NATIONAL FLOOD INSURANCE PROGRAM
FEMA MAP COORDINATION CONTRACTOR

JAN 30 2002

IN REPLY REFER TO:
Case No.: 02-06-600R
Community: City of Albuquerque, Bernalillo County, New Mexico
Community No.: 350002

316-ACK.FRQ

Diane Hoelzer, P.E.
D. Mark Goodwin and Associates, P.A.
P.O. Box 90606
Albuquerque, NM 87199

Dear Ms. Hoelzer:

This responds to a request, dated November 9, 2001, from Carlos A. Montoya, Floodplain Administrator for the City of Albuquerque and Bernalillo County, New Mexico, that the Federal Emergency Management Agency (FEMA) issue a conditional revision to the Flood Insurance Rate Map (FIRM) for the above-referenced community. Pertinent information about the request is listed below.

Identifier:	Sunrise Ranch West
Flooding Source:	Arroyo B-B
FIRM Panels Affected:	Bernalillo County, New Mexico and Incorporated Areas FIRM number 35001C0328 D, dated September 20, 1996

We have completed an inventory of the items that you submitted. The items identified below are required before we can begin a detailed review of your request.

1. Subparagraph 65.6(a)(6) of the National Flood Insurance Program (NFIP) regulations states that computer programs used to perform hydrologic and hydraulic analyses in support of a flood insurance map revision must be accepted and adopted by governmental agencies responsible for implementing flood control programs and regulating floodplains. Please use FEMA's accepted hydrologic and hydraulic models, as indicated below.

   a) Our preliminary review shows that AHYMO94 computer modeling package has been used to perform the hydrologic analysis for this project. Please submit a revised hydrologic analysis using the 24-hour duration storm event of the 1% annual chance frequency flood and utilizing the AHYMO97 computer modeling package, dated August 1997.

   b) The hydraulic model, HEC-2, dated 1989, has been used to perform street capacity flow calculation for the proposed Sunrise Ranch West development. FEMA no longer accepts this HEC-2 model. Please submit electronic and paper copies for proposed conditions of the 1% annual chance flood using HEC-2 version 4.6.2, dated 1991, HEC-RAS version 2.2, dated 1998, or HEC-RAS version 3.0.1. Also, include additional cross sections for each street of the proposed Sunrise Ranch West Subdivision starting at upgrade and continuing downgrade to the proposed onsite detention pond.

2. Please reflect Comments 1(a) and 1(b) on the topographic work map and provide us with a copy of the map showing the revised proposed base floodplain boundary delineations and additional cross section locations.

3. Please reflect Comments 1(a) and 2(b) on the effective FIRM and provide us with a copy of the annotated FIRM showing the revised proposed base floodplain boundary delineations.

4. Please indicate the vertical datum used in the hydraulic models and on the topographic map and grading plans.

Please send the required data to us at the address shown at the bottom of the first page. If all required items are not submitted within 90 days of the date of this letter, FEMA will treat any subsequent request as an original submittal, and it will be subject to all submittal/payment procedures.

If you are unable to meet the 90-day deadline for submittal of required items and would like FEMA to continue processing your request, you must request an extension of the deadline. This request must be submitted to us in writing and must provide (1) the reason why the data cannot be submitted within the requested timeframe and (2) a new date for the submittal of the data. FEMA receives a very large volume of requests and cannot maintain inactive requests for an indefinite period of time. Therefore, the fees will be forfeited for any request for which neither the requested data nor a written extension request is received within 90 days.

When you write to us about your request, please include the case number referenced above in your letter. If you have general questions about your case, FEMA policy, or the NFIP, please call FEMA's toll free map assistance line at 1-877-FEMA MAP (1-877-336-2627). If you have specific questions concerning your request, please contact the Engineer assigned to your case, Ms. Diane Rubin, by phone at 1-800-697-7275 Ext. 682, or by e-mail at drubin@pbsj.com.

Sincerely,

Andre Cadogan, P.E.
Program Manager, Region VI

cc: Carlos A. Montoya, Floodplain Administrator,
City of Albuquerque/Bernalillo County

rec'd 6-19-02 gfs

Federal Emergency Management Agency

Washington, D.C. 20472

JUN 13 2002

The Honorable Martin Chavez
Mayor, City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

IN REPLY REFER TO:
Case Number: 02-06-600R

Community: City of Albuquerque, Bernalillo County, New Mexico
Community No.: 350002

104

Dear Mayor Chavez:

This is in reference to a letter dated November 9, 2001, from Carlos A. Montoya, Floodplain Administrator for the City of Albuquerque, Bernalillo County, requesting a Conditional Letter of Map Revision (CLOMR) from the Federal Emergency Management Agency (FEMA) for the proposed Sunrise Ranch West Subdivision. The proposed project will be located along Arroyo B-B, from 106th Street to approximately 1,130 feet downstream of 106th Street. It will involve the placement of fill in the 1% annual chance (100-year) floodplain, designated a Zone AO of 1-foot depth, from 106th Street to approximately 750 feet downstream of 106th Street. It will also involve the relocation of the channel through a 60-inch storm drain system along 106th Street to a detention pond located at the northwestern corner of 106th Street and Eucariz Avenue and the Snow Vista Channel Pond. An onsite detention pond will capture the overland flow from the Sunrise Ranch West Subdivision. The area of the proposed project is shown on Flood Insurance Rate Map (FIRM) panels 35001C0309 D and 35001C0328 D, dated September 20, 1996.

We received the following data, prepared by Diane Hoelzer, P.E., of D. Mark Goodwin and Associates, P.A., in support of this request:

- AHYMO97 hydrologic model, dated February 19, 2002, representing existing and proposed conditions for the 1% annual chance storm event for the Snow Vista Watershed;
- HEC-RAS hydraulic model, dated August 20, 2001, for Arroyo B-B for the 1% annual chance flood, representing existing conditions;
- HEC-2 hydraulic model, dated February 19, 2002, for the 1% annual chance flood through the proposed drainage swale and the proposed Sunrise Ranch West Subdivision streets;
- a certified topographic work map, dated February 20, 2002, titled *HEC Cross Sections*, at a scale of 1 inch = 50 feet, with a contour interval of 1 foot, representing the existing 1% annual chance floodplain along Arroyo B-B;
- a certified topographic work map, dated December 18, 2001, titled *Grading & Drainage Plan*, at a scale of 1 inch = 50 feet, with a contour interval of 1 foot, representing the proposed 1% annual chance floodplain along Arroyo B-B;
- schematic drawings, dated July 2001, for the proposed drainage swale along 106th Street and the detention pond to be located onsite of the Sunrise Ranch West Subdivision;

- portions of the Bernilillo County, New Mexico and Incorporated Areas FIRM numbers 35001C0309 D and 35001C0328 D, dated September 20, 1996, annotated to reflect proposed conditions; and

- completed application/certification forms, including community concurrence of the proposed project.

We received all of the data required to perform a technical review of the CLOMR request as of April 16, 2002.

An existing conditions model was developed to provide additional detail in the vicinity of the proposed project. The existing conditions model incorporated updated topographic information and additional cross sections to reflect current hydraulic conditions. This model was then compared to the effective FIRM and the proposed conditions model to differentiate changes in flood hazards caused by more detailed modeling from changes in flood hazards that will be caused by the proposed project. The existing conditions model reveals decreases in the 1% annual chance floodplain for Arroyo B-B compared to the effective FIRM, with a maximum decrease of 100 feet occurring approximately 370 feet upstream of the Snow Vista Channel Pond.

Our review of the proposed conditions model indicates that the proposed project would eliminate the 1% annual chance floodplain for a portion of reach for Arroyo B-B, from 106th Street to approximately 750 feet downstream of 106th Street. Flow from Arroyo B-B will be captured in a storm sewer system located approximately 250 feet south of the intersection of Sunset Gardens Road and 106th Street and conveyed approximately 670 feet along 106th Street to the detention pond located at the intersection of 106th Street and Eucariz Avenue. Outflow from this detention pond will be conveyed through a storm sewer system to the Snow Vista Channel Pond located approximately 1,250 feet from the intersection of 106th Street and Eucariz Avenue.

We have reviewed the submitted data and determined that the proposed project meets the minimum floodplain management criteria of the National Flood Insurance Program (NFIP). If the project is built as proposed, a revision to the Flood Insurance Study (FIS) and FIRM for your community will be warranted. This revision will show the following effects, as shown by the data submitted to support the request:

1% Annual Chance Water Surface Elevations

When we compared the proposed conditions model to the effective FIRM downstream of the relocated reach, we observed that the 1% annual chance water surface elevations for Arroyo B-B would decrease from a Zone AO depth of 1 foot, to unmappable depths from the Sunset Ranch West Subdivision to the Snow Vista Channel Pond. In addition, the proposed project would redirect flow along Arroyo B-B from approximately 250 feet south of the intersection of Sunset Gardens Road and 106th Street and conveyed approximately 670 feet along 106th Street to the detention pond located at the intersection of 106th Street and Eucariz Avenue.

1% Annual Chance Floodplain (Zone AO)

When we compared the proposed conditions model to the effective FIRM downstream of the relocated reach, we observe that the 1% annual chance floodplain for Arroyo B-B would decrease. The maximum decrease of 100 feet would occur approximately 370 feet upstream of the Snow Vista Channel Pond. In addition, the proposed project would eliminate the 1% annual chance

floodplain for a portion of reach for Arroyo B-B from 106th Street to approximately 750 feet downstream of 106th Street.

Future revisions to the FIS and FIRM, or restudies of the flood hazards in this area, could modify this determination.

We based this determination on the 1% annual chance discharges computed in the submitted hydrologic model. Future development of projects upstream may increase discharges, which may increase flood hazards. A comprehensive restudy of your community's flood hazards would consider the cumulative effects of development on discharges and therefore, could establish greater flood hazards in this area.

Your community must approve all proposed floodplain development, including this proposed project, and ensure that permits required by other Federal agencies and/or State and local agencies have been obtained. State and/or community officials may set standards for construction that are more restrictive than the minimum NFIP standards or may limit development in floodplains, based on knowledge of local conditions and in the interest of safety. If the State and/or the community have adopted more restrictive or comprehensive floodplain management criteria, those criteria take precedence over the minimum NFIP requirements.

Channel modifications will fail to function as designed without proper maintenance, such as the regular clearing of the drainage swale and detention ponds. To avoid such failures, we require participating communities to ensure that the flood-carrying capacity within the altered or relocated portion of any watercourse is maintained according to NFIP regulations Subparagraph 60.3(b)(7). Therefore, upon completion of the project, your community must submit documentation ensuring that the drainage swale and detention ponds will be maintained to preserve their design function. We may request that your community submit a description and schedule of their maintenance, as outlined in Subparagraph 65.6(a)(12) of the NFIP regulations.

If fill is placed in your community to raise the ground surface to or above the Base (1% annual chance) Flood Elevation (BFE), your community must meet the criteria of NFIP regulations Sections 60.3 and 65.5, which require that the community's NFIP permit official certify that proposed or existing structures to be removed from the Special Flood Hazard Area (SFHA) be "reasonably safe from flooding." "Reasonably safe from flooding" means base flood waters will not inundate the land or damage structures to be removed from the SFHA and that any subsurface waters related to the base flood will not damage existing or proposed buildings. The community and engineers should review and use *FEMA Technical Bulletin 10-01, Ensuring that Structures Built on Fill In or Near Special Flood Hazard Areas are Reasonably Safe From Flooding*, which may be downloaded directly from the FEMA website at http://www.fema.gov/mit/tb1001.pdf.

Upon completion of the proposed project, your community must request a revision to the FIS and FIRM, per NFIP regulations Section 65.3. The revision request should include the data listed below.

1. Evidence of compliance with NFIP regulations Paragraph 65.4(b), which states that "all requests for changes to effective maps . . . must be made in writing by the community's Chief Executive Officer (CEO) or an official designated by the CEO."

2. As-built plans of all relevant project elements or a statement declaring that the project was built as proposed, either of which must be certified by a Professional Engineer.

3. The detailed application and certification forms may be required if as-built conditions differ from the preliminary plans. If required, please submit new forms or annotated copies of the previously submitted forms showing the revised information.

4. HEC-2 hydraulic analyses for the 1% annual chance flood for Arroyo B-B, representing as-built conditions.

5. A certified topographic map, delineating the 1% annual chance floodplain for Arroyo B-B, including the locations and alignments of the cross sections and flow lines used in the hydraulic model, representing as-built conditions.

    a. Please show this information on a map of suitable scale and topographic definition to provide reasonable accuracy.

    b. Please label all items and include the vertical datum and reference marks for easy cross-referencing to the hydraulic model and summary data.

6. An annotated copy of the Bernilillo County, New Mexico and Incorporated Areas FIRM numbers 35001C0309 D and 35001C0328 D, dated September 20, 1996, to reflect as-built conditions.

7. Evidence of compliance with NFIP regulation Subparagraph 60.3(b)(7) and 65.5(a)(12) regarding channel maintenance, and Subparagraph 65.5(a)(4) regarding the placement of fill.

If the project is built as proposed in the data submitted in support of this request, you do not have to resubmit items 3 and 4 listed above; otherwise, please resubmit them.

We have enclosed a copy of our application/certification forms for your reference. The application/certification forms package may be downloaded directly from the FEMA website at http://www.fema.gov/mit/tsd/en_main.htm or copies may be obtained by contacting the FEMA Map Assistance Center, toll free, at 1-877-FEMA MAP (1-877-336-2627). Typically, we do not require all of these forms if the project is completed as proposed in the data submitted in support of this request. The enclosed document, titled *Requirements for Submitting Application/ Certification Forms to Support Requests for NFIP Map Revisions*, describes in detail the circumstances under which the forms are required.

The NFIP is primarily funded by policyholders, not taxes. We recover costs associated with reviewing and processing requests for modifications to published FISs and FIRMs to minimize the financial burden on the policyholders. The fee for an as-built Letter of Map Revision request in follow-up to this CLOMR is $3,400, which we must receive before we can begin processing. This fee represents the new fee schedule effective June 1, 2000. However, the fee schedule is subject to change, and the requester is required to submit the fee in effect at the time of the submission. Your payment must be a check or money order made payable to the National Flood Insurance Program and should be forwarded to:

Federal Emergency Management Agency
Fee Charge System Administrator
P.O. Box 3173
Merrifield, Virginia 22216

Once we receive the processing fee and the items listed above, complete our review, and verify that the completed project meets all applicable NFIP standards, we will revise your community's FIS and FIRM to incorporate the effects of the completed project, as appropriate.

Part 65 of the enclosed NFIP regulations further describes the data needed to support a request to revise a FIS and FIRM. Your compliance with the criteria outlined in the NFIP regulations will streamline our review, allowing us to expeditiously revise your community's FIS and FIRM.

If you have any questions regarding this CLOMR, please contact the FEMA Map Assistance Center, toll free, at 1-877-FEMA MAP (1-877-336-2627).

Sincerely,

William R Blanton Jr

William R. Blanton Jr., Project Officer
Hazards Study Branch
Federal Insurance and
Mitigation Administration

For: Matthew B. Miller, P.E., Chief
Hazards Study Branch
Federal Insurance and
Mitigation Administration

Enclosures

cc: Carlos A. Montoya, City/County Floodplain Administrator,
City of Albuquerque, Bernalillo County
Diane Hoelzer, P.E., D. Mark Goodwin and Associates

NATIONAL FLOOD INSURANCE PROGRAM
FEMA MAP COORDINATION CONTRACTOR

APR 10 2002

Diane Hoelzer, P.E.
D. Mark Goodwin and Associates, P.A.
P.O. Box 90606
Albuquerque, NM 87199

IN REPLY REFER TO:

Case No.:	02-06-600R
Community:	City of Albuquerque, Bernalillo County, New Mexico
Community No.:	350002

316-AD

Dear Ms. Hoelzer

This is in regard to your November 9, 2001, request that the Federal Emergency Management Agency (FEMA) issue a Conditional Letter of Map Revision to the Flood Insurance Rate Map (FIRM) for the above-referenced community. In a previous letter, you were informed that additional data might be required to complete our review of the request. The data required to complete our review, which must be submitted within 90 days of the date of this letter, are listed below.

1. The proposed onsite detention pond for Sunrise Ranch West is designed to have a 2-foot freeboard. The National Flood Insurance Program (NFIP) regulation Subparagraph 65.10(b)(1) requires that any flood control structure be designed and built to have a minimum 3-foot freeboard. Please revise the design of the onsite detention pond to include the 3-foot freeboard and provide back-up calculations for the spillway and outfall for the 1% annual chance (100-year) flood.

2. The annotated FIRM shows proposed removal of the Zone AO along Arroyo B-B from 750 feet downstream of 106th Street to Snow Vista Channel Pond. Please provide hydraulic modeling, topographic mapping, and grading plans of the remaining channel flow to account for proposed revision of this Zone AO.

Please send the required data to us at the address shown at the bottom of this page. Further action on the request has been suspended pending receipt of the required data.

If we do not receive the required data within 90 days, we will suspend the processing of your request. Any data submitted after 90 days will be treated as an original submittal and will be subject to all submittal/payment procedures, including the review and processing fee in effect at the time of the re-submittal. A copy of the notice summarizing the current fee schedule, which was published in the *Federal Register,* is enclosed for your information.

12101 Indian Creek Court, Beltsville, MD 20705 • Phone: 1-800-697-7275 • Fax: 301-210-5157

When you write to us about your request, please include the case number referenced above. If you have general questions about your case, FEMA policy, or the NFIP, please call FEMA's toll free map assistance line at 1-877-FEMA MAP (1-877-336-2627). If you have specific questions concerning your request, please contact the Engineer assigned to your case, Ms. Diane Rubin, by phone at 1-800-697-7275 Ext. 682, or by e-mail at drubin@pbsj.com.

Sincerely,

Joseph A. Martinenza, Jr.
Program Manager, Region VI

Enclosure

cc: Carlos A. Montoya, City/County Floodplain Administrator
City of Albuquerque, Bernalillo County

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

November 9, 2001

Bill Blanton
Federal Emergency Management Agency
500 C Street, SW
Washington, DC 20472

RE: Request for a Conditional Letter of Map Revision for Sunrise Ranch West Subdivision

City of Albuquerque, New Mexico, Community No. 350002, FIRM Panel 35002C0328 D, Effective Date September 20, 1996

Dear Mr. Blanton,

The purpose of this submittal is to convey the documents in order to request a Conditional Letter of Map Revision based on approved drainage report dated September 2001.

As the City Floodplain Administrator, I have reviewed the response provided with this submittal. Our Community would greatly appreciate your prompt response and approval for this Conditional Letter of Map Revision.

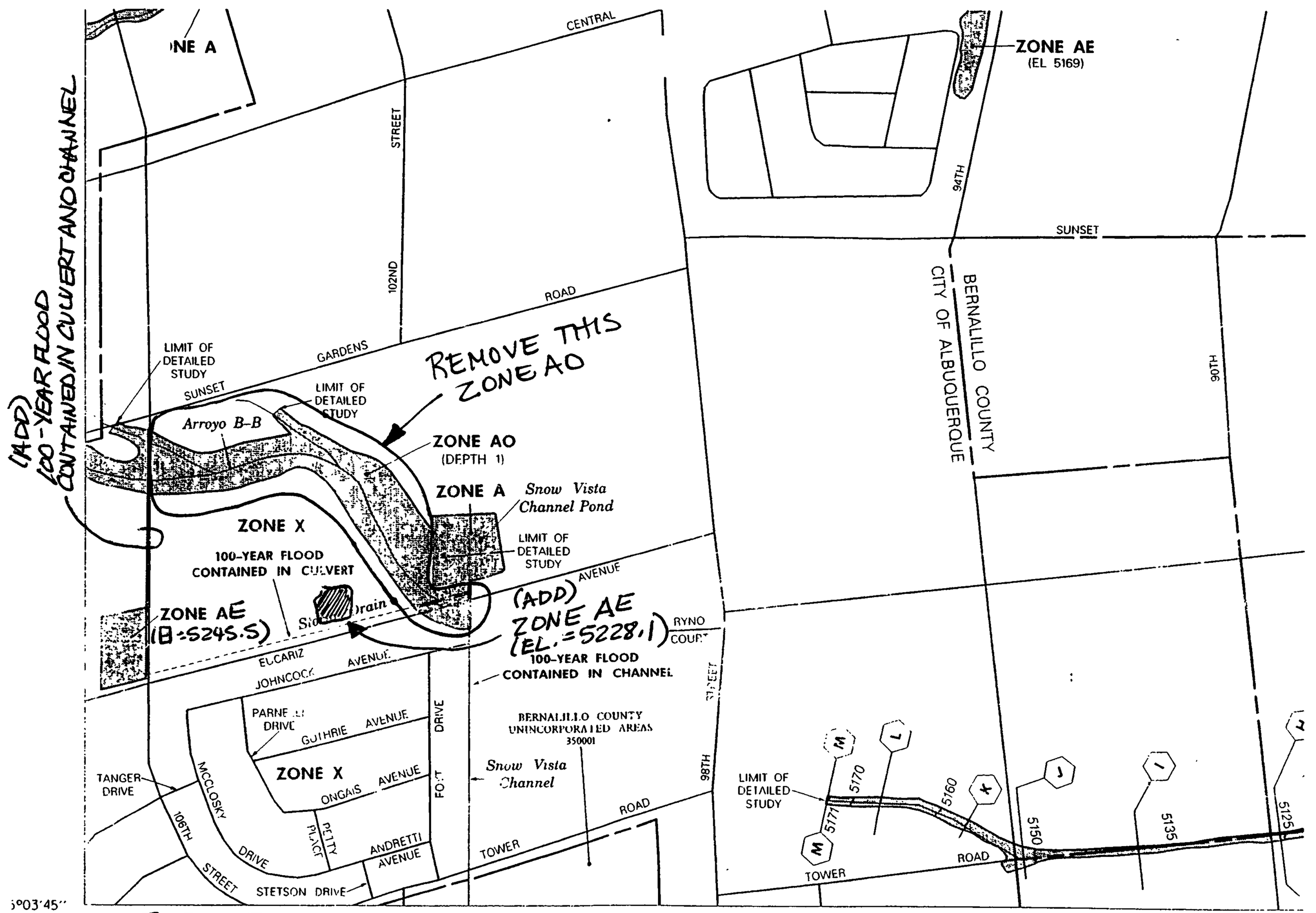
If you have any questions, you can contact me at (505) 924-3982.

Sincerely,

Carlos A. Montoya
City/County Floodplain Administrator

C: Diane Hoelzer, Mark Goodwin & Associates
Alan Johnson, FEMA Headquarters
Jack Quarles, FEMA Region VI

THE CITY OF ALBUQUERQUE IS AN EQUAL OPPORTUNITY/REASONABLE ACCOMMODATION EMPLOYER



35°03'45"
106°45'00"

FIRM PANEL 328 OF 825
CITY OF ALBUQUERQUE, BERNALILLO COUNTY
3500020328D, SEPT. 20, 1996.

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

October 18, 2001

Mr. Carlos Montoya
City of Albuquerque Flood Plain Administrator
Hydrology Dept.
Plaza del Sol
P.O. Box 1293
Albuquerque, NM 87103

Re: Request for CLOMR for Sunrise Ranch West Subdivision
Engineer's stamp 10-18-01 (L8/D14)

Dear Mr. Montoya,

The Drainage Report for this project was approved September 11, 2001 with engineers stamp dated 9-7-01.

Floodplain Arroyo B-B flows through this project site as shown on the attached FIRM panel 3500020328D dated September 20, 1996. I am requesting a CLOMR for this site to fill in the existing floodplain arroyo in order to develop the site into a 143 single family residential subdivision.

I am proposing to remove our project site from the floodplain by diverting all of the 100-year flows from the existing arroyo south within the 106th street right-of-way, partially through a proposed 60" storm sewer that will connect to an existing 60" storm sewer and partially through a temporary diversion channel that will discharge to the existing 106th street detention pond located at the northwest corner of 106th street and Eucariz. The flow restriction on the outfall structure in this pond will be removed. A sedimentation pond around the 8' diameter manhole drop structure will serve to slow down the flow velocities and allow sediment deposition prior to entrance into the storm sewer.

This site is in the Snow Vista Basin which is part of the approved AMAFCA Amole-Hubbell Drainage Management Plan. This proposed plan has been developed in close accordance with this plan. Any and all changes made were verified using the previously developed AHYMO files in the AMAFCA report.

If you have any questions, please call me.

Sincerely,

MARK GOODWIN AND ASSOCIATES, P.A.

Diane Hoelzer, P.E.

file: sunrise.wst/clomr1.ltr

FEDERAL EMERGENCY MANAGEMENT AGENCY **REVISION REQUESTER AND COMMUNITY OFFICIAL**	O.M.B No. 3067-0148 Expires April 30, 2001

Public reporting burden for this form is estimated to average 2.13 hours per response. The burden estimate includes he time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

1. REQUESTED RESPONSE FROM FEMA

This request is for a:

- [x] CLOMR A letter from FEMA commenting on whether a proposed project, if built as proposed, would justify a map revision, or proposed hydrology changes (See 44 CFR Ch. 1, Parts 60,65 & 72).
- [ ] LOMR A letter from FEMA officially revising the current NFIP map to show the changes to floodplains, floodway or flood elevations. LOMRs typically decrease flood hazards. (See 44 CFR Ch. 1 Parts 60 & 65.)
- [ ] Other Describe:

2. OVERVIEW

1. The basis for this revision request is (are): (check all that apply)

[x] Physical Change [ ] Improved Methodology/Data [ ] Floodway Revision

[ ] Other Describe:

Note: A photograph is not required, but is very helpful during review.

2. Flooding Source: Arroyo B-B

3. Project Name/Identifier: Sunrise Ranch West

4. FEMA zone designations affected: AO (Depth 1.0')
(example: A, AH, AO, A1-A30, A99, AE, V, V1-V30, VE, B, C, D, X)

5. The NFIP map panel(s) affected for all impacted communities is (are):

Community No.	Community Name	State	Map No.	Panel No.	Effective Date
Ex: 480301	Katy, City	TX	480301	0005D	02/08/83
480287	Harris County	TX	48201C	0220G	09/28/90
350002	Albuquerque, City	NM	35001C	0328D	9/20/96
350001	Bernalillo County	NM	35001C	0328D	9/20/96

6. The area of revision encompasses the following types of flooding and structures. Check all that apply.

Types of Flooding	Structures
[x] Riverine	[x] Channelization
[ ] Coastal	[ ] Levee/Floodwall
[ ] Alluvial fan	[ ] Bridge/Culvert
[x] Shallow Flooding (e.g. Zones AO and AH)	[ ] Dam
[ ] Lakes	[ ] Fill
[ ] Other (describe)	[x] Other (describe) Storm Sewer

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

4. ENCROACHMENT INFORMATION

1. Does the State have jurisdiction over the floodway or its adoption by communities participating in the NFIP?
   ☒ Yes ☐ No

If Yes, attach a copy of a letter notifying the appropriate State agency of the floodway revision and documentation of the pproval of the revised floodway by the appropriate State agency.

2. Does the development in the floodway cause the 1% annual chance (base) elevation to increase at any location by more than 0.000 feet? ☐ Yes ☐ No ☒ N/A

3. Does the cumulative effect of all development that has occurred since the effective SFHA was originally identified cause the base flood elevation to increase at any location by more than one foot (or other increase limit if community or state has adopted more stringent criteria - even if a floodway has not been delineated by FEMA)?
   ☐ Yes ☐ No

If the answer to either items is Yes, please attach documentation that all requirements of Section 65.12 of the NFIP regulations have been met, regarding evaluation of alternatives, notice to individual legal property owners, concurrence of CEO, and certification that no insurable structures are impacted.

5. MAINTENANCE RESPONSIBILITY

The community is willing to assume responsibility for ☐ performing ☒ overseeing compliance with the maintenance and operation plans of the Sunrise Ranch West Subdivision

flood control structure. If not performed promptly by an owner other than the community, the community will provide the necessary services without cost to the Federal government.

Operation and maintenance plans are attached. ☒ **Yes** ☐ **No** ☐ **N/A**

6. REVIEW FEE

The review fee for the appropriate request category has been included. ☒ Yes Fee amount: $__

OR

This request is based on a federally sponsored flood-control project where 50 percent or more of the project's cost is federally sponsored, or the request is based on detailed hydrologic and hydraulic studies conducted by Federal, State, or local agencies to replace approximate studies conducted by FEMA and shown on the effective FIRM; thus the project is fee exempt. ☐ Yes

Please see Instructions for Fee Amounts

7. SIGNATURE

Note: **I understand that my signature indicates that all information submitted in support of this request is correct**

Diane Hoelzer
Signature of Revision Requester

Diane Hoelzer, Senior Civil Engineer
Printed Name and Title of Revision Requester

Mark Goodwin & Associates, PA
Company Name

Telephone No.: 505-828-2200 Date: October 17, 2001

Note: **Signature indicates that the community understands, from the revision requester, the impacts of the revision on flooding conditions in the community.**

Carlos A. Montoya
Signature of Community Official

Carlos A. Montoya
Printed Name and Title of Community Official

Albuquerque New Mexico
Community Name

Telephone No.: 505-924-3982 Date: 11-9-01

CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR

This certification is in accordance with 44 CFR Ch. 1, Sect 65.2

Diane Hoelzer
Signature

Diane Hoelzer, Senior Civil Engineer
Printed Name and Title of Revision Requester

Registr No. 11967 Expires (Date) 12-31-01 State NM

ype of License/Expertise: PE

Check which forms have been included with this request

Form Name and (Number)	Required if .....
☒ **Hydrologic** (3)	new or revised discharges
☒ **Hydraulic** (4)	new or revised water-surface elevations
☒ **Mapping** (5)	floodplain/floodway changes
☒ **Channelization** (6)	channel is modified
☐ **Bridge/Culvert** (7)	addition/revision of bridge/culvert
☐ **Levee/Floodwall** (8)	addition/revision of levee/floodwall
☐ **Coastal** (9)	new or revised coastal elevations
☐ **Coastal Structures** (10)	addition/revision of coastal structure
☒ **Dam** (11)	addition/revision of dam
☐ **Alluvial Fan** (12)	structures proposed on alluvial fan

FEDERAL EMERGENCY MANAGEMENT AGENCY **HYDROLOGIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

ublic reporting burden for this form is estimated to average **3.67** hours per response. The burden estimate includes he time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Albuquerque City

Flooding Source: Arroyo B-B

Project Name/Identifier: Sunrise Ranch West

1. REASON FOR NEW HYDROLOGIC ANALYSIS

☒ No existing analysis ☐ Improved data ☐ Changed physical condition of watershed

☐ Alternative methodology ☐ Proposed Conditions (CLOMR) ☐ Other

For the reason stated above, please attach a detailed explanation. If a computer program/model was used in revising the hydrologic analysis, **please provide a diskette with the input files** for the same flood recurrence intervals contained in the FIS for that stream; and at least for the 1% annual chance (base) flood where no detailed study exists.

Explanation provided: ☒ Yes ☐ No **Diskettes provided:** ☒ Yes ☐ No

2. METHODOLOGY FOR NEW ANALYSIS

Indicate Method	Required Data	Data Included
☐ Statistical Analysis of Gage Records	Form 3 - Attachment A	☐ Yes ☒ No
☐ Regional Regression Equations	Form 3 - Attachment C	☐ Yes ☒ No
☒ Precipitation/Runoff Model	Form 3 - Attachment D	☒ Yes ☐ No
☐ Other	Back-up computations and supporting data	☐ Yes ☒ No

3. APPROVAL OF ANALYSIS

The hydrologic analysis has already been approved by a local, state, or Federal Agency. ☒ Yes ☐ No ☐ Not Required

If Yes, attach evidence of approval. ☒ **Approval attached.** If No, attach explanation. ☐ **Explanation attached.**

4. COMPARISON OF BASE FLOOD DISCHARGES

Location:	Drainage Area (SqMi)	FIS(cfs)	Revised (cfs)
At 106th street	0.2711	NA	195 cfs

Note: When revised discharges are not significantly different than the FIS discharges, FEMA may require a confidence limits analysis (see attachment B) at a later date to complete the review.

If only a portion of a detailed study area was revised please attach an explanation describing the transition from the proposed discharges to the effective discharges. ☐ **Explanation Included** ☒ **Explanation Not Required**

5. HISTORICAL FLOODING INFORMATION

If historical data are available for the flooding source please provide: Location, peak discharges/water-surface elevations and dates, and source of information. ☐ **Data Attached** ☒ **Data Not Available**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

ATTACHMENT D: PRECIPITATION/RUNOFF MODEL

		FIS:	Revised:
1.	Method or model used:	AHYMO Model (AMAFCA Hydrologic Model)	
	Version:		
	Date:	1994	
2.	Source of rainfall depth:	Figure 24 and 30, NOAA Atlas Volume IV	
3.	Source of rainfall distribution:	City of Albuquerque, DPM Sec22 2	
4.	Rainfall duration:	6 hour and 10 day.	
5.	Areal adjustment to precipitation (%):	None.	
6.	Maximum overland flow length	300'	
7.	Hydrograph development method:	AHYMO	
8.	Loss rate method:		
	Source of soils information:	COA, DPM, Sect. 22.2	
	Source of land use information:	COA, DPM, Sect. 22.2	
9.	Channel routing method:		
10.	Reservoir routing:	☐ Yes ☐ No	☒ Yes ☐ No
11.	Baseflow considerations:	☐ Yes ☐ No	☐ Yes ☒ No
	If Yes, explain below how baseflow was determined:		
12.	Snowmelt considerations:	☐ Yes ☐ No	☐ Yes ☒ No
13.	Model calibration:	☐ Yes ☐ No	☐ Yes ☒ No
	If Yes, explain below how calibration was performed		
14.	Future land use condition:	☐ Yes ☐ No	☐ Yes ☒ No
	If Yes, explain why below		

All hydrologic analyses in this report used the same 'future land use condition' used in the approved AMAFCA Amole-Hubbel Drainage Management Plan

15. **Attach precipitation/runoff model, hydrologic model schematic, curve number calculations, time of concentration calculations, and supporting maps, delineating the watershed boundary and drainage area divides.** see drainage report

Information and Maps provided? ☒ Yes ☐ No

NOTE: FEMA policy is to base flooding on existing conditions.

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 2.25 hours per response. The burden estimate includes the time for eviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and eviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Albuquerque City

Flooding Source: Arroyo B-B

Project Name/Identifier: Sunrise Ranch West

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? [x] Yes

Downstream Limit: Snow Vista Sedimentation Pond

Upstream Limit: 106th Street

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See ıstructions for directions on when other models may be required.

for areas which do not have detailed flooding:
Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model NA [ ] **Natural** **File Name** _____ [ ] **Floodway** **File Name**
Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model NA [ ] **Natural** **File Name** _____ [ ] **Floodway** **File Name**
The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model [x] **Natural** **File Name** _____ [ ] **Floodway** **File Name**
The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model [x] **Natural** **File Name** _____ [ ] **Floodway** **File Name**
The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model nust reflect proposed conditions.

5. Other - Please attach a sheet describing all other models submitted along with the file names. [ ] **Natural** [ ] **Floodway**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? [X] Yes [ ] No

NOTE: If the effective study is an approximate study, the slope/area method is recommended.
For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

[ ] Supercritical depth [ ] Critical Depth [ ] Drawdowns [ ] Negative Floodway Surcharges

[ ] Floodway Surcharges Greater Than Maximum Allowed by Community/State

[ ] Water surface elevations higher than the end points of cross sections.

[ ] Floodway discharge is different than the Natural 100-year (base) flood discharge.

[X] Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property) Flows through project site will be diverted south in 106th roadside swale and 60" storm sewer (partial flow in each)

Explanation attached with Form [ ] **Explanation provided on attached printout** [ ]

(refer to drainage report)

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? [ ] **Yes** NA [ ] **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. Profile Transition

a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

NA
Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

NA
Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

NA
Downstream End _____ within _____ (feet) Upstream End _____ within _____ (feet)
Cross-Section # *Cross-Section #*

2. Profile Checklist (check box if information has been provided on profile)

NA (there is no existing profile)
The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

[ ] Stream Name [ ] Community Name [ ] Corporate Limits labeled [ ] Study limits labeled

[ ] Confluences labeled [ ] Channel Stationing [ ] Streambed profiled [ ] Cross Sections labeled

[ ] Horizontal/Vertical Scales indicated [ ] 100-year elevs profiled*

[ ] Road Crossings [ ] Labeled [ ] Low Chord Elevations [ ] Top of Road Elevations

*All recurrence intervals in the effective study must also be profiled.

Floodway Data Table
NA

Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

Floodway Data Table Attached [ ] **Yes** [ ] **Not Required**

NA

FEDERAL EMERGENCY MANAGEMENT AGENCY
RIVERINE / COASTAL MAPPING

O.M.B No. 3067-0148
Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 1.5 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Albuquerque, City

Flooding Source: Arroyo B-B

Project Name/Identifier: Sunrise Ranch West

This is a ☒ Manual ☐ Digital submission. *Digital map submissions may be used to update digital FIRMs (DFIRMs). For updating DFIRMs, these submissions must be coordinated with FEMA Headquarters as far in advance as possible.*

1. MAPPING CHANGES

1. A topographic workmap must be submitted showing the following information (check N/A when not applicable):

a. Revised approximate 100-year floodplain boundaries (Zone A)	☒ Yes	☐ No	☐ N/A
b. Revised detailed 100- and 500-year floodplain boundaries.	☐ Yes	☐ No	☒ N/A
c. Revised floodway boundaries	☐ Yes	☐ No	☒ N/A
d. Location and alignment of all cross sections with stationing control indicated.	☐ Yes	☐ No	☒ N/A
e. Stream alignments, road alignments and dam alignments.	☒ Yes	☐ No	☐ N/A
f. Current community boundaries.	☒ Yes	☐ No	☐ N/A
g. Effective 100- year floodplain and floodway boundaries from FIRM/FBFM reduced or enlarged to the scale of the topographic workmap	☒ Yes	☐ No	☐ N/A
h. Tie-ins between the effective and revised 100-, 500-year and floodway boundaries	☐ Yes	☐ No	☒ N/A
i. The requester's property boundaries and community easements	☒ Yes	☐ No	☐ N/A
j. The signed certification of a registered professional engineer	☒ Yes	☐ No	☐ N/A
k. Location and description of reference marks	☒ Yes	☐ No	☐ N/A
l. Vertical datum (example: NGVD, NAVD)	☒ Yes	☐ No	☐ N/A
m. Coastal zone designations tie into adjacent areas not being revised	☐ Yes	☐ No	☒ N/A
n. Location and alignment of all coastal transects used to revise the coastal analyze	☐ Yes	☐ No	☒ N/A
o. V-zone has been delineated to extend landward to the heel of the primary frontal dune	☐ Yes	☐ No	☒ N/A

If any items are marked No or N/A please attach an explanation.

2. What is the source and date of the updated topographic information (example: orthophoto maps, July 1985; filed survey, May 1979, beach profile, June 1987 etc.)? Aldrich Land Surveying, January 2000.

3. What is the scale and contour interval of the following workmaps?

Effective FIS Scale 1-200' Contour Interval NA

Revision Request Scale 1"=50' Contour Interval 1 foot

NOTE: Revised topographic information must be of equal or greater detail than effective.

4. Attach an annotated FIRM/FBFM at the scale of the effective FIRM/FBFM showing the revised 100- and 500-year floodplain and the floodway boundaries and how they tie into those shown on the effective FIRM/FBFM downstream and upstream of the revisions or adjacent to the area of revision for coastal studies. **FIRM/FBFM attached?** ☒ Yes ☐ No

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

2. EARTH FILL PLACEMENT

1. The fill is: ☐ Existing ☒ Proposed

2. Has fill been/will be placed in the regulatory floodway? NA ☐ Yes ☐ No
If Yes, please attach completed Riverine Hydraulic Analysis Form (Form 4).

3. Has fill been/will be placed in floodway fringe (*area between the floodway and 100-year floodplain boundaries*)? ☒ Yes ☐ No

If Yes, then complete A, B, C, and D below.

a. Are fill slopes for granular materials steeper than one vertical on one-and-one-half horizontal? ☐ Yes ☒ No

If Yes, justify steeper slopes

b. Is adequate erosion protection provided for fill slopes exposed to moving flood waters? (*Slopes exposed to flows with velocities of up to 5 feet per second (fps) during the 100-year flood must, at a minimum, be protected by a cover of grass, vines, weeds, or similar vegetation; slopes exposed to flows with velocities greater than 5 fps during the 100-year flood must, at a minimum, be protected by stone or rock riprap.*)

☒ Yes ☐ No

If No, describe erosion protection provided

c. Has all fill placed in revised 100-year floodplain been compacted to 95 percent of the maximum density obtainable with the Standard Proctor Test Method or acceptable equivalent method? ☐ Yes ☐ No

d. Can structures conceivably be constructed on the fill at any time in the future? ☒ Yes ☐ No

If Yes, attach certification of fill compaction (item 3c. above) by the community's NFIP permit official, a registered professional engineer, or an accredited soils engineer in accordance with Subparagraph 65.5(a)(6) of the NFIP regulations.

Fill certification attached ☐ Yes ☒ No (will submit with LOMR)

4. Has fill been/will be placed in a V zone? ☐ Yes ☒ No

If Yes, is the fill protected from erosion by a flood control structure such as a revetment or seawall?

☐ Yes ☐ No NA

If Yes, attach the Coastal Structures Form (Form 10).

FEDERAL EMERGENCY MANAGEMENT AGENCY **CHANNELIZATION**	O.M.B. Burden No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 1.75 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Community Name: Albuquerque, City

Flooding Source: Arroyo B-B

Project Name/Identifier: Sunrise Ranch West

1. REACH TO BE REVISED

Describe the limits of the revision **OR** submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? [x] Yes

Downstream Limit: Snow Vista Pond

Upstream Limit: 106th Street

2. CHANNEL DESCRIPTION

Attach the following information about the channel (check box if information has been provided):

[x] Description of the inlet and outlet

[X] Description of the shape of the channel *(both cross sectional and planimetric configuration)* and its lining *(channel bottom and sides)*:

3. ACCESSORY STRUCTURES

The channelization includes:

- [ ] Levees *(Attach Levee/Floodwall System Analysis Form - Form 8)*
- [ ] Drop structures
- [ ] Superelevated sections
- [ ] Transitions in cross sectional geometry
- [ ] Debris basin/detention basin
- [ ] Energy dissipater
- [x] Other (Describe): pipe with drop inlet structure

4. DRAWING CHECKLIST

Attach the plans of the channelization certified by a registered professional engineer. The plan detail and information should include (check box if information has been provided):

[x] Channel alignment and locations of inlet, outlet, and accessory structures

[x] Channel lining

[x] Typical cross sections and profiles of channel banks and invert

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

5. HYDRAULIC CONSIDERATIONS

1. The channel was designed to carry 195 (cfs) and/or the 100 -year flood.
(8' diameter drop manhole to storm sewer to intercept 118 cfs with remaining 77 cfs conveyed by roadside channel to detention pond.)

2 The design elevation in the channel based on:

- ☒ Subcritical flow
- ☐ Critical flow
- ☐ Supercritical flow
- ☐ Energy grade line

3. **If there is the potential for a hydraulic jump at the following locations, check the box(es) that apply and attach an explanation of how the hydraulic jump is controlled without affecting the stability of the channel.**

Inlet to channel?	☐ Yes
Outlet of channel?	☐ Yes
At Drop Structures?	☐ Yes
At Transitions?	☐ Yes
Other locations?	☐ Yes

Explanation Attached? ☐ **Yes** ☐ **No** ☐ **N/A**

6. SEDIMENT TRANSPORT CONSIDERATIONS

If there is any indication from historical records that sediment transport (including scour and deposition) can affect the 100-year (base flood) water-surface elevations; and/or based on the stream geomorphology, vegetative cover, development of the watershed and bank conditions, there is a potential for debris and sediment transport (including sewer and deposition) to affect the base flood water-surface elevations, then provide the following information **(Check the box if provided):**

- ☒ Estimated sediment load
- ☐ Method used to estimate sediment transport
- ☐ Method used to estimate scour and/or deposition
- ☒ Method used to revise hydraulic or hydrologic analysis (model) to account for sediment transport

(A bulk factor was taken into account in the AHYMO models and a sediment pond is being constructed around the 8' dia. manhole drop structure to the storm sewer to facilitate sediment deposition prior to entrance to storm sewer.)

FEDERAL EMERGENCY MANAGEMENT AGENCY **DAM**	O.M.B. Burden No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 0.5 hour per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Community Name: Albuquerque City

Flooding Source: Arroyo B-B

Project Name/Identifier: Sunrise Ranch West

1. IDENTIFIER

1. **Name of Dam:** Onsite Detention Pond
2. Location of dam along flood source (in terms of stream distance or cross section identifier):
   Located approximately 600 feet south of Arroyo B-B. Adjacent to the north side of Eucariz Row.
3. This request is for (check one of the following):
   - ☐ Existing dam
   - ☒ New dam
   - ☐ Modifications of existing dam (describe modifications):
4. Was the dam designed by: ☐ Federal agency ☐ State agency ☐ Local government agency ☒ Private organization?

2. BACKGROUND

1. Does the dam have dedicated flood control storage? ☒ Yes ☐ No
2. Does the project involve revised hydrology? ☒ Yes ☐ No

   If Yes, complete Hydrologic Analysis Form (Form 3) and include calculations of the 100-year inflow flood hydrograph routed through the dam with the beginning pool at the normal pool elevation (spillway crest elevation for ungated spillway). Include any inflow hydrograph bulking by watershed sediment yield and provide necessary debris and sediment yield analysis.
3. Does the revised hydrology affect the 100-year water-surface (base flood) elevation behind the dam or downstream of the dam?

   ☒ Yes ☐ No

   If yes, complete the Riverine Hydraulic Analysis Form (Form 4) and complete the table shown on the following page.

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. RESULTS

On site Detention Pond	Stillwater Elevation Behind the Dam	
	FIS	REVISED
10-year N/A		
50-year N/A		
100-year		5228.1
500-year N/A		
Normal Pool Elevation N/A		

1. Was long-term sediment accumulation taken into consideration in determining the normal pool elevation? N/A ☐ Yes ☐ No

2. Was the *pond* designed to withstand the hydrostatic and hydrodynamic forces associated with floods greater than the base flood? ☒ Yes ☐ No

If No, the dam should not be modeled as considering the attenuation effects from the dam.

3. Provide the following data on the dam:

Dimensional Height: 0

Crest Elevation of top of dam: 5230

base flood storage capacity: 0.95 acre-feet

Freeboard (measured from base flood elevation): 2.0

Spillway(s):

Type: ☐ gated ☒ ungated

Dimensional Width: 2.0

Dimensional Height: 2.0

Crest Elevation of Top of Spillway: 5228.0

5. Outlet(s): concrete culvert

Type: ☐ gated ☒ ungated

Width: N/A

Height: N/A

Diameter: 18"

Invert Elevation: 5220.0

6. Explain flow regulation plan: N/A *This is a dry storage detention pond. Surface maintenance responsibility will be the SRR Home Owners Assoc. Maintenance of drainage structures will be responsibility of City of Albuquerque*

7. Are the project features, including the emergency spillway, designed to accommodate the 100-year flood discharge without overtopping the dam? ☒ Yes ☐ No

8. Was the dam designed in accordance with all currently applicable local, State, and Federal regulations? ☒ Yes ☐ No

If No, please attach an explanation. Explanation attached ☐ Yes ☐ No

FEMA may request a list of regulations that have been complied with and supporting documentation demonstrating compliance with these regulations.

9. **Attach copy of formal operation and maintenance plan. Plan Attached?** ☒ Yes ☐ No

FEDERAL EMERGENCY MANAGEMENT AGENCY **DAM**	O.M.B. Burden No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 0.5 hour per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Community Name: Albuquerque, City

Flooding Source: Arroyo B-B

Project Name/Identifier: Sunrise Ranch West

1. IDENTIFIER

1. **Name of Dam:** 106th Offsite Detention Pond
2. Location of dam along flood source (in terms of stream distance or cross section identifier):

   Northwest corner of 106th St. & Eucariz, located approximately 600 feet south of Arroyo B-B

3. This request is for (check one of the following):

   ☒ Existing dam
   ☐ New dam
   ☒ Modifications of existing dam (describe modifications): Remove Flow restriction on outfall structure.

4. Was the dam designed by: ☐ Federal agency ☐ State agency ☐ Local government agency ☒ Private organization?

2. BACKGROUND

1. Does the dam have dedicated flood control storage? ☒ Yes ☐ No
2. Does the project involve revised hydrology? ☒ Yes ☐ No

   If Yes, complete Hydrologic Analysis Form (Form 3) and include calculations of the 100-year inflow flood hydrograph routed through the dam with the beginning pool at the normal pool elevation (spillway crest elevation for ungated spillway). Include any inflow hydrograph bulking by watershed sediment yield and provide necessary debris and sediment yield analysis.

3. Does the revised hydrology affect the 100-year water-surface (base flood) elevation behind the dam or downstream of the dam?

   ☒ Yes ☐ No

   If yes, complete the Riverine Hydraulic Analysis Form (Form 4) and complete the table shown on the following page.

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. RESULTS

106th St. offsite pond	Stillwater Elevation Behind the Dam	
	EXISTING	REVISED
10-year N/A		
50-year N/A		
100-year	5246.0	5246.7
500-year N/A		
Normal Pool Elevation	N/A	N/A

1. Was long-term sediment accumulation taken into consideration in determining the normal pool elevation? N/A ☐ Yes ☐ No

2. Was the *pond* designed to withstand the hydrostatic and hydrodynamic forces associated with floods greater than the base flood? ☒ Yes ☐ No

   If No, the dam should not be modeled as considering the attenuation effects from the dam.

3. Provide the following data on the dam:

   Dimensional Height: 0

   Crest Elevation of top of dam:

   base flood storage capacity: 3.48 acre-feet

   Freeboard (measured from base flood elevation): 3.3 ft.

Spillway(s):

Type: ☐ gated ☒ ungated

Dimensional Width: 24

Dimensional Height: 2.0

Crest Elevation of Top of Spillway: 5248.0

5. Outlet(s): concrete culvert

Type: ☐ gated ☒ ungated

Width: N/A

Height: N/A

Diameter: 24"

Invert Elevation: 5238.5

6. Explain flow regulation plan: N/A *This is a dry storage detentin pond encumbered by a Public Drainage Easement. Facility maintencence is the responsiblity of the City of Albuquerque*

7. Are the project features, including the emergency spillway, designed to accommodate the 100-year flood discharge without overtopping the dam? ☒ Yes ☐ No

8. Was the dam designed in accordance with all currently applicable local, State, and Federal regulations? ☒ Yes ☐ No

   If No, please attach an explanation. **Explanation attached** ☐ Yes ☐ No

   FEMA may request a list of regulations that have been complied with and supporting documentation demonstrating compliance with these regulations.

9. **Attach copy of formal operation and maintenance plan. Plan Attached?** ☒ Yes ☐ No

DRAINAGE REPORT

For

Sunrise Ranch West Subdivision

DIANE HOELZER
NEW MEXICO
11967
REGISTERED PROFESSIONAL ENGINEER
10-17-01

September 2001

D. MARK GOODWIN & ASSOCIATES

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

September 7, 2001

Mr. Bradley Bingham
Plaza del Sol
Hydrology Dept.
P.O. Box 1293
Albuquerque, NM 87103

Re: Revised Drainage Plan for Sunrise Ranch West
Engineer's stamp 9-7-01 (L8/D14)

Dear Mr. Bingham,

I am submitting a revised Drainage Report and Grading and Drainage Plan for the above referenced project. In response to you comment letter dated August 6, 2001:

1. *I am seeking AMAFCA's approval.*

2. *According to the approved Snow Vista Drainage Management Plan as outlined in the Amole Hubbell Drainage Management Plan (July 22, 1999), Subasin 300 is supposed to be routed south along 114th street to a point approximately 1100 feet south of Eucariz where it is added to runoff from subasin 310. As we discussed, it appears that prior downstream developments were approved without constructing the required infrastructure that would allow runoff from this subasin 300 to flow south. At the City's request I have analyzed an addition allowable discharge of 22 cfs from this subasin into the Snow Vista Sedimentation Pond via Eucariz Road at 106th street.*

3. *A HEC-2 analysis of the FEMA floodplain using an existing conditions estimated 100 year discharge of 212 cfs. The maximum water surface elevation and erosion setback line have been added to the G&D plan.*

4. *Preliminary profiles for Sunset Gardens Road and 106th street have been added to the revised report submittal. No surface drainage from 106th street to the Eucariz Road will occur. An inlet in 106th street will prevent this from occurring. A gate and drive pad will be shown on the 106th street construction plan improvements at DRC.*

5. *Reference to the sideyard "10' private drainage easement" has been removed from the preliminary plat and G&D plan.*

6. *Spot elevation in the temporary swale have been added to the G&D plan.*

7. *City of Albuquerque ownership of the "Drainage Easement" on Eucariz was recorded in the Bernalillo County Clerks office on June 27, 1995 in Book 95-15, Pages 3251-3254. The existing offsite 106th street detention pond was granted to the city of Albuquerque. A copy of the recorded document is in Appendix B.2*

8. *Design grades for the backyards of Sunrise Ranch Unit 2 have been added to the G&D plan.*

9. *To increase the size of the pond would require the limits of the temporary drainage easement to increase. I doubt that the current property owners would agree to this. Since the allowable discharge to the Snow Vista Pond from this existing offsite pond is much greater than the current design discharge from the outfall structure, adjusting the existing outfall structure to allow an increase in discharge is the best solution for the interim condition. When the site west of 106th street develops, the storm sewer can remain and an orifice plate constructed to restrict the "developed conditions" runoff to the allowable discharge.*

In response to AMAFCA's comments:

1. *Two summary tables, Table 2 and Table 3, have been provided in the report following the same format found in the Amole-Hubbell Drainage Management Plan Report.*

2. *The proposed outfall structure will be the existing 24" RCP without the restrictive 30" CMP inlet.*

3. *The following note was added to the Sunrise Ranch Infrastructure List:* ***"Regrade and restore the floodplain areas to the original condition should Unit 2 not be developed. (To be financially guaranteed through AMAFCA.)"***

If you have any questions, please call me.

Sincerely,

MARK GOODWIN AND ASSOCIATES, P.A.

Diane Hoelzer

Diane Hoelzer, P.E.

file: sunrise.wst/drain1.ltr

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

August 6, 2001

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

Re: Sunrise Ranch West Drainage Report
Engineer's Stamp dated 7-13-01 (L8/D14)

Dear Ms. Hoelzer,

Based upon the information provided in your submittal dated 7-13-01, the above referenced plan cannot be approved for Preliminary Plat until the following comments are addressed:

- Because your project drains to the Snow Vista detention facility, AMAFCA review and concurrence will be required.

- You will need to include Basin 300 in your analysis of the Eucariz storm drain or explain how this basin was modified to drain elsewhere.

- Please indicate on the grading plan the erosion setback and the limits of the floodplain. A drainage easement, dedicated to AMAFCA, should encompass the erosion setback area.

- Please provide preliminary profiles for Sunset Gardens and 106th. Storm drain (and inlets) will need to be identified and financially guaranteed in 106th. There should be no surface drainage to the Eucariz "swale" unless you want to hard line it. A pipe gate and drivepad shall be required. (?)

- Please remove references to sideyard private drainage easements. Include the detail of side yard swales previously provided to your office. Street slopes should be shown on the grading plan.

- With respect to the temporary asphalt diversion swale, please show spot elevations every 200'. The 2:1 tie-slope will need to end at the existing property line.

- Please provide documentation of ownership of the easement on Eucariz and the pond in Basin 160B. (COF)

- Please place design grades (pads and backyard spots) from adjoining lots from Sunrise Ranch, Unit 2. Also, add dimensions to your wall detail adjoining this subdivision.

- Increasing the size of the outlet pipe from the pond in Basin 160 is not the ultimate condition for this basin. It is wiser to increase the size of the pond than increase the pipe, and then install a smaller pipe upon later development (in order to detain the basin to acceptable levels).

AMAFCA's comments are as follows:

- It would be helpful to include in the Drainage Report a table comparing flow rates and, for the ponds, storage volumes and water surface elevations, for the major drainage facilities. Include flow rates for existing, interim and developed conditions.

- The outflow-rating curve for the proposed 42-inch riser pipe in the existing Sunrise Terrace pond should begin at elevation 38.5 and include orifice flow through the 6-inch holes.

- The SIA should include a provision for restoring grading within the FEMA floodplain should the project not be completed. This is similar to what was done for the Desert Ridge Trails Subdivision.

- For the revised Amole-Hubbell DMP AHYMO files, put a "FINISH" after the Snow Vista Channel confluence.

If you have any questions about my comments, you can contact me at 924-3986. If you have any questions about AMAFCA's comments, contact Lynn Mazur at 884-2215.

Sincerely,

Bradley L. Bingham

Bradley L. Bingham, PE
Sr. Engineer, Hydrology

C: Lynn Mazur, AMAFCA
file

Regrade + restore floodplain areas to original
(To be F.G. through AMAFCA)

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

August 20, 2001

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

Re: Sunrise Ranch West Additional Comments (L8/D14)

Dear Ms. Hoelzer,

Per our meeting, I would like you to investigate accepting the detained basin 300 runoff (approximately 22 cfs) into the existing 60-inch SD in Eucariz. Since the as-built conditions of the Sunrise Terrace Subdivision will not allow for basin 300 to drain per the original Amole-Hubbard Master Plan, it has no other route but to go east to the Snow Vista Pond (in the Eucariz SD).

I have searched our available files and have not found any documentation of ownership or maintenance of the pond in basin 160B at this time. I can defer this requirement to the time of your CLOMR in order to facilitate approval of your project.

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

Sincerely,

Bradley L. Bingham, PE
Sr. Engineer, Hydrology

C: Lynn Mazur, AMAFCA
file

THE CITY OF ALBUQUERQUE IS AN EQUAL OPPORTUNITY/REASONABLE ACCOMMODATION EMPLOYER

TABLE OF CONTENTS

CORRESPONDENCE LETTERS

I. PROJECT DESCRIPTION

II. DESIGN CRITERIA AND PREVIOUS REPORTS

III. EXISTING DRAINAGE CONDITIONS

IV. DEVELOPED DRAINAGE CONDITIONS

V. INTERIM DRAINAGE CONDITIONS

FIGURE 1: VICINITY MAP
FIGURE 2: FEMA MAP
FIGURE 3: ONSITE SUBASIN BOUNDARIES & STREET CAPACITY SUMMARY
FIGURE 4: SNOW VISTA BASIN EXISTING CONDITIONS BOUNDARIES
FIGURE 5: SNOW VISTA BASIN DEVELOPED CONDITIONS BOUNDARIES
FIGURE 6: ONSITE DETENTION POND OUTFALL STRUCTURE (in Appendix B.2)

TABLE 1: SUMMARY OF HYDROLOGIC PARAMETERS
TABLE 2: SUMMARY OF DEVELOPED DRAINAGE CONDITIONS - Snow Vista Basin
TABLE3: SUMMARY OF EXISTING/INTERIM DRAINAGE CONDITIONS - Snow Vista Basin

APPENDIX A.1 - ONSITE DRAINAGE CONDITIONS (AHYMO FILES)

APPENDIX A.2 - AMAFCA AMOLE-HUBBELL DRAINAGE MANAGEMENT PLAN (AHYMO FILES)
- ORIGINAL 'DEVELOPED CONDITIONS' MODEL
- REVISED 'DEVELOPED CONDITIONS' MODEL

APPENDIX A.3 - AMAFCA AMOLE-HUBBELL DRAINAGE MANAGEMENT PLAN (AHYMO FILES)
- ORIGINAL 'EXISTING CONDITIONS' MODEL
- REVISED 'EXISTING / INTERIM CONDITIONS' MODEL

APPENDIX B.1 - TEMPORARY 106TH STREET SWALE
- STREET CAPACITY CALCULATIONS (HEC-2)

APPENDIX B 2 - ONSITE AND OFFSITE POND RATING TABLES
- OUTFALL STRUCTURES CALCULATIONS AND SCHEMATICS
- RECORDED OFFSITE POND 'PERMANENT DRAINAGE EASEMENT' DOCUMENT

APPENDIX B.3 - FLOODPLAIN ANALYSIS (HEC-RAS)
- CROSS SECTION INPUT

APPENDIX C.1 - 106TH STREET INLET CALCULATIONS

APPENDIX C.2 - STORM SEWER ANALYSIS (STORMPLUS MODEL)
- STORM SEWER SCHEMATIC
- INTERIM CONDITION MODEL
- DEVELOPED CONDITION MODEL

POCKETS: Sunrise Ranch West Grading and Drainage Plan
Floodplain WSEL and Erosion Setback Plan (within HEC-2 Cross Sections)
Proposed Sunset Gardens and 106th Street Sewer and Water Profile
As builts for Eucariz 60" Storm Sewer and Offsite Detention Pond Outfall (2 sheets)

I. PROJECT DESCRIPTION

The proposed Sunrise Ranch West Subdivision located southeast of Sunset Gardens and 106th street covers an area of approximately 19.7 acres. (Figure 1: Vicinity Map). The site is to be developed into 143 single family residential homes in two units. The northern half of the site is encumbered by a 100 year floodplain with a Zone AO designation as shown on FEMA Panel 35001 C0309 and C0328 D (Figure 2: FEMA Map). Unit 2 will be encumbered by this floodplain. This will allow time for a FEMA CLOMR submittal and approval prior to earthwork in Unit 2 but should not hinder proceeding with the development of Unit 1. This site is directly west of the recently developed Sunrise Ranch Units 1-4 subdivision (Mark Goodwin & Associates, Drainage File L9 / D6). Adjacent to the south property boundary is Eucariz Road (60' private road) which is encumbered with a City of Albuquerque Drainage Easement and partially by a City of Albuquerque Drainage and Utility Right-of-way. Immediately adjacent to this road is the Sunrise Terrace subdivision. Along the west property boundary is vacant land and an existing detention pond at the northwest corner of Eucariz and 106th street. The north is bounded by vacant land, a mobile home park and a commercial site.

II. DRAINAGE 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) = 1.87", P(6 hr)=2.20" and P(24 hr)=2.66". The onsite Land Treatment values used were Treatment D=60, Treatment C=20 and Treatment B=20 as determined using "Table A-5 Percent Treatment D" in the DPM. AHYMO printouts are provided in Appendix A.1.

This project site lies within the Snow Vista Basin of the Amole-Hubbell Drainage Management Plan. In the Final Facilities Plan Report (Leedshill-Herkenhoff, Inc., July 99), the allowable peak discharge from this project site (Subasin 180) is 1.29 cfs/acre or 25.10 cfs. The AHYMO "existing drainage conditions" model from this report was revised to reflect the proposed "interim drainage conditions" as discussed below. These AHYMO files can be found in Appendix A.3. The AHYMO "developed drainage conditions" model from the same report was revised to reflect the proposed "developed conditions". These AHYMO files can be found in Appendix A.2. Tables 2 and Table 3 are a comparison summary of the revised drainage conditions with the original drainage conditions.

III. EXISTING DRAINAGE CONDITIONS

Runoff within the project site flows in an eastward direction at an approximate slope of 3.0 percent (Figure 4).

Along the project sites' western boundary there is an existing arroyo that originates northwest of Central Avenue and flows through the project site before discharging into the Snow Vista Sedimentation pond. This arroyo has been identified as a designated FEMA 100 year floodplain (Figure 2). Another arroyo at the project sites southwest boundary is intercepted by a temporary offsite detention pond at 106th street and Eucariz. This pond was constructed as part of the Sunrise Terrace subdivision located southeast of 106th street and Eucariz. A "restrictive" outfall structure from this pond discharges to a 60" RCP storm sewer that was constructed within the Eucariz corridor, extending from 106th street to the Snow Vista Sedimentation Pond. No offsite flows enter our project site from this arroyo.
Along the project sites south boundary there is an existing swale within the 60' wide Eucariz corridor that

appears to convey nuisance flows towards the Snow Vista Sedimentation Pond. The Sunrise Terrace subdivision is immediately adjacent to the Eucariz corridor.

The eastern boundary is adjacent to Sunrise Ranch Unit 2 development and vacant land. No offsite flows enter the site from this direction.

The northern boundary is adjacent to a mobile home park, vacant land and a commercial site. Flows from the mobile home park are directed to a pond on their site. Flows from the vacant land are directed to a depression area located north of the future Sunset Gardens Road. The commercial site is relatively flat but appears to drain toward Sunset Gardens Road and then eastward.

IV. DEVELOPED DRAINAGE CONDITIONS

A. Onsite Flows

The "developed conditions" peak discharge from the project site is 68.9 cfs (Table 1). Onsite runoff will be conveyed as street flow to the southeast corner of the subdivision and into a permanent onsite detention pond facility via a concrete rundown. The pond will be 8.1 feet deep with 2' of freeboard and will have 4:1 side slopes. The maximum discharge from the pond is 25.2 cfs (allowable = 25.1 cfs) with a maximum storage volume of 0.9494 acre-feet at a maximum depth of 8.1 feet. The outfall structure will consist of a 24" pipe connection from the pond to the existing 60" storm sewer in the Eucariz corridor. Connected to the 24" pipe will be a 30" CMP inlet structure perforated with a series of 6" diameter orifice openings on the side and one 9.15" diameter opening on the top of the structure. Two scenarios were analyzed for the orifice opening discharge: 1) for no backwater effect in the storm sewer and 2) (Worse Case Scenario) backwater effect from storm sewer at a maximum HGL = 24.7' as determined from the "developed conditions" stormplus model. Refer to Figure 6: Onsite Detention Pond Outfall Structure for a preliminary sketch and the outfall structure rating tables found in Appendix B.2. Scenario 1 results in a maximum water surface elevation of 28.1' (proposed spillway crest) and scenario 2 results in a maximum water surface elevation of 29.18'. Under the worse case scenario water will spill to the Eucariz corridor existing swale but no homes in the subdivision will be flooded.

Waterblocks at both the north and west project site entrance roads prevents exchange between onsite and offsite flows. Offsite runoff from Sunset Gardens will flow east and enter the Snow Vista Sedimentation pond as street flow through Sunrise Ranch subdivision via Round Up Place. Runoff from 106th street will be conveyed as street flow south to inlets that will connect to the proposed 60" RCP storm sewer in 106th street.

B. Offsite Flows

This project site is part of the Snow Vista Basin Drainage Management Plan (AMAFCA"s Amole-Hubbell Drainage Management Plan, LHI, July 99). The original Snow Vista Basin drainage management plan has been revised to reflect changed existing conditions and proposed drainage conditions as a result of the Sunrise Ranch West development. The revised Snow Vista Basin "developed conditions" drainage management plan is schematically shown in Figure 5. The revisions to the original "developed conditions"

Snow Vista Basin Management Plan AHYMO model are as follows:

1. *The original subasin 170 has been renamed subasin 170A to reflect the revised "existing" drainage conditions. This area has been developed into a residential subdivision and drains toward the southeast and does not flow to the northeast as originally planned.*

2. *The original subasin 160 has been subdivided and is now subasins 160A and 160B.*

3. *The proposed 60" RCP storm sewer in the Eucariz Corridor between Snow Vista Pond and the Sunrise Terrace offsite temporary detention pond has been constructed.*

4. *The original proposed storm sewer in Sunset Gardens Avenue from 106th street to 102nd street has been eliminated and replaced with a storm sewer in 106th street from Sunset Gardens Avenue to the existing 60" storm sewer in the Eucariz corridor.*

5. *The original subasin 180 has been revised to reflect developed conditions and renamed subasin 180A.*

6. *Subasin 300 in the original "existing conditions" AHYMO drained to the south in 114th street and was supposed to be intercepted by a future storm sewer. Existing development to date does not allow for this to occur. Subasin 300 is now to be restricted to a maximum "developed conditions" discharge of 22 cfs and will be routed east within the future Eucariz Road corridor.*

All of these changes have been incorporated into AMAFCA's Snow Vista Basin 'developed conditions' AHYMO model to make sure that the Snow Vista master planned storm sewer will function conceptually and that the downstream conveyance capacity in the Snow Vista channel did not change significantly. This has been demonstrated as shown in Table 2 'Snow Vista Basin Summary of Developed Drainage Conditions'. The AHYMO files are in Appendix A.2.

The future 60" storm sewer in 106th street has been preliminarily designed and analyzed. The plan and profile of the proposed storm sewer in 106th street is shown on the '106th Street and Sunset Gardens Sewer and Water P&P' found in one of the pockets in this report. The as-builts for the existing 60" storm sewer in Eucariz corridor can also be found in one of the back pockets. The existing 60" storm sewer in the Eucariz corridor and the proposed 106th street 60" storm sewer were modeled using STORMPLUS software to ensure adequate capacity to handle the basinwide "developed drainage conditions". The storm sewer nodal schematic and analysis can be found in Appendix C.2. Figure 5 'Snow Vista Basin Developed Conditions Boundaries' shows the proposed future "developed conditions" storm sewer layout.

The FEMA floodplain will ultimately be removed as development continues to occur to the west and north. In the interim, this floodplain will be intercepted before reaching the project site as discussed below.

IV. INTERIM DRAINAGE CONDITIONS

To develop the entire project site, offsite flows presently entering the site from west which includes an arroyo located within a FEMA floodplain will need to be intercepted and directed south to the existing 60" storm sewer in Eucariz. An attempt to acquire a temporary offsite detention pond on the property to the west (SB 160A) to intercept and attenuate a majority of the offsite flows outside of the public right-of-way was unsuccessful. The alternative solution is to intercept a portion of these flows into the proposed 60" storm sewer in 106th street through an 8' diameter drop manhole with the remaining flows to be conveyed through a temporary swale located within the western half of the 106th street right-of-way. Flows intercepted by the storm sewer will be conveyed south and continue east in the existing 60" Eucariz storm sewer to the Snow Vista Sedimentation Pond. Flows conveyed in the temporary swale will discharge into the existing offsite 106th St. detention pond located at 106th street and Eucariz. There is excess capacity in the existing 106th street detention pond to accommodate a portion of the additional runoff from the flows originating from the 100 year floodplain arroyo. The combination of the temporary swale and outfall structure have been designed to intercept runoff from the 100-year storm. Capacity calculations and rating tables for the outfall structures are in Appendix B.2.

The Snow Vista Basin "existing conditions" AHYMO model has been revised to reflect this interim condition and demonstrates that capacity exists in the offsite 106th St. pond and does not exceed the downstream capacity in the Snow Vista channel (refer to Appendix A.3). The outfall structure in the existing pond will be modified to remove the 30" CMP inlet on the 24" RCP. Details for this modification will be designed at DRC.

The original AMAFCA Snow Vista Basin existing conditions AHYMO model has been revised to reflect changed 'existing conditions' in the area as well as changes as a result of the proposed Sunrise Ranch West development. The revised Snow Vista Basin "existing conditions" is schematically shown in Figure 4. The revisions to the original 'existing conditions' Snow Vista Basin Management Plan AHYMO model are as follows:

1. *Original subasins 20101 and 20104 were revised to eliminate the area east of 106th street which is now the project site.*

2. *Offsite flows from subasin 20101A and 20104A were routed south into the offsite 106th St. Sunrise Terrace detention pond located at 106th street and Eucariz.*

3. *The portion of the original subasins 20101 and 20104 east of 106th street was renamed as Subasin 180 (proposed Sunrise Ranch West) and routed through the 60" storm sewer in Eucariz which discharges into the Snow Vista Sedimentation Pond.*

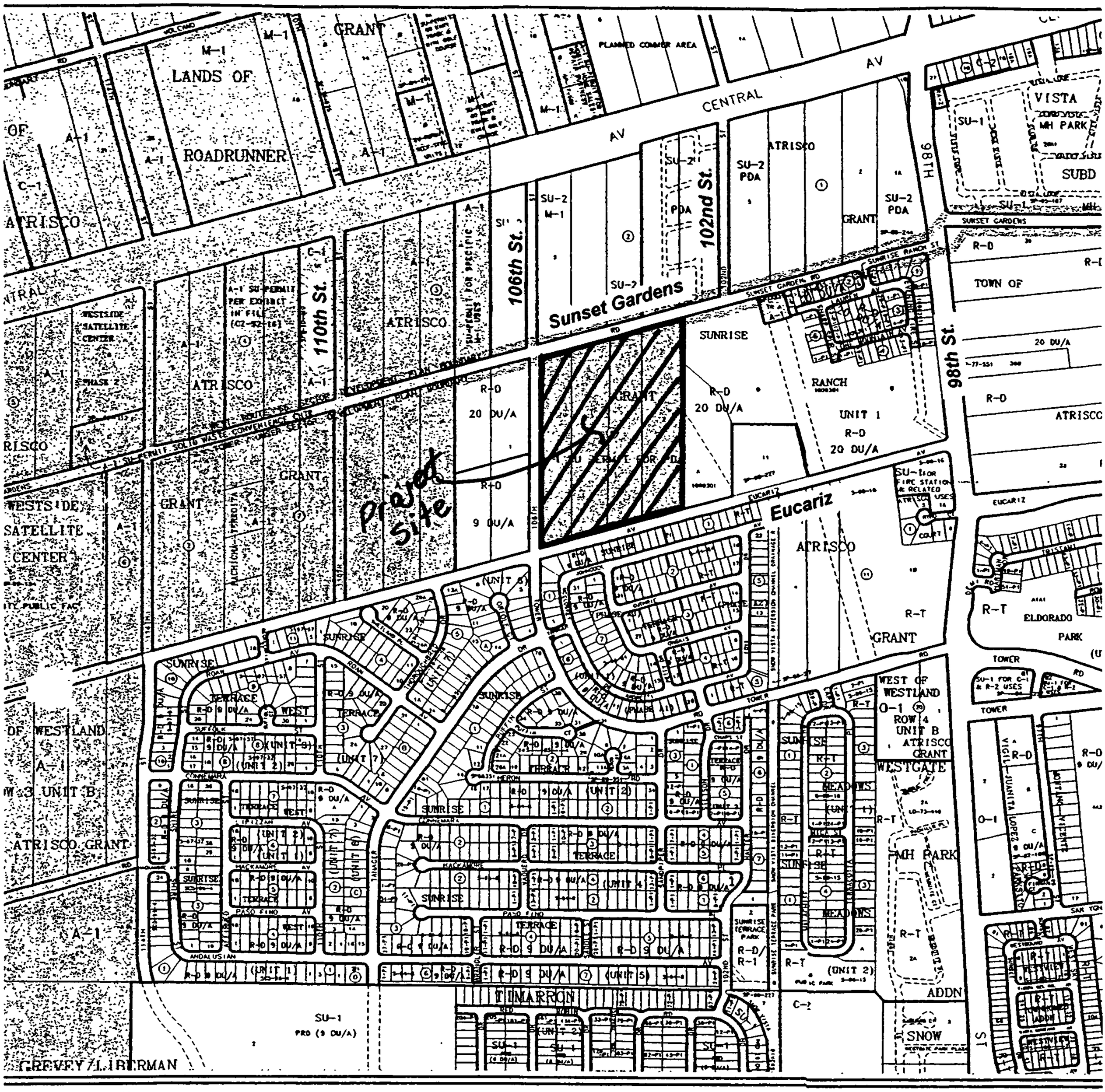
4. *The 30" CMP outfall structure in the 106th St. Sunrise Terrace pond was removed, allowing the existing 24" RCP to become the 'flow restricting' outfall structure. The rating table for this pond was revised to reflect this new configuration and existing topo conditions verified in the field.*

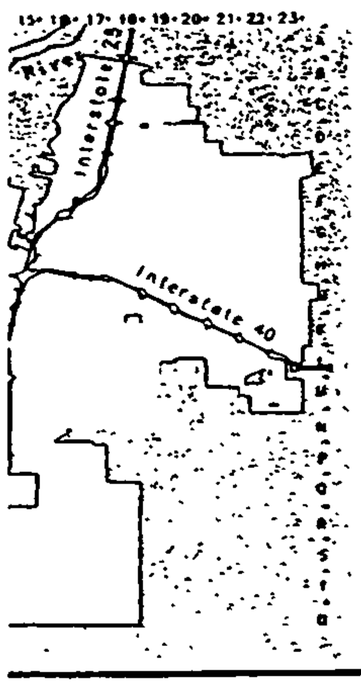
All of these changes have been incorporated into AMAFCA's Snow Vista Basin 'existing conditions' AHYMO model to make sure that the Snow Vista master planned storm sewer will function conceptually and that the downstream conveyance capacity in the Snow Vista channel did not change significantly. This has been

demonstrated as summarized in Table 3 'Snow Vista Basin Summary of Developed Drainage Conditions'. The AHYMO files are in Appendix A.2.

A. FEMA Floodplain

The maximum water surface elevation for the floodplain arroyo was determined using a peak discharge value of 212 cfs which is the 'existing conditions' 100 year flow as determined in AMAFCA's Amole-HUBBELL Drainage Management Plan Report. Cross sections were obtained from available existing topo as shown on the HEC-2 Cross Section exhibit found in this reports pocket. Erosion setback for the arroyo was determined and is shown in the same exhibit. The erosion setback calculations for the well define arroyo channel located in the far eastern portion of the site was determined previously in the Sunrise Ranch Drainage Report as directed by AMAFCA staff and is reproduced in Appendix B.3. In the remaining floodplain area without a well defined channel, the setback was determined using 6 feet per 100 cfs of runoff. Upon preliminary plat approval a FEMA submittal will be made to the city hydrology staff to be forwarded to FEMA for a CLOMR. HEC-RAS results and cross section input data are in Appendix B.3.





CITY OF Albuquerque

Albuquerque Geographic Information System

PLANNING DEPARTMENT

© Copyright 2000

GRAPHIC SCALE IN FEET

250 0 750 1000

Zone Atlas Page

L-8-Z

Map Amended through December 08, 2000

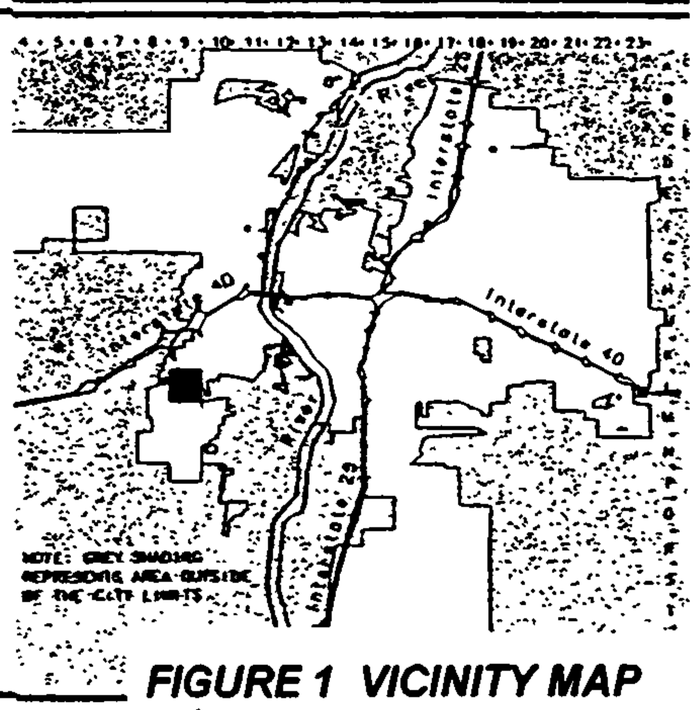


FIGURE 1 VICINITY MAP

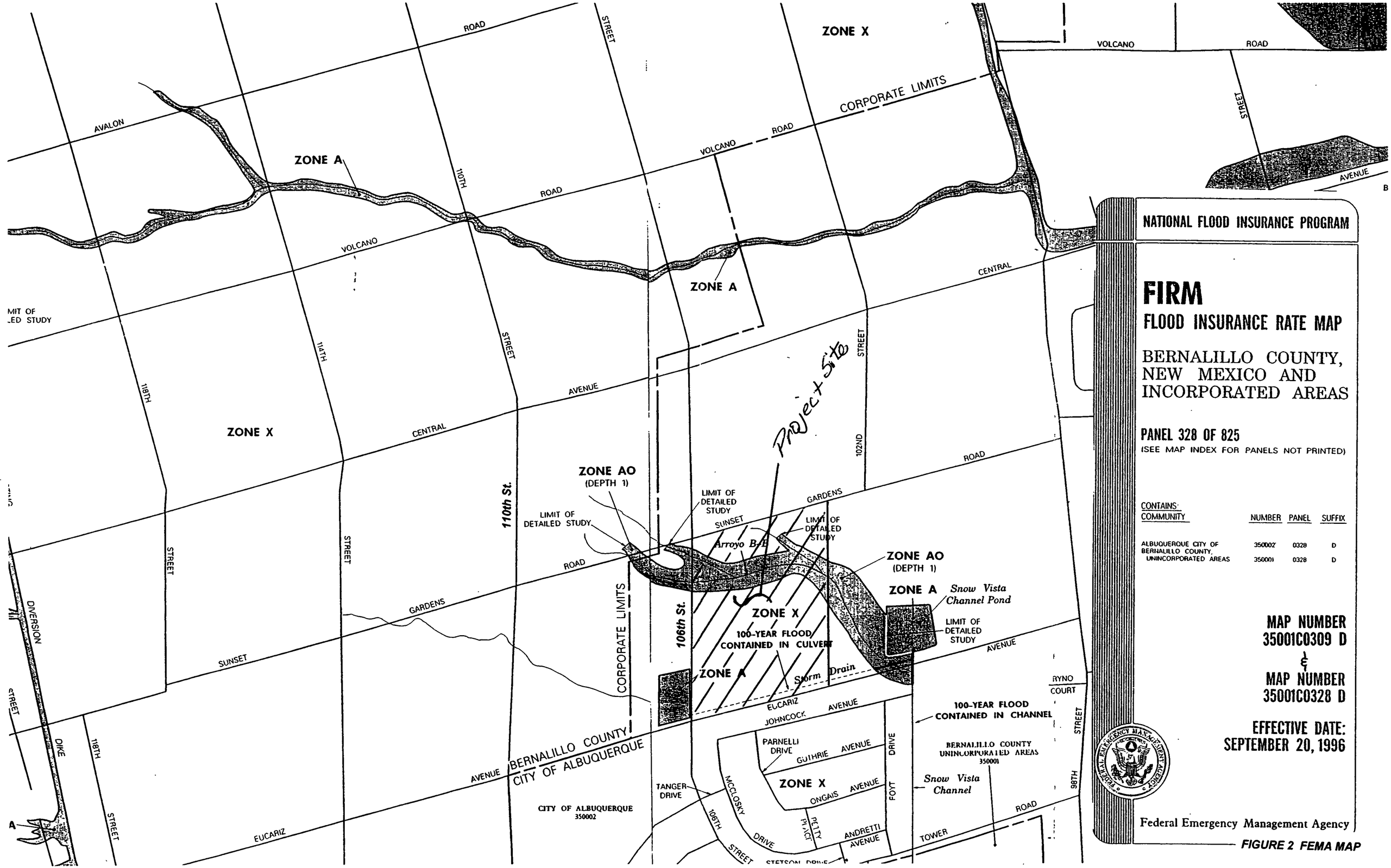
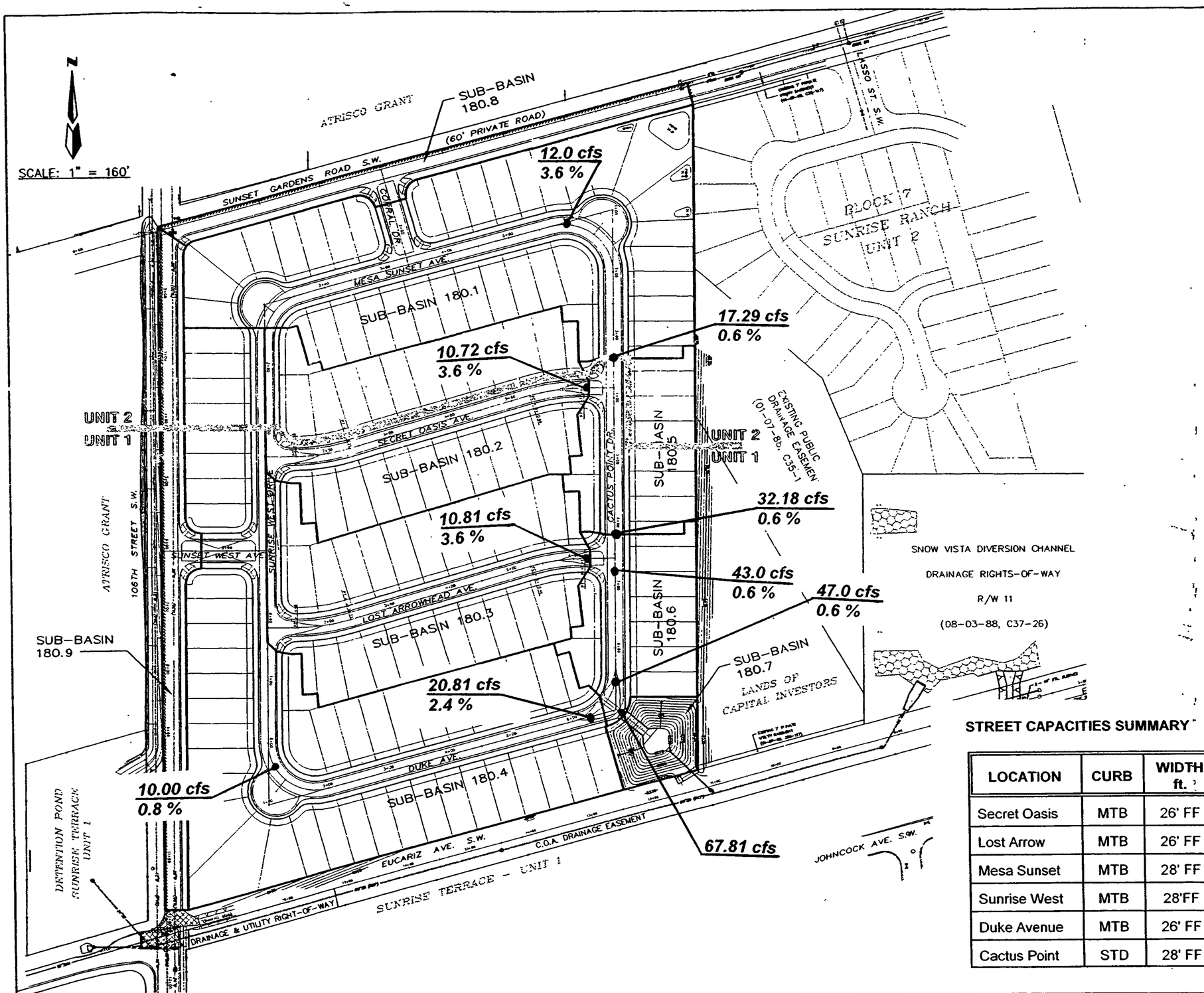


FIGURE 2 FEMA MAP



Hydrology Summary Table

LOCATION	SUBASIN ID	Q(100) cfs
Onsite	180.1	17.29
Onsite	180.2	10.72
Onsite	180.3	10.81
Onsite	180.4	20.81
Onsite	180.5	4.17
Onsite	180.6	4.01
Onsite Pond	180.7	1.10
Sunset Gardnes	180.8	2.95
106th Street	180.9	3.89

STREET CAPACITIES SUMMARY

LOCATION	CURB	WIDTH ft.	SLOPE %	Q cfs	DEPTH ft	VELOC. fps	EG ft.
Secret Oasis	MTB	26' FF	3.60	10.72	.23	3.9	.47
Lost Arrow	MTB	26' FF	3.60	10.81	.23	3.9	.47
Mesa Sunset	MTB	28' FF	3.00	12.00	.25	3.8	.47
Sunrise West	MTB	28'FF	0.80	10.00	.30	2.3	.38
Duke Avenue	MTB	26' FF	2.40	20.81	.31	4.3	.61
Cactus Point	STD	28' FF	0.60	47.00	.66	3.8	.88

ZONE MAP No.: L-8

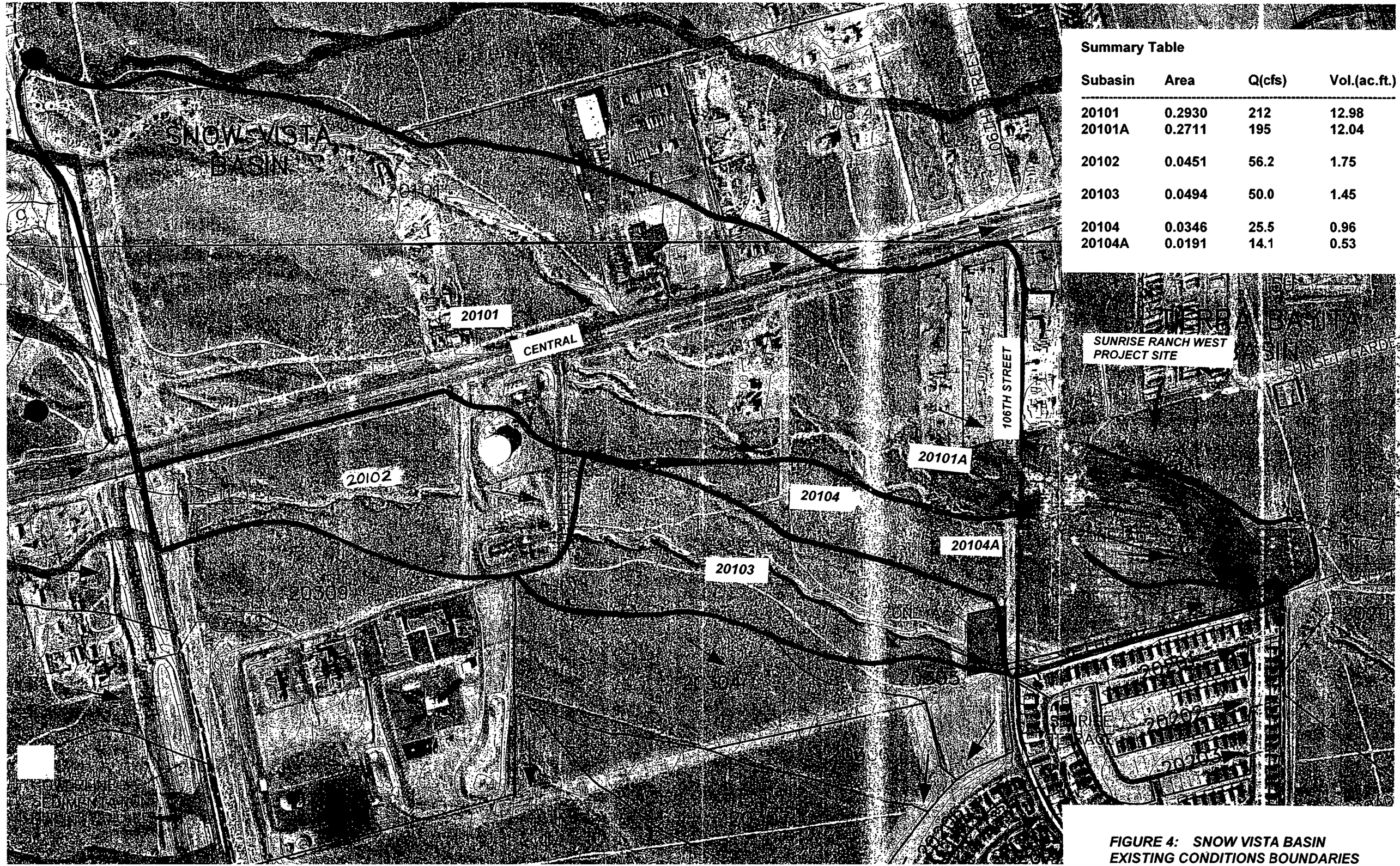
Designed By: | Drawn By: | Checked By:

dmg MARK GOODWIN & ASSOCIATES, P.A.
CONSULTING ENGINEERS
P.O. BOX 90606
ALBUQUERQUE, NEW MEXICO 87199

SUNRISE RANCH WEST — ALBUQUERQUE, NEW MEXICO

ON-SITE BASIN BOUNDARIES
& STREET CAPACITY SUMMARY

FIG. 3



Summary Table

Subasin	Area	Q(cfs)	Vol.(ac.ft.)
20101	0.2930	212	12.98
20101A	0.2711	195	12.04
20102	0.0451	56.2	1.75
20103	0.0494	50.0	1.45
20104	0.0346	25.5	0.96
20104A	0.0191	14.1	0.53

FIGURE 4: SNOW VISTA BASIN EXISTING CONDITIONS BOUNDARIES

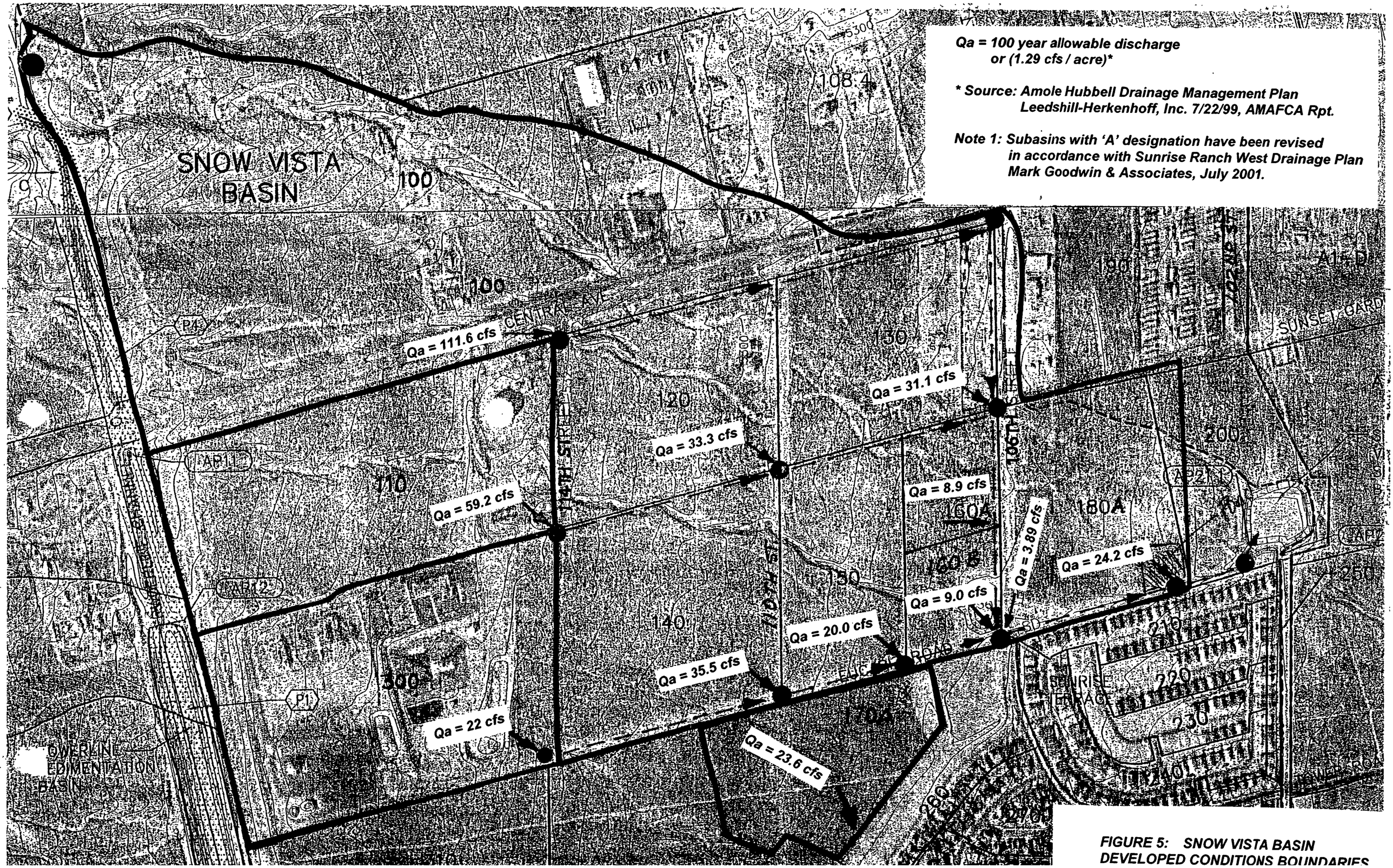


FIGURE 5: SNOW VISTA BASIN
DEVELOPED CONDITIONS BOUNDARIES

Sunrise Ranch West Subdivision

TABLE 1: SUMMARY OF HYDROLOGIC PARAMETERS

LOCATION	SUBASIN ID	AREA (acres)	AREA (sq.mi.)	L.TR D	L.TR B	L.TR C	Q(100) cfs	RUNOFF VOL. (AF)
ONSITE	180.1	4.864	0.00760	60	20	20	17.29	0.611
ONSITE	180.2	3.017	0.00471	60	20	20	10.72	0.378
ONSITE	180.3	3.043	0.00475	60	20	20	10.81	0.382
ONSITE	180.4	5.855	0.00915	60	20	20	20.81	0.735
ONSITE	180 5	1.174	0.00183	60	20	20	4 17	0.147
ONSITE	180.6	1.129	0.00176	60	20	20	4 01	0.141
ONSITE POND	180.7	0.383	0.00060	0	0	100	1.10	0.032
SUB-TOTAL		**19.46**	**0.0304**				**68.91**	**2.426**
SUNSET GARDENS	180.8	0.746	0.00117	80	10	10	2.95	0.108
106 th STREET	180.9	0.979	0.00153	82	9	9	3.89	0.144
TOTAL		**21.19**						

(19.46 acres) x (1.29 cfs/acre) = 25.10 cfs
(21.19 acres) x (1.29 cfs/acre) = 27.33 cfs

f\\sunrise.wst\hydsum_1.tbl

TABLE 2
SNOW VISTA BASIN
SUMMARY OF DEVELOPED DRAINAGE CONDITIONS

AP NO.	MAP NO.	DESCRIPTION	VARIABLE	PROPOSED DMP FACILITIES		REVISED PROPOSED DMP FACILITIES	
				DMP	FUTURE CAPACITY	DMP	FUTURE CAPACITY
21.1	4	SNOW VISTA SEDIMENTATION BASIN	Q (cfs) Tvol (AF) Runoff (in) cfs/ac	423 53.8 2.07 1.36	484	407 57.1 2.06 1.23	484
21	4	SNOW VISTA CHANNEL AT HEAD	Q (cfs) Tvol (AF) Runoff (in) cfs/ac	389 53.8 2.07 1 25	375	378 57.1 2.07 1.14	375
22	4	SNOW VISTA BELOW SECTION LINE JUNCTION	Q (cfs) Tvol (AF) Runoff (in) cfs/ac	747 95 1.97 1.29	810	671 92.9 1.95 1.17	810
22.1	4	SNOW VISTA BELOW SAGE CROSSING	Q (cfs) Tvol (AF) Runoff (in) cfs/ac	916 114.4 1.93 1.29	930	841 112.5 1.92 1.20	930
22.2	4	SNOW VISTA BELOW INLET FROM WESTGATE	Q (cfs) Tvol (AF) Runoff (in) cfs/ac	1031 121.7 1.92 1.36	1050	956 119.7 1.91 1.27	1050
23	4	SNOW VISTA BELOW BENAVIDES INLET	Q (cfs) Tvol (AF) Runoff (in) cfs/ac	2058 167.5 1.88 1.93	2100	1979 165.5 1.87 1 86	2100
24	7	SNOW VISTA AT ENTRANCE TO AMOLE ARROYO	Q (cfs) Tvol (AF) Runoff (in) cfs/ac	2081 183.4 1.87 1.77	2100	2005 181.4 1.86 1.71	2100

Revised according to revised Snow Vista Mangement Plan AHYMO file "sv_dmpr2.dat" dated 8-17-01

TABLE 3
SNOW VISTA BASIN
SUMMARY OF EXISTING / INTERIM DRAINAGE CONDITIONS

AP NO.	MAP NO.	DESCRIPTION	VARIABLE	EXISTING CONDITIONS		INTERIM CONDITIONS	
					FUTURE CAPACITY		FUTURE CAPACITY
21.1	4	SNOW VISTA SEDIMENTATION BASIN	Q (cfs) Tvol (AF) Runoff (in) cfs/ac	233 17.1 0.76 0.86	484	205 19.0 0.86 0.77	484
21	4	SNOW VISTA CHANNEL AT HEAD	Q (cfs) Tvol (AF) Runoff (in) cfs/ac	167 17.0 0.76 0.62	375	168 18.9 0.85 0.63	375
22	4	SNOW VISTA BELOW SECTION LINE JUNCTION	Q (cfs) Tvol (AF) Runoff (in) cfs/ac	407 41 0.86 0.70	810	406 43.3 0.91 0.71	810
22.1	4	SNOW VISTA BELOW SAGE CROSSING	Q (cfs) Tvol (AF) Runoff (in) cfs/ac	642 49.4 0.83 0.90	930	641 51.2 0 87 0 91	930
22.2	4	SNOW VISTA BELOW INLET FROM WESTGATE	Q (cfs) Tvol (AF) Runoff (in) cfs/ac	812 57.0 0.90 1.07	1050	812 58.9 0.94 1.07	1050
23	4	SNOW VISTA BELOW BENAVIDES INLET	Q (cfs) Tvol (AF) Runoff (in) cfs/ac	1864 99.0 1.14 1.78	2100	1864 101.0 1.16 1.79	2100
24	7	SNOW VISTA AT ENTRANCE TO AMOLE ARROYO	Q (cfs) Tvol (AF) Runoff (in) cfs/ac	1814 105.7 1.10 1 57	2100	1815 107.5 1.12 1.58	2100

f:wp-proj\sunrise.wst\sv_rev2.tbl

Revised according to revised Snow Vista Mangement Plan AHYMO files "sv100e1b dat" and "sv100er.dat"

APPENDIX A.1

Onsite Developed Conditions (AHYMO files)

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =09/05/2001
INPUT FILE = SUNWEST.DAT USER NO.= M_GOODWN.I01

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	PEAK AREA (SQ MI)	RUNOFF DISCHARGE (CFS)	VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START								TIME= .00		
RAINFALL TYPE= 1								RAIN6= 2.200		
COMPUTE NM HYD	180.10	-	1	.00760	17.29	.611	1.50672	1.500	3.555	PER IMP= 60.00
COMPUTE NM HYD	180.20	-	2	.00471	10.72	.378	1.50672	1.500	3.556	PER IMP= 60.00
ADD HYD	100.20	1& 2	3	.01231	28.01	.989	1.50668	1.500	3.555	
COMPUTE NM HYD	180.30	-	1	.00475	10.81	.382	1.50672	1.500	3.556	PER IMP= 60.00
ADD HYD	100.30	1& 3	2	.01706	38.82	1.371	1.50667	1.500	3.556	
COMPUTE NM HYD	180.40	-	1	.00915	20.81	.735	1.50672	1.500	3.554	PER IMP= 60.00
ADD HYD	100.40	1& 2	3	.02621	59.63	2.106	1.50668	1.500	3.555	
COMPUTE NM HYD	180.50	-	1	.00183	4.17	.147	1.50672	1.500	3.564	PER IMP= 60.00
ADD HYD	100.50	1& 3	2	.02804	63.81	2.253	1.50667	1.500	3.556	
COMPUTE NM HYD	180.60	-	1	.00176	4.01	.141	1.50672	1.500	3.564	PER IMP= 60.00
ADD HYD	100.60	1& 2	3	.02980	67.82	2.395	1.50667	1.500	3.556	
COMPUTE NM HYD	180.70	-	1	.00060	1.10	.032	.99307	1.500	2.864	PER IMP= .00
ADD HYD	100.70	1& 3	2	.03040	68.92	2.426	1.49653	1.500	3.542	
ROUTE RESERVOIR	POND.100	2	1	.03040	25.20	2.426	1.49653	1.750	1.295	AC-FT= .949
COMPUTE NM HYD	180.80	-	1	.00117	2.95	.108	1.73716	1.500	3.945	PER IMP= 80.00
COMPUTE NM HYD	180.90	-	1	.00153	3.89	.144	1.76021	1.500	3.976	PER IMP= 82.00
FINISH										

```
AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
   RUN DATE (MON/DAY/YR) = 09/05/2001
   START TIME (HR:MIN:SEC) = 14:21:54     USER NO.= M_GOODWN.I01
   INPUT FILE = SUNWEST.DAT

START            TIME=0.0
*****   SUNRISE RANCH WEST LONGFORD HOMES (L-9)
*****   100-YEAR 6-HOUR STORM EVENT
*****   FILE: SUNWEST.DAT  SEPT 2001 BY:DLH
*****   SINGLE FAMILY DETACHED
RAINFALL          TYPE=1 RAIN QUARTER=0.0 IN
            RAIN ONE=1.87 IN RAIN SIX=2.20 IN
            RAIN DAY=2.66 IN DT=0.05 HR

        COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
        DT =   .050000 HOURS      END TIME =     6.000000 HOURS
        .0000  .0025  .0050  .0076  .0103  .0131  .0160
        .0190  .0222  .0254  .0289  .0324  .0362  .0401
        .0443  .0487  .0534  .0584  .0637  .0695  .0758
        .0837  .0924  .1176  .1773  .2798  .4384  .6668
        .9790 1.2253 1.3366 1.4295 1.5109 1.5836 1.6495
       1.7096 1.7648 1.8156 1.8624 1.9057 1.9458 1.9548
       1.9631 1.9708 1.9780 1.9848 1.9912 1.9973 2.0031
       2.0087 2.0140 2.0191 2.0240 2.0287 2.0333 2.0377
       2.0420 2.0462 2.0502 2.0542 2.0580 2.0617 2.0653
       2.0689 2.0724 2.0757 2.0791 2.0823 2.0855 2.0886
       2.0916 2.0946 2.0976 2.1005 2.1033 2.1061 2.1088
       2.1115 2.1142 2.1168 2.1193 2.1219 2.1244 2.1268
       2.1293 2.1316 2.1340 2.1363 2.1386 2.1409 2.1431
       2.1453 2.1475 2.1497 2.1518 2.1539 2.1560 2.1580
       2.1601 2.1621 2.1641 2.1660 2.1680 2.1699 2.1718
       2.1737 2.1756 2.1774 2.1793 2.1811 2.1829 2.1847
       2.1864 2.1882 2.1899 2.1916 2.1933 2.1950 2.1967
       2.1984 2.2000

***** ****************************************************
*****          DEVELOPED CONDITIONS
***** ****************************************************
***** SUBASIN 180.1 (4.86 ACRES)
*****
COMPUTE NM HYD     ID=1 HYD NO=180.1 AREA=0.00760 SQ MI
            PER A=0 PER B=20 PER C=20 PER D=60
            TP=0.1333 HR MASS RAINFALL=-1

  K =  .072649HR   TP =  .133300HR   K/TP RATIO =  .545000    SHAPE CONSTANT, N =  7.106420
  UNIT PEAK =  18.003   CFS  UNIT VOLUME =  .9985      B =  526.28     P60 = 1.8700
  AREA =     .004560 SQ MI   IA =  .10000 INCHES   INF =  .04000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .050000


  K =  .118429HR   TP =  .133300HR   K/TP RATIO =  .888442    SHAPE CONSTANT, N =  3.992480
  UNIT PEAK =  8.0885   CFS  UNIT VOLUME =  .9996      B =  354.67     P60 = 1.8700
  AREA =     .003040 SQ MI   IA =  .42500 INCHES   INF =  1.04000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .050000
```

```
PRINT HYD        ID=1 CODE=1

                    PARTIAL HYDROGRAPH   180.10


  RUNOFF VOLUME =    1.50672 INCHES    =      .6107 ACRE-FEET
  PEAK DISCHARGE RATE =     17.29 CFS  AT   1.500 HOURS   BASIN AREA =   .0076 SQ. MI.


*****
***** SUBASIN 180.2 (3.017 ACRES)
*****
COMPUTE NM HYD     ID=2 HYD NO=180.2 AREA=0.00471 SQ MI
             PER A=0 PER B=20 PER C=20 PER D=60
             TP=0.1333 HR MASS RAINFALL=-1

  K =  .072649HR   TP =  .133300HR   K/TP RATIO =  .545000    SHAPE CONSTANT, N =  7.106420
  UNIT PEAK =  11.157   CFS  UNIT VOLUME =   .9981      B =  526.28      P60 = 1.8700
  AREA =     .002826 SQ MI   IA =   .10000 INCHES   INF =   .04000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .050000


  K =  .118429HR   TP =  .133300HR   K/TP RATIO =  .888442    SHAPE CONSTANT, N =  3.992480
  UNIT PEAK =  5.0127   CFS  UNIT VOLUME =   .9988      B =  354.67      P60 = 1.8700
  AREA =     .001884 SQ MI   IA =   .42500 INCHES   INF =  1.04000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .050000

PRINT HYD        ID=2 CODE=1

                    PARTIAL HYDROGRAPH   180.20


  RUNOFF VOLUME =    1.50672 INCHES    =      .3785 ACRE-FEET
  PEAK DISCHARGE RATE =     10.72 CFS  AT   1.500 HOURS   BASIN AREA =   .0047 SQ. MI.


*****
ADD HYD          ID=3 HYD=100.2 ID=1  ID=2
PRINT HYD        ID=3 CODE=1

                    PARTIAL HYDROGRAPH   100.20


  RUNOFF VOLUME =    1.50668 INCHES    =      .9892 ACRE-FEET
  PEAK DISCHARGE RATE =     28.01 CFS  AT   1.500 HOURS   BASIN AREA =   .0123 SQ. MI.


*****
***** SUBASIN 180.3 (3.043 ACRES)
*****
COMPUTE NM HYD     ID=1 HYD NO=180.3 AREA=0.00475 SQ MI
             PER A=0 PER B=20 PER C=20 PER D=60
             TP=0.1333 HR MASS RAINFALL=-1
```

```
K =  .072649HR   TP =  .133300HR   K/TP RATIO =  .545000   SHAPE CONSTANT, N =  7.106420
UNIT PEAK =  11.252   CFS   UNIT VOLUME =   .9981     B =  526.28     P60 = 1.8700
AREA =     .002850 SQ MI   IA =   .10000 INCHES   INF =   .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .050000

K =  .118429HR   TP =  .133300HR   K/TP RATIO =  .888442   SHAPE CONSTANT, N =  3.992480
UNIT PEAK =  5.0553   CFS   UNIT VOLUME =   .9988     B =  354.67     P60 = 1.8700
AREA =     .001900 SQ MI   IA =   .42500 INCHES   INF =  1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .050000

PRINT HYD        ID=1 CODE=1

                    PARTIAL HYDROGRAPH   180.30

RUNOFF VOLUME =    1.50672 INCHES    =       .3817 ACRE-FEET
PEAK DISCHARGE RATE =     10.81 CFS  AT   1.500 HOURS   BASIN AREA =   .0048 SQ. MI.


*****
ADD HYD          ID=2 HYD=100.3 ID=1  ID=3
PRINT HYD         ID=2 CODE=1

                    PARTIAL HYDROGRAPH   100.30

RUNOFF VOLUME =    1.50667 INCHES    =      1.3709 ACRE-FEET
PEAK DISCHARGE RATE =     38.82 CFS  AT   1.500 HOURS   BASIN AREA =   .0171 SQ. MI.


*****
***** SUBASIN 180.4 (5.855 ACRES)
*****
COMPUTE NM HYD     ID=1 HYD NO=180.4 AREA=0.00915 SQ MI
            PER A=0 PER B=20 PER C=20 PER D=60
            TP=0.1333 HR MASS RAINFALL=-1

K =  .072649HR   TP =  .133300HR   K/TP RATIO =  .545000   SHAPE CONSTANT, N =  7.106420
UNIT PEAK =  21.675   CFS   UNIT VOLUME =   .9986     B =  526.28     P60 = 1.8700
AREA =     .005490 SQ MI   IA =   .10000 INCHES   INF =   .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .050000

K =  .118429HR   TP =  .133300HR   K/TP RATIO =  .888442   SHAPE CONSTANT, N =  3.992480
UNIT PEAK =  9.7381   CFS   UNIT VOLUME =   1.000     B =  354.67     P60 = 1.8700
AREA =     .003660 SQ MI   IA =   .42500 INCHES   INF =  1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .050000

PRINT HYD        ID=1 CODE=1

                    PARTIAL HYDROGRAPH   180.40
```

```
RUNOFF VOLUME =    1.50672 INCHES    =      .7353 ACRE-FEET
PEAK DISCHARGE RATE =     20.81 CFS  AT   1.500 HOURS   BASIN AREA =   .0092 SQ. MI.


*****
ADD HYD          ID=3 HYD=100.4 ID=1  ID=2
PRINT HYD         ID=3 CODE=1

                    PARTIAL HYDROGRAPH   100.40


RUNOFF VOLUME =    1.50668 INCHES    =     2.1061 ACRE-FEET
PEAK DISCHARGE RATE =     59.63 CFS  AT   1.500 HOURS   BASIN AREA =   .0262 SQ. MI.


*****
***** SUBASIN 180.5 (1.174 ACRES)
*****
COMPUTE NM HYD     ID=1 HYD NO=180.5 AREA=0.00183 SQ MI
            PER A=0 PER B=20 PER C=20 PER D=60
            TP=0.1333 HR MASS RAINFALL=-1

K =  .072649HR   TP =  .133300HR   K/TP RATIO =  .545000    SHAPE CONSTANT, N =  7.106420
UNIT PEAK =  4.3350   CFS  UNIT VOLUME =   .9966      B =  526.28      P60 = 1.8700
AREA =     .001098 SQ MI   IA =   .10000 INCHES   INF =   .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000


K =  .118429HR   TP =  .133300HR   K/TP RATIO =  .888442    SHAPE CONSTANT, N =  3.992480
UNIT PEAK =  1.9476   CFS  UNIT VOLUME =   .9946      B =  354.67      P60 = 1.8700
AREA =     .000732 SQ MI   IA =   .42500 INCHES   INF =  1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000

PRINT HYD         ID=1 CODE=1

                    PARTIAL HYDROGRAPH   180.50


RUNOFF VOLUME =    1.50672 INCHES    =      .1471 ACRE-FEET
PEAK DISCHARGE RATE =      4.17 CFS  AT   1.500 HOURS   BASIN AREA =   .0018 SQ. MI.


*****
ADD HYD          ID=2 HYD=100.5 ID=1  ID=3
PRINT HYD         ID=2 CODE=1

                    PARTIAL HYDROGRAPH   100.50


RUNOFF VOLUME =    1.50667 INCHES    =     2.2532 ACRE-FEET
PEAK DISCHARGE RATE =     63.81 CFS  AT   1.500 HOURS   BASIN AREA =   .0280 SQ. MI.
```

```
*****
***** SUBASIN 180.6 (1.129 ACRES)
*****
COMPUTE NM HYD     ID=1 HYD NO=180.6 AREA=0.00176 SQ MI
            PER A=0 PER B=20 PER C=20 PER D=60
            TP=0.1333 HR MASS RAINFALL=-1

  K =  .072649HR   TP =  .133300HR   K/TP RATIO =  .545000   SHAPE CONSTANT, N =  7.106420
  UNIT PEAK =  4.1691   CFS  UNIT VOLUME =  .9966    B =  526.28    P60 = 1.8700
  AREA =    .001056 SQ MI   IA =  .10000 INCHES   INF =  .04000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .050000


  K =  .118429HR   TP =  .133300HR   K/TP RATIO =  .888442   SHAPE CONSTANT, N =  3.992480
  UNIT PEAK =  1.8731   CFS  UNIT VOLUME =  .9946    B =  354.67    P60 = 1.8700
  AREA =    .000704 SQ MI   IA =  .42500 INCHES   INF =  1.04000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .050000

PRINT HYD        ID=1 CODE=1

                    PARTIAL HYDROGRAPH  180.60

  RUNOFF VOLUME =    1.50672 INCHES    =     .1414 ACRE-FEET
  PEAK DISCHARGE RATE =     4.01 CFS  AT  1.500 HOURS  BASIN AREA =  .0018 SQ. MI.


*****
ADD HYD          ID=3 HYD=100.6 ID=1  ID=2
PRINT HYD        ID=3 CODE=1

                    PARTIAL HYDROGRAPH  100.60

  RUNOFF VOLUME =    1.50667 INCHES    =    2.3946 ACRE-FEET
  PEAK DISCHARGE RATE =    67.82 CFS  AT  1.500 HOURS  BASIN AREA =  .0298 SQ. MI.


*****
***** SUBASIN 180.7 (0.383 ACRES)
*****
COMPUTE NM HYD     ID=1 HYD NO=180.7 AREA=0.00060 SQ MI
            PER A=0 PER B=0 PER C=100 PER D=0
            TP=0.1333 HR MASS RAINFALL=-1

  K =  .105867HR   TP =  .133300HR   K/TP RATIO =  .794199   SHAPE CONSTANT, N =  4.514851
  UNIT PEAK =  1.7471   CFS  UNIT VOLUME =  .9952    B =  388.14    P60 = 1.8700
  AREA =    .000600 SQ MI   IA =  .35000 INCHES   INF =  .83000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .050000

PRINT HYD        ID=1 CODE=1

                    PARTIAL HYDROGRAPH  180.70
```

RUNOFF VOLUME = .99307 INCHES = .0318 ACRE-FEET
PEAK DISCHARGE RATE = 1.10 CFS AT 1.500 HOURS BASIN AREA = .0006 SQ. MI.

*****
ADD HYD ID=2 HYD=100.7 ID=1 ID=3
PRINT HYD ID=2 CODE=1

PARTIAL HYDROGRAPH 100.70

RUNOFF VOLUME = 1.49653 INCHES = 2.4264 ACRE-FEET
PEAK DISCHARGE RATE = 68.92 CFS AT 1.500 HOURS BASIN AREA = .0304 SQ. MI.

*****
***** ROUTE FLOW THROUGH SUNRISE RANCH WEST ONSITE DETENTION POND
***** OUTFALL STRUCTURE: SERIES OF (8)-6" DIA. HOLE IN STANDPIPE+ (1) 9.15" DIA
***** DISCHARGE TO 24" RCP TO 60" RCP STORM SEWER IN EUCARIZ
***** **********
***** *** ASSUMES NO BACKWATER EFFECT ***
***** **********
ROUTE RESERVOIR ID=1 HYD=POND.100 INFLOW=2 CODE=24

OUTFLOW (CFS)	STORAGE (AC FT)	ELEV (FT)
0	0	20.0
2.7	0.0397	21.0
7.9	0.0944	22.0
10.98	0.1682	23.0
15.51	0.2641	24.0
18.40	0.3853	25.0
20.86	0.5344	26.0
23.04	0.7139	27.0
25.03	0.9266	28.0
26.86	1.1752	29.0

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

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	20.00	.000	.00
1.20	1.38	20.07	.003	.20
2.40	2.62	24.67	.345	17.43
3.60	.34	20.16	.006	.43
4.80	.30	20.11	.004	.30
6.00	.38	20.13	.005	.36
7.20	.00	20.00	.000	.00

PEAK DISCHARGE = 25.198 CFS - PEAK OCCURS AT HOUR 1.75
MAXIMUM WATER SURFACE ELEVATION = 28.092
MAXIMUM STORAGE = .9494 AC-FT INCREMENTAL TIME= .050000HRS

PRINT HYD ID=1 CODE=1

HYDROGRAPH FROM AREA POND.100

```
RUNOFF VOLUME =    1.49653 INCHES     =      2.4264 ACRE-FEET
PEAK DISCHARGE RATE =     25.20 CFS  AT   1.750 HOURS   BASIN AREA =   .0304 SQ. MI.


*****
***** SUBASIN 180.8 (0.746 ACRES) SUNSET GARDENS AVENUE
*****
COMPUTE NM HYD     ID=1 HYD NO=180.8 AREA=0.00117 SQ MI
            PER A=0 PER B=10 PER C=10 PER D=80
            TP=0.1333 HR MASS RAINFALL=-1

K =  .072649HR   TP =  .133300HR   K/TP RATIO =  .545000    SHAPE CONSTANT, N =  7.106420
UNIT PEAK =  3.6954   CFS  UNIT VOLUME =   .9959      B =  526.28     P60 = 1.8700
AREA =     .000936 SQ MI   IA =   .10000 INCHES   INF =   .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .050000

K =  .118429HR   TP =  .133300HR   K/TP RATIO =  .888442    SHAPE CONSTANT, N =  3.992480
UNIT PEAK =  .62260   CFS  UNIT VOLUME =   .9808      B =  354.67     P60 = 1.8700
AREA =     .000234 SQ MI   IA =   .42500 INCHES   INF =  1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .050000

PRINT HYD        ID=1 CODE=1

                    PARTIAL HYDROGRAPH   180.80


RUNOFF VOLUME =    1.73716 INCHES     =       .1084 ACRE-FEET
PEAK DISCHARGE RATE =      2.95 CFS  AT   1.500 HOURS   BASIN AREA =   .0012 SQ. MI.


*****
***** SUBASIN 180.9 (0.979 ACRES) 106TH STREET
*****
COMPUTE NM HYD     ID=1 HYD NO=180.9 AREA=0.00153 SQ MI
            PER A=0 PER B=9 PER C=9 PER D=82
            TP=0.1333 HR MASS RAINFALL=-1

K =  .072649HR   TP =  .133300HR   K/TP RATIO =  .545000    SHAPE CONSTANT, N =  7.106420
UNIT PEAK =  4.9532   CFS  UNIT VOLUME =   .9971      B =  526.28     P60 = 1.8700
AREA =     .001255 SQ MI   IA =   .10000 INCHES   INF =   .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .050000

K =  .118429HR   TP =  .133300HR   K/TP RATIO =  .888442    SHAPE CONSTANT, N =  3.992480
UNIT PEAK =  .73275   CFS  UNIT VOLUME =   .9835      B =  354.67     P60 = 1.8700
AREA =     .000275 SQ MI   IA =   .42500 INCHES   INF =  1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .050000

PRINT HYD        ID=1 CODE=1

                    PARTIAL HYDROGRAPH   180.90
```

```
RUNOFF VOLUME =     1.76021 INCHES     =       .1436 ACRE-FEET
PEAK DISCHARGE RATE =      3.89 CFS  AT   1.500 HOURS   BASIN AREA =   .0015 SQ. MI.


*****
FINISH

NORMAL PROGRAM FINISH        END TIME (HR:MIN:SEC) = 14:21:54
```

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =09/05/2001
INPUT FILE = sunwest1.dat USER NO.= M_GOODWN.I01

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	PEAK AREA (SQ MI)	RUNOFF DISCHARGE (CFS)	VOLUME (AC-FT)	TIME TO RUNOFF (INCHES)	CFS PEAK (HOURS)	PAGE = 1 PER ACRE	NOTATION
START							TIME=	.00		
RAINFALL TYPE= 1							RAIN6=	2.200		
COMPUTE NM HYD	180.10	-	1	.00760	17.29	.611	1.50672	1.500	3.555	PER IMP= 60.00
COMPUTE NM HYD	180.20	-	2	.00471	10.72	.378	1.50672	1.500	3.556	PER IMP= 60.00
ADD HYD	100.20	1& 2	3	.01231	28.01	.989	1.50668	1.500	3.555	
COMPUTE NM HYD	180.30	-	1	.00475	10.81	.382	1.50672	1.500	3.556	PER IMP= 60.00
ADD HYD	100.30	1& 3	2	.01706	38.82	1.371	1.50667	1.500	3.556	
COMPUTE NM HYD	180.40	-	1	.00915	20.81	.735	1.50672	1.500	3.554	PER IMP= 60.00
ADD HYD	100.40	1& 2	3	.02621	59.63	2.106	1.50668	1.500	3.555	
COMPUTE NM HYD	180.50	-	1	.00183	4.17	.147	1.50672	1.500	3.564	PER IMP= 60.00
ADD HYD	100.50	1& 3	2	.02804	63.81	2.253	1.50667	1.500	3.556	
COMPUTE NM HYD	180.60	-	1	.00176	4.01	.141	1.50672	1.500	3.564	PER IMP= 60.00
ADD HYD	100.60	1& 2	3	.02980	67.82	2.395	1.50667	1.500	3.556	
COMPUTE NM HYD	180.70	-	1	.00060	1.10	.032	.99307	1.500	2.864	PER IMP= .00
ADD HYD	100.70	1& 3	2	.03040	68.92	2.426	1.49653	1.500	3.542	
ROUTE RESERVOIR	POND.100	2	1	.03040	20.59	2.232	1.37639	1.850	1.058	AC-FT= 1.228
COMPUTE NM HYD	180.80	-	1	.00117	2.95	.108	1.73716	1.500	3.945	PER IMP= 80.00
COMPUTE NM HYD	180.90	-	1	.00153	3.89	.144	1.76021	1.500	3.976	PER IMP= 82.00
FINISH										

```
AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
   RUN DATE (MON/DAY/YR) = 09/05/2001
   START TIME (HR:MIN:SEC) = 14:22:36     USER NO.= M_GOODWN.I01
   INPUT FILE = sunwest1.dat

START            TIME=0.0
*****   SUNRISE RANCH WEST LONGFORD HOMES (L-9)
*****   100-YEAR 6-HOUR STORM EVENT
*****   FILE: SUNWEST1.DAT  SEPT 2001 BY:DLH
*****   SINGLE FAMILY DETACHED
RAINFALL          TYPE=1 RAIN QUARTER=0.0 IN
             RAIN ONE=1.87 IN RAIN SIX=2.20 IN
             RAIN DAY=2.66 IN DT=0.05 HR

        COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
        DT =   .050000 HOURS      END TIME =     6.000000 HOURS
         .0000  .0025  .0050  .0076  .0103  .0131  .0160
         .0190  .0222  .0254  .0289  .0324  .0362  .0401
         .0443  .0487  .0534  .0584  .0637  .0695  .0758
         .0837  .0924  .1176  .1773  .2798  .4384  .6668
         .9790 1.2253 1.3366 1.4295 1.5109 1.5836 1.6495
        1.7096 1.7648 1.8156 1.8624 1.9057 1.9458 1.9548
        1.9631 1.9708 1.9780 1.9848 1.9912 1.9973 2.0031
        2.0087 2.0140 2.0191 2.0240 2.0287 2.0333 2.0377
        2.0420 2.0462 2.0502 2.0542 2.0580 2.0617 2.0653
        2.0689 2.0724 2.0757 2.0791 2.0823 2.0855 2.0886
        2.0916 2.0946 2.0976 2.1005 2.1033 2.1061 2.1088
        2.1115 2.1142 2.1168 2.1193 2.1219 2.1244 2.1268
        2.1293 2.1316 2.1340 2.1363 2.1386 2.1409 2.1431
        2.1453 2.1475 2.1497 2.1518 2.1539 2.1560 2.1580
        2.1601 2.1621 2.1641 2.1660 2.1680 2.1699 2.1718
        2.1737 2.1756 2.1774 2.1793 2.1811 2.1829 2.1847
        2.1864 2.1882 2.1899 2.1916 2.1933 2.1950 2.1967
        2.1984 2.2000

***** ***************************************************
*****          DEVELOPED CONDITIONS
***** ***************************************************
***** SUBASIN 180.1 (4.86 ACRES)
*****
COMPUTE NM HYD     ID=1 HYD NO=180.1 AREA=0.00760 SQ MI
             PER A=0 PER B=20 PER C=20 PER D=60
             TP=0.1333 HR MASS RAINFALL=-1

  K =  .072649HR   TP =  .133300HR   K/TP RATIO =  .545000    SHAPE CONSTANT, N =  7.106420
  UNIT PEAK =  18.003   CFS  UNIT VOLUME =   .9985      B =  526.28      P60 = 1.8700
  AREA =     .004560 SQ MI   IA =   .10000 INCHES   INF =   .04000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .050000


  K =  .118429HR   TP =  .133300HR   K/TP RATIO =  .888442    SHAPE CONSTANT, N =  3.992480
  UNIT PEAK =  8.0885   CFS  UNIT VOLUME =   .9996      B =  354.67      P60 = 1.8700
  AREA =     .003040 SQ MI   IA =   .42500 INCHES   INF =  1.04000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .050000
```

```
PRINT HYD        ID=1 CODE=1

                    PARTIAL HYDROGRAPH   180.10


  RUNOFF VOLUME =    1.50672 INCHES    =      .6107 ACRE-FEET
  PEAK DISCHARGE RATE =     17.29 CFS  AT   1.500 HOURS   BASIN AREA =   .0076 SQ. MI.


*****
***** SUBASIN 180.2 (3.017 ACRES)
*****
COMPUTE NM HYD     ID=2 HYD NO=180.2 AREA=0.00471 SQ MI
             PER A=0 PER B=20 PER C=20 PER D=60
             TP=0.1333 HR MASS RAINFALL=-1

  K =  .072649HR   TP =  .133300HR   K/TP RATIO =  .545000    SHAPE CONSTANT, N =  7.106420
  UNIT PEAK =  11.157   CFS  UNIT VOLUME =   .9981      B =  526.28      P60 = 1.8700
  AREA =     .002826 SQ MI   IA =   .10000 INCHES   INF =   .04000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .050000


  K =  .118429HR   TP =  .133300HR   K/TP RATIO =  .888442    SHAPE CONSTANT, N =  3.992480
  UNIT PEAK =  5.0127   CFS   UNIT VOLUME =   .9988      B =  354.67      P60 = 1.8700
  AREA =     .001884 SQ MI   IA =   .42500 INCHES   INF =  1.04000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .050000

PRINT HYD        ID=2 CODE=1

                    PARTIAL HYDROGRAPH   180.20


  RUNOFF VOLUME =    1.50672 INCHES    =      .3785 ACRE-FEET
  PEAK DISCHARGE RATE =     10.72 CFS  AT   1.500 HOURS   BASIN AREA =   .0047 SQ. MI.


*****
ADD HYD          ID=3 HYD=100.2 ID=1  ID=2
PRINT HYD        ID=3 CODE=1

                    PARTIAL HYDROGRAPH   100.20


  RUNOFF VOLUME =    1.50668 INCHES    =      .9892 ACRE-FEET
  PEAK DISCHARGE RATE =     28.01 CFS  AT   1.500 HOURS   BASIN AREA =   .0123 SQ. MI.


*****
***** SUBASIN 180.3 (3.043 ACRES)
*****
COMPUTE NM HYD     ID=1 HYD NO=180.3 AREA=0.00475 SQ MI
             PER A=0 PER B=20 PER C=20 PER D=60
             TP=0.1333 HR MASS RAINFALL=-1
```

```
K =  .072649HR   TP =  .133300HR   K/TP RATIO =  .545000    SHAPE CONSTANT, N =  7.106420
UNIT PEAK =  11.252   CFS   UNIT VOLUME =   .9981      B =  526.28      P60 = 1.8700
AREA =     .002850 SQ MI   IA =   .10000 INCHES   INF =   .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .050000

K =  .118429HR   TP =  .133300HR   K/TP RATIO =  .888442    SHAPE CONSTANT, N =  3.992480
UNIT PEAK =  5.0553   CFS   UNIT VOLUME =   .9988      B =  354.67      P60 = 1.8700
AREA =     .001900 SQ MI   IA =   .42500 INCHES   INF =  1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .050000

PRINT HYD        ID=1 CODE=1

                    PARTIAL HYDROGRAPH   180.30

RUNOFF VOLUME =     1.50672 INCHES     =       .3817 ACRE-FEET
PEAK DISCHARGE RATE =     10.81 CFS  AT   1.500 HOURS   BASIN AREA =   .0048 SQ. MI.

*****
ADD HYD          ID=2 HYD=100.3 ID=1  ID=3
PRINT HYD        ID=2 CODE=1

                    PARTIAL HYDROGRAPH   100.30

RUNOFF VOLUME =     1.50667 INCHES     =      1.3709 ACRE-FEET
PEAK DISCHARGE RATE =     38.82 CFS  AT   1.500 HOURS   BASIN AREA =   .0171 SQ. MI.

*****
***** SUBASIN 180.4 (5.855 ACRES)
*****
COMPUTE NM HYD     ID=1 HYD NO=180.4 AREA=0.00915 SQ MI
            PER A=0 PER B=20 PER C=20 PER D=60
            TP=0.1333 HR MASS RAINFALL=-1

K =  .072649HR   TP =  .133300HR   K/TP RATIO =  .545000    SHAPE CONSTANT, N =  7.106420
UNIT PEAK =  21.675   CFS   UNIT VOLUME =   .9986      B =  526.28      P60 = 1.8700
AREA =     .005490 SQ MI   IA =   .10000 INCHES   INF =   .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .050000

K =  .118429HR   TP =  .133300HR   K/TP RATIO =  .888442    SHAPE CONSTANT, N =  3.992480
UNIT PEAK =  9.7381   CFS   UNIT VOLUME =   1.000      B =  354.67      P60 = 1.8700
AREA =     .003660 SQ MI   IA =   .42500 INCHES   INF =  1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .050000

PRINT HYD        ID=1 CODE=1

                    PARTIAL HYDROGRAPH   180.40
```

```
RUNOFF VOLUME =    1.50672 INCHES    =      .7353 ACRE-FEET
PEAK DISCHARGE RATE =     20.81 CFS  AT   1.500 HOURS   BASIN AREA =   .0092 SQ. MI.


*****
ADD HYD          ID=3 HYD=100.4 ID=1  ID=2
PRINT HYD         ID=3 CODE=1

                    PARTIAL HYDROGRAPH   100.40


RUNOFF VOLUME =    1.50668 INCHES    =     2.1061 ACRE-FEET
PEAK DISCHARGE RATE =     59.63 CFS  AT   1.500 HOURS   BASIN AREA =   .0262 SQ. MI.


*****
***** SUBASIN 180.5 (1.174 ACRES)
*****
COMPUTE NM HYD     ID=1 HYD NO=180.5 AREA=0.00183 SQ MI
            PER A=0 PER B=20 PER C=20 PER D=60
            TP=0.1333 HR MASS RAINFALL=-1

K =  .072649HR   TP =  .133300HR   K/TP RATIO =  .545000    SHAPE CONSTANT, N =  7.106420
UNIT PEAK =  4.3350   CFS   UNIT VOLUME =   .9966      B =  526.28      P60 = 1.8700
AREA =     .001098 SQ MI   IA =   .10000 INCHES   INF =   .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .050000


K =  .118429HR   TP =  .133300HR   K/TP RATIO =  .888442    SHAPE CONSTANT, N =  3.992480
UNIT PEAK =  1.9476   CFS   UNIT VOLUME =   .9946      B =  354.67      P60 = 1.8700
AREA =     .000732 SQ MI   IA =   .42500 INCHES   INF =  1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .050000

PRINT HYD         ID=1 CODE=1

                    PARTIAL HYDROGRAPH   180.50


RUNOFF VOLUME =    1.50672 INCHES    =      .1471 ACRE-FEET
PEAK DISCHARGE RATE =      4.17 CFS  AT   1.500 HOURS   BASIN AREA =   .0018 SQ. MI.


*****
ADD HYD          ID=2 HYD=100.5 ID=1  ID=3
PRINT HYD         ID=2 CODE=1

                    PARTIAL HYDROGRAPH   100.50


RUNOFF VOLUME =    1.50667 INCHES    =     2.2532 ACRE-FEET
PEAK DISCHARGE RATE =     63.81 CFS  AT   1.500 HOURS   BASIN AREA =   .0280 SQ. MI.
```

```
*****
***** SUBASIN 180.6 (1.129 ACRES)
*****
COMPUTE NM HYD     ID=1 HYD NO=180.6 AREA=0.00176 SQ MI
            PER A=0 PER B=20 PER C=20 PER D=60
            TP=0.1333 HR MASS RAINFALL=-1

  K =  .072649HR   TP =  .133300HR   K/TP RATIO =  .545000   SHAPE CONSTANT, N =  7.106420
  UNIT PEAK =  4.1691   CFS  UNIT VOLUME =  .9966     B =  526.28     P60 = 1.8700
  AREA =    .001056 SQ MI   IA =   .10000 INCHES   INF =   .04000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .050000


  K =  .118429HR   TP =  .133300HR   K/TP RATIO =  .888442   SHAPE CONSTANT, N =  3.992480
  UNIT PEAK =  1.8731   CFS  UNIT VOLUME =  .9946     B =  354.67     P60 = 1.8700
  AREA =    .000704 SQ MI   IA =   .42500 INCHES   INF =  1.04000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .050000

PRINT HYD        ID=1 CODE=1

                    PARTIAL HYDROGRAPH   180.60


  RUNOFF VOLUME =    1.50672 INCHES    =      .1414 ACRE-FEET
  PEAK DISCHARGE RATE =     4.01 CFS  AT   1.500 HOURS   BASIN AREA =   .0018 SQ. MI.


*****
ADD HYD          ID=3 HYD=100.6 ID=1  ID=2
PRINT HYD        ID=3 CODE=1

                    PARTIAL HYDROGRAPH   100.60


  RUNOFF VOLUME =    1.50667 INCHES    =     2.3946 ACRE-FEET
  PEAK DISCHARGE RATE =    67.82 CFS  AT   1.500 HOURS   BASIN AREA =   .0298 SQ. MI.


*****
***** SUBASIN 180.7 (0.383 ACRES)
*****
COMPUTE NM HYD     ID=1 HYD NO=180.7 AREA=0.00060 SQ MI
            PER A=0 PER B=0 PER C=100 PER D=0
            TP=0.1333 HR MASS RAINFALL=-1

  K =  .105867HR   TP =  .133300HR   K/TP RATIO =  .794199   SHAPE CONSTANT, N =  4.514851
  UNIT PEAK =  1.7471   CFS  UNIT VOLUME =  .9952     B =  388.14     P60 = 1.8700
  AREA =    .000600 SQ MI   IA =   .35000 INCHES   INF =   .83000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .050000

PRINT HYD        ID=1 CODE=1

                    PARTIAL HYDROGRAPH   180.70
```

RUNOFF VOLUME = .99307 INCHES = .0318 ACRE-FEET
PEAK DISCHARGE RATE = 1.10 CFS AT 1.500 HOURS BASIN AREA = .0006 SQ. MI.

*****
ADD HYD ID=2 HYD=100.7 ID=1 ID=3
PRINT HYD ID=2 CODE=1

PARTIAL HYDROGRAPH 100.70

RUNOFF VOLUME = 1.49653 INCHES = 2.4264 ACRE-FEET
PEAK DISCHARGE RATE = 68.92 CFS AT 1.500 HOURS BASIN AREA = .0304 SQ. MI.

*****
***** ROUTE FLOW THROUGH SUNRISE RANCH WEST ONSITE DETENTION POND
***** ASSUMES WORSE CASE SCENERIO THAT OUTFALL STRUCTURE IS LIMITED BY
***** OUTFALL STRUCTURE: SERIES OF (8)-6" DIA. HOLE IN STANDPIPE+ (1) 9.15" DIA
***** DISCHARGE TO 24" RCP TO 60" RCP STORM SEWER IN EUCARIZ
***** **********
***** *** ASSUME HGL(maximum) = 24.7' IN 60" RCP STORM SEWER ***
***** **********
ROUTE RESERVOIR ID=1 HYD=POND.100 INFLOW=2 CODE=24

OUTFLOW (CFS)	STORAGE (AC FT)	ELEV (FT)
0	0	20.0
0.01	0.0397	21.0
0.02	0.0944	22.0
0.03	0.1682	23.0
0.04	0.2641	24.0
5.33	0.3853	25.0
11.09	0.5344	26.0
14.76	0.7139	27.0
17.68	0.9266	28.0
20.18	1.1752	29.0
22.40	1.4624	30.0

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

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	20.00	.000	.00
1.20	1.38	20.09	.003	.00
2.40	2.62	27.38	.795	15.88
3.60	.34	24.15	.283	.85
4.80	.30	24.05	.270	.30
6.00	.38	24.06	.271	.35
7.20	.00	23.99	.263	.04
8.40	.00	23.95	.259	.04
9.60	.00	23.91	.255	.04
10.80	.00	23.87	.251	.04
12.00	.00	23.83	.247	.04
13.20	.00	23.79	.244	.04

14.40	.00	23.75	.240	.04
15.60	.00	23.71	.236	.04
16.80	.00	23.67	.233	.04
18.00	.00	23.63	.229	.04
19.20	.00	23.60	.225	.04
20.40	.00	23.56	.222	.04
21.60	.00	23.52	.218	.04
22.80	.00	23.49	.215	.03
24.00	.00	23.45	.211	.03
25.20	.00	23.41	.208	.03
26.40	.00	23.38	.205	.03
27.60	.00	23.34	.201	.03
28.80	.00	23.31	.198	.03

PEAK DISCHARGE = 20.588 CFS - PEAK OCCURS AT HOUR 1.85
MAXIMUM WATER SURFACE ELEVATION = 29.184
MAXIMUM STORAGE = 1.2280 AC-FT INCREMENTAL TIME= .050000HRS

PRINT HYD ID=1 CODE=1

HYDROGRAPH FROM AREA POND.100

RUNOFF VOLUME = 1.37639 INCHES = 2.2316 ACRE-FEET
PEAK DISCHARGE RATE = 20.59 CFS AT 1.850 HOURS BASIN AREA = .0304 SQ. MI.

*****
***** SUBASIN 180.8 (0.746 ACRES) SUNSET GARDENS AVENUE
*****
COMPUTE NM HYD ID=1 HYD NO=180.8 AREA=0.00117 SQ MI
PER A=0 PER B=10 PER C=10 PER D=80
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 3.6954 CFS UNIT VOLUME = .9959 B = 526.28 P60 = 1.8700
AREA = .000936 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

K = .118429HR TP = .133300HR K/TP RATIO = .888442 SHAPE CONSTANT, N = 3.992480
UNIT PEAK = .62260 CFS UNIT VOLUME = .9808 B = 354.67 P60 = 1.8700
AREA = .000234 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 180.80

RUNOFF VOLUME = 1.73716 INCHES = .1084 ACRE-FEET
PEAK DISCHARGE RATE = 2.95 CFS AT 1.500 HOURS BASIN AREA = .0012 SQ. MI.

*****

```
***** SUBASIN 180.9 (0.979 ACRES) 106TH STREET
*****
COMPUTE NM HYD     ID=1 HYD NO=180.9 AREA=0.00153 SQ MI
            PER A=0 PER B=9 PER C=9 PER D=82
            TP=0.1333 HR MASS RAINFALL=-1

  K =  .072649HR   TP =  .133300HR   K/TP RATIO =  .545000   SHAPE CONSTANT, N =  7.106420
  UNIT PEAK =  4.9532   CFS  UNIT VOLUME =   .9971     B =  526.28     P60 = 1.8700
  AREA =     .001255 SQ MI   IA =   .10000 INCHES   INF =   .04000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .050000


  K =  .118429HR   TP =  .133300HR   K/TP RATIO =  .888442   SHAPE CONSTANT, N =  3.992480
  UNIT PEAK =  .73275   CFS  UNIT VOLUME =   .9835     B =  354.67     P60 = 1.8700
  AREA =     .000275 SQ MI   IA =   .42500 INCHES   INF =  1.04000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .050000

PRINT HYD        ID=1 CODE=1

                    PARTIAL HYDROGRAPH  180.90


  RUNOFF VOLUME =    1.76021 INCHES    =      .1436 ACRE-FEET
  PEAK DISCHARGE RATE =     3.89 CFS  AT  1.500 HOURS   BASIN AREA =  .0015 SQ. MI.


*****
FINISH

  NORMAL PROGRAM FINISH        END TIME (HR:MIN:SEC) = 14:22:36
```

APPENDIX A.2

AMAFCA Amole-Hubbell Drainage Management Plan

Original 'developed conditions' model (AHYMO)

Revised 'developed conditions' model (AHYMO)

Snow Vista Sedimentation Pond

```
** ROUTE THE FLOW AT THE HEAD OF THE SNOW VISTA CHANNEL THROUGH THE EXISTING
   ** SEDIMENTATION BASIN
   ** 1994 TOPO BY TOM MANN AND ALBUQUERQUE SURVEYING USED AS A BASIS FOR STORAGE
   ** VOLUME CALCULATIONS. OUTFLOW CALCULATED WITH A WEIR EQUATION C=3.00. FLOW
   ** OVER SIDE SLOPE AREAS CALCULATED IN .5' WIDE INCREMENTS WITH DEPTH AT
   ** THE MIDPOINT OF THE INCREMENT USED FOR h FOR THE INCREMENT.
   ROUTE RESERVOIR      ID=3   HYD=200.2  INFLOW ID=10   CODE=24.2
                        CFS OUT    VOL AC-FT   ELEV FT
                         0           0          10.0
                         1.7         0.54       11.0
                        34           1.79       12.0
                       112           3.25       13.0
                       230           4.82       14.0
                       393           6.51       15.0
                       604           8.29       16.0

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

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

         .00         .00     10.00       .000       .00
        1.20        2.77     10.01       .007       .02
        2.40      359.55     14.84      6.247    367.67
        3.60       30.88     12.03      1.830     36.13
        4.80       27.98     11.84      1.586     28.73
        6.00        8.39     11.26       .861      9.99
        7.20        9.77     11.25       .854      9.82
        8.40        9.02     11.23       .833      9.28
        9.60        8.43     11.22       .809      8.66
       10.80        7.83     11.20       .787      8.08
       12.00        7.43     11.18       .768      7.60
       13.20        7.01     11.17       .752      7.17
       14.40        6.64     11.16       .737      6.79
       15.60        6.32     11.15       .724      6.46
       16.80        6.04     11.14       .712      6.15
       18.00        5.78     11.13       .702      5.88
       19.20        5.54     11.12       .692      5.63
       20.40        5.30     11.11       .683      5.39
       21.60        5.12     11.11       .675      5.19
       22.80        4.93     11.10       .668      5.00
       24.00        4.76     11.10       .660      4.81
       25.20         .09     10.95       .511      1.61
       26.40         .00     10.70       .376      1.18
       27.60         .00     10.51       .275       .87
       28.80         .00     10.37       .201       .63
       30.00         .00     10.27       .147       .46
       31.20         .00     10.20       .108       .34
       32.40         .00     10.15       .079       .25
       33.60         .00     10.11       .058       .18
       34.80         .00     10.08       .042       .13
       36.00         .00     10.06       .031       .10
       37.20         .00     10.04       .023       .07
       38.40         .00     10.03       .017       .05
       39.60         .00     10.02       .012       .04
       40.80         .00     10.02       .009       .03
       42.00         .00     10.01       .006       .02
       43.20         .00     10.01       .005       .01
       44.40         .00     10.01       .003       .01
       45.60         .00     10.00       .003       .01
       46.80         .00     10.00       .002       .01
       48.00         .00     10.00       .001       .00
       49.20         .00     10.00       .001       .00
       50.40         .00     10.00       .001       .00
       51.60         .00     10.00       .001       .00
   PEAK DISCHARGE =      377.756 CFS - PEAK OCCURS AT HOUR    2.00
   MAXIMUM WATER SURFACE ELEVATION =       14.906
   MAXIMUM STORAGE =        6.3520 AC-FT      INCREMENTAL TIME=     .100000HRS

  PRINT HYD                ID=3  CODE=1

                                   PARTIAL HYDROGRAPH   200.20


      RUNOFF VOLUME =     2.06540 INCHES     =      57.1326 ACRE-FEET
      PEAK DISCHARGE RATE =     377.76 CFS  AT   2.000 HOURS   BASIN AREA =   .5187 SQ. MI.
```

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =06/28/2001
INPUT FILE = sv_dmp.dat USER NO.= M_GOODWN.I01

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION
START										TIME= .00
*S										
*S	SNOW VISTA									
*S	WITH MANAGEMENT PLAN IN PLACE									
*S										
*S										
*S 100-YR, 24-HR STORM WITH NO SEDIMENT**										
*S FILE NAME : SV_DMP1.DAT										
*S BY: TOM BLAINE AND RICHARD STOCKTON/K. JACOBSEN										
*S LAST REVISION: 06-08-99 (PIPE FOR POND.71 CHANGED AND HYD=400)										
*S100 YEAR 24HR STORM DEVELOPED CONDITION										
RAINFALL TYPE= 2										RAIN24= 2.660
COMPUTE NM HYD	100.00	-	2	.13520	340.82	15.597	2.16311	1.500	3.939	PER IMP= 85.00
ROUTE RESERVOIR	100.10	2	5	.13520	111.60	15.611	2.16501	1.850	1.290	AC-FT= 4.075
ROUTE	100.20	5	3	.13520	112.75	15.611	2.16502	1.400	1.303	
ROUTE	100.30	3	10	.13520	114.14	15.611	2.16502	1.450	1.319	
COMPUTE NM HYD	110.00	-	2	.07170	181.36	8.272	2.16311	1.500	3.952	PER IMP= 85.00
ROUTE RESERVOIR	110.10	2	5	.07170	59.19	8.377	2.19060	2.600	1.290	AC-FT= .001
ROUTE	110.20	5	11	.07170	61.29	8.377	2.19061	1.400	1.336	
COMPUTE NM HYD	120.00	-	2	.04030	101.99	4.649	2.16311	1.500	3.954	PER IMP= 85.00
ROUTE RESERVOIR	120.10	2	5	.04030	33.30	4.654	2.16525	1.850	1.291	AC-FT= 1.219
ADD HYD	120.20	11& 5	12	.11200	94.58	13.031	2.18148	1.400	1.319	
ROUTE	120.30	12	11	.11200	95.88	13.031	2.18148	1.400	1.338	
COMPUTE NM HYD	130.00	-	2	.03770	95.41	4.349	2.16311	1.500	3.954	PER IMP= 85.00
ROUTE RESERVOIR	130.10	2	5	.03770	31.10	4.349	2.16310	1.850	1.289	AC-FT= 1.142
ADD HYD	130.20	11& 5	12	.14970	126.97	17.380	2.17685	1.400	1.325	
ADD HYD	130.30	10&12	12	.28490	238.38	32.991	2.17123	1.450	1.307	
ROUTE	130.40	12	90	.28490	241.75	32.991	2.17124	1.450	1.326	
COMPUTE NM HYD	140.00	-	2	.04300	105.07	4.718	2.05746	1.500	3.818	PER IMP= 79.00
ROUTE RESERVOIR	140.10	2	5	.04300	35.50	4.739	2.06628	1.800	1.290	AC-FT= 1.198
ROUTE	140.20	5	11	.04300	36.97	4.739	2.06630	1.400	1.343	
COMPUTE NM HYD	150.00	-	2	.02420	55.95	2.451	1.89898	1.500	3.612	PER IMP= 70.00
ROUTE RESERVOIR	150.10	2	5	.02420	19.99	2.456	1.90318	1.800	1.291	AC-FT= .589
ADD HYD	150.20	11& 5	12	.06720	56.96	7.195	2.00755	1.400	1.324	
COMPUTE NM HYD	170.00	-	70	.02853	65.96	2.889	1.89898	1.500	3.612	PER IMP= 70.00
ROUTE RESERVOIR	150.10	70	5	.02853	23.61	2.893	1.90140	1.800	1.293	AC-FT= .693
ADD HYD	170.20	12& 5	12	.09573	80.56	10.088	1.97591	1.400	1.315	
ROUTE	150.30	12	11	.09573	83.24	10.088	1.97592	1.400	1.359	
COMPUTE NM HYD	160.00	-	2	.02170	50.17	2.198	1.89898	1.500	3.612	PER IMP= 70.00
ROUTE RESERVOIR	160.10	2	5	.02170	15.89	2.198	1.89896	1.850	1.144	AC-FT= .888
ADD HYD	160.20	11& 5	12	.11743	94.99	12.286	1.96168	1.850	1.264	
ROUTE	170.40	12	11	.11743	94.99	12.286	1.96169	1.850	1.264	
COMPUTE NM HYD	180.00	-	2	.02810	64.96	2.846	1.89898	1.500	3.612	PER IMP= 70.00
ROUTE RESERVOIR	180.10	2	5	.02810	23.20	2.854	1.90432	1.800	1.290	AC-FT= .684

ADD HYD	180.20	11& 5	10	.14553	118.19	15.140	1.95061	1.850	1.269		
ROUTE	180.30	10	11	.14553	118.20	15.140	1.95061	1.850	1.269		
COMPUTE NM HYD	190.00	-	2	.03130	79.22	3.611	2.16311	1.500	3.955	PER IMP=	85.00
ROUTE RESERVOIR	190.10	2	5	.03130	25.80	3.611	2.16310	1.850	1.288	AC-FT=	.950
ADD HYD	190.00	90& 5	1	.31620	267.54	36.602	2.17043	1.450	1.322		
ROUTE	190.20	1	10	.31620	271.17	36.602	2.17043	1.450	1.340		
ADD HYD	190.30	11&10	12	.46173	380.80	51.742	2.10114	1.450	1.289		
COMPUTE NM HYD	200.00	-	2	.02520	49.60	2.074	1.54349	1.500	3.075	PER IMP=	52.00
*S THE VOLUME FROM 200.1 IS THE SNOW VISTA POND VOLUME UNDER DEV. COND.											
*S HYD=200.1 IS *****AP 21.1*****											
ADD HYD	200.10	2&12	10	.48693	423.42	53.816	2.07228	1.450	1.359		
ROUTE RESERVOIR	200.20	10	3	.48693	387.71	53.814	2.07218	2.000	1.244	AC-FT=	6.455
*S HYD=200.2 IS *****AP 21*****											
MODIFY TIME	200.20	3	3	.48693	388.53	53.814	2.07218	1.950	1.247		
*s BEGIN ONSITE WATERSHED											
COMPUTE NM HYD	210.00	-	2	.00920	20.66	.871	1.77514	1.500	3.509	PER IMP=	61.00
ADD HYD	210.10	3& 2	10	.49613	393.57	54.685	2.06667	1.900	1.239		
ROUTE	210.20	10	11	.49613	393.76	54.684	2.06663	1.950	1.240		
COMPUTE NM HYD	220.00	-	2	.00800	17.97	.757	1.77514	1.500	3.510	PER IMP=	61.00
ADD HYD	220.10	11& 2	10	.50413	397.90	55.441	2.06200	1.950	1.233		
ROUTE	220.20	10	11	.50413	397.80	55.440	2.06198	1.900	1.233		
COMPUTE NM HYD	230.00	-	2	.00940	21.11	.890	1.77514	1.500	3.509	PER IMP=	61.00
ADD HYD	230.10	11& 2	10	.51353	403.48	56.330	2.05673	1.850	1.228		
ROUTE	230.20	10	11	.51353	404.02	56.330	2.05670	1.900	1.229		
COMPUTE NM HYD	240.00	-	2	.01450	32.56	1.373	1.77514	1.500	3.509	PER IMP=	61.00
*s END ONSITE WATERSHED											
ADD HYD	240.10	11& 2	10	.52803	412.58	57.702	2.04897	1.800	1.221		
COMPUTE NM HYD	250.00	-	2	.00220	5.04	.201	1.71016	1.500	3.582	PER IMP=	50.00
ADD HYD	250.10	10& 2	11	.53023	414.22	57.903	2.04756	1.800	1.221		
COMPUTE NM HYD	260.00	-	2	.01570	34.01	1.443	1.72289	1.500	3.385	PER IMP=	60.00
ROUTE	260.10	2	15	.01570	32.36	1.443	1.72292	1.550	3.221		
COMPUTE NM HYD	270.00	-	2	.01020	20.61	.841	1.54680	1.500	3.157	PER IMP=	50.00
ADD HYD	270.10	15& 2	16	.02590	52.62	2.284	1.65352	1.500	3.175		
DIVIDE HYD	270.20	16	15	.02035	25.79	1.795	1.65352	1.500	1.980		
	270.30	AND	3	.00555	26.84	.489	1.65352	1.500	7.556		
ROUTE	270.40	3	16	.00555	24.11	.489	1.65360	1.550	6.788		
COMPUTE NM HYD	280.00	-	2	.00220	5.42	.243	2.07506	1.500	3.850	PER IMP=	80.00
ADD HYD	280.10	16& 2	17	.00775	28.88	.733	1.77310	1.550	5.821		
ADD HYD	280.20	17&11	10	.53798	419.19	58.636	2.04361	1.750	1.217		
ROUTE	280.30	10	11	.53798	419.02	58.632	2.04348	1.750	1.217		
COMPUTE NM HYD	290.00	-	2	.00670	12.00	.421	1.17900	1.500	2.799	PER IMP=	25.00
ADD HYD	290.10	11& 2	10	.54468	424.08	59.053	2.03284	1.700	1.217		
COMPUTE NM HYD	300.00	-	2	.07090	179.34	8.179	2.16311	1.500	3.952	PER IMP=	85.00
ROUTE RESERVOIR	300.10	2	5	.07090	58.60	8.192	2.16634	1.850	1.291	AC-FT=	2.142
ROUTE	300.20	5	11	.07090	58.59	8.192	2.16636	2.350	1.291		
COMPUTE NM HYD	310.00	-	2	.08640	214.61	9.724	2.11028	1.500	3.881	PER IMP=	82.00
ROUTE RESERVOIR	310.10	2	5	.08640	71.30	9.826	2.13237	1.800	1.289	AC-FT=	2.505
ADD HYD	310.20	11& 5	12	.15730	129.89	18.018	2.14769	2.300	1.290		
ROUTE	310.30	12	11	.15730	129.89	18.018	2.14769	2.300	1.290		
ROUTE	310.40	11	13	.15730	129.89	18.018	2.14769	2.350	1.290		
COMPUTE NM HYD	320.00	-	2	.05470	122.45	5.283	1.81093	1.500	3.498	PER IMP=	65.00

```
ROUTE RESERVOIR        320.10    2    5        .05470        16.32        5.206      1.78457    2.100      .466 AC-FT=    3.035
ROUTE                  320.20    5   11        .05470        16.32        5.205      1.78432    2.150      .466
COMPUTE NM HYD         330.00    -    2        .02380        53.29        2.299      1.81093    1.500     3.498 PER IMP=  65.00
ADD HYD                330.10 11& 2  12        .07850        63.27        7.504      1.79239    1.500     1.259
ADD HYD                330.20 12&13  14        .23580       190.99       25.522      2.02940    1.500     1.266
ROUTE                  330.30   14   12        .23580       189.79       25.521      2.02938    1.550     1.258
ROUTE                  330.40   12   11        .23580       190.04       25.521      2.02933    1.550     1.259
ROUTE                  330.50   15   17        .02035        25.49        1.795      1.65356    1.550     1.957
ROUTE                  330.60   17   16        .02035        25.11        1.795      1.65356    1.550     1.928
COMPUTE NM HYD         340.00    -    2        .01550        31.31        1.279      1.54680    1.500     3.156 PER IMP=  50.00
ADD HYD                340.10 16& 2  15        .03585        55.01        3.073      1.60737    1.500     2.398
ROUTE                  340.20   15   16        .03585        54.76        3.073      1.60739    1.500     2.387
ROUTE                  340.30   16   15        .03585        54.42        3.073      1.60739    1.500     2.372
COMPUTE NM HYD         350.00    -    2        .04830        97.54        3.985      1.54680    1.500     3.155 PER IMP=  50.00
ADD HYD                350.10 15& 2  16        .08415       151.96        7.058      1.57260    1.500     2.822
ROUTE                  350.20   16   15        .08415       151.86        7.058      1.57261    1.500     2.820
ROUTE                  350.30   15   16        .08415       150.38        7.058      1.57261    1.500     2.792
COMPUTE NM HYD         360.00    -    2        .02080        42.01        1.716      1.54680    1.500     3.156 PER IMP=  50.00
ADD HYD                360.10 16& 2  15        .10495       192.40        8.774      1.56748    1.500     2.864
ADD HYD                360.20 15&11  17        .34075       379.27       34.295      1.88709    1.500     1.739
ROUTE                  360.30   17   16        .34075       377.82       34.295      1.88708    1.500     1.732
ADD HYD                360.40 16&10  15        .88543       741.01       93.348      1.97675    1.600     1.308
COMPUTE NM HYD         370.00    -    2        .01830        36.97        1.510      1.54680    1.500     3.156 PER IMP=  50.00
ROUTE RESERVOIR        370.10    2    5        .01830         6.64        1.510      1.54678    2.050      .567 AC-FT=     .768
*S HYD=AP22 IS *****AP 22*****
ADD HYD                  AP22  5&15  22        .90373       747.11       94.857      1.96804    1.600     1.292
ROUTE                  100.00   22   88        .90373       752.81       94.856      1.96801    1.600     1.302
*S COMPUTE HYD FOR BASIN 301.61
COMPUTE NM HYD         301.61    -   61        .03590        84.71        3.399      1.77514    1.500     3.687 PER IMP=  61.00
*S ROUTE ID=61 THROUGH POND.61
ROUTE RESERVOIR          .61   61    1        .03590        26.35        3.411      1.78163    1.750     1.147 AC-FT=    1.154
*S  ROUTE THIS FLOW DOWN THE 24" STORM DRAIN PIPE TO POND.62
ROUTE                    .61    1   11        .03590        26.36        3.411      1.78166    1.800     1.147
*S  HYDROGRAPH ID = 11 IS THE ROUTED FLOW OUT OF POND.61
*S COMPUTE HYD FOR BASIN 301.62
COMPUTE NM HYD         301.62    -   62        .03440        81.18        3.257      1.77514    1.500     3.687 PER IMP=  61.00
*S ROUTE ID=62 THROUGH POND.62
ROUTE RESERVOIR          .62   62    1        .03440        25.02        3.267      1.78046    1.800     1.136 AC-FT=    1.098
*S  ROUTED FLOW OUT OF POND.62
*S  ADD HYD ID=11 TO ID=1 AND ROUTE THIS FLOW THROUGH THE 30" STORM DRAIN
*S  TO POND.63
ADD HYD                POND.62  1&11   1        .07030        51.38        6.678      1.78106    1.800     1.142
ROUTE                    .62    1   12        .07030        51.40        6.678      1.78107    1.800     1.142
*S  HYDROGRAPH ID = 12 IS THE ROUTED FLOW DOWN THE 30" STORM DRAIN PIPE
*S COMPUTE HYD FOR BASIN 301.63
COMPUTE NM HYD         301.63    -   63        .03440        81.18        3.257      1.77514    1.500     3.687 PER IMP=  61.00
*S ROUTE ID=63 THROUGH POND.63
ROUTE RESERVOIR          .63   63    1        .03440        25.02        3.267      1.78046    1.800     1.136 AC-FT=    1.098
*S  ROUTED FLOW OUT OF POND.63
*S  ADD HYD ID=12 TO ID=1 AND ROUTE THIS FLOW THROUGH THE 36" STORM DRAIN
*S  TO POND.64
```

```
ADD HYD              POND.63  1&12   1        .10470        76.42       9.944      1.78086    1.800    1.140
ROUTE                    .63     1  13        .10470        76.44       9.944      1.78087    1.800    1.141
*S  HYDROGRAPH ID = 13 IS THE ROUTED FLOW DOWN THE 36" STORM DRAIN PIPE
*S  TO THE INLET OF POND.64 TO THIS STORM DRAIN PIPE
*S COMPUTE HYD FOR BASIN 301.64
COMPUTE NM HYD        301.64   -    64        .03440        81.18       3.257      1.77514    1.500    3.687 PER IMP=  61.00
*S ROUTE ID=64 THROUGH POND.64
ROUTE RESERVOIR          .64    64    1        .03440        25.02       3.267      1.78046    1.800    1.136 AC-FT=    1.098
*S  ROUTED FLOW OUT OF POND.64
*S  ADD HYD ID=13 TO ID=1 AND ROUTE THIS FLOW THROUGH THE 36" STORM DRAIN
*S  TO POND.65
ADD HYD              POND.64  1&13   1        .13910       101.46      13.211      1.78076    1.800    1.140
ROUTE                    .64     1  14        .13910       101.46      13.211      1.78077    1.800    1.140
*S  HYDROGRAPH ID = 14 IS THE ROUTED FLOW DOWN THE 36" STORM DRAIN PIPE
*S  TO THE INLET OF POND.64 TO THIS STORM DRAIN PIPE
*S COMPUTE HYD FOR BASIN 301.65
COMPUTE NM HYD        301.65   -    65        .03440        81.18       3.257      1.77514    1.500    3.687 PER IMP=  61.00
*S ROUTE ID=65 THROUGH POND.65
ROUTE RESERVOIR          .65    65    1        .03440        25.02       3.267      1.78046    1.800    1.136 AC-FT=    1.098
*S  ROUTED FLOW OUT OF POND.65
*S  ADD HYD ID=14 TO ID=1 AND ROUTE THIS FLOW THROUGH THE 36" STORM DRAIN
*S  TO SNOW VISTA CHANNEL
ADD HYD              POND.65  1&14   1        .17350       126.48      16.477      1.78070    1.800    1.139
*S COMPUTE HYD FOR BASIN 301.05
COMPUTE NM HYD        301.05   -     5        .03280        77.40       3.105      1.77514    1.500    3.687 PER IMP=  61.00
*S TOTAL FLOW AT AP-22.1 IN SNOW VISTA CHANNEL
ADD HYD               301.00 88& 1   3       1.07723       870.85     111.334      1.93785    1.600    1.263
*S HYD=AP22.1 IS *****AP 22.1*****
ADD HYD               AP22.1  3& 5   2       1.11003       916.28     114.439      1.93304    1.600    1.290
ROUTE                 301.60     2   1       1.11003       925.36     114.436      1.93299    1.600    1.303
*S COMPUTE HYD FOR BASIN 301.04
COMPUTE NM HYD        301.04   -     4        .07660       180.72       7.252      1.77515    1.500    3.686 PER IMP=  61.00
*S HYD=AP22.2 IS *****AP 22.2*****
ADD HYD               AP22.2  1& 4   1       1.18663      1031.47     121.688      1.92280    1.600    1.358
ROUTE                 300.00     1   9       1.18663      1037.20     121.687      1.92278    1.600    1.366
*S COMPUTE HYD FOR BASIN 301.71
COMPUTE NM HYD        301.71   -    71        .06940       163.75       6.570      1.77514    1.500    3.687 PER IMP=  61.00
*S  ROUTE THIS FLOW DOWN THE 60" STORM DRAIN PIPE LINE TO 301.72
ROUTE                    .71    71   11        .06940       167.38       6.570      1.77515    1.500    3.769
*S COMPUTE HYD FOR BASIN 301.72
COMPUTE NM HYD        301.72   -    72        .04220        99.58       3.995      1.77514    1.500    3.687 PER IMP=  61.00
*S  ADD BASIN 301.71 AND ROUTE THIS FLOW DOWN THE 60" STORM DRAIN PIPE LINE TO 3
ADD HYD               301.72 72&11   2        .11160       266.96      10.566      1.77514    1.500    3.738
ROUTE                    .71     2  11        .11160       269.93      10.566      1.77515    1.500    3.779
*S COMPUTE HYD FOR BASIN 301.74
COMPUTE NM HYD        301.74   -    74        .00910        21.88        .830      1.71015    1.500    3.757 PER IMP=  50.00
*S  ADD BASIN 301.72 AND BASIN 301.74
ADD HYD               301.74 74&11  11        .12070       291.81      11.396      1.77024    1.500    3.778
COMPUTE NM HYD        301.73   -    73        .01940        45.78       1.837      1.77514    1.500    3.688 PER IMP=  61.00
*S  ADD HYDGRAPHS FROM
ADD HYD               301.73 73&11   4        .14010       337.60      13.232      1.77092    1.500    3.765
```

```
*S COMPUTE HYD FOR BASIN 301.03
COMPUTE NM HYD        301.03   -     3        .34380       810.21      32.549      1.77514    1.500    3.682 PER IMP=  61.00
*S  HYDROGRAPH ID 73 IS THE INFLOW TO THE SNOW VISTA CHANNEL AT AP-23
ADD HYD               301.03  3& 4  73        .48390      1147.81      45.781      1.77392    1.500    3.706
*S HYD=AP23 IS *****AP 23*****
ADD HYD                 AP23  9&73   1       1.67053      2058.10     167.468      1.87966    1.500    1.925
ROUTE                 400.00    1    2       1.67053      2065.12     167.468      1.87965    1.500    1.932
ROUTE                 500.00    2    3       1.67053      2022.43     167.464      1.87961    1.500    1.892
ROUTE                 600.00    3    4       1.67053      2008.97     167.462      1.87960    1.550    1.879
*S COMPUTE HYD FOR BASIN 301.02
COMPUTE NM HYD        301.02   -     2        .03910        92.26       3.702      1.77514    1.500    3.687 PER IMP=  61.00
ROUTE RESERVOIR          .02    2    1        .03910        44.19       3.702      1.77514    1.650    1.766 AC-FT=    1.152
ADD HYD               AP23.1  4& 1   3       1.70963      2048.99     171.164      1.87720    1.550    1.873
ROUTE                 700.00    3    2       1.70963      2040.10     171.156      1.87711    1.550    1.865
*S COMPUTE HYD FOR BASIN 301.01
COMPUTE NM HYD        301.01   -     1        .07810       184.26       7.394      1.77514    1.500    3.686 PER IMP=  61.00
ROUTE RESERVOIR          .01    1    5        .07810       102.50       7.394      1.77514    1.600    2.051 AC-FT=    1.789
ADD HYD               AP23.2  5& 2   6       1.78773      2142.56     178.549      1.87266    1.550    1.873
ROUTE                 800.00    6    4       1.78773      2038.68     178.537      1.87252    1.600    1.782
*S COMPUTE HYD FOR BASIN 301.00
COMPUTE NM HYD        300.00   -     1        .05156       121.66       4.881      1.77514    1.500    3.687 PER IMP=  61.00
ROUTE RESERVOIR          .01    1    5        .05156        42.85       4.881      1.77514    1.750    1.298 AC-FT=    1.790
*S HYD=AP24 IS *****AP 24*****
ADD HYD                 AP24  5& 4   2       1.83929      2081.41     183.418      1.86979    1.600    1.768
ROUTE            SV_DMP2.HYD    2   66       1.83929      2062.57     183.409      1.86969    1.600    1.752
FINISH
```

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =08/24/2001
INPUT FILE = SV_DMPR2.DAT USER NO.= M_GOODWN.I01

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00

*S
*S SNOW VISTA
*S WITH MANAGEMENT PLAN IN PLACE **(REVISED DEVELOPED CONDITIONS)**
*S
*S
*S 100-YR, 24-HR STORM WITH NO SEDIMENT**
*S FILE NAME : SV_DMPR2.DAT (7-6-01)
*S BY: TOM BLAINE AND RICHARD STOCKTON/K. JACOBSEN
*S LAST REVISION: 06-08-99 (PIPE FOR POND.71 CHANGED AND HYD=400)
*S
*S LAST REVISION: 11-20-00 (REVISED SUBASIN 190 TO 190A & 190B,
S DMG ROUTED 190A THROUGH SNOW VISTA POND; REVISED SUBASIN 200 TO 200 & 200A,
S DMG ROUTED THROUGH SNOW VISTA POND)
*S
*S LAST REVISION: 7-9-01 (REVISED SUBASIN 180 TO 180A (DEV.SUNRISE RANCH WEST);
S DMG SPLIT SUBASIN 160 TO 160A AND 160B;ROUTED 1/2 106th ST TO INL AT EUCARIZ
S DMG REVISED STORM SEWER AT SUNSET GARDENS/106th ST DOWN 106th ST TO EUCARIZ,
S DMG DELETED STORM SEWER IN SUNSET GARDENS EAST OF 106th ST;
S DMG FIELD VERIFIED SB 170A DRAINS SOUTH TOWARDS SB 320, THUS ADDED SB 170A
S DMG TO SB 320 AND ASSUMEDI THE COMPOSITE FLOW ROUTES THRU TANAGER DET. POND
S DMG
S DMG LAST REVISION 8-17-01 (SUBASIN 300 ADDED TO SUBASIN 140 AND ROUTED
S DMG EAST IN EUCARIZ STORM DRAIN
*S100 YEAR 24HR STORM DEVELOPED CONDITION

RAINFALL TYPE= 2										RAIN24=	2.660
COMPUTE NM HYD	100.00	-	2	.13520	340.82	15.597	2.16311	1.500	3.939	PER IMP=	85.00
ROUTE RESERVOIR	100.10	2	5	.13520	111.60	15.611	2.16501	1.850	1.290	AC-FT=	4.075
ROUTE	100.20	5	3	.13520	112.75	15.611	2.16502	1.400	1.303		
ROUTE	100.30	3	10	.13520	114.14	15.611	2.16502	1.450	1.319		
COMPUTE NM HYD	110.00	-	2	.07170	181.36	8.272	2.16311	1.500	3.952	PER IMP=	85.00
ROUTE RESERVOIR	110.10	2	5	.07170	59.20	8.278	2.16471	1.850	1.290	AC-FT=	2.168
ROUTE	110.20	5	11	.07170	61.38	8.278	2.16473	1.400	1.338		
COMPUTE NM HYD	120.00	-	2	.04030	101.99	4.649	2.16311	1.500	3.954	PER IMP=	85.00
ROUTE RESERVOIR	120.10	2	5	.04030	33.30	4.654	2.16525	1.850	1.291	AC-FT=	1.219
ADD HYD	120.20	11& 5	12	.11200	94.67	12.932	2.16491	1.400	1.321		
ROUTE	120.30	12	11	.11200	95.94	12.932	2.16491	1.400	1.338		
COMPUTE NM HYD	130.00	-	2	.03770	95.41	4.349	2.16311	1.500	3.954	PER IMP=	85.00
ROUTE RESERVOIR	130.10	2	5	.03770	31.10	4.349	2.16310	1.850	1.289	AC-FT=	1.142
ADD HYD	130.20	11& 5	12	.14970	127.03	17.281	2.16445	1.400	1.326		
ADD HYD	130.30	10&12	11	.28490	238.61	32.892	2.16472	1.450	1.309		

ROUTE	130.40	11	13	.28490	239.66	32.892	2.16472	1.450	1.314		
COMPUTE NM HYD	160A	-	2	.01085	25.09	1.099	1.89898	1.500	3.613	PER IMP=	70.00
ROUTE RESERVOIR	160.10	2	5	.01085	8.91	1.099	1.89895	1.800	1.283	AC-FT=	.408
ADD HYD	160.20	13& 5	12	.29575	244.13	33.991	2.15497	1.700	1.290		
ROUTE	160.30	12	13	.29575	244.31	33.991	2.15497	1.450	1.291		
COMPUTE NM HYD	160B	-	2	.01085	25.09	1.099	1.89898	1.500	3.613	PER IMP=	70.00
ROUTE RESERVOIR	160.40	2	5	.01085	9.01	1.099	1.89895	1.800	1.297	AC-FT=	.406
COMPUTE NM HYD	180.90	-	2	.00306	7.77	.349	2.13711	1.500	3.968	PER IMP=	82.00
ADD HYD	160.50	2& 5	4	.01391	13.68	1.448	1.95126	1.550	1.536		
ADD HYD	160.60	13& 4	14	.30966	256.52	35.439	2.14582	1.650	1.294		
COMPUTE NM HYD	300.00	-	2	.07090	179.34	8.179	2.16311	1.500	3.952	PER IMP=	85.00
ROUTE RESERVOIR	300.10	2	5	.07090	22.01	8.203	2.16936	2.150	.485	AC-FT=	4.271
ROUTE	300.20	5	12	.07090	22.06	8.203	2.16937	1.350	.486		
COMPUTE NM HYD	140.00	-	2	.04300	105.07	4.718	2.05746	1.500	3.818	PER IMP=	79.00
ROUTE RESERVOIR	140.10	2	5	.04300	35.50	4.739	2.06628	1.800	1.290	AC-FT=	1.198
ADD HYD	140.30	5&12	11	.11390	57.55	12.942	2.13045	1.350	.789		
ROUTE	140.20	11	10	.11390	58.76	12.942	2.13045	1.400	.806		
COMPUTE NM HYD	150.00	-	2	.02420	55.95	2.451	1.89898	1.500	3.612	PER IMP=	70.00
ROUTE RESERVOIR	150.10	2	5	.02420	19.99	2.456	1.90318	1.800	1.291	AC-FT=	.589
ADD HYD	150.20	10& 5	11	.13810	78.75	15.398	2.09062	1.400	.891		
ROUTE	150.30	11	12	.13810	80.37	15.398	2.09063	1.400	.909		
ADD HYD	150.40	12&14	10	.44776	334.06	50.837	2.12879	1.650	1.166		
ROUTE	150.50	10	11	.44776	334.02	50.837	2.12879	1.650	1.166		
COMPUTE NM HYD	180A	-	2	.03040	69.10	2.890	1.78251	1.500	3.552	PER IMP=	60.00
ROUTE RESERVOIR	180.10	2	5	.03040	25.10	2.918	1.80000	1.750	1.290	AC-FT=	.711
ADD HYD	180.20	11& 5	10	.47816	359.11	53.755	2.10789	1.650	1.173		
ROUTE	180.30	10	80	.47816	359.25	53.755	2.10789	1.700	1.174		
COMPUTE NM HYD	190A	-	2	.01878	47.54	2.167	2.16311	1.500	3.955	PER IMP=	85.00
ROUTE RESERVOIR	190.10	2	5	.01878	15.47	2.167	2.16309	1.850	1.287	AC-FT=	.571
COMPUTE NM HYD	200.00	-	1	.01436	18.51	.510	.66636	1.500	2.014	PER IMP=	.00
COMPUTE NM HYD	200A	-	3	.00736	16.74	.700	1.78251	1.500	3.554	PER IMP=	60.00
ADD HYD	200.A	5& 3	4	.02614	32.21	2.866	2.05592	1.500	1.926		
ADD HYD	200.A	1& 4	2	.04050	50.73	3.377	1.56322	1.500	1.957		

*S THE VOLUME FROM 200.1 IS THE SNOW VISTA POND VOLUME UNDER DEV. COND.
*S HYD=200.1 IS *****AP 21.1*****

ADD HYD	200.10	2&80	10	.51866	406.82	57.132	2.06536	1.500	1.226		
ROUTE RESERVOIR	200.20	10	3	.51866	377.76	57.133	2.06540	2.000	1.138	AC-FT=	6.352

*S HYD=200.2 IS *****AP 21*****

MODIFY TIME	200.20	3	3	.51866	378.34	57.133	2.06540	1.950	1.140		

*s BEGIN ONSITE WATERSHED

COMPUTE NM HYD	210.00	-	2	.00920	20.66	.871	1.77514	1.500	3.509	PER IMP=	61.00
ADD HYD	210.10	3& 2	10	.52786	383.22	58.004	2.06034	1.900	1.134		
ROUTE	210.20	10	11	.52786	383.59	58.003	2.06030	1.950	1.135		
COMPUTE NM HYD	220.00	-	2	.00800	17.97	.757	1.77514	1.500	3.510	PER IMP=	61.00
ADD HYD	220.10	11& 2	10	.53586	387.73	58.760	2.05605	1.950	1.131		
ROUTE	220.20	10	11	.53586	387.40	58.760	2.05602	1.950	1.130		
COMPUTE NM HYD	230.00	-	2	.00940	21.11	.890	1.77514	1.500	3.509	PER IMP=	61.00
ADD HYD	230.10	11& 2	10	.54526	392.78	59.649	2.05118	1.850	1.126		
ROUTE	230.20	10	11	.54526	393.59	59.649	2.05115	1.900	1.128		
COMPUTE NM HYD	240.00	-	2	.01450	32.56	1.373	1.77514	1.500	3.509	PER IMP=	61.00

*s END ONSITE WATERSHED

ADD HYD	240.10	11& 2	10	.55976	401.94	61.021	2.04400	1.900	1.122		
COMPUTE NM HYD	250.00	-	2	.00220	5.04	.201	1.71016	1.500	3.582	PER IMP=	50.00
ADD HYD	250.10	10& 2	11	.56196	403.22	61.222	2.04270	1.900	1.121		
COMPUTE NM HYD	260.00	-	2	.01570	34.01	1.443	1.72289	1.500	3.385	PER IMP=	60.00
ROUTE	260.10	2	15	.01570	32.36	1.443	1.72292	1.550	3.221		
COMPUTE NM HYD	270.00	-	2	.01020	20.61	.841	1.54680	1.500	3.157	PER IMP=	50.00
ADD HYD	270.10	15& 2	16	.02590	52.62	2.284	1.65352	1.500	3.175		
DIVIDE HYD	270.20	16	15	.02035	25.79	1.795	1.65352	1.500	1.980		
	270.30	AND	3	.00555	26.84	.489	1.65352	1.500	7.556		
ROUTE	270.40	3	16	.00555	24.11	.489	1.65360	1.550	6.788		
COMPUTE NM HYD	280.00	-	2	.00220	5.42	.243	2.07506	1.500	3.850	PER IMP=	80.00
ADD HYD	280.10	16& 2	17	.00775	28.88	.733	1.77310	1.550	5.821		
ADD HYD	280.20	17&11	10	.56971	407.20	61.955	2.03903	1.800	1.117		
ROUTE	280.30	10	11	.56971	407.32	61.951	2.03890	1.800	1.117		
COMPUTE NM HYD	290.00	-	2	.00670	12.00	.421	1.17900	1.500	2.799	PER IMP=	25.00
ADD HYD	290.10	11& 2	10	.57641	410.72	62.372	2.02891	1.800	1.113		
COMPUTE NM HYD	310.00	-	2	.08640	214.61	9.724	2.11028	1.500	3.881	PER IMP=	82.00
ROUTE RESERVOIR	310.10	2	5	.08640	71.30	9.826	2.13237	1.800	1.289	AC-FT=	2.505
ROUTE	310.30	5	11	.08640	74.19	9.826	2.13238	1.400	1.342		
ROUTE	310.40	11	13	.08640	75.19	9.826	2.13238	1.400	1.360		
COMPUTE NM HYD	170.00	-	1	.02853	65.96	2.889	1.89898	1.500	3.612	PER IMP=	70.00
ROUTE RESERVOIR	170.10	1	3	.02853	23.61	2.893	1.90140	1.800	1.293	AC-FT=	.693
COMPUTE NM HYD	320.00	-	4	.05470	122.45	5.283	1.81093	1.500	3.498	PER IMP=	65.00
ADD HYD	170.20	4& 3	2	.08323	146.05	8.176	1.84194	1.500	2.742		
ROUTE RESERVOIR	320.10	2	5	.08323	19.96	8.098	1.82421	2.400	.375	AC-FT=	4.815
ROUTE	320.20	5	11	.08323	19.95	8.097	1.82404	2.450	.375		
COMPUTE NM HYD	330.00	-	2	.02380	53.29	2.299	1.81093	1.500	3.498	PER IMP=	65.00
ADD HYD	330.10	11& 2	12	.10703	64.82	10.395	1.82112	1.500	.946		
ADD HYD	330.20	12&13	14	.19343	135.42	20.221	1.96015	1.500	1.094		
ROUTE	330.30	14	12	.19343	134.46	20.221	1.96012	1.500	1.086		
ROUTE	330.40	12	11	.19343	134.56	20.221	1.96006	1.550	1.087		
ROUTE	330.50	15	17	.02035	25.49	1.795	1.65356	1.550	1.957		
ROUTE	330.60	17	16	.02035	25.11	1.795	1.65356	1.550	1.928		
COMPUTE NM HYD	340.00	-	2	.01550	31.31	1.279	1.54680	1.500	3.156	PER IMP=	50.00
ADD HYD	340.10	16& 2	15	.03585	55.01	3.073	1.60737	1.500	2.398		
ROUTE	340.20	15	16	.03585	54.76	3.073	1.60739	1.500	2.387		
ROUTE	340.30	16	15	.03585	54.42	3.073	1.60739	1.500	2.372		
COMPUTE NM HYD	350.00	-	2	.04830	97.54	3.985	1.54680	1.500	3.155	PER IMP=	50.00
ADD HYD	350.10	15& 2	16	.08415	151.96	7.058	1.57260	1.500	2.822		
ROUTE	350.20	16	15	.08415	151.86	7.058	1.57261	1.500	2.820		
ROUTE	350.30	15	16	.08415	150.38	7.058	1.57261	1.500	2.792		
COMPUTE NM HYD	360.00	-	2	.02080	42.01	1.716	1.54680	1.500	3.156	PER IMP=	50.00
ADD HYD	360.10	16& 2	15	.10495	192.40	8.774	1.56748	1.500	2.864		
ADD HYD	360.20	15&11	17	.29838	324.86	28.994	1.82198	1.500	1.701		
ROUTE	360.30	17	16	.29838	323.72	28.994	1.82197	1.500	1.695		
ADD HYD	360.40	16&10	15	.87479	665.25	91.366	1.95832	1.600	1.188		
COMPUTE NM HYD	370.00	-	2	.01830	36.97	1.510	1.54680	1.500	3.156	PER IMP=	50.00
ROUTE RESERVOIR	370.10	2	5	.01830	6.64	1.510	1.54678	2.050	.567	AC-FT=	.768
*S HYD=AP22 IS *****AP 22*****											
ADD HYD	AP22	5&15	22	.89309	671.34	92.876	1.94989	1.600	1.175		
ROUTE	100.00	22	88	.89309	677.11	92.875	1.94986	1.600	1.185		

```
COMPUTE NM HYD        301.61   -    61        .03590        84.71       3.399      1.77514    1.500    3.687 PER IMP=  61.00
*S ROUTE ID=61 THROUGH POND.61
ROUTE RESERVOIR          .61   61    1        .03590        26.35       3.411      1.78163    1.750    1.147 AC-FT=    1.154
*S  ROUTE THIS FLOW DOWN THE 24" STORM DRAIN PIPE TO POND.62
ROUTE                    .61    1   11        .03590        26.36       3.411      1.78166    1.800    1.147
*S  HYDROGRAPH ID = 11 IS THE ROUTED FLOW OUT OF POND.61
COMPUTE NM HYD        301.62   -    62        .03440        81.18       3.257      1.77514    1.500    3.687 PER IMP=  61.00
*S ROUTE ID=62 THROUGH POND.62
ROUTE RESERVOIR          .62   62    1        .03440        25.02       3.267      1.78046    1.800    1.136 AC-FT=    1.098
*S  ROUTED FLOW OUT OF POND.62
*S  ADD HYD ID=11 TO ID=1 AND ROUTE THIS FLOW THROUGH THE 30" STORM DRAIN
*S  TO POND.63
ADD HYD               POND.62  1&11    1        .07030        51.38       6.678      1.78106    1.800    1.142
ROUTE                    .62    1   12        .07030        51.40       6.678      1.78107    1.800    1.142
*S  HYDROGRAPH ID = 12 IS THE ROUTED FLOW DOWN THE 30" STORM DRAIN PIPE
*S COMPUTE HYD FOR BASIN 301.63
COMPUTE NM HYD        301.63   -    63        .03440        81.18       3.257      1.77514    1.500    3.687 PER IMP=  61.00
*S ROUTE ID=63 THROUGH POND.63
ROUTE RESERVOIR          .63   63    1        .03440        25.02       3.267      1.78046    1.800    1.136 AC-FT=    1.098
*S  ROUTED FLOW OUT OF POND.63
*S  ADD HYD ID=12 TO ID=1 AND ROUTE THIS FLOW THROUGH THE 36" STORM DRAIN
*S  TO POND.64
ADD HYD               POND.63  1&12    1        .10470        76.42       9.944      1.78086    1.800    1.140
ROUTE                    .63    1   13        .10470        76.44       9.944      1.78087    1.800    1.141
*S  HYDROGRAPH ID = 13 IS THE ROUTED FLOW DOWN THE 36" STORM DRAIN PIPE
*S  TO THE INLET OF POND.64 TO THIS STORM DRAIN PIPE
COMPUTE NM HYD        301.64   -    64        .03440        81.18       3.257      1.77514    1.500    3.687 PER IMP=  61.00
*S ROUTE ID=64 THROUGH POND.64
ROUTE RESERVOIR          .64   64    1        .03440        25.02       3.267      1.78046    1.800    1.136 AC-FT=    1.098
*S  ROUTED FLOW OUT OF POND.64
*S  ADD HYD ID=13 TO ID=1 AND ROUTE THIS FLOW THROUGH THE 36" STORM DRAIN
*S  TO POND.65
ADD HYD               POND.64  1&13    1        .13910       101.46      13.211      1.78076    1.800    1.140
ROUTE                    .64    1   14        .13910       101.46      13.211      1.78077    1.800    1.140
*S  HYDROGRAPH ID = 14 IS THE ROUTED FLOW DOWN THE 36" STORM DRAIN PIPE
*S  TO THE INLET OF POND.64 TO THIS STORM DRAIN PIPE
COMPUTE NM HYD        301.65   -    65        .03440        81.18       3.257      1.77514    1.500    3.687 PER IMP=  61.00
*S ROUTE ID=65 THROUGH POND.65
ROUTE RESERVOIR          .65   65    1        .03440        25.02       3.267      1.78046    1.800    1.136 AC-FT=    1.098
*S  ROUTED FLOW OUT OF POND.65
*S  ADD HYD ID=14 TO ID=1 AND ROUTE THIS FLOW THROUGH THE 36" STORM DRAIN
*S  TO SNOW VISTA CHANNEL
ADD HYD               POND.65  1&14    1        .17350       126.48      16.477      1.78070    1.800    1.139
*S COMPUTE HYD FOR BASIN 301.05
COMPUTE NM HYD        301.05   -     5        .03280        77.40       3.105      1.77514    1.500    3.687 PER IMP=  61.00
*S TOTAL FLOW AT AP-22.1 IN SNOW VISTA CHANNEL
ADD HYD               301.00 88& 1   3       1.06659       795.15     109.352      1.92235    1.600    1.165
*S HYD=AP22.1 IS *****AP 22.1*****
ADD HYD               AP22.1  3& 5   2       1.09939       840.58     112.458      1.91796    1.600    1.195
ROUTE                 301.60    2    1       1.09939       849.61     112.455      1.91791    1.600    1.208
*S COMPUTE HYD FOR BASIN 301.04
```

```
COMPUTE NM HYD        301.04   -     4        .07660       180.72       7.252      1.77515    1.500    3.686 PER IMP=  61.00
*S HYD=AP22.2 IS *****AP 22.2*****
ADD HYD               AP22.2  1& 4   1       1.17599       955.72     119.707      1.90860    1.600    1.270
ROUTE                 300.00    1    9       1.17599       961.12     119.705      1.90858    1.600    1.277
COMPUTE NM HYD        301.71   -    71        .06940       163.75       6.570      1.77514    1.500    3.687 PER IMP=  61.00
*S  ROUTE THIS FLOW DOWN THE 60" STORM DRAIN PIPE LINE TO 301.72
ROUTE                    .71   71   11        .06940       167.38       6.570      1.77515    1.500    3.769
*S COMPUTE HYD FOR BASIN 301.72
COMPUTE NM HYD        301.72   -    72        .04220        99.58       3.995      1.77514    1.500    3.687 PER IMP=  61.00
*S  ADD BASIN 301.71 AND ROUTE THIS FLOW DOWN THE 60" STORM DRAIN PIPE LINE TO 3
ADD HYD               301.72 72&11   2        .11160       266.96      10.566      1.77514    1.500    3.738
ROUTE                    .71    2   11        .11160       269.93      10.566      1.77515    1.500    3.779
COMPUTE NM HYD        301.74   -    74        .00910        21.88        .830      1.71015    1.500    3.757 PER IMP=  50.00
*S  ADD BASIN 301.72 AND BASIN 301.74
ADD HYD               301.74 74&11  11        .12070       291.81      11.396      1.77024    1.500    3.778
COMPUTE NM HYD        301.73   -    73        .01940        45.78       1.837      1.77514    1.500    3.688 PER IMP=  61.00
ADD HYD               301.73 73&11   4        .14010       337.60      13.232      1.77092    1.500    3.765
COMPUTE NM HYD        301.03   -     3        .34380       810.21      32.549      1.77514    1.500    3.682 PER IMP=  61.00
*S  HYDROGRAPH ID 73 IS THE INFLOW TO THE SNOW VISTA CHANNEL AT AP-23
ADD HYD               301.03  3& 4  73        .48390      1147.81      45.781      1.77392    1.500    3.706
*S HYD=AP23 IS *****AP 23*****
ADD HYD                 AP23  9&73   1       1.65989      1978.57     165.487      1.86933    1.500    1.862
ROUTE                 400.00    1    2       1.65989      1985.71     165.486      1.86932    1.500    1.869
ROUTE                 500.00    2    3       1.65989      1944.27     165.482      1.86928    1.500    1.830
ROUTE                 600.00    3    4       1.65989      1931.38     165.481      1.86926    1.550    1.818
COMPUTE NM HYD        301.02   -     2        .03910        92.26       3.702      1.77514    1.500    3.687 PER IMP=  61.00
ROUTE RESERVOIR          .02    2    1        .03910        44.19       3.702      1.77514    1.650    1.766 AC-FT=    1.152
ADD HYD               AP23.1  4& 1   3       1.69899      1971.41     169.182      1.86709    1.550    1.813
ROUTE                 700.00    3    2       1.69899      1961.78     169.174      1.86700    1.550    1.804
COMPUTE NM HYD        301.01   -     1        .07810       184.26       7.394      1.77514    1.500    3.686 PER IMP=  61.00
ROUTE RESERVOIR          .01    1    5        .07810       102.50       7.394      1.77514    1.600    2.051 AC-FT=    1.789
ADD HYD               AP23.2  5& 2   6       1.77709      2064.23     176.568      1.86296    1.550    1.815
ROUTE                 800.00    6    4       1.77709      1962.59     176.554      1.86282    1.600    1.726
COMPUTE NM HYD        300.00   -     1        .05156       121.66       4.881      1.77514    1.500    3.687 PER IMP=  61.00
ROUTE RESERVOIR          .01    1    5        .05156        42.85       4.881      1.77514    1.750    1.298 AC-FT=    1.790
*S HYD=AP24 IS *****AP 24*****
ADD HYD                 AP24  5& 4   2       1.82865      2005.32     181.436      1.86035    1.600    1.713
ROUTE            SV_DMP2.HYD    2   66       1.82865      1985.36     181.426      1.86025    1.600    1.696
FINISH
```

```
START                    0.0 HOURS   PC=0  PL=-1
*S
*S                 SNOW VISTA
*S                 WITH MANAGEMENT PLAN IN PLACE (REVISED DEVELOPED CONDITIONS)
*S
*S
*S 100-YR, 24-HR STORM WITH NO SEDIMENT**
*S FILE NAME : SV_DMPR2.DAT (7-6-01)
*S BY: TOM BLAINE AND RICHARD STOCKTON/K. JACOBSEN
*S LAST REVISION: 06-08-99 (PIPE FOR POND.71 CHANGED AND HYD=400)
*S
*S LAST REVISION: 11-20-00 (REVISED SUBASIN 190 TO 190A & 190B,
*S DMG* ROUTED 190A THROUGH SNOW VISTA POND; REVISED SUBASIN 200 TO 200 & 200A,
*S DMG* ROUTED THROUGH SNOW VISTA POND)
*S
*S LAST REVISION: 7-9-01 (REVISED SUBASIN 180 TO 180A (DEV.SUNRISE RANCH WEST);
*S DMG* SPLIT SUBASIN 160 TO 160A AND 160B;ROUTED 1/2 106th ST TO INL AT EUCARIZ;
*S DMG* REVISED STORM SEWER AT SUNSET GARDENS/106th ST DOWN 106th ST TO EUCARIZ,
*S DMG* DELETED STORM SEWER IN SUNSET GARDENS EAST OF 106th ST;
*S DMG* FIELD VERIFIED SB 170A DRAINS SOUTH TOWARDS SB 320, THUS ADDED SB 170A
*S DMG* TO SB 320 AND ASSUMED! THE COMPOSITE FLOW ROUTES THRU TANAGER DET. POND
*S DMG*
*S DMG* LAST REVISION 8-17-01 (SUBASIN 300 ADDED TO SUBASIN 140 AND ROUTED
*S DMG* EAST IN EUCARIZ STORM DRAIN
*****************************************************************************
* THE PURPOSE OF THIS MODEL IS TO CALCULATE THE RUNOFF TO THE SNOW VISTA
* CHANNEL FOR THE DEVELOPED CONDITIONS. AMAFCA IS CONCERNED
* WITH THE CAPACITY OF  BOTH THE SNOW VISTA POND AND THE CHANNEL.  MODELS BY
* EASTERLING AND ASSOCIATES AND RYLES AND ASSOCIATES WERE USED IN THE
* CONSTRUCTION OF THIS MODEL.  DRAINAGE BASINS WERE DETERMINED FROM ORIGINAL
* DESIGN DATA FOR SNOW VISTA CHANNEL BY LH.  THE LOCATION OF THE INLETS TO THE
* CHANNEL WERE DETERMINED FROM THE AERIALS AND DESIGN DATA.
*****************************************************************************
** ANALYSIS ASSUMPTIONS:
*****************************************************************************
** ALL LAND IN THE OFFSITE WATERSHED IS MODELED IN DEVELOPED CONDITION
** ACCORDING TO THE ZONING PROPOSED IN SECTOR PLANS FOR THE AREA. DETENTION OF
** RUNOFF TO A PEAK OF 1.29 cfs PER ac IS ASSUMED FOR MOST BASINS WHICH ARE
** NOT LOCATED ADJACENT TO THE SNOW VISTA CHANNEL. STORM DRAIN CONVEYENCES
** BETWEEN EACH BASIN AND THE SNOW VISTA CHANNEL ARE ASSUMED. THE ASSUMED
** STORM DRAINS ARE SIZED FOR NEAR OR AT FULL PIPE FLOW IN THE 100 YR
** STORM.
** TO PROVIDE FOR A CERTAIN PORTION OF EACH BASIN TO FREE DISCHARGE TO THE
** FUTURE STORM DRAINS (ie. public streets & adjacent areas) THE POND ROUTINGS
** USED TO SIMULATE DETENTION OF RUNOFF FROM INDIVDUAL BASINS IN THE WATERSHED
** ALLOW THE FULL ALLOWABLE DISCHARGE TO PASS THROUGH AS SOON AS IT IS
** AVAILABLE AT THE BOTTOM OF THE BASIN.  POND THAT ARE EXISTING OR HAVE
** CONSTRUCTION DRAWINGS PREPARED FOR THEM ARE MODELED TO SIMULATE THEIR NORMAL
** STAGE STORAGE DISCHARGE CHARACTERISTICS.
*****************************************************************************
* SUBSEQUENT USERS OF THIS MODEL ASSUME FULL RESPONSIBILITY TO VERIFY THE
* VALIDITY, CURRENCY, AND PROPRIETY OF THE ASSUMPTIONS UPON WHICH THIS MODEL
* WAS CONSTRUCTED.
*****************************************************************************
*S100 YEAR 24HR STORM DEVELOPED CONDITION
RAINFALL                 TYPE=2  0.0  1.87  2.20  2.66    DT=0.05
** 10 YEAR 24HR STORM DEVELOPED CONDITION
**RAINFALL               TYPE=2  0.0  1.25  1.47  1.77    DT=0.05
**  5 YEAR STORM
**RAINFALL               TYPE=2  0.0  1.04  1.24  1.51    DT=0.05
**  2 YEAR STORM
**RAINFALL               TYPE=2  0.0  0.74  0.95  1.15    DT=0.05
*****************************************************************************
** COMPUTE HYDROGRAPH FOR BASIN 100 THE WATERSHED EAST OF THE POWERLINE CHANNEL
** AND NORTH OF CENTRAL AVE. INDUSTRIAL PARK DEVELOPMENT ASSUMED
COMPUTE NM HYD         ID=2  HYD=100  DA==0.1352 SM
                       %A=0  %B=15.0  %C=0.0 %D85.0 TP=0.1333
                       MASS RAINFALL=-1
PRINT HYD              ID=2 CODE=1
** USE A ROUTE RESERVOIR ROUTINE TO SIMULATE CONTROLLED DISCHARGE
```

```
** ASSUMED ALLOWABLE DISCHARGE = 111.6 cfs
ROUTE RESERVOIR      ID=5 HYDROGRAPH NO=100.1  INFLOW ID=2  CODE=24
                      OUTFLOW(cfs)     STORAGE(ac ft)     ELEV(ft)
                              0            0.0            100
                           111.59         0.001           100.1
                           111.6          4.10            105
PRINT HYD            ID=5  CODE=1
**ROUTE FLOW DOWN AN ASSUMED STORM DRAIN ALONG THE SOUTH SIDE OF CENTRAL FROM
**THE EXISTING BOX CULVERT NEAR 114TH ST. TO 106TH ST.
COMPUTE RATING CURVE CID=1  VALLEY SECTION NO=1  CODE=-1  SLOPE=0.017
                     PIPE DIA=42  N=0.013
COMPUTE TRAVEL TIME ID=3  REACH=1  NUMBER OF VALLEY SECTIONS=1
                     LENGTH=1800 FT  SLOPE=0.017
ROUTE                ID=3 HYDROGRAPH NO=100.2  INFLOW ID=5  DT=0.0
PRINT HYD            ID=3 CODE=1
**ROUTE FLOW DOWN AN ASSUMED STORM DRAIN IN THE 106TH STREET ROW TO THE
**INTERSECTION OF SUNSET GARDEN AND 106TH
COMPUTE RATING CURVE CID=1  VALLEY SECTION NO=1  CODE=-1  SLOPE=0.010
                     PIPE DIA=48  N=0.013
COMPUTE TRAVEL TIME ID=10  REACH=1  NUMBER OF VALLEY SECTIONS=1
                     LENGTH=1000 FT  SLOPE=0.010
ROUTE                ID=10 HYDROGRAPH NO=100.3  INFLOW ID=3  DT=0.0
PRINT HYD            ID=10 CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 110 THE WATERSHED E OF THE POWERLINE CHANNEL
** S. OF CENTRAL AVE , W. OF 114 STREET, N. OF SUNSET GARDEN. ASSUMED IP DEVELOPMENT
COMPUTE NM HYD       ID=2  HYD=110  DA==0.0717 SM
                     %A=0  %B=15.0  %C=0.0 %D=85.0 TP=0.13333
                     MASS RAINFALL=-1
PRINT HYD            ID=2 CODE=1
** USE A ROUTE RESERVOIR ROUTINE TO SIMULATE CONTROLLED DISCHARGE
** ASSUMED ALLOWABLE DISCHARGE = 59.2 cfs
ROUTE RESERVOIR      ID=5 HYDROGRAPH NO=110.1  INFLOW ID=2  CODE=24
                      OUTFLOW(cfs)     STORAGE(ac ft)     ELEV(ft)
                              0            0.0            100
                           59.19          0.001           100.1
                           59.2           2.3             101
PRINT HYD            ID=5  CODE=1
**ROUTE FLOW DOWN A STORM DRAIN IN SUNSET GARDENS TO 110 STREET
COMPUTE RATING CURVE CID=1  VALLEY SECTION NO=1  CODE=-1  SLOPE=0.030
                     PIPE DIA=30  N=0.013
COMPUTE TRAVEL TIME ID=11  REACH=1  NUMBER OF VALLEY SECTIONS=1
                     LENGTH=1100 FT  SLOPE=0.030
ROUTE                ID=11 HYDROGRAPH NO=110.2  INFLOW ID=5  DT=0.0
PRINT HYD            ID=11 CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 120 THE WATERSHED E OF 114 STREET,
** S. OF CENTRAL AVE , W. OF 110 STREET, N. OF SUNSET. ASSUMED IP DEVELOPMENT
COMPUTE NM HYD       ID=2  HYD=120  DA==0.0403 SM
                     %A=0  %B=15.0  %C=0.0 %D=85.0 TP=0.13333
                     MASS RAINFALL=-1
PRINT HYD            ID=2 CODE=1
** USE A ROUTE RESERVOIR ROUTINE TO SIMULATE CONTROLLED DISCHARGE
** ASSUMED ALLOWABLE DISCHARGE Q=33.3
ROUTE RESERVOIR      ID=5 HYDROGRAPH NO=120.1  INFLOW ID=2  CODE=24
                      OUTFLOW(cfs)     STORAGE(ac ft)     ELEV(ft)
                              0            0.0            100
                           33.29          0.001           100.1
                           33.3           1.30            105
PRINT HYD            ID=5  CODE=1
** ADD THE FLOW FROM BASIN 120 TO THE ROUTED FLOW FROM THE  WEST AT
** THE INTERSECTION OF SUNSET GARDENS AND 110 STREET
ADD HYD              ID=12   HYD=120.2  ID I=11   ID II=5
PRINT HYD            ID=12 CODE=1
**ROUTE FLOW DOWN A STORM DRAIN IN THE SUNSET GARDENS ROW FROM 110TH TO
**TO 106TH STREET.
COMPUTE RATING CURVE CID=1  VALLEY SECTION NO=1  CODE=-1  SLOPE=0.027
                     PIPE DIA=36  N=0.013
COMPUTE TRAVEL TIME ID=11  REACH=1  NUMBER OF VALLEY SECTIONS=1
                     LENGTH=1100 FT  SLOPE=0.027
ROUTE                ID=11 HYDROGRAPH NO=120.3  INFLOW ID=12  DT=0.0
PRINT HYD            ID=11 CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 130 THE WATERSHED E OF 110 STREET,
```

```
** S. OF CENTRAL AVE , W. OF 106 STREET, N. OF SUNSET GARDENS. ASSUMED IP DEVELOPMENT
COMPUTE NM HYD        ID=2  HYD=130  DA==0.0377 SM
                      %A=0  %B=15.0  %C=0.0 %D=85.0 TP=0.13333
                      MASS RAINFALL=-1
PRINT HYD             ID=2 CODE=1
** USE A ROUTE RESERVOIR ROUTINE TO SIMULATE CONTROLLED DISCHARGE
** ASSUMED ALLOWABLE DISCHARGE Q=31.1
ROUTE RESERVOIR       ID=5 HYDROGRAPH NO=130.1  INFLOW ID=2  CODE=24
                       OUTFLOW(cfs)     STORAGE(ac ft)     ELEV(ft)
                               0            0.0            100
                              31.09         0.001          100.1
                              31.10         1.30           105
PRINT HYD             ID=5  CODE=1
** ADD THE FLOW FROM BASIN 130 TO THE ROUTED FLOW FROM THE WEST IN THE
** ASSUMED SUNSET GARDENS STORM DRAIN AT THE INTERSECTION OF SUNSET GARDENS
** AND 106TH STREET
ADD HYD               ID=12   HYD=130.2  ID I=11   ID II=5
PRINT HYD             ID=12 CODE=1
** ADD THE FLOW IN THE ASSUMED SUNSET GARDENS STORM DRAIN TO THE FLOW IN THE
** ASSUMED 106TH STREET STORM DRAIN AT THE INTERSECTION OF SUNSET GARDENS AND
** 106TH STREET
ADD HYD               ID=11   HYD=130.3  ID I=10   ID II=12
PRINT HYD             ID=11 CODE=1
** REVISED 7-9-01
** ROUTE THE COMBINED FLOW AT THE INTERSECTION OF 106TH STREET AND SUNSET
** GARDENS DOWN AN ASSUMED STORM DRAIN IN 106TH ROW TO THE INTERSECTION
** HALFWAY TO EUCARIZ @ SW CORNER OF SB 160B
COMPUTE RATING CURVE CID=1  VALLEY SECTION NO=1  CODE=-1  SLOPE=0.009
                      PIPE DIA=60  N=0.013
COMPUTE TRAVEL TIME ID=13  REACH=1  NUMBER OF VALLEY SECTIONS=1
                      LENGTH=520 FT  SLOPE=0.009
ROUTE                 ID=13 HYDROGRAPH NO=130.4  INFLOW ID=11  DT=0.0
PRINT HYD             ID=13 CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 160A THE WATERSHED W OF 106 STREET,
** S. OF SUNSET GARDENS, N. OF EUCARIZ, ASSUMED MULTI-FAMILY DEVELOPMENT
COMPUTE NM HYD        ID=2  HYD=160A  DA==0.01085 SM
                      %A=0  %B=30.0  %C=0.0 %D=70.0 TP=0.13333
                      MASS RAINFALL=-1
PRINT HYD             ID=2 CODE=1
** USE A ROUTE RESERVOIR ROUTINE TO SIMULATE CONTROLLED DISCHARGE
** ASSUMED ALLOWABLE DISCHARGE Q=8.9
ROUTE RESERVOIR       ID=5 HYDROGRAPH NO=160.1  INFLOW ID=2 CODE=24
                       OUTFLOW(cfs)     STORAGE(ac ft)     ELEV(ft)
                               0            0.0            100
                               8.9          0.40           100.1
                               8.91         0.41           105
PRINT HYD             ID=5  CODE=1
** ADD THE FLOW FROM BASIN 160A TO THE FLOW IN THE ASSUMED 106TH STREET STORM SEWER
** MIDWAY BETWEEN SUNSET GARDENS AND EUCARIZ
ADD HYD               ID=12   HYD=160.2 ID I=13   ID II=5
PRINT HYD             ID=12   CODE=1
** ROUTE THE COMBINED FLOW MIDWAY DOWN 106TH STREET IN ASSUMED STORM SEWER
** TO THE INTERSECTION OF EUCARIZ AND 106TH STREET
COMPUTE RATING CURVE CID=1  VALLEY SECTION NO=1  CODE=-1  SLOPE=0.009
                      PIPE DIA=60  N=0.013
COMPUTE TRAVEL TIME ID=13  REACH=1  NUMBER OF VALLEY SECTIONS=1
                      LENGTH=555 FT  SLOPE=0.009
ROUTE                 ID=13 HYDROGRAPH NO=160.3  INFLOW ID=12  DT=0.0
PRINT HYD             ID=13 CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 160B THE WATERSHED W OF 106 STREET,
** S. OF SUNSET GARDENS, N. OF EUCARIZ, ASSUME MULTI-FAMILY DEVELOPMENT
COMPUTE NM HYD        ID=2  HYD=160B  DA==0.01085 SM
                      %A=0  %B=30.0  %C=0.0 %D=70.0 TP=0.13333
                      MASS RAINFALL=-1
PRINT HYD             ID=2 CODE=1
** USE A ROUTE RESERVOIR ROUTINE TO SIMULATE CONTROLLED DISCHARGE
** ASSUMED ALLOWABLE DISCHARGE Q=9.0
ROUTE RESERVOIR       ID=5 HYDROGRAPH NO=160.4  INFLOW ID=2 CODE=24
                       OUTFLOW(cfs)     STORAGE(ac ft)     ELEV(ft)
                               0.           0.0            100.
                               9.0          0.40           100.1
```

```
                                9.01        0.407        105.
PRINT HYD              ID=5  CODE=1
** COMPUTE HYD FOR 106TH STREET FLOW
** ASSUME FULL PVMT SECTION SUNSET GARDENS TO EUCARIZ
COMPUTE NM HYD         ID=2  HYD=180.9 DA=0.00306 SM
                       %A=0  %B=9.0  %C=9.0  %D=82.0 TP=0.13333
                       MASS RAINFALL=-1
PRINT HYD              ID=2 CODE=1
** ADD 106TH STREET FLOW TO SB 160B
ADD HYD                ID=4   HYD=160.5 ID I=2   ID II=5
PRINT HYD              ID=4   CODE=1
** ADD THE FLOW FROM BASIN 160B TO THE FLOW IN THE ASSUMED 106TH STREET STORM SEWER
** AT THE INTERSECTION OF 106TH STREET AND EUCARIZ ROAD
ADD HYD                ID=14   HYD=160.6 ID I=13   ID II=4
PRINT HYD              ID=14   CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 300 THE WEST SIDE CONVIENIENCE CENTER. SITE IS
** CURRENTLY PARTIALLY DEVELOPED AND FLOW IS DETAINED AND RELEASED AT A SMALL
** RATE. ASSUME PROPERTY IS FULLY DEVELOPED BUT WILL ONLY BE ALLOWED TO RELEASE
** 22 CFS (PER COA HYDROLOGY DEPT. 8-17-01)
COMPUTE NM HYD         ID=2  HYD=300  DA==0.0709 SM
                       %A=0  %B=15.0  %C=0.0 %D=85.0 TP=0.13333
                       MASS RAINFALL=-1
PRINT HYD              ID=2 CODE=1
** USE A ROUTE RESERVOIR ROUTINE TO SIMULATE CONTROLLED DISCHARGE
** ASSUMED ALLOWABLE DISCHARGE Q=22.0 cfs
ROUTE RESERVOIR        ID=5 HYDROGRAPH NO=300.1  INFLOW ID=2  CODE=24
                        OUTFLOW(cfs)     STORAGE(ac ft)     ELEV(ft)
                                0            0.0            100
                               22.0          0.001          100.1
                               22.01         4.30           105
PRINT HYD              ID=5  CODE=1
**ROUTE FLOW FROM BASIN 300 DOWN AN ASSUMED STORM DRAIN IN EUCARIZ AVENUE TO A
**FROM 114TH ST TO A POINT APPROXIMATELY 1100 LF EAST TO 110TH ST
COMPUTE RATING CURVE CID=1  VALLEY SECTION NO=1  CODE=-1  SLOPE=0.01
                       PIPE DIA=24  N=0.013
COMPUTE TRAVEL TIME ID=12  REACH=1  NUMBER OF VALLEY SECTIONS=1
                       LENGTH=1100 FT  SLOPE=0.010
ROUTE                  ID=12 HYDROGRAPH NO=300.2  INFLOW ID=5  DT=0.0
PRINT HYD              ID=12 CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 140 THE WATERSHED E OF 114 STREET,
** S. OF SUNSET GARDENS, W. OF 110 STREET, N. OF EUCARIZ. 60% IP AND
** 40% MULTIPLE UNIT RESIDENTIAL DEVELOPMENT ASSUMED.
COMPUTE NM HYD         ID=2  HYD=140  DA==0.0430 SM
                       %A=0  %B=21.0  %C=0.0 %D79.0 TP=0.1333
                       MASS RAINFALL=-1
PRINT HYD              ID=2 CODE=1
** USE A ROUTE RESERVOIR ROUTINE TO SIMULATE CONTROLLED DISCHARGE
** ASSUMED ALLOWABLE DISCHARGE Q=35.5
ROUTE RESERVOIR        ID=5 HYDROGRAPH NO=140.1  INFLOW ID=2  CODE=24
                        OUTFLOW(cfs)     STORAGE(ac ft)     ELEV(ft)
                                0            0.0            100
                               35.49         0.001          100.1
                               35.50         1.4            105
PRINT HYD              ID=5  CODE=1
** ADD BASIN 300 TO SUBASIN 140 IN EUCARIZ STORM DRAIN AT 110th ST
ADD HYD                ID=11   HYD=140.3 ID I=5   ID II=12
PRINT HYD              ID=11   CODE=1
**ROUTE FLOW DOWN A STORM DRAIN IN THE EUCARIZ STREET ROW FROM 110 STREET
**TO A POINT 600' EAST
COMPUTE RATING CURVE CID=1  VALLEY SECTION NO=1  CODE=-1  SLOPE=0.020
                       PIPE DIA=30  N=0.013
COMPUTE TRAVEL TIME ID=10  REACH=1  NUMBER OF VALLEY SECTIONS=1
                       LENGTH=600 FT  SLOPE=0.020
ROUTE                  ID=10 HYDROGRAPH NO=140.2  INFLOW ID=11  DT=0.0
PRINT HYD              ID=10 CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 150 THE WATERSHED E OF 110 STREET,
** S. OF SUNSET GARDENS, N. OF EUCARIZ, ASSUME MULTI-FAMILY DEVELOPMENT
COMPUTE NM HYD         ID=2  HYD=150  DA==0.0242 SM
                       %A=0  %B=30.0  %C=0.0 %D=70.0 TP=0.13333
                       MASS RAINFALL=-1
PRINT HYD              ID=2 CODE=1
** USE A ROUTE RESERVOIR ROUTINE TO SIMULATE CONTROLLED DISCHARGE
```

```
** ASSUMED ALLOWABLE DISCHARGE Q=20.0 cfs
ROUTE RESERVOIR      ID=5 HYDROGRAPH NO=150.1  INFLOW ID=2  CODE=24
                      OUTFLOW(cfs)    STORAGE(ac ft)    ELEV(ft)
                              0            0.0            100
                             19.99        0.001          100.1
                             20.00        1.20           105
PRINT HYD            ID=5  CODE=1
** ADD THE FLOW FROM BASIN 150 TO THE FLOW IN THE ASSUMED EUCARIZ STORM DRAIN
** AT A POINT 1600' EAST OF 114TH STREET
ADD HYD              ID=11   HYD=150.2 ID I=10   ID II=5
PRINT HYD            ID=11   CODE=1
** ROUTE THE FLOW IN THE ASSUMED EUCARIZ STORM DRAIN FROM 550' WEST OF 110TH
** STREET TO THE INTERSECTION OF EUCARIZ AND 106TH STREET
COMPUTE RATING CURVE CID=1  VALLEY SECTION NO=1  CODE=-1  SLOPE=0.027
                     PIPE DIA=36  N=0.013
COMPUTE TRAVEL TIME ID=12  REACH=1  NUMBER OF VALLEY SECTIONS=1
                     LENGTH=500 FT  SLOPE=0.027
ROUTE                ID=12 HYDROGRAPH NO=150.3  INFLOW ID=11 DT=0.0
PRINT HYD            ID=12 CODE=1
** ADD THE FLOW FROM 106TH ST STORM SEWER AT EUCARIZ TO THE EUCARIZ STORM SEWER AT 106TH ST
** AT A POINT 1600' EAST OF 114TH STREET
ADD HYD              ID=10   HYD=150.4 ID I=12   ID II=14
PRINT HYD            ID=10   CODE=1
**ROUTE FLOW DOWN A STORM DRAIN IN THE EUCARIZ CORRIDOR FROM 106TH STREET TO A
**POINT 900' EAST OF 106TH STREET
COMPUTE RATING CURVE CID=1  VALLEY SECTION NO=1  CODE=-1  SLOPE=0.016
                     PIPE DIA=60  N=0.013
COMPUTE TRAVEL TIME ID=11  REACH=1  NUMBER OF VALLEY SECTIONS=1
                     LENGTH=900 FT  SLOPE=0.016
ROUTE                ID=11 HYDROGRAPH NO=150.5  INFLOW ID=10  DT=0.0
PRINT HYD            ID=11 CODE=1
** (REV.7-9-01)COMPUTE HYDROGRAPH FOR BASIN 180A THE WATERSHED E OF 106TH STREET,
** S. OF SUNSET GARDENS, N. OF EUCARIZ CORRIDOR,  SINGLE FAMILY RESIDENTIAL
COMPUTE NM HYD       ID=2  HYD=180A  DA==0.03040 SM
                     %A=0  %B=20.0  %C=20.0 %D=60.0 TP=0.13333
                     MASS RAINFALL=-1
PRINT HYD            ID=2 CODE=1
** USE A ROUTE RESERVOIR ROUTINE TO SIMULATE CONTROLLED DISCHARGE
** ASSUMED ALLOWABLE DISCHARGE Q=25.1
ROUTE RESERVOIR      ID=5 HYDROGRAPH NO=180.1  INFLOW ID=2  CODE=24
                      OUTFLOW(cfs)    STORAGE(ac ft)    ELEV(ft)
                              0.           0.0           100.
                             25.09        0.001          100.1
                             25.10        0.90           105.
PRINT HYD            ID=5  CODE=1
** ADD THE FLOW FROM BASIN 180A TO THE STORM DRAIN IN THE EUCARIZ STORM SEWER
ADD HYD              ID=10   HYD=180.2  ID I=11   ID II=5
PRINT HYD            ID=10 CODE=1
**ROUTE FLOW IN THE EUCARIZ CORRIDOR STORM SEWER FROM 400' EAST OF 106TH TO
**THE POND AT THE HEAD OF THE SNOW VISTA CHANNEL
COMPUTE RATING CURVE CID=1  VALLEY SECTION NO=1  CODE=-1  SLOPE=0.020
                     PIPE DIA=60  N=0.013
COMPUTE TRAVEL TIME ID=80  REACH=1  NUMBER OF VALLEY SECTIONS=1
                     LENGTH=400 FT  SLOPE=0.016
ROUTE                ID=80 HYDROGRAPH NO=180.3  INFLOW ID=10  DT=0.0
PRINT HYD            ID=80 CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 190 THE WATERSHED E OF 106TH STREET,
** N. OF SUNSET GARDENS, SOUTH OF CENTRAL.  ASSUME I.P DEVELOPMENT
**
** DMG revision SUBASIN 190 SPLIT INTO TWO SUBASINS 190A & 190B
** DMG Q(allowable) 190A = 15.48 cfs (60%)
** DMG Q(allowable) 190B = 10.32 cfs (40%)
** DMG SUBASIN 190A ROUTED TO SNOW VISTA SEDIMENTATION POND
**
COMPUTE NM HYD       ID=2  HYD=190A  DA==0.01878 SM
                     %A=0  %B=15.0  %C=0.0 %D=85.0 TP=0.13333
                     MASS RAINFALL=-1
PRINT HYD            ID=2 CODE=1
** USE A ROUTE RESERVOIR ROUTINE TO SIMULATE CONTROLLED DISCHARGE
** ASSUMED ALLOWABLE DISCHARGE Q=25.8
** DMG revision* Q(allowable)=15.48 cfs
```

```
ROUTE RESERVOIR      ID=5 HYDROGRAPH NO=190.1  INFLOW ID=2  CODE=24
                      OUTFLOW(cfs)     STORAGE(ac ft)     ELEV(ft)
                              0           0.0            100
                           15.47          0.001          100.1
                           15.48          1.30           105
PRINT HYD            ID=5  CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 200 THE BASIN BETWEEN SUNSET GARDEN ROAD AND
** THE EUCERIZ CORRIDOR THAT INCLUDES THE POND AT THE HEAD OF THE SNOW VISTA
** CHANNEL. IT IS ASSUMED THAT FREE DISCHARGE FROM THIS PROPERTY IS PREFERABLE
** DUE TO IT'S CLOSE PROXIMITY TO THE SNOW VISTA CHANNEL
** DMG revision SUBASIN 200=Open Area + Pond, SUBASIN 200A=Sunrise Ranch Subdivision
COMPUTE NM HYD       ID=1  HYD=200  DA==0.01436 SM
                     %A=0  %B=100  %C=0 %D=0 TP=0.13333
                     MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
COMPUTE NM HYD       ID=3  HYD=200A  DA==0.00736 SM
                     %A=0.0  %B=20.0  %C=20.0 %D=60.0 TP=0.13333
                     MASS RAINFALL=-1
PRINT HYD            ID=3 CODE=1
** ADD THE FLOW FROM BASIN 190A TO THE FLOW FROM SB 200
** TO THE SNOW VISTA SEDIMENTATION POND
ADD HYD              ID=4   HYD=200.A ID I=5   ID II=3
ADD HYD              ID=2   HYD=200.A ID I=1   ID II=4
** ADD THE FLOW FROM BASIN 200 TO THE POND AT THE HEAD OF THE SNOW VISTA
** CHANNEL. THIS IS THE TOTAL FLOW TO THE POND.
*S THE VOLUME FROM 200.1 IS THE SNOW VISTA POND VOLUME UNDER DEV. COND.
*S HYD=200.1 IS *****AP 21.1*****
ADD HYD              ID=10   HYD=200.1 ID I=2   ID II=80
PRINT HYD            ID=10 CODE=1
** ROUTE THE FLOW AT THE HEAD OF THE SNOW VISTA CHANNEL THROUGH THE EXISTING
** SEDIMENTATION BASIN
** 1994 TOPO BY TOM MANN AND ALBUQUERQUE SURVEYING USED AS A BASIS FOR STORAGE
** VOLUME CALCULATIONS. OUTFLOW CALCULATED WITH A WEIR EQUATION C=3.00. FLOW
** OVER SIDE SLOPE AREAS CALCULATED IN .5' WIDE INCREMENTS WITH DEPTH AT
** THE MIDPOINT OF THE INCREMENT USED FOR h FOR THE INCREMENT.
ROUTE RESERVOIR      ID=3   HYD=200.2  INFLOW ID=10   CODE=24.2
                      CFS OUT    VOL AC-FT   ELEV FT
                       0           0 ·        10.0
                       1.7         0.54       11.0
                      34           1.79       12.0
                     112           3.25       13.0
                     230           4.82       14.0
                     393           6.51       15.0
                     604           8.29       16.0
PRINT HYD                ID=3  CODE=1
*S HYD=200.2 IS *****AP 21*****
MODIFY TIME              ID=3  DT=0.05  CODE=3
PRINT HYD                ID=3  CODE=1
*******************************************************************************
*******************************************************************************
*s BEGIN ONSITE WATERSHED
*******************************************************************************
*******************************************************************************
** ASSUME FREE DISCHARGE TO THE CHANNEL IS PREFERABLE DUE TO THE CLOSE
** PROXIMITY TO THE CHANNEL
** COMPUTE HYDROGRAPH FOR BASIN 210 SUNRISE TERRACE UNIT 1. ASSUME 6.5 DU PER
** ACRE RESIDENTIAL DEVELOPMENT
COMPUTE NM HYD       ID=2  HYD=210  DA=0.0092 SM
                     %A=0.0  %B=27.0  %C=12.0 %D=61.0 TP=0.13333
                     MASS RAINFALL=-1
PRINT HYD            ID=2 CODE=1
** ADD THE FLOW FROM BASIN 210 TO THE FLOW IN THE SNOW VISTA CHANNEL NEAR
** THE HEAD OF THE SNOW VISTA CHANNEL
ADD HYD              ID=10   HYD=210.1 ID I=3   ID II=2
PRINT HYD            ID=10 CODE=1
** ROUTE THE COMBINED FLOW DOWN THE SNOW VISTA CHANNEL FROM THE HEAD TO
** A POINT 500LF SOUTH.
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                     MINIMUM ELEV=100 FT  MAXIMUM ELEV=105.0 FT
                     CHANNEL SLOPE=0.0105 FLOOD PLAIN SLOPE=0.0109
                     N=0.013  DIST=30
```

```
                        DIST  ELEV    DIST   ELEV   DIST   ELEV   DIST   ELEV
                         0   105       10     100     20     100    30    105
COMPUTE TRAVEL TIME ID=11  REACH NO=1  VALLEY SECTIONS=1
                    LENGTH=500 FT  SLOPE=0.0109
ROUTE               ID=11 HYDROGRAPH NO=210.2 INFLOW ID=10 DT=0.0
PRINT HYD           ID=11 CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 220 SUNRISE TERRACE UNIT 1. ASSUME 6.5 DU PER
** ACRE RESIDENTIAL DEVELOPMENT
COMPUTE NM HYD      ID=2  HYD=220  DA==0.0080 SM
                    %A=0.0  %B=27.0  %C=12.0 %D=61.0 TP=0.13333
                    MASS RAINFALL=-1
PRINT HYD           ID=2 CODE=1
** ADD THE FLOW FROM BASIN 220 TO THE FLOW IN THE SNOW VISTA CHANNEL 500LF
** SOUTH OF THE HEAD OF THE CHANNEL
ADD HYD             ID=10   HYD=220.1 ID I=11   ID II=2
PRINT HYD           ID=10 CODE=1
** ROUTE THE COMBINED FLOW DOWN THE SNOW VISTA CHANNEL FROM 500LF SOUTH OF
** THE HEAD OF THE CHANNEL TO A POINT 750 LF SOUTH OF THE HEAD
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                     MINIMUM ELEV=100 FT  MAXIMUM ELEV=105.0 FT
                     CHANNEL SLOPE=0.0109 FLOOD PLAIN SLOPE=0.0109
                     N=0.013  DIST=30
                     DIST  ELEV    DIST   ELEV   DIST   ELEV   DIST   ELEV
                      0   105       10     100     20     100    30    105
COMPUTE TRAVEL TIME ID=11  REACH NO=1  VALLEY SECTIONS=1
                    LENGTH=250 FT  SLOPE=0.0109
ROUTE               ID=11 HYDROGRAPH NO=220.2 INFLOW ID=10 DT=0.0
PRINT HYD           ID=11 CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 230 SUNRISE TERRACE UNIT 1. ASSUME 6.5 DU PER
** ACRE RESIDENTIAL DEVELOPMENT
COMPUTE NM HYD      ID=2  HYD=230  DA==0.0094 SM
                    %A=0.0  %B=27.0  %C=12.0 %D=61.0 TP=0.13333
                    MASS RAINFALL=-1
PRINT HYD           ID=2 CODE=1
** ADD THE FLOW FROM BASIN 230 TO THE FLOW IN THE SNOW VISTA CHANNEL AT A POINT
** 750 LF SOUTH OF THE HEAD OF THE CHANNEL
ADD HYD             ID=10   HYD=230.1 ID I=11   ID II=2
PRINT HYD           ID=10 CODE=1
** ROUTE THE COMBINED FLOW DOWN THE SNOW VISTA CHANNEL FROM 750LF SOUTH OF
** THE HEAD OF THE CHANNEL TO TOWER ROAD
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                     MINIMUM ELEV=100 FT  MAXIMUM ELEV=105.0 FT
                     CHANNEL SLOPE=0.0109 FLOOD PLAIN SLOPE=0.0109
                     N=0.013  DIST=30
                     DIST  ELEV    DIST   ELEV   DIST   ELEV   DIST   ELEV
                      0   105       10     100     20     100    30    105
COMPUTE TRAVEL TIME ID=11  REACH NO=1  VALLEY SECTIONS=1
                    LENGTH=350 FT  SLOPE=0.0109
ROUTE               ID=11 HYDROGRAPH NO=230.2 INFLOW ID=10 DT=0.0
PRINT HYD           ID=11 CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 240 SUNRISE TERRACE UNIT 1. ASSUME 6.5 DU PER
** ACRE RESIDENTIAL DEVELOPMENT
COMPUTE NM HYD      ID=2  HYD=240  DA==0.0145 SM
                    %A=0.0  %B=27.0  %C=12.0 %D=61.0 TP=0.13333
                    MASS RAINFALL=-1
PRINT HYD           ID=2 CODE=1
*s END ONSITE WATERSHED
** ADD THE FLOW FROM BASIN 240 TO THE FLOW IN THE SNOW VISTA CHANNEL NEAR
** TOWER ROAD
ADD HYD             ID=10   HYD=240.1 ID I=11   ID II=2
PRINT HYD           ID=10 CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 250 THE SNOW VISTA CHANNEL CORRIDOR NORTH
** OF TOWER ROAD
COMPUTE NM HYD      ID=2  HYD=250  DA==0.0022 SM
                    %A=0.0  %B=0.0  %C=50.0 %D=50.0 TP=0.13333
                    MASS RAINFALL=-1
PRINT HYD           ID=2 CODE=1
** ADD THE FLOW FROM BASIN 250 TO THE ROUTED FLOW IN THE SNOW VISTA CHANNEL
** AT TOWER ROAD
ADD HYD             ID=11   HYD=250.1 ID I=10  ID II=2
PRINT HYD           ID=11 CODE=1
```

```
** COMPUTE HYDROGRAPH FOR BASIN 260 THE NORTHWEST PORTION OF SUNRISE TERRACE
** UNIT 2 PHASE A-1 AND A PORTION OF 106TH STREEET
COMPUTE NM HYD        ID=2  HYD=260  DA==0.0157 SM
                      %A=0.0  %B=40.0  %C=0.0 %D=60.0 TP=0.13333
                      MASS RAINFALL=-1
PRINT HYD             ID=2 CODE=1
** ASSUME MAJORITY OF THE FLOW REMAINS ON SOUTHWEST  SIDE OF THE STREET. ROUTE
** THE FLOW DOWN 106TH STREET  FROM TANAGER ROAD TO THE EASEMENT CHANNEL
** FROM SUNRISE TERRACE UNIT 2 PHASE A-1. ROUTE IN ONE HALF STREET SECTION
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=3
                      MINIMUM ELEV=0.0 FT  MAXIMUM ELEV=0.67 FT
                      CHANNEL SLOPE=0.0298  FLOOD PLAIN SLOPE=0.0298
                      N=.013  DIST=2.16  N=-.017  DIST=38.16 N=.013 DIST=40.32
                      DIST  ELEV    DIST   ELEV    DIST   ELEV   DIST   ELEV
                      0.0   0.67    0.16   0.00    2.16   0.13   20.16  0.42
                      38.16 0.13   40.16   0.00   40.32   0.67
COMPUTE TRAVEL TIME ID=15  REACH NO=1  VALLEY SECTIONS=1
                      LENGTH=520 FT  SLOPE=0.0298
ROUTE                 ID=15 HYDROGRAPH NO=260.1 INFLOW ID=2 DT=0.0
PRINT HYD             ID=15  CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 270 THE  PORTION OF SUNRISE TERRACE
** UNIT 2 PHASE A-1 THAT CONTRIBUTES FLOW TO THE EASEMENT CHANNEL LEADING
** TO 106TH STREET AND A PORTION OF 106TH STREET.
COMPUTE NM HYD        ID=2  HYD=270  DA==0.0102 SM
                      %A=0.0  %B=50.0  %C=0.0 %D=50.0 TP=0.13333
                      MASS RAINFALL=-1
PRINT HYD             ID=2 CODE=1
** ADD THE FLOW FROM BASIN 270 TO THE ROUTED FLOW IN 106TH STREET AT THE
** INTERSECTION WITH THE EASEMENT CHANNEL
ADD HYD               ID=16   HYD=270.1 ID I=15  ID II=2
PRINT HYD             ID=16 CODE=1
** ASSUME THAT THE PORTION OF THE FLOW IN 106TH STREET THAT EXCEEDS ONE HALF
** THE STREET CAPACITY WILL SPILL OVER INTO THE NORTHEAST HALF OF THE STREET
** HYD. 270.2 = FLOW TO REMAIN ON THE SOUTH WEST SIDE OF THE STREET
** HYD. 270.3 = FLOW TO SPILL OVER TO THE NORTHEAST SIDE SIDE OF THE STREET
DIVIDE HYD            ID=16   CODE=999.0  ID=15  HYD=270.2     ID=3  HYD=270.3
                            TOTAL FLOW        DIVIDED FLOW
                               5                 4.9
                              21                20.9
                              46                22.0
                              60                30.0
PRINT HYD             ID=15  CODE=1
PRINT HYD             ID=3   CODE=1
** ROUTE THE FLOW ON THE NORTHEAST SIDE OF 106TH STREET DOWN TOWER BLVD TO THE
** SNOW VISTA CHANNEL. USE AVERAGE SLOPE
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=3
                      MINIMUM ELEV=0.0 FT  MAXIMUM ELEV=0.67 FT
                      CHANNEL SLOPE=0.0298  FLOOD PLAIN SLOPE=0.0298
                      N=.013  DIST=2.16  N=-.017  DIST=38.16 N=.013 DIST=40.32
                      DIST  ELEV    DIST   ELEV    DIST   ELEV   DIST   ELEV
                      0.0   0.67    0.16   0.00    2.16   0.13   20.16  0.42
                      38.16 0.13    40.16  0.00    40.32  0.67
COMPUTE TRAVEL TIME ID=16  REACH NO=1  VALLEY SECTIONS=1
                      LENGTH=950 FT  SLOPE=0.0298
ROUTE                 ID=16 HYDROGRAPH NO=270.4 INFLOW ID=3 DT=0.0
PRINT HYD             ID=16  CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 280 THE  PORTION OF TOWER BLVD EAST OF THE
** INTERSECTION WITH SANDPIPER DRIVE AND WEST OF THE SNOW VISTA CHANNEL
COMPUTE NM HYD        ID=2  HYD=280  DA==0.0022 SM
                      %A=0.0  %B=20.0  %C=0.0 %D=80.0 TP=0.13333
                      MASS RAINFALL=-1
PRINT HYD             ID=2 CODE=1
** ADD THE FLOW FROM BASIN 270 TO THE ROUTED FLOW IN TOWER BLVD. AT THE
** THE SNOW VISTA CHANNEL
ADD HYD               ID=17   HYD=280.1  ID I=16  ID II=2
PRINT HYD             ID=17 CODE=1
** ADD THE FLOW IN TOWER TO THE SNOW VISTA CHANNEL AT THE CHANNEL CROSSING
ADD HYD               ID=10   HYD=280.2  ID I=17   ID II=11
PRINT HYD             ID=10 CODE=1
** ROUTE THE COMBINED FLOW DOWN THE SNOW VISTA CHANNEL FROM TOWER ROAD
** TO THE CONFLUENCE AT THE SECTION LINE. USE AVERAGE CHANNEL SLOPE
```

```
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                     MINIMUM ELEV=100 FT  MAXIMUM ELEV=105.0 FT
                     CHANNEL SLOPE=0.0105 FLOOD PLAIN SLOPE=0.0105
                     N=0.013  DIST=30
                     DIST  ELEV    DIST  ELEV   DIST   ELEV   DIST   ELEV
                      0   105       10     100     20     100    30    105
COMPUTE TRAVEL TIME ID=11  REACH NO=1  VALLEY SECTIONS=1
                    LENGTH=1600 FT  SLOPE=0.0105
ROUTE               ID=11 HYDROGRAPH NO=280.3 INFLOW ID=10 DT=0.0
PRINT HYD           ID=11 CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 290 THE SNOW VISTA CHANNEL CORRIDOR SOUTH OF
** OF TOWER ROAD AND THE SUNRISE TERRACE PARK AREA
COMPUTE NM HYD      ID=2  HYD=290  DA==0.0067 SM
                    %A=0.0  %B=50.0  %C=25.0 %D=25.0 TP=0.13333
                    MASS RAINFALL=-1
PRINT HYD           ID=2 CODE=1
** ADD THE FLOW FROM BASIN 280 TO THE ROUTED FLOW IN THE SNOW VISTA CHANNEL
** AT THE SECTION LINE
ADD HYD             ID=10   HYD=290.1 ID I=11  ID II=2
PRINT HYD           ID=10 CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 310 THE TRACT SOUTH OF EUCARIZ, NORTH OF THE
** SECTION LINE, AND EAST OF THE POWERLINE CHANNEL. ASSUME 75% I.P. AND 25%
** MULTIPLE UNIT RESIDENTIAL DEVELOPMENT
COMPUTE NM HYD      ID=2  HYD=310  DA==0.0864 SM
                    %A=0.0  %B=18.0  %C=0.0 %D=82.0 TP=0.13333
                    MASS RAINFALL=-1
PRINT HYD           ID=2 CODE=1
** USE A ROUTE RESERVOIR ROUTINE TO SIMULATE CONTROLLED DISCHARGE
** ASSUMED ALLOWABLE DISCHARGE Q=71.3 cfs
ROUTE RESERVOIR     ID=5 HYDROGRAPH NO=310.1  INFLOW ID=2  CODE=24
                     OUTFLOW(cfs)     STORAGE(ac ft)    ELEV(ft)
                            0            0.0            100
                           71.29         0.001          100.1
                           71.3          4.00           105
PRINT HYD           ID=5  CODE=1
*** (Rev.8-17-01 (DMG) SB 300 removed from 114th street storm sewer routing
***  and added to SB 140 at Eucariz and 114th St.)
**ROUTE FLOW FROM BASIN 310 DOWN AN ASSUMED STORM DRAIN
**FROM A POINT 1100 LF SOUTH OF EUCARIZ TO A POINT 1600 LF SOUTH OF EUCARIZ
COMPUTE RATING CURVE CID=1  VALLEY SECTION NO=1  CODE=-1  SLOPE=0.008
                    PIPE DIA=48  N=0.013
COMPUTE TRAVEL TIME ID=11  REACH=1  NUMBER OF VALLEY SECTIONS=1
                    LENGTH=500 FT  SLOPE=0.008
ROUTE               ID=11 HYDROGRAPH NO=310.3  INFLOW ID=5  DT=0.0
PRINT HYD           ID=11 CODE=1
**ROUTE THE ROUTED FLOW FROM BASIN 310 DOWN AN ASSUMED STORM DRAIN
**FROM A POINT 1600 LF SOUTH OF EUCARIZ AT THE WEST LINE OF BASIN 330 EAST
**TO TANAGER DRIVE
COMPUTE RATING CURVE CID=1  VALLEY SECTION NO=1  CODE=-1  SLOPE=0.035
                    PIPE DIA=42  N=0.013
COMPUTE TRAVEL TIME ID=13  REACH=1  NUMBER OF VALLEY SECTIONS=1
                    LENGTH=1250 FT  SLOPE=0.035
ROUTE               ID=13 HYDROGRAPH NO=310.4  INFLOW ID=11  DT=0.0
PRINT HYD           ID=13 CODE=1
** COMPUTE THE HYDROGRAPH FOR BASINS 320 AND 330.
** THESE BASINS ARE UNDER THE SAME OWNERSHIP
** ASSUME THE RUNOFF FROM THE MAJORITY OF THE SITE WILL BE ROUTED THROUGH
** THE EXISTING TANAGER POND CONSTRUCTED WITH THE SUNRISE TERRACE UNITS
** 3,4,& 5 PROJECT. BECAUSE THE OUTFALL FROM THE POND IS SMALL THE PEAK
** OUTFLOW FROM THE AREA ROUTED THROUGH THE POND WILL BE LESS THAN 1.29cfs PER
** ac.. THIS WILL ALLOW BASIN 330 TO HAVE FREE DISCHARGE TO THE STORM DRAIN
** SYSTEM. THE COMBINED OUTFLOW FROM BASINS 320 AND 330 WILL BE LIMITED TO
** 1.29 cfs PER ac. Q=73.1
** (REV.7-9-01)COMPUTE HYDROGRAPH FOR BASIN 170 THE WATERSHED W OF 106 STREET,
** S. OF EUCARIZ, MULTI-FAMILY DEVELOPMENT ASSUMED.
** ASSUMED SB 170 TO BE ADDED TO SB 320 AND ROUTE THROUGH TANAGER POND (7-9-01)
COMPUTE NM HYD      ID=1  HYD=170  DA==0.02853 SM
                    %A=0  %B=30.0  %C=0.0 %D=70.0 TP=0.13333
                    MASS RAINFALL=-1
PRINT HYD           ID=1 CODE=1
** USE A ROUTE RESERVOIR ROUTINE TO SIMULATE CONTROLLED DISCHARGE
```

```
** ASSUMED ALLOWABLE DISCHARGE Q=23.6 cfs
ROUTE RESERVOIR      ID=3 HYDROGRAPH NO=170.1  INFLOW ID=1  CODE=24
                      OUTFLOW(cfs)     STORAGE(ac ft)     ELEV(ft)
                              0            0.0             100
                           23.6            0.001           100.1
                           23.61           1.30            105
PRINT HYD            ID=3  CODE=1
** COMPUTE THE HYDROGRAPH FOR BASIN 320 THE NORTH PORTION OF THE AREA SOUTH
** EUCERIZ ,EAST OF TANAGER, AND NORTH OF THE SECTION LINE. ASSUME
** SINGLE FAMILY RESIDENTIAL DEVELOPMENT
COMPUTE NM HYD       ID=4  HYD=320  DA==0.0547 SM
                     %A=0.0  %B=35.0  %C=0.0 %D=65.0 TP=0.13333
                     MASS RAINFALL=-1
PRINT HYD            ID=4 CODE=1
** (REV 7-9-01)ADD THE FLOW FROM BASIN 170 TO FLOW FROM SB 320
** ASSUME SB 170 ALSO ROUTED THROUGH TANAGER POND
ADD HYD              ID=2   HYD=170.2 ID I=4   ID II=3
PRINT HYD            ID=2   CODE=1
** ROUTE FLOW FROM BASIN 320 THROUGH THE TANAGER POND. POND VOLUME IS APPROX.
** DISCHARGE CURVE IS BASED ON PRESSURE PIPE FLOW THROUGH A 24" DIA PIPE. HGL
** AT THE OUTLET END OF THE 24" PIPE AT TANAGER AND ANDALUSIAN DRIVE IS ASSUMED
** TO BE 44.0 AT THE TIME OF THE PEAK DISCHARGE FROM THE POND. DESIGN OF THE
** OUTFALL PIPE IS PRELIMINARY AT THIS TIME. ALL OF THE ASSUMPTIONS USED HERE
** SHOULD BE CHECKED AT THE TIME THAT DEVELOPMENT OCCURS IN BASINS 320 AND 330.
ROUTE RESERVOIR      ID=5 HYDROGRAPH NO=320.1  INFLOW ID=2  CODE=24
                      OUTFLOW(cfs)     STORAGE(ac ft)     ELEV(ft)
                           0                0               43
                           0.1             0.11             44
                           7.5             0.54             45
                           10.6            1.13             46
                           13.0            1.76             47
                           15.0            2.44             48
                           16.6            3.16             49
                           18.3            3.94             50
                           19.9            4.78             51
                           21.3            5.66             52
                           22.6            6.60             53
PRINT HYD            ID=5  CODE=1
**ROUTE THE OUTFLOW FROM THE POND DOWN THE 24" OUTFALL PIPE TO THE 48" STORM
**DRAIN AT THE INTERSECTION OF ANDALUSIAN AVE. AND TANAGER DRIVE. USE PEAK FLOW
**FRICTION SLOPE FOR PIPE SLOPE
COMPUTE RATING CURVE CID=1  VALLEY SECTION NO=1  CODE=-1  SLOPE=0.01
                     PIPE DIA=24  N=0.013
COMPUTE TRAVEL TIME ID=11  REACH=1  NUMBER OF VALLEY SECTIONS=1
                     LENGTH=850 FT  SLOPE=0.01
ROUTE                ID=11 HYDROGRAPH NO=320.2  INFLOW ID=5   DT=0.0
PRINT HYD            ID=11 CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 330 THE SOUTH PORTION OF THE TRACT SOUTH OF
** EUCERIZ ,EAST OF TANAGER, AND NORTH OF THE SECTION LINE. ASSUME
** SINGLE FAMILY RESIDENTIAL DEVELOPMENT
COMPUTE NM HYD       ID=2  HYD=330  DA==0.0238 SM
                     %A=0.0  %B=35.0  %C=0.0 %D=65.0 TP=0.13333
                     MASS RAINFALL=-1
PRINT HYD            ID=2 CODE=1
** ADD THE FLOW FROM BASIN 330 TO THE ROUTED FLOW FROM BASIN 320
** THE COMBINED DISCHARGE IS ASSUMED TO BE LIMITED TO 73.1 cfs
ADD HYD              ID=12   HYD=330.1  ID I=11   ID II=2
PRINT HYD            ID=12  CODE=1
** ADD THE FLOW FROM BASIN 330 & 320 TO THE ROUTED FLOW IN THE STORM DRAIN
** FROM THE WEST
ADD HYD              ID=14   HYD=330.2  ID I=12   ID II=13
PRINT HYD            ID=14  CODE=1
**ROUTE THE FLOW FROM TANAGER TO THE INTERSECTION OF ANDALUSTAN AND HALTER
**IN THE STORM DRAIN TO BE CONSTRUCTED WITH THE SUNRISE TERRACE UNITS 3,4 & 5
**PROJECT. CURRENT PLANS PREPARED BY RYALS ENGINEERING CALL FOR APPROX 800 LF
**OF 48" DIA STORM DRAIN AND 1150 LF OF 54" DIA STORM DRAIN
**USE FRICTION SLOPE FOR PIPE SLOPE.
**NOTE: PIPE LENGTH IS APPROXIMATE
COMPUTE RATING CURVE CID=1  VALLEY SECTION NO=1  CODE=-1  SLOPE=0.0196
                     PIPE DIA=48  N=0.013
COMPUTE TRAVEL TIME ID=12  REACH=1  NUMBER OF VALLEY SECTIONS=1
```

```
                    LENGTH=800 FT  SLOPE=0.0196
ROUTE               ID=12 HYDROGRAPH NO=330.3  INFLOW ID=14  DT=0.0
PRINT HYD           ID=12 CODE=1
COMPUTE RATING CURVE CID=1  VALLEY SECTION NO=1  CODE=-1  SLOPE=0.0105
                    PIPE DIA=54  N=0.013
COMPUTE TRAVEL TIME ID=11  REACH=1  NUMBER OF VALLEY SECTIONS=1
                    LENGTH=1150 FT  SLOPE=0.0105
ROUTE               ID=11 HYDROGRAPH NO=330.4  INFLOW ID=12  DT=0.0
PRINT HYD           ID=11 CODE=1
** ROUTE THE FLOW IN TOWER ROAD TO THE EASEMENT CHANNEL
** OUTLET DOWN TOWER BOULEVARD TO SANDPIPER DRIVE. USE AVERAGE SLOPE
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=3
                    MINIMUM ELEV=0.0 FT  MAXIMUM ELEV=0.67 FT
                    CHANNEL SLOPE=0.0298 FLOOD PLAIN SLOPE=0.0298
                    N=.013  DIST=2.16  N=-.017  DIST=38.16 N=.013 DIST=42.32
                    DIST  ELEV    DIST   ELEV    DIST   ELEV   DIST   ELEV
                    0.0   0.67    0.16   0.00    2.16   0.13   20.16  0.42
                    38.16 0.13    40.16  0.00   40.32   0.67
COMPUTE TRAVEL TIME ID=17  REACH NO=1  VALLEY SECTIONS=1
                    LENGTH=370 FT  SLOPE=0.0298
ROUTE               ID=17 HYDROGRAPH NO=330.5 INFLOW ID=15 DT=0.0
PRINT HYD           ID=17  CODE=1
** ASSUME ALL OF THE FLOW ON THE SOUTH SIDE OF TOWER ROAD IS ACCEPTED BY
** SANDPIPER DRIVE. ROUTE THE FLOW DOWN SANDPIPER DRIVE FROM TOWER ROAD TO
** THE PROPOSED INLETS NORTH OF CONNEMARA AVENUE. USE AVERAGE SLOPE
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=5
                    MINIMUM ELEV=0.0 FT  MAXIMUM ELEV=0.87 FT
                    CHANNEL SLOPE=0.014 FLOOD PLAIN SLOPE=0.014
                    N=0.030  DIST=9.0  N=-0.013  DIST=11  N=-0.017  DIST=39
                    N=0.013  DIST=41   N=0.030   DIST=50
                    DIST  ELEV    DIST   ELEV    DIST   ELEV   DIST   ELEV
                    0.0   0.87     9.0   .67     9.16   0.0     11     0.13
                    25    0.28     37.0  .13     39.0   0.0     41.0   .67
                    50.0  0.87
COMPUTE TRAVEL TIME ID=16  REACH NO=1  VALLEY SECTIONS=1
                    LENGTH=450 FT  SLOPE=0.014
ROUTE               ID=16 HYDROGRAPH NO=330.6 INFLOW ID=17 DT=0.0
PRINT HYD           ID=16  CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 340 THE SOUTHEAST PORTION OF SUNRISE TERRACE
** UNIT 2 PHASE A-1 THAT DISCHARGES TO SANDPIPER DRIVE
COMPUTE NM HYD      ID=2  HYD=340  DA==0.0155 SM
                    %A=0.0  %B=50  %C=0.0 %D=50.0 TP=0.13333
                    MASS RAINFALL=-1
PRINT HYD           ID=2 CODE=1
** ADD THE FLOW FROM BASIN 340 TO THE ROUTED FLOW IN SANDPIPER DRIVE
ADD HYD             ID=15   HYD=340.1  ID I=16   ID II=2
PRINT HYD           ID=15 CODE=1
** FOR MODELING PURPOSES ASSUME ALL OF THE FLOW IN SANDPIPER IS INTERCEPTED
** BY THE PROPOSED SANDPIPER STORM DRAIN ABOVE THE INTERSECTION WITH CONNEMARA.
** ROUTE THE FLOW IN THE PROPOSED STORM DRAIN DOWN SANDPIPER TO PASO FINO PLACE.
COMPUTE RATING CURVE CID=1  VALLEY SECTION NO=1  CODE=-1  SLOPE=0.008
                    PIPE DIA=36  N=0.013
COMPUTE TRAVEL TIME ID=16  REACH=1  NUMBER OF VALLEY SECTIONS=1
                    LENGTH=270 FT  SLOPE=0.008
ROUTE               ID=16 HYDROGRAPH NO=340.2  INFLOW ID=15  DT=0.0
PRINT HYD           ID=16 CODE=1
COMPUTE RATING CURVE CID=1  VALLEY SECTION NO=1  CODE=-1  SLOPE=0.011
                    PIPE DIA=36  N=0.013
COMPUTE TRAVEL TIME ID=15  REACH=1  NUMBER OF VALLEY SECTIONS=1
                    LENGTH=340 FT  SLOPE=0.011
ROUTE               ID=15 HYDROGRAPH NO=340.3  INFLOW ID=16  DT=0.0
PRINT HYD           ID=15 CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 350 THE NORTH WEST PORTION OF SUNRISE TERRACE
** UNITS 3, 4, AND 5
COMPUTE NM HYD      ID=2  HYD=350  DA==0.0483 SM
                    %A=0.0  %B=50  %C=0.0 %D=50.0 TP=0.13333
                    MASS RAINFALL=-1
PRINT HYD           ID=2 CODE=1
** ADD THE FLOW FROM BASIN 350 TO THE SANDPIPER DR. S.D. FLOW AT THE
** INTERSECTION OF PASO FINO AND SANDPIPER DRIVE
ADD HYD             ID=16   HYD=350.1  ID I=15   ID II=2
```

```
PRINT HYD            ID=16 CODE=1
**ROUTE THE COMBINED FLOW DOWN THE PASO FINO STORM DRAIN FROM SANDPIPER TO
**HALTER DRIVE
COMPUTE RATING CURVE CID=1  VALLEY SECTION NO=1  CODE=-1  SLOPE=0.023
                     PIPE DIA=48  N=0.013
COMPUTE TRAVEL TIME ID=15  REACH=1  NUMBER OF VALLEY SECTIONS=1
                     LENGTH=360 FT  SLOPE=0.023
ROUTE                ID=15 HYDROGRAPH NO=350.2  INFLOW ID=16  DT=0.0
PRINT HYD            ID=15 CODE=1
**ROUTE THE FLOW FROM THE PROPOSED PASO FINO STORM DRAIN DOWN THE PROPOSED
**HALTER DRIVE STORM DRAIN
COMPUTE RATING CURVE CID=1  VALLEY SECTION NO=1  CODE=-1  SLOPE=0.006
                     PIPE DIA=54  N=0.013
COMPUTE TRAVEL TIME ID=16  REACH=1  NUMBER OF VALLEY SECTIONS=1
                     LENGTH=250 FT  SLOPE=0.006
ROUTE                ID=16 HYDROGRAPH NO=350.3  INFLOW ID=15  DT=0.0
PRINT HYD            ID=16 CODE=1
** COMPUTE THE HYDROGRAPH FOR BASIN 360. THE BASIN THAT CONTRIBUTES FLOW
** TO ANDLUSIAN AVENUE
COMPUTE NM HYD       ID=2  HYD=360  DA==0.0208 SM
                     %A=0.0  %B=50  %C=0.0 %D=50.0 TP=0.13333
                     MASS RAINFALL=-1
PRINT HYD            ID=2 CODE=1
** ADD THE FLOW FROM BASIN 360 TO THE FLOW IN THE PROPOSED HALTER STORM
** DRAIN AT THE INTERSECTION OF HALTER DR. & ANDALUSTAN AVE.
ADD HYD              ID=15   HYD=360.1  ID I=16   ID II=2
PRINT HYD            ID=15 CODE=1
** ADD THE FLOW FROM THE PROPOSED HALTER STORM DRAIN TO THE PROPOSED
** ANDALUSTAN STORM DRAIN AT THE INTERSECTION OF HALTER AND ANDALUSTAN
ADD HYD              ID=17   HYD=360.2  ID I=15   ID II=11
PRINT HYD            ID=17 CODE=1
**ROUTE THE COMBINED FLOW DOWN THE STORM DRAIN OUTFALL FROM THE INTERSECTION
**OF HALTER DRIVE AND ANDALUSTAN DRIVE TO THE SNOW VISTA CHANNEL
COMPUTE RATING CURVE CID=1  VALLEY SECTION NO=1  CODE=-1  SLOPE=0.009
                     PIPE DIA=72  N=0.013
COMPUTE TRAVEL TIME ID=16  REACH=1  NUMBER OF VALLEY SECTIONS=1
                     LENGTH=200 FT  SLOPE=0.009
ROUTE                ID=16 HYDROGRAPH NO=360.3  INFLOW ID=17  DT=0.0
PRINT HYD            ID=16 CODE=1
** ADD THE FLOW FROM THE THE PROPOSED 72" DIA OUTFALL FROM THE SUNRISE
** TERRACE UNITS 3, 4, AND 5 SUBDIVISION TO THE FLOW IN THE SNOW VISTA CHANNEL
** AT THE SECTION LINE.
ADD HYD              ID=15   HYD=360.4  ID I=16   ID II=10
PRINT HYD            ID=15 CODE=1
** COMPUTE THE HYDROGRAPH FOR BASIN 370 THE PORTION OF SUNRISE TERRACE UNIT 3
** THAT IS ADJACENT TO THE SNOW VISTA CHANNEL AND CONTRIBUTES FLOW TO THE
** TO THE PROPOSED HALTER DETENTION POND
COMPUTE NM HYD       ID=2  HYD=370  DA==0.0183 SM
                     %A=0.0  %B=50  %C=0.0 %D=50.0 TP=0.13333
                     MASS RAINFALL=-1
PRINT HYD            ID=2 CODE=1
** ROUTE FLOW FROM BASIN 370 THROUGH THE PROPOSED HALTER POND
** STAGE STORAGE DISCHARGE CURVE PER MASTER DRAINAGE PLAN FOR SUNRISE TERRACE
** UNITS 3,4,AND 5 BY RYLES ENGINEERING
ROUTE RESERVOIR      ID=5  HYD=370.1 INFLOW ID=2    CODE=24
                      OUTFLOW CFS    STORAGE AC-FT   ELEVATION FT
                        0.00000      0.0000          88.50
                        3.68         0.1180          90.5
                        5.20         0.3172          92.5
                        6.37         0.6137          94.5
                        6.88         0.9032          95.5
                        7.13         0.9092          96.0
PRINT HYD            ID=5  CODE=1
** ADD THE  FLOW FROM THE PROPOSED HALTER POND TO THE FLOW IN THE SNOW VISTA
** CHANNEL AT THE SECTION LINE.
** THIS IS THE TOTAL FLOW IN THE SNOW VISTA CHANNEL AT THE SECTION LINE
*S HYD=AP22 IS *****AP 22*****
ADD HYD              ID=22   HYD=AP22  ID I=5   ID II=15
PRINT HYD            ID=22  CODE=1
*****************************************************************
** RATING CURVE FOR AP22 TO 22.1
```

```
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                     MINIMUM ELEV=100 FT  MAXIMUM ELEV=106 FT
                     CHANNEL SLOPE=0.0246 FLOOD PLAIN SLOPE=0.0246
                     N=0.013  DIST=34
                     DIST  ELEV    DIST  ELEV   DIST   ELEV   DIST   ELEV
                      0   106       12     100     22     100    34    106
COMPUTE TRAVEL TIME ID=88  REACH NO=1  VALLEY SECTIONS=1
                    LENGTH=784 FT  SLOPE=0.0246
ROUTE               ID=88 HYDROGRAPH NO=100 INFLOW ID=22 DT=0.0
PRINT HYD           ID=88 CODE=1
*********   INSERTED TOM'S STUFF !!!
*****************************************************************************
* ANALYSIS OF THE BASINS ABOVE THE SNOW VISTA CHANNEL AND THE SECTION LINE
* CONFLUENCE.
* DEVELOPED LAND TREATMENT A=0  B=27%  C=12%  D=61%
* THE RUNOFF IS CALCULATED ASSUMING THAT THERE ARE SEVEN BASINS.
* TIME OF CONCENTRATION IS CALCULATED TO BE LESS THAN 10 MIN. THEREFORE,
* Tp = 2/3 Tc = 2/3 0.16667 = 0.1111  FOR ALL BASINS.
*****************************************************************************
*  BASIN 301.61
*  UNDEVELOPED LAND WEST OF WESTGATE HEIGHTS.
*  MAXIMUM DISCHARGE IS 1.29 x 23 ACRES = 29.7 CFS
*  ENTERS SNOW VISTA CHANNEL VIA A RUNDOWN AT "22.1"
*****************************************************************************
COMPUTE NM HYD      ID=61  HYD=301.61 DA=0.0359 SQ MI
                    %A=0 %B=27 %C=12 %D=61 TP=0.111
                    MASS RAINFALL=-1
PRINT HYD           ID=61 CODE=1
*S ROUTE ID=61 THROUGH POND.61
*  ROUTE RESERVOIR TO SIMULATE THE CONTROLLED DISCHARGE OF THE POND.
*  TOTAL MAXIMUM DISCHARGE IS 1.29 x 23 ACRES = 29.7 CFS
ROUTE RESERVOIR     ID=1 HYDROGRAPH NO=POND.61   INFLOW ID=61   CODE=24
                    OUTFLOW (CFS)        STORAGE (AF)       ELEV (FT)
                      00.00                0.000              100.0
                      15.00                0.001              100.1
                      20.00                0.500              101.0
                      29.70                1.500              105.0
PRINT HYD           ID=1    CODE=1
*S  ROUTE THIS FLOW DOWN THE 24" STORM DRAIN PIPE TO POND.62
COMPUTE RATING CURVE  CID=1   VS NO=1  CODE=-1   SLOPE=0.053
                      PIPE DIA=24     N=0.013
COMPUTE TRAVEL TIME   ID=11   REACH=1   NUMBER OF SECTIONS=1
                      LENGTH=750       SLOPE=0.053
ROUTE                 ID=11   HYDROGRAPH=POND.61   INFLOW ID=1  DT=0.0
*S  HYDROGRAPH ID = 11 IS THE ROUTED FLOW OUT OF POND.61
PRINT HYD             ID=11    CODE=1
*****************************************************************************
*  BASIN 301.62
*  UNDEVELOPED LAND WEST OF WESTGATE HEIGHTS.
*  MAXIMUM DISCHARGE = 1.29 x 22 ACRES = 28.4 CFS
*  ENTERS SNOW VISTA CHANNEL VIA A RUNDOWN AT "22.1"
*****************************************************************************
COMPUTE NM HYD      ID=62  HYD=301.62 DA=0.0344 SQ MI
                    %A=0 %B=27 %C=12 %D=61 TP=0.111
                    MASS RAINFALL=-1
PRINT HYD           ID=62 CODE=1
*S ROUTE ID=62 THROUGH POND.62
*  ROUTE RESERVOIR TO SIMULATE THE CONTROLLED DISCHARGE OF THE POND.
*  TOTAL MAXIMUM DISCHARGE IS 1.29 x 22 ACRES = 28.4 CFS
ROUTE RESERVOIR     ID=1 HYDROGRAPH NO=POND.62   INFLOW ID=62   CODE=24
                    OUTFLOW (CFS)        STORAGE (AF)       ELEV (FT)
                      00.00                0.000              100.0
                      15.00                0.001              100.1
                      20.00                0.500              101.0
                      28.40                1.500              105.0
*S  ROUTED FLOW OUT OF POND.62
PRINT HYD           ID=1    CODE=1
*S  ADD HYD ID=11 TO ID=1 AND ROUTE THIS FLOW THROUGH THE 30" STORM DRAIN
*S  TO POND.63
ADD HYD               ID=1    HYD NO=POND.62    ID I=1   ID II=11
COMPUTE RATING CURVE  CID=1   VS NO=1  CODE=-1   SLOPE=0.045
```

```
                        PIPE DIA=30      N=0.013
COMPUTE TRAVEL TIME     ID=12   REACH=1   NUMBER OF SECTIONS=1
                        LENGTH=1100       SLOPE=0.045
ROUTE                   ID=12   HYDROGRAPH=POND.62   INFLOW ID=1  DT=0.0
*S  HYDROGRAPH ID = 12 IS THE ROUTED FLOW DOWN THE 30" STORM DRAIN PIPE
PRINT HYD               ID=12    CODE=1
*****************************************************************************
*  BASIN 301.63
*  UNDEVELOPED LAND NORTH OF WESTGATE HEIGHTS.
*  MAXIMUM DISCHARGE = 1.29 x 22 ACRES = 28.4 CFS
*  ENTERS SNOW VISTA CHANNEL VIA A RUNDOWN AT "22.1"
*****************************************************************************
*S COMPUTE HYD FOR BASIN 301.63
COMPUTE NM HYD       ID=63  HYD=301.63  DA=0.0344 SQ MI
                     %A=0 %B=27 %C=12 %D=61 TP=0.111
                     MASS RAINFALL=-1
PRINT HYD            ID=63 CODE=1
*S ROUTE ID=63 THROUGH POND.63
*  ROUTE RESERVOIR TO SIMULATE THE CONTROLLED DISCHARGE OF THE POND.
*  TOTAL MAXIMUM DISCHARGE IS 1.29 x 22 ACRES = 28.4 CFS
ROUTE RESERVOIR      ID=1 HYDROGRAPH NO=POND.63   INFLOW ID=63   CODE=24
                     OUTFLOW (CFS)        STORAGE (AF)       ELEV (FT)
                       00.00                0.000              100.0
                       15.00                0.001              100.1
                       20.00                0.500              101.0
                       28.40                1.500              105.0
*S  ROUTED FLOW OUT OF POND.63
PRINT HYD            ID=1    CODE=1
*S  ADD HYD ID=12 TO ID=1 AND ROUTE THIS FLOW THROUGH THE 36" STORM DRAIN
*S  TO POND.64
ADD HYD                 ID=1    HYD NO=POND.63    ID I=1   ID II=12
COMPUTE RATING CURVE  CID=1   VS NO=1  CODE=-1   SLOPE=0.035
                        PIPE DIA=36      N=0.013
COMPUTE TRAVEL TIME     ID=13   REACH=1   NUMBER OF SECTIONS=1
                        LENGTH=1000       SLOPE=0.035
ROUTE                   ID=13   HYDROGRAPH=POND.63   INFLOW ID=1  DT=0.0
*S  HYDROGRAPH ID = 13 IS THE ROUTED FLOW DOWN THE 36" STORM DRAIN PIPE
*S  TO THE INLET OF POND.64 TO THIS STORM DRAIN PIPE
PRINT HYD               ID=13    CODE=1
*****************************************************************************
*  BASIN 301.64
*  UNDEVELOPED LAND NORTH OF WESTGATE HEIGHTS.
*  MAXIMUM DISCHARGE = 1.29 x 22 ACRES = 28.4 CFS
*
*  ENTERS SNOW VISTA CHANNEL VIA A RUNDOWN AT "22.1"
*****************************************************************************
COMPUTE NM HYD       ID=64  HYD=301.64  DA=0.0344 SQ MI
                     %A=0 %B=27 %C=12 %D=61 TP=0.111
                     MASS RAINFALL=-1
PRINT HYD            ID=64 CODE=1
*S ROUTE ID=64 THROUGH POND.64
*  ROUTE RESERVOIR TO SIMULATE THE CONTROLLED DISCHARGE OF THE POND.
*  TOTAL MAXIMUM DISCHARGE IS 1.29 x 22 ACRES = 28.4 CFS
ROUTE RESERVOIR      ID=1 HYDROGRAPH NO=POND.64   INFLOW ID=64   CODE=24
                     OUTFLOW (CFS)        STORAGE (AF)       ELEV (FT)
                       00.00                0.000              100.0
                       15.00                0.001              100.1
                       20.00                0.500              101.0
                       28.40                1.500              105.0
*S  ROUTED FLOW OUT OF POND.64
PRINT HYD            ID=1    CODE=1
*S  ADD HYD ID=13 TO ID=1 AND ROUTE THIS FLOW THROUGH THE 36" STORM DRAIN
*S  TO POND.65
ADD HYD                 ID=1    HYD NO=POND.64    ID I=1   ID II=13
COMPUTE RATING CURVE  CID=1   VS NO=1  CODE=-1   SLOPE=0.035
                        PIPE DIA=36      N=0.013
COMPUTE TRAVEL TIME     ID=14   REACH=1   NUMBER OF SECTIONS=1
                        LENGTH=1000       SLOPE=0.035
ROUTE                   ID=14   HYDROGRAPH=POND.64   INFLOW ID=1  DT=0.0
*S  HYDROGRAPH ID = 14 IS THE ROUTED FLOW DOWN THE 36" STORM DRAIN PIPE
*S  TO THE INLET OF POND.64 TO THIS STORM DRAIN PIPE
```

```
PRINT HYD                ID=14    CODE=1
*****************************************************************************
*  BASIN 301.65
*  UNDEVELOPED LAND NORTH OF WESTGATE HEIGHTS.
*  MAXIMUM DISCHARGE = 1.29 x 22 ACRES = 28.4 CFS
*  ENTERS SNOW VISTA CHANNEL VIA A RUNDOWN AT "22.1"
*****************************************************************************
COMPUTE NM HYD      ID=65  HYD=301.65 DA=0.0344 SQ MI
                    %A=0 %B=27 %C=12 %D=61 TP=0.111
                    MASS RAINFALL=-1
PRINT HYD           ID=65 CODE=1
*S ROUTE ID=65 THROUGH POND.65
*  ROUTE RESERVOIR TO SIMULATE THE CONTROLLED DISCHARGE OF THE POND.
*  TOTAL MAXIMUM DISCHARGE IS 1.29 x 22 ACRES = 28.4 CFS
ROUTE RESERVOIR     ID=1 HYDROGRAPH NO=POND.65   INFLOW ID=65   CODE=24
                    OUTFLOW (CFS)        STORAGE (AF)       ELEV (FT)
                      00.00                0.000              100.0
                      15.00                0.001              100.1
                      20.00                0.500              101.0
                      28.40                1.500              105.0
*S  ROUTED FLOW OUT OF POND.65
PRINT HYD           ID=1    CODE=1
*S  ADD HYD ID=14 TO ID=1 AND ROUTE THIS FLOW THROUGH THE 36" STORM DRAIN
*S  TO SNOW VISTA CHANNEL
ADD HYD                 ID=1    HYD NO=POND.65    ID I=1   ID II=14
PRINT HYD               ID=1   CODE=1
*****************************************************************************
*  BASIN 301.5
*  DEVELOPED LAND THE NORTHERN PORTION OF WESTGATE.
*  ENTERS SNOW VISTA CHANNEL INLETS IN GIBSON AT "22.1"
*****************************************************************************
*S COMPUTE HYD FOR BASIN 301.05
COMPUTE NM HYD      ID=5  HYD=301.05 DA=0.0328 SQ MI
                    %A=0 %B=27 %C=12 %D=61 TP=0.111
                    MASS RAINFALL=-1
PRINT HYD           ID=5 CODE=1
*S TOTAL FLOW AT AP-22.1 IN SNOW VISTA CHANNEL
ADD HYD             ID=3  HYD=301  I=88 II=1
*S HYD=AP22.1 IS *****AP 22.1*****
ADD HYD             ID=2  HYD=AP22.1  I=3 II=5
PRINT HYD           ID=2     CODE=1
*****************************************************************
** RATING CURVE FOR 22.1 TO 22.2
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                     MINIMUM ELEV=100 FT  MAXIMUM ELEV=106 FT
                     CHANNEL SLOPE=0.012 FLOOD PLAIN SLOPE=0.012
                     N=0.013  DIST=34
                     DIST  ELEV    DIST  ELEV   DIST   ELEV   DIST   ELEV
                      0   106       12    100    22     100    34    106
COMPUTE TRAVEL TIME ID=1  REACH NO=1  VALLEY SECTIONS=1
                    LENGTH=1217 FT  SLOPE=0.012
ROUTE               ID=1 HYDROGRAPH NO=301.6 INFLOW ID=2 DT=0.0
PRINT HYD           ID=1 CODE=1
*****************************************************************************
*  BASIN 301.4
*  DEVELOPED LAND CONSISTING OF THE NORTHEASTERN PORTION OF WESTGATE HEIGHTS.
*  ENTERS SNOW VISTA CHANNEL INLETS AT "22.2"
*****************************************************************************
*S COMPUTE HYD FOR BASIN 301.04
COMPUTE NM HYD      ID=4  HYD=301.04 DA=0.0766 SQ MI
                    %A=0 %B=27 %C=12 %D=61 TP=0.111
                    MASS RAINFALL=-1
PRINT HYD           ID=4 CODE=1
*S HYD=AP22.2 IS *****AP 22.2*****
ADD HYD             ID=1  HYD=AP22.2  I=1 II=4
PRINT HYD           ID=1  CODE=1
*****************************************************************
** RATING CURVE FOR 22.2 TO AP23
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                     MINIMUM ELEV=100 FT  MAXIMUM ELEV=106 FT
                     CHANNEL SLOPE=0.012 FLOOD PLAIN SLOPE=0.012
```

```
                        N=0.013  DIST=34
                        DIST  ELEV    DIST  ELEV   DIST   ELEV   DIST   ELEV
                         0   106       12     100     22     100    34    106
COMPUTE TRAVEL TIME ID=9  REACH NO=1  VALLEY SECTIONS=1
                    LENGTH=568 FT  SLOPE=0.012
ROUTE               ID=9 HYD=300 INID=1 DT=0.0
PRINT HYD           ID=9 CODE=1
*****************************************************************************
*  BASIN 301.71
*  LAND EAST OF SNOW VISTA CHANNEL. THIS IS THE UNDEVELOPED LAND WEST OF THE
*  TRAILER PARK.  THIS BASIN FLOWS THROUGH A CONTROL DISCHARGE POND AND INTO
*  MAXIMUM DISCHARGE = FREE DISCHARGE (KMJ-LH 3/8/99)
*  REMOVED WITH * (1.29 x 25 ACRES = 32.25 CFS)
*
*  ENTERS SNOW VISTA CHANNEL AT "AP-23".
*****************************************************************************
COMPUTE NM HYD      ID=71  HYD=301.71 DA=0.0694 SQ MI
                    %A=0 %B=27 %C=12 %D=61 TP=0.111
                    MASS RAINFALL=-1
PRINT HYD           ID=71 CODE=1
*
*   *S ROUTE ID=71 THROUGH POND.71
*   *  ROUTE RESERVOIR TO SIMULATE THE CONTROLLED DISCHARGE OF THE POND.
*   *  TOTAL MAXIMUM DISCHARGE IS 1.29 x 25 ACRES = 32.25 CFS.
*
*   ROUTE RESERVOIR     ID=1 HYDROGRAPH NO=POND.71   INFLOW ID=71   CODE=24
*                      OUTFLOW (CFS)        STORAGE (AF)       ELEV (FT)
*                         00.00                0.000              100.0
*                         10.00                0.001              100.1
*                         25.00                0.500              101.0
*                         32.25                1.500              105.0
*   PRINT HYD           ID=1    CODE=1
*S  ROUTE THIS FLOW DOWN THE 60" STORM DRAIN PIPE LINE TO 301.72
COMPUTE RATING CURVE  CID=1   VS NO=1  CODE=-1   SLOPE=0.013
                      PIPE DIA=60     N=0.013
COMPUTE TRAVEL TIME   ID=11   REACH=1   NUMBER OF SECTIONS=1
                      LENGTH=600       SLOPE=0.013
ROUTE                 ID=11   HYDROGRAPH=POND.71   INFLOW ID=71  DT=0.0
PRINT HYD             ID=11    CODE=1
*****************************************************************************
*  BASIN 301.72
*  LAND EAST OF SNOW VISTA CHANNEL. THIS IS THE TRAILER PARK LAND.
*  THIS BASIN FLOWS INTO THE CHANNEL VIA A 24" CMP AT THE
*  MAXIMUM DISCHARGE = FREE DISCHARGE
*  ENTERS SNOW VISTA CHANNEL AT "AP-23".
*****************************************************************************
*S COMPUTE HYD FOR BASIN 301.72
COMPUTE NM HYD      ID=72 . HYD=301.72 DA=0.0422 SQ MI
                    %A=0 %B=27 %C=12 %D=61 TP=0.111
                    MASS RAINFALL=-1
PRINT HYD           ID=72 CODE=1
*S  ADD BASIN 301.71 AND ROUTE THIS FLOW DOWN THE 60" STORM DRAIN PIPE LINE TO 301.73
ADD HYD             ID=2  HYD=301.72  I=72  II=11
COMPUTE RATING CURVE  CID=1   VS NO=1  CODE=-1   SLOPE=0.013
                      PIPE DIA=60     N=0.013
COMPUTE TRAVEL TIME   ID=11   REACH=1   NUMBER OF SECTIONS=1
                      LENGTH=600       SLOPE=0.013
ROUTE                 ID=11   HYDROGRAPH=POND.71   INFLOW ID=2  DT=0.0
PRINT HYD             ID=11    CODE=1
*****************************************
COMPUTE NM HYD      ID=74  HYD=301.74 DA=0.0091 SQ MI
                    %A=0 %B=0 %C=50 %D=50  TP=0.111
                    MASS RAINFALL=-1
PRINT HYD           ID=74 CODE=1
*S  ADD BASIN 301.72 AND BASIN 301.74
ADD HYD             ID=11  HYD=301.74  I=74  II=11
*****************************************************************************
*  BASIN 301.73
*  LAND EAST OF SNOW VISTA CHANNEL. THIS IS THE UNDEVELOPED LAND SOUTH OF THE
*  TRAILER PARK.  THIS BASIN FLOWS INTO A CONTROLLED DISCHARGE POND AND THEN
*  TO THE THE CHANNEL.
```

```
*  MAXIMUM DISCHARGE = FREE DISCHARGE (KMJ-LH 3/8/99)
*  REMOVED WITH * (1.29 x 17 ACRES = 21.9 CFS)
*  ENTERS SNOW VISTA CHANNEL AT "AP-23".
*************************************************************************
COMPUTE NM HYD       ID=73  HYD=301.73 DA=0.01940 SQ MI
                     %A=0 %B=27 %C=12 %D=61  TP=0.111
                     MASS RAINFALL=-1
PRINT HYD            ID=73 CODE=1
*
*
*   *S ROUTE ID=73 THROUGH POND.73
*   *  ROUTE RESERVOIR TO SIMULATE THE CONTROLLED DISCHARGE OF THE POND.
*   *  TOTAL MAXIMUM DISCHARGE IS 1.29 x 17 ACRES = 21.9 CFS
*
*   ROUTE RESERVOIR      ID=12 HYDROGRAPH NO=POND.73   INFLOW ID=73   CODE=24
*                        OUTFLOW (CFS)        STORAGE (AF)       ELEV (FT)
*                          00.00                0.000              100.0
*                          10.00                0.001              100.1
*                          15.00                0.500              101.0
*                          21.90                3.000              105.0
*   PRINT HYD            ID=12     CODE=1
ADD HYD              ID=4   HYD=301.73  ID I=73   ID II=11
PRINT HYD            ID=4    CODE=1
*************************************************************************
*  BASIN 301.3
*  DEVELOPED LAND CONSISTING OF THE MAJOR PORTION OF EXISTING WESTGATE HEIGHTS.
*  ENTERS SNOW VISTA CHANNEL INLETS AT "AP-23"
*************************************************************************
COMPUTE NM HYD       ID=3  HYD=301.03 DA=0.3438 SQ MI
                     %A=0 %B=27 %C=12 %D=61 TP=0.111
                     MASS RAINFALL=-1
PRINT HYD            ID=3 CODE=1
*S  HYDROGRAPH ID 73 IS THE INFLOW TO THE SNOW VISTA CHANNEL AT AP-23
ADD HYD              ID=73   HYD=301.03   I=3  II=4
PRINT HYD            ID=73   CODE=1
*S HYD=AP23 IS *****AP 23*****
ADD HYD              ID=1  HYD=AP23  I=9  II=73
PRINT HYD            ID=1 CODE=1
*****************************************************************
** RATING CURVE FOR AP23 TO 23.1
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                     MINIMUM ELEV=100 FT  MAXIMUM ELEV=115 FT
                     CHANNEL SLOPE=0.012 FLOOD PLAIN SLOPE=0.012
                     N=0.013  DIST=60
                     DIST  ELEV    DIST  ELEV   DIST   ELEV   DIST   ELEV
                      0    115     10     100     50     100    60    115
COMPUTE RATING CURVE CID=2  VALLEY SECTION=2  NUMBER OF SEGMENTS=1
                     MINIMUM ELEV=100 FT  MAXIMUM ELEV=115 FT
                     CHANNEL SLOPE=0.0037 FLOOD PLAIN SLOPE=0.0037
                     N=0.013  DIST=60
                     DIST  ELEV    DIST  ELEV   DIST   ELEV   DIST   ELEV
                      0    115     10     100     50     100    60    115
COMPUTE TRAVEL TIME  ID=2  REACH NO=1  VALLEY SECTIONS=2
                     LENGTH= 183 FT  SLOPE=0.012
ROUTE                ID=2  HYD=400  INID=1   DT=0.0
PRINT HYD            ID=2 CODE=1
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                     MINIMUM ELEV=100 FT  MAXIMUM ELEV=106 FT
                     CHANNEL SLOPE=0.0037 FLOOD PLAIN SLOPE=0.0037
                     N=0.035  DIST=76
                     DIST  ELEV    DIST  ELEV   DIST   ELEV   DIST   ELEV
                      0     106    18     100     58     100    76    106
COMPUTE TRAVEL TIME  ID=3  REACH NO=2  VALLEY SECTIONS=1
                     LENGTH= 342 FT  SLOPE=0.0037
ROUTE                ID=3  HYD=500  INID=2   DT=0.0
PRINT HYD            ID=3 CODE=1
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                     MINIMUM ELEV=100 FT  MAXIMUM ELEV=106 FT
                     CHANNEL SLOPE=0.0038 FLOOD PLAIN SLOPE=0.0038
                     N=0.030  DIST=76
                     DIST  ELEV    DIST  ELEV   DIST   ELEV   DIST   ELEV
```

```
                        0     106    18    100     58     100    76    106
COMPUTE TRAVEL TIME ID=4  REACH NO=3  VALLEY SECTIONS=1
                    LENGTH=170 FT  SLOPE=0.0038
ROUTE               ID=4 HYD=600 INFLOW ID=3 DT=0.0
PRINT HYD           ID=4 CODE=1
*****************************************************************************
*  BASIN 301.2
*  DEVELOPED  AND UNDEVELOPED LAND CONSISTING OF THE SOUTHEAST PORTION OF
*  WESTGATE HEIGHTS.
*  10AC DEVELOPED AND 15 AC UNDEVELOPED.  THE ROUTE RESERVOIR ACCOUNTS FOR A
*  DEVELOPED DISCHARGE OF 38.16 CFS, PLUS (15)(1.29)=19.35 CFS FOR UNDEVELOPED.
*  MAX DISCHARGE FROM THIS BASIN = 57.51 CFS
*  ENTERS SNOW VISTA CHANNEL INLETS IN GIBSON AT "23.1"
*****************************************************************************
COMPUTE NM HYD      ID=2  HYD=301.02 DA=0.0391 SQ MI
                    %A=0 %B=27 %C=12 %D=61 TP=0.111
                    MASS RAINFALL=-1
PRINT HYD           ID=2 CODE=1
ROUTE RESERVOIR     ID=1 HYDROGRAPH NO=POND.02   INFLOW ID=2   CODE=24
                    OUTFLOW (CFS)        STORAGE (AF)       ELEV (FT)
                      00.00                0.000              100.0
                      57.51                1.500              100.1
                      58.00                3.0                105.0
PRINT HYD           ID=1    CODE=1
ADD HYD             ID=3  HYD=AP23.1  I=4  II=1
PRINT HYD           ID=3    CODE=1
*****************************************************************
** RATING CURVE FOR 23.1 TO 23.2
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                     MINIMUM ELEV=100 FT  MAXIMUM ELEV=106 FT
                     CHANNEL SLOPE=0.0038 FLOOD PLAIN SLOPE=0.0038
                     N=0.030  DIST=76
                     DIST  ELEV    DIST  ELEV   DIST   ELEV   DIST   ELEV
                      0     106    18    100     58     100    76    106
COMPUTE TRAVEL TIME ID=2  REACH NO=3  VALLEY SECTIONS=1
                    LENGTH=850 FT  SLOPE=0.0038
ROUTE               ID=2 HYD=700 INFLOW ID=3 DT=0.0
PRINT HYD           ID=2 CODE=1
*****************************************************************************
*  BASIN 301.1
*  DEVELOPED  AND UNDEVELOPED LAND CONSISTING OF THE SOUTHEAST PORTION OF
*  WESTGATE HEIGHTS.
*  15 AC DEVELOPED AND 35 AC UNDEVELOPED.  THE ROUTE RESERVOIR ACCOUNTS FOR A
*  DEVELOPED DISCHARGE OF 57.23 CFS, PLUS (35)(1.29)=45.15 CFS FOR UNDEVELOPED.
*  MAX DISCHARGE FROM THIS BASIN = 102.38 CFS
*  ENTERS SNOW VISTA CHANNEL INLETS IN GIBSON AT "23.2"
*****************************************************************************
COMPUTE NM HYD      ID=1  HYD=301.01 DA=0.0781 SQ MI
                    %A=0 %B=27 %C=12 %D=61 TP=0.111
                    MASS RAINFALL=-1
PRINT HYD           ID=1 CODE=1
ROUTE RESERVOIR     ID=5 HYDROGRAPH NO=POND.01   INFLOW ID=1   CODE=24
                    OUTFLOW (CFS)        STORAGE (AF)       ELEV (FT)
                      00.00                0.000              100.0
                      102.38               1.500              100.5
                      103.00               3.000              105.0
PRINT HYD           ID=5    CODE=1
ADD HYD             ID=6  HYD=AP23.2  I=5  II=2
PRINT HYD           ID=6    CODE=1
*****************************************************************
** RATING CURVE FOR 23.2 TO 23.3
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                     MINIMUM ELEV=100 FT  MAXIMUM ELEV=106 FT
                     CHANNEL SLOPE=0.0038 FLOOD PLAIN SLOPE=0.0038
                     N=0.030  DIST=76
                     DIST  ELEV    DIST  ELEV   DIST   ELEV   DIST   ELEV
                      0     106    18    100     58     100    76    106
COMPUTE TRAVEL TIME ID=4  REACH NO=3  VALLEY SECTIONS=1
                    LENGTH=1225 FT  SLOPE=0.0038
ROUTE               ID=4 HYD=800 INFLOW ID=6 DT=0.0
PRINT HYD           ID=4 CODE=1
```

```
*****************************************************************************
*  BASIN 301.00
*  DEVELOPED AND UNDEVELOPED LAND CONSISTING OF THE SOUTH PORTION OF
*  WESTGATE HEIGHTS.
*  ENTERS SNOW VISTA CHANNEL INLETS AT "23.3"
*****************************************************************************
COMPUTE NM HYD       ID=1  HYD=300.00 DA=0.05156 SQ MI
                     %A=0 %B=27 %C=12 %D=61 TP=0.111
                     MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
ROUTE RESERVOIR      ID=5 HYDROGRAPH NO=POND.01   INFLOW ID=1   CODE=24
                     OUTFLOW (CFS)        STORAGE (AF)       ELEV (FT)
                       00.00               0.000              100.0
                       42.57               1.500              100.1
                       44.00               3.000              105.0
PRINT HYD            ID=5    CODE=1
*S HYD=AP24 IS *****AP 24*****
ADD HYD              ID=2  HYD=AP24  I=5  II=4
PRINT HYD            ID=2    CODE=1
*****************************************************************
** RATING CURVE FOR AP24 TO AP03
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                     MINIMUM ELEV=100 FT  MAXIMUM ELEV=106 FT
                     CHANNEL SLOPE=0.024 FLOOD PLAIN SLOPE=0.024
                     N=0.035  DIST=56
                     DIST  ELEV    DIST  ELEV   DIST   ELEV   DIST   ELEV
                      0     106    18    100    38     100    56    106
COMPUTE TRAVEL TIME ID=3  REACH NO=3  VALLEY SECTIONS=1
                    LENGTH=1800 FT  SLOPE=0.0190
ROUTE               ID=66 HYD=SV_DMP2.HYD INFLOW ID=2 DT=0.0
PRINT HYD           ID=66 CODE=1
PUNCH HYD           ID=66
FINISH
```

APPENDIX A.3

AMAFCA Amole-Hubbell Drainage Management Plan

Original 'existing conditions' model (AHYMO)

Revised 'existing/interim conditions' model (AHYMO)

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 Sunrise Ranch West
SUBJECT Exist. offsite Subasin
BY DLH DATE 7-12-01
CHECKED _____ DATE _____
SHEET ___ OF ___

Revise Exist. Conditions Offsite Subasins

From AMAFCA AHYMO File: SV10DE1B.DAT
(Refer to Figure 4: Snow Vista Exist Conditions Basin

SB 20101 (Revise to remove area east of 106th st.)

Area = 0.29230 sq.mi. = 187.07 acres

Area east of 106th st = 1480 × 400 = 592,000 SF
= 13.59 acres

SB 20101 A = 173.48 acres (187.07 − 13.59)
= 0.27106 sq mi

SB 20104 (Revise to remove area east of 106th st)

Area = 0.0346 sq.mi. = 22.14 acres

Area east of 106th st = 750(1150)½ = 431,250 SF
= 9.90 acres.

SB 20104 A = 12.24 acres (22.14 − 9.90)
= 0.0191 sq.mi.

Sunrise Terrace - Offsite Pond (Existing 106th st/Eucariz)

Elev	Area					Σ AF
5238	145×50	7250	9731(2)			
5240	172×71	12,212	16663.5(4)	19462	19462	0.4468
5244	205×103	21,115	24,357.5(4)	66654	86116	1.9770
5248	120×230	27600		97,430	183546	4.2136

106TH STREET DETENTION POND (EXISTING DRAINAGE CONDITIONS)

```
** ROUTE THE COMBINED FLOW THROUGH THE PROPOSED SEDIMENTATION BASIN TO BE
** LOCATED IN THE SOUTH EAST CORNER OF BASIN 20103. STAGE STORAGE DISCHARGE
** CURVE IS PRELIMINARY. OUTFLOW ASSUMED TO BE CONTROLLED BY A 6" DIA.
** ORIFICE. POND VOLUME IS ASSUMED TO BE 3.58 ac ft AT 8' DEPTH
** 0.9095 ac ft OF THIS VOLUME IS REQUIRED FOR SEDIMENT STORAGE AND THUS
** IS EXCLUDED FROM THE STORAGE CURVE
ROUTE RESERVOIR      ID=5 HYD=E20103.3  INFLOW ID=10  CODE=24
                      OUTFLOW(cfs)     STORAGE(ac ft)    ELEV(ft)
                             0            0.0            100
                            1.25          0.001          102
                            1.83          0.55           104
                            2.26          1.52           106
                            2.63          2.67           108
                            2.95          4.00           110

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

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

     .00         .00     100.00       .000        .00
    1.20         .02     100.02       .000        .01
    2.40        7.87     107.91      2.617       2.61
    3.60         .57     107.91      2.619       2.61
    4.80         .10     107.51      2.387       2.54
    6.00         .07     107.09      2.147       2.46
    7.20         .09     106.69      1.915       2.39
    8.40         .08     106.30      1.691       2.31
    9.60         .08     105.90      1.472       2.24
   10.80         .07     105.47      1.262       2.15
   12.00         .07     105.05      1.061       2.06
   13.20         .06     104.66       .868       1.97
   14.40         .06     104.27       .683       1.89
   15.60         .06     103.84       .505       1.78
   16.80         .05     103.25       .343       1.61
   18.00         .05     102.71       .196       1.46
   19.20         .05     102.23       .064       1.32
   20.40         .05     100.08       .000        .05
   21.60         .05     100.07       .000        .05
   22.80         .04     100.07       .000        .04
   24.00         .04     100.07       .000        .04
 PEAK DISCHARGE =        2.637 CFS - PEAK OCCURS AT HOUR    2.85
 MAXIMUM WATER SURFACE ELEVATION =      108.042
 MAXIMUM STORAGE =        2.6981 AC-FT      INCREMENTAL TIME=     .050000HRS

PRINT HYD            ID=5  CODE=1

                                HYDROGRAPH FROM AREA E20103.3

RUNOFF VOLUME =       .63437 INCHES     =       3.1972 ACRE-FEET
PEAK DISCHARGE RATE =       2.64 CFS  AT   2.850 HOURS   BASIN AREA =    .0945 SQ. MI.
```

106th STREET OFFSITE POND (INTERIM DRAINAGE CONDITIONS)

```
** X-ROUTE THE COMBINED FLOW THROUGH THE PROPOSED SEDIMENTATION BASIN TO BE
** X-LOCATED IN THE SOUTH EAST CORNER OF BASIN 20103. STAGE STORAGE DISCHARGE
** X-CURVE IS PRELIMINARY. OUTFLOW ASSUMED TO BE CONTROLLED BY A 6" DIA.
** X-ORIFICE. POND VOLUME IS ASSUMED TO BE 4.21 ac ft AT 8' DEPTH
** X-0.9095 ac ft OF THIS VOLUME IS REQUIRED FOR SEDIMENT STORAGE AND THUS
** X-IS EXCLUDED FROM THE STORAGE CURVE
**
** REVISED 10-16-01 DMG ROUTE COMBINED FLOW THROUGH AN EXISTING TEMPORARY
** SEDIMENTATION POND. LOWER ELEVATION OF 30" STAND PIPE TO ELEV=38.5'
** USE EXISTING 24"SD OUTFALL STRUCTURE.
** RATING TABLE HAS BEEN REVISED TO REFLECT PROPOSED CONDITIONS WITH
** EXISTING POND CONFIGURATION FOR THE INTERIM CONDITION
** FEMA ARROYO B-B: (TO STORM SEWER Qmax=119 cfs TO SWALE Qmax=76 cfs)
**
ROUTE RESERVOIR      ID=5 HYD=E20103.3  INFLOW ID=11  CODE=24
                      OUTFLOW(cfs)     STORAGE(ac ft)     ELEV(ft)
                               0           0.00           5234.7
                            0.01           0.151          5238.5
                            9.44           0.303          5239
                            48.0           0.605          5240
                            53.0           1.059          5241.5
                            54.5           1.212          5242
                            63.0           1.977          5244
                            66.0           3.096          5246
                            71.0           4.214          5248

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

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	5234.70	.000	.00
1.20	.02	5234.70	.000	.00
2.40	11.05	5243.00	1.596	58.77
3.60	.74	5238.57	.171	1.27
4.80	.13	5238.51	.154	.17
6.00	.08	5238.50	.152	.08
7.20	.09	5238.50	.152	.09
8.40	.08	5238.50	.152	.08
9.60	.08	5238.50	.152	.08
10.80	.07	5238.50	.152	.07
12.00	.07	5238.50	.152	.07
13.20	.06	5238.50	.152	.06
14.40	.06	5238.50	.152	.06
15.60	.06	5238.50	.152	.06
16.80	.05	5238.50	.152	.06
18.00	.05	5238.50	.152	.05
19.20	.05	5238.50	.152	.05
20.40	.05	5238.50	.152	.05
21.60	.05	5238.50	.152	.05
22.80	.04	5238.50	.152	.05
24.00	.04	5238.50	.152	.04
25.20	.00	5238.49	.151	.01
26.40	.00	5238.47	.150	.01
27.60	.00	5238.44	.149	.01
28.80	.00	5238.42	.148	.01

```
PEAK DISCHARGE =        65.207 CFS - PEAK OCCURS AT HOUR    1.95
MAXIMUM WATER SURFACE ELEVATION =     5245.471
MAXIMUM STORAGE =         2.8000 AC-FT      INCREMENTAL TIME=     .050000HRS

PRINT HYD            ID=5  CODE=1

                                        HYDROGRAPH FROM AREA E20103.3

RUNOFF VOLUME = 1.7820 INCHES = 21 CFS= AT   16.9[illegible] HOURS-FEET IN AREA =   .1776 SQ. MI.
```

SNOW VISTA SEDIMENTATION POND (EXISTING DRAINAGE CONDITIONS)

```
ROUTE RESERVOIR        ID=50   HYD=POND.OUT  INFLOW ID=10   CODE=24
                       CFS OUT    VOL AC-FT   ELEV FT
                        0           0          10.0
                        1.7         0.54       11.0
                       34           1.79       12.0
                      112           3.25       13.0
                      230           4.82       14.0
                      393           6.51       15.0
                      604           8.29       16.0

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

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

    .00         .00      10.00        .000        .00
   1.20         .12      10.00        .000        .00
   2.40       39.17      12.52       2.549      74.53
   3.60        9.03      11.44       1.088      15.86
   4.80        4.63      11.14        .719       6.31
   6.00        3.73      11.07        .633       4.09
   7.20        3.61      11.06        .618       3.71
   8.40        3.40      11.06        .609       3.48
   9.60        3.24      11.05        .602       3.30
  10.80        3.07      11.04        .596       3.14
  12.00        2.93      11.04        .590       2.99
  13.20        2.80      11.04        .584       2.85
  14.40        2.67      11.03        .579       2.72
  15.60        2.53      11.03        .575       2.59
  16.80        2.33      11.02        .567       2.40
  18.00        2.14      11.02        .560       2.21
  19.20        1.97      11.01        .553       2.04
  20.40         .67      10.95        .510       1.61
  21.60         .64      10.79        .429       1.35
  22.80         .62      10.68        .368       1.16
  24.00         .60      10.59        .321       1.01
  25.20         .03      10.47        .252        .79
  26.40         .00      10.34        .185        .58
  27.60         .00      10.25        .136        .43
  28.80         .00      10.18        .099        .31
 PEAK DISCHARGE =       167.323 CFS - PEAK OCCURS AT HOUR    1.90
 MAXIMUM WATER SURFACE ELEVATION =        13.469
 MAXIMUM STORAGE =        3.9861 AC-FT      INCREMENTAL TIME=     .050000HRS

PRINT HYD                ID=50  CODE=1

                                        HYDROGRAPH FROM AREA POND.OUT

RUNOFF VOLUME =       .75933 INCHES     =      17.0656 ACRE-FEET
PEAK DISCHARGE RATE =     167.32 CFS  AT   1.900 HOURS   BASIN AREA =   .4214 SQ. MI.
```

SNOW VISTA SEDIMENTATION POND (INTERIM DRAINAGE CONDITIONS)

```
ROUTE RESERVOIR        ID=50    HYD=POND.OUT   INFLOW ID=10    CODE=24
                       CFS OUT     VOL AC-FT    ELEV FT
                        0            0           10.0
                        1.7          0.54        11.0
                       34            1.79        12.0
                      112            3.25        13.0
                      230            4.82        14.0
                      393            6.51        15.0
                      604            8.29        16.0

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

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

     .00        .00      10.00        .000       .00
    1.20        .34      10.00        .001       .00
    2.40     117.60      13.20       3.568    135.89
    3.60       7.28      11.49       1.153     17.53
    4.80       2.52      11.09        .649      4.51
    6.00       1.72      11.01        .554      2.05
    7.20       1.74      11.00        .544      1.80
    8.40       1.56      10.99        .536      1.69
    9.60       1.44      10.96        .519      1.63
   10.80       1.34      10.92        .498      1.57
   12.00       1.26      10.88        .475      1.49
   13.20       1.19      10.84        .451      1.42
   14.40       1.13      10.79        .429      1.35
   15.60       1.07      10.75        .407      1.28
   16.80       1.02      10.72        .387      1.22
   18.00        .98      10.68        .368      1.16
   19.20        .94      10.65        .351      1.10
   20.40        .90      10.62        .335      1.05
   21.60        .86      10.59        .320      1.01
   22.80        .83      10.57        .306       .96
   24.00        .80      10.54        .293       .92
   25.20        .04      10.44        .239       .75
   26.40        .00      10.33        .176       .55
   27.60        .00      10.24        .129       .41
   28.80        .00      10.17        .094       .30
 PEAK DISCHARGE =       172.554 CFS - PEAK OCCURS AT HOUR    2.00
 MAXIMUM WATER SURFACE ELEVATION =       13.513
 MAXIMUM STORAGE =        4.0557 AC-FT      INCREMENTAL TIME=     .050000HRS

PRINT HYD                ID=50  CODE=1

                                        HYDROGRAPH FROM AREA POND.OUT

RUNOFF VOLUME =       .86294 INCHES     =      19.1024 ACRE-FEET
PEAK DISCHARGE RATE =     172.55 CFS  AT   2.000 HOURS   BASIN AREA =   .4151 SQ. MI.
```

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =07/05/2001
INPUT FILE = SV100E1B.DAT USER NO.= M_GOODWN.I01

PAGE = 1

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION
START										TIME= .00
*S										
*S SNOW VISTA WATERSHED (Existing Drainage Conditions - Original)										
*S										
*S										
*S 100-YR, 24-HR STORM WITH SEDIMENT. SNOW VISTA WATERSHED										
*S FILE NAME : SV100E1B.DAT (existing conditions)										
*S BY: RICHARD STOCKTON AND TOM BLAINE PEER REVIEWED BY: CLINT DODGE										
*S LAST REVISION: 05-15-96										
*S 100 YEAR 24 HR STORM, EXISTING CONDITIONS										
RAINFALL TYPE= 2										RAIN24= 2.660
*S COMPUTE HYD FOR BASIN 20101, FLOW INTO SNOW VISTA POND,										
*S THAT WAS NOT MODELED BY EASTERLING.										
SEDIMENT BULK										PK BF = 1.16
COMPUTE NM HYD	E20101	-	50	.29230	212.20	12.978	.83249	1.700	1.134	PER IMP= 14.00
*S BEGIN EASTERLING OFFSITE WATERSHED										
COMPUTE NM HYD	E20102	-	2	.04510	56.15	1.749	.72724	1.500	1.945	PER IMP= 6.00
SED WASH LOAD	E20102	2						WASH CONC.(PPM-w) =		41687
ROUTE	E20102.1	2	10	.04510	47.65	1.749	.72725	1.600	1.651	
COMPUTE NM HYD	E20103	-	3	.04940	50.00	1.448	.54959	1.500	1.581	PER IMP= 1.00
*S COMPUTE SEDIMENT WASH LOAD FOR BASIN 20103										
SED WASH LOAD	E20103	3						WASH CONC.(PPM-w) =		50848
ADD HYD	E20103.1	3&10	11	.09450	94.70	3.197	.63437	1.550	1.566	
ROUTE	E20103.2	11	10	.09450	84.91	3.197	.63438	1.600	1.404	
SEDIMENT TRANSP	E20103.1	11		SED ID = 1		PEAK CONC.(PPM-w) =	413317	TOTAL SED.(TONS) =		1994.42
ROUTE RESERVOIR	E20103.3	10	5	.09450	2.64	3.197	.63437	2.850	.044	AC-FT= 2.698
ROUTE	E20103.4	5	10	.09450	2.64	3.197	.63438	2.950	.044	
SEDIMENT BULK										PK BF = 1.16
COMPUTE NM HYD	E20104	-	2	.03460	25.46	.964	.52229	1.550	1.150	PER IMP= .00
ADD HYD	E20104.1	2&10	1	.12910	26.70	4.161	.60433	1.550	.323	
ADD HYD	SVPOND.1	1&50	10	.42140	232.82	17.139	.76259	1.700	.863	
ROUTE RESERVOIR	POND.OUT	10	50	.42140	167.32	17.066	.75933	1.900	.620	AC-FT= 3.986
*S HYD NO. POND.OUT IS ***** AP 21 ******										
*S BEGIN EASTERLING ONSITE WATERSHED										
COMPUTE NM HYD	E20201	-	2	.00920	23.97	1.010	2.05917	1.500	4.071	PER IMP= 61.00
ADD HYD	E20201.1	50& 2	10	.43060	174.20	18.076	.78710	1.850	.632	
ROUTE	E20201.2	10	11	.43060	174.30	18.076	.78708	1.900	.632	
COMPUTE NM HYD	E20202	-	2	.00800	20.84	.879	2.05917	1.500	4.071	PER IMP= 61.00
ADD HYD	E20202.1	11& 2	10	.43860	179.64	18.954	.81028	1.900	.640	
ROUTE	E20202.2	10	11	.43860	180.06	18.954	.81027	1.850	.641	
COMPUTE NM HYD	E20203	-	2	.00940	24.49	1.032	2.05917	1.500	4.071	PER IMP= 61.00
ADD HYD	E20203.1	11& 2	10	.44800	187.10	19.986	.83647	1.850	.653	
ROUTE	E20203.2	10	11	.44800	187.34	19.986	.83646	1.850	.653	
COMPUTE NM HYD	E20204	-	2	.01450	37.77	1.592	2.05917	1.500	4.070	PER IMP= 61.00

```
ADD HYD            E20204.1 11& 2  10        .46250      198.21      21.578      .87479    1.850     .670
COMPUTE NM HYD       E20205   -     2        .00220        5.85        .233     1.98378    1.500    4.155 PER IMP=  50.00
ADD HYD            E20205.1 10& 2  11        .46470      199.89      21.811      .88004    1.850     .672
COMPUTE NM HYD       E20206   -     2        .01570       39.45       1.673     1.99855    1.500    3.926 PER IMP=  60.00
ROUTE              E20206.1    2   15        .01570       37.59       1.673     1.99858    1.550    3.741
COMPUTE NM HYD       E20207   -     2        .01020       23.91        .976     1.79429    1.500    3.662 PER IMP=  50.00
ADD HYD            E20207.1 15& 2  16        .02590       61.31       2.650     1.91809    1.500    3.699
DIVIDE HYD         E20207.2   16   15        .01972       30.75       2.017     1.91809    1.500    2.437
                   E20207.3  AND    3        .00618       30.56        .632     1.91809    1.500    7.727
ROUTE              E20207.4    3   16        .00618       28.19        .632     1.91817    1.550    7.128
COMPUTE NM HYD       E20208   -     2        .00220        6.29        .282     2.40707    1.500    4.467 PER IMP=  80.00
ADD HYD            E20208.1 16& 2  17        .00838       33.72        .915     2.04640    1.550    6.287
*S HYD=E20208.2 IS THE FLOW IN SNOW VISTA CHANNEL AT TOWER ROAD
ADD HYD            E20208.2 17&11  10        .47308      203.91      22.725      .90070    1.850     .673
ROUTE              E20208.3   10   30        .47308      202.70      22.724      .90065    1.850     .669
ROUTE              E20207.5   15   17        .01972       30.66       2.017     1.91813    1.550    2.429
COMPUTE NM HYD       E20301   -     2        .01550       36.32       1.483     1.79429    1.500    3.661 PER IMP=  50.00
ADD HYD            E20301.1 17& 2  15        .03522       64.23       3.501     1.86360    1.500    2.849
ROUTE              E20207.6   15   16        .03522       64.46       3.501     1.86362    1.550    2.860
ROUTE              E20301.2   16   12        .03522       64.84       3.501     1.86362    1.550    2.877
ROUTE              E20301.3   12   15        .03522       64.93       3.501     1.86362    1.550    2.881
COMPUTE NM HYD       E20302   -     2        .04830      113.15       4.622     1.79429    1.500    3.660 PER IMP=  50.00
ADD HYD            E20302.1 15& 2  16        .08352      174.32       8.123     1.82351    1.500    3.261
ROUTE              E20302.2   16   15        .08352      173.92       8.123     1.82352    1.500    3.254
ROUTE              E20302.3   15   16        .08352      171.52       8.123     1.82352    1.550    3.209
COMPUTE NM HYD       E20303   -     2        .02080       48.74       1.990     1.79429    1.500    3.661 PER IMP=  50.00
ADD HYD            E20303.1 16& 2  20        .10432      219.05      10.113     1.81768    1.500    3.281
*S  BEGIN RYALS OFFSITE FLOW
SEDIMENT BULK                                                                                   PK BF =    1.16
COMPUTE NM HYD       E20304   -     1        .03141       30.80        .875      .52229    1.500    1.532 PER IMP=   .00
ROUTE              E20304.5    1    3        .03141       21.56        .875      .52234    1.600    1.072
SEDIMENT BULK                                                                                   PK BF =    1.16
COMPUTE NM HYD       E20305   -     4        .00170        2.33        .070      .77297    1.500    2.142 PER IMP=   .00
SEDIMENT BULK                                                                                   PK BF =    1.16
COMPUTE NM HYD       E20306   -     2        .01500       14.71        .418      .52229    1.500    1.533 PER IMP=   .00
ADD HYD            E20306.1  2& 3   1        .04641       33.34       1.293      .52231    1.600    1.122
ADD HYD            E20306.2  1& 4   3        .04811       35.33       1.363      .53116    1.600    1.147
*S USE L FROM MID POINT OF BASIN TO MIDPOINT OF NEXT
ROUTE              E20306.5    3    2        .04811       28.96       1.363      .53118    1.650     .940
SEDIMENT BULK                                                                                   PK BF =    1.16
COMPUTE NM HYD       E20307   -     3        .02938       28.81        .818      .52229    1.500    1.532 PER IMP=   .00
ADD HYD            E20307.1  2& 3   1        .07749       50.93       2.181      .52780    1.600    1.027
*S HYD 20307.5 = INTO TANAGER POND *LOCATION* FROM NORTH
ROUTE              E20307.5    1    4        .07749       48.75       2.181      .52781    1.600     .983
SEDIMENT BULK                                                                                   PK BF =    1.16
COMPUTE NM HYD       E20308   -     3        .06688       65.73       1.863      .52229    1.500    1.536 PER IMP=   .00
*S HYD 20309=COA SATELLITE: ASSUME 10 CFS CLEAN & NON-ERSOIVE; REAL 1993 0.5+-
STORE HYD            E20309   -     2        .07516         .51        .112     .02786     .400     .011
*S HYD 20309.1 = INTO TANAGER POND LOCATION FROM WEST (20308+20309 (COA SATELLIT
ADD HYD            E20309.1  2& 3   1        .14204       66.24       1.975      .26067    1.500     .729
ADD HYD            E20309.2  1& 4   5        .21953      109.35       4.156      .35496    1.550     .778
```

```
SEDIMENT BULK                                                                                                  PK BF =    1.16
COMPUTE NM HYD        E20310    -     1        .07109        70.02       1.980       .52229    1.500    1.539 PER IMP=    .00
ROUTE                E20310.5    1     2        .07109        70.82       1.980       .52231    1.500    1.557
*S  HYD 20310.1 = AP 2 IN = TANAGER POND IN
ADD HYD              E20310.1  2& 5    3        .29062       179.49       6.136       .39589    1.550     .965
*S  HYD 20310.8 = AP2 OUT = TANAGER POND OUT  (CURVE FROM RYALS)
ROUTE RESERVOIR      E20310.8    3     4        .29062        22.88       6.136       .39589    2.100     .123 AC-FT=    3.882
ROUTE                E20310.6    4     2        .29062        22.83       6.136       .39590    2.300     .123
SEDIMENT BULK                                                                                                  PK BF =    1.16
COMPUTE NM HYD        E20311    -     3        .01031        10.12        .287       .52229    1.500    1.533 PER IMP=    .00
ADD HYD              E20311.1  2& 3    1        .30093        23.90       6.423       .40022    1.600     .124
*S  BEGIN EASTERLING'S MODEL OF RYALS ONSITE FLOWS
ROUTE                E20207.3    1    12        .30093        23.94       6.423       .40023    1.650     .124
ROUTE                E20207.4   12    11        .30093        24.04       6.423       .40023    1.650     .125
ADD HYD              E20303.2 20&11   17        .40525       235.07      16.536       .76511    1.550     .906
ROUTE                E20303.3   17    16        .40525       235.94      16.537       .76511    1.550     .910
COMPUTE NM HYD        E20312    -     2        .00670        13.92        .489      1.36764    1.500    3.246 PER IMP=  25.00
*S THIS IS THE TOTAL FLOW INTO THE EXISTING RUNDOWN CHANNEL FROM ORGINAL
*S 1980'S GORDON HERKENHOFF DESIGN.
ADD HYD              E20313.4 16& 2    3        .41195       248.60      17.025       .77491    1.550     .943
COMPUTE NM HYD        E20313    -     2        .01830        42.88       1.751      1.79429    1.500    3.661 PER IMP=  50.00
ROUTE RESERVOIR      E20313.1    2     5        .01830         7.26       1.751      1.79427    2.050     .620 AC-FT=     .912
ADD HYD              E20208.3  5&30   10        .49138       209.55      24.475       .93393    1.850     .666
ROUTE                E20303.4   10    12        .49138       210.03      24.475       .93392    1.900     .668
*S HYD NO. E20303.1 IS ***** AP 22 *****
ADD HYD              E20303.1 12& 3   20        .90333       407.21      41.500       .86140    1.550     .704
ROUTE                E20303.5   20    11        .90333       410.12      41.500       .86139    1.550     .709
*S COMPUTE HYD FOR BASIN 20401
SEDIMENT BULK                                                                                                  PK BF =    1.16
COMPUTE NM HYD        E20401    -     1        .12700       148.03       3.452       .50966    1.500    1.821 PER IMP=    .00
*S COMPUTE HYD FOR BASIN 20402
SEDIMENT BULK                                                                                                  PK BF =    1.06
COMPUTE NM HYD        E20402    -     2        .07970       129.46       4.406      1.03660    1.500    2.538 PER IMP=  25.00
ADD HYD              E20402.1  1& 2    3        .20670       277.49       7.858       .71283    1.500    2.098
*S HYD NO. E20402.2 IS ***** AP 22.1 *****
ADD HYD              E20402.2  3&11    1       1.11003       642.08      49.358       .83373    1.550     .904
ROUTE                E20402.5    1     2       1.11003       658.11      49.357       .83371    1.550     .926
*S COMPUTE HYD FOR BASIN 20403
COMPUTE NM HYD        E20403    -     4        .07660       191.56       7.687      1.88165    1.500    3.908 PER IMP=  61.00
*S HYD NO. E20403.1 IS ***** AP 22.2 *****
ADD HYD              E20403.1  4& 2    1       1.18663       811.88      57.044       .90135    1.500    1.069
ROUTE                E20403.5    1    11       1.18663       822.09      57.043       .90135    1.550    1.082
*S COMPUTE HYD FOR BASIN 20404
SEDIMENT BULK                                                                                                  PK BF =    1.08
COMPUTE NM HYD        E20404    -     7        .10300       183.66       6.852      1.24740    1.500    2.786 PER IMP=  36.00
*S COMPUTE HYD FOR BASIN 20405
COMPUTE NM HYD        E20405    -     3        .34380       875.03      35.153      1.91716    1.500    3.977 PER IMP=  61.00
ADD HYD              E20405.1  7& 3    2        .44680      1058.68      42.005      1.76276    1.500    3.702
*S HYD NO. E20405.2 IS ***** AP 23 *****
ADD HYD              E20405.2  2&11    4       1.63343      1864.25      99.049      1.13697    1.500    1.783
ROUTE                E20405.5    4     2       1.63343      1849.63      99.048      1.13697    1.500    1.769
```

```
ROUTE              E20405.6    2    3      1.63343     1817.23     99.047     1.13695    1.500    1.738
ROUTE              E20405.7    3    4      1.63343     1801.11     99.046     1.13694    1.500    1.723
*S COMPUTE HYD FOR BASIN 20501
COMPUTE NM HYD       E20501    -    2       .03910       63.72      2.158     1.03465    1.500    2.546 PER IMP=  24.00
ADD HYD            E20501.1  2& 4   3      1.67253     1864.83    101.204     1.13455    1.500    1.742
ROUTE              E20501.5    3    4      1.67253     1837.67    101.200     1.13451    1.550    1.717
*S COMPUTE HYD FOR BASIN 20502
COMPUTE NM HYD       E20502    -    1       .07810      104.93      3.133      .75209    1.500    2.099 PER IMP=  12.00
ADD HYD            E20502.1  4& 1   3      1.75063     1925.25    104.333     1.11745    1.550    1.718
ROUTE              E20502.5    3    4      1.75063     1770.60    104.327     1.11739    1.600    1.580
*S COMPUTE HYD FOR BASIN 20503
COMPUTE NM HYD       E20503    -    1       .05156       56.47      1.359      .49417    1.500    1.711 PER IMP=    .00
*S HYD NO. E20503.1 IS ***** AP 24 *****
ADD HYD            E20503.1  4& 1   2      1.80219     1814.40    105.686     1.09956    1.550    1.573
ROUTE          SV100E1B.HYD    2    3      1.80219     1828.07    105.681     1.09951    1.600    1.585
FINISH
```

```
AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994          RUN DATE (MON/DAY/YR) =10/17/2001
INPUT FILE = SV100ER.DAT                                                                  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     NOTATION

START                                                                                                      TIME=       .00
*S
*S      SNOW VISTA WATERSHED (INTERIM CONDITIONS)
*S
*S
*S 100-YR, 24-HR STORM WITH SEDIMENT
*S LAST REVISION 10-16-01 INCLUDES 106TH STORM SEWER AND SPLIT FLOODPLAIN
*S ARROYO B-B FLOW INTERCEPTION BETWEEN 8' DIA. MANHOLE DROP INLET
*S AND TEMP.SWALE INTERCEPTION AND
*S REVISED 106TH ST OFFSITE DETENTION POND OUTFALL (24"RCP)
*S LAST REVISION 10-16-01 DLH MARK GOODWIN & ASSOCIATES
*S NEW FILE NAME: SV100ER.DAT (EXISTING CONDITIONS REVISED SUBASIN 20101 TO 2010
*S AND SUBASIN 20104 TO 20104A
*S
*S OLD FILE NAME : SV100E1B.DAT (existing conditions)
*S BY: RICHARD STOCKTON AND TOM BLAINE      PEER REVIEWED BY: CLINT DODGE
*S LAST REVISION: 05-15-96
*S 100 YEAR 24 HR STORM, EXISTING CONDITIONS
RAINFALL  TYPE= 2                                                                                          RAIN24=   2.660
*S COMPUTE HYD FOR BASIN 20101, FLOW INTO SNOW VISTA POND,
*S THAT WAS NOT MODELED BY EASTERLING.
SEDIMENT BULK                                                                                              PK BF =    1.16
*S REVISED SB 20101 TO 20101A DELETED AREA EAST OF 106TH STREET
COMPUTE NM HYD       E20101A   -     1        .27106       195.27      12.035       .83249    1.700    1.126 PER IMP=  14.00
*S FLOODPLAIN FLOW FROM ARROYO B-B IS INTERCEPTED BY 8'DIAMETER DROP MANHOLE (IN
*S AND 106TH STREET ROADSIDE SWALE(SWL)
DIVIDE HYD           201.INL    1    6        .20707       118.85       9.194       .83249    1.700     .897
                     201.SWL  AND    3        .06399        76.42       2.841       .83249    1.700    1.866
SEDIMENT BULK                                                                                              PK BF =    1.16
*S REVISED SB 20104 TO 20104, DELETED AREA EAST OF 106TH STREET
COMPUTE NM HYD       E20104A   -     2        .01910        14.06        .532       .52229    1.550    1.150 PER IMP=    .00
ADD HYD             E20104.1  2& 3   4        .08309        87.01       3.373       .76118    1.650    1.636
*S  BEGIN EASTERLING OFFSITE WATERSHED
COMPUTE NM HYD        E20102   -     2        .04510        56.15       1.749       .72724    1.500    1.945 PER IMP=   6.00
SED WASH LOAD         E20102    2                                                             WASH CONC.(PPM-w) =     41687
ROUTE               E20102.1    2    10        .04510        47.65       1.749       .72725    1.600    1.651
COMPUTE NM HYD        E20103   -     3        .04940        50.00       1.448       .54959    1.500    1.581 PER IMP=   1.00
*S COMPUTE SEDIMENT WASH LOAD FOR BASIN 20103
SED WASH LOAD         E20103    3                                                             WASH CONC.(PPM-w) =     50848
ADD HYD             E20103.1  3&10  11        .09450        94.70       3.197       .63437    1.550    1.566
ROUTE               E20103.2   11   10        .09450        84.91       3.197       .63438    1.600    1.404
SEDIMENT TRANSP     E20103.1   11       SED ID =  1              PEAK CONC.(PPM-w) =   413317  TOTAL SED.(TONS) =    1994.42
*S ADD SB 20101A, 20104A, 20102, 20103
```

```
ADD HYD              E20103.1  4&10  11        .17759       168.25       6.571       .69370    1.650     1.480
ROUTE RESERVOIR      E20103.3   11    5        .17759        65.21       6.424       .67820    1.950      .574 AC-FT=     2.800
ADD HYD              E20103.1  5& 6   4        .38466       181.09      15.617       .76125    1.700      .736
COMPUTE NM HYD           180A   -     1        .03040        80.16       3.352      2.06771    1.500     4.120 PER IMP=  60.00
ROUTE RESERVOIR        180.10    1    2        .03040        25.10       3.353      2.06807    1.800     1.290 AC-FT=      .974
ADD HYD              E20103.1  2& 4   3        .41506       206.19      18.970       .85697    1.700      .776
ROUTE                E20103.4    3   10        .41506       205.16      18.970       .85697    1.750      .772
ROUTE RESERVOIR      POND.OUT   10   50        .41506       168.01      18.898       .85372    2.000      .632 AC-FT=     3.995
*S HYD NO. POND.OUT IS ***** AP 21 ******
*S BEGIN EASTERLING ONSITE WATERSHED
COMPUTE NM HYD         E20201   -     2        .00920        23.97       1.010      2.05917    1.500     4.071 PER IMP=  61.00
ADD HYD              E20201.1 50& 2  10        .42426       173.02      19.909       .87986    2.000      .637
ROUTE                E20201.2   10   11        .42426       173.08      19.908       .87983    2.000      .637
COMPUTE NM HYD         E20202   -     2        .00800        20.84        .879      2.05917    1.500     4.071 PER IMP=  61.00
ADD HYD              E20202.1 11& 2  10        .43226       177.44      20.787       .90166    2.000      .641
ROUTE                E20202.2   10   11        .43226       177.64      20.786       .90165    2.000      .642
COMPUTE NM HYD         E20203   -     2        .00940        24.49       1.032      2.05917    1.500     4.071 PER IMP=  61.00
ADD HYD              E20203.1 11&.2  10        .44166       182.76      21.819       .92628    2.000      .647
ROUTE                E20203.2   10   11        .44166       183.00      21.818       .92627    2.000      .647
COMPUTE NM HYD         E20204   -     2        .01450        37.77       1.592      2.05917    1.500     4.070 PER IMP=  61.00
ADD HYD              E20204.1 11& 2  10        .45616       190.89      23.411       .96228    2.000      .654
COMPUTE NM HYD         E20205   -     2        .00220         5.85        .233      1.98378    1.500     4.155 PER IMP=  50.00
ADD HYD              E20205.1 10& 2  11        .45836       192.04      23.644       .96718    2.000      .655
COMPUTE NM HYD         E20206   -     2        .01570        39.45       1.673      1.99855    1.500     3.926 PER IMP=  60.00
ROUTE                E20206.1    2   15        .01570        37.59       1.673      1.99858    1.550     3.741
COMPUTE NM HYD         E20207   -     2        .01020        23.91        .976      1.79429    1.500     3.662 PER IMP=  50.00
ADD HYD              E20207.1 15& 2  16        .02590        61.31       2.650      1.91809    1.500     3.699
DIVIDE HYD           E20207.2   16   15        .01972        30.75       2.017      1.91809    1.500     2.437
                     E20207.3  AND    3        .00618        30.56        .632      1.91809    1.500     7.727
ROUTE                E20207.4    3   16        .00618        28.19        .632      1.91817    1.550     7.128
COMPUTE NM HYD         E20208   -     2        .00220         6.29        .282      2.40707    1.500     4.467 PER IMP=  80.00
ADD HYD              E20208.1 16& 2  17        .00838        33.72        .915      2.04640    1.550     6.287
*S HYD=E20208.2 IS THE FLOW IN SNOW VISTA CHANNEL AT TOWER ROAD
ADD HYD              E20208.2 17&11  10        .46674       194.01      24.558       .98656    2.000      .649
ROUTE                E20208.3   10   30        .46674       194.16      24.557       .98651    2.000      .650
ROUTE                E20207.5   15   17        .01972        30.66       2.017      1.91813    1.550     2.429
COMPUTE NM HYD         E20301   -     2        .01550        36.32       1.483      1.79429    1.500     3.661 PER IMP=  50.00
ADD HYD              E20301.1 17& 2  15        .03522        64.23       3.501      1.86360    1.500     2.849
ROUTE                E20207.6   15   16        .03522        64.46       3.501      1.86362    1.550     2.860
ROUTE                E20301.2   16   12        .03522        64.84       3.501      1.86362    1.550     2.877
ROUTE                E20301.3   12   15        .03522        64.93       3.501      1.86362    1.550     2.881
COMPUTE NM HYD         E20302   -     2        .04830       113.15       4.622      1.79429    1.500     3.660 PER IMP=  50.00
ADD HYD              E20302.1 15& 2  16        .08352       174.32       8.123      1.82351    1.500     3.261
ROUTE                E20302.2   16   15        .08352       173.92       8.123      1.82352    1.500     3.254
ROUTE                E20302.3   15   16        .08352       171.52       8.123      1.82352    1.550     3.209
COMPUTE NM HYD         E20303   -     2        .02080        48.74       1.990      1.79429    1.500     3.661 PER IMP=  50.00
ADD HYD              E20303.1 16& 2  20        .10432       219.05      10.113      1.81768    1.500     3.281
*S  BEGIN RYALS OFFSITE FLOW
SEDIMENT BULK                                                                                   PK BF =     1.16
COMPUTE NM HYD         E20304   -     1        .03141        30.80        .875       .52229    1.500     1.532 PER IMP=     .00
ROUTE                E20304.5    1    3        .03141        21.56        .875       .52234    1.600     1.072
```

```
SEDIMENT BULK                                                                                                  PK BF =    1.16
COMPUTE NM HYD        E20305   -     4        .00170        2.33        .070       .77297    1.500    2.142 PER IMP=    .00
SEDIMENT BULK                                                                                                  PK BF =    1.16
COMPUTE NM HYD        E20306   -     2        .01500       14.71        .418       .52229    1.500    1.533 PER IMP=    .00
ADD HYD             E20306.1  2& 3   1        .04641       33.34       1.293       .52231    1.600    1.122
ADD HYD             E20306.2  1& 4   3        .04811       35.33       1.363       .53116    1.600    1.147
*S USE L FROM MID POINT OF BASIN TO MIDPOINT OF NEXT
ROUTE               E20306.5    3    2        .04811       28.96       1.363       .53118    1.650     .940
SEDIMENT BULK                                                                                                  PK BF =    1.16
COMPUTE NM HYD        E20307   -     3        .02938       28.81        .818       .52229    1.500    1.532 PER IMP=    .00
ADD HYD             E20307.1  2& 3   1        .07749       50.93       2.181       .52780    1.600    1.027
*S HYD 20307.5 = INTO TANAGER POND *LOCATION* FROM NORTH
ROUTE               E20307.5    1    4        .07749       48.75       2.181       .52781    1.600     .983
SEDIMENT BULK                                                                                                  PK BF =    1.16
COMPUTE NM HYD        E20308   -     3        .06688       65.73       1.863       .52229    1.500    1.536 PER IMP=    .00
*S HYD 20309=COA SATELLITE: ASSUME 10 CFS CLEAN & NON-ERSOIVE; REAL 1993 0.5+-
STORE HYD             E20309   -     2        .07516         .51        .112       .02786     .400     .011
*S HYD 20309.1 = INTO TANAGER POND LOCATION FROM WEST (20308+20309 (COA SATELLIT
ADD HYD             E20309.1  2& 3   1        .14204       66.24       1.975       .26067    1.500     .729
ADD HYD             E20309.2  1& 4   5        .21953      109.35       4.156       .35496    1.550     .778
SEDIMENT BULK                                                                                                  PK BF =    1.16
COMPUTE NM HYD        E20310   -     1        .07109       70.02       1.980       .52229    1.500    1.539 PER IMP=    .00
ROUTE               E20310.5    1    2        .07109       70.82       1.980       .52231    1.500    1.557
*S  HYD 20310.1 = AP 2 IN = TANAGER POND IN
ADD HYD             E20310.1  2& 5   3        .29062      179.49       6.136       .39589    1.550     .965
*S  HYD 20310.8 = AP2 OUT = TANAGER POND OUT  (CURVE FROM RYALS)
ROUTE RESERVOIR     E20310.8    3    4        .29062       22.88       6.136       .39589    2.100     .123 AC-FT=    3.882
ROUTE               E20310.6    4    2        .29062       22.83       6.136       .39590    2.300     .123
SEDIMENT BULK                                                                                                  PK BF =    1.16
COMPUTE NM HYD        E20311   -     3        .01031       10.12        .287       .52229    1.500    1.533 PER IMP=    .00
ADD HYD             E20311.1  2& 3   1        .30093       23.90       6.423       .40022    1.600     .124
*S  BEGIN EASTERLING'S MODEL OF RYALS ONSITE FLOWS
ROUTE               E20207.3    1   12        .30093       23.94       6.423       .40023    1.650     .124
ROUTE               E20207.4   12   11        .30093       24.04       6.423       .40023    1.650     .125
ADD HYD             E20303.2 20&11  17        .40525      235.07      16.536       .76511    1.550     .906
ROUTE               E20303.3   17   16        .40525      235.94      16.537       .76511    1.550     .910
COMPUTE NM HYD        E20312   -     2        .00670       13.92        .489      1.36764    1.500    3.246 PER IMP=  25.00
*S THIS IS THE TOTAL FLOW INTO THE EXISTING RUNDOWN CHANNEL FROM ORGINAL
*S 1980'S GORDON HERKENHOFF DESIGN.
ADD HYD             E20313.4 16& 2   3        .41195      248.60      17.025       .77491    1.550     .943
COMPUTE NM HYD        E20313   -     2        .01830       42.88       1.751      1.79429    1.500    3.661 PER IMP=  50.00
ROUTE RESERVOIR     E20313.1    2    5        .01830        7.26       1.751      1.79427    2.050     .620 AC-FT=     .912
ADD HYD             E20208.3  5&30  10        .48504      201.40      26.308      1.01698    2.000     .649
ROUTE               E20303.4   10   12        .48504      201.49      26.308      1.01697    2.000     .649
*S HYD NO. E20303.1 IS ***** AP 22 *****
ADD HYD             E20303.1 12& 3  20        .89699      406.32      43.333       .90580    1.550     .708
ROUTE               E20303.5   20   11        .89699      409.52      43.332       .90579    1.550     .713
*S COMPUTE HYD FOR BASIN 20401
SEDIMENT BULK                                                                                                  PK BF =    1.16
COMPUTE NM HYD        E20401   -     1        .12700      148.03       3.452       .50966    1.500    1.821 PER IMP=    .00
*S COMPUTE HYD FOR BASIN 20402
```

```
SEDIMENT BULK
COMPUTE NM HYD        E20402   -     2        .07970       129.46       4.406      1.03660    1.500     2.538 PER IMP=  25.00
ADD HYD             E20402.1  1& 2   3        .20670       277.49       7.858       .71283    1.500     2.098
*S HYD NO. E20402.2 IS ***** AP 22.1 *****
ADD HYD             E20402.2  3&11   1      1.10369       641.48      51.191       .86965    1.550      .908
ROUTE               E20402.5    1    2      1.10369       657.84      51.190       .86963    1.550      .931
*S COMPUTE HYD FOR BASIN 20403
COMPUTE NM HYD        E20403   -     4        .07660       191.56       7.687      1.88165    1.500     3.908 PER IMP=  61.00
*S HYD NO. E20403.1 IS ***** AP 22.2 *****
ADD HYD             E20403.1  4& 2   1      1.18029       812.17      58.877       .93531    1.500     1.075
ROUTE               E20403.5    1   11      1.18029       821.95      58.876       .93530    1.550     1.088
*S COMPUTE HYD FOR BASIN 20404
SEDIMENT BULK
COMPUTE NM HYD        E20404   -     7        .10300       183.66       6.852      1.24740    1.500     2.786 PER IMP=  36.00
*S COMPUTE HYD FOR BASIN 20405
COMPUTE NM HYD        E20405   -     3        .34380       875.03      35.153      1.91716    1.500     3.977 PER IMP=  61.00
ADD HYD             E20405.1  7& 3   2        .44680      1058.68      42.005      1.76276    1.500     3.702
*S HYD NO. E20405.2 IS ***** AP 23 *****
ADD HYD             E20405.2  2&11   4      1.62709      1864.53     100.881      1.16252    1.500     1.791
ROUTE               E20405.5    4    2      1.62709      1849.90     100.881      1.16252    1.500     1.776
ROUTE               E20405.6    2    3      1.62709      1817.48     100.880      1.16250    1.500     1.745
ROUTE               E20405.7    3    4      1.62709      1801.35     100.879      1.16249    1.500     1.730
*S COMPUTE HYD FOR BASIN 20501
COMPUTE NM HYD        E20501   -     2        .03910        63.72       2.158      1.03465    1.500     2.546 PER IMP=  24.00
ADD HYD             E20501.1  2& 4   3      1.66619      1865.07     103.036      1.15949    1.500     1.749
ROUTE               E20501.5    3    4      1.66619      1837.81     103.033      1.15945    1.550     1.723
*S COMPUTE HYD FOR BASIN 20502
COMPUTE NM HYD        E20502   -     1        .07810       104.93       3.133       .75209    1.500     2.099 PER IMP=  12.00
ADD HYD             E20502.1  4& 1   3      1.74429      1925.39     106.165      1.14121    1.550     1.725
ROUTE               E20502.5    3    4      1.74429      1770.30     106.160      1.14115    1.600     1.586
*S COMPUTE HYD FOR BASIN 20503
COMPUTE NM HYD        E20503   -     1        .05156        56.47       1.359       .49417    1.500     1.711 PER IMP=    .00
*S HYD NO. E20503.1 IS ***** AP 24 *****
ADD HYD             E20503.1  4& 1   2      1.79585      1814.56     107.519      1.12258    1.550     1.579
ROUTE           SV100E1B.HYD    2    3      1.79585      1828.02     107.515      1.12253    1.600     1.590
FINISH
```

```
START                    0.0 HOURS   PC=0  PL=-1
*S
*S       SNOW VISTA WATERSHED (INTERIM CONDITIONS)
*S
*S
*S 100-YR, 24-HR STORM WITH SEDIMENT
*S LAST REVISION 10-16-01 INCLUDES 106TH STORM SEWER AND SPLIT FLOODPLAIN
*S ARROYO B-B FLOW INTERCEPTION BETWEEN 8' DIA. MANHOLE DROP INLET
*S AND TEMP.SWALE INTERCEPTION AND
*S REVISED 106TH ST OFFSITE DETENTION POND OUTFALL (24"RCP)
*S LAST REVISION 10-16-01 DLH MARK GOODWIN & ASSOCIATES
*S NEW FILE NAME: SV100ER.DAT (EXISTING CONDITIONS REVISED SUBASIN 20101 TO 20101A
*S AND SUBASIN 20104 TO 20104A
*S
*S OLD FILE NAME : SV100E1B.DAT (existing conditions)
*S BY: RICHARD STOCKTON AND TOM BLAINE      PEER REVIEWED BY: CLINT DODGE
*S LAST REVISION: 05-15-96
*****************************************************************************
* THE PURPOSE OF THIS MODEL IS TO CALCULATE THE RUNOFF TO THE SNOW VISTA POND
* AND THE CHANNEL FOR THE EXISTING CONDITIONS AMAFCA IS CONCERNED
* WITH THE CAPACITY OF  BOTH THE POND AND THE CHANNEL.  MODELS BY
* EASTERLING AND ASSOCIATES AND RYLES AND ASSOCIATES WERE USED IN THE
* CONSTRUCTION OF THIS MODEL.
*****************************************************************************
***** ANALYSIS ASSUMPTIONS:******
*****************************************************************************
* BASINS THAT CONTRIBUTE FLOW TO THE SNOW VISTA CHANNEL ARE ASSUMED TO BE IN
* THE EXISTING CONDITION BASED ON THE AERIAL PHOTO DATED NOVEMBER 07, 1995.
*****************************************************************************
* SUBSEQUENT USERS OF THIS MODEL ASSUME FULL RESPONSIBILITY TO VERIFY THE
* VALIDITY, CURRENCY, AND PROPRIETY OF THE ASSUMPTIONS UPON WHICH THIS MODEL
* WAS CONSTRUCTED.
*****************************************************************************
*S 100 YEAR 24 HR STORM, EXISTING CONDITIONS
RAINFALL                 TYPE=2  0.0  1.87  2.20  2.66    DT=0.0500
* 10 YEAR 24 HR STORM, EXISTING CONDITIONS
**RAINFALL               TYPE=2  0.0  1.25  1.47  1.77    DT=0.0500
* 2 YEAR 24 HR STORM, EXISTING CONDITIONS
**RAINFALL               TYPE=2  0.0  0.74  0.95  1.15    DT=0.0500
*
******************************************************************************
* THE RUNOFF FOR BASIN 20101 IS CALCULATED ASSUMING THAT THERE IS ONE BASIN
* AND NO SUB-BASINS. TIME OF CONCENTRATION IS CALCULATED USING THE SCS
* UPLAND METHOD.
* Tp = 2/3 Tc = 2/3 (0.46) = 0.31
* THERE ARE SEVERAL SMALL AREAS THAT ARE DEVELOPED.  THE AREA WAS CALCULATED USING
* AREIAL PHOTOGRAPHS.  THE TOTAL AREA OF LAND TREATMENT "D" IS 34.9 ACRES.
* THE TOTAL AREA OF THE BASIN IS 187.1 ACRES (0.2923 SQ MI).
* BULKING FACTORS WERE CALCULATED FROM BASINS 20102 AND 20103.  THE CALCULATED
* BULKING FACTOR WAS THEN DISTRIBUTED THROUGH OUT THE WATERSHED TO APPLICABLE
* BASINS.
******************************************************************************
*
*S COMPUTE HYD FOR BASIN 20101, FLOW INTO SNOW VISTA POND,
*S THAT WAS NOT MODELED BY EASTERLING.
*
SEDIMENT BULK            CODE=1  BF=1.16
*S REVISED SB 20101 TO 20101A DELETED AREA EAST OF 106TH STREET
COMPUTE NM HYD           ID=1  HYD=E20101A  DA=0.27106 SQ MI
                         %A=86 %B=0 %C=0 %D=14 TP=0.31
                         MASS RAINFALL=-1
PRINT HYD                ID=1 CODE=1
*
*S FLOODPLAIN FLOW FROM ARROYO B-B IS INTERCEPTED BY 8'DIAMETER DROP MANHOLE (INL)
*S AND 106TH STREET ROADSIDE SWALE(SWL)
*
DIVIDE HYD               ID=1 CODE=999 ID=6   HYD NO=201.INL
                                       ID=3   HYD NO=201.SWL
                              TOTAL FLOW      DIVIDE FLOW IDSIX
                                    26.5          26.5
```

```
                                102.          75.
                                236.         138.
                                324.         173.
PRINT HYD              ID=6 CODE=1
PRINT HYD              ID=3 CODE=1
** COMPUTE BULKED HYDROGRAPH FOR BASIN 20104
SEDIMENT BULK              CODE=1  BF=1.16
*S REVISED SB 20104 TO 20104, DELETED AREA EAST OF 106TH STREET
COMPUTE NM HYD         ID=2  HYD=E20104A  DA==0.0191 SM
                       %A=97  %B=0.0  %C=3.0 %D=0.0 TP=0.1855
                       MASS RAINFALL=-1
PRINT HYD              ID=2 CODE=1
*ADD SB 20101A & 20104A
ADD HYD                    ID=4  HYD=E20104.1  I=2 II=3
PRINT HYD                  ID=4  CODE=1
*******************************************************************************
*S  BEGIN EASTERLING OFFSITE WATERSHED
*******************************************************************************
COMPUTE NM HYD             ID=2  HYD=E20102  DA=0.0451
                           A=77  B=0  C=17  D=6 TP=0.1333
                           MASS RAIN=-1
PRINT HYD                  ID=2  CODE=1
SED WASH LOAD              ID=2  K=0.17  C=0.20  P=1.0  LS=0.87
                           IMPERV=6.0  WASH LF=3.0
** ROUTE THE FLOW FROM BASIN 20102 DOWN THE EXISTING ARROYO FROM THE WEST LINE
** OF BASIN 20103 TO A POINT 500' WEST OF 106TH STREET
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                     MINIMUM ELEV=100 FT  MAXIMUM ELEV=107.0 FT
                     CHANNEL SLOPE=0.032 FLOOD PLAIN SLOPE=0.032
                     N=0.030  DIST=36
                     DIST  ELEV    DIST   ELEV   DIST   ELEV   DIST   ELEV
                      0   107       14     100     24    100     36    107
COMPUTE TRAVEL TIME ID=10  REACH NO=1  VALLEY SECTIONS=1
                    LENGTH=1750 FT  SLOPE=0.032
ROUTE               ID=10 HYD=E20102.1 INFLOW ID=2 DT=0.0
PRINT HYD           ID=10 CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 20103
COMPUTE NM HYD      ID=3  HYD=E20103  DA==0.0494 SM
                    %A=95  %B=0.0  %C=4.0 %D=1.0 TP=0.1333
                    MASS RAINFALL=-1
PRINT HYD           ID=3 CODE=1
*S COMPUTE SEDIMENT WASH LOAD FOR BASIN 20103
SED WASH LOAD       ID=3  SOIL  K=0.17  CROP=.20
                    EROSION PRACTICE P=1.0  LS=1.00
                    PERCENT IMPERVIOUS=1.1 WASH LOAD FACTOR=3.0
** ADD THE ROUTED FLOW FROM BASIN 20102 TO THE FLOW FROM BASIN 20103 AT A POINT
** IN THE ARROYO LOCATED 500 LF WEST OF 106TH STREET
ADD HYD             ID=11   HYD=E20103.1  ID I=3   ID II=10
PRINT HYD           ID=11   CODE=1
** ROUTE THE COMBINED FLOW DOWN THE ARROYO TO THE PROPOSED SEDIMENTATION BASIN
** TO BE LOCATED AT THE SOUTH EAST CORNER OF BASIN 20103. USE AVERAGE CONDITIONS.
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                     MINIMUM ELEV=100 FT  MAXIMUM ELEV=106.0 FT
                     CHANNEL SLOPE=0.024 FLOOD PLAIN SLOPE=0.024
                     N=0.030  DIST=40
                     DIST  ELEV    DIST   ELEV   DIST   ELEV   DIST   ELEV
                      0    106       14     100     26    100     40    106
COMPUTE TRAVEL TIME ID=10  REACH NO=1  VALLEY SECTIONS=1
                    LENGTH=1750 FT  SLOPE=0.032
ROUTE               ID=10 HYD=E20103.2 INFLOW ID=11 DT=0.0
PRINT HYD           ID=10 CODE=1
** COMPUTE SEDIMENT TRANSPORT FOR THE ARROYO IN THE 1750 LF REACH ABOVE THE
** PROPOSED SEDIMENTATION BASIN.
** USE COMPOSITE WASH LOAD CONCENTRATION FROM BASINS 20102 AND 20103
SEDIMENT TRANS      ID=11   IDS=1   CODE=10
                    A FACTOR= 0.0022  B EXP= 3.4
                    C EXP= 0.80  D EXP=-2.4 NUMBER WASH = 1
                    WASH CONC=44112 PPM  CID = -1
*S ADD SB 20101A, 20104A, 20102, 20103
ADD HYD             ID=11   HYD=E20103.1  ID I=4   ID II=10
PRINT HYD           ID=11   CODE=1
```

```
** X-ROUTE THE COMBINED FLOW THROUGH THE PROPOSED SEDIMENTATION BASIN TO BE
** X-LOCATED IN THE SOUTH EAST CORNER OF BASIN 20103. STAGE STORAGE DISCHARGE
** X-CURVE IS PRELIMINARY. OUTFLOW ASSUMED TO BE CONTROLLED BY A 6" DIA.
** X-ORIFICE. POND VOLUME IS ASSUMED TO BE 4.21 ac ft AT 8' DEPTH
** X-0.9095 ac ft OF THIS VOLUME IS REQUIRED FOR SEDIMENT STORAGE AND THUS
** X-IS EXCLUDED FROM THE STORAGE CURVE
**
** REVISED 10-16-01 DMG ROUTE COMBINED FLOW THROUGH AN EXISTING TEMPORARY
** SEDIMENTATION POND. LOWER ELEVATION OF 30" STAND PIPE TO ELEV=38.5'
** USE EXISTING 24"SD OUTFALL STRUCTURE.
** RATING TABLE HAS BEEN REVISED TO REFLECT PROPOSED CONDITIONS WITH
** EXISTING POND CONFIGURATION FOR THE INTERIM CONDITION
** FEMA ARROYO B-B: (TO STORM SEWER Qmax=119 cfs TO SWALE Qmax=76 cfs)
**
ROUTE RESERVOIR      ID=5 HYD=E20103.3  INFLOW ID=11  CODE=24
                      OUTFLOW(cfs)     STORAGE(ac ft)    ELEV(ft)
                              0            0.00           5234.7
                           0.01            0.151          5238.5
                           9.44            0.303          5239
                           48.0            0.605          5240
                           53.0            1.059          5241.5
                           54.5            1.212          5242
                           63.0            1.977          5244
                           66.0            3.096          5246
                           71.0            4.214          5248
PRINT HYD            ID=5  CODE=1
** ADD FLOW FROM DETENTION POND TO FLOW IN 60" SD IN 106TH STREET
**
ADD HYD              ID=4   HYD=E20103.1  ID I=5   ID II=6
PRINT HYD            ID=4   CODE=1
**
** ADD SUNRISE RANCH WEST SUBDIVISION HYDROGRAPH TO 60" STORM SEWER IN EUCARIZ
** (REV.7-9-01)COMPUTE HYDROGRAPH FOR BASIN 180A THE WATERSHED E OF 106TH STREET,
** S. OF SUNSET GARDENS, N. OF EUCARIZ CORRIDOR,  SINGLE FAMILY RESIDENTIAL
COMPUTE NM HYD       ID=1  HYD=180A  DA==0.03040 SM
                     %A=0  %B=20.0  %C=20.0 %D=60.0 TP=0.13333
                     MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
**
** USE A ROUTE RESERVOIR ROUTINE TO SIMULATE CONTROLLED DISCHARGE
** ASSUMED ALLOWABLE DISCHARGE Q=25.1
ROUTE RESERVOIR      ID=2 HYDROGRAPH NO=180.1  INFLOW ID=1  CODE=24
                      OUTFLOW(cfs)     STORAGE(ac ft)    ELEV(ft)
                              0.           0.0            100.
                           25.09           0.01          100.1
                           25.10           1.00           105.
PRINT HYD            ID=3  CODE=1
** ADD FLOW SUNRISE RANCH WEST AND OUTFLOW FROM 106TH ST POND AND 106TH ST STORM SEWER
ADD HYD              ID=3   HYD=E20103.1  ID I=2   ID II=4
PRINT HYD            ID=3   CODE=1
*
** OUTFLOW FROM THE POND IS ROUTED THROUGH THE EXISTING 60" DIA STORM
** NORTH OF THE ONSITE AREA TO THE SNOW VISTA CHANNEL POND.
*
COMPUTE RATING CURVE    CID=1  VS NO=1  CODE=-1  SLP=0.01  DIA=5  N=0.014
COMPUTE TRAVEL TIME     ID=10  R NO=1  VS=1  L=1200  SLP=0.01
ROUTE                   ID=10  HYD=E20103.4  INFLOW=3
PRINT HYD               ID=10  CODE=1
*
ROUTE RESERVOIR      ID=50   HYD=POND.OUT  INFLOW ID=10   CODE=24
                     CFS OUT    VOL AC-FT   ELEV FT
                      0            0          10.0
                      1.7          0.54       11.0
                      34           1.79       12.0
                     112           3.25       13.0
                     230           4.82       14.0
                     393           6.51       15.0
                     604           8.29       16.0
PRINT HYD               ID=50  CODE=1
*S HYD NO. POND.OUT IS ***** AP 21 ******
*
```

```
*****************************************************************************
*****************************************************************************
*S BEGIN EASTERLING ONSITE WATERSHED
*****************************************************************************
*****************************************************************************
** ASSUME FREE DISCHARGE TO THE CHANNEL IS PREFERABLE DUE TO THE CLOSE
** PROXIMITY TO THE CHANNEL
** COMPUTE HYDROGRAPH FOR BASIN 20201 SUNRISE TERRACE UNIT 1. ASSUME 6.5 DU PER
** ACRE RESIDENTIAL DEVELOPMENT
COMPUTE NM HYD       ID=2  HYD=E20201  DA=0.0092 SM
                     %A=0.0  %B=27.0  %C=12.0 %D=61.0 TP=0.13333
                     MASS RAINFALL=-1
PRINT HYD            ID=2 CODE=1
** ADD THE FLOW FROM BASIN 20201 TO THE FLOW IN THE SNOW VISTA CHANNEL NEAR
** THE HEAD OF THE SNOW VISTA CHANNEL
ADD HYD              ID=10   HYD=E20201.1 ID I=50   ID II=2
PRINT HYD            ID=10 CODE=1
** ROUTE THE COMBINED FLOW DOWN THE SNOW VISTA CHANNEL FROM THE HEAD TO
** A POINT 500LF SOUTH.
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                     MINIMUM ELEV=100 FT  MAXIMUM ELEV=105.0 FT
                     CHANNEL SLOPE=0.0109 FLOOD PLAIN SLOPE=0.0109
                     N=0.013  DIST=30
                     DIST  ELEV    DIST   ELEV   DIST   ELEV   DIST   ELEV
                      0   105       10     100     20     100    30    105
COMPUTE TRAVEL TIME ID=11  REACH NO=1  VALLEY SECTIONS=1
                    LENGTH=500 FT  SLOPE=0.0109
ROUTE               ID=11 HYD=E20201.2 INFLOW ID=10 DT=0.0
PRINT HYD           ID=11 CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 20202 SUNRISE TERRACE UNIT 1. ASSUME 6.5 DU PER
** ACRE RESIDENTIAL DEVELOPMENT
COMPUTE NM HYD      ID=2  HYD=E20202  DA==0.0080 SM
                    %A=0.0  %B=27.0  %C=12.0 %D=61.0 TP=0.13333
                    MASS RAINFALL=-1
PRINT HYD           ID=2 CODE=1
** ADD THE FLOW FROM BASIN 20202 TO THE FLOW IN THE SNOW VISTA CHANNEL 500LF
** SOUTH OF THE HEAD OF THE CHANNEL
ADD HYD             ID=10   HYD=E20202.1 ID I=11   ID II=2
PRINT HYD           ID=10 CODE=1
** ROUTE THE COMBINED FLOW DOWN THE SNOW VISTA CHANNEL FROM 500LF SOUTH OF
** THE HEAD OF THE CHANNEL TO A POINT 750 LF SOUTH OF THE HEAD
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                     MINIMUM ELEV=100 FT  MAXIMUM ELEV=105.0 FT
                     CHANNEL SLOPE=0.0109 FLOOD PLAIN SLOPE=0.0109
                     N=0.013  DIST=30
                     DIST  ELEV    DIST   ELEV   DIST   ELEV   DIST   ELEV
                      0   105       10     100     20     100    30    105
COMPUTE TRAVEL TIME ID=11  REACH NO=1  VALLEY SECTIONS=1
                    LENGTH=250 FT  SLOPE=0.0109
ROUTE               ID=11 HYD=E20202.2 INFLOW ID=10 DT=0.0
PRINT HYD           ID=11 CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 20203 SUNRISE TERRACE UNIT 1. ASSUME 6.5 DU PER
** ACRE RESIDENTIAL DEVELOPMENT
COMPUTE NM HYD      ID=2  HYD=E20203  DA==0.0094 SM
                    %A=0.0  %B=27.0  %C=12.0 %D=61.0 TP=0.13333
                    MASS RAINFALL=-1
PRINT HYD           ID=2 CODE=1
** ADD THE FLOW FROM BASIN 20203 TO THE FLOW IN THE SNOW VISTA CHANNEL AT A POINT
** 750 LF SOUTH OF THE HEAD OF THE CHANNEL
ADD HYD             ID=10   HYD=E20203.1 ID I=11   ID II=2
PRINT HYD           ID=10 CODE=1
** ROUTE THE COMBINED FLOW DOWN THE SNOW VISTA CHANNEL FROM 750LF SOUTH OF
** THE HEAD OF THE CHANNEL TO TOWER ROAD
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                     MINIMUM ELEV=100 FT  MAXIMUM ELEV=105.0 FT
                     CHANNEL SLOPE=0.0109 FLOOD PLAIN SLOPE=0.0109
                     N=0.013  DIST=30
                     DIST  ELEV    DIST   ELEV   DIST   ELEV   DIST   ELEV
                      0   105       10     100     20     100    30    105
COMPUTE TRAVEL TIME ID=11  REACH NO=1  VALLEY SECTIONS=1
                    LENGTH=350 FT  SLOPE=0.0109
```

```
ROUTE                ID=11 HYD=E20203.2 INFLOW ID=10 DT=0.0
PRINT HYD            ID=11 CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 20204 SUNRISE TERRACE UNIT 1. ASSUME 6.5 DU PER
** ACRE RESIDENTIAL DEVELOPMENT
COMPUTE NM HYD       ID=2  HYD=E20204  DA==0.0145 SM
                     %A=0.0  %B=27.0  %C=12.0 %D=61.0 TP=0.13333
                     MASS RAINFALL=-1
PRINT HYD            ID=2 CODE=1
** ADD THE FLOW FROM BASIN 20204 TO THE FLOW IN THE SNOW VISTA CHANNEL NEAR
** TOWER ROAD
ADD HYD              ID=10   HYD=E20204.1 ID I=11   ID II=2
PRINT HYD            ID=10 CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 20205 THE SNOW VISTA CHANNEL CORRIDOR NORTH
** OF TOWER ROAD
COMPUTE NM HYD       ID=2  HYD=E20205  DA==0.0022 SM
                     %A=0.0  %B=0.0  %C=50.0 %D=50.0 TP=0.13333
                     MASS RAINFALL=-1
PRINT HYD            ID=2 CODE=1
** ADD THE FLOW FROM BASIN 20205 TO THE ROUTED FLOW IN THE SNOW VISTA CHANNEL
** AT TOWER ROAD
ADD HYD              ID=11   HYD=E20205.1 ID I=10  ID II=2
PRINT HYD            ID=11 CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 20206 THE NORTHWEST PORTION OF SUNRISE TERRACE
** UNIT 2 PHASE A-1 AND A PORTION OF 106TH STREEET
COMPUTE NM HYD       ID=2  HYD=E20206  DA==0.0157 SM
                     %A=0.0  %B=40.0  %C=0.0 %D=60.0 TP=0.13333
                     MASS RAINFALL=-1
PRINT HYD            ID=2 CODE=1
** ASSUME MAJORITY OF THE FLOW REMAINS ON SOUTHWEST  SIDE OF THE STREET. ROUTE
** THE FLOW DOWN 106TH STREET  FROM TANAGER ROAD TO THE EASEMENT CHANNEL
** FROM SUNRISE TERRACE UNIT 2 PHASE A-1. ROUTE IN ONE HALF STREET SECTION
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=3
                     MINIMUM ELEV=0.0 FT  MAXIMUM ELEV=0.67 FT
                     CHANNEL SLOPE=0.0298  FLOOD PLAIN SLOPE=0.0298
                     N=.013  DIST=2.16  N=-.017  DIST=38.16 N=.013 DIST=40.32
                     DIST  ELEV    DIST   ELEV    DIST   ELEV   DIST   ELEV
                     0.0   0.67    0.16   0.00    2.16   0.13   20.16  0.42
                     38.16 0.13   40.16   0.00   40.32   0.67
COMPUTE TRAVEL TIME ID=15  REACH NO=1  VALLEY SECTIONS=1
                     LENGTH=520 FT  SLOPE=0.0298
ROUTE                ID=15 HYD=E20206.1 INFLOW ID=2 DT=0.0
PRINT HYD            ID=15  CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 20207 THE  PORTION OF SUNRISE TERRACE
** UNIT 2 PHASE A-1 THAT CONTRIBUTES FLOW TO THE EASEMENT CHANNEL LEADING
** TO 106TH STREET AND A PORTION OF 106TH STREET.
COMPUTE NM HYD       ID=2  HYD=E20207  DA==0.0102 SM
                     %A=0.0  %B=50.0  %C=0.0 %D=50.0 TP=0.13333
                     MASS RAINFALL=-1
PRINT HYD            ID=2 CODE=1
** ADD THE FLOW FROM BASIN 20207 TO THE ROUTED FLOW IN 106TH STREET AT THE
** INTERSECTION WITH THE EASEMENT CHANNEL
ADD HYD              ID=16   HYD=E20207.1 ID I=15  ID II=2
PRINT HYD            ID=16 CODE=1
** ASSUME THAT THE PORTION OF THE FLOW IN 106TH STREET THAT EXCEEDS ONE HALF
** THE STREET CAPACITY WILL SPILL OVER INTO THE NORTHEAST HALF OF THE STREET
** HYD. 20207.2 = FLOW TO REMAIN ON THE SOUTH WEST SIDE OF THE STREET
** HYD. 20207.3 = FLOW TO SPILL OVER TO THE NORTHEAST SIDE SIDE OF THE STREET
DIVIDE HYD           ID=16  CODE=999.0  ID=15  HYD=E20207.2 ID=3  HYD=E20207.3
                           TOTAL FLOW       DIVIDED FLOW
                              5                 4.9
                             21                20.9
                             46                22.0
                             60                30.0
PRINT HYD            ID=15  CODE=1
PRINT HYD            ID=3   CODE=1
** ROUTE THE FLOW ON THE NORTHEAST SIDE OF 106TH STREET DOWN TOWER BLVD TO THE
** SNOW VISTA CHANNEL. USE AVERAGE SLOPE
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=3
                     MINIMUM ELEV=0.0 FT  MAXIMUM ELEV=0.67 FT
                     CHANNEL SLOPE=0.0298  FLOOD PLAIN SLOPE=0.0298
                     N=.013  DIST=2.16  N=-.017  DIST=38.16 N=.013 DIST=40.32
```

```
                    DIST  ELEV    DIST   ELEV    DIST   ELEV   DIST   ELEV
                    0.0   0.67    0.16   0.00    2.16   0.13   20.16  0.42
                    38.16 0.13    40.16  0.00    40.32  0.67
COMPUTE TRAVEL TIME ID=16  REACH NO=1  VALLEY SECTIONS=1
                    LENGTH=950 FT  SLOPE=0.0298
ROUTE               ID=16 HYD=E20207.4 INFLOW ID=3 DT=0.0
PRINT HYD           ID=16  CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 20208 THE  PORTION OF TOWER BLVD EAST OF THE
** INTERSECTION WITH SANDPIPER DRIVE AND WEST OF THE SNOW VISTA CHANNEL
COMPUTE NM HYD      ID=2  HYD=E20208  DA==0.0022 SM
                    %A=0.0  %B=20.0  %C=0.0 %D=80.0 TP=0.13333
                    MASS RAINFALL=-1
PRINT HYD           ID=2 CODE=1
** ADD THE FLOW FROM BASIN 20207 TO THE ROUTED FLOW IN TOWER BLVD. AT THE
** THE SNOW VISTA CHANNEL
ADD HYD             ID=17   HYD=E20208.1  ID I=16  ID II=2
PRINT HYD           ID=17 CODE=1
** ADD THE FLOW IN TOWER TO THE SNOW VISTA CHANNEL AT THE CHANNEL CROSSING
*S HYD=E20208.2 IS THE FLOW IN SNOW VISTA CHANNEL AT TOWER ROAD
ADD HYD             ID=10   HYD=E20208.2  ID I=17   ID II=11
PRINT HYD           ID=10 CODE=2
** ROUTE THE COMBINED FLOW DOWN THE SNOW VISTA CHANNEL FROM TOWER ROAD
** 500 FEET NORTH OF THE CONFLUENCE AT THE SECTION LINE. USE AVERAGE CHANNEL SLOPE
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                    MINIMUM ELEV=100 FT  MAXIMUM ELEV=105.5 FT
                    CHANNEL SLOPE=0.0105 FLOOD PLAIN SLOPE=0.0105
                    N=0.013  DIST=30
                    DIST  ELEV    DIST  ELEV   DIST   ELEV   DIST   ELEV
                     0   105.5       10     100     20     100    30    105.5
COMPUTE TRAVEL TIME ID=30  REACH NO=1  VALLEY SECTIONS=1
                    LENGTH=1100 FT  SLOPE=0.0105
ROUTE               ID=30 HYD=E20208.3 INFLOW ID=10 DT=0.0
PRINT HYD           ID=30 CODE=1
** ROUTE THE FLOW IN SANDPIPER ROAD FROM TOWER TO HERON ROAD. USE AVERAGE SLOPE
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=3
                    MINIMUM ELEV=0.0 FT  MAXIMUM ELEV=0.67 FT
                    CHANNEL SLOPE=0.0298 FLOOD PLAIN SLOPE=0.0298
                    N=.013  DIST=2.16  N=-.017  DIST=38.16 N=.013 DIST=42.32
                    DIST  ELEV    DIST   ELEV    DIST   ELEV   DIST   ELEV
                    0.0   0.67    0.16   0.00    2.16   0.13   20.16  0.42
                    38.16 0.13    40.16  0.00   40.32   0.67
COMPUTE TRAVEL TIME ID=17  REACH NO=1  VALLEY SECTIONS=1
                    LENGTH=370 FT  SLOPE=0.0298
ROUTE               ID=17 HYD=E20207.5 INFLOW ID=15 DT=0.0
PRINT HYD           ID=17  CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 20301 THE SOUTHEAST PORTION OF SUNRISE TERRACE
** UNIT 2 PHASE A-1 THAT DISCHARGES TO SANDPIPER DRIVE
COMPUTE NM HYD      ID=2  HYD=E20301  DA==0.0155 SM
                    %A=0.0  %B=50  %C=0.0 %D=50.0 TP=0.13333
                    MASS RAINFALL=-1
PRINT HYD           ID=2 CODE=1
** ADD THE FLOW FROM BASIN 20301 TO THE ROUTED FLOW IN SANDPIPER DRIVE
ADD HYD             ID=15   HYD=E20301.1  ID I=17   ID II=2
PRINT HYD           ID=15 CODE=2
** ROUTE THE FLOW DOWN SANDPIPER DRIVE FROM HERON ROAD TO
** THE PROPOSED INLETS NORTH OF CONNEMARA AVENUE. USE AVERAGE SLOPE
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=5
                    MINIMUM ELEV=0.0 FT  MAXIMUM ELEV=0.87 FT
                    CHANNEL SLOPE=0.014 FLOOD PLAIN SLOPE=0.014
                    N=0.030  DIST=9.0  N=-0.013  DIST=11  N=-0.017  DIST=39
                    N=0.013  DIST=41   N=0.030   DIST=50
                    DIST  ELEV    DIST   ELEV    DIST   ELEV   DIST   ELEV
                    0.0   0.87     9.0   .67     9.16   0.0     11    0.13
                    25    0.28     37.0  .13     39.0   0.0     41.0  .67
                    50.0  0.87
COMPUTE TRAVEL TIME ID=16  REACH NO=1  VALLEY SECTIONS=1
                    LENGTH=200 FT  SLOPE=0.014
ROUTE               ID=16 HYD=E20207.6 INFLOW ID=15 DT=0.0
PRINT HYD           ID=16  CODE=1
** FOR MODELING PURPOSES ASSUME ALL OF THE FLOW IN SANDPIPER IS INTERCEPTED
** BY THE PROPOSED SANDPIPER STORM DRAIN ABOVE THE INTERSECTION WITH CONNEMARA.
```

```
** ROUTE THE FLOW IN THE PROPOSED STORM DRAIN DOWN SANDPIPER TO PASO FINO PLACE.
COMPUTE RATING CURVE CID=1  VALLEY SECTION NO=1  CODE=-1  SLOPE=0.008
                     PIPE DIA=36  N=0.013
COMPUTE TRAVEL TIME ID=12  REACH=1  NUMBER OF VALLEY SECTIONS=1
                     LENGTH=270 FT  SLOPE=0.008
ROUTE                ID=12 HYD=E20301.2  INFLOW ID=16  DT=0.0
PRINT HYD            ID=12 CODE=1
COMPUTE RATING CURVE CID=1  VALLEY SECTION NO=1  CODE=-1  SLOPE=0.011
                     PIPE DIA=36  N=0.013
COMPUTE TRAVEL TIME ID=15  REACH=1  NUMBER OF VALLEY SECTIONS=1
                     LENGTH=340 FT  SLOPE=0.011
ROUTE                ID=15 HYD=E20301.3  INFLOW ID=12  DT=0.0
PRINT HYD            ID=15 CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 20302 THE NORTH WEST PORTION OF SUNRISE TERRACE
** UNITS 3, 4, AND 5
COMPUTE NM HYD       ID=2  HYD=E20302  DA==0.0483 SM
                     %A=0.0  %B=50  %C=0.0 %D=50.0 TP=0.13333
                     MASS RAINFALL=-1
PRINT HYD            ID=2 CODE=1
** ADD THE FLOW FROM BASIN 20302 TO THE SANDPIPER DR. S.D. FLOW AT THE
** INTERSECTION OF PASO FINO AND SANDPIPER DRIVE
ADD HYD              ID=16   HYD=E20302.1  ID I=15   ID II=2
PRINT HYD            ID=16 CODE=2
**ROUTE THE COMBINED FLOW DOWN THE PASO FINO STORM DRAIN FROM SANDPIPER TO
**HALTER DRIVE
COMPUTE RATING CURVE CID=1  VALLEY SECTION NO=1  CODE=-1  SLOPE=0.023
                     PIPE DIA=48  N=0.013
COMPUTE TRAVEL TIME ID=15  REACH=1  NUMBER OF VALLEY SECTIONS=1
                     LENGTH=360 FT  SLOPE=0.023
ROUTE                ID=15 HYD=E20302.2  INFLOW ID=16  DT=0.0
PRINT HYD            ID=15 CODE=1
**ROUTE THE FLOW FROM THE PROPOSED PASO FINO STORM DRAIN DOWN THE PROPOSED
**HALTER DRIVE STORM DRAIN
COMPUTE RATING CURVE CID=1  VALLEY SECTION NO=1  CODE=-1  SLOPE=0.006
                     PIPE DIA=54  N=0.013
COMPUTE TRAVEL TIME ID=16  REACH=1  NUMBER OF VALLEY SECTIONS=1
                     LENGTH=250 FT  SLOPE=0.006
ROUTE                ID=16 HYD=E20302.3  INFLOW ID=15  DT=0.0
PRINT HYD            ID=16 CODE=1
** COMPUTE THE HYDROGRAPH FOR BASIN 20303. THE BASIN THAT CONTRIBUTES FLOW
** TO ANDLUSIAN AVENUE
COMPUTE NM HYD       ID=2  HYD=E20303  DA==0.0208 SM
                     %A=0.0  %B=50  %C=0.0 %D=50.0 TP=0.13333
                     MASS RAINFALL=-1
PRINT HYD            ID=2 CODE=1
** ADD THE FLOW FROM BASIN 20303 TO THE FLOW IN THE PROPOSED HALTER STORM
** DRAIN AT THE INTERSECTION OF HALTER DR. & ANDALUSTAN AVE.
ADD HYD              ID=20   HYD=E20303.1  ID I=16   ID II=2
PRINT HYD            ID=20 CODE=2
*************************************************************************
*S  BEGIN RYALS OFFSITE FLOW
*************************************************************************
SEDIMENT BULK        CODE=1  BF=1.16
COMPUTE NM HYD       ID=1   HYD=E20304   DA=0.03141  SQ MI
                     PER A=97  B=0    C=3   D=0    TP=0.1333 HRS   RAIN=-1
PRINT HYD            ID=1   CODE=1
COMPUTE RATING CURVE CID=-1  VS NO=38   NO SEGS=1
                     MIN EL=0    FT   MAX EL=1    FT
                     CH SLP= .037     FP SLP=.037     FT PER FT
                       N   END X
                     .035   122
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     1       1     0       121   0       122   1
COMPUTE TRAVEL TIME  ID=3     REACH=2  NO VS=1
                     L=900    ft       SLP=.037    ft/ft
ROUTE                ID=3     HYD=E20304.5     INFLOW HYD ID=1   DT=0.0
*************************************************************************
** BASIN 20305 = RYLAS BASINS 353 354 AND 355
** COMPUTE HYDROGRAPH FOR BASIN 20305
SEDIMENT BULK        CODE=1  BF=1.16
COMPUTE NM HYD      ID=4  HYD=E20305  DA==0.0017 SM
```

```
                    %A=50  %B=0.0  %C=50.0 %D=0.0 TP=0.1438
                    MASS RAINFALL=-1
PRINT HYD           ID=4 CODE=1
*****************************************************************************
SEDIMENT BULK        CODE=1  BF=1.16
COMPUTE NM HYD       ID=2   HYD=E20306   DA=0.01500  SQ MI
                     PER A=97 B=0     C=3    D=0     TP=0.1333 HRS RAIN=-1
PRINT HYD            ID=2  CODE=1
ADD HYD              ID=1   HYD=E20306.1    ID I=2      ID II=3
PRINT HYD            ID=1  CODE=1
ADD HYD              ID=3   HYD=E20306.2   I=1  II=4
PRINT HYD            ID=3  CODE=1
COMPUTE RATING CURVE CID=1  VS NO=32  NO SEGS=1
                     MIN EL=0    FT   MAX EL=5    FT
                     CH SLP=.001      FP SLP=.001     FT PER FT
                      N  END FT
                     .030  40
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     5       15    0       25    0       40    5
*S USE L FROM MID POINT OF BASIN TO MIDPOINT OF NEXT
COMPUTE TRAVEL TIME  ID=2     REACH=32 NO VS=1
                     L=600    ft       SLP=.001    ft/ft
ROUTE                ID=2     HYD=E20306.5     INFLOW HYD ID=3   DT=0.0
*****************************************************************************
SEDIMENT BULK        CODE=1  BF=1.16
COMPUTE NM HYD       ID=3 HYD=E20307 DA=0.02938 SQ MI
                     PER A=97 B=0     C=3    D=0     TP=0.1333 HRS RAIN=-1
PRINT HYD            ID=3   CODE=1
ADD HYD              ID=1   HYD=E20307.1    ID I=2      ID II=3
PRINT HYD            ID=1  CODE=1
COMPUTE RATING CURVE CID=1  VS NO=32  NO SEGS=1
                     MIN EL=0    FT   MAX EL=5    FT
                     CH SLP=.001      FP SLP=.001     FT PER FT
                      N  END FT
                     .030  40
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     5       15    0       25    0       40    5
* USE  L FROM MID-POINT OF BASIN TO MID-POINT OF NEXT
COMPUTE TRAVEL TIME  ID=4     REACH=32 NO VS=1
                     L=250    ft       SLP=.001    ft/ft
*S HYD 20307.5 = INTO TANAGER POND *LOCATION* FROM NORTH
ROUTE                ID=4     HYD=E20307.5     INFLOW HYD ID=1   DT=0.0
*****************************************************************************
SEDIMENT BULK        CODE=1  BF=1.16
COMPUTE NM HYD       ID=3   HYD=E20308   DA=0.06688  SQ MI
                     PER A=97 B=0     C=3    D=0     TP=0.1333 HRS RAIN=-1
PRINT HYD            ID=3  CODE=1
*****************************************************************************
*S HYD 20309=COA SATELLITE: ASSUME 10 CFS CLEAN & NON-ERSOIVE; REAL 1993 0.5+-
STORE HYD            ID=2   HYD=E20309  DT=0.05 HR   DA=.07516  SQ MI
                     FLOW RATES CFS= (LEFT TO RIGHT, DOWN, LEFT TO RIGHT ...)
                     0       .00     .00     .00     .00     .00
                     .00     .51     .51     .51     .51     .51
                     .51     .51     .51     .51     .51     .51
                     .51     .51     .51     .51     .51     .51
                     .51     .51     .51     .51     .51     .51
                     .51     .51     .51     .51     .51     .51
                     .51     .51     .51     .51     .51     .51
                     .51     .51     .51     .51     .51     .51
                     .51     .51     .51     .51     .51     .51
                     .51     .51     .51     .51     .51     .51
                     .51     .51     .51     .51     .51     .51
*S HYD 20309.1 = INTO TANAGER POND LOCATION FROM WEST (20308+20309 (COA SATELLITE))
ADD HYD              ID=1   HYD=E20309.1    ID I=2      ID II=3
PRINT HYD            ID=1  CODE=1
ADD HYD              ID=5   HYD=E20309.2    ID I=1      ID II=4
PRINT HYD            ID=5  CODE=1
*****************************************************************************
SEDIMENT BULK        CODE=1  BF=1.16
COMPUTE NM HYD       ID=1   HYD=E20310  DA=.07109   SQ MI
                     PER A=97 B=0     C=3    D=0     TP=0.1333 HRS RAIN=-1
PRINT HYD            ID=1   CODE=1
```

```
COMPUTE RATING CURVE CID=-1  VS NO=33  NO SEGS=1
                     MIN EL=0    FT   MAX EL=5    FT
                     CH SLP=.005      FP SLP=.005     FT PER FT
                      N  END FT
                     .017  13.33
                     DIST  ELEV    DIST  ELEV    DIST  ELEV    DIST  ELEV
                     0     1.17    .01   .5      3     0       9.83  0
                     13.33 1.17
COMPUTE TRAVEL TIME  ID=2     REACH=33 NO VS=1
                     L=350  ft       SLP=.005    ft/ft
ROUTE                ID=2     HYD=E20310.5     INFLOW HYD ID=1   DT=0.0
*S  HYD 20310.1 = AP 2 IN = TANAGER POND IN
*                      NEW      NEW        IN1          IN2
ADD HYD              ID=3   HYD=E20310.1    ID I=2      ID II=5
PRINT HYD            ID=3   CODE=1
*S  HYD 20310.8 = AP2 OUT = TANAGER POND OUT  (CURVE FROM RYALS)
*   Qout=21.33 @ 52.00 FOR 24"RCP AND SILT-STOP BERM @ 49.0
ROUTE RESERVOIR      ID=4  HYD=E20310.8  INFLOW ID=3  CODE=2
                     OUTFLOW CFS    STORAGE AC-FT   ELEVATION FT
                       0.            0.0000          49
                       13.42         0.1515          49.2
                       18.25         0.3826          49.5
                       18.91         0.7781          50
                       20.15         1.6084          51
                       21.33         2.4923          52
                       21.88         2.9549          52.5
                       22.44         3.4315          53
                       22.92         3.9222          53.5
                       23.54         4.4272          54
PRINT HYD            ID=4   CODE=1
COMPUTE RATING CURVE CID=-1  VS NO=33  NO SEGS=-1   PIPE
                     S=.0015 FT/FT   DIAM=2 FT    N=.013
COMPUTE TRAVEL TIME  ID=2     REACH=33 NO VS=1
                     L=900  ft       SLP=.0015   ft/ft
ROUTE                ID=2     HYD=E20310.6     INFLOW HYD ID=4   DT=0.0
*************************************************************************
* 20311 = SOUTH END OF BASIN 302
SEDIMENT BULK        CODE=1  BF=1.16
COMPUTE NM HYD       ID=3    HYD=E20311  DA=.01031   SQ MI
                     PER A=97 B=0     C=3    D=0     TP=0.1333 HRS RAIN=-1
PRINT HYD            ID=3    CODE=1
ADD HYD              ID=1   HYD=E20311.1   ID I=2      ID II=3
PRINT HYD            ID=1    CODE=1
*************************************************************************
*S  BEGIN EASTERLING'S MODEL OF RYALS ONSITE FLOWS
*************************************************************************
**  THIS DATA WAS OBTAINED FROM EASTERLINGS DEV MODEL
**
**ROUTE THE FLOW FROM TANAGER TO THE INTERSECTION OF ANDALUSTAN AND HALTER
**IN THE STORM DRAIN TO BE CONSTRUCTED WITH THE SUNRISE TERRACE UNITS 3,4 & 5
**PROJECT. CURRENT PLANS PREPARED BY RYALS ENGINEERING CALL FOR APPROX 800 LF
**OF 48" DIA STORM DRAIN AND 1150 LF OF 54" DIA STORM DRAIN
**USE FRICTION SLOPE FOR PIPE SLOPE.
**NOTE: PIPE LENGTH IS APPROXIMATE
COMPUTE RATING CURVE CID=1  VALLEY SECTION NO=1  CODE=-1  SLOPE=0.0196
                     PIPE DIA=48  N=0.013
COMPUTE TRAVEL TIME ID=12  REACH=1  NUMBER OF VALLEY SECTIONS=1
                     LENGTH=800 FT  SLOPE=0.0196
ROUTE                ID=12 HYD=E20207.3  INFLOW ID=1  DT=0.0
PRINT HYD            ID=12 CODE=1
COMPUTE RATING CURVE CID=1  VALLEY SECTION NO=1  CODE=-1  SLOPE=0.0105
                     PIPE DIA=54  N=0.013
COMPUTE TRAVEL TIME ID=11  REACH=1  NUMBER OF VALLEY SECTIONS=1
                     LENGTH=1150 FT  SLOPE=0.0105
ROUTE                ID=11 HYD=E20207.4  INFLOW ID=12  DT=0.0
PRINT HYD            ID=11 CODE=1
** ADD THE FLOW FROM THE PROPOSED HALTER STORM DRAIN TO THE PROPOSED
** ANDALUSTAN STORM DRAIN AT THE INTERSECTION OF HALTER AND ANDALUSTAN
ADD HYD              ID=17   HYD=E20303.2  ID I=20   ID II=11
PRINT HYD            ID=17 CODE=2
**ROUTE THE COMBINED FLOW DOWN THE STORM DRAIN OUTFALL FROM THE INTERSECTION
```

```
**OF HALTER DRIVE AND ANDALUSTAN DRIVE TO THE SNOW VISTA CHANNEL
COMPUTE RATING CURVE CID=1  VALLEY SECTION NO=1  CODE=-1  SLOPE=0.009
                     PIPE DIA=72  N=0.013
COMPUTE TRAVEL TIME ID=16  REACH=1  NUMBER OF VALLEY SECTIONS=1
                     LENGTH=200 FT  SLOPE=0.009
ROUTE                ID=16 HYD=E20303.3  INFLOW ID=17  DT=0.0
PRINT HYD            ID=16 CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 20312 THE SNOW VISTA CHANNEL
COMPUTE NM HYD       ID=2  HYD=E20312  DA==0.0067 SM
                     %A=0.0  %B=50.0  %C=25.0 %D=25.0 TP=0.13333
                     MASS RAINFALL=-1
PRINT HYD            ID=2 CODE=1
** ADD THE FLOW FROM BASIN 20312 TO THE ROUTED FLOW FROM THE 72" OUTFALL.
*S THIS IS THE TOTAL FLOW INTO THE EXISTING RUNDOWN CHANNEL FROM ORGINAL
*S 1980'S GORDON HERKENHOFF DESIGN.
ADD HYD              ID=3  HYD=E20313.4  I=16  II=2
PRINT HYD            ID=3  CODE=1
*************************************************************************
** COMPUTE THE HYDROGRAPH FOR BASIN 20313 THE PORTION OF SUNRISE TERRACE UNIT 3
** THAT IS ADJACENT TO THE SNOW VISTA CHANNEL AND CONTRIBUTES FLOW TO THE
** TO THE PROPOSED HALTER DETENTION POND
COMPUTE NM HYD       ID=2  HYD=E20313  DA==0.0183 SM
                     %A=0.0  %B=50  %C=0.0 %D=50.0 TP=0.13333
                     MASS RAINFALL=-1
PRINT HYD            ID=2 CODE=1
** ROUTE FLOW FROM BASIN 20313 THROUGH THE PROPOSED HALTER POND
** STAGE STORAGE DISCHARGE CURVE PER MASTER DRAINAGE PLAN FOR SUNRISE TERRACE
** UNITS 3,4,AND 5 BY RYLES ENGINEERING
ROUTE RESERVOIR      ID=5  HYD=E20313.1 INFLOW ID=2    CODE=24
                      OUTFLOW CFS    STORAGE AC-FT   ELEVATION FT
                        0.00000      0.0000          88.50
                        3.68         0.1180          90.5
                        5.20         0.3172          92.5
                        6.37         0.6137          94.5
                        6.88         0.9032          95.5
                        7.13         0.9092          96.0
PRINT HYD            ID=5  CODE=1
** ADD THE  FLOW FROM THE PROPOSED HALTER POND TO THE FLOW IN THE SNOW VISTA
** CHANNEL AT THE SECTION LINE.
ADD HYD              ID=10   HYD=E20208.3  ID I=5   ID II=30
PRINT HYD            ID=10   CODE=1
** ROUTE THE FLOW FROM THE PROPOSED HALTER POND DOWN THE SNOW VISTA
** CHANNEL TO THE SECTION LINE.
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                     MINIMUM ELEV=100 FT  MAXIMUM ELEV=105.5 FT
                     CHANNEL SLOPE=0.0105 FLOOD PLAIN SLOPE=0.0105
                     N=0.013  DIST=30
                     DIST  ELEV    DIST  ELEV   DIST   ELEV   DIST   ELEV
                      0   105.5       10     100     20     100    30    105.5
COMPUTE TRAVEL TIME ID=12  REACH NO=1  VALLEY SECTIONS=1
                     LENGTH=300 FT  SLOPE=0.0105
ROUTE                ID=12 HYD=E20303.4 INFLOW ID=10 DT=0.0
PRINT HYD            ID=12 CODE=1
** ADD THE FLOW FROM THE THE PROPOSED 72" DIA OUTFALL FROM THE SUNRISE
** TERRACE UNITS 3, 4, AND 5 SUBDIVISION TO THE FLOW IN THE SNOW VISTA CHANNEL
** AT THE SECTION LINE.
** THIS IS THE TOTAL FLOW IN THE SNOW VISTA CHANNEL AT THE SECTION LINE
*S HYD NO. E20303.1 IS ***** AP 22 *****
ADD HYD              ID=20   HYD=E20303.1  ID I=12   ID II=3
PRINT HYD            ID=20 CODE=2
*************************************************************************
** RATING CURVE FOR AP22 TO 22.1
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                      MINIMUM ELEV=100 FT  MAXIMUM ELEV=106 FT
                      CHANNEL SLOPE=0.0246 FLOOD PLAIN SLOPE=0.0246
                      N=0.013  DIST=34
                      DIST  ELEV    DIST  ELEV   DIST   ELEV   DIST   ELEV
                       0   106       12     100     22     100    34    106
COMPUTE TRAVEL TIME ID=11  REACH NO=1  VALLEY SECTIONS=1
                     LENGTH=784 FT  SLOPE=0.0246
ROUTE                ID=11 HYD=E20303.5 INFLOW ID=20 DT=0.0
```

```
PRINT HYD            ID=11 CODE=1
*****************************************************************************
*  BASIN 20401
*  UNDEVELOPED LAND NORTH OF WESTGATE HEIGHTS.
*  THE BULKING FACTOR THAT WAS CALCUALTED IN EASTERLING MODEL IS 1.16.
*  THIS LAND IS UNDEVELOPED. THEREFORE, A BULKING
*  FACTOR OF 1.16 IS USED.
*  ENTERS SNOW VISTA CHANNEL VIA A RUNDOWN AT "22.1"
*****************************************************************************
*S COMPUTE HYD FOR BASIN 20401
*
SEDIMENT BULK        CODE=1  BF=1.16
COMPUTE NM HYD       ID=1  HYD=E20401 DA=0.127 SQ MI
                     %A=100 %B=0 %C=0 %D=0 TP=0.111
                     MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
*****************************************************************************
*  BASIN 20402
*  UNDEVELOPED LAND WEST OF WESTGATE HEIGHTS AND THE NORTHERN PORTION OF
*  WESTGATE. THE BULKING FACTOR THAT WAS CALCUALTED IN EASTERLING MODEL IS
*  1.16. THIS LAND IS SIMILAR TO THAT LAND. THEREFORE, THE BULKING FACTOR
*  FOR THE UNDEVELOPED LAND WAS CALCULATED TO BE 1.06.
*  ENTERS SNOW VISTA CHANNEL INLETS IN GIBSON AT "22.1"
*****************************************************************************
*S COMPUTE HYD FOR BASIN 20402
*
SEDIMENT BULK        CODE=1  BF=1.06
COMPUTE NM HYD       ID=2  HYD=E20402 DA=0.0797 SQ MI
                     %A=59 %B=11 %C=5 %D=25 TP=0.111
                     MASS RAINFALL=-1
PRINT HYD            ID=2 CODE=1
ADD HYD              ID=3  HYD=E20402.1  I=1  II=2
PRINT HYD             ID=3  CODE=1
*S HYD NO. E20402.2 IS ***** AP 22.1 *****
ADD HYD              ID=1  HYD=E20402.2  I=3  II=11
PRINT HYD             ID=1  CODE=1
*****************************************************************
** RATING CURVE FOR 22.1 TO 22.2
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                      MINIMUM ELEV=100 FT  MAXIMUM ELEV=106 FT
                      CHANNEL SLOPE=0.012 FLOOD PLAIN SLOPE=0.012
                      N=0.013  DIST=34
                      DIST  ELEV    DIST  ELEV   DIST   ELEV   DIST   ELEV
                       0   106       12     100     22     100    34    106
COMPUTE TRAVEL TIME ID=2  REACH NO=1  VALLEY SECTIONS=1
                     LENGTH=1217 FT  SLOPE=0.012
ROUTE                ID=2 HYD=E20402.5 INFLOW ID=1 DT=0.0
PRINT HYD            ID=2 CODE=1
*****************************************************************************
*  BASIN 20403
*  DEVELOPED LAND CONSISTING OF THE NORTHEASTERN PORTION OF WESTGATE HEIGHTS.
*  ENTERS SNOW VISTA CHANNEL INLETS AT "22.2"
*****************************************************************************
*S COMPUTE HYD FOR BASIN 20403
*
COMPUTE NM HYD       ID=4  HYD=E20403 DA=0.0766 SQ MI
                     %A=0 %B=27 %C=12 %D=61 TP=0.111
                     MASS RAINFALL=-1
PRINT HYD            ID=4 CODE=1
*S HYD NO. E20403.1 IS ***** AP 22.2 *****
ADD HYD              ID=1  HYD=E20403.1 I=4 II=2
PRINT HYD            ID=1 CODE=1
*****************************************************************
** RATING CURVE FOR 22.2 TO AP23
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                      MINIMUM ELEV=100 FT  MAXIMUM ELEV=106 FT
                      CHANNEL SLOPE=0.012 FLOOD PLAIN SLOPE=0.012
                      N=0.013  DIST=34
                      DIST  ELEV    DIST  ELEV   DIST   ELEV   DIST   ELEV
                       0   106       12     100     22     100    34    106
```

```
COMPUTE TRAVEL TIME ID=11  REACH NO=1  VALLEY SECTIONS=1
                    LENGTH=568 FT  SLOPE=0.012
ROUTE               ID=11 HYD=E20403.5 INID=1 DT=0.0
PRINT HYD           ID=11 CODE=1
*****************************************************************
*  BASIN 20404
*  LAND EAST OF SNOW VISTA CHANNEL. THIS IS THE TRAILER PARK AND THE
*  UNDEVELOPED
*  LAND.  THIS BASIN FLOWS INTO THE CHANNEL VIA A 42" CMP AT THE
*  JUMP STRUCTURE. THE BULKING FACTOR THAT WAS CALCUALTED IN
*  EASTERLING MODEL IS 1.16. THEREFORE, A BULKING FACTOR WEIGHTED TO THE
*  UNDEVELOPED LAND IS CALCULATED TO BE 1.08.
*  ENTERS SNOW VISTA CHANNEL AT "AP-23".
*************************************************************************
*S COMPUTE HYD FOR BASIN 20404
*
SEDIMENT BULK       CODE=1  BF=1.08
COMPUTE NM HYD      ID=7  HYD=E20404 DA=0.103 SQ MI
                    %A=64 %B=0 %C=0 %D=36 TP=0.111
                    MASS RAINFALL=-1
PRINT HYD           ID=7 CODE=1
*
*************************************************************************
*  BASIN 20405
*  DEVELOPED LAND CONSISTING OF THE MAJOR PORTION OF WESTGATE HEIGHTS.
*  ENTERS SNOW VISTA CHANNEL INLETS AT "AP-23"
*************************************************************************
*S COMPUTE HYD FOR BASIN 20405
*
COMPUTE NM HYD      ID=3  HYD=E20405 DA=0.3438 SQ MI
                    %A=0 %B=27 %C=12 %D=61 TP=0.111
                    MASS RAINFALL=-1
PRINT HYD           ID=3 CODE=1
ADD HYD             ID=2  HYD=E20405.1  I=7  II=3
PRINT HYD            ID=2  CODE=1
*S HYD NO. E20405.2 IS ***** AP 23 *****
ADD HYD             ID=4  HYD=E20405.2  I=2  II=11
PRINT HYD            ID=4  CODE=1  .
*****************************************************************
** RATING CURVE FOR AP23 TO 23.1
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                     MINIMUM ELEV=100 FT  MAXIMUM ELEV=106 FT
                     CHANNEL SLOPE=0.012 FLOOD PLAIN SLOPE=0.012
                     N=0.013  DIST=21
                     DIST  ELEV    DIST  ELEV   DIST   ELEV   DIST   ELEV
                      9    106     10     100     20     100    21    106
COMPUTE RATING CURVE CID=2  VALLEY SECTION=2  NUMBER OF SEGMENTS=1
                     MINIMUM ELEV=100 FT  MAXIMUM ELEV=106 FT
                     CHANNEL SLOPE=0.0037 FLOOD PLAIN SLOPE=0.0037
                     N=0.013  DIST=50.1
                     DIST  ELEV    DIST  ELEV   DIST   ELEV   DIST   ELEV
                      9   106      10    100     50     100    50.1    106
COMPUTE TRAVEL TIME  ID=2  REACH NO=1  VALLEY SECTIONS=2
                     LENGTH= 183 FT  SLOPE=0.012
ROUTE                ID=2  HYD=E20405.5  INFLOW ID=4   DT=0.0
PRINT HYD            ID=2 CODE=1
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                     MINIMUM ELEV=100 FT  MAXIMUM ELEV=106 FT
                     CHANNEL SLOPE=0.0037 FLOOD PLAIN SLOPE=0.0037
                     N=0.035  DIST=76
                     DIST  ELEV    DIST  ELEV   DIST   ELEV   DIST   ELEV
                      0     106    18    100     58     100    76    106
COMPUTE TRAVEL TIME  ID=3  REACH NO=2  VALLEY SECTIONS=1
                     LENGTH= 342 FT  SLOPE=0.0037
ROUTE                ID=3  HYD=E20405.6  INID=2   DT=0.0
PRINT HYD            ID=3 CODE=1
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                     MINIMUM ELEV=100 FT  MAXIMUM ELEV=106 FT
                     CHANNEL SLOPE=0.0038 FLOOD PLAIN SLOPE=0.0038
                     N=0.030  DIST=76
                     DIST  ELEV    DIST  ELEV   DIST   ELEV   DIST   ELEV
```

```
                      0     106    18    100     58     100    76    106
COMPUTE TRAVEL TIME ID=4  REACH NO=3  VALLEY SECTIONS=1
                    LENGTH=170 FT  SLOPE=0.0038
ROUTE               ID=4 HYD=E20405.7 INFLOW ID=3 DT=0.0
PRINT HYD           ID=4 CODE=1
*****************************************************************************
*  BASIN 20501
*  DEVELOPED AND UNDEVELOPED LAND CONSISTING OF THE SOUTHEAST PORTION OF
*  WESTGATE HEIGHTS.
*  ENTERS SNOW VISTA CHANNEL INLETS AT "23.1"
*****************************************************************************
*S COMPUTE HYD FOR BASIN 20501
*
COMPUTE NM HYD      ID=2  HYD=E20501 DA=0.0391 SQ MI
                    %A=60 %B=11 %C=5 %D=24 TP=0.111
                    MASS RAINFALL=-1
PRINT HYD           ID=2 CODE=1
ADD HYD             ID=3 HYD=E20501.1 I=2 II=4
PRINT HYD            ID=3  CODE=1
*************************************************************
** RATING CURVE FOR 23.1 TO 23.2
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                     MINIMUM ELEV=100 FT  MAXIMUM ELEV=106 FT
                     CHANNEL SLOPE=0.0038 FLOOD PLAIN SLOPE=0.0038
                     N=0.030  DIST=76
                     DIST  ELEV    DIST  ELEV   DIST   ELEV   DIST   ELEV
                      0     106    18    100     58     100    76    106
COMPUTE TRAVEL TIME ID=4  REACH NO=3  VALLEY SECTIONS=1
                    LENGTH=850 FT  SLOPE=0.0038
ROUTE               ID=4 HYD=E20501.5 INFLOW ID=3 DT=0.0
PRINT HYD           ID=4 CODE=1
*****************************************************************************
*  BASIN 20502
*  DEVELOPED AND UNDEVELOPED LAND CONSISTING OF THE SOUTH PORTION OF
*  WESTGATE HEIGHTS.
*  ENTERS SNOW VISTA CHANNEL INLETS AT "23.2"
*****************************************************************************
*S COMPUTE HYD FOR BASIN 20502
*
COMPUTE NM HYD      ID=1  HYD=E20502 DA=0.0781 SQ MI
                    %A=80 %B=6 %C=2 %D=12 TP=0.111
                    MASS RAINFALL=-1
PRINT HYD           ID=1 CODE=1
ADD HYD             ID=3  HYD=E20502.1 I=4 II=1
PRINT HYD            ID=3  CODE=1
*************************************************************
** RATING CURVE FOR 23.2 TO 23.3
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                     MINIMUM ELEV=100 FT  MAXIMUM ELEV=106 FT
                     CHANNEL SLOPE=0.0038 FLOOD PLAIN SLOPE=0.0038
                     N=0.030  DIST=76
                     DIST  ELEV    DIST  ELEV   DIST   ELEV   DIST   ELEV
                      0     106    18    100     58     100    76    106
COMPUTE TRAVEL TIME ID=4  REACH NO=3  VALLEY SECTIONS=1
                    LENGTH=1225 FT  SLOPE=0.0038
ROUTE               ID=4 HYD=E20502.5 INFLOW ID=3 DT=0.0
PRINT HYD           ID=4 CODE=1
*****************************************************************************
*  BASIN 20503
*  DEVELOPED AND UNDEVELOPED LAND CONSISTING OF THE SOUTH PORTION OF
*  WESTGATE HEIGHTS.
*  ENTERS SNOW VISTA CHANNEL INLETS AT "23.3"
*****************************************************************************
*S COMPUTE HYD FOR BASIN 20503
*
COMPUTE NM HYD      ID=1  HYD=E20503 DA=0.05156 SQ MI
                    %A=95 %B=0 %C=5 %D=0 TP=0.111
                    MASS RAINFALL=-1
PRINT HYD           ID=1 CODE=1
*S HYD NO. E20503.1 IS ***** AP 24 *****
ADD HYD             ID=2 HYD=E20503.1 I=4 II=1
```

```
PRINT HYD              ID=2  CODE=1
*****************************************************************
** RATING CURVE FOR 23.3 TO AP03
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                     MINIMUM ELEV=100 FT  MAXIMUM ELEV=106 FT
                     CHANNEL SLOPE=0.024 FLOOD PLAIN SLOPE=0.024
                     N=0.035  DIST=56
                     DIST  ELEV    DIST  ELEV   DIST   ELEV   DIST   ELEV
                      0     106    18    100     38     100    56    106
COMPUTE TRAVEL TIME ID=3  REACH NO=3  VALLEY SECTIONS=1
                    LENGTH=1800 FT  SLOPE=0.0190
ROUTE               ID=3 HYD=SV100E1B.HYD INFLOW ID=2 DT=0.0
PRINT HYD           ID=3 CODE=1
PUNCH HYD           ID=3
*****************************************************************
FINISH
```

APPENDIX B.1

Temporary 106th Street Swale

Street Capacity Calculations (HEC-2)

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 Sunrise Ranch West
SUBJECT
BY DLH DATE 10-16-01
CHECKED DATE
SHEET OF

Interim Condition - 106th street Floodplain Diversion

Rating Table Calculations

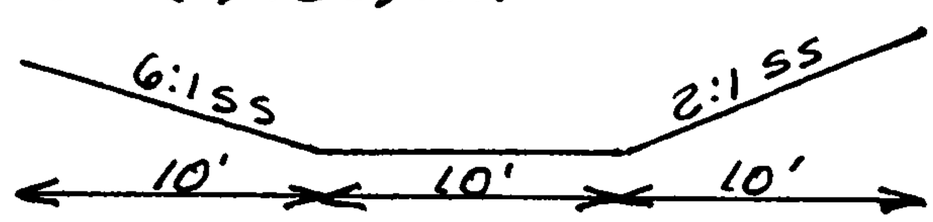
Use combination 8' diameter drop manhole and swale

8' Manhole $\Rightarrow$ $Q = CLH^{1.5}$ $L = 2\pi R = 25'$

$Q = (3)(25)(H)^{1.5}$

Swale | channel

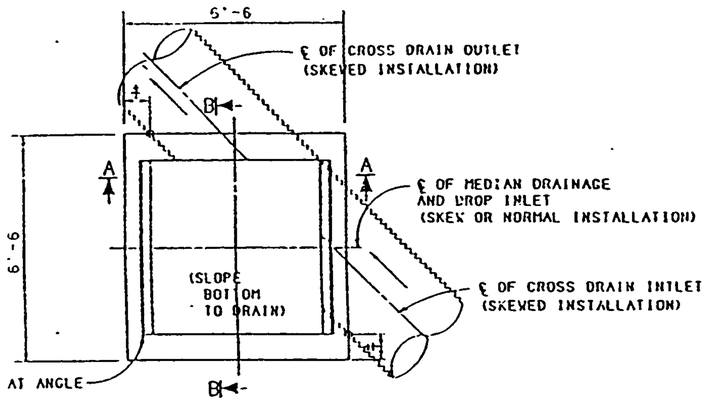
SLOPE = 0.8%



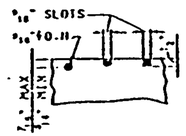
RATING TABLE

DEPTH	ELEV.	DROP INL	SWALE*	TOTAL
	5254.50	0	0	0
0.5'	5255.00	26.5	0	26.5
1.0'	5255.5	75.0	27.	102.0
1.5'	5256.0	138.	98.	236.0
1.75'	5256.25	173.	151.	324.0
2.0'	5256.50	212.	195.	407.0

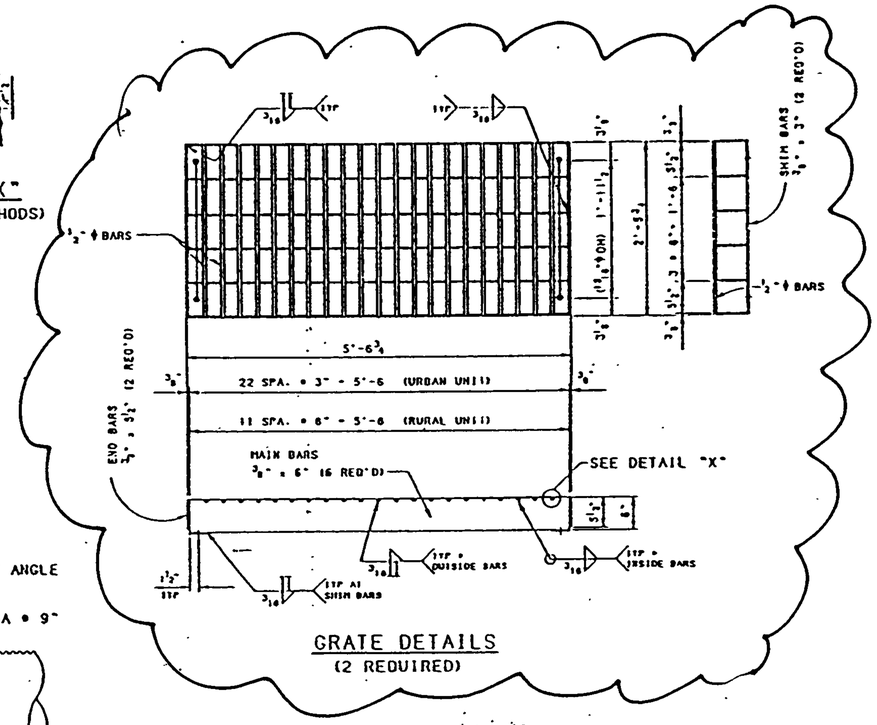
* ASSUMES n = 0.017



PLAN



DETAIL "X"
(ALTERNATE METHODS)



GRATE DETAILS
(2 REQUIRED)

GENERAL NOTES

1. ALL CONCRETE SHALL BE CLASS "A". CHAMFER EXPOSED EDGES OF CONCRETE 3/4" UNLESS OTHERWISE NOTED ON THE DETAILS.
2. REINFORCING BARS SHALL CONFORM TO A.A.S.H.T.O. SPECIFICATION M-31, GRADE 60. DIMENSIONS REFER TO THE CENTERLINE OF BAR UNLESS OTHERWISE NOTED ON THE DETAILS.
3. STRUCTURAL STEEL SHALL CONFORM TO A.A.S.H.T.O. SPECIFICATION M-183 AND SHALL BE GIVEN A PROTECTIVE COATING IN CONFORMANCE WITH THE SPECIFICATIONS.
4. DROP INLETS MAY BE USED WITH EITHER R.C.P. OR C.M.P. C.M.P. IS SHOWN IN THE DETAILS.
5. PIPES MAY BE LOCATED ON ANY WALL AND MAY BE ANY SHAPE. DIAMETER OR SPAN OF THE PIPES WILL BE DETERMINED BY THE SKEW ANGLE AND THE REQUIRED CLEARANCE AS SHOWN ON THE PLAN VIEW.

DRAWINGS REQUIRED

ROADWAY DESIGN DRAWINGS: FOR PIPE TYPE, LOCATION, HEIGHT, SKEW ANGLE, AND NUMBER REQUIRED.

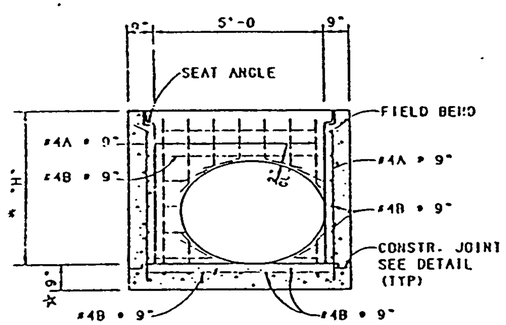
DESIGN DATA

DESIGN ACCORDING TO A.A.S.H.T.O. SPECIFICATIONS DATED 1992.

DESIGN STRESSES:
REINFORCED CONCRETE: f_c=1200 psi, F_y=60,000 psi, n=10.
STRUCTURAL STEEL: f_b=20,000 psi, F_y=36,000 psi.

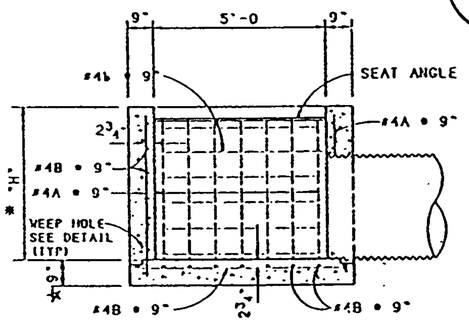
EARTH PRESSURE: 36 lbs./cu.ft. EQUIV. FLUID PRESSURE 2'-0 SURCHARGE.

LIVE LOAD ON URBAN GRATING: ONE 16,000 lbs. WHEEL PLUS 30% IMPACT, 15% OVERSTRESS.



SECTION A-A

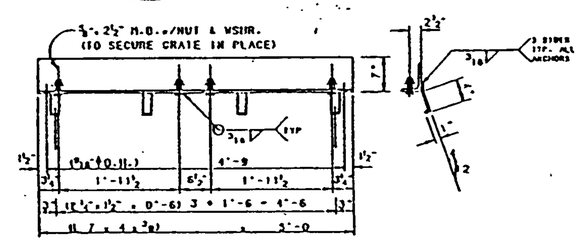
NOTE: FIELD CUT AND BEND REBAR AS REQUIRED TO CLEAR SEAT ANGLES AND PIPE OPENINGS.



SECTION B-B

☆ AVERAGE BOTTOM THICKNESS USE 8 1/2" AT OUTLET AND 9 1/2" AT HIGH SIDE.

* "H"= DIA. OR RISE OF PIPE + 1'-3 MINIMUM, AND 15'-0 MAXIMUM.



SEAT ANGLE DETAILS

NOTE: MEDIAN DROP INLETS, COMPLETE IN PLACE, WILL BE PAID FOR AT THE UNIT PRICE BID PER EACH.

#4A	"H" PLUS 6"	REQ'D. 28
#4B	6'-3	" 18 @ 5.33"H▲

REINFORCING STEEL DETAILS

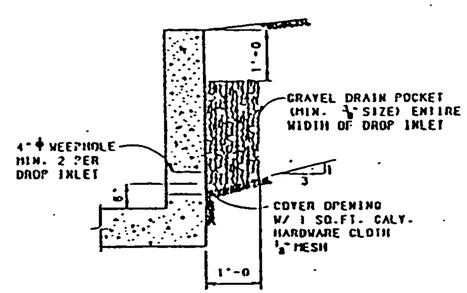
▲ NOTE: ROUND OFF "H" TO THE NEAREST FOOT. USE SHORTER LENGTH WHEN DIMENSION FALLS ON 6".

ESTIMATED QUANTITIES

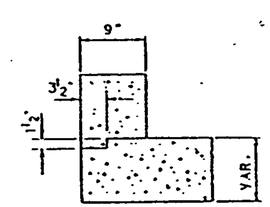
(FOR CONTRACTOR'S INFORMATION ONLY. NOT A BID ITEM)

CLASS "A" CONCRETE	1.102+0.639"H"	CU.YDS.
REINFORCING STEEL	64.50+40.96"H"	LBS.
STRUCTURAL STEEL (URBAN)	820	LBS.
STRUCTURAL STEEL (RURAL)	785	LBS.

NOTE: TO OBTAIN CLASS "A" CONCRETE QUANTITY, USE VALUE TABULATED ABOVE AND DEDUCT THE VOLUME OF THE PIPE OPENINGS FROM THE QUANTITY TABULATED.



WEEP HOLE DETAIL



CONST. JOINT DETAIL

NO.	DESCRIPTION	DATE	BY
6			
5			
4			
3			
2			
1	REVISED NOTES	1/21/9[illegible]	SJM

REVISIONS (OR CHANGE NOTICES)

NEW MEXICO STATE
HIGHWAY AND TRANSPORTATION
DEPARTMENT

MEDIAN DROP INLET
5'-0 x 5'-0
DETAILS AND QUANTITIES

SERIAL BMDI-006

```
1*****************************************************
 *  WATER SURFACE PROFILES                           *
 *  VERSION OF SEPTEMBER 1988                        *
 *  ERROR: 01,02                                     *
 *  UPDATED:  4 APRIL    1989                        *
 *  RUN DATE    10/16/ 1   TIME   18:18:44           *
 *****************************************************

                                        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
THIS RUN EXECUTED 10/16/ 1    18:18:44
 ***************************************************
   HEC2 RELEASE DATED SEP 88 UPDATED APR  1989
   ERROR CORR -  01,02
   MODIFICATION -
 ***************************************************

 T1          SUNRISE RANCH WEST CHANNEL 106th STREET
 T2          SWALE SLOPE = 0.8%, ASSUMES ASPHALT BOTTOM (SW_106R.DAT)
 T3          10' BOTTOM WIDTH, 1.66' DEPTH, 6:1 WEST SLOPE AND 2:1 EAST SLOPE (wo

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

       0         2         0         1      .008         0         0         0         0         0

 J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     38        43         1         2        26         4        68         3

 NC     .017      .017      .017       .1       .3
 QT        4        27        98      151      195
 X1        1         4         0      130        0         0         0         0         0         0
 GR     1.66       100         0      110        0       120       2.0       130

    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

 CCHV=     .100 CEHV=     .300
 *SECNO 1.000
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
      1.00      .50      .50      .55      .00      .78      .28      .00      .00     1.66
       27.       0.      27.       0.       0.       6.       0.       0.       0.     2.00
```

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

```
     .00       .00      4.26       .00      .000      .017      .000      .000       .00    107.01
  .007894       0.        0.        0.         0        14         5       .00     15.48    122.49

T1
T2
T3

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

     0         3         0         1       .008

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

    2         0        -1         0         0         0         0         0         0         0

   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 2

CCHV=      .100 CEHV=      .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
    1.00      1.00      1.00      1.15       .00      1.62       .62       .00       .00      1.66
     98.        0.       98.        0.        0.       16.        0.        0.        0.      2.00
     .00       .00      6.32       .00      .000      .017      .000      .000       .00    103.97
  .007917       0.        0.        0.         0        11         5       .00     21.03    125.00

T1
T2
T3

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

     0         4         0         1       .008

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

    3         0        -1         0         0         0         0         0         0         0

   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 3

CCHV=      .100 CEHV=      .300
*SECNO 1.000
```

```
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.00     1.25     1.25     1.46      .00     2.05      .80      .00      .00     1.66
     151.       0.     151.       0.       0.      21.       0.       0.       0.     2.00
      .00      .00     7.17      .00     .000     .017     .000     .000      .00   102.49
  .008012       0.       0.       0.        0       14        6      .00    23.75   126.24

T1
T2
T3

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

     0         5         0         1       .008

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     4         0        -1         0         0         0         0         0         0         0

   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 4

CCHV=      .100 CEHV=      .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.00     1.42     1.42     1.67      .00     2.34      .92      .00      .00     1.66
     195.       0.     195.       0.       0.      25.       0.       0.       0.     2.00
      .00      .00     7.70      .00     .000     .017     .000     .000      .00   101.45
  .008015       0.       0.       0.        0       17        6      .00    25.65   127.10

  THIS RUN EXECUTED 10/16/ 1    18:18:44
**************************************************
  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
    10' BOTTOM WIDTH,

SUMMARY PRINTOUT

      SECNO       Q       CWSEL     CRIWS      VCH     TOPWID     FRCH       EG

      1.000     27.00       .50       .55      4.26     15.48      1.17       .78
      1.000     98.00      1.00      1.15      6.32     21.03      1.30      1.62
      1.000    151.00      1.25      1.46      7.17     23.75      1.34      2.05
      1.000    195.00      1.42      1.67      7.70     25.65      1.37      2.34
```

```
1*****************************************************
 *  WATER SURFACE PROFILES                           *
 *  VERSION OF SEPTEMBER 1988                        *
 *  ERROR: 01,02                                     *
 *  UPDATED:  4 APRIL    1989                        *
 *  RUN DATE    10/16/ 1   TIME   18:18:26           *
 *****************************************************

                                        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 10/16/ 1    18:18:26
 ***************************************************
   HEC2 RELEASE DATED SEP 88 UPDATED APR  1989
   ERROR CORR -  01,02
   MODIFICATION -
 ***************************************************

 T1          SUNRISE RANCH WEST CHANNEL 106th STREET
 T2          SWALE SLOPE = 0.8% ASSUMES EARTHEN BOTTOM (SW_106.DAT)
 T3          10' BOTTOM WIDTH, 1.66' DEPTH, 6:1 WEST SLOPE AND 2:1 EAST SLOPE (wo

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

       0         2         0         0      .008         0         0         0         0         0

 J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     38        43         1         2        26         4        68         3

 NC     .025      .025      .025        .1        .3
 QT        4        18        68       103       148
 X1        1         4         0       130         0         0         0         0         0         0
 GR     1.66       100         0       110         0       120       2.0       130

    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

 CCHV=     .100 CEHV=     .300
 *SECNO 1.000
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
      1.00      .49      .49      .00      .00      .62      .13      .00      .00     1.66
```


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

```
      18.       0.      18.       0.       0.       6.       0.       0.       0.      2.00
     .00       .00     2.88      .00     .000     .025     .000     .000      .00    107.04
 .007885        0.       0.       0.        0        0        5      .00     15.42    122.46

T1
T2
T3

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ

     0         3        0        0       .008

J2  NPROF     IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

    2         0        -1       0        0        0        0        0        0        0

   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 2

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
      1.00      1.01     1.01      .00      .00     1.30      .29      .00      .00     1.66
      68.        0.      68.       0.       0.      16.       0.       0.       0.     2.00
      .00       .00     4.32      .00     .000     .025     .000     .000      .00   103.91
 .007909        0.       0.       0.        0        0        5      .00    21.15   125.06

T1
T2
T3

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ

     0         4        0        0       .008

J2  NPROF     IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

    3         0        -1       0        0        0        0        0        0        0

   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 3

CCHV=     .100 CEHV=     .300
```

```
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.00      1.25      1.25       .00       .00      1.62       .37       .00       .00      1.66
     103.        0.      103.        0.        0.       21.        0.        0.        0.      2.00
      .00       .00      4.88       .00      .000      .025      .000      .000       .00    102.47
  .008012        0.        0.        0.         0         0         6       .00     23.77    126.25

T1
T2
T3

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

     0         5         0         0       .008

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

    4         0        -1         0         0         0         0         0         0         0

   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 4

CCHV=      .100 CEHV=      .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.00      1.50      1.50       .00       .00      1.95       .45       .00       .00      1.66
     148.        0.      148.        0.        0.       27.        0.        0.        0.      2.00
      .00       .00      5.40       .00      .000      .025      .000      .000       .00    100.96
  .008016        0.        0.        0.         0         0         6       .00     26.54    127.50

  THIS RUN EXECUTED 10/16/ 1    18:18:26
*****************************************************
  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
10' BOTTOM WIDTH,
SUMMARY PRINTOUT
      SECNO        Q        CWSEL     CRIWS      VCH      TOPWID     FRCH       EG

      1.000     18.00        .49       .00      2.88      15.42      .80        .62
      1.000     68.00       1.01       .00      4.32      21.15      .88       1.30
      1.000    103.00       1.25       .00      4.88      23.77      .91       1.62
      1.000    148.00       1.50       .00      5.40      26.54      .94       1.95

 SUMMARY OF ERRORS AND SPECIAL NOTES
```

```
1*****************************************************
 *  WATER SURFACE PROFILES                           *
 *  VERSION OF SEPTEMBER 1988                        *
 *  ERROR: 01,02                                     *
 *  UPDATED:  4 APRIL    1989                        *
 *  RUN DATE     7/ 9/ 1   TIME   16:11:52           *
 *****************************************************
```

```
*****************************************
*  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  7/ 9/ 1    16:11:52
 ************************************************
   HEC2 RELEASE DATED SEP 88 UPDATED APR  1989
   ERROR CORR -  01,02
   MODIFICATION -
 ************************************************

 T1          SUNRISER RANCH WEST STREET CAPACITY
 T2          26'FF W/ MOUNTABLE CURB - CROWN
 T3          SECRET OASIS

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

       0         2         0         1      .036         0         0         0         0         0

 J3  VARIABLE CODES FOR SUMMARY PRINTOUT

      38        43         1         2        26         4        68         3

 NC     .017      .017      .017       .1       .3
 QT        4     10.72     10.81    20.81    15.50
 X1        1         7         0       44        0         0         0         0         0         0
 GR      .51         0       .33      8.9        0         9       .26        22         0        35
 GR      .33      35.1       .51       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

 *PROF 1

 CCHV=     .100 CEHV=     .300
 *SECNO 1.000
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
 .
```

```
3265 DIVIDED FLOW

     1.00      .23      .23      .30      .00      .47      .24      .00      .00      .51
      11.       0.      11.       0.       0.       3.       0.       0.       0.      .51
      .00      .00     3.89      .00     .000     .017     .000     .000      .00     8.93
  .035408       0.       0.       0.        0       11        5      .00    23.53    35.07

T1
T2 LOST ARROW
T3

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ

      0        3        0        1      .036

J2  NPROF     IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

     2         0       -1        0        0        0        0        0        0        0

   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 2

CCHV=      .100 CEHV=      .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

3265 DIVIDED FLOW

     1.00      .23      .23      .30      .00      .47      .24      .00      .00      .51
      11.       0.      11.       0.       0.       3.       0.       0.       0.      .51
      .00      .00     3.90      .00     .000     .017     .000     .000      .00     8.93
  .035450       0.       0.       0.        0       11        5      .00    23.60    35.07

T1
T2 DUKE AVENUE
T3

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ

      0        4        0        1      .024

J2  NPROF     IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

     3         0       -1        0        0        0        0        0        0        0

   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 3

CCHV=      .100 CEHV=      .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.00      .31      .31      .41      .00      .61      .29      .00      .00      .51
      21.       0.      21.       0.       0.       5.       0.       0.       0.      .51
      .00      .00     4.33      .00     .000     .017     .000     .000      .00     8.90
  .024144       0.       0.       0.        0       14        6      .00    26.19    35.10

T1
T2 DUKE AVENUE
T3

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ

      0         5        0        1      .024

J2  NPROF     IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

     4         0       -1        0        0        0        0        0        0        0

   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 4

CCHV=      .100 CEHV=      .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.00      .28      .28      .36      .00      .51      .23      .00      .00      .51
      16.       0.      15.       0.       0.       4.       0.       0.       0.      .51
      .00      .00     3.85      .00     .000     .017     .000     .000      .00     8.91
  .024033       0.       0.       0.        0       14        6      .00    26.17    35.09
                                                                THIS RUN EXECUTED  7/ 9/ 1    16:11:52

**************************************************
  HEC2 RELEASE DATED SEP 88 UPDATED APR  1989
  ERROR CORR -  01,02
  MODIFICATION -
**************************************************

      SECNO       Q       CWSEL     CRIWS      VCH     TOPWID     FRCH       EG

      1.000     10.72       .23       .30      3.89     23.53      2.12       .47
      1.000     10.81       .23       .30      3.90     23.60      2.11       .47
      1.000     20.81       .31       .41      4.33     26.19      1.78       .61
      1.000     15.50       .28       .36      3.85     26.17      1.73       .51
 SUMMARY OF ERRORS AND SPECIAL NOTES
```

```
1*****************************************************
 *  WATER SURFACE PROFILES                           *
 *  VERSION OF SEPTEMBER 1988                        *
 *  ERROR: 01,02                                     *
 *  UPDATED:  4 APRIL    1989                        *
 *  RUN DATE     7/ 9/ 1   TIME   16:24:57           *
 *****************************************************

                                        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
```

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

```
 END OF BANNER
   THIS RUN EXECUTED  7/ 9/ 1    16:24:57
 ************************************************
   HEC2 RELEASE DATED SEP 88 UPDATED APR  1989
   ERROR CORR -  01,02
   MODIFICATION -
 ************************************************

 T1          SUNRISE RANCH WEST STREET CAPACITY
 T2          28'FF 8" STD CURB CROWN
 T3          CACTUS POINT DRIVE

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

       0         2         0         0      .006         0         0         0         0         0

 J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     38        43         1         2        26         4        68         3

 NC     .017      .017      .017       .1       .3
 QT        2     47.0     20.81
 X1        1        9         0       46        0         0         0         0         0         0
 GR      .87        0       .67      8.9        0         9      .125        11      .365        23
 GR     .125       35         0       37      .67      37.1       .87        46

    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

 CCHV=      .100 CEHV=      .300
 *SECNO 1.000
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.00      .66      .66      .65      .00      .88      .22      .00      .00      .87
```

```
     47.       0.      47.       0.       0.      12.       0.       0.       0.       .87
     .00      .00    3.80      .00     .000     .017     .000     .000      .00     8.90
 .005972       0.       0.       0.        0       14        0      .00    28.20    37.10

T1 DUKE AVENUE
T2
T3

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ

     0         3        0        1       .024

J2  NPROF     IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

    2         0        -1       0        0        0        0        0        0        0

   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 2

CCHV=     .100 CEHV=     .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
    1.00      .40      .40      .47      .00      .67      .27      .00      .00      .87
     21.       0.      21.       0.       0.       5.       0.       0.       0.      .87
     .00      .00     4.19      .00     .000     .017     .000     .000      .00     8.94
 .023898       0.       0.       0.        0        8        5      .00    28.12    37.06

  THIS RUN EXECUTED  7/ 9/ 1    16:24:57
**************************************************
  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

    CACTUS POINT DRIVE

SUMMARY PRINTOUT

      SECNO       Q       CWSEL     CRIWS      VCH     TOPWID     FRCH       EG

      1.000     47.00      .66       .65      3.80     28.20      1.01       .88
      1.000     20.81      .40       .47      4.19     28.12      1.76       .67

 SUMMARY OF ERRORS AND SPECIAL NOTES
```

```
1*****************************************************
 *  WATER SURFACE PROFILES                           *
 *  VERSION OF SEPTEMBER 1988                        *
 *  ERROR: 01,02                                     *
 *  UPDATED:  4 APRIL    1989                        *
 *  RUN DATE     7/11/ 1   TIME   11:42:12           *
 *****************************************************

                                        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  7/11/ 1    11:42:12
 ************************************************
   HEC2 RELEASE DATED SEP 88 UPDATED APR  1989
   ERROR CORR -  01,02
   MODIFICATION -
 ************************************************

 T1          DESERT SAGE SUBDIVISION STREET CAPACITY
 T2          28'FF MOUNTABLE CURB
 T3          MESA SUNSET

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

        0         2         0         1       .03         0         0         0         0         0

 J3  VARIABLE CODES FOR SUMMARY PRINTOUT

      38        43         1         2        26         4        68         3

 NC     .017      .017      .017       .1        .3
 QT        2       12.       10.
 X1        1         7         0       48         0         0         0         0         0         0
 GR      .67         0       .33      9.9         0        10       .28        24         0        38
 GR      .33      38.1       .67       48

    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

 CCHV=     .100 CEHV=     .300
 *SECNO 1.000
 2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
```

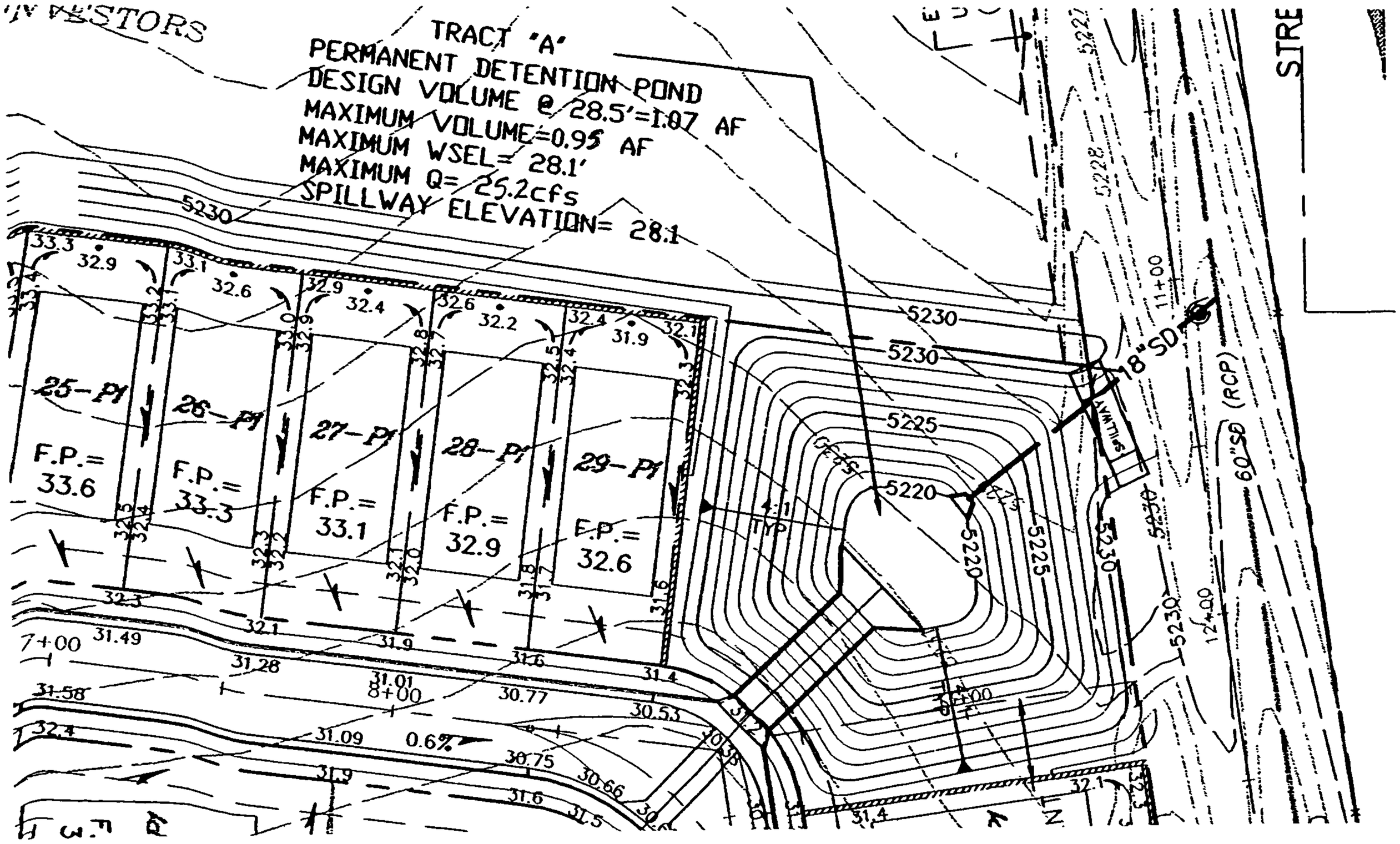
```
*****************************************
*  U.S. ARMY CORPS OF ENGINEERS         *
*  THE HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D           *
*  DAVIS, CALIFORNIA 95616-4687         *
*  (916) 756-1104, (916) 551-1748       *
*****************************************
```

```
3265 DIVIDED FLOW

     1.00      .25      .25      .31      .00      .47      .22      .00      .00      .67
      12.       0.      12.       0.       0.       3.       0.       0.       0.      .67
      .00      .00     3.76      .00     .000     .017     .000     .000      .00     9.92
  .029963       0.       0.       0.        0       11        7      .00    25.33    38.08

T1
T2 SUNRISE WEST
T3

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

      0         3         0         0       .008

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     2         0        -1         0         0         0         0         0         0         0

   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 2

CCHV=      .100 CEHV=      .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
     1.00      .30      .30      .30      .00      .38      .08      .00      .00      .67
      10.       0.      10.       0.       0.       4.       0.       0.       0.      .67
      .00      .00     2.25      .00     .000     .017     .000     .000      .00     9.91
  .007893       0.       0.       0.        0       15        0      .00    28.18    38.09

  THIS RUN EXECUTED  7/11/ 1    11:42:12
**************************************************
  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

    MESA SUNSET

SUMMARY PRINTOUT

      SECNO       Q       CWSEL     CRIWS      VCH     TOPWID     FRCH       EG

       1.000     12.00       .25       .31      3.76     25.33      1.97       .47
       1.000     10.00       .30       .30      2.25     28.18      1.00       .38
 SUMMARY OF ERRORS AND SPECIAL NOTES
```

APPENDIX B.2

Onsite and Offsite Detention Ponds

Rating Tables and Outfall Structures



ONSITE POND - VOLUME CALCS.

Elevation	Area (SF)	Volume (CF)	Σ Volume (CF)	Σ Volume (AcFt)
20	1455.6	0	0	0
21	2016.0	1728.2	1728.2	0.0397
22	2775.5	2385.7	4113.9	0.0944
23	3669.7	3212.2	7326.1	0.1682
24	4710.5	4179.3	11505.4	0.2641
25	5867.3	5278.3	16783.7	0.3853
26	7140.6	6493.5	23277.2	0.5344
27	8522.5	7821.4	31098.6	0.7139
28	10028.4	9265.2	40363.8	0.9266
29	11646.6	10827.4	51191.2	1.1752
30	13393.6	12509.9	63701.1	1.4624

$$\text{VOLUME} = \frac{1}{3}(\text{depth})(A_1 + A_2 + \sqrt{A_1 \cdot A_2})$$

Rating Table
(Assume no backwater effect in 60"RCP)

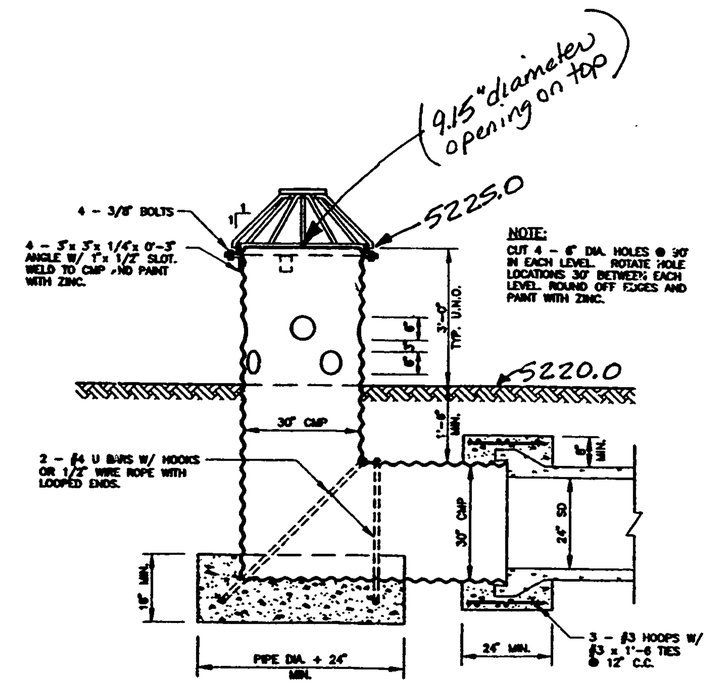
OUTFLOW Q (cfs)	STORAGE (Ac.Ft.)	ELEVATION (feet)
0	0	20
2.67	0.0397	21
7.91	0.0944	22
10.98	0.1682	23
15.51	0.2641	24
18.40	0.3853	25
20.86	0.5344	26
23.04	0.7139	27
25.03	0.9266	28
26.87	1.1752	29
28.57	1.4624	30

Results of AHYMO analysis:
Peak Q (out) = 25.2 cfs
Peak Volume = 0.9494 acre-feet
Peak WSEI = 28.1'

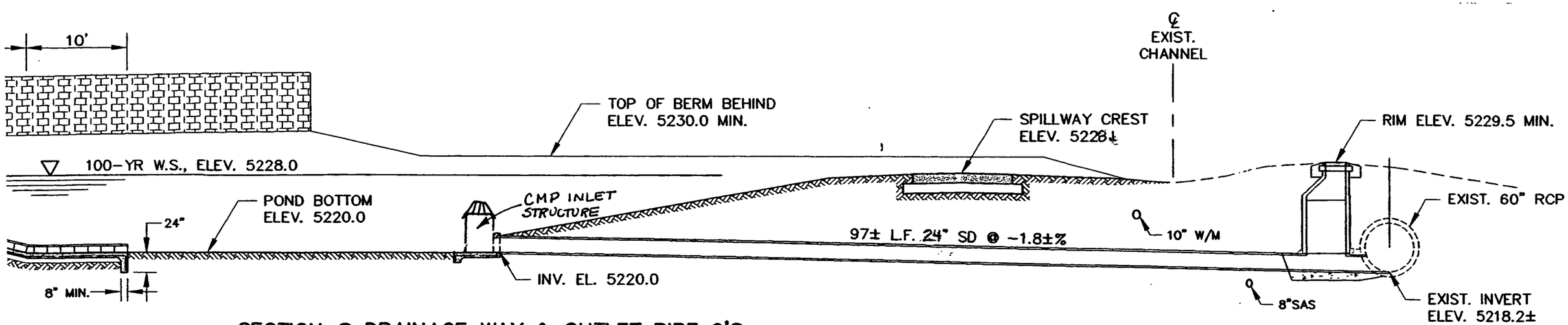
Rating Table
WORSE CASE SCENARIO: submerged orifice
(Assume HGL(max.)=24.7' in 60"RCP)

OUTFLOW Q (cfs)	STORAGE (Ac.Ft.)	ELEVATION (feet)
0	0	20
0.01	0.0397	21
0.02	0.0944	22
0.03	0.1682	23
0.04	0.2641	24
5.33	0.3853	25
11.09	0.5344	26
14.76	0.7139	27
17.68	0.9266	28
20.18	1.1752	29
22.40	1.4624	30

Results of AHYMO analysis:
Peak Q (out) = 20.59 cfs
Peak Volume = 1.228 acre-feet
Peak WSEI = 29.18'



CMP INLET STRUCTURE
NOT TO SCALE



SECTION @ DRAINAGE WAY & OUTLET PIPE ℄'S
1" = 10'-0"

Figure 6 Onsite Detention Pond Outfall Structure

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 Sunrise Ranch West
SUBJECT Onsite Detention Pond
BY DLH DATE 9-5-01
CHECKED _____ DATE _____
SHEET ____ OF ____

Assume: No backwater effect from 60" RCP Storm Sewer

Area (4) - 6" Dia openings $= (4)\pi(.25)^2 = 0.7854$ SF

Area 9.15" Dia. opening $= (1)\pi(r)^2 = 0.45$ SF

(1) Orifice Eqn bottom 4 openings: $Q = 0.6(.7854)\sqrt{64.4(x-20.5)}$

(2) Orifice Eqn next 4 openings: $Q = 0.6(.7854)\sqrt{64.4(x-21.25)}$

(3) Orifice Eqn top 9.15" diam. opening: $Q = 0.6(.45)\sqrt{64.4(x-23)}$

Elevation	Qcfs Eqn (1)	Qcfs Eqn (2)	Qcfs Eqn (3)	Q (cfs) Total
21	2.67	0	0	2.67
22	4.63	3.28	0	7.91
23	5.98	5.00	0	10.98
24	7.07	6.27	2.17	15.51
25	8.02	7.32	3.06	18.40
26	8.87	8.24	3.75	20.86
27	9.64	9.07	4.33	23.04
28	10.36	9.83	4.84	25.03
29	11.03	10.53	5.31	26.87
30	11.65	11.19	5.73	28.57

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 Sunrise Ranch West
SUBJECT Onsite Detention Pond
BY DLH DATE 9-5-01
CHECKED _____ DATE _____
SHEET ____ OF ____

Assume HGL(max.) = 24.7' constant in 60" RCP storm sewer

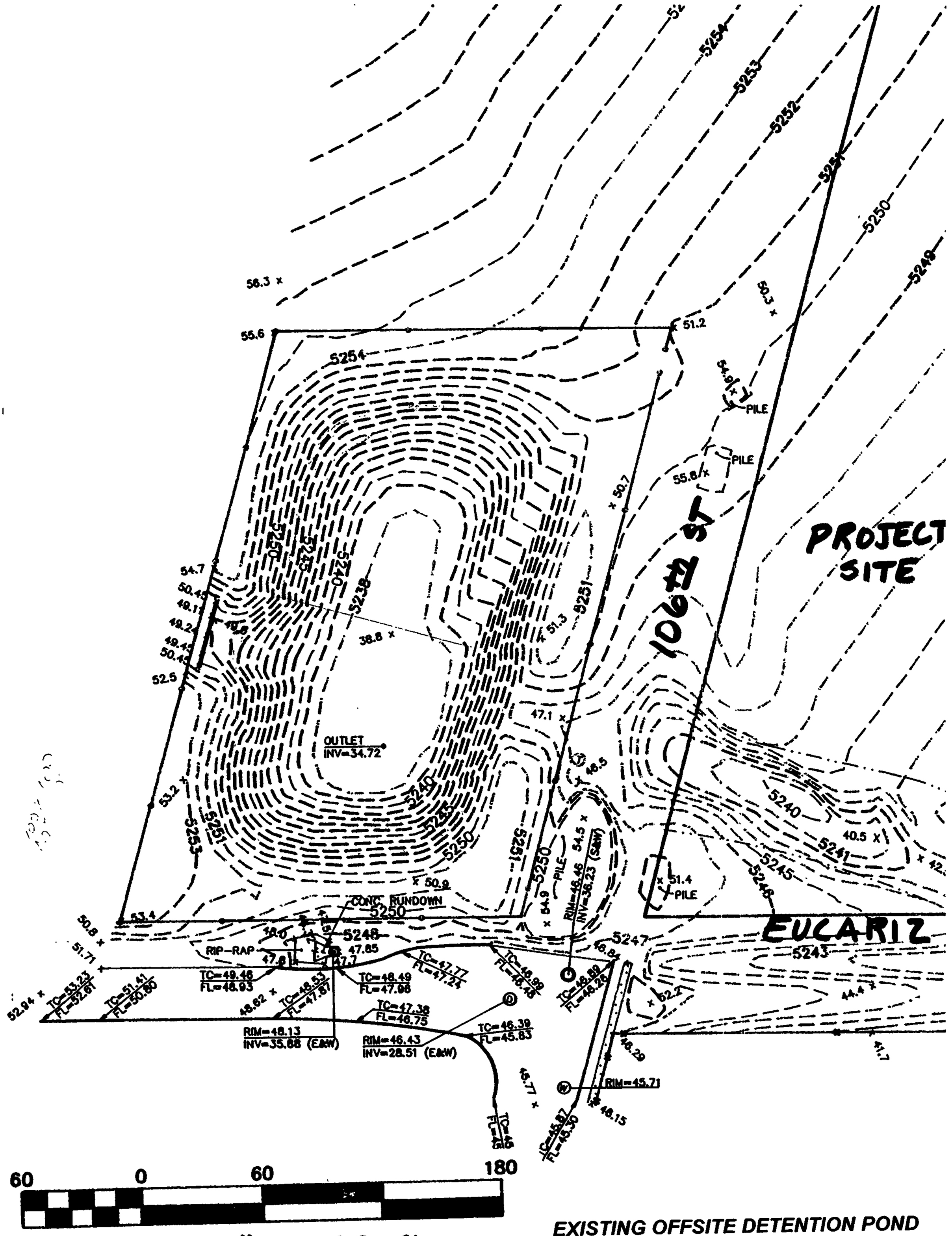
WORSE CASE SCENARIO: "Submerged orifice"

$$Q = 0.6(A_1 + A_2 + A_3)\sqrt{64.4(X-24.7)}$$

$$Q = 0.6(.7854 + .7854 + .45)\sqrt{64.4(X-24.7)}$$

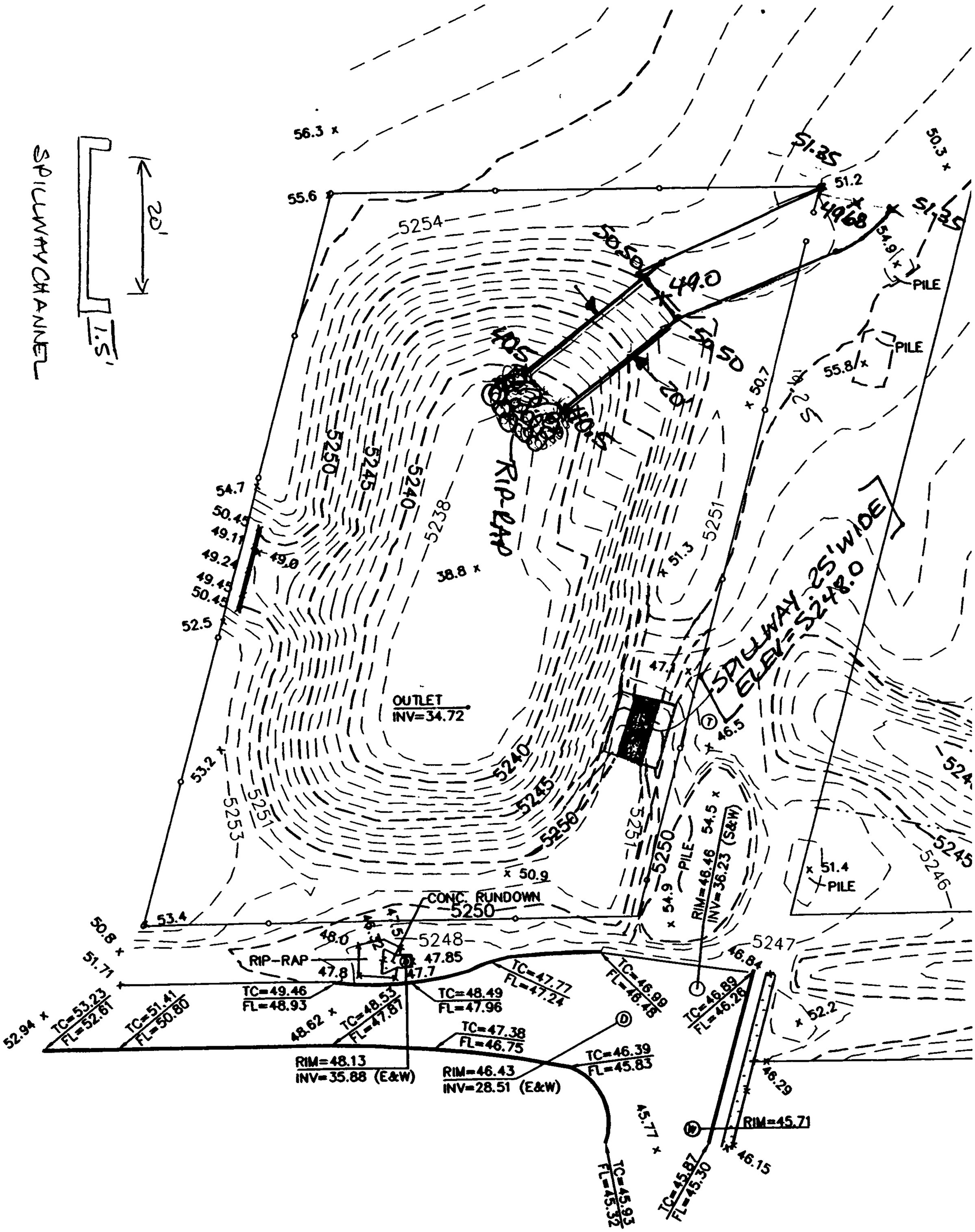
(1.21248)

Elevation	Total Q
25	5.33
26	11.09
27	14.76
28	17.68
29	20.18
30	22.40



EXISTING OFFSITE DETENTION POND

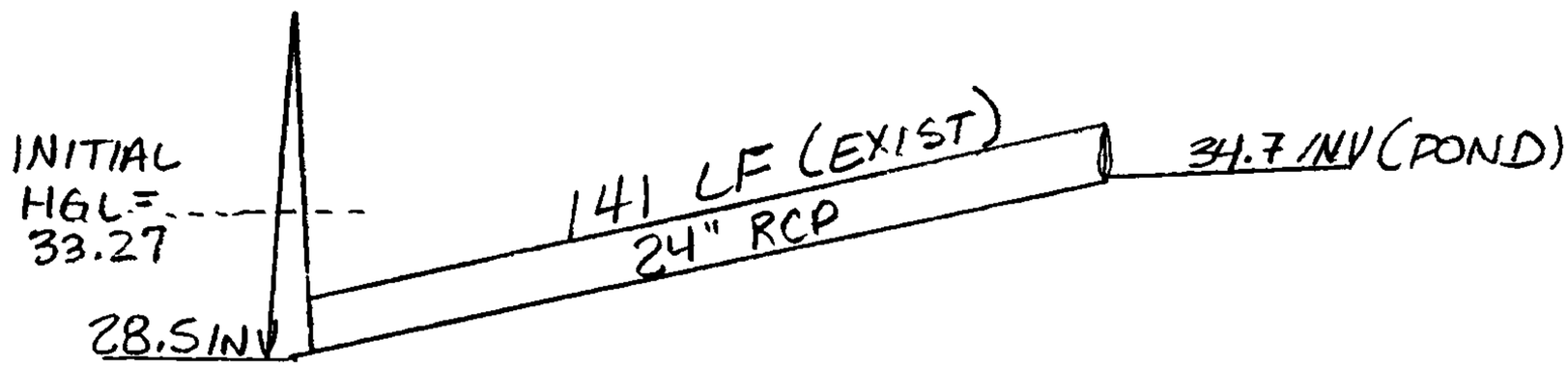
(NW OF 106TH STREET AND EUCARIZ CORRIDOR

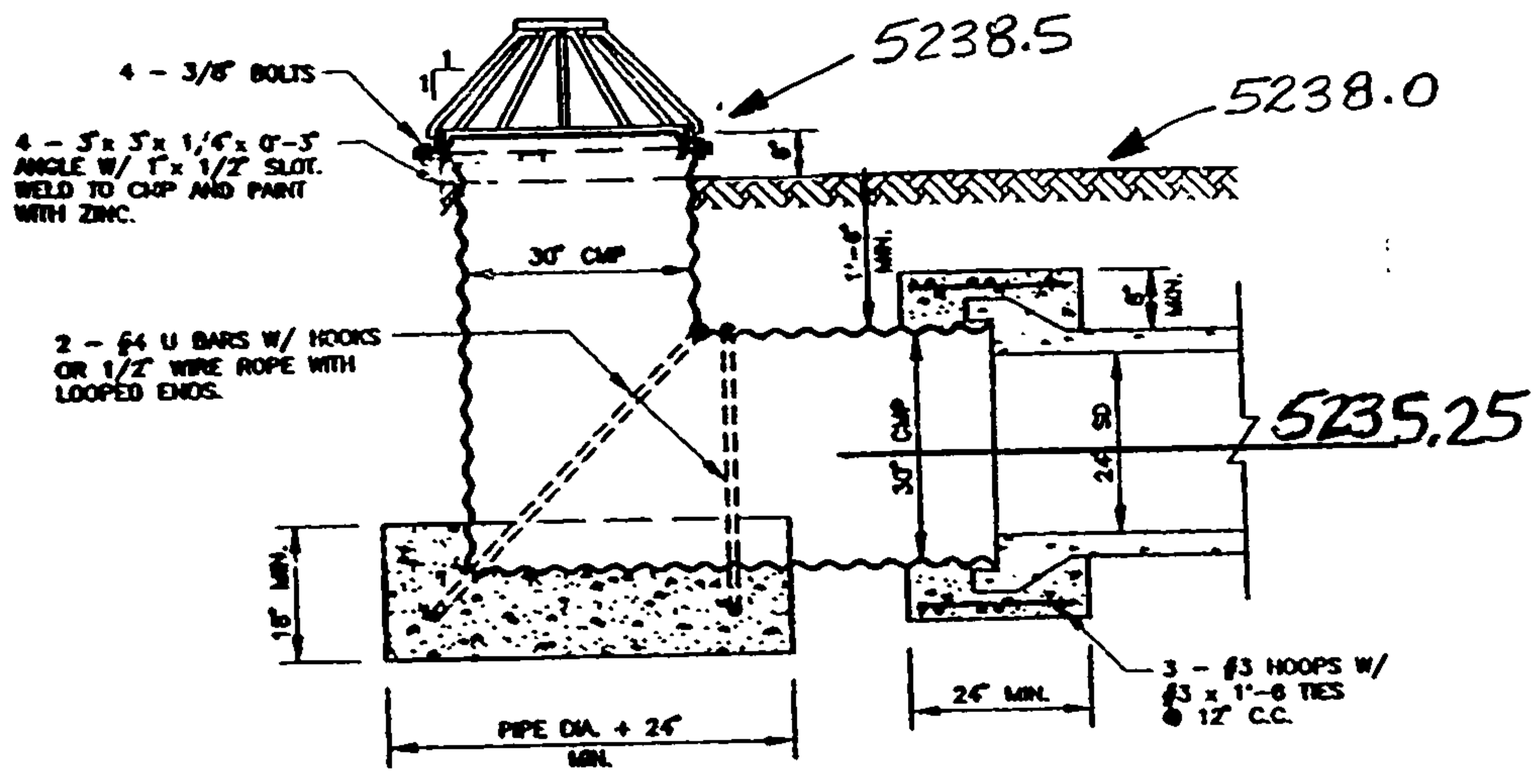


106TH ST. DETENTION POND

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 Sunrise Ranch West
SUBJECT 106th st offsite Pond
BY DLH DATE 10-16-01
CHECKED _____ DATE _____
SHEET ___ OF ___





Area 30"CMP = 7.85 ft²

CMP INLET STRUCTURE
NOT TO SCALE

For interim condition assumed maximum HGL = 33.27 to develop rating table for pond.

RATING TABLE (in AHYMO analysis)

Depth (ft)	Elev. (ft)	Storage (Acft)	Outflow (cfs)
34.7	0	0	
38.5	0.151	0.01	
39.0	.303	9.44	(Weir Eqn) $Q = 3.4(7.85)(0.5)^{1.5}$
40.0	.605	48.0	(Storm Aus)
41.5	1.059	53.0	↓
42.0	1.212	54.5	
44.0	1.977	63.0	
46.0	3.096	66.0	
48.0	4.214	71.0	

LINE 1 / Q = 40.0 / HT = 24 / WID = 24 / N = .013 / L = 141.5 / JLC = .1

MH 3EX- PONDOUT / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	33.27	24.00	28.51	12.73	35.79	0.00	15.92	3.14
UPSTRM	37.95	24.00	34.70	12.73	40.47	0.00	11.29	3.14

Drainage area (ac)	= 0	Slope of invert (%)	= 4.375
Runoff coefficient	= 0	Slope energy grade line (%)	= 3.128
Time of conc (min)	= 0	Critical depth (in)	= 23.65
Inlet time (min)	= 0	Req'd length curb inlet (ft)	= 0.0
Intensity (in/hr)	= 0.00	Req'd grate area (sf)	= 0.0
Cumulative C*A	= 0.0	Depth at inlet opening (in)	= 0
Flow contrib (cfs)	= 40	Confluence angle (deg)	= 0
Default Q (cfs)	= 40	Natural ground elev (ft)	= 48
Line capac. (cfs)	= 47.3	Line storage (cuft)	= 444

LINE 1 / Q = 71.0 / HT = 24 / WID = 24 / N = .013 / L = 141.5 / JLC = .1

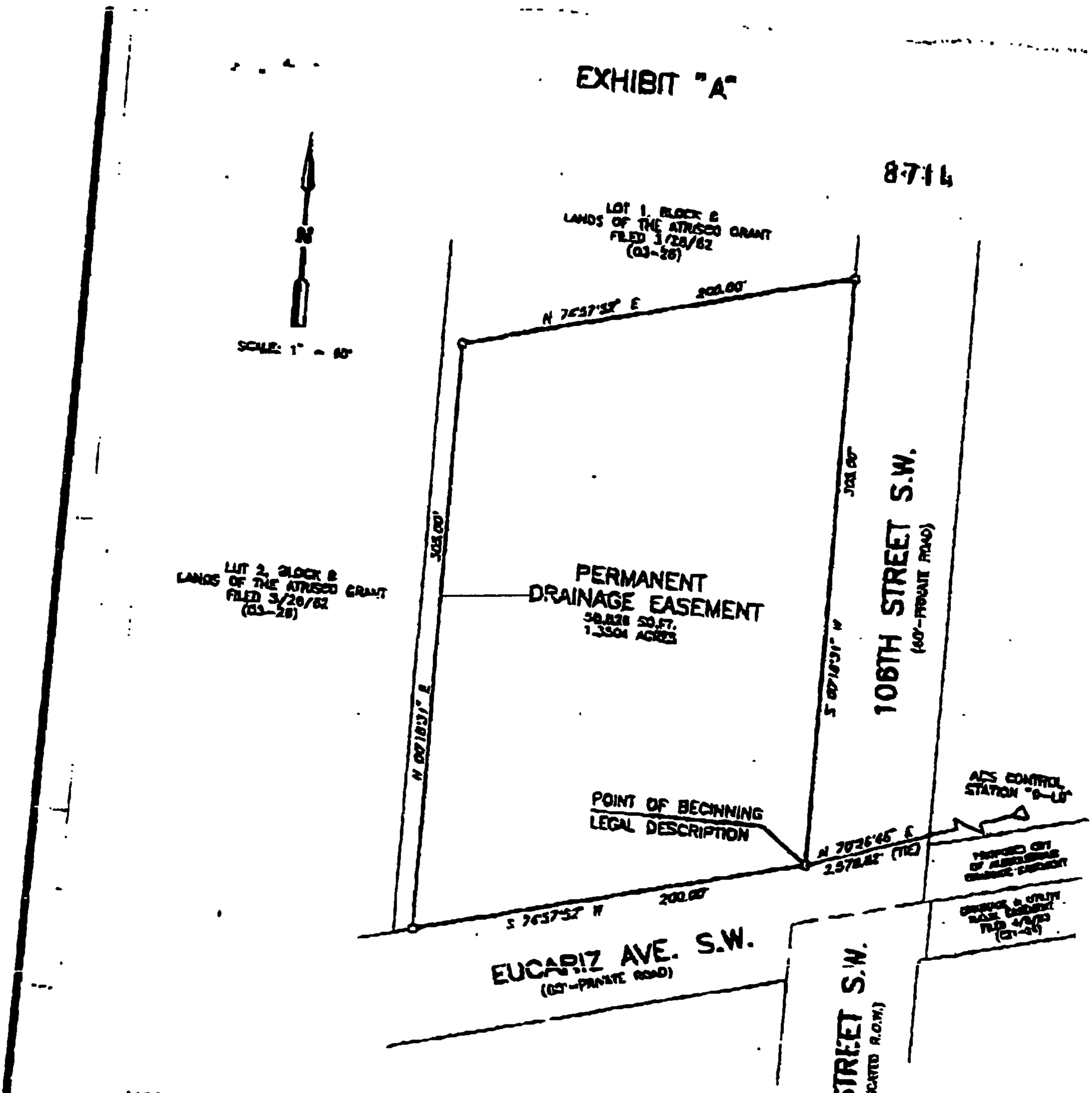
MH 3EX- PONDOUT / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	33.27	24.00	28.51	22.60	41.20	0.00	15.92	3.14
UPSTRM	48.01	24.00	34.70	22.60	55.94	0.00	11.29	3.14

Drainage area (ac)	= 0	Slope of invert (%)	= 4.375
Runoff coefficient	= 0	Slope energy grade line (%)	= 9.856
Time of conc (min)	= 0	Critical depth (in)	= 23.99
Inlet time (min)	= 0	Req'd length curb inlet (ft)	= 0.0
Intensity (in/hr)	= 0.00	Req'd grate area (sf)	= 0.0
Cumulative C*A	= 0.0	Depth at inlet opening (in)	= 0
Flow contrib (cfs)	= 71	Confluence angle (deg)	= 0
Default Q (cfs)	= 71	Natural ground elev (ft)	= 48
Line capac. (cfs)	= 47.3	Line storage (cuft)	= 444

EXHIBIT "A"

8714



NOTES:

1. BEARINGS SHOWN ARE NEW MEXICO STATE PLANE GRID BEARINGS (CENTRAL ZONE).
2. DISTANCES ARE GROUND DISTANCES.

ALBUQUERQUE SURVEYING CO., INC. PH. 884-2036 PAGE 2

8713

ALBUQUERQUE SURVEYING COMPANY INC
2119 MENAUL BOULEVARD NE ALBUQUERQUE NM 87107
PHONE 884-2036
FAX 884-3796

EXHIBIT "A"
LEGAL DESCRIPTION
PERMANENT DRAINAGE EASEMENT

Being that certain parcel of land situated within the Town of Atrisco Grant, within Section 29 (as projected), Township 10 North, Range 2 East, New Mexico Principal Meridian, Albuquerque, Bernalillo County, New Mexico, and being identified as the southeasterly portion of Lot 1, Block 8, Lands of the Atrisco Grant, as said Lot 1 is shown and designated on "PLAT, LANDS OF THE ATRISCO GRANT WITHIN SECTIONS 28, 29, & 30, T10N, R2E, N.M.P.M.", filed in the Office of the County Clerk, Bernalillo County, New Mexico, on March 26, 1962, in Volume D3, Folio 26, and being more particularly described by metes and bounds survey as follows:

Beginning at the southeast corner of the parcel of land herein described being the point at the intersection of the northerly line of Eucariz Road (private road) and the westerly line of 106th Street (private road), whence the ACS Control Station "9-L9" bears N. 70° 26' 46" E., 2,578.82 feet distance; thence,

S. 74° 57' 52" W., 200.00 feet distance to the southwest corner of the parcel of land herein described; thence,

N. 00° 18' 31" E., 305.00 feet distance to the northwest corner of the parcel of land herein described; thence,

N. 74° 57' 52" E., 200.00 feet distance to the northeast corner of the parcel of land herein described being a point on the westerly line of 106th Street (private road); thence,

S. 00° 18' 31" W., 305.00 feet distance to the southeast corner and point of beginning of the parcel of land herein described and containing 58,826 square feet (1.3504 acres), more or less.

Vladimir Jirik, N.M.P.S. #10464

11/18/94
Date

PROFESSIONAL SURVEYOR STATE OF NEW MEXICO NO. 10464 VLADIMIR JIRIK

95078500

EASEMENT

This grant of Easement, between S.T. Development LLC ("Grantor"), and the City of Albuquerque, a New Mexico municipal corporation ("City"), whose address is P. O. Box 1293 Albuquerque, New Mexico 87103.

1. **Grant of Easement.** The Grantor grants to the City an exclusive permanent easement for a ("Public Improvement") on, over, across and through the property described on Exhibit A attached hereto ("Property"), together with the right of the City to operate, maintain, repair, replace and construct the Public Improvement and the right to remove trees, bushes, undergrowth and any other obstacles upon the Property if the City determines they interfere with the appropriate use of the easement.

2. **Warranties.** Grantor covenants and warrants that it is the owner in fee simple of the Property and that is has a good lawful right to convey the Property or any part thereof and that the Grantor will forever warrant and defend the title to the Property against all claims from all persons or entities.

3. **Binding on Grantor's Property.** The grant and other provisions of this Easement constitute covenants running with title to the Property for the benefit of the City and its successors and assigns until terminated.

Witness my hand and seal this 7th day of August 1995.

GRANTOR:

By: Charles A. Hagelin
Its: President
Dated: 8-7-95

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

This instrument was acknowledged before me on August 7, 1995 by Charles A. Hagelin President of S.T. Development LLC, on behalf of the Company.

Notary Public

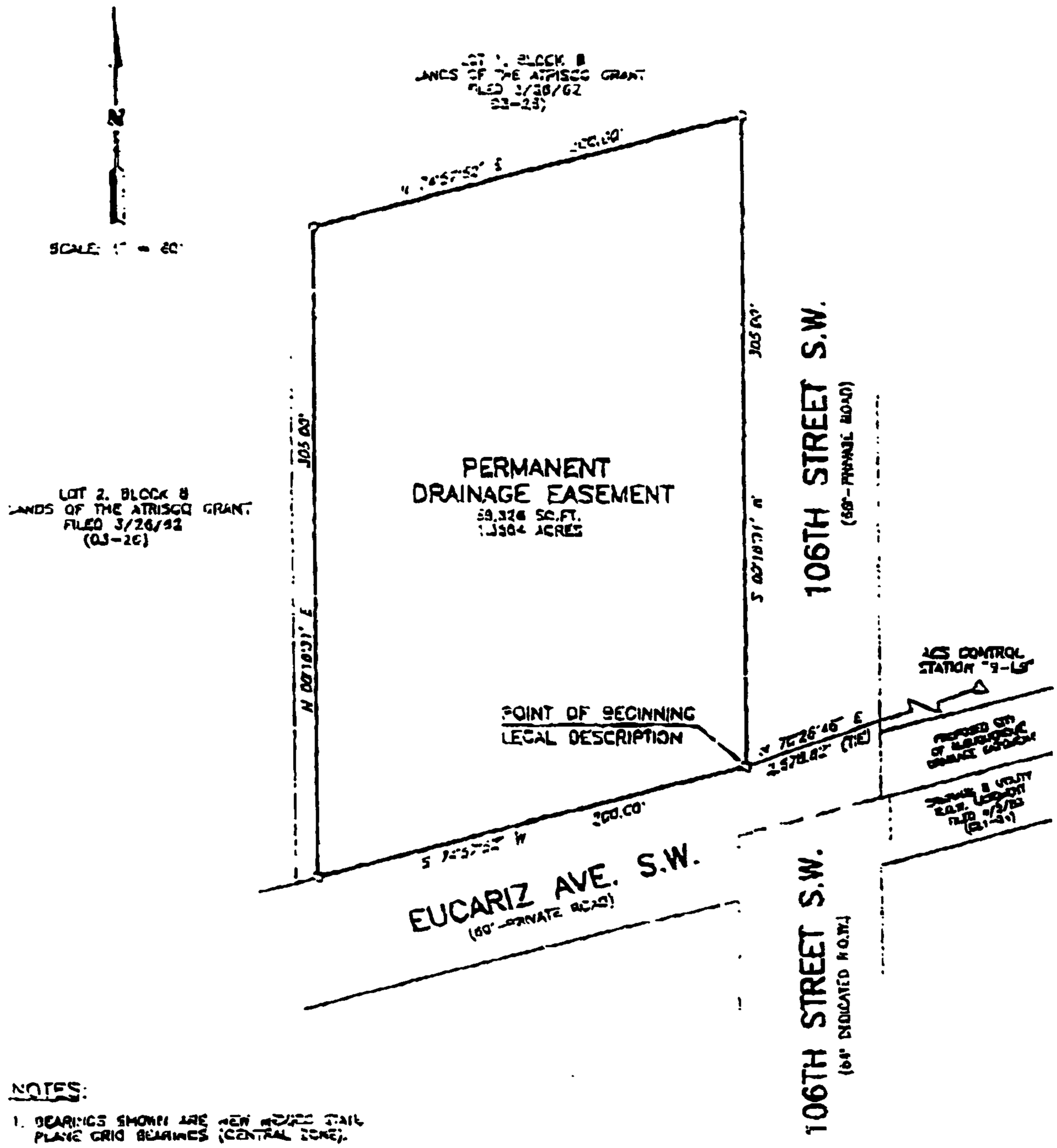
My Commission Expires:
1-2-99

STATE OF NEW MEXICO
COUNTY OF BERNALILLO
FILED & RECORDED
1995 AUG -8 PM 12:16
95-8712-8714

k:\ggd\easement.frm

EXHIBIT "A"

5830



NOTES:

1. BEARINGS SHOWN ARE NEW MEXICO STATE PLANE GRID BEARINGS (CENTRAL ZONE).
2. DISTANCES ARE GROUND DISTANCES.

5829

ALBUQUERQUE SURVEYING COMPANY INC.

EXHIBIT "A"
LEGAL DESCRIPTION
PERMANENT DRAINAGE EASEMENT

Being that certain parcel of land situated within the Town of Atrisco Grant, within Section 29 (as projected), Township 10 North, Range 2 East, New Mexico Principal Meridian, Albuquerque, Bernalillo County, New Mexico, and being identified as the southeasterly portion of Lot 1, Block 1, Lands of the Atrisco Grant, as said Lot 1 is shown and designated on "PLAT, LANDS OF THE ATRISCO GRANT WITHIN SECTIONS 28, 29, & 30, T10N, R2E, N.M.P.M.", filed in the office of the County Clerk, Bernalillo County, New Mexico, on March 26, 1982, in Volume 33, Folio 26, and being more particularly described by metes and bounds survey as follows:

Beginning at the southeast corner of the parcel of land herein described being the point at the intersection of the northerly line of Guerario Road (private road) and the westerly line of 106th Street (private road), whence the ACS Control Station "9-L9" bears N. 70° 26' 48" E., 2,578.92 feet distance; thence,

S. 74° 57' 52" W., 200.00 feet distance to the southwest corner of the parcel of land herein described; thence,

N. 00° 18' 31" E., 165.00 feet distance to the northwest corner of the parcel of land herein described; thence,

N. 74° 57' 52" E., 200.00 feet distance to the northeast corner of the parcel of land herein described being a point on the westerly line of 106th Street (private road); thence,

S. 00° 18' 31" W., 305.00 feet distance to the southeast corner and point of beginning of the parcel of land herein described and containing 58,926 square feet (1.3504 acres), more or less.

Wesley Stirk, N.M.P.S. 10464

8/15/97
Date

STATE OF NEW MEXICO
NO. 10464
PROFESSIONAL SURVEYOR
WESLEY STIRK

5928

95029565 PERMANENT EASEMENT

Grant of Permanent Easement, between SANTA FE PROPERTIES SUNRISE TERRACE LIMITED PARTNERSHIP ("Grantor"), whose address is 1323 PASEO DE PERALTA SANTA FE and the City of Albuquerque, a New Mexico municipal corporation ("City"), whose address is P.O. Box 1293, Albuquerque, New Mexico, 87103.

Grantor grants to the City an exclusive, permanent easement ("Easement") in, over, upon and across the real property described on Exhibit "A" attached hereto ("Property") for the construction, installation, maintenance, repair, modification, replacement and operation of DRAINAGE, together with the right to remove trees, bushes, undergrowth and any other obstacles upon the Property if the City determines they interfere with the appropriate use of this Easement.

Grantor covenants and warrants that Grantor is the owner in fee simple of the Property, that Grantor has a good lawful right to convey the Property or any part thereof and that Grantor will forever warrant and defend the title to the Property against all claims from all persons or entities.

The grant and other provisions of this Easement constitute covenants running with the land for the benefit of the City and its successors and assigns until terminated.

WITNESS my hand and seal this 13th day of March, 1995.

GRANTOR:

Bradley M. Odegard
Secretary of Santa Fe Properties
Real Estate Co., Inc., a NM Corp.,
General Partner

STATE OF NEW MEXICO)
)
COUNTY OF BERNALILLO)

The foregoing instrument was acknowledged before me this 21st day of March, 1995 by Bradley M. Odegard, as aforesaid, on behalf of said Partnership.

Notary Public

95 MAR 24 [illegible]

-1-

Return to: First American Title Co. Inc. GF#

APPENDIX B.3

Floodplain Analysis (HEC-RAS)

Erosion Setback Calculations

HEC RAS cross sections

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 Sunrise Ranch Unit 2
SUBJECT Erosion Setback Calcs.
BY DLH DATE 10-4-00
CHECKED _____ DATE _____
SHEET ____ OF ____

SB 20101 (upstream subasin, source: Amole Hubbell Drainage Management Plan)

100yr-24hr Qpeak = 212 cfs

Dominant Discharge $Q_d = 0.2\,Q_{100}$ (Eqn 3.77)*

$Q_d = 0.2(212\text{cfs}) = 42.4\text{cfs}$

$S_c = 0.037\,Q_D^{-.133} = .02248$ $\quad S = \frac{28.6-20.3}{375} = .02213$

For $Q_D = 42.4$cfs

$\Rightarrow \Delta_{max} = 11.5\,Q_D^{0.4}$ WHEN $S \geq S_c$ and $Q_D \leq 200$cfs

$\Delta_{max} = 11.5(42.4)^{0.4}$ (Eqn. 3.81a)*

$\Delta_{max} = 51.5'$

$\Rightarrow \Delta_{max} = 6.2\,Q_D^{0.375}\,S^{-.188}$ WHEN $S < S_c$ and $Q_D \leq 200$cfs

$\Delta_{max} = 6.2(42.4)^{.375}(.02213)^{-.188}$ (Eqn. 3.82a)*

$= 6.2(4.076)(2.047)$

$\Delta_{max} = 51.7'$

SOURCE: SEDIMENT AND EROSION DESIGN GUIDE, AMAFCA, MARCH 1994.

HEC-RAS Plan: Plan 01 Reach: SUNRISE

River Sta.	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
2426	212.00	58 70	60.35	60 42	60 64	0 040053	4.31	49 24	136.40	1.26
2376	212 00	58 00	58.90	58 94	59 21	0 026185	4.48	47 34	89.90	1 09
2246	212 00	54.00	54.70	54 76	55 02	0 033220	4.55	46.60	103.38	1.19
2188	212 00	52 20	53.09	53 11	53.35	0 026706	4.10	51 72	113 88	1.07
2131	212 00	50 50	51.30	51 36	51 60	0 032494	4.36	48.62	113 06	1 17
1991	212 00	47 20	48 06	48 06	48 29	0 024247	3.84	55 23	124.82	1.05
1916	212 00	45 25	46 15	46 16	46 41	0.025518	4 08	52 00	111.53	1.05
1804	212 00	42.60	43 46	43.47	43.73	0.024565	4.18	50 72	101 85	1 04
1739	212 00	40.80	41 58	41.61	41 86	0 029760	4 25	49 89	112 85	1.13
1579	212 00	37.50	38 32	38.32	38 54	0 024131	3.75	56 53	131 82	1.01
1509	212.00	35.00	36.25	36.29	36 57	0 027916	4.54	46 68	91 06	1.12
1469	212 00	33.00	34 87	35 23	35.49	0 022568	6.33	33 51	33 68	1 12
1450	212 00	32 20	33.83	34 24	34 88	0.039689	8 22	25 80	26.69	1 47
1420	212 00	30 50	32.92	33 12	33 80	0.021570	7 55	28 07	20 43	1 14
1375	212.00	28 60	31.75	31 91	32.76	0 021599	8.07	26.26	16.27	1 12
1302	212.00	27.00	29 63	29.89	30 74	0.026010	8.44	25 13	17.43	1.24
1252	212 00	24.90	26 96	27.50	28.69	0 047124	10 53	20.14	15 79	1 64
1202	212 00	23.90	26 61	26 61	27.13	0 018782	5 74	36.95	36.89	1.01
1153	212 00	22 85	24.58	24 90	25.69	0 032076	8.45	25 10	20.98	1 36
1130	212 00	22 65	24.56	24 65	25 26	0.021592	6.73	31.50	27.69	1 11
1102	212.00	22 30	24 18	24 19	24 73	0 018074	5.91	35 89	33 80	1.01
1076	212 00	21 80	23.46	23.54	24 07	0 021752	6.25	33 92	33 80	1 10
1046	212 00	21 40	22 94	22.95	23 46	0 019144	5.82	36.41	36 66	1.03
1000	212 00	20.30	22 15	22.15	22 73	0 017591	6.10	34 75	30 52	1 01

HEC-RAS Plan: Plan 01 Reach: SUNRISE

River Sta.	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
2426	212.00	58 70	60 35	60.42	60 64	0 040053	4.31	49 24	136 40	1.26
2409.33*	212.00	58 47	59 89	59.93	60.15	0 028032	4 09	51.79	118 41	1.09
2392.66*	212 00	58.23	59 34	59.41	59 69	0.029902	4.70	45.11	88 01	1 16
2376	212 00	58 00	58 90	58 94	59.21	0 026185	4.48	47.34	89 90	1 09
2357.42*	212 00	57.43	58.24	58 33	58.63	0.036511	5 01	42.30	87 09	1 27
2338.85*	212.00	56 86	57.69	57 73	58 01	0 029580	4 59	46.17	92 55	1 15
2320.28*	212.00	56 29	57.07	57 14	57 42	0 033808	4.77	44 47	93.15	1.22
2301.71*	212.00	55 71	56.48	56 54	56 81	0.031615	4 61	45.97	96 23	1.18
2283.14*	212 00	55 14	55.89	55 95	56.21	0.030977	4 53	46.81	99 20	1.16
2264.57*	212 00	54 57	55 30	55.35	55 61	0.030208	4.44	47.71	102 05	1 15
2246	212 00	54.00	54.70	54.76	55 02	0.033220	4.55	46 60	103 38	1 19
2226.66*	212.00	53.40	54.21	54.22	54.47	0 023995	4.03	52 60	109 59	1 03
2207.33*	212 00	52.80	53.61	53.67	53 93	0.034588	4 57	46.43	105 55	1.21
2188	212.00	52.20	53 09	53.11	53.35	0 026706	4.10	51 72	113 88	1.07
2169.*	212 00	51 63	52.47	52.53	52.77	0 033945	4.41	48.11	113 78	1.19
2150.*	212 00	51 07	51.92	51 94	52.18	0 027956	4.10	51 65	117 47	1.09
2131	212 00	50 50	51 30	51.36	51 60	0.032494	4 36	48 62	113.06	1 17
2111.*	212 00	50 03	50.79	50 89	51 15	0.043584	4 82	43 99	109 70	1 34
2091.*	212 00	49 56	50 26	50 42	50 76	0.069540	5 66	37 43	104 04	1.66
2071.*	212.00	49.09	49.69	49.95	50.60	0 159748	7.66	27.66	91.14	2 45
2051.*	212 00	48.61	49 17	49.47	50 38	0 232030	8 83	24.01	84 59	2 92
2031.*	212 00	48 14	48.76	49.01	49.60	0 141083	7.34	28.88	92 48	2.31
2011.*	212 00	47 67	48 55	48 54	48.76	0.022659	3 71	57 17	129.33	0 98
1991	212.00	47 20	48.06	48.06	48 29	0.024247	3 84	55 23	124 82	1.05
1972.25*	212.00	46 71	47 57	47.59	47.82	0.027182	4 03	52.56	120.15	1.07
1953.5*	212.00	46 23	47.11	47 12	47 36	0 025921	4 01	52.92	117 95	1.05
1934.75*	212.00	45.74	46 63	46 65	46 88	0.025541	4.03	52.56	114 66	1 05
1916	212.00	45 25	46 15	46.16	46 41	0 025518	4.08	52.00	111.53	1 05
1897.33*	212 00	44 81	45 70	45.72	45 96	0 025840	4 12	51 45	109 64	1 06
1878.66*	212 00	44.37	45 25	45 27	45 52	0 025785	4.14	51 16	107 92	1 06
1860.*	212 00	43.92	44.81	44.82	45 07	0 024865	4.12	51 50	106 77	1.04
1841.33*	212.00	43 48	44 36	44.37	44.62	0.024764	4 14	51 16	104 71	1 04
1822.66*	212.00	43 04	43.92	43 92	44 18	0.023721	4 10	51.67	103 91	1 03
1804	212.00	42.60	43 46	43.47	43 73	0.024565	4.18	50.72	101.85	1 04
1787.75*	212 00	42.15	42.95	43 01	43.28	0 032880	4 57	46 36	101 27	1 19
1771.5*	212.00	41.70	42 53	42.55	42.80	0.025789	4 14	51.25	108 40	1 06
1755.25*	212.00	41 25	42 03	42.08	42 33	0 031036	4 37	48 53	108.71	1.15
1739	212 00	40 80	41 58	41 61	41.86	0 029760	4 25	49 89	112.85	1 13
1719.*	212.00	40 39	41 08	41 20	41.49	0 052049	5 19	40 88	104 36	1 46
1699.*	212 00	39 97	40 53	40 78	41 41	0 147852	7.52	28 21	90 28	2 37
1679.*	212 00	39 56	40 40		40 60	0 019850	3 61	58 79	125 60	0 93
1659.*	212 00	39 15	39 98	39 96	40.19	0 021448	3.69	57.53	126 07	0.96
1639.*	212 00	38 74	39.58		39.77	0 019243	3.52	60.21	130 25	0.91
1619.*	212.00	38 33	39.15	39 14	39 36	0 022279	3 69	57 48	129 44	0.98
1599.*	212.00	37.91	38.77		38 95	0.017704	3.37	62 95	136 76	0 87
1579	212 00	37.50	38.32	38.32	38 54	0 024131	3.75	56.53	131 82	1 01
1561.5*	212 00	36 88	37.78	37.83	38 06	0 032843	4 28	49 48	119.04	1 17
1544.*	212 00	36 25	37 32	37.33	37 56	0 024772	3.96	53 58	117.58	1.03
1526.5*	212 00	35 63	36 77	36.82	37 08	0 030743	4 47	47 43	101 87	1 15
1509	212 00	35 00	36 25	36 29	36 57	0 027916	4 54	46.68	91 06	1 12
1489.*	212.00	34 00	35.70	35 74	36.00	0 027026	4.44	47.71	93 78	1 10
1469	212.00	33 00	34.87	35 23	35.49	0 022568	6 33	33 51	33.68	1 12
1450	212 00	32.20	33.83	34 24	34 88	0 039689	8.22	25 80	26 69	1.47
1435.*	212 00	31.35	32.97	33.34	34.13	0.061289	8.62	24.60	32 90	1.76
1420	212.00	30.50	32.92	33 12	33 80	0.021570	7 55	28 07	20 43	1.14
1405.*	212.00	29 87	32.31	32.60	33 42	0.028420	8.45	25 09	18.87	1 29
1390.*	212 00	29 23	31.87	32.17	33 00	0.027909	8.55	24 80	17.83	1 28
1375	212.00	28.60	31.75	31 91	32 76	0 021599	8.07	26 26	16 27	1 12
1356.75*	212.00	28 20	31.11	31.42	32 31	0.027031	8 79	24 13	15.77	1 25
1338.5*	212 00	27.80	30 62	30.91	31.78	0 026872	8 64	24 54	16 59	1 25

HEC-RAS Plan: Plan 01 Reach: SUNRISE (continued)

River Sta.	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1320.25*	212 00	27.40	30.11	30 39	31 26	0.027282	8 60	24 64	17.12	1.26
1302	212.00	27 00	29.33	29 89	30.74	0 026010	8 44	25 13	17 43	1 24
1285.33*	212 00	26 30	28 61	29.09	30 15	0 040352	9.97	21.27	16.04	1 52
1268.66*	212 00	25 60	27 77	28.29	29 43	0 044627	10.33	20 52	15.85	1 60
1252	212 00	24 90	26 96	27 50	28 69	0.047124	10.53	20 14	15 79	1.64
1235.33*	212.00	24 57	26.78	27 08	27 85	0.032603	8 30	25.55	22 07	1.36
1218.66*	212 00	24 23	26.95		27.39	0 013228	5.35	39.66	33.87	0 87
1202	212 00	23.90	26 61	26.61	27 13	0 018782	5.74	36 95	36.89	1 01
1185.66*	212.00	23.55	25 69	26 01	26 70	0.028494	8 05	26 33	21 49	1.28
1169.33*	212.00	23 20	25.09	25 43	26 20	0.032019	8.44	25.11	20 91	1 36
1153	212 00	22 85	24 58	24.90	25 69	0 032076	8.45	25 10	20 98	1 36
1141.5*	212 00	22 75	24 66	24 79	25 44	0.022620	7 09	29 89	25 09	1 14
1130	212.00	22.65	24.56	24 65	25 26	0.021592	6.73	31.50	27 69	1 11
1116.*	212 00	22 47	24.38	24 44	25.00	0 019718	6.32	33 54	30.36	1 06
1102	212 00	22 30	24.18	24 19	24.73	0.018074	5 91	35 89	33.80	1.01
1089.*	212.00	22 05	23.71	23 87	24 43	0.027025	6.82	31.08	31 94	1 22
1076	212.00	21.80	23 46	23 54	24 07	0.021752	6 25	33 92	33.80	1.10
1061.*	212.00	21.60	23 20	23 24	23.74	0.020291	5 92	35.82	36.79	1.06
1046	212.00	21 40	22.94	22 95	23 46	0 019144	5.82	36 41	36 66	1 03
1030.66*	212.00	21 03	22.74	22.69	23 20	0 015885	5.45	38.89	37 60	0 94
1015.33*	212 00	20 67	22.56		22 97	0.012726	5 17	41.03	36 37	0 86
1000	212 00	20.30	22 15	22 15	22 73	0 017591	6.10	34.75	30.52	1.01

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 Sunrise Ranch West
SUBJECT Arroyo Cross Sections
BY Dtt DATE 8-20-01
CHECKED _____ DATE _____
SHEET ____ OF ____

STA 1804		STA 1916		STA 1991	
100	45.0	100 TB	48.0	100	50.0 TB
160 TB	45.0	148	47.0	145	49.0
248	44.0	198	46.0	185	48.0
292	43.0	250	45.25	260	47.2
325	42.6	295	46.0	304	48.0
355	43.0	342	47.0	357	49.0
395	44.0	405 TB	48.0	440	50.0 TB.
460 TB	45.0				

STA 2131		STA 2188		STA 2246	
100 TB	53.0	100 TB	55.0	100 TB	57.0
205	52.0	195	54.0	165	56.0
292	51.0	245	53.0	215	55.0
340	50.5	315	52.2	260	54.0
370	51.0	350	53.0	290	54.0
398	52.0	400	54.0	350	55.0
450 TB	53.0	470 TB	55.0	385.	56.0
				460 TB.	57.0

STA 2376		STA 2426	
100 TB	60.0	100 TB	61.0
172	59.0	190	60.0
200	58.0	200	59.0
215	58.0	205	58.7
270	59.0	210	59.0
445 TB	60.0	218	60.0
		438 TB	61.0

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 Sunrise Ranch West
SUBJECT Arroyo Cross Sections
BY DLH DATE 8-20-01
CHECKED _____ DATE _____
SHEET ____ OF ____

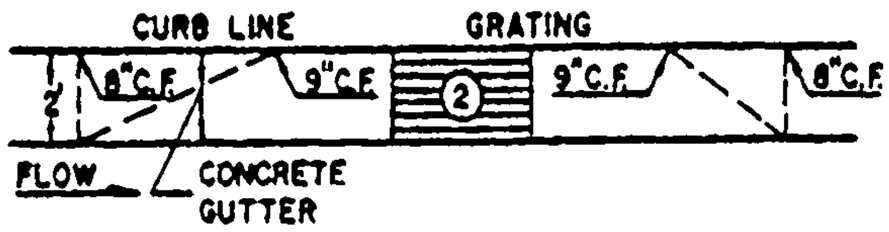
STA 1420		STA 1450		STA 1469	
100	TB 35.8	100	TB 36.5	100	TB 37.0
140	35.0	154	36.0	175	36.0
153	34.0	166	35.0	185	35.0
160	33.0	176	34.0	194	34.0
164	32.0	183	33.0	202	33.0
168	31.0	188	32.2	206	33.0
172	30.5	194	32.2	212	34.0
175	31.0	198	33.0	221	35.0
178	32.0	205	34.0	360	35.3
181	33.0	250	34.9	460	TB 36.0
184	34.0	345	34.6		
200	TB 35.7	430	TB 35.0		
285	34.5				
330	33.8				
390	33.0				

STA 1509		STA 1579		STA 1739	
100	TB 38.0	100	TB 40.0	100	43.0
200	37.0	212	39.0	200	43.0 TB
212	36.0	228	38.0	275	42.0
224	35.0	250	37.5	330	41.0
230	35.0	315	38.0	350	40.8
264	36.0	440	39.0	375	41.0
410	37.0	520	TB 40.0	438	42.0
500	TB 38.0			490	43.0 TB

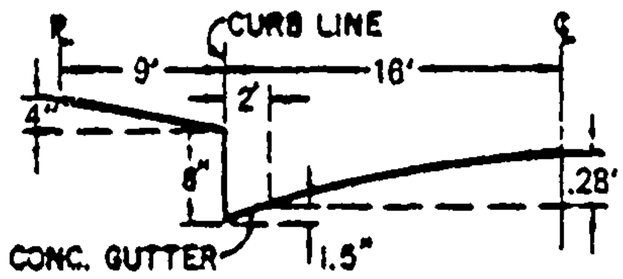
APPENDIX C.1

Inlet Calculations (106th Street)

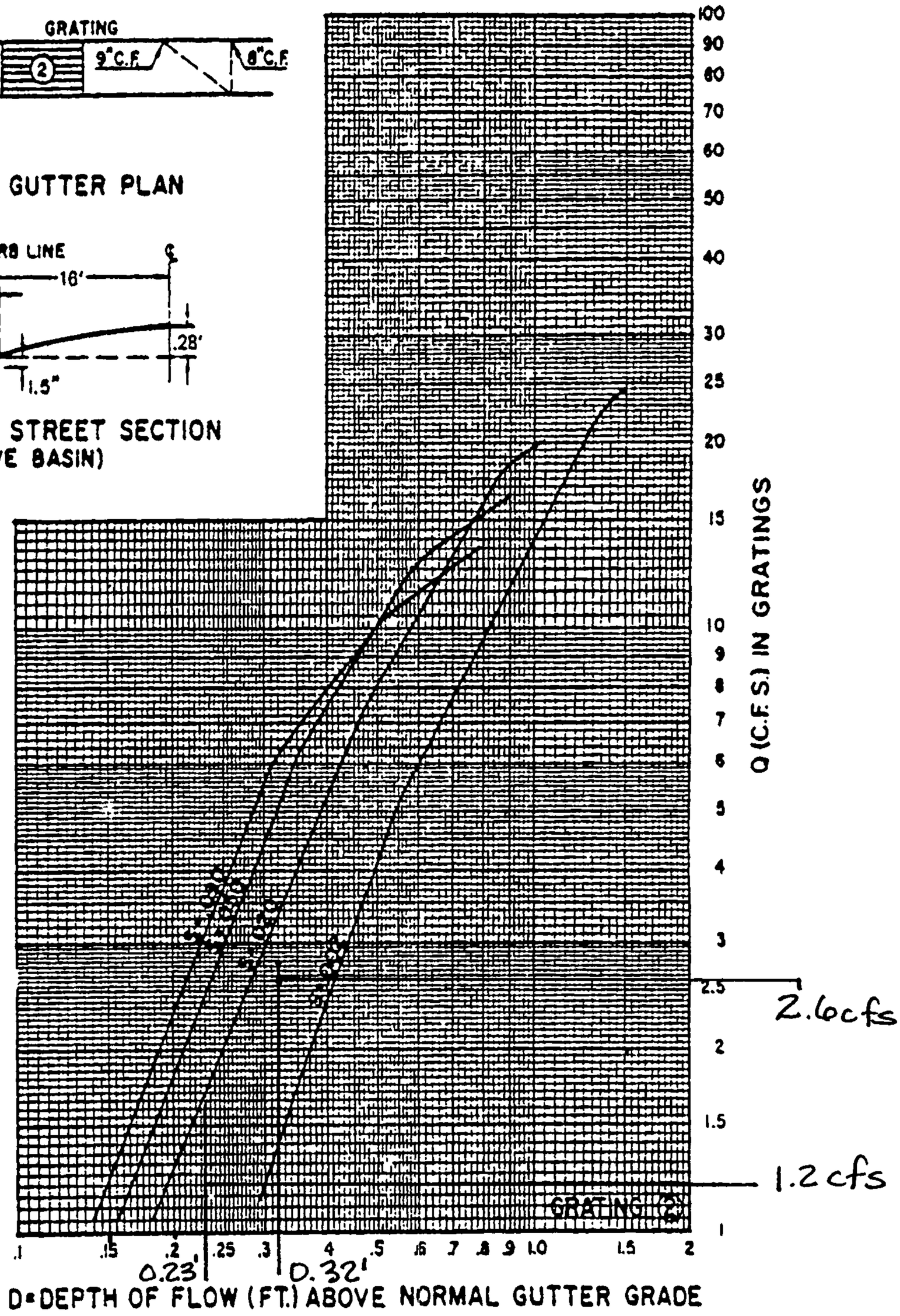
GRATING CAPACITIES FOR TYPE 'A' , 'C' and 'D'



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)



106th st Inlet

3.8cfs
-2.6cfs
1.2cfs

PLATE 22.3 D-5

```
1*****************************************************
 *  WATER SURFACE PROFILES                           *
 *  VERSION OF SEPTEMBER 1988                        *
 *  ERROR: 01,02                                     *
 *  UPDATED:  4 APRIL    1989                        *
 *  RUN DATE     8/23/ 1   TIME   14:33:27           *
 *****************************************************
```

```
*****************************************
*  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 8/23/ 1   14:33:27

```
*************************************************
  HEC2 RELEASE DATED SEP 88 UPDATED APR  1989
  ERROR CORR -  01,02
  MODIFICATION -
*************************************************
```

```
T1          SUNRISE RANCH WEST STREET CAPACITY CALCULATIONS
T2          24'FF W/ STD CURB, NO CROWN, 2.% CROSS SLOPE
T3          106 TH STREET

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

       0        2         0         1      .015         0         0         0         0         0

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     38        43         1         2        26         4        68         3

NC     .017      .017      .017       .1       .3
QT        1      3.89
X1        1         5         0        33         0         0         0         0         0         0
GR      .85         0       .67       8.9         0         9      .125        11      .565        33

   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

CCHV=      .100 CEHV=      .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
```

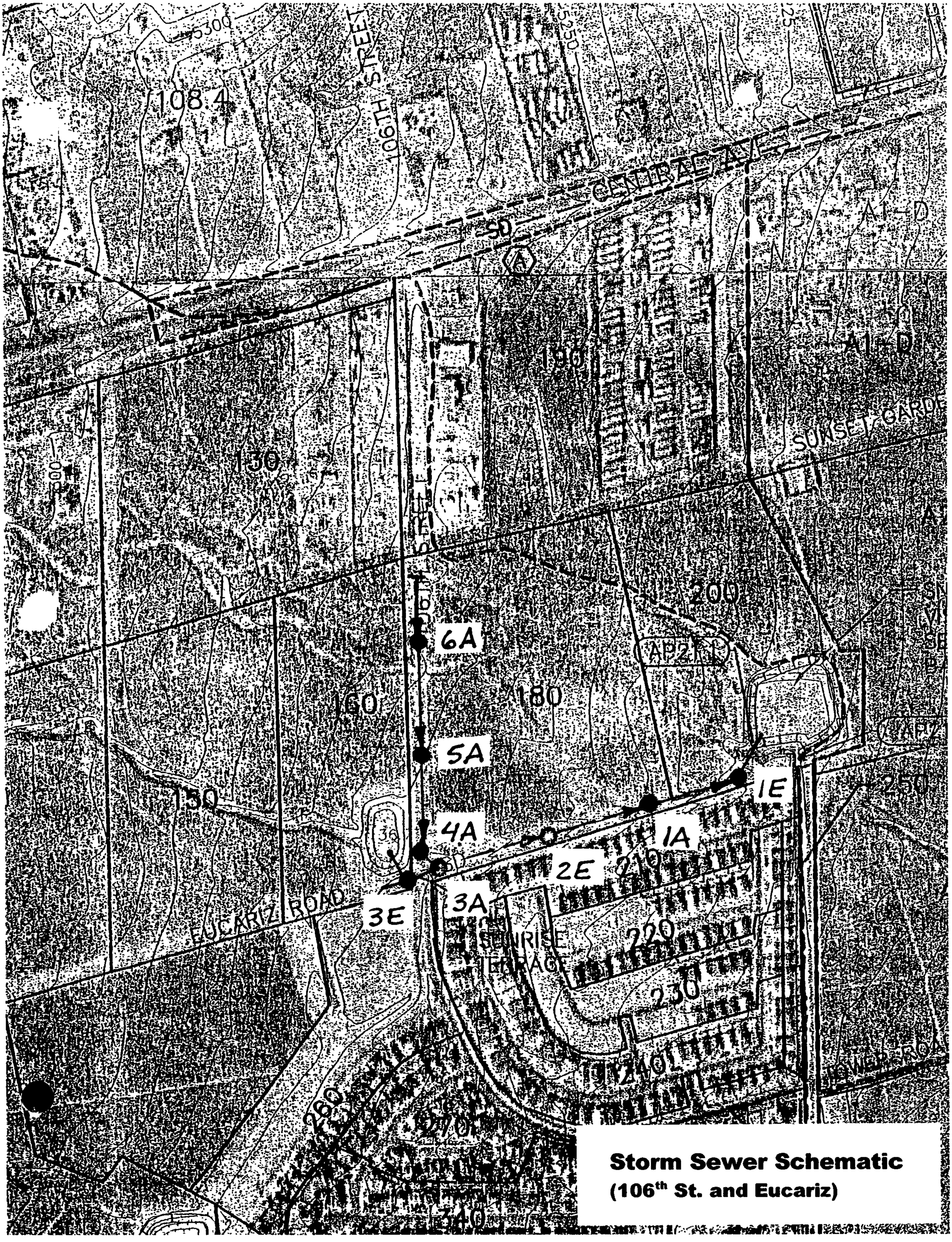
```
    1.00      .32      .32      .35      .00      .43      .11      .00      .00      .85
      4.       0.       4.       0.       0.       1.       0.       0.       0.      .56
     .00      .00     2.65      .00     .000     .017     .000     .000      .00     8.95
 .015175       0.       0.       0.        0       11        6      .00    11.78    20.73

THIS RUN EXECUTED  8/23/ 1    14:33:27
**************************************************
  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

    106 TH STREET

SUMMARY PRINTOUT

      SECNO       Q       CWSEL     CRIWS      VCH     TOPWID     FRCH       EG

      1.000     3.89       .32       .35      2.65     11.78      1.32       .43

 SUMMARY OF ERRORS AND SPECIAL NOTES
```

APPENDIX C.2

Storm Sewer Analysis

(106th street and Eucariz)

Interim Conditions and Developed Conditions

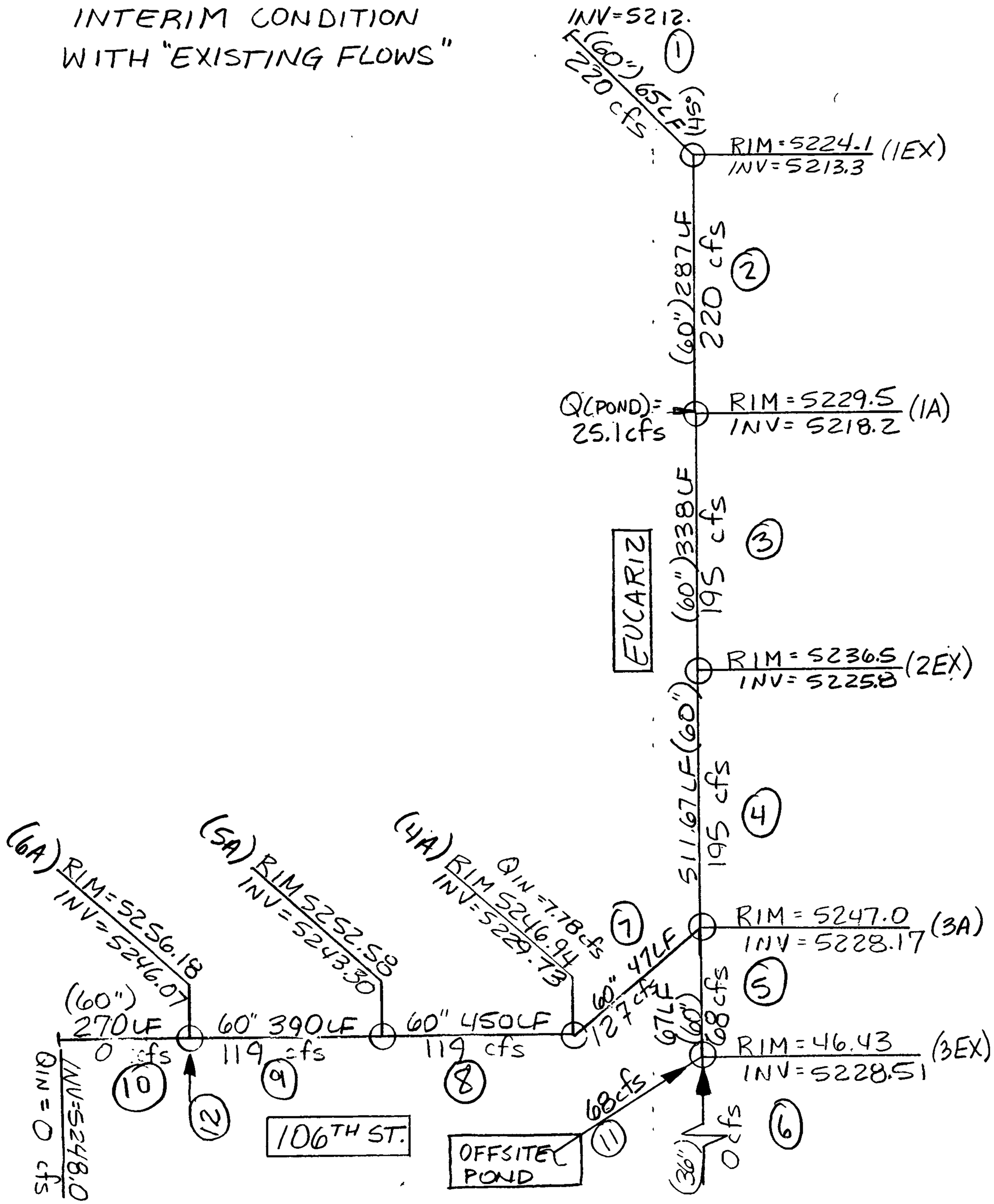


Storm Sewer Schematic
(106th St. and Eucariz)

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: Sunrise Ranch West
SUBJECT: 106th st. Storm Sewer
BY: DLH DATE: 10-17-01
CHECKED: _____ DATE: _____
SHEET ____ OF ____

INTERIM CONDITION
WITH "EXISTING FLOWS"



HYDRAULIC REPORT FOR

PRELIMINARY

STORM SEWER DESIGN

(106th St. - Eucariz)

INTERIM DRAINAGE CONDITION

Mark Goodwin & Associates

DLH

October 16, 2001

sunrintm

LINE 1 / Q = 220.0 / HT = 60 / WID = 60 / N = .013 / L = 65 / JLC = .2

SNOWPND-MH1EX / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	5214.82	33.87	5212.00	19.26	5220.58	59.50	-1	11.42
UPSTRM	5216.12	33.87	5213.30	19.26	5221.88	59.50	5.8	11.42

Drainage area (ac)	= 0	Slope of invert (%)	= 2.000
Runoff coefficient	= 0	Slope energy grade line (%)	= 2.000
Time of conc (min)	= 13	Critical depth (in)	= 49.66
Inlet time (min)	= 0	Req'd length curb inlet (ft)	= 0.0
Intensity (in/hr)	= 0.00	Req'd grate area (sf)	= 0.0
Cumulative C*A	= 0.0	Depth at inlet opening (in)	= 0
Flow contrib (cfs)	= 220	Confluence angle (deg)	= 0
Default Q (cfs)	= 220	Natural ground elev (ft)	= 5224.1
Line capac. (cfs)	= 368.3	Line storage (cuft)	= 743

LINE 2 / Q = 220.0 / HT = 60 / WID = 60 / N = .013 / L = 287 / JLC = .1

MH1EX-MH1A / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	5216.25	35.35	5213.30	18.28	5221.44	59.04	5.8	12.03
UPSTRM	5221.15	35.35	5218.20	18.28	5226.34	59.04	6.29	12.03

Drainage area (ac)	= 0	Slope of invert (%)	= 1.707
Runoff coefficient	= 0	Slope energy grade line (%)	= 1.707
Time of conc (min)	= 11	Critical depth (in)	= 49.66
Inlet time (min)	= 0	Req'd length curb inlet (ft)	= 0.0
Intensity (in/hr)	= 0.00	Req'd grate area (sf)	= 0.0
Cumulative C*A	= 0.0	Depth at inlet opening (in)	= 0
Flow contrib (cfs)	= 220	Confluence angle (deg)	= 45
Default Q (cfs)	= 220	Natural ground elev (ft)	= 5229.5
Line capac. (cfs)	= 340.4	Line storage (cuft)	= 3454

LINE 3 / Q = 195.0 / HT = 60 / WID = 60 / N = .013 / L = 338 / JLC = .15

MH1A-MH2EX / DNLN = 2

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	5220.71	30.13	5218.20	19.76	5226.77	60.00	6.29	9.87
UPSTRM	5228.31	30.13	5225.80	19.76	5234.37	60.00	5.7	9.87

Drainage area (ac)	= 0	Slope of invert (%)	= 2.248
Runoff coefficient	= 0	Slope energy grade line (%)	= 2.248
Time of conc (min)	= 9	Critical depth (in)	= 46.75
Inlet time (min)	= 0	Req'd length curb inlet (ft)	= 0.0
Intensity (in/hr)	= 0.00	Req'd grate area (sf)	= 0.0
Cumulative C*A	= 0.0	Depth at inlet opening (in)	= 0
Flow contrib (cfs)	= 195	Confluence angle (deg)	= 0
Default Q (cfs)	= 195	Natural ground elev (ft)	= 5236.5
Line capac. (cfs)	= 390.6	Line storage (cuft)	= 3336

LINE 4 / Q = 195.0 / HT = 60 / WID = 60 / N = .013 / L = 512 / JLC = .1

MH2EX-MH3A / DNLN = 3

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	5229.70	46.75	5225.80	11.66	5231.81	48.51	5.7	16.72
UPSTRM	5233.07	58.78	5228.17	9.98	5234.61	16.96	13.83	19.54

Drainage area (ac)	= 0	Slope of invert (%)	= 0.463
Runoff coefficient	= 0	Slope energy grade line (%)	= 0.548
Time of conc (min)	= 6	Critical depth (in)	= 46.75
Inlet time (min)	= 0	Req'd length curb inlet (ft)	= 0.0
Intensity (in/hr)	= 0.00	Req'd grate area (sf)	= 0.0
Cumulative C*A	= 0.0	Depth at inlet opening (in)	= 0
Flow contrib (cfs)	= 195	Confluence angle (deg)	= 0
Default Q (cfs)	= 195	Natural ground elev (ft)	= 5247
Line capac. (cfs)	= 177.2	Line storage (cuft)	= 9283

LINE 5 / Q = 68.0 / HT = 60 / WID = 60 / N = .013 / L = 67 / JLC = .1

MH3A-MH3EX / DNLN = 4

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	5233.22	60.00	5228.17	3.46	5233.41	0.00	13.83	19.63
UPSTRM	5233.25	56.93	5228.51	3.53	5233.45	26.45	12.89	19.25

Drainage area (ac)	= 0	Slope of invert (%)	= 0.507
Runoff coefficient	= 0	Slope energy grade line (%)	= 0.058
Time of conc (min)	= 3	Critical depth (in)	= 27.61
Inlet time (min)	= 0	Req'd length curb inlet (ft)	= 0.0
Intensity (in/hr)	= 0.00	Req'd grate area (sf)	= 0.0
Cumulative C*A	= 0.0	Depth at inlet opening (in)	= 0
Flow contrib (cfs)	= 68	Confluence angle (deg)	= 0
Default Q (cfs)	= 68	Natural ground elev (ft)	= 5246.4
Line capac. (cfs)	= 185.5	Line storage (cuft)	= 1303

LINE 6 / Q = 0.0 / HT = 36 / WID = 36 / N = .013 / L = 500 / JLC = .1

MH3EX-SB150 / DNLN = 5

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	5233.27	33.28	5230.50	0.00	5233.27	18.56	12.89	6.84
UPSTRM	5244.00	0.02	5244.00	0.00	5244.00	1.80	13	0.00

Drainage area (ac)	= 0	Slope of invert (%)	= 2.700
Runoff coefficient	= 0	Slope energy grade line (%)	= 2.146
Time of conc (min)	= 0	Critical depth (in)	= 0.00
Inlet time (min)	= 0	Req'd length curb inlet (ft)	= 0.0
Intensity (in/hr)	= 0.00	Req'd grate area (sf)	= 0.0
Cumulative C*A	= 0.0	Depth at inlet opening (in)	= 0
Flow contrib (cfs)	= 0	Confluence angle (deg)	= 0
Default Q (cfs)	= 0	Natural ground elev (ft)	= 5260
Line capac. (cfs)	= 109.6	Line storage (cuft)	= 1711

LINE 7 / Q = 127.0 / HT = 60 / WID = 60 / N = .013 / L = 47 / JLC = .15

MH3A-MH4A / DNLN = 4

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	5233.22	60.00	5228.17	6.47	5233.87	0.00	13.83	19.63
UPSTRM	5232.88	37.83	5229.73	9.74	5234.35	57.92	12.16	13.04

Drainage area (ac)	= 0	Slope of invert (%)	= 3.319
Runoff coefficient	= 0	Slope energy grade line (%)	= 1.026
Time of conc (min)	= 6	Critical depth (in)	= 37.73
Inlet time (min)	= 0	Req'd length curb inlet (ft)	= 0.0
Intensity (in/hr)	= 0.00	Req'd grate area (sf)	= 0.0
Cumulative C*A	= 0.0	Depth at inlet opening (in)	= 0
Flow contrib (cfs)	= 127	Confluence angle (deg)	= 50
Default Q (cfs)	= 127	Natural ground elev (ft)	= 5246.9
Line capac. (cfs)	= 474.5	Line storage (cuft)	= 768

LINE 8 / Q = 119.0 / HT = 60 / WID = 60 / N = .013 / L = 450 / JLC = .15

MH 4A-MH 5A / DNLN = 7

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	5233.10	40.48	5229.73	8.30	5234.17	55.74	12.16	14.34
UPSTRM	5246.36	36.67	5243.30	9.46	5247.75	58.50	4.2	12.57

Drainage area (ac)	= 0	Slope of invert (%)	= 3.016
Runoff coefficient	= 0	Slope energy grade line (%)	= 3.016
Time of conc (min)	= 4	Critical depth (in)	= 36.52
Inlet time (min)	= 0	Req'd length curb inlet (ft)	= 0.0
Intensity (in/hr)	= 0.00	Req'd grate area (sf)	= 0.0
Cumulative C*A	= 0.0	Depth at inlet opening (in)	= 0
Flow contrib (cfs)	= 119	Confluence angle (deg)	= 40
Default Q (cfs)	= 119	Natural ground elev (ft)	= 5252.5
Line capac. (cfs)	= 452.3	Line storage (cuft)	= 6055

LINE 9 / Q = 119.0 / HT = 60 / WID = 60 / N = .013 / L = 390 / JLC = .15

MH 5A - MH 6A / DNLN = 8

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	5246.56	39.17	5243.30	8.63	5247.72	56.78	4.2	13.79
UPSTRM	5249.14	36.67	5246.08	9.46	5250.53	58.50	5.02	12.57

Drainage area (ac)	= 0	Slope of invert (%)	= 0.713
Runoff coefficient	= 0	Slope energy grade line (%)	= 0.719
Time of conc (min)	= 2	Critical depth (in)	= 36.52
Inlet time (min)	= 0	Req'd length curb inlet (ft)	= 0.0
Intensity (in/hr)	= 0.00	Req'd grate area (sf)	= 0.0
Cumulative C*A	= 0.0	Depth at inlet opening (in)	= 0
Flow contrib (cfs)	= 119	Confluence angle (deg)	= 0
Default Q (cfs)	= 119	Natural ground elev (ft)	= 5256.1
Line capac. (cfs)	= 219.9	Line storage (cuft)	= 5140

LINE 10 / Q = 119.0 / HT = 60 / WID = 60 / N = .013 / L = 270 / JLC = .1

MH 6A - STUB / DNLN = 9

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	5249.34	37.97	5246.18	9.00	5250.60	57.68	4.91	13.22
UPSTRM	5251.19	36.67	5248.00	9.46	5252.59	58.50	4	12.57

Drainage area (ac)	= 0	Slope of invert (%)	= 0.674
Runoff coefficient	= 0	Slope energy grade line (%)	= 0.734
Time of conc (min)	= 0	Critical depth (in)	= 36.52
Inlet time (min)	= 0.	Req'd length curb inlet (ft)	= 0.0
Intensity (in/hr)	= 0.00	Req'd grate area (sf)	= 0.0
Cumulative C*A	= 0.0	Depth at inlet opening (in)	= 0
Flow contrib (cfs)	= 119	Confluence angle (deg)	= 0
Default Q (cfs)	= 119	Natural ground elev (ft)	= 5257
Line capac. (cfs)	= 213.8	Line storage (cuft)	= 3482

LINE 11 / Q = 68.0 / HT = 24 / WID = 24 / N = .013 / L = 141.5 / JLC = .1

MH3EX-POND / DNLN = 5

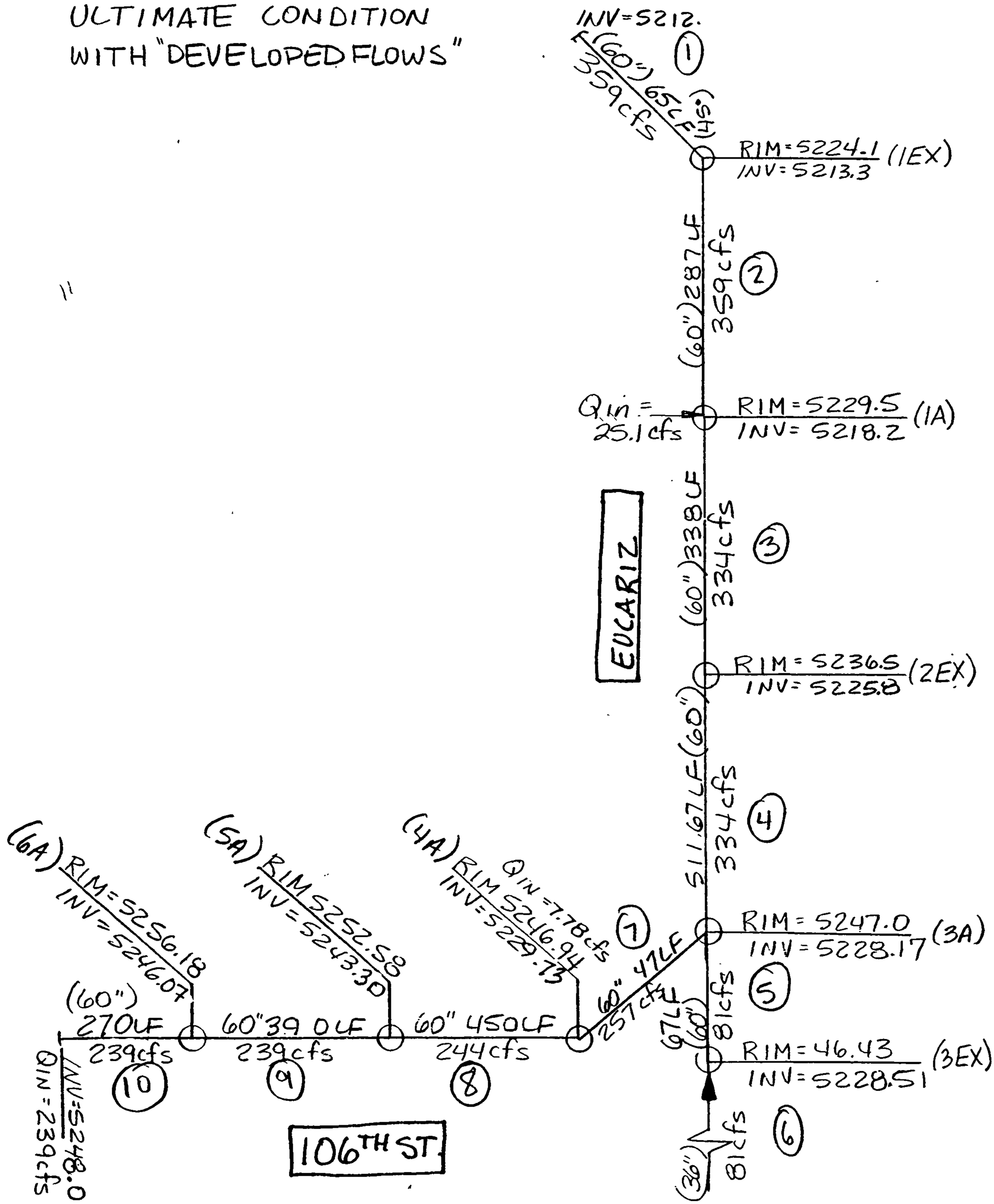
	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	5233.27	24.00	5228.51	21.65	5240.55	0.00	15.89	3.14
UPSTRM	5246.80	24.00	5234.72	21.65	5254.07	0.00	11.27	3.14

Drainage area (ac)	= 0	Slope of invert (%)	= 4.389
Runoff coefficient	= 0	Slope energy grade line (%)	= 9.041
Time of conc (min)	= 0	Critical depth (in)	= 23.99
Inlet time (min)	= 0	Req'd length curb inlet (ft)	= 0.0
Intensity (in/hr)	= 0.00	Req'd grate area (sf)	= 0.0
Cumulative C*A	= 0.0	Depth at inlet opening (in)	= 0
Flow contrib (cfs)	= 68	Confluence angle (deg)	= 70
Default Q (cfs)	= 68	Natural ground elev (ft)	= 5248
Line capac. (cfs)	= 47.4	Line storage (cuft)	= 444

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 Sunrise Ranch West
SUBJECT 106th st. Storm Sewer
BY DLH DATE 10-17-01
CHECKED _____ DATE _____
SHEET ____ OF ____

ULTIMATE CONDITION
WITH "DEVELOPED FLOWS"



HYDRAULIC REPORT FOR

PRELIMINARY

STORM SEWER DESIGN

(106th St. & Eucariz)

Future Ultimate Condition

Mark Goodwin & Associates

DLH

October 16, 2001

sunrwest

LINE 1 / Q = 359.0 / HT = 60 / WID = 60 / N = .013 / L = 65 / JLC = .2

SNOWPND-MH1EX / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	5216.02	48.26	5212.00	21.21	5223.01	47.61	-1	16.92
UPSTRM	5217.32	48.26	5213.30	21.21	5224.31	47.61	5.8	16.92

Drainage area (ac)	= 0	Slope of invert (%)	= 2.000
Runoff coefficient	= 0	Slope energy grade line (%)	= 2.000
Time of conc (min)	= 13	Critical depth (in)	= 58.27
Inlet time (min)	= 0	Req'd length curb inlet (ft)	= 0.0
Intensity (in/hr)	= 0.00	Req'd grate area (sf)	= 0.0
Cumulative C*A	= 0.0	Depth at inlet opening (in)	= 0
Flow contrib (cfs)	= 359	Confluence angle (deg)	= 0
Default Q (cfs)	= 359	Natural ground elev (ft)	= 5224.1
Line capac. (cfs)	= 368.3	Line storage (cuft)	= 1100

LINE 2 / Q = 359.0 / HT = 60 / WID = 60 / N = .013 / L = 287 / JLC = .1

MH1EX-MH1A / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	5218.72	60.00	5213.30	18.29	5223.91	0.00	5.8	19.63
UPSTRM	5224.17	60.00	5218.20	18.28	5229.36	0.00	6.29	19.63

Drainage area (ac)	= 0	Slope of invert (%)	= 1.707
Runoff coefficient	= 0	Slope energy grade line (%)	= 1.900
Time of conc (min)	= 11	Critical depth (in)	= 58.27
Inlet time (min)	= 0	Req'd length curb inlet (ft)	= 0.0
Intensity (in/hr)	= 0.00	Req'd grate area (sf)	= 0.0
Cumulative C*A	= 0.0	Depth at inlet opening (in)	= 0
Flow contrib (cfs)	= 359	Confluence angle (deg)	= 45
Default Q (cfs)	= 359	Natural ground elev (ft)	= 5229.5
Line capac. (cfs)	= 340.4	Line storage (cuft)	= 5635

LINE 3 / Q = 334.0 / HT = 60 / WID = 60 / N = .013 / L = 338 / JLC = .15

MH1A-MH2EX / DNLN = 2

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	5224.69	60.00	5218.20	17.01	5229.19	0.00	6.29	19.63
UPSTRM	5230.62	57.79	5225.80	17.22	5235.22	22.62	5.7	19.40

Drainage area (ac)	= 0	Slope of invert (%)	= 2.248
Runoff coefficient	= 0	Slope energy grade line (%)	= 1.784
Time of conc (min)	= 9	Critical depth (in)	= 57.73
Inlet time (min)	= 0	Req'd length curb inlet (ft)	= 0.0
Intensity (in/hr)	= 0.00	Req'd grate area (sf)	= 0.0
Cumulative C*A	= 0.0	Depth at inlet opening (in)	= 0
Flow contrib (cfs)	= 334	Confluence angle (deg)	= 0
Default Q (cfs)	= 334	Natural ground elev (ft)	= 5236.5
Line capac. (cfs)	= 390.6	Line storage (cuft)	= 6597

LINE 4 / Q = 334.0 / HT = 60 / WID = 60 / N = .013 / L = 512 / JLC = .1

MH2EX-MH3A / DNLN = 3

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	5231.31	60.00	5225.80	17.01	5235.80	0.00	5.7	19.63
UPSTRM	5239.73	60.00	5228.17	17.01	5244.22	0.00	13.83	19.63

Drainage area (ac)	= 0	Slope of invert (%)	= 0.463
Runoff coefficient	= 0	Slope energy grade line (%)	= 1.645
Time of conc (min)	= 6	Critical depth (in)	= 57.73
Inlet time (min)	= 0	Req'd length curb inlet (ft)	= 0.0
Intensity (in/hr)	= 0.00	Req'd grate area (sf)	= 0.0
Cumulative C*A	= 0.0	Depth at inlet opening (in)	= 0
Flow contrib (cfs)	= 334	Confluence angle (deg)	= 0
Default Q (cfs)	= 334	Natural ground elev (ft)	= 5247
Line capac. (cfs)	= 177.2	Line storage (cuft)	= 10052

LINE 5 / Q = 81.0 / HT = 60 / WID = 60 / N = .013 / L = 67 / JLC = .1

MH3A-MH3EX / DNLN = 4

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	5240.18	60.00	5228.17	4.13	5240.44	0.00	13.83	19.63
UPSTRM	5240.24	60.00	5228.51	4.13	5240.51	0.00	12.89	19.63

Drainage area (ac)	= 0	Slope of invert (%)	= 0.507
Runoff coefficient	= 0	Slope energy grade line (%)	= 0.097
Time of conc (min)	= 3	Critical depth (in)	= 30.13
Inlet time (min)	= 0	Req'd length curb inlet (ft)	= 0.0
Intensity (in/hr)	= 0.00	Req'd grate area (sf)	= 0.0
Cumulative C*A	= 0.0	Depth at inlet opening (in)	= 0
Flow contrib (cfs)	= 81	Confluence angle (deg)	= 0
Default Q (cfs)	= 81	Natural ground elev (ft)	= 5246.4
Line capac. (cfs)	= 185.5	Line storage (cuft)	= 1315

LINE 6 / Q = 81.0 / HT = 36 / WID = 36 / N = .013 / L = 500 / JLC = .1

MH3EX-SB150 / DNLN = 5

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	5240.27	36.00	5230.50	11.46	5242.31	0.00	12.89	7.07
UPSTRM	5247.85	36.00	5244.00	11.46	5249.89	0.00	13	7.07

Drainage area (ac)	= 0	Slope of invert (%)	= 2.700
Runoff coefficient	= 0	Slope energy grade line (%)	= 1.516
Time of conc (min)	= 0	Critical depth (in)	= 33.87
Inlet time (min)	= 0	Req'd length curb inlet (ft)	= 0.0
Intensity (in/hr)	= 0.00	Req'd grate area (sf)	= 0.0
Cumulative C*A	= 0.0	Depth at inlet opening (in)	= 0
Flow contrib (cfs)	= 81	Confluence angle (deg)	= 0
Default Q (cfs)	= 81	Natural ground elev (ft)	= 5260
Line capac. (cfs)	= 109.6	Line storage (cuft)	= 3534

LINE 7 / Q = 257.0 / HT = 60 / WID = 60 / N = .013 / L = 47 / JLC = .15

MH3A-MH4A / DNLN = 4

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	5240.18	60.00	5228.17	13.09	5242.84	0.00	13.83	19.63
UPSTRM	5240.64	60.00	5229.73	13.09	5243.30	0.00	12.16	19.63

Drainage area (ac)	= 0	Slope of invert (%)	= 3.319
Runoff coefficient	= 0	Slope energy grade line (%)	= 0.973
Time of conc (min)	= 6	Critical depth (in)	= 54.90
Inlet time (min)	= 0	Req'd length curb inlet (ft)	= 0.0
Intensity (in/hr)	= 0.00	Req'd grate area (sf)	= 0.0
Cumulative C*A	= 0.0	Depth at inlet opening (in)	= 0
Flow contrib (cfs)	= 257	Confluence angle (deg)	= 50
Default Q (cfs)	= 257	Natural ground elev (ft)	= 5246.9
Line capac. (cfs)	= 474.5	Line storage (cuft)	= 923

LINE 8 / Q = 244.0 / HT = 60 / WID = 60 / N = .013 / L = 450 / JLC = .15

MH 4A-MH 5A / DNLN = 7

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	5241.03	60.00	5229.73	12.43	5243.43	0.00	12.16	19.63
UPSTRM	5247.73	53.20	5243.30	13.26	5250.46	38.03	4.2	18.41

Drainage area (ac)	= 0	Slope of invert (%)	= 3.016
Runoff coefficient	= 0	Slope energy grade line (%)	= 1.562
Time of conc (min)	= 4	Critical depth (in)	= 53.11
Inlet time (min)	= 0	Req'd length curb inlet (ft)	= 0.0
Intensity (in/hr)	= 0.00	Req'd grate area (sf)	= 0.0
Cumulative C*A	= 0.0	Depth at inlet opening (in)	= 0
Flow contrib (cfs)	= 244	Confluence angle (deg)	= 40
Default Q (cfs)	= 244	Natural ground elev (ft)	= 5252.5
Line capac. (cfs)	= 452.3	Line storage (cuft)	= 8559

LINE 9 / Q = 239.0 / HT = 60 / WID = 60 / N = .013 / L = 390 / JLC = .15

MH 5A - MH 6A / DNLN = 8

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	5248.14	58.11	5243.30	12.27	5250.48	20.10	4.2	19.47
UPSTRM	5251.27	60.00	5246.08	12.17	5253.57	0.00	5.02	19.63

Drainage area (ac)	= 0	Slope of invert (%)	= 0.713
Runoff coefficient	= 0	Slope energy grade line (%)	= 0.792
Time of conc (min)	= 2	Critical depth (in)	= 53.11
Inlet time (min)	= 0	Req'd length curb inlet (ft)	= 0.0
Intensity (in/hr)	= 0.00	Req'd grate area (sf)	= 0.0
Cumulative C*A	= 0.0	Depth at inlet opening (in)	= 0
Flow contrib (cfs)	= 239	Confluence angle (deg)	= 0
Default Q (cfs)	= 239	Natural ground elev (ft)	= 5256.1
Line capac. (cfs)	= 219.9	Line storage (cuft)	= 7626

LINE 10 / Q = 239.0 / HT = 60 / WID = 60 / N = .013 / L = 270 / JLC = .1

MH 6A - STUB / DNLN = 9

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	5251.62	60.00	5246.18	12.17	5253.92	0.00	4.91	19.63
UPSTRM	5254.12	60.00	5248.00	12.17	5256.42	0.00	4	19.63

Drainage area (ac)	= 0	Slope of invert (%)	= 0.674
Runoff coefficient	= 0	Slope energy grade line (%)	= 0.842
Time of conc (min)	= 0	Critical depth (in)	= 53.11
Inlet time (min)	= 0	Req'd length curb inlet (ft)	= 0.0
Intensity (in/hr)	= 0.00	Req'd grate area (sf)	= 0.0
Cumulative C*A	= 0.0	Depth at inlet opening (in)	= 0
Flow contrib (cfs)	= 239	Confluence angle (deg)	= 0
Default Q (cfs)	= 239	Natural ground elev (ft)	= 5257
Line capac. (cfs)	= 213.8	Line storage (cuft)	= 5301

Legend

- Lateral Stubout Inlet Connector
- Collector
- Reservor Drain Siphon
- Double Pipe
- Force Main
- Abandon Lines
- Manhole
- Inlet Catch Basin
- Junction Box
- Vault
- Standpipe/Riser
- Surface Flow
- Pipe Flow
- Water Course Holding Ponds Dams
- Well
- Reservoir
- Pump Station

0 100 200 400 600

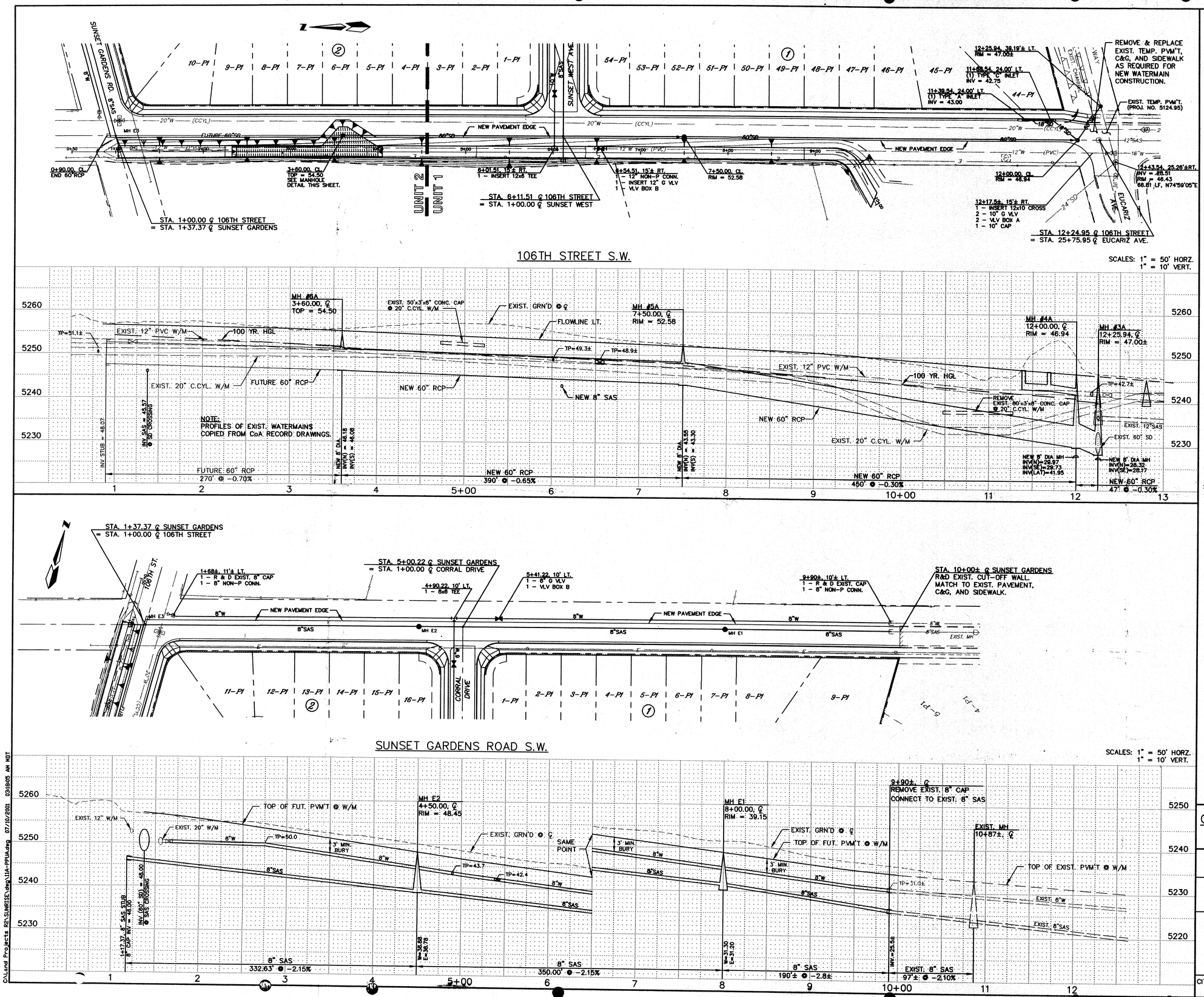
SCALE

MAP GRID

L-08

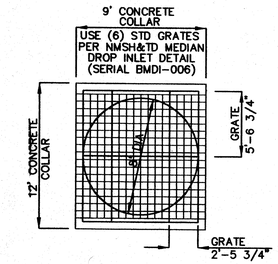
Notes.

1. Map is for information only and is subject to corrections. (Corrections call 768-3608.)
2. Features are drawn for general representation of facilities.
3. Refer to as-built drawing for true representation



STORM SEWER HYDRAULIC SUMMARY

LOCATION	Q (cfs)	V (fps)
MH 3A-4A	257	13.0
MH 4A-5A	244	12.8
MH 5A-6A	239	12.2
MH 6A-STUB	239	12.1



INTERIM 8'ø DROP MANHOLE STRUCTURE DETAIL

NTS

AS BUILT INFORMATION

CONTRACTOR | DATE
WORK STAKED BY
INSPECTOR'S ACCEPTANCE BY | DATE
FIELD REVISED BY | DATE
VERIFICATION BY
CORRECTIONS CHECKED BY | DATE
MICRO-FILM INFORMATION
RECORDED BY | DATE
NO.

BENCH MARKS

● ACS MONUMENT "9-L9" @ THE NORTHEAST CORNER OF SUNRISE RANCH WEST.
ELEV.: 5187.04 MSL.

SURVEY INFORMATION

FIELD NOTES

NO.	BY	DATE
	ALDRITCH LAND SURVEY	
	P.O. BOX 30701	
	ALBUQUERQUE, NM	
	87190-0701	
	(505) 884-1990	

ENGINEER'S SEAL

DANIEL HOELZER
NEW MEXICO
10-17-01

NO.	DATE	REMARKS	BY
		REVISIONS	
		DESIGN	

DESIGNED BY: HC-A DATE: JULY -01
DRAWN BY: HC-A DATE: JULY -01
CHECKED BY: DLH DATE: JULY -01

dmg
MARK GOODWIN & ASSOCIATES, P.A.
CONSULTING ENGINEERS
P.O. BOX 90606
ALBUQUERQUE, NEW MEXICO 87199
(505) 828-2200, FAX (505) 797-9539

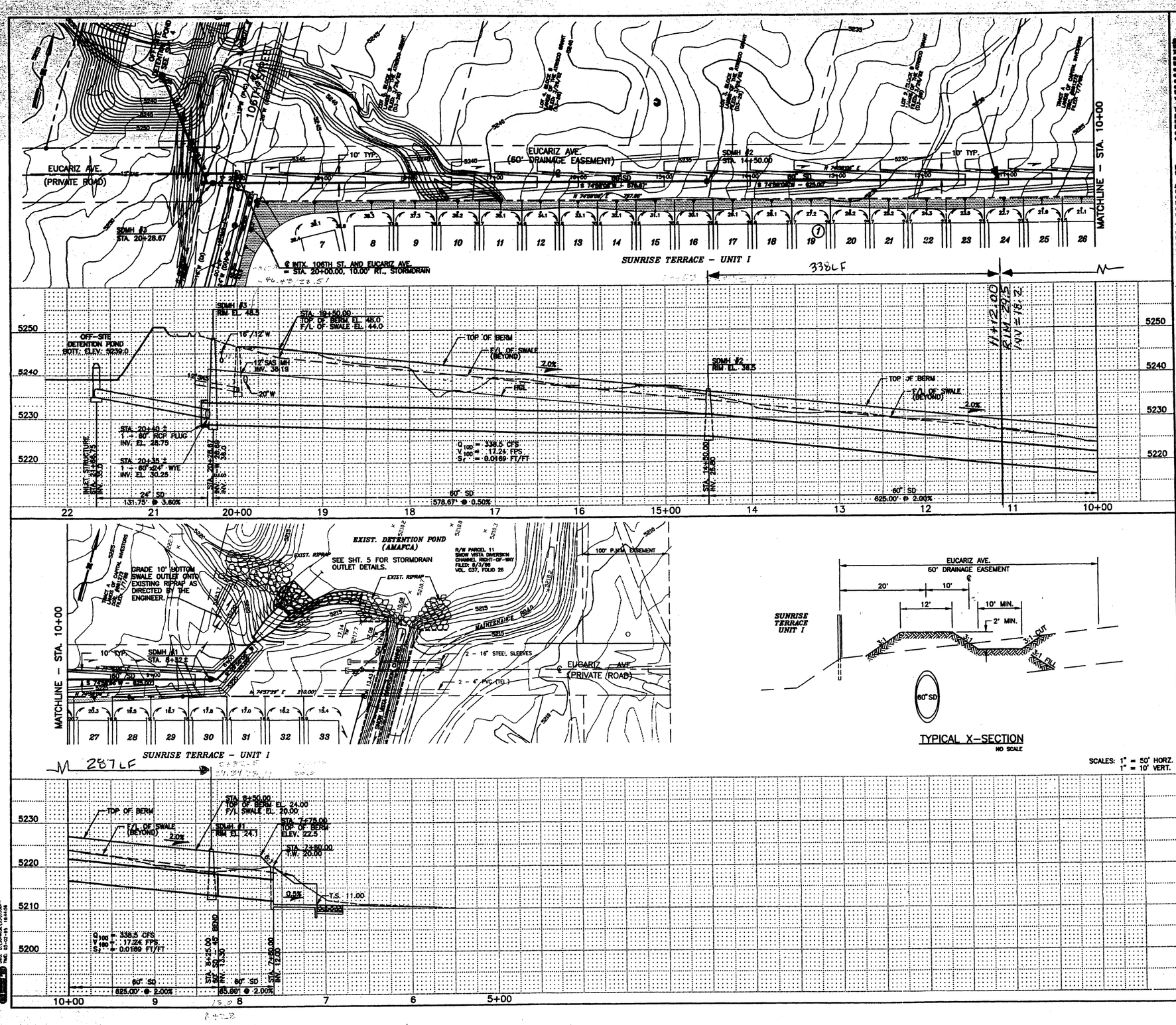
CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING DEVELOPMENT GROUP

SUNRISE RANCH WEST
106TH STREET AND SUNSET GARDENS ROAD S.W.
SEWER AND WATER PLANS & PROFILES

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	LAST DESIGN UPDATE	Mo./DAY/YR.	Mo./DAY/YR.

CITY PROJECT No.	ZONE MAP NO.	SHEET	OF
XXXXXX	L-8	12	19

C:\Land Projects RE\SUNRISE\dwg\11A-PPUA.dwg 07/10/2001 03:18:05 AM MDT



TYPICAL X-SECTION
NO SCALE

STORMDRAIN PIPE SPECIFICATIONS

GENERAL: The storm drainage system design as shown on the Plans is based on reinforced concrete pipe construction. The Contractor may, upon request, substitute other pipe specified below at his/her option. The Contractor shall then also be responsible for modifying the the details of construction shown on the Plans, as may be required, by letter, to suit the alternate pipe material and method of construction. The Contractor shall submit complete details, shop drawings, and samples to notify the Engineer and his/her proposed construction will be similar to that shown on the Plans.

The bid proposal prepared and the assessment and payment of quantities of the Specifications shall reflect reinforced or for reinforced concrete pipe construction. No additional payment will be allowed for any cost attributable to the use of alternate pipe materials or construction methods.

MATERIALS

Pipe used in stormdrain construction shall meet one of the following specifications:

A. Reinforced Concrete Pipe. Reinforced concrete pipe shall meet the requirements of ASTM C 76. The required class of pipe shall be determined by the Marston formula for standard trench installations assuming SC-90 soils with an average soil weight of 125 lbs/cu. ft. Impact loads may be ignored.

The Contractor shall submit manufacturer's data for a complete system, including reusable layout drawings and/or shop drawings for review. Stations, curve data, horizontal alignment, etc., shown on the Plans may be adjusted to fit the manufacturer's standard products with the Engineer's approval, and provided that the intent of the design shown on the Plans is met without interference with other project requirements.

B. Cast-In-Place Concrete Pipe. Cast-in-place concrete shall meet the requirements of ACI 346 and the recommendations of ACI 349R. Portland cement concrete used for the construction of CIP pipe shall meet the requirements of the Cost Standard Specifications, Section 101 for Portland cement concrete for channels and drainage structures.

CONCRETE. Concrete for miscellaneous structures, joint fillers, etc., shall conform to the requirements of Section 101 of the Standard Specifications for miscellaneous concrete work.

JOINTS

A. Reinforced Concrete Pipe. Joints in reinforced concrete pipe shall be bell and spigot or tongue and groove joints meeting the requirements of ASTM C 76 with flexible gasket meeting the requirements of ASTM C 443 or AASHTO M 198.

B. Cast-In-Place Concrete Pipe. Joints in CIP concrete pipe shall be constructed in accordance with Paragraph 7.2 "Construction Joints," of ACI 346.

FITTINGS. Specials, such as wyes, tees, reducers, manhole bases, etc., for reinforced concrete pipe and spiral rib pipe shall be shop fabricated when practicable, and shall conform to the applicable specifications for the type and class or gauge of pipe used. The Contractor shall submit shop drawings for the Engineer's review, clearly indicating the contours of construction, special reinforcement, and fittings in ample time before fabricating the pieces. Field fabrication will only be permitted with the Engineer's specific approval for each instance. For cast-in place pipe, the Contractor shall submit either shop drawings or a standard construction manual that show how special construction problems will be solved.

AS BUILT INFORMATION — CONTRACTOR / STAKING BY / INSPECTOR BY / FIELD / CONTRACTOR BY / STAKING BY / DATE — MICRO-FILM INFORMATION — RECORDED BY / DATE / NO.

BENCH MARKS: ACS ALUMINUM CAP "5-L5" AT N.E. CORNER OF CENTRAL AVE. AND 110 TH. ST. S.W. ELEVATION = 5301.89 MSL.

SURVEY INFORMATION — FIELD NOTES: NO. / BY / DATE — ALBUQUERQUE SURVEYING CO., INC. AND T.R. MANN & ASSOC. (PHOTOGRAMMETRY) 9-94

ENGINEER'S SEAL — No. 5258

NO.	DATE	REMARKS	BY
		REVISIONS	
		DESIGN	

DESIGNED BY HC-A DATE 2-95
DRAWN BY HC-A DATE 2-95
CHECKED BY RPB DATE 2-95

26-5124.91 0395

Easterling & Associates, Inc.
CONSULTING ENGINEERS
10521 Coors Rd., NW, Suite H-7
ALBUQUERQUE, NEW MEXICO 87114
(505) 898-8021 FAX (505) 898-8601

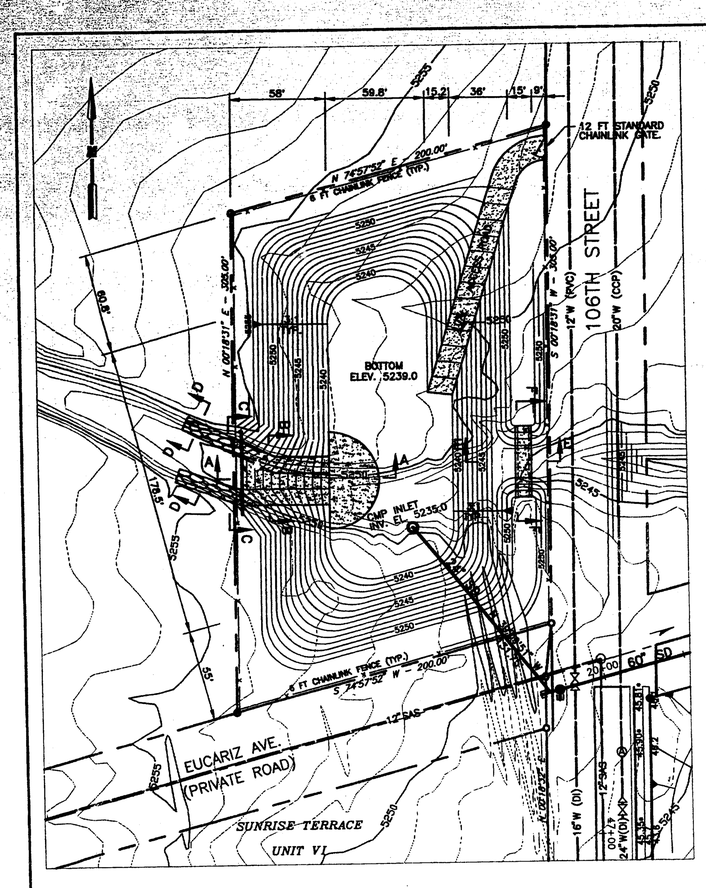
CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

SUNRISE TERRACE, UNIT 1

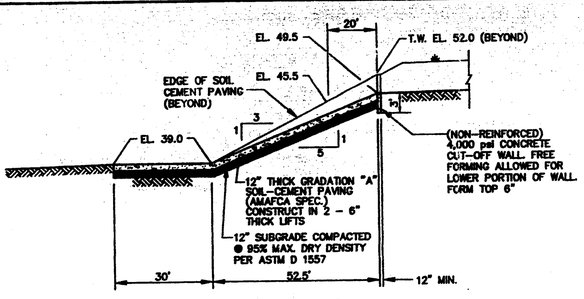
STORMDRAIN PLAN & PROFILE

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
D.R.C. CHAIR		3-7-95	WATER	N/A RWE	3-7-95
TRANS. DEV.		3-07-95	WASTEWATER	N/A RWE	3-7-95
HYDROLOGY		3-7-95	CONST. COORD.		
A.M.A.F.C.A.		3-6-95			

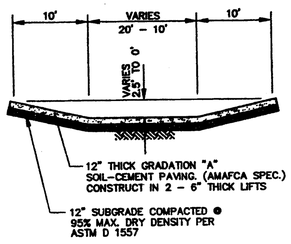
DRAWING NO. 5124.91 | MAP NO. L-8 | SHEET 3 OF 5



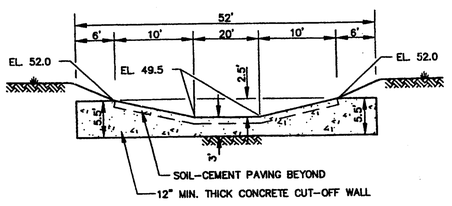
OFF-SITE DETENTION POND
1" = 40'



RUNDOWN STRUCTURE – SECTION A-A
NOT TO SCALE



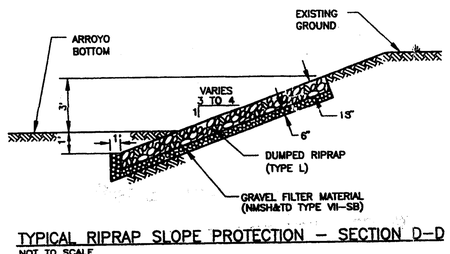
RUNDOWN STRUCTURE – SECTION B-B
NOT TO SCALE



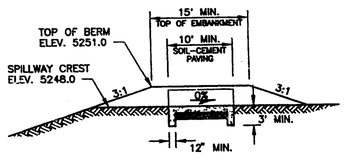
RUNDOWN CONCRETE CUT-OFF WALL – SECTION C-C
NOT TO SCALE

FENCE NOTES

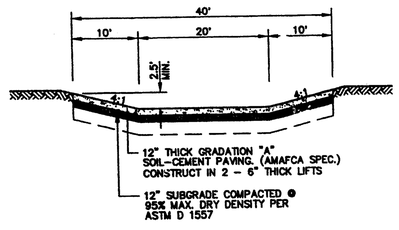
6 FT CHAINLINK FENCE AND 12 FT CHAINLINK GATE SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. DWG. 2252.



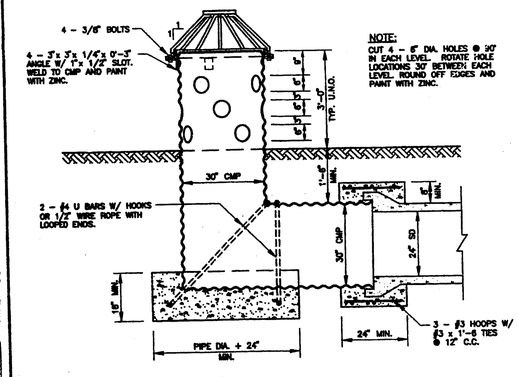
TYPICAL RIPRAP SLOPE PROTECTION – SECTION D-D
NOT TO SCALE



SPILLWAY STRUCTURE – SECTION E-E
NOT TO SCALE

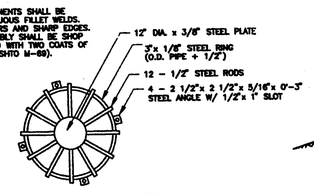


SPILLWAY STRUCTURE – SECTION F-F
NOT TO SCALE

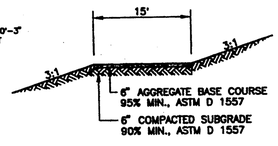


CMP INLET STRUCTURE
NOT TO SCALE

NOTE: TRASH RACK COMPONENTS SHALL BE JOINED WITH CONTINUOUS FILLET WELDS. GRIND OFF ALL BURRS AND SHARP EDGES. THE FINISHED ASSEMBLY SHALL BE SHOP PRIMED AND PAINTED WITH TWO COATS OF ALUMINUM PAINT (AASHTO M-69).



TRASH RACK – PLAN VIEW
NOT TO SCALE



ACCESS ROAD X-SECTION
NOT TO SCALE

AS BUILT INFORMATION — CONTRACTOR / STAKING BY / INSPECTOR BY / FIELD / CONTRACTOR BY / STAKING BY / DATE — MICRO-FILM INFORMATION — RECORDED BY / DATE / NO.

BENCH MARKS: ACS ALUMINUM CAP "5-L5" AT N.E. CORNER OF CENTRAL AVE. AND 110 TH. ST. S.W. ELEVATION = 5301.89 MSL.

SURVEY INFORMATION — FIELD NOTES: NO. / BY / DATE — ALBUQUERQUE SURVEYING CO., INC. AND T.R. MANN & ASSOC. (PHOTOGRAMMETRY) 9-94

ENGINEER'S SEAL — No. 5258

NO.	DATE	REMARKS	BY
		REVISIONS	
		DESIGN	

DESIGNED BY HC-A DATE 2-95
DRAWN BY HC-A DATE 2-95
CHECKED BY RPB DATE 2-95

26-5124.91 0395

Easterling & Associates, Inc.
CONSULTING ENGINEERS
10521 Coors Rd., NW, Suite H-7
ALBUQUERQUE, NEW MEXICO 87114
(505) 898-8021 FAX (505) 898-8601

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

SUNRISE TERRACE, UNIT 1

OFF-SITE DETENTION POND

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
D.R.C. CHAIR		3-7-95	WATER	N/A RWE	3-7-95
TRANS. DEV.	N/A GHO	3-07-95	WASTEWATER	N/A RWE	3-7-95
HYDROLOGY		3-7-95	CONST. COORD.		

DRAWING NO. 5124.91 | MAP NO. L-8 | SHEET 4 OF 5

DWG: D:\SUNRISE\SD\04D-POND
TIME: 03-03-95 06:22:50