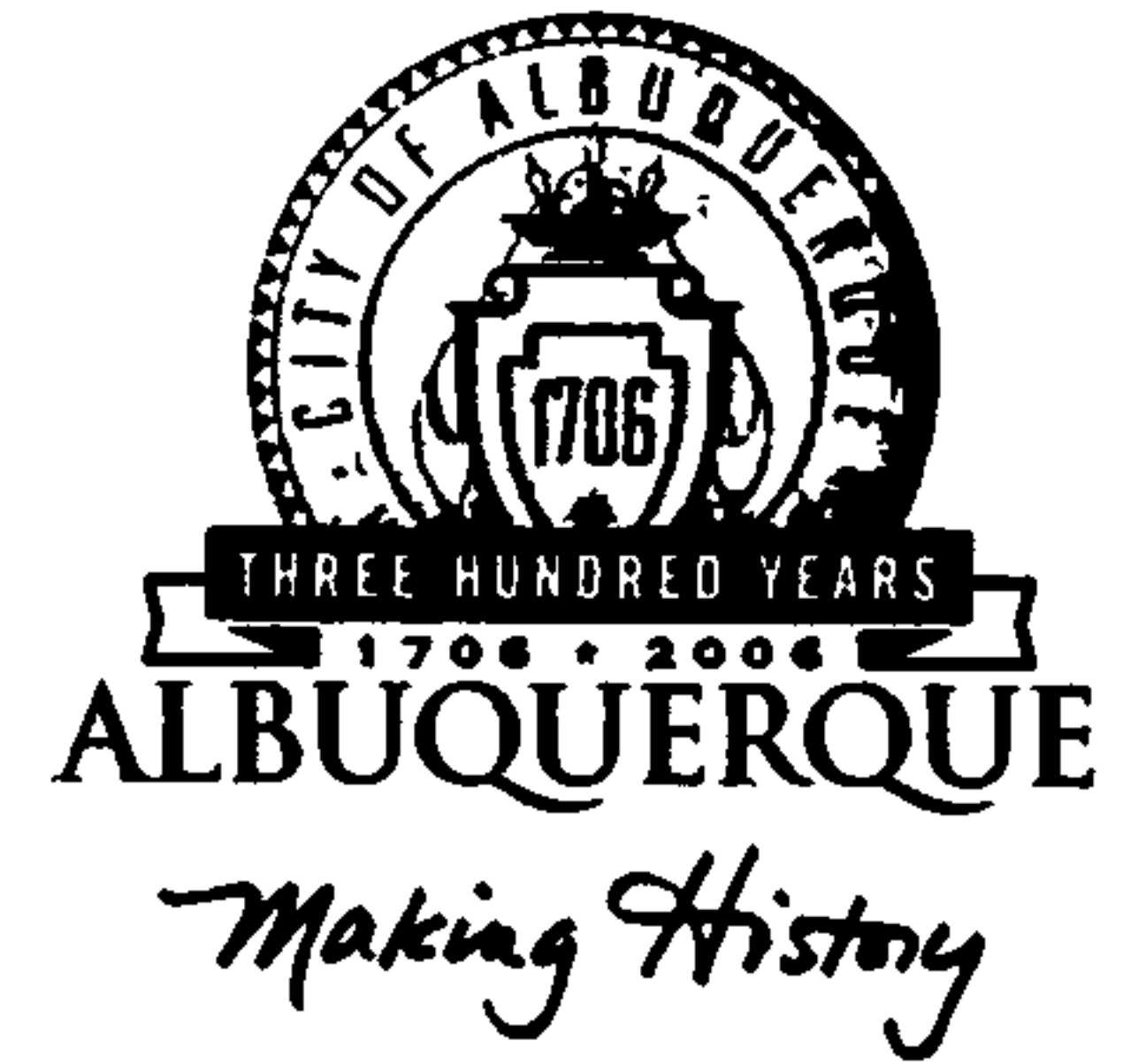


# CITY OF ALBUQUERQUE



November 15, 2004

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

**Re: Sundoro South Subdivision Units 5,6,7 Drainage Report  
Engineer's Stamp dated 10-29-04 (J9/D19A)**

Dear Ms. Hoelzer,

Based upon the information provided in your submittal dated 10-29-04, the above referenced report is approved for Preliminary Plat action by the DRB. Once that board approves the plan, please submit a mylar copy for my signature in order to obtain a Rough Grading Permit.

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

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

Sincerely,

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

C: Chuck Caruso, DMD  
file

P.O. Box 1293

Albuquerque

New Mexico 87103

[www.cabq.gov](http://www.cabq.gov)

**DRAINAGE INFORMATION SHEET**  
(REV. 1/28/2003rd)

3-09/15019A

|                                                                                                                                                                                                    |                                          |                 |                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-----------------|---------------------|
| PROJECT TITLE:                                                                                                                                                                                     | <u>Sundoro Units 5, 6 and 7</u>          | ZONE MAP/DRG #: | <u>J-8/9</u>        |
| DRB#:                                                                                                                                                                                              | EPC #:                                   | W.O.#:          |                     |
| LEGAL DESCRIPTION: <u>Parcel J-2-B Westland North&amp; Lot 43-P1, Blk 4, Tract L Sundoro South Subd., Unit 1&amp; Tract B, Painted Sky Subd., Unit 1&amp; two 'Tract of Land' by Warranty Deed</u> |                                          |                 |                     |
| CITY ADDRESS:                                                                                                                                                                                      |                                          |                 |                     |
| ENGINEERING FIRM:                                                                                                                                                                                  | <u>Mark Goodwin &amp; Associates, PA</u> | CONTACT:        |                     |
| ADDRESS:                                                                                                                                                                                           | <u>PO Box 90606</u>                      | PHONE:          | <u>828-2200</u>     |
| CITY, STATE:                                                                                                                                                                                       | <u>Albuquerque, NM</u>                   | ZIP CODE:       | <u>87199</u>        |
| OWNER:                                                                                                                                                                                             | <u>Westland Development Co. Inc.</u>     | CONTACT:        | <u>Leroy Chavez</u> |
| ADDRESS:                                                                                                                                                                                           | <u>401 Coors Blvd. NW</u>                | PHONE:          | <u>831-9600</u>     |
| CITY, STATE:                                                                                                                                                                                       | <u>ABQ, NM</u>                           | ZIP CODE:       | <u>87121</u>        |
| ARCHITECT:                                                                                                                                                                                         | <u>NA</u>                                | CONTACT:        |                     |
| ADDRESS:                                                                                                                                                                                           |                                          | PHONE:          |                     |
| CITY, STATE:                                                                                                                                                                                       |                                          | ZIP CODE:       |                     |
| SURVEYOR:                                                                                                                                                                                          | <u>Aldrich Land Surveying</u>            | CONTACT:        | <u>Tim Aldrich</u>  |
| ADDRESS:                                                                                                                                                                                           | <u>P.O. Box 30701</u>                    | PHONE:          | <u>884-1990</u>     |
| CITY, STATE:                                                                                                                                                                                       | <u>Albuquerque, NM</u>                   | ZIP CODE:       | <u>87190-0701</u>   |
| CONTRACTOR:                                                                                                                                                                                        | <u>NA</u>                                | CONTACT:        |                     |
| ADDRESS:                                                                                                                                                                                           |                                          | PHONE:          |                     |
| CITY, STATE:                                                                                                                                                                                       |                                          | ZIP CODE:       |                     |

CHECK TYPE OF SUBMITTAL:

|                                     |                                                            |
|-------------------------------------|------------------------------------------------------------|
| <input checked="" type="checkbox"/> | DRAINAGE REPORT                                            |
| <input type="checkbox"/>            | DRAINAGE PLAN 1 <sup>ST</sup> SUBMITTAL, req. TCL or equal |
| <input type="checkbox"/>            | DRAINAGE PLAN RESUBMITTAL                                  |
| <input type="checkbox"/>            | CONCEPTUAL GRADING & DRAINAGE PLAN                         |
| <input checked="" type="checkbox"/> | GRADING PLAN                                               |
| <input type="checkbox"/>            | EROSION CONTROL PLAN                                       |
| <input type="checkbox"/>            | ENGINEER'S CERTIFICATION (HYDROLOGY)                       |
| <input type="checkbox"/>            | CLOMR/LOMR                                                 |
| <input type="checkbox"/>            | TRAFFIC CIRCULATION LAYOUT (TCL)                           |
| <input type="checkbox"/>            | ENGINEER'S CERTIFICATION (TCL)                             |
| <input type="checkbox"/>            | ENGINEER'S CERTIFICATION (DRB APPR. SITE PLAN)             |
| <input type="checkbox"/>            | OTHER                                                      |

WAS A PRE-DESIGN CONFERENCE ATTENDED?

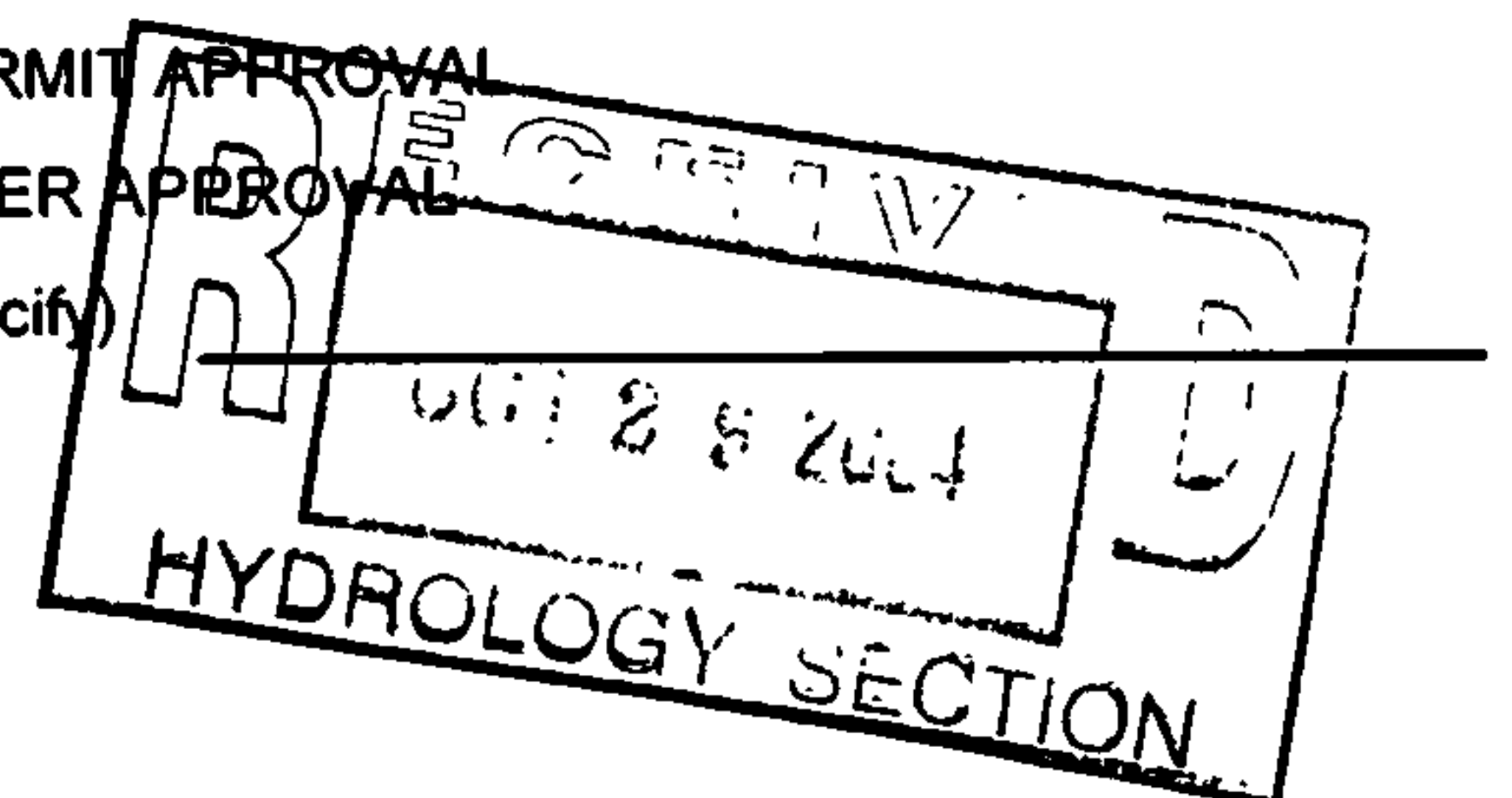
☐ YES

☐ NO

☐ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

|                                     |                                        |
|-------------------------------------|----------------------------------------|
| <input type="checkbox"/>            | SIA / FINANCIAL GUARANTEE RELEASE      |
| <input checked="" type="checkbox"/> | PRELIMINARY PLAT APPROVAL              |
| <input type="checkbox"/>            | S. DEV. PLAN FOR SUB'D. APPROVAL       |
| <input type="checkbox"/>            | S. DEV. PLAN FOR BLDG. PERMIT APPROVAL |
| <input type="checkbox"/>            | SECTOR PLAN APPROVAL                   |
| <input type="checkbox"/>            | FINAL PLAT APPROVAL                    |
| <input type="checkbox"/>            | FOUNDATION PERMIT APPROVAL             |
| <input type="checkbox"/>            | BUILDING PERMIT APPROVAL               |
| <input type="checkbox"/>            | CERTIFICATE OF OCCUPANCY (PERM)        |
| <input type="checkbox"/>            | CERTIFICATE OF OCCUPANCY (TEMP)        |
| <input checked="" type="checkbox"/> | GRADING PERMIT APPROVAL                |
| <input type="checkbox"/>            | PAVING PERMIT APPROVAL                 |
| <input type="checkbox"/>            | WORK ORDER APPROVAL                    |
| <input type="checkbox"/>            | OTHER (specify)                        |



DATE SUBMITTED: OCTOBER 29, 2004

BY:

Diane Hoelzer  
Diane Hoelzer, PE

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

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

---

**MARK GOODWIN**

**& ASSOCIATES**  
CONSULTING ENGINEERS

dmg

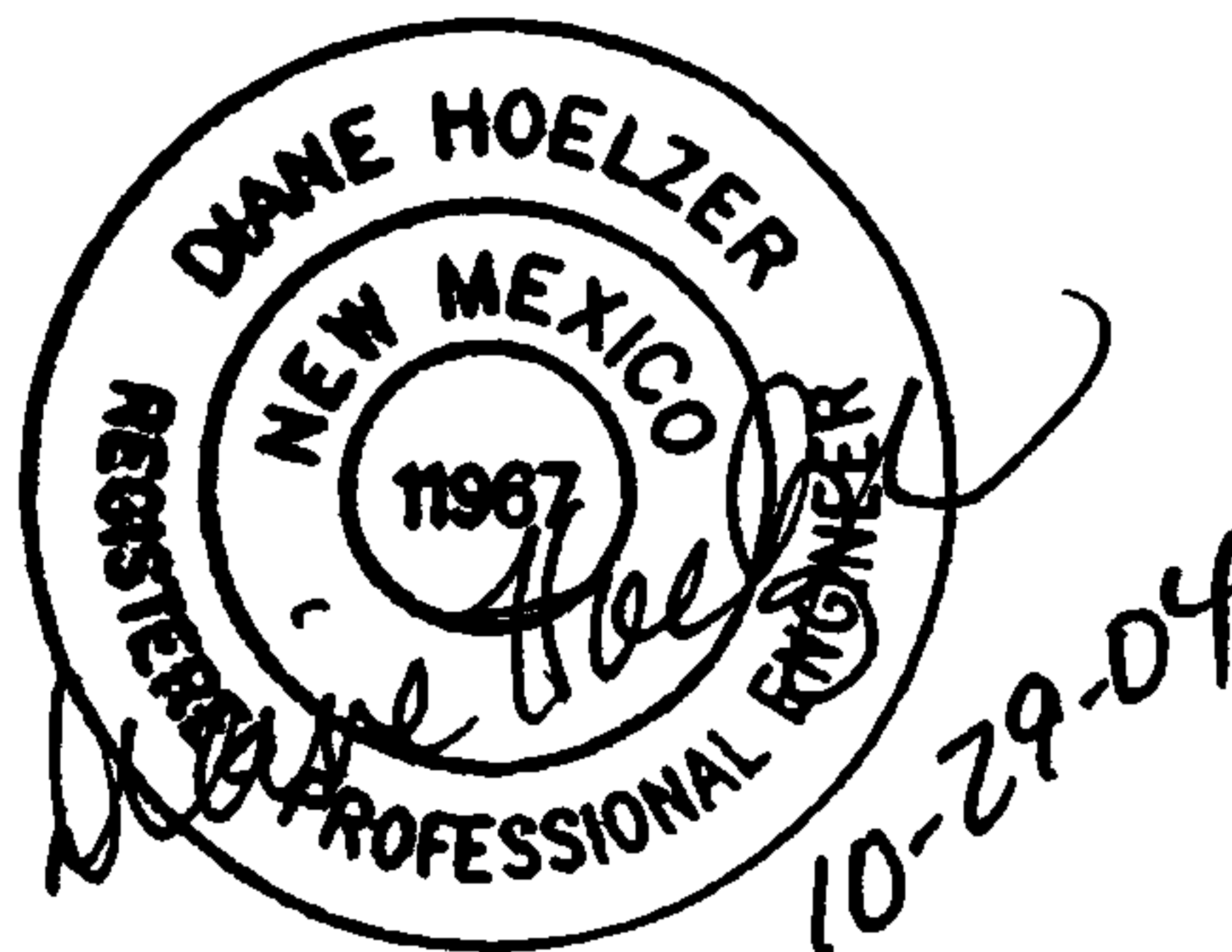
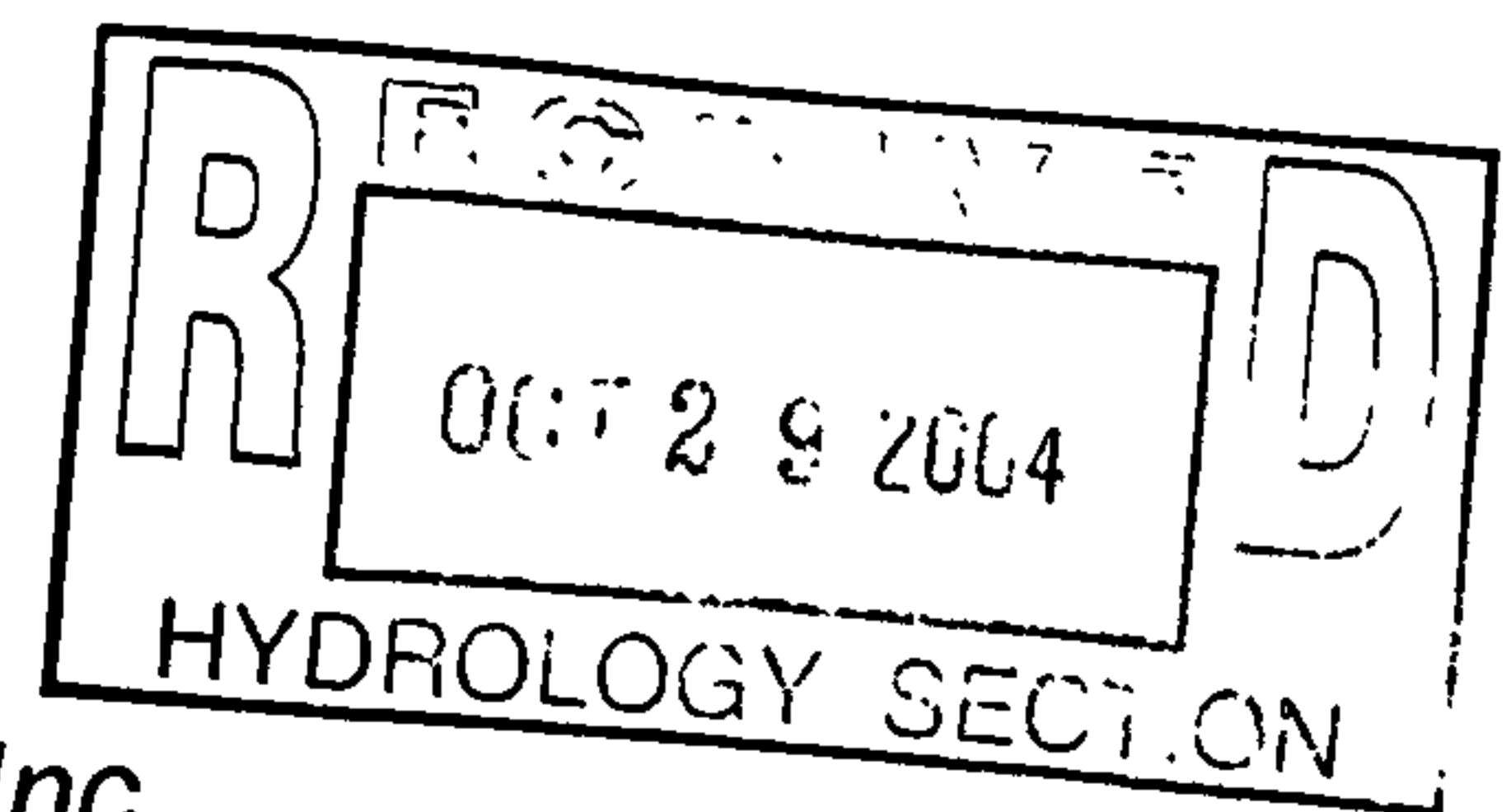
# **DRAINAGE MANAGEMENT PLAN**

*For*

**SUNDORO SOUTH**

*Units 5, 6 and 7*

*Prepared for:*  
**Westland Development Co. Inc.**



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

**October 29, 2004**

## *Sundoro South Units 5,6,7*

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| <i>III.</i>       | <i>EXISTING DRAINAGE CONDITIONS</i>                                    |
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## **I. PROJECT DESCRIPTION**

*The proposed Sundoro South Subdivision will consist of 198 lots for single family dwellings. The first Phase (Unit 5) will consist of 123 lots. The second phase (Unit 6) will consist of 67 lots. The final phase (Unit 7) will consist of 8 lots and will not be developed until the temporary retention pond is replaced with the future AMAFCA channel.*

*The project site is located east of 98<sup>th</sup> street and immediately adjacent to the north side of I - 40 and the south side of Ladera Drive. Sundoro Unit 5 is bounded by Endee Road to the south, Ladera Drive to the north, vacant land to the east (future Sundoro Unit 8) and the existing Sundoro Unit 1,2, and 3 subdivision to the west. Sundoro Unit 6 is bounded by Endee Road to the north, I-40 right of way to the south, Painted Sky Unit 5 to the east and vacant land to the west (future Sundoro Unit 9).*

## **II. DESIGN CRITERIA AND PREVIOUS REPORTS**

*The design criteria used in this report was in accordance with Section 22.2 Hydrology of the Development Process Manual, Volume 2, Design Criteria, January 1993 edition. The 100-year 6-hour storm event was analyzed to determine street capacities using  $P(1\text{ hr})=1.89"$ ,  $P(6\text{ hr})=2.20"$ ,  $P(24\text{ hr})=2.66"$ . The onsite Land Treatment values used were using "Table A-5 Percent Treatment D" in the DPM. AHYMO printouts are provided in Appendix A.*

## **III. EXISTING DRAINAGE CONDITIONS**

*Runoff from the project site under existing drainage conditions flows in a general eastward to southeastward direction. There are several existing arroyos that direct runoff to the southeast corner of the project site. The primary arroyo is within the FEMA floodplain and is classified as a Zone AO (1'depth) as shown in Figure 2.*

#### **IV. DEVELOPED DRAINAGE CONDITIONS**

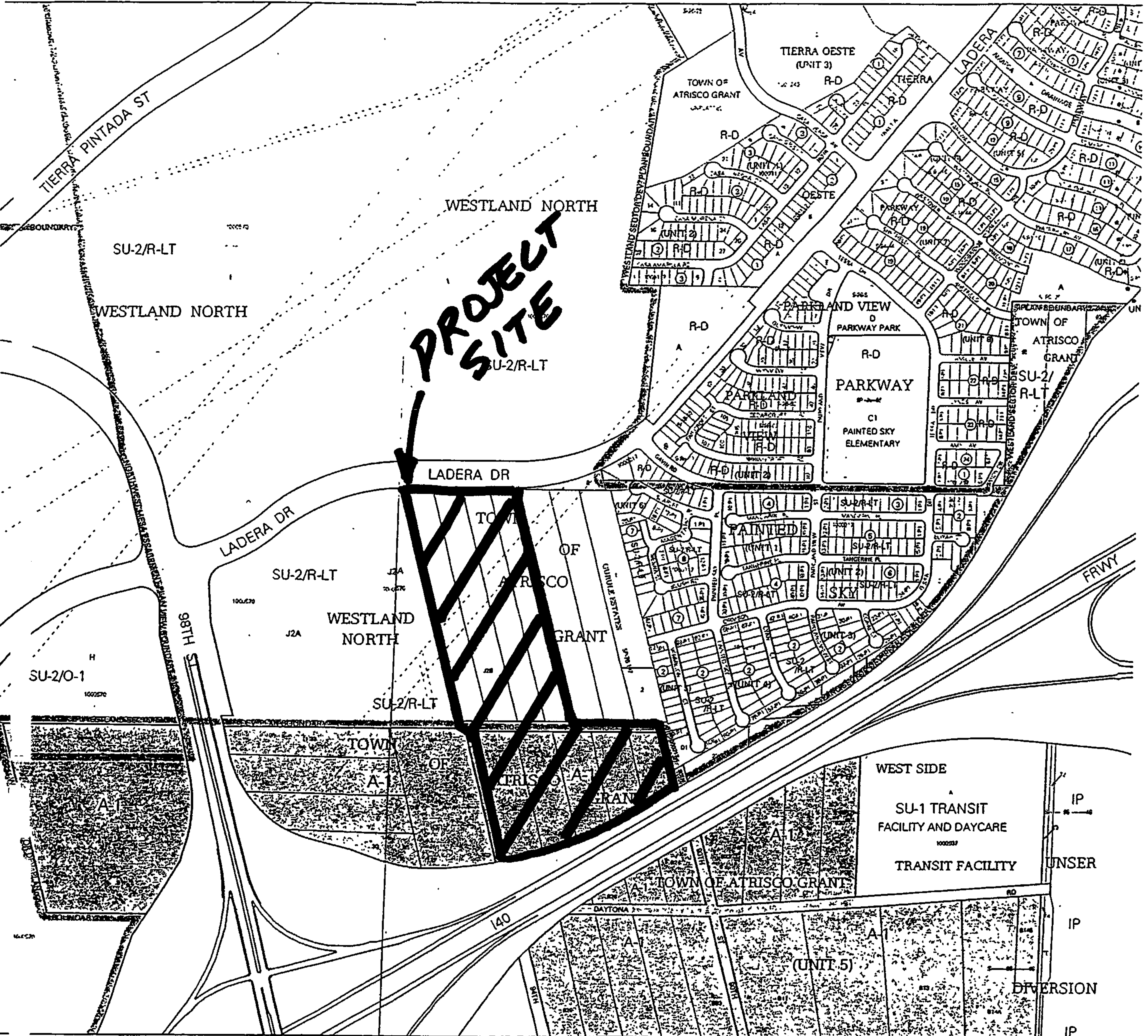
*Under developed drainage conditions runoff will be directed through street flow and storm sewer to a retention pond located at the southeast corner of the project site. There is an existing temporary retention pond located at the southwest corner of the Painted Sky Unit 5 Subdivision (Subasin OF-3) that presently intercepts runoff from one of the Painted Sky subasins and all of the offsite runoff originating from the north and west that includes our proposed project site. This existing temporary retention pond will be expanded and the side slopes changed from 2:1 to 3:1 side slopes to contain the required '100 yr-10 day' runoff volume from the project sites' developed flows (Unit 5 and 6), the future developed flows from Sundoro Unit 8 (OF-4) and Sundoro Unit.9' (OF-1 and OF-2) and existing developed flows from Sundoro Units 1,2,3 (OF-5). Refer to the Subasin boundary exhibit for visual explanation. The required storage volume for the expanded retention pond can be found in Table 3.1 and 3.2.*

*The storm sewer was designed for the ultimate fully developed conditions for the 100-year 6-hour storm. This includes 'developed' flows from Offsite subasins OF-1, OF-2, OF-3, OF-4, and OF-5. The retention pond was designed to have the storage capacity for these same 'developed condition' flows for the 100-year 10 day storm event. For preliminary design of the storm sewer and inlet capacity calculations, refer to Appendix C. For Street Capacity Calculations refer to Appendix B and Table 2.*

##### **IV.A Offsite Flows**

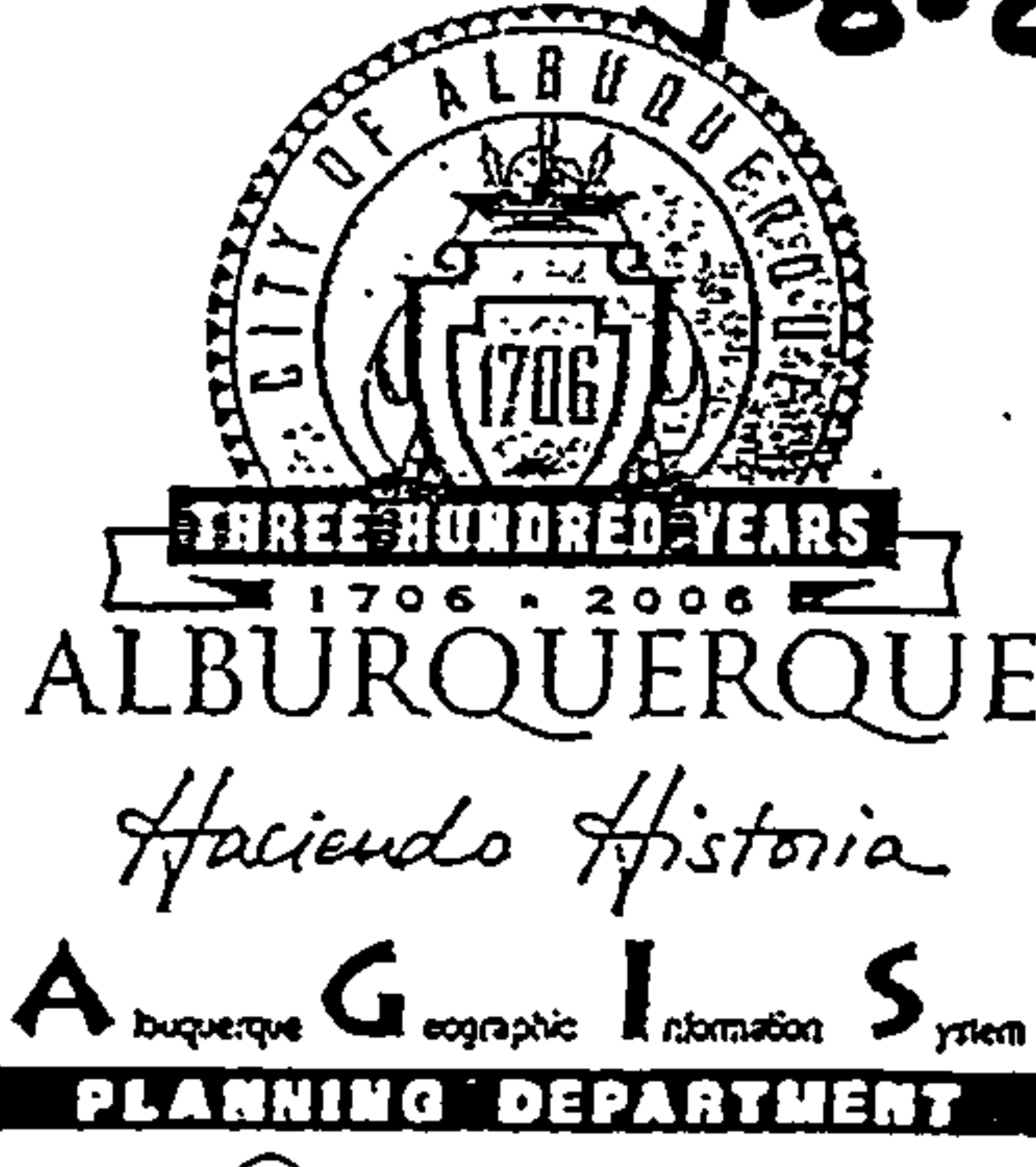
*Offsite 'existing condition' flows (OF-4) entering the project site along the west boundary of the future Unit 6 will be directed south to the existing I-40 roadside swale which is where this runoff presently flows to now. 'Existing condition' flows (OF-1,2) from the vacant parcel of land bounded by the proposed Sundoro Unit 5 and the existing Painted Sky Unit 5 subdivision will continue to be directed into the Painted Sky retention pond at the northwest corner of the existing pond.*

H-9-Z



K-9-Z

J-8-Z



Zone Atlas Page: **J-9-Z**

amended through: Aug 06, 2004

Selected Symbols

- |                           |     |                        |
|---------------------------|-----|------------------------|
| Incorporated Areas        | X   | Grant Boundaries       |
| Director Plan Boundaries  | ~   | Petroglyph             |
| Parcel Boundaries         | --- | H-1 Buffer Zone        |
| Assessment Lines          | --- | Arroyos                |
| Freeway Lanes             | --- | LDN Noise Level        |
| Jurisdictional Boundaries | +   | Airport Clearance Zone |
| Westgate Wall             | +   | Design Overlay Zones   |
| Scarpment                 | +   |                        |

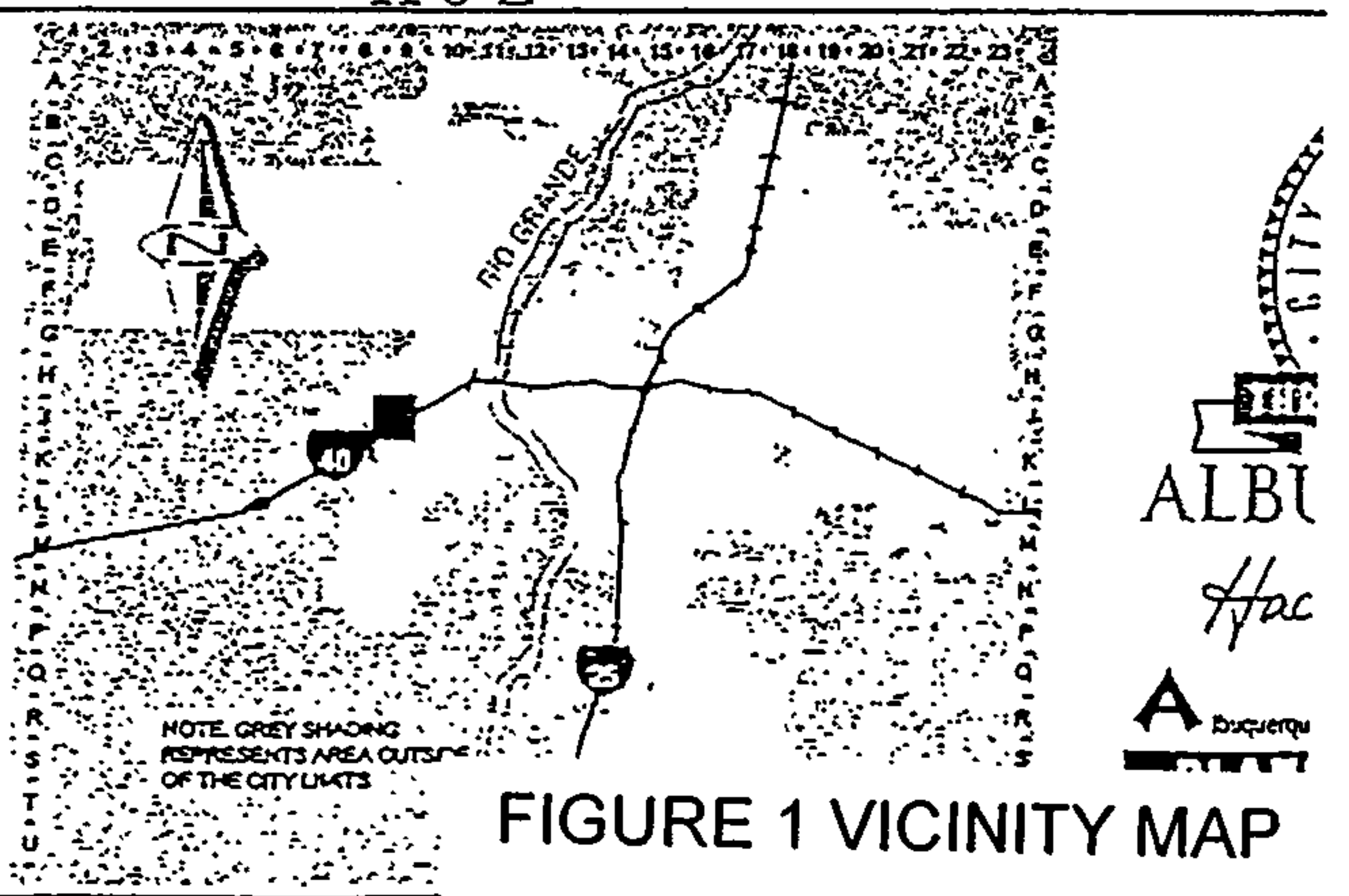
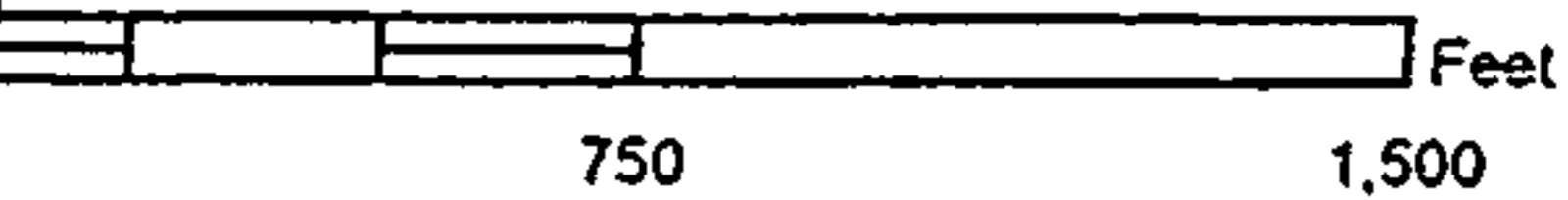
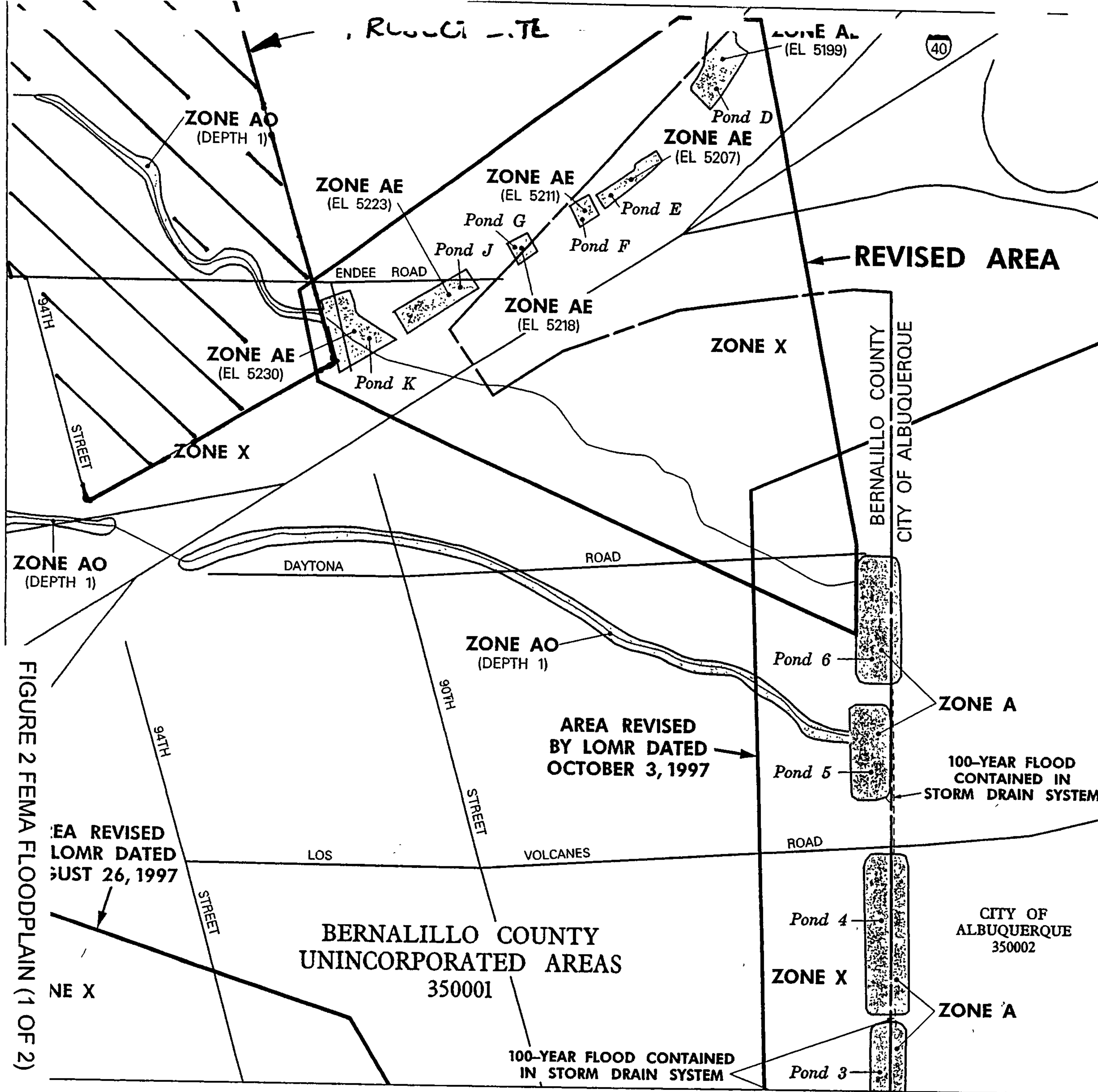


FIGURE 1 VICINITY MAP



CITY OF ALBUQUERQUE  
350002



APPROXIMATE SCALE IN FEET  
500 0 500

NATIONAL FLOOD INSURANCE PROGRAM

**FIRM**  
FLOOD INSURANCE RATE MAP  
BERNALILLO COUNTY,  
NEW MEXICO AND  
INCORPORATED AREAS

PANEL 328 OF 825  
(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:  
COMMUNITY

| COMMUNITY                               | NUMBER | PANEL | SUFFIX |
|-----------------------------------------|--------|-------|--------|
| ALBUQUERQUE, CITY OF                    | 350002 | 0328  | D      |
| BERNALILLO COUNTY, UNINCORPORATED AREAS | 360001 | 0328  | D      |

REVISED TO  
REFLECT LOMR  
DATED JUN 13 2003

MAP NUMBER  
35001C0328 D

EFFECTIVE DATE:  
SEPTEMBER 20, 1996



Federal Emergency Management Agency

FIGURE 2 FEMA FLOODPLAIN (1 OF 2)



# Federal Emergency Management Agency

Washington, D.C. 20472

JUN 13 2003

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

Mr. Tim Cummins  
Chairman, County Commission  
Bernalillo County  
One Civic Plaza, N.W.  
Albuquerque, NM 87102

IN REPLY REFER TO:

Case Number: 03-06-200P  
Community Name: Bernalillo County, New Mexico  
(Unincorporated Areas)  
Community Number: 350001  
Effective Date of  
this Revision: JUN 13 2003

Dear Mr. Cummins:

The Flood Insurance Study (FIS) and Flood Insurance Rate Map (FIRM) for your community have been revised by this Letter of Map Revision (LOMR). Please use the enclosed annotated map panel revised by this LOMR for floodplain management purposes and for all flood insurance policies and renewals issued in your community.

Additional documents are enclosed that provide information regarding this LOMR. Please see the List of Enclosures below to determine which documents are included. Other attachments specific to this request may be included as referenced in the Determination Document. If you have any questions regarding floodplain management regulations for your community or the National Flood Insurance Program (NFIP) in general, please contact the Consultation Coordination Officer (CCO) for your community. If you have any technical questions regarding this LOMR, please contact the Director, Federal Insurance and Mitigation Division of the Federal Emergency Management Agency (FEMA) in Denton, Texas, at (940) 898-5165, or the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP). Additional information about the NFIP is available on our web site at <http://www.fema.gov/nfip>.

Sincerely,

Kevin C. Long, CFM  
Project Engineer  
Hazard Study Branch  
Emergency Preparedness and  
Response Directorate

For: Mary Jean Pajak, P.E., Acting Chief  
Hazard Study Branch  
Emergency Preparedness and  
Response Directorate

**List of Enclosures:**

Letter of Map Revision Determination Document  
Annotated Flood Insurance Study Report  
Annotated Flood Insurance Rate Map  
List of Current Flood Insurance Study Data

cc: The Honorable Martin Chavez, Mayor, City of Albuquerque  
Susan M. Calongne, P.E., Floodplain Administrator Bernalillo County  
Carlos A. Montoya, City Floodplain Administrator, City of Albuquerque  
James D. Hughes, P.E., D. Mark Goodwin & Associates, PA  
Fred Ambrogi, VP, Development Division, Westland Development Co., Inc.  
Community Map Repository, Bernalillo County

**INFRASTRUCTURE LIST**

**EXHIBIT "A"**  
**TO SUBDIVISION IMPROVEMENTS AGREEMENT**  
**DEVELOPMENT REVIEW BOARD (D.R.B.) REQUIRED INFRASTRUCTURE LIST**

Date Submitted: 10/29/2004  
Date Site Plan Approved: \_\_\_\_\_  
Date Preliminary Plat Approved: \_\_\_\_\_  
Date Preliminary Plat Expires: \_\_\_\_\_  
DRB Project No.: \_\_\_\_\_  
DRB Application No.: \_\_\_\_\_

**Sundoro South, Unit 5**  
**PROPOSED NAME OF PLAT AND/OR SITE DEVELOPMENT PLAN**  
**Parcel J-2-B Westland North & Lot 43-P1, Block 4, Tract L, Sundoro South Subdivision, Unit 1 & Tract B, Painted Sky Subdivision, Unit 1, & two**  
**'Tracts Of Land' by Warranty Deed**  
**EXISTING LEGAL DESCRIPTION PRIOR TO PLATTING ACTION**

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

| SIA<br>Sequence #    | COA DRC<br>Project # |
|----------------------|----------------------|
| <input type="text"/> | <input type="text"/> |
| <input type="text"/> | <input type="text"/> |
| <input type="text"/> | <input type="text"/> |
| <input type="text"/> | <input type="text"/> |
| <input type="text"/> | <input type="text"/> |
| <input type="text"/> | <input type="text"/> |

| Size          | Type of Improvement                                    | Location         | From            | To                   |
|---------------|--------------------------------------------------------|------------------|-----------------|----------------------|
| <b>PAVING</b> |                                                        |                  |                 |                      |
| 26' FF        | Res Pvmnt (including Knuckle)<br>C & G (Both Sides)    | Tephra Avenue NW | Cinder Place NW | Lot 10, Block 6      |
| 4'            | Sidewalk (Both Sides) (1)                              |                  |                 |                      |
| 26' FF        | Res Pvmnt<br>C & G (North Side Only)                   | Tephra Avenue NW | Lot 10, Block 6 | End Stub             |
| 4'            | Sidewalk (North Side Only) (1)                         |                  |                 |                      |
| 28' FF        | Res Pvmnt ( including End)<br>C & G (Both Sides)       | Cinder Place NW  | Kipuka Drive NW | Cul de Sac           |
| 4'            | Sidewalk (Both Sides) (1)                              |                  |                 |                      |
| 28' FF        | Res Pvmnt<br>C & G (Both Sides)                        | Colima Avenue NW | Kipuka Drive NW | Villaricca Street NW |
| 4'            | Sidewalk (Both Sides) (1)                              |                  |                 |                      |
| 28' FF        | Res Pvmnt (including Cul de Sac)<br>C & G (Both Sides) | Ashfall Place NW | Kipuka Drive NW | Cul de Sac           |
| 4'            | Sidewalk (Both Sides) (1)                              |                  |                 |                      |
| 50' FF        | Res Pvmnt<br>C & G (Both Sides)                        | Kipuka Drive NW  | Ladera Drive NW | Tract M, Block 6     |
| 6'            | Sidewalk (Both Sides) (1)                              |                  |                 |                      |

| Private<br>Inspector | City<br>Inspector | City Cnst<br>Engineer |
|----------------------|-------------------|-----------------------|
| <u>  /  </u>         | <u>  /  </u>      | <u>  /  </u>          |
| <u>  /  </u>         | <u>  /  </u>      | <u>  /  </u>          |
| <u>  /  </u>         | <u>  /  </u>      | <u>  /  </u>          |
| <u>  /  </u>         | <u>  /  </u>      | <u>  /  </u>          |
| <u>  /  </u>         | <u>  /  </u>      | <u>  /  </u>          |
| <u>  /  </u>         | <u>  /  </u>      | <u>  /  </u>          |

Project name:

Sundoro South, Unit 5

| SIA<br>Sequence # | COA DRC<br>Project # | Size                    | Type of Improvement                       | Location                                      | From                              | To                             | Private<br>Inspector | City<br>Inspector | City Cnst<br>Engineer |
|-------------------|----------------------|-------------------------|-------------------------------------------|-----------------------------------------------|-----------------------------------|--------------------------------|----------------------|-------------------|-----------------------|
|                   |                      | 50'-54' FF              | Transition Res Pvmt<br>C & G (Both Sides) | Kipuka Drive NW                               | Tract M. Block 6                  | Colima Avenue NW               | /                    | /                 | /                     |
|                   |                      | 6'                      | Sidewalk (Both Sides) (1)                 |                                               |                                   |                                |                      |                   |                       |
|                   |                      | 54' FF                  | Res Pvmt<br>C & G (Both Sides)            | Kipuka Drive NW                               | Colima Avenue NW                  | Ashfall Place NW               | /                    | /                 | /                     |
|                   |                      | 6'                      | Sidewalk (Both Sides) (1)                 |                                               |                                   |                                |                      |                   |                       |
|                   |                      | 28' FF                  | Res Pvmt<br>C & G (Both Sides)            | Tumulus Drive NW                              | Ashfall Place NW                  | Endee Road NW                  | /                    | /                 | /                     |
|                   |                      | 4'                      | Sidewalk (Both Sides) (1)                 |                                               |                                   |                                |                      |                   |                       |
|                   |                      | 24' FF                  | Res Pvmt<br>C & G (North Side Only)       | Lahar Avenue NW                               | Tumulus Drive NW                  | End Stub                       | /                    | /                 | /                     |
|                   |                      | 4'                      | Sidewalk (North Side Only) (1)            |                                               |                                   |                                |                      |                   |                       |
|                   |                      | 28'-36'                 | Res Pvmt<br>C & G Std (Both Sides)        | Endee Road NW                                 | Exist Pvmt<br>Lot 10, Block 8     | Tumulus Drive NW               | /                    | /                 | /                     |
|                   |                      | 4'                      | Sidewalk (Both Sides) (1)                 |                                               |                                   |                                |                      |                   |                       |
|                   |                      | <b>WATER (3WR ZONE)</b> |                                           |                                               |                                   |                                |                      |                   |                       |
|                   |                      | 6"                      | Waterline                                 | Tephra Avenue NW                              | Cinder Place NW                   | Lot 13, Property Line          | /                    | /                 | /                     |
|                   |                      | 6"                      | Waterline                                 | Cinder Place NW                               | Kipuka Drive NW                   | 20' Public WL Esmt<br>(Lot 24) | /                    | /                 | /                     |
|                   |                      | 6"                      | Waterline                                 | 20' Public WL Easmt<br>(Lots 24 & 49, Blck 6) | Cinder Place NW                   | Colima Avenue NW               | /                    | /                 | /                     |
|                   |                      | 8"                      | Waterline                                 | Colima Avenue NW                              | Kipuka Drive NW                   | 20' Public WL Esmt<br>(Lot 24) | /                    | /                 | /                     |
|                   |                      | 6"                      | Waterline                                 | Colima Avenue NW                              | 20' Public WL Esmt<br>(Lot 24)    | Exist WL in Villaricca         | /                    | /                 | /                     |
|                   |                      | 10"                     | Waterline                                 | Kipuka Drive NW                               | Exst 10" WL in<br>Ladera Drive NW | Ashfall Place NW               | /                    | /                 | /                     |
|                   |                      | 10"                     | Waterline                                 | Ashfall Place NW                              | Kipuka Drive NW                   | Tumulus Drive NW               | /                    | /                 | /                     |

Project name:

Sundoro South, Unit 5

| SIA<br>Sequence #   | COA DRC<br>Project # | Size | Type of Improvement      | Location                             | From                      | To                                | Private<br>Inspector | City<br>Inspector | City Cnst<br>Engineer |
|---------------------|----------------------|------|--------------------------|--------------------------------------|---------------------------|-----------------------------------|----------------------|-------------------|-----------------------|
|                     |                      | 6"   | Waterline                | Ashfall Place NW                     | Tumulus Drive NW          | 20' Public WL Esmt<br>(Park Area) | /                    | /                 | /                     |
|                     |                      | 6"   | Waterline                | 20' Public WL Esmt<br>(Park Area)    | Ashfall Place NW          | Exst 10" WL in<br>Endee Rd NW     | /                    | /                 | /                     |
|                     |                      | 10"  | Waterline                | Tumulus Drive NW                     | Ashfall Place NW          | Endee Road NW                     | /                    | /                 | /                     |
|                     |                      | 4"   | Waterline                | Lahara Avenue NW                     | Tumulus Drive NW          | Lot 23 & 24                       | /                    | /                 | /                     |
|                     |                      | 10"  | Waterline                | Endee Road NW                        | Tumulus Drive NW          | Exst 10" WL in<br>Endee Road Nw   | /                    | /                 | /                     |
| OFFSITES (3WR ZONE) |                      |      |                          |                                      |                           |                                   |                      |                   |                       |
|                     |                      |      | Temporary Retention Pond | Molten Drive NW Lots 36-41, Block 13 |                           |                                   | /                    | /                 | /                     |
| WATER (2R ZONE)     |                      |      |                          |                                      |                           |                                   |                      |                   |                       |
|                     |                      | 10"  | Waterline                | Kipuka Drive NW                      | 100'PNM Easemnt           | Ashfall Place NW                  | /                    | /                 | /                     |
|                     |                      | 6"   | Waterline Stub           | Ashfall Place NW                     | 10" WL in Kipuka Drive NW |                                   | /                    | /                 | /                     |
|                     |                      | 6"   | Waterline                | Tumulus Drive NW                     | Endee Road NW             | Lot 14, Block 12                  | /                    | /                 | /                     |
|                     |                      | 6"   | Waterline                | Endee Road NW                        | Tumulus Drive NW          | Lot 14, Block 12                  | /                    | /                 | /                     |
| SANITARY SEWER      |                      |      |                          |                                      |                           |                                   |                      |                   |                       |
|                     |                      | 8"   | SAS                      | Tephra Avenue NW                     | Lot 13, Blk 6             | Cinder Place NW                   | /                    | /                 | /                     |
|                     |                      | 8"   | SAS                      | Cinder Place NW                      | Kipuka Drive NW           | Lot 23/24, Blk 6                  | /                    | /                 | /                     |
|                     |                      | 8"   | SAS                      | Kipuka Drive NW                      | Cinder Place NW           | Ashfall Place NW                  | /                    | /                 | /                     |
|                     |                      | 8"   | SAS                      | Colima Avenue NW                     | Kipuka Drive NW           | Lot 17, Block 7                   | /                    | /                 | /                     |

| SIA<br>Sequence #                                            | COA DRC<br>Project # | Size       | Type of Improvement                                                                          | Location              | From                        | To                       | Private<br>Inspector | City<br>Inspector | City Cnst<br>Engineer |
|--------------------------------------------------------------|----------------------|------------|----------------------------------------------------------------------------------------------|-----------------------|-----------------------------|--------------------------|----------------------|-------------------|-----------------------|
|                                                              |                      | 8"         | SAS                                                                                          | Ashfall Place NW      | Kipuka Drive NW             | Lot 18, Block 7          | /                    | /                 | /                     |
|                                                              |                      | 8"         | SAS                                                                                          | Tumulus Drive NW      | Ashfall Place NW            | Exist SAS in Endee       | /                    | /                 | /                     |
|                                                              |                      | 8"         | SAS                                                                                          | Lahar Avenue NW       | Tumulus Drive NW            | Lot 23/24, Block 8       | /                    | /                 | /                     |
| OFF SITES SAS (BUILT WITH CPN 727081 SUNDORO UNITS 1, 2 & 3) |                      |            |                                                                                              |                       |                             |                          |                      |                   |                       |
|                                                              |                      | 8"         | SAS                                                                                          | Endee Road NW         | Molten Drive NW             | Tract P Park             | /                    | /                 | /                     |
|                                                              |                      | 8"         | SAS                                                                                          | Molten Drive NW       | Endee Road NW               | Exist 20' Public Esmt    | /                    | /                 | /                     |
|                                                              |                      | 8"         | SAS                                                                                          | Exist Public Easement | Molten Drive NW             | Vermillion Court         | /                    | /                 | /                     |
| STORM DRAIN                                                  |                      |            |                                                                                              |                       |                             |                          |                      |                   |                       |
|                                                              |                      | 18-30"     | Storm Drain                                                                                  | Kipuka Drive NW       | Tract M., Block 6           | Ashfall Place NW         | /                    | /                 | /                     |
|                                                              |                      | 30"        | Storm Drain                                                                                  | Ashfall Place NW      | Kipuka Drive NW             | Tumulus Drive NW         | /                    | /                 | /                     |
|                                                              |                      | 30-36"     | Storm Drain                                                                                  | Tumulus Drive         | Ashfall Place               | Endee Road               |                      |                   |                       |
|                                                              |                      | 36-60"     | Storm Drain                                                                                  | Endee Road NW         | Lot 10, Blk 8<br>Exst SD MH | Molten Drive NW          | /                    | /                 | /                     |
|                                                              |                      | 66"        | Storm Drain                                                                                  | Molten Drive NW       | Endee Road                  | Temp Ret Pond<br>Outfall | /                    | /                 | /                     |
|                                                              |                      | Per Design | Temporary Retention Pond, Swale & Agreement & Covenant                                       |                       |                             |                          |                      |                   |                       |
|                                                              |                      | Per Design | Engineer's Certificate for Private Grading & Drainage before release of Financial Guaranty's |                       |                             |                          |                      |                   |                       |

Project name: Sundoro South, Unit 5

- 1

2

3

4

5

6

7

8
- Internal Sidewalks to be deferred

Standard C & G will be constructed where required for drainage purposes

Water infrastructure to include valves, fittings, valve boxes and fire hydrants

Sanitary sewer to include manholes and service connections

Storm Drain to include inlets and manholes

Street lights per DPM

AGENT / OWNER

DEVELOPMENT REVIEW BOARD MEMBER APPROVALS

James D. Hughes, P.E.  
NAME (print)

MARK GOODWIN & ASSOCIATES

FIRM  
  
SIGNATURE - date

MAXIMUM TIME ALLOWED TO CONSTRUCT  
THE IMPROVEMENTS WITHOUT A DRB  
EXTENSION: N/A

DRB CHAIR - date

TRANSPORTATION DEVELOPMENT - date

UTILITY DEVELOPMENT - date

CITY ENGINEER - date

PARKS & GENERAL SERVICES - date

AMAFCA - date

- date

- date

DESIGN REVIEW COMMITTEE REVISIONS

| REVISION | DATE | DRC CHAIR | USER DEPARTMENT | AGENT /OWNER |
|----------|------|-----------|-----------------|--------------|
|          |      |           |                 |              |
|          |      |           |                 |              |
|          |      |           |                 |              |

## Sundoro South Subdivision Offsite Basins

**TABLE 1.2: Summary of Hydrologic Parameters**

| SUBASIN ID |                       | AREA<br>(acres) | AREA<br>(sq.mi.) | # Lots | N<br>value | Land<br>Treat. D | Land<br>Treat.B/C | Q(100)<br>cfs | Runoff<br>Volume<br>(Ac.Ft.) |
|------------|-----------------------|-----------------|------------------|--------|------------|------------------|-------------------|---------------|------------------------------|
| T5         | Open<br>Space         | 0.78209         | 0.00122          | -      | -          | 0                | 50 / 50           | 1.98          | 0.054                        |
| OF-1       | Sundoro<br>Unit 5     | 4.19121         | 0.00655          | 33     | 7.9        | 60               | 20.0              | 15.42         | 0.528                        |
| OF-2       | Sundoro<br>Unit 6     | 10.28310        | 0.01607          | 65     | 6.3        | 60               | 20.0              | 37.93         | 1.295                        |
| OF-3       | Painted<br>Sky Unit 5 | 3.59890         | 0.00562          | 26     | 7.2        | 60               | 20.0              | 13.27         | 0.453                        |
| OF-4       | Sundoro<br>Unit 9     | 6.82410         | 0.01066          | 39     | 5.7        | 55               | 22.5              | 24.49         | 0.826                        |
| OF-5       | Sundoro<br>Unit 1,2,3 | 34.11000        | 0.05330          | 175    | 5.1        | 50               | 25.0              | 119.06        | 3.969                        |
| OF-5.1     | Ladera<br>Drive       | 1.20000         | 0.00188          | -      | -          | 58               | 14 / 28           | 4.47          | 0.151                        |

\\4046sundoro south\drainage\hydro\_sum1a.wpd 10-28-04

# Sundoro South Subdivision

## Units 5, 6 and 7

**TABLE 1.1: Summary of Hydrologic Parameters**

| SUBASIN ID   | AREA<br>(acres) | AREA<br>(sq.mi.) | # Lots            | N value    | Land<br>Treat. D | Land<br>Treat.B/C | Q(100)<br>cfs | Runoff<br>Volume<br>(Ac.Ft.) |
|--------------|-----------------|------------------|-------------------|------------|------------------|-------------------|---------------|------------------------------|
| S0           | 1.22653         | 0.00192          |                   |            | 90               | O/10              | 5.30          | 0.191                        |
| S1           | 2.06972         | 0.00323          | 12                | 5.8        | 55               | 22.5              | 7.43          | 0.250                        |
| S2           | 2.48258         | 0.00388          | 16                | 6.4        | 60               | 20.0              | 9.17          | 0.313                        |
| S3           | 1.37391         | 0.00215          | 8                 | 5.8        | 56               | 22.0              | 4.98          | 0.168                        |
| S4           | 5.42460         | 0.00848          | 30                | 5.5        | 53               | 23.5              | 19.27         | 0.647                        |
| S5           | 3.55413         | 0.00555          | 20                | 5.6        | 54               | 23.0              | 12.69         | 0.427                        |
| S6A          | 0.62957         | 0.00098          | 4                 | 6.4        | 60               | 20.0              | 2.33          | 0.079                        |
| S6B          | 1.41849         | 0.00222          | 9                 | 6.3        | 60               | 20.0              | 5.25          | 0.179                        |
| S7           | 3.01139         | 0.00471          | 16                | 5.3        | 52               | 24.0              | 10.65         | 0.356                        |
| S8           | 2.08865         | 0.00326          | 14                | 6.7        | 60               | 20.0              | 7.70          | 0.263                        |
| S9           | 2.45079         | 0.00383          | 12                | 4.9        | 49               | 25.5              | 9.05          | 0.308                        |
| <b>TOTAL</b> | <b>25.73036</b> | <b>0.04020</b>   | <b><u>141</u></b> | <b>5.5</b> | <b>53</b>        | <b>22.5</b>       | <b>93.82</b>  | <b>3.181</b>                 |
| T1           | 2.42255         | 0.00379          | 17                | 7.0        |                  |                   | 8.93          | 0.305                        |
| T2           | 2.46940         | 0.00386          | 17                | 6.9        |                  |                   | 9.10          | 0.311                        |
| T3           | 2.33447         | 0.00365          | 13                | 5.6        |                  |                   | 8.60          | 0.294                        |
| T4           | 2.23102         | 0.00349          | 14                | 6.3        |                  |                   | 8.22          | 0.281                        |
| <b>TOTAL</b> | <b>9.45744</b>  | <b>0.01478</b>   | <b>61</b>         | <b>6.5</b> | <b>60</b>        | <b>20.0</b>       | <b>34.86</b>  | <b>1.190</b>                 |

**SUNDORO SOUTH SUBDIVISION**  
Units 5, 6 and 7

**TABLE 2: SUMMARY OF STREET CAPACITIES**

Page 1 of 2

| LOCATION               | CURB | CRWN | WIDTH<br>ft. | SLOPE<br>% | Q<br>cfs | DEPTH<br>ft. | EG<br>ft. | INLET<br>INTERCEPT | FLOW<br>BYPASS |
|------------------------|------|------|--------------|------------|----------|--------------|-----------|--------------------|----------------|
| Tephra Avenue          | Mtb  | Yes  | 28           | 2.50       | 7.43     | 0.25         | 0.39      | -                  | -              |
| Cinder Avenue          | Mtb  | Yes  | 28           | 1.48       | 16.60    | 0.35         | 0.50      | -                  | -              |
| Colima Avenue          | Mtb  | Yes  | 28           | 1.85       | 16.00    | 0.33         | 0.51      | -                  | -              |
| Ashfall Avenue         | Mtb  | Yes  | 28           | 0.70       | 10.00    | 0.33         | 0.40      | -                  | -              |
| Kipuka Avenue          | Mtb  | Yes  | 28           | 1.87       | 8.22     | 0.27         | 0.39      | -                  | -              |
| Tumulus Drive          | Mtb  | Yes  | 28           | 2.99       | 9.11     | 0.25         | 0.44      | -                  | -              |
| Scoria Drive           | Mtb  | Yes  | 28           | 2.92       | 8.93     | 0.25         | 0.43      | -                  | -              |
|                        |      |      |              |            |          |              |           |                    |                |
| Kipuka Drive @ Colima  | Std  | Yes  | 54           | 2.85       | 22.78    | 0.40         | 0.71      | 6.4 (SGL'A')       | 16.38          |
| Colima Avenue          | Std  | Yes  | 28           | 1.85       | 19.27    | 0.40         | 0.62      | 6.4 x2(SGL'A')     | 6.47           |
| Kipuka Drive @ Ashfall | Std  | Yes  | 54           | 2.18       | 24.35    | 0.42         | 0.69      | 6.4 (SGL'C')       | 17.95          |
| Kipuka Drive Ashfall   | Std  | Yes  | 54           | 2.18       | 17.95    | 0.39         | 0.62      | 5.4 (SGL'C')       | 12.55          |
| Ashfall Drive (NE)     | Std  | Yes  | 28           | 0.70       | 20.10    | 0.47         | 0.60      | 4.5x2 (SGL'A')     | 11.10          |
| Ashfall Drive (SW)     | Std  | 2%cs | 28           | 1.26       | 12.69    | 0.47         | 0.63      | 5.5 (SGL'A')       | 7.19           |

# SUNDORO SOUTH SUBDIVISION

## Units 5, 6 and 7

**TABLE 2: SUMMARY OF STREET CAPACITIES**

Page 2 of 2

| LOCATION               | CURB | CRWN   | WIDTH<br>ft. | SLOPE<br>% | Q<br>cfs | DEPTH<br>ft. | EG<br>ft. | INLET<br>INTERCEPT | FLOW<br>BYPASS |
|------------------------|------|--------|--------------|------------|----------|--------------|-----------|--------------------|----------------|
| Tumulus Drive          | Std  | Yes    | 28           | 1.60       | 31.57    | 0.48         | 0.77      | 6.6x2 (SGL'A')     | 18.37          |
| Tumulus Drive          | Std  | Yes    | 28           | 1.60       | 18.37    | 0.40         | 0.60      | 4.5x2 (SGL'C')     | 9.37           |
| Endee Rd @ West P.L.   | Std  | Yes    | 24           | 3.00       | 51.00    | 0.60         | 1.32      | 10.50 (SGL'A')     | 40.50          |
| Endee Rd @ West P.L.   | Std  | Yes    | 36           | 3.00       | 40.50    | 0.47         | 0.91      | 9.4x2 (DBL'C')     | 21.70          |
| Endee Rd @ Tumulus     | Std  | Yes    | 28           | 3.15       | 29.40    | 0.42         | 0.84      | 6.8x2 (SGL'C')     | 15.80          |
| Endee Rd @ Molten      | Std  | Yes    | 28           | 0.90       | 33.17    | 0.53         | 0.75      | 6.6x2 (SGL'C')     | 19.97          |
| Endee Rd @ Molten      | Std  | Yes    | 28           | 0.90       | 19.97    | 0.45         | 0.60      | 4.7x2 (SGL'C')     | 10.57          |
| Molten Rd @ sump inlts | Std  | 2%cs   | 28           | 0.79       | 16.62    | 0.57         | 0.69      | 16.62x2(DBL'C')    | 0 sump         |
| Molten Rd @ sump inlts | Std  | "      | "            | "          | 26.62    | 0.65         | 0.82      | 26.62              | 0 sump         |
| Silica Avenue          | Std  | Yes    | 28           | 1.00       | 23.77    | 0.47         | 0.65      | -                  | -              |
| Silica Avenue          | Std  | 1.6-2% | 28           | 1.00       | 26.64    | 0.62         | 0.83      | 9.0(SGL'A')        | 17.64          |
| Silica Avenue          | Std  | 2%cs   | 28           | 1.00       | 25.86    | 0.61         | 0.82      | 25.86x2(DBL'C')    | 0 sump         |

## Sundoro South Subdivision

**TABLE 3.1: Temporary Retention Volume Calculations**

| SUBASIN ID   | AREA<br>(acres) | Land<br>Treat. D | Area<br>Treat.D<br>(acres) |
|--------------|-----------------|------------------|----------------------------|
| S0           | 1.22653         | 0.90             | 1.10                       |
| S1           | 2.06972         | 0.55             | 1.14                       |
| S2           | 2.48258         | 0.60             | 1.49                       |
| S3           | 1.37391         | 0.56             | 0.77                       |
| S4           | 5.42460         | 0.53             | 2.88                       |
| S5           | 3.55413         | 0.54             | 1.92                       |
| S6A          | 0.62957         | 0.60             | 0.38                       |
| S6B          | 1.41849         | 0.60             | 0.85                       |
| S7           | 3.01139         | 0.52             | 1.57                       |
| S8           | 2.08865         | 0.60             | 1.25                       |
| S9           | 2.45079         | 0.49             | 1.20                       |
| <b>TOTAL</b> | <b>25.73036</b> |                  | <b>14.54</b>               |
|              |                 |                  |                            |
| T1           | 2.42255         | 0.60             | 1.45                       |
| T2           | 2.46940         | 0.60             | 1.48                       |
| T3           | 2.33447         | 0.60             | 1.40                       |
| T4           | 2.23102         | 0.60             | 1.34                       |
| <b>TOTAL</b> | <b>9.45744</b>  |                  | <b>5.67</b>                |
|              |                 |                  |                            |
| OF-1         | 4.19121         | 0.60             | 2.51                       |
| OF-2         | 10.28310        | 0.60             | 6.17                       |
| OF-3         | 3.59890         | 0.60             | 2.16                       |
| OF-4         | 6.82410         | 0.55             | 3.75                       |
| OF-5         | 34.11000        | 0.50             | 17.06                      |
| OF-5.1       | 1.20000         | 0.58             | 0.70                       |
| <b>TOTAL</b> | <b>60.20731</b> |                  | <b>32.35</b>               |
|              |                 |                  |                            |

### Table 3.2: TEMPORARY RETENTION VOLUME CALCULATIONS

$$\text{Volume}_{(10 \text{ day})} = V_{360} + A_D \times ((P_{10\text{day}} - P_{360}) / (12 \text{ ipf}))$$

$$V_{360} = (3.181 + 1.190 + 0.528 + 1.295 + 0.453 + 0.826 + 3.969 + 0.151) \text{ acre-feet}$$

$$V_{360} = 11.593 \text{ acre-feet}$$

$$A_D = (14.54 + 5.67 + 32.35) \text{ acres}$$

$$A_D = 52.56 \text{ acres}$$

$$P_{10\text{day}} = 10 - (24.9 / ((2.66)^{1.4})) = 3.67 \checkmark$$

$$\text{Volume}_{(10 \text{ day})} = 11.593 \text{ acre-ft} + 52.56 \text{ acres} \times ((3.67'' - 2.2'') / (12 \text{ ipf}))$$

$$\text{Volume}_{(10 \text{ day})} = 18.03 \checkmark$$

$$\underline{\text{Pond Design Volume}_{(10 \text{ day})} = 18.03 \text{ acre-feet}}$$

## ***APPENDIX A - HYDROLOGY***

*AHYMO Printouts*

RUN DATE (MON/DAY/YR) =10/21/2004  
USER NO.= AHYMO-I-9702dGoodwinM-AH

|                  |                | FROM | TO  |         |           | PEAK    | RUNOFF   |         |       | CFS      | PAGE =   | 1     |
|------------------|----------------|------|-----|---------|-----------|---------|----------|---------|-------|----------|----------|-------|
| COMMAND          | HYDROGRAPH     | ID   | ID  | AREA    | DISCHARGE | VOLUME  | RUNOFF   | TIME TO |       |          |          |       |
|                  | IDENTIFICATION | NO.  | NO. | (SQ MI) | (CFS)     | (AC-FT) | (INCHES) | PEAK    |       | PER      | NOTATION |       |
|                  |                |      |     |         |           |         |          | (HOURS) |       | ACRE     |          |       |
| START            |                |      |     |         |           |         |          |         |       |          | TIME=    | .00   |
| RAINFALL TYPE= 1 |                |      |     |         |           |         |          |         |       |          | RAIN6=   | 2.200 |
| COMPUTE NM HYD   | 100.S          | -    | 1   | .03829  | 87.91     | 2.968   | 1.45328  | 1.499   | 3.588 | PER IMP= | 55.00    |       |
| COMPUTE NM HYD   | 100.T          | -    | 1   | .01478  | 34.86     | 1.190   | 1.51026  | 1.499   | 3.686 | PER IMP= | 60.00    |       |
| COMPUTE NM HYD   | 100.T5         | -    | 1   | .00122  | 1.98      | .054    | .82643   | 1.499   | 2.526 | PER IMP= | .00      |       |
| COMPUTE NM HYD   | 100.O1         | -    | 1   | .00655  | 15.46     | .528    | 1.51026  | 1.499   | 3.688 | PER IMP= | 60.00    |       |
| COMPUTE NM HYD   | 100.O2         | -    | 1   | .01608  | 37.93     | 1.295   | 1.51026  | 1.499   | 3.686 | PER IMP= | 60.00    |       |
| COMPUTE NM HYD   | 100.O3         | -    | 1   | .00562  | 13.27     | .453    | 1.51026  | 1.499   | 3.689 | PER IMP= | 60.00    |       |
| COMPUTE NM HYD   | 100.O4         | -    | 1   | .01066  | 24.49     | .826    | 1.45327  | 1.499   | 3.589 | PER IMP= | 55.00    |       |
| COMPUTE NM HYD   | 100.O5         | -    | 1   | .05330  | 119.06    | 3.969   | 1.39629  | 1.499   | 3.490 | PER IMP= | 50.00    |       |
| COMPUTE NM HYD   | 100.O51        | -    | 1   | .00188  | 4.47      | .151    | 1.51090  | 1.499   | 3.717 | PER IMP= | 58.00    |       |
| COMPUTE NM HYD   | 100.S0         | -    | 1   | .00192  | 5.30      | .191    | 1.87017  | 1.499   | 4.326 | PER IMP= | 90.00    |       |
| COMPUTE NM HYD   | 100.S1         | -    | 1   | .00323  | 7.43      | .250    | 1.45328  | 1.499   | 3.595 | PER IMP= | 55.00    |       |
| COMPUTE NM HYD   | 100.S2         | -    | 1   | .00388  | 9.17      | .313    | 1.51026  | 1.499   | 3.691 | PER IMP= | 60.00    |       |
| COMPUTE NM HYD   | 100.S3         | -    | 1   | .00215  | 4.98      | .168    | 1.46467  | 1.499   | 3.619 | PER IMP= | 56.00    |       |
| COMPUTE NM HYD   | 100.S4         | -    | 1   | .00848  | 19.27     | .647    | 1.43048  | 1.499   | 3.551 | PER IMP= | 53.00    |       |
| COMPUTE NM HYD   | 100.S5         | -    | 1   | .00555  | 12.69     | .427    | 1.44188  | 1.499   | 3.572 | PER IMP= | 54.00    |       |
| COMPUTE NM HYD   | 100.S6A        | -    | 1   | .00098  | 2.33      | .079    | 1.51026  | 1.499   | 3.709 | PER IMP= | 60.00    |       |
| COMPUTE NM HYD   | 100.S6B        | -    | 1   | .00222  | 5.25      | .179    | 1.51026  | 1.499   | 3.696 | PER IMP= | 60.00    |       |
| COMPUTE NM HYD   | 100.S7         | -    | 1   | .00471  | 10.65     | .356    | 1.41908  | 1.499   | 3.534 | PER IMP= | 52.00    |       |
| COMPUTE NM HYD   | 100.S8         | -    | 1   | .00326  | 7.70      | .263    | 1.51026  | 1.499   | 3.692 | PER IMP= | 60.00    |       |
| COMPUTE NM HYD   | 100.S9         | -    | 1   | .00383  | 9.05      | .308    | 1.51026  | 1.499   | 3.691 | PER IMP= | 60.00    |       |
| FINISH           |                |      |     |         |           |         |          |         |       |          |          |       |

```

START                TIME=0.0
*****
*****  SUNDORO SOUTH UNIT 5, 6 & 7
*****  100-YEAR 6-HOUR STORM EVENT
*****  FILE: SUNDORO.DAT  OCT 2004 BY:DLH
RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=1.89 IN RAIN SIX=2.20 IN
                     RAIN DAY=2.66 IN DT=0.0333 HR

*****
*****  ***** DEVELOPED CONDITIONS *****
*****
*****  SUBASIN S1 THRU 9
*****  24.50383 ACRES
*****
COMPUTE NM HYD       ID=1 HYD NO=100.S AREA=0.038287 SQ MI
                     PER A=0 PER B=22.5 PER C=22.5 PER D=55
                     TP=0.13 HR MASS RAINFALL=-1

PRINT HYD            ID=1 CODE=1
*****
*****  SUBASIN T1 THRU 4
*****  9.45714 ACRES
*****
COMPUTE NM HYD       ID=1 HYD NO=100.T AREA=0.014777 SQ MI
                     PER A=0 PER B=20 PER C=20 PER D=60
                     TP=0.13 HR MASS RAINFALL=-1

PRINT HYD            ID=1 CODE=1
*****
*****  SUBASIN T5 OPEN SPACE SIGN AREA
*****  0.78209 ACRES
*****
COMPUTE NM HYD       ID=1 HYD NO=100.T5 AREA=0.001222 SQ MI
                     PER A=0 PER B=50 PER C=50 PER D=0
                     TP=0.13 HR MASS RAINFALL=-1

PRINT HYD            ID=1 CODE=1
*****
*****  SUBASIN OFFSITE-1
*****  4.1912 ACRES
*****
COMPUTE NM HYD       ID=1 HYD NO=100.O1 AREA=0.006550 SQ MI
                     PER A=0 PER B=20 PER C=20 PER D=60
                     TP=0.13 HR MASS RAINFALL=-1

PRINT HYD            ID=1 CODE=1
*****
*****  SUBASIN OFFSITE-2
*****  10.2831 ACRES
*****
COMPUTE NM HYD       ID=1 HYD NO=100.O2 AREA=0.016078 SQ MI
                     PER A=0 PER B=20 PER C=20 PER D=60
                     TP=0.13 HR MASS RAINFALL=-1

PRINT HYD            ID=1 CODE=1
*****
*****  SUBASIN OFFSITE-3
*****  3.5989 ACRES
*****
COMPUTE NM HYD       ID=1 HYD NO=100.O3 AREA=0.00562 SQ MI
                     PER A=0 PER B=20 PER C=20 PER D=60
                     TP=0.13 HR MASS RAINFALL=-1

PRINT HYD            ID=1 CODE=1
*****
*****  SUBASIN OFFSITE-4
*****  6.8241 ACRES
*****
COMPUTE NM HYD       ID=1 HYD NO=100.O4 AREA=0.01066 SQ MI
                     PER A=0 PER B=22.5 PER C=22.5 PER D=55
                     TP=0.13 HR MASS RAINFALL=-1

PRINT HYD            ID=1 CODE=1
*****
*****  SUBASIN OFFSITE-5
*****  34.11 ACRES
*****
COMPUTE NM HYD       ID=1 HYD NO=100.O5 AREA=0.05330 SQ MI

```

```

PER A=0 PER B=25 PER C=25 PER D=50
TP=0.13 HR MASS RAINFALL=-1
ID=1 CODE=1
PRINT HYD
*****
***** SUBASIN OFFSITE-5.1
***** 1.2000 ACRES
*****
COMPUTE NM HYD      ID=1 HYD NO=100.051 AREA=0.00188 SQ MI
PER A=0 PER B=14 PER C=28 PER D=58
TP=0.13 HR MASS RAINFALL=-1
ID=1 CODE=1
PRINT HYD
*****
***** SUBASIN ENTRANCE ROAD SUBASIN SO
***** 1.22653 ACRES
*****
COMPUTE NM HYD      ID=1 HYD NO=100.S0 AREA=0.001916 SQ MI
PER A=0 PER B=0 PER C=10 PER D=90
TP=0.13 HR MASS RAINFALL=-1
ID=1 CODE=1
PRINT HYD
*****
***** SUBASIN S1
***** 2.06972 ACRES
*****
COMPUTE NM HYD      ID=1 HYD NO=100.S1 AREA=0.00323 SQ MI
PER A=0 PER B=22.5 PER C=22.5 PER D=55
TP=0.13 HR MASS RAINFALL=-1
ID=1 CODE=1
PRINT HYD
*****
***** SUBASIN S2
***** 2.48258 ACRES
*****
COMPUTE NM HYD      ID=1 HYD NO=100.S2 AREA=0.00388 SQ MI
PER A=0 PER B=20 PER C=20 PER D=60
TP=0.13 HR MASS RAINFALL=-1
ID=1 CODE=1
PRINT HYD
*****
***** SUBASIN S3
***** 1.37391 ACRES
*****
COMPUTE NM HYD      ID=1 HYD NO=100.S3 AREA=0.00215 SQ MI
PER A=0 PER B=22 PER C=22 PER D=56
TP=0.13 HR MASS RAINFALL=-1
ID=1 CODE=1
PRINT HYD
*****
***** SUBASIN S4
***** 5.42460 ACRES
*****
COMPUTE NM HYD      ID=1 HYD NO=100.S4 AREA=0.00848 SQ MI
PER A=0 PER B=23.5 PER C=23.5 PER D=53
TP=0.13 HR MASS RAINFALL=-1
ID=1 CODE=1
PRINT HYD
*****
***** SUBASIN S5
***** 3.55413 ACRES
*****
COMPUTE NM HYD      ID=1 HYD NO=100.S5 AREA=0.00555 SQ MI
PER A=0 PER B=23 PER C=23 PER D=54
TP=0.13 HR MASS RAINFALL=-1
ID=1 CODE=1
PRINT HYD
*****
***** SUBASIN S6A
***** 0.62957 ACRES
*****
COMPUTE NM HYD      ID=1 HYD NO=100.S6A AREA=0.00098 SQ MI
PER A=0 PER B=20 PER C=20 PER D=60
TP=0.13 HR MASS RAINFALL=-1
ID=1 CODE=1
PRINT HYD
*****
***** SUBASIN S6B
***** 1.41849 ACRES
*****

```

```

COMPUTE NM HYD      ID=1 HYD NO=100.S6B AREA=0.00222 SQ MI
                    PER A=0 PER B=20 PER C=20 PER D=60
                    TP=0.13 HR MASS RAINFALL=-1
PRINT HYD           ID=1 CODE=1
*****
***** SUBASIN S7
***** 3.01139 ACRES
*****
COMPUTE NM HYD      ID=1 HYD NO=100.S7 AREA=0.00471 SQ MI
                    PER A=0 PER B=24 PER C=24 PER D=52
                    TP=0.13 HR MASS RAINFALL=-1
PRINT HYD           ID=1 CODE=1
*****
***** SUBASIN S8
***** 2.08865 ACRES
*****
COMPUTE NM HYD      ID=1 HYD NO=100.S8 AREA=0.00326 SQ MI
                    PER A=0 PER B=20 PER C=20 PER D=60
                    TP=0.13 HR MASS RAINFALL=-1
PRINT HYD           ID=1 CODE=1
*****
***** SUBASIN S9
***** 2.45079 ACRES
*****
COMPUTE NM HYD      ID=1 HYD NO=100.S9 AREA=0.00383 SQ MI
                    PER A=0 PER B=20 PER C=20 PER D=60
                    TP=0.13 HR MASS RAINFALL=-1
PRINT HYD           ID=1 CODE=1
FINISH

```

## ***APPENDIX B - HYDRAULICS***

*HEC-2 Street Capacity Printouts*

```

1*****
*   HEC-2 WATER SURFACE PROFILES   *
*                                   *
*   Version   4.6.2;  May 1991     *
*                                   *
*   RUN DATE   29OCT04   TIME   08:46:10 *
*****

```

```

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

```

```

      X   X  XXXXXXXX  XXXXX
      X   X  X        X   X
      X   X  X        X
      XXXXXXXX XXXX   X   XXXXX  XXXXX
      X   X  X        X        X
      X   X  X        X   X

```

```

THIS RUN EXECUTED 29OCT04   08:46:10
*****
HEC-2 WATER SURFACE PROFILES
Version   4.6.2;  May 1991
*****

```

```

T1      SUNDORO SOUTH @ ANDERSON HILLS STREET CAPACITY
T2      28'FF MTB CURB
T3      TEPHRA AVE

```

| J1 | ICHECK | INQ | NINV | IDIR | STRT | METRIC | HVINS | Q | WSEL | FQ |
|----|--------|-----|------|------|------|--------|-------|---|------|----|
|    | 0      | 2   | 0    | 1    | .025 | 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 | 7     | 7.43  | 16.60 | 16.00 | 10.00 | 8.22 | 9.11  | 8.93  |
| X1 | 1     | 9     | 0     | 48    | 0     | 0    | 0     | 0     |
| GR | .51   | 0     | .33   | 9     | 0     | 10.6 | .0625 | 11.63 |
| GR | .0625 | 36.37 | 0     | 37.4  | .33   | 39   | .51   | 48    |

| SECNO | DEPTH | CWSEL | CRIWS | WSELK  | EG   | HV    | HL    | OLOSS  | L-BANK ELEV |
|-------|-------|-------|-------|--------|------|-------|-------|--------|-------------|
| Q     | QLOB  | QCH   | QROB  | ALOB   | ACH  | AROB  | VOL   | TWA    | R-BANK ELEV |
| 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

|         |     |      |     |      |      |      |      |       |       |
|---------|-----|------|-----|------|------|------|------|-------|-------|
| 1.000   | .25 | .25  | .29 | .00  | .39  | .15  | .00  | .00   | .51   |
| 7.4     | .0  | 7.4  | .0  | .0   | 2.4  | .0   | .0   | .0    | .51   |
| .00     | .00 | 3.08 | .00 | .000 | .017 | .000 | .000 | .00   | 9.41  |
| .024883 | 0.  | 0.   | 0.  | 0    | 8    | 5    | .00  | 22.75 | 38.59 |

T1  
T2 CINDER AVE  
T3

|    |        |       |       |       |        |        |       |       |        |             |
|----|--------|-------|-------|-------|--------|--------|-------|-------|--------|-------------|
| J1 | ICHECK | INQ   | NINV  | IDIR  | STRT   | METRIC | HVINS | Q     | WSEL   | FQ          |
|    | 0      | 3     | 0     | 1     | .0148  |        |       |       |        |             |
| 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  | L-BANK ELEV |
|    | Q      | QLOB  | QCH   | QROB  | ALOB   | ACH    | AROB  | VOL   | TWA    | R-BANK ELEV |
|    | 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

|         |     |      |     |      |      |      |      |       |       |
|---------|-----|------|-----|------|------|------|------|-------|-------|
| 1.000   | .35 | .35  | .39 | .00  | .50  | .16  | .00  | .00   | .51   |
| 16.6    | .0  | 16.6 | .0  | .0   | 5.2  | .0   | .0   | .0    | .51   |
| .00     | .00 | 3.19 | .00 | .000 | .017 | .000 | .000 | .00   | 8.19  |
| .014841 | 0.  | 0.   | 0.  | 0    | 14   | 7    | .00  | 31.62 | 39.81 |

T1  
T2 COLIMA AVE  
T3

|    |        |       |       |       |       |        |       |     |       |             |
|----|--------|-------|-------|-------|-------|--------|-------|-----|-------|-------------|
| J1 | ICHECK | INQ   | NINV  | IDIR  | STRT  | METRIC | HVINS | Q   | WSEL  | FQ          |
|    | 0      | 4     | 0     | 1     | .0185 |        |       |     |       |             |
| 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 | L-BANK ELEV |
|    | Q      | QLOB  | QCH   | QROB  | ALOB  | ACH    | AROB  | VOL | TWA   | R-BANK ELEV |
|    | 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 |       |       |       |        |      |       |       |        |       |
| 1.000                                     | .33   | .33   | .38   | .00    | .51  | .18   | .00   | .00    | .51   |
| 16.0                                      | .0    | 16.0  | .0    | .0     | 4.7  | .0    | .0    | .0     | .51   |
| .00                                       | .00   | 3.43  | .00   | .000   | .017 | .000  | .000  | .00    | 9.01  |
| .018411                                   | 0.    | 0.    | 0.    | 0      | 14   | 7     | .00   | 29.99  | 38.99 |

T1  
T2 ASHFALL  
T3

| J1 | ICHECK | INQ   | NINV  | IDIR  | STRT   | METRIC | HVINS | Q     | WSEL   | FQ          |
|----|--------|-------|-------|-------|--------|--------|-------|-------|--------|-------------|
|    | 0      | 5     | 0     | 0     | .007   |        |       |       |        |             |
| 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  | L-BANK ELEV |
|    | Q      | QLOB  | QCH   | QROB  | ALOB   | ACH    | AROB  | VOL   | TWA    | R-BANK ELEV |
|    | 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 |      |       |      |      |      |      |      |       |       |
| 1.000                                     | .33  | .33   | .00  | .00  | .40  | .07  | .00  | .00   | .51   |
| 10.0                                      | .0   | 10.0  | .0   | .0   | 4.7  | .0   | .0   | .0    | .51   |
| .00                                       | .00  | 2.12  | .00  | .000 | .017 | .000 | .000 | .00   | 8.98  |
| .006980                                   | 0.   | 0.    | 0.   | 0    | 0    | 7    | .00  | 30.05 | 39.02 |

T1  
T2 KIPUKA  
T3

| J1 | ICHECK | INQ   | NINV  | IDIR  | STRT  | METRIC | HVINS | Q   | WSEL  | FQ     |
|----|--------|-------|-------|-------|-------|--------|-------|-----|-------|--------|
|    | 0      | 6     | 0     | 1     | .0187 |        |       |     |       |        |
| J2 | NPROF  | IPLOT | PRFVS | XSECV | XSECH | FN     | ALLDC | IBW | CHNIM | ITRACE |

5 0 -1 0 0 0 0 0 0 0

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

\*PROF 5

CCHV= .100 CEHV= .300

\*SECNO 1.000

2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

3265 DIVIDED FLOW

|         |     |      |     |      |      |      |      |       |       |
|---------|-----|------|-----|------|------|------|------|-------|-------|
| 1.000   | .27 | .27  | .30 | .00  | .39  | .12  | .00  | .00   | .51   |
| 8.2     | .0  | 8.2  | .0  | .0   | 2.9  | .0   | .0   | .0    | .51   |
| .00     | .00 | 2.83 | .00 | .000 | .017 | .000 | .000 | .00   | 9.31  |
| .018560 | 0.  | 0.   | 0.  | 0    | 11   | 5    | .00  | 25.02 | 38.69 |

T1

T2 TUMULUS

T3

|    |        |     |      |      |      |        |       |   |      |    |
|----|--------|-----|------|------|------|--------|-------|---|------|----|
| J1 | ICHECK | INQ | NINV | IDIR | STRT | METRIC | HVINS | Q | WSEL | FQ |
|----|--------|-----|------|------|------|--------|-------|---|------|----|

|   |   |   |   |       |
|---|---|---|---|-------|
| 0 | 7 | 0 | 1 | .0299 |
|---|---|---|---|-------|

|    |       |       |       |       |       |    |       |     |       |        |
|----|-------|-------|-------|-------|-------|----|-------|-----|-------|--------|
| J2 | NPROF | IPLOT | PRFVS | XSECV | XSECH | FN | ALLDC | IBW | CHNIM | ITRACE |
|----|-------|-------|-------|-------|-------|----|-------|-----|-------|--------|

|   |   |    |   |   |   |   |   |   |   |   |
|---|---|----|---|---|---|---|---|---|---|---|
| 6 | 0 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|---|---|----|---|---|---|---|---|---|---|---|

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

\*PROF 6

CCHV= .100 CEHV= .300

\*SECNO 1.000

2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

3265 DIVIDED FLOW

|         |     |      |     |      |      |      |      |       |       |
|---------|-----|------|-----|------|------|------|------|-------|-------|
| 1.000   | .25 | .25  | .31 | .00  | .44  | .19  | .00  | .00   | .51   |
| 9.1     | .0  | 9.1  | .0  | .0   | 2.6  | .0   | .0   | .0    | .51   |
| .00     | .00 | 3.46 | .00 | .000 | .017 | .000 | .000 | .00   | 9.36  |
| .029714 | 0.  | 0.   | 0.  | 0    | 10   | 0    | .00  | 23.78 | 38.64 |

T1  
T2 SCORIA  
T3

|    |        |       |       |       |        |        |       |       |        |             |
|----|--------|-------|-------|-------|--------|--------|-------|-------|--------|-------------|
| J1 | ICHECK | INQ   | NINV  | IDIR  | STRT   | METRIC | HVINS | Q     | WSEL   | FQ          |
|    | 0      | 8     | 0     | 1     | .0292  |        |       |       |        |             |
| J2 | NPROF  | IPLOT | PRFVS | XSECV | XSECH  | FN     | ALLDC | IBW   | CHNIM  | ITRACE      |
|    | 7      | 0     | -1    | 0     | 0      | 0      | 0     | 0     | 0      | 0           |
|    | SECNO  | DEPTH | CWSEL | CRIWS | WSELK  | EG     | HV    | HL    | OLOSS  | L-BANK ELEV |
|    | Q      | QLOB  | QCH   | QROB  | ALOB   | ACH    | AROB  | VOL   | TWA    | R-BANK ELEV |
|    | TIME   | VLOB  | VCH   | VROB  | XNL    | XNCH   | XNR   | WTN   | ELMIN  | SSTA        |
|    | SLOPE  | XLOBL | XLCH  | XLOBR | ITRIAL | IDC    | ICONT | CORAR | TOPWID | ENDST       |

\*PROF 7

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

3265 DIVIDED FLOW

|         |     |      |     |      |      |      |      |       |       |
|---------|-----|------|-----|------|------|------|------|-------|-------|
| 1.000   | .25 | .25  | .31 | .00  | .43  | .18  | .00  | .00   | .51   |
| 8.9     | .0  | 8.9  | .0  | .0   | 2.6  | .0   | .0   | .0    | .51   |
| .00     | .00 | 3.40 | .00 | .000 | .017 | .000 | .000 | .00   | 9.36  |
| .028676 | 0.  | 0.   | 0.  | 0    | 11   | 3    | .00  | 23.76 | 38.64 |

THIS RUN EXECUTED 29OCT04 08:46:10

\*\*\*\*\*  
HEC-2 WATER SURFACE PROFILES  
Version 4.6.2; May 1991  
\*\*\*\*\*

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

| SECNO | Q     | CWSEL | CRIWS | VCH  | TOPWID | FRCH | EG  |
|-------|-------|-------|-------|------|--------|------|-----|
| 1.000 | 7.43  | .25   | .29   | 3.08 | 22.75  | 1.89 | .39 |
| 1.000 | 16.60 | .35   | .39   | 3.19 | 31.62  | 1.39 | .50 |
| 1.000 | 16.00 | .33   | .38   | 3.43 | 29.99  | 1.53 | .51 |
| 1.000 | 10.00 | .33   | .00   | 2.12 | 30.05  | .94  | .40 |
| 1.000 | 8.22  | .27   | .30   | 2.83 | 25.02  | 1.59 | .39 |
| 1.000 | 9.11  | .25   | .31   | 3.46 | 23.78  | 2.04 | .44 |
| 1.000 | 8.93  | .25   | .31   | 3.40 | 23.76  | 2.00 | .43 |

```

1*****
*   HEC-2 WATER SURFACE PROFILES   *
*                                   *
*   Version   4.6.2;   May 1991    *
*                                   *
*   RUN DATE   29OCT04   TIME   09:08:55  *
*****

```

```

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

```

```

      X   X  XXXXXXX  XXXXX      XXXXX
      X   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   X  XXXXXXX  XXXXX      XXXXXXX

```

THIS RUN EXECUTED 29OCT04 09:08:55

\*\*\*\*\*

HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991

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T1 SUNDORO SOUTH STREET CAPACITY  
T2 28'FF STD CURB  
T3 COLIMA

| J1 | ICHECK | INQ | NINV | IDIR | STRT  | METRIC | HVINS | Q | WSEL | FQ |
|----|--------|-----|------|------|-------|--------|-------|---|------|----|
|    | 0      | 2   | 0    | 1    | .0185 | 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 | 9    | 19.27 | 20.10 | 31.57 | 18.37 | 29.40 | 33.17 | 19.97 | 23.77 | 23.77 |
| 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  | L-BANK ELEV |
|-------|-------|-------|-------|--------|------|-------|-------|--------|-------------|
| Q     | QLOB  | QCH   | QROB  | ALOB   | ACH  | AROB  | VOL   | TWA    | R-BANK ELEV |
| 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

|         |     |      |     |      |      |      |      |       |       |
|---------|-----|------|-----|------|------|------|------|-------|-------|
| 1.000   | .40 | .40  | .46 | .00  | .62  | .22  | .00  | .00   | .87   |
| 19.3    | .0  | 19.3 | .0  | .0   | 5.1  | .0   | .0   | .0    | .87   |
| .00     | .00 | 3.76 | .00 | .000 | .017 | .000 | .000 | .00   | 8.94  |
| .018448 | 0.  | 0.   | 0.  | 0    | 8    | 5    | .00  | 28.12 | 37.06 |

T1  
T2 ASHFALL  
T3

|    |        |       |       |       |        |        |       |       |        |             |
|----|--------|-------|-------|-------|--------|--------|-------|-------|--------|-------------|
| J1 | ICHECK | INQ   | NINV  | IDIR  | STRT   | METRIC | HVINS | Q     | WSEL   | FQ          |
|    | 0      | 3     | 0     | 0     | .007   |        |       |       |        |             |
| 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  | L-BANK ELEV |
|    | Q      | QLOB  | QCH   | QROB  | ALOB   | ACH    | AROB  | VOL   | TWA    | R-BANK ELEV |
|    | 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

|         |     |      |     |      |      |      |      |       |       |
|---------|-----|------|-----|------|------|------|------|-------|-------|
| 1.000   | .47 | .47  | .47 | .00  | .60  | .13  | .00  | .00   | .87   |
| 20.1    | .0  | 20.1 | .0  | .0   | 7.1  | .0   | .0   | .0    | .87   |
| .00     | .00 | 2.84 | .00 | .000 | .017 | .000 | .000 | .00   | 8.93  |
| .006936 | 0.  | 0.   | 0.  | 0    | 8    | 0    | .00  | 28.14 | 37.07 |

T1  
T2 TUMULUS  
T3

|    |        |       |       |       |        |        |       |       |        |             |
|----|--------|-------|-------|-------|--------|--------|-------|-------|--------|-------------|
| J1 | ICHECK | INQ   | NINV  | IDIR  | STRT   | METRIC | HVINS | Q     | WSEL   | FQ          |
|    | 0      | 4     | 0     | 1     | .016   |        |       |       |        |             |
| 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  | L-BANK ELEV |
|    | Q      | QLOB  | QCH   | QROB  | ALOB   | ACH    | AROB  | VOL   | TWA    | R-BANK ELEV |
|    | 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

|         |     |      |     |      |      |      |      |       |       |
|---------|-----|------|-----|------|------|------|------|-------|-------|
| 1.000   | .48 | .48  | .56 | .00  | .77  | .30  | .00  | .00   | .87   |
| 31.6    | .0  | 31.6 | .0  | .0   | 7.2  | .0   | .0   | .0    | .87   |
| .00     | .00 | 4.36 | .00 | .000 | .017 | .000 | .000 | .00   | 8.93  |
| .015810 | 0.  | 0.   | 0.  | 0    | 11   | 5    | .00  | 28.14 | 37.07 |

T1

T2 TUMULUS

T3

|    |        |       |       |       |        |        |       |       |        |             |
|----|--------|-------|-------|-------|--------|--------|-------|-------|--------|-------------|
| J1 | ICHECK | INQ   | NINV  | IDIR  | STRT   | METRIC | HVINS | Q     | WSEL   | FQ          |
|    | 0      | 5     | 0     | 1     | .016   |        |       |       |        |             |
| 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  | L-BANK ELEV |
|    | Q      | QLOB  | QCH   | QROB  | ALOB   | ACH    | AROB  | VOL   | TWA    | R-BANK ELEV |
|    | 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

|         |     |      |     |      |      |      |      |       |       |
|---------|-----|------|-----|------|------|------|------|-------|-------|
| 1.000   | .40 | .40  | .45 | .00  | .60  | .19  | .00  | .00   | .87   |
| 18.4    | .0  | 18.4 | .0  | .0   | 5.2  | .0   | .0   | .0    | .87   |
| .00     | .00 | 3.53 | .00 | .000 | .017 | .000 | .000 | .00   | 8.94  |
| .015964 | 0.  | 0.   | 0.  | 0    | 8    | 5    | .00  | 28.12 | 37.06 |

T1

T2 ENDEE @ TUMULUS

T3

|    |        |       |       |       |       |        |       |     |       |        |
|----|--------|-------|-------|-------|-------|--------|-------|-----|-------|--------|
| J1 | ICHECK | INQ   | NINV  | IDIR  | STRT  | METRIC | HVINS | Q   | WSEL  | FQ     |
|    | 0      | 6     | 0     | 1     | .0315 |        |       |     |       |        |
| J2 | NPROF  | IPLOT | PRFVS | XSECV | XSECH | FN     | ALLDC | IBW | CHNIM | ITRACE |
|    | 5      | 0     | -1    | 0     | 0     | 0      | 0     | 0   | 0     | 0      |

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

\*PROF 5

CCHV= .100 CEHV= .300

\*SECNO 1.000

2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

|         |     |      |     |      |      |      |      |       |       |
|---------|-----|------|-----|------|------|------|------|-------|-------|
| 1.000   | .42 | .42  | .54 | .00  | .84  | .42  | .00  | .00   | .87   |
| 29.4    | .0  | 29.4 | .0  | .0   | 5.6  | .0   | .0   | .0    | .87   |
| .00     | .00 | 5.22 | .00 | .000 | .017 | .000 | .000 | .00   | 8.94  |
| .031485 | 0.  | 0.   | 0.  | 0    | 11   | 5    | .00  | 28.13 | 37.06 |

T1

T2 ENDEE @ MOLTEN

T3

|    |        |     |      |      |      |        |       |   |      |    |
|----|--------|-----|------|------|------|--------|-------|---|------|----|
| J1 | ICHECK | INQ | NINV | IDIR | STRT | METRIC | HVINS | Q | WSEL | FQ |
|    | 0      | 7   | 0    | 1    | .009 |        |       |   |      |    |

|    |       |       |       |       |       |    |       |     |       |        |
|----|-------|-------|-------|-------|-------|----|-------|-----|-------|--------|
| J2 | NPROF | IPLOT | PRFVS | XSECV | XSECH | FN | ALLDC | IBW | CHNIM | ITRACE |
|    | 6     | 0     | -1    | 0     | 0     | 0  | 0     | 0   | 0     | 0      |

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

\*PROF 6

CCHV= .100 CEHV= .300

\*SECNO 1.000

2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

|         |     |      |     |      |      |      |      |       |       |
|---------|-----|------|-----|------|------|------|------|-------|-------|
| 1.000   | .53 | .53  | .57 | .00  | .75  | .22  | .00  | .00   | .87   |
| 33.2    | .0  | 33.2 | .0  | .0   | 8.8  | .0   | .0   | .0    | .87   |
| .00     | .00 | 3.75 | .00 | .000 | .017 | .000 | .000 | .00   | 8.92  |
| .009024 | 0.  | 0.   | 0.  | 0    | 11   | 6    | .00  | 28.16 | 37.08 |

T1

T2 ENDEE @ MOLTEN

T3

|    |        |     |      |      |      |        |       |   |      |    |
|----|--------|-----|------|------|------|--------|-------|---|------|----|
| J1 | ICHECK | INQ | NINV | IDIR | STRT | METRIC | HVINS | Q | WSEL | FQ |
|    | 0      | 8   | 0    | 1    | .009 |        |       |   |      |    |

|    |       |       |       |       |        |      |       |       |        |        |      |
|----|-------|-------|-------|-------|--------|------|-------|-------|--------|--------|------|
| J2 | NPROF | IPLOT | PRFVS | XSECV | XSECH  | FN   | ALLDC | IBW   | CHNIM  | ITRACE |      |
|    | 7     | 0     | -1    | 0     | 0      | 0    | 0     | 0     | 0      | 0      |      |
|    | SECNO | DEPTH | CWSEL | CRIWS | WSELK  | EG   | HV    | HL    | OLOSS  | L-BANK | ELEV |
|    | Q     | QLOB  | QCH   | QROB  | ALOB   | ACH  | AROB  | VOL   | TWA    | R-BANK | ELEV |
|    | TIME  | VLOB  | VCH   | VROB  | XNL    | XNCH | XNR   | WTN   | ELMIN  | SSTA   |      |
|    | SLOPE | XLOBL | XLCH  | XLOBR | ITRIAL | IDC  | ICONT | CORAR | TOPWID | ENDST  |      |

\*PROF 7

CCHV= .100 CEHV= .300

\*SECNO 1.000

2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

|         |     |      |     |      |      |      |      |       |       |
|---------|-----|------|-----|------|------|------|------|-------|-------|
| 1.000   | .45 | .45  | .47 | .00  | .60  | .15  | .00  | .00   | .87   |
| 20.0    | .0  | 20.0 | .0  | .0   | 6.5  | .0   | .0   | .0    | .87   |
| .00     | .00 | 3.07 | .00 | .000 | .017 | .000 | .000 | .00   | 8.93  |
| .008981 | 0.  | 0.   | 0.  | 0    | 8    | 5    | .00  | 28.13 | 37.07 |

T1

T2 SILICA

T3

|    |        |       |       |       |        |        |       |       |        |        |      |
|----|--------|-------|-------|-------|--------|--------|-------|-------|--------|--------|------|
| J1 | ICHECK | INQ   | NINV  | IDIR  | STRT   | METRIC | HVINS | Q     | WSEL   | FQ     |      |
|    | 0      | 9     | 0     | 1     | .010   |        |       |       |        |        |      |
| J2 | NPROF  | IPLOT | PRFVS | XSECV | XSECH  | FN     | ALLDC | IBW   | CHNIM  | ITRACE |      |
|    | 8      | 0     | -1    | 0     | 0      | 0      | 0     | 0     | 0      | 0      |      |
|    | SECNO  | DEPTH | CWSEL | CRIWS | WSELK  | EG     | HV    | HL    | OLOSS  | L-BANK | ELEV |
|    | Q      | QLOB  | QCH   | QROB  | ALOB   | ACH    | AROB  | VOL   | TWA    | R-BANK | ELEV |
|    | TIME   | VLOB  | VCH   | VROB  | XNL    | XNCH   | XNR   | WTN   | ELMIN  | SSTA   |      |
|    | SLOPE  | XLOBL | XLCH  | XLOBR | ITRIAL | IDC    | ICONT | CORAR | TOPWID | ENDST  |      |

\*PROF 8

CCHV= .100 CEHV= .300

\*SECNO 1.000

2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

|         |     |      |     |      |      |      |      |       |       |
|---------|-----|------|-----|------|------|------|------|-------|-------|
| 1.000   | .47 | .47  | .50 | .00  | .65  | .18  | .00  | .00   | .87   |
| 23.8    | .0  | 23.8 | .0  | .0   | 7.0  | .0   | .0   | .0    | .87   |
| .00     | .00 | 3.38 | .00 | .000 | .017 | .000 | .000 | .00   | 8.93  |
| .009916 | 0.  | 0.   | 0.  | 0    | 8    | 5    | .00  | 28.14 | 37.07 |

T1

T2 SILICA  
T3

|    |        |       |       |       |        |        |       |       |        |             |
|----|--------|-------|-------|-------|--------|--------|-------|-------|--------|-------------|
| J1 | ICHECK | INQ   | NINV  | IDIR  | STRT   | METRIC | HVINS | Q     | WSEL   | FQ          |
|    | 0      | 10    | 0     | 1     | .010   |        |       |       |        |             |
| J2 | NPROF  | IPLOT | PRFVS | XSECV | XSECH  | FN     | ALLDC | IBW   | CHNIM  | ITRACE      |
|    | 9      | 0     | -1    | 0     | 0      | 0      | 0     | 0     | 0      | 0           |
|    | SECNO  | DEPTH | CWSEL | CRIWS | WSELK  | EG     | HV    | HL    | OLOSS  | L-BANK ELEV |
|    | Q      | QLOB  | QCH   | QROB  | ALOB   | ACH    | AROB  | VOL   | TWA    | R-BANK ELEV |
|    | TIME   | VLOB  | VCH   | VROB  | XNL    | XNCH   | XNR   | WTN   | ELMIN  | SSTA        |
|    | SLOPE  | XLOBL | XLCH  | XLOBR | ITRIAL | IDC    | ICONT | CORAR | TOPWID | ENDST       |

\*PROF 9

CCHV= .100 CEHV= .300

\*SECNO 1.000

2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

|         |     |      |     |      |      |      |      |       |       |
|---------|-----|------|-----|------|------|------|------|-------|-------|
| 1.000   | .47 | .47  | .50 | .00  | .65  | .18  | .00  | .00   | .87   |
| 23.8    | .0  | 23.8 | .0  | .0   | 7.0  | .0   | .0   | .0    | .87   |
| .00     | .00 | 3.38 | .00 | .000 | .017 | .000 | .000 | .00   | 8.93  |
| .009916 | 0.  | 0.   | 0.  | 0    | 8    | 5    | .00  | 28.14 | 37.07 |

THIS RUN EXECUTED 29OCT04 09:08:55

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HEC-2 WATER SURFACE PROFILES  
Version 4.6.2; May 1991  
\*\*\*\*\*

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

SUMMARY PRINTOUT

| SECNO | Q     | CWSEL | CRIWS | VCH  | TOPWID | FRCH | EG  |
|-------|-------|-------|-------|------|--------|------|-----|
| 1.000 | 19.27 | .40   | .46   | 3.76 | 28.12  | 1.55 | .62 |
| 1.000 | 20.10 | .47   | .47   | 2.84 | 28.14  | 1.00 | .60 |
| 1.000 | 31.57 | .48   | .56   | 4.36 | 28.14  | 1.51 | .77 |
| 1.000 | 18.37 | .40   | .45   | 3.53 | 28.12  | 1.45 | .60 |
| 1.000 | 29.40 | .42   | .54   | 5.22 | 28.13  | 2.06 | .84 |
| 1.000 | 33.17 | .53   | .57   | 3.75 | 28.16  | 1.18 | .75 |
| 1.000 | 19.97 | .45   | .47   | 3.07 | 28.13  | 1.12 | .60 |
| 1.000 | 23.77 | .47   | .50   | 3.38 | 28.14  | 1.19 | .65 |
| 1.000 | 23.77 | .47   | .50   | 3.38 | 28.14  | 1.19 | .65 |

SUMMARY OF ERRORS AND SPECIAL NOTES

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1*****
* HEC-2 WATER SURFACE PROFILES *
*                               *
* Version  4.6.2;  May 1991    *
*                               *
* RUN DATE   29OCT04   TIME   09:27:35 *
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*****
* U.S. ARMY CORPS OF ENGINEERS *
* HYDROLOGIC ENGINEERING CENTER *
* 609 SECOND STREET, SUITE D    *
* DAVIS, CALIFORNIA 95616-4687 *
* (916) 756-1104               *
*****

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      X   X XXXXXXXX XXXXX
      X   X X      X   X
      X   X X      X
XXXXXXX XXXX X      XXXXX XXXXX
      X   X X      X
      X   X X      X   X

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THIS RUN EXECUTED 29OCT04 09:27:35

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*****
HEC-2 WATER SURFACE PROFILES
Version  4.6.2;  May 1991
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T1      SUNDORO SOUTH STREET CAPACITY
T2      54'FF STD CURB WITH NO MEDIAN - 1% SLOPE
T3      KIPUKA @ COLIMA

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| J1 | ICHECK | INQ | NINV | IDIR | STRT  | METRIC | HVINS | Q | WSEL | FQ |
|----|--------|-----|------|------|-------|--------|-------|---|------|----|
|    | 0      | 2   | 0    | 1    | .0285 | 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 | 3    | 22.78 | 24.35 | 17.95 |     |      |      |     |
| X1 | 1    | 9     | 0     | 37    | 0   | 0    | 0    | 0   |
| GR | .87  | 0     | .67   | 9.9   | 0   | 10   | .125 | 12  |
| GR | .125 | 62.   | 0     | 63.9  | .67 | 64.0 | .87  | 74. |

| SECNO | DEPTH | CWSEL | CRIWS | WSELK  | EG   | HV    | HL    | OLOSS  | L-BANK ELEV |
|-------|-------|-------|-------|--------|------|-------|-------|--------|-------------|
| Q     | QLOB  | QCH   | QROB  | ALOB   | ACH  | AROB  | VOL   | TWA    | R-BANK ELEV |
| 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

|         |     |      |      |      |      |      |      |       |       |
|---------|-----|------|------|------|------|------|------|-------|-------|
| 1.000   | .35 | .35  | .42  | .00  | .57  | .22  | .00  | .00   | .87   |
| 22.8    | .0  | 11.0 | 11.7 | .0   | 3.0  | 3.0  | .0   | .0    | .38   |
| .00     | .00 | 3.63 | 3.89 | .000 | .017 | .017 | .000 | .00   | 9.95  |
| .027964 | 0.  | 0.   | 0.   | 0    | 10   | 6    | .00  | 48.40 | 63.95 |

T1  
T2 KIPUKA @ ASHFALL  
T3

|    |        |       |       |       |        |        |       |       |        |             |
|----|--------|-------|-------|-------|--------|--------|-------|-------|--------|-------------|
| J1 | ICHECK | INQ   | NINV  | IDIR  | STRT   | METRIC | HVINS | Q     | WSEL   | FQ          |
|    | 0      | 3     | 0     | 1     | .0218  |        |       |       |        |             |
| 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  | L-BANK ELEV |
|    | Q      | QLOB  | QCH   | QROB  | ALOB   | ACH    | AROB  | VOL   | TWA    | R-BANK ELEV |
|    | 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

|         |     |      |      |      |      |      |      |       |       |
|---------|-----|------|------|------|------|------|------|-------|-------|
| 1.000   | .37 | .37  | .43  | .00  | .55  | .19  | .00  | .00   | .87   |
| 24.4    | .0  | 11.8 | 12.5 | .0   | 3.5  | 3.5  | .0   | .0    | .38   |
| .00     | .00 | 3.35 | 3.57 | .000 | .017 | .017 | .000 | .00   | 9.95  |
| .021562 | 0.  | 0.   | 0.   | 0    | 6    | 6    | .00  | 52.33 | 63.95 |

T1  
T2 KIPUKA @ ASHFALL  
T3

|    |        |       |       |       |       |        |       |     |       |        |
|----|--------|-------|-------|-------|-------|--------|-------|-----|-------|--------|
| J1 | ICHECK | INQ   | NINV  | IDIR  | STRT  | METRIC | HVINS | Q   | WSEL  | FQ     |
|    | 0      | 3     | 0     | 1     | .0218 |        |       |     |       |        |
| J2 | NPROF  | IPLOT | PRFVS | XSECV | XSECH | FN     | ALLDC | IBW | CHNIM | ITRACE |
|    | 2      | 0     | -1    | 0     | 0     | 0      | 0     | 0   | 0     | 0      |

29OCT04 09:27:35

| SECNO | DEPTH | CWSEL | CRIWS | WSELK  | EG   | HV    | HL    | OLOSS  | L-BANK ELEV |
|-------|-------|-------|-------|--------|------|-------|-------|--------|-------------|
| Q     | QLOB  | QCH   | QROB  | ALOB   | ACH  | AROB  | VOL   | TWA    | R-BANK ELEV |
| 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

3265 DIVIDED FLOW

|         |     |      |      |      |      |      |      |       |       |
|---------|-----|------|------|------|------|------|------|-------|-------|
| 1.000   | .37 | .37  | .43  | .00  | .55  | .19  | .00  | .00   | .87   |
| 24.4    | .0  | 11.8 | 12.5 | .0   | 3.5  | 3.5  | .0   | .0    | .38   |
| .00     | .00 | 3.35 | 3.57 | .000 | .017 | .017 | .000 | .00   | 9.95  |
| .021562 | 0.  | 0.   | 0.   | 0    | 6    | 6    | .00  | 52.33 | 63.95 |

THIS RUN EXECUTED 29OCT04 09:27:35

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HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991

\*\*\*\*\*

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

KIPUKA @ COLIMA

SUMMARY PRINTOUT

| SECNO | Q     | CWSEL | CRIWS | VCH  | TOPWID | FRCH | EG  |
|-------|-------|-------|-------|------|--------|------|-----|
| 1.000 | 22.78 | .35   | .42   | 3.63 | 48.40  | 1.91 | .57 |
| 1.000 | 24.35 | .37   | .43   | 3.35 | 52.33  | 1.63 | .55 |
| 1.000 | 24.35 | .37   | .43   | 3.35 | 52.33  | 1.63 | .55 |

SUMMARY OF ERRORS AND SPECIAL NOTES

```

1*****
* HEC-2 WATER SURFACE PROFILES *
*                               *
* Version  4.6.2; May 1991      *
*                               *
* RUN DATE  29OCT04   TIME  09:30:27 *
*****

```

```

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

```

```

      X   X XXXXXXXX XXXXX
      X   X X      X   X
      X   X X      X
      XXXXXXXX XXXX X      XXXXX XXXXX
      X   X X      X
      X   X X      X   X

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THIS RUN EXECUTED 29OCT04 09:30:27

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*****
HEC-2 WATER SURFACE PROFILES
Version  4.6.2; May 1991
*****

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```

T1      SUNDORO SOUTH STREET CAPACITY
T2      54'FF STD CURB WITH 6' WIDE MEDIAN - 2% SLOPE
T3      KIPUKA DRIVE @ COLIMA

```

| J1 | ICHECK | INQ | NINV | IDIR | STRT  | METRIC | HVINS | Q | WSEL | FQ |
|----|--------|-----|------|------|-------|--------|-------|---|------|----|
|    | 0      | 2   | 0    | 1    | .0285 | 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 | 3     | 22.78 | 24.35 | 17.95 |      |     |      |     |
| X1 | 1     | 12    | 0     | 34    | 0    | 0   | 0    | 0   |
| GR | .87   | 0     | .67   | 9.9   | 0    | 10  | .125 | 12  |
| GR | 1.235 | 34    | 1.235 | 39.9  | .565 | 40. | .125 | 62. |
| GR | .67   | 64.0  | .87   | 74.   |      |     |      | 0   |

| SECNO | DEPTH | CWSEL | CRIWS | WSELK  | EG   | HV    | HL    | OLOSS  | L-BANK ELEV |
|-------|-------|-------|-------|--------|------|-------|-------|--------|-------------|
| Q     | QLOB  | QCH   | QROB  | ALOB   | ACH  | AROB  | VOL   | TWA    | R-BANK ELEV |
| 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

|         |     |      |      |      |      |      |      |       |       |
|---------|-----|------|------|------|------|------|------|-------|-------|
| 1.000   | .40 | .40  | .50  | .00  | .71  | .31  | .00  | .00   | .87   |
| 22.8    | .0  | 11.0 | 11.8 | .0   | 2.6  | 2.5  | .0   | .0    | 1.24  |
| .00     | .00 | 4.30 | 4.68 | .000 | .017 | .017 | .000 | .00   | 9.94  |
| .028040 | 0.  | 0.   | 0.   | 0    | 8    | 5    | .00  | 31.35 | 63.96 |

T1

T2 KIPUKA DRIVE @ ASHFALL DRIVE

T3

|    |        |       |       |       |        |        |       |       |        |             |
|----|--------|-------|-------|-------|--------|--------|-------|-------|--------|-------------|
| J1 | ICHECK | INQ   | NINV  | IDIR  | STRT   | METRIC | HVINS | Q     | WSEL   | FQ          |
|    | 0      | 3     | 0     | 1     | .0218  |        |       |       |        |             |
| 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  | L-BANK ELEV |
|    | Q      | QLOB  | QCH   | QROB  | ALOB   | ACH    | AROB  | VOL   | TWA    | R-BANK ELEV |
|    | 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

|         |     |      |      |      |      |      |      |       |       |
|---------|-----|------|------|------|------|------|------|-------|-------|
| 1.000   | .42 | .42  | .51  | .00  | .69  | .27  | .00  | .00   | .87   |
| 24.4    | .0  | 11.8 | 12.6 | .0   | 3.0  | 2.9  | .0   | .0    | 1.24  |
| .00     | .00 | 3.97 | 4.29 | .000 | .017 | .017 | .000 | .00   | 9.94  |
| .021773 | 0.  | 0.   | 0.   | 0    | 11   | 5    | .00  | 33.84 | 63.96 |

T1

T2 KIPUKA DRIVE @ ASHFALL DRIVE

T3

|    |        |       |       |       |       |        |       |     |       |        |
|----|--------|-------|-------|-------|-------|--------|-------|-----|-------|--------|
| J1 | ICHECK | INQ   | NINV  | IDIR  | STRT  | METRIC | HVINS | Q   | WSEL  | FQ     |
|    | 0      | 4     | 0     | 1     | .0218 |        |       |     |       |        |
| 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  | L-BANK ELEV |
| Q     | QLOB  | QCH   | QROB  | ALOB   | ACH  | AROB  | VOL   | TWA    | R-BANK ELEV |
| 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

3265 DIVIDED FLOW

|         |     |      |      |      |      |      |      |       |       |
|---------|-----|------|------|------|------|------|------|-------|-------|
| 1.000   | .39 | .39  | .46  | .00  | .62  | .23  | .00  | .00   | .87   |
| 18.0    | .0  | 8.6  | 9.3  | .0   | 2.3  | 2.3  | .0   | .0    | 1.24  |
| .00     | .00 | 3.68 | 4.02 | .000 | .017 | .017 | .000 | .00   | 9.94  |
| .021758 | 0.  | 0.   | 0.   | 0    | 8    | 6    | .00  | 29.98 | 63.96 |

THIS RUN EXECUTED 29OCT04 09:30:27

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HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991

\*\*\*\*\*

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

KIPUKA DRIVE @ COLIM

SUMMARY PRINTOUT

| SECNO | Q     | CWSEL | CRIWS | VCH  | TOPWID | FRCH | EG  |
|-------|-------|-------|-------|------|--------|------|-----|
| 1.000 | 22.78 | .40   | .50   | 4.30 | 31.35  | 2.33 | .71 |
| 1.000 | 24.35 | .42   | .51   | 3.97 | 33.84  | 2.00 | .69 |
| 1.000 | 17.95 | .39   | .46   | 3.68 | 29.98  | 2.08 | .62 |

SUMMARY OF ERRORS AND SPECIAL NOTES

```

1*****
* HEC-2 WATER SURFACE PROFILES *
* *
* Version 4.6.2; May 1991 *
* *
* RUN DATE 29OCT04 TIME 09:32:56 *
*****

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

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X X XXXXXXXX XXXXX
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

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THIS RUN EXECUTED 29OCT04 09:32:56
*****
HEC-2 WATER SURFACE PROFILES
Version 4.6.2; May 1991
*****

```

```

T1 SUNDORO SOUTH ENDEE ROAD NORTH STREET CAPACITY
T2 24' PVMT WITH STD C&G, CROWN AT 18 FT
T3 ENDEE ROAD INLET # 7E TYPE SGL 'A'

```

| J1 | ICHECK | INQ | NINV | IDIR | STRT | METRIC | HVINS | Q | WSEL | FQ |
|----|--------|-----|------|------|------|--------|-------|---|------|----|
|    | 0      | 2   | 0    | 1    | .030 | 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    | 51.0 |      |      |    |    |      |      |
| X1 | 1    | 7    | 0    | 34.1 | 0  | 0  | 0    | 0    |
| GR | 1.0  | 0    | .67  | 9.9  | 0  | 10 | .125 | 12   |
| GR | .325 | 34   | .995 | 34.1 |    |    |      | .445 |
|    |      |      |      |      |    |    |      | 28   |

| SECNO | DEPTH | CWSEL | CRIWS | WSELK  | EG   | HV    | HL    | OLOSS  | L-BANK ELEV |
|-------|-------|-------|-------|--------|------|-------|-------|--------|-------------|
| Q     | QLOB  | QCH   | QROB  | ALOB   | ACH  | AROB  | VOL   | TWA    | R-BANK ELEV |
| 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

```

|         |     |      |     |      |      |      |      |       |       |
|---------|-----|------|-----|------|------|------|------|-------|-------|
| 1.000   | .60 | .60  | .82 | .00  | 1.32 | .72  | .00  | .00   | 1.00  |
| 51.0    | .0  | 51.0 | .0  | .0   | 7.5  | .0   | .0   | .0    | 1.00  |
| .00     | .00 | 6.81 | .00 | .000 | .017 | .000 | .000 | .00   | 9.91  |
| .030079 | 0.  | 0.   | 0.  | 0    | 17   | 6    | .00  | 24.13 | 34.04 |

THIS RUN EXECUTED 29OCT04 09:32:56

\*\*\*\*\*  
 HEC-2 WATER SURFACE PROFILES  
 Version 4.6.2; May 1991  
 \*\*\*\*\*

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

ENDEE ROAD INLET #

SUMMARY PRINTOUT

| SECNO | Q     | CWSEL | CRIWS | VCH  | TOPWID | FRCH | EG   |
|-------|-------|-------|-------|------|--------|------|------|
| 1.000 | 51.00 | .60   | .82   | 6.81 | 24.13  | 2.15 | 1.32 |

SUMMARY OF ERRORS AND SPECIAL NOTES

```

1*****
* HEC-2 WATER SURFACE PROFILES *
*                               *
* Version 4.6.2; May 1991      *
*                               *
* RUN DATE 18OCT04 TIME 10:39:26 *
*****

```

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

```

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      X   X XXXXXXXX XXXXX
      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 XXXXXXXX XXXXX

```

```

THIS RUN EXECUTED 18OCT04 10:39:26
*****
HEC-2 WATER SURFACE PROFILES
Version 4.6.2; May 1991
*****

```

```

T1 SUNDORO SOUTH STREET CAPACITY CALCULATIONS
T2 36'FF STD 54' ROW
T3 ENDEE ROAD - INLETS TYPE DBL 'C' 9E & 10E

```

| J1 | ICHECK | INQ | NINV | IDIR | STRT | METRIC | HVINS | Q | WSEL | FQ |
|----|--------|-----|------|------|------|--------|-------|---|------|----|
|    | 0      | 2   | 0    | 0    | .030 | 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    | 40.5 | 40.5 |     |     |      |      |    |
| X1 | 1    | 9    | 0    | 50  | 0   | 0    | 0    | 0  |
| GR | .87  | 0    | .67  | 8.9 | 0   | 9    | .125 | 11 |
| GR | .125 | 43   | 0    | 45  | .67 | 45.1 | .87  | 54 |

| SECNO | DEPTH | CWSEL | CRIWS | WSELK  | EG   | HV    | HL    | OLOSS  | L-BANK ELEV |
|-------|-------|-------|-------|--------|------|-------|-------|--------|-------------|
| Q     | QLOB  | QCH   | QROB  | ALOB   | ACH  | AROB  | VOL   | TWA    | R-BANK ELEV |
| 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

```

3720 CRITICAL DEPTH ASSUMED

|         |     |      |     |      |      |      |      |       |       |
|---------|-----|------|-----|------|------|------|------|-------|-------|
| 1.000   | .60 | .60  | .60 | .00  | .77  | .17  | .00  | .00   | .87   |
| 40.5    | .0  | 40.5 | .0  | .0   | 12.1 | .0   | .0   | .0    | .67   |
| .00     | .00 | 3.34 | .00 | .000 | .017 | .000 | .000 | .00   | 8.91  |
| .006536 | 0.  | 0.   | 0.  | 0    | 14   | 0    | .00  | 36.18 | 45.09 |

T1 36' FF STD

T2

T3 ENDEE

| J1    | ICHECK | INQ   | NINV  | IDIR   | STRT  | METRIC | HVINS | Q      | WSEL        | FQ     |
|-------|--------|-------|-------|--------|-------|--------|-------|--------|-------------|--------|
|       | 0      | 3     | 0     | 1      | .030  |        |       |        |             |        |
| 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  | L-BANK ELEV |        |
| Q     | QLOB   | QCH   | QROB  | ALOB   | ACH   | AROB   | VOL   | TWA    | R-BANK ELEV |        |
| 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

|         |     |      |     |      |      |      |      |       |       |
|---------|-----|------|-----|------|------|------|------|-------|-------|
| 1.000   | .47 | .47  | .60 | .00  | .91  | .44  | .00  | .00   | .87   |
| 40.5    | .0  | 40.5 | .0  | .0   | 7.6  | .0   | .0   | .0    | .67   |
| .00     | .00 | 5.30 | .00 | .000 | .017 | .000 | .000 | .00   | 8.93  |
| .030035 | 0.  | 0.   | 0.  | 0    | 14   | 6    | .00  | 36.14 | 45.07 |

THIS RUN EXECUTED 18OCT04 10:39:26

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HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991

\*\*\*\*\*

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

ENDEE ROAD - INLETS

SUMMARY PRINTOUT

|   | SECNO | Q     | CWSEL | CRIWS | VCH  | TOPWID | FRCH | EG  |
|---|-------|-------|-------|-------|------|--------|------|-----|
| * | 1.000 | 40.50 | .60   | .60   | 3.34 | 36.18  | 1.02 | .77 |
|   | 1.000 | 40.50 | .47   | .60   | 5.30 | 36.14  | 2.03 | .91 |

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 1.000 PROFILE= 1 CRITICAL DEPTH ASSUMED

## ***APPENDIX C - STORM SEWER***



Program Package Serial Number: 1454

## WATER SURFACE PROFILE LISTING

Date:10-27-2004 Time: 3:31:44

Preliminary Sundoro South Storm Drain Analysis

Future Channel to Molten Dr to Endee Rd

File: Sundoro\_Endee 10-27-04

```

*****
Station | Invert | Depth | Water | Q | Vel | Vel | Energy | Super | Critical | Flow Top | Height | Base Wt | No Wth
      | Elev  | (FT)  | Elev  | (CFS) | (FPS) | Head | Grd.El. | Elev | Depth | Width | Dia.-FT | or I.D. | ZL | Prs/Pip
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
L/Elem | Ch Slope |          |          |          |          | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch
*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****
----- WARNING - Junction Analysis - Large Lateral Flow(s) -----
943.000 | 30.040 | 4.725 | 34.765 | 964.21 | 10.50 | 1.71 | 36.48 | .00 | 4.82 | 28.88 | 5.000 | 10.000 | 2.00 | 0 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
JUNCT STR | .0186 |          |          |          |          | .0048 | .28 | 4.73 | 1.04 |          | .013 | .00 | 2.00 | TRAP
----- WARNING - Junction Analysis - Change in Channel Type -----
1000.000 | 31.100 | 4.072 | 35.172 | 264.21 | 14.01 | 3.05 | 38.22 | .00 | 4.52 | 4.82 | 5.500 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
20.991 | .0083 |          |          |          |          | .0076 | .16 | 4.07 | 1.25 | 3.94 | .013 | .00 | .00 | PIPE
1020.991 | 31.275 | 4.099 | 35.374 | 264.21 | 13.91 | 3.01 | 38.38 | .00 | 4.52 | 4.79 | 5.500 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
65.855 | .0083 |          |          |          |          | .0072 | .47 | 4.10 | 1.23 | 3.94 | .013 | .00 | .00 | PIPE
1086.846 | 31.822 | 4.297 | 36.119 | 264.21 | 13.26 | 2.73 | 38.85 | .00 | 4.52 | 4.55 | 5.500 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
14.154 | .0083 |          |          |          |          | .0065 | .09 | 4.30 | 1.12 | 3.94 | .013 | .00 | .00 | PIPE
1101.000 | 31.940 | 4.520 | 36.460 | 264.21 | 12.65 | 2.48 | 38.94 | .00 | 4.52 | 4.21 | 5.500 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
JUNCT STR | .0075 |          |          |          |          | .0058 | .05 | 4.52 | 1.00 |          | .013 | .00 | .00 | PIPE
1109.000 | 32.000 | 5.565 | 37.565 | 247.59 | 10.42 | 1.69 | 39.25 | .00 | 4.39 | .00 | 5.500 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
144.177 | .0090 |          |          |          |          | .0054 | .78 | 5.57 | .00 | 3.64 | .013 | .00 | .00 | PIPE
1253.177 | 33.303 | 5.500 | 38.803 | 247.59 | 10.42 | 1.69 | 40.49 | .00 | 4.39 | .00 | 5.500 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
82.700 | .0090 |          |          |          |          | .0051 | .42 | 5.50 | .00 | 3.64 | .013 | .00 | .00 | PIPE

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Program Package Serial Number: 1454

## WATER SURFACE PROFILE LISTING

Date:10-27-2004 Time: 3:31:44

Preliminary Sundoro South Storm Drain Analysis

Future Channel to Molten Dr to Endee Rd

File: Sundoro\_Endee 10-27-04

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*****
Station | Invert | Depth | Water | Q | Vel | Vel | Energy | Super | Critical | Flow Top | Height/ | Base Wt | | No Wth
      | Elev  | (FT)  | Elev  | (CFS) | (FPS) | Head | Grd.El. | Elev | Depth | Width | Dia.-FT | or I.D. | ZL | Prs/Pip
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
L/Elem | Ch Slope | | | | | | | | | | | | | | |
*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|
1335.877 | 34.050 | 5.011 | 39.061 | 247.59 | 10.90 | 1.84 | 40.91 | .00 | 4.39 | 3.13 | 5.500 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
HYDRAULIC JUMP
1335.877 | 34.050 | 3.821 | 37.871 | 247.59 | 14.05 | 3.07 | 40.94 | .00 | 4.39 | 5.07 | 5.500 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
.696 | .0090 | | | | | | | | | | | | | | |
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
.0079 | .01 | 3.82 | 1.33 | 3.64 | .013 | .00 | .00 | PIPE
1336.573 | 34.056 | 3.821 | 37.877 | 247.59 | 14.05 | 3.07 | 40.94 | .00 | 4.39 | 5.07 | 5.500 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
68.889 | .0090 | | | | | | | | | | | | | | |
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
.0075 | .52 | 3.82 | 1.33 | 3.64 | .013 | .00 | .00 | PIPE
1405.462 | 34.679 | 3.993 | 38.672 | 247.59 | 13.40 | 2.79 | 41.46 | .00 | 4.39 | 4.91 | 5.500 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
28.008 | .0090 | | | | | | | | | | | | | | |
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
.0067 | .19 | 3.99 | 1.22 | 3.64 | .013 | .00 | .00 | PIPE
1433.470 | 34.932 | 4.181 | 39.113 | 247.59 | 12.78 | 2.53 | 41.65 | .00 | 4.39 | 4.70 | 5.500 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
7.530 | .0090 | | | | | | | | | | | | | | |
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
.0060 | .05 | 4.18 | 1.11 | 3.64 | .013 | .00 | .00 | PIPE
1441.000 | 35.000 | 4.390 | 39.390 | 247.59 | 12.18 | 2.30 | 41.69 | .00 | 4.39 | 4.42 | 5.500 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
JUNCT STR -.0150 | | | | | | | | | | | | | | |
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
.0061 | .05 | 4.39 | 1.00 | .013 | .00 | .00 | PIPE
1449.000 | 34.880 | 5.318 | 40.198 | 209.27 | 10.66 | 1.76 | 41.96 | .00 | 4.12 | .00 | 5.000 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
13.000 | .0092 | | | | | | | | | | | | | | |
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
.0065 | .08 | 5.32 | .00 | 3.50 | .013 | .00 | .00 | PIPE
1462.000 | 35.000 | 5.806 | 40.806 | 209.27 | 10.66 | 1.76 | 42.57 | .00 | 4.12 | .00 | 5.000 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
JUNCT STR .0083 | | | | | | | | | | | | | | |
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
.0058 | .03 | 5.81 | .00 | .013 | .00 | .00 | PIPE
1468.000 | 35.050 | 6.364 | 41.414 | 186.67 | 9.51 | 1.40 | 42.82 | .00 | 3.91 | .00 | 5.000 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
196.000 | .0068 | | | | | | | | | | | | | | |
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
.0051 | 1.01 | 6.36 | .00 | 3.60 | .013 | .00 | .00 | PIPE

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Program Package Serial Number: 1454

## WATER SURFACE PROFILE LISTING

Date:10-27-2004 Time: 3:31:44

Preliminary Sundoro South Storm Drain Analysis

Future Channel to Molten Dr to Endee Rd

File: Sundoro\_Endee 10-27-04

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*****
Station | Invert | Depth | Water | Q | Vel | Vel | Energy | Super | Critical | Flow Top | Height | Base Wt | No Wth
      | Elev  | (FT)  | Elev  | (CFS) | (FPS) | Head | Grd.El. | Elev | Depth | Width | Dia.-FT | or I.D. | ZL | Prs/Pip
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
L/Elem | Ch Slope |          |          |          |          | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch
*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|
1664.000 | 36.390 | 6.101 | 42.491 | 186.67 | 9.51 | 1.40 | 43.89 | .00 | 3.91 | .00 | 5.000 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
JUNCT STR | .0083 |          |          |          |          | .0047 | .03 | 6.10 | .00 |          | .013 | .00 | .00 | PIPE
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
1670.000 | 36.440 | 6.530 | 42.970 | 171.05 | 8.71 | 1.18 | 44.15 | .00 | 3.75 | .00 | 5.000 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
249.000 | .0072 |          |          |          |          | .0043 | 1.07 | 6.53 | .00 | 3.31 | .013 | .00 | .00 | PIPE
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
1919.000 | 38.230 | 5.873 | 44.103 | 171.05 | 8.71 | 1.18 | 45.28 | .00 | 3.75 | .00 | 5.000 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
JUNCT STR | .2500 |          |          |          |          | .0073 | .04 | 5.87 | .00 |          | .013 | .00 | .00 | PIPE
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
1925.000 | 39.730 | 5.137 | 44.867 | 102.35 | 10.64 | 1.76 | 46.62 | .00 | 3.09 | .00 | 3.500 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
24.000 | .0087 |          |          |          |          | .0103 | .25 | 5.14 | .00 | 3.50 | .013 | .00 | .00 | PIPE
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
1949.000 | 39.940 | 5.263 | 45.203 | 102.35 | 10.64 | 1.76 | 46.96 | .00 | 3.09 | .00 | 3.500 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
JUNCT STR | .0100 |          |          |          |          | .0091 | .05 | 5.26 | .00 |          | .013 | .00 | .00 | PIPE
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
1955.000 | 40.000 | 5.995 | 45.995 | 88.75 | 9.22 | 1.32 | 47.32 | .00 | 2.93 | .00 | 3.500 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
34.652 | .0365 |          |          |          |          | .0078 | .27 | 6.00 | .00 | 1.67 | .013 | .00 | .00 | PIPE
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
1989.652 | 41.265 | 5.035 | 46.300 | 88.75 | 9.22 | 1.32 | 47.62 | .00 | 2.93 | .00 | 3.500 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
HYDRAULIC JUMP
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
1989.652 | 41.265 | 1.673 | 42.938 | 88.75 | 19.55 | 5.93 | 48.87 | .00 | 2.93 | 3.50 | 3.500 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
154.348 | .0365 |          |          |          |          | .0359 | 5.54 | 1.67 | 3.02 | 1.67 | .013 | .00 | .00 | PIPE
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
2144.000 | 46.900 | 1.684 | 48.584 | 88.75 | 19.37 | 5.83 | 54.41 | .00 | 2.93 | 3.50 | 3.500 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
JUNCT STR | .0167 |          |          |          |          | .0355 | .21 | 1.68 | 2.98 |          | .013 | .00 | .00 | PIPE

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Program Package Serial Number: 1454

## WATER SURFACE PROFILE LISTING

Date:10-27-2004 Time: 3:31:44

Preliminary Sundoro South Storm Drain Analysis

Future Channel to Molten Dr to Endee Rd

File: Sundoro\_Endee 10-27-04

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*****
Station | Invert | Depth | Water | Q | Vel | Vel | Energy | Super | Critical | Flow Top | Height | Base Wt | No Wth
      | Elev  | (FT)  | Elev  | (CFS) | (FPS) | Head | Grd.El. | Elev | Depth | Width | Dia.-FT | or I.D. | ZL | Prs/Pip
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
L/Elem | Ch Slope |          |          |          |          | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch
*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|
2150.000 | 47.000 | 1.861 | 48.861 | 88.75 | 19.27 | 5.76 | 54.63 | .00 | 2.84 | 2.91 | 3.000 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
3.830 | .0456 |          |          |          |          | .0353 | .14 | 1.86 | 2.70 | 1.71 | .013 | .00 | .00 | PIPE
2153.830 | 47.175 | 1.867 | 49.042 | 88.75 | 19.18 | 5.71 | 54.76 | .00 | 2.84 | 2.91 | 3.000 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
35.170 | .0456 |          |          |          |          | .0331 | 1.16 | 1.87 | 2.68 | 1.71 | .013 | .00 | .00 | PIPE
2189.000 | 48.780 | 1.946 | 50.726 | 88.75 | 18.29 | 5.20 | 55.92 | .00 | 2.84 | 2.86 | 3.000 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
55.769 | .0336 |          |          |          |          | .0303 | 1.69 | 1.95 | 2.48 | 1.90 | .013 | .00 | .00 | PIPE
2244.769 | 50.652 | 1.982 | 52.635 | 88.75 | 17.90 | 4.98 | 57.61 | .00 | 2.84 | 2.84 | 3.000 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
64.496 | .0336 |          |          |          |          | .0279 | 1.80 | 1.98 | 2.39 | 1.90 | .013 | .00 | .00 | PIPE
2309.265 | 52.818 | 2.068 | 54.886 | 88.75 | 17.07 | 4.53 | 59.41 | .00 | 2.84 | 2.78 | 3.000 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
36.538 | .0336 |          |          |          |          | .0249 | .91 | 2.07 | 2.20 | 1.90 | .013 | .00 | .00 | PIPE
2345.802 | 54.045 | 2.161 | 56.206 | 88.75 | 16.28 | 4.11 | 60.32 | .00 | 2.84 | 2.69 | 3.000 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
24.079 | .0336 |          |          |          |          | .0222 | .54 | 2.16 | 2.02 | 1.90 | .013 | .00 | .00 | PIPE
2369.881 | 54.853 | 2.262 | 57.115 | 88.75 | 15.52 | 3.74 | 60.85 | .00 | 2.84 | 2.58 | 3.000 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
16.848 | .0336 |          |          |          |          | .0200 | .34 | 2.26 | 1.84 | 1.90 | .013 | .00 | .00 | PIPE
2386.729 | 55.419 | 2.373 | 57.792 | 88.75 | 14.80 | 3.40 | 61.19 | .00 | 2.84 | 2.44 | 3.000 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
11.882 | .0336 |          |          |          |          | .0181 | .21 | 2.37 | 1.66 | 1.90 | .013 | .00 | .00 | PIPE
2398.612 | 55.818 | 2.498 | 58.316 | 88.75 | 14.11 | 3.09 | 61.41 | .00 | 2.84 | 2.24 | 3.000 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
7.931 | .0336 |          |          |          |          | .0166 | .13 | 2.50 | 1.48 | 1.90 | .013 | .00 | .00 | PIPE

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WATER SURFACE PROFILE LISTING

Preliminary Sundoro South Storm Drain Analysis  
Future Channel to Molten Dr to Endee Rd  
File: Sundoro Endee      10-27-04

Date:10-27-2004 Time: 3:31:44

|                |          |       |        |       |       |        |         |         |          |          |         |         |       |         |       |  |
|----------------|----------|-------|--------|-------|-------|--------|---------|---------|----------|----------|---------|---------|-------|---------|-------|--|
| *****          |          |       |        |       |       |        |         |         |          |          |         |         |       |         |       |  |
|                | Invert   | Depth | Water  | Q     | Vel   | Vel    | Energy  | Super   | Critical | Flow Top | Height/ | Base Wt |       | No Wth  | ***** |  |
| Station        | Elev     | (FT)  | Elev   | (CFS) | (FPS) | Head   | Grd.El. | Elev    | Depth    | Width    | Dia.-FT | or I.D. | 2L    | Prs/Pip |       |  |
| - -            | - -      | - -   | - -    | - -   | - -   | - -    | - -     | - -     | - -      | - -      | - -     | - -     | - -   | - -     |       |  |
| L/Elem         | Ch Slope |       |        |       |       | SF Ave | HF      | SE Dpth | Froude N | Norm Dp  | "N"     | X-Fall  | ZR    | Type Ch |       |  |
| *****          | *****    | ***** | *****  | ***** | ***** | *****  | *****   | *****   | *****    | *****    | *****   | *****   | ***** | *****   |       |  |
| 2406.543       | 56.084   | 2.644 | 58.728 | 88.75 | 13.45 | 2.81   | 61.54   | .00     | 2.84     | 1.94     | 3.000   | .000    | .00   | 1       | .0    |  |
| - -            | - -      | - -   | - -    | - -   | - -   | - -    | - -     | - -     | - -      | - -      | - -     | - -     | - -   | - -     |       |  |
| 3.457          | .0336    |       |        |       |       | .0156  | .05     | 2.64    | 1.29     | 1.90     | .013    | .00     | .00   | PIPE    |       |  |
| 2410.000       | 56.200   | 2.838 | 59.038 | 88.75 | 12.82 | 2.55   | 61.59   | .00     | 2.84     | 1.35     | 3.000   | .000    | .00   | 1       | .0    |  |
| - -            | - -      | - -   | - -    | - -   | - -   | - -    | - -     | - -     | - -      | - -      | - -     | - -     | - -   | - -     |       |  |
| JUNCT STR      | -.0667   |       |        |       |       | .0132  | .08     | 2.84    | 1.00     |          | .013    | .00     | .00   | PIPE    |       |  |
| 2416.000       | 55.800   | 5.025 | 60.825 | 69.95 | 9.90  | 1.52   | 62.35   | .00     | 2.66     | .00      | 3.000   | .000    | .00   | 1       | .0    |  |
| - -            | - -      | - -   | - -    | - -   | - -   | - -    | - -     | - -     | - -      | - -      | - -     | - -     | - -   | - -     |       |  |
| 120.000        | .0183    |       |        |       |       | .0110  | 1.32    | 5.02    | .00      | 1.98     | .013    | .00     | .00   | PIPE    |       |  |
| 2536.000       | 58.000   | 4.144 | 62.144 | 69.95 | 9.90  | 1.52   | 63.67   | .00     | 2.66     | .00      | 3.000   | .000    | .00   | 1       | .0    |  |
| - -            | - -      | - -   | - -    | - -   | - -   | - -    | - -     | - -     | - -      | - -      | - -     | - -     | - -   | - -     |       |  |
| JUNCT STR      | .0500    |       |        |       |       | .0095  | .04     | 4.14    | .00      |          | .013    | .00     | .00   | PIPE    |       |  |
| 2540.000       | 58.200   | 4.724 | 62.924 | 59.45 | 8.41  | 1.10   | 64.02   | .00     | 2.49     | .00      | 3.000   | .000    | .00   | 1       | .0    |  |
| - -            | - -      | - -   | - -    | - -   | - -   | - -    | - -     | - -     | - -      | - -      | - -     | - -     | - -   | - -     |       |  |
| 18.000         | .0167    |       |        |       |       | .0079  | .14     | 4.72    | .00      | 1.83     | .013    | .00     | .00   | PIPE    |       |  |
| 2558.000       | 58.500   | 4.897 | 63.397 | 59.45 | 8.41  | 1.10   | 64.50   | .00     | 2.49     | .00      | 3.000   | .000    | .00   | 1       | .0    |  |
| - -            | - -      | - -   | - -    | - -   | - -   | - -    | - -     | - -     | - -      | - -      | - -     | - -     | - -   | - -     |       |  |
| JUNCT STR      | .0500    |       |        |       |       | .0065  | .03     | 4.90    | .00      |          | .013    | .00     | .00   | PIPE    |       |  |
| 2562.000       | 58.700   | 5.162 | 63.862 | 47.05 | 6.66  | .69    | 64.55   | .00     | 2.23     | .00      | 3.000   | .000    | .00   | 1       | .0    |  |
| - -            | - -      | - -   | - -    | - -   | - -   | - -    | - -     | - -     | - -      | - -      | - -     | - -     | - -   | - -     |       |  |
| 214.074        | .0152    |       |        |       |       | .0049  | 1.06    | 5.16    | .00      | 1.63     | .013    | .00     | .00   | PIPE    |       |  |
| 2776.074       | 61.945   | 3.000 | 64.945 | 47.05 | 6.66  | .69    | 65.63   | .00     | 2.23     | .00      | 3.000   | .000    | .00   | 1       | .0    |  |
| - -            | - -      | - -   | - -    | - -   | - -   | - -    | - -     | - -     | - -      | - -      | - -     | - -     | - -   | - -     |       |  |
| 3.831          | .0152    |       |        |       |       | .0047  | .02     | 3.00    | .00      | 1.63     | .013    | .00     | .00   | PIPE    |       |  |
| 2779.905       | 62.003   | 2.956 | 64.959 | 47.05 | 6.68  | .69    | 65.65   | .00     | 2.23     | .72      | 3.000   | .000    | .00   | 1       | .0    |  |
| - -            | - -      | - -   | - -    | - -   | - -   | - -    | - -     | - -     | - -      | - -      | - -     | - -     | - -   | - -     |       |  |
| HYDRAULIC JUMP |          |       |        |       |       |        |         |         |          |          |         |         |       |         |       |  |

Program Package Serial Number: 1454

## WATER SURFACE PROFILE LISTING

Date:10-27-2004 Time: 3:31:44

Preliminary Sundoro South Storm Drain Analysis

Future Channel to Molten Dr to Endee Rd

File: Sundoro\_Endee 10-27-04

| *****     |             |            |            |         |           |          |                |            |                |                |                |                 |     |                |     |
|-----------|-------------|------------|------------|---------|-----------|----------|----------------|------------|----------------|----------------|----------------|-----------------|-----|----------------|-----|
| Station   | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/Dia.-FT | Base Wt/or I.D. | ZL  | No Wth Prs/Pip |     |
| L/Elem    | Ch Slope    |            |            |         |           | SF Ave   | HF             | SE Dpth    | Froude N       | Norm Dp        | "N"            | X-Fall          | ZR  | Type Ch        |     |
| *****     |             |            |            |         |           |          |                |            |                |                |                |                 |     |                |     |
| 2779.905  | 62.003      | 1.653      | 63.656     | 47.05   | 11.78     | 2.16     | 65.81          | .00        | 2.23           | 2.98           | 3.000          | .000            | .00 | 1              | .0  |
| - -       | - -         | - -        | - -        | - -     | - -       | - -      | - -            | - -        | - -            | - -            | - -            | - -             | - - | - -            | - - |
| 60.675    | .0152       |            |            |         |           | .0142    | .86            | 1.65       | 1.80           | 1.63           | .013           | .00             | .00 | PIPE           |     |
| 2840.581  | 62.923      | 1.669      | 64.592     | 47.05   | 11.64     | 2.10     | 66.70          | .00        | 2.23           | 2.98           | 3.000          | .000            | .00 | 1              | .0  |
| - -       | - -         | - -        | - -        | - -     | - -       | - -      | - -            | - -        | - -            | - -            | - -            | - -             | - - | - -            | - - |
| 62.211    | .0152       |            |            |         |           | .0131    | .82            | 1.67       | 1.76           | 1.63           | .013           | .00             | .00 | PIPE           |     |
| 2902.792  | 63.866      | 1.735      | 65.601     | 47.05   | 11.10     | 1.91     | 67.51          | .00        | 2.23           | 2.96           | 3.000          | .000            | .00 | 1              | .0  |
| - -       | - -         | - -        | - -        | - -     | - -       | - -      | - -            | - -        | - -            | - -            | - -            | - -             | - - | - -            | - - |
| 29.082    | .0152       |            |            |         |           | .0116    | .34            | 1.74       | 1.64           | 1.63           | .013           | .00             | .00 | PIPE           |     |
| 2931.874  | 64.307      | 1.806      | 66.113     | 47.05   | 10.58     | 1.74     | 67.85          | .00        | 2.23           | 2.94           | 3.000          | .000            | .00 | 1              | .0  |
| - -       | - -         | - -        | - -        | - -     | - -       | - -      | - -            | - -        | - -            | - -            | - -            | - -             | - - | - -            | - - |
| 17.263    | .0152       |            |            |         |           | .0103    | .18            | 1.81       | 1.52           | 1.63           | .013           | .00             | .00 | PIPE           |     |
| 2949.136  | 64.569      | 1.880      | 66.449     | 47.05   | 10.09     | 1.58     | 68.03          | .00        | 2.23           | 2.90           | 3.000          | .000            | .00 | 1              | .0  |
| - -       | - -         | - -        | - -        | - -     | - -       | - -      | - -            | - -        | - -            | - -            | - -            | - -             | - - | - -            | - - |
| 10.717    | .0152       |            |            |         |           | .0091    | .10            | 1.88       | 1.40           | 1.63           | .013           | .00             | .00 | PIPE           |     |
| 2959.854  | 64.731      | 1.959      | 66.690     | 47.05   | 9.62      | 1.44     | 68.13          | .00        | 2.23           | 2.86           | 3.000          | .000            | .00 | 1              | .0  |
| - -       | - -         | - -        | - -        | - -     | - -       | - -      | - -            | - -        | - -            | - -            | - -            | - -             | - - | - -            | - - |
| 6.610     | .0152       |            |            |         |           | .0081    | .05            | 1.96       | 1.30           | 1.63           | .013           | .00             | .00 | PIPE           |     |
| 2966.464  | 64.831      | 2.043      | 66.874     | 47.05   | 9.17      | 1.31     | 68.18          | .00        | 2.23           | 2.80           | 3.000          | .000            | .00 | 1              | .0  |
| - -       | - -         | - -        | - -        | - -     | - -       | - -      | - -            | - -        | - -            | - -            | - -            | - -             | - - | - -            | - - |
| 3.496     | .0152       |            |            |         |           | .0072    | .03            | 2.04       | 1.19           | 1.63           | .013           | .00             | .00 | PIPE           |     |
| 2969.960  | 64.884      | 2.134      | 67.018     | 47.05   | 8.75      | 1.19     | 68.21          | .00        | 2.23           | 2.72           | 3.000          | .000            | .00 | 1              | .0  |
| - -       | - -         | - -        | - -        | - -     | - -       | - -      | - -            | - -        | - -            | - -            | - -            | - -             | - - | - -            | - - |
| 1.040     | .0152       |            |            |         |           | .0064    | .01            | 2.13       | 1.10           | 1.63           | .013           | .00             | .00 | PIPE           |     |
| 2971.000  | 64.900      | 2.234      | 67.134     | 47.05   | 8.33      | 1.08     | 68.21          | .00        | 2.23           | 2.62           | 3.000          | .000            | .00 | 1              | .0  |
| - -       | - -         | - -        | - -        | - -     | - -       | - -      | - -            | - -        | - -            | - -            | - -            | - -             | - - | - -            | - - |
| JUNCT STR | .0167       |            |            |         |           | .0054    | .03            | 2.23       | 1.00           |                | .013           | .00             | .00 | PIPE           |     |

Date:10-27-2004 Time: 3:31:44

File: Sundoro\_Endee 10-27-04

[illegible]

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Program Package Serial Number: 1454

## WATER SURFACE PROFILE LISTING

Date:10-28-2004 Time: 9:42:49

Preliminary Sundoro South Storm Drain Analysis

Endee to Tumulus to Ashfall to Kipuka Drive

File: Sundoro\_Kipuka Revised: 10-28-04

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*****
Station | Invert | Depth | Water | Q | Vel | Vel | Energy | Super | Critical | Flow Top | Height/ | Base Wt | | No Wth
| Elev | (FT) | Elev | (CFS) | (FPS) | Head | Grd.El. | Elev | Depth | Width | Dia.-FT | or I.D. | ZL | Prs/Pip
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch
*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|
1000.000 | 40.230 | 4.637 | 44.867 | 67.70 | 9.58 | 1.42 | 46.29 | .00 | 2.63 | .00 | 3.000 | .000 | .00 | 1 | .0
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
49.000 | .0194 | | | | | .0103 | .50 | 4.64 | .00 | 1.90 | .013 | .00 | .00 | | PIPE
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
1049.000 | 41.180 | 4.310 | 45.490 | 67.70 | 9.58 | 1.42 | 46.91 | .00 | 2.63 | .00 | 3.000 | .000 | .00 | 1 | .0
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
JUNCT STR | .0167 | | | | | .0075 | .04 | 4.31 | .00 | | .013 | .00 | .00 | | PIPE
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
1055.000 | 41.280 | 5.357 | 46.637 | 45.50 | 6.44 | .64 | 47.28 | .00 | 2.20 | .00 | 3.000 | .000 | .00 | 1 | .0
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
179.993 | .0175 | | | | | .0047 | .84 | 5.36 | .00 | 1.53 | .013 | .00 | .00 | | PIPE
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
1234.993 | 44.432 | 3.092 | 47.524 | 45.50 | 6.44 | .64 | 48.17 | .00 | 2.20 | .00 | 3.000 | .000 | .00 | 1 | .0
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
HYDRAULIC JUMP
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
1234.993 | 44.432 | 1.505 | 45.937 | 45.50 | 12.82 | 2.55 | 48.49 | .00 | 2.20 | 3.00 | 3.000 | .000 | .00 | 1 | .0
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
91.411 | .0175 | | | | | .0189 | 1.73 | 1.51 | 2.08 | 1.53 | .013 | .00 | .00 | | PIPE
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
1326.404 | 46.033 | 1.482 | 47.515 | 45.50 | 13.07 | 2.65 | 50.17 | .00 | 2.20 | 3.00 | 3.000 | .000 | .00 | 1 | .0
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
66.534 | .0175 | | | | | .0207 | 1.38 | 1.48 | 2.14 | 1.53 | .013 | .00 | .00 | | PIPE
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
1392.938 | 47.198 | 1.428 | 48.626 | 45.50 | 13.71 | 2.92 | 51.54 | .00 | 2.20 | 3.00 | 3.000 | .000 | .00 | 1 | .0
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
40.062 | .0175 | | | | | .0235 | .94 | 1.43 | 2.29 | 1.53 | .013 | .00 | .00 | | PIPE
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
1433.000 | 47.900 | 1.377 | 49.277 | 45.50 | 14.37 | 3.21 | 52.49 | .00 | 2.20 | 2.99 | 3.000 | .000 | .00 | 1 | .0
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
JUNCT STR | .0833 | | | | | .0218 | .13 | 1.38 | 2.46 | | .013 | .00 | .00 | | PIPE
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
1439.000 | 48.400 | 1.714 | 50.114 | 45.50 | 12.69 | 2.50 | 52.61 | .00 | 2.23 | 2.32 | 2.500 | .000 | .00 | 1 | .0
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
50.000 | .0200 | | | | | .0179 | .89 | 1.71 | 1.80 | 1.67 | .013 | .00 | .00 | | PIPE

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**Program Package Serial Number: 1454**

## WATER SURFACE PROFILE LISTING

Date:10-28-2004 Time: 9:42:49

## Preliminary Sundoro South Storm Drain Analysis

Endee to Tumulus to Ashfall to Kipuka Drive

File: Sundoro Kipuka      Revised: 10-28-04

| *****     |             |            |            |         |           |          |                |            |                |                |                |                 |       |                |  | ***** |
|-----------|-------------|------------|------------|---------|-----------|----------|----------------|------------|----------------|----------------|----------------|-----------------|-------|----------------|--|-------|
| Station   | Invert Elev | Depth (FT) | Water Elev | Q (CFS) | Vel (FPS) | Vel Head | Energy Grd.El. | Super Elev | Critical Depth | Flow Top Width | Height/Dia.-FT | Base Wt/or I.D. | ZL    | No Wth Prs/Pip |  |       |
| L/Elem    | Ch Slope    |            |            |         |           | SF Ave   | HF             | SE Dpth    | Froude N       | Norm Dp        | "N"            | X-Fall          | ZR    | Type Ch        |  |       |
| *****     | *****       | *****      | *****      | *****   | *****     | *****    | *****          | *****      | *****          | *****          | *****          | *****           | ***** | *****          |  |       |
| 1489.000  | 49.400      | 1.766      | 51.166     | 45.50   | 12.28     | 2.34     | 53.51          | .00        | 2.23           | 2.28           | 2.500          | .000            | .00   | 1 .0           |  |       |
| - -       | - -         | - -        | - -        | - -     | - -       | - -      | - -            | - -        | - -            | - -            | - -            | - -             | - -   | - -            |  |       |
| 30.461    | .0195       |            |            |         |           | .0165    | .50            | 1.77       | 1.70           | 1.68           | .013           | .00             | .00   | PIPE           |  |       |
| 1519.461  | 49.994      | 1.818      | 51.812     | 45.50   | 11.90     | 2.20     | 54.01          | .00        | 2.23           | 2.23           | 2.500          | .000            | .00   | 1 .0           |  |       |
| - -       | - -         | - -        | - -        | - -     | - -       | - -      | - -            | - -        | - -            | - -            | - -            | - -             | - -   | - -            |  |       |
| 26.080    | .0195       |            |            |         |           | .0151    | .39            | 1.82       | 1.60           | 1.68           | .013           | .00             | .00   | PIPE           |  |       |
| 1545.541  | 50.503      | 1.903      | 52.406     | 45.50   | 11.34     | 2.00     | 54.40          | .00        | 2.23           | 2.13           | 2.500          | .000            | .00   | 1 .0           |  |       |
| - -       | - -         | - -        | - -        | - -     | - -       | - -      | - -            | - -        | - -            | - -            | - -            | - -             | - -   | - -            |  |       |
| 14.640    | .0195       |            |            |         |           | .0136    | .20            | 1.90       | 1.46           | 1.68           | .013           | .00             | .00   | PIPE           |  |       |
| 1560.182  | 50.789      | 1.998      | 52.787     | 45.50   | 10.82     | 1.82     | 54.60          | .00        | 2.23           | 2.00           | 2.500          | .000            | .00   | 1 .0           |  |       |
| - -       | - -         | - -        | - -        | - -     | - -       | - -      | - -            | - -        | - -            | - -            | - -            | - -             | - -   | - -            |  |       |
| 8.090     | .0195       |            |            |         |           | .0123    | .10            | 2.00       | 1.32           | 1.68           | .013           | .00             | .00   | PIPE           |  |       |
| 1568.272  | 50.947      | 2.105      | 53.052     | 45.50   | 10.31     | 1.65     | 54.70          | .00        | 2.23           | 1.82           | 2.500          | .000            | .00   | 1 .0           |  |       |
| - -       | - -         | - -        | - -        | - -     | - -       | - -      | - -            | - -        | - -            | - -            | - -            | - -             | - -   | - -            |  |       |
| 2.728     | .0195       |            |            |         |           | .0113    | .03            | 2.11       | 1.17           | 1.68           | .013           | .00             | .00   | PIPE           |  |       |
| 1571.000  | 51.000      | 2.234      | 53.234     | 45.50   | 9.83      | 1.50     | 54.73          | .00        | 2.23           | 1.54           | 2.500          | .000            | .00   | 1 .0           |  |       |
| - -       | - -         | - -        | - -        | - -     | - -       | - -      | - -            | - -        | - -            | - -            | - -            | - -             | - -   | - -            |  |       |
| JUNCT STR | .0167       |            |            |         |           | .0102    | .06            | 2.23       | 1.00           |                | .013           | .00             | .00   | PIPE           |  |       |
| 1577.000  | 51.100      | 2.985      | 54.085     | 40.00   | 8.15      | 1.03     | 55.12          | .00        | 2.13           | .00            | 2.500          | .000            | .00   | 1 .0           |  |       |
| - -       | - -         | - -        | - -        | - -     | - -       | - -      | - -            | - -        | - -            | - -            | - -            | - -             | - -   | - -            |  |       |
| 156.000   | .0071       |            |            |         |           | .0095    | 1.48           | 2.99       | .00            | 2.50           | .013           | .00             | .00   | PIPE           |  |       |
| 1733.000  | 52.200      | 3.461      | 55.661     | 40.00   | 8.15      | 1.03     | 56.69          | .00        | 2.13           | .00            | 2.500          | .000            | .00   | 1 .0           |  |       |
| - -       | - -         | - -        | - -        | - -     | - -       | - -      | - -            | - -        | - -            | - -            | - -            | - -             | - -   | - -            |  |       |
| JUNCT STR | .0000       |            |            |         |           | .0076    | .05            | 3.46       | .00            |                | .013           | .00             | .00   | PIPE           |  |       |
| 1739.000  | 52.200      | 4.219      | 56.419     | 31.00   | 6.32      | .62      | 57.04          | .00        | 1.90           | .00            | 2.500          | .000            | .00   | 1 .0           |  |       |
| - -       | - -         | - -        | - -        | - -     | - -       | - -      | - -            | - -        | - -            | - -            | - -            | - -             | - -   | - -            |  |       |
| 141.000   | .0071       |            |            |         |           | .0057    | .81            | 4.22       | .00            | 1.85           | .013           | .00             | .00   | PIPE           |  |       |

Program Package Serial Number: 1454

## WATER SURFACE PROFILE LISTING

Date:10-28-2004 Time: 9:42:49

## Preliminary Sundoro South Storm Drain Analysis

Endee to Tumulus to Ashfall to Kipuka Drive

File: Sundoro Kipuka      Revised: 10-28-04

[illegible]

# CITY OF ALBUQUERQUE



June 5, 2006

Mr. James D. Hughes, PE  
**MARK GOODWIN & ASSOCIATES**  
P.O. Box 90606  
Albuquerque, NM 87199

**RE: SUNDORO SOUTH SUBDIVISION, UNIT 5 (J-9/D19A)**  
**Engineers Certification for Release of Financial Guaranty**  
**Approved Engineers Stamp dated 02/15/2005**  
**Submitted Engineers Stamp dated 10/29/2004**  
**Engineers Certification dated 05/25/2006**

Dear Doug:

P.O. Box 1293

Based upon the information provided in your Engineer's Certification Submittal dated 06/01/2006, the above referenced plan cannot be approved for Grading and Drainage Certification for Release of Financial Guaranty.

Albuquerque

1. The Approved Grading and Drainage Plan has an Engineer's Seal date of 02/15/2005 not 10/29/2004 as indicated in your submittal. (See attached copies of Grading Plan approval letter and Engineer's Seal).

New Mexico 87103

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

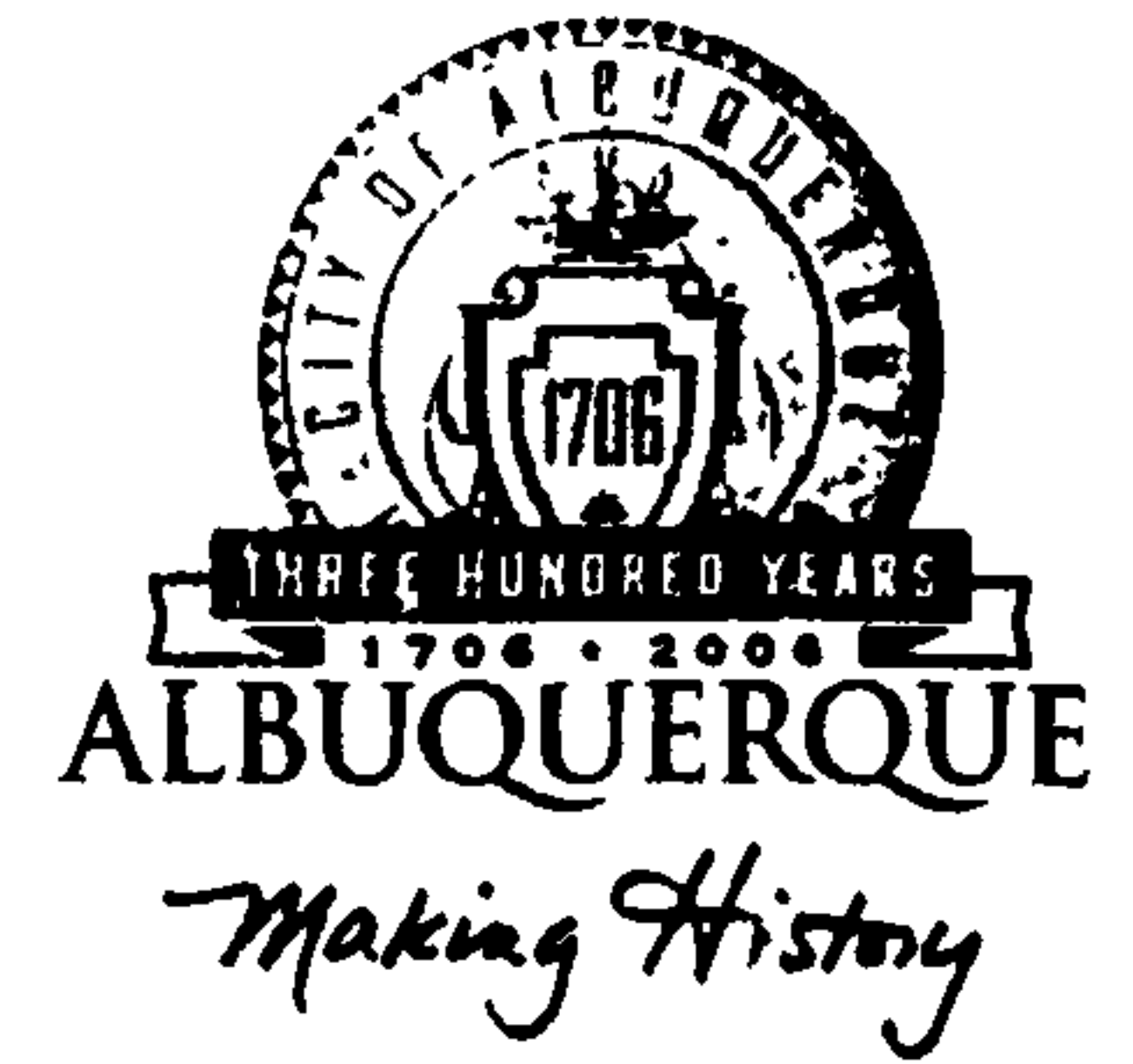
[www.cabq.gov](http://www.cabq.gov)

Sincerely,

Arlene V. Portillo  
Plan Checker, Planning Dept.- Hydrology  
Development and Building Services

C: File

# CITY OF ALBUQUERQUE



April 7, 2005

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

**Re: Sundoro South Subdivision Unit 5 – Amended Grading & Drainage Plan  
Engineer Stamp dated 2-15-05 (J9-D19A)**

Dear Ms. Hoelzer,

Based upon the information provided in your submittal dated 2-16-05, the above referenced plan is approved as amended. This will be the plan that must be certified for Release of Financial Guaranty.

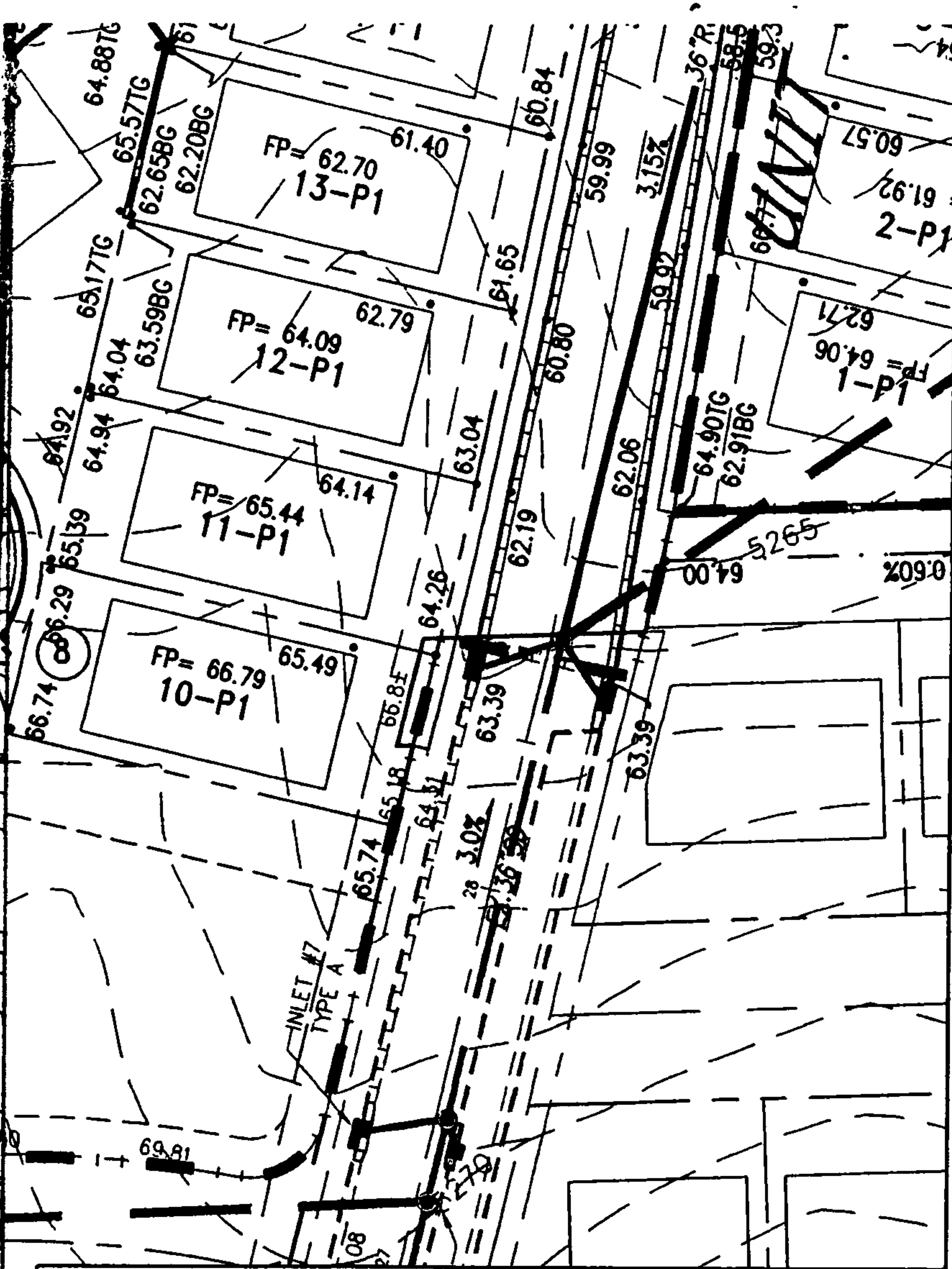
This project requires a National Pollutant Discharge Elimination System (NPDES) permit. Refer to the attachment that is provided with this letter for details. If you have any questions please feel free to call the Municipal Development Department, Hydrology section at 768-3654 (Charles Caruso).

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

Sincerely,

Phillip J. Lovato, E.I.  
Associate Engineer, Planning Department  
Development and Building Services

C: Chuck Caruso, DMD  
file



|                 |      |         |       |
|-----------------|------|---------|-------|
| ENGINEER'S SEAL |      |         |       |
|                 |      |         |       |
| NO.             | DATE | REMARKS | BY    |
| DESIGN          |      |         |       |
| DESIGNED BY     | DLH  | DATE    | 10/04 |
| DRAWN BY        | TAS  | DATE    | 10/04 |
| CHECKED BY      | DMG  | DATE    | 10/04 |

**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**

TITLE: **SUNDORO SOUTH UNIT 5  
GRADING & DRAINAGE PLAN**

|                         |                        |                    |             |             |
|-------------------------|------------------------|--------------------|-------------|-------------|
| DESIGN REVIEW COMMITTEE | CITY ENGINEER APPROVAL | LAST DESIGN UPDATE | MO./DAY/YR. | MO./DAY/YR. |
|                         |                        |                    |             |             |
|                         |                        |                    |             |             |
|                         |                        |                    |             |             |
|                         |                        |                    |             |             |

|                  |              |       |    |
|------------------|--------------|-------|----|
| CITY PROJECT NO. | ZONE MAP NO. | SHEET | OF |
|                  | J-8/9        | 1     | 2  |

# DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV. 1/28/2003rd)

3-9/019A

PROJECT TITLE: Sundoro Unit 5

DRB #: 1003606

EPC#: \_\_\_\_\_

ZONE MAP/DRG. FILE #: J-B/9

WORK ORDER#: \_\_\_\_\_

LEGAL DESCRIPTION: Parcel J-2-B Westland North & Lot 43-P1, Blk 4, Tr L Sundoro S. Subd. Unit 1

CITY ADDRESS: \_\_\_\_\_

ENGINEERING FIRM: Mark Goodwin & Associates, PA

ADDRESS: PO Box 90606

CITY, STATE: Albuquerque, NM

CONTACT: James D. Hughes

PHONE: 828-2200

ZIP CODE: 87199

OWNER: Westland Development Co., Inc.

ADDRESS: 401 Coors Blvd NW

CITY, STATE: Albuquerque, NM

CONTACT: Leroy Chavez

PHONE: 831-9600

ZIP CODE: 87121

ARCHITECT: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

CITY, STATE: \_\_\_\_\_

CONTACT: \_\_\_\_\_

PHONE: \_\_\_\_\_

ZIP CODE: \_\_\_\_\_

SURVEYOR: Aldrich Land Surveying

ADDRESS: PO Box 30701

CITY, STATE: Albuquerque, NM

CONTACT: Tim Aldrich

PHONE: 884-1990

ZIP CODE: 87190-0701

CONTRACTOR: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

CITY, STATE: \_\_\_\_\_

CONTACT: \_\_\_\_\_

PHONE: \_\_\_\_\_

ZIP CODE: \_\_\_\_\_

## CHECK TYPE OF SUBMITTAL:

- ☐ DRAINAGE REPORT
- ☐ DRAINAGE PLAN 1<sup>st</sup> SUBMITTAL, **REQUIRES TCL or equal**
- ☐ DRAINAGE PLAN RESUBMITTAL
- ☐ CONCEPTUAL GRADING & DRAINAGE PLAN
- ☐ GRADING PLAN
- ☐ EROSION CONTROL PLAN
- ☒ ENGINEER'S CERTIFICATION (HYDROLOGY)
- ☐ CLOMR/LOMR
- ☐ TRAFFIC CIRCULATION LAYOUT (TCL)
- ☐ ENGINEERS CERTIFICATION (TCL)
- ☐ ENGINEERS CERTIFICATION (DRB APPR. SITE PLAN)
- ☐ OTHER

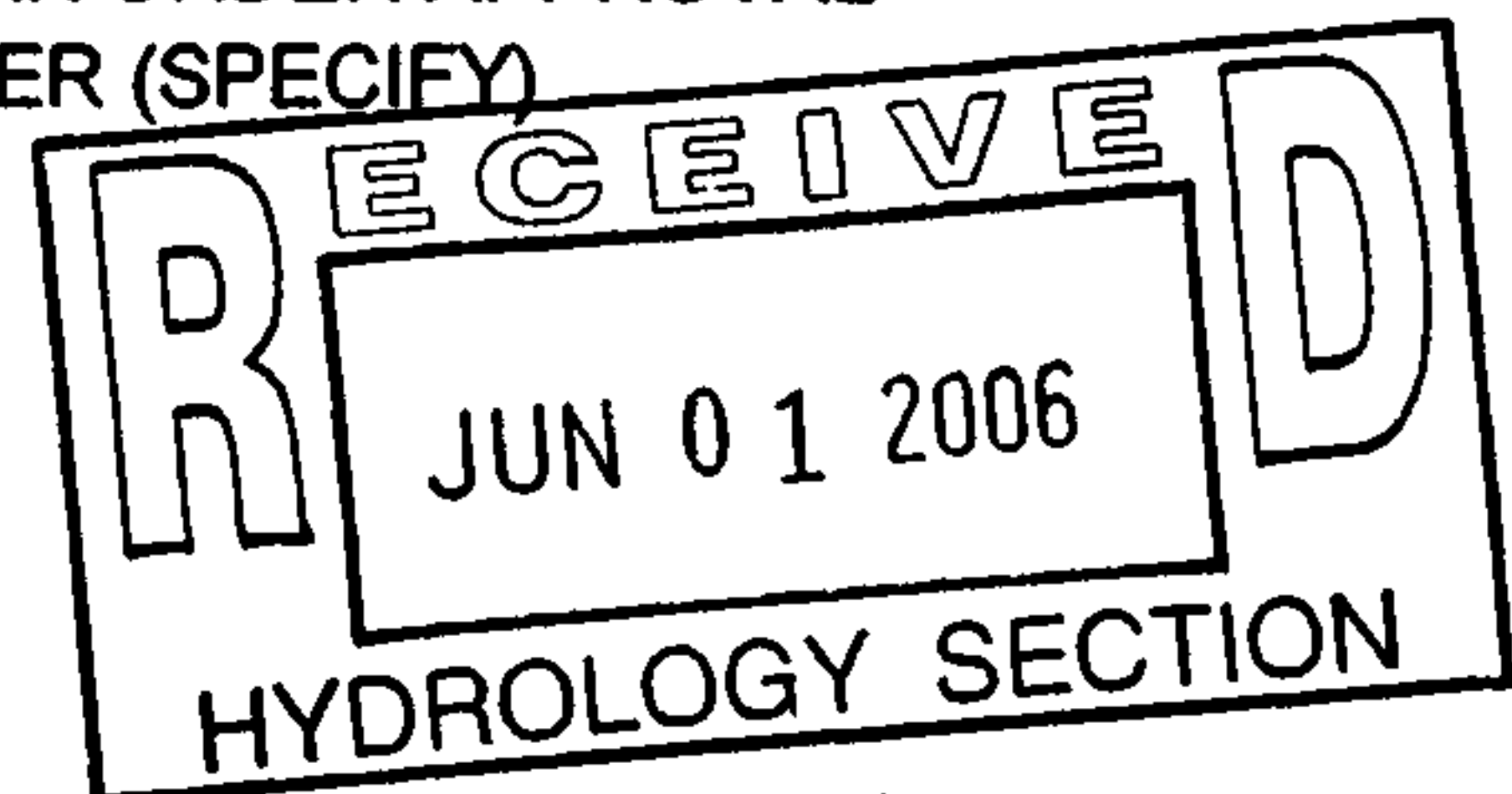
*N = Wrong G.I.D. Plan; Seals should be 2-15-05*

## WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ☐ YES
- ☒ NO
- ☐ COPY PROVIDED

## CHECK TYPE OF APPROVAL SOUGHT:

- ☒ SIA / FINANCIAL GUARANTEE RELEASE
- ☐ PRELIMINARY PLAT APPROVAL
- ☐ S. DEV. PLAN FOR SUB'D. APPROVAL
- ☐ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
- ☐ SECTOR PLAN APPROVAL
- ☐ FINAL PLAT APPROVAL
- ☐ FOUNDATION PERMIT APPROVAL
- ☐ BUILDING PERMIT APPROVAL
- ☐ CERTIFICATE OF OCCUPANCY (PERM.)
- ☐ CERTIFICATE OF OCCUPANCY (TEMP.)
- ☒ GRADING PERMIT APPROVAL
- ☐ PAVING PERMIT APPROVAL
- ☐ WORK ORDER APPROVAL
- ☐ OTHER (SPECIFY)



DATE SUBMITTED: 6/01/2006

BY: James D. Hughes

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

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

Current DRC

Project Number: \_\_\_\_\_

FIGURE 12

INFRASTRUCTURE LIST

EXHIBIT "A"

TO SUBDIVISION IMPROVEMENTS AGREEMENT

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

Sundoro South, Unit 6

PROPOSED NAME OF PLAT AND/OR SITE DEVELOPMENT PLAN

Tracts B-24 thru B-28, Town of Atrisco Grant, Unit 5

EXISTING LEGAL DESCRIPTION PRIOR TO PLATTING ACTION

Date Submitted: 11/17/05

Date Site Plan Approved: 02/16/05

Date Preliminary Plat Approved: 02/16/05

Date Preliminary Plat Expires: 02/16/05

DRB Project No.: 1003285

DRB Application No.: 1003606

5-25-05

05-00105

ORIGINAL  
ORIGINAL

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

| SIA<br>Sequence # | COA DRC<br>Project # | Size   | Type of Improvement                                      | Location         | From                              | To                                 | Private<br>Inspector | City<br>Inspector | City Cnst<br>Engineer |
|-------------------|----------------------|--------|----------------------------------------------------------|------------------|-----------------------------------|------------------------------------|----------------------|-------------------|-----------------------|
|                   |                      |        | PAVING                                                   |                  |                                   |                                    |                      |                   |                       |
|                   |                      | 28' FF | Res Pvmnt                                                | Scoria Drive NW  | Endee Road NW                     | Silica Avenue NW                   | /                    | /                 | /                     |
|                   |                      | 4'     | C & G (Both Sides)<br>Sidewalk (Both Sides) (1)          |                  |                                   |                                    |                      |                   |                       |
|                   |                      | 28' FF | Res Pvmnt                                                | Tumulus Drive NW | Endee Road NW                     | Silica Avenue NW                   | /                    | /                 | /                     |
|                   |                      | 4'     | C & G (Both Sides)<br>Sidewalk (Both Sides) (1)          |                  |                                   |                                    |                      |                   |                       |
|                   |                      | 28' FF | Res Pvmnt                                                | Kipuka Drive NW  | Endee Road NW                     | Silica Avenue NW                   | /                    | /                 | /                     |
|                   |                      | 4'     | C & G Std (Both Sides)<br>Sidewalk (Both Sides) (1)      |                  |                                   |                                    |                      |                   |                       |
|                   |                      | 28' FF | Res Pvmnt                                                | Kipuka Drive NW  | Silica Avenue NW                  | Lot 13, blk 13<br>Lot 24, Block 10 | /                    | /                 | /                     |
|                   |                      | 4'     | C & G Std (Both Sides)<br>Sidewalk (Both Sides) (1)      |                  |                                   |                                    |                      |                   |                       |
|                   |                      | 28' FF | Res Pvmnt                                                | Endee Road NW    | west Boundary<br>Tumulus Drive NW | Molten Drive NW                    | /                    | /                 | /                     |
|                   |                      | 4'     | C & G Std (Both Sides)<br>Sidewalk (South Side Only) (1) |                  |                                   |                                    |                      |                   |                       |
|                   |                      | 28' FF | Res Pvmnt                                                | Molten Drive NW  | Endee Road NW                     | Lot 33, block 10<br>Tract R        | /                    | /                 | /                     |
|                   |                      | 4'     | C & G Std (Both Sides)<br>Sidewalk (South Side Only) (1) |                  |                                   |                                    |                      |                   |                       |



Project name:

Sundoro South, Unit 6

ORIGINAL

| SIA<br>Sequence #                                                            | COA DRC<br>Project # | Size    | Type of Improvement | Location                         | From             | To                                   | Private<br>Inspector | City<br>Inspector | City Cnst<br>Engineer |
|------------------------------------------------------------------------------|----------------------|---------|---------------------|----------------------------------|------------------|--------------------------------------|----------------------|-------------------|-----------------------|
|                                                                              |                      | 6"      | Waterline           | Scoria Drive NW                  | Endee Road NW    | Silica Avenue NW                     | /                    | /                 | /                     |
|                                                                              |                      | 6"      | Waterline           | Silica Avenue NW                 | Scoria Drive NW  | West Prop Line<br>(Lot 12, Block 10) | /                    | /                 | /                     |
|                                                                              |                      | 4"      | Waterline           | Silica Avenue NW                 | Scoria Drive NW  | Lot 15, Block 10                     | /                    | /                 | /                     |
| <b>STORM DRAIN</b>                                                           |                      |         |                     |                                  |                  |                                      |                      |                   |                       |
|                                                                              |                      | 24"-36" | Storm Drain         | Silica Avenue NW                 | Kipuka Drive NW  | West Prop Line                       | /                    | /                 | /                     |
|                                                                              |                      | 36"-42" | Storm Drain         | Kipuka Drive NW                  | Silica Avenue NW | Temp Ret Pond                        | /                    | /                 | /                     |
|                                                                              |                      | 36"-60" | Storm Drain         | AMAFCA R/W                       | WR               | Molten Dr                            | /                    | /                 | /                     |
|                                                                              |                      | 60"     | Storm Drain         | Endee Rd                         | Endee            | Tract R                              | /                    | /                 | /                     |
|                                                                              |                      | 18"     | SANITARY SEWER      | Molten Dr                        | Endee            |                                      | /                    | /                 | /                     |
|                                                                              |                      | 8"      | SAS                 | Act Pond on Tract A W/ Agreement | Scoria Drive NW  | Lot 18, block 11                     | /                    | /                 | /                     |
|                                                                              |                      | 8"      | SAS                 | Tumulus Drive NW                 | Lot 14, Block 12 | Silica Avenue NW                     | /                    | /                 | /                     |
|                                                                              |                      | 8"      | SAS                 | Kipuka Drive NW                  | Endee Road NW    | Lot 24, Block 10                     | /                    | /                 | /                     |
|                                                                              |                      | 8"      | SAS                 | Silica Avenue NW                 | Kipuka Drive NW  | Lot 12, Block 10<br>West Prop Line   | /                    | /                 | /                     |
| <b>OFFSITE (SANITARY SEWER built with 727198 Sundoro Units 1, 2 &amp; 3)</b> |                      |         |                     |                                  |                  |                                      |                      |                   |                       |
|                                                                              |                      | 8"      | SAS                 | Endee Road NW                    | Molten Drive NW  | Lot 10, Block 8 (U5)                 | /                    | /                 | /                     |
|                                                                              |                      | 8"      | SAS                 | Molten Drive NW                  | Endee Road NW    | 20' Public Easmt                     | /                    | /                 | /                     |
|                                                                              |                      | 8"      | SAS                 | 20' Public Easement              | Molten Drive NW  | Vermillion Court                     | /                    | /                 | /                     |

S-9/D19A

- 1 Sidewalks to be deferred
- 2 Storm Drain to include drop inlet & manhole
- 3 Water Infrastructure to include valves, fittings, valve boxes, and fire hydrants
- 4 Sanitary Sewer to include manholes and service connections
- 5 Street lights per DPM

- 6 Approved LOMR Required For Release of Financial Guarantee Required 8/21/06
- 7 Contribution to I-40 Channel Per AMAFCA agreement Required Prior to Final Plat
- 8 Engineering Certification of grading plan req'd for release of SIA & Financial Guarantee

ORIGINAL

Project name: Sundoro South, Unit 6

AGENT / OWNER

Diane Hoelzer, P.E.  
NAME (print)

DEVELOPMENT REVIEW BOARD MEMBER APPROVALS

*Alan Makon* 02/16/05 *Christina Sandora* 2/16/05  
DRB CHAIR - date PARKS & GENERAL SERVICES - date

MARK GOODWIN & ASSOCIATES  
FIRM

*Diane Hoelzer* 1-17-05  
SIGNATURE - date

*June D. Hoelzer* 2-16-05  
MAXIMUM TIME ALLOWED TO CONSTRUCT  
THE IMPROVEMENTS WITHOUT A DRB

EXTENSION: N/A

*Jeffery* 2-16-05  
TRANSPORTATION DEVELOPMENT - date

*Roger Green* 2/16/05  
UTILITY DEVELOPMENT - date

*Bradley L. Bingham* 2-16-05  
CITY ENGINEER - date

AMAFCA - date

- date

- date

DESIGN REVIEW COMMITTEE REVISIONS

| REVISION | DATE    | DRC CHAIR          | USER DEPARTMENT     | AGENT / OWNER          |
|----------|---------|--------------------|---------------------|------------------------|
| 1        | 5-25-05 | <i>[Signature]</i> | <i>Bull Bingham</i> | <i>Diane Hoelzer</i>   |
| 2        | 7-5-05  | <i>[Signature]</i> | <i>[Signature]</i>  | <i>June D. Hoelzer</i> |
|          |         |                    |                     |                        |

PAGE 4 OF 4

## AGREEMENT AND COVENANT

This Agreement and Covenant, between the City of Albuquerque, New Mexico ("City") and Westland Development Co., Inc., ("User") is made in Albuquerque, New Mexico and is entered into as of the date of recording this Agreement with the Bernalillo County Clerk.

1. Recital. The User is the owner of certain real property ("User's Property") located at south of Molten Place NW, in Albuquerque, New Mexico, and more particularly described as: (give legal description and filing information)

*Tract R, Sundoro South, Unit 6, recorded in the Bernalillo County Clerk's office 9/13/05, Book 2005C, Page 302.*

The City is the owner of certain real property, easement or public right-of-way ("City's Property") in the vicinity of, contiguous to, abutting or within User's Property, and more particularly described as:

Temporary public drainage easement on  
*Tract R, Sundoro South, Unit 6*  
by plat recorded in the Bernalillo  
County Clerk's office 9/13/05, bk 2005C, pg 302

The User wishes to construct upon, improve or repair and to maintain the following "Improvement" on the City's Property (or already has done so):

*Temporary Retention Pond with associated connecting storm drain outfall(s) to pond.*

A sketch of the proposed or existing Improvement is attached as Exhibit A and made a part of this Agreement, *along with Exhibit B of the recorded final plat for Sundoro South, Unit 6.*

The City agrees to permit the Improvement to exist on the City's Property provided the User complies with the terms of this Agreement.

2. City Use of City's Property and City Liability. The City has the right to enter upon the City's Property at any time and perform whatever inspection, installation, maintenance, repair, modification or removal ("Work") it deems appropriate without liability to the User. If the Work affects the Improvement the City will not be financially or otherwise responsible for rebuilding or repairing the Improvement. The User promptly will repair the Improvement to the City's satisfaction. The cost of repairing the Improvement will be paid by User.

3. User's Responsibility for Improvement. The User will be solely responsible for constructing, maintaining, repairing and, if required, removing the Improvement, all in accordance with standards required by the City as per the approved Grading and Drainage Plan J9/D19A



(2/15/05) on file at the City Engineer's office. The User will be solely responsible for paying all related costs. The User will be solely responsible for paying all related costs. The User will not permit the Improvement to constitute a hazard to the health or safety of the general public or to interfere with the City's use of the City's Property. The User will conform with all applicable laws, ordinances and regulations.

4. Use of the Improvement. If the City's Property is a public right-of-way, it shall be open to the use of the general public at all times, subject to reasonable curtailment during periods of construction, maintenance or repair.

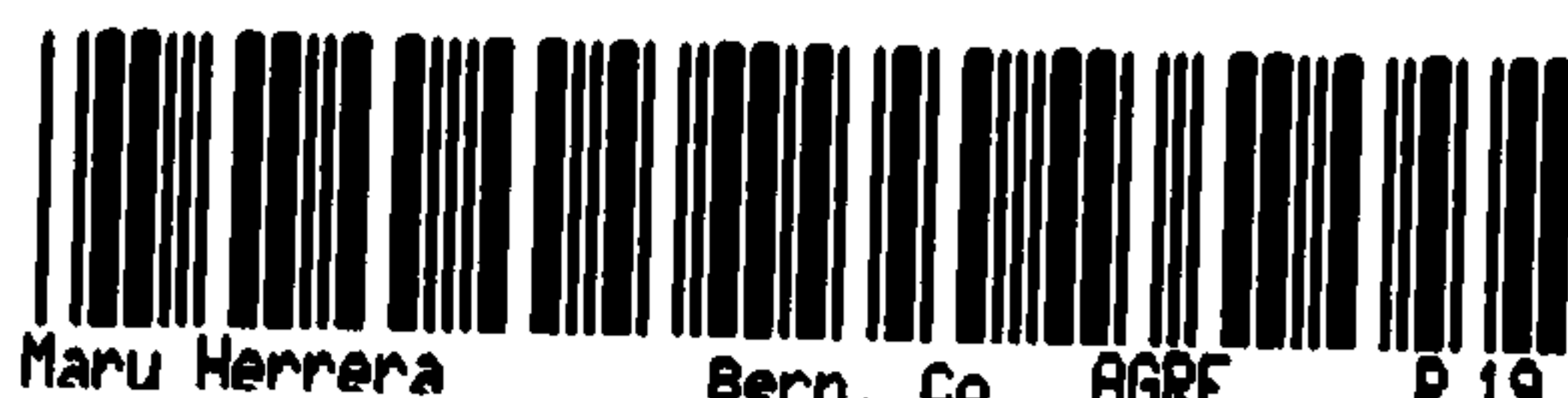
5. Demand for Repair, Modification or Removal. The City may send written notice ("Notice") to the User requiring the User to repair, modify or remove the Improvement within 30 days ("Deadline") and the User will comply promptly with the requirements of the Notice. If removal is demanded, the City also may require the User to return the City's Property to its original condition by the Deadline. The User will perform all required work by the Deadline, at User's sole expense.

6. Failure to Perform by User and Emergency Work by City. If the User fails to comply with the terms of the Notice by the Deadline stated, or, if the City determines that an emergency condition exists, the City may perform the work itself. The City then may assess the User for the cost of the work and for any other expenses or damages which result from User's failure to perform. The User agrees promptly to pay the City the amount assessed. If the User fails to pay the City within thirty (30) days after the City gives the User written notice of the amount due, the City may impose a lien against User's Property for the total resulting amount.

7. Cancellation of Agreement and Release of Covenant. This Agreement may be canceled and User's covenants released by the City at will by the City's mailing to the User notice of the City's intention to record a Cancellation and Release with the Bernalillo County Clerk. The Cancellation and Release will be effective thirty (30) days after the date of mailing the notice to the User unless a later date is stated in the notice or the Cancellation and Release. After the effective date, the City will record the Cancellation and Release with the Bernalillo County Clerk.

8. Condemnation. If any part of the User's Property is ever condemned by the City, the User will forego all claims to compensation for any portion of User's structure which encroaches on City Property and for severance damage to the remaining portion of User's structure on User's Property.

9. Assessment. Nothing in this Agreement shall be construed to relieve the User, his heirs, assigns and successors from an assessment against User's Property for improvements to the City Property under a duly authorized and approved Special Assessment District. The parties specifically agree that the value of the Improvement will not reduce the amount assessed by the City.



10. Notice. For purposes of giving formal written notice to the User, User's address is:

*Westland Development Co., Inc.  
401 Coors NW  
Albuquerque, NM 87121*

Notice may be given to the User either in person or by mailing the notice by regular U.S. mail, postage paid. Notice will be considered to have been received by the User within 3 days after the notice is mailed if there is no actual evidence of receipt. The User may change User's address by giving written notice of the change by certified mail, return receipt requested, to the City Engineer at P.O. Box 1293, Albuquerque, New Mexico 87103.

11. Indemnification. The User agrees to defend, indemnify and hold harmless the City, its officials, agents and employees from and against any and all claims, actions, suits or proceedings of any kind brought against said parties as a result of User's use of the City's Property. To the extent, if at all, Section 56-7-1 NMSA 1978 is applicable to this Agreement, this Agreement to indemnify will not extend to liability, claims, damages, losses or expenses, including attorney's fees, arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications by the indemnitee, or the agents or employees of the indemnitee; or (2) the giving of or the failure to give direction or instructions by the indemnitee, where such giving or failure to give directions or instructions is the primary cause of bodily injury to persons or damage to property.

12. Term. This Agreement shall continue until revoked by the City pursuant to Section 7 above.

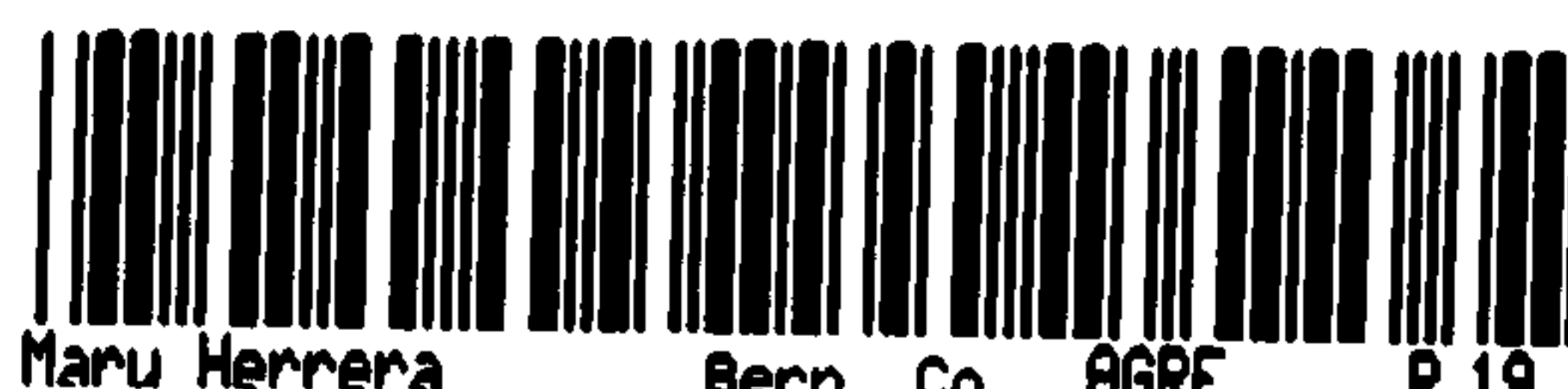
13. Binding on User's Property. The covenants and obligations of the User set forth herein shall be binding on User, his heirs assigns and successors and on User's Property and constitute covenants running with User's Property until released by the City.

14. Entire Agreement. This Agreement contains the entire agreement of the parties and supersedes any and all other agreements or understandings, oral or written, whether previous to the execution hereof or contemporaneous herewith.

15. Changes of Agreement. Changes to this Agreement are not binding unless made in writing, signed by both parties.

16. Construction and Severability. If any part of this Agreement is held to be invalid or unenforceable, the remainder of the Agreement will remain valid and enforceable if the remainder is reasonably capable of completion.

17. Captions. The captions to the sections or paragraphs of this Agreement are not part of this Agreement and will not affect the meaning or construction of any of its provisions.



By:   
Richard Dourte  
City Engineer  
Dated: 7-05-06

By:   
Name: Leroy Chavez  
Title: Vice President of Development  
Dated: \_\_\_\_\_

7/3/00

6-29-06

[illegible]

Gloria V. Saavedra  
Notary Public

My Commission Expires: 11-25-2007

**STATE OF NEW MEXICO        )**  
**) ss.**  
**COUNTY OF BERNALILLO     )**

Gunda Blair  
Notary Public

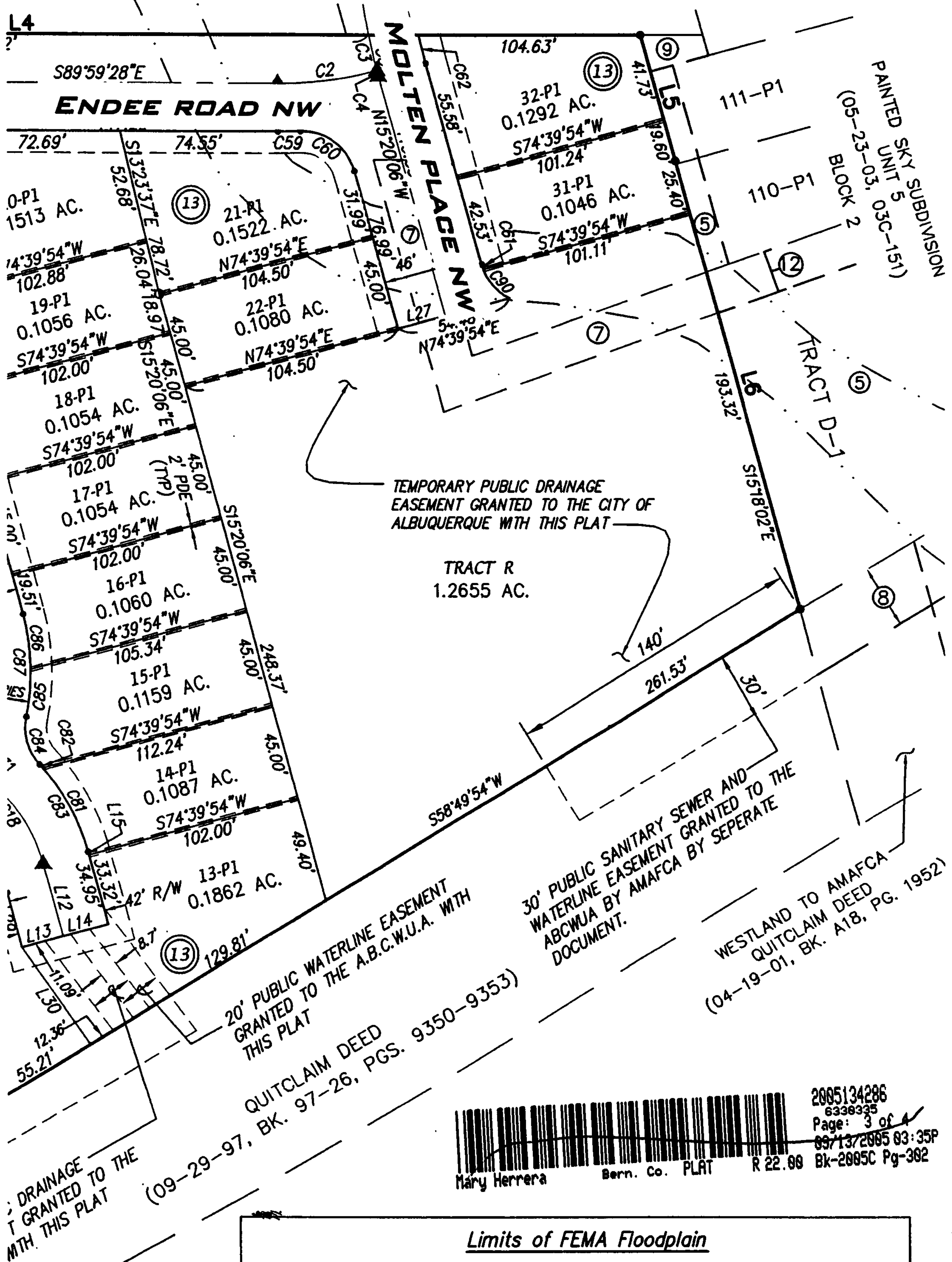
OFFICIAL SEAL  
LINDA J. BLAIR  
NOTARY PUBLIC STATE OF NEW YORK  
Notary Bond Filed With Secretary of State  
My Commission Expires 8/5/09





PLAT FOR  
**SUNDORO SOUTH SUBDIVISION  
UNIT 6**

WITHIN THE  
TOWN OF ATRISCO GRANT  
PROJECTED SECTION 16  
TOWNSHIP 10 NORTH, RANGE 2 EAST, NMPM  
CITY OF ALBUQUERQUE  
BERNALILLO COUNTY, NEW MEXICO  
APRIL, 2005



Limits of FEMA Floodplain

Until such time that the LOMR is issued by FEMA to remove the floodplain, this area and any future lots that develop in this area, flood insurance may be required by the mortgage company.

**SUNDORO SOUTH UNIT 6  
EXHIBIT B FINAL PLAT**

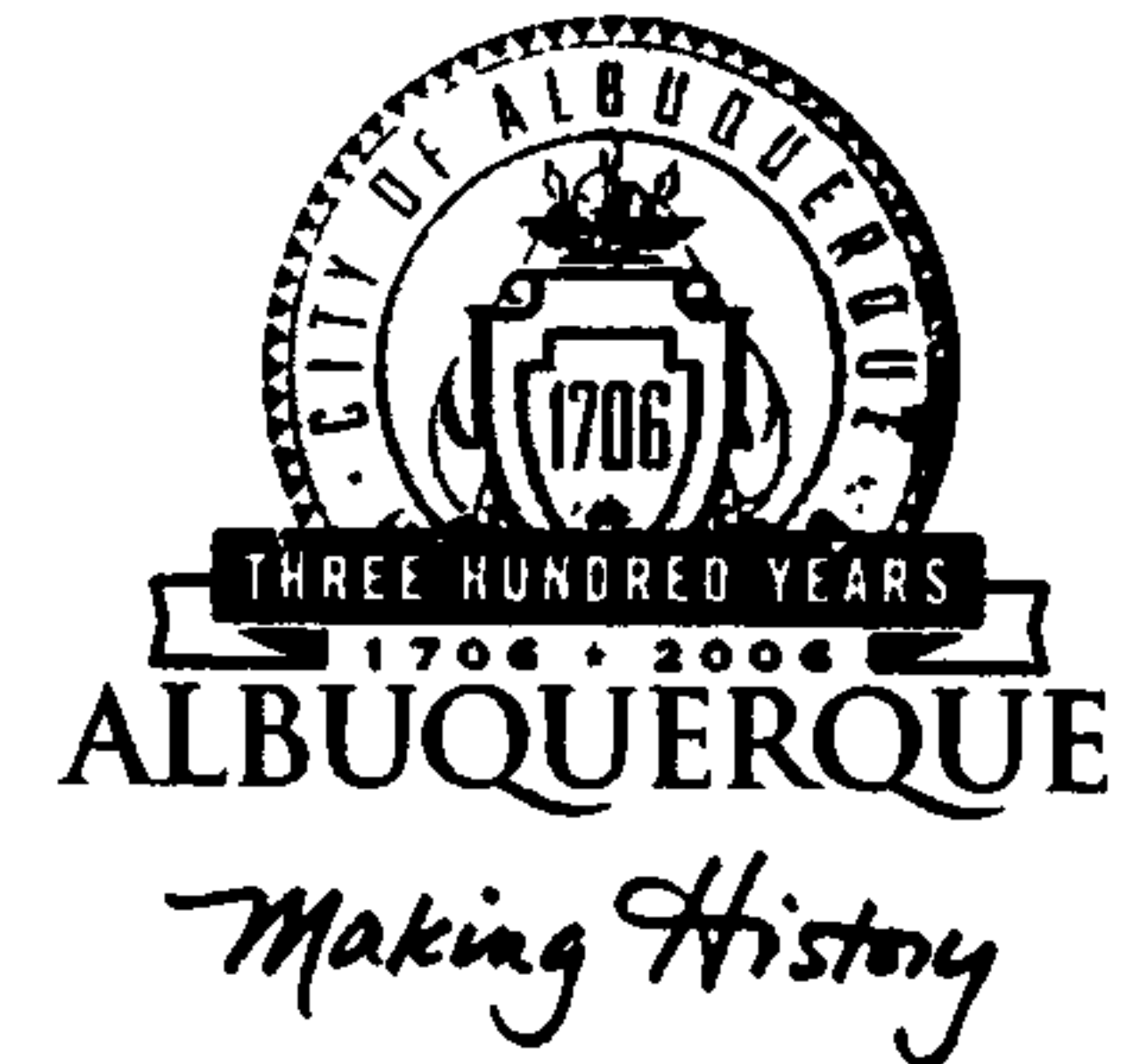
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Page: 3 of 4  
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BK-2005C Pg-302

Mary Herrera  
Bern. Co. PLAT  
R 22.00

Mary Herrera  
Bern. Co. AGRE  
R 19.00

# CITY OF ALBUQUERQUE



April 7, 2005

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

**Re: Sundoro South Subdivision Unit 6 – Amended Grading & Drainage Plan  
Engineer Stamp dated 3-25-05 (J9-D19A)**

Dear Ms. Hoelzer,

Based upon the information provided in your submittal dated 3-25-05, the above referenced plan is approved as amended. This will be the plan that must be certified for Release of Financial Guaranty.

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

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

Sincerely,

Phillip J. Lovato, E.I.  
Associate Engineer, Planning Department  
Development and Building Services

C: Chuck Caruso, DMD  
file

**DRAINAGE INFORMATION SHEET**  
(REV. 1/28/2003rd)

|                    |                                                                                                                                                              |                 |              |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------------|
| PROJECT TITLE:     | Sundoro Units <del>5</del> 6                                                                                                                                 | ZONE MAP/DRG #: | J 9 / D19A   |
| DRB#:              | 1003285 (Unit 6) 1003606 (Unit 5)                                                                                                                            | EPC #:          | W.O.#:       |
| LEGAL DESCRIPTION: | Parcel J-2-B Westland North& Lot 43-P1, Blk 4, Tract L Sundoro South Subd., Unit 1& Tract B, Painted Sky Subd., Unit 1& two 'Tract of Land' by Warranty Deed |                 |              |
| CITY ADDRESS:      |                                                                                                                                                              |                 |              |
| ENGINEERING FIRM:  | Mark Goodwin & Associates, PA                                                                                                                                | CONTACT:        |              |
| ADDRESS:           | PO Box 90606                                                                                                                                                 | PHONE:          | 828-2200     |
| CITY, STATE:       | Albuquerque, NM                                                                                                                                              | ZIP CODE:       | 87199        |
| OWNER:             | Westland Development Co. Inc.                                                                                                                                | CONTACT:        | Leroy Chavez |
| ADDRESS:           | 401 Coors Blvd. NW                                                                                                                                           | PHONE:          | 831-9600     |
| CITY, STATE:       | ABQ, NM                                                                                                                                                      | ZIP CODE:       | 87121        |
| ARCHITECT:         | NA                                                                                                                                                           | CONTACT:        |              |
| ADDRESS:           |                                                                                                                                                              | PHONE:          |              |
| CITY, STATE:       |                                                                                                                                                              | ZIP CODE:       |              |
| SURVEYOR:          | Aldrich Land Surveying                                                                                                                                       | CONTACT:        | Tim Aldrich  |
| ADDRESS:           | P.O. Box 30701                                                                                                                                               | PHONE:          | 884-1990     |
| CITY, STATE:       | Albuquerque, NM                                                                                                                                              | ZIP CODE:       | 87190-0701   |
| CONTRACTOR:        | NA                                                                                                                                                           | CONTACT:        |              |
| ADDRESS:           |                                                                                                                                                              | PHONE:          |              |
| CITY, STATE:       |                                                                                                                                                              | ZIP CODE:       |              |

CHECK TYPE OF SUBMITTAL:

- |                                     |                                                            |
|-------------------------------------|------------------------------------------------------------|
| <input type="checkbox"/>            | DRAINAGE REPORT                                            |
| <input type="checkbox"/>            | DRAINAGE PLAN 1 <sup>ST</sup> SUBMITTAL, req. TCL or equal |
| <input type="checkbox"/>            | DRAINAGE PLAN RESUBMITTAL                                  |
| <input type="checkbox"/>            | CONCEPTUAL GRADING & DRAINAGE PLAN                         |
| <input checked="" type="checkbox"/> | GRADING PLAN (revised 3/25/05 for Unit 6)                  |
| <input type="checkbox"/>            | EROSION CONTROL PLAN                                       |
| <input type="checkbox"/>            | ENGINEER'S CERTIFICATION (HYDROLOGY)                       |
| <input type="checkbox"/>            | CLOMR/LOMR                                                 |
| <input type="checkbox"/>            | TRAFFIC CIRCULATION LAYOUT (TCL)                           |
| <input type="checkbox"/>            | ENGINEER'S CERTIFICATION (TCL)                             |
| <input type="checkbox"/>            | ENGINEER'S CERTIFICATION (DRB APPR. SITE PLAN)             |
| <input type="checkbox"/>            | OTHER                                                      |

CHECK TYPE OF APPROVAL SOUGHT:

- |                                     |                                        |
|-------------------------------------|----------------------------------------|
| <input type="checkbox"/>            | SIA / FINANCIAL GUARANTEE RELEASE      |
| <input type="checkbox"/>            | PRELIMINARY PLAT APPROVAL              |
| <input type="checkbox"/>            | S. DEV. PLAN FOR SUB'D. APPROVAL       |
| <input type="checkbox"/>            | S. DEV. PLAN FOR BLDG. PERMIT APPROVAL |
| <input type="checkbox"/>            | SECTOR PLAN APPROVAL                   |
| <input type="checkbox"/>            | FINAL PLAT APPROVAL                    |
| <input type="checkbox"/>            | FOUNDATION PERMIT APPROVAL             |
| <input type="checkbox"/>            | BUILDING PERMIT APPROVAL               |
| <input type="checkbox"/>            | CERTIFICATE OF OCCUPANCY (PERM)        |
| <input type="checkbox"/>            | CERTIFICATE OF OCCUPANCY (TEMP)        |
| <input checked="" type="checkbox"/> | GRADING PERMIT APPROVAL                |
| <input type="checkbox"/>            | PAVING PERMIT APPROVAL                 |
| <input type="checkbox"/>            | WORK ORDER APPROVAL                    |
| <input type="checkbox"/>            | OTHER (specify) _____                  |

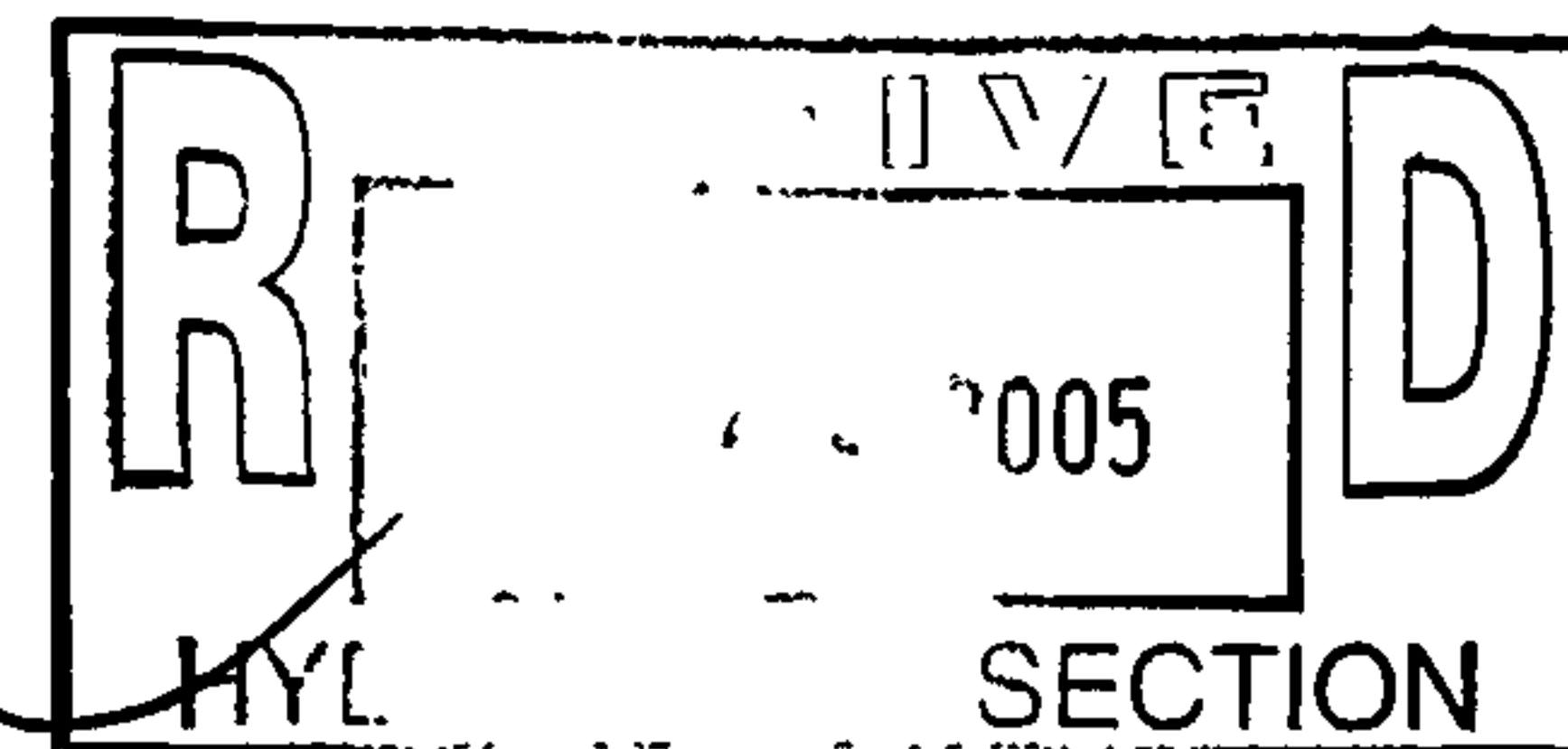
WAS A PRE-DESIGN CONFERENCE ATTENDED?

- |                          |               |
|--------------------------|---------------|
| <input type="checkbox"/> | YES           |
| <input type="checkbox"/> | NO            |
| <input type="checkbox"/> | COPY PROVIDED |

DATE SUBMITTED: MARCH 25, 2005

BY:

*Diane Hoelzer*  
Diane Hoelzer, PE



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

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



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

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

March 25, 2005

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

**Re: Revised Grading Plan for Sundoro Unit 6  
Engineer's stamp 3-25-05 (J9 / D19A)**

Dear Mr. Bingham,

I am submitting a revised Grading Plan for Sundoro Unit 6. The only area I revised is along the north slope and the bottom elevation of the retention pond. I offset the top of the pond (5233.0') 5 feet from the existing Sanitary sewer that runs along the north side of the pond and I deepened the pond by 2 feet to make up for the lost volume as a result of the shift south of the north side slope. I did this in order to help protect the existing sanitary sewer line and manhole.

If you have any questions, please call me.

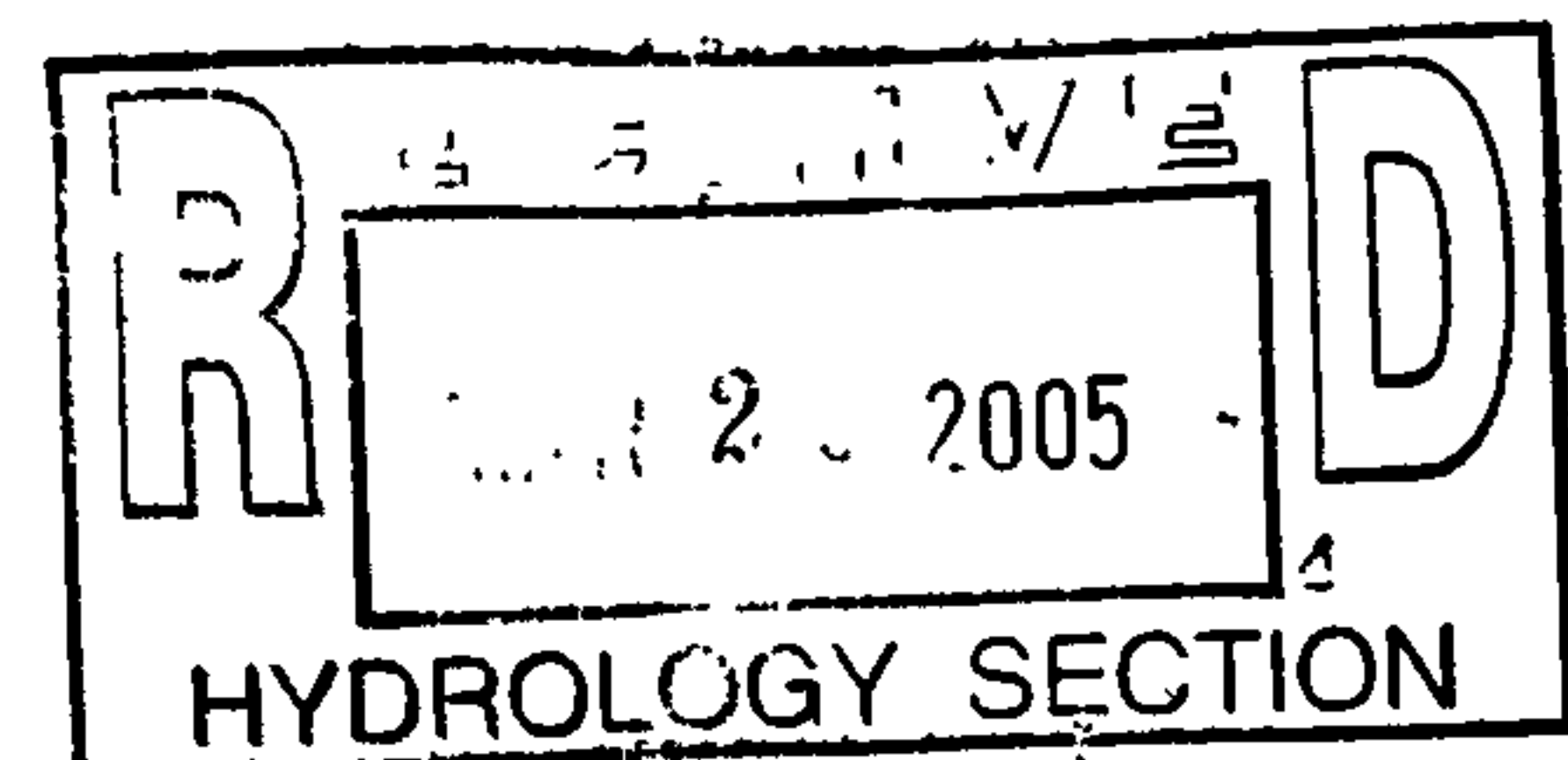
Sincerely,

MARK GOODWIN AND ASSOCIATES, P.A.



Diane Hoelzer, P.E.

file./4046ss / sundoro / dr\_2.ltr



**DRAINAGE INFORMATION SHEET**  
(REV. 1/28/2003rd)

J-9/D19A

|                    |                                                                                                                                                              |                 |                 |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------|
| PROJECT TITLE:     | Sundoro <sup>South</sup> Units 5 and 6                                                                                                                       | ZONE MAP/DRG #: | <del>4819</del> |
| DRB#:              | 1003285 (Unit 6) 1003606 (Unit 5)                                                                                                                            | EPC #:          |                 |
| LEGAL DESCRIPTION: | Parcel J-2-B Westland North& Lot 43-P1, Blk 4, Tract L Sundoro South Subd., Unit 1& Tract B, Painted Sky Subd., Unit 1& two 'Tract of Land' by Warranty Deed |                 |                 |
| CITY ADDRESS:      |                                                                                                                                                              |                 |                 |
| ENGINEERING FIRM:  | Mark Goodwin & Associates, PA                                                                                                                                | CONTACT:        |                 |
| ADDRESS:           | PO Box 90606                                                                                                                                                 | PHONE:          | 828-2200        |
| CITY, STATE:       | Albuquerque, NM                                                                                                                                              | ZIP CODE:       | 87199           |
| OWNER:             | Westland Development Co. Inc.                                                                                                                                | CONTACT:        | Leroy Chavez    |
| ADDRESS:           | 401 Coors Blvd. NW                                                                                                                                           | PHONE:          | 831-9600        |
| CITY, STATE:       | ABQ, NM                                                                                                                                                      | ZIP CODE:       | 87121           |
| ARCHITECT:         | NA                                                                                                                                                           | CONTACT:        |                 |
| ADDRESS:           |                                                                                                                                                              | PHONE:          |                 |
| CITY, STATE:       |                                                                                                                                                              | ZIP CODE:       |                 |
| SURVEYOR:          | Aldrich Land Surveying                                                                                                                                       | CONTACT:        | Tim Aldrich     |
| ADDRESS:           | P.O Box 30701                                                                                                                                                | PHONE:          | 884-1990        |
| CITY, STATE:       | Albuquerque, NM                                                                                                                                              | ZIP CODE:       | 87190-0701      |
| CONTRACTOR:        | NA                                                                                                                                                           | CONTACT:        |                 |
| ADDRESS:           |                                                                                                                                                              | PHONE:          |                 |
| CITY, STATE:       |                                                                                                                                                              | ZIP CODE:       |                 |

CHECK TYPE OF SUBMITTAL:

|                                     |                                                            |
|-------------------------------------|------------------------------------------------------------|
| <input type="checkbox"/>            | DRAINAGE REPORT                                            |
| <input type="checkbox"/>            | DRAINAGE PLAN 1 <sup>ST</sup> SUBMITTAL, req. TCL or equal |
| <input type="checkbox"/>            | DRAINAGE PLAN RESUBMITTAL                                  |
| <input type="checkbox"/>            | CONCEPTUAL GRADING & DRAINAGE PLAN                         |
| <input checked="" type="checkbox"/> | GRADING PLAN (revised 2/15/05 for Unit 6) + units          |
| <input type="checkbox"/>            | EROSION CONTROL PLAN                                       |
| <input type="checkbox"/>            | ENGINEER'S CERTIFICATION (HYDROLOGY)                       |
| <input type="checkbox"/>            | CLOMR/LOMR                                                 |
| <input type="checkbox"/>            | TRAFFIC CIRCULATION LAYOUT (TCL)                           |
| <input type="checkbox"/>            | ENGINEER'S CERTIFICATION (TCL)                             |
| <input type="checkbox"/>            | ENGINEER'S CERTIFICATION (DRB APPR. SITE PLAN)             |
| <input type="checkbox"/>            | OTHER                                                      |

CHECK TYPE OF APPROVAL SOUGHT:

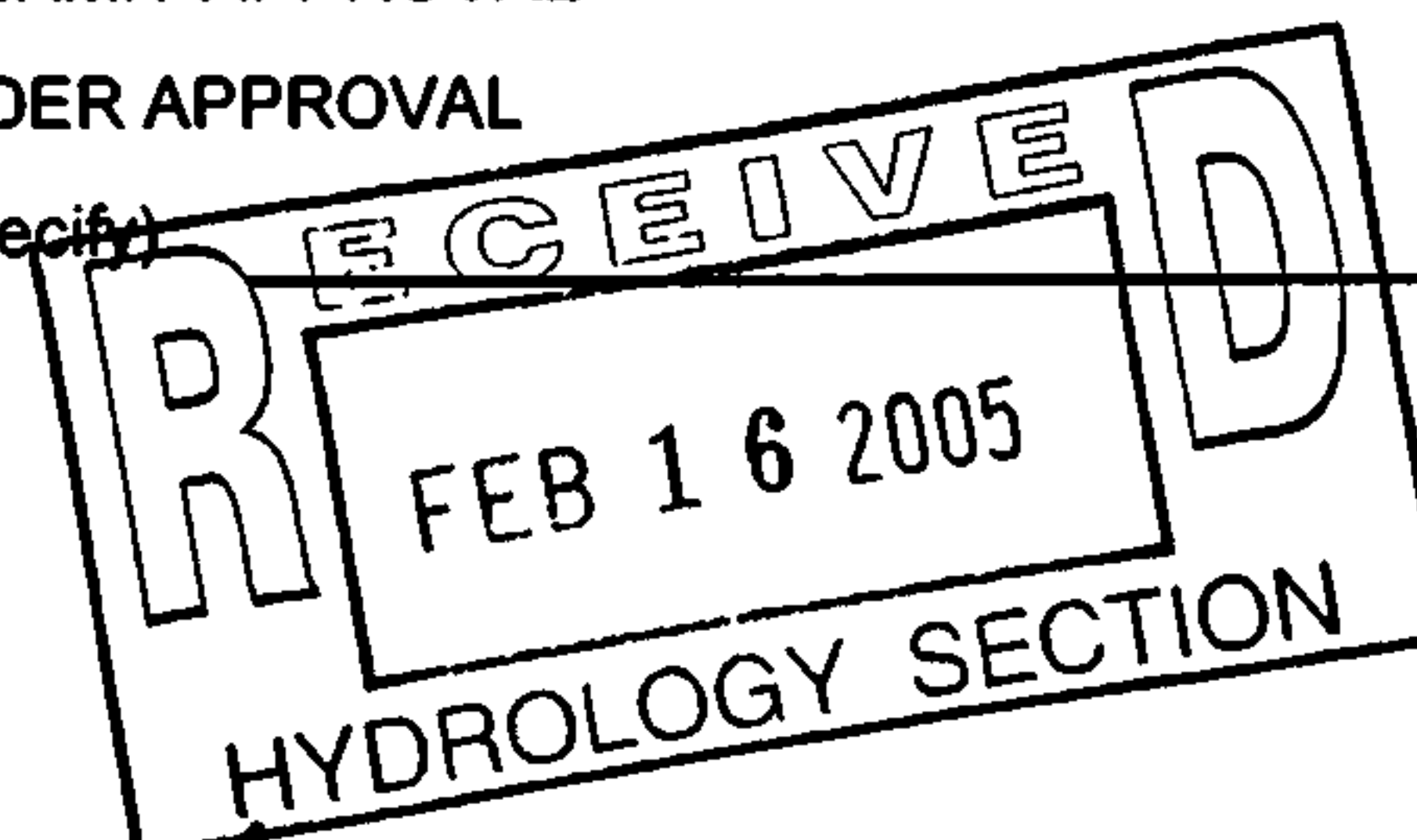
|                                     |                                        |
|-------------------------------------|----------------------------------------|
| <input type="checkbox"/>            | SIA / FINANCIAL GUARANTEE RELEASE      |
| <input checked="" type="checkbox"/> | PRELIMINARY PLAT APPROVAL              |
| <input type="checkbox"/>            | S. DEV. PLAN FOR SUB'D. APPROVAL       |
| <input type="checkbox"/>            | S. DEV. PLAN FOR BLDG. PERMIT APPROVAL |
| <input type="checkbox"/>            | SECTOR PLAN APPROVAL                   |
| <input type="checkbox"/>            | FINAL PLAT APPROVAL                    |
| <input type="checkbox"/>            | FOUNDATION PERMIT APPROVAL             |
| <input type="checkbox"/>            | BUILDING PERMIT APPROVAL               |
| <input type="checkbox"/>            | CERTIFICATE OF OCCUPANCY (PERM)        |
| <input type="checkbox"/>            | CERTIFICATE OF OCCUPANCY (TEMP)        |
| <input checked="" type="checkbox"/> | GRADING PERMIT APPROVAL                |
| <input type="checkbox"/>            | PAVING PERMIT APPROVAL                 |
| <input type="checkbox"/>            | WORK ORDER APPROVAL                    |
| <input type="checkbox"/>            | OTHER (specify)                        |

WAS A PRE-DESIGN CONFERENCE ATTENDED?

|                          |               |
|--------------------------|---------------|
| <input type="checkbox"/> | YES           |
| <input type="checkbox"/> | NO            |
| <input type="checkbox"/> | COPY PROVIDED |

DATE SUBMITTED: FEBRUARY 16, 2005

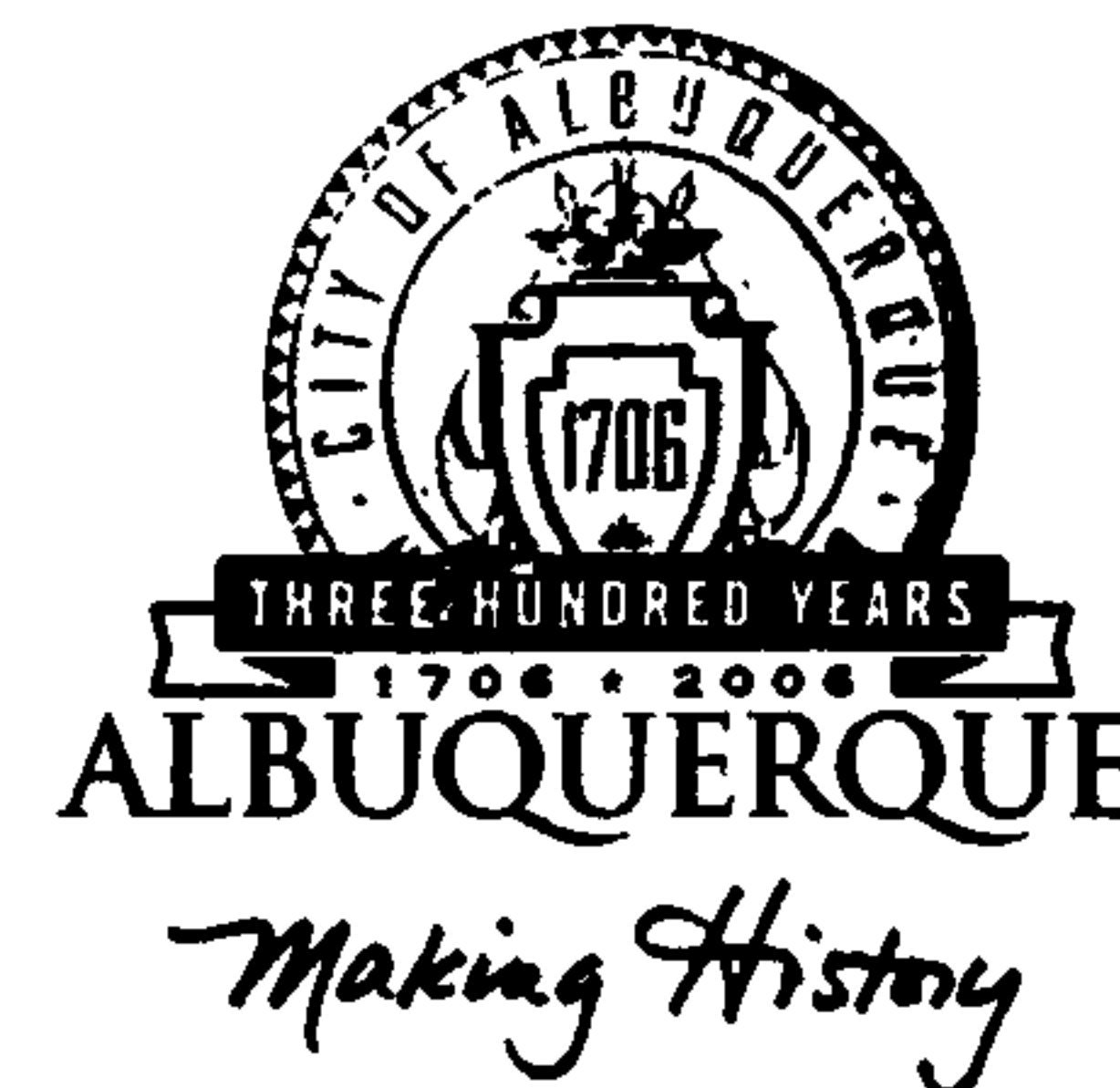
BY: Diane Hoelzer, PE



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

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# CITY OF ALBUQUERQUE



April 7, 2005

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

**Re: Sundoro South Subdivision Unit 5 – Amended Grading & Drainage Plan  
Engineer Stamp dated 2-15-05 (J9-D19A)**

Dear Ms. Hoelzer,

Based upon the information provided in your submittal dated 2-16-05, the above referenced plan is approved as amended. This will be the plan that must be certified for Release of Financial Guaranty.

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

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

Sincerely,

Phillip J. Lovato, E.I.  
Associate Engineer, Planning Department  
Development and Building Services

C: Chuck Caruso, DMD  
file

# CITY OF ALBUQUERQUE



## “REVISION TO LETTER DATED 06/05/2006”

August 21, 2006

Mr. James D. Hughes, PE  
**MARK GOODWIN & ASSOCIATES**  
P.O. Box 90606  
Albuquerque, NM 87199

**RE: SUNDORO SOUTH SUBDIVISION, UNIT 6 (J-9/D19A)**  
**Engineers Certification for Release of Financial Guaranty**  
**Engineers Stamp dated 03/25/2005**  
**Engineers Certification dated 05/25/2006**

P.O. Box 1293

Dear Doug:

Albuquerque

Based upon the information provided in your submittal received 06/01/2006, the above referenced certification is approved for release of SIA and Financial Guarantee.

New Mexico 87103

**However, prior to release of financial guaranty, the LOMR must be accepted by FEMA.**

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

[www.cabq.gov](http://www.cabq.gov)

Sincerely,

Arlene V. Portillo  
Plan Checker, Planning Dept.- Hydrology  
Development and Building Services

C: Marilyn Maldonado, COA# 727085  
File

# CITY OF ALBUQUERQUE



June 5, 2006

Mr. James D. Hughes, PE  
**MARK GOODWIN & ASSOCIATES**  
P.O. Box 90606  
Albuquerque, NM 87199

**RE: SUNDORO SOUTH SUBDIVISION, UNIT 6 (J-9/D19A)**  
**Engineers Certification for Release of Financial Guaranty**  
**Engineers Stamp dated 03/25/2005**  
**Engineers Certification dated 05/25/2006**

Dear Doug:

Based upon the information provided in your Engineer's Certification Submittal dated 06/01/2006, the above referenced plan is adequate to satisfy the Grading and Drainage Certification for Release of Financial Guaranty.

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

Sincerely,

Arlene V. Portillo  
Plan Checker, Planning Dept.- Hydrology  
Development and Building Services

C: Marilyn Maldonado, COA# 727085  
File

P.O. Box 1293

Albuquerque

New Mexico 87103

[www.cabq.gov](http://www.cabq.gov)

# DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV. 1/28/2003rd)

3-9/D19A

PROJECT TITLE: Sundoro Unit 6  
DRB #: 1003285

EPC#: \_\_\_\_\_

ZONE MAP/DRG. FILE #: J-B/9  
WORK ORDER#: \_\_\_\_\_

LEGAL DESCRIPTION: Parcel J-2-B Westland North & Lot 43-P1, Blk 4, Tr L Sundoro S. Subd. Unit 1  
CITY ADDRESS: \_\_\_\_\_

ENGINEERING FIRM: Mark Goodwin & Associates, PA  
ADDRESS: PO Box 90606  
CITY, STATE: Albuquerque, NM

CONTACT: James D. Hughes  
PHONE: 828-2200  
ZIP CODE: 87199

OWNER: Westland Development Co., Inc.  
ADDRESS: 401 Coors Blvd NW  
CITY, STATE: Albuquerque, NM

CONTACT: Leroy Chavez  
PHONE: 831-9600  
ZIP CODE: 87121

ARCHITECT: \_\_\_\_\_  
ADDRESS: \_\_\_\_\_  
CITY, STATE: \_\_\_\_\_

CONTACT: \_\_\_\_\_  
PHONE: \_\_\_\_\_  
ZIP CODE: \_\_\_\_\_

SURVEYOR: Aldrich Land Surveying  
ADDRESS: PO Box 30701  
CITY, STATE: Albuquerque, NM

CONTACT: Tim Aldrich  
PHONE: 884-1990  
ZIP CODE: 87190-0701

CONTRACTOR: \_\_\_\_\_  
ADDRESS: \_\_\_\_\_  
CITY, STATE: \_\_\_\_\_

CONTACT: \_\_\_\_\_  
PHONE: \_\_\_\_\_  
ZIP CODE: \_\_\_\_\_

## CHECK TYPE OF SUBMITTAL:

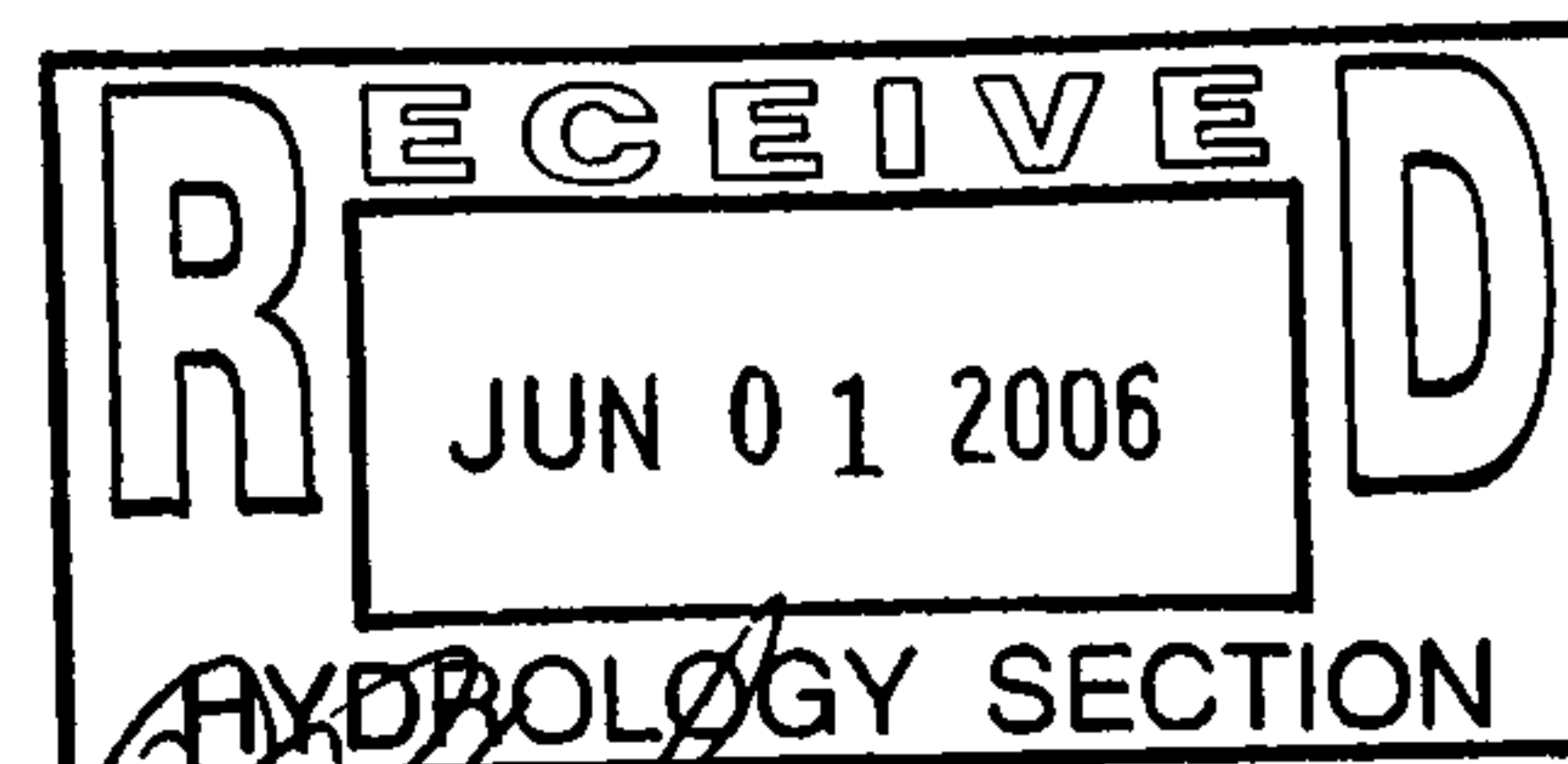
- ☐ DRAINAGE REPORT
- ☐ DRAINAGE PLAN 1<sup>st</sup> SUBMITTAL, **REQUIRES TCL or equal**
- ☐ DRAINAGE PLAN RESUBMITTAL
- ☐ CONCEPTUAL GRADING & DRAINAGE PLAN
- ☐ GRADING PLAN
- ☐ EROSION CONTROL PLAN
- ☒ ENGINEER'S CERTIFICATION (HYDROLOGY)
- ☐ CLOMR/LOMR
- ☐ TRAFFIC CIRCULATION LAYOUT (TCL)
- ☐ ENGINEERS CERTIFICATION (TCL)
- ☐ ENGINEERS CERTIFICATION (DRB APPR. SITE PLAN)
- ☐ OTHER

## CHECK TYPE OF APPROVAL SOUGHT:

- ☒ SIA / FINANCIAL GUARANTEE RELEASE
- ☐ PRELIMINARY PLAT APPROVAL
- ☐ S. DEV. PLAN FOR SUB'D. APPROVAL
- ☐ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
- ☐ SECTOR PLAN APPROVAL
- ☐ FINAL PLAT APPROVAL
- ☐ FOUNDATION PERMIT APPROVAL
- ☐ BUILDING PERMIT APPROVAL
- ☐ CERTIFICATE OF OCCUPANCY (PERM.)
- ☐ CERTIFICATE OF OCCUPANCY (TEMP.)
- ☒ GRADING PERMIT APPROVAL
- ☐ PAVING PERMIT APPROVAL
- ☐ WORK ORDER APPROVAL
- ☐ OTHER (SPECIFY)

## WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ☐ YES
- ☒ NO
- ☐ COPY PROVIDED



DATE SUBMITTED: 6/01/2006

BY: James D. Hughes

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# CITY OF ALBUQUERQUE



## **“REVISION TO LETTER DATED 8/17/2006”**

August 21, 2006

Mr. James D. Hughes, PE  
**MARK GOODWIN & ASSOCIATES**  
P.O. Box 90606  
Albuquerque, NM 87199

**RE: SUNDORO SOUTH SUBDIVISION, UNIT 5 (J-9/D19A)**  
**Engineers Certification for Release of Financial Guaranty**  
**Engineers Stamp dated 02/15/2005**  
**Engineers Certification dated 05/25/2006**

P.O. Box 1293

Dear Doug:

Albuquerque

Based upon the information provided in your submittal received 08/17/2006, the above referenced certification is approved for release of SIA and Financial Guarantee.

New Mexico 87103

**However, prior to release of financial guaranty, the LOMR must be accepted by FEMA.**

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

www.cabq.gov

Sincerely,

Arlene V. Portillo  
Plan Checker, Planning Dept.- Hydrology  
Development and Building Services

C: Marilyn Maldonado, COA# 727084  
File

# CITY OF ALBUQUERQUE



August 17, 2006

Mr. James D. Hughes, PE  
**MARK GOODWIN & ASSOCIATES**  
P.O. Box 90606  
Albuquerque, NM 87199

**RE: SUNDORO SOUTH SUBDIVISION, UNIT 5 (J-9/D19A)**  
**Engineers Certification for Release of Financial Guaranty**  
**Engineers Stamp dated 02/15/2005**  
**Engineers Certification dated 05/25/2006**

Dear Doug:

Based upon the information provided in your Engineer's Certification Submittal dated 08/17/2006, the above referenced plan is adequate to satisfy the Grading and Drainage Certification for Release of Financial Guaranty.

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

Sincerely,

Arlene V. Portillo  
Plan Checker, Planning Dept.- Hydrology  
Development and Building Services

C: Marilyn Maldonado, COA# 727084  
File

P.O. Box 1293

Albuquerque

New Mexico 87103

[www.cabq.gov](http://www.cabq.gov)

# DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV. 1/28/2003rd)

PROJECT TITLE: Sundoro Unit 5  
DRB #: 1003606

EPC#: \_\_\_\_\_

ZONE MAP/DRG. FILE #: J-9/D19A  
WORK ORDER#: 727084

LEGAL DESCRIPTION: Parcel J-2-B Westland North & Lot 43-P1, Blk 4, Tr L Sundoro S. Subd. Unit 1  
CITY ADDRESS: \_\_\_\_\_

ENGINEERING FIRM: Mark Goodwin & Associates, PA  
ADDRESS: PO Box 90606  
CITY, STATE: Albuquerque, NM

CONTACT: James D. Hughes  
PHONE: 828-2200  
ZIP CODE: 87199

OWNER: Westland Development Co., Inc.  
ADDRESS: 401 Coors Blvd NW  
CITY, STATE: Albuquerque, NM

CONTACT: Leroy Chavez  
PHONE: 831-9600  
ZIP CODE: 87121

ARCHITECT: \_\_\_\_\_  
ADDRESS: \_\_\_\_\_  
CITY, STATE: \_\_\_\_\_

CONTACT: \_\_\_\_\_  
PHONE: \_\_\_\_\_  
ZIP CODE: \_\_\_\_\_

SURVEYOR: Aldrich Land Surveying  
ADDRESS: PO Box 30701  
CITY, STATE: Albuquerque, NM

CONTACT: Tim Aldrich  
PHONE: 884-1990  
ZIP CODE: 87190-0701

CONTRACTOR: \_\_\_\_\_  
ADDRESS: \_\_\_\_\_  
CITY, STATE: \_\_\_\_\_

CONTACT: \_\_\_\_\_  
PHONE: \_\_\_\_\_  
ZIP CODE: \_\_\_\_\_

## CHECK TYPE OF SUBMITTAL:

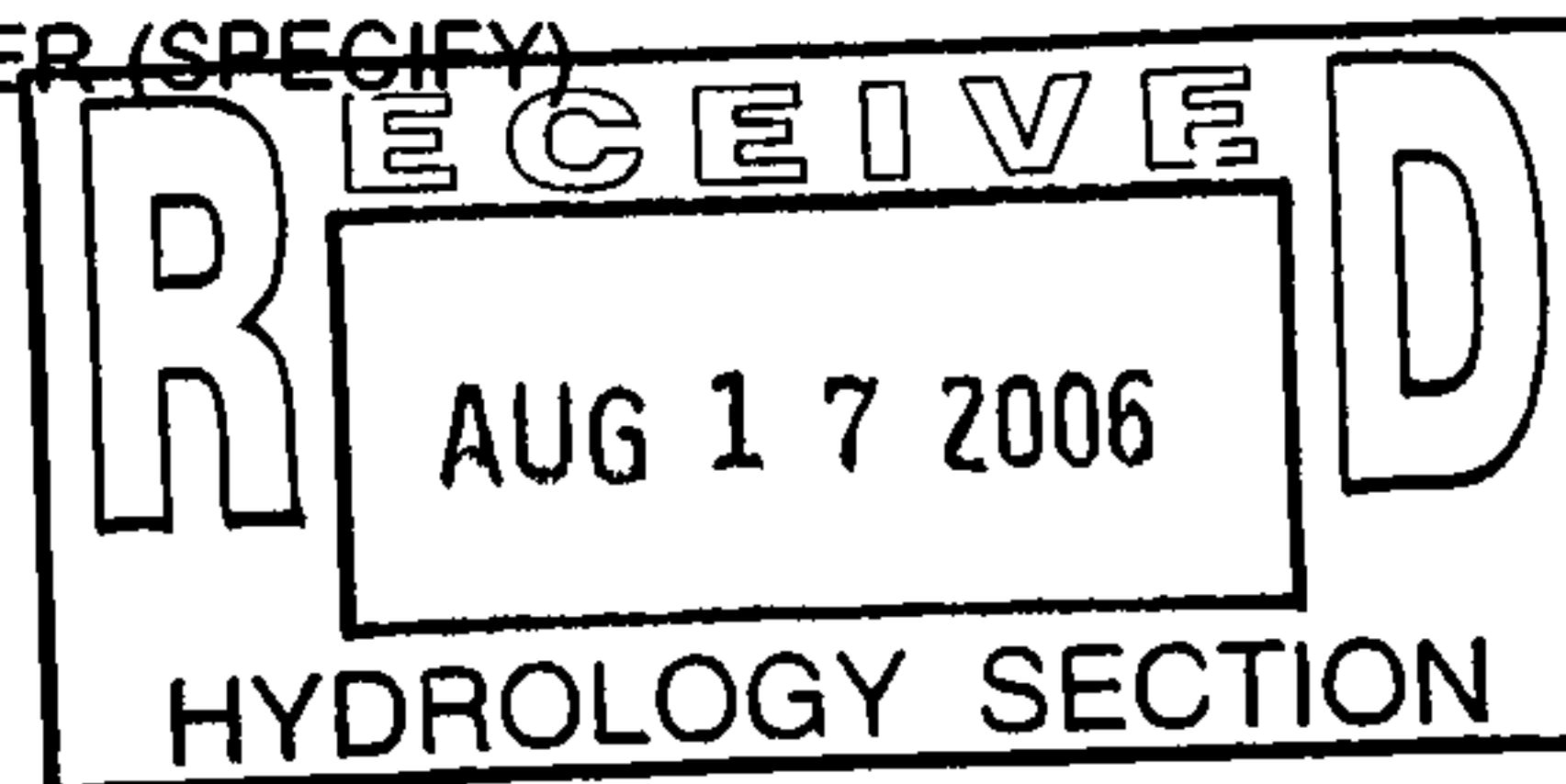
- ☐ DRAINAGE REPORT
- ☐ DRAINAGE PLAN 1<sup>st</sup> SUBMITTAL, **REQUIRES TCL or equal**
- ☐ DRAINAGE PLAN RESUBMITTAL
- ☐ CONCEPTUAL GRADING & DRAINAGE PLAN
- ☐ GRADING PLAN
- ☐ EROSION CONTROL PLAN
- ☒ ENGINEER'S CERTIFICATION (HYDROLOGY)
- ☐ CLOMR/LOMR
- ☐ TRAFFIC CIRCULATION LAYOUT (TCL)
- ☐ ENGINEERS CERTIFICATION (TCL)
- ☐ ENGINEERS CERTIFICATION (DRB APPR. SITE PLAN)
- ☐ OTHER

## CHECK TYPE OF APPROVAL SOUGHT:

- ☒ SIA / FINANCIAL GUARANTEE RELEASE
- ☐ PRELIMINARY PLAT APPROVAL
- ☐ S. DEV. PLAN FOR SUB'D. APPROVAL
- ☐ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
- ☐ SECTOR PLAN APPROVAL
- ☐ FINAL PLAT APPROVAL
- ☐ FOUNDATION PERMIT APPROVAL
- ☐ BUILDING PERMIT APPROVAL
- ☐ CERTIFICATE OF OCCUPANCY (PERM.)
- ☐ CERTIFICATE OF OCCUPANCY (TEMP.)
- ☒ GRADING PERMIT APPROVAL
- ☐ PAVING PERMIT APPROVAL
- ☐ WORK ORDER APPROVAL
- ☐ OTHER (SPECIFY)

## WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ☐ YES
- ☒ NO
- ☐ COPY PROVIDED



DATE SUBMITTED: 8/16/2006

BY: \_\_\_\_\_

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