PUBLIC WORKS/HYDROLOGY
L11/D3

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L11/D3

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March 25, 1981 letter

comment 1 : no indication of a resubmittal to address this cmt.

cmt 2 : No Engineer certification within file supplied by mr. Weiss. In reviewing plan and report it's critical that design parameters would have to have been met in order to function properly.

cmt 3 : Report identifies a 15' wide spillway crest the plan drawing still shows 12'.

Off-site flow map not included with report

Report indicates that at Bataan & Gonzales there exist a Q of 102 cfs

street design for Bataan capacity is 110 cfs

no signed copy of the march 25, 1981 letter exists.

1979 Flood maps indicate that the surrounding area including the site in question was within one huge flood basin.

1983 Maps are more refined in that they show the townhouse development and area east on Gonzales and Sunset Gardens not to be within a designated flood zone

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CITY OF ALBUQUERQUE

ALBUQUERQUE, NEW MEXICO

INTER-OFFICE CORRESPONDENCE

October 14, 1987

REF. NO._____

TO: Eugene F. Costillo, Construction Industries Division

FROM: Fred J. Aguirre, P.E., Hydrologist, Engineering Group/PWD FJA

SUBJECT: SUNSET GARDEN TOWNHOMES (E-11/D3)

Per our discussion, we have researched our records regarding the status of the Drainage Report for the subject subdivision. The following are our findings:

- The drainage report for the subject site is missing from our files; however, we have requested and received copies of the report from the engineering firm that had originally prepared the study. The copies received did not include an off-site drainage basin map, which was referenced in the report, nor did it include any letters of approval. Consequently, we could not determine if the report had ever been approved by this office.

- We located copies of the approved construction plans for the subject subdivision (copies attached). These plans have Mr. Easterling's signature of approval, who was then the City's Hydrologist. Mr. Easterling's signature implies approval of the Drainage Study for the site.

The major item of concern with respect to this subdivision is verification that the subsurface and/or surface recharge system have been constructed per the approved construction plans. Mr. Easterling, in his letter dated March 25, 1981, required certification of these drainage improvements by the developer's engineer; however, we have no records of any such certifications ever being provided to this office.

I strongly recommend that the certification required by Mr. Easterling be provided prior to any more building permits being issued since this subdivision is located within a designated flood hazard area and the improvements were to protect the subdivision from the existing flooding condition.

Attachments

FJA/lk

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ROUTING SLIP

DATE: 9/24

TO:
- [x] Aquirre
- [ ] Ertsgaard
- [ ] Fosnaugh
- [ ] Giron
- [ ] Gomez
- [ ] Hicks
- [ ] Houle
- [ ] Leyendecker
- [ ] McNamara
- [ ] Nickerson
- [ ] Olson
- [ ] Orr
- [ ] Parks
- [ ] Selvia
- [ ] Urban
- [ ] Wilcox

- [ ] For your information
- [ ] Please see me
- [ ] File: _____
- [ ] Copies to: _____
- [ ] Review & report to: _____
- [ ] Send copy of response to: _____
- [ ] Prepare reply for my signature
- [ ] Prepare reply for C.A.O., A.C.A.O signature
- [ ] Read & pass on
- [ ] Prepare reply for Director signature
- [ ] ~~Please call Lion Enterprise ASAP and provide them guidance in~~

REQUIRED BY: _____ Date

FROM: _____

accord with Larry's directive.

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CITY OF ALBUQUERQUE, NEW MEXICO
PUBLIC WORKS DEPARTMENT
L. A. LARRANAGA, DIRECTOR

ROUTING & TRANSMITTAL FORM

To:	Initials:	For Your:
☐ ARCHULETA	_____	☐ Action
☐ MARTIN	_____	☒ Coordination
☐ OTTO	_____	☐ Comment & Return
☒ SELVIA	_____	☐ Information
☐ WAID	_____	☐ Approval
☐ WALL		☐ Files
☐ _____		☐ Signature
☐ _____		☐ Response
☐ _____		My Signature

PWD/ENGINEERING GROUP
RECEIVED
SEP 23 1987
0334

Remarks:
For Fred Aguirre's Group
Please have Fred contact
Lion Enterprise and provide
them necessary guidance.

From: RAR Date: 9/22/87

Reply Requested By (date): _____

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LION ENTERPRISE, Ltd.

(505) 877-2187 • 3308 COORS S.W. • P.O. BOX 12395 • ALBUQUERQUE, NEW MEXICO 87195

Jose León (Buddy) Romero
President

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SEP 22 1987
1669-87
COUNTY MANAGER'S OFFICE

September 21, 1987

City Engineer
Albuquerque,NM 87103

Gentleman,

Re:Case #5-80-51
Sunset Gardens Subdivision

We are requesting information on the requirements needed from the drainage plan submitted for the Sunset Gardens Subdivision.

We are in urgent need of this information. Please call our office and we will make arrangements for a member of our staff to personally pick up the information.

Thank you, Respectfully

M. Mary Romero V.P.

M. Mary Romero, V.P.
LION ENTERPRISE LTD.

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2. Wait until the City can provide a downstream temporary ponding site and allow the flows to continue southward along Batson Drive. I will sign the plat upon receipt of a signed copy of this letter acknowledging your client's understanding of the offsite flow situation and the possible solutions.

If you have any questions please call.

Sincerely,

Charles M. Easterling
Principal Asst. City Engineer/Hydrology

CME/fs

I understand that the approval of the plat for Sunset Gardens Townhouses does not resolve the offsite drainage issues and that the afore-mentioned parcel may be required to accept historical offsite flows and pass them through the property in a non-injurious manner.

Signed: _____

Date: _____

cc - R. Leonard
F. Aguirre

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

March 25, 1981

Mr. Christopher L. Weiss, P.E.
Consultants Terra Sol, Inc.
P. O. Box 142
Sandia Park, New Mexico 87047

Re: Drainage Report and Grading Plans for
Sunset Gardens Townhouses *L11-D3*

Dear Mr. Weiss:

I would like to commend you on a very thorough and complete drainage report for the above-mentioned development. Keep up the good work!

I would like to see the following issues clarified prior to acceptance and approval of this report:

1. It is not clear exactly how the individual lot ponds are to be graded due to the scale and the amount of information shown on Sheet 3 of 10. A suggestion is to include on a separate sheet the typical onsite drainage details that you showed in your report for the various lot sizes.

2. I am concerned that the subsurface infiltration galleries will not function if they are not properly installed. I will require an engineer's certification of such proper installation prior to final subdivision acceptance.

3. You have a conflict concerning spillway width on the common pond between the report and the plan sheet.

Finally, as you are aware there exists a serious drainage situation at the corner of Bataan Drive SW and Gonzales Road SW. As I see it, there are only two solutions available to your client.

1. Allow the off-site flows to continue towards the natural playa on the east and adjacent to the parcel while preserving the playa's storage capacity.

MUNICIPAL DEVELOPMENT DEPARTMENT
Richard S. Heller, P.E., City Engineer ENGINEERING DIVISION Telephone (505) 766-7467

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Consultants terra-Sol inc.

P.O. Box 142 Sandia Park, New Mexico 87047 (505) 281-1991

January 13, 1981

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HYDROLOGY SECTION

Mr. Richard Heller
Municipal Development
City of Albuquerque
400 Marquette NW
Albuquerque, New Mexico 87102

RE: Sunset Gardens Townhouses

Dear Mr. Heller:

We are submitting the attached report, prepared by Consultants/Terra-Sol, Inc., for your review and approval.

Thank you.

Respectfully,

Christopher L. Weiss, P. E.
President

CLW/vw

Attachments

266-3449

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DRAINAGE REPORT & GRADING PLAN

SUNSET GARDENS TOWNHOUSES

on

BATAAN DRIVE S.W.
ALBUQUERQUE, NEW MEXICO

JANUARY, 1981

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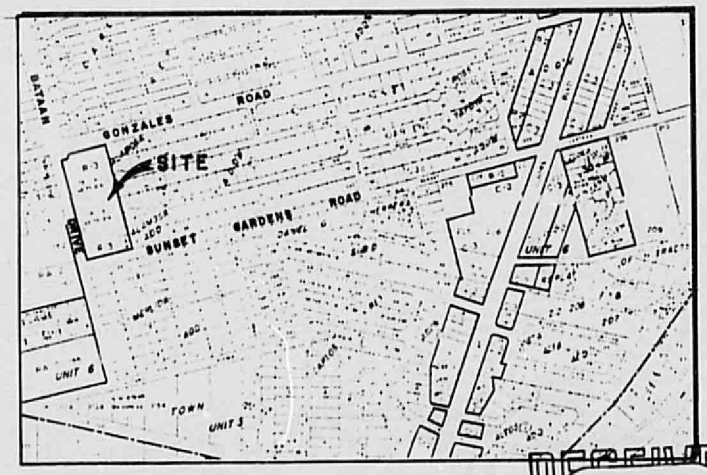
DRAINAGE REPORT & GRADING PLAN JANUARY 1981
SUNSET GARDENS TOWNHOUSES

INTRODUCTION

At the request of Sanchez Construction. Inc., owners of the proposed townhouse tract, Consultants/Terra-Sol, Inc., has investigated the storm drainage for the site. This investigation follows the criteria set forth in the November, 1979, City of Albuquerque Interim Drainage Guidelines for projects located on the west mesa.

SITE LOCATION

The proposed site (4.71 Acres) is located in the SW quadrant of the City. It lies east of and adjacent to Bataan Drive, between Gonzales Road and Sunset Gardens Road, and is bordered on the east by an undeveloped R-1 tract of land.



VICINITY MAP - K&L

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P R O P O S E D D E V E L O P M E N T

The proposed development will consist of 71 zero-lot line type townhouses and related street improvements, with a dedicated common ponding area located in the SE corner of the site.

Proposed construction features which are pertinent to drainage are as follows:

1. Each structure's roof will drain to the rear yard and with no roof ponding. Individual lot surface ponds, where applicable, will be kept a minimum of 15' away from the structure, and 1' away from the side and rear property lines. The front area of the lot will be sloped away for positive drainage to the adjacent street.
2. For those units with adequate rear yard space, the following surface pond characteristics will apply:
   - Each pond's depth will be held to a maximum of 0.5' and will require a pond perimeter wall, as per FHA standards.
   - The sides of each pond area will be constructed to a maximum 2:1 slope.
   - Each pond will be sized to hold the entire volume generated by a 100 yr.-6hr. storm for the area draining to that pond.
   - Each pond will be constructed with a sub-surface recharge system--details covered later in this report.
3. For those units with inadequqte rear yard space for a total surface pond, the following charactistics will apply:
   - Depth, location from building, walls and pond side slopes will apply as above.
   - Each pond will be sized to hold the increased runoff created by development, with a positive discharge provided to the street to drain off the undeveloped 100 yr. storm volume.
   - Pond capacity will be provided through a combination of surface and sub-surface storage. The sub-surface

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portion will be constructed to provide groundwater recharge.

4. The dedicated common pond area in the SE corner of the site will be constructed with a positive drain onto Sunset Gardens Road and will be landscaped in Southwestern style with native shrubs. (See copy of agreement in rear of report).

TOPOGRAPHIC MAP

The topographic map used as a basis for the grading plan is the result of a field survey conducted by Walker Surveying Company in November, 1980. This map represents the site topography as it now exists.

SOILS REPORT

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The soil-type for the site consists of deposits of principally silty sands with traces of fine gravel (SM). Specific drainage recommendations require the edges of any ponding areas be held a minimum distance of 15' from the building perimeters for the foundation design covered in the soils report. The SCS infiltration rate for this area (Soil Class BCC) is 6" to 20"/hr., verified by a field percolation test by ATL of 15"/hr.

DRAINAGE/GRADING EXHIBIT

The drainage/grading plan located in the back of this report shows the location of the proposed drainage improvements and the proposed final grades for the site.

EXISTING DRAINAGE

Existing conditions indicate that the site is subject

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to offsite flows from the west. Points of discharge of offsite flows affecting the site occur from the intersection of Gonzales Road and Bataan and fom two minor arroyos immediately west of the site. The offsite drainage map, located in the back of this report, refers to these areas as A-1, A-2 and A-3. This map is a composite of an existing orthophoto map on file with the City, and a recent unpublished map supplied by Bohannan-Huston Engineers. This updated map defines Airport Road as the western limit for these drainage areas, which coincides with Bohannan-Huston's FIA Map amendment study.

Particulars for the offsite drainage areas are as follows:

<u>Area A-1</u> Area = 6.2 Ac
I = 5.4, C = 0.40
Q = <u>13</u> cfs at Bataan Drive

<u>Area A-2</u> Area = 3.4 Ac
I = 5.4, C = 0.40
Q = <u>7</u> cfs at Bataan Drive

<u>Area A-3</u> Area = 34 Ac
Channel Tc = 3 minutes
Overland Tc = 10 minutes
I = 5, C = 0.60
Q = <u>102</u> cfs at Gonzales and Bataan

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Surface runoff from the site, as well as offsite flows, collect in a natural sump area adjacent to and partially within the eastern portion of the site. The entire site is presently designated to be within a flood hazard area, as shown on Page 4 of the Flood Hazard Boundary Map, dated December 4, 1979.

However, Bohannan-Huston Engineers is presently updating the FIA maps and a preliminary analysis by that firm indicates the high water level for the sump area to be 5010.80 (see copy of correspondence in rear of report). In light of this data,

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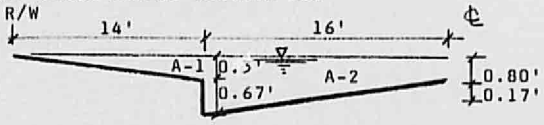
the City has requested that the FIA review the data, and if they concur, remove the site from the flood status above the elevation of 5010.8.

D E V E L O P E D D R A I N A G E

Offsite Flows

Flows from the offsite areas A-1 through A-3 will be routed south because of existing water blocks at the intersections of Gonzales and Sunset Garden Road with Bataan. Recent street construction of Bataan Drive south of Sunset Gardens Road maintains a positive slope to the south for continuance of this flow pattern.

Although Bataan Drive will be constructed adjacent to the site, the maximum slope obtainable for this section of street will be 0.26% due to the control of existing street improvements at each end of Bataan. The hydralic capacity of this portion of a 60' R/W with a 32' Face to Face, one half crown street section is:



Area A-1 $\frac{(14)(0.3)}{2}(2) = 4.2$

A-2 $\frac{(1+0.80)}{2}(16)(2) = \frac{28.8}{33.0 \text{ ft.}^2}$

WP = 60 + 2(0.67) = 61.34 ft.

Q = 2158 S1/2

For S = 0.0026,

Q = 110 cfs at a velocity of 3'/Sec

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Onsite Flows

Each lot will incorporate individual ponding to account for roof and rear yard area runoff. The front portion of each lot will drain to the adjacent street for routing away from the site.

The common dedicated pond area located in the southeast corner of the site is provided to account for an equivalent volume of runoff displaced by filling operations below the 5010.80 natural sump elevation.

All individual lot pond areas will be constructed with sub-surface recharge systems to insure a more functional use of each pond area. The recharge systems are necessary because the site will be raised by fill material. All material moved onto the site will be compacted under controlled earth fill conditions, and as such, the permeability of the pond areas will be substantially reduced for single storm conditions or even made ineffective in back-to-back storm conditions.

Generally, the subdivision will consist of three different types of buildings, 22',24' and 26' wide. The typical townhouse for the lot with a 5' side setback will consist of a single-story unit, 50' in depth. The typical townhouse for interior, zero-lot line lots will consist of a two-story unit, 30' in depth.

Detailed pond size calculations for individual lots are shown for the most common size proposed. For atypical lots not covered by the following data, final pond size and volume was adjusted to suit that particular lot and proposed structure size, as shown on the table of pond sizes in the Grading Plan.

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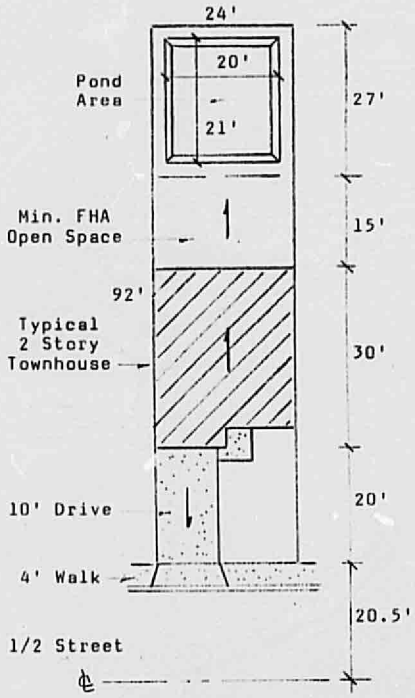
SUNSET GARDENS TOWN HOUSES JANUARY 1981

Onsite Drainage

Interior Lot - 24' wide



Roof and Rear Yard Area

Area Draining to pond-

24'x72' = 1728 ft.^{2}

Roof - 24x30 = 720(0.9) = 0.38

Yard - 24x42 = 1008(0.4)= 0.23

C = 0.61

Volume = 2.2/12(0.61)(1728)

= 193 ft.^{3} (100% retention)

Pond size at top, 0.5' deep with 2:1 S.S. = 20' across x 21' wide.

Front yard/Street Area

Undeveloped Area Draining from site -

24x112.5 = 2700 ft.^{2}

Undeveloped flow volume -

2.2/12(0.4)(2700) = 198 ft.^{3}

Developed Area Draining from site -

24x40.5 = 972 ft.^{2}

Developed flow volume -

2.2/12(0.74)(972) = 132 ft.^{3}

Result is a 33% volume reduction leaving site.

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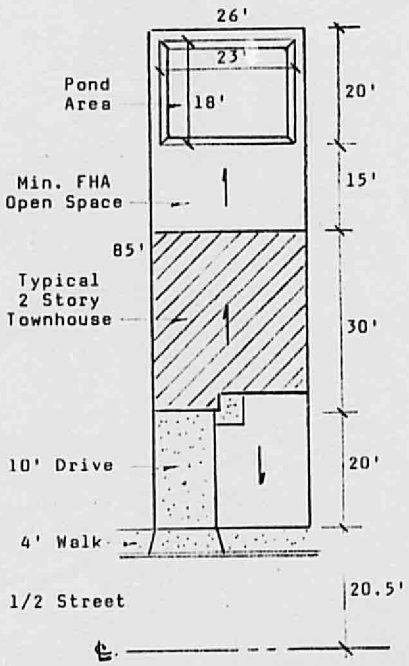
SUNSET GARDENS TOWN HOUSES JANUARY 1981

Onsite Drainage
Interior Lot - 26' Wide



Roof and Rear Yard Area

Area Draining to Pond -

26x65 = 1690 ft.^{2}

Roof - 26x30 = 780(0.9) = 0.42

Yard - 26x35 = 910(0.4) = 0.22

C = 0.63

Volume = 2.2/12(0.63)(1690)

= 195 ft.^{3} (100% retention)

Pond size at top, 0.5'deep with 2:1 S.S. = 23' across x 18' wide

Front Yard/Street Area

Undeveloped Area Draining from site -

26x105.5 = 2743 ft.^{2}

Undeveloped flow volume -

2.2/12(0.4)(2743) = 201 ft.^{3}

Developed Area Draining from site -

26x40.5 = 1053 ft.^{2}

Developed flow volume -

2.2/12(0.73)(1053) = 140 ft.^{3}

Result is a 30% volume reduction leaving site.

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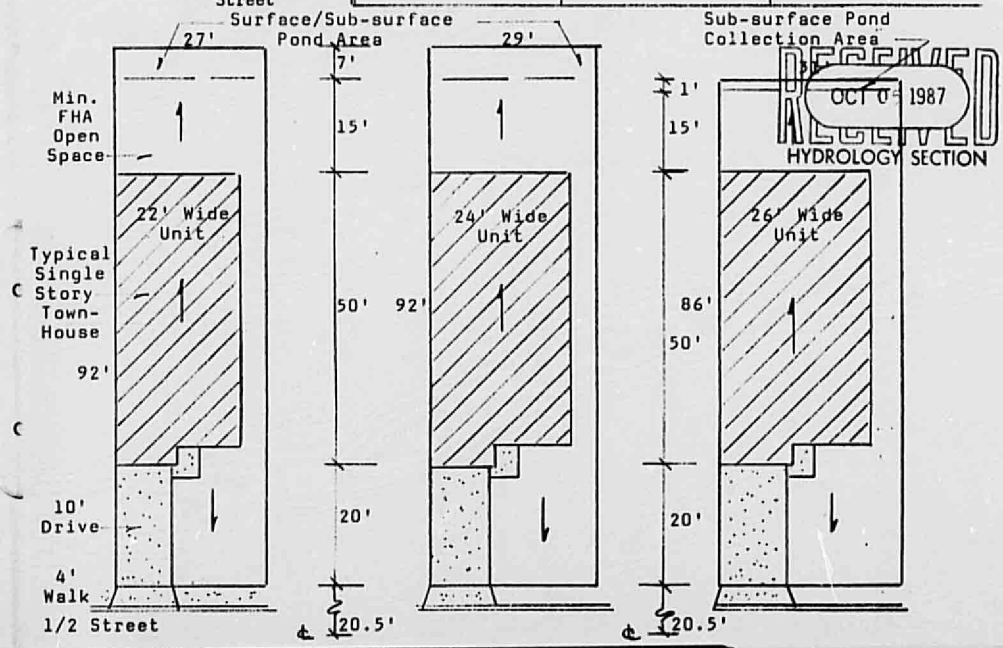
SUNSET GARDENS TOWNHOUSES JANUARY 1981

	27' Lot	29' Lot	31' Lot
Undeveloped Area	27x112.5' =3037.5 ft.^{2}	29'x112.5 =3262.5 ft.^{2}	31x106.5 =3301.5 ft.^{2}
Undeveloped Vol.	2.2/12(0.4)(3037.5) =223 ft.^{3}	2.2/12(0.4)(3262.5) =239 ft.^{3}	2.2/12(0.4)(3301.5) =242. ft.^{3}
Developed Vol.	2.2/12(0.61)(3037.5) =340 ft.^{3}	2.2/12(0.61)(3262.5) =367 ft.^{3}	2.2/12(0.62)(3301.5) =375 ft.^{3}
Vol. to be Ponded	340-223 =117 ft.^{3}	367-239 =128 ft.^{3}	375-242 133 ft.^{3}
Ck. Vol. to Pond	2.2/12(0.68)(1944) =242 ft.^{3}	2.2/12(0.69)(2088) =264 ft.^{3}	2.2/12(0.72)(2046) =270 ft.^{3}
Surface Pond Size	5'x25'x0.5' w/2:1 S.S. =49 ft.^{3}	5'x25'x0.5' w/2:1 S.S. =49 ft.^{3}	None
Sub-Surface Pond	5'x25'x1.7' w/ 1/3 void =70 ft.^{3}	5'x25'x2' w/ 1/3 void =83 ft.^{3}	5'x27'x3' w/ 1/3 void =134 ft.^{3}
Total Pond Capacity	119 ft.^{3} > 117 req'd	132 ft.^{3} > 128 req'd	134 ft.^{3} ≅ 133 req'd
Pond Overflow to Street	242-119 = 123 ft.^{3}	264-132 = 132 ft.^{3}	270-134 = 136 ft.^{3}



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Rear Yard Ponds

Projects of this nature will require a high usage of the open space available in the rear yards. Somewhat in conflict with this open space usage are the surface pond requirements, where applicable. Given the high infiltration rate of the existing subsoil, these pond areas normally would function quite effectively in single or multiple storm situations, providing minimal inconvenience to the homeowner. However, the entire site will be raised up substantially above existing contours, and the fill material will be compacted in place to a minimum of 90% density. The net result to the infiltration rates of the surface ponds will be a substantial reduction in the soil's ability to absorb runoff quickly. The effects of a single storm in the pond area will linger for days. The effects of a multiple storm could cause damage to the building when backed-up flows are not absorbed.

For these reasons, it will be necessary to install a connection from the surface pond to the rapid infiltration area of the native soils to reduce the pond infiltration time. This connection will be a 12" diameter augered hole drilled through the fill material into the native soil below. The hole will be backfilled with 3/4" to 1 1/2" diameter gravel packed around a 6" perforated PVC vertical pipe. The vertical pipe will be capped off at the top to help maintain it as a clean-out for a clear passage through the gravel area.

For those lots requiring a subsurface pond, the outflow pipe will be a continuance of this collection system and will function only when the subsurface system has reached design capacity. (See Grading Plan for details).

Common Dedicated Pond Area

This project will involve the use of a dedicated common pond to compensate for the equivalent volume of ru

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displaced by filling in that portion of the natural sump area lying within the site.

Base Data

Volume of displaced runoff below Elevation 5010.8 = 5300 ft.^{3}
Surface Pond Capacity with vertical walls At 1.5' depth = 4449 ft.^{3}
Sub-surface overexcavation/gravel backfill with 1/3 void ratio at 1' - 0" deep, capacity = 979 ft.^{3}
Total Capacity = 5428 ft.^{3}
Volume draining to pond (1.2/12)(0.75)(38,890) = 5347 ft.^{3}

a. Outlet facilities - Positive discharge of Q_1, with Overfow spillway = Q100 Developed. The pond outlet for the spillway and the positive Q_1 discharge will be defined by the pond perimeter wall and will drain onto Sunset Gardens Road at the SE corner of the site.

The outlet will consist of a pipe at flowline elevation of 5013.3 to release the Q_1 flow rate of (0.75)(1.62)(0.66 Ac) = 0.8 cfs. With a high water elevation of 5014.8, the head on the pipe would be 1.5'. The area of the discharge pipe is found from the formula $Q=CA\sqrt{2gh}$. The pipe area = 0.10 ft.^{2}, or use 1 - 4" pipe installed under the sidewalk and through the existing curb.

The Q100 discharge rate for the area draining to the pond is (0.75)(5.4)(0.89) = 3.6 cfs. Using the general form of the equation for horizontal-crested weirs, Q = CLH3/2, with a value of C = 2.68 for broad-crested weirs at a H = 0.2', the breadth of the spillway crest should equal 15', invert at elevation 5014.80.

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R E C O M M E N D A T I O N S

1. Rear Yard Ponds
   a. Construct block perimeter wall around pond area, per FHA standards.

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b. Grade pond side slopes to a maximum 2:1 S.S. and hold depth to a maximum of 0.5'.

c. Hold pond edges a minimum distance of 15' from buildings, 1' from pond perimeter walls at property lines.

d. Install sub-surface recharge collection systems for each pond, as shown by Grading Plan details.

e. For lots requiring sub-surface ponds, install outlet pipe connected to recharge collection system to drain overflow to street. Use filter cloth to line excavated sub-basin prior to installing 3/4" to 1 1/2" diameter washed gravel.

2. Dedicated Common Pond

a. Construct block retaining wall around perimeter of pond area, as shown by Grading Plan details. Waterproof pond-side of wall with approved bitummous coating.

b. Construct pond outlet at SE corner of pond to drain to Sunset Gardens Road. Install 1 - 4" diameter pipe under existing walk and through curb - flow line invert 5013.3. Construct a 15' wide spillway in pond perimeter wall at SE corner of pond - invert at 5014.8. Hold top of perimeter wall at elevation 5015.5, except at spillway opening.

c. Overexcavate pond area by 1'-0" and fill with gravel to elevation 5013.3. Do not use plastic liner under gravel.

d. Landscape pond with Southwestern style/native shrubs.

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C O N C L U S I O N

The proposed site will reduce the onsite volume and divert offsite flows to the south, in addition to discharging reduced runoff onto adjacent streets for positive drainage, thus lowering the volume of runoff presently draining to the natural sump area adjacent to the east side of the site.

The following pages are copies of correspondence concerning the flood hazard status, meetings with the City Engineer's office, and the Soils Report.

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PLANS/PLATS ON FILE

FILE DESC: LII/D3

PLANS/PLATS 5

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