JONES
ENGINEERING & CONSULTING, LLC

1-FOOT RISE CERTIFICATION

Client/Owner: James and Cathy Futral

Property Address: 1494 SW Santa Fe Drive, Fort White, FL 32038

Property Description: ± 0.63 acres in Columbia County (27,443 sf)

Parcel # 00-00-00-00641-011

Structures in SFHA Zone AE:

Existing residence constructed in 1987.

Existing vinyl shed constructed in 1993.

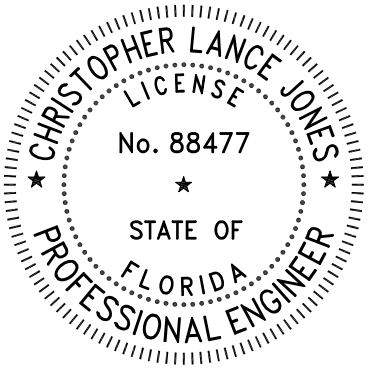
Proposed 29'-6" x 56'-3" residence with lowest horizontal member at an elevation of 36.51' per the architectural plans. The minimum allowable elevation of the lowest horizontal member is 34.40'.

Elevation of 100-YR Flood: 33.4 FT NAVD88 based on SRWMD Effective Flood Report

FIRM Panel: 12023C0466C

100-YR Flood Level Increase: A HEC-Ras model was generated to model the floodway with the proposed site improvements. The results identified that the 1% annual chance base flood elevation would not increase by more than 0.01 feet due to the construction of the residence.

I hereby certify that, to the best of my knowledge, construction of the proposed structures listed above will increase the 100-YR flood elevation less than 1 ft at the project location. Ground elevations and building dimensions were from a survey and building plans provided by the client. The 100-YR flood elevation and the floodplain width were obtained from the Suwannee River Water Management District Flood Report. This "One Foot Rise" certification is solely for the purpose of obtaining a building permit from the Columbia County Building Department and does not relieve the owner of any other permits that may be required.



Christopher L Jones
2023.04.24 23:31:38 -04'00'

This item has been digitally signed and sealed by C. Lance Jones, PE, on the date adjacent to the seal.

Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

Christopher L. Jones, P.E.
License No. 88477

Attachment 1. Zero Rise Report

Zero Rise Report

James and Cathy Futral

Parcel 00-00-00-00641-011

Columbia County, FL

Submitted To:

Suwannee River Water Management District

9225 County Rd 49, Live Oak, FL 32060

Submitted By:

Jones Engineering & Consulting, LLC

4605 East US Hwy 90

Lake City, FL 32025

Christopher L Jones
2023.04.24 23:31:54
-04'00'

CHRISTOPHER LANCE JONES
LICENSE
No. 88477
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

This item has been digitally signed and sealed by C. Lance Jones, PE, on the date adjacent to the seal.

Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

Christopher Lance Jones, PE
Florida PE No. 88477
April 6, 2023

Table of Contents

Table of Figures

I. Project Description

Existing Conditions

The existing parcel (00-00-00-00641-011) is 0.63 acres more or less and located at 1494 SW Santa Fe Drive, Fort White, FL 32038 in the Santa Fe Main Reach between river stations 8.43 and 7.64 with a 1% Annual Chance Base Flood Elevation of 33.40 feet per the SRWMD Effective Flood Information Report. Existing structures on the site include a single-story residence constructed in 1987 and portable vinyl shed constructed in 1993. An existing floating dock is in poor condition and will be removed.

Proposed Conditions

The applicant proposes to permit the construction of an elevated residence with the lowest horizontal member (16" floor joist) to be located at an elevation of +/- 36.51 feet, which is 3.11 feet above the 1% annual chance base flood elevation of 33.40 feet. Architectural plans accompanying this submittal and the existing ground elevations indicate that the finished floor elevation will be at +/- 37.84'. A HEC-RAS model has been developed to analyze the floodway impacts due to the construction of the proposed structures at the subject location. Existing structures were excluded from the HEC-RAS model under **40B-4.1070 Exemptions** due to the completion of their construction prior to January 29, 2001.

II. Analysis

HEC-RAS 5.07 was used to perform the Zero Rise Certification Modeling with data being obtained from Suwannee River Water Management District (SRWMD). The following steps were executed in performing the zero-rise analysis:

1. Obtain the current effective model.

   The current effective model has the 1% annual chance base flood elevation at 33.43 feet at the nearest upstream river station mile marker 8.43 and 33.40 feet for the subject parcel.

2. Run the current effective model and verify results match current effective data for two upstream and downstream river stations.

   HEC-Ras data for the Santa Fe River Main reach was obtained from SRWMD and used to generate the effective model. The model for existing conditions was run and an analysis was performed for a minimum of two upstream stations and downstream stations from the subject site. The results matched closely to the district flood report and are included in Table 1 on page 3.

3. Add pre-development cross-sections for the subject site floodway by interpolating the cross-sections of the upstream and downstream stations from the proposed development (without proposed floodway encroachments). Adjust the site cross-sectional data to match available topographic data from survey or GIS data. Run the HEC-RAS model for pre-development conditions and verify that the output data matches that of the current effective model.

A new cross-section, RS 8.324*, was interpolated between RS 8.43 and RS 7.64. Topographical data was included from a survey by Britt Surveying & Mapping, LLC. The model was run again after adding cross-section RS 8.324* for the subject property. Results are included in Table 1 below.

4. Add existing, permitted, and proposed floodway encroachments along the new cross-section to model the proposed development. Run the HEC-RAS model with new cross-section and post-development obstructions.

   The post-development site improvements and obstructions for the proposed residence was added to the new cross section RS 8.324*. Obstructions were modeled at 1 foot above the 100-year flood elevation at an elevation of 34.4 feet.

5. Verify that the output data does not increase the water surface elevation obtained in Step 3 by greater than 0.01 feet.

   The model was run a final time after the addition of the post-development site improvements and obstructions to cross-section RS 8.324*. There were no increases to the 100-year flood elevation at any of the cross-sections from the modeled runs in Step 3 by greater than 0.01 feet, therefore a zero rise is achieved per SRWMD rule 40B-4.3030(9). Results are included in the attached table.

Table 1. Zero Rise Modeling Summary

Zero Rise Modeling Results Summary Table			
River Station	Effective Model	Pre Development	Post Development
11.30	34.23	34.22	34.22
10.06	33.89	33.88	33.88
8.43	33.43	33.42	33.42
8.324*		33.40	33.40
7.64	33.21	33.21	33.21
6.46	32.94	32.94	32.94

Table 2. Zero Rise Modeling Data Effective Model

Profile Output Table - Standard Table 1

File Options Std. Tables User Tables Locations Help

HEC-RAS Plan: Effective Locations: User Defined — Reload Data

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Santa Fe	Main	11.3	100 Year	16359.00	6.34	34.23		34.26	0.000035	1.70	32793.67	2491.64	0.06
Santa Fe	Main	11.3	FW	16359.00	6.34	35.03		35.06	0.000035	1.73	28340.08	1615.00	0.06
Santa Fe	Main	10.06	100 Year	16359.00	1.15	33.89		33.96	0.000068	2.39	21181.91	2550.91	0.08
Santa Fe	Main	10.06	FW	16359.00	1.15	34.70		34.77	0.000064	2.37	17765.12	1217.00	0.08
Santa Fe	Main	8.43	100 Year	16359.00	-1.66	33.43		33.49	0.000052	2.21	34648.19	5661.33	0.07
Santa Fe	Main	8.43	FW	16359.00	-1.66	34.24		34.30	0.000053	2.27	24866.34	2099.00	0.07
Santa Fe	Main	7.64	100 Year	16359.00	2.09	33.21		33.26	0.000062	2.22	35468.11	5128.03	0.08
Santa Fe	Main	7.64	FW	16359.00	2.09	34.00		34.06	0.000070	2.41	23748.89	1694.00	0.08
Santa Fe	Main	6.46	100 Year	16359.00	1.87	32.94		32.98	0.000039	1.81	37577.47	3849.59	0.06
Santa Fe	Main	6.46	FW	16359.00	1.87	33.72		33.75	0.000039	1.87	29833.99	1601.00	0.06

Table 3. Zero Rise Modeling Data Predevelopment Conditions

Profile Output Table - Standard Table 1

File Options Std. Tables User Tables Locations Help

HEC-RAS Plan: Predevelopment Locations: User Defined — Reload Data

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Santa Fe	Main	11.3	100 Year	16359.00	6.34	34.22		34.25	0.000035	1.70	32759.01	2490.22	0.06
Santa Fe	Main	11.3	FW	16359.00	6.34	35.00		35.04	0.000035	1.73	28294.65	1615.00	0.06
Santa Fe	Main	10.06	100 Year	16359.00	1.15	33.88		33.95	0.000068	2.40	21144.38	2548.42	0.08
Santa Fe	Main	10.06	FW	16359.00	1.15	34.67		34.74	0.000065	2.38	17729.24	1217.00	0.08
Santa Fe	Main	8.43	100 Year	16359.00	-1.66	33.42		33.47	0.000053	2.22	34556.57	5659.33	0.07
Santa Fe	Main	8.43	FW	16359.00	-1.66	34.21		34.27	0.000053	2.27	24799.84	2099.00	0.07
Santa Fe	Main	8.3240*	100 Year	16359.00	-1.16	33.40		33.44	0.000046	1.95	33424.80	5529.81	0.07
Santa Fe	Main	8.3240*	FW	16359.00	-1.16	34.20		34.24	0.000039	1.83	37906.94	5633.90	0.06
Santa Fe	Main	7.64	100 Year	16359.00	2.09	33.21		33.26	0.000062	2.22	35468.11	5128.03	0.08
Santa Fe	Main	7.64	FW	16359.00	2.09	34.00		34.06	0.000070	2.41	23748.89	1694.00	0.08
Santa Fe	Main	6.46	100 Year	16359.00	1.87	32.94		32.98	0.000039	1.81	37577.47	3849.59	0.06
Santa Fe	Main	6.46	FW	16359.00	1.87	33.72		33.75	0.000039	1.87	29833.99	1601.00	0.06

Critical water surface elevation. Water surface corresponding to the minimum energy on the energy versus depth curve.

*Figure 1.Geometry Model for Predevelopment Conditions at RS 8.324**

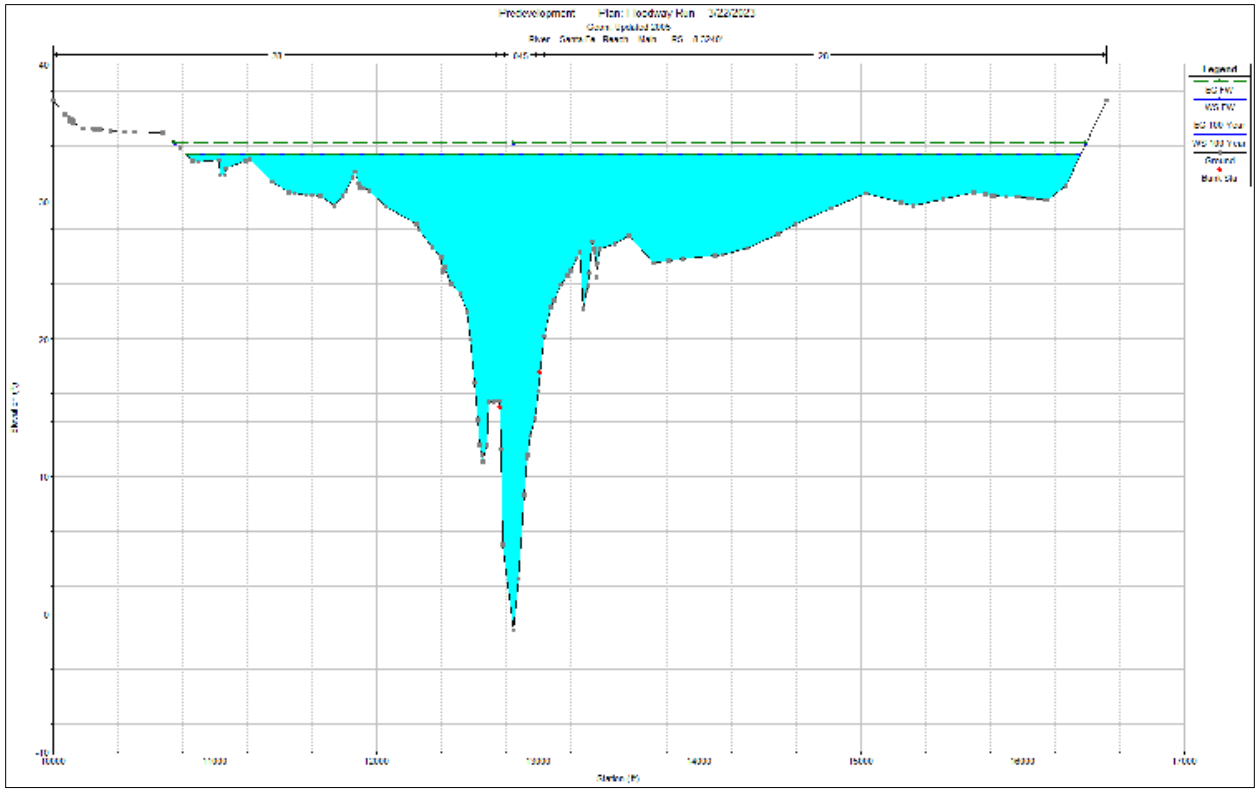


Table 4. Zero Rise Modeling Data Postdevelopment Conditions

Profile Output Table - Standard Table 1

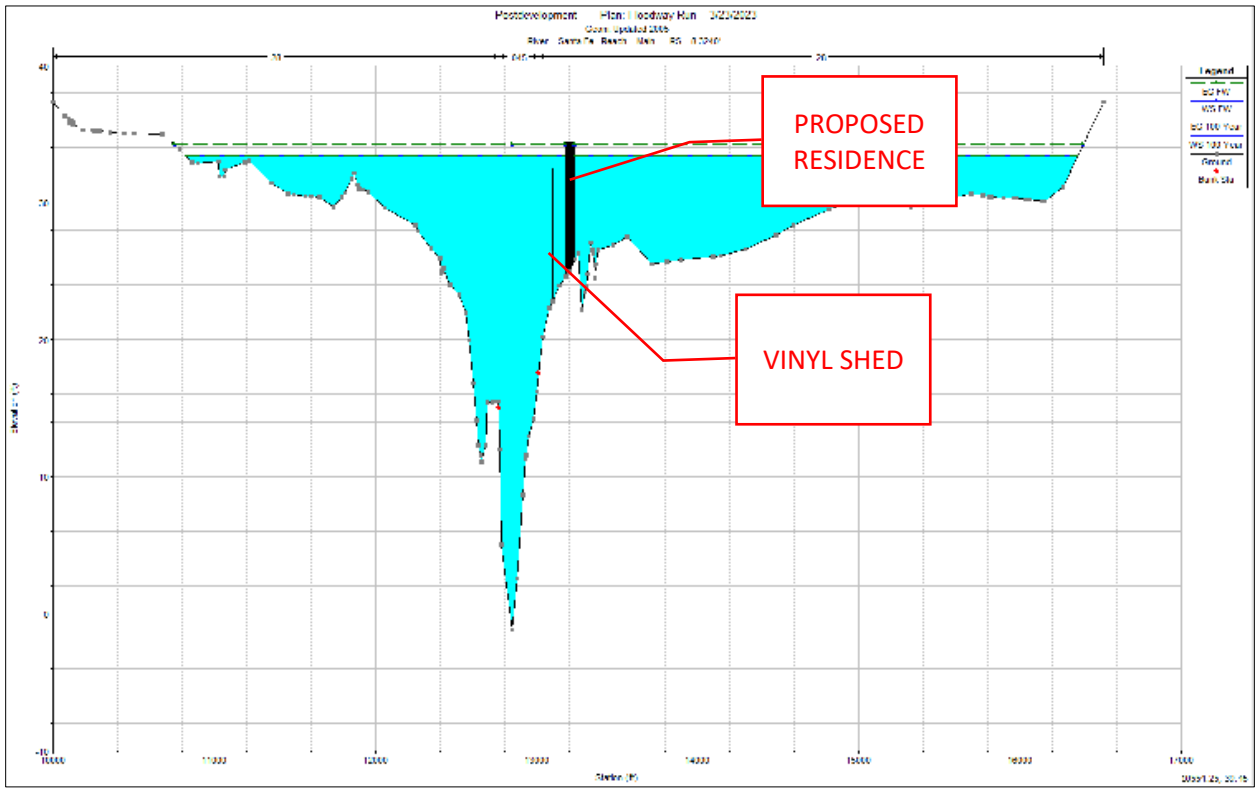
File Options Std. Tables User Tables Locations Help

HEC-RAS Plan: Postdevelopment Locations: User Defined — Reload Data

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Santa Fe	Main	11.3	100 Year	16359.00	6.34	34.22		34.25	0.000035	1.70	32761.42	2490.32	0.06
Santa Fe	Main	11.3	FW	16359.00	6.34	35.00		35.04	0.000035	1.73	28296.50	1615.00	0.06
Santa Fe	Main	10.06	100 Year	16359.00	1.15	33.88		33.95	0.000068	2.40	21146.99	2548.59	0.08
Santa Fe	Main	10.06	FW	16359.00	1.15	34.67		34.74	0.000064	2.38	17730.70	1217.00	0.08
Santa Fe	Main	8.43	100 Year	16359.00	-1.66	33.42		33.47	0.000053	2.22	34562.96	5659.47	0.07
Santa Fe	Main	8.43	FW	16359.00	-1.66	34.21		34.27	0.000053	2.27	24802.55	2099.00	0.07
Santa Fe	Main	8.3240*	100 Year	16359.00	-1.16	33.40		33.44	0.000047	1.97	32841.90	5473.57	0.07
Santa Fe	Main	8.3240*	FW	16359.00	-1.16	34.20		34.24	0.000040	1.85	37280.08	5577.69	0.06
Santa Fe	Main	7.64	100 Year	16359.00	2.09	33.21		33.26	0.000062	2.22	35468.11	5128.03	0.08
Santa Fe	Main	7.64	FW	16359.00	2.09	34.00		34.06	0.000070	2.41	23748.89	1694.00	0.08
Santa Fe	Main	6.46	100 Year	16359.00	1.87	32.94		32.98	0.000039	1.81	37577.47	3849.59	0.06
Santa Fe	Main	6.46	FW	16359.00	1.87	33.72		33.75	0.000039	1.87	29833.99	1601.00	0.06

Total flow in cross section.

*Figure 2. Geometry Model for Postdevelopment Conditions at RS 8.324**



III. Attachments

Attachment 1. Property Appraiser Map

Columbia County Property Appraiser
Jeff Hampton

2023 Working Values
updated: 3/16/2023

Parcel: << 00-00-00-00641-011 (2848) >>

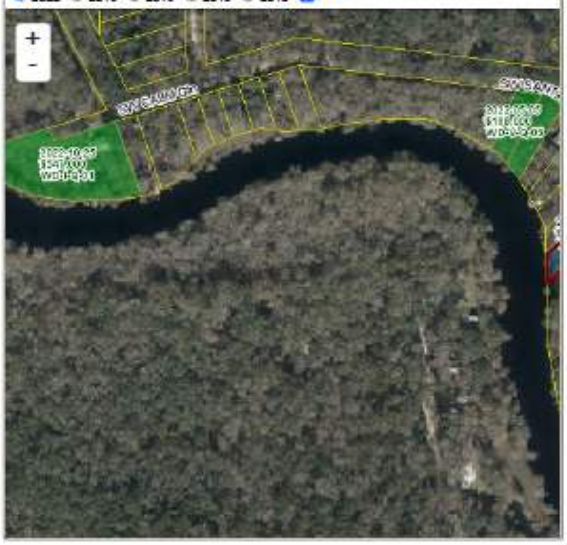
Owner & Property Info Result: 1 of 1

Owner	FUTRAL JAMES H FUTRAL CATHY C 5226 EASTCHESTER DR SARASOTA, FL 34234		
Site	1494 SW SANTA FE DR, FORT WHITE		
Description*	LOT 11 UNIT 6 THREE RIVERS ESTATES. 500-566, 634-615, 687-595, 811-373, 818-1652, 820-1007, 927-1350, DC 971-1130, WD 1056-2406, WD 1434-1886		
Area	0.63 AC	S/T/R	26-6S-15
Use Code**	SINGLE FAMILY (0100)	Tax District	3

*The Description above is not to be used as the Legal Description for this parcel in any legal transaction.
**The Use Code is a FL Dept. of Revenue (DOR) code and is not maintained by the Property Appraiser's office. Please contact your city or county Planning & Zoning office for specific zoning information.

Aerial Viewer | Pictometery | Google Maps

2022 | 2019 | 2016 | 2013 | 2010 | Sales



Property & Assessment Values

2022 Certified Values		2023 Working Values	
Mkt Land	$48,750	Mkt Land	$48,750
Ag Land	$0	Ag Land	$0
Building	$69,332	Building	$68,455
XFOB	$4,173	XFOB	$4,173
Just	$122,255	Just	$121,378
Class	$0	Class	$0
Appraised	$122,255	Appraised	$121,378
SOH Cap [?]	$0	SOH Cap [?]	$0
Assessed	$122,255	Assessed	$121,378
Exempt	$0	Exempt	$0
Total Taxable	county:$122,255 city:$0 other:$0 school:$122,255	Total Taxable	county:$121,378 city:$0 other:$0 school:$121,378

Sales History

Sale Date	Sale Price	Book/Page	Deed	V/I	Qualification (Codes)	RCode
4/9/2021	$160,000	1434/1886	WD	I	Q	01
8/25/2005	$80,000	1056/2406	WD	I	Q	
5/10/2001	$50,000	0927/1350	WD	I	Q	
4/11/1996	$30,000	0820/1007	WD	I	Q	
9/26/1995	$0	0811/0373	CT	I	U	11
6/2/1989	$35,000	0687/0595	WD	I	Q	
10/5/1987	$25,000	0634/0615	WD	I	U	
11/1/1982	$20,500	0500/0566	WD	V	U	01
7/1/1979	$10,000	0431/0184	03	V	Q	

Building Characteristics

Bldg Sketch	Description*	Year Blt	Base SF	Actual SF	Bldg Value
Sketch	SINGLE FAM (0100)	1987	690	739	$68,455

*Bldg Desc determinations are used by the Property Appraisers office solely for the purpose of determining a property's Just Value for ad valorem tax purposes and should not be used for any other purpose.

Extra Features & Out Buildings (Codes)

Code	Desc	Year Blt	Value	Units	Dims
0294	SHED WOOD/VINYL	1993	$780.00	120.00	10 x 12
0064	DOCK-RIVER	2006	$3,393.00	585.00	0 x 0

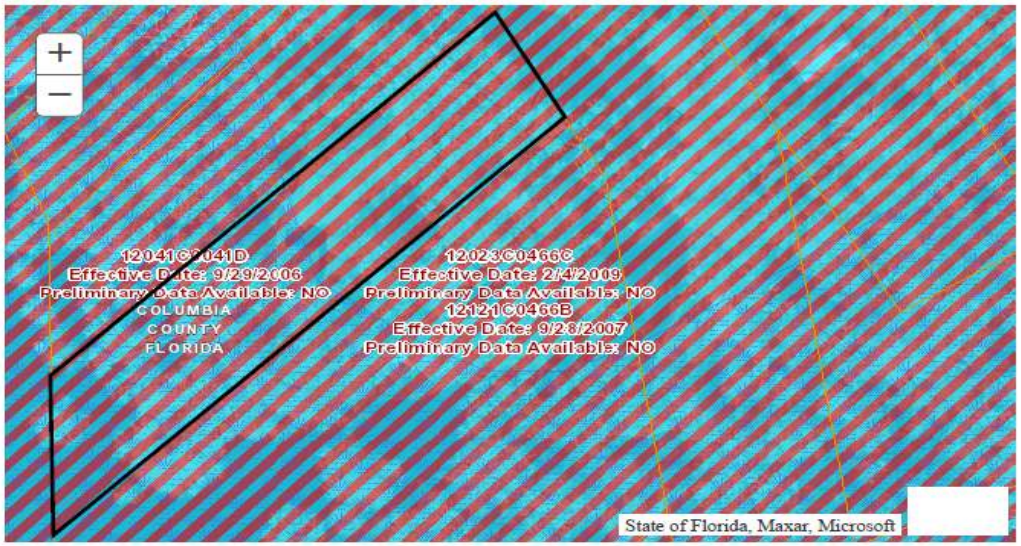
Land Breakdown

Code	Desc	Units	Adjustments	Eff Rate	Land Value
0100	SFR (MKT)	75.000 FF (0.630 AC)	1.0000/1.0000 1.0000/1.3000000 /	$650 /FF	$48,750

Search Result: 1 of 1

Attachment 2. SRWMD Effective Flood Information Report

EFFECTIVE FLOOD INFORMATION REPORT



Location Information

County:	**COLUMBIA**
Parcel:	**00-00-00-00641-011**
Flood Zone:	**AE FW**
Flood Risk:	**HIGH**

1% Annual Chance Base Flood Elev*	**33.4 (feet)**
10% Annual Chance Flood Elev*	**27.5 (feet)**
50% Annual Chance Flood Elev*	**22 (feet)**

* Flood Elevations shown on this report are in NAVD 88 and are derived from FEMA flood mapping products, rounded to the nearest tenth of a foot. For more information, please see the note below

Legend with Flood Zone Designations

1% Flood -Floodway (High Risk)	Area Not Included	CrossSections	Wetlands
1% Flood - Zone AE (High Risk)	SFHA Decrease	County Boundaries	
1% Flood - Zone A (HighRisk)	SFHA Increase	FIRM Panel Index	
1% Flood - Zone VE (HighRisk)	Depressions	Parcels	
0.2% Flood-Shaded Zone X (Moderate Risk)	BaseFlood Elevations (BFE)	River Marks	

Supplemental Information

Watershed	Santa Fe	Map Effective Date	2/4/2009	Special Flood Hazard Area	Yes
FIRM Panel(s)	12023C0466C				

Anywhere it can rain, it can flood
Know your risk.

www.srwmdfloodreport.com

The information herein represents the best available data as of the effective map date shown. The Federal Emergency Management Agency (FEMA) Flood Map Service Center (https://msc.fema.gov) maintains the database of Flood Insurance Studies and Digital Flood Insurance Rate Maps, as well as additional information such as how the Base Flood Elevations (BFEs) and/or floodways have been determined and previously issued Letters of Map Change. Requests to revise flood information may be provided to the District during the community review period on preliminary maps, or through the appropriate process with FEMA Change Your Flood Zone Designation | FEMA.gov. Information about flood insurance may be obtained at (https://www.floodsmart.com)

Prepared by and return to:

Dana E. Hill, Esquire
Hill Law Associates, PLLC
230 Court Street SE
Live Oak, FL 32064
386-362-1900
File Number: **21-174**

[Space Above This Line For Recording Data]

Warranty Deed

This Warranty Deed made this **9th** day of **April, 2021** between **Marvin E. Buchanan and Matthew E. Buchanan, as Trustees of the Central Florida Lands & Timber 401K Retirement Plan,** whose post office address is **3087 N CR 53, Mayo, FL 32066**, grantor, and **James H. Futral and Cathy C. Futral, husband and wife,** whose post office address is **5226 Eastchester Drive, Sarasota, FL 34234**, grantee:

(Whenever used herein the terms "grantor" and "grantee" include all the parties to this instrument and the heirs, legal representatives, and assigns of individuals, and the successors and assigns of corporations, trusts and trustees)

Witnesseth, that said grantor, for and in consideration of the sum of One Hundred Sixty Thousand and 00/100 Dollars ($160,000.00) and other good and valuable considerations to said grantor in hand paid by said grantee, the receipt whereof is hereby acknowledged, has granted, bargained, and sold to the said grantee, and grantee's heirs and assigns forever, the following described land, situate, lying and being in **Columbia County, Florida** to-wit:

Lot 11, THREE RIVERS ESTATES, UNIT NO. 6, a subdivision according to the plat thereof as recorded in Plat Book 4, page 39, of the public records of Columbia County, Florida.

Parcel Identification Number: R 00641-011

N.B. Grantors warrant that at the time of this conveyance, the subject property is not the Grantor's homestead within the meaning set forth in the constitution of the state of Florida, nor is it contiguous to or a part of homestead property.

SUBJECT TO any valid and existing oil, gas or mineral right, reservation, royalty transfer or mineral deed conveying or reserving any interest in the oil, gas or minerals underlying said lands, or any portion thereof, heretofore executed and duly recorded in the public records of said county.

FURTHER SUBJECT TO covenants, conditions, restrictions, easements, reservations and limitations of record, road rights of way and utility easements, and rules, regulations and permitting requirements of Suwannee River Water Management District, if any.

Together with all the tenements, hereditaments and appurtenances thereto belonging or in anywise appertaining.

To Have and to Hold, the same in fee simple forever.

And the grantor hereby covenants with said grantee that the grantor is lawfully seized of said land in fee simple; that the grantor has good right and lawful authority to sell and convey said land; that the grantor hereby fully warrants the title to said land and will defend the same against the lawful claims of all persons whomsoever; and that said land is free of all encumbrances, except taxes accruing subsequent to **December 31, 2020**.

In Witness Whereof, grantor has hereunto set grantor's hand and seal the day and year first above written.

Appendix A. HEC-RAS Pre-development Report Summary

```
   10000   39.34   10089   37.24   10283   35.04   10472   31.64   10610   31.24
   10770   33.24   11030   33.34   11183   29.34   11374   25.34   11475   21.24
   11508   19.84   11699   20.04   11981   20.84   12090   22.44   12353   24.64
   12443   19.74   12471   15.34   12500   12.14   12550    9.94   12575    9.84
   12600   13.04   12624   15.34   12650   19.04   12734   22.94   12782   22.94
   12838   15.94   12878   22.94   12930   23.94   12985   23.54   13064   30.24
   13172   32.74   13298   33.84   13507   35.74   13550   35.94   13572   34.74
   13612   36.34   13835   38.54   13910   39.34

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   10000     .28   12443    .045   12650     .28

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         12443   12650             4700    5540    5500             .1       .3

CROSS SECTION


RIVER: Santa Fe
REACH: Main               RS: 13.03

INPUT
Description: J - GILCHRIST FIS -
Station Elevation Data    num=      31
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   10000   39.34   10118   37.74   10251   38.34   10333   38.64   10366   37.44
   10479   33.34   10562   30.84   10858   29.24   11233   28.84   11574   30.04
   11746   26.74   11961   26.14   12415   31.64   12535   29.74   12667   22.64
   12868   19.04   12920   12.64   12950    7.84   12975   -6.11   13025    6.79
   13085   12.64   13185   15.94   13381   16.24   13544   18.44   13733   17.84
   13810   19.34   13901   21.54   14050   22.14   14187   23.54   14265   24.24
   14369   39.34

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   10000     .28   12920    .045   13085     .28

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         12920   13085             6100    9130    5400             .1       .3

CROSS SECTION


RIVER: Santa Fe
REACH: Main               RS: 11.3

INPUT
Description: I - GILCHRIST FIS -
Station Elevation Data    num=      28
```

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
10000	39.34	10116	35.24	10270	30.64	10433	35.14	10605	38.24
10755	39.84	10968	34.24	11118	28.04	11379	22.24	11645	25.74
11856	19.34	11938	17.54	12080	13.54	12100	9.94	12200	6.44
12250	6.34	12300	9.24	12345	13.54	12376	19.54	12427	20.04
12548	18.84	12597	16.64	12861	15.54	13001	16.34	13088	19.44
13173	29.54	13249	39.34	13294	41.04				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
10000	.28	12080	.045	12345	.28

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
12080	12345	5900	6550	4400	.1	.3

CROSS SECTION

RIVER: Santa Fe
REACH: Main RS: 10.06

INPUT
Description: H - GILCHRIST FIS -
Station Elevation Data num= 36

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
10000	37.34	10243	30.54	10362	27.64	10472	25.74	10548	23.64
10608	12.04	10650	10.65	10689	12.04	10751	15.84	10828	19.04
10926	20.24	10972	18.64	10989	12.04	11000	3.65	11050	1.15
11100	4.14	11133	12.04	11175	15.64	11255	27.24	11288	30.84
11415	30.04	11478	28.64	11498	27.14	11570	27.84	11646	27.94
11859	29.74	12154	30.64	12428	31.34	12570	34.34	12697	36.14
12751	35.04	12769	36.64	12846	37.74	13166	35.14	13344	32.44
13443	37.34								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
10000	.28	10972	.045	11175	.28

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
10972	11175	5500	8600	6200	.1	.3

CROSS SECTION

RIVER: Santa Fe
REACH: Main RS: 8.43

INPUT
Description: G - GILCHRIST FIS -
Station Elevation Data num= 74

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
10000	37.34	10181	35.54	10431	35.34	10664	35.34	10849	33.14
11010	33.24	11014	32.04	11041	32.04	11046	32.54	11193	33.34
11328	31.54	11429	30.64	11538	30.44	11623	30.44	11707	29.64
11781	30.84	11819	32.04	11835	32.54	11855	31.54	11863	31.24
11891	31.14	12019	30.34	12206	30.14	12304	28.34	12359	27.54
12362	26.24	12369	26.44	12375	26.34	12378	26.64	12415	25.34
12472	24.34	12515	22.74	12537	20.44	12559	16.74	12579	13.54
12592	11.44	12610	10.07	12638	11.44	12647	15.04	12677	15.04
12702	15.14	12710	15.14	12714	14.54	12720	11.44	12730	4.01
12800	-1.66	12830	2.11	12884	11.44	12896	17.94	12942	17.04
13004	17.04	13180	16.94	13277	24.04	13305	27.64	13322	26.64
13330	25.74	13333	24.64	13335	25.84	13355	27.04	13541	28.34
13705	26.04	13891	26.34	14100	26.64	14310	26.94	14510	27.74
14856	29.54	15078	30.64	15386	29.54	15582	30.04	15779	30.54
16054	30.04	16257	29.64	16376	30.64	16639	37.34		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
10000	.28	12714	.045	12896	.28

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
12714	12896	348.96	559.68	617.39	.1 .3

CROSS SECTION

RIVER: Santa Fe
REACH: Main RS: 8.3240*

INPUT
Description:
Station Elevation Data num= 128

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
10000	37.34	10074.38	36.31	10094.99	36.12	10100.37	35.99	10102.16	35.86
10113.81	35.76	10116.5	35.94	10120.98	35.87	10124.56	35.72	10184.31	35.32
10185.5	35.32	10239.27	35.27	10252.71	35.21	10277.8	35.21	10294.83	35.21
10353.08	35.09	10438.89	35.02	10502.73	35.02	10676.15	35	10784.11	33.9
10864.54	32.94	10896.13	32.91	11028.48	32.97	11032.55	31.93	11060.05	31.93
11065.14	32.37	11191.85	32.95	11214.83	33.05	11352.3	31.44	11455.15	30.63
11494.74	30.55	11566.14	30.44	11599.59	30.44	11652.7	30.41	11738.23	29.67
11791.36	30.37	11813.59	30.68	11852.28	31.72	11868.58	32.15	11888.94	31.28
11897.09	31.03	11925.6	30.94	11955.35	30.78	12055.94	29.64	12246.36	28.32
12264.52	27.92	12346.16	26.65	12402.16	25.96	12405.22	24.83	12412.35	25
12418.46	24.92	12421.51	25.18	12459.19	24.05	12464.35	23.97	12517.23	23.26
12561.02	21.94	12583.42	19.98	12605.82	16.81	12626.19	14.07	12639.43	12.27
12650.75	11.55	12657.76	11.11	12686.27	12.29	12695.43	15.41	12725.98	15.4
12751.44	15.49	12759.59	15.49	12763.66	14.97	12769.62	11.99	12779.56	5.07
12780.33	4.98	12849.12	-1.16	12879.29	2.54	12916.7	8.65	12932.14	11.26
12933.59	11.53	12950	12.94	12980	14.22	13000	16.18	13013.46	17.54

```
   13040   20.18   13080   22.28   13100   22.76   13140   23.93   13180   24.62
   13200   24.98   13240   25.8513261.24   26.3213281.71   22.2113302.08   23.48
13309.05   23.8213309.35   23.8513316.62   24.7813335.76   27.0813347.17   26.52
13351.97   26.25 13359.6   25.4613362.46    24.513364.37   25.5313383.44   26.53
13475.19    26.913560.85   27.4713717.27   25.5213806.88   25.6713894.67    25.8
14094.01   26.0414141.48    26.1 14294.3   26.5914485.06   27.64   14591   28.35
14815.07    29.515026.81   30.55 15247.1   29.9315320.57    29.715507.51   30.16
15695.41   30.6215767.91   30.5115802.82   30.4215817.37   30.3915895.93   30.32
15957.69   30.3315973.03   30.3316035.58   30.24 16057.4    30.216138.87   30.09
16151.31   30.0916264.81   31.1416515.66   37.34

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   10000     .2812763.66    .04513013.46     .28

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      12763.6613013.46          2251.04 3610.32 3982.61             .1       .3

CROSS SECTION


RIVER: Santa Fe
REACH: Main               RS: 7.64

INPUT
Description: F - GILCHRIST FIS -
Station Elevation Data    num=      59
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   10000   37.34   10083   34.24   10106   34.24   10112   33.64   10114   32.74
   10127   32.74   10130   34.24   10135   34.04   10139   33.14   10207   33.94
   10267   33.84   10282   33.44   10310   33.54   10329   33.64   10394   33.04
   10561   32.94   10875   32.74   11000   31.24   11330   31.24   11668   30.44
   11785   30.44   11999   29.64   12182   29.64   12527   15.74   12750   15.74
   12958   17.74   13084   17.74   13100   11.64   13166    2.09   13236    9.39
   13252   11.74   13266   14.94   13305   15.94   13336   17.04   13359   20.04
   13380   22.64   13414   23.94   13458   24.34   13472   24.14   13481   23.74
   13497   23.94   13511   23.34   13516   22.34   13521   22.94   13542   23.84
   13630   21.64   13858   22.34   14088   22.14   14397   28.54   14848   30.64
   15206   31.24   15230   30.94   15240   30.94   15294   31.34   15347   32.44
   15390   32.54   15405   32.54   15461   32.84   15720   37.34

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   10000     .28   13084    .045   13266     .28

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         13084   13266             4950    6230    4900             .1       .3

CROSS SECTION
```

RIVER: Santa Fe
REACH: Main RS: 6.46

INPUT
Description: E - GILCHRIST FIS -
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
10000	39.64	10049	39.54	10052	39.24	10063	39.14	10080	39.24
10108	39.34	10130	39.24	10167	38.94	10232	38.04	10302	35.24
10379	34.34	10422	34.44	10496	34.64	10544	37.44	10588	37.34
10627	36.94	10659	34.74	10671	33.74	10678	33.74	10708	35.44
10744	36.94	10824	37.24	10848	36.54	10877	36.14	10940	36.24
11029	36.04	11120	36.54	11217	35.94	11346	35.44	11451	36.04
11572	36.54	11660	37.14	11807	38.14	11879	37.24	12048	36.64
12139	35.44	12228	34.04	12480	32.74	12675	32.44	12704	32.34
12836	32.54	12943	32.44	12970	31.64	12980	31.54	12989	32.44
12995	32.44	13007	30.64	13133	30.64	13215	30.04	13321	28.04
13410	24.44	13477	20.04	13596	19.14	13692	15.54	14143	15.24
14263	14.34	14360	13.34	14497	13.34	14538	13.34	14544	10.54
14619	1.87	14744	10.34	14754	12.14	14794	13.24	14825	14.64
14866	18.94	14895	21.44	14928	21.24	14956	20.44	15044	20.44
15205	23.54	15252	27.34	15276	25.64	15286	25.74	15296	26.84
15306	26.84	15318	26.44	15322	26.44	15372	28.04	15456	28.44
15659	27.64	15733	26.74	15791	26.74	15860	26.44	15924	27.24
15989	28.54	16077	31.84	16172	34.24	16285	35.74	16497	33.44
16615	31.34	16704	33.14	16828	35.04	16934	37.64	17048	39.74
17123	40.24								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
10000	.28	14538	.045	14754	.28

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
14538	14754	8200	9150	9900	.1	.3

CROSS SECTION

RIVER: Santa Fe
REACH: Main RS: 4.73

INPUT
Description: D - GILCHRIST FIS -
Station Elevation Data num= 53

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
10000	40.04	10052	37.54	10114	36.94	10172	34.94	10232	33.84
10299	32.74	10368	32.84	10431	31.64	10482	31.24	10540	31.04
10604	30.64	10668	29.84	10720	28.64	10771	24.14	10833	20.54
10901	19.04	10969	18.64	11043	18.04	11139	17.34	11214	15.24

Appendix B. HEC-RAS Post-development Report Summary

```
   10000   39.34   10089   37.24   10283   35.04   10472   31.64   10610   31.24
   10770   33.24   11030   33.34   11183   29.34   11374   25.34   11475   21.24
   11508   19.84   11699   20.04   11981   20.84   12090   22.44   12353   24.64
   12443   19.74   12471   15.34   12500   12.14   12550    9.94   12575    9.84
   12600   13.04   12624   15.34   12650   19.04   12734   22.94   12782   22.94
   12838   15.94   12878   22.94   12930   23.94   12985   23.54   13064   30.24
   13172   32.74   13298   33.84   13507   35.74   13550   35.94   13572   34.74
   13612   36.34   13835   38.54   13910   39.34

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   10000     .28   12443    .045   12650     .28

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         12443   12650             4700    5540    5500             .1       .3

CROSS SECTION


RIVER: Santa Fe
REACH: Main               RS: 13.03

INPUT
Description: J - GILCHRIST FIS -
Station Elevation Data    num=      31
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   10000   39.34   10118   37.74   10251   38.34   10333   38.64   10366   37.44
   10479   33.34   10562   30.84   10858   29.24   11233   28.84   11574   30.04
   11746   26.74   11961   26.14   12415   31.64   12535   29.74   12667   22.64
   12868   19.04   12920   12.64   12950    7.84   12975   -6.11   13025    6.79
   13085   12.64   13185   15.94   13381   16.24   13544   18.44   13733   17.84
   13810   19.34   13901   21.54   14050   22.14   14187   23.54   14265   24.24
   14369   39.34

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   10000     .28   12920    .045   13085     .28

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         12920   13085             6100    9130    5400             .1       .3

CROSS SECTION


RIVER: Santa Fe
REACH: Main               RS: 11.3

INPUT
Description: I - GILCHRIST FIS -
Station Elevation Data    num=      28
```

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
10000	39.34	10116	35.24	10270	30.64	10433	35.14	10605	38.24
10755	39.84	10968	34.24	11118	28.04	11379	22.24	11645	25.74
11856	19.34	11938	17.54	12080	13.54	12100	9.94	12200	6.44
12250	6.34	12300	9.24	12345	13.54	12376	19.54	12427	20.04
12548	18.84	12597	16.64	12861	15.54	13001	16.34	13088	19.44
13173	29.54	13249	39.34	13294	41.04				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
10000	.28	12080	.045	12345	.28

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
12080	12345	5900	6550	4400	.1	.3

CROSS SECTION

RIVER: Santa Fe
REACH: Main RS: 10.06

INPUT
Description: H - GILCHRIST FIS -
Station Elevation Data num= 36

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
10000	37.34	10243	30.54	10362	27.64	10472	25.74	10548	23.64
10608	12.04	10650	10.65	10689	12.04	10751	15.84	10828	19.04
10926	20.24	10972	18.64	10989	12.04	11000	3.65	11050	1.15
11100	4.14	11133	12.04	11175	15.64	11255	27.24	11288	30.84
11415	30.04	11478	28.64	11498	27.14	11570	27.84	11646	27.94
11859	29.74	12154	30.64	12428	31.34	12570	34.34	12697	36.14
12751	35.04	12769	36.64	12846	37.74	13166	35.14	13344	32.44
13443	37.34								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
10000	.28	10972	.045	11175	.28

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
10972	11175	5500	8600	6200	.1	.3

CROSS SECTION

RIVER: Santa Fe
REACH: Main RS: 8.43

INPUT
Description: G - GILCHRIST FIS -
Station Elevation Data num= 74

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
10000	37.34	10181	35.54	10431	35.34	10664	35.34	10849	33.14
11010	33.24	11014	32.04	11041	32.04	11046	32.54	11193	33.34
11328	31.54	11429	30.64	11538	30.44	11623	30.44	11707	29.64
11781	30.84	11819	32.04	11835	32.54	11855	31.54	11863	31.24
11891	31.14	12019	30.34	12206	30.14	12304	28.34	12359	27.54
12362	26.24	12369	26.44	12375	26.34	12378	26.64	12415	25.34
12472	24.34	12515	22.74	12537	20.44	12559	16.74	12579	13.54
12592	11.44	12610	10.07	12638	11.44	12647	15.04	12677	15.04
12702	15.14	12710	15.14	12714	14.54	12720	11.44	12730	4.01
12800	-1.66	12830	2.11	12884	11.44	12896	17.94	12942	17.04
13004	17.04	13180	16.94	13277	24.04	13305	27.64	13322	26.64
13330	25.74	13333	24.64	13335	25.84	13355	27.04	13541	28.34
13705	26.04	13891	26.34	14100	26.64	14310	26.94	14510	27.74
14856	29.54	15078	30.64	15386	29.54	15582	30.04	15779	30.54
16054	30.04	16257	29.64	16376	30.64	16639	37.34		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
10000	.28	12714	.045	12896	.28

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
12714	12896	348.96	559.68	617.39	.1 .3

CROSS SECTION

RIVER: Santa Fe
REACH: Main RS: 8.3240*

INPUT
Description:
Station Elevation Data num= 128

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
10000	37.34	10074.38	36.31	10094.99	36.12	10100.37	35.99	10102.16	35.86
10113.81	35.76	10116.5	35.94	10120.98	35.87	10124.56	35.72	10184.31	35.32
10185.5	35.32	10239.27	35.27	10252.71	35.21	10277.8	35.21	10294.83	35.21
10353.08	35.09	10438.89	35.02	10502.73	35.02	10676.15	35	10784.11	33.9
10864.54	32.94	10896.13	32.91	11028.48	32.97	11032.55	31.93	11060.05	31.93
11065.14	32.37	11191.85	32.95	11214.83	33.05	11352.3	31.44	11455.15	30.63
11494.74	30.55	11566.14	30.44	11599.59	30.44	11652.7	30.41	11738.23	29.67
11791.36	30.37	11813.59	30.68	11852.28	31.72	11868.58	32.15	11888.94	31.28
11897.09	31.03	11925.6	30.94	11955.35	30.78	12055.94	29.64	12246.36	28.32
12264.52	27.92	12346.16	26.65	12402.16	25.96	12405.22	24.83	12412.35	25
12418.46	24.92	12421.51	25.18	12459.19	24.05	12464.35	23.97	12517.23	23.26
12561.02	21.94	12583.42	19.98	12605.82	16.81	12626.19	14.07	12639.43	12.27
12650.75	11.55	12657.76	11.11	12686.27	12.29	12695.43	15.41	12725.98	15.4
12751.44	15.49	12759.59	15.49	12763.66	14.97	12769.62	11.99	12779.56	5.07
12780.33	4.98	12849.12	-1.16	12879.29	2.54	12916.7	8.65	12932.14	11.26
12933.59	11.53	12950	12.94	12980	14.22	13000	16.18	13013.46	17.54

```
   13040   20.18   13080   22.28   13100   22.76   13140   23.93   13180   24.62
   13200   24.98   13240   25.8513261.24   26.3213281.71   22.2113302.08   23.48
13309.05   23.8213309.35   23.8513316.62   24.7813335.76   27.0813347.17   26.52
13351.97   26.25 13359.6   25.4613362.46    24.513364.37   25.5313383.44   26.53
13475.19    26.913560.85   27.4713717.27   25.5213806.88   25.6713894.67    25.8
14094.01   26.0414141.48    26.1 14294.3   26.5914485.06   27.64   14591   28.35
14815.07    29.515026.81   30.55 15247.1   29.9315320.57    29.715507.51   30.16
15695.41   30.6215767.91   30.5115802.82   30.4215817.37   30.3915895.93   30.32
15957.69   30.3315973.03   30.3316035.58   30.24 16057.4    30.216138.87   30.09
16151.31   30.0916264.81   31.1416515.66   37.34

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   10000     .2812763.66    .04513013.46     .28

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      12763.6613013.46          2251.04 3610.32 3982.61             .1       .3
Blocked Obstructions     num=       2
   Sta L   Sta R    Elev   Sta L   Sta R    Elev
13094.4813106.48    32.513175.9113232.18    34.4

CROSS SECTION


RIVER: Santa Fe
REACH: Main               RS: 7.64

INPUT
Description: F - GILCHRIST FIS -
Station Elevation Data    num=      59
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   10000   37.34   10083   34.24   10106   34.24   10112   33.64   10114   32.74
   10127   32.74   10130   34.24   10135   34.04   10139   33.14   10207   33.94
   10267   33.84   10282   33.44   10310   33.54   10329   33.64   10394   33.04
   10561   32.94   10875   32.74   11000   31.24   11330   31.24   11668   30.44
   11785   30.44   11999   29.64   12182   29.64   12527   15.74   12750   15.74
   12958   17.74   13084   17.74   13100   11.64   13166    2.09   13236    9.39
   13252   11.74   13266   14.94   13305   15.94   13336   17.04   13359   20.04
   13380   22.64   13414   23.94   13458   24.34   13472   24.14   13481   23.74
   13497   23.94   13511   23.34   13516   22.34   13521   22.94   13542   23.84
   13630   21.64   13858   22.34   14088   22.14   14397   28.54   14848   30.64
   15206   31.24   15230   30.94   15240   30.94   15294   31.34   15347   32.44
   15390   32.54   15405   32.54   15461   32.84   15720   37.34

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   10000     .28   13084    .045   13266     .28

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         13084   13266             4950    6230    4900             .1       .3
```

CROSS SECTION

RIVER: Santa Fe
REACH: Main RS: 6.46

INPUT
Description: E - GILCHRIST FIS -
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
10000	39.64	10049	39.54	10052	39.24	10063	39.14	10080	39.24
10108	39.34	10130	39.24	10167	38.94	10232	38.04	10302	35.24
10379	34.34	10422	34.44	10496	34.64	10544	37.44	10588	37.34
10627	36.94	10659	34.74	10671	33.74	10678	33.74	10708	35.44
10744	36.94	10824	37.24	10848	36.54	10877	36.14	10940	36.24
11029	36.04	11120	36.54	11217	35.94	11346	35.44	11451	36.04
11572	36.54	11660	37.14	11807	38.14	11879	37.24	12048	36.64
12139	35.44	12228	34.04	12480	32.74	12675	32.44	12704	32.34
12836	32.54	12943	32.44	12970	31.64	12980	31.54	12989	32.44
12995	32.44	13007	30.64	13133	30.64	13215	30.04	13321	28.04
13410	24.44	13477	20.04	13596	19.14	13692	15.54	14143	15.24
14263	14.34	14360	13.34	14497	13.34	14538	13.34	14544	10.54
14619	1.87	14744	10.34	14754	12.14	14794	13.24	14825	14.64
14866	18.94	14895	21.44	14928	21.24	14956	20.44	15044	20.44
15205	23.54	15252	27.34	15276	25.64	15286	25.74	15296	26.84
15306	26.84	15318	26.44	15322	26.44	15372	28.04	15456	28.44
15659	27.64	15733	26.74	15791	26.74	15860	26.44	15924	27.24
15989	28.54	16077	31.84	16172	34.24	16285	35.74	16497	33.44
16615	31.34	16704	33.14	16828	35.04	16934	37.64	17048	39.74
17123	40.24								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
10000	.28	14538	.045	14754	.28

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
14538	14754	8200	9150	9900	.1	.3

CROSS SECTION

RIVER: Santa Fe
REACH: Main RS: 4.73

INPUT
Description: D - GILCHRIST FIS -
Station Elevation Data num= 53

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
10000	40.04	10052	37.54	10114	36.94	10172	34.94	10232	33.84