TOM GREEN COUNTY

Subdivision Application Form
(Please Print or Type)

Document must be filled out COMPLETELY, leaving no blank areas. N/A may be used if appropriate

Name of Proposed Subdivision: BUFFALO HEIGHTS - SECTION EIGHT

Location: BUCK RUN

Has Plat been reviewed by Plat Reviewer? Yes ____ BEING SUBMITTED FOR REVIEW
No ____ **STOP! PLAT MUST BE REVIEWED BY PLAT REVIEWER**

Is location within the ETJ? Yes ____ **STOP! PLAT MUST BE FILED WITH CITY**
No X TGC Pct. # 3

Type of Request: Preliminary X Final X Replat ____
Amended ____ Vacation ____ Revised ____

Owner(s) of Subdivision: DAVID JENSEN

Address: P.O. BOX 1669 SAN ANGELO, TX 76902

Phone # 234-8544 Fax: N/A

Existing Land Use: VACANT

Proposed Land Use: RESIDEATIAL

Total Acreage: 55.091 Number of Proposed Lots: 23

Proposed Source of Water Supply: Individual Well ____ Water Supply X

Name of Water System CONCHO RURAL WTR. SUPPLY CORP.

Proposed Sewage Disposal System: Individual Septic Tank X

Private Sewage System ____

Are any off-site drainage, access or other easements necessary for this subdivision? No X
Yes ____ (Please explain) ____

Are there existing deed restrictions on this property? No X Yes ____

If yes, please give the deed record reference:

Volume N/A Page N/A or Instrument Number (if Vol and Page Not Available) N/A

Are there any deviations or variances from existing subdivision rules & regulations requested?

No ____ Yes X

(Please explain) VARIANCE FROM SEPERATE PRELIMINARY PLAT REVIEW

The owner hereby designates SKG ENGINEERING (Name)

as the official representative. 706 S. ABE ST. SAN ANGELO, TX 76903 (Address) (phone) 655-1288

Application fee ($150.00 + 10.00 per lot) Paid by Owner ____

Representative X. To be paid to the Tom Green County Clerk's office prior to placement on the Commissioners' Court Agenda. Bring Plat, Tax Certificate showing "Zero" taxes owed, and receipt for application fee to Court on day of the Agenda Presentation.

The owner is aware that there will be an additional filing fee after approval by the Tom Green County Commissioners Court. The filing fee will also be paid to the Tom Green County Clerk at the time of filing of the plat for the records.

The undersigned hereby applies for subdivision plat approval in accordance with the regulations for the development of subdivisions and manufactured home rental communities as set out by the Commissioners Court of Tom Green County and certifies that the information contained on this application is true and accurate to the best of my knowledge.

*****(Note to applicant – ensure all areas are filled out completely before signing. N/A may be used if appropriate)*****

Owner's Signature ____ Date 8/23/13

Representative's Signature ____ Date 08/23/2013

Total Paid: $ 380.00 Date Paid 8/27/13

Date of Commissioner's Court Action: ____

FYI – FOR FINAL PLAT REQUIREMENTS, SEE SUBDIVISION REGULATIONS SECTION III FINAL PLAT

DUPLICATE

TOM GREEN COUNTY CLERK
124 W. BEAUREGARD
SAN ANGELO, TX 76903
(325)659-6553

ISSUED TO: SKG ENGINEERING LLC

RECEIPT #: 402875 DATE: 08/27/2013 02:36:08 PM
DEPARTMENT: RE WORK STATION: INDEX05

SERVICE	PAGES	FEE
MISCELLANEOUS,APPLIC	1	150.00
MISCELLANEOUS,ADDITI	23	230.00
Total Amount Due		380.00
CHECK 3754		380.00
Total Amount Paid		380.00

THANK YOU

SKG
ENGINEERING, LLC
FIRM REGISTRATION NUMBER F-7608
SURVEYING • ENVIRONMENTAL • LAB/CMT

706 SOUTH ABE STREET
SAN ANGELO, TEXAS 76903

PHONE: 325.655.1288
FAX: 325.657.8189

July 25, 2013

Mrs. Sandra Villarreal
San Angelo-Tom Green County Health Dept.
106 S. Chadbourne
San Angelo, Texas 76903

Subject: Buffalo Heights, Section 8
Tom Green County, Texas

Dear Mrs. Villarreal,

The following information is provided as per 30 TAC 285.4 (c), and is submitted for the above-referenced development.

The preliminary soil investigation of the site soils has determined that the soil is predominately Mereta clay loam (MeA) in the proposed subdivision. There are also areas of the Angelo clay loam (AnA), Slaughter clay loam (ShB), and Sagerton clay loam (OlA) series.

A portion of the site is MeA soils. A clay loam layer 0-6 inches deep, is followed by either a clay, clay loam or silty clay 6-18 inches deep. A cemented hardpan exists 18-21 inches deep. The hardpan is underlaid by a loam, clay loam or gravely clay loam from 21-80 inches deep. Soil clay content is 30-45%. Gravel content ranges from 10-25%.

A representative profile for OlA consists of a clay loam layer, 0-10 inches deep, clay loam, clay to from 10-32 inches deep, and clay loam, silty clay loam to a clay from 32-80 inches deep. The OlA soils are generally considered to be very limited. Based on clay content, OlA soil would be expected to be classified as a Class III or Class IV soil. Conventional OSSF may or may not be suitable for these soils. If the Class IV soils can be removed, conventional systems can be installed in Class III soils, engineered systems including mounds, evapo-transpiration beds, low pressure dosed, drip irrigation, or individual aerobic units followed by spray irrigation could be considered for Class IV soils.

The site has few areas that consist of the ShB soils. A representative profile for ShB consists of a clay loam layer, 0-6 inches deep, clay loam, clay from 6-16 inches deep and, a cemented hard pan exists from 16-34 inches deep. The hardpan is underlaid by a loam, clay loam or gravely clay loam from 21-80 inches deep. The ShB soils are generally considered to be very limited. Based on clay content, ShB soil would be expected to be classified as a Class III or Class IV soil. Conventional OSSF may or may not be suitable for these soils. If the Class IV soils can be removed, conventional systems can be installed in Class III soils, engineered systems including

mounds, evapo-transpiration beds, low pressure dosed, drip irrigation, or individual aerobic units followed by spray irrigation could be considered for Class IV soils.

The site has few areas that consist of the AnA soils. A representative profile for AnA consists of a clay loam layer, 0-6 inches deep, clay, silty clay loam to a silty clay from 6-28 inches deep, and clay loam, silty clay loam to a clay from 28-80 inches deep. The AnA soils are generally considered to be very limited. Based on clay content, AnA soil would be expected to be classified as a Class III or Class IV soil. Conventional OSSF may or may not be suitable for these soils. If the Class IV soils can be removed, conventional systems can be installed in Class III soils, engineered systems including mounds, evapo-transpiration beds, low pressure dosed, drip irrigation, or individual aerobic units followed by spray irrigation could be considered for Class IV soils.

Note that the above discussion is based on documented soil types that would be expected to exist in the proposed subdivision. Existing site conditions will need to be verified for each lot at the time of OSSF installation by the installer or site evaluator.

There are no water wells located within the limits of the proposed subdivision. The effect of subsurface disposal of residential wastewater, given the depth and existing quality, should be minimal. Groundwater depth is estimated to be greater than 50 feet. Water shall be provided by Concho Rural Water Supply and no water wells shall be located on sites less than one acre.

The proposed development is not in the FEMA established 100 year flood plain or floodway. The effect of subsurface disposal of wastewater, given the depth and existing quality, should be minimal. Surface drainage from the development will be to the south and east and will be conveyed by borrow ditches along the roadway. Impacts of the development will be dictated to some degree by the amount of impervious surfaces placed as a part of the site development, but it is not expected to greatly impact the existing overall drainage of the area.

If you have any questions or comments, please do not hesitate to contact us at (325) 655-1288

Sincerely,
SKG Engineering

Ethan George

Russell Gully, P.E.

STATE OF TEXAS
RUSSELL T. GULLY
87727
LICENSED
PROFESSIONAL ENGINEER

F-7608
July 25, 2013

CC: Mr. David Jensen
File

Attachments – USDA – Web Soil Survey – Soil Suitability (9 pages)
Preliminary Plat
Topographic Map
FEMA Map

Engineering Properties

This table gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

References:
American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.
American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Report—Engineering Properties

Absence of an entry indicates that the data were not estimated. The asterisk '*' denotes the representative texture; other possible textures follow the dash.

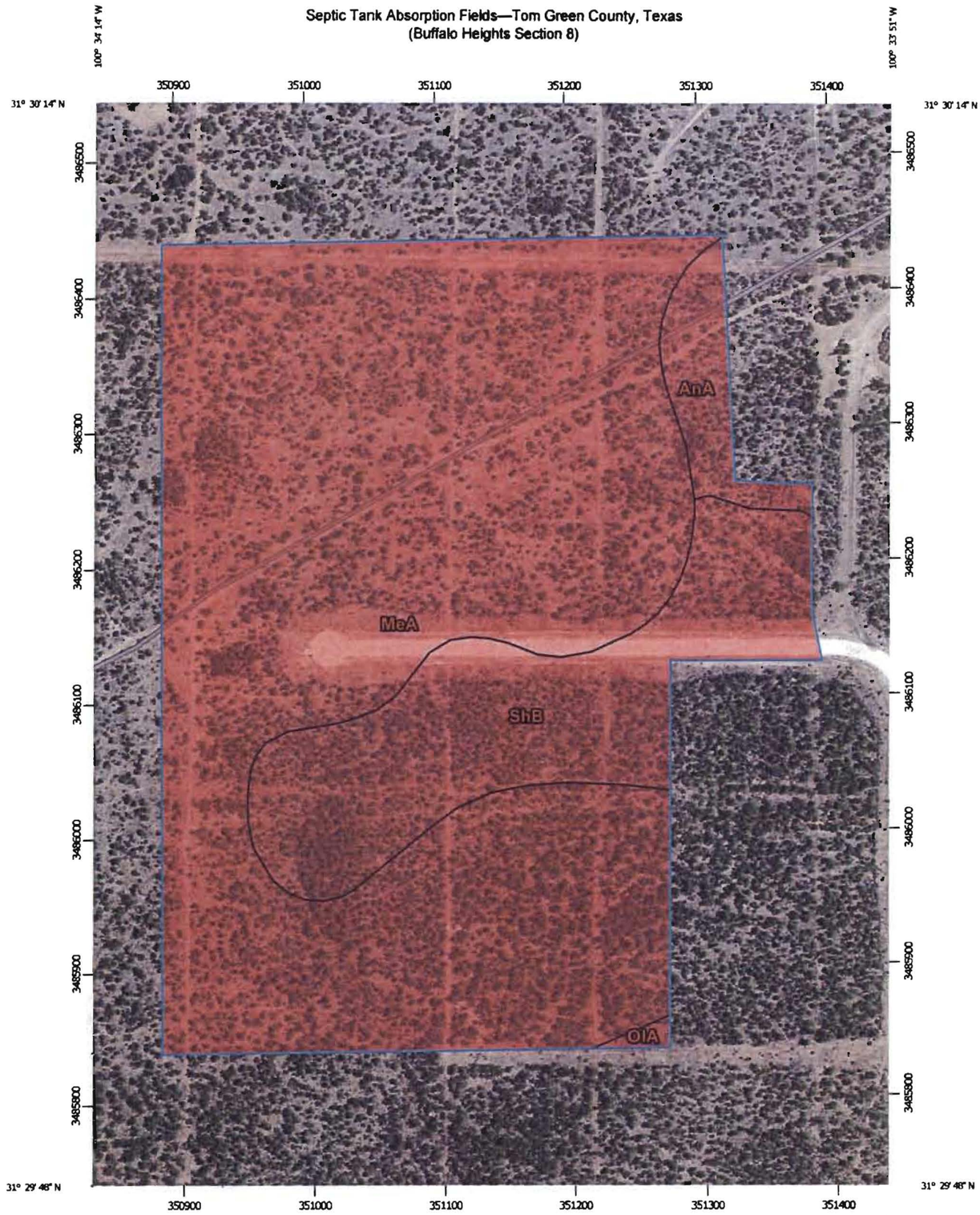
Engineering Properties–Tom Green County, Texas												
Map unit symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
AnA—Angelo clay loam, 0 to 1 percent slopes												
Angelo	0-6	*Clay loam	CL	A-6, A-7-6	0	0	90-100	90-100	85-100	60-90	37-50	18-30
	6-28	*Clay, Silty clay loam, silty clay	CH, CL	A-6, A-7-6	0	0	90-100	90-100	85-100	70-92	37-60	20-38
	28-80	*Silty clay loam, Clay loam, clay	CL	A-6, A-7-6	0	0	60-100	60-100	60-100	50-90	30-49	15-30
Unnamed, hydric minor components	—	—	—	—	—	—	—	—	—	—	—	—
MeA—Mereta clay loam, 0 to 1 percent slopes												
Mereta	0-6	*Clay loam	CL	A-7-6, A-6	0	0-5	90-100	85-100	80-97	60-85	39-50	19-28
	6-18	*Clay loam, Clay, silty clay	CL, CH	A-7-6, A-6	0-2	0-5	90-100	85-100	80-97	60-85	39-52	19-30
	18-21	*Cemented material	—	—	—	—	—	—	—	—	—	—
	21-80	*Clay loam, Gravelly clay loam, loam	SC, CL	A-7-6, A-6	0	0-5	80-95	75-90	60-85	45-70	38-50	18-28

Engineering Properties–Tom Green County, Texas												
Map unit symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
OlA—Sagerton clay loam, 0 to 1 percent slopes												
Sagerton	0-10	*Clay loam	CL	A-6, A-4	0	0	95-100	95-100	90-100	55-80	25-35	8-18
	10-32	*Clay, Clay loam	CL	A-7-6, A-6	0	0	95-100	95-100	90-100	65-95	36-50	18-30
	32-80	*Silty clay loam, Clay, clay loam	CL	A-7-6, A-6, A-4	0	0	90-100	90-100	80-100	60-85	25-50	8-30
ShB—Slaughter clay loam, 1 to 3 percent slopes												
Slaughter	0-6	*Clay loam	CL	A-7-6, A-6	0	0	100	100	90-100	70-85	30-45	12-25
	6-16	*Clay, Clay loam	CL	A-7-6, A-6	0	0	98-100	95-100	95-100	65-90	35-50	17-30
	16-34	*Cemented material	—	—	—	—	—	—	—	—	—	—
	34-80	*Variable	—	—	—	—	—	—	—	—	—	—

Data Source Information

Soil Survey Area: Tom Green County, Texas
Survey Area Data: Version 10, Sep 21, 2012

Septic Tank Absorption Fields—Tom Green County, Texas
(Buffalo Heights Section 8)



Map Scale: 1:3,920 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 14N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

Very limited

Somewhat limited

Not limited

Not rated or not available

Soil Rating Lines

Very limited

Somewhat limited

Not limited

Not rated or not available

Soil Rating Points

Very limited

Somewhat limited

Not limited

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Tom Green County, Texas
Survey Area Data: Version 10, Sep 21, 2012

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 21, 2011—Jun 10, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Septic Tank Absorption Fields

Septic Tank Absorption Fields— Summary by Map Unit — Tom Green County, Texas (TX451)						
Map unit symbol	**Map unit name**	**Rating**	**Component name (percent)**	**Rating reasons (numeric values)**	**Acres in AOI**	**Percent of AOI**
AnA	Angelo clay loam, 0 to 1 percent slopes	Very limited	Angelo (98%)	Slow water movement (1.00)	2.2	3.4%
MeA	Mereta clay loam, 0 to 1 percent slopes	Very limited	Mereta (100%)	Depth to cemented pan (1.00)	49.2	77.4%
OlA	Sagerton clay loam, 0 to 1 percent slopes	Very limited	Sagerton (100%)	Slow water movement (1.00)	0.2	0.3%
ShB	Slaughter clay loam, 1 to 3 percent slopes	Very limited	Slaughter (100%)	Depth to cemented pan (1.00)	12.0	18.9%
Totals for Area of Interest					**63.6**	**100.0%**

Septic Tank Absorption Fields— Summary by Rating Value		
Rating	**Acres in AOI**	**Percent of AOI**
Very limited	63.6	100.0%
Totals for Area of Interest	**63.6**	**100.0%**

Description

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 60 inches is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Saturated hydraulic conductivity (Ksat), depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Rating Options

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

SKG
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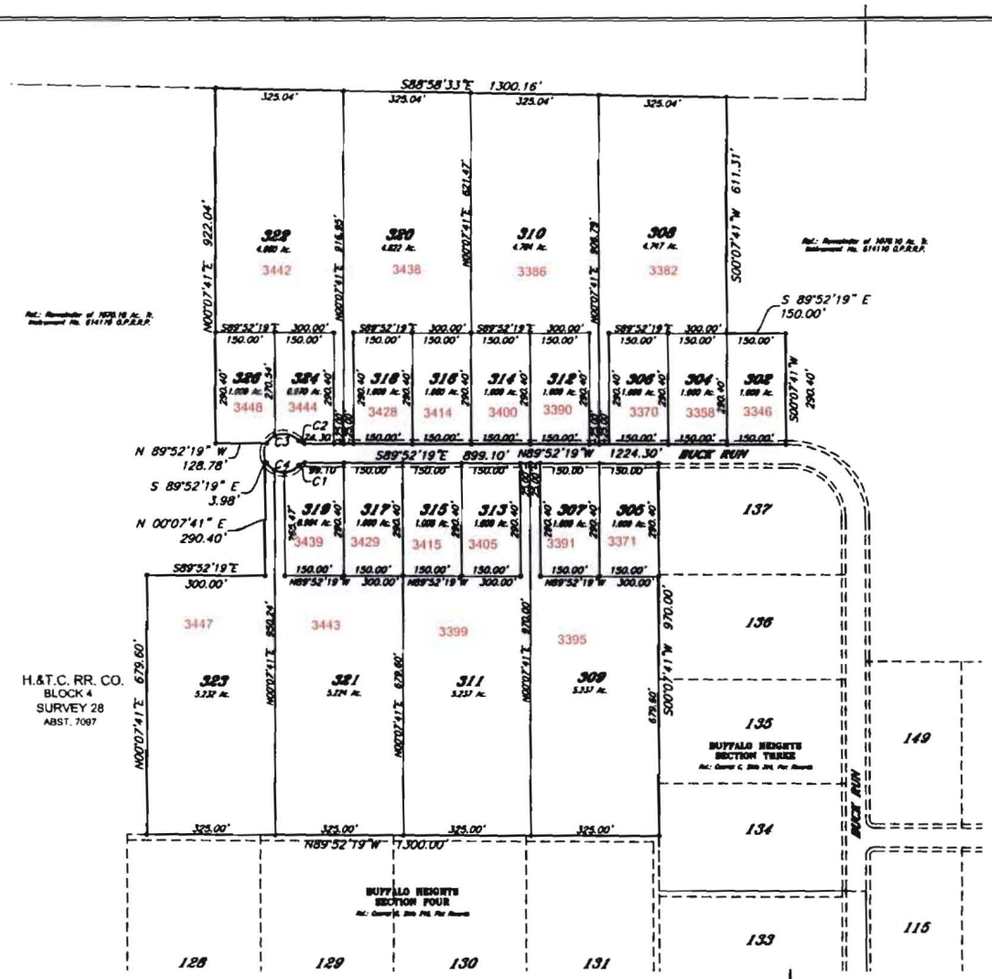
SURVEYING • ENVIRONMENTAL • LAB/CMT
708 SOUTH ABE STREET
SAN ANGELO, TEXAS 76903
PHONE: 325.655.1200
FAX: 325.657.6199
www.skge.com



BUFFALO HEIGHTS
SECTION EIGHT
TOM GREEN COUNTY, TEXAS

OWNER: DAVID JENSEN

DESCRIPTION: Being an area of 55.091 acres out of the H.&T.C.RR.CO. Survey 28, Abstract No. 7097 also being out of that certain 1070.18 acre tract recorded as Instrument No. 514110, Official Public Records of Real Property, Tom Green County, Texas.

ACKNOWLEDGEMENT/DEDICATION

I, David Jensen, do hereby adopt this plat as the subdivision of my property and dedicate for the use of the public the streets and easements shown hereon.

David Jensen

Preliminary, this document shall not be recorded for any purpose.

STATE OF TEXAS
COUNTY OF TOM GREEN
This instrument was acknowledged before me on_____
by David Jensen.

Notary Public, State of Texas

911 COORDINATOR
Approved for recording this____ day of_____, 20____.

By:_____

COUNTY COMMISSIONER'S COURT
Approved for recording this____ day of_____, 20____.

By:_____
County Judge

COUNTY CLERK
Filed for record this____ day of _____, 20____ @ _____.
County Clerk of Tom Green Co., Tx.

By:_____

SCALE: 1"=200'

0 100 200 400
GRAPHIC SCALE : FEET

NOTE: Bearings shown hereon are based on the Texas Coordinate System - Central Zone.
Distances shown are surface horizontal.

LEGEND:
- Found ½" Iron Pipe or Rod (unless noted otherwise)
- Set ½" Iron Rod with Cap
- #### 911 Address

This Plat is Filed in Cabinet ____ Slide_____ Plat Records of Tom Green County, Texas.

Field Notes are filed as Instrument No._____ Official Public Records of Real Property, Tom Green County, Texas.

TOM GREEN COUNTY NOTES
No construction or development within this subdivision may begin until all Tom Green County requirements have been satisfied.

No structure in this subdivision shall be occupied until connected to a public sewer system or to an on-site wastewater system that has been approved and permitted by the Tom Green County Environmental Health Department.

Tom Green County Commissioner's Court makes no representation whatsoever as to the ground water availability for any tract in this subdivision.

There is a 10' utility and drainage easement on both sides of the roadway shown hereon.

SURVEYOR'S CERTIFICATE
Know all men by these presents: that I, Russell T. Gully RPLS, do hereby certify that I prepared this plat from an actual and accurate survey of the land and that corner monuments shown hereon were properly placed, under my supervision, in accordance with the rules for land subdivision; I further certify that the tract of land herein platted lies outside of the extraterritorial jurisdictional area of any City in Tom Green County, Texas.

12-S-0346

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FISHER
LAKE
O C FISHER LAKE
Pulliam Pt
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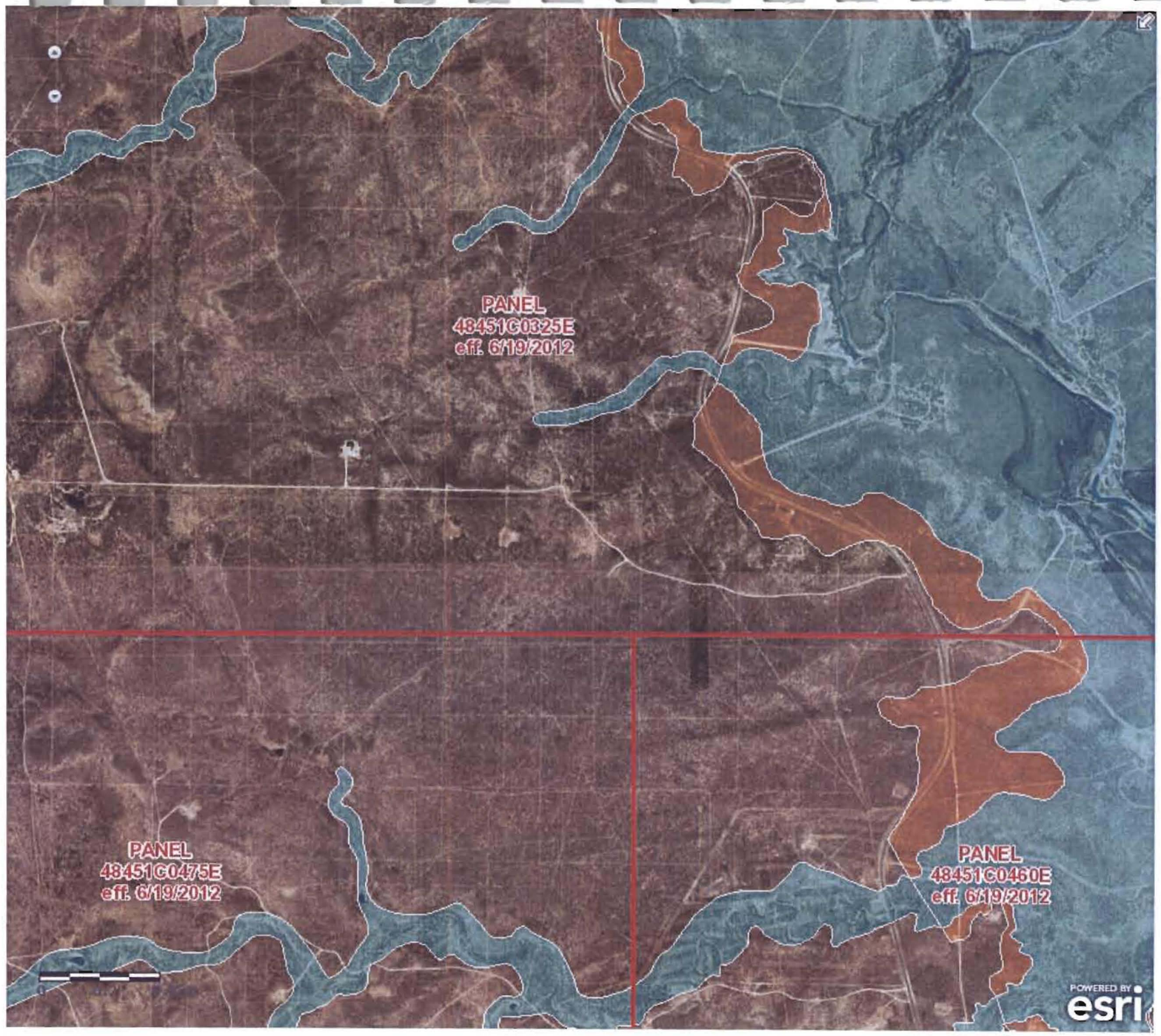
0.6mi
Copyright: © 2022 National Geographic Society, i-cubed
esri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eff. 6/19/2012
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esri

SKG
ENGINEERING, LLC
FIRM REGISTRATION NUMBER F-7608
SURVEYING ♦ ENVIRONMENTAL ♦ LAB/CMT

706 SOUTH ABE STREET
SAN ANGELO, TEXAS 76903

PHONE: 325.655.1288
FAX: 325.657.8189

DRAINAGE STUDY

BUFFALO HEIGHTS

SECTION 8

SAN ANGELO, TEXAS

AUGUST 16, 2013

PERFORMED BY:

ERICA CARTER, P.E.

STATE OF TEXAS
ERICA CARTER
114215
LICENSED
PROFESSIONAL ENGINEER

Erica Carter
08.16.2013

Purpose of Study:

SKG was retained to perform a drainage study at Buffalo Heights in Tom Green County, Texas. The purpose of this drainage study was to model the street section for the development and determine whether or not the borrow ditches beside the proposed street can convey a 10 year storm event.

Methods and Software used:

The section was analyzed by determining a drainage area for a borrow ditch on each side of the proposed street. These drainage areas were labeled as DA1 and DA2. A drainage area map has been provided and can be found in Appendix A.

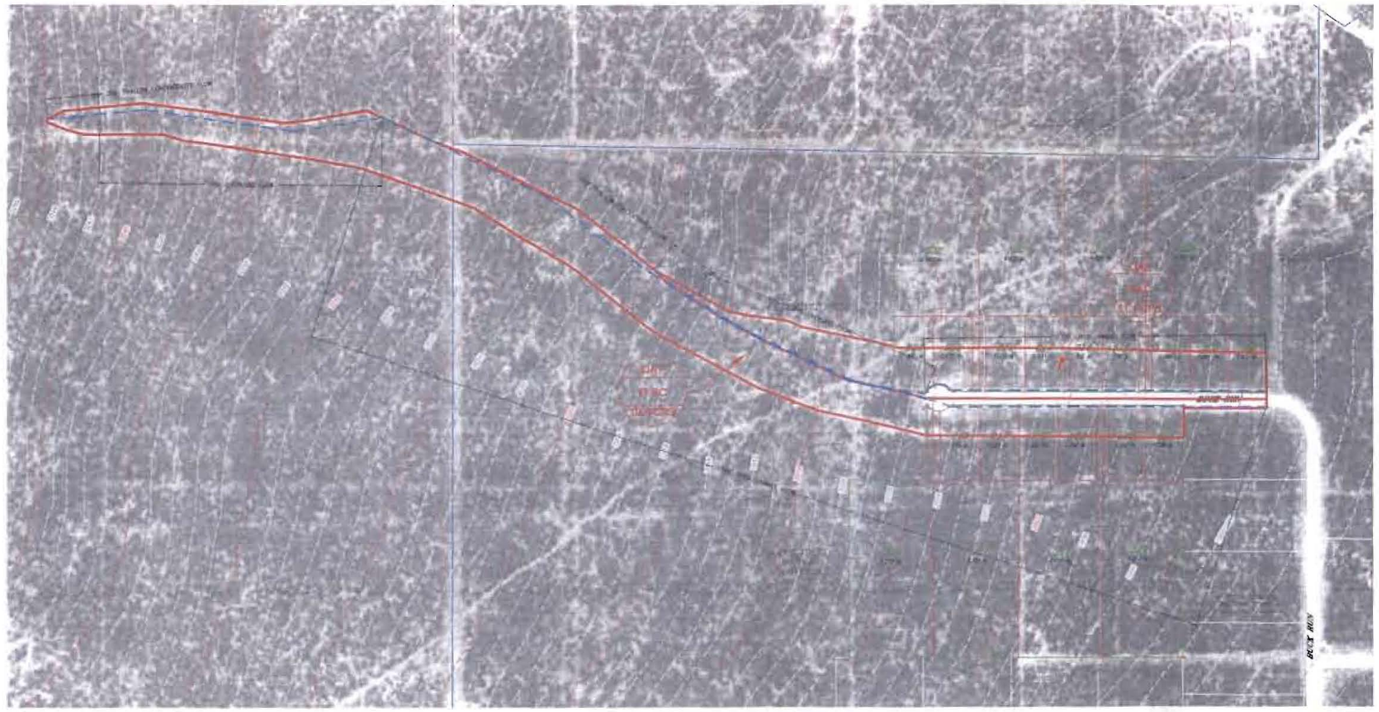
DA 1 is approximately 17 acres and DA2 is approximately 8 acres. Since the areas are less than 200 acres, the Rational Method was used to determine the 10year runoff capacities. A time of concentration was found for each drainage area and point rainfall intensity constants were used from the San Angelo Drainage Manual in the calculations for the 10 year runoff capacity. A consistent C-value was chosen from the San Angelo Drainage Manual based on future developed conditions. A spreadsheet showing the calculations has been provided and can be found in Appendix B.

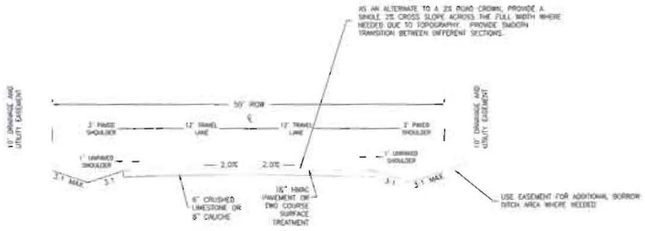
Flowmaster was used to analyze the street cross sections in order to determine the capacity of the borrow ditch on each side of the road. The flow master generated report showing cross sections has been provided and can be found in Appendix C.

Summary:

After analyzing the street section it was determined that for Drainage Area One, a portion of the utility and drainage easement will be utilized for an additional 3' of borrow ditch in order to adequately convey the 10 year storm event. Drainage Area Two will adequately convey the 10 year storm even without utilizing any of the proposed easement.

APPENDIX A





RESIDENTIAL ROADWAY

LEGEND

CONTRIBUTING DRAINAGE AREA

FLOW PATH

DA1 DRAINAGE AREA ID

17 AC DRAINAGE AREA

19.6 CFS DRAINAGE AREA FLOWRATE

SKG ENGINEERING, LLC
SURVEYING • ENVIRONMENTAL • LANDCAT

PROJECT OWNER:
DAVID JENSEN
3131 W. BEAUREGARD BLVD.
SAN ANGELO, TEXAS

BUFFALO HEIGHTS
SECTION 8
TOM GREEN COUNTY, TEXAS

DRAINAGE AREA MAP

REVISIONS

DRAWN BY: KBC
DATE: 08.10.2015
JOB NO.: 13-S-0348
SHEET NO.: D1
SCALE: 1"=300'

APPENDIX B

TIME OF CONCENTRATION AND FLOW CALCULATIONS

Project Description: Buffalo Heights
Section 8

Project No.: 13-S-0348

Step		K	C	Rainfall Intensity, I=b/(Td+d)^e					A	Qpeak
				b	d	e	Tc	I (in/hr)	(acres)	(cfs)
1	DA1	1.00	0.40	75.5	11.5	0.836	38.6	2.86	17.0	19.6
2	DA2	1.00	0.40	75.5	11.5	0.836	28.8	3.44	8.0	11.1

	SHALLOW CONCENTRATED FLOW		OVERLAND FLOW					OPEN CHANNEL FLOW						Total Time of Concentration
	**HYDRAULIC LENGTH (L)	*TIME OF CONCENTRATION (T_c)	**HYDRAULIC LENGTH (L)	**SLOPE (S)	*C_{VALUE}	VELOCITY (V)	TIME OF CONCENTRATION (T_c)	**HYDRAULIC LENGTH (L)	HYDRAULIC RADIUS (R	**SLOPE (S)	*MANNING'S COEFFICIENT (n)	VELOCITY (V)	TIME OF CONCENTRATION (T_c)	
PROPOSED CONDITIONS DA1	200	15	1000	0.011	20	2.10	7.95	3798	0.75	0.0097	0.03	4.04	15.7	38.6

	SHALLOW CONCENTRATED FLOW		OVERLAND FLOW					OPEN CHANNEL FLOW						Total Time of Concentration
	**HYDRAULIC LENGTH (L)	*TIME OF CONCENTRATION (T_c)	**HYDRAULIC LENGTH (L)	**SLOPE (S)	*C_{VALUE}	VELOCITY (V)	TIME OF CONCENTRATION (T_c)	**HYDRAULIC LENGTH (L)	HYDRAULIC RADIUS (R	**SLOPE (S)	*MANNING'S COEFFICIENT (n)	VELOCITY (V)	TIME OF CONCENTRATION (T_c)	
PROPOSED CONDITIONS DA2	200	15	1000	0.012	20	2.19	7.61	1356	0.75	0.008	0.03	3.67	6.2	28.8

* TAKEN FROM CITY OF SAN ANGELO DRAINAGE MANUAL
** REFER TO DRAINAGE AREA MAPS

	UNITS USED
LENGTH	FT
T_C	MINS
VELOCITY	FT/SEC

1) VELOCITY (OVERLAND FLOW) $V = C\sqrt{S}$

2) TIME OF CONCENTRATION $T_C = L/(V \times 60)$

3) VELOCITY (OPEN CHANNEL FLOW) $V = \frac{1.49 \times R^{\frac{2}{3}} \times \sqrt{S}}{n}$

APPENDIX C

Cross Section for DA1

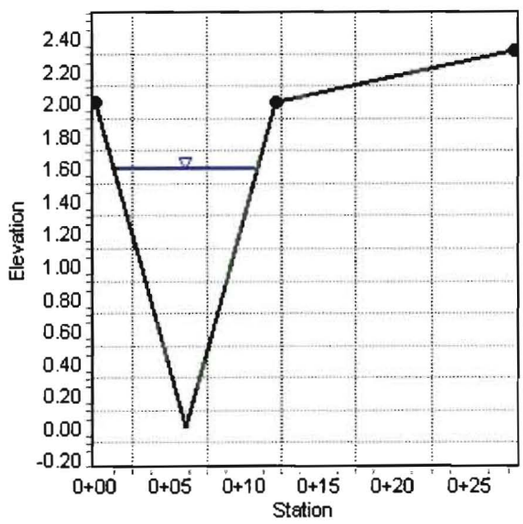
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00880	ft/ft
Normal Depth	1.59	ft
Discharge	19.60	ft^3/s

Cross Section Image

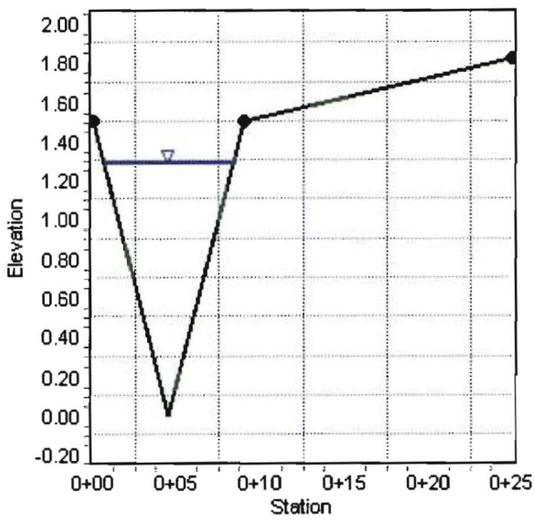


Cross Section for DA2

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00880	ft/ft
Normal Depth	1.29	ft
Discharge	11.10	ft^3/s

Cross Section Image