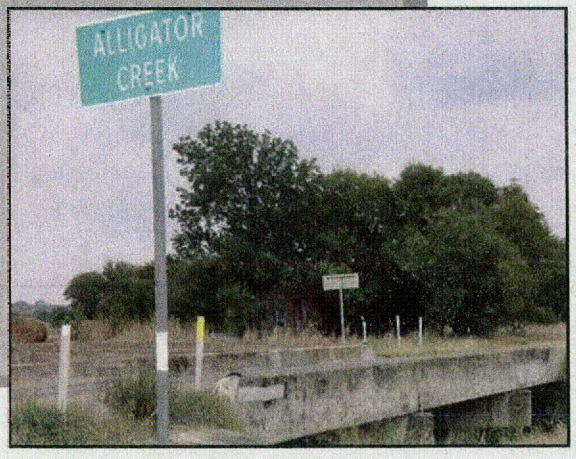
M&S ENGINEERING, LLC
Engineers, Planners, Surveyors

FINAL
Geronimo Creek
Flood Protection Plan



Guadalupe County, Texas
June 2011

GUADALUPE COUNTY
SEGUIN * 1846 * TEXAS

TEXAS WATER DEVELOPMENT BOARD

FINAL
Geronimo Creek
Flood Protection Plan

Prepared for:
Guadalupe County
2605 N. Guadalupe St.
Seguin, Texas

June 2011

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EXECUTIVE SUMMARY

This document is a Flood Protection Plan for Geronimo Creek, including its major tributary Alligator Creek, located in Comal and Guadalupe Counties, Texas. The combined watershed includes portions of Comal County, the City of New Braunfels, Guadalupe County, and the City of Seguin. Geronimo Creek ultimately confluences with the Guadalupe River.

Guadalupe County officials initiated an application to the Texas Water Development Board (TWDB) for funding assistance through the Flood Protection Planning Program in January of 2009. The application for funding was approved and contracts executed on August 18, 2009. In addition to Guadalupe County the following local governments and agencies supported the efforts of the study: Comal County, City of New Braunfels, City of Seguin, and Guadalupe-Blanco River Authority (GBRA). An Oversight Committee was created, made up of representatives from each of the local participants, the TWDB, and M&S Engineering (M&S) staff.

The primary goal of this study is to identify potential methods to reduce flooding in the Geronimo Creek watershed. There are two objectives identified in order to achieve this goal. One objective is to create detailed hydrologic and hydraulic models that evaluate existing watershed conditions in order to identify the impacts due to development since the Effective FEMA Flood Insurance Study that was performed in 1976. The second objective is using the hydrologic and hydraulic data to evaluate structural and non-structural mitigation alternatives and determine if these alternatives are cost beneficial options for reducing the risk and frequency of flooding.

The Oversight Committee charged M&S to evaluate seven flood mitigation alternatives. Four of the alternatives were structural measures that were evaluated using standard engineering practices of hydrologic and hydraulic modeling, construction cost analysis, and cost/benefit analysis based on impacts. These structural projects included: channel modifications, brush removal, bridge and low water crossing improvements, and regional detention ponds. The remaining non-structural options were regional detention regulations, and flood early warning systems. These non-structural solutions were difficult to calculate inherit benefits, construction costs, or implementation costs. Buyouts for repetitive loss structures in one area of the watershed were evaluated.

Channel modifications, brush clearing, and stream crossing improvements were found to have negligible impacts on the water surface elevations of the floodplain. Although making improvements to roads and bridges could reduce the risk of loss of life for motorists, it had a limited impact on flooding and proved to be non-beneficial based on construction cost. The investigation of using detention ponds to reduce flooding resulted in beneficial impacts to the floodplain. Due to characteristics of the watershed, large detention ponds will be required to achieve the desired level of flood reductions.

In addition to the construction of detention ponds to mitigate current flooding; a floodplain management and regulatory approach shows promise in reducing future damages and loss of life.

ACKNOWLEDGEMENTS

Numerous people contributed to the successful completion of this study. M&S Engineering, LLC wishes to acknowledge the following individuals as key contributors and supporters of the Geronimo Creek Flood Protection Plan.

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Chad Martin, PWS, CWB, Malcolm Pirnie, Inc.

A special thank you goes to the Navarro Independent School District for use of their elementary and junior high school cafeterias for public meetings.

1.0 INTRODUCTION

The Geronimo Creek Flood Protection Plan is a flood study funded by the TWDB and Guadalupe County, with participation from the City of New Braunfels, Comal County, the City of Seguin, and the GBRA.

Geronimo Creek and Alligator Creek, one of the major tributaries of Geronimo Creek, have experienced severe flooding in recent years. The severity and the frequency of these flooding events have increased rapidly as the watershed has experienced substantial development. Obviously, the increase in development increases the amount of impervious cover in the watershed, thereby increasing the severity and frequency of the flood events. The enlarged amount of impervious cover increases peak runoff and increases flooding of structures currently in the floodplain and also increases the risk of additional structures being damaged by floodwaters. With the increase of development comes increasing numbers of travelers who are using roads and subsequently, low water crossings that place travelers in the path of floodwaters.

In November 2007, the 100-year floodplain maps for Guadalupe County were revised indicating an approximated 525 structures located within the mapped flood limits. Life-threatening flooding has occurred nearly every year since October 1998 (March 2007, June 2004, July 2002, November 2001, August 2001, and of course the record-setting flood of October 1998). Prior to October 1998, major flooding was documented in May 1972 and September 1952. It is presumed that the increase in flooding since 1998 is partially a function of the development within the watershed of the Geronimo Creek as well as other upstream developments.

It is apparent that flooding within the Geronimo Creek watershed has increased and is expected to further increase, placing the health, safety, and welfare of the citizens of the watershed and those who travel through it at additional risk. It is even more apparent that flood protection and drainage infrastructure must be reviewed and studied to decrease the risk of placing the general public at undue risk.

1.1 Study Area

The Geronimo and Alligator Creeks are located in South Central Texas with the majority of the watershed located in Guadalupe County (See Figure 1-1). The headwaters of Alligator Creek are in Comal County. From there, Alligator Creek flows through New Braunfels, into Guadalupe County and intersects Geronimo Creek 1.5 miles west of the Community of Geronimo which is located on Hwy 123, north of the City of Seguin, in Guadalupe County.

Geronimo Creek's headwaters are located south of the New Braunfels Municipal Airport located in Guadalupe County. From the airport, Geronimo Creek flows approximately 3.5 miles to the southeast where it intersects Alligator Creek. Downstream from the confluence of the Geronimo and Alligator Creeks, the stream holds the name "Geronimo Creek" and travels approximately 13 miles, through the City of Seguin, and ultimately intersects the Guadalupe River.

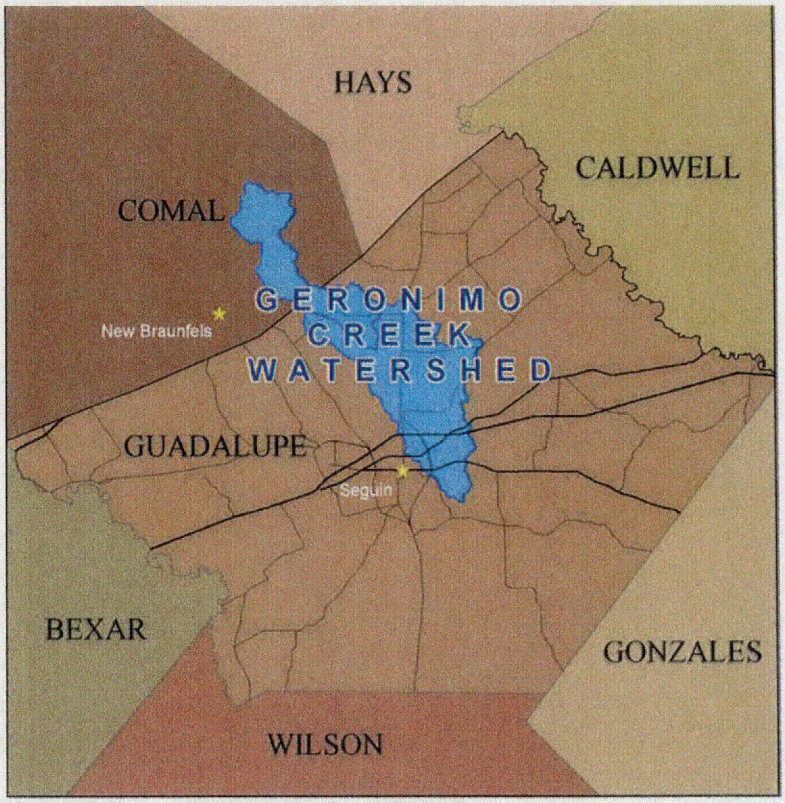


Figure 1-1: Study Area

The Geronimo Creek watershed (including Alligator Creek and all associated tributaries) has a total watershed of 68.65 square miles. The upper and lower sections of the watershed are urbanized while the stream segment in between contains rural subdivisions and small communities. With increased industrial and commercial development realized in Guadalupe County and the construction of SH-130, the middle stream segment will experience further, increased development.

Elevations in the watershed range from a high of 1020 feet at the upper reaches of the headwaters to a low of approximately 450 feet at the confluence with the Guadalupe River. The watershed, from the headwaters of Alligator Creek to the confluence of the Guadalupe River, is approximately 22 miles long and at the widest is approximately 7 miles wide.

The entire watershed was studied because Guadalupe County realized the need to evaluate the watershed as a complete, all-encompassing, system. Additionally, it is essential to incorporate all of the entities to provide a cumulative approach to flood protection planning.

1.2 Scope of Services

Because there were numerous sponsors and participants who were varied in need and purpose, communication has been vital throughout the study, and especially critical in the initial phases. Public input as well as input from the sponsors provided direction and insight from all the parties affected and was needed for the project to be a watershed-wide success. The economies, demographics, and "personalities" throughout the expansive watershed are varied and needed to be addressed.

The fundamental objective of this proposed flood protection planning was to thoroughly integrate all of the various needs of affected persons and sponsors into one effort, using the latest hydrologic studies made available to achieve a broad and comprehensive flood reduction plan for the entire watershed. Generally, current studies were to be updated to reflect current and potential future conditions, field data would be obtained as necessary, existing structures verified, data on new structures gathered, environmental considerations associated with proposed solutions evaluated, and benefit-cost analyses conducted.

Guadalupe County underwent FEMA Flood Insurance Rate Map (FIRM) revisions in November of 2007. Initially it was understood that the revised Effective FEMA hydrologic and hydraulic studies would be used as a baseline and built upon, adding more detail based on current development and topography. Upon obtaining FEMA backup data it was discovered that the Effective Flood Insurance Study (FIS) for the study area was outdated and incomplete. Therefore the scope of work to complete the study changed drastically.

A detailed break down of the project tasks as outlined in the Grant Application and the TWDB contract:

a. *Project Start and Baseline Information* - The project will begin with "communication" the most critical component, in the form of a kick off meeting with all of the sponsors and other political subdivisions that may have an interest in the planning effort. This meeting will set goals, project scope, project schedules, assign responsibilities, identify problem areas, anticipate project achievements, and initiate the compilation of all data that may be available. Geographic Information Systems (GIS) data will be obtained from Comal County, Guadalupe County, and the City of New Braunfels. Current (FIS) and United States Army Corps of Engineers (USACE) hydrologic and hydraulic models will be obtained as well as any past studies, possible FEMA Letter of Map Revisions (LOMRs), geotechnical information, topography, and any other related and necessary information. Once project goals, scope, and objectives are confirmed and agreed upon through the meeting with the sponsors, a public meeting will be held in a location central to the watershed – potentially in the community of Geronimo. This meeting will be to solicit the general public's input, concerns, perceived trouble areas, and "on the ground" information as well as communicate to the public the objective of the study. National Flood Insurance Program (NFIP) policy holders who have experienced a flood event will be determined and identified in this task. The final product of this task will be a planning area base map and a clear understanding of goals, responsibilities, project schedules, and scope.

b. *Environmental Considerations* – Part of the watershed (Alligator Creek segment) falls within the Balcones Escarpment. Accordingly, environmental issues related to the Edwards Aquifer Recharge Zone must be taken into account when considering any possible solution for flood protection. In addition to possible concerns related to the Recharge Zone, other potential critical environmental features must be identified and considered. Although a detailed survey will not be conducted, endangered species, wetlands, and other potential environmental issues will be reviewed and identified through available information by a subcontractor (Malcolm Pirnie) who will also address any storm water quality concerns. Additionally, all work related to environmental effort/task will be coordinated with the water quality modeling program that the GBRA is currently developing but, no funding from this grant will be used to support that effort.

c. *Field Data Collection* – From information gathered in the Project Start task and through the review of data acquired from the previously conducted hydrologic studies, information or data/survey "gaps" will be identified. It is anticipated that approximately 2,000 feet of stream channel may require additional cross-sectioning, and that approximately 20 days of survey crew will be required to verify stream crossing data and obtain data from crossings where no data is available.

d. *Hydrologic Considerations* – Making use of the model used to develop the FIRMs revised in November 2007 as well as other data obtained in the Project Start task, an updated hydrologic model will be developed that integrates all of the data made available using USACE Hydrologic Engineering Centers – Hydrologic Modeling System (HEC-HMS). Utilizing existing data will greatly reduce time and effort needed as it relates to having to develop times of concentration, curve numbers, etc. for the existing model. Soils data, rainfall distributions, and land use estimates provided and used in the existing model will be evaluated and modified as needed to develop existing hydrologic data and future hydrologic data. Separate HEC-HMS models will be developed, including calibrating/verifying the existing model, updating the model to current conditions, and modeling future land use conditions. Each model run will develop 2-year, 10-year, 25-year, and 100-year peak flow rates for use in the hydraulic model. In summary, this effort will, ultimately provide storm water flows at 4 frequencies (2, 10, 25, and 100-year) for the model as it currently exists (as of November 2007), existing (current time), and for the ultimate development of the watershed.

e. *Hydraulic Considerations* – Utilizing the data from the model previously described, other data obtained in the Project Start task, field survey data, topographic and GIS data obtained from Guadalupe County, information gathered from sponsors, design plans and the most up to date topographic data available from other sources, the USACE Hydrologic Engineering Centers – River Analysis System (HEC-RAS) model runs will be verified for its current state (November 2007). Upon verification and calibration of the model as developed and approved in November 2007, current or existing conditions (present day) will be run in the model as well as projected future land conditions. Flood profiles will be developed for the existing conditions (present day) and the expected, ultimate development, future land use conditions for the 2-year, 10-year, 25-year, and 100-year watershed conditions. The final product of this task will be flood profiles and floodplain delineations for both the existing and future conditions.

f. *Assessment of Potential Flood Protection Measures* – Using the data from the aforementioned analyses (2-year, 10-year, 25-year, and 100-year peak flows for both existing/present day and future conditions), an acceptable level of flood protection for each problem area identified. Hydrologic and hydraulic analyses will be performed for each scenario identified at the present day and future conditions for each of the flood frequencies to aid in determining the amount of protection provided. The flood protection measures may include structural and/or non-structural improvements including, but not limited to: channel improvements, culvert upgrades, low water crossing upgrades, buy-outs, flood-proofing, in-channel detention, and off-channel detention. Non structural measures may include items such as regional regulations and policies, land planning, land use restrictions, etc. The potential flood protection measures will be communicated to the sponsors of the study through a detailed report showing the results of the analysis. Their input and consideration will be integrated into the detailed report and then communicated to the general public through a second public meeting. The public meeting will be to present the findings to date and to describe how benefit-cost analyses will be used, in addition to input from the sponsors and the public, in narrowing the selection of protective measures to 5 scenarios.

g. *Benefit-Cost Analyses*- Each alternative will be quantified in terms of the benefit ("tangible" and "intangible") the protection measure provides. Although "tangible" benefits are more easily quantified, "intangible" benefits such as reducing bank erosion, reducing subsidence, reducing disruption to infrastructure, reducing disruption to economies, etc. are difficult to quantify, but will be applied in a subjective manner to the proposed solutions. These benefits will be compared to the cost associated with constructing the protective measure including, but not limited to: capital costs, financing costs, life cycle, right of way requirements, maintenance costs, etc. In the event the benefit-cost ratio appears to be inappropriately skewed, the FEMA benefit-cost analysis software will be utilized as a comparison. Capital costs will be based upon current construction unit pricing, consultation with contractors, GIS data made available by the sponsors, and rough, preliminary schematics of the suggested protection measure. Using the benefit-cost ratios as a beginning measure for prioritizing, public health and welfare benefits associated with the scenario will be evaluated to provide additional and more critical prioritizing measures. The final product of this task will be a report showing all of the studied protection measures including benefit-cost analyses, "intangible" benefits and costs, costs of improvements, discussion of public health and welfare benefits, and prioritization of the proposed solutions. Projects that have the higher benefit-cost ratios will be ranked with the highest priority with subject to consideration to the "intangible" considerations. This task will be presented in a third public meeting upon approval of Guadalupe County and the sponsors.

h. *Financing/Implementation Phases* – Based upon the input from the sponsors and the public on the benefit-cost analysis/study, the effort of defining financing alternatives will be explored. Potential funding sources include, but are not limited to: impact fees, development fees, utility fees, grants, taxes, capital budgeting. The sponsors' individual capital improvement plan(s) and budgeting will be considered and coordinated with others to obtain the broad, watershed-wide, solution(s) that is inherent in this proposed study. Recommendations will be provided for implementing and financing the suggested flood protection measures.

i. *Deliverables* – Upon the completion of the tasks listed, including the deliverables indicated in each task, a final document will be developed. This document will be the accumulation of all of the efforts associated with the study and will be presented to the public in a final, fourth public meeting. The final report, which will include, maps, technical analyses, exhibits, supporting documentation, and implementation/ financial considerations, will be entitled, "Flood Protection Plan for Geronimo and Alligator Creeks' Watersheds". The report will be presented to the Texas Water Development Board following the completion of the final meeting and approval of Guadalupe County.

1.3 Oversight Committee

As previously mentioned, an Oversight Committee was formed to provide assistance, guidance, and general support to the study effort. The committee met six times during the course of the project and was a large contributing factor to the effectiveness and completion of the study. In addition to the Oversight Committee meetings, members also attended the three public meetings that were held throughout the project period. They provided invaluable input and support while addressing questions and comments from residents and property owners.

1.4 Public Meetings

Three public meetings were held at different key phases of the study. Each meeting had a formal presentation, question and comment time, and a workshop session in which the public provided input and were able to speak with M&S staff and Oversight Committee members. Public notice for each meeting included announcements in local papers, radio stations, television stations, and Guadalupe County Commissioners Court. In addition, written invitations were sent to the residents and property owners in the study area.

The first meeting was held on November 4, 2009 at the Navarro Elementary School Cafeteria. Participating agencies, consultants, and local governments were introduced to the attendees. An update was given by GBRA and AgriLife Extension on the efforts associated with the Geronimo and Alligator Creeks Watershed Protection Plan, in which water quality of the watershed is being evaluated. M&S presented a detailed description of history, purpose, and goals for the study. During the workshop session attendees filled out questionnaires regarding their personal experiences with flooding and located problem areas on watershed maps. Valuable information was obtained from the public and was used for hydraulic model validation, prioritizing flood prone areas, and establishing initial locations of potential detention structures.

The second public meeting was held on June 16, 2010 at the Navarro Middle School Cafeteria. Participating agencies, consultants, and local governments were introduced to the attendees. An update was given by GBRA on the status of the Geronimo and Alligator Creeks Watershed Protection Plan. M&S presented a brief overview of the purpose of the study and updated attendees on the work completed to date. M&S presented an aerial flyover displaying a graphical comparison of the Effective FEMA 1% annual floodplain and the newly calculated 1% annual floodplain. The flyover began at the headwaters of the Alligator Creek and moved downstream through Geronimo Creek to the confluence with the Guadalupe River. During the

workshop sessions attendees viewed more detailed maps of the floodplain comparison, asked questions, and expressed concerns to M&S staff and Oversight Committee members.

The final public meeting was held on August 18, 2010 at the Navarro Middle School Cafeteria. Participating agencies, consultants, and local governments were introduced to the attendees. An update was given by GBRA on the status of the Geronimo and Alligator Creeks Watershed Protection Plan. M&S presented a brief overview of the purpose of the study. Flood mitigation alternatives were discussed with regards to flood reduction effectiveness, costs, and benefit to the community. Preliminary locations for recommended detention ponds were shown. At the time of this meeting the benefits of the ponds were not calculated yet. It was thought that the ponds would not be shown as beneficial due to the minimal impact on the 1% Annual floodplain. The workshop consisted of many questions, comments, and concerns by the attendees.

1.5 FEMA Backup Data

Upon startup of this project the Effective FEMA FIS backup data was requested. The data in PDF format and was downloaded from a FEMA FTP site. The PDF was created from a microfiche hydraulic report. The hydraulic study was performed in the SCS (now NRCS) Water Surface Profile Model (WSP2) software. No WSP2 files were received, only the copies of the output. Dates on the model ranged from August 14, 1974 to February 13, 1976, with a hand written note that indicates the model was plotted on March 5, 1976.

The intent regarding the hydraulic model was to use the WSP2 data to rebuild the model in HEC-RAS. The stream flow information from the WSP2 model would be used to calibrate. After detailed review of the data it was discovered that a large section of the input data for numerous cross sections was missing. Due to an incomplete data set for the hydraulic model and no hydrological backup data, the decision was made to create new models. A new drainage study for the entire watershed was performed. As efforts began to create the HEC-RAS model for the streams, it was found that no existing topographic data was available for the Guadalupe County portion of the watershed. The City of New Braunfels provided 2-foot contour data for the Comal County segment of the watershed. After several months of trying to find topographic data, M&S contracted with Stewart Geo Technologies to have the area surveyed via aerial photogrammetric mapping.

2.0 HYDROLOGIC ANALYSIS

The computational method employed in this study was developed by the Natural Resource Conservation Service (formerly the Soil Conservation Service). It is typically referred to as the SCS method. The SCS method uses dimensionless hydrographs to approximate runoff rates per unit time for the duration of a storm event. The method uses the following input parameters to calculate peak runoff values: drainage area, time of concentration, synthetic storm/ precipitation data, land use, and curve number values. Each of these parameters is discussed in detail in the following sections.

Although there may exist reasons based on theory to chose one method over another, M&S staff chose its methods on much more pragmatic grounds. While these methods are widely accepted by the engineering community considerations were made based on familiarity with computational techniques and computer software, available data for model input, and approved methods by permitting agencies. The last consideration was the most important factor. Although, Guadalupe County, the other study participants, and the TWDB have no required methods; careful consideration was made regarding future submittals to FEMA. The methods and software used in this study are accepted by FEMA.

Hydrologic analysis includes the evaluation of the existing 50%, 20%, 10%, 4%, 2% and 1% annual chance (2, 5, 10, 25, 50 and 100-year, respectively) storm events. The basins were delineated using ArcGIS 9.3.1 and Arc Hydro Tools 9. Curve Numbers were generated manually using parcel data, soil data and aerial imaging. Time of concentration information was developed by hand using 2 ft contour data of the watershed. Peak flow rate estimates for each basin were calculated using Bentley PondPack 10. Floodplain modeling was completed using HEC-RAS 4.1.0 and compiled using HEC-GeoRAS 4.2.93 within ArcGIS.

2.1 Drainage Area Delineation

The Guadalupe County Geodatabase contains boundaries for the sub basins within the county, including the Alligator and Geronimo Creek watersheds. This was used as the outer boundary of the delineation process in Arc Hydro Tools 9. A digital elevation model (DEM) of this area was created using 2 ft contours provided by Comal County and M&S Engineering, LLC. Terrain preprocessing was done on the DEM to recondition it for watershed processing. Basins were created based on the FEMA river reach study limits. A study area begins where 1 square mile of land drains to a particular point. Catchments were generated for tributaries with a drainage area of 640 acres (1 sq. mi.) or larger. A total of 39 basins were created. These drainage basins were named by assigning a number 1 through 39 starting at the northernmost basin and working south. Alligator Creek is defined by Basins 1 through 11. Geronimo Creek is defined by Basins 12 through 39.

2.2 Time of Concentration

The time of concentration (Tc) is the time it takes for the most hydraulically remote point to contribute to the runoff of the drainage area under investigation. The method used to calculate this was based on Natural Resources Conservation Service Technical Release 55 (NRCS TR55).

Flow is characterized by three different types: sheet flow, shallow concentrated flow and open channel flow. Sheet flow Tc is based on Manning's roughness value over the path, flow length, slope, and the 2-yr 24 hr rain depths. Shallow concentrated flow Tc is calculated using velocity, slope, flow length, and cover type. Channel flow Tc is calculated using the hydraulic radius, flow area, wetted perimeter, velocity, slope, Manning's roughness and flow length.[1] These parameters were calculated by hand using aerial photography, 2 ft contours and ArcGIS.

The Manning's roughness values used were[2]:

n-value	Description
0.3	100% vegetated ground cover, bare soil or rock outcrops, min-med brush or tree cover. (sheet flow)
0.02	Asphalt. (sheet flow)
0.045	Natural Streams on plain, winding, some pools and shoals, some weeds and stones.
0.04	Cultivated areas – mature field crops.
0.015	Sewer with manholes, inlet, etc.

The wetted perimeter and flow area were found using an iterative process. An initial guess was entered into the channel flow formula to get a Tc. With this the volume flow rate (Q) was calculated in Pondpack. The Q value was then entered into FlowMaster to find the wetted perimeter and flow area of the channel cross section. This was repeated until the change in Q was less than 5%. The equations used by Pondpack to find Tc can be found in Appendix B along with the Tc values that were calculated for each basin. The total travel time through the watershed was estimated to be approximately 14 hours.

2.3 Synthetic Storm/Precipitation Data

The precipitation data used in this analysis was derived from NWS NOAA Technical Paper No40 (Rainfall Frequency Atlas). Using this data, a synthetic storm was created in Pondpack, using the NRCS Type III 24-Hour Rainfall Distribution, for the 2-, 5-, 10-, 25-, 50- and 100-year storm events. Table 2-1 shows the design rainfall for these storms. These design storms were applied uniformly to each basin.

Table 2-1: NRCS Type III 24-Hour Rainfall Distribution for Guadalupe County[3]

Duration		Design Rainfall					
		2 Yr	5 Yr	10 Yr	25 Yr	50 Yr	100 Yr
(minutes)	(hours)	(inches)	(inches)	(inches)	(inches)	(inches)	(inches)
5	0.0833	0.61	0.76	0.86	1.00	1.09	1.24
15	0.2500	1.18	1.49	1.69	1.98	2.16	2.44
60	1.0000	2.01	2.58	2.98	3.50	3.90	4.34
120	2.0000	2.43	3.15	3.67	4.33	4.87	5.40
180	3.0000	2.69	3.49	4.10	4.85	5.48	6.07
360	6.0000	3.15	4.13	4.88	5.81	6.63	7.32
720	12.0000	3.67	4.83	5.77	6.90	7.96	8.75
1440	24.0000	4.24	5.62	6.79	8.16	9.51	10.43

[1] United States. *Urban Hydrology for Small Watersheds TR-55.* , 1986. Print.
[2] Chow, V.T. *Open-channel hydraulics:.* New York: McGraw- Hill Book Co., 1959. Print.
[3] Hershfield, David M. United States. *Technical Paper no. 40 Rainfall Frequency Atlas of the United States for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Years.* , 1961. Print.

2.4 Land Use and Curve Numbers

The runoff curve numbers (CN) are the means by which land use is converted to runoff. Once rainfall values are calculated CN values are identified based on types of development and the conditions of the land. CN values are based on soils, plant cover, amount of impervious areas, interception, and surface storage.

Soils are classified into hydrologic soil groups (HSG's) to indicate the minimum rate of infiltration obtained for bare soil after prolonged wetting. The HSG's, which are A, B, C, and D, are one element used in determining runoff curve numbers.[4]

Group A soils are sandy and well drained while group D soils are highly plastic clays that drain poorly. Groups B and C are in the intermediate ranges within the two extremes listed above.[5] Table 2-2 shows the CN values that were used.

Table 2-2: Alligator and Geronimo Watershed Curve Numbers[6]

Cover Type	Curve Number for Soil Group		
	B	C	D
Commercial Business	92	94	95
Fair condition (grass cover)	69	79	84
Grassland (fair)	69	79	84
Paved, open ditches	-	-	93
Residential >= 2 acres	65	77	82
Residential 1 acre	70	79	84
Residential 1/2 acre	70	80	85
Residential 1/3 acre	72	81	86
Residential 1/4 acre	75	83	87
Row Crops (SR+CR Good)	75	87	90
Woods (fair)	60	73	79

Using county-provided parcel data and the NRCS soils map, CN values were assigned to each parcel depending on the land use and hydrologic soil group. In case of a parcel being on the boundary of one or more soil types, the soil group that was most dominant was chosen.

A weighted average was done on the CN values in each basin to obtain one CN value per basin. This was calculated automatically by Pondpack. CN values and their area within each watershed can be found in Appendix B.

Ultimate development models do not exist for the Alligator and Geronimo Creek Watersheds. To simulate this ultimate development, each basin was looked at separately. Within each basin, the amount of commercial, residential and paved areas are expected to increase while undeveloped land such as grassland and crop land would be expected to decrease. An exception to this is residential areas greater than 2 acres which is mainly ranch land. These were assumed to turn into residential subdivisions. An assumption was made that within each basin, the

[4] United States. *Urban Hydrology for Small Watersheds TR-55.*, 1986. 2-1. Print.
[5] Bedient, Phillip B. *Hydrology and Floodplain Analysis*. 2nd ed. Addison Wesley, 1992. 128. Print.
[6] United States. *Urban Hydrology for Small Watersheds TR-55.*, 1986. Print.

continued development would match the percentage of commercial, residential and paved areas that already exist. Undeveloped area was then divided among the developed areas based on how much of each type currently exists. Care was taken to make sure soil type was taken into account.

2.5 Peak Flow Summary

Pondpack was used to model the peak flows through each basin. The Modified Puls and Muskingum methods are the default routing methods are available in the PondPack software. The Modified Puls method was selected for its ability to be used with irregular channel cross section geometry. Channel cross sections and reach lengths were measured in ArcGIS. The time step used was 0.01 hours. Level pool routing was used for the detention study. Table 2-3 shows the peak flow values for each basin. Table 2-4 shows the cumulative Peak Discharge of Alligator and Geronimo Creeks.

Table 2-3: Peak Flow Rates for Alligator and Geronimo Creek in C.F.S.

River	Basin	2YR	5YR	10YR	25YR	50YR	100YR
Alligator Creek	1	1666.45	2504.99	3227.02	4084.26	4928.62	5502.81
Alligator Creek	2	962.90	1453.85	1877.08	2374.96	2865.47	3199.08
Alligator Creek	3	466.37	688.01	877.29	1098.78	1316.29	1464.12
Alligator Creek	4	626.05	927.96	1186.50	1489.57	1787.52	1989.98
Alligator Creek	5	969.70	1451.48	1867.31	2357.47	2840.39	3168.89
Alligator Creek	6	6.51	9.61	12.27	15.37	18.42	20.49
Alligator Creek	7	1395.93	2036.88	2584.50	3227.25	3859.03	4288.39
Alligator Creek	8	719.41	1021.27	1277.16	1575.47	1867.98	2066.56
Alligator Creek	9	1808.47	2618.72	3308.90	4116.83	4912.26	5452.80
Alligator Creek	10	827.10	1214.79	1547.11	1936.23	2318.59	2578.33
Alligator Creek	11	1378.13	2070.83	2668.99	3373.89	4071.28	4546.58
Geronimo Creek	12	1169.98	1722.27	2194.60	2748.07	3292.21	3662.00
Geronimo Creek	13	730.23	1074.03	1368.13	1712.59	2051.13	2281.15
Geronimo Creek	14	539.43	795.77	1015.64	1274.33	1529.40	1702.93
Geronimo Creek	15	279.84	411.91	524.94	657.40	787.64	876.14
Geronimo Creek	16	284.78	419.54	535.34	671.24	804.98	895.93
Geronimo Creek	17	839.49	1229.94	1566.26	1962.37	2354.05	2621.05
Geronimo Creek	18	417.51	615.49	785.11	984.12	1179.99	1313.52
Geronimo Creek	19	138.73	203.59	258.95	323.73	387.35	430.57
Geronimo Creek	20	32.20	47.27	60.12	75.17	90.00	100.09
Geronimo Creek	21	456.48	667.47	847.98	1059.64	1268.28	1410.24
Geronimo Creek	22	1590.44	2334.81	2973.71	3721.85	4456.97	4956.38
Geronimo Creek	23	676.07	990.93	1259.98	1576.31	1887.03	2098.07
Geronimo Creek	24	775.48	1149.46	1470.21	1848.20	2220.09	2472.89
Geronimo Creek	25	849.40	1252.71	1599.46	2006.73	2407.88	2680.80
Geronimo Creek	26	776.38	1155.95	1482.74	1867.19	2247.13	2505.90
Geronimo Creek	27	738.47	1089.90	1391.79	1746.78	2097.26	2335.81
Geronimo Creek	28	36.40	53.20	67.51	84.22	100.62	111.75
Geronimo Creek	29	541.63	806.55	1034.98	1303.89	1569.70	1750.80
Geronimo Creek	30	924.21	1375.78	1764.45	2221.60	2673.05	2980.64
Geronimo Creek	31	335.28	499.00	640.40	806.84	971.00	1082.76
Geronimo Creek	32	563.44	815.87	1031.17	1283.59	1531.68	1700.29
Geronimo Creek	33	1118.86	1680.87	2165.96	2737.98	3303.92	3689.33
Geronimo Creek	34	155.82	228.29	290.35	362.93	434.19	482.57
Geronimo Creek	35	596.06	845.60	1057.11	1304.01	1546.09	1710.44
Geronimo Creek	36	757.32	1125.83	1442.32	1814.00	2179.93	2428.78
Geronimo Creek	37	251.41	380.76	492.63	624.52	755.17	844.20
Geronimo Creek	38	484.62	701.02	885.64	1101.51	1313.53	1457.56
Geronimo Creek	39	682.92	1035.30	1340.27	1700.05	2055.29	2297.32

Table 2-4: Cumulative Peak Discharge for Alligator and Geronimo Creek in C.F.S.

	Dist from Confluence	2YR	5YR	10YR	25YR	50YR	100YR
Alligator Creek	149752.15	1666.45	2504.99	3227.02	4084.26	4928.62	5502.81
	149752.14	2563.60	3873.13	5002.02	6329.95	7638.10	8527.77
	145475.15	2374.66	3494.05	4796.33	6269.38	7717.71	8712.43
	145475.14	3000.71	4422.01	5971.38	7746.75	9466.52	10636.95
	145161.14	2997.51	4411.44	5960.31	7724.39	9466.36	10644.72
	145161.13	3876.16	5750.31	7628.32	9815.74	11942.58	13380.11
	119828.13	2623.28	3887.44	5071.23	6543.82	7823.13	8790.12
	119828.12	3248.10	4826.89	6191.33	7936.08	9494.28	10658.12
	97219.12	2960.84	4561.31	6099.88	8006.16	9887.37	11137.54
	97219.11	3227.24	4951.53	6572.81	8596.04	10600.53	11954.99
	79168.11	2991.65	4685.71	6467.70	8726.85	10978.51	12359.69
Geronimo Creek	79168.10	3678.91	5707.62	7702.59	10205.29	12660.32	14117.76
	72485.10	3702.17	5746.97	7750.96	10266.27	12725.95	14243.17
	72485.09	3979.29	6174.36	8337.14	11060.84	13771.00	15445.51
	65357.09	4061.00	6305.42	8504.75	11264.89	13973.88	15642.93
	65357.08	4334.30	6734.51	9051.73	11973.84	14857.50	16646.07
	64629.08	4338.17	6738.59	9056.27	11977.55	14859.75	16651.09
	64629.07	5353.06	8230.85	10837.45	14137.44	17464.43	19619.88
	61375.07	5376.04	8261.96	10872.96	14171.93	17464.78	19671.07
	61375.06	5486.93	8418.52	11062.50	14394.18	17727.29	19978.71
	47375.06	5989.53	9240.12	12144.37	15729.27	19384.48	21832.01
	47375.05	7386.25	11353.46	14857.78	19081.93	23450.73	26367.64
	34585.05	7537.12	11788.65	15515.59	19974.62	24560.28	27612.53
	34585.04	8959.35	14031.45	18482.08	23708.42	29073.65	32633.99
	29921.04	9181.69	14376.70	18962.28	24345.03	29864.25	33518.89
	29921.03	9567.80	14978.72	19762.45	25366.80	31104.72	34907.39
	26370.03	9558.16	14969.37	19765.07	25377.72	31099.70	34909.85
	26370.02	9717.06	15213.57	20089.82	25789.79	31602.36	35466.41
	13840.02	8852.04	14606.91	19589.68	25443.65	31391.78	35318.17
	13840.01	9265.94	15375.89	20691.86	26919.52	33245.72	37425.65
	10720.01	9313.65	15443.30	20785.12	27005.51	33258.78	37644.90
	10720.00	9455.69	15688.75	21136.17	27459.30	33813.13	38321.38
	0.00	9604.16	15688.75	21136.17	27459.30	33813.13	38321.38

3.0 HYDRAULIC ANALYSIS

3.1 Methodology

Cross section spacing for the hydraulic model was based on Paul Samuel's equation (Samuels, P.G., 1989. "Backwater lengths in rivers", Proceedings — Institution of Civil Engineers, Part 2, Research and Theory, 87, 571-582.). Bankful depth estimates were taken from within Alligator Creek and Geronimo Creek. An average cross section distance was found to be 500 ft. Using HEC-GeoRAS, cross sections for every reach were created by hand.

Bank stations were added through HEC-GeoRAS by mapping out the banks from an aerial photo of the watershed. The bank lines were measured by hand and inserted into the HEC-RAS model after it was created by HEC-GeoRAS.

Fifty-four bridges and low water crossings were studied in the Geronimo and Alligator creek watershed. There were a small number of other bridges and water crossings that were on private property which were simplified or ignored for this project. Of note are the I-35 culverts in Basin 8 that go underneath the Creekside Way development. Due to the complex geometry and drainage occurring through these culverts, it is not possible to accurately portray its flow without further study. Table 3-1 lists the bridges and water crossings that were studied.

Surveyed bridges were modeled in HEC-RAS at the height at which they were surveyed. The bridge deck was tied back into the road profile which was obtained from HEC-GeoRAS outside of the bridge survey extents. Upstream and downstream cross sections were modified as needed to define the channel and place the invert of the opening properly. Site visits were conducted at crossings which were not surveyed. Measurements taken at these crossings include culvert dimensions and vertical distance from the road deck.

Table 3-1: Bridges and Low Water Crossings Studied in Alligator and Geronimo Creek

Stream	Reach	Stream Station	Description
Alligator Creek	6	220.2640 Hoffmann Ln	Hoffmann Ln.
Alligator Creek	7	21614.83 FM 1102	FM 1102
Alligator Creek	7	11959.56 Gooodwin Ln	Gooodwin Ln
Alligator Creek	7	5955.235 IH 35 (Main Road	IH 35 (Main Road)
Alligator Creek	7	5835.668 IH 35 (Northboun	IH 35 (Northbound Access Road)
Alligator Creek	7	6070.973 IH 35 (Southboun	IH 35 Southbound Access Road)
Alligator Creek	8	3684.417 IH 35 N (Target)	IH 35 N (Target)
Alligator Creek	9	18818.89 FM 1101	FM 1101
Alligator Creek	9	512.7987 Schwarzlose Rd	Schwarzlose Rd
Alligator Creek	9	12179.1 Westmeyer Rd	Westmeyer Rd
Alligator Creek	11	10705.84 Barbarossa Rd	Barbarossa Rd
Alligator Creek	11	13530.24 FM 758	FM 758
Alligator Creek	11	2185.628 Huber Rd	Huber Rd
Geronimo Creek	12	4494.543 HWY 123 N	HWY 123 N
Geronimo Creek	12	3269.041 Thormeyer Rd	Thormeyer Rd
Geronimo Creek	16	3404.278 Geronimo Dr	Geronimo Dr
Geronimo Creek	16	2443.984 Heinemeyer Rd	Heinemeyer Rd
Geronimo Creek	16	4240.247 HWY 123 N	HWY 123 N
Geronimo Creek	17	5313.559 Barbarossa Rd	Barbarossa Rd
Geronimo Creek	17	1083.083 Huber Rd	Huber Rd
Geronimo Creek	17	9348.906 Pieper Rd	Pieper Rd
Geronimo Creek	18	6094.869 FM 2623	FM 2623
Geronimo Creek	18	2453.47 Heinemeyer Rd	Heinemeyer Rd
Geronimo Creek	21	2876.437 HWY 123 N	HWY 123 N
Geronimo Creek	25	12569.19 Glenwinkel Rd	Glenwinkel Rd
Geronimo Creek	25	8115.275 Timmermann Rd	Timmermann Rd
Geronimo Creek	26	8215.094 FM 20	FM 20
Geronimo Creek	26	7829.957 Ilka Switch	Ilka Switch
Geronimo Creek	26	12623.76 Laubach Rd	Laubach Rd
Geronimo Creek	26	20681.18 Timmermann Rd	Timmermann Rd
Geronimo Creek	27	1637.609 Haberle RD	Haberle RD
Geronimo Creek	27	10050.53 HWY 123 N	HWY 123 N
Geronimo Creek	27	4023.071 Willmann Rd	Willmann Rd
Geronimo Creek	29	4547.385 FM 20	FM 20
Geronimo Creek	29	10488.67 Laubach Rd	Laubach Rd
Geronimo Creek	30	7791.949 HWY 123 N and Co	HWY 123 N and Cordova Rd Intersection
Geronimo Creek	30	7753.43 HWY 123 N and La	HWY 123 N and Laubach Rd Intersection
Geronimo Creek	30	1754.984 Laubach Rd	Laubach Rd
Geronimo Creek	32	6107.988 East Martindale	East Martindale Rd
Geronimo Creek	33	4521.891 Baer Creek Trl	Baer Creek Trl
Geronimo Creek	33	3090.634 East Walnut St	East Walnut St
Geronimo Creek	33	14067.64 IH 10 E	IH 10 E
Geronimo Creek	33	14337.06 IH 10 E Northern	IH 10 E Northern Access Rd
Geronimo Creek	33	13566.6 IH 10 E Southern	IH 10 E Southern Access Rd
Geronimo Creek	33	13060.61 Sunbelt Rd	Sunbelt Rd
Geronimo Creek	33	1356.759Alternate 90	Alternate 90
Geronimo Creek	34	3385.687 IH 10 E Eastboun	IH 10 E Eastbound
Geronimo Creek	34	3497.879 IH 10 E Westboun	IH 10 E Westbound
Geronimo Creek	35	1623.926 Railroad Bridge	Railroad Bridge
Geronimo Creek	36	1189.034 East Court St/Al	East Court St / Alt 90
Geronimo Creek	36	10701.42 E kingsbury St/U	East kingsbury St / US 90
Geronimo Creek	36	2300.292 East Walnut St	East Walnut St
Geronimo Creek	38	3270.17 Elmwood Dr	Elmwood Dr
Geronimo Creek	38	1916.548 Monterey Oak	Monterey Oak

*Grey – Detailed Survey conducted
**White – Measured in field

3.2 Hydraulic Model Verification

Model calibration and verification was completed through five different methods: community input, Effective FEMA floodplain comparison, 1974 Study data, flood insurance claims, and historical bridge high water marks obtained from G.B.R.A.

Community input was taken at a public meeting with local residents. Residents marked where there was flooding, loss of power, property damage and well as the lack of flooding if they lived near a flood prone area. These locations were checked against the proposed 100-Year floodplain generated by M&S. It was found that this information depicted the proposed floodplain to a good degree.

Flood insurance claims were located and overlaid on the proposed floodplain. These claim locations fit very well with the proposed 100-Year inundation pattern.

The Effective FEMA floodplain was created from a study conducted in 1974. This floodplain was produced with less-detailed information and it used the WSP2 program which is now retired. Some of the documentation from the model has been lost over the years making it impossible to fully replicate the results today. The flow values that were recoverable were placed in the HEC-RAS model and mapped with up-to-date topography. This new 1974 floodplain was then overlaid on the current 1974 FEMA maps and on the proposed floodplain generated by M&S. The differences seen between these two floodplains were expected. This floodplain comparison can be seen in Appendix A – Exhibit 7.

As mentioned, historical bridge high water marks for Geronimo Creek were obtained from GBRA. Elevations were converted to NAVD 88 as needed. As can be seen in Table 3-2, elevation differences range from 1.5 to -2.8 ft.

Table 3-2: High Water Marks Verification

Description	Date Event	Recorded HWM	Adjusted NAVD 88 Elev	Prop Upper Elev	Elev Diff
Schwartzlose Rd, nail in elect pole	10/17/1998	619.8	620.1	619.5	-0.6
Huber Rd, nail in elect pole	10/17/1998	592.1	592.4	592.5	0.1
HWY 123 Bridge, nail in elect pole	10/17/1998	580.0	580.3	577.5	-2.8
HWY 20 Bridge, wooden stake	10/17/1998	523.4	523.7	522.2	-1.5
HWY 20 Bridge, wooden stake in drainage ditch	10/17/1998	520.5	520.8	522.2	1.4
HWY 90 Bridge, nail in tree (E Kingsbury)	10/17/1998	498.7	499.0	498.0	-0.9
HWY 90 Bridge, nail in tree (E Kingsbury)	10/17/1998	497.8	498.1	498.0	0.0
HWY 90A Bridge, nail in tree (E Court St)	10/17/1998	481.6	481.9	483.3	1.5

A comparison between the effective FEMA floodplain and the proposed floodplain showed some interesting results. The FEMA study conducted in Comal County had overestimated WSELs while the Guadalupe County study had underestimated WSELs as can be seen in Table 3-3. This can be caused by any number of things including different n values, cross section spacing, bridge changes, better survey methods, and more detailed floodplain modeling methods, to name a few. The water surface elevation change calculated for East Court Street seemed quite large. Further study revealed that the proposed elevation fit much closer to the verification data that was collected than the Effective elevation did.

Table 3-3: FEMA Floodplain and Proposed Floodplain Elevations

	Location	Cross Section	Effective WSEL	Proposed WSEL	Elevation Difference
	Alligator Creek				
Comal County	Hoffmann Ln	W	717	714	-3
	1300 Ft D.S. of Rd	V	712	709	-3
	2600 Ft D.S. of Rd	U	711	705	-6
	Fm 1102	T	711	702	-9
	1600 Ft D.S. of Rd	R	700	697	-3
	3300 Ft D.S. of Rd	Q	695	692	-3
	5400 Ft D.S. of Rd	P	689	687	-2
	7400 Ft D.S. of Rd	O	684	682	-2
	Goodwin Ln	N	682	680	-2
	2200 Ft D.S. of Rd	L	675	674	-1
	4100 Ft D.S. of Rd	K	673	671	-2
	I-35	J	670	668	-2
	18900 Ft D.S. of Rd	I	630	632	2
	Schwarzlose	H	619	619	0
	Fm 768	F	615	613	-2
Guadalupe County	Barbarossa Rd	D	606	608	2
	Huber Rd	B	592	594	2
	Geronimo Creek				
	1900 Ft D.S. of Rd	M	588	592	4
	Hwy 123	L	574	578	4
	Heinemeyer Rd	J	572	573	1
	Glenewinkel Rd	I	560	560	0
	Timmermann Rd		550	553	3
	Laubach Rd		528	535	7
	FM 20	G	515	522	7
	E Kingsbury St	E	492	499	7
	Court St	C	484	472	-12
	11700 Ft D.S. of Rd	A	464	465	1

3.3 Model Limitations

During the larger flood events, it was found that water from some stream reaches was overflowing across the ridge that separates it from a neighboring reach. This occurs in a few areas where two reaches come together. Lateral weirs were added to the model, but the model continually failed to converge during optimization. It was decided that the model is more accurate without lateral weirs than with them not working properly. Currently there are four areas where the water surface elevation contours do not appear natural due to the lack of weirs. This will need to be resolved prior to any submissions to FEMA for map revisions. There are a few smaller bridges which did not get surveyed due to funding constraints. These bridges will need to be surveyed and updated in the model if submitted to FEMA.

4.0 PROBLEM AREA IDENTIFICATION

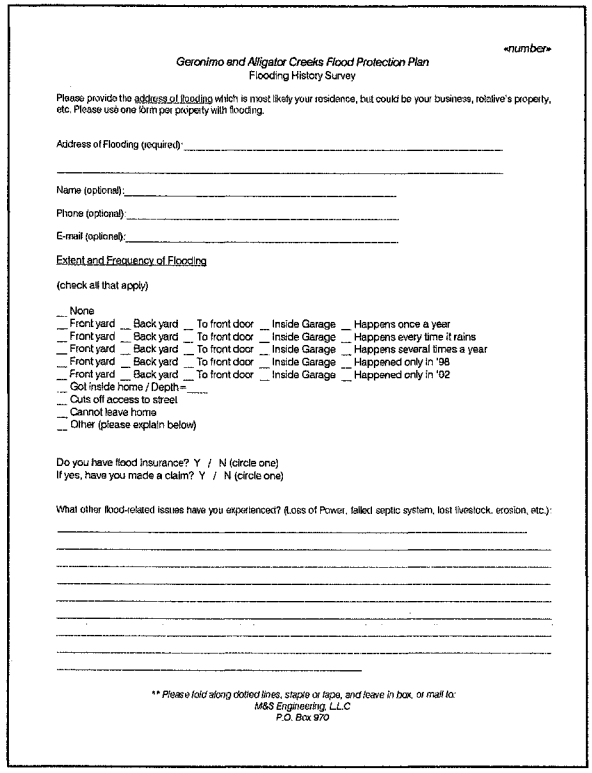
The identification of areas that are prone to flooding or flood damage is an effective tool in the initial planning of flood mitigation alternatives. Problem areas are used to geographically concentrate the flood reduction effort in order to achieve the maximum beneficial impact. Several different methods were used to identify and locate problem areas. The following sections will describe in detail the methods used.

4.1 Public Input & Location of Problem Areas

During the first public meeting residents and property owners were asked to fill out a Flooding History Survey in which information was requested regarding locations of flooding, extent of flooding, and frequency of flooding. Many people took surveys back to neighbors who were unable to attend the meeting. Numerous surveys were received by mail.

Residents and property owners were asked to locate on a map, using numbered stickers, the area(s) that they described in the Flooding History Survey. The numbered stickers corresponded to a number on the Flooding History Survey. This allowed the problem area to be cross referenced to the survey and located graphically in case there was a poor description or no address was given.

After the meeting the problem areas were input into GIS to create a digital version of the map created at the public meeting. The information on the Flooding History Surveys was entered into attribute tables associated with each location. A sample Flooding History Survey is shown in Figure 4-1.



«number»

Geronimo and Alligator Creeks Flood Protection Plan
Flooding History Survey

Please provide the address of flooding which is most likely your residence, but could be your business, relative's property, etc. Please use one form per property with flooding.

Address of Flooding (required): _____

_____

Name (optional): _____

Phone (optional): _____

E-mail (optional): _____

Extent and Frequency of Flooding

(check all that apply)

__ None
__ Front yard __ Back yard __ To front door __ Inside Garage __ Happens once a year
__ Front yard __ Back yard __ To front door __ Inside Garage __ Happens every time it rains
__ Front yard __ Back yard __ To front door __ Inside Garage __ Happens several times a year
__ Front yard __ Back yard __ To front door __ Inside Garage __ Happened only in '98
__ Front yard __ Back yard __ To front door __ Inside Garage __ Happened only in '02
__ Got inside home / Depth=____
__ Cuts off access to street
__ Cannot leave home
__ Other (please explain below)

Do you have flood insurance? Y / N (circle one)
If yes, have you made a claim? Y / N (circle one)

What other flood-related issues have you experienced? (Loss of Power, failed septic system, lost livestock, erosion, etc.):

_____
_____
_____
_____
_____
_____
_____
_____
_____

** *Please fold along dotted lines, staple or tape, and leave in box, or mail to:*
M&S Engineering, L.L.C
P.O. Box 970

Figure 4-1: Sample Flooding History Survey

4.2 Stream Crossing Ranking

Alligator and Geronimo Creeks have a combined total of 27 structures that cross the main stream channel. For the purposes of this study a crossing defined as: public roadway with culvert, public low water crossing, public bridge, and railroad tracks. Each stream crossing was evaluated using ten criteria. Table 4-1 shows a list of the criteria. No private drives, culverts or bridges were included in the evaluation. Railroad crossings were identified but not ranked.

M&S staff ranked the ten criteria based on the level of importance each criterion had with respect to assessing problems at stream crossings. Each individual ranked the criteria on scale of zero to nine; zero being the least important and nine the most important. The total number of

points each criterion received was divided by the total maximum points possible. The result was a weighted average that ranked the criteria based on the highest score. Table 4-2 shows the results of the criteria ranking.

The next step in ranking the stream crossings was to set up a decision matrix that totals the scores for each criterion per steam crossing. In order to do this a numerical scoring system was established. Each criterion was scored based on parameters that assigned levels of importance according to the functionality, condition, or threat of the stream crossing. Tables in Appendix E show the parameters used to score the criteria for each roadway.

The top 5 ranked crossings were identified based in the 5 highest scores. A high score indicated that a roadway is inadequate based on the chosen criteria, and was evaluated to determine if modifications would be favorable in reducing the frequency and extent of flooding. Tables 4-3 and 4-4 show the results of the ranking process.

Table 4-1 Evaluation Criteria

ID.	Description
C1	Restriction of Emergency Access During Flood Events
C2	Threat to Adjacent Upstream Habitable Structures
C3	Frequency of Reported Road Closures
C4	Condition of Crossing
C5	Ratio of Structure Opening Area to Drainage Area
C6	Severity of Erosion Condition
C7	Severity of Debris Obstruction
C8	Severity of Sediment Obstruction
C9	Drainage Area Contributing to Crossing
C10	Hydraulic Adequacy (frequency of overtopping)

Table 4-2 Criteria Rank

ID.	Description	Weight	Rank
C1	Restriction of Emergency Access During Flood Events	0.2	1
C2	Threat to Adjacent Upstream Habitable Structures	0.16	2
C3	Frequency of Reported Road Closures	0.15	3
C4	Condition of Crossing	0.12	4
C10	Hydraulic Adequacy (frequency of overtopping)	0.1	5
C6	Severity of Erosion Condition	0.09	6
C5	Ratio of Structure Opening Area to Drainage Area	0.08	7
C9	Drainage Area Contributing to Crossing	0.05	8
C7	Severity of Debris Obstruction	0.03	9
C8	Severity of Sediment Obstruction	0.02	10

Table 4-3: Top 5 Ranked Stream Crossings

Location	Crossing ID	Score
Huber Rd	A11	1.76
Laubach Rd	G9	1.58
CR 122 Geronimo Dr	G5	1.43
Barbarosa Rd	A10	1.40
Heinemeyer Rd	G6	1.39

Table 4-4: Scoring Results

	Location	Crossing ID	C1 Restriction of Emergency Access During Flood Events	C2 Threat to Adjacent Upstream Habitable Structures	C3 Frequency of Reported Road Closures	C4 Condition of Crossing	C5 Ratio of Drainage Area to Structure Opening Area	C6 Severity of Erosion Condition	C7 Severity of Debris Obstruction	C8 Severity of Sediment Obstruction	C9 Drainage Area Contributing to Crossing	C10 Hydraulic Adequacy (frequency of overtopping)	Total Weighted Score
Criteria Weights			0.2	0.16	0.15	0.12	0.08	0.09	0.03	0.02	0.05	0.1	
Alligator Creek	FM 1102	A1	0	2	2	1	0	0	0	0	0	3	1.04
	RR Track North	A2	Not Scored										
	RR Track South	A3											
	Goodwin Lane	A4	0	2	0	1	0	0	0	0	0	3	0.74
	IH-35	A5	0	0	0	1	0	0	0	0	1	0	0.17
	FM 1101	A6	0	1	0	1	2	0	0	0	1	3	0.79
	CR 139 Westmeyer Rd	A7	0	1	0	1		0	0	0	1	3	0.63
	Schwarzlose Rd	A8	1	1	0	0	2	0	0	0	2	3	0.92
	FM 758	A9	1	3	0	1	1	1	0	0	2	3	1.37
	Barbarosa Rd	A10	2	2	0	1	2	0	0	0	2	3	1.40
	Huber Rd	A11	3	3	0	1	2	0	0	0	2	3	1.76
Geronimo Creek	CR 130	G1	0	0	0	1	0	0	0	0	0	3	0.42
	Barbarosa Rd	G2	0	0	0	0	1	0	0	0	0	3	0.38
	Huber Rd	G3	1	2	0	1	1	2	2	0	0	3	1.26
	HWY 123	G4	0	2	0	1	2	0	0	0	2	2	0.90
	CR 122 Geronimo Dr	G5	1	2	1	1	3	0	0	0	2	3	1.43
	Heinemeyer Rd	G6	0	3	1	1	3	0	0	0	2	3	1.39
	Glenewinkel Rd	G7	1	0	1	0	1	0	0	0	2	3	0.83
	Timmerman Rd	G8	1	0	0	1	1	0	0	0	2	3	0.80
	Laubach Rd	G9	1	2	2	1	3	0	0	0	2	3	1.58
	FM 20	G10	0	3	0	1	2	0	0	0	3	3	1.21
	IH-10	G11	0	0	0	1	2	0	0	0	3	0	0.43
	RR Track	G12	Not Scored										
	Hwy 90 Kingsbury St	G13	0	2	0	1	2	0	0	0	3	0	0.75
	Walnut St	G14	0	0	0	1	2	0	0	0	3	3	0.73
	Hwy 90 Court St	G15	0	2	0	1	2	0	0	0	3	3	1.05

4.3 National Flood Insurance Program Claim Locations

Locating structures that file flood insurance claims provides valuable geographic referencing to identify problem areas. National Flood Insurance Program (NFIP) claim data for the project area was provided by the TWDB. The data was used solely for locating structures that have made claims and all structures were represented by a symbol on a map. No private information was released or published for the policy holders.

The locations of the claims proved to be a valuable tool in which to prioritize problem areas. Claim locations also assisted greatly in the validation of the hydraulic model.

Figure 4-2: NFIP Claim Locations—Elmwood Subdivision, Seguin, TX

5.0 FLOOD MITIGATION ALTERNATIVE EVALUATIONS

Potential flood mitigation alternatives were identified by the Oversight Committee to be evaluated for effectiveness in reducing floodplain elevations, reducing/preventing flood damage, and providing cost-beneficial impacts. The options explored as part of this study included: channel modifications, brush removal, stream crossing improvements, regional detention ponds, regional detention regulations, flood early warning system, and buyouts for repetitive loss structures.

5.1 Channel Modifications

Initially channel modifications were modeled in proximity to identified problem areas and stream crossings to evaluate the effects. No localized effects were seen in the water surface elevations of any storm frequency. Next a regional approach was explored. An exaggerated cross section was used to create a modified channel the entire length of Geronimo Creek to see what the effects would be. Again no impacts to the water surface elevations were observed. It was determined that the flow area of the cross sections were so large that adding wide channels resulted in a negligible increase to the flow area, thus not constituting any benefit and resulting in a decision to not pursue this option.

5.2 Brush Removal

The findings of the evaluation removing brush from stream beds and overbank areas were similar to that of the channel modifications. By reducing the Manning's friction coefficients in the hydraulic model the clearing of brush and debris can be simulated. Aerial photos were used to target areas of dense trees and underbrush for removal. The model was modified to reflect a lower Manning's n-value for a 100-foot wide clearing and the effects were non-measurable.

5.3 Stream Crossing Improvements

The opportunity to make structural modifications or upgrades to roads and bridges can have very beneficial impacts for local residents, county road crews, and emergency service agencies. Roadway modifications and culvert upgrades, while beneficial to traffic flow and reduction of risk to life, do not reduce the occurrence or magnitude of flooding.

The top 5 ranked stream crossings were evaluated in detail to determine if reasonable improvements would allow for increased conveyance of stormwater under the roadway. Increased conveyance may possibly reduce the depth, frequency, or even the occurrence of flood water over the road. The 5 stream crossings were iteratively modified in HEC-RAS to determine the effects on the water surface elevations over the road.

Three considerations were found to be true in analyzing the roadways. The first is that the majority of the roads have limiting slopes and can not be raised without creating high spot in the road that causes the floodwater to seek an alternate path around. The second consideration is that the bridges analyzed could not be significantly raised without created increased threat of backwater to upstream and adjacent structures. The final consideration is that due to the

previous two concerns it is not economically feasible to construct culverts or bridge sections to convey enough flood water to reduce the magnitude and frequency at which the roads overtop. Based on these considerations it was determined that upgrading culverts and raising roadways would have a negligible benefit based on the cost of the improvements.

5.4 Regional Detention Ponds

In order to evaluate the effectiveness of detention as a flood mitigation strategy, a large number of possible detention pond configurations were modeled. Locations for possible ponds were selected based on potential availability of land and likelihood of beneficial timing effects. These ponds were all designed to be offline from the main stream, with an inlet weir to control inflow rates. The inlet weir elevations are set above the channel overbank elevation to allow base stream flow to bypass the pond. The water surface elevation of the pond was designed to be lower than the weir elevation, which ensures that there will be no backwater effect of the pond on the stream.

It was found that the floodplain was fairly resistant to decreases in flood flows, which necessitates large decreases in discharge to reduce water surface elevations, thus requiring large detention volumes. Large detention volumes dictate construction of large ponds, which consequently can have high construction costs.

When analyzing the benefits due to the flood reduction it was found that the current development conditions cause low benefits. The middle section of the Geronimo Creek currently consists of rural subdivisions, small communities, and much undeveloped agricultural land. By comparing the benefits of reducing water surface elevations to the expected construction costs, the results showed a benefit-cost ratio well below the desired 1.0. However, future benefits may also be considered by alternate means of analysis to show the construction of the ponds more beneficial.

The following sections describe in detail the methods used to analyze and model the size, location, and effects of the detention pond options. In addition, explanations and rationale are detailed below in order to illustrate the distinctive characteristics of the watersheds.

5.4.1 Model Set Up

The detention ponds were modeled and analyzed using a combination of software. The foundational watershed model was created in PondPack to provide hydrological and timing calculations. HEC-RAS was used for weir inlet hydraulic calculations. Excel was used for hydrograph creation calculations. The modeling process is described below.

The ponds were first modeled individually and separate from the larger stream model to determine efficient pond depths and peak inlet flows given the area and total fall available. A range of approximate inflow hydrographs were used to determine if there is an optimum inflow rate resulting in greater flow reduction capabilities. Simple orifices were used for the pond outflows. The pond bottom depth and orifice inverts, diameters, and number were determined by trial and error to achieve the highest possible reduction in peak outflow rate.

Once workable pond geometries had been determined, a complete proposed PondPack model was created. As PondPack does not allow for split flow, the model must be broken into smaller sections, with an outfall just upstream of each pond. Each new section begins with a hydrograph routed through a pond, as well as a hydrograph representing the flow in the main stream which bypasses the pond. These hydrographs are calculated in Excel.

In order to construct a reasonable pond inflow hydrograph, a preliminary lateral weir was modeled in HEC-RAS at the location of each proposed pond. Using this weir, a table relating pond inflow rates to total stream flow rates was developed.

Once the weir relationship had been determined, the hydrograph for the flows at this location just upstream of the pond was imported from PondPack. For each value in the flow rate table, the times at which the total stream flow occurs is identified. When paired with the weir inflow Q's, these times proved a rough pond inflow hydrograph. However, in order to be imported back into PondPack, a more complete hydrograph with a small, uniform timestep is required. Therefore an equation based on polynomial regression is generated to match the determined hydrograph within the upper and lower time bounds. The equation generator PolySolve Version 3.3 developed by Paul Lutus was used. This tool requires judgment on what constitutes a reasonable data fit, and often requires additional interpolated points to assist in the equation solving.

Finally, this inflow hydrograph is subtracted from the main stream hydrograph to determine what flow bypasses the pond.

As the flows at each location will be affected by upstream ponds, these pond hydrographs must be developed consecutively, starting at the top of the watershed. As each pair of hydrographs is created, it is entered into the model so that the starting hydrograph for the next pond takes into account the effects of the upstream ponds.

This complete model accounts for both the direct reduction in peak flow due to the detention pond, as well as the indirect effects based on the timing of detention pond release.

5.4.2 Limitations

This process is sufficient for the present task of identifying general pond effectiveness and evaluating the timing effects of multiple ponds. If detailed design specifications for a specific pond configuration will be prepared, the pond geometries and outfalls will have to be carefully set to match real-world constraints and the weirs adjusted for maximum effectiveness. The final characteristics of the weir will affect the inflow hydrograph which will in turn affect the pond outflow, and so results will need to be iterated through the process several times to achieve consistent flow values.

The ponds as currently modeled are simplified and idealized. Real-world pond geometry considerations such as topological constraints, bottom slopes, available depths, and outlet structure design will affect pond efficiency.

5.4.3 Results

In the course of this analysis, several general relationships were revealed. These provide a useful rule of thumb for the purposes of planning and determining the feasibility of detention options within the Geronimo Creek watershed.

The first relationship of note is between flow rate (measured in cfs) and flood depth (measured in feet). Figures 5-1 and 5-2 plot this relationship for two representative cross sections. From these it can be seen that the 100-year floodplain is fairly resistant to changes. A large reduction in flow rate corresponds to a comparatively small change in flood depth. For smaller storm events, a reduction in flow rates has a comparatively larger effect. Within the Geronimo Creek/Alligator Creek Watershed, as a rule of thumb, for the 100-year storm event to achieve a 1 foot reduction in floodplain elevation requires a 4000 cfs reduction of flow rate. For the 10-year storm event to achieve a 1 foot reduction in floodplain elevation requires a 2500 cfs reduction of flow rate.

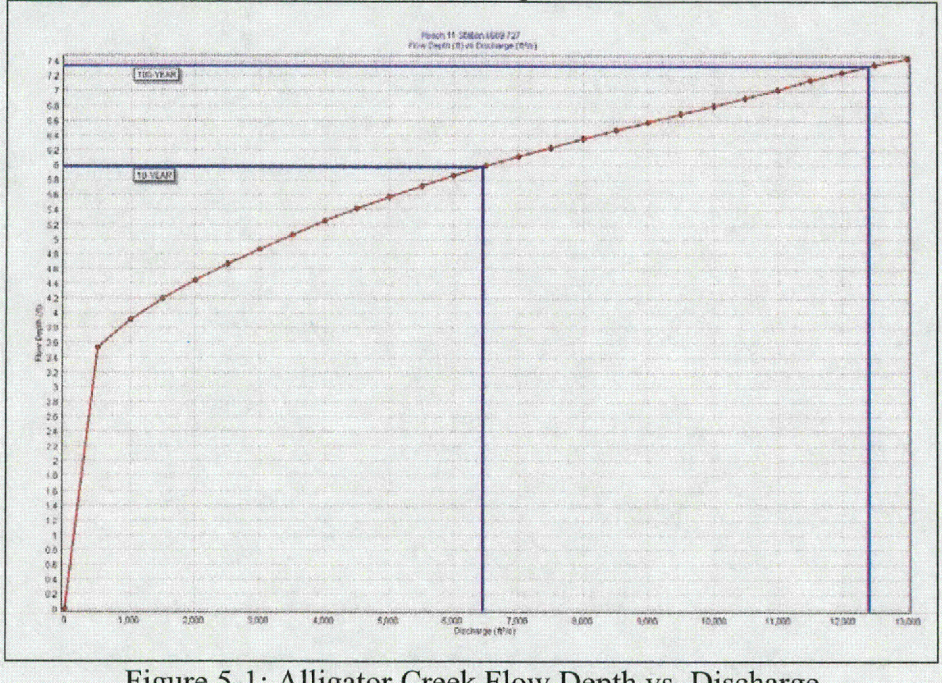


Figure 5-1: Alligator Creek Flow Depth vs. Discharge

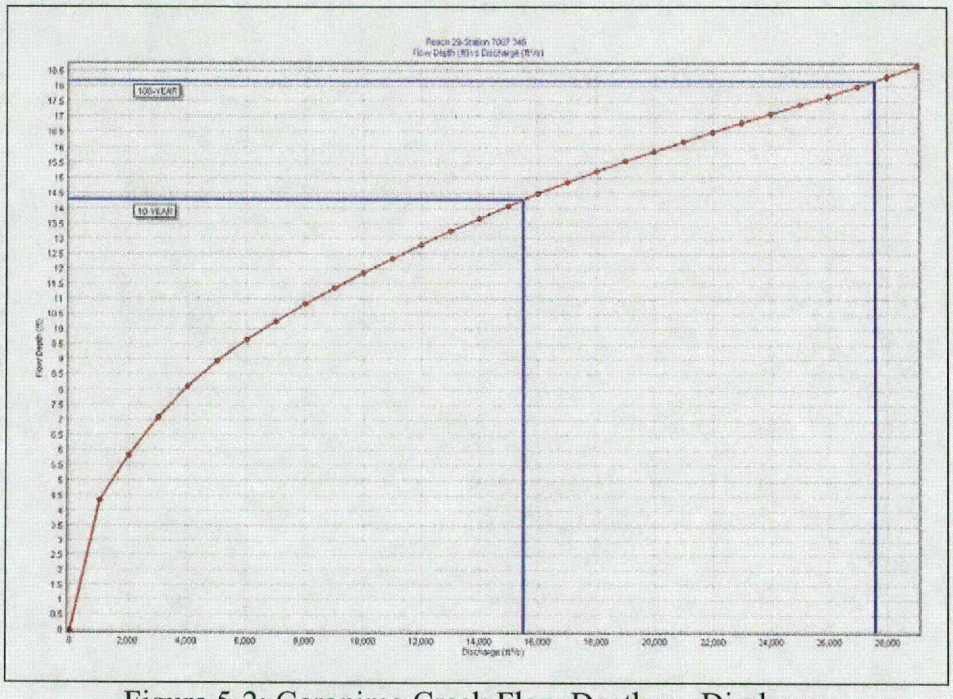


Figure 5-2: Geronimo Creek Flow Depth vs. Discharge

The second useful relationship is between total storage volume and peak flow reduction. Figure 5-3 shows a four-pond scenario designed to reduce the 25-year peak flows by up to 4000 cfs within Geronimo Creek. Pond efficiency, measured as the ratio of flow reduction to storage volume, varies from approximately 1.3 to 2.3. (Alligator Creek exhibits more complex behavior and is discussed below.) This pattern was found to hold across many pond configurations. Consequently, a second rule of thumb is that 1 acre-ft of storage yields a peak flow reduction of 1.5 cfs.

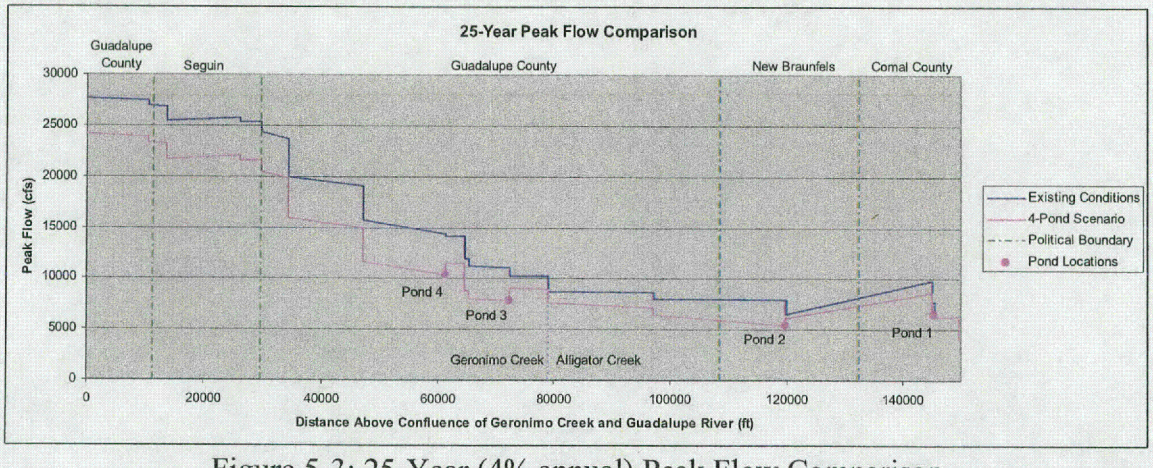


Figure 5-3: 25-Year (4% annual) Peak Flow Comparison

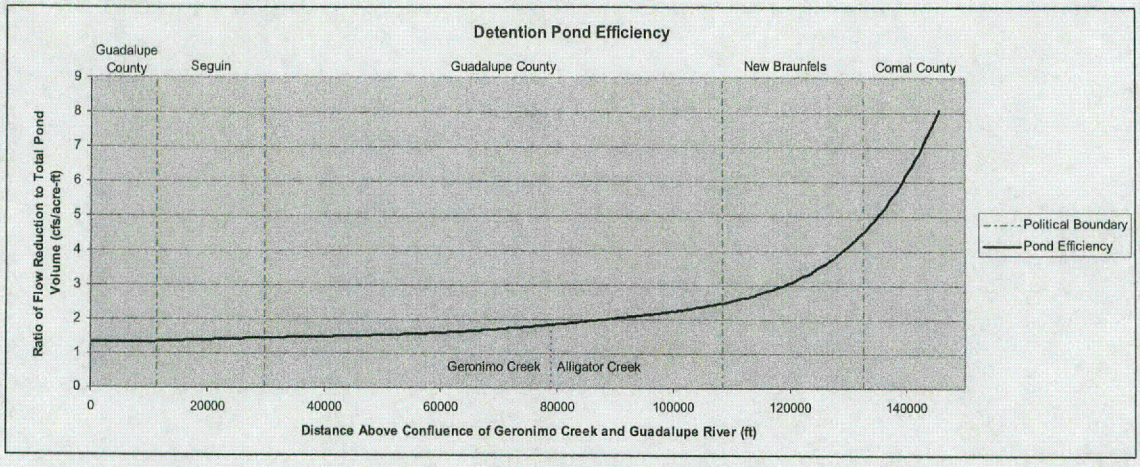


Figure 5-4: Detention Pond Efficiency

A further discovery is that Alligator Creek is hydrologically distinct from Geronimo Creek. The contributing drainage basins to the upper region of Alligator Creek peak at nearly the same time, which results in a very sharply defined hydrograph. This is naturally attenuated while travelling the length of Reaches 7 and 9. Figure 5-5 illustrates this by comparing the hydrograph at 145,161 ft, in the upper portion of Alligator Creek, with the hydrograph at 79,168 ft, at the confluence of Alligator Creek and Geronimo Creek. The peak flow values are nearly identical, but the broader hydrograph represents a much larger total volume of water the downstream location.

This sharp peak is very sensitive to detention and routing effects, and accounts for the high efficiency of upper reach ponds shown in Figure 5-4. Consequently, detention ponds in this upper region can have a strong localized effect. However, most of the benefit of ponds in this location will be localized as any modifications upstream of this reach have little effect on downstream flows. In contrast, downstream ponds must detain a much larger volume of water to attain the same peak flow reduction. However, it can be seen in Figure 5-3 that ponds within Geronimo Creek provide reduction which propagates consistently downstream.

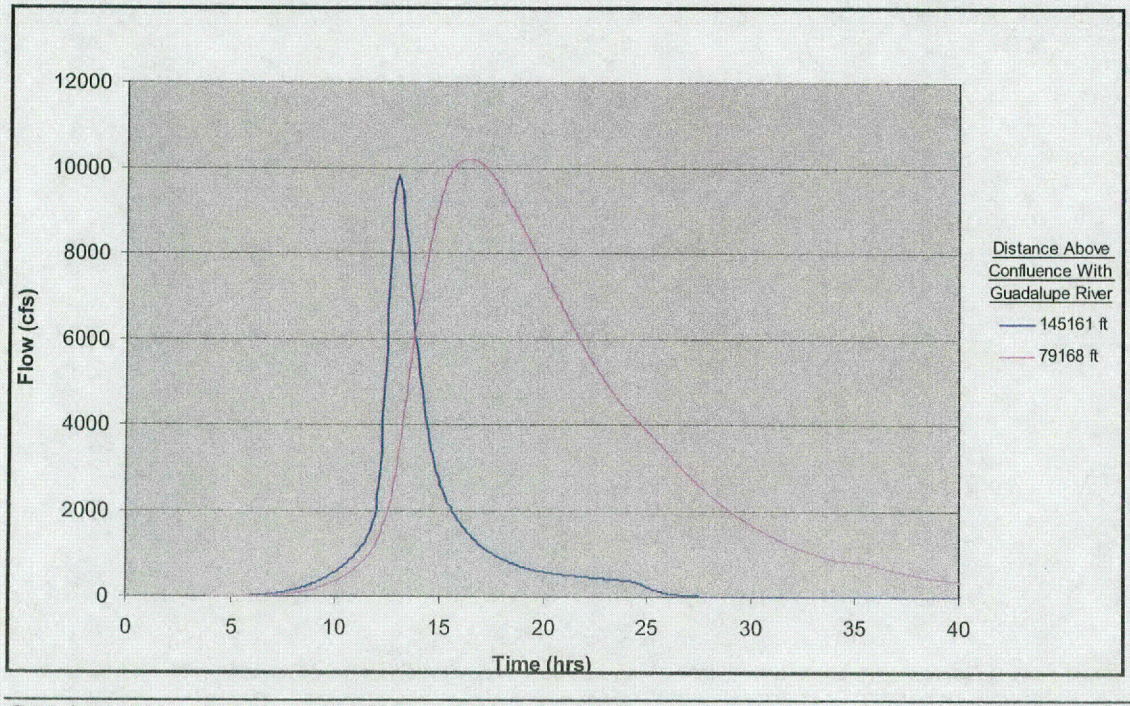


Figure 5-5: 25-Year (4% annual) Hydrograph Comparison

Using these two rules of thumb, a planner can get a quick estimate of the scale of project involved in achieving any desired floodplain reduction. It can also be seen, however, that such projects are unlikely to be cost effective. For example, the seemingly modest goal of reducing the 100-year flood elevation by 2 feet requires approximately 8000 cfs reduction. At 1.5 cfs/acre-ft, this necessitates 5300 acre-ft of storage volume. If we assume pond depths of 15 feet, this equates to over 350 acres of land.

5.5 Regional Detention Regulations

Currently all four regulatory authorities for the Geronimo Creek watershed have detention requirements as part of development regulations. Comal County, Guadalupe County, and the City of New Braunfels require detention for the 1% annual storm event. The City of Seguin requires detention of the 50%, 20%, 10%, 4%, 2%, and 1% annual storm events for all new development.

More stringent detention requirements in the upper portions of the watershed will have significant impacts on flooding for lower intensity more frequent storms, which in this watershed have the potential for structural damage and loss of life due to roadway flooding. Inversely, the detention requirements in the lower Geronimo Creek watershed, specifically southern Guadalupe County and the City of Seguin, should be evaluated on a case by case basis to determine if detention is beneficial or detrimental to the timing of downstream flood water peaks.

Future regulations will not reduce the occurrence or magnitude of current flooding. However, increased design criteria for detention ponds may reduce the rate at which flooding increases due to development in the watershed.

5.6 Flood Early Warning System

The primary objective of early warning systems is to notify local officials, emergency services, and the general public in flood prone areas of imminent danger in order to assist with the organization and implementation of evacuations. Early warning systems can prevent loss of life and property during a flood event if the information is distributed in a timely and accurate manner.

Residents in the lower reaches of the Geronimo Creek would benefit greatly if a system were in place that notified them of intense rain, increasing flow rates, or rising water in the upper portions of the Alligator and Geronimo Creek watersheds. This would allow for more effective and timely evacuations and the removal of portable property from flooding risk.

Automatic gates at stream crossings could significantly reduce the possible loss of life. The gates can be integrated with the flood warning system and designed to close the road during flood events. Additional benefits would be in the form of reduced man hours for County/City

road crews setting up and removing barricades at flooded crossings; and reduced risk for emergency services responding to flood related rescues at stream crossings.

5.7 Buyouts for Repetitive Loss Structures

Removing structures and relocating residents from the floodplain is the most effective means of reducing flood damages and potential loss of life and property. Buyouts were evaluated for the Elmwood Subdivision in the City of Seguin. Elmwood is located adjacent to Geronimo Creek and is subject to repetitive flooding. Numerous insurance claims are filed by residents in this neighborhood after major flood events ranging from during the time frame of 1981 to 2007. The claims for this area can be see in Table 5-1 below.

Table 5-1: Elmwood Annual Flood Insurance Totals

Year	Claims
1981	$ 321,192
1983	$ 967
1998	$ 1,702,950
2002	$ 336,521
2004	$ 2,310,718
2007	$ 155,796
Total	**$ 4,828,144**

The cost to purchase the 33 homes in the proposed 1% annual floodplain in Elmwood would be $4,599,124 (based on appraisal district values). This value does not include costs for relocation. The benefit-cost ratio solely based on the total insurance claims paid to date is 1.05. It is evident that major flood events have become more frequent since 1998, which is cause to believe that the buyout costs could possibly be recovered (by eliminating claims) in 10-15 years.

6.0 RECOMMENDATIONS

Based on the evaluation of the four structural alternatives it was concluded that regional detention ponds are the only mitigation option that shows beneficial impact to flood elevations. Due to the characteristics and sensitivities of the watershed, very large ponds are required to yield beneficial impacts. Relationships were discovered that would allow municipal planners to estimate the scale of a detention project involved in achieving desired floodplain reduction.

Although the benefit-cost ratio for a regional type of detention structure appears to be skewed toward being unfavorable, it is important to note that this ratio is based upon existing conditions. Obviously, it is impossible to accurately predict future basin development, but as the basin does develop, the benefit-cost ratio should improve as additional structures and improvements have the potential of having limited impact from a flood event by flood waters being detained by the regional detention pond. This study evaluated only the traditional, financially-based, benefit-cost ratio. Recently there has been a national trend to quantify, not only the traditional, financial benefit-cost ratios, but also consider other benefits such as environmental and social. This new benefit-cost analysis is called the Triple Bottom Line (TBL) and includes quantifying the financial, social, and environmental benefits. It may be prudent to perform a TBL on a regional detention structure to further show the benefits of this proposed solution.

Due to the magnitude of detention volume required to have significant impacts on the floodplain no one detention pond can reasonable be expected to be constructed in this watershed. Instead a two pond scenario is recommended. Pond 1 is proposed to be located immediately downstream of the confluence of Alligator and Geronimo Creeks. This area is prone to flooding and has been identified by residents as a re-occurring problem. The pond is approximately 225 acres in surface area and 2,250 acre-feet of detention volume. The large size of this pond could easily lend itself for use as a park facility with ball fields, play grounds, hiking trails, etc. located within the inundation area.

Pond 2 is located north of Laubach Road on the Geronimo Creek near Haberle and Willmann Roads. This location was chosen based on available undeveloped property, favorable topography, and ideal opportunity for inflow and outflow structures adjacent to the stream. The pond is approximately 75 acres in surface area and 750 acre-feet of detention volume.

The water surface elevation reduction for the 1% Annual event as a result of the two ponds ranges from 1.0 to 1.6 feet. The probable construction costs for Ponds 1 and 2 are approximately $18.9 Million and $6.3 Million respectively. Costs used to estimate detention ponds were based upon City of San Antonio 2009 average bid pricing. If local participation includes using local resources, equipment, and labor, the cost of large detention ponds has the potential of being greatly reduced, thereby improving the benefit-cost ratio. See Appendix A, Exhibit 9 for a preliminary location of the proposed ponds.

In addition to desirable affects for the 1% Annual event, the ponds also lower water surface elevations for the 10% and 4% events (10- and 25-year). These events result in less total rainfall and intensity, but are more frequent in return period. Therefore, by reducing flood depths during these events benefits can been seen more frequently occurring.

As the ultimate goal of reducing flood damage is shown to be achieved through peak flow reduction by detention ponds, a flood planning and regulatory approach also shows promise for mitigating future flood damage or loss of life. Options for this approach include the creation of regional detention regulations to minimize future growth of the floodplain, increasing restrictions for construction within the 1% Annual floodplain, and the installation of physical measures such as flood warning systems and automatic gates at crossings. Buyouts and relocation of repetitive loss structures was proven to be a cost-beneficial alternative to reduce the flood damage in the Elmwood subdivision in Seguin.

7.0 IMPLEMENTATION AND FUNDING

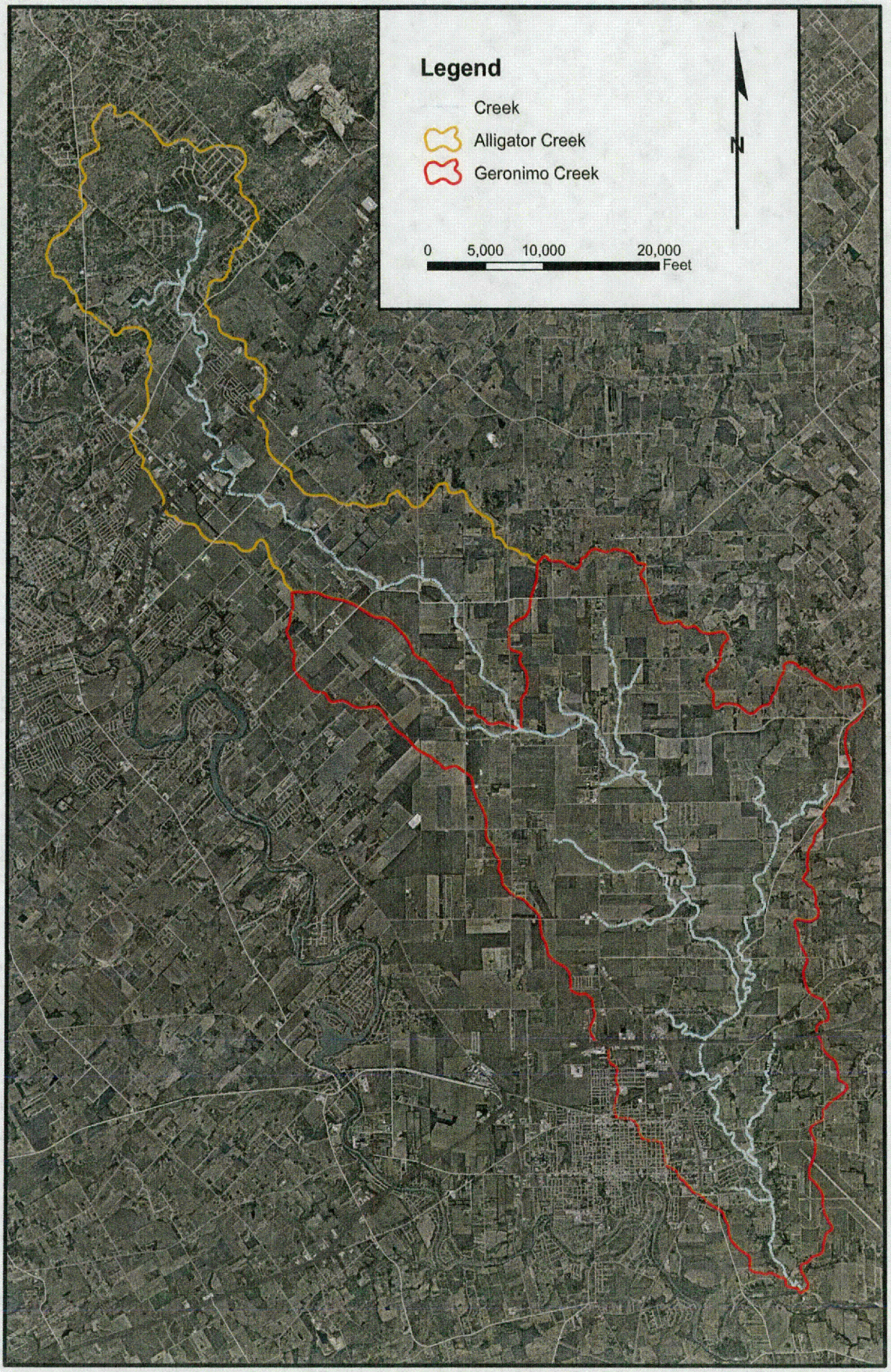
The recommended detention alternatives as outlined in this study total over $25,000,000 in probable construction costs. This is beyond the capacity of the County's operational budget and implementation will require additional funding from various sources. Generally, Guadalupe County has the following potential sources available for accomplishing recommended flood protection measures:

- Annual Operating Budget
- Developer Contribution
- Establishing a Regional Stormwater Program and collecting Impact Fees
- Taxes
- Bonds/Debt Instruments
- State Programs:
  - TWDB Clean Water State Revolving Fund – Provides low interest loans for the planning, acquisition, and construction of stormwater and nonpoint source pollution control.
  - TWDB Texas Water Development Fund – Provides loans for the planning, acquisition, and construction of stormwater and nonpoint source pollution control, reservoirs, and flood control structures.
- Federal Programs:
  - FEMA Flood Mitigation Assistance Program (FMA) – Provides grants for planning assistance to communities in implementing measures to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the National Flood Insurance Program (NFIP). Eligible work includes: Acquisition of insured structures and real property; Relocation or demolition of insured structures; Dry flood proofing of insured structures; Elevation of insured structures; Minor, localized structural projects that are not fundable by State or other Federal programs; and Beach nourishment activities such as planting of dune grass.
  - FEMA Hazard Mitigation Grant Program (HMGP) - Provides grants to States and local governments to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster.
  - FEMA Pre-Disaster Mitigation Grant Program (PDM) - Provides funds to states, territories, Indian tribal governments, communities, and universities for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event.
  - FEMA Repetitive Flood Claims Program (RFC) - Up to $10 million is available annually for FEMA to provide RFC funds to assist States and communities reduce flood damages to insured properties that have had one or more claims to the NFIP. FEMA may contribute up to 100 percent of the total amount approved under the RFC grant award to implement approved activities, if the Applicant has demonstrated that the proposed activities can not be funded under the Flood Mitigation Assistance (FMA) program.

- FEMA Severe Repetitive Loss Program (SRL) - Provides funding to reduce or eliminate the long-term risk of flood damage to severe repetitive loss (SRL) structures insured under the NFIP.
- Natural Resources Conservation Service (NRCS) Emergency Watershed Protection - Program objective is to assist sponsors and individuals in implementing emergency measures to relieve imminent hazards to life and property created by a natural disaster. Activities include providing financial and technical assistance to remove debris from streams, protect destabilized streambanks, establish cover on critically eroding lands, repairing conservation practices, and the purchase of flood plain easements. The program is designed for installation of recovery measures.
- NRCS Watershed Protection and Flood Prevention Operations - Watershed Operations assistance may be provided in authorized watershed projects to install conservation practices and project measures (works of improvement) throughout the watershed project area. The planned works of improvement are described in watershed project plans and are normally scheduled to be installed over multiple years. Works of improvement may include floodwater retarding dams and reservoirs.

The projects identified through the study are eligible to be funded with the means listed above and potentially in conjunction with other jurisdictions/participants who would gain from the flood protection measures.

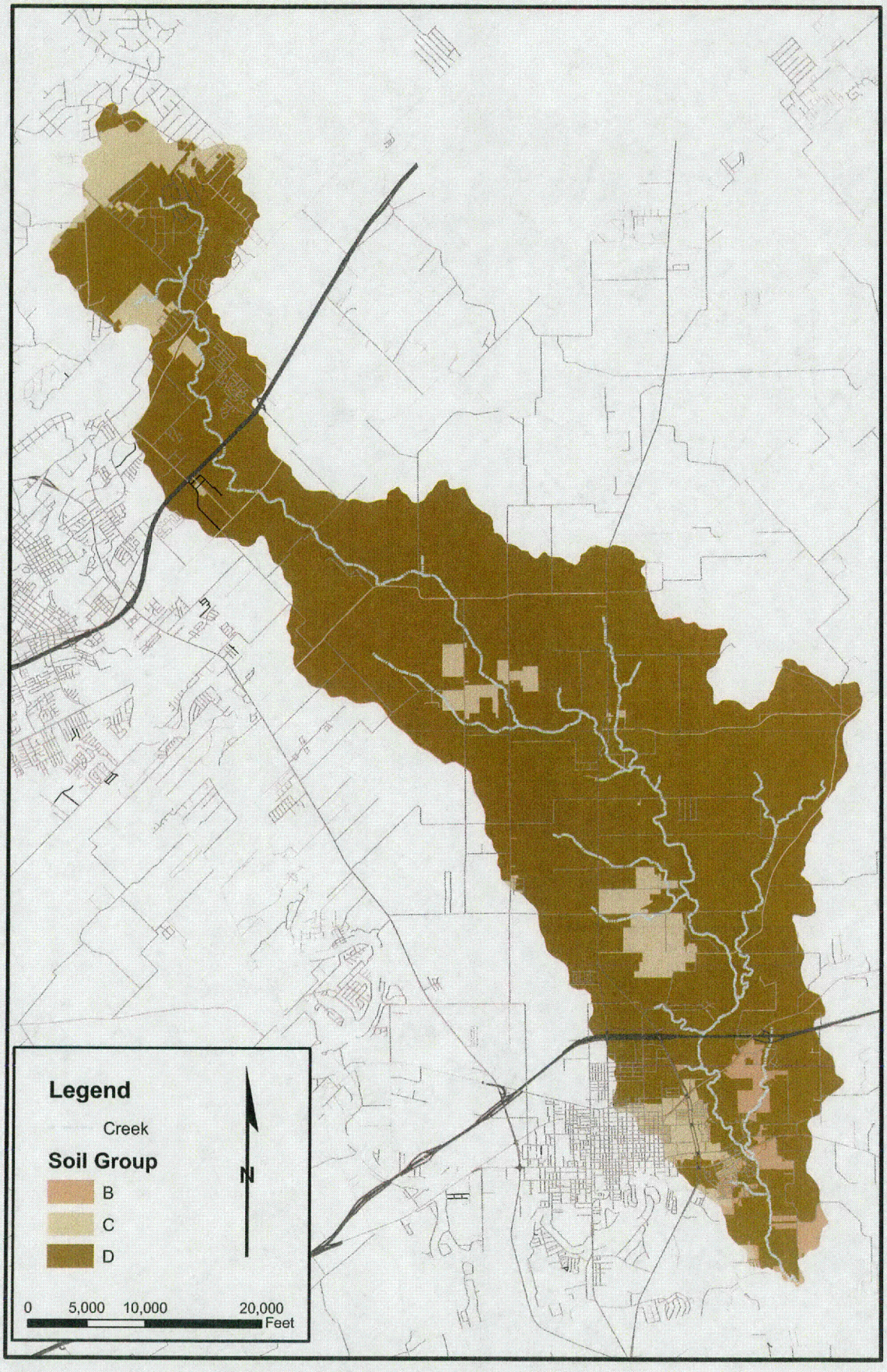
Exhibit 1 – Drainage Area Map
Exhibit 2 – Hydrologic Soil Map
Exhibit 3 – Land Use Map
Exhibit 4 – Watershed Sub-Basins
Exhibit 5 - HEC-RAS Cross-Section Map
Exhibit 6 – Floodplain Comparison: Effective FEMA vs. Proposed (1% annual)
Exhibit 7 – Floodplain Comparison: Effective Reconstructed vs. Proposed (1% annual)
Exhibit 8 – Floodplain Comparison: Ultimate vs. Proposed (1% annual)
Exhibit 9 – Proposed Detention Pond Locations
Exhibit 10 – Proposed Pond Floodplain Comparison – 10% Annual
Exhibit 11 – Proposed Pond Floodplain Comparison – 4% Annual
Exhibit 12 – Proposed Pond Floodplain Comparison – 1% Annual



Geronimo Flood Protection Plan

Drainage Area Map

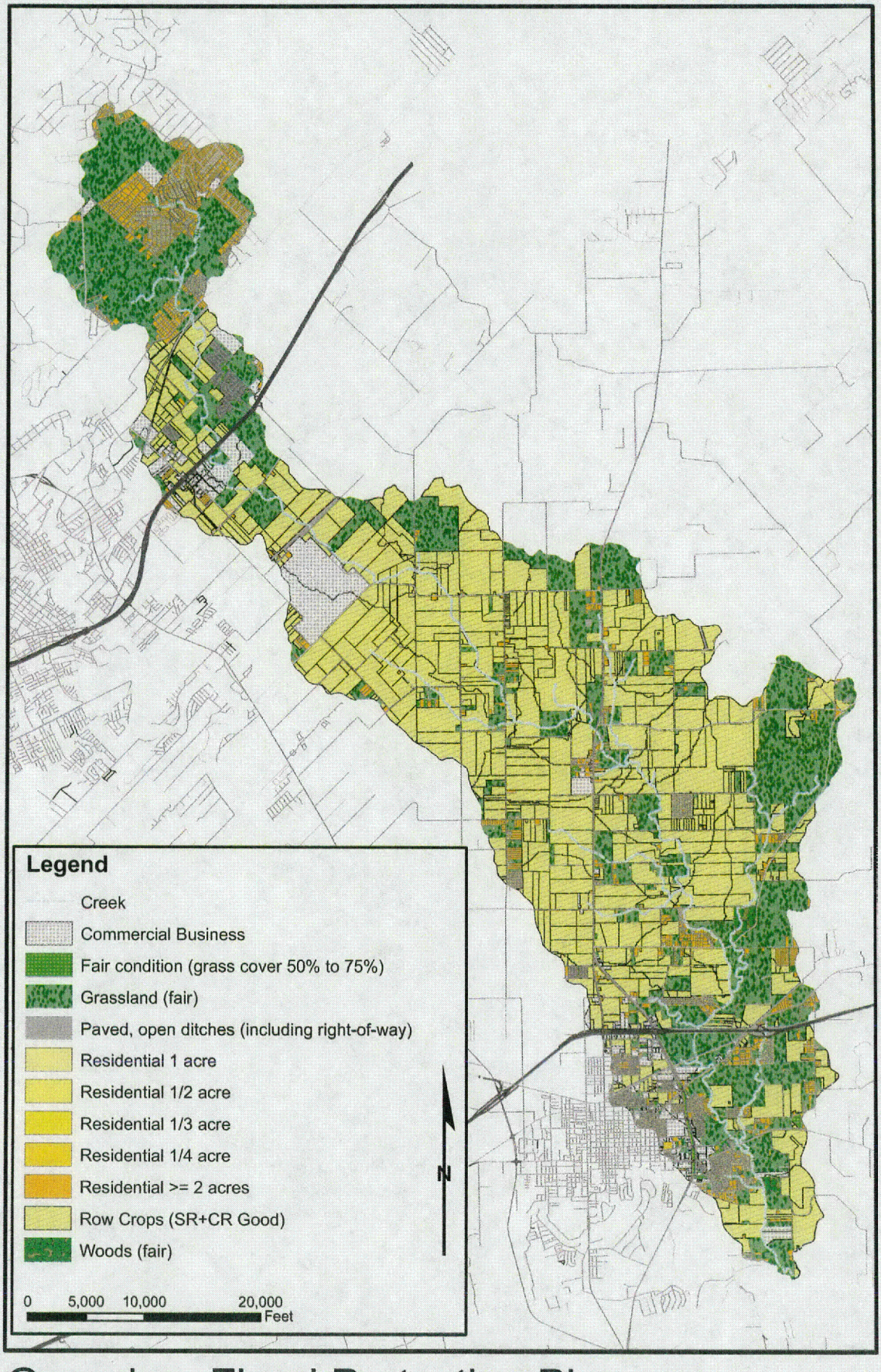
Exhibit 1



Geronimo Flood Protection Plan

Hydrologic Soil Group Map

Exhibit 2



Geronimo Flood Protection Plan

Land Use Map

Exhibit 3

APPENDIX B
PONDPACK OUTPUT REPORT

==========
JOB TITLE
==========

Project Date: 4/15/2010
Project Engineer: Keith C. Strimple, PE, CFM
Project Title: Geronimo Creek and Alligator Creek
Project Comments:
This model was created for Guadalupe County by M&S Engineering, LLC.

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MASTER DESIGN STORM SUMMARY

Network Storm Collection: Guad Co 100-Year

Return Event	Total Depth in	Rainfall Type	RNF ID
100	10.4300	Synthetic Curve	TypeIII 24hr

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
BASIN 01	AREA	100	969.427		12.5828	5502.81		
BASIN 02	AREA	100	665.360		12.8328	3199.08		
BASIN 03	AREA	100	246.620		12.4995	1464.12		
BASIN 04	AREA	100	468.992		12.9995	1989.98		
BASIN 05	AREA	100	911.682		13.3328	3168.89		
BASIN 06	AREA	100	3.230		12.4995	20.49		
BASIN 07	AREA	100	1635.476		13.9994	4288.39		
BASIN 08	AREA	100	684.501		13.5828	2066.56		
BASIN 09	AREA	100	2382.139		14.4161	5452.80		
BASIN 10	AREA	100	685.183		13.1661	2578.33		
BASIN 11	AREA	100	1950.624		14.4161	4546.58		

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
BASIN 12	AREA	100	1174.125		13.5828	3662.00		
BASIN 13	AREA	100	656.501		13.3328	2281.15		
BASIN 14	AREA	100	800.758		14.7494	1702.93		
BASIN 15	AREA	100	281.809		13.5828	876.14		
BASIN 16	AREA	100	364.993		14.2494	895.93		
BASIN 17	AREA	100	2309.165		18.6659	2621.05		
BASIN 18	AREA	100	530.546		14.1661	1313.52		
BASIN 19	AREA	100	106.118		13.0828	430.57		
BASIN 20	AREA	100	25.754		13.0828	100.09		
BASIN 21	AREA	100	682.868		14.8327	1410.24		
BASIN 22	AREA	100	1320.158		13.1661	4956.38		
BASIN 23	AREA	100	484.572		12.9162	2098.07		
BASIN 24	AREA	100	687.445		13.2495	2472.89		
BASIN 25	AREA	100	1272.643		14.7494	2680.80		
BASIN 26	AREA	100	1152.146		14.6661	2505.90		
BASIN 27	AREA	100	1209.964		15.1661	2335.81		
BASIN 28	AREA	100	17.534		12.4995	111.75		
BASIN 29	AREA	100	872.185		14.9994	1750.80		

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
BASIN 30	AREA	100	1315.101		14.4994	2980.64		
BASIN 31	AREA	100	522.486		14.9161	1082.76		
BASIN 32	AREA	100	772.218		14.5828	1700.29		
BASIN 33	AREA	100	1543.593		14.3328	3689.33		
BASIN 34	AREA	100	91.871		12.6662	482.57		
BASIN 35	AREA	100	550.554		13.4995	1710.44		
BASIN 36	AREA	100	827.652		13.7495	2428.78		
BASIN 37	AREA	100	281.662		13.6661	844.20		
BASIN 38	AREA	100	570.593		14.0828	1457.56		
BASIN 39	AREA	100	820.928		13.8328	2297.32		
J01	JCT	100	1634.788		12.6662	8527.77		
J02	JCT	100	2350.397		12.8328	10636.95		
J03	JCT	100	3265.310		12.9995	13380.11		
J04	JCT	100	5585.243	R	13.9994	10658.12		
J05	JCT	100	8652.504	R	14.8327	11954.99		
J06	JCT	100	12912.170	R	16.1660	14117.76		
J07	JCT	100	13994.680	R	16.0827	15445.51		
J08	JCT	100	15042.480	R	16.3327	16646.07		

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
J09	JCT	100	17429.370	R	15.7494	19619.88		
J10	JCT	100	18020.050	R	15.8327	19978.71		
J11	JCT	100	21835.170	R	15.6660	26367.64		
J12	JCT	100	25867.050	R	15.5827	32633.99		
J13	JCT	100	27161.690	R	15.6660	34907.39		
J14	JCT	100	27804.050	R	15.7494	35466.41		
J15	JCT	100	30175.200	R	16.0827	37425.65		
J16	JCT	100	31027.380	R	16.1660	38321.38		
*J17	JCT	100	31848.220	R	16.4993	38723.43		
J18	JCT	100	1830.624		13.4995	5890.22		
J19	JCT	100	2525.064		14.7494	5227.20		
J20	JCT	100	2007.604		13.2495	7409.11		
N01	JCT	100	969.427		12.5828	5502.81		
N02	JCT	100	1881.405		12.8328	8712.43		
N03	JCT	100	2353.629		12.9162	10644.72		
N04	JCT	100	4900.741	R	14.1661	8790.12		
N05	JCT	100	7967.317	R	15.0827	11137.54		
N06	JCT	100	10602.980	R	15.3327	12359.69		

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
N07	JCT	100	13193.920	R	16.5827	14243.17		
N08	JCT	100	14359.630	R	16.5827	15642.93		
N09A	JCT	100	15068.190	R	16.4160	16651.09		
N09B	JCT	100	2361.164		13.9994	6455.00		
N10	JCT	100	17535.480	R	15.8327	19671.07		
N11A	JCT	100	19292.580	R	15.9994	21832.01		
N11B	JCT	100	2542.600		14.7494	5236.39		
N12A	JCT	100	22707.290	R	15.9160	27612.53		
N12B	JCT	100	3159.740		14.1661	7283.65		
N13	JCT	100	26389.460	R	15.7494	33518.89		
N14	JCT	100	27253.500	R	15.7494	34909.85		
N15	JCT	100	28631.620	R	16.2494	35318.17		
N16	JCT	100	30456.800	R	16.2494	37644.90		

NETWORK RUNOFF NODE SEQUENCE

Runoff Data	Apply to Node	Receiving Link
SCS UH BASIN 02	Subarea BASIN 02	Add Hyd BASIN 02
SCS UH BASIN 04	Subarea BASIN 04	Add Hyd BASIN 04
SCS UH BASIN 05	Subarea BASIN 05	Add Hyd BASIN 05
SCS UH BASIN 08	Subarea BASIN 08	Add Hyd BASIN 08
SCS UH BASIN 10	Subarea BASIN 10	Add Hyd BASIN 10
SCS UH BASIN 17	Subarea BASIN 17	Add Hyd BASIN 17
SCS UH BASIN 14	Subarea BASIN 14	Add Hyd BASIN 14
SCS UH BASIN 13	Subarea BASIN 13	Add Hyd BASIN 13
SCS UH BASIN 12	Subarea BASIN 12	Add Hyd BASIN 12
SCS UH BASIN 21	Subarea BASIN 21	Add Hyd BASIN 21
SCS UH BASIN 23	Subarea BASIN 23	Add Hyd BASIN 23
SCS UH BASIN 27	Subarea BASIN 27	Add Hyd BASIN 27
SCS UH BASIN 30	Subarea BASIN 30	Add Hyd BASIN 30
SCS UH BASIN 22	Subarea BASIN 22	Add Hyd BASIN 22
SCS UH BASIN 24	Subarea BASIN 24	Add Hyd BASIN 24
SCS UH BASIN 32	Subarea BASIN 32	Add Hyd BASIN 32
SCS UH BASIN 35	Subarea BASIN 35	Add Hyd BASIN 35
SCS UH BASIN 39	Subarea BASIN 39	Add Hyd BASIN 39
SCS UH BASIN 38	Subarea BASIN 38	Add Hyd BASIN 38
SCS UH BASIN 33	Subarea BASIN 33	Add Hyd BASIN 33
SCS UH BASIN 36	Subarea BASIN 36	Add Hyd BASIN 36
SCS UH BASIN 01	Subarea BASIN 01	Add Hyd BASIN 01
SCS UH BASIN 03	Subarea BASIN 03	Add Hyd BASIN 03
SCS UH BASIN 06	Subarea BASIN 06	Add Hyd BASIN 06

NETWORK RUNOFF NODE SEQUENCE

Runoff Data		Apply to Node		Receiving Link	
SCS UH	BASIN 07	Subarea	BASIN 07	Add Hyd	BASIN 07
SCS UH	BASIN 09	Subarea	BASIN 09	Add Hyd	BASIN 09
SCS UH	BASIN 11	Subarea	BASIN 11	Add Hyd	BASIN 11
SCS UH	BASIN 15	Subarea	BASIN 15	Add Hyd	BASIN 15
SCS UH	BASIN 16	Subarea	BASIN 16	Add Hyd	BASIN 16
SCS UH	BASIN 20	Subarea	BASIN 20	Add Hyd	BASIN 20
SCS UH	BASIN 19	Subarea	BASIN 19	Add Hyd	BASIN 19
SCS UH	BASIN 25	Subarea	BASIN 25	Add Hyd	BASIN 25
SCS UH	BASIN 29	Subarea	BASIN 29	Add Hyd	BASIN 29
SCS UH	BASIN 31	Subarea	BASIN 31	Add Hyd	BASIN 31
SCS UH	BASIN 34	Subarea	BASIN 34	Add Hyd	BASIN 34
SCS UH	BASIN 37	Subarea	BASIN 37	Add Hyd	BASIN 37
SCS UH	BASIN 18	Subarea	BASIN 18	Add Hyd	BASIN 18
SCS UH	BASIN 26	Subarea	BASIN 26	Add Hyd	BASIN 26
SCS UH	BASIN 28	Subarea	BASIN 28	Add Hyd	BASIN 28

NETWORK ROUTING SEQUENCE

Link Operation	UPstream Node	DNstream Node
Add Hyd L01	Subarea BASIN 01	Jct N01
Add Hyd NJ01	Jct N01	Jct J01
Add Hyd L02	Subarea BASIN 02	Jct J01
Add Hyd L03	Subarea BASIN 03	Jct N02
Reach R03	Jct J01	Jct N02
Add Hyd L04	Subarea BASIN 04	Jct J02
Add Hyd NJ02	Jct N02	Jct J02
Add Hyd L06	Subarea BASIN 06	Jct N03
Reach R06	Jct J02	Jct N03
Add Hyd L05	Subarea BASIN 05	Jct J03
Add Hyd NJ03	Jct N03	Jct J03
Add Hyd L07	Subarea BASIN 07	Jct N04
Reach R07	Jct J03	Jct N04
Add Hyd NJ04	Jct N04	Jct J04
Add Hyd L08	Subarea BASIN 08	Jct J04
Add Hyd L09	Subarea BASIN 09	Jct N05
Reach R09	Jct J04	Jct N05
Add Hyd L10	Subarea BASIN 10	Jct J05
Add Hyd NJ05	Jct N05	Jct J05
Add Hyd L11	Subarea BASIN 11	Jct N06
Reach R11	Jct J05	Jct N06
Add Hyd L17	Subarea BASIN 17	Jct J06
Add Hyd NJ06	Jct N06	Jct J06
Reach R15	Jct J06	Jct N07
Add Hyd L15	Subarea BASIN 15	Jct N07
Add Hyd NJ07	Jct N07	Jct J07
Add Hyd L14	Subarea BASIN 14	Jct J07
Add Hyd L16	Subarea BASIN 16	Jct N08
Reach R16	Jct J07	Jct N08
Add Hyd L12	Subarea BASIN 12	Jct J18
Add Hyd L13	Subarea BASIN 13	Jct J18
Add Hyd NJ08	Jct N08	Jct J08
Add Hyd L21	Subarea BASIN 21	Jct J08
Add Hyd L18	Subarea BASIN 18	Jct N09B
Reach R18	Jct J18	Jct N09B

Reach	R20	Jct	J08	Jct	N09A
Add Hyd	L20	Subarea	BASIN 20	Jct	N09A
Add Hyd	NJ09A	Jct	N09A	Jct	J09
Add Hyd	NJ09B	Jct	N09B	Jct	J09
Reach	R19	Jct	J09	Jct	N10
Add Hyd	L19	Subarea	BASIN 19	Jct	N10
Add Hyd	L27	Subarea	BASIN 27	Jct	J19
Add Hyd	L30	Subarea	BASIN 30	Jct	J19
Add Hyd	L23	Subarea	BASIN 23	Jct	J10
Add Hyd	NJ10	Jct	N10	Jct	J10
Add Hyd	L28	Subarea	BASIN 28	Jct	N11B
Reach	R28	Jct	J19	Jct	N11B
Reach	R25	Jct	J10	Jct	N11A
Add Hyd	L25	Subarea	BASIN 25	Jct	N11A
Add Hyd	L22	Subarea	BASIN 22	Jct	J20
Add Hyd	L24	Subarea	BASIN 24	Jct	J20
Add Hyd	NJ11A	Jct	N11A	Jct	J11
Add Hyd	NJ11B	Jct	N11B	Jct	J11
Add Hyd	L26	Subarea	BASIN 26	Jct	N12B
Reach	R26	Jct	J20	Jct	N12B
Reach	R29	Jct	J11	Jct	N12A
Add Hyd	L29	Subarea	BASIN 29	Jct	N12A
Add Hyd	NJ12A	Jct	N12A	Jct	J12
Add Hyd	NJ12B	Jct	N12B	Jct	J12
Reach	R31	Jct	J12	Jct	N13
Add Hyd	L31	Subarea	BASIN 31	Jct	N13
Add Hyd	NJ13	Jct	N13	Jct	J13
Add Hyd	L32	Subarea	BASIN 32	Jct	J13
Add Hyd	L34	Subarea	BASIN 34	Jct	N14
Reach	R34	Jct	J13	Jct	N14
Add Hyd	L35	Subarea	BASIN 35	Jct	J14
Add Hyd	NJ14	Jct	N14	Jct	J14
Add Hyd	L36	Subarea	BASIN 36	Jct	N15
Reach	R36	Jct	J14	Jct	N15
Add Hyd	L33	Subarea	BASIN 33	Jct	J15
Add Hyd	NJ15	Jct	N15	Jct	J15
Add Hyd	L37	Subarea	BASIN 37	Jct	N16
Reach	R37	Jct	J15	Jct	N16
Add Hyd	NJ16	Jct	N16	Jct	J16
Add Hyd	L38	Subarea	BASIN 38	Jct	J16
Add Hyd	L39	Subarea	BASIN 39	Jct	J17
Reach	R39	Jct	J16	Jct	J17

Title... Project Date: 4/15/2010
Project Engineer: Keith C. Strimple, PE, CFM
Project Title: Geronimo Creek and Alligator Creek
Project Comments:
This model was created for Guadalupe County by M&S Engineering, LLC.

DESIGN STORMS SUMMARY

Design Storm File,ID = Guad Co 100-Year

Storm Tag Name = 100

Data Type, File, ID = Synthetic Storm TypeIII 24hr
Storm Frequency = 100 yr
Total Rainfall Depth= 10.4300 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

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Design Storm File,ID = Guad Co 100-Year

Storm Tag Name = 100

Data Type, File, ID = Synthetic Storm TypeIII 24hr
Storm Frequency = 100 yr
Total Rainfall Depth= 10.4300 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

CUMULATIVE RAINFALL FRACTIONS
Output Time increment = .1000 hrs
Time on left represents time for first value in each row.

Time hrs					
.0000	.000	.001	.002	.003	.004
.5000	.005	.006	.007	.008	.009
1.0000	.010	.011	.012	.013	.014
1.5000	.015	.016	.017	.018	.019
2.0000	.020	.021	.022	.023	.024
2.5000	.025	.026	.027	.028	.030
3.0000	.031	.032	.033	.034	.035
3.5000	.037	.038	.039	.040	.042
4.0000	.043	.044	.046	.047	.048
4.5000	.050	.051	.052	.054	.055
5.0000	.057	.058	.060	.061	.063
5.5000	.064	.066	.067	.069	.070
6.0000	.072	.074	.075	.077	.079
6.5000	.081	.083	.084	.086	.088
7.0000	.091	.093	.095	.097	.099
7.5000	.102	.104	.106	.109	.111
8.0000	.114	.117	.119	.122	.125
8.5000	.128	.132	.135	.138	.142
9.0000	.146	.150	.153	.158	.162
9.5000	.166	.170	.175	.179	.184
10.0000	.189	.194	.199	.205	.211
10.5000	.217	.223	.229	.236	.243
11.0000	.250	.258	.266	.276	.287
11.5000	.298	.314	.339	.373	.416
12.0000	.500	.584	.627	.661	.686
12.5000	.702	.713	.724	.734	.742
13.0000	.750	.757	.764	.771	.777
13.5000	.784	.789	.795	.801	.806
14.0000	.811	.816	.821	.825	.830
14.5000	.834	.838	.842	.847	.850
15.0000	.854	.858	.862	.865	.868
15.5000	.872	.875	.878	.881	.883
16.0000	.886	.889	.891	.894	.896
16.5000	.898	.901	.903	.905	.907
17.0000	.910	.912	.914	.916	.918
17.5000	.919	.921	.923	.925	.926
18.0000	.928	.930	.931	.933	.934
18.5000	.936	.937	.939	.940	.942
19.0000	.943	.945	.946	.948	.949
19.5000	.950	.952	.953	.954	.956
20.0000	.957	.958	.960	.961	.962
20.5000	.963	.965	.966	.967	.968
21.0000	.969	.971	.972	.973	.974
21.5000	.975	.976	.977	.979	.980

CUMULATIVE RAINFALL FRACTIONS
Output Time increment = .1000 hrs
Time on left represents time for first value in each row.

Time hrs					
22.0000	.981	.982	.983	.984	.985
22.5000	.986	.987	.988	.989	.990
23.0000	.991	.992	.993	.994	.995
23.5000	.996	.997	.997	.998	.999
24.0000	1.000				

CUMULATIVE RAINFALL DEPTHS (in)
Output Time increment = .1000 hrs
Time on left represents time for first value in each row.

Time hrs					
.0000	.0000	.0104	.0209	.0313	.0417
.5000	.0522	.0626	.0730	.0834	.0939
1.0000	.1043	.1147	.1252	.1356	.1460
1.5000	.1565	.1669	.1773	.1877	.1982
2.0000	.2086	.2191	.2298	.2406	.2516
2.5000	.2627	.2740	.2855	.2970	.3088
3.0000	.3207	.3328	.3450	.3574	.3700
3.5000	.3827	.3955	.4085	.4217	.4350
4.0000	.4485	.4622	.4759	.4899	.5040
4.5000	.5183	.5327	.5473	.5620	.5769
5.0000	.5919	.6071	.6225	.6380	.6536
5.5000	.6695	.6855	.7016	.7179	.7344
6.0000	.7510	.7680	.7854	.8034	.8219
6.5000	.8410	.8605	.8806	.9012	.9223
7.0000	.9439	.9661	.9888	1.0120	1.0357
7.5000	1.0600	1.0847	1.1101	1.1358	1.1622
8.0000	1.1890	1.2168	1.2457	1.2758	1.3071
8.5000	1.3396	1.3733	1.4083	1.4443	1.4817
9.0000	1.5202	1.5599	1.6008	1.6429	1.6862
9.5000	1.7308	1.7764	1.8234	1.8715	1.9208
10.0000	1.9713	2.0236	2.0785	2.1359	2.1957
10.5000	2.2581	2.3230	2.3903	2.4602	2.5326
11.0000	2.6075	2.6884	2.7790	2.8791	2.9888
11.5000	3.1081	3.2781	3.5399	3.8935	4.3389
12.0000	5.2150	6.0911	6.5365	6.8901	7.1519
12.5000	7.3219	7.4412	7.5509	7.6510	7.7416
13.0000	7.8225	7.8974	7.9698	8.0397	8.1070
13.5000	8.1719	8.2343	8.2941	8.3515	8.4064
14.0000	8.4587	8.5092	8.5585	8.6066	8.6536
14.5000	8.6992	8.7438	8.7871	8.8292	8.8701
15.0000	8.9098	8.9483	8.9857	9.0217	9.0567
15.5000	9.0904	9.1229	9.1542	9.1843	9.2132
16.0000	9.2410	9.2679	9.2942	9.3200	9.3453
16.5000	9.3701	9.3943	9.4181	9.4412	9.4640
17.0000	9.4861	9.5078	9.5288	9.5495	9.5695
17.5000	9.5891	9.6081	9.6267	9.6446	9.6621
18.0000	9.6790	9.6956	9.7121	9.7284	9.7445
18.5000	9.7605	9.7764	9.7920	9.8075	9.8229
19.0000	9.8381	9.8531	9.8680	9.8827	9.8973
19.5000	9.9117	9.9260	9.9401	9.9541	9.9678
20.0000	9.9815	9.9950	10.0084	10.0217	10.0348
20.5000	10.0478	10.0608	10.0735	10.0862	10.0987
21.0000	10.1113	10.1236	10.1358	10.1479	10.1599
21.5000	10.1717	10.1834	10.1950	10.2066	10.2180

CUMULATIVE RAINFALL DEPTHS (in)
Output Time increment = .1000 hrs
Time on left represents time for first value in each row.

Time hrs					
22.0000	10.2292	10.2404	10.2514	10.2623	10.2731
22.5000	10.2838	10.2944	10.3048	10.3152	10.3254
23.0000	10.3355	10.3454	10.3553	10.3650	10.3747
23.5000	10.3842	10.3936	10.4029	10.4121	10.4210
24.0000	10.4300				

::
TIME OF CONCENTRATION CALCULATOR
::

Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.072900	ft/ft
Avg.Velocity	.24	ft/sec

Segment #1 Time: .3546 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	1415.00	ft
Slope	.074500	ft/ft
Unpaved		
Avg.Velocity	4.40	ft/sec

Segment #2 Time: .0893 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	307.4600	sq.ft
Wetted Perimeter	116.23	ft
Hydraulic Radius	2.65	ft
Slope	.016400	ft/ft
Mannings n	.0450	
Hydraulic Length	6887.00	ft
Avg.Velocity	8.11	ft/sec

Segment #3 Time: .2359 hrs

Segment #4: Tc: TR-55 Channel

Flow Area	575.8700	sq.ft
Wetted Perimeter	142.72	ft
Hydraulic Radius	4.03	ft
Slope	.011000	ft/ft
Mannings n	.0450	
Hydraulic Length	7130.00	ft
Avg.Velocity	8.80	ft/sec

Segment #4 Time: .2250 hrs

Total Tc: .9047 hrs

::
TIME OF CONCENTRATION CALCULATOR
::

Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.021600	ft/ft
Avg.Velocity	.14	ft/sec

Segment #1 Time: .5768 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	1236.00	ft
Slope	.052200	ft/ft
Unpaved		
Avg.Velocity	3.69	ft/sec

Segment #2 Time: .0931 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	35.9900	sq.ft
Wetted Perimeter	111.11	ft
Hydraulic Radius	.32	ft
Slope	.030600	ft/ft
Mannings n	.0450	
Hydraulic Length	1383.00	ft
Avg.Velocity	2.73	ft/sec

Segment #3 Time: .1406 hrs

Segment #4: Tc: TR-55 Channel

Flow Area	154.0700	sq.ft
Wetted Perimeter	121.89	ft
Hydraulic Radius	1.26	ft
Slope	.017400	ft/ft
Mannings n	.0450	
Hydraulic Length	2272.00	ft

Avg.Velocity 5.11 ft/sec

Segment #4 Time: .1236 hrs

Segment #5: Tc: TR-55 Channel

Flow Area	443.3200	sq.ft
Wetted Perimeter	274.14	ft
Hydraulic Radius	1.62	ft
Slope	.009900	ft/ft
Mannings n	.0450	
Hydraulic Length	4481.00	ft

Avg.Velocity 4.54 ft/sec

Segment #5 Time: .2742 hrs

==========
Total Tc: 1.2084 hrs
==========

::
TIME OF CONCENTRATION CALCULATOR
::

Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.069400	ft/ft
Avg.Velocity	.23	ft/sec

Segment #1 Time: .3616 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	1529.00	ft
Slope	.048900	ft/ft
Unpaved		
Avg.Velocity	3.57	ft/sec

Segment #2 Time: .1190 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	73.3800	sq.ft
Wetted Perimeter	51.99	ft
Hydraulic Radius	1.41	ft
Slope	.009700	ft/ft
Mannings n	.0450	
Hydraulic Length	2165.00	ft
Avg.Velocity	4.10	ft/sec

Segment #3 Time: .1466 hrs

Segment #4: Tc: TR-55 Channel

Flow Area	99.1200	sq.ft
Wetted Perimeter	52.67	ft
Hydraulic Radius	1.88	ft
Slope	.006900	ft/ft
Mannings n	.0450	
Hydraulic Length	1049.00	ft
Avg.Velocity	4.19	ft/sec

Segment #4 Time: .0695 hrs

Segment #5: Tc: TR-55 Channel

Flow Area	402.2700	sq.ft
Wetted Perimeter	160.62	ft
Hydraulic Radius	2.50	ft
Slope	.002900	ft/ft
Mannings n	.0450	
Hydraulic Length	1341.00	ft
Avg.Velocity	3.29	ft/sec

Segment #5 Time: .1133 hrs

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Total Tc: .8100 hrs

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::
TIME OF CONCENTRATION CALCULATOR
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Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.011000	ft/ft
Avg.Velocity	.11	ft/sec

Segment #1 Time: .7555 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	2224.00	ft
Slope	.032100	ft/ft
Unpaved		
Avg.Velocity	2.89	ft/sec

Segment #2 Time: .2137 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	48.6900	sq.ft
Wetted Perimeter	99.59	ft
Hydraulic Radius	.49	ft
Slope	.024600	ft/ft
Mannings n	.0450	
Hydraulic Length	1644.00	ft
Avg.Velocity	3.22	ft/sec

Segment #3 Time: .1417 hrs

Segment #4: Tc: TR-55 Channel

Flow Area	93.3200	sq.ft
Wetted Perimeter	47.72	ft
Hydraulic Radius	1.96	ft
Slope	.023100	ft/ft
Mannings n	.0450	
Hydraulic Length	1770.00	ft
Avg.Velocity	7.87	ft/sec

Segment #4 Time: .0625 hrs

Segment #5: Tc: TR-55 Channel

Flow Area	161.5900	sq.ft
Wetted Perimeter	74.99	ft
Hydraulic Radius	2.15	ft
Slope	.013100	ft/ft
Mannings n	.0450	
Hydraulic Length	1709.00	ft
Avg.Velocity	6.32	ft/sec

Segment #5 Time: .0751 hrs

Segment #6: Tc: TR-55 Channel

Flow Area	171.3000	sq.ft
Wetted Perimeter	62.67	ft
Hydraulic Radius	2.73	ft
Slope	.011700	ft/ft
Mannings n	.0450	
Hydraulic Length	2582.00	ft
Avg.Velocity	7.00	ft/sec

Segment #6 Time: .1024 hrs

Segment #7: Tc: TR-55 Channel

Flow Area	419.6200	sq.ft
Wetted Perimeter	216.96	ft
Hydraulic Radius	1.93	ft
Slope	.007600	ft/ft
Mannings n	.0450	
Hydraulic Length	1687.00	ft
Avg.Velocity	4.48	ft/sec

Segment #7 Time: .1046 hrs

Total Tc: 1.4555 hrs

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TIME OF CONCENTRATION CALCULATOR
::

Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.015600	ft/ft
Avg.Velocity	.13	ft/sec

Segment #1 Time: .6570 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	893.00	ft
Slope	.041000	ft/ft
Unpaved		
Avg.Velocity	3.27	ft/sec

Segment #2 Time: .0759 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	64.9400	sq.ft
Wetted Perimeter	89.83	ft
Hydraulic Radius	.72	ft
Slope	.017800	ft/ft
Mannings n	.0450	
Hydraulic Length	4446.00	ft
Avg.Velocity	3.56	ft/sec

Segment #3 Time: .3471 hrs

Segment #4: Tc: TR-55 Channel

Flow Area	332.9700	sq.ft
Wetted Perimeter	221.74	ft
Hydraulic Radius	1.50	ft
Slope	.007600	ft/ft
Mannings n	.0450	
Hydraulic Length	7372.00	ft
Avg.Velocity	3.79	ft/sec

Segment #4 Time: .5410 hrs

Segment #5: Tc: TR-55 Channel

Flow Area	674.0100	sq.ft
Wetted Perimeter	347.98	ft
Hydraulic Radius	1.94	ft
Slope	.006900	ft/ft
Mannings n	.0450	
Hydraulic Length	5518.00	ft
Avg.Velocity	4.27	ft/sec

Segment #5 Time: .3587 hrs

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Total Tc: 1.9796 hrs
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TIME OF CONCENTRATION CALCULATOR
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Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.015200	ft/ft

Avg.Velocity .13 ft/sec

Segment #1 Time: .6639 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	234.00	ft
Slope	.029000	ft/ft

Unpaved

Avg.Velocity 2.75 ft/sec

Segment #2 Time: .0237 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	4.2800	sq.ft
Wetted Perimeter	20.14	ft
Hydraulic Radius	.21	ft
Slope	.026400	ft/ft
Mannings n	.0450	
Hydraulic Length	235.00	ft

Avg.Velocity 1.92 ft/sec

Segment #3 Time: .0341 hrs

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Total Tc: .7216 hrs
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TIME OF CONCENTRATION CALCULATOR
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Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.031300	ft/ft
Avg.Velocity	.17	ft/sec

Segment #1 Time: .4973 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	1746.00	ft
Slope	.028900	ft/ft
Unpaved		
Avg.Velocity	2.74	ft/sec

Segment #2 Time: .1768 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	30.2000	sq.ft
Wetted Perimeter	55.52	ft
Hydraulic Radius	.54	ft
Slope	.022700	ft/ft
Mannings n	.0450	
Hydraulic Length	474.00	ft
Avg.Velocity	3.32	ft/sec

Segment #3 Time: .0396 hrs

Segment #4: Tc: TR-55 Channel

Flow Area	62.0800	sq.ft
Wetted Perimeter	236.67	ft
Hydraulic Radius	.26	ft
Slope	.026200	ft/ft
Mannings n	.0450	
Hydraulic Length	344.00	ft
Avg.Velocity	2.20	ft/sec

Segment #4 Time: .0435 hrs

Segment #5: Tc: TR-55 Channel

Flow Area	287.5300	sq.ft
Wetted Perimeter	128.92	ft
Hydraulic Radius	2.23	ft
Slope	.002700	ft/ft
Mannings n	.0450	
Hydraulic Length	5781.00	ft
Avg.Velocity	2.94	ft/sec

Segment #5 Time: .5468 hrs

Segment #6: Tc: TR-55 Channel

Flow Area	810.1400	sq.ft
Wetted Perimeter	419.55	ft
Hydraulic Radius	1.93	ft
Slope	.001800	ft/ft
Mannings n	.0450	
Hydraulic Length	3296.00	ft
Avg.Velocity	2.18	ft/sec

Segment #6 Time: .4203 hrs

Segment #7: Tc: TR-55 Channel

Flow Area	691.1600	sq.ft
Wetted Perimeter	233.52	ft
Hydraulic Radius	2.96	ft
Slope	.001900	ft/ft
Mannings n	.0450	
Hydraulic Length	798.00	ft
Avg.Velocity	2.98	ft/sec

Segment #7 Time: .0745 hrs

Segment #8: Tc: TR-55 Channel

Flow Area	1283.4600	sq.ft
Wetted Perimeter	728.48	ft
Hydraulic Radius	1.76	ft
Slope	.001800	ft/ft
Mannings n	.0450	
Hydraulic Length	4760.00	ft
Avg.Velocity	2.05	ft/sec

Segment #8 Time: .6452 hrs

Segment #9: Tc: TR-55 Channel

Flow Area	1174.8500	sq.ft
Wetted Perimeter	338.48	ft
Hydraulic Radius	3.47	ft
Slope	.002200	ft/ft
Mannings n	.0450	
Hydraulic Length	6406.00	ft
Avg.Velocity	3.56	ft/sec

Segment #9 Time: .4998 hrs

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Total Tc: 2.9438 hrs
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TIME OF CONCENTRATION CALCULATOR
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Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.008000	ft/ft
Avg.Velocity	.10	ft/sec

Segment #1 Time: .8582 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	2468.00	ft
Slope	.004100	ft/ft
Unpaved		
Avg.Velocity	1.03	ft/sec

Segment #2 Time: .6636 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	267.7500	sq.ft
Wetted Perimeter	236.49	ft
Hydraulic Radius	1.13	ft
Slope	.002800	ft/ft
Mannings n	.0450	
Hydraulic Length	5197.00	ft
Avg.Velocity	1.90	ft/sec

Segment #3 Time: .7585 hrs

Segment #4: Tc: TR-55 Channel

Flow Area	212.7100	sq.ft
Wetted Perimeter	93.39	ft
Hydraulic Radius	2.28	ft
Slope	.001600	ft/ft
Mannings n	.0150	
Hydraulic Length	1860.00	ft
Avg.Velocity	6.88	ft/sec

Segment #4 Time: .0751 hrs

Total Tc: 2.3554 hrs

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TIME OF CONCENTRATION CALCULATOR
::

Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.037400	ft/ft
Avg.Velocity	.18	ft/sec

Segment #1 Time: .4631 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	625.00	ft
Slope	.028500	ft/ft
Unpaved		
Avg.Velocity	2.72	ft/sec

Segment #2 Time: .0637 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	24.2300	sq.ft
Wetted Perimeter	31.73	ft
Hydraulic Radius	.76	ft
Slope	.015600	ft/ft
Mannings n	.0450	
Hydraulic Length	3274.00	ft
Avg.Velocity	3.46	ft/sec

Segment #3 Time: .2632 hrs

Segment #4: Tc: TR-55 Channel

Flow Area	154.2700	sq.ft
Wetted Perimeter	232.15	ft
Hydraulic Radius	.66	ft
Slope	.008100	ft/ft
Mannings n	.0450	
Hydraulic Length	2728.00	ft

Avg.Velocity 2.27 ft/sec

Segment #4 Time: .3339 hrs

Segment #5: Tc: TR-55 Channel

Flow Area	242.5500	sq.ft
Wetted Perimeter	220.47	ft
Hydraulic Radius	1.10	ft
Slope	.003200	ft/ft
Mannings n	.0450	
Hydraulic Length	2760.00	ft

Avg.Velocity 2.00 ft/sec

Segment #5 Time: .3841 hrs

Segment #6: Tc: TR-55 Channel

Flow Area	1103.9400	sq.ft
Wetted Perimeter	656.37	ft
Hydraulic Radius	1.68	ft
Slope	.000990	ft/ft
Mannings n	.0450	
Hydraulic Length	2852.18	ft

Avg.Velocity 1.47 ft/sec

Segment #6 Time: .5377 hrs

Segment #7: Tc: TR-55 Channel

Flow Area	1114.4900	sq.ft
Wetted Perimeter	418.47	ft
Hydraulic Radius	2.66	ft
Slope	.001700	ft/ft
Mannings n	.0450	
Hydraulic Length	9509.90	ft
Avg.Velocity	2.62	ft/sec

Segment #7 Time: 1.0071 hrs

Segment #8: Tc: TR-55 Channel

Flow Area	1495.7100	sq.ft
Wetted Perimeter	507.40	ft
Hydraulic Radius	2.95	ft
Slope	.001920	ft/ft
Mannings n	.0450	
Hydraulic Length	1920.45	ft
Avg.Velocity	2.98	ft/sec

Segment #8 Time: .1788 hrs

Segment #9: Tc: TR-55 Channel

Flow Area	1672.2000	sq.ft
Wetted Perimeter	510.42	ft
Hydraulic Radius	3.28	ft
Slope	.001380	ft/ft
Mannings n	.0450	
Hydraulic Length	3181.39	ft
Avg.Velocity	2.71	ft/sec

Segment #9 Time: .3257 hrs

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Total Tc: 3.5574 hrs
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TIME OF CONCENTRATION CALCULATOR
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Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.007400	ft/ft
Avg.Velocity	.09	ft/sec

Segment #1 Time: .8854 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	1813.00	ft
Slope	.030500	ft/ft
Unpaved		
Avg.Velocity	2.82	ft/sec

Segment #2 Time: .1787 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	472.9400	sq.ft
Wetted Perimeter	578.40	ft
Hydraulic Radius	.82	ft
Slope	.007400	ft/ft
Mannings n	.0400	
Hydraulic Length	6825.00	ft
Avg.Velocity	2.80	ft/sec

Segment #3 Time: .6766 hrs

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Total Tc: 1.7407 hrs
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TIME OF CONCENTRATION CALCULATOR
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Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.009400	ft/ft
Avg.Velocity	.10	ft/sec

Segment #1 Time: .8046 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	681.00	ft
Slope	.014400	ft/ft
Unpaved		
Avg.Velocity	1.94	ft/sec

Segment #2 Time: .0977 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	128.7100	sq.ft
Wetted Perimeter	134.08	ft
Hydraulic Radius	.96	ft
Slope	.011700	ft/ft
Mannings n	.0450	
Hydraulic Length	8008.00	ft
Avg.Velocity	3.49	ft/sec

Segment #3 Time: .6382 hrs

Segment #4: Tc: TR-55 Channel

Flow Area	417.2200	sq.ft
Wetted Perimeter	366.83	ft
Hydraulic Radius	1.14	ft
Slope	.003800	ft/ft
Mannings n	.0450	
Hydraulic Length	4213.00	ft
Avg.Velocity	2.22	ft/sec

Segment #4 Time: .5262 hrs

Segment #5: Tc: TR-55 Channel

Flow Area	1959.2900	sq.ft
Wetted Perimeter	1201.20	ft
Hydraulic Radius	1.63	ft
Slope	.001700	ft/ft
Mannings n	.0450	
Hydraulic Length	9934.00	ft
Avg.Velocity	1.89	ft/sec

Segment #5 Time: 1.4587 hrs

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Total Tc: 3.5254 hrs
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TIME OF CONCENTRATION CALCULATOR

Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.011800	ft/ft
Avg.Velocity	.11	ft/sec

Segment #1 Time: .7346 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	4278.00	ft
Slope	.014700	ft/ft
Unpaved		
Avg.Velocity	1.96	ft/sec

Segment #2 Time: .6075 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	490.3000	sq.ft
Wetted Perimeter	658.66	ft
Hydraulic Radius	.74	ft
Slope	.004500	ft/ft
Mannings n	.0400	
Hydraulic Length	3828.00	ft
Avg.Velocity	2.05	ft/sec

Segment #3 Time: .5181 hrs

Segment #4: Tc: TR-55 Channel

Flow Area	1375.0600	sq.ft
Wetted Perimeter	859.97	ft
Hydraulic Radius	1.60	ft
Slope	.003200	ft/ft
Mannings n	.0450	
Hydraulic Length	4049.00	ft
Avg.Velocity	2.56	ft/sec

Segment #4 Time: .4391 hrs

Total Tc: 2.2993 hrs

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TIME OF CONCENTRATION CALCULATOR
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Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.006300	ft/ft
Avg.Velocity	.09	ft/sec

Segment #1 Time: .9442 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	2248.00	ft
Slope	.021800	ft/ft
Unpaved		
Avg.Velocity	2.38	ft/sec

Segment #2 Time: .2621 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	313.5100	sq.ft
Wetted Perimeter	359.35	ft
Hydraulic Radius	.87	ft
Slope	.007800	ft/ft
Mannings n	.0400	
Hydraulic Length	8186.00	ft
Avg.Velocity	3.00	ft/sec

Segment #3 Time: .7570 hrs

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Total Tc: 1.9634 hrs
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TIME OF CONCENTRATION CALCULATOR
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Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.000500	ft/ft
Avg.Velocity	.03	ft/sec

Segment #1 Time: 2.6015 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	1088.00	ft
Slope	.029900	ft/ft
Unpaved		
Avg.Velocity	2.79	ft/sec

Segment #2 Time: .1083 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	284.5000	sq.ft
Wetted Perimeter	240.89	ft
Hydraulic Radius	1.18	ft
Slope	.007200	ft/ft
Mannings n	.0450	
Hydraulic Length	14401.00	ft
Avg.Velocity	3.14	ft/sec

Segment #3 Time: 1.2743 hrs

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Total Tc: 3.9841 hrs
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TIME OF CONCENTRATION CALCULATOR
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Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.007900	ft/ft
Avg.Velocity	.10	ft/sec

Segment #1 Time: .8625 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	3711.00	ft
Slope	.004800	ft/ft
Unpaved		
Avg.Velocity	1.12	ft/sec

Segment #2 Time: .9222 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	257.2300	sq.ft
Wetted Perimeter	143.45	ft
Hydraulic Radius	1.79	ft
Slope	.002600	ft/ft
Mannings n	.0450	
Hydraulic Length	4727.00	ft
Avg.Velocity	2.49	ft/sec

Segment #3 Time: .5269 hrs

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Total Tc: 2.3116 hrs
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TIME OF CONCENTRATION CALCULATOR
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Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.002900	ft/ft
Avg.Velocity	.06	ft/sec

Segment #1 Time: 1.2878 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	3817.00	ft
Slope	.005000	ft/ft
Unpaved		
Avg.Velocity	1.14	ft/sec

Segment #2 Time: .9293 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	132.2400	sq.ft
Wetted Perimeter	314.56	ft
Hydraulic Radius	.42	ft
Slope	.009800	ft/ft
Mannings n	.0450	
Hydraulic Length	2089.00	ft
Avg.Velocity	1.84	ft/sec

Segment #3 Time: .3155 hrs

Segment #4: Tc: TR-55 Channel

Flow Area	691.5500	sq.ft
Wetted Perimeter	237.31	ft
Hydraulic Radius	2.91	ft
Slope	.000300	ft/ft
Mannings n	.0450	
Hydraulic Length	3027.00	ft
Avg.Velocity	1.17	ft/sec

Segment #4 Time: .7186 hrs

Total Tc: 3.2512 hrs

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TIME OF CONCENTRATION CALCULATOR
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Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.000100	ft/ft
Avg.Velocity	.02	ft/sec

Segment #1 Time: 4.9523 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	7594.00	ft
Slope	.003100	ft/ft
Unpaved		
Avg.Velocity	.90	ft/sec

Segment #2 Time: 2.3482 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	817.6900	sq.ft
Wetted Perimeter	608.40	ft
Hydraulic Radius	1.34	ft
Slope	.002700	ft/ft
Mannings n	.0450	
Hydraulic Length	15506.00	ft
Avg.Velocity	2.10	ft/sec

Segment #3 Time: 2.0556 hrs

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Total Tc: 9.3561 hrs
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TIME OF CONCENTRATION CALCULATOR
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Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.004800	ft/ft
Avg.Velocity	.08	ft/sec

Segment #1 Time: 1.0527 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	4748.00	ft
Slope	.005800	ft/ft
Unpaved		
Avg.Velocity	1.23	ft/sec

Segment #2 Time: 1.0733 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	370.4400	sq.ft
Wetted Perimeter	294.83	ft
Hydraulic Radius	1.26	ft
Slope	.002100	ft/ft
Mannings n	.0450	
Hydraulic Length	6895.00	ft
Avg.Velocity	1.77	ft/sec

Segment #3 Time: 1.0841 hrs

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Total Tc: 3.2101 hrs
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TIME OF CONCENTRATION CALCULATOR
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Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.004500	ft/ft
Avg.Velocity	.08	ft/sec

Segment #1 Time: 1.0803 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	1218.00	ft
Slope	.020400	ft/ft
Unpaved		
Avg.Velocity	2.30	ft/sec

Segment #2 Time: .1468 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	61.6300	sq.ft
Wetted Perimeter	55.66	ft
Hydraulic Radius	1.11	ft
Slope	.003300	ft/ft
Mannings n	.0450	
Hydraulic Length	2346.00	ft
Avg.Velocity	2.04	ft/sec

Segment #3 Time: .3201 hrs

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Total Tc: 1.5472 hrs
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TIME OF CONCENTRATION CALCULATOR
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Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.002800	ft/ft
Avg.Velocity	.06	ft/sec

Segment #1 Time: 1.3060 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	1868.00	ft
Slope	.015000	ft/ft
Unpaved		
Avg.Velocity	1.98	ft/sec

Segment #2 Time: .2626 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	66.4800	sq.ft
Wetted Perimeter	66.92	ft
Hydraulic Radius	.99	ft
Slope	.001100	ft/ft
Mannings n	.0450	
Hydraulic Length	341.00	ft
Avg.Velocity	1.09	ft/sec

Segment #3 Time: .0866 hrs

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Total Tc: 1.6552 hrs
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::
TIME OF CONCENTRATION CALCULATOR
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Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.001700	ft/ft
Avg.Velocity	.05	ft/sec

Segment #1 Time: 1.5945 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	7781.00	ft
Slope	.003800	ft/ft
Unpaved		
Avg.Velocity	.99	ft/sec

Segment #2 Time: 2.1731 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	406.4000	sq.ft
Wetted Perimeter	298.18	ft
Hydraulic Radius	1.36	ft
Slope	.006100	ft/ft
Mannings n	.0450	
Hydraulic Length	4200.00	ft
Avg.Velocity	3.18	ft/sec

Segment #3 Time: .3670 hrs

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Total Tc: 4.1346 hrs
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TIME OF CONCENTRATION CALCULATOR
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Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.017100	ft/ft
Avg.Velocity	.13	ft/sec

Segment #1 Time: .6333 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	1993.00	ft
Slope	.023400	ft/ft
Unpaved		
Avg.Velocity	2.47	ft/sec

Segment #2 Time: .2243 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	317.7700	sq.ft
Wetted Perimeter	154.39	ft
Hydraulic Radius	2.06	ft
Slope	.007700	ft/ft
Mannings n	.0450	
Hydraulic Length	15019.00	ft
Avg.Velocity	4.70	ft/sec

Segment #3 Time: .8874 hrs

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Total Tc: 1.7450 hrs
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::
TIME OF CONCENTRATION CALCULATOR
::

Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.049500	ft/ft
Avg.Velocity	.20	ft/sec

Segment #1 Time: .4140 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	784.00	ft
Slope	.036200	ft/ft
Unpaved		
Avg.Velocity	3.07	ft/sec

Segment #2 Time: .0709 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	279.8200	sq.ft
Wetted Perimeter	284.00	ft
Hydraulic Radius	.99	ft
Slope	.009500	ft/ft
Mannings n	.0400	
Hydraulic Length	8016.00	ft
Avg.Velocity	3.59	ft/sec

Segment #3 Time: .6194 hrs

Segment #4: Tc: TR-55 Channel

Flow Area	577.6200	sq.ft
Wetted Perimeter	571.17	ft
Hydraulic Radius	1.01	ft
Slope	.007200	ft/ft
Mannings n	.0450	
Hydraulic Length	3005.00	ft
Avg.Velocity	2.83	ft/sec

Segment #4 Time: .2949 hrs

Total Tc: 1.3992 hrs

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TIME OF CONCENTRATION CALCULATOR
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Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.012800	ft/ft
Avg.Velocity	.12	ft/sec

Segment #1 Time: .7111 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	1900.00	ft
Slope	.035500	ft/ft
Unpaved		
Avg.Velocity	3.04	ft/sec

Segment #2 Time: .1736 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	307.7700	sq.ft
Wetted Perimeter	208.86	ft
Hydraulic Radius	1.47	ft
Slope	.008200	ft/ft
Mannings n	.0450	
Hydraulic Length	13816.00	ft
Avg.Velocity	3.88	ft/sec

Segment #3 Time: .9884 hrs

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Total Tc: 1.8731 hrs
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TIME OF CONCENTRATION CALCULATOR
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Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.001600	ft/ft
Avg.Velocity	.05	ft/sec

Segment #1 Time: 1.6337 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	3592.00	ft
Slope	.002300	ft/ft
Unpaved		
Avg.Velocity	.77	ft/sec

Segment #2 Time: 1.2895 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	144.9400	sq.ft
Wetted Perimeter	222.74	ft
Hydraulic Radius	.65	ft
Slope	.010800	ft/ft
Mannings n	.0450	
Hydraulic Length	3784.00	ft
Avg.Velocity	2.58	ft/sec

Segment #3 Time: .4068 hrs

Segment #4: Tc: TR-55 Channel

Flow Area	595.9200	sq.ft
Wetted Perimeter	152.83	ft
Hydraulic Radius	3.90	ft
Slope	.002100	ft/ft
Mannings n	.0450	
Hydraulic Length	9556.00	ft
Avg.Velocity	3.76	ft/sec

Segment #4 Time: .7062 hrs

Total Tc: 4.0361 hrs

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TIME OF CONCENTRATION CALCULATOR
::

Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.001200	ft/ft
Avg.Velocity	.05	ft/sec

Segment #1 Time: 1.8329 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	1076.00	ft
Slope	.013700	ft/ft
Unpaved		
Avg.Velocity	1.89	ft/sec

Segment #2 Time: .1583 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	537.4900	sq.ft
Wetted Perimeter	322.92	ft
Hydraulic Radius	1.66	ft
Slope	.003800	ft/ft
Mannings n	.0450	
Hydraulic Length	19445.00	ft
Avg.Velocity	2.87	ft/sec

Segment #3 Time: 1.8842 hrs

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Total Tc: 3.8753 hrs
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::
TIME OF CONCENTRATION CALCULATOR
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Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.003700	ft/ft
Avg.Velocity	.07	ft/sec

Segment #1 Time: 1.1682 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	7488.00	ft
Slope	.003200	ft/ft
Unpaved		
Avg.Velocity	.91	ft/sec

Segment #2 Time: 2.2789 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	615.6300	sq.ft
Wetted Perimeter	366.64	ft
Hydraulic Radius	1.68	ft
Slope	.004300	ft/ft
Mannings n	.0450	
Hydraulic Length	12330.00	ft
Avg.Velocity	3.07	ft/sec

Segment #3 Time: 1.1166 hrs

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Total Tc: 4.5638 hrs
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TIME OF CONCENTRATION CALCULATOR
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Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.021700	ft/ft
Avg.Velocity	.14	ft/sec

Segment #1 Time: .5757 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	253.00	ft
Slope	.056900	ft/ft
Unpaved		
Avg.Velocity	3.85	ft/sec

Segment #2 Time: .0183 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	24.7100	sq.ft
Wetted Perimeter	32.35	ft
Hydraulic Radius	.76	ft
Slope	.011700	ft/ft
Mannings n	.0450	
Hydraulic Length	1162.00	ft
Avg.Velocity	2.99	ft/sec

Segment #3 Time: .1079 hrs

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Total Tc: .7019 hrs
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TIME OF CONCENTRATION CALCULATOR
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Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.001600	ft/ft
Avg.Velocity	.05	ft/sec

Segment #1 Time: 1.6337 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	6410.00	ft
Slope	.004600	ft/ft
Unpaved		
Avg.Velocity	1.09	ft/sec

Segment #2 Time: 1.6271 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	85.3800	sq.ft
Wetted Perimeter	66.92	ft
Hydraulic Radius	1.28	ft
Slope	.011200	ft/ft
Mannings n	.0450	
Hydraulic Length	1822.00	ft
Avg.Velocity	4.12	ft/sec

Segment #3 Time: .1228 hrs

Segment #4: Tc: TR-55 Channel

Flow Area	381.4900	sq.ft
Wetted Perimeter	165.54	ft
Hydraulic Radius	2.30	ft
Slope	.002900	ft/ft
Mannings n	.0450	
Hydraulic Length	10664.00	ft
Avg.Velocity	3.11	ft/sec

Segment #4 Time: .9522 hrs

Total Tc: 4.3358 hrs

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TIME OF CONCENTRATION CALCULATOR
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Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.001600	ft/ft
Avg.Velocity	.05	ft/sec

Segment #1 Time: 1.6337 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	5279.00	ft
Slope	.005500	ft/ft
Unpaved		
Avg.Velocity	1.20	ft/sec

Segment #2 Time: 1.2255 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	698.2700	sq.ft
Wetted Perimeter	330.08	ft
Hydraulic Radius	2.12	ft
Slope	.004000	ft/ft
Mannings n	.0450	
Hydraulic Length	9882.00	ft
Avg.Velocity	3.45	ft/sec

Segment #3 Time: .7954 hrs

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Total Tc: 3.6546 hrs
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TIME OF CONCENTRATION CALCULATOR
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Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.000500	ft/ft
Avg.Velocity	.03	ft/sec

Segment #1 Time: 2.6015 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	4795.00	ft
Slope	.008100	ft/ft
Unpaved		
Avg.Velocity	1.45	ft/sec

Segment #2 Time: .9173 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	122.2000	sq.ft
Wetted Perimeter	290.73	ft
Hydraulic Radius	.42	ft
Slope	.013700	ft/ft
Mannings n	.0450	
Hydraulic Length	3558.00	ft
Avg.Velocity	2.17	ft/sec

Segment #3 Time: .4545 hrs

Segment #4: Tc: TR-55 Channel

Flow Area	307.9000	sq.ft
Wetted Perimeter	94.95	ft
Hydraulic Radius	3.24	ft
Slope	.001800	ft/ft
Mannings n	.0450	
Hydraulic Length	1920.00	ft
Avg.Velocity	3.08	ft/sec

Segment #4 Time: .1733 hrs

Total Tc: 4.1465 hrs

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TIME OF CONCENTRATION CALCULATOR
::

Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.000500	ft/ft
Avg.Velocity	.03	ft/sec

Segment #1 Time: 2.6015 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	752.00	ft
Slope	.000700	ft/ft
Unpaved		
Avg.Velocity	.43	ft/sec

Segment #2 Time: .4893 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	262.1600	sq.ft
Wetted Perimeter	131.43	ft
Hydraulic Radius	1.99	ft
Slope	.007900	ft/ft
Mannings n	.0450	
Hydraulic Length	11244.00	ft
Avg.Velocity	4.66	ft/sec

Segment #3 Time: .6698 hrs

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Total Tc: 3.7606 hrs
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TIME OF CONCENTRATION CALCULATOR
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Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.006400	ft/ft
Avg.Velocity	.09	ft/sec

Segment #1 Time: .9383 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	4590.00	ft
Slope	.008700	ft/ft
Unpaved		
Avg.Velocity	1.50	ft/sec

Segment #2 Time: .8472 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	173.7600	sq.ft
Wetted Perimeter	242.69	ft
Hydraulic Radius	.72	ft
Slope	.006900	ft/ft
Mannings n	.0400	
Hydraulic Length	2084.00	ft
Avg.Velocity	2.48	ft/sec

Segment #3 Time: .2338 hrs

Segment #4: Tc: TR-55 Channel

Flow Area	451.1400	sq.ft
Wetted Perimeter	245.56	ft
Hydraulic Radius	1.84	ft
Slope	.004600	ft/ft
Mannings n	.0450	
Hydraulic Length	16769.00	ft
Avg.Velocity	3.37	ft/sec

Segment #4 Time: 1.3828 hrs

Total Tc: 3.4020 hrs

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TIME OF CONCENTRATION CALCULATOR
::

Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.021200	ft/ft
Avg.Velocity	.14	ft/sec

Segment #1 Time: .5811 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	1527.00	ft
Slope	.014100	ft/ft
Unpaved		
Avg.Velocity	1.92	ft/sec

Segment #2 Time: .2214 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	107.7800	sq.ft
Wetted Perimeter	59.51	ft
Hydraulic Radius	1.81	ft
Slope	.004000	ft/ft
Mannings n	.0450	
Hydraulic Length	2436.00	ft
Avg.Velocity	3.11	ft/sec

Segment #3 Time: .2175 hrs

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Total Tc: 1.0200 hrs
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TIME OF CONCENTRATION CALCULATOR
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Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.007100	ft/ft
Avg.Velocity	.09	ft/sec

Segment #1 Time: .9001 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	1800.00	ft
Slope	.005600	ft/ft
Unpaved		
Avg.Velocity	1.21	ft/sec

Segment #2 Time: .4141 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	87.8400	sq.ft
Wetted Perimeter	197.16	ft
Hydraulic Radius	.45	ft
Slope	.007600	ft/ft
Mannings n	.0450	
Hydraulic Length	3835.00	ft
Avg.Velocity	1.68	ft/sec

Segment #3 Time: .6327 hrs

Segment #4: Tc: TR-55 Channel

Flow Area	341.6800	sq.ft
Wetted Perimeter	321.77	ft
Hydraulic Radius	1.06	ft
Slope	.005900	ft/ft
Mannings n	.0450	
Hydraulic Length	2180.00	ft
Avg.Velocity	2.65	ft/sec

Segment #4 Time: .2288 hrs

Segment #5: Tc: TR-55 Channel

Flow Area	185.5400	sq.ft
Wetted Perimeter	72.54	ft
Hydraulic Radius	2.56	ft
Slope	.018400	ft/ft
Mannings n	.0450	
Hydraulic Length	2430.00	ft
Avg.Velocity	8.40	ft/sec

Segment #5 Time: .0804 hrs

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Total Tc: 2.2560 hrs
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TIME OF CONCENTRATION CALCULATOR
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Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.016500	ft/ft
Avg.Velocity	.13	ft/sec

Segment #1 Time: .6424 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	1244.00	ft
Slope	.009200	ft/ft
Unpaved		
Avg.Velocity	1.55	ft/sec

Segment #2 Time: .2233 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	83.2700	sq.ft
Wetted Perimeter	142.21	ft
Hydraulic Radius	.59	ft
Slope	.011900	ft/ft
Mannings n	.0450	
Hydraulic Length	5096.00	ft
Avg.Velocity	2.53	ft/sec

Segment #3 Time: .5599 hrs

Segment #4: Tc: TR-55 Channel

Flow Area	392.5000	sq.ft
Wetted Perimeter	121.20	ft
Hydraulic Radius	3.24	ft
Slope	.001800	ft/ft
Mannings n	.0450	
Hydraulic Length	12205.00	ft
Avg.Velocity	3.07	ft/sec

Segment #4 Time: 1.1026 hrs

Total Tc: 2.5282 hrs

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TIME OF CONCENTRATION CALCULATOR
::

Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.001000	ft/ft
Avg.Velocity	.04	ft/sec

Segment #1 Time: 1.9716 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	742.00	ft
Slope	.007600	ft/ft
Unpaved		
Avg.Velocity	1.41	ft/sec

Segment #2 Time: .1465 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	97.5000	sq.ft
Wetted Perimeter	96.67	ft
Hydraulic Radius	1.01	ft
Slope	.020100	ft/ft
Mannings n	.0450	
Hydraulic Length	3556.00	ft
Avg.Velocity	4.72	ft/sec

Segment #3 Time: .2092 hrs

Segment #4: Tc: TR-55 Channel

Flow Area	454.3500	sq.ft
Wetted Perimeter	256.65	ft
Hydraulic Radius	1.77	ft
Slope	.001400	ft/ft
Mannings n	.0450	
Hydraulic Length	942.00	ft
Avg.Velocity	1.81	ft/sec

Segment #4 Time: .1443 hrs

Total Tc: 2.4716 hrs

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TIME OF CONCENTRATION CALCULATOR
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Segment #1: Tc: TR-55 Sheet

Mannings n	.0200	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.000100	ft/ft
Avg.Velocity	.15	ft/sec

Segment #1 Time: .5675 hrs

Segment #2: Tc: TR-55 Shallcw

Hydraulic Length	2490.00	ft
Slope	.001100	ft/ft
Unpaved		
Avg.Velocity	.54	ft/sec

Segment #2 Time: 1.2925 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	425.3700	sq.ft
Wetted Perimeter	1006.83	ft
Hydraulic Radius	.42	ft
Slope	.004300	ft/ft
Mannings n	.0150	
Hydraulic Length	5997.00	ft
Avg.Velocity	3.67	ft/sec

Segment #3 Time: .4542 hrs

Segment #4: Tc: TR-55 Channel

Flow Area	494.3100	sq.ft
Wetted Perimeter	502.15	ft
Hydraulic Radius	.98	ft
Slope	.002900	ft/ft
Mannings n	.0450	
Hydraulic Length	2831.00	ft
Avg.Velocity	1.76	ft/sec

Segment #4 Time: .4457 hrs

Segment #5: Tc: TR-55 Channel

Flow Area	273.0900	sq.ft
Wetted Perimeter	167.94	ft
Hydraulic Radius	1.63	ft
Slope	.012000	ft/ft
Mannings n	.0450	
Hydraulic Length	5069.00	ft
Avg.Velocity	5.02	ft/sec

Segment #5 Time: .2807 hrs

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Total Tc: 3.0406 hrs
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TIME OF CONCENTRATION CALCULATOR
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Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	300.00	ft
2yr, 24hr P	4.2400	in
Slope	.001300	ft/ft
Avg.Velocity	.05	ft/sec

Segment #1 Time: 1.7751 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	2089.00	ft
Slope	.004800	ft/ft
Unpaved		
Avg.Velocity	1.12	ft/sec

Segment #2 Time: .5191 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	103.4600	sq.ft
Wetted Perimeter	104.72	ft
Hydraulic Radius	.99	ft
Slope	.015200	ft/ft
Mannings n	.0400	
Hydraulic Length	4171.00	ft
Avg.Velocity	4.56	ft/sec

Segment #3 Time: .2543 hrs

Segment #4: Tc: TR-55 Channel

Flow Area	390.4500	sq.ft
Wetted Perimeter	88.03	ft
Hydraulic Radius	4.44	ft
Slope	.003900	ft/ft
Mannings n	.0450	
Hydraulic Length	3543.00	ft
Avg.Velocity	5.58	ft/sec

Segment #4 Time: .1763 hrs

Total Tc: 2.7249 hrs

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Commercial Business Soil D	95	59.010			95.00
Grassland (fair) Soil C	79	669.240			79.00
Grassland (fair) Soil D	84	145.810			84.00
Paved, open ditches Soil D	93	48.220			93.00
Residential >= 2 acres Soil C	77	32.680			77.00
Residential >=2 acres Soil D	82	375.670			82.00
Residential 1 acre Soil C	79	3.820			79.00
Residential 1 acre Soil D	84	80.260			84.00
Residential 1/2 acre Soil C	80	.430			80.00
Residential 1/2 acre Soil D	85	2.380			85.00
Residential 1/3 acre Soil C	81	.710			81.00
Residential 1/3 acre Soil D	86	1.460			86.00
Residential 1/4 acre Soil C	83	.130			83.00
Residential 1/4 acre Soil D	87	.330			87.00
COMPOSITE AREA & WEIGHTED CN --->		1420.150			81.70 (82)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Commercial Business Soil D	95	24.420			95.00
Grassland (fair) Soil C	79	42.720			79.00
Grassland (fair) Soil D	81	293.740			81.00
Paved, Open Ditches Soil D	93	61.340			93.00
Residential >= 2 acres Soil C	77	129.360			77.00
Residential >= 2 acres Soil D	82	329.180			82.00
Residential 1 acre Soil C	79	30.620			79.00
Residential 1 acre Soil D	84	59.100			84.00
Residential 1/2 acre Soil C	80	2.190			80.00
Residential 1/2 acre Soil D	85	.220			85.00
Residential 1/3 acre Soil C	81	1.040			81.00
Residential 1/3 acre Soil D	86	.050			86.00
Residential 1/4 acre Soil C	83	.560			83.00
Residential 1/4 acre Soil D	87	.420			87.00
COMPOSITE AREA & WEIGHTED CN --->		974.960			81.95 (82)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Grassland (fair) Soil D	84	241.690			84.00
Paved, open ditches Soil D	93	10.830			93.00
Residential >= 2 acres Soil D	82	55.270			82.00
Residential 1 acre Soil D	84	30.900			84.00
Residential 1/2 acre Soil D	85	10.960			85.00
Residential 1/3 acre Soil D	86	.590			86.00
Residential 1/4 acre Soil D	87	.220			87.00
COMPOSITE AREA & WEIGHTED CN --->		350.460			84.00 (84)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Commecial Business Soil C	94	21.260			94.00
Grassland (fair) Soil C	79	10.530			79.00
Grassland (fair) Soil D	84	294.550			84.00
Paved, open ditches Soil D	93	40.200			93.00
Residential >= 2 acres Soil C	77	23.090			77.00
Residential >= 2 acres Soil D	82	182.000			82.00
Residential 1 acre Soil C	79	1.180			79.00
Residential 1 acre Soil D	84	87.250			84.00
Residential 1/3 acre Soil C	86	.040			86.00
Woods (fair) Soil C	73	1.360			73.00
Woods (fair) Soil D	79	4.850			79.00
COMPOSITE AREA & WEIGHTED CN --->		666.310			83.93 (84)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Commercial Business Soil D	95	4.010			95.00
Grassland (fair) Soil C	79	218.150			79.00
Grassland (fair) Soil D	84	1005.600			84.00
Paved, open ditches Soil D Paved,	93	24.830			93.00
Residential >= 2 acres Soil C	77	15.760			77.00
Residential >=2 acres Soil D	82	25.130			82.00
Residential 1 acre Soil D	84	13.640			84.00
Residential 1/2 acre Soil D	85	.840			85.00
Residential 1/3 acre Soil D	86	.690			86.00
Residential 1/4 acre Soil C	83	.230			83.00
Residential 1/4 acre Soil D	87	.860			87.00
Woods (fair) Soil C	73	1.900			73.00
Woods (fair) Soil D	79	3.520			79.00
COMPOSITE AREA & WEIGHTED CN --->		1315.160			83.23 (83)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Grassland (fair) Soil D	84	3.090			84.00
Paved, open ditches Soil D	93	.100			93.00
Residential 1 acre Soil D	84	1.400			84.00
COMPOSITE AREA & WEIGHTED CN --->		4.590			84.20 (84)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Commercial Business Soil D	95	256.080			95.00
Fair condition (grass cover) Soil D	84	18.180			84.00
Grassland (fair) Soil C	79	49.640			79.00
Grassland (fair) Soil D	84	705.560			84.00
Paved, open ditches Soil D	93	195.740			93.00
Residential >= 2 acres Soil C	77	28.940			77.00
Residential >=2 acres Soil D	82	147.480			82.00
Residential 1 acre Soil C	79	.860			79.00
Residential 1 acre Soil D	84	34.190			84.00
Residential 1/2 acre Soil D	85	15.430			85.00
Residential 1/3 acre Soil D	86	19.270			86.00
Residential 1/4 acre Soil D	87	141.860			87.00
Row Crops (SR+CR Good) Soil C	82	76.090			82.00
Row Crops (SR+CR Good) Soil D	85	555.950			85.00
Woods (fair) Soil C	73	3.360			73.00
Woods (fair) Soil D	79	6.650			79.00
COMPOSITE AREA & WEIGHTED CN --->		2255.280			86.06 (86)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Commercial Business Soil C	94	10.030			94.00
Commercial Business Soil D	95	269.220			95.00
Fair condition (grass cover) Soil D	84	10.810			84.00
Grassland (fair) Soil D	84	37.140			84.00
Paved, open ditches Soil D	93	87.950			93.00
Residential >=2 acres Soil D	82	18.290			82.00
Residential 1 acre Soil D	84	1.460			84.00
Residential 1/2 acre Soil D	85	3.530			85.00
Residential 1/3 acre Soil D	86	3.800			86.00
Residential 1/4 acre Soil D	87	18.060			87.00
Row Crops (SR+CR Good) Soil D	85	444.290			85.00
COMPOSITE AREA & WEIGHTED CN --->		904.580			88.78 (89)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Commercial Business Soil C	94	3.180			94.00
Commercial Business Soil D	95	567.530			95.00
Grassland (fair) Soil D	84	606.320			84.00
Paved, open ditches Soil D	93	142.540			93.00
Residential >=2 acres Soil D	82	40.520			82.00
Residential 1 acre Soil D	84	2.570			84.00
Residential 1/2 acre Soil D	85	.330			85.00
Residential 1/3 acre Soil D	86	.130			86.00
Row Crops (SR+CR Good) Soil D	85	1874.650			85.00
COMPOSITE AREA & WEIGHTED CN --->		3237.770			86.89 (87)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Grassland (fair) Soil D	84	431.940			84.00
Paved, open ditches Soil D	93	7.580			93.00
Residential >=2 acres Soil D	82	8.000			82.00
Row Crops (SR+CR Good) Soil D	85	511.440			85.00
COMPOSITE AREA & WEIGHTED CN --->		958.960			84.59 (85)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Grassland (fair) Soil C	79	40.980			79.00
Grassland (fair) Soil D	84	172.660			84.00
Paved, open ditches Soil D	9	50.890			9.00
Residential >= 2 acres Soil C	77	10.010			77.00
Residential >=2 acres Soil D	82	37.590			82.00
Residential 1 acre Soil C	79	3.630			79.00
Residential 1 acre Soil D	84	6.090			84.00
Residential 1/2 acre Soil C	80	.500			80.00
Residential 1/2 acre Soil D	85	1.100			85.00
Residential 1/3 acre Soil D	86	.290			86.00
Residential 1/4 acre Soil D	87	.240			87.00
Row Crops (SR+CR Good) Soil C	82	216.640			82.00
Row Crops (SR+CR Good) Soil D	85	2273.030			85.00
COMPOSITE AREA & WEIGHTED CN --->		2813.650			83.17 (83)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Fair condition (grass cover 50% to Grassland (fair) C	84	5.090			84.00
Grassland (fair) D	79	.970			79.00
Paved, open ditches (including righ Residential >= 2 acres D	84	690.920			84.00
Residential 1 acre D	93	57.790			93.00
Residential 1/2 acre D	82	85.700			82.00
Row Crops (SR+CR Good) D	84	1.470			84.00
	85	.760			85.00
	85	800.670			85.00
COMPOSITE AREA & WEIGHTED CN --->		1643.370			84.70 (85)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Grassland (fair) D	84	141.540			84.00
Paved, open ditches (including righ	93	26.370			93.00
Residential >= 2 acres D	82	28.020			82.00
Residential 1 acre D	84	1.750			84.00
Residential 1/2 acre D	85	.500			85.00
Row Crops (SR+CR Good) D	85	720.430			85.00
COMPOSITE AREA & WEIGHTED CN --->		918.610			84.98 (85)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Grassland (fair) D	84	90.020			84.00
Paved, open ditches (including righ	93	11.100			93.00
Residential >= 2 acres D	82	10.200			82.00
Residential 1 acre D	84	.550			84.00
Row Crops (SR+CR Good) C	82	28.870			82.00
Row Crops (SR+CR Good) D	85	979.850			85.00
COMPOSITE AREA & WEIGHTED CN --->		1120.590			84.89 (85)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Grassland (fair) D					
Grassland (fair	84	107.620			84.00
Paved, open ditches (including righ	93	4.950			93.00
Residential >= 2 acres D	82	2.100			82.00
Residential 1/4 acre D	87	.510			87.00
Row Crops (SR+CR Good) C	82	25.560			82.00
Row Crops (SR+CR Good) D	85	253.680			85.00
COMPOSITE AREA & WEIGHTED CN --->		394.420			84.62 (85)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Commercial Business D	95	2.230			95.00
Grassland (fair) D	84	123.710			84.00
Paved, open ditches (including righ	93	24.290			93.00
Residential >= 2 acres C	77	.130			77.00
Residential >= 2 acres D	82	35.960			82.00
Residential 1 acre C	79	.100			79.00
Residential 1 acre D	84	18.420			84.00
Residential 1/2 acre D	85	5.330			85.00
Residential 1/3 acre D	86	2.030			86.00
Residential 1/4 acre D	87	.800			87.00
Row Crops (SR+CR Good) D	85	297.780			85.00
COMPOSITE AREA & WEIGHTED CN --->		510.780			84.94 (85)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Commercial Business D	95	384.190			95.00
Fair condition (grass cover 50% to Grassland (fair) C	84	19.710			84.00
Grassland (fair) D	79	10.640			79.00
Paved, open ditches (including righ	84	124.930			84.00
Residential >= 2 acres C	93	71.230			93.00
Residential >= 2 acres D	77	4.410			77.00
Residential 1 acre C	82	73.830			82.00
Residential 1 acre D	79	.970			79.00
Residential 1/2 acre D	84	3.030			84.00
Row Crops (SR+CR Good) C	85	.500			85.00
Row Crops (SR+CR Good) D	82	115.710			82.00
	85	2375.060			85.00
COMPOSITE AREA & WEIGHTED CN --->		3184.210			86.13 (86)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Grassland (fair) C	79	8.140			79.00
Grassland (fair) D	84	123.670			84.00
Paved, open ditches (including righ	93	21.560			93.00
Residential >= 2 acres C	77	4.950			77.00
Residential >= 2 acres D	82	13.780			82.00
Residential 1 acre C	79	2.440			79.00
Residential 1 acre D	84	1.030			84.00
Row Crops (SR+CR Good) D	85	566.850			85.00
COMPOSITE AREA & WEIGHTED CN --->		742.420			84.87 (85)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Grassland (fair) D	84	1.500			84.00
Paved, open ditches (including righ	93	1.640			93.00
Residential >= 2 acres C	77	.030			77.00
Residential 1 acre D	84	.670			84.00
Row Crops (SR+CR Good) D	85	144.680			85.00
COMPOSITE AREA & WEIGHTED CN --->		148.520			85.07 (85)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Grassland (fair) D	84	4.720			84.00
Row Crops (SR+CR Good) D	85	31.320			85.00
COMPOSITE AREA & WEIGHTED CN --->		36.040			84.87 (85)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Commercial Business D	95	71.910			95.00
Fair condition (grass cover 50% to	84	12.130			84.00
Grassland (fair) D	84	45.410			84.00
Paved, open ditches (including righ	93	21.180			93.00
Residential >= 2 acres D	82	29.050			82.00
Residential 1 acre D	84	2.790			84.00
Residential 1/2 acre D	85	.970			85.00
Residential 1/3 acre D	86	1.180			86.00
Residential 1/4 acre D	87	.130			87.00
Row Crops (SR+CR Good) D	85	756.910			85.00
COMPOSITE AREA & WEIGHTED CN --->		941.660			85.79 (86)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Grassland (fair) D	84	1022.370			84.00
Paved, open ditches (including righ	93	25.290			93.00
Residential >= 2 acres D	82	21.540			82.00
Residential 1 acre D	84	2.930			84.00
Row Crops (SR+CR Good) D	85	775.540			85.00
COMPOSITE AREA & WEIGHTED CN --->		1847.670			84.52 (85)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Grassland (fair) D	84	58.320			84.00
Paved, open ditches (including righ	93	13.970			93.00
Residential >= 2 acres D	82	3.960			82.00
Residential 1 acre D	84	1.450			84.00
Row Crops (SR+CR Good) D	85	600.390			85.00
COMPOSITE AREA & WEIGHTED CN --->		678.090			85.06 (85)

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RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Grassland (fair) D	84	700.510			84.00
Paved, open ditches (including righ	93	32.900			93.00
Residential >= 2 acres D	82	20.800			82.00
Residential 1/2 acre D	85	.340			85.00
Residential 1/3 acre D	86	.010			86.00
Residential 1/4 acre D	87	.230			87.00
Row Crops (SR+CR Good) D	85	221.810			85.00
COMPOSITE AREA & WEIGHTED CN --->		976.600			84.49 (84)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Commercial Business D	95	.110			95.00
Grassland (fair) D	84	246.460			84.00
Paved, open ditches (including righ	93	45.190			93.00
Residential >= 2 acres C	77	1.400			77.00
Residential >= 2 acres D	82	13.180			82.00
Residential 1 acre D	84	44.500			84.00
Residential 1/2 acre D	85	32.880			85.00
Residential 1/3 acre D	86	.300			86.00
Row Crops (SR+CR Good) C	82	4.850			82.00
Row Crops (SR+CR Good) D	85	1392.120			85.00
COMPOSITE AREA & WEIGHTED CN --->		1780.990			85.00 (85)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Grassland (fair) D	84	812.650			84.00
Paved, open ditches (including righ	93	35.510			93.00
Residential >= 2 acres D	82	70.860			82.00
Residential 1 acre D	84	8.840			84.00
Residential 1/2 acre D	85	1.440			85.00
Residential 1/4 acre D	87	.250			87.00
Row Crops (SR+CR Good) D	85	606.290			85.00
Woods (fair) D	79	100.760			79.00
COMPOSITE AREA & WEIGHTED CN --->		1636.600			84.17 (84)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Commercial Business D	95	4.370			95.00
Fair condition (grass cover 50% to	84	4.720			84.00
Grassland (fair) C	79	7.550			79.00
Grassland (fair) D	84	324.440			84.00
Paved, open ditches (including righ	93	47.720			93.00
Residential >= 2 acres C	77	2.120			77.00
Residential >= 2 acres D	82	129.830			82.00
Residential 1 acre C	79	.960			79.00
Residential 1 acre D	84	13.020			84.00
Residential 1/2 acre C	80	4.610			80.00
Residential 1/2 acre D	85	.940			85.00
Residential 1/3 acre D	86	.270			86.00
Residential 1/4 acre D	87	.250			87.00
Row Crops (SR+CR Good) C	82	105.630			82.00
Row Crops (SR+CR Good) D	85	1046.860			85.00
COMPOSITE AREA & WEIGHTED CN --->		1693.290			84.58 (85)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Row Crops (SR+CR Good) D	85	24.560			85.00
COMPOSITE AREA & WEIGHTED CN --->		24.560			85.00 (85)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Fair condition (grass cover 50% to	79	4.750			79.00
Fair condition (grass cover 50% to	84	3.540			84.00
Grassland (fair) C	79	38.350			79.00
Grassland (fair) D	84	143.610			84.00
Paved, open ditches (including righ	93	29.580			93.00
Residential >= 2 acres C	77	50.740			77.00
Residential >= 2 acres D	82	89.630			82.00
Residential 1 acre C	79	5.630			79.00
Residential 1 acre D	84	20.760			84.00
Residential 1/2 acre D	85	2.780			85.00
Residential 1/3 acre C	81	.340			81.00
Residential 1/3 acre D	86	.270			86.00
Row Crops (SR+CR Good) C	82	151.070			82.00
Row Crops (SR+CR Good) D	85	697.930			85.00
COMPOSITE AREA & WEIGHTED CN --->		1238.980			83.91 (84)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Commercial Business D	95	10.370			95.00
Fair condition (grass cover 50% to	84	2.320			84.00
Grassland (fair) C	79	40.270			79.00
Grassland (fair) D	84	43.930			84.00
Paved, open ditches (including righ	93	60.790			93.00
Residential >= 2 acres C	77	9.580			77.00
Residential >= 2 acres D	82	17.860			82.00
Residential 1 acre C	79	2.250			79.00
Residential 1 acre D	84	6.920			84.00
Residential 1/2 acre C	80	4.480			80.00
Residential 1/2 acre D	85	19.350			85.00
Residential 1/3 acre C	81	.060			81.00
Residential 1/4 acre C	83	.380			83.00
Residential 1/4 acre D	87	.710			87.00
Row Crops (SR+CR Good) C	82	360.610			82.00
Row Crops (SR+CR Good) D	85	1288.260			85.00
COMPOSITE AREA & WEIGHTED CN --->		1868.140			84.49 (84)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Fair condition (grass cover 50% to	79	4.810			79.00
Fair condition (grass cover 50% to	84	3.100			84.00
Grassland (fair) C	79	14.190			79.00
Grassland (fair) D	84	160.440			84.00
Paved, open ditches (including righ	93	34.220			93.00
Residential >= 2 acres C	77	8.690			77.00
Residential >= 2 acres D	82	28.170			82.00
Residential 1 acre C	79	.090			79.00
Residential 1 acre D	84	18.720			84.00
Residential 1/2 acre D	85	26.880			85.00
Residential 1/3 acre D	86	.300			86.00
Residential 1/4 acre D	87	.210			87.00
Row Crops (SR+CR Good) C	82	77.770			82.00
Row Crops (SR+CR Good) D	85	353.870			85.00
Woods (fair) D	79	10.720			79.00
COMPOSITE AREA & WEIGHTED CN --->		742.180			84.36 (84)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Commercial Business D	95	88.020			95.00
Fair condition (grass cover 50% to Grassland (fair) D	84	8.700			84.00
	84	186.470			84.00
Paved, open ditches (including righ	93	149.900			93.00
Residential >= 2 acres D	82	42.700			82.00
Residential 1 acre D	84	11.220			84.00
Residential 1/2 acre D	85	16.690			85.00
Residential 1/3 acre D	86	5.560			86.00
Residential 1/4 acre D	87	24.140			87.00
Row Crops (SR+CR Good) C	82	4.210			82.00
Row Crops (SR+CR Good) D	85	511.970			85.00
COMPOSITE AREA & WEIGHTED CN --->		1049.580			86.70 (87)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Fair condition (grass cover 50% to	69	3.170			69.00
Fair condition (grass cover 50% to	84	33.010			84.00
Grassland (fair) B	69	226.480			69.00
Grassland (fair) D	84	791.720			84.00
Paved, open ditches (including righ	93	172.780			93.00
Residential >= 2 acres B	65	46.640			65.00
Residential >= 2 acres D	82	240.460			82.00
Residential 1 acre B	68	4.970			68.00
Residential 1 acre D	84	44.420			84.00
Residential 1/2 acre B	70	.890			70.00
Residential 1/2 acre D	85	11.050			85.00
Residential 1/3 acre B	72	.890			72.00
Residential 1/3 acre D	86	5.090			86.00
Residential 1/4 acre D	87	2.320			87.00
Row Crops (SR+CR Good) B	75	3.200			75.00
Row Crops (SR+CR Good) D	85	629.520			85.00
Woods (fair) D	79	9.960			79.00
COMPOSITE AREA & WEIGHTED CN --->		2226.570			82.75 (83)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Grassland (fair) D	84	109.510			84.00
Paved, open ditches (including righ	93	19.020			93.00
Row Crops (SR+CR Good) D	85	.030			85.00
COMPOSITE AREA & WEIGHTED CN --->		128.560			85.33 (85)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	Impervious Adjustment %UC	Adjusted CN
Commercial Business C	94	14.300			94.00
Commercial Business D	95	212.120			95.00
Fair condition (grass cover 50% to	79	5.860			79.00
Fair condition (grass cover 50% to	84	7.660			84.00
Grassland (fair) B	69	7.500			69.00
Grassland (fair) C	79	.740			79.00
Grassland (fair) D	84	99.180			84.00
Paved, open ditches (including righ	93	131.640			93.00
Residential >= 2 acres C	77	4.630			77.00
Residential >= 2 acres D	82	14.420			82.00
Residential 1 acre D	84	11.890			84.00
Residential 1/2 acre D	85	11.930			85.00
Residential 1/3 acre D	86	6.360			86.00
Residential 1/4 acre D	87	48.880			87.00
Row Crops (SR+CR Good) D	85	150.510			85.00
COMPOSITE AREA & WEIGHTED CN --->		727.620			89.19 (89)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Commercial Business B	92	8.140			92.00
Commercial Business C	94	60.710			94.00
Commercial Business D	95	29.920			95.00
Fair condition (grass cover 50% to	69	3.720			69.00
Fair condition (grass cover 50% to	79	23.230			79.00
Fair condition (grass cover 50% to	84	4.850			84.00
Grassland (fair) B	69	50.780			69.00
Grassland (fair) C	79	31.820			79.00
Grassland (fair) D	84	386.800			84.00
Paved, open ditches (including righ	93	153.860			93.00
Residential >= 2 acres B	65	31.770			65.00
Residential >= 2 acres C	77	19.530			77.00
Residential >= 2 acres D	82	28.600			82.00
Residential 1 acre B	68	5.230			68.00
Residential 1 acre C	79	7.670			79.00
Residential 1 acre D	84	13.680			84.00
Residential 1/2 acre B	70	5.970			70.00
Residential 1/2 acre C	80	23.950			80.00
Residential 1/2 acre D	85	6.450			85.00
Residential 1/3 acre B	72	4.360			72.00
Residential 1/3 acre C	81	26.330			81.00
Residential 1/3 acre D	86	9.520			86.00
Residential 1/4 acre B	75	3.290			75.00
Residential 1/4 acre C	83	43.980			83.00
Residential 1/4 acre D	87	11.370			87.00
Row Crops (SR+CR Good) B	75	13.310			75.00

Row Crops (SR+CR Good) C	82	28.730	82.00
Row Crops (SR+CR Good) D	85	124.910	85.00
Woods (fair) D	79	13.150	79.00
COMPOSITE AREA & WEIGHTED CN --->		1175.630	83.94 (84)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Commercial Business D	95	20.580			95.00
Fair condition (grass cover 50% to	84	6.180			84.00
Grassland (fair) B	69	83.840			69.00
Grassland (fair) D	84	69.050			84.00
Paved, open ditches (including righ	93	23.790			93.00
Residential >= 2 acres B	65	2.510			65.00
Residential >= 2 acres D	82	14.040			82.00
Residential 1 acre B	68	3.410			68.00
Residential 1 acre C	79	.620			79.00
Residential 1 acre D	84	18.670			84.00
Residential 1/2 acre B	70	1.410			70.00
Residential 1/2 acre C	80	4.330			80.00
Residential 1/2 acre D	85	7.790			85.00
Residential 1/3 acre B	72	.600			72.00
Residential 1/3 acre C	81	8.060			81.00
Residential 1/3 acre D	86	.340			86.00
Residential 1/4 acre C	83	1.710			83.00
Residential 1/4 acre D	87	.010			87.00
Row Crops (SR+CR Good) D	85	142.440			85.00
Woods (fair) D	79	3.220			79.00
COMPOSITE AREA & WEIGHTED CN --->		412.600			81.85 (82)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Commercial Business C	94	161.530			94.00
Commercial Business D	95	88.980			95.00
Fair condition (grass cover 50% to	69	2.800			69.00
Fair condition (grass cover 50% to	79	8.270			79.00
Fair condition (grass cover 50% to	84	16.520			84.00
Grassland (fair) B	69	1.660			69.00
Grassland (fair) C	79	27.240			79.00
Grassland (fair) D	84	32.050			84.00
Paved, open ditches (including righ	93	139.700			93.00
Residential >= 2 acres B	65	2.720			65.00
Residential >= 2 acres C	77	19.450			77.00
Residential >= 2 acres D	82	20.660			82.00
Residential 1 acre B	68	11.710			68.00
Residential 1 acre C	79	8.710			79.00
Residential 1 acre D	84	5.200			84.00
Residential 1/2 acre B	70	13.100			70.00
Residential 1/2 acre C	80	20.580			80.00
Residential 1/2 acre D	85	4.960			85.00
Residential 1/3 acre B	72	15.280			72.00
Residential 1/3 acre C	81	44.540			81.00
Residential 1/3 acre D	86	22.040			86.00
Residential 1/4 acre B	75	9.010			75.00
Residential 1/4 acre C	83	57.790			83.00
Residential 1/4 acre D	87	19.970			87.00
Row Crops (SR+CR Good) B	75	.660			75.00
Row Crops (SR+CR Good) C	82	1.640			82.00

Row Crops (SR+CR Good) D	85	15.500	85.00
Woods (fair) D	79	3.330	79.00
COMPOSITE AREA & WEIGHTED CN --->		775.600	87.25 (87)

::

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Commercial Business D	95	76.300			95.00
Grassland (fair) B	69	26.780			69.00
Grassland (fair) C	79	1.790			79.00
Grassland (fair) D	84	273.270			84.00
Paved, open ditches (inclucing righ	93	19.400			93.00
Residential >= 2 acres B	65	21.880			65.00
Residential >= 2 acres C	77	9.320			77.00
Residential >= 2 acres D	82	23.090			82.00
Residential 1 acre B	68	3.830			68.00
Residential 1 acre C	79	3.130			79.00
Residential 1 acre D	84	1.800			84.00
Residential 1/2 acre B	70	1.410			70.00
Residential 1/2 acre C	80	2.670			80.00
Residential 1/3 acre B	72	.120			72.00
Residential 1/3 acre C	81	.350			81.00
Residential 1/4 acre C	83	.230			83.00
Residential 1/4 acre D	87	.040			87.00
Row Crops (SR+CR Good) B	75	202.250			75.00
Row Crops (SR+CR Good) C	82	23.380			82.00
Row Crops (SR+CR Good) D	85	462.750			85.00
Woods (fair) B	60	48.970			60.00
COMPOSITE AREA & WEIGHTED CN --->		1202.760			81.83 (82)

MODIFIED PULS REACH ROUTING SUMMARY

```
HYG Dir          = S:\Active Projects\9GUADCO001 Geronimo Creek Flood Protection Study\H&
Inflow  HYG file = work_pad.hyg - J01              100
Outflow HYG file = work_pad.hyg - R03              100

Reach Link Data  = R03
Reach Length     = 4047.00 ft
Approx. Total Tt = .4321 hrs  (based on Wtd.Q = 3702.66 cfs)
Reach Channel    = R03  (Chn-Irreg.)
Overflow Elev.   = 738.46 ft
Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS
----------------------------------
Starting WS Elev   =   715.90 ft
Starting Volume    =     .000 ac-ft
Starting Outflow   =      .00 cfs
Starting Infiltr.  =      .00 cfs
Starting Total Qout=      .00 cfs
Time Increment     =    .0833 hrs


INFLOW/OUTFLOW HYDROGRAPH SUMMARY
=================================================
Peak Inflow       =   8527.77 cfs    at   12.6662 hrs
Peak Outflow      =   7633.48 cfs    at   12.9162 hrs
=================================================


MASS BALANCE (ac-ft)
---------------------------
+ Initial Vol  =        .000
+ HYG Vol IN   =    1634.788
- Infiltration =        .000
- HYG Vol OUT  =    1634.785
- Retained Vol =        .001
               ----------
Unrouted Vol =       -.003 ac-ft  (.000% of Inflow Volume)
```

MODIFIED PULS REACH ROUTING SUMMARY

HYG Dir = S:\Active Projects\9GUADCO001 Geronimo Creek Flood Protection Study\H&
Inflow HYG file = work_pad.hyg - J02 100
Outflow HYG file = work_pad.hyg - R06 100

Reach Link Data = R06
Reach Length = 402.00 ft
Approx. Total Tt = .0162 hrs (based on Wtd.Q = 4800.81 cfs)
Reach Channel = R06 (Chn-Irreg.)
Overflow Elev. = 734.95 ft
Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	703.70 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.0833 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	10636.95 cfs	at	12.8328 hrs
Peak Outflow	=	10632.65 cfs	at	12.9162 hrs

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	2350.397
- Infiltration	=	.000
- HYG Vol OUT	=	2350.397
- Retained Vol	=	.000
Unrouted Vol	=	.000 ac-ft (.000% of Outflow Volume)

WARNING: For weighted average inflow, the approximate total travel time through entire reach is shorter than the inflow hydrograph time step. Consider reducing calculation time step.
Wtd.Avg.Q = 4800.81 cfs Approx.Total Tt = .0162 hrs

MODIFIED PULS REACH ROUTING SUMMARY

HYG Dir = S:\Active Projects\9GUADCO001 Geronimo Creek Flood Protection Study\H&
Inflow HYG file = work_pad.hyg - J03 100
Outflow HYG file = work_pad.hyg - R07 100

Reach Link Data = R07
Reach Length = 25244.00 ft
Approx. Total Tt = 3.8188 hrs (based on Wtd.Q = 6247.58 cfs)
Reach Channel = R07 (Chn-Irreg.)
Overflow Elev. = 676.02 ft
Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	662.89 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.0833 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	13380.11 cfs	at	12.9995 hrs
Peak Outflow	=	4598.26 cfs	at	14.5828 hrs

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	3265.310
- Infiltration	=	.000
- HYG Vol OUT	=	3265.267
- Retained Vol	=	.061
Unrouted Vol	=	.018 ac-ft (.001% of Inflow Volume)

WARNING: Outflow hydrograph truncated on right side.

MODIFIED PULS REACH ROUTING SUMMARY

HYG Dir = S:\Active Projects\9GUADCO001 Geronimo Creek Flood Protection Study\H&
Inflow HYG file = work_pad.hyg - J04 100
Outflow HYG file = work_pad.hyg - R09 100

Reach Link Data = R09
Reach Length = 21366.00 ft
Approx. Total Tt = 3.0414 hrs (based on Wtd.Q = 5639.42 cfs)
Reach Channel = R09 (Chn-Irreg.)
Overflow Elev. = 659.82 ft
Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	633.61 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.0833 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	10658.12 cfs	at	13.9994 hrs
Peak Outflow	=	6609.35 cfs	at	16.0827 hrs

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	5585.243
- Infiltration	=	.000
- HYG Vol OUT	=	5585.153
- Retained Vol	=	.069
Unrouted Vol	=	-.020 ac-ft (.000% of Inflow Volume)

WARNING: Outflow hydrograph truncated on right side.

MODIFIED PULS REACH ROUTING SUMMARY

HYG Dir = S:\Active Projects\9GUADCO001 Geronimo Creek Flood Protection Study\H&
Inflow HYG file = work_pad.hyg - J05 100
Outflow HYG file = work_pad.hyg - R11 100

Reach Link Data = R11
Reach Length = 17095.00 ft
Approx. Total Tt = 2.3102 hrs (based on Wtd.Q = 6834.22 cfs)
Reach Channel = R11 (Chn-Irreg.)
Overflow Elev. = 609.20 ft
Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	592.03 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.0833 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	11954.99 cfs	at	14.8327 hrs
Peak Outflow	=	9508.30 cfs	at	16.7493 hrs

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	8652.504
- Infiltration	=	.000
- HYG Vol OUT	=	8652.357
- Retained Vol	=	.117
Unrouted Vol	=	-.030 ac-ft (.000% of Inflow Volume)

WARNING: Outflow hydrograph truncated on right side.

MODIFIED PULS REACH ROUTING SUMMARY

HYG Dir = S:\Active Projects\9GUADCO001 Geronimo Creek Flood Protection Study\H&
Inflow HYG file = work_pad.hyg - J06 100
Outflow HYG file = work_pad.hyg - R15 100

Reach Link Data = R15
Reach Length = 6544.00 ft
Approx. Total Tt = .5149 hrs (based on Wtd.Q = 8959.03 cfs)
Reach Channel = R15 (Chn-Irreg.)
Overflow Elev. = 587.00 ft
Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	576.12 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.0833 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	14117.76 cfs	at	16.1660 hrs
Peak Outflow	=	14037.59 cfs	at	16.6660 hrs

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	12912.170
- Infiltration	=	.000
- HYG Vol OUT	=	12912.110
- Retained Vol	=	.039
Unrouted Vol	=	-.017 ac-ft (.000% of Inflow Volume)

WARNING: Outflow hydrograph truncated on right side.

MODIFIED PULS REACH ROUTING SUMMARY

HYG Dir = S:\Active Projects\9GUADCO001 Geronimo Creek Flood Protection Study\H&
Inflow HYG file = work_pad.hyg - J07 100
Outflow HYG file = work_pad.hyg - R16 100

Reach Link Data = R16
Reach Length = 6767.00 ft
Approx. Total Tt = .4812 hrs (based on Wtd.Q = 9688.86 cfs)
Reach Channel = R16 (Chn-Irreg.)
Overflow Elev. = 584.44 ft
Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	566.11 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.0833 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	15445.51 cfs	at	16.0827 hrs
Peak Outflow	=	15254.95 cfs	at	16.7493 hrs

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	13994.680
- Infiltration	=	.000
- HYG Vol OUT	=	13994.630
- Retained Vol	=	.058
Unrouted Vol	=	.003 ac-ft (.000% of Inflow Volume)

WARNING: Outflow hydrograph truncated on right side.

MODIFIED PULS REACH ROUTING SUMMARY

```
HYG Dir          = S:\Active Projects\9GUADCO001 Geronimo Creek Flood Protection Study\H&
Inflow  HYG file = work_pad.hyg - J18              100
Outflow HYG file = work_pad.hyg - R18              100

Reach Link Data  = R18
Reach Length     = 8243.00 ft
Approx. Total Tt = .8716 hrs  (based on Wtd.Q = 3002.73 cfs)
Reach Channel    = R18  (Chn-Irreg.)
Overflow Elev.   = 576.00 ft
Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS
----------------------------------
Starting WS Elev   =   568.47 ft
Starting Volume    =     .000 ac-ft
Starting Outflow   =      .00 cfs
Starting Infiltr.  =      .00 cfs
Starting Total Qout=      .00 cfs
Time Increment     =    .0833 hrs


INFLOW/OUTFLOW HYDROGRAPH SUMMARY
=========================================================
Peak Inflow       =   5890.22 cfs    at   13.4995 hrs
Peak Outflow      =   5155.82 cfs    at   13.9994 hrs
=========================================================


MASS BALANCE (ac-ft)
-------------------------
+ Initial Vol  =        .000
+ HYG Vol IN   =    1830.624
- Infiltration =        .000
- HYG Vol OUT  =    1830.616
- Retained Vol =        .002
               ----------
Unrouted Vol =       -.006 ac-ft  (.000% of Inflow Volume)
```

MODIFIED PULS REACH ROUTING SUMMARY

HYG Dir = S:\Active Projects\9GUADCO001 Geronimo Creek Flood Protection Study\H&
Inflow HYG file = work_pad.hyg - J09 100
Outflow HYG file = work_pad.hyg - R19 100

Reach Link Data = R19
Reach Length = 2962.00 ft
Approx. Total Tt = .1351 hrs (based on Wtd.Q = 12291.94 cfs)
Reach Channel = R19 (Chn-Irreg.)
Overflow Elev. = 565.69 ft
Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	546.22 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.0833 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	19619.88 cfs	at	15.7494 hrs
Peak Outflow	=	19598.49 cfs	at	15.8327 hrs

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	17429.370
- Infiltration	=	.000
- HYG Vol OUT	=	17429.370
- Retained Vol	=	.021
Unrouted Vol	=	.018 ac-ft (.000% of Inflow Volume)

WARNING: Outflow hydrograph truncated on right side.

MODIFIED PULS REACH ROUTING SUMMARY

```
HYG Dir          = S:\Active Projects\9GUADCO001 Geronimo Creek Flood Protection Study\H&
Inflow  HYG file = work_pad.hyg - J08              100
Outflow HYG file = work_pad.hyg - R20              100

Reach Link Data  = R20
Reach Length     = 1250.00 ft
Approx, Total Tt = .1186 hrs  (based on Wtd.Q = 10429.88 cfs)
Reach Channel    = R20  (Chn-Irreg.)
Overflow Elev.   = 566.00 ft
Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS
---------------------------------
Starting WS Elev   =   554.16 ft
Starting Volume    =     .000 ac-ft
Starting Outflow   =      .00 cfs
Starting Infiltr.  =      .00 cfs
Starting Total Qout=      .00 cfs
Time Increment     =    .0833 hrs


INFLOW/OUTFLOW HYDROGRAPH SUMMARY
=================================================
Peak Inflow       =  16646.07 cfs    at   16.3327 hrs
Peak Outflow      =  16636.34 cfs    at   16.4160 hrs
=================================================


MASS BALANCE (ac-ft)
-------------------------
+ Initial Vol  =        .000
+ HYG Vol IN   =   15042.480
- Infiltration =        .000
- HYG Vol OUT  =   15042.450
- Retained Vol =        .020
               ----------
Unrouted Vol =       -.018 ac-ft  (.000% of Inflow Volume)


WARNING: Outflow hydrograph truncated on right side.
```

MODIFIED PULS REACH ROUTING SUMMARY

HYG Dir = S:\Active Projects\9GUADCO001 Geronimo Creek Flood Protection Study\H&
Inflow HYG file = work_pad.hyg - J10 100
Outflow HYG file = work_pad.hyg - R25 100

Reach Link Data = R25
Reach Length = 13319.00 ft
Approx. Total Tt = .6273 hrs (based on Wtd.Q = 12543.50 cfs)
Reach Channel = R25 (Chn-Irreg.)
Overflow Elev. = 562.41 ft
Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	527.39 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.0833 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	19978.71 cfs	at	15.8327 hrs
Peak Outflow	=	19755.32 cfs	at	16.2494 hrs

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	18020.050
- Infiltration	=	.000
- HYG Vol OUT	=	18019.940
- Retained Vol	=	.096
Unrouted Vol	=	-.021 ac-ft (.000% of Inflow Volume)

WARNING: Outflow hydrograph truncated on right side.

MODIFIED PULS REACH ROUTING SUMMARY

HYG Dir = S:\Active Projects\9GUADC0001 Geronimo Creek Flood Protection Study\H&
Inflow HYG file = work_pad.hyg - J20 100
Outflow HYG file = work_pad.hyg - R26 100

Reach Link Data = R26
Reach Length = 20775.00 ft
Approx. Total Tt = 1.5532 hrs (based on Wtd.Q = 3609.87 cfs)
Reach Channel = R26 (Chn-Irreg.)
Overflow Elev. = 553.93 ft
Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	528.54 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.0833 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	7409.11 cfs	at	13.2495 hrs
Peak Outflow	=	4966.19 cfs	at	13.9994 hrs

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	2007.604
- Infiltration	=	.000
- HYG Vol OUT	=	2007.599
- Retained Vol	=	.002
Unrouted Vol	=	-.003 ac-ft (.000% of Inflow Volume)

MODIFIED PULS REACH ROUTING SUMMARY

HYG Dir = S:\Active Projects\9GUADCO001 Geronimo Creek Flood Protection Study\H&
Inflow HYG file = work_pad.hyg - J19 100
Outflow HYG file = work_pad.hyg - R28 100

Reach Link Data = R28
Reach Length = 1315.00 ft
Approx. Total Tt = .0420 hrs (based on Wtd.Q = 3048.61 cfs)
Reach Channel = R28 (Chn-Irreg.)
Overflow Elev. = 538.00 ft
Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	521.77 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.0833 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	5227.20 cfs	at	14.7494 hrs
Peak Outflow	=	5224.46 cfs	at	14.7494 hrs

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	2525.064
- Infiltration	=	.000
- HYG Vol OUT	=	2525.064
- Retained Vol	=	.000
Unrouted Vol	=	-.000 ac-ft (.000% of Inflow Volume)

WARNING: For weighted average inflow, the approximate total travel time through entire reach is shorter than the inflow hydrograph time step. Consider reducing calculation time step.
Wtd.Avg.Q = 3048.61 cfs Approx.Total Tt = .0420 hrs

MODIFIED PULS REACH ROUTING SUMMARY

```
HYG Dir          = S:\Active Projects\9GUADCO001 Geronimo Creek Flood Protection Study\H&
Inflow  HYG file = work_pad.hyg - J11              100
Outflow HYG file = work_pad.hyg - R29              100

Reach Link Data  = R29
Reach Length     = 12575.00 ft
Approx. Total Tt = .5886 hrs  (based on Wtd.Q = 15913.79 cfs)
Reach Channel    = R29  (Chn-Irreg.)
Overflow Elev.   = 541.70 ft
Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS
----------------------------------
Starting WS Elev   =   510.21 ft
Starting Volume    =     .000 ac-ft
Starting Outflow   =      .00 cfs
Starting Infiltr.  =      .00 cfs
Starting Total Qout=      .00 cfs
Time Increment     =    .0833 hrs


INFLOW/OUTFLOW HYDROGRAPH SUMMARY
=========================================================
Peak Inflow       =  26367.64 cfs    at   15.6660 hrs
Peak Outflow      =  26064.58 cfs    at   15.9994 hrs
=========================================================


MASS BALANCE (ac-ft)
---------------------------
+ Initial Vol  =        .000
+ HYG Vol IN   =   21835.170
- Infiltration =        .000
- HYG Vol OUT  =   21835.100
- Retained Vol =        .104
                 ----------
Unrouted Vol =        .031 ac-ft  (.000% of Inflow Volume)


WARNING: Outflow hydrograph truncated on right side.
```

MODIFIED PULS REACH ROUTING SUMMARY

HYG Dir = S:\Active Projects\9GUADCO001 Geronimo Creek Flood Protection Study\H&
Inflow HYG file = work_pad.hyg - J12 100
Outflow HYG file = work_pad.hyg - R31 100

Reach Link Data = R31
Reach Length = 4389.00 ft
Approx. Total Tt = .2472 hrs (based on Wtd.Q = 19356.43 cfs)
Reach Channel = R31 (Chn-Irreg.)
Overflow Elev. = 517.32 ft
Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	487.33 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.0833 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	32633.99 cfs	at	15.5827 hrs
Peak Outflow	=	32549.15 cfs	at	15.7494 hrs

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	25867.050
- Infiltration	=	.000
- HYG Vol OUT	=	25866.970
- Retained Vol	=	.053
Unrouted Vol	=	-.026 ac-ft (.000% of Inflow Volume)

WARNING: Outflow hydrograph truncated on right side.

MODIFIED PULS REACH ROUTING SUMMARY

HYG Dir = S:\Active Projects\9GUADCO001 Geronimo Creek Flood Protection Study\H&
Inflow HYG file = work_pad.hyg - J13 100
Outflow HYG file = work_pad.hyg - R34 100

Reach Link Data = R34
Reach Length = 3561.00 ft
Approx. Total Tt = .1668 hrs (based on Wtd.Q = 20532.08 cfs)
Reach Channel = R34 (Chn-Irreg.)
Overflow Elev. = 506.84 ft
Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	482.92 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.0833 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	34907.39 cfs	at	15.6660 hrs
Peak Outflow	=	34859.03 cfs	at	15.7494 hrs

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	27161.690
- Infiltration	=	.000
- HYG Vol OUT	=	27161.630
- Retained Vol	=	.035
Unrouted Vol	=	-.020 ac-ft (.000% of Inflow Volume)

WARNING: Outflow hydrograph truncated on right side.

MODIFIED PULS REACH ROUTING SUMMARY

HYG Dir = S:\Active Projects\9GUADCO001 Geronimo Creek Flood Protection Study\H&
Inflow HYG file = work_pad.hyg - J14 100
Outflow HYG file = work_pad.hyg - R36 100

Reach Link Data = R36
Reach Length = 12304.00 ft
Approx. Total Tt = .8415 hrs (based on Wtd.Q = 20853.63 cfs)
Reach Channel = R36 (Chn-Irreg.)
Overflow Elev. = 524.21 ft
Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	472.77 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout=		.00 cfs
Time Increment	=	.0833 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	35466.41 cfs	at	15.7494 hrs
Peak Outflow	=	34537.07 cfs	at	16.3327 hrs

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	27804.050
- Infiltration	=	.000
- HYG Vol OUT	=	27803.960
- Retained Vol	=	.112
Unrouted Vol	=	.021 ac-ft (.000% of Inflow Volume)

WARNING: Outflow hydrograph truncated on right side.

MODIFIED PULS REACH ROUTING SUMMARY

HYG Dir = S:\Active Projects\9GUADC0001 Geronimo Creek Flood Protection Study\H&
Inflow HYG file = work_pad.hyg - J15 100
Outflow HYG file = work_pad.hyg - R37 100

Reach Link Data = R37
Reach Length = 3437.00 ft
Approx. Total Tt = .1788 hrs (based on Wtd.Q = 21931.67 cfs)
Reach Channel = R37 (Chn-Irreg.)
Overflow Elev. = 480.76 ft
Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	450.22 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.0833 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	37425.65 cfs	at	16.0827 hrs
Peak Outflow	=	37378.93 cfs	at	16.2494 hrs

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	30175.200
- Infiltration	=	.000
- HYG Vol OUT	=	30175.130
- Retained Vol	=	.057
Unrouted Vol	=	-.023 ac-ft (.000% of Inflow Volume)

WARNING: Outflow hydrograph truncated on right side.

Index of Starting Page Numbers for ID Names

APPENDIX C
HEC-RAS OUTPUT REPORT

HEC-RAS Version 4.1.0 Jan 2010
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X      X   X     X  X    X
X     X  X        X           X   X    X    X   X
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
X     X  X        X           X  X     X    X        X
X     X  X        X    X      X   X    X    X        X
X     X  XXXXXX    XXXX       X    X   X    X   XXXXX
```

PROJECT DATA
Project Title: CompleteWatershed001
Project File : CompleteWatershed001.prj
Run Date and Time: 8/27/2010 10:05:01 AM

Project in English units

PLAN DATA

Plan Title: Plan 11
Plan File : s:\Active Projects\9GUADCO001 Geronimo Creek Flood Protection Study\HECRAS\Complete Models\CompleteWatershed001.p11

Geometry Title: CompleteGeometry001
Geometry File : s:\Active Projects\9GUADCO001 Geronimo Creek Flood Protection Study\HECRAS\Complete Models\CompleteWatershed001.g02

Flow Title : CompleteFlow001
Flow File : s:\Active Projects\9GUADCO001 Geronimo Creek Flood Protection Study\HECRAS\Complete Models\CompleteWatershed001.f01

Plan Summary Information:
Number of: Cross Sections = 778 Multiple Openings = 0
Culverts = 36 Inline Structures = 6
Bridges = 12 Lateral Structures = 0

Computational Information
Water surface calculation tolerance = 0.01
Critical depth calculation tolerance = 0.01
Maximum number of iterations = 20
Maximum difference tolerance = 0.3
Flow tolerance factor = 0.001

Computation Options
Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Mixed Flow

FLOW DATA

Flow Title: CompleteFlow001
Flow File : s:\Active Projects\9GUADCO001 Geronimo Creek Flood Protection Study\HECRAS\Complete Models\CompleteWatershed001.f01

Flow Data (cfs)

River	Reach	RS	2YR	5YR	10YR	25YR	50YR	100YR
Alligator Creek	01	7001.815	1666.45	2504.99	3227.02	4084.26	4928.62	5502.81
Alligator Creek	02	1478.984	962.9	1453.85	1877.08	2374.96	2865.47	3199.08
Alligator Creek	03	4046.940	2374.66	3494.05	4796.33	6269.38	7717.71	8712.43
Alligator Creek	04	1377.197	626.05	927.96	1186.5	1489.57	1787.52	1989.98
Alligator Creek	06	401.6497	2997.51	4411.44	5960.31	7721.39	9466.36	10644.72
Alligator Creek	05	6263.753	969.7	1451.48	1867.31	2357.47	2840.39	3168.89
Alligator Creek	07	25243.75	2623.28	3887.44	5071.23	6543.82	7823.13	8790.12
Alligator Creek	08	3868.154	719.41	1021.27	1277.16	1575.47	1867.98	2066.56
Alligator Creek	09	21362.03	2960.84	4561.31	6099.88	8006.16	9887.37	11137.54
Alligator Creek	10	1723.322	827.1	1214.79	1547.11	1936.23	2318.59	2578.33
Alligator Creek	11	17092.60	2991.65	4685.71	6467.7	8726.85	10978.51	12359.69

Geronimo Creek	17	15638.80	839.49	1229.94	1566.26	1962.37
2354.05	2621.05					
Geronimo Creek	15	6539.199	3702.17	5746.97	7750.96	10266.27
12725.95	14243.17					
Geronimo Creek	14	6216.048	539.43	795.77	1015.64	1274.33
1529.4	1702.93					
Geronimo Creek	16	6761.568	4061	6305.42	8504.75	11264.89
13973.88	15642.93					
Geronimo Creek	12	6984.158	1169.98	1722.27	2194.6	2748.07
3292.21	3662					
Geronimo Creek	13	3304.832	730.23	1074.03	1368.13	1712.59
2051.13	2281.15					
Geronimo Creek	18	9313.508	1872.38	2847.17	3690.96	4746.22
5765.17	6455					
Geronimo Creek	21	3113.896	456.48	667.47	847.98	1059.64
1268.28	1410.24					
Geronimo Creek	20	1245.643	4338.17	6738.59	9056.27	11977.55
14859.75	16651.09					
Geronimo Creek	23	1674.871	676.07	990.93	1259.98	1576.31
1887.03	2098.07					
Geronimo Creek	19	2959.619	5376.04	8261.96	10872.96	14171.93
17464.78	19671.07					
Geronimo Creek	25	13317.21	5989.53	9240.12	12144.37	15729.27
19384.48	21832.01					
Geronimo Creek	27	14681.39	738.47	1089.9	1391.79	1746.78
2097.26	2335.81					
Geronimo Creek	30	8600.818	924.21	1375.78	1764.45	2221.6
2673.05	2980.64					
Geronimo Creek	28	1312.527	1635.13	2425.79	3106.87	3907.69
4697.5	5236.39					
Geronimo Creek	29	12573.41	7537.12	11788.65	15515.59	19974.62
24560.28	27612.53					
Geronimo Creek	22	7594.440	1590.44	2334.81	2973.71	3721.85
4456.97	4956.38					
Geronimo Creek	24	8320.812	775.48	1149.46	1470.21	1848.2
2220.09	2472.89					
Geronimo Creek	26	20703.36	1996.64	3106.94	4090.14	5275.55
6468.27	7283.65					
Geronimo Creek	31	4331.490	9181.69	14376.7	18962.28	24345.03
29864.25	33518.89					
Geronimo Creek	32	7040.648	563.44	815.87	1031.17	1283.59
1531.68	1700.29					
Geronimo Creek	34	3501.852	9558.16	14969.37	19765.07	25377.72
31099.7	34909.85					
Geronimo Creek	35	2028.254	596.06	845.6	1057.11	1304.01
1546.09	1710.44					
Geronimo Creek	36	12299.67	9455.69	15688.75	21136.17	27459.3
33813.13	38321.38					
Geronimo Creek	33	14886.32	1118.86	1680.87	2165.96	2737.98
3303.92	3689.33					
Geronimo Creek	37	3428.899	9313.65	15443.3	20785.12	27005.51
33258.78	37644.9					
Geronimo Creek	38	4110.340	484.62	701.02	885.64	1101.51
1313.53	1457.56					
Geronimo Creek	39	9690.862	9604.16	15703.44	21261.88	27719.89
34037.38	38723.43					

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
Alligator Creek	01	2YR	Normal S = 0.016	
Alligator Creek	01	5YR	Normal S = 0.016	
Alligator Creek	01	10YR	Normal S = 0.016	
Alligator Creek	01	25YR	Normal S = 0.016	
Alligator Creek	01	50YR	Normal S = 0.016	
Alligator Creek	01	100YR	Normal S = 0.016	
Alligator Creek	02	2YR	Normal S = 0.008	
Alligator Creek	02	5YR	Normal S = 0.008	
Alligator Creek	02	10YR	Normal S = 0.008	
Alligator Creek	02	25YR	Normal S = 0.008	
Alligator Creek	02	50YR	Normal S = 0.008	
Alligator Creek	02	100YR	Normal S = 0.008	
Alligator Creek	04	2YR	Normal S = 0.008	
Alligator Creek	04	5YR	Normal S = 0.008	
Alligator Creek	04	10YR	Normal S = 0.008	
Alligator Creek	04	25YR	Normal S = 0.008	
Alligator Creek	04	50YR	Normal S = 0.008	
Alligator Creek	04	100YR	Normal S = 0.008	
Alligator Creek	05	2YR	Normal S = 0.005	
Alligator Creek	05	5YR	Normal S = 0.005	
Alligator Creek	05	10YR	Normal S = 0.005	
Alligator Creek	05	25YR	Normal S = 0.005	
Alligator Creek	05	50YR	Normal S = 0.005	
Alligator Creek	05	100YR	Normal S = 0.005	
Alligator Creek	08	2YR	Critical	
Alligator Creek	08	5YR	Critical	
Alligator Creek	08	10YR	Critical	
Alligator Creek	08	25YR	Critical	
Alligator Creek	08	50YR	Critical	
Alligator Creek	08	100YR	Critical	
Alligator Creek	10	2YR	Normal S = 0.002	
Alligator Creek	10	5YR	Normal S = 0.002	
Alligator Creek	10	10YR	Normal S = 0.002	

Alligator Creek	10	25YR	Normal S = 0.002
Alligator Creek	10	50YR	Normal S = 0.002
Alligator Creek	10	100YR	Normal S = 0.002
Geronimo Creek	17	2YR	Normal S = 0.005
Geronimo Creek	17	5YR	Normal S = 0.005
Geronimo Creek	17	10YR	Normal S = 0.005
Geronimo Creek	17	25YR	Normal S = 0.005
Geronimo Creek	17	50YR	Normal S = 0.005
Geronimo Creek	17	100YR	Normal S = 0.005
Geronimo Creek	14	2YR	Normal S = 0.003
Geronimo Creek	14	5YR	Normal S = 0.003
Geronimo Creek	14	10YR	Normal S = 0.003
Geronimo Creek	14	25YR	Normal S = 0.003
Geronimo Creek	14	50YR	Normal S = 0.003
Geronimo Creek	14	100YR	Normal S = 0.003
Geronimo Creek	12	2YR	Normal S = 0.007
Geronimo Creek	12	5YR	Normal S = 0.007
Geronimo Creek	12	10YR	Normal S = 0.007
Geronimo Creek	12	25YR	Normal S = 0.007
Geronimo Creek	12	50YR	Normal S = 0.007
Geronimo Creek	12	100YR	Normal S = 0.007
Geronimo Creek	13	2YR	Normal S = 0.004
Geronimo Creek	13	5YR	Normal S = 0.004
Geronimo Creek	13	10YR	Normal S = 0.004
Geronimo Creek	13	25YR	Normal S = 0.004
Geronimo Creek	13	50YR	Normal S = 0.004
Geronimo Creek	13	100YR	Normal S = 0.004
Geronimo Creek	21	2YR	Normal S = 0.004
Geronimo Creek	21	5YR	Normal S = 0.004
Geronimo Creek	21	10YR	Normal S = 0.004
Geronimo Creek	21	25YR	Normal S = 0.004
Geronimo Creek	21	50YR	Normal S = 0.004
Geronimo Creek	21	100YR	Normal S = 0.004
Geronimo Creek	23	2YR	Normal S = 0.011
Geronimo Creek	23	5YR	Normal S = 0.011
Geronimo Creek	23	10YR	Normal S = 0.011
Geronimo Creek	23	25YR	Normal S = 0.011
Geronimo Creek	23	50YR	Normal S = 0.011
Geronimo Creek	23	100YR	Normal S = 0.011
Geronimo Creek	27	2YR	Normal S = 0.011
Geronimo Creek	27	5YR	Normal S = 0.011
Geronimo Creek	27	10YR	Normal S = 0.011
Geronimo Creek	27	25YR	Normal S = 0.011
Geronimo Creek	27	50YR	Normal S = 0.011
Geronimo Creek	27	100YR	Normal S = 0.011
Geronimo Creek	30	2YR	Normal S = 0.004
Geronimo Creek	30	5YR	Normal S = 0.004
Geronimo Creek	30	10YR	Normal S = 0.004
Geronimo Creek	30	25YR	Normal S = 0.004
Geronimo Creek	30	50YR	Normal S = 0.004
Geronimo Creek	30	100YR	Normal S = 0.004
Geronimo Creek	22	2YR	Normal S = 0.006
Geronimo Creek	22	5YR	Normal S = 0.006
Geronimo Creek	22	10YR	Normal S = 0.006
Geronimo Creek	22	25YR	Normal S = 0.006
Geronimo Creek	22	50YR	Normal S = 0.006
Geronimo Creek	22	100YR	Normal S = 0.006
Geronimo Creek	24	2YR	Normal S = 0.007
Geronimo Creek	24	5YR	Normal S = 0.007
Geronimo Creek	24	10YR	Normal S = 0.007
Geronimo Creek	24	25YR	Normal S = 0.007
Geronimo Creek	24	50YR	Normal S = 0.007
Geronimo Creek	24	100YR	Normal S = 0.007
Geronimo Creek	32	2YR	Normal S = 0.004
Geronimo Creek	32	5YR	Normal S = 0.004
Geronimo Creek	32	10YR	Normal S = 0.004
Geronimo Creek	32	25YR	Normal S = 0.004
Geronimo Creek	32	50YR	Normal S = 0.004
Geronimo Creek	32	100YR	Normal S = 0.004
Geronimo Creek	35	2YR	Normal S = 0.041
Geronimo Creek	35	5YR	Normal S = 0.041
Geronimo Creek	35	10YR	Normal S = 0.041
Geronimo Creek	35	25YR	Normal S = 0.041
Geronimo Creek	35	50YR	Normal S = 0.041
Geronimo Creek	35	100YR	Normal S = 0.041
Geronimo Creek	33	2YR	Normal S = 0.005
Geronimo Creek	33	5YR	Normal S = 0.005
Geronimo Creek	33	10YR	Normal S = 0.005
Geronimo Creek	33	25YR	Normal S = 0.005
Geronimo Creek	33	50YR	Normal S = 0.005
Geronimo Creek	33	100YR	Normal S = 0.005
Geronimo Creek	38	2YR	Normal S = 0.005
Geronimo Creek	38	5YR	Normal S = 0.005
Geronimo Creek	38	10YR	Normal S = 0.005
Geronimo Creek	38	25YR	Normal S = 0.005
Geronimo Creek	38	50YR	Normal S = 0.005
Geronimo Creek	38	100YR	Normal S = 0.005
Geronimo Creek	39	2YR	Known WS = 456.56
Geronimo Creek	39	5YR	Known WS = 458.81
Geronimo Creek	39	10YR	Known WS = 460.25
Geronimo Creek	39	25YR	Known WS = 461.8
Geronimo Creek	39	50YR	Known WS = 463.15
Geronimo Creek	39	100YR	Known WS = 464

CULVERT

RIVER: Alligator Creek
REACH: 07 RS: 21614.83

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #1

Q Culv Group (cfs)	3615.45	Culv Full Len (ft)	84.00
# Barrels	9	Culv Vel US (ft/s)	6.09
Q Barrel (cfs)	401.72	Culv Vel DS (ft/s)	6.09
E.G. US. (ft)	702.94	Culv Inv El Up (ft)	691.62
W.S. US. (ft)	702.90	Culv Inv El Dn (ft)	691.62
E.G. DS (ft)	702.07	Culv Frctn Ls (ft)	0.07
W.S. DS (ft)	702.00	Culv Exit Loss (ft)	0.51
Delta EG (ft)	0.86	Culv Entr Loss (ft)	0.29
Delta WS (ft)	0.90	Q Weir (cfs)	5174.68
E.G. IC (ft)	702.10	Weir Sta Lft (ft)	388.25
E.G. OC (ft)	702.94	Weir Sta Rgt (ft)	1175.02
Culvert Control	Outlet	Weir Submerg	0.54
Culv WS Inlet (ft)	697.62	Weir Max Depth (ft)	2.50
Culv WS Outlet (ft)	697.62	Weir Avg Depth (ft)	1.78
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	1403.33
Culv Crt Depth (ft)	3.46	Min El Weir Flow (ft)	700.45

CULVERT

RIVER: Alligator Creek
REACH: 07 RS: 6070.573

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #1

Q Culv Group (cfs)	3401.08	Culv Full Len (ft)	59.00
# Barrels	25	Culv Vel US (ft/s)	3.89
Q Barrel (cfs)	136.04	Culv Vel DS (ft/s)	3.89
E.G. US. (ft)	668.52	Culv Inv El Up (ft)	660.79
W.S. US. (ft)	668.43	Culv Inv El Dn (ft)	660.79
E.G. DS (ft)	668.37	Culv Frctn Ls (ft)	0.03
W.S. DS (ft)	668.07	Culv Exit Loss (ft)	0.00
Delta EG (ft)	0.15	Culv Entr Loss (ft)	0.12
Delta WS (ft)	0.36	Q Weir (cfs)	5389.04
E.G. IC (ft)	668.37	Weir Sta Lft (ft)	809.49
E.G. OC (ft)	668.52	Weir Sta Rgt (ft)	3124.24
Culvert Control	Outlet	Weir Submerg	0.54
Culv WS Inlet (ft)	665.79	Weir Max Depth (ft)	1.55
Culv WS Outlet (ft)	665.79	Weir Avg Depth (ft)	0.90
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	2078.41
Culv Crt Depth (ft)	2.27	Min El Weir Flow (ft)	666.98

Warning: During the culvert inlet control computations, the program could not balance the culvert/weir flow. The reported inlet
energy grade answer may not be valid.

CULVERT

RIVER: Alligator Creek
REACH: 07 RS: 5955.235

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #1

Q Culv Group (cfs)	8790.12	Culv Full Len (ft)	68.45
# Barrels	25	Culv Vel US (ft/s)	10.05
Q Barrel (cfs)	351.60	Culv Vel DS (ft/s)	11.74
E.G. US. (ft)	668.37	Culv Inv El Up (ft)	660.79
W.S. US. (ft)	668.07	Culv Inv El Dn (ft)	660.79
E.G. DS (ft)	665.35	Culv Frctn Ls (ft)	0.38
W.S. DS (ft)	664.99	Culv Exit Loss (ft)	1.86
Delta EG (ft)	3.02	Culv Entr Loss (ft)	0.78
Delta WS (ft)	3.08	Q Weir (cfs)	
E.G. IC (ft)	668.59	Weir Sta Lft (ft)	
E.G. OC (ft)	668.37	Weir Sta Rgt (ft)	
Culvert Control	Outlet	Weir Submerg	
Culv WS Inlet (ft)	665.79	Weir Max Depth (ft)	
Culv WS Outlet (ft)	665.07	Weir Avg Depth (ft)	
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	
Culv Crt Depth (ft)	4.28	Min El Weir Flow (ft)	670.01

Note: During supercritical analysis, the culvert direct step method went to critical depth. The program then assumed critical
depth at the outlet.
Note: During the supercritical calculations a hydraulic jump occurred inside of the culvert.
Note: The culvert inlet is submerged and the culvert flows full over part or all of its length. Therefore, the culvert inlet
equations are not valid and the supercritical result has been discarded. The outlet answer will be used.

BRIDGE

RIVER: Alligator Creek
REACH: 07 RS: 5835.668

BRIDGE OUTPUT Profile #100YR

			Inside BR US	Inside BR DS
E.G. US. (ft)	665.35	Element		
W.S. US. (ft)	664.99	E.G. Elev (ft)	665.26	664.99
Q Total (cfs)	8790.12	W.S. Elev (ft)	664.72	664.39
Q Bridge (cfs)	8790.12	Crit W.S. (ft)	661.54	661.67
Q Weir (cfs)		Max Chl Dpth (ft)	6.72	6.39
Weir Sta Lft (ft)		Vel Total (ft/s)	5.88	6.22
Weir Sta Rgt (ft)		Flow Area (sq ft)	1495.52	1412.25
Weir Submerg		Froude # Chl	0.40	0.43
Weir Max Depth (ft)		Specif Force (cu ft)	6884.26	6210.59
Min El Weir Flow (ft)	665.70	Hydr Depth (ft)		6.39
Min El Prs (ft)	664.53	W.P. Total (ft)	623.54	348.88
Delta EG (ft)	0.47	Conv. Total (cfs)	87080.0	118446.2
Delta WS (ft)	0.50	Top Width (ft)		221.00
BR Open Area (sq ft)	1495.52	Frctn Loss (ft)	0.26	0.05
BR Open Vel (ft/s)	6.22	C & E Loss (ft)	0.01	0.06
Coef of Q		Shear Total (lb/sq ft)	1.53	1.39
Br Sel Method	Energy only	Power Total (lb/ft s)	0.00	0.00

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.

CULVERT

RIVER: Alligator Creek
REACH: 08 RS: 3684.417

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #1

Q Culv Group (cfs)	1889.93	Culv Full Len (ft)	
# Barrels	5	Culv Vel US (ft/s)	10.68
Q Barrel (cfs)	377.99	Culv Vel DS (ft/s)	17.44
E.G. US. (ft)	672.20	Culv Inv El Up (ft)	666.00
W.S. US. (ft)	672.19	Culv Inv El Dn (ft)	661.40
E.G. DS (ft)	664.62	Culv Frctn Ls (ft)	3.02
W.S. DS (ft)	663.63	Culv Exit Loss (ft)	3.67
Delta EG (ft)	7.58	Culv Entr Loss (ft)	0.89
Delta WS (ft)	8.57	Q Weir (cfs)	176.63
E.G. IC (ft)	671.60	Weir Sta Lft (ft)	0.00
E.G. OC (ft)	672.20	Weir Sta Rgt (ft)	751.72
Culvert Control	Outlet	Weir Submerg	0.00
Culv WS Inlet (ft)	669.54	Weir Max Depth (ft)	0.20
Culv WS Outlet (ft)	663.57	Weir Avg Depth (ft)	0.20
Culv Nml Depth (ft)	2.06	Weir Flow Area (sq ft)	151.13
Culv Crt Depth (ft)	3.54	Min El Weir Flow (ft)	672.01

Warning: The flow through the culvert is supercritical. However, since there is flow over the road (weir flow), the program cannot
determine if the downstream cross section should be subcritical or supercritical. The program used the downstream
subcritical answer, even though it may not be valid.
Warning: During the culvert inlet control computations, the program could not balance the culvert/weir flow. The reported inlet
energy grade answer may not be valid.
Note: The flow in the culvert is entirely supercritical.

CULVERT

RIVER: Alligator Creek
REACH: 09 RS: 18818.89

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #1

Q Culv Group (cfs)	150.89	Culv Full Len (ft)	55.00
# Barrels	4	Culv Vel US (ft/s)	3.92
Q Barrel (cfs)	37.72	Culv Vel DS (ft/s)	3.92
E.G. US. (ft)	651.53	Culv Inv El Up (ft)	643.27
W.S. US. (ft)	651.17	Culv Inv El Dn (ft)	642.32
E.G. DS (ft)	651.10	Culv Frctn Ls (ft)	0.26
W.S. DS (ft)	650.59	Culv Exit Loss (ft)	0.00
Delta EG (ft)	0.43	Culv Entr Loss (ft)	0.17
Delta WS (ft)	0.58	Q Weir (cfs)	10986.65
E.G. IC (ft)	651.49	Weir Sta Lft (ft)	377.33
E.G. OC (ft)	651.53	Weir Sta Rgt (ft)	1361.10
Culvert Control	Outlet	Weir Submerg	0.68
Culv WS Inlet (ft)	646.77	Weir Max Depth (ft)	4.82
Culv WS Outlet (ft)	645.82	Weir Avg Depth (ft)	2.43
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	2393.06
Culv Crt Depth (ft)	1.91	Min El Weir Flow (ft)	646.75

CULVERT

RIVER: Alligator Creek
REACH: 09 RS: 512.7387

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #1

Q Culv Group (cfs)	143.67	Culv Full Len (ft)	30.00
# Barrels	4	Culv Vel US (ft/s)	3.73
Q Barrel (cfs)	35.92	Culv Vel DS (ft/s)	3.73
E.G. US. (ft)	619.66	Culv Inv El Up (ft)	612.32
W.S. US. (ft)	619.49	Culv Inv El Dn (ft)	611.82
E.G. DS (ft)	619.38	Culv Frctn Ls (ft)	0.13
W.S. DS (ft)	619.21	Culv Exit Loss (ft)	0.04
Delta EG (ft)	0.28	Culv Entr Loss (ft)	0.11
Delta WS (ft)	0.28	Q Weir (cfs)	11005.51
E.G. IC (ft)	619.62	Weir Sta Lft (ft)	449.17
E.G. OC (ft)	619.66	Weir Sta Rgt (ft)	1882.32
Culvert Control	Outlet	Weir Submerg	0.79
Culv WS Inlet (ft)	615.82	Weir Max Depth (ft)	3.83
Culv WS Outlet (ft)	615.32	Weir Avg Depth (ft)	1.98
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	2832.55
Culv Crt Depth (ft)	1.86	Min El Weir Flow (ft)	615.84

BRIDGE

RIVER: Alligator Creek
REACH: 11 RS: 13530.24

BRIDGE OUTPUT Profile #100YR

E.G. US. (ft)	613.34	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	613.13	E.G. Elev (ft)	613.23	612.92
Q Total (cfs)	12359.69	W.S. Elev (ft)	612.98	612.36
Q Bridge (cfs)	808.18	Crit W.S. (ft)	612.24	612.24
Q Weir (cfs)		Max Chl Dpth (ft)	6.98	6.36
Weir Sta Lft (ft)		Vel Total (ft/s)	3.62	5.40
Weir Sta Rgt (ft)		Flow Area (sq ft)	3412.84	2287.50
Weir Submerg		Froude # Chl	0.27	0.42
Weir Max Depth (ft)		Specif Force (cu ft)	6206.88	5185.63
Min El Weir Flow (ft)	610.07	Hydr Depth (ft)	1.71	1.43
Min El Prs (ft)	608.58	W.P. Total (ft)	2218.03	1810.77
Delta EG (ft)	0.66	Conv. Total (cfs)	127133.4	76947.1
Delta WS (ft)	0.76	Top Width (ft)	2001.54	1594.28
BR Open Area (sq ft)	242.45	Frctn Loss (ft)	0.28	0.15
BR Open Vel (ft/s)	3.33	C & E Loss (ft)	0.03	0.10
Coef of Q		Shear Total (lb/sq ft)	0.91	2.03
Br Sel Method	Energy only	Power Total (lb/ft s)	0.00	0.00

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CULVERT

RIVER: Alligator Creek
REACH: 11 RS: 10705.84

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #1

Q Culv Group (cfs)	16.95	Culv Full Len (ft)	45.00
# Barrels	4	Culv Vel US (ft/s)	0.34
Q Barrel (cfs)	4.24	Culv Vel DS (ft/s)	0.34
E.G. US. (ft)	607.49	Culv Inv El Up (ft)	598.30
W.S. US. (ft)	607.23	Culv Inv El Dn (ft)	598.25
E.G. DS (ft)	607.49	Culv Frctn Ls (ft)	0.00
W.S. DS (ft)	607.35	Culv Exit Loss (ft)	0.00
Delta EG (ft)	0.00	Culv Entr Loss (ft)	0.00
Delta WS (ft)	0.12	Q Weir (cfs)	12342.74
E.G. IC (ft)	607.53	Weir Sta Lft (ft)	2856.87
E.G. OC (ft)	607.49	Weir Sta Rgt (ft)	5536.33
Culvert Control	Outlet	Weir Submerg	0.94
Culv WS Inlet (ft)	602.30	Weir Max Depth (ft)	4.32
Culv WS Outlet (ft)	602.25	Weir Avg Depth (ft)	1.94
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	4512.59
Culv Crt Depth (ft)	0.59	Min El Weir Flow (ft)	603.23

Warning: During the culvert inlet control computations, the program could not balance the culvert/weir flow. The reported inlet
energy grade answer may not be valid.

CULVERT

RIVER: Alligator Creek
REACH: 11 RS: 2185.628

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #1

Q Culv Group (cfs)	8.48	Culv Full Len (ft)	39.00
# Barrels	2	Culv Vel US (ft/s)	0.86
Q Barrel (cfs)	4.24	Culv Vel DS (ft/s)	0.86
E.G. US. (ft)	594.04	Culv Inv El Up (ft)	586.04
W.S. US. (ft)	593.97	Culv Inv El Dn (ft)	585.40
E.G. DS (ft)	594.02	Culv Frctn Ls (ft)	0.01
W.S. DS (ft)	593.95	Culv Exit Loss (ft)	0.00
Delta EG (ft)	0.02	Culv Entr Loss (ft)	0.01
Delta WS (ft)	0.02	Q Weir (cfs)	12343.30
E.G. IC (ft)	594.04	Weir Sta Lft (ft)	899.61
E.G. OC (ft)	594.04	Weir Sta Rgt (ft)	3273.04
Culvert Control	Outlet	Weir Submerg	0.99
Culv WS Inlet (ft)	588.54	Weir Max Depth (ft)	5.54
Culv WS Outlet (ft)	587.90	Weir Avg Depth (ft)	2.83
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	6712.92
Culv Crt Depth (ft)	0.68	Min El Weir Flow (ft)	588.51

Warning: The weir over culvert is submerged.

CULVERT

RIVER: Geronimo Creek
REACH: 17 RS: 5313.559

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #1

Q Culv Group (cfs)	279.37	Culv Full Len (ft)	37.00
# Barrels	4	Culv Vel US (ft/s)	5.56
Q Barrel (cfs)	69.84	Culv Vel DS (ft/s)	5.56
E.G. US. (ft)	604.05	Culv Inv El Up (ft)	597.45
W.S. US. (ft)	603.99	Culv Inv El Dn (ft)	597.00
E.G. DS (ft)	603.15	Culv Frctn Ls (ft)	0.30
W.S. DS (ft)	603.03	Culv Exit Loss (ft)	0.36
Delta EG (ft)	0.90	Culv Entr Loss (ft)	0.24
Delta WS (ft)	0.96	Q Weir (cfs)	2341.69
E.G. IC (ft)	603.96	Weir Sta Lft (ft)	1591.94
E.G. OC (ft)	604.05	Weir Sta Rgt (ft)	2307.69
Culvert Control	Outlet	Weir Submerg	0.27
Culv WS Inlet (ft)	601.45	Weir Max Depth (ft)	1.86
Culv WS Outlet (ft)	601.00	Weir Avg Depth (ft)	1.12
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	802.90
Culv Crt Depth (ft)	2.53	Min El Weir Flow (ft)	602.19

CULVERT

RIVER: Geronimo Creek
REACH: 17 RS: 1083.083

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #1

Q Culv Group (cfs)	3.14	Culv Full Len (ft)	22.00
# Barrels	1	Culv Vel US (ft/s)	1.00
Q Barrel (cfs)	3.14	Culv Vel DS (ft/s)	1.00
E.G. US. (ft)	592.56	Culv Inv El Up (ft)	585.98
W.S. US. (ft)	592.53	Culv Inv El Dn (ft)	585.73
E.G. DS (ft)	592.54	Culv Frctn Ls (ft)	0.01
W.S. DS (ft)	592.51	Culv Exit Loss (ft)	0.00
Delta EG (ft)	0.02	Culv Entr Loss (ft)	0.01
Delta WS (ft)	0.02	Q Weir (cfs)	2613.91
E.G. IC (ft)	592.57	Weir Sta Lft (ft)	0.00
E.G. OC (ft)	592.56	Weir Sta Rgt (ft)	1050.32
Culvert Control	Outlet	Weir Submerg	0.98
Culv WS Inlet (ft)	587.98	Weir Max Depth (ft)	4.07
Culv WS Outlet (ft)	587.73	Weir Avg Depth (ft)	1.45
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	1524.25
Culv Crt Depth (ft)	0.62	Min El Weir Flow (ft)	588.50

Warning: The weir over culvert is submerged.
Warning: During the culvert inlet control computations, the program could not balance the culvert/weir flow. The reported inlet
energy grade answer may not be valid.

BRIDGE

RIVER: Geronimo Creek
REACH: 16 RS: 4240.247

BRIDGE OUTPUT Profile #100YR

E.G. US. (ft)	578.18	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	578.07	E.G. Elev (ft)	578.01	576.87
Q Total (cfs)	15642.93	W.S. Elev (ft)	577.50	576.00
Q Bridge (cfs)	13679.60	Crit W.S. (ft)	570.13	569.85
Q Weir (cfs)		Max Chl Dpth (ft)	13.50	12.00
Weir Sta Lft (ft)		Vel Total (ft/s)	5.75	7.35
Weir Sta Rgt (ft)		Flow Area (sq ft)	2720.94	2128.04
Weir Submerg		Froude # Chl	0.28	0.38
Weir Max Depth (ft)		Specif Force (cu ft)	19390.19	17721.54
Min El Weir Flow (ft)	576.38	Hydr Depth (ft)	2.86	
Min El Prs (ft)	574.30	W.P. Total (ft)	1501.86	579.23
Delta EG (ft)	1.75	Conv. Total (cfs)	103877.6	106579.8
Delta WS (ft)	1.92	Top Width (ft)	952.25	
BR Open Area (sq ft)	2003.08	Frctn Loss (ft)	1.10	0.27
BR Open Vel (ft/s)	6.83	C & E Loss (ft)	0.04	0.18
Coef of Q		Shear Total (lb/sq ft)	2.56	4.94
Br Sel Method	Energy only	Power Total (lb/ft s)	0.00	0.00

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the
need for additional cross sections.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.

CULVERT

RIVER: Geronimo Creek
REACH: 16 RS: 3404.278

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #1

Q Culv Group (cfs)	15.26	Culv Full Len (ft)	18.00
# Barrels	1	Culv Vel US (ft/s)	2.16
Q Barrel (cfs)	15.26	Culv Vel DS (ft/s)	2.16
E.G. US. (ft)	574.88	Culv Inv El Up (ft)	559.72
W.S. US. (ft)	574.74	Culv Inv El Dn (ft)	559.72
E.G. DS (ft)	574.84	Culv Frctn Ls (ft)	0.01
W.S. DS (ft)	574.64	Culv Exit Loss (ft)	0.00
Delta EG (ft)	0.04	Culv Entr Loss (ft)	0.04
Delta WS (ft)	0.09	Q Weir (cfs)	15627.67
E.G. IC (ft)	574.88	Weir Sta Lft (ft)	207.98
E.G. OC (ft)	574.88	Weir Sta Rgt (ft)	1629.59
Culvert Control	Outlet	Weir Submerg	0.98
Culv WS Inlet (ft)	562.72	Weir Max Depth (ft)	12.22
Culv WS Outlet (ft)	562.72	Weir Avg Depth (ft)	4.34
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	6172.22
Culv Crt Depth (ft)	1.25	Min El Weir Flow (ft)	562.67

Warning: The weir over culvert is submerged.

CULVERT

RIVER: Geronimo Creek
REACH: 16 RS: 2443.984

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #1

Q Culv Group (cfs)	16.99	Culv Full Len (ft)	34.00
# Barrels	3	Culv Vel US (ft/s)	0.80
Q Barrel (cfs)	5.66	Culv Vel DS (ft/s)	0.80
E.G. US. (ft)	572.78	Culv Inv El Up (ft)	557.58
W.S. US. (ft)	572.66	Culv Inv El Dn (ft)	557.58
E.G. DS (ft)	572.77	Culv Frctn Ls (ft)	0.01
W.S. DS (ft)	572.66	Culv Exit Loss (ft)	0.00
Delta EG (ft)	0.02	Culv Entr Loss (ft)	0.01
Delta WS (ft)	0.01	Q Weir (cfs)	15625.94
E.G. IC (ft)	572.78	Weir Sta Lft (ft)	0.00
E.G. OC (ft)	572.78	Weir Sta Rgt (ft)	1159.70
Culvert Control	Outlet	Weir Submerg	0.99
Culv WS Inlet (ft)	560.58	Weir Max Depth (ft)	11.63
Culv WS Outlet (ft)	560.53	Weir Avg Depth (ft)	5.34
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	6192.32
Culv Crt Depth (ft)	0.75	Min El Weir Flow (ft)	561.19

Warning: The weir over culvert is submerged.
Warning: During the culvert inlet control computations, the program could not balance the culvert/weir flow. The reported inlet
energy grade answer may not be valid.
Warning: During the culvert outlet control computations, the program could not balance the culvert/weir flow. The reported
outlet energy grade answer may not be valid.

CULVERT

RIVER: Geronimo Creek
REACH: 12 RS: 4494.543

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #1

Q Culv Group (cfs)	2080.67	Culv Full Len (ft)	
# Barrels	5	Culv Vel US (ft/s)	11.88
Q Barrel (cfs)	416.13	Culv Vel DS (ft/s)	15.18
E.G. US. (ft)	600.41	Culv Inv El Up (ft)	592.96
W.S. US. (ft)	600.40	Culv Inv El Dn (ft)	592.14
E.G. DS (ft)	596.03	Culv Frctn Ls (ft)	0.38
W.S. DS (ft)	595.97	Culv Exit Loss (ft)	3.11
Delta EG (ft)	4.37	Culv Entr Loss (ft)	0.88
Delta WS (ft)	4.44	Q Weir (cfs)	1643.05
E.G. IC (ft)	600.10	Weir Sta Lft (ft)	817.79
E.G. OC (ft)	600.41	Weir Sta Rgt (ft)	4352.64
Culvert Control	Outlet	Weir Submerg	0.00
Culv WS Inlet (ft)	597.34	Weir Max Depth (ft)	0.46
Culv WS Outlet (ft)	595.57	Weir Avg Depth (ft)	0.35
Culv Nml Depth (ft)	2.78	Weir Flow Area (sq ft)	1059.66
Culv Crt Depth (ft)	4.38	Min El Weir Flow (ft)	599.96

Warning: The flow through the culvert is supercritical. However, since there is flow over the road (weir flow), the program cannot
determine if the downstream cross section should be subcritical or supercritical. The program used the downstream
subcritical answer, even though it may not be valid.
Warning: During the supercritical analysis, the program could not converge on a supercritical answer in the downstream cross
section. The program used the solution with the least error.
Note: The flow in the culvert is entirely supercritical.

CULVERT

RIVER: Geronimo Creek
REACH: 12 RS: 3269.041

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #2

Q Culv Group (cfs)	11.10	Culv Full Len (ft)	22.00
# Barrels	1	Culv Vel US (ft/s)	3.77
Q Barrel (cfs)	11.10	Culv Vel DS (ft/s)	3.77
E.G. US. (ft)	593.73	Culv Inv El Up (ft)	590.00
W.S. US. (ft)	593.68	Culv Inv El Dn (ft)	590.00
E.G. DS (ft)	593.23	Culv Frctn Ls (ft)	0.25
W.S. DS (ft)	593.15	Culv Exit Loss (ft)	0.14
Delta EG (ft)	0.50	Culv Entr Loss (ft)	0.11
Delta WS (ft)	0.52	Q Weir (cfs)	3578.23
E.G. IC (ft)	591.44	Weir Sta Lft (ft)	1112.44
E.G. OC (ft)	593.73	Weir Sta Rgt (ft)	1912.46
Culvert Control	Outlet	Weir Submerg	0.60
Culv WS Inlet (ft)	591.50	Weir Max Depth (ft)	1.74
Culv WS Outlet (ft)	591.50	Weir Avg Depth (ft)	1.40
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	1117.85
Culv Crt Depth (ft)	0.84	Min El Weir Flow (ft)	592.01

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #1

Q Culv Group (cfs)	59.01	Culv Full Len (ft)	22.00
# Barrels	3	Culv Vel US (ft/s)	4.70
Q Barrel (cfs)	19.67	Culv Vel DS (ft/s)	4.70
E.G. US. (ft)	593.73	Culv Inv El Up (ft)	588.81
W.S. US. (ft)	593.68	Culv Inv El Dn (ft)	588.81
E.G. DS (ft)	593.23	Culv Frctn Ls (ft)	0.07
W.S. DS (ft)	593.15	Culv Exit Loss (ft)	0.26
Delta EG (ft)	0.50	Culv Entr Loss (ft)	0.17
Delta WS (ft)	0.52	Q Weir (cfs)	3578.23
E.G. IC (ft)	590.68	Weir Sta Lft (ft)	1112.44
E.G. OC (ft)	593.73	Weir Sta Rgt (ft)	1912.46
Culvert Control	Outlet	Weir Submerg	0.60
Culv WS Inlet (ft)	590.41	Weir Max Depth (ft)	1.74
Culv WS Outlet (ft)	590.41	Weir Avg Depth (ft)	1.40
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	1117.85
Culv Crt Depth (ft)	1.02	Min El Weir Flow (ft)	592.01

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #3

Q Culv Group (cfs)	13.67	Culv Full Len (ft)	22.00
# Barrels	1	Culv Vel US (ft/s)	4.64
Q Barrel (cfs)	13.67	Culv Vel DS (ft/s)	4.64
E.G. US. (ft)	593.73	Culv Inv El Up (ft)	590.00
W.S. US. (ft)	593.68	Culv Inv El Dn (ft)	590.00
E.G. DS (ft)	593.23	Culv Frctn Ls (ft)	0.08
W.S. DS (ft)	593.15	Culv Exit Loss (ft)	0.25
Delta EG (ft)	0.50	Culv Entr Loss (ft)	0.17
Delta WS (ft)	0.52	Q Weir (cfs)	3578.23

E.G. IC (ft)	591.80	Weir Sta Lft (ft)	1112.44
E.G. OC (ft)	593.73	Weir Sta Rgt (ft)	1912.46
Culvert Control	Outlet	Weir Submerg	0.60
Culv WS Inlet (ft)	591.50	Weir Max Depth (ft)	1.74
Culv WS Outlet (ft)	591.50	Weir Avg Depth (ft)	1.40
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	1117.85
Culv Crt Depth (ft)	0.97	Min El Weir Flow (ft)	592.01

CULVERT

RIVER: Geronimo Creek
REACH: 18 RS: 6094.369

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #1

Q Culv Group (cfs)	1614.86	Culv Full Len (ft)	33.00
# Barrels	5	Culv Vel US (ft/s)	10.09
Q Barrel (cfs)	322.97	Culv Vel DS (ft/s)	10.09
E.G. US. (ft)	581.33	Culv Inv El Up (ft)	573.00
W.S. US. (ft)	581.24	Culv Inv El Dn (ft)	572.50
E.G. DS (ft)	579.39	Culv Frctn Ls (ft)	0.13
W.S. DS (ft)	578.84	Culv Exit Loss (ft)	1.03
Delta EG (ft)	1.94	Culv Entr Loss (ft)	0.79
Delta WS (ft)	2.41	Q Weir (cfs)	4840.14
E.G. IC (ft)	581.28	Weir Sta Lft (ft)	1944.27
E.G. OC (ft)	581.33	Weir Sta Rgt (ft)	2963.30
Culvert Control	Outlet	Weir Submerg	0.00
Culv WS Inlet (ft)	577.00	Weir Max Depth (ft)	1.85
Culv WS Outlet (ft)	576.50	Weir Avg Depth (ft)	1.48
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	1509.91
Culv Crt Depth (ft)	3.70	Min El Weir Flow (ft)	579.51

CULVERT

RIVER: Geronimo Creek
REACH: 21 RS: 2876.437

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #1

Q Culv Group (cfs)	231.68	Culv Full Len (ft)	88.00
# Barrels	3	Culv Vel US (ft/s)	7.72
Q Barrel (cfs)	77.23	Culv Vel DS (ft/s)	7.72
E.G. US. (ft)	582.86	Culv Inv El Up (ft)	578.15
W.S. US. (ft)	582.80	Culv Inv El Dn (ft)	576.10
E.G. DS (ft)	580.56	Culv Frctn Ls (ft)	1.08
W.S. DS (ft)	580.39	Culv Exit Loss (ft)	0.76
Delta EG (ft)	2.30	Culv Entr Loss (ft)	0.46
Delta WS (ft)	2.40	Q Weir (cfs)	1178.57
E.G. IC (ft)	582.84	Weir Sta Lft (ft)	71.48
E.G. OC (ft)	582.86	Weir Sta Rgt (ft)	823.17
Culvert Control	Outlet	Weir Submerg	0.00
Culv WS Inlet (ft)	580.15	Weir Max Depth (ft)	0.86
Culv WS Outlet (ft)	578.10	Weir Avg Depth (ft)	0.69
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	520.69
Culv Crt Depth (ft)	1.95	Min El Weir Flow (ft)	582.01

BRIDGE

RIVER: Geronimo Creek
REACH: 25 RS: 12569.19

BRIDGE OUTPUT Profile #100YR

E.G. US. (ft)	560.41	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	560.23	E.G. Elev (ft)	560.32	560.15
Q Total (cfs)	21832.01	W.S. Elev (ft)	560.09	559.89
Q Bridge (cfs)	1175.53	Crit W.S. (ft)	557.85	557.64
Q Weir (cfs)		Max Chl Dpth (ft)	15.33	15.51
Weir Sta Lft (ft)		Vel Total (ft/s)	3.69	3.87
Weir Sta Rgt (ft)		Flow Area (sq ft)	5923.49	5642.21
Weir Submerg		Froude # Chl	0.17	0.18
Weir Max Depth (ft)		Specif Force (cu ft)	18694.38	18649.64
Min El Weir Flow (ft)	553.23	Hydr Depth (ft)	3.03	2.96
Min El Prs (ft)	550.46	W.P. Total (ft)	2116.61	2070.97
Delta EG (ft)	0.33	Conv. Total (cfs)	284987.0	268409.6
Delta WS (ft)	0.33	Top Width (ft)	1955.46	1909.04
BR Open Area (sq ft)	421.07	Frctn Loss (ft)	0.17	0.05
BR Open Vel (ft/s)	2.79	C & E Loss (ft)	0.00	0.02
Coef of Q		Shear Total (lb/sq ft)	1.03	1.13
Br Sel Method	Energy only	Power Total (lb/ft s)	0.00	0.00

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

BRIDGE

RIVER: Geronimo Creek
REACH: 25 RS: 8115.275

BRIDGE OUTPUT Profile #100YR

			Inside BR US	Inside BR DS
E.G. US. (ft)	552.82	Element		
W.S. US. (ft)	552.52	E.G. Elev (ft)	552.79	552.71
Q Total (cfs)	21832.01	W.S. Elev (ft)	552.40	552.32
Q Bridge (cfs)	589.91	Crit W.S. (ft)	546.18	546.10
Q Weir (cfs)		Max Chl Dpth (ft)	22.40	22.32
Weir Sta Lft (ft)		Vel Total (ft/s)	4.46	4.29
Weir Sta Rgt (ft)		Flow Area (sq ft)	4899.95	5087.76
Weir Submerg		Froude # Chl	0.19	0.19
Weir Max Depth (ft)		Specif Force (cu ft)	29409.25	29514.70
Min El Weir Flow (ft)	538.14	Hydr Depth (ft)	4.23	4.23
Min El Prs (ft)	536.50	W.P. Total (ft)	1252.31	1296.94
Delta EG (ft)	0.16	Conv. Total (cfs)	346208.4	350107.6
Delta WS (ft)	0.16	Top Width (ft)	1158.30	1202.87
BR Open Area (sq ft)	255.88	Frctn Loss (ft)	0.08	0.02
BR Open Vel (ft/s)	2.31	C & E Loss (ft)	0.00	0.02
Coef of Q		Shear Total (lb/sq ft)	0.97	0.95
Br Sel Method	Energy only	Power Total (lb/ft s)	0.00	0.00

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CULVERT

RIVER: Geronimo Creek
REACH: 27 RS: 10050.53

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #1

Q Culv Group (cfs)	811.13	Culv Full Len (ft)	
# Barrels	4	Culv Vel US (ft/s)	9.66
Q Barrel (cfs)	202.78	Culv Vel DS (ft/s)	12.13
E.G. US. (ft)	584.30	Culv Inv El Up (ft)	578.05
W.S. US. (ft)	584.29	Culv Inv El Dn (ft)	578.05
E.G. DS (ft)	579.34	Culv Frctn Ls (ft)	0.45
W.S. DS (ft)	579.19	Culv Exit Loss (ft)	3.78
Delta EG (ft)	4.96	Culv Entr Loss (ft)	0.72
Delta WS (ft)	5.10	Q Weir (cfs)	1524.68
E.G. IC (ft)	584.30	Weir Sta Lft (ft)	1997.92
E.G. OC (ft)	584.02	Weir Sta Rgt (ft)	5012.48
Culvert Control	Inlet	Weir Submerg	0.00
Culv WS Inlet (ft)	581.55	Weir Max Depth (ft)	0.35
Culv WS Outlet (ft)	580.84	Weir Avg Depth (ft)	0.33
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	1008.65
Culv Crt Depth (ft)	3.29	Min El Weir Flow (ft)	584.00

Warning: The flow through the culvert is supercritical. However, since there is flow over the road (weir flow), the program cannot
determine if the downstream cross section should be subcritical or supercritical. The program used the downstream
subcritical answer, even though it may not be valid.
Warning: During the supercritical analysis, the program could not converge on a supercritical answer in the downstream cross
section. The program used the solution with the least error.
Note: The flow in the culvert is entirely supercritical.

CULVERT

RIVER: Geronimo Creek
REACH: 27 RS: 4023.071

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #1

Q Culv Group (cfs)	85.98	Culv Full Len (ft)	22.00
# Barrels	4	Culv Vel US (ft/s)	6.84
Q Barrel (cfs)	21.49	Culv Vel DS (ft/s)	6.84
E.G. US. (ft)	560.49	Culv Inv El Up (ft)	556.00
W.S. US. (ft)	560.43	Culv Inv El Dn (ft)	555.57
E.G. DS (ft)	559.06	Culv Frctn Ls (ft)	0.68
W.S. DS (ft)	558.73	Culv Exit Loss (ft)	0.40
Delta EG (ft)	1.44	Culv Entr Loss (ft)	0.36
Delta WS (ft)	1.70	Q Weir (cfs)	2249.83
E.G. IC (ft)	560.49	Weir Sta Lft (ft)	452.86
E.G. OC (ft)	560.49	Weir Sta Rgt (ft)	1025.15
Culvert Control	Outlet	Weir Submerg	0.04

Culv WS Inlet (ft)	558.00	Weir Max Depth (ft)	2.00
Culv WS Outlet (ft)	557.57	Weir Avg Depth (ft)	1.28
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	729.93
Culv Crt Depth (ft)	1.66	Min El Weir Flow (ft)	558.51

CULVERT

RIVER: Geronimo Creek
REACH: 27 RS: 1637.609

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #1

Q Culv Group (cfs)	15.82	Culv Full Len (ft)	16.00
# Barrels	1	Culv Vel US (ft/s)	4.79
Q Barrel (cfs)	15.82	Culv Vel DS (ft/s)	4.79
E.G. US. (ft)	548.29	Culv Inv El Up (ft)	544.00
W.S. US. (ft)	548.16	Culv Inv El Dn (ft)	543.88
E.G. DS (ft)	547.68	Culv Frctn Ls (ft)	0.16
W.S. DS (ft)	547.46	Culv Exit Loss (ft)	0.14
Delta EG (ft)	0.61	Culv Entr Loss (ft)	0.32
Delta WS (ft)	0.71	Q Weir (cfs)	3281.61
E.G. IC (ft)	548.29	Weir Sta Lft (ft)	0.00
E.G. OC (ft)	548.29	Weir Sta Rgt (ft)	796.08
Culvert Control	Outlet	Weir Submerg	0.53
Culv WS Inlet (ft)	545.58	Weir Max Depth (ft)	3.56
Culv WS Outlet (ft)	545.46	Weir Avg Depth (ft)	1.20
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	955.13
Culv Crt Depth (ft)	1.17	Min El Weir Flow (ft)	546.09

Warning: During subcritical analysis, while trying to calculate culvert and weir flow, the program could not get a balance of
energy within the specified tolerance and number of trials. The program used the solution with the minimum error.
Warning: During the culvert inlet control computations, the program could not balance the culvert/weir flow. The reported inlet
energy grade answer may not be valid.
Warning: During the culvert outlet control computations, the program could not balance the culvert/weir flow. The reported
outlet energy grade answer may not be valid.

CULVERT

RIVER: Geronimo Creek
REACH: 30 RS: 7791.949

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #1

Q Culv Group (cfs)	584.38	Culv Full Len (ft)	
# Barrels	4	Culv Vel US (ft/s)	8.12
Q Barrel (cfs)	146.22	Culv Vel DS (ft/s)	14.86
E.G. US. (ft)	576.34	Culv Inv El Up (ft)	572.00
W.S. US. (ft)	576.32	Culv Inv El Dn (ft)	571.00
E.G. DS (ft)	574.50	Culv Frctn Ls (ft)	0.37
W.S. DS (ft)	573.94	Culv Exit Loss (ft)	1.57
Delta EG (ft)	2.34	Culv Entr Loss (ft)	0.41
Delta WS (ft)	2.88	Q Weir (cfs)	2395.76
E.G. IC (ft)	576.84	Weir Sta Lft (ft)	1235.87
E.G. OC (ft)	576.49	Weir Sta Rgt (ft)	2559.10
Culvert Control	Inlet	Weir Submerg	0.00
Culv WS Inlet (ft)	575.00	Weir Max Depth (ft)	0.83
Culv WS Outlet (ft)	572.64	Weir Avg Depth (ft)	0.78
Culv Nml Depth (ft)	1.24	Weir Flow Area (sq ft)	1026.04
Culv Crt Depth (ft)	2.64	Min El Weir Flow (ft)	576.01

Warning: The flow through the culvert is supercritical. However, since there is flow over the road (weir flow), the program cannot
determine if the downstream cross section should be subcritical or supercritical. The program used the downstream
subcritical answer, even though it may not be valid.
Warning: During the supercritical analysis, the program could not converge on a supercritical answer in the downstream cross
section. The program used the solution with the least error.
Note: The flow in the culvert is entirely supercritical.

CULVERT

RIVER: Geronimo Creek
REACH: 30 RS: 7753.43

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #1

Q Culv Group (cfs)	964.80	Culv Full Len (ft)	
# Barrels	5	Culv Vel US (ft/s)	7.57
Q Barrel (cfs)	192.96	Culv Vel DS (ft/s)	11.53
E.G. US. (ft)	574.04	Culv Inv El Up (ft)	569.47
W.S. US. (ft)	574.01	Culv Inv El Dn (ft)	569.47

E.G. DS (ft)	572.36	Culv Frctn Ls (ft)	0.18
W.S. DS (ft)	572.29	Culv Exit Loss (ft)	1.15
Delta EG (ft)	1.68	Culv Entr Loss (ft)	0.36
Delta WS (ft)	1.72	Q Weir (cfs)	2015.84
E.G. IC (ft)	574.04	Weir Sta Lft (ft)	1708.27
E.G. OC (ft)	573.71	Weir Sta Rgt (ft)	2593.78
Culvert Control	Inlet	Weir Submerg	0.00
Culv WS Inlet (ft)	572.47	Weir Max Depth (ft)	1.03
Culv WS Outlet (ft)	571.44	Weir Avg Depth (ft)	0.90
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	797.46
Culv Crt Depth (ft)	2.52	Min El Weir Flow (ft)	573.01

Warning: The flow through the culvert is supercritical. However, since there is flow over the road (weir flow), the program cannot
determine if the downstream cross section should be subcritical or supercritical. The program used the downstream
subcritical answer, even though it may not be valid.
Warning: During the supercritical analysis, the program could not converge on a supercritical answer in the downstream cross
section. The program used the solution with the least error.
Note: The flow in the culvert is entirely supercritical.

CULVERT

RIVER: Geronimo Creek
REACH: 29 RS: 10488.67

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #1

Q Culv Group (cfs)	10.27	Culv Full Len (ft)	25.00
# Barrels	2	Culv Vel US (ft/s)	1.63
Q Barrel (cfs)	5.13	Culv Vel DS (ft/s)	1.63
E.G. US. (ft)	535.06	Culv Inv El Up (ft)	513.41
W.S. US. (ft)	534.85	Culv Inv El Dn (ft)	512.54
E.G. DS (ft)	534.98	Culv Frctn Ls (ft)	0.04
W.S. DS (ft)	534.76	Culv Exit Loss (ft)	0.00
Delta EG (ft)	0.08	Culv Entr Loss (ft)	0.04
Delta WS (ft)	0.09	Q Weir (cfs)	27237.21
E.G. IC (ft)	514.56	Weir Sta Lft (ft)	1088.68
E.G. OC (ft)	535.06	Weir Sta Rgt (ft)	1908.72
Culvert Control	Outlet	Weir Submerg	0.99
Culv WS Inlet (ft)	515.41	Weir Max Depth (ft)	18.93
Culv WS Outlet (ft)	514.54	Weir Avg Depth (ft)	9.45
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	7750.78
Culv Crt Depth (ft)	0.80	Min El Weir Flow (ft)	516.67

Warning: The weir over culvert is submerged.

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #2

Q Culv Group (cfs)	13.64	Culv Full Len (ft)	26.50
# Barrels	2	Culv Vel US (ft/s)	2.17
Q Barrel (cfs)	6.82	Culv Vel DS (ft/s)	2.17
E.G. US. (ft)	535.06	Culv Inv El Up (ft)	512.62
W.S. US. (ft)	534.85	Culv Inv El Dn (ft)	512.62
E.G. DS (ft)	534.98	Culv Frctn Ls (ft)	0.02
W.S. DS (ft)	534.76	Culv Exit Loss (ft)	0.00
Delta EG (ft)	0.08	Culv Entr Loss (ft)	0.07
Delta WS (ft)	0.09	Q Weir (cfs)	27237.21
E.G. IC (ft)	514.03	Weir Sta Lft (ft)	1088.68
E.G. OC (ft)	535.06	Weir Sta Rgt (ft)	1908.72
Culvert Control	Outlet	Weir Submerg	0.99
Culv WS Inlet (ft)	514.62	Weir Max Depth (ft)	18.93
Culv WS Outlet (ft)	514.62	Weir Avg Depth (ft)	9.45
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	7750.78
Culv Crt Depth (ft)	0.93	Min El Weir Flow (ft)	516.67

Warning: The weir over culvert is submerged.

BRIDGE

RIVER: Geronimo Creek
REACH: 29 RS: 4547.385

BRIDGE OUTPUT Profile #100YR

			Inside BR US	Inside BR DS
E.G. US. (ft)	522.62	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	522.39	E.G. Elev (ft)	522.55	522.23
Q Total (cfs)	27612.53	W.S. Elev (ft)	522.17	521.79
Q Bridge (cfs)	16067.61	Crit W.S. (ft)	510.25	511.04
Q Weir (cfs)		Max Chl Dpth (ft)	20.30	19.14
Weir Sta Lft (ft)		Vel Total (ft/s)	4.85	5.14
Weir Sta Rgt (ft)		Flow Area (sq ft)	5693.38	5376.58
Weir Submerg		Froude # Chl	0.20	0.21
Weir Max Depth (ft)		Specif Force (cu ft)	48866.78	44370.89
Min El Weir Flow (ft)	517.77	Hydr Depth (ft)	6.29	6.03
Min El Prs (ft)	517.66	W.P. Total (ft)	1593.66	1573.73
Delta EG (ft)	0.50	Conv. Total (cfs)	304559.4	288984.1

Delta WS (ft)	0.52	Top Width (ft)	905.37	891.26
BR Open Area (sq ft)	3062.37	Frctn Loss (ft)	0.32	0.05
BR Open Vel (ft/s)	5.25	C & E Loss (ft)	0.00	0.06
Coef of Q		Shear Total (lb/sq ft)	1.83	1.95
Br Sel Method	Energy only	Power Total (lb/ft s)	0.00	0.00

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.

CULVERT

RIVER: Geronimo Creek
REACH: 26 RS: 20681.18

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #1

Q Culv Group (cfs)	145.48	Culv Full Len (ft)	30.00
# Barrels	5	Culv Vel US (ft/s)	4.49
Q Barrel (cfs)	29.10	Culv Vel DS (ft/s)	4.49
E.G. US. (ft)	550.54	Culv Inv El Up (ft)	543.97
W.S. US. (ft)	550.28	Culv Inv El Dn (ft)	543.57
E.G. DS (ft)	550.19	Culv Frctn Ls (ft)	0.13
W.S. DS (ft)	549.85	Culv Exit Loss (ft)	0.00
Delta EG (ft)	0.35	Culv Entr Loss (ft)	0.22
Delta WS (ft)	0.44	Q Weir (cfs)	7138.17
E.G. IC (ft)	550.49	Weir Sta Lft (ft)	2285.97
E.G. OC (ft)	550.54	Weir Sta Rgt (ft)	2886.61
Culvert Control	Outlet	Weir Submerg	0.76
Culv WS Inlet (ft)	546.22	Weir Max Depth (ft)	3.82
Culv WS Outlet (ft)	545.82	Weir Avg Depth (ft)	2.65
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	1594.28
Culv Crt Depth (ft)	1.49	Min El Weir Flow (ft)	546.73

CULVERT

RIVER: Geronimo Creek
REACH: 26 RS: 12623.76

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #1

Q Culv Group (cfs)	220.01	Culv Full Len (ft)	41.00
# Barrels	2	Culv Vel US (ft/s)	1.79
Q Barrel (cfs)	110.01	Culv Vel DS (ft/s)	1.79
E.G. US. (ft)	536.56	Culv Inv El Up (ft)	526.00
W.S. US. (ft)	536.53	Culv Inv El Dn (ft)	526.00
E.G. DS (ft)	536.51	Culv Frctn Ls (ft)	0.00
W.S. DS (ft)	536.58	Culv Exit Loss (ft)	0.02
Delta EG (ft)	0.04	Culv Entr Loss (ft)	0.02
Delta WS (ft)	0.04	Q Weir (cfs)	7063.64
E.G. IC (ft)	536.63	Weir Sta Lft (ft)	1797.42
E.G. OC (ft)	536.66	Weir Sta Rgt (ft)	3281.53
Culvert Control	Outlet	Weir Submerg	0.99
Culv WS Inlet (ft)	532.83	Weir Max Depth (ft)	3.31
Culv WS Outlet (ft)	532.83	Weir Avg Depth (ft)	2.57
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	3810.44
Culv Crt Depth (ft)	1.67	Min El Weir Flow (ft)	533.34

Warning: The weir over culvert is submerged.
Warning: During the culvert inlet control computations, the program could not balance the culvert/weir flow. The reported inlet
energy grade answer may not be valid.

CULVERT

RIVER: Geronimo Creek
REACH: 26 RS: 8215.094

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #1

Q Culv Group (cfs)	2836.12	Culv Full Len (ft)	40.00
# Barrels	7	Culv Vel US (ft/s)	6.75
Q Barrel (cfs)	405.16	Culv Vel DS (ft/s)	6.75
E.G. US. (ft)	523.24	Culv Inv El Up (ft)	511.59
W.S. US. (ft)	522.95	Culv Inv El Dn (ft)	511.45
E.G. DS (ft)	522.70	Culv Frctn Ls (ft)	0.04
W.S. DS (ft)	522.21	Culv Exit Loss (ft)	0.22
Delta EG (ft)	0.54	Culv Entr Loss (ft)	0.28
Delta WS (ft)	0.75	Q Weir (cfs)	4447.53
E.G. IC (ft)	522.72	Weir Sta Lft (ft)	1216.36
E.G. OC (ft)	523.24	Weir Sta Rgt (ft)	1768.92
Culvert Control	Outlet	Weir Submerg	0.53
Culv WS Inlet (ft)	517.59	Weir Max Depth (ft)	3.10
Culv WS Outlet (ft)	517.45	Weir Avg Depth (ft)	2.06
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	1136.05
Culv Crt Depth (ft)	3.71	Min El Weir Flow (ft)	520.16

CULVERT

RIVER: Geronimo Creek
REACH: 26 RS: 7829.957

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #1

Q Culv Group (cfs)	25.89	Culv Full Len (ft)	22.00
# Barrels	2	Culv Vel US (ft/s)	2.75
Q Barrel (cfs)	12.95	Culv Vel DS (ft/s)	2.75
E.G. US. (ft)	521.22	Culv Inv El Up (ft)	514.03
W.S. US. (ft)	521.07	Culv Inv El Dn (ft)	514.03
E.G. DS (ft)	521.11	Culv Frctn Ls (ft)	0.02
W.S. DS (ft)	521.02	Culv Exit Loss (ft)	0.03
Delta EG (ft)	0.11	Culv Entr Loss (ft)	0.06
Delta WS (ft)	0.04	Q Weir (cfs)	7281.78
E.G. IC (ft)	521.21	Weir Sta Lft (ft)	748.67
E.G. OC (ft)	521.22	Weir Sta Rgt (ft)	1784.35
Culvert Control	Outlet	Weir Submerg	0.92
Culv WS Inlet (ft)	516.03	Weir Max Depth (ft)	3.19
Culv WS Outlet (ft)	516.03	Weir Avg Depth (ft)	2.06
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	2129.35
Culv Crt Depth (ft)	1.05	Min El Weir Flow (ft)	518.04

CULVERT

RIVER: Geronimo Creek
REACH: 32 RS: 6107.988

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #1

Q Culv Group (cfs)	295.24	Culv Full Len (ft)	
# Barrels	2	Culv Vel US (ft/s)	8.34
Q Barrel (cfs)	147.62	Culv Vel DS (ft/s)	8.67
E.G. US. (ft)	554.69	Culv Inv El Up (ft)	549.00
W.S. US. (ft)	554.63	Culv Inv El Dn (ft)	549.00
E.G. DS (ft)	553.03	Culv Frctn Ls (ft)	0.06
W.S. DS (ft)	552.72	Culv Exit Loss (ft)	0.85
Delta EG (ft)	1.66	Culv Entr Loss (ft)	0.75
Delta WS (ft)	1.91	Q Weir (cfs)	1405.05
E.G. IC (ft)	554.69	Weir Sta Lft (ft)	820.20
E.G. OC (ft)	554.74	Weir Sta Rgt (ft)	1452.56
Culvert Control	Inlet	Weir Submerg	0.00
Culv WS Inlet (ft)	552.86	Weir Max Depth (ft)	1.23
Culv WS Outlet (ft)	552.72	Weir Avg Depth (ft)	0.88
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	557.27
Culv Crt Depth (ft)	3.18	Min El Weir Flow (ft)	553.51

BRIDGE

RIVER: Geronimo Creek
REACH: 34 RS: 3497.879

BRIDGE OUTPUT Profile #100YR

E.G. US. (ft)	506.63	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	506.36	E.G. Elev (ft)	506.23	505.98
Q Total (cfs)	34909.85	W.S. Elev (ft)	505.22	504.92
Q Bridge (cfs)	34909.85	Crit W.S. (ft)	500.54	499.92
Q Weir (cfs)		Max Chl Dpth (ft)	13.98	16.46
Weir Sta Lft (ft)		Vel Total (ft/s)	7.94	7.93
Weir Sta Rgt (ft)		Flow Area (sq ft)	4395.48	4402.39
Weir Submerg		Froude # Chl	0.38	0.36
Weir Max Depth (ft)		Specif Force (cu ft)	33252.50	35862.27
Min El Weir Flow (ft)	513.98	Hydr Depth (ft)	10.89	11.65
Min El Prs (ft)	519.58	W.P. Total (ft)	556.22	535.47
Delta EG (ft)	0.92	Conv. Total (cfs)	409989.4	435831.7
Delta WS (ft)	1.34	Top Width (ft)	403.63	377.96
BR Open Area (sq ft)	9367.75	Frctn Loss (ft)	0.24	0.17
BR Open Vel (ft/s)	7.94	C & E Loss (ft)	0.01	0.11
Coef of Q		Shear Total (lb/sq ft)	3.58	3.29
Br Sel Method	Energy only	Power Total (lb/ft s)	0.00	0.00

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.

BRIDGE

RIVER: Geronimo Creek
REACH: 34 RS: 3385.687

BRIDGE OUTPUT Profile #100YR

E.G. US. (ft)	505.71	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	505.02	E.G. Elev (ft)	505.55	505.33
Q Total (cfs)	34909.85	W.S. Elev (ft)	504.67	504.39
Q Bridge (cfs)	34909.85	Crit W.S. (ft)	499.40	499.45
Q Weir (cfs)		Max Chl Dpth (ft)	16.21	15.93
Weir Sta Lft (ft)		Vel Total (ft/s)	7.45	7.65
Weir Sta Rgt (ft)		Flow Area (sq ft)	4685.93	4561.48
Weir Submerg		Froude # Chl	0.33	0.34
Weir Max Depth (ft)		Specif Force (cu ft)	36086.65	35224.12
Min El Weir Flow (ft)	513.58	Hydr Depth (ft)	11.59	11.29
Min El Prs (ft)	520.94	W.P. Total (ft)	565.44	560.63
Delta EG (ft)	1.05	Conv. Total (cfs)	462557.7	428888.4
Delta WS (ft)	0.86	Top Width (ft)	404.15	404.16
BR Open Area (sq ft)	10339.51	Frctn Loss (ft)	0.21	0.54
BR Open Vel (ft/s)	7.65	C & E Loss (ft)	0.01	0.13
Coef of Q		Shear Total (lb/sq ft)	2.95	3.37
Br Sel Method	Energy only	Power Total (lb/ft s)	0.00	0.00

CULVERT

RIVER: Geronimo Creek
REACH: 35 RS: 1623.926

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #1

Q Culv Group (cfs)	953.71	Culv Full Len (ft)	61.00
# Barrels	1	Culv Vel US (ft/s)	18.70
Q Barrel (cfs)	953.71	Culv Vel DS (ft/s)	18.70
E.G. US. (ft)	518.74	Culv Inv El Up (ft)	500.78
W.S. US. (ft)	518.74	Culv Inv El Dn (ft)	500.78
E.G. DS (ft)	505.87	Culv Frctn Ls (ft)	1.32
W.S. DS (ft)	505.48	Culv Exit Loss (ft)	8.84
Delta EG (ft)	12.87	Culv Entr Loss (ft)	2.72
Delta WS (ft)	13.25	Q Weir (cfs)	756.73
E.G. IC (ft)	518.80	Weir Sta Lft (ft)	0.00
E.G. OC (ft)	518.74	Weir Sta Rgt (ft)	233.82
Culvert Control	Outlet	Weir Submerg	0.00
Culv WS Inlet (ft)	509.28	Weir Max Depth (ft)	2.23
Culv WS Outlet (ft)	509.28	Weir Avg Depth (ft)	1.09
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	254.27
Culv Crt Depth (ft)	8.50	Min El Weir Flow (ft)	516.51

Note: Culvert critical depth exceeds the height of the culvert.
Note: During the supercritical calculations a hydraulic jump occurred inside of the culvert.
Note: The culvert inlet is submerged and the culvert flows full over part or all of its length. Therefore, the culvert inlet
equations are not valid and the supercritical result has been discarded. The outlet answer will be used.

BRIDGE

RIVER: Geronimo Creek
REACH: 36 RS: 10701.42

BRIDGE OUTPUT Profile #100YR

E.G. US. (ft)	498.16	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	498.04	E.G. Elev (ft)	498.16	497.95
Q Total (cfs)	38321.38	W.S. Elev (ft)	498.04	497.31
Q Bridge (cfs)	26502.57	Crit W.S. (ft)	490.94	489.74
Q Weir (cfs)	11818.81	Max Chl Dpth (ft)	23.50	22.38
Weir Sta Lft (ft)	969.80	Vel Total (ft/s)	6.77	6.49
Weir Sta Rgt (ft)	2550.82	Flow Area (sq ft)	5661.96	5902.74
Weir Submerg	0.00	Froude # Chl	0.28	0.35
Weir Max Depth (ft)	2.25	Specif Force (cu ft)	41501.17	43649.75
Min El Weir Flow (ft)	495.92	Hydr Depth (ft)	3.61	4.07
Min El Prs (ft)	493.57	W.P. Total (ft)	2142.26	2038.14
Delta EG (ft)	2.55	Conv. Total (cfs)		
Delta WS (ft)	2.54	Top Width (ft)	1569.93	1451.03
BR Open Area (sq ft)	2527.69	Frctn Loss (ft)		
BR Open Vel (ft/s)	10.48	C & E Loss (ft)		
Coef of Q		Shear Total (lb/sq ft)		
Br Sel Method	Press/Weir	Power Total (lb/ft s)	0.00	0.00

Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was
used for pressure flow.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from
the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Note: For the cross section inside the bridge at the downstream end, the water surface and energy are based on critical
depth over the weir.

BRIDGE

RIVER: Geronimo Creek
REACH: 36 RS: 2300.292

BRIDGE OUTPUT Profile #100YR

			Inside BR US	Inside BR DS
E.G. US. (ft)	486.08	Element		
W.S. US. (ft)	485.98	E.G. Elev (ft)	486.04	485.93
Q Total (cfs)	38321.38	W.S. Elev (ft)	485.78	485.66
Q Bridge (cfs)	5183.34	Crit W.S. (ft)	481.31	481.45
Q Weir (cfs)		Max Chl Dpth (ft)	20.54	19.69
Weir Sta Lft (ft)		Vel Total (ft/s)	3.85	4.02
Weir Sta Rgt (ft)		Flow Area (sq ft)	9945.64	9540.64
Weir Submerg		Froude # Chl	0.16	0.16
Weir Max Depth (ft)		Specif Force (cu ft)	59884.57	56448.89
Min El Weir Flow (ft)	478.32	Hydr Depth (ft)	7.21	7.07
Min El Prs (ft)	474.30	W.P. Total (ft)	1897.97	1869.23
Delta EG (ft)	0.24	Conv. Total (cfs)	701455.9	560816.4
Delta WS (ft)	0.26	Top Width (ft)	1379.65	1350.22
BR Open Area (sq ft)	1882.49	Frctn Loss (ft)	0.11	0.04
BR Open Vel (ft/s)	2.75	C & E Loss (ft)	0.00	0.04
Coef of Q		Shear Total (lb/sq ft)	0.98	1.49
Br Sel Method	Energy only	Power Total (lb/ft s)	0.00	0.00

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

BRIDGE

RIVER: Geronimo Creek
REACH: 36 RS: 1189.034

BRIDGE OUTPUT Profile #100YR

			Inside BR US	Inside BR DS
E.G. US. (ft)	485.08	Element		
W.S. US. (ft)	484.16	E.G. Elev (ft)	484.86	482.57
Q Total (cfs)	38321.38	W.S. Elev (ft)	483.33	480.07
Q Bridge (cfs)	22181.53	Crit W.S. (ft)	473.96	473.70
Q Weir (cfs)		Max Chl Dpth (ft)	28.42	24.72
Weir Sta Lft (ft)		Vel Total (ft/s)	9.86	12.68
Weir Sta Rgt (ft)		Flow Area (sq ft)	3884.88	3021.86
Weir Submerg		Froude # Chl	0.33	0.45
Weir Max Depth (ft)		Specif Force (cu ft)	51612.28	44700.19
Min El Weir Flow (ft)	476.49	Hydr Depth (ft)	11.85	12.14
Min El Prs (ft)	476.21	W.P. Total (ft)	943.16	865.72
Delta EG (ft)	3.24	Conv. Total (cfs)	204770.4	139106.4
Delta WS (ft)	3.63	Top Width (ft)	327.80	249.01
BR Open Area (sq ft)	2396.13	Frctn Loss (ft)	2.19	0.37
BR Open Vel (ft/s)	9.26	C & E Loss (ft)	0.10	0.35
Coef of Q		Shear Total (lb/sq ft)	9.01	16.54
Br Sel Method	Energy only	Power Total (lb/ft s)	0.00	0.00

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the
need for additional cross sections.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.

CULVERT

RIVER: Geronimo Creek
REACH: 33 RS: 14337.06

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #1

Q Culv Group (cfs)	3689.33	Culv Full Len (ft)	26.00
# Barrels	5	Culv Vel US (ft/s)	10.25
Q Barrel (cfs)	737.87	Culv Vel DS (ft/s)	10.25
E.G. US. (ft)	533.86	Culv Inv El Up (ft)	521.76
W.S. US. (ft)	533.85	Culv Inv El Dn (ft)	521.76
E.G. DS (ft)	531.40	Culv Frctn Ls (ft)	0.06
W.S. DS (ft)	531.36	Culv Exit Loss (ft)	1.59

Delta EG (ft)	2.46	Culv Entr Loss (ft)	0.82
Delta WS (ft)	2.49	Q Weir (cfs)	
E.G. IC (ft)	531.63	Weir Sta Lft (ft)	
E.G. OC (ft)	533.86	Weir Sta Rgt (ft)	
Culvert Control	Outlet	Weir Submerg	
Culv WS Inlet (ft)	529.76	Weir Max Depth (ft)	
Culv WS Outlet (ft)	529.76	Weir Avg Depth (ft)	
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	
Culv Crt Depth (ft)	5.93	Min El Weir Flow (ft)	534.01

CULVERT

RIVER: Geronimo Creek
REACH: 33 RS: 14067.64

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #1

Q Culv Group (cfs)	3689.33	Culv Full Len (ft)	120.97
# Barrels	4	Culv Vel US (ft/s)	11.53
Q Barrel (cfs)	922.33	Culv Vel DS (ft/s)	11.76
E.G. US. (ft)	531.40	Culv Inv El Up (ft)	520.00
W.S. US. (ft)	531.36	Culv Inv El Dn (ft)	520.00
E.G. DS (ft)	527.88	Culv Frctn Ls (ft)	0.38
W.S. DS (ft)	527.84	Culv Exit Loss (ft)	2.11
Delta EG (ft)	3.52	Culv Entr Loss (ft)	1.03
Delta WS (ft)	3.52	Q Weir (cfs)	
E.G. IC (ft)	531.49	Weir Sta Lft (ft)	
E.G. OC (ft)	531.40	Weir Sta Rgt (ft)	
Culvert Control	Outlet	Weir Submerg	
Culv WS Inlet (ft)	528.00	Weir Max Depth (ft)	
Culv WS Outlet (ft)	527.84	Weir Avg Depth (ft)	
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	
Culv Crt Depth (ft)	6.42	Min El Weir Flow (ft)	534.01

Note: The culvert inlet is submerged and the culvert flows full over part or all of its length. Therefore, the culvert inlet
equations are not valid and the supercritical result has been discarded. The outlet answer will be used.

CULVERT

RIVER: Geronimo Creek
REACH: 33 RS: 13566.6

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #1

Q Culv Group (cfs)	2003.17	Culv Full Len (ft)	40.00
# Barrels	4	Culv Vel US (ft/s)	10.12
Q Barrel (cfs)	500.79	Culv Vel DS (ft/s)	10.12
E.G. US. (ft)	527.88	Culv Inv El Up (ft)	519.00
W.S. US. (ft)	527.84	Culv Inv El Dn (ft)	518.60
E.G. DS (ft)	525.50	Culv Frctn Ls (ft)	0.11
W.S. DS (ft)	525.39	Culv Exit Loss (ft)	1.48
Delta EG (ft)	2.38	Culv Entr Loss (ft)	0.79
Delta WS (ft)	2.45	Q Weir (cfs)	1686.16
E.G. IC (ft)	527.85	Weir Sta Lft (ft)	2220.72
E.G. OC (ft)	527.88	Weir Sta Rgt (ft)	2986.47
Culvert Control	Outlet	Weir Submerg	0.00
Culv WS Inlet (ft)	524.50	Weir Max Depth (ft)	1.42
Culv WS Outlet (ft)	524.10	Weir Avg Depth (ft)	0.87
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	667.21
Culv Crt Depth (ft)	4.58	Min El Weir Flow (ft)	526.51

CULVERT

RIVER: Geronimo Creek
REACH: 33 RS: 13060.61

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #1

Q Culv Group (cfs)	503.58	Culv Full Len (ft)	28.00
# Barrels	3	Culv Vel US (ft/s)	9.84
Q Barrel (cfs)	167.86	Culv Vel DS (ft/s)	9.84
E.G. US. (ft)	525.07	Culv Inv El Up (ft)	517.00
W.S. US. (ft)	525.04	Culv Inv El Dn (ft)	514.00
E.G. DS (ft)	521.78	Culv Frctn Ls (ft)	0.58
W.S. DS (ft)	521.64	Culv Exit Loss (ft)	1.36
Delta EG (ft)	3.29	Culv Entr Loss (ft)	1.35
Delta WS (ft)	3.41	Q Weir (cfs)	3193.97
E.G. IC (ft)	525.04	Weir Sta Lft (ft)	2058.35
E.G. OC (ft)	525.07	Weir Sta Rgt (ft)	2677.80
Culvert Control	Outlet	Weir Submerg	0.00
Culv WS Inlet (ft)	521.66	Weir Max Depth (ft)	2.09
Culv WS Outlet (ft)	518.66	Weir Avg Depth (ft)	1.54
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	952.79
Culv Crt Depth (ft)	3.76	Min El Weir Flow (ft)	522.99

CULVERT

RIVER: Geronimo Creek
REACH: 33 RS: 4521.891

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #1

Q Culv Group (cfs)	449.05	Culv Full Len (ft)	30.00
# Barrels	3	Culv Vel US (ft/s)	7.94
Q Barrel (cfs)	149.68	Culv Vel DS (ft/s)	7.94
E.G. US. (ft)	485.72	Culv Inv El Up (ft)	477.50
W.S. US. (ft)	485.50	Culv Inv El Dn (ft)	476.50
E.G. DS (ft)	484.17	Culv Frctn Ls (ft)	0.39
W.S. DS (ft)	483.86	Culv Exit Loss (ft)	0.67
Delta EG (ft)	1.55	Culv Entr Loss (ft)	0.49
Delta WS (ft)	1.64	Q Weir (cfs)	3240.28
E.G. IC (ft)	485.64	Weir Sta Lft (ft)	2262.59
E.G. OC (ft)	485.72	Weir Sta Rgt (ft)	2664.37
Culvert Control	Outlet	Weir Submerg	0.26
Culv WS Inlet (ft)	481.50	Weir Max Depth (ft)	2.72
Culv WS Outlet (ft)	480.50	Weir Avg Depth (ft)	2.02
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	812.81
Culv Crt Depth (ft)	3.02	Min El Weir Flow (ft)	483.01

CULVERT

RIVER: Geronimo Creek
REACH: 33 RS: 3090.634

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #1

Q Culv Group (cfs)	1459.87	Culv Full Len (ft)	25.00
# Barrels	1	Culv Vel US (ft/s)	7.30
Q Barrel (cfs)	1459.87	Culv Vel DS (ft/s)	7.30
E.G. US. (ft)	480.01	Culv Inv El Up (ft)	467.36
W.S. US. (ft)	479.92	Culv Inv El Dn (ft)	466.00
E.G. DS (ft)	478.94	Culv Frctn Ls (ft)	0.01
W.S. DS (ft)	478.83	Culv Exit Loss (ft)	0.72
Delta EG (ft)	1.06	Culv Entr Loss (ft)	0.33
Delta WS (ft)	1.09	Q Weir (cfs)	2229.46
E.G. IC (ft)	479.53	Weir Sta Lft (ft)	1449.78
E.G. OC (ft)	480.01	Weir Sta Rgt (ft)	1938.30
Culvert Control	Outlet	Weir Submerg	0.34
Culv WS Inlet (ft)	477.36	Weir Max Depth (ft)	2.01
Culv WS Outlet (ft)	476.00	Weir Avg Depth (ft)	1.35
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	651.59
Culv Crt Depth (ft)	5.49	Min El Weir Flow (ft)	478.01

BRIDGE

RIVER: Geronimo Creek
REACH: 33 RS: 1356.759

BRIDGE OUTPUT Profile #100YR

E.G. US. (ft)	478.66	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	478.65	E.G. Elev (ft)	478.65	478.57
Q Total (cfs)	3689.33	W.S. Elev (ft)	478.61	478.53
Q Bridge (cfs)	2165.04	Crit W.S. (ft)	466.57	466.41
Q Weir (cfs)		Max Chl Dpth (ft)	18.97	18.17
Weir Sta Lft (ft)		Vel Total (ft/s)	1.56	1.60
Weir Sta Rgt (ft)		Flow Area (sq ft)	2363.05	2310.78
Weir Submerg		Froude # Chl	0.06	0.07
Weir Max Depth (ft)		Specif Force (cu ft)	13431.89	13370.33
Min El Weir Flow (ft)	476.31	Hydr Depth (ft)	3.78	3.74
Min El Prs (ft)	474.41	W.P. Total (ft)	976.70	968.83
Delta EG (ft)	0.10	Conv. Total (cfs)	91137.8	88681.0
Delta WS (ft)	0.10	Top Width (ft)	624.33	617.89
BR Open Area (sq ft)	1243.38	Frctn Loss (ft)	0.07	0.01
BR Open Vel (ft/s)	1.74	C & E Loss (ft)	0.00	0.01
Coef of Q		Shear Total (lb/sq ft)	0.25	0.26
Br Sel Method	Energy only	Power Total (lb/ft s)	0.00	0.00

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.

CULVERT

RIVER: Geronimo Creek
REACH: 38 RS: 3270.17

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #1

Q Culv Group (cfs)	471.90	Culv Full Len (ft)	30.00
# Barrels	5	Culv Vel US (ft/s)	9.44
Q Barrel (cfs)	94.38	Culv Vel DS (ft/s)	9.44
E.G. US. (ft)	504.33	Culv Inv El Up (ft)	499.90
W.S. US. (ft)	504.24	Culv Inv El Dn (ft)	499.90
E.G. DS (ft)	502.31	Culv Frctn Ls (ft)	0.23
W.S. DS (ft)	502.03	Culv Exit Loss (ft)	1.10
Delta EG (ft)	2.02	Culv Entr Loss (ft)	0.69
Delta WS (ft)	2.21	Q Weir (cfs)	985.66
E.G. IC (ft)	504.34	Weir Sta Lft (ft)	237.85
E.G. OC (ft)	504.33	Weir Sta Rgt (ft)	814.95
Culvert Control	Outlet	Weir Submerg	0.00
Culv WS Inlet (ft)	501.90	Weir Max Depth (ft)	1.90
Culv WS Outlet (ft)	501.90	Weir Avg Depth (ft)	0.64
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	367.42
Culv Crt Depth (ft)	2.00	Min El Weir Flow (ft)	502.41

Note: Culvert critical depth exceeds the height of the culvert.
Note: During the supercritical calculations a hydraulic jump occurred inside of the culvert.
Note: The culvert inlet is submerged and the culvert flows full over part or all of its length. Therefore, the culvert inlet
equations are not valid and the supercritical result has been discarded. The outlet answer will be used.

CULVERT

RIVER: Geronimo Creek
REACH: 38 RS: 1916.548

CULVERT OUTPUT Profile #100YR Culv Group: Culvert #1

Q Culv Group (cfs)	1010.88	Culv Full Len (ft)	
# Barrels	3	Culv Vel US (ft/s)	9.07
Q Barrel (cfs)	336.96	Culv Vel DS (ft/s)	10.28
E.G. US. (ft)	491.90	Culv Inv El Up (ft)	486.00
W.S. US. (ft)	491.79	Culv Inv El Dn (ft)	486.00
E.G. DS (ft)	490.24	Culv Frctn Ls (ft)	0.07
W.S. DS (ft)	489.15	Culv Exit Loss (ft)	0.68
Delta EG (ft)	1.56	Culv Entr Loss (ft)	0.91
Delta WS (ft)	2.54	Q Weir (cfs)	446.68
E.G. IC (ft)	491.90	Weir Sta Lft (ft)	468.98
E.G. OC (ft)	491.83	Weir Sta Rgt (ft)	756.50
Culvert Control	Inlet	Weir Submerg	0.00
Culv WS Inlet (ft)	489.71	Weir Max Depth (ft)	0.90
Culv WS Outlet (ft)	489.28	Weir Avg Depth (ft)	0.69
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	198.69
Culv Crt Depth (ft)	3.28	Min El Weir Flow (ft)	491.01

SUMMARY OF MANNING'S N VALUES

River:Alligator Creek

Reach	River Sta.	n1	n2	n3
01	7001.815	.09	.08	.11
01	6666.048	.09	.08	.11
01	6071.593	.09	.08	.11
01	5632.614	.09	.08	.11
01	5199.927	.09	.08	.11
01	4778.006	.09	.08	.11
01	4412.863	.09	.08	.11
01	3944.025	.09	.08	.11
01	3480.455	.09	.08	.11
01	3050.542	.09	.08	.11
01	2636.258	.09	.08	.11
01	2163.958	.09	.08	.11
01	1779.514	.09	.08	.11
01	1363.093	.09	.08	.11
01	921.0338	.09	.08	.11
01	516.4432	.09	.08	.11
02	1478.984	.09	.08	.09
02	1002.400	.09	.08	.09
02	525.2717	.09	.08	.09
03	4046.940	.09	.08	.09
03	3685.581	.09	.08	.09
03	3306.994	.09	.08	.09
03	2877.564	.09	.08	.09
03	2259.372	.09	.08	.09
03	1881.173	.09	.08	.09
03	1544.100	.09	.08	.09
03	1077.772	.09	.08	.09
03	706.3887	.09	.08	.09
03	513.3656	.09	.08	.09
04	1377.197	.09	.08	.09
04	985.9020	.09	.08	.09
04	627.2396	.09	.08	.09
06	401.6497	.09	.05	.09
06	238.6775	.09	.05	.09
06	220.2640	Inl Struct		

06	198.3896	.09	.05	.09
05	6263.753	.09	.08	.09
05	5877.358	.09	.08	.09
05	5430.774	.09	.08	.09
05	4994.244	.09	.08	.09
05	4481.492	.09	.08	.09
05	4052.968	.09	.08	.09
05	3589.432	.06	.045	.06
05	3123.015	.06	.045	.06
05	2718.800	.06	.045	.06
05	2238.492	.06	.045	.06
05	1818.003	.06	.045	.06
05	1417.452	.06	.045	.06
05	1022.440	.06	.045	.06
05	665.7545	.06	.045	.06
07	25243.75	.09	.045	.06
07	25025.61	.09	.045	.06
07	24560.41	.09	.08	.06
07	24200.48	.06	.045	.09
07	23731.28	.09	.08	.11
07	23362.87	.09	.08	.11
07	22859.18	.09	.08	.11
07	22353.31	.06	.08	.11
07	21991.19	.06	.08	.11
07	21685.87	.09	.045	.06
07	21614.83	Culvert		
07	21553.36	.06	.045	.09
07	20964.85	.06	.045	.09
07	20856.37	.06	.045	.09
07	20761.90	.06	.045	.09
07	20649.80	.06	.045	.09
07	20129.65	.06	.08	.06
07	19663.41	.06	.08	.06
07	19197.29	.06	.08	.06
07	18777.99	.06	.08	.06
07	18309.60	.06	.08	.06
07	17891.29	.06	.08	.06
07	17389.77	.06	.08	.06
07	16922.28	.06	.08	.06
07	16482.07	.06	.08	.06
07	15972.79	.06	.045	.06
07	15642.81	.06	.045	.06
07	15202.46	.06	.08	.09
07	14794.83	.06	.08	.09
07	14297.19	.11	.08	.09
07	13852.29	.11	.08	.09
07	13285.73	.11	.08	.09
07	12908.47	.06	.08	.06
07	12366.32	.06	.08	.06
07	11988.83	.06	.08	.06
07	11959.56	Inl Struct		
07	11932.31	.06	.08	.06
07	11451.57	.06	.08	.06
07	10995.69	.06	.08	.06
07	10527.75	.06	.08	.06
07	10049.44	.06	.08	.06
07	9607.541	.06	.08	.06
07	8796.886	.06	.08	.06
07	8559.950	.06	.08	.06
07	8189.323	.06	.08	.06
07	7744.639	.06	.045	.06
07	7211.670	.06	.045	.06
07	6811.536	.06	.045	.06
07	6376.050	.06	.045	.06
07	6105.288	.06	.045	.06
07	6070.973	Culvert		
07	6030.020	.06	.045	.06
07	5955.235	Culvert		
07	5870.958	.06	.045	.06
07	5835.668	Bridge		
07	5801.258	.06	.045	.06
07	5453.075	.06	.045	.06
07	5058.763	.06	.045	.06
07	4661.763	.06	.045	.06
07	4063.939	.06	.08	.11
07	3562.239	.06	.08	.11
07	3160.334	.06	.08	.11
07	2743.151	.11	.08	.06
07	2334.364	.11	.08	.06
07	1818.598	.11	.08	.06
07	1363.123	.06	.08	.06
07	891.0135	.06	.08	.06
07	468.6593	.06	.08	.06
08	3868.154	.06	.045	.06
08	3684.417	Culvert		
08	3515.235	.06	.045	.06
09	21362.03	.06	.08	.06
09	21008.09	.06	.08	.06
09	20492.43	.06	.08	.06
09	20093.13	.06	.08	.06
09	19673.09	.06	.08	.06
09	19283.90	.06	.045	.06
09	18858.21	.06	.045	.06
09	18818.89	Culvert		
09	18790.20	.06	.045	.06

09	18309.19	.06	.045	.06
09	17868.16	.06	.045	.06
09	17398.76	.06	.045	.06
09	16937.24	.06	.045	.06
09	16533.45	.06	.045	.06
09	16085.89	.06	.045	.06
09	15624.50	.06	.045	.06
09	15140.54	.06	.045	.06
09	14734.32	.06	.045	.06
09	14298.98	.06	.045	.06
09	13849.77	.06	.045	.06
09	13403.25	.06	.045	.06
09	12980.02	.06	.045	.06
09	12611.53	.06	.045	.06
09	12209.63	.06	.045	.06
09	12179.1	Inl Struct		
09	12157.00	.06	.08	.06
09	11833.46	.06	.08	.06
09	11402.89	.06	.08	.06
09	10894.18	.06	.08	.06
09	10452.90	.06	.08	.06
09	10036.78	.06	.08	.06
09	9548.166	.06	.08	.06
09	9084.236	.06	.08	.06
09	8677.278	.06	.045	.06
09	8258.621	.06	.045	.06
09	7807.266	.06	.045	.06
09	7462.590	.06	.045	.06
09	7014.799	.06	.045	.06
09	6581.594	.06	.045	.06
09	6167.955	.06	.045	.06
09	5795.476	.06	.045	.06
09	5357.093	.06	.045	.06
09	5035.595	.06	.045	.06
09	4431.182	.06	.045	.06
09	3979.711	.06	.045	.06
09	3628.677	.06	.045	.06
09	3347.044	.06	.045	.06
09	2914.049	.06	.045	.06
09	2409.827	.06	.045	.06
09	2046.571	.06	.045	.06
09	1686.318	.06	.045	.06
09	1260.851	.06	.045	.06
09	870.0872	.06	.045	.06
09	534.2142	.06	.045	.06
09	512.7987	Culvert		
09	487.0423	.06	.045	.06
10	1723.322	.06	.045	.06
10	1322.144	.06	.045	.06
10	869.0064	.06	.045	.06
10	599.8826	.06	.045	.06
11	17092.60	.06	.045	.06
11	16641.90	.06	.045	.06
11	16152.15	.06	.045	.06
11	15742.48	.06	.045	.06
11	15240.02	.06	.045	.06
11	14822.08	.06	.045	.06
11	14366.75	.06	.045	.06
11	13574.50	.06	.045	.06
11	13530.24	Bridge		
11	13500.21	.06	.045	.06
11	13091.80	.06	.045	.06
11	12775.78	.06	.045	.06
11	12432.38	.06	.045	.06
11	12200.85	.06	.045	.06
11	11880.24	.06	.045	.06
11	11531.50	.06	.045	.06
11	11142.91	.06	.045	.06
11	10729.37	.06	.045	.06
11	10705.84	Culvert		
11	10667.06	.06	.045	.06
11	10263.35	.06	.045	.06
11	9837.850	.06	.08	.06
11	9375.285	.06	.08	.06
11	8842.052	.06	.08	.06
11	8360.648	.06	.045	.06
11	8033.496	.06	.045	.06
11	7584.099	.06	.045	.06
11	7142.863	.06	.045	.06
11	6669.727	.06	.045	.06
11	6169.099	.06	.045	.06
11	5761.961	.06	.045	.06
11	5410.477	.06	.045	.06
11	4993.689	.06	.045	.06
11	4654.933	.06	.045	.06
11	4180.005	.06	.045	.06
11	3711.341	.06	.045	.06
11	3333.704	.06	.045	.06
11	2904.701	.06	.045	.06
11	2517.772	.11	.045	.06
11	2208.812	.06	.045	.06
11	2185.628	Culvert		
11	2164.553	.06	.045	.06
11	1705.497	.06	.045	.06
11	1321.084	.06	.045	.06

11	934.6802	.06	.045	.06

River:Geronimo Creek

Reach	River Sta.	n1	n2	n3
17	15638.80	.06	.045	.06
17	15220.62	.06	.045	.06
17	14987.56	.06	.045	.06
17	14593.35	.06	.045	.06
17	14228.28	.06	.045	.06
17	13816.83	.06	.045	.06
17	13447.00	.06	.045	.06
17	13059.35	.06	.045	.06
17	12711.03	.06	.045	.06
17	12356.04	.06	.045	.06
17	11967.57	.06	.045	.06
17	11616.94	.06	.045	.06
17	11202.66	.06	.045	.06
17	10906.17	.06	.045	.06
17	10585.47	.06	.045	.06
17	9748.546	.06	.045	.06
17	9379.787	.06	.045	.06
17	9348.906	Inl Struct		
17	9323.837	.06	.045	.06
17	8900.254	.06	.045	.06
17	8543.387	.06	.045	.06
17	8172.811	.06	.045	.06
17	7778.655	.06	.045	.06
17	7421.944	.06	.045	.06
17	7047.496	.06	.045	.06
17	6609.844	.06	.045	.06
17	6234.014	.06	.045	.06
17	5810.414	.06	.045	.06
17	5335.999	.06	.045	.06
17	5313.559	Culvert		
17	5287.534	.06	.08	.06
17	5034.467	.06	.08	.06
17	4640.684	.06	.08	.06
17	4264.159	.06	.08	.06
17	3877.585	.06	.08	.06
17	3526.473	.06	.045	.06
17	3090.484	.06	.045	.06
17	2739.473	.06	.045	.06
17	2383.192	.06	.045	.06
17	2002.921	.06	.045	.06
17	1617.031	.06	.045	.06
17	1236.473	.06	.045	.06
17	1107.126	.06	.045	.06
17	1083.083	Culvert		
17	1063.544	.06	.045	.06
17	544.8980	.06	.045	.06
15	6539.199	.06	.045	.06
15	6172.728	.06	.045	.06
15	5924.155	.06	.045	.06
15	5794.695	.06	.045	.06
15	5338.748	.06	.045	.06
15	4941.976	.09	.045	.06
15	4572.145	.09	.045	.06
15	4172.543	.06	.045	.06
15	3826.604	.06	.045	.06
15	3429.473	.06	.045	.06
15	3051.701	.06	.045	.06
15	2667.292	.06	.08	.06
15	2259.224	.06	.08	.06
15	1895.613	.06	.08	.06
15	1524.027	.06	.08	.06
15	1222.843	.06	.08	.06
15	756.0126	.06	.08	.06
14	4216.048	.06	.045	.06
14	3901.041	.06	.045	.06
14	3501.408	.06	.045	.06
14	3127.227	.06	.045	.06
14	2763.318	.06	.045	.06
14	2353.072	.06	.045	.06
14	1952.266	.06	.045	.06
14	1545.949	.06	.045	.06
14	982.1239	.06	.045	.06
14	602.2983	.06	.045	.06
14	437.6996	.06	.045	.06
16	6761.568	.06	.045	.06
16	6378.598	.06	.045	.06
16	5958.476	.09	.08	.06
16	5535.360	.09	.08	.06
16	5064.207	.06	.08	.06
16	4678.552	.06	.08	.06
16	4319.062	.06	.08	.06
16	4240.247	Bridge		
16	4175.095	.06	.075	.09
16	3430.691	.06	.075	.09
16	3404.278	Culvert		
16	3387.990	.06	.075	.11
16	2914.585	.06	.075	.11
16	2459.023	.06	.075	.11

16	2443.984	Culvert		
16	2423.408	.06	.075	.06
16	1949.767	.06	.075	.06
16	1571.515	.06	.075	.09
16	1170.243	.06	.075	.09
12	6984.158	.06	.035	.06
12	6607.363	.06	.035	.06
12	6234.334	.06	.035	.06
12	5841.284	.06	.035	.06
12	5649.116	.06	.035	.06
12	5462.402	.06	.035	.06
12	4549.137	.06	.035	.06
12	4494.543	Culvert		
12	4419.659	.06	.045	.06
12	3290.656	.11	.08	.06
12	3269.041	Culvert		
12	3253.125	.11	.08	.06
12	2887.753	.06	.08	.11
12	2470.736	.06	.08	.11
12	2063.875	.06	.045	.06
12	1672.932	.06	.045	.11
12	1275.737	.06	.045	.11
12	1016.513	.06	.045	.11
13	3304.832	.06	.045	.06
13	2922.873	.06	.045	.06
13	2556.748	.06	.045	.06
13	2175.639	.06	.045	.06
13	1839.405	.06	.045	.06
13	1280.254	.06	.045	.06
13	1040.141	.06	.045	.06
18	9313.508	.06	.045	.06
18	8959.585	.06	.045	.06
18	8574.691	.06	.045	.06
18	8198.670	.06	.045	.06
18	7835.606	.06	.045	.06
18	7434.704	.06	.045	.06
18	7036.415	.06	.045	.06
18	6676.866	.06	.045	.06
18	6127.414	.06	.045	.06
18	6094.869	Culvert		
18	6064.352	.06	.045	.06
18	5472.841	.06	.045	.06
18	5182.329	.06	.045	.06
18	4716.460	.06	.045	.06
18	4192.974	.06	.045	.06
18	3848.818	.06	.045	.06
18	2917.404	.06	.045	.06
18	2485.782	.06	.075	.06
18	2453.47	Inl Struct		
18	2435.004	.06	.075	.06
18	2195.439	.06	.075	.06
18	1771.474	.06	.075	.06
18	1216.437	.06	.075	.06
21	3113.896	.11	.035	.11
21	2930.708	.11	.035	.11
21	2876.437	Culvert		
21	2830.964	.06	.045	.06
21	2749.93*	.06	.045	.06
21	2668.89*	.06	.045	.06
21	2587.86*	.06	.045	.06
21	2506.83*	.06	.045	.06
21	2425.798	.06	.045	.06
21	2077.844	.06	.045	.06
21	1695.479	.06	.045	.06
21	1426.042	.06	.045	.06
21	917.2910	.06	.045	.06
20	1245.643	.06	.08	.06
20	908.4860	.06	.08	.06
23	1674.871	.06	.05	.06
23	1370.369	.06	.05	.06
19	2959.619	.06	.075	.06
19	2581.703	.06	.075	.06
19	2159.497	.06	.075	.06
19	1812.917	.06	.075	.06
19	1391.640	.06	.075	.09
19	1031.941	.06	.075	.09
25	13317.21	.06	.075	.06
25	12910.43	.06	.075	.06
25	12612.31	.06	.075	.06
25	12569.19	Bridge		
25	12539.99	.06	.075	.06
25	12127.40	.06	.075	.06
25	11743.62	.06	.075	.06
25	11337.06	.06	.075	.06
25	10848.60	.06	.075	.06
25	10130.66	.09	.075	.09
25	9739.624	.09	.075	.09
25	8862.773	.09	.075	.09
25	8486.471	.09	.075	.09
25	8132.284	.09	.075	.09
25	8115.275	Bridge		
25	8094.885	.09	.075	.09
25	7691.704	.09	.075	.09
25	7236.833	.09	.075	.09
25	6807.332	.09	.075	.09

25	6481.168	.09	.075	.09
25	6008.903	.09	.075	.09
25	5639.565	.09	.075	.09
25	5280.304	.09	.075	.09
25	4878.634	.09	.075	.06
25	4572.304	.09	.075	.06
25	4143.621	.09	.075	.06
25	3760.534	.09	.075	.06
25	3127.250	.09	.075	.06
25	3091.959	.09	.075	.06
25	2952.909	.09	.075	.06
25	2602.701	.09	.075	.06
25	2187.395	.09	.075	.06
25	1801.236	.09	.075	.06
25	1372.753	.06	.075	.09
25	1008.586	.06	.075	.09
25	627.0599	.09	.075	.09
25	172.7209	.09	.075	.09
27	14681.39	.06	.045	.06
27	14283.12	.06	.045	.06
27	13934.16	.06	.045	.06
27	13576.62	.06	.045	.06
27	13205.19	.06	.045	.06
27	12891.22	.06	.045	.06
27	12413.49	.06	.045	.06
27	12042.30	.06	.045	.06
27	11651.30	.06	.045	.06
27	11232.07	.06	.045	.06
27	10854.26	.06	.045	.06
27	10508.23	.06	.045	.06
27	10103.85	.06	.045	.06
27	10050.53	Culvert		
27	10000.22	.06	.045	.06
27	9744.508	.06	.045	.06
27	9452.706	.06	.045	.06
27	9045.165	.06	.045	.06
27	8604.989	.06	.045	.06
27	8198.066	.06	.045	.06
27	7790.214	.06	.045	.06
27	7390.013	.06	.045	.06
27	6995.871	.06	.045	.06
27	6601.957	.06	.045	.06
27	6272.143	.06	.045	.06
27	5844.979	.06	.045	.06
27	5498.864	.06	.045	.06
27	5142.006	.06	.045	.06
27	4757.940	.09	.08	.09
27	4382.055	.09	.08	.09
27	4052.782	.06	.045	.06
27	4023.071	Culvert		
27	4004.546	.06	.045	.06
27	3910.34*	.06	.045	.06
27	3816.14*	.06	.045	.06
27	3721.93*	.06	.045	.06
27	3627.73*	.06	.045	.06
27	3533.530	.06	.045	.06
27	3124.060	.06	.045	.06
27	2688.031	.06	.045	.06
27	2276.643	.06	.045	.06
27	1885.065	.06	.045	.06
27	1656.575	.06	.08	.06
27	1637.609	Culvert		
27	1622.846	.06	.08	.06
27	1493.316	.06	.08	.06
27	1065.117	.06	.08	.06
27	424.2883	.06	.08	.06
30	8600.818	.06	.035	.11
30	8248.143	.06	.035	.11
30	7839.258	.06	.045	.06
30	7791.949	Culvert		
30	7771.700	.06	.045	.06
30	7764.346	.06	.045	.06
30	7753.43	Culvert		
30	7657.904	.06	.045	.06
30	7030.618	.06	.045	.06
30	6599.164	.06	.045	.06
30	6285.656	.06	.045	.06
30	5874.330	.06	.045	.06
30	5508.256	.11	.045	.06
30	5114.104	.11	.045	.06
30	4766.809	.11	.045	.06
30	4475.781	.06	.045	.06
30	4369.581	.06	.045	.06
30	4021.627	.06	.045	.06
30	3659.528	.06	.045	.06
30	3206.891	.06	.045	.06
30	2875.067	.06	.045	.06
30	2488.417	.06	.045	.06
30	2389.83*	.06	.045	.06
30	2291.26*	.06	.045	.06
30	2192.68*	.06	.045	.06
30	2094.10*	.06	.045	.06
30	1995.52*	.06	.045	.06
30	1896.95*	.06	.045	.06
30	1798.373	.06	.045	.06

30	1754.984	Inl Struct		
30	1651.787	.09	.08	.09
30	1304.458	.09	.08	.09
30	952.7689	.09	.08	.09
30	584.5117	.09	.08	.09
30	442.194	.09	.08	.09
30	188.829	.09	.08	.09
28	1312.527	.09	.08	.09
28	836.6860	.09	.08	.09
28	477.7337	.09	.08	.09
28	167.3792	.09	.08	.09
29	12573.41	.09	.075	.09
29	12224.45	.09	.075	.09
29	11866.70	.09	.075	.09
29	11382.95	.09	.075	.09
29	11012.83	.09	.075	.09
29	10510.78	.09	.075	.09
29	10488.67	Culvert		
29	10467.86	.09	.075	.09
29	9798.117	.09	.075	.11
29	9414.042	.09	.075	.11
29	9040.013	.09	.075	.11
29	8649.716	.09	.075	.11
29	8242.242	.09	.075	.11
29	7844.552	.09	.075	.11
29	7425.873	.09	.075	.11
29	7007.346	.09	.075	.11
29	6652.178	.09	.075	.11
29	6210.362	.09	.075	.11
29	5829.625	.09	.075	.11
29	5400.283	.09	.075	.11
29	5055.585	.09	.075	.11
29	4587.341	.09	.075	.06
29	4547.385	Bridge		
29	4510.887	.09	.075	.06
29	4274.090	.09	.075	.06
29	3838.440	.09	.075	.06
29	3471.418	.09	.075	.06
29	3100.540	.09	.075	.06
29	2708.030	.09	.075	.06
29	2307.927	.09	.075	.06
29	1917.213	.09	.075	.06
29	1561.481	.09	.075	.06
29	1252.745	.09	.075	.06
29	775.4671	.09	.075	.06
22	7594.440	.09	.05	.06
22	7048.587	.09	.05	.06
22	6681.791	.09	.05	.06
22	6362.637	.09	.05	.06
22	5856.173	.09	.08	.06
22	5440.594	.06	.08	.06
22	5109.083	.06	.08	.06
22	4718.687	.06	.08	.06
22	4415.806	.06	.08	.06
22	3861.461	.06	.08	.06
22	3523.679	.06	.08	.06
22	3144.195	.06	.08	.06
22	2698.041	.06	.08	.06
22	2197.010	.06	.08	.06
22	1814.518	.06	.08	.06
22	1411.655	.09	.08	.06
22	1083.360	.09	.08	.06
24	8320.812	.06	.08	.09
24	7897.323	.06	.08	.09
24	7431.888	.06	.08	.09
24	6994.305	.06	.08	.09
24	6693.844	.06	.08	.09
24	6315.686	.09	.08	.09
24	5794.832	.09	.08	.09
24	5310.562	.06	.08	.09
24	4975.231	.06	.08	.09
24	4608.562	.06	.08	.09
24	4205.708	.09	.08	.09
24	3652.195	.09	.08	.09
24	3271.389	.09	.08	.09
24	2891.920	.09	.08	.06
24	2505.899	.09	.08	.06
24	2042.937	.09	.08	.06
24	1604.807	.06	.08	.09
24	1222.286	.06	.08	.09
26	20703.36	.06	.045	.06
26	20681.18	Culvert		
26	20659.46	.06	.045	.06
26	20202.54	.06	.045	.06
26	19772.67	.06	.045	.06
26	19452.73	.06	.045	.06
26	19047.66	.06	.045	.06
26	18679.26	.06	.045	.06
26	18285.96	.06	.045	.06
26	17923.71	.06	.045	.06
26	17493.48	.06	.045	.06
26	17087.73	.06	.045	.06
26	16684.70	.06	.045	.06
26	16261.61	.06	.045	.06
26	15899.29	.06	.045	.06

26	15521.45	.06	.045	.06
26	15170.76	.06	.045	.06
26	14752.25	.06	.075	.06
26	14320.39	.06	.075	.06
26	13942.66	.06	.075	.06
26	13518.46	.06	.075	.06
26	13171.35	.06	.075	.06
26	12655.09	.09	.075	.09
26	12623.76	Culvert		
26	12600.59	.09	.075	.09
26	11836.06	.09	.075	.09
26	11515.08	.09	.075	.09
26	11193.76	.09	.075	.09
26	10861.39	.09	.075	.09
26	10340.73	.09	.075	.09
26	9979.560	.09	.075	.09
26	9558.537	.09	.075	.09
26	9121.228	.09	.075	.09
26	8255.131	.09	.075	.09
26	8215.094	Culvert		
26	8181.618	.09	.075	.09
26	7850.240	.09	.075	.09
26	7829.957	Culvert		
26	7813.000	.09	.075	.09
26	7402.282	.09	.075	.09
26	6819.392	.09	.075	.09
26	6422.728	.09	.075	.09
26	6065.681	.09	.075	.09
26	5513.595	.09	.075	.09
26	5120.130	.09	.075	.09
26	4800.164	.09	.075	.09
26	4445.884	.09	.075	.09
26	3821.744	.09	.075	.09
26	3464.756	.09	.075	.09
26	3064.365	.09	.075	.09
26	2304.277	.09	.075	.09
26	1766.342	.09	.075	.09
26	1397.603	.09	.075	.09
26	830.7893	.09	.075	.09
31	4331.490	.09	.075	.06
31	3956.241	.09	.075	.06
31	3515.958	.09	.075	.06
31	3131.035	.09	.075	.09
31	2756.918	.09	.075	.09
31	2350.095	.09	.075	.09
31	1892.244	.06	.075	.09
31	1447.178	.06	.075	.09
31	1064.086	.06	.075	.09
31	674.1167	.06	.075	.09
32	7040.648	.09	.08	.06
32	6965.67*	.09	.08	.06
32	6890.70*	.09	.08	.06
32	6815.72*	.09	.08	.06
32	6740.75*	.09	.08	.06
32	6665.780	.09	.08	.06
32	6126.720	.09	.08	.09
32	6107.988	Culvert		
32	6078.115	.09	.08	.09
32	5717.056	.09	.08	.09
32	5340.712	.09	.08	.09
32	4920.513	.09	.08	.09
32	4547.408	.09	.08	.09
32	4173.362	.09	.08	.09
32	3772.509	.09	.08	.09
32	3301.191	.09	.08	.09
32	2810.726	.09	.08	.09
32	2429.592	.09	.08	.09
32	2054.332	.09	.08	.09
32	1673.084	.09	.08	.09
32	1609.82*	.09	.08	.09
32	1546.55*	.09	.08	.09
32	1483.29*	.09	.08	.09
32	1420.02*	.09	.08	.09
32	1356.764	.09	.08	.09
32	1252.49*	.09	.08	.09
32	1148.22*	.09	.08	.09
32	1043.95*	.09	.08	.09
32	939.681*	.09	.08	.09
32	835.4105	.09	.08	.09
34	3601.852	.06	.075	.06
34	3497.879	Bridge		
34	3438.920	.06	.075	.06
34	3385.687	Bridge		
34	3270.013	.06	.075	.06
34	3174.291	.06	.075	.06
34	2802.762	.06	.075	.06
34	2468.746	.06	.075	.06
34	2028.468	.06	.075	.06
34	1630.172	.06	.075	.06
34	1138.698	.06	.075	.06
34	1014.423	.06	.075	.06
35	2028.254	.06	.08	.09
35	1670.695	.06	.08	.09
35	1623.926	Culvert		
35	1567.806	.06	.08	.09

35	1504.79*	.06	.08	.09
35	1441.78*	.06	.08	.09
35	1378.77*	.06	.08	.09
35	1315.75*	.06	.08	.09
35	1252.746	.06	.08	.09
35	925.0138	.06	.08	.09
36	12299.67	.09	.075	.09
36	11887.85	.09	.075	.09
36	11568.58	.09	.075	.09
36	10748.29	.09	.075	.09
36	10701.42	Bridge		
36	10628.91	.09	.075	.09
36	10285.02	.09	.075	.09
36	9835.625	.09	.075	.09
36	9310.851	.09	.075	.09
36	9016.529	.09	.075	.09
36	8598.124	.09	.075	.09
36	8254.599	.06	.075	.09
36	7852.151	.06	.075	.09
36	7464.759	.06	.075	.09
36	7025.109	.06	.075	.09
36	6651.383	.06	.075	.09
36	6218.691	.09	.075	.09
36	5762.456	.09	.075	.09
36	5280.270	.09	.075	.09
36	4942.821	.09	.075	.09
36	4576.013	.09	.075	.09
36	3697.462	.09	.075	.09
36	3326.681	.06	.075	.06
36	2968.468	.06	.075	.06
36	2348.780	.06	.075	.06
36	2300.292	Bridge		
36	2253.830	.09	.075	.06
36	1778.120	.09	.075	.06
36	1234.803	.09	.075	.06
36	1189.034	Bridge		
36	1140.938	.09	.075	.06
36	881.5888	.09	.075	.06
33	14886.32	.06	.045	.06
33	14400.06	.06	.045	.06
33	14337.06	Culvert		
33	14294.84	.06	.045	.06
33	14067.64	Culvert		
33	13611.99	.06	.045	.06
33	13566.6	Culvert		
33	13513.28	.11	.08	.06
33	13104.60	.11	.08	.06
33	13060.61	Culvert		
33	13018.95	.11	.08	.06
33	12498.76	.11	.08	.06
33	12066.33	.11	.045	.06
33	11666.34	.11	.045	.06
33	11228.95	.09	.08	.09
33	10814.51	.09	.08	.09
33	10421.99	.09	.08	.09
33	10020.34	.09	.08	.09
33	9610.082	.09	.08	.09
33	9546.39*	.09	.08	.09
33	9482.70*	.09	.08	.09
33	9419.01*	.09	.08	.09
33	9355.33*	.09	.08	.09
33	9291.643	.09	.08	.09
33	8356.693	.09	.08	.09
33	7929.136	.06	.08	.06
33	7506.919	.06	.08	.06
33	7114.497	.06	.08	.06
33	6708.256	.06	.08	.06
33	6341.458	.06	.08	.06
33	5838.546	.11	.08	.11
33	5464.178	.11	.08	.11
33	5083.775	.11	.08	.11
33	4561.275	.11	.08	.11
33	4521.891	Culvert		
33	4495.844	.11	.08	.11
33	4202.610	.06	.08	.06
33	3829.389	.06	.08	.06
33	3358.744	.06	.08	.06
33	3127.033	.06	.08	.06
33	3090.634	Culvert		
33	3058.142	.06	.08	.06
33	2606.397	.06	.08	.06
33	1986.304	.06	.08	.06
33	1414.563	.06	.08	.06
33	1356.759	Bridge		
33	1304.607	.06	.08	.06
33	1093.827	.06	.08	.06
37	3428.899	.09	.075	.11
37	3032.930	.09	.075	.11
37	2644.870	.09	.075	.11
37	2248.088	.09	.075	.11
37	1841.594	.09	.075	.11
37	1443.370	.09	.075	.11
37	1092.210	.09	.075	.11
38	4110.340	.11	.045	.11
38	3779.502	.11	.045	.11

38	3303.016	.11	.045	.11
38	3270.17	Culvert		
38	3240.494	.11	.045	.11
38	3035.443	.11	.045	.11
38	2681.133	.11	.045	.11
38	2283.605	.11	.045	.11
38	2215.80*	.11	.045	.11
38	2147.99*	.11	.045	.11
38	2080.19*	.11	.045	.11
38	2012.38*	.11	.045	.11
38	1944.585	.11	.045	.11
38	1916.548	Culvert		
38	1882.307	.11	.045	.11
38	1504.532	.11	.045	.11
38	1018.686	.06	.045	.06
38	935.686	.06	.045	.06
38	790.606	.06	.045	.06
38	597.3232	.06	.045	.06
39	9690.862	.09	.075	.06
39	9283.278	.09	.075	.06
39	8905.132	.09	.075	.06
39	8506.541	.09	.075	.06
39	8108.496	.09	.075	.06
39	7772.685	.09	.075	.06
39	7364.602	.09	.075	.06
39	6956.714	.09	.075	.06
39	6554.943	.06	.075	.09
39	6119.252	.06	.075	.09
39	5709.437	.06	.075	.09
39	5329.669	.09	.075	.09
39	4944.850	.09	.075	.09
39	4556.073	.06	.075	.09
39	4229.440	.06	.075	.09
39	3835.312	.06	.075	.09
39	3372.097	.06	.075	.09
39	2980.636	.06	.075	.06
39	2580.466	.06	.075	.06
39	2217.355	.06	.075	.06
39	1820.344	.06	.075	.06
39	1410.110	.06	.075	.06
39	644.4846	.06	.075	.06
39	401.4402	.06	.075	.06
39	0	.06	.075	.06

SUMMARY OF REACH LENGTHS

River: Alligator Creek

Reach	River Sta.	Left	Channel	Right
01	7001.815	316.8771	335.7675	358.9518
01	6666.048	581.1628	594.4552	561.3848
01	6071.593	366.977	438.9787	471.8685
01	5632.614	445.1512	432.6865	415.1775
01	5199.927	414.5997	421.9213	450.4943
01	4778.006	301.8232	365.1431	323.6184
01	4412.863	621.5308	468.8379	385.0062
01	3944.025	438.2895	463.5703	402.001
01	3480.455	448.0926	429.9129	423.5636
01	3050.542	392.9389	414.2839	365.983
01	2636.258	537.3488	472.2998	450.8037
01	2163.958	510.8095	384.4441	319.9366
01	1779.514	490.3018	416.4212	346.2931
01	1363.093	438.1888	442.0592	463.1261
01	921.0338	400.9505	404.5906	420.9539
01	516.4432	0	516.4433	0
02	1478.984	447.7535	476.5902	516.718
02	1002.400	403.7134	477.1291	433.9363
02	525.2717	0	525.2717	0
03	4046.940	207.8872	361.3589	308.7456
03	3685.581	325.7354	378.5867	370.8715
03	3306.994	408.9219	429.3305	390.0446
03	2877.664	438.3155	617.7919	475.6794
03	2259.872	268.1976	378.6993	383.1088
03	1881.173	298.8472	337.0723	306.799
03	1544.100	557.0048	466.3286	328.7335
03	1077.772	367.6507	371.3834	291.1909
03	706.3887	325.041	193.0232	130.0137
03	513.3656	0	513.3656	0
04	1377.197	217.2499	391.1977	355.7322
04	985.9020	333.2663	358.6624	102.1297
04	627.2396	0	627.2396	0
06	401.6497	227.1009	162.9734	106.206
06	238.6775	42.5783	40.288	46.895
06	220.2640	Inl Struct		
06	198.3896	0	198.3896	0
05	6263.753	347.3104	386.3951	424.7692
05	5877.358	403.4759	446.584	392.2774
05	5430.774	451.5754	436.5301	342.7749
05	4994.244	238.7748	512.7522	462.1094
05	4481.492	240.4686	428.5235	490.6475
05	4052.968	480.2405	463.5366	467.7488

05	3589.432	358.7153	466.417	362.8697
05	3123.015	397.0729	404.2154	395.0881
05	2718.800	517.4929	480.3078	431.2036
05	2238.492	455.1116	420.4892	351.2649
05	1818.003	367.3539	400.5511	378.3278
05	1417.452	301.7002	395.0116	386.4017
05	1022.440	256.4851	356.686	207.9642
05	665.7545	0	665.7545	0
07	25243.75	201.1523	218.1376	187.5863
07	25025.61	459.6591	465.1995	335.5969
07	24560.41	317.9171	359.9353	428.6027
07	24200.48	373.1683	469.1963	481.5036
07	23731.28	248.5194	368.4106	396.748
07	23362.87	274.79	503.6911	628.4974
07	22859.18	310.4456	505.8727	420.1606
07	22353.31	327.2501	362.1158	198.6396
07	21991.19	311.4235	305.3236	499.1487
07	21685.87	126.3064	132.5105	149.5524
07	21614.83	Culvert		
07	21553.36	569.8812	588.5058	304.956
07	20964.85	166.9225	108.4837	111.2737
07	20856.37	96.1424	94.4664	95.9963
07	20761.90	96.0381	112.0979	108.9476
07	20649.80	452.6369	520.1547	419.0502
07	20129.65	278.8836	466.2421	291.5088
07	19663.41	536.7158	466.115	65.3959
07	19197.29	436.187	419.3042	270.6564
07	18777.99	467.1412	468.3835	287.2565
07	18309.60	400.7425	418.2932	208.191
07	17891.29	208.5716	501.5151	388.2369
07	17389.77	318.2881	467.4958	442.3281
07	16922.28	568.1573	440.2051	377.6698
07	16482.07	505.8261	509.2868	428.4248
07	15972.79	357.9747	329.9707	338.0914
07	15642.81	378.0723	440.3519	408.7288
07	15202.46	369.9836	407.6292	400.5588
07	14794.83	356.6484	497.6414	390.1772
07	14297.19	333.0031	444.8994	377.2593
07	13852.29	111.933	566.5621	545.0953
07	13285.73	315.6388	377.2627	347.8776
07	12908.47	337.751	542.1484	539.8123
07	12366.32	290.3603	377.492	441.035
07	11988.83	49.1977	56.5203	51.2626
07	11959.56	Inl Struct		
07	11932.31	388.1323	480.7353	293.1276
07	11451.57	430.748	455.8813	235.3693
07	10995.69	490.5547	467.9393	328.744
07	10527.75	478.7009	478.3103	310.745
07	10049.44	488.0398	441.9049	341.6304
07	9607.541	374.4289	810.6544	435.6258
07	8796.886	115.3702	236.936	251.2903
07	8559.950	233.0231	370.6266	374.7134
07	8189.323	253.5315	444.6844	365.1518
07	7744.639	350.0164	532.9593	453.6226
07	7211.670	371.2692	400.1268	465.2324
07	6811.536	391.8481	435.4818	463.632
07	6376.050	244.0768	270.7622	349.5982
07	6105.288	124.1962	75.2674	74.4796
07	6070.973	Culvert		
07	6030.020	222.2367	159.0611	156.4613
07	5955.235	Culvert		
07	5870.958	89.6636	69.7	72.7136
07	5835.668	Bridge		
07	5801.258	462.6166	348.1833	120.4282
07	5453.075	494.2793	394.3126	306.9761
07	5058.763	255.5403	396.9997	289.3148
07	4661.763	162.8854	597.8233	622.0946
07	4063.939	214.1128	501.7003	533.5112
07	3562.239	122.6786	401.9056	345.9695
07	3160.334	250.23	417.1826	408.3175
07	2743.151	201.8429	408.7869	322.8216
07	2334.364	478.2547	515.7657	431.5073
07	1818.598	416.9909	455.4757	352.8674
07	1363.123	156.2944	472.1096	425.9506
07	891.0135	132.984	422.3542	399.1465
07	468.6593	0	468.6593	0
08	3868.154	350	350	350
08	3684.417	Culvert		
08	3515.235	0	0	0
09	21362.03	285.7935	353.9347	409.4429
09	21008.09	407.8066	515.6647	427.689
09	20492.43	377.8091	399.2985	315.6882
09	20093.13	427.2622	420.0354	378.0437
09	19673.09	400.1284	389.1948	240.5248
09	19283.90	445.2509	425.6877	376.2757
09	18858.21	67.1081	68.0089	70.2979
09	18818.89	Culvert		
09	18790.20	450.9346	481.013	336.7122
09	18309.19	303.9795	441.0275	778.0125
09	17868.16	299.3822	469.3984	421.4566
09	17398.76	438.2523	461.5262	317.0808
09	16937.24	397.7921	403.7872	211.7696
09	16533.45	487.0667	447.5634	310.3013
09	16085.89	448.0719	461.3883	376.5551
09	15624.50	343.5227	483.954	402.6617

09	15140.54	349.381	406.2212	360.7792
09	14734.32	444.0871	435.3426	412.097
09	14298.98	406.521	449.2069	461.1454
09	13849.77	387.2508	446.5235	478.5413
09	13403.25	374.6793	423.2326	362.0469
09	12980.02	414.4162	368.4843	334.8017
09	12611.53	415.3656	401.9019	373.3603
09	12209.63	58.9015	52.6311	57.2969
09	12179.1	Inl Struct		
09	12157.00	362.1891	323.5448	297.0256
09	11833.46	396.1313	430.5646	370.5447
09	11402.89	500.9212	508.7083	491.169
09	10894.18	417.8621	441.2855	435.6057
09	10452.90	370.0384	416.1224	366.6934
09	10036.78	438.3384	488.6128	454.657
09	9548.166	384.211	463.9314	445.4391
09	9084.236	373.8294	406.9581	383.7108
09	8677.278	345.7773	418.6565	492.7876
09	8258.621	370.0503	451.355	551.0323
09	7807.266	342.5946	344.676	312.638
09	7462.590	444.4343	447.7914	444.2098
09	7014.799	504.6483	433.2044	388.6479
09	6581.594	364.5484	413.6395	396.1075
09	6167.955	416.2841	372.4789	367.7116
09	5795.476	384.9041	438.3826	408.6096
09	5357.093	274.6835	321.4986	372.127
09	5035.595	283.9545	604.4125	416.0548
09	4431.182	279.069	451.4714	459.9667
09	3979.711	255.142	351.0336	317.6378
09	3628.677	249.2055	281.6333	271.187
09	3347.044	380.0846	432.9948	461.0656
09	2914.049	445.4087	504.2218	561.7308
09	2409.827	354.8872	363.2568	381.2265
09	2046.571	363.02	360.2529	321.6176
09	1686.318	458.2483	425.4663	359.2511
09	1260.851	281.0347	390.7646	319.019
09	870.0872	321.9184	335.8729	295.5467
09	534.2142	55.6029	47.1719	32.5133
09	512.7987	Culvert		
09	487.0423	0	487.0424	0
10	1723.322	386.1468	400.4204	357.0385
10	1322.144	410.9976	453.1381	443.9216
10	869.0064	247.306	269.1237	258.6487
10	599.8826	0	599.8827	0
11	17092.60	445.1122	450.7094	394.4416
11	16641.90	404.0833	489.7501	373.7854
11	16152.15	396.6201	409.6661	372.6556
11	15742.48	498.1979	502.4633	416.9698
11	15240.02	425.0317	417.9378	363.6996
11	14822.08	458.3516	455.3288	366.729
11	14366.75	1016.057	792.2517	678.0482
11	13574.50	59.7479	74.2871	69.879
11	13530.24	Bridge		
11	13500.21	352.8011	408.4143	483.9308
11	13091.80	328.6337	316.0168	308.6359
11	12775.78	394.9126	343.3947	325.5092
11	12432.38	184.2071	231.5303	263.7586
11	12200.85	206.304	320.6168	457.6577
11	11880.24	177.379	348.7416	373.2954
11	11531.50	407.5239	388.5892	398.5095
11	11142.91	361.2496	413.5316	904.4119
11	10729.37	57.0043	62.3182	78.8623
11	10705.84	Culvert		
11	10667.06	461.399	403.7111	298.4262
11	10263.35	388.571	425.5002	307.0024
11	9837.850	376.9623	462.565	391.0508
11	9375.285	390.3587	533.2326	446.9398
11	8842.052	583.6331	481.4039	469.6801
11	8360.648	512.6471	327.152	257.6082
11	8033.496	585.3336	449.3969	332.5459
11	7584.099	424.2862	441.2363	342.536
11	7142.863	395.4383	473.1358	513.5247
11	6669.727	374.733	500.6284	437.9975
11	6169.099	342.8412	407.1375	423.1312
11	5761.961	321.2181	351.4845	365.8982
11	5410.477	426.3904	416.7877	431.862
11	4993.689	354.5084	338.7561	317.4323
11	4654.933	442.8426	474.9278	364.9665
11	4180.005	431.1273	468.6639	466.7801
11	3711.341	403.5354	377.6373	285.707
11	3333.704	155.9745	429.0025	319.6127
11	2904.701	131.0204	386.9288	551.3078
11	2517.772	184.7605	308.9606	837.8565
11	2208.812	80.9359	44.2578	54.7368
11	2185.628	Culvert		
11	2164.553	942.2643	459.0561	160.6752
11	1705.497	293.2686	384.4131	142.246
11	1321.084	246.5672	386.4046	205.3504
11	934.6802	0	934.6802	0

River: Geronimo Creek

Reach	River Sta.	Left	Channel	Right

17	15638.80	434.1011	418.183	428.9797
17	15220.62	228.7682	233.0579	245.8404
17	14987.56	383.8815	394.2049	385.1917
17	14593.35	368.9055	365.0743	343.8048
17	14228.28	405.3781	411.4453	400.6751
17	13816.83	373.0711	369.8358	380.713
17	13447.00	377.2181	387.6468	395.1345
17	13059.35	352.0716	348.3176	392.1498
17	12711.03	353.9718	354.9916	329.8173
17	12356.04	399.7861	388.4744	405.7743
17	11967.57	334.8266	350.6277	350.0617
17	11616.94	384.516	414.2827	378.8831
17	11202.66	302.0024	296.4892	315.5003
17	10906.17	316.484	320.7024	299.2134
17	10585.47	845.6448	836.9238	706.1513
17	9748.546	587.3746	368.7602	314.8786
17	9379.787	57.1015	55.9491	71.7676
17	9348.906	Inl Struct		
17	9323.837	326.0022	423.5825	583.2534
17	8900.254	311.9066	356.8677	345.6691
17	8543.387	360.7238	370.5765	375.6257
17	8172.811	341.0787	394.1559	391.5104
17	7778.655	324.8326	356.7107	341.4624
17	7421.944	334.228	374.4485	377.8037
17	7047.496	432.8317	437.6515	418.0721
17	6609.844	379.3276	375.8303	420.2566
17	6234.014	332.4637	423.5998	451.8659
17	5810.414	305.3681	474.4152	552.3862
17	5335.999	76.1246	48.4651	53.178
17	5313.559	Culvert		
17	5287.534	333.6213	253.0668	241.8456
17	5034.467	377.1601	393.783	385.718
17	4640.684	353.3281	376.5245	368.1169
17	4264.159	385.9808	386.5744	368.5294
17	3877.585	380.6053	351.1119	394.2824
17	3526.473	375.7405	435.9887	441.955
17	3090.484	283.2336	351.0116	324.5191
17	2739.473	286.8145	356.2807	369.9755
17	2383.192	321.5945	380.2709	370.6151
17	2002.921	369.7477	385.8899	349.9421
17	1617.031	379.3638	380.557	350.5905
17	1236.473	232.1845	129.347	125.9254
17	1107.126	47.1893	43.5823	42.7312
17	1083.083	Culvert		
17	1063.544	385.6751	518.6462	567.7373
17	544.8980	0	544.898	0
15	6539.199	351.4289	366.4713	337.6589
15	6172.728	237.5242	248.5723	252.6753
15	5924.155	128.5104	129.4602	129.2974
15	5794.695	417.6939	455.9472	420.357
15	5338.748	422.0375	396.7716	299.2407
15	4941.976	311.7488	369.8314	437.005
15	4572.145	392.3676	399.602	391.0273
15	4172.543	347.8097	345.9384	346.4733
15	3826.604	386.6852	397.1316	386.5746
15	3429.473	348.5359	377.7721	378.6535
15	3051.701	343.7289	384.4084	391.1359
15	2667.292	369.0496	408.0652	335.3997
15	2259.224	324.6467	363.6113	375.1685
15	1895.613	338.1746	371.5858	404.2941
15	1524.027	218.165	301.1843	253.969
15	1222.843	413.5024	466.8308	265.8218
15	756.0126	0	756.0127	0
14	4216.048	313.3188	315.0179	300.7441
14	3901.041	390.3984	399.6328	382.2923
14	3501.408	361.748	374.1814	383.6398
14	3127.227	328.6769	363.9087	390.4704
14	2763.318	388.5444	410.2453	450.1992
14	2353.072	350.3776	400.8065	475.1386
14	1952.266	393.8743	406.3167	377.8549
14	1545.949	560.9191	563.8256	441.1044
14	982.1239	313.3944	379.8256	457.5303
14	602.2983	114.7879	164.5987	97.5901
14	437.6996	0	437.6996	0
16	6761.568	333.2605	382.97	282.5546
16	6378.598	420.5271	420.1164	319.8012
16	5958.476	511.5957	422.4822	319.3728
16	5535.360	336.8004	471.6709	325.8935
16	5064.207	300.25	385.655	379.0145
16	4678.552	248.8867	359.4897	477.6786
16	4319.062	127.6347	143.9675	139.6412
16	4240.247	Bridge		
16	4175.095	815.8543	744.4038	686.2413
16	3430.691	57.7891	42.7009	53.207
16	3404.278	Culvert		
16	3387.990	503.6201	473.4049	425.4205
16	2914.585	507.4735	455.5621	272.2949
16	2459.023	30.7755	35.6151	30.3201
16	2443.984	Culvert		
16	2423.408	342.8996	473.641	556.6768
16	1949.767	284.1602	378.2524	360.0482
16	1571.515	316.5433	401.2717	324.3676
16	1170.243	0	1170.243	0
12	6984.158	380.6178	376.7943	374.5238
12	6607.363	365.3187	373.0289	367.5067

12	6234.334	375.481	393.0504	392.4484
12	5841.284	184.0005	192.1685	208.3698
12	5649.116	179.1616	186.7133	508.7991
12	5462.402	157.0443	913.2656	788.2288
12	4549.137	180.8037	129.4775	117.2228
12	4494.543	Culvert		
12	4419.659	1559.568	1129.003	785.1018
12	3290.656	39.5	37.5306	41.0142
12	3269.041	Culvert		
12	3253.125	365.3167	365.3724	370.6756
12	2887.753	335.8526	417.0171	332.901
12	2470.736	404.3588	406.8611	412.4035
12	2063.875	395.0904	390.943	391.1084
12	1672.932	345.7417	397.1948	397.4926
12	1275.737	220.9441	259.2236	314.3742
12	1016.513	0	1016.514	0
13	3304.832	389.8282	381.9588	371.906
13	2922.873	364.9459	366.1248	393.5512
13	2556.748	380.2828	381.1087	382.7361
13	2175.639	323.0017	336.2342	323.0667
13	1839.405	556.4516	559.1506	381.1539
13	1280.254	220.8558	240.113	189.4709
13	1040.141	0	1040.142	0
18	9313.508	352.9922	353.9234	373.8837
18	8959.585	322.9026	384.8942	378.8158
18	8574.691	364.8237	376.0206	363.7789
18	8198.670	348.7728	363.0634	365.6486
18	7835.606	401.4136	400.9025	408.8434
18	7434.704	402.6921	398.2888	399.7744
18	7036.415	359.0523	359.5494	358.2065
18	6676.866	539.3099	549.4524	542.3186
18	6127.414	62.0276	63.0621	63.5719
18	6094.869	Culvert		
18	6064.352	566.9172	591.5103	600.0416
18	5472.841	287.5978	290.5114	335.2512
18	5182.329	427.3815	465.8683	388.9252
18	4716.460	349.1755	523.4862	318.6569
18	4192.974	239.017	344.1565	345.4221
18	3848.818	806.3518	931.4141	912.5979
18	2917.404	472.0658	431.622	400.0976
18	2485.782	49.3974	50.7778	50.2002
18	2453.47	Inl Struct		
18	2435.004	240.3348	239.5645	254.916
18	2195.439	358.1578	423.9652	362.6415
18	1771.474	539.6075	555.0371	486.8555
18	1216.437	0	1216.438	0
21	3113.896	242.4327	183.189	190.844
21	2930.708	91.2089	99.7437	93.2449
21	2876.437	Culvert		
21	2830.964	77.59	81.03	86.71
21	2749.93*	77.59	81.03	86.71
21	2668.89*	77.59	81.03	86.71
21	2587.86*	77.59	81.03	86.71
21	2506.83*	77.59	81.03	86.72
21	2425.798	308.3299	347.9531	372.0047
21	2077.844	330.0172	382.3659	428.698
21	1695.479	258.8647	269.4362	277.7837
21	1426.042	493.3033	508.7519	450.4968
21	917.2910	0	917.291	0
20	1245.643	266.9882	337.1578	259.3693
20	908.4860	0	908.486	0
23	1674.871	378.8804	304.5024	240.5056
23	1370.369	0	1370.369	0
19	2959.619	463.2745	377.9161	289.1649
19	2581.703	427.3318	422.2057	174.1158
19	2159.497	192.7337	346.5803	297.2148
19	1812.917	281.5671	421.2776	401.5915
19	1391.640	344.1237	359.6989	380.6417
19	1031.941	0	1031.941	0
25	13317.21	350.2579	406.7847	283.3296
25	12910.43	418.945	298.1129	269.8562
25	12612.31	43.4152	72.323	50.3228
25	12569.19	Bridge		
25	12539.99	335.8019	412.5912	343.557
25	12127.40	411.8751	383.7791	359.679
25	11743.62	399.8877	406.562	385.0595
25	11337.06	372.3504	488.4547	306.2836
25	10848.60	556.169	717.9411	436.9337
25	10130.66	212.0876	391.0443	337.8724
25	9739.624	455.1501	876.8506	752.7775
25	8862.773	355.8535	376.3012	356.2647
25	8486.471	362.1966	354.1876	320.2751
25	8132.284	36.8197	37.3984	39.924
25	8115.275	Bridge		
25	8094.885	356.2409	403.1812	417.1037
25	7691.704	373.124	454.8715	495.2036
25	7236.833	566.5043	429.496	417.8997
25	6807.332	590.993	326.1636	347.2597
25	6481.168	256.7397	472.2656	456.1856
25	6008.903	229.6954	369.338	337.6189
25	5639.565	332.2952	359.2613	308.8604
25	5280.304	333.4203	401.6692	327.002
25	4878.634	313.1846	306.3301	301.445
25	4572.304	465.093	428.683	344.1429
25	4143.621	353.8834	383.0871	311.2751

25	3760.534	320.6529	633.2842	244.1717
25	3127.250	41.6364	35.2912	75.723
25	3091.959	454.9319	139.0494	305.168
25	2952.909	356.8775	350.2085	295.0042
25	2602.701	468.1606	415.3059	299.8809
25	2187.395	293.7777	386.1593	301.3598
25	1801.236	237.5115	428.4829	236.989
25	1372.753	194.6099	364.1663	495.3964
25	1008.586	172.3487	381.5271	219.839
25	627.0599	335.5106	454.3389	270.4736
25	172.7209	0	172.721	0
27	14681.39	386.7778	393.4093	366.1268
27	14283.12	335.9655	348.9654	334.1954
27	13934.16	325.4066	357.5402	360.4409
27	13576.62	364.049	371.4209	374.6476
27	13205.19	325.7252	313.9694	313.3768
27	12891.22	434.1731	477.7312	441.6342
27	12413.49	395.365	371.1918	350.5442
27	12042.30	380.2817	390.9899	369.6399
27	11651.30	403.5764	419.2338	418.5641
27	11232.07	381.8865	377.8072	385.5514
27	10854.26	344.4152	346.0366	369.0018
27	10508.23	388.2396	404.3763	439.1467
27	10103.85	103.6239	103.632	111.6534
27	10050.53	Culvert		
27	10000.22	263.9054	255.7162	243.7904
27	9744.508	314.4623	291.8028	277.9853
27	9452.706	387.7675	407.5407	437.7955
27	9045.165	412.7809	440.1759	430.3432
27	8604.989	382.9468	406.9229	409.9745
27	8198.066	392.1585	407.8517	419.8266
27	7790.214	404.718	400.2007	402.3251
27	7390.013	376.234	394.1426	428.0096
27	6995.871	380.1406	393.9143	383.5869
27	6601.957	360.3767	329.8134	306.3777
27	6272.143	409.7471	427.1645	343.939
27	5844.979	384.1928	346.1143	337.6734
27	5498.864	403.4738	356.8583	319.1178
27	5142.006	322.009	384.0656	257.2964
27	4757.940	382.4666	375.8839	362.4096
27	4382.055	426.8768	329.2737	357.948
27	4052.782	47.6125	48.236	47.7664
27	4023.071	Culvert		
27	4004.546	68.17	94.2	92.88
27	3910.34*	68.17	94.2	92.88
27	3816.14*	68.17	94.2	92.88
27	3721.93*	68.17	94.2	92.88
27	3627.73*	68.17	94.2	92.88
27	3533.530	392.157	409.47	302.5341
27	3124.060	435.2763	436.0287	386.0178
27	2688.031	401.7776	411.3887	366.3249
27	2276.643	392.0542	391.5779	320.4559
27	1885.065	239.804	228.4901	209.8204
27	1656.575	34.7815	33.7289	25.8705
27	1637.609	Culvert		
27	1622.846	100.7764	129.5302	170.1021
27	1493.316	313.2132	428.1984	530.1259
27	1065.117	491.1143	640.8295	557.3452
27	424.2883	0	424.2883	0
30	8600.818	313.8764	352.6744	287.2875
30	8248.143	465.8061	408.8857	580.3275
30	7839.258	190.9489	67.5575	90.1707
30	7791.949	Culvert		
30	7771.700	360.9033	7.3546	143.6439
30	7764.346	41.0006	106.4412	116.3593
30	7753.43	Culvert		
30	7657.904	413.8622	627.2862	681.8007
30	7030.618	406.0105	431.4544	406.0114
30	6599.164	282.5613	313.5082	344.6639
30	6285.656	381.0567	411.3255	404.1142
30	5874.330	328.8894	366.0745	364.4279
30	5508.256	376.3388	394.1516	399.988
30	5114.104	332.4883	347.2951	377.3804
30	4766.809	272.0274	291.0276	283.4778
30	4475.781	119.4911	106.2005	98.0555
30	4369.581	345.4413	347.954	335.6773
30	4021.627	362.0945	362.099	371.1948
30	3659.528	444.5581	452.6374	424.7389
30	3206.891	337.8287	331.822	326.8275
30	2875.067	306.3475	386.6509	396.9445
30	2488.417	47.35	98.58	139.84
30	2389.83*	47.35	98.58	139.84
30	2291.26*	47.35	98.58	139.84
30	2192.68*	47.35	98.58	139.84
30	2094.10*	47.35	98.58	139.84
30	1995.52*	47.35	98.58	139.84
30	1896.95*	47.35	98.58	139.84
30	1798.373	172.6228	146.586	123.63
30	1754.984	Inl Struct		
30	1651.787	621.1644	347.3289	124.9134
30	1304.458	409.7341	351.6897	280.1441
30	952.7689	312.8593	368.2572	421.6099
30	584.5117	188.63	142.51	99.223
30	442.194	216.076	253.365	215.319
30	188.829	0	188.829	0

28	1312.527	243.9385	475.8412	439.6001
28	836.6860	284.917	358.9523	324.6048
28	477.7337	303.8037	310.3544	254.6568
28	167.3792	0	167.3793	0
29	12573.41	308.0085	348.9603	224.2902
29	12224.45	391.3735	357.7508	307.6457
29	11866.70	482.5137	483.7534	323.1254
29	11382.95	434.5767	370.1185	290.3197
29	11012.83	299.685	502.0555	515.0581
29	10510.78	54.9385	42.9158	33.1638
29	10488.67	Culvert		
29	10467.86	740.664	669.7486	516.5801
29	9798.117	314.3015	384.0739	405.9039
29	9414.042	304.9668	374.029	416.124
29	9040.013	336.7387	390.2977	358.2435
29	8649.716	295.1397	407.4746	612.2401
29	8242.242	339.1014	397.6893	491.9119
29	7844.552	373.0454	418.679	446.4229
29	7425.873	424.182	418.5273	344.2821
29	7007.346	345.6688	355.1681	296.1855
29	6652.178	481.5285	441.8158	367.6627
29	6210.362	378.8249	380.7363	317.9783
29	5829.625	402.545	429.3416	350.4621
29	5400.283	337.6532	344.6979	342.2997
29	5055.585	546.2352	468.2441	378.0243
29	4587.341	73.8052	76.4545	115.1754
29	4547.385	Bridge		
29	4510.887	198.732	236.797	266.1884
29	4274.090	452.1692	435.6498	346.7969
29	3838.440	359.6472	367.0216	337.445
29	3471.418	314.4229	370.8782	435.7287
29	3100.540	419.6972	392.5104	314.9641
29	2708.030	424.2159	400.1011	364.9897
29	2307.927	366.1398	390.7147	373.9275
29	1917.213	305.0819	355.7317	369.4066
29	1561.481	318.1668	308.7358	319.6527
29	1252.745	349.3372	477.2786	456.984
29	775.4671	0	775.4671	0
22	7594.440	473.5183	545.8524	529.2771
22	7048.587	537.0441	366.7957	384.4369
22	6681.791	291.4821	319.1548	264.7842
22	6362.637	391.9968	506.4636	395.7773
22	5856.173	518.9112	415.5793	393.1967
22	5440.594	231.5418	331.5114	340.3283
22	5109.083	303.8868	390.396	407.4705
22	4718.687	265.21	302.8808	282.3919
22	4415.806	402.5773	554.3446	543.7776
22	3861.461	315.8268	337.7816	318.0625
22	3523.679	447.7763	379.4844	371.0186
22	3144.195	319.3216	446.1543	370.0232
22	2698.041	478.2929	501.0304	709.17
22	2197.010	285.3027	382.4927	408.1603
22	1814.518	422.5328	402.8624	364.144
22	1411.655	351.0515	328.2954	358.346
22	1083.360	0	1083.36	0
24	8320.812	409.7391	423.4892	410.0119
24	7897.323	422.6553	465.4345	418.108
24	7431.888	383.6419	437.5832	387.9205
24	6994.305	370.1347	300.461	309.0024
24	6693.844	397.2874	378.1584	277.9
24	6315.686	285.262	520.8543	352.2738
24	5794.832	526.2656	484.2697	408.4498
24	5310.562	310.9831	335.331	353.0999
24	4975.231	345.2192	366.6691	336.6691
24	4608.562	395.3803	402.8544	394.8405
24	4205.708	308.2733	553.512	276.3963
24	3652.195	362.9312	380.8066	325.0794
24	3271.389	397.786	379.4687	384.1767
24	2891.920	338.2908	386.0211	370.4221
24	2505.899	388.8574	462.9625	364.7771
24	2042.937	398.189	438.13	402.0442
24	1604.807	333.7934	382.5202	384.3939
24	1222.286	0	1222.287	0
26	20703.36	41.9757	43.9061	34.2292
26	20681.18	Culvert		
26	20659.46	455.1274	456.9186	446.8066
26	20202.54	386.1351	429.8696	369.8799
26	19772.67	362.4323	319.9434	338.7835
26	19452.73	389.2508	405.0669	395.3338
26	19047.66	373.9942	368.403	364.4608
26	18679.26	328.7768	393.294	365.8525
26	18285.96	371.3056	362.2573	415.6905
26	17923.71	459.1818	430.2245	422.0495
26	17493.48	324.0978	405.7559	320.137
26	17087.73	400.2594	403.0286	387.4263
26	16684.70	426.1385	423.085	445.2547
26	16261.61	310.5951	362.3238	364.023
26	15899.29	348.5801	377.8416	351.4837
26	15521.45	331.7129	350.6899	323.0355
26	15170.76	424.3839	418.5044	417.5193
26	14752.25	363.1418	431.8624	306.0848
26	14320.39	406.7749	377.7344	359.1287
26	13942.66	336.0848	424.2	339.4996
26	13518.46	298.9474	347.107	416.2751
26	13171.35	102.6778	516.2545	528.2963

26	12655.09	198.5808	54.5074	88.2826
26	12623.76	Culvert		
26	12600.59	1032.068	764.5282	509.6231
26	11836.06	327.5651	320.9752	286.4541
26	11515.08	337.7418	321.3184	347.6321
26	11193.76	328.2318	332.3774	310.8098
26	10861.39	495.0046	520.6604	465.8914
26	10340.73	361.3465	361.172	345.4831
26	9979.560	414.9377	421.0235	382.0185
26	9558.537	360.97	437.3078	380.0061
26	9121.228	683.1101	866.0972	920.603
26	8255.131	65.0609	73.5136	73.4359
26	8215.094	Culvert		
26	8181.618	379.4198	331.3776	239.0024
26	7850.240	34.0274	37.2393	38.3201
26	7829.957	Culvert		
26	7813.000	322.0461	410.7185	438.5031
26	7402.282	576.5764	582.8902	390.4076
26	6819.392	357.819	396.6644	317.5762
26	6422.728	365.2824	357.0465	327.7752
26	6065.681	411.414	552.0859	445.3164
26	5513.595	348.9104	393.4645	316.6343
26	5120.130	450.6006	319.9671	252.1247
26	4800.164	355.9395	354.2796	315.959
26	4445.884	593.1668	624.1394	494.1883
26	3821.744	334.8098	356.9885	358.5328
26	3464.756	317.2033	400.3912	494.9114
26	3064.365	742.6813	760.0876	503.2503
26	2304.277	503.2364	537.9353	380.0413
26	1766.342	338.4427	368.739	241.0681
26	1397.603	467.733	566.8141	386.6034
26	830.7893	0	830.7893	0
31	4331.490	373.8651	375.2488	340.874
31	3956.241	426.9599	440.2829	385.6222
31	3515.958	396.6529	384.9228	365.7503
31	3131.035	359.9341	374.1168	362.1338
31	2756.918	400.0917	406.8233	382.4745
31	2350.095	416.3117	457.8506	377.4218
31	1892.244	414.3229	445.066	422.3249
31	1447.178	379.3032	383.0918	382.6776
31	1064.086	352.3148	389.9701	381.9165
31	674.1167	0	684.0243	0
32	7040.648	72.59	74.97	72.63
32	6965.67*	72.59	74.97	72.63
32	6890.70*	72.59	74.97	72.63
32	6815.72*	72.59	74.97	72.63
32	6740.75*	72.59	74.97	72.63
32	6665.780	618.1407	539.0594	317.3222
32	6126.720	62.9391	48.6057	84.8661
32	6107.988	Culvert		
32	6078.115	328.1167	361.0584	404.7224
32	5717.056	336.0665	376.3442	364.7165
32	5340.712	412.7263	420.1993	389.8864
32	4920.513	421.5388	373.1046	344.4497
32	4547.408	292.8191	374.0458	381.0008
32	4173.362	339.6925	400.8536	325.1592
32	3772.509	490.076	471.3174	399.7578
32	3301.191	580.1242	490.4457	330.5921
32	2810.726	299.76	381.1339	460.0953
32	2429.592	270.9096	375.2602	380.7791
32	2054.332	362.3217	381.2471	344.0867
32	1673.084	54.23	63.26	53.7
32	1609.82*	54.23	63.26	53.7
32	1546.55*	54.23	63.26	53.7
32	1483.29*	54.23	63.26	53.7
32	1420.02*	54.23	63.26	53.7
32	1356.764	85.4	104.27	88.28
32	1252.49*	85.4	104.27	88.28
32	1148.22*	85.4	104.27	88.28
32	1043.95*	85.4	104.27	88.28
32	939.681*	85.4	104.27	88.28
32	835.4105	0	846.5212	0
34	3601.852	158.2668	162.1903	165.8433
34	3497.879	Bridge		
34	3438.920	160.4557	168.907	191.3458
34	3385.687	Bridge		
34	3270.013	135.7125	95.7223	116.5249
34	3174.291	334.878	371.5291	322.4909
34	2802.762	315.5084	334.0163	306.1058
34	2468.746	389.2619	440.2779	426.4363
34	2028.468	369.6994	398.2953	410.6439
34	1630.172	462.7758	491.474	504.026
34	1138.698	146.4832	124.2754	123.124
34	1014.423	0	1014.424	0
35	2028.254	442.2154	357.5586	367.1299
35	1670.695	102.4645	102.8892	92.9252
35	1623.926	Culvert		
35	1567.806	56.3	63.01	76.37
35	1504.79*	56.3	63.01	76.37
35	1441.78*	56.3	63.01	76.37
35	1378.77*	56.3	63.01	76.37
35	1315.75*	56.3	63.01	76.37
35	1252.746	237.2963	327.7322	398.1151
35	925.0138	0	925.0138	0
36	12299.67	343.1238	411.8266	345.5858

36	11887.85	339.9154	319.2607	121.1461
36	11568.58	515.2759	820.2918	412.8408
36	10748.29	133.83	119.38	114.12
36	10701.42	Bridge		
36	10628.91	378.7577	343.8875	268.7093
36	10285.02	426.0775	449.4015	185.6627
36	9835.625	264.736	524.7748	288.3695
36	9310.851	297.5972	294.3218	226.0442
36	9016.529	315.3444	418.4055	378.3203
36	8598.124	323.9932	343.5245	362.2905
36	8254.599	368.7624	402.4477	392.7356
36	7852.151	435.214	387.3915	363.7902
36	7464.759	401.9991	439.6503	414.1566
36	7025.109	344.4111	373.7259	343.0566
36	6651.383	374.6916	432.6925	397.9457
36	6218.691	334.0147	456.2353	350.037
36	5762.456	330.3883	482.1853	402.7827
36	5280.270	421.9042	337.4491	367.1057
36	4942.821	470.5814	366.808	363.4637
36	4576.013	337.1971	878.5508	433.5865
36	3697.462	290.1498	370.7817	356.4531
36	3326.681	259.4055	358.2123	303.0585
36	2968.468	625.765	619.6884	612.2827
36	2348.780	83.5856	94.9497	85.7613
36	2300.292	Bridge		
36	2253.830	384.3766	475.7101	502.6178
36	1778.120	585.5717	543.3168	501.1488
36	1234.803	99.8414	93.8651	86.3186
36	1189.034	Bridge		
36	1140.938	225.8612	259.3498	293.447
36	881.5888	0	881.5888	0
33	14886.32	498.3857	486.2521	469.9279
33	14400.06	113.4058	105.2214	105.8099
33	14337.06	Culvert		
33	14294.84	647.3979	682.8513	710.7036
33	14067.64	Culvert		
33	13611.99	109.4957	98.7155	80.969
33	13566.6	Culvert		
33	13513.28	421.9584	408.6763	432.1377
33	13104.60	48.289	85.6496	60.8529
33	13060.61	Culvert		
33	13018.95	488.2035	520.1865	511.9075
33	12498.76	367.5173	432.4293	508.9752
33	12066.33	400.2306	399.9931	398.1819
33	11666.34	381.0636	437.386	319.8152
33	11228.95	385.9614	414.4452	386.4692
33	10814.51	384.9564	392.5216	386.5633
33	10421.99	352.4335	401.6477	378.9079
33	10020.34	374.0438	410.2621	415.485
33	9610.082	117.98	63.69	66.62
33	9546.39*	117.98	63.69	66.62
33	9482.70*	117.98	63.69	66.62
33	9419.01*	117.98	63.69	66.62
33	9355.33*	117.98	63.69	66.62
33	9291.643	467.6464	934.9502	640.0931
33	8356.693	438.8238	427.5562	389.8312
33	7929.136	369.5282	422.2166	384.265
33	7506.919	389.2132	392.4233	398.7024
33	7114.497	368.6747	406.2401	382.1371
33	6708.256	342.4946	366.7985	350.7277
33	6341.458	425.245	502.9115	447.6716
33	5838.546	366.0155	374.3678	327.2164
33	5464.178	354.6231	380.4034	387.0813
33	5083.775	409.2546	522.5	445.9675
33	4561.275	62.5836	65.4308	57.8078
33	4521.891	Culvert		
33	4495.844	249.8073	293.2345	305.1338
33	4202.610	344.0843	373.2208	333.0179
33	3829.389	379.7683	470.6453	341.1083
33	3358.744	194.7105	231.7106	233.3033
33	3127.033	69.3154	68.8909	61.1194
33	3090.634	Culvert		
33	3058.142	433.5131	451.7453	441.815
33	2606.397	353.7716	620.0931	262.9642
33	1986.304	242.1055	571.741	624.246
33	1414.563	92.8387	109.956	109.1751
33	1356.759	Bridge		
33	1304.607	282.8406	210.7793	225.8036
33	1093.827	0	1093.828	0
37	3428.899	360.3125	395.9687	371.5372
37	3032.930	392.7579	388.0601	397.8642
37	2644.870	405.619	396.7821	451.5403
37	2248.088	386.8939	406.4943	319.1719
37	1841.594	384.1436	398.2236	381.7842
37	1443.370	304.2207	351.1599	365.7928
37	1092.210	0	1092.211	0
38	4110.340	314.7802	330.8378	362.5096
38	3779.502	463.678	476.4866	412.7587
38	3303.016	71.4082	62.5219	51.027
38	3270.17	Culvert		
38	3240.494	216.8011	205.0507	181.6448
38	3035.443	376.3145	354.3108	307.9209
38	2681.133	432.2549	397.5273	343.2197
38	2283.605	65.02	67.8	64.82
38	2215.80*	65.02	67.8	64.82

38	2147.99*	65.02	67.8	64.82
38	2080.19*	65.02	67.8	64.82
38	2012.38*	65.02	67.8	64.82
38	1944.585	68.0778	62.2786	70.1054
38	1916.548	Culvert		
38	1882.307	266.3229	377.7745	349.5582
38	1504.532	393.2158	485.8467	596.8879
38	1018.686	84.2	83	82.3
38	935.686	142.72	145.08	147
38	790.606	176.55	193.3	200.45
38	597.3232	0	597.3233	0
39	9690.862	385.4327	407.5848	389.5711
39	9283.278	304.6555	378.1452	274.4975
39	8905.132	401.5752	398.5918	390.437
39	8506.541	391.6813	398.0444	391.5797
39	8108.496	338.1369	335.8114	330.0207
39	7772.685	400.7303	408.0828	405.5974
39	7364.602	400.6406	407.8872	407.9999
39	6956.714	400.5613	401.7716	407.9999
39	6554.943	367.0393	435.6909	364.0603
39	6119.252	323.4726	409.815	309.8879
39	5709.437	319.4479	379.7681	321.2285
39	5329.669	381.5575	384.8193	370.7581
39	4944.850	378.2885	388.7769	381.0043
39	4556.073	340.7052	326.6185	350.8089
39	4229.440	394.521	394.1279	283.2778
39	3835.312	391.8108	463.2146	566.6164
39	3372.097	364.3153	391.4615	405.733
39	2980.636	365.8099	400.1699	450.2014
39	2580.466	346.1378	363.1111	387.7234
39	2217.355	382.413	397.0112	403.4298
39	1820.344	265.0868	410.2331	429.3361
39	1410.110	510.2121	765.6264	279.4459
39	644.4846	227.1197	243.0443	204.5877
39	401.4402	564.0453	401.4403	321.5373
39	0	0	0	0

Profile Output Table - Standard Table 1

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Geronimo Creek	17	15638.80	100YR	2621.05	623.99	625.62	625.17	625.78	0.006696	3.61	934.40	865.58	0.51
Geronimo Creek	17	15220.62	100YR	2621.05	622.04	624.18	623.02	624.26	0.002192	2.53	1351.48	941.40	0.31
Geronimo Creek	17	14987.56	100YR	2621.05	620.15	623.71	622.53	623.80	0.001796	2.74	1363.79	849.36	0.29
Geronimo Creek	17	14593.35	100YR	2621.05	619.89	623.23	621.46	623.28	0.000983	2.17	1749.66	919.23	0.22
Geronimo Creek	17	14228.28	100YR	2621.05	619.94	622.83	621.32	622.88	0.001172	2.23	1593.54	888.69	0.24
Geronimo Creek	17	13816.83	100YR	2621.05	619.85	622.26	621.03	622.32	0.001607	2.32	1459.82	881.96	0.27
Geronimo Creek	17	13447.00	100YR	2621.05	619.31	621.27	620.55	621.40	0.004306	3.29	1000.88	693.34	0.42
Geronimo Creek	17	13059.35	100YR	2621.05	616.90	620.01	618.97	620.12	0.002604	3.18	1221.97	844.65	0.35
Geronimo Creek	17	12711.03	100YR	2621.05	615.96	619.23	617.88	619.33	0.001892	2.98	1284.74	855.32	0.30
Geronimo Creek	17	12356.04	100YR	2621.05	615.78	618.60	617.27	618.69	0.001748	2.70	1378.46	815.52	0.29
Geronimo Creek	17	11967.57	100YR	2621.05	615.28	617.62	616.77	617.74	0.003513	3.27	1116.17	787.77	0.39
Geronimo Creek	17	11616.94	100YR	2621.05	613.98	616.85	615.45	616.92	0.001631	2.59	1427.98	860.84	0.28
Geronimo Creek	17	11202.66	100YR	2621.05	613.89	615.83	614.99	615.93	0.004220	3.21	1150.53	846.41	0.42
Geronimo Creek	17	10906.17	100YR	2621.05	610.07	614.58	613.61	614.78	0.003391	4.18	985.25	739.91	0.41
Geronimo Creek	17	10585.47	100YR	2621.05	609.99	613.93	612.41	614.05	0.001586	3.13	1232.25	625.68	0.29
Geronimo Creek	17	9748.546	100YR	2621.05	609.23	612.66	611.36	612.73	0.001719	2.81	1476.30	849.43	0.29
Geronimo Creek	17	9379.787	100YR	2621.05	609.99	611.92	611.02	611.97	0.002106	2.32	1598.03	1109.76	0.30
Geronimo Creek	17	9348.906 Pieper Rd		Inl Struct									
Geronimo Creek	17	9323.837	100YR	2621.05	609.96	611.43	610.76	611.53	0.006054	3.29	1159.19	1116.90	0.48
Geronimo Creek	17	8900.254	100YR	2621.05	608.00	609.75	608.83	609.82	0.003332	2.76	1294.43	892.85	0.37
Geronimo Creek	17	8543.387	100YR	2621.05	605.94	608.69	607.48	608.80	0.002798	3.06	1145.22	707.50	0.35
Geronimo Creek	17	8172.811	100YR	2621.05	603.98	608.05	606.33	608.14	0.001231	2.74	1331.63	614.48	0.25
Geronimo Creek	17	7778.655	100YR	2621.05	603.93	607.59	605.87	607.66	0.001189	2.52	1419.94	725.29	0.24
Geronimo Creek	17	7421.944	100YR	2621.05	603.97	607.16	605.63	607.23	0.001265	2.46	1514.73	811.71	0.25
Geronimo Creek	17	7047.496	100YR	2621.05	603.98	606.58	605.40	606.66	0.001908	2.64	1364.51	849.47	0.30
Geronimo Creek	17	6609.844	100YR	2621.05	602.75	605.69	604.57	605.78	0.002146	2.79	1241.79	697.35	0.31
Geronimo Creek	17	6234.014	100YR	2621.05	601.98	605.19	603.47	605.24	0.000961	2.18	1740.44	884.16	0.22
Geronimo Creek	17	5810.414	100YR	2621.05	601.80	604.65	603.22	604.74	0.001594	2.55	1289.43	674.32	0.27
Geronimo Creek	17	5335.999	100YR	2621.05	597.45	603.99	602.67	604.05	0.001375	2.24	1585.23	888.21	0.25
Geronimo Creek	17	5313.559 Barbarossa Rd		Culvert									
Geronimo Creek	17	5287.534	100YR	2621.05	597.00	603.03	602.24	603.15	0.007866	2.97	971.64	635.91	0.33
Geronimo Creek	17	5034.467	100YR	2621.05	598.62	601.70	600.35	601.77	0.003414	2.22	1250.82	669.04	0.23
Geronimo Creek	17	4640.684	100YR	2621.05	597.78	600.54	599.06	600.60	0.002743	1.87	1308.83	626.96	0.20
Geronimo Creek	17	4264.159	100YR	2621.05	595.93	599.64	597.74	599.70	0.002295	2.10	1401.17	1198.62	0.19
Geronimo Creek	17	3877.585	100YR	2621.05	594.26	598.68	597.18	598.73	0.002769	2.21	1635.82	1544.40	0.21
Geronimo Creek	17	3526.473	100YR	2621.05	594.00	597.92	596.21	598.01	0.001446	2.85	1219.28	810.23	0.27
Geronimo Creek	17	3090.484	100YR	2621.05	593.42	597.26	595.39	597.38	0.001505	2.89	1058.99	467.77	0.28
Geronimo Creek	17	2739.473	100YR	2621.05	593.58	595.96	595.48	596.32	0.008926	5.31	628.91	399.57	0.63
Geronimo Creek	17	2383.192	100YR	2621.05	590.27	594.54	593.28	594.73	0.002694	3.95	907.04	425.60	0.37
Geronimo Creek	17	2002.921	100YR	2621.05	590.00	593.84	592.20	593.95	0.001621	3.03	1151.75	533.05	0.29
Geronimo Creek	17	1617.031	100YR	2621.05	589.99	593.22	591.93	593.31	0.001705	2.74	1332.23	791.70	0.29
Geronimo Creek	17	1236.473	100YR	2621.05	589.63	592.65	591.29	592.71	0.001465	2.53	1668.50	987.44	0.26
Geronimo Creek	17	1107.126	100YR	2621.05	585.99	592.53	590.68	592.56	0.000499	1.79	2406.00	1107.04	0.16
Geronimo Creek	17	1083.083 Huber Rd		Culvert									
Geronimo Creek	17	1063.544	100YR	2621.05	585.73	592.51	590.43	592.54	0.000343	1.68	2662.70	1102.35	0.14
Geronimo Creek	17	544.8980	100YR	2621.05	584.21	592.43	588.24	592.44	0.000122	1.29	4064.26	1544.30	0.09
Geronimo Creek	15	6539.199	100YR	14243.17	582.03	591.97	588.72	592.09	0.001069	4.78	6863.07	2068.60	0.28
Geronimo Creek	15	6172.728	100YR	14243.17	582.09	591.59	587.83	591.71	0.001114	4.62	6599.77	1962.51	0.28
Geronimo Creek	15	5924.155	100YR	14243.17	581.86	591.28	587.65	591.42	0.001184	4.86	5846.13	1567.63	0.29
Geronimo Creek	15	5794.695	100YR	14243.17	581.07	591.09	588.01	591.26	0.001285	5.22	5413.91	1413.90	0.30
Geronimo Creek	15	5338.748	100YR	14243.17	580.33	590.59	586.85	590.76	0.001055	4.83	5510.03	1403.12	0.28
Geronimo Creek	15	4941.976	100YR	14243.17	579.97	589.99	587.20	590.27	0.001672	6.14	5811.38	1876.73	0.35
Geronimo Creek	15	4572.145	100YR	14243.17	579.76	589.37	586.26	589.63	0.001695	5.72	6036.10	2057.12	0.34
Geronimo Creek	15	4172.543	100YR	14243.17	579.71	588.39	585.71	588.80	0.002554	6.62	3640.66	999.29	0.41
Geronimo Creek	15	3826.604	100YR	14243.17	579.72	587.42	585.28	587.83	0.003091	6.84	3811.43	1225.43	0.45
Geronimo Creek	15	3429.473	100YR	14243.17	577.78	586.75	584.73	586.96	0.001482	5.15	4959.56	1239.33	0.32
Geronimo Creek	15	3051.701	100YR	14243.17	576.05	586.26	583.81	586.47	0.001240	4.94	4962.13	1203.10	0.29
Geronimo Creek	15	2667.292	100YR	14243.17	574.02	585.69	582.86	585.86	0.002260	3.72	4514.31	1058.07	0.22
Geronimo Creek	15	2259.224	100YR	14243.17	572.77	584.83	581.63	584.99	0.002254	3.66	4753.56	1171.96	0.22
Geronimo Creek	15	1895.613	100YR	14243.17	572.02	584.13	581.33	584.27	0.001902	3.51	5156.36	1328.92	0.21
Geronimo Creek	15	1524.027	100YR	14243.17	572.25	583.32	581.08	583.48	0.002622	3.51	4831.60	1565.56	0.23
Geronimo Creek	15	1222.843	100YR	14243.17	572.12	582.63	579.40	582.79	0.002611	3.53	4817.43	1365.45	0.23
Geronimo Creek	15	756.0126	100YR	14243.17	571.58	581.77	578.77	581.86	0.001702	2.83	6142.30	1776.57	0.19
Geronimo Creek	14	4216.048	100YR	1702.93	588.10	589.89	588.62	589.97	0.003315	1.74	748.59	410.14	0.33
Geronimo Creek	14	3901.041	100YR	1702.93	587.85	588.68	587.64	588.76	0.004959	1.58	746.70	590.82	0.37
Geronimo Creek	14	3501.408	100YR	1702.93	585.72	587.59	586.47	587.63	0.001902	2.04	1115.79	725.19	0.28
Geronimo Creek	14	3127.227	100YR	1702.93	583.88	586.14	585.50	586.34	0.007583	4.50	597.67	780.23	0.57
Geronimo Creek	14	2763.318	100YR	1702.93	583.26	584.03	582.12	584.17	0.004365	1.60	598.36	462.42	0.36
Geronimo Creek	14	2353.072	100YR	1702.93	579.05	583.04	581.40	583.13	0.001511	2.63	877.29	594.52	0.27
Geronimo Creek	14	1952.266	100YR	1702.93	578.12	581.75	581.45	582.05	0.005977	5.33	656.34	954.87	0.54
Geronimo Creek	14	1545.949	100YR	1702.93	575.38	581.16	578.90	581.24	0.000906	2.85	1199.25	825.26	0.23
Geronimo Creek	14	982.1239	100YR	1702.93	574.22	580.96	577.44	580.99	0.000259	1.66	1999.06	1102.15	0.12
Geronimo Creek	14	602.2983	100YR	1702.93	573.51	580.92	576.29	580.93	0.000072	1.00	3511.03	1351.30	0.07

Geronimo Creek	14	437.6996		100YR	1702.93	570.33	580.92	573.56	580.93	0.000019	0.60	5315.23	1357.68	0.04
Geronimo Creek	16	6761.568		100YR	15642.93	569.53	580.52	576.73	580.71	0.001368	5.18	5675.50	1419.97	0.31
Geronimo Creek	16	6378.598		100YR	15642.93	568.04	580.15	576.01	580.33	0.000956	5.03	6174.52	1343.13	0.27
Geronimo Creek	16	5958.476		100YR	15642.93	566.60	579.77	574.77	579.89	0.001362	3.51	6140.57	1281.10	0.18
Geronimo Creek	16	5535.360		100YR	15642.93	566.08	579.39	572.51	579.48	0.000942	2.86	6493.91	1104.95	0.15
Geronimo Creek	16	5064.207		100YR	15642.93	565.41	578.91	572.67	579.06	0.001354	3.69	5150.64	826.00	0.18
Geronimo Creek	16	4678.552		100YR	15642.93	565.54	578.44	572.09	578.60	0.001375	3.44	5105.02	973.21	0.18
Geronimo Creek	16	4319.062		100YR	15642.93	564.00	578.07	569.74	578.18	0.001006	3.43	6661.87	1530.57	0.16
Geronimo Creek	16	4240.247	HWY 123 N		Bridge									
Geronimo Creek	16	4175.095		100YR	15642.93	564.00	576.15	569.59	576.42	0.002485	5.22	4780.48	1165.54	0.26
Geronimo Creek	16	3430.691		100YR	15642.93	559.72	574.74	569.81	574.88	0.001685	4.17	6493.22	1422.51	0.21
Geronimo Creek	16	3404.278	Geronimo Dr		Culvert									
Geronimo Creek	16	3387.990		100YR	15642.93	559.72	574.64	569.85	574.84	0.002188	4.76	6184.48	1431.03	0.25
Geronimo Creek	16	2914.585		100YR	15642.93	560.28	573.36	569.33	573.62	0.003133	5.80	5029.02	1107.72	0.30
Geronimo Creek	16	2459.023		100YR	15642.93	557.58	572.66	567.64	572.78	0.001202	3.66	6392.61	1154.06	0.18
Geronimo Creek	16	2443.984	Heinemeyer Rd		Culvert									
Geronimo Creek	16	2423.408		100YR	15642.93	557.58	572.66	567.23	572.77	0.000954	3.32	6412.77	1149.09	0.16
Geronimo Creek	16	1949.767		100YR	15642.93	559.80	571.91	568.24	572.14	0.002516	4.58	4610.14	1179.24	0.26
Geronimo Creek	16	1571.515		100YR	15642.93	559.62	571.02	566.89	571.27	0.002587	4.81	4658.12	1152.87	0.26
Geronimo Creek	16	1170.243		100YR	15642.93	557.42	569.78	565.38	570.16	0.003422	5.62	4133.83	1166.10	0.30
Geronimo Creek	12	6984.158		100YR	3662.00	600.78	603.57	603.17	603.80	0.004857	5.27	1361.89	1063.01	0.60
Geronimo Creek	12	6607.363		100YR	3662.00	599.98	602.58	601.46	602.66	0.001923	3.50	2118.56	1459.90	0.38
Geronimo Creek	12	6234.334		100YR	3662.00	598.93	601.61	600.94	601.73	0.003455	4.22	1757.23	1419.89	0.50
Geronimo Creek	12	5841.284		100YR	3662.00	597.62	600.75	599.34	600.83	0.001619	3.50	2274.82	1463.31	0.36
Geronimo Creek	12	5649.116		100YR	3662.00	597.68	600.51	598.57	600.55	0.001143	2.61	2822.31	1736.45	0.29
Geronimo Creek	12	5462.402		100YR	3662.00	595.94	600.43	597.08	600.44	0.000108	1.15	6644.11	2485.58	0.10
Geronimo Creek	12	4549.137		100YR	3662.00	592.96	600.40	595.76	600.41	0.000024	0.67	10956.53	3067.57	0.05
Geronimo Creek	12	4494.543	HWY 123 N		Culvert									
Geronimo Creek	12	4419.659		100YR	3662.00	592.14	595.97	595.18	596.03	0.002592	2.98	2053.93	1452.20	0.34
Geronimo Creek	12	3290.656		100YR	3662.00	588.81	593.68	591.35	593.73	0.001757	1.97	2111.58	791.41	0.17
Geronimo Creek	12	3269.041	Thormeyer Rd		Culvert									
Geronimo Creek	12	3253.125		100YR	3662.00	588.38	593.15	591.41	593.23	0.003085	2.52	1825.02	919.60	0.23
Geronimo Creek	12	2887.753		100YR	3662.00	587.26	592.27	589.60	592.35	0.001929	2.27	1847.56	917.58	0.19
Geronimo Creek	12	2470.736		100YR	3662.00	586.85	591.34	589.58	591.45	0.003560	2.73	1635.02	915.04	0.24
Geronimo Creek	12	2063.875		100YR	3662.00	585.89	590.38	589.05	590.46	0.001730	3.34	1939.51	985.78	0.30
Geronimo Creek	12	1672.932		100YR	3662.00	585.91	589.68	588.13	589.78	0.001777	3.32	2090.73	995.01	0.30
Geronimo Creek	12	1275.737		100YR	3662.00	583.93	588.79	587.79	588.94	0.002809	4.31	1762.96	1087.92	0.39
Geronimo Creek	12	1016.513		100YR	3662.00	582.44	588.31	586.84	588.44	0.001489	3.60	2182.94	1555.70	0.29
Geronimo Creek	13	3304.832		100YR	2281.15	591.34	595.30	594.38	595.49	0.004002	4.40	809.09	490.69	0.44
Geronimo Creek	13	2922.873		100YR	2281.15	588.29	593.41	592.26	593.76	0.005035	5.03	612.00	495.45	0.50
Geronimo Creek	13	2556.748		100YR	2281.15	587.87	592.04	591.30	592.22	0.003312	4.12	880.67	584.81	0.41
Geronimo Creek	13	2175.639		100YR	2281.15	586.34	590.97	589.67	591.13	0.002485	3.79	942.33	602.54	0.36
Geronimo Creek	13	1839.405		100YR	2281.15	586.03	590.17	589.19	590.30	0.002453	3.66	1066.41	733.53	0.35
Geronimo Creek	13	1280.254		100YR	2281.15	585.69	588.96	587.77	589.08	0.002414	3.47	1101.89	708.63	0.35
Geronimo Creek	13	1040.141		100YR	2281.15	585.76	588.58	587.09	588.64	0.001535	2.53	1425.00	881.63	0.27
Geronimo Creek	18	9313.508		100YR	6455.00	581.89	586.19	585.02	586.31	0.002614	4.33	2825.69	1415.29	0.38
Geronimo Creek	18	8959.585		100YR	6455.00	581.72	585.32	583.82	585.40	0.002293	3.68	3281.78	1924.02	0.34
Geronimo Creek	18	8574.691		100YR	6455.00	580.16	584.68	583.34	584.74	0.001393	3.09	4098.65	2551.41	0.27
Geronimo Creek	18	8198.670		100YR	6455.00	579.99	584.18	582.39	584.26	0.001202	2.96	3854.53	2371.52	0.26
Geronimo Creek	18	7835.606		100YR	6455.00	577.96	583.68	581.66	583.78	0.001455	3.82	3216.11	1410.02	0.29
Geronimo Creek	18	7434.704		100YR	6455.00	578.00	583.04	581.07	583.14	0.001746	3.99	3016.40	1118.83	0.32
Geronimo Creek	18	7036.415		100YR	6455.00	576.41	582.29	579.65	582.42	0.001835	4.23	2661.83	910.89	0.33
Geronimo Creek	18	6676.866		100YR	6455.00	575.75	581.77	579.23	581.87	0.001253	3.80	3046.74	1022.84	0.28
Geronimo Creek	18	6127.414		100YR	6455.00	573.00	581.24	578.82	581.33	0.000788	3.49	3533.89	1069.59	0.23
Geronimo Creek	18	6094.869	FM 2623		Culvert									
Geronimo Creek	18	6064.352		100YR	6455.00	572.50	578.84	578.48	579.39	0.005443	7.53	1560.36	743.98	0.57
Geronimo Creek	18	5472.841		100YR	6455.00	571.47	576.75	575.06	576.94	0.003014	5.38	2150.68	760.31	0.42
Geronimo Creek	18	5182.329		100YR	6455.00	570.10	575.90	573.49	576.09	0.002610	5.14	2164.92	743.12	0.39
Geronimo Creek	18	4716.460		100YR	6455.00	568.54	574.50	573.02	574.78	0.003635	6.11	1880.40	700.36	0.46
Geronimo Creek	18	4192.974		100YR	6455.00	566.45	573.39	571.07	573.61	0.002431	5.52	2182.44	736.12	0.39
Geronimo Creek	18	3848.818		100YR	6455.00	566.47	572.23	570.64	572.59	0.004444	6.40	1614.35	577.08	0.51
Geronimo Creek	18	2917.404		100YR	6455.00	562.03	569.62	566.62	569.88	0.002174	5.38	1875.57	475.49	0.37
Geronimo Creek	18	2485.782		100YR	6455.00	561.51	568.87	565.68	568.97	0.001926	3.17	2636.52	777.51	0.21
Geronimo Creek	18	2453.47	Heinemeyer Rd		Inl Struct									
Geronimo Creek	18	2435.004		100YR	6455.00	560.08	568.80	565.36	568.92	0.001871	3.42	2523.56	693.76	0.21
Geronimo Creek	18	2195.439		100YR	6455.00	559.82	568.44	564.42	568.53	0.001279	2.54	2785.73	645.46	0.17
Geronimo Creek	18	1771.474		100YR	6455.00	559.82	567.76	564.32	567.90	0.002145	3.51	2340.74	642.70	0.23
Geronimo Creek	18	1216.437		100YR	6455.00	557.93	567.22	562.31	567.27	0.000693	2.12	3934.47	1074.90	0.13
Geronimo Creek	21	3113.896		100YR	1410.24	579.92	582.90	580.90	582.92	0.000190	1.13	1540.33	798.79	0.12
Geronimo Creek	21	2930.708		100YR	1410.24	578.15	582.80	581.19	582.86	0.000656	2.28	1368.34	1012.75	0.23
Geronimo Creek	21	2876.437	HWY 123 N		Culvert									
Geronimo Creek	21	2830.964		100YR	1410.24	576.10	580.39	579.91	580.56	0.006356	3.69	490.75	443.27	0.50
Geronimo Creek	21	2749.93*		100YR	1410.24	577.66	579.76	579.38	579.95	0.008826	3.94	456.06	437.40	0.58
Geronimo Creek	21	2668.89*		100YR	1410.24	576.90	579.01	578.64	579.22	0.008779	4.05	442.34	418.20	0.58
Geronimo Creek	21	2587.86*		100YR	1410.24	576.14	578.25	577.91	578.47	0.009167	4.22	421.89	393.75	0.60
Geronimo Creek	21	2506.83*		100YR	1410.24	575.38	577.54	577.15	577.76	0.008162	4.15	427.04	380.96	0.57
Geronimo Creek	21	2425.798		100YR	1410.24	574.62	577.19	576.40	577.32	0.003390	3.17	575.52	409.66	0.38
Geronimo Creek	21	2077.844		100YR	1410.24	573.26	575.65	574.99	575.85	0.005356	3.71	431.75	302.45	0.47
Geronimo Cr[redacted]	21	1695.479		100YR	1410.24	570.23	[redacted].73	572.47	573.05	0.010791	4.76	359.69	365.87	0.66

Geronimo Creek	21	1426.042		100YR	1410.24	569.79	571.26	570.74	571.33	0.003953	2.49	762.72	873.86	0.38
Geronimo Creek	21	917.2910		100YR	1410.24	566.82	568.95	568.55	569.06	0.005387	3.75	674.09	681.24	0.48
Geronimo Creek	20	1245.643		100YR	16651.09	555.71	567.34	561.60	567.49	0.001589	3.68	5969.43	1406.16	0.19
Geronimo Creek	20	908.4860		100YR	16651.09	554.23	566.97	560.68	567.07	0.001207	3.08	6982.38	1568.47	0.17
Geronimo Creek	23	1674.871		100YR	2098.07	559.36	562.93	561.60	563.07	0.003124	3.17	734.98	350.02	0.34
Geronimo Creek	23	1370.369		100YR	2098.07	554.31	562.88	558.29	562.90	0.000158	1.19	2027.60	581.48	0.09
Geronimo Creek	19	2959.619		100YR	19671.07	550.55	565.76	560.54	565.92	0.001319	4.03	7174.02	1600.02	0.19
Geronimo Creek	19	2581.703		100YR	19671.07	549.31	565.25	559.07	565.41	0.001555	3.96	6823.73	1433.22	0.21
Geronimo Creek	19	2159.497		100YR	19671.07	549.21	564.80	556.82	564.96	0.001195	3.49	6886.83	1324.64	0.18
Geronimo Creek	19	1812.917		100YR	19671.07	546.02	564.39	555.93	564.57	0.001155	3.80	6721.26	1241.56	0.18
Geronimo Creek	19	1391.640		100YR	19671.07	544.71	563.60	557.42	563.91	0.002388	5.24	5505.61	1131.72	0.26
Geronimo Creek	19	1031.941		100YR	19671.07	544.09	562.91	555.83	563.15	0.001800	4.61	6728.88	1583.02	0.23
Geronimo Creek	25	13317.21		100YR	21832.01	546.12	561.36	555.20	561.52	0.001375	3.67	7762.93	1597.71	0.19
Geronimo Creek	25	12910.43		100YR	21832.01	545.66	560.75	555.51	560.94	0.001872	4.38	7209.48	1765.19	0.23
Geronimo Creek	25	12612.31		100YR	21832.01	544.76	560.23	554.88	560.41	0.001685	4.21	7897.75	2166.45	0.22
Geronimo Creek	25	12569.19	Glenwinkel Rd		Bridge									
Geronimo Creek	25	12539.99		100YR	21832.01	544.38	559.90	555.11	560.08	0.001813	4.10	7669.55	2049.31	0.22
Geronimo Creek	25	12127.40		100YR	21832.01	544.22	559.10	554.69	559.32	0.002155	4.43	7356.55	2333.20	0.24
Geronimo Creek	25	11743.62		100YR	21832.01	543.44	558.69	552.76	558.78	0.000888	3.01	10946.67	2890.17	0.16
Geronimo Creek	25	11337.06		100YR	21832.01	541.96	558.13	552.59	558.27	0.001864	3.40	7713.90	1769.21	0.21
Geronimo Creek	25	10848.60		100YR	21832.01	541.43	557.73	549.53	557.80	0.000694	2.41	10020.36	1454.00	0.13
Geronimo Creek	25	10130.66		100YR	21832.01	540.06	557.02	548.38	557.18	0.001264	3.30	7078.46	1375.97	0.18
Geronimo Creek	25	9739.624		100YR	21832.01	539.27	556.56	547.62	556.71	0.001150	3.20	7664.81	1807.46	0.17
Geronimo Creek	25	8862.773		100YR	21832.01	537.82	554.77	547.86	555.20	0.002880	5.66	5323.25	1104.35	0.28
Geronimo Creek	25	8486.471		100YR	21832.01	535.91	553.30	547.22	553.89	0.004212	6.31	3947.02	659.88	0.34
Geronimo Creek	25	8132.284		100YR	21832.01	530.00	552.52	544.49	552.82	0.001972	4.58	5859.60	1443.13	0.23
Geronimo Creek	25	8115.275	Timmermann Rd		Bridge									
Geronimo Creek	25	8094.885		100YR	21832.01	530.00	552.35	544.78	552.66	0.002074	4.66	5989.32	1435.20	0.24
Geronimo Creek	25	7691.704		100YR	21832.01	530.55	551.48	542.83	551.82	0.002129	4.90	5442.35	971.75	0.24
Geronimo Creek	25	7236.833		100YR	21832.01	531.57	550.21	544.66	550.64	0.003509	6.23	5430.54	1099.53	0.31
Geronimo Creek	25	6807.332		100YR	21832.01	530.44	549.87	539.32	549.96	0.000627	2.67	10606.67	1562.00	0.13
Geronimo Creek	25	6481.168		100YR	21832.01	530.29	549.75	536.30	549.81	0.000268	1.96	11399.65	866.57	0.09
Geronimo Creek	25	6008.903		100YR	21832.01	530.01	549.49	537.18	549.62	0.000645	2.90	7656.72	636.84	0.14
Geronimo Creek	25	5639.565		100YR	21832.01	528.18	548.90	539.79	549.22	0.001949	4.51	5035.04	544.25	0.23
Geronimo Creek	25	5280.304		100YR	21832.01	526.91	547.96	539.23	548.37	0.002837	5.16	4261.27	429.65	0.28
Geronimo Creek	25	4878.634		100YR	21832.01	527.48	546.60	538.42	547.13	0.003317	5.82	3777.74	353.18	0.30
Geronimo Creek	25	4572.304		100YR	21832.01	526.13	545.54	537.92	546.06	0.003643	5.76	3789.66	356.08	0.31
Geronimo Creek	25	4143.621		100YR	21832.01	525.92	544.75	536.38	544.97	0.001621	3.85	5844.37	779.12	0.21
Geronimo Creek	25	3760.534		100YR	21832.01	524.36	543.65	536.03	544.11	0.003164	5.51	4260.84	741.00	0.29
Geronimo Creek	25	3127.250		100YR	21832.01	522.22	543.29	531.70	543.37	0.000485	2.37	9583.63	1107.41	0.12
Geronimo Creek	25	3091.959		100YR	21832.01	522.50	543.24	532.80	543.35	0.000680	2.69	8468.82	1083.00	0.14
Geronimo Creek	25	2952.909		100YR	21832.01	523.79	542.86	535.13	543.17	0.001944	4.65	5420.66	963.78	0.23
Geronimo Creek	25	2602.701		100YR	21832.01	521.34	542.47	534.40	542.64	0.001103	3.76	7255.57	1085.96	0.18
Geronimo Creek	25	2187.395		100YR	21832.01	521.47	542.13	532.37	542.26	0.000852	3.11	7907.35	1028.34	0.15
Geronimo Creek	25	1801.236		100YR	21832.01	521.58	541.84	531.03	541.97	0.000710	2.96	7796.36	779.24	0.14
Geronimo Creek	25	1372.753		100YR	21832.01	520.60	541.46	529.67	541.63	0.000890	3.31	6644.35	560.04	0.16
Geronimo Creek	25	1008.586		100YR	21832.01	521.63	540.73	532.34	541.08	0.002836	4.74	4624.70	511.96	0.27
Geronimo Creek	25	627.0599		100YR	21832.01	519.55	540.28	529.37	540.45	0.000943	3.32	6887.20	669.20	0.16
Geronimo Creek	25	172.7209		100YR	21832.01	518.90	539.99	529.07	540.10	0.000622	2.86	9204.60	1132.56	0.13
Geronimo Creek	27	14681.39		100YR	2335.81	586.20	588.60	588.00	588.74	0.005708	4.36	1050.36	1069.48	0.51
Geronimo Creek	27	14283.12		100YR	2335.81	583.52	587.72	585.87	587.81	0.001282	2.90	1337.89	866.78	0.26
Geronimo Creek	27	13934.16		100YR	2335.81	583.87	587.24	585.70	587.32	0.001543	2.82	1368.42	895.16	0.28
Geronimo Creek	27	13576.62		100YR	2335.81	582.13	586.67	585.48	586.77	0.001657	3.29	1402.67	981.72	0.30
Geronimo Creek	27	13205.19		100YR	2335.81	581.86	586.13	584.76	586.21	0.001337	2.95	1441.59	962.87	0.27
Geronimo Creek	27	12891.22		100YR	2335.81	581.80	585.65	584.15	585.74	0.001659	3.19	1282.53	778.93	0.29
Geronimo Creek	27	12413.49		100YR	2335.81	581.50	585.03	583.27	585.09	0.001199	2.50	1456.89	727.84	0.24
Geronimo Creek	27	12042.30		100YR	2335.81	579.92	584.63	582.85	584.70	0.000914	2.60	1584.18	852.47	0.22
Geronimo Creek	27	11651.30		100YR	2335.81	579.99	584.48	581.62	584.50	0.000302	1.53	2508.95	999.11	0.13
Geronimo Creek	27	11232.07		100YR	2335.81	579.97	584.39	581.15	584.40	0.000190	1.21	3401.36	1363.16	0.10
Geronimo Creek	27	10854.26		100YR	2335.81	579.93	584.34	580.85	584.34	0.000104	0.90	4570.42	1761.05	0.08
Geronimo Creek	27	10508.23		100YR	2335.81	579.29	584.31	580.44	584.32	0.000052	0.70	6400.04	2394.61	0.06
Geronimo Creek	27	10103.85		100YR	2335.81	578.05	584.29	580.56	584.30	0.000046	0.67	7763.85	3798.58	0.05
Geronimo Creek	27	10050.53	HWY 123 N		Culvert									
Geronimo Creek	27	10000.22		100YR	2335.81	576.96	579.19	578.69	579.34	0.008109	3.88	844.87	740.32	0.56
Geronimo Creek	27	9744.508		100YR	2335.81	575.63	577.73	576.95	577.83	0.004472	3.59	1068.96	830.90	0.44
Geronimo Creek	27	9452.706		100YR	2335.81	573.94	576.35	575.75	576.50	0.004671	3.80	925.17	742.58	0.45
Geronimo Creek	27	9045.165		100YR	2335.81	572.21	574.63	573.66	574.74	0.003717	3.27	967.08	596.41	0.40
Geronimo Creek	27	8604.989		100YR	2335.81	570.04	573.57	572.45	573.66	0.001767	3.10	1243.26	711.32	0.30
Geronimo Creek	27	8198.066		100YR	2335.81	569.95	572.59	571.54	572.71	0.003245	3.56	986.67	594.54	0.39
Geronimo Creek	27	7790.214		100YR	2335.81	567.73	571.54	570.11	571.67	0.002063	3.55	976.93	441.31	0.33
Geronimo Creek	27	7390.013		100YR	2335.81	567.78	570.19	569.41	570.38	0.005676	4.35	777.22	478.90	0.50
Geronimo Creek	27	6995.871		100YR	2335.81	565.22	568.81	567.56	568.94	0.002511	3.52	977.14	494.95	0.35
Geronimo Creek	27	6601.957		100YR	2335.81	564.00	567.73	566.72	567.89	0.002923	3.75	901.10	501.96	0.38
Geronimo Creek	27	6272.143		100YR	2335.81	563.74	566.76	565.45	566.89	0.002852	3.47	916.04	462.47	0.37
Geronimo Creek	27	5844.979		100YR	2335.81	562.00	565.90	564.11	566.02	0.001614	3.14	996.62	426.58	0.29
Geronimo Creek	27	5498.864		100YR	2335.81	561.96	565.19	563.85	565.31	0.002683	3.32	923.44	436.87	0.36
Geronimo Creek	27	5142.006		100YR	2335.81	561.94	564.24	563.08	564.34	0.002979	3.09	977.83	522.31	0.36
Geronimo Creek	27	4757.940		100YR	2335.81	559.54	563.19	561.15	563.26	0.003293	2.20	1179.38	473.98	0.23
Geronimo Creek	27	4382.055		100YR	2335.81	557.96	561.21	559.91	561.36	0.008756	3.65	847.69	430.27	0.37

Geronimo Creek	27	4052.782		100YR	2335.81	556.00	560.43	558.80	560.49	0.001078	2.59	1381.24	635.94	0.24
Geronimo Creek	27	4023.071	Willmann Rd		Culvert									
Geronimo Creek	27	4004.546		100YR	2335.81	555.57	558.73	558.42	559.06	0.006461	5.16	664.33	535.97	0.55
Geronimo Creek	27	3910.34*		100YR	2335.81	554.95	557.94	557.58	558.38	0.008553	5.77	546.95	421.95	0.63
Geronimo Creek	27	3816.14*		100YR	2335.81	553.92	557.16	556.79	557.60	0.008589	5.76	519.26	339.22	0.63
Geronimo Creek	27	3721.93*		100YR	2335.81	552.88	556.52	555.97	556.89	0.006936	5.33	553.43	316.67	0.57
Geronimo Creek	27	3627.73*		100YR	2335.81	551.85	556.16	555.18	556.40	0.003922	4.37	673.03	315.29	0.44
Geronimo Creek	27	3533.530		100YR	2335.81	550.82	555.99	554.36	556.14	0.001958	3.46	850.28	322.57	0.32
Geronimo Creek	27	3124.060		100YR	2335.81	550.37	554.95	553.54	555.16	0.003431	4.40	756.62	335.24	0.42
Geronimo Creek	27	2688.031		100YR	2335.81	549.86	553.21	552.21	553.50	0.004530	4.70	629.49	315.78	0.47
Geronimo Creek	27	2276.643		100YR	2335.81	547.75	550.60	550.07	551.02	0.008689	5.97	529.10	292.65	0.64
Geronimo Creek	27	1885.065		100YR	2335.81	544.14	548.97	547.73	549.18	0.002912	4.20	784.37	372.51	0.39
Geronimo Creek	27	1656.575		100YR	2335.81	544.00	548.16	546.85	548.29	0.005471	3.19	873.16	537.94	0.30
Geronimo Creek	27	1637.609	Haberle RD		Culvert									
Geronimo Creek	27	1622.846		100YR	2335.81	543.88	547.46	546.71	547.68	0.011849	4.17	645.23	385.39	0.43
Geronimo Creek	27	1493.316		100YR	2335.81	542.00	546.52	545.14	546.63	0.004882	3.08	896.84	467.25	0.28
Geronimo Creek	27	1065.117		100YR	2335.81	537.95	542.10	541.33	542.61	0.022711	5.85	419.10	183.38	0.59
Geronimo Creek	27	424.2883		100YR	2335.81	531.43	540.60	535.99	540.66	0.001079	2.18	1212.76	300.86	0.15
Geronimo Creek	30	8600.818		100YR	2980.64	574.30	577.10	575.75	577.16	0.000783	2.14	1907.83	1131.97	0.24
Geronimo Creek	30	8248.143		100YR	2980.64	573.98	576.98	574.93	577.01	0.000261	1.40	2732.72	1255.31	0.14
Geronimo Creek	30	7839.258		100YR	2980.64	572.00	576.82	574.80	576.84	0.000549	1.80	2709.52	1321.33	0.17
Geronimo Creek	30	7791.949	HWY 123 N and Co		Culvert									
Geronimo Creek	30	7771.700		100YR	2980.64	571.00	573.94	573.94	574.50	0.020051	7.41	594.49	478.61	0.92
Geronimo Creek	30	7764.346		100YR	2980.64	569.23	574.01	571.20	574.04	0.000393	1.69	2583.16	881.43	0.15
Geronimo Creek	30	7753.43	HWY 123 N and La		Culvert									
Geronimo Creek	30	7657.904		100YR	2980.64	569.47	572.29	571.04	572.36	0.002184	2.88	1754.75	1389.44	0.32
Geronimo Creek	30	7030.618		100YR	2980.64	567.97	571.35	570.26	571.41	0.001307	2.62	1997.24	1243.44	0.26
Geronimo Creek	30	6599.164		100YR	2980.64	567.99	570.81	569.29	570.86	0.001284	2.29	1802.12	1000.94	0.25
Geronimo Creek	30	6285.656		100YR	2980.64	567.75	570.25	569.03	570.33	0.002228	2.77	1427.39	826.92	0.32
Geronimo Creek	30	5874.330		100YR	2980.64	565.94	569.12	568.03	569.28	0.003051	3.83	1144.27	634.25	0.39
Geronimo Creek	30	5508.256		100YR	2980.64	563.84	567.73	566.84	567.98	0.004314	5.12	1116.83	591.17	0.47
Geronimo Creek	30	5114.104		100YR	2980.64	562.08	566.34	565.21	566.54	0.003103	4.44	1197.93	618.00	0.40
Geronimo Creek	30	4766.809		100YR	2980.64	561.64	564.14	563.71	564.57	0.012351	6.63	810.64	564.29	0.75
Geronimo Creek	30	4475.781		100YR	2980.64	558.22	563.14	561.35	563.29	0.002094	4.02	1225.99	533.54	0.34
Geronimo Creek	30	4369.581		100YR	2980.64	559.55	562.72	561.83	562.93	0.005804	5.18	960.82	547.65	0.53
Geronimo Creek	30	4021.627		100YR	2980.64	556.04	561.02	559.97	561.31	0.003822	5.28	920.91	470.27	0.46
Geronimo Creek	30	3659.528		100YR	2980.64	555.94	559.12	558.50	559.50	0.006691	5.60	731.69	417.62	0.57
Geronimo Creek	30	3206.891		100YR	2980.64	553.85	557.10	555.95	557.32	0.003554	4.18	925.73	503.70	0.42
Geronimo Creek	30	2875.067		100YR	2980.64	552.01	555.91	554.76	556.14	0.003568	4.63	975.35	470.18	0.43
Geronimo Creek	30	2488.417		100YR	2980.64	549.65	553.49	552.98	554.07	0.010097	6.60	547.40	271.12	0.69
Geronimo Creek	30	2389.83*		100YR	2980.64	548.96	552.65	552.12	553.17	0.009633	6.21	572.87	294.26	0.67
Geronimo Creek	30	2291.26*		100YR	2980.64	548.27	551.82	551.32	552.29	0.009362	5.90	596.90	320.62	0.66
Geronimo Creek	30	2192.68*		100YR	2980.64	547.58	551.01	550.50	551.44	0.009126	5.62	621.49	348.65	0.64
Geronimo Creek	30	2094.10*		100YR	2980.64	546.89	550.22	549.71	550.61	0.008904	5.37	647.31	379.06	0.63
Geronimo Creek	30	1995.52*		100YR	2980.64	546.20	549.44	548.92	549.80	0.008585	5.13	677.98	415.28	0.61
Geronimo Creek	30	1896.95*		100YR	2980.64	545.51	548.87	548.15	549.13	0.005958	4.40	798.75	479.50	0.51
Geronimo Creek	30	1798.373		100YR	2980.64	544.82	548.60	547.37	548.74	0.002752	3.34	1113.96	606.41	0.36
Geronimo Creek	30	1754.984	Laubach Rd		Inl Struct									
Geronimo Creek	30	1651.787		100YR	2980.64	543.74	548.59	546.35	548.67	0.002774	2.44	1563.56	688.76	0.22
Geronimo Creek	30	1304.458		100YR	2980.64	539.47	546.81	544.27	547.13	0.007758	4.70	693.84	204.56	0.37
Geronimo Creek	30	952.7689		100YR	2980.64	535.21	544.84	540.97	545.14	0.004278	4.71	787.54	179.11	0.30
Geronimo Creek	30	584.5117		100YR	2980.64	535.93	542.10	540.44	542.60	0.012712	5.92	557.75	156.78	0.48
Geronimo Creek	30	442.194		100YR	2980.64	532.72	541.08	537.79	541.33	0.006087	3.99	747.08	165.87	0.33
Geronimo Creek	30	188.829		100YR	2980.64	529.36	540.46	534.68	540.57	0.001627	2.60	1173.53	212.18	0.18
Geronimo Creek	28	1312.527		100YR	5236.39	528.96	540.40	532.96	540.43	0.000391	1.49	3655.25	535.68	0.09
Geronimo Creek	28	836.6860		100YR	5236.39	522.28	540.15	529.40	540.22	0.000530	2.28	2887.67	497.49	0.11
Geronimo Creek	28	477.7337		100YR	5236.39	521.83	540.04	528.49	540.07	0.000284	1.71	4400.42	970.60	0.08
Geronimo Creek	28	167.3792		100YR	5236.39	520.39	540.02	526.07	540.03	0.000066	1.01	9334.64	1493.02	0.04
Geronimo Creek	29	12573.41		100YR	27612.53	518.13	539.42	531.04	539.87	0.002254	5.83	6663.72	1134.53	0.26
Geronimo Creek	29	12224.45		100YR	27612.53	517.22	538.64	530.60	539.03	0.002659	5.87	6633.06	1135.71	0.28
Geronimo Creek	29	11866.70		100YR	27612.53	518.81	537.69	530.58	538.10	0.002476	6.29	7602.13	1538.95	0.28
Geronimo Creek	29	11382.95		100YR	27612.53	517.22	536.55	527.45	537.01	0.002156	5.76	6204.03	1136.95	0.26
Geronimo Creek	29	11012.83		100YR	27612.53	517.83	535.65	529.42	536.10	0.003044	5.93	6058.29	949.57	0.29
Geronimo Creek	29	10510.78		100YR	27612.53	512.62	534.85	525.77	535.06	0.001319	4.06	8159.36	840.69	0.20
Geronimo Creek	29	10488.67	Laubach Rd		Culvert									
Geronimo Creek	29	10467.86		100YR	27612.53	512.54	534.76	525.42	534.98	0.001163	4.15	8321.58	838.89	0.19
Geronimo Creek	29	9798.117		100YR	27612.53	514.65	533.57	524.55	533.88	0.002442	5.53	7490.67	1035.40	0.26
Geronimo Creek	29	9414.042		100YR	27612.53	514.12	532.49	525.54	532.89	0.003262	6.32	6588.23	947.49	0.30
Geronimo Creek	29	9040.013		100YR	27612.53	512.86	531.73	523.94	532.00	0.001968	5.03	7612.52	858.97	0.24
Geronimo Creek	29	8649.716		100YR	27612.53	512.98	531.17	523.03	531.34	0.001546	4.23	8859.61	956.53	0.21
Geronimo Creek	29	8242.242		100YR	27612.53	512.14	530.69	523.01	530.86	0.001319	4.10	9182.40	916.22	0.19
Geronimo Creek	29	7844.552		100YR	27612.53	512.15	530.08	521.71	530.28	0.001930	4.70	8326.28	952.93	0.23
Geronimo Creek	29	7425.873		100YR	27612.53	510.63	529.04	521.05	529.38	0.002686	5.70	6825.14	872.43	0.28
Geronimo Creek	29	7007.346		100YR	27612.53	509.55	527.87	520.00	528.32	0.002384	6.13	6273.72	669.20	0.27
Geronimo Creek	29	6652.178		100YR	27612.53	507.63	527.21	518.55	527.57	0.001861	5.35	7099.33	964.97	0.24
Geronimo Creek	29	6210.362		100YR	27612.53	505.86	526.09	518.60	526.59	0.002888	6.52	5848.35	652.18	0.29
Geronimo Creek	29	5829.625		100YR	27612.53	505.28	525.05	517.52	525.55	0.002776	6.76	5974.18	609.16	0.29
Geronimo Creek	29	5400.283		100YR	27612.53	505.59	523.99	516.15	524.39	0.002887	6.51	6829.55	741.09	0.29
Geronimo Creek	29	5055.585		100YR	27612.53	504.36	522.98	515.00	523.41	0.002797	6.55	6713.09	730.32	0.29

Geronimo Creek	29	4587.341		100YR	27612.53	501.87	522.39	509.63	522.62	0.001127	4.99	8281.73	1045.76	0.19
Geronimo Creek	29	4547.385	FM 20		Bridge									
Geronimo Creek	29	4510.887		100YR	27612.53	502.65	521.87	510.68	522.12	0.001282	5.09	7673.87	910.43	0.20
Geronimo Creek	29	4274.090		100YR	27612.53	502.00	521.41	513.27	521.73	0.001864	5.66	7422.49	1238.55	0.24
Geronimo Creek	29	3838.440		100YR	27612.53	500.21	520.62	513.20	520.92	0.001995	5.75	8065.04	1398.96	0.25
Geronimo Creek	29	3471.418		100YR	27612.53	498.23	519.92	511.84	520.22	0.001877	5.21	7368.03	874.19	0.24
Geronimo Creek	29	3100.540		100YR	27612.53	498.04	519.06	511.77	519.45	0.002407	5.79	6589.81	910.91	0.27
Geronimo Creek	29	2708.030		100YR	27612.53	498.09	518.34	510.94	518.66	0.001805	5.32	6485.76	815.40	0.23
Geronimo Creek	29	2307.927		100YR	27612.53	496.46	517.75	509.61	518.03	0.001483	4.69	6648.01	664.61	0.21
Geronimo Creek	29	1917.213		100YR	27612.53	495.33	517.05	508.98	517.40	0.001783	5.81	6419.11	727.04	0.24
Geronimo Creek	29	1561.481		100YR	27612.53	495.89	516.43	508.55	516.77	0.001785	5.73	6657.03	711.82	0.24
Geronimo Creek	29	1252.745		100YR	27612.53	492.81	515.90	507.39	516.23	0.001637	5.90	7165.93	840.64	0.23
Geronimo Creek	29	775.4671		100YR	27612.53	493.32	515.28	507.39	515.51	0.001554	4.91	8692.21	1411.48	0.22
Geronimo Creek	22	7594.440		100YR	4956.38	570.07	574.44	573.13	574.57	0.004512	3.94	2078.59	862.55	0.42
Geronimo Creek	22	7048.587		100YR	4956.38	567.48	571.89	570.90	572.14	0.005042	5.47	1845.39	884.40	0.47
Geronimo Creek	22	6681.791		100YR	4956.38	565.94	570.73	568.84	570.87	0.002013	3.13	1827.22	655.43	0.29
Geronimo Creek	22	6362.637		100YR	4956.38	563.79	569.87	567.45	570.15	0.002542	4.35	1276.57	689.90	0.34
Geronimo Creek	22	5856.173		100YR	4956.38	563.71	568.73	566.09	568.82	0.002670	2.74	2236.62	752.45	0.22
Geronimo Creek	22	5440.594		100YR	4956.38	561.83	567.52	565.29	567.63	0.002861	3.02	1968.68	715.82	0.23
Geronimo Creek	22	5109.083		100YR	4956.38	561.98	566.08	564.22	566.29	0.006687	3.79	1376.83	446.03	0.34
Geronimo Creek	22	4718.687		100YR	4956.38	558.09	564.23	562.13	564.38	0.004013	3.34	1604.67	488.82	0.27
Geronimo Creek	22	4415.806		100YR	4956.38	557.22	563.42	560.36	563.52	0.002265	2.50	1930.39	477.55	0.20
Geronimo Creek	22	3861.461		100YR	4956.38	555.19	561.77	558.69	561.98	0.003990	3.73	1355.39	293.64	0.28
Geronimo Creek	22	3523.679		100YR	4956.38	553.80	560.33	557.65	560.56	0.004581	4.16	1321.14	337.65	0.30
Geronimo Creek	22	3144.195		100YR	4956.38	553.55	557.86	556.55	558.15	0.009141	4.46	1186.02	503.33	0.39
Geronimo Creek	22	2698.041		100YR	4956.38	549.86	554.90	553.48	555.09	0.006368	3.43	1424.80	557.07	0.32
Geronimo Creek	22	2197.010		100YR	4956.38	549.81	553.57	551.13	553.62	0.001199	1.52	2949.80	1004.45	0.14
Geronimo Creek	22	1814.518		100YR	4956.38	547.51	553.24	549.72	553.28	0.000743	1.59	3106.67	802.41	0.12
Geronimo Creek	22	1411.655		100YR	4956.38	545.99	552.84	549.21	552.91	0.001233	2.25	2603.31	680.54	0.16
Geronimo Creek	22	1083.360		100YR	4956.38	546.00	552.43	548.65	552.49	0.001200	2.12	2464.31	555.42	0.15
Geronimo Creek	24	8320.812		100YR	2472.89	576.02	580.13	578.57	580.32	0.006718	3.73	804.40	399.21	0.34
Geronimo Creek	24	7897.323		100YR	2472.89	573.71	577.08	576.19	577.19	0.008350	3.21	942.93	616.47	0.35
Geronimo Creek	24	7431.888		100YR	2472.89	569.03	574.45	572.45	574.59	0.004342	3.36	889.59	354.20	0.28
Geronimo Creek	24	6994.305		100YR	2472.89	567.85	572.20	570.85	572.34	0.006679	3.11	844.37	381.62	0.32
Geronimo Creek	24	6693.844		100YR	2472.89	565.93	569.77	568.41	569.97	0.008856	3.62	722.71	313.85	0.37
Geronimo Creek	24	6315.686		100YR	2472.89	564.00	567.92	565.87	567.99	0.003955	2.50	1238.06	490.54	0.25
Geronimo Creek	24	5794.832		100YR	2472.89	561.98	565.59	564.52	565.72	0.007657	3.35	961.31	518.49	0.34
Geronimo Creek	24	5310.562		100YR	2472.89	560.01	563.40	561.92	563.47	0.003020	2.20	1194.68	592.76	0.22
Geronimo Creek	24	4975.231		100YR	2472.89	558.08	562.21	560.56	562.32	0.004302	2.99	969.46	427.50	0.27
Geronimo Creek	24	4608.562		100YR	2472.89	557.00	560.01	558.82	560.18	0.008755	3.38	778.87	357.14	0.36
Geronimo Creek	24	4205.708		100YR	2472.89	554.28	558.64	556.45	558.69	0.001969	1.85	1492.53	549.63	0.18
Geronimo Creek	24	3652.195		100YR	2472.89	553.47	557.66	555.45	557.71	0.002277	2.07	1500.29	566.03	0.19
Geronimo Creek	24	3271.389		100YR	2472.89	553.15	556.92	554.82	556.96	0.001925	1.89	1675.30	667.36	0.18
Geronimo Creek	24	2891.920		100YR	2472.89	551.94	555.95	554.21	556.03	0.003097	2.55	1107.81	460.98	0.23
Geronimo Creek	24	2505.899		100YR	2472.89	551.01	555.01	553.05	555.06	0.002165	1.98	1381.47	547.27	0.19
Geronimo Creek	24	2042.937		100YR	2472.89	549.87	554.17	551.87	554.22	0.001896	1.73	1337.99	475.93	0.17
Geronimo Creek	24	1604.807		100YR	2472.89	549.02	553.29	551.02	553.36	0.002196	2.11	1276.34	471.82	0.19
Geronimo Creek	24	1222.286		100YR	2472.89	547.97	552.80	549.88	552.83	0.000967	1.62	1832.45	623.41	0.13
Geronimo Creek	26	20703.36		100YR	7283.65	543.97	550.28	547.90	550.54	0.002457	5.28	2129.76	598.43	0.39
Geronimo Creek	26	20681.18	Timmermann Rd		Culvert									
Geronimo Creek	26	20659.46		100YR	7283.65	543.57	549.85	547.87	550.19	0.003441	6.00	1829.86	530.50	0.45
Geronimo Creek	26	20202.54		100YR	7283.65	541.89	548.98	546.11	549.16	0.001488	4.34	2603.96	710.22	0.30
Geronimo Creek	26	19772.67		100YR	7283.65	541.92	548.23	545.91	548.47	0.001950	4.79	2222.19	600.58	0.35
Geronimo Creek	26	19452.73		100YR	7283.65	541.93	547.61	545.14	547.82	0.001925	4.46	2301.89	609.13	0.34
Geronimo Creek	26	19047.66		100YR	7283.65	541.64	546.92	544.31	547.09	0.001671	3.98	2536.23	686.38	0.31
Geronimo Creek	26	18679.26		100YR	7283.65	541.36	545.93	544.11	546.25	0.003170	4.99	1826.33	571.54	0.42
Geronimo Creek	26	18285.96		100YR	7283.65	540.00	545.05	543.29	545.23	0.002159	4.31	2676.25	1085.34	0.35
Geronimo Creek	26	17923.71		100YR	7283.65	539.87	544.45	542.76	544.54	0.001422	3.34	3700.62	1578.54	0.28
Geronimo Creek	26	17493.48		100YR	7283.65	537.71	543.86	541.52	543.97	0.001223	3.35	3134.55	992.41	0.27
Geronimo Creek	26	17087.73		100YR	7283.65	536.38	543.19	541.28	543.38	0.002097	4.23	2368.26	740.11	0.34
Geronimo Creek	26	16684.70		100YR	7283.65	536.41	542.42	540.04	542.57	0.001925	4.20	2840.81	1222.75	0.33
Geronimo Creek	26	16261.61		100YR	7283.65	535.75	541.93	539.10	542.02	0.000871	3.07	3598.82	972.25	0.23
Geronimo Creek	26	15899.29		100YR	7283.65	534.89	541.49	538.68	541.65	0.001376	3.97	2730.54	751.88	0.29
Geronimo Creek	26	15521.45		100YR	7283.65	534.68	540.88	538.89	541.05	0.001957	4.43	2616.96	825.63	0.34
Geronimo Creek	26	15170.76		100YR	7283.65	534.01	540.31	538.02	540.46	0.001556	4.07	2810.66	839.07	0.31
Geronimo Creek	26	14752.25		100YR	7283.65	532.42	539.52	536.50	539.66	0.002340	3.21	2436.29	570.58	0.23
Geronimo Creek	26	14320.39		100YR	7283.65	530.13	538.71	535.60	538.83	0.002007	3.19	2764.90	772.06	0.22
Geronimo Creek	26	13942.66		100YR	7283.65	528.42	537.97	534.22	538.11	0.001823	3.34	2558.86	581.38	0.21
Geronimo Creek	26	13518.46		100YR	7283.65	528.86	537.27	534.22	537.40	0.002012	3.33	2565.26	626.14	0.22
Geronimo Creek	26	13171.35		100YR	7283.65	527.66	536.87	532.92	536.93	0.000926	2.51	3876.54	990.22	0.15
Geronimo Creek	26	12655.09		100YR	7283.65	526.00	536.63	532.27	536.66	0.000592	2.01	6325.02	1520.64	0.12
Geronimo Creek	26	12623.76	Laubach Rd		Culvert									
Geronimo Creek	26	12600.59		100YR	7283.65	526.00	536.58	532.59	536.61	0.000652	1.99	6124.27	1472.25	0.13
Geronimo Creek	26	11836.06		100YR	7283.65	523.65	535.16	531.06	535.58	0.004149	5.88	1642.37	276.29	0.33
Geronimo Creek	26	11515.08		100YR	7283.65	522.94	534.34	529.59	534.56	0.002384	4.42	2268.91	422.00	0.25
Geronimo Creek	26	11193.76		100YR	7283.65	522.48	533.16	529.70	533.49	0.004611	5.11	1746.37	324.34	0.33
Geronimo Creek	26	10861.39		100YR	7283.65	521.09	531.91	527.34	532.23	0.003191	4.89	1832.75	354.45	0.28
Geronimo Creek	26	10340.73		100YR	7283.65	518.79	530.14	526.25	530.47	0.003727	5.15	1930.17	418.88	0.31
Geronimo Creek	26	9979.560		100YR	7283.65	518.72	528.84	525.27	529.13	0.003695	5.06	2032.68	436.47	0.30

Geronimo Creek	26	9558.537	100YR	7283.65	516.94	527.27	524.77	527.54	0.004099	5.41	2121.95	463.41	0.32
Geronimo Creek	26	9121.228	100YR	7283.65	514.40	525.62	521.97	525.95	0.003740	5.56	1984.01	397.05	0.31
Geronimo Creek	26	8255.131	100YR	7283.65	511.59	522.96	518.30	523.24	0.002775	5.00	2294.72	544.51	0.27
Geronimo Creek	26	8215.094 FM 20		Culvert									
Geronimo Creek	26	8181.618	100YR	7283.65	511.45	522.21	517.80	522.70	0.004655	6.12	1675.87	441.25	0.34
Geronimo Creek	26	7850.240	100YR	7283.65	514.03	521.07	519.13	521.21	0.003883	4.10	2952.45	1033.59	0.29
Geronimo Creek	26	7829.957 Ilka Switch		Culvert									
Geronimo Creek	26	7813.000	100YR	7283.65	513.14	521.02	518.72	521.11	0.002147	3.30	3745.55	1111.76	0.22
Geronimo Creek	26	7402.282	100YR	7283.65	510.39	520.43	516.34	520.51	0.001254	2.82	3793.77	788.65	0.17
Geronimo Creek	26	6819.392	100YR	7283.65	512.13	519.16	516.10	519.35	0.004704	4.59	2356.61	617.96	0.32
Geronimo Creek	26	6422.728	100YR	7283.65	508.06	518.09	513.98	518.23	0.002255	3.75	2671.46	504.97	0.23
Geronimo Creek	26	6065.681	100YR	7283.65	503.99	517.57	510.29	517.70	0.001089	3.21	3067.91	596.61	0.17
Geronimo Creek	26	5513.595	100YR	7283.65	506.61	516.84	512.53	516.97	0.002025	3.84	3165.69	818.48	0.23
Geronimo Creek	26	5120.130	100YR	7283.65	504.28	516.48	508.72	516.56	0.000628	2.42	3564.58	573.39	0.13
Geronimo Creek	26	4800.164	100YR	7283.65	500.69	516.13	507.77	516.29	0.001076	3.79	3151.06	711.72	0.18
Geronimo Creek	26	4445.884	100YR	7283.65	500.39	515.95	506.95	516.02	0.000498	2.43	4113.10	579.63	0.12
Geronimo Creek	26	3821.744	100YR	7283.65	501.05	515.56	508.46	515.64	0.000835	2.92	3607.02	528.41	0.15
Geronimo Creek	26	3464.756	100YR	7283.65	499.54	515.46	507.52	515.48	0.000258	1.70	7203.44	1216.66	0.08
Geronimo Creek	26	3064.365	100YR	7283.65	499.12	515.41	506.11	515.42	0.000106	1.15	9288.64	1086.38	0.06
Geronimo Creek	26	2304.277	100YR	7283.65	498.04	515.29	504.72	515.32	0.000215	1.85	6374.72	762.58	0.08
Geronimo Creek	26	1766.342	100YR	7283.65	497.63	515.18	504.68	515.21	0.000254	1.94	5983.84	728.33	0.09
Geronimo Creek	26	1397.603	100YR	7283.65	495.01	515.09	502.72	515.13	0.000249	2.19	5595.05	630.45	0.09
Geronimo Creek	26	830.7893	100YR	7283.65	493.53	515.01	502.75	515.03	0.000164	1.81	7149.21	817.20	0.07
Geronimo Creek	31	4331.490	100YR	33518.89	490.63	514.06	504.99	514.34	0.001459	5.65	8759.94	1069.84	0.22
Geronimo Creek	31	3956.241	100YR	33518.89	491.88	513.55	505.10	513.83	0.001411	5.40	8815.22	1062.81	0.21
Geronimo Creek	31	3515.958	100YR	33518.89	490.95	512.86	505.73	513.18	0.001788	6.02	8313.24	1092.42	0.24
Geronimo Creek	31	3131.035	100YR	33518.89	491.22	511.79	505.93	512.27	0.003310	8.00	8013.91	1105.00	0.33
Geronimo Creek	31	2756.918	100YR	33518.89	488.73	510.94	503.55	511.31	0.002002	6.38	8516.67	886.29	0.26
Geronimo Creek	31	2350.095	100YR	33518.89	489.91	510.08	503.83	510.44	0.002403	6.57	8389.98	935.95	0.28
Geronimo Creek	31	1892.244	100YR	33518.89	489.66	509.60	500.15	509.75	0.001034	4.50	11345.59	1088.97	0.18
Geronimo Creek	31	1447.178	100YR	33518.89	487.57	508.89	502.68	509.18	0.001730	5.93	8635.26	1060.41	0.24
Geronimo Creek	31	1064.086	100YR	33518.89	488.14	508.25	502.31	508.53	0.001687	5.59	8757.53	1053.37	0.23
Geronimo Creek	31	674.1167	100YR	33518.89	487.81	507.66	501.51	507.91	0.001608	5.53	9033.06	1110.24	0.23
Geronimo Creek	32	7040.648	100YR	1700.29	557.42	560.23	559.02	560.34	0.007160	3.04	666.53	403.61	0.33
Geronimo Creek	32	6965.67*	100YR	1700.29	556.97	559.69	558.55	559.80	0.007338	3.02	672.07	415.63	0.33
Geronimo Creek	32	6890.70*	100YR	1700.29	556.52	559.14	558.09	559.25	0.007511	2.99	677.12	424.45	0.33
Geronimo Creek	32	6815.72*	100YR	1700.29	556.07	558.58	557.60	558.69	0.007742	2.96	679.58	430.54	0.33
Geronimo Creek	32	6740.75*	100YR	1700.29	555.62	557.99	557.07	558.10	0.008287	2.95	672.48	433.59	0.34
Geronimo Creek	32	6665.780	100YR	1700.29	555.17	557.22	556.50	557.36	0.012254	3.26	593.10	416.18	0.41
Geronimo Creek	32	6126.720	100YR	1700.29	549.00	554.63	552.83	554.69	0.002939	2.15	1030.87	623.71	0.21
Geronimo Creek	32	6107.988 East Martindale		Culvert									
Geronimo Creek	32	6078.115	100YR	1700.29	548.86	552.72	552.26	553.03	0.019132	5.06	450.44	314.88	0.54
Geronimo Creek	32	5717.056	100YR	1700.29	545.38	549.39	547.60	549.52	0.005651	3.41	659.06	278.40	0.31
Geronimo Creek	32	5340.712	100YR	1700.29	541.93	544.61	544.14	545.12	0.038536	6.29	303.79	153.93	0.74
Geronimo Creek	32	4920.513	100YR	1700.29	536.17	541.23	538.83	541.31	0.003946	2.68	791.83	305.11	0.25
Geronimo Creek	32	4547.408	100YR	1700.29	534.00	539.11	537.19	539.34	0.007533	3.93	469.24	157.97	0.35
Geronimo Creek	32	4173.362	100YR	1700.29	530.26	534.23	533.52	534.72	0.024426	5.89	325.81	159.35	0.61
Geronimo Creek	32	3772.509	100YR	1700.29	526.54	531.60	529.46	531.69	0.003588	2.68	821.15	345.16	0.24
Geronimo Creek	32	3301.191	100YR	1700.29	523.65	528.17	527.26	528.51	0.017822	5.48	399.89	179.11	0.53
Geronimo Creek	32	2810.726	100YR	1700.29	517.97	523.50	521.24	523.71	0.006812	3.73	465.67	751.17	0.34
Geronimo Creek	32	2429.592	100YR	1700.29	515.12	518.46	517.83	518.97	0.028705	5.77	302.06	136.87	0.64
Geronimo Creek	32	2054.332	100YR	1700.29	509.48	514.14	512.13	514.34	0.006637	3.66	490.03	153.22	0.33
Geronimo Creek	32	1673.084	100YR	1700.29	504.40	510.48	508.81	510.90	0.012954	5.34	343.99	107.75	0.47
Geronimo Creek	32	1609.82*	100YR	1700.29	503.90	509.73	508.00	510.11	0.011833	5.01	360.36	109.23	0.45
Geronimo Creek	32	1546.55*	100YR	1700.29	503.40	509.09	507.21	509.41	0.009994	4.56	392.52	117.20	0.41
Geronimo Creek	32	1483.29*	100YR	1700.29	502.89	508.64	506.41	508.87	0.006703	3.92	457.82	133.20	0.34
Geronimo Creek	32	1420.02*	100YR	1700.29	502.39	508.43	505.63	508.56	0.003221	3.01	675.71	242.44	0.24
Geronimo Creek	32	1356.764	100YR	1700.29	501.89	508.42	504.65	508.45	0.000736	1.60	1279.37	289.32	0.12
Geronimo Creek	32	1252.49*	100YR	1700.29	500.83	508.32	503.88	508.37	0.000934	1.94	1067.19	266.97	0.14
Geronimo Creek	32	1148.22*	100YR	1700.29	499.78	508.24	502.92	508.28	0.000698	1.79	1076.84	218.73	0.12
Geronimo Creek	32	1043.95*	100YR	1700.29	498.72	508.19	501.95	508.22	0.000455	1.53	1245.80	223.68	0.10
Geronimo Creek	32	939.681*	100YR	1700.29	497.67	508.16	500.94	508.18	0.000294	1.30	1489.92	252.95	0.08
Geronimo Creek	32	835.4105	100YR	1700.29	496.61	508.14	499.93	508.16	0.000184	1.09	1849.48	304.71	0.06
Geronimo Creek	34	3601.852	100YR	34909.85	491.24	506.36	500.29	506.63	0.002205	5.26	8818.89	1426.05	0.25
Geronimo Creek	34	3497.879 IH 10 E Westboun		Bridge									
Geronimo Creek	34	3438.920	100YR	34909.85	491.40	505.02	499.25	505.71	0.003107	5.83	5306.91	475.98	0.30
Geronimo Creek	34	3385.687 IH 10 E Eastboun		Bridge									
Geronimo Creek	34	3270.013	100YR	34909.85	490.07	504.16	499.29	504.65	0.004463	6.35	6311.31	994.71	0.35
Geronimo Creek	34	3174.291	100YR	34909.85	485.15	504.03	498.45	504.28	0.001593	5.03	9031.57	1182.65	0.22
Geronimo Creek	34	2802.762	100YR	34909.85	484.76	503.33	498.09	503.66	0.002034	5.38	7907.04	1031.73	0.25
Geronimo Creek	34	2468.746	100YR	34909.85	484.43	502.72	497.32	503.04	0.001818	5.38	7991.30	962.74	0.24
Geronimo Creek	34	2028.468	100YR	34909.85	482.87	501.87	496.80	502.20	0.002353	6.21	8165.45	1260.89	0.27
Geronimo Creek	34	1630.172	100YR	34909.85	482.90	501.03	496.25	501.32	0.002176	5.82	8452.50	1274.99	0.26
Geronimo Creek	34	1138.698	100YR	34909.85	481.01	500.02	495.68	500.29	0.002147	5.97	9342.15	1690.24	0.26
Geronimo Creek	34	1014.423	100YR	34909.85	481.92	500.00	493.18	500.10	0.000588	3.10	14666.04	1896.21	0.13
Geronimo Creek	35	2028.254	100YR	1710.44	504.05	518.74	507.34	518.75	0.000033	0.56	3839.51	445.20	0.03
Geronimo Creek	35	1670.695	100YR	1710.44	500.00	518.74	505.28	518.74	0.000012	0.38	5964.33	810.84	0.02
Geronimo Creek	35	1623.926 Railroad Bridge		Culvert									
Geronimo [redacted]	35	1567.806	100YR	1710.44	500.00	[redacted]05.48	504.18	505.87	0.018203	4.97	344.04	122.48	0.52

Geronimo Creek	35	1504.79*	100YR	1710.44	498.99	504.32	503.08	504.71	0.018574	5.00	341.85	123.79	0.53
Geronimo Creek	35	1441.78*	100YR	1710.44	497.99	503.13	501.95	503.53	0.018834	5.06	338.49	124.10	0.53
Geronimo Creek	35	1378.77*	100YR	1710.44	496.98	501.96	500.78	502.36	0.018429	5.06	338.89	124.35	0.53
Geronimo Creek	35	1315.75*	100YR	1710.44	495.98	500.94	499.59	501.30	0.015022	4.78	360.72	127.34	0.48
Geronimo Creek	35	1252.746	100YR	1710.44	494.97	500.33	498.38	500.57	0.008415	3.98	437.93	138.29	0.37
Geronimo Creek	35	925.0138	100YR	1710.44	492.53	500.15	496.09	500.16	0.000365	1.22	2240.84	777.22	0.08
Geronimo Creek	36	12299.67	100YR	38321.38	479.41	499.27	493.03	499.36	0.000907	3.90	17792.92	2137.26	0.17
Geronimo Creek	36	11887.85	100YR	38321.38	479.48	498.86	491.97	498.98	0.001276	4.63	16243.45	2192.23	0.20
Geronimo Creek	36	11568.58	100YR	38321.38	479.80	498.56	489.38	498.69	0.000851	3.91	16276.10	1873.95	0.16
Geronimo Creek	36	10748.29	100YR	38321.38	474.53	498.04	490.60	498.16	0.000872	3.46	15530.08	1688.01	0.16
Geronimo Creek	36	10701.42 E kingsbury St/U		Bridge									
Geronimo Creek	36	10628.91	100YR	38321.38	474.93	495.50	488.01	495.61	0.000812	3.38	15710.81	1590.56	0.16
Geronimo Creek	36	10285.02	100YR	38321.38	477.72	495.13	487.84	495.30	0.001258	4.27	13182.43	1482.82	0.19
Geronimo Creek	36	9835.625	100YR	38321.38	476.86	494.49	490.42	494.78	0.002633	6.37	10981.69	1605.67	0.28
Geronimo Creek	36	9310.851	100YR	38321.38	476.40	493.90	484.89	494.10	0.001147	4.27	13419.07	1657.73	0.19
Geronimo Creek	36	9016.529	100YR	38321.38	474.42	493.53	487.07	493.73	0.001457	5.02	13051.78	1586.91	0.21
Geronimo Creek	36	8598.124	100YR	38321.38	471.77	492.81	487.29	493.11	0.001918	5.52	10934.12	1377.85	0.24
Geronimo Creek	36	8254.599	100YR	38321.38	472.13	492.23	486.95	492.49	0.001701	4.99	10164.13	1333.23	0.23
Geronimo Creek	36	7852.151	100YR	38321.38	471.83	491.61	486.30	491.86	0.001579	5.17	10382.54	1268.35	0.22
Geronimo Creek	36	7464.759	100YR	38321.38	472.70	490.92	484.92	491.18	0.001736	5.25	10034.16	1230.98	0.23
Geronimo Creek	36	7025.109	100YR	38321.38	472.20	490.29	483.83	490.51	0.001469	4.88	10967.53	1398.93	0.21
Geronimo Creek	36	6651.383	100YR	38321.38	468.65	489.96	481.46	490.11	0.000833	4.01	13140.59	1453.95	0.16
Geronimo Creek	36	6218.691	100YR	38321.38	467.26	489.55	478.96	489.75	0.000932	4.32	13675.98	1516.94	0.17
Geronimo Creek	36	5762.456	100YR	38321.38	465.70	489.05	480.78	489.29	0.001480	5.52	12368.04	1453.52	0.22
Geronimo Creek	36	5280.270	100YR	38321.38	464.92	488.48	479.65	488.73	0.001307	5.31	12187.80	1331.14	0.21
Geronimo Creek	36	4942.821	100YR	38321.38	463.49	487.70	482.45	488.09	0.002137	6.62	10130.52	1271.80	0.26
Geronimo Creek	36	4576.013	100YR	38321.38	464.39	487.34	475.77	487.46	0.000876	4.20	15409.60	1575.61	0.17
Geronimo Creek	36	3697.462	100YR	38321.38	463.15	486.78	477.75	486.95	0.001137	4.91	14163.83	1641.96	0.19
Geronimo Creek	36	3326.681	100YR	38321.38	460.85	486.44	476.39	486.62	0.000788	4.24	12477.86	1433.62	0.16
Geronimo Creek	36	2968.468	100YR	38321.38	461.58	486.27	477.08	486.40	0.000554	3.68	13958.11	1364.79	0.14
Geronimo Creek	36	2348.780	100YR	38321.38	465.24	485.98	476.03	486.08	0.000447	2.94	15284.59	1382.63	0.12
Geronimo Creek	36	2300.292 East Walnut St		Bridge									
Geronimo Creek	36	2253.830	100YR	38321.38	465.98	485.72	475.11	485.84	0.000606	3.17	14887.25	1351.33	0.14
Geronimo Creek	36	1778.120	100YR	38321.38	455.38	485.50	472.18	485.62	0.000390	3.45	15104.38	1109.77	0.12
Geronimo Creek	36	1234.803	100YR	38321.38	454.91	484.16	473.00	485.08	0.003044	7.91	5144.88	339.02	0.30
Geronimo Creek	36	1189.034 East Court St/Al		Bridge									
Geronimo Creek	36	1140.938	100YR	38321.38	455.35	480.52	473.38	481.84	0.005637	9.39	4281.91	333.62	0.41
Geronimo Creek	36	881.5888	100YR	38321.38	455.76	479.42	473.36	480.50	0.004301	9.55	5206.90	461.32	0.37
Geronimo Creek	33	14886.32	100YR	3689.33	523.95	533.88	526.56	533.89	0.000050	1.07	5872.19	990.01	0.06
Geronimo Creek	33	14400.06	100YR	3689.33	521.24	533.85	525.64	533.86	0.000059	1.30	5017.86	873.78	0.07
Geronimo Creek	33	14337.06 IH 10 E Northern		Culvert									
Geronimo Creek	33	14294.84	100YR	3689.33	520.00	531.36	525.44	531.40	0.000201	2.08	3255.67	855.39	0.12
Geronimo Creek	33	14067.64 IH 10 E		Culvert									
Geronimo Creek	33	13611.99	100YR	3689.33	518.14	527.84	523.26	527.88	0.000292	2.05	3065.27	969.71	0.14
Geronimo Creek	33	13566.6 IH 10 E Southern		Culvert									
Geronimo Creek	33	13513.28	100YR	3689.33	517.83	525.39	522.35	525.50	0.002495	3.10	1657.09	586.94	0.22
Geronimo Creek	33	13104.60	100YR	3689.33	516.71	525.04	520.41	525.07	0.000512	1.58	3013.92	648.61	0.10
Geronimo Creek	33	13060.61 Sunbelt Rd		Culvert									
Geronimo Creek	33	13018.95	100YR	3689.33	513.69	521.64	519.04	521.78	0.003602	3.44	1417.90	456.36	0.26
Geronimo Creek	33	12498.76	100YR	3689.33	512.67	518.33	517.07	518.69	0.011651	5.26	851.86	326.06	0.45
Geronimo Creek	33	12066.33	100YR	3689.33	511.98	515.47	514.28	515.73	0.004384	4.06	921.07	378.43	0.45
Geronimo Creek	33	11666.34	100YR	3689.33	510.48	514.41	512.65	514.56	0.001978	3.12	1197.18	406.74	0.31
Geronimo Creek	33	11228.95	100YR	3689.33	505.69	512.54	510.59	512.96	0.009015	5.67	840.28	275.92	0.42
Geronimo Creek	33	10814.51	100YR	3689.33	502.20	510.26	507.08	510.48	0.004160	4.15	1123.41	310.23	0.29
Geronimo Creek	33	10421.99	100YR	3689.33	501.89	507.99	505.75	508.32	0.007598	4.89	874.23	237.66	0.38
Geronimo Creek	33	10020.34	100YR	3689.33	499.58	506.36	503.00	506.50	0.002912	3.13	1337.49	324.33	0.23
Geronimo Creek	33	9610.082	100YR	3689.33	498.36	503.48	502.47	503.97	0.019775	5.81	696.98	277.39	0.56
Geronimo Creek	33	9546.39*	100YR	3689.33	497.72	502.35	501.29	502.72	0.016680	4.97	796.80	330.14	0.51
Geronimo Creek	33	9482.70*	100YR	3689.33	497.07	501.43	500.29	501.70	0.013317	4.24	924.33	390.60	0.45
Geronimo Creek	33	9419.01*	100YR	3689.33	496.43	500.82	499.39	500.98	0.008022	3.35	1164.92	458.29	0.35
Geronimo Creek	33	9355.33*	100YR	3689.33	495.78	500.51	498.40	500.60	0.003698	2.46	1577.11	531.33	0.24
Geronimo Creek	33	9291.643	100YR	3689.33	495.14	500.38	497.43	500.43	0.001616	1.79	2141.79	604.58	0.16
Geronimo Creek	33	8356.693	100YR	3689.33	491.15	498.45	495.23	498.59	0.003030	3.31	1506.88	507.94	0.24
Geronimo Creek	33	7929.136	100YR	3689.33	487.38	496.81	493.46	497.07	0.004213	4.57	962.69	255.80	0.30
Geronimo Creek	33	7506.919	100YR	3689.33	486.44	495.38	491.43	495.56	0.003123	3.54	1123.88	256.07	0.25
Geronimo Creek	33	7114.497	100YR	3689.33	485.27	494.11	490.91	494.30	0.003285	4.00	1113.32	313.45	0.26
Geronimo Creek	33	6708.256	100YR	3689.33	485.00	492.57	490.18	492.77	0.004627	4.12	1076.21	353.61	0.30
Geronimo Creek	33	6341.458	100YR	3689.33	482.68	490.80	487.91	491.05	0.004885	4.36	1016.42	344.07	0.31
Geronimo Creek	33	5838.546	100YR	3689.33	480.83	489.51	485.19	489.63	0.001839	2.93	1583.21	353.35	0.19
Geronimo Creek	33	5464.178	100YR	3689.33	478.55	488.49	484.81	488.71	0.003369	4.31	1243.05	280.27	0.27
Geronimo Creek	33	5083.775	100YR	3689.33	478.96	487.29	483.95	487.45	0.003294	4.13	1522.52	396.85	0.26
Geronimo Creek	33	4561.275	100YR	3689.33	477.42	485.50	482.09	485.71	0.003897	4.21	1310.21	384.88	0.28
Geronimo Creek	33	4521.891 Baer Creek Trl		Culvert									
Geronimo Creek	33	4495.844	100YR	3689.33	475.81	483.86	481.39	484.17	0.006156	5.02	1062.47	330.73	0.35
Geronimo Creek	33	4202.610	100YR	3689.33	473.84	481.38	479.33	481.90	0.010548	6.26	666.86	186.84	0.45
Geronimo Creek	33	3829.389	100YR	3689.33	470.73	480.42	475.35	480.53	0.001655	2.84	1538.28	471.13	0.19
Geronimo Creek	33	3358.744	100YR	3689.33	466.49	480.12	472.40	480.16	0.000440	1.65	2553.01	517.47	0.10
Geronimo Creek	33	3127.033	100YR	3689.33	467.36	479.92	474.22	480.01	0.001092	2.64	1801.81	481.07	0.15
Geronimo Creek	33	3090.634 East Walnut St		Culvert									

Geronimo Creek	33	3058.142	100YR	3689.33	466.00	478.83	473.05	478.94	0.001480	2.96	1561.48	430.04	0.18
Geronimo Creek	33	2606.397	100YR	3689.33	465.31	478.72	471.53	478.74	0.000176	1.24	3483.19	585.40	0.06
Geronimo Creek	33	1986.304	100YR	3689.33	463.65	478.68	468.54	478.69	0.000075	0.86	5234.56	836.66	0.04
Geronimo Creek	33	1414.563	100YR	3689.33	459.64	478.65	466.34	478.66	0.000083	1.00	4648.24	704.22	0.05
Geronimo Creek	33	1356.759 Alternate 90		Bridge									
Geronimo Creek	33	1304.607	100YR	3689.33	460.36	478.55	466.18	478.56	0.000088	1.04	4531.05	693.52	0.05
Geronimo Creek	33	1093.827	100YR	3689.33	459.01	478.55	464.04	478.55	0.000016	0.48	8843.79	967.62	0.02
Geronimo Creek	37	3428.899	100YR	37644.90	454.59	477.57	467.79	477.93	0.001804	6.66	10858.14	1124.15	0.25
Geronimo Creek	37	3032.930	100YR	37644.90	454.87	476.72	469.97	477.04	0.003074	6.68	10576.87	1276.08	0.30
Geronimo Creek	37	2644.870	100YR	37644.90	451.79	475.06	470.33	475.62	0.004132	8.08	9054.64	1275.81	0.35
Geronimo Creek	37	2248.088	100YR	37644.90	449.64	473.73	466.21	474.24	0.002577	7.88	10067.16	1316.67	0.30
Geronimo Creek	37	1841.594	100YR	37644.90	446.33	473.07	463.20	473.46	0.001567	6.52	10339.13	1087.07	0.23
Geronimo Creek	37	1443.370	100YR	37644.90	448.22	472.39	463.36	472.75	0.002061	6.73	9897.32	1067.18	0.26
Geronimo Creek	37	1092.210	100YR	37644.90	445.52	471.73	459.92	472.11	0.001836	6.57	9753.79	1018.50	0.25
Geronimo Creek	38	4110.340	100YR	1457.56	502.11	506.77	505.22	506.95	0.002414	3.42	538.39	336.24	0.34
Geronimo Creek	38	3779.502	100YR	1457.56	502.40	505.31	504.85	505.55	0.008865	4.29	492.96	393.69	0.59
Geronimo Creek	38	3303.016	100YR	1457.56	499.90	504.24	502.39	504.33	0.001153	2.76	1052.14	567.37	0.25
Geronimo Creek	38	3270.17 Elmwood Dr		Culvert									
Geronimo Creek	38	3240.494	100YR	1457.56	499.82	502.03	501.53	502.31	0.009577	5.08	505.49	354.13	0.64
Geronimo Creek	38	3035.443	100YR	1457.56	497.73	499.82	499.21	500.07	0.011942	4.98	476.41	296.55	0.69
Geronimo Creek	38	2681.133	100YR	1457.56	493.69	496.24	495.63	496.62	0.007853	5.13	353.39	207.42	0.59
Geronimo Creek	38	2283.605	100YR	1457.56	489.99	493.21	492.46	493.53	0.007817	4.94	403.15	205.15	0.59
Geronimo Creek	38	2215.80*	100YR	1457.56	489.19	492.65	491.95	492.99	0.007869	4.99	377.47	202.30	0.59
Geronimo Creek	38	2147.99*	100YR	1457.56	488.39	492.21	491.34	492.52	0.006006	4.66	383.91	204.14	0.52
Geronimo Creek	38	2080.19*	100YR	1457.56	487.60	491.96	490.62	492.20	0.003493	4.01	438.01	217.60	0.41
Geronimo Creek	38	2012.38*	100YR	1457.56	486.80	491.84	489.85	492.01	0.001860	3.33	537.09	243.11	0.31
Geronimo Creek	38	1944.585	100YR	1457.56	486.00	491.79	488.95	491.90	0.001016	2.77	672.50	277.54	0.24
Geronimo Creek	38	1916.548 Monterey Oak		Culvert									
Geronimo Creek	38	1882.307	100YR	1457.56	486.00	489.15	489.15	490.24	0.022857	8.37	174.05	79.61	1.00
Geronimo Creek	38	1504.532	100YR	1457.56	478.78	485.11	480.75	485.13	0.000185	1.26	1192.72	282.14	0.10
Geronimo Creek	38	1018.686	100YR	1457.56	476.00	482.87	482.87	484.66	0.021006	10.74	135.75	37.82	1.00
Geronimo Creek	38	935.686	100YR	1457.56	472.76	479.76	480.00	482.18	0.042674	12.49	116.70	44.45	1.36
Geronimo Creek	38	790.606	100YR	1457.56	463.96	471.13	468.84	471.15	0.000215	1.33	1523.55	391.46	0.11
Geronimo Creek	38	597.3232	100YR	1457.56	459.23	471.14	463.98	471.14	0.000015	0.53	3925.03	587.16	0.03
Geronimo Creek	39	9690.862	100YR	38723.43	445.56	470.54	459.08	470.79	0.000826	4.39	10243.20	807.43	0.17
Geronimo Creek	39	9283.278	100YR	38723.43	442.69	470.22	459.62	470.44	0.000901	5.15	11717.16	1051.77	0.18
Geronimo Creek	39	8905.132	100YR	38723.43	442.40	469.82	460.24	470.11	0.001149	5.59	10092.29	1195.35	0.20
Geronimo Creek	39	8506.541	100YR	38723.43	441.75	469.21	460.99	469.58	0.001542	6.59	9038.57	1072.87	0.23
Geronimo Creek	39	8108.496	100YR	38723.43	441.67	468.33	459.22	468.87	0.002015	6.82	7843.12	959.06	0.26
Geronimo Creek	39	7772.685	100YR	38723.43	439.85	467.86	459.06	468.23	0.001570	6.64	10455.92	1649.57	0.23
Geronimo Creek	39	7364.602	100YR	38723.43	439.90	467.40	457.77	467.65	0.001144	5.56	12172.77	1819.16	0.20
Geronimo Creek	39	6956.714	100YR	38723.43	439.20	467.03	457.09	467.23	0.000889	4.98	13113.70	1746.83	0.18
Geronimo Creek	39	6554.943	100YR	38723.43	436.92	466.72	454.90	466.89	0.000731	4.67	15755.21	1718.53	0.16
Geronimo Creek	39	6119.252	100YR	38723.43	435.24	466.44	453.64	466.61	0.000669	4.35	14456.19	1458.02	0.15
Geronimo Creek	39	5709.437	100YR	38723.43	435.15	466.27	453.20	466.39	0.000510	3.62	15992.48	1699.46	0.13
Geronimo Creek	39	5329.669	100YR	38723.43	433.94	466.10	451.93	466.22	0.000469	3.91	18084.66	1643.34	0.13
Geronimo Creek	39	4944.850	100YR	38723.43	430.95	465.90	449.37	466.04	0.000477	3.95	17891.55	1700.73	0.13
Geronimo Creek	39	4556.073	100YR	38723.43	427.83	465.80	443.09	465.89	0.000273	3.25	20063.07	2066.93	0.10
Geronimo Creek	39	4229.440	100YR	38723.43	429.69	465.72	447.27	465.79	0.000269	3.35	21033.98	2192.11	0.10
Geronimo Creek	39	3835.312	100YR	38723.43	429.21	465.63	444.18	465.70	0.000212	2.90	23801.09	2544.24	0.09
Geronimo Creek	39	3372.097	100YR	38723.43	434.20	465.32	451.38	465.52	0.000752	5.03	14386.21	1857.82	0.17
Geronimo Creek	39	2980.636	100YR	38723.43	432.40	465.09	451.78	465.25	0.000590	4.60	14295.24	1671.75	0.15
Geronimo Creek	39	2580.466	100YR	38723.43	431.50	464.87	452.07	465.02	0.000557	4.20	14399.36	1639.26	0.14
Geronimo Creek	39	2217.355	100YR	38723.43	433.51	464.62	449.97	464.80	0.000663	4.49	12782.83	1335.82	0.15
Geronimo Creek	39	1820.344	100YR	38723.43	432.80	464.59	448.61	464.65	0.000160	2.18	19729.64	1208.40	0.08
Geronimo Creek	39	1410.110	100YR	38723.43	430.96	464.52	446.78	464.60	0.000166	2.47	17092.93	829.67	0.08
Geronimo Creek	39	644.4846	100YR	38723.43	432.79	464.38	448.05	464.49	0.000248	2.82	15917.10	1155.69	0.09
Geronimo Creek	39	401.4402	100YR	38723.43	432.40	464.23	449.28	464.41	0.000474	3.76	12348.24	935.29	0.13
Geronimo Creek	39	0	100YR	38723.43	431.67	464.00	447.80	464.21	0.000465	4.11	10704.61	565.86	0.13
Alligator Creek	01	7001.815	100YR	5502.81	799.49	803.92	803.45	804.56	0.037208	6.50	867.32	410.99	0.73
Alligator Creek	01	6666.048	100YR	5502.81	794.28	800.33	797.79	800.54	0.005570	3.73	1485.77	353.49	0.31
Alligator Creek	01	6071.593	100YR	5502.81	787.90	794.17	793.36	794.76	0.021146	7.87	1035.88	381.70	0.62
Alligator Creek	01	5632.614	100YR	5502.81	780.33	788.58	786.60	789.08	0.009660	6.28	1125.16	315.32	0.44
Alligator Creek	01	5199.927	100YR	5502.81	777.74	783.99	781.95	784.55	0.011273	6.22	1027.59	320.65	0.46
Alligator Creek	01	4778.006	100YR	5502.81	772.01	779.68	777.35	780.16	0.009519	5.67	1031.16	229.93	0.42
Alligator Creek	01	4412.863	100YR	5502.81	769.43	776.77	773.95	777.19	0.007069	5.44	1156.65	247.54	0.38
Alligator Creek	01	3944.025	100YR	5502.81	764.45	771.61	770.31	772.33	0.017011	7.56	944.37	253.46	0.57
Alligator Creek	01	3480.455	100YR	5502.81	756.05	762.94	761.57	763.89	0.020080	7.94	726.63	166.32	0.61
Alligator Creek	01	3050.542	100YR	5502.81	749.77	757.70	755.24	758.12	0.009169	5.21	1085.83	255.83	0.41
Alligator Creek	01	2636.258	100YR	5502.81	747.26	753.64	751.41	754.12	0.010223	5.52	1011.51	220.83	0.43
Alligator Creek	01	2163.958	100YR	5502.81	740.39	748.81	746.53	749.23	0.010473	5.61	1253.90	408.36	0.44
Alligator Creek	01	1779.514	100YR	5502.81	738.03	745.97	743.45	746.27	0.006076	4.88	1540.71	450.32	0.35
Alligator Creek	01	1363.093	100YR	5502.81	735.83	742.16	740.45	742.73	0.013155	6.27	1049.70	380.76	0.49
Alligator Creek	01	921.0338	100YR	5502.81	733.29	738.84	736.39	739.01	0.005444	3.95	1892.50	538.93	0.31
Alligator Creek	01	516.4432	100YR	5502.81	730.00	736.26	734.47	736.52	0.006870	4.83	1596.06	459.91	0.36
Alligator Creek	02	1478.984	100YR	3199.08	737.96	740.69	739.38	740.77	0.007468	3.11	1464.01	828.94	0.33
Alligator Creek	02	1002.400	100YR	3199.08	733.90	737.11	735.87	737.22	0.007658	2.82	1330.77	749.57	0.33
Alligator Creek	02	525.2717	100YR	3199.08	731.45	735.59	733.22	735.64	0.001974	1.94	1890.95	601.97	0.18
Alligator C[redacted]	03	4046.940	100YR	8712.43	726.00	[redacted].57	731.02	733.79	0.004520	4.45	2626.69	672.44	0.30

Alligator Creek	03	3685.581		100YR	8712.43	724.23	732.26	729.07	732.46	0.004285	4.59	2712.23	601.41	0.30
Alligator Creek	03	3306.994		100YR	8712.43	722.00	730.21	728.10	730.50	0.006633	5.74	2277.44	543.34	0.37
Alligator Creek	03	2877.664		100YR	8712.43	720.23	727.18	725.36	727.49	0.008391	5.64	2132.00	539.54	0.40
Alligator Creek	03	2259.872		100YR	8712.43	715.82	725.15	720.42	725.30	0.002276	3.46	3042.17	562.18	0.22
Alligator Creek	03	1881.173		100YR	8712.43	714.44	723.94	721.18	724.19	0.004783	5.17	2512.16	578.69	0.32
Alligator Creek	03	1544.100		100YR	8712.43	713.75	722.41	718.96	722.71	0.004431	4.86	2314.27	515.41	0.31
Alligator Creek	03	1077.772		100YR	8712.43	711.63	720.18	717.50	720.48	0.005323	5.19	2411.17	651.08	0.33
Alligator Creek	03	706.3887		100YR	8712.43	710.01	718.29	715.57	718.57	0.005144	4.97	2389.31	594.96	0.33
Alligator Creek	03	513.3656		100YR	8712.43	709.72	717.55	713.56	717.67	0.002514	3.37	3300.43	697.20	0.23
Alligator Creek	04	1377.197		100YR	1989.98	718.03	722.87	720.98	723.01	0.005110	3.40	747.41	305.33	0.30
Alligator Creek	04	985.9020		100YR	1989.98	715.44	718.47	717.98	718.94	0.033981	5.47	366.99	194.92	0.68
Alligator Creek	04	627.2396		100YR	1989.98	711.81	717.99	714.02	718.01	0.000747	1.27	1844.01	546.41	0.11
Alligator Creek	06	401.6497		100YR	10644.72	708.03	714.92	713.66	715.57	0.006420	7.69	2289.11	672.32	0.56
Alligator Creek	06	238.6775		100YR	10644.72	707.99	713.82	712.74	714.55	0.007192	7.70	2147.53	728.00	0.59
Alligator Creek	06	220.2640	Hoffmann Ln		Inl Struct									
Alligator Creek	06	198.3896		100YR	10644.72	707.87	713.82	711.86	714.28	0.004265	6.02	2557.02	752.34	0.45
Alligator Creek	05	6263.753		100YR	3168.89	748.06	753.05	751.67	753.28	0.010202	4.71	927.75	417.63	0.42
Alligator Creek	05	5877.358		100YR	3168.89	744.65	750.17	748.22	750.32	0.005974	3.84	1107.84	378.23	0.32
Alligator Creek	05	5430.774		100YR	3168.89	741.92	747.01	745.43	747.28	0.008610	4.70	862.51	310.15	0.39
Alligator Creek	05	4994.244		100YR	3168.89	739.99	743.09	742.13	743.25	0.011251	4.17	1121.23	646.62	0.42
Alligator Creek	05	4481.492		100YR	3168.89	735.27	740.29	737.92	740.42	0.004023	3.21	1218.61	569.47	0.27
Alligator Creek	05	4052.968		100YR	3168.89	731.88	735.56	735.37	736.44	0.046039	9.08	469.11	211.29	0.86
Alligator Creek	05	3589.432		100YR	3168.89	728.10	730.61	729.52	730.74	0.005147	3.41	1109.28	564.36	0.46
Alligator Creek	05	3123.015		100YR	3168.89	725.93	728.48	727.59	728.66	0.005839	4.54	999.11	525.03	0.52
Alligator Creek	05	2718.800		100YR	3168.89	721.72	725.89	724.88	726.35	0.005548	5.64	646.28	267.53	0.53
Alligator Creek	05	2238.492		100YR	3168.89	719.80	723.63	722.50	723.90	0.004724	4.91	840.53	348.65	0.48
Alligator Creek	05	1818.003		100YR	3168.89	717.67	720.88	720.39	721.32	0.009803	6.65	692.80	351.84	0.69
Alligator Creek	05	1417.452		100YR	3168.89	715.67	719.32	717.63	719.46	0.002631	3.66	1129.11	411.72	0.36
Alligator Creek	05	1022.440		100YR	3168.89	713.91	716.54	716.54	717.21	0.021848	8.66	579.21	401.65	0.99
Alligator Creek	05	665.7545		100YR	3168.89	711.58	715.14	713.48	715.26	0.001654	2.93	1369.45	667.48	0.29
Alligator Creek	07	25243.75		100YR	8790.12	706.81	713.12	711.14	713.55	0.003016	5.58	2085.62	742.40	0.42
Alligator Creek	07	25025.61		100YR	8790.12	705.62	712.69	709.93	713.01	0.001904	4.80	2390.53	733.42	0.34
Alligator Creek	07	24560.41		100YR	8790.12	704.01	711.30	708.74	711.60	0.006020	4.63	2166.66	621.02	0.34
Alligator Creek	07	24200.48		100YR	8790.12	703.52	709.77	707.50	710.18	0.002679	5.42	2085.16	627.66	0.40
Alligator Creek	07	23731.28		100YR	8790.12	697.15	708.27	704.53	708.60	0.004511	5.21	2646.21	921.18	0.31
Alligator Creek	07	23362.87		100YR	8790.12	696.00	707.19	702.84	707.37	0.002732	4.06	3599.20	1231.87	0.24
Alligator Creek	07	22859.18		100YR	8790.12	694.21	705.20	702.43	705.58	0.006225	5.73	2431.24	921.97	0.36
Alligator Creek	07	22353.31		100YR	8790.12	693.78	703.80	698.63	703.96	0.002096	3.46	3045.57	811.67	0.21
Alligator Creek	07	21991.19		100YR	8790.12	692.58	702.97	697.66	703.17	0.002343	3.66	2884.81	886.33	0.22
Alligator Creek	07	21685.87		100YR	8790.12	691.62	702.90	697.97	702.94	0.000216	2.03	7050.83	1510.57	0.12
Alligator Creek	07	21614.83	FM 1102		Culvert									
Alligator Creek	07	21553.36		100YR	8790.12	691.62	702.00	697.57	702.07	0.000421	2.76	5917.68	1184.89	0.17
Alligator Creek	07	20964.85		100YR	8790.12	693.25	701.56	698.32	701.74	0.001223	4.06	3395.20	697.56	0.28
Alligator Creek	07	20856.37		100YR	8790.12	693.09	701.30	698.55	701.56	0.001876	4.63	2709.56	667.80	0.34
Alligator Creek	07	20761.90		100YR	8790.12	691.79	701.19	697.36	701.42	0.001098	4.40	3046.01	566.47	0.27
Alligator Creek	07	20649.80		100YR	8790.12	690.72	700.12	699.13	701.11	0.005417	9.00	1565.42	417.56	0.59
Alligator Creek	07	20129.65		100YR	8790.12	688.66	698.36	695.09	698.63	0.003898	4.79	2362.16	683.29	0.29
Alligator Creek	07	19663.41		100YR	8790.12	688.04	697.44	693.33	697.55	0.001995	3.24	3296.98	850.84	0.21
Alligator Creek	07	19197.29		100YR	8790.12	688.06	696.89	693.46	697.03	0.002413	3.56	3241.43	990.49	0.23
Alligator Creek	07	18777.99		100YR	8790.12	686.04	695.58	692.69	695.85	0.004552	4.64	2491.64	943.61	0.31
Alligator Creek	07	18309.60		100YR	8790.12	685.79	694.24	690.19	694.40	0.002526	3.49	2988.02	833.07	0.23
Alligator Creek	07	17891.29		100YR	8790.12	683.55	693.41	688.54	693.55	0.001933	3.24	3330.92	961.18	0.20
Alligator Creek	07	17389.77		100YR	8790.12	680.12	692.43	688.25	692.62	0.002558	4.17	2933.95	881.86	0.24
Alligator Creek	07	16922.28		100YR	8790.12	680.26	691.35	687.39	691.53	0.002774	3.87	2987.39	971.97	0.24
Alligator Creek	07	16482.07		100YR	8790.12	680.47	689.97	687.02	690.15	0.002968	3.73	2656.76	625.33	0.25
Alligator Creek	07	15972.79		100YR	8790.12	679.98	688.22	685.82	688.69	0.002753	5.80	1994.89	756.60	0.41
Alligator Creek	07	15642.81		100YR	8790.12	679.64	687.41	685.49	687.75	0.002656	5.17	2402.75	948.04	0.40
Alligator Creek	07	15202.46		100YR	8790.12	678.23	686.36	683.57	686.52	0.002938	3.58	3072.46	957.87	0.24
Alligator Creek	07	14794.83		100YR	8790.12	673.94	685.38	682.42	685.53	0.002203	3.51	3068.09	893.26	0.22
Alligator Creek	07	14297.19		100YR	8790.12	676.10	684.29	681.17	684.43	0.002957	3.56	3240.49	761.67	0.24
Alligator Creek	07	13852.29		100YR	8790.12	672.35	683.64	678.57	683.71	0.001090	2.61	5073.38	1157.71	0.16
Alligator Creek	07	13285.73		100YR	8790.12	671.71	682.78	679.30	682.96	0.003363	4.52	3471.27	862.88	0.27
Alligator Creek	07	12908.47		100YR	8790.12	673.89	681.68	677.92	681.85	0.003045	3.76	2722.31	695.40	0.25
Alligator Creek	07	12366.32		100YR	8790.12	671.86	680.29	676.90	680.45	0.002890	3.69	2907.10	838.34	0.24
Alligator Creek	07	11988.83		100YR	8790.12	669.76	679.43	675.90	679.58	0.002153	3.64	2943.52	682.71	0.22
Alligator Creek	07	11959.56	Gooodwin Ln		Inl Struct									
Alligator Creek	07	11932.31		100YR	8790.12	669.69	679.32	675.94	679.47	0.002421	3.68	3093.66	1086.21	0.23
Alligator Creek	07	11451.57		100YR	8790.12	668.05	678.71	672.35	678.80	0.001064	2.70	4506.70	1714.87	0.16
Alligator Creek	07	10995.69		100YR	8790.12	668.06	678.01	674.12	678.17	0.002537	3.90	3498.93	1658.27	0.24
Alligator Creek	07	10527.75		100YR	8790.12	666.91	676.94	672.43	677.11	0.002446	3.75	3379.93	1603.19	0.23
Alligator Creek	07	10049.44		100YR	8790.12	664.94	675.36	672.81	675.64	0.004911	4.97	2599.10	1314.94	0.32
Alligator Creek	07	9607.541		100YR	8790.12	665.85	673.71	671.76	673.86	0.003663	3.73	3082.12	1224.18	0.27
Alligator Creek	07	8796.886		100YR	8790.12	665.65	672.47	669.05	672.54	0.001465	2.33	4504.05	1432.96	0.17
Alligator Creek	07	8559.950		100YR	8790.12	665.36	672.20	669.65	672.27	0.001718	2.23	4445.77	1497.70	0.18
Alligator Creek	07	8189.323		100YR	8790.12	665.32	671.57	668.65	671.66	0.002282	2.69	3968.52	1488.04	0.21
Alligator Creek	07	7744.639		100YR	8790.12	664.01	671.01	667.85	671.13	0.000919	3.01	4004.59	1391.99	0.23
Alligator Creek	07	7211.670		100YR	8790.12	662.36	670.43	667.78	670.59	0.001261	3.58	3331.02	1152.58	0.27
Alligator Creek	07	6811.536		100YR	8790.12	661.61	669.45	667.55	669.84	0.002728	5.78	2400.29	956.20	0.41
Alligator Creek	07	6376.050		100YR	8790.12	662.57	668.62	666.22	668.85	0.001755	4.15	2862.92	1068.61	0.32

Alligator Creek	07	6105.288		100YR	8790.12	660.79	668.43	664.82	668.51	0.000651	2.80	5531.71	2363.08	0.20
Alligator Creek	07	6070.973	IH 35 (Southboun		Culvert									
Alligator Creek	07	6030.020		100YR	8790.12	660.79	668.07	664.77	668.37	0.002354	4.82	2829.65	1844.05	0.37
Alligator Creek	07	5955.235	IH 35 (Main Road		Culvert									
Alligator Creek	07	5870.958		100YR	8790.12	658.00	664.99	661.33	665.35	0.001781	4.88	1852.39	287.24	0.33
Alligator Creek	07	5835.668	IH 35 (Northboun		Bridge									
Alligator Creek	07	5801.258		100YR	8790.12	658.00	664.49	661.44	664.88	0.002309	5.10	2104.56	1239.48	0.37
Alligator Creek	07	5453.075		100YR	8790.12	654.27	663.93	660.39	664.23	0.001597	4.85	3063.33	1790.66	0.32
Alligator Creek	07	5058.763		100YR	8790.12	654.62	663.35	660.43	663.62	0.001615	4.81	3289.10	1626.57	0.32
Alligator Creek	07	4661.763		100YR	8790.12	654.19	663.17	658.40	663.27	0.000495	2.73	4947.06	1906.86	0.18
Alligator Creek	07	4063.939		100YR	8790.12	655.86	662.84	660.71	662.90	0.001491	2.32	4844.97	1786.06	0.17
Alligator Creek	07	3562.239		100YR	8790.12	655.91	662.39	660.00	662.45	0.001561	2.40	4485.77	1538.64	0.17
Alligator Creek	07	3160.334		100YR	8790.12	653.68	662.01	659.63	662.10	0.001720	2.58	4043.41	1320.89	0.18
Alligator Creek	07	2743.151		100YR	8790.12	653.84	661.41	658.19	661.48	0.001670	2.45	4617.96	1583.59	0.18
Alligator Creek	07	2334.364		100YR	8790.12	653.55	660.71	657.73	660.80	0.002043	2.79	4078.30	1554.46	0.20
Alligator Creek	07	1818.598		100YR	8790.12	652.52	659.57	657.55	659.67	0.002829	3.18	3783.28	1649.60	0.23
Alligator Creek	07	1363.123		100YR	8790.12	649.00	658.02	654.83	658.21	0.004621	4.11	3097.64	1794.71	0.30
Alligator Creek	07	891.0135		100YR	8790.12	647.51	657.47	652.29	657.52	0.000727	1.99	5558.89	1545.79	0.12
Alligator Creek	07	468.6593		100YR	8790.12	647.63	657.24	651.89	657.28	0.000582	1.71	5942.53	1385.22	0.11
Alligator Creek	08	3868.154		100YR	2066.56	666.00	672.19	668.57	672.20	0.000038	0.64	5608.08	1748.49	0.05
Alligator Creek	08	3684.417	IH 35 N (Target)		Culvert									
Alligator Creek	08	3515.235		100YR	2066.56	660.61	663.63	663.63	664.62	0.029709	9.08	266.47	131.33	1.13
Alligator Creek	09	21362.03		100YR	11137.54	647.93	656.75	653.26	656.83	0.001504	2.74	4974.51	1344.45	0.18
Alligator Creek	09	21008.09		100YR	11137.54	647.90	656.25	653.28	656.33	0.001656	2.86	4864.54	1393.15	0.19
Alligator Creek	09	20492.43		100YR	11137.54	648.00	655.40	652.29	655.51	0.002065	3.03	4427.61	1287.13	0.20
Alligator Creek	09	20093.13		100YR	11137.54	647.87	654.45	651.76	654.58	0.003006	3.40	4019.31	1320.53	0.24
Alligator Creek	09	19673.09		100YR	11137.54	646.06	653.26	650.62	653.39	0.002773	3.12	3996.92	1122.49	0.23
Alligator Creek	09	19283.90		100YR	11137.54	644.19	652.36	650.00	652.59	0.001827	4.37	3637.52	1183.17	0.33
Alligator Creek	09	18858.21		100YR	11137.54	643.27	651.17	649.83	651.53	0.003782	6.13	2943.57	1048.30	0.47
Alligator Creek	09	18818.89	FM 1101		Culvert									
Alligator Creek	09	18790.20		100YR	11137.54	642.32	650.59	649.28	651.10	0.004337	6.79	2610.20	1012.86	0.51
Alligator Creek	09	18309.19		100YR	11137.54	640.17	649.48	647.25	649.81	0.001958	5.31	3193.85	1014.95	0.36
Alligator Creek	09	17868.16		100YR	11137.54	640.11	648.68	645.73	648.92	0.001556	4.76	3712.57	1098.32	0.32
Alligator Creek	09	17398.76		100YR	11137.54	638.08	648.00	645.37	648.27	0.001501	5.25	3856.93	1223.67	0.32
Alligator Creek	09	16937.24		100YR	11137.54	637.73	647.43	644.44	647.67	0.001252	4.84	4236.33	1455.21	0.29
Alligator Creek	09	16533.45		100YR	11137.54	638.24	646.90	645.70	647.14	0.002155	5.89	4008.73	1395.09	0.38
Alligator Creek	09	16085.89		100YR	11137.54	639.78	645.99	644.73	646.22	0.002889	5.91	3634.62	1259.12	0.42
Alligator Creek	09	15624.50		100YR	11137.54	639.53	645.16	642.58	645.33	0.001558	4.02	3857.78	1000.15	0.30
Alligator Creek	09	15140.54		100YR	11137.54	637.80	644.34	641.57	644.58	0.001805	4.59	3268.53	831.06	0.33
Alligator Creek	09	14734.32		100YR	11137.54	635.66	643.63	641.12	643.86	0.001944	5.06	3518.73	951.91	0.35
Alligator Creek	09	14298.98		100YR	11137.54	635.61	643.01	640.22	643.18	0.001220	4.05	4276.31	1245.62	0.28
Alligator Creek	09	13849.77		100YR	11137.54	635.60	642.44	639.59	642.62	0.001319	4.02	4084.36	1253.31	0.29
Alligator Creek	09	13403.25		100YR	11137.54	635.58	641.92	639.19	642.07	0.001180	3.71	4316.43	1208.67	0.27
Alligator Creek	09	12980.02		100YR	11137.54	633.85	641.51	638.04	641.65	0.000930	3.70	4621.82	1165.89	0.25
Alligator Creek	09	12611.53		100YR	11137.54	633.63	641.14	637.32	641.28	0.000997	3.78	4496.31	1139.41	0.25
Alligator Creek	09	12209.63		100YR	11137.54	633.64	640.66	637.71	640.84	0.001247	4.04	4163.06	1218.14	0.28
Alligator Creek	09	12179.1	Westmeyer Rd		Inl Struct									
Alligator Creek	09	12157.00		100YR	11137.54	631.96	640.65	637.20	640.76	0.002026	3.06	4364.75	1194.21	0.20
Alligator Creek	09	11833.46		100YR	11137.54	631.78	640.08	635.65	640.18	0.001590	2.89	4552.53	1121.59	0.18
Alligator Creek	09	11402.89		100YR	11137.54	630.93	639.28	635.37	639.42	0.002182	3.33	3985.93	1024.19	0.21
Alligator Creek	09	10894.18		100YR	11137.54	629.91	638.12	634.95	638.26	0.002427	3.45	3975.27	1105.22	0.22
Alligator Creek	09	10452.90		100YR	11137.54	629.71	637.18	634.29	637.28	0.002070	3.05	4486.28	1352.12	0.21
Alligator Creek	09	10036.78		100YR	11137.54	629.83	636.34	633.60	636.45	0.002293	2.95	4423.53	1334.94	0.21
Alligator Creek	09	9548.166		100YR	11137.54	628.01	635.25	632.62	635.37	0.002368	3.21	4261.15	1361.13	0.22
Alligator Creek	09	9084.236		100YR	11137.54	625.88	634.15	631.33	634.29	0.002489	3.43	3800.20	1000.78	0.23
Alligator Creek	09	8677.278		100YR	11137.54	625.94	633.23	630.90	633.44	0.001892	5.00	3805.53	1107.61	0.35
Alligator Creek	09	8258.621		100YR	11137.54	625.78	632.52	629.85	632.68	0.001573	4.61	4311.76	1279.17	0.32
Alligator Creek	09	7807.266		100YR	11137.54	625.28	631.65	629.65	631.87	0.001967	4.87	3985.12	1376.32	0.35
Alligator Creek	09	7462.590		100YR	11137.54	623.76	630.99	629.36	631.19	0.002055	5.11	4085.78	1423.68	0.36
Alligator Creek	09	7014.799		100YR	11137.54	623.91	630.17	628.42	630.34	0.001743	4.53	4486.59	1614.62	0.33
Alligator Creek	09	6581.594		100YR	11137.54	623.66	629.27	627.36	629.48	0.002236	4.77	3772.86	1300.92	0.36
Alligator Creek	09	6167.955		100YR	11137.54	621.51	628.36	626.90	628.61	0.002150	5.03	3731.93	1329.25	0.36
Alligator Creek	09	5795.476		100YR	11137.54	619.54	627.53	626.25	627.77	0.002157	5.05	3824.40	1396.93	0.36
Alligator Creek	09	5357.093		100YR	11137.54	619.62	626.50	625.35	626.77	0.002669	5.45	3498.48	1255.79	0.40
Alligator Creek	09	5035.595		100YR	11137.54	618.06	626.00	623.71	626.13	0.001393	4.16	4618.61	1314.22	0.29
Alligator Creek	09	4431.182		100YR	11137.54	617.50	624.98	623.81	625.27	0.003055	6.27	3413.64	1219.67	0.44
Alligator Creek	09	3979.711		100YR	11137.54	616.09	624.19	622.56	624.40	0.002028	5.29	3733.50	1037.87	0.36
Alligator Creek	09	3628.677		100YR	11137.54	612.36	623.95	619.33	624.08	0.000576	3.52	4801.72	947.52	0.20
Alligator Creek	09	3347.044		100YR	11137.54	615.93	623.55	620.45	623.82	0.001765	5.11	3597.99	1096.70	0.34
Alligator Creek	09	2914.049		100YR	11137.54	615.84	622.88	620.27	623.10	0.001578	4.54	4221.96	1669.99	0.32
Alligator Creek	09	2409.827		100YR	11137.54	615.65	622.28	619.76	622.42	0.001112	3.58	4978.66	1734.31	0.26
Alligator Creek	09	2046.571		100YR	11137.54	615.26	621.86	619.33	622.01	0.001128	3.70	4701.73	1482.38	0.26
Alligator Creek	09	1686.318		100YR	11137.54	615.61	621.39	618.93	621.56	0.001415	3.78	4162.15	1414.43	0.29
Alligator Creek	09	1260.851		100YR	11137.54	615.35	620.71	618.57	620.90	0.001773	4.03	4035.52	1530.58	0.32
Alligator Creek	09	870.0872		100YR	11137.54	615.76	620.05	618.23	620.22	0.001878	3.67	3909.14	1431.41	0.32
Alligator Creek	09	534.2142		100YR	11137.54	612.32	619.49	617.10	619.66	0.001569	3.73	4106.90	1419.48	0.30
Alligator Creek	09	512.7987	Schwarzlose Rd		Culvert									
Alligator Creek	09	487.0423		100YR	11137.54	611.82	619.21	616.51	619.38	0.001264	3.71	4182.46	1391.10	0.28
Alligator Creek	10	1723.322		100YR	2578.33	616.09	0.94	619.54	621.10	0.002208	3.80	974.27	460.12	0.34

Alligator Creek	10	1322.144	100YR	2578.33	614.71	619.64	618.92	619.92	0.004305	4.85	830.14	665.44	0.47
Alligator Creek	10	869.0064	100YR	2578.33	614.01	619.26	617.35	619.29	0.000591	2.05	2257.02	1116.49	0.18
Alligator Creek	10	599.8826	100YR	2578.33	613.76	619.20	616.58	619.21	0.000170	1.19	4097.45	1928.02	0.10
Alligator Creek	11	17092.60	100YR	12359.69	610.35	618.66	615.80	618.78	0.001142	4.03	5456.32	1489.11	0.27
Alligator Creek	11	16641.90	100YR	12359.69	610.02	618.05	615.35	618.21	0.001429	4.51	4729.79	1299.85	0.30
Alligator Creek	11	16152.15	100YR	12359.69	609.85	617.38	614.48	617.56	0.001516	4.17	4384.47	1257.33	0.30
Alligator Creek	11	15742.48	100YR	12359.69	609.12	616.64	614.12	616.87	0.002047	4.73	3943.48	1232.13	0.35
Alligator Creek	11	15240.02	100YR	12359.69	606.51	615.79	613.07	616.04	0.001516	5.00	4171.34	1204.17	0.32
Alligator Creek	11	14822.08	100YR	12359.69	607.08	615.06	612.78	615.34	0.002011	5.42	3967.10	1265.19	0.36
Alligator Creek	11	14366.75	100YR	12359.69	607.59	614.38	611.55	614.56	0.001530	4.40	4638.36	1443.67	0.31
Alligator Creek	11	13574.50	100YR	12359.69	606.00	613.19	611.25	613.34	0.001400	4.05	5853.83	2543.50	0.29
Alligator Creek	11	13530.24 FM 758		Bridge									
Alligator Creek	11	13500.21	100YR	12359.69	606.00	612.43	611.19	612.67	0.002800	5.12	4564.89	2364.57	0.40
Alligator Creek	11	13091.80	100YR	12359.69	605.75	611.84	609.89	611.93	0.001216	3.52	6154.41	2066.99	0.27
Alligator Creek	11	12775.78	100YR	12359.69	605.74	611.39	609.58	611.48	0.001615	3.75	5766.03	2109.23	0.30
Alligator Creek	11	12432.38	100YR	12359.69	604.00	610.83	608.89	610.92	0.001375	3.79	6153.29	2267.34	0.29
Alligator Creek	11	12200.85	100YR	12359.69	604.32	610.57	608.23	610.65	0.001280	3.26	6383.03	2361.92	0.27
Alligator Creek	11	11880.24	100YR	12359.69	604.02	610.26	607.82	610.35	0.001125	3.13	6465.27	2405.33	0.25
Alligator Creek	11	11531.50	100YR	12359.69	603.80	609.89	607.88	610.00	0.001794	3.93	5636.66	2279.37	0.32
Alligator Creek	11	11142.91	100YR	12359.69	602.13	608.79	607.35	609.06	0.003063	5.58	4291.69	2163.13	0.43
Alligator Creek	11	10729.37	100YR	12359.69	598.30	607.23	606.20	607.49	0.003459	5.68	4333.25	2296.92	0.45
Alligator Creek	11	10705.84 Barbarossa Rd		Culvert									
Alligator Creek	11	10667.06	100YR	12359.69	598.25	607.35	605.50	607.49	0.001753	4.37	5704.23	2569.56	0.32
Alligator Creek	11	10263.35	100YR	12359.69	600.00	607.02	604.55	607.08	0.000676	2.57	8322.71	3094.88	0.20
Alligator Creek	11	9837.850	100YR	12359.69	599.91	606.70	603.99	606.75	0.001227	2.14	7348.91	2872.67	0.15
Alligator Creek	11	9375.285	100YR	12359.69	599.71	605.94	603.57	606.03	0.002781	2.79	5528.79	2452.43	0.22
Alligator Creek	11	8842.052	100YR	12359.69	599.97	605.18	602.94	605.23	0.001698	2.11	7120.54	3158.20	0.17
Alligator Creek	11	8360.648	100YR	12359.69	599.97	604.31	602.66	604.40	0.001581	3.26	6354.10	2774.22	0.29
Alligator Creek	11	8033.496	100YR	12359.69	599.82	603.77	601.89	603.85	0.001716	3.20	5946.01	2470.75	0.30
Alligator Creek	11	7584.099	100YR	12359.69	597.96	603.15	601.20	603.22	0.001326	3.10	6421.55	2381.52	0.27
Alligator Creek	11	7142.863	100YR	12359.69	597.02	602.68	600.85	602.75	0.001081	3.12	6659.60	2217.51	0.25
Alligator Creek	11	6669.727	100YR	12359.69	594.89	602.22	599.69	602.30	0.000919	3.23	6351.24	1870.13	0.24
Alligator Creek	11	6169.099	100YR	12359.69	594.15	601.79	599.29	601.89	0.001022	3.68	5915.06	1626.44	0.25
Alligator Creek	11	5761.961	100YR	12359.69	592.72	601.41	598.53	601.51	0.001009	3.93	5871.89	1560.07	0.26
Alligator Creek	11	5410.477	100YR	12359.69	592.46	600.99	598.55	601.13	0.001237	4.32	5230.63	1493.90	0.28
Alligator Creek	11	4993.689	100YR	12359.69	592.04	600.39	598.00	600.56	0.001457	4.55	4654.39	1267.81	0.31
Alligator Creek	11	4654.933	100YR	12359.69	591.95	599.80	597.35	600.02	0.001695	4.77	4111.80	1240.93	0.33
Alligator Creek	11	4180.005	100YR	12359.69	591.96	599.02	596.85	599.21	0.001939	4.93	4316.68	1270.52	0.35
Alligator Creek	11	3711.341	100YR	12359.69	590.34	597.93	595.58	598.22	0.002358	5.54	3741.84	1211.06	0.39
Alligator Creek	11	3333.704	100YR	12359.69	590.68	596.88	595.29	597.25	0.003194	6.07	3234.72	1026.73	0.44
Alligator Creek	11	2904.701	100YR	12359.69	590.01	595.64	593.90	596.02	0.003717	5.74	2890.26	848.42	0.46
Alligator Creek	11	2517.772	100YR	12359.69	589.30	594.30	592.78	594.69	0.003506	5.55	3319.77	1012.08	0.45
Alligator Creek	11	2208.812	100YR	12359.69	586.05	593.97	590.97	594.04	0.000708	2.89	7377.03	2344.23	0.21
Alligator Creek	11	2185.628 Huber Rd		Culvert									
Alligator Creek	11	2164.553	100YR	12359.69	585.40	593.95	590.78	594.02	0.000661	2.87	7573.71	2417.61	0.20
Alligator Creek	11	1705.497	100YR	12359.69	584.28	593.63	589.61	593.73	0.000710	3.56	6788.43	2033.12	0.22
Alligator Creek	11	1321.084	100YR	12359.69	584.12	593.25	590.52	593.45	0.001485	5.24	5154.40	1802.80	0.32
Alligator Creek	11	934.6802	100YR	12359.69	583.83	592.90	589.15	593.07	0.001003	4.32	5438.79	1819.62	0.26

APPENDIX D

APPENDIX D
FEMA BACKUP DATA (EFFECTIVE 1% ANNUAL)

WSP2 XEQ 02/13/76
REV 08/14/74

Late

Prepared 3-5-

80/80 LIST OF INPUT DATA

```
WSP2
TITLE    GUADALUPE COUNTY, TEXAS, FLOOD INSURANCE STUDY  02-10-76                    1
TITLE    PROFILES FOR GERONIMO CREEK AND ALLIGATOR CREEK                             2
TRIB     16UU                                                                        3
COMMENT  SET UP REACH AND ROAD DATA FOR ALL SECTIONS                                 4
COMMENT  BEGIN REACH AND ROAD DATA FOR GERONIMO CREEK                                5
REACH    21DD      69.55     2700      2050      0         0                        6
REACH    21D       65.41     11450     10950     0         0                        7R
ROAD     21        2.7       50        50                                           8R
REACH    21U       65.41     50        50                                           9
REACH    20D       61.15     8900      7600      0         0                        10
ROAD     20        2.7       50        50                                           11R
REACH    20U       61.15     50        50        0         0                        12
REACH    19D       55.68     13300     12700     0         0                        13
ROAD     19        2.7       50        50                                           14R
REACH    19U       55.68     50        50        0         0                        15
REACH    18D       39.45     19600     16600     0         0                        16
ROAD     18        2.7       50        50                                           17R
REACH    18U       39.45     50        50        0         0                        18
REACH    17        31.08     7000      6400      0         0                        19
REACH    16D       30.86     1750      1750      0         0                        20R
ROAD     16        2.7       50        50                                           21R
REACH    16U       30.86     50        50        0         0                        22
REACH    16UU      28.5      8600      6800      0         0                        23
REACH    13D       4.11      5700      4800      0         0                        24R
ROAD     13        2.7       50        50                                           25R
REACH    13U       4.11      50        50        0         0                        26
REACH    15D       3.15      3800      3200      0         0                        27
ROAD     15        2.7       50        50                                           28R
REACH    15U       3.15      50        50        0         0                        29
COMMENT  END REACH AND ROAD DATA FOR GERONIMO CREEK                                  30
COMMENT  BEGIN REACH AND ROAD DATA FOR ALLIGATOR CREEK                               31
REACH    14D       22.75     2050      1550      0         0                        32
ROAD     14        2.7       50        50                                           33R
REACH    14U       22.75     50        50                                           34
```

WSP2 XEQ 02/13/76 GUADALUPE COUNTY, TEXAS, FLOOD INSURANCE STUD
REV 08/14/74 PROFILES FOR GERONIMO CREEK AND ALLIGATOR CRE

80/80 LIST OF INPUT DATA

```
                2000      608.7     2100      609.1
ENDTABLE
SECTION   13
                335       610.      400       609.      500       607.2
                600       605.3     700       603.3     800       601.4
                900       599.8     944       599.9     1000      600.3
                1100      601.3     1200      602.2     1300      603.2
                1400      603.9     1500      604.7     1600      605.6
                1700      606.8     1800      607.6     1900      608.4
                2000      609.      2100      610.
ENDTABLE
SECTION   13U
                375       609.2     400       608.9     500       607.
                600       604.8     700       602.6     800       601.1
                900       599.9     940       597.9     1000      600.3
                1100      601.3     1200      601.5     1300      602.3
                1400      602.9     1500      603.3     1600      604.4
                1700      605.4     1800      606.1     1900      607.1
                2000      608.1     2100      609.2
ENDTABLE
SECTION   15D
                00        615.7     100       615.3     200       615.3
                300       614.8     400       614.6     500       614.3
                600       613.7     700       613.5     800       612.9
                900       612.2     1000      611.5     1100      610.7
                1200      610.6     1300      610.3     1400      609.7
```

80/80 LIST OF INPUT DATA

```
ENDTABLE
SECTION   15U
          2C0      614.8    300      614.7    400      614.3
          5C0      614.2    600      613.8    700      613.3
          8C0      612.9    900      612.3    1000     611.7
          1100     611.3    1200     611.2    1300     610.2
          1400     609.7    1500     609.6    1600     609.5
          1700     609.2    176?     608.9    1800     608.9
          1900     608.     2000     608.     2100     608.8
          2200     609.3    2300     609.9    2400     611.7
          2500     612.3    2600     613.     2700     614.5
          2800     614.8
ENDTABLE
SECTION   14D
          00       600.     00       591.3    100      591.4
          200      591.3    300      590.9    400      590.3
          500      589.3    [illegible]  588.7    700      588.2
          8C0      588.3    900      587.9    1000     587.8
          1100     585.1    1200     588.5    1300     588.9
          1400     589.6    1500     590.2    1600     591.8
          1700     592.2    1800     592.4    1900     592.6
          2C00     593.7    2100     593.8    2200     594.3
          2300     594.5    2300     600.
ENDTABLE
SECTION   14
          00       600.     00       592.2    100      592.5
          2C0      592.4    300      592.2    400      591.6
          5C0      591.2    600      590.6    700      589.3
          8C0      589.3    900      588.6    1000     588.5
```

80/80 LIST OF INPUT DATA

```
ENDTABLE
SECTION   12D
          00      610.    00      606.6   100     605.2
          200     605.1   300     604.7   400     604.4
          500     604.7   600     604.2   700     603.8
          800     603.5   900     603.8   1000    603.2
          1100    602.    1200    601.5   1300    600.4
          1365    598.2   1400    600.4   1500    603.5
          1600    604.3   1700    605.4   1800    606.
          1900    606.3   2000    606.5   2100    606.8
          2200    607.2   2300    607.6   2400    608.2
          2500    608.2   2500    610.
ENDTABLE
SECTION   12
          00      610.    00      608.7   100     608.2
          200     607.2   300     606.7   400     606.3
          500     605.7   600     605.6   700     605.4
          800     605.    900     604.5   1000    604.
          1100    603.4   1200    602.6   1300    601.2
          1364    600.9   1400    601.2   1500    603.7
          1600    605.1   1700    606.2   1800    606.7
          1900    607.2   2000    607.2   2100    607.5
          2200    608.    2300    608.3   2400    608.6
          2500    608.9   2500    610.
ENDTABLE
SECTION   12U
          00      610.    00      607.7   100     607.1
          200     606.4   300     605.7   400     605.2
          500     605.2   600     605.2   700     604.7
```

80/80 LIST OF INPUT DATA

```
ENDTABLE
SECTION   11
          00      620.    00      612.1   100     611.3
          200     610.8   300     610.3   400     610.2
          500     610.2   600     610.1   700     610.
          800     609.9   838     609.9   838     606.7
          864     605.3   886     605.3   912     605.3
          936     607.    936     609.9   1000    609.8
          1100    609.7   1200    610.1   1300    610.6
          1400    611.7   1500    612.6   1600    613.5
          1700    614.6   1800    615.6   1800    620.
ENDTABLE
SECTION   11U
          00      620.    00      611.    100     610.2
          200     609.8   300     609.3   400     609.3
          500     609.2   600     608.5   700     608.3
          800     607.    900     605.8   1000    607.2
          1100    608.2   1200    609.2   1300    609.7
          1400    610.5   1500    611.4   1600    612.2
          1700    613.3   1800    614.3   1800    620.
ENDTABLE
SECTION   10D
          700     625.5   800     624.4   900     622.3
          1000    619.7   1100    617.8   1200    615.2
          1300    614.    1386    612.4   1400    613.5
          1426    613.7   1426.1  613.7   1426.2  613.7
          1500    614.8   1600    615.7   1700    617.3
          1800    617.2   1900    617.4   2000    617.5
          2100    617.6   2200    618.2   2300    618.
```

WSP2 XEQ 02/13/76
REV 08/14/74

GUADALUPE COUNTY, TEXAS, FLOOD INSURANCE S
PROFILES FOR GERONIMO CREEK AND ALLIGATOR

80/80 LIST OF INPUT DATA

```
SECTION   10U
          700       625.      800       623.5     900       621.5
          1000      619.1     1100      617.1     1200      615.8
          1300      614.2     1386      613.5     1400      613.7
          1426      614.2     1500      614.5     1600      615.5
          1700      615.7     1800      616.7     1900      617.2
          2000      617.      2100      617.7     2200      618.2
          2300      618.9     2400      618.5     2500      619.3
          2600      621.1     2700      620.8     2800      621.6
          2900      621.6     3000      622.4     3100      622.3
          3100      625.
ENDTABLE
SECTION   16UU
          000       600.      420.      590.      885.      584.
          900       580.      930.      580.      945.      584.
          2050      590.      4300.     600.
ENDTABLE
SECTION   21DD
          000       470.      750.      460.      830.      450.
          900       440.      990.      435.      1050.     440.
          1120.     450.      1200.     460.      2490.     470.
ENDTABLE
COMMENT   THE FOLLOWING SEGMENT DATA ARE FOR GERONIMO CREEK
SEGMENT   21U       1         D         642       468.7
NVALUE    .11
SEGMENT   21U       2         D         700       456.6
NVALUE    .045
SEGMENT   21U       3         D         825       472.3
NVALUE    .11
```

WSP2 XEQ 02/13/76 GUADALUPE COUNTY, TEXAS, FLOOD INSURANCE STUI
REV 08/14/74 PROFILES FOR GERONIMO CREEK AND ALLIGATOR CRI

80/80 LIST OF INPUT DATA

SEGMENT	21D	6	D	1285	487.
NVALUE	.11				
SEGMENT	20D	1	D	525	489.6
NVALUE	.1				
SEGMENT	20D	2	C	642	481.5
NVALUE	.04				
SEGMENT	20D	3	D	930	483.3
NVALUE	.1				
SEGMENT	20D	4	D	1000	484.2
NVALUE	.04				
SEGMENT	20D	5	D	2370	502.3
NVALUE	.1				
SEGMENT	20U	1	D	518	489.7
NVALUE	.1				
SEGMENT	20U	2	C	600	481.4
NVALUE	.04				
SEGMENT	20U	3	D	2368	508.1
NVALUE	.1				
SEGMENT	19D	1	D	1200	506.8
NVALUE	.11				
SEGMENT	19D	2	C	1262	507.5
NVALUE	.045				
SEGMENT	19D	3	D	1600	523.4
NVALUE	.11				
SEGMENT	19U	1	D	1185	505.6
NVALUE	.11				
SEGMENT	19U	2	C	1237	503.5
NVALUE	.045				
SEGMENT	19U	3	D	1493	527.7

WSP2 XEQ 02/13/76
REV 08/14/74

GUADALUPE COUNTY, TEXAS, FLOOD INSURANCE ST
PROFILES FOR GERONIMO CREEK AND ALLIGATOR C

80/80 LIST OF INPUT DATA

NVALUE	.05				
SEGMENT	17	3	D	1900	572.1
NVALUE	.1				
SEGMENT	16U	1	D	1584	573.2
NVALUE	.08				
SEGMENT	16U	2	C	1900	571.4
NVALUE	.05				
SEGMENT	16U	3	D	2167	585.
NVALUE	.08				
SEGMENT	16D	1	D	1573	564.5
NVALUE	.08				
SEGMENT	16D	2	C	1628	566.8
NVALUE	.05				
SEGMENT	16D	3	D	2167	585.
NVALUE	.08				
SEGMENT	13U	1	D	900	599.9
NVALUE	.05				
SEGMENT	13U	2	C	1000	600.3
NVALUE	.035				
SEGMENT	13U	3	D	2100	609.2
NVALUE	.05				
SEGMENT	13D	1	D	900	598.3
NVALUE	.05				
SEGMENT	13D	2	C	1000	599.8
NVALUE	.035				
SEGMENT	13D	3	D	2100	609.1
NVALUE	.05				
SEGMENT	15J	1	D	1800	608.9
NVALUE	.075				

WSP2 XEQ 02/13/76
REV 08/14/74

GUADALUPE COUNTY, TEXAS, FLOOD INSURANCE STUDY
PROFILES FOR GERONIMO CREEK AND ALLIGATOR CREEK

80/80 LIST OF INPUT DATA

```
SEGMENT   14U      3        D          2300       600.
NVALUE    .06
SEGMENT   14D      1        D          1000       587.8
NVALUE    .06
SEGMENT   14D      2        C          1200       588.5
NVALUE    .03
SEGMENT   14D      3        D          2300       600.
NVALUE    .06
SEGMENT   12U      1        D          1300       600.8
NVALUE    .075
SEGMENT   12U      2        C          1400       598.6
NVALUE    .025
SEGMENT   12U      3        D          2500       610.
NVALUE    .075
SEGMENT   12D      1        D          1300       600.4
NVALUE    .075
SEGMENT   12D      2        C          1400       600.4
NVALUE    .025
SEGMENT   12D      3        D          2500       610.
NVALUE    .075
SEGMENT   11U      1        D          800        607.
NVALUE    .075
SEGMENT   11U      2        C          1000       607.2
NVALUE    .030
SEGMENT   11U      3        D          1800       620.
NVALUE    .075
SEGMENT   11D      1        D          800        606.5
NVALUE    .075
SEGMENT   11D      2        C          1000       608.2
NVALUE    .03
SEGMENT   11D      3        D          1800       620.
```

```
WSP2 XEQ 02/13/76          GUADALUPE COUNTY, TEXAS, FLOOD INSURANCE STUDY
     REV 08/14/74          PROFILES FOR GERONIMO CREEK AND ALLIGATOR CREE

-------------------------------80/80 LIST OF INPUT DATA-------------------------
NVALUE     .07
SEGMENT    16UU       2          C          945        584.
NVALUE     .04
SEGMENT    16UU       3          D          4300.      600.
NVALUE     .07
SEGMENT    21DD       1          D          900        440.
NVALUE     .11
SEGMENT    21DD       2          C          1050.      440.
NVALUE     .045
SEGMENT    21DD       3          D          2490.      470.
NVALUE     .11
COMMENT    SET UP DISCHARGE VALUES AND STARTING ELEVATIONS
DISCHARGE  69.55      545        790        936        1349
STARTE     21DD       446.2      455        457.5      461.6
TITLE      PROFILES FOR GERONIMO CREEK
OUTPUT     P B S K
COMPUTE    21DD       15U        21DD
-------------------------------END OF 80/80 LIST--------------------------------
```

RATING TABLE FOR SECTION 21DD DA= 69.5

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM
0	435.0	0.0	0.0			
BANK FULL	440.0	376.1	16921.8	0.0	0.0	0.0
ZERO DAMG	440.0	376.1	16921.8	0.0	0.0	0.0
1	446.2	1575.2	37904.7	0.0	0.0	0.0
2	455.0	4228.2	54944.5	0.0	0.0	0.0
3	457.5	5201.1	65098.8	0.0	0.0	0.0
4	461.6	7317.0	93822.9	0.0	0.0	0.0

SEGMENT TABLE FOR SECTION 21DD

CSM		TOTAL	SEG NO 1	SEG NO 2	SEG NO 3
			D	C	D
1	DISCHARGE CFS	37905.	882.	36141.	882.
545.	VELOCITY FPS	27.12	6.53	27.69	6.53
2	DISCHARGE CFS	54944.	3772.	47401.	3772.
790.	VELOCITY FPS	16.88	4.71	18.06	4.71
3	DISCHARGE CFS	65099.	5273.	54553.	5273.
936.	VELOCITY FPS	16.77	4.79	18.18	4.79
4	DISCHARGE CFS	93823.	7910.	78735.	7178.
1349.	VELOCITY FPS	20.04	4.37	21.78	3.79
1	ELEV 446.2 KD	190862.	4396.	182070.	4396.
2	ELEV 455.0 KD	6[illegible]29.	46280.	583868.	46[illegible].
3	ELEV 457.5 KD	870351.	70428.	729494.	70428.
4	ELEV 461.6 KD	1186311.	100062.	995431.	90819.

WSP2 AEQ 02/13/76
REV 08/14/74

GUADALUPE COUNTY, TEXAS, FLOOD INSURANCE S
PROFILES FOR GERONIMO CREEK

KD TABLE FOR CROSS SECTION 21DD

ELEVATION	AREA	KD	KD BY SEGMENT		
435.00	0.				
436.	16.	314.	1.	311.	
437.	60.	1981.	1.	1978.	
438.	135.	5836.	1.	5833.	
439.	241.	12567.	1.	12564.	
440.	376.	23131.	2.	23126.	
441.	533.	39819.	28.	39738.	
442.	704.	61020.	208.	60577.	
443.	888.	86074.	636.	84802.	
444.	1087.	114773.	1369.	112034.	1
445.	1300.	147183.	2483.	142217.	2
446.	1527.	183289.	4037.	175213.	4
447.	1768.	223089.	6090.	210907.	6
448.	2024.	266539.	8681.	249125.	8
449.	2294.	313749.	11882.	289902.	11
450.	2578.	364649.	15707.	333149.	15
451.	2876.	419248.	20191.	378790.	20
452.	3189.	477626.	25409.	426747.	25
453.	3519.	539925.	31462.	476935.	31
454.	3867.	606209.	38394.	529285.	38
455.	4228.	676546.	46280.	583868.	46
456.	4603.	750972.	55174.	640624.	55
457.	5000.	829555.	65059.	699314.	65
458.	5412.	912356.	76038.	760093.	76
459.	5833.	999319.	88165.	823005.	88
460.	6301.	1068884.	92881.	887714.	88
461.	6876.	1141216.	97462.	954485.	89
462.	7611.	1216883.	101801.	1023181.	91

WSP2 XEQ 02/13/76
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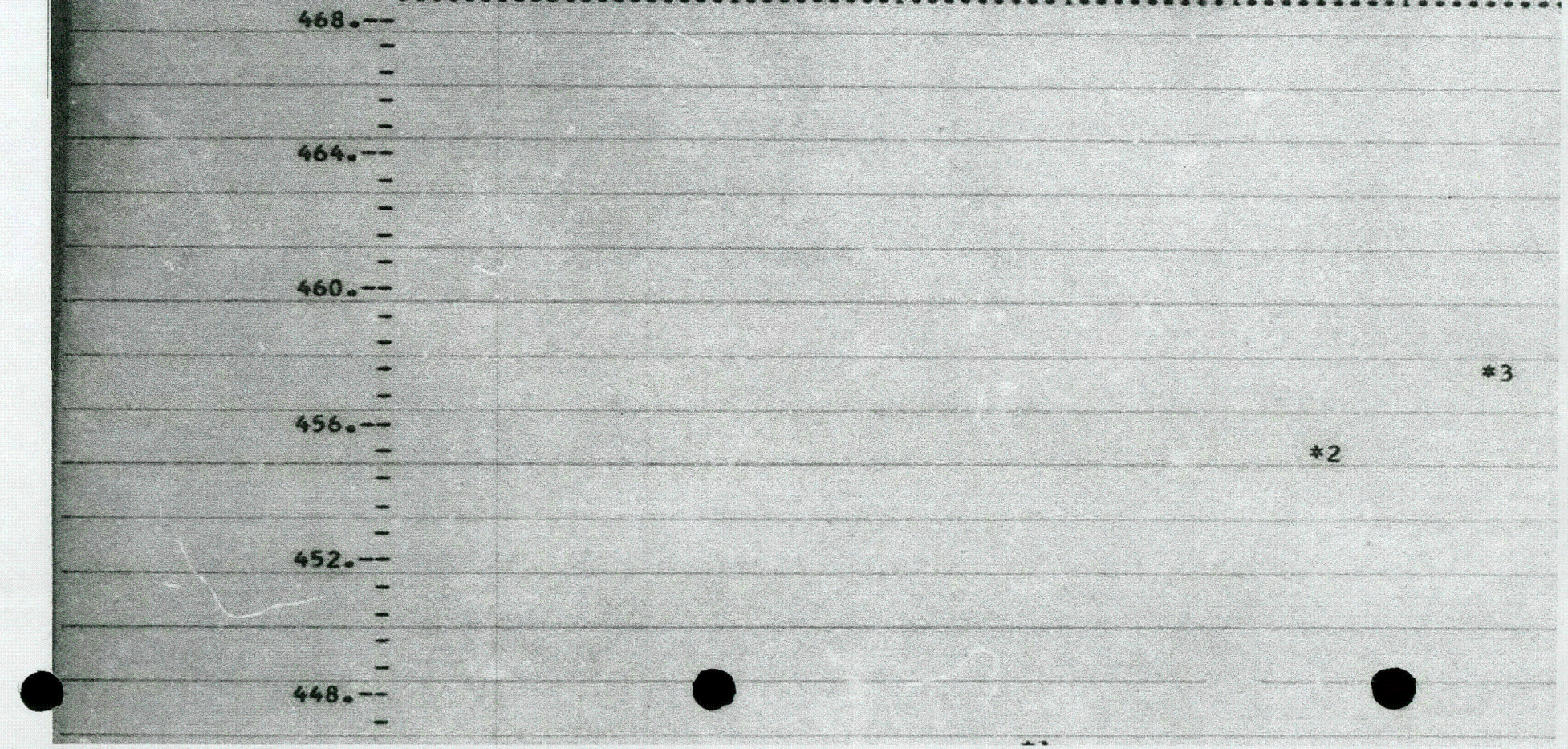
GUADALUPE COUNTY, TEXAS, FLOOD INSURANCE STUDY
PROFILES FOR GERONIMO CREEK

CROSS SECTION 21DD

SCALES ARE 1 INCH = 10000. CFS, AND 4.8 FEET/ ELEVATION



```
I.........I.........I.........I.........I.........I.........I.........I.....
0.    10000.    20000.    30000.    40000.    50000.    60000.    700
                                                DISCHARGE-CFS
```

WSP2 XEQ 02/13/76 GUADALUPE COUNTY, TEXAS, FLOOD INSURANCE STUDY
REV 08/14/74 PROFILES FOR GERONIMO CREEK

RATING TABLE FOR SECTION 21D DA= 65.4

NO.	ELEV	AREA	CFS	ACRES FLOODED		
				DAMAGE	CHANNEL	NON-I
0	456.2	0.0	0.0			
ZERO DAMG	456.2	0.0	0.0	0.0	0.0	0.
BANK FULL	458.5	162.3	3892.5	0.0	0.0	0.
1	477.8	9076.4	36573.1	0.0	0.0	0.
2	480.6	12173.0	53014.3	0.0	0.0	0.
3	482.3	14174.2	62811.9	0.0	0.0	0.
4	486.4	19209.9	90526.9	0.0	0.0	0.

SEGMENT TABLE FOR SECTION 21D

CSM		TOTAL	SEG NO 1 D	2 D	3 D
1	DISCHARGE CFS	36573.	5590.	6566.	2184.
559.	VELOCITY FPS	7.96	1.95	10.11	2.94
2	DISCHARGE CFS	53014.	10461.	8276.	3250.
810.	VELOCITY FPS	8.34	2.42	11.25	3.50
3	DISCHARGE CFS	62812.	13910.	9091.	3859.
960.	VELOCITY FPS	8.28	2.63	11.52	3.69
4	DISCHARGE CFS	90527.	23956.	11313.	5524.
1384.	VELOCITY FPS	8.38	3.09	12.35	4.19
1	ELEV 477.8 KD	846562.	128442.	152438.	50557.
2	ELEV 480.6 KD	1201110.	235940.	187911.	73660.

WSP2 XEQ 02/13/76
REV 08/14/74

GUADALUPE COUNTY, TEXAS, FLOOD INSURANCE STUDY
PROFILES FOR GERONIMO CREEK

KD TABLE FOR CROSS SECTION 210

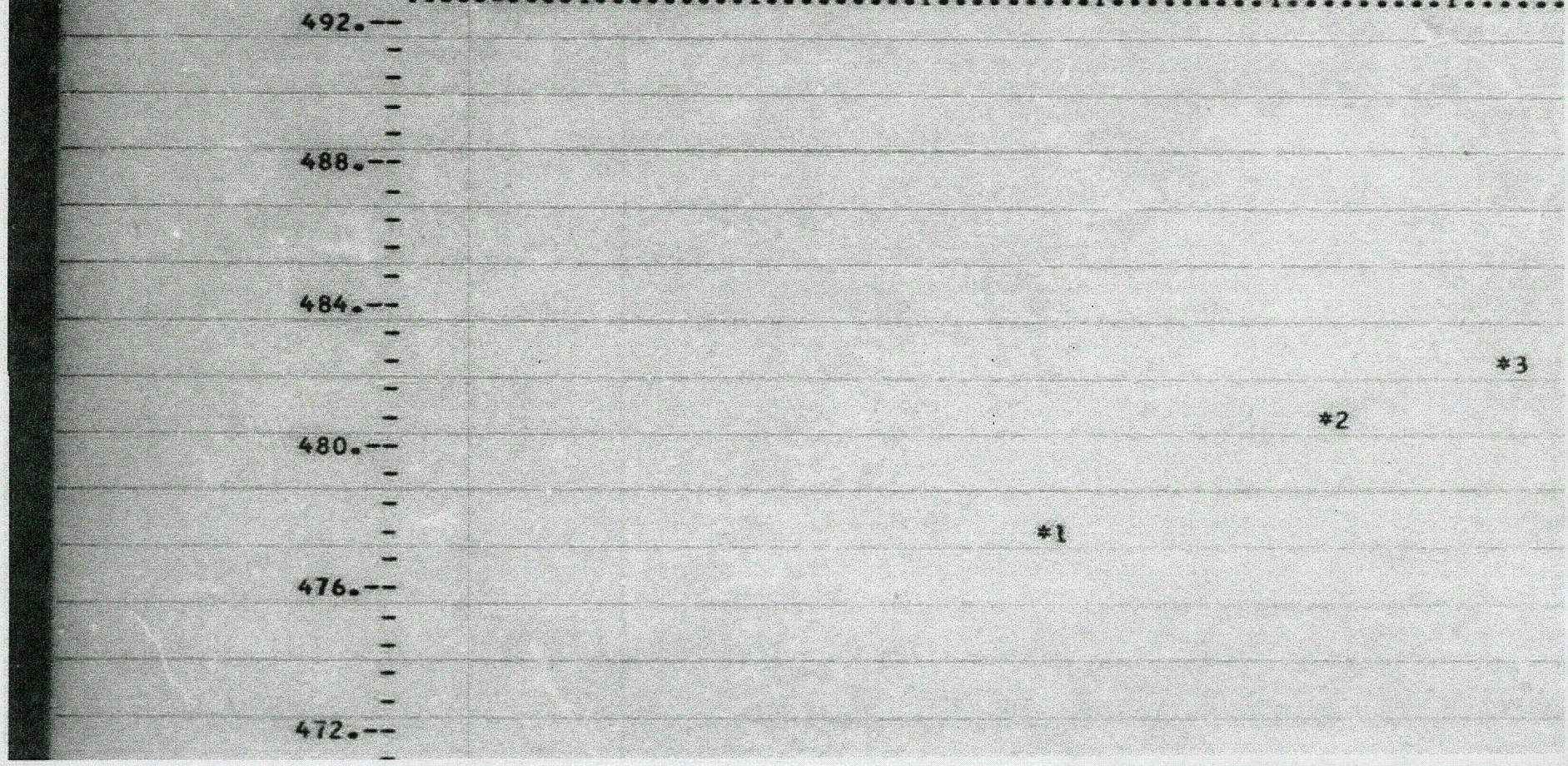
ELEVATION	AREA	KD	KD BY SEGMENT		
456.20	0.				
457.	50.	1380.	1.	531.	1.
458.	123.	5458.	1.	2038.	1.
459.	206.	11886.	1.	4247.	1.
460.	304.	21154.	14.	7196.	1.
461.	420.	32920.	132.	10772.	1.
462.	558.	47121.	426.	14896.	1.
463.	715.	63962.	965.	19688.	4.
464.	896.	83749.	1806.	25302.	74.
465.	1106.	106471.	2992.	31490.	365.
466.	1344.	132260.	4576.	38210.	978.
467.	1609.	161324.	6605.	45439.	2037.
468.	1899.	193766.	9121.	53160.	3585.
469.	2238.	226303.	10881.	61356.	5582.
470.	2656.	262536.	13575.	70018.	8078.
471.	3176.	304594.	17825.	79133.	11093.
472.	3807.	354288.	23529.	88690.	14761.
473.	4542.	415658.	31226.	98678.	19599.
474.	5387.	487373.	42788.	109080.	24966.
475.	6284.	568356.	58575.	119900.	30998.
476.	7229.	659082.	79477.	131129.	37575.
477.	8230.	759488.	105000.	142754.	44580.
478.	9279.	869041.	134425.	154768.	52023.
479.	10362.	988428.	168908.	167170.	59967.
480.	11478.	1118214.	209186.	179953.	68373.
481.	12625.	1257454.	254123.	193106.	77140.

WSP2 XEQ 02/13/76
REV 08/14/74

GUADALUPE COUNTY, TEXAS, FLOOD INSURANCE STU
PROFILES FOR GERONIMO CREEK

CROSS SECTION 21D

SCALES ARE 1 INCH = 10000. CFS, AND 4.8 FEET/ ELEVATION



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I.........I.........I.........I.........I.........I.........I.........I.....
0.    10000.    20000.    30000.    40000.    50000.    60000.    70(
                                                DISCHARGE-CFS
```

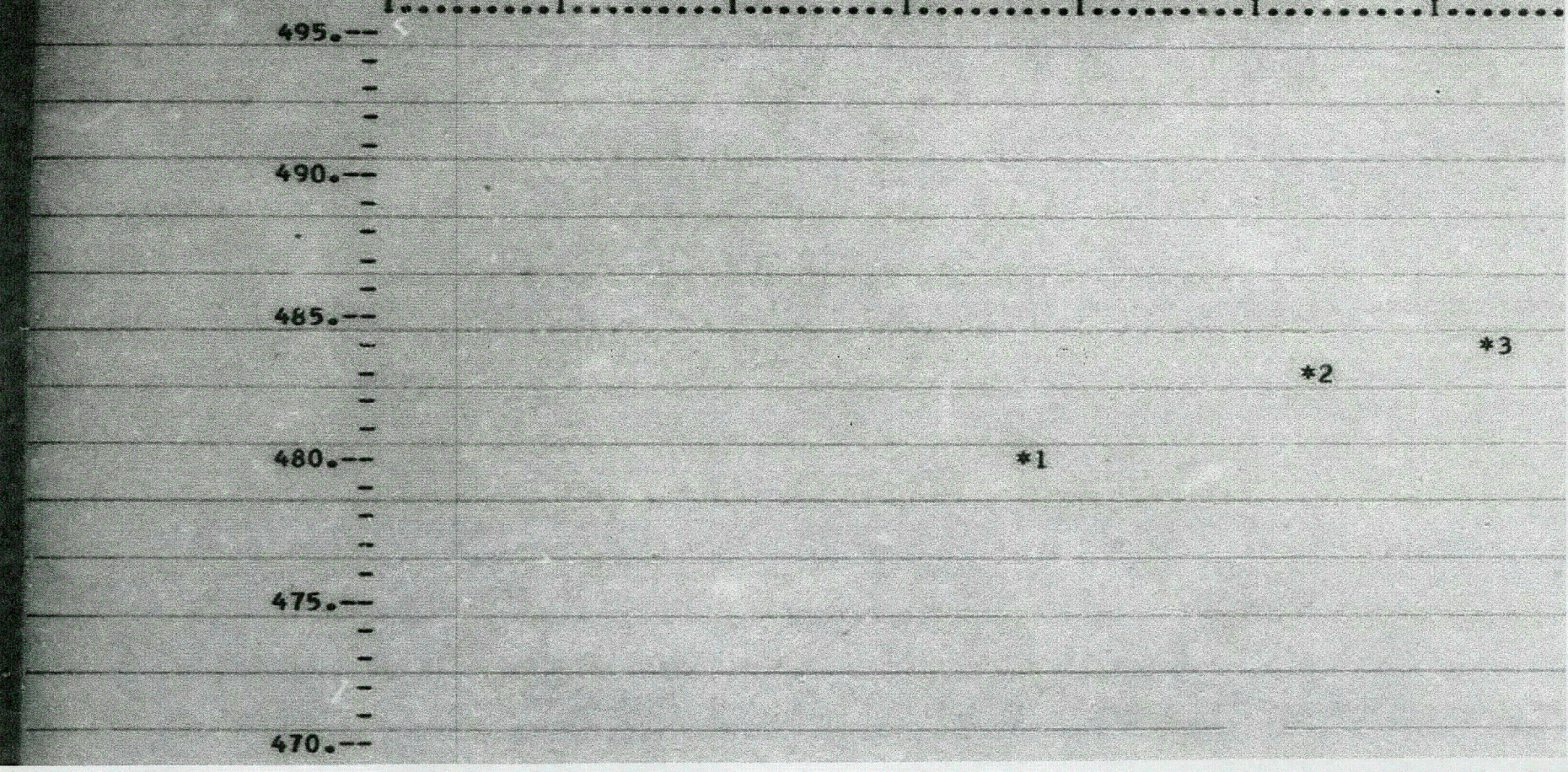
```
  COEFK         AKB      DLTAK      SIGMA         DKE         DKS          M       ALF
 0.0          0.0         0.0        0.0         0.0         0.0        0.0   ********
  DCRIT      -1.00 KBCRIT=
ELEVB=     480.09  EWSBD=     478.21  HDLOSS=        1.88
 0.0          0.0         0.0        0.0         0.0         0.0        0.0   ********
  DCRIT      -1.00 KBCRIT=
ELEVB=     482.58  EWSBD=     481.01  HDLOSS=        1.58
 0.0          0.0         0.0        0.0         0.0         0.0        0.0   ********
  DCRIT      -1.00 KBCRIT=
ELEVB=     484.05  EWSBD=     482.69  HDLOSS=        1.36
 0.0          0.0         0.0        0.0         0.0         0.0        0.0   ********
  DCRIT      -1.00 KBCRIT=
ELEVB=     488.00  EWSBD=     486.75  HDLOSS=        1.26
```

WSP2 XEQ 02/13/76
REV 08/14/74

GUADALUPE COUNTY, TEXAS, FLOOD INSURANCE STUD
PROFILES FOR GERONIMO CREEK

ROAD SECTION 21

SCALES ARE 1 INCH = 10000. CFS, AND 6.0 FEET/ ELEVATION



WSP2 XEQ 02/13/76
REV 08/14/74

GUADALUPE COUNTY, TEXAS, FLOOD INSURANCE STUDY
PROFILES FOR GERONIMO CREEK

ROAD SECTION 21

NO.	HW	CFS	HL	TW
0	454.70	0.00	0.00	0.00
1	480.09	36573.14	1.88	478.21
2	482.58	53014.28	1.58	481.01
3	484.05	62811.87	1.36	482.69
4	488.00	90526.88	1.26	486.75

MIN ROAD ELEVATION 476.20

BRIDGE TYPE 2 GIRDER BOTTOM ELEVATION = 474.90

450.—

I.....I.....I.....I.....I.....I.....I.....I.....I.....

0. 10000. 20000. 30000. 40000. 50000. 60000.

DISCHARGE-CFS

WSP2 XEQ 02/13/76 GUADALUPE COUNTY, TEXAS, FLOOD INSURANCE STI
REV 08/14/74 PROFILES FOR GERONIMO CREEK

RATING TABLE FOR SECTION 21U DA= 65.4

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	CHANNEL	NI
0	454.5	0.0	0.0			
ZERO DAMG	456.6	86.0	2992.9	0.0	0.0	
BANK FULL	466.5	1131.8	17101.7	0.0	0.0	
1	480.2	11317.2	36573.1	0.0	0.0	
2	482.7	14261.4	53014.3	0.0	0.0	
3	484.1	16044.2	62811.9	0.0	0.0	
4	488.1	20925.1	90526.9	0.0	0.0	

**********PROFILE NO 4 EXCEEDS SU

SEGMENT TABLE FOR SECTION 21U

CSM		TOTAL	SEG NO 1 D	2 D	3 D
1	DISCHARGE CFS	36573.	5626.	8406.	3370.
559.	VELOCITY FPS	5.86	1.49	7.22	2.20
2	DISCHARGE CFS	53014.	10186.	11183.	5029.
810.	VELOCITY FPS	6.63	1.95	8.54	2.73
3	DISCHARGE CFS	62812.	13227.	12688.	6016.
960.	VELOCITY FPS	6.91	2.16	9.10	2.97
4	DISCHARGE CFS	90527.	22110.	16818.	8801.
1384.	VELOCITY FPS	7.30	2.57	10.36	3.49
1	ELEV 480.2 KD	1173763.	180292.	269910.	108166.

WSP2 XEQ 02/13/76
REV 08/14/74

GUADALUPE COUNTY, TEXAS, FLOOD INSURANCE STUDY
PROFILES FOR GERONIMO CREEK

KD TABLE FOR CROSS SECTION 21U

ELEVATION	AREA	KD	KD BY SEGMENT		
454.50	0.				
455.	19.	401.	1.	1.	1.
456.	60.	2481.	1.	1.	1.
457.	105.	5859.	1.	11.	2.
458.	165.	10738.	1.	414.	7.
459.	235.	17331.	1.	1508.	31.
460.	310.	25519.	1.	3185.	79.
461.	395.	34799.	1.	4950.	157.
462.	498.	45820.	1.	7412.	272.
463.	616.	60281.	1.	12283.	391.
464.	746.	77676.	1.	19267.	564.
465.	889.	97030.	1.	27370.	985.
466.	1048.	118544.	1.	36498.	1802.
467.	1251.	144521.	1.	46548.	3088.
468.	1517.	176085.	2.	57582.	4942.
469.	1856.	212631.	9.	69638.	7442.
470.	2286.	255114.	572.	83162.	10645.
471.	2799.	303635.	2421.	97593.	14620.
472.	3400.	358274.	5499.	112934.	19086.
473.	4080.	420275.	10168.	129244.	24842.
474.	4866.	491984.	16510.	146412.	33660.
475.	5805.	575987.	29067.	164332.	43246.
476.	67[illegible].	670594.	47901.	183135.	53973.
477.	78[illegible].	776044.	72845.	202785.	65720.
478.	8905.	890895.	100582.	223119.	78065.

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I.....I.....I.....I.....I.....I.....I.....I.....I.....
0.    10000.    20000.    30000.    40000.    50000.    60000.    70
                                                DISCHARGE-CFS
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WSP2 XEQ 02/13/76
REV 08/14/74

GUADALUPE COUNTY, TEXAS, FLOOD INSURANCE STU
PROFILES FOR GERONIMO CREEK

RATING TABLE FOR SECTION 20D DA= 61.1

NO.	ELEV	AREA	CFS	ACRES FLOODED--- DAMAGE	CHANNEL	NO
0	476.8	0.0	0.0			
ZERO DAMG	481.0	199.3	9203.2	0.0	0.0	
BANK FULL	481.5	246.6	10298.2	0.0	0.0	
1	492.8	11724.1	35156.0	0.0	0.0	
2	495.0	15895.4	50960.1	0.0	0.0	
3	496.2	18225.0	60378.0	0.0	0.0	
4	499.1	24299.0	87019.1	0.0	0.0	

SEGMENT TABLE FOR SECTION 20D

CSM			TOTAL	SEG NO 1 D	2 C	3 D
1	DISCHARGE CFS		35156.	679.	9937.	6226.
575.	VELOCITY FPS		5.15	1.26	7.24	2.55
2	DISCHARGE CFS		50960.	1552.	12647.	8726.
833.	VELOCITY FPS		5.28	1.57	7.78	2.85
3	DISCHARGE CFS		60378.	2122.	14174.	10171.
987.	VELOCITY FPS		5.38	1.67	8.04	2.99
4	DISCHARGE CFS		87019.	4030.	18213.	14052.
1423.	VELOCITY FPS		5.61	1.89	8.66	3.32
1	ELEV	492.8 KD	916837.	17132.	260291.	162675.
2	ELEV	495.0 KD	1393930.	42405.	346016.	238702.
3	ELEV	496.2 KD	1682522.	58850.	395535.	283593.
4	ELEV	499.1 KD	2535831.	117274.	530995.	409588.

WSP2 XEQ 02/13/76
REV 08/14/74

GUADALUPE COUNTY, TEXAS, FLOOD INSURANCE STUDY
PROFILES FOR GERONIMO CREEK

KD TABLE FOR CROSS SECTION 20D

ELEVATION	AREA	KD	KD BY SEGMENT		
476.80	0.				
477.	6.	76.	1.	72.	1.
478.	41.	1538.	1.	1534.	1.
479.	85.	4554.	1.	4550.	1.
480.	138.	9119.	1.	9115.	1.
481.	199.	15326.	1.	15321.	1.
482.	306.	24669.	1.	23573.	16.
483.	453.	38151.	1.	33950.	367.
484.	652.	56341.	1.	46187.	1433.
485.	1069.	82643.	1.	60334.	4004.
486.	1861.	123083.	1.	76452.	10021.
487.	2809.	182151.	1.	94601.	22805.
488.	3881.	255556.	1.	114845.	39329.
489.	5090.	344945.	3.	137548.	59158.
490.	6592.	446563.	813.	163866.	82354.
491.	8354.	591253.	4087.	195669.	107959.
492.	10162.	758989.	10192.	229764.	136459.
493.	12016.	948358.	18530.	266065.	167672.
494.	13915.	1157822.	29059.	304465.	201401.
495.	15848.	1388524.	42117.	345054.	237848.
496.	17851.	1634078.	55912.	387353.	276058.
497.	19893.	1903209.	72522.	431723.	316805.
498.	21972.	2195060.	92164.	478086.	359943.
499.	24095.	2504779.	114875.	526237.	405074.
500.	26264.	2832011.	140770.	576123.	452127.
501.	28445.	3182859.	170730.	628159.	501945.
502.	30626.	3560295.	205455.	682500.	554900.
503.	[illegible]07.	3965157.	245468.	739151.	611051.
504.	[illegible]988.	4398268.	291323.	798116.	670457.

COEFK	AKB	DLTAK	SIGMA	DKE	DKS	M	ALPHA
2.1268	2.0412	0.0856	0.4206	0.0	0.0	0.2843	2.7533

DCRIT 490.70 KBCRIT=
ELEVB= 497.37 EWSBD= 493.15 HDLOSS= 4.21

0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7533

DCRIT -1.00 KBCRIT=
ELEVB= 498.97 EWSBD= 495.32 HDLOSS= 3.65

0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7533

DCRIT -1.00 KBCRIT=
ELEVB= 499.73 EWSBD= 496.48 HDLOSS= 3.25

0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7533

DCRIT -1.00 KBCRIT=
ELEVB= 501.73 EWSBD= 499.38 HDLOSS= 2.36

WSP2 XEQ 02/13/76
REV 08/14/74

GUADALUPE COUNTY, TEXAS, FLOOD INSURANCE STUDY
PROFILES FOR GERONIMO CREEK

ROAD SECTION 20

NO.	HW	CFS	HL	TW
0	472.70	0.00	0.00	0.00
1	497.37	35156.00	4.21	493.15
2	498.97	50960.07	3.65	495.32
3	499.73	60378.00	3.25	496.48
4	501.73	87019.13	2.36	499.38

MIN ROAD ELEVATION 495.30

BRIDGE TYPE 2 GIRDER BOTTOM ELEVATION = 494.40

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I.........I.........I.........I.........I.........I.........I.........I.....
0.    10000.    20000.    30000.    40000.    50000.    60000.    700
                                                DISCHARGE-CFS
```

WSP2 XEQ 02/13/76
REV 08/14/74

GUADALUPE COUNTY, TEXAS, FLOOD INSURANCE STUDY
PROFILES FOR GERONIMO CREEK

RATING TABLE FOR SECTION 20U DA= 61.1

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-
0	476.7	0.0	0.0			
BANK FULL	481.4	187.8	8028.1	0.0	0.0	0
ZERO DAMG	481.4	187.8	8028.1	0.0	0.0	0
1	497.3	17578.8	35156.0	0.0	0.0	0
2	498.9	20876.8	50960.1	0.0	0.0	0
3	499.6	22475.3	60378.0	0.0	0.0	0
4	501.6	26795.4	87019.1	0.0	0.0	0

SEGMENT TABLE FOR SECTION 20U

CSM		TOTAL	SEG NO 1 D	SEG NO 2 C	SEG NO 3 D
1	DISCHARGE CFS	35156.	1531.	8983.	24641.
575.	VELOCITY FPS	3.52	1.07	6.33	1.67
2	DISCHARGE CFS	50960.	2713.	11803.	36444.
833.	VELOCITY FPS	4.10	1.38	7.63	2.10
3	DISCHARGE CFS	60378.	3480.	13411.	43487.
987.	VELOCITY FPS	4.43	1.56	8.34	2.33
4	DISCHARGE CFS	87019.	5953.	17567.	63500.
1423.	VELOCITY FPS	5.14	1.97	9.92	2.89
1	ELEV 497.3 KD	1337200.	57423.	342940.	936838.
2	ELEV 498.9 KD	1710300.	90583.	396814.	1222904.
3	ELEV 499.6 KD	1900056.	108592.	423290.	1368174.
4	ELEV 501.6 KD	2454892.	166782.	496814.	1791296.

WSP2 XEQ 02/13/76
REV 08/14/74

GUADALUPE COUNTY, TEXAS, FLOOD INSURANCE STUDY
PROFILES FOR GERONIMO CREEK

KD TABLE FOR CROSS SECTION 20U

ELEVATION	AREA	KD	KD BY SEGMENT		
476.70	0.				
477.	5.	62.	1.	59.	1.
478.	33.	1295.	1.	1293.	1.
479.	66.	3555.	1.	3553.	1.
480.	109.	6791.	1.	6789.	1.
481.	163.	11560.	1.	11557.	1.
482.	234.	18844.	1.	18790.	24.
483.	328.	28812.	1.	28366.	415.
484.	453.	41088.	1.	39500.	1562.
485.	609.	55783.	1.	52131.	3601.
486.	857.	72499.	1.	66271.	6208.
487.	1389.	95226.	1.	81865.	11991.
488.	2230.	135016.	1.	98892.	35258.
489.	3164.	184923.	1.	117443.	66954.
490.	4240.	242507.	3.	137901.	104441.
491.	5620.	312824.	98.	161620.	150905.
492.	7286.	420064.	721.	186786.	231252.
493.	9112.	550464.	3646.	213417.	331497.
494.	11026.	702210.	11203.	241448.	448002.
495.	12977.	877091.	22447.	270922.	583427.
496.	14972.	1067461.	35760.	301636.	729213.
497.	17003.	1275737.	52192.	333672.	889006.
498.	19065.	1502447.	71751.	367039.	1063232.
499.	21165.	1746620.	93931.	401664.	1249845.
500.	23319.	2004233.	118757.	437432.	1447333.
501.	25495.	2283703.	147853.	474514.	1660940.
502.	27708.	2581203.	181189.	512756.	1886832.
503.	29947.	2894949.	218461.	552151.	2123746.
504.	32203.	3227723.	260303.	592782.	2374524.

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I.........I.........I.........I.........I.........I.........I.........I.....
0.    10000.    20000.    30000.    40000.    50000.    60000.    700
                                  DISCHARGE-CFS
```

WSP2 XEQ 02/13/76
REV 08/14/74

GUADALUPE COUNTY, TEXAS, FLOOD INSURANCE STUDY
PROFILES FOR GERONIMO CREEK

RATING TABLE FOR SECTION 19D DA= 55.7

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-
0	495.5	0.0	0.0			
BANK FULL	506.8	440.8	13571.6	0.0	0.0	0
ZERO DAMG	506.8	440.8	13571.6	0.0	0.0	0
1	523.2	8995.7	33259.0	0.0	0.0	0
2	526.8	12498.2	48210.4	0.0	0.0	0
3	528.6	14227.7	57120.1	0.0	0.0	0
4	532.8	18214.2	82323.8	0.0	0.0	0

**********PROFILE NO 2 EXCEEDS SURVE
**********PROFILE NO 3 EXCEEDS SURVE
**********PROFILE NO 4 EXCEEDS SURVE

SEGMENT TABLE FOR SECTION 19D

CSM		TOTAL	SEG NO 1 D	SEG NO 2 C	SEG NO 3 D
1	DISCHARGE CFS	33259.	12692.	16545.	4023.
597.	VELOCITY FPS	8.15	2.27	11.37	2.07
2	DISCHARGE CFS	48210.	19538.	22556.	6117.
866.	VELOCITY FPS	8.93	2.45	13.42	2.16
3	DISCHARGE CFS	57120.	23597.	26164.	7359.
1026.	VELOCITY FPS	9.33	2.57	14.60	2.25
4	DISCHARGE CFS	82324.	35069.	36382.	10872.
1479.	VELOCITY FPS	10.31	2.95	17.76	2.54
1	ELEV 523.2 KD	746471.	285489.	370553.	90429.

WSP2 XEQ 02/13/76
REV 08/14/74

GUADALUPE COUNTY, TEXAS, FLOOD INSURANCE STUDY
PROFILES FOR GERONIMO CREEK

KD TABLE FOR CROSS SECTION 19D

ELEVATION	AREA	KD	KD BY SEGMENT		
495.50	0.				
496.	3.	35.	1.	32.	1
497.	22.	637.	1.	635.	1
498.	49.	2222.	1.	2220.	1
499.	79.	4584.	1.	4582.	1
500.	113.	7711.	1.	7709.	1
501.	151.	11619.	1.	11617.	1
502.	192.	16334.	1.	16332.	1
503.	237.	21889.	1.	21887.	1
504.	285.	28321.	1.	28319.	1
505.	337.	35662.	1.	35660.	1
506.	393.	43952.	1.	43950.	1
507.	454.	53498.	5.	53487.	1
508.	555.	65588.	76.	65138.	18
509.	722.	80924.	689.	78818.	1029
510.	960.	99556.	3167.	93529.	2708
511.	1262.	122063.	7659.	109185.	5019
512.	1619.	148940.	14693.	125768.	8032
513.	2023.	180085.	24355.	143276.	11817
514.	2462.	215760.	37138.	161750.	16504
515.	2943.	256439.	53120.	181104.	22052
516.	3473.	301904.	71764.	201250.	28426
517.	4040.	351563.	93119.	222287.	35834
518.	4646.	405154.	116786.	244184.	44093
519.	5337.	462025.	143727.	266812.	51133
520.	6088.	525470.	175522.	290288.	59257
521.	6897.	596166.	212835.	314583.	68632
				339568.	78108

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I.........I.........I.........I.........I.........I.........I.........I.....
0.    10000.    20000.    30000.    40000.    50000.    60000.    700
                                                DISCHARGE-CFS
```

COEFK	AKB	DLTAK	SIGMA	DKE	DKS		M	ALP
0.0	0.0	0.0	0.0	0.0	0.0	0.0		2.75

DCRIT= -1.00 KBCRIT=

ELEVB= 524.04 EWSBD= 523.24 HDLOSS= 0.80

0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.75

DCRIT= -1.00 KBCRIT=

ELEVB= 527.74 EWSBD= 526.88 HDLOSS= 0.86

0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.75

DCRIT= -1.00 KBCRIT=

ELEVB= 529.58 EWSBD= 528.68 HDLOSS= 0.90

0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.75

DCRIT= -1.00 KBCRIT=

ELEVB= 533.90 EWSBD= 532.82 HDLOSS= 1.08

WSP2 XEQ 02/13/76
REV 08/14/74

GUADALUPE COUNTY, TEXAS, FLOOD INSURANCE STUDY
PROFILES FOR GERONIMO CREEK

ROAD SECTION 19

NO.	HW	CFS	HL	TW
0	495.80	0.00	0.00	0.00
1	524.04	33259.04	0.80	523.24
2	527.74	48210.36	0.86	526.88
3	529.58	57120.13	0.90	528.68
4	533.90	82323.75	1.08	532.82

MIN ROAD ELEVATION 509.30

BRIDGE TYPE 2 GIRDER BOTTOM ELEVATION = 507.90

WSP2 XEQ 02/13/76
REV 08/14/74

GUADALUPE COUNTY, TEXAS, FLOOD INSURANCE
PROFILES FOR GERONIMO CREEK

RATING TABLE FOR SECTION 19U DA= 55.7

NO.	ELEV	AREA	CFS	ACRES FLOODE DAMAGE	ACRES FLOODE CHANNEL
0	495.8	0.0	0.0		
BANK FULL	503.5	208.4	9039.1	0.0	0.0
ZERO DAMG	503.5	208.4	9039.1	0.0	0.0
1	524.1	9940.1	33259.0	0.0	0.0
2	527.8	14712.0	48210.4	0.0	0.0
3	529.6	17122.2	57120.1	0.0	0.0
4	534.0	22792.9	82323.8	0.0	0.0

********** PROFILE NO 2 EXCEEDS
********** PROFILE NO 3 EXCEEDS
********** PROFILE NO 4 EXCEEDS

SEGMENT TABLE FOR SECTION 19U

CSM		TOTAL	SEG NO 1 D	SEG NO 2 C	SEG NO 3 D
1	DISCHARGE CFS	33259.	15136.	14299.	38
591.	VELOCITY FPS	7.55	2.16	11.20	2
2	DISCHARGE CFS	48210.	24988.	17246.	59
866.	VELOCITY FPS	7.11	2.32	11.75	2
3	DISCHARGE CFS	57120.	30686.	19210.	72
1026.	VELOCITY FPS	6.91	2.42	12.29	2
4	DISCHARGE CFS	82324.	46545.	25059.	107
1479.	VELOCITY FPS	6.48	2.71	14.02	2
1	ELEV 524.1 KD	794731.	360982.	342492.	912
2	ELEV 527.8 KD	1234431.	647987.	432777.	1536
3	ELEV 529.6 KD	1524292.	848167.	481331.	1947
4	ELEV 534.0 KD	2444600.	1514708.	605227.	3246

WSP2 XEQ 02/13/76
REV 08/14/74

GUADALUPE COUNTY, TEXAS, FLOOD INSURANCE STUD
PROFILES FOR GERONIMO CREEK

KD TABLE FOR CROSS SECTION 190

ELEVATION	AREA	KD	KD BY SEGMENT		
495.80	0.				
496.	0.	3.	1.	1.	1
497.	6.	148.	1.	146.	1
498.	22.	740.	1.	738.	1
499.	44.	2051.	1.	2049.	1
500.	72.	4093.	1.	4091.	1
501.	105.	6889.	1.	6887.	1
502.	142.	10520.	1.	10518.	1
503.	185.	15053.	1.	15051.	1
504.	233.	20893.	1.	20883.	4
505.	288.	28168.	1.	28099.	58
506.	354.	36810.	4.	36530.	236
507.	445.	47437.	257.	46525.	587
508.	568.	59818.	1125.	57454.	1146
509.	720.	74125.	2862.	69328.	1933
510.	932.	90773.	5642.	81999.	3000
511.	1201.	110800.	10478.	95532.	4472
512.	1517.	134455.	17789.	109895.	6410
513.	1880.	161972.	27740.	125051.	8813
514.	2279.	193502.	40792.	141030.	11677
515.	2739.	229459.	56353.	157669.	15066
516.	3239.	269087.	74426.	175089.	19248
517.	3784.	312428.	94695.	193260.	24342
518.	4411.	359326.	116659.	212114.	30414
519.	5127.	414175.	144532.	231632.	37497
520.	5887.	475919.	178048.	251897.	45737
521.	6731.	545665.	217329.	272787.	55112
522.	7658.	618380.	258302.	294349.	65405
523.	8638.	694690.	301349.	316609.	76727
524.	9789.	782957.	353613.	339431.	89465

DISCHARGE=C

*****SECT.18D KD VALUES REVERSED ON SEGMENT 1 AT ELEVATION 5[illegible].30 VA

WSP2 XEQ 02/13/76
REV 08/14/74

GUADALUPE COUNTY, TEXAS, FLOOD INSURANCE STU
PROFILES FOR GERONIMO CREEK

RATING TABLE FOR SECTION 18D DA= 39.4

NO.	ELEV	AREA	CFS	ACRES FLOODED--- DAMAGE	CHANNEL	NC
0	540.5	0.0	0.0			
BANK FULL	543.3	73.9	3161.1	0.0	0.0	
ZERO DAMG	543.3	73.9	3161.1	0.0	0.0	
1	564.4	7831.7	26990.9	0.0	0.0	
2	569.4	10784.5	39124.5	0.0	0.0	
3	572.1	12325.1	46355.1	0.0	0.0	
4	578.6	16134.2	66808.8	0.0	0.0	

**********PROFILE NO 1 EXCEEDS SUF
**********PROFILE NO 2 EXCEEDS SUF
**********PROFILE NO 3 EXCEEDS SUF
**********PROFILE NO 4 EXCEEDS SUF

SEGMENT TABLE FOR SECTION 18D

CSM		TOTAL	SEG NO 1 D	2 C	3 D
1	DISCHARGE CFS	26991.	3043.	16591.	7358.
684.	VELOCITY FPS	8.96	0.84	11.74	2.63
2	DISCHARGE CFS	39124.	3394.	24207.	11523.
992.	VELOCITY FPS	10.36	0.66	13.95	2.95
3	DISCHARGE CFS	46355.	3590.	28748.	14017.
1175.	VELOCITY FPS	11.06	0.60	15.10	3.13
4	DISCHARGE CFS	66809.	4089.	41602.	21118.
1694.	VELOCITY FPS	12.71	0.52	17.94	3.58
1	ELEV 564.4 KD	650345.	62178.	371739.	216429.
2	ELEV 569.4 KD	1010968.	62181.	532248.	416539.
[illegible]	[illegible] KD	[illegible]	62182.	626575.	560938.

WSP2 XEQ 02/13/76
REV 08/14/74

GUADALUPE COUNTY, TEXAS, FLOOD INSURANCE STU
PROFILES FOR GERONIMO CREEK

KD TABLE FOR CROSS SECTION 18D

ELEVATION	AREA	KD	KD BY SEGMENT		
540.50	0.				
541.	2.	33.	1.	30.	
542.	21.	572.	1.	570.	
543.	59.	2239.	1.	2237.	
544.	115.	5747.	24.	5716.	
545.	190.	11288.	276.	10998.	
546.	289.	19480.	967.	18413.	6
547.	418.	30382.	2250.	27519.	58
548.	578.	44141.	4260.	37999.	181
549.	764.	60921.	7135.	49793.	389
550.	975.	80914.	11008.	62854.	695
551.	1213.	104253.	15939.	77099.	1112
552.	1479.	130787.	21706.	92483.	1651
553.	1780.	160901.	28576.	108953.	2325
554.	2114.	194913.	37255.	126507.	3107
555.	2486.	232309.	47943.	145097.	3923
556.	2915.	274566.	60810.	164675.	4904
557.	3486.	308306.	62173.	185219.	6073
558.	4073.	342385.	62174.	206865.	7429
559.	4659.	378021.	62175.	229626.	8988
560.	5246.	415196.	62176.	253495.	10769
561.	5832.	453892.	62176.	278463.	1277

DISCHARGE CFS

SECT.18U KD VALUES REVERSED ON SEGMENT 1 AT ELEVATION 556.60 VALU

ELEVB=	565.11	EWSBD=	564.47	HDLOSS=	0.64
ELEVB=	570.22	EWSBD=	569.50	HDLOSS=	0.72
ELEVB=	572.84	EWSBD=	572.13	HDLOSS=	0.72
ELEVB=	579.50	EWSBD=	578.62	HDLOSS=	0.88

WSP2 XEQ 02/13/76
REV 08/14/74

GUADALUPE COUNTY, TEXAS, FLOOD INSURANCE STUDY
PROFILES FOR GERONIMO CREEK

ROAD SECTION 18

NO.	HW	CFS	HL	TW	
0	540.90	0.00	0.00	0.00	
1	565.11	26990.94	0.64	564.47	
2	570.22	39124.49	0.72	569.50	
3	572.84	46355.09	0.72	572.13	
4	579.50	66808.75	0.88	578.62	1

MIN ROAD ELEVATION 544.10

OPENING NO.	NO. CULVERTS	CULV. CODE	HEIGHT OR DIAM	WIDTH	LENGTH	IN
1	2	12311.	3.00		34.00	54

WSP2 XEQ 02/13/76
REV 08/14/74

GUADALUPE COUNTY, TEXAS, FLOOD INSURANCE STUDY
PROFILES FOR GERONIMO CREEK

RATING TABLE FOR SECTION 18U DA= 39.4

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	CHANNEL	NON-D
0	541.0	0.0	0.0			
BANK FULL	544.2	81.0	3573.1	0.0	0.0	0.
ZERO DAMG	544.2	81.0	3573.1	0.0	0.0	0.
1	565.2	8546.4	26990.9	0.0	0.0	0.
2	570.3	11630.1	39124.5	0.0	0.0	0.
3	572.9	13215.1	46355.1	0.0	0.0	0.
4	579.6	17230.7	66808.8	0.0	0.0	0.

**********PROFILE NO 1 EXCEEDS SURVEY
**********PROFILE NO 2 EXCEEDS SURVEY
**********PROFILE NO 3 EXCEEDS SURVEY
**********PROFILE NO 4 EXCEEDS SURVEY

SEGMENT TABLE FOR SECTION 18U

CSM		TOTAL	SEG NO 1 D	2 C	3 D
1	DISCHARGE CFS	26991.	2831.	15444.	8715.
684.	VELOCITY FPS	7.33	0.85	11.01	2.30
2	DISCHARGE CFS	39124.	3111.	22120.	13894.
992.	VELOCITY FPS	7.72	0.69	12.79	2.59
3	DISCHARGE CFS	46355.	3279.	26098.	16979.
1175.	VELOCITY FPS	7.93	0.64	13.75	2.75
4	DISCHARGE CFS	66809.	3692.	37335.	25783.
1694.	VELOCITY FPS	8.32	0.55	16.07	3.13
1	ELEV 565.2 KD	1442900.	58876.	372182.	1011842.
2	ELEV 570.3 KD	4586552.	58879.	542105.	5569.
3	ELEV 572.9 KD	8066004.	58880.	641580.	7365545.
				930251.	28534112.

WSP2 XEQ 02/13/76
REV 08/14/74

GUADALUPE COUNTY, TEXAS, FLOOD INSURANCE STUDY
PROFILES FOR GERONIMO CREEK

KD TABLE FOR CROSS SECTION 18U

ELEVATION	AREA	KD	KD BY SEGMENT		
541.00	0.				
542.	8.	164.	1.	161.	1.
543.	31.	1028.	1.	1026.	1.
544.	70.	3026.	1.	3024.	1.
545.	130.	6908.	57.	6829.	1.
546.	217.	12787.	580.	12178.	1.
547.	326.	20963.	1834.	19095.	2.
548.	457.	32087.	3950.	28059.	41.
549.	612.	46045.	7069.	38656.	320.
550.	795.	62756.	11298.	50514.	944.
551.	1002.	82361.	16796.	63609.	1955.
552.	1252.	104672.	23673.	77884.	3114.
553.	1573.	131497.	32046.	93291.	6157.
554.	1975.	163674.	42002.	109764.	11688.
555.	2448.	201663.	53688.	127311.	20263.
556.	3006.	238964.	58870.	145897.	33307.
557.	3610.	275471.	58871.	165598.	52853.
558.	4214.	314828.	58872.	186522.	81551.
559.	4818.	357072.	58873.	208664.	122751.
560.	5422.	402235.	58873.	232024.	180725.

WSP2 XEQ 02/13/76 GUADALUPE COUNTY, TEXAS, FLOOD INSURANCE STUD
REV 08/14/74 PROFILES FOR GERONIMO CREEK

RATING TABLE FOR SECTION 17 DA= 31.1

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	CHANNEL	NON
0	560.7	0.0	0.0			
BANK FULL	562.2	75.3	2464.6	0.0	0.0	
ZERO DAMG	562.2	75.3	2464.6	0.0	0.0	
1	574.9	9190.7	23253.0	0.0	0.0	
2	577.8	12444.9	33706.2	0.0	0.0	
3	579.4	14315.3	39935.5	0.0	0.0	
4	584.1	19496.0	57556.6	0.0	0.0	

**********PROFILE NO 1 EXCEEDS SURV
**********PROFILE NO 2 EXCEEDS SURV
**********PROFILE NO 3 EXCEEDS SURV
**********PROFILE NO 4 EXCEEDS SURV

SEGMENT TABLE FOR SECTION 17

CSM		TOTAL	SEG NO 1 D	2 C	3 D
1	DISCHARGE CFS	23253.	5226.	8651.	9375.
748.	VELOCITY FPS	3.76	1.92	6.52	1.82
2	DISCHARGE CFS	33706.	7769.	11831.	14106.
1084.	VELOCITY FPS	3.54	2.09	7.32	1.99
3	DISCHARGE CFS	39935.	9287.	13717.	16931.
1285.	VELOCITY FPS	3.39	2.16	7.70	2.06
4	DISCHARGE CFS	57557.	13589.	19021.	24947.
1852.	VELOCITY FPS	2.96	2.31	8.49	2.19
1	ELEV 574.9 KD	676850.	157987.	223825.	295038.
2	ELEV 577.8 KD	1172506.	288818.	313381.	570308.

WSP2 XEQ 02/13/76
REV 08/14/74

GUADALUPE COUNTY, TEXAS, FLOOD INSURANCE STUDY
PROFILES FOR GERONIMO CREEK

KD TABLE FOR CROSS SECTION 17

ELEVATION	AREA	KD	KD BY SEGMENT		
560.70	0.				
561.	3.	28.	1.	25.	1.
562.	57.	1258.	1.	1256.	1.
563.	186.	6352.	124.	6084.	121.
564.	410.	16272.	1141.	13967.	1104.
565.	710.	31511.	3514.	24297.	3675.
566.	1096.	52415.	7305.	36734.	8293.
567.	1563.	79359.	12803.	51189.	15334.
568.	2160.	111993.	19380.	67478.	25091.
569.	2945.	155086.	28388.	85500.	40962.
570.	3861.	211473.	40779.	105209.	65246.
571.	4894.	280055.	56821.	126518.	96538.
572.	6009.	359311.	76563.	149418.	133718.
573.	7125.	451351.	100588.	173990.	180166.
574.	8240.	556946.	129360.	200205.	237154.
575.	9355.	676846.	163355.	228037.	306008.

WSP2 XEQ 02/13/76
REV 08/14/74

GUADALUPE COUNTY, TEXAS, FLOOD INSURANCE STUDY 02-
PROFILES FOR GERONIMO CREEK

RATING TABLE FOR SECTION 16D DA= 30.9

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM
0	562.3	0.0	0.0			
BANK FULL	564.5	80.5	3379.9	0.0	0.0	0.0
ZERO DAMG	564.5	80.5	3379.9	0.0	0.0	0.0
1	577.4	10348.7	23148.7	0.0	0.0	0.0
2	579.5	14886.9	33555.0	0.0	0.0	0.0
3	580.8	17798.3	39756.3	0.0	0.0	0.0
4	584.9	26649.9	57298.3	0.0	0.0	0.0

SEGMENT TABLE FOR SECTION 16D

CSM		TOTAL	SEG NO 1 D	SEG NO 2 C	SEG NO 3 D
1	DISCHARGE CFS	23149.	14199.	4893.	4057.
750.	VELOCITY FPS	3.40	1.92	6.31	1.85
2	DISCHARGE CFS	33555.	22064.	5190.	6302.
1087.	VELOCITY FPS	2.98	2.06	5.82	1.92
3	DISCHARGE CFS	39756.	26617.	5305.	7834.
1288.	VELOCITY FPS	2.78	2.08	5.49	1.95
4	DISCHARGE CFS	57298.	39434.	5686.	12179.
1857.	VELOCITY FPS	2.44	2.05	4.77	1.96
1	ELEV 577.4 KD	623987.	380499.	133417.	110070.
2	ELEV 579.5 KD	1081106.	710332.	168368.	202407.
3	ELEV 580.8 KD	1434675.	960168.	192252.	282256.
4	ELEV 584.9 KD	2750219.	1892967.	272439.	584813.

WSP2 XEQ 02/13/76
REV 08/14/74

GUADALUPE COUNTY, TEXAS, FLOOD INSURANCE
PROFILES FOR GERONIMO CREEK

KD TABLE FOR CROSS SECTION 16D

ELEVATION	AREA	KD	KD BY SEGMENT	
562.30	0.			
563.	22.	476.	1.	474.
564.	59.	2200.	1.	2198.
565.	109.	5171.	21.	5118.
566.	194.	9882.	620.	9239.
567.	322.	17103.	2438.	14634.
568.	515.	28072.	6023.	21662.
569.	785.	43346.	11730.	29796.
570.	1133.	63625.	19899.	38947.
571.	1568.	90420.	31717.	49046.
572.	2088.	123113.	46676.	60062.
573.	2753.	156544.	59456.	71951.
574.	3835.	190234.	67865.	84683.
575.	5563.	272490.	116738.	98225.
576.	7540.	402864.	212333.	112567.
577.	9581.	562661.	332803.	127682.
578.	11679.	744946.	473259.	143551.
579.	13846.	968037.	630427.	160149.
580.	16013.	1212500.	802621.	177455.
581.	18180.	1483484.	994360.	195477.
582.	20347.	1778595.	1203563.	214196.
583.	22514.	2090701.	1424618.	233580.
584.	24681.	2423894.	1660968.	253633.
585.	26848.	2784438.	1917514.	274366.
586.	29015.	3179543.	2200020.	295790.
587.	31182.	3610851.	2509844.	317898.
588.	33349.	4080010.	2848363.	340681.

ELEVB=	[illegible]	EWSBD=	[illegible]	HDLOSS=	1.08
ELEVB=	580.03	EWSBD=	579.49	HDLOSS=	0.54
ELEVB=	581.32	EWSBD=	580.84	HDLOSS=	0.48
ELEVB=	585.44	EWSBD=	584.92	HDLOSS=	0.52

WSP2 XEQ 02/13/76
REV 08/14/74

GUADALUPE COUNTY, TEXAS, FLOOD INSURANCE STUDY
PROFILES FOR GERONIMO CREEK

ROAD SECTION 16

NO.	HW	CFS	HL	TW	
0	563.10	0.00	0.00	0.00	
1	578.45	23148.67	1.08	577.37	
2	580.03	33554.96	0.54	579.49	
3	581.32	39756.25	0.48	580.84	
4	585.44	57298.27	0.52	584.92	1

MIN ROAD ELEVATION 575.70

BRIDGE TYPE 2 GIRDER BOTTOM ELEVATION = 574.00

OPENING NO.	NO. CULVERTS	CULV. CODE	HEIGHT OR DIAM	WIDTH	LENGTH	I
1	1	41111.	5.00	6.00	54.00	5

APPENDIX E
STREAM CROSSING RANKING: CRITERIA SCORING PARAMETERS

Scoring Parameters – Restriction of Emergency Access during Flooding Events

Score	Description
0	Multiple alternative access routes not subject to flooding
1	One alternative access route not subject to flooding
2	Access cut off, no alternate routes (one house)
3	Access cut off, no alternate routes (more than one house)

Scoring Parameters – Threat to Adjacent Upstream Habitable Structures

Score	Description
0	No Habital Structures (within overbanks)
1	One Habital Structure (within overbanks)
2	>1 and ≤5 Habital Structures (within overbanks)
3	>5 Habital Structures (within overbanks)

Scoring Parameters – Frequency of Reported Road Closures

Score	***Number of Road Closures Since June, 2000***
0	0 closures
1	1 closure
2	2 to 5 closures
3	More than 5 closures

Scoring Parameters – Condition of Crossing

Score	**Description**
0	New - built within the last five years
1	Satisfactory - not new, but fully functional
2	Impaired - ability to convey flow is impaired
3	Failing - structure does not convey flow

Scoring Parameters – Ratio of Drainage Area to Structure Opening Area

Score	***Ratio of Drainage Area* to Structure Opening Area (ac/ft^2)**
0	≤ 8.0
1	>8 and ≤100
2	>100 and ≤400
3	>400

Scoring Parameters – Severity of Erosion Condition

Score	Description
0	None
1	Minor
2	Moderate
3	Severe – erosion severely threatens integrity of structure

Scoring Parameters – Severity of Debris Obstruction

Score	Description
0	None
1	Minor
2	Moderate
3	Severe - debris severely restricts flow

Scoring Parameters – Severity of Sediment Obstruction

Score	Description
0	None
1	Minor
2	Moderate
3	Severe - sediment severely restricts flow

Scoring Parameters – Drainage Area Contributing to Crossing

Score	Drainage Area Range
0	< 6,400 acres
1	≥ 6,400 acres but < 12,800 acres
2	≥ 12,800 acres but < 25,600 acres
3	≥ 25,600 acres

Scoring Parameters – Hydraulic Adequacy (frequency of overtopping)

Score	Frequency of Overtopping
0	Does not overtop in any storm frequency
1	Overtops 100-year only
2	Overtops 25 to 50-year storm frequencies
3	Overtops < 25-year storm frequencies

APPENDIX F

APPENDIX F
TWDB COMMENTS AND RESPONSE

Texas Water Development Board

P.O. Box 13231, 1700 N. Congress Ave.
Austin, TX 78711-3231, www.twdb.state.tx.us
Phone (512) 463-7847, Fax (512) 475-2053

June 3, 2011

The Honorable Mike Wiggins
County Judge
Guadalupe County
307 West Court St.
Seguin, Texas 78155

RE: Flood Protection Planning Grant between the Texas Water Development Board (TWDB) and Guadalupe County (County), TWDB Contract No. 0904830951, Draft Report Comments

Dear Judge Wiggins:

Staff members of TWDB have completed a review of the Draft Final Study Report under TWDB Contract No. 0904830951. As stated in the above-referenced contract, the County will consider incorporating Draft Final Study Report comments, shown in Attachment I, as well as other comments received, into the Final Study Report. In accordance with Article III, Item 3 of the contract, a copy of these TWDB Executive Administrator comments as well as a written summary of how the Draft Final Study Report was revised in response must be included in all the Final Study Report documents, for example, as an appendix.

TWDB looks forward to receiving one (1) electronic copy of the Final Report in Portable Document Format (PDF) and seven (7) bound double-sided copies of the final report to the Executive Administrator no later than June 30, 2011.

If you have any questions concerning the contract, please contact Kathy Hopkins, the TWDB's designated Contract Manager for this planning project at (512) 463-6198.

Sincerely,

Carolyn L. Brittin
Deputy Executive Administrator
Water Resources Planning and Information

Attachment

c: Kathy Hopkins, TWDB

M & S ENGINEERING, LLC
ENGINEERS I PLANNERS I SURVEYORS

6477 FM 311 I PO BOX 970
SPRING BRANCH, TX 78070
830.228.5446 PH I 830.885.2170 FX
FIRM F-1394
WWW.MSENGR.COM

June 29, 2011

Gilbert Ward
Texas Water Development Board
1700 North Congress Avenue
P.O. Box 13231
Austin, Texas 78711-3231

Re: Response to Draft Report Comments for Geronimo Creek Flood Protection Plan

Project #: 109GUADCO001

Mr. Ward,

Please find the attached package as a re-submittal responding to comment letter dated June 3, 2011. Items listed below are numbered according to comments and describe the action taken address the comment.

Response to Comments:

1. Final review has been conducted in hopes of revising typos, grammatical errors, and proper use of citations.
2. Additional information has been added to Section 1.0, Introduction; regarding historical flooding and flood hazards for the study area.
3. Additional information was added to Section 2.0, Hydrologic Analysis, and Section 3.0, Hydraulic Analysis regarding the analytical methodologies employed by the study.
4. The last sentence of Section 2.1, Drainage Area Delineation; was removed for clarity
5. A discussion regarding the definitions of hydrologic soil groups was added to Section 2.4, Land Use and Curve Numbers.
6. Section 7.0, Implementation and Funding; was added to address possible funding alternatives.
7. Comment noted and appreciated.

Appendix F was added to the final study report to include the TWDB Executive Administrator comments and this response summary. Please find enclosed one (1) digital copy (PDF) and seven (7) bound double-sided copies of the final report.

Sincerely,

Lance Klein, P.E., P.H., C.F.M.
Hydrology & Hydraulics Department Manager