Draft Environmental Assessment

Markham-Peachtree Channel Reconstruction

St. Tammany Parish, Louisiana

Hazard Mitigation Grant Program

HMGP # 1603-0321

May 2015

U.S. Department of Homeland Security
Louisiana Transitional Recovery Office
Baton Rouge, Louisiana 70802

TABLE OF CONTENTS

SECTION		PAGE
1.0 INTRODUCTION		1
1.1	Project Authority	1
1.2	Project Location	1
1.3	Site Description	3
2.0 PURPOSE AND NEED		5
3.0 ALTERNATIVES		5
3.1	No Action	5
3.2	Alternatives Eliminated from Further Consideration: 1, 2, 3	5
3.3	Preferred Alternative: Channel Reconstruction (Proposed Action)	6
4.0 AFFECTED ENVIRONMENT AND IMPACTS		7
4.1	Impact Summary	7
4.2	Hydrology and Floodplains	21
5.0 CUMULATIVE IMPACTS		24
6.0 CONDITIONS AND MITIGATION MEASURES		25
7.0 PUBLIC INVOLVEMENT		29
8.0 AGENCY COORDINATION		29
9.0 LIST OF PREPARERS		29
10.0 REFERENCES		29

LIST OF FIGURES

Figure 1	Location of St Tammany Parish, Louisiana	2
Figure 2	Project Location	3
Figure 3	Project Map (Volkert, 2014)	4
Figure 4	Preliminary Digital Flood Insurance Rate Map, Community-Panel Number 22103C0495F, 04/30/2008, St. Tammany Parish, Louisiana (and Incorporated Areas)	23

LIST OF TABLES

Table 1 - Affected Environment and Environmental Consequences Matrix: Preferred Action: Reconstruct An Open Channel and Remove Box Culvert 9-20

APPENDICES

Site Photos	Appendix A
Site Plans for Proposed Drainage Improvements	Appendix B
Hydraulic & Hydrology Study	Appendix C
Agency Correspondence	Appendix D
Public Notice8-Step Process	Appendix E

LIST OF ACRONYMS

ACHP	Advisory Council on Historic Preservation
APE	Area of Potential Effects
BMP	Best Management Practices
CAA	Clean Air Act
CBRA	Coastal Barrier Resources Act
CBRS	Coastal Barrier Resources System
CUP	Coastal Use Permit
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
DEA	Draft Environmental Assessment
DFIRM	Digital Flood Insurance Rate Map
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
GOHSEP	Governor's Office of Homeland Security and Emergency Preparedness
LDEQ	Louisiana Department of Environmental Quality
LDNR	Louisiana Department of Natural Resources
LSB	Louisiana State Brownfield
MOA	Memorandum of Agreement
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NGVD	National Geodetic Vertical Datum
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
NRCS	Natural Resources Conservation Services
OPA	Otherwise Protected Area
RCRA	Resource Conservation and Recovery Act
RCW	Red-Cockaded Woodpecker
RFP	Request for Proposal
RHA	Rivers and Harbors Act
SHPO	State Historic Preservation Office/Officer
THPO	Tribal Historic Preservation Office/Officer
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
WSRA	Wild and Scenic Rivers Act

This Page was Intentionally Left Blank

1.0 INTRODUCTION

1.1 Project Authority

Hurricane Katrina, a Category 4 hurricane with a storm surge above normal high tide levels, moved across the Louisiana, Mississippi and Alabama Gulf Coasts on August 29, 2005. Maximum sustained winds at landfall were estimated at 140 miles per hour. President George W. Bush declared a major disaster for the State of Louisiana due to damages from Hurricane Katrina and signed a disaster declaration (FEMA-1603-DR-LA) on August 29, 2005, authorizing the Department of Homeland Security's Federal Emergency Management Agency (FEMA) to provide federal assistance in designated areas of Louisiana. FEMA is administering this disaster assistance pursuant to the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), PL 93-288, as amended. Section 404 and Section 406 of the Stafford Act authorizes FEMA's Hazard Mitigation Program to provide funds to states and local governments to implement long-term hazard mitigation measures after a major disaster declaration.

This Environmental Assessment (EA) has been prepared in compliance with the National Environmental Policy Act of 1969 (NEPA); the President's Council on Environmental Quality regulations implementing NEPA (40 CFR 1500-1508); and FEMA's regulations implementing NEPA (44 CFR 10.9). The purpose of this EA is to analyze potential environmental impacts associated with drainage improvements for the Markham-Peachtree area of St. Tammany Parish, Louisiana. FEMA will use the findings in this EA to determine whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI).

1.2 Project Location

St. Tammany Parish is located in the Northshore area of Southeast Louisiana. It is approximately 854 square miles, bordered to the east by Pearl River, to the south by Lake Pontchartrain, and to the west by the Tchefuncte River. The City of Slidell is located in the southeastern tip of St. Tammany Parish, and is the parish's largest municipality with approximately 27,068 people according to 2010 Census figures. It is approximately three miles from the north shore of Lake Pontchartrain (Figure 1). Three major highways, I-10, I-12, and I-59, form a "cross roads" in the city. Slidell is approximately 30 miles from New Orleans, Louisiana and 82 miles from Baton Rouge, Louisiana. The project is located in the southeastern portion of St. Tammany Parish, in the city of Slidell.

The specific site for the proposed drainage improvements is within the Markham Drive and Peachtree Drive community beginning at an open canal WP-20 located at approximately Latitude 30.2529, Longitude -89.781917 in Slidell, Louisiana (Figure 2). At the Markham/Peachtree site the applicant proposes to modify an existing canal and box culvert to improve drainage. The flows drain to Lake Ponchartrain via the Schneider Canal Pump Station. Beginning at the Olive Street Bridge crossing the stream would have the vegetation of the right bank removed, excavated, and laid back for approximately 185 linear feet to a 2:1 slope. Another 650 linear feet of the stream would have both banks laid back to a 2:1 slope, and the applicant would reseed and revegetate the banks.

The applicant would also remove any debris, trees or brush immediately upstream and downstream of the existing box culvert for the removal of 337 linear feet of the culvert, and would replace the culvert with an open, vegetated channel.

Removal of an additional 939 linear feet of existing box culvert would be replaced with a ten foot wide by six foot tall open top concrete flume structure, which would flow to an existing 10 foot wide by 4 foot tall concrete box culvert outfall. The new culvert would be installed on a minimum 12 inch compacted aggregate base. This would require the excavation of materials from the area below the existing box in order to accommodate the larger box. It may also be necessary to remove and replace additional soil material. Some grading may also be necessary along the banks adjacent to the culvert to provide an appropriate grade for drainage to the top of the culvert. The newly constructed channel would empty downstream at a splashdown site where a concrete apron would be installed at two (2) converging drainage canals.

In addition to the new structure, wing walls would be installed to provide better flow characteristics for the channel as well as to help protect the channel banks from erosion at the entrance and exit and allow for better flow to the outfall. Minimum 8-foot high 90 gage chain-link fence must be constructed along both sides of the channel in the easement to prevent people and pets from entering or falling into the open channel. Ramps at each end for maintenance equipment entry points must also be constructed. The existing 10 foot wide by 4 foot high box culvert drains approximately 275 acres of the West Schneider Drainage Basin. The basin is partially within the jurisdiction of the City of Slidell and partially within the jurisdiction of St. Tammany Parish (Volkert, 2014).

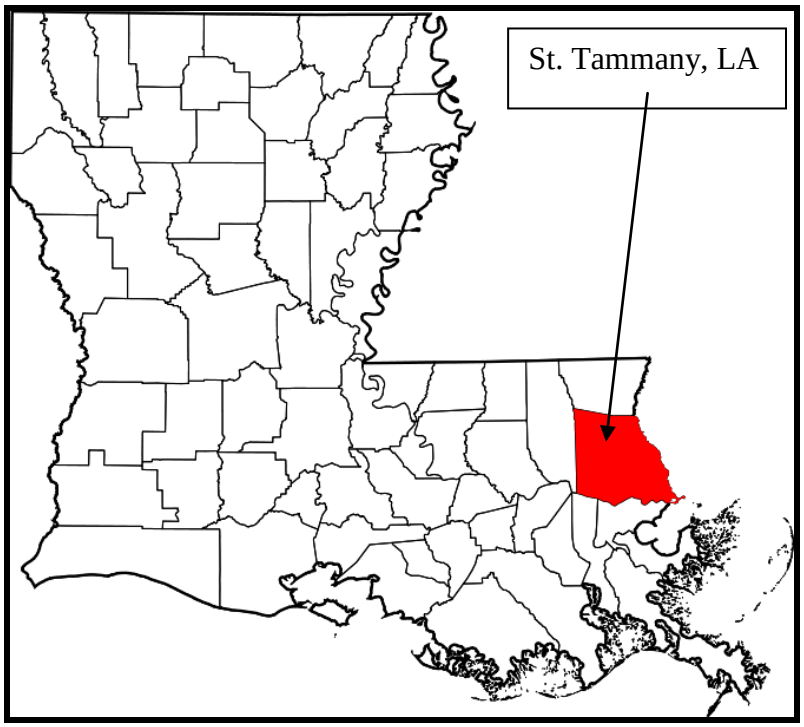


Figure 1: Location of St. Tammany Parish

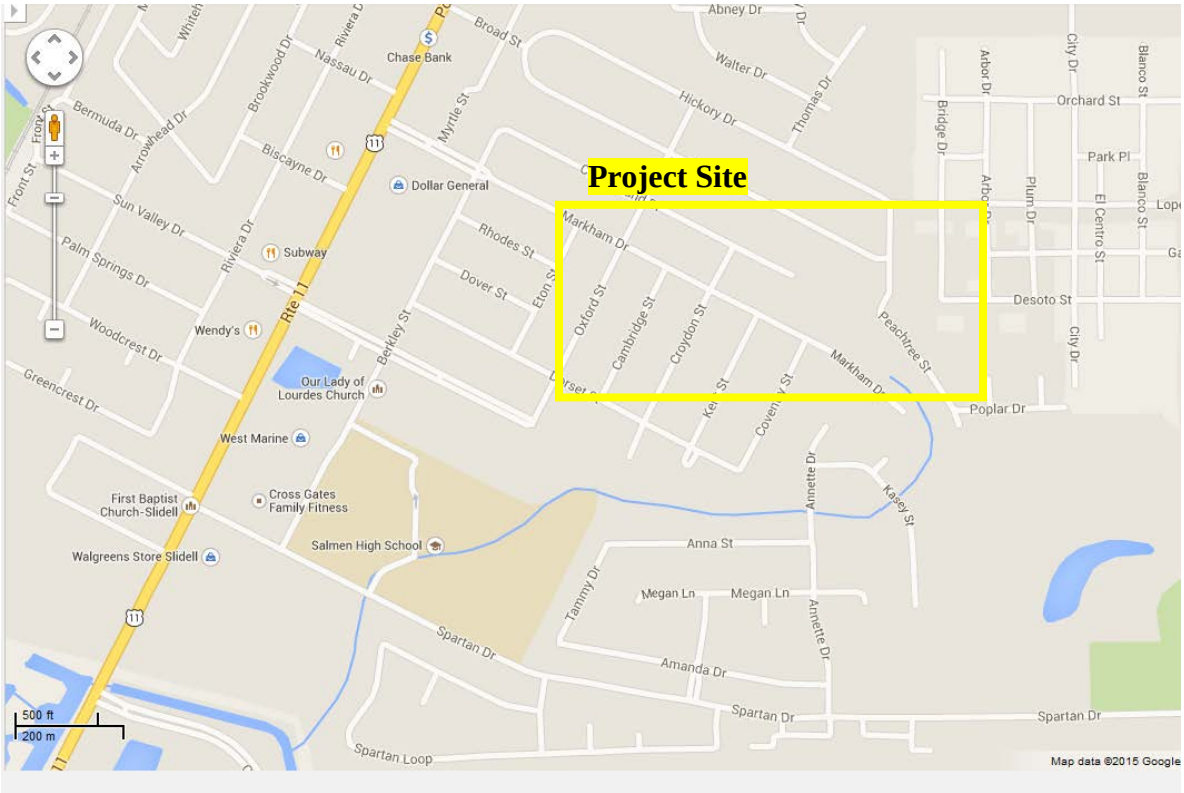


Figure 2: Project location- Markham Drive and Peachtree Drive

1.3 Site Description

Markham Dr. and Peachtree Dr. are densely populated residential areas located in the southeastern portion of St. Tammany Parish, Louisiana. See Appendix A for photos.

The topography of the Schneider Canal West Basin is exceptionally flat with a maximum elevation around 8 feet above sea level and a minimum elevation around 1 foot above sea level. Along the channel in the area that was surveyed, the bank elevation ranges from about 6 feet above sea level to about 2 feet above sea level (Volkert, 2014).

There are several structures that cross the existing WP-20 and Southside Lateral canals. Upstream from the WP-20 canal there is an existing slab span bridge at Hickory Drive and another at Olive Drive. The canal flows into the existing 10 foot wide by 4 foot high Markham-Peachtree box culvert south of Olive Drive.

The culvert is approximately 1,258 linear feet long and has a concrete slab top and bottom with cinder block walls and several inlet drains along the top (Volkert, 2014). It is located within a 15 foot right of way that is between the Windsor Place and Westchester Estates Subdivisions and a 15 foot wide easement along the back of lots 1-11 of Westchester Estates to the west of the right of way.

There is also a 10 foot wide public servitude to the east of the right of way along the back of lots 1-12 of the Windsor Place Subdivision, but the culvert does not enter into it. Just downstream from the box culvert the WP-20 canal splits at the junction of the Southside Lateral Canal.

The W-20 canal continues toward the southwest going through a 102 inch wide by 62 inch high reinforced concrete arch pipe (RCAP) just past the junction and through two (2) 120 inch wide by 62 inch high corrugated box culverts at Kasey Street and Annette Drive. The WP-20 canal then passes under two (2) 280 inch wide by 57 inch high reinforced concrete pipe (RCP) crossings of the Spartan High School parking lot, and a slab span bridge at Spartan Drive. The W-20 canal finally empties into the Schneider Canal (Volkert, 2014). There are also three (3) small pedestrian bridges crossing the WP-20 at Spartan High School.

The South Lateral Canal flows under a small wooden pedestrian bridge and continues through two (2) 87 inch wide by 63 inch high RCPs under Spartan Drive before discharging into the Schneider Canal (See Appendix D for the H&H study and photos) (Volkert, 2014).

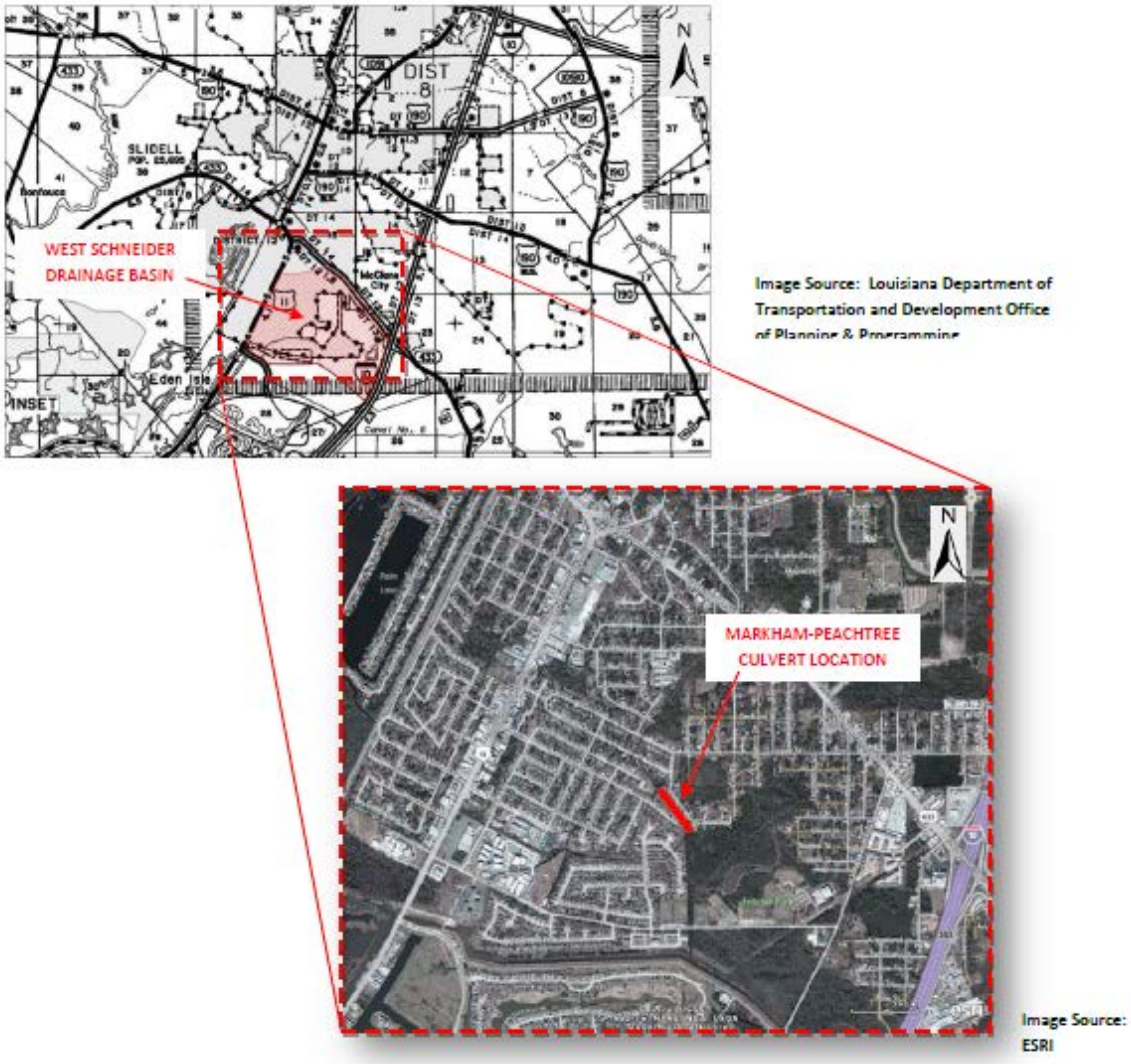


Figure 3: Project Map (Volkert, 2014)

2.0 Purpose and Need

The 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. The project site is subject to flooding during major storm events. Since 2008 the project area has been damaged by flooding multiple times. If left unprotected, future storm events have the potential to repeatedly damage homes in this area.

Per the Hydrology and Hydraulics Study (H &H) prepared by Volkert, March 2014, within the project area there are a total of 106 structures that fall within the 100 year flood limits. Of these structures, 17 have had repetitive loss claims. There are also 51 structures that fall within the 50 year flood limits. Of these 51 structures, 14 have had repetitive loss claims. Repetitive loss data is based on information provided by FEMA in June 2008.
All repetitive loss structures are located at WP-20 Canal Upper, between Hickory Street and the downstream outlet of the Markham-Peachtree box culvert (Volkert, 2014). Currently, the applicant, City of Slidell, needs to protect its residents within the project area from the 100-year flood.

3.0 ALTERNATIVES CONSIDERED

3.1 No Action

Implementation of the No Action Alternative would entail no hazard mitigation measures for the project area within the W-20 watershed. Consequently, this alternative would not provide any type of protection to residents of the area during peak flow events or other emergency situations. Under this alternative, water damage would likely continue to occur and both insured and uninsured losses would be experienced. This alternative would perpetuate the "damage-repair-damage" cycle thus requiring additional funding to be drawn from the National Flood Insurance Program as well as depleting local and National disaster funds.

3.2 Alternatives Eliminated from Further Consideration: 1, 2, and 3

Per the H&H study, Alternative 1 includes the replacement of the existing buried 10' x 4' box culvert with a 10' x 5' box culvert. The new pre-cast box culvert would be installed on a minimum 12" compacted aggregate base. This Alternative would require the removal of the existing culvert and removal of any debris, trees or brush immediately upstream and downstream of the culvert. This would also require the excavation of material from the area below the existing box in order to accommodate the larger culvert.

In addition to the new box culvert, new wing walls would be installed to provide better flow characteristics for the channel as well as to help protect the channel banks from erosion at the culvert entrance and exit and allow for better flow into the box culvert. Sized inlet openings would also be placed in the top of the new box at the same locations as were on the existing structure at a minimum. Other box culvert sizes were also evaluated including a 10 foot wide by 6 foot high culvert, an 8 foot wide by 6 high culvert, and a double 7 foot wide by 5 foot high culvert as well as other standard sizes.

Each of these options was dismissed due to reasons that included inefficient cover over the box, limited right-of-way, or no significant change in hydraulics. If this alternative were chosen, the proposed box-culvert modifications alone would not allow the 100-year storm to flow through the culvert, without significantly increasing the elevation of the top of the culvert thus removing the swale over the culvert which drains the adjacent properties. The proposed culvert replacement would greatly reduce the limits of flooding upstream of and along the new culvert, but would not have a significant impact downstream of the new culvert (Volkert, 2014). Therefore, this alternative was not considered effective and will not be carried forward.

Per the H&H study, Alternative 2 includes improving the Markham-Peachtree box culvert as described above in Alternative 1, and to upsize the culverts under Spartan Drive at the crossing of South Lateral Canal from the existing 7.25 foot wide by 5.25 foot high culverts to 10 foot wide by 7 foot high culverts.
These modifications may decrease the water surface elevation by up to one (1) foot immediately upstream of Spartan Drive thus allowing decreases further upstream along the existing flooding area. The additional modifications to the Spartan Drive crossing of the South Lateral Canal would significantly decrease water surface elevations thus removing additional structures from flood zones in 50-year and 100-year storms. If this alternative were chosen, the improvement would still not be enough to allow the 100-year storm event to flow through the culvert without overflowing through the swale and there would be an increase in the demand on the Schneider Canal pump station (Volkert, 2014). Therefore, this alternative was not considered effective and will not be carried forward.

Per the H&H study, Alternative 3 includes improving both the Markham-Peachtree box culvert and the Spartan Drive culvert crossing described above, and to replace the Olive Drive Bridge with a structure which provides greater conveyance. Replacing the bridge with an elevated clear-span bridge which does not encroach laterally on channel cross-section would reduce the head differential between upstream and downstream of the existing bridge which occurs during large storm events.

On top of the benefits afforded by the modifications described in Alternative 2, the additional modification of the Olive Drive Bridge would result in an additional reduction in water surface elevation of 0.8 inches to 2.6 inches upstream of the bridge, depending on the intensity of the storm. The improvements would remove numerous structures from flood zones, but would increase the demand on the Schneider Canal pump station (Volkert, 2014). Therefore, this alternative was not considered cost effective and will not be carried forward.

3.3 Preferred Alternative: Channel Reconstruction (Proposed Action)

The preferred alternative is to improve the drainage canal from the Olive Street Bridge to the existing Markham-Peachtree box culvert, and replace the existing Markham-Peachtree box culvert with a 10 foot wide by 6 foot high typical section concrete-lined open channel with vertical side walls rather than the 10 foot wide by 5 foot high box culvert of Alternative 1.

Beginning at the Olive Street Bridge the crossing, including bents in the waterway, are proposed to be reconstructed, and the vegetation of the right bank removed, excavated, and

laid back for approximately 185 linear feet to a 2:1 slope. The next 650 linear feet would have both banks laid back to a 2:1 slope. The applicant would reseed and vegetate the banks.

The applicant would also remove of the existing culvert and remove any debris, trees or brush immediately upstream and downstream of the culvert. The new culvert would be installed on a minimum 12 inch compacted aggregate base. This would require the excavation of material from the area below the existing box in order to accommodate the larger box. It may also be necessary to remove and replace additional unsuitable material. Some grading may also be necessary along the banks adjacent to the culvert to provide an appropriate grade for drainage to the top of the culvert. In addition to the new structure, wing walls would be installed to provide better flow characteristics for the channel as well as to help protect the channel banks from erosion at the entrance and exit and allow for better flow into the box culvert.
Minimum 8 foot high 90 gage chain-link fence must be constructed along both sides of the easement to prevent people and pets from entering or falling into the open channel. Ramps at each end for maintenance equipment entry points must also be constructed.

Per the H&H study, this alternative provides easier access to the channel for maintenance than the closed-top box culvert option. Also, this alternative is intended to remove the 11 inch allowance between the top of the culvert opening and the top of the ground which can cause an obstruction to flow in large storm events. Hydraulically the open channel is a substantial improvement over the closed-top box culvert, such that the improvements to the Olive Drive Bridge as described above are no longer necessary. Thus, only the improvements to the Olive Drive Bridge as described above are recommended in tandem with the open channel of Alternative 4.

This alternative allows the flow from the 100-year storm to flow through the Markham-Peachtree open channel without overtopping the banks and prevents virtually all upstream flooding up to a 100-year storm event. This alternative offers no significant improvement from the existing conditions in a 500-year event.

4.0 Affected Environment and Impacts

The following subsections discuss the existing conditions and relevant regulatory setting in St. Tammany Parish for those resources/areas of concern that the Proposed Action and/or alternatives have the potential to affect.

The following resources/areas of concern were not discussed in this EA due to the limited impacts to the resources from the proposed action and alternatives. Resources not addressed are as follows:

- Climate Change – the proposed drainage improvements within the Markham Drive and Peachtree Drive community would not significantly adversely affect climate.

4.1 Impact Summary

The following matrix summarizes the results of the environmental review process (Table 1). Potential environmental impacts that were found to be negligible are not evaluated further.

Resource areas that have the potential for impacts of minor, moderate, or major intensity are further developed in the subsequent sections. Definitions of impact intensity are described below:

Negligible: The resource area (e.g., geology) would either not be affected, changes would be non-detectable, or if detected, would have effects that would be slight and local. Impacts would be well below regulatory standards, as applicable. Effects to Cultural Resources would be either non-existent, i.e., a building is less than 50 years old and/or no known archeological sites are present on the site, or the project is determined not likely to affect and State Historic Preservation Officer (SHPO)/Tribal Historic Preservation Officer (THPO) concurs. No mitigation is needed.

Minor: Changes to the resource would be measurable, although the changes would be small and localized. Impacts would be within or below regulatory standards, as applicable. Mitigation measures would reduce any potential adverse effects. Effects to Cultural Resources are not likely, i.e., building is at least 50 years old and/or known archeological sites are near the project area, but special conditions/mitigation are sufficient to maintain the "not likely to affect determination."

Moderate: Changes to the resource would be measurable and have both localized and regional scale impacts. Impacts would be within or below regulatory standards, but historical conditions would be altered on a short-term basis. Mitigation measures would be necessary to reduce any potential adverse effects. Effects to Cultural Resources are likely, i.e., building is 50 years old and/or known archeological sites are in the project area. Impacts would have at least local and possibly regional scale impacts.

Major: Changes would be readily measurable and would have substantial consequences on a local and regional level. Impacts would exceed regulatory standards. Mitigation measures to offset the adverse effects would be required to reduce impacts, although long-term changes to the resource would be expected. Effects to Cultural Resources are likely, i.e., building is at least 50 years old and/or known archeological sites are in the project area. Impacts would have substantial consequences on a local and regional level.

Table 1 - Affected Environment and Environmental Consequences Matrix: Preferred Action: Reconstruct an Open Channel and Remove Box Culvert

Resource Area	Impact Negligible	Impact Minor	Impact Moderate	Impact Major	Impact Summary	Agency Coordination / Permits	Mitigation
Geology and Soils	X				The Farmland Protection Policy Act (FPPA: Public Law 97-98, §§ 1539-1549; 7 U.S.C. 4201, *et seq.*) was enacted in 1981 and is intended to minimize the impact federal actions may have on the unnecessary and irreversible conversion of farmland to non-agricultural uses. It assures that, to the extent possible, federal programs and policies are administered to be compatible with state and local farmland protection policies and programs. Potential for short-term localized increase in soil erosion during construction. Per review of the Natural Resources Conservation Services (NRCS) Web Soil Survey, the soil located on the proposed project area (Myatt fine sandy loam, [Mt]) is not classified as a prime farmland soil; Farmland Protection Policy Act is precluded. Potential for short-term localized increase in soil erosion during construction activities.	A SOV to Louisiana Department of Environmental Quality (LDEQ) was prepared and sent out by the FEMA on 05/15/2015. The response period ends on 06/15/2015, at which time FEMA-EHP will update this EA to reflect comments and conditions received by the regulatory agency. If substantial comments are received, this EA will be republished, if not this document will become final. (See also Appendix C External Agency Correspondence).	Implement construction Best Management Practices (BMPs); install silt fences/straw bales to reduce downslope sedimentation. Area soils must be covered and/or wetted during construction. If fill is stored on site as part of unit installation or removal, the contractor is required to appropriately cover it. Construction contractor is required to obtain applicable Louisiana Pollutant Discharge Elimination System (LPDES) permit, and implement stormwater pollution prevention plan. See also Section 6.0 Conditions and Mitigation Measures.

Resource Area	Impact Negligible	Impact Minor	Impact Moderate	Impact Major	Impact Summary	Agency Coordination / Permits	Mitigation
Hydrology and Floodplains (Executive Order 11988)		X			Executive Order (EO) 11988 (Floodplain Management) requires Federal agencies to avoid direct or indirect support or development within the 100-year floodplain whenever there is a practicable alternative. FEMA's regulations for complying with EO 11988 are found at 44 CFR Part 9. Preliminary Digital Flood Insurance Map (DFIRM) Panel 22103C0495F, dated 04/30/2008, places this project in Zone "AE" Base Flood Elevation (BFE) 11 feet NAVD88. Advisory Base Flood Elevation (ABFE) Maps LA-MM40, -MM41, -LL-40, -LL41 dated 01/2006, place this project in an ABFE 10 feet NGVD 29. *NGVD 29 = National Geodetic Vertical Datum of 1929. See Section 4.2 Hydrology and Floodplain	Preliminary DFIRM Panel 22103C0495F, dated 04/30/2008 ABFE Maps LA-MM40, -MM41, -LL-40, -LL41 dated 01/2006.	The applicant is required to coordinate with the local floodplain administrator regarding floodplain permit(s) prior to the start of any activities. All coordination pertaining to these activities and applicant compliance with any conditions should be documented and copies forwarded to the state and FEMA for inclusion in the permanent project files. As per 44 CFR 9.11 (d) (9), mitigation or minimization standards must be applied, where possible. The replacement of building contents, materials and equipment should be, where possible, wet or dry-proofed, elevated, or relocated to or above the Preliminary DFIRM BFE or local floodplain ordinances, whichever is more stringent. See also Section 6.0 Conditions and Mitigation Measures.

Resource Area	Impact Negligible	Impact Minor	Impact Moderate	Impact Major	Impact Summary	Agency Coordination / Permits	Mitigation
Wetlands (Executive Order 11990)	X				EO 11990, Protection of Wetlands, directs Federal agencies to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the values of wetlands for federally funded projects. FEMA regulations for complying with EO 11990 are found at 44 CFR Part 9, Floodplain Management and Protection of Wetlands. U.S. Fish and Wildlife Service (USFWS)-National Wetlands Inventory map http://www.fws.gov/wetlands/Wetlands-Mapper.htm l queried on 5/17/2015 shows there are no mapped wetlands present in the proposed project area.	A SOV to U.S. Army Corps of Engineers (USACE), USFWS and USEPA was prepared and sent out by the FEMA on 05/15/2015. The response period ends on 06/15/2015, at which time FEMA-EHP will update this EA to reflect comments and conditions received by the regulatory agency. If substantial comments are received, this EA will be republished, if not this document will become final. See Appendix C External Agency Correspondence	Any changes or modifications to the proposed project will require a revised determination. Off-site locations of activities such as borrow, disposals, haul- and detour roads, and work mobilization site developments may be subject to USACE regulatory requirements. A Department of the Army Section 404 permit and Rivers and Harbors Act Section 10 permit may be required prior to the deposition or redistribution of dredged or fill material. Applicant must contact USACE prior to any work in the waterway or the wetland. If any of the proposed work is located in wetlands or other areas subject to the jurisdiction of the U.S. Army Corps of Engineers (USACE), USACE should be contacted directly to inquire about the possible necessity for permits. If a USACE permit is required, part of the application process may involve a water quality certification from LDEQ. See also Section 6.0 Conditions and Mitigation Measures.

Resource Area	Impact Negligible	Impact Minor	Impact Moderate	Impact Major	Impact Summary	Agency Coordination / Permits	Mitigation
Surface Water and Water Quality	X				The United States Army Corps Engineers (USACE) regulates the discharge of dredged or fill material into waters of the U.S., including wetlands, pursuant to §§ 401 and 404 of the Clean Water Act (CWA). Section 402 of the CWA, entitled National Pollutant Discharge Elimination System (NPDES), authorizes and sets forth standards for state administered permitting programs regulating the discharge of pollutants into navigable waters within the state's jurisdiction. The USACE also regulates the building of structures in waters of the U.S. pursuant to §§ 9 and 10 of the Rivers and Harbors Act (RHA). Project is to improve the drainage canal from the Olive Street Bridge to the existing Markham-Peachtree box culvert, and replace the existing Markham-Peachtree box culvert with a 10' x 6' typical section concrete-lined open channel with vertical side walls.	A SOV to U.S. Army Corps of Engineers (USACE) and the Louisiana Department of Environmental Quality (LDEQ) was prepared and sent out by the FEMA on 05/15/2015. The response period ends on 06/15/2015, at which time FEMA-EHP will update this EA to reflect comments and conditions received by the regulatory agency. If substantial comments are received, this EA will be republished, if not this document will become final. See Appendix C External Agency Correspondence	The project results in a discharge to waters of the State; submittal of a Louisiana Pollutant Discharge Elimination System LPDES application is necessary. All precautions must be observed to control nonpoint source pollution from construction activities. LDEQ has stormwater general permits for construction areas equal to or greater than one (1) acre. The applicant must contact the LDEQ Water Permits Division at (225) 219-9371 to determine if the proposed project requires a permit. Please be advised that water softeners generate wastewaters that may require special limitations depending on local water quality considerations. Therefore if the applicant's water system improvements include water softeners, the applicant is to contact the LDEQ Water Permits Department to determine if special water quality-based limitations will be necessary. Any renovation or remodeling must comply with Louisiana Administrative Code (LAC) 33:III.Chapter 28, Lead-Based Paint Activities; LAC 33:III.Chapter 27, Asbestos-Containing Materials in Schools and State Buildings (includes all training and accreditation); and LAC 33:III.5151, Emission Standard for Asbestos for any renovations or demolitions. If any solid or hazardous wastes, or soils and/or groundwater contaminated with hazardous constituents are encountered during the project, notification to LDEQ's Single-Point-of-Contact (SPOC) at (225) 219-3640 is required. Additionally, precautions must be taken to protect workers from these hazardous constituents If any of the proposed work is located in wetlands or other areas subject to the jurisdiction of the U.S. Army Corps of Engineers (USACE), USACE should be contacted directly to inquire about the possible necessity for permits. If a USACE permit is required, part of the application process may involve a water quality certification from LDEQ. See also Section 6.0 Conditions and Mitigation Measures.

Resource Area	Impact Negligible	Impact Minor	Impact Moderate	Impact Major	Impact Summary	Agency Coordination / Permits	Mitigation
Groundwater	X				The Safe Drinking Water Act (SDWA) was originally passed by Congress in 1974 to protect public health by regulating the nation's public drinking water supply. Project as proposed is not expected to affect any groundwater.	A SOV to USEPA was prepared and sent out by the FEMA on 05/15/2015. The response period ends on 06/15/2015, at which time FEMA-EHP will update this EA to reflect comments and conditions received by the regulatory agency. If substantial comments are received, this EA will be republished, if not this document will become final. See Appendix C External Agency Correspondence	The contractor must observe all precautions to protect the groundwater of the region. See also Section 6.0 Conditions and Mitigation Measures
Wild and Scenic River	X				The Wild and Scenic Rivers Act (Act), (P. L. 90-543 as amended: 16 U.S.C. 1271-1287) established a method for providing federal protection for certain free-flowing rivers, preserving them and their immediate environments for the use and enjoyment of present and future generations. There are no Wild and Scenic Rivers in the vicinity.	National Wild and Scenic Rivers http://www.rivers.gov/louisiana.php queried 5/13/2015	

Resource Area	Impact Negligible	Impact Minor	Impact Moderate	Impact Major	Impact Summary	Agency Coordination / Permits	Mitigation
Coastal Resources	X				The Coastal Zone Management Act of 1972 (CZMA, or the Act) encourages the management of coastal zone areas and provides grants to be used in maintaining coastal zone areas. It is intended to ensure that federal activities are consistent with state programs for the protection and, where, possible, enhancement of the nation's coastal zones. The USFWS regulates federal funding in Coastal Barrier Resource System (CBRS) units under the Coastal Barrier Resources Act (CBRA). This Act protects undeveloped coastal barriers and related areas (*i.e*., Otherwise Protected Areas [OPAs]) by prohibiting or limiting direct or indirect Federal funding of projects that support development in these areas. According to the Louisiana Department of Natural Resources (LDNR), the project site is located within the Louisiana Coastal Zone and may require a Coastal Use Permit (CUP). St. Tammany Parish lies entirely within the Louisiana Coastal Zone and the proposed project may be subject to the rules and regulations of the CZMA. The project is not located within the CBRS	A SOV to LDNR was prepared and sent out by the FEMA on 05/15/2015. The response period ends on 06/15/2015, at which time FEMA-EHP will update this EA to reflect comments and conditions received by the regulatory agency. See Appendix C External Agency Correspondence	The applicant is responsible for coordinating with and obtaining any required permit(s) from the LDNR Coastal Management Division prior to initiating work. The applicant shall comply with all conditions of the required permit. All coordination pertaining to these activities and applicant compliance with any conditions should be documented and copies forwarded to the state and FEMA for inclusion in the permanent project files. See also Section 6.0 Conditions and Mitigation Measures
Air Quality	X				The Clean Air Act (CAA) requires the State of Louisiana to adopt ambient air quality standards to protect the public from potentially harmful amounts of pollutants. The LDEQ has designated areas meeting the state's ambient air quality standards by their monitoring and modeling program efforts. During construction, there is potential for a short-term localized increase in vehicle emissions and dust particles. St. Tammany Parish is classified as attainment under the National Ambient Air Quality Standards (NAAS) and has no general conformity determination obligations.	A SOV to LDEQ was prepared and sent out by the FEMA on 05/15/2015. The response period ends on 06/15/2015, at which time FEMA-EHP will update this EA to reflect comments and conditions received by the regulatory agency. See Appendix C External Agency Correspondence	Vehicle operation times would be kept to a minimum. Area soils must be covered and/or wetted during construction to minimize dust. Any renovation or remodeling must comply with LAC 33:III.Chapter 28, Lead-Based Paint Activities; LAC 33:III.Chapter 27, Asbestos-Containing Materials in Schools and State Buildings (includes all training and accreditation); and LAC 33:III.5151, Emission Standard for Asbestos for any renovations or demolitions. See also Section 6.0 Conditions and Mitigation Measures

Resource Area	Impact Negligible	Impact Minor	Impact Moderate	Impact Major	Impact Summary	Agency Coordination / Permits	Mitigation
Vegetation and Wildlife	X				The Fish and Wildlife Coordination Act (FWCA) provides the basic authority for the USFWS involvement in evaluating impacts to fish and wildlife from proposed water resource development projects. It requires that fish and wildlife resources receive equal consideration to other project features. It also requires Federal agencies that construct, license or permit water resource development projects to first consult with the Service (and the National Marine Fisheries Service in some instances) and State fish and wildlife agency regarding the impacts on fish and wildlife resources and measures to mitigate these impacts. The site is developed in an urban area with little native vegetation present. In addition the project does not involve the diversion, modification, or control of a waterway.	A SOV to LDWF was prepared and sent out by the FEMA on 05/15/2015. The response period ends on 06/15/2015, at which time FEMA-EHP will update this EA to reflect comments and conditions received by the regulatory agency. USFWS determination of no effect on Federal trust resources, dated 5/15/15. See Appendix C External Agency Correspondence	Extreme care must be taken during the construction process through the appropriate use and maintenance of BMP's. See also Section 6.0 Conditions and Mitigation Measures

Resource Area	Impact Negligible	Impact Minor	Impact Moderate	Impact Major	Impact Summary	Agency Coordination / Permits	Mitigation
Threatened and Endangered Species (Endangered Species Act Section 7)	X				The Endangered Species Act (ESA) of 1973 prohibits the taking of listed, threatened, and endangered species unless specifically authorized by permit from the USFWS or the National Marine Fisheries Service. No rare, threatened, or endangered species are present on the site. No impacts to rare, threatened, or endangered species or critical habitats are anticipated for the proposed project. No state or Federal parks, wildlife refuges, or wildlife management areas are known at the site.	As previously directed by USFWS, FEMA utilized the self-screening website www.fws.gov/lafayette to make a preliminary no effects determination on Federal trust resources, dated 5/15/15. A SOV to LDWF was prepared and sent out by the FEMA on 05/15/2015. The response period ends on 06/15/2015, at which time FEMA-EHP will update this EA to reflect comments and conditions received by the regulatory agency. If substantial comments are received, this EA will be republished, if not this document will become final. See Appendix C External Agency Correspondence	Any changes to the scope or location of the proposed project or if the project has not been initiated one year from the date of the solicitation of views (May 15, 2016), the applicant is responsible for coordinating with United States Fish and Wildlife Service. See also Section 6.0 Conditions and Mitigation Measures
Bald and Golden Eagle Protection Act of 1940 (Title 16 United States Code [USC] §§668-668c)	X				The bald eagle is protected under the Bald and Golden Eagle Protection Act, which prohibits anyone, without permission from the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs. The Act provides criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof." The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." Bald eagles are known to occur in Orleans Parish.	Internet Resource: USFWS Bald Eagle Management Guidelines and Conservation Measures – The Bald and Golden Eagle Protection Act	If a bald eagle or its nest is spotted within 1,500 feet of the project site during the months of October through mid-May, the applicant must cease construction activities and contact LDWF and USFWS immediately. All correspondence must be documented and remain in the project permanent files. See also Section 6.0 Conditions and Mitigation Measures.

Resource Area	Impact Negligible	Impact Minor	Impact Moderate	Impact Major	Impact Summary	Agency Coordination / Permits	Mitigation
Cultural Resources (National Historic Preservation Act Section 106)	X				FEMA determined that there are no historic properties as defined in 36 CFR 800.16(l) within the Area of Potential Effects (APE) for the City Barn Drainage Improvements Project, the Eastwood Drainage Improvements Project, and the Markham-Peachtree Storm Drain Line Improvement Project (Channel Reconstruction). Therefore, FEMA has determined a finding of No Historic Properties Affected for this Undertaking (i.e., No Impact to Cultural Resources). The applicant must comply with the National Historic Preservation Act (NHPA) conditions set forth in this EA.	FEMA submitted a finding of No Historic Properties Affected to the Louisiana State Historic Preservation Office and the affected tribes, (Alabama-Coushatta Tribe of Texas [ACTT], Choctaw Nation of Oklahoma [CNO], Coushatta Tribe of Louisiana [CT], Jena Band of Choctaw Indians [JBCI], Mississippi Band of Choctaw Indians [MBCI], and the Tunica-Biloxi Tribe of Louisiana [TBTL]) per FEMA's Programmatic Agreement dated August 17, 2009 and amended on July 22, 2011 (PA). The consultation letter was submitted on May 18, 2015 for a 30-day consultation period. FEMA anticipates concurrence from all parties, but no responses have been received to date. (See Appendix C)	If archaeological artifacts or features (prehistoric or historic) are discovered during the course of FEMA funded work, the Applicant must ensure that their Contractor stops work in the vicinity of the discovery and takes all reasonable measures to avoid and minimize harm to the discovery. The Applicant shall inform GOHSEP and FEMA of the discovery and FEMA will deploy an archaeologist to the location to conduct a site condition assessment. The Applicant will not proceed with work until FEMA has completed consultation with the SHPO and Tribes on the treatment of the discovery. Unmarked If human remains are discovered during the course of FEMA funded work, the Applicant and the Applicant's Contractor are responsible for immediately halting work within the vicinity of the human remains finding. The Applicant will immediately notify GOHSEP, FEMA, the local Police Department, and the local Coroner's Office of the discovery. The local Coroner's Office will assess the nature and age of the human skeletal remains. If the Coroner's Office determines that the human skeletal remains are older than 50 years of age, the Louisiana Division of Archaeology will take jurisdiction over the remains. Within twenty-four (24) hours, FEMA will notify the Louisiana Division of Archaeology (225-342-8170) of the finding. Within seventy-two (72) hours, FEMA will take the lead in working with the Louisiana Division of Archaeology and other interested parties, as necessary, to ensure compliance with the Louisiana Unmarked Human Burial Sites Preservation Act (R.S. 8:671 et seq.) and other applicable laws. In addition, the Applicant must afford FEMA the opportunity to comply with the "Human Remains Policy" set forth by the Advisory Council on Historic Preservation (ACHP). See also Section 6.0.

Resource Area	Impact Negligible	Impact Minor	Impact Moderate	Impact Major	Impact Summary	Agency Coordination / Permits	Mitigation
Environmental Justice Executive Order (EO 12898) Socioeconomics	X				EO 12898, entitled "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," was signed on February 11, 1994. The EO directs federal agencies to make achieving environmental justice part of their missions by identifying and addressing, as appropriate, disproportionately high adverse human health, environmental, economic, and social effects of its programs, policies and activities on minority or low-income populations. According to the 2010 U.S. Census Demographic Profile of Slidell, LA: the total population is 27,068 with 17% Black, 76% White, and 6.3% Hispanic. The median household income is $48,122 and 16.3% of the population is below poverty level. No disproportionately high adverse human health, environmental, economic, and social effects are expected on minority or low-income populations as a result of the proposed activities. The drainage improvements are expected to be beneficial to all populations.	U.S. Census Bureau, American Fact Finder, Data for Slidell, Louisiana accessed May 2015	

Resource Area	Impact Negligible	Impact Minor	Impact Moderate	Impact Major	Impact Summary	Agency Coordination / Permits	Mitigation
Resource Recovery and Conservation Act (RCRA)	X				The objectives of the RCRA are to protect human health and the environment from the potential hazards of waste disposal, to conserve energy and natural resources, to reduce the amount of waste generated, and to ensure that wastes are managed in an environmentally sound manner. RCRA regulates the management of solid waste (e.g., garbage), hazardous waste, and underground storage tanks holding petroleum products or certain chemicals. Project is to improve the drainage canal from the Olive Street Bridge to the existing Markham-Peachtree box culvert, and replace the existing Markham-Peachtree box culvert with a 10 foot wide by 6 foot high typical concrete-lined open channel with vertical side walls.	A SOV to LDEQ was prepared and sent out by the FEMA on 05/15/2015. The response period ends on 06/15/2015, at which time FEMA-EHP will update this EA to reflect comments and conditions received by the regulatory agency. See Appendix C External Agency Correspondence	If any solid or hazardous wastes, or soils and/or groundwater contaminated with hazardous constituents are encountered during the project, notification to LDEQ's SPOC at (225) 219-3640 is required. Additionally, precautions should be taken to protect workers from these hazardous constituents. The applicant is responsible for complying with the Toxic Substances Control Act (TSCA) Section 402(c)(3) requirements as well as to the satisfaction of the governing local, state, and federal agencies to ensure that project activities are managed, administered, and/or handled by certified/accredited technicians, contractors, and providers. The applicant is responsible complying with all local, state, and federal laws and ensuring that project activities are coordinated with the LDEQ for abatement activities. See also Section 6.0 Conditions and Mitigation Measures
Noise	X				Noise is commonly defined as unwanted or unwelcome sound, and most commonly measured in decibels (dB) on the A-weighted scale, which is the scale most similar to the range of sounds that the human ear can hear. Sound is federally regulated by the Noise Control Act of 1972, which charges the EPA with preparing guidelines for acceptable ambient noise levels. EPA guidelines, and those of many other federal agencies, state that outdoor sound levels in excess of 55 dB day-night average sound level are "normally unacceptable" for noise-sensitive land uses including residences, schools, or hospitals. During the construction period there would be a short-term increase in noise levels.	St Tammany Parish Noise Ordinance, Article IV, Noise and Sound Section 14-035.00	St Tammany Parish limits noise levels by receiving land use in residential, public, commercial, and industrial areas to decibel levels of 60 during the "daytime" hours of 7 AM to 10 PM. Construction activities should be limited to this schedule on weekdays. Mitigation and abatement measures will be required to reduce the noise levels to a range that would be considered acceptable. See also Conditions Section 6.0.

Resource Area	Impact Negligible	Impact Minor	Impact Moderate	Impact Major	Impact Summary	Agency Coordination / Permits	Mitigation
Public Safety and Access	X				Congress passed the Occupational and Safety Health Act to ensure worker and workplace safety. The goal was to make sure employers provide their workers a place of employment free from recognized hazards to safety and health, such as exposure to toxic chemicals, excessive noise levels, mechanical dangers, heat or cold stress, or unsanitary conditions. During construction heavy equipment would be located in a populated area. Impacts to public safety and security would be minimized with mitigation measures, including following Occupational Safety and Health Administration (OSHA) regulations.		The contractor must place fencing around the work area perimeters to protect nearby residents from vehicular traffic. To minimize worker and public health and safety risks from project construction and closure, all construction and closure work must be done using qualified personnel trained in the proper use of construction equipment, including all appropriate safety precautions. Additionally, all activities must be conducted in a safe manner in accordance with the standards specified in OSHA regulations and the USACE safety manual. The contractor must post appropriate signage and fencing to minimize potential adverse public safety concerns. See also Section 6.0 Conditions and Mitigation Measures
Traffic and Transportation	X				Traffic volumes near the respective work access areas would increase temporarily during work activities.		Appropriate signage and barriers should be in place prior to construction activities in order to alert pedestrians and motorists of project activities and traffic pattern changes. The contractor should implement traffic control measures, as necessary. See also Section 6.0 Conditions and Mitigation Measures
Hazardous Materials and Toxic Wastes	X				The management of hazardous materials is regulated under various federal and state environmental and transportation laws and regulations, including the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); the Toxic Substances Control Act of 1976 (TSCA); the Emergency Planning and Community Right-to-Know Act; the Hazardous Materials Transportation Act; and the Louisiana Voluntary Investigation and Remedial Action statute. The purpose of the regulatory requirements set forth under these laws is to ensure the protection of human health and the environment through proper management (identification, use, storage, treatment, transport, and disposal) of these materials. Some of these laws provide for the investigation and cleanup of sites already contaminated by releases of hazardous materials, wastes, or substances. Per NEPAssist database search, there are no Louisiana State Brownfield sites located within 0.5 miles of the site. No Superfund or Toxic Release Inventory sites were listed.	A SOV was prepared and sent to the LDEQ by FEMA on May 15, 2015. The response period ends on 06/15/2015, at which time FEMA-EHP will update this EA to reflect comments and conditions received by the regulatory agency. NEPAssist-USEPA website http://nepassisttool.epa.gov/nepassist/entry.aspx referenced 5/14/2015 (See Appendix C External Agency Correspondence).	If hazardous materials are unexpectedly encountered in the project area during the proposed construction operations, appropriate measures for the proper assessment, remediation, management and disposal of the contamination would be initiated in accordance with applicable federal, state, and local regulations. The contractor would be required to take appropriate measures to prevent, minimize, and control the spill of hazardous materials in the construction area. If any solid or hazardous wastes, or soils and/or groundwater contaminated with hazardous constituents are encountered during the project, notification to LDEQ's Single-Point-of-Contact (SPOC) at (225) 219-3640 is required. Additionally, precautions should be taken to protect workers from these hazardous constituents. The LDNR Office of Conservation should be contacted at (225) 342-5540 if any unregistered wells of any type are encountered during construction work. For pipelines and other underground hazards, Louisiana One Call should be contacted at 800-272-3020 prior to commencing operations. See also Section 6.0 Conditions and Mitigation Measures

4.2 Hydrology and Floodplains

The applicant's consultant, Volkert, studied the current hydrology of the exiting conditions of the Markham-Peachtree WP-20 Canal and Box Culvert. Per the Hydrology and Hydraulics Study (H &H) prepared by Volkert, dated March 2014, within the project area there are a total of 106 structures that fall within the 100 year flood limits. This drainage is part of the West Schneider Drainage Basin, which drains to Lake Ponchartrain via the Schneider Canal Pump Station. The area near and upstream of the culvert has been an area prone to frequent flooding (Volkert, 2014). The drainage area at the inlet of the Markham-Peachtree Culvert is approximately 275 acres, with an additional 875 acres contributing to the reaches downstream of the culvert to the Schneider Canal outfall (Volkert, 2014).

The United States Army Corps of Engineers (USACE) regulates the discharge of dredged or fill material into waters of the U.S., including wetlands, pursuant to Section 404 of the CWA. USACE also regulates the building of any structures in waters of the U.S. pursuant to Section 10 of the Rivers and Harbors Act (RHA). There are no wild and scenic rivers, as designated under the Wild and Scenic Rivers Act (WSRA), in or near the property.

Jurisdictional wetlands are defined as those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. The property contains Freshwater Emergent wetlands to the south and east of the property. Jurisdictional wetland determinations are regulated by the USACE pursuant to the CWA. In addition, Executive Order 11990, Protection of Wetlands, directs federal agencies to take actions to minimize the destruction, loss, or degradation of wetlands (Figure 3.1).

Alternative 1- No Action: The No Action alternative would have no effect on wetlands or other waters of the U.S. and would not require permits regulated under Sections 401 or 404 of the CWA, or Section 10 regulated under the RHA. In addition this alternative would not have any effect on the floodplain.

Alternative 2- Proposed Action- During construction there is the potential to impact surface waters through minor erosion and runoff. Storm water runoff could carry sediment offsite into the receiving streams or bodies of water. In order to minimize impacts to waters of the U.S., the contractor is required to implement Best Management Practices (BMPs) that meet the Louisiana Department of Environmental Quality's (LDEQ) permitting specifications for storm water discharge regulated under Section 402 of the Clean Water Act (CWA). This includes designing the site with specific construction measures to reduce or eliminate run-off impacts. Any adverse effects to water quality associated with the construction of the projects would be short term and minimized by the measures described above. There would be no long-term effects to water quality because once structures are in place, natural vegetation will reemerge.

FEMA initiated consultation with the USACE on May 15, 2015 regarding potential impacts to waters of the U.S., including wetlands. The response period ends on 06/15/2015, at which time FEMA-EHP will update this EA to reflect comments and conditions received by the regulatory agency. If substantial comments are received, this EA will be republished, if not this document will become final. The applicant is required to coordinate with USACE for any required permits and/or authorizations.

Any changes or modifications to the proposed project will require a revised determination. Other off-site locations of activities such as borrow, disposals, haul-and detour-roads, and work mobilization site developments may be subject to the Department of the Army regulatory requirements and may impact a Department of Army project.

Executive Order 11988 (Floodplain Management) requires federal agencies to avoid or minimize development in the floodplain except when there are no practicable alternatives. St. Tammany Parish enrolled in the National Flood Insurance Program (NFIP) on April 23, 1971. According to Preliminary Digital Flood Insurance Rate Map (DFIRM) 22103C0495F, dated 4/30/08, the site is located in zone AE (EL 11) (Figure 4.0).

In accordance with EO 11988 (Floodplain Management) and EO 11990 (Wetland Protection), an 8 Step Process assessment was prepared by FEMA to evaluate the impacts related to the construction of the Proposed Action within the 100-year floodplain (Appendix C). A public notice was published in the local newspaper, The Times-Picayune, on Wednesday, May 20, Friday, May 22, 2015 and Sunday May 24, 2015. This public notice will also run in the local newspaper, The St Tammany Farmer, on Thursdays, May 21 and May 28, 2015 to inform the public of the intent to implement the Proposed Action.

The public comment period of 15 days will allow interested citizens to review the Draft Environmental Assessment and associated documents, and provide comment. The 8-Step Process reviewed practicable alternatives, identified direct and indirect impacts, minimization and mitigation of impacts, and provided an evaluation of the Proposed Action's location within the floodplain. Based on the 8-Step Process evaluation, FEMA has determined that no other practicable alternative to the Proposed Action would meet the purpose and need of the project.

No significant direct impact would occur to floodplains under the Proposed Action; however, indirect short-term impacts to the surrounding area could occur during construction. Construction BMPs will be included into the daily construction activities.

To comply with Executive Order 11988, Floodplain Management, FEMA is required to follow the procedure outlined in 44 CFR Part 9 to assure that alternatives to the proposed action have been considered. This process, also known as the "Eight Step Planning Process," has been applied to this mitigation project and is described in Appendix C. This action must be coordinated with the local floodplain manager as well as comply with

local floodplain ordinances. For the purposes of this study, there are no practical alternatives to the proposed action. Local ordinance calls for a no net fill in St. Tammany Parish. Per this ordinance "net fill" is defined "as the placement of any fill material that results in any increase in the surface elevation of property from its natural or pre-development state."

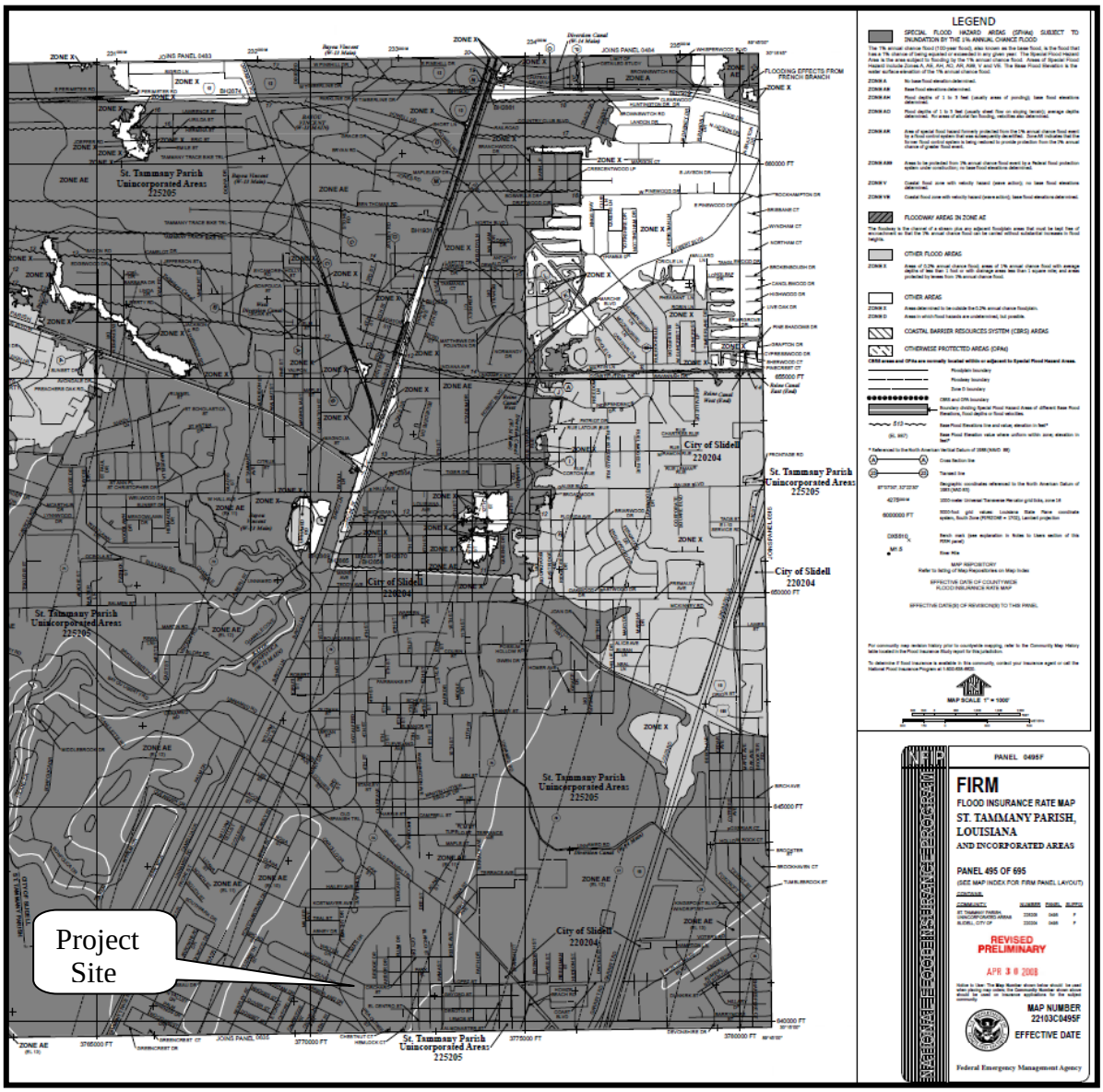


Figure 4: Preliminary Digital Flood Insurance Rate Map, Community-Panel Number 22103C0495F, 04/30/2008, St. Tammany Parish, Louisiana (and Incorporated Areas)

5.0 CUMULATIVE IMPACTS

The CEQ's regulations state that cumulative impacts represent the "impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (Federal or non-Federal) or person undertakes such other actions." Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 C.F.R. § 1508.7).

In its comprehensive guidance on cumulative impacts analysis under NEPA, the CEQ notes that: "[t]he range of actions that must be considered includes not only the project proposal, but all connected and similar actions that could contribute to cumulative effects" (CEQ, 1997). The term "similar actions" may be defined as "reasonably foreseeable or proposed agency actions [with] similarities that provide a basis for evaluating the environmental consequences together, such as common timing or geography" (40 C.F.R. § 1508.25[a][3]; see also 40 C.F.R. §§ 1508.25[a][2] and [c]).

Not all potential issues identified during cumulative effects scoping need be included in an EA. Because some effects may be irrelevant or inconsequential to decisions about the proposed action and alternatives, the focus of the cumulative effects analysis should be narrowed to important issues of national, regional, or local significance. To assist agencies in this narrowing process, CEQ lists seven (7) basic questions, including: (1) is the proposed action one of several similar past, present, or future actions in the same geographic area; (2) do other activities (governmental or private) in the region have environmental effects similar to those of the proposed action; (3) have any recent or ongoing NEPA analyses of similar actions or nearby actions identified important adverse or beneficial cumulative effect issues; and, (4) has the impact been historically significant, such that the importance of the resource is defined by past loss, past gain, or investments to restore resources (CEQ, 1997).

It is normally insufficient when analyzing the contribution of a proposed action to cumulative effects to merely analyze effects within the immediate area of the proposed action (CEQ, 1997, pg. 12). Geographic boundaries should be expanded for cumulative effects analysis, and conducted on the scale of human communities, landscapes, watersheds, or airsheds. Temporal frames should be extended to encompass additional effects on the resources, ecosystems, and human communities of concern. A useful concept in determining appropriate geographic boundaries for a cumulative effects analysis is the project impact zone; that is, the area (and resources within that area) that could be affected by the proposed action. The area appropriate for analysis of cumulative effects will, in most instances, be a larger geographic area occupied by resources outside of the project impact zone.

In the City of Slidell and surrounding areas in St Tammany Parish, the City Barn, Eastwood drainage projects, as well as other FEMA funded projects, when added to the proposed action at Markham-Peachtree, would not have a cumulative impact on the

human environment as the vast majority of these projects restore, repair, mitigate, or replace existing structures or facilities.

6.0 CONDITIONS AND MITIGATION MEASURES

Based upon the studies and consultations undertaken in this Environmental Assessment (EA), several conditions and mitigation measures must be taken by the applicant prior to and during project implementation.

- Any changes or modifications to the proposed project will require a revised determination. Off-site locations of activities such as borrow, disposals, haul- and detour roads, and work mobilization site developments may be subject to USACE regulatory requirements.

- A Department of the Army Section 404 permit and Rivers and Harbors Act Section 10 permit may be required prior to the deposition or redistribution of dredged or fill material. Applicant must contact USACE prior to any work in the waterway or the wetland.

- If any of the proposed work is located in wetlands or other areas subject to the jurisdiction of the U.S. Army Corps of Engineers (USACE), USACE should be contacted directly to inquire about the possible necessity for permits. If a USACE permit is required, part of the application process may involve a water quality certification from LDEQ.

- Implement construction Best Management Practices (BMPs); install silt fences/straw bales to reduce downslope sedimentation. Area soils must be covered and/or wetted during construction.

- If fill is stored on site as part of unit installation or removal, the contractor is required to appropriately cover it.

- Construction contractor is required to obtain applicable Louisiana Pollutant Discharge Elimination System (LPDES) permit, and implement stormwater pollution prevention plan.

- The applicant is required to coordinate with the local floodplain administrator regarding floodplain permit(s) or authorizations prior to the start of any activities.

- All coordination pertaining to these activities and applicant compliance with any conditions should be documented and copies forwarded to the state and FEMA for inclusion in the permanent project files.

- As per 44 CFR 9.11 (d) (9), mitigation or minimization standards must be applied, where possible. The replacement of building contents, materials and equipment should be, where possible, wet or dry-proofed, elevated, or relocated to or above the Preliminary DFIRM BFE or local floodplain ordinances, whichever is more stringent.

- All precautions must be observed to control nonpoint source pollution from construction activities. LDEQ has stormwater general permits for construction areas equal to or greater than one (1) acre. The applicant must contact the LDEQ Water Permits Division at (225) 219-9371 to determine if the proposed project requires a permit.

- Please be advised that water softeners generate wastewaters that may require special limitations depending on local water quality considerations. Therefore if the applicant's water system improvements include water softeners, the applicant is to contact the LDEQ Water Permits Department to determine if special water quality-based limitations will be necessary.

- Any renovation or remodeling must comply with Louisiana Administrative Code (LAC) 33:III.Chapter 28, Lead-Based Paint Activities; LAC 33:III.Chapter 27, Asbestos-Containing Materials in Schools and State Buildings (includes all training and accreditation); and LAC 33:III.5151, Emission Standard for Asbestos for any renovations or demolitions.

- If any solid or hazardous wastes, or soils and/or groundwater contaminated with hazardous constituents are encountered during the project, notification to LDEQ's Single-Point-of-Contact (SPOC) at (225) 219-3640 is required. Additionally, precautions must be taken to protect workers from these hazardous constituents.

- The contractor must observe all precautions to protect the groundwater of the region.

- The applicant is responsible for coordinating with and obtaining any required permit(s) from the LDNR Coastal Management Division prior to initiating work. The applicant shall comply with all conditions of the required permit. All coordination pertaining to these activities and applicant compliance with any conditions should be documented and copies forwarded to the state and FEMA for inclusion in the permanent project files.

- Vehicle operation times would be kept to a minimum. Area soils must be covered and/or wetted during construction to minimize dust.

- Any changes to the scope or location of the proposed project or if the project has not been initiated one year from the date of the solicitation of views (May 15, 2016), the applicant is responsible for coordinating with United States Fish and Wildlife Service.

- If a bald eagle or its nest is spotted within 1,500 feet of the project site during the months of October through mid-May, the applicant must cease construction activities and contact LDWF and USFWS immediately. All correspondence must be documented and remain in the project permanent files.

- The applicant is responsible for complying with the Toxic Substances Control Act (TSCA) Section 402(c)(3) requirements as well as to the satisfaction of the governing local, state, and federal agencies to ensure that project activities are managed, administered, and/or handled by certified/accredited technicians, contractors, and providers. The applicant is responsible complying with all local, state, and federal laws and ensuring that project activities are coordinated with the LDEQ for abatement activities.

- St Tammany Parish limits noise levels by receiving land use in residential, public, commercial, and industrial areas to decibel levels of 60 during the "daytime" hours of 7 AM to 10 PM. Construction activities should be limited to this schedule on weekdays. Mitigation and abatement measures will be required to reduce the noise levels to a range that would be considered acceptable.

- The contractor must place fencing around the work area perimeters to protect nearby residents from vehicular traffic.

- To minimize worker and public health and safety risks from project construction and closure, all construction and closure work must be done using qualified personnel trained in the proper use of construction equipment, including all appropriate safety precautions. Additionally, all activities must be conducted in a safe manner in accordance with the standards specified in OSHA regulations and the USACE safety manual.

- The contractor must post appropriate signage and fencing to minimize potential adverse public safety concerns.

- Appropriate signage and barriers should be in place prior to construction activities in order to alert pedestrians and motorists of project activities and traffic pattern changes.

- If hazardous materials are unexpectedly encountered in the project area during the proposed construction operations, appropriate measures for the proper assessment, remediation, management and disposal of the contamination would be initiated in accordance with applicable federal, state, and local regulations. The contractor would be required to take appropriate measures to prevent, minimize, and control the spill of hazardous materials in the construction area.

- The LDNR Office of Conservation should be contacted at (225) 342-5540 if any unregistered wells of any type are encountered during construction work.

- For pipelines and other underground hazards, Louisiana One Call should be contacted at 800-272-3020 prior to commencing operations.

- If archaeological artifacts or features (prehistoric or historic) are discovered during the course of FEMA funded work, the Applicant must ensure that their Contractor stops work in the vicinity of the discovery and takes all reasonable measures to avoid and minimize harm to the discovery. The Applicant shall inform GOHSEP and FEMA of the discovery and FEMA will deploy an archaeologist to the location to conduct a site condition assessment. The Applicant will not proceed with work until FEMA has completed consultation with the SHPO on the treatment of the discovery.

- If human remains are discovered during the course of FEMA funded work, the Applicant and the Applicant's Contractor are responsible for immediately halting work within the vicinity of the human remains finding. The Applicant will immediately notify GOHSEP, FEMA, the local Police Department, and the local Coroner's Office of the discovery. The local Coroner's Office will assess the nature and age of the human skeletal remains. If the Coroner's Office determines that the human skeletal remains are older than 50 years of age, the Louisiana Division of Archaeology will take jurisdiction over the remains. Within twenty-four (24) hours, FEMA will notify the Louisiana Division of Archaeology (225-342-8170) of the finding. Within seventy-two (72) hours, FEMA will take the lead in working with the Louisiana Division of Archaeology and other interested parties, as necessary, to ensure compliance with the Louisiana Unmarked Human Burial Sites Preservation Act (R.S. 8:671 *et seq.*) and other applicable laws. In addition, the Applicant must afford FEMA the opportunity to comply with the "Human Remains Policy" set forth by the Advisory Council on Historic Preservation (ACHP).

Failure to comply with these conditions may make part or all of these projects ineligible for FEMA funding.

7.0 PUBLIC INVOLVEMENT

The public will be invited to comment on the proposed action. A display notice was published in the following newspapers: the St. Tammany Farmer and the Times Picayune. Additionally the Environmental Assessment was made available at the St. Tammany Parish Library- Slidell Branch. The Environmental Assessment was published on FEMA's and the Parish's official websites. A copy of the Public Notice is attached in Appendix F.

8.0 AGENCY COORDINATION

Environmental Protection Agency
U.S. Fish and Wildlife Service
Louisiana Department of Environmental Quality
Louisiana Department of Wildlife and Fisheries
Louisiana Department of Natural Resources
National Oceanic and Atmospheric Administration
USDA National Resources Conservation Service
Louisiana State Historic Preservation Office/r
Tribal Historic Preservation Office/r and/or cultural offices

9.0 LIST OF PREPARERS

Tiffany Spann-Winfield, Deputy Environmental Liaison Officer
Merina Christoffersen, Environmental Protection Specialist
Melanie Pitts, Lead Environmental Specialist
Jamie Schexnayder, Environmental Protection Specialist
LeSchina Holmes, Lead Environmental Specialist
Maria Tavaszi, Historic Preservation Specialist

10.0 REFERENCES

City of Slidell, Louisiana. History of Slidell. [Online] http://www.slidell.la.us/history.php

Environmental Protection Agency. Enviromapper. [Online]: http://www.epa.gov/enviro/katrina/emkatrina.html

Environmental Protection Agency. 2006. Nonattainment Status for each Parish by year. [Online]: http://www.epa.gov/oar/oaqps/greenbk/anay.html

Environmental Protection Agency. Brownfields. [Online]: http://oaspub.epa.gov/enviro/bms_report.get_list?juris_value=&juris_search_type=Beginning+With&juris_type_label=-1&state_code=LA&zip_code=&proj_value=&proj_search_type=Beginning+With&rec_value=&rec_search_type=Beginning+With&cfda_type=NULL&CFDA_ID

=&prop_value=&prop_search_type=Beginning+With&propaddr_name=&propcity_name=&propstate_code=LA

Environmental Protection Agency. Envirofacts. [Online]: http://www.epa.gov/enviro/

Louisiana Department of Environmental Quality. Air quality data. [Online]: http://www.deq.louisiana.gov/portal/tabid/37/Default.aspx?Search =non-attainment+areas

Louisiana Department of Environmental Quality. Authorized Debris Sites (updated 4/23/09). [Online]: http://159.39.17.27/Debris_Sites/

Louisiana Department of Environmental Quality. Electronic Document Management System. [Online]: http://www.deq.louisiana.gov/portal/tabid/2604/Default.aspx

Louisiana Department of Environmental Quality.

Louisiana Department of Environmental Quality. Louisiana State Brownfields List. [Online]: http://www.deq.louisiana.gov/portal/tabid/2620/Default.aspx

Louisiana Department of Environmental Quality. Voluntary Remediation Program List. [Online]: http://www.deq.louisiana.gov/portal/Portals/0/RemediationServices/VRP/form_5226_current.pdf

Louisiana Department of Natural Resources. SONRIS Integrated Applications. [Online]: http://sonris-www.dnr.state.la.us/www_root/sonris_portal_1.htm

National Oceanic and Atmospheric Administration. Coastal Barrier Resources Act. [Online] Available: http://www.csc.noaa.gov/cmfp/reference /Coastal_Barrier _Resources_Act.htm

Richard C. Lambert Consultants, L.L.C. 100% Final Plans 03/12/15, Franz. J. Zemmer, P.E.

St. Tammany Parish Government. Land Use Ordinance. [Online] Available: http://www.stpgov.org/code/content.php?parent=2517

U.S. Census Bureau. 2010 Census Data for Slidell, Louisiana. [Online]: http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF

U. S. Department of Agriculture. Soil Conservation Service. 1990. *Soil Survey of St. Tammany Parish, Louisiana.*

U.S. Fish and Wildlife Service. Endangered species data. [Online] Available: http://www. fws.gov/endangered/

Volkert. Hydrology and Hydraulics Study (H &H) prepared March 2014

APPENDIX A
SITE PHOTOS

Photo 1: Looking northeast at the Markham Peachtree Beginning of Channel Reconstruction Project. At this location the bridge and bents are proposed for reconstruction.

Photo 2: Markham Peachtree Beginning of Channel Reconstruction Project Looking NE at the Olive St Bridge. At this location the right bank would be graded to a 2:1 slope and vegetated. Leftbank unchanged. Both banks would have chain link fencing installed the entire length to prevent trespass and protect the public.

Photo 3: Markham Peachtree Beginning of Channel Reconstruction Project. At this location only the right bank would be graded and laid back to a 2:1 slope for about 185 linear feet

Photo 4: Markham Peachtree approx. first quarter of Channel Reconstruction Project. At this location both banks would be graded and laid back to a 2:1 slope and revegetated for about 650 linear feet

Photo 5: Markham Peachtree approx. first quarter of Channel Reconstruction Project. At this location both banks would be graded and laid back to a 2:1 slope and revegetated for about 650 linear feet

Photo 6: Markham Peachtree approx. first quarter of Channel Reconstruction Project. At this location both banks would be graded and laid back to a 2:1 slope and revegetated for about 650 linear feet.

Photo 7: Entrance to existing 10'x4' Box Culvert to be replaced with an open channel

Photo 8: A grassy area above the box culvert currently used for parking by a swimming pool facility would potentially be reconstructed by clearing a wooded lot on the left.

Photo 9: If a parking lot would be constructed by clearing the wooded lot, small wetlands may be impacted

Photo 10: If a parking lot would be constructed by clearing the wooded lot, small wetlands may be impacted

Photo 11: The removal of the existing box culvert and construction of an open channel would potentially impact homeowners backyards that have fences on or within the right of way of the Parish Drainage District.

Photo 12: The removal of the existing box culvert and construction of an open channel would potentially impact homeowners backyards that have fences on or within the right of way of the Parish Drainage District.

Photo 13: The newly constructed channel would empty downstream at a splashdown site where a concrete apron would be installed in a pool at two converging drainage canals. The concrete box culvert outfall is in this location at this time.

Photo 14: Outfall of 10'x4' Box Culvert

Photo 15: After the Box Culvert Outfall, there is a channel bifurcation of the WP-20 and Southside Lateral Canals

Photo 16: After the Box Culvert Outfall, there is a long straight section of channel.

Photo 17: After the Box Culvert Outfall, there is a long straight section of channel that has a pedestrian concrete culvert crossing. This 18 foot section of arch pipe allows for a walkway across the WP-20 Canal south of the junction.

APPENDIX B

SITE PLANS FOR PROPOSED DRAINAGE IMPROVEMENTS

March 27, 2015 3:31 PM

MARKHAM-PEACHTREE STORM DRAIN LINE IMPROVEMENTS PROJECT

100% FINAL DESIGN

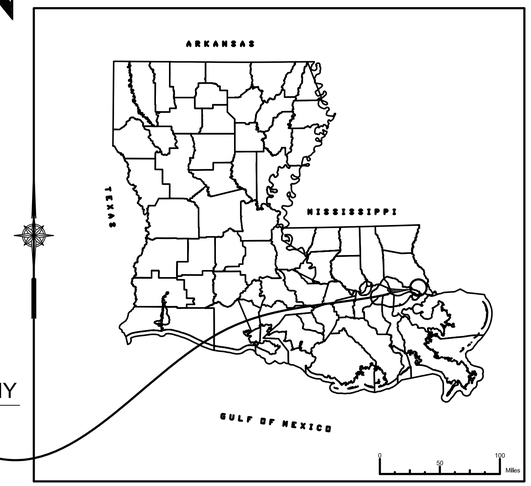
GOHSEP PROJECT NO. 1603n-103-0043
CITY OF SLIDELL PROJECT NO. 100-117
VOLKERT PROJECT NO. 447300.80

INDEX TO SHEETS

SHEET NO.	SHEET TITLE
0.0	TITLE SHEET & VICINITY MAP
1.0	SUMMARY OF ESTIMATED QUANTITIES
2.0	GENERAL NOTES AND LEGEND
3.1–3.4	TYPICAL SECTIONS
4.1–4.4	SITE LAYOUT & FENCING PLAN
5.1–5.7	PLAN & PROFILE
6.1–6.4	GEOMETRICS & CONTROL POINTS
7.1–7.4	UTILITY PLAN
8.1–8.4	TEMPORARY EROSION CONTROL PLAN
9.1–9.2	HEADWALL DETAILS
10.0	DRAINAGE DETAILS
11.0	UTILITY DETAILS
12.1–12.2	FENCING & SAFETY DETAILS
13.0–13.2	SLOPE PAVING & RAMP DETAILS
14.1–14.2	FLUME DETAILS
15.1–15.9	CHANNEL CROSS SECTIONS
16.1–16.4	BORING LOGS

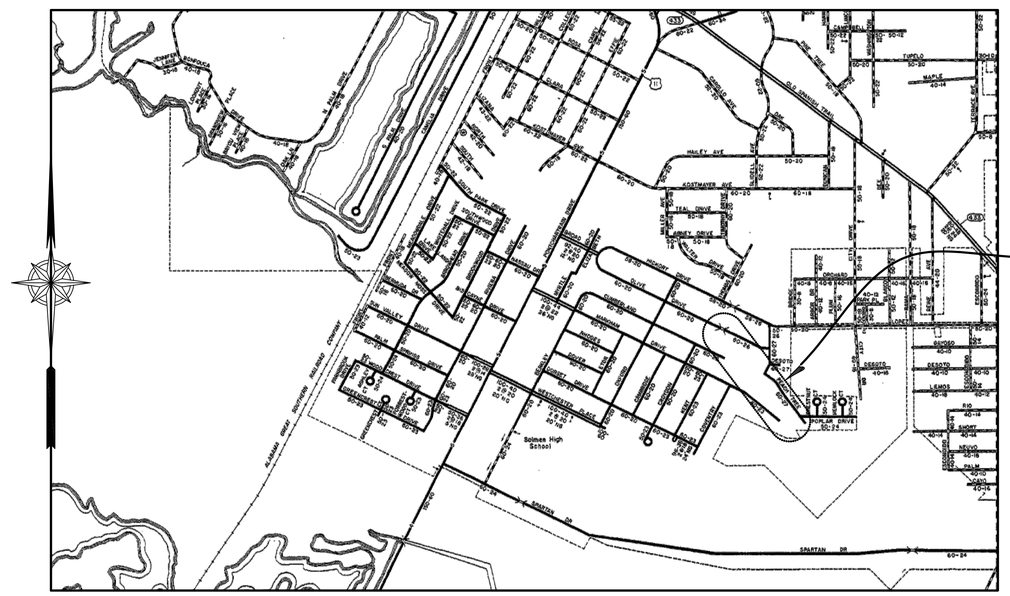
TOTAL NUMBER OF SHEETS = 54

PROJECT LOCATION
SLIDELL, LOUISIANA
PARISH OF ST. TAMMANY



VICINITY MAP

PROJECT LOCATION
WP-20 CANAL: STATION 100+00 TO 115+96
SOUTH LATERAL CANAL: STATION 115+96 TO 117+63



PROJECT LOCATION MAP
SCALE: 1" = 1,000'

RECOMMENDED FOR APPROVAL BY:

ANTHONY S. EVETT, P.E. DATE
VOLKERT, INC.

CALL LOUISIANA ONE CALL 811 OR 1-800-272-3020

LOUISIANA STATE LAW, SECTION R.S.40:1749.15 REQUIRES EXCAVATORS AND DEMOLISHERS TO NOTIFY A REGIONAL NOTIFICATION CENTER BY TELEPHONE 48 TO 120 HOURS IN ADVANCE OF ANY EXCAVATION OR DEMOLITION ACTIVITY. THE OWNERS/OPERATORS OF ANY UNDERGROUND FACILITY MUST THEN MARK THE AREA OR PROVIDE INFORMATION THAT WILL ENABLE AN EXCAVATOR OR DEMOLISHER TO DETERMINE THE LOCATION OF UNDERGROUND FACILITIES.

REV.	DATE	DESCRIPTION	BY
5			
4			
3			
2			
1			

VOLKERT

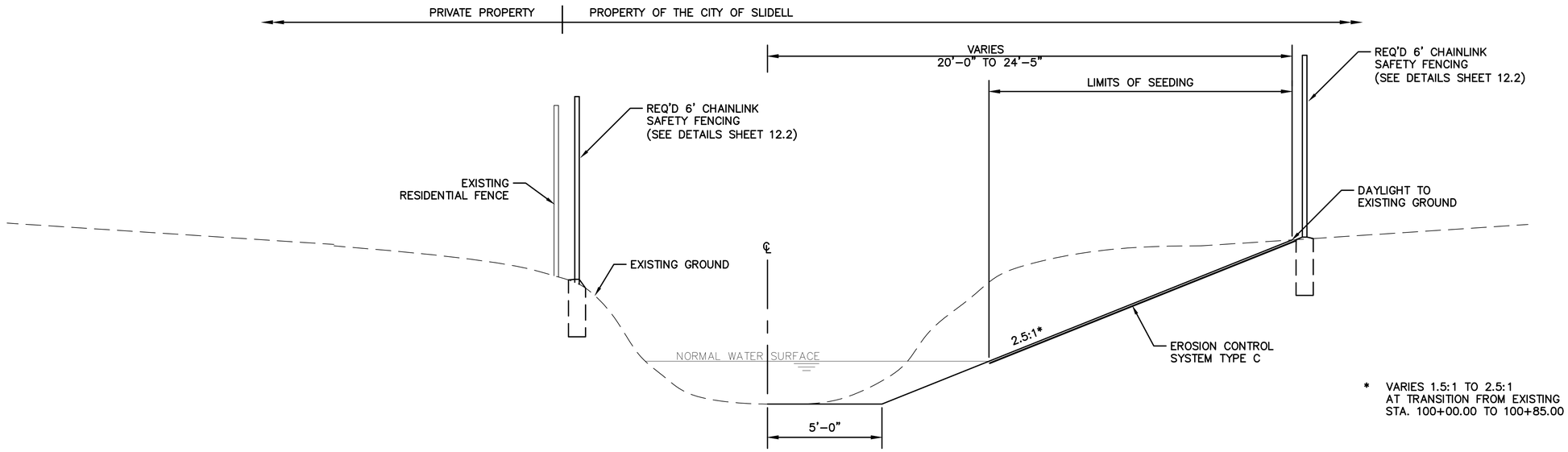
3466 Drusilla Lane, Suite A
Baton Rouge, LA 70809
(225) 218-9440
batonrouge@volkert.com

3801 Canal St, Suite 210
New Orleans, LA 70119
(504) 488-8002
neworleans@volkert.com

620 Oak Harbor Blvd, Suite 103
Slidell, LA 70458
(985) 661-1455
slidell@volkert.com

SHEET NO. 0.0

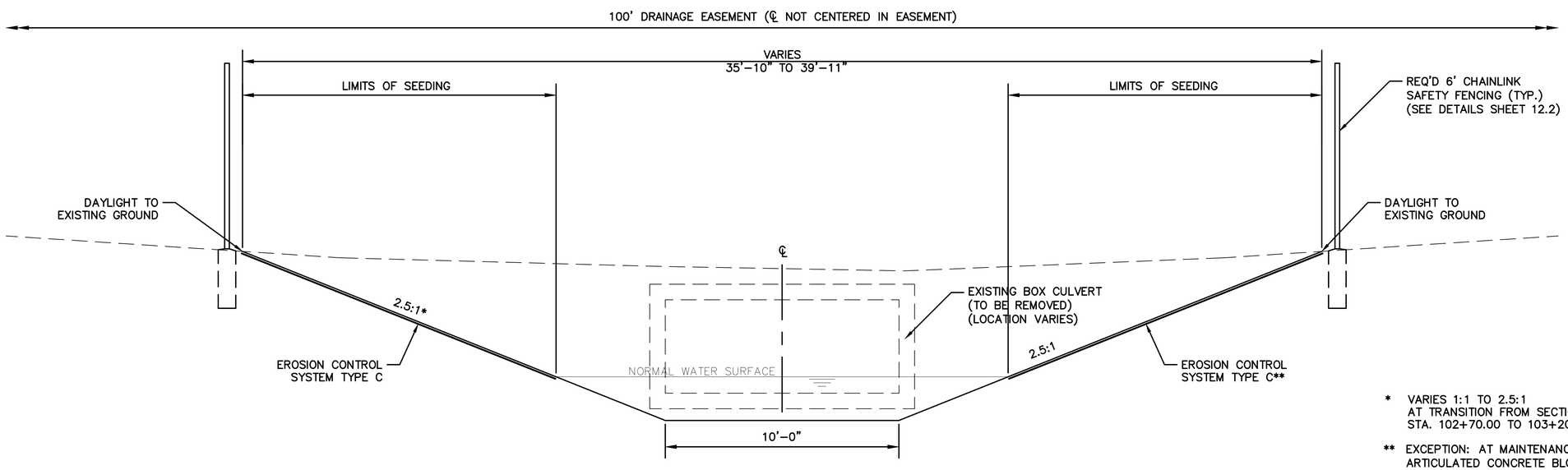
B:\447300.80 Markham to Peachtree Design\DESIGN\DRAWINGS\PLANS\DWG\0.0 Title Sheet.dwg



* VARIES 1.5:1 TO 2.5:1
AT TRANSITION FROM EXISTING
STA. 100+00.00 TO 100+85.00

TYPICAL FINISHED CHANNEL SECTION A

WP-20 CANAL UPPER
STA. 100+00.00 TO 102+70.00
SCALE: 3/8" = 1'-0"



* VARIES 1:1 TO 2.5:1
AT TRANSITION FROM SECTION A TO SECTION B
STA. 102+70.00 TO 103+20.00

** EXCEPTION: AT MAINTENANCE RAMP
ARTICULATED CONCRETE BLOCKS (NOT SHOWN)
STA. 106+07.00 TO 106+57.00

TYPICAL FINISHED CHANNEL SECTION B

WP-20 CANAL UPPER
102+70.00 TO 106+57.00
SCALE: 3/8" = 1'-0"

NOTE: TYPICAL SECTIONS
ARE SHOWN LOOKING UP
STATION (DOWNSTREAM)

SHEET NUMBER 3.1
GOHSEP PROJECT 1603N-103-0043
VOLKERT PROJECT 447300.00
CITY PROJECT 100-117
DESIGNED A.S.E. CHECKED E.S.L.
DETAILED S.L.G. CHECKED A.S.E.
DATE MAR. 2015 SHEET 4 OF 54

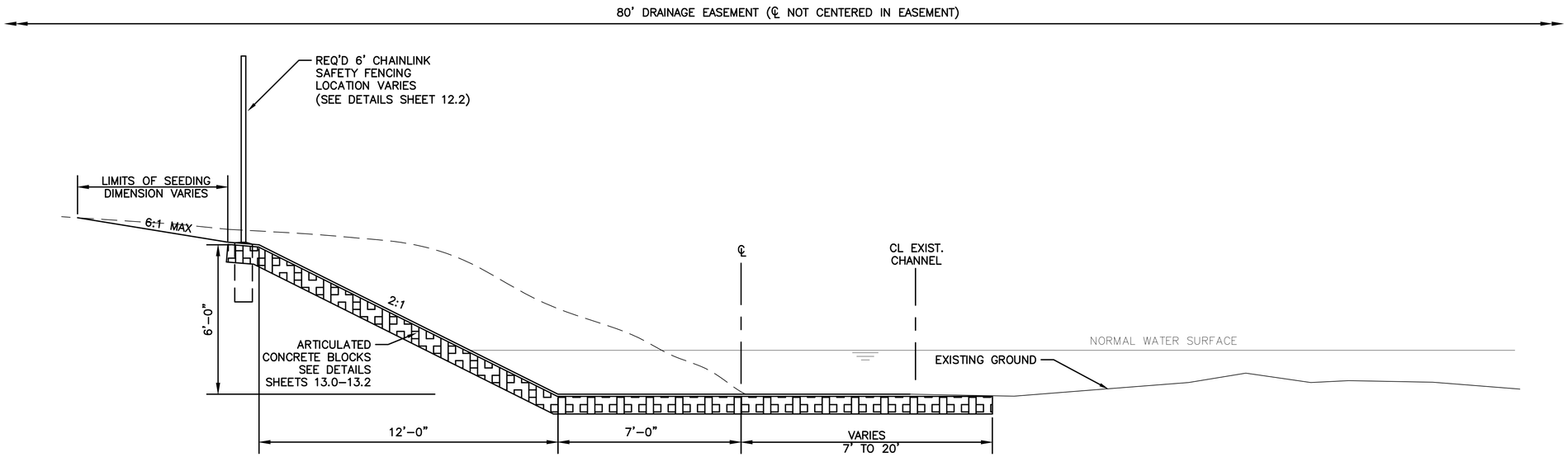
VOLKERT

NO.	DATE	REVISION DESCRIPTION	BY

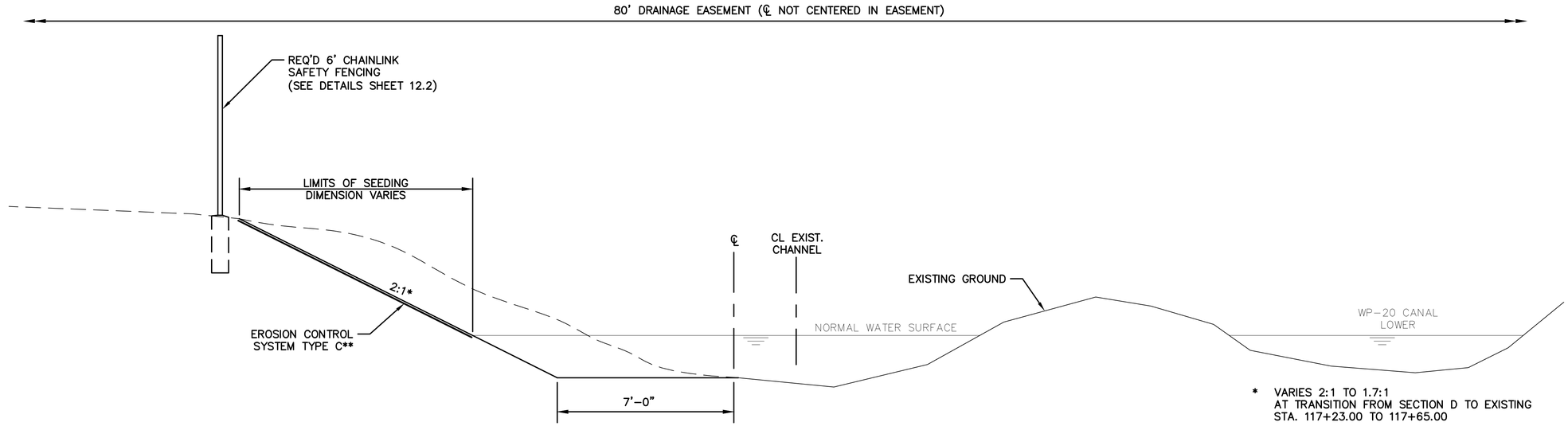
MARKHAM-PEACHTREE STORM DRAIN LINE IMPROVEMENTS
TYPICAL SECTIONS
CITY OF SLIDELL

March 27, 2015 2:46 PM
B:\447300.80 Markham to Peachtree Design\DESIGN\DRAWINGS\PLANS\DWG\3.0 Typical Sections.dwg

March 27, 2015 2:52 PM
B:\447300.80 Markham to Peachtree Design\DESIGN\DRAWINGS\PLANS\DWG\3.0 Typical Sections.dwg



TYPICAL FINISHED CHANNEL SECTION C
SOUTH LATERAL CANAL
STA. 115+96.00 TO 116+57.00
SCALE: 3/8" = 1'-0"



* VARIES 2:1 TO 1.7:1 AT TRANSITION FROM SECTION D TO EXISTING STA. 117+23.00 TO 117+65.00

TYPICAL FINISHED CHANNEL SECTION D
SOUTH LATERAL CANAL
STA. 116+57.00 TO 117+65.00
SCALE: 3/8" = 1'-0"

NOTE: TYPICAL SECTIONS ARE SHOWN LOOKING UP STATION (DOWNSTREAM)

SHEET NUMBER	3.4
GDHSEP PROJECT	1603N-103-0043
VOLKERT PROJECT	447300.00
CITY PROJECT	100-117
DESIGNED / CHECKED	A.S.E. / E.S.L.
DETAILED / CHECKED	S.L.G. / A.S.E.
DATE / SHEET	MAR. 2015 / 7 OF 54

VOLKERT

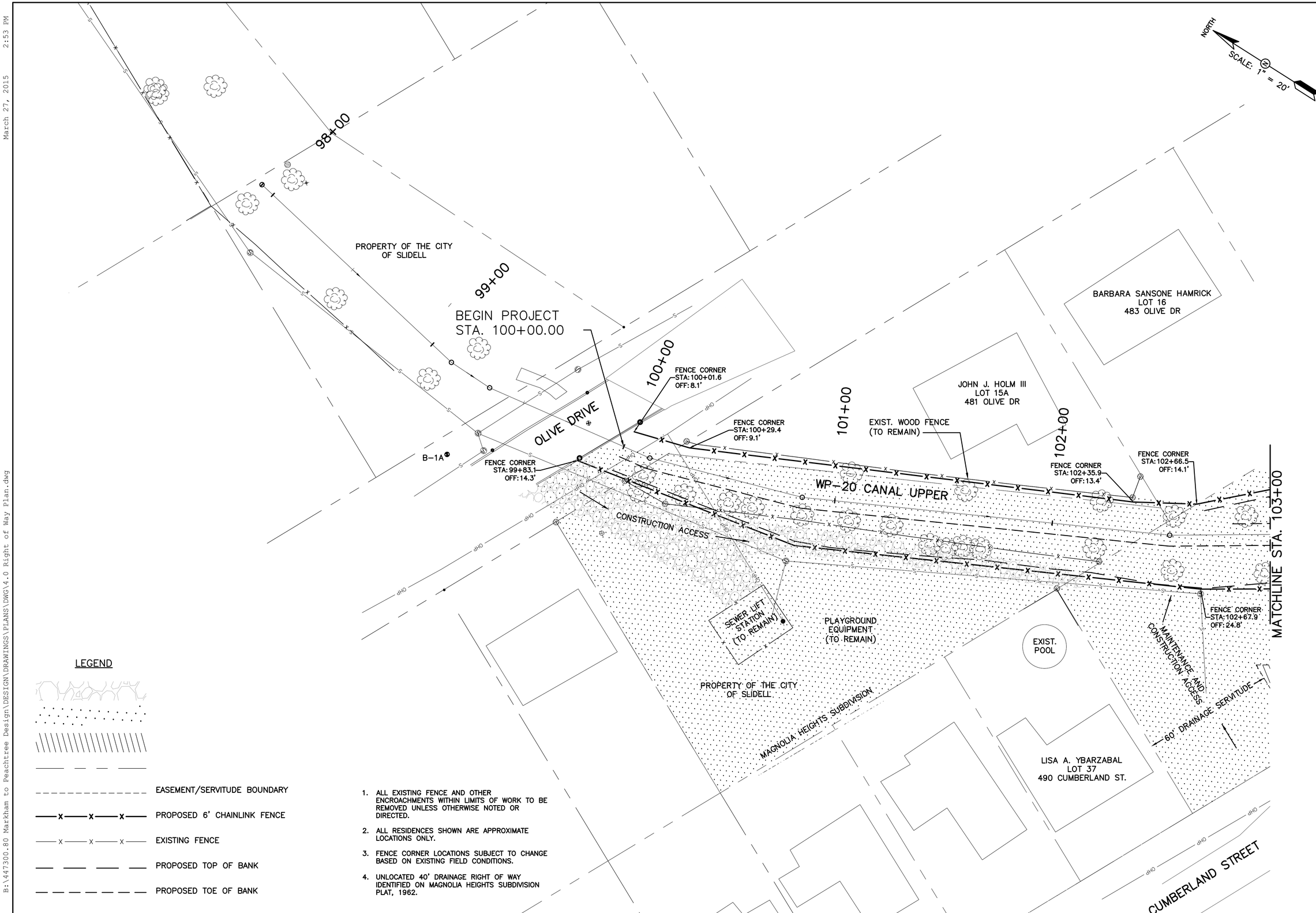
NO.	DATE	REVISION DESCRIPTION	BY

MARKHAM-PEACHTREE STORM DRAIN LINE IMPROVEMENTS

TYPICAL SECTIONS

CITY OF SLIDELL

March 27, 2015 2:53 PM
B:\447300.80 Markham to Peachtree Design\DESIGN\DRAWINGS\PLANS\DWG\4.0 Right of Way Plan.dwg



LEGEND

- EASEMENT/SERVITUDE BOUNDARY
- PROPOSED 6' CHAINLINK FENCE
- EXISTING FENCE
- PROPOSED TOP OF BANK
- PROPOSED TOE OF BANK

1. ALL EXISTING FENCE AND OTHER ENCROACHMENTS WITHIN LIMITS OF WORK TO BE REMOVED UNLESS OTHERWISE NOTED OR DIRECTED.
2. ALL RESIDENCES SHOWN ARE APPROXIMATE LOCATIONS ONLY.
3. FENCE CORNER LOCATIONS SUBJECT TO CHANGE BASED ON EXISTING FIELD CONDITIONS.
4. UNLOCATED 40' DRAINAGE RIGHT OF WAY IDENTIFIED ON MAGNOLIA HEIGHTS SUBDIVISION PLAT, 1962.

SHEET NUMBER	4.1
GOHSEP PROJECT	1603N-103-0043
VOLKERT PROJECT	447300.00
CITY PROJECT	100-117
DESIGNED / CHECKED	A.S.E. / E.S.L.
DETAILED / CHECKED	S.L.G. / A.S.E.
DATE / SHEET	MAR. 2015 / 8 OF 54

VOLKERT

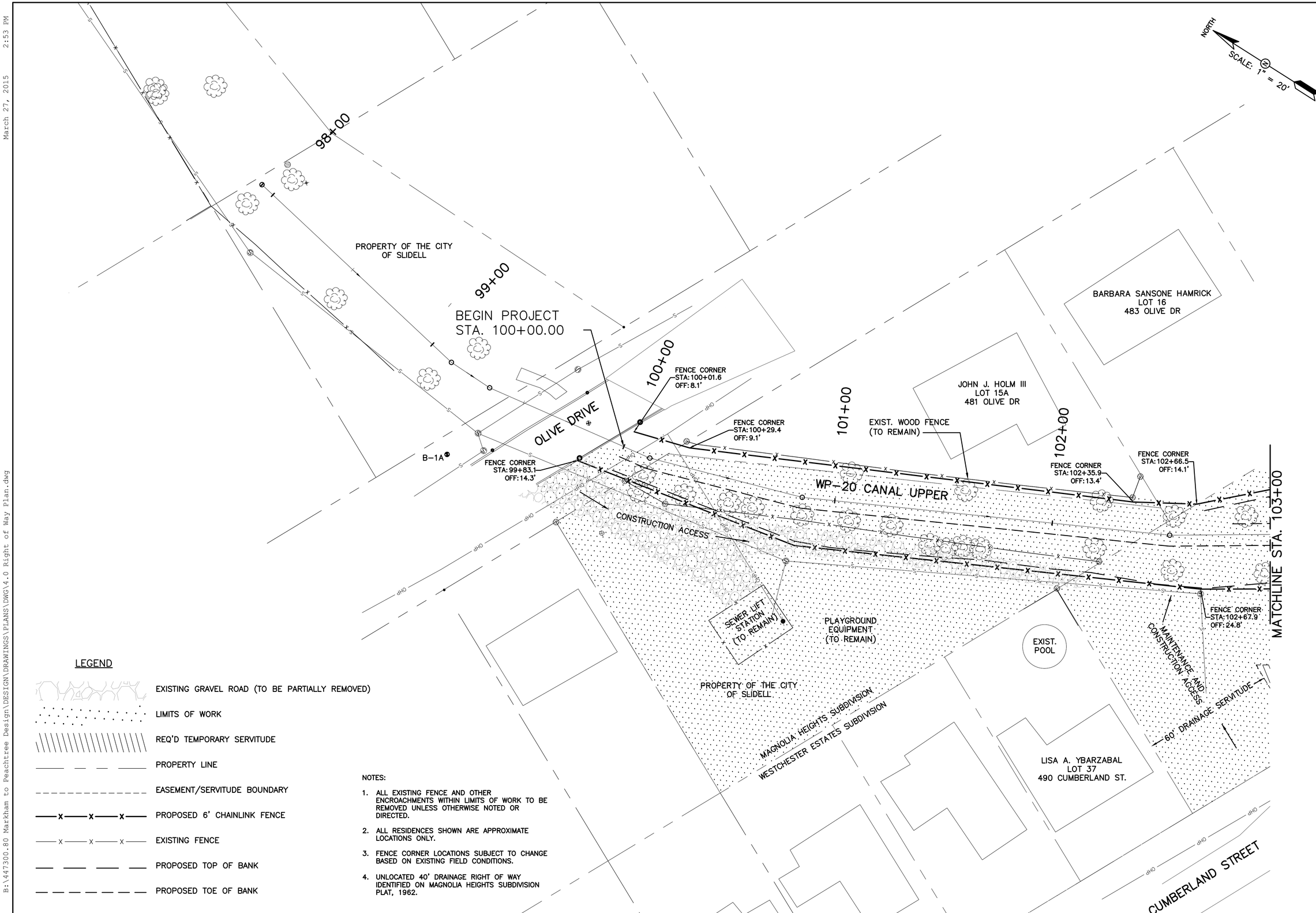
NO.	DATE	REVISION DESCRIPTION	BY

MARKHAM-PEACHTREE STORM DRAIN LINE IMPROVEMENTS

SITE LAYOUT & FENCING PLAN

CITY OF SLIDELL

March 27, 2015 2:53 PM
B:\447300.80 Markham to Peachtree Design\DESIGN\DRAWINGS\PLANS\DWG\4.0 Right of Way Plan.dwg



LEGEND

- EXISTING GRAVEL ROAD (TO BE PARTIALLY REMOVED)
- LIMITS OF WORK
- REQ'D TEMPORARY SERVITUDE
- PROPERTY LINE
- EASEMENT/SERVITUDE BOUNDARY
- PROPOSED 6' CHAINLINK FENCE
- EXISTING FENCE
- PROPOSED TOP OF BANK
- PROPOSED TOE OF BANK

NOTES:

1. ALL EXISTING FENCE AND OTHER ENCROACHMENTS WITHIN LIMITS OF WORK TO BE REMOVED UNLESS OTHERWISE NOTED OR DIRECTED.
2. ALL RESIDENCES SHOWN ARE APPROXIMATE LOCATIONS ONLY.
3. FENCE CORNER LOCATIONS SUBJECT TO CHANGE BASED ON EXISTING FIELD CONDITIONS.
4. UNLOCATED 40' DRAINAGE RIGHT OF WAY IDENTIFIED ON MAGNOLIA HEIGHTS SUBDIVISION PLAT, 1962.

SHEET NUMBER	4.1
GOHSEP PROJECT	1603N-103-0043
VOLKERT PROJECT	447300.00
CITY PROJECT	100-117
DESIGNED / CHECKED	A.S.E. / E.S.L.
DETAILED / CHECKED	S.L.G. / A.S.E.
DATE / SHEET	MAR. 2015 / 8 OF 54

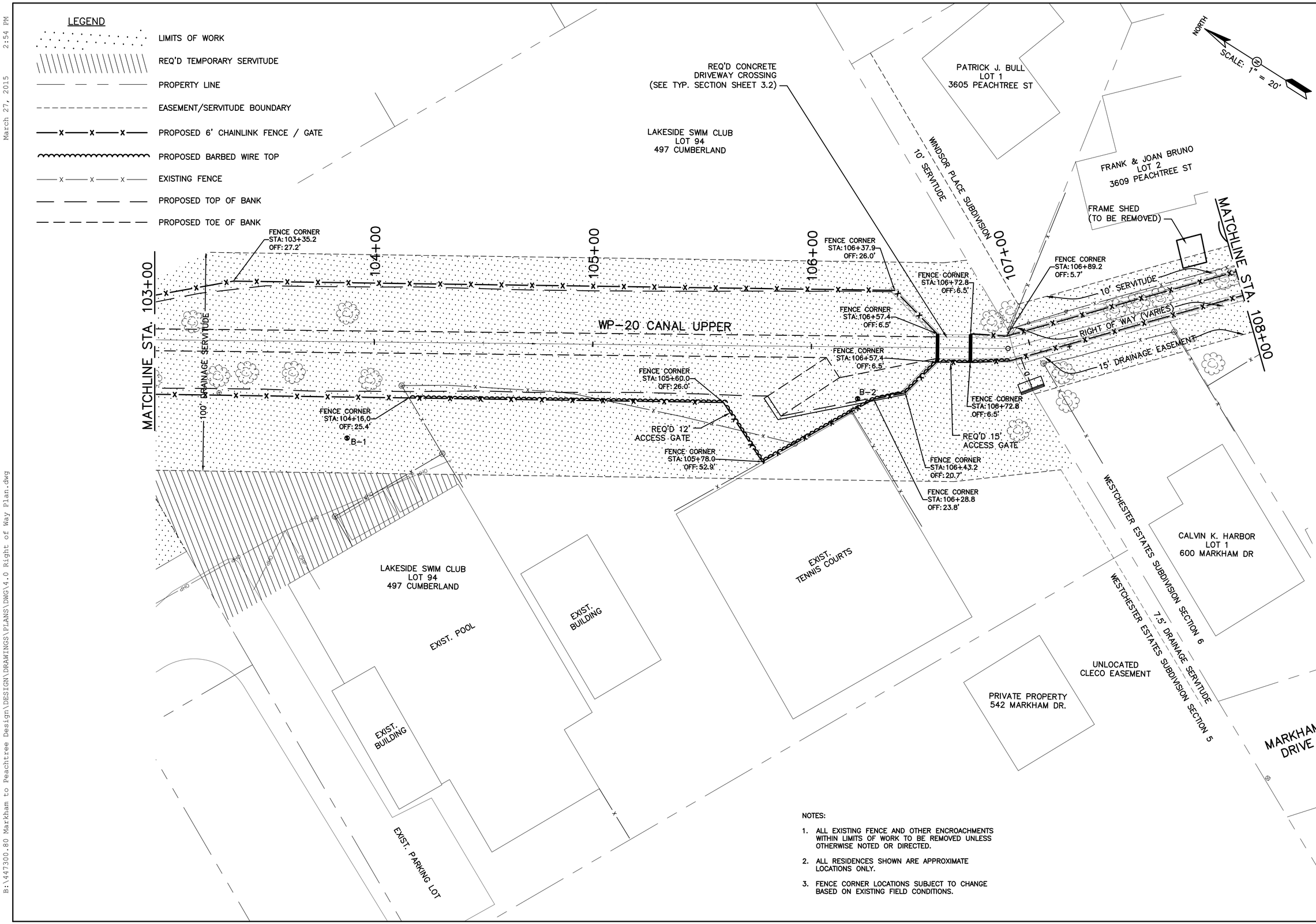
VOLKERT

NO.	DATE	REVISION DESCRIPTION	BY

MARKHAM-PEACHTREE STORM DRAIN LINE IMPROVEMENTS

SITE LAYOUT & FENCING PLAN

CITY OF SLIDELL



NOTES:

1. ALL EXISTING FENCE AND OTHER ENCROACHMENTS WITHIN LIMITS OF WORK TO BE REMOVED UNLESS OTHERWISE NOTED OR DIRECTED.
2. ALL RESIDENCES SHOWN ARE APPROXIMATE LOCATIONS ONLY.
3. FENCE CORNER LOCATIONS SUBJECT TO CHANGE BASED ON EXISTING FIELD CONDITIONS.

SHEET NUMBER	4.2
GONISEP PROJECT	1603N-103-0043
VOLKERT PROJECT	447300.00
CITY PROJECT	100-117
DESIGNED / CHECKED	A.S.E. / E.S.L.
DETAILED / CHECKED	S.L.G. / A.S.E.
DATE / SHEET	MAR. 2015 / 9 OF 54

VOLKERT

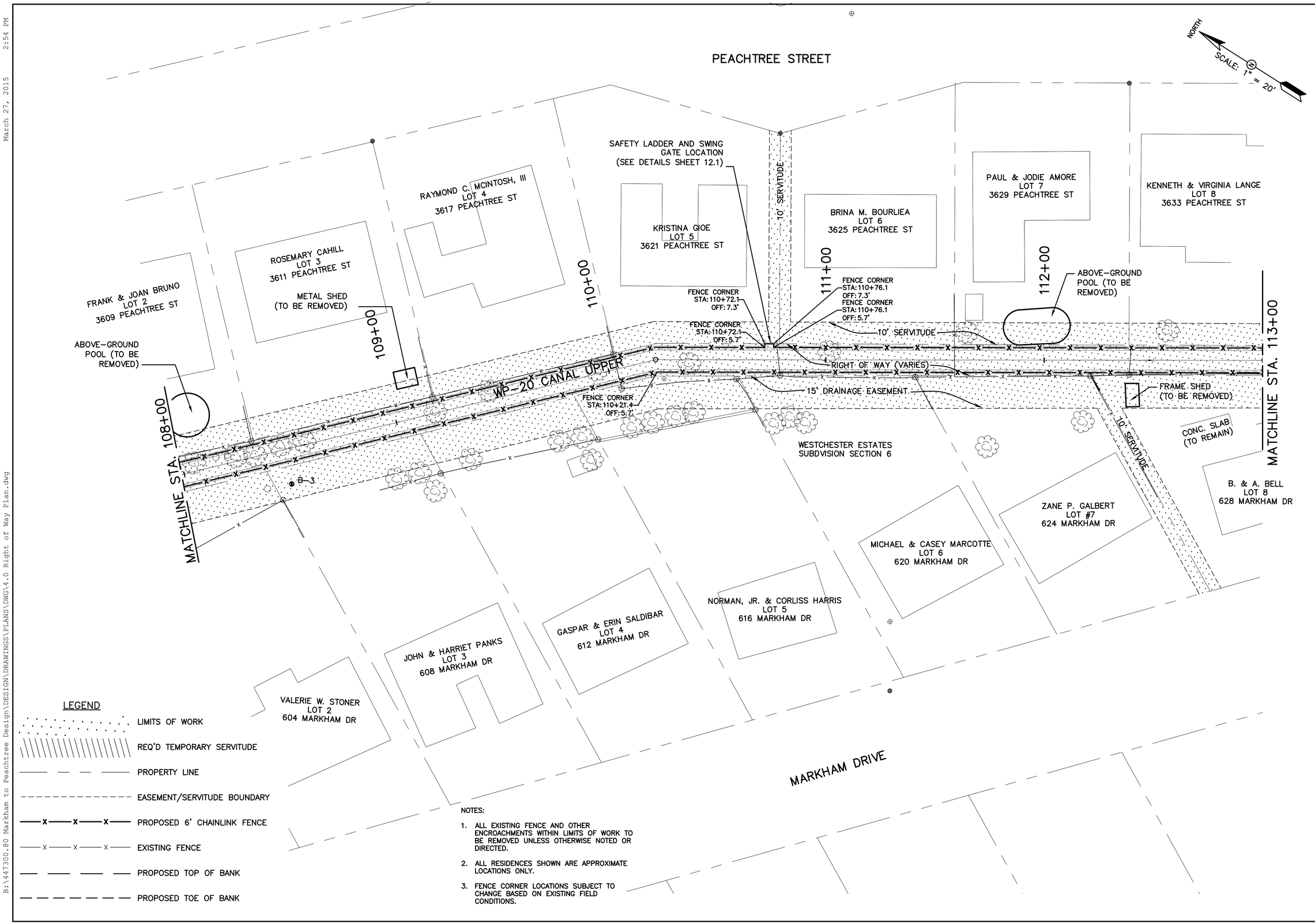
NO.	DATE	REVISION DESCRIPTION	BY

MARKHAM-PEACHTREE STORM DRAIN LINE IMPROVEMENTS

SITE LAYOUT & FENCING PLAN

CITY OF SLIDELL

B:\447300.80 Markham to Peachtree Design\DESIGN\DRAWINGS\PLANS\DWG\4.0 Right of Way Plan.dwg March 27, 2015 2:54 PM



NOTES:

1. ALL EXISTING FENCE AND OTHER ENCROACHMENTS WITHIN LIMITS OF WORK TO BE REMOVED UNLESS OTHERWISE NOTED OR DIRECTED.
2. ALL RESIDENCES SHOWN ARE APPROXIMATE LOCATIONS ONLY.
3. FENCE CORNER LOCATIONS SUBJECT TO CHANGE BASED ON EXISTING FIELD CONDITIONS.

SHEET NUMBER	4.3
GOHSEP PROJECT	1603N-103-0043
VOLKERT PROJECT	447300.00
CITY PROJECT	100-117
DESIGNED / CHECKED	A.S.E. / E.S.L.
DETAILED / CHECKED	S.L.G. / A.S.E.
DATE / SHEET	MAR. 2015 / 10 OF 54

VOLKERT

NO.	DATE	REVISION DESCRIPTION	BY

MARKHAM-PEACHTREE STORM DRAIN LINE IMPROVEMENTS

SITE LAYOUT & FENCING PLAN

CITY OF SLIDELL

B:\447300.80 Markham to Peachtree Design\DESIGN\DRAWINGS\PLANS\DWG\4.0 Right of Way Plan.dwg March 27, 2015 2:54 PM

APPENDIX C

HYDROLOGY AND HYDRAULICS STUDY

MARKHAM-PEACHTREE STORM DRAIN LINE IMPROVEMENTS DRAINAGE STUDY

PREPARED FOR

City of Slidell Louisiana

STATE OF LOUISIANA
ANTHONY B. EVETT
License No. 36383
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
3/26/2014

BY

VOLKERT

March 2014

Contents

Executive Summary 4

Introduction 5

Site Description 7

- Drainage Area 7
- Topography 7
- Schneider Canal Pump Station 8
- Soils 9
- Existing Structures 9

Hydrology 13

- Flow Rates 13
- Boundary Conditions 14

Existing Conditions 15

Proposed Conditions 17

- Alternative #1 17
- Alternative #2 19
- Alternative #3 20
- Alternative #4 21

Cost-Benefit Comparison of Alternatives 23

Construction and ROW Concerns 26

Conclusion 27

References 28

Exhibits

Exhibit E1: Schneider Canal West Basin Map

Exhibit E2: Existing Bridges & Culverts

Exhibit E3: Easement Map

Exhibit E4: Encroachment Map

Exhibit E5: Existing Inundation Map (50-Year Storm)

Exhibit E6: Existing Inundation Map (100-Year Storm)

Exhibit E7: Alternative 1 Projected Inundation Map (100-Year Storm)

Exhibit E8: Alternative 2 Projected Inundation Map (100-Year Storm)

Exhibit E9: Alternative 3 Projected Inundation Map (100-Year Storm)

Exhibit E10: Alternative 4 Projected Inundation Map (100-Year Storm)

Exhibit E11: 500-Year Storm Inundation Map

Appendices

Appendix A: Topographic Surveys (by BFM Corporation)

Appendix B: Lateral Canal South Channel Design Plan

Appendix C: Soil Classification Map

Appendix D: Geotechnical Report (by Professional Service Industries, Inc.)

Appendix E: Schneider Canal Pump Data

Appendix F: FEMA Flood Insurance Rate Map

Appendix G: HYDR1130 Output

Appendix H: HEC-RAS Output

Appendix I: HEC-RAS Water Surface Profiles

Appendix J: Conceptual Cost Estimate

Executive Summary

The Markham-Peachtree Box Culvert is part of the West Schneider Drainage Basin, which drains to Lake Ponchartrain via the Schneider Canal Pump Station. The area near and upstream of the culvert has been recognized as an area of frequent flooding, and FEMA has recognized 16 repetitive loss structures in this vicinity.

This study has been executed using HEC-RAS hydraulic modeling, in order to investigate solutions to the chronic flooding including replacement of the Markham-Peachtree Box Culvert or other hydraulic modifications. In this report, four modifications are considered in various combinations to optimize the flow through the channel. These modifications are as follows:

A	Markham-Peachtree Box Culvert	*Replace with larger box culvert*
B	Spartan Drive Culvert	*Replace with larger structure*
C	Olive Drive Bridge	*Replace with wider clear span*
D	Markham-Peachtree Box Culvert	*Replace with open channel*

The study found that the most preferred alternative is Alternative 4, consisting of options C and D above. While the existing conditions model results in 106 impacted residential structures during a 100-year storm and 51 impacted residential structures during a 50-year storm, the preferred alternative completely eliminates the flood zone up to a 100-year storm. No significant reduction in flooding is noted during a 500-year storm. The total projected engineering and construction cost for this alternative is $4,252,261.

Currently, there is a grass swale over the buried Markham-Peachtree box culvert. The open channel is proposed to be built fully within the limits of the available right of way; however, this open channel configuration recommended by the preferred alternative restricts access between properties and may reduce the amount of usable space currently available to property owners.

If it is determined that the open channel configuration is undesirable, closed box-culvert alternatives are presented in this report at costs between 7% and 24% less than the preferred alternative. The closed box-culvert alternatives are effective in reducing, but not completely eliminating, the 100-year flood risks.

Introduction

The Markham-Peachtree Culvert is a ¼ mile long culvert located in Slidell, Louisiana along the WP-20 Canal between Markham Drive and Peachtree Street. The existing 10'x4' box culvert drains approximately 275 acres of the West Schneider Drainage Basin. The basin is partially within the jurisdiction of the City of Slidell and partially within the jurisdiction of St. Tammany Parish. A vicinity map and aerial photo are shown in Figure 1. A more detailed exhibit of the basin is provided in Exhibit E1: Schneider Canal West Basin Map.

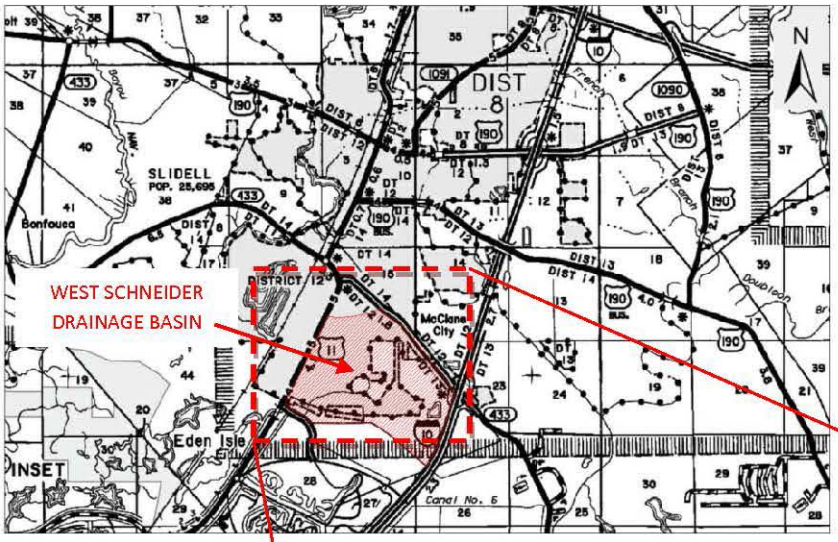


Image Source: Louisiana Department of Transportation and Development Office of Planning & Programming

Image Source: ESRI

FIGURE 1

VICINITY MAP AND AERIAL PHOTO

Due to chronic flooding in the area at the culvert and upstream of the culvert, the City of Slidell proposes replacing the existing culvert with a larger culvert to minimize damage to structures.

Using the U.S. Army Corps of Engineers Hydrologic Engineer Center River Analysis System (HEC-RAS) software, Volkert established a sub-critical steady-flow model to replicate how the Markham-Peachtree Box Culvert and the WP-20, Southside Lateral, and Schneider Canals respond to various storm events before and after the culvert replacement.

The rainfall events modeled are the 2, 5, 10, 25, 50, 100, and 500 year storm events. These storms can also be referred to by the percent chance of occurrence in any given year as shown in Table 3 below.

TABLE 1

Recurrence Intervals and Probabilities of Occurrences		
Recurrence Interval, in Years	**Probability of Occurrence in any given year**	**Percent Chance of Occurrence in any given year**
500	1 in 500	0.2
100	1 in 100	1
50	1 in 50	2
25	1 in 25	4
10	1 in 10	10
5	1 in 5	20
2	1 in 2	50

From USGS "Floods: Recurrence intervals and 100-year floods", http://ga.water.usgs.gov/edu/100yearflood.html

This report describes the approach and presents the results of the Markham-Peachtree culvert drainage study. The purpose of this study is to investigate the drainage impacts of the existing culvert on flooding and the impacts of upsizing the culvert; to appropriately size the new culvert and to investigate potential modifications to other structures for further improvements to drainage in this area. The goal is to see if it is possible to allow a 100-year storm event to pass through an upsized culvert.

Site Description

Drainage Area

The Schneider Canal drainage basin was laid out in the Master Drainage Plan (MDP) prepared by Burk & Associates, Inc. By using information obtained from the MDP, LIDAR data obtained from Atlas (the Louisiana statewide GIS database), survey data provided by BFM Corporation, and GIS / storm sewer information obtained from the City of Slidell Department of Public Works, the limits of the drainage basin and its sub-basins were established. The drainage area at the inlet of the Markham-Peachtree Culvert is approximately 275 acres, with an additional 875 acres contributing to the reaches downstream of the culvert to the Schneider Canal outfall. See Exhibit E1: Schneider Canal West Basin Map for drainage basin map.

Topography

A detailed topographic survey of the area from Hickory Drive to Kasey Street along the WP-20 Canal within the immediate vicinity of the Markham-Peachtree culvert was performed by BFM Corporation in 2010. The survey shows property lines, servitudes, structures, utilities and other conditions along the existing servitude and right of way as well as any structures outside of that, which could be impacted by construction work along the length of the culvert. An additional survey which captured structure data and 19 channel cross-sections downstream of the Markham-Peachtree culvert was conducted by BFM Corporation in 2013. A copy of both surveys is found in Appendix A.

The topography of the Schneider Canal West Basin is exceptionally flat with a maximum elevation around 8 feet above sea level and a minimum elevation around 1 foot above sea level. Along the channel in the area that was surveyed, the bank elevation ranges from about 6 feet above sea level to about 2 feet above sea level.

The land use of the Schneider Canal drainage basin and the portion of the basin that contributes flow to the Markham-Peachtree culvert is primarily residential with some open spaces, commercial and wooded areas. The Markham-Peachtree box culvert site is located within the Eagle Point, Westchester Estates, Windsor Place and Magnolia Heights Subdivisions. The subdivisions and houses were constructed primarily in the 1960s, but some as recent as the 2000s. The culvert is located within a 15' right of way that is between the Windsor Place and Westchester Estates Subdivisions and a 15' easement along the back of lots 1-11 of Westchester Estates to the west of the right of way. There is also a 10' public servitude to the east of the right of way along the back of lots 1-12 of the Windsor Place Subdivision, but the culvert does not enter into it. See Exhibit E3: Easement Map.

Surveyed or interpolated channel cross-sections were incorporated into the HEC-RAS model at minimum 100-foot intervals to estimate channel geometry. Where no surveyed cross-sections were available, trapezoidal cross-sections were estimated. For Schneider Canal Upper, the section was estimated using a continuous bottom slope and shape, and top width measurements from aerial photographs. For

Lateral Canal South upstream of Spartan Drive, the section was estimated based on channel design plans. An excerpt from the document showing the design typical section is provided in Appendix B.

The channel geometry was combined with channel overbank geometry from LIDAR data to create cross-sections spanning approximately 200 feet across the channels and their overbanks.

Schneider Canal Pump Station

The flow through the Markham-Peachtree box culvert ultimately passes the Schneider Canal Pump Station's six 63,375 GPM Flygt pumps before outfalling into Lake Ponchartrain.

This pump station houses a flapgate which is opened when Lake Ponchartrain's tidally influenced conditions are low enough to permit gravity flow through the station. When the tidal side elevations exceed the intake or pump suction side elevations, the gate is closed and the pumps are activated by a programmable float level controller switch. Current switch operational data provided by the City of Slidell is presented below. From survey data it is estimated that the channel bottom is at approximately -9.0 ft. See Appendix E for additional pump data.

TABLE 2

Schneider Canal Pump Station Operational Data (Provided by the City of Slidell)		
Number of Pumps Operational	**Water Elevation Above Channel Bottom for Turn-on (ft)**	**Total Pump Capacity (cfs)**
1	7.6	141
2	8.2	282
3	8.8	423
4	9.2	565
5	9.7	706
6	10.2	841

The pump station is designed for a maximum elevation of Lake Ponchartrain of 9 ft before overtopping of the lake into the Schneider Canal Basin. Data regarding Lake Ponchartrain elevations are presented in Table 3. The data is based on USGS gauge 301001089442600 at the Rigolets, approximately 6 miles from the Schneider Canal Pump Station, with a record period spanning from 2004 to 2013.

Existing 10'x4' Box Culvert

Culvert construction consists of cinder block walls and a concrete slab top and bottom. There are no wing walls at the culvert entrance.

Note the broken pipe segment at outfall into the WP-20 due to erosion / undermining of the channel bank.

Location of existing 10'x4' Box Culvert between homes

Inlet tops are spaced throughout the shallow swale along the length of box culvert to allow inflow into culvert between properties. Toward the south end of the culvert, the fences cross over the R.O.W., thus closing off any access to the drainage servitude. Note there is limited work space. There are phone and cable lines that also run along the back fence lines.

Outfall of 10'x4' Box Culvert

Note the fence and 6" ductile iron pipe on top of box. The pipe will require either relocation or support during construction to enable uninterrupted service.

Channel Bifurcation of the WP-20 and Southside Lateral Canals

Shortly downstream of the Markham-Peachtree Culvert, the channel splits. In this view looking northward toward the culvert outfall, the WP-20 Lower is to the left and the Lateral Canal South is to the right. The Southside Lateral was constructed after the creation of the Master Drainage Plan.

The WP-20 continues on toward the southwest going through a 102"x62" RCAP just past the junction and through two 120"x62" corrugated box culverts at Kasey Street and Annette Drive. The WP-20 canal then passes under two 280"x57" RCP crossings of the Spartan High School parking lot, and a slab span bridge at Spartan Drive, before tying into the Schneider Canal. There are also three small pedestrian bridges crossing the WP-20 at Spartan High School which have not been surveyed or included in the model. Their profiles are high and their hydraulic effects are expected to be minimal.

At the South Lateral Canal, there is a small wooden pedestrian bridge. The South Lateral Canal also goes under an elevated pedestrian bridge (not surveyed, not included in the model) and through two 87"x63" reinforced concrete pipes under Spartan Drive before discharging into the Schneider Canal.

Photographs of three structures immediately downstream of the Markham-Peachtree Culvert are provided below. The photos were captured by Volkert, Inc. in late 2011.

See Exhibit E2: Existing Bridges & Culverts for locations of all structures.

Hydrology

Flow Rates

The Schneider Drainage Basin was divided into sub-basins in order to determine flow rates along the channels. During a preliminary run of the model using preliminary flow rate calculations, it was calculated by HEC-RAS split flow optimization that at the bifurcation of WP-20 Canal Upper approximately 70% of the flow runs into Lateral Canal South and 30% of the flow runs into WP-20 Lower. This rule was verified by general visual inspection of the channel and applied to the flow calculations. Eleven areas or points of interest were identified and flow rates were applied to the channel accordingly. These areas/points of interest and their corresponding flow rates are listed in the table below.

TABLE 4

Peak Flow by Rainfall Return Period -- SCS Method (From LADOTD HYDR1130)								
Area/Point of Interest	**Contributing Sub-Basins** (see Exhibit E1)	**2-Yr (cfs)**	**5-Yr (cfs)**	**10-Yr (cfs)**	**25-Yr (cfs)**	**50-Yr (cfs)**	**100-Yr (cfs)**	**500-Yr (cfs)**
Olive Drive Bridge (Flow Loc. RS 1950)	1A	79	123	158	207	247	288	372
Markham-Peachtree Box Culvert Inlet (Flow Loc. RS 1350)	1A / 1B	88	137	175	230	275	321	415
Walkway Culvert at WP-20 (Flow Loc. RS 6100)	30% of 1A / 1B	26	41	53	69	83	96	124
Upstream 1/3 of WP-20 Lower (Flow Loc. RS 5500)	30% of 1A / 1B 33% of 5	55	84	107	139	165	192	247
Middle 1/3 of WP-20 Lower (Flow Loc. RS 3700)	30% of 1A / 1B 67% of 5	72	111	141	184	219	255	329
Downstream 1/3 of WP-20 Lower (Flow Loc. RS 2000)	30% of 1A / 1B 5	87	134	170	221	264	307	395
Upstream 1/2 of Lateral Canal South (Flow Loc. RS 12247.75)	70% of 1A / 1B	62	96	122	161	192	225	291
Spartan Drive Bridge (Flow Loc. RS 11000)	70% of 1A / 1B 2A	124	193	247	322	385	449	580
Schneider Canal Upper (Flow Loc. RS 29400)	3	112	174	222	291	348	405	523
Schneider Canal Middle (Flow Loc. RS 25600)	70% of 1A / 1B 2A / 2B / 3/ 4	172	266	339	443	530	617	798
Schneider Canal Lower (Flow Loc. 21400)	1A / 1B / 2A / 2B / 3 / 4 / 5	236	360	458	594	709	824	1061

The Runoff calculations for the Schneider Canal Drainage Basin presented here were calculated using LADOTD HYDR1130 software which calculates peak flows based on the Soil Conservation Service (SCS) method, recommended by the LADOTD Hydraulics Manual for drainage basins of 200 acres to 2000 acres in size. Rainfall depths for 2, 5, 10, 25, 50, and 100-year storms were provided by the LADOTD Hydraulics Manual. The 500-year rainfall depth was determined by extrapolating along a logarithmic curve fit to this data. The HYDR1130 flow rates were cross-checked with WIN TR-55 and USGS methods. For HYDR1130 output, see Appendix G.

The calculated 100-year flood (824 cfs) is comparable to the maximum capacity of the Schneider Canal Pump (847 cfs).

Boundary Conditions

The downstream conditions of the Schneider Canal are crucial to the hydraulic functioning of the Markham-Peachtree box culvert. Because the canal is serviced by a pump station, the effects of the pumps were incorporated into the model using known water surface elevations corresponding to pump operations. The table below shows downstream water surface elevations corresponding to different rainfall events. These boundary conditions were estimated according to the data in Tables 2 and 4 above and are applied to the HEC-RAS model at the Schneider Canal Pump Station. Because the 500-year storm flow rate exceeds the capacity of the pumps, additional storage behind the pump station was estimated from the 24-hour hydrograph to determine the resulting peak water surface elevation.

TABLE 5

HEC-RAS Model Boundary Conditions Schneider Canal Pump Station	
Rainfall Event	**Water Surface Elevation (ft)**
500-year	3.0
100-year	1.1
50-year	0.7
25-year	0.3
10-year	-0.1
5-year	-0.5
2-year	-1.0

Existing Conditions HEC-RAS Model

The existing conditions model shows that the Markham-Peachtree 10'x4' culvert cannot carry the 25-year and greater flood events. The model shows the banks of the canal in the vicinity of the culvert being majorly overtopped in 50-year and greater storm events. Exhibits E5 and E6 (provided in *Exhibits* and on the following pages) show the approximate limits of flooding for the 50 and 100 year storm events.

The exhibit shows that there are a total of 106 structures that fall within the 100 year flood limits. Of these structures, 17 have had repetitive loss claims. The exhibit also shows that there are 51 structures that fall within the 50 year flood limits. Of these 51 structures, 14 have had repetitive loss claims. Repetitive loss data is based on information provided by FEMA in June 2008. All repetitive loss structures are located at WP-20 Canal Upper, between Hickory Street and the downstream outlet of the Markham-Peachtree box culvert.

The structure at Spartan Drive is undersized and causes as much as 1.4 feet of differential water surface elevation in a 100-year event (for illustration see Appendix H – HEC-RAS Water Surface Profiles). While this does not cause flooding over the banks immediately upstream, it does increase the tail-water elevation at the Markham-Peachtree culvert, contributing to the observed flooding further upstream. The structure at Olive Drive upstream of the culvert also appears to cause differential water surface elevations in larger storm events, and may be a major cause for the three repetitive loss structures immediately upstream of Olive Drive.

Numerical HEC-RAS output for the existing conditions is located in Appendix H. HEC-RAS generated water surface profiles are provided in Appendix I.

LEGEND

EXISTING INUNDATION LIMIT

STRUCTURES WITH REPETITIVE LOSS CLAIMS

STRUCTURES IN EXISTING 50 YEAR FLOOD LIMIT

EXISTING CONDITIONS
50 YEAR STORM

NOTES

1. 25 YR AND LESSER STORM EVENTS ARE CONTAINED WITHIN THE CHANNEL.
2. INUNDATION LIMITS DO NOT TAKE INTO ACCOUNT FLOODING DUE TO STORM WATERS NOT BEING ABLE TO FLOW TO THE DRAINAGE CANAL DUE TO CLOGGED OR UNDERSIZED DRAINAGE, LOW SPOTS, ETC.
3. INUNDATION LIMITS WERE ESTABLISHED USING LIDAR DATA OBTAINED FROM T-R ATLAS WEBSITE (HTTP://ATLAS.SLIDELL.COM). DATA USED IS DATED 2008.

CITY OF SLIDELL
LOUISIANA

CITY OF SLIDELL
MARKHAM-PEACHTREE
STORM DRAIN LINE IMPROVEMENTS

EXISTING INUNDATION MAP

VOLKERT

SLIDELL

135300.00

180-117

05

EXISTING CONDITIONS
100 YEAR STORM

LEGEND

- EXISTING INUNDATION LIMIT
- STRUCTURES WITH REPETITIVE LOSS CLAIMS
- STRUCTURES IN EXISTING 100 YEAR FLOOD LIMIT

NOTES

1. 25 YR AND LESSER STORM EVENTS ARE CONTAINED WITHIN THE CHANNEL.
2. INUNDATION LIMITS DO NOT TAKE INTO ACCOUNT FLOODING DUE TO STORM WATERS NOT BEING ABLE TO FLOW TO THE DRAINAGE CANAL DUE TO CLOGGED OR UNDERSIZED DRAINS, LOW SPOTS, ETC.
3. INUNDATION LIMITS WERE ESTABLISHED USING LIDAR DATA OBTAINED FROM THE ATLAS WEBSITE (HTTP://ATLAS.SLIDELL.LA.US). DATA WAS COLLECTED DURING 2002.

CITY OF SLIDELL
MASTER PLAN UPDATE
STORM DRAIN LINE IMPROVEMENTS
EXISTING INUNDATION MAP

CITY OF SLIDELL
SLIDELL
LOUISIANA

VOLKERT

SLIDELL

Calibration

High water marks were observed at the Olive Drive Bridge at approximate elevation 1.8 ft. These high water marks are estimated to correspond with common low-intensity rainfall events of less than 2-year frequency. The existing-conditions HEC-RAS model indicates a 2-year water surface elevation of approximately 2.2 ft at this location.

Also, all 17 repetitive loss structures in the vicinity of the project are within the 100-year flood zone estimated by the model, and 14 of the 17 structures are within the 50-year flood zone. No repetitive loss structures are documented downstream of WP-20 Upper; and no existing flooding is indicated by the model downstream of WP-20 Upper (see the figure below – water surface exceeds geometric limits of the model only upstream of Markham-Peachtree culvert).

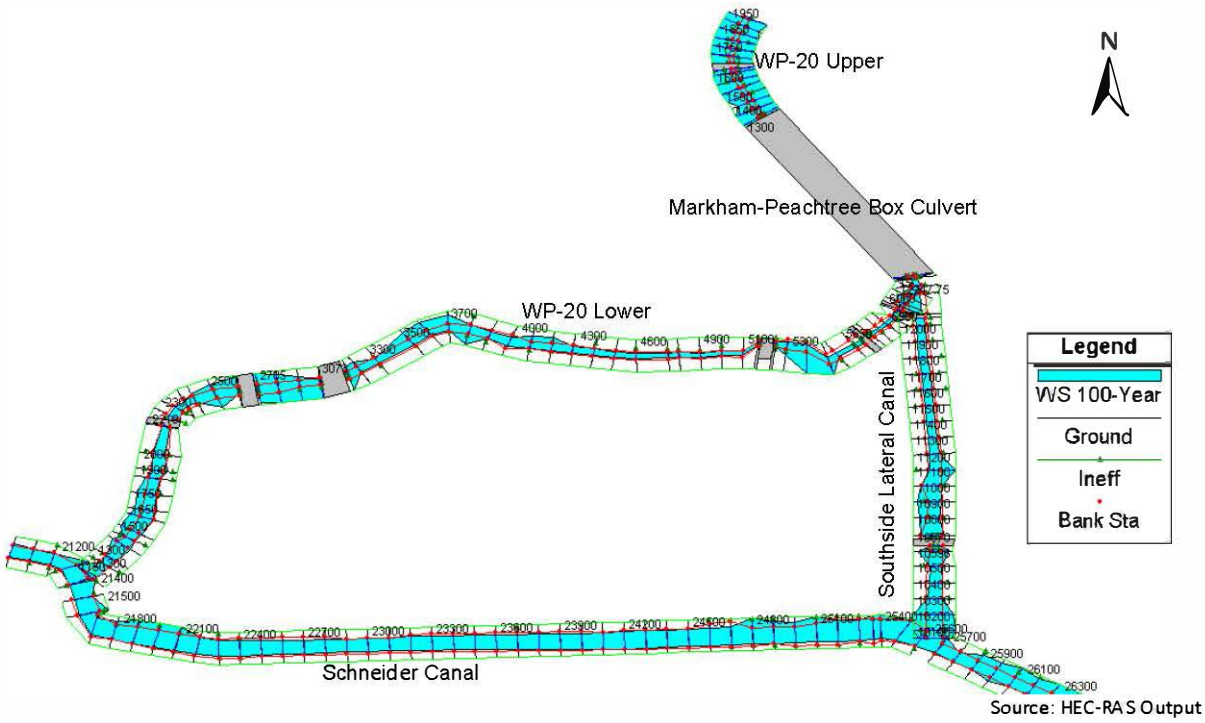


FIGURE 2

EXISTING 100-YEAR WATER SURFACE PLAN VIEW

Proposed Conditions HEC-RAS Model

Alternative 1 – Markham-Peachtree Box Culvert

One proposed alternative improvement to the Markham-Peachtree culvert involves replacement of the existing buried 10'x4' box culvert with a 10'x5' box culvert. This includes removal of the existing culvert and removal of any debris, trees or brush immediately upstream and downstream of the culvert. The new pre-cast box culvert will be installed on a minimum 12" compacted aggregate base. This will require the excavation of material from the area below the existing box in order to accommodate the larger culvert. It may also be necessary to remove and replace additional unsuitable material. In addition to the new box culvert, new wing walls will be installed to provide better flow characteristics for the channel as well as to help protect the channel banks from erosion at the culvert entrance and exit and allow for better flow into the box culvert. Appropriately sized inlet openings will also be placed in the top of the new box at the same locations as were on the existing structure at a minimum.

Other box culvert sizes were also evaluated. These included a 10'x6' culvert, an 8'x6' culvert, and a double 7'x5' culvert as well as other standard sizes. Each of the other options was dismissed due to reasons that included inefficient cover over the box, limited right-of-way, or no significant change in hydraulics.

The proposed design is intended to generally preserve the ability of the adjacent properties to drain into the culvert. The design allows 11" between the top of the culvert opening and the ground surface. The culvert may be built with a standard LADOTD 11" culvert wall thickness and the top of the culvert may be exposed, or a special thinner culvert may be designed in order to allow grass cover in the 11" allowance.

The proposed improvements as described above and shown in the preliminary plan and profile sheets were incorporated into the HEC-RAS model. A 10'x5' culvert was modeled, including adjusted culvert slope and wing walls. Whereas the existing culvert cannot carry the 50-year and larger storm events, the 50-year event can be carried through the new culvert. The 100-year event still shows some flow above the culvert between Markham Drive and Peachtree Road.

Although the proposed culvert does not carry the 100-year storm event, it does offer up to a 2-inch decrease in water surface elevation for this event. The improvement in water surface elevation is most pronounced in 25-year and 50-year events. The culvert modification provides a decrease in water surface elevation around 6 inches upstream of the culvert in these events. In lower frequency (10-year, 5-year, and 2-year) events, the decrease in water surface elevation is around 2 inches.

The proposed box-culvert modifications alone cannot allow the 100-year storm to flow through the culvert, without significantly increasing the elevation of the top of the culvert thus removing the swale over the culvert which drains the adjacent properties.

The proposed culvert replacement will greatly reduce the limits of flooding upstream of and along the new culvert, but will not have a significant impact downstream of the new culvert.

Exhibit E7 (provided in *Exhibits* and on the following page) shows the approximate projected limits of inundation due to flooding after the proposed improvements of Alternative 1. The improvements remove numerous structures from flood zones. This alternative removes all 51 structures from the 50-year flood zone and reduces the number of structures in the 100-year flood zone from 110 to 102. The model shows no significant improvement for 500-year event.

HEC-RAS generated water surface profiles for 2-year through 100-year events are provided in Appendix I. Numerical HEC-RAS output is located in Appendix H.

LEGEND

PROJECT INUNDATION LIMIT

STRUCTURES WITH REPETIVE LOSS CLAIMS

STRUCTURES IN EXISTING 100 YEAR FLOOD LIMIT

6 STRUCTURES REMOVED FROM LIMITS

ALTERNATIVE 1
100 YEAR STORM

NOTES:

1. 50 YR AND LESSER STORM EVENTS ARE CONTAINED WITHIN THE CHANNEL.
2. INUNDATION LIMITS DO NOT TAKE INTO ACCOUNT FLOODING DUE TO STORM WATERS NOT BEING ABLE TO FLOW TO THE DRAINAGE CANAL DUE TO CLOGGED OR UNDERSIZED DRAINS, LOW SPOTS, ETC.
3. INUNDATION LIMITS WERE ESTABLISHED USING LIDAR DATA OBTAINED FROM THE ATLAS WEBSITE (HTTP://FAT.AGS.SU.EDU). DATA USED IS DATED 2006.

CITY OF SLIDELL
LOUISIANA

CITY OF SLIDELL
MASTER PLAN UPDATE
STORM DRAIN LINE IMPROVEMENTS

PROJECTED INUNDATION MAP

VOLKERT

SHEET NUMBER

Alternative 2 – Markham-Peachtree Box Culvert and Spartan Drive

Some other improvements have been noted which could potentially improve the water surface in certain areas. It was considered to widen the Southside Lateral Canal for further improvements, but it was found that the benefits are negligible because the limiting factor for conveyance of flow is the crossing at Spartan Drive, not the size of the channel. Thus, a second proposed alternative is to improve the Markham-Peachtree box culvert as described above in Alternative 1, and to upsize the culverts under Spartan Drive at the crossing of the South Lateral Canal. The existing 7.25' x 5.25' culverts may be replaced with proposed 10' x 7' culverts.

Replacing these culverts with a larger structure may decrease the water surface elevation by up to 1 foot immediately upstream of Spartan Drive thus allowing decreases further upstream along the existing flooding area.

The additional modification to the Spartan Drive crossing of the South Lateral Canal significantly decreases water surface elevations thus removing additional structures from flood zones in 50-Year and 100-Year storms. Although the additional modification to Spartan Drive makes little to no difference to WP-20 Canal Upper in 2-year, 5-year, and 10-year events, the benefit during 25-year, 50-year, and 100-year events is an additional 1 to 2 inches on top of the benefits offered by the modification to the box culvert alone.

However, this improvement is still not enough to allow the 100-year storm event to flow through the culvert without overflowing through the swale. Also, immediately upstream of Spartan Drive where most of the improved water surface can be seen, the affected area is mostly wooded, the few existing homes are substantially elevated, and there are no repetitive loss claims. The undersized culvert operates as a dam during large storm events and may provide a benefit to the areas downstream. These downstream areas are serviced by the Schneider Canal Pump Station and the effects of the change should be minimal as long as the pumping capacity is not exceeded.

Exhibit E8 (provided in *Exhibits* and on the following page) shows the approximate projected limits of inundation due to flooding from the WP-20 canal after the proposed improvements of Alternative 2. The improvements remove numerous structures from flood zones. This alternative removes all 51 structures from the 50-year flood zone and reduces the number of structures in the 100-year flood zone to 47.

HEC-RAS generated water surface profiles for 2-year through 100-year events are provided in Appendix I. Numerical HEC-RAS output is located in Appendix H.

LEGEND

PROJECTED INUNDATION LIMIT –

STRUCTURES WITH REPETITIVE – LOSS CLAIMS

STRUCTURES IN EXISTING 100 – YEAR FLOOD LIMIT

50 STRUCTURES REMOVED FROM LIMITS

ALTERNATIVE 2
100 YEAR STORM

NOTES:

1. 50 YR AND LESSER STORM EVENTS ARE CONTAINED WITHIN THE CHANNEL.
2. INUNDATION LIMITS DO NOT TAKE INTO ACCOUNT FLOODING DUE TO STORM WATERS NOT BEING ABLE TO FLOW TO THE DRAINAGE CANAL DUE TO CLOGGED OR UNDERSIZED DRAINS, LOW SPOTS, ETC.
3. INUNDATION LIMITS WERE ESTABLISHED USING LIDAR DATA OBTAINED FROM THE ASLDE SERVER (HTTP://ASLDE.LSU.EDU). DATA USED IS DATED 2003.

VOLKERT

CITY OF SLIDELL
WARHAM-PLACIDWILL
STORM DRAIN LINE IMPROVEMENTS

PROJECTED INUNDATION MAP

CITY OF
SLIDELL
LOUISIANA

Alternative 3 – Markham-Peachtree Box Culvert, Spartan Drive Culvert and Olive Drive Bridge

A third proposed alternative is to improve the Markham-Peachtree box culvert and the Spartan Drive culvert crossing as described above, and also to replace the Olive Drive Bridge with a structure which offers greater conveyance. The existing Olive Drive structure's abutments encroach on the channel cross section. A clear-span bridge is recommended to maximize the cross-sectional area for the passage of flow.

Replacing this bridge with an elevated clear-span bridge which does not encroach laterally on the channel cross-section can reduce the head differential between upstream and downstream of the existing bridge which occurs during large storm events.

The benefits of the additional modification of the Olive Drive Bridge are upstream of Olive Drive. On top of the benefits afforded by the modifications described in Alternative 2, the additional modification of the Olive Drive Bridge results in an additional reduction in water surface elevation of 0.8 inches to 2.6 inches upstream of the bridge, depending on the intensity of the storm.

Exhibit E9 (provided in *Exhibits* and on the following page) shows the approximate projected limits of inundation due to flooding from the WP-20 canal after the proposed improvements of Alternative 3. The improvements remove numerous structures from flood zones. This alternative removes all 51 structures from the 50-year flood zone and reduces the number of structures in the 100-year flood zone to 39.

HEC-RAS generated water surface profiles for 2-year through 100-year events are provided in Appendix I. Numerical HEC-RAS output is located in Appendix H.

LEGEND

PROJECTED INUNDATION LIMIT –

STRUCTURES IN INSPECTIVE – LOSS CLAIMS

STRUCTURES IN EXISTING 100 – YEAR FLOOD LIMIT

71 STRUCTURES REMOVED FROM LIMITS

ALTERNATIVE 3
100 YEAR STORM

NOTES:

1. 25 YR AND LESSER STORM EVENTS ARE CONTAINED WITHIN THE CHANNEL.
2. INUNDATION LIMITS DO NOT TAKE INTO ACCOUNT FLOODING DUE TO STORM WATERS NOT RAINED AND TO FLOW TO THE DRAINAGE CANAL DUE TO CLOGGED OR UNDERSIZED DRAINS, LOW SPOTS, ETC.
3. INUNDATION LIMITS WERE EXTRAPOLATED USING LIDAR DATA OBTAINED FROM THE ATLAS WEBSITE (HTTP://ATLAS.LSU.EDU). DATA USED IS DATED 2005.

CITY OF SLIDELL
LOUISIANA

CITY OF SLIDELL
MARGARET PLACE/THE
STORM DRAIN LINE IMPROVEMENTS

PROJECTED INUNDATION MAP

PRELIMINARY
NOT FOR CONSTRUCTION
PLANS PREPARED BY
VOLKERT

VOLKERT

DRAWN: T. CLAUSEN
DESIGN: T. CLAUSEN
CHECKED: M. BRYAN
APPROVED: E. LORELLO
DATE: 1-8-14
SCALE: 1"=100'
JOB NO. 135500.00
SHEET NO. 195-117

Alternative 4 – Markham-Peachtree Open Channel and Olive Drive Bridge

A fourth proposed alternative is to replace the existing Markham-Peachtree Box Culvert with a 10'x6' typical section concrete-lined open channel with vertical side walls rather than the 10'x5' box culvert of Alternative 1. This includes removal of the existing culvert and removal of any debris, trees or brush immediately upstream and downstream of the culvert. The new culvert will be installed on a minimum 12" compacted aggregate base. This will require the excavation of material from the area below the existing box in order to accommodate the larger box. It may also be necessary to remove and replace additional unsuitable material. Some grading may also be necessary along the banks adjacent to the culvert to provide an appropriate grade for drainage to the top of the culvert. In addition to the new structure, wing walls will be installed to provide better flow characteristics for the channel as well as to help protect the channel banks from erosion at the entrance and exit and allow for better flow into the box culvert. Minimum 8-foot high 90 gage chain-link fence must be constructed along both sides of the easement to prevent people and pets from entering or falling into the open channel. Ramps at each end for maintenance equipment entry points must also be constructed.

This alternative provides easier access to the channel for maintenance than the closed-top box culvert option. Also, this alternative is intended to remove the 11" allowance between the top of the culvert opening and the top of the ground which can cause an obstruction to flow in large storm events. Hydraulically the open channel is a substantial improvement over the closed-top box culvert, such that the improvements to Spartan Drive described above are no longer necessary. Thus, only the improvements to the Olive Drive Bridge as described above are recommended in tandem with the open channel of Alternative 4.

Although the open channel is hydraulically superior to and easier to maintain than the closed-top box culvert, the open channel option restricts access over the channel between properties and subtracts from the usable space that the adjacent property owners currently have available. If the subtraction of usable space is a major concern, a 10'x6' closed box culvert which protrudes from ground level may be considered for similar hydraulic performance. However, this option is not recommended because the elevation of the top wall of the box will interfere with drainage characteristics of the adjacent properties and will require special considerations for routing this runoff into the channel.

An open channel with vertical side slopes supported by sheet pile retaining walls, and an open channel with an earthen bottom were also considered for this alternative, but were rejected due to the high friction caused by the corrugations of the sheet piles and by a weedy or stony bottom.

The water surface profile dips down at the beginning of the Markham-Peachtree open channel and rises after the end of the Markham-Peachtree open channel (see Appendix I—HEC-RAS Water Surface Profiles). This feature is caused by the reduced friction of the concrete lining, which allows some energy to be temporarily converted into velocity. Note that the water surface profile shown here is vertically exaggerated; the actual dip and rise in water surface elevation will not appear as pronounced in the physical channel.

This alternative allows the flow from the 100-year storm to flow through the Markham-Peachtree open channel without overtopping the banks and prevents virtually all upstream flooding up to a 100-year storm event. This alternative offers no significant improvement from the existing conditions in a 500-year event. Exhibit E10 shows that there is no flooding at the WP-20 Canal after the proposed improvements of Alternative 4.

HEC-RAS generated water surface profiles for 2-year through 100-year events are provided in Appendix I. Numerical HEC-RAS output is located in Appendix H.

LEGEND

100 YEAR INUNDATION LIMIT –

STRUCTURES WITH REPETITIVE LOSS CLAIMS –

STRUCTURES IN EXISTING 100 YEAR FLOOD LIMIT –

100 STRUCTURES REMOVED FROM LIMITS

ALTERNATIVE 4
100 YEAR STORM

NOTES:

1. 100 YEAR AND LESSER STORM EVENTS ARE CONTAINED WITHIN THE CHANNEL.
2. INUNDATION LIMITS DO NOT TAKE INTO ACCOUNT FLOODING DUE TO STORM WATERS NOT BEING ABLE TO FLOW TO THE DRAINAGE CANAL DUE TO CLOGGED OR UNDERSIZED DRAINS, LOW SPOTS, ETC.
3. INUNDATION LIMITS WERE ESTABLISHED USING LIDAR DATA OBTAINED FROM THE ATLAS MAPPING (HTTP://ATLAS.SLIDELL). DATA USED IS DATED 2006.

CITY OF SLIDELL
LOUISIANA

CITY OF SLIDELL
MARSHAN—PEACHTREE
STORM DRAIN LINE IMPROVEMENTS

PROJECTED INUNDATION MAP

VOLKERT

CITY OF SLIDELL

PRELIMINARY
NOT FOR CONSTRUCTION
OR RECORDING PURPOSES

DATE: 1/29/14
SCALE: 1" = 150'
DRAWN BY: E. SHELLER
CHECKED BY: E. SHELLER
APPROVED BY: N. SPITHAN
DATE: 1/29/14
JOB NO.: 142-137
SHEET NO.: 4

Cost-Benefit Comparison of Alternatives

The four alternatives discussed above improve the hydraulics of the channel to varying degrees and at different costs. This section is intended to compare the costs and benefits of each alternative to select a preferred alternative.

The figures below illustrate the various water surface elevations along WP-20 Upper in 50-year and 100-year flood events, from downstream of the culvert (river station 15) to downstream of the Hickory Street Bridge (river station 1950). All documented repetitive loss structures within the vicinity of the project are located between these stations and all flooding indicated by the models occurs in 50-year or greater storms.

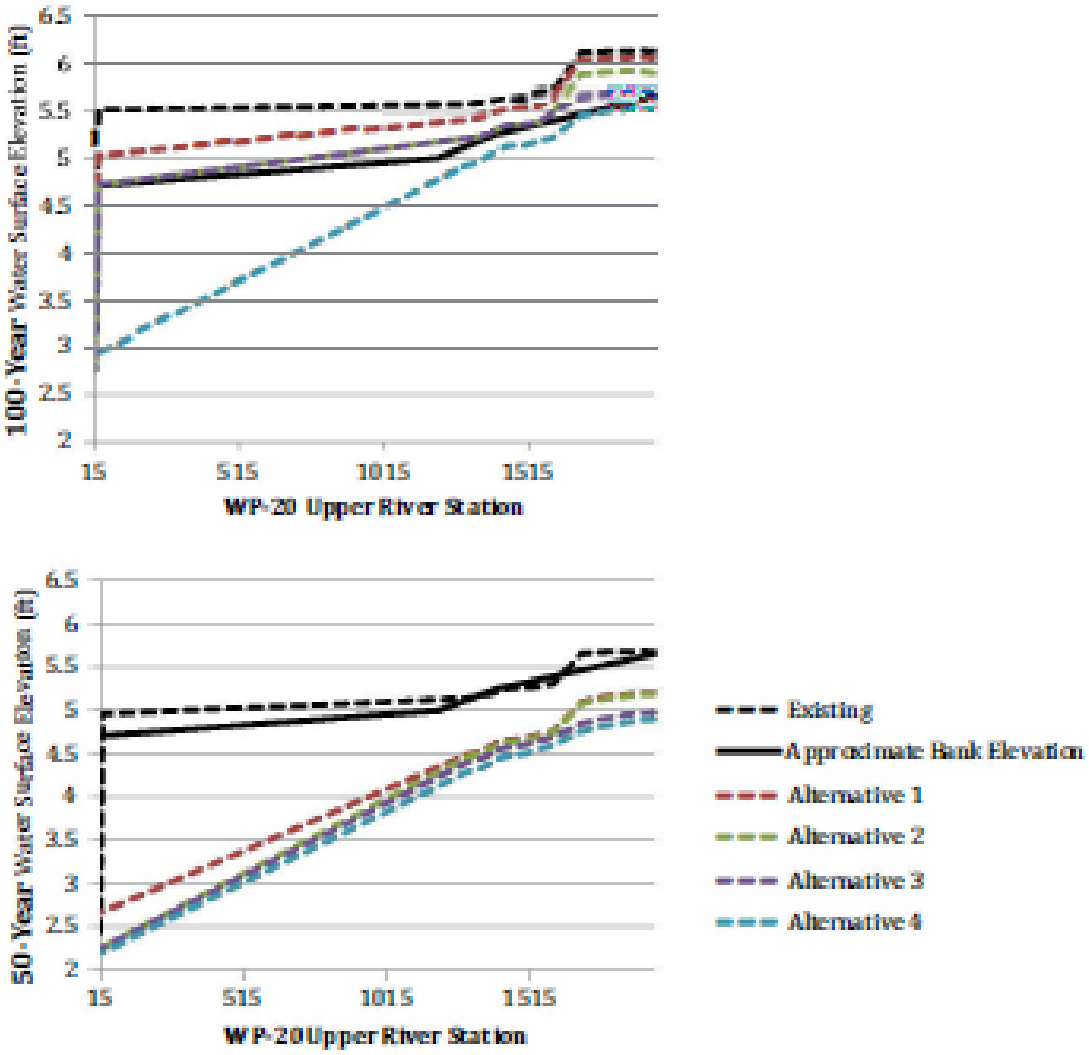


FIGURE 3

50-YEAR AND 100-YEAR WATER SURFACE PROFILES AT EXISTING FLOOD ZONE

In all storm events including the 50-year and 100-year events shown above, Alternative 4 provides the greatest reduction in water surface elevation. Alternatives 2 and 3 are similar although Alternative 3 provides additional improvement in the upper reaches upstream of Olive Drive. Alternative 1 provides the least reduction in water surface elevation.

In the 500-year event, no significant improvements to the water surface are shown by any of the proposed alternatives, except those alternatives which include modification of the crossing at Spartan Drive (Alternatives 2 and 3). However, a majority of the area where flooding is prevented is parkland. See Exhibit E11 for 500-year limits of inundation.

Table 6 on the following page presents estimated costs and various measures of the benefits of the modifications, including the number of structures within the flood zone during various storm events. Also see Exhibits E5 through E11 for flood maps. For detailed itemized cost estimates, see Appendix J.

Based on the information in Table 6 and using a 100-year design event, the recommended alternative is Alternative 4 – to replace the existing Markham-Peachtree box culvert with a concrete-lined open channel with vertical side slopes and typical dimensions of 10' x 6', and to replace the Olive Drive Bridge with a clear-span bridge which does not encroach on the channel section. This alternative is the only alternative which completely prevents flooding in the area modeled in the 100-year storm. The estimated cost of this alternative is 7% greater than the cost of Alternative 3, 15% greater than the cost of Alternative 2, and 24% greater than the cost of Alternative 1, but is significantly more effective than any of these options.

TABLE 6

Cost-Benefit Comparison of Alternatives					
	Existing Conditions	**Alternative 1** M.-P. Box Culvert	**Alternative 2** M.-P. Box Culvert Spartan Drive	**Alternative 3** M.-P. Box Culvert Spartan Drive Olive Drive	**Alternative 4** M.-P. Open Channel Olive Drive
Number of Structures in 500-Year Flood Zone	202	202	177	177	202
Number of Structures in 100-Year Flood Zone	110	102	47	39	0
Number of Structures in 50-Year Flood Zone	51	0	0	0	0
Number of Structures in 25-Year Flood Zone	0	0	0	0	0
Number of Structures in 10-Year Flood Zone	0	0	0	0	0
Maximum Capacity of Markham-Peachtree Culvert	25-Year Event	50-Year Event	50-Year Event	50-Year Event	100-Year Event
Decrease in Water Surface Elevation (Upstream of Existing Markham-Peachtree Culvert)	-	1.8 in. (100-Yr Event) 7.8 in. (50-Yr Event)	4.3 in. (100-Yr Event) 8.2 in. (50-Yr Event)	5.4 in. (100-Yr Event) 9.7 in. (50-Yr Event)	8.0 in. (100-Yr Event) 10.8 in. (50-Yr Event)
Estimated Total Cost	-	$3.23 million	$3.60 million	$3.95 million	$4.25 million
Other Considerations	-	-	May increase demand on Schneider Canal pump station	May increase demand on Schneider Canal pump station	Limits access and usable space between properties Easier access into channel for maintenance

Construction and ROW Concerns

Prior to and during construction there are several issues that would need to be addressed to ensure that any potential problems are minimized. The first of these is the limited amount of R.O.W. and servitudes. It would be necessary for the City to obtain at a minimum some Temporary Construction Easements.

Other reasons are the limited work space and the need to remove/relocate fences and other items. There are a number of encroachments into the right of way and servitude, primarily fences that run along or through the servitude. There is also a storage shed and batting cage that encroach into the servitude. There are also several swimming pools and other structures that are close to the servitudes that would require special care during any construction work to ensure that they are not damaged. Also running along the right of way are buried telephone/cable lines. See Exhibit E4: Encroachment Map.

Due to the limited workspace, the contractor will likely need to provide shoring along the sides of the open work area. Temporary fencing to protect the work site will also be required, especially due to this being located within a residential area. Extra care will need to be taken to ensure safety, especially after work ends each day, to keep unauthorized entrance into the work area. Many of the local residents have children and pets, so temporary fencing will be required for safety. Erosion control measures will also need to be put in place to prevent siltation of the channel and drainage structures. It is also recommended that pre- and post- residential property inspections be completed. These inspections give a permanent record of conditions both inside and out of each residence along the project and helps protect not only the City's interest, but also those of the property owners and the Contractor's. A full time inspector should also be on duty to ensure quality and to act as a go-between for the City, Contractor, Engineer and local residents.

Construction and ROW Concerns

Prior to and during construction there are several issues that would need to be addressed to ensure that any potential problems are minimized. The first of these is the limited amount of R.O.W. and servitudes. It would be necessary for the City to obtain at a minimum some Temporary Construction Easements.

Other reasons are the limited work space and the need to remove/relocate fences and other items. There are a number of encroachments into the right of way and servitude, primarily fences that run along or through the servitude. There is also a storage shed and batting cage that encroach into the servitude. There are also several swimming pools and other structures that are close to the servitudes that would require special care during any construction work to ensure that they are not damaged. Also running along the right of way are buried telephone/cable lines. See Exhibit E4: Encroachment Map.

Due to the limited workspace, the contractor will likely need to provide shoring along the sides of the open work area. Temporary fencing to protect the work site will also be required, especially due to this being located within a residential area. Extra care will need to be taken to ensure safety, especially after work ends each day, to keep unauthorized entrance into the work area. Many of the local residents have children and pets, so temporary fencing will be required for safety. Erosion control measures will also need to be put in place to prevent siltation of the channel and drainage structures. It is also recommended that pre- and post- residential property inspections be completed. These inspections give a permanent record of conditions both inside and out of each residence along the project and helps protect not only the City's interest, but also those of the property owners and the Contractor's. A full time inspector should also be on duty to ensure quality and to act as a go-between for the City, Contractor, Engineer and local residents.

Conclusion

The goal of this study is to see if it is possible to allow a 100-year storm event to pass through an upsized culvert. The study determined that it is not possible to allow a 100-year storm event to pass through a closed-top box culvert constructed within the existing right of way. A larger closed-top culvert can reduce flooding, but cannot completely eliminate 100-year flood risks. In order to eliminate 100-year flood risks, an open channel design is required.

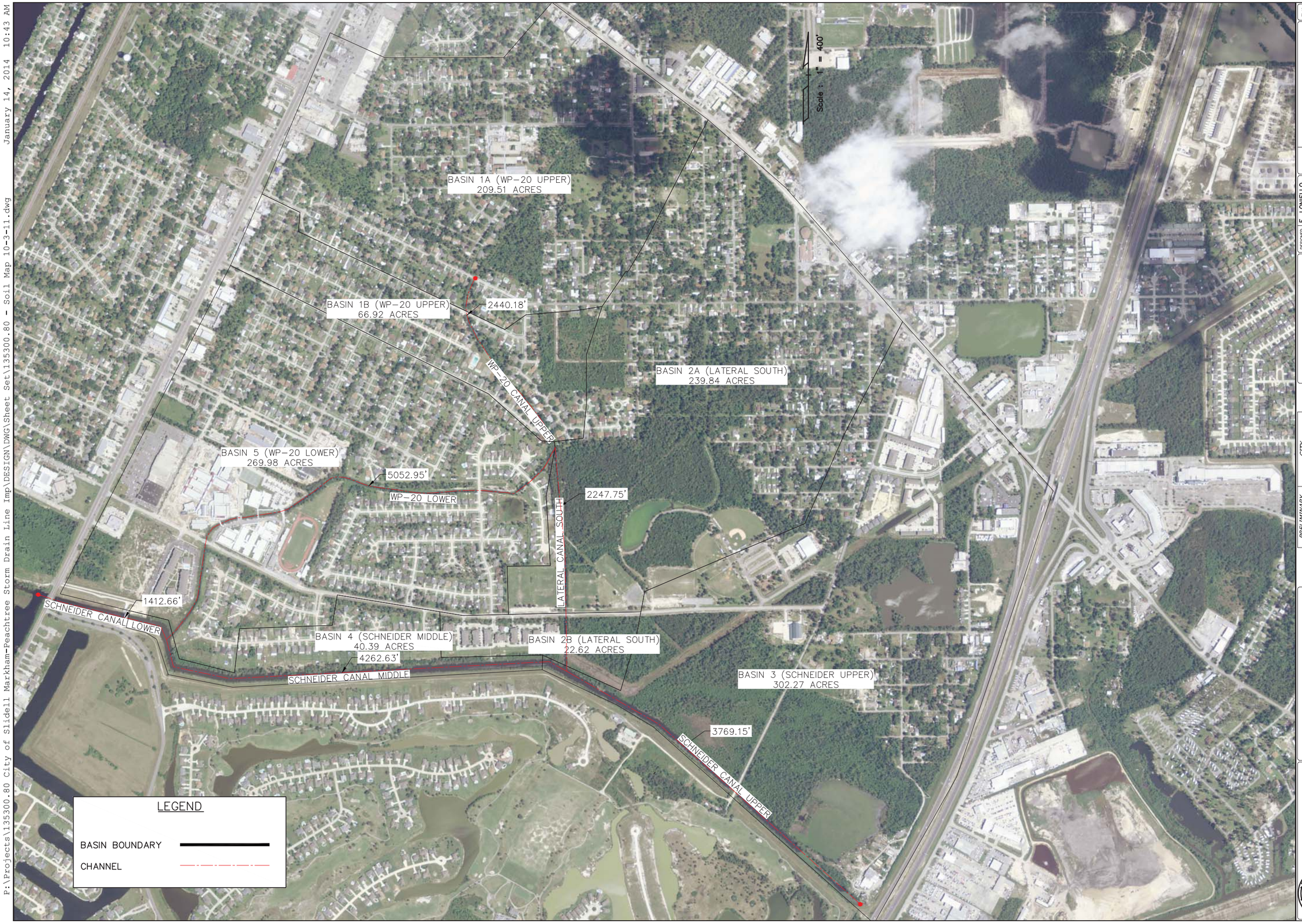
The recommended preferred alternative is Alternative 4 as described above, which includes the replacement of the existing Markham-Peachtree box culvert with a fenced-in concrete-lined open channel with vertical side slopes, as well as replacement of the Olive Drive Bridge upstream of the existing culvert. This alternative reduces the number of structures impacted by a 100-year storm from 106 to zero, and reduces the number of structures impacted by a 50-year storm from 51 to zero.

The total cost for Alternative 4 is estimated at $4,252,261. This includes $3,153,860 for the replacement of the culvert with the open channel and $297,883 for the Olive Drive Bridge replacement. Engineering design for final plans, ROW acquisition, utility relocation, final survey, and construction phase services will add an additional $800,518 to the project cost. The complete itemized cost estimates for the preferred and other alternatives are located in Appendix J.

References

1. Hydraulics Manual, Louisiana Department of Transportation and Development, adopted November 1984, Revised March 1987.
2. HEC-RAS River Analysis System User's Manual, Version 4.1. United States Army Corps of Engineers. January 2010.

EXHIBITS



P:\Projects\135300.80 City of Slidell Markham-Peachtree Storm Drain Line Imp\DESIGN\DWG\Sheet Set\135300.80 - Soil Map 10-3-11.dwg January 14, 2014 10:43 AM

SHEET NUMBER E1

CITY SLIDELL

VOLKERT PROJECT 135300.80

CITY PROJECT 100-117

DESIGNED E. LONIELLO
CHECKED T. EVETT

DETAILED M. BRYAN
CHECKED E. LONIELLO

DATE 1-9-14
SHEET

VOLKERT

CITY OF SLIDELL

ENGINEER: ANTHONY EVETT
LICENSE #: 35363
DATE: 1-9-2014

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION, BIDDING OR RECORDATION. COMPLETENESS, ACCURACY, SEALED OR DATE AWAIT THE ISSUANCE OF A PERMIT.

CITY OF SLIDELL
MARKHAM-PEACHTREE
STORM DRAIN LINE IMPROVEMENTS

SCHNEIDER CANAL WEST BASIN MAP

CITY OF SLIDELL
LOUISIANA

P:\Projects\135300.80 City of Slidell Markham-Peachtree Storm Drain Line Imp\DESIGN\DWG\135300.80 - Ex_Bridge_Culvert.dwg January 14, 2014 10:43 AM

SHEET NUMBER E2

CITY: SLIDELL
VOLKERT PROJECT: 135300.80
CITY PROJECT: 100–117

DESIGNED: E. LONIELLO
CHECKED: T. EVETT
DETAILED: M. BRYAN
CHECKED: E. LONIELLO
DATE: 1–9–14
SHEET:

VOLKERT

CITY OF SLIDELL
ENGINEER: ANTHONY EVETT
LICENSE # : 33363
DATE: 1-9-2014

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION, BIDDING OR RECORDATION, CONVEYANCE, SALES OR ASSESSMENT PRIOR TO THE ISSUANCE OF A PERMIT.

CITY OF SLIDELL
MARKHAM–PEACHTREE
STORM DRAIN LINE IMPROVEMENTS

EXISTING BRIDGES & CULVERTS

CITY OF SLIDELL
LOUISIANA

CITY OF SLIDELL LOUISIANA

CITY OF SLIDELL
MARKHAM-PEACHTREE
STORM DRAIN LINE IMPROVEMENTS

EASEMENTS

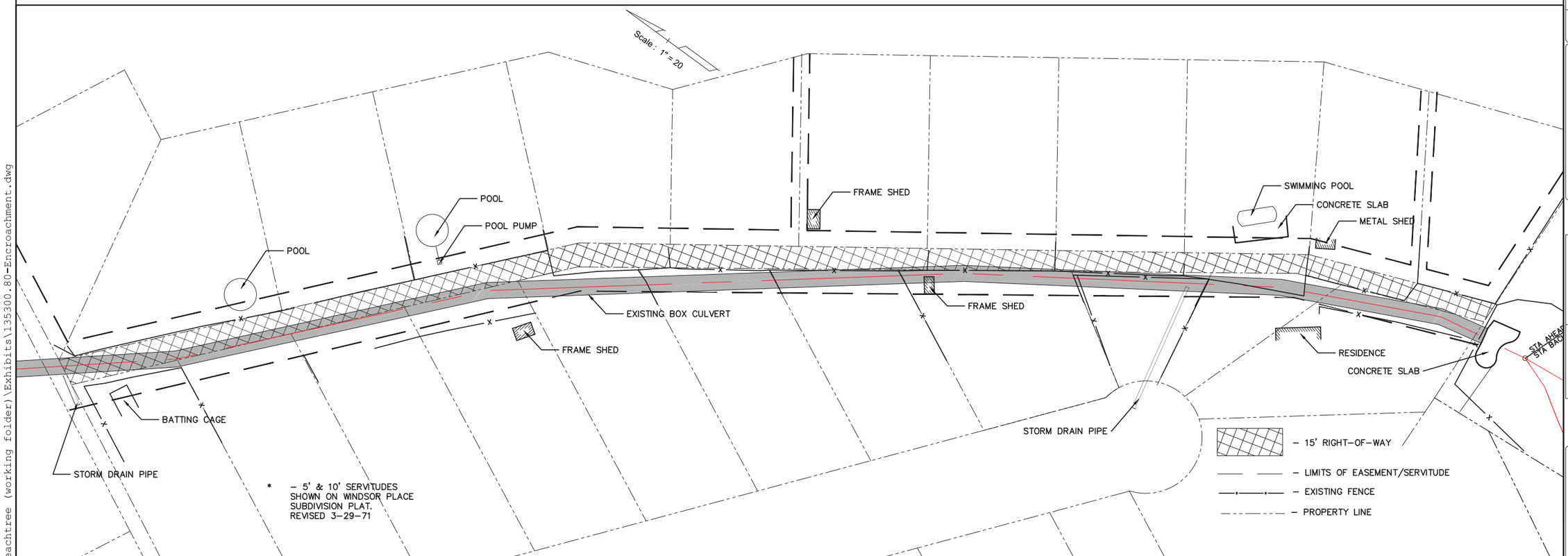
PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

CITY of SLIDELL
ENGINEER: ANTHONY EVETT
LICENSE #: 35363
DATE: 1-9-2014

VOLKERT

DESIGNED	W. PURSER	CITY	SLIDELL
CHECKED	P. GRIGGS		
DETAILED	M. BRYAN	VOLKERT PROJECT	135300.80
CHECKED	W. PURSER		
DATE	1-4-12	CITY PROJECT	100-117
SHEET			

SHEET NUMBER E3



SHEET NUMBER	E4
CITY	SLIDELL
VOLKERT PROJECT	135300.80
CITY PROJECT	100–117
DESIGNED	W. PURSER
CHECKED	P. GRIGGS
DETAILED	M. BRYAN
CHECKED	W. PURSER
DATE	1-4-12
SHEET	

VOLKERT

CITY
SLIDELL

ENGINEER: ANTHONY EVETT
LICENSE #: 33363
DATE: 1-9-2014

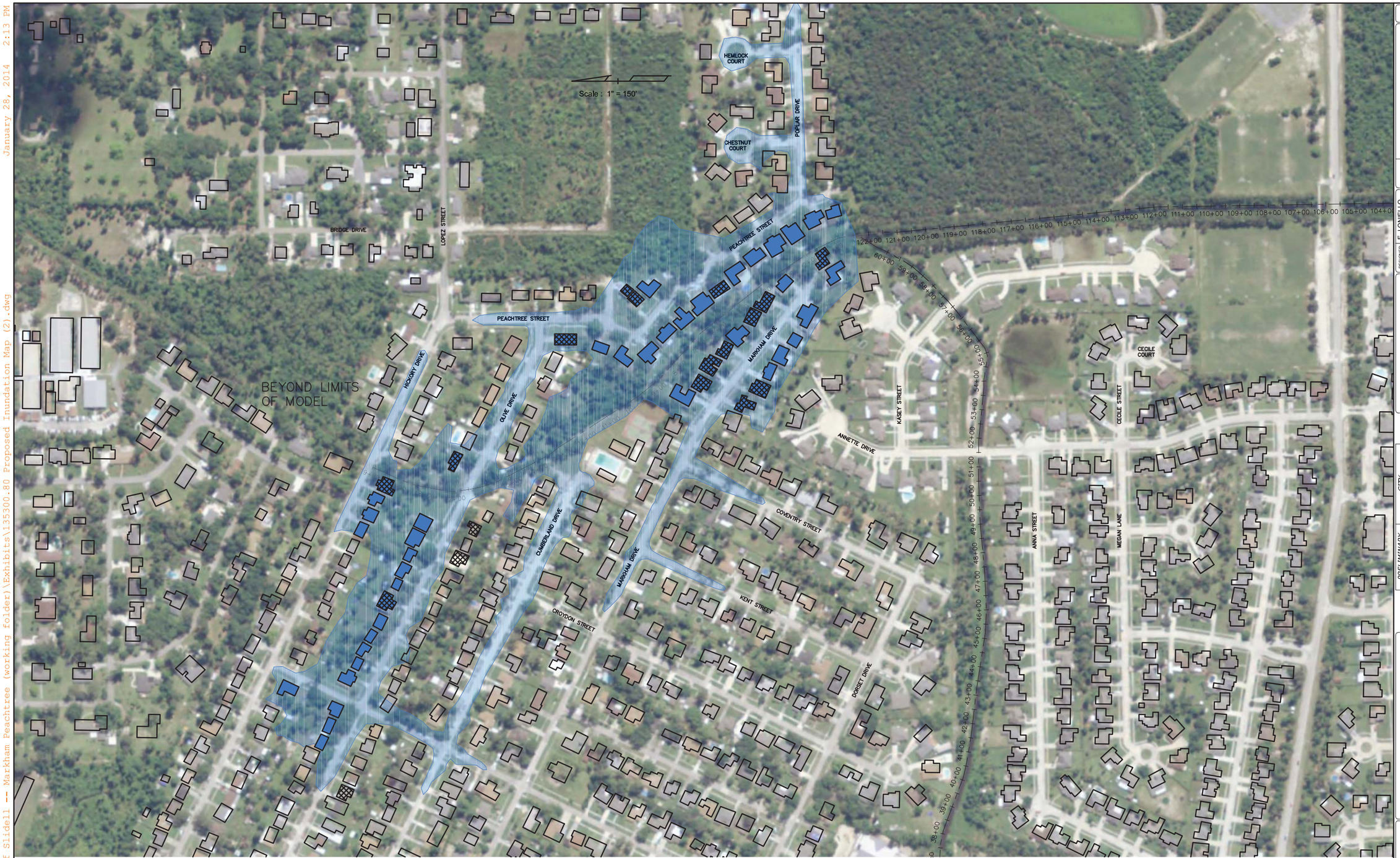
PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

CITY OF SLIDELL
MARKHAM–PEACHTREE
STORM DRAIN LINE IMPROVEMENTS

ENCROACHMENTS

CITY OF
SLIDELL
LOUISIANA

N:\Projects\City of Slidell -- Markham Peachtree (working folder)\Exhibits\135300.80 Proposed Inundation Map (2).dwg January 28, 2014 2:13 PM



LEGEND

EXISTING INUNDATION LIMIT –

STRUCTURES WITH REPETITIVE LOSS CLAIMS –

STRUCTURES IN EXISTING 50 YEAR FLOOD LIMIT – 51

EXISTING CONDITIONS 50 YEAR STORM

NOTES:

1. 25 YR AND LESSER STORM EVENTS ARE CONTAINED WITHIN THE CHANNEL.
2. INUNDATION LIMITS DO NOT TAKE INTO ACCOUNT FLOODING DUE TO STORM WATERS NOT BEING ABLE TO FLOW TO THE DRAINAGE CANAL DUE TO CLOGGED OR UNDERSIZED DRAINS, LOW SPOTS, ETC.
3. INUNDATION LIMITS WERE ESTABLISHED USING LIDAR DATA OBTAINED FROM THE ATLAS WEBSITE (HTTP://ATLAS.LSU.EDU). DATA USED IS DATED 2001.
4.
5.

SHEET NUMBER E5

DESIGNED	E. LONIELLO	CITY	SLIDELL
CHECKED	T. EVETT		
DETAILED	M. BRYAN	VOLKERT PROJECT	135300.80
CHECKED	E. LONIELLO		
DATE	1-9-14	CITY PROJECT	100–117
SHEET			

VOLKERT

CITY SLIDELL

ENGINEER: ANTHONY EVETT
LICENSE #: 33363
DATE: 1-9-2014

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECONDATION, CONVEYANCES OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

CITY OF SLIDELL
MARKHAM–PEACHTREE
STORM DRAIN LINE IMPROVEMENTS

EXISTING INUNDATION MAP

CITY OF SLIDELL LOUISIANA

N:\Projects\City of Slidell -- Markham Peachtree (working folder)\Exhibits\135300.80 Proposed Inundation Map (2).dwg January 28, 2014 2:31 PM

LEGEND

EXISTING INUNDATION LIMIT –

STRUCTURES WITH REPETITIVE LOSS CLAIMS –

STRUCTURES IN EXISTING 100 YEAR FLOOD LIMIT – 110

EXISTING CONDITIONS 100 YEAR STORM

NOTES:

1. 25 YR AND LESSER STORM EVENTS ARE CONTAINED WITHIN THE CHANNEL.
2. INUNDATION LIMITS DO NOT TAKE INTO ACCOUNT FLOODING DUE TO STORM WATERS NOT BEING ABLE TO FLOW TO THE DRAINAGE CANAL DUE TO CLOGGED OR UNDERSIZED DRAINS, LOW SPOTS, ETC.
3. INUNDATION LIMITS WERE ESTABLISHED USING LIDAR DATA OBTAINED FROM THE ATLAS WEBSITE (HTTP://ATLAS.LSU.EDU). DATA USED IS DATED 2001.
4.
5.

SHEET NUMBER E6

DESIGNED	E. LONIELLO	CITY	SLIDELL
CHECKED	T. EVETT		
DETAILED	M. BRYAN	VOLKERT PROJECT	135300.80
CHECKED	E. LONIELLO		
DATE	1-9-14	CITY PROJECT	100–117
SHEET			

VOLKERT

CITY SLIDELL

ENGINEER: ANTHONY EVETT
LICENSE #: 33363
DATE: 1-9-2014

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECONDATION, CONVEYANCES, SALES OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

CITY OF SLIDELL
MARKHAM–PEACHTREE
STORM DRAIN LINE IMPROVEMENTS

EXISTING INUNDATION MAP

CITY OF SLIDELL LOUISIANA

LEGEND

PROJECTEDINUNDATION LIMIT –

STRUCTURES WITH REPETITIVE LOSS CLAIMS –

STRUCTURES IN EXISTING 100 YEAR FLOOD LIMIT –

8 STRUCTURES REMOVED FROM LIMITS

ALTERNATIVE 1
100 YEAR STORM

NOTES:

1. 50 YR AND LESSER STORM EVENTS ARE CONTAINED WITHIN THE CHANNEL.
2. INUNDATION LIMITS DO NOT TAKE INTO ACCOUNT FLOODING DUE TO STORM WATERS NOT BEING ABLE TO FLOW TO THE DRAINAGE CANAL DUE TO CLOGGED OR UNDERSIZED DRAINS, LOW SPOTS, ETC.
3. INUNDATION LIMITS WERE ESTABLISHED USING LIDAR DATA OBTAINED FROM THE ATLAS WEBSITE (HTTP://ATLAS.LSU.EDU). DATA USED IS DATED 2001.

SHEET NUMBER E7

DESIGNED	E. LONIELLO	CITY	SLIDELL
CHECKED	T. EVETT		
DETAILED	M. BRYAN	VOLKERT PROJECT	135300.80
CHECKED	E. LONIELLO		
DATE	1-9-14	CITY PROJECT	100-117
SHEET			

VOLKERT

CITY OF SLIDELL

ENGINEER: ANTHONY EVETT
LICENSE #: 35363
DATE: 1-9-2014

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES OR ANY PURPOSE OTHER THE ISSUANCE OF A PERMIT.

CITY OF SLIDELL
MARKHAM-PEACHTREE
STORM DRAIN LINE IMPROVEMENTS

PROJECTED INUNDATION MAP

CITY OF SLIDELL
LOUISIANA

P:\Projects\135300.80 City of Slidell Markham-Peachtree Storm Drain Line Imp\DESIGN\DWG\Incoming\135300.80 Proposed Inundation Map.dwg January 30, 2014 11:51 AM

N:\Projects\City of Slidell -- Markham Peachtree (working folder)\Exhibits\135300.80 Proposed Inundation Map (2).dwg January 28, 2014 6:37 PM

LEGEND

PROJECTED INUNDATION LIMIT –

STRUCTURES WITH REPETITIVE LOSS CLAIMS –

STRUCTURES IN EXISTING 100 YEAR FLOOD LIMIT –

63 STRUCTURES REMOVED FROM LIMITS

ALTERNATIVE 2
100 YEAR STORM

NOTES:

1. 50 YR AND LESSER STORM EVENTS ARE CONTAINED WITHIN THE CHANNEL.
2. INUNDATION LIMITS DO NOT TAKE INTO ACCOUNT FLOODING DUE TO STORM WATERS NOT BEING ABLE TO FLOW TO THE DRAINAGE CANAL DUE TO CLOGGED OR UNDERSIZED DRAINS, LOW SPOTS, ETC.
3. INUNDATION LIMITS WERE ESTABLISHED USING LIDAR DATA OBTAINED FROM THE ATLAS WEBSITE (HTTP://ATLAS.LSU.EDU). DATA USED IS DATED 2001.

SHEET NUMBER	E8
CITY	SLIDELL
VOLKERT PROJECT	135300.80
CITY PROJECT	100–117
DESIGNED	E. LONIELLO
CHECKED	T. EVETT
DETAILED	M. BRYAN
CHECKED	E. LONIELLO
DATE	1-9-12
SHEET	

VOLKERT

CITY SLIDELL

ENGINEER: ANTHONY EVETT
LICENSE #: 33363
DATE: 1-9-2014

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECONDATION, CONVEYANCES OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

CITY OF SLIDELL
MARKHAM–PEACHTREE
STORM DRAIN LINE IMPROVEMENTS

PROJECTED INUNDATION MAP

CITY OF SLIDELL LOUISIANA

N:\Projects\City of Slidell -- Markham Peachtree (working folder)\Exhibits\135300.80 Proposed Inundation Map (2).dwg January 28, 2014 7:55 PM

LEGEND

PROJECTED INUNDATION LIMIT –

STRUCTURES WITH REPETITIVE LOSS CLAIMS –

STRUCTURES IN EXISTING 100 YEAR FLOOD LIMIT – 71 STRUCTURES REMOVED FROM LIMITS

ALTERNATIVE 3
100 YEAR STORM

NOTES:

1. 50 YR AND LESSER STORM EVENTS ARE CONTAINED WITHIN THE CHANNEL.
2. INUNDATION LIMITS DO NOT TAKE INTO ACCOUNT FLOODING DUE TO STORM WATERS NOT BEING ABLE TO FLOW TO THE DRAINAGE CANAL DUE TO CLOGGED OR UNDERSIZED DRAINS, LOW SPOTS, ETC.
3. INUNDATION LIMITS WERE ESTABLISHED USING LIDAR DATA OBTAINED FROM THE ATLAS WEBSITE (HTTP://ATLAS.LSU.EDU). DATA USED IS DATED 2001.

SHEET NUMBER	E9
CITY	SLIDELL
VOLKERT PROJECT	135300.80
CITY PROJECT	100–117
DESIGNED	E. LONIELLO
CHECKED	T. EVETT
DETAILED	M. BRYAN
CHECKED	E. LONIELLO
DATE	1-9-14
SHEET	

VOLKERT

CITY SLIDELL

ENGINEER: ANTHONY EVETT
LICENSE #: 33363
DATE: 1-9-2014

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECONDATION, CONVEYANCES OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

CITY OF SLIDELL
MARKHAM–PEACHTREE
STORM DRAIN LINE IMPROVEMENTS

PROJECTED INUNDATION MAP

CITY OF SLIDELL LOUISIANA

LEGEND

100 YEAR INUNDATION LIMIT –

STRUCTURES WITH REPETITIVE – LOSS CLAIMS

STRUCTURES IN EXISTING 100 – YEAR FLOOD LIMIT

106 STRUCTURES REMOVED FROM LIMITS

ALTERNATIVE 4
100 YEAR STORM

NOTES:

1. 100 YR AND LESSER STORM EVENTS ARE CONTAINED WITHIN THE CHANNEL.
2. INUNDATION LIMITS DO NOT TAKE INTO ACCOUNT FLOODING DUE TO STORM WATERS NOT BEING ABLE TO FLOW TO THE DRAINAGE CANAL DUE TO CLOGGED OR UNDERSIZED DRAINS, LOW SPOTS, ETC.
3. INUNDATION LIMITS WERE ESTABLISHED USING LIDAR DATA OBTAINED FROM THE ATLAS WEBSITE (HTTP://ATLAS.LSU.EDU). DATA USED IS DATED 2001.

SHEET NUMBER E10

DESIGNED	E. LONIELLO	CITY	SLIDELL
CHECKED	T. EVETT		
DETAILED	M. BRYAN	VOLKERT PROJECT	135300.80
CHECKED	E. LONIELLO		
DATE	1-9-14	CITY PROJECT	100-117
SHEET			

VOLKERT

CITY OF SLIDELL

ENGINEER: ANTHONY EVETT
LICENSE # : 33363
DATE: 1-9-2014

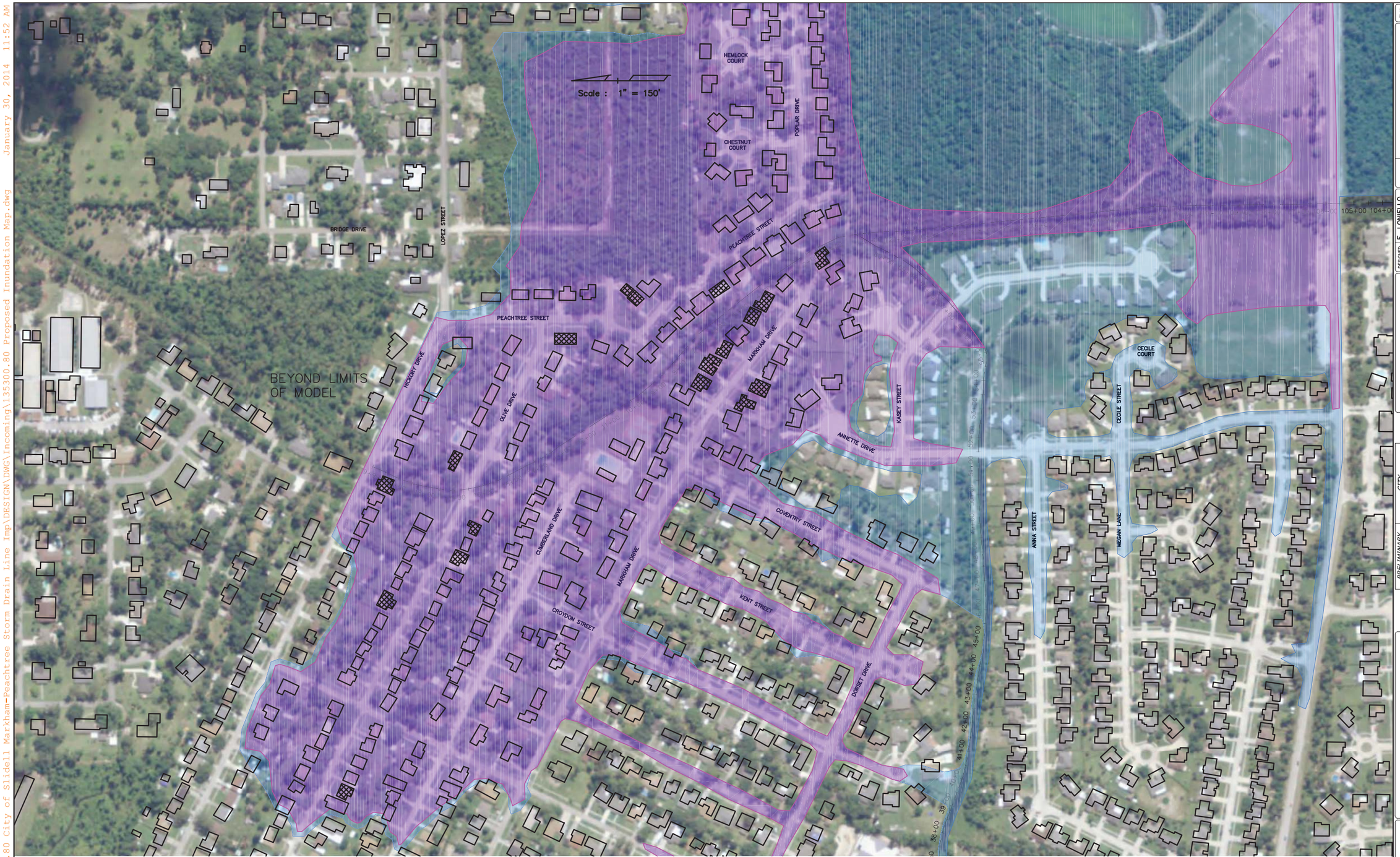
PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION, BIDDING OR RECORDATION, CONVEYANCE, SALES OR ANY PURPOSE PRIOR TO THE ISSUANCE OF A PERMIT.

CITY OF SLIDELL
MARKHAM–PEACHTREE
STORM DRAIN LINE IMPROVEMENTS

PROJECTED INUNDATION MAP

CITY OF SLIDELL LOUISIANA

P:\Projects\135300.80 City of Slidell Markham-Peachtree Storm Drain Line Imp\DESIGN\DWG\Incoming\135300.80 Proposed Inundation Map.dwg January 30, 2014 11:51 AM



LEGEND

EXISTING INUNDATION LIMIT –

PROJECTED INUNDATION LIMIT (ALTERNATIVES 2 AND 3 ONLY) –

STRUCTURES WITH REPETITIVE LOSS CLAIMS –

500 YEAR STORM

NOTES:

1. NO IMPROVEMENTS IN THE 500 YEAR INUNDATION LIMITS ARE NOTED FOR ALTERNATIVES 1 OR 4. ONLY THE IMPROVEMENTS TO SPARTAN DRIVE (ALTERNATIVES 2 AND 3) SIGNIFICANTLY AFFECT THE 500–YEAR INUNDATION LIMITS.
2. INUNDATION LIMITS DO NOT TAKE INTO ACCOUNT FLOODING DUE TO STORM WATERS NOT BEING ABLE TO FLOW TO THE DRAINAGE CANAL DUE TO CLOGGED OR UNDERSIZED DRAINS, LOW SPOTS, ETC.
3. INUNDATION LIMITS WERE ESTABLISHED USING LIDAR DATA OBTAINED FROM THE ATLAS WEBSITE (HTTP://ATLAS.LSU.EDU). DATA USED IS DATED 2001.

SHEET NUMBER E11

CITY: SLIDELL
VOLKERT PROJECT: 135300.80
CITY PROJECT: 100–117

DESIGNED: E. LONIELLO
CHECKED: T. EVETT
DETAILED: M. BRYAN
CHECKED: E. LONIELLO
DATE: 1–23–14
SHEET:

VOLKERT

CITY OF SLIDELL
ENGINEER: ANTHONY EVETT
LICENSE #: 35363
DATE: 1-9-2014

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES OR ANY PURPOSE OTHER THE ISSUANCE OF A PERMIT.

CITY OF SLIDELL MARKHAM–PEACHTREE STORM DRAIN LINE IMPROVEMENTS

500 YEAR INUNDATION MAP

CITY OF SLIDELL LOUISIANA

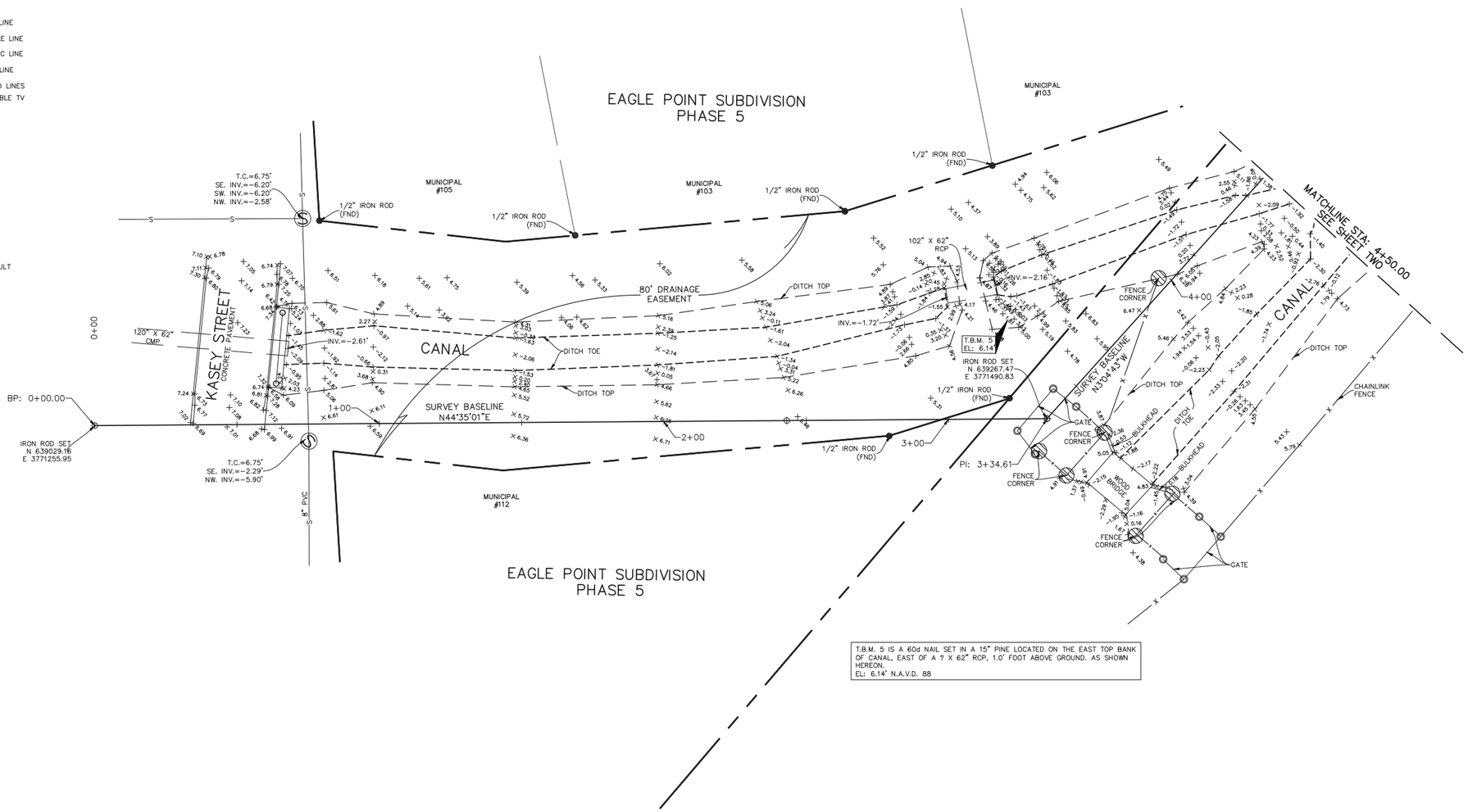
P:\Projects\135300.80 City of Slidell Markham-Peachtree Storm Drain Line Imp\DESIGN\DWG\Incoming\135300.80 Proposed Inundation Map.dwg January 30, 2014 11:52 AM

APPENDIX A

TOPOGRAPHIC SURVEYS

LEGEND

- BUILDING
- EXISTING RIGHT OF WAY
- CATCH BASIN
- CULVERT
- DROP INLET, DRAIN LINE
- DROP INLET, DRAIN LINE
- COMMUNICATIONS MANHOLE, COMM. LINE
- DRAIN MANHOLE, DRAIN LINE
- ELECTRICAL MANHOLE, ELEC. LINE
- GAS MANHOLE, GAS LINE
- SEWER MANHOLE, SEWER LINE
- TELEPHONE MANHOLE, TELE LINE
- TRAFFIC MANHOLE, TRAFFIC LINE
- WATER MANHOLE, WATER LINE
- UTILITY POLE / OVERHEAD LINES ELECTRIC, TELEPHONE, CABLE TV
- FENCE
- UTILITY BOX
- UTILITY CLEANOUT
- UTILITY METER
- UTILITY PEDESTAL
- UTILITY VALVE
- UTILITY VALVE VAULT
- FIRE HYDRANT
- LIGHT STANDARD
- TRAFFIC SIGNAL POLE
- TRAFFIC LIGHT POWER VAULT
- CANOPY SUPPORT
- SIGN
- TREE
- RESIDENTIAL MAILBOX
- PP DEADMAN



T.B.M. 5 IS A 60d NAIL SET IN A 15" PINE LOCATED ON THE EAST TOP BANK OF CANAL, EAST OF A ? X 62" RCP, 1.0' FOOT ABOVE GROUND. AS SHOWN HEREON.
EL: 6.14' N.A.V.D. 88

VICINITY MAP
NOT TO SCALE

GENERAL NOTES

THE LOCATIONS OF UNDERGROUND AND OTHER NONVISIBLE UTILITIES SHOWN HEREON HAVE BEEN DETERMINED FROM DATA EITHER FURNISHED BY THE AGENCIES CONTROLLING SUCH DATA AND/OR EXTRACTED FROM RECORDS MADE AVAILABLE TO US BY THE AGENCIES CONTROLLING SUCH RECORDS. WHERE FOUND, THE SURFACE FEATURES OF LOCATIONS ARE SHOWN. THE ACTUAL NONVISIBLE LOCATIONS MAY VARY FROM THOSE SHOWN HEREON. EACH AGENCY SHOULD BE CONTACTED RELATIVE TO THE PRECISE LOCATION OF ITS UNDERGROUND INSTALLATION PRIOR TO ANY RELIANCE UPON THE ACCURACY OF SUCH LOCATIONS SHOWN HEREON, INCLUDING PRIOR TO EXCAVATION AND DIGGING.

ALL ELEVATIONS SHOWN REFER TO N.A.V.D. 88 DATUM.
N.A.V.D. = NORTH AMERICAN VERTICAL DATUM

REFERENCE B.M. = 52 V 075
ELEVATION = 10.67' N.A.V.D. 88

The Servitudes and Restrictions shown on this survey are limited to those set forth in the description furnished us and there is no representation that all applicable Servitudes and Restrictions are shown hereon. The surveyor has made no title search or public record search in compiling the data for this survey.

GRID NORTH

NORTH REFERENCED TO LOUISIANA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 83.

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

STATE OF LOUISIANA
JOHN S. TEEGARDEN
REG. No. 4635
REGISTERED PROFESSIONAL
LAND SURVEYOR

REGISTERED PROFESSIONAL LAND SURVEYOR
JOHN S. TEEGARDEN
REGISTRATION NO. 4635

BGM CORPORATION, L.L.C.
Professional Land Surveyors
534 WILLIAMS BOULEVARD
E-mail: bgmcorporation@bellsouth.net
(504) 468-8800
Fax No. (504) 467-0065
KENNER, LOUISIANA 70062
JEFFERSON PARISH, LOUISIANA, 70062

TOPOGRAPHIC SURVEY OF THE MARKHAM–PEACHTREE STROM DRAIN LINES FROM KASEY STREET TO HICKORY STREET CITY OF SLIDELL ST. TAMMANY PARISH, LOUISIANA

I certify that this plat represents an actual ground survey made by me or under my direction, and it does conform to the requirements for the Minimum Standards for Property Boundary Surveys as found in Louisiana Administrative Code TITLE 46: LX, Chapter 29 for a Class C survey.

VOLKERT

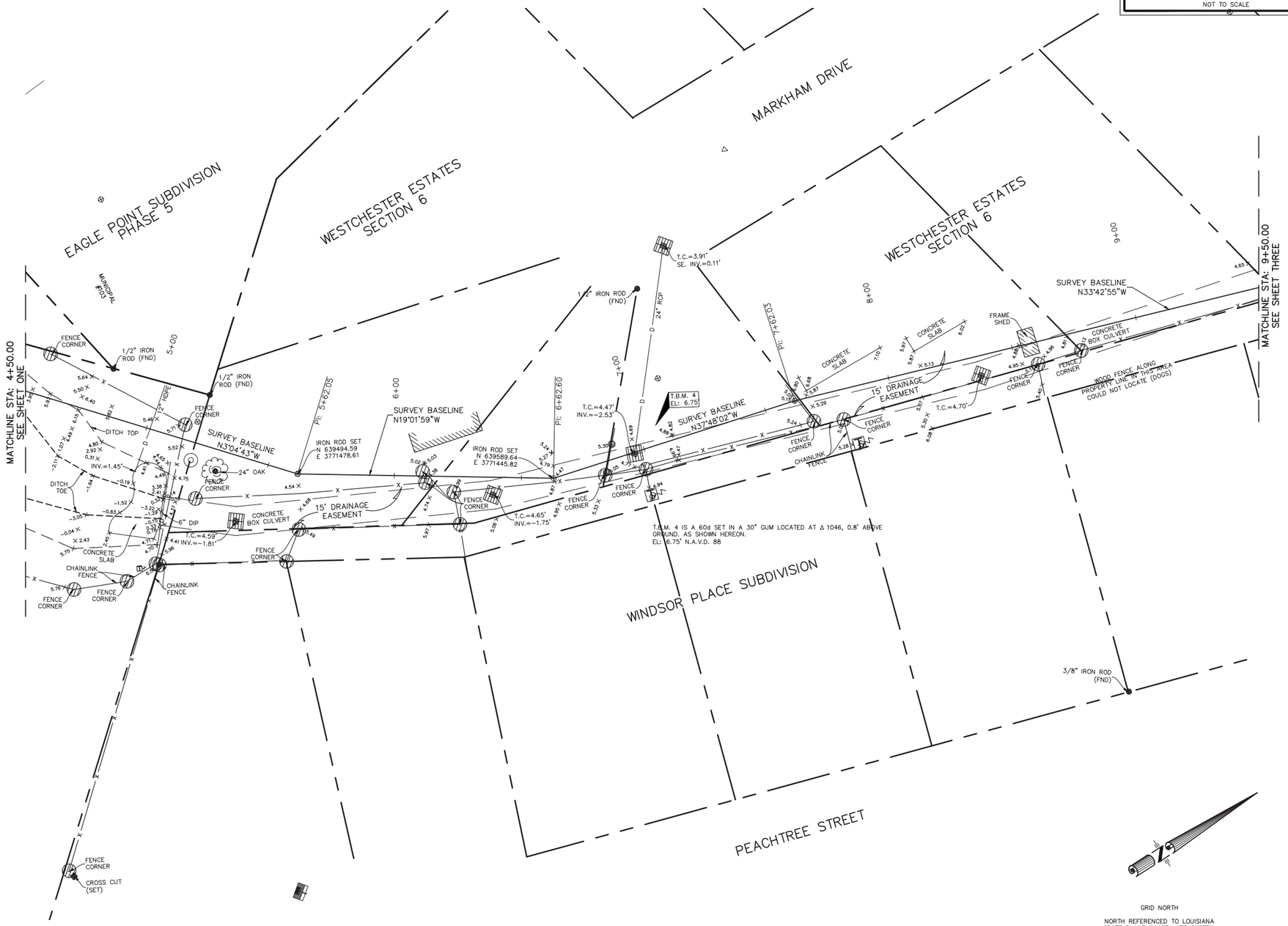
MARK	DESCRIPTION	DATE	BY	CHK'D

REVISION RECORD

SCALE:	1" = 20'
DATE:	JUNE 17, 2011
DRAWN BY:	J.N.S.
CHECKED BY:	K.A.B.
PROJECT NO.	70518
DRAWING NO.	70518
SHEET	1 OF 5

LEGEND

- BUILDING
- EXISTING RIGHT OF WAY
- CATCH BASIN
- CULVERT
- DROP INLET, DRAIN LINE
- DROP INLET, DRAIN LINE
- COMMUNICATIONS MANHOLE, COMM. LINE
- DRAIN MANHOLE, DRAIN LINE
- ELECTRICAL MANHOLE, ELEC. LINE
- GAS MANHOLE, GAS LINE
- SEWER MANHOLE, SEWER LINE
- TELEPHONE MANHOLE, TELE LINE
- TRAFFIC MANHOLE, TRAFFIC LINE
- WATER MANHOLE, WATER LINE
- UTILITY POLE / OVERHEAD LINES ELECTRIC, TELEPHONE, CABLE TV
- FENCE
- UTILITY BOX
- UTILITY CLEANOUT
- UTILITY METER
- UTILITY PEDESTAL
- UTILITY VALVE
- UTILITY VALVE VAULT
- FIRE HYDRANT
- LIGHT STANDARD
- TRAFFIC SIGNAL POLE
- TRAFFIC LIGHT POWER VAULT
- CANOPY SUPPORT
- SIGN
- TREE
- RESIDENTIAL MAILBOX
- PP DEADMAN



The Servitudes and Restrictions shown on this survey are limited to those set forth in the description furnished us and there is no representation that all applicable Servitudes and Restrictions are shown hereon. The surveyor has made no title search or public record search in compiling the data for this survey.

GENERAL NOTES

THE LOCATIONS OF UNDERGROUND AND OTHER NONVISIBLE UTILITIES SHOWN HEREON HAVE BEEN DETERMINED FROM DATA EITHER FURNISHED BY THE AGENCIES CONTROLLING SUCH DATA AND/OR EXTRACTED FROM RECORDS MADE AVAILABLE TO US BY THE AGENCIES CONTROLLING SUCH RECORDS. WHERE FOUND, THE SURFACE FEATURES OF LOCATIONS ARE SHOWN. THE ACTUAL NONVISIBLE LOCATIONS MAY VARY FROM THOSE SHOWN HEREON. EACH AGENCY SHOULD BE CONTACTED RELATIVE TO THE PRECISE LOCATION OF ITS UNDERGROUND INSTALLATION PRIOR TO ANY RELIANCE UPON THE ACCURACY OF SUCH LOCATIONS SHOWN HEREON, INCLUDING PRIOR TO EXCAVATION AND DIGGING.

ALL ELEVATIONS SHOWN REFER TO N.A.V.D. 88 DATUM.
N.A.V.D. = NORTH AMERICAN VERTICAL DATUM

REFERENCE B.M. = 52 V 075
ELEVATION = 10.67' N.A.V.D. 88

GRID NORTH

NORTH REFERENCED TO LOUISIANA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 83.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

VICINITY MAP
NOT TO SCALE

STATE OF LOUISIANA
JOHN S. TILLEMAN
REG. No. 4635
REGISTERED PROFESSIONAL LAND SURVEYOR

REGISTERED PROFESSIONAL LAND SURVEYOR
JOHN S. TILLEMAN
REGISTRATION NO. 4635

BGM CORPORATION, L.L.C.
Professional Land Surveyors
534 WILLIAMS BOULEVARD
E-mail: bgmcorporation@bellsouth.net
(504) 468-8800
Fax No. (504) 467-0065
FIRM No. LA 2000 465
JEFFERSON PARISH, LOUISIANA, 70062

TOPOGRAPHIC SURVEY OF THE MARKHAM–PEACHTREE STROM DRAIN LINES FROM KASEY STREET TO HICKORY STREET
CITY OF SLIDELL
ST. TAMMANY PARISH, LOUISIANA

I certify that this plat represents an actual ground survey made by me or under my direction, and it does conform to the requirements for the Minimum Standards for Property Boundary Surveys as found in Louisiana Administrative Code TITLE 46, Ch. Chapter 29 for a Class C survey.

VOLKERT

MARK	DESCRIPTION	DATE	BY	CHK'D

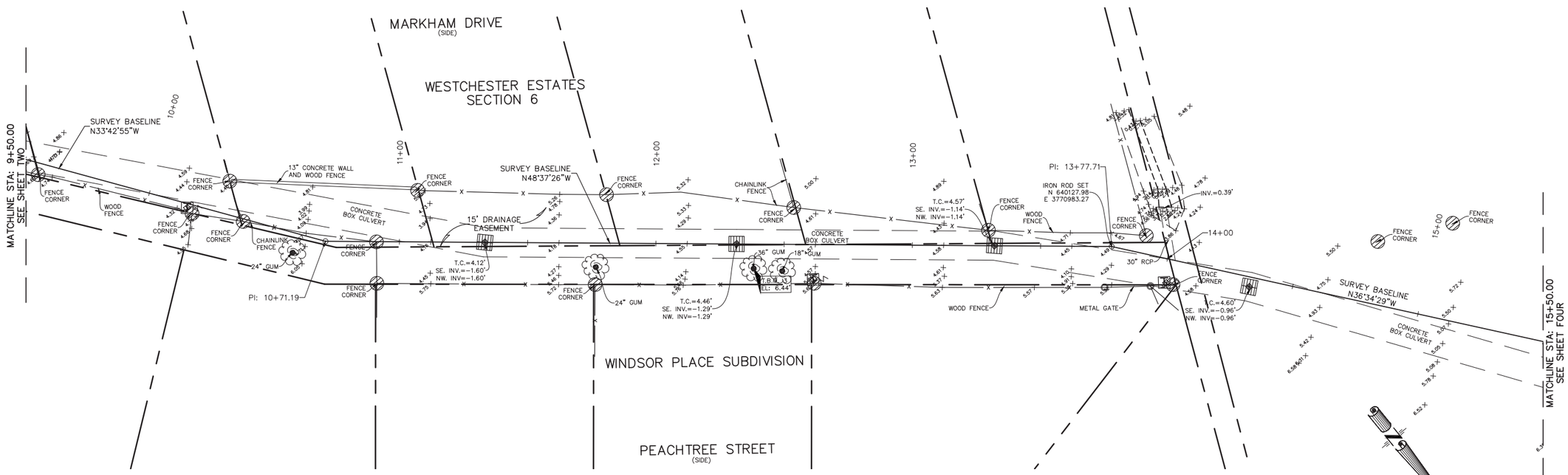
REVISION RECORD

SCALE:	1" = 20'
DATE:	JUNE 17, 2011
DRAWN BY:	J.N.S.
CHECKED BY:	K.A.B.
PROJECT NO.	70518
DRAWING NO.	70518
SHEET	2 OF 5

LEGEND

- BUILDING
- EXISTING RIGHT OF WAY
- CATCH BASIN
- CULVERT
- DROP INLET, DRAIN LINE
- DROP INLET, DRAIN LINE
- COMMUNICATIONS MANHOLE, COMM. LINE
- DRAIN MANHOLE, DRAIN LINE
- ELECTRICAL MANHOLE, ELEC. LINE
- GAS MANHOLE, GAS LINE
- SEWER MANHOLE, SEWER LINE
- TELEPHONE MANHOLE, TELE LINE
- TRAFFIC MANHOLE, TRAFFIC LINE
- WATER MANHOLE, WATER LINE
- UTILITY POLE / OVERHEAD LINES ELECTRIC, TELEPHONE, CABLE TV
- FENCE
- UTILITY BOX
- UTILITY CLEANOUT
- UTILITY METER
- UTILITY PEDESTAL
- UTILITY VALVE
- UTILITY VALVE VAULT
- FIRE HYDRANT
- LIGHT STANDARD
- TRAFFIC SIGNAL POLE
- TRAFFIC LIGHT POWER VAULT
- CANOPY SUPPORT
- SIGN
- TREE
- RESIDENTIAL MAILBOX
- PP DEADMAN

VICINITY MAP
NOT TO SCALE



The Servitudes and Restrictions shown on this survey are limited to those set forth in the description furnished us and there is no representation that all applicable Servitudes and Restrictions are shown hereon. The surveyor has made no title search or public record search in compiling the data for this survey.

GENERAL NOTES

THE LOCATIONS OF UNDERGROUND AND OTHER NONVISIBLE UTILITIES SHOWN HEREON HAVE BEEN DETERMINED FROM DATA EITHER FURNISHED BY THE AGENCIES CONTROLLING SUCH DATA AND/OR EXTRACTED FROM RECORDS MADE AVAILABLE TO US BY THE AGENCIES CONTROLLING SUCH RECORDS. WHERE FOUND, THE SURFACE FEATURES OF LOCATIONS ARE SHOWN. THE ACTUAL NONVISIBLE LOCATIONS MAY VARY FROM THOSE SHOWN HEREON. EACH AGENCY SHOULD BE CONTACTED RELATIVE TO THE PRECISE LOCATION OF ITS UNDERGROUND INSTALLATION PRIOR TO ANY RELIANCE UPON THE ACCURACY OF SUCH LOCATIONS SHOWN HEREON, INCLUDING PRIOR TO EXCAVATION AND DIGGING.

ALL ELEVATIONS SHOWN REFER TO N.A.V.D. 88 DATUM.
N.A.V.D. = NORTH AMERICAN VERTICAL DATUM

REFERENCE B.M. = 52 V 075
ELEVATION = 10.67' N.A.V.D. 88

GRID NORTH

NORTH REFERENCED TO LOUISIANA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 83.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

STATE OF LOUISIANA
JOHN S. TILEGRDEN
REG. No. 4635
REGISTERED
PROFESSIONAL
LAND SURVEYOR

REGISTERED PROFESSIONAL LAND SURVEYOR
JOHN S. TILEGRDEN
REGISTRATION NO. 4635

BGM CORPORATION, L.L.C.
Professional Land Surveyors
534 WILLIAMS BOULEVARD
E-mail: Bgmcorporation@bellsouth.com
(504) 468-8800
Fax No. (504) 467-0065
JOB No. 2006-0065
JEFFERSON PARISH, LOUISIANA, 70062

TOPOGRAPHIC SURVEY OF THE MARKHAM-PEACHTREE STROM DRAIN LINES FROM KASEY STREET TO HICKORY STREET

CITY OF SLIDELL
ST. TAMMANY PARISH, LOUISIANA

I certify that this plat represents an actual ground survey made by me or under my direction, and it does conform to the requirements for the Minimum Standards for Property Boundary Surveys as found in Louisiana Administrative Code, TITLE 46, LXI, Chapter 29 for a Class C survey.

VOLKERT

MARK	DESCRIPTION	DATE	BY	CH'D
	REVISION RECORD			

SCALE: 1" = 20'

DATE: JUNE 17, 2011

DRAWN BY: J.N.S.

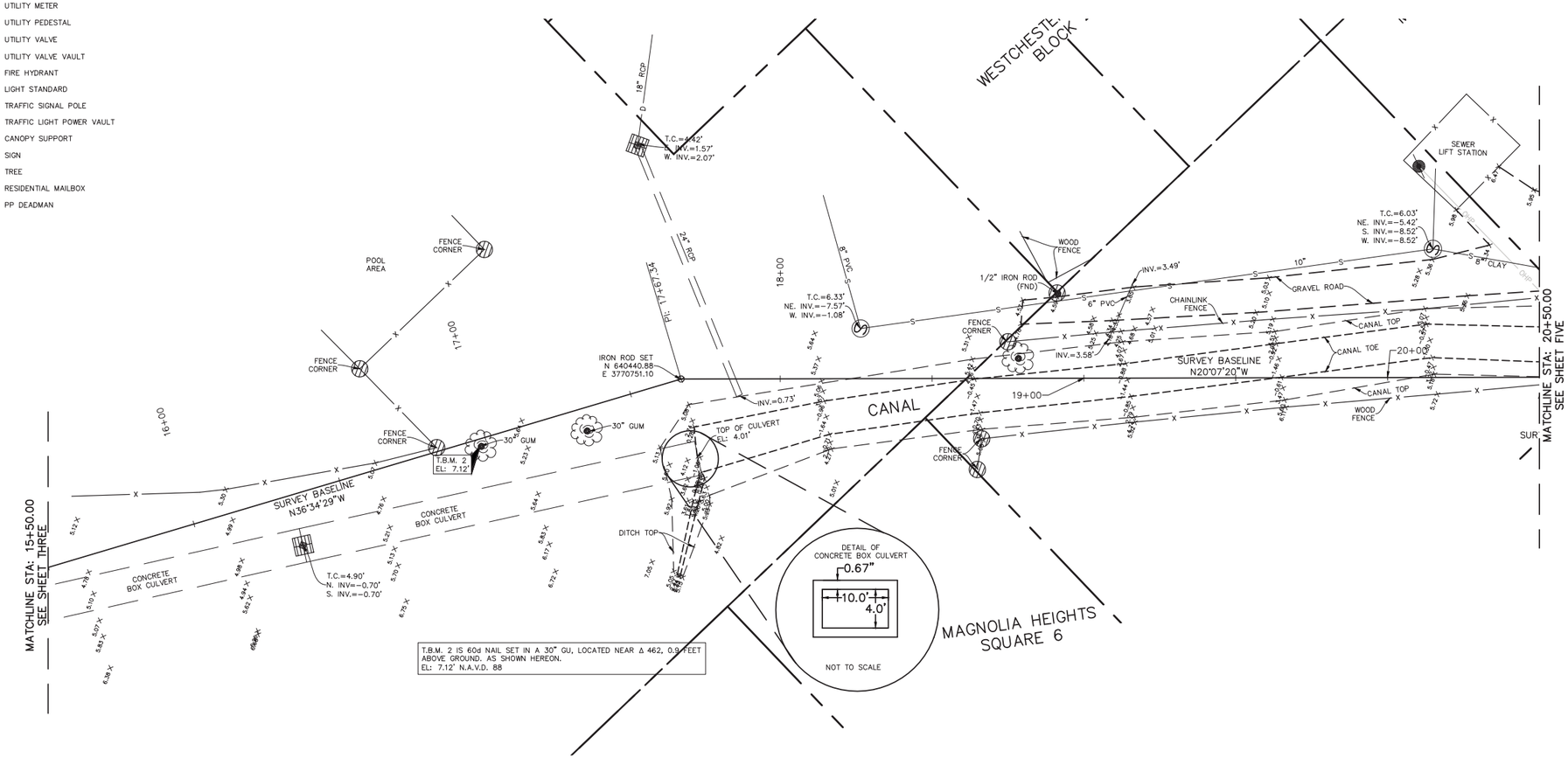
CHECKED BY: K.A.B.

PROJECT NO. 70518 | DRAWING NO. 70518

SHEET 3 OF 5

LEGEND

- BUILDING
- EXISTING RIGHT OF WAY
- CATCH BASIN
- CULVERT
- DROP INLET, DRAIN LINE
- DROP INLET, DRAIN LINE
- COMMUNICATIONS MANHOLE, COMM. LINE
- DRAIN MANHOLE, DRAIN LINE
- ELECTRICAL MANHOLE, ELEC. LINE
- GAS MANHOLE, GAS LINE
- SEWER MANHOLE, SEWER LINE
- TELEPHONE MANHOLE, TELE LINE
- TRAFFIC MANHOLE, TRAFFIC LINE
- WATER MANHOLE, WATER LINE
- UTILITY POLE / OVERHEAD LINES ELECTRIC, TELEPHONE, CABLE TV
- FENCE
- UTILITY BOX
- UTILITY CLEANOUT
- UTILITY METER
- UTILITY PEDESTAL
- UTILITY VALVE
- UTILITY VALVE VAULT
- FIRE HYDRANT
- LIGHT STANDARD
- TRAFFIC SIGNAL POLE
- TRAFFIC LIGHT POWER VAULT
- CANOPY SUPPORT
- SIGN
- TREE
- RESIDENTIAL MAILBOX
- PP DEADMAN



T.B.M. 2 IS 60d NAIL SET IN A 30" GU, LOCATED NEAR Δ 462, 0.9 FEET ABOVE GROUND. AS SHOWN HEREON.
EL: 7.12' N.A.V.D. 88

The Servitudes and Restrictions shown on this survey are limited to those set forth in the description furnished us and there is no representation that all applicable Servitudes and Restrictions are shown hereon. The surveyor has made no title search or public record search in compiling the data for this survey.

GENERAL NOTES

THE LOCATIONS OF UNDERGROUND AND OTHER NONVISIBLE UTILITIES SHOWN HEREON HAVE BEEN DETERMINED FROM DATA EITHER FURNISHED BY THE AGENCIES CONTROLLING SUCH DATA AND/OR EXTRACTED FROM RECORDS MADE AVAILABLE TO US BY THE AGENCIES CONTROLLING SUCH RECORDS. WHERE FOUND, THE SURFACE FEATURES OF LOCATIONS ARE SHOWN. THE ACTUAL NONVISIBLE LOCATIONS MAY VARY FROM THOSE SHOWN HEREON. EACH AGENCY SHOULD BE CONTACTED RELATIVE TO THE PRECISE LOCATION OF ITS UNDERGROUND INSTALLATION PRIOR TO ANY RELIANCE UPON THE ACCURACY OF SUCH LOCATIONS SHOWN HEREON, INCLUDING PRIOR TO EXCAVATION AND DIGGING.

ALL ELEVATIONS SHOWN REFER TO N.A.V.D. 88 DATUM.
N.A.V.D. = NORTH AMERICAN VERTICAL DATUM

REFERENCE B.M. = 52 V 075
ELEVATION = 10.67' N.A.V.D. 88

GRID NORTH

NORTH REFERENCED TO LOUISIANA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 83.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

VICINITY MAP
NOT TO SCALE

STATE OF LOUISIANA
JOHN S. TILEGREN
REG. No. 4635
REGISTERED PROFESSIONAL LAND SURVEYOR

REGISTERED PROFESSIONAL LAND SURVEYOR
JOHN S. TILEGREN
REGISTRATION NO. 4635

BGM CORPORATION, L.L.C.
Professional Land Surveyors
534 WILLIAMS BOULEVARD
E-mail: bgmcorporation@bellsouth.net
(504) 468-8800
Fax No. (504) 467-0065
KENNER, LA 70062
JEFFERSON PARISH, LOUISIANA, 70062

TOPOGRAPHIC SURVEY OF THE MARKHAM-PEACHTREE STROM DRAIN LINES FROM KASEY STREET TO HICKORY STREET
CITY OF SLIDELL
ST. TAMMANY PARISH, LOUISIANA

VOLKERT

I certify that this plat represents an actual ground survey made by me or under my direction, and it does conform to the requirements for the Minimum Standards for Property Boundary Surveys as found in Louisiana Administrative Code Title 46: 1XL, Chapter 29, for a Class "C" survey.

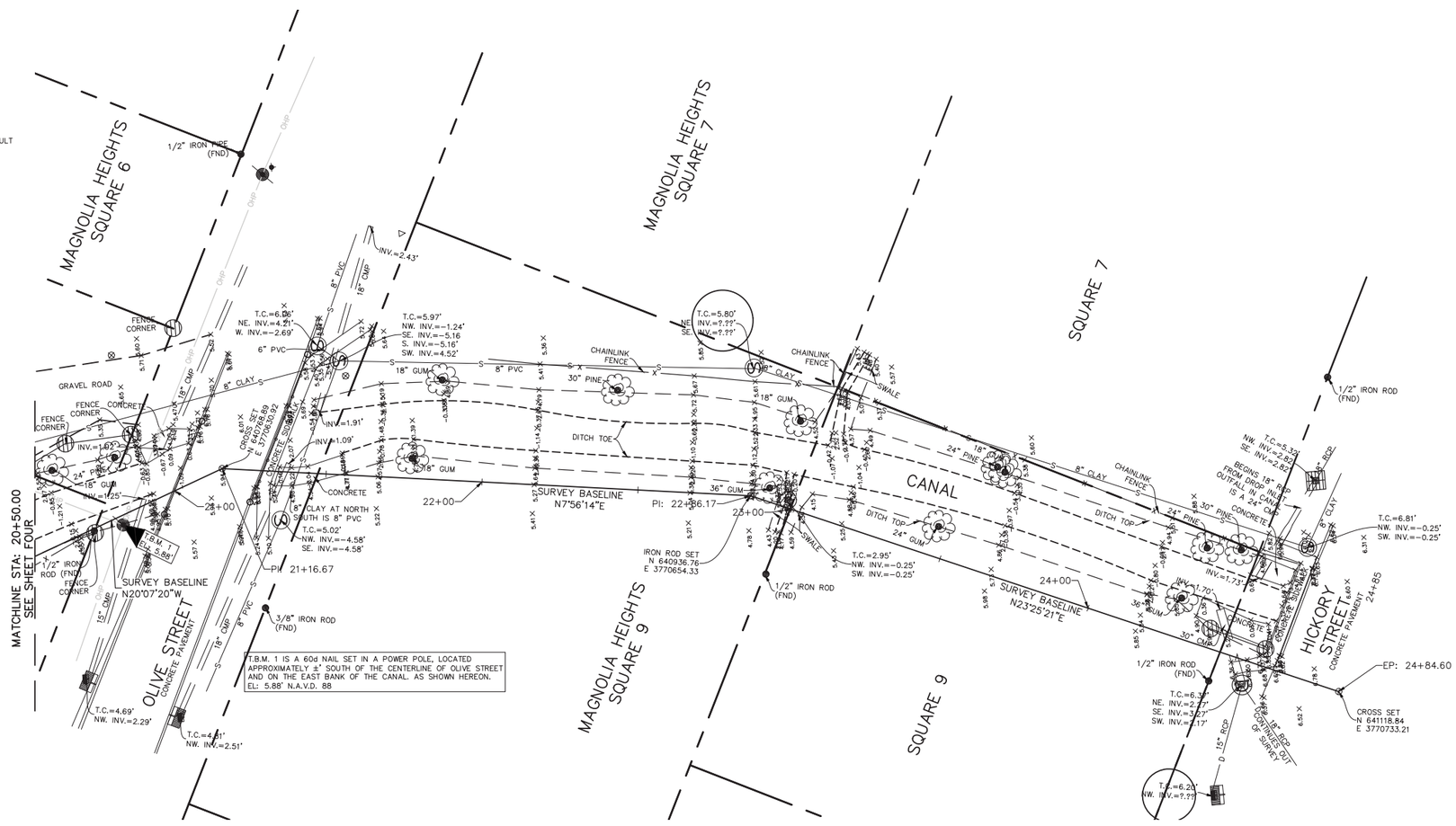
MARK	DESCRIPTION	DATE	BY	CHK'D

REVISION RECORD

SCALE:	1" = 20'
DATE:	JUNE 17, 2011
DRAWN BY:	J.N.S.
CHECKED BY:	K.A.B.
PROJECT NO.	70518
DRAWING NO.	70518
SHEET	4 OF 5

LEGEND

- BUILDING
- EXISTING RIGHT OF WAY
- CATCH BASIN
- CULVERT
- DROP INLET, DRAIN LINE
- DROP INLET, DRAIN LINE
- COMMUNICATIONS MANHOLE, COMM. LINE
- DRAIN MANHOLE, DRAIN LINE
- ELECTRICAL MANHOLE, ELEC. LINE
- GAS MANHOLE, GAS LINE
- SEWER MANHOLE, SEWER LINE
- TELEPHONE MANHOLE, TELE LINE
- TRAFFIC MANHOLE, TRAFFIC LINE
- WATER MANHOLE, WATER LINE
- UTILITY POLE / OVERHEAD LINES ELECTRIC, TELEPHONE, CABLE TV
- FENCE
- UTILITY BOX
- UTILITY CLEANOUT
- UTILITY METER
- UTILITY PEDESTAL
- UTILITY VALVE
- UTILITY VALVE VAULT
- FIRE HYDRANT
- LIGHT STANDARD
- TRAFFIC SIGNAL POLE
- TRAFFIC LIGHT POWER VAULT
- CANOPY SUPPORT
- SIGN
- TREE
- RESIDENTIAL MAILBOX
- PP DEADMAN



The Servitudes and Restrictions shown on this survey are limited to those set forth in the description furnished us and there is no representation that all applicable Servitudes and Restrictions are shown hereon. The surveyor has made no title search or public record search in compiling the data for this survey.

T.B.M. 1 IS A 60d NAIL SET IN A POWER POLE, LOCATED APPROXIMATELY ±' SOUTH OF THE CENTERLINE OF OLIVE STREET AND ON THE EAST BANK OF THE CANAL. AS SHOWN HEREON. EL: 5.88' N.A.V.D. 88

GENERAL NOTES

THE LOCATIONS OF UNDERGROUND AND OTHER NONVISIBLE UTILITIES SHOWN HEREON HAVE BEEN DETERMINED FROM DATA EITHER FURNISHED BY THE AGENCIES CONTROLLING SUCH DATA AND/OR EXTRACTED FROM RECORDS MADE AVAILABLE TO US BY THE AGENCIES CONTROLLING SUCH RECORDS. WHERE FOUND, THE SURFACE FEATURES OF LOCATIONS ARE SHOWN. THE ACTUAL NONVISIBLE LOCATIONS MAY VARY FROM THOSE SHOWN HEREON. EACH AGENCY SHOULD BE CONTACTED RELATIVE TO THE PRECISE LOCATION OF ITS UNDERGROUND INSTALLATION PRIOR TO ANY RELIANCE UPON THE ACCURACY OF SUCH LOCATIONS SHOWN HEREON, INCLUDING PRIOR TO EXCAVATION AND DIGGING.

ALL ELEVATIONS SHOWN REFER TO N.A.V.D. 88 DATUM.
N.A.V.D. = NORTH AMERICAN VERTICAL DATUM

REFERENCE B.M. = 52 V 075
ELEVATION = 10.67' N.A.V.D. 88

GRID NORTH

NORTH REFERENCED TO LOUISIANA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 83.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

VICINITY MAP
NOT TO SCALE

STATE OF LOUISIANA
JOHN S. TILEGRDEN
REG. No. 4635
REGISTERED
PROFESSIONAL
LAND SURVEYOR

REGISTERED PROFESSIONAL LAND SURVEYOR
JOHN S. TILEGRDEN
REGISTRATION NO. 4635

BGM
CORPORATION, L.L.C.
Professional Land Surveyors
534 WILLIAMS BOULEVARD
E-mail: bgmcorporation@bellsouth.net
(504) 468-8800
Fax No. (504) 467-0065
CITY OF KENNER
JEFFERSON PARISH, LOUISIANA, 70062

TOPOGRAPHIC SURVEY OF THE MARKHAM-PEACHTREE STROM DRAIN LINES FROM KASEY STREET TO HICKORY STREET

CITY OF SLIDELL
ST. TAMMANY PARISH, LOUISIANA

VOLKERT

I certify that this plat represents an actual ground survey made by me or under my direction, and it does conform to the requirements for the Minimum Standards for Property Boundary Surveys as found in Louisiana Administrative Code, TITLE 46, LA. Chapter 29 for a Class C survey.

MARK	DESCRIPTION	DATE	BY	CH'D
	REVISION RECORD			

SCALE: 1" = 20'

DATE: JUNE 17, 2011

DRAWN BY: J.N.S.

CHECKED BY: K.A.B.

PROJECT NO. 70518 | DRAWING NO. 70518

SHEET 5 OF 5

LEGEND

- BUILDING
- EXISTING RIGHT OF WAY
- SERVITUDE
- CATCH BASIN
- CULVERT
- DROP INLET, DRAIN LINE
- DROP INLET, DRAIN LINE
- COMMUNICATIONS MANHOLE, LINE
- DRAIN MANHOLE, DRAIN LINE
- ELECTRICAL MANHOLE, ELEC. LINE
- GAS MANHOLE, GAS LINE
- SEWER MANHOLE, SEWER LINE
- TELEPHONE MANHOLE, TELE LINE
- TRAFFIC MANHOLE, TRAFFIC LINE
- WATER MANHOLE, WATER LINE
- UTILITY POLE / OVERHEAD LINES ELECTRIC, TELEPHONE, CABLE TV
- FIBER OPTIC RISER / LINE
- FENCE
- TELCO RISER / PEDISTAL
- UTILITY CLEANOUT
- UTILITY METER
- UTILITY PEDESTAL
- UTILITY VALVE
- UTILITY VALVE VAULT
- FIRE HYDRANT
- LIGHT STANDARD
- TRAFFIC SIGNAL POLE
- TRAFFIC LIGHT POWER VAULT
- CANOPY SUPPORT
- BOLLARD
- SIGN
- TREE
- RESIDENTIAL MAILBOX
- PP DEADMAN

GENERAL NOTES

THE LOCATIONS OF UNDERGROUND AND OTHER NONVISIBLE UTILITIES SHOWN HEREON HAVE BEEN DETERMINED FROM DATA EITHER FURNISHED BY THE AGENCIES CONTROLLING SUCH DATA AND/OR EXTRACTED FROM RECORDS MADE AVAILABLE TO US BY THE AGENCIES CONTROLLING SUCH RECORDS. WHERE FOUND, THE SURFACE FEATURES OF LOCATIONS ARE SHOWN. THE ACTUAL NONVISIBLE LOCATIONS MAY VARY FROM THOSE SHOWN HEREON. EACH AGENCY SHOULD BE CONTACTED RELATIVE TO THE PRECISE LOCATION OF ITS UNDERGROUND INSTALLATION PRIOR TO ANY RELIANCE UPON THE ACCURACY OF SUCH LOCATIONS SHOWN HEREON, INCLUDING PRIOR TO EXCAVATION AND DIGGING.

REFERENCE BENCHMARK

ALL ELEVATIONS SHOWN REFER TO N.A.V.D. 88 DATUM.
N.A.V.D. = NORTH AMERICAN VERTICAL DATUM

METHOD OF DATA COLLECTION: ELEVATIONS SHOWN ON THIS SURVEY ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) UTILIZING GEOID 09. THEY ARE DERIVED FROM GPS OBSERVATIONS REFERENCED TO THE LOUISIANA STATE UNIVERSITY CONTINUOUSLY OPERATING REFERENCE STATIONS NETWORK IN ACCORDANCE WITH LOUISIANA R.S. 50:173.1 COVERING VERTICAL CONTROL STANDARDS.

TEMPORARY BENCHMARKS (TBM)

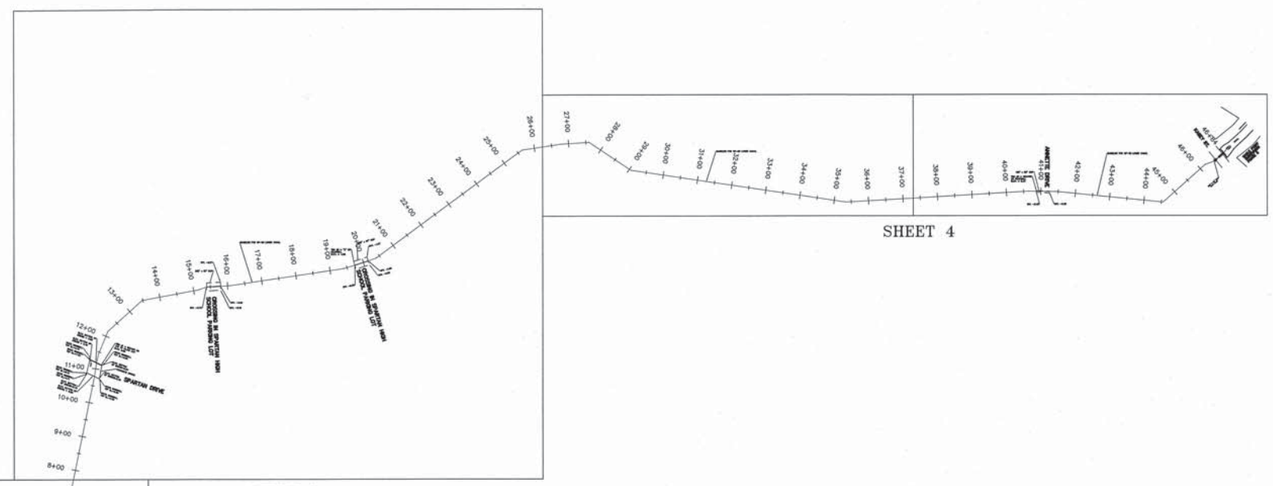
TBM #1 IS A SQUARE CUT INTO THE TOP OF THE PILING CAP AT STATION 1118+/– ALONG THE BASELINE FOR WP–20 LOWER CANAL, **ELEVATION:** 6.88' N.A.V.D. 88 (2006.81) GEOID 09.

TBM #2 IS AN "X" ON THE HEADWALL AT STATION 1974+/– ALONG THE BASELINE FOR WP–20 LOWER CANAL, **ELEVATION:** 4.92' N.A.V.D. 88 (2006.81) GEOID 09.

TBM #3 IS A SQUARE CUT ON THE HEADWALL AT STATION 4086+/– ALONG THE BASELINE FOR WP–20 LOWER CANAL, **ELEVATION:** 5.33' N.A.V.D. 88 (2006.81) GEOID 09

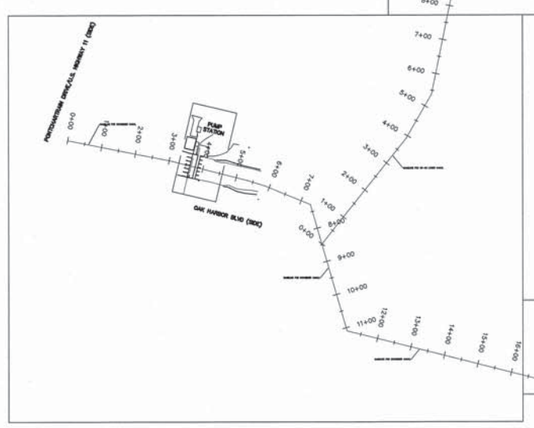
GRID NORTH
NORTH REFERENCED TO LOUISIANA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 83.

VICINITY MAP
NOT TO SCALE

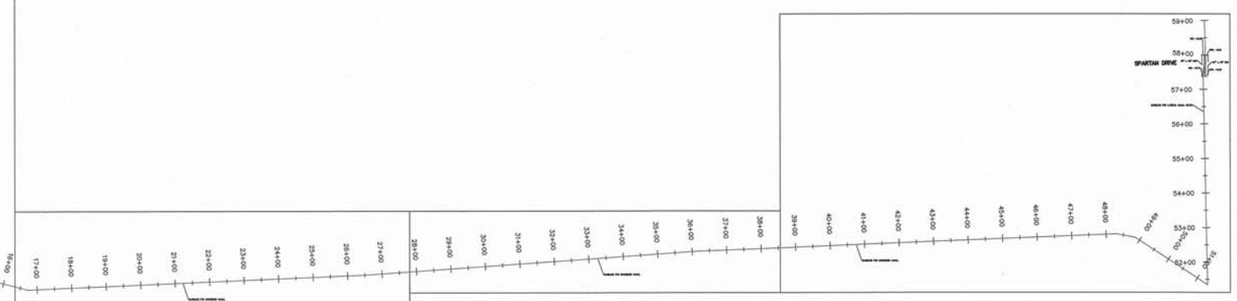


SHEET 3

SHEET 4



SHEET 2



SHEET 5

SHEET 6

GRAPHIC SCALE
200 0 100 200 400 800
(IN FEET)
1 inch = 200 ft.

STATE OF LOUISIANA
JOHN S. TEEGARDEN
LICENSE No. 4635
PROFESSIONAL LAND SURVEYOR

REGISTERED PROFESSIONAL LAND SURVEYOR
JOHN S. TEEGARDEN
REGISTRATION No. 4635

BSM Professional Land Surveyors
534 WILLIAMS BOULEVARD
E-mail: bmcorp@bmcorporation.com
(504) 443-1203
Fax (504) 467-0065
CITY OF KENNER
JEFFERSON PARISH, LOUISIANA, 70062

DRAINAGE STUDY
MARKHAM DRIVE TO PEACHTREE STREET
SLIDELL, LOUISIANA

I certify that this plat represents an actual ground survey made by me or under my direction, and it does fairly and accurately represent the facts found on the ground as shown hereon, to the best of my knowledge, belief and ability, and that it meets the requirements of the Louisiana Standards of Practice for Land Surveying as found in Louisiana Administrative Code, TITLE 46, LXI, Chapter 29 for a Class ___C___ survey.

VOLKERT

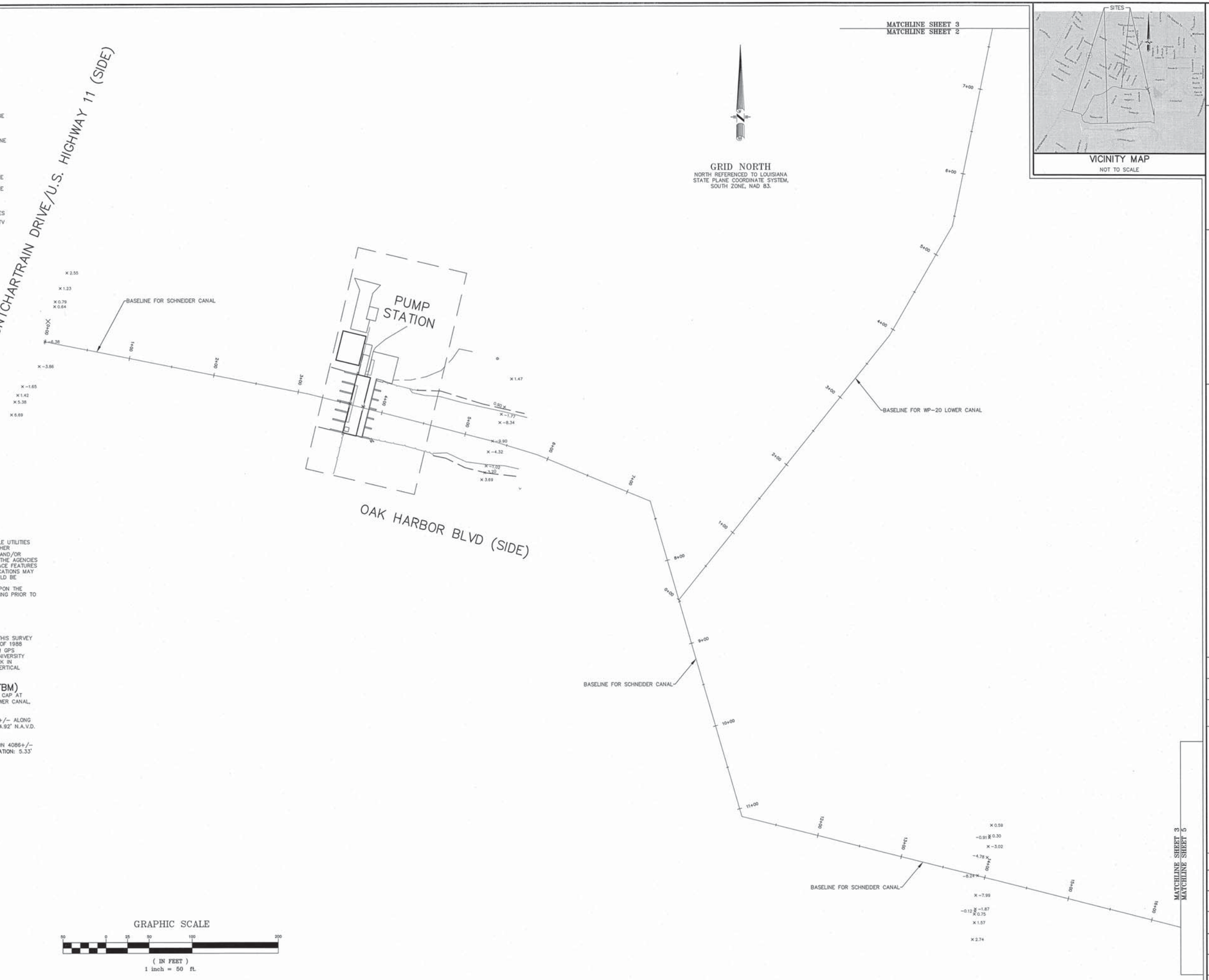
MARK	DESCRIPTION	DATE	BY	CK'D

REVISION RECORD

SCALE:	1" = 200'
DATE:	09/23/2013
DRAWN BY:	B.S.F.
CHECKED BY:	K.J.E.
FILE NO.	70594
PROJECT NO.	70594
SHEET	1 OF 10

LEGEND

- BUILDING
- EXISTING RIGHT OF WAY
- SERVITUDE
- CATCH BASIN
- CULVERT
- DROP INLET, DRAIN LINE
- DROP INLET, DRAIN LINE
- COMMUNICATIONS MANHOLE, LINE
- DRAIN MANHOLE, DRAIN LINE
- ELECTRICAL MANHOLE, ELEC. LINE
- GAS MANHOLE, GAS LINE
- SEWER MANHOLE, SEWER LINE
- TELEPHONE MANHOLE, TELE LINE
- TRAFFIC MANHOLE, TRAFFIC LINE
- WATER MANHOLE, WATER LINE
- UTILITY POLE / OVERHEAD LINES ELECTRIC, TELEPHONE, CABLE TV
- FIBER OPTIC RISER / LINE
- FENCE
- TELCO RISER / PEDISTAL
- UTILITY CLEANOUT
- UTILITY METER
- UTILITY PEDESTAL
- UTILITY VALVE
- UTILITY VALVE VAULT
- FIRE HYDRANT
- LIGHT STANDARD
- TRAFFIC SIGNAL POLE
- TRAFFIC LIGHT POWER VAULT
- CANOPY SUPPORT
- BOLLARD
- SIGN
- TREE
- RESIDENTIAL MAILBOX
- PP DEADMAN



VICINITY MAP
NOT TO SCALE

GENERAL NOTES

THE LOCATIONS OF UNDERGROUND AND OTHER NONVISIBLE UTILITIES SHOWN HEREON HAVE BEEN DETERMINED FROM DATA EITHER FURNISHED BY THE AGENCIES CONTROLLING SUCH DATA AND/OR EXTRACTED FROM RECORDS MADE AVAILABLE TO US BY THE AGENCIES CONTROLLING SUCH RECORDS. WHERE FOUND, THE SURFACE FEATURES OF LOCATIONS ARE SHOWN. THE ACTUAL NONVISIBLE LOCATIONS MAY VARY FROM THOSE SHOWN HEREON. EACH AGENCY SHOULD BE CONTACTED RELATIVE TO THE PRECISE LOCATION OF ITS UNDERGROUND INSTALLATION PRIOR TO ANY RELIANCE UPON THE ACCURACY OF SUCH LOCATIONS SHOWN HEREON, INCLUDING PRIOR TO EXCAVATION AND DIGGING.

REFERENCE BENCHMARK

ALL ELEVATIONS SHOWN REFER TO N.A.V.D. 88 DATUM.
N.A.V.D. = NORTH AMERICAN VERTICAL DATUM

METHOD OF DATA COLLECTION: ELEVATIONS SHOWN ON THIS SURVEY ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) UTILIZING GEOID 09. THEY ARE DERIVED FROM GPS OBSERVATIONS REFERENCED TO THE LOUISIANA STATE UNIVERSITY CONTINUOUSLY OPERATING REFERENCE STATIONS NETWORK IN ACCORDANCE WITH LOUISIANA R.S. 50:173.1 COVERING VERTICAL CONTROL STANDARDS.

TEMPORARY BENCHMARKS (TBM)

TBM #1 IS A SQUARE CUT INTO THE TOP OF THE PILING CAP AT STATION 1118+/- ALONG THE BASELINE FOR WP-20 LOWER CANAL, **ELEVATION:** 6.88' N.A.V.D. 88 (2006.81) GEOID 09.

TBM #2 IS AN "X" ON THE HEADWALL AT STATION 1974+/- ALONG THE BASELINE FOR WP-20 LOWER CANAL, **ELEVATION:** 4.92' N.A.V.D. 88 (2006.81) GEOID 09.

TBM #3 IS A SQUARE CUT ON THE HEADWALL AT STATION 4086+/- ALONG THE BASELINE FOR WP-20 LOWER CANAL, **ELEVATION:** 5.33' N.A.V.D. 88 (2006.81) GEOID 09

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

STATE OF LOUISIANA
JOHN S. TEEGARDEN
LICENSE NO. 4635
PROFESSIONAL
LAND SURVEYOR

REGISTERED PROFESSIONAL LAND SURVEYOR
JOHN S. TEEGARDEN
REGISTRATION NO. 4635

BCM
Professional Land Surveyors
534 WILLIAMS BOULEVARD
E-mail: bmcorp@bellsouth.net
(504) 467-0065
Fax No. (504) 467-0065
CITY OF KENNER
JEFFERSON PARISH, LOUISIANA, 70062

DRAINAGE STUDY
MARKHAM DRIVE TO PEACHTREE STREET
SLIDELL, LOUISIANA

I certify that this plat represents an actual ground survey made by me or under my direction, and it accurately represents the information found on the ground at the time of the survey, and is in accordance with the minimum standards for property boundary surveys as adopted by the Louisiana Board of Professional Land Surveyors and found in Louisiana Administrative Code TITLE 46: LX, Chapter 29 for a Class C survey.

VOLKERT

MARK	DESCRIPTION	DATE	BY	CHK'D

REVISION RECORD

SCALE:	1" = 50'
DATE:	09/23/2013
DRAWN BY:	B.S.F.
CHECKED BY:	K.J.E.
FILE NO.	70594
PROJECT NO.	70594
SHEET	2 OF 10

LEGEND

- BUILDING
- EXISTING RIGHT OF WAY
- SERVITUDE
- CATCH BASIN
- CULVERT
- DROP INLET, DRAIN LINE
- DROP INLET, DRAIN LINE
- COMMUNICATIONS MANHOLE, LINE
- DRAIN MANHOLE, DRAIN LINE
- ELECTRICAL MANHOLE, ELEC. LINE
- GAS MANHOLE, GAS LINE
- SEWER MANHOLE, SEWER LINE
- TELEPHONE MANHOLE, TELE LINE
- TRAFFIC MANHOLE, TRAFFIC LINE
- WATER MANHOLE, WATER LINE
- UTILITY POLE / OVERHEAD LINES ELECTRIC, TELEPHONE, CABLE TV
- FIBER OPTIC RISER / LINE
- FENCE
- TELCO RISER / PEDISTAL
- UTILITY CLEANOUT
- UTILITY METER
- UTILITY PEDESTAL
- UTILITY VALVE
- UTILITY VALVE VAULT
- FIRE HYDRANT
- LIGHT STANDARD
- TRAFFIC SIGNAL POLE
- TRAFFIC LIGHT POWER VAULT
- CANOPY SUPPORT
- BOLLARD
- SIGN
- TREE
- RESIDENTIAL MAILBOX
- PP DEADMAN

GENERAL NOTES

THE LOCATIONS OF UNDERGROUND AND OTHER NONVISIBLE UTILITIES SHOWN HEREON HAVE BEEN DETERMINED FROM DATA EITHER FURNISHED BY THE AGENCIES CONTROLLING SUCH DATA AND/OR EXTRACTED FROM RECORDS MADE AVAILABLE TO US BY THE AGENCIES CONTROLLING SUCH RECORDS. WHERE FOUND, THE SURFACE FEATURES OF LOCATIONS ARE SHOWN. THE ACTUAL NONVISIBLE LOCATIONS MAY VARY FROM THOSE SHOWN HEREON. EACH AGENCY SHOULD BE CONTACTED RELATIVE TO THE PRECISE LOCATION OF ITS UNDERGROUND INSTALLATION PRIOR TO ANY RELIANCE UPON THE ACCURACY OF SUCH LOCATIONS SHOWN HEREON, INCLUDING PRIOR TO EXCAVATION AND DIGGING.

REFERENCE BENCHMARK

ALL ELEVATIONS SHOWN REFER TO N.A.V.D. 88 DATUM.
N.A.V.D. = NORTH AMERICAN VERTICAL DATUM

METHOD OF DATA COLLECTION: ELEVATIONS SHOWN ON THIS SURVEY ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) UTILIZING GEOID 09. THEY ARE DERIVED FROM GPS OBSERVATIONS REFERENCED TO THE LOUISIANA STATE UNIVERSITY CONTINUOUSLY OPERATING REFERENCE STATIONS NETWORK IN ACCORDANCE WITH LOUISIANA R.S. 50:173.1 COVERING VERTICAL CONTROL STANDARDS.

TEMPORARY BENCHMARKS (TBM)

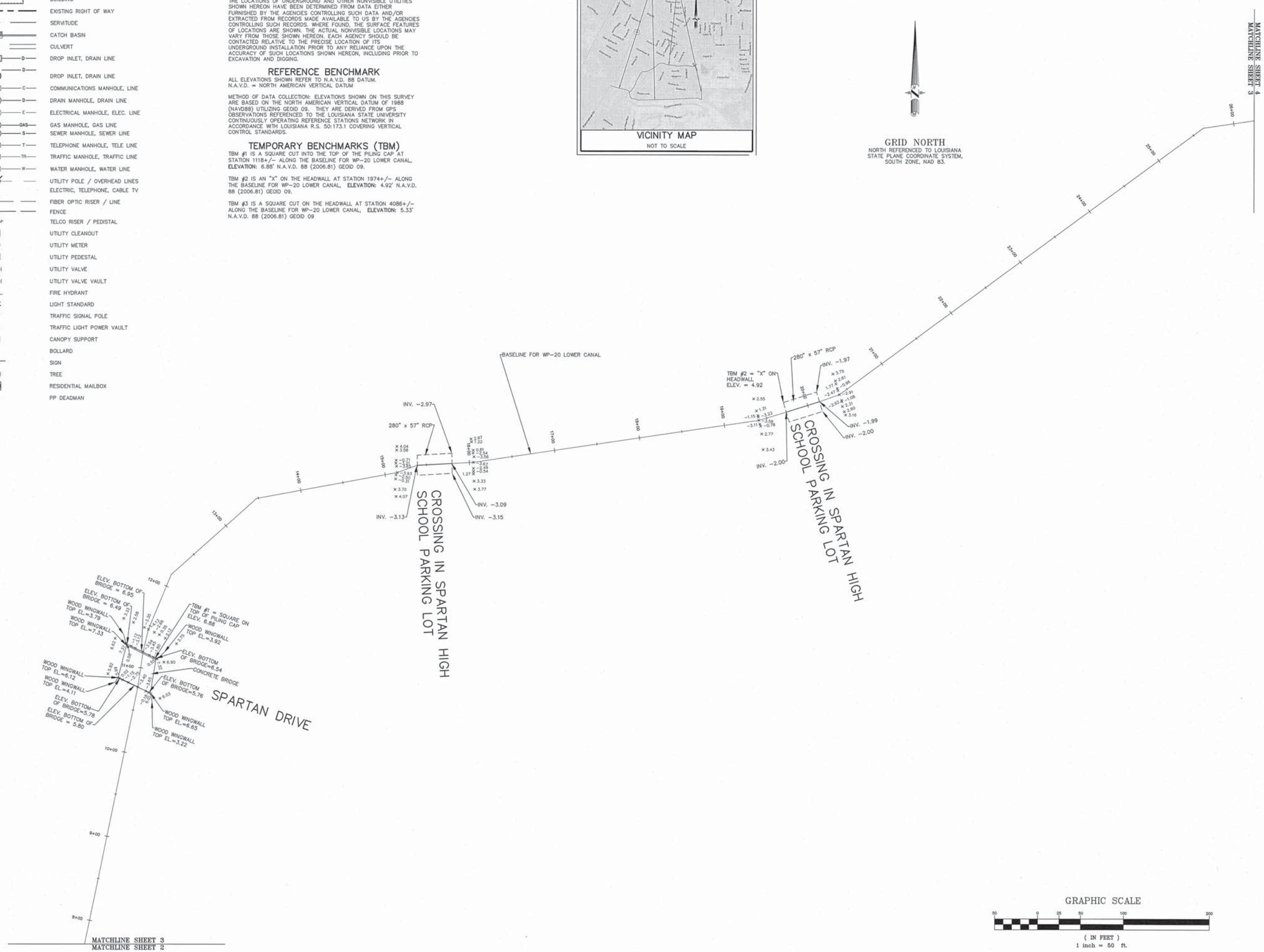
TBM #1 IS A SQUARE CUT INTO THE TOP OF THE PILING CAP AT STATION 1118+/- ALONG THE BASELINE FOR WP-20 LOWER CANAL, **ELEVATION:** 6.88' N.A.V.D. 88 (2006.81) GEOID 09.

TBM #2 IS AN "X" ON THE HEADWALL AT STATION 1974+/- ALONG THE BASELINE FOR WP-20 LOWER CANAL, **ELEVATION:** 4.92' N.A.V.D. 88 (2006.81) GEOID 09.

TBM #3 IS A SQUARE CUT ON THE HEADWALL AT STATION 4086+/- ALONG THE BASELINE FOR WP-20 LOWER CANAL, **ELEVATION:** 5.33' N.A.V.D. 88 (2006.81) GEOID 09

VICINITY MAP
NOT TO SCALE

GRID NORTH
NORTH REFERENCED TO LOUISIANA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 83.



STATE OF LOUISIANA
JOHN S. TEEGARDEN
LICENSE No. 4635
PROFESSIONAL LAND SURVEYOR

REGISTERED PROFESSIONAL LAND SURVEYOR
JOHN S. TEEGARDEN
REGISTRATION NO. 4635

BFM Professional Land Surveyors
534 WILLIAMS BOULEVARD
E-mail: bfmcorp@bellsouth.net
(504) 468-4800
Fax No. (504) 465-0505
CITY OF KENNER
JEFFERSON PARISH, LOUISIANA, 70062

DRAINAGE STUDY
MARKHAM DRIVE TO PEACHTREE STREET
SLIDELL, LOUISIANA

I certify that this plat represents an actual ground survey made by me or under my direction, and it shows all encroachments, if any, visible on the surface, except as noted. Surveys as found in Louisiana Administrative Code TITLE 46: Chapter 29 for a Class C Survey.

VOLKERT

MARK	DESCRIPTION	DATE	BY	CHK'D

REVISION RECORD

SCALE:	1" = 50'
DATE:	09/23/2013
DRAWN BY:	B.S.F.
CHECKED BY:	K.J.E.
FILE NO.	70594
PROJECT NO.	70594
SHEET	3 OF 10

LEGEND

- BUILDING
- EXISTING RIGHT OF WAY
- SERVITUDE
- CATCH BASIN
- CULVERT
- DROP INLET, DRAIN LINE
- DROP INLET, DRAIN LINE
- COMMUNICATIONS MANHOLE, LINE
- DRAIN MANHOLE, DRAIN LINE
- ELECTRICAL MANHOLE, ELEC. LINE
- GAS MANHOLE, GAS LINE
- SEWER MANHOLE, SEWER LINE
- TELEPHONE MANHOLE, TELE LINE
- TRAFFIC MANHOLE, TRAFFIC LINE
- WATER MANHOLE, WATER LINE
- UTILITY POLE / OVERHEAD LINES ELECTRIC, TELEPHONE, CABLE TV
- FIBER OPTIC RISER / LINE
- FENCE
- TELCO RISER / PEDISTAL
- UTILITY CLEANOUT
- UTILITY METER
- UTILITY PEDESTAL
- UTILITY VALVE
- UTILITY VALVE VAULT
- FIRE HYDRANT
- LIGHT STANDARD
- TRAFFIC SIGNAL POLE
- TRAFFIC LIGHT POWER VAULT
- CANOPY SUPPORT
- BOLLARD
- SIGN
- TREE
- RESIDENTIAL MAILBOX
- PP DEADMAN

GENERAL NOTES

THE LOCATIONS OF UNDERGROUND AND OTHER NONVISIBLE UTILITIES SHOWN HEREON HAVE BEEN DETERMINED FROM DATA EITHER FURNISHED BY THE AGENCIES CONTROLLING SUCH DATA AND/OR EXTRACTED FROM RECORDS MADE AVAILABLE TO US BY THE AGENCIES CONTROLLING SUCH RECORDS. WHERE FOUND, THE SURFACE FEATURES OF LOCATIONS ARE SHOWN. THE ACTUAL NONVISIBLE LOCATIONS MAY VARY FROM THOSE SHOWN HEREON. EACH AGENCY SHOULD BE CONTACTED RELATIVE TO THE PRECISE LOCATION OF ITS UNDERGROUND INSTALLATION PRIOR TO ANY RELIANCE UPON THE ACCURACY OF SUCH LOCATIONS SHOWN HEREON, INCLUDING PRIOR TO EXCAVATION AND DIGGING.

REFERENCE BENCHMARK

ALL ELEVATIONS SHOWN REFER TO N.A.V.D. 88 DATUM.
N.A.V.D. = NORTH AMERICAN VERTICAL DATUM

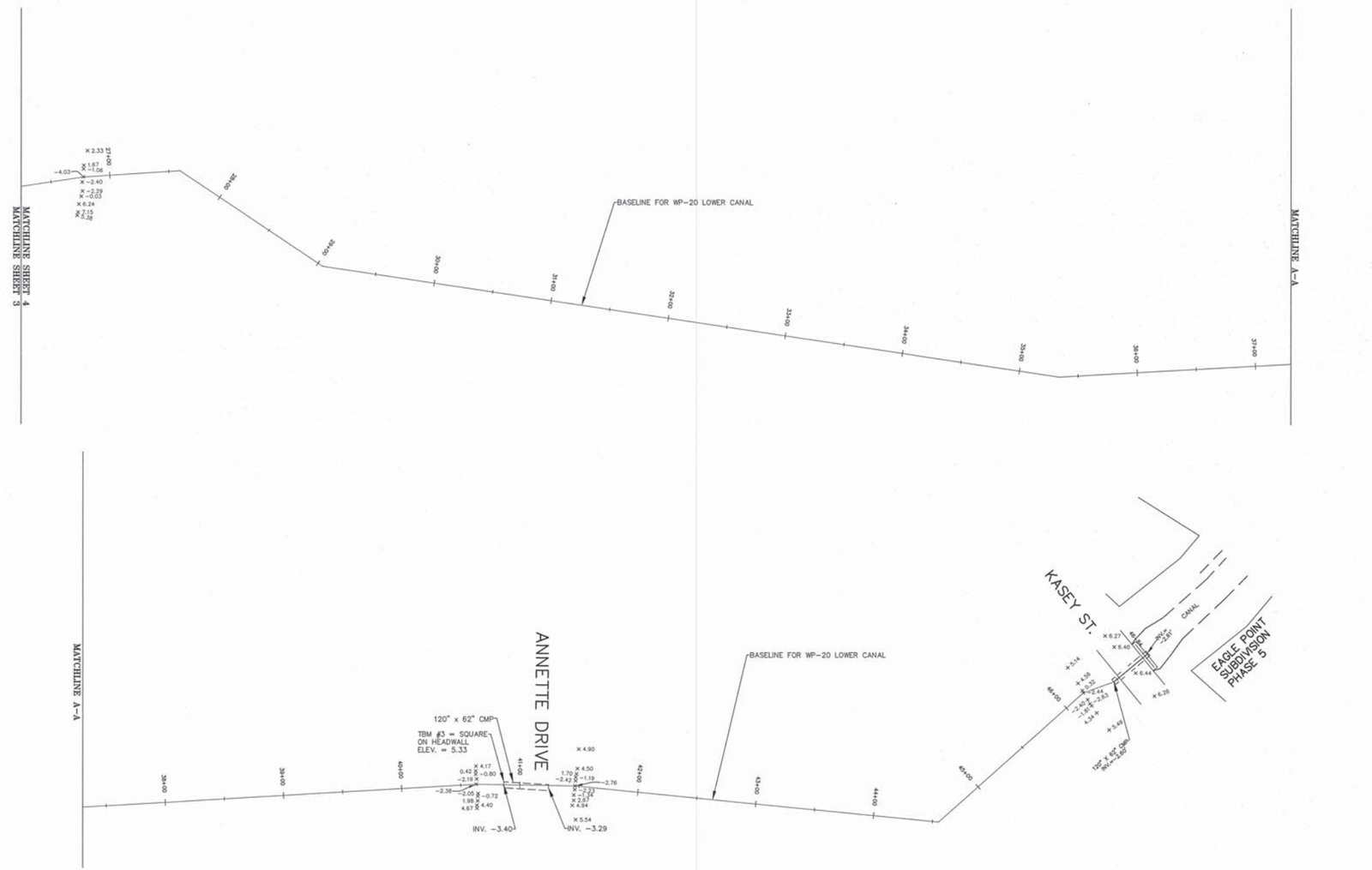
METHOD OF DATA COLLECTION: ELEVATIONS SHOWN ON THIS SURVEY ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) UTILIZING GEOID 09. THEY ARE DERIVED FROM GPS OBSERVATIONS REFERENCED TO THE LOUISIANA STATE UNIVERSITY CONTINUOUSLY OPERATING REFERENCE STATIONS NETWORK IN ACCORDANCE WITH LOUISIANA R.S. 50:173.1 COVERING VERTICAL CONTROL STANDARDS.

TEMPORARY BENCHMARKS (TBM)

TBM #1 IS A SQUARE CUT INTO THE TOP OF THE PILING CAP AT STATION 1118+/– ALONG THE BASELINE FOR WP–20 LOWER CANAL. **ELEVATION:** 6.88' N.A.V.D. 88 (2006.81) GEOID 09.

TBM #2 IS AN "X" ON THE HEADWALL AT STATION 1974+/– ALONG THE BASELINE FOR WP–20 LOWER CANAL. **ELEVATION:** 4.92' N.A.V.D. 88 (2006.81) GEOID 09.

TBM #3 IS A SQUARE CUT ON THE HEADWALL AT STATION 4086+/– ALONG THE BASELINE FOR WP–20 LOWER CANAL. **ELEVATION:** 5.33' N.A.V.D. 88 (2006.81) GEOID 09



VICINITY MAP
NOT TO SCALE

STATE OF LOUISIANA
JOHN S. TEEGARDEN
LICENSE NO. 4635
PROFESSIONAL LAND SURVEYOR

REGISTERED PROFESSIONAL LAND SURVEYOR
JOHN S. TEEGARDEN
REGISTRATION NO. 4635

BCM Professional Land Surveyors
534 WILLIAMS BOULEVARD
E-mail: bfmcorp@bellsouth.net
Phone (504) 467-0065
Fax (504) 467-0065
CITY OF KENNER
JEFFERSON PARISH, LOUISIANA, 70062

DRAINAGE STUDY
MARKHAM DRIVE TO PEACHTREE STREET
SLIDELL, LOUISIANA

I certify that this plat represents an actual ground survey made by me or under my direction, and it does not correspond to the requirements for a Boundary Survey as found in Louisiana Administrative Code TITLE 46: LM, Chapter 29.

VOLKERT

MARK	DESCRIPTION	DATE	BY	CHK'D

REVISION RECORD

SCALE:	1" = 50'
DATE:	09/23/2013
DRAWN BY:	B.S.F.
CHECKED BY:	K.J.E.
FILE NO.	70594
PROJECT NO.	70594
SHEET	4 OF 10

LEGEND

- BUILDING
- EXISTING RIGHT OF WAY
- SERVITUDE
- CATCH BASIN
- CULVERT
- DROP INLET, DRAIN LINE
- DROP INLET, DRAIN LINE
- COMMUNICATIONS MANHOLE, LINE
- DRAIN MANHOLE, DRAIN LINE
- ELECTRICAL MANHOLE, ELEC. LINE
- GAS MANHOLE, GAS LINE
- SEWER MANHOLE, SEWER LINE
- TELEPHONE MANHOLE, TELE LINE
- TRAFFIC MANHOLE, TRAFFIC LINE
- WATER MANHOLE, WATER LINE
- UTILITY POLE / OVERHEAD LINES ELECTRIC, TELEPHONE, CABLE TV
- FIBER OPTIC RISER / LINE
- FENCE
- TELCO RISER / PEDISTAL
- UTILITY CLEANOUT
- UTILITY METER
- UTILITY PEDESTAL
- UTILITY VALVE
- UTILITY VALVE VAULT
- FIRE HYDRANT
- LIGHT STANDARD
- TRAFFIC SIGNAL POLE
- TRAFFIC LIGHT POWER VAULT
- CANOPY SUPPORT
- BOLLARD
- SIGN
- TREE
- RESIDENTIAL MAILBOX
- PP DEADMAN

GENERAL NOTES

THE LOCATIONS OF UNDERGROUND AND OTHER NONVISIBLE UTILITIES SHOWN HEREON HAVE BEEN DETERMINED FROM DATA EITHER FURNISHED BY THE AGENCIES CONTROLLING SUCH DATA AND/OR EXTRACTED FROM RECORDS MADE AVAILABLE TO US BY THE AGENCIES CONTROLLING SUCH RECORDS. WHERE FOUND, THE SURFACE FEATURES OF LOCATIONS ARE SHOWN. THE ACTUAL NONVISIBLE LOCATIONS MAY VARY FROM THOSE SHOWN HEREON. EACH AGENCY SHOULD BE CONTACTED RELATIVE TO THE PRECISE LOCATION OF ITS UNDERGROUND INSTALLATION PRIOR TO ANY RELIANCE UPON THE ACCURACY OF SUCH LOCATIONS SHOWN HEREON, INCLUDING PRIOR TO EXCAVATION AND DIGGING.

REFERENCE BENCHMARK

ALL ELEVATIONS SHOWN REFER TO N.A.V.D. 88 DATUM.
N.A.V.D. = NORTH AMERICAN VERTICAL DATUM

METHOD OF DATA COLLECTION: ELEVATIONS SHOWN ON THIS SURVEY ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) UTILIZING GEOID 09. THEY ARE DERIVED FROM GPS OBSERVATIONS REFERENCED TO THE LOUISIANA STATE UNIVERSITY CONTINUOUSLY OPERATING REFERENCE STATIONS NETWORK IN ACCORDANCE WITH LOUISIANA R.S. 50:173.1 COVERING VERTICAL CONTROL STANDARDS.

TEMPORARY BENCHMARKS (TBM)

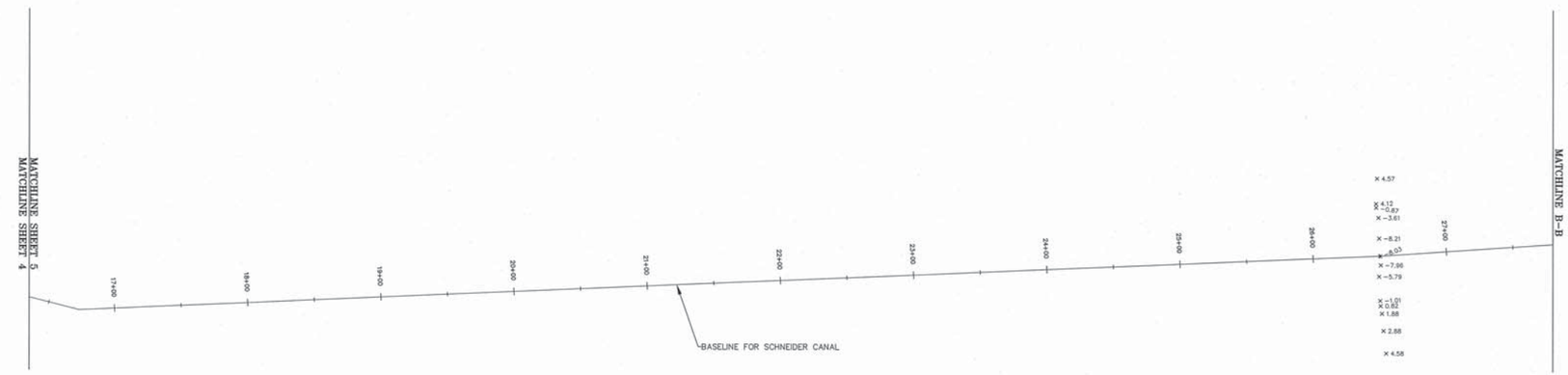
TBM #1 IS A SQUARE CUT INTO THE TOP OF THE PILING CAP AT STATION 1118+/- ALONG THE BASELINE FOR WP-20 LOWER CANAL, **ELEVATION:** 6.88' N.A.V.D. 88 (2006.81) GEOID 09.

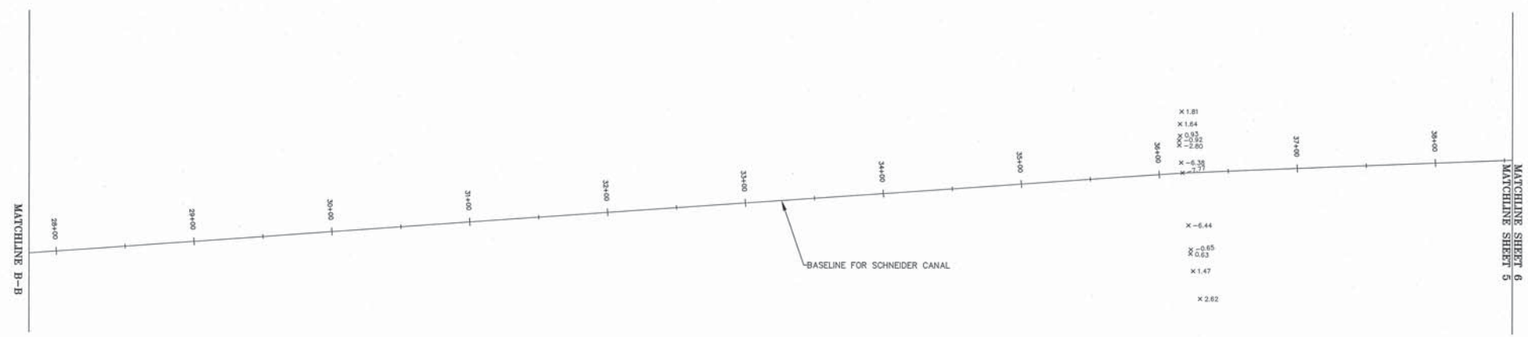
TBM #2 IS AN "X" ON THE HEADWALL AT STATION 1974+/- ALONG THE BASELINE FOR WP-20 LOWER CANAL, **ELEVATION:** 4.92' N.A.V.D. 88 (2006.81) GEOID 09.

TBM #3 IS A SQUARE CUT ON THE HEADWALL AT STATION 4086+/- ALONG THE BASELINE FOR WP-20 LOWER CANAL, **ELEVATION:** 5.33' N.A.V.D. 88 (2006.81) GEOID 09

GRID NORTH
NORTH REFERENCED TO LOUISIANA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 83.

VICINITY MAP
NOT TO SCALE





GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

STATE OF LOUISIANA
JOHN S. TEEGARDEN
LICENSE No. 4635
PROFESSIONAL
LAND SURVEYOR

REGISTERED PROFESSIONAL LAND SURVEYOR
JOHN S. TEEGARDEN
REGISTRATION No. 4635

BSM
Professional Land Surveyors
534 WILLIAMS BOULEVARD
E-mail: bsmcorp@bellsouth.net
(504) 468-8500
Fax (504) 467-0965
CITY OF KENNER
JEFFERSON PARISH, LOUISIANA, 70062

DRAINAGE STUDY
MARKHAM DRIVE TO PEACHTREE STREET
SLIDELL, LOUISIANA

I certify that this plat represents an actual ground survey made by me or under my direction, and is date to the best of my knowledge and belief, and that it was found in Louisiana Administrative Code TITLE 46: LXI, Chapter 29 for a Class "C" survey.

VOLKERT

MARK	DESCRIPTION	DATE	BY	CHK'D

REVISION RECORD

SCALE: 1" = 50'
DATE: 09/23/2013
DRAWN BY: B.S.F.
CHECKED BY: K.J.E.
FILE NO. 70594
PROJECT NO. 70594
SHEET 5 OF 10

LEGEND

- BUILDING
- EXISTING RIGHT OF WAY
- SERVITUDE
- CATCH BASIN
- CULVERT
- DROP INLET, DRAIN LINE
- DROP INLET, DRAIN LINE
- COMMUNICATIONS MANHOLE, LINE
- DRAIN MANHOLE, DRAIN LINE
- ELECTRICAL MANHOLE, ELEC. LINE
- GAS MANHOLE, GAS LINE
- SEWER MANHOLE, SEWER LINE
- TELEPHONE MANHOLE, TELE LINE
- TRAFFIC MANHOLE, TRAFFIC LINE
- WATER MANHOLE, WATER LINE
- UTILITY POLE / OVERHEAD LINES ELECTRIC, TELEPHONE, CABLE TV
- FIBER OPTIC RISER / LINE
- FENCE
- TELCO RISER / PEDISTAL
- UTILITY CLEANOUT
- UTILITY METER
- UTILITY PEDESTAL
- UTILITY VALVE
- UTILITY VALVE VAULT
- FIRE HYDRANT
- LIGHT STANDARD
- TRAFFIC SIGNAL POLE
- TRAFFIC LIGHT POWER VAULT
- CANOPY SUPPORT
- BOLLARD
- SIGN
- TREE
- RESIDENTIAL MAILBOX
- PP DEADMAN

GENERAL NOTES

THE LOCATIONS OF UNDERGROUND AND OTHER NONVISIBLE UTILITIES SHOWN HEREON HAVE BEEN DETERMINED FROM DATA EITHER FURNISHED BY THE AGENCIES CONTROLLING SUCH DATA AND/OR EXTRACTED FROM RECORDS MADE AVAILABLE TO US BY THE AGENCIES CONTROLLING SUCH RECORDS. WHERE FOUND, THE SURFACE FEATURES OF LOCATIONS ARE SHOWN. THE ACTUAL NONVISIBLE LOCATIONS MAY VARY FROM THOSE SHOWN HEREON. EACH AGENCY SHOULD BE CONTACTED RELATIVE TO THE PRECISE LOCATION OF ITS UNDERGROUND INSTALLATION PRIOR TO ANY RELIANCE UPON THE ACCURACY OF SUCH LOCATIONS SHOWN HEREON, INCLUDING PRIOR TO EXCAVATION AND DIGGING.

REFERENCE BENCHMARK

ALL ELEVATIONS SHOWN REFER TO N.A.V.D. 88 DATUM.
N.A.V.D. = NORTH AMERICAN VERTICAL DATUM

METHOD OF DATA COLLECTION: ELEVATIONS SHOWN ON THIS SURVEY ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) UTILIZING GEOID 09. THEY ARE DERIVED FROM GPS OBSERVATIONS REFERENCED TO THE LOUISIANA STATE UNIVERSITY CONTINUOUSLY OPERATING REFERENCE STATIONS NETWORK IN ACCORDANCE WITH LOUISIANA R.S. 50:173.1 COVERING VERTICAL CONTROL STANDARDS.

TEMPORARY BENCHMARKS (TBM)

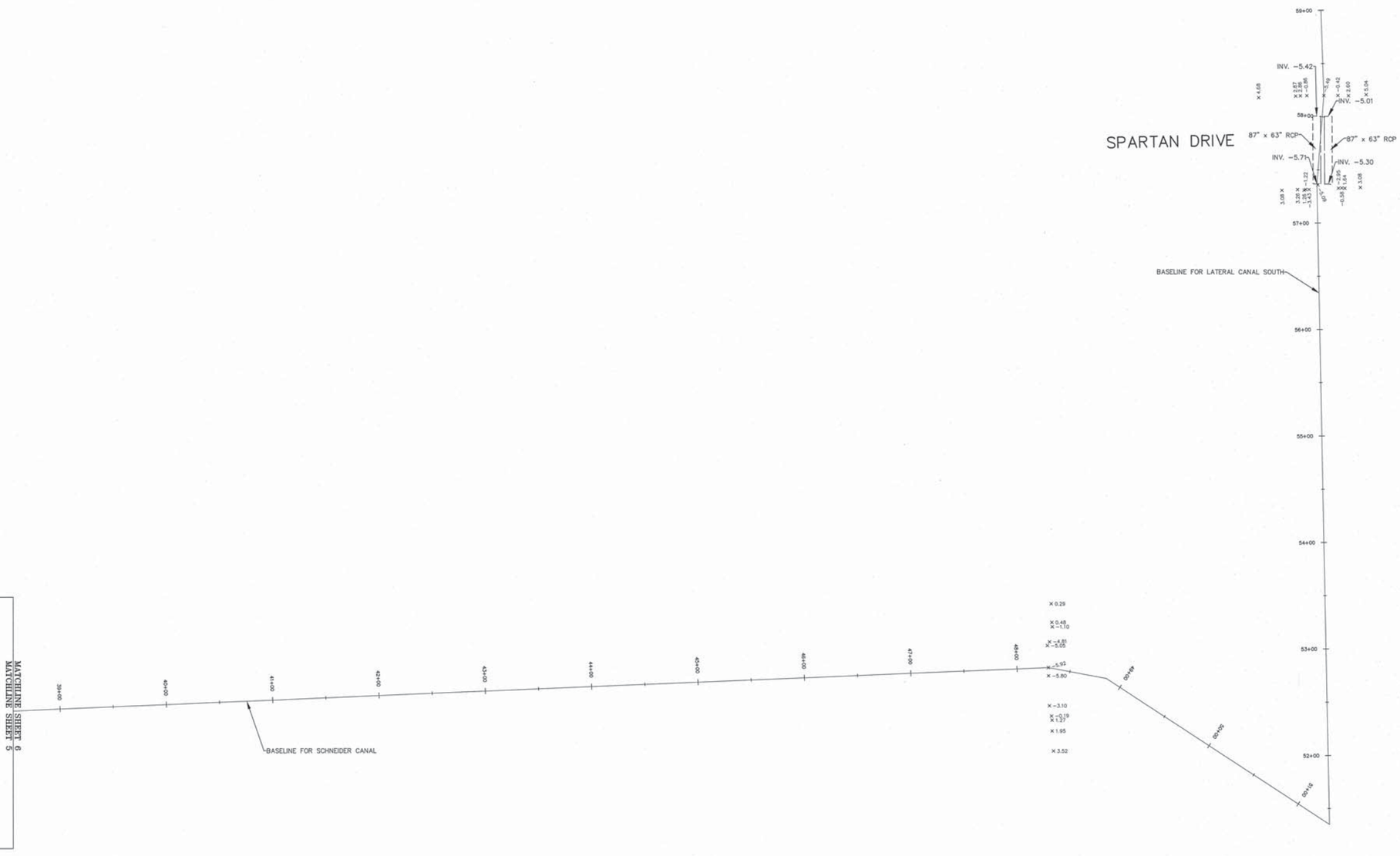
TBM #1 IS A SQUARE CUT INTO THE TOP OF THE PILING CAP AT STATION 1118+/- ALONG THE BASELINE FOR WP-20 LOWER CANAL, **ELEVATION:** 6.88' N.A.V.D. 88 (2006.81) GEOID 09.

TBM #2 IS AN "X" ON THE HEADWALL AT STATION 1974+/- ALONG THE BASELINE FOR WP-20 LOWER CANAL, **ELEVATION:** 4.92' N.A.V.D. 88 (2006.81) GEOID 09.

TBM #3 IS A SQUARE CUT ON THE HEADWALL AT STATION 4086+/- ALONG THE BASELINE FOR WP-20 LOWER CANAL, **ELEVATION:** 5.33' N.A.V.D. 88 (2006.81) GEOID 09

GRID NORTH
NORTH REFERENCED TO LOUISIANA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 83.

VICINITY MAP
NOT TO SCALE



GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

STATE OF LOUISIANA
JOHN S. TEEGARDEN
License No. 4635
PROFESSIONAL
LAND SURVEYOR

REGISTERED PROFESSIONAL LAND SURVEYOR
JOHN S. TEEGARDEN
REGISTRATION NO. 4635

BSM
Professional Land Surveyors
534 WILLIAMS BOULEVARD
E-mail: $mcorp@bsmcorporation.com
(504) 468-4800
Fax (504) 467-0065
CITY OF KENNER
JEFFERSON PARISH, LOUISIANA, 70062

DRAINAGE STUDY
MARKHAM DRIVE TO PEACHTREE STREET
SLIDELL, LOUISIANA

I certify that this plat represents an actual ground survey made by me or under my direct supervision, and it does substantially meet the minimum standards of practice for land surveys as found in Louisiana Administrative Code, TITLE 46: LXI, Chapter 29 for a Class C Survey.

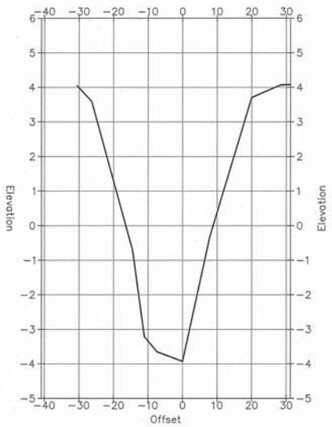
VOLKERT

MARK	DESCRIPTION	DATE	BY	CHK'D

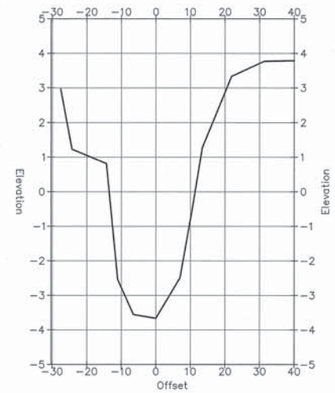
REVISION RECORD

SCALE: 1" = 50'
DATE: 09/23/2013
DRAWN BY: B.S.F.
CHECKED BY: K.J.E.
FILE NO. 70594
PROJECT NO. 70594
SHEET 6 OF 10

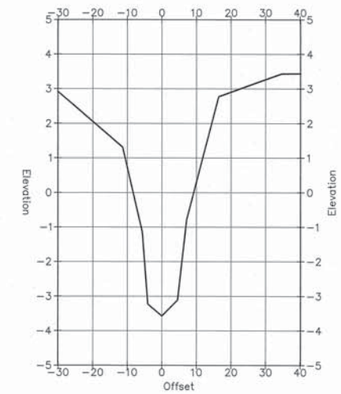
WP-20
LOWER CANAL
15+14.37



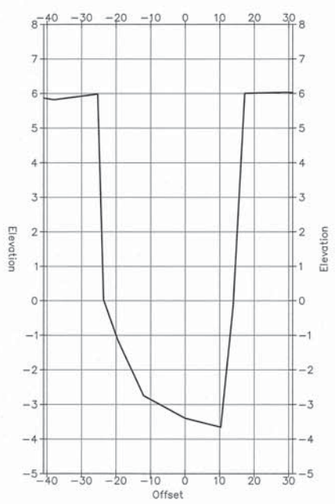
WP-20
LOWER CANAL
16+04.59



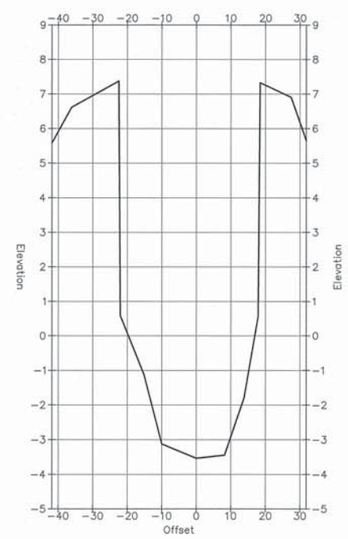
WP-20
LOWER CANAL
19+40.45



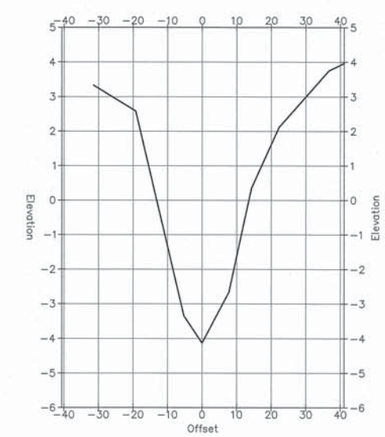
WP-20
LOWER CANAL
10+77.43



WP-20
LOWER CANAL
11+18.83



WP-20
LOWER CANAL
11+45.48



STATE OF LOUISIANA
JOHN S. TEEGARDEN
LICENSE NO. 4635
PROFESSIONAL LAND SURVEYOR

REGISTERED PROFESSIONAL LAND SURVEYOR
JOHN S. TEEGARDEN
REGISTRATION NO. 4635

BSM
Professional Land Surveyors
5A WILLIAMS BOULEVARD
E-mail: bsmcorp@bellsouth.net
(504) 466-4800
Fax (504) 466-0665
CITY OF KENNER
JEFFERSON PARISH, LOUISIANA, 70062

DRAINAGE STUDY
MARKHAM DRIVE TO PEACHTREE STREET
SLIDELL, LOUISIANA

I certify that this plat represents an actual ground survey made by me or under my supervision, and it shows all encroachments, if any, from or onto adjoining premises, except as noted. This survey is in accordance with the standards of practice for a Class "C" survey as found in Louisiana Administrative Code, TITLE 46: LXI, Chapter 29 for a Class "C" survey.

VOLKERT

MARK	DESCRIPTION	DATE	BY	CHK'D

REVISION RECORD

SCALE: 1" = 20'

DATE: 09/23/2013

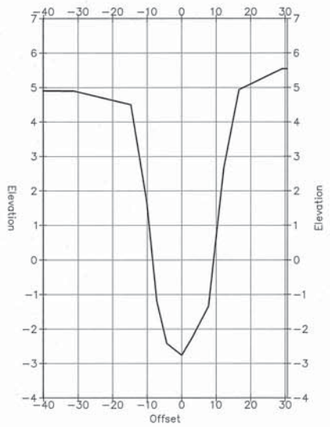
DRAWN BY: B.S.F.

CHECKED BY: K.J.E.

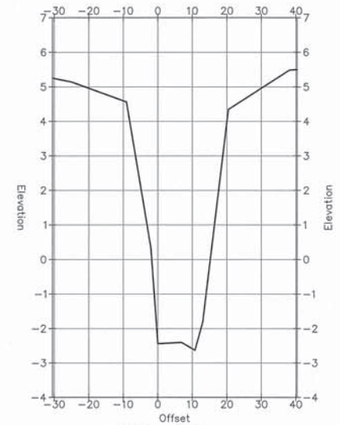
FILE NO. 70594 | PROJECT NO. 70594

SHEET 7 OF 10

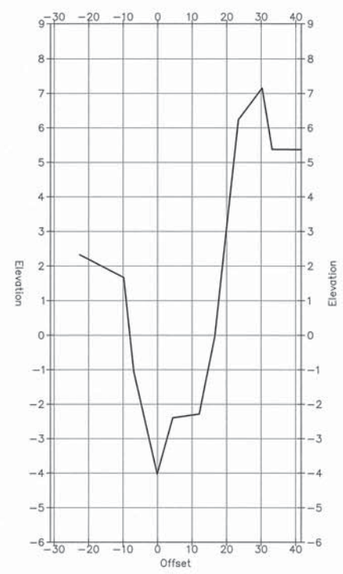
WP-20
LOWER CANAL
41+46.57



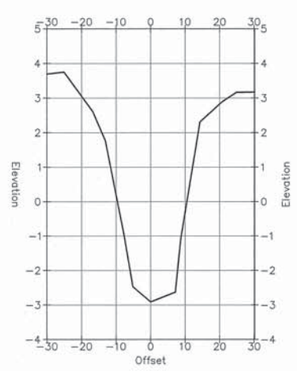
WP-20
LOWER CANAL
46+19.08



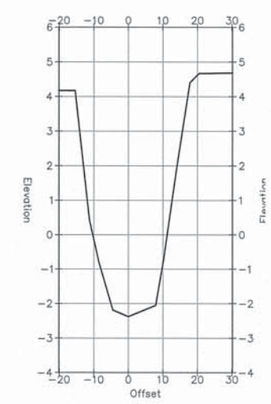
WP-20
LOWER CANAL
26+77.71



WP-20
LOWER CANAL
20+39.05



WP-20
LOWER CANAL
40+63.16



STATE OF LOUISIANA
JOHN S. TEEGARDEN
LICENSE No. 4635
PROFESSIONAL
LAND SURVEYOR

REGISTERED PROFESSIONAL LAND SURVEYOR
JOHN S. TEEGARDEN
REGISTRATION NO. 4635

BSM
Professional Land Surveyors
534 WILLIAMS BOULEVARD
E-mail: bsmcorp@bsmcorporation.com
(504) 467-0065
Fax (504) 467-0065
CITY OF KENNER
JEFFERSON PARISH, LOUISIANA, 70062

DRAINAGE STUDY
MARKHAM DRIVE TO PEACHTREE STREET
SLIDELL, LOUISIANA

I certify that this plat represents an actual ground survey made by me or under my direction, and it does not conform to the minimum standards for property boundary surveys as found in Louisiana Administrative Code TITLE 46; LAC Chapter 29 for a Class C survey.

VOLKERT

MARK	DESCRIPTION	DATE	BY	CHK'D

REVISION RECORD

SCALE: 1" = 20'

DATE: 09/23/2013

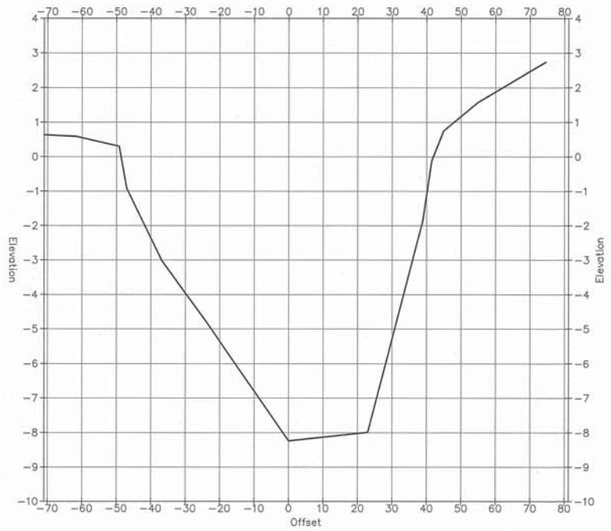
DRAWN BY: B.S.F.

CHECKED BY: K.J.E.

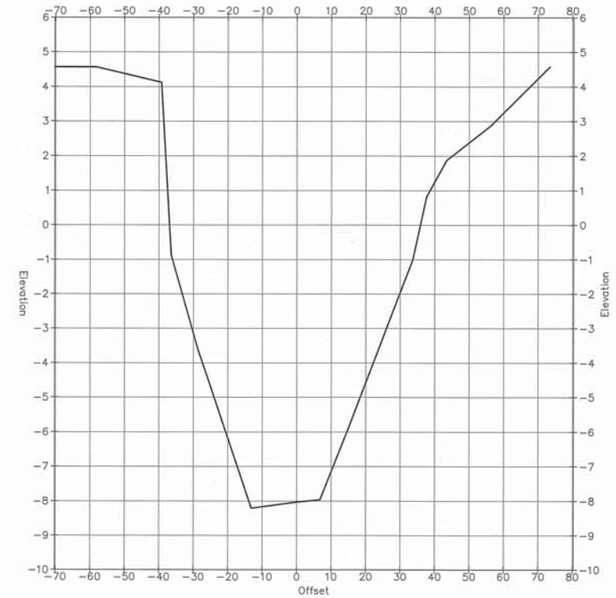
FILE NO. 70594 | PROJECT NO. 70594

SHEET 8 OF 10

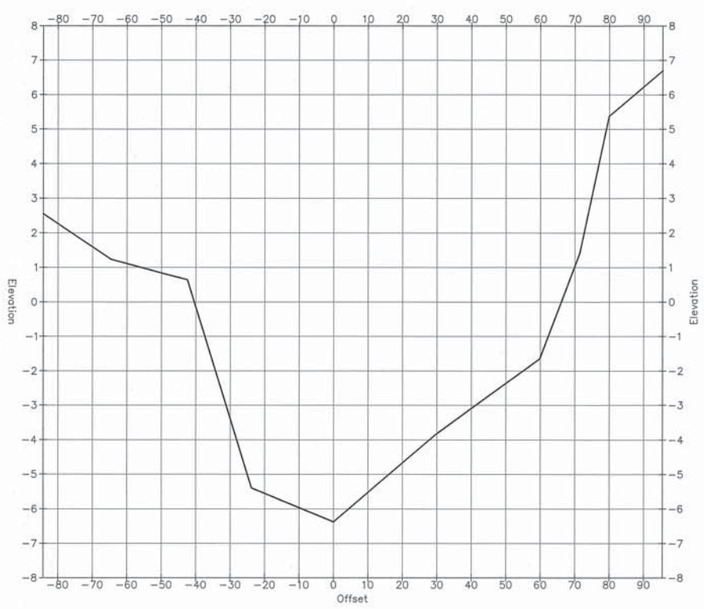
SCHNEIDER CANAL
13+91.27



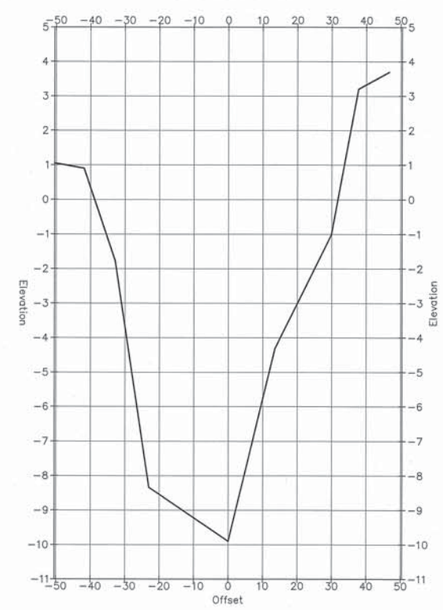
SCHNEIDER CANAL
26+50.28



SCHNEIDER CANAL
0+00.00



SCHNEIDER CANAL
5+32.70



STATE OF LOUISIANA
JOHN S. TEEGARDEN
LICENSE No. 4635
PROFESSIONAL
LAND SURVEYOR

REGISTERED PROFESSIONAL LAND SURVEYOR
JOHN S. TEEGARDEN
REGISTRATION NO. 4635

BCM
Professional Land Surveyors
534 WILLIAMS BOULEVARD
E-mail: bmcorp@bmcorporation.com
(504) 467-4629
Fax No. (504) 467-0065
CITY OF KENNER
JEFFERSON PARISH, LOUISIANA, 70062

DRAINAGE STUDY
MARKHAM DRIVE TO PEACHTREE STREET
SLIDELL, LOUISIANA

I certify that this plat represents an actual ground survey made by me or under my direction, and it conforms to the minimum standards for property boundary surveys as found in Louisiana Administrative Code TITLE 46: LXI, Chapter 29 for a Class "C" survey.

VOLKERT

MARK	DESCRIPTION	DATE	BY	CHK'D

REVISION RECORD

SCALE: 1" = 20'

DATE: 09/23/2013

DRAWN BY: B.S.F.

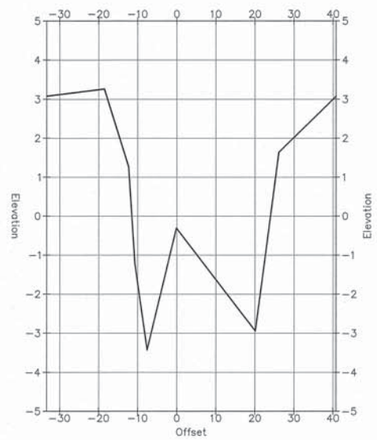
CHECKED BY: K.J.E.

FILE NO. 70594 | PROJECT NO. 70594

SHEET 9 OF 10

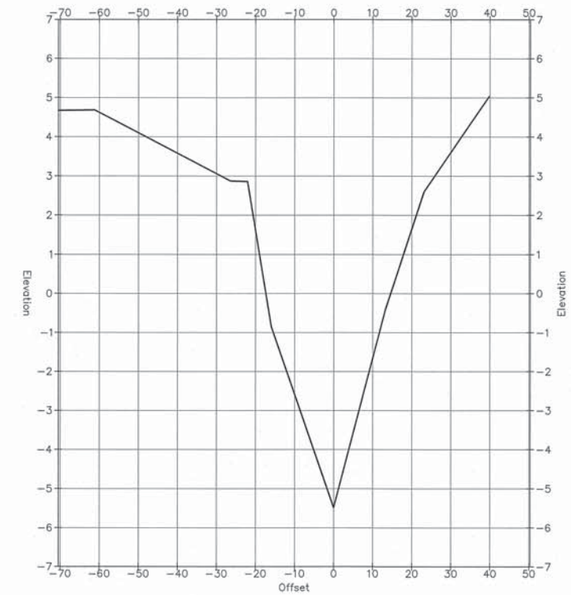
SCHNEIDER CANAL

57+31.41



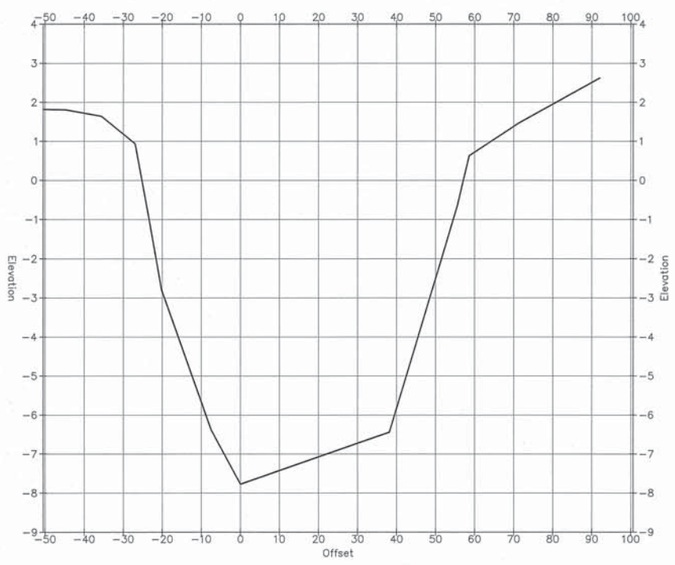
SCHNEIDER CANAL

58+20.05



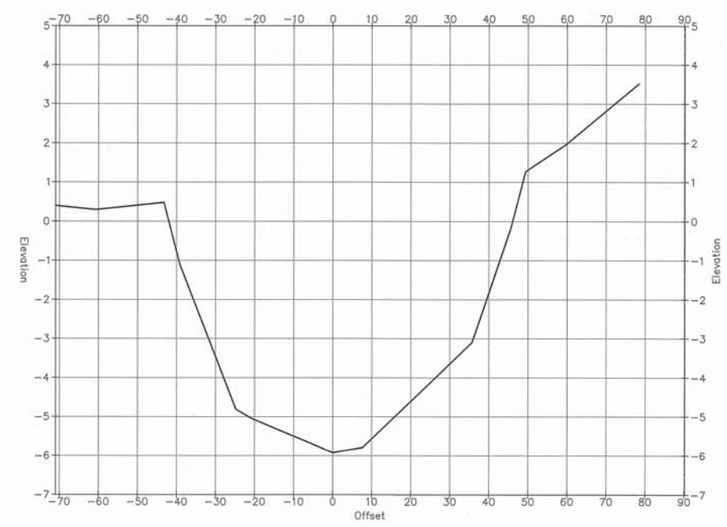
SCHNEIDER CANAL

36+16.93



SCHNEIDER CANAL

48+29.46



STATE OF LOUISIANA
JOHN S. TEEGARDEN
License No. 4635
PROFESSIONAL
LAND SURVEYOR

REGISTERED PROFESSIONAL LAND SURVEYOR
JOHN S. TEEGARDEN
REGISTRATION NO. 4635

BCM
Professional Land Surveyors
534 WILLIAMS BOULEVARD
E-mail: bfmcorp@bellsouth.net
(504) 468-4800
Fax (504) 467-0065
CITY OF KENNER
JEFFERSON PARISH, LOUISIANA, 70062

DRAINAGE STUDY
MARKHAM DRIVE TO PEACHTREE STREET
SLIDELL, LOUISIANA

I certify that this plat represents an actual ground survey made by me or under my direct supervision and that it does not violate the provisions of the Louisiana Standards for Property Boundary Surveys as found in Louisiana Administrative Code TITLE 46: LX, Chapter 29 for a Class "C" Survey.

VOLKERT

MARK	DESCRIPTION	DATE	BY	CHK'D

REVISION RECORD

SCALE: 1" = 20'

DATE: 09/23/2013

DRAWN BY: B.S.F.

CHECKED BY: K.J.E.

FILE NO. 70594 | PROJECT NO. 70594

SHEET 10 OF 10

APPENDIX B

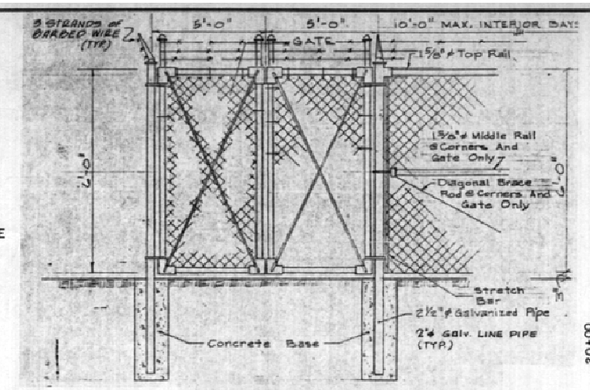
LATERAL CANAL SOUTH CHANNEL DESIGN PLAN

GENERAL NOTES

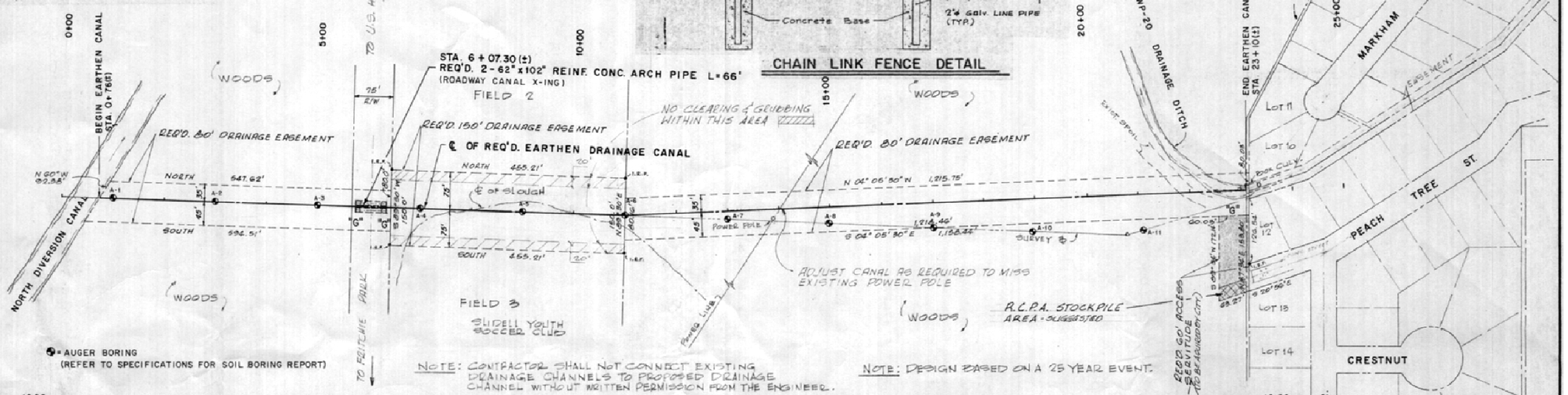
1. All topo is approximate - verify in the field.
2. Existing gas line, telephone line and electric line locations should be verified in the field prior to construction.
3. After channel construction and/or conduit installation, the Contractor shall take whatever steps are necessary to grade the immediate surrounding area to adequately drain.
4. Any and all salvageable material shall remain the property of the Owner.
5. The Contractor shall adhere, at all times, to accepted construction methods, standards and practices.
6. The Contractor shall not substitute materials specified within these plans, alter paving details, or deviate from these plans in any manner, without first written approval from the Design Engineer, (Cartier & Associates, Inc., 2101 Lakeshore Drive, P. O. Box 1212, Mandeville, Louisiana 70448).
7. The Contractor shall notify, in writing, the City of Slidell Police Department, Fire Department, City Engineer and Design Engineer no less than three (3) working days prior to the start of construction.
8. The Contractor shall provide adequate signing and flagmen (as required) to safely detour traffic around the construction site.
9. The Contractor shall provide temporary access as required to individual property owners within the area of construction.

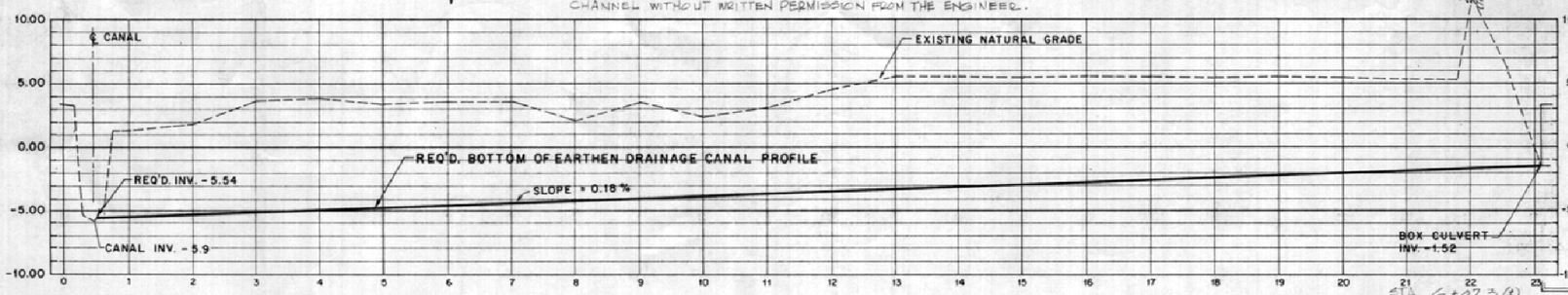
SUGGESTED R.C.P.A. STOCKPILE AREA

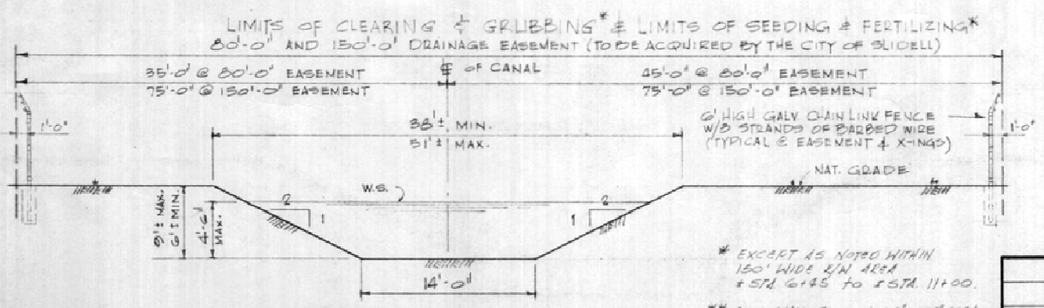
"G" 10' GALV. GATE FOR 6' HIGH C.L. FENCE



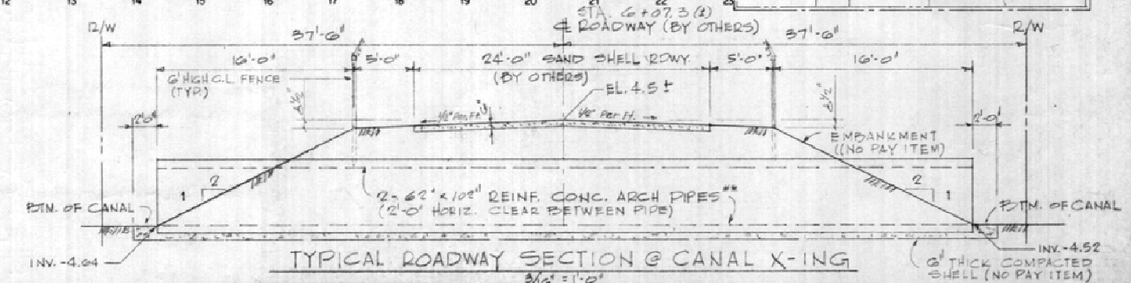
CHAIN LINK FENCE DETAIL







TYPICAL EARTHEN CANAL SECTION
3/16" = 1'-0" (LOOKING NORTH)



TYPICAL ROADWAY SECTION @ CANAL X-ING
3/16" = 1'-0"

DATE	REVISIONS	BY

Cartier & Associates, Inc.
CONSULTING ENGINEERS
2101 Lakeshore Drive — Mandeville, La.

DESIGNED BY: E.A.W. — DRAWN BY: W.W.C. — CHECKED BY: E.A.W.
DATE: MAY, 1986 — APPROVED BY: R.A.C.

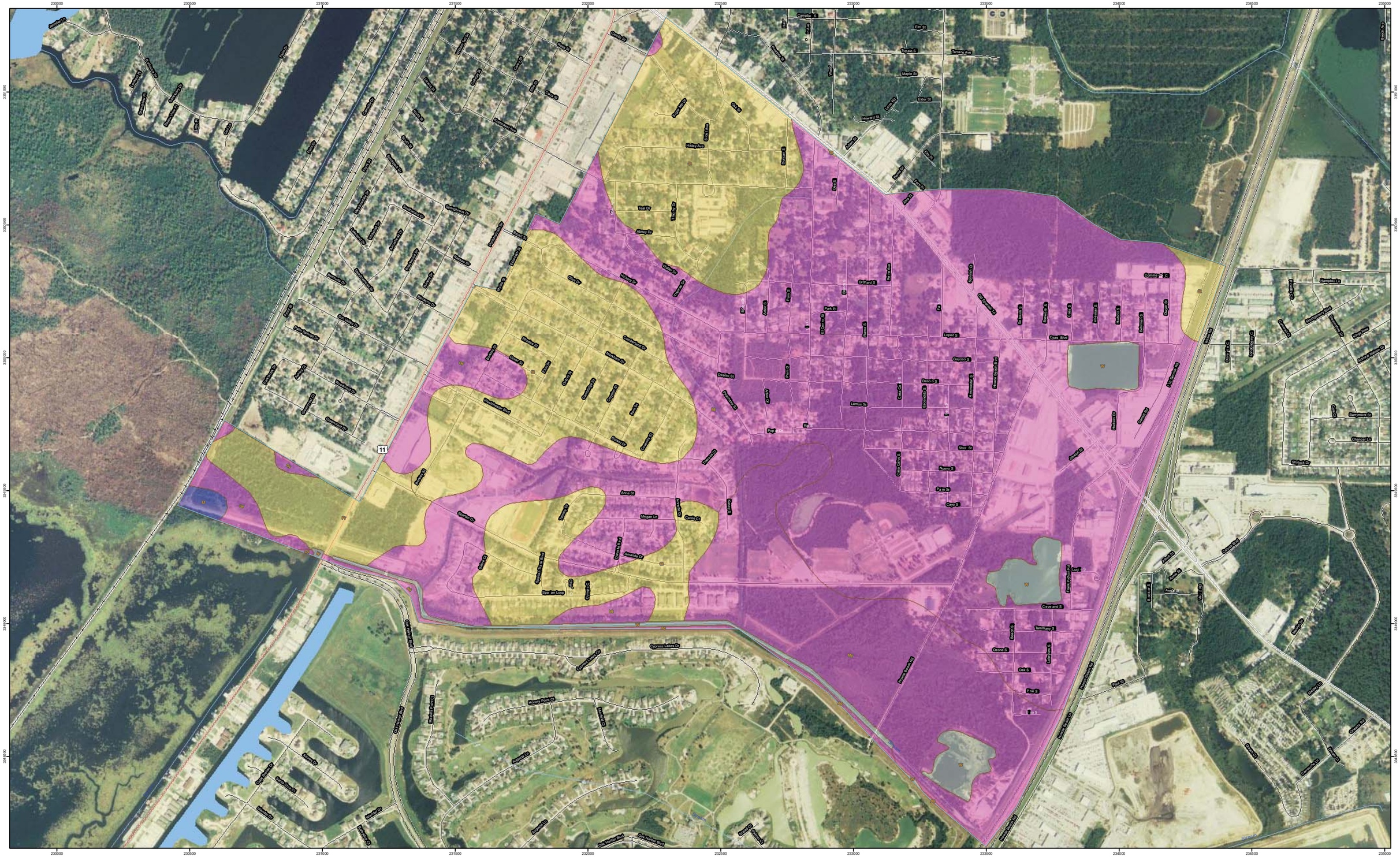
STATE OF LOUISIANA — ROY A. CARTIER — REG. NO. 9663 — REGISTERED PROFESSIONAL ENGINEER IN CIVIL ENGINEERING

TITLE: NEW EARTHEN CANAL SOUTH SIDE
OWNER: CITY OF SLIDELL
PROJECT: OPERATION RAINWATER

SCALE: 1" = 100'
JOB NO.: 8019
SHEET NO.: 2 OF 4

APPENDIX C

SOIL CLASSIFICATION MAP


89° 48' 26"
89° 45' 15"
30° 15' 48"
30° 15' 52"
30° 14' 5"
30° 14' 9"
230000
230500
231000
231500
232000
232500
233000
233500
234000
234500
235000
3351000
3350500
3350000
3349500
3349000
3348500
Map Scale: 1:6,550 if printed on D size (22" x 34") sheet.
Meters
0 50 100 200 300
Feet
0 200 400 800 1,200
N

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Political Features

Cities

Water Features

Oceans

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

MAP INFORMATION

Map Scale: 1:6,550 if printed on D size (22" × 34") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 16N NAD83

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

Soil Survey Area: St. Tammany Parish, Louisiana
Survey Area Data: Version 6, Sep 8, 2009

Date(s) aerial images were photographed: 9/18/2007; 9/20/2007

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

APPENDIX D

GEOTECHNICAL REPORT

Information To Build On
Engineering • Consulting • Testing

August 17, 2011

Volkert, Inc.
3466 Drusilla Lane, Suite A
Baton Rouge, Louisiana 70809

Attention: Mr. William Purser, P.E.
Phone: (225) 218-9440
Email: william.purser@volkert.com

Re: Geotechnical Engineering Report
Markham-Peachtree Culvert Replacement Project
Between Markham Drive and Peachtree Street
Slidell, Louisiana
PSI File Number 0254308

Dear Mr. Purser:

Professional Service Industries, Inc. (PSI) is pleased to transmit our Geotechnical Engineering Services report for the above referenced project. This report includes the results of field exploration, laboratory testing, and geotechnical recommendations, as well as general site development.

We appreciate the opportunity to perform this geotechnical study and look forward to continued participation during the design and construction phases of this project. If you have any questions pertaining to this report, please contact our office.

Respectfully submitted,
PROFESSIONAL SERVICE INDUSTRIES, INC.

Georgina Sanmartin
for Ajay Potturi
Department Manager

for Marty Skyrman
Project Manager

Malay Ghose Hajra, Ph. D., PE
Regional Engineer

STATE OF LOUISIANA
MALAY GHOSE HAJRA
License No. 31084
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING

8/17/2011

GEOTECHNICAL ENGINEERING REPORT

MARKHAM-PEACHTREE CULVERT REPLACEMENT PROJECT
BETWEEN MARKHAM DRIVE AND PEACHTREE STREET
SLIDELL, LOUISIANA

PSI FILE NUMBER 0254308

PREPARED FOR

VOLKERT, INC
3466 DRUSILLA LANE, SUITE A
BATON ROUGE, LOUISIANA 70809

AUGUST 17, 2011

BY

PROFESSIONAL SERVICE INDUSTRIES, INC.
22171 MCH ROAD
MANDEVILLE, LOUISIANA 70471
PHONE: 985-809-2333
FAX: 985-809-2338

TABLE OF CONTENTS

Page No.

PROJECT INFORMATION **1**
Project Authorization 1
Project Description 1
Purpose and Scope of Services 1

SITE AND SUBSURFACE CONDITIONS **3**
Site Location and Description 3
Field Exploration 3
Drilling and Sampling Procedures 3
Laboratory Testing Program 4
Subsurface Conditions 4
Groundwater Information 4

ENGINEERING ANALYSES AND RECOMMENDATIONS **5**
Site Preparation 5
Concrete Box Culvert 5
Slope Stability 7

CONSTRUCTION CONSIDERATIONS **9**
Moisture Sensitive Soils/Weather Related Concerns 9
Drainage and Groundwater Concerns 9
Excavations 9

REPORT LIMITATIONS **11**

APPENDIX
Site Vicinity Map
Boring Location Plan
Boring Logs
Key to Terms and Symbols Used on Boring Logs
Open Channel Cross-Sections
Slope Stability Analyses Results

PROJECT INFORMATION

Project Authorization

Professional Service Industries, Inc. (PSI) has completed a geotechnical exploration for the culvert replacement project between Markham Drive and Peachtree Street in Slidell, Louisiana. This report presents the results of our field exploration and laboratory testing as well as geotechnical recommendations, including general site preparation guidelines. The services were authorized by execution of the Subconsultant Agreement, dated May 20, 2011, between Volkert, Inc. and PSI, Inc. The services were performed in general accordance with PSI Proposal No. 42868, dated April 8, 2011.

Project Description

Project information was provided to PSI by Mr. William Purser with Volkert, Inc. Based on the information provided, the proposed project will include the replacement of approximately 1,300 feet of existing culvert between Markham Drive and Peachtree Street in Slidell, Louisiana. The existing 4 feet x10 feet culvert will be replaced with a new 5 feet (rise) x10' (span) pre-cast or cast in place concrete box culvert with headwalls in approximately the same location and grade as the existing structure. As such, the bottom of the proposed box culvert will be bearing at a depth of approximately 6 to 8 feet below the existing ground surface at the boring locations.

It is also understood that a portion of the channel along the alignment will be left for open drainage (without a box culvert). Preliminary channel cross-sections are provided to PSI and included in this report. It is requested that PSI perform a slope stability analyses for the open channel cross-sections at two stations along the drainage channel.

The geotechnical recommendations presented in this report are based on the available project information, culvert location, and the subsurface materials described in this report. If any of the above information should change significantly, or be in error, it should be brought to the attention of PSI so that any changes in the recommendations can be made if required. PSI will not be responsible for the implementation of its recommendations when it is not notified of changes in the project.

Purpose and Scope of Services

The purpose of this study was to explore the subsurface conditions at the site to evaluate soil bearing capacity and slope stability for the proposed construction. Our scope of services included drilling a total of four (4) soil test borings. One (1) boring (B-1) was drilled to 70 feet below the existing ground surface and three (3) borings (B-2 through B-4) were drilled to a depth of 30 feet. The scope also included laboratory tests conducted on selected samples recovered from the soil borings and preparation of this geotechnical report. This report briefly outlines the testing procedures, presents available project information, describes the site and subsurface conditions, and presents recommendations regarding the following:

- General site preparation guidelines;
- Allowable bearing capacity and an estimate of settlement for the proposed box culvert;
- Slope stability analyses of the canal cross sections provided;

- Comments regarding factors that will impact construction and performance of the proposed construction.

The scope of services did not include an environmental assessment for determining the presence or absence of hazardous or toxic materials in the soil, surface water, groundwater, or air on or below, or around this site. Any statements in this report or on the boring logs regarding odors, colors, and unusual or suspicious items or conditions are strictly for informational purposes. Prior to the development at this site, an environmental site assessment is advisable.

SITE AND SUBSURFACE CONDITIONS

Site Location and Description

The site for the proposed culvert and open channel is located within the Westchester Estates Subdivision in Slidell, Louisiana. The site is bounded by Olive Drive to the north, Markham Drive to the south, and residential areas to the east and west, respectively. The project site is currently a utility right of way for the City of Slidell consisting of both covered and uncovered sections for drainage. The right of way is bounded by one (1) and two (2) story structures on either side for a total distance of approximately 1,500 lineal feet. The ground surface throughout was covered primarily with surface vegetation, some trees, and privacy fences, and the site generally appeared level at the time of our field exploration. The approximate project location is indicated in the Site Vicinity Map included in the Appendix of this report.

Field Exploration

The field exploration, which was performed to evaluate the engineering characteristics of the foundation materials, included a reconnaissance of the project site by a PSI representative, drilling the soil borings and recovering soil samples. Any groundwater encountered in the test borings was measured and recorded.

The project site was characterized by drilling a total of four (4) soil borings along the existing culvert. One (1) boring (B-1) was drilled to a depth of 70 feet and three (3) borings (B-2 through B-4) were drilled a depth of 30 feet. The boring depth is in reference to the existing ground surface at the time of the field exploration. The approximate location of each boring is located on the Boring Location Plan included in the Appendix of this report.

Drilling and Sampling Procedures

The borings were drilled with a truck-mounted drilling rig. Wet rotary and hollow stem auger drilling techniques were used to advance the boreholes. Samples were generally obtained continuously from the ground surface to a depth of 10 feet and at five (5) foot intervals thereafter to the boring completion depths. Drilling and sampling techniques were accomplished in general accordance with ASTM Standard Procedures.

Undisturbed samples of cohesive soils were generally obtained using thin-wall tube sampling procedures in general accordance with the procedures for “Thin-Walled Tube Geotechnical Sampling of Soils” (ASTM D-1587). These samples were extruded in the field with a hydraulic ram.

For cohesionless and semi-cohesive soils, Standard Penetration Tests (SPT) were performed to obtain standard penetration values of the soil. The standard penetration value (N) is defined as the number of blows of a 140 pound hammer, falling 30 inches, required to advance the split-barrel sampler one (1) foot into the soil. To perform the test and obtain a sample, the sampler is lowered to the bottom of the previously cleaned drill hole and advanced by blows from the hammer. The number of blows is recorded for each of three (3) successive increments of six (6) inches penetration. The “N” value is obtained by adding the second and third incremental numbers. The results of the standard penetration test indicate the relative density of cohesionless soils and thereby provide a basis for estimating the relative strength and compressibility of the soil profile components. Samples of granular soils were obtained utilizing

a two (2) inch O.D. split-barrel sampler in general accordance with procedures for “Penetration Test and Split-Barrel Sampling of Soils” (ASTM D-1586).

The samples were identified according to project number, boring number and depth, and were placed in plastic bags to protect against moisture loss, and were transported to the laboratory in containers to prevent against disturbance. All of the samples obtained from the field exploration were identified and evaluated by experienced geotechnical personnel upon arrival of the laboratory.

Laboratory Testing Program

In addition to the field exploration, a supplemental laboratory testing program was conducted to determine additional pertinent engineering characteristics of the in situ soils.

The laboratory testing program included visual classification and water content tests on all samples. In addition, selected samples were subjected to unconfined compressive strength testing, unconsolidated undrained triaxial strength testing, Atterberg Limits, and percent finer than a No. 200 sieve tests. All phases of the laboratory testing program were conducted in general accordance with applicable ASTM Specifications. The results of these tests are presented on the accompanying boring logs in the Appendix.

Subsurface Conditions

Based on the borings, about four (4) to six (6) inches of sandy topsoil with roots was encountered at the surface. This was generally underlain by soft to stiff tan and gray lean clay with sand, extending to depths between 4 and 8 feet, followed by firm to stiff tan and gray fat clay extending from 4 feet to a depth of about 27 feet. Below this was gray silty or clayey sand to a depth of about 32 feet. This was underlain by firm to stiff gray fat clay to a depth of about 57 feet. Below this was medium dense to dense gray silty sand to a depth of at least 70 feet, the maximum depth explored.

The above subsurface description is of a generalized nature to highlight the major subsurface stratification features and material characteristics. The boring logs included in the appendix should be reviewed for specific information at individual boring locations. These records include soil descriptions, stratifications, penetration resistances, locations of the samples and laboratory test data. The stratifications shown on the boring logs represent the conditions only at the actual boring locations. Variations may occur and should be expected between boring locations. The stratifications represent the approximate boundary between subsurface materials and the actual transition may be gradual. The samples, which were not altered by laboratory testing will be retained for 60 days from the date of this report and then will be discarded.

Groundwater Information

Groundwater was encountered at about 25 feet (B-3 and B-4) during drilling and was measured at depths ranging between 14.5 feet and 25.5 feet upon completion of drilling. This groundwater level was measured during the drilling operation and it may not have become fully static at the time of measurement. In any event, groundwater could fluctuate at the site due to seasonal precipitation and variation in weather conditions. It is recommended that the actual groundwater levels at the site be determined by the contractor at the time of construction activities.

ENGINEERING ANALYSES AND RECOMMENDATIONS

Site Preparation

It is understood that the existing box culvert will be removed and replaced with a new concrete box culvert. Therefore, site preparation is expected to include but not be limited to the demolition and removal of the existing culvert. It is recommended that any vegetation, roots, topsoil, organics, deleterious materials, and any loose or soft soils encountered in the ditch bottom and sides be stripped and removed. Based on the borings drilled near the top of the ditch bank, up to six (6) inches of brown sandy topsoil with organics was encountered. However, the actual stripping depth should be determined in the field by the Geotechnical Engineer or his representative at the time of construction. This topsoil can be replaced on the proposed cut-slopes upon reaching finish grade in order to help establish vegetation.

It is anticipated that the ditch will be shored, dewatered, and excavated to a depth of approximately one (1) feet below the proposed bottom of culvert. The actual depth of the undercutting should be determined by the Geotechnical Engineer or his representative at the time of construction. The upper 12 inches of the exposed subgrade should be scarified and re-compacted to at least 95 percent of Standard Proctor maximum dry density as determined by ASTM Designation D698 prior to placement of aggregate bedding.

Fill soils, if required, should be placed in relatively uniform horizontal lifts and be adequately keyed into the stripped and proofrolled soils. All fill should be placed in maximum lifts of eight (8) inches of loose material and should be compacted within the range of 1 percentage point below to 3 percentage points above the optimum moisture content value. If water must be added, it should be uniformly applied and thoroughly mixed into the soil by disking or scarifying. Each lift of compacted fill should be tested by a representative of the Geotechnical Engineer prior to placement of subsequent lifts.

If required, the proposed ditch banks should be benched to allow proper compaction of the fill. In addition, fill (if necessary) should be “keyed” or benched into existing slopes. All fill should be placed horizontally and “flat” and level surface. Placement of fill on a sloped face should be avoided if at all possible.

Structural fill should consist of sandy clay or clayey sand. The fill should be free of organic or other deleterious materials and have a liquid limit less than 40 percent and plasticity index between 10 and 20 percent. Structural fill soils with plasticity indices in this range will require close moisture content control to achieve the recommended degree of compaction. Structural fill should be compacted to at least 95 percent of Standard Proctor maximum dry density as determined by ASTM Designation D698.

Concrete Box Culvert

We understand that the existing box culverts will be replaced by a new concrete box culvert about 5 feet (rise) by 10 feet (span) with 10 inch thick side walls and top and bottom slabs. We understand that the new box culvert will be placed at a depth of about 8 feet below the existing ground surface.

Bearing Capacity: The soils at and below the box culvert invert elevations generally consist of firm to stiff lean/fat clay soils and have an average ultimate soil bearing value on the order of 3,000 pounds per square foot (psf). Estimating an imposed load from the proposed box culvert to be on the order of 800 psf, including backfill above the culvert, an adequate factor of safety will be maintained against bearing failure. Any localized soft/loose soil zones should be undercut to the required depths and backfilled with properly compacted structural fill soils. It is recommended that proposed box culverts should be placed on at least 12 inches of properly compacted structural fill.

A 5 feet (rise) by 10 feet (span) concrete box culvert designed as discussed, could experience a long-term settlement of about one (1) inch.

Bedding and Backfill Requirements: It is recommended that proposed box culverts should be placed on at least 12 inches of compacted aggregate base. Aggregate base bedding material should be in conformance with the LADOTD specifications for Class II Aggregate Base. The aggregate base should be compacted to at least 95 percent of the maximum dry density as determined by standard Proctor (ASTM D 698), within zero to two percentage points of the optimum moisture content. The excavation, bedding and backfill requirements should conform to the local city and/or parish specifications for underground utility lines.

Groundwater Considerations: Groundwater was not observed during the drilling operations to the planned excavations of about 8 feet. Nevertheless, the groundwater level may vary seasonally, and it is possible that water may seep into open excavations during the construction at some locations. The excavations should be clean and free of loose soil or standing water. If water seepage cannot be handled by pumping from sumps, PSI should be contacted to provide additional recommendations.

It should be noted that ground water and/or surface water infiltration during the service life of the box culvert might exert some buoyant forces on the culvert. As such, the culvert should be designed for buoyancy forces due to groundwater or surface water infiltration and local submergence. The culvert structures can be designed for a minimum buoyant uplift force of 500 psf.

Excavations: The excavations should be observed by a representative of PSI prior to steel or concrete placement to assess that the foundation materials are capable of supporting the design loads and are consistent with the materials discussed in this report. Soft or loose soil zones encountered at the bottom of the excavations should be removed to the level of firm soils or adequately compacted fill as directed by the geotechnical engineer. Cavities formed as a result of excavation of soft or loose soil zones should be backfilled with compacted structural fill or graded aggregate base, as determined by the Geotechnical Engineer.

Excavations should be observed and concrete placed as quickly as possible to avoid exposure of the foundation bottoms to wetting and drying. Surface run-off water should be drained away from the excavations and not be allowed to pond prior to or after concrete placement. If possible, foundation concrete should be placed during the same day the excavation is made. If it is required that excavations be left open for more than one day, they should be protected to reduce evaporation or entry of moisture.

Side Slope for Excavations: Excavations are typically sloped-back in accordance with OSHA requirements. For excavations deeper than four feet, the side slopes should also conform to

applicable federal, state and local regulations. The guidelines provided in the construction requirement section should be followed. The soils found at this project can be classified as "Type C" according to OSHA.

We suggest that construction equipment and stockpiled materials should be kept away from the excavation at a minimum distance equal to the excavation depth to avoid surcharging of the excavation slopes. If excavations were to be near existing foundations (i.e., within a distance equal to 1.5 times the excavation depth), PSI should be contacted to evaluate the effects of excavation on these nearby foundations.

Slope Stability

Slope stability analyses were performed for the open channel portions of the project at Station 4+60 and 17+67. A design soil profile for the project was created based on the results of soil borings B-1 through B-4. Elevations used in the analyses are based on the preliminary cross section drawings provided by Volkert, dated July 18, 2011 and included in the Appendix. Based on our subsurface exploration and general experience in the project vicinity, a static water table elevation equivalent to the proposed channel invert was used in both the short term and long term analyses (varies between elev. -2.9 and elev. -2.4).

Analyses were performed using the Slope-W computer software program to determine the stability of the proposed slope under both short term (end of construction) and long term loading conditions. The proposed slope is between eight (8) and nine (9) feet high and is inclined at 3:1 (H:V) +/-. A traffic surcharge load was not incorporated into the analyses.

Slope stability analysis involves a search for the most likely sliding surface by comparing the developed shear stresses with the gravity forces associated with the sliding soil. The method involves the determination of the factor of safety along the surface where the soil mass may slide, For a relatively homogenous soil profile, as encountered at this site, this determination is based on a circular-shaped failure surface. For these analyses, Spencer's Method was used to predict the factor of safety against sliding along multiple failure circles and to determine the critical circle with the least factor of safety.

The design soil parameters used in the stability analyses are presented in the following Table.

DESIGN SOIL PARAMETERS						
Soil Type	Elevation (ft)	Total Unit Weight (pcf)	Short Term (undrained)		Long Term (drained)	
			Cohesion (psf)	Angle of Internal Friction (°)	Effective Cohesion (psf)	Effective Angle of Friction (°)
Sandy Lean Clay	+6 to 0	127	600	0	25	25
Fat Clay	0 to -21	118	1,000	0	25	23
Silty Sand	-21 to -26	120	0	30	0	30
Fat Clay	-26 to -51	115	800-1200	0	0	23
Silty Sand	-51 to -64	120	0	30	0	30

Slope stability was evaluated for the following loading conditions:

Short Term (End of Construction) Condition: The condition occurs immediately subsequent to construction. It is assumed that the pore pressures within the soil slope have not dissipated. For this condition, slopes were analyzed using undrained (total stress) soil strength parameters derived from the results of laboratory testing. The minimum required factor of safety (FOS) for this condition is 1.3.

Long Term Condition: This condition is evaluated when long term stability of the slope is considered. For this condition, slopes were analyzed using drained (effective stress) soil strength parameters derived from well-accepted correlations found in the geotechnical literature. The minimum required factor of safety for this condition is 1.5.

The results of the slope stability analyses for the various loading conditions are summarized in the Table below. Plates indicating location of critical failure surfaces and computer output files are presented in the Appendix.

RESULTS OF SLOPE STABILITY ANALYSES		
LOADING CASE	**Minimum Required FOS**	**Calculated Minimum FOS**
Sta. 4+60		
Short Term	1.3	5.05
Long Term	1.5	1.56
Sta. 17+67		
Short Term	1.3	5.95
Long Term	1.5	1.60

Results of the analyses indicate suitable Factors of Safety (FOS) values for both short and long term loading conditions. Slopes constructed steeper than 3:1 (horizontal:vertical) will not meet the minimum requirements stated above, and will likely have increased maintenance due to surficial sloughing.

CONSTRUCTION CONSIDERATIONS

It is recommended that PSI be retained to provide observation and testing of construction activities involved in the foundations and pavements, earthwork, and related activities of this project. PSI cannot accept any responsibility for any conditions, which deviated from those described in this report, nor for the performance of the proposed improvements if not engaged, to also provide construction observation and testing for this project to ensure that the recommendations presented herein are implemented.

Moisture Sensitive Soils/Weather Related Concerns

The upper soils encountered at this site are relatively sensitive to disturbances caused by construction traffic and changes in moisture content. During wet weather periods, an increase in the moisture content of the soil can cause significant reduction in the soil strength and support capabilities. In addition, soils that become wet may be slow to dry and thus significantly retard the progress of grading and compaction activities. It will, therefore, be advantageous to perform earthwork and foundation construction activities during dry weather.

Drainage and Groundwater Concerns

Water should not be allowed to collect in the foundation excavations, or on the prepared subgrade in the construction area either during or after construction. Undercut or excavated areas should be sloped toward one corner to facilitate removal of any collected rainwater, groundwater, or surface runoff.

Groundwater was measured between 14½ and 25 feet below the ground surface upon completion of drilling activities. However, it is possible that seasonal variations will cause fluctuations of the water table. Additionally, perched water may be encountered in discontinuous zones within the overburden. Any water accumulation should be removed from excavations by pumping. Should excessive and uncontrolled amounts of seepage occur, the geotechnical engineer should be consulted.

Excavations

In Federal Register, Volume 54, No. 209 (October 1989), the United States Department of Labor, Occupational Safety and Health Administration (OSHA) amended its “Construction Standards for Excavations, 29 CFR, part 1926, Subpart P”. This document was issued to better insure the safety of workmen entering trenches or excavations. It is mandated by this federal regulation that excavations, whether they be utility trenches, basement excavation or footing excavations, be constructed in accordance with the new OSHA guidelines. It is our understanding that these regulations are being strictly enforced and if they are not closely followed, the owner and the contractor could be liable for substantial penalties.

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractor’s “responsible person”, as defined in 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor’s safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations.

We are providing this information solely as a service to our client. PSI does not assume responsibility for construction site safety or the contractor's or other parties' compliance with local, state, and federal safety or other regulations.

REPORT LIMITATIONS

The recommendations submitted in this report are based on the available project information and subsurface information obtained by PSI. If there are any revisions to the plans for this project, or if deviations from the subsurface conditions noted in this report are encountered during construction, PSI should be notified immediately to determine if changes in the foundation recommendations are required. If PSI is not notified of such changes, PSI will not be responsible for the impact of those changes on the project.

The Geotechnical Engineer warrants that the findings, recommendations, specifications, or professional advice contained herein have been made in accordance with generally accepted professional geotechnical engineering practices in the local area. No other warranties are implied or expressed.

After the plans and specifications are more complete, the Geotechnical Engineer should be retained and provided the opportunity to review the final design plans and specifications to check that our engineering recommendations have been properly incorporated into the design documents. At that time, it may be necessary to submit supplementary recommendations. This report has been prepared for the exclusive use of Volkert, Inc for the specific application to the Markham-Peachtree Culvert Replacement Project in Slidell, Louisiana.

APPENDIX

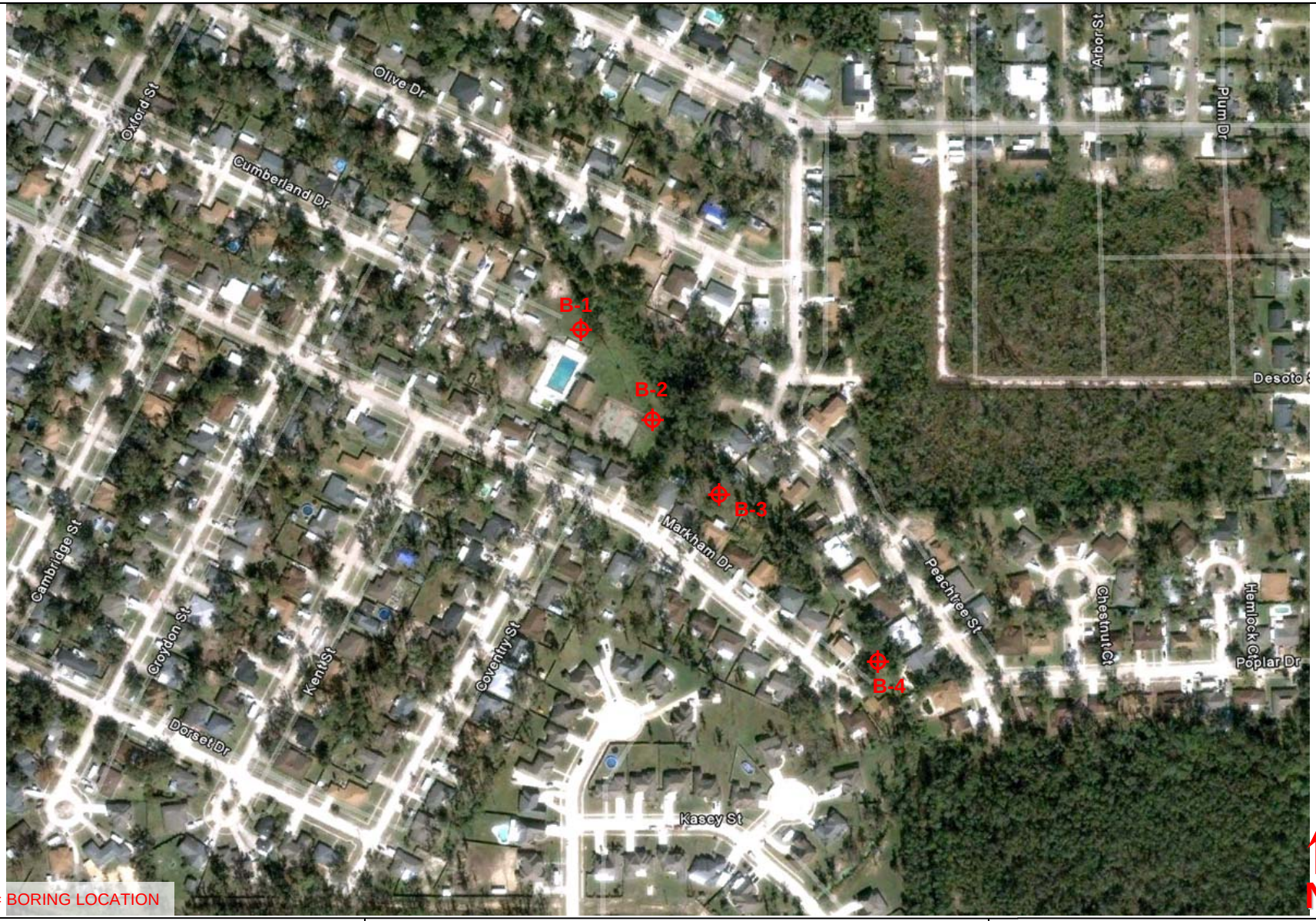
Site Vicinity Map
Boring Location Plan
Boring Logs
Key to Terms and Symbols Used on Boring Logs
Open Channel Cross Sections
Slope Stability Analyses Results

GEOTECHNICAL ENGINEERING SERVICES
MARKHAM-PEACHTREE CULVERT REPLACEMENT
BETWEEN MARKHAM DR & PEACHTREE ST
SLIDELL, LOUISIANA

SITE VICINITY

PSI PROJECT NO.: 0254308

psi Information To Build On
Engineering • Consulting • Testing



⊕ = BORING LOCATION

GEOTECHNICAL ENGINEERING SERVICES
MARKHAM-PEACHTREE CULVERT REPLACEMENT
BETWEEN MARKHAM DR & PEACHTREE ST
SLIDELL, LOUISIANA

BORING LOCATION PLAN

PSI PROJECT NO.: 0254308

psi Information To Build On
Engineering • Consulting • Testing

LOG OF BORING B-1

Markham-Peachtree Culvert Replacement Project
Between Markham Drive and Peachtree Street
Slidell, Louisiana

TYPE OF BORING: Wet Rotary

PSI Project No.: 0254308

LATITUDE:
LONGITUDE:

DEPTH, FT.	SOIL TYPE	USCS SYMBOL	SAMPLES	SOIL DESCRIPTION	N-BLOWS/FT.	MOISTURE CONTENT (%)	LIQUID LIMIT (LL)	PLASTIC LIMIT (PL)	PLASTICITY INDEX (PI)	% PASSING No. 200 SIEVE	SHEAR STRENGTH (tsf) HP / UC / TV / UU (0.0 0.5 1.0 1.5)	SHEAR STRENGTH (tsf) HAND PEN (tsf)	SHEAR STRENGTH (tsf) UC (tsf)	SHEAR STRENGTH (tsf) TORVANE (tsf)	SHEAR STRENGTH (tsf) UU (tsf)	UNIT DRY WEIGHT (pcf)
		CL		Stiff to very stiff tan and gray Lean Clay, with sand	17	8	28	16	12	78						
2.5					12	11										
5.0						15						1.50				
		CH		Stiff tan and gray Fat Clay, with silt seams -slickensided, 6' to 8'		24	56	17	39			1.50	0.71			99
7.5						32						0.50				
10.0																
12.5				-slickensided, 13' to 15'		35				100		0.92	0.24			88
15.0																
17.5						44						0.50				
20.0																
22.5				-slickensided, 23' to 25'		40						0.92			0.69	83
25.0																
27.5		SM		Gray Silty Sand, with clay pockets		24				25						
30.0																
32.5		CH		Firm to stiff gray Fat Clay, with silt and sand seams		39								0.35		
35.0																
37.5						54								0.30	0.37	69
40.0																
42.5						28								0.40		
45.0																
47.5						29						0.67				
50.0																

DEPTH OF BORING: 70 FEET

DATE DRILLED: 6/11/11

GROUNDWATER: N/A feet While Drilling

14.5 feet Upon Completion

BORINGLOG_JEFFERSON - PSIHOUSTON.GDT - 7/11/11 15:11 - 0254

LOG OF BORING B-1

Markham-Peachtree Culvert Replacement Project
Between Markham Drive and Peachtree Street
Slidell, Louisiana

TYPE OF BORING: Wet Rotary

PSI Project No.: 0254308

DEPTH, FT.	SOIL TYPE	USCS SYMBOL	SAMPLES	SOIL DESCRIPTION	N-BLOWS/FT.	MOISTURE CONTENT (%)	LIQUID LIMIT (LL)	PLASTIC LIMIT (PL)	PLASTICITY INDEX (PI)	% PASSING No. 200 SIEVE	SHEAR STRENGTH (tsf) ○ HP ● UC △ TV ▲ UU (0.0 0.5 1.0 1.5)	SHEAR STRENGTH (tsf) HAND PEN (tsf)	UC (tsf)	TORVANE (tsf)	UU (tsf)	UNIT DRY WEIGHT (pcf)
52.5				Firm to stiff gray Fat Clay, with silt and sand seams												
55.0			■			29					▲	0.75			0.79	94
57.5		SM		Medium dense to dense gray Silty Sand												
60.0			╳		17	31				26						
62.5																
65.0			╳		26	24										
67.5																
70.0			╳		30	28										
				Boring terminated at 70 feet												
72.5																
75.0																
77.5																
80.0																
82.5																
85.0																
87.5																
90.0																
92.5																
95.0																
97.5																
100.0																

DEPTH OF BORING: 70 FEET

DATE DRILLED: 6/11/11

BORINGLOG_JEFFERSON - PSIHOUSTON.GDT - 7/11/11 15:11 - 0254

LOG OF BORING B-2

Markham-Peachtree Culvert Replacement Project
Between Markham Drive and Peachtree Street
Slidell, Louisiana

TYPE OF BORING: Hollow Stem Auger

PSI Project No.: 0254308

LATITUDE:
LONGITUDE:

DEPTH, FT.	SOIL TYPE	USCS SYMBOL	SAMPLES	SOIL DESCRIPTION	N-BLOWS/FT.	MOISTURE CONTENT (%)	LIQUID LIMIT (LL)	PLASTIC LIMIT (PL)	PLASTICITY INDEX (PI)	% PASSING No. 200 SIEVE	SHEAR STRENGTH (tsf) HP / UC / TV / UU (0.0 0.5 1.0 1.5)	SHEAR STRENGTH (tsf) HAND PEN (tsf)	UC (tsf)	TORVANE (tsf)	UU (tsf)	UNIT DRY WEIGHT (pcf)
		CL		Firm to stiff tan and gray Lean Clay, with sand	11	12										
2.5					6	19	44	17	27	84						
5.0						26							0.26	0.30		101
7.5						26								0.25		
		CH		Firm to stiff tan and gray Fat Clay, with silt and sand seams -slickensided, 8' to 10'		28	52	20	32			1.50	0.35			94
10.0																
12.5																
						38						0.67				
15.0																
17.5																
						46						0.50				
20.0																
22.5																
						41						1.17			0.67	84
25.0																
27.5		SC		Gray Clayey Sand												
						28	29	16	13	37						
30.0				Boring terminated at 30 feet												
32.5																
35.0																
37.5																
40.0																
42.5																
45.0																
47.5																
50.0																

DEPTH OF BORING: 30 FEET

DATE DRILLED: 6/21/11

GROUNDWATER: N/A feet While Drilling

N/A feet Upon Completion

BORINGLOG_JEFFERSON - PSIHOUSTON.GDT - 7/11/11 15:11 - 0254

psi Information To Build On
Engineering • Consulting • Testing
Geotechnical Consulting Services
22171 MCH Road
Mandeville, Louisiana 70471

LOG OF BORING B-3

Markham-Peachtree Culvert Replacement Project
Between Markham Drive and Peachtree Street
Slidell, Louisiana

TYPE OF BORING: Hollow Stem Auger

PSI Project No.: 0254308

LATITUDE:
LONGITUDE:

DEPTH, FT.	SOIL TYPE	USCS SYMBOL	SAMPLES	SOIL DESCRIPTION	N-BLOWS/FT.	MOISTURE CONTENT (%)	LIQUID LIMIT (LL)	PLASTIC LIMIT (PL)	PLASTICITY INDEX (PI)	% PASSING No. 200 SIEVE	SHEAR STRENGTH (tsf) HP / UC / TV / UU (0.0 0.5 1.0 1.5)	SHEAR STRENGTH (tsf) HAND PEN (tsf)	SHEAR STRENGTH (tsf) UC (tsf)	SHEAR STRENGTH (tsf) TORVANE (tsf)	SHEAR STRENGTH (tsf) UU (tsf)	UNIT DRY WEIGHT (pcf)
		CL		Soft to firm tan and gray Sandy Lean Clay	8	9	33	16	17	69						
2.5					4	16	41	13	28							
5.0		CH		Firm to stiff gray Fat Clay, with sand		21				82		1.50	0.46			106
7.5						34						0.33				
10.0						36						1.50	0.40			88
12.5				-tan, 13' to 23'		45						0.50				
15.0																
17.5						38	58	19	39			1.00			0.77	83
20.0																
22.5						45								0.40		
25.0																
27.5		SM		Dark gray Silty Sand, with shell fragments and clay pockets		32				35						
30.0				Boring terminated at 30 feet												
32.5																
35.0																
37.5																
40.0																
42.5																
45.0																
47.5																
50.0																

DEPTH OF BORING: 30 FEET

DATE DRILLED: 6/21/11

GROUNDWATER: ▽ 25 feet While Drilling
▼ 25 feet Upon Completion

BORINGLOG_JEFFERSON - PSIHOUSTON.GDT - 7/11/11 15:11 - 0254

psi Information To Build On
Engineering • Consulting • Testing
Geotechnical Consulting Services
22171 MCH Road
Mandeville, Louisiana 70471

LOG OF BORING B-4

Markham-Peachtree Culvert Replacement Project
Between Markham Drive and Peachtree Street
Slidell, Louisiana

TYPE OF BORING: Hollow Stem Auger

PSI Project No.: 0254308

LATITUDE:
LONGITUDE:

DEPTH, FT.	SOIL TYPE	USCS SYMBOL	SAMPLES	SOIL DESCRIPTION	N-BLOWS/FT.	MOISTURE CONTENT (%)	LIQUID LIMIT (LL)	PLASTIC LIMIT (PL)	PLASTICITY INDEX (PI)	% PASSING No. 200 SIEVE	SHEAR STRENGTH (tsf) HP / UC / TV / UU (0.0 0.5 1.0 1.5)	SHEAR STRENGTH (tsf) HAND PEN (tsf)	UC (tsf)	TORVANE (tsf)	UU (tsf)	UNIT DRY WEIGHT (pcf)
		CL		Very stiff tan Sandy Lean Clay	21	6				70						
2.5		CL		Stiff tan Lean Clay, with silt and sand seams	9	15	44	17	27	87						
5.0						21						0.67				
7.5						26	41	15	26	97		0.92			0.63	97
		CH		Stiff tan and gray Fat Clay, with silt seams		38						0.83				
10.0																
12.5																
						43						0.50				
15.0																
17.5																
						34						1.08			0.63	86
20.0																
22.5																
						34	80	21	59			0.83			0.92	83
25.0																
27.5																
				-firm below 28'		48								0.40		
30.0				Boring terminated at 30 feet												
32.5																
35.0																
37.5																
40.0																
42.5																
45.0																
47.5																
50.0																

DEPTH OF BORING: 30 FEET

DATE DRILLED: 6/21/11

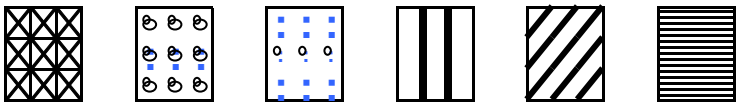
GROUNDWATER: 25 feet While Drilling
25.5 feet Upon Completion

BORINGLOG_JEFFERSON - PSIHOUSTON.GDT - 7/11/11 15:11 - 0254

psi Information To Build On
Engineering • Consulting • Testing
Geotechnical Consulting Services
22171 MCH Road
Mandeville, Louisiana 70471

KEY TO TERMS AND SYMBOLS USED ON LOGS

SOIL TYPE

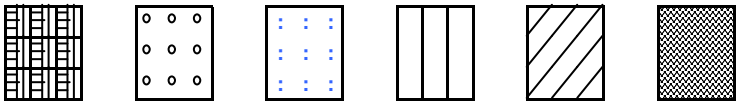


ROCK GRAVEL SAND SILT CLAY PEAT

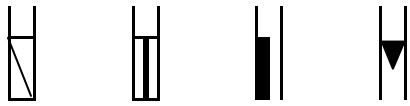
SAMPLER TYPE

NO SAMPLE | AUGER SAMPLE | SHELBY TUBE | SPLIT SPOON

MODIFIERS



STONE GRAVELY SANDY SILTY CLAYEY FILL



NO RECOVERY | ROCK CORE | 2" SHELBY TUBE | TXDOT CONE

UNIFIED SOIL CLASSIFICATION SYSTEM - ASTM D 2487 (1980)

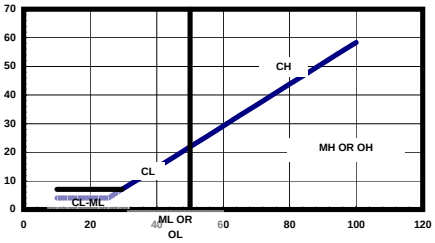
MAJOR DIVISIONS			LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS LESS THAN 50% PASSING NO. 200 SIEVE	GRAVEL & GRAVELY SOILS LESS THAN 50% PASSING NO. 4 SIEVE	CLEAN GRAVEL (LITTLE OR NO FINES	GW	WELL GRADED GRAVEL, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
			GP	POORLY GRADED GRAVEL, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
		W/ APPRECIA BLE FINES	GM	SILTY GRAVEL, GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SANDS MORE THAN 50% PASSING NO. 4 SIEVE	CLEAN SANDS LITTLE FINES	SW	WELL GRADED SAND, GRAVELY SAND (LITTLE FINES)
			SP	POORLY GRADED SANDS, GRAVELY SAND (L.FINES)
		SANDS WITH APPREA. FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
			SC	CLAYEY SANDS,SAND-CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% PASSING NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS & VERY FINE SANDS,ROCK FLOUR SILTY OR CLAYEY FINE SANDS OR CLAYEY SILT W/ LOW PI
			CL	INORGANIC CLAY OF LOW TO MEDIUM PI LEAN CLAY GRAVELY CLAYS, SANDY CLAYS, SILTY CLAYS
			OL	ORGANIC SILTS & ORGANIC SILTY CLAYS OF LOW PI
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY FAT CLAYS
			OH	ORGANIC CLAYS OF MED TO HIGH PI, ORGANIC SILT
HIGHLY ORGANIC SOIL			PT	PEAT AND OTHER HIGHLY ORGANIC SOILS
UNCLASSIFIED FILL MATERIALS			ARTIFICIALLY DEPOSITED AND OTHER UNCLASSIFIED SOILS AND MAN-MADE SOIL MIXTURES	

CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	SHEAR STRENGTH IN TONS/FT^2
VERY SOFT	0. TO 0.125
SOFT	0.125 TO 0.25
FIRM	0.25 TO 0.5
STIFF	0.5 TO 1.0
VERY STIFF	1.0 TO 2.0
HARD	> 2.0 OR 2.0+

RELATIVE DENSITY - GRANULAR SOILS

CONSISTENCY	N-VALUE (BLOWS/FOOT)
VERY LOOSE	0-4
LOOSE	4-9
MEDIUM DENSE	10-29
DENSE	30-49
VERY DENSE	> 50 OR 50+



ABBREVIATIONS

HP - HAND PENETROMETER
TV - TORVANE
MV - MINIATURE VANE
UC - UNCONFINED COMPRESSION TEST
UU - UNCONSOLIDATED UNDRAINED TRAIXIAL
CU - CONSOLIDATED UNDRAINED

NOTE: PLOT INDICATES SHEAR STRENGTH AS OBTAINED BY ABOVE TESTS

▼ DELAYED GROUNDWATER LVL

∇ LEVEL GROUNDWATER ENCOUNTERED

CLASSIFICATION OF GRANULAR SOILS

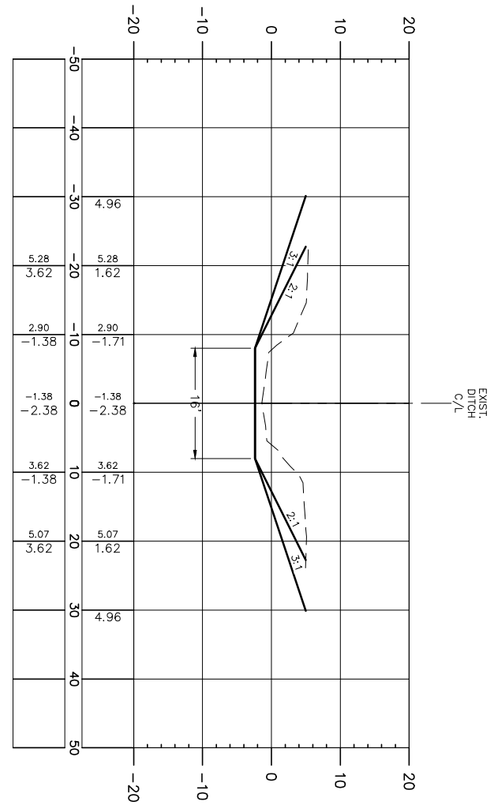
U.S. STANDARD SIEVE SIZE(S)

6" 3" 3/4" 4 10 40 200

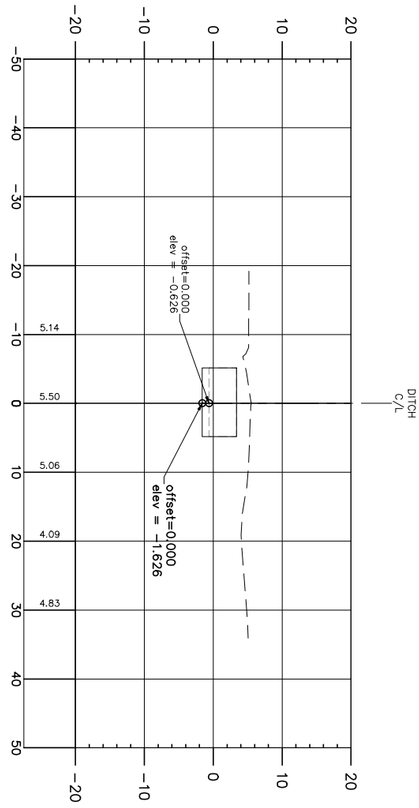
BOUL--DERS	COBBLES	GRAVEL		SAND			SILT OR CLAY	CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE		

152 76.2 19.1 4.76 2.0 0.42 0.074 0.002

GRAIN SIZE IN MM



17+67



17+33

CITY OF SLIDELL LOUISIANA

PRELIMINARY SECTION SHEET

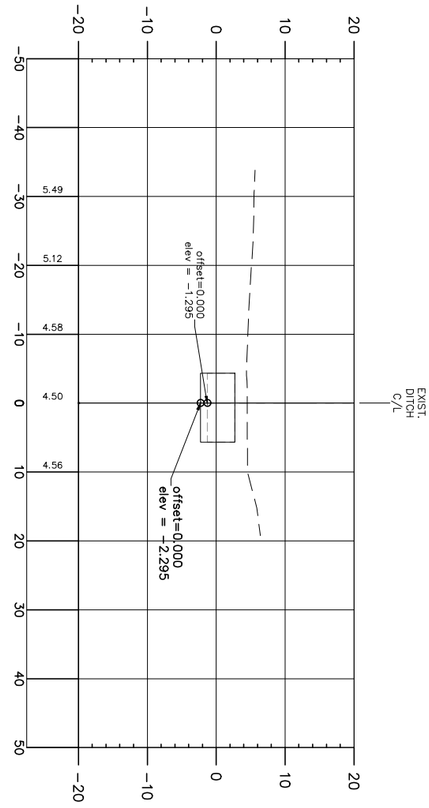
SLIDELL

CITY OF SLIDELL MARKHAM-PEACHTREE STORM DRAIN LINE IMPROVEMENTS

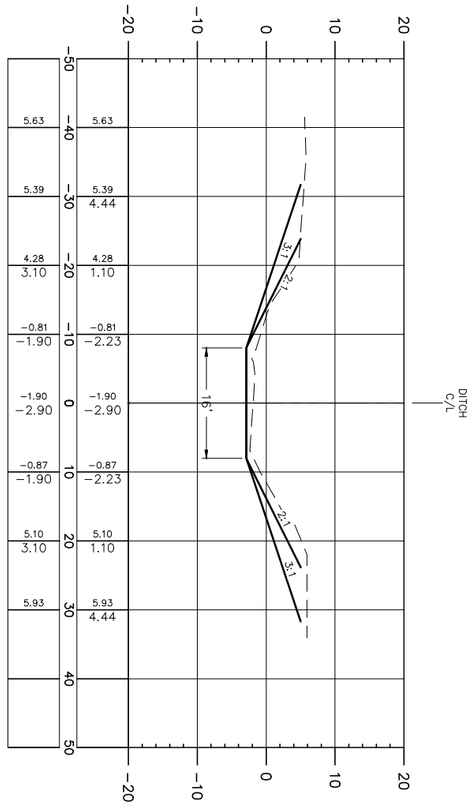
VOLKERT

DESIGNED / CHECKED	W. PURSER / P. GRIGGS	PARISH	ST. TAMMANY
DETAILED / CHECKED	M. BRYAN / W. PURSER	VOLKERT PROJECT	135300.80
DATE / SHEET	7-18-11	CITY PROJECT	100-117

SHEET NUMBER 2



4+95



4+60

CITY OF SLIDELL LOUISIANA

PRELIMINARY SECTION SHEET

SLIDELL

CITY OF SLIDELL MARKHAM-PEACHTREE STORM DRAIN LINE IMPROVEMENTS

VOLKERT

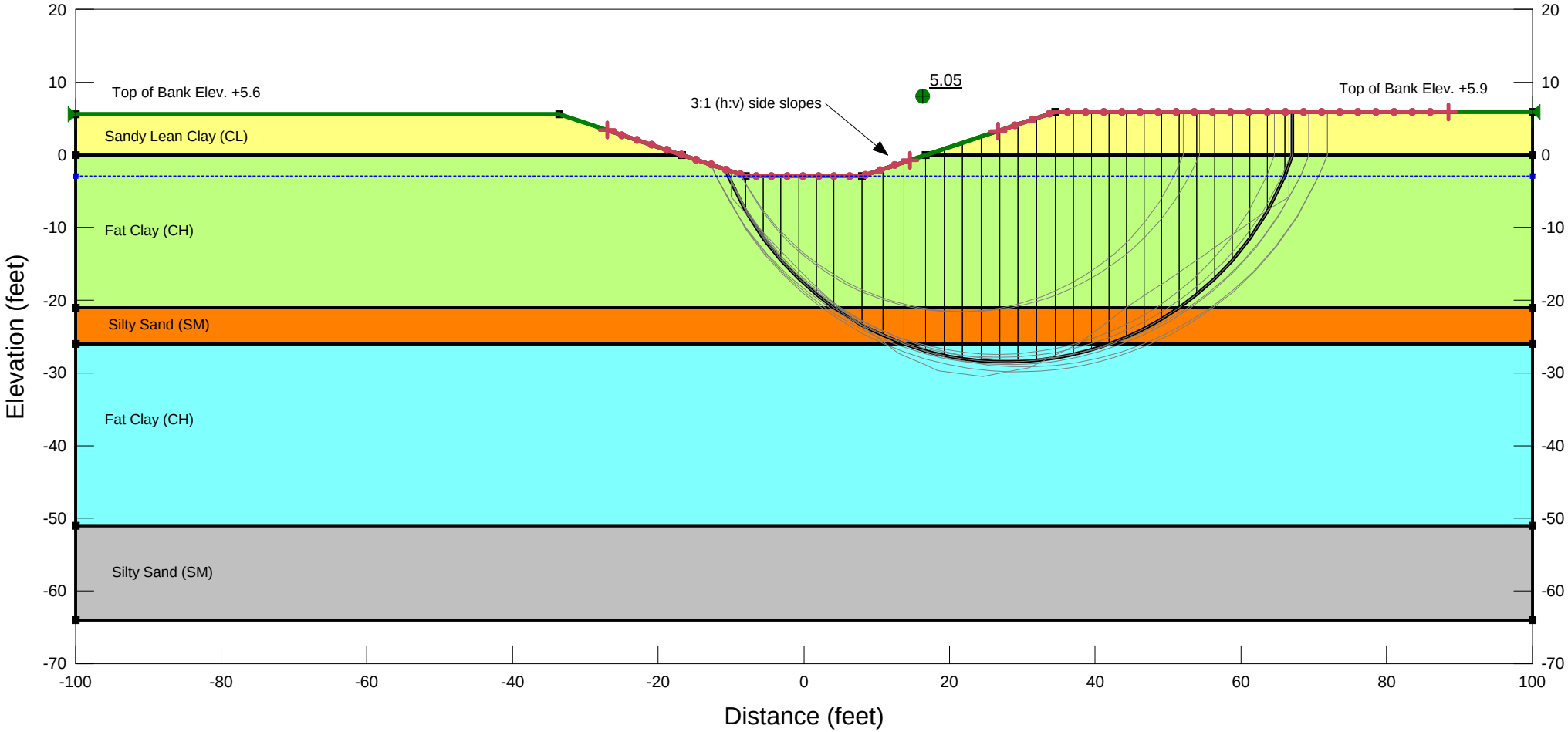
DESIGNED / CHECKED	W. PURSER / P. GRIGGS	PARISH	ST. TAMMANY
DETAILED / CHECKED	M. BRYAN / W. PURSER	VOLKERT PROJECT	135300.80
DATE / SHEET	7-18-11	CITY PROJECT	100-117

SHEET NUMBER 1

Markham-Peachtree Culvert Replacement Project
Open Channel Section (Sta. 4+60)
Slidell, Louisiana

Short Term Conditions
Method: Spencer
FOS: 5.05

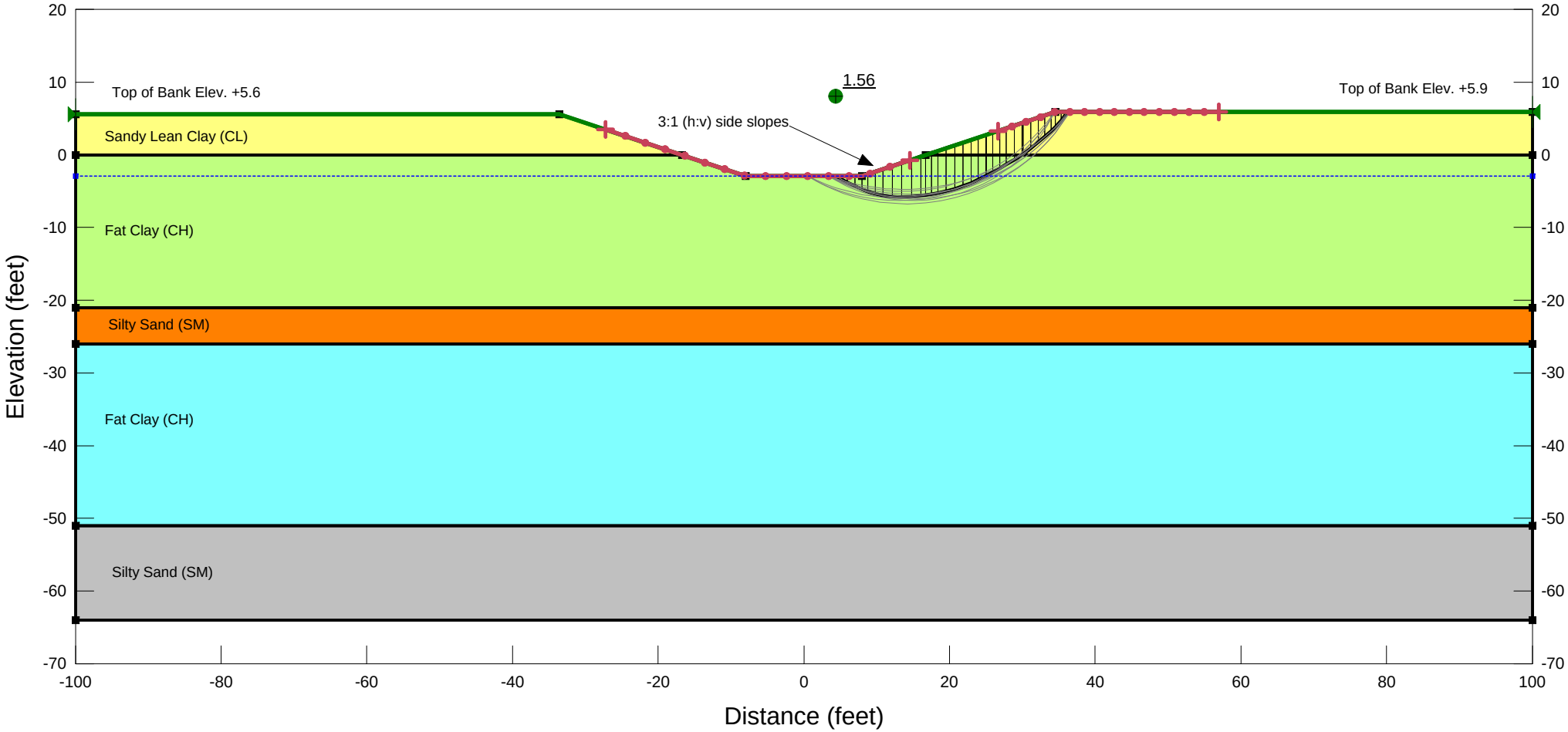
Soil Properties
Name: Sandy Lean Clay Unit Weight: 127 pcf Cohesion: 600 psf
Name: Fat Clay Unit Weight: 118 pcf Cohesion: 1000 psf
Name: Silty Sand Unit Weight: 120 pcf Cohesion: 0 psf Phi: 30 °
Name: Fat Clay (2) Unit Weight: 115 pcf C-Top of Layer: 800 psf C-Rate of Change: 16 psf/ft Limiting C: 1200 psf
Name: Silty Sand (2) Unit Weight: 120 pcf Cohesion: 0 psf Phi: 30 °



Markham-Peachtree Culvert Replacement Project
Open Channel Section (Sta. 4+60)
Slidell, Louisiana

Long Term Conditions
Method: Spencer
FOS: 1.56

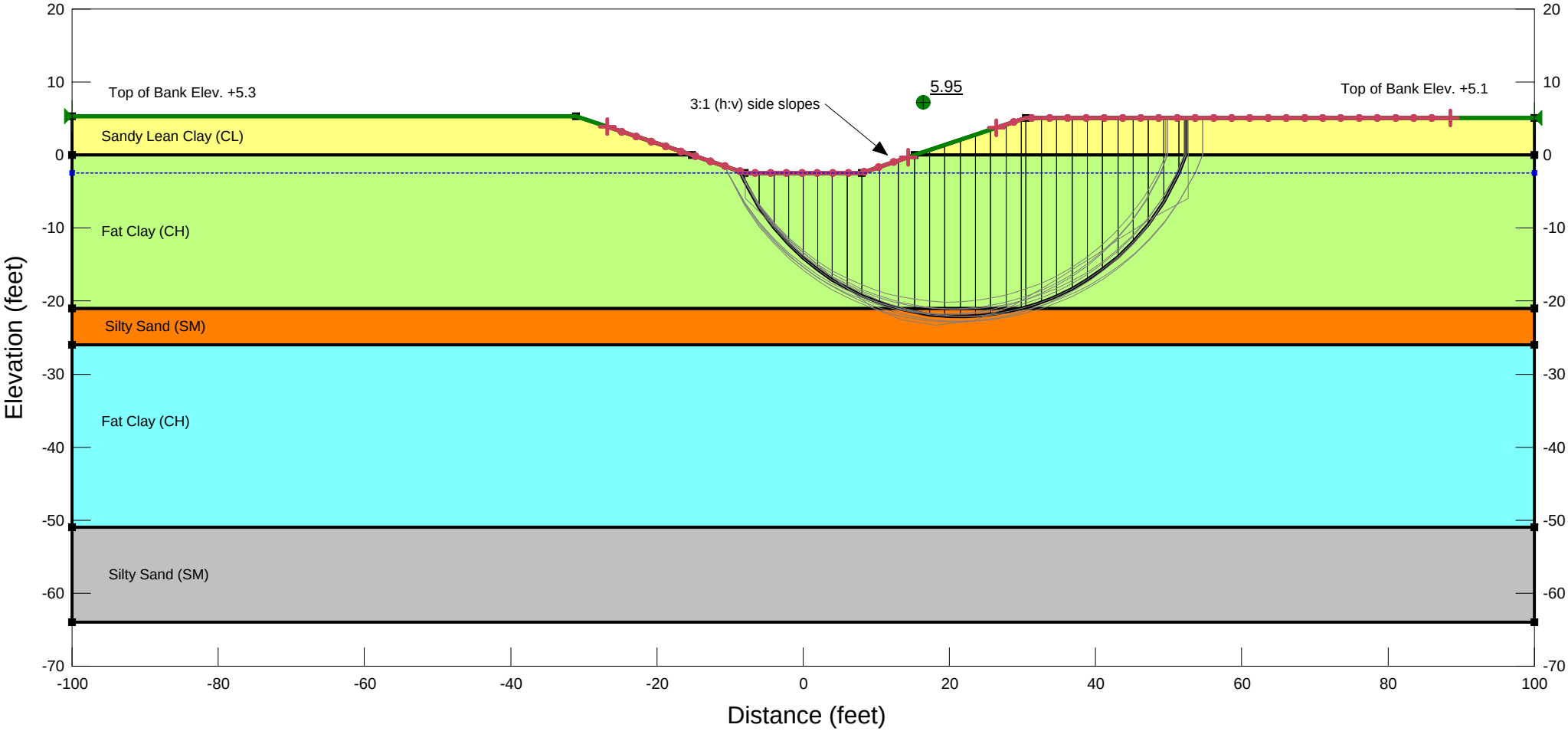
Soil Properties
Name: Sandy Lean Clay Unit Weight: 127 pcf Cohesion: 25 psf Phi: 25 °
Name: Fat Clay Unit Weight: 118 pcf Cohesion: 25 psf Phi: 23 °
Name: Silty Sand Unit Weight: 120 pcf Cohesion: 0 psf Phi: 30 °
Name: Fat Clay (2) Unit Weight: 115 pcf Cohesion: 0 psf Phi: 23 °
Name: Silty Sand (2) Unit Weight: 120 pcf Cohesion: 0 psf Phi: 30 °



Markham-Peachtree Culvert Replacement Project
Open Channel Section (Sta. 17+67)
Slidell, Louisiana

Short Term Conditions
Method: Spencer
FOS: 5.95

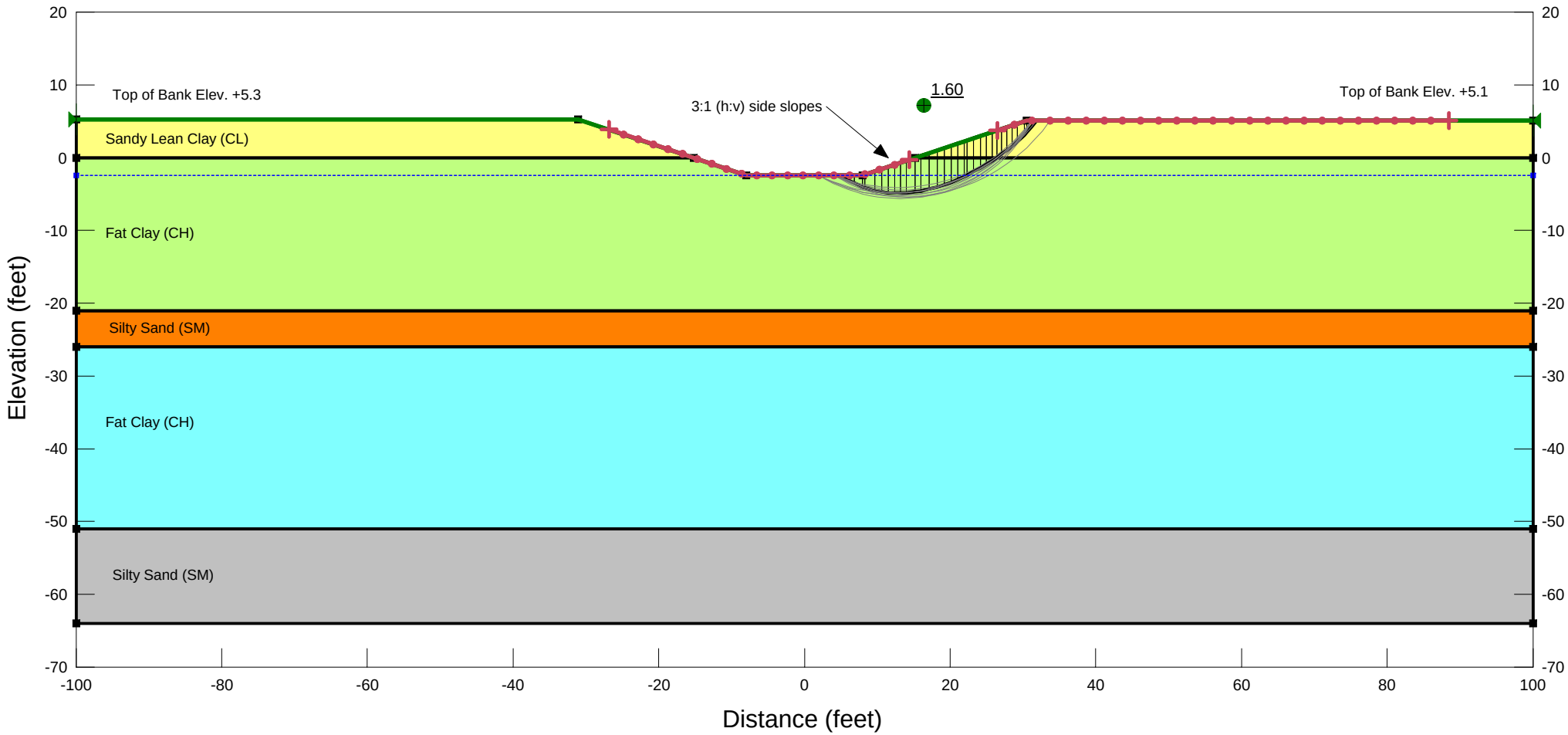
Soil Properties
Name: Sandy Lean Clay Unit Weight: 127 pcf Cohesion: 600 psf
Name: Fat Clay Unit Weight: 118 pcf Cohesion: 1000 psf
Name: Silty Sand Unit Weight: 120 pcf Cohesion: 0 psf Phi: 30 °
Name: Fat Clay (2) Unit Weight: 115 pcf C-Top of Layer: 800 psf C-Rate of Change: 16 psf/ft Limiting C: 1200 psf
Name: Silty Sand (2) Unit Weight: 120 pcf Cohesion: 0 psf Phi: 30 °



Markham-Peachtree Culvert Replacement Project
Open Channel Section (Sta. 17+67)
Slidell, Louisiana

Long Term Conditions
Method: Spencer
FOS: 1.60

Soil Properties
Name: Sandy Lean Clay Unit Weight: 127 pcf Cohesion: 25 psf Phi: 25 °
Name: Fat Clay Unit Weight: 118 pcf Cohesion: 25 psf Phi: 23 °
Name: Silty Sand Unit Weight: 120 pcf Cohesion: 0 psf Phi: 30 °
Name: Fat Clay (2) Unit Weight: 115 pcf Cohesion: 0 psf Phi: 23 °
Name: Silty Sand (2) Unit Weight: 120 pcf Cohesion: 0 psf Phi: 30 °



APPENDIX E

SCHNEIDER CANAL PUMP DATA

SCHNEIDER CANAL PUMPING STAT

TOTAL PUMPING CAPACITY -

380,250 G

I. PROJECT SUMMARY

A. Identifications

1. Parish – ST. TAMMANY PARISH LOUISIANA
2. Sponsoring Authority – City of Slidell
3. Project Name – Schneider Canal Pumping Station
4. Person responsible for OPERATION AND MAINTENANCE
   a. Name – ~~Stephen~~ Dennis Fall, City Engineer
   a. Mailing Address – 2065 2nd St., Slidell, LA 70459
   b. Telephone Number
      1. Business – (504) 646-4270
      2. Home – N/A
5. Contractor
   a. Name – PROFESSIONAL CONSTRUCTION SERVICES, INC.
   b. Mailing Address – P. O. Box 26245, New Orleans, LA 70186
   c. Telephone Number – (504) 241-8001
6. Engineer
   a. Name – Burk-Kleinpeter, Inc.
   b. Mailing Address – P. O. Box 19087, New Orleans, LA 70119
   c. Telephone Number – (504) 486-5901
7. Brief Project Description
   a. Project Components – The Drainage Pump Station consists of an earthen levee and a concrete gatewell pump station, comprised of six (6) submersible pumps and ninety-six (96) inch square flapvalves (flap gates).
   b. General Location – Schneider Canal Drainage Basin – Slidell, LA

B. History

Flooding in the project area is caused when locally heavy rainfall overburdens the capacity of the sub-basin system's drainage channels to discharge stormwater runoff by the force of gravity alone. The major discharge channel for stormwater runoff in the project area is the Schneider Canal. This canal is subject to Lake Pontchartrain's tidal fluctuations via two connecting borrow pit channels. The pumping station and related improvements are intended to mitigate flooding within the Schneider Canal Drainage Basin during periods when tidal conditions in Lake Pontchartrain impede the gravity flow of stormwater.

II. DESCRIPTION OF PROJECT

A. Project Components

1. Pump Flygt Propeller Pump –

Pump-Serial Nos. 9661045, 9661035, 9731084, 9731085, 9731098, 9731099

   a. Description – Single Stage Axial Flow, Vertical
   b. Size – 56"
   c. TDH – 11.50ft. at 63,375 GPM EACH PUMP
   d. RPM – 505

   The pump/motor is submersible, single stage axial flow, propeller type impeller, with a 56" outside diameter discharge column pipe.

TOTAL G.P.M. w/ ALL SIX (6) RUNNING – 380,250 GPM

e. Monitoring Unit – Flygt 83 50 40 CAS
f. Accessories
   1. Grip – Kellems Single Eye, Closed Mesh
g. Bubbler System – EG Controls BAMS-20
   1. Air Compressor – Ingram Products BAS-30X/BAS-30SB
   2. Electrogage – EG Controls 5 FW1.5I

2. Motor – Flygt oil-filled propeller pump motor
   The pump motor is squirrel-cage induction type, shell type design, housed in an oil filled, water tight chamber. The stator windings and stator leads are insulated with moisture resistant Class F insulation rated for 311 degree F (155 degree C). The motor is a 305 horsepower submersible electric motor connected for operation on 460 volts, 3 phase, 60 hertz service. The motor is close-coupled to the pump to form an integrated unit.
3. Flap Gates – Hydro Gate Heavy Duty Flap Gate
   a. Description – Automatic drainage gate with wall thimble
   b. Size 96" X 96"
   c. Weight:
      1. Thimble – 4273 lbs.
      2. Gate – 9464 lbs.
4. Electrical
   a. Components
      1. Lighting – High Pressure Sodium
      2. Switchboard Enclosures – Cutler-Hammer Nema 3R Front Access Enclosure
      3. Motor Control Center – Cutler-Hammer 480 volt-60Hz, Nema 3R enclosure, 1600 A bus, 120 volt Control Power

B. Project Location
Schneider Canal Pumping Station is located approximately 50 feet north of the existing Schneider Canal and approximately 1,000 feet from the right of way of Highway 11 (Pontchartrain Boulevard) in St. Tammany Parish, LA.

III. OPERATION

A. Normal Operating Procedures
Under normal procedures, all electrical power for the station is supplied by CLECO.

1. Follow Manufacturer's recommendations stated in the operations manuals for each component startup. The following comments are recommendations based on system design and multiple - manufacturer system operation:
   a. General – Under normal conditions, the station operation will be in the pumped mode. This mode will occur at any period when the tidal side elevations exceed the intake or pump suction side elevations. During the gravity flow mode, the 96 inch flap gate will open to allow unpumped drainage to flow in. As long as the flap gate remains open and the location switch indicates open flap, the pumps will not activate and will remain locked out. During the pumped mode the differential head across the flap gate will seat the gate, allowing no flow across it. The pump control system, consisting

of a MTA series stepping programmer, utilizes a permanent magnet reversing motor which steps upon impulse steps to alternate pump starting sequence. The float level controller, an EG-Controls Bubbler Controller, takes pre-set and adjustable pump start and stop level conditions and applies a called pump start upon the step programmer selection. With rising intake level conditions, each subsequent pump will come on line until the intake level is maintained, or the full compliment of six (6) pumps are activated. When the level falls, the pumps will then be de-activated through the bubbler controller.

IV. MAINTENANCE

Pumps and Motor (Section 2)

a. Inspection	pg. 13-19
b. Testing	pg. 21
c. Lubricating	N/A
d. Trouble Shooting – Monitoring Unit	pg. 8
e. Repairing	

Flap Gate (Section 4) — Refer to Section 4

a. Inspection
b. Testing
c. Lubricating
d. Trouble Shooting
e. Repairing

Controls (Section 5)

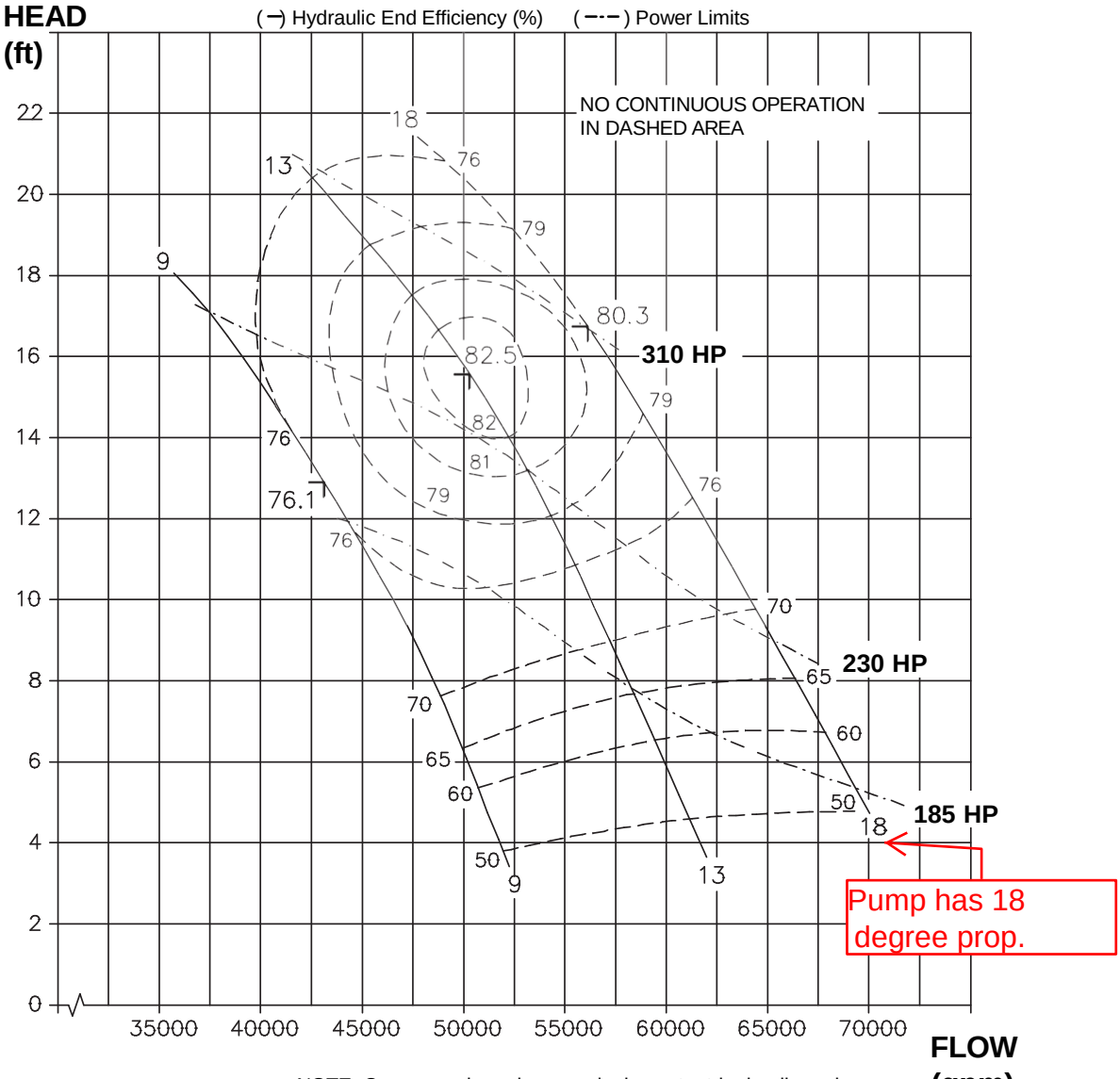
Inspection, Testing, Troubleshooting and repairing are listed under each individual component under the subsection entitled Technical Data Sheets.

Electrical (Section 6)

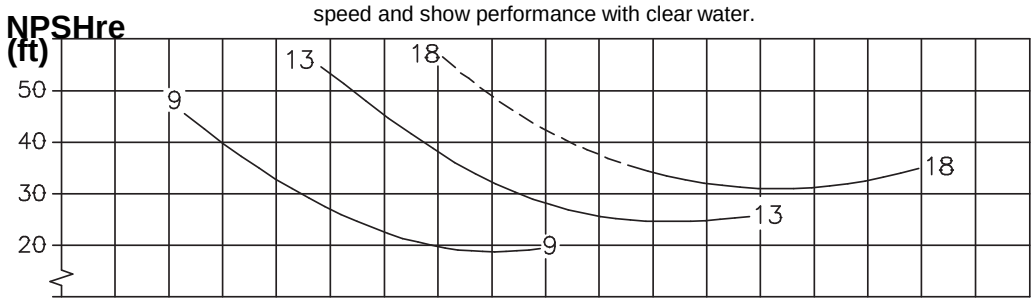
Refer to individual Sections covering Lighting, SwitchBoard Enclosures and Motor Control Center for all maintenance items covering Inspection, Testing, Troubleshooting and Repairing.

PL-7115-505

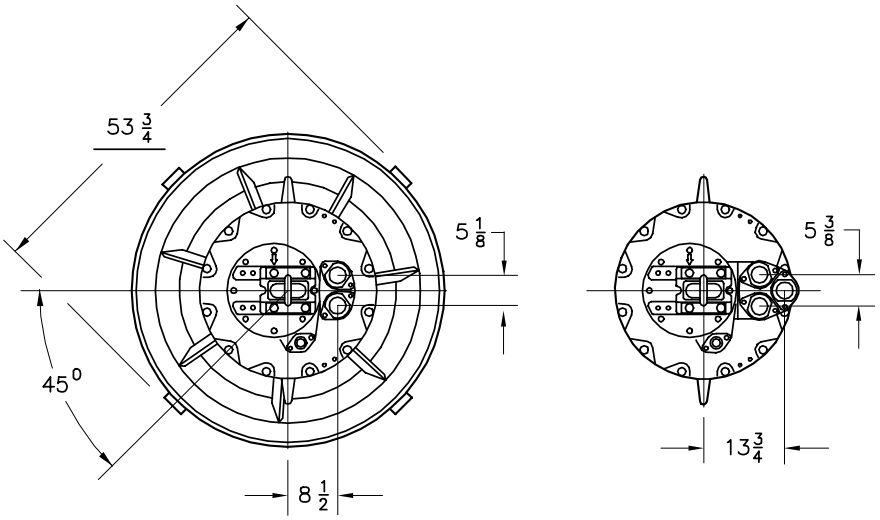
	FLYGT				Issued: 2/97	Supersedes: 10/94
Service: 3Ø 60HZ	**Drive Unit:**	**Motor:**	**Poles:**	**Rated (shaft) Power:**	**Rated Speed (RPM):**	**Blades:** D3
	835 (845)	54-52-14AA	14	185HP	505	
	865 (875)	54-66-14AA	14	230HP	505	
	905 (915)	66-56-14AA	14	310HP	510	

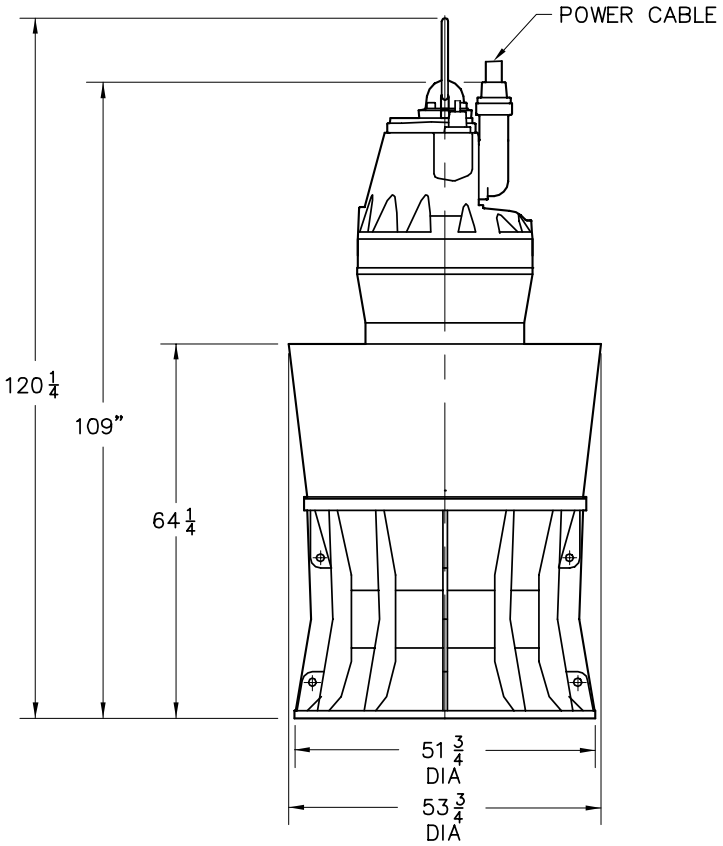


NOTE: Curves are based on nominal constant hydraulic-end speed and show performance with clear water.



PL-7115 (905/915 Drives)

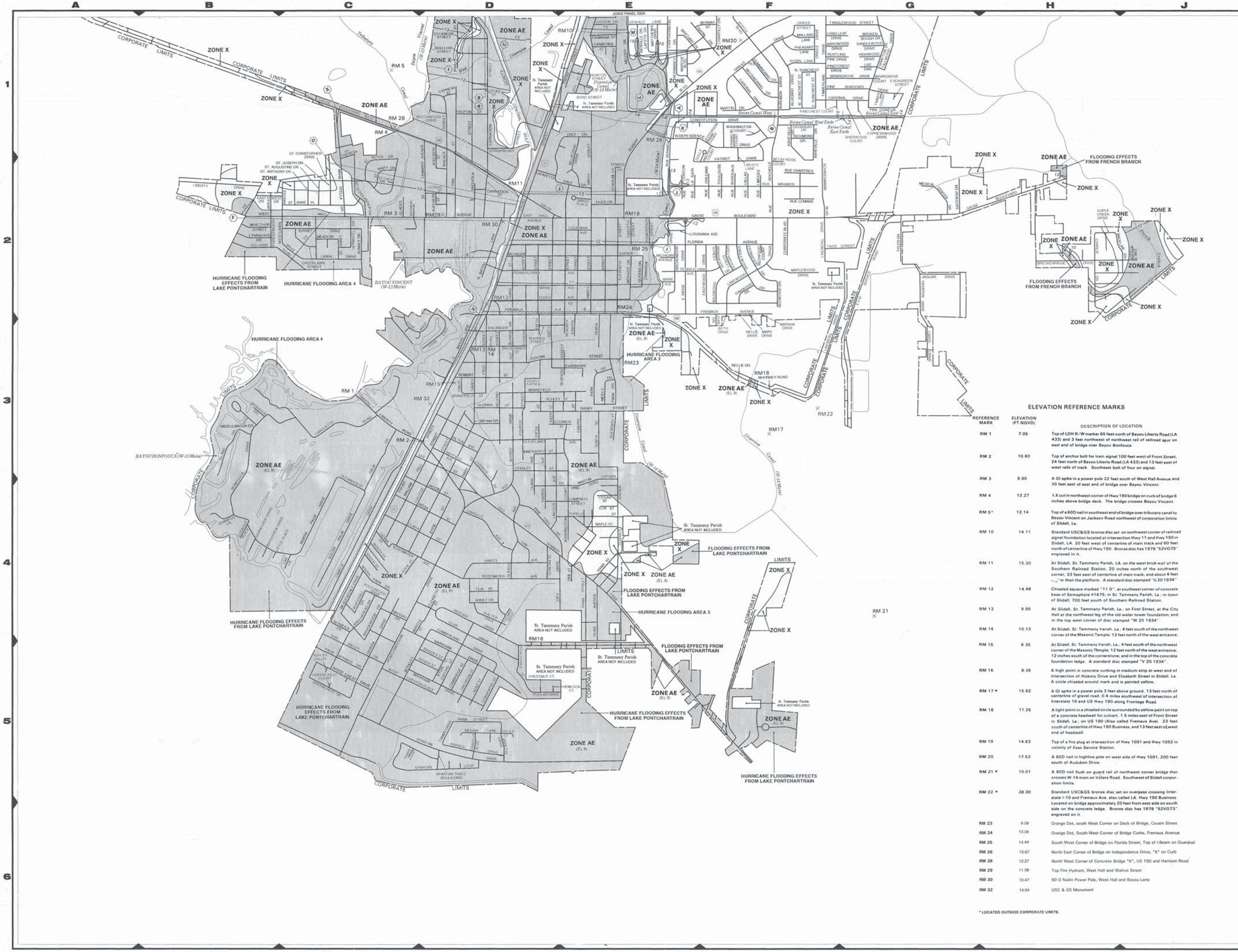




DRIVE UNIT	MOTOR TYPE	WEIGHT (LBS)
905/915	66–56–XX	8580

APPENDIX F

FEMA FLOOD INSURANCE RATE MAP



LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

- **ZONE A** No base flood elevations determined.
- **ZONE AE** Base flood elevations determined.
- **ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
- **ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE A99** To be protected from 100-year flood by federal flood protection system under construction; no base flood elevations determined.
- **ZONE V** Coastal flood with velocity hazard (wave action); no base flood elevations determined.
- **ZONE VE** Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

- **ZONE X** Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

- **ZONE X** Areas determined to be outside 500-year floodplain.
- **ZONE D** Areas in which flood hazards are undetermined.

UNDEVELOPED COASTAL BARRIERS†

Identified 1983 | Identified 1990 | Otherwise Protected Areas

†Coastal barrier areas are normally located within or adjacent to special flood hazard areas.

- Floodplain Boundary
- Floodway Boundary
- Zone D Boundary
- Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.
- 513 — Base Flood Elevation Line; Elevation in Feet*
- (D)—(D) Cross Section Line
- (EL 987) Base Flood Elevation in Feet Where Uniform Within Zone*
- RM 7 × Elevation Reference Mark
- •M1.5 River Mile

*Referenced to the National Geodetic Vertical Datum of 1929

NOTES

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size, or all planimetric features outside Special Flood Hazard Areas. The community map repository should be consulted for more detailed data on BFEs, and for any information on floodway delineations, prior to use of this map for property purchase or construction purposes.

Areas of Special Flood Hazard (100-year flood) include Zones A, AE, A1-A30, AH, AO, A99, V, VE and V1-V30.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the Federal Emergency Management Agency.

Floodway widths in some areas may be too narrow to show to scale. Refer to Floodway Data Table where floodway width is shown at 1/20 inch.

Coastal base flood elevations apply only landward of 0.0 NGVD, and include the effects of wave action; these elevations may also differ significantly from those developed by the National Weather Service for hurricane evacuation planning.

Corporate limits shown are current as of the date of this map. The user should contact appropriate community officials to determine if corporate limits have changed subsequent to the issuance of this map.

For adjoining panels, see separately printed Map Index.

MAP REPOSITORY
City Hall
2056 2nd Street
Slidell, Louisiana 70459
(Maps available for reference only, not for distribution.)

INITIAL IDENTIFICATION:
NOVEMBER 16, 1973

FLOOD HAZARD BOUNDARY MAP REVISION:
MAY 21, 1976

FLOOD INSURANCE RATE MAP EFFECTIVE:
DECEMBER 16, 1980

FLOOD INSURANCE RATE MAP REVISIONS:
Map revised April 21, 1999 to update corporate limits, to add base flood elevations, and to add special flood hazard areas.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at (800) 638-6620.

APPROXIMATE SCALE IN FEET
1000 0 1000

ELEVATION REFERENCE MARKS

REFERENCE MARK	ELEVATION (FT.NGVD)	DESCRIPTION OF LOCATION
RM 1	7.05	Top of LDH R/W marker 65 feet north of Bayou Liberty Road (LA 433) and 3 feet northwest of northwest rail of railroad spur on east end of bridge over Bayou Bonfouca.
RM 2	10.80	Top of anchor bolt for train signal 100 feet west of Front Street, 24 feet north of Bayou Liberty Road (LA 433) and 13 feet east of west rails of track. Southeast bolt of four on signal.
RM 3	9.90	A GI spike in a power pole 22 feet south of West Hall Avenue and 50 feet east of east end of bridge over Bayou Vincent.
RM 4	12.27	A X cut in northwest corner of Hwy 190 bridge on curb of bridge 6 inches above bridge deck. The bridge crosses Bayou Vincent.
RM 5*	12.14	Top of a 60D nail in southeast end of bridge over tributary canal to Bayou Vincent on Jackson Road northwest of corporation limits of Slidell, La.
RM 10	14.11	Standard USC&GS bronze disc set on northwest corner of railroad signal foundation located at intersection Hwy 11 and Hwy 190 in Slidell, LA. 20 feet west of centerline of main track and 60 feet north of centerline of Hwy 190. Bronze disc has 1978 "52VO79" engraved in it.
RM 11	15.30	At Slidell, St. Tammany Parish, LA. on the west brick wall of the Southern Railroad Station. 20 inches north of the southwest corner, 33 feet east of centerline of main track, and about 4 feet [illegible] or than the platform. A standard disc stamped "U 20 1934"
RM 12	14.48	Chiseled square marked "11.0", at southeast corner of concrete base of Semaphore #1675; in St. Tammany Parish, La.; in town of Slidell; 700 feet south of Southern Railroad Station.
RM 13	9.95	At Slidell, St. Tammany Parish, La.; on First Street, at the City Hall at the northwest leg of the old water tower foundation; and in the top west corner of disc stamped "W 20 1934".
RM 14	10.13	At Slidell, St. Tammany Parish, La.; 4 feet south of the northwest corner of the Masonic Temple; 12 feet north of the west entrance.
RM 15	8.35	At Slidell, St. Tammany Parish, La.; 4 feet south of the northwest corner of the Masonic Tbmple; 12 feet north of the west entrance; 12 inches south of the cornerstone; and in the top of the concrete foundation ledge. A standard disc stamped "V 20 1934".
RM 16	8.36	A high point in concrete curbing in medium strip at west end of intersection of Hickory Drive and Elizabeth Street in Slidell, La. A circle chiseled around mark and is painted yellow.
RM 17*	15.52	A GI spike in a power pole 3 feet above ground, 13 feet north of centerline of gravel road; 0.4 miles southwest of intersection of Interstate 10 and US Hwy 190 along Frontage Road.
RM 18	11.25	A light point in a chiseled circle surrounded by yellow paint on top of a concrete headwall for culvert, 1.5 miles east of Front Street in Slidell, La.; on US 190 (Also called Fremaux Ave). 23 feet south of centerline of Hwy 190 Business, and 13 feet east of west end of headwall.
RM 19	14.63	Top of a fire plug at intersection of Hwy 1091 and Hwy 1092 in vicinity of Esso Service Station.
RM 20	17.53	A 60D nail in highline pole on west side of Hwy 1091, 200 feet south of Audubon Drive.
RM 21*	10.01	A 60D nail flush on guard rail of northwest corner bridge that crosses W-14 main on Voters Road. Southwest of Slidell corporation limits.
RM 22*	38.30	Standard USC&GS bronze disc set on overpass crossing Interstate I-10 and Fremaux Ave. also called LA. Hwy 190 Business. Located on bridge approximately 20 feet from east side on south side on the concrete ledge. Bronze disc has 1978 "52VO73" engraved on it.
RM 23	9.08	Orange Dot, south West Corner on Deck of Bridge, Cousin Street
RM 24	13.06	Orange Dot, South West Corner of Bridge Curbe, Fremaux Avenue
RM 25	14.44	South West Corner of Bridge on Florida Street, Top of I-Beam on Guardrail
RM 26	15.67	North East Corner of Bridge on Independence Drive, "X" on Curb
RM 28	12.27	North West Corner of Concrete Bridge "X", US 190 and Harrison Road
RM 29	11.38	Top Fire Hydrant, West Hall and Walnut Street
RM 30	10.47	60 D Nailin Power Pole, West Hall and Bayou Lane
RM 32	14.04	USC & GS Monument

* LOCATED OUTSIDE CORPORATE LIMITS.

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

CITY OF
SLIDELL,
LOUISIANA
ST. TAMMANY PARISH

(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
220204 0010 C

MAP REVISED:
APRIL 21, 1999

Federal Emergency Management Agency

APPENDIX G

HYDR1130 OUTPUT

```
LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT      HYDR1130-071498
HYDRAULICS SECTION
DESIGNER: E. Loniello                 DATE: 11-08-2013
REMARKS:      Schneider Basin

                 STATE PROJECT NUMBER  135302.80

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                          1950
         DRAINAGE AREA (ACRES)                               209.51
         HYDRAULIC LENGTH (FEET)                            4960.00
         CURVE NUMBER                                         81.00
         RAINFALL (INCHES)                                     4.80
         SLOPE (PERCENT)                                        .10
         PEAK ADJUSTMENT FACTOR                               1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                  79.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                          1350
         DRAINAGE AREA (ACRES)                               276.43
         HYDRAULIC LENGTH (FEET)                            6520.00
         CURVE NUMBER                                         81.00
         RAINFALL (INCHES)                                     4.80
         SLOPE (PERCENT)                                        .10
         PEAK ADJUSTMENT FACTOR                               1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                  88.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                          5500
         DRAINAGE AREA (ACRES)                               172.92
         HYDRAULIC LENGTH (FEET)                            7870.00
         CURVE NUMBER                                         83.00
         RAINFALL (INCHES)                                     4.80
         SLOPE (PERCENT)                                        .10
         PEAK ADJUSTMENT FACTOR                               1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                  55.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****
♀
LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT      HYDR1130-071498
HYDRAULICS SECTION
DESIGNER: E. Loniello                 DATE: 11-08-2013
REMARKS:      Schneider Basin

                 STATE PROJECT NUMBER  135302.80

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                          3700
         DRAINAGE AREA (ACRES)                               262.92
         HYDRAULIC LENGTH (FEET)                            9570.00
```

```
         CURVE NUMBER                                        83.00
         RAINFALL (INCHES)                                    4.80
         SLOPE (PERCENT)                                       .10
         PEAK ADJUSTMENT FACTOR                               1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                  72.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                            2000
         DRAINAGE AREA (ACRES)                                352.91
         HYDRAULIC LENGTH (FEET)                            11590.00
         CURVE NUMBER                                         83.00
         RAINFALL (INCHES)                                    4.80
         SLOPE (PERCENT)                                       .10
         PEAK ADJUSTMENT FACTOR                               1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                  87.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                            11000
         DRAINAGE AREA (ACRES)                                433.34
         HYDRAULIC LENGTH (FEET)                             8230.00
         CURVE NUMBER                                         82.00
         RAINFALL (INCHES)                                    4.80
         SLOPE (PERCENT)                                       .10
         PEAK ADJUSTMENT FACTOR                               1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                 124.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****
```

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT HYDR1130-071498
HYDRAULICS SECTION
DESIGNER: E. Loniello DATE: 11-08-2013
REMARKS: Schneider Basin

STATE PROJECT NUMBER 135302.80

```
                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                            29400
         DRAINAGE AREA (ACRES)                                302.27
         HYDRAULIC LENGTH (FEET)                             5340.00
         CURVE NUMBER                                         82.00
         RAINFALL (INCHES)                                    4.80
         SLOPE (PERCENT)                                       .10
         PEAK ADJUSTMENT FACTOR                               1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                 112.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                            25600
```

```
         DRAINAGE AREA (ACRES)                          798.62
         HYDRAULIC LENGTH (FEET)                      13090.00
         CURVE NUMBER                                    82.00
         RAINFALL (INCHES)                                4.80
         SLOPE (PERCENT)                                   .10
         PEAK ADJUSTMENT FACTOR                           1.00
*******************************************************************
         PEAK DISCHARGE (CFS)                             172.
*******************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                        SCS PEAK DISCHARGE
*******************************************************************
         STATION                                        21400
         DRAINAGE AREA (ACRES)                          1151.53
         HYDRAULIC LENGTH (FEET)                      14500.00
         CURVE NUMBER                                    83.00
         RAINFALL (INCHES)                                4.80
         SLOPE (PERCENT)                                   .10
         PEAK ADJUSTMENT FACTOR                           1.00
*******************************************************************
         PEAK DISCHARGE (CFS)                             236.
*******************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****
```

```
LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT      HYDR1130-071498
HYDRAULICS SECTION
DESIGNER: E. Loniello                 DATE: 11-08-2013
REMARKS:      Schneider Basin

                 STATE PROJECT NUMBER  135302.80

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                          1950
         DRAINAGE AREA (ACRES)                               209.51
         HYDRAULIC LENGTH (FEET)                            4960.00
         CURVE NUMBER                                         81.00
         RAINFALL (INCHES)                                     6.50
         SLOPE (PERCENT)                                        .10
         PEAK ADJUSTMENT FACTOR                                1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                  123.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                          1350
         DRAINAGE AREA (ACRES)                               276.43
         HYDRAULIC LENGTH (FEET)                            6520.00
         CURVE NUMBER                                         81.00
         RAINFALL (INCHES)                                     6.50
         SLOPE (PERCENT)                                        .10
         PEAK ADJUSTMENT FACTOR                                1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                  137.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                          5500
         DRAINAGE AREA (ACRES)                               172.92
         HYDRAULIC LENGTH (FEET)                            7870.00
         CURVE NUMBER                                         83.00
         RAINFALL (INCHES)                                     6.50
         SLOPE (PERCENT)                                        .10
         PEAK ADJUSTMENT FACTOR                                1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                   84.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****
♀
LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT      HYDR1130-071498
HYDRAULICS SECTION
DESIGNER: E. Loniello                 DATE: 11-08-2013
REMARKS:      Schneider Basin

                 STATE PROJECT NUMBER  135302.80

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                          3700
         DRAINAGE AREA (ACRES)                               262.92
         HYDRAULIC LENGTH (FEET)                            9570.00
```

```
         CURVE NUMBER                                        83.00
         RAINFALL (INCHES)                                    6.50
         SLOPE (PERCENT)                                       .10
         PEAK ADJUSTMENT FACTOR                               1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                 111.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                            2000
         DRAINAGE AREA (ACRES)                                 352.91
         HYDRAULIC LENGTH (FEET)                            11590.00
         CURVE NUMBER                                          83.00
         RAINFALL (INCHES)                                     6.50
         SLOPE (PERCENT)                                        .10
         PEAK ADJUSTMENT FACTOR                               1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                 134.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                            11000
         DRAINAGE AREA (ACRES)                                 433.34
         HYDRAULIC LENGTH (FEET)                             8230.00
         CURVE NUMBER                                          82.00
         RAINFALL (INCHES)                                     6.50
         SLOPE (PERCENT)                                        .10
         PEAK ADJUSTMENT FACTOR                               1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                 193.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****
```

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT HYDR1130-071498
HYDRAULICS SECTION
DESIGNER: E. Loniello DATE: 11-08-2013
REMARKS: Schneider Basin

STATE PROJECT NUMBER 135302.80

```
                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                            29400
         DRAINAGE AREA (ACRES)                                 302.27
         HYDRAULIC LENGTH (FEET)                             5340.00
         CURVE NUMBER                                          82.00
         RAINFALL (INCHES)                                     6.50
         SLOPE (PERCENT)                                        .10
         PEAK ADJUSTMENT FACTOR                               1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                 174.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                            25600
```

```
         DRAINAGE AREA (ACRES)                          798.62
         HYDRAULIC LENGTH (FEET)                      13090.00
         CURVE NUMBER                                    82.00
         RAINFALL (INCHES)                                6.50
         SLOPE (PERCENT)                                   .10
         PEAK ADJUSTMENT FACTOR                           1.00
*******************************************************************
         PEAK DISCHARGE (CFS)                             266.
*******************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                        SCS PEAK DISCHARGE
*******************************************************************
         STATION                                        21400
         DRAINAGE AREA (ACRES)                          1151.53
         HYDRAULIC LENGTH (FEET)                      14500.00
         CURVE NUMBER                                    83.00
         RAINFALL (INCHES)                                6.50
         SLOPE (PERCENT)                                   .10
         PEAK ADJUSTMENT FACTOR                           1.00
*******************************************************************
         PEAK DISCHARGE (CFS)                             360.
*******************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****
```

```
LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT      HYDR1130-071498
HYDRAULICS SECTION
DESIGNER: E. Loniello                 DATE: 11-08-2013
REMARKS:      Schneider Basin

                 STATE PROJECT NUMBER  135302.80

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                          1950
         DRAINAGE AREA (ACRES)                               209.51
         HYDRAULIC LENGTH (FEET)                            4960.00
         CURVE NUMBER                                         81.00
         RAINFALL (INCHES)                                     7.80
         SLOPE (PERCENT)                                        .10
         PEAK ADJUSTMENT FACTOR                                1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                  158.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                          1350
         DRAINAGE AREA (ACRES)                               276.43
         HYDRAULIC LENGTH (FEET)                            6520.00
         CURVE NUMBER                                         81.00
         RAINFALL (INCHES)                                     7.80
         SLOPE (PERCENT)                                        .10
         PEAK ADJUSTMENT FACTOR                                1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                  175.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                          5500
         DRAINAGE AREA (ACRES)                               172.92
         HYDRAULIC LENGTH (FEET)                            7870.00
         CURVE NUMBER                                         83.00
         RAINFALL (INCHES)                                     7.80
         SLOPE (PERCENT)                                        .10
         PEAK ADJUSTMENT FACTOR                                1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                  107.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****
♀
LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT      HYDR1130-071498
HYDRAULICS SECTION
DESIGNER: E. Loniello                 DATE: 11-08-2013
REMARKS:      Schneider Basin

                 STATE PROJECT NUMBER  135302.80

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                          3700
         DRAINAGE AREA (ACRES)                               262.92
         HYDRAULIC LENGTH (FEET)                            9570.00
```

```
         CURVE NUMBER                                        83.00
         RAINFALL (INCHES)                                    7.80
         SLOPE (PERCENT)                                       .10
         PEAK ADJUSTMENT FACTOR                               1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                141.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                           2000
         DRAINAGE AREA (ACRES)                                352.91
         HYDRAULIC LENGTH (FEET)                           11590.00
         CURVE NUMBER                                         83.00
         RAINFALL (INCHES)                                    7.80
         SLOPE (PERCENT)                                       .10
         PEAK ADJUSTMENT FACTOR                               1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                170.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                           11000
         DRAINAGE AREA (ACRES)                                433.34
         HYDRAULIC LENGTH (FEET)                            8230.00
         CURVE NUMBER                                         82.00
         RAINFALL (INCHES)                                    7.80
         SLOPE (PERCENT)                                       .10
         PEAK ADJUSTMENT FACTOR                               1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                247.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT      HYDR1130-071498
HYDRAULICS SECTION
DESIGNER: E. Loniello                 DATE: 11-08-2013
REMARKS:      Schneider Basin

                  STATE PROJECT NUMBER  135302.80

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                           29400
         DRAINAGE AREA (ACRES)                                302.27
         HYDRAULIC LENGTH (FEET)                            5340.00
         CURVE NUMBER                                         82.00
         RAINFALL (INCHES)                                    7.80
         SLOPE (PERCENT)                                       .10
         PEAK ADJUSTMENT FACTOR                               1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                222.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                           25600
```

```
         DRAINAGE AREA (ACRES)                          798.62
         HYDRAULIC LENGTH (FEET)                      13090.00
         CURVE NUMBER                                    82.00
         RAINFALL (INCHES)                                7.80
         SLOPE (PERCENT)                                   .10
         PEAK ADJUSTMENT FACTOR                           1.00
*******************************************************************
         PEAK DISCHARGE (CFS)                             339.
*******************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                        SCS PEAK DISCHARGE
*******************************************************************
         STATION                                        21400
         DRAINAGE AREA (ACRES)                          1151.53
         HYDRAULIC LENGTH (FEET)                      14500.00
         CURVE NUMBER                                    83.00
         RAINFALL (INCHES)                                7.80
         SLOPE (PERCENT)                                   .10
         PEAK ADJUSTMENT FACTOR                           1.00
*******************************************************************
         PEAK DISCHARGE (CFS)                             458.
*******************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****
```

```
LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT      HYDR1130-071498
HYDRAULICS SECTION
DESIGNER: E. Loniello                 DATE: 11-08-2013
REMARKS:      Schneider Basin

                 STATE PROJECT NUMBER  135302.80

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                          1950
         DRAINAGE AREA (ACRES)                               209.51
         HYDRAULIC LENGTH (FEET)                            4960.00
         CURVE NUMBER                                         81.00
         RAINFALL (INCHES)                                     9.60
         SLOPE (PERCENT)                                        .10
         PEAK ADJUSTMENT FACTOR                                1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                  207.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                          1350
         DRAINAGE AREA (ACRES)                               276.43
         HYDRAULIC LENGTH (FEET)                            6520.00
         CURVE NUMBER                                         81.00
         RAINFALL (INCHES)                                     9.60
         SLOPE (PERCENT)                                        .10
         PEAK ADJUSTMENT FACTOR                                1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                  230.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                          5500
         DRAINAGE AREA (ACRES)                               172.92
         HYDRAULIC LENGTH (FEET)                            7870.00
         CURVE NUMBER                                         83.00
         RAINFALL (INCHES)                                     9.60
         SLOPE (PERCENT)                                        .10
         PEAK ADJUSTMENT FACTOR                                1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                  139.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****
♀
LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT      HYDR1130-071498
HYDRAULICS SECTION
DESIGNER: E. Loniello                 DATE: 11-08-2013
REMARKS:      Schneider Basin

                 STATE PROJECT NUMBER  135302.80

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                          3700
         DRAINAGE AREA (ACRES)                               262.92
         HYDRAULIC LENGTH (FEET)                            9570.00
```

```
         CURVE NUMBER                                        83.00
         RAINFALL (INCHES)                                    9.60
         SLOPE (PERCENT)                                       .10
         PEAK ADJUSTMENT FACTOR                               1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                184.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                           2000
         DRAINAGE AREA (ACRES)                                352.91
         HYDRAULIC LENGTH (FEET)                           11590.00
         CURVE NUMBER                                         83.00
         RAINFALL (INCHES)                                    9.60
         SLOPE (PERCENT)                                       .10
         PEAK ADJUSTMENT FACTOR                               1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                221.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                           11000
         DRAINAGE AREA (ACRES)                                433.34
         HYDRAULIC LENGTH (FEET)                            8230.00
         CURVE NUMBER                                         82.00
         RAINFALL (INCHES)                                    9.60
         SLOPE (PERCENT)                                       .10
         PEAK ADJUSTMENT FACTOR                               1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                322.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT      HYDR1130-071498
HYDRAULICS SECTION
DESIGNER: E. Loniello                 DATE: 11-08-2013
REMARKS:      Schneider Basin

                  STATE PROJECT NUMBER  135302.80

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                           29400
         DRAINAGE AREA (ACRES)                                302.27
         HYDRAULIC LENGTH (FEET)                            5340.00
         CURVE NUMBER                                         82.00
         RAINFALL (INCHES)                                    9.60
         SLOPE (PERCENT)                                       .10
         PEAK ADJUSTMENT FACTOR                               1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                291.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                           25600
```

```
         DRAINAGE AREA (ACRES)                          798.62
         HYDRAULIC LENGTH (FEET)                      13090.00
         CURVE NUMBER                                    82.00
         RAINFALL (INCHES)                                9.60
         SLOPE (PERCENT)                                   .10
         PEAK ADJUSTMENT FACTOR                           1.00
*******************************************************************
         PEAK DISCHARGE (CFS)                             443.
*******************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                        SCS PEAK DISCHARGE
*******************************************************************
         STATION                                        21400
         DRAINAGE AREA (ACRES)                          1151.53
         HYDRAULIC LENGTH (FEET)                      14500.00
         CURVE NUMBER                                    83.00
         RAINFALL (INCHES)                                9.60
         SLOPE (PERCENT)                                   .10
         PEAK ADJUSTMENT FACTOR                           1.00
*******************************************************************
         PEAK DISCHARGE (CFS)                             594.
*******************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****
```

```
LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT      HYDR1130-071498
HYDRAULICS SECTION
DESIGNER: E. Loniello                 DATE: 11-08-2013
REMARKS:      Schneider Basin

                 STATE PROJECT NUMBER  135302.80

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                          1950
         DRAINAGE AREA (ACRES)                               209.51
         HYDRAULIC LENGTH (FEET)                            4960.00
         CURVE NUMBER                                         81.00
         RAINFALL (INCHES)                                    11.10
         SLOPE (PERCENT)                                        .10
         PEAK ADJUSTMENT FACTOR                                1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                   247.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                          1350
         DRAINAGE AREA (ACRES)                               276.43
         HYDRAULIC LENGTH (FEET)                            6520.00
         CURVE NUMBER                                         81.00
         RAINFALL (INCHES)                                    11.10
         SLOPE (PERCENT)                                        .10
         PEAK ADJUSTMENT FACTOR                                1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                   275.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                          5500
         DRAINAGE AREA (ACRES)                               172.92
         HYDRAULIC LENGTH (FEET)                            7870.00
         CURVE NUMBER                                         83.00
         RAINFALL (INCHES)                                    11.10
         SLOPE (PERCENT)                                        .10
         PEAK ADJUSTMENT FACTOR                                1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                   165.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****
♀
LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT      HYDR1130-071498
HYDRAULICS SECTION
DESIGNER: E. Loniello                 DATE: 11-08-2013
REMARKS:      Schneider Basin

                 STATE PROJECT NUMBER  135302.80

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                          3700
         DRAINAGE AREA (ACRES)                               262.92
         HYDRAULIC LENGTH (FEET)                            9570.00
```

```
         CURVE NUMBER                                        83.00
         RAINFALL (INCHES)                                   11.10
         SLOPE (PERCENT)                                       .10
         PEAK ADJUSTMENT FACTOR                               1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                 219.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                            2000
         DRAINAGE AREA (ACRES)                                352.91
         HYDRAULIC LENGTH (FEET)                            11590.00
         CURVE NUMBER                                         83.00
         RAINFALL (INCHES)                                    11.10
         SLOPE (PERCENT)                                        .10
         PEAK ADJUSTMENT FACTOR                               1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                 264.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                           11000
         DRAINAGE AREA (ACRES)                                433.34
         HYDRAULIC LENGTH (FEET)                             8230.00
         CURVE NUMBER                                         82.00
         RAINFALL (INCHES)                                    11.10
         SLOPE (PERCENT)                                        .10
         PEAK ADJUSTMENT FACTOR                               1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                 385.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****
```

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT HYDR1130-071498
HYDRAULICS SECTION
DESIGNER: E. Loniello DATE: 11-08-2013
REMARKS: Schneider Basin

STATE PROJECT NUMBER 135302.80

```
                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                           29400
         DRAINAGE AREA (ACRES)                                302.27
         HYDRAULIC LENGTH (FEET)                             5340.00
         CURVE NUMBER                                         82.00
         RAINFALL (INCHES)                                    11.10
         SLOPE (PERCENT)                                        .10
         PEAK ADJUSTMENT FACTOR                               1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                 348.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                           25600
```

```
         DRAINAGE AREA (ACRES)                          798.62
         HYDRAULIC LENGTH (FEET)                      13090.00
         CURVE NUMBER                                    82.00
         RAINFALL (INCHES)                               11.10
         SLOPE (PERCENT)                                   .10
         PEAK ADJUSTMENT FACTOR                           1.00
*******************************************************************
         PEAK DISCHARGE (CFS)                             530.
*******************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                        SCS PEAK DISCHARGE
*******************************************************************
         STATION                                        21400
         DRAINAGE AREA (ACRES)                          1151.53
         HYDRAULIC LENGTH (FEET)                      14500.00
         CURVE NUMBER                                    83.00
         RAINFALL (INCHES)                               11.10
         SLOPE (PERCENT)                                   .10
         PEAK ADJUSTMENT FACTOR                           1.00
*******************************************************************
         PEAK DISCHARGE (CFS)                             709.
*******************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****
```

```
LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT      HYDR1130-071498
HYDRAULICS SECTION
DESIGNER: E. Loniello                 DATE: 11-08-2013
REMARKS:      Schneider Basin

                 STATE PROJECT NUMBER  135302.80

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                          1950
         DRAINAGE AREA (ACRES)                               209.51
         HYDRAULIC LENGTH (FEET)                            4960.00
         CURVE NUMBER                                         81.00
         RAINFALL (INCHES)                                    12.60
         SLOPE (PERCENT)                                        .10
         PEAK ADJUSTMENT FACTOR                                1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                   288.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                          1350
         DRAINAGE AREA (ACRES)                               276.43
         HYDRAULIC LENGTH (FEET)                            6520.00
         CURVE NUMBER                                         81.00
         RAINFALL (INCHES)                                    12.60
         SLOPE (PERCENT)                                        .10
         PEAK ADJUSTMENT FACTOR                                1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                   321.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                          5500
         DRAINAGE AREA (ACRES)                               172.92
         HYDRAULIC LENGTH (FEET)                            7870.00
         CURVE NUMBER                                         83.00
         RAINFALL (INCHES)                                    12.60
         SLOPE (PERCENT)                                        .10
         PEAK ADJUSTMENT FACTOR                                1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                   192.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****
♀
LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT      HYDR1130-071498
HYDRAULICS SECTION
DESIGNER: E. Loniello                 DATE: 11-08-2013
REMARKS:      Schneider Basin

                 STATE PROJECT NUMBER  135302.80

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                          3700
         DRAINAGE AREA (ACRES)                               262.92
         HYDRAULIC LENGTH (FEET)                            9570.00
```

```
         CURVE NUMBER                                        83.00
         RAINFALL (INCHES)                                   12.60
         SLOPE (PERCENT)                                       .10
         PEAK ADJUSTMENT FACTOR                               1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                 255.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                            2000
         DRAINAGE AREA (ACRES)                                352.91
         HYDRAULIC LENGTH (FEET)                            11590.00
         CURVE NUMBER                                         83.00
         RAINFALL (INCHES)                                    12.60
         SLOPE (PERCENT)                                       .10
         PEAK ADJUSTMENT FACTOR                               1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                 307.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                            11000
         DRAINAGE AREA (ACRES)                                433.34
         HYDRAULIC LENGTH (FEET)                             8230.00
         CURVE NUMBER                                         82.00
         RAINFALL (INCHES)                                    12.60
         SLOPE (PERCENT)                                       .10
         PEAK ADJUSTMENT FACTOR                               1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                 449.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****
```

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT HYDR1130-071498
HYDRAULICS SECTION
DESIGNER: E. Loniello DATE: 11-08-2013
REMARKS: Schneider Basin

STATE PROJECT NUMBER 135302.80

```
                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                            29400
         DRAINAGE AREA (ACRES)                                302.27
         HYDRAULIC LENGTH (FEET)                             5340.00
         CURVE NUMBER                                         82.00
         RAINFALL (INCHES)                                    12.60
         SLOPE (PERCENT)                                       .10
         PEAK ADJUSTMENT FACTOR                               1.00
*********************************************************************
         PEAK DISCHARGE (CFS)                                 405.
*********************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                        SCS PEAK DISCHARGE
*********************************************************************
         STATION                                            25600
```

```
         DRAINAGE AREA (ACRES)                          798.62
         HYDRAULIC LENGTH (FEET)                      13090.00
         CURVE NUMBER                                    82.00
         RAINFALL (INCHES)                               12.60
         SLOPE (PERCENT)                                   .10
         PEAK ADJUSTMENT FACTOR                           1.00
*******************************************************************
         PEAK DISCHARGE (CFS)                             617.
*******************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                        SCS PEAK DISCHARGE
*******************************************************************
         STATION                                        21400
         DRAINAGE AREA (ACRES)                          1151.53
         HYDRAULIC LENGTH (FEET)                      14500.00
         CURVE NUMBER                                    83.00
         RAINFALL (INCHES)                               12.60
         SLOPE (PERCENT)                                   .10
         PEAK ADJUSTMENT FACTOR                           1.00
*******************************************************************
         PEAK DISCHARGE (CFS)                             824.
*******************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****
```

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT HYDR1130-071498
HYDRAULICS SECTION
DESIGNER: E. Loniello DATE: 01-21-2014
REMARKS: Schneider Basin

STATE PROJECT NUMBER 135302.80

SCS PEAK DISCHARGE

STATION	1950
DRAINAGE AREA (ACRES)	209.51
HYDRAULIC LENGTH (FEET)	4960.00
CURVE NUMBER	81.00
RAINFALL (INCHES)	15.70
SLOPE (PERCENT)	.10
PEAK ADJUSTMENT FACTOR	1.00
PEAK DISCHARGE (CFS)	372.

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

SCS PEAK DISCHARGE

STATION	1350
DRAINAGE AREA (ACRES)	276.43
HYDRAULIC LENGTH (FEET)	6520.00
CURVE NUMBER	81.00
RAINFALL (INCHES)	15.70
SLOPE (PERCENT)	.10
PEAK ADJUSTMENT FACTOR	1.00
PEAK DISCHARGE (CFS)	415.

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

SCS PEAK DISCHARGE

STATION	5500
DRAINAGE AREA (ACRES)	172.92
HYDRAULIC LENGTH (FEET)	7870.00
CURVE NUMBER	83.00
RAINFALL (INCHES)	15.70
SLOPE (PERCENT)	.10
PEAK ADJUSTMENT FACTOR	1.00
PEAK DISCHARGE (CFS)	247.

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT HYDR1130-071498
HYDRAULICS SECTION
DESIGNER: E. Loniello DATE: 01-21-2014
REMARKS: Schneider Basin

STATE PROJECT NUMBER 135302.80

SCS PEAK DISCHARGE

STATION	3700
DRAINAGE AREA (ACRES)	262.92
HYDRAULIC LENGTH (FEET)	9570.00

```
         CURVE NUMBER                                        83.00
         RAINFALL (INCHES)                                   15.70
         SLOPE (PERCENT)                                       .10
         PEAK ADJUSTMENT FACTOR                               1.00
*******************************************************************
         PEAK DISCHARGE (CFS)                                329.
*******************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                         SCS PEAK DISCHARGE
*******************************************************************
         STATION                                            2000
         DRAINAGE AREA (ACRES)                              352.91
         HYDRAULIC LENGTH (FEET)                          11590.00
         CURVE NUMBER                                        83.00
         RAINFALL (INCHES)                                   15.70
         SLOPE (PERCENT)                                       .10
         PEAK ADJUSTMENT FACTOR                               1.00
*******************************************************************
         PEAK DISCHARGE (CFS)                                395.
*******************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                         SCS PEAK DISCHARGE
*******************************************************************
         STATION                                           11000
         DRAINAGE AREA (ACRES)                              433.34
         HYDRAULIC LENGTH (FEET)                           8230.00
         CURVE NUMBER                                        82.00
         RAINFALL (INCHES)                                   15.70
         SLOPE (PERCENT)                                       .10
         PEAK ADJUSTMENT FACTOR                               1.00
*******************************************************************
         PEAK DISCHARGE (CFS)                                580.
*******************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT      HYDR1130-071498
HYDRAULICS SECTION
DESIGNER: E. Loniello                 DATE: 01-21-2014
REMARKS:       Schneider Basin

                  STATE PROJECT NUMBER  135302.80

                         SCS PEAK DISCHARGE
*******************************************************************
         STATION                                           29400
         DRAINAGE AREA (ACRES)                              302.27
         HYDRAULIC LENGTH (FEET)                           5340.00
         CURVE NUMBER                                        82.00
         RAINFALL (INCHES)                                   15.70
         SLOPE (PERCENT)                                       .10
         PEAK ADJUSTMENT FACTOR                               1.00
*******************************************************************
         PEAK DISCHARGE (CFS)                                523.
*******************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                         SCS PEAK DISCHARGE
*******************************************************************
         STATION                                           25600
```

```
         DRAINAGE AREA (ACRES)                          798.62
         HYDRAULIC LENGTH (FEET)                      13090.00
         CURVE NUMBER                                    82.00
         RAINFALL (INCHES)                               15.70
         SLOPE (PERCENT)                                   .10
         PEAK ADJUSTMENT FACTOR                           1.00
*******************************************************************
         PEAK DISCHARGE (CFS)                             798.
*******************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****

                        SCS PEAK DISCHARGE
*******************************************************************
         STATION                                       21400
         DRAINAGE AREA (ACRES)                          1151.53
         HYDRAULIC LENGTH (FEET)                      14500.00
         CURVE NUMBER                                    83.00
         RAINFALL (INCHES)                               15.70
         SLOPE (PERCENT)                                   .10
         PEAK ADJUSTMENT FACTOR                           1.00
*******************************************************************
         PEAK DISCHARGE (CFS)                            1061.
*******************************************************************

**** WARNING THE MINIMUM ALLOWABLE WATERSHED SLOPEIS 0.10 PER CENT ****
```

APPENDIX H

HEC-RAS OUTPUT

HEC-RAS Conditions & Assumptions

- Flow is steady (not time-varying).
- Initial flow split ratio at WP-20 Upper junction of WP-20 Lower and Lateral Canal South is 3:7. Model run with split-flow optimization at this junction.
- No split flow (ineffective flow areas at all levee formations)
- Pump Station maintains constant water surface elevation at model boundary (known WS Elev boundary condition). Elevation depends on storm intensity.
- At structures, ineffective flow areas are defined using an Expansion Rate of 2:1 and a Contraction Rate of 1:1.
- Coefficients are summarized below.

Coefficient	*Value*
Contraction Coefficients	0.1
Expansion Coefficients	0.3
Overbank Manning's n	0.04
Natural Channel Manning's n	0.032
Concrete Manning's n	0.013
Corrugated Metal Manning's n	0.022
Bridge Weir Coefficients	2.6
Culvert Entrance Loss Coefficients	0.2-0.7
Culvert Exit Loss Coefficients	1

HEC-RAS digital files provided in CD.

HEC-RAS Output - Existing Conditions

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Upper	1950	2-Year	79	-0.76	2.4	0.71	2.48	0.000862	2.21	35.78	14.29	0.25
WP-20 Canal	Upper	1950	5-Year	123	-0.76	3.27	1.09	3.36	0.000875	2.53	48.55	15.35	0.25
WP-20 Canal	Upper	1950	10-Year	158	-0.76	3.85	1.37	3.97	0.000884	2.73	57.8	16.05	0.25
WP-20 Canal	Upper	1950	25-Year	207	-0.76	4.87	1.71	4.99	0.000743	2.77	74.75	22.78	0.23
WP-20 Canal	Upper	1950	50-Year	247	-0.76	5.68	1.96	5.8	0.000669	2.76	89.55	135.06	0.23
WP-20 Canal	Upper	1950	100-Year	288	-0.76	6.13	2.22	6.22	0.00057	2.65	147.04	187.75	0.21
WP-20 Canal	Upper	1900	2-Year	79	-0.94	2.38	0.5	2.44	0.000637	1.97	40.11	15.79	0.22
WP-20 Canal	Upper	1900	5-Year	123	-0.94	3.24	0.88	3.32	0.00067	2.26	54.51	17.88	0.23
WP-20 Canal	Upper	1900	10-Year	158	-0.94	3.83	1.15	3.92	0.000682	2.4	65.7	19.9	0.23
WP-20 Canal	Upper	1900	25-Year	207	-0.94	4.86	1.49	4.95	0.000577	2.34	88.31	24.84	0.22
WP-20 Canal	Upper	1900	50-Year	247	-0.94	5.69	1.74	5.76	0.000502	2.11	136.25	119.92	0.21
WP-20 Canal	Upper	1900	100-Year	288	-0.94	6.14	1.98	6.19	0.00036	1.94	202.35	182.67	0.18
WP-20 Canal	Upper	1850	2-Year	79	-1.03	2.36	0.37	2.41	0.000486	1.77	44.69	17.02	0.19
WP-20 Canal	Upper	1850	5-Year	123	-1.03	3.22	0.72	3.29	0.000521	2.04	60.17	19.1	0.2
WP-20 Canal	Upper	1850	10-Year	158	-1.03	3.81	0.97	3.89	0.000534	2.19	72.01	20.85	0.21
WP-20 Canal	Upper	1850	25-Year	207	-1.03	4.85	1.28	4.92	0.000437	2.17	95.48	26.29	0.19
WP-20 Canal	Upper	1850	50-Year	247	-1.03	5.68	1.52	5.73	0.000264	1.92	181.62	178.9	0.15
WP-20 Canal	Upper	1850	100-Year	288	-1.03	6.13	1.75	6.17	0.000194	1.75	270.51	200	0.13
WP-20 Canal	Upper	1800	2-Year	79	-1.11	2.33	0.4	2.38	0.000542	1.84	42.96	17.07	0.2
WP-20 Canal	Upper	1800	5-Year	123	-1.11	3.19	0.78	3.26	0.000569	2.09	58.83	19.89	0.21
WP-20 Canal	Upper	1800	10-Year	158	-1.11	3.79	1.04	3.86	0.00057	2.22	71.3	22.12	0.22
WP-20 Canal	Upper	1800	25-Year	207	-1.11	4.83	1.37	4.9	0.000465	2.14	98.61	49.59	0.2
WP-20 Canal	Upper	1800	50-Year	247	-1.11	5.68	1.6	5.72	0.00025	1.79	187.46	197.69	0.15
WP-20 Canal	Upper	1800	100-Year	288	-1.11	6.13	1.83	6.16	0.000166	1.56	300.79	200	0.13
WP-20 Canal	Upper	1750	2-Year	79	-1.13	2.31	0.29	2.35	0.000461	1.73	45.68	17.46	0.19
WP-20 Canal	Upper	1750	5-Year	123	-1.13	3.17	0.64	3.23	0.000495	1.99	61.68	19.91	0.2
WP-20 Canal	Upper	1750	10-Year	158	-1.13	3.76	0.89	3.83	0.000504	2.13	74.07	21.86	0.2
WP-20 Canal	Upper	1750	25-Year	207	-1.13	4.81	1.2	4.87	0.000431	2.09	98.9	35.49	0.19
WP-20 Canal	Upper	1750	50-Year	247	-1.13	5.67	1.44	5.71	0.000237	1.71	216.77	200	0.15
WP-20 Canal	Upper	1750	100-Year	288	-1.13	6.12	1.66	6.15	0.000162	1.51	308.11	200	0.12
WP-20 Canal	Upper	1700	2-Year	79	-1.13	2.27	0.43	2.33	0.000589	1.88	42.1	17.26	0.21
WP-20 Canal	Upper	1700	5-Year	123	-1.13	3.13	0.79	3.2	0.000591	2.12	57.97	19.58	0.22
WP-20 Canal	Upper	1700	10-Year	158	-1.13	3.73	1.04	3.81	0.000578	2.26	70	20.99	0.22
WP-20 Canal	Upper	1700	25-Year	207	-1.13	4.77	1.37	4.85	0.000446	2.22	93.31	59.7	0.2
WP-20 Canal	Upper	1700	50-Year	247	-1.13	5.66	1.61	5.69	0.0002	1.69	243.02	200	0.14
WP-20 Canal	Upper	1700	100-Year	288	-1.13	6.12	1.83	6.14	0.000138	1.49	334.92	200	0.11
WP-20 Canal	Upper	1639		Olive Drive									
WP-20 Canal	Upper	1600	2-Year	79	-0.83	2.14	0.4	2.2	0.000734	2.05	38.5	16.17	0.23
WP-20 Canal	Upper	1600	5-Year	123	-0.83	2.98	0.78	3.07	0.000728	2.33	52.87	17.9	0.24
WP-20 Canal	Upper	1600	10-Year	158	-0.83	3.56	1.05	3.65	0.00072	2.49	63.54	19.09	0.24
WP-20 Canal	Upper	1600	25-Year	207	-0.83	4.53	1.39	4.63	0.000595	2.49	83.22	78.47	0.22
WP-20 Canal	Upper	1600	50-Year	247	-0.83	5.31	1.64	5.4	0.000469	2.45	104.89	146.96	0.2
WP-20 Canal	Upper	1600	100-Year	288	-0.83	5.71	1.87	5.75	0.000241	1.86	238.65	198.18	0.15
WP-20 Canal	Upper	1550	2-Year	79	-1.26	2.1	0.29	2.17	0.000676	2.02	39.18	15.55	0.22
WP-20 Canal	Upper	1550	5-Year	123	-1.26	2.95	0.66	3.03	0.000709	2.32	52.92	17.22	0.23
WP-20 Canal	Upper	1550	10-Year	158	-1.26	3.52	0.93	3.62	0.00072	2.5	63.21	18.49	0.24
WP-20 Canal	Upper	1550	25-Year	207	-1.26	4.5	1.26	4.6	0.000607	2.51	82.35	55.47	0.22
WP-20 Canal	Upper	1550	50-Year	247	-1.26	5.28	1.52	5.38	0.000597	2.45	100.69	112.64	0.22
WP-20 Canal	Upper	1550	100-Year	288	-1.26	5.7	1.75	5.74	0.000288	1.83	230.53	167.45	0.16
WP-20 Canal	Upper	1500	2-Year	79	-1.4	2.07	0.14	2.13	0.000647	2	39.53	14.91	0.22
WP-20 Canal	Upper	1500	5-Year	123	-1.4	2.91	0.52	2.99	0.000706	2.34	52.56	16.28	0.23
WP-20 Canal	Upper	1500	10-Year	158	-1.4	3.48	0.79	3.58	0.000739	2.54	62.21	17.48	0.24
WP-20 Canal	Upper	1500	25-Year	207	-1.4	4.46	1.13	4.57	0.000646	2.57	80.63	27.91	0.23
WP-20 Canal	Upper	1500	50-Year	247	-1.4	5.26	1.39	5.35	0.000528	2.37	130.78	136.82	0.21
WP-20 Canal	Upper	1500	100-Year	288	-1.4	5.65	1.64	5.72	0.000439	2.27	174.24	177.13	0.19

HEC-RAS Output - Existing Conditions

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
				79	-1.11	2.05	0.19	2.1	0.000592	1.85	42.63	18.1	0.21
				123	-1.11	2.89	0.56	2.96	0.000573	2.11	58.41	19.32	0.21
WP-20 Canal	Upper	1450	10-Year	158	-1.11	3.46	0.81	3.54	0.000574	2.26	69.8	20.42	0.22
WP-20 Canal	Upper	1450	25-Year	207	-1.11	4.45	1.14	4.53	0.000496	2.26	91.41	48.37	0.2
WP-20 Canal	Upper	1450	50-Year	247	-1.11	5.26	1.38	5.32	0.000346	2	156.93	100.97	0.17
WP-20 Canal	Upper	1450	100-Year	288	-1.11	5.64	1.62	5.69	0.000308	1.98	197.88	116.83	0.17
WP-20 Canal	Upper	1400	2-Year	79	-1.46	2.01	0.07	2.07	0.000634	1.96	40.35	16.02	0.22
WP-20 Canal	Upper	1400	5-Year	123	-1.46	2.85	0.46	2.92	0.000682	2.24	54.94	18.8	0.23
WP-20 Canal	Upper	1400	10-Year	158	-1.46	3.42	0.73	3.51	0.000673	2.39	66.15	20.15	0.23
WP-20 Canal	Upper	1400	25-Year	207	-1.46	4.42	1.07	4.5	0.000566	2.35	88.09	25.94	0.22
WP-20 Canal	Upper	1400	50-Year	247	-1.46	5.21	1.33	5.29	0.000467	2.27	108.72	95.5	0.2
WP-20 Canal	Upper	1400	100-Year	288	-1.46	5.61	1.59	5.68	0.000373	2.14	187.24	165.31	0.18
WP-20 Canal	Upper	1350	2-Year	88	-1.57	1.96	0.09	2.03	0.000766	2.19	40.27	15.42	0.24
WP-20 Canal	Upper	1350	5-Year	137	-1.57	2.78	0.5	2.88	0.000834	2.56	53.59	16.88	0.25
WP-20 Canal	Upper	1350	10-Year	175	-1.57	3.35	0.79	3.47	0.000853	2.76	63.46	17.88	0.26
WP-20 Canal	Upper	1350	25-Year	230	-1.57	4.35	1.16	4.47	0.00076	2.78	82.62	21.15	0.25
WP-20 Canal	Upper	1350	50-Year	275	-1.57	5.17	1.44	5.27	0.000587	2.6	126.46	155.06	0.22
WP-20 Canal	Upper	1350	100-Year	321	-1.57	5.59	1.69	5.66	0.000403	2.29	227.6	200	0.19
WP-20 Canal	Upper	1300	2-Year	88	-1.23	1.92	0.32	1.99	0.00072	2.12	41.44	18.76	0.24
WP-20 Canal	Upper	1300	5-Year	137	-1.23	2.75	0.68	2.84	0.000675	2.44	56.15	20.18	0.24
WP-20 Canal	Upper	1300	10-Year	175	-1.23	3.32	0.93	3.43	0.000629	2.64	66.41	21.72	0.24
WP-20 Canal	Upper	1300	25-Year	230	-1.23	4.32	1.25	4.44	0.000488	2.72	84.98	29.64	0.22
WP-20 Canal	Upper	1300	50-Year	275	-1.23	5.14	1.49	5.23	0.000605	2.48	143.28	149.68	0.23
WP-20 Canal	Upper	1300	100-Year	321	-1.23	5.57	1.72	5.64	0.000428	2.25	224.82	200	0.2
WP-20 Canal	Upper	657		Markham-Peachtree Box Culvert									
WP-20 Canal	Upper	15	2-Year	88	-3.22	0.16	0.16	0.84	0.018734	6.6	13.34	10.11	1.01
WP-20 Canal	Upper	15	5-Year	137	-3.22	0.7	0.7	1.46	0.017073	7.02	19.51	12.82	1
WP-20 Canal	Upper	15	10-Year	175	-3.22	0.96	0.96	1.86	0.017074	7.62	22.97	13.49	1.02
WP-20 Canal	Upper	15	25-Year	230	-3.22	1.58	1.34	2.42	0.011055	7.34	31.35	14.42	0.85
WP-20 Canal	Upper	15	50-Year	275	-3.22	2.35		3.01	0.006423	6.57	41.87	15.56	0.67
WP-20 Canal	Upper	15	100-Year	321	-3.22	3.11		3.67	0.004604	6.02	53.34	18.54	0.58
WP-20 Canal	Lower	6100	2-Year	6.77	-2.82	0.23	-1.63	0.23	0.000007	0.18	37.72	38.24	0.02
WP-20 Canal	Lower	6100	5-Year	13.93	-2.82	0.91	-1.51	0.91	0.000011	0.27	52.45	40.26	0.03
WP-20 Canal	Lower	6100	10-Year	24.67	-2.82	1.46	-1.39	1.47	0.000018	0.38	65.11	41.89	0.04
WP-20 Canal	Lower	6100	25-Year	42.23	-2.82	2.17	-1.21	2.18	0.000026	0.51	82.22	44.12	0.05
WP-20 Canal	Lower	6100	50-Year	61.15	-2.82	2.8	-1.05	2.81	0.000032	0.62	98.21	45.77	0.06
WP-20 Canal	Lower	6100	100-Year	82.32	-2.82	3.49	-0.9	3.5	0.000035	0.71	116.38	47.54	0.06
WP-20 Canal	Lower	6050	2-Year	6.77	-1.7	0.22	-1.34	0.22	0.000028	0.3	22.81	16.14	0.04
WP-20 Canal	Lower	6050	5-Year	13.93	-1.7	0.91	-1.19	0.91	0.000035	0.41	34.33	17.6	0.05
WP-20 Canal	Lower	6050	10-Year	24.67	-1.7	1.46	-1	1.46	0.000052	0.56	44.37	18.73	0.06
WP-20 Canal	Lower	6050	25-Year	42.23	-1.7	2.17	-0.76	2.17	0.00007	0.73	58.12	20.18	0.08
WP-20 Canal	Lower	6050	50-Year	61.15	-1.7	2.79	-0.55	2.81	0.000082	0.86	71.22	21.48	0.08
WP-20 Canal	Lower	6050	100-Year	82.32	-1.7	3.48	-0.33	3.5	0.000086	0.95	86.52	22.95	0.09
WP-20 Canal	Lower	6000	2-Year	6.77	-1.82	0.22	-1.48	0.22	0.000019	0.27	25.52	15.58	0.04
WP-20 Canal	Lower	6000	5-Year	13.93	-1.82	0.9	-1.34	0.91	0.000028	0.38	36.59	16.86	0.05
WP-20 Canal	Lower	6000	10-Year	24.67	-1.82	1.46	-1.16	1.46	0.000044	0.53	46.17	17.89	0.06
WP-20 Canal	Lower	6000	25-Year	42.23	-1.82	2.16	-0.94	2.17	0.000064	0.71	59.24	19.16	0.07
WP-20 Canal	Lower	6000	50-Year	61.15	-1.82	2.79	-0.74	2.8	0.000078	0.85	71.64	20.3	0.08
WP-20 Canal	Lower	6000	100-Year	82.32	-1.82	3.48	-0.54	3.49	0.000085	0.96	86.06	21.62	0.08
WP-20 Canal	Lower	5969		Pedestrial Walkway Culvert									
WP-20 Canal	Lower	5950	2-Year	6.77	-1.96	0.22	-1.5	0.22	0.000021	0.27	25.06	16.45	0.04
WP-20 Canal	Lower	5950	5-Year	13.93	-1.96	0.9	-1.34	0.9	0.000028	0.38	36.54	17.4	0.05
WP-20 Canal	Lower	5950	10-Year	24.67	-1.96	1.44	-1.15	1.44	0.000045	0.53	46.22	18.46	0.06
WP-20 Canal	Lower	5950	25-Year	42.23	-1.96	2.13	-0.91	2.13	0.000067	0.71	59.68	20.88	0.07
WP-20 Canal	Lower	5950	50-Year	61.15	-1.96	2.73	-0.69	2.74	0.00008	0.84	72.59	22	0.08

HEC-RAS Output - Existing Conditions

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
				82.32	-1.96	3.38	-0.48	3.39	0.000086	0.94	87.35	23.22	0.09
WP-20 Canal	Lower	5900	2-Year	6.77	-2.01	0.22	-1.52	0.22	0.000022	0.28	24.43	15.49	0.04
WP-20 Canal	Lower	5900	5-Year	13.93	-2.01	0.9	-1.34	0.9	0.000031	0.39	35.49	16.97	0.05
WP-20 Canal	Lower	5900	10-Year	24.67	-2.01	1.44	-1.18	1.44	0.000048	0.55	44.94	17.92	0.06
WP-20 Canal	Lower	5900	25-Year	42.23	-2.01	2.12	-0.93	2.13	0.000069	0.73	57.62	19.13	0.07
WP-20 Canal	Lower	5900	50-Year	61.15	-2.01	2.72	-0.72	2.73	0.000086	0.88	69.43	20.18	0.08
WP-20 Canal	Lower	5900	100-Year	82.32	-2.01	3.37	-0.51	3.39	0.000095	0.99	82.99	21.55	0.09
WP-20 Canal	Lower	5850	2-Year	6.77	-2.13	0.22	-1.68	0.22	0.000015	0.25	27.09	15.03	0.03
WP-20 Canal	Lower	5850	5-Year	13.93	-2.13	0.89	-1.52	0.9	0.000024	0.37	37.55	15.86	0.04
WP-20 Canal	Lower	5850	10-Year	24.67	-2.13	1.43	-1.32	1.44	0.000041	0.53	46.3	16.52	0.06
WP-20 Canal	Lower	5850	25-Year	42.23	-2.13	2.12	-1.09	2.13	0.000064	0.73	57.87	17.35	0.07
WP-20 Canal	Lower	5850	50-Year	61.15	-2.13	2.72	-0.89	2.73	0.000084	0.89	68.52	18.36	0.08
WP-20 Canal	Lower	5850	100-Year	82.32	-2.13	3.37	-0.68	3.38	0.000099	1.02	81.01	20.15	0.09
WP-20 Canal	Lower	5800	2-Year	6.77	-2.07	0.22	-1.61	0.22	0.000016	0.25	26.78	15.43	0.03
WP-20 Canal	Lower	5800	5-Year	13.93	-2.07	0.89	-1.47	0.89	0.000025	0.37	37.65	16.64	0.04
WP-20 Canal	Lower	5800	10-Year	24.67	-2.07	1.43	-1.3	1.44	0.000042	0.53	46.87	17.54	0.06
WP-20 Canal	Lower	5800	25-Year	42.23	-2.07	2.11	-1.07	2.12	0.000063	0.71	59.23	18.77	0.07
WP-20 Canal	Lower	5800	50-Year	61.15	-2.07	2.71	-0.87	2.73	0.00008	0.86	70.74	19.67	0.08
WP-20 Canal	Lower	5800	100-Year	82.32	-2.07	3.36	-0.67	3.38	0.00009	0.98	83.87	20.73	0.09
WP-20 Canal	Lower	5750	2-Year	6.77	-2.04	0.22	-1.56	0.22	0.000016	0.27	24.89	16	0.04
WP-20 Canal	Lower	5750	5-Year	13.93	-2.04	0.89	-1.37	0.89	0.000024	0.41	34.35	17.38	0.05
WP-20 Canal	Lower	5750	10-Year	24.67	-2.04	1.43	-1.18	1.43	0.000038	0.59	41.89	18.37	0.06
WP-20 Canal	Lower	5750	25-Year	42.23	-2.04	2.11	-0.94	2.12	0.000057	0.82	51.4	19.36	0.08
WP-20 Canal	Lower	5750	50-Year	61.15	-2.04	2.7	-0.74	2.72	0.000072	1.02	59.74	20.51	0.09
WP-20 Canal	Lower	5750	100-Year	82.32	-2.04	3.35	-0.54	3.37	0.000082	1.2	68.8	21.88	0.1
WP-20 Canal	Lower	5711		Kasey Street									
WP-20 Canal	Lower	5650	2-Year	6.77	-2.49	0.21	-2.17	0.22	0.00001	0.25	27.34	17.41	0.03
WP-20 Canal	Lower	5650	5-Year	13.93	-2.49	0.89	-2	0.89	0.000021	0.39	35.69	19.36	0.04
WP-20 Canal	Lower	5650	10-Year	24.67	-2.49	1.43	-1.82	1.43	0.000039	0.58	42.84	20.9	0.06
WP-20 Canal	Lower	5650	25-Year	42.23	-2.49	2.1	-1.56	2.11	0.00006	0.81	52.27	22.84	0.07
WP-20 Canal	Lower	5650	50-Year	61.15	-2.49	2.68	-1.33	2.7	0.000077	1.01	60.45	24.52	0.09
WP-20 Canal	Lower	5650	100-Year	82.32	-2.49	3.31	-1.09	3.33	0.000089	1.19	69.17	26.32	0.09
WP-20 Canal	Lower	5550	2-Year	6.77	-2.55	0.21	-2.13	0.21	0.000008	0.19	35.04	17.47	0.02
WP-20 Canal	Lower	5550	5-Year	13.93	-2.55	0.89	-1.98	0.89	0.000014	0.29	47.49	19.43	0.03
WP-20 Canal	Lower	5550	10-Year	24.67	-2.55	1.42	-1.8	1.43	0.000024	0.42	58.3	20.99	0.04
WP-20 Canal	Lower	5550	25-Year	42.23	-2.55	2.1	-1.56	2.1	0.000038	0.58	73.11	22.94	0.06
WP-20 Canal	Lower	5550	50-Year	61.15	-2.55	2.68	-1.35	2.69	0.00005	0.7	87.04	24.64	0.07
WP-20 Canal	Lower	5550	100-Year	82.32	-2.55	3.31	-1.14	3.32	0.000057	0.8	102.99	26.46	0.07
WP-20 Canal	Lower	5500	2-Year	35.77	-2.59	0.19	-1.61	0.21	0.00023	1.05	34.14	17.37	0.13
WP-20 Canal	Lower	5500	5-Year	56.93	-2.59	0.86	-1.36	0.88	0.000246	1.23	46.38	19.32	0.14
WP-20 Canal	Lower	5500	10-Year	78.67	-2.59	1.39	-1.14	1.42	0.000264	1.38	57.01	73.83	0.15
WP-20 Canal	Lower	5500	25-Year	112.23	-2.59	2.05	-0.84	2.09	0.000287	1.57	71.55	78.8	0.16
WP-20 Canal	Lower	5500	50-Year	143.15	-2.59	2.64	-0.6	2.68	0.000288	1.68	85.31	83.13	0.16
WP-20 Canal	Lower	5500	100-Year	178.32	-2.59	3.26	-0.37	3.31	0.000284	1.76	101.11	87.92	0.16
WP-20 Canal	Lower	5400	2-Year	35.77	-2.66	0.17	-1.56	0.19	0.000239	1.06	33.64	17.24	0.13
WP-20 Canal	Lower	5400	5-Year	56.93	-2.66	0.83	-1.33	0.86	0.000253	1.24	45.73	19.07	0.14
WP-20 Canal	Lower	5400	10-Year	78.67	-2.66	1.36	-1.12	1.39	0.000273	1.4	56.16	72.66	0.15
WP-20 Canal	Lower	5400	25-Year	112.23	-2.66	2.02	-0.82	2.06	0.000298	1.59	70.47	77.37	0.16
WP-20 Canal	Lower	5400	50-Year	143.15	-2.66	2.61	-0.6	2.65	0.000299	1.7	84.08	81.5	0.16
WP-20 Canal	Lower	5400	100-Year	178.32	-2.66	3.23	-0.36	3.28	0.000332	1.77	101.03	102.14	0.17
WP-20 Canal	Lower	5300	2-Year	35.77	-2.72	0.15	-1.6	0.16	0.00023	1.05	34.07	17.27	0.13
WP-20 Canal	Lower	5300	5-Year	56.93	-2.72	0.81	-1.36	0.83	0.000246	1.23	46.12	18.99	0.14
WP-20 Canal	Lower	5300	10-Year	78.67	-2.72	1.33	-1.15	1.36	0.000266	1.39	56.44	20.34	0.15
WP-20 Canal	Lower	5300	25-Year	112.23	-2.72	1.99	-0.87	2.03	0.000292	1.59	70.43	22.04	0.16
WP-20 Canal	Lower	5300	50-Year	143.15	-2.72	2.57	-0.64	2.62	0.000333	1.69	84.58	27.04	0.17

HEC-RAS Output - Existing Conditions

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
				178.32	-2.72	3.2	-0.41	3.24	0.000339	1.73	103.13	43.49	0.17
WP-20 Canal	Lower	5246	2-Year	35.77	-2.76	0.14	-1.69	0.15	0.000191	0.98	36.6	17.95	0.12
WP-20 Canal	Lower	5246	5-Year	56.93	-2.76	0.8	-1.43	0.82	0.000208	1.16	48.97	19.34	0.13
WP-20 Canal	Lower	5246	10-Year	78.67	-2.76	1.32	-1.22	1.35	0.000228	1.32	59.4	20.44	0.14
WP-20 Canal	Lower	5246	25-Year	112.23	-2.76	1.98	-0.96	2.02	0.000258	1.53	73.35	22.01	0.15
WP-20 Canal	Lower	5246	50-Year	143.15	-2.76	2.56	-0.73	2.6	0.000268	1.65	86.52	23.59	0.15
WP-20 Canal	Lower	5246	100-Year	178.32	-2.76	3.18	-0.51	3.22	0.000272	1.75	101.72	25.69	0.16
WP-20 Canal	Lower	5229	2-Year	35.77	-2.76	0.05	-1.03	0.14	0.001387	2.42	14.81	17.76	0.32
WP-20 Canal	Lower	5229	5-Year	56.93	-2.76	0.68	-0.68	0.8	0.001399	2.8	20.32	19.09	0.33
WP-20 Canal	Lower	5229	10-Year	78.67	-2.76	1.17	-0.38	1.33	0.001491	3.16	24.9	20.13	0.34
WP-20 Canal	Lower	5229	25-Year	112.23	-2.76	1.79	0.03	1.99	0.001634	3.62	30.98	21.48	0.37
WP-20 Canal	Lower	5229	50-Year	143.15	-2.76	2.34	0.37	2.57	0.001645	3.89	36.77	22.98	0.37
WP-20 Canal	Lower	5229	100-Year	178.32	-2.76	2.93	0.72	3.19	0.001635	4.11	43.43	24.82	0.38
WP-20 Canal	Lower	5205		Annette Drive									
WP-20 Canal	Lower	5181	2-Year	35.77	-2.38	0.09		0.13	0.000412	1.47	24.39	21.72	0.18
WP-20 Canal	Lower	5181	5-Year	56.93	-2.38	0.74		0.79	0.000417	1.77	32.12	23.78	0.19
WP-20 Canal	Lower	5181	10-Year	78.67	-2.38	1.24		1.3	0.00045	2.06	38.13	25.09	0.2
WP-20 Canal	Lower	5181	25-Year	112.23	-2.38	1.85		1.95	0.000508	2.47	45.49	26.69	0.22
WP-20 Canal	Lower	5181	50-Year	143.15	-2.38	2.36		2.48	0.000542	2.77	51.62	28.06	0.24
WP-20 Canal	Lower	5181	100-Year	178.32	-2.38	2.87		3.02	0.000582	3.09	57.68	29.43	0.25
WP-20 Canal	Lower	5163	2-Year	35.77	-2.38	0.1	-1.62	0.12	0.000176	0.89	39.99	21.76	0.12
WP-20 Canal	Lower	5163	5-Year	56.93	-2.38	0.75	-1.4	0.77	0.000177	1.04	54.9	23.82	0.12
WP-20 Canal	Lower	5163	10-Year	78.67	-2.38	1.26	-1.21	1.29	0.000186	1.17	67.39	25.16	0.13
WP-20 Canal	Lower	5163	25-Year	112.23	-2.38	1.89	-0.96	1.92	0.000203	1.34	83.7	26.8	0.13
WP-20 Canal	Lower	5163	50-Year	143.15	-2.38	2.42	-0.75	2.45	0.00021	1.46	98.14	28.21	0.14
WP-20 Canal	Lower	5163	100-Year	178.32	-2.38	2.94	-0.54	2.98	0.000219	1.58	113.19	29.62	0.14
WP-20 Canal	Lower	5100	2-Year	35.77	-2.46	0.09		0.1	0.00018	0.9	39.71	21.82	0.12
WP-20 Canal	Lower	5100	5-Year	56.93	-2.46	0.74		0.76	0.000182	1.04	54.79	24.25	0.12
WP-20 Canal	Lower	5100	10-Year	78.67	-2.46	1.25		1.27	0.000189	1.17	67.5	25.65	0.13
WP-20 Canal	Lower	5100	25-Year	112.23	-2.46	1.88		1.91	0.000204	1.33	84.11	27.37	0.13
WP-20 Canal	Lower	5100	50-Year	143.15	-2.46	2.4		2.44	0.00021	1.45	98.85	28.8	0.14
WP-20 Canal	Lower	5100	100-Year	178.32	-2.46	2.92		2.96	0.000216	1.56	114.2	30.21	0.14
WP-20 Canal	Lower	5000	2-Year	35.77	-2.57	0.07	-1.68	0.09	0.00019	0.92	39.02	21.78	0.12
WP-20 Canal	Lower	5000	5-Year	56.93	-2.57	0.72	-1.45	0.74	0.000194	1.05	54.32	25.02	0.13
WP-20 Canal	Lower	5000	10-Year	78.67	-2.57	1.23	-1.25	1.25	0.000197	1.17	67.45	26.53	0.13
WP-20 Canal	Lower	5000	25-Year	112.23	-2.57	1.86	-0.99	1.89	0.000208	1.33	84.62	28.32	0.14
WP-20 Canal	Lower	5000	50-Year	143.15	-2.57	2.38	-0.78	2.42	0.00021	1.43	99.86	29.76	0.14
WP-20 Canal	Lower	5000	100-Year	178.32	-2.57	2.9	-0.56	2.94	0.000214	1.54	115.7	31.2	0.14
WP-20 Canal	Lower	4900	2-Year	35.77	-2.69	0.05	-1.73	0.07	0.000197	0.93	38.48	21.54	0.12
WP-20 Canal	Lower	4900	5-Year	56.93	-2.69	0.7	-1.5	0.72	0.000206	1.06	53.84	25.65	0.13
WP-20 Canal	Lower	4900	10-Year	78.67	-2.69	1.21	-1.29	1.23	0.000205	1.17	67.44	27.52	0.13
WP-20 Canal	Lower	4900	25-Year	112.23	-2.69	1.84	-1.03	1.87	0.000211	1.32	85.19	29.27	0.14
WP-20 Canal	Lower	4900	50-Year	143.15	-2.69	2.36	-0.8	2.39	0.00021	1.42	100.93	30.73	0.14
WP-20 Canal	Lower	4900	100-Year	178.32	-2.69	2.88	-0.57	2.92	0.000212	1.52	117.28	32.18	0.14
WP-20 Canal	Lower	4800	2-Year	35.77	-2.81	0.03	-1.77	0.05	0.000201	0.94	37.95	21.11	0.12
WP-20 Canal	Lower	4800	5-Year	56.93	-2.81	0.68	-1.53	0.7	0.000217	1.07	53.25	25.98	0.13
WP-20 Canal	Lower	4800	10-Year	78.67	-2.81	1.19	-1.33	1.21	0.000216	1.17	67.28	28.48	0.13
WP-20 Canal	Lower	4800	25-Year	112.23	-2.81	1.82	-1.05	1.84	0.000216	1.31	85.64	30.24	0.14
WP-20 Canal	Lower	4800	50-Year	143.15	-2.81	2.34	-0.82	2.37	0.000211	1.4	101.91	31.73	0.14
WP-20 Canal	Lower	4800	100-Year	178.32	-2.81	2.86	-0.59	2.9	0.000211	1.5	118.79	33.2	0.14
WP-20 Canal	Lower	4750	2-Year	35.77	-2.87	0.02	-1.79	0.04	0.0002	0.95	37.81	20.82	0.12
WP-20 Canal	Lower	4750	5-Year	56.93	-2.87	0.67	-1.55	0.69	0.000221	1.07	53.03	26.08	0.13
WP-20 Canal	Lower	4750	10-Year	78.67	-2.87	1.18	-1.34	1.2	0.000221	1.17	67.2	28.95	0.14
WP-20 Canal	Lower	4750	25-Year	112.23	-2.87	1.81	-1.06	1.83	0.000218	1.31	85.86	30.74	0.14
WP-20 Canal	Lower	4750	50-Year	143.15	-2.87	2.33	-0.83	2.36	0.000212	1.4	102.42	32.23	0.14

HEC-RAS Output - Existing Conditions

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
				178.32	-2.87	2.85	-0.6	2.89	0.00021	1.49	119.56	33.72	0.14
				35.77	-3.05	-0.01	-1.87	0.01	0.000198	0.94	37.96	20.86	0.12
				56.93	-3.05	0.64	-1.62	0.66	0.000221	1.08	52.85	25.75	0.13
				78.67	-3.05	1.15	-1.4	1.17	0.000234	1.17	67.07	30.14	0.14
WP-20 Canal	Lower	4600	25-Year	112.23	-3.05	1.77	-1.11	1.8	0.000224	1.29	86.71	32.26	0.14
WP-20 Canal	Lower	4600	50-Year	143.15	-3.05	2.3	-0.87	2.33	0.000213	1.37	104.12	33.79	0.14
WP-20 Canal	Lower	4600	100-Year	178.32	-3.05	2.82	-0.63	2.85	0.000217	1.46	122.27	36.74	0.14
WP-20 Canal	Lower	4500	2-Year	35.77	-3.17	-0.03	-1.93	-0.01	0.000196	0.93	38.45	21.34	0.12
WP-20 Canal	Lower	4500	5-Year	56.93	-3.17	0.62	-1.66	0.63	0.000211	1.07	53.08	25.07	0.13
WP-20 Canal	Lower	4500	10-Year	78.67	-3.17	1.12	-1.43	1.15	0.000234	1.17	67.05	30.04	0.14
WP-20 Canal	Lower	4500	25-Year	112.23	-3.17	1.75	-1.13	1.78	0.000229	1.29	87.23	33.3	0.14
WP-20 Canal	Lower	4500	50-Year	143.15	-3.17	2.28	-0.9	2.31	0.000214	1.36	105.25	34.85	0.14
WP-20 Canal	Lower	4500	100-Year	178.32	-3.17	2.8	-0.66	2.83	0.000217	1.43	124.5	38.68	0.14
WP-20 Canal	Lower	4400	2-Year	35.77	-3.29	-0.05	-1.99	-0.03	0.000185	0.91	39.29	21.53	0.12
WP-20 Canal	Lower	4400	5-Year	56.93	-3.29	0.6	-1.71	0.61	0.000192	1.06	53.82	23.98	0.12
WP-20 Canal	Lower	4400	10-Year	78.67	-3.29	1.1	-1.46	1.12	0.000227	1.17	67.31	29.53	0.14
WP-20 Canal	Lower	4400	25-Year	112.23	-3.29	1.73	-1.16	1.75	0.000234	1.28	87.74	34.35	0.14
WP-20 Canal	Lower	4400	50-Year	143.15	-3.29	2.26	-0.92	2.29	0.000223	1.34	106.66	37.39	0.14
WP-20 Canal	Lower	4400	100-Year	178.32	-3.29	2.78	-0.69	2.81	0.000216	1.41	126.91	40.42	0.14
WP-20 Canal	Lower	4300	2-Year	35.77	-3.41	-0.06	-2.05	-0.05	0.000171	0.88	40.47	21.8	0.11
WP-20 Canal	Lower	4300	5-Year	56.93	-3.41	0.58	-1.76	0.6	0.000177	1.03	55.13	23.92	0.12
WP-20 Canal	Lower	4300	10-Year	78.67	-3.41	1.08	-1.49	1.1	0.000212	1.16	68.03	28.62	0.13
WP-20 Canal	Lower	4300	25-Year	112.23	-3.41	1.7	-1.19	1.73	0.000243	1.27	88.31	35.95	0.14
WP-20 Canal	Lower	4300	50-Year	143.15	-3.41	2.24	-0.95	2.26	0.000224	1.32	108.33	39.08	0.14
WP-20 Canal	Lower	4300	100-Year	178.32	-3.41	2.76	-0.73	2.79	0.000212	1.38	129.48	41.96	0.14
WP-20 Canal	Lower	4200	2-Year	35.77	-3.53	-0.08	-2.1	-0.07	0.000156	0.85	41.87	22.1	0.11
WP-20 Canal	Lower	4200	5-Year	56.93	-3.53	0.56	-1.79	0.58	0.000164	1	56.7	24.19	0.12
WP-20 Canal	Lower	4200	10-Year	78.67	-3.53	1.06	-1.53	1.08	0.00019	1.14	69.23	27.27	0.13
WP-20 Canal	Lower	4200	25-Year	112.23	-3.53	1.68	-1.22	1.71	0.000244	1.26	89.07	36.84	0.14
WP-20 Canal	Lower	4200	50-Year	143.15	-3.53	2.22	-1	2.24	0.000221	1.3	109.78	39.99	0.14
WP-20 Canal	Lower	4200	100-Year	178.32	-3.53	2.74	-0.79	2.77	0.000205	1.36	131.33	47.91	0.14
WP-20 Canal	Lower	4100	2-Year	35.77	-3.65	-0.09	-2.17	-0.08	0.00014	0.82	43.64	22.47	0.1
WP-20 Canal	Lower	4100	5-Year	56.93	-3.65	0.55	-1.82	0.56	0.00015	0.97	58.68	24.52	0.11
WP-20 Canal	Lower	4100	10-Year	78.67	-3.65	1.04	-1.56	1.06	0.000167	1.1	71.22	26.45	0.12
WP-20 Canal	Lower	4100	25-Year	112.23	-3.65	1.66	-1.27	1.68	0.000227	1.24	90.23	35.87	0.14
WP-20 Canal	Lower	4100	50-Year	143.15	-3.65	2.19	-1.08	2.22	0.000218	1.29	111.24	40.88	0.14
WP-20 Canal	Lower	4100	100-Year	178.32	-3.65	2.72	-0.88	2.75	0.000199	1.34	133.27	72.4	0.13
WP-20 Canal	Lower	4000	2-Year	35.77	-3.77	-0.1	-2.22	-0.1	0.000123	0.78	45.75	22.9	0.1
WP-20 Canal	Lower	4000	5-Year	56.93	-3.77	0.53	-1.85	0.55	0.000135	0.93	61.03	24.92	0.11
WP-20 Canal	Lower	4000	10-Year	78.67	-3.77	1.03	-1.61	1.04	0.000162	1.06	74.1	28.69	0.12
WP-20 Canal	Lower	4000	25-Year	112.23	-3.77	1.64	-1.37	1.66	0.000222	1.19	94.23	39.39	0.14
WP-20 Canal	Lower	4000	50-Year	143.15	-3.77	2.17	-1.17	2.2	0.000225	1.21	118.56	49.65	0.14
WP-20 Canal	Lower	4000	100-Year	178.32	-3.77	2.7	-0.98	2.73	0.000209	1.22	146.62	57.38	0.13
WP-20 Canal	Lower	3900	2-Year	35.77	-3.88	-0.12	-2.28	-0.11	0.000107	0.74	48.07	23.36	0.09
WP-20 Canal	Lower	3900	5-Year	56.93	-3.88	0.52	-1.89	0.53	0.000122	0.89	63.64	25.56	0.1
WP-20 Canal	Lower	3900	10-Year	78.67	-3.88	1.01	-1.71	1.03	0.000137	1.03	76.57	27.14	0.11
WP-20 Canal	Lower	3900	25-Year	112.23	-3.88	1.62	-1.47	1.64	0.000174	1.2	93.77	31.72	0.12
WP-20 Canal	Lower	3900	50-Year	143.15	-3.88	2.15	-1.27	2.17	0.000213	1.26	113.37	41.84	0.14
WP-20 Canal	Lower	3900	100-Year	178.32	-3.88	2.68	-1.07	2.7	0.000197	1.31	136.09	44.63	0.13
WP-20 Canal	Lower	3800	2-Year	35.77	-4	-0.12	-2.22	-0.12	0.000092	0.7	50.82	23.87	0.09
WP-20 Canal	Lower	3800	5-Year	56.93	-4	0.51	-2.01	0.52	0.000112	0.85	67.03	27.44	0.1
WP-20 Canal	Lower	3800	10-Year	78.67	-4	1	-1.83	1.02	0.00013	0.97	81.23	30.57	0.1
WP-20 Canal	Lower	3800	25-Year	112.23	-4	1.6	-1.59	1.62	0.000151	1.11	100.78	34.42	0.11
WP-20 Canal	Lower	3800	50-Year	143.15	-4	2.13	-1.39	2.15	0.000191	1.17	122.16	46.81	0.13
WP-20 Canal	Lower	3800	100-Year	178.32	-4	2.66	-1.19	2.68	0.000188	1.19	150.57	73.43	0.13

HEC-RAS Output - Existing Conditions

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
				52.77	-3.89	-0.15	-1.99	-0.13	0.000232	1.1	48.14	23.28	0.13
				83.93	-3.89	0.48	-1.73	0.5	0.000263	1.32	63.37	25.12	0.15
WP-20 Canal	Lower	3700	10-Year	112.67	-3.89	0.96	-1.52	0.99	0.000281	1.49	75.81	26.35	0.15
WP-20 Canal	Lower	3700	25-Year	157.23	-3.89	1.55	-1.24	1.6	0.000314	1.71	91.85	27.84	0.17
WP-20 Canal	Lower	3700	50-Year	197.15	-3.89	2.07	-1.02	2.12	0.000384	1.83	107.74	46.8	0.18
WP-20 Canal	Lower	3700	100-Year	241.32	-3.89	2.6	-0.8	2.65	0.000393	1.84	139	85.71	0.19
WP-20 Canal	Lower	3600	2-Year	52.77	-3.72	-0.18	-1.88	-0.16	0.000293	1.2	44.13	22.44	0.15
WP-20 Canal	Lower	3600	5-Year	83.93	-3.72	0.44	-1.61	0.47	0.000323	1.43	58.76	24.44	0.16
WP-20 Canal	Lower	3600	10-Year	112.67	-3.72	0.92	-1.4	0.96	0.00034	1.59	70.88	25.89	0.17
WP-20 Canal	Lower	3600	25-Year	157.23	-3.72	1.51	-1.12	1.56	0.000373	1.82	86.6	27.59	0.18
WP-20 Canal	Lower	3600	50-Year	197.15	-3.72	2.02	-0.9	2.08	0.000426	1.94	101.68	40.73	0.19
WP-20 Canal	Lower	3600	100-Year	241.32	-3.72	2.55	-0.67	2.61	0.000465	2	120.69	83.27	0.2
WP-20 Canal	Lower	3500	2-Year	52.77	-3.54	-0.22	-1.77	-0.19	0.000379	1.31	40.13	21.61	0.17
WP-20 Canal	Lower	3500	5-Year	83.93	-3.54	0.4	-1.5	0.44	0.000403	1.55	54.16	23.64	0.18
WP-20 Canal	Lower	3500	10-Year	112.67	-3.54	0.88	-1.28	0.92	0.000416	1.71	65.86	25.21	0.19
WP-20 Canal	Lower	3500	25-Year	157.23	-3.54	1.46	-0.99	1.52	0.00045	1.94	81.14	27.16	0.2
WP-20 Canal	Lower	3500	50-Year	197.15	-3.54	1.97	-0.77	2.04	0.000488	2.06	95.62	31.09	0.21
WP-20 Canal	Lower	3500	100-Year	241.32	-3.54	2.49	-0.54	2.56	0.000522	2.13	113.42	74.36	0.22
WP-20 Canal	Lower	3300	2-Year	52.77	-3.19	-0.34	-1.54	-0.3	0.000724	1.66	31.84	19.86	0.23
WP-20 Canal	Lower	3300	5-Year	83.93	-3.19	0.28	-1.25	0.33	0.000683	1.88	44.76	21.99	0.23
WP-20 Canal	Lower	3300	10-Year	112.67	-3.19	0.76	-1.02	0.82	0.00066	2.02	55.67	23.64	0.23
WP-20 Canal	Lower	3300	25-Year	157.23	-3.19	1.33	-0.74	1.41	0.000678	2.25	69.83	25.62	0.24
WP-20 Canal	Lower	3300	50-Year	197.15	-3.19	1.83	-0.51	1.92	0.000675	2.37	83.14	28.06	0.24
WP-20 Canal	Lower	3300	100-Year	241.32	-3.19	2.34	-0.27	2.44	0.000712	2.44	98.92	33.58	0.25
WP-20 Canal	Lower	3200	2-Year	52.77	-3.02	-0.45	-1.43	-0.39	0.001144	1.95	27.1	18.83	0.29
WP-20 Canal	Lower	3200	5-Year	83.93	-3.02	0.18	-1.12	0.25	0.00096	2.12	39.63	21.06	0.27
WP-20 Canal	Lower	3200	10-Year	112.67	-3.02	0.66	-0.9	0.74	0.000879	2.24	50.22	22.76	0.27
WP-20 Canal	Lower	3200	25-Year	157.23	-3.02	1.24	-0.61	1.33	0.00087	2.46	63.85	24.79	0.27
WP-20 Canal	Lower	3200	50-Year	197.15	-3.02	1.74	-0.37	1.84	0.000816	2.57	76.8	26.57	0.27
WP-20 Canal	Lower	3200	100-Year	241.32	-3.02	2.25	-0.14	2.36	0.000847	2.64	91.36	59.62	0.27
WP-20 Canal	Lower	3139	2-Year	52.77	-2.91	-0.51	-1.92	-0.47	0.000592	1.6	32.98	18.2	0.21
WP-20 Canal	Lower	3139	5-Year	83.93	-2.91	0.12	-1.62	0.17	0.00062	1.86	45.16	20.47	0.22
WP-20 Canal	Lower	3139	10-Year	112.67	-2.91	0.6	-1.39	0.66	0.000631	2.03	55.49	22.21	0.23
WP-20 Canal	Lower	3139	25-Year	157.23	-2.91	1.17	-1.08	1.25	0.000681	2.29	68.73	24.26	0.24
WP-20 Canal	Lower	3139	50-Year	197.15	-2.91	1.68	-0.83	1.77	0.000672	2.42	81.47	26.08	0.24
WP-20 Canal	Lower	3139	100-Year	241.32	-2.91	2.18	-0.57	2.28	0.000682	2.53	95.26	55.15	0.25
WP-20 Canal	Lower	3119	2-Year	52.77	-2.91	-0.53	-1.92	-0.49	0.000604	1.61	32.75	18.15	0.21
WP-20 Canal	Lower	3119	5-Year	83.93	-2.91	0.1	-1.62	0.16	0.000631	1.87	44.89	20.42	0.22
WP-20 Canal	Lower	3119	10-Year	112.67	-2.91	0.59	-1.4	0.65	0.000625	2.04	55.14	22.16	0.23
WP-20 Canal	Lower	3119	25-Year	157.23	-2.91	1.15	-1.09	1.24	0.000655	2.32	67.8	24.2	0.24
WP-20 Canal	Lower	3119	50-Year	197.15	-2.91	1.66	-0.83	1.75	0.000613	2.48	79.38	26.02	0.24
WP-20 Canal	Lower	3119	100-Year	241.32	-2.91	2.16	-0.57	2.27	0.000586	2.66	90.86	53.11	0.24
WP-20 Canal	Lower	3090		Spartan High School parking Lot East									
WP-20 Canal	Lower	3073	2-Year	52.77	-3.58	-0.57	-2.34	-0.53	0.000609	1.71	30.8	14.74	0.21
WP-20 Canal	Lower	3073	5-Year	83.93	-3.58	0.05	-1.98	0.11	0.000759	2.05	40.87	17.76	0.24
WP-20 Canal	Lower	3073	10-Year	112.67	-3.58	0.52	-1.69	0.6	0.000826	2.26	49.83	20.07	0.25
WP-20 Canal	Lower	3073	25-Year	157.23	-3.58	1.07	-1.31	1.17	0.000892	2.56	61.34	22.73	0.27
WP-20 Canal	Lower	3073	50-Year	197.15	-3.58	1.55	-1	1.67	0.00087	2.73	72.29	60.9	0.27
WP-20 Canal	Lower	3073	100-Year	241.32	-3.58	2.03	-0.66	2.16	0.000814	2.9	83.26	94.52	0.27
WP-20 Canal	Lower	3040	2-Year	52.77	-3.58	-0.6	-2.33	-0.55	0.000624	1.73	30.48	14.64	0.21
WP-20 Canal	Lower	3040	5-Year	83.93	-3.58	0.02	-1.98	0.09	0.000782	2.08	40.39	17.63	0.24
WP-20 Canal	Lower	3040	10-Year	112.67	-3.58	0.49	-1.69	0.57	0.000851	2.29	49.24	19.92	0.26
WP-20 Canal	Lower	3040	25-Year	157.23	-3.58	1.03	-1.31	1.14	0.000964	2.59	60.79	22.57	0.28
WP-20 Canal	Lower	3040	50-Year	197.15	-3.58	1.52	-0.99	1.64	0.001044	2.71	72.63	47.02	0.29
WP-20 Canal	Lower	3040	100-Year	241.32	-3.58	2.01	-0.66	2.13	0.00112	2.76	87.37	89.25	0.3

HEC-RAS Output - Existing Conditions

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
				52.77	-3.59	-0.62	-2.36	-0.57	0.000605	1.68	31.35	15.66	0.21
				83.93	-3.59	-0.01	-1.99	0.05	0.000731	2.01	41.76	18.49	0.24
				112.67	-3.59	0.46	-1.72	0.54	0.000784	2.21	50.96	20.68	0.25
WP-20 Canal	Lower	3000	25-Year	157.23	-3.59	1	-1.33	1.1	0.000884	2.5	62.81	23.19	0.27
WP-20 Canal	Lower	3000	50-Year	197.15	-3.59	1.49	-1.01	1.6	0.000956	2.63	74.87	39.12	0.28
WP-20 Canal	Lower	3000	100-Year	241.32	-3.59	1.97	-0.68	2.08	0.001018	2.69	89.61	83.45	0.29
WP-20 Canal	Lower	2900	2-Year	52.77	-3.62	-0.67	-2.41	-0.63	0.000502	1.53	34.55	17.92	0.19
WP-20 Canal	Lower	2900	5-Year	83.93	-3.62	-0.07	-2.05	-0.01	0.000581	1.82	46.09	20.44	0.21
WP-20 Canal	Lower	2900	10-Year	112.67	-3.62	0.4	-1.77	0.46	0.000617	2.01	56.09	22.39	0.22
WP-20 Canal	Lower	2900	25-Year	157.23	-3.62	0.93	-1.4	1.02	0.000697	2.29	68.62	26.61	0.24
WP-20 Canal	Lower	2900	50-Year	197.15	-3.62	1.41	-1.12	1.51	0.000759	2.43	81.25	69.51	0.25
WP-20 Canal	Lower	2900	100-Year	241.32	-3.62	1.89	-0.85	1.99	0.0008	2.51	96.1	100.34	0.26
WP-20 Canal	Lower	2800	2-Year	52.77	-3.64	-0.7	-2.48	-0.68	0.000369	1.34	39.25	19.86	0.17
WP-20 Canal	Lower	2800	5-Year	83.93	-3.64	-0.11	-2.15	-0.07	0.000432	1.62	51.78	22.11	0.19
WP-20 Canal	Lower	2800	10-Year	112.67	-3.64	0.36	-1.9	0.41	0.000463	1.8	62.45	23.87	0.2
WP-20 Canal	Lower	2800	25-Year	157.23	-3.64	0.88	-1.58	0.95	0.000535	2.08	75.55	36.69	0.21
WP-20 Canal	Lower	2800	50-Year	197.15	-3.64	1.36	-1.33	1.43	0.000591	2.22	88.68	61.6	0.23
WP-20 Canal	Lower	2800	100-Year	241.32	-3.64	1.83	-1.07	1.91	0.000645	2.33	103.74	126.16	0.24
WP-20 Canal	Lower	2705	2-Year	52.77	-3.67	-0.72	-2.64	-0.71	0.000198	1.06	49.93	22.81	0.13
WP-20 Canal	Lower	2705	5-Year	83.93	-3.67	-0.13	-2.38	-0.1	0.000244	1.31	63.95	24.36	0.14
WP-20 Canal	Lower	2705	10-Year	112.67	-3.67	0.33	-2.19	0.37	0.000272	1.49	75.5	25.55	0.15
WP-20 Canal	Lower	2705	25-Year	157.23	-3.67	0.86	-1.92	0.9	0.000345	1.76	89.2	27.96	0.17
WP-20 Canal	Lower	2705	50-Year	197.15	-3.67	1.32	-1.7	1.38	0.000463	1.88	104.97	38.02	0.2
WP-20 Canal	Lower	2705	100-Year	241.32	-3.67	1.79	-1.48	1.85	0.000462	1.95	123.94	113.18	0.2
WP-20 Canal	Lower	2685	2-Year	52.77	-4.27	-0.72	-3.25	-0.71	0.00009	0.83	63.36	24.38	0.09
WP-20 Canal	Lower	2685	5-Year	83.93	-4.27	-0.13	-2.98	-0.11	0.000118	1.09	77.04	25.9	0.1
WP-20 Canal	Lower	2685	10-Year	112.67	-4.27	0.34	-2.78	0.36	0.000138	1.28	87.68	30.03	0.12
WP-20 Canal	Lower	2685	25-Year	157.23	-4.27	0.86	-2.52	0.9	0.000176	1.58	99.67	39.35	0.13
WP-20 Canal	Lower	2685	50-Year	197.15	-4.27	1.32	-2.29	1.37	0.000197	1.79	110.33	43.91	0.14
WP-20 Canal	Lower	2685	100-Year	241.32	-4.27	1.78	-2.08	1.85	0.000217	1.99	120.98	109.93	0.15
WP-20 Canal	Lower	2660		Spartan High School Parking Lot West									
WP-20 Canal	Lower	2639	2-Year	52.77	-4.53	-0.74	-3.42	-0.73	0.000111	0.89	59.35	23.77	0.1
WP-20 Canal	Lower	2639	5-Year	83.93	-4.53	-0.15	-3.13	-0.13	0.000147	1.15	72.74	26.99	0.11
WP-20 Canal	Lower	2639	10-Year	112.67	-4.53	0.3	-2.89	0.33	0.00017	1.36	83.11	29.47	0.13
WP-20 Canal	Lower	2639	25-Year	157.23	-4.53	0.79	-2.57	0.84	0.000215	1.66	94.53	32.21	0.14
WP-20 Canal	Lower	2639	50-Year	197.15	-4.53	1.23	-2.32	1.28	0.000242	1.89	104.55	34.61	0.16
WP-20 Canal	Lower	2639	100-Year	241.32	-4.53	1.65	-2.06	1.72	0.000269	2.11	114.24	47.06	0.17
WP-20 Canal	Lower	2614	2-Year	52.77	-3.93	-0.75	-2.83	-0.73	0.000233	1.15	46.01	20.81	0.14
WP-20 Canal	Lower	2614	5-Year	83.93	-3.93	-0.17	-2.53	-0.14	0.000308	1.43	58.84	23.59	0.16
WP-20 Canal	Lower	2614	10-Year	112.67	-3.93	0.28	-2.29	0.32	0.000355	1.61	70	26.06	0.17
WP-20 Canal	Lower	2614	25-Year	157.23	-3.93	0.77	-1.97	0.83	0.000436	1.88	83.57	28.79	0.19
WP-20 Canal	Lower	2614	50-Year	197.15	-3.93	1.21	-1.72	1.28	0.000469	2.04	96.7	31.2	0.2
WP-20 Canal	Lower	2614	100-Year	241.32	-3.93	1.64	-1.46	1.71	0.000496	2.18	110.47	38.85	0.21
WP-20 Canal	Lower	2500	2-Year	52.77	-3.99	-0.79	-2.68	-0.76	0.000322	1.25	42.08	21.54	0.16
WP-20 Canal	Lower	2500	5-Year	83.93	-3.99	-0.22	-2.34	-0.18	0.000388	1.52	55.11	24.1	0.18
WP-20 Canal	Lower	2500	10-Year	112.67	-3.99	0.23	-2.08	0.27	0.000422	1.7	66.26	26.1	0.19
WP-20 Canal	Lower	2500	25-Year	157.23	-3.99	0.71	-1.75	0.77	0.000515	1.98	79.58	32.88	0.21
WP-20 Canal	Lower	2500	50-Year	197.15	-3.99	1.15	-1.49	1.22	0.000548	2.12	92.85	48.02	0.22
WP-20 Canal	Lower	2500	100-Year	241.32	-3.99	1.57	-1.24	1.65	0.000571	2.26	106.98	66.48	0.23
WP-20 Canal	Lower	2400	2-Year	52.77	-4.05	-0.83	-2.62	-0.8	0.000405	1.35	39.16	21.46	0.18
WP-20 Canal	Lower	2400	5-Year	83.93	-4.05	-0.26	-2.26	-0.22	0.000475	1.61	52.17	24.7	0.2
WP-20 Canal	Lower	2400	10-Year	112.67	-4.05	0.18	-1.99	0.23	0.000503	1.77	63.64	27.21	0.2
WP-20 Canal	Lower	2400	25-Year	157.23	-4.05	0.65	-1.65	0.72	0.000575	2.04	77.08	29.38	0.22
WP-20 Canal	Lower	2400	50-Year	197.15	-4.05	1.09	-1.39	1.16	0.000586	2.19	90.19	31.35	0.23
WP-20 Canal	Lower	2400	100-Year	241.32	-4.05	1.51	-1.13	1.59	0.000618	2.32	103.94	40.54	0.24

HEC-RAS Output - Existing Conditions

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
				52.77	-4.07	-0.85	-2.59	-0.82	0.000423	1.37	38.52	21.32	0.18
				83.93	-4.07	-0.29	-2.24	-0.25	0.000495	1.63	51.34	24.49	0.2
WP-20 Canal	Lower	2350	10-Year	112.67	-4.07	0.15	-1.97	0.2	0.000523	1.8	62.66	26.98	0.21
WP-20 Canal	Lower	2350	25-Year	157.23	-4.07	0.62	-1.64	0.69	0.000608	2.07	76	29.65	0.23
WP-20 Canal	Lower	2350	50-Year	197.15	-4.07	1.05	-1.38	1.13	0.000617	2.21	89.32	31.96	0.23
WP-20 Canal	Lower	2350	100-Year	241.32	-4.07	1.47	-1.12	1.56	0.000634	2.34	103.16	34.49	0.24
WP-20 Canal	Lower	2300	2-Year	52.77	-4.1	-0.87	-2.59	-0.84	0.000427	1.37	38.38	21.3	0.18
WP-20 Canal	Lower	2300	5-Year	83.93	-4.1	-0.31	-2.25	-0.27	0.000501	1.64	51.08	24.41	0.2
WP-20 Canal	Lower	2300	10-Year	112.67	-4.1	0.12	-1.99	0.18	0.000529	1.81	62.32	26.86	0.21
WP-20 Canal	Lower	2300	25-Year	157.23	-4.1	0.59	-1.65	0.66	0.000617	2.08	75.46	29.48	0.23
WP-20 Canal	Lower	2300	50-Year	197.15	-4.1	1.02	-1.39	1.1	0.000639	2.22	88.71	32.32	0.24
WP-20 Canal	Lower	2300	100-Year	241.32	-4.1	1.44	-1.13	1.53	0.000665	2.34	102.96	35.73	0.24
WP-20 Canal	Lower	2245	2-Year	52.77	-4.13	-0.88	-2.76	-0.86	0.00027	1.17	45.14	22.72	0.15
WP-20 Canal	Lower	2245	5-Year	83.93	-4.13	-0.33	-2.46	-0.3	0.000335	1.44	58.41	25.24	0.17
WP-20 Canal	Lower	2245	10-Year	112.67	-4.13	0.11	-2.23	0.15	0.000369	1.61	69.87	27.23	0.18
WP-20 Canal	Lower	2245	25-Year	157.23	-4.13	0.57	-1.92	0.63	0.000459	1.89	83.01	29.95	0.2
WP-20 Canal	Lower	2245	50-Year	197.15	-4.13	1	-1.68	1.06	0.000498	2.04	96.54	33.09	0.21
WP-20 Canal	Lower	2245	100-Year	241.32	-4.13	1.42	-1.44	1.49	0.000527	2.17	111.08	39.67	0.22
WP-20 Canal	Lower	2219	2-Year	52.77	-4.14	-0.87	-3.38	-0.87	0.00006	0.63	83.18	35.04	0.07
WP-20 Canal	Lower	2219	5-Year	83.93	-4.14	-0.32	-3.17	-0.31	0.000079	0.82	102.98	38.24	0.08
WP-20 Canal	Lower	2219	10-Year	112.67	-4.14	0.12	-2.99	0.14	0.000088	0.95	118.81	39.91	0.09
WP-20 Canal	Lower	2219	25-Year	157.23	-4.14	0.59	-2.76	0.61	0.000111	1.16	135.62	39.95	0.11
WP-20 Canal	Lower	2219	50-Year	197.15	-4.14	1.02	-2.57	1.05	0.000121	1.3	151.14	39.99	0.11
WP-20 Canal	Lower	2219	100-Year	241.32	-4.14	1.44	-2.38	1.47	0.000132	1.45	166.21	40.03	0.12
WP-20 Canal	Lower	2198		Spartan Drive									
WP-20 Canal	Lower	2177	2-Year	52.77	-4.25	-0.88	-3.34	-0.87	0.000056	0.61	86.28	35.05	0.07
WP-20 Canal	Lower	2177	5-Year	83.93	-4.25	-0.32	-3.14	-0.31	0.000075	0.79	106.2	36.24	0.08
WP-20 Canal	Lower	2177	10-Year	112.67	-4.25	0.12	-2.97	0.13	0.000088	0.92	122.21	36.63	0.09
WP-20 Canal	Lower	2177	25-Year	157.23	-4.25	0.58	-2.76	0.6	0.000114	1.13	139.38	37.04	0.1
WP-20 Canal	Lower	2177	50-Year	197.15	-4.25	1.02	-2.58	1.04	0.000129	1.27	155.42	37.42	0.11
WP-20 Canal	Lower	2177	100-Year	241.32	-4.25	1.43	-2.4	1.46	0.000144	1.41	171.15	37.79	0.12
WP-20 Canal	Lower	2000	2-Year	67.77	-3.83	-0.9	-2.82	-0.89	0.000165	0.95	71	33.48	0.12
WP-20 Canal	Lower	2000	5-Year	106.93	-3.83	-0.36	-2.58	-0.33	0.000204	1.19	89.84	35.42	0.13
WP-20 Canal	Lower	2000	10-Year	141.67	-3.83	0.08	-2.41	0.1	0.000243	1.33	106.18	40.4	0.15
WP-20 Canal	Lower	2000	25-Year	194.23	-3.83	0.53	-2.17	0.57	0.000308	1.54	125.96	46.37	0.16
WP-20 Canal	Lower	2000	50-Year	242.15	-3.83	0.96	-1.98	1	0.000332	1.65	146.98	51.96	0.17
WP-20 Canal	Lower	2000	100-Year	293.32	-3.83	1.38	-1.79	1.42	0.000343	1.73	169.81	57.42	0.18
WP-20 Canal	Lower	1900	2-Year	67.77	-3.93	-0.92	-2.92	-0.9	0.000146	0.92	73.87	33.78	0.11
WP-20 Canal	Lower	1900	5-Year	106.93	-3.93	-0.37	-2.68	-0.35	0.000189	1.15	92.75	36.28	0.13
WP-20 Canal	Lower	1900	10-Year	141.67	-3.93	0.06	-2.51	0.08	0.000221	1.3	109.25	40.36	0.14
WP-20 Canal	Lower	1900	25-Year	194.23	-3.93	0.5	-2.27	0.54	0.000276	1.51	128.32	44.46	0.16
WP-20 Canal	Lower	1900	50-Year	242.15	-3.93	0.93	-2.08	0.97	0.000298	1.64	148.02	48.33	0.16
WP-20 Canal	Lower	1900	100-Year	293.32	-3.93	1.34	-1.88	1.39	0.000311	1.74	169.13	58.11	0.17
WP-20 Canal	Lower	1850	2-Year	67.77	-3.98	-0.92	-2.96	-0.91	0.000138	0.9	75.33	33.93	0.11
WP-20 Canal	Lower	1850	5-Year	106.93	-3.98	-0.38	-2.73	-0.36	0.000181	1.13	94.24	36.51	0.12
WP-20 Canal	Lower	1850	10-Year	141.67	-3.98	0.04	-2.56	0.07	0.000211	1.28	110.69	40.3	0.14
WP-20 Canal	Lower	1850	25-Year	194.23	-3.98	0.49	-2.32	0.53	0.000265	1.5	129.59	44.26	0.15
WP-20 Canal	Lower	1850	50-Year	242.15	-3.98	0.92	-2.12	0.96	0.000287	1.62	149.13	48.01	0.16
WP-20 Canal	Lower	1850	100-Year	293.32	-3.98	1.33	-1.94	1.38	0.000301	1.73	169.79	52.58	0.17
WP-20 Canal	Lower	1750	2-Year	67.77	-4.09	-0.94	-3.07	-0.93	0.000121	0.86	78.67	34.27	0.1
WP-20 Canal	Lower	1750	5-Year	106.93	-4.09	-0.4	-2.85	-0.38	0.000164	1.09	97.69	37.19	0.12
WP-20 Canal	Lower	1750	10-Year	141.67	-4.09	0.03	-2.67	0.05	0.000192	1.24	114.25	40.65	0.13
WP-20 Canal	Lower	1750	25-Year	194.23	-4.09	0.47	-2.43	0.5	0.000243	1.46	133.01	44.25	0.15
WP-20 Canal	Lower	1750	50-Year	242.15	-4.09	0.89	-2.24	0.93	0.000265	1.59	152.38	55.86	0.16
WP-20 Canal	Lower	1750	100-Year	293.32	-4.09	1.3	-2.05	1.35	0.00028	1.7	172.76	66.81	0.16

HEC-RAS Output - Existing Conditions

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
				67.77	-4.19	-0.95	-3.17	-0.94	0.000108	0.83	81.74	34.59	0.1
				106.93	-4.19	-0.41	-2.95	-0.4	0.000156	1.06	101.04	38.99	0.12
				141.67	-4.19	0.01	-2.77	0.03	0.000187	1.19	118.59	43.99	0.13
				194.23	-4.19	0.45	-2.53	0.48	0.00024	1.4	138.96	49.16	0.15
WP-20 Canal	Lower	1650	50-Year	242.15	-4.19	0.87	-2.34	0.9	0.000261	1.51	160.65	54.13	0.15
WP-20 Canal	Lower	1650	100-Year	293.32	-4.19	1.28	-2.15	1.32	0.000273	1.59	183.99	63.84	0.16
WP-20 Canal	Lower	1600	2-Year	67.77	-4.24	-0.95	-3.23	-0.94	0.000102	0.81	83.3	34.75	0.09
WP-20 Canal	Lower	1600	5-Year	106.93	-4.24	-0.42	-2.99	-0.41	0.000155	1.04	102.95	40.7	0.12
WP-20 Canal	Lower	1600	10-Year	141.67	-4.24	0	-2.82	0.02	0.000188	1.17	121.39	46.83	0.13
WP-20 Canal	Lower	1600	25-Year	194.23	-4.24	0.43	-2.58	0.46	0.000241	1.36	143.16	59.85	0.15
WP-20 Canal	Lower	1600	50-Year	242.15	-4.24	0.85	-2.39	0.89	0.00026	1.45	166.75	84.06	0.15
WP-20 Canal	Lower	1600	100-Year	293.32	-4.24	1.27	-2.2	1.3	0.000269	1.52	192.44	101.59	0.16
WP-20 Canal	Lower	1500	2-Year	67.77	-4.34	-0.96	-3.33	-0.95	0.000091	0.78	86.47	35.06	0.09
WP-20 Canal	Lower	1500	5-Year	106.93	-4.34	-0.44	-3.09	-0.42	0.000133	1.01	105.71	38.74	0.11
WP-20 Canal	Lower	1500	10-Year	141.67	-4.34	-0.02	-2.91	0	0.000161	1.15	122.72	42.63	0.12
WP-20 Canal	Lower	1500	25-Year	194.23	-4.34	0.41	-2.68	0.44	0.00021	1.37	141.88	46.62	0.14
WP-20 Canal	Lower	1500	50-Year	242.15	-4.34	0.83	-2.48	0.86	0.000225	1.49	163.66	80.25	0.15
WP-20 Canal	Lower	1500	100-Year	293.32	-4.34	1.24	-2.29	1.28	0.000213	1.57	206.17	115.91	0.14
WP-20 Canal	Lower	1450	2-Year	67.77	-4.39	-0.97	-3.37	-0.96	0.000087	0.77	88.08	35.23	0.09
WP-20 Canal	Lower	1450	5-Year	106.93	-4.39	-0.44	-3.15	-0.43	0.000127	1	107.46	38.98	0.11
WP-20 Canal	Lower	1450	10-Year	141.67	-4.39	-0.03	-2.97	-0.01	0.000152	1.14	124.38	42.2	0.12
WP-20 Canal	Lower	1450	25-Year	194.23	-4.39	0.4	-2.74	0.43	0.000198	1.36	143.1	45.49	0.13
WP-20 Canal	Lower	1450	50-Year	242.15	-4.39	0.82	-2.53	0.85	0.000219	1.49	162.66	48.7	0.14
WP-20 Canal	Lower	1450	100-Year	293.32	-4.39	1.23	-2.35	1.27	0.000232	1.6	185.31	64.55	0.15
WP-20 Canal	Lower	1400	2-Year	67.77	-4.44	-0.97		-0.96	0.000082	0.76	89.7	35.39	0.08
WP-20 Canal	Lower	1400	5-Year	106.93	-4.44	-0.45		-0.43	0.000132	0.97	109.84	42.58	0.11
WP-20 Canal	Lower	1400	10-Year	141.67	-4.44	-0.03		-0.01	0.000164	1.1	128.95	49.32	0.12
WP-20 Canal	Lower	1400	25-Year	194.23	-4.44	0.39		0.42	0.000214	1.28	151.42	56.21	0.14
WP-20 Canal	Lower	1400	50-Year	242.15	-4.44	0.81		0.84	0.000226	1.38	176.52	66.07	0.14
WP-20 Canal	Lower	1400	100-Year	293.32	-4.44	1.22		1.25	0.000215	1.44	209.23	96.01	0.14
WP-20 Canal	Lower	1300	2-Year	67.77	-4.55	-0.98	-3.53	-0.97	0.000075	0.73	93.39	36.53	0.08
WP-20 Canal	Lower	1300	5-Year	106.93	-4.55	-0.46	-3.31	-0.45	0.000115	0.94	113.64	41.56	0.1
WP-20 Canal	Lower	1300	10-Year	141.67	-4.55	-0.05	-3.13	-0.03	0.000139	1.08	131.6	45.44	0.11
WP-20 Canal	Lower	1300	25-Year	194.23	-4.55	0.37	-2.89	0.4	0.000183	1.28	151.55	49.39	0.13
WP-20 Canal	Lower	1300	50-Year	242.15	-4.55	0.79	-2.69	0.82	0.000203	1.4	172.74	53.27	0.14
WP-20 Canal	Lower	1300	100-Year	293.32	-4.55	1.2	-2.51	1.23	0.000217	1.5	195.4	57.12	0.14
WP-20 Canal	Lower	1250	2-Year	67.77	-4.6	-0.98	-3.58	-0.97	0.000071	0.71	95.08	36.76	0.08
WP-20 Canal	Lower	1250	5-Year	106.93	-4.6	-0.47	-3.35	-0.45	0.000107	0.93	115.07	40.68	0.1
WP-20 Canal	Lower	1250	10-Year	141.67	-4.6	-0.05	-3.18	-0.04	0.00013	1.07	132.45	43.75	0.11
WP-20 Canal	Lower	1250	25-Year	194.23	-4.6	0.36	-2.94	0.39	0.000172	1.28	151.4	46.86	0.13
WP-20 Canal	Lower	1250	50-Year	242.15	-4.6	0.78	-2.74	0.81	0.000193	1.41	171.3	49.92	0.13
WP-20 Canal	Lower	1250	100-Year	293.32	-4.6	1.19	-2.55	1.22	0.000208	1.52	192.35	52.96	0.14
WP-20 Canal	Lower	1150	2-Year	67.77	-4.7	-0.99	-3.68	-0.98	0.000066	0.69	98.65	38.25	0.08
WP-20 Canal	Lower	1150	5-Year	106.93	-4.7	-0.47	-3.46	-0.46	0.000103	0.89	119.59	43.52	0.1
WP-20 Canal	Lower	1150	10-Year	141.67	-4.7	-0.07	-3.28	-0.05	0.000126	1.02	138.29	47.73	0.11
WP-20 Canal	Lower	1150	25-Year	194.23	-4.7	0.35	-3.04	0.37	0.000168	1.22	159.4	55.2	0.12
WP-20 Canal	Lower	1150	50-Year	242.15	-4.7	0.76	-2.85	0.79	0.000169	1.33	186.47	76.53	0.13
WP-20 Canal	Lower	1150	100-Year	293.32	-4.7	1.17	-2.66	1.2	0.000166	1.42	222.89	107.58	0.13
Schneider Cana	Upper	29400	2-Year	112	-3.88	-0.64		-0.63	0.000066	0.74	150.46	52.95	0.08
Schneider Cana	Upper	29400	5-Year	174	-3.88	0.02		0.03	0.000084	0.93	186.2	55.58	0.09
Schneider Cana	Upper	29400	10-Year	222	-3.88	0.49		0.51	0.000092	1.04	213.28	57.5	0.1
Schneider Cana	Upper	29400	25-Year	291	-3.88	1.03		1.05	0.000105	1.19	244.57	59.64	0.1
Schneider Cana	Upper	29400	50-Year	348	-3.88	1.49		1.51	0.000112	1.28	272.46	62.34	0.11
Schneider Cana	Upper	29400	100-Year	405	-3.88	1.93		1.95	0.000117	1.34	306.46	94.6	0.11
Schneider Cana	Upper	29300	2-Year	112	-3.89	-0.65		-0.64	0.000066	0.74	150.63	52.96	0.08
Schneider Cana	Upper	29300	5-Year	174	-3.89	0.01		0.02	0.000084	0.93	186.27	55.58	0.09

HEC-RAS Output - Existing Conditions

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Upper	29300	10-Year	222	-3.89	0.49		0.5	0.000092	1.04	213.31	57.49	0.1
Schneider Cana	Upper	29300	25-Year	291	-3.89	1.02		1.04	0.000105	1.19	244.51	59.62	0.1
Schneider Cana	Upper	29300	50-Year	348	-3.89	1.48		1.5	0.00011	1.28	273.26	73.06	0.11
Schneider Cana	Upper	29300	100-Year	405	-3.89	1.91		1.94	0.00011	1.35	306.73	78.83	0.11
Schneider Cana	Upper	29200	2-Year	112	-3.9	-0.66	-3.29	-0.65	0.000066	0.74	150.82	52.98	0.08
Schneider Cana	Upper	29200	5-Year	174	-3.9	0	-3.08	0.01	0.000084	0.93	186.38	55.6	0.09
Schneider Cana	Upper	29200	10-Year	222	-3.9	0.48	-2.93	0.49	0.000092	1.04	213.39	57.52	0.1
Schneider Cana	Upper	29200	25-Year	291	-3.9	1.01	-2.75	1.03	0.000105	1.19	244.52	59.64	0.1
Schneider Cana	Upper	29200	50-Year	348	-3.9	1.47	-2.59	1.49	0.00011	1.28	272.28	61.48	0.11
Schneider Cana	Upper	29200	100-Year	405	-3.9	1.9	-2.47	1.93	0.000113	1.35	299.46	63.22	0.11
Schneider Cana	Upper	29100	2-Year	112	-3.91	-0.66	-3.3	-0.65	0.000066	0.74	151	52.99	0.08
Schneider Cana	Upper	29100	5-Year	174	-3.91	-0.01	-3.08	0	0.000084	0.93	186.46	55.6	0.09
Schneider Cana	Upper	29100	10-Year	222	-3.91	0.47	-2.94	0.48	0.000092	1.04	213.42	57.51	0.1
Schneider Cana	Upper	29100	25-Year	291	-3.91	1	-2.75	1.02	0.000105	1.19	244.47	59.63	0.1
Schneider Cana	Upper	29100	50-Year	348	-3.91	1.46	-2.61	1.48	0.00011	1.28	272.2	61.46	0.11
Schneider Cana	Upper	29100	100-Year	405	-3.91	1.89	-2.48	1.92	0.000113	1.35	299.35	63.2	0.11
Schneider Cana	Upper	29000	2-Year	112	-3.92	-0.67		-0.66	0.000065	0.74	151.18	53	0.08
Schneider Cana	Upper	29000	5-Year	174	-3.92	-0.02		0	0.000084	0.93	186.54	55.6	0.09
Schneider Cana	Upper	29000	10-Year	222	-3.92	0.46		0.48	0.000091	1.04	213.46	57.5	0.1
Schneider Cana	Upper	29000	25-Year	291	-3.92	0.99		1.01	0.000105	1.19	244.42	59.61	0.1
Schneider Cana	Upper	29000	50-Year	348	-3.92	1.44		1.47	0.000108	1.28	275.83	80.39	0.11
Schneider Cana	Upper	29000	100-Year	405	-3.92	1.88		1.91	0.000108	1.34	315.54	120.07	0.11
Schneider Cana	Upper	28900	2-Year	112	-3.93	-0.68	-3.31	-0.67	0.000065	0.74	151.37	53.02	0.08
Schneider Cana	Upper	28900	5-Year	174	-3.93	-0.03	-3.11	-0.01	0.000084	0.93	186.64	55.62	0.09
Schneider Cana	Upper	28900	10-Year	222	-3.93	0.45	-2.96	0.47	0.000091	1.04	213.53	57.52	0.1
Schneider Cana	Upper	28900	25-Year	291	-3.93	0.98	-2.77	1	0.000105	1.19	244.42	59.63	0.1
Schneider Cana	Upper	28900	50-Year	348	-3.93	1.43	-2.63	1.46	0.000109	1.28	274.3	79.19	0.11
Schneider Cana	Upper	28900	100-Year	405	-3.93	1.87	-2.49	1.9	0.000109	1.35	306.07	99.41	0.11
Schneider Cana	Upper	28800	2-Year	112	-3.94	-0.68		-0.67	0.000065	0.74	151.55	53.03	0.08
Schneider Cana	Upper	28800	5-Year	174	-3.94	-0.03		-0.02	0.000084	0.93	186.72	55.62	0.09
Schneider Cana	Upper	28800	10-Year	222	-3.94	0.44		0.46	0.000091	1.04	213.56	57.51	0.1
Schneider Cana	Upper	28800	25-Year	291	-3.94	0.97		0.99	0.000105	1.19	244.37	60.26	0.1
Schneider Cana	Upper	28800	50-Year	348	-3.94	1.42		1.45	0.000108	1.28	275.2	80.03	0.11
Schneider Cana	Upper	28800	100-Year	405	-3.94	1.86		1.89	0.000105	1.34	324.73	138.05	0.11
Schneider Cana	Upper	28700	2-Year	112	-3.95	-0.69	-3.33	-0.68	0.000065	0.74	151.74	53.05	0.08
Schneider Cana	Upper	28700	5-Year	174	-3.95	-0.04	-3.13	-0.03	0.000084	0.93	186.82	55.63	0.09
Schneider Cana	Upper	28700	10-Year	222	-3.95	0.43	-2.98	0.45	0.000091	1.04	213.62	57.52	0.1
Schneider Cana	Upper	28700	25-Year	291	-3.95	0.96	-2.8	0.98	0.000106	1.19	244.34	66.13	0.1
Schneider Cana	Upper	28700	50-Year	348	-3.95	1.41	-2.64	1.44	0.000108	1.27	280.88	99.34	0.11
Schneider Cana	Upper	28700	100-Year	405	-3.95	1.85	-2.52	1.88	0.000106	1.33	325.34	122.21	0.11
Schneider Cana	Upper	28600	2-Year	112	-3.96	-0.69	-3.34	-0.69	0.000064	0.74	151.93	53.06	0.08
Schneider Cana	Upper	28600	5-Year	174	-3.96	-0.05	-3.13	-0.04	0.000083	0.93	186.91	55.63	0.09
Schneider Cana	Upper	28600	10-Year	222	-3.96	0.42	-2.99	0.44	0.000091	1.04	213.67	57.52	0.1
Schneider Cana	Upper	28600	25-Year	291	-3.96	0.94	-2.8	0.97	0.000106	1.19	244.3	68.03	0.1
Schneider Cana	Upper	28600	50-Year	348	-3.96	1.4	-2.66	1.43	0.00011	1.28	271.91	84.25	0.11
Schneider Cana	Upper	28600	100-Year	405	-3.96	1.84	-2.52	1.87	0.000109	1.33	324.98	119.52	0.11
Schneider Cana	Upper	28500	2-Year	112	-3.97	-0.7	-3.35	-0.69	0.000064	0.74	152.12	53.07	0.08
Schneider Cana	Upper	28500	5-Year	174	-3.97	-0.06	-3.15	-0.05	0.000083	0.93	187	71.86	0.09
Schneider Cana	Upper	28500	10-Year	222	-3.97	0.41	-3	0.43	0.000091	1.04	213.71	95.5	0.09
Schneider Cana	Upper	28500	25-Year	291	-3.97	0.93	-2.82	0.96	0.000106	1.19	244.26	107.15	0.1
Schneider Cana	Upper	28500	50-Year	348	-3.97	1.39	-2.67	1.42	0.00011	1.28	271.84	120.72	0.11
Schneider Cana	Upper	28500	100-Year	405	-3.97	1.83	-2.54	1.85	0.000113	1.35	298.96	126.07	0.11
Schneider Cana	Upper	28400	2-Year	112	-3.98	-0.71	-3.37	-0.7	0.000064	0.74	152.31	53.09	0.08
Schneider Cana	Upper	28400	5-Year	174	-3.98	-0.07	-3.16	-0.05	0.000083	0.93	187.11	55.65	0.09
Schneider Cana	Upper	28400	10-Year	222	-3.98	0.4	-3.01	0.42	0.000091	1.04	213.78	57.54	0.09
Schneider Cana	Upper	28400	25-Year	291	-3.98	0.92	-2.82	0.95	0.000106	1.19	245.17	79.09	0.1

HEC-RAS Output - Existing Conditions

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Upper	28400	50-Year	348	-3.98	1.38	-2.68	1.4	0.000108	1.28	279.88	123.81	0.11
Schneider Cana	Upper	28400	100-Year	405	-3.98	1.82	-2.54	1.84	0.000102	1.31	348.81	131.6	0.1
Schneider Cana	Upper	28300	2-Year	112	-3.99	-0.71	-3.37	-0.71	0.000064	0.73	152.51	53.11	0.08
Schneider Cana	Upper	28300	5-Year	174	-3.99	-0.08	-3.16	-0.06	0.000082	0.93	188.01	63.17	0.09
Schneider Cana	Upper	28300	10-Year	222	-3.99	0.39	-3.02	0.41	0.000088	1.03	219.18	67.58	0.09
Schneider Cana	Upper	28300	25-Year	291	-3.99	0.91	-2.83	0.94	0.000099	1.18	254.99	73.4	0.1
Schneider Cana	Upper	28300	50-Year	348	-3.99	1.37	-2.69	1.39	0.000098	1.26	303.97	142.08	0.1
Schneider Cana	Upper	28300	100-Year	405	-3.99	1.81	-2.56	1.83	0.000092	1.29	366.48	143.55	0.1
Schneider Cana	Upper	28200	2-Year	112	-4	-0.72		-0.71	0.000063	0.73	152.7	53.12	0.08
Schneider Cana	Upper	28200	5-Year	174	-4	-0.08		-0.07	0.000083	0.93	187.3	55.67	0.09
Schneider Cana	Upper	28200	10-Year	222	-4	0.39		0.4	0.000091	1.04	213.9	57.55	0.09
Schneider Cana	Upper	28200	25-Year	291	-4	0.9		0.93	0.000106	1.19	244.27	63.17	0.1
Schneider Cana	Upper	28200	50-Year	348	-4	1.36		1.38	0.000107	1.26	296.08	130.73	0.11
Schneider Cana	Upper	28200	100-Year	405	-4	1.8		1.82	0.0001	1.3	354.29	138.56	0.1
Schneider Cana	Upper	28100	2-Year	112	-4.01	-0.73	-3.39	-0.72	0.000063	0.73	152.89	53.13	0.08
Schneider Cana	Upper	28100	5-Year	174	-4.01	-0.09	-3.19	-0.08	0.000083	0.93	187.39	55.67	0.09
Schneider Cana	Upper	28100	10-Year	222	-4.01	0.38	-3.04	0.39	0.000091	1.04	213.95	57.55	0.09
Schneider Cana	Upper	28100	25-Year	291	-4.01	0.89	-2.85	0.91	0.000104	1.19	248.41	78.82	0.1
Schneider Cana	Upper	28100	50-Year	348	-4.01	1.35	-2.71	1.37	0.000103	1.27	292.99	109.42	0.1
Schneider Cana	Upper	28100	100-Year	405	-4.01	1.79	-2.58	1.81	0.000098	1.31	342.38	115.22	0.1
Schneider Cana	Upper	28000	2-Year	112	-4.02	-0.73		-0.72	0.000063	0.73	153.09	53.15	0.08
Schneider Cana	Upper	28000	5-Year	174	-4.02	-0.1		-0.09	0.000083	0.93	187.49	55.68	0.09
Schneider Cana	Upper	28000	10-Year	222	-4.02	0.37		0.38	0.000091	1.04	214.01	60.37	0.09
Schneider Cana	Upper	28000	25-Year	291	-4.02	0.88		0.9	0.000103	1.18	261.92	120.98	0.1
Schneider Cana	Upper	28000	50-Year	348	-4.02	1.34		1.36	0.0001	1.23	320.47	130.72	0.1
Schneider Cana	Upper	28000	100-Year	405	-4.02	1.78		1.8	0.000093	1.25	378.11	131.6	0.1
Schneider Cana	Upper	27900	2-Year	112	-4.03	-0.74	-3.41	-0.73	0.000063	0.73	153.29	53.17	0.08
Schneider Cana	Upper	27900	5-Year	174	-4.03	-0.11	-3.2	-0.1	0.000083	0.93	187.59	55.69	0.09
Schneider Cana	Upper	27900	10-Year	222	-4.03	0.36	-3.06	0.38	0.000091	1.04	214.06	57.56	0.09
Schneider Cana	Upper	27900	25-Year	291	-4.03	0.87	-2.87	0.89	0.000103	1.19	251.56	89.3	0.1
Schneider Cana	Upper	27900	50-Year	348	-4.03	1.33	-2.73	1.35	0.000102	1.26	289.97	118.8	0.1
Schneider Cana	Upper	27900	100-Year	405	-4.03	1.77	-2.59	1.79	0.000096	1.3	356.71	136.7	0.1
Schneider Cana	Upper	27800	2-Year	112	-4.04	-0.75	-3.43	-0.74	0.000062	0.73	153.49	53.17	0.08
Schneider Cana	Upper	27800	5-Year	174	-4.04	-0.12	-3.21	-0.1	0.000082	0.93	187.68	55.68	0.09
Schneider Cana	Upper	27800	10-Year	222	-4.04	0.35	-3.07	0.37	0.000091	1.04	214.1	83.1	0.09
Schneider Cana	Upper	27800	25-Year	291	-4.04	0.86	-2.88	0.88	0.000106	1.19	244.07	127.64	0.1
Schneider Cana	Upper	27800	50-Year	348	-4.04	1.32	-2.74	1.34	0.000095	1.2	335.7	130.72	0.1
Schneider Cana	Upper	27800	100-Year	405	-4.04	1.76	-2.61	1.78	0.000089	1.22	393.49	131.6	0.1
Schneider Cana	Upper	27700	2-Year	112	-4.05	-0.75	-3.43	-0.74	0.000062	0.73	153.69	53.19	0.08
Schneider Cana	Upper	27700	5-Year	174	-4.05	-0.13	-3.22	-0.11	0.000082	0.93	187.78	67.11	0.09
Schneider Cana	Upper	27700	10-Year	222	-4.05	0.34	-3.08	0.36	0.000091	1.04	214.16	74.17	0.09
Schneider Cana	Upper	27700	25-Year	291	-4.05	0.85	-2.9	0.87	0.000106	1.19	244.05	82.86	0.1
Schneider Cana	Upper	27700	50-Year	348	-4.05	1.31	-2.75	1.33	0.000103	1.24	315.13	130.71	0.1
Schneider Cana	Upper	27700	100-Year	405	-4.05	1.75	-2.61	1.77	0.000095	1.26	377.28	150.68	0.1
Schneider Cana	Upper	27600	2-Year	112	-4.06	-0.76	-3.44	-0.75	0.000062	0.73	153.89	53.2	0.08
Schneider Cana	Upper	27600	5-Year	174	-4.06	-0.13	-3.23	-0.12	0.000082	0.93	187.87	55.7	0.09
Schneider Cana	Upper	27600	10-Year	222	-4.06	0.33	-3.09	0.35	0.000091	1.04	214.21	57.56	0.09
Schneider Cana	Upper	27600	25-Year	291	-4.06	0.84	-2.9	0.86	0.000106	1.19	245.11	73.47	0.1
Schneider Cana	Upper	27600	50-Year	348	-4.06	1.3	-2.76	1.32	0.000108	1.27	283.63	114.51	0.11
Schneider Cana	Upper	27600	100-Year	405	-4.06	1.74	-2.62	1.76	0.000103	1.32	342.48	131.59	0.11
Schneider Cana	Upper	27500	2-Year	112	-4.07	-0.76	-3.45	-0.76	0.000062	0.73	154.1	53.23	0.08
Schneider Cana	Upper	27500	5-Year	174	-4.07	-0.14	-3.24	-0.13	0.000082	0.93	187.99	55.72	0.09
Schneider Cana	Upper	27500	10-Year	222	-4.07	0.32	-3.1	0.34	0.00009	1.04	214.28	57.57	0.09
Schneider Cana	Upper	27500	25-Year	291	-4.07	0.83	-2.92	0.85	0.000106	1.19	244.1	64.25	0.1
Schneider Cana	Upper	27500	50-Year	348	-4.07	1.28	-2.77	1.31	0.000108	1.28	278.59	90.29	0.11
Schneider Cana	Upper	27500	100-Year	405	-4.07	1.72	-2.64	1.75	0.000106	1.33	333.42	131.6	0.11

HEC-RAS Output - Existing Conditions

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Upper	27400	2-Year	112	-4.08	-0.77	-3.46	-0.76	0.000061	0.73	154.3	53.24	0.08
Schneider Cana	Upper	27400	5-Year	174	-4.08	-0.15	-3.26	-0.14	0.000082	0.93	188.09	55.72	0.09
Schneider Cana	Upper	27400	10-Year	222	-4.08	0.31	-3.12	0.33	0.00009	1.04	214.33	57.58	0.09
Schneider Cana	Upper	27400	25-Year	291	-4.08	0.82	-2.92	0.84	0.000106	1.19	243.95	59.6	0.1
Schneider Cana	Upper	27400	50-Year	348	-4.08	1.27	-2.78	1.3	0.000111	1.28	271.45	61.42	0.11
Schneider Cana	Upper	27400	100-Year	405	-4.08	1.71	-2.64	1.74	0.000114	1.36	298.8	81.78	0.11
Schneider Cana	Upper	27300	2-Year	112	-4.09	-0.78	-3.47	-0.77	0.000061	0.72	154.51	53.26	0.07
Schneider Cana	Upper	27300	5-Year	174	-4.09	-0.16	-3.26	-0.15	0.000082	0.92	188.19	55.73	0.09
Schneider Cana	Upper	27300	10-Year	222	-4.09	0.3	-3.12	0.32	0.00009	1.04	214.39	57.58	0.09
Schneider Cana	Upper	27300	25-Year	291	-4.09	0.81	-2.94	0.83	0.000106	1.19	243.91	59.6	0.1
Schneider Cana	Upper	27300	50-Year	348	-4.09	1.26	-2.79	1.29	0.000111	1.28	271.38	61.42	0.11
Schneider Cana	Upper	27300	100-Year	405	-4.09	1.7	-2.66	1.73	0.000114	1.35	299.92	69.57	0.11
Schneider Cana	Upper	27200	2-Year	112	-4.1	-0.78	-3.48	-0.77	0.000061	0.72	154.71	53.27	0.07
Schneider Cana	Upper	27200	5-Year	174	-4.1	-0.17	-3.27	-0.15	0.000082	0.92	188.28	55.73	0.09
Schneider Cana	Upper	27200	10-Year	222	-4.1	0.3	-3.13	0.31	0.00009	1.04	214.43	57.58	0.09
Schneider Cana	Upper	27200	25-Year	291	-4.1	0.8	-2.95	0.82	0.000106	1.19	243.86	59.58	0.1
Schneider Cana	Upper	27200	50-Year	348	-4.1	1.25	-2.8	1.28	0.000111	1.28	271.29	61.4	0.11
Schneider Cana	Upper	27200	100-Year	405	-4.1	1.69	-2.66	1.72	0.000114	1.36	298.59	63.92	0.11
Schneider Cana	Upper	27100	2-Year	112	-4.11	-0.79	-3.49	-0.78	0.000061	0.72	154.93	53.29	0.07
Schneider Cana	Upper	27100	5-Year	174	-4.11	-0.17	-3.28	-0.16	0.000081	0.92	188.39	55.74	0.09
Schneider Cana	Upper	27100	10-Year	222	-4.11	0.29	-3.14	0.3	0.00009	1.03	214.5	57.59	0.09
Schneider Cana	Upper	27100	25-Year	291	-4.11	0.79	-2.95	0.81	0.000106	1.19	243.84	59.59	0.1
Schneider Cana	Upper	27100	50-Year	348	-4.11	1.24	-2.81	1.26	0.000124	1.27	273.2	68.17	0.11
Schneider Cana	Upper	27100	100-Year	405	-4.11	1.68	-2.68	1.71	0.00013	1.33	304.28	73.59	0.12
Schneider Cana	Upper	27000	2-Year	112	-4.12	-0.79	-3.5	-0.79	0.00006	0.72	155.14	53.3	0.07
Schneider Cana	Upper	27000	5-Year	174	-4.12	-0.18	-3.29	-0.17	0.000081	0.92	188.49	55.75	0.09
Schneider Cana	Upper	27000	10-Year	222	-4.12	0.28	-3.15	0.29	0.00009	1.03	214.55	57.59	0.09
Schneider Cana	Upper	27000	25-Year	291	-4.12	0.78	-2.96	0.8	0.000106	1.19	243.79	59.58	0.1
Schneider Cana	Upper	27000	50-Year	348	-4.12	1.23	-2.82	1.25	0.000111	1.28	271.08	61.39	0.11
Schneider Cana	Upper	27000	100-Year	405	-4.12	1.66	-2.68	1.69	0.000114	1.36	298.31	63.14	0.11
Schneider Cana	Upper	26900	2-Year	112	-4.13	-0.8	-3.51	-0.79	0.00006	0.72	155.35	53.32	0.07
Schneider Cana	Upper	26900	5-Year	174	-4.13	-0.19	-3.3	-0.18	0.000081	0.92	188.6	55.76	0.09
Schneider Cana	Upper	26900	10-Year	222	-4.13	0.27	-3.16	0.28	0.00009	1.03	214.61	57.59	0.09
Schneider Cana	Upper	26900	25-Year	291	-4.13	0.77	-2.97	0.79	0.000106	1.19	243.76	59.58	0.1
Schneider Cana	Upper	26900	50-Year	348	-4.13	1.22	-2.83	1.24	0.000111	1.28	271.01	64.78	0.11
Schneider Cana	Upper	26900	100-Year	405	-4.13	1.65	-2.7	1.68	0.000114	1.36	298.22	87.28	0.11
Schneider Cana	Upper	26800	2-Year	112	-4.14	-0.81	-3.52	-0.8	0.00006	0.72	155.56	53.33	0.07
Schneider Cana	Upper	26800	5-Year	174	-4.14	-0.2	-3.31	-0.19	0.000081	0.92	188.7	55.76	0.09
Schneider Cana	Upper	26800	10-Year	222	-4.14	0.26	-3.17	0.28	0.00009	1.03	214.66	57.6	0.09
Schneider Cana	Upper	26800	25-Year	291	-4.14	0.75	-2.98	0.78	0.000106	1.19	243.72	59.58	0.1
Schneider Cana	Upper	26800	50-Year	348	-4.14	1.2	-2.84	1.23	0.000111	1.28	270.94	61.38	0.11
Schneider Cana	Upper	26800	100-Year	405	-4.14	1.64	-2.7	1.67	0.000114	1.36	298.13	71.28	0.11
Schneider Cana	Upper	26700	2-Year	112	-4.15	-0.81	-3.53	-0.8	0.00006	0.72	155.78	53.35	0.07
Schneider Cana	Upper	26700	5-Year	174	-4.15	-0.21	-3.32	-0.19	0.000081	0.92	188.81	60.53	0.09
Schneider Cana	Upper	26700	10-Year	222	-4.15	0.25	-3.18	0.27	0.00009	1.03	214.72	68.14	0.09
Schneider Cana	Upper	26700	25-Year	291	-4.15	0.74	-2.99	0.77	0.000106	1.19	243.68	76.51	0.1
Schneider Cana	Upper	26700	50-Year	348	-4.15	1.19	-2.85	1.22	0.000112	1.28	270.87	96.11	0.11
Schneider Cana	Upper	26700	100-Year	405	-4.15	1.63	-2.72	1.66	0.000104	1.31	338.38	109.19	0.11
Schneider Cana	Upper	26600	2-Year	112	-4.16	-0.82	-3.54	-0.81	0.000059	0.72	155.99	53.37	0.07
Schneider Cana	Upper	26600	5-Year	174	-4.16	-0.22	-3.33	-0.2	0.000081	0.92	188.92	55.78	0.09
Schneider Cana	Upper	26600	10-Year	222	-4.16	0.24	-3.19	0.26	0.00009	1.03	214.79	57.61	0.09
Schneider Cana	Upper	26600	25-Year	291	-4.16	0.73	-3	0.76	0.000106	1.19	243.65	59.58	0.1
Schneider Cana	Upper	26600	50-Year	348	-4.16	1.18	-2.86	1.21	0.000112	1.29	270.81	115.28	0.11
Schneider Cana	Upper	26600	100-Year	405	-4.16	1.62	-2.73	1.65	0.000107	1.31	343.47	131.56	0.11
Schneider Cana	Upper	26500	2-Year	112	-4.17	-0.82	-3.55	-0.82	0.000059	0.72	156.21	53.38	0.07

HEC-RAS Output - Existing Conditions

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Upper	26500	5-Year	174	-4.17	-0.22	-3.34	-0.21	0.000081	0.92	189.02	55.79	0.09
Schneider Cana	Upper	26500	10-Year	222	-4.17	0.23	-3.2	0.25	0.00009	1.03	214.84	57.61	0.09
Schneider Cana	Upper	26500	25-Year	291	-4.17	0.72	-3.01	0.75	0.000106	1.19	243.6	64.15	0.1
Schneider Cana	Upper	26500	50-Year	348	-4.17	1.17	-2.87	1.2	0.000112	1.29	270.72	94.33	0.11
Schneider Cana	Upper	26500	100-Year	405	-4.17	1.61	-2.74	1.64	0.000115	1.36	297.89	117.24	0.11
Schneider Cana	Upper	26400	2-Year	112	-4.18	-0.83	-3.56	-0.82	0.000059	0.72	156.43	53.4	0.07
Schneider Cana	Upper	26400	5-Year	174	-4.18	-0.23	-3.35	-0.22	0.000081	0.92	189.13	55.79	0.09
Schneider Cana	Upper	26400	10-Year	222	-4.18	0.22	-3.21	0.24	0.00009	1.03	214.9	57.61	0.09
Schneider Cana	Upper	26400	25-Year	291	-4.18	0.71	-3.02	0.73	0.000107	1.19	243.56	63.39	0.1
Schneider Cana	Upper	26400	50-Year	348	-4.18	1.16	-2.88	1.19	0.000112	1.29	270.65	79.58	0.11
Schneider Cana	Upper	26400	100-Year	405	-4.18	1.6	-2.74	1.63	0.000115	1.36	297.8	86.3	0.11
Schneider Cana	Upper	26300	2-Year	112	-4.19	-0.84	-3.58	-0.83	0.000059	0.71	156.65	53.42	0.07
Schneider Cana	Upper	26300	5-Year	174	-4.19	-0.24	-3.37	-0.23	0.00008	0.92	189.24	55.8	0.09
Schneider Cana	Upper	26300	10-Year	222	-4.19	0.21	-3.22	0.23	0.00009	1.03	214.96	57.62	0.09
Schneider Cana	Upper	26300	25-Year	291	-4.19	0.7	-3.03	0.72	0.000107	1.19	243.52	68.81	0.1
Schneider Cana	Upper	26300	50-Year	348	-4.19	1.15	-2.89	1.17	0.000112	1.29	270.57	82.73	0.11
Schneider Cana	Upper	26300	100-Year	405	-4.19	1.59	-2.75	1.61	0.000115	1.36	297.71	91.86	0.11
Schneider Cana	Upper	26200	2-Year	112	-4.2	-0.84	-3.59	-0.83	0.000058	0.71	156.87	53.43	0.07
Schneider Cana	Upper	26200	5-Year	174	-4.2	-0.25	-3.38	-0.23	0.00008	0.92	189.35	55.8	0.09
Schneider Cana	Upper	26200	10-Year	222	-4.2	0.21	-3.23	0.22	0.00009	1.03	215.01	57.61	0.09
Schneider Cana	Upper	26200	25-Year	291	-4.2	0.69	-3.04	0.71	0.000107	1.19	244.17	67.26	0.1
Schneider Cana	Upper	26200	50-Year	348	-4.2	1.14	-2.9	1.16	0.000111	1.28	279.33	89.3	0.11
Schneider Cana	Upper	26200	100-Year	405	-4.2	1.57	-2.77	1.6	0.000108	1.34	325.69	111.92	0.11
Schneider Cana	Upper	26100	2-Year	112	-4.21	-0.85	-3.59	-0.84	0.000058	0.71	157.09	53.45	0.07
Schneider Cana	Upper	26100	5-Year	174	-4.21	-0.26	-3.38	-0.24	0.00008	0.92	189.46	55.82	0.09
Schneider Cana	Upper	26100	10-Year	222	-4.21	0.2	-3.24	0.21	0.000089	1.03	215.08	57.62	0.09
Schneider Cana	Upper	26100	25-Year	291	-4.21	0.68	-3.05	0.7	0.000107	1.2	243.44	59.56	0.1
Schneider Cana	Upper	26100	50-Year	348	-4.21	1.13	-2.91	1.15	0.000111	1.29	271.53	83.41	0.11
Schneider Cana	Upper	26100	100-Year	405	-4.21	1.56	-2.77	1.59	0.000112	1.36	303.31	103.73	0.11
Schneider Cana	Upper	26000	2-Year	112	-4.22	-0.85		-0.85	0.000058	0.71	157.33	53.47	0.07
Schneider Cana	Upper	26000	5-Year	174	-4.22	-0.26		-0.25	0.00008	0.92	189.58	55.83	0.09
Schneider Cana	Upper	26000	10-Year	222	-4.22	0.19		0.2	0.000089	1.03	215.15	57.64	0.09
Schneider Cana	Upper	26000	25-Year	291	-4.22	0.67		0.69	0.000107	1.2	243.42	59.57	0.1
Schneider Cana	Upper	26000	50-Year	348	-4.22	1.12		1.14	0.000112	1.29	270.37	61.35	0.11
Schneider Cana	Upper	26000	100-Year	405	-4.22	1.55		1.58	0.000114	1.36	303.05	114.87	0.11
Schneider Cana	Upper	25900	2-Year	112	-4.23	-0.86	-3.61	-0.85	0.000058	0.71	157.54	53.48	0.07
Schneider Cana	Upper	25900	5-Year	174	-4.23	-0.27	-3.4	-0.26	0.00008	0.92	189.68	55.83	0.09
Schneider Cana	Upper	25900	10-Year	222	-4.23	0.18	-3.26	0.19	0.000089	1.03	215.19	57.63	0.09
Schneider Cana	Upper	25900	25-Year	291	-4.23	0.66	-3.08	0.68	0.000107	1.2	243.35	66.78	0.1
Schneider Cana	Upper	25900	50-Year	348	-4.23	1.1	-2.93	1.13	0.000112	1.29	270.26	78.64	0.11
Schneider Cana	Upper	25900	100-Year	405	-4.23	1.54	-2.79	1.57	0.000115	1.36	297.33	97.67	0.11
Schneider Cana	Upper	25800	2-Year	112	-4.24	-0.87	-3.62	-0.86	0.000057	0.71	157.77	53.5	0.07
Schneider Cana	Upper	25800	5-Year	174	-4.24	-0.28	-3.41	-0.27	0.00008	0.92	189.8	55.84	0.09
Schneider Cana	Upper	25800	10-Year	222	-4.24	0.17	-3.27	0.19	0.000089	1.03	215.26	57.63	0.09
Schneider Cana	Upper	25800	25-Year	291	-4.24	0.65	-3.09	0.67	0.000107	1.2	243.31	59.55	0.1
Schneider Cana	Upper	25800	50-Year	348	-4.24	1.09	-2.94	1.12	0.000112	1.29	270.19	61.33	0.11
Schneider Cana	Upper	25800	100-Year	405	-4.24	1.53	-2.8	1.56	0.000115	1.36	297.24	63.07	0.11
Schneider Cana	Upper	25700	2-Year	112	-4.25	-0.87	-3.63	-0.86	0.000057	0.71	158	53.52	0.07
Schneider Cana	Upper	25700	5-Year	174	-4.25	-0.29	-3.43	-0.27	0.00008	0.92	189.91	55.85	0.09
Schneider Cana	Upper	25700	10-Year	222	-4.25	0.16	-3.28	0.18	0.000089	1.03	215.33	57.64	0.09
Schneider Cana	Upper	25700	25-Year	291	-4.25	0.64	-3.1	0.66	0.000107	1.2	243.28	59.55	0.1
Schneider Cana	Upper	25700	50-Year	348	-4.25	1.08	-2.95	1.11	0.000112	1.29	270.12	61.33	0.11
Schneider Cana	Upper	25700	100-Year	405	-4.25	1.52	-2.81	1.55	0.000115	1.36	297.16	88.22	0.11
Schneider Cana	Middle	25600	2-Year	191.23	-5.74	-0.87	-4.44	-0.86	0.000044	0.71	270.23	76.34	0.07
Schneider Cana	Middle	25600	5-Year	293.07	-5.74	-0.29	-4.15	-0.28	0.000066	0.93	315.67	79.64	0.08
Schneider Cana	Middle	25600	10-Year	367.33	-5.74	0.16	-3.97	0.17	0.000075	1.04	351.88	82.18	0.09

HEC-RAS Output - Existing Conditions

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Middle	25600	25-Year	469.77	-5.74	0.64	-3.75	0.66	0.00009	1.2	391.72	84.89	0.1
Schneider Cana	Middle	25600	50-Year	551.85	-5.74	1.08	-3.59	1.1	0.000096	1.28	430.16	109.76	0.1
Schneider Cana	Middle	25600	100-Year	630.68	-5.74	1.51	-3.45	1.54	0.00011	1.34	470.18	127.72	0.11
Schneider Cana	Middle	25500	2-Year	191.23	-5.74	-0.88		-0.87	0.000047	0.7	272.08	81.26	0.07
Schneider Cana	Middle	25500	5-Year	293.07	-5.74	-0.3		-0.28	0.000077	0.91	323.51	95.94	0.09
Schneider Cana	Middle	25500	10-Year	367.33	-5.74	0.15		0.17	0.00009	1	368.92	107.24	0.09
Schneider Cana	Middle	25500	25-Year	469.77	-5.74	0.63		0.65	0.000107	1.11	422.9	119.29	0.1
Schneider Cana	Middle	25500	50-Year	551.85	-5.74	1.07		1.09	0.000111	1.15	478.49	130.54	0.11
Schneider Cana	Middle	25500	100-Year	630.68	-5.74	1.51		1.53	0.000109	1.17	537.71	141.55	0.11
Schneider Cana	Middle	25400	2-Year	191.23	-5.74	-0.88	-4.44	-0.87	0.000045	0.7	272.28	79.39	0.07
Schneider Cana	Middle	25400	5-Year	293.07	-5.74	-0.3	-4.15	-0.29	0.000068	0.92	319.65	84.67	0.08
Schneider Cana	Middle	25400	10-Year	367.33	-5.74	0.14	-3.97	0.16	0.000077	1.03	358.25	88.74	0.09
Schneider Cana	Middle	25400	25-Year	469.77	-5.74	0.62	-3.75	0.64	0.000092	1.17	401.31	93.08	0.1
Schneider Cana	Middle	25400	50-Year	551.85	-5.74	1.06	-3.59	1.08	0.000097	1.24	443.46	97.13	0.1
Schneider Cana	Middle	25400	100-Year	630.68	-5.74	1.49	-3.45	1.52	0.0001	1.3	486.63	110.06	0.1
Schneider Cana	Middle	25364	2-Year	191.23	-5.92	-0.88	-4.59	-0.88	0.00004	0.67	285.56	82.21	0.06
Schneider Cana	Middle	25364	5-Year	293.07	-5.92	-0.31	-4.3	-0.3	0.000059	0.88	333.85	85.55	0.08
Schneider Cana	Middle	25364	10-Year	367.33	-5.92	0.14	-4.11	0.15	0.000067	0.99	372.41	87.92	0.08
Schneider Cana	Middle	25364	25-Year	469.77	-5.92	0.61	-3.89	0.63	0.000099	1.12	418.49	108.84	0.1
Schneider Cana	Middle	25364	50-Year	551.85	-5.92	1.05	-3.72	1.07	0.000098	1.18	467.53	112.29	0.1
Schneider Cana	Middle	25364	100-Year	630.68	-5.92	1.48	-3.57	1.51	0.000098	1.22	517.3	119.94	0.1
Schneider Cana	Middle	25300	2-Year	191.23	-6.02	-0.89	-4.58	-0.88	0.000042	0.68	282.75	82.63	0.06
Schneider Cana	Middle	25300	5-Year	293.07	-6.02	-0.31	-4.29	-0.3	0.000061	0.88	331.25	86.05	0.08
Schneider Cana	Middle	25300	10-Year	367.33	-6.02	0.13	-4.1	0.15	0.000069	0.99	369.95	88.33	0.09
Schneider Cana	Middle	25300	25-Year	469.77	-6.02	0.6	-3.88	0.62	0.000084	1.14	412.04	92.13	0.1
Schneider Cana	Middle	25300	50-Year	551.85	-6.02	1.04	-3.71	1.07	0.000101	1.21	456.13	108.06	0.1
Schneider Cana	Middle	25300	100-Year	630.68	-6.02	1.48	-3.56	1.5	0.000114	1.24	506.84	125.68	0.11
Schneider Cana	Middle	25200	2-Year	191.23	-6.17	-0.89	-4.62	-0.88	0.000044	0.68	279.35	83.39	0.07
Schneider Cana	Middle	25200	5-Year	293.07	-6.17	-0.32	-4.3	-0.31	0.000064	0.89	328.09	86.68	0.08
Schneider Cana	Middle	25200	10-Year	367.33	-6.17	0.12	-4.1	0.14	0.000071	1	367.01	88.95	0.09
Schneider Cana	Middle	25200	25-Year	469.77	-6.17	0.59	-3.87	0.61	0.000086	1.15	409.54	93.12	0.1
Schneider Cana	Middle	25200	50-Year	551.85	-6.17	1.03	-3.71	1.06	0.000107	1.22	454.17	111.73	0.11
Schneider Cana	Middle	25200	100-Year	630.68	-6.17	1.46	-3.56	1.49	0.000122	1.24	507.04	132.58	0.11
Schneider Cana	Middle	25100	2-Year	191.23	-6.32	-0.9	-4.68	-0.89	0.000045	0.69	277.49	83.35	0.07
Schneider Cana	Middle	25100	5-Year	293.07	-6.32	-0.33	-4.34	-0.31	0.000066	0.9	326.24	87.6	0.08
Schneider Cana	Middle	25100	10-Year	367.33	-6.32	0.12	-4.14	0.13	0.000075	1	365.82	91.35	0.09
Schneider Cana	Middle	25100	25-Year	469.77	-6.32	0.58	-3.9	0.6	0.000089	1.15	409.39	95.32	0.1
Schneider Cana	Middle	25100	50-Year	551.85	-6.32	1.02	-3.73	1.04	0.000103	1.22	453.13	107.81	0.1
Schneider Cana	Middle	25100	100-Year	630.68	-6.32	1.45	-3.58	1.48	0.000104	1.26	505.46	131.48	0.11
Schneider Cana	Middle	25000	2-Year	191.23	-6.48	-0.9	-4.77	-0.89	0.000045	0.69	277.27	83.47	0.07
Schneider Cana	Middle	25000	5-Year	293.07	-6.48	-0.33	-4.42	-0.32	0.000068	0.9	326.39	89.44	0.08
Schneider Cana	Middle	25000	10-Year	367.33	-6.48	0.11	-4.21	0.12	0.000076	1	366.73	93.09	0.09
Schneider Cana	Middle	25000	25-Year	469.77	-6.48	0.57	-3.94	0.59	0.00009	1.14	410.89	96.63	0.1
Schneider Cana	Middle	25000	50-Year	551.85	-6.48	1.01	-3.77	1.03	0.000092	1.22	454.34	106.25	0.1
Schneider Cana	Middle	25000	100-Year	630.68	-6.48	1.44	-3.6	1.47	0.000091	1.27	505.31	130.14	0.1
Schneider Cana	Middle	24900	2-Year	191.23	-6.63	-0.91	-4.85	-0.9	0.000045	0.69	279.03	83.94	0.07
Schneider Cana	Middle	24900	5-Year	293.07	-6.63	-0.34	-4.49	-0.33	0.000067	0.89	328.22	89.89	0.08
Schneider Cana	Middle	24900	10-Year	367.33	-6.63	0.1	-4.27	0.12	0.000076	1	368.84	94.21	0.09
Schneider Cana	Middle	24900	25-Year	469.77	-6.63	0.57	-4.01	0.59	0.000089	1.14	413.33	97.47	0.1
Schneider Cana	Middle	24900	50-Year	551.85	-6.63	1	-3.82	1.03	0.000092	1.21	456.66	101.48	0.1
Schneider Cana	Middle	24900	100-Year	630.68	-6.63	1.43	-3.65	1.46	0.00009	1.26	507.91	136.15	0.1
Schneider Cana	Middle	24800	2-Year	191.23	-6.78	-0.91	-4.95	-0.9	0.000042	0.68	283.14	83.53	0.06
Schneider Cana	Middle	24800	5-Year	293.07	-6.78	-0.35	-4.58	-0.33	0.000064	0.88	331.95	89.61	0.08
Schneider Cana	Middle	24800	10-Year	367.33	-6.78	0.09	-4.35	0.11	0.000074	0.99	372.39	94.34	0.09
Schneider Cana	Middle	24800	25-Year	469.77	-6.78	0.56	-4.08	0.58	0.000087	1.13	417.02	98.04	0.1
Schneider Cana	Middle	24800	50-Year	551.85	-6.78	0.99	-3.9	1.02	0.00009	1.2	460.52	100.91	0.1

HEC-RAS Output - Existing Conditions

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Middle	24800	100-Year	630.68	-6.78	1.43	-3.73	1.45	0.000089	1.25	515.09	141.97	0.1
Schneider Cana	Middle	24700	2-Year	191.23	-6.93	-0.91	-5.05	-0.91	0.000039	0.66	289.29	82.27	0.06
Schneider Cana	Middle	24700	5-Year	293.07	-6.93	-0.35	-4.67	-0.34	0.00006	0.87	337.29	88.61	0.08
Schneider Cana	Middle	24700	10-Year	367.33	-6.93	0.09	-4.45	0.1	0.00007	0.97	377.25	93.57	0.09
Schneider Cana	Middle	24700	25-Year	469.77	-6.93	0.55	-4.19	0.57	0.000084	1.11	421.64	98.49	0.09
Schneider Cana	Middle	24700	50-Year	551.85	-6.93	0.99	-4	1.01	0.000087	1.19	465.28	101.23	0.1
Schneider Cana	Middle	24700	100-Year	630.68	-6.93	1.42	-3.83	1.44	0.000094	1.24	510.21	110.9	0.1
Schneider Cana	Middle	24600	2-Year	191.23	-7.09	-0.92	-5.17	-0.91	0.000034	0.64	297.94	80.02	0.06
Schneider Cana	Middle	24600	5-Year	293.07	-7.09	-0.36	-4.8	-0.35	0.000055	0.85	344.63	86.81	0.08
Schneider Cana	Middle	24600	10-Year	367.33	-7.09	0.08	-4.58	0.09	0.000065	0.96	383.79	92.11	0.08
Schneider Cana	Middle	24600	25-Year	469.77	-7.09	0.54	-4.33	0.56	0.00008	1.1	427.45	97.69	0.09
Schneider Cana	Middle	24600	50-Year	551.85	-7.09	0.98	-4.14	1	0.000084	1.17	471.09	101.47	0.1
Schneider Cana	Middle	24600	100-Year	630.68	-7.09	1.41	-4	1.43	0.000091	1.22	515.88	110.44	0.1
Schneider Cana	Middle	24500	2-Year	191.23	-7.24	-0.92		-0.91	0.000029	0.62	309.4	78.13	0.05
Schneider Cana	Middle	24500	5-Year	293.07	-7.24	-0.36		-0.35	0.000048	0.83	354.36	84.02	0.07
Schneider Cana	Middle	24500	10-Year	367.33	-7.24	0.07		0.09	0.000058	0.94	392.31	89.81	0.08
Schneider Cana	Middle	24500	25-Year	469.77	-7.24	0.53		0.55	0.000074	1.08	434.89	95.88	0.09
Schneider Cana	Middle	24500	50-Year	551.85	-7.24	0.97		0.99	0.00008	1.15	477.97	101.66	0.09
Schneider Cana	Middle	24500	100-Year	630.68	-7.24	1.4		1.42	0.000084	1.21	522.98	108.1	0.1
Schneider Cana	Middle	24400	2-Year	191.23	-7.39	-0.92		-0.92	0.000025	0.59	322.27	77.93	0.05
Schneider Cana	Middle	24400	5-Year	293.07	-7.39	-0.37		-0.36	0.000041	0.8	366.45	80.94	0.07
Schneider Cana	Middle	24400	10-Year	367.33	-7.39	0.07		0.08	0.000051	0.91	402.69	86.24	0.07
Schneider Cana	Middle	24400	25-Year	469.77	-7.39	0.53		0.54	0.000067	1.06	443.65	93.05	0.09
Schneider Cana	Middle	24400	50-Year	551.85	-7.39	0.96		0.98	0.000075	1.14	485.6	100.19	0.09
Schneider Cana	Middle	24400	100-Year	630.68	-7.39	1.39		1.41	0.000082	1.19	530.81	109.44	0.1
Schneider Cana	Middle	24300	2-Year	191.23	-7.54	-0.92		-0.92	0.000022	0.57	336.9	77.84	0.05
Schneider Cana	Middle	24300	5-Year	293.07	-7.54	-0.37		-0.36	0.000036	0.77	380.88	80.67	0.06
Schneider Cana	Middle	24300	10-Year	367.33	-7.54	0.07		0.08	0.000043	0.88	416.44	82.88	0.07
Schneider Cana	Middle	24300	25-Year	469.77	-7.54	0.52		0.54	0.000058	1.03	455.24	88.73	0.08
Schneider Cana	Middle	24300	50-Year	551.85	-7.54	0.96		0.97	0.000068	1.11	495.55	98.02	0.09
Schneider Cana	Middle	24300	100-Year	630.68	-7.54	1.38		1.41	0.000078	1.17	540.14	110.1	0.09
Schneider Cana	Middle	24200	2-Year	191.23	-7.7	-0.93		-0.92	0.000019	0.54	352.79	77.81	0.04
Schneider Cana	Middle	24200	5-Year	293.07	-7.7	-0.37		-0.36	0.000031	0.74	396.63	80.49	0.06
Schneider Cana	Middle	24200	10-Year	367.33	-7.7	0.06		0.07	0.000038	0.85	432.04	82.59	0.07
Schneider Cana	Middle	24200	25-Year	469.77	-7.7	0.52		0.53	0.000049	1	470.07	84.79	0.07
Schneider Cana	Middle	24200	50-Year	551.85	-7.7	0.95		0.97	0.00006	1.09	508.17	93.93	0.08
Schneider Cana	Middle	24200	100-Year	630.68	-7.7	1.38		1.4	0.000071	1.14	551.24	107.64	0.09
Schneider Cana	Middle	24100	2-Year	191.23	-7.78	-0.93		-0.92	0.000016	0.52	367.82	77.68	0.04
Schneider Cana	Middle	24100	5-Year	293.07	-7.78	-0.37		-0.37	0.000028	0.71	411.5	80.34	0.06
Schneider Cana	Middle	24100	10-Year	367.33	-7.78	0.06		0.07	0.000034	0.82	446.79	82.43	0.06
Schneider Cana	Middle	24100	25-Year	469.77	-7.78	0.51		0.53	0.000044	0.97	484.67	84.61	0.07
Schneider Cana	Middle	24100	50-Year	551.85	-7.78	0.94		0.96	0.000053	1.06	522.2	91.14	0.08
Schneider Cana	Middle	24100	100-Year	630.68	-7.78	1.37		1.39	0.000062	1.12	563.33	101.79	0.08
Schneider Cana	Middle	24000	2-Year	191.23	-7.81	-0.93		-0.92	0.000019	0.54	351.07	76.61	0.04
Schneider Cana	Middle	24000	5-Year	293.07	-7.81	-0.38		-0.37	0.000031	0.74	394.04	79.29	0.06
Schneider Cana	Middle	24000	10-Year	367.33	-7.81	0.05		0.07	0.000039	0.86	428.84	81.65	0.07
Schneider Cana	Middle	24000	25-Year	469.77	-7.81	0.51		0.52	0.000051	1.01	466.61	86.06	0.08
Schneider Cana	Middle	24000	50-Year	551.85	-7.81	0.94		0.96	0.000059	1.09	504.87	91.29	0.08
Schneider Cana	Middle	24000	100-Year	630.68	-7.81	1.36		1.38	0.000067	1.16	545.6	100.88	0.09
Schneider Cana	Middle	23900	2-Year	191.23	-7.84	-0.93		-0.93	0.000021	0.57	335.95	75.49	0.05
Schneider Cana	Middle	23900	5-Year	293.07	-7.84	-0.38		-0.37	0.000035	0.77	378.19	78.2	0.06
Schneider Cana	Middle	23900	10-Year	367.33	-7.84	0.05		0.06	0.000044	0.89	412.63	81.88	0.07
Schneider Cana	Middle	23900	25-Year	469.77	-7.84	0.5		0.52	0.000058	1.04	450.69	87.07	0.08
Schneider Cana	Middle	23900	50-Year	551.85	-7.84	0.93		0.95	0.000066	1.13	489.26	92.04	0.09
Schneider Cana	Middle	23900	100-Year	630.68	-7.84	1.35		1.38	0.000072	1.19	529.53	98.72	0.09

HEC-RAS Output - Existing Conditions

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Middle	23800	2-Year	191.23	-7.86	-0.93		-0.93	0.000024	0.59	322.27	74.31	0.05
Schneider Cana	Middle	23800	5-Year	293.07	-7.86	-0.39		-0.38	0.00004	0.81	363.94	78.36	0.07
Schneider Cana	Middle	23800	10-Year	367.33	-7.86	0.04		0.06	0.00005	0.92	398.51	82.21	0.07
Schneider Cana	Middle	23800	25-Year	469.77	-7.86	0.49		0.51	0.000064	1.08	436.37	86.78	0.08
Schneider Cana	Middle	23800	50-Year	551.85	-7.86	0.92		0.94	0.000072	1.16	474.74	91.86	0.09
Schneider Cana	Middle	23800	100-Year	630.68	-7.86	1.35		1.37	0.000078	1.23	514.77	97.07	0.09
Schneider Cana	Middle	23700	2-Year	191.23	-7.89	-0.94	-6.02	-0.93	0.000027	0.62	310.8	73.84	0.05
Schneider Cana	Middle	23700	5-Year	293.07	-7.89	-0.39	-5.61	-0.38	0.000045	0.83	352.33	78.35	0.07
Schneider Cana	Middle	23700	10-Year	367.33	-7.89	0.04	-5.36	0.05	0.000055	0.95	386.75	81.9	0.08
Schneider Cana	Middle	23700	25-Year	469.77	-7.89	0.48	-5.06	0.5	0.00007	1.11	424.18	85.6	0.09
Schneider Cana	Middle	23700	50-Year	551.85	-7.89	0.91	-4.85	0.94	0.000078	1.19	461.97	90.78	0.09
Schneider Cana	Middle	23700	100-Year	630.68	-7.89	1.34	-4.66	1.36	0.000084	1.26	501.49	96.04	0.1
Schneider Cana	Middle	23600	2-Year	191.23	-7.92	-0.94		-0.93	0.000029	0.63	301.46	73.51	0.06
Schneider Cana	Middle	23600	5-Year	293.07	-7.92	-0.4		-0.39	0.000048	0.86	342.57	77.74	0.07
Schneider Cana	Middle	23600	10-Year	367.33	-7.92	0.03		0.05	0.000059	0.98	376.59	81.08	0.08
Schneider Cana	Middle	23600	25-Year	469.77	-7.92	0.48		0.5	0.000075	1.14	413.49	84.76	0.09
Schneider Cana	Middle	23600	50-Year	551.85	-7.92	0.9		0.93	0.000083	1.22	450.56	88.92	0.1
Schneider Cana	Middle	23600	100-Year	630.68	-7.92	1.33		1.35	0.000089	1.29	489.28	94.38	0.1
Schneider Cana	Middle	23500	2-Year	191.23	-7.95	-0.94		-0.94	0.000031	0.65	294.3	72.54	0.06
Schneider Cana	Middle	23500	5-Year	293.07	-7.95	-0.4		-0.39	0.000051	0.88	334.67	76.6	0.07
Schneider Cana	Middle	23500	10-Year	367.33	-7.95	0.02		0.04	0.000062	1	368.08	79.87	0.08
Schneider Cana	Middle	23500	25-Year	469.77	-7.95	0.47		0.49	0.000079	1.16	404.31	83.58	0.09
Schneider Cana	Middle	23500	50-Year	551.85	-7.95	0.89		0.92	0.000087	1.25	440.74	87.15	0.1
Schneider Cana	Middle	23500	100-Year	630.68	-7.95	1.32		1.34	0.000092	1.32	478.41	92.03	0.1
Schneider Cana	Middle	23400	2-Year	191.23	-7.97	-0.95		-0.94	0.000032	0.66	289.28	70.81	0.06
Schneider Cana	Middle	23400	5-Year	293.07	-7.97	-0.41		-0.4	0.000053	0.89	328.62	75	0.08
Schneider Cana	Middle	23400	10-Year	367.33	-7.97	0.02		0.03	0.000065	1.02	361.28	78.46	0.08
Schneider Cana	Middle	23400	25-Year	469.77	-7.97	0.46		0.48	0.000082	1.18	396.72	82.14	0.09
Schneider Cana	Middle	23400	50-Year	551.85	-7.97	0.88		0.91	0.00009	1.28	432.46	85.69	0.1
Schneider Cana	Middle	23400	100-Year	630.68	-7.97	1.31		1.33	0.000095	1.34	469.27	89.2	0.1
Schneider Cana	Middle	23300	2-Year	191.23	-8	-0.95		-0.94	0.000031	0.67	287.12	68.37	0.06
Schneider Cana	Middle	23300	5-Year	293.07	-8	-0.41		-0.4	0.000053	0.9	324.96	72.74	0.08
Schneider Cana	Middle	23300	10-Year	367.33	-8	0.01		0.03	0.000065	1.03	356.65	76.51	0.08
Schneider Cana	Middle	23300	25-Year	469.77	-8	0.45		0.47	0.000084	1.2	391.07	80.26	0.1
Schneider Cana	Middle	23300	50-Year	551.85	-8	0.87		0.9	0.000092	1.3	425.96	83.9	0.1
Schneider Cana	Middle	23300	100-Year	630.68	-8	1.29		1.32	0.000097	1.37	461.98	87.5	0.1
Schneider Cana	Middle	23200	2-Year	191.23	-8.18	-0.95		-0.95	0.00003	0.67	287.27	66.4	0.06
Schneider Cana	Middle	23200	5-Year	293.07	-8.18	-0.42		-0.41	0.000052	0.9	323.88	70.68	0.07
Schneider Cana	Middle	23200	10-Year	367.33	-8.18	0		0.02	0.000064	1.04	354.53	74.19	0.08
Schneider Cana	Middle	23200	25-Year	469.77	-8.18	0.44		0.46	0.000083	1.21	387.75	77.81	0.1
Schneider Cana	Middle	23200	50-Year	551.85	-8.18	0.86		0.89	0.000092	1.31	421.49	81.46	0.1
Schneider Cana	Middle	23200	100-Year	630.68	-8.18	1.28		1.31	0.000098	1.38	456.49	85.32	0.11
Schneider Cana	Middle	23100	2-Year	191.23	-8.04	-0.96		-0.95	0.000022	0.59	325.79	70.75	0.05
Schneider Cana	Middle	23100	5-Year	293.07	-8.04	-0.42		-0.41	0.000036	0.81	364.02	72.41	0.06
Schneider Cana	Middle	23100	10-Year	367.33	-8.04	0		0.01	0.000045	0.93	394.86	73.57	0.07
Schneider Cana	Middle	23100	25-Year	469.77	-8.04	0.44		0.46	0.000058	1.1	427.25	75.21	0.08
Schneider Cana	Middle	23100	50-Year	551.85	-8.04	0.86		0.88	0.000066	1.2	459.52	77.29	0.09
Schneider Cana	Middle	23100	100-Year	630.68	-8.04	1.28		1.3	0.000071	1.28	492.34	79.34	0.09
Schneider Cana	Middle	23000	2-Year	191.23	-8.06	-0.96		-0.95	0.000022	0.58	328.35	71.91	0.05
Schneider Cana	Middle	23000	5-Year	293.07	-8.06	-0.43		-0.42	0.000036	0.8	367.1	73.63	0.06
Schneider Cana	Middle	23000	10-Year	367.33	-8.06	0		0.01	0.000045	0.92	398.53	75.41	0.07
Schneider Cana	Middle	23000	25-Year	469.77	-8.06	0.43		0.45	0.000058	1.09	431.73	77.26	0.08
Schneider Cana	Middle	23000	50-Year	551.85	-8.06	0.85		0.88	0.000065	1.19	464.75	79.05	0.09
Schneider Cana	Middle	23000	100-Year	630.68	-8.06	1.27		1.3	0.00007	1.27	498.22	80.82	0.09
Schneider Cana	Middle	22900	2-Year	191.23	-8.08	-0.96		-0.95	0.000021	0.58	331.47	73.28	0.05
Schneider Cana	Middle	22900	5-Year	293.07	-8.08	-0.43		-0.42	0.000036	0.79	371.01	75.53	0.06

HEC-RAS Output - Existing Conditions

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Middle	22900	10-Year	367.33	-8.08	-0.01		0	0.000044	0.91	403.15	77.16	0.07
Schneider Cana	Middle	22900	25-Year	469.77	-8.08	0.43		0.44	0.000057	1.08	436.97	78.83	0.08
Schneider Cana	Middle	22900	50-Year	551.85	-8.08	0.85		0.87	0.000064	1.17	470.58	80.46	0.09
Schneider Cana	Middle	22900	100-Year	630.68	-8.08	1.27		1.29	0.000068	1.25	504.57	82.07	0.09
Schneider Cana	Middle	22800	2-Year	191.23	-8.09	-0.96		-0.96	0.000021	0.57	335.6	74.97	0.05
Schneider Cana	Middle	22800	5-Year	293.07	-8.09	-0.43		-0.42	0.000035	0.78	375.9	77.11	0.06
Schneider Cana	Middle	22800	10-Year	367.33	-8.09	-0.01		0	0.000043	0.9	408.62	78.62	0.07
Schneider Cana	Middle	22800	25-Year	469.77	-8.09	0.42		0.44	0.000056	1.06	442.96	80.19	0.08
Schneider Cana	Middle	22800	50-Year	551.85	-8.09	0.84		0.86	0.000062	1.16	477.07	81.71	0.08
Schneider Cana	Middle	22800	100-Year	630.68	-8.09	1.26		1.28	0.000066	1.23	511.54	83.22	0.09
Schneider Cana	Middle	22700	2-Year	191.23	-8.11	-0.96		-0.96	0.000021	0.56	340.72	76.46	0.05
Schneider Cana	Middle	22700	5-Year	293.07	-8.11	-0.44		-0.43	0.000034	0.77	381.68	78.49	0.06
Schneider Cana	Middle	22700	10-Year	367.33	-8.11	-0.02		0	0.000042	0.89	414.91	79.94	0.07
Schneider Cana	Middle	22700	25-Year	469.77	-8.11	0.42		0.43	0.000054	1.04	449.7	81.42	0.08
Schneider Cana	Middle	22700	50-Year	551.85	-8.11	0.84		0.86	0.00006	1.14	484.28	82.87	0.08
Schneider Cana	Middle	22700	100-Year	630.68	-8.11	1.25		1.28	0.000065	1.21	519.25	85.37	0.09
Schneider Cana	Middle	22600	2-Year	191.23	-8.13	-0.97		-0.96	0.00002	0.55	346.54	77.77	0.05
Schneider Cana	Middle	22600	5-Year	293.07	-8.13	-0.44		-0.43	0.000033	0.76	388.08	79.75	0.06
Schneider Cana	Middle	22600	10-Year	367.33	-8.13	-0.02		-0.01	0.000041	0.87	421.77	81.13	0.07
Schneider Cana	Middle	22600	25-Year	469.77	-8.13	0.41		0.43	0.000052	1.03	456.98	82.56	0.08
Schneider Cana	Middle	22600	50-Year	551.85	-8.13	0.83		0.85	0.000058	1.12	491.98	83.95	0.08
Schneider Cana	Middle	22600	100-Year	630.68	-8.13	1.25		1.27	0.000063	1.2	527.6	87.47	0.09
Schneider Cana	Middle	22500	2-Year	191.23	-8.14	-0.97		-0.96	0.000019	0.54	352.72	79.01	0.05
Schneider Cana	Middle	22500	5-Year	293.07	-8.14	-0.44		-0.43	0.000032	0.74	394.81	80.94	0.06
Schneider Cana	Middle	22500	10-Year	367.33	-8.14	-0.02		-0.01	0.000039	0.86	428.93	82.28	0.07
Schneider Cana	Middle	22500	25-Year	469.77	-8.14	0.41		0.42	0.00005	1.01	464.54	83.66	0.08
Schneider Cana	Middle	22500	50-Year	551.85	-8.14	0.83		0.84	0.000056	1.1	499.95	85.25	0.08
Schneider Cana	Middle	22500	100-Year	630.68	-8.14	1.24		1.26	0.000062	1.18	536.34	89.46	0.08
Schneider Cana	Middle	22400	2-Year	191.23	-8.16	-0.97	-6.21	-0.96	0.000018	0.53	359.75	80.17	0.04
Schneider Cana	Middle	22400	5-Year	293.07	-8.16	-0.44	-5.87	-0.44	0.000031	0.73	402.35	82.08	0.06
Schneider Cana	Middle	22400	10-Year	367.33	-8.16	-0.03	-5.65	-0.02	0.000037	0.84	436.89	83.39	0.06
Schneider Cana	Middle	22400	25-Year	469.77	-8.16	0.4	-5.4	0.42	0.000048	0.99	472.88	84.73	0.07
Schneider Cana	Middle	22400	50-Year	551.85	-8.16	0.82	-5.23	0.84	0.000054	1.08	508.81	87.31	0.08
Schneider Cana	Middle	22400	100-Year	630.68	-8.16	1.24	-5.07	1.26	0.000063	1.15	546.43	94.98	0.08
Schneider Cana	Middle	22300	2-Year	191.23	-8.18	-0.97	-6.24	-0.97	0.000017	0.52	367.49	81.33	0.04
Schneider Cana	Middle	22300	5-Year	293.07	-8.18	-0.45	-5.9	-0.44	0.000029	0.71	410.59	83.18	0.06
Schneider Cana	Middle	22300	10-Year	367.33	-8.18	-0.03	-5.71	-0.02	0.000036	0.82	445.53	84.45	0.06
Schneider Cana	Middle	22300	25-Year	469.77	-8.18	0.4	-5.49	0.41	0.000046	0.97	481.88	85.76	0.07
Schneider Cana	Middle	22300	50-Year	551.85	-8.18	0.82	-5.32	0.83	0.000055	1.06	518.8	92.25	0.08
Schneider Cana	Middle	22300	100-Year	630.68	-8.18	1.23	-5.16	1.25	0.000063	1.13	559.03	101.48	0.08
Schneider Cana	Middle	22200	2-Year	191.23	-8.19	-0.97		-0.97	0.000016	0.51	375.49	82.39	0.04
Schneider Cana	Middle	22200	5-Year	293.07	-8.19	-0.45		-0.44	0.000028	0.7	419.06	84.23	0.06
Schneider Cana	Middle	22200	10-Year	367.33	-8.19	-0.03		-0.02	0.000034	0.81	454.39	85.48	0.06
Schneider Cana	Middle	22200	25-Year	469.77	-8.19	0.39		0.41	0.000046	0.96	491.37	89.67	0.07
Schneider Cana	Middle	22200	50-Year	551.85	-8.19	0.81		0.83	0.000055	1.04	530.65	98.34	0.08
Schneider Cana	Middle	22200	100-Year	630.68	-8.19	1.22		1.24	0.000062	1.1	573.21	106.94	0.08
Schneider Cana	Middle	22100	2-Year	191.23	-8.21	-0.97	-6.53	-0.97	0.000015	0.5	383.93	83.45	0.04
Schneider Cana	Middle	22100	5-Year	293.07	-8.21	-0.45	-6.21	-0.45	0.000026	0.68	427.97	85.27	0.05
Schneider Cana	Middle	22100	10-Year	367.33	-8.21	-0.04	-6.01	-0.03	0.000033	0.79	463.83	88.35	0.06
Schneider Cana	Middle	22100	25-Year	469.77	-8.21	0.39	-5.75	0.4	0.000046	0.93	502.78	95.52	0.07
Schneider Cana	Middle	22100	50-Year	551.85	-8.21	0.81	-5.57	0.82	0.000054	1.01	544.33	103.71	0.08
Schneider Cana	Middle	22100	100-Year	630.68	-8.21	1.22	-5.4	1.24	0.000059	1.07	588.93	123.76	0.08
Schneider Cana	Middle	22000	2-Year	191.23	-8.23	-0.98	-6.75	-0.97	0.000015	0.49	393.21	84.52	0.04
Schneider Cana	Middle	22000	5-Year	293.07	-8.23	-0.45	-6.42	-0.45	0.000025	0.67	437.83	87.83	0.05
Schneider Cana	Middle	22000	10-Year	367.33	-8.23	-0.04	-6.21	-0.03	0.000033	0.77	475.39	93.13	0.06
Schneider Cana	Middle	22000	25-Year	469.77	-8.23	0.38	-5.95	0.4	0.000045	0.91	516.44	100.74	0.07

HEC-RAS Output - Existing Conditions

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
				551.85	-8.23	0.8	-5.76	0.82	0.000052	0.99	560	108.44	0.08
				630.68	-8.23	1.21	-5.59	1.23	0.000054	1.04	608.77	127.5	0.08
				191.23	-8.29	-0.98	-6.93	-0.97	0.000014	0.47	404.16	87.21	0.04
				293.07	-8.29	-0.46	-6.58	-0.45	0.000024	0.65	450.41	90.9	0.05
				367.33	-8.29	-0.04	-6.36	-0.03	0.00003	0.75	488.7	93.85	0.06
				469.77	-8.29	0.38	-6.09	0.39	0.00004	0.89	529.25	97.9	0.07
				551.85	-8.29	0.8	-5.9	0.81	0.000045	0.97	570.8	107.18	0.07
				630.68	-8.29	1.21	-5.72	1.23	0.00005	1.03	614.39	142.43	0.08
				191.23	-8.48	-0.98	-6.86	-0.97	0.000015	0.5	385.75	80.22	0.04
				293.07	-8.48	-0.46	-6.52	-0.45	0.000025	0.68	427.88	82.48	0.05
				367.33	-8.48	-0.05	-6.3	-0.04	0.000031	0.79	462.37	84.29	0.06
				469.77	-8.48	0.37	-6.03	0.39	0.000041	0.94	498.28	86.15	0.07
				551.85	-8.48	0.79	-5.84	0.81	0.000047	1.03	534.61	93.76	0.07
				630.68	-8.48	1.2	-5.67	1.22	0.00005	1.1	578.42	111.07	0.08
				191.23	-8.68	-0.98	-6.84	-0.98	0.000017	0.51	376.87	84.18	0.04
				293.07	-8.68	-0.46	-6.5	-0.46	0.00003	0.69	421.95	90.25	0.06
				367.33	-8.68	-0.05	-6.28	-0.04	0.000037	0.8	460.13	94.63	0.06
				469.77	-8.68	0.37	-6.02	0.38	0.000049	0.94	500.86	99.08	0.07
				551.85	-8.68	0.78	-5.83	0.8	0.000054	1.02	542.84	103.56	0.08
				630.68	-8.68	1.2	-5.67	1.22	0.000059	1.08	586.67	108.98	0.08
				191.23	-8.87	-0.98	-6.89	-0.98	0.000017	0.53	363.3	77.85	0.04
				293.07	-8.87	-0.47	-6.52	-0.46	0.000031	0.72	404.78	83.23	0.06
				367.33	-8.87	-0.06	-6.31	-0.04	0.000039	0.83	439.95	87.53	0.07
				469.77	-8.87	0.36	-6.05	0.38	0.000051	0.98	477.46	91.48	0.08
				551.85	-8.87	0.78	-5.87	0.79	0.000058	1.07	516.06	95.21	0.08
				630.68	-8.87	1.19	-5.71	1.21	0.000062	1.13	556.01	100.45	0.08
				191.23	-9.06	-0.98	-7	-0.98	0.000017	0.54	352.73	72.65	0.04
				293.07	-9.06	-0.47	-6.62	-0.46	0.000031	0.75	390.86	75.9	0.06
				367.33	-9.06	-0.06	-6.4	-0.05	0.000039	0.87	422.57	78.5	0.07
				469.77	-9.06	0.36	-6.14	0.37	0.000052	1.03	455.85	81.14	0.08
				551.85	-9.06	0.77	-5.95	0.79	0.000058	1.13	489.83	83.57	0.08
				630.68	-9.06	1.18	-5.78	1.2	0.000063	1.2	524.55	85.56	0.09
				236	-9.26	-0.99	-6.99	-0.98	0.000027	0.69	344.32	69.33	0.05
				360	-9.26	-0.48	-6.59	-0.46	0.000049	0.95	380.67	73.5	0.07
				458	-9.26	-0.07	-6.33	-0.05	0.000065	1.11	411.49	77.67	0.09
				594	-9.26	0.34	-5.99	0.37	0.000091	1.34	444.37	81.88	0.1
				709	-9.26	0.75	-5.73	0.78	0.000108	1.48	478.66	102.79	0.11
				824	-9.26	1.16	-5.5	1.2	0.000122	1.6	514.53	118.77	0.12
				236	-9.45	-0.99	-7.2	-0.98	0.000027	0.7	337.48	66.09	0.05
				360	-9.45	-0.48	-6.79	-0.47	0.000049	0.97	371.93	69.71	0.07
				458	-9.45	-0.08	-6.51	-0.06	0.000065	1.14	400.92	75.71	0.09
				594	-9.45	0.33	-6.16	0.36	0.000088	1.38	435.65	111.14	0.1
				709	-9.45	0.74	-5.89	0.77	0.000101	1.53	486.8	124.46	0.11
				824	-9.45	1.14	-5.64	1.19	0.00011	1.64	538.25	128.78	0.11
				236	-9.64	-0.99	-7.43	-0.99	0.000027	0.71	332.01	63.08	0.05
				360	-9.64	-0.49	-7.01	-0.47	0.00005	0.99	364.73	66.55	0.07
				458	-9.64	-0.09	-6.72	-0.06	0.000067	1.17	392.15	69.32	0.09
				594	-9.64	0.32	-6.36	0.35	0.000094	1.41	420.85	72.13	0.1
				709	-9.64	0.72	-6.08	0.76	0.000113	1.57	450.68	75.52	0.11
				824	-9.64	1.13	-5.82	1.17	0.00013	1.71	481.82	78.9	0.12
				236	-9.84	-1	-7.68	-0.99	0.000027	0.72	328.37	60.28	0.05
				360	-9.84	-0.49	-7.26	-0.48	0.00005	1	359.48	63.61	0.07
				458	-9.84	-0.09	-6.95	-0.07	0.000068	1.19	385.56	66.27	0.09
				594	-9.84	0.31	-6.58	0.34	0.000095	1.44	412.78	68.95	0.1
				709	-9.84	0.71	-6.3	0.75	0.000114	1.61	441.54	75.67	0.11
Schneider Cana	Lower	21100	100-Year	824	-9.84	1.11	-6.03	1.16	0.000128	1.75	472.59	78.54	0.12

HEC-RAS Output - Existing Conditions

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
				236	-9.45	-1	-7.36	-0.99	0.000031	0.73	324.62	65.84	0.06
				360	-9.45	-0.5	-6.92	-0.48	0.000055	1.01	358.2	68.45	0.08
				458	-9.45	-0.1	-6.62	-0.08	0.000072	1.19	385.99	70.54	0.09
				594	-9.45	0.3	-6.24	0.33	0.0001	1.43	414.63	72.62	0.11
				709	-9.45	0.7	-5.95	0.74	0.000118	1.6	444.09	74.71	0.12
				824	-9.45	1.1	-5.69	1.15	0.000131	1.74	476.73	86.82	0.12
				81.23	-1.94	0.1	-0.44	0.21	0.003111	2.67	30.42	28.62	0.46
				123.07	-1.94	0.83	-0.17	0.92	0.001322	2.34	52.57	31.37	0.32
				150.33	-1.94	1.38	-0.03	1.45	0.000823	2.15	70.06	33.09	0.26
				187.77	-1.94	2.1	0.14	2.16	0.000519	1.98	94.81	35.38	0.21
				213.85	-1.94	2.76	0.24	2.81	0.000342	1.8	118.86	37.12	0.18
				238.68	-1.94	3.46	0.34	3.5	0.000234	1.64	145.49	38.8	0.15
				81.23	-2.76	0.06	-1.39	0.12	0.000897	2.04	39.88	20.73	0.26
				123.07	-2.76	0.79	-1.06	0.87	0.000801	2.18	56.37	24.19	0.25
				150.33	-2.76	1.34	-0.86	1.41	0.000657	2.14	70.36	26.79	0.23
				187.77	-2.76	2.07	-0.62	2.13	0.000526	2.06	91.2	31.09	0.21
				213.85	-2.76	2.74	-0.47	2.79	0.000402	1.88	113.82	40.27	0.19
				238.68	-2.76	3.45	-0.33	3.49	0.000292	1.68	141.72	58.19	0.16
				81.23	-2.33	0.01	-1.27	0.08	0.000918	2.04	39.76	21.5	0.26
				123.07	-2.33	0.75	-0.97	0.83	0.000772	2.17	56.83	24.51	0.25
Lateral Canal	South	12150	10-Year	150.33	-2.33	1.31	-0.8	1.38	0.000619	2.11	71.09	26.77	0.23
Lateral Canal	South	12150	25-Year	187.77	-2.33	2.04	-0.58	2.11	0.000475	2.05	91.81	29.6	0.2
Lateral Canal	South	12150	50-Year	213.85	-2.33	2.72	-0.44	2.77	0.000343	1.9	112.33	34.83	0.18
Lateral Canal	South	12150	100-Year	238.68	-2.33	3.43	-0.31	3.48	0.000251	1.76	135.24	48.67	0.15
Lateral Canal	South	12095		Pedestrian Walkway Bridge									
Lateral Canal	South	12000	2-Year	81.23	-2.88	-0.32	-1.91	-0.28	0.000533	1.66	48.97	24.24	0.21
Lateral Canal	South	12000	5-Year	123.07	-2.88	0.48	-1.63	0.53	0.000453	1.77	69.55	27.43	0.2
Lateral Canal	South	12000	10-Year	150.33	-2.88	1.08	-1.45	1.13	0.000362	1.73	86.93	29.86	0.18
Lateral Canal	South	12000	25-Year	187.77	-2.88	1.86	-1.25	1.9	0.000285	1.69	111.2	32.95	0.16
Lateral Canal	South	12000	50-Year	213.85	-2.88	2.57	-1.11	2.61	0.000214	1.58	135.76	35.81	0.14
Lateral Canal	South	12000	100-Year	238.68	-2.88	3.31	-0.99	3.35	0.00016	1.46	163.41	38.77	0.13
Lateral Canal	South	11900	2-Year	81.23	-3.06	-0.36	-2.09	-0.33	0.000442	1.55	52.29	24.79	0.19
Lateral Canal	South	11900	5-Year	123.07	-3.06	0.44	-1.8	0.48	0.000388	1.68	73.47	28	0.18
Lateral Canal	South	11900	10-Year	150.33	-3.06	1.05	-1.63	1.1	0.000314	1.64	91.43	30.45	0.17
Lateral Canal	South	11900	25-Year	187.77	-3.06	1.83	-1.42	1.87	0.000251	1.61	116.39	33.57	0.15
Lateral Canal	South	11900	50-Year	213.85	-3.06	2.55	-1.29	2.59	0.00019	1.51	141.62	36.45	0.14
Lateral Canal	South	11900	100-Year	238.68	-3.06	3.3	-1.16	3.33	0.000144	1.4	169.93	39.44	0.12
Lateral Canal	South	11800	2-Year	81.23	-3.24	-0.4	-2.27	-0.37	0.000366	1.45	55.88	25.36	0.17
Lateral Canal	South	11800	5-Year	123.07	-3.24	0.41	-1.98	0.45	0.000332	1.59	77.64	28.59	0.17
Lateral Canal	South	11800	10-Year	150.33	-3.24	1.03	-1.82	1.07	0.000273	1.56	96.16	31.07	0.16
Lateral Canal	South	11800	25-Year	187.77	-3.24	1.81	-1.6	1.85	0.000222	1.54	121.77	34.21	0.14
Lateral Canal	South	11800	50-Year	213.85	-3.24	2.54	-1.47	2.57	0.00017	1.45	147.65	37.11	0.13
Lateral Canal	South	11800	100-Year	238.68	-3.24	3.29	-1.35	3.32	0.00013	1.35	176.61	40.11	0.11
Lateral Canal	South	11700	2-Year	81.23	-3.42	-0.43	-2.45	-0.4	0.000303	1.36	59.72	25.96	0.16
Lateral Canal	South	11700	5-Year	123.07	-3.42	0.38	-2.16	0.41	0.000285	1.5	82.03	29.19	0.16
Lateral Canal	South	11700	10-Year	150.33	-3.42	1	-2	1.04	0.000238	1.49	101.09	31.7	0.15
Lateral Canal	South	11700	25-Year	187.77	-3.42	1.79	-1.79	1.83	0.000196	1.47	127.34	34.85	0.14
Lateral Canal	South	11700	50-Year	213.85	-3.42	2.52	-1.65	2.55	0.000152	1.39	153.86	37.77	0.12
Lateral Canal	South	11700	100-Year	238.68	-3.42	3.28	-1.52	3.3	0.000117	1.3	183.45	40.79	0.11
Lateral Canal	South	11600	2-Year	81.23	-3.6	-0.46	-2.63	-0.43	0.000252	1.27	63.79	26.58	0.14
Lateral Canal	South	11600	5-Year	123.07	-3.6	0.35	-2.35	0.39	0.000245	1.42	86.64	29.82	0.15
Lateral Canal	South	11600	10-Year	150.33	-3.6	0.98	-2.18	1.02	0.000207	1.42	106.21	32.34	0.14
Lateral Canal	South	11600	25-Year	187.77	-3.6	1.78	-1.97	1.81	0.000174	1.41	133.1	35.51	0.13
Lateral Canal	South	11600	50-Year	213.85	-3.6	2.51	-1.82	2.54	0.000136	1.33	160.23	38.44	0.12
Lateral Canal	South	11600	100-Year	238.68	-3.6	3.27	-1.7	3.29	0.000105	1.25	190.45	41.47	0.1

HEC-RAS Output - Existing Conditions

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
				81.23	-3.78	-0.48	-2.81	-0.45	0.00021	1.19	68.07	27.21	0.13
Lateral Canal	South	11500	5-Year	123.07	-3.78	0.33	-2.52	0.36	0.000211	1.35	91.45	30.46	0.14
Lateral Canal	South	11500	10-Year	150.33	-3.78	0.97	-2.36	1	0.000181	1.35	111.52	32.99	0.13
Lateral Canal	South	11500	25-Year	187.77	-3.78	1.76	-2.14	1.79	0.000154	1.35	139.02	36.17	0.12
Lateral Canal	South	11500	50-Year	213.85	-3.78	2.5	-2.01	2.52	0.000122	1.28	166.77	39.12	0.11
Lateral Canal	South	11500	100-Year	238.68	-3.78	3.26	-1.89	3.28	0.000095	1.21	197.61	42.15	0.1
Lateral Canal	South	11400	2-Year	81.23	-3.96	-0.49	-2.99	-0.47	0.000175	1.12	72.55	27.86	0.12
Lateral Canal	South	11400	5-Year	123.07	-3.96	0.32	-2.7	0.34	0.000182	1.28	96.45	31.11	0.13
Lateral Canal	South	11400	10-Year	150.33	-3.96	0.95	-2.54	0.98	0.000159	1.28	117.02	33.65	0.12
Lateral Canal	South	11400	25-Year	187.77	-3.96	1.75	-2.32	1.78	0.000137	1.29	145.12	36.84	0.11
Lateral Canal	South	11400	50-Year	213.85	-3.96	2.49	-2.19	2.51	0.000109	1.23	173.48	39.8	0.1
Lateral Canal	South	11400	100-Year	238.68	-3.96	3.25	-2.06	3.27	0.000086	1.16	204.92	42.84	0.09
Lateral Canal	South	11300	2-Year	81.23	-4.14	-0.51	-3.17	-0.49	0.000147	1.05	77.22	28.53	0.11
Lateral Canal	South	11300	5-Year	123.07	-4.14	0.3	-2.88	0.32	0.000157	1.21	101.64	31.77	0.12
Lateral Canal	South	11300	10-Year	150.33	-4.14	0.94	-2.72	0.96	0.000139	1.23	122.68	34.31	0.11
Lateral Canal	South	11300	25-Year	187.77	-4.14	1.74	-2.51	1.76	0.000122	1.24	151.39	37.51	0.11
Lateral Canal	South	11300	50-Year	213.85	-4.14	2.48	-2.37	2.5	0.000098	1.19	180.33	40.48	0.1
Lateral Canal	South	11300	100-Year	238.68	-4.14	3.24	-2.24	3.26	0.000078	1.12	212.38	43.53	0.09
Lateral Canal	South	11200	2-Year	81.23	-4.32	-0.52	-3.35	-0.51	0.000124	0.99	82.06	29.2	0.1
Lateral Canal	South	11200	5-Year	123.07	-4.32	0.29	-3.06	0.31	0.000136	1.15	106.99	32.43	0.11
Lateral Canal	South	11200	10-Year	150.33	-4.32	0.93	-2.9	0.95	0.000123	1.17	128.52	34.99	0.11
Lateral Canal	South	11200	25-Year	187.77	-4.32	1.73	-2.69	1.75	0.000109	1.19	157.82	38.19	0.1
Lateral Canal	South	11200	50-Year	213.85	-4.32	2.47	-2.55	2.49	0.000089	1.14	187.35	41.17	0.09
Lateral Canal	South	11200	100-Year	238.68	-4.32	3.24	-2.43	3.25	0.000071	1.08	219.99	44.23	0.09
Lateral Canal	South	11100	2-Year	81.23	-4.5	-0.53	-3.53	-0.52	0.000105	0.93	87.08	29.88	0.1
Lateral Canal	South	11100	5-Year	123.07	-4.5	0.28	-3.24	0.3	0.000119	1.09	112.52	33.11	0.1
Lateral Canal	South	11100	10-Year	150.33	-4.5	0.92	-3.07	0.94	0.000108	1.12	134.51	35.67	0.1
Lateral Canal	South	11100	25-Year	187.77	-4.5	1.72	-2.87	1.74	0.000097	1.14	164.4	58.4	0.1
Lateral Canal	South	11100	50-Year	213.85	-4.5	2.46	-2.73	2.48	0.00008	1.1	194.51	71.26	0.09
Lateral Canal	South	11100	100-Year	238.68	-4.5	3.23	-2.6	3.25	0.000065	1.05	227.75	94.36	0.08
Lateral Canal	South	11000	2-Year	143.23	-4.68	-0.58	-3.3	-0.54	0.000288	1.57	91.11	30.41	0.16
Lateral Canal	South	11000	5-Year	220.07	-4.68	0.21	-2.88	0.27	0.000345	1.89	116.44	33.58	0.18
Lateral Canal	South	11000	10-Year	275.33	-4.68	0.85	-2.62	0.91	0.000335	1.99	138.57	36.12	0.18
Lateral Canal	South	11000	25-Year	348.77	-4.68	1.65	-2.3	1.72	0.000313	2.07	168.71	39.31	0.18
Lateral Canal	South	11000	50-Year	406.85	-4.68	2.4	-2.07	2.46	0.000271	2.04	199.28	42.31	0.17
Lateral Canal	South	11000	100-Year	462.68	-4.68	3.17	-1.87	3.22	0.000517	1.94	239.09	96.12	0.21
Lateral Canal	South	10900	2-Year	143.23	-4.86	-0.6	-3.48	-0.57	0.00025	1.49	95.9	31.04	0.15
Lateral Canal	South	10900	5-Year	220.07	-4.86	0.19	-3.06	0.24	0.000306	1.81	121.54	34.18	0.17
Lateral Canal	South	10900	10-Year	275.33	-4.86	0.82	-2.8	0.88	0.000301	1.91	144.09	36.73	0.17
Lateral Canal	South	10900	25-Year	348.77	-4.86	1.62	-2.48	1.68	0.000285	2	174.78	39.93	0.17
Lateral Canal	South	10900	50-Year	406.85	-4.86	2.37	-2.26	2.43	0.000345	1.91	213.48	66.45	0.18
Lateral Canal	South	10900	100-Year	462.68	-4.86	3.14	-2.05	3.19	0.000235	1.77	269.91	108.3	0.15
Lateral Canal	South	10800	2-Year	143.23	-5.04	-0.62	-3.66	-0.59	0.000217	1.42	100.89	31.67	0.14
Lateral Canal	South	10800	5-Year	220.07	-5.04	0.16	-3.24	0.21	0.000272	1.73	126.86	34.8	0.16
Lateral Canal	South	10800	10-Year	275.33	-5.04	0.8	-2.98	0.85	0.00027	1.84	149.81	37.34	0.16
Lateral Canal	South	10800	25-Year	348.77	-5.04	1.6	-2.66	1.66	0.000259	1.93	181.05	40.55	0.16
Lateral Canal	South	10800	50-Year	406.85	-5.04	2.34	-2.44	2.4	0.000228	1.91	212.46	43.54	0.15
Lateral Canal	South	10800	100-Year	462.68	-5.04	3.11	-2.23	3.17	0.000191	1.87	246.77	71.05	0.14
Lateral Canal	South	10670	2-Year	143.23	-5.49	-0.72	-2.81	-0.64	0.000593	2.23	64.28	28.66	0.23
Lateral Canal	South	10670	5-Year	220.07	-5.49	0.03	-2.3	0.15	0.000655	2.73	80.73	32.14	0.25
Lateral Canal	South	10670	10-Year	275.33	-5.49	0.66	-2.03	0.79	0.000606	2.91	94.51	35.22	0.25
Lateral Canal	South	10670	25-Year	348.77	-5.49	1.45	-1.7	1.6	0.000554	3.12	111.89	39.11	0.24
Lateral Canal	South	10670	50-Year	406.85	-5.49	2.19	-1.46	2.35	0.000478	3.17	128.31	42.78	0.23
Lateral Canal	South	10670	100-Year	462.68	-5.49	2.96	-1.24	3.12	0.000409	3.19	145.21	59	0.22
Lateral Canal	South	10633		Spartan Drive									

HEC-RAS Output - Existing Conditions

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Lateral Canal	South	11500	2-Year	81.23	-3.78	-0.48	-2.81	-0.45	0.00021	1.19	68.07	27.21	0.13
Lateral Canal	South	11500	5-Year	123.07	-3.78	0.33	-2.52	0.36	0.000211	1.35	91.45	30.46	0.14
Lateral Canal	South	11500	10-Year	150.33	-3.78	0.97	-2.36	1	0.000181	1.35	111.52	32.99	0.13
Lateral Canal	South	11500	25-Year	187.77	-3.78	1.76	-2.14	1.79	0.000154	1.35	139.02	36.17	0.12
Lateral Canal	South	11500	50-Year	213.85	-3.78	2.5	-2.01	2.52	0.000122	1.28	166.77	39.12	0.11
Lateral Canal	South	11500	100-Year	238.68	-3.78	3.26	-1.89	3.28	0.000095	1.21	197.61	42.15	0.1
Lateral Canal	South	11400	2-Year	81.23	-3.96	-0.49	-2.99	-0.47	0.000175	1.12	72.55	27.86	0.12
Lateral Canal	South	11400	5-Year	123.07	-3.96	0.32	-2.7	0.34	0.000182	1.28	96.45	31.11	0.13
Lateral Canal	South	11400	10-Year	150.33	-3.96	0.95	-2.54	0.98	0.000159	1.28	117.02	33.65	0.12
Lateral Canal	South	11400	25-Year	187.77	-3.96	1.75	-2.32	1.78	0.000137	1.29	145.12	36.84	0.11
Lateral Canal	South	11400	50-Year	213.85	-3.96	2.49	-2.19	2.51	0.000109	1.23	173.48	39.8	0.1
Lateral Canal	South	11400	100-Year	238.68	-3.96	3.25	-2.06	3.27	0.000086	1.16	204.92	42.84	0.09
Lateral Canal	South	11300	2-Year	81.23	-4.14	-0.51	-3.17	-0.49	0.000147	1.05	77.22	28.53	0.11
Lateral Canal	South	11300	5-Year	123.07	-4.14	0.3	-2.88	0.32	0.000157	1.21	101.64	31.77	0.12
Lateral Canal	South	11300	10-Year	150.33	-4.14	0.94	-2.72	0.96	0.000139	1.23	122.68	34.31	0.11
Lateral Canal	South	11300	25-Year	187.77	-4.14	1.74	-2.51	1.76	0.000122	1.24	151.39	37.51	0.11
Lateral Canal	South	11300	50-Year	213.85	-4.14	2.48	-2.37	2.5	0.000098	1.19	180.33	40.48	0.1
Lateral Canal	South	11300	100-Year	238.68	-4.14	3.24	-2.24	3.26	0.000078	1.12	212.38	43.53	0.09
Lateral Canal	South	11200	2-Year	81.23	-4.32	-0.52	-3.35	-0.51	0.000124	0.99	82.06	29.2	0.1
Lateral Canal	South	11200	5-Year	123.07	-4.32	0.29	-3.06	0.31	0.000136	1.15	106.99	32.43	0.11
Lateral Canal	South	11200	10-Year	150.33	-4.32	0.93	-2.9	0.95	0.000123	1.17	128.52	34.99	0.11
Lateral Canal	South	11200	25-Year	187.77	-4.32	1.73	-2.69	1.75	0.000109	1.19	157.82	38.19	0.1
Lateral Canal	South	11200	50-Year	213.85	-4.32	2.47	-2.55	2.49	0.000089	1.14	187.35	41.17	0.09
Lateral Canal	South	11200	100-Year	238.68	-4.32	3.24	-2.43	3.25	0.000071	1.08	219.99	44.23	0.09
Lateral Canal	South	11100	2-Year	81.23	-4.5	-0.53	-3.53	-0.52	0.000105	0.93	87.08	29.88	0.1
Lateral Canal	South	11100	5-Year	123.07	-4.5	0.28	-3.24	0.3	0.000119	1.09	112.52	33.11	0.1
Lateral Canal	South	11100	10-Year	150.33	-4.5	0.92	-3.07	0.94	0.000108	1.12	134.51	35.67	0.1
Lateral Canal	South	11100	25-Year	187.77	-4.5	1.72	-2.87	1.74	0.000097	1.14	164.4	58.4	0.1
Lateral Canal	South	11100	50-Year	213.85	-4.5	2.46	-2.73	2.48	0.00008	1.1	194.51	71.26	0.09
Lateral Canal	South	11100	100-Year	238.68	-4.5	3.23	-2.6	3.25	0.000065	1.05	227.75	94.36	0.08
Lateral Canal	South	11000	2-Year	143.23	-4.68	-0.58	-3.3	-0.54	0.000288	1.57	91.11	30.41	0.16
Lateral Canal	South	11000	5-Year	220.07	-4.68	0.21	-2.88	0.27	0.000345	1.89	116.44	33.58	0.18
Lateral Canal	South	11000	10-Year	275.33	-4.68	0.85	-2.62	0.91	0.000335	1.99	138.57	36.12	0.18
Lateral Canal	South	11000	25-Year	348.77	-4.68	1.65	-2.3	1.72	0.000313	2.07	168.71	39.31	0.18
Lateral Canal	South	11000	50-Year	406.85	-4.68	2.4	-2.07	2.46	0.000271	2.04	199.28	42.31	0.17
Lateral Canal	South	11000	100-Year	462.68	-4.68	3.17	-1.87	3.22	0.000517	1.94	239.09	96.12	0.21
Lateral Canal	South	10900	2-Year	143.23	-4.86	-0.6	-3.48	-0.57	0.00025	1.49	95.9	31.04	0.15
Lateral Canal	South	10900	5-Year	220.07	-4.86	0.19	-3.06	0.24	0.000306	1.81	121.54	34.18	0.17
Lateral Canal	South	10900	10-Year	275.33	-4.86	0.82	-2.8	0.88	0.000301	1.91	144.09	36.73	0.17
Lateral Canal	South	10900	25-Year	348.77	-4.86	1.62	-2.48	1.68	0.000285	2	174.78	39.93	0.17
Lateral Canal	South	10900	50-Year	406.85	-4.86	2.37	-2.26	2.43	0.000345	1.91	213.48	66.45	0.18
Lateral Canal	South	10900	100-Year	462.68	-4.86	3.14	-2.05	3.19	0.000235	1.77	269.91	108.3	0.15
Lateral Canal	South	10800	2-Year	143.23	-5.04	-0.62	-3.66	-0.59	0.000217	1.42	100.89	31.67	0.14
Lateral Canal	South	10800	5-Year	220.07	-5.04	0.16	-3.24	0.21	0.000272	1.73	126.86	34.8	0.16
Lateral Canal	South	10800	10-Year	275.33	-5.04	0.8	-2.98	0.85	0.00027	1.84	149.81	37.34	0.16
Lateral Canal	South	10800	25-Year	348.77	-5.04	1.6	-2.66	1.66	0.000259	1.93	181.05	40.55	0.16
Lateral Canal	South	10800	50-Year	406.85	-5.04	2.34	-2.44	2.4	0.000228	1.91	212.46	43.54	0.15
Lateral Canal	South	10800	100-Year	462.68	-5.04	3.11	-2.23	3.17	0.000191	1.87	246.77	71.05	0.14
Lateral Canal	South	10670	2-Year	143.23	-5.49	-0.72	-2.81	-0.64	0.000593	2.23	64.28	28.66	0.23
Lateral Canal	South	10670	5-Year	220.07	-5.49	0.03	-2.3	0.15	0.000655	2.73	80.73	32.14	0.25
Lateral Canal	South	10670	10-Year	275.33	-5.49	0.66	-2.03	0.79	0.000606	2.91	94.51	35.22	0.25
Lateral Canal	South	10670	25-Year	348.77	-5.49	1.45	-1.7	1.6	0.000554	3.12	111.89	39.11	0.24
Lateral Canal	South	10670	50-Year	406.85	-5.49	2.19	-1.46	2.35	0.000478	3.17	128.31	42.78	0.23
Lateral Canal	South	10670	100-Year	462.68	-5.49	2.96	-1.24	3.12	0.000409	3.19	145.21	59	0.22
Lateral Canal	South	10633		Spartan Drive									

HEC-RAS Output - Existing Conditions

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Lateral Canal	South	10596	2-Year	143.23	-5.09	-0.81	-3.21	-0.75	0.000308	1.86	76.84	33.94	0.18
Lateral Canal	South	10596	5-Year	220.07	-5.09	-0.2	-2.84	-0.11	0.000428	2.44	90.12	35.07	0.21
Lateral Canal	South	10596	10-Year	275.33	-5.09	0.25	-2.6	0.36	0.000473	2.75	100.02	35.91	0.23
Lateral Canal	South	10596	25-Year	348.77	-5.09	0.73	-2.32	0.88	0.000543	3.15	110.57	40.52	0.25
Lateral Canal	South	10596	50-Year	406.85	-5.09	1.16	-2.1	1.34	0.00056	3.39	120.16	48.54	0.26
Lateral Canal	South	10596	100-Year	462.68	-5.09	1.58	-1.91	1.78	0.000566	3.58	129.4	57.01	0.26
Lateral Canal	South	10500	2-Year	143.23	-5.18	-0.81	-3.35	-0.78	0.000208	1.36	105.4	34.29	0.14
Lateral Canal	South	10500	5-Year	220.07	-5.18	-0.2	-3.01	-0.16	0.000283	1.74	126.63	35.42	0.16
Lateral Canal	South	10500	10-Year	275.33	-5.18	0.25	-2.81	0.31	0.000308	1.93	143	36.27	0.17
Lateral Canal	South	10500	25-Year	348.77	-5.18	0.74	-2.57	0.82	0.000352	2.17	161.01	37.56	0.18
Lateral Canal	South	10500	50-Year	406.85	-5.18	1.19	-2.38	1.27	0.000396	2.28	178.61	42.49	0.2
Lateral Canal	South	10500	100-Year	462.68	-5.18	1.62	-2.22	1.7	0.000424	2.34	198.09	48.19	0.2
Lateral Canal	South	10400	2-Year	143.23	-5.27	-0.83	-3.52	-0.8	0.000175	1.28	111.71	34.63	0.13
Lateral Canal	South	10400	5-Year	220.07	-5.27	-0.23	-3.21	-0.18	0.000245	1.66	132.91	35.76	0.15
Lateral Canal	South	10400	10-Year	275.33	-5.27	0.23	-3.01	0.28	0.000292	1.84	149.66	39.28	0.17
Lateral Canal	South	10400	25-Year	348.77	-5.27	0.71	-2.76	0.78	0.000369	2.05	170.28	45.7	0.19
Lateral Canal	South	10400	50-Year	406.85	-5.27	1.15	-2.58	1.22	0.000394	2.12	191.79	51.56	0.19
Lateral Canal	South	10400	100-Year	462.68	-5.27	1.58	-2.41	1.65	0.000417	2.15	215.27	59.68	0.2
Lateral Canal	South	10300	2-Year	143.23	-5.36	-0.84	-3.7	-0.82	0.000149	1.21	117.94	34.97	0.12
Lateral Canal	South	10300	5-Year	220.07	-5.36	-0.25	-3.39	-0.21	0.000249	1.56	140.85	42.43	0.15
Lateral Canal	South	10300	10-Year	275.33	-5.36	0.2	-3.19	0.25	0.000293	1.71	161.34	48.44	0.16
Lateral Canal	South	10300	25-Year	348.77	-5.36	0.68	-2.94	0.74	0.000354	1.87	186.29	56.43	0.18
Lateral Canal	South	10300	50-Year	406.85	-5.36	1.13	-2.77	1.18	0.000374	1.91	213.53	66.18	0.19
Lateral Canal	South	10300	100-Year	462.68	-5.36	1.56	-2.6	1.61	0.000349	1.9	243.32	72.25	0.18
Lateral Canal	South	10200	2-Year	143.23	-5.45	-0.86	-3.88	-0.84	0.000152	1.13	127.22	43.86	0.12
Lateral Canal	South	10200	5-Year	220.07	-5.45	-0.27	-3.56	-0.24	0.000233	1.42	155.4	52.53	0.15
Lateral Canal	South	10200	10-Year	275.33	-5.45	0.18	-3.37	0.22	0.000269	1.52	181	61.57	0.16
Lateral Canal	South	10200	25-Year	348.77	-5.45	0.66	-3.12	0.7	0.000291	1.64	212.41	79.34	0.16
Lateral Canal	South	10200	50-Year	406.85	-5.45	1.1	-2.94	1.15	0.000273	1.67	245.72	98.37	0.16
Lateral Canal	South	10200	100-Year	462.68	-5.45	1.54	-2.78	1.58	0.000236	1.66	290.88	157.37	0.15
Lateral Canal	South	10100	2-Year	143.23	-5.55	-0.87	-4.05	-0.85	0.000134	0.99	144.16	55.41	0.11
Lateral Canal	South	10100	5-Year	220.07	-5.55	-0.28	-3.73	-0.26	0.00019	1.22	179.66	65.72	0.13
Lateral Canal	South	10100	10-Year	275.33	-5.55	0.16	-3.54	0.19	0.000189	1.31	210.02	69.77	0.13
Lateral Canal	South	10100	25-Year	348.77	-5.55	0.64	-3.3	0.68	0.000197	1.43	244.58	75.7	0.14
Lateral Canal	South	10100	50-Year	406.85	-5.55	1.09	-3.12	1.12	0.000179	1.47	279.7	92.77	0.13
Lateral Canal	South	10100	100-Year	462.68	-5.55	1.52	-2.96	1.56	0.000159	1.49	319.17	148.17	0.13
Lateral Canal	South	10050	2-Year	143.23	-5.59	-0.87	-4.12	-0.86	0.000118	0.92	156.11	61.68	0.1
Lateral Canal	South	10050	5-Year	220.07	-5.59	-0.29	-3.82	-0.27	0.000156	1.13	194.62	69.53	0.12
Lateral Canal	South	10050	10-Year	275.33	-5.59	0.16	-3.62	0.18	0.00016	1.21	226.91	84.25	0.12
Lateral Canal	South	10050	25-Year	348.77	-5.59	0.64	-3.38	0.66	0.000169	1.32	263.82	99.73	0.13
Lateral Canal	South	10050	50-Year	406.85	-5.59	1.08	-3.21	1.11	0.000149	1.33	319.76	117.36	0.12
Lateral Canal	South	10050	100-Year	462.68	-5.59	1.52	-3.05	1.55	0.000131	1.33	376.74	136.89	0.12

HEC-RAS Output - Alternative 1

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Upper	1950	2-Year	79	-0.76	2.25	0.71	2.34	0.001031	2.35	33.62	14.11	0.27
WP-20 Canal	Upper	1950	5-Year	123	-0.76	3.1	1.09	3.21	0.001018	2.67	46.01	15.14	0.27
WP-20 Canal	Upper	1950	10-Year	158	-0.76	3.7	1.37	3.83	0.000997	2.85	55.37	15.87	0.27
WP-20 Canal	Upper	1950	25-Year	207	-0.76	4.45	1.71	4.6	0.000982	3.06	67.59	16.75	0.27
WP-20 Canal	Upper	1950	50-Year	247	-0.76	5.21	1.96	5.36	0.000868	3.06	80.73	83.45	0.25
WP-20 Canal	Upper	1950	100-Year	288	-0.76	6.06	2.22	6.16	0.000604	2.71	139.66	175	0.22
WP-20 Canal	Upper	1900	2-Year	79	-0.94	2.22	0.5	2.29	0.000766	2.1	37.63	15.57	0.24
WP-20 Canal	Upper	1900	5-Year	123	-0.94	3.07	0.88	3.16	0.000775	2.39	51.49	17.31	0.24
WP-20 Canal	Upper	1900	10-Year	158	-0.94	3.68	1.15	3.78	0.000772	2.52	62.63	19.37	0.25
WP-20 Canal	Upper	1900	25-Year	207	-0.94	4.44	1.49	4.54	0.000743	2.64	78.28	21.97	0.25
WP-20 Canal	Upper	1900	50-Year	247	-0.94	5.21	1.74	5.31	0.000723	2.53	97.53	29.54	0.25
WP-20 Canal	Upper	1900	100-Year	288	-0.94	6.07	1.98	6.12	0.000399	2.02	189.86	174.13	0.19
WP-20 Canal	Upper	1850	2-Year	79	-1.03	2.2	0.37	2.25	0.000583	1.88	41.95	16.77	0.21
WP-20 Canal	Upper	1850	5-Year	123	-1.03	3.05	0.72	3.12	0.000605	2.16	56.88	18.59	0.22
WP-20 Canal	Upper	1850	10-Year	158	-1.03	3.66	0.97	3.74	0.000604	2.3	68.73	20.38	0.22
WP-20 Canal	Upper	1850	25-Year	207	-1.03	4.41	1.28	4.51	0.000589	2.43	85.03	22.59	0.22
WP-20 Canal	Upper	1850	50-Year	247	-1.03	5.18	1.52	5.27	0.000472	2.38	105.59	97.56	0.2
WP-20 Canal	Upper	1850	100-Year	288	-1.03	6.06	1.75	6.1	0.000214	1.82	256.53	200	0.14
WP-20 Canal	Upper	1800	2-Year	79	-1.11	2.16	0.4	2.22	0.00066	1.97	40.09	16.77	0.22
WP-20 Canal	Upper	1800	5-Year	123	-1.11	3.01	0.78	3.09	0.000669	2.22	55.3	19.22	0.23
WP-20 Canal	Upper	1800	10-Year	158	-1.11	3.62	1.04	3.71	0.000651	2.33	67.73	21.49	0.23
WP-20 Canal	Upper	1800	25-Year	207	-1.11	4.38	1.37	4.48	0.000614	2.43	85.22	24.36	0.23
WP-20 Canal	Upper	1800	50-Year	247	-1.11	5.17	1.6	5.25	0.000474	2.26	127.62	117.27	0.2
WP-20 Canal	Upper	1800	100-Year	288	-1.11	6.06	1.83	6.09	0.000183	1.62	286.77	200	0.13
WP-20 Canal	Upper	1750	2-Year	79	-1.13	2.13	0.29	2.19	0.00056	1.85	42.67	17.16	0.21
WP-20 Canal	Upper	1750	5-Year	123	-1.13	2.98	0.64	3.05	0.000581	2.12	58.06	19.31	0.22
WP-20 Canal	Upper	1750	10-Year	**158**	**-1.13**	**3.6**	**0.89**	**3.67**	**0.000575**	**2.24**	**70.47**	**21.31**	**0.22**
WP-20 Canal	Upper	1750	25-Year	207	-1.13	4.36	1.2	4.44	0.000554	2.36	87.69	23.87	0.22
WP-20 Canal	Upper	1750	50-Year	247	-1.13	5.14	1.44	5.22	0.000503	2.28	108.79	118.71	0.21
WP-20 Canal	Upper	1750	100-Year	288	-1.13	6.05	1.66	6.08	0.000179	1.58	293.93	200	0.13
WP-20 Canal	Upper	1700	2-Year	79	-1.13	2.09	0.43	2.15	0.000731	2.03	39	16.84	0.23
WP-20 Canal	Upper	1700	5-Year	123	-1.13	2.94	0.79	3.02	0.000709	2.27	54.27	19.09	0.24
WP-20 Canal	Upper	1700	10-Year	158	-1.13	3.55	1.04	3.64	0.000668	2.38	66.42	20.58	0.23
WP-20 Canal	Upper	1700	25-Year	207	-1.13	4.32	1.37	4.41	0.000624	2.5	82.81	30.12	0.23
WP-20 Canal	Upper	1700	50-Year	247	-1.13	5.1	1.61	5.2	0.000494	2.44	103.19	145.02	0.21
WP-20 Canal	Upper	1700	100-Year	288	-1.13	6.05	1.83	6.07	0.000153	1.55	320.62	200	0.12
WP-20 Canal	Upper	1639		Olive Drive									
WP-20 Canal	Upper	1600	2-Year	79	-0.83	1.92	0.4	2	0.000962	2.26	35	15.72	0.27
WP-20 Canal	Upper	1600	5-Year	123	-0.83	2.76	0.78	2.86	0.000903	2.51	48.95	17.45	0.26
WP-20 Canal	Upper	1600	10-Year	158	-0.83	3.35	1.05	3.46	0.00086	2.65	59.61	18.66	0.26
WP-20 Canal	Upper	1600	25-Year	207	-0.83	4.13	1.39	4.25	0.000789	2.76	74.87	50.36	0.25
WP-20 Canal	Upper	1600	50-Year	247	-0.83	4.76	1.64	4.89	0.000723	2.8	88.31	93.38	0.25
WP-20 Canal	Upper	1600	100-Year	288	-0.83	5.64	1.87	5.68	0.000265	1.93	227.89	191.15	0.15
WP-20 Canal	Upper	1550	2-Year	79	-1.26	1.87	0.29	1.95	0.000885	2.22	35.65	15.17	0.25
WP-20 Canal	Upper	1550	5-Year	123	-1.26	2.71	0.66	2.81	0.000874	2.51	49.02	16.69	0.26
WP-20 Canal	Upper	1550	10-Year	158	-1.26	3.31	0.93	3.42	0.000859	2.67	59.27	18.04	0.26
WP-20 Canal	Upper	1550	25-Year	207	-1.26	4.09	1.26	4.21	0.000801	2.79	74.07	48.03	0.25
WP-20 Canal	Upper	1550	50-Year	247	-1.26	4.72	1.52	4.85	0.000749	2.84	87.09	88.13	0.25
WP-20 Canal	Upper	1550	100-Year	288	-1.26	5.55	1.75	5.65	0.000642	2.66	112.68	158.58	0.23
WP-20 Canal	Upper	1500	2-Year	79	-1.4	1.83	0.14	1.91	0.000844	2.19	35.99	14.54	0.25
WP-20 Canal	Upper	1500	5-Year	123	-1.4	2.67	0.52	2.77	0.00087	2.52	48.73	15.85	0.25
WP-20 Canal	Upper	1500	10-Year	158	-1.4	3.26	0.79	3.37	0.000876	2.71	58.37	16.99	0.26
WP-20 Canal	Upper	1500	25-Year	207	-1.4	4.04	1.13	4.17	0.000848	2.86	72.41	18.86	0.26
WP-20 Canal	Upper	1500	50-Year	247	-1.4	4.68	1.39	4.81	0.000805	2.9	85.03	40.76	0.25
WP-20 Canal	Upper	1500	100-Year	288	-1.4	5.54	1.64	5.62	0.000508	2.4	161.64	158.86	0.21

HEC-RAS Output - Alternative 1

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Upper	1450	2-Year	79	-1.11	1.8	0.19	1.86	0.000803	2.07	38.19	17.36	0.25
WP-20 Canal	Upper	1450	5-Year	123	-1.11	2.64	0.56	2.72	0.000731	2.29	53.7	18.99	0.24
WP-20 Canal	Upper	1450	10-Year	158	-1.11	3.24	0.81	3.33	0.000693	2.42	65.21	19.93	0.24
WP-20 Canal	Upper	1450	25-Year	207	-1.11	4.02	1.14	4.12	0.000647	2.53	81.68	27.83	0.23
WP-20 Canal	Upper	1450	50-Year	247	-1.11	4.66	1.38	4.77	0.000626	2.56	96.64	57.02	0.23
WP-20 Canal	Upper	1450	100-Year	288	-1.11	5.53	1.62	5.59	0.00035	2.07	185.47	109.76	0.18
WP-20 Canal	Upper	1400	2-Year	79	-1.46	1.75	0.07	1.82	0.000854	2.18	36.23	15.37	0.25
WP-20 Canal	Upper	1400	5-Year	123	-1.46	2.59	0.46	2.68	0.000866	2.45	50.2	17.97	0.26
WP-20 Canal	Upper	1400	10-Year	158	-1.46	3.18	0.73	3.29	0.000827	2.57	61.43	19.62	0.26
WP-20 Canal	Upper	1400	25-Year	207	-1.46	3.98	1.07	4.09	0.000766	2.66	77.8	22.22	0.25
WP-20 Canal	Upper	1400	50-Year	247	-1.46	4.62	1.33	4.73	0.000697	2.65	93.12	36.61	0.24
WP-20 Canal	Upper	1400	100-Year	288	-1.46	5.49	1.59	5.57	0.000439	2.28	167.73	163.21	0.2
WP-20 Canal	Upper	1350	2-Year	88	-1.57	1.68	0.09	1.77	0.001051	2.44	36.03	14.94	0.28
WP-20 Canal	Upper	1350	5-Year	137	-1.57	2.51	0.5	2.63	0.001068	2.79	49.05	16.39	0.28
WP-20 Canal	Upper	1350	10-Year	175	-1.57	3.1	0.79	3.24	0.001041	2.96	59.03	17.44	0.28
WP-20 Canal	Upper	1350	25-Year	230	-1.57	3.89	1.16	4.04	0.001008	3.14	73.34	19.24	0.28
WP-20 Canal	Upper	1350	50-Year	275	-1.57	4.53	1.44	4.68	0.000996	3.18	86.55	29.61	0.28
WP-20 Canal	Upper	1350	100-Year	321	-1.57	5.44	1.69	5.54	0.000593	2.71	156.14	196.1	0.23
WP-20 Canal	Upper	1300	2-Year	88	-1.23	1.63	0.32	1.72	0.001084	2.42	36.31	18.22	0.29
WP-20 Canal	Upper	1300	5-Year	137	-1.23	2.47	0.68	2.58	0.00092	2.68	51.03	19.69	0.28
WP-20 Canal	Upper	1300	10-Year	175	-1.23	3.06	0.93	3.19	0.000802	2.83	61.76	20.86	0.27
WP-20 Canal	Upper	1300	25-Year	230	-1.23	3.85	1.25	4	0.000694	3.03	75.97	23.5	0.26
WP-20 Canal	Upper	1300	50-Year	275	-1.23	4.49	1.49	4.65	0.000618	3.14	89.35	40.32	0.25
WP-20 Canal	Upper	1300	100-Year	321	-1.23	5.42	1.72	5.51	0.000549	2.48	195.08	200	0.22
WP-20 Canal	Upper	657		Markham-Peachtree Box Culvert									
WP-20 Canal	Upper	15	2-Year	**88**	**-2.2**	**0.15**		**0.26**	**0.000232**	**2.6**	**33.91**	**19.42**	**0.33**
WP-20 Canal	Upper	15	5-Year	137	-2.2	0.81		0.95	0.000212	2.99	45.76	22.06	0.33
WP-20 Canal	Upper	15	10-Year	175	-2.2	1.36		1.51	0.000181	3.15	55.56	24.23	0.32
WP-20 Canal	Upper	15	25-Year	230	-2.2	2.02		2.2	0.000164	3.41	67.44	26.87	0.31
WP-20 Canal	Upper	15	50-Year	275	-2.2	2.67		2.85	0.000138	3.48	79.11	29.47	0.29
WP-20 Canal	Upper	15	100-Year	321	-2.2	3.36		3.55	0.000115	3.5	91.59	32.24	0.27
WP-20 Canal	Lower	6100	2-Year	6.77	-2.82	0.23	-1.63	0.23	0.000007	0.18	37.72	38.24	0.02
WP-20 Canal	Lower	6100	5-Year	13.93	-2.82	0.91	-1.51	0.91	0.000011	0.27	52.45	40.26	0.03
WP-20 Canal	Lower	6100	10-Year	24.67	-2.82	1.46	-1.39	1.47	0.000018	0.38	65.11	41.89	0.04
WP-20 Canal	Lower	6100	25-Year	42.23	-2.82	2.17	-1.21	2.18	0.000026	0.51	82.22	44.12	0.05
WP-20 Canal	Lower	6100	50-Year	61.15	-2.82	2.8	-1.05	2.81	0.000032	0.62	98.21	45.77	0.06
WP-20 Canal	Lower	6100	100-Year	82.32	-2.82	3.49	-0.9	3.5	0.000035	0.71	116.38	47.54	0.06
WP-20 Canal	Lower	6050	2-Year	6.77	-1.7	0.22	-1.34	0.22	0.000028	0.3	22.81	16.14	0.04
WP-20 Canal	Lower	6050	5-Year	13.93	-1.7	0.91	-1.19	0.91	0.000035	0.41	34.33	17.6	0.05
WP-20 Canal	Lower	6050	10-Year	24.67	-1.7	1.46	-1	1.46	0.000052	0.56	44.37	18.73	0.06
WP-20 Canal	Lower	6050	25-Year	42.23	-1.7	2.17	-0.76	2.17	0.00007	0.73	58.12	20.18	0.08
WP-20 Canal	Lower	6050	50-Year	61.15	-1.7	2.79	-0.55	2.81	0.000082	0.86	71.22	21.48	0.08
WP-20 Canal	Lower	6050	100-Year	82.32	-1.7	3.48	-0.33	3.5	0.000086	0.95	86.52	22.95	0.09
WP-20 Canal	Lower	6000	2-Year	6.77	-1.82	0.22	-1.48	0.22	0.000019	0.27	25.52	15.58	0.04
WP-20 Canal	Lower	6000	5-Year	13.93	-1.82	0.9	-1.34	0.91	0.000028	0.38	36.59	16.86	0.05
WP-20 Canal	Lower	6000	10-Year	24.67	-1.82	1.46	-1.16	1.46	0.000044	0.53	46.17	17.89	0.06
WP-20 Canal	Lower	6000	25-Year	42.23	-1.82	2.16	-0.94	2.17	0.000064	0.71	59.24	19.16	0.07
WP-20 Canal	Lower	6000	50-Year	61.15	-1.82	2.79	-0.74	2.8	0.000078	0.85	71.64	20.3	0.08
WP-20 Canal	Lower	6000	100-Year	82.32	-1.82	3.48	-0.54	3.49	0.000085	0.96	86.06	21.62	0.08
WP-20 Canal	Lower	5969		Pedestrian Walkway Culvert									
WP-20 Canal	Lower	5950	2-Year	6.77	-1.96	0.22	-1.5	0.22	0.000021	0.27	25.06	16.45	0.04
WP-20 Canal	Lower	5950	5-Year	13.93	-1.96	0.9	-1.34	0.9	0.000028	0.38	36.54	17.4	0.05
WP-20 Canal	Lower	5950	10-Year	24.67	-1.96	1.44	-1.15	1.44	0.000045	0.53	46.22	18.46	0.06
WP-20 Canal	Lower	5950	25-Year	42.23	-1.96	2.13	-0.91	2.13	0.000067	0.71	59.68	20.88	0.07
WP-20 Canal	Lower	5950	50-Year	61.15	-1.96	2.73	-0.69	2.74	0.00008	0.84	72.59	22	0.08

HEC-RAS Output - Alternative 1

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Lower	5950	100-Year	82.32	-1.96	3.38	-0.48	3.39	0.000086	0.94	87.35	23.22	0.09
WP-20 Canal	Lower	5900	2-Year	6.77	-2.01	0.22	-1.52	0.22	0.000022	0.28	24.43	15.49	0.04
WP-20 Canal	Lower	5900	5-Year	13.93	-2.01	0.9	-1.34	0.9	0.000031	0.39	35.49	16.97	0.05
WP-20 Canal	Lower	5900	10-Year	24.67	-2.01	1.44	-1.18	1.44	0.000048	0.55	44.94	17.92	0.06
WP-20 Canal	Lower	5900	25-Year	42.23	-2.01	2.12	-0.93	2.13	0.000069	0.73	57.62	19.13	0.07
WP-20 Canal	Lower	5900	50-Year	61.15	-2.01	2.72	-0.72	2.73	0.000086	0.88	69.43	20.18	0.08
WP-20 Canal	Lower	5900	100-Year	82.32	-2.01	3.37	-0.51	3.39	0.000095	0.99	82.99	21.55	0.09
WP-20 Canal	Lower	5850	2-Year	6.77	-2.13	0.22	-1.68	0.22	0.000015	0.25	27.09	15.03	0.03
WP-20 Canal	Lower	5850	5-Year	13.93	-2.13	0.89	-1.52	0.9	0.000024	0.37	37.55	15.86	0.04
WP-20 Canal	Lower	5850	10-Year	24.67	-2.13	1.43	-1.32	1.44	0.000041	0.53	46.3	16.52	0.06
WP-20 Canal	Lower	5850	25-Year	42.23	-2.13	2.12	-1.09	2.13	0.000064	0.73	57.87	17.35	0.07
WP-20 Canal	Lower	5850	50-Year	61.15	-2.13	2.72	-0.89	2.73	0.000084	0.89	68.52	18.36	0.08
WP-20 Canal	Lower	5850	100-Year	82.32	-2.13	3.37	-0.68	3.38	0.000099	1.02	81.01	20.15	0.09
WP-20 Canal	Lower	5800	2-Year	6.77	-2.07	0.22	-1.61	0.22	0.000016	0.25	26.78	15.43	0.03
WP-20 Canal	Lower	5800	5-Year	13.93	-2.07	0.89	-1.47	0.89	0.000025	0.37	37.65	16.64	0.04
WP-20 Canal	Lower	5800	10-Year	24.67	-2.07	1.43	-1.3	1.44	0.000042	0.53	46.87	17.54	0.06
WP-20 Canal	Lower	5800	25-Year	42.23	-2.07	2.11	-1.07	2.12	0.000063	0.71	59.23	18.77	0.07
WP-20 Canal	Lower	5800	50-Year	61.15	-2.07	2.71	-0.87	2.73	0.00008	0.86	70.74	19.67	0.08
WP-20 Canal	Lower	5800	100-Year	82.32	-2.07	3.36	-0.67	3.38	0.00009	0.98	83.87	20.73	0.09
WP-20 Canal	Lower	5750	2-Year	6.77	-2.04	0.22	-1.56	0.22	0.000016	0.27	24.89	16	0.04
WP-20 Canal	Lower	5750	5-Year	13.93	-2.04	0.89	-1.37	0.89	0.000024	0.41	34.35	17.38	0.05
WP-20 Canal	Lower	5750	10-Year	24.67	-2.04	1.43	-1.18	1.43	0.000038	0.59	41.89	18.37	0.06
WP-20 Canal	Lower	5750	25-Year	42.23	-2.04	2.11	-0.94	2.12	0.000057	0.82	51.4	19.36	0.08
WP-20 Canal	Lower	5750	50-Year	61.15	-2.04	2.7	-0.74	2.72	0.000072	1.02	59.74	20.51	0.09
WP-20 Canal	Lower	5750	100-Year	82.32	-2.04	3.35	-0.54	3.37	0.000082	1.2	68.8	21.88	0.1
WP-20 Canal	Lower	5711		Kasey Street									
WP-20 Canal	Lower	5650	2-Year	6.77	-2.49	0.21	-2.17	0.22	0.00001	0.25	27.34	17.41	0.03
WP-20 Canal	Lower	5650	5-Year	13.93	-2.49	0.89	-2	0.89	0.000021	0.39	35.69	19.36	0.04
WP-20 Canal	Lower	5650	10-Year	24.67	-2.49	1.43	-1.82	1.43	0.000039	0.58	42.84	20.9	0.06
WP-20 Canal	Lower	5650	25-Year	42.23	-2.49	2.1	-1.56	2.11	0.00006	0.81	52.27	22.84	0.07
WP-20 Canal	Lower	5650	50-Year	61.15	-2.49	2.68	-1.33	2.7	0.000077	1.01	60.45	24.52	0.09
WP-20 Canal	Lower	5650	100-Year	82.32	-2.49	3.31	-1.09	3.33	0.000089	1.19	69.17	26.32	0.09
WP-20 Canal	Lower	5550	2-Year	6.77	-2.55	0.21	-2.13	0.21	0.000008	0.19	35.04	17.47	0.02
WP-20 Canal	Lower	5550	5-Year	13.93	-2.55	0.89	-1.98	0.89	0.000014	0.29	47.49	19.43	0.03
WP-20 Canal	Lower	5550	10-Year	24.67	-2.55	1.42	-1.8	1.43	0.000024	0.42	58.3	20.99	0.04
WP-20 Canal	Lower	5550	25-Year	42.23	-2.55	2.1	-1.56	2.1	0.000038	0.58	73.11	22.94	0.06
WP-20 Canal	Lower	5550	50-Year	61.15	-2.55	2.68	-1.35	2.69	0.00005	0.7	87.04	24.64	0.07
WP-20 Canal	Lower	5550	100-Year	82.32	-2.55	3.31	-1.14	3.32	0.000057	0.8	102.99	26.46	0.07
WP-20 Canal	Lower	5500	2-Year	35.77	-2.59	0.19	-1.61	0.21	0.00023	1.05	34.14	17.37	0.13
WP-20 Canal	Lower	5500	5-Year	56.93	-2.59	0.86	-1.36	0.88	0.000246	1.23	46.38	19.32	0.14
WP-20 Canal	Lower	5500	10-Year	78.67	-2.59	1.39	-1.14	1.42	0.000264	1.38	57.01	73.83	0.15
WP-20 Canal	Lower	5500	25-Year	112.23	-2.59	2.05	-0.84	2.09	0.000287	1.57	71.55	78.8	0.16
WP-20 Canal	Lower	5500	50-Year	143.15	-2.59	2.64	-0.6	2.68	0.000288	1.68	85.31	83.13	0.16
WP-20 Canal	Lower	5500	100-Year	178.32	-2.59	3.26	-0.37	3.31	0.000284	1.76	101.11	87.92	0.16
WP-20 Canal	Lower	5400	2-Year	35.77	-2.66	0.17	-1.56	0.19	0.000239	1.06	33.64	17.24	0.13
WP-20 Canal	Lower	5400	5-Year	56.93	-2.66	0.83	-1.33	0.86	0.000253	1.24	45.73	19.07	0.14
WP-20 Canal	Lower	5400	10-Year	78.67	-2.66	1.36	-1.12	1.39	0.000273	1.4	56.16	72.66	0.15
WP-20 Canal	Lower	5400	25-Year	112.23	-2.66	2.02	-0.82	2.06	0.000298	1.59	70.47	77.37	0.16
WP-20 Canal	Lower	5400	50-Year	143.15	-2.66	2.61	-0.6	2.65	0.000299	1.7	84.08	81.5	0.16
WP-20 Canal	Lower	5400	100-Year	178.32	-2.66	3.23	-0.36	3.28	0.000332	1.77	101.03	102.14	0.17
WP-20 Canal	Lower	5300	2-Year	35.77	-2.72	0.15	-1.6	0.16	0.00023	1.05	34.07	17.27	0.13
WP-20 Canal	Lower	5300	5-Year	56.93	-2.72	0.81	-1.36	0.83	0.000246	1.23	46.12	18.99	0.14
WP-20 Canal	Lower	5300	10-Year	78.67	-2.72	1.33	-1.15	1.36	0.000266	1.39	56.44	20.34	0.15
WP-20 Canal	Lower	5300	25-Year	112.23	-2.72	1.99	-0.87	2.03	0.000292	1.59	70.43	22.04	0.16
WP-20 Canal	Lower	5300	50-Year	143.15	-2.72	2.57	-0.64	2.62	0.000333	1.69	84.58	27.04	0.17

HEC-RAS Output - Alternative 1

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Lower	5300	100-Year	178.32	-2.72	3.2	-0.41	3.24	0.000339	1.73	103.13	43.49	0.17
WP-20 Canal	Lower	5246	2-Year	35.77	-2.76	0.14	-1.69	0.15	0.000191	0.98	36.6	17.95	0.12
WP-20 Canal	Lower	5246	5-Year	56.93	-2.76	0.8	-1.43	0.82	0.000208	1.16	48.97	19.34	0.13
WP-20 Canal	Lower	5246	10-Year	78.67	-2.76	1.32	-1.22	1.35	0.000228	1.32	59.4	20.44	0.14
WP-20 Canal	Lower	5246	25-Year	112.23	-2.76	1.98	-0.96	2.02	0.000258	1.53	73.35	22.01	0.15
WP-20 Canal	Lower	5246	50-Year	143.15	-2.76	2.56	-0.73	2.6	0.000268	1.65	86.52	23.59	0.15
WP-20 Canal	Lower	5246	100-Year	178.32	-2.76	3.18	-0.51	3.22	0.000272	1.75	101.71	25.69	0.16
WP-20 Canal	Lower	5229	2-Year	35.77	-2.76	0.05	-1.03	0.14	0.001387	2.42	14.81	17.76	0.32
WP-20 Canal	Lower	5229	5-Year	56.93	-2.76	0.68	-0.68	0.8	0.001399	2.8	20.32	19.09	0.33
WP-20 Canal	Lower	5229	10-Year	78.67	-2.76	1.17	-0.38	1.33	0.001491	3.16	24.9	20.13	0.34
WP-20 Canal	Lower	5229	25-Year	112.23	-2.76	1.79	0.03	1.99	0.001634	3.62	30.98	21.48	0.37
WP-20 Canal	Lower	5229	50-Year	143.15	-2.76	2.34	0.37	2.57	0.001645	3.89	36.77	22.98	0.37
WP-20 Canal	Lower	5229	100-Year	178.32	-2.76	2.93	0.72	3.19	0.001635	4.11	43.43	24.82	0.38
WP-20 Canal	Lower	5205		Annette Drive									
WP-20 Canal	Lower	5181	2-Year	35.77	-2.38	0.09		0.13	0.000412	1.47	24.39	21.72	0.18
WP-20 Canal	Lower	5181	5-Year	56.93	-2.38	0.74		0.79	0.000417	1.77	32.12	23.78	0.19
WP-20 Canal	Lower	5181	10-Year	78.67	-2.38	1.24		1.3	0.00045	2.06	38.13	25.09	0.2
WP-20 Canal	Lower	5181	25-Year	112.23	-2.38	1.85		1.95	0.000508	2.47	45.49	26.69	0.22
WP-20 Canal	Lower	5181	50-Year	143.15	-2.38	2.36		2.48	0.000542	2.77	51.62	28.06	0.24
WP-20 Canal	Lower	5181	100-Year	178.32	-2.38	2.87		3.02	0.000582	3.09	57.68	29.43	0.25
WP-20 Canal	Lower	5163	2-Year	35.77	-2.38	0.1	-1.62	0.12	0.000176	0.89	39.99	21.76	0.12
WP-20 Canal	Lower	5163	5-Year	56.93	-2.38	0.75	-1.4	0.77	0.000177	1.04	54.9	23.82	0.12
WP-20 Canal	Lower	5163	10-Year	78.67	-2.38	1.26	-1.21	1.29	0.000186	1.17	67.39	25.16	0.13
WP-20 Canal	Lower	5163	25-Year	112.23	-2.38	1.89	-0.96	1.92	0.000203	1.34	83.7	26.8	0.13
WP-20 Canal	Lower	5163	50-Year	143.15	-2.38	2.42	-0.75	2.45	0.00021	1.46	98.14	28.21	0.14
WP-20 Canal	Lower	5163	100-Year	**178.32**	**-2.38**	**2.94**	**-0.54**	**2.98**	**0.000219**	**1.58**	**113.19**	**29.62**	**0.14**
WP-20 Canal	Lower	5100	2-Year	35.77	-2.46	0.09		0.1	0.00018	0.9	39.71	21.82	0.12
WP-20 Canal	Lower	5100	5-Year	56.93	-2.46	0.74		0.76	0.000182	1.04	54.79	24.25	0.12
WP-20 Canal	Lower	5100	10-Year	78.67	-2.46	1.25		1.27	0.000189	1.17	67.5	25.65	0.13
WP-20 Canal	Lower	5100	25-Year	112.23	-2.46	1.88		1.91	0.000204	1.33	84.11	27.37	0.13
WP-20 Canal	Lower	5100	50-Year	143.15	-2.46	2.4		2.44	0.00021	1.45	98.85	28.8	0.14
WP-20 Canal	Lower	5100	100-Year	178.32	-2.46	2.92		2.96	0.000216	1.56	114.2	30.21	0.14
WP-20 Canal	Lower	5000	2-Year	35.77	-2.57	0.07	-1.68	0.09	0.00019	0.92	39.02	21.78	0.12
WP-20 Canal	Lower	5000	5-Year	56.93	-2.57	0.72	-1.45	0.74	0.000194	1.05	54.32	25.02	0.13
WP-20 Canal	Lower	5000	10-Year	78.67	-2.57	1.23	-1.25	1.25	0.000197	1.17	67.45	26.53	0.13
WP-20 Canal	Lower	5000	25-Year	112.23	-2.57	1.86	-0.99	1.89	0.000208	1.33	84.62	28.32	0.14
WP-20 Canal	Lower	5000	50-Year	143.15	-2.57	2.38	-0.78	2.42	0.00021	1.43	99.86	29.76	0.14
WP-20 Canal	Lower	5000	100-Year	178.32	-2.57	2.9	-0.56	2.94	0.000214	1.54	115.7	31.2	0.14
WP-20 Canal	Lower	4900	2-Year	35.77	-2.69	0.05	-1.73	0.07	0.000197	0.93	38.48	21.54	0.12
WP-20 Canal	Lower	4900	5-Year	56.93	-2.69	0.7	-1.5	0.72	0.000206	1.06	53.84	25.65	0.13
WP-20 Canal	Lower	4900	10-Year	78.67	-2.69	1.21	-1.29	1.23	0.000205	1.17	67.44	27.52	0.13
WP-20 Canal	Lower	4900	25-Year	112.23	-2.69	1.84	-1.03	1.87	0.000211	1.32	85.19	29.27	0.14
WP-20 Canal	Lower	4900	50-Year	143.15	-2.69	2.36	-0.8	2.39	0.00021	1.42	100.93	30.73	0.14
WP-20 Canal	Lower	4900	100-Year	178.32	-2.69	2.88	-0.57	2.92	0.000212	1.52	117.28	32.18	0.14
WP-20 Canal	Lower	4800	2-Year	35.77	-2.81	0.03	-1.77	0.05	0.000201	0.94	37.95	21.11	0.12
WP-20 Canal	Lower	4800	5-Year	56.93	-2.81	0.68	-1.53	0.7	0.000217	1.07	53.25	25.98	0.13
WP-20 Canal	Lower	4800	10-Year	78.67	-2.81	1.19	-1.33	1.21	0.000216	1.17	67.28	28.48	0.13
WP-20 Canal	Lower	4800	25-Year	112.23	-2.81	1.82	-1.05	1.84	0.000216	1.31	85.64	30.24	0.14
WP-20 Canal	Lower	4800	50-Year	143.15	-2.81	2.34	-0.82	2.37	0.000211	1.4	101.91	31.73	0.14
WP-20 Canal	Lower	4800	100-Year	178.32	-2.81	2.86	-0.59	2.9	0.000211	1.5	118.79	33.2	0.14
WP-20 Canal	Lower	4750	2-Year	35.77	-2.87	0.02	-1.79	0.04	0.0002	0.95	37.81	20.82	0.12
WP-20 Canal	Lower	4750	5-Year	56.93	-2.87	0.67	-1.55	0.69	0.000221	1.07	53.03	26.08	0.13
WP-20 Canal	Lower	4750	10-Year	78.67	-2.87	1.18	-1.34	1.2	0.000221	1.17	67.2	28.95	0.14
WP-20 Canal	Lower	4750	25-Year	112.23	-2.87	1.81	-1.06	1.83	0.000218	1.31	85.86	30.74	0.14
WP-20 Canal	Lower	4750	50-Year	143.15	-2.87	2.33	-0.83	2.36	0.000212	1.4	102.42	32.23	0.14

HEC-RAS Output - Alternative 1

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20				178.32	-2.87	2.85	-0.6	2.89	0.00021	1.49	119.56	33.72	0.14
WP-20				35.77	-3.05	-0.01	-1.87	0.01	0.000198	0.94	37.96	20.86	0.12
WP-20				56.93	-3.05	0.64	-1.62	0.66	0.000221	1.08	52.85	25.75	0.13
WP-20				78.67	-3.05	1.15	-1.4	1.17	0.000234	1.17	67.07	30.14	0.14
WP-20				112.23	-3.05	1.77	-1.11	1.8	0.000224	1.29	86.71	32.26	0.14
WP-20				143.15	-3.05	2.3	-0.87	2.33	0.000213	1.37	104.12	33.79	0.14
WP-20				178.32	-3.05	2.82	-0.63	2.85	0.000217	1.46	122.27	36.74	0.14
WP-20				35.77	-3.17	-0.03	-1.93	-0.01	0.000196	0.93	38.45	21.34	0.12
WP-20				56.93	-3.17	0.62	-1.66	0.63	0.000211	1.07	53.08	25.07	0.13
WP-20				78.67	-3.17	1.12	-1.43	1.15	0.000234	1.17	67.05	30.04	0.14
WP-20				112.23	-3.17	1.75	-1.13	1.78	0.000229	1.29	87.23	33.3	0.14
WP-20				143.15	-3.17	2.28	-0.9	2.31	0.000214	1.36	105.25	34.85	0.14
WP-20				178.32	-3.17	2.8	-0.66	2.83	0.000217	1.43	124.5	38.68	0.14
WP-20				35.77	-3.29	-0.05	-1.99	-0.03	0.000185	0.91	39.29	21.53	0.12
WP-20				56.93	-3.29	0.6	-1.71	0.61	0.000192	1.06	53.82	23.98	0.12
WP-20				78.67	-3.29	1.1	-1.46	1.12	0.000227	1.17	67.31	29.53	0.14
WP-20				112.23	-3.29	1.73	-1.16	1.75	0.000234	1.28	87.74	34.35	0.14
WP-20				143.15	-3.29	2.26	-0.92	2.29	0.000223	1.34	106.66	37.39	0.14
WP-20				178.32	-3.29	2.78	-0.69	2.81	0.000216	1.41	126.91	40.42	0.14
WP-20				35.77	-3.41	-0.06	-2.05	-0.05	0.000171	0.88	40.47	21.8	0.11
WP-20				56.93	-3.41	0.58	-1.76	0.6	0.000177	1.03	55.13	23.92	0.12
WP-20				78.67	-3.41	1.08	-1.49	1.1	0.000212	1.16	68.03	28.62	0.13
WP-20				112.23	-3.41	1.7	-1.19	1.73	0.000243	1.27	88.31	35.95	0.14
WP-20				143.15	-3.41	2.24	-0.95	2.26	0.000224	1.32	108.33	39.08	0.14
WP-20				178.32	-3.41	2.76	-0.73	2.79	0.000212	1.38	129.48	41.96	0.14
WP-20				**35.77**	**-3.53**	**-0.08**	**-2.1**	**-0.07**	**0.000156**	**0.85**	**41.87**	**22.1**	**0.11**
WP-20				56.93	-3.53	0.56	-1.79	0.58	0.000164	1	56.7	24.19	0.12
WP-20				78.67	-3.53	1.06	-1.53	1.08	0.00019	1.14	69.23	27.27	0.13
WP-20				112.23	-3.53	1.68	-1.22	1.71	0.000244	1.26	89.07	36.84	0.14
WP-20				143.15	-3.53	2.22	-1	2.24	0.000221	1.3	109.78	39.99	0.14
WP-20				178.32	-3.53	2.74	-0.79	2.77	0.000205	1.36	131.33	47.91	0.14
WP-20				35.77	-3.65	-0.09	-2.17	-0.08	0.00014	0.82	43.64	22.47	0.1
WP-20				56.93	-3.65	0.55	-1.82	0.56	0.00015	0.97	58.68	24.52	0.11
WP-20				78.67	-3.65	1.04	-1.56	1.06	0.000167	1.1	71.22	26.45	0.12
WP-20				112.23	-3.65	1.66	-1.27	1.68	0.000227	1.24	90.23	35.87	0.14
WP-20				143.15	-3.65	2.19	-1.08	2.22	0.000218	1.29	111.24	40.88	0.14
WP-20				178.32	-3.65	2.72	-0.88	2.75	0.000199	1.34	133.27	72.4	0.13
WP-20				35.77	-3.77	-0.1	-2.22	-0.1	0.000123	0.78	45.75	22.9	0.1
WP-20				56.93	-3.77	0.53	-1.85	0.55	0.000135	0.93	61.03	24.92	0.11
WP-20				78.67	-3.77	1.03	-1.61	1.04	0.000162	1.06	74.1	28.69	0.12
WP-20				112.23	-3.77	1.64	-1.37	1.66	0.000222	1.19	94.23	39.39	0.14
WP-20				143.15	-3.77	2.17	-1.17	2.2	0.000225	1.21	118.56	49.65	0.14
WP-20				178.32	-3.77	2.7	-0.97	2.73	0.000209	1.22	146.62	57.38	0.13
WP-20				35.77	-3.88	-0.12	-2.28	-0.11	0.000107	0.74	48.07	23.36	0.09
WP-20				56.93	-3.88	0.52	-1.89	0.53	0.000122	0.89	63.64	25.56	0.1
WP-20				78.67	-3.88	1.01	-1.71	1.03	0.000137	1.03	76.57	27.14	0.11
WP-20				112.23	-3.88	1.62	-1.47	1.64	0.000174	1.2	93.77	31.72	0.12
WP-20				143.15	-3.88	2.15	-1.27	2.17	0.000213	1.26	113.37	41.84	0.14
WP-20				178.32	-3.88	2.68	-1.07	2.7	0.000197	1.31	136.09	44.63	0.13
WP-20				35.77	-4	-0.12	-2.22	-0.12	0.000092	0.7	50.82	23.87	0.09
WP-20				56.93	-4	0.51	-2.01	0.52	0.000112	0.85	67.03	27.44	0.1
WP-20				78.67	-4	1	-1.83	1.02	0.00013	0.97	81.23	30.57	0.1
WP-20				112.23	-4	1.6	-1.59	1.62	0.000151	1.11	100.78	34.42	0.11
WP-20				143.15	-4	2.13	-1.39	2.15	0.000191	1.17	122.16	46.81	0.13
WP-20				178.32	-4	2.66	-1.19	2.68	0.000188	1.19	150.57	73.42	0.13

HEC-RAS Output - Alternative 1

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Lower	3700	2-Year	52.77	-3.89	-0.15	-1.99	-0.13	0.000232	1.1	48.14	23.28	0.13
WP-20 Canal	Lower	3700	5-Year	83.93	-3.89	0.48	-1.73	0.5	0.000263	1.32	63.37	25.12	0.15
WP-20 Canal	Lower	3700	10-Year	112.67	-3.89	0.96	-1.52	0.99	0.000281	1.49	75.81	26.35	0.15
WP-20 Canal	Lower	3700	25-Year	157.23	-3.89	1.55	-1.24	1.6	0.000314	1.71	91.85	27.84	0.17
WP-20 Canal	Lower	3700	50-Year	197.15	-3.89	2.07	-1.02	2.12	0.000384	1.83	107.74	46.8	0.18
WP-20 Canal	Lower	3700	100-Year	241.32	-3.89	2.6	-0.8	2.65	0.000393	1.84	138.99	85.69	0.19
WP-20 Canal	Lower	3600	2-Year	52.77	-3.72	-0.18	-1.88	-0.16	0.000293	1.2	44.13	22.44	0.15
WP-20 Canal	Lower	3600	5-Year	83.93	-3.72	0.44	-1.61	0.47	0.000323	1.43	58.76	24.44	0.16
WP-20 Canal	Lower	3600	10-Year	112.67	-3.72	0.92	-1.4	0.96	0.00034	1.59	70.88	25.89	0.17
WP-20 Canal	Lower	3600	25-Year	157.23	-3.72	1.51	-1.12	1.56	0.000373	1.82	86.6	27.59	0.18
WP-20 Canal	Lower	3600	50-Year	197.15	-3.72	2.02	-0.9	2.08	0.000426	1.94	101.68	40.73	0.19
WP-20 Canal	Lower	3600	100-Year	241.32	-3.72	2.55	-0.67	2.61	0.000465	2	120.69	83.26	0.2
WP-20 Canal	Lower	3500	2-Year	52.77	-3.54	-0.22	-1.77	-0.19	0.000379	1.31	40.13	21.61	0.17
WP-20 Canal	Lower	3500	5-Year	83.93	-3.54	0.4	-1.5	0.44	0.000403	1.55	54.16	23.64	0.18
WP-20 Canal	Lower	3500	10-Year	112.67	-3.54	0.88	-1.28	0.92	0.000416	1.71	65.86	25.21	0.19
WP-20 Canal	Lower	3500	25-Year	157.23	-3.54	1.46	-0.99	1.52	0.00045	1.94	81.14	27.16	0.2
WP-20 Canal	Lower	3500	50-Year	197.15	-3.54	1.97	-0.77	2.04	0.000488	2.06	95.62	31.09	0.21
WP-20 Canal	Lower	3500	100-Year	241.32	-3.54	2.49	-0.54	2.56	0.000522	2.13	113.41	74.35	0.22
WP-20 Canal	Lower	3300	2-Year	52.77	-3.19	-0.34	-1.54	-0.3	0.000724	1.66	31.84	19.86	0.23
WP-20 Canal	Lower	3300	5-Year	83.93	-3.19	0.28	-1.25	0.33	0.000683	1.88	44.76	21.99	0.23
WP-20 Canal	Lower	3300	10-Year	112.67	-3.19	0.76	-1.02	0.82	0.00066	2.02	55.67	23.64	0.23
WP-20 Canal	Lower	3300	25-Year	157.23	-3.19	1.33	-0.74	1.41	0.000678	2.25	69.83	25.62	0.24
WP-20 Canal	Lower	3300	50-Year	197.15	-3.19	1.83	-0.51	1.92	0.000675	2.37	83.14	28.06	0.24
WP-20 Canal	Lower	3300	100-Year	241.32	-3.19	2.34	-0.27	2.44	0.000712	2.44	98.91	33.58	0.25
WP-20 Canal	Lower	3200	2-Year	52.77	-3.02	-0.45	-1.43	-0.39	0.001144	1.95	27.1	18.83	0.29
WP-20 Canal	Lower	3200	5-Year	83.93	-3.02	0.18	-1.12	0.25	0.00096	2.12	39.63	21.06	0.27
WP-20 Canal	Lower	3200	10-Year	**112.67**	**-3.02**	**0.66**	**-0.9**	**0.74**	**0.000879**	**2.24**	**50.22**	**22.76**	**0.27**
WP-20 Canal	Lower	3200	25-Year	157.23	-3.02	1.24	-0.61	1.33	0.00087	2.46	63.85	24.79	0.27
WP-20 Canal	Lower	3200	50-Year	197.15	-3.02	1.74	-0.37	1.84	0.000816	2.57	76.8	26.57	0.27
WP-20 Canal	Lower	3200	100-Year	241.32	-3.02	2.25	-0.14	2.36	0.000847	2.64	91.35	59.62	0.27
WP-20 Canal	Lower	3139	2-Year	52.77	-2.91	-0.51	-1.92	-0.47	0.000592	1.6	32.98	18.2	0.21
WP-20 Canal	Lower	3139	5-Year	83.93	-2.91	0.12	-1.62	0.17	0.00062	1.86	45.16	20.47	0.22
WP-20 Canal	Lower	3139	10-Year	112.67	-2.91	0.6	-1.39	0.66	0.000631	2.03	55.49	22.21	0.23
WP-20 Canal	Lower	3139	25-Year	157.23	-2.91	1.17	-1.08	1.25	0.000681	2.29	68.73	24.26	0.24
WP-20 Canal	Lower	3139	50-Year	197.15	-2.91	1.68	-0.83	1.77	0.000672	2.42	81.47	26.08	0.24
WP-20 Canal	Lower	3139	100-Year	241.32	-2.91	2.18	-0.57	2.28	0.000682	2.53	95.26	55.14	0.25
WP-20 Canal	Lower	3119	2-Year	52.77	-2.91	-0.53	-1.92	-0.49	0.000604	1.61	32.75	18.15	0.21
WP-20 Canal	Lower	3119	5-Year	83.93	-2.91	0.1	-1.62	0.16	0.000631	1.87	44.89	20.42	0.22
WP-20 Canal	Lower	3119	10-Year	112.67	-2.91	0.59	-1.4	0.65	0.000625	2.04	55.14	22.16	0.23
WP-20 Canal	Lower	3119	25-Year	157.23	-2.91	1.15	-1.09	1.24	0.000655	2.32	67.8	24.2	0.24
WP-20 Canal	Lower	3119	50-Year	197.15	-2.91	1.66	-0.83	1.75	0.000613	2.48	79.38	26.02	0.24
WP-20 Canal	Lower	3119	100-Year	241.32	-2.91	2.16	-0.57	2.27	0.000586	2.66	90.86	53.11	0.24
WP-20 Canal	Lower	3090		Spartan Drive Parking Lot East									
WP-20 Canal	Lower	3073	2-Year	52.77	-3.58	-0.57	-2.34	-0.53	0.000609	1.71	30.8	14.74	0.21
WP-20 Canal	Lower	3073	5-Year	83.93	-3.58	0.05	-1.98	0.11	0.000759	2.05	40.87	17.76	0.24
WP-20 Canal	Lower	3073	10-Year	112.67	-3.58	0.52	-1.69	0.6	0.000826	2.26	49.83	20.07	0.25
WP-20 Canal	Lower	3073	25-Year	157.23	-3.58	1.07	-1.31	1.17	0.000892	2.56	61.34	22.73	0.27
WP-20 Canal	Lower	3073	50-Year	197.15	-3.58	1.55	-1	1.67	0.00087	2.73	72.29	60.9	0.27
WP-20 Canal	Lower	3073	100-Year	241.32	-3.58	2.03	-0.66	2.16	0.000814	2.9	83.26	94.51	0.27
WP-20 Canal	Lower	3040	2-Year	52.77	-3.58	-0.6	-2.33	-0.55	0.000624	1.73	30.48	14.64	0.21
WP-20 Canal	Lower	3040	5-Year	83.93	-3.58	0.02	-1.98	0.09	0.000782	2.08	40.39	17.63	0.24
WP-20 Canal	Lower	3040	10-Year	112.67	-3.58	0.49	-1.69	0.57	0.000851	2.29	49.24	19.92	0.26
WP-20 Canal	Lower	3040	25-Year	157.23	-3.58	1.03	-1.31	1.14	0.000964	2.59	60.79	22.57	0.28
WP-20 Canal	Lower	3040	50-Year	197.15	-3.58	1.52	-0.99	1.64	0.001044	2.71	72.63	47.02	0.29
WP-20 Canal	Lower	3040	100-Year	241.32	-3.58	2.01	-0.66	2.13	0.00112	2.76	87.37	89.24	0.3

HEC-RAS Output - Alternative 1

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Lower	3000	2-Year	52.77	-3.59	-0.62	-2.36	-0.57	0.000605	1.68	31.35	15.66	0.21
WP-20 Canal	Lower	3000	5-Year	83.93	-3.59	-0.01	-1.99	0.05	0.000731	2.01	41.76	18.49	0.24
WP-20 Canal	Lower	3000	10-Year	112.67	-3.59	0.46	-1.72	0.54	0.000784	2.21	50.96	20.68	0.25
WP-20 Canal	Lower	3000	25-Year	157.23	-3.59	1	-1.33	1.1	0.000884	2.5	62.81	23.19	0.27
WP-20 Canal	Lower	3000	50-Year	197.15	-3.59	1.49	-1.01	1.6	0.000956	2.63	74.87	39.12	0.28
WP-20 Canal	Lower	3000	100-Year	241.32	-3.59	1.97	-0.68	2.08	0.001018	2.69	89.61	83.45	0.29
WP-20 Canal	Lower	2900	2-Year	52.77	-3.62	-0.67	-2.41	-0.63	0.000502	1.53	34.55	17.92	0.19
WP-20 Canal	Lower	2900	5-Year	83.93	-3.62	-0.07	-2.05	-0.01	0.000581	1.82	46.09	20.44	0.21
WP-20 Canal	Lower	2900	10-Year	112.67	-3.62	0.4	-1.77	0.46	0.000617	2.01	56.09	22.39	0.22
WP-20 Canal	Lower	2900	25-Year	157.23	-3.62	0.93	-1.4	1.02	0.000697	2.29	68.62	26.61	0.24
WP-20 Canal	Lower	2900	50-Year	197.15	-3.62	1.41	-1.12	1.51	0.000759	2.43	81.25	69.51	0.25
WP-20 Canal	Lower	2900	100-Year	241.32	-3.62	1.89	-0.85	1.99	0.0008	2.51	96.1	100.34	0.26
WP-20 Canal	Lower	2800	2-Year	52.77	-3.64	-0.7	-2.48	-0.68	0.000369	1.34	39.25	19.86	0.17
WP-20 Canal	Lower	2800	5-Year	83.93	-3.64	-0.11	-2.15	-0.07	0.000432	1.62	51.78	22.11	0.19
WP-20 Canal	Lower	2800	10-Year	112.67	-3.64	0.36	-1.9	0.41	0.000463	1.8	62.45	23.87	0.2
WP-20 Canal	Lower	2800	25-Year	157.23	-3.64	0.88	-1.58	0.95	0.000535	2.08	75.55	36.69	0.21
WP-20 Canal	Lower	2800	50-Year	197.15	-3.64	1.36	-1.33	1.43	0.000591	2.22	88.68	61.6	0.23
WP-20 Canal	Lower	2800	100-Year	241.32	-3.64	1.83	-1.07	1.91	0.000645	2.33	103.74	126.14	0.24
WP-20 Canal	Lower	2705	2-Year	52.77	-3.67	-0.72	-2.64	-0.71	0.000198	1.06	49.93	22.81	0.13
WP-20 Canal	Lower	2705	5-Year	83.93	-3.67	-0.13	-2.38	-0.1	0.000244	1.31	63.95	24.36	0.14
WP-20 Canal	Lower	2705	10-Year	112.67	-3.67	0.33	-2.19	0.37	0.000272	1.49	75.5	25.55	0.15
WP-20 Canal	Lower	2705	25-Year	157.23	-3.67	0.86	-1.92	0.9	0.000345	1.76	89.2	27.96	0.17
WP-20 Canal	Lower	2705	50-Year	197.15	-3.67	1.32	-1.7	1.38	0.000463	1.88	104.97	38.02	0.2
WP-20 Canal	Lower	2705	100-Year	241.32	-3.67	1.79	-1.48	1.85	0.000462	1.95	123.94	113.14	0.2
WP-20 Canal	Lower	2685	2-Year	52.77	-4.27	-0.72	-3.25	-0.71	0.00009	0.83	63.36	24.38	0.09
WP-20 Canal	Lower	2685	5-Year	83.93	-4.27	-0.13	-2.98	-0.11	0.000118	1.09	77.04	25.9	0.1
WP-20 Canal	Lower	2685	10-Year	**112.67**	**-4.27**	**0.34**	**-2.78**	**0.36**	**0.000138**	**1.28**	**87.68**	**30.03**	**0.12**
WP-20 Canal	Lower	2685	25-Year	157.23	-4.27	0.86	-2.52	0.9	0.000176	1.58	99.67	39.35	0.13
WP-20 Canal	Lower	2685	50-Year	197.15	-4.27	1.32	-2.29	1.37	0.000197	1.79	110.33	43.91	0.14
WP-20 Canal	Lower	2685	100-Year	241.32	-4.27	1.78	-2.08	1.85	0.000217	1.99	120.98	109.88	0.15
WP-20 Canal	Lower	2660		Spartan Drive Parking Lot West									
WP-20 Canal	Lower	2639	2-Year	52.77	-4.53	-0.74	-3.42	-0.73	0.000111	0.89	59.35	23.77	0.1
WP-20 Canal	Lower	2639	5-Year	83.93	-4.53	-0.15	-3.13	-0.13	0.000147	1.15	72.74	26.99	0.11
WP-20 Canal	Lower	2639	10-Year	112.67	-4.53	0.3	-2.89	0.33	0.00017	1.36	83.11	29.47	0.13
WP-20 Canal	Lower	2639	25-Year	157.23	-4.53	0.79	-2.57	0.84	0.000215	1.66	94.53	32.21	0.14
WP-20 Canal	Lower	2639	50-Year	197.15	-4.53	1.23	-2.32	1.28	0.000242	1.89	104.55	34.61	0.16
WP-20 Canal	Lower	2639	100-Year	241.32	-4.53	1.65	-2.06	1.72	0.000269	2.11	114.24	47.04	0.17
WP-20 Canal	Lower	2614	2-Year	52.77	-3.93	-0.75	-2.83	-0.73	0.000233	1.15	46.01	20.81	0.14
WP-20 Canal	Lower	2614	5-Year	83.93	-3.93	-0.17	-2.53	-0.14	0.000308	1.43	58.84	23.59	0.16
WP-20 Canal	Lower	2614	10-Year	112.67	-3.93	0.28	-2.29	0.32	0.000355	1.61	70	26.06	0.17
WP-20 Canal	Lower	2614	25-Year	157.23	-3.93	0.77	-1.97	0.83	0.000436	1.88	83.56	28.79	0.19
WP-20 Canal	Lower	2614	50-Year	197.15	-3.93	1.21	-1.72	1.28	0.000469	2.04	96.7	31.2	0.2
WP-20 Canal	Lower	2614	100-Year	241.32	-3.93	1.64	-1.46	1.71	0.000496	2.18	110.47	38.83	0.21
WP-20 Canal	Lower	2500	2-Year	52.77	-3.99	-0.79	-2.68	-0.76	0.000322	1.25	42.08	21.54	0.16
WP-20 Canal	Lower	2500	5-Year	83.93	-3.99	-0.22	-2.34	-0.18	0.000388	1.52	55.11	24.1	0.18
WP-20 Canal	Lower	2500	10-Year	112.67	-3.99	0.23	-2.08	0.27	0.000422	1.7	66.26	26.1	0.19
WP-20 Canal	Lower	2500	25-Year	157.23	-3.99	0.71	-1.75	0.77	0.000515	1.98	79.58	32.88	0.21
WP-20 Canal	Lower	2500	50-Year	197.15	-3.99	1.15	-1.49	1.22	0.000548	2.12	92.85	48.02	0.22
WP-20 Canal	Lower	2500	100-Year	241.32	-3.99	1.57	-1.24	1.65	0.000571	2.26	106.98	66.47	0.23
WP-20 Canal	Lower	2400	2-Year	52.77	-4.05	-0.83	-2.62	-0.8	0.000405	1.35	39.16	21.46	0.18
WP-20 Canal	Lower	2400	5-Year	83.93	-4.05	-0.26	-2.26	-0.22	0.000475	1.61	52.17	24.7	0.2
WP-20 Canal	Lower	2400	10-Year	112.67	-4.05	0.18	-1.99	0.23	0.000503	1.77	63.64	27.21	0.2
WP-20 Canal	Lower	2400	25-Year	157.23	-4.05	0.65	-1.65	0.72	0.000575	2.04	77.08	29.38	0.22
WP-20 Canal	Lower	2400	50-Year	197.15	-4.05	1.09	-1.39	1.16	0.000586	2.19	90.19	31.35	0.23
WP-20 Canal	Lower	2400	100-Year	241.32	-4.05	1.51	-1.13	1.59	0.000618	2.32	103.94	40.54	0.24

HEC-RAS Output - Alternative 1

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Lower	2350	2-Year	52.77	-4.07	-0.85	-2.59	-0.82	0.000423	1.37	38.52	21.32	0.18
WP-20 Canal	Lower	2350	5-Year	83.93	-4.07	-0.29	-2.24	-0.25	0.000495	1.63	51.34	24.49	0.2
WP-20 Canal	Lower	2350	10-Year	112.67	-4.07	0.15	-1.97	0.2	0.000523	1.8	62.66	26.98	0.21
WP-20 Canal	Lower	2350	25-Year	157.23	-4.07	0.62	-1.64	0.69	0.000608	2.07	76	29.65	0.23
WP-20 Canal	Lower	2350	50-Year	197.15	-4.07	1.05	-1.38	1.13	0.000617	2.21	89.32	31.96	0.23
WP-20 Canal	Lower	2350	100-Year	241.32	-4.07	1.47	-1.12	1.56	0.000634	2.34	103.16	34.49	0.24
WP-20 Canal	Lower	2300	2-Year	52.77	-4.1	-0.87	-2.59	-0.84	0.000427	1.37	38.38	21.3	0.18
WP-20 Canal	Lower	2300	5-Year	83.93	-4.1	-0.31	-2.25	-0.27	0.000501	1.64	51.08	24.41	0.2
WP-20 Canal	Lower	2300	10-Year	112.67	-4.1	0.12	-1.99	0.18	0.000529	1.81	62.32	26.86	0.21
WP-20 Canal	Lower	2300	25-Year	157.23	-4.1	0.59	-1.65	0.66	0.000617	2.08	75.46	29.48	0.23
WP-20 Canal	Lower	2300	50-Year	197.15	-4.1	1.02	-1.39	1.1	0.000639	2.22	88.71	32.32	0.24
WP-20 Canal	Lower	2300	100-Year	241.32	-4.1	1.44	-1.13	1.53	0.000665	2.34	102.96	35.73	0.24
WP-20 Canal	Lower	2245	2-Year	52.77	-4.13	-0.88	-2.76	-0.86	0.00027	1.17	45.14	22.72	0.15
WP-20 Canal	Lower	2245	5-Year	83.93	-4.13	-0.33	-2.46	-0.3	0.000335	1.44	58.41	25.24	0.17
WP-20 Canal	Lower	2245	10-Year	112.67	-4.13	0.11	-2.23	0.15	0.000369	1.61	69.87	27.23	0.18
WP-20 Canal	Lower	2245	25-Year	157.23	-4.13	0.57	-1.92	0.63	0.000459	1.89	83.01	29.95	0.2
WP-20 Canal	Lower	2245	50-Year	197.15	-4.13	1	-1.68	1.06	0.000498	2.04	96.54	33.09	0.21
WP-20 Canal	Lower	2245	100-Year	241.32	-4.13	1.42	-1.44	1.49	0.000527	2.17	111.08	39.67	0.22
WP-20 Canal	Lower	2219	2-Year	52.77	-4.14	-0.87	-3.38	-0.87	0.00006	0.63	83.18	35.04	0.07
WP-20 Canal	Lower	2219	5-Year	83.93	-4.14	-0.32	-3.17	-0.31	0.000079	0.82	102.98	38.24	0.08
WP-20 Canal	Lower	2219	10-Year	112.67	-4.14	0.12	-2.99	0.14	0.000088	0.95	118.81	39.91	0.09
WP-20 Canal	Lower	2219	25-Year	157.23	-4.14	0.59	-2.76	0.61	0.000111	1.16	135.62	39.95	0.11
WP-20 Canal	Lower	2219	50-Year	197.15	-4.14	1.02	-2.57	1.05	0.000121	1.3	151.14	39.99	0.11
WP-20 Canal	Lower	2219	100-Year	241.32	-4.14	1.44	-2.38	1.47	0.000132	1.45	166.21	40.03	0.12
WP-20 Canal	Lower	2198		Spartan Drive									
WP-20 Canal	Lower	2177	2-Year	**52.77**	**-4.25**	**-0.88**	**-3.34**	**-0.87**	**0.000056**	**0.61**	**86.28**	**35.05**	**0.07**
WP-20 Canal	Lower	2177	5-Year	83.93	-4.25	-0.32	-3.14	-0.31	0.000075	0.79	106.2	36.24	0.08
WP-20 Canal	Lower	2177	10-Year	112.67	-4.25	0.12	-2.97	0.13	0.000088	0.92	122.21	36.63	0.09
WP-20 Canal	Lower	2177	25-Year	157.23	-4.25	0.58	-2.76	0.6	0.000114	1.13	139.38	37.04	0.1
WP-20 Canal	Lower	2177	50-Year	197.15	-4.25	1.02	-2.58	1.04	0.000129	1.27	155.42	37.42	0.11
WP-20 Canal	Lower	2177	100-Year	241.32	-4.25	1.43	-2.4	1.46	0.000144	1.41	171.15	37.79	0.12
WP-20 Canal	Lower	2000	2-Year	67.77	-3.83	-0.9	-2.82	-0.89	0.000165	0.95	71	33.48	0.12
WP-20 Canal	Lower	2000	5-Year	106.93	-3.83	-0.36	-2.58	-0.33	0.000204	1.19	89.84	35.42	0.13
WP-20 Canal	Lower	2000	10-Year	141.67	-3.83	0.08	-2.41	0.1	0.000243	1.33	106.18	40.4	0.15
WP-20 Canal	Lower	2000	25-Year	194.23	-3.83	0.53	-2.17	0.57	0.000308	1.54	125.96	46.37	0.16
WP-20 Canal	Lower	2000	50-Year	242.15	-3.83	0.96	-1.98	1	0.000332	1.65	146.98	51.96	0.17
WP-20 Canal	Lower	2000	100-Year	293.32	-3.83	1.38	-1.79	1.42	0.000343	1.73	169.8	57.42	0.18
WP-20 Canal	Lower	1900	2-Year	67.77	-3.93	-0.92	-2.92	-0.9	0.000146	0.92	73.87	33.78	0.11
WP-20 Canal	Lower	1900	5-Year	106.93	-3.93	-0.37	-2.68	-0.35	0.000189	1.15	92.75	36.28	0.13
WP-20 Canal	Lower	1900	10-Year	141.67	-3.93	0.06	-2.51	0.08	0.000221	1.3	109.25	40.36	0.14
WP-20 Canal	Lower	1900	25-Year	194.23	-3.93	0.5	-2.27	0.54	0.000276	1.51	128.32	44.46	0.16
WP-20 Canal	Lower	1900	50-Year	242.15	-3.93	0.93	-2.08	0.97	0.000298	1.64	148.02	48.33	0.16
WP-20 Canal	Lower	1900	100-Year	293.32	-3.93	1.34	-1.88	1.39	0.000311	1.74	169.13	58.11	0.17
WP-20 Canal	Lower	1850	2-Year	67.77	-3.98	-0.92	-2.96	-0.91	0.000138	0.9	75.33	33.93	0.11
WP-20 Canal	Lower	1850	5-Year	106.93	-3.98	-0.38	-2.73	-0.36	0.000181	1.13	94.24	36.51	0.12
WP-20 Canal	Lower	1850	10-Year	141.67	-3.98	0.04	-2.56	0.07	0.000211	1.28	110.69	40.3	0.14
WP-20 Canal	Lower	1850	25-Year	194.23	-3.98	0.49	-2.32	0.53	0.000265	1.5	129.59	44.26	0.15
WP-20 Canal	Lower	1850	50-Year	242.15	-3.98	0.92	-2.12	0.96	0.000287	1.62	149.13	48.01	0.16
WP-20 Canal	Lower	1850	100-Year	293.32	-3.98	1.33	-1.94	1.38	0.000301	1.73	169.79	52.58	0.17
WP-20 Canal	Lower	1750	2-Year	67.77	-4.09	-0.94	-3.07	-0.93	0.000121	0.86	78.67	34.27	0.1
WP-20 Canal	Lower	1750	5-Year	106.93	-4.09	-0.4	-2.85	-0.38	0.000164	1.09	97.69	37.19	0.12
WP-20 Canal	Lower	1750	10-Year	141.67	-4.09	0.03	-2.67	0.05	0.000192	1.24	114.25	40.65	0.13
WP-20 Canal	Lower	1750	25-Year	194.23	-4.09	0.47	-2.43	0.5	0.000243	1.46	133.01	44.25	0.15
WP-20 Canal	Lower	1750	50-Year	242.15	-4.09	0.89	-2.24	0.93	0.000265	1.59	152.38	55.86	0.16
WP-20 Canal	Lower	1750	100-Year	293.32	-4.09	1.3	-2.05	1.35	0.00028	1.7	172.76	66.8	0.16

HEC-RAS Output - Alternative 1

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Lower	1650	2-Year	67.77	-4.19	-0.95	-3.17	-0.94	0.000108	0.83	81.74	34.59	0.1
WP-20 Canal	Lower	1650	5-Year	106.93	-4.19	-0.41	-2.95	-0.4	0.000156	1.06	101.04	38.99	0.12
WP-20 Canal	Lower	1650	10-Year	141.67	-4.19	0.01	-2.77	0.03	0.000187	1.19	118.59	43.99	0.13
WP-20 Canal	Lower	1650	25-Year	194.23	-4.19	0.45	-2.53	0.48	0.00024	1.4	138.96	49.16	0.15
WP-20 Canal	Lower	1650	50-Year	242.15	-4.19	0.87	-2.34	0.9	0.000261	1.51	160.65	54.13	0.15
WP-20 Canal	Lower	1650	100-Year	293.32	-4.19	1.28	-2.15	1.32	0.000273	1.59	183.99	63.84	0.16
WP-20 Canal	Lower	1600	2-Year	67.77	-4.24	-0.95	-3.23	-0.94	0.000102	0.81	83.3	34.75	0.09
WP-20 Canal	Lower	1600	5-Year	106.93	-4.24	-0.42	-2.99	-0.41	0.000155	1.04	102.95	40.7	0.12
WP-20 Canal	Lower	1600	10-Year	141.67	-4.24	0	-2.82	0.02	0.000188	1.17	121.39	46.83	0.13
WP-20 Canal	Lower	1600	25-Year	194.23	-4.24	0.43	-2.58	0.46	0.000241	1.36	143.16	59.85	0.15
WP-20 Canal	Lower	1600	50-Year	242.15	-4.24	0.85	-2.39	0.89	0.00026	1.45	166.75	84.06	0.15
WP-20 Canal	Lower	1600	100-Year	293.32	-4.24	1.27	-2.2	1.3	0.000269	1.52	192.44	101.59	0.16
WP-20 Canal	Lower	1500	2-Year	67.77	-4.34	-0.96	-3.33	-0.95	0.000091	0.78	86.47	35.06	0.09
WP-20 Canal	Lower	1500	5-Year	106.93	-4.34	-0.44	-3.09	-0.42	0.000133	1.01	105.71	38.74	0.11
WP-20 Canal	Lower	1500	10-Year	141.67	-4.34	-0.02	-2.91	0	0.000161	1.15	122.72	42.63	0.12
WP-20 Canal	Lower	1500	25-Year	194.23	-4.34	0.41	-2.68	0.44	0.00021	1.37	141.88	46.62	0.14
WP-20 Canal	Lower	1500	50-Year	242.15	-4.34	0.83	-2.48	0.86	0.000225	1.49	163.66	80.25	0.15
WP-20 Canal	Lower	1500	100-Year	293.32	-4.34	1.24	-2.29	1.28	0.000213	1.57	206.16	115.91	0.14
WP-20 Canal	Lower	1450	2-Year	67.77	-4.39	-0.97	-3.37	-0.96	0.000087	0.77	88.08	35.23	0.09
WP-20 Canal	Lower	1450	5-Year	106.93	-4.39	-0.44	-3.15	-0.43	0.000127	1	107.46	38.98	0.11
WP-20 Canal	Lower	1450	10-Year	141.67	-4.39	-0.03	-2.97	-0.01	0.000152	1.14	124.38	42.2	0.12
WP-20 Canal	Lower	1450	25-Year	194.23	-4.39	0.4	-2.74	0.43	0.000198	1.36	143.1	45.49	0.13
WP-20 Canal	Lower	1450	50-Year	242.15	-4.39	0.82	-2.53	0.85	0.000219	1.49	162.66	48.7	0.14
WP-20 Canal	Lower	1450	100-Year	293.32	-4.39	1.23	-2.35	1.27	0.000232	1.6	185.3	64.55	0.15
WP-20 Canal	Lower	1400	2-Year	67.77	-4.44	-0.97		-0.96	0.000082	0.76	89.7	35.39	0.08
WP-20 Canal	Lower	1400	5-Year	106.93	-4.44	-0.45		-0.43	0.000132	0.97	109.84	42.58	0.11
WP-20 Canal	Lower	1400	10-Year	**141.67**	**-4.44**	**-0.03**		**-0.01**	**0.000164**	**1.1**	**128.95**	**49.32**	**0.12**
WP-20 Canal	Lower	1400	25-Year	194.23	-4.44	0.39		0.42	0.000214	1.28	151.42	56.21	0.14
WP-20 Canal	Lower	1400	50-Year	242.15	-4.44	0.81		0.84	0.000226	1.38	176.52	66.07	0.14
WP-20 Canal	Lower	1400	100-Year	293.32	-4.44	1.22		1.25	0.000215	1.44	209.22	96	0.14
WP-20 Canal	Lower	1300	2-Year	67.77	-4.55	-0.98	-3.53	-0.97	0.000075	0.73	93.39	36.53	0.08
WP-20 Canal	Lower	1300	5-Year	106.93	-4.55	-0.46	-3.31	-0.45	0.000115	0.94	113.64	41.56	0.1
WP-20 Canal	Lower	1300	10-Year	141.67	-4.55	-0.05	-3.13	-0.03	0.000139	1.08	131.6	45.44	0.11
WP-20 Canal	Lower	1300	25-Year	194.23	-4.55	0.37	-2.89	0.4	0.000183	1.28	151.55	49.39	0.13
WP-20 Canal	Lower	1300	50-Year	242.15	-4.55	0.79	-2.69	0.82	0.000203	1.4	172.74	53.27	0.14
WP-20 Canal	Lower	1300	100-Year	293.32	-4.55	1.2	-2.51	1.23	0.000217	1.5	195.4	57.12	0.14
WP-20 Canal	Lower	1250	2-Year	67.77	-4.6	-0.98	-3.58	-0.97	0.000071	0.71	95.08	36.76	0.08
WP-20 Canal	Lower	1250	5-Year	106.93	-4.6	-0.47	-3.35	-0.45	0.000107	0.93	115.07	40.68	0.1
WP-20 Canal	Lower	1250	10-Year	141.67	-4.6	-0.05	-3.18	-0.04	0.00013	1.07	132.45	43.75	0.11
WP-20 Canal	Lower	1250	25-Year	194.23	-4.6	0.36	-2.94	0.39	0.000172	1.28	151.4	46.86	0.13
WP-20 Canal	Lower	1250	50-Year	242.15	-4.6	0.78	-2.74	0.81	0.000193	1.41	171.3	49.92	0.13
WP-20 Canal	Lower	1250	100-Year	293.32	-4.6	1.19	-2.55	1.22	0.000208	1.52	192.35	52.96	0.14
WP-20 Canal	Lower	1150	2-Year	67.77	-4.7	-0.99	-3.68	-0.98	0.000066	0.69	98.65	38.25	0.08
WP-20 Canal	Lower	1150	5-Year	106.93	-4.7	-0.47	-3.46	-0.46	0.000103	0.89	119.59	43.52	0.1
WP-20 Canal	Lower	1150	10-Year	141.67	-4.7	-0.07	-3.28	-0.05	0.000126	1.02	138.29	47.73	0.11
WP-20 Canal	Lower	1150	25-Year	194.23	-4.7	0.35	-3.04	0.37	0.000168	1.22	159.4	55.2	0.12
WP-20 Canal	Lower	1150	50-Year	242.15	-4.7	0.76	-2.85	0.79	0.000169	1.33	186.47	76.53	0.13
WP-20 Canal	Lower	1150	100-Year	293.32	-4.7	1.17	-2.66	1.2	0.000166	1.42	222.89	107.57	0.13
Schneider Cana	Upper	29400	2-Year	112	-3.88	-0.64		-0.63	0.000066	0.74	150.46	52.95	0.08
Schneider Cana	Upper	29400	5-Year	174	-3.88	0.02		0.03	0.000084	0.93	186.2	55.58	0.09
Schneider Cana	Upper	29400	10-Year	222	-3.88	0.49		0.51	0.000092	1.04	213.28	57.5	0.1
Schneider Cana	Upper	29400	25-Year	291	-3.88	1.03		1.05	0.000105	1.19	244.57	59.64	0.1
Schneider Cana	Upper	29400	50-Year	348	-3.88	1.49		1.51	0.000112	1.28	272.46	62.34	0.11
Schneider Cana	Upper	29400	100-Year	405	-3.88	1.93		1.95	0.000117	1.34	306.45	94.6	0.11
Schneider Cana	Upper	29300	2-Year	112	-3.89	-0.65		-0.64	0.000066	0.74	150.63	52.96	0.08
Schneider Cana	Upper	29300	5-Year	174	-3.89	0.01		0.02	0.000084	0.93	186.27	55.58	0.09

HEC-RAS Output - Alternative 1

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Upper	29300	10-Year	222	-3.89	0.49		0.5	0.000092	1.04	213.31	57.49	0.1
Schneider Cana	Upper	29300	25-Year	291	-3.89	1.02		1.04	0.000105	1.19	244.51	59.62	0.1
Schneider Cana	Upper	29300	50-Year	348	-3.89	1.48		1.5	0.00011	1.28	273.26	73.06	0.11
Schneider Cana	Upper	29300	100-Year	405	-3.89	1.91		1.94	0.00011	1.35	306.73	78.83	0.11
Schneider Cana	Upper	29200	2-Year	112	-3.9	-0.66	-3.29	-0.65	0.000066	0.74	150.82	52.98	0.08
Schneider Cana	Upper	29200	5-Year	174	-3.9	0	-3.08	0.01	0.000084	0.93	186.38	55.6	0.09
Schneider Cana	Upper	29200	10-Year	222	-3.9	0.48	-2.93	0.49	0.000092	1.04	213.39	57.52	0.1
Schneider Cana	Upper	29200	25-Year	291	-3.9	1.01	-2.75	1.03	0.000105	1.19	244.52	59.64	0.1
Schneider Cana	Upper	29200	50-Year	348	-3.9	1.47	-2.59	1.49	0.00011	1.28	272.28	61.48	0.11
Schneider Cana	Upper	29200	100-Year	405	-3.9	1.9	-2.47	1.93	0.000113	1.35	299.45	63.22	0.11
Schneider Cana	Upper	29100	2-Year	112	-3.91	-0.66	-3.3	-0.65	0.000066	0.74	151	52.99	0.08
Schneider Cana	Upper	29100	5-Year	174	-3.91	-0.01	-3.08	0	0.000084	0.93	186.46	55.6	0.09
Schneider Cana	Upper	29100	10-Year	222	-3.91	0.47	-2.94	0.48	0.000092	1.04	213.42	57.51	0.1
Schneider Cana	Upper	29100	25-Year	291	-3.91	1	-2.75	1.02	0.000105	1.19	244.47	59.63	0.1
Schneider Cana	Upper	29100	50-Year	348	-3.91	1.46	-2.61	1.48	0.00011	1.28	272.2	61.46	0.11
Schneider Cana	Upper	29100	100-Year	405	-3.91	1.89	-2.48	1.92	0.000113	1.35	299.35	63.2	0.11
Schneider Cana	Upper	29000	2-Year	112	-3.92	-0.67		-0.66	0.000065	0.74	151.18	53	0.08
Schneider Cana	Upper	29000	5-Year	174	-3.92	-0.02		0	0.000084	0.93	186.54	55.6	0.09
Schneider Cana	Upper	29000	10-Year	222	-3.92	0.46		0.48	0.000091	1.04	213.46	57.5	0.1
Schneider Cana	Upper	29000	25-Year	291	-3.92	0.99		1.01	0.000105	1.19	244.42	59.61	0.1
Schneider Cana	Upper	29000	50-Year	348	-3.92	1.44		1.47	0.000108	1.28	275.83	80.39	0.11
Schneider Cana	Upper	29000	100-Year	405	-3.92	1.88		1.91	0.000108	1.34	315.53	120.07	0.11
Schneider Cana	Upper	28900	2-Year	112	-3.93	-0.68	-3.31	-0.67	0.000065	0.74	151.37	53.02	0.08
Schneider Cana	Upper	28900	5-Year	174	-3.93	-0.03	-3.11	-0.01	0.000084	0.93	186.64	55.62	0.09
Schneider Cana	Upper	28900	10-Year	222	-3.93	0.45	-2.96	0.47	0.000091	1.04	213.53	57.52	0.1
Schneider Cana	Upper	28900	25-Year	291	-3.93	0.98	-2.77	1	0.000105	1.19	244.42	59.63	0.1
Schneider Cana	Upper	28900	50-Year	**348**	**-3.93**	**1.43**	**-2.63**	**1.46**	**0.000109**	**1.28**	**274.3**	**79.19**	**0.11**
Schneider Cana	Upper	28900	100-Year	405	-3.93	1.87	-2.49	1.9	0.000109	1.35	306.06	99.41	0.11
Schneider Cana	Upper	28800	2-Year	112	-3.94	-0.68		-0.67	0.000065	0.74	151.55	53.03	0.08
Schneider Cana	Upper	28800	5-Year	174	-3.94	-0.03		-0.02	0.000084	0.93	186.72	55.62	0.09
Schneider Cana	Upper	28800	10-Year	222	-3.94	0.44		0.46	0.000091	1.04	213.56	57.51	0.1
Schneider Cana	Upper	28800	25-Year	291	-3.94	0.97		0.99	0.000105	1.19	244.37	60.26	0.1
Schneider Cana	Upper	28800	50-Year	348	-3.94	1.42		1.45	0.000108	1.28	275.2	80.03	0.11
Schneider Cana	Upper	28800	100-Year	405	-3.94	1.86		1.89	0.000105	1.34	324.72	138.05	0.11
Schneider Cana	Upper	28700	2-Year	112	-3.95	-0.69	-3.33	-0.68	0.000065	0.74	151.74	53.05	0.08
Schneider Cana	Upper	28700	5-Year	174	-3.95	-0.04	-3.13	-0.03	0.000084	0.93	186.82	55.63	0.09
Schneider Cana	Upper	28700	10-Year	222	-3.95	0.43	-2.98	0.45	0.000091	1.04	213.62	57.52	0.1
Schneider Cana	Upper	28700	25-Year	291	-3.95	0.96	-2.8	0.98	0.000106	1.19	244.34	66.13	0.1
Schneider Cana	Upper	28700	50-Year	348	-3.95	1.41	-2.64	1.44	0.000108	1.27	280.88	99.34	0.11
Schneider Cana	Upper	28700	100-Year	405	-3.95	1.85	-2.52	1.88	0.000106	1.33	325.34	122.21	0.11
Schneider Cana	Upper	28600	2-Year	112	-3.96	-0.69	-3.34	-0.69	0.000064	0.74	151.93	53.06	0.08
Schneider Cana	Upper	28600	5-Year	174	-3.96	-0.05	-3.13	-0.04	0.000083	0.93	186.91	55.63	0.09
Schneider Cana	Upper	28600	10-Year	222	-3.96	0.42	-2.99	0.44	0.000091	1.04	213.67	57.52	0.1
Schneider Cana	Upper	28600	25-Year	291	-3.96	0.94	-2.8	0.97	0.000106	1.19	244.3	68.03	0.1
Schneider Cana	Upper	28600	50-Year	348	-3.96	1.4	-2.66	1.43	0.00011	1.28	271.91	84.25	0.11
Schneider Cana	Upper	28600	100-Year	405	-3.96	1.84	-2.52	1.86	0.000109	1.33	324.98	119.52	0.11
Schneider Cana	Upper	28500	2-Year	112	-3.97	-0.7	-3.35	-0.69	0.000064	0.74	152.12	53.07	0.08
Schneider Cana	Upper	28500	5-Year	174	-3.97	-0.06	-3.15	-0.05	0.000083	0.93	187	71.86	0.09
Schneider Cana	Upper	28500	10-Year	222	-3.97	0.41	-3	0.43	0.000091	1.04	213.71	95.5	0.09
Schneider Cana	Upper	28500	25-Year	291	-3.97	0.93	-2.82	0.96	0.000106	1.19	244.26	107.15	0.1
Schneider Cana	Upper	28500	50-Year	348	-3.97	1.39	-2.67	1.42	0.00011	1.28	271.84	120.72	0.11
Schneider Cana	Upper	28500	100-Year	405	-3.97	1.83	-2.54	1.85	0.000113	1.35	298.95	126.07	0.11
Schneider Cana	Upper	28400	2-Year	112	-3.98	-0.71	-3.37	-0.7	0.000064	0.74	152.31	53.09	0.08
Schneider Cana	Upper	28400	5-Year	174	-3.98	-0.07	-3.16	-0.05	0.000083	0.93	187.11	55.65	0.09
Schneider Cana	Upper	28400	10-Year	222	-3.98	0.4	-3.01	0.42	0.000091	1.04	213.78	57.54	0.09
Schneider Cana	Upper	28400	25-Year	291	-3.98	0.92	-2.82	0.95	0.000106	1.19	245.17	79.09	0.1

HEC-RAS Output - Alternative 1

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Upper	28400	50-Year	348	-3.98	1.38	-2.68	1.4	0.000108	1.28	279.88	123.81	0.11
Schneider Cana	Upper	28400	100-Year	405	-3.98	1.82	-2.54	1.84	0.000102	1.31	348.8	131.6	0.1
Schneider Cana	Upper	28300	2-Year	112	-3.99	-0.71	-3.37	-0.71	0.000064	0.73	152.51	53.11	0.08
Schneider Cana	Upper	28300	5-Year	174	-3.99	-0.08	-3.16	-0.06	0.000082	0.93	188.01	63.17	0.09
Schneider Cana	Upper	28300	10-Year	222	-3.99	0.39	-3.02	0.41	0.000088	1.03	219.18	67.58	0.09
Schneider Cana	Upper	28300	25-Year	291	-3.99	0.91	-2.83	0.94	0.000099	1.18	254.99	73.4	0.1
Schneider Cana	Upper	28300	50-Year	348	-3.99	1.37	-2.69	1.39	0.000098	1.26	303.97	142.08	0.1
Schneider Cana	Upper	28300	100-Year	405	-3.99	1.81	-2.56	1.83	0.000092	1.29	366.47	143.55	0.1
Schneider Cana	Upper	28200	2-Year	112	-4	-0.72		-0.71	0.000063	0.73	152.7	53.12	0.08
Schneider Cana	Upper	28200	5-Year	174	-4	-0.08		-0.07	0.000083	0.93	187.3	55.67	0.09
Schneider Cana	Upper	28200	10-Year	222	-4	0.39		0.4	0.000091	1.04	213.9	57.55	0.09
Schneider Cana	Upper	28200	25-Year	291	-4	0.9		0.93	0.000106	1.19	244.27	63.17	0.1
Schneider Cana	Upper	28200	50-Year	348	-4	1.36		1.38	0.000107	1.26	296.08	130.73	0.11
Schneider Cana	Upper	28200	100-Year	405	-4	1.8		1.82	0.0001	1.3	354.29	138.56	0.1
Schneider Cana	Upper	28100	2-Year	112	-4.01	-0.73	-3.39	-0.72	0.000063	0.73	152.89	53.13	0.08
Schneider Cana	Upper	28100	5-Year	174	-4.01	-0.09	-3.19	-0.08	0.000083	0.93	187.39	55.67	0.09
Schneider Cana	Upper	28100	10-Year	222	-4.01	0.38	-3.04	0.39	0.000091	1.04	213.95	57.55	0.09
Schneider Cana	Upper	28100	25-Year	291	-4.01	0.89	-2.85	0.91	0.000104	1.19	248.41	78.82	0.1
Schneider Cana	Upper	28100	50-Year	348	-4.01	1.35	-2.71	1.37	0.000103	1.27	292.99	109.42	0.1
Schneider Cana	Upper	28100	100-Year	405	-4.01	1.79	-2.58	1.81	0.000098	1.31	342.38	115.22	0.1
Schneider Cana	Upper	28000	2-Year	112	-4.02	-0.73		-0.72	0.000063	0.73	153.09	53.15	0.08
Schneider Cana	Upper	28000	5-Year	174	-4.02	-0.1		-0.09	0.000083	0.93	187.49	55.68	0.09
Schneider Cana	Upper	28000	10-Year	222	-4.02	0.37		0.38	0.000091	1.04	214.01	60.37	0.09
Schneider Cana	Upper	28000	25-Year	291	-4.02	0.88		0.9	0.000103	1.18	261.92	120.98	0.1
Schneider Cana	Upper	28000	50-Year	348	-4.02	1.34		1.36	0.0001	1.23	320.47	130.72	0.1
Schneider Cana	Upper	28000	100-Year	405	-4.02	1.78		1.8	0.000093	1.25	378.1	131.6	0.1
Schneider Cana	Upper	27900	2-Year	112	-4.03	-0.74	-3.41	-0.73	0.000063	0.73	153.29	53.17	0.08
Schneider Cana	Upper	27900	5-Year	174	-4.03	-0.11	-3.2	-0.1	0.000083	0.93	187.59	55.69	0.09
Schneider Cana	Upper	27900	10-Year	222	-4.03	0.36	-3.06	0.38	0.000091	1.04	214.06	57.56	0.09
Schneider Cana	Upper	27900	25-Year	291	-4.03	0.87	-2.87	0.89	0.000103	1.19	251.56	89.3	0.1
Schneider Cana	Upper	27900	50-Year	348	-4.03	1.33	-2.73	1.35	0.000102	1.26	289.97	118.8	0.1
Schneider Cana	Upper	27900	100-Year	405	-4.03	1.77	-2.59	1.79	0.000096	1.3	356.7	136.7	0.1
Schneider Cana	Upper	27800	2-Year	112	-4.04	-0.75	-3.43	-0.74	0.000062	0.73	153.49	53.17	0.08
Schneider Cana	Upper	27800	5-Year	174	-4.04	-0.12	-3.21	-0.1	0.000082	0.93	187.68	55.68	0.09
Schneider Cana	Upper	27800	10-Year	222	-4.04	0.35	-3.07	0.37	0.000091	1.04	214.1	83.1	0.09
Schneider Cana	Upper	27800	25-Year	291	-4.04	0.86	-2.88	0.88	0.000106	1.19	244.07	127.64	0.1
Schneider Cana	Upper	27800	50-Year	348	-4.04	1.32	-2.74	1.34	0.000095	1.2	335.7	130.72	0.1
Schneider Cana	Upper	27800	100-Year	405	-4.04	1.76	-2.61	1.78	0.000089	1.22	393.48	131.6	0.1
Schneider Cana	Upper	27700	2-Year	112	-4.05	-0.75	-3.43	-0.74	0.000062	0.73	153.69	53.19	0.08
Schneider Cana	Upper	27700	5-Year	174	-4.05	-0.13	-3.22	-0.11	0.000082	0.93	187.78	67.11	0.09
Schneider Cana	Upper	27700	10-Year	222	-4.05	0.34	-3.08	0.36	0.000091	1.04	214.16	74.17	0.09
Schneider Cana	Upper	27700	25-Year	291	-4.05	0.85	-2.9	0.87	0.000106	1.19	244.05	82.86	0.1
Schneider Cana	Upper	27700	50-Year	348	-4.05	1.31	-2.75	1.33	0.000103	1.24	315.13	130.71	0.1
Schneider Cana	Upper	27700	100-Year	405	-4.05	1.75	-2.61	1.77	0.000095	1.26	377.27	150.68	0.1
Schneider Cana	Upper	27600	2-Year	112	-4.06	-0.76	-3.44	-0.75	0.000062	0.73	153.89	53.2	0.08
Schneider Cana	Upper	27600	5-Year	174	-4.06	-0.13	-3.23	-0.12	0.000082	0.93	187.87	55.7	0.09
Schneider Cana	Upper	27600	10-Year	222	-4.06	0.33	-3.09	0.35	0.000091	1.04	214.21	57.56	0.09
Schneider Cana	Upper	27600	25-Year	291	-4.06	0.84	-2.9	0.86	0.000106	1.19	245.11	73.47	0.1
Schneider Cana	Upper	27600	50-Year	348	-4.06	1.3	-2.76	1.32	0.000108	1.27	283.63	114.51	0.11
Schneider Cana	Upper	27600	100-Year	405	-4.06	1.74	-2.62	1.76	0.000103	1.32	342.48	131.59	0.11
Schneider Cana	Upper	27500	2-Year	112	-4.07	-0.76	-3.45	-0.76	0.000062	0.73	154.1	53.23	0.08
Schneider Cana	Upper	27500	5-Year	174	-4.07	-0.14	-3.24	-0.13	0.000082	0.93	187.99	55.72	0.09
Schneider Cana	Upper	27500	10-Year	222	-4.07	0.32	-3.1	0.34	0.00009	1.04	214.28	57.57	0.09
Schneider Cana	Upper	27500	25-Year	291	-4.07	0.83	-2.92	0.85	0.000106	1.19	244.1	64.25	0.1
Schneider Cana	Upper	27500	50-Year	348	-4.07	1.28	-2.77	1.31	0.000108	1.28	278.59	90.29	0.11
Schneider Cana	Upper	27500	100-Year	405	-4.07	1.72	-2.64	1.75	0.000106	1.33	333.41	131.6	0.11

HEC-RAS Output - Alternative 1

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Upper	27400	2-Year	112	-4.08	-0.77	-3.46	-0.76	0.000061	0.73	154.3	53.24	0.08
Schneider Cana	Upper	27400	5-Year	174	-4.08	-0.15	-3.26	-0.14	0.000082	0.93	188.09	55.72	0.09
Schneider Cana	Upper	27400	10-Year	222	-4.08	0.31	-3.12	0.33	0.00009	1.04	214.33	57.58	0.09
Schneider Cana	Upper	27400	25-Year	291	-4.08	0.82	-2.92	0.84	0.000106	1.19	243.95	59.6	0.1
Schneider Cana	Upper	27400	50-Year	348	-4.08	1.27	-2.78	1.3	0.000111	1.28	271.45	61.42	0.11
Schneider Cana	Upper	27400	100-Year	405	-4.08	1.71	-2.64	1.74	0.000114	1.36	298.8	81.78	0.11
Schneider Cana	Upper	27300	2-Year	112	-4.09	-0.78	-3.47	-0.77	0.000061	0.72	154.51	53.26	0.07
Schneider Cana	Upper	27300	5-Year	174	-4.09	-0.16	-3.26	-0.15	0.000082	0.92	188.19	55.73	0.09
Schneider Cana	Upper	27300	10-Year	222	-4.09	0.3	-3.12	0.32	0.00009	1.04	214.39	57.58	0.09
Schneider Cana	Upper	27300	25-Year	291	-4.09	0.81	-2.94	0.83	0.000106	1.19	243.91	59.6	0.1
Schneider Cana	Upper	27300	50-Year	348	-4.09	1.26	-2.79	1.29	0.000111	1.28	271.38	61.42	0.11
Schneider Cana	Upper	27300	100-Year	405	-4.09	1.7	-2.66	1.73	0.000114	1.35	299.91	69.57	0.11
Schneider Cana	Upper	27200	2-Year	112	-4.1	-0.78	-3.48	-0.77	0.000061	0.72	154.71	53.27	0.07
Schneider Cana	Upper	27200	5-Year	174	-4.1	-0.17	-3.27	-0.15	0.000082	0.92	188.28	55.73	0.09
Schneider Cana	Upper	27200	10-Year	222	-4.1	0.3	-3.13	0.31	0.00009	1.04	214.43	57.58	0.09
Schneider Cana	Upper	27200	25-Year	291	-4.1	0.8	-2.95	0.82	0.000106	1.19	243.86	59.58	0.1
Schneider Cana	Upper	27200	50-Year	348	-4.1	1.25	-2.8	1.28	0.000111	1.28	271.29	61.4	0.11
Schneider Cana	Upper	27200	100-Year	405	-4.1	1.69	-2.66	1.72	0.000114	1.36	298.59	63.91	0.11
Schneider Cana	Upper	27100	2-Year	112	-4.11	-0.79	-3.49	-0.78	0.000061	0.72	154.93	53.29	0.07
Schneider Cana	Upper	27100	5-Year	174	-4.11	-0.17	-3.28	-0.16	0.000081	0.92	188.39	55.74	0.09
Schneider Cana	Upper	27100	10-Year	222	-4.11	0.29	-3.14	0.3	0.00009	1.03	214.5	57.59	0.09
Schneider Cana	Upper	27100	25-Year	291	-4.11	0.79	-2.95	0.81	0.000106	1.19	243.84	59.59	0.1
Schneider Cana	Upper	27100	50-Year	348	-4.11	1.24	-2.81	1.26	0.000124	1.27	273.2	68.17	0.11
Schneider Cana	Upper	27100	100-Year	405	-4.11	1.68	-2.68	1.71	0.00013	1.33	304.28	73.59	0.12
Schneider Cana	Upper	27000	2-Year	112	-4.12	-0.79	-3.5	-0.79	0.00006	0.72	155.14	53.3	0.07
Schneider Cana	Upper	27000	5-Year	**174**	**-4.12**	**-0.18**	**-3.29**	**-0.17**	**0.000081**	**0.92**	**188.49**	**55.75**	**0.09**
Schneider Cana	Upper	27000	10-Year	222	-4.12	0.28	-3.15	0.29	0.00009	1.03	214.55	57.59	0.09
Schneider Cana	Upper	27000	25-Year	291	-4.12	0.78	-2.96	0.8	0.000106	1.19	243.79	59.58	0.1
Schneider Cana	Upper	27000	50-Year	348	-4.12	1.23	-2.82	1.25	0.000111	1.28	271.08	61.39	0.11
Schneider Cana	Upper	27000	100-Year	405	-4.12	1.66	-2.68	1.69	0.000114	1.36	298.31	63.14	0.11
Schneider Cana	Upper	26900	2-Year	112	-4.13	-0.8	-3.51	-0.79	0.00006	0.72	155.35	53.32	0.07
Schneider Cana	Upper	26900	5-Year	174	-4.13	-0.19	-3.3	-0.18	0.000081	0.92	188.6	55.76	0.09
Schneider Cana	Upper	26900	10-Year	222	-4.13	0.27	-3.16	0.28	0.00009	1.03	214.61	57.59	0.09
Schneider Cana	Upper	26900	25-Year	291	-4.13	0.77	-2.97	0.79	0.000106	1.19	243.76	59.58	0.1
Schneider Cana	Upper	26900	50-Year	348	-4.13	1.22	-2.83	1.24	0.000111	1.28	271.01	64.78	0.11
Schneider Cana	Upper	26900	100-Year	405	-4.13	1.65	-2.7	1.68	0.000114	1.36	298.22	87.28	0.11
Schneider Cana	Upper	26800	2-Year	112	-4.14	-0.81	-3.52	-0.8	0.00006	0.72	155.56	53.33	0.07
Schneider Cana	Upper	26800	5-Year	174	-4.14	-0.2	-3.31	-0.19	0.000081	0.92	188.7	55.76	0.09
Schneider Cana	Upper	26800	10-Year	222	-4.14	0.26	-3.17	0.28	0.00009	1.03	214.66	57.6	0.09
Schneider Cana	Upper	26800	25-Year	291	-4.14	0.75	-2.98	0.78	0.000106	1.19	243.72	59.58	0.1
Schneider Cana	Upper	26800	50-Year	348	-4.14	1.2	-2.84	1.23	0.000111	1.28	270.94	61.38	0.11
Schneider Cana	Upper	26800	100-Year	405	-4.14	1.64	-2.7	1.67	0.000114	1.36	298.12	71.28	0.11
Schneider Cana	Upper	26700	2-Year	112	-4.15	-0.81	-3.53	-0.8	0.00006	0.72	155.78	53.35	0.07
Schneider Cana	Upper	26700	5-Year	174	-4.15	-0.21	-3.32	-0.19	0.000081	0.92	188.81	60.53	0.09
Schneider Cana	Upper	26700	10-Year	222	-4.15	0.25	-3.18	0.27	0.00009	1.03	214.72	68.14	0.09
Schneider Cana	Upper	26700	25-Year	291	-4.15	0.74	-2.99	0.77	0.000106	1.19	243.68	76.51	0.1
Schneider Cana	Upper	26700	50-Year	348	-4.15	1.19	-2.85	1.22	0.000112	1.28	270.87	96.11	0.11
Schneider Cana	Upper	26700	100-Year	405	-4.15	1.63	-2.72	1.66	0.000104	1.31	338.37	109.19	0.11
Schneider Cana	Upper	26600	2-Year	112	-4.16	-0.82	-3.54	-0.81	0.000059	0.72	155.99	53.37	0.07
Schneider Cana	Upper	26600	5-Year	174	-4.16	-0.22	-3.33	-0.2	0.000081	0.92	188.92	55.78	0.09
Schneider Cana	Upper	26600	10-Year	222	-4.16	0.24	-3.19	0.26	0.00009	1.03	214.79	57.61	0.09
Schneider Cana	Upper	26600	25-Year	291	-4.16	0.73	-3	0.76	0.000106	1.19	243.65	59.58	0.1
Schneider Cana	Upper	26600	50-Year	348	-4.16	1.18	-2.86	1.21	0.000112	1.29	270.81	115.28	0.11
Schneider Cana	Upper	26600	100-Year	405	-4.16	1.62	-2.73	1.65	0.000107	1.31	343.47	131.56	0.11
Schneider Cana	Upper	26500	2-Year	112	-4.17	-0.82	-3.55	-0.82	0.000059	0.72	156.21	53.38	0.07

HEC-RAS Output - Alternative 1

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Upper	26500	5-Year	174	-4.17	-0.22	-3.34	-0.21	0.000081	0.92	189.02	55.79	0.09
Schneider Cana	Upper	26500	10-Year	222	-4.17	0.23	-3.2	0.25	0.00009	1.03	214.84	57.61	0.09
Schneider Cana	Upper	26500	25-Year	291	-4.17	0.72	-3.01	0.75	0.000106	1.19	243.6	64.15	0.1
Schneider Cana	Upper	26500	50-Year	348	-4.17	1.17	-2.87	1.2	0.000112	1.29	270.72	94.33	0.11
Schneider Cana	Upper	26500	100-Year	405	-4.17	1.61	-2.74	1.64	0.000115	1.36	297.89	117.23	0.11
Schneider Cana	Upper	26400	2-Year	112	-4.18	-0.83	-3.56	-0.82	0.000059	0.72	156.43	53.4	0.07
Schneider Cana	Upper	26400	5-Year	174	-4.18	-0.23	-3.35	-0.22	0.000081	0.92	189.13	55.79	0.09
Schneider Cana	Upper	26400	10-Year	222	-4.18	0.22	-3.21	0.24	0.00009	1.03	214.9	57.61	0.09
Schneider Cana	Upper	26400	25-Year	291	-4.18	0.71	-3.02	0.73	0.000107	1.19	243.56	63.39	0.1
Schneider Cana	Upper	26400	50-Year	348	-4.18	1.16	-2.88	1.19	0.000112	1.29	270.65	79.58	0.11
Schneider Cana	Upper	26400	100-Year	405	-4.18	1.6	-2.74	1.63	0.000115	1.36	297.8	86.3	0.11
Schneider Cana	Upper	26300	2-Year	112	-4.19	-0.84	-3.58	-0.83	0.000059	0.71	156.65	53.42	0.07
Schneider Cana	Upper	26300	5-Year	174	-4.19	-0.24	-3.37	-0.23	0.00008	0.92	189.24	55.8	0.09
Schneider Cana	Upper	26300	10-Year	222	-4.19	0.21	-3.22	0.23	0.00009	1.03	214.96	57.62	0.09
Schneider Cana	Upper	26300	25-Year	291	-4.19	0.7	-3.03	0.72	0.000107	1.19	243.52	68.81	0.1
Schneider Cana	Upper	26300	50-Year	348	-4.19	1.15	-2.89	1.17	0.000112	1.29	270.57	82.73	0.11
Schneider Cana	Upper	26300	100-Year	405	-4.19	1.59	-2.75	1.61	0.000115	1.36	297.7	91.85	0.11
Schneider Cana	Upper	26200	2-Year	112	-4.2	-0.84	-3.59	-0.83	0.000058	0.71	156.87	53.43	0.07
Schneider Cana	Upper	26200	5-Year	174	-4.2	-0.25	-3.38	-0.23	0.00008	0.92	189.35	55.8	0.09
Schneider Cana	Upper	26200	10-Year	222	-4.2	0.21	-3.23	0.22	0.00009	1.03	215.01	57.61	0.09
Schneider Cana	Upper	26200	25-Year	291	-4.2	0.69	-3.04	0.71	0.000107	1.19	244.17	67.26	0.1
Schneider Cana	Upper	26200	50-Year	348	-4.2	1.14	-2.9	1.16	0.000111	1.28	279.33	89.3	0.11
Schneider Cana	Upper	26200	100-Year	405	-4.2	1.57	-2.77	1.6	0.000108	1.34	325.68	111.91	0.11
Schneider Cana	Upper	26100	2-Year	112	-4.21	-0.85	-3.59	-0.84	0.000058	0.71	157.09	53.45	0.07
Schneider Cana	Upper	26100	5-Year	174	-4.21	-0.26	-3.38	-0.24	0.00008	0.92	189.46	55.82	0.09
Schneider Cana	Upper	26100	10-Year	222	-4.21	0.2	-3.24	0.21	0.000089	1.03	215.08	57.62	0.09
Schneider Cana	Upper	26100	25-Year	**291**	**-4.21**	**0.68**	**-3.05**	**0.7**	**0.000107**	**1.2**	**243.44**	**59.56**	**0.1**
Schneider Cana	Upper	26100	50-Year	348	-4.21	1.13	-2.91	1.15	0.000111	1.29	271.53	83.41	0.11
Schneider Cana	Upper	26100	100-Year	405	-4.21	1.56	-2.77	1.59	0.000112	1.36	303.3	103.72	0.11
Schneider Cana	Upper	26000	2-Year	112	-4.22	-0.85		-0.85	0.000058	0.71	157.33	53.47	0.07
Schneider Cana	Upper	26000	5-Year	174	-4.22	-0.26		-0.25	0.00008	0.92	189.58	55.83	0.09
Schneider Cana	Upper	26000	10-Year	222	-4.22	0.19		0.2	0.000089	1.03	215.15	57.64	0.09
Schneider Cana	Upper	26000	25-Year	291	-4.22	0.67		0.69	0.000107	1.2	243.42	59.57	0.1
Schneider Cana	Upper	26000	50-Year	348	-4.22	1.12		1.14	0.000112	1.29	270.37	61.35	0.11
Schneider Cana	Upper	26000	100-Year	405	-4.22	1.55		1.58	0.000114	1.36	303.04	114.87	0.11
Schneider Cana	Upper	25900	2-Year	112	-4.23	-0.86	-3.61	-0.85	0.000058	0.71	157.54	53.48	0.07
Schneider Cana	Upper	25900	5-Year	174	-4.23	-0.27	-3.4	-0.26	0.00008	0.92	189.68	55.83	0.09
Schneider Cana	Upper	25900	10-Year	222	-4.23	0.18	-3.26	0.19	0.000089	1.03	215.19	57.63	0.09
Schneider Cana	Upper	25900	25-Year	291	-4.23	0.66	-3.08	0.68	0.000107	1.2	243.35	66.78	0.1
Schneider Cana	Upper	25900	50-Year	348	-4.23	1.1	-2.93	1.13	0.000112	1.29	270.26	78.64	0.11
Schneider Cana	Upper	25900	100-Year	405	-4.23	1.54	-2.79	1.57	0.000115	1.36	297.33	97.67	0.11
Schneider Cana	Upper	25800	2-Year	112	-4.24	-0.87	-3.62	-0.86	0.000057	0.71	157.77	53.5	0.07
Schneider Cana	Upper	25800	5-Year	174	-4.24	-0.28	-3.41	-0.27	0.00008	0.92	189.8	55.84	0.09
Schneider Cana	Upper	25800	10-Year	222	-4.24	0.17	-3.27	0.19	0.000089	1.03	215.26	57.63	0.09
Schneider Cana	Upper	25800	25-Year	291	-4.24	0.65	-3.09	0.67	0.000107	1.2	243.31	59.55	0.1
Schneider Cana	Upper	25800	50-Year	348	-4.24	1.09	-2.94	1.12	0.000112	1.29	270.19	61.33	0.11
Schneider Cana	Upper	25800	100-Year	405	-4.24	1.53	-2.8	1.56	0.000115	1.36	297.24	63.06	0.11
Schneider Cana	Upper	25700	2-Year	112	-4.25	-0.87	-3.63	-0.86	0.000057	0.71	158	53.52	0.07
Schneider Cana	Upper	25700	5-Year	174	-4.25	-0.29	-3.43	-0.27	0.00008	0.92	189.91	55.85	0.09
Schneider Cana	Upper	25700	10-Year	222	-4.25	0.16	-3.28	0.18	0.000089	1.03	215.33	57.64	0.09
Schneider Cana	Upper	25700	25-Year	291	-4.25	0.64	-3.1	0.66	0.000107	1.2	243.28	59.55	0.1
Schneider Cana	Upper	25700	50-Year	348	-4.25	1.08	-2.95	1.11	0.000112	1.29	270.12	61.33	0.11
Schneider Cana	Upper	25700	100-Year	405	-4.25	1.52	-2.81	1.55	0.000115	1.36	297.15	88.22	0.11
Schneider Cana	Middle	25600	2-Year	191.23	-5.74	-0.87	-4.44	-0.86	0.000044	0.71	270.23	76.34	0.07
Schneider Cana	Middle	25600	5-Year	293.07	-5.74	-0.29	-4.15	-0.28	0.000066	0.93	315.67	79.64	0.08
Schneider Cana	Middle	25600	10-Year	367.33	-5.74	0.16	-3.97	0.17	0.000075	1.04	351.88	82.18	0.09

HEC-RAS Output - Alternative 1

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Middle	25600	25-Year	469.77	-5.74	0.64	-3.75	0.66	0.00009	1.2	391.72	84.89	0.1
Schneider Cana	Middle	25600	50-Year	551.85	-5.74	1.08	-3.59	1.1	0.000096	1.28	430.16	109.76	0.1
Schneider Cana	Middle	25600	100-Year	630.68	-5.74	1.51	-3.45	1.54	0.00011	1.34	470.17	127.72	0.11
Schneider Cana	Middle	25500	2-Year	191.23	-5.74	-0.88		-0.87	0.000047	0.7	272.08	81.26	0.07
Schneider Cana	Middle	25500	5-Year	293.07	-5.74	-0.3		-0.28	0.000077	0.91	323.51	95.94	0.09
Schneider Cana	Middle	25500	10-Year	367.33	-5.74	0.15		0.17	0.00009	1	368.92	107.24	0.09
Schneider Cana	Middle	25500	25-Year	469.77	-5.74	0.63		0.65	0.000107	1.11	422.9	119.29	0.1
Schneider Cana	Middle	25500	50-Year	551.85	-5.74	1.07		1.09	0.000111	1.15	478.49	130.54	0.11
Schneider Cana	Middle	25500	100-Year	630.68	-5.74	1.51		1.53	0.000109	1.17	537.71	141.54	0.11
Schneider Cana	Middle	25400	2-Year	191.23	-5.74	-0.88	-4.44	-0.87	0.000045	0.7	272.28	79.39	0.07
Schneider Cana	Middle	25400	5-Year	293.07	-5.74	-0.3	-4.15	-0.29	0.000068	0.92	319.65	84.67	0.08
Schneider Cana	Middle	25400	10-Year	367.33	-5.74	0.14	-3.97	0.16	0.000077	1.03	358.25	88.74	0.09
Schneider Cana	Middle	25400	25-Year	469.77	-5.74	0.62	-3.75	0.64	0.000092	1.17	401.31	93.08	0.1
Schneider Cana	Middle	25400	50-Year	551.85	-5.74	1.06	-3.59	1.08	0.000097	1.24	443.46	97.13	0.1
Schneider Cana	Middle	25400	100-Year	630.68	-5.74	1.49	-3.45	1.52	0.0001	1.3	486.62	110.06	0.1
Schneider Cana	Middle	25364	2-Year	191.23	-5.92	-0.88	-4.59	-0.88	0.00004	0.67	285.56	82.21	0.06
Schneider Cana	Middle	25364	5-Year	293.07	-5.92	-0.31	-4.3	-0.3	0.000059	0.88	333.85	85.55	0.08
Schneider Cana	Middle	25364	10-Year	367.33	-5.92	0.14	-4.11	0.15	0.000067	0.99	372.41	87.92	0.08
Schneider Cana	Middle	25364	25-Year	469.77	-5.92	0.61	-3.89	0.63	0.000099	1.12	418.49	108.84	0.1
Schneider Cana	Middle	25364	50-Year	551.85	-5.92	1.05	-3.72	1.07	0.000098	1.18	467.53	112.29	0.1
Schneider Cana	Middle	25364	100-Year	630.68	-5.92	1.48	-3.57	1.51	0.000098	1.22	517.29	119.93	0.1
Schneider Cana	Middle	25300	2-Year	191.23	-6.02	-0.89	-4.58	-0.88	0.000042	0.68	282.75	82.63	0.06
Schneider Cana	Middle	25300	5-Year	293.07	-6.02	-0.31	-4.29	-0.3	0.000061	0.88	331.25	86.05	0.08
Schneider Cana	Middle	25300	10-Year	367.33	-6.02	0.13	-4.1	0.15	0.000069	0.99	369.95	88.33	0.09
Schneider Cana	Middle	25300	25-Year	469.77	-6.02	0.6	-3.88	0.62	0.000084	1.14	412.04	92.13	0.1
Schneider Cana	Middle	25300	50-Year	551.85	-6.02	1.04	-3.71	1.07	0.000101	1.21	456.13	108.06	0.1
Schneider Cana	Middle	25300	100-Year	**630.68**	**-6.02**	**1.48**	**-3.56**	**1.5**	**0.000114**	**1.24**	**506.84**	**125.68**	**0.11**
Schneider Cana	Middle	25200	2-Year	191.23	-6.17	-0.89	-4.62	-0.88	0.000044	0.68	279.35	83.39	0.07
Schneider Cana	Middle	25200	5-Year	293.07	-6.17	-0.32	-4.3	-0.31	0.000064	0.89	328.09	86.68	0.08
Schneider Cana	Middle	25200	10-Year	367.33	-6.17	0.12	-4.1	0.14	0.000071	1	367.01	88.95	0.09
Schneider Cana	Middle	25200	25-Year	469.77	-6.17	0.59	-3.87	0.61	0.000086	1.15	409.54	93.12	0.1
Schneider Cana	Middle	25200	50-Year	551.85	-6.17	1.03	-3.71	1.06	0.000107	1.22	454.17	111.73	0.11
Schneider Cana	Middle	25200	100-Year	630.68	-6.17	1.46	-3.56	1.49	0.000122	1.24	507.04	132.58	0.11
Schneider Cana	Middle	25100	2-Year	191.23	-6.32	-0.9	-4.68	-0.89	0.000045	0.69	277.49	83.35	0.07
Schneider Cana	Middle	25100	5-Year	293.07	-6.32	-0.33	-4.34	-0.31	0.000066	0.9	326.24	87.6	0.08
Schneider Cana	Middle	25100	10-Year	367.33	-6.32	0.12	-4.14	0.13	0.000075	1	365.82	91.35	0.09
Schneider Cana	Middle	25100	25-Year	469.77	-6.32	0.58	-3.9	0.6	0.000089	1.15	409.39	95.32	0.1
Schneider Cana	Middle	25100	50-Year	551.85	-6.32	1.02	-3.73	1.04	0.000103	1.22	453.13	107.81	0.1
Schneider Cana	Middle	25100	100-Year	630.68	-6.32	1.45	-3.58	1.48	0.000104	1.26	505.45	131.47	0.11
Schneider Cana	Middle	25000	2-Year	191.23	-6.48	-0.9	-4.77	-0.89	0.000045	0.69	277.27	83.47	0.07
Schneider Cana	Middle	25000	5-Year	293.07	-6.48	-0.33	-4.42	-0.32	0.000068	0.9	326.39	89.44	0.08
Schneider Cana	Middle	25000	10-Year	367.33	-6.48	0.11	-4.21	0.12	0.000076	1	366.73	93.09	0.09
Schneider Cana	Middle	25000	25-Year	469.77	-6.48	0.57	-3.94	0.59	0.00009	1.14	410.89	96.63	0.1
Schneider Cana	Middle	25000	50-Year	551.85	-6.48	1.01	-3.77	1.03	0.000092	1.22	454.34	106.25	0.1
Schneider Cana	Middle	25000	100-Year	630.68	-6.48	1.44	-3.6	1.47	0.000091	1.27	505.3	130.14	0.1
Schneider Cana	Middle	24900	2-Year	191.23	-6.63	-0.91	-4.85	-0.9	0.000045	0.69	279.03	83.94	0.07
Schneider Cana	Middle	24900	5-Year	293.07	-6.63	-0.34	-4.49	-0.33	0.000067	0.89	328.22	89.89	0.08
Schneider Cana	Middle	24900	10-Year	367.33	-6.63	0.1	-4.27	0.12	0.000076	1	368.84	94.21	0.09
Schneider Cana	Middle	24900	25-Year	469.77	-6.63	0.57	-4.01	0.59	0.000089	1.14	413.33	97.47	0.1
Schneider Cana	Middle	24900	50-Year	551.85	-6.63	1	-3.82	1.03	0.000092	1.21	456.66	101.48	0.1
Schneider Cana	Middle	24900	100-Year	630.68	-6.63	1.43	-3.65	1.46	0.00009	1.26	507.9	136.14	0.1
Schneider Cana	Middle	24800	2-Year	191.23	-6.78	-0.91	-4.95	-0.9	0.000042	0.68	283.14	83.53	0.06
Schneider Cana	Middle	24800	5-Year	293.07	-6.78	-0.35	-4.58	-0.33	0.000064	0.88	331.95	89.61	0.08
Schneider Cana	Middle	24800	10-Year	367.33	-6.78	0.09	-4.35	0.11	0.000074	0.99	372.39	94.34	0.09
Schneider Cana	Middle	24800	25-Year	469.77	-6.78	0.56	-4.08	0.58	0.000087	1.13	417.02	98.04	0.1
Schneider Cana	Middle	24800	50-Year	551.85	-6.78	0.99	-3.9	1.02	0.00009	1.2	460.52	100.91	0.1

HEC-RAS Output - Alternative 1

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Middle	24800	100-Year	630.68	-6.78	1.43	-3.73	1.45	0.000089	1.25	515.08	141.97	0.1
Schneider Cana	Middle	24700	2-Year	191.23	-6.93	-0.91	-5.05	-0.91	0.000039	0.66	289.29	82.27	0.06
Schneider Cana	Middle	24700	5-Year	293.07	-6.93	-0.35	-4.67	-0.34	0.00006	0.87	337.29	88.61	0.08
Schneider Cana	Middle	24700	10-Year	367.33	-6.93	0.09	-4.45	0.1	0.00007	0.97	377.25	93.57	0.09
Schneider Cana	Middle	24700	25-Year	469.77	-6.93	0.55	-4.19	0.57	0.000084	1.11	421.64	98.49	0.09
Schneider Cana	Middle	24700	50-Year	551.85	-6.93	0.99	-4	1.01	0.000087	1.19	465.28	101.23	0.1
Schneider Cana	Middle	24700	100-Year	630.68	-6.93	1.42	-3.83	1.44	0.000094	1.24	510.2	110.89	0.1
Schneider Cana	Middle	24600	2-Year	191.23	-7.09	-0.92	-5.17	-0.91	0.000034	0.64	297.94	80.02	0.06
Schneider Cana	Middle	24600	5-Year	293.07	-7.09	-0.36	-4.8	-0.35	0.000055	0.85	344.63	86.81	0.08
Schneider Cana	Middle	24600	10-Year	367.33	-7.09	0.08	-4.58	0.09	0.000065	0.96	383.79	92.11	0.08
Schneider Cana	Middle	24600	25-Year	469.77	-7.09	0.54	-4.33	0.56	0.00008	1.1	427.45	97.69	0.09
Schneider Cana	Middle	24600	50-Year	551.85	-7.09	0.98	-4.14	1	0.000084	1.17	471.09	101.47	0.1
Schneider Cana	Middle	24600	100-Year	630.68	-7.09	1.41	-4	1.43	0.000091	1.22	515.87	110.44	0.1
Schneider Cana	Middle	24500	2-Year	191.23	-7.24	-0.92		-0.91	0.000029	0.62	309.4	78.13	0.05
Schneider Cana	Middle	24500	5-Year	293.07	-7.24	-0.36		-0.35	0.000048	0.83	354.36	84.02	0.07
Schneider Cana	Middle	24500	10-Year	367.33	-7.24	0.07		0.09	0.000058	0.94	392.31	89.81	0.08
Schneider Cana	Middle	24500	25-Year	469.77	-7.24	0.53		0.55	0.000074	1.08	434.89	95.88	0.09
Schneider Cana	Middle	24500	50-Year	551.85	-7.24	0.97		0.99	0.00008	1.15	477.97	101.66	0.09
Schneider Cana	Middle	24500	100-Year	630.68	-7.24	1.4		1.42	0.000084	1.21	522.97	108.1	0.1
Schneider Cana	Middle	24400	2-Year	191.23	-7.39	-0.92		-0.92	0.000025	0.59	322.27	77.93	0.05
Schneider Cana	Middle	24400	5-Year	293.07	-7.39	-0.37		-0.36	0.000041	0.8	366.45	80.94	0.07
Schneider Cana	Middle	24400	10-Year	367.33	-7.39	0.07		0.08	0.000051	0.91	402.69	86.24	0.07
Schneider Cana	Middle	24400	25-Year	469.77	-7.39	0.53		0.54	0.000067	1.06	443.65	93.05	0.09
Schneider Cana	Middle	24400	50-Year	551.85	-7.39	0.96		0.98	0.000075	1.14	485.6	100.19	0.09
Schneider Cana	Middle	24400	100-Year	630.68	-7.39	1.39		1.41	0.000082	1.19	530.8	109.44	0.1
Schneider Cana	Middle	24300	2-Year	**191.23**	**-7.54**	**-0.92**		**-0.92**	**0.000022**	**0.57**	**336.9**	**77.84**	**0.05**
Schneider Cana	Middle	24300	5-Year	293.07	-7.54	-0.37		-0.36	0.000036	0.77	380.88	80.67	0.06
Schneider Cana	Middle	24300	10-Year	367.33	-7.54	0.07		0.08	0.000043	0.88	416.44	82.88	0.07
Schneider Cana	Middle	24300	25-Year	469.77	-7.54	0.52		0.54	0.000058	1.03	455.24	88.73	0.08
Schneider Cana	Middle	24300	50-Year	551.85	-7.54	0.96		0.97	0.000068	1.11	495.55	98.02	0.09
Schneider Cana	Middle	24300	100-Year	630.68	-7.54	1.38		1.41	0.000078	1.17	540.14	110.1	0.09
Schneider Cana	Middle	24200	2-Year	191.23	-7.7	-0.93		-0.92	0.000019	0.54	352.79	77.81	0.04
Schneider Cana	Middle	24200	5-Year	293.07	-7.7	-0.37		-0.36	0.000031	0.74	396.63	80.49	0.06
Schneider Cana	Middle	24200	10-Year	367.33	-7.7	0.06		0.07	0.000038	0.85	432.04	82.59	0.07
Schneider Cana	Middle	24200	25-Year	469.77	-7.7	0.52		0.53	0.000049	1	470.07	84.79	0.07
Schneider Cana	Middle	24200	50-Year	551.85	-7.7	0.95		0.97	0.00006	1.09	508.17	93.93	0.08
Schneider Cana	Middle	24200	100-Year	630.68	-7.7	1.38		1.4	0.000071	1.14	551.24	107.63	0.09
Schneider Cana	Middle	24100	2-Year	191.23	-7.78	-0.93		-0.92	0.000016	0.52	367.82	77.68	0.04
Schneider Cana	Middle	24100	5-Year	293.07	-7.78	-0.37		-0.37	0.000028	0.71	411.5	80.34	0.06
Schneider Cana	Middle	24100	10-Year	367.33	-7.78	0.06		0.07	0.000034	0.82	446.79	82.43	0.06
Schneider Cana	Middle	24100	25-Year	469.77	-7.78	0.51		0.53	0.000044	0.97	484.67	84.61	0.07
Schneider Cana	Middle	24100	50-Year	551.85	-7.78	0.94		0.96	0.000053	1.06	522.2	91.14	0.08
Schneider Cana	Middle	24100	100-Year	630.68	-7.78	1.37		1.39	0.000062	1.12	563.32	101.79	0.08
Schneider Cana	Middle	24000	2-Year	191.23	-7.81	-0.93		-0.92	0.000019	0.54	351.07	76.61	0.04
Schneider Cana	Middle	24000	5-Year	293.07	-7.81	-0.38		-0.37	0.000031	0.74	394.04	79.29	0.06
Schneider Cana	Middle	24000	10-Year	367.33	-7.81	0.05		0.07	0.000039	0.86	428.84	81.65	0.07
Schneider Cana	Middle	24000	25-Year	469.77	-7.81	0.51		0.52	0.000051	1.01	466.61	86.06	0.08
Schneider Cana	Middle	24000	50-Year	551.85	-7.81	0.94		0.96	0.000059	1.09	504.87	91.29	0.08
Schneider Cana	Middle	24000	100-Year	630.68	-7.81	1.36		1.38	0.000067	1.16	545.59	100.88	0.09
Schneider Cana	Middle	23900	2-Year	191.23	-7.84	-0.93		-0.93	0.000021	0.57	335.95	75.49	0.05
Schneider Cana	Middle	23900	5-Year	293.07	-7.84	-0.38		-0.37	0.000035	0.77	378.19	78.2	0.06
Schneider Cana	Middle	23900	10-Year	367.33	-7.84	0.05		0.06	0.000044	0.89	412.63	81.88	0.07
Schneider Cana	Middle	23900	25-Year	469.77	-7.84	0.5		0.52	0.000058	1.04	450.69	87.07	0.08
Schneider Cana	Middle	23900	50-Year	551.85	-7.84	0.93		0.95	0.000066	1.13	489.26	92.04	0.09
Schneider Cana	Middle	23900	100-Year	630.68	-7.84	1.35		1.38	0.000072	1.19	529.53	98.72	0.09

HEC-RAS Output - Alternative 1

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Canal	Middle	23800	2-Year	191.23	-7.86	-0.93		-0.93	0.000024	0.59	322.27	74.31	0.05
Schneider Canal	Middle	23800	5-Year	293.07	-7.86	-0.39		-0.38	0.00004	0.81	363.94	78.36	0.07
Schneider Canal	Middle	23800	10-Year	367.33	-7.86	0.04		0.06	0.00005	0.92	398.51	82.21	0.07
Schneider Canal	Middle	23800	25-Year	469.77	-7.86	0.49		0.51	0.000064	1.08	436.37	86.78	0.08
Schneider Canal	Middle	23800	50-Year	551.85	-7.86	0.92		0.94	0.000072	1.16	474.74	91.86	0.09
Schneider Canal	Middle	23800	100-Year	630.68	-7.86	1.35		1.37	0.000078	1.23	514.76	97.07	0.09
Schneider Canal	Middle	23700	2-Year	191.23	-7.89	-0.94	-6.02	-0.93	0.000027	0.62	310.8	73.84	0.05
Schneider Canal	Middle	23700	5-Year	293.07	-7.89	-0.39	-5.61	-0.38	0.000045	0.83	352.33	78.35	0.07
Schneider Canal	Middle	23700	10-Year	367.33	-7.89	0.04	-5.36	0.05	0.000055	0.95	386.75	81.9	0.08
Schneider Canal	Middle	23700	25-Year	469.77	-7.89	0.48	-5.06	0.5	0.00007	1.11	424.18	85.6	0.09
Schneider Canal	Middle	23700	50-Year	551.85	-7.89	0.91	-4.85	0.94	0.000078	1.19	461.97	90.78	0.09
Schneider Canal	Middle	23700	100-Year	630.68	-7.89	1.34	-4.66	1.36	0.000084	1.26	501.49	96.04	0.1
Schneider Canal	Middle	23600	2-Year	191.23	-7.92	-0.94		-0.93	0.000029	0.63	301.46	73.51	0.06
Schneider Canal	Middle	23600	5-Year	293.07	-7.92	-0.4		-0.39	0.000048	0.86	342.57	77.74	0.07
Schneider Canal	Middle	23600	10-Year	367.33	-7.92	0.03		0.05	0.000059	0.98	376.59	81.08	0.08
Schneider Canal	Middle	23600	25-Year	469.77	-7.92	0.48		0.5	0.000075	1.14	413.49	84.76	0.09
Schneider Canal	Middle	23600	50-Year	551.85	-7.92	0.9		0.93	0.000083	1.22	450.56	88.92	0.1
Schneider Canal	Middle	23600	100-Year	630.68	-7.92	1.33		1.35	0.000089	1.29	489.27	94.38	0.1
Schneider Canal	Middle	23500	2-Year	191.23	-7.95	-0.94		-0.94	0.000031	0.65	294.3	72.54	0.06
Schneider Canal	Middle	23500	5-Year	293.07	-7.95	-0.4		-0.39	0.000051	0.88	334.67	76.6	0.07
Schneider Canal	Middle	23500	10-Year	367.33	-7.95	0.02		0.04	0.000062	1	368.08	79.87	0.08
Schneider Canal	Middle	23500	25-Year	469.77	-7.95	0.47		0.49	0.000079	1.16	404.31	83.58	0.09
Schneider Canal	Middle	23500	50-Year	551.85	-7.95	0.89		0.92	0.000087	1.25	440.74	87.15	0.1
Schneider Canal	Middle	23500	100-Year	630.68	-7.95	1.32		1.34	0.000092	1.32	478.41	92.03	0.1
Schneider Canal	Middle	23400	2-Year	191.23	-7.97	-0.95		-0.94	0.000032	0.66	289.28	70.81	0.06
Schneider Canal	Middle	23400	5-Year	293.07	-7.97	-0.41		-0.4	0.000053	0.89	328.62	75	0.08
Schneider Canal	Middle	23400	10-Year	**367.33**	**-7.97**	**0.02**		**0.03**	**0.000065**	**1.02**	**361.28**	**78.46**	**0.08**
Schneider Canal	Middle	23400	25-Year	469.77	-7.97	0.46		0.48	0.000082	1.18	396.72	82.14	0.09
Schneider Canal	Middle	23400	50-Year	551.85	-7.97	0.88		0.91	0.00009	1.28	432.46	85.69	0.1
Schneider Canal	Middle	23400	100-Year	630.68	-7.97	1.31		1.33	0.000095	1.34	469.27	89.2	0.1
Schneider Canal	Middle	23300	2-Year	191.23	-8	-0.95		-0.94	0.000031	0.67	287.12	68.37	0.06
Schneider Canal	Middle	23300	5-Year	293.07	-8	-0.41		-0.4	0.000053	0.9	324.96	72.74	0.08
Schneider Canal	Middle	23300	10-Year	367.33	-8	0.01		0.03	0.000065	1.03	356.65	76.51	0.08
Schneider Canal	Middle	23300	25-Year	469.77	-8	0.45		0.47	0.000084	1.2	391.07	80.26	0.1
Schneider Canal	Middle	23300	50-Year	551.85	-8	0.87		0.9	0.000092	1.3	425.96	83.9	0.1
Schneider Canal	Middle	23300	100-Year	630.68	-8	1.29		1.32	0.000097	1.37	461.98	87.49	0.1
Schneider Canal	Middle	23200	2-Year	191.23	-8.18	-0.95		-0.95	0.00003	0.67	287.27	66.4	0.06
Schneider Canal	Middle	23200	5-Year	293.07	-8.18	-0.42		-0.41	0.000052	0.9	323.88	70.68	0.07
Schneider Canal	Middle	23200	10-Year	367.33	-8.18	0		0.02	0.000064	1.04	354.53	74.19	0.08
Schneider Canal	Middle	23200	25-Year	469.77	-8.18	0.44		0.46	0.000083	1.21	387.75	77.81	0.1
Schneider Canal	Middle	23200	50-Year	551.85	-8.18	0.86		0.89	0.000092	1.31	421.49	81.46	0.1
Schneider Canal	Middle	23200	100-Year	630.68	-8.18	1.28		1.31	0.000098	1.38	456.49	85.32	0.11
Schneider Canal	Middle	23100	2-Year	191.23	-8.04	-0.96		-0.95	0.000022	0.59	325.79	70.75	0.05
Schneider Canal	Middle	23100	5-Year	293.07	-8.04	-0.42		-0.41	0.000036	0.81	364.02	72.41	0.06
Schneider Canal	Middle	23100	10-Year	367.33	-8.04	0		0.01	0.000045	0.93	394.86	73.57	0.07
Schneider Canal	Middle	23100	25-Year	469.77	-8.04	0.44		0.46	0.000058	1.1	427.25	75.21	0.08
Schneider Canal	Middle	23100	50-Year	551.85	-8.04	0.86		0.88	0.000066	1.2	459.52	77.29	0.09
Schneider Canal	Middle	23100	100-Year	630.68	-8.04	1.28		1.3	0.000071	1.28	492.34	79.34	0.09
Schneider Canal	Middle	23000	2-Year	191.23	-8.06	-0.96		-0.95	0.000022	0.58	328.35	71.91	0.05
Schneider Canal	Middle	23000	5-Year	293.07	-8.06	-0.43		-0.42	0.000036	0.8	367.1	73.63	0.06
Schneider Canal	Middle	23000	10-Year	367.33	-8.06	0		0.01	0.000045	0.92	398.53	75.41	0.07
Schneider Canal	Middle	23000	25-Year	469.77	-8.06	0.43		0.45	0.000058	1.09	431.73	77.26	0.08
Schneider Canal	Middle	23000	50-Year	551.85	-8.06	0.85		0.88	0.000065	1.19	464.75	79.05	0.09
Schneider Canal	Middle	23000	100-Year	630.68	-8.06	1.27		1.3	0.00007	1.27	498.21	80.82	0.09
Schneider Canal	Middle	22900	2-Year	191.23	-8.08	-0.96		-0.95	0.000021	0.58	331.47	73.28	0.05
Schneider Canal	Middle	22900	5-Year	293.07	-8.08	-0.43		-0.42	0.000036	0.79	371.01	75.53	0.06

HEC-RAS Output - Alternative 1

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Middle	22900	10-Year	367.33	-8.08	-0.01		0	0.000044	0.91	403.15	77.16	0.07
Schneider Cana	Middle	22900	25-Year	469.77	-8.08	0.43		0.44	0.000057	1.08	436.97	78.83	0.08
Schneider Cana	Middle	22900	50-Year	551.85	-8.08	0.85		0.87	0.000064	1.17	470.58	80.46	0.09
Schneider Cana	Middle	22900	100-Year	630.68	-8.08	1.27		1.29	0.000068	1.25	504.56	82.07	0.09
Schneider Cana	Middle	22800	2-Year	191.23	-8.09	-0.96		-0.96	0.000021	0.57	335.6	74.97	0.05
Schneider Cana	Middle	22800	5-Year	293.07	-8.09	-0.43		-0.42	0.000035	0.78	375.9	77.11	0.06
Schneider Cana	Middle	22800	10-Year	367.33	-8.09	-0.01		0	0.000043	0.9	408.62	78.62	0.07
Schneider Cana	Middle	22800	25-Year	469.77	-8.09	0.42		0.44	0.000056	1.06	442.96	80.19	0.08
Schneider Cana	Middle	22800	50-Year	551.85	-8.09	0.84		0.86	0.000062	1.16	477.07	81.71	0.08
Schneider Cana	Middle	22800	100-Year	630.68	-8.09	1.26		1.28	0.000066	1.23	511.53	83.22	0.09
Schneider Cana	Middle	22700	2-Year	191.23	-8.11	-0.96		-0.96	0.000021	0.56	340.72	76.46	0.05
Schneider Cana	Middle	22700	5-Year	293.07	-8.11	-0.44		-0.43	0.000034	0.77	381.68	78.49	0.06
Schneider Cana	Middle	22700	10-Year	367.33	-8.11	-0.02		0	0.000042	0.89	414.91	79.94	0.07
Schneider Cana	Middle	22700	25-Year	469.77	-8.11	0.42		0.43	0.000054	1.04	449.7	81.42	0.08
Schneider Cana	Middle	22700	50-Year	551.85	-8.11	0.84		0.86	0.00006	1.14	484.28	82.87	0.08
Schneider Cana	Middle	22700	100-Year	630.68	-8.11	1.25		1.28	0.000065	1.21	519.25	85.37	0.09
Schneider Cana	Middle	22600	2-Year	191.23	-8.13	-0.97		-0.96	0.00002	0.55	346.54	77.77	0.05
Schneider Cana	Middle	22600	5-Year	293.07	-8.13	-0.44		-0.43	0.000033	0.76	388.08	79.75	0.06
Schneider Cana	Middle	22600	10-Year	367.33	-8.13	-0.02		-0.01	0.000041	0.87	421.77	81.13	0.07
Schneider Cana	Middle	22600	25-Year	469.77	-8.13	0.41		0.43	0.000052	1.03	456.98	82.56	0.08
Schneider Cana	Middle	22600	50-Year	551.85	-8.13	0.83		0.85	0.000058	1.12	491.98	83.95	0.08
Schneider Cana	Middle	22600	100-Year	630.68	-8.13	1.25		1.27	0.000063	1.2	527.59	87.47	0.09
Schneider Cana	Middle	22500	2-Year	191.23	-8.14	-0.97		-0.96	0.000019	0.54	352.72	79.01	0.05
Schneider Cana	Middle	22500	5-Year	293.07	-8.14	-0.44		-0.43	0.000032	0.74	394.81	80.94	0.06
Schneider Cana	Middle	22500	10-Year	367.33	-8.14	-0.02		-0.01	0.000039	0.86	428.93	82.28	0.07
Schneider Cana	Middle	22500	25-Year	469.77	-8.14	0.41		0.42	0.00005	1.01	464.54	83.66	0.08
Schneider Cana	Middle	22500	50-Year	**551.85**	**-8.14**	**0.83**		**0.84**	**0.000056**	**1.1**	**499.95**	**85.25**	**0.08**
Schneider Cana	Middle	22500	100-Year	630.68	-8.14	1.24		1.26	0.000062	1.18	536.34	89.46	0.08
Schneider Cana	Middle	22400	2-Year	191.23	-8.16	-0.97	-6.21	-0.96	0.000018	0.53	359.75	80.17	0.04
Schneider Cana	Middle	22400	5-Year	293.07	-8.16	-0.44	-5.87	-0.44	0.000031	0.73	402.35	82.08	0.06
Schneider Cana	Middle	22400	10-Year	367.33	-8.16	-0.03	-5.65	-0.02	0.000037	0.84	436.89	83.39	0.06
Schneider Cana	Middle	22400	25-Year	469.77	-8.16	0.4	-5.4	0.42	0.000048	0.99	472.88	84.73	0.07
Schneider Cana	Middle	22400	50-Year	551.85	-8.16	0.82	-5.23	0.84	0.000054	1.08	508.81	87.31	0.08
Schneider Cana	Middle	22400	100-Year	630.68	-8.16	1.24	-5.07	1.26	0.000063	1.15	546.42	94.97	0.08
Schneider Cana	Middle	22300	2-Year	191.23	-8.18	-0.97	-6.24	-0.97	0.000017	0.52	367.49	81.33	0.04
Schneider Cana	Middle	22300	5-Year	293.07	-8.18	-0.45	-5.9	-0.44	0.000029	0.71	410.59	83.18	0.06
Schneider Cana	Middle	22300	10-Year	367.33	-8.18	-0.03	-5.71	-0.02	0.000036	0.82	445.53	84.45	0.06
Schneider Cana	Middle	22300	25-Year	469.77	-8.18	0.4	-5.49	0.41	0.000046	0.97	481.88	85.76	0.07
Schneider Cana	Middle	22300	50-Year	551.85	-8.18	0.82	-5.32	0.83	0.000055	1.06	518.8	92.25	0.08
Schneider Cana	Middle	22300	100-Year	630.68	-8.18	1.23	-5.16	1.25	0.000063	1.13	559.02	101.48	0.08
Schneider Cana	Middle	22200	2-Year	191.23	-8.19	-0.97		-0.97	0.000016	0.51	375.49	82.39	0.04
Schneider Cana	Middle	22200	5-Year	293.07	-8.19	-0.45		-0.44	0.000028	0.7	419.06	84.23	0.06
Schneider Cana	Middle	22200	10-Year	367.33	-8.19	-0.03		-0.02	0.000034	0.81	454.39	85.48	0.06
Schneider Cana	Middle	22200	25-Year	469.77	-8.19	0.39		0.41	0.000046	0.96	491.37	89.67	0.07
Schneider Cana	Middle	22200	50-Year	551.85	-8.19	0.81		0.83	0.000055	1.04	530.65	98.34	0.08
Schneider Cana	Middle	22200	100-Year	630.68	-8.19	1.22		1.24	0.000062	1.1	573.21	106.94	0.08
Schneider Cana	Middle	22100	2-Year	191.23	-8.21	-0.97	-6.53	-0.97	0.000015	0.5	383.93	83.45	0.04
Schneider Cana	Middle	22100	5-Year	293.07	-8.21	-0.45	-6.21	-0.45	0.000026	0.68	427.97	85.27	0.05
Schneider Cana	Middle	22100	10-Year	367.33	-8.21	-0.04	-6.01	-0.03	0.000033	0.79	463.83	88.35	0.06
Schneider Cana	Middle	22100	25-Year	469.77	-8.21	0.39	-5.75	0.4	0.000046	0.93	502.78	95.52	0.07
Schneider Cana	Middle	22100	50-Year	551.85	-8.21	0.81	-5.57	0.82	0.000054	1.01	544.33	103.71	0.08
Schneider Cana	Middle	22100	100-Year	630.68	-8.21	1.22	-5.4	1.24	0.000059	1.07	588.93	123.76	0.08
Schneider Cana	Middle	22000	2-Year	191.23	-8.23	-0.98	-6.75	-0.97	0.000015	0.49	393.21	84.52	0.04
Schneider Cana	Middle	22000	5-Year	293.07	-8.23	-0.45	-6.42	-0.45	0.000025	0.67	437.83	87.83	0.05
Schneider Cana	Middle	22000	10-Year	367.33	-8.23	-0.04	-6.21	-0.03	0.000033	0.77	475.39	93.13	0.06
Schneider Cana	Middle	22000	25-Year	469.77	-8.23	0.38	-5.95	0.4	0.000045	0.91	516.44	100.74	0.07

HEC-RAS Output - Alternative 1

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Middle	22000	50-Year	551.85	-8.23	0.8	-5.76	0.82	0.000052	0.99	560	108.44	0.08
Schneider Cana	Middle	22000	100-Year	630.68	-8.23	1.21	-5.59	1.23	0.000054	1.04	608.77	127.5	0.08
Schneider Cana	Middle	21900	2-Year	191.23	-8.29	-0.98	-6.93	-0.97	0.000014	0.47	404.16	87.21	0.04
Schneider Cana	Middle	21900	5-Year	293.07	-8.29	-0.46	-6.58	-0.45	0.000024	0.65	450.41	90.9	0.05
Schneider Cana	Middle	21900	10-Year	367.33	-8.29	-0.04	-6.36	-0.03	0.00003	0.75	488.7	93.85	0.06
Schneider Cana	Middle	21900	25-Year	469.77	-8.29	0.38	-6.09	0.39	0.00004	0.89	529.25	97.9	0.07
Schneider Cana	Middle	21900	50-Year	551.85	-8.29	0.8	-5.9	0.81	0.000045	0.97	570.8	107.18	0.07
Schneider Cana	Middle	21900	100-Year	630.68	-8.29	1.21	-5.72	1.23	0.00005	1.03	614.39	142.43	0.08
Schneider Cana	Middle	21800	2-Year	191.23	-8.48	-0.98	-6.86	-0.97	0.000015	0.5	385.75	80.22	0.04
Schneider Cana	Middle	21800	5-Year	293.07	-8.48	-0.46	-6.52	-0.45	0.000025	0.68	427.88	82.48	0.05
Schneider Cana	Middle	21800	10-Year	367.33	-8.48	-0.05	-6.3	-0.04	0.000031	0.79	462.37	84.29	0.06
Schneider Cana	Middle	21800	25-Year	469.77	-8.48	0.37	-6.03	0.39	0.000041	0.94	498.28	86.15	0.07
Schneider Cana	Middle	21800	50-Year	551.85	-8.48	0.79	-5.84	0.81	0.000047	1.03	534.61	93.76	0.07
Schneider Cana	Middle	21800	100-Year	630.68	-8.48	1.2	-5.67	1.22	0.00005	1.1	578.42	111.07	0.08
Schneider Cana	Middle	21700	2-Year	191.23	-8.68	-0.98	-6.84	-0.98	0.000017	0.51	376.87	84.18	0.04
Schneider Cana	Middle	21700	5-Year	293.07	-8.68	-0.46	-6.5	-0.46	0.00003	0.69	421.95	90.25	0.06
Schneider Cana	Middle	21700	10-Year	367.33	-8.68	-0.05	-6.28	-0.04	0.000037	0.8	460.13	94.63	0.06
Schneider Cana	Middle	21700	25-Year	469.77	-8.68	0.37	-6.02	0.38	0.000049	0.94	500.86	99.08	0.07
Schneider Cana	Middle	21700	50-Year	551.85	-8.68	0.78	-5.83	0.8	0.000054	1.02	542.84	103.56	0.08
Schneider Cana	Middle	21700	100-Year	630.68	-8.68	1.2	-5.67	1.21	0.000059	1.08	586.66	108.98	0.08
Schneider Cana	Middle	21600	2-Year	191.23	-8.87	-0.98	-6.89	-0.98	0.000017	0.53	363.3	77.85	0.04
Schneider Cana	Middle	21600	5-Year	293.07	-8.87	-0.47	-6.52	-0.46	0.000031	0.72	404.78	83.23	0.06
Schneider Cana	Middle	21600	10-Year	367.33	-8.87	-0.06	-6.31	-0.04	0.000039	0.83	439.95	87.53	0.07
Schneider Cana	Middle	21600	25-Year	469.77	-8.87	0.36	-6.05	0.38	0.000051	0.98	477.46	91.48	0.08
Schneider Cana	Middle	21600	50-Year	551.85	-8.87	0.78	-5.87	0.79	0.000058	1.07	516.06	95.21	0.08
Schneider Cana	Middle	21600	100-Year	630.68	-8.87	1.19	-5.71	1.21	0.000062	1.13	556.01	100.45	0.08
Schneider Cana	Middle	21500	2-Year	191.23	-9.06	-0.98	-7	-0.98	0.000017	0.54	352.73	72.65	0.04
Schneider Cana	Middle	21500	5-Year	293.07	-9.06	-0.47	-6.62	-0.46	0.000031	0.75	390.86	75.9	0.06
Schneider Cana	Middle	21500	10-Year	367.33	-9.06	-0.06	-6.4	-0.05	0.000039	0.87	422.57	78.5	0.07
Schneider Cana	Middle	21500	25-Year	469.77	-9.06	0.36	-6.14	0.37	0.000052	1.03	455.85	81.14	0.08
Schneider Cana	Middle	21500	50-Year	551.85	-9.06	0.77	-5.95	0.79	0.000058	1.13	489.83	83.57	0.08
Schneider Cana	Middle	21500	100-Year	630.68	-9.06	1.18	-5.78	1.2	0.000063	1.2	524.54	85.55	0.09
Schneider Cana	Lower	21400	2-Year	236	-9.26	-0.99	-6.99	-0.98	0.000027	0.69	344.32	69.33	0.05
Schneider Cana	Lower	21400	5-Year	360	-9.26	-0.48	-6.59	-0.46	0.000049	0.95	380.67	73.5	0.07
Schneider Cana	Lower	21400	10-Year	458	-9.26	-0.07	-6.33	-0.05	0.000065	1.11	411.49	77.67	0.09
Schneider Cana	Lower	21400	25-Year	594	-9.26	0.34	-5.99	0.37	0.000091	1.34	444.37	81.88	0.1
Schneider Cana	Lower	21400	50-Year	709	-9.26	0.75	-5.73	0.78	0.000108	1.48	478.66	102.79	0.11
Schneider Cana	Lower	21400	100-Year	824	-9.26	1.16	-5.5	1.2	0.000122	1.6	514.52	118.77	0.12
Schneider Cana	Lower	21300	2-Year	236	-9.45	-0.99	-7.2	-0.98	0.000027	0.7	337.48	66.09	0.05
Schneider Cana	Lower	21300	5-Year	360	-9.45	-0.48	-6.79	-0.47	0.000049	0.97	371.93	69.71	0.07
Schneider Cana	Lower	21300	10-Year	458	-9.45	-0.08	-6.51	-0.06	0.000065	1.14	400.92	75.71	0.09
Schneider Cana	Lower	21300	25-Year	594	-9.45	0.33	-6.16	0.36	0.000088	1.38	435.65	111.14	0.1
Schneider Cana	Lower	21300	50-Year	709	-9.45	0.74	-5.89	0.77	0.000101	1.53	486.8	124.46	0.11
Schneider Cana	Lower	21300	100-Year	824	-9.45	1.14	-5.64	1.19	0.00011	1.64	538.24	128.78	0.11
Schneider Cana	Lower	21200	2-Year	236	-9.64	-0.99	-7.43	-0.99	0.000027	0.71	332.01	63.08	0.05
Schneider Cana	Lower	21200	5-Year	360	-9.64	-0.49	-7.01	-0.47	0.00005	0.99	364.73	66.55	0.07
Schneider Cana	Lower	21200	10-Year	458	-9.64	-0.09	-6.72	-0.06	0.000067	1.17	392.15	69.32	0.09
Schneider Cana	Lower	21200	25-Year	594	-9.64	0.32	-6.36	0.35	0.000094	1.41	420.85	72.13	0.1
Schneider Cana	Lower	21200	50-Year	709	-9.64	0.72	-6.08	0.76	0.000113	1.57	450.68	75.52	0.11
Schneider Cana	Lower	21200	100-Year	824	-9.64	1.13	-5.82	1.17	0.00013	1.71	481.81	78.9	0.12
Schneider Cana	Lower	21100	2-Year	236	-9.84	-1	-7.68	-0.99	0.000027	0.72	328.37	60.28	0.05
Schneider Cana	Lower	21100	5-Year	360	-9.84	-0.49	-7.26	-0.48	0.00005	1	359.48	63.61	0.07
Schneider Cana	Lower	21100	10-Year	458	-9.84	-0.09	-6.95	-0.07	0.000068	1.19	385.56	66.27	0.09
Schneider Cana	Lower	21100	25-Year	594	-9.84	0.31	-6.58	0.34	0.000095	1.44	412.78	68.95	0.1
Schneider Cana	Lower	21100	50-Year	709	-9.84	0.71	-6.3	0.75	0.000114	1.61	441.54	75.67	0.11
Schneider Cana	Lower	21100	100-Year	824	-9.84	1.11	-6.03	1.16	0.000128	1.75	472.59	78.54	0.12

HEC-RAS Output - Alternative 1

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Canal	Lower	21000	2-Year	236	-9.45	-1	-7.36	-0.99	0.000031	0.73	324.62	65.84	0.06
Schneider Canal	Lower	21000	5-Year	360	-9.45	-0.5	-6.92	-0.48	0.000055	1.01	358.2	68.45	0.08
Schneider Canal	Lower	21000	10-Year	458	-9.45	-0.1	-6.62	-0.08	0.000072	1.19	385.99	70.54	0.09
Schneider Canal	Lower	21000	25-Year	594	-9.45	0.3	-6.24	0.33	0.0001	1.43	414.63	72.62	0.11
Schneider Canal	Lower	21000	50-Year	709	-9.45	0.7	-5.96	0.74	0.000118	1.6	444.09	74.71	0.12
Schneider Canal	Lower	21000	100-Year	824	-9.45	1.1	-5.69	1.15	0.000131	1.74	476.73	86.82	0.12
Lateral Canal	South	12247.75	2-Year	81.23	-1.94	0.1	-0.44	0.21	0.003111	2.67	30.42	28.62	0.46
Lateral Canal	South	12247.75	5-Year	123.07	-1.94	0.83	-0.17	0.92	0.001322	2.34	52.57	31.37	0.32
Lateral Canal	South	12247.75	10-Year	150.33	-1.94	1.38	-0.03	1.45	0.000823	2.15	70.06	33.09	0.26
Lateral Canal	South	12247.75	25-Year	187.77	-1.94	2.1	0.14	2.16	0.000519	1.98	94.81	35.38	0.21
Lateral Canal	South	12247.75	50-Year	213.85	-1.94	2.76	0.24	2.81	0.000342	1.8	118.86	37.12	0.18
Lateral Canal	South	12247.75	100-Year	238.68	-1.94	3.46	0.34	3.5	0.000234	1.64	145.49	38.8	0.15
Lateral Canal	South	12200	2-Year	81.23	-2.76	0.06	-1.39	0.12	0.000897	2.04	39.88	20.73	0.26
Lateral Canal	South	12200	5-Year	123.07	-2.76	0.79	-1.06	0.87	0.000801	2.18	56.37	24.19	0.25
Lateral Canal	South	12200	10-Year	150.33	-2.76	1.34	-0.86	1.41	0.000657	2.14	70.36	26.79	0.23
Lateral Canal	South	12200	25-Year	187.77	-2.76	2.07	-0.62	2.13	0.000526	2.06	91.2	31.09	0.21
Lateral Canal	South	12200	50-Year	213.85	-2.76	2.74	-0.47	2.79	0.000402	1.88	113.82	40.27	0.19
Lateral Canal	South	12200	100-Year	238.68	-2.76	3.45	-0.33	3.49	0.000292	1.68	141.72	58.19	0.16
Lateral Canal	South	12150	2-Year	81.23	-2.33	0.01	-1.27	0.08	0.000918	2.04	39.76	21.5	0.26
Lateral Canal	South	12150	5-Year	123.07	-2.33	0.75	-0.97	0.83	0.000772	2.17	56.83	24.51	0.25
Lateral Canal	South	12150	10-Year	150.33	-2.33	1.31	-0.8	1.38	0.000619	2.11	71.09	26.77	0.23
Lateral Canal	South	12150	25-Year	187.77	-2.33	2.04	-0.58	2.11	0.000475	2.05	91.81	29.6	0.2
Lateral Canal	South	12150	50-Year	213.85	-2.33	2.72	-0.44	2.77	0.000343	1.9	112.33	34.83	0.18
Lateral Canal	South	12150	100-Year	238.68	-2.33	3.43	-0.31	3.48	0.000251	1.76	135.23	48.67	0.15
Lateral Canal	South	12095		Pedestrian Walkway Bridge									
Lateral Canal	South	12000	2-Year	81.23	-2.88	-0.32	-1.91	-0.28	0.000533	1.66	48.97	24.24	0.21
Lateral Canal	South	12000	5-Year	123.07	-2.88	0.48	-1.63	0.53	0.000453	1.77	69.55	27.43	0.2
Lateral Canal	South	12000	10-Year	150.33	-2.88	1.08	-1.45	1.13	0.000362	1.73	86.93	29.86	0.18
Lateral Canal	South	12000	25-Year	187.77	-2.88	1.86	-1.25	1.9	0.000285	1.69	111.2	32.95	0.16
Lateral Canal	South	12000	50-Year	213.85	-2.88	2.57	-1.11	2.61	0.000214	1.58	135.76	35.81	0.14
Lateral Canal	South	12000	100-Year	238.68	-2.88	3.31	-0.99	3.35	0.00016	1.46	163.41	38.77	0.13
Lateral Canal	South	11900	2-Year	81.23	-3.06	-0.36	-2.09	-0.33	0.000442	1.55	52.29	24.79	0.19
Lateral Canal	South	11900	5-Year	123.07	-3.06	0.44	-1.8	0.48	0.000388	1.68	73.47	28	0.18
Lateral Canal	South	11900	10-Year	150.33	-3.06	1.05	-1.63	1.1	0.000314	1.64	91.43	30.45	0.17
Lateral Canal	South	11900	25-Year	187.77	-3.06	1.83	-1.42	1.87	0.000251	1.61	116.39	33.57	0.15
Lateral Canal	South	11900	50-Year	213.85	-3.06	2.55	-1.29	2.59	0.00019	1.51	141.62	36.45	0.14
Lateral Canal	South	11900	100-Year	238.68	-3.06	3.3	-1.16	3.33	0.000144	1.4	169.93	39.44	0.12
Lateral Canal	South	11800	2-Year	81.23	-3.24	-0.4	-2.27	-0.37	0.000366	1.45	55.88	25.36	0.17
Lateral Canal	South	11800	5-Year	123.07	-3.24	0.41	-1.98	0.45	0.000332	1.59	77.64	28.59	0.17
Lateral Canal	South	11800	10-Year	150.33	-3.24	1.03	-1.82	1.07	0.000273	1.56	96.16	31.07	0.16
Lateral Canal	South	11800	25-Year	187.77	-3.24	1.81	-1.6	1.85	0.000222	1.54	121.77	34.21	0.14
Lateral Canal	South	11800	50-Year	213.85	-3.24	2.54	-1.47	2.57	0.00017	1.45	147.65	37.11	0.13
Lateral Canal	South	11800	100-Year	238.68	-3.24	3.29	-1.35	3.32	0.00013	1.35	176.61	40.11	0.11
Lateral Canal	South	11700	2-Year	81.23	-3.42	-0.43	-2.45	-0.4	0.000303	1.36	59.72	25.96	0.16
Lateral Canal	South	11700	5-Year	123.07	-3.42	0.38	-2.16	0.41	0.000285	1.5	82.03	29.19	0.16
Lateral Canal	South	11700	10-Year	150.33	-3.42	1	-2	1.04	0.000238	1.49	101.09	31.7	0.15
Lateral Canal	South	11700	25-Year	187.77	-3.42	1.79	-1.79	1.83	0.000196	1.47	127.34	34.85	0.14
Lateral Canal	South	11700	50-Year	213.85	-3.42	2.52	-1.65	2.55	0.000152	1.39	153.86	37.77	0.12
Lateral Canal	South	11700	100-Year	238.68	-3.42	3.28	-1.52	3.3	0.000117	1.3	183.45	40.79	0.11
Lateral Canal	South	11600	2-Year	81.23	-3.6	-0.46	-2.63	-0.43	0.000252	1.27	63.79	26.58	0.14
Lateral Canal	South	11600	5-Year	123.07	-3.6	0.35	-2.35	0.39	0.000245	1.42	86.64	29.82	0.15
Lateral Canal	South	11600	10-Year	150.33	-3.6	0.98	-2.18	1.02	0.000207	1.42	106.21	32.34	0.14
Lateral Canal	South	11600	25-Year	187.77	-3.6	1.78	-1.97	1.81	0.000174	1.41	133.1	35.51	0.13
Lateral Canal	South	11600	50-Year	213.85	-3.6	2.51	-1.82	2.54	0.000136	1.33	160.23	38.44	0.12
Lateral Canal	South	11600	100-Year	238.68	-3.6	3.27	-1.7	3.29	0.000105	1.25	190.45	41.47	0.1

HEC-RAS Output - Alternative 1

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Lateral Canal	South	11500	2-Year	81.23	-3.78	-0.48	-2.81	-0.45	0.00021	1.19	68.07	27.21	0.13
Lateral Canal	South	11500	5-Year	123.07	-3.78	0.33	-2.52	0.36	0.000211	1.35	91.45	30.46	0.14
Lateral Canal	South	11500	10-Year	150.33	-3.78	0.97	-2.36	1	0.000181	1.35	111.52	32.99	0.13
Lateral Canal	South	11500	25-Year	187.77	-3.78	1.76	-2.14	1.79	0.000154	1.35	139.02	36.17	0.12
Lateral Canal	South	11500	50-Year	213.85	-3.78	2.5	-2.01	2.52	0.000122	1.28	166.77	39.12	0.11
Lateral Canal	South	11500	100-Year	238.68	-3.78	3.26	-1.89	3.28	0.000095	1.21	197.61	42.15	0.1
Lateral Canal	South	11400	2-Year	81.23	-3.96	-0.49	-2.99	-0.47	0.000175	1.12	72.55	27.86	0.12
Lateral Canal	South	11400	5-Year	123.07	-3.96	0.32	-2.7	0.34	0.000182	1.28	96.45	31.11	0.13
Lateral Canal	South	11400	10-Year	150.33	-3.96	0.95	-2.54	0.98	0.000159	1.28	117.02	33.65	0.12
Lateral Canal	South	11400	25-Year	187.77	-3.96	1.75	-2.32	1.78	0.000137	1.29	145.12	36.84	0.11
Lateral Canal	South	11400	50-Year	213.85	-3.96	2.49	-2.19	2.51	0.000109	1.23	173.48	39.8	0.1
Lateral Canal	South	11400	100-Year	238.68	-3.96	3.25	-2.06	3.27	0.000086	1.16	204.92	42.84	0.09
Lateral Canal	South	11300	2-Year	81.23	-4.14	-0.51	-3.17	-0.49	0.000147	1.05	77.22	28.53	0.11
Lateral Canal	South	11300	5-Year	123.07	-4.14	0.3	-2.88	0.32	0.000157	1.21	101.64	31.77	0.12
Lateral Canal	South	11300	10-Year	150.33	-4.14	0.94	-2.72	0.96	0.000139	1.23	122.68	34.31	0.11
Lateral Canal	South	11300	25-Year	187.77	-4.14	1.74	-2.51	1.76	0.000122	1.24	151.39	37.51	0.11
Lateral Canal	South	11300	50-Year	213.85	-4.14	2.48	-2.37	2.5	0.000098	1.19	180.33	40.48	0.1
Lateral Canal	South	11300	100-Year	238.68	-4.14	3.24	-2.24	3.26	0.000078	1.12	212.38	43.53	0.09
Lateral Canal	South	11200	2-Year	81.23	-4.32	-0.52	-3.35	-0.51	0.000124	0.99	82.06	29.2	0.1
Lateral Canal	South	11200	5-Year	123.07	-4.32	0.29	-3.06	0.31	0.000136	1.15	106.99	32.43	0.11
Lateral Canal	South	11200	10-Year	150.33	-4.32	0.93	-2.9	0.95	0.000123	1.17	128.52	34.99	0.11
Lateral Canal	South	11200	25-Year	187.77	-4.32	1.73	-2.69	1.75	0.000109	1.19	157.82	38.19	0.1
Lateral Canal	South	11200	50-Year	213.85	-4.32	2.47	-2.55	2.49	0.000089	1.14	187.35	41.17	0.09
Lateral Canal	South	11200	100-Year	238.68	-4.32	3.24	-2.43	3.25	0.000071	1.08	219.99	44.23	0.09
Lateral Canal	South	11100	2-Year	81.23	-4.5	-0.53	-3.53	-0.52	0.000105	0.93	87.08	29.88	0.1
Lateral Canal	South	11100	5-Year	**123.07**	**-4.5**	**0.28**	**-3.24**	**0.3**	**0.000119**	**1.09**	**112.52**	**33.11**	**0.1**
Lateral Canal	South	11100	10-Year	150.33	-4.5	0.92	-3.07	0.94	0.000108	1.12	134.51	35.67	0.1
Lateral Canal	South	11100	25-Year	187.77	-4.5	1.72	-2.87	1.74	0.000097	1.14	164.4	58.4	0.1
Lateral Canal	South	11100	50-Year	213.85	-4.5	2.46	-2.73	2.48	0.00008	1.1	194.51	71.26	0.09
Lateral Canal	South	11100	100-Year	238.68	-4.5	3.23	-2.6	3.25	0.000065	1.05	227.75	94.36	0.08
Lateral Canal	South	11000	2-Year	143.23	-4.68	-0.58	-3.3	-0.54	0.000288	1.57	91.11	30.41	0.16
Lateral Canal	South	11000	5-Year	220.07	-4.68	0.21	-2.88	0.27	0.000345	1.89	116.44	33.58	0.18
Lateral Canal	South	11000	10-Year	275.33	-4.68	0.85	-2.62	0.91	0.000335	1.99	138.57	36.12	0.18
Lateral Canal	South	11000	25-Year	348.77	-4.68	1.65	-2.3	1.72	0.000313	2.07	168.71	39.31	0.18
Lateral Canal	South	11000	50-Year	406.85	-4.68	2.4	-2.07	2.46	0.000271	2.04	199.28	42.31	0.17
Lateral Canal	South	11000	100-Year	462.68	-4.68	3.17	-1.87	3.22	0.000517	1.94	239.09	96.12	0.21
Lateral Canal	South	10900	2-Year	143.23	-4.86	-0.6	-3.48	-0.57	0.00025	1.49	95.9	31.04	0.15
Lateral Canal	South	10900	5-Year	220.07	-4.86	0.19	-3.06	0.24	0.000306	1.81	121.54	34.18	0.17
Lateral Canal	South	10900	10-Year	275.33	-4.86	0.82	-2.8	0.88	0.000301	1.91	144.09	36.73	0.17
Lateral Canal	South	10900	25-Year	348.77	-4.86	1.62	-2.48	1.68	0.000285	2	174.78	39.93	0.17
Lateral Canal	South	10900	50-Year	406.85	-4.86	2.37	-2.26	2.43	0.000345	1.91	213.48	66.45	0.18
Lateral Canal	South	10900	100-Year	462.68	-4.86	3.14	-2.05	3.19	0.000235	1.77	269.91	108.3	0.15
Lateral Canal	South	10800	2-Year	143.23	-5.04	-0.62	-3.66	-0.59	0.000217	1.42	100.89	31.67	0.14
Lateral Canal	South	10800	5-Year	220.07	-5.04	0.16	-3.24	0.21	0.000272	1.73	126.86	34.8	0.16
Lateral Canal	South	10800	10-Year	275.33	-5.04	0.8	-2.98	0.85	0.00027	1.84	149.81	37.34	0.16
Lateral Canal	South	10800	25-Year	348.77	-5.04	1.6	-2.66	1.66	0.000259	1.93	181.05	40.55	0.16
Lateral Canal	South	10800	50-Year	406.85	-5.04	2.34	-2.44	2.4	0.000228	1.91	212.46	43.54	0.15
Lateral Canal	South	10800	100-Year	462.68	-5.04	3.11	-2.23	3.17	0.000191	1.87	246.77	71.05	0.14
Lateral Canal	South	10670	2-Year	143.23	-5.49	-0.72	-2.81	-0.64	0.000593	2.23	64.28	28.66	0.23
Lateral Canal	South	10670	5-Year	220.07	-5.49	0.03	-2.3	0.15	0.000655	2.73	80.73	32.14	0.25
Lateral Canal	South	10670	10-Year	275.33	-5.49	0.66	-2.03	0.79	0.000606	2.91	94.51	35.22	0.25
Lateral Canal	South	10670	25-Year	348.77	-5.49	1.45	-1.7	1.6	0.000554	3.12	111.89	39.11	0.24
Lateral Canal	South	10670	50-Year	406.85	-5.49	2.19	-1.46	2.35	0.000478	3.17	128.31	42.78	0.23
Lateral Canal	South	10670	100-Year	462.68	-5.49	2.96	-1.24	3.12	0.000409	3.19	145.21	58.99	0.22
Lateral Canal	South	10633		Spartan Drive									

HEC-RAS Output - Alternative 1

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Lateral Canal	South	10596	2-Year	143.23	-5.09	-0.81	-3.21	-0.75	0.000308	1.86	76.84	33.94	0.18
Lateral Canal	South	10596	5-Year	220.07	-5.09	-0.2	-2.84	-0.11	0.000428	2.44	90.12	35.07	0.21
Lateral Canal	South	10596	10-Year	275.33	-5.09	0.25	-2.6	0.36	0.000473	2.75	100.02	35.91	0.23
Lateral Canal	South	10596	25-Year	348.77	-5.09	0.73	-2.32	0.88	0.000543	3.15	110.57	40.52	0.25
Lateral Canal	South	10596	50-Year	406.85	-5.09	1.16	-2.1	1.34	0.00056	3.39	120.16	48.54	0.26
Lateral Canal	South	10596	100-Year	462.68	-5.09	1.58	-1.91	1.78	0.000566	3.58	129.4	57	0.26
Lateral Canal	South	10500	2-Year	143.23	-5.18	-0.81	-3.35	-0.78	0.000208	1.36	105.4	34.29	0.14
Lateral Canal	South	10500	5-Year	220.07	-5.18	-0.2	-3.01	-0.16	0.000283	1.74	126.63	35.42	0.16
Lateral Canal	South	10500	10-Year	275.33	-5.18	0.25	-2.81	0.31	0.000308	1.93	143	36.27	0.17
Lateral Canal	South	10500	25-Year	348.77	-5.18	0.74	-2.57	0.82	0.000352	2.17	161.01	37.56	0.18
Lateral Canal	South	10500	50-Year	406.85	-5.18	1.19	-2.38	1.27	0.000396	2.28	178.61	42.49	0.2
Lateral Canal	South	10500	100-Year	462.68	-5.18	1.62	-2.22	1.7	0.000424	2.34	198.09	48.19	0.2
Lateral Canal	South	10400	2-Year	143.23	-5.27	-0.83	-3.52	-0.8	0.000175	1.28	111.71	34.63	0.13
Lateral Canal	South	10400	5-Year	220.07	-5.27	-0.23	-3.21	-0.18	0.000245	1.66	132.91	35.76	0.15
Lateral Canal	South	10400	10-Year	275.33	-5.27	0.23	-3.01	0.28	0.000292	1.84	149.66	39.28	0.17
Lateral Canal	South	10400	25-Year	348.77	-5.27	0.71	-2.76	0.78	0.000369	2.05	170.28	45.7	0.19
Lateral Canal	South	10400	50-Year	406.85	-5.27	1.15	-2.58	1.22	0.000394	2.12	191.79	51.56	0.19
Lateral Canal	South	10400	100-Year	462.68	-5.27	1.58	-2.41	1.65	0.000417	2.15	215.27	59.68	0.2
Lateral Canal	South	10300	2-Year	143.23	-5.36	-0.84	-3.7	-0.82	0.000149	1.21	117.94	34.97	0.12
Lateral Canal	South	10300	5-Year	220.07	-5.36	-0.25	-3.39	-0.21	0.000249	1.56	140.85	42.43	0.15
Lateral Canal	South	10300	10-Year	275.33	-5.36	0.2	-3.19	0.25	0.000293	1.71	161.34	48.44	0.16
Lateral Canal	South	10300	25-Year	348.77	-5.36	0.68	-2.94	0.74	0.000354	1.87	186.29	56.43	0.18
Lateral Canal	South	10300	50-Year	406.85	-5.36	1.13	-2.77	1.18	0.000374	1.91	213.53	66.18	0.19
Lateral Canal	South	10300	100-Year	462.68	-5.36	1.56	-2.6	1.61	0.000349	1.9	243.31	72.25	0.18
Lateral Canal	South	10200	2-Year	143.23	-5.45	-0.86	-3.88	-0.84	0.000152	1.13	127.22	43.86	0.12
Lateral Canal	South	10200	5-Year	**220.07**	**-5.45**	**-0.27**	**-3.56**	**-0.24**	**0.000233**	**1.42**	**155.4**	**52.53**	**0.15**
Lateral Canal	South	10200	10-Year	275.33	-5.45	0.18	-3.37	0.22	0.000269	1.52	181	61.57	0.16
Lateral Canal	South	10200	25-Year	348.77	-5.45	0.66	-3.12	0.7	0.000291	1.64	212.41	79.34	0.16
Lateral Canal	South	10200	50-Year	406.85	-5.45	1.1	-2.94	1.15	0.000273	1.67	245.72	98.37	0.16
Lateral Canal	South	10200	100-Year	462.68	-5.45	1.54	-2.78	1.58	0.000236	1.66	290.88	157.36	0.15
Lateral Canal	South	10100	2-Year	143.23	-5.55	-0.87	-4.05	-0.85	0.000134	0.99	144.16	55.41	0.11
Lateral Canal	South	10100	5-Year	220.07	-5.55	-0.28	-3.73	-0.26	0.00019	1.22	179.66	65.72	0.13
Lateral Canal	South	10100	10-Year	275.33	-5.55	0.16	-3.54	0.19	0.000189	1.31	210.02	69.77	0.13
Lateral Canal	South	10100	25-Year	348.77	-5.55	0.64	-3.3	0.68	0.000197	1.43	244.58	75.7	0.14
Lateral Canal	South	10100	50-Year	406.85	-5.55	1.09	-3.12	1.12	0.000179	1.47	279.7	92.77	0.13
Lateral Canal	South	10100	100-Year	462.68	-5.55	1.52	-2.96	1.56	0.000159	1.49	319.16	148.17	0.13
Lateral Canal	South	10050	2-Year	143.23	-5.59	-0.87	-4.12	-0.86	0.000118	0.92	156.11	61.68	0.1
Lateral Canal	South	10050	5-Year	220.07	-5.59	-0.29	-3.82	-0.27	0.000156	1.13	194.62	69.53	0.12
Lateral Canal	South	10050	10-Year	275.33	-5.59	0.16	-3.62	0.18	0.00016	1.21	226.91	84.25	0.12
Lateral Canal	South	10050	25-Year	348.77	-5.59	0.64	-3.38	0.66	0.000169	1.32	263.82	99.73	0.13
Lateral Canal	South	10050	50-Year	406.85	-5.59	1.08	-3.21	1.11	0.000149	1.33	319.76	117.36	0.12
Lateral Canal	South	10050	100-Year	462.68	-5.59	1.52	-3.05	1.55	0.000131	1.33	376.73	136.89	0.12

HEC-RAS Output - Alternative 2

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Upper	1950	2-Year	79	-0.76	2.25	0.71	2.34	0.001032	2.35	33.62	14.11	0.27
WP-20 Canal	Upper	1950	5-Year	123	-0.76	3.1	1.09	3.21	0.00102	2.67	45.99	15.14	0.27
WP-20 Canal	Upper	1950	10-Year	158	-0.76	3.69	1.37	3.82	0.001004	2.86	55.24	15.86	0.27
WP-20 Canal	Upper	1950	25-Year	207	-0.76	4.43	1.71	4.57	0.000998	3.08	67.18	16.72	0.27
WP-20 Canal	Upper	1950	50-Year	247	-0.76	5.15	1.96	5.3	0.000901	3.1	79.55	66.89	0.26
WP-20 Canal	Upper	1950	100-Year	288	-0.76	5.9	2.22	6.04	0.000797	3.07	95.17	154.79	0.25
WP-20 Canal	Upper	1900	2-Year	79	-0.94	2.22	0.5	2.29	0.000767	2.1	37.62	15.57	0.24
WP-20 Canal	Upper	1900	5-Year	123	-0.94	3.07	0.88	3.16	0.000777	2.39	51.46	17.3	0.24
WP-20 Canal	Upper	1900	10-Year	158	-0.94	3.67	1.15	3.77	0.000777	2.53	62.47	19.34	0.25
WP-20 Canal	Upper	1900	25-Year	207	-0.94	4.41	1.49	4.52	0.000757	2.66	77.73	21.88	0.25
WP-20 Canal	Upper	1900	50-Year	247	-0.94	5.14	1.74	5.24	0.000742	2.58	95.6	28.54	0.25
WP-20 Canal	Upper	1900	100-Year	288	-0.94	5.92	1.98	5.99	0.000494	2.19	164.36	155.1	0.21
WP-20 Canal	Upper	1850	2-Year	79	-1.03	2.19	0.37	2.25	0.000584	1.88	41.93	16.77	0.21
WP-20 Canal	Upper	1850	5-Year	123	-1.03	3.05	0.72	3.12	0.000606	2.16	56.85	18.58	0.22
WP-20 Canal	Upper	1850	10-Year	158	-1.03	3.65	0.97	3.73	0.000608	2.3	68.56	20.36	0.22
WP-20 Canal	Upper	1850	25-Year	207	-1.03	4.39	1.28	4.48	0.0006	2.45	84.45	22.52	0.22
WP-20 Canal	Upper	1850	50-Year	247	-1.03	5.12	1.52	5.21	0.000499	2.42	103.32	90.75	0.21
WP-20 Canal	Upper	1850	100-Year	288	-1.03	5.92	1.75	5.97	0.000264	1.98	227.07	200	0.16
WP-20 Canal	Upper	1800	2-Year	79	-1.11	2.16	0.4	2.22	0.000661	1.97	40.08	16.77	0.22
WP-20 Canal	Upper	1800	5-Year	123	-1.11	3.01	0.78	3.09	0.00067	2.23	55.27	19.21	0.23
WP-20 Canal	Upper	1800	10-Year	158	-1.11	3.61	1.04	3.7	0.000656	2.34	67.53	21.45	0.23
WP-20 Canal	Upper	1800	25-Year	207	-1.11	4.36	1.37	4.45	0.000626	2.45	84.58	24.27	0.23
WP-20 Canal	Upper	1800	50-Year	247	-1.11	5.1	1.6	5.18	0.000512	2.33	116.39	106.84	0.21
WP-20 Canal	Upper	1800	100-Year	288	-1.11	5.91	1.83	5.95	0.000228	1.77	257.16	200	0.15
WP-20 Canal	Upper	1750	2-Year	79	-1.13	2.13	0.29	2.19	0.000561	1.85	42.66	17.16	0.21
WP-20 Canal	Upper	1750	5-Year	123	-1.13	2.98	0.64	3.05	0.000582	2.12	58.03	19.31	0.22
WP-20 Canal	Upper	1750	10-Year	158	-1.13	3.59	0.89	3.66	0.000579	2.25	70.27	21.28	0.22
WP-20 Canal	Upper	1750	25-Year	207	-1.13	4.33	1.2	4.42	0.000565	2.38	87.05	23.78	0.22
WP-20 Canal	Upper	1750	50-Year	247	-1.13	5.07	1.44	5.15	0.000536	2.32	106.5	88.56	0.22
WP-20 Canal	Upper	1750	100-Year	288	-1.13	5.9	1.66	5.94	0.000224	1.72	263.86	200	0.14
WP-20 Canal	Upper	1700	2-Year	79	-1.13	2.09	0.43	2.15	0.000732	2.03	38.98	16.83	0.23
WP-20 Canal	Upper	1700	5-Year	123	-1.13	2.94	0.79	3.02	0.00071	2.27	54.23	19.08	0.24
WP-20 Canal	Upper	1700	10-Year	158	-1.13	3.54	1.04	3.63	0.000674	2.39	66.22	20.55	0.23
WP-20 Canal	Upper	1700	25-Year	207	-1.13	4.29	1.37	4.39	0.000637	2.52	82.2	28.44	0.23
WP-20 Canal	Upper	1700	50-Year	247	-1.13	5.03	1.61	5.13	0.000524	2.48	100.57	130.18	0.21
WP-20 Canal	Upper	1700	100-Year	288	-1.13	5.89	1.83	5.93	0.000191	1.7	290.23	200	0.13
WP-20 Canal	Upper	1639		Olive Drive									
WP-20 Canal	Upper	1600	2-Year	79	-0.83	1.92	0.4	2	0.000964	2.26	34.99	15.72	0.27
WP-20 Canal	Upper	1600	5-Year	123	-0.83	2.76	0.78	2.85	0.000905	2.52	48.91	17.44	0.26
WP-20 Canal	Upper	1600	10-Year	158	-0.83	3.34	1.05	3.45	0.000869	2.66	59.39	18.63	0.26
WP-20 Canal	Upper	1600	25-Year	207	-0.83	4.1	1.39	4.22	0.000808	2.79	74.22	48.47	0.26
WP-20 Canal	Upper	1600	50-Year	247	-0.83	4.69	1.64	4.82	0.000761	2.85	86.64	91.05	0.25
WP-20 Canal	Upper	1600	100-Year	288	-0.83	5.48	1.87	5.53	0.000324	2.09	206.75	168.01	0.17
WP-20 Canal	Upper	1550	2-Year	79	-1.26	1.87	0.29	1.95	0.000886	2.22	35.63	15.16	0.25
WP-20 Canal	Upper	1550	5-Year	123	-1.26	2.71	0.66	2.81	0.000876	2.51	48.97	16.69	0.26
WP-20 Canal	Upper	1550	10-Year	158	-1.26	3.29	0.93	3.4	0.000868	2.68	59.05	18.02	0.26
WP-20 Canal	Upper	1550	25-Year	207	-1.26	4.06	1.26	4.18	0.00082	2.82	73.42	47.46	0.26
WP-20 Canal	Upper	1550	50-Year	247	-1.26	4.65	1.52	4.78	0.000786	2.89	85.44	81.35	0.25
WP-20 Canal	Upper	1550	100-Year	288	-1.26	5.38	1.75	5.5	0.000745	2.79	104.12	140.16	0.25
WP-20 Canal	Upper	1500	2-Year	79	-1.4	1.83	0.14	1.91	0.000845	2.2	35.98	14.54	0.25
WP-20 Canal	Upper	1500	5-Year	123	-1.4	2.67	0.52	2.77	0.000872	2.53	48.69	15.84	0.25
WP-20 Canal	Upper	1500	10-Year	158	-1.4	3.25	0.79	3.36	0.000885	2.72	58.16	16.97	0.26
WP-20 Canal	Upper	1500	25-Year	207	-1.4	4.01	1.13	4.14	0.000868	2.88	71.77	18.77	0.26
WP-20 Canal	Upper	1500	50-Year	247	-1.4	4.6	1.39	4.74	0.000845	2.96	83.39	30.71	0.26
WP-20 Canal	Upper	1500	100-Year	288	-1.4	5.36	1.64	5.46	0.000637	2.63	141.78	140.18	0.23

HEC-RAS Output - Alternative 2

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Upper	1450	2-Year	79	-1.11	1.8	0.19	1.86	0.000804	2.07	38.17	17.36	0.25
WP-20 Canal	Upper	1450	5-Year	123	-1.11	2.64	0.56	2.72	0.000734	2.29	53.65	18.99	0.24
WP-20 Canal	Upper	1450	10-Year	158	-1.11	3.22	0.81	3.31	0.0007	2.43	64.94	19.9	0.24
WP-20 Canal	Upper	1450	25-Year	207	-1.11	3.99	1.14	4.09	0.000663	2.56	80.92	25.98	0.23
WP-20 Canal	Upper	1450	50-Year	247	-1.11	4.58	1.38	4.69	0.000655	2.61	94.62	53.2	0.24
WP-20 Canal	Upper	1450	100-Year	288	-1.11	5.36	1.62	5.43	0.000424	2.24	166.75	104.02	0.19
WP-20 Canal	Upper	1400	2-Year	79	-1.46	1.75	0.07	1.82	0.000855	2.18	36.21	15.37	0.25
WP-20 Canal	Upper	1400	5-Year	123	-1.46	2.59	0.46	2.68	0.000869	2.45	50.15	17.96	0.26
WP-20 Canal	Upper	1400	10-Year	158	-1.46	3.17	0.73	3.27	0.000837	2.58	61.16	19.59	0.26
WP-20 Canal	Upper	1400	25-Year	207	-1.46	3.94	1.07	4.05	0.000783	2.69	77	22	0.25
WP-20 Canal	Upper	1400	50-Year	247	-1.46	4.54	1.33	4.65	0.000739	2.71	91.05	29.33	0.25
WP-20 Canal	Upper	1400	100-Year	288	-1.46	5.3	1.59	5.4	0.000593	2.58	119.2	128.9	0.23
WP-20 Canal	Upper	1350	2-Year	88	-1.57	1.68	0.09	1.77	0.001052	2.44	36.01	14.94	0.28
WP-20 Canal	Upper	1350	5-Year	137	-1.57	2.51	0.5	2.63	0.001071	2.8	49	16.39	0.28
WP-20 Canal	Upper	1350	10-Year	175	-1.57	3.09	0.79	3.22	0.001054	2.98	58.78	17.41	0.29
WP-20 Canal	Upper	1350	25-Year	230	-1.57	3.85	1.16	4	0.001032	3.17	72.62	19.09	0.29
WP-20 Canal	Upper	1350	50-Year	275	-1.57	4.44	1.44	4.6	0.00104	3.25	84.62	24.28	0.29
WP-20 Canal	Upper	1350	100-Year	321	-1.57	5.23	1.69	5.36	0.000748	2.95	133.13	175.89	0.25
WP-20 Canal	Upper	1300	2-Year	88	-1.23	1.62	0.32	1.72	0.001086	2.42	36.29	18.22	0.29
WP-20 Canal	Upper	1300	5-Year	137	-1.23	2.46	0.68	2.58	0.000923	2.69	50.97	19.69	0.28
WP-20 Canal	Upper	1300	10-Year	175	-1.23	3.05	0.93	3.17	0.000814	2.85	61.48	20.81	0.27
WP-20 Canal	Upper	1300	25-Year	230	-1.23	3.81	1.25	3.96	0.000716	3.06	75.27	23.36	0.26
WP-20 Canal	Upper	1300	50-Year	275	-1.23	4.4	1.49	4.56	0.000658	3.2	86.86	32.08	0.26
WP-20 Canal	Upper	1300	100-Year	321	-1.23	5.21	1.71	5.32	0.000759	2.81	153.23	172.16	0.26
WP-20 Canal	Upper	657		Markham-Peachtree Box Culvert									
WP-20 Canal	Upper	15	2-Year	88	-2.2	0.12		0.23	0.000244	2.64	33.35	19.29	0.34
WP-20 Canal	Upper	15	5-Year	137	-2.2	0.78		0.92	0.000222	3.04	45.14	21.92	0.34
WP-20 Canal	Upper	15	10-Year	175	-2.2	1.24		1.41	0.000205	3.27	53.48	23.77	0.33
WP-20 Canal	Upper	15	25-Year	230	-2.2	1.79		1.99	0.000202	3.63	63.32	25.96	0.34
WP-20 Canal	Upper	15	50-Year	275	-2.2	2.26		2.49	0.000191	3.83	71.73	27.83	0.34
WP-20 Canal	Upper	15	100-Year	321	-2.2	2.76		3	0.000175	3.98	80.75	29.83	0.33
WP-20 Canal	Lower	6100	2-Year	5.77	-2.82	0.2	-1.64	0.2	0.000005	0.16	37.12	38.16	0.02
WP-20 Canal	Lower	6100	5-Year	12.51	-2.82	0.88	-1.53	0.88	0.000009	0.24	51.75	40.17	0.03
WP-20 Canal	Lower	6100	10-Year	19.04	-2.82	1.36	-1.45	1.36	0.000012	0.3	62.63	41.57	0.03
WP-20 Canal	Lower	6100	25-Year	28.68	-2.82	1.94	-1.35	1.95	0.000015	0.37	76.6	43.4	0.04
WP-20 Canal	Lower	6100	50-Year	39.39	-2.82	2.45	-1.24	2.45	0.000018	0.44	89.22	44.87	0.04
WP-20 Canal	Lower	6100	100-Year	47.98	-2.82	2.95	-1.16	2.95	0.000018	0.47	101.93	46.14	0.04
WP-20 Canal	Lower	6050	2-Year	5.77	-1.7	0.2	-1.37	0.2	0.000021	0.26	22.36	16.07	0.04
WP-20 Canal	Lower	6050	5-Year	12.51	-1.7	0.87	-1.22	0.88	0.000029	0.37	33.78	17.53	0.05
WP-20 Canal	Lower	6050	10-Year	19.04	-1.7	1.35	-1.09	1.36	0.000035	0.45	42.41	18.52	0.05
WP-20 Canal	Lower	6050	25-Year	28.68	-1.7	1.94	-0.94	1.94	0.00004	0.53	53.62	19.72	0.06
WP-20 Canal	Lower	6050	50-Year	39.39	-1.7	2.45	-0.8	2.45	0.000046	0.62	63.87	20.76	0.06
WP-20 Canal	Lower	6050	100-Year	47.98	-1.7	2.94	-0.7	2.95	0.000045	0.64	74.41	21.78	0.06
WP-20 Canal	Lower	6000	2-Year	5.77	-1.82	0.19	-1.5	0.2	0.000014	0.23	25.08	15.53	0.03
WP-20 Canal	Lower	6000	5-Year	12.51	-1.82	0.87	-1.36	0.88	0.000023	0.35	36.07	16.8	0.04
WP-20 Canal	Lower	6000	10-Year	19.04	-1.82	1.35	-1.25	1.35	0.00003	0.43	44.31	17.69	0.05
WP-20 Canal	Lower	6000	25-Year	28.68	-1.82	1.94	-1.11	1.94	0.000036	0.52	55	18.76	0.05
WP-20 Canal	Lower	6000	50-Year	39.39	-1.82	2.44	-0.97	2.45	0.000043	0.61	64.72	19.67	0.06
WP-20 Canal	Lower	6000	100-Year	47.98	-1.82	2.94	-0.88	2.95	0.000043	0.64	74.69	20.57	0.06
WP-20 Canal	Lower	5969		Pedestrian Walkway Culvert									
WP-20 Canal	Lower	5950	2-Year	5.77	-1.96	0.19	-1.54	0.19	0.000016	0.23	24.61	16.38	0.03
WP-20 Canal	Lower	5950	5-Year	12.51	-1.96	0.87	-1.38	0.87	0.000024	0.35	36.02	17.36	0.04
WP-20 Canal	Lower	5950	10-Year	19.04	-1.96	1.34	-1.25	1.34	0.00003	0.43	44.43	18.22	0.05
WP-20 Canal	Lower	5950	25-Year	28.68	-1.96	1.92	-1.09	1.92	0.000038	0.52	55.46	20.2	0.06
WP-20 Canal	Lower	5950	50-Year	39.39	-1.96	2.42	-0.94	2.42	0.000044	0.6	65.82	21.42	0.06

HEC-RAS Output - Alternative 2

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Lower	5950	100-Year	47.98	-1.96	2.9	-0.83	2.91	0.000043	0.63	76.47	22.33	0.06
WP-20 Canal	Lower	5900	2-Year	5.77	-2.01	0.19	-1.55	0.19	0.000016	0.24	24.01	15.41	0.03
WP-20 Canal	Lower	5900	5-Year	12.51	-2.01	0.87	-1.38	0.87	0.000026	0.36	35	16.92	0.04
WP-20 Canal	Lower	5900	10-Year	19.04	-2.01	1.34	-1.26	1.34	0.000032	0.44	43.21	17.75	0.05
WP-20 Canal	Lower	5900	25-Year	28.68	-2.01	1.92	-1.12	1.92	0.000039	0.53	53.76	18.77	0.06
WP-20 Canal	Lower	5900	50-Year	39.39	-2.01	2.41	-0.97	2.42	0.000046	0.62	63.27	19.64	0.06
WP-20 Canal	Lower	5900	100-Year	47.98	-2.01	2.9	-0.87	2.91	0.000046	0.66	73.04	20.5	0.06
WP-20 Canal	Lower	5850	2-Year	5.77	-2.13	0.19	-1.71	0.19	0.000011	0.22	26.69	15	0.03
WP-20 Canal	Lower	5850	5-Year	12.51	-2.13	0.86	-1.55	0.87	0.00002	0.34	37.09	15.82	0.04
WP-20 Canal	Lower	5850	10-Year	19.04	-2.13	1.34	-1.42	1.34	0.000027	0.43	44.71	16.4	0.05
WP-20 Canal	Lower	5850	25-Year	28.68	-2.13	1.92	-1.26	1.92	0.000035	0.53	54.39	17.1	0.05
WP-20 Canal	Lower	5850	50-Year	39.39	-2.13	2.41	-1.13	2.42	0.000044	0.63	63	17.71	0.06
WP-20 Canal	Lower	5850	100-Year	47.98	-2.13	2.9	-1.03	2.9	0.000046	0.67	71.86	18.79	0.06
WP-20 Canal	Lower	5800	2-Year	5.77	-2.07	0.19	-1.65	0.19	0.000012	0.22	26.37	15.36	0.03
WP-20 Canal	Lower	5800	5-Year	12.51	-2.07	0.86	-1.49	0.87	0.000021	0.34	37.17	16.59	0.04
WP-20 Canal	Lower	5800	10-Year	19.04	-2.07	1.34	-1.38	1.34	0.000028	0.42	45.2	17.38	0.05
WP-20 Canal	Lower	5800	25-Year	28.68	-2.07	1.91	-1.24	1.92	0.000035	0.52	55.5	18.34	0.05
WP-20 Canal	Lower	5800	50-Year	39.39	-2.07	2.41	-1.11	2.41	0.000042	0.61	64.8	19.21	0.06
WP-20 Canal	Lower	5800	100-Year	47.98	-2.07	2.9	-1.02	2.9	0.000043	0.65	74.33	19.96	0.06
WP-20 Canal	Lower	5750	2-Year	5.77	-2.04	0.19	-1.6	0.19	0.000012	0.24	24.52	15.95	0.03
WP-20 Canal	Lower	5750	5-Year	12.51	-2.04	0.86	-1.41	0.86	0.00002	0.37	33.95	17.32	0.04
WP-20 Canal	Lower	5750	10-Year	19.04	-2.04	1.33	-1.27	1.34	0.000025	0.47	40.56	18.23	0.05
WP-20 Canal	Lower	5750	25-Year	28.68	-2.04	1.91	-1.11	1.92	0.000031	0.59	48.63	19.07	0.06
WP-20 Canal	Lower	5750	50-Year	39.39	-2.04	2.4	-0.97	2.41	0.000038	0.71	55.53	19.87	0.06
WP-20 Canal	Lower	5750	100-Year	47.98	-2.04	2.89	-0.87	2.9	0.000039	0.77	62.34	20.9	0.06
WP-20 Canal	Lower	5711		Kasey Street									
WP-20 Canal	Lower	5650	2-Year	5.77	-2.49	0.19	-2.2	0.19	0.000008	0.21	27.03	17.34	0.02
WP-20 Canal	Lower	5650	5-Year	12.51	-2.49	0.86	-2.04	0.86	0.000017	0.35	35.32	19.27	0.04
WP-20 Canal	Lower	5650	10-Year	19.04	-2.49	1.33	-1.91	1.34	0.000025	0.46	41.57	20.63	0.05
WP-20 Canal	Lower	5650	25-Year	28.68	-2.49	1.91	-1.76	1.91	0.000033	0.58	49.57	22.28	0.05
WP-20 Canal	Lower	5650	50-Year	39.39	-2.49	2.4	-1.6	2.4	0.00004	0.7	56.43	23.7	0.06
WP-20 Canal	Lower	5650	100-Year	47.98	-2.49	2.88	-1.48	2.89	0.000041	0.76	63.15	25.08	0.06
WP-20 Canal	Lower	5550	2-Year	5.77	-2.55	0.19	-2.15	0.19	0.000006	0.17	34.59	17.4	0.02
WP-20 Canal	Lower	5550	5-Year	12.51	-2.55	0.86	-2	0.86	0.000011	0.27	46.94	19.35	0.03
WP-20 Canal	Lower	5550	10-Year	19.04	-2.55	1.33	-1.89	1.33	0.000016	0.34	56.37	20.72	0.04
WP-20 Canal	Lower	5550	25-Year	28.68	-2.55	1.91	-1.75	1.91	0.000021	0.42	68.74	22.38	0.04
WP-20 Canal	Lower	5550	50-Year	39.39	-2.55	2.4	-1.6	2.4	0.000026	0.49	80.07	23.81	0.05
WP-20 Canal	Lower	5550	100-Year	47.98	-2.55	2.88	-1.5	2.88	0.000026	0.52	91.85	25.21	0.05
WP-20 Canal	Lower	5500	2-Year	34.77	-2.59	0.17	-1.62	0.18	0.000226	1.03	33.7	17.29	0.13
WP-20 Canal	Lower	5500	5-Year	55.51	-2.59	0.83	-1.37	0.85	0.000241	1.21	45.85	19.24	0.14
WP-20 Canal	Lower	5500	10-Year	73.04	-2.59	1.3	-1.19	1.33	0.00025	1.32	55.14	73.06	0.14
WP-20 Canal	Lower	5500	25-Year	98.68	-2.59	1.87	-0.96	1.9	0.000263	1.47	67.3	77.39	0.15
WP-20 Canal	Lower	5500	50-Year	121.39	-2.59	2.35	-0.78	2.39	0.000261	1.55	78.49	81.02	0.15
WP-20 Canal	Lower	5500	100-Year	143.98	-2.59	2.83	-0.6	2.87	0.000251	1.6	90.16	84.58	0.15
WP-20 Canal	Lower	5400	2-Year	34.77	-2.66	0.14	-1.58	0.16	0.000234	1.05	33.21	17.18	0.13
WP-20 Canal	Lower	5400	5-Year	55.51	-2.66	0.81	-1.34	0.83	0.000249	1.23	45.22	19	0.14
WP-20 Canal	Lower	5400	10-Year	73.04	-2.66	1.27	-1.16	1.3	0.000257	1.34	54.35	72.03	0.14
WP-20 Canal	Lower	5400	25-Year	98.68	-2.66	1.84	-0.94	1.87	0.000272	1.49	66.32	76.05	0.15
WP-20 Canal	Lower	5400	50-Year	121.39	-2.66	2.33	-0.76	2.36	0.00027	1.57	77.39	79.51	0.15
WP-20 Canal	Lower	5400	100-Year	143.98	-2.66	2.8	-0.58	2.85	0.000273	1.62	89.08	84.15	0.15
WP-20 Canal	Lower	5300	2-Year	34.77	-2.72	0.12	-1.62	0.14	0.000226	1.03	33.65	17.21	0.13
WP-20 Canal	Lower	5300	5-Year	55.51	-2.72	0.78	-1.37	0.81	0.000241	1.22	45.61	18.92	0.14
WP-20 Canal	Lower	5300	10-Year	73.04	-2.72	1.25	-1.2	1.27	0.000251	1.34	54.67	20.11	0.14
WP-20 Canal	Lower	5300	25-Year	98.68	-2.72	1.81	-0.98	1.85	0.000266	1.49	66.44	21.57	0.15
WP-20 Canal	Lower	5300	50-Year	121.39	-2.72	2.3	-0.8	2.34	0.000285	1.57	77.45	24.51	0.16

HEC-RAS Output - Alternative 2

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Lower	5300	100-Year	143.98	-2.72	2.78	-0.64	2.82	0.000295	1.6	90.25	29.54	0.16
WP-20 Canal	Lower	5246	2-Year	34.77	-2.76	0.11	-1.7	0.13	0.000187	0.96	36.16	17.9	0.12
WP-20 Canal	Lower	5246	5-Year	55.51	-2.76	0.77	-1.44	0.79	0.000203	1.15	48.46	19.29	0.13
WP-20 Canal	Lower	5246	10-Year	73.04	-2.76	1.24	-1.26	1.26	0.000214	1.27	57.63	20.26	0.13
WP-20 Canal	Lower	5246	25-Year	98.68	-2.76	1.8	-1.06	1.83	0.000232	1.42	69.39	21.51	0.14
WP-20 Canal	Lower	5246	50-Year	121.39	-2.76	2.29	-0.89	2.32	0.000237	1.51	80.16	22.84	0.14
WP-20 Canal	Lower	5246	100-Year	143.98	-2.76	2.76	-0.73	2.8	0.000234	1.58	91.39	24.22	0.14
WP-20 Canal	Lower	5229	2-Year	34.77	-2.76	0.02	-1.05	0.11	0.001359	2.38	14.63	17.71	0.32
WP-20 Canal	Lower	5229	5-Year	55.51	-2.76	0.66	-0.7	0.78	0.001369	2.76	20.11	19.05	0.33
WP-20 Canal	Lower	5229	10-Year	73.04	-2.76	1.1	-0.45	1.24	0.001394	3.02	24.2	19.98	0.33
WP-20 Canal	Lower	5229	25-Year	98.68	-2.76	1.63	-0.12	1.81	0.001463	3.35	29.42	21.1	0.35
WP-20 Canal	Lower	5229	50-Year	121.39	-2.76	2.1	0.14	2.3	0.001444	3.55	34.24	22.34	0.35
WP-20 Canal	Lower	5229	100-Year	143.98	-2.76	2.57	0.38	2.78	0.001383	3.66	39.3	23.62	0.34
WP-20 Canal	Lower	5205		Annette Drive									
WP-20 Canal	Lower	5181	2-Year	34.77	-2.38	0.07		0.1	0.000405	1.44	24.11	21.64	0.18
WP-20 Canal	Lower	5181	5-Year	55.51	-2.38	0.71		0.76	0.000409	1.74	31.82	23.71	0.19
WP-20 Canal	Lower	5181	10-Year	73.04	-2.38	1.16		1.22	0.000421	1.96	37.19	24.88	0.2
WP-20 Canal	Lower	5181	25-Year	98.68	-2.38	1.7		1.78	0.000451	2.26	43.64	26.29	0.21
WP-20 Canal	Lower	5181	50-Year	121.39	-2.38	2.14		2.24	0.000464	2.48	49	27.47	0.22
WP-20 Canal	Lower	5181	100-Year	143.98	-2.38	2.57		2.68	0.000468	2.66	54.13	28.63	0.22
WP-20 Canal	Lower	5163	2-Year	34.77	-2.38	0.08	-1.62	0.09	0.000172	0.88	39.48	21.67	0.11
WP-20 Canal	Lower	5163	5-Year	55.51	-2.38	0.73	-1.42	0.75	0.000174	1.02	54.31	23.76	0.12
WP-20 Canal	Lower	5163	10-Year	73.04	-2.38	1.18	-1.26	1.2	0.000176	1.12	65.35	24.94	0.12
WP-20 Canal	Lower	5163	25-Year	98.68	-2.38	1.73	-1.05	1.76	0.000183	1.24	79.41	26.38	0.13
WP-20 Canal	Lower	5163	50-Year	121.39	-2.38	2.19	-0.89	2.21	0.000183	1.32	91.7	27.59	0.13
WP-20 Canal	Lower	5163	100-Year	143.98	-2.38	2.62	-0.74	2.65	0.000181	1.38	103.99	28.77	0.13
WP-20 Canal	Lower	5100	2-Year	34.77	-2.46	0.07		0.08	0.000177	0.89	39.2	21.72	0.12
WP-20 Canal	Lower	5100	5-Year	55.51	-2.46	0.72		0.73	0.000179	1.02	54.19	24.18	0.12
WP-20 Canal	Lower	5100	10-Year	73.04	-2.46	1.17		1.19	0.000178	1.12	65.44	25.43	0.12
WP-20 Canal	Lower	5100	25-Year	98.68	-2.46	1.72		1.74	0.000184	1.24	79.77	26.93	0.13
WP-20 Canal	Lower	5100	50-Year	121.39	-2.46	2.18		2.2	0.000183	1.31	92.32	28.17	0.13
WP-20 Canal	Lower	5100	100-Year	143.98	-2.46	2.61		2.64	0.000179	1.37	104.88	29.36	0.13
WP-20 Canal	Lower	5000	2-Year	34.77	-2.57	0.05	-1.69	0.06	0.000186	0.9	38.53	21.66	0.12
WP-20 Canal	Lower	5000	5-Year	55.51	-2.57	0.7	-1.47	0.72	0.00019	1.03	53.71	24.95	0.12
WP-20 Canal	Lower	5000	10-Year	73.04	-2.57	1.15	-1.3	1.17	0.000186	1.12	65.34	26.3	0.12
WP-20 Canal	Lower	5000	25-Year	98.68	-2.57	1.7	-1.09	1.72	0.000188	1.23	80.18	27.88	0.13
WP-20 Canal	Lower	5000	50-Year	121.39	-2.57	2.16	-0.93	2.18	0.000184	1.3	93.18	29.14	0.13
WP-20 Canal	Lower	5000	100-Year	143.98	-2.57	2.59	-0.78	2.62	0.000178	1.36	106.19	30.35	0.13
WP-20 Canal	Lower	4900	2-Year	34.77	-2.69	0.03	-1.74	0.04	0.000192	0.92	38	21.4	0.12
WP-20 Canal	Lower	4900	5-Year	55.51	-2.69	0.68	-1.51	0.7	0.000201	1.04	53.22	25.5	0.13
WP-20 Canal	Lower	4900	10-Year	73.04	-2.69	1.13	-1.34	1.15	0.000195	1.12	65.28	27.28	0.13
WP-20 Canal	Lower	4900	25-Year	98.68	-2.69	1.68	-1.13	1.71	0.000191	1.22	80.65	28.83	0.13
WP-20 Canal	Lower	4900	50-Year	121.39	-2.69	2.14	-0.96	2.16	0.000185	1.29	94.11	30.11	0.13
WP-20 Canal	Lower	4900	100-Year	143.98	-2.69	2.58	-0.8	2.61	0.000177	1.34	107.57	31.33	0.13
WP-20 Canal	Lower	4800	2-Year	34.77	-2.81	0.01	-1.78	0.02	0.000196	0.93	37.49	20.95	0.12
WP-20 Canal	Lower	4800	5-Year	55.51	-2.81	0.66	-1.54	0.68	0.000212	1.05	52.64	25.8	0.13
WP-20 Canal	Lower	4800	10-Year	73.04	-2.81	1.11	-1.38	1.13	0.000205	1.12	65.08	28.26	0.13
WP-20 Canal	Lower	4800	25-Year	98.68	-2.81	1.66	-1.15	1.69	0.000196	1.22	81.01	29.81	0.13
WP-20 Canal	Lower	4800	50-Year	121.39	-2.81	2.12	-0.98	2.15	0.000187	1.28	94.94	31.1	0.13
WP-20 Canal	Lower	4800	100-Year	143.98	-2.81	2.56	-0.81	2.59	0.000177	1.32	108.87	32.34	0.13
WP-20 Canal	Lower	4750	2-Year	34.77	-2.87	0	-1.81	0.01	0.000194	0.93	37.37	20.64	0.12
WP-20 Canal	Lower	4750	5-Year	55.51	-2.87	0.65	-1.57	0.67	0.000216	1.06	52.42	25.89	0.13
WP-20 Canal	Lower	4750	10-Year	73.04	-2.87	1.1	-1.4	1.12	0.000211	1.12	64.97	28.73	0.13
WP-20 Canal	Lower	4750	25-Year	98.68	-2.87	1.65	-1.17	1.68	0.000199	1.22	81.19	30.3	0.13
WP-20 Canal	Lower	4750	50-Year	121.39	-2.87	2.11	-0.99	2.14	0.000188	1.27	95.37	31.61	0.13

HEC-RAS Output - Alternative 2

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Lower	4750	100-Year	143.98	-2.87	2.55	-0.83	2.58	0.000176	1.31	109.55	32.86	0.13
WP-20 Canal	Lower	4600	2-Year	34.77	-3.05	-0.03	-1.89	-0.01	0.000193	0.93	37.53	20.75	0.12
WP-20 Canal	Lower	4600	5-Year	55.51	-3.05	0.62	-1.63	0.63	0.000215	1.06	52.26	25.55	0.13
WP-20 Canal	Lower	4600	10-Year	73.04	-3.05	1.07	-1.45	1.09	0.00022	1.13	64.82	29.49	0.13
WP-20 Canal	Lower	4600	25-Year	98.68	-3.05	1.62	-1.22	1.65	0.000205	1.21	81.89	31.82	0.13
WP-20 Canal	Lower	4600	50-Year	121.39	-3.05	2.08	-1.03	2.11	0.000189	1.25	96.85	33.16	0.13
WP-20 Canal	Lower	4600	100-Year	143.98	-3.05	2.53	-0.86	2.55	0.000175	1.29	111.78	34.44	0.13
WP-20 Canal	Lower	4500	2-Year	34.77	-3.17	-0.05	-1.94	-0.03	0.000191	0.91	38.02	21.27	0.12
WP-20 Canal	Lower	4500	5-Year	55.51	-3.17	0.59	-1.67	0.61	0.000205	1.06	52.52	24.85	0.13
WP-20 Canal	Lower	4500	10-Year	73.04	-3.17	1.05	-1.49	1.07	0.000219	1.13	64.86	29.32	0.13
WP-20 Canal	Lower	4500	25-Year	98.68	-3.17	1.6	-1.25	1.63	0.000211	1.2	82.31	32.86	0.13
WP-20 Canal	Lower	4500	50-Year	121.39	-3.17	2.07	-1.06	2.09	0.000191	1.24	97.82	34.22	0.13
WP-20 Canal	Lower	4500	100-Year	143.98	-3.17	2.51	-0.89	2.53	0.000181	1.27	113.47	36.91	0.13
WP-20 Canal	Lower	4400	2-Year	34.77	-3.29	-0.07	-2	-0.05	0.00018	0.89	38.86	21.47	0.12
WP-20 Canal	Lower	4400	5-Year	55.51	-3.29	0.58	-1.72	0.59	0.000186	1.04	53.31	23.75	0.12
WP-20 Canal	Lower	4400	10-Year	73.04	-3.29	1.03	-1.52	1.05	0.00021	1.12	65.2	28.73	0.13
WP-20 Canal	Lower	4400	25-Year	98.68	-3.29	1.58	-1.27	1.6	0.000216	1.19	82.72	33.92	0.13
WP-20 Canal	Lower	4400	50-Year	121.39	-3.29	2.05	-1.08	2.07	0.000196	1.23	98.83	35.98	0.13
WP-20 Canal	Lower	4400	100-Year	143.98	-3.29	2.49	-0.92	2.52	0.000182	1.25	115.48	38.74	0.13
WP-20 Canal	Lower	4300	2-Year	34.77	-3.41	-0.08	-2.06	-0.07	0.000167	0.87	40.04	21.73	0.11
WP-20 Canal	Lower	4300	5-Year	55.51	-3.41	0.56	-1.77	0.57	0.000173	1.02	54.63	23.85	0.12
WP-20 Canal	Lower	4300	10-Year	73.04	-3.41	1.01	-1.56	1.03	0.000194	1.11	66.04	27.75	0.13
WP-20 Canal	Lower	4300	25-Year	98.68	-3.41	1.56	-1.31	1.58	0.000217	1.19	83.21	34.53	0.13
WP-20 Canal	Lower	4300	50-Year	121.39	-3.41	2.03	-1.12	2.05	0.0002	1.21	100.23	37.92	0.13
WP-20 Canal	Lower	4300	100-Year	143.98	-3.41	2.47	-0.95	2.5	0.00018	1.22	117.72	40.38	0.13
WP-20 Canal	Lower	4200	2-Year	34.77	-3.53	-0.1	-2.12	-0.09	0.000152	0.84	41.44	22.04	0.11
WP-20 Canal	Lower	4200	5-Year	55.51	-3.53	0.54	-1.81	0.56	0.00016	0.99	56.2	24.12	0.11
WP-20 Canal	Lower	4200	10-Year	73.04	-3.53	0.99	-1.59	1.01	0.000171	1.08	67.39	26.33	0.12
WP-20 Canal	Lower	4200	25-Year	98.68	-3.53	1.54	-1.33	1.56	0.000212	1.17	84	34.68	0.13
WP-20 Canal	Lower	4200	50-Year	121.39	-3.53	2.01	-1.15	2.03	0.0002	1.2	101.55	39.05	0.13
WP-20 Canal	Lower	4200	100-Year	143.98	-3.53	2.46	-0.99	2.48	0.000175	1.2	119.54	41.07	0.12
WP-20 Canal	Lower	4100	2-Year	34.77	-3.65	-0.11	-2.18	-0.1	0.000136	0.8	43.22	22.41	0.1
WP-20 Canal	Lower	4100	5-Year	55.51	-3.65	0.53	-1.84	0.54	0.000146	0.95	58.18	24.46	0.11
WP-20 Canal	Lower	4100	10-Year	73.04	-3.65	0.98	-1.62	0.99	0.000152	1.05	69.47	25.89	0.11
WP-20 Canal	Lower	4100	25-Year	98.68	-3.65	1.52	-1.38	1.54	0.000194	1.16	85.41	33.62	0.13
WP-20 Canal	Lower	4100	50-Year	121.39	-3.65	1.99	-1.21	2.01	0.000198	1.18	102.89	40.04	0.13
WP-20 Canal	Lower	4100	100-Year	143.98	-3.65	2.44	-1.08	2.46	0.000171	1.19	121.39	65.71	0.12
WP-20 Canal	Lower	4000	2-Year	34.77	-3.77	-0.12	-2.24	-0.11	0.000119	0.77	45.33	22.84	0.1
WP-20 Canal	Lower	4000	5-Year	55.51	-3.77	0.51	-1.87	0.53	0.000131	0.92	60.53	24.86	0.1
WP-20 Canal	Lower	4000	10-Year	73.04	-3.77	0.96	-1.66	0.98	0.000148	1.01	72.23	28.08	0.11
WP-20 Canal	Lower	4000	25-Year	98.68	-3.77	1.5	-1.46	1.52	0.000186	1.11	89.11	36.27	0.12
WP-20 Canal	Lower	4000	50-Year	121.39	-3.77	1.97	-1.31	1.99	0.000203	1.12	108.61	47.06	0.13
WP-20 Canal	Lower	4000	100-Year	143.98	-3.77	2.42	-1.16	2.44	0.000175	1.1	131.31	52.61	0.12
WP-20 Canal	Lower	3900	2-Year	34.77	-3.88	-0.13	-2.3	-0.13	0.000104	0.73	47.65	23.3	0.09
WP-20 Canal	Lower	3900	5-Year	55.51	-3.88	0.5	-1.9	0.51	0.000118	0.88	63.14	25.5	0.1
WP-20 Canal	Lower	3900	10-Year	73.04	-3.88	0.95	-1.75	0.96	0.000126	0.98	74.83	26.94	0.1
WP-20 Canal	Lower	3900	25-Year	98.68	-3.88	1.49	-1.56	1.5	0.000141	1.1	89.76	29.22	0.11
WP-20 Canal	Lower	3900	50-Year	121.39	-3.88	1.95	-1.41	1.97	0.000173	1.15	105.36	38.03	0.12
WP-20 Canal	Lower	3900	100-Year	143.98	-3.88	2.41	-1.26	2.43	0.000165	1.16	124.19	42.82	0.12
WP-20 Canal	Lower	3800	2-Year	34.77	-4	-0.14	-2.22	-0.14	0.000089	0.69	50.39	23.82	0.08
WP-20 Canal	Lower	3800	5-Year	55.51	-4	0.49	-2.02	0.5	0.000109	0.83	66.5	27.32	0.09
WP-20 Canal	Lower	3800	10-Year	73.04	-4	0.94	-1.87	0.95	0.00012	0.92	79.3	30.17	0.1
WP-20 Canal	Lower	3800	25-Year	98.68	-4	1.47	-1.68	1.49	0.000132	1.02	96.39	33.6	0.11
WP-20 Canal	Lower	3800	50-Year	121.39	-4	1.93	-1.52	1.95	0.000154	1.07	113.41	42.02	0.11
WP-20 Canal	Lower	3800	100-Year	143.98	-4	2.39	-1.39	2.41	0.000166	1.07	135.05	53.95	0.12

HEC-RAS Output - Alternative 2

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Lower	3700	2-Year	51.77	-3.89	-0.17	-2	-0.15	0.000229	1.08	47.73	23.23	0.13
WP-20 Canal	Lower	3700	5-Year	82.51	-3.89	0.46	-1.74	0.48	0.00026	1.31	62.89	25.07	0.15
WP-20 Canal	Lower	3700	10-Year	107.04	-3.89	0.9	-1.56	0.93	0.00027	1.44	74.19	26.19	0.15
WP-20 Canal	Lower	3700	25-Year	143.68	-3.89	1.43	-1.32	1.47	0.000293	1.63	88.38	27.52	0.16
WP-20 Canal	Lower	3700	50-Year	175.39	-3.89	1.88	-1.13	1.93	0.000329	1.73	101.43	31.56	0.17
WP-20 Canal	Lower	3700	100-Year	206.98	-3.89	2.33	-0.96	2.38	0.00037	1.76	117.41	56.23	0.18
WP-20 Canal	Lower	3600	2-Year	51.77	-3.72	-0.2	-1.89	-0.18	0.000289	1.18	43.75	22.39	0.15
WP-20 Canal	Lower	3600	5-Year	82.51	-3.72	0.42	-1.63	0.45	0.00032	1.42	58.31	24.39	0.16
WP-20 Canal	Lower	3600	10-Year	107.04	-3.72	0.86	-1.44	0.9	0.000327	1.54	69.33	25.72	0.17
WP-20 Canal	Lower	3600	25-Year	143.68	-3.72	1.39	-1.2	1.43	0.000349	1.73	83.23	27.23	0.17
WP-20 Canal	Lower	3600	50-Year	175.39	-3.72	1.84	-1.01	1.89	0.00037	1.83	95.92	32.44	0.18
WP-20 Canal	Lower	3600	100-Year	206.98	-3.72	2.29	-0.84	2.34	0.000404	1.87	110.75	60.48	0.19
WP-20 Canal	Lower	3500	2-Year	51.77	-3.54	-0.24	-1.78	-0.21	0.000375	1.3	39.77	21.55	0.17
WP-20 Canal	Lower	3500	5-Year	82.51	-3.54	0.38	-1.51	0.42	0.000399	1.54	53.74	23.58	0.18
WP-20 Canal	Lower	3500	10-Year	107.04	-3.54	0.82	-1.32	0.86	0.0004	1.66	64.39	25.02	0.18
WP-20 Canal	Lower	3500	25-Year	143.68	-3.54	1.34	-1.07	1.4	0.000421	1.84	77.92	26.76	0.19
WP-20 Canal	Lower	3500	50-Year	175.39	-3.54	1.79	-0.89	1.85	0.000427	1.94	90.31	28.97	0.19
WP-20 Canal	Lower	3500	100-Year	206.98	-3.54	2.24	-0.72	2.3	0.000455	1.98	104.35	49.73	0.2
WP-20 Canal	Lower	3300	2-Year	51.77	-3.19	-0.35	-1.56	-0.31	0.000716	1.64	31.54	19.81	0.23
WP-20 Canal	Lower	3300	5-Year	82.51	-3.19	0.26	-1.26	0.31	0.000675	1.86	44.4	21.94	0.23
WP-20 Canal	Lower	3300	10-Year	107.04	-3.19	0.7	-1.07	0.76	0.000636	1.97	54.41	23.46	0.23
WP-20 Canal	Lower	3300	25-Year	143.68	-3.19	1.22	-0.82	1.29	0.000636	2.14	67.02	25.24	0.23
WP-20 Canal	Lower	3300	50-Year	175.39	-3.19	1.67	-0.63	1.75	0.000603	2.23	78.76	26.8	0.23
WP-20 Canal	Lower	3300	100-Year	206.98	-3.19	2.11	-0.45	2.19	0.000618	2.27	91.37	31.06	0.23
WP-20 Canal	Lower	3200	2-Year	51.77	-3.02	-0.46	-1.44	-0.4	0.001133	1.93	26.84	18.79	0.28
WP-20 Canal	Lower	3200	5-Year	82.51	-3.02	0.17	-1.13	0.23	0.000949	2.1	39.32	21	0.27
WP-20 Canal	Lower	3200	10-Year	107.04	-3.02	0.61	-0.94	0.69	0.000847	2.18	49.09	22.59	0.26
WP-20 Canal	Lower	3200	25-Year	143.68	-3.02	1.13	-0.69	1.22	0.000815	2.34	61.29	24.42	0.26
WP-20 Canal	Lower	3200	50-Year	175.39	-3.02	1.59	-0.5	1.68	0.000749	2.41	72.82	26.04	0.25
WP-20 Canal	Lower	3200	100-Year	206.98	-3.02	2.03	-0.33	2.12	0.00072	2.44	84.78	40.21	0.25
WP-20 Canal	Lower	3139	2-Year	51.77	-2.91	-0.53	-1.93	-0.49	0.000581	1.58	32.75	18.15	0.21
WP-20 Canal	Lower	3139	5-Year	82.51	-2.91	0.1	-1.64	0.15	0.00061	1.84	44.87	20.42	0.22
WP-20 Canal	Lower	3139	10-Year	107.04	-2.91	0.55	-1.44	0.61	0.0006	1.97	54.46	22.04	0.22
WP-20 Canal	Lower	3139	25-Year	143.68	-2.91	1.07	-1.18	1.14	0.000627	2.17	66.35	23.91	0.23
WP-20 Canal	Lower	3139	50-Year	175.39	-2.91	1.53	-0.97	1.61	0.000605	2.26	77.72	25.56	0.23
WP-20 Canal	Lower	3139	100-Year	206.98	-2.91	1.97	-0.77	2.05	0.000586	2.32	89.39	45.8	0.23
WP-20 Canal	Lower	3119	2-Year	51.77	-2.91	-0.54	-1.93	-0.5	0.000592	1.59	32.52	18.11	0.21
WP-20 Canal	Lower	3119	5-Year	82.51	-2.91	0.09	-1.64	0.14	0.00062	1.85	44.6	20.37	0.22
WP-20 Canal	Lower	3119	10-Year	107.04	-2.91	0.54	-1.44	0.6	0.000597	1.98	54.14	22	0.22
WP-20 Canal	Lower	3119	25-Year	143.68	-2.91	1.06	-1.18	1.13	0.000604	2.19	65.59	23.85	0.23
WP-20 Canal	Lower	3119	50-Year	175.39	-2.91	1.52	-0.96	1.6	0.000559	2.3	76.11	25.51	0.22
WP-20 Canal	Lower	3119	100-Year	206.98	-2.91	1.95	-0.77	2.04	0.000514	2.4	86.2	44.96	0.22
WP-20 Canal	Lower	3090		Spartan High School Parking Lot East									
WP-20 Canal	Lower	3073	2-Year	51.77	-3.58	-0.59	-2.35	-0.54	0.000594	1.69	30.63	14.69	0.21
WP-20 Canal	Lower	3073	5-Year	82.51	-3.58	0.03	-1.99	0.1	0.000744	2.03	40.64	17.7	0.24
WP-20 Canal	Lower	3073	10-Year	107.04	-3.58	0.48	-1.75	0.55	0.000778	2.18	49	19.87	0.25
WP-20 Canal	Lower	3073	25-Year	143.68	-3.58	0.98	-1.42	1.07	0.000817	2.42	59.46	22.31	0.26
WP-20 Canal	Lower	3073	50-Year	175.39	-3.58	1.43	-1.16	1.53	0.000789	2.53	69.39	25.59	0.26
WP-20 Canal	Lower	3073	100-Year	206.98	-3.58	1.85	-0.92	1.96	0.000707	2.61	79.22	79.31	0.25
WP-20 Canal	Lower	3040	2-Year	51.77	-3.58	-0.61	-2.35	-0.56	0.000609	1.71	30.32	14.59	0.21
WP-20 Canal	Lower	3040	5-Year	82.51	-3.58	0.01	-2	0.07	0.000766	2.05	40.18	17.57	0.24
WP-20 Canal	Lower	3040	10-Year	107.04	-3.58	0.45	-1.74	0.53	0.000801	2.21	48.45	19.73	0.25
WP-20 Canal	Lower	3040	25-Year	143.68	-3.58	0.95	-1.42	1.04	0.000873	2.44	58.92	22.16	0.26
WP-20 Canal	Lower	3040	50-Year	175.39	-3.58	1.4	-1.17	1.5	0.000884	2.53	69.43	25.2	0.27
WP-20 Canal	Lower	3040	100-Year	206.98	-3.58	1.83	-0.92	1.93	0.000939	2.53	81.65	78.57	0.28

HEC-RAS Output - Alternative 2

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Lower	3000	2-Year	51.77	-3.59	-0.63	-2.37	-0.59	0.00059	1.66	31.19	15.61	0.21
WP-20 Canal	Lower	3000	5-Year	82.51	-3.59	-0.02	-2.01	0.04	0.000715	1.99	41.55	18.44	0.23
WP-20 Canal	Lower	3000	10-Year	107.04	-3.59	0.42	-1.77	0.49	0.000737	2.13	50.17	20.5	0.24
WP-20 Canal	Lower	3000	25-Year	143.68	-3.59	0.92	-1.44	1.01	0.000798	2.36	60.95	22.81	0.25
WP-20 Canal	Lower	3000	50-Year	175.39	-3.59	1.37	-1.18	1.46	0.000813	2.44	71.75	25.92	0.26
WP-20 Canal	Lower	3000	100-Year	206.98	-3.59	1.8	-0.93	1.89	0.00085	2.46	84.11	78.18	0.27
WP-20 Canal	Lower	2900	2-Year	51.77	-3.62	-0.68	-2.42	-0.64	0.00049	1.51	34.38	17.88	0.19
WP-20 Canal	Lower	2900	5-Year	82.51	-3.62	-0.08	-2.07	-0.03	0.000569	1.8	45.88	20.39	0.21
WP-20 Canal	Lower	2900	10-Year	107.04	-3.62	0.37	-1.82	0.42	0.000578	1.93	55.32	22.25	0.22
WP-20 Canal	Lower	2900	25-Year	143.68	-3.62	0.86	-1.51	0.93	0.000626	2.15	66.82	24.32	0.23
WP-20 Canal	Lower	2900	50-Year	175.39	-3.62	1.31	-1.27	1.39	0.000646	2.24	78.28	58.46	0.23
WP-20 Canal	Lower	2900	100-Year	206.98	-3.62	1.74	-1.06	1.82	0.000661	2.27	91.03	87.74	0.24
WP-20 Canal	Lower	2800	2-Year	51.77	-3.64	-0.71	-2.49	-0.69	0.000359	1.32	39.09	19.83	0.17
WP-20 Canal	Lower	2800	5-Year	82.51	-3.64	-0.12	-2.16	-0.08	0.000422	1.6	51.57	22.08	0.18
WP-20 Canal	Lower	2800	10-Year	107.04	-3.64	0.33	-1.94	0.37	0.000432	1.73	61.71	23.75	0.19
WP-20 Canal	Lower	2800	25-Year	143.68	-3.64	0.82	-1.67	0.87	0.000476	1.95	73.8	33.86	0.2
WP-20 Canal	Lower	2800	50-Year	175.39	-3.64	1.26	-1.46	1.33	0.000502	2.04	85.85	57.62	0.21
WP-20 Canal	Lower	2800	100-Year	206.98	-3.64	1.69	-1.27	1.75	0.000511	2.09	98.96	105.44	0.21
WP-20 Canal	Lower	2705	2-Year	51.77	-3.67	-0.73	-2.65	-0.71	0.000192	1.04	49.75	22.79	0.12
WP-20 Canal	Lower	2705	5-Year	82.51	-3.67	-0.14	-2.39	-0.11	0.000238	1.29	63.73	24.34	0.14
WP-20 Canal	Lower	2705	10-Year	107.04	-3.67	0.3	-2.22	0.34	0.000253	1.43	74.74	25.47	0.15
WP-20 Canal	Lower	2705	25-Year	143.68	-3.67	0.79	-1.99	0.83	0.000291	1.64	87.46	26.72	0.16
WP-20 Canal	Lower	2705	50-Year	175.39	-3.67	1.23	-1.82	1.28	0.0004	1.73	101.51	37.36	0.18
WP-20 Canal	Lower	2705	100-Year	206.98	-3.67	1.66	-1.65	1.71	0.000382	1.75	118.27	54.07	0.18
WP-20 Canal	Lower	2685	2-Year	51.77	-4.27	-0.73	-3.25	-0.72	0.000087	0.82	63.19	24.36	0.09
WP-20 Canal	Lower	2685	5-Year	82.51	-4.27	-0.13	-2.99	-0.12	0.000115	1.07	76.83	25.88	0.1
WP-20 Canal	Lower	2685	10-Year	107.04	-4.27	0.31	-2.82	0.33	0.000128	1.23	86.99	29.26	0.11
WP-20 Canal	Lower	2685	25-Year	143.68	-4.27	0.79	-2.59	0.83	0.000154	1.46	98.2	38.72	0.12
WP-20 Canal	Lower	2685	50-Year	175.39	-4.27	1.23	-2.42	1.27	0.000166	1.62	108.24	43.01	0.13
WP-20 Canal	Lower	2685	100-Year	206.98	-4.27	1.65	-2.25	1.7	0.000174	1.75	117.97	58.31	0.14
WP-20 Canal	Lower	2660		Spartan High School Parking Lot West									
WP-20 Canal	Lower	2639	2-Year	51.77	-4.53	-0.74	-3.43	-0.73	0.000108	0.87	59.19	23.73	0.1
WP-20 Canal	Lower	2639	5-Year	82.51	-4.53	-0.16	-3.14	-0.14	0.000143	1.14	72.55	26.94	0.11
WP-20 Canal	Lower	2639	10-Year	107.04	-4.53	0.27	-2.93	0.3	0.000157	1.3	82.5	29.33	0.12
WP-20 Canal	Lower	2639	25-Year	143.68	-4.53	0.74	-2.67	0.78	0.000188	1.54	93.28	31.91	0.13
WP-20 Canal	Lower	2639	50-Year	175.39	-4.53	1.16	-2.45	1.2	0.000202	1.7	102.88	34.21	0.14
WP-20 Canal	Lower	2639	100-Year	206.98	-4.53	1.56	-2.26	1.61	0.000211	1.85	112.05	36.4	0.15
WP-20 Canal	Lower	2614	2-Year	51.77	-3.93	-0.76	-2.84	-0.74	0.000227	1.13	45.87	20.79	0.13
WP-20 Canal	Lower	2614	5-Year	82.51	-3.93	-0.18	-2.54	-0.15	0.0003	1.41	58.66	23.55	0.16
WP-20 Canal	Lower	2614	10-Year	107.04	-3.93	0.25	-2.33	0.29	0.000328	1.54	69.34	25.93	0.17
WP-20 Canal	Lower	2614	25-Year	143.68	-3.93	0.72	-2.07	0.77	0.000382	1.75	82.08	28.5	0.18
WP-20 Canal	Lower	2614	50-Year	175.39	-3.93	1.14	-1.85	1.19	0.000394	1.86	94.53	30.82	0.19
WP-20 Canal	Lower	2614	100-Year	206.98	-3.93	1.54	-1.66	1.6	0.000393	1.93	107.37	33.03	0.19
WP-20 Canal	Lower	2500	2-Year	51.77	-3.99	-0.79	-2.69	-0.77	0.000313	1.23	41.96	21.51	0.16
WP-20 Canal	Lower	2500	5-Year	82.51	-3.99	-0.22	-2.35	-0.19	0.000378	1.5	54.95	24.08	0.18
WP-20 Canal	Lower	2500	10-Year	107.04	-3.99	0.21	-2.14	0.25	0.00039	1.63	65.71	26.01	0.18
WP-20 Canal	Lower	2500	25-Year	143.68	-3.99	0.67	-1.85	0.72	0.000448	1.83	78.31	28.83	0.2
WP-20 Canal	Lower	2500	50-Year	175.39	-3.99	1.09	-1.63	1.15	0.000457	1.93	90.97	46.9	0.2
WP-20 Canal	Lower	2500	100-Year	206.98	-3.99	1.49	-1.43	1.55	0.000449	1.99	104.25	54.63	0.2
WP-20 Canal	Lower	2400	2-Year	51.77	-4.05	-0.83	-2.63	-0.8	0.000392	1.33	39.07	21.43	0.17
WP-20 Canal	Lower	2400	5-Year	82.51	-4.05	-0.27	-2.28	-0.23	0.000462	1.59	52.04	24.67	0.19
WP-20 Canal	Lower	2400	10-Year	107.04	-4.05	0.16	-2.05	0.21	0.000463	1.69	63.17	27.13	0.2
WP-20 Canal	Lower	2400	25-Year	143.68	-4.05	0.62	-1.75	0.67	0.000499	1.89	76.02	29.21	0.21
WP-20 Canal	Lower	2400	50-Year	175.39	-4.05	1.04	-1.52	1.1	0.000486	1.98	88.67	31.13	0.21
WP-20 Canal	Lower	2400	100-Year	206.98	-4.05	1.44	-1.33	1.51	0.000479	2.03	101.74	38.35	0.21

HEC-RAS Output - Alternative 2

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Lower	2350	2-Year	51.77	-4.07	-0.85	-2.6	-0.82	0.00041	1.35	38.44	21.3	0.18
WP-20 Canal	Lower	2350	5-Year	82.51	-4.07	-0.29	-2.26	-0.25	0.000481	1.61	51.23	24.46	0.2
WP-20 Canal	Lower	2350	10-Year	107.04	-4.07	0.14	-2.03	0.18	0.00048	1.72	62.26	26.9	0.2
WP-20 Canal	Lower	2350	25-Year	143.68	-4.07	0.59	-1.74	0.65	0.000525	1.91	75.06	29.47	0.21
WP-20 Canal	Lower	2350	50-Year	175.39	-4.07	1.01	-1.51	1.07	0.00051	1.99	87.94	31.77	0.21
WP-20 Canal	Lower	2350	100-Year	206.98	-4.07	1.42	-1.32	1.48	0.000488	2.04	101.23	34.03	0.21
WP-20 Canal	Lower	2300	2-Year	51.77	-4.1	-0.87	-2.6	-0.84	0.000413	1.35	38.32	21.28	0.18
WP-20 Canal	Lower	2300	5-Year	82.51	-4.1	-0.32	-2.26	-0.28	0.000486	1.62	50.99	24.39	0.2
WP-20 Canal	Lower	2300	10-Year	107.04	-4.1	0.11	-2.03	0.16	0.000485	1.73	61.98	26.79	0.2
WP-20 Canal	Lower	2300	25-Year	143.68	-4.1	0.56	-1.75	0.62	0.00053	1.92	74.65	29.32	0.21
WP-20 Canal	Lower	2300	50-Year	175.39	-4.1	0.98	-1.52	1.05	0.000523	2	87.52	32.02	0.21
WP-20 Canal	Lower	2300	100-Year	206.98	-4.1	1.39	-1.33	1.46	0.00051	2.04	101.23	35.33	0.21
WP-20 Canal	Lower	2245	2-Year	51.77	-4.13	-0.89	-2.76	-0.86	0.000261	1.15	45.08	22.71	0.14
WP-20 Canal	Lower	2245	5-Year	82.51	-4.13	-0.33	-2.47	-0.3	0.000325	1.41	58.33	25.23	0.16
WP-20 Canal	Lower	2245	10-Year	107.04	-4.13	0.1	-2.27	0.13	0.000337	1.54	69.57	27.18	0.17
WP-20 Canal	Lower	2245	25-Year	143.68	-4.13	0.55	-2.01	0.59	0.000392	1.75	82.29	29.77	0.19
WP-20 Canal	Lower	2245	50-Year	175.39	-4.13	0.97	-1.81	1.02	0.000405	1.84	95.46	32.85	0.19
WP-20 Canal	Lower	2245	100-Year	206.98	-4.13	1.37	-1.62	1.43	0.000401	1.89	109.44	36.34	0.19
WP-20 Canal	Lower	2219	2-Year	51.77	-4.14	-0.88	-3.39	-0.87	0.000058	0.62	83.08	35.02	0.07
WP-20 Canal	Lower	2219	5-Year	82.51	-4.14	-0.32	-3.17	-0.31	0.000077	0.8	102.85	38.22	0.08
WP-20 Canal	Lower	2219	10-Year	107.04	-4.14	0.11	-3.02	0.12	0.000081	0.9	118.36	39.91	0.09
WP-20 Canal	Lower	2219	25-Year	143.68	-4.14	0.56	-2.83	0.58	0.000095	1.07	134.65	39.95	0.1
WP-20 Canal	Lower	2219	50-Year	175.39	-4.14	0.98	-2.67	1	0.000099	1.17	149.82	39.99	0.1
WP-20 Canal	Lower	2219	100-Year	206.98	-4.14	1.39	-2.53	1.41	0.000101	1.26	164.47	40.03	0.1
WP-20 Canal	Lower	2198		Spartan Drive									
WP-20 Canal	Lower	2177	2-Year	51.77	-4.25	-0.88	-3.34	-0.87	0.000054	0.6	86.18	35.04	0.07
WP-20 Canal	Lower	2177	5-Year	82.51	-4.25	-0.32	-3.14	-0.31	0.000073	0.78	106.08	36.23	0.08
WP-20 Canal	Lower	2177	10-Year	107.04	-4.25	0.11	-3.01	0.12	0.00008	0.88	121.76	36.62	0.08
WP-20 Canal	Lower	2177	25-Year	143.68	-4.25	0.56	-2.82	0.58	0.000097	1.04	138.4	37.02	0.09
WP-20 Canal	Lower	2177	50-Year	175.39	-4.25	0.98	-2.67	1	0.000104	1.14	154.08	37.39	0.1
WP-20 Canal	Lower	2177	100-Year	206.98	-4.25	1.39	-2.54	1.41	0.000109	1.22	169.36	37.75	0.1
WP-20 Canal	Lower	2000	2-Year	66.77	-3.83	-0.91	-2.82	-0.89	0.00016	0.94	70.93	33.47	0.11
WP-20 Canal	Lower	2000	5-Year	105.51	-3.83	-0.36	-2.6	-0.34	0.000199	1.18	89.74	35.4	0.13
WP-20 Canal	Lower	2000	10-Year	136.04	-3.83	0.07	-2.44	0.09	0.000225	1.29	105.8	40.28	0.14
WP-20 Canal	Lower	2000	25-Year	180.68	-3.83	0.51	-2.23	0.54	0.000271	1.45	125.01	46.1	0.15
WP-20 Canal	Lower	2000	50-Year	220.39	-3.83	0.93	-2.07	0.97	0.000282	1.51	145.52	51.59	0.16
WP-20 Canal	Lower	2000	100-Year	258.98	-3.83	1.34	-1.91	1.38	0.000275	1.54	167.68	56.94	0.16
WP-20 Canal	Lower	1900	2-Year	66.77	-3.93	-0.92	-2.92	-0.91	0.000142	0.9	73.81	33.77	0.11
WP-20 Canal	Lower	1900	5-Year	105.51	-3.93	-0.38	-2.7	-0.36	0.000184	1.14	92.67	36.26	0.13
WP-20 Canal	Lower	1900	10-Year	136.04	-3.93	0.05	-2.54	0.07	0.000205	1.25	108.93	40.29	0.13
WP-20 Canal	Lower	1900	25-Year	180.68	-3.93	0.49	-2.33	0.52	0.000243	1.42	127.57	44.3	0.15
WP-20 Canal	Lower	1900	50-Year	220.39	-3.93	0.91	-2.17	0.94	0.000252	1.5	146.91	48.12	0.15
WP-20 Canal	Lower	1900	100-Year	258.98	-3.93	1.31	-2.01	1.35	0.000249	1.55	167.41	55.81	0.15
WP-20 Canal	Lower	1850	2-Year	66.77	-3.98	-0.93	-2.97	-0.91	0.000134	0.89	75.28	33.92	0.1
WP-20 Canal	Lower	1850	5-Year	105.51	-3.98	-0.39	-2.74	-0.37	0.000176	1.12	94.17	36.49	0.12
WP-20 Canal	Lower	1850	10-Year	136.04	-3.98	0.04	-2.59	0.06	0.000196	1.23	110.41	40.24	0.13
WP-20 Canal	Lower	1850	25-Year	180.68	-3.98	0.48	-2.38	0.51	0.000232	1.4	128.92	44.12	0.14
WP-20 Canal	Lower	1850	50-Year	220.39	-3.98	0.89	-2.21	0.93	0.000242	1.49	148.13	47.82	0.15
WP-20 Canal	Lower	1850	100-Year	258.98	-3.98	1.3	-2.06	1.34	0.00024	1.54	168.39	51.51	0.15
WP-20 Canal	Lower	1750	2-Year	66.77	-4.09	-0.94	-3.08	-0.93	0.000118	0.85	78.62	34.27	0.1
WP-20 Canal	Lower	1750	5-Year	105.51	-4.09	-0.4	-2.86	-0.38	0.00016	1.08	97.63	37.17	0.12
WP-20 Canal	Lower	1750	10-Year	136.04	-4.09	0.02	-2.7	0.04	0.000178	1.19	114.02	40.61	0.13
WP-20 Canal	Lower	1750	25-Year	180.68	-4.09	0.46	-2.49	0.48	0.000213	1.36	132.47	44.15	0.14
WP-20 Canal	Lower	1750	50-Year	220.39	-4.09	0.87	-2.32	0.91	0.000223	1.45	151.58	55.28	0.14
WP-20 Canal	Lower	1750	100-Year	258.98	-4.09	1.28	-2.17	1.32	0.000222	1.51	171.67	66.36	0.14

HEC-RAS Output - Alternative 2

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Lower	1650	2-Year	66.77	-4.19	-0.95	-3.18	-0.94	0.000105	0.82	81.7	34.58	0.09
WP-20 Canal	Lower	1650	5-Year	105.51	-4.19	-0.42	-2.96	-0.4	0.000152	1.04	101	38.97	0.11
WP-20 Canal	Lower	1650	10-Year	136.04	-4.19	0	-2.8	0.02	0.000174	1.15	118.4	43.94	0.12
WP-20 Canal	Lower	1650	25-Year	180.68	-4.19	0.44	-2.59	0.46	0.000209	1.3	138.5	49.05	0.14
WP-20 Canal	Lower	1650	50-Year	220.39	-4.19	0.85	-2.42	0.88	0.000218	1.38	159.96	53.98	0.14
WP-20 Canal	Lower	1650	100-Year	258.98	-4.19	1.26	-2.28	1.29	0.000215	1.42	183.03	63.33	0.14
WP-20 Canal	Lower	1600	2-Year	66.77	-4.24	-0.95	-3.23	-0.94	0.000099	0.8	83.27	34.74	0.09
WP-20 Canal	Lower	1600	5-Year	105.51	-4.24	-0.42	-3	-0.41	0.000151	1.03	102.91	40.69	0.11
WP-20 Canal	Lower	1600	10-Year	136.04	-4.24	0	-2.85	0.02	0.000174	1.12	121.22	46.78	0.12
WP-20 Canal	Lower	1600	25-Year	180.68	-4.24	0.43	-2.64	0.45	0.00021	1.27	142.73	59.06	0.14
WP-20 Canal	Lower	1600	50-Year	220.39	-4.24	0.84	-2.47	0.87	0.000217	1.33	166.1	83.59	0.14
WP-20 Canal	Lower	1600	100-Year	258.98	-4.24	1.25	-2.32	1.28	0.000212	1.35	191.53	100.99	0.14
WP-20 Canal	Lower	1500	2-Year	66.77	-4.34	-0.96	-3.33	-0.95	0.000089	0.77	86.45	35.06	0.09
WP-20 Canal	Lower	1500	5-Year	105.51	-4.34	-0.44	-3.11	-0.42	0.00013	1	105.68	38.74	0.11
WP-20 Canal	Lower	1500	10-Year	136.04	-4.34	-0.02	-2.95	0	0.000149	1.11	122.62	42.61	0.12
WP-20 Canal	Lower	1500	25-Year	180.68	-4.34	0.41	-2.75	0.43	0.000182	1.28	141.65	46.57	0.13
WP-20 Canal	Lower	1500	50-Year	220.39	-4.34	0.82	-2.57	0.85	0.000187	1.36	163.26	79.82	0.13
WP-20 Canal	Lower	1500	100-Year	258.98	-4.34	1.23	-2.42	1.26	0.000167	1.39	205.18	115.6	0.13
WP-20 Canal	Lower	1450	2-Year	66.77	-4.39	-0.97	-3.38	-0.96	0.000084	0.76	88.06	35.22	0.08
WP-20 Canal	Lower	1450	5-Year	105.51	-4.39	-0.44	-3.15	-0.43	0.000124	0.98	107.44	38.98	0.1
WP-20 Canal	Lower	1450	10-Year	136.04	-4.39	-0.03	-3	-0.01	0.00014	1.09	124.3	42.19	0.11
WP-20 Canal	Lower	1450	25-Year	180.68	-4.39	0.4	-2.79	0.42	0.000172	1.26	142.93	45.46	0.13
WP-20 Canal	Lower	1450	50-Year	220.39	-4.39	0.81	-2.63	0.84	0.000182	1.36	162.43	48.66	0.13
WP-20 Canal	Lower	1450	100-Year	258.98	-4.39	1.22	-2.47	1.25	0.000182	1.41	184.95	64.39	0.13
WP-20 Canal	Lower	1400	2-Year	66.77	-4.44	-0.97		-0.96	0.00008	0.74	89.69	35.39	0.08
WP-20 Canal	Lower	1400	5-Year	105.51	-4.44	-0.45		-0.43	0.000129	0.96	109.83	42.58	0.11
WP-20 Canal	Lower	1400	10-Year	136.04	-4.44	-0.03		-0.02	0.000151	1.06	128.89	49.3	0.12
WP-20 Canal	Lower	1400	25-Year	180.68	-4.44	0.39		0.41	0.000185	1.19	151.27	56.17	0.13
WP-20 Canal	Lower	1400	50-Year	220.39	-4.44	0.81		0.83	0.000188	1.25	176.29	65.93	0.13
WP-20 Canal	Lower	1400	100-Year	258.98	-4.44	1.22		1.24	0.000169	1.28	208.82	95.54	0.13
WP-20 Canal	Lower	1300	2-Year	66.77	-4.55	-0.98	-3.54	-0.97	0.000073	0.71	93.39	36.53	0.08
WP-20 Canal	Lower	1300	5-Year	105.51	-4.55	-0.46	-3.31	-0.45	0.000112	0.93	113.64	41.56	0.1
WP-20 Canal	Lower	1300	10-Year	136.04	-4.55	-0.05	-3.15	-0.03	0.000129	1.03	131.6	45.44	0.11
WP-20 Canal	Lower	1300	25-Year	180.68	-4.55	0.37	-2.95	0.4	0.000158	1.19	151.55	49.39	0.12
WP-20 Canal	Lower	1300	50-Year	220.39	-4.55	0.79	-2.79	0.81	0.000168	1.28	172.77	53.27	0.12
WP-20 Canal	Lower	1300	100-Year	258.98	-4.55	1.2	-2.64	1.23	0.000169	1.32	195.47	57.13	0.13
WP-20 Canal	Lower	1250	2-Year	66.77	-4.6	-0.98	-3.59	-0.97	0.000069	0.7	95.09	36.76	0.08
WP-20 Canal	Lower	1250	5-Year	105.51	-4.6	-0.46	-3.36	-0.45	0.000105	0.92	115.07	40.68	0.1
WP-20 Canal	Lower	1250	10-Year	136.04	-4.6	-0.05	-3.2	-0.04	0.00012	1.03	132.47	43.75	0.1
WP-20 Canal	Lower	1250	25-Year	180.68	-4.6	0.37	-3	0.39	0.000149	1.19	151.46	46.87	0.12
WP-20 Canal	Lower	1250	50-Year	220.39	-4.6	0.78	-2.83	0.8	0.000159	1.29	171.42	49.94	0.12
WP-20 Canal	Lower	1250	100-Year	258.98	-4.6	1.19	-2.68	1.22	0.000162	1.34	192.56	52.99	0.12
WP-20 Canal	Lower	1150	2-Year	66.77	-4.7	-0.99	-3.69	-0.98	0.000064	0.68	98.66	38.25	0.07
WP-20 Canal	Lower	1150	5-Year	105.51	-4.7	-0.47	-3.46	-0.46	0.0001	0.88	119.61	43.52	0.09
WP-20 Canal	Lower	1150	10-Year	136.04	-4.7	-0.06	-3.31	-0.05	0.000116	0.98	138.35	47.75	0.1
WP-20 Canal	Lower	1150	25-Year	180.68	-4.7	0.35	-3.1	0.37	0.000145	1.13	159.59	55.38	0.11
WP-20 Canal	Lower	1150	50-Year	220.39	-4.7	0.77	-2.93	0.79	0.00014	1.21	186.87	76.8	0.12
WP-20 Canal	Lower	1150	100-Year	258.98	-4.7	1.18	-2.78	1.2	0.000128	1.25	223.68	108.47	0.11
Schneider Cana	Upper	29400	2-Year	112	-3.88	-0.64		-0.63	0.000066	0.74	150.5	52.95	0.08
Schneider Cana	Upper	29400	5-Year	174	-3.88	0.02		0.03	0.000084	0.93	186.27	55.59	0.09
Schneider Cana	Upper	29400	10-Year	222	-3.88	0.5		0.52	0.000091	1.04	213.57	57.52	0.1
Schneider Cana	Upper	29400	25-Year	291	-3.88	1.04		1.06	0.000104	1.19	245.28	59.68	0.1
Schneider Cana	Upper	29400	50-Year	348	-3.88	1.51		1.53	0.00011	1.27	273.6	62.5	0.11
Schneider Cana	Upper	29400	100-Year	405	-3.88	1.95		1.98	0.000114	1.34	309.07	100.76	0.11
Schneider Cana	Upper	29300	2-Year	112	-3.89	-0.65		-0.64	0.000066	0.74	150.68	52.96	0.08
Schneider Cana	Upper	29300	5-Year	174	-3.89	0.01		0.02	0.000084	0.93	186.35	55.59	0.09

HEC-RAS Output - Alternative 2

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Upper	29300	10-Year	222	-3.89	0.49		0.51	0.000091	1.04	213.61	57.51	0.1
Schneider Cana	Upper	29300	25-Year	291	-3.89	1.03		1.05	0.000104	1.19	245.23	59.67	0.1
Schneider Cana	Upper	29300	50-Year	348	-3.89	1.5		1.52	0.000108	1.27	274.62	74.47	0.11
Schneider Cana	Upper	29300	100-Year	405	-3.89	1.94		1.97	0.000108	1.34	308.89	79.02	0.11
Schneider Cana	Upper	29200	2-Year	112	-3.9	-0.65	-3.29	-0.65	0.000066	0.74	150.87	52.98	0.08
Schneider Cana	Upper	29200	5-Year	174	-3.9	0	-3.08	0.01	0.000084	0.93	186.45	55.61	0.09
Schneider Cana	Upper	29200	10-Year	222	-3.9	0.48	-2.93	0.5	0.000091	1.04	213.68	57.54	0.1
Schneider Cana	Upper	29200	25-Year	291	-3.9	1.02	-2.75	1.04	0.000104	1.19	245.24	59.69	0.1
Schneider Cana	Upper	29200	50-Year	348	-3.9	1.49	-2.59	1.51	0.000109	1.27	273.42	61.55	0.11
Schneider Cana	Upper	29200	100-Year	405	-3.9	1.93	-2.47	1.96	0.000111	1.34	301.2	63.33	0.11
Schneider Cana	Upper	29100	2-Year	112	-3.91	-0.66	-3.3	-0.65	0.000066	0.74	151.05	52.99	0.08
Schneider Cana	Upper	29100	5-Year	174	-3.91	-0.01	-3.08	0.01	0.000084	0.93	186.54	55.61	0.09
Schneider Cana	Upper	29100	10-Year	222	-3.91	0.47	-2.94	0.49	0.000091	1.04	213.72	57.53	0.09
Schneider Cana	Upper	29100	25-Year	291	-3.91	1.01	-2.75	1.03	0.000104	1.19	245.2	59.68	0.1
Schneider Cana	Upper	29100	50-Year	348	-3.91	1.47	-2.61	1.5	0.000109	1.27	273.34	61.54	0.11
Schneider Cana	Upper	29100	100-Year	405	-3.91	1.92	-2.48	1.95	0.000111	1.35	301.1	63.32	0.11
Schneider Cana	Upper	29000	2-Year	112	-3.92	-0.67		-0.66	0.000065	0.74	151.23	53	0.08
Schneider Cana	Upper	29000	5-Year	174	-3.92	-0.02		0	0.000084	0.93	186.62	55.61	0.09
Schneider Cana	Upper	29000	10-Year	222	-3.92	0.46		0.48	0.000091	1.04	213.76	57.52	0.09
Schneider Cana	Upper	29000	25-Year	291	-3.92	1		1.02	0.000104	1.19	245.15	59.66	0.1
Schneider Cana	Upper	29000	50-Year	348	-3.92	1.46		1.49	0.000107	1.27	277.35	80.94	0.11
Schneider Cana	Upper	29000	100-Year	405	-3.92	1.91		1.94	0.000106	1.34	318.93	122.69	0.11
Schneider Cana	Upper	28900	2-Year	112	-3.93	-0.67	-3.31	-0.67	0.000065	0.74	151.42	53.03	0.08
Schneider Cana	Upper	28900	5-Year	174	-3.93	-0.02	-3.11	-0.01	0.000084	0.93	186.72	55.63	0.09
Schneider Cana	Upper	28900	10-Year	222	-3.93	0.45	-2.96	0.47	0.000091	1.04	213.83	57.54	0.09
Schneider Cana	Upper	28900	25-Year	291	-3.93	0.99	-2.77	1.01	0.000105	1.19	245.15	59.68	0.1
Schneider Cana	Upper	28900	50-Year	348	-3.93	1.45	-2.63	1.48	0.000107	1.27	275.67	79.61	0.11
Schneider Cana	Upper	28900	100-Year	405	-3.93	1.9	-2.49	1.93	0.000107	1.34	308.2	101.22	0.11
Schneider Cana	Upper	28800	2-Year	112	-3.94	-0.68		-0.67	0.000065	0.74	151.6	53.03	0.08
Schneider Cana	Upper	28800	5-Year	174	-3.94	-0.03		-0.02	0.000084	0.93	186.8	55.62	0.09
Schneider Cana	Upper	28800	10-Year	222	-3.94	0.45		0.46	0.000091	1.04	213.87	57.53	0.09
Schneider Cana	Upper	28800	25-Year	291	-3.94	0.98		1	0.000104	1.19	245.12	60.63	0.1
Schneider Cana	Upper	28800	50-Year	348	-3.94	1.44		1.47	0.000106	1.27	276.76	83.3	0.11
Schneider Cana	Upper	28800	100-Year	405	-3.94	1.89		1.91	0.000103	1.33	328.66	138.59	0.11
Schneider Cana	Upper	28700	2-Year	112	-3.95	-0.69	-3.33	-0.68	0.000065	0.74	151.79	53.05	0.08
Schneider Cana	Upper	28700	5-Year	174	-3.95	-0.04	-3.13	-0.03	0.000083	0.93	186.9	55.63	0.09
Schneider Cana	Upper	28700	10-Year	222	-3.95	0.44	-2.98	0.45	0.000091	1.04	213.93	57.55	0.09
Schneider Cana	Upper	28700	25-Year	291	-3.95	0.97	-2.8	0.99	0.000105	1.19	245.09	66.27	0.1
Schneider Cana	Upper	28700	50-Year	348	-3.95	1.43	-2.64	1.46	0.000106	1.27	282.61	99.74	0.11
Schneider Cana	Upper	28700	100-Year	405	-3.95	1.88	-2.52	1.9	0.000104	1.32	328.48	124.33	0.11
Schneider Cana	Upper	28600	2-Year	112	-3.96	-0.69	-3.34	-0.69	0.000064	0.74	151.98	53.06	0.08
Schneider Cana	Upper	28600	5-Year	174	-3.96	-0.05	-3.13	-0.04	0.000083	0.93	186.99	55.64	0.09
Schneider Cana	Upper	28600	10-Year	222	-3.96	0.43	-2.99	0.44	0.000091	1.04	213.97	57.54	0.09
Schneider Cana	Upper	28600	25-Year	291	-3.96	0.96	-2.8	0.98	0.000105	1.19	245.05	68.36	0.1
Schneider Cana	Upper	28600	50-Year	348	-3.96	1.42	-2.66	1.45	0.000109	1.27	273.1	85.57	0.11
Schneider Cana	Upper	28600	100-Year	405	-3.96	1.87	-2.52	1.89	0.000106	1.32	328.46	121.02	0.11
Schneider Cana	Upper	28500	2-Year	112	-3.97	-0.7	-3.35	-0.69	0.000064	0.74	152.17	53.07	0.08
Schneider Cana	Upper	28500	5-Year	174	-3.97	-0.06	-3.15	-0.04	0.000083	0.93	187.08	72.26	0.09
Schneider Cana	Upper	28500	10-Year	222	-3.97	0.42	-3	0.43	0.000091	1.04	214.02	95.59	0.09
Schneider Cana	Upper	28500	25-Year	291	-3.97	0.95	-2.82	0.97	0.000105	1.19	245.02	107.28	0.1
Schneider Cana	Upper	28500	50-Year	348	-3.97	1.41	-2.67	1.43	0.000109	1.27	273.04	120.96	0.11
Schneider Cana	Upper	28500	100-Year	405	-3.97	1.85	-2.54	1.88	0.000111	1.35	300.79	126.43	0.11
Schneider Cana	Upper	28400	2-Year	112	-3.98	-0.71	-3.37	-0.7	0.000064	0.74	152.37	53.1	0.08
Schneider Cana	Upper	28400	5-Year	174	-3.98	-0.07	-3.16	-0.05	0.000083	0.93	187.19	55.66	0.09
Schneider Cana	Upper	28400	10-Year	222	-3.98	0.41	-3.01	0.43	0.000091	1.04	214.09	57.56	0.09
Schneider Cana	Upper	28400	25-Year	291	-3.98	0.94	-2.82	0.96	0.000105	1.19	246.06	80.72	0.1

HEC-RAS Output - Alternative 2

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Upper	28400	50-Year	348	-3.98	1.4	-2.68	1.42	0.000106	1.27	281.62	127.19	0.11
Schneider Cana	Upper	28400	100-Year	405	-3.98	1.85	-2.54	1.87	0.000099	1.3	352.67	131.66	0.1
Schneider Cana	Upper	28300	2-Year	112	-3.99	-0.71	-3.37	-0.7	0.000064	0.73	152.56	53.12	0.08
Schneider Cana	Upper	28300	5-Year	174	-3.99	-0.07	-3.16	-0.06	0.000082	0.93	188.1	63.23	0.09
Schneider Cana	Upper	28300	10-Year	222	-3.99	0.4	-3.02	0.42	0.000087	1.03	219.55	67.61	0.09
Schneider Cana	Upper	28300	25-Year	291	-3.99	0.93	-2.83	0.95	0.000098	1.18	255.9	74.06	0.1
Schneider Cana	Upper	28300	50-Year	348	-3.99	1.39	-2.69	1.41	0.000096	1.25	306.79	142.15	0.1
Schneider Cana	Upper	28300	100-Year	405	-3.99	1.84	-2.56	1.86	0.00009	1.28	370.72	143.65	0.1
Schneider Cana	Upper	28200	2-Year	112	-4	-0.72		-0.71	0.000063	0.73	152.75	53.13	0.08
Schneider Cana	Upper	28200	5-Year	174	-4	-0.08		-0.07	0.000083	0.93	187.38	55.67	0.09
Schneider Cana	Upper	28200	10-Year	222	-4	0.39		0.41	0.000091	1.04	214.22	57.57	0.09
Schneider Cana	Upper	28200	25-Year	291	-4	0.92		0.94	0.000105	1.19	245.1	64.61	0.1
Schneider Cana	Upper	28200	50-Year	348	-4	1.38		1.4	0.000105	1.26	298.7	130.77	0.1
Schneider Cana	Upper	28200	100-Year	405	-4	1.83		1.85	0.000098	1.29	358.42	138.79	0.1
Schneider Cana	Upper	28100	2-Year	112	-4.01	-0.73	-3.39	-0.72	0.000063	0.73	152.95	53.14	0.08
Schneider Cana	Upper	28100	5-Year	174	-4.01	-0.09	-3.19	-0.08	0.000083	0.93	187.47	55.68	0.09
Schneider Cana	Upper	28100	10-Year	222	-4.01	0.38	-3.04	0.4	0.00009	1.04	214.27	57.57	0.09
Schneider Cana	Upper	28100	25-Year	291	-4.01	0.91	-2.85	0.93	0.000103	1.19	249.44	79.19	0.1
Schneider Cana	Upper	28100	50-Year	348	-4.01	1.37	-2.71	1.39	0.000101	1.26	295.21	110.24	0.1
Schneider Cana	Upper	28100	100-Year	405	-4.01	1.82	-2.58	1.84	0.000096	1.3	345.84	115.56	0.1
Schneider Cana	Upper	28000	2-Year	112	-4.02	-0.73		-0.72	0.000063	0.73	153.14	53.15	0.08
Schneider Cana	Upper	28000	5-Year	174	-4.02	-0.1		-0.09	0.000083	0.93	187.57	55.68	0.09
Schneider Cana	Upper	28000	10-Year	222	-4.02	0.37		0.39	0.00009	1.04	214.35	62.5	0.09
Schneider Cana	Upper	28000	25-Year	291	-4.02	0.9		0.92	0.000102	1.17	263.53	121.52	0.1
Schneider Cana	Upper	28000	50-Year	348	-4.02	1.36		1.38	0.000098	1.22	323.14	130.76	0.1
Schneider Cana	Upper	28000	100-Year	405	-4.02	1.81		1.83	0.000091	1.24	382.09	131.66	0.1
Schneider Cana	Upper	27900	2-Year	112	-4.03	-0.74	-3.41	-0.73	0.000063	0.73	153.35	53.17	0.08
Schneider Cana	Upper	27900	5-Year	174	-4.03	-0.11	-3.2	-0.09	0.000082	0.93	187.67	55.7	0.09
Schneider Cana	Upper	27900	10-Year	222	-4.03	0.36	-3.06	0.38	0.00009	1.04	214.39	57.58	0.09
Schneider Cana	Upper	27900	25-Year	291	-4.03	0.89	-2.87	0.91	0.000102	1.18	252.61	89.93	0.1
Schneider Cana	Upper	27900	50-Year	348	-4.03	1.35	-2.73	1.37	0.000101	1.26	291.81	120.37	0.1
Schneider Cana	Upper	27900	100-Year	405	-4.03	1.8	-2.59	1.82	0.000094	1.29	360.89	137.81	0.1
Schneider Cana	Upper	27800	2-Year	112	-4.04	-0.74	-3.43	-0.74	0.000062	0.73	153.54	53.18	0.08
Schneider Cana	Upper	27800	5-Year	174	-4.04	-0.12	-3.21	-0.1	0.000082	0.93	187.76	55.69	0.09
Schneider Cana	Upper	27800	10-Year	222	-4.04	0.36	-3.07	0.37	0.00009	1.04	214.42	83.49	0.09
Schneider Cana	Upper	27800	25-Year	291	-4.04	0.87	-2.88	0.9	0.000105	1.19	244.87	128.26	0.1
Schneider Cana	Upper	27800	50-Year	348	-4.04	1.34	-2.74	1.36	0.000094	1.19	338.41	130.76	0.1
Schneider Cana	Upper	27800	100-Year	405	-4.04	1.79	-2.61	1.81	0.000087	1.21	397.52	131.66	0.1
Schneider Cana	Upper	27700	2-Year	112	-4.05	-0.75	-3.43	-0.74	0.000062	0.73	153.74	53.2	0.08
Schneider Cana	Upper	27700	5-Year	174	-4.05	-0.12	-3.22	-0.11	0.000082	0.93	187.87	67.13	0.09
Schneider Cana	Upper	27700	10-Year	222	-4.05	0.35	-3.08	0.36	0.00009	1.04	214.49	74.25	0.09
Schneider Cana	Upper	27700	25-Year	291	-4.05	0.86	-2.9	0.89	0.000105	1.19	244.86	83.74	0.1
Schneider Cana	Upper	27700	50-Year	348	-4.05	1.33	-2.75	1.35	0.000101	1.23	317.86	130.75	0.1
Schneider Cana	Upper	27700	100-Year	405	-4.05	1.78	-2.61	1.8	0.000092	1.25	381.96	151.45	0.1
Schneider Cana	Upper	27600	2-Year	112	-4.06	-0.76	-3.44	-0.75	0.000062	0.73	153.94	53.21	0.08
Schneider Cana	Upper	27600	5-Year	174	-4.06	-0.13	-3.23	-0.12	0.000082	0.93	187.96	55.7	0.09
Schneider Cana	Upper	27600	10-Year	222	-4.06	0.34	-3.09	0.35	0.00009	1.03	214.54	57.58	0.09
Schneider Cana	Upper	27600	25-Year	291	-4.06	0.85	-2.9	0.88	0.000105	1.19	246.12	74.71	0.1
Schneider Cana	Upper	27600	50-Year	348	-4.06	1.32	-2.76	1.34	0.000106	1.27	285.58	115.66	0.11
Schneider Cana	Upper	27600	100-Year	405	-4.06	1.77	-2.62	1.79	0.000101	1.31	346.59	131.65	0.1
Schneider Cana	Upper	27500	2-Year	112	-4.07	-0.76	-3.45	-0.75	0.000062	0.73	154.15	53.23	0.08
Schneider Cana	Upper	27500	5-Year	174	-4.07	-0.14	-3.24	-0.13	0.000082	0.93	188.07	55.72	0.09
Schneider Cana	Upper	27500	10-Year	222	-4.07	0.33	-3.1	0.34	0.00009	1.03	214.61	57.6	0.09
Schneider Cana	Upper	27500	25-Year	291	-4.07	0.84	-2.92	0.86	0.000105	1.19	245	65.6	0.1
Schneider Cana	Upper	27500	50-Year	348	-4.07	1.31	-2.77	1.33	0.000107	1.27	280.3	91.78	0.11
Schneider Cana	Upper	27500	100-Year	405	-4.07	1.76	-2.64	1.78	0.000103	1.32	337.56	131.66	0.11

HEC-RAS Output - Alternative 2

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Upper	27400	2-Year	112	-4.08	-0.77	-3.46	-0.76	0.000061	0.73	154.36	53.25	0.08
Schneider Cana	Upper	27400	5-Year	174	-4.08	-0.15	-3.26	-0.14	0.000082	0.92	188.17	55.73	0.09
Schneider Cana	Upper	27400	10-Year	222	-4.08	0.32	-3.12	0.34	0.00009	1.03	214.67	57.6	0.09
Schneider Cana	Upper	27400	25-Year	291	-4.08	0.83	-2.92	0.85	0.000105	1.19	244.78	59.66	0.1
Schneider Cana	Upper	27400	50-Year	348	-4.08	1.29	-2.78	1.32	0.000109	1.28	272.76	61.51	0.11
Schneider Cana	Upper	27400	100-Year	405	-4.08	1.74	-2.64	1.77	0.000111	1.35	300.8	83.48	0.11
Schneider Cana	Upper	27300	2-Year	112	-4.09	-0.78	-3.47	-0.77	0.000061	0.72	154.57	53.26	0.07
Schneider Cana	Upper	27300	5-Year	174	-4.09	-0.16	-3.26	-0.14	0.000082	0.92	188.27	55.74	0.09
Schneider Cana	Upper	27300	10-Year	222	-4.09	0.31	-3.12	0.33	0.00009	1.03	214.73	57.61	0.09
Schneider Cana	Upper	27300	25-Year	291	-4.09	0.82	-2.94	0.84	0.000105	1.19	244.75	59.65	0.1
Schneider Cana	Upper	27300	50-Year	348	-4.09	1.28	-2.79	1.31	0.000109	1.28	272.7	61.5	0.11
Schneider Cana	Upper	27300	100-Year	405	-4.09	1.73	-2.66	1.76	0.000111	1.35	302.14	70.25	0.11
Schneider Cana	Upper	27200	2-Year	112	-4.1	-0.78	-3.48	-0.77	0.000061	0.72	154.77	53.27	0.07
Schneider Cana	Upper	27200	5-Year	174	-4.1	-0.16	-3.27	-0.15	0.000082	0.92	188.37	55.74	0.09
Schneider Cana	Upper	27200	10-Year	222	-4.1	0.3	-3.13	0.32	0.00009	1.03	214.77	57.6	0.09
Schneider Cana	Upper	27200	25-Year	291	-4.1	0.81	-2.95	0.83	0.000105	1.19	244.7	59.64	0.1
Schneider Cana	Upper	27200	50-Year	348	-4.1	1.27	-2.8	1.3	0.000109	1.28	272.62	61.48	0.11
Schneider Cana	Upper	27200	100-Year	405	-4.1	1.72	-2.66	1.75	0.000112	1.35	300.62	64.54	0.11
Schneider Cana	Upper	27100	2-Year	112	-4.11	-0.79	-3.49	-0.78	0.000061	0.72	154.98	53.29	0.07
Schneider Cana	Upper	27100	5-Year	174	-4.11	-0.17	-3.28	-0.16	0.000081	0.92	188.48	55.75	0.09
Schneider Cana	Upper	27100	10-Year	222	-4.11	0.29	-3.14	0.31	0.00009	1.03	214.84	57.61	0.09
Schneider Cana	Upper	27100	25-Year	291	-4.11	0.8	-2.95	0.82	0.000105	1.19	244.68	59.68	0.1
Schneider Cana	Upper	27100	50-Year	348	-4.11	1.26	-2.81	1.29	0.000122	1.27	274.68	68.43	0.11
Schneider Cana	Upper	27100	100-Year	405	-4.11	1.71	-2.68	1.74	0.000127	1.32	306.66	73.99	0.11
Schneider Cana	Upper	27000	2-Year	112	-4.12	-0.79	-3.5	-0.79	0.00006	0.72	155.19	53.31	0.07
Schneider Cana	Upper	27000	5-Year	174	-4.12	-0.18	-3.29	-0.17	0.000081	0.92	188.58	55.76	0.09
Schneider Cana	Upper	27000	10-Year	222	-4.12	0.28	-3.15	0.3	0.00009	1.03	214.9	57.61	0.09
Schneider Cana	Upper	27000	25-Year	291	-4.12	0.79	-2.96	0.81	0.000105	1.19	244.64	59.64	0.1
Schneider Cana	Upper	27000	50-Year	348	-4.12	1.25	-2.82	1.27	0.00011	1.28	272.43	61.48	0.11
Schneider Cana	Upper	27000	100-Year	405	-4.12	1.7	-2.68	1.73	0.000112	1.35	300.36	63.27	0.11
Schneider Cana	Upper	26900	2-Year	112	-4.13	-0.8	-3.51	-0.79	0.00006	0.72	155.41	53.32	0.07
Schneider Cana	Upper	26900	5-Year	174	-4.13	-0.19	-3.3	-0.18	0.000081	0.92	188.69	55.76	0.09
Schneider Cana	Upper	26900	10-Year	222	-4.13	0.27	-3.16	0.29	0.00009	1.03	214.96	57.62	0.09
Schneider Cana	Upper	26900	25-Year	291	-4.13	0.78	-2.97	0.8	0.000105	1.19	244.61	59.64	0.1
Schneider Cana	Upper	26900	50-Year	348	-4.13	1.24	-2.83	1.26	0.00011	1.28	272.36	65.42	0.11
Schneider Cana	Upper	26900	100-Year	405	-4.13	1.69	-2.7	1.71	0.000112	1.35	300.29	89.33	0.11
Schneider Cana	Upper	26800	2-Year	112	-4.14	-0.81	-3.52	-0.8	0.00006	0.72	155.62	53.34	0.07
Schneider Cana	Upper	26800	5-Year	174	-4.14	-0.2	-3.31	-0.18	0.000081	0.92	188.79	55.77	0.09
Schneider Cana	Upper	26800	10-Year	222	-4.14	0.27	-3.17	0.28	0.00009	1.03	215.02	57.62	0.09
Schneider Cana	Upper	26800	25-Year	291	-4.14	0.77	-2.98	0.79	0.000105	1.19	244.58	59.64	0.1
Schneider Cana	Upper	26800	50-Year	348	-4.14	1.23	-2.84	1.25	0.00011	1.28	272.3	61.47	0.11
Schneider Cana	Upper	26800	100-Year	405	-4.14	1.67	-2.7	1.7	0.000112	1.35	300.21	71.72	0.11
Schneider Cana	Upper	26700	2-Year	112	-4.15	-0.81	-3.53	-0.8	0.00006	0.72	155.83	53.35	0.07
Schneider Cana	Upper	26700	5-Year	174	-4.15	-0.21	-3.32	-0.19	0.000081	0.92	188.9	60.56	0.09
Schneider Cana	Upper	26700	10-Year	222	-4.15	0.26	-3.18	0.27	0.000089	1.03	215.08	68.25	0.09
Schneider Cana	Upper	26700	25-Year	291	-4.15	0.76	-2.99	0.78	0.000105	1.19	244.55	77.15	0.1
Schneider Cana	Upper	26700	50-Year	348	-4.15	1.22	-2.85	1.24	0.00011	1.28	272.24	97.09	0.11
Schneider Cana	Upper	26700	100-Year	405	-4.15	1.67	-2.72	1.69	0.000102	1.3	342.04	111.37	0.1
Schneider Cana	Upper	26600	2-Year	112	-4.16	-0.82	-3.54	-0.81	0.000059	0.72	156.05	53.37	0.07
Schneider Cana	Upper	26600	5-Year	174	-4.16	-0.21	-3.33	-0.2	0.000081	0.92	189.01	55.79	0.09
Schneider Cana	Upper	26600	10-Year	222	-4.16	0.25	-3.19	0.26	0.000089	1.03	215.15	57.64	0.09
Schneider Cana	Upper	26600	25-Year	291	-4.16	0.75	-3	0.77	0.000105	1.19	244.53	60.93	0.1
Schneider Cana	Upper	26600	50-Year	348	-4.16	1.21	-2.86	1.23	0.00011	1.28	272.19	116.36	0.11
Schneider Cana	Upper	26600	100-Year	405	-4.16	1.66	-2.73	1.68	0.000104	1.3	347.89	131.63	0.11
Schneider Cana	Upper	26500	2-Year	112	-4.17	-0.82	-3.55	-0.82	0.000059	0.72	156.27	53.39	0.07

HEC-RAS Output - Alternative 2

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Upper	26500	5-Year	174	-4.17	-0.22	-3.34	-0.21	0.000081	0.92	189.12	55.79	0.09
Schneider Cana	Upper	26500	10-Year	222	-4.17	0.24	-3.2	0.25	0.000089	1.03	215.2	57.63	0.09
Schneider Cana	Upper	26500	25-Year	291	-4.17	0.74	-3.01	0.76	0.000105	1.19	244.49	65.03	0.1
Schneider Cana	Upper	26500	50-Year	348	-4.17	1.19	-2.87	1.22	0.00011	1.28	272.12	95.96	0.11
Schneider Cana	Upper	26500	100-Year	405	-4.17	1.64	-2.74	1.67	0.000112	1.35	300.02	118.76	0.11
Schneider Cana	Upper	26400	2-Year	112	-4.18	-0.83	-3.56	-0.82	0.000059	0.72	156.49	53.4	0.07
Schneider Cana	Upper	26400	5-Year	174	-4.18	-0.23	-3.35	-0.22	0.00008	0.92	189.23	55.8	0.09
Schneider Cana	Upper	26400	10-Year	222	-4.18	0.23	-3.21	0.25	0.000089	1.03	215.26	57.64	0.09
Schneider Cana	Upper	26400	25-Year	291	-4.18	0.73	-3.02	0.75	0.000105	1.19	244.45	64.14	0.1
Schneider Cana	Upper	26400	50-Year	348	-4.18	1.18	-2.88	1.21	0.00011	1.28	272.05	79.97	0.11
Schneider Cana	Upper	26400	100-Year	405	-4.18	1.63	-2.74	1.66	0.000112	1.35	299.94	87.04	0.11
Schneider Cana	Upper	26300	2-Year	112	-4.19	-0.84	-3.58	-0.83	0.000059	0.71	156.71	53.42	0.07
Schneider Cana	Upper	26300	5-Year	174	-4.19	-0.24	-3.37	-0.22	0.00008	0.92	189.34	55.81	0.09
Schneider Cana	Upper	26300	10-Year	222	-4.19	0.22	-3.22	0.24	0.000089	1.03	215.32	57.64	0.09
Schneider Cana	Upper	26300	25-Year	291	-4.19	0.72	-3.03	0.74	0.000105	1.19	244.42	69.48	0.1
Schneider Cana	Upper	26300	50-Year	348	-4.19	1.17	-2.89	1.2	0.00011	1.28	271.99	83.26	0.11
Schneider Cana	Upper	26300	100-Year	405	-4.19	1.62	-2.75	1.65	0.000112	1.35	299.86	92.53	0.11
Schneider Cana	Upper	26200	2-Year	112	-4.2	-0.84	-3.59	-0.83	0.000058	0.71	156.93	53.43	0.07
Schneider Cana	Upper	26200	5-Year	174	-4.2	-0.25	-3.38	-0.23	0.00008	0.92	189.44	55.81	0.09
Schneider Cana	Upper	26200	10-Year	222	-4.2	0.21	-3.23	0.23	0.000089	1.03	215.38	57.64	0.09
Schneider Cana	Upper	26200	25-Year	291	-4.2	0.71	-3.04	0.73	0.000105	1.19	245.19	67.96	0.1
Schneider Cana	Upper	26200	50-Year	348	-4.2	1.16	-2.9	1.19	0.000109	1.27	281.45	92.73	0.11
Schneider Cana	Upper	26200	100-Year	405	-4.2	1.61	-2.77	1.64	0.000106	1.32	329.56	112.47	0.11
Schneider Cana	Upper	26100	2-Year	112	-4.21	-0.85	-3.59	-0.84	0.000058	0.71	157.16	53.45	0.07
Schneider Cana	Upper	26100	5-Year	174	-4.21	-0.25	-3.38	-0.24	0.00008	0.92	189.56	55.83	0.09
Schneider Cana	Upper	26100	10-Year	222	-4.21	0.2	-3.24	0.22	0.000089	1.03	215.45	57.65	0.09
Schneider Cana	Upper	26100	25-Year	291	-4.21	0.7	-3.05	0.72	0.000106	1.19	244.36	59.62	0.1
Schneider Cana	Upper	26100	50-Year	348	-4.21	1.15	-2.91	1.18	0.000109	1.28	273.15	84.52	0.11
Schneider Cana	Upper	26100	100-Year	405	-4.21	1.6	-2.77	1.63	0.000109	1.35	305.97	105.43	0.11
Schneider Cana	Upper	26000	2-Year	112	-4.22	-0.85		-0.84	0.000058	0.71	157.39	53.47	0.07
Schneider Cana	Upper	26000	5-Year	174	-4.22	-0.26		-0.25	0.00008	0.92	189.68	55.84	0.09
Schneider Cana	Upper	26000	10-Year	222	-4.22	0.19		0.21	0.000089	1.03	215.53	57.66	0.09
Schneider Cana	Upper	26000	25-Year	291	-4.22	0.69		0.71	0.000106	1.19	244.34	59.63	0.1
Schneider Cana	Upper	26000	50-Year	348	-4.22	1.14		1.16	0.00011	1.28	271.82	61.45	0.11
Schneider Cana	Upper	26000	100-Year	405	-4.22	1.59		1.61	0.000112	1.35	307.1	116.4	0.11
Schneider Cana	Upper	25900	2-Year	112	-4.23	-0.86	-3.61	-0.85	0.000058	0.71	157.6	53.48	0.07
Schneider Cana	Upper	25900	5-Year	174	-4.23	-0.27	-3.4	-0.26	0.00008	0.92	189.78	55.84	0.09
Schneider Cana	Upper	25900	10-Year	222	-4.23	0.18	-3.26	0.2	0.000089	1.03	215.57	57.65	0.09
Schneider Cana	Upper	25900	25-Year	291	-4.23	0.67	-3.08	0.7	0.000106	1.19	244.27	67.18	0.1
Schneider Cana	Upper	25900	50-Year	348	-4.23	1.13	-2.93	1.15	0.000111	1.28	271.72	79.76	0.11
Schneider Cana	Upper	25900	100-Year	405	-4.23	1.57	-2.79	1.6	0.000113	1.35	299.55	98.48	0.11
Schneider Cana	Upper	25800	2-Year	112	-4.24	-0.86	-3.62	-0.86	0.000057	0.71	157.83	53.5	0.07
Schneider Cana	Upper	25800	5-Year	174	-4.24	-0.28	-3.41	-0.26	0.00008	0.92	189.89	55.85	0.09
Schneider Cana	Upper	25800	10-Year	222	-4.24	0.18	-3.27	0.19	0.000089	1.03	215.64	57.66	0.09
Schneider Cana	Upper	25800	25-Year	291	-4.24	0.66	-3.09	0.69	0.000106	1.19	244.25	59.61	0.1
Schneider Cana	Upper	25800	50-Year	348	-4.24	1.12	-2.94	1.14	0.000111	1.28	271.66	61.42	0.11
Schneider Cana	Upper	25800	100-Year	405	-4.24	1.56	-2.8	1.59	0.000113	1.35	299.48	63.21	0.11
Schneider Cana	Upper	25700	2-Year	112	-4.25	-0.87	-3.63	-0.86	0.000057	0.71	158.06	53.52	0.07
Schneider Cana	Upper	25700	5-Year	174	-4.25	-0.29	-3.43	-0.27	0.000079	0.92	190.01	55.86	0.09
Schneider Cana	Upper	25700	10-Year	222	-4.25	0.17	-3.28	0.18	0.000089	1.03	215.71	57.67	0.09
Schneider Cana	Upper	25700	25-Year	291	-4.25	0.65	-3.1	0.68	0.000106	1.19	244.22	59.61	0.1
Schneider Cana	Upper	25700	50-Year	348	-4.25	1.11	-2.95	1.13	0.000111	1.28	271.61	61.42	0.11
Schneider Cana	Upper	25700	100-Year	405	-4.25	1.55	-2.81	1.58	0.000113	1.35	299.41	89.04	0.11
Schneider Cana	Middle	25600	2-Year	192.23	-5.74	-0.87	-4.43	-0.86	0.000045	0.71	270.31	76.35	0.07
Schneider Cana	Middle	25600	5-Year	294.49	-5.74	-0.29	-4.15	-0.27	0.000066	0.93	315.79	79.65	0.08
Schneider Cana	Middle	25600	10-Year	372.96	-5.74	0.16	-3.96	0.18	0.000077	1.06	352.37	82.22	0.09

HEC-RAS Output - Alternative 2

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Middle	25600	25-Year	483.32	-5.74	0.65	-3.72	0.67	0.000094	1.23	392.93	84.97	0.1
Schneider Cana	Middle	25600	50-Year	573.61	-5.74	1.1	-3.54	1.13	0.000102	1.33	432.09	110.14	0.11
Schneider Cana	Middle	25600	100-Year	665.02	-5.74	1.55	-3.38	1.58	0.000121	1.4	473.44	128.93	0.11
Schneider Cana	Middle	25500	2-Year	192.23	-5.74	-0.88		-0.87	0.000047	0.71	272.17	81.29	0.07
Schneider Cana	Middle	25500	5-Year	294.49	-5.74	-0.29		-0.28	0.000077	0.91	323.66	95.98	0.09
Schneider Cana	Middle	25500	10-Year	372.96	-5.74	0.16		0.17	0.000092	1.01	369.54	107.39	0.1
Schneider Cana	Middle	25500	25-Year	483.32	-5.74	0.64		0.66	0.000113	1.14	424.56	119.64	0.11
Schneider Cana	Middle	25500	50-Year	573.61	-5.74	1.09		1.12	0.000118	1.19	481.29	131.08	0.11
Schneider Cana	Middle	25500	100-Year	665.02	-5.74	1.54		1.56	0.000119	1.23	542.25	142.35	0.11
Schneider Cana	Middle	25400	2-Year	192.23	-5.74	-0.88	-4.43	-0.87	0.000045	0.71	272.36	79.39	0.07
Schneider Cana	Middle	25400	5-Year	294.49	-5.74	-0.3	-4.15	-0.29	0.000068	0.92	319.77	84.68	0.08
Schneider Cana	Middle	25400	10-Year	372.96	-5.74	0.15	-3.96	0.16	0.000079	1.04	358.74	88.79	0.09
Schneider Cana	Middle	25400	25-Year	483.32	-5.74	0.63	-3.73	0.65	0.000097	1.2	402.54	93.2	0.1
Schneider Cana	Middle	25400	50-Year	573.61	-5.74	1.08	-3.55	1.1	0.000103	1.29	445.45	97.32	0.11
Schneider Cana	Middle	25400	100-Year	665.02	-5.74	1.52	-3.38	1.55	0.000109	1.36	489.74	110.81	0.11
Schneider Cana	Middle	25364	2-Year	192.23	-5.92	-0.88	-4.58	-0.88	0.000041	0.67	285.64	82.22	0.06
Schneider Cana	Middle	25364	5-Year	294.49	-5.92	-0.31	-4.3	-0.3	0.00006	0.88	333.97	85.56	0.08
Schneider Cana	Middle	25364	10-Year	372.96	-5.92	0.14	-4.1	0.16	0.000069	1	372.88	87.95	0.09
Schneider Cana	Middle	25364	25-Year	483.32	-5.92	0.62	-3.87	0.64	0.000104	1.15	419.89	108.94	0.1
Schneider Cana	Middle	25364	50-Year	573.61	-5.92	1.07	-3.68	1.09	0.000105	1.22	469.77	112.44	0.11
Schneider Cana	Middle	25364	100-Year	665.02	-5.92	1.51	-3.51	1.54	0.000108	1.28	520.81	121.26	0.11
Schneider Cana	Middle	25300	2-Year	192.23	-6.02	-0.89	-4.58	-0.88	0.000042	0.68	282.83	82.63	0.06
Schneider Cana	Middle	25300	5-Year	294.49	-6.02	-0.31	-4.29	-0.3	0.000062	0.89	331.37	86.06	0.08
Schneider Cana	Middle	25300	10-Year	372.96	-6.02	0.14	-4.09	0.15	0.000071	1.01	370.41	88.36	0.09
Schneider Cana	Middle	25300	25-Year	483.32	-6.02	0.61	-3.85	0.63	0.000088	1.17	413.19	92.54	0.1
Schneider Cana	Middle	25300	50-Year	573.61	-6.02	1.06	-3.67	1.09	0.000109	1.25	458.23	108.84	0.11
Schneider Cana	Middle	25300	100-Year	665.02	-6.02	1.51	-3.5	1.53	0.000125	1.3	510.5	126.85	0.11
Schneider Cana	Middle	25200	2-Year	192.23	-6.17	-0.89	-4.62	-0.88	0.000044	0.69	279.42	83.4	0.07
Schneider Cana	Middle	25200	5-Year	294.49	-6.17	-0.32	-4.3	-0.31	0.000064	0.9	328.21	86.69	0.08
Schneider Cana	Middle	25200	10-Year	372.96	-6.17	0.13	-4.09	0.14	0.000073	1.01	367.45	88.98	0.09
Schneider Cana	Middle	25200	25-Year	483.32	-6.17	0.6	-3.85	0.63	0.000091	1.18	410.66	93.24	0.1
Schneider Cana	Middle	25200	50-Year	573.61	-6.17	1.05	-3.66	1.08	0.000115	1.26	456.26	112.63	0.11
Schneider Cana	Middle	25200	100-Year	665.02	-6.17	1.49	-3.5	1.52	0.000134	1.3	510.74	133.92	0.12
Schneider Cana	Middle	25100	2-Year	192.23	-6.32	-0.9	-4.68	-0.89	0.000045	0.69	277.56	83.36	0.07
Schneider Cana	Middle	25100	5-Year	294.49	-6.32	-0.33	-4.34	-0.31	0.000066	0.9	326.35	87.61	0.08
Schneider Cana	Middle	25100	10-Year	372.96	-6.32	0.12	-4.12	0.14	0.000077	1.02	366.26	91.4	0.09
Schneider Cana	Middle	25100	25-Year	483.32	-6.32	0.59	-3.87	0.62	0.000094	1.18	410.5	95.42	0.1
Schneider Cana	Middle	25100	50-Year	573.61	-6.32	1.04	-3.69	1.06	0.000111	1.26	455.05	108.57	0.11
Schneider Cana	Middle	25100	100-Year	665.02	-6.32	1.48	-3.52	1.51	0.000114	1.32	508.9	132.29	0.11
Schneider Cana	Middle	25000	2-Year	192.23	-6.48	-0.9	-4.76	-0.89	0.000046	0.69	277.34	83.48	0.07
Schneider Cana	Middle	25000	5-Year	294.49	-6.48	-0.33	-4.41	-0.32	0.000068	0.9	326.5	89.45	0.08
Schneider Cana	Middle	25000	10-Year	372.96	-6.48	0.11	-4.19	0.13	0.000078	1.02	367.16	93.13	0.09
Schneider Cana	Middle	25000	25-Year	483.32	-6.48	0.59	-3.92	0.61	0.000094	1.17	411.97	96.71	0.1
Schneider Cana	Middle	25000	50-Year	573.61	-6.48	1.03	-3.72	1.05	0.000099	1.26	456.16	107.19	0.1
Schneider Cana	Middle	25000	100-Year	665.02	-6.48	1.47	-3.54	1.5	0.0001	1.33	508.66	131.56	0.11
Schneider Cana	Middle	24900	2-Year	192.23	-6.63	-0.9	-4.85	-0.9	0.000045	0.69	279.09	83.95	0.07
Schneider Cana	Middle	24900	5-Year	294.49	-6.63	-0.34	-4.49	-0.33	0.000067	0.9	328.33	89.91	0.08
Schneider Cana	Middle	24900	10-Year	372.96	-6.63	0.11	-4.26	0.12	0.000078	1.01	369.25	94.24	0.09
Schneider Cana	Middle	24900	25-Year	483.32	-6.63	0.58	-3.98	0.6	0.000093	1.17	414.37	97.54	0.1
Schneider Cana	Middle	24900	50-Year	573.61	-6.63	1.02	-3.77	1.04	0.000098	1.25	458.33	102.8	0.1
Schneider Cana	Middle	24900	100-Year	665.02	-6.63	1.46	-3.58	1.49	0.000099	1.32	511.31	138.29	0.11
Schneider Cana	Middle	24800	2-Year	192.23	-6.78	-0.91	-4.95	-0.9	0.000043	0.68	283.2	83.54	0.06
Schneider Cana	Middle	24800	5-Year	294.49	-6.78	-0.34	-4.57	-0.33	0.000065	0.89	332.05	89.62	0.08
Schneider Cana	Middle	24800	10-Year	372.96	-6.78	0.1	-4.34	0.11	0.000076	1	372.79	94.39	0.09
Schneider Cana	Middle	24800	25-Year	483.32	-6.78	0.57	-4.05	0.59	0.000091	1.16	418.03	98.11	0.1
Schneider Cana	Middle	24800	50-Year	573.61	-6.78	1.01	-3.84	1.03	0.000096	1.24	462.12	101.02	0.1

HEC-RAS Output - Alternative 2

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Middle	24800	100-Year	665.02	-6.78	1.45	-3.65	1.48	0.000098	1.31	518.43	142.7	0.1
Schneider Cana	Middle	24700	2-Year	192.23	-6.93	-0.91	-5.05	-0.91	0.000039	0.66	289.35	82.28	0.06
Schneider Cana	Middle	24700	5-Year	294.49	-6.93	-0.35	-4.67	-0.34	0.000061	0.87	337.38	88.63	0.08
Schneider Cana	Middle	24700	10-Year	372.96	-6.93	0.09	-4.44	0.11	0.000072	0.99	377.63	93.62	0.09
Schneider Cana	Middle	24700	25-Year	483.32	-6.93	0.56	-4.15	0.58	0.000089	1.14	422.61	98.55	0.1
Schneider Cana	Middle	24700	50-Year	573.61	-6.93	1	-3.95	1.02	0.000093	1.23	466.82	101.32	0.1
Schneider Cana	Middle	24700	100-Year	665.02	-6.93	1.44	-3.76	1.47	0.000104	1.3	512.77	111.84	0.11
Schneider Cana	Middle	24600	2-Year	192.23	-7.09	-0.92	-5.16	-0.91	0.000034	0.65	297.99	80.03	0.06
Schneider Cana	Middle	24600	5-Year	294.49	-7.09	-0.36	-4.8	-0.34	0.000055	0.85	344.71	86.82	0.08
Schneider Cana	Middle	24600	10-Year	372.96	-7.09	0.08	-4.57	0.1	0.000067	0.97	384.14	92.16	0.08
Schneider Cana	Middle	24600	25-Year	483.32	-7.09	0.55	-4.3	0.57	0.000084	1.13	428.37	97.8	0.1
Schneider Cana	Middle	24600	50-Year	573.61	-7.09	0.99	-4.1	1.01	0.00009	1.21	472.57	101.56	0.1
Schneider Cana	Middle	24600	100-Year	665.02	-7.09	1.43	-3.94	1.46	0.000101	1.28	518.33	111.69	0.1
Schneider Cana	Middle	24500	2-Year	192.23	-7.24	-0.92		-0.91	0.000029	0.62	309.45	78.13	0.06
Schneider Cana	Middle	24500	5-Year	294.49	-7.24	-0.36		-0.35	0.000048	0.83	354.44	84.04	0.07
Schneider Cana	Middle	24500	10-Year	372.96	-7.24	0.08		0.09	0.00006	0.95	392.65	89.86	0.08
Schneider Cana	Middle	24500	25-Year	483.32	-7.24	0.54		0.56	0.000078	1.11	435.76	96	0.09
Schneider Cana	Middle	24500	50-Year	573.61	-7.24	0.98		1.01	0.000086	1.2	479.4	101.74	0.1
Schneider Cana	Middle	24500	100-Year	665.02	-7.24	1.42		1.45	0.000093	1.27	525.27	108.44	0.1
Schneider Cana	Middle	24400	2-Year	192.23	-7.39	-0.92		-0.92	0.000026	0.6	322.31	77.94	0.05
Schneider Cana	Middle	24400	5-Year	294.49	-7.39	-0.36		-0.35	0.000041	0.8	366.53	80.94	0.07
Schneider Cana	Middle	24400	10-Year	372.96	-7.39	0.07		0.09	0.000052	0.93	402.99	86.29	0.08
Schneider Cana	Middle	24400	25-Year	483.32	-7.39	0.54		0.55	0.00007	1.09	444.46	93.18	0.09
Schneider Cana	Middle	24400	50-Year	573.61	-7.39	0.98		1	0.000081	1.18	486.95	100.54	0.09
Schneider Cana	Middle	24400	100-Year	665.02	-7.39	1.41		1.44	0.00009	1.25	533.04	109.77	0.1
Schneider Cana	Middle	24300	2-Year	192.23	-7.54	-0.92		-0.92	0.000022	0.57	336.94	77.84	0.05
Schneider Cana	Middle	24300	5-Year	294.49	-7.54	-0.37		-0.36	0.000036	0.77	380.95	80.67	0.06
Schneider Cana	Middle	24300	10-Year	372.96	-7.54	0.07		0.08	0.000045	0.89	416.73	82.9	0.07
Schneider Cana	Middle	24300	25-Year	483.32	-7.54	0.53		0.55	0.000061	1.06	455.99	88.87	0.08
Schneider Cana	Middle	24300	50-Year	573.61	-7.54	0.97		0.99	0.000074	1.15	496.83	98.39	0.09
Schneider Cana	Middle	24300	100-Year	665.02	-7.54	1.4		1.43	0.000086	1.23	542.31	110.65	0.1
Schneider Cana	Middle	24200	2-Year	192.23	-7.7	-0.93		-0.92	0.000019	0.54	352.84	77.82	0.05
Schneider Cana	Middle	24200	5-Year	294.49	-7.7	-0.37		-0.36	0.000032	0.74	396.7	80.5	0.06
Schneider Cana	Middle	24200	10-Year	372.96	-7.7	0.07		0.08	0.000039	0.86	432.31	82.61	0.07
Schneider Cana	Middle	24200	25-Year	483.32	-7.7	0.52		0.54	0.000052	1.03	470.76	84.83	0.08
Schneider Cana	Middle	24200	50-Year	573.61	-7.7	0.96		0.98	0.000064	1.13	509.36	94.33	0.09
Schneider Cana	Middle	24200	100-Year	665.02	-7.7	1.4		1.42	0.000079	1.2	553.28	108.24	0.09
Schneider Cana	Middle	24100	2-Year	192.23	-7.78	-0.93		-0.92	0.000016	0.52	367.86	77.69	0.04
Schneider Cana	Middle	24100	5-Year	294.49	-7.78	-0.37		-0.37	0.000028	0.72	411.57	80.35	0.06
Schneider Cana	Middle	24100	10-Year	372.96	-7.78	0.06		0.07	0.000035	0.83	447.06	82.45	0.06
Schneider Cana	Middle	24100	25-Year	483.32	-7.78	0.52		0.54	0.000047	1	485.34	84.65	0.07
Schneider Cana	Middle	24100	50-Year	573.61	-7.78	0.96		0.98	0.000057	1.1	523.31	91.45	0.08
Schneider Cana	Middle	24100	100-Year	665.02	-7.78	1.39		1.41	0.000068	1.18	565.18	102.25	0.09
Schneider Cana	Middle	24000	2-Year	192.23	-7.81	-0.93		-0.92	0.000019	0.55	351.11	76.61	0.05
Schneider Cana	Middle	24000	5-Year	294.49	-7.81	-0.38		-0.37	0.000032	0.75	394.1	79.29	0.06
Schneider Cana	Middle	24000	10-Year	372.96	-7.81	0.06		0.07	0.00004	0.87	429.1	81.66	0.07
Schneider Cana	Middle	24000	25-Year	483.32	-7.81	0.51		0.53	0.000054	1.03	467.26	86.15	0.08
Schneider Cana	Middle	24000	50-Year	573.61	-7.81	0.95		0.97	0.000063	1.13	505.93	91.44	0.08
Schneider Cana	Middle	24000	100-Year	665.02	-7.81	1.38		1.4	0.000075	1.21	547.35	101.32	0.09
Schneider Cana	Middle	23900	2-Year	192.23	-7.84	-0.93		-0.93	0.000021	0.57	335.99	75.49	0.05
Schneider Cana	Middle	23900	5-Year	294.49	-7.84	-0.38		-0.37	0.000036	0.78	378.24	78.2	0.06
Schneider Cana	Middle	23900	10-Year	372.96	-7.84	0.05		0.06	0.000045	0.9	412.87	81.91	0.07
Schneider Cana	Middle	23900	25-Year	483.32	-7.84	0.51		0.52	0.000061	1.07	451.32	87.16	0.08
Schneider Cana	Middle	23900	50-Year	573.61	-7.84	0.94		0.96	0.000071	1.17	490.27	92.17	0.09
Schneider Cana	Middle	23900	100-Year	665.02	-7.84	1.37		1.4	0.00008	1.25	531.15	99.09	0.1

HEC-RAS Output - Alternative 2

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Middle	23800	2-Year	192.23	-7.86	-0.93		-0.93	0.000024	0.6	322.3	74.31	0.05
Schneider Cana	Middle	23800	5-Year	294.49	-7.86	-0.39		-0.38	0.00004	0.81	364	78.36	0.07
Schneider Cana	Middle	23800	10-Year	372.96	-7.86	0.05		0.06	0.000051	0.94	398.74	82.23	0.07
Schneider Cana	Middle	23800	25-Year	483.32	-7.86	0.5		0.52	0.000068	1.11	436.96	86.85	0.09
Schneider Cana	Middle	23800	50-Year	573.61	-7.86	0.93		0.96	0.000078	1.21	475.7	91.99	0.09
Schneider Cana	Middle	23800	100-Year	665.02	-7.86	1.36		1.39	0.000086	1.29	516.27	97.26	0.1
Schneider Cana	Middle	23700	2-Year	192.23	-7.89	-0.94	-6.01	-0.93	0.000027	0.62	310.83	73.85	0.05
Schneider Cana	Middle	23700	5-Year	294.49	-7.89	-0.39	-5.61	-0.38	0.000045	0.84	352.38	78.36	0.07
Schneider Cana	Middle	23700	10-Year	372.96	-7.89	0.04	-5.34	0.05	0.000056	0.96	386.96	81.92	0.08
Schneider Cana	Middle	23700	25-Year	483.32	-7.89	0.49	-5.02	0.51	0.000073	1.14	424.73	85.66	0.09
Schneider Cana	Middle	23700	50-Year	573.61	-7.89	0.92	-4.8	0.95	0.000084	1.24	462.85	90.9	0.1
Schneider Cana	Middle	23700	100-Year	665.02	-7.89	1.35	-4.58	1.38	0.000092	1.32	502.88	96.22	0.1
Schneider Cana	Middle	23600	2-Year	192.23	-7.92	-0.94		-0.93	0.00003	0.64	301.49	73.51	0.06
Schneider Cana	Middle	23600	5-Year	294.49	-7.92	-0.4		-0.39	0.000049	0.86	342.62	77.75	0.07
Schneider Cana	Middle	23600	10-Year	372.96	-7.92	0.03		0.05	0.000061	0.99	376.79	81.1	0.08
Schneider Cana	Middle	23600	25-Year	483.32	-7.92	0.48		0.5	0.000079	1.17	413.99	84.81	0.09
Schneider Cana	Middle	23600	50-Year	573.61	-7.92	0.91		0.94	0.000089	1.27	451.37	89.04	0.1
Schneider Cana	Middle	23600	100-Year	665.02	-7.92	1.34		1.37	0.000098	1.36	490.55	94.55	0.1
Schneider Cana	Middle	23500	2-Year	192.23	-7.95	-0.94		-0.94	0.000032	0.65	294.32	72.55	0.06
Schneider Cana	Middle	23500	5-Year	294.49	-7.95	-0.4		-0.39	0.000052	0.88	334.72	76.61	0.07
Schneider Cana	Middle	23500	10-Year	372.96	-7.95	0.03		0.04	0.000064	1.01	368.26	79.89	0.08
Schneider Cana	Middle	23500	25-Year	483.32	-7.95	0.47		0.5	0.000083	1.19	404.76	83.62	0.1
Schneider Cana	Middle	23500	50-Year	573.61	-7.95	0.9		0.93	0.000093	1.3	441.47	87.22	0.1
Schneider Cana	Middle	23500	100-Year	665.02	-7.95	1.33		1.36	0.000102	1.39	479.55	92.2	0.11
Schneider Cana	Middle	23400	2-Year	192.23	-7.97	-0.95		-0.94	0.000032	0.66	289.3	70.82	0.06
Schneider Cana	Middle	23400	5-Year	294.49	-7.97	-0.41		-0.4	0.000054	0.9	328.66	75	0.08
Schneider Cana	Middle	23400	10-Year	372.96	-7.97	0.02		0.04	0.000067	1.03	361.44	78.47	0.08
Schneider Cana	Middle	23400	25-Year	483.32	-7.97	0.46		0.49	0.000087	1.22	397.12	82.18	0.1
Schneider Cana	Middle	23400	50-Year	573.61	-7.97	0.89		0.92	0.000097	1.32	433.1	85.75	0.1
Schneider Cana	Middle	23400	100-Year	665.02	-7.97	1.32		1.35	0.000105	1.41	470.27	89.29	0.11
Schneider Cana	Middle	23300	2-Year	192.23	-8	-0.95		-0.94	0.000032	0.67	287.14	68.37	0.06
Schneider Cana	Middle	23300	5-Year	294.49	-8	-0.41		-0.4	0.000054	0.91	325	72.75	0.08
Schneider Cana	Middle	23300	10-Year	372.96	-8	0.01		0.03	0.000067	1.05	356.78	76.52	0.09
Schneider Cana	Middle	23300	25-Year	483.32	-8	0.45		0.48	0.000089	1.23	391.43	80.3	0.1
Schneider Cana	Middle	23300	50-Year	573.61	-8	0.88		0.91	0.0001	1.34	426.52	83.96	0.11
Schneider Cana	Middle	23300	100-Year	665.02	-8	1.3		1.34	0.000108	1.44	462.86	87.58	0.11
Schneider Cana	Middle	23200	2-Year	192.23	-8.18	-0.95		-0.95	0.000031	0.67	287.29	66.4	0.06
Schneider Cana	Middle	23200	5-Year	294.49	-8.18	-0.42		-0.41	0.000052	0.91	323.91	70.69	0.07
Schneider Cana	Middle	23200	10-Year	372.96	-8.18	0.01		0.02	0.000066	1.05	354.65	74.2	0.08
Schneider Cana	Middle	23200	25-Year	483.32	-8.18	0.44		0.47	0.000088	1.25	388.05	77.84	0.1
Schneider Cana	Middle	23200	50-Year	573.61	-8.18	0.87		0.9	0.000099	1.36	421.98	81.52	0.11
Schneider Cana	Middle	23200	100-Year	665.02	-8.18	1.29		1.33	0.000109	1.45	457.25	85.41	0.11
Schneider Cana	Middle	23100	2-Year	192.23	-8.04	-0.96		-0.95	0.000022	0.59	325.8	70.75	0.05
Schneider Cana	Middle	23100	5-Year	294.49	-8.04	-0.42		-0.41	0.000037	0.81	364.05	72.41	0.06
Schneider Cana	Middle	23100	10-Year	372.96	-8.04	0		0.02	0.000046	0.94	394.97	73.57	0.07
Schneider Cana	Middle	23100	25-Year	483.32	-8.04	0.44		0.46	0.000062	1.13	427.53	75.23	0.08
Schneider Cana	Middle	23100	50-Year	573.61	-8.04	0.87		0.89	0.000071	1.25	459.95	77.31	0.09
Schneider Cana	Middle	23100	100-Year	665.02	-8.04	1.29		1.32	0.000078	1.35	493	79.38	0.1
Schneider Cana	Middle	23000	2-Year	192.23	-8.06	-0.96		-0.95	0.000022	0.59	328.37	71.92	0.05
Schneider Cana	Middle	23000	5-Year	294.49	-8.06	-0.43		-0.42	0.000036	0.8	367.13	73.63	0.06
Schneider Cana	Middle	23000	10-Year	372.96	-8.06	0		0.01	0.000046	0.94	398.64	75.42	0.07
Schneider Cana	Middle	23000	25-Year	483.32	-8.06	0.43		0.45	0.000061	1.12	431.99	77.27	0.08
Schneider Cana	Middle	23000	50-Year	573.61	-8.06	0.86		0.88	0.00007	1.23	465.16	79.07	0.09
Schneider Cana	Middle	23000	100-Year	665.02	-8.06	1.28		1.31	0.000077	1.33	498.83	80.85	0.09
Schneider Cana	Middle	22900	2-Year	192.23	-8.08	-0.96		-0.95	0.000022	0.58	331.49	73.28	0.05
Schneider Cana	Middle	22900	5-Year	294.49	-8.08	-0.43		-0.42	0.000036	0.79	371.03	75.54	0.06

HEC-RAS Output - Alternative 2

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Middle	22900	10-Year	372.96	-8.08	-0.01		0.01	0.000046	0.92	403.24	77.16	0.07
Schneider Cana	Middle	22900	25-Year	483.32	-8.08	0.43		0.45	0.000061	1.11	437.2	78.84	0.08
Schneider Cana	Middle	22900	50-Year	573.61	-8.08	0.85		0.88	0.000069	1.22	470.95	80.47	0.09
Schneider Cana	Middle	22900	100-Year	665.02	-8.08	1.27		1.3	0.000075	1.32	505.13	82.1	0.09
Schneider Cana	Middle	22800	2-Year	192.23	-8.09	-0.96		-0.96	0.000021	0.57	335.61	74.97	0.05
Schneider Cana	Middle	22800	5-Year	294.49	-8.09	-0.43		-0.42	0.000036	0.78	375.92	77.11	0.06
Schneider Cana	Middle	22800	10-Year	372.96	-8.09	-0.01		0	0.000045	0.91	408.71	78.63	0.07
Schneider Cana	Middle	22800	25-Year	483.32	-8.09	0.42		0.44	0.000059	1.09	443.18	80.2	0.08
Schneider Cana	Middle	22800	50-Year	573.61	-8.09	0.85		0.87	0.000067	1.2	477.41	81.72	0.09
Schneider Cana	Middle	22800	100-Year	665.02	-8.09	1.27		1.29	0.000073	1.3	512.05	83.24	0.09
Schneider Cana	Middle	22700	2-Year	192.23	-8.11	-0.96		-0.96	0.000021	0.56	340.73	76.46	0.05
Schneider Cana	Middle	22700	5-Year	294.49	-8.11	-0.44		-0.43	0.000035	0.77	381.7	78.49	0.06
Schneider Cana	Middle	22700	10-Year	372.96	-8.11	-0.02		0	0.000043	0.9	414.98	79.94	0.07
Schneider Cana	Middle	22700	25-Year	483.32	-8.11	0.42		0.44	0.000057	1.07	449.9	81.43	0.08
Schneider Cana	Middle	22700	50-Year	573.61	-8.11	0.84		0.86	0.000065	1.18	484.58	82.88	0.09
Schneider Cana	Middle	22700	100-Year	665.02	-8.11	1.26		1.28	0.000072	1.28	519.72	85.43	0.09
Schneider Cana	Middle	22600	2-Year	192.23	-8.13	-0.97		-0.96	0.00002	0.55	346.55	77.77	0.05
Schneider Cana	Middle	22600	5-Year	294.49	-8.13	-0.44		-0.43	0.000034	0.76	388.1	79.75	0.06
Schneider Cana	Middle	22600	10-Year	372.96	-8.13	-0.02		-0.01	0.000042	0.88	421.84	81.14	0.07
Schneider Cana	Middle	22600	25-Year	483.32	-8.13	0.41		0.43	0.000055	1.06	457.16	82.56	0.08
Schneider Cana	Middle	22600	50-Year	573.61	-8.13	0.83		0.85	0.000062	1.17	492.25	83.96	0.08
Schneider Cana	Middle	22600	100-Year	665.02	-8.13	1.25		1.28	0.00007	1.26	528.03	87.52	0.09
Schneider Cana	Middle	22500	2-Year	192.23	-8.14	-0.97		-0.96	0.000019	0.54	352.73	79.01	0.05
Schneider Cana	Middle	22500	5-Year	294.49	-8.14	-0.44		-0.43	0.000032	0.75	394.82	80.94	0.06
Schneider Cana	Middle	22500	10-Year	372.96	-8.14	-0.02		-0.01	0.00004	0.87	428.99	82.29	0.07
Schneider Cana	Middle	22500	25-Year	483.32	-8.14	0.41		0.42	0.000053	1.04	464.69	83.67	0.08
Schneider Cana	Middle	22500	50-Year	573.61	-8.14	0.83		0.85	0.00006	1.15	500.2	85.28	0.08
Schneider Cana	Middle	22500	100-Year	665.02	-8.14	1.25		1.27	0.000069	1.24	536.72	89.51	0.09
Schneider Cana	Middle	22400	2-Year	192.23	-8.16	-0.97	-6.21	-0.96	0.000018	0.53	359.76	80.17	0.04
Schneider Cana	Middle	22400	5-Year	294.49	-8.16	-0.44	-5.86	-0.44	0.000031	0.73	402.37	82.08	0.06
Schneider Cana	Middle	22400	10-Year	372.96	-8.16	-0.03	-5.64	-0.02	0.000039	0.85	436.95	83.39	0.07
Schneider Cana	Middle	22400	25-Year	483.32	-8.16	0.4	-5.37	0.42	0.000051	1.02	473.01	84.73	0.08
Schneider Cana	Middle	22400	50-Year	573.61	-8.16	0.82	-5.18	0.84	0.000059	1.13	509.02	87.33	0.08
Schneider Cana	Middle	22400	100-Year	665.02	-8.16	1.24	-5.01	1.26	0.00007	1.22	546.77	95.06	0.09
Schneider Cana	Middle	22300	2-Year	192.23	-8.18	-0.97	-6.24	-0.97	0.000017	0.52	367.5	81.33	0.04
Schneider Cana	Middle	22300	5-Year	294.49	-8.18	-0.45	-5.9	-0.44	0.000029	0.72	410.6	83.18	0.06
Schneider Cana	Middle	22300	10-Year	372.96	-8.18	-0.03	-5.7	-0.02	0.000037	0.84	445.58	84.46	0.06
Schneider Cana	Middle	22300	25-Year	483.32	-8.18	0.4	-5.46	0.41	0.000049	1	482	85.77	0.07
Schneider Cana	Middle	22300	50-Year	573.61	-8.18	0.82	-5.27	0.84	0.000059	1.11	518.99	92.3	0.08
Schneider Cana	Middle	22300	100-Year	665.02	-8.18	1.23	-5.1	1.26	0.00007	1.19	559.33	101.55	0.09
Schneider Cana	Middle	22200	2-Year	192.23	-8.19	-0.97		-0.97	0.000017	0.51	375.5	82.39	0.04
Schneider Cana	Middle	22200	5-Year	294.49	-8.19	-0.45		-0.44	0.000028	0.7	419.07	84.23	0.06
Schneider Cana	Middle	22200	10-Year	372.96	-8.19	-0.03		-0.02	0.000035	0.82	454.43	85.49	0.06
Schneider Cana	Middle	22200	25-Year	483.32	-8.19	0.39		0.41	0.000048	0.98	491.47	89.69	0.07
Schneider Cana	Middle	22200	50-Year	573.61	-8.19	0.81		0.83	0.000059	1.08	530.82	98.37	0.08
Schneider Cana	Middle	22200	100-Year	665.02	-8.19	1.23		1.25	0.000069	1.16	573.47	106.99	0.09
Schneider Cana	Middle	22100	2-Year	192.23	-8.21	-0.97	-6.53	-0.97	0.000016	0.5	383.94	83.45	0.04
Schneider Cana	Middle	22100	5-Year	294.49	-8.21	-0.45	-6.21	-0.45	0.000026	0.69	427.97	85.27	0.05
Schneider Cana	Middle	22100	10-Year	372.96	-8.21	-0.04	-5.99	-0.03	0.000034	0.8	463.86	88.36	0.06
Schneider Cana	Middle	22100	25-Year	483.32	-8.21	0.39	-5.72	0.4	0.000048	0.96	502.86	95.54	0.07
Schneider Cana	Middle	22100	50-Year	573.61	-8.21	0.81	-5.52	0.82	0.000058	1.05	544.47	103.73	0.08
Schneider Cana	Middle	22100	100-Year	665.02	-8.21	1.22	-5.33	1.24	0.000066	1.13	589.13	123.86	0.09
Schneider Cana	Middle	22000	2-Year	192.23	-8.23	-0.98	-6.76	-0.97	0.000015	0.49	393.21	84.52	0.04
Schneider Cana	Middle	22000	5-Year	294.49	-8.23	-0.45	-6.42	-0.45	0.000025	0.67	437.83	87.84	0.05
Schneider Cana	Middle	22000	10-Year	372.96	-8.23	-0.04	-6.19	-0.03	0.000034	0.78	475.41	93.13	0.06
Schneider Cana	Middle	22000	25-Year	483.32	-8.23	0.38	-5.91	0.4	0.000047	0.94	516.5	100.75	0.07

HEC-RAS Output - Alternative 2

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Middle	22000	50-Year	573.61	-8.23	0.8	-5.7	0.82	0.000056	1.02	560.1	108.45	0.08
Schneider Cana	Middle	22000	100-Year	665.02	-8.23	1.22	-5.51	1.23	0.000061	1.1	608.93	127.55	0.08
Schneider Cana	Middle	21900	2-Year	192.23	-8.29	-0.98	-6.92	-0.97	0.000014	0.48	404.16	87.22	0.04
Schneider Cana	Middle	21900	5-Year	294.49	-8.29	-0.46	-6.58	-0.45	0.000024	0.65	450.41	90.9	0.05
Schneider Cana	Middle	21900	10-Year	372.96	-8.29	-0.04	-6.35	-0.03	0.000031	0.76	488.72	93.85	0.06
Schneider Cana	Middle	21900	25-Year	483.32	-8.29	0.38	-6.06	0.39	0.000042	0.91	529.28	97.91	0.07
Schneider Cana	Middle	21900	50-Year	573.61	-8.29	0.8	-5.85	0.81	0.000049	1	570.86	107.2	0.07
Schneider Cana	Middle	21900	100-Year	665.02	-8.29	1.21	-5.65	1.23	0.000056	1.08	614.47	142.46	0.08
Schneider Cana	Middle	21800	2-Year	192.23	-8.48	-0.98	-6.86	-0.97	0.000015	0.5	385.75	80.22	0.04
Schneider Cana	Middle	21800	5-Year	294.49	-8.48	-0.46	-6.51	-0.45	0.000025	0.69	427.88	82.48	0.05
Schneider Cana	Middle	21800	10-Year	372.96	-8.48	-0.05	-6.29	-0.04	0.000032	0.81	462.37	84.29	0.06
Schneider Cana	Middle	21800	25-Year	483.32	-8.48	0.37	-6	0.39	0.000044	0.97	498.28	86.15	0.07
Schneider Cana	Middle	21800	50-Year	573.61	-8.48	0.79	-5.79	0.81	0.000051	1.07	534.61	93.76	0.08
Schneider Cana	Middle	21800	100-Year	665.02	-8.48	1.2	-5.59	1.22	0.000056	1.16	578.4	111.07	0.08
Schneider Cana	Middle	21700	2-Year	192.23	-8.68	-0.98	-6.83	-0.98	0.000017	0.51	376.87	84.18	0.04
Schneider Cana	Middle	21700	5-Year	294.49	-8.68	-0.46	-6.49	-0.46	0.00003	0.7	421.95	90.25	0.06
Schneider Cana	Middle	21700	10-Year	372.96	-8.68	-0.05	-6.27	-0.04	0.000038	0.81	460.12	94.63	0.06
Schneider Cana	Middle	21700	25-Year	483.32	-8.68	0.37	-5.98	0.38	0.000051	0.97	500.84	99.08	0.08
Schneider Cana	Middle	21700	50-Year	573.61	-8.68	0.78	-5.78	0.8	0.000059	1.06	542.8	103.56	0.08
Schneider Cana	Middle	21700	100-Year	665.02	-8.68	1.2	-5.59	1.22	0.000065	1.13	586.59	108.97	0.09
Schneider Cana	Middle	21600	2-Year	192.23	-8.87	-0.98	-6.89	-0.98	0.000017	0.53	363.3	77.85	0.04
Schneider Cana	Middle	21600	5-Year	294.49	-8.87	-0.47	-6.52	-0.46	0.000031	0.73	404.78	83.23	0.06
Schneider Cana	Middle	21600	10-Year	372.96	-8.87	-0.06	-6.29	-0.04	0.00004	0.85	439.93	87.53	0.07
Schneider Cana	Middle	21600	25-Year	483.32	-8.87	0.36	-6.02	0.38	0.000055	1.01	477.41	91.47	0.08
Schneider Cana	Middle	21600	50-Year	573.61	-8.87	0.78	-5.82	0.8	0.000063	1.11	515.96	95.2	0.08
Schneider Cana	Middle	21600	100-Year	665.02	-8.87	1.19	-5.64	1.21	0.000069	1.2	555.85	100.39	0.09
Schneider Cana	Middle	21500	2-Year	192.23	-9.06	-0.98	-7	-0.98	0.000018	0.54	352.73	72.65	0.04
Schneider Cana	Middle	21500	5-Year	294.49	-9.06	-0.47	-6.62	-0.46	0.000031	0.75	390.85	75.9	0.06
Schneider Cana	Middle	21500	10-Year	372.96	-9.06	-0.06	-6.39	-0.05	0.00004	0.88	422.54	78.5	0.07
Schneider Cana	Middle	21500	25-Year	483.32	-9.06	0.36	-6.11	0.37	0.000055	1.06	455.77	81.13	0.08
Schneider Cana	Middle	21500	50-Year	573.61	-9.06	0.77	-5.91	0.79	0.000063	1.17	489.69	83.56	0.09
Schneider Cana	Middle	21500	100-Year	665.02	-9.06	1.18	-5.72	1.2	0.00007	1.27	524.32	85.54	0.09
Schneider Cana	Lower	21400	2-Year	236	-9.26	-0.99	-6.99	-0.98	0.000027	0.69	344.32	69.33	0.05
Schneider Cana	Lower	21400	5-Year	360	-9.26	-0.48	-6.59	-0.46	0.000049	0.95	380.67	73.5	0.07
Schneider Cana	Lower	21400	10-Year	458	-9.26	-0.07	-6.33	-0.05	0.000065	1.11	411.49	77.67	0.09
Schneider Cana	Lower	21400	25-Year	594	-9.26	0.34	-5.99	0.37	0.000091	1.34	444.37	81.88	0.1
Schneider Cana	Lower	21400	50-Year	709	-9.26	0.75	-5.73	0.78	0.000108	1.48	478.66	102.79	0.11
Schneider Cana	Lower	21400	100-Year	824	-9.26	1.16	-5.5	1.2	0.000122	1.6	514.52	118.77	0.12
Schneider Cana	Lower	21300	2-Year	236	-9.45	-0.99	-7.2	-0.98	0.000027	0.7	337.48	66.09	0.05
Schneider Cana	Lower	21300	5-Year	360	-9.45	-0.48	-6.79	-0.47	0.000049	0.97	371.93	69.71	0.07
Schneider Cana	Lower	21300	10-Year	458	-9.45	-0.08	-6.51	-0.06	0.000065	1.14	400.92	75.71	0.09
Schneider Cana	Lower	21300	25-Year	594	-9.45	0.33	-6.16	0.36	0.000088	1.38	435.65	111.14	0.1
Schneider Cana	Lower	21300	50-Year	709	-9.45	0.74	-5.89	0.77	0.000101	1.53	486.8	124.46	0.11
Schneider Cana	Lower	21300	100-Year	824	-9.45	1.14	-5.64	1.19	0.00011	1.64	538.24	128.78	0.11
Schneider Cana	Lower	21200	2-Year	236	-9.64	-0.99	-7.43	-0.99	0.000027	0.71	332.01	63.08	0.05
Schneider Cana	Lower	21200	5-Year	360	-9.64	-0.49	-7.01	-0.47	0.00005	0.99	364.73	66.55	0.07
Schneider Cana	Lower	21200	10-Year	458	-9.64	-0.09	-6.72	-0.06	0.000067	1.17	392.15	69.32	0.09
Schneider Cana	Lower	21200	25-Year	594	-9.64	0.32	-6.36	0.35	0.000094	1.41	420.85	72.13	0.1
Schneider Cana	Lower	21200	50-Year	709	-9.64	0.72	-6.08	0.76	0.000113	1.57	450.68	75.52	0.11
Schneider Cana	Lower	21200	100-Year	824	-9.64	1.13	-5.82	1.17	0.00013	1.71	481.81	78.9	0.12
Schneider Cana	Lower	21100	2-Year	236	-9.84	-1	-7.68	-0.99	0.000027	0.72	328.37	60.28	0.05
Schneider Cana	Lower	21100	5-Year	360	-9.84	-0.49	-7.26	-0.48	0.00005	1	359.48	63.61	0.07
Schneider Cana	Lower	21100	10-Year	458	-9.84	-0.09	-6.95	-0.07	0.000068	1.19	385.56	66.27	0.09
Schneider Cana	Lower	21100	25-Year	594	-9.84	0.31	-6.58	0.34	0.000095	1.44	412.78	68.95	0.1
Schneider Cana	Lower	21100	50-Year	709	-9.84	0.71	-6.3	0.75	0.000114	1.61	441.54	75.67	0.11
Schneider Cana	Lower	21100	100-Year	824	-9.84	1.11	-6.03	1.16	0.000128	1.75	472.59	78.54	0.12

HEC-RAS Output - Alternative 2

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Lower	21000	2-Year	236	-9.45	-1	-7.36	-0.99	0.000031	0.73	324.62	65.84	0.06
Schneider Cana	Lower	21000	5-Year	360	-9.45	-0.5	-6.92	-0.48	0.000055	1.01	358.2	68.45	0.08
Schneider Cana	Lower	21000	10-Year	458	-9.45	-0.1	-6.62	-0.08	0.000072	1.19	385.99	70.54	0.09
Schneider Cana	Lower	21000	25-Year	594	-9.45	0.3	-6.25	0.33	0.0001	1.43	414.63	72.62	0.11
Schneider Cana	Lower	21000	50-Year	709	-9.45	0.7	-5.96	0.74	0.000118	1.6	444.09	74.71	0.12
Schneider Cana	Lower	21000	100-Year	824	-9.45	1.1	-5.69	1.15	0.000131	1.74	476.73	86.82	0.12
Lateral Canal	South	12247.75	2-Year	82.23	-1.94	0.1	-0.43	0.21	0.00321	2.71	30.35	28.61	0.46
Lateral Canal	South	12247.75	5-Year	124.49	-1.94	0.78	-0.16	0.87	0.001491	2.44	50.94	31.2	0.34
Lateral Canal	South	12247.75	10-Year	155.96	-1.94	1.27	0	1.35	0.001038	2.35	66.48	32.75	0.29
Lateral Canal	South	12247.75	25-Year	201.32	-1.94	1.87	0.2	1.95	0.000775	2.32	86.8	34.66	0.26
Lateral Canal	South	12247.75	50-Year	235.61	-1.94	2.36	0.33	2.44	0.00062	2.26	104.05	36.2	0.24
Lateral Canal	South	12247.75	100-Year	273.02	-1.94	2.87	0.46	2.95	0.000502	2.22	123.04	37.35	0.22
Lateral Canal	South	12200	2-Year	82.23	-2.76	0.05	-1.38	0.12	0.000923	2.07	39.8	20.71	0.26
Lateral Canal	South	12200	5-Year	124.49	-2.76	0.74	-1.05	0.82	0.000876	2.26	55.02	23.92	0.26
Lateral Canal	South	12200	10-Year	155.96	-2.76	1.22	-0.82	1.31	0.000797	2.32	67.28	26.24	0.26
Lateral Canal	South	12200	25-Year	201.32	-2.76	1.83	-0.54	1.92	0.000733	2.4	83.95	29.15	0.25
Lateral Canal	South	12200	50-Year	235.61	-2.76	2.32	-0.34	2.4	0.00068	2.38	99.18	33.08	0.24
Lateral Canal	South	12200	100-Year	273.02	-2.76	2.84	-0.15	2.92	0.000606	2.32	117.52	42.39	0.23
Lateral Canal	South	12150	2-Year	82.23	-2.33	0.01	-1.27	0.07	0.000948	2.07	39.64	21.48	0.27
Lateral Canal	South	12150	5-Year	124.49	-2.33	0.69	-0.96	0.77	0.00085	2.25	55.37	24.27	0.26
Lateral Canal	South	12150	10-Year	155.96	-2.33	1.19	-0.77	1.27	0.000759	2.3	67.83	26.27	0.25
Lateral Canal	South	12150	25-Year	201.32	-2.33	1.79	-0.51	1.88	0.00069	2.38	84.47	28.73	0.24
Lateral Canal	South	12150	50-Year	235.61	-2.33	2.28	-0.33	2.37	0.0006	2.38	99.01	30.2	0.23
Lateral Canal	South	12150	100-Year	273.02	-2.33	2.81	-0.14	2.89	0.000521	2.37	115.11	36.21	0.22
Lateral Canal	South	12095		Pedestrian Walkway Bridge									
Lateral Canal	South	12000	2-Year	82.23	-2.88	-0.35	-1.9	-0.31	0.000572	1.71	48.19	24.12	0.21
Lateral Canal	South	12000	5-Year	124.49	-2.88	0.37	-1.61	0.43	0.000522	1.87	66.67	27.01	0.21
Lateral Canal	South	12000	10-Year	155.96	-2.88	0.89	-1.43	0.95	0.00047	1.92	81.23	29.08	0.2
Lateral Canal	South	12000	25-Year	201.32	-2.88	1.5	-1.17	1.56	0.000444	2.02	99.67	31.52	0.2
Lateral Canal	South	12000	50-Year	235.61	-2.88	2.01	-1	2.08	0.000396	2.02	116.4	33.57	0.19
Lateral Canal	South	12000	100-Year	273.02	-2.88	2.55	-0.83	2.62	0.000353	2.02	135.08	35.73	0.18
Lateral Canal	South	11900	2-Year	82.23	-3.06	-0.4	-2.08	-0.36	0.000476	1.6	51.41	24.64	0.2
Lateral Canal	South	11900	5-Year	124.49	-3.06	0.33	-1.79	0.38	0.000448	1.77	70.36	27.55	0.2
Lateral Canal	South	11900	10-Year	155.96	-3.06	0.85	-1.6	0.9	0.00041	1.83	85.34	29.64	0.19
Lateral Canal	South	11900	25-Year	201.32	-3.06	1.46	-1.36	1.52	0.000392	1.93	104.19	32.09	0.19
Lateral Canal	South	11900	50-Year	235.61	-3.06	1.98	-1.18	2.04	0.000353	1.94	121.35	34.16	0.18
Lateral Canal	South	11900	100-Year	273.02	-3.06	2.52	-1.01	2.58	0.000317	1.94	140.49	36.33	0.17
Lateral Canal	South	11800	2-Year	82.23	-3.24	-0.44	-2.26	-0.4	0.000394	1.5	54.9	25.2	0.18
Lateral Canal	South	11800	5-Year	124.49	-3.24	0.29	-1.97	0.33	0.000385	1.68	74.32	28.12	0.18
Lateral Canal	South	11800	10-Year	155.96	-3.24	0.82	-1.78	0.86	0.000357	1.74	89.69	30.22	0.18
Lateral Canal	South	11800	25-Year	201.32	-3.24	1.43	-1.53	1.48	0.000347	1.85	108.93	32.67	0.18
Lateral Canal	South	11800	50-Year	235.61	-3.24	1.95	-1.36	2	0.000315	1.86	126.52	34.76	0.17
Lateral Canal	South	11800	100-Year	273.02	-3.24	2.5	-1.19	2.55	0.000285	1.87	146.09	36.94	0.17
Lateral Canal	South	11700	2-Year	82.23	-3.42	-0.47	-2.44	-0.44	0.000327	1.4	58.66	25.79	0.16
Lateral Canal	South	11700	5-Year	124.49	-3.42	0.26	-2.16	0.3	0.00033	1.59	78.51	28.71	0.17
Lateral Canal	South	11700	10-Year	155.96	-3.42	0.79	-1.96	0.83	0.000311	1.65	94.26	30.82	0.17
Lateral Canal	South	11700	25-Year	201.32	-3.42	1.4	-1.72	1.45	0.000307	1.77	113.9	33.27	0.17
Lateral Canal	South	11700	50-Year	235.61	-3.42	1.92	-1.54	1.97	0.000281	1.79	131.89	35.37	0.16
Lateral Canal	South	11700	100-Year	273.02	-3.42	2.47	-1.37	2.52	0.000256	1.8	151.9	37.57	0.16
Lateral Canal	South	11600	2-Year	82.23	-3.6	-0.5	-2.62	-0.47	0.000271	1.31	62.65	26.4	0.15
Lateral Canal	South	11600	5-Year	124.49	-3.6	0.23	-2.33	0.26	0.000283	1.5	82.93	29.32	0.16
Lateral Canal	South	11600	10-Year	155.96	-3.6	0.76	-2.14	0.8	0.000271	1.57	99.05	31.44	0.16
Lateral Canal	South	11600	25-Year	201.32	-3.6	1.37	-1.89	1.42	0.000271	1.69	119.07	33.89	0.16
Lateral Canal	South	11600	50-Year	235.61	-3.6	1.9	-1.72	1.94	0.00025	1.71	137.47	36	0.15
Lateral Canal	South	11600	100-Year	273.02	-3.6	2.45	-1.54	2.5	0.00023	1.73	157.9	38.2	0.15

HEC-RAS Output - Alternative 2

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Lateral Canal	South	11500	2-Year	82.23	-3.78	-0.52	-2.81	-0.5	0.000226	1.23	66.86	27.03	0.14
Lateral Canal	South	11500	5-Year	124.49	-3.78	0.21	-2.51	0.24	0.000243	1.42	87.56	29.94	0.15
Lateral Canal	South	11500	10-Year	155.96	-3.78	0.74	-2.32	0.77	0.000236	1.5	104.05	32.07	0.15
Lateral Canal	South	11500	25-Year	201.32	-3.78	1.35	-2.07	1.39	0.00024	1.62	124.45	34.52	0.15
Lateral Canal	South	11500	50-Year	235.61	-3.78	1.88	-1.9	1.92	0.000224	1.64	143.24	36.63	0.15
Lateral Canal	South	11500	100-Year	273.02	-3.78	2.43	-1.73	2.47	0.000207	1.66	164.09	38.84	0.14
Lateral Canal	South	11400	2-Year	82.23	-3.96	-0.54	-2.99	-0.52	0.000189	1.15	71.27	27.68	0.13
Lateral Canal	South	11400	5-Year	124.49	-3.96	0.19	-2.7	0.21	0.000209	1.35	92.4	30.58	0.14
Lateral Canal	South	11400	10-Year	155.96	-3.96	0.72	-2.51	0.75	0.000207	1.43	109.23	32.71	0.14
Lateral Canal	South	11400	25-Year	201.32	-3.96	1.33	-2.25	1.37	0.000213	1.55	130.01	35.16	0.14
Lateral Canal	South	11400	50-Year	235.61	-3.96	1.86	-2.08	1.9	0.0002	1.58	149.19	37.28	0.14
Lateral Canal	South	11400	100-Year	273.02	-3.96	2.41	-1.91	2.45	0.000187	1.6	170.45	39.49	0.14
Lateral Canal	South	11300	2-Year	82.23	-4.14	-0.56	-3.16	-0.54	0.000158	1.08	75.88	28.34	0.12
Lateral Canal	South	11300	5-Year	124.49	-4.14	0.17	-2.87	0.19	0.000181	1.28	97.42	31.23	0.13
Lateral Canal	South	11300	10-Year	155.96	-4.14	0.7	-2.68	0.73	0.000181	1.36	114.61	33.36	0.13
Lateral Canal	South	11300	25-Year	201.32	-4.14	1.31	-2.43	1.35	0.000189	1.48	135.76	35.81	0.13
Lateral Canal	South	11300	50-Year	235.61	-4.14	1.84	-2.26	1.88	0.000179	1.52	155.33	37.93	0.13
Lateral Canal	South	11300	100-Year	273.02	-4.14	2.4	-2.09	2.43	0.000169	1.54	177	40.15	0.13
Lateral Canal	South	11200	2-Year	82.23	-4.32	-0.57	-3.34	-0.55	0.000133	1.02	80.66	29.01	0.11
Lateral Canal	South	11200	5-Year	124.49	-4.32	0.15	-3.05	0.18	0.000156	1.21	102.63	31.89	0.12
Lateral Canal	South	11200	10-Year	155.96	-4.32	0.68	-2.86	0.71	0.000159	1.3	120.16	34.02	0.12
Lateral Canal	South	11200	25-Year	201.32	-4.32	1.3	-2.62	1.33	0.000168	1.42	141.69	36.46	0.13
Lateral Canal	South	11200	50-Year	235.61	-4.32	1.83	-2.44	1.86	0.000161	1.46	161.64	38.59	0.13
Lateral Canal	South	11200	100-Year	273.02	-4.32	2.38	-2.27	2.42	0.000152	1.49	183.71	40.81	0.12
Lateral Canal	South	11100	2-Year	82.23	-4.5	-0.58	-3.53	-0.57	0.000113	0.96	85.62	29.68	0.1
Lateral Canal	South	11100	5-Year	124.49	-4.5	0.14	-3.24	0.16	0.000136	1.15	108.01	32.56	0.11
Lateral Canal	South	11100	10-Year	155.96	-4.5	0.67	-3.04	0.7	0.00014	1.24	125.89	34.69	0.11
Lateral Canal	South	11100	25-Year	201.32	-4.5	1.28	-2.8	1.31	0.00015	1.36	147.8	44.21	0.12
Lateral Canal	South	11100	50-Year	235.61	-4.5	1.81	-2.63	1.84	0.000144	1.4	168.12	60.62	0.12
Lateral Canal	South	11100	100-Year	273.02	-4.5	2.37	-2.45	2.4	0.000138	1.43	190.59	69.93	0.12
Lateral Canal	South	11000	2-Year	144.23	-4.68	-0.63	-3.29	-0.59	0.000306	1.61	89.56	30.21	0.16
Lateral Canal	South	11000	5-Year	221.49	-4.68	0.07	-2.87	0.13	0.000393	1.98	111.63	33	0.19
Lateral Canal	South	11000	10-Year	280.96	-4.68	0.59	-2.59	0.66	0.000421	2.17	129.35	35.08	0.2
Lateral Canal	South	11000	25-Year	362.32	-4.68	1.19	-2.25	1.28	0.000458	2.4	150.96	37.47	0.21
Lateral Canal	South	11000	50-Year	428.61	-4.68	1.71	-1.99	1.81	0.000455	2.5	171.22	39.57	0.21
Lateral Canal	South	11000	100-Year	497.02	-4.68	2.27	-1.75	2.37	0.000437	2.57	193.75	41.79	0.21
Lateral Canal	South	10900	2-Year	144.23	-4.86	-0.65	-3.47	-0.62	0.000266	1.53	94.26	30.82	0.15
Lateral Canal	South	10900	5-Year	221.49	-4.86	0.04	-3.06	0.09	0.000349	1.9	116.51	33.59	0.18
Lateral Canal	South	10900	10-Year	280.96	-4.86	0.55	-2.77	0.62	0.000379	2.09	134.44	35.66	0.19
Lateral Canal	South	10900	25-Year	362.32	-4.86	1.15	-2.43	1.23	0.000417	2.32	156.26	38.03	0.2
Lateral Canal	South	10900	50-Year	428.61	-4.86	1.67	-2.18	1.76	0.000416	2.42	176.83	40.13	0.2
Lateral Canal	South	10900	100-Year	497.02	-4.86	2.22	-1.93	2.32	0.00059	2.44	203.7	63.72	0.23
Lateral Canal	South	10800	2-Year	144.23	-5.04	-0.68	-3.65	-0.64	0.000231	1.45	99.18	31.45	0.14
Lateral Canal	South	10800	5-Year	221.49	-5.04	0.01	-3.23	0.06	0.00031	1.82	121.6	34.19	0.17
Lateral Canal	South	10800	10-Year	280.96	-5.04	0.52	-2.95	0.59	0.00034	2.01	139.75	36.25	0.18
Lateral Canal	South	10800	25-Year	362.32	-5.04	1.11	-2.61	1.19	0.000379	2.24	161.79	38.6	0.19
Lateral Canal	South	10800	50-Year	428.61	-5.04	1.64	-2.35	1.72	0.000381	2.35	182.66	40.71	0.2
Lateral Canal	South	10800	100-Year	497.02	-5.04	2.18	-2.11	2.27	0.000373	2.42	205.22	42.87	0.2
Lateral Canal	South	10670	2-Year	144.23	-5.49	-0.77	-2.8	-0.7	0.000716	2.13	67.58	28.45	0.24
Lateral Canal	South	10670	5-Year	221.49	-5.49	-0.11	-2.29	-0.01	0.000827	2.54	87.26	31.45	0.27
Lateral Canal	South	10670	10-Year	280.96	-5.49	0.4	-1.98	0.51	0.000826	2.7	103.92	33.96	0.27
Lateral Canal	South	10670	25-Year	362.32	-5.49	0.98	-1.6	1.11	0.00084	2.91	124.47	36.81	0.28
Lateral Canal	South	10670	50-Year	428.61	-5.49	1.51	-1.33	1.65	0.000746	2.97	144.46	39.43	0.27
Lateral Canal	South	10670	100-Year	497.02	-5.49	2.06	-1.08	2.2	0.000641	3.01	165.24	42.12	0.25
Lateral Canal	South	10633		Spartan Drive									

HEC-RAS Output - Alternative 2

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Lateral Canal	South	10596	2-Year	144.23	-5.09	-0.79	-3.18	-0.76	0.000251	1.45	99.43	33.97	0.15
Lateral Canal	South	10596	5-Year	221.49	-5.09	-0.18	-2.83	-0.12	0.00033	1.83	120.72	35.12	0.17
Lateral Canal	South	10596	10-Year	280.96	-5.09	0.29	-2.61	0.36	0.000357	2.05	137.24	35.99	0.18
Lateral Canal	South	10596	25-Year	362.32	-5.09	0.8	-2.34	0.88	0.000401	2.33	155.33	41.72	0.2
Lateral Canal	South	10596	50-Year	428.61	-5.09	1.25	-2.13	1.35	0.000409	2.5	171.75	50.16	0.2
Lateral Canal	South	10596	100-Year	497.02	-5.09	1.69	-1.93	1.8	0.000425	2.64	188.08	59.8	0.21
Lateral Canal	South	10500	2-Year	144.23	-5.18	-0.81	-3.34	-0.78	0.00021	1.37	105.47	34.29	0.14
Lateral Canal	South	10500	5-Year	221.49	-5.18	-0.2	-3.01	-0.15	0.000286	1.75	126.72	35.43	0.16
Lateral Canal	South	10500	10-Year	280.96	-5.18	0.26	-2.8	0.32	0.000319	1.96	143.34	36.29	0.17
Lateral Canal	South	10500	25-Year	362.32	-5.18	0.76	-2.53	0.84	0.000375	2.24	161.8	37.66	0.19
Lateral Canal	South	10500	50-Year	428.61	-5.18	1.22	-2.32	1.31	0.000434	2.38	179.93	42.9	0.2
Lateral Canal	South	10500	100-Year	497.02	-5.18	1.66	-2.12	1.76	0.00048	2.48	200.24	48.78	0.22
Lateral Canal	South	10400	2-Year	144.23	-5.27	-0.83	-3.52	-0.8	0.000177	1.29	111.76	34.63	0.13
Lateral Canal	South	10400	5-Year	221.49	-5.27	-0.22	-3.2	-0.18	0.000248	1.67	133	35.76	0.15
Lateral Canal	South	10400	10-Year	280.96	-5.27	0.23	-2.99	0.29	0.000303	1.87	149.98	39.39	0.17
Lateral Canal	South	10400	25-Year	362.32	-5.27	0.73	-2.72	0.8	0.000394	2.12	171.15	45.96	0.19
Lateral Canal	South	10400	50-Year	428.61	-5.27	1.18	-2.51	1.26	0.00043	2.22	193.24	51.93	0.2
Lateral Canal	South	10400	100-Year	497.02	-5.27	1.62	-2.32	1.7	0.000476	2.28	217.67	60.95	0.21
Lateral Canal	South	10300	2-Year	144.23	-5.36	-0.84	-3.69	-0.82	0.000151	1.22	117.99	34.98	0.12
Lateral Canal	South	10300	5-Year	221.49	-5.36	-0.25	-3.38	-0.21	0.000252	1.57	140.94	42.46	0.15
Lateral Canal	South	10300	10-Year	280.96	-5.36	0.21	-3.17	0.26	0.000304	1.74	161.7	48.54	0.17
Lateral Canal	South	10300	25-Year	362.32	-5.36	0.7	-2.9	0.76	0.000379	1.93	187.26	56.84	0.19
Lateral Canal	South	10300	50-Year	428.61	-5.36	1.15	-2.7	1.21	0.000407	1.99	215.21	66.54	0.2
Lateral Canal	South	10300	100-Year	497.02	-5.36	1.59	-2.5	1.66	0.000392	2.02	245.94	72.76	0.19
Lateral Canal	South	10200	2-Year	144.23	-5.45	-0.86	-3.87	-0.84	0.000154	1.13	127.27	43.88	0.12
Lateral Canal	South	10200	5-Year	221.49	-5.45	-0.27	-3.56	-0.23	0.000235	1.42	155.5	52.57	0.15
Lateral Canal	South	10200	10-Year	280.96	-5.45	0.19	-3.34	0.22	0.000278	1.55	181.41	61.71	0.16
Lateral Canal	South	10200	25-Year	362.32	-5.45	0.68	-3.07	0.72	0.00031	1.7	213.47	79.66	0.17
Lateral Canal	South	10200	50-Year	428.61	-5.45	1.13	-2.88	1.17	0.000297	1.74	247.67	99.32	0.17
Lateral Canal	South	10200	100-Year	497.02	-5.45	1.57	-2.68	1.62	0.000263	1.77	295.24	163.78	0.16
Lateral Canal	South	10100	2-Year	144.23	-5.55	-0.87	-4.04	-0.85	0.000136	1	144.22	55.43	0.11
Lateral Canal	South	10100	5-Year	221.49	-5.55	-0.28	-3.73	-0.26	0.000192	1.23	179.77	65.73	0.13
Lateral Canal	South	10100	10-Year	280.96	-5.55	0.17	-3.52	0.2	0.000196	1.34	210.45	69.82	0.14
Lateral Canal	South	10100	25-Year	362.32	-5.55	0.66	-3.26	0.69	0.00021	1.48	245.68	75.89	0.14
Lateral Canal	South	10100	50-Year	428.61	-5.55	1.11	-3.06	1.15	0.000195	1.54	281.52	94.13	0.14
Lateral Canal	South	10100	100-Year	497.02	-5.55	1.56	-2.87	1.59	0.000178	1.59	322.38	150.37	0.14
Lateral Canal	South	10050	2-Year	144.23	-5.59	-0.87	-4.12	-0.86	0.000119	0.92	156.17	61.7	0.1
Lateral Canal	South	10050	5-Year	221.49	-5.59	-0.29	-3.81	-0.27	0.000158	1.14	194.73	69.55	0.12
Lateral Canal	South	10050	10-Year	280.96	-5.59	0.16	-3.61	0.19	0.000166	1.24	227.35	84.45	0.12
Lateral Canal	South	10050	25-Year	362.32	-5.59	0.65	-3.34	0.68	0.00018	1.37	264.94	100.02	0.13
Lateral Canal	South	10050	50-Year	428.61	-5.59	1.11	-3.14	1.14	0.000163	1.4	322.14	118.16	0.13
Lateral Canal	South	10050	100-Year	497.02	-5.59	1.55	-2.95	1.58	0.000147	1.42	381.19	139.09	0.12

HEC-RAS Output - Alternative 3

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Upper	1950	2-Year	79	-0.76	2.19	0.71	2.28	0.001109	2.41	32.79	14.03	0.28
WP-20 Canal	Upper	1950	5-Year	123	-0.76	3.02	1.09	3.14	0.001092	2.74	44.89	15.05	0.28
WP-20 Canal	Upper	1950	10-Year	158	-0.76	3.6	1.37	3.73	0.001085	2.94	53.73	15.75	0.28
WP-20 Canal	Upper	1950	25-Year	207	-0.76	4.34	1.71	4.49	0.00106	3.15	65.74	16.62	0.28
WP-20 Canal	Upper	1950	50-Year	247	-0.76	4.98	1.96	5.14	0.000988	3.22	76.65	36.85	0.27
WP-20 Canal	Upper	1950	100-Year	288	-0.76	5.7	2.22	5.86	0.000899	3.21	89.96	136.74	0.26
WP-20 Canal	Upper	1900	2-Year	79	-0.94	2.16	0.5	2.23	0.000826	2.15	36.67	15.49	0.25
WP-20 Canal	Upper	1900	5-Year	123	-0.94	2.99	0.88	3.09	0.000829	2.45	50.17	17.05	0.25
WP-20 Canal	Upper	1900	10-Year	158	-0.94	3.57	1.15	3.68	0.000841	2.61	60.58	19	0.26
WP-20 Canal	Upper	1900	25-Year	207	-0.94	4.32	1.49	4.44	0.000808	2.73	75.81	21.58	0.26
WP-20 Canal	Upper	1900	50-Year	247	-0.94	4.97	1.74	5.09	0.000784	2.71	91.03	26	0.26
WP-20 Canal	Upper	1900	100-Year	288	-0.94	5.71	1.98	5.8	0.000661	2.43	138.98	120.49	0.24
WP-20 Canal	Upper	1850	2-Year	79	-1.03	2.13	0.37	2.19	0.000629	1.93	40.87	16.67	0.22
WP-20 Canal	Upper	1850	5-Year	123	-1.03	2.97	0.72	3.04	0.000648	2.22	55.42	18.35	0.23
WP-20 Canal	Upper	1850	10-Year	158	-1.03	3.55	0.97	3.63	0.000659	2.38	66.52	20.06	0.23
WP-20 Canal	Upper	1850	25-Year	207	-1.03	4.3	1.28	4.4	0.00064	2.51	82.44	22.27	0.23
WP-20 Canal	Upper	1850	50-Year	247	-1.03	4.95	1.52	5.05	0.000573	2.53	98.23	52.36	0.22
WP-20 Canal	Upper	1850	100-Year	288	-1.03	5.7	1.75	5.77	0.000352	2.22	185.28	183.3	0.18
WP-20 Canal	Upper	1800	2-Year	79	-1.11	2.09	0.4	2.16	0.000717	2.03	38.97	16.65	0.23
WP-20 Canal	Upper	1800	5-Year	123	-1.11	2.93	0.78	3.01	0.00072	2.29	53.74	18.92	0.24
WP-20 Canal	Upper	1800	10-Year	158	-1.11	3.51	1.04	3.6	0.000715	2.42	65.32	21.05	0.24
WP-20 Canal	Upper	1800	25-Year	207	-1.11	4.27	1.37	4.36	0.000672	2.51	82.35	23.93	0.24
WP-20 Canal	Upper	1800	50-Year	247	-1.11	4.92	1.6	5.02	0.000607	2.48	104.12	64.41	0.23
WP-20 Canal	Upper	1800	100-Year	288	-1.11	5.69	1.83	5.75	0.000332	2.07	189.82	198.93	0.18
WP-20 Canal	Upper	1750	2-Year	79	-1.13	2.06	0.29	2.12	0.000608	1.9	41.48	17.04	0.22
WP-20 Canal	Upper	1750	5-Year	123	-1.13	2.9	0.64	2.97	0.000626	2.18	56.45	19.04	0.22
WP-20 Canal	Upper	1750	10-Year	158	-1.13	3.48	0.89	3.56	0.000631	2.32	68.02	20.93	0.23
WP-20 Canal	Upper	1750	25-Year	207	-1.13	4.24	1.2	4.33	0.000605	2.44	84.82	23.45	0.23
WP-20 Canal	Upper	1750	50-Year	247	-1.13	4.89	1.44	4.99	0.000589	2.44	101.32	46.81	0.23
WP-20 Canal	Upper	1750	100-Year	288	-1.13	5.68	1.66	5.73	0.000315	1.97	219.74	200	0.17
WP-20 Canal	Upper	1700	2-Year	79	-1.13	2.02	0.43	2.08	0.000801	2.09	37.77	16.69	0.25
WP-20 Canal	Upper	1700	5-Year	123	-1.13	2.85	0.79	2.94	0.000772	2.34	52.6	18.85	0.25
WP-20 Canal	Upper	1700	10-Year	158	-1.13	3.43	1.04	3.53	0.000741	2.47	63.97	20.29	0.25
WP-20 Canal	Upper	1700	25-Year	207	-1.13	4.19	1.37	4.3	0.000685	2.59	80.06	22.78	0.24
WP-20 Canal	Upper	1700	50-Year	247	-1.13	4.85	1.61	4.96	0.0006	2.6	95.21	85.96	0.23
WP-20 Canal	Upper	1700	100-Year	288	-1.13	5.67	1.83	5.72	0.000268	1.95	245.43	200	0.16
WP-20 Canal	Upper	1639		Olive Drive									
WP-20 Canal	Upper	1600	2-Year	79	-0.83	1.92	0.4	2	0.000964	2.26	34.99	15.72	0.27
WP-20 Canal	Upper	1600	5-Year	123	-0.83	2.76	0.78	2.85	0.000905	2.52	48.91	17.44	0.26
WP-20 Canal	Upper	1600	10-Year	158	-0.83	3.34	1.05	3.45	0.000869	2.66	59.39	18.63	0.26
WP-20 Canal	Upper	1600	25-Year	207	-0.83	4.1	1.39	4.22	0.000808	2.79	74.22	48.47	0.26
WP-20 Canal	Upper	1600	50-Year	247	-0.83	4.69	1.64	4.82	0.000761	2.85	86.64	91.05	0.25
WP-20 Canal	Upper	1600	100-Year	288	-0.83	5.48	1.87	5.53	0.000324	2.09	206.75	168.01	0.17
WP-20 Canal	Upper	1550	2-Year	79	-1.26	1.87	0.29	1.95	0.000886	2.22	35.63	15.16	0.25
WP-20 Canal	Upper	1550	5-Year	123	-1.26	2.71	0.66	2.81	0.000876	2.51	48.97	16.69	0.26
WP-20 Canal	Upper	1550	10-Year	158	-1.26	3.29	0.93	3.4	0.000868	2.68	59.05	18.02	0.26
WP-20 Canal	Upper	1550	25-Year	207	-1.26	4.06	1.26	4.18	0.00082	2.82	73.42	47.46	0.26
WP-20 Canal	Upper	1550	50-Year	247	-1.26	4.65	1.52	4.78	0.000786	2.89	85.44	81.35	0.25
WP-20 Canal	Upper	1550	100-Year	288	-1.26	5.38	1.75	5.5	0.000745	2.79	104.12	140.16	0.25
WP-20 Canal	Upper	1500	2-Year	79	-1.4	1.83	0.14	1.91	0.000845	2.2	35.98	14.54	0.25
WP-20 Canal	Upper	1500	5-Year	123	-1.4	2.67	0.52	2.77	0.000872	2.53	48.69	15.84	0.25
WP-20 Canal	Upper	1500	10-Year	158	-1.4	3.25	0.79	3.36	0.000885	2.72	58.16	16.97	0.26
WP-20 Canal	Upper	1500	25-Year	207	-1.4	4.01	1.13	4.14	0.000868	2.88	71.77	18.77	0.26
WP-20 Canal	Upper	1500	50-Year	247	-1.4	4.6	1.39	4.74	0.000845	2.96	83.39	30.71	0.26
WP-20 Canal	Upper	1500	100-Year	288	-1.4	5.36	1.64	5.46	0.000637	2.63	141.78	140.18	0.23

HEC-RAS Output - Alternative 3

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Upper	1450	2-Year	79	-1.11	1.8	0.19	1.86	0.000804	2.07	38.17	17.36	0.25
WP-20 Canal	Upper	1450	5-Year	123	-1.11	2.64	0.56	2.72	0.000734	2.29	53.65	18.99	0.24
WP-20 Canal	Upper	1450	10-Year	158	-1.11	3.22	0.81	3.31	0.0007	2.43	64.94	19.9	0.24
WP-20 Canal	Upper	1450	25-Year	207	-1.11	3.99	1.14	4.09	0.000663	2.56	80.92	25.98	0.23
WP-20 Canal	Upper	1450	50-Year	247	-1.11	4.58	1.38	4.69	0.000655	2.61	94.62	53.2	0.24
WP-20 Canal	Upper	1450	100-Year	288	-1.11	5.36	1.62	5.43	0.000424	2.24	166.75	104.02	0.19
WP-20 Canal	Upper	1400	2-Year	79	-1.46	1.75	0.07	1.82	0.000855	2.18	36.21	15.37	0.25
WP-20 Canal	Upper	1400	5-Year	123	-1.46	2.59	0.46	2.68	0.000869	2.45	50.15	17.96	0.26
WP-20 Canal	Upper	1400	10-Year	158	-1.46	3.17	0.73	3.27	0.000837	2.58	61.16	19.59	0.26
WP-20 Canal	Upper	1400	25-Year	207	-1.46	3.94	1.07	4.05	0.000783	2.69	77	22	0.25
WP-20 Canal	Upper	1400	50-Year	247	-1.46	4.54	1.33	4.65	0.000739	2.71	91.05	29.33	0.25
WP-20 Canal	Upper	1400	100-Year	288	-1.46	5.3	1.59	5.4	0.000593	2.58	119.2	128.9	0.23
WP-20 Canal	Upper	1350	2-Year	88	-1.57	1.68	0.09	1.77	0.001052	2.44	36.01	14.94	0.28
WP-20 Canal	Upper	1350	5-Year	137	-1.57	2.51	0.5	2.63	0.001071	2.8	49	16.39	0.28
WP-20 Canal	Upper	1350	10-Year	175	-1.57	3.09	0.79	3.22	0.001054	2.98	58.78	17.41	0.29
WP-20 Canal	Upper	1350	25-Year	230	-1.57	3.85	1.16	4	0.001032	3.17	72.62	19.09	0.29
WP-20 Canal	Upper	1350	50-Year	275	-1.57	4.44	1.44	4.6	0.00104	3.25	84.62	24.28	0.29
WP-20 Canal	Upper	1350	100-Year	321	-1.57	5.23	1.69	5.36	0.000748	2.95	133.13	175.89	0.25
WP-20 Canal	Upper	1300	2-Year	88	-1.23	1.62	0.32	1.72	0.001086	2.42	36.29	18.22	0.29
WP-20 Canal	Upper	1300	5-Year	137	-1.23	2.46	0.68	2.58	0.000923	2.69	50.97	19.69	0.28
WP-20 Canal	Upper	1300	10-Year	175	-1.23	3.05	0.93	3.17	0.000814	2.85	61.48	20.81	0.27
WP-20 Canal	Upper	1300	25-Year	230	-1.23	3.81	1.25	3.96	0.000716	3.06	75.27	23.36	0.26
WP-20 Canal	Upper	1300	50-Year	275	-1.23	4.4	1.49	4.56	0.000658	3.2	86.86	32.08	0.26
WP-20 Canal	Upper	1300	100-Year	321	-1.23	5.21	1.71	5.32	0.000759	2.81	153.23	172.16	0.26
WP-20 Canal	Upper	657		Markham-Peachtree Box Culvert									
WP-20 Canal	Upper	15	2-Year	88	-2.2	0.12		0.23	0.000244	2.64	33.35	19.29	0.34
WP-20 Canal	Upper	15	5-Year	137	-2.2	0.78		0.92	0.000222	3.04	45.14	21.92	0.34
WP-20 Canal	Upper	15	10-Year	175	-2.2	1.24		1.41	0.000205	3.27	53.48	23.77	0.33
WP-20 Canal	Upper	15	25-Year	230	-2.2	1.79		1.99	0.000202	3.63	63.32	25.96	0.34
WP-20 Canal	Upper	15	50-Year	275	-2.2	2.26		2.49	0.000191	3.83	71.73	27.83	0.34
WP-20 Canal	Upper	15	100-Year	321	-2.2	2.76		3	0.000175	3.98	80.75	29.83	0.33
WP-20 Canal	Lower	6100	2-Year	5.77	-2.82	0.2	-1.64	0.2	0.000005	0.16	37.12	38.16	0.02
WP-20 Canal	Lower	6100	5-Year	12.51	-2.82	0.88	-1.53	0.88	0.000009	0.24	51.75	40.17	0.03
WP-20 Canal	Lower	6100	10-Year	19.04	-2.82	1.36	-1.45	1.36	0.000012	0.3	62.63	41.57	0.03
WP-20 Canal	Lower	6100	25-Year	28.68	-2.82	1.94	-1.35	1.95	0.000015	0.37	76.6	43.4	0.04
WP-20 Canal	Lower	6100	50-Year	39.39	-2.82	2.45	-1.24	2.45	0.000018	0.44	89.22	44.87	0.04
WP-20 Canal	Lower	6100	100-Year	47.98	-2.82	2.95	-1.16	2.95	0.000018	0.47	101.93	46.14	0.04
WP-20 Canal	Lower	6050	2-Year	5.77	-1.7	0.2	-1.37	0.2	0.000021	0.26	22.36	16.07	0.04
WP-20 Canal	Lower	6050	5-Year	12.51	-1.7	0.87	-1.22	0.88	0.000029	0.37	33.78	17.53	0.05
WP-20 Canal	Lower	6050	10-Year	19.04	-1.7	1.35	-1.09	1.36	0.000035	0.45	42.41	18.52	0.05
WP-20 Canal	Lower	6050	25-Year	28.68	-1.7	1.94	-0.94	1.94	0.00004	0.53	53.62	19.72	0.06
WP-20 Canal	Lower	6050	50-Year	39.39	-1.7	2.45	-0.8	2.45	0.000046	0.62	63.87	20.76	0.06
WP-20 Canal	Lower	6050	100-Year	47.98	-1.7	2.94	-0.7	2.95	0.000045	0.64	74.41	21.78	0.06
WP-20 Canal	Lower	6000	2-Year	5.77	-1.82	0.19	-1.5	0.2	0.000014	0.23	25.08	15.53	0.03
WP-20 Canal	Lower	6000	5-Year	12.51	-1.82	0.87	-1.36	0.88	0.000023	0.35	36.07	16.8	0.04
WP-20 Canal	Lower	6000	10-Year	19.04	-1.82	1.35	-1.25	1.35	0.00003	0.43	44.31	17.69	0.05
WP-20 Canal	Lower	6000	25-Year	28.68	-1.82	1.94	-1.11	1.94	0.000036	0.52	55	18.76	0.05
WP-20 Canal	Lower	6000	50-Year	39.39	-1.82	2.44	-0.97	2.45	0.000043	0.61	64.72	19.67	0.06
WP-20 Canal	Lower	6000	100-Year	47.98	-1.82	2.94	-0.88	2.95	0.000043	0.64	74.69	20.57	0.06
WP-20 Canal	Lower	5969		Pedestrian Walkway Culvert									
WP-20 Canal	Lower	5950	2-Year	5.77	-1.96	0.19	-1.54	0.19	0.000016	0.23	24.61	16.38	0.03
WP-20 Canal	Lower	5950	5-Year	12.51	-1.96	0.87	-1.38	0.87	0.000024	0.35	36.02	17.36	0.04
WP-20 Canal	Lower	5950	10-Year	19.04	-1.96	1.34	-1.25	1.34	0.00003	0.43	44.43	18.22	0.05
WP-20 Canal	Lower	5950	25-Year	28.68	-1.96	1.92	-1.09	1.92	0.000038	0.52	55.46	20.2	0.06
WP-20 Canal	Lower	5950	50-Year	39.39	-1.96	2.42	-0.94	2.42	0.000044	0.6	65.82	21.42	0.06

HEC-RAS Output - Alternative 3

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Lower	5950	100-Year	47.98	-1.96	2.9	-0.83	2.91	0.000043	0.63	76.47	22.33	0.06
WP-20 Canal	Lower	5900	2-Year	5.77	-2.01	0.19	-1.55	0.19	0.000016	0.24	24.01	15.41	0.03
WP-20 Canal	Lower	5900	5-Year	12.51	-2.01	0.87	-1.38	0.87	0.000026	0.36	35	16.92	0.04
WP-20 Canal	Lower	5900	10-Year	19.04	-2.01	1.34	-1.26	1.34	0.000032	0.44	43.21	17.75	0.05
WP-20 Canal	Lower	5900	25-Year	28.68	-2.01	1.92	-1.12	1.92	0.000039	0.53	53.76	18.77	0.06
WP-20 Canal	Lower	5900	50-Year	39.39	-2.01	2.41	-0.97	2.42	0.000046	0.62	63.27	19.64	0.06
WP-20 Canal	Lower	5900	100-Year	47.98	-2.01	2.9	-0.87	2.91	0.000046	0.66	73.04	20.5	0.06
WP-20 Canal	Lower	5850	2-Year	5.77	-2.13	0.19	-1.71	0.19	0.000011	0.22	26.69	15	0.03
WP-20 Canal	Lower	5850	5-Year	12.51	-2.13	0.86	-1.55	0.87	0.00002	0.34	37.09	15.82	0.04
WP-20 Canal	Lower	5850	10-Year	19.04	-2.13	1.34	-1.42	1.34	0.000027	0.43	44.71	16.4	0.05
WP-20 Canal	Lower	5850	25-Year	28.68	-2.13	1.92	-1.26	1.92	0.000035	0.53	54.39	17.1	0.05
WP-20 Canal	Lower	5850	50-Year	39.39	-2.13	2.41	-1.13	2.42	0.000044	0.63	63	17.71	0.06
WP-20 Canal	Lower	5850	100-Year	47.98	-2.13	2.9	-1.03	2.9	0.000046	0.67	71.86	18.79	0.06
WP-20 Canal	Lower	5800	2-Year	5.77	-2.07	0.19	-1.65	0.19	0.000012	0.22	26.37	15.36	0.03
WP-20 Canal	Lower	5800	5-Year	12.51	-2.07	0.86	-1.49	0.87	0.000021	0.34	37.17	16.59	0.04
WP-20 Canal	Lower	5800	10-Year	19.04	-2.07	1.34	-1.38	1.34	0.000028	0.42	45.2	17.38	0.05
WP-20 Canal	Lower	5800	25-Year	28.68	-2.07	1.91	-1.24	1.92	0.000035	0.52	55.5	18.34	0.05
WP-20 Canal	Lower	5800	50-Year	39.39	-2.07	2.41	-1.11	2.41	0.000042	0.61	64.8	19.21	0.06
WP-20 Canal	Lower	5800	100-Year	47.98	-2.07	2.9	-1.02	2.9	0.000043	0.65	74.33	19.96	0.06
WP-20 Canal	Lower	5750	2-Year	5.77	-2.04	0.19	-1.6	0.19	0.000012	0.24	24.52	15.95	0.03
WP-20 Canal	Lower	5750	5-Year	12.51	-2.04	0.86	-1.41	0.86	0.00002	0.37	33.95	17.32	0.04
WP-20 Canal	Lower	5750	10-Year	19.04	-2.04	1.33	-1.27	1.34	0.000025	0.47	40.56	18.23	0.05
WP-20 Canal	Lower	5750	25-Year	28.68	-2.04	1.91	-1.11	1.92	0.000031	0.59	48.63	19.07	0.06
WP-20 Canal	Lower	5750	50-Year	39.39	-2.04	2.4	-0.97	2.41	0.000038	0.71	55.53	19.87	0.06
WP-20 Canal	Lower	5750	100-Year	47.98	-2.04	2.89	-0.87	2.9	0.000039	0.77	62.34	20.9	0.06
WP-20 Canal	Lower	5711		Kasey Street									
WP-20 Canal	Lower	5650	2-Year	5.77	-2.49	0.19	-2.2	0.19	0.000008	0.21	27.03	17.34	0.02
WP-20 Canal	Lower	5650	5-Year	12.51	-2.49	0.86	-2.04	0.86	0.000017	0.35	35.32	19.27	0.04
WP-20 Canal	Lower	5650	10-Year	19.04	-2.49	1.33	-1.91	1.34	0.000025	0.46	41.57	20.63	0.05
WP-20 Canal	Lower	5650	25-Year	28.68	-2.49	1.91	-1.76	1.91	0.000033	0.58	49.57	22.28	0.05
WP-20 Canal	Lower	5650	50-Year	39.39	-2.49	2.4	-1.6	2.4	0.00004	0.7	56.43	23.7	0.06
WP-20 Canal	Lower	5650	100-Year	47.98	-2.49	2.88	-1.48	2.89	0.000041	0.76	63.15	25.08	0.06
WP-20 Canal	Lower	5550	2-Year	5.77	-2.55	0.19	-2.15	0.19	0.000006	0.17	34.59	17.4	0.02
WP-20 Canal	Lower	5550	5-Year	12.51	-2.55	0.86	-2	0.86	0.000011	0.27	46.94	19.35	0.03
WP-20 Canal	Lower	5550	10-Year	19.04	-2.55	1.33	-1.89	1.33	0.000016	0.34	56.37	20.72	0.04
WP-20 Canal	Lower	5550	25-Year	28.68	-2.55	1.91	-1.75	1.91	0.000021	0.42	68.74	22.38	0.04
WP-20 Canal	Lower	5550	50-Year	39.39	-2.55	2.4	-1.6	2.4	0.000026	0.49	80.07	23.81	0.05
WP-20 Canal	Lower	5550	100-Year	47.98	-2.55	2.88	-1.5	2.88	0.000026	0.52	91.85	25.21	0.05
WP-20 Canal	Lower	5500	2-Year	34.77	-2.59	0.17	-1.62	0.18	0.000226	1.03	33.7	17.29	0.13
WP-20 Canal	Lower	5500	5-Year	55.51	-2.59	0.83	-1.37	0.85	0.000241	1.21	45.85	19.24	0.14
WP-20 Canal	Lower	5500	10-Year	73.04	-2.59	1.3	-1.19	1.33	0.00025	1.32	55.14	73.06	0.14
WP-20 Canal	Lower	5500	25-Year	98.68	-2.59	1.87	-0.96	1.9	0.000263	1.47	67.3	77.39	0.15
WP-20 Canal	Lower	5500	50-Year	121.39	-2.59	2.35	-0.78	2.39	0.000261	1.55	78.49	81.02	0.15
WP-20 Canal	Lower	5500	100-Year	143.98	-2.59	2.83	-0.6	2.87	0.000251	1.6	90.16	84.58	0.15
WP-20 Canal	Lower	5400	2-Year	34.77	-2.66	0.14	-1.58	0.16	0.000234	1.05	33.21	17.18	0.13
WP-20 Canal	Lower	5400	5-Year	55.51	-2.66	0.81	-1.34	0.83	0.000249	1.23	45.22	19	0.14
WP-20 Canal	Lower	5400	10-Year	73.04	-2.66	1.27	-1.16	1.3	0.000257	1.34	54.35	72.03	0.14
WP-20 Canal	Lower	5400	25-Year	98.68	-2.66	1.84	-0.94	1.87	0.000272	1.49	66.32	76.05	0.15
WP-20 Canal	Lower	5400	50-Year	121.39	-2.66	2.33	-0.76	2.36	0.00027	1.57	77.39	79.51	0.15
WP-20 Canal	Lower	5400	100-Year	143.98	-2.66	2.8	-0.58	2.85	0.000273	1.62	89.08	84.15	0.15
WP-20 Canal	Lower	5300	2-Year	34.77	-2.72	0.12	-1.62	0.14	0.000226	1.03	33.65	17.21	0.13
WP-20 Canal	Lower	5300	5-Year	55.51	-2.72	0.78	-1.37	0.81	0.000241	1.22	45.61	18.92	0.14
WP-20 Canal	Lower	5300	10-Year	73.04	-2.72	1.25	-1.2	1.27	0.000251	1.34	54.67	20.11	0.14
WP-20 Canal	Lower	5300	25-Year	98.68	-2.72	1.81	-0.98	1.85	0.000266	1.49	66.44	21.57	0.15
WP-20 Canal	Lower	5300	50-Year	121.39	-2.72	2.3	-0.8	2.34	0.000285	1.57	77.45	24.51	0.16

HEC-RAS Output - Alternative 3

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Lower	5300	100-Year	143.98	-2.72	2.78	-0.64	2.82	0.000295	1.6	90.25	29.54	0.16
WP-20 Canal	Lower	5246	2-Year	34.77	-2.76	0.11	-1.7	0.13	0.000187	0.96	36.16	17.9	0.12
WP-20 Canal	Lower	5246	5-Year	55.51	-2.76	0.77	-1.44	0.79	0.000203	1.15	48.46	19.29	0.13
WP-20 Canal	Lower	5246	10-Year	73.04	-2.76	1.24	-1.26	1.26	0.000214	1.27	57.63	20.26	0.13
WP-20 Canal	Lower	5246	25-Year	98.68	-2.76	1.8	-1.06	1.83	0.000232	1.42	69.39	21.51	0.14
WP-20 Canal	Lower	5246	50-Year	121.39	-2.76	2.29	-0.89	2.32	0.000237	1.51	80.16	22.84	0.14
WP-20 Canal	Lower	5246	100-Year	143.98	-2.76	2.76	-0.73	2.8	0.000234	1.58	91.39	24.22	0.14
WP-20 Canal	Lower	5229	2-Year	34.77	-2.76	0.02	-1.05	0.11	0.001359	2.38	14.63	17.71	0.32
WP-20 Canal	Lower	5229	5-Year	55.51	-2.76	0.66	-0.7	0.78	0.001369	2.76	20.11	19.05	0.33
WP-20 Canal	Lower	5229	10-Year	73.04	-2.76	1.1	-0.45	1.24	0.001394	3.02	24.2	19.98	0.33
WP-20 Canal	Lower	5229	25-Year	98.68	-2.76	1.63	-0.12	1.81	0.001463	3.35	29.42	21.1	0.35
WP-20 Canal	Lower	5229	50-Year	121.39	-2.76	2.1	0.14	2.3	0.001444	3.55	34.24	22.34	0.35
WP-20 Canal	Lower	5229	100-Year	143.98	-2.76	2.57	0.38	2.78	0.001383	3.66	39.3	23.62	0.34
WP-20 Canal	Lower	5205		Annette Drive									
WP-20 Canal	Lower	5181	2-Year	34.77	-2.38	0.07		0.1	0.000405	1.44	24.11	21.64	0.18
WP-20 Canal	Lower	5181	5-Year	55.51	-2.38	0.71		0.76	0.000409	1.74	31.82	23.71	0.19
WP-20 Canal	Lower	5181	10-Year	73.04	-2.38	1.16		1.22	0.000421	1.96	37.19	24.88	0.2
WP-20 Canal	Lower	5181	25-Year	98.68	-2.38	1.7		1.78	0.000451	2.26	43.64	26.29	0.21
WP-20 Canal	Lower	5181	50-Year	121.39	-2.38	2.14		2.24	0.000464	2.48	49	27.47	0.22
WP-20 Canal	Lower	5181	100-Year	143.98	-2.38	2.57		2.68	0.000468	2.66	54.13	28.63	0.22
WP-20 Canal	Lower	5163	2-Year	34.77	-2.38	0.08	-1.62	0.09	0.000172	0.88	39.48	21.67	0.11
WP-20 Canal	Lower	5163	5-Year	55.51	-2.38	0.73	-1.42	0.75	0.000174	1.02	54.31	23.76	0.12
WP-20 Canal	Lower	5163	10-Year	73.04	-2.38	1.18	-1.26	1.2	0.000176	1.12	65.35	24.94	0.12
WP-20 Canal	Lower	5163	25-Year	98.68	-2.38	1.73	-1.05	1.76	0.000183	1.24	79.41	26.38	0.13
WP-20 Canal	Lower	5163	50-Year	121.39	-2.38	2.19	-0.89	2.21	0.000183	1.32	91.7	27.59	0.13
WP-20 Canal	Lower	5163	100-Year	143.98	-2.38	2.62	-0.74	2.65	0.000181	1.38	103.99	28.77	0.13
WP-20 Canal	Lower	5100	2-Year	34.77	-2.46	0.07		0.08	0.000177	0.89	39.2	21.72	0.12
WP-20 Canal	Lower	5100	5-Year	55.51	-2.46	0.72		0.73	0.000179	1.02	54.19	24.18	0.12
WP-20 Canal	Lower	5100	10-Year	73.04	-2.46	1.17		1.19	0.000178	1.12	65.44	25.43	0.12
WP-20 Canal	Lower	5100	25-Year	98.68	-2.46	1.72		1.74	0.000184	1.24	79.77	26.93	0.13
WP-20 Canal	Lower	5100	50-Year	121.39	-2.46	2.18		2.2	0.000183	1.31	92.32	28.17	0.13
WP-20 Canal	Lower	5100	100-Year	143.98	-2.46	2.61		2.64	0.000179	1.37	104.88	29.36	0.13
WP-20 Canal	Lower	5000	2-Year	34.77	-2.57	0.05	-1.69	0.06	0.000186	0.9	38.53	21.66	0.12
WP-20 Canal	Lower	5000	5-Year	55.51	-2.57	0.7	-1.47	0.72	0.00019	1.03	53.71	24.95	0.12
WP-20 Canal	Lower	5000	10-Year	73.04	-2.57	1.15	-1.3	1.17	0.000186	1.12	65.34	26.3	0.12
WP-20 Canal	Lower	5000	25-Year	98.68	-2.57	1.7	-1.09	1.72	0.000188	1.23	80.18	27.88	0.13
WP-20 Canal	Lower	5000	50-Year	121.39	-2.57	2.16	-0.93	2.18	0.000184	1.3	93.18	29.14	0.13
WP-20 Canal	Lower	5000	100-Year	143.98	-2.57	2.59	-0.78	2.62	0.000178	1.36	106.19	30.35	0.13
WP-20 Canal	Lower	4900	2-Year	34.77	-2.69	0.03	-1.74	0.04	0.000192	0.92	38	21.4	0.12
WP-20 Canal	Lower	4900	5-Year	55.51	-2.69	0.68	-1.51	0.7	0.000201	1.04	53.22	25.5	0.13
WP-20 Canal	Lower	4900	10-Year	73.04	-2.69	1.13	-1.34	1.15	0.000195	1.12	65.28	27.28	0.13
WP-20 Canal	Lower	4900	25-Year	98.68	-2.69	1.68	-1.13	1.71	0.000191	1.22	80.65	28.83	0.13
WP-20 Canal	Lower	4900	50-Year	121.39	-2.69	2.14	-0.96	2.16	0.000185	1.29	94.11	30.11	0.13
WP-20 Canal	Lower	4900	100-Year	143.98	-2.69	2.58	-0.8	2.61	0.000177	1.34	107.57	31.33	0.13
WP-20 Canal	Lower	4800	2-Year	34.77	-2.81	0.01	-1.78	0.02	0.000196	0.93	37.49	20.95	0.12
WP-20 Canal	Lower	4800	5-Year	55.51	-2.81	0.66	-1.54	0.68	0.000212	1.05	52.64	25.8	0.13
WP-20 Canal	Lower	4800	10-Year	73.04	-2.81	1.11	-1.38	1.13	0.000205	1.12	65.08	28.26	0.13
WP-20 Canal	Lower	4800	25-Year	98.68	-2.81	1.66	-1.15	1.69	0.000196	1.22	81.01	29.81	0.13
WP-20 Canal	Lower	4800	50-Year	121.39	-2.81	2.12	-0.98	2.15	0.000187	1.28	94.94	31.1	0.13
WP-20 Canal	Lower	4800	100-Year	143.98	-2.81	2.56	-0.81	2.59	0.000177	1.32	108.87	32.34	0.13
WP-20 Canal	Lower	4750	2-Year	34.77	-2.87	0	-1.81	0.01	0.000194	0.93	37.37	20.64	0.12
WP-20 Canal	Lower	4750	5-Year	55.51	-2.87	0.65	-1.57	0.67	0.000216	1.06	52.42	25.89	0.13
WP-20 Canal	Lower	4750	10-Year	73.04	-2.87	1.1	-1.4	1.12	0.000211	1.12	64.97	28.73	0.13
WP-20 Canal	Lower	4750	25-Year	98.68	-2.87	1.65	-1.17	1.68	0.000199	1.22	81.19	30.3	0.13
WP-20 Canal	Lower	4750	50-Year	121.39	-2.87	2.11	-0.99	2.14	0.000188	1.27	95.37	31.61	0.13

HEC-RAS Output - Alternative 3

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Lower	4750	100-Year	143.98	-2.87	2.55	-0.83	2.58	0.000176	1.31	109.55	32.86	0.13
WP-20 Canal	Lower	4600	2-Year	34.77	-3.05	-0.03	-1.89	-0.01	0.000193	0.93	37.53	20.75	0.12
WP-20 Canal	Lower	4600	5-Year	55.51	-3.05	0.62	-1.63	0.63	0.000215	1.06	52.26	25.55	0.13
WP-20 Canal	Lower	4600	10-Year	73.04	-3.05	1.07	-1.45	1.09	0.00022	1.13	64.82	29.49	0.13
WP-20 Canal	Lower	4600	25-Year	98.68	-3.05	1.62	-1.22	1.65	0.000205	1.21	81.89	31.82	0.13
WP-20 Canal	Lower	4600	50-Year	121.39	-3.05	2.08	-1.03	2.11	0.000189	1.25	96.85	33.16	0.13
WP-20 Canal	Lower	4600	100-Year	143.98	-3.05	2.53	-0.86	2.55	0.000175	1.29	111.78	34.44	0.13
WP-20 Canal	Lower	4500	2-Year	34.77	-3.17	-0.05	-1.94	-0.03	0.000191	0.91	38.02	21.27	0.12
WP-20 Canal	Lower	4500	5-Year	55.51	-3.17	0.59	-1.67	0.61	0.000205	1.06	52.52	24.85	0.13
WP-20 Canal	Lower	4500	10-Year	73.04	-3.17	1.05	-1.49	1.07	0.000219	1.13	64.86	29.32	0.13
WP-20 Canal	Lower	4500	25-Year	98.68	-3.17	1.6	-1.25	1.63	0.000211	1.2	82.31	32.86	0.13
WP-20 Canal	Lower	4500	50-Year	121.39	-3.17	2.07	-1.06	2.09	0.000191	1.24	97.82	34.22	0.13
WP-20 Canal	Lower	4500	100-Year	143.98	-3.17	2.51	-0.89	2.53	0.000181	1.27	113.47	36.91	0.13
WP-20 Canal	Lower	4400	2-Year	34.77	-3.29	-0.07	-2	-0.05	0.00018	0.89	38.86	21.47	0.12
WP-20 Canal	Lower	4400	5-Year	55.51	-3.29	0.58	-1.72	0.59	0.000186	1.04	53.31	23.75	0.12
WP-20 Canal	Lower	4400	10-Year	73.04	-3.29	1.03	-1.52	1.05	0.00021	1.12	65.2	28.73	0.13
WP-20 Canal	Lower	4400	25-Year	98.68	-3.29	1.58	-1.27	1.6	0.000216	1.19	82.72	33.92	0.13
WP-20 Canal	Lower	4400	50-Year	121.39	-3.29	2.05	-1.08	2.07	0.000196	1.23	98.83	35.98	0.13
WP-20 Canal	Lower	4400	100-Year	143.98	-3.29	2.49	-0.92	2.52	0.000182	1.25	115.48	38.74	0.13
WP-20 Canal	Lower	4300	2-Year	34.77	-3.41	-0.08	-2.06	-0.07	0.000167	0.87	40.04	21.73	0.11
WP-20 Canal	Lower	4300	5-Year	55.51	-3.41	0.56	-1.77	0.57	0.000173	1.02	54.63	23.85	0.12
WP-20 Canal	Lower	4300	10-Year	73.04	-3.41	1.01	-1.56	1.03	0.000194	1.11	66.04	27.75	0.13
WP-20 Canal	Lower	4300	25-Year	98.68	-3.41	1.56	-1.31	1.58	0.000217	1.19	83.21	34.53	0.13
WP-20 Canal	Lower	4300	50-Year	121.39	-3.41	2.03	-1.12	2.05	0.0002	1.21	100.23	37.92	0.13
WP-20 Canal	Lower	4300	100-Year	143.98	-3.41	2.47	-0.95	2.5	0.00018	1.22	117.72	40.38	0.13
WP-20 Canal	Lower	4200	2-Year	34.77	-3.53	-0.1	-2.12	-0.09	0.000152	0.84	41.44	22.04	0.11
WP-20 Canal	Lower	4200	5-Year	55.51	-3.53	0.54	-1.81	0.56	0.00016	0.99	56.2	24.12	0.11
WP-20 Canal	Lower	4200	10-Year	73.04	-3.53	0.99	-1.59	1.01	0.000171	1.08	67.39	26.33	0.12
WP-20 Canal	Lower	4200	25-Year	98.68	-3.53	1.54	-1.33	1.56	0.000212	1.17	84	34.68	0.13
WP-20 Canal	Lower	4200	50-Year	121.39	-3.53	2.01	-1.15	2.03	0.0002	1.2	101.55	39.05	0.13
WP-20 Canal	Lower	4200	100-Year	143.98	-3.53	2.46	-0.99	2.48	0.000175	1.2	119.54	41.07	0.12
WP-20 Canal	Lower	4100	2-Year	34.77	-3.65	-0.11	-2.18	-0.1	0.000136	0.8	43.22	22.41	0.1
WP-20 Canal	Lower	4100	5-Year	55.51	-3.65	0.53	-1.84	0.54	0.000146	0.95	58.18	24.46	0.11
WP-20 Canal	Lower	4100	10-Year	73.04	-3.65	0.98	-1.62	0.99	0.000152	1.05	69.47	25.89	0.11
WP-20 Canal	Lower	4100	25-Year	98.68	-3.65	1.52	-1.38	1.54	0.000194	1.16	85.41	33.62	0.13
WP-20 Canal	Lower	4100	50-Year	121.39	-3.65	1.99	-1.21	2.01	0.000198	1.18	102.89	40.04	0.13
WP-20 Canal	Lower	4100	100-Year	143.98	-3.65	2.44	-1.08	2.46	0.000171	1.19	121.39	65.71	0.12
WP-20 Canal	Lower	4000	2-Year	34.77	-3.77	-0.12	-2.24	-0.11	0.000119	0.77	45.33	22.84	0.1
WP-20 Canal	Lower	4000	5-Year	55.51	-3.77	0.51	-1.87	0.53	0.000131	0.92	60.53	24.86	0.1
WP-20 Canal	Lower	4000	10-Year	73.04	-3.77	0.96	-1.66	0.98	0.000148	1.01	72.23	28.08	0.11
WP-20 Canal	Lower	4000	25-Year	98.68	-3.77	1.5	-1.46	1.52	0.000186	1.11	89.11	36.27	0.12
WP-20 Canal	Lower	4000	50-Year	121.39	-3.77	1.97	-1.31	1.99	0.000203	1.12	108.61	47.06	0.13
WP-20 Canal	Lower	4000	100-Year	143.98	-3.77	2.42	-1.16	2.44	0.000175	1.1	131.31	52.61	0.12
WP-20 Canal	Lower	3900	2-Year	34.77	-3.88	-0.13	-2.3	-0.13	0.000104	0.73	47.65	23.3	0.09
WP-20 Canal	Lower	3900	5-Year	55.51	-3.88	0.5	-1.9	0.51	0.000118	0.88	63.14	25.5	0.1
WP-20 Canal	Lower	3900	10-Year	73.04	-3.88	0.95	-1.75	0.96	0.000126	0.98	74.83	26.94	0.1
WP-20 Canal	Lower	3900	25-Year	98.68	-3.88	1.49	-1.56	1.5	0.000141	1.1	89.76	29.22	0.11
WP-20 Canal	Lower	3900	50-Year	121.39	-3.88	1.95	-1.41	1.97	0.000173	1.15	105.36	38.03	0.12
WP-20 Canal	Lower	3900	100-Year	143.98	-3.88	2.41	-1.26	2.43	0.000165	1.16	124.19	42.82	0.12
WP-20 Canal	Lower	3800	2-Year	34.77	-4	-0.14	-2.22	-0.14	0.000089	0.69	50.39	23.82	0.08
WP-20 Canal	Lower	3800	5-Year	55.51	-4	0.49	-2.02	0.5	0.000109	0.83	66.5	27.32	0.09
WP-20 Canal	Lower	3800	10-Year	73.04	-4	0.94	-1.87	0.95	0.00012	0.92	79.3	30.17	0.1
WP-20 Canal	Lower	3800	25-Year	98.68	-4	1.47	-1.68	1.49	0.000132	1.02	96.39	33.6	0.11
WP-20 Canal	Lower	3800	50-Year	121.39	-4	1.93	-1.52	1.95	0.000154	1.07	113.41	42.02	0.11
WP-20 Canal	Lower	3800	100-Year	143.98	-4	2.39	-1.39	2.41	0.000166	1.07	135.05	53.95	0.12

HEC-RAS Output - Alternative 3

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Lower	3700	2-Year	51.77	-3.89	-0.17	-2	-0.15	0.000229	1.08	47.73	23.23	0.13
WP-20 Canal	Lower	3700	5-Year	82.51	-3.89	0.46	-1.74	0.48	0.00026	1.31	62.89	25.07	0.15
WP-20 Canal	Lower	3700	10-Year	107.04	-3.89	0.9	-1.56	0.93	0.00027	1.44	74.19	26.19	0.15
WP-20 Canal	Lower	3700	25-Year	143.68	-3.89	1.43	-1.32	1.47	0.000293	1.63	88.38	27.52	0.16
WP-20 Canal	Lower	3700	50-Year	175.39	-3.89	1.88	-1.13	1.93	0.000329	1.73	101.43	31.56	0.17
WP-20 Canal	Lower	3700	100-Year	206.98	-3.89	2.33	-0.96	2.38	0.00037	1.76	117.41	56.23	0.18
WP-20 Canal	Lower	3600	2-Year	51.77	-3.72	-0.2	-1.89	-0.18	0.000289	1.18	43.75	22.39	0.15
WP-20 Canal	Lower	3600	5-Year	82.51	-3.72	0.42	-1.63	0.45	0.00032	1.42	58.31	24.39	0.16
WP-20 Canal	Lower	3600	10-Year	107.04	-3.72	0.86	-1.44	0.9	0.000327	1.54	69.33	25.72	0.17
WP-20 Canal	Lower	3600	25-Year	143.68	-3.72	1.39	-1.2	1.43	0.000349	1.73	83.23	27.23	0.17
WP-20 Canal	Lower	3600	50-Year	175.39	-3.72	1.84	-1.01	1.89	0.00037	1.83	95.92	32.44	0.18
WP-20 Canal	Lower	3600	100-Year	206.98	-3.72	2.29	-0.84	2.34	0.000404	1.87	110.75	60.48	0.19
WP-20 Canal	Lower	3500	2-Year	51.77	-3.54	-0.24	-1.78	-0.21	0.000375	1.3	39.77	21.55	0.17
WP-20 Canal	Lower	3500	5-Year	82.51	-3.54	0.38	-1.51	0.42	0.000399	1.54	53.74	23.58	0.18
WP-20 Canal	Lower	3500	10-Year	107.04	-3.54	0.82	-1.32	0.86	0.0004	1.66	64.39	25.02	0.18
WP-20 Canal	Lower	3500	25-Year	143.68	-3.54	1.34	-1.07	1.4	0.000421	1.84	77.92	26.76	0.19
WP-20 Canal	Lower	3500	50-Year	175.39	-3.54	1.79	-0.89	1.85	0.000427	1.94	90.31	28.97	0.19
WP-20 Canal	Lower	3500	100-Year	206.98	-3.54	2.24	-0.72	2.3	0.000455	1.98	104.35	49.73	0.2
WP-20 Canal	Lower	3300	2-Year	51.77	-3.19	-0.35	-1.56	-0.31	0.000716	1.64	31.54	19.81	0.23
WP-20 Canal	Lower	3300	5-Year	82.51	-3.19	0.26	-1.26	0.31	0.000675	1.86	44.4	21.94	0.23
WP-20 Canal	Lower	3300	10-Year	107.04	-3.19	0.7	-1.07	0.76	0.000636	1.97	54.41	23.46	0.23
WP-20 Canal	Lower	3300	25-Year	143.68	-3.19	1.22	-0.82	1.29	0.000636	2.14	67.02	25.24	0.23
WP-20 Canal	Lower	3300	50-Year	175.39	-3.19	1.67	-0.63	1.75	0.000603	2.23	78.76	26.8	0.23
WP-20 Canal	Lower	3300	100-Year	206.98	-3.19	2.11	-0.45	2.19	0.000618	2.27	91.37	31.06	0.23
WP-20 Canal	Lower	3200	2-Year	51.77	-3.02	-0.46	-1.44	-0.4	0.001133	1.93	26.84	18.79	0.28
WP-20 Canal	Lower	3200	5-Year	82.51	-3.02	0.17	-1.13	0.23	0.000949	2.1	39.32	21	0.27
WP-20 Canal	Lower	3200	10-Year	107.04	-3.02	0.61	-0.94	0.69	0.000847	2.18	49.09	22.59	0.26
WP-20 Canal	Lower	3200	25-Year	143.68	-3.02	1.13	-0.69	1.22	0.000815	2.34	61.29	24.42	0.26
WP-20 Canal	Lower	3200	50-Year	175.39	-3.02	1.59	-0.5	1.68	0.000749	2.41	72.82	26.04	0.25
WP-20 Canal	Lower	3200	100-Year	206.98	-3.02	2.03	-0.33	2.12	0.00072	2.44	84.78	40.21	0.25
WP-20 Canal	Lower	3139	2-Year	51.77	-2.91	-0.53	-1.93	-0.49	0.000581	1.58	32.75	18.15	0.21
WP-20 Canal	Lower	3139	5-Year	82.51	-2.91	0.1	-1.64	0.15	0.00061	1.84	44.87	20.42	0.22
WP-20 Canal	Lower	3139	10-Year	107.04	-2.91	0.55	-1.44	0.61	0.0006	1.97	54.46	22.04	0.22
WP-20 Canal	Lower	3139	25-Year	143.68	-2.91	1.07	-1.18	1.14	0.000627	2.17	66.35	23.91	0.23
WP-20 Canal	Lower	3139	50-Year	175.39	-2.91	1.53	-0.97	1.61	0.000605	2.26	77.72	25.56	0.23
WP-20 Canal	Lower	3139	100-Year	206.98	-2.91	1.97	-0.77	2.05	0.000586	2.32	89.39	45.8	0.23
WP-20 Canal	Lower	3119	2-Year	51.77	-2.91	-0.54	-1.93	-0.5	0.000592	1.59	32.52	18.11	0.21
WP-20 Canal	Lower	3119	5-Year	82.51	-2.91	0.09	-1.64	0.14	0.00062	1.85	44.6	20.37	0.22
WP-20 Canal	Lower	3119	10-Year	107.04	-2.91	0.54	-1.44	0.6	0.000597	1.98	54.14	22	0.22
WP-20 Canal	Lower	3119	25-Year	143.68	-2.91	1.06	-1.18	1.13	0.000604	2.19	65.59	23.85	0.23
WP-20 Canal	Lower	3119	50-Year	175.39	-2.91	1.52	-0.96	1.6	0.000559	2.3	76.11	25.51	0.22
WP-20 Canal	Lower	3119	100-Year	206.98	-2.91	1.95	-0.77	2.04	0.000514	2.4	86.2	44.96	0.22
WP-20 Canal	Lower	3090		Spartan High School Parking Lot East									
WP-20 Canal	Lower	3073	2-Year	51.77	-3.58	-0.59	-2.35	-0.54	0.000594	1.69	30.63	14.69	0.21
WP-20 Canal	Lower	3073	5-Year	82.51	-3.58	0.03	-1.99	0.1	0.000744	2.03	40.64	17.7	0.24
WP-20 Canal	Lower	3073	10-Year	107.04	-3.58	0.48	-1.75	0.55	0.000778	2.18	49	19.87	0.25
WP-20 Canal	Lower	3073	25-Year	143.68	-3.58	0.98	-1.42	1.07	0.000817	2.42	59.46	22.31	0.26
WP-20 Canal	Lower	3073	50-Year	175.39	-3.58	1.43	-1.16	1.53	0.000789	2.53	69.39	25.59	0.26
WP-20 Canal	Lower	3073	100-Year	206.98	-3.58	1.85	-0.92	1.96	0.000707	2.61	79.22	79.31	0.25
WP-20 Canal	Lower	3040	2-Year	51.77	-3.58	-0.61	-2.35	-0.56	0.000609	1.71	30.32	14.59	0.21
WP-20 Canal	Lower	3040	5-Year	82.51	-3.58	0.01	-2	0.07	0.000766	2.05	40.18	17.57	0.24
WP-20 Canal	Lower	3040	10-Year	107.04	-3.58	0.45	-1.74	0.53	0.000801	2.21	48.45	19.73	0.25
WP-20 Canal	Lower	3040	25-Year	143.68	-3.58	0.95	-1.42	1.04	0.000873	2.44	58.92	22.16	0.26
WP-20 Canal	Lower	3040	50-Year	175.39	-3.58	1.4	-1.17	1.5	0.000884	2.53	69.43	25.2	0.27
WP-20 Canal	Lower	3040	100-Year	206.98	-3.58	1.83	-0.92	1.93	0.000939	2.53	81.65	78.57	0.28

HEC-RAS Output - Alternative 3

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Lower	3000	2-Year	51.77	-3.59	-0.63	-2.37	-0.59	0.00059	1.66	31.19	15.61	0.21
WP-20 Canal	Lower	3000	5-Year	82.51	-3.59	-0.02	-2.01	0.04	0.000715	1.99	41.55	18.44	0.23
WP-20 Canal	Lower	3000	10-Year	107.04	-3.59	0.42	-1.77	0.49	0.000737	2.13	50.17	20.5	0.24
WP-20 Canal	Lower	3000	25-Year	143.68	-3.59	0.92	-1.44	1.01	0.000798	2.36	60.95	22.81	0.25
WP-20 Canal	Lower	3000	50-Year	175.39	-3.59	1.37	-1.18	1.46	0.000813	2.44	71.75	25.92	0.26
WP-20 Canal	Lower	3000	100-Year	206.98	-3.59	1.8	-0.93	1.89	0.00085	2.46	84.11	78.18	0.27
WP-20 Canal	Lower	2900	2-Year	51.77	-3.62	-0.68	-2.42	-0.64	0.00049	1.51	34.38	17.88	0.19
WP-20 Canal	Lower	2900	5-Year	82.51	-3.62	-0.08	-2.07	-0.03	0.000569	1.8	45.88	20.39	0.21
WP-20 Canal	Lower	2900	10-Year	107.04	-3.62	0.37	-1.82	0.42	0.000578	1.93	55.32	22.25	0.22
WP-20 Canal	Lower	2900	25-Year	143.68	-3.62	0.86	-1.51	0.93	0.000626	2.15	66.82	24.32	0.23
WP-20 Canal	Lower	2900	50-Year	175.39	-3.62	1.31	-1.27	1.39	0.000646	2.24	78.28	58.46	0.23
WP-20 Canal	Lower	2900	100-Year	206.98	-3.62	1.74	-1.06	1.82	0.000661	2.27	91.03	87.74	0.24
WP-20 Canal	Lower	2800	2-Year	51.77	-3.64	-0.71	-2.49	-0.69	0.000359	1.32	39.09	19.83	0.17
WP-20 Canal	Lower	2800	5-Year	82.51	-3.64	-0.12	-2.16	-0.08	0.000422	1.6	51.57	22.08	0.18
WP-20 Canal	Lower	2800	10-Year	107.04	-3.64	0.33	-1.94	0.37	0.000432	1.73	61.71	23.75	0.19
WP-20 Canal	Lower	2800	25-Year	143.68	-3.64	0.82	-1.67	0.87	0.000476	1.95	73.8	33.86	0.2
WP-20 Canal	Lower	2800	50-Year	175.39	-3.64	1.26	-1.46	1.33	0.000502	2.04	85.85	57.62	0.21
WP-20 Canal	Lower	2800	100-Year	206.98	-3.64	1.69	-1.27	1.75	0.000511	2.09	98.96	105.44	0.21
WP-20 Canal	Lower	2705	2-Year	51.77	-3.67	-0.73	-2.65	-0.71	0.000192	1.04	49.75	22.79	0.12
WP-20 Canal	Lower	2705	5-Year	82.51	-3.67	-0.14	-2.39	-0.11	0.000238	1.29	63.73	24.34	0.14
WP-20 Canal	Lower	2705	10-Year	107.04	-3.67	0.3	-2.22	0.34	0.000253	1.43	74.74	25.47	0.15
WP-20 Canal	Lower	2705	25-Year	143.68	-3.67	0.79	-1.99	0.83	0.000291	1.64	87.46	26.72	0.16
WP-20 Canal	Lower	2705	50-Year	175.39	-3.67	1.23	-1.82	1.28	0.0004	1.73	101.51	37.36	0.18
WP-20 Canal	Lower	2705	100-Year	206.98	-3.67	1.66	-1.65	1.71	0.000382	1.75	118.27	54.07	0.18
WP-20 Canal	Lower	2685	2-Year	51.77	-4.27	-0.73	-3.25	-0.72	0.000087	0.82	63.19	24.36	0.09
WP-20 Canal	Lower	2685	5-Year	82.51	-4.27	-0.13	-2.99	-0.12	0.000115	1.07	76.83	25.88	0.1
WP-20 Canal	Lower	2685	10-Year	107.04	-4.27	0.31	-2.82	0.33	0.000128	1.23	86.99	29.26	0.11
WP-20 Canal	Lower	2685	25-Year	143.68	-4.27	0.79	-2.59	0.83	0.000154	1.46	98.2	38.72	0.12
WP-20 Canal	Lower	2685	50-Year	175.39	-4.27	1.23	-2.42	1.27	0.000166	1.62	108.24	43.01	0.13
WP-20 Canal	Lower	2685	100-Year	206.98	-4.27	1.65	-2.25	1.7	0.000174	1.75	117.97	58.31	0.14
WP-20 Canal	Lower	2660		Spartan High School Parking Lot West									
WP-20 Canal	Lower	2639	2-Year	51.77	-4.53	-0.74	-3.43	-0.73	0.000108	0.87	59.19	23.73	0.1
WP-20 Canal	Lower	2639	5-Year	82.51	-4.53	-0.16	-3.14	-0.14	0.000143	1.14	72.55	26.94	0.11
WP-20 Canal	Lower	2639	10-Year	107.04	-4.53	0.27	-2.93	0.3	0.000157	1.3	82.5	29.33	0.12
WP-20 Canal	Lower	2639	25-Year	143.68	-4.53	0.74	-2.67	0.78	0.000188	1.54	93.28	31.91	0.13
WP-20 Canal	Lower	2639	50-Year	175.39	-4.53	1.16	-2.45	1.2	0.000202	1.7	102.88	34.21	0.14
WP-20 Canal	Lower	2639	100-Year	206.98	-4.53	1.56	-2.26	1.61	0.000211	1.85	112.05	36.4	0.15
WP-20 Canal	Lower	2614	2-Year	51.77	-3.93	-0.76	-2.84	-0.74	0.000227	1.13	45.87	20.79	0.13
WP-20 Canal	Lower	2614	5-Year	82.51	-3.93	-0.18	-2.54	-0.15	0.0003	1.41	58.66	23.55	0.16
WP-20 Canal	Lower	2614	10-Year	107.04	-3.93	0.25	-2.33	0.29	0.000328	1.54	69.34	25.93	0.17
WP-20 Canal	Lower	2614	25-Year	143.68	-3.93	0.72	-2.07	0.77	0.000382	1.75	82.08	28.5	0.18
WP-20 Canal	Lower	2614	50-Year	175.39	-3.93	1.14	-1.85	1.19	0.000394	1.86	94.53	30.82	0.19
WP-20 Canal	Lower	2614	100-Year	206.98	-3.93	1.54	-1.66	1.6	0.000393	1.93	107.37	33.03	0.19
WP-20 Canal	Lower	2500	2-Year	51.77	-3.99	-0.79	-2.69	-0.77	0.000313	1.23	41.96	21.51	0.16
WP-20 Canal	Lower	2500	5-Year	82.51	-3.99	-0.22	-2.35	-0.19	0.000378	1.5	54.95	24.08	0.18
WP-20 Canal	Lower	2500	10-Year	107.04	-3.99	0.21	-2.14	0.25	0.00039	1.63	65.71	26.01	0.18
WP-20 Canal	Lower	2500	25-Year	143.68	-3.99	0.67	-1.85	0.72	0.000448	1.83	78.31	28.83	0.2
WP-20 Canal	Lower	2500	50-Year	175.39	-3.99	1.09	-1.63	1.15	0.000457	1.93	90.97	46.9	0.2
WP-20 Canal	Lower	2500	100-Year	206.98	-3.99	1.49	-1.43	1.55	0.000449	1.99	104.25	54.63	0.2
WP-20 Canal	Lower	2400	2-Year	51.77	-4.05	-0.83	-2.63	-0.8	0.000392	1.33	39.07	21.43	0.17
WP-20 Canal	Lower	2400	5-Year	82.51	-4.05	-0.27	-2.28	-0.23	0.000462	1.59	52.04	24.67	0.19
WP-20 Canal	Lower	2400	10-Year	107.04	-4.05	0.16	-2.05	0.21	0.000463	1.69	63.17	27.13	0.2
WP-20 Canal	Lower	2400	25-Year	143.68	-4.05	0.62	-1.75	0.67	0.000499	1.89	76.02	29.21	0.21
WP-20 Canal	Lower	2400	50-Year	175.39	-4.05	1.04	-1.52	1.1	0.000486	1.98	88.67	31.13	0.21
WP-20 Canal	Lower	2400	100-Year	206.98	-4.05	1.44	-1.33	1.51	0.000479	2.03	101.74	38.35	0.21

HEC-RAS Output - Alternative 3

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Lower	2350	2-Year	51.77	-4.07	-0.85	-2.6	-0.82	0.00041	1.35	38.44	21.3	0.18
WP-20 Canal	Lower	2350	5-Year	82.51	-4.07	-0.29	-2.26	-0.25	0.000481	1.61	51.23	24.46	0.2
WP-20 Canal	Lower	2350	10-Year	107.04	-4.07	0.14	-2.03	0.18	0.00048	1.72	62.26	26.9	0.2
WP-20 Canal	Lower	2350	25-Year	143.68	-4.07	0.59	-1.74	0.65	0.000525	1.91	75.06	29.47	0.21
WP-20 Canal	Lower	2350	50-Year	175.39	-4.07	1.01	-1.51	1.07	0.00051	1.99	87.94	31.77	0.21
WP-20 Canal	Lower	2350	100-Year	206.98	-4.07	1.42	-1.32	1.48	0.000488	2.04	101.23	34.03	0.21
WP-20 Canal	Lower	2300	2-Year	51.77	-4.1	-0.87	-2.6	-0.84	0.000413	1.35	38.32	21.28	0.18
WP-20 Canal	Lower	2300	5-Year	82.51	-4.1	-0.32	-2.26	-0.28	0.000486	1.62	50.99	24.39	0.2
WP-20 Canal	Lower	2300	10-Year	107.04	-4.1	0.11	-2.03	0.16	0.000485	1.73	61.98	26.79	0.2
WP-20 Canal	Lower	2300	25-Year	143.68	-4.1	0.56	-1.75	0.62	0.00053	1.92	74.65	29.32	0.21
WP-20 Canal	Lower	2300	50-Year	175.39	-4.1	0.98	-1.52	1.05	0.000523	2	87.52	32.02	0.21
WP-20 Canal	Lower	2300	100-Year	206.98	-4.1	1.39	-1.33	1.46	0.00051	2.04	101.23	35.33	0.21
WP-20 Canal	Lower	2245	2-Year	51.77	-4.13	-0.89	-2.76	-0.86	0.000261	1.15	45.08	22.71	0.14
WP-20 Canal	Lower	2245	5-Year	82.51	-4.13	-0.33	-2.47	-0.3	0.000325	1.41	58.33	25.23	0.16
WP-20 Canal	Lower	2245	10-Year	107.04	-4.13	0.1	-2.27	0.13	0.000337	1.54	69.57	27.18	0.17
WP-20 Canal	Lower	2245	25-Year	143.68	-4.13	0.55	-2.01	0.59	0.000392	1.75	82.29	29.77	0.19
WP-20 Canal	Lower	2245	50-Year	175.39	-4.13	0.97	-1.81	1.02	0.000405	1.84	95.46	32.85	0.19
WP-20 Canal	Lower	2245	100-Year	206.98	-4.13	1.37	-1.62	1.43	0.000401	1.89	109.44	36.34	0.19
WP-20 Canal	Lower	2219	2-Year	51.77	-4.14	-0.88	-3.39	-0.87	0.000058	0.62	83.08	35.02	0.07
WP-20 Canal	Lower	2219	5-Year	82.51	-4.14	-0.32	-3.17	-0.31	0.000077	0.8	102.85	38.22	0.08
WP-20 Canal	Lower	2219	10-Year	107.04	-4.14	0.11	-3.02	0.12	0.000081	0.9	118.36	39.91	0.09
WP-20 Canal	Lower	2219	25-Year	143.68	-4.14	0.56	-2.83	0.58	0.000095	1.07	134.65	39.95	0.1
WP-20 Canal	Lower	2219	50-Year	175.39	-4.14	0.98	-2.67	1	0.000099	1.17	149.82	39.99	0.1
WP-20 Canal	Lower	2219	100-Year	206.98	-4.14	1.39	-2.53	1.41	0.000101	1.26	164.47	40.03	0.1
WP-20 Canal	Lower	2198		Spartan Drive									
WP-20 Canal	Lower	2177	2-Year	51.77	-4.25	-0.88	-3.34	-0.87	0.000054	0.6	86.18	35.04	0.07
WP-20 Canal	Lower	2177	5-Year	82.51	-4.25	-0.32	-3.14	-0.31	0.000073	0.78	106.08	36.23	0.08
WP-20 Canal	Lower	2177	10-Year	107.04	-4.25	0.11	-3.01	0.12	0.00008	0.88	121.76	36.62	0.08
WP-20 Canal	Lower	2177	25-Year	143.68	-4.25	0.56	-2.82	0.58	0.000097	1.04	138.4	37.02	0.09
WP-20 Canal	Lower	2177	50-Year	175.39	-4.25	0.98	-2.67	1	0.000104	1.14	154.08	37.39	0.1
WP-20 Canal	Lower	2177	100-Year	206.98	-4.25	1.39	-2.54	1.41	0.000109	1.22	169.36	37.75	0.1
WP-20 Canal	Lower	2000	2-Year	66.77	-3.83	-0.91	-2.82	-0.89	0.00016	0.94	70.93	33.47	0.11
WP-20 Canal	Lower	2000	5-Year	105.51	-3.83	-0.36	-2.6	-0.34	0.000199	1.18	89.74	35.4	0.13
WP-20 Canal	Lower	2000	10-Year	136.04	-3.83	0.07	-2.44	0.09	0.000225	1.29	105.8	40.28	0.14
WP-20 Canal	Lower	2000	25-Year	180.68	-3.83	0.51	-2.23	0.54	0.000271	1.45	125.01	46.1	0.15
WP-20 Canal	Lower	2000	50-Year	220.39	-3.83	0.93	-2.07	0.97	0.000282	1.51	145.52	51.59	0.16
WP-20 Canal	Lower	2000	100-Year	258.98	-3.83	1.34	-1.91	1.38	0.000275	1.54	167.68	56.94	0.16
WP-20 Canal	Lower	1900	2-Year	66.77	-3.93	-0.92	-2.92	-0.91	0.000142	0.9	73.81	33.77	0.11
WP-20 Canal	Lower	1900	5-Year	105.51	-3.93	-0.38	-2.7	-0.36	0.000184	1.14	92.67	36.26	0.13
WP-20 Canal	Lower	1900	10-Year	136.04	-3.93	0.05	-2.54	0.07	0.000205	1.25	108.93	40.29	0.13
WP-20 Canal	Lower	1900	25-Year	180.68	-3.93	0.49	-2.33	0.52	0.000243	1.42	127.57	44.3	0.15
WP-20 Canal	Lower	1900	50-Year	220.39	-3.93	0.91	-2.17	0.94	0.000252	1.5	146.91	48.12	0.15
WP-20 Canal	Lower	1900	100-Year	258.98	-3.93	1.31	-2.01	1.35	0.000249	1.55	167.41	55.81	0.15
WP-20 Canal	Lower	1850	2-Year	66.77	-3.98	-0.93	-2.97	-0.91	0.000134	0.89	75.28	33.92	0.1
WP-20 Canal	Lower	1850	5-Year	105.51	-3.98	-0.39	-2.74	-0.37	0.000176	1.12	94.17	36.49	0.12
WP-20 Canal	Lower	1850	10-Year	136.04	-3.98	0.04	-2.59	0.06	0.000196	1.23	110.41	40.24	0.13
WP-20 Canal	Lower	1850	25-Year	180.68	-3.98	0.48	-2.38	0.51	0.000232	1.4	128.92	44.12	0.14
WP-20 Canal	Lower	1850	50-Year	220.39	-3.98	0.89	-2.21	0.93	0.000242	1.49	148.13	47.82	0.15
WP-20 Canal	Lower	1850	100-Year	258.98	-3.98	1.3	-2.06	1.34	0.00024	1.54	168.39	51.51	0.15
WP-20 Canal	Lower	1750	2-Year	66.77	-4.09	-0.94	-3.08	-0.93	0.000118	0.85	78.62	34.27	0.1
WP-20 Canal	Lower	1750	5-Year	105.51	-4.09	-0.4	-2.86	-0.38	0.00016	1.08	97.63	37.17	0.12
WP-20 Canal	Lower	1750	10-Year	136.04	-4.09	0.02	-2.7	0.04	0.000178	1.19	114.02	40.61	0.13
WP-20 Canal	Lower	1750	25-Year	180.68	-4.09	0.46	-2.49	0.48	0.000213	1.36	132.47	44.15	0.14
WP-20 Canal	Lower	1750	50-Year	220.39	-4.09	0.87	-2.32	0.91	0.000223	1.45	151.58	55.28	0.14
WP-20 Canal	Lower	1750	100-Year	258.98	-4.09	1.28	-2.17	1.32	0.000222	1.51	171.67	66.36	0.14

HEC-RAS Output - Alternative 3

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Lower	1650	2-Year	66.77	-4.19	-0.95	-3.18	-0.94	0.000105	0.82	81.7	34.58	0.09
WP-20 Canal	Lower	1650	5-Year	105.51	-4.19	-0.42	-2.96	-0.4	0.000152	1.04	101	38.97	0.11
WP-20 Canal	Lower	1650	10-Year	136.04	-4.19	0	-2.8	0.02	0.000174	1.15	118.4	43.94	0.12
WP-20 Canal	Lower	1650	25-Year	180.68	-4.19	0.44	-2.59	0.46	0.000209	1.3	138.5	49.05	0.14
WP-20 Canal	Lower	1650	50-Year	220.39	-4.19	0.85	-2.42	0.88	0.000218	1.38	159.96	53.98	0.14
WP-20 Canal	Lower	1650	100-Year	258.98	-4.19	1.26	-2.28	1.29	0.000215	1.42	183.03	63.33	0.14
WP-20 Canal	Lower	1600	2-Year	66.77	-4.24	-0.95	-3.23	-0.94	0.000099	0.8	83.27	34.74	0.09
WP-20 Canal	Lower	1600	5-Year	105.51	-4.24	-0.42	-3	-0.41	0.000151	1.03	102.91	40.69	0.11
WP-20 Canal	Lower	1600	10-Year	136.04	-4.24	0	-2.85	0.02	0.000174	1.12	121.22	46.78	0.12
WP-20 Canal	Lower	1600	25-Year	180.68	-4.24	0.43	-2.64	0.45	0.00021	1.27	142.73	59.06	0.14
WP-20 Canal	Lower	1600	50-Year	220.39	-4.24	0.84	-2.47	0.87	0.000217	1.33	166.1	83.59	0.14
WP-20 Canal	Lower	1600	100-Year	258.98	-4.24	1.25	-2.32	1.28	0.000212	1.35	191.53	100.99	0.14
WP-20 Canal	Lower	1500	2-Year	66.77	-4.34	-0.96	-3.33	-0.95	0.000089	0.77	86.45	35.06	0.09
WP-20 Canal	Lower	1500	5-Year	105.51	-4.34	-0.44	-3.11	-0.42	0.00013	1	105.68	38.74	0.11
WP-20 Canal	Lower	1500	10-Year	136.04	-4.34	-0.02	-2.95	0	0.000149	1.11	122.62	42.61	0.12
WP-20 Canal	Lower	1500	25-Year	180.68	-4.34	0.41	-2.75	0.43	0.000182	1.28	141.65	46.57	0.13
WP-20 Canal	Lower	1500	50-Year	220.39	-4.34	0.82	-2.57	0.85	0.000187	1.36	163.26	79.82	0.13
WP-20 Canal	Lower	1500	100-Year	258.98	-4.34	1.23	-2.42	1.26	0.000167	1.39	205.18	115.6	0.13
WP-20 Canal	Lower	1450	2-Year	66.77	-4.39	-0.97	-3.38	-0.96	0.000084	0.76	88.06	35.22	0.08
WP-20 Canal	Lower	1450	5-Year	105.51	-4.39	-0.44	-3.15	-0.43	0.000124	0.98	107.44	38.98	0.1
WP-20 Canal	Lower	1450	10-Year	136.04	-4.39	-0.03	-3	-0.01	0.00014	1.09	124.3	42.19	0.11
WP-20 Canal	Lower	1450	25-Year	180.68	-4.39	0.4	-2.79	0.42	0.000172	1.26	142.93	45.46	0.13
WP-20 Canal	Lower	1450	50-Year	220.39	-4.39	0.81	-2.63	0.84	0.000182	1.36	162.43	48.66	0.13
WP-20 Canal	Lower	1450	100-Year	258.98	-4.39	1.22	-2.47	1.25	0.000182	1.41	184.95	64.39	0.13
WP-20 Canal	Lower	1400	2-Year	66.77	-4.44	-0.97		-0.96	0.00008	0.74	89.69	35.39	0.08
WP-20 Canal	Lower	1400	5-Year	105.51	-4.44	-0.45		-0.43	0.000129	0.96	109.83	42.58	0.11
WP-20 Canal	Lower	1400	10-Year	136.04	-4.44	-0.03		-0.02	0.000151	1.06	128.89	49.3	0.12
WP-20 Canal	Lower	1400	25-Year	180.68	-4.44	0.39		0.41	0.000185	1.19	151.27	56.17	0.13
WP-20 Canal	Lower	1400	50-Year	220.39	-4.44	0.81		0.83	0.000188	1.25	176.29	65.93	0.13
WP-20 Canal	Lower	1400	100-Year	258.98	-4.44	1.22		1.24	0.000169	1.28	208.82	95.54	0.13
WP-20 Canal	Lower	1300	2-Year	66.77	-4.55	-0.98	-3.54	-0.97	0.000073	0.71	93.39	36.53	0.08
WP-20 Canal	Lower	1300	5-Year	105.51	-4.55	-0.46	-3.31	-0.45	0.000112	0.93	113.64	41.56	0.1
WP-20 Canal	Lower	1300	10-Year	136.04	-4.55	-0.05	-3.15	-0.03	0.000129	1.03	131.6	45.44	0.11
WP-20 Canal	Lower	1300	25-Year	180.68	-4.55	0.37	-2.95	0.4	0.000158	1.19	151.55	49.39	0.12
WP-20 Canal	Lower	1300	50-Year	220.39	-4.55	0.79	-2.79	0.81	0.000168	1.28	172.77	53.27	0.12
WP-20 Canal	Lower	1300	100-Year	258.98	-4.55	1.2	-2.64	1.23	0.000169	1.32	195.47	57.13	0.13
WP-20 Canal	Lower	1250	2-Year	66.77	-4.6	-0.98	-3.59	-0.97	0.000069	0.7	95.09	36.76	0.08
WP-20 Canal	Lower	1250	5-Year	105.51	-4.6	-0.46	-3.36	-0.45	0.000105	0.92	115.07	40.68	0.1
WP-20 Canal	Lower	1250	10-Year	136.04	-4.6	-0.05	-3.2	-0.04	0.00012	1.03	132.47	43.75	0.1
WP-20 Canal	Lower	1250	25-Year	180.68	-4.6	0.37	-3	0.39	0.000149	1.19	151.46	46.87	0.12
WP-20 Canal	Lower	1250	50-Year	220.39	-4.6	0.78	-2.83	0.8	0.000159	1.29	171.42	49.94	0.12
WP-20 Canal	Lower	1250	100-Year	258.98	-4.6	1.19	-2.68	1.22	0.000162	1.34	192.56	52.99	0.12
WP-20 Canal	Lower	1150	2-Year	66.77	-4.7	-0.99	-3.69	-0.98	0.000064	0.68	98.66	38.25	0.07
WP-20 Canal	Lower	1150	5-Year	105.51	-4.7	-0.47	-3.46	-0.46	0.0001	0.88	119.61	43.52	0.09
WP-20 Canal	Lower	1150	10-Year	136.04	-4.7	-0.06	-3.31	-0.05	0.000116	0.98	138.35	47.75	0.1
WP-20 Canal	Lower	1150	25-Year	180.68	-4.7	0.35	-3.1	0.37	0.000145	1.13	159.59	55.38	0.11
WP-20 Canal	Lower	1150	50-Year	220.39	-4.7	0.77	-2.93	0.79	0.00014	1.21	186.87	76.8	0.12
WP-20 Canal	Lower	1150	100-Year	258.98	-4.7	1.18	-2.78	1.2	0.000128	1.25	223.68	108.47	0.11
Schneider Cana	Upper	29400	2-Year	112	-3.88	-0.64		-0.63	0.000066	0.74	150.5	52.95	0.08
Schneider Cana	Upper	29400	5-Year	174	-3.88	0.02		0.03	0.000084	0.93	186.27	55.59	0.09
Schneider Cana	Upper	29400	10-Year	222	-3.88	0.5		0.52	0.000091	1.04	213.57	57.52	0.1
Schneider Cana	Upper	29400	25-Year	291	-3.88	1.04		1.06	0.000104	1.19	245.28	59.68	0.1
Schneider Cana	Upper	29400	50-Year	348	-3.88	1.51		1.53	0.00011	1.27	273.6	62.5	0.11
Schneider Cana	Upper	29400	100-Year	405	-3.88	1.95		1.98	0.000114	1.34	309.07	100.76	0.11
Schneider Cana	Upper	29300	2-Year	112	-3.89	-0.65		-0.64	0.000066	0.74	150.68	52.96	0.08
Schneider Cana	Upper	29300	5-Year	174	-3.89	0.01		0.02	0.000084	0.93	186.35	55.59	0.09

HEC-RAS Output - Alternative 3

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Upper	29300	10-Year	222	-3.89	0.49		0.51	0.000091	1.04	213.61	57.51	0.1
Schneider Cana	Upper	29300	25-Year	291	-3.89	1.03		1.05	0.000104	1.19	245.23	59.67	0.1
Schneider Cana	Upper	29300	50-Year	348	-3.89	1.5		1.52	0.000108	1.27	274.62	74.47	0.11
Schneider Cana	Upper	29300	100-Year	405	-3.89	1.94		1.97	0.000108	1.34	308.89	79.02	0.11
Schneider Cana	Upper	29200	2-Year	112	-3.9	-0.65	-3.29	-0.65	0.000066	0.74	150.87	52.98	0.08
Schneider Cana	Upper	29200	5-Year	174	-3.9	0	-3.08	0.01	0.000084	0.93	186.45	55.61	0.09
Schneider Cana	Upper	29200	10-Year	222	-3.9	0.48	-2.93	0.5	0.000091	1.04	213.68	57.54	0.1
Schneider Cana	Upper	29200	25-Year	291	-3.9	1.02	-2.75	1.04	0.000104	1.19	245.24	59.69	0.1
Schneider Cana	Upper	29200	50-Year	348	-3.9	1.49	-2.59	1.51	0.000109	1.27	273.42	61.55	0.11
Schneider Cana	Upper	29200	100-Year	405	-3.9	1.93	-2.47	1.96	0.000111	1.34	301.2	63.33	0.11
Schneider Cana	Upper	29100	2-Year	112	-3.91	-0.66	-3.3	-0.65	0.000066	0.74	151.05	52.99	0.08
Schneider Cana	Upper	29100	5-Year	174	-3.91	-0.01	-3.08	0.01	0.000084	0.93	186.54	55.61	0.09
Schneider Cana	Upper	29100	10-Year	222	-3.91	0.47	-2.94	0.49	0.000091	1.04	213.72	57.53	0.09
Schneider Cana	Upper	29100	25-Year	291	-3.91	1.01	-2.75	1.03	0.000104	1.19	245.2	59.68	0.1
Schneider Cana	Upper	29100	50-Year	348	-3.91	1.47	-2.61	1.5	0.000109	1.27	273.34	61.54	0.11
Schneider Cana	Upper	29100	100-Year	405	-3.91	1.92	-2.48	1.95	0.000111	1.35	301.1	63.32	0.11
Schneider Cana	Upper	29000	2-Year	112	-3.92	-0.67		-0.66	0.000065	0.74	151.23	53	0.08
Schneider Cana	Upper	29000	5-Year	174	-3.92	-0.02		0	0.000084	0.93	186.62	55.61	0.09
Schneider Cana	Upper	29000	10-Year	222	-3.92	0.46		0.48	0.000091	1.04	213.76	57.52	0.09
Schneider Cana	Upper	29000	25-Year	291	-3.92	1		1.02	0.000104	1.19	245.15	59.66	0.1
Schneider Cana	Upper	29000	50-Year	348	-3.92	1.46		1.49	0.000107	1.27	277.35	80.94	0.11
Schneider Cana	Upper	29000	100-Year	405	-3.92	1.91		1.94	0.000106	1.34	318.93	122.69	0.11
Schneider Cana	Upper	28900	2-Year	112	-3.93	-0.67	-3.31	-0.67	0.000065	0.74	151.42	53.03	0.08
Schneider Cana	Upper	28900	5-Year	174	-3.93	-0.02	-3.11	-0.01	0.000084	0.93	186.72	55.63	0.09
Schneider Cana	Upper	28900	10-Year	222	-3.93	0.45	-2.96	0.47	0.000091	1.04	213.83	57.54	0.09
Schneider Cana	Upper	28900	25-Year	291	-3.93	0.99	-2.77	1.01	0.000105	1.19	245.15	59.68	0.1
Schneider Cana	Upper	28900	50-Year	348	-3.93	1.45	-2.63	1.48	0.000107	1.27	275.67	79.61	0.11
Schneider Cana	Upper	28900	100-Year	405	-3.93	1.9	-2.49	1.93	0.000107	1.34	308.2	101.22	0.11
Schneider Cana	Upper	28800	2-Year	112	-3.94	-0.68		-0.67	0.000065	0.74	151.6	53.03	0.08
Schneider Cana	Upper	28800	5-Year	174	-3.94	-0.03		-0.02	0.000084	0.93	186.8	55.62	0.09
Schneider Cana	Upper	28800	10-Year	222	-3.94	0.45		0.46	0.000091	1.04	213.87	57.53	0.09
Schneider Cana	Upper	28800	25-Year	291	-3.94	0.98		1	0.000104	1.19	245.12	60.63	0.1
Schneider Cana	Upper	28800	50-Year	348	-3.94	1.44		1.47	0.000106	1.27	276.76	83.3	0.11
Schneider Cana	Upper	28800	100-Year	405	-3.94	1.89		1.91	0.000103	1.33	328.66	138.59	0.11
Schneider Cana	Upper	28700	2-Year	112	-3.95	-0.69	-3.33	-0.68	0.000065	0.74	151.79	53.05	0.08
Schneider Cana	Upper	28700	5-Year	174	-3.95	-0.04	-3.13	-0.03	0.000083	0.93	186.9	55.63	0.09
Schneider Cana	Upper	28700	10-Year	222	-3.95	0.44	-2.98	0.45	0.000091	1.04	213.93	57.55	0.09
Schneider Cana	Upper	28700	25-Year	291	-3.95	0.97	-2.8	0.99	0.000105	1.19	245.09	66.27	0.1
Schneider Cana	Upper	28700	50-Year	348	-3.95	1.43	-2.64	1.46	0.000106	1.27	282.61	99.74	0.11
Schneider Cana	Upper	28700	100-Year	405	-3.95	1.88	-2.52	1.9	0.000104	1.32	328.48	124.33	0.11
Schneider Cana	Upper	28600	2-Year	112	-3.96	-0.69	-3.34	-0.69	0.000064	0.74	151.98	53.06	0.08
Schneider Cana	Upper	28600	5-Year	174	-3.96	-0.05	-3.13	-0.04	0.000083	0.93	186.99	55.64	0.09
Schneider Cana	Upper	28600	10-Year	222	-3.96	0.43	-2.99	0.44	0.000091	1.04	213.97	57.54	0.09
Schneider Cana	Upper	28600	25-Year	291	-3.96	0.96	-2.8	0.98	0.000105	1.19	245.05	68.36	0.1
Schneider Cana	Upper	28600	50-Year	348	-3.96	1.42	-2.66	1.45	0.000109	1.27	273.1	85.57	0.11
Schneider Cana	Upper	28600	100-Year	405	-3.96	1.87	-2.52	1.89	0.000106	1.32	328.46	121.02	0.11
Schneider Cana	Upper	28500	2-Year	112	-3.97	-0.7	-3.35	-0.69	0.000064	0.74	152.17	53.07	0.08
Schneider Cana	Upper	28500	5-Year	174	-3.97	-0.06	-3.15	-0.04	0.000083	0.93	187.08	72.26	0.09
Schneider Cana	Upper	28500	10-Year	222	-3.97	0.42	-3	0.43	0.000091	1.04	214.02	95.59	0.09
Schneider Cana	Upper	28500	25-Year	291	-3.97	0.95	-2.82	0.97	0.000105	1.19	245.02	107.28	0.1
Schneider Cana	Upper	28500	50-Year	348	-3.97	1.41	-2.67	1.43	0.000109	1.27	273.04	120.96	0.11
Schneider Cana	Upper	28500	100-Year	405	-3.97	1.85	-2.54	1.88	0.000111	1.35	300.79	126.43	0.11
Schneider Cana	Upper	28400	2-Year	112	-3.98	-0.71	-3.37	-0.7	0.000064	0.74	152.37	53.1	0.08
Schneider Cana	Upper	28400	5-Year	174	-3.98	-0.07	-3.16	-0.05	0.000083	0.93	187.19	55.66	0.09
Schneider Cana	Upper	28400	10-Year	222	-3.98	0.41	-3.01	0.43	0.000091	1.04	214.09	57.56	0.09
Schneider Cana	Upper	28400	25-Year	291	-3.98	0.94	-2.82	0.96	0.000105	1.19	246.06	80.72	0.1

HEC-RAS Output - Alternative 3

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Upper	28400	50-Year	348	-3.98	1.4	-2.68	1.42	0.000106	1.27	281.62	127.19	0.11
Schneider Cana	Upper	28400	100-Year	405	-3.98	1.85	-2.54	1.87	0.000099	1.3	352.67	131.66	0.1
Schneider Cana	Upper	28300	2-Year	112	-3.99	-0.71	-3.37	-0.7	0.000064	0.73	152.56	53.12	0.08
Schneider Cana	Upper	28300	5-Year	174	-3.99	-0.07	-3.16	-0.06	0.000082	0.93	188.1	63.23	0.09
Schneider Cana	Upper	28300	10-Year	222	-3.99	0.4	-3.02	0.42	0.000087	1.03	219.55	67.61	0.09
Schneider Cana	Upper	28300	25-Year	291	-3.99	0.93	-2.83	0.95	0.000098	1.18	255.9	74.06	0.1
Schneider Cana	Upper	28300	50-Year	348	-3.99	1.39	-2.69	1.41	0.000096	1.25	306.79	142.15	0.1
Schneider Cana	Upper	28300	100-Year	405	-3.99	1.84	-2.56	1.86	0.00009	1.28	370.72	143.65	0.1
Schneider Cana	Upper	28200	2-Year	112	-4	-0.72		-0.71	0.000063	0.73	152.75	53.13	0.08
Schneider Cana	Upper	28200	5-Year	174	-4	-0.08		-0.07	0.000083	0.93	187.38	55.67	0.09
Schneider Cana	Upper	28200	10-Year	222	-4	0.39		0.41	0.000091	1.04	214.22	57.57	0.09
Schneider Cana	Upper	28200	25-Year	291	-4	0.92		0.94	0.000105	1.19	245.1	64.61	0.1
Schneider Cana	Upper	28200	50-Year	348	-4	1.38		1.4	0.000105	1.26	298.7	130.77	0.1
Schneider Cana	Upper	28200	100-Year	405	-4	1.83		1.85	0.000098	1.29	358.42	138.79	0.1
Schneider Cana	Upper	28100	2-Year	112	-4.01	-0.73	-3.39	-0.72	0.000063	0.73	152.95	53.14	0.08
Schneider Cana	Upper	28100	5-Year	174	-4.01	-0.09	-3.19	-0.08	0.000083	0.93	187.47	55.68	0.09
Schneider Cana	Upper	28100	10-Year	222	-4.01	0.38	-3.04	0.4	0.00009	1.04	214.27	57.57	0.09
Schneider Cana	Upper	28100	25-Year	291	-4.01	0.91	-2.85	0.93	0.000103	1.19	249.44	79.19	0.1
Schneider Cana	Upper	28100	50-Year	348	-4.01	1.37	-2.71	1.39	0.000101	1.26	295.21	110.24	0.1
Schneider Cana	Upper	28100	100-Year	405	-4.01	1.82	-2.58	1.84	0.000096	1.3	345.84	115.56	0.1
Schneider Cana	Upper	28000	2-Year	112	-4.02	-0.73		-0.72	0.000063	0.73	153.14	53.15	0.08
Schneider Cana	Upper	28000	5-Year	174	-4.02	-0.1		-0.09	0.000083	0.93	187.57	55.68	0.09
Schneider Cana	Upper	28000	10-Year	222	-4.02	0.37		0.39	0.00009	1.04	214.35	62.5	0.09
Schneider Cana	Upper	28000	25-Year	291	-4.02	0.9		0.92	0.000102	1.17	263.53	121.52	0.1
Schneider Cana	Upper	28000	50-Year	348	-4.02	1.36		1.38	0.000098	1.22	323.14	130.76	0.1
Schneider Cana	Upper	28000	100-Year	405	-4.02	1.81		1.83	0.000091	1.24	382.09	131.66	0.1
Schneider Cana	Upper	27900	2-Year	112	-4.03	-0.74	-3.41	-0.73	0.000063	0.73	153.35	53.17	0.08
Schneider Cana	Upper	27900	5-Year	174	-4.03	-0.11	-3.2	-0.09	0.000082	0.93	187.67	55.7	0.09
Schneider Cana	Upper	27900	10-Year	222	-4.03	0.36	-3.06	0.38	0.00009	1.04	214.39	57.58	0.09
Schneider Cana	Upper	27900	25-Year	291	-4.03	0.89	-2.87	0.91	0.000102	1.18	252.61	89.93	0.1
Schneider Cana	Upper	27900	50-Year	348	-4.03	1.35	-2.73	1.37	0.000101	1.26	291.81	120.37	0.1
Schneider Cana	Upper	27900	100-Year	405	-4.03	1.8	-2.59	1.82	0.000094	1.29	360.89	137.81	0.1
Schneider Cana	Upper	27800	2-Year	112	-4.04	-0.74	-3.43	-0.74	0.000062	0.73	153.54	53.18	0.08
Schneider Cana	Upper	27800	5-Year	174	-4.04	-0.12	-3.21	-0.1	0.000082	0.93	187.76	55.69	0.09
Schneider Cana	Upper	27800	10-Year	222	-4.04	0.36	-3.07	0.37	0.00009	1.04	214.42	83.49	0.09
Schneider Cana	Upper	27800	25-Year	291	-4.04	0.87	-2.88	0.9	0.000105	1.19	244.87	128.26	0.1
Schneider Cana	Upper	27800	50-Year	348	-4.04	1.34	-2.74	1.36	0.000094	1.19	338.41	130.76	0.1
Schneider Cana	Upper	27800	100-Year	405	-4.04	1.79	-2.61	1.81	0.000087	1.21	397.52	131.66	0.1
Schneider Cana	Upper	27700	2-Year	112	-4.05	-0.75	-3.43	-0.74	0.000062	0.73	153.74	53.2	0.08
Schneider Cana	Upper	27700	5-Year	174	-4.05	-0.12	-3.22	-0.11	0.000082	0.93	187.87	67.13	0.09
Schneider Cana	Upper	27700	10-Year	222	-4.05	0.35	-3.08	0.36	0.00009	1.04	214.49	74.25	0.09
Schneider Cana	Upper	27700	25-Year	291	-4.05	0.86	-2.9	0.89	0.000105	1.19	244.86	83.74	0.1
Schneider Cana	Upper	27700	50-Year	348	-4.05	1.33	-2.75	1.35	0.000101	1.23	317.86	130.75	0.1
Schneider Cana	Upper	27700	100-Year	405	-4.05	1.78	-2.61	1.8	0.000092	1.25	381.96	151.45	0.1
Schneider Cana	Upper	27600	2-Year	112	-4.06	-0.76	-3.44	-0.75	0.000062	0.73	153.94	53.21	0.08
Schneider Cana	Upper	27600	5-Year	174	-4.06	-0.13	-3.23	-0.12	0.000082	0.93	187.96	55.7	0.09
Schneider Cana	Upper	27600	10-Year	222	-4.06	0.34	-3.09	0.35	0.00009	1.03	214.54	57.58	0.09
Schneider Cana	Upper	27600	25-Year	291	-4.06	0.85	-2.9	0.88	0.000105	1.19	246.12	74.71	0.1
Schneider Cana	Upper	27600	50-Year	348	-4.06	1.32	-2.76	1.34	0.000106	1.27	285.58	115.66	0.11
Schneider Cana	Upper	27600	100-Year	405	-4.06	1.77	-2.62	1.79	0.000101	1.31	346.59	131.65	0.1
Schneider Cana	Upper	27500	2-Year	112	-4.07	-0.76	-3.45	-0.75	0.000062	0.73	154.15	53.23	0.08
Schneider Cana	Upper	27500	5-Year	174	-4.07	-0.14	-3.24	-0.13	0.000082	0.93	188.07	55.72	0.09
Schneider Cana	Upper	27500	10-Year	222	-4.07	0.33	-3.1	0.34	0.00009	1.03	214.61	57.6	0.09
Schneider Cana	Upper	27500	25-Year	291	-4.07	0.84	-2.92	0.86	0.000105	1.19	245	65.6	0.1
Schneider Cana	Upper	27500	50-Year	348	-4.07	1.31	-2.77	1.33	0.000107	1.27	280.3	91.78	0.11
Schneider Cana	Upper	27500	100-Year	405	-4.07	1.76	-2.64	1.78	0.000103	1.32	337.56	131.66	0.11

HEC-RAS Output - Alternative 3

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Upper	27400	2-Year	112	-4.08	-0.77	-3.46	-0.76	0.000061	0.73	154.36	53.25	0.08
Schneider Cana	Upper	27400	5-Year	174	-4.08	-0.15	-3.26	-0.14	0.000082	0.92	188.17	55.73	0.09
Schneider Cana	Upper	27400	10-Year	222	-4.08	0.32	-3.12	0.34	0.00009	1.03	214.67	57.6	0.09
Schneider Cana	Upper	27400	25-Year	291	-4.08	0.83	-2.92	0.85	0.000105	1.19	244.78	59.66	0.1
Schneider Cana	Upper	27400	50-Year	348	-4.08	1.29	-2.78	1.32	0.000109	1.28	272.76	61.51	0.11
Schneider Cana	Upper	27400	100-Year	405	-4.08	1.74	-2.64	1.77	0.000111	1.35	300.8	83.48	0.11
Schneider Cana	Upper	27300	2-Year	112	-4.09	-0.78	-3.47	-0.77	0.000061	0.72	154.57	53.26	0.07
Schneider Cana	Upper	27300	5-Year	174	-4.09	-0.16	-3.26	-0.14	0.000082	0.92	188.27	55.74	0.09
Schneider Cana	Upper	27300	10-Year	222	-4.09	0.31	-3.12	0.33	0.00009	1.03	214.73	57.61	0.09
Schneider Cana	Upper	27300	25-Year	291	-4.09	0.82	-2.94	0.84	0.000105	1.19	244.75	59.65	0.1
Schneider Cana	Upper	27300	50-Year	348	-4.09	1.28	-2.79	1.31	0.000109	1.28	272.7	61.5	0.11
Schneider Cana	Upper	27300	100-Year	405	-4.09	1.73	-2.66	1.76	0.000111	1.35	302.14	70.25	0.11
Schneider Cana	Upper	27200	2-Year	112	-4.1	-0.78	-3.48	-0.77	0.000061	0.72	154.77	53.27	0.07
Schneider Cana	Upper	27200	5-Year	174	-4.1	-0.16	-3.27	-0.15	0.000082	0.92	188.37	55.74	0.09
Schneider Cana	Upper	27200	10-Year	222	-4.1	0.3	-3.13	0.32	0.00009	1.03	214.77	57.6	0.09
Schneider Cana	Upper	27200	25-Year	291	-4.1	0.81	-2.95	0.83	0.000105	1.19	244.7	59.64	0.1
Schneider Cana	Upper	27200	50-Year	348	-4.1	1.27	-2.8	1.3	0.000109	1.28	272.62	61.48	0.11
Schneider Cana	Upper	27200	100-Year	405	-4.1	1.72	-2.66	1.75	0.000112	1.35	300.62	64.54	0.11
Schneider Cana	Upper	27100	2-Year	112	-4.11	-0.79	-3.49	-0.78	0.000061	0.72	154.98	53.29	0.07
Schneider Cana	Upper	27100	5-Year	174	-4.11	-0.17	-3.28	-0.16	0.000081	0.92	188.48	55.75	0.09
Schneider Cana	Upper	27100	10-Year	222	-4.11	0.29	-3.14	0.31	0.00009	1.03	214.84	57.61	0.09
Schneider Cana	Upper	27100	25-Year	291	-4.11	0.8	-2.95	0.82	0.000105	1.19	244.68	59.68	0.1
Schneider Cana	Upper	27100	50-Year	348	-4.11	1.26	-2.81	1.29	0.000122	1.27	274.68	68.43	0.11
Schneider Cana	Upper	27100	100-Year	405	-4.11	1.71	-2.68	1.74	0.000127	1.32	306.66	73.99	0.11
Schneider Cana	Upper	27000	2-Year	112	-4.12	-0.79	-3.5	-0.79	0.00006	0.72	155.19	53.31	0.07
Schneider Cana	Upper	27000	5-Year	174	-4.12	-0.18	-3.29	-0.17	0.000081	0.92	188.58	55.76	0.09
Schneider Cana	Upper	27000	10-Year	222	-4.12	0.28	-3.15	0.3	0.00009	1.03	214.9	57.61	0.09
Schneider Cana	Upper	27000	25-Year	291	-4.12	0.79	-2.96	0.81	0.000105	1.19	244.64	59.64	0.1
Schneider Cana	Upper	27000	50-Year	348	-4.12	1.25	-2.82	1.27	0.00011	1.28	272.43	61.48	0.11
Schneider Cana	Upper	27000	100-Year	405	-4.12	1.7	-2.68	1.73	0.000112	1.35	300.36	63.27	0.11
Schneider Cana	Upper	26900	2-Year	112	-4.13	-0.8	-3.51	-0.79	0.00006	0.72	155.41	53.32	0.07
Schneider Cana	Upper	26900	5-Year	174	-4.13	-0.19	-3.3	-0.18	0.000081	0.92	188.69	55.76	0.09
Schneider Cana	Upper	26900	10-Year	222	-4.13	0.27	-3.16	0.29	0.00009	1.03	214.96	57.62	0.09
Schneider Cana	Upper	26900	25-Year	291	-4.13	0.78	-2.97	0.8	0.000105	1.19	244.61	59.64	0.1
Schneider Cana	Upper	26900	50-Year	348	-4.13	1.24	-2.83	1.26	0.00011	1.28	272.36	65.42	0.11
Schneider Cana	Upper	26900	100-Year	405	-4.13	1.69	-2.7	1.71	0.000112	1.35	300.29	89.33	0.11
Schneider Cana	Upper	26800	2-Year	112	-4.14	-0.81	-3.52	-0.8	0.00006	0.72	155.62	53.34	0.07
Schneider Cana	Upper	26800	5-Year	174	-4.14	-0.2	-3.31	-0.18	0.000081	0.92	188.79	55.77	0.09
Schneider Cana	Upper	26800	10-Year	222	-4.14	0.27	-3.17	0.28	0.00009	1.03	215.02	57.62	0.09
Schneider Cana	Upper	26800	25-Year	291	-4.14	0.77	-2.98	0.79	0.000105	1.19	244.58	59.64	0.1
Schneider Cana	Upper	26800	50-Year	348	-4.14	1.23	-2.84	1.25	0.00011	1.28	272.3	61.47	0.11
Schneider Cana	Upper	26800	100-Year	405	-4.14	1.67	-2.7	1.7	0.000112	1.35	300.21	71.72	0.11
Schneider Cana	Upper	26700	2-Year	112	-4.15	-0.81	-3.53	-0.8	0.00006	0.72	155.83	53.35	0.07
Schneider Cana	Upper	26700	5-Year	174	-4.15	-0.21	-3.32	-0.19	0.000081	0.92	188.9	60.56	0.09
Schneider Cana	Upper	26700	10-Year	222	-4.15	0.26	-3.18	0.27	0.000089	1.03	215.08	68.25	0.09
Schneider Cana	Upper	26700	25-Year	291	-4.15	0.76	-2.99	0.78	0.000105	1.19	244.55	77.15	0.1
Schneider Cana	Upper	26700	50-Year	348	-4.15	1.22	-2.85	1.24	0.00011	1.28	272.24	97.09	0.11
Schneider Cana	Upper	26700	100-Year	405	-4.15	1.67	-2.72	1.69	0.000102	1.3	342.04	111.37	0.1
Schneider Cana	Upper	26600	2-Year	112	-4.16	-0.82	-3.54	-0.81	0.000059	0.72	156.05	53.37	0.07
Schneider Cana	Upper	26600	5-Year	174	-4.16	-0.21	-3.33	-0.2	0.000081	0.92	189.01	55.79	0.09
Schneider Cana	Upper	26600	10-Year	222	-4.16	0.25	-3.19	0.26	0.000089	1.03	215.15	57.64	0.09
Schneider Cana	Upper	26600	25-Year	291	-4.16	0.75	-3	0.77	0.000105	1.19	244.53	60.93	0.1
Schneider Cana	Upper	26600	50-Year	348	-4.16	1.21	-2.86	1.23	0.00011	1.28	272.19	116.36	0.11
Schneider Cana	Upper	26600	100-Year	405	-4.16	1.66	-2.73	1.68	0.000104	1.3	347.89	131.63	0.11
Schneider Cana	Upper	26500	2-Year	112	-4.17	-0.82	-3.55	-0.82	0.000059	0.72	156.27	53.39	0.07

HEC-RAS Output - Alternative 3

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Upper	26500	5-Year	174	-4.17	-0.22	-3.34	-0.21	0.000081	0.92	189.12	55.79	0.09
Schneider Cana	Upper	26500	10-Year	222	-4.17	0.24	-3.2	0.25	0.000089	1.03	215.2	57.63	0.09
Schneider Cana	Upper	26500	25-Year	291	-4.17	0.74	-3.01	0.76	0.000105	1.19	244.49	65.03	0.1
Schneider Cana	Upper	26500	50-Year	348	-4.17	1.19	-2.87	1.22	0.00011	1.28	272.12	95.96	0.11
Schneider Cana	Upper	26500	100-Year	405	-4.17	1.64	-2.74	1.67	0.000112	1.35	300.02	118.76	0.11
Schneider Cana	Upper	26400	2-Year	112	-4.18	-0.83	-3.56	-0.82	0.000059	0.72	156.49	53.4	0.07
Schneider Cana	Upper	26400	5-Year	174	-4.18	-0.23	-3.35	-0.22	0.00008	0.92	189.23	55.8	0.09
Schneider Cana	Upper	26400	10-Year	222	-4.18	0.23	-3.21	0.25	0.000089	1.03	215.26	57.64	0.09
Schneider Cana	Upper	26400	25-Year	291	-4.18	0.73	-3.02	0.75	0.000105	1.19	244.45	64.14	0.1
Schneider Cana	Upper	26400	50-Year	348	-4.18	1.18	-2.88	1.21	0.00011	1.28	272.05	79.97	0.11
Schneider Cana	Upper	26400	100-Year	405	-4.18	1.63	-2.74	1.66	0.000112	1.35	299.94	87.04	0.11
Schneider Cana	Upper	26300	2-Year	112	-4.19	-0.84	-3.58	-0.83	0.000059	0.71	156.71	53.42	0.07
Schneider Cana	Upper	26300	5-Year	174	-4.19	-0.24	-3.37	-0.22	0.00008	0.92	189.34	55.81	0.09
Schneider Cana	Upper	26300	10-Year	222	-4.19	0.22	-3.22	0.24	0.000089	1.03	215.32	57.64	0.09
Schneider Cana	Upper	26300	25-Year	291	-4.19	0.72	-3.03	0.74	0.000105	1.19	244.42	69.48	0.1
Schneider Cana	Upper	26300	50-Year	348	-4.19	1.17	-2.89	1.2	0.00011	1.28	271.99	83.26	0.11
Schneider Cana	Upper	26300	100-Year	405	-4.19	1.62	-2.75	1.65	0.000112	1.35	299.86	92.53	0.11
Schneider Cana	Upper	26200	2-Year	112	-4.2	-0.84	-3.59	-0.83	0.000058	0.71	156.93	53.43	0.07
Schneider Cana	Upper	26200	5-Year	174	-4.2	-0.25	-3.38	-0.23	0.00008	0.92	189.44	55.81	0.09
Schneider Cana	Upper	26200	10-Year	222	-4.2	0.21	-3.23	0.23	0.000089	1.03	215.38	57.64	0.09
Schneider Cana	Upper	26200	25-Year	291	-4.2	0.71	-3.04	0.73	0.000105	1.19	245.19	67.96	0.1
Schneider Cana	Upper	26200	50-Year	348	-4.2	1.16	-2.9	1.19	0.000109	1.27	281.45	92.73	0.11
Schneider Cana	Upper	26200	100-Year	405	-4.2	1.61	-2.77	1.64	0.000106	1.32	329.56	112.47	0.11
Schneider Cana	Upper	26100	2-Year	112	-4.21	-0.85	-3.59	-0.84	0.000058	0.71	157.16	53.45	0.07
Schneider Cana	Upper	26100	5-Year	174	-4.21	-0.25	-3.38	-0.24	0.00008	0.92	189.56	55.83	0.09
Schneider Cana	Upper	26100	10-Year	222	-4.21	0.2	-3.24	0.22	0.000089	1.03	215.45	57.65	0.09
Schneider Cana	Upper	26100	25-Year	291	-4.21	0.7	-3.05	0.72	0.000106	1.19	244.36	59.62	0.1
Schneider Cana	Upper	26100	50-Year	348	-4.21	1.15	-2.91	1.18	0.000109	1.28	273.15	84.52	0.11
Schneider Cana	Upper	26100	100-Year	405	-4.21	1.6	-2.77	1.63	0.000109	1.35	305.97	105.43	0.11
Schneider Cana	Upper	26000	2-Year	112	-4.22	-0.85		-0.84	0.000058	0.71	157.39	53.47	0.07
Schneider Cana	Upper	26000	5-Year	174	-4.22	-0.26		-0.25	0.00008	0.92	189.68	55.84	0.09
Schneider Cana	Upper	26000	10-Year	222	-4.22	0.19		0.21	0.000089	1.03	215.53	57.66	0.09
Schneider Cana	Upper	26000	25-Year	291	-4.22	0.69		0.71	0.000106	1.19	244.34	59.63	0.1
Schneider Cana	Upper	26000	50-Year	348	-4.22	1.14		1.16	0.00011	1.28	271.82	61.45	0.11
Schneider Cana	Upper	26000	100-Year	405	-4.22	1.59		1.61	0.000112	1.35	307.1	116.4	0.11
Schneider Cana	Upper	25900	2-Year	112	-4.23	-0.86	-3.61	-0.85	0.000058	0.71	157.6	53.48	0.07
Schneider Cana	Upper	25900	5-Year	174	-4.23	-0.27	-3.4	-0.26	0.00008	0.92	189.78	55.84	0.09
Schneider Cana	Upper	25900	10-Year	222	-4.23	0.18	-3.26	0.2	0.000089	1.03	215.57	57.65	0.09
Schneider Cana	Upper	25900	25-Year	291	-4.23	0.67	-3.08	0.7	0.000106	1.19	244.27	67.18	0.1
Schneider Cana	Upper	25900	50-Year	348	-4.23	1.13	-2.93	1.15	0.000111	1.28	271.72	79.76	0.11
Schneider Cana	Upper	25900	100-Year	405	-4.23	1.57	-2.79	1.6	0.000113	1.35	299.55	98.48	0.11
Schneider Cana	Upper	25800	2-Year	112	-4.24	-0.86	-3.62	-0.86	0.000057	0.71	157.83	53.5	0.07
Schneider Cana	Upper	25800	5-Year	174	-4.24	-0.28	-3.41	-0.26	0.00008	0.92	189.89	55.85	0.09
Schneider Cana	Upper	25800	10-Year	222	-4.24	0.18	-3.27	0.19	0.000089	1.03	215.64	57.66	0.09
Schneider Cana	Upper	25800	25-Year	291	-4.24	0.66	-3.09	0.69	0.000106	1.19	244.25	59.61	0.1
Schneider Cana	Upper	25800	50-Year	348	-4.24	1.12	-2.94	1.14	0.000111	1.28	271.66	61.42	0.11
Schneider Cana	Upper	25800	100-Year	405	-4.24	1.56	-2.8	1.59	0.000113	1.35	299.48	63.21	0.11
Schneider Cana	Upper	25700	2-Year	112	-4.25	-0.87	-3.63	-0.86	0.000057	0.71	158.06	53.52	0.07
Schneider Cana	Upper	25700	5-Year	174	-4.25	-0.29	-3.43	-0.27	0.000079	0.92	190.01	55.86	0.09
Schneider Cana	Upper	25700	10-Year	222	-4.25	0.17	-3.28	0.18	0.000089	1.03	215.71	57.67	0.09
Schneider Cana	Upper	25700	25-Year	291	-4.25	0.65	-3.1	0.68	0.000106	1.19	244.22	59.61	0.1
Schneider Cana	Upper	25700	50-Year	348	-4.25	1.11	-2.95	1.13	0.000111	1.28	271.61	61.42	0.11
Schneider Cana	Upper	25700	100-Year	405	-4.25	1.55	-2.81	1.58	0.000113	1.35	299.41	89.04	0.11
Schneider Cana	Middle	25600	2-Year	192.23	-5.74	-0.87	-4.43	-0.86	0.000045	0.71	270.31	76.35	0.07
Schneider Cana	Middle	25600	5-Year	294.49	-5.74	-0.29	-4.15	-0.27	0.000066	0.93	315.79	79.65	0.08
Schneider Cana	Middle	25600	10-Year	372.96	-5.74	0.16	-3.96	0.18	0.000077	1.06	352.37	82.22	0.09

HEC-RAS Output - Alternative 3

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Middle	25600	25-Year	483.32	-5.74	0.65	-3.72	0.67	0.000094	1.23	392.93	84.97	0.1
Schneider Cana	Middle	25600	50-Year	573.61	-5.74	1.1	-3.54	1.13	0.000102	1.33	432.09	110.14	0.11
Schneider Cana	Middle	25600	100-Year	665.02	-5.74	1.55	-3.38	1.58	0.000121	1.4	473.44	128.93	0.11
Schneider Cana	Middle	25500	2-Year	192.23	-5.74	-0.88		-0.87	0.000047	0.71	272.17	81.29	0.07
Schneider Cana	Middle	25500	5-Year	294.49	-5.74	-0.29		-0.28	0.000077	0.91	323.66	95.98	0.09
Schneider Cana	Middle	25500	10-Year	372.96	-5.74	0.16		0.17	0.000092	1.01	369.54	107.39	0.1
Schneider Cana	Middle	25500	25-Year	483.32	-5.74	0.64		0.66	0.000113	1.14	424.56	119.64	0.11
Schneider Cana	Middle	25500	50-Year	573.61	-5.74	1.09		1.12	0.000118	1.19	481.29	131.08	0.11
Schneider Cana	Middle	25500	100-Year	665.02	-5.74	1.54		1.56	0.000119	1.23	542.25	142.35	0.11
Schneider Cana	Middle	25400	2-Year	192.23	-5.74	-0.88	-4.43	-0.87	0.000045	0.71	272.36	79.39	0.07
Schneider Cana	Middle	25400	5-Year	294.49	-5.74	-0.3	-4.15	-0.29	0.000068	0.92	319.77	84.68	0.08
Schneider Cana	Middle	25400	10-Year	372.96	-5.74	0.15	-3.96	0.16	0.000079	1.04	358.74	88.79	0.09
Schneider Cana	Middle	25400	25-Year	483.32	-5.74	0.63	-3.73	0.65	0.000097	1.2	402.54	93.2	0.1
Schneider Cana	Middle	25400	50-Year	573.61	-5.74	1.08	-3.55	1.1	0.000103	1.29	445.45	97.32	0.11
Schneider Cana	Middle	25400	100-Year	665.02	-5.74	1.52	-3.38	1.55	0.000109	1.36	489.74	110.81	0.11
Schneider Cana	Middle	25364	2-Year	192.23	-5.92	-0.88	-4.58	-0.88	0.000041	0.67	285.64	82.22	0.06
Schneider Cana	Middle	25364	5-Year	294.49	-5.92	-0.31	-4.3	-0.3	0.00006	0.88	333.97	85.56	0.08
Schneider Cana	Middle	25364	10-Year	372.96	-5.92	0.14	-4.1	0.16	0.000069	1	372.88	87.95	0.09
Schneider Cana	Middle	25364	25-Year	483.32	-5.92	0.62	-3.87	0.64	0.000104	1.15	419.89	108.94	0.1
Schneider Cana	Middle	25364	50-Year	573.61	-5.92	1.07	-3.68	1.09	0.000105	1.22	469.77	112.44	0.11
Schneider Cana	Middle	25364	100-Year	665.02	-5.92	1.51	-3.51	1.54	0.000108	1.28	520.81	121.26	0.11
Schneider Cana	Middle	25300	2-Year	192.23	-6.02	-0.89	-4.58	-0.88	0.000042	0.68	282.83	82.63	0.06
Schneider Cana	Middle	25300	5-Year	294.49	-6.02	-0.31	-4.29	-0.3	0.000062	0.89	331.37	86.06	0.08
Schneider Cana	Middle	25300	10-Year	372.96	-6.02	0.14	-4.09	0.15	0.000071	1.01	370.41	88.36	0.09
Schneider Cana	Middle	25300	25-Year	483.32	-6.02	0.61	-3.85	0.63	0.000088	1.17	413.19	92.54	0.1
Schneider Cana	Middle	25300	50-Year	573.61	-6.02	1.06	-3.67	1.09	0.000109	1.25	458.23	108.84	0.11
Schneider Cana	Middle	25300	100-Year	665.02	-6.02	1.51	-3.5	1.53	0.000125	1.3	510.5	126.85	0.11
Schneider Cana	Middle	25200	2-Year	192.23	-6.17	-0.89	-4.62	-0.88	0.000044	0.69	279.42	83.4	0.07
Schneider Cana	Middle	25200	5-Year	294.49	-6.17	-0.32	-4.3	-0.31	0.000064	0.9	328.21	86.69	0.08
Schneider Cana	Middle	25200	10-Year	372.96	-6.17	0.13	-4.09	0.14	0.000073	1.01	367.45	88.98	0.09
Schneider Cana	Middle	25200	25-Year	483.32	-6.17	0.6	-3.85	0.63	0.000091	1.18	410.66	93.24	0.1
Schneider Cana	Middle	25200	50-Year	573.61	-6.17	1.05	-3.66	1.08	0.000115	1.26	456.26	112.63	0.11
Schneider Cana	Middle	25200	100-Year	665.02	-6.17	1.49	-3.5	1.52	0.000134	1.3	510.74	133.92	0.12
Schneider Cana	Middle	25100	2-Year	192.23	-6.32	-0.9	-4.68	-0.89	0.000045	0.69	277.56	83.36	0.07
Schneider Cana	Middle	25100	5-Year	294.49	-6.32	-0.33	-4.34	-0.31	0.000066	0.9	326.35	87.61	0.08
Schneider Cana	Middle	25100	10-Year	372.96	-6.32	0.12	-4.12	0.14	0.000077	1.02	366.26	91.4	0.09
Schneider Cana	Middle	25100	25-Year	483.32	-6.32	0.59	-3.87	0.62	0.000094	1.18	410.5	95.42	0.1
Schneider Cana	Middle	25100	50-Year	573.61	-6.32	1.04	-3.69	1.06	0.000111	1.26	455.05	108.57	0.11
Schneider Cana	Middle	25100	100-Year	665.02	-6.32	1.48	-3.52	1.51	0.000114	1.32	508.9	132.29	0.11
Schneider Cana	Middle	25000	2-Year	192.23	-6.48	-0.9	-4.76	-0.89	0.000046	0.69	277.34	83.48	0.07
Schneider Cana	Middle	25000	5-Year	294.49	-6.48	-0.33	-4.41	-0.32	0.000068	0.9	326.5	89.45	0.08
Schneider Cana	Middle	25000	10-Year	372.96	-6.48	0.11	-4.19	0.13	0.000078	1.02	367.16	93.13	0.09
Schneider Cana	Middle	25000	25-Year	483.32	-6.48	0.59	-3.92	0.61	0.000094	1.17	411.97	96.71	0.1
Schneider Cana	Middle	25000	50-Year	573.61	-6.48	1.03	-3.72	1.05	0.000099	1.26	456.16	107.19	0.1
Schneider Cana	Middle	25000	100-Year	665.02	-6.48	1.47	-3.54	1.5	0.0001	1.33	508.66	131.56	0.11
Schneider Cana	Middle	24900	2-Year	192.23	-6.63	-0.9	-4.85	-0.9	0.000045	0.69	279.09	83.95	0.07
Schneider Cana	Middle	24900	5-Year	294.49	-6.63	-0.34	-4.49	-0.33	0.000067	0.9	328.33	89.91	0.08
Schneider Cana	Middle	24900	10-Year	372.96	-6.63	0.11	-4.26	0.12	0.000078	1.01	369.25	94.24	0.09
Schneider Cana	Middle	24900	25-Year	483.32	-6.63	0.58	-3.98	0.6	0.000093	1.17	414.37	97.54	0.1
Schneider Cana	Middle	24900	50-Year	573.61	-6.63	1.02	-3.77	1.04	0.000098	1.25	458.33	102.8	0.1
Schneider Cana	Middle	24900	100-Year	665.02	-6.63	1.46	-3.58	1.49	0.000099	1.32	511.31	138.29	0.11
Schneider Cana	Middle	24800	2-Year	192.23	-6.78	-0.91	-4.95	-0.9	0.000043	0.68	283.2	83.54	0.06
Schneider Cana	Middle	24800	5-Year	294.49	-6.78	-0.34	-4.57	-0.33	0.000065	0.89	332.05	89.62	0.08
Schneider Cana	Middle	24800	10-Year	372.96	-6.78	0.1	-4.34	0.11	0.000076	1	372.79	94.39	0.09
Schneider Cana	Middle	24800	25-Year	483.32	-6.78	0.57	-4.05	0.59	0.000091	1.16	418.03	98.11	0.1
Schneider Cana	Middle	24800	50-Year	573.61	-6.78	1.01	-3.84	1.03	0.000096	1.24	462.12	101.02	0.1

HEC-RAS Output - Alternative 3

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Middle	24800	100-Year	665.02	-6.78	1.45	-3.65	1.48	0.000098	1.31	518.43	142.7	0.1
Schneider Cana	Middle	24700	2-Year	192.23	-6.93	-0.91	-5.05	-0.91	0.000039	0.66	289.35	82.28	0.06
Schneider Cana	Middle	24700	5-Year	294.49	-6.93	-0.35	-4.67	-0.34	0.000061	0.87	337.38	88.63	0.08
Schneider Cana	Middle	24700	10-Year	372.96	-6.93	0.09	-4.44	0.11	0.000072	0.99	377.63	93.62	0.09
Schneider Cana	Middle	24700	25-Year	483.32	-6.93	0.56	-4.15	0.58	0.000089	1.14	422.61	98.55	0.1
Schneider Cana	Middle	24700	50-Year	573.61	-6.93	1	-3.95	1.02	0.000093	1.23	466.82	101.32	0.1
Schneider Cana	Middle	24700	100-Year	665.02	-6.93	1.44	-3.76	1.47	0.000104	1.3	512.77	111.84	0.11
Schneider Cana	Middle	24600	2-Year	192.23	-7.09	-0.92	-5.16	-0.91	0.000034	0.65	297.99	80.03	0.06
Schneider Cana	Middle	24600	5-Year	294.49	-7.09	-0.36	-4.8	-0.34	0.000055	0.85	344.71	86.82	0.08
Schneider Cana	Middle	24600	10-Year	372.96	-7.09	0.08	-4.57	0.1	0.000067	0.97	384.14	92.16	0.08
Schneider Cana	Middle	24600	25-Year	483.32	-7.09	0.55	-4.3	0.57	0.000084	1.13	428.37	97.8	0.1
Schneider Cana	Middle	24600	50-Year	573.61	-7.09	0.99	-4.1	1.01	0.00009	1.21	472.57	101.56	0.1
Schneider Cana	Middle	24600	100-Year	665.02	-7.09	1.43	-3.94	1.46	0.000101	1.28	518.33	111.69	0.1
Schneider Cana	Middle	24500	2-Year	192.23	-7.24	-0.92		-0.91	0.000029	0.62	309.45	78.13	0.06
Schneider Cana	Middle	24500	5-Year	294.49	-7.24	-0.36		-0.35	0.000048	0.83	354.44	84.04	0.07
Schneider Cana	Middle	24500	10-Year	372.96	-7.24	0.08		0.09	0.00006	0.95	392.65	89.86	0.08
Schneider Cana	Middle	24500	25-Year	483.32	-7.24	0.54		0.56	0.000078	1.11	435.76	96	0.09
Schneider Cana	Middle	24500	50-Year	573.61	-7.24	0.98		1.01	0.000086	1.2	479.4	101.74	0.1
Schneider Cana	Middle	24500	100-Year	665.02	-7.24	1.42		1.45	0.000093	1.27	525.27	108.44	0.1
Schneider Cana	Middle	24400	2-Year	192.23	-7.39	-0.92		-0.92	0.000026	0.6	322.31	77.94	0.05
Schneider Cana	Middle	24400	5-Year	294.49	-7.39	-0.36		-0.35	0.000041	0.8	366.53	80.94	0.07
Schneider Cana	Middle	24400	10-Year	372.96	-7.39	0.07		0.09	0.000052	0.93	402.99	86.29	0.08
Schneider Cana	Middle	24400	25-Year	483.32	-7.39	0.54		0.55	0.00007	1.09	444.46	93.18	0.09
Schneider Cana	Middle	24400	50-Year	573.61	-7.39	0.98		1	0.000081	1.18	486.95	100.54	0.09
Schneider Cana	Middle	24400	100-Year	665.02	-7.39	1.41		1.44	0.00009	1.25	533.04	109.77	0.1
Schneider Cana	Middle	24300	2-Year	192.23	-7.54	-0.92		-0.92	0.000022	0.57	336.94	77.84	0.05
Schneider Cana	Middle	24300	5-Year	294.49	-7.54	-0.37		-0.36	0.000036	0.77	380.95	80.67	0.06
Schneider Cana	Middle	24300	10-Year	372.96	-7.54	0.07		0.08	0.000045	0.89	416.73	82.9	0.07
Schneider Cana	Middle	24300	25-Year	483.32	-7.54	0.53		0.55	0.000061	1.06	455.99	88.87	0.08
Schneider Cana	Middle	24300	50-Year	573.61	-7.54	0.97		0.99	0.000074	1.15	496.83	98.39	0.09
Schneider Cana	Middle	24300	100-Year	665.02	-7.54	1.4		1.43	0.000086	1.23	542.31	110.65	0.1
Schneider Cana	Middle	24200	2-Year	192.23	-7.7	-0.93		-0.92	0.000019	0.54	352.84	77.82	0.05
Schneider Cana	Middle	24200	5-Year	294.49	-7.7	-0.37		-0.36	0.000032	0.74	396.7	80.5	0.06
Schneider Cana	Middle	24200	10-Year	372.96	-7.7	0.07		0.08	0.000039	0.86	432.31	82.61	0.07
Schneider Cana	Middle	24200	25-Year	483.32	-7.7	0.52		0.54	0.000052	1.03	470.76	84.83	0.08
Schneider Cana	Middle	24200	50-Year	573.61	-7.7	0.96		0.98	0.000064	1.13	509.36	94.33	0.09
Schneider Cana	Middle	24200	100-Year	665.02	-7.7	1.4		1.42	0.000079	1.2	553.28	108.24	0.09
Schneider Cana	Middle	24100	2-Year	192.23	-7.78	-0.93		-0.92	0.000016	0.52	367.86	77.69	0.04
Schneider Cana	Middle	24100	5-Year	294.49	-7.78	-0.37		-0.37	0.000028	0.72	411.57	80.35	0.06
Schneider Cana	Middle	24100	10-Year	372.96	-7.78	0.06		0.07	0.000035	0.83	447.06	82.45	0.06
Schneider Cana	Middle	24100	25-Year	483.32	-7.78	0.52		0.54	0.000047	1	485.34	84.65	0.07
Schneider Cana	Middle	24100	50-Year	573.61	-7.78	0.96		0.98	0.000057	1.1	523.31	91.45	0.08
Schneider Cana	Middle	24100	100-Year	665.02	-7.78	1.39		1.41	0.000068	1.18	565.18	102.25	0.09
Schneider Cana	Middle	24000	2-Year	192.23	-7.81	-0.93		-0.92	0.000019	0.55	351.11	76.61	0.05
Schneider Cana	Middle	24000	5-Year	294.49	-7.81	-0.38		-0.37	0.000032	0.75	394.1	79.29	0.06
Schneider Cana	Middle	24000	10-Year	372.96	-7.81	0.06		0.07	0.00004	0.87	429.1	81.66	0.07
Schneider Cana	Middle	24000	25-Year	483.32	-7.81	0.51		0.53	0.000054	1.03	467.26	86.15	0.08
Schneider Cana	Middle	24000	50-Year	573.61	-7.81	0.95		0.97	0.000063	1.13	505.93	91.44	0.08
Schneider Cana	Middle	24000	100-Year	665.02	-7.81	1.38		1.4	0.000075	1.21	547.35	101.32	0.09
Schneider Cana	Middle	23900	2-Year	192.23	-7.84	-0.93		-0.93	0.000021	0.57	335.99	75.49	0.05
Schneider Cana	Middle	23900	5-Year	294.49	-7.84	-0.38		-0.37	0.000036	0.78	378.24	78.2	0.06
Schneider Cana	Middle	23900	10-Year	372.96	-7.84	0.05		0.06	0.000045	0.9	412.87	81.91	0.07
Schneider Cana	Middle	23900	25-Year	483.32	-7.84	0.51		0.52	0.000061	1.07	451.32	87.16	0.08
Schneider Cana	Middle	23900	50-Year	573.61	-7.84	0.94		0.96	0.000071	1.17	490.27	92.17	0.09
Schneider Cana	Middle	23900	100-Year	665.02	-7.84	1.37		1.4	0.00008	1.25	531.15	99.09	0.1

HEC-RAS Output - Alternative 3

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Middle	23800	2-Year	192.23	-7.86	-0.93		-0.93	0.000024	0.6	322.3	74.31	0.05
Schneider Cana	Middle	23800	5-Year	294.49	-7.86	-0.39		-0.38	0.00004	0.81	364	78.36	0.07
Schneider Cana	Middle	23800	10-Year	372.96	-7.86	0.05		0.06	0.000051	0.94	398.74	82.23	0.07
Schneider Cana	Middle	23800	25-Year	483.32	-7.86	0.5		0.52	0.000068	1.11	436.96	86.85	0.09
Schneider Cana	Middle	23800	50-Year	573.61	-7.86	0.93		0.96	0.000078	1.21	475.7	91.99	0.09
Schneider Cana	Middle	23800	100-Year	665.02	-7.86	1.36		1.39	0.000086	1.29	516.27	97.26	0.1
Schneider Cana	Middle	23700	2-Year	192.23	-7.89	-0.94	-6.01	-0.93	0.000027	0.62	310.83	73.85	0.05
Schneider Cana	Middle	23700	5-Year	294.49	-7.89	-0.39	-5.61	-0.38	0.000045	0.84	352.38	78.36	0.07
Schneider Cana	Middle	23700	10-Year	372.96	-7.89	0.04	-5.34	0.05	0.000056	0.96	386.96	81.92	0.08
Schneider Cana	Middle	23700	25-Year	483.32	-7.89	0.49	-5.02	0.51	0.000073	1.14	424.73	85.66	0.09
Schneider Cana	Middle	23700	50-Year	573.61	-7.89	0.92	-4.8	0.95	0.000084	1.24	462.85	90.9	0.1
Schneider Cana	Middle	23700	100-Year	665.02	-7.89	1.35	-4.58	1.38	0.000092	1.32	502.88	96.22	0.1
Schneider Cana	Middle	23600	2-Year	192.23	-7.92	-0.94		-0.93	0.00003	0.64	301.49	73.51	0.06
Schneider Cana	Middle	23600	5-Year	294.49	-7.92	-0.4		-0.39	0.000049	0.86	342.62	77.75	0.07
Schneider Cana	Middle	23600	10-Year	372.96	-7.92	0.03		0.05	0.000061	0.99	376.79	81.1	0.08
Schneider Cana	Middle	23600	25-Year	483.32	-7.92	0.48		0.5	0.000079	1.17	413.99	84.81	0.09
Schneider Cana	Middle	23600	50-Year	573.61	-7.92	0.91		0.94	0.000089	1.27	451.37	89.04	0.1
Schneider Cana	Middle	23600	100-Year	665.02	-7.92	1.34		1.37	0.000098	1.36	490.55	94.55	0.1
Schneider Cana	Middle	23500	2-Year	192.23	-7.95	-0.94		-0.94	0.000032	0.65	294.32	72.55	0.06
Schneider Cana	Middle	23500	5-Year	294.49	-7.95	-0.4		-0.39	0.000052	0.88	334.72	76.61	0.07
Schneider Cana	Middle	23500	10-Year	372.96	-7.95	0.03		0.04	0.000064	1.01	368.26	79.89	0.08
Schneider Cana	Middle	23500	25-Year	483.32	-7.95	0.47		0.5	0.000083	1.19	404.76	83.62	0.1
Schneider Cana	Middle	23500	50-Year	573.61	-7.95	0.9		0.93	0.000093	1.3	441.47	87.22	0.1
Schneider Cana	Middle	23500	100-Year	665.02	-7.95	1.33		1.36	0.000102	1.39	479.55	92.2	0.11
Schneider Cana	Middle	23400	2-Year	192.23	-7.97	-0.95		-0.94	0.000032	0.66	289.3	70.82	0.06
Schneider Cana	Middle	23400	5-Year	294.49	-7.97	-0.41		-0.4	0.000054	0.9	328.66	75	0.08
Schneider Cana	Middle	23400	10-Year	372.96	-7.97	0.02		0.04	0.000067	1.03	361.44	78.47	0.08
Schneider Cana	Middle	23400	25-Year	483.32	-7.97	0.46		0.49	0.000087	1.22	397.12	82.18	0.1
Schneider Cana	Middle	23400	50-Year	573.61	-7.97	0.89		0.92	0.000097	1.32	433.1	85.75	0.1
Schneider Cana	Middle	23400	100-Year	665.02	-7.97	1.32		1.35	0.000105	1.41	470.27	89.29	0.11
Schneider Cana	Middle	23300	2-Year	192.23	-8	-0.95		-0.94	0.000032	0.67	287.14	68.37	0.06
Schneider Cana	Middle	23300	5-Year	294.49	-8	-0.41		-0.4	0.000054	0.91	325	72.75	0.08
Schneider Cana	Middle	23300	10-Year	372.96	-8	0.01		0.03	0.000067	1.05	356.78	76.52	0.09
Schneider Cana	Middle	23300	25-Year	483.32	-8	0.45		0.48	0.000089	1.23	391.43	80.3	0.1
Schneider Cana	Middle	23300	50-Year	573.61	-8	0.88		0.91	0.0001	1.34	426.52	83.96	0.11
Schneider Cana	Middle	23300	100-Year	665.02	-8	1.3		1.34	0.000108	1.44	462.86	87.58	0.11
Schneider Cana	Middle	23200	2-Year	192.23	-8.18	-0.95		-0.95	0.000031	0.67	287.29	66.4	0.06
Schneider Cana	Middle	23200	5-Year	294.49	-8.18	-0.42		-0.41	0.000052	0.91	323.91	70.69	0.07
Schneider Cana	Middle	23200	10-Year	372.96	-8.18	0.01		0.02	0.000066	1.05	354.65	74.2	0.08
Schneider Cana	Middle	23200	25-Year	483.32	-8.18	0.44		0.47	0.000088	1.25	388.05	77.84	0.1
Schneider Cana	Middle	23200	50-Year	573.61	-8.18	0.87		0.9	0.000099	1.36	421.98	81.52	0.11
Schneider Cana	Middle	23200	100-Year	665.02	-8.18	1.29		1.33	0.000109	1.45	457.25	85.41	0.11
Schneider Cana	Middle	23100	2-Year	192.23	-8.04	-0.96		-0.95	0.000022	0.59	325.8	70.75	0.05
Schneider Cana	Middle	23100	5-Year	294.49	-8.04	-0.42		-0.41	0.000037	0.81	364.05	72.41	0.06
Schneider Cana	Middle	23100	10-Year	372.96	-8.04	0		0.02	0.000046	0.94	394.97	73.57	0.07
Schneider Cana	Middle	23100	25-Year	483.32	-8.04	0.44		0.46	0.000062	1.13	427.53	75.23	0.08
Schneider Cana	Middle	23100	50-Year	573.61	-8.04	0.87		0.89	0.000071	1.25	459.95	77.31	0.09
Schneider Cana	Middle	23100	100-Year	665.02	-8.04	1.29		1.32	0.000078	1.35	493	79.38	0.1
Schneider Cana	Middle	23000	2-Year	192.23	-8.06	-0.96		-0.95	0.000022	0.59	328.37	71.92	0.05
Schneider Cana	Middle	23000	5-Year	294.49	-8.06	-0.43		-0.42	0.000036	0.8	367.13	73.63	0.06
Schneider Cana	Middle	23000	10-Year	372.96	-8.06	0		0.01	0.000046	0.94	398.64	75.42	0.07
Schneider Cana	Middle	23000	25-Year	483.32	-8.06	0.43		0.45	0.000061	1.12	431.99	77.27	0.08
Schneider Cana	Middle	23000	50-Year	573.61	-8.06	0.86		0.88	0.00007	1.23	465.16	79.07	0.09
Schneider Cana	Middle	23000	100-Year	665.02	-8.06	1.28		1.31	0.000077	1.33	498.83	80.85	0.09
Schneider Cana	Middle	22900	2-Year	192.23	-8.08	-0.96		-0.95	0.000022	0.58	331.49	73.28	0.05
Schneider Cana	Middle	22900	5-Year	294.49	-8.08	-0.43		-0.42	0.000036	0.79	371.03	75.54	0.06

HEC-RAS Output - Alternative 3

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Middle	22900	10-Year	372.96	-8.08	-0.01		0.01	0.000046	0.92	403.24	77.16	0.07
Schneider Cana	Middle	22900	25-Year	483.32	-8.08	0.43		0.45	0.000061	1.11	437.2	78.84	0.08
Schneider Cana	Middle	22900	50-Year	573.61	-8.08	0.85		0.88	0.000069	1.22	470.95	80.47	0.09
Schneider Cana	Middle	22900	100-Year	665.02	-8.08	1.27		1.3	0.000075	1.32	505.13	82.1	0.09
Schneider Cana	Middle	22800	2-Year	192.23	-8.09	-0.96		-0.96	0.000021	0.57	335.61	74.97	0.05
Schneider Cana	Middle	22800	5-Year	294.49	-8.09	-0.43		-0.42	0.000036	0.78	375.92	77.11	0.06
Schneider Cana	Middle	22800	10-Year	372.96	-8.09	-0.01		0	0.000045	0.91	408.71	78.63	0.07
Schneider Cana	Middle	22800	25-Year	483.32	-8.09	0.42		0.44	0.000059	1.09	443.18	80.2	0.08
Schneider Cana	Middle	22800	50-Year	573.61	-8.09	0.85		0.87	0.000067	1.2	477.41	81.72	0.09
Schneider Cana	Middle	22800	100-Year	665.02	-8.09	1.27		1.29	0.000073	1.3	512.05	83.24	0.09
Schneider Cana	Middle	22700	2-Year	192.23	-8.11	-0.96		-0.96	0.000021	0.56	340.73	76.46	0.05
Schneider Cana	Middle	22700	5-Year	294.49	-8.11	-0.44		-0.43	0.000035	0.77	381.7	78.49	0.06
Schneider Cana	Middle	22700	10-Year	372.96	-8.11	-0.02		0	0.000043	0.9	414.98	79.94	0.07
Schneider Cana	Middle	22700	25-Year	483.32	-8.11	0.42		0.44	0.000057	1.07	449.9	81.43	0.08
Schneider Cana	Middle	22700	50-Year	573.61	-8.11	0.84		0.86	0.000065	1.18	484.58	82.88	0.09
Schneider Cana	Middle	22700	100-Year	665.02	-8.11	1.26		1.28	0.000072	1.28	519.72	85.43	0.09
Schneider Cana	Middle	22600	2-Year	192.23	-8.13	-0.97		-0.96	0.00002	0.55	346.55	77.77	0.05
Schneider Cana	Middle	22600	5-Year	294.49	-8.13	-0.44		-0.43	0.000034	0.76	388.1	79.75	0.06
Schneider Cana	Middle	22600	10-Year	372.96	-8.13	-0.02		-0.01	0.000042	0.88	421.84	81.14	0.07
Schneider Cana	Middle	22600	25-Year	483.32	-8.13	0.41		0.43	0.000055	1.06	457.16	82.56	0.08
Schneider Cana	Middle	22600	50-Year	573.61	-8.13	0.83		0.85	0.000062	1.17	492.25	83.96	0.08
Schneider Cana	Middle	22600	100-Year	665.02	-8.13	1.25		1.28	0.00007	1.26	528.03	87.52	0.09
Schneider Cana	Middle	22500	2-Year	192.23	-8.14	-0.97		-0.96	0.000019	0.54	352.73	79.01	0.05
Schneider Cana	Middle	22500	5-Year	294.49	-8.14	-0.44		-0.43	0.000032	0.75	394.82	80.94	0.06
Schneider Cana	Middle	22500	10-Year	372.96	-8.14	-0.02		-0.01	0.00004	0.87	428.99	82.29	0.07
Schneider Cana	Middle	22500	25-Year	483.32	-8.14	0.41		0.42	0.000053	1.04	464.69	83.67	0.08
Schneider Cana	Middle	22500	50-Year	573.61	-8.14	0.83		0.85	0.00006	1.15	500.2	85.28	0.08
Schneider Cana	Middle	22500	100-Year	665.02	-8.14	1.25		1.27	0.000069	1.24	536.72	89.51	0.09
Schneider Cana	Middle	22400	2-Year	192.23	-8.16	-0.97	-6.21	-0.96	0.000018	0.53	359.76	80.17	0.04
Schneider Cana	Middle	22400	5-Year	294.49	-8.16	-0.44	-5.86	-0.44	0.000031	0.73	402.37	82.08	0.06
Schneider Cana	Middle	22400	10-Year	372.96	-8.16	-0.03	-5.64	-0.02	0.000039	0.85	436.95	83.39	0.07
Schneider Cana	Middle	22400	25-Year	483.32	-8.16	0.4	-5.37	0.42	0.000051	1.02	473.01	84.73	0.08
Schneider Cana	Middle	22400	50-Year	573.61	-8.16	0.82	-5.18	0.84	0.000059	1.13	509.02	87.33	0.08
Schneider Cana	Middle	22400	100-Year	665.02	-8.16	1.24	-5.01	1.26	0.00007	1.22	546.77	95.06	0.09
Schneider Cana	Middle	22300	2-Year	192.23	-8.18	-0.97	-6.24	-0.97	0.000017	0.52	367.5	81.33	0.04
Schneider Cana	Middle	22300	5-Year	294.49	-8.18	-0.45	-5.9	-0.44	0.000029	0.72	410.6	83.18	0.06
Schneider Cana	Middle	22300	10-Year	372.96	-8.18	-0.03	-5.7	-0.02	0.000037	0.84	445.58	84.46	0.06
Schneider Cana	Middle	22300	25-Year	483.32	-8.18	0.4	-5.46	0.41	0.000049	1	482	85.77	0.07
Schneider Cana	Middle	22300	50-Year	573.61	-8.18	0.82	-5.27	0.84	0.000059	1.11	518.99	92.3	0.08
Schneider Cana	Middle	22300	100-Year	665.02	-8.18	1.23	-5.1	1.26	0.00007	1.19	559.33	101.55	0.09
Schneider Cana	Middle	22200	2-Year	192.23	-8.19	-0.97		-0.97	0.000017	0.51	375.5	82.39	0.04
Schneider Cana	Middle	22200	5-Year	294.49	-8.19	-0.45		-0.44	0.000028	0.7	419.07	84.23	0.06
Schneider Cana	Middle	22200	10-Year	372.96	-8.19	-0.03		-0.02	0.000035	0.82	454.43	85.49	0.06
Schneider Cana	Middle	22200	25-Year	483.32	-8.19	0.39		0.41	0.000048	0.98	491.47	89.69	0.07
Schneider Cana	Middle	22200	50-Year	573.61	-8.19	0.81		0.83	0.000059	1.08	530.82	98.37	0.08
Schneider Cana	Middle	22200	100-Year	665.02	-8.19	1.23		1.25	0.000069	1.16	573.47	106.99	0.09
Schneider Cana	Middle	22100	2-Year	192.23	-8.21	-0.97	-6.53	-0.97	0.000016	0.5	383.94	83.45	0.04
Schneider Cana	Middle	22100	5-Year	294.49	-8.21	-0.45	-6.21	-0.45	0.000026	0.69	427.97	85.27	0.05
Schneider Cana	Middle	22100	10-Year	372.96	-8.21	-0.04	-5.99	-0.03	0.000034	0.8	463.86	88.36	0.06
Schneider Cana	Middle	22100	25-Year	483.32	-8.21	0.39	-5.72	0.4	0.000048	0.96	502.86	95.54	0.07
Schneider Cana	Middle	22100	50-Year	573.61	-8.21	0.81	-5.52	0.82	0.000058	1.05	544.47	103.73	0.08
Schneider Cana	Middle	22100	100-Year	665.02	-8.21	1.22	-5.33	1.24	0.000066	1.13	589.13	123.86	0.09
Schneider Cana	Middle	22000	2-Year	192.23	-8.23	-0.98	-6.76	-0.97	0.000015	0.49	393.21	84.52	0.04
Schneider Cana	Middle	22000	5-Year	294.49	-8.23	-0.45	-6.42	-0.45	0.000025	0.67	437.83	87.84	0.05
Schneider Cana	Middle	22000	10-Year	372.96	-8.23	-0.04	-6.19	-0.03	0.000034	0.78	475.41	93.13	0.06
Schneider Cana	Middle	22000	25-Year	483.32	-8.23	0.38	-5.91	0.4	0.000047	0.94	516.5	100.75	0.07

HEC-RAS Output - Alternative 3

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Middle	22000	50-Year	573.61	-8.23	0.8	-5.7	0.82	0.000056	1.02	560.1	108.45	0.08
Schneider Cana	Middle	22000	100-Year	665.02	-8.23	1.22	-5.51	1.23	0.000061	1.1	608.93	127.55	0.08
Schneider Cana	Middle	21900	2-Year	192.23	-8.29	-0.98	-6.92	-0.97	0.000014	0.48	404.16	87.22	0.04
Schneider Cana	Middle	21900	5-Year	294.49	-8.29	-0.46	-6.58	-0.45	0.000024	0.65	450.41	90.9	0.05
Schneider Cana	Middle	21900	10-Year	372.96	-8.29	-0.04	-6.35	-0.03	0.000031	0.76	488.72	93.85	0.06
Schneider Cana	Middle	21900	25-Year	483.32	-8.29	0.38	-6.06	0.39	0.000042	0.91	529.28	97.91	0.07
Schneider Cana	Middle	21900	50-Year	573.61	-8.29	0.8	-5.85	0.81	0.000049	1	570.86	107.2	0.07
Schneider Cana	Middle	21900	100-Year	665.02	-8.29	1.21	-5.65	1.23	0.000056	1.08	614.47	142.46	0.08
Schneider Cana	Middle	21800	2-Year	192.23	-8.48	-0.98	-6.86	-0.97	0.000015	0.5	385.75	80.22	0.04
Schneider Cana	Middle	21800	5-Year	294.49	-8.48	-0.46	-6.51	-0.45	0.000025	0.69	427.88	82.48	0.05
Schneider Cana	Middle	21800	10-Year	372.96	-8.48	-0.05	-6.29	-0.04	0.000032	0.81	462.37	84.29	0.06
Schneider Cana	Middle	21800	25-Year	483.32	-8.48	0.37	-6	0.39	0.000044	0.97	498.28	86.15	0.07
Schneider Cana	Middle	21800	50-Year	573.61	-8.48	0.79	-5.79	0.81	0.000051	1.07	534.61	93.76	0.08
Schneider Cana	Middle	21800	100-Year	665.02	-8.48	1.2	-5.59	1.22	0.000056	1.16	578.4	111.07	0.08
Schneider Cana	Middle	21700	2-Year	192.23	-8.68	-0.98	-6.83	-0.98	0.000017	0.51	376.87	84.18	0.04
Schneider Cana	Middle	21700	5-Year	294.49	-8.68	-0.46	-6.49	-0.46	0.00003	0.7	421.95	90.25	0.06
Schneider Cana	Middle	21700	10-Year	372.96	-8.68	-0.05	-6.27	-0.04	0.000038	0.81	460.12	94.63	0.06
Schneider Cana	Middle	21700	25-Year	483.32	-8.68	0.37	-5.98	0.38	0.000051	0.97	500.84	99.08	0.08
Schneider Cana	Middle	21700	50-Year	573.61	-8.68	0.78	-5.78	0.8	0.000059	1.06	542.8	103.56	0.08
Schneider Cana	Middle	21700	100-Year	665.02	-8.68	1.2	-5.59	1.22	0.000065	1.13	586.59	108.97	0.09
Schneider Cana	Middle	21600	2-Year	192.23	-8.87	-0.98	-6.89	-0.98	0.000017	0.53	363.3	77.85	0.04
Schneider Cana	Middle	21600	5-Year	294.49	-8.87	-0.47	-6.52	-0.46	0.000031	0.73	404.78	83.23	0.06
Schneider Cana	Middle	21600	10-Year	372.96	-8.87	-0.06	-6.29	-0.04	0.00004	0.85	439.93	87.53	0.07
Schneider Cana	Middle	21600	25-Year	483.32	-8.87	0.36	-6.02	0.38	0.000055	1.01	477.41	91.47	0.08
Schneider Cana	Middle	21600	50-Year	573.61	-8.87	0.78	-5.82	0.8	0.000063	1.11	515.96	95.2	0.08
Schneider Cana	Middle	21600	100-Year	665.02	-8.87	1.19	-5.64	1.21	0.000069	1.2	555.85	100.39	0.09
Schneider Cana	Middle	21500	2-Year	192.23	-9.06	-0.98	-7	-0.98	0.000018	0.54	352.73	72.65	0.04
Schneider Cana	Middle	21500	5-Year	294.49	-9.06	-0.47	-6.62	-0.46	0.000031	0.75	390.85	75.9	0.06
Schneider Cana	Middle	21500	10-Year	372.96	-9.06	-0.06	-6.39	-0.05	0.00004	0.88	422.54	78.5	0.07
Schneider Cana	Middle	21500	25-Year	483.32	-9.06	0.36	-6.11	0.37	0.000055	1.06	455.77	81.13	0.08
Schneider Cana	Middle	21500	50-Year	573.61	-9.06	0.77	-5.91	0.79	0.000063	1.17	489.69	83.56	0.09
Schneider Cana	Middle	21500	100-Year	665.02	-9.06	1.18	-5.72	1.2	0.00007	1.27	524.32	85.54	0.09
Schneider Cana	Lower	21400	2-Year	236	-9.26	-0.99	-6.99	-0.98	0.000027	0.69	344.32	69.33	0.05
Schneider Cana	Lower	21400	5-Year	360	-9.26	-0.48	-6.59	-0.46	0.000049	0.95	380.67	73.5	0.07
Schneider Cana	Lower	21400	10-Year	458	-9.26	-0.07	-6.33	-0.05	0.000065	1.11	411.49	77.67	0.09
Schneider Cana	Lower	21400	25-Year	594	-9.26	0.34	-5.99	0.37	0.000091	1.34	444.37	81.88	0.1
Schneider Cana	Lower	21400	50-Year	709	-9.26	0.75	-5.73	0.78	0.000108	1.48	478.66	102.79	0.11
Schneider Cana	Lower	21400	100-Year	824	-9.26	1.16	-5.5	1.2	0.000122	1.6	514.52	118.77	0.12
Schneider Cana	Lower	21300	2-Year	236	-9.45	-0.99	-7.2	-0.98	0.000027	0.7	337.48	66.09	0.05
Schneider Cana	Lower	21300	5-Year	360	-9.45	-0.48	-6.79	-0.47	0.000049	0.97	371.93	69.71	0.07
Schneider Cana	Lower	21300	10-Year	458	-9.45	-0.08	-6.51	-0.06	0.000065	1.14	400.92	75.71	0.09
Schneider Cana	Lower	21300	25-Year	594	-9.45	0.33	-6.16	0.36	0.000088	1.38	435.65	111.14	0.1
Schneider Cana	Lower	21300	50-Year	709	-9.45	0.74	-5.89	0.77	0.000101	1.53	486.8	124.46	0.11
Schneider Cana	Lower	21300	100-Year	824	-9.45	1.14	-5.64	1.19	0.00011	1.64	538.24	128.78	0.11
Schneider Cana	Lower	21200	2-Year	236	-9.64	-0.99	-7.43	-0.99	0.000027	0.71	332.01	63.08	0.05
Schneider Cana	Lower	21200	5-Year	360	-9.64	-0.49	-7.01	-0.47	0.00005	0.99	364.73	66.55	0.07
Schneider Cana	Lower	21200	10-Year	458	-9.64	-0.09	-6.72	-0.06	0.000067	1.17	392.15	69.32	0.09
Schneider Cana	Lower	21200	25-Year	594	-9.64	0.32	-6.36	0.35	0.000094	1.41	420.85	72.13	0.1
Schneider Cana	Lower	21200	50-Year	709	-9.64	0.72	-6.08	0.76	0.000113	1.57	450.68	75.52	0.11
Schneider Cana	Lower	21200	100-Year	824	-9.64	1.13	-5.82	1.17	0.00013	1.71	481.81	78.9	0.12
Schneider Cana	Lower	21100	2-Year	236	-9.84	-1	-7.68	-0.99	0.000027	0.72	328.37	60.28	0.05
Schneider Cana	Lower	21100	5-Year	360	-9.84	-0.49	-7.26	-0.48	0.00005	1	359.48	63.61	0.07
Schneider Cana	Lower	21100	10-Year	458	-9.84	-0.09	-6.95	-0.07	0.000068	1.19	385.56	66.27	0.09
Schneider Cana	Lower	21100	25-Year	594	-9.84	0.31	-6.58	0.34	0.000095	1.44	412.78	68.95	0.1
Schneider Cana	Lower	21100	50-Year	709	-9.84	0.71	-6.3	0.75	0.000114	1.61	441.54	75.67	0.11
Schneider Cana	Lower	21100	100-Year	824	-9.84	1.11	-6.03	1.16	0.000128	1.75	472.59	78.54	0.12

HEC-RAS Output - Alternative 3

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Lower	21000	2-Year	236	-9.45	-1	-7.36	-0.99	0.000031	0.73	324.62	65.84	0.06
Schneider Cana	Lower	21000	5-Year	360	-9.45	-0.5	-6.92	-0.48	0.000055	1.01	358.2	68.45	0.08
Schneider Cana	Lower	21000	10-Year	458	-9.45	-0.1	-6.62	-0.08	0.000072	1.19	385.99	70.54	0.09
Schneider Cana	Lower	21000	25-Year	594	-9.45	0.3	-6.25	0.33	0.0001	1.43	414.63	72.62	0.11
Schneider Cana	Lower	21000	50-Year	709	-9.45	0.7	-5.96	0.74	0.000118	1.6	444.09	74.71	0.12
Schneider Cana	Lower	21000	100-Year	824	-9.45	1.1	-5.69	1.15	0.000131	1.74	476.73	86.82	0.12
Lateral Canal	South	12247.75	2-Year	82.23	-1.94	0.1	-0.43	0.21	0.00321	2.71	30.35	28.61	0.46
Lateral Canal	South	12247.75	5-Year	124.49	-1.94	0.78	-0.16	0.87	0.001491	2.44	50.94	31.2	0.34
Lateral Canal	South	12247.75	10-Year	155.96	-1.94	1.27	0	1.35	0.001038	2.35	66.48	32.75	0.29
Lateral Canal	South	12247.75	25-Year	201.32	-1.94	1.87	0.2	1.95	0.000775	2.32	86.8	34.66	0.26
Lateral Canal	South	12247.75	50-Year	235.61	-1.94	2.36	0.33	2.44	0.00062	2.26	104.05	36.2	0.24
Lateral Canal	South	12247.75	100-Year	273.02	-1.94	2.87	0.46	2.95	0.000502	2.22	123.04	37.35	0.22
Lateral Canal	South	12200	2-Year	82.23	-2.76	0.05	-1.38	0.12	0.000923	2.07	39.8	20.71	0.26
Lateral Canal	South	12200	5-Year	124.49	-2.76	0.74	-1.05	0.82	0.000876	2.26	55.02	23.92	0.26
Lateral Canal	South	12200	10-Year	155.96	-2.76	1.22	-0.82	1.31	0.000797	2.32	67.28	26.24	0.26
Lateral Canal	South	12200	25-Year	201.32	-2.76	1.83	-0.54	1.92	0.000733	2.4	83.95	29.15	0.25
Lateral Canal	South	12200	50-Year	235.61	-2.76	2.32	-0.34	2.4	0.00068	2.38	99.18	33.08	0.24
Lateral Canal	South	12200	100-Year	273.02	-2.76	2.84	-0.15	2.92	0.000606	2.32	117.52	42.39	0.23
Lateral Canal	South	12150	2-Year	82.23	-2.33	0.01	-1.27	0.07	0.000948	2.07	39.64	21.48	0.27
Lateral Canal	South	12150	5-Year	124.49	-2.33	0.69	-0.96	0.77	0.00085	2.25	55.37	24.27	0.26
Lateral Canal	South	12150	10-Year	155.96	-2.33	1.19	-0.77	1.27	0.000759	2.3	67.83	26.27	0.25
Lateral Canal	South	12150	25-Year	201.32	-2.33	1.79	-0.51	1.88	0.00069	2.38	84.47	28.73	0.24
Lateral Canal	South	12150	50-Year	235.61	-2.33	2.28	-0.33	2.37	0.0006	2.38	99.01	30.2	0.23
Lateral Canal	South	12150	100-Year	273.02	-2.33	2.81	-0.14	2.89	0.000521	2.37	115.11	36.21	0.22
Lateral Canal	South	12095		Pedestrian Walkway Bridge									
Lateral Canal	South	12000	2-Year	82.23	-2.88	-0.35	-1.9	-0.31	0.000572	1.71	48.19	24.12	0.21
Lateral Canal	South	12000	5-Year	124.49	-2.88	0.37	-1.61	0.43	0.000522	1.87	66.67	27.01	0.21
Lateral Canal	South	12000	10-Year	155.96	-2.88	0.89	-1.43	0.95	0.00047	1.92	81.23	29.08	0.2
Lateral Canal	South	12000	25-Year	201.32	-2.88	1.5	-1.17	1.56	0.000444	2.02	99.67	31.52	0.2
Lateral Canal	South	12000	50-Year	235.61	-2.88	2.01	-1	2.08	0.000396	2.02	116.4	33.57	0.19
Lateral Canal	South	12000	100-Year	273.02	-2.88	2.55	-0.83	2.62	0.000353	2.02	135.08	35.73	0.18
Lateral Canal	South	11900	2-Year	82.23	-3.06	-0.4	-2.08	-0.36	0.000476	1.6	51.41	24.64	0.2
Lateral Canal	South	11900	5-Year	124.49	-3.06	0.33	-1.79	0.38	0.000448	1.77	70.36	27.55	0.2
Lateral Canal	South	11900	10-Year	155.96	-3.06	0.85	-1.6	0.9	0.00041	1.83	85.34	29.64	0.19
Lateral Canal	South	11900	25-Year	201.32	-3.06	1.46	-1.36	1.52	0.000392	1.93	104.19	32.09	0.19
Lateral Canal	South	11900	50-Year	235.61	-3.06	1.98	-1.18	2.04	0.000353	1.94	121.35	34.16	0.18
Lateral Canal	South	11900	100-Year	273.02	-3.06	2.52	-1.01	2.58	0.000317	1.94	140.49	36.33	0.17
Lateral Canal	South	11800	2-Year	82.23	-3.24	-0.44	-2.26	-0.4	0.000394	1.5	54.9	25.2	0.18
Lateral Canal	South	11800	5-Year	124.49	-3.24	0.29	-1.97	0.33	0.000385	1.68	74.32	28.12	0.18
Lateral Canal	South	11800	10-Year	155.96	-3.24	0.82	-1.78	0.86	0.000357	1.74	89.69	30.22	0.18
Lateral Canal	South	11800	25-Year	201.32	-3.24	1.43	-1.53	1.48	0.000347	1.85	108.93	32.67	0.18
Lateral Canal	South	11800	50-Year	235.61	-3.24	1.95	-1.36	2	0.000315	1.86	126.52	34.76	0.17
Lateral Canal	South	11800	100-Year	273.02	-3.24	2.5	-1.19	2.55	0.000285	1.87	146.09	36.94	0.17
Lateral Canal	South	11700	2-Year	82.23	-3.42	-0.47	-2.44	-0.44	0.000327	1.4	58.66	25.79	0.16
Lateral Canal	South	11700	5-Year	124.49	-3.42	0.26	-2.16	0.3	0.00033	1.59	78.51	28.71	0.17
Lateral Canal	South	11700	10-Year	155.96	-3.42	0.79	-1.96	0.83	0.000311	1.65	94.26	30.82	0.17
Lateral Canal	South	11700	25-Year	201.32	-3.42	1.4	-1.72	1.45	0.000307	1.77	113.9	33.27	0.17
Lateral Canal	South	11700	50-Year	235.61	-3.42	1.92	-1.54	1.97	0.000281	1.79	131.89	35.37	0.16
Lateral Canal	South	11700	100-Year	273.02	-3.42	2.47	-1.37	2.52	0.000256	1.8	151.9	37.57	0.16
Lateral Canal	South	11600	2-Year	82.23	-3.6	-0.5	-2.62	-0.47	0.000271	1.31	62.65	26.4	0.15
Lateral Canal	South	11600	5-Year	124.49	-3.6	0.23	-2.33	0.26	0.000283	1.5	82.93	29.32	0.16
Lateral Canal	South	11600	10-Year	155.96	-3.6	0.76	-2.14	0.8	0.000271	1.57	99.05	31.44	0.16
Lateral Canal	South	11600	25-Year	201.32	-3.6	1.37	-1.89	1.42	0.000271	1.69	119.07	33.89	0.16
Lateral Canal	South	11600	50-Year	235.61	-3.6	1.9	-1.72	1.94	0.00025	1.71	137.47	36	0.15
Lateral Canal	South	11600	100-Year	273.02	-3.6	2.45	-1.54	2.5	0.00023	1.73	157.9	38.2	0.15

HEC-RAS Output - Alternative 3

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Lateral Canal	South	11500	2-Year	82.23	-3.78	-0.52	-2.81	-0.5	0.000226	1.23	66.86	27.03	0.14
Lateral Canal	South	11500	5-Year	124.49	-3.78	0.21	-2.51	0.24	0.000243	1.42	87.56	29.94	0.15
Lateral Canal	South	11500	10-Year	155.96	-3.78	0.74	-2.32	0.77	0.000236	1.5	104.05	32.07	0.15
Lateral Canal	South	11500	25-Year	201.32	-3.78	1.35	-2.07	1.39	0.00024	1.62	124.45	34.52	0.15
Lateral Canal	South	11500	50-Year	235.61	-3.78	1.88	-1.9	1.92	0.000224	1.64	143.24	36.63	0.15
Lateral Canal	South	11500	100-Year	273.02	-3.78	2.43	-1.73	2.47	0.000207	1.66	164.09	38.84	0.14
Lateral Canal	South	11400	2-Year	82.23	-3.96	-0.54	-2.99	-0.52	0.000189	1.15	71.27	27.68	0.13
Lateral Canal	South	11400	5-Year	124.49	-3.96	0.19	-2.7	0.21	0.000209	1.35	92.4	30.58	0.14
Lateral Canal	South	11400	10-Year	155.96	-3.96	0.72	-2.51	0.75	0.000207	1.43	109.23	32.71	0.14
Lateral Canal	South	11400	25-Year	201.32	-3.96	1.33	-2.25	1.37	0.000213	1.55	130.01	35.16	0.14
Lateral Canal	South	11400	50-Year	235.61	-3.96	1.86	-2.08	1.9	0.0002	1.58	149.19	37.28	0.14
Lateral Canal	South	11400	100-Year	273.02	-3.96	2.41	-1.91	2.45	0.000187	1.6	170.45	39.49	0.14
Lateral Canal	South	11300	2-Year	82.23	-4.14	-0.56	-3.16	-0.54	0.000158	1.08	75.88	28.34	0.12
Lateral Canal	South	11300	5-Year	124.49	-4.14	0.17	-2.87	0.19	0.000181	1.28	97.42	31.23	0.13
Lateral Canal	South	11300	10-Year	155.96	-4.14	0.7	-2.68	0.73	0.000181	1.36	114.61	33.36	0.13
Lateral Canal	South	11300	25-Year	201.32	-4.14	1.31	-2.43	1.35	0.000189	1.48	135.76	35.81	0.13
Lateral Canal	South	11300	50-Year	235.61	-4.14	1.84	-2.26	1.88	0.000179	1.52	155.33	37.93	0.13
Lateral Canal	South	11300	100-Year	273.02	-4.14	2.4	-2.09	2.43	0.000169	1.54	177	40.15	0.13
Lateral Canal	South	11200	2-Year	82.23	-4.32	-0.57	-3.34	-0.55	0.000133	1.02	80.66	29.01	0.11
Lateral Canal	South	11200	5-Year	124.49	-4.32	0.15	-3.05	0.18	0.000156	1.21	102.63	31.89	0.12
Lateral Canal	South	11200	10-Year	155.96	-4.32	0.68	-2.86	0.71	0.000159	1.3	120.16	34.02	0.12
Lateral Canal	South	11200	25-Year	201.32	-4.32	1.3	-2.62	1.33	0.000168	1.42	141.69	36.46	0.13
Lateral Canal	South	11200	50-Year	235.61	-4.32	1.83	-2.44	1.86	0.000161	1.46	161.64	38.59	0.13
Lateral Canal	South	11200	100-Year	273.02	-4.32	2.38	-2.27	2.42	0.000152	1.49	183.71	40.81	0.12
Lateral Canal	South	11100	2-Year	82.23	-4.5	-0.58	-3.53	-0.57	0.000113	0.96	85.62	29.68	0.1
Lateral Canal	South	11100	5-Year	124.49	-4.5	0.14	-3.24	0.16	0.000136	1.15	108.01	32.56	0.11
Lateral Canal	South	11100	10-Year	155.96	-4.5	0.67	-3.04	0.7	0.00014	1.24	125.89	34.69	0.11
Lateral Canal	South	11100	25-Year	201.32	-4.5	1.28	-2.8	1.31	0.00015	1.36	147.8	44.21	0.12
Lateral Canal	South	11100	50-Year	235.61	-4.5	1.81	-2.63	1.84	0.000144	1.4	168.12	60.62	0.12
Lateral Canal	South	11100	100-Year	273.02	-4.5	2.37	-2.45	2.4	0.000138	1.43	190.59	69.93	0.12
Lateral Canal	South	11000	2-Year	144.23	-4.68	-0.63	-3.29	-0.59	0.000306	1.61	89.56	30.21	0.16
Lateral Canal	South	11000	5-Year	221.49	-4.68	0.07	-2.87	0.13	0.000393	1.98	111.63	33	0.19
Lateral Canal	South	11000	10-Year	280.96	-4.68	0.59	-2.59	0.66	0.000421	2.17	129.35	35.08	0.2
Lateral Canal	South	11000	25-Year	362.32	-4.68	1.19	-2.25	1.28	0.000458	2.4	150.96	37.47	0.21
Lateral Canal	South	11000	50-Year	428.61	-4.68	1.71	-1.99	1.81	0.000455	2.5	171.22	39.57	0.21
Lateral Canal	South	11000	100-Year	497.02	-4.68	2.27	-1.75	2.37	0.000437	2.57	193.75	41.79	0.21
Lateral Canal	South	10900	2-Year	144.23	-4.86	-0.65	-3.47	-0.62	0.000266	1.53	94.26	30.82	0.15
Lateral Canal	South	10900	5-Year	221.49	-4.86	0.04	-3.06	0.09	0.000349	1.9	116.51	33.59	0.18
Lateral Canal	South	10900	10-Year	280.96	-4.86	0.55	-2.77	0.62	0.000379	2.09	134.44	35.66	0.19
Lateral Canal	South	10900	25-Year	362.32	-4.86	1.15	-2.43	1.23	0.000417	2.32	156.26	38.03	0.2
Lateral Canal	South	10900	50-Year	428.61	-4.86	1.67	-2.18	1.76	0.000416	2.42	176.83	40.13	0.2
Lateral Canal	South	10900	100-Year	497.02	-4.86	2.22	-1.93	2.32	0.00059	2.44	203.7	63.72	0.23
Lateral Canal	South	10800	2-Year	144.23	-5.04	-0.68	-3.65	-0.64	0.000231	1.45	99.18	31.45	0.14
Lateral Canal	South	10800	5-Year	221.49	-5.04	0.01	-3.23	0.06	0.00031	1.82	121.6	34.19	0.17
Lateral Canal	South	10800	10-Year	280.96	-5.04	0.52	-2.95	0.59	0.00034	2.01	139.75	36.25	0.18
Lateral Canal	South	10800	25-Year	362.32	-5.04	1.11	-2.61	1.19	0.000379	2.24	161.79	38.6	0.19
Lateral Canal	South	10800	50-Year	428.61	-5.04	1.64	-2.35	1.72	0.000381	2.35	182.66	40.71	0.2
Lateral Canal	South	10800	100-Year	497.02	-5.04	2.18	-2.11	2.27	0.000373	2.42	205.22	42.87	0.2
Lateral Canal	South	10670	2-Year	144.23	-5.49	-0.77	-2.8	-0.7	0.000716	2.13	67.58	28.45	0.24
Lateral Canal	South	10670	5-Year	221.49	-5.49	-0.11	-2.29	-0.01	0.000827	2.54	87.26	31.45	0.27
Lateral Canal	South	10670	10-Year	280.96	-5.49	0.4	-1.98	0.51	0.000826	2.7	103.92	33.96	0.27
Lateral Canal	South	10670	25-Year	362.32	-5.49	0.98	-1.6	1.11	0.00084	2.91	124.47	36.81	0.28
Lateral Canal	South	10670	50-Year	428.61	-5.49	1.51	-1.33	1.65	0.000746	2.97	144.46	39.43	0.27
Lateral Canal	South	10670	100-Year	497.02	-5.49	2.06	-1.08	2.2	0.000641	3.01	165.24	42.12	0.25
Lateral Canal	South	10633		Spartan Drive									

HEC-RAS Output - Alternative 3

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Lateral Canal	South	10596	2-Year	144.23	-5.09	-0.79	-3.18	-0.76	0.000251	1.45	99.43	33.97	0.15
Lateral Canal	South	10596	5-Year	221.49	-5.09	-0.18	-2.83	-0.12	0.00033	1.83	120.72	35.12	0.17
Lateral Canal	South	10596	10-Year	280.96	-5.09	0.29	-2.61	0.36	0.000357	2.05	137.24	35.99	0.18
Lateral Canal	South	10596	25-Year	362.32	-5.09	0.8	-2.34	0.88	0.000401	2.33	155.33	41.72	0.2
Lateral Canal	South	10596	50-Year	428.61	-5.09	1.25	-2.13	1.35	0.000409	2.5	171.75	50.16	0.2
Lateral Canal	South	10596	100-Year	497.02	-5.09	1.69	-1.93	1.8	0.000425	2.64	188.08	59.8	0.21
Lateral Canal	South	10500	2-Year	144.23	-5.18	-0.81	-3.34	-0.78	0.00021	1.37	105.47	34.29	0.14
Lateral Canal	South	10500	5-Year	221.49	-5.18	-0.2	-3.01	-0.15	0.000286	1.75	126.72	35.43	0.16
Lateral Canal	South	10500	10-Year	280.96	-5.18	0.26	-2.8	0.32	0.000319	1.96	143.34	36.29	0.17
Lateral Canal	South	10500	25-Year	362.32	-5.18	0.76	-2.53	0.84	0.000375	2.24	161.8	37.66	0.19
Lateral Canal	South	10500	50-Year	428.61	-5.18	1.22	-2.32	1.31	0.000434	2.38	179.93	42.9	0.2
Lateral Canal	South	10500	100-Year	497.02	-5.18	1.66	-2.12	1.76	0.00048	2.48	200.24	48.78	0.22
Lateral Canal	South	10400	2-Year	144.23	-5.27	-0.83	-3.52	-0.8	0.000177	1.29	111.76	34.63	0.13
Lateral Canal	South	10400	5-Year	221.49	-5.27	-0.22	-3.2	-0.18	0.000248	1.67	133	35.76	0.15
Lateral Canal	South	10400	10-Year	280.96	-5.27	0.23	-2.99	0.29	0.000303	1.87	149.98	39.39	0.17
Lateral Canal	South	10400	25-Year	362.32	-5.27	0.73	-2.72	0.8	0.000394	2.12	171.15	45.96	0.19
Lateral Canal	South	10400	50-Year	428.61	-5.27	1.18	-2.51	1.26	0.00043	2.22	193.24	51.93	0.2
Lateral Canal	South	10400	100-Year	497.02	-5.27	1.62	-2.32	1.7	0.000476	2.28	217.67	60.95	0.21
Lateral Canal	South	10300	2-Year	144.23	-5.36	-0.84	-3.69	-0.82	0.000151	1.22	117.99	34.98	0.12
Lateral Canal	South	10300	5-Year	221.49	-5.36	-0.25	-3.38	-0.21	0.000252	1.57	140.94	42.46	0.15
Lateral Canal	South	10300	10-Year	280.96	-5.36	0.21	-3.17	0.26	0.000304	1.74	161.7	48.54	0.17
Lateral Canal	South	10300	25-Year	362.32	-5.36	0.7	-2.9	0.76	0.000379	1.93	187.26	56.84	0.19
Lateral Canal	South	10300	50-Year	428.61	-5.36	1.15	-2.7	1.21	0.000407	1.99	215.21	66.54	0.2
Lateral Canal	South	10300	100-Year	497.02	-5.36	1.59	-2.5	1.66	0.000392	2.02	245.94	72.76	0.19
Lateral Canal	South	10200	2-Year	144.23	-5.45	-0.86	-3.87	-0.84	0.000154	1.13	127.27	43.88	0.12
Lateral Canal	South	10200	5-Year	221.49	-5.45	-0.27	-3.56	-0.23	0.000235	1.42	155.5	52.57	0.15
Lateral Canal	South	10200	10-Year	280.96	-5.45	0.19	-3.34	0.22	0.000278	1.55	181.41	61.71	0.16
Lateral Canal	South	10200	25-Year	362.32	-5.45	0.68	-3.07	0.72	0.00031	1.7	213.47	79.66	0.17
Lateral Canal	South	10200	50-Year	428.61	-5.45	1.13	-2.88	1.17	0.000297	1.74	247.67	99.32	0.17
Lateral Canal	South	10200	100-Year	497.02	-5.45	1.57	-2.68	1.62	0.000263	1.77	295.24	163.78	0.16
Lateral Canal	South	10100	2-Year	144.23	-5.55	-0.87	-4.04	-0.85	0.000136	1	144.22	55.43	0.11
Lateral Canal	South	10100	5-Year	221.49	-5.55	-0.28	-3.73	-0.26	0.000192	1.23	179.77	65.73	0.13
Lateral Canal	South	10100	10-Year	280.96	-5.55	0.17	-3.52	0.2	0.000196	1.34	210.45	69.82	0.14
Lateral Canal	South	10100	25-Year	362.32	-5.55	0.66	-3.26	0.69	0.00021	1.48	245.68	75.89	0.14
Lateral Canal	South	10100	50-Year	428.61	-5.55	1.11	-3.06	1.15	0.000195	1.54	281.52	94.13	0.14
Lateral Canal	South	10100	100-Year	497.02	-5.55	1.56	-2.87	1.59	0.000178	1.59	322.38	150.37	0.14
Lateral Canal	South	10050	2-Year	144.23	-5.59	-0.87	-4.12	-0.86	0.000119	0.92	156.17	61.7	0.1
Lateral Canal	South	10050	5-Year	221.49	-5.59	-0.29	-3.81	-0.27	0.000158	1.14	194.73	69.55	0.12
Lateral Canal	South	10050	10-Year	280.96	-5.59	0.16	-3.61	0.19	0.000166	1.24	227.35	84.45	0.12
Lateral Canal	South	10050	25-Year	362.32	-5.59	0.65	-3.34	0.68	0.00018	1.37	264.94	100.02	0.13
Lateral Canal	South	10050	50-Year	428.61	-5.59	1.11	-3.14	1.14	0.000163	1.4	322.14	118.16	0.13
Lateral Canal	South	10050	100-Year	497.02	-5.59	1.55	-2.95	1.58	0.000147	1.42	381.19	139.09	0.12

HEC-RAS Output - Alternative 4

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Upper	1950	2-Year	79	-0.76	2.22	0.71	2.3	0.001078	2.39	33.11	14.06	0.27
WP-20 Canal	Upper	1950	5-Year	123	-0.76	3.02	1.09	3.14	0.001093	2.74	44.88	15.05	0.28
WP-20 Canal	Upper	1950	10-Year	158	-0.76	3.57	1.37	3.71	0.001108	2.96	53.33	15.72	0.28
WP-20 Canal	Upper	1950	25-Year	207	-0.76	4.28	1.71	4.44	0.001106	3.2	64.75	16.55	0.28
WP-20 Canal	Upper	1950	50-Year	247	-0.76	4.9	1.96	5.07	0.001041	3.28	75.21	23.72	0.28
WP-20 Canal	Upper	1950	100-Year	288	-0.76	5.53	2.22	5.71	0.000993	3.32	86.63	125.58	0.27
WP-20 Canal	Upper	1900	2-Year	79	-0.94	2.18	0.5	2.25	0.000802	2.13	37.04	15.52	0.24
WP-20 Canal	Upper	1900	5-Year	123	-0.94	2.99	0.88	3.09	0.00083	2.45	50.15	17.05	0.25
WP-20 Canal	Upper	1900	10-Year	158	-0.94	3.54	1.15	3.65	0.000859	2.63	60.08	18.91	0.26
WP-20 Canal	Upper	1900	25-Year	207	-0.94	4.26	1.49	4.38	0.000846	2.78	74.48	21.36	0.26
WP-20 Canal	Upper	1900	50-Year	247	-0.94	4.89	1.74	5.01	0.000811	2.78	88.88	25	0.26
WP-20 Canal	Upper	1900	100-Year	288	-0.94	5.53	1.98	5.64	0.000822	2.67	108.16	100.58	0.26
WP-20 Canal	Upper	1850	2-Year	79	-1.03	2.16	0.37	2.21	0.000611	1.91	41.29	16.71	0.21
WP-20 Canal	Upper	1850	5-Year	123	-1.03	2.97	0.72	3.04	0.000648	2.22	55.41	18.35	0.23
WP-20 Canal	Upper	1850	10-Year	158	-1.03	3.52	0.97	3.61	0.000673	2.39	65.99	19.98	0.23
WP-20 Canal	Upper	1850	25-Year	207	-1.03	4.24	1.28	4.34	0.00067	2.55	81.04	22.09	0.24
WP-20 Canal	Upper	1850	50-Year	247	-1.03	4.86	1.52	4.97	0.000615	2.58	95.91	26.47	0.23
WP-20 Canal	Upper	1850	100-Year	288	-1.03	5.51	1.75	5.61	0.000498	2.57	119.04	137.42	0.21
WP-20 Canal	Upper	1800	2-Year	79	-1.11	2.12	0.4	2.18	0.000694	2	39.41	16.7	0.23
WP-20 Canal	Upper	1800	5-Year	123	-1.11	2.93	0.78	3.01	0.000721	2.29	53.72	18.92	0.24
WP-20 Canal	Upper	1800	10-Year	158	-1.11	3.48	1.04	3.57	0.000732	2.44	64.74	20.95	0.24
WP-20 Canal	Upper	1800	25-Year	207	-1.11	4.2	1.37	4.3	0.000706	2.56	80.8	23.7	0.24
WP-20 Canal	Upper	1800	50-Year	247	-1.11	4.83	1.6	4.93	0.000658	2.55	98.98	51.35	0.24
WP-20 Canal	Upper	1800	100-Year	288	-1.11	5.5	1.83	5.58	0.000423	2.26	166.63	176.97	0.2
WP-20 Canal	Upper	1750	2-Year	79	-1.13	2.09	0.29	2.15	0.000589	1.88	41.95	17.08	0.21
WP-20 Canal	Upper	1750	5-Year	123	-1.13	2.9	0.64	2.97	0.000627	2.18	56.43	19.04	0.22
WP-20 Canal	Upper	1750	10-Year	158	-1.13	3.45	0.89	3.54	0.000646	2.34	67.43	20.83	0.23
WP-20 Canal	Upper	1750	25-Year	207	-1.13	4.17	1.2	4.27	0.000635	2.49	83.27	23.22	0.23
WP-20 Canal	Upper	1750	50-Year	247	-1.13	4.8	1.44	4.9	0.000614	2.5	98.85	35.28	0.23
WP-20 Canal	Upper	1750	100-Year	288	-1.13	5.48	1.66	5.55	0.000428	2.23	180.05	200	0.2
WP-20 Canal	Upper	1700	2-Year	79	-1.13	2.05	0.43	2.11	0.000773	2.07	38.25	16.75	0.24
WP-20 Canal	Upper	1700	5-Year	123	-1.13	2.85	0.79	2.94	0.000773	2.34	52.59	18.84	0.25
WP-20 Canal	Upper	1700	10-Year	158	-1.13	3.4	1.04	3.5	0.000761	2.49	63.37	20.22	0.25
WP-20 Canal	Upper	1700	25-Year	207	-1.13	4.12	1.37	4.23	0.000722	2.64	78.54	21.93	0.25
WP-20 Canal	Upper	1700	50-Year	247	-1.13	4.76	1.61	4.87	0.000643	2.66	92.93	55.93	0.23
WP-20 Canal	Upper	1700	100-Year	288	-1.13	5.45	1.83	5.53	0.000436	2.41	159.03	196.92	0.2
WP-20 Canal	Upper	1639		Olive Drive									
WP-20 Canal	Upper	1600	2-Year	79	-0.83	1.95	0.4	2.03	0.000924	2.23	35.5	15.79	0.26
WP-20 Canal	Upper	1600	5-Year	123	-0.83	2.76	0.78	2.85	0.000906	2.52	48.89	17.44	0.26
WP-20 Canal	Upper	1600	10-Year	158	-0.83	3.31	1.05	3.42	0.000894	2.69	58.79	18.57	0.27
WP-20 Canal	Upper	1600	25-Year	207	-0.83	4.03	1.39	4.15	0.000854	2.85	72.73	42.2	0.26
WP-20 Canal	Upper	1600	50-Year	247	-0.83	4.6	1.64	4.73	0.000811	2.92	84.59	87.86	0.26
WP-20 Canal	Upper	1600	100-Year	288	-0.83	5.22	1.87	5.35	0.000685	2.92	101.35	128.26	0.24
WP-20 Canal	Upper	1550	2-Year	79	-1.26	1.91	0.29	1.98	0.00085	2.19	36.16	15.22	0.25
WP-20 Canal	Upper	1550	5-Year	123	-1.26	2.71	0.66	2.81	0.000876	2.51	48.96	16.68	0.26
WP-20 Canal	Upper	1550	10-Year	158	-1.26	3.26	0.93	3.37	0.000893	2.7	58.45	17.94	0.26
WP-20 Canal	Upper	1550	25-Year	207	-1.26	3.98	1.26	4.11	0.000867	2.88	71.93	46.13	0.26
WP-20 Canal	Upper	1550	50-Year	247	-1.26	4.55	1.52	4.69	0.000837	2.96	83.41	66.44	0.26
WP-20 Canal	Upper	1550	100-Year	288	-1.26	5.18	1.75	5.31	0.000882	2.94	97.85	104.4	0.27
WP-20 Canal	Upper	1500	2-Year	79	-1.4	1.87	0.14	1.94	0.000811	2.16	36.51	14.59	0.24
WP-20 Canal	Upper	1500	5-Year	123	-1.4	2.67	0.52	2.77	0.000873	2.53	48.67	15.84	0.25
WP-20 Canal	Upper	1500	10-Year	158	-1.4	3.21	0.79	3.33	0.00091	2.74	57.56	16.89	0.26
WP-20 Canal	Upper	1500	25-Year	207	-1.4	3.93	1.13	4.06	0.000917	2.94	70.3	18.57	0.27
WP-20 Canal	Upper	1500	50-Year	247	-1.4	4.5	1.39	4.64	0.0009	3.04	81.35	28.66	0.27
WP-20 Canal	Upper	1500	100-Year	288	-1.4	5.13	1.64	5.27	0.000893	3.03	95.05	120.74	0.27

HEC-RAS Output - Alternative 4

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Upper	1450	2-Year	79	-1.11	1.83	0.19	1.9	0.000766	2.03	38.84	17.47	0.24
WP-20 Canal	Upper	1450	5-Year	123	-1.11	2.64	0.56	2.72	0.000734	2.29	53.63	18.99	0.24
WP-20 Canal	Upper	1450	10-Year	158	-1.11	3.19	0.81	3.28	0.000722	2.46	64.23	19.83	0.24
WP-20 Canal	Upper	1450	25-Year	207	-1.11	3.91	1.14	4.02	0.000703	2.61	79.17	21.62	0.24
WP-20 Canal	Upper	1450	50-Year	247	-1.11	4.48	1.38	4.59	0.000694	2.68	92.15	49.47	0.24
WP-20 Canal	Upper	1450	100-Year	288	-1.11	5.13	1.62	5.22	0.000538	2.45	144.05	89.6	0.22
WP-20 Canal	Upper	1400	2-Year	79	-1.46	1.79	0.07	1.86	0.000816	2.15	36.83	15.47	0.24
WP-20 Canal	Upper	1400	5-Year	123	-1.46	2.59	0.46	2.68	0.00087	2.45	50.13	17.96	0.26
WP-20 Canal	Upper	1400	10-Year	158	-1.46	3.13	0.73	3.24	0.000866	2.62	60.42	19.51	0.26
WP-20 Canal	Upper	1400	25-Year	207	-1.46	3.86	1.07	3.98	0.000825	2.75	75.18	21.5	0.26
WP-20 Canal	Upper	1400	50-Year	247	-1.46	4.43	1.33	4.56	0.000797	2.79	88.49	26.4	0.26
WP-20 Canal	Upper	1400	100-Year	288	-1.46	5.07	1.59	5.18	0.000703	2.75	104.63	71.09	0.25
WP-20 Canal	Upper	1350	2-Year	88	-1.57	1.72	0.09	1.81	0.001	2.4	36.66	15.01	0.27
WP-20 Canal	Upper	1350	5-Year	137	-1.57	2.51	0.5	2.63	0.001072	2.8	48.98	16.38	0.29
WP-20 Canal	Upper	1350	10-Year	175	-1.57	3.05	0.79	3.19	0.001089	3.01	58.08	17.34	0.29
WP-20 Canal	Upper	1350	25-Year	230	-1.57	3.76	1.16	3.92	0.001091	3.24	70.95	18.75	0.29
WP-20 Canal	Upper	1350	50-Year	275	-1.57	4.33	1.44	4.5	0.001096	3.34	82.25	21.02	0.3
WP-20 Canal	Upper	1350	100-Year	321	-1.57	4.97	1.69	5.14	0.000998	3.32	97.77	120.94	0.29
WP-20 Canal	Upper	1300	2-Year	88	-1.23	1.67		1.76	0.001015	2.37	37.1	18.32	0.28
WP-20 Canal	Upper	1300	5-Year	137	-1.23	2.46		2.58	0.000924	2.69	50.95	19.68	0.28
WP-20 Canal	Upper	1300	10-Year	175	-1.23	3.01		3.14	0.000848	2.88	60.73	20.67	0.28
WP-20 Canal	Upper	1300	25-Year	230	-1.23	3.72		3.88	0.00077	3.12	73.64	23.06	0.27
WP-20 Canal	Upper	1300	50-Year	275	-1.23	4.29		4.46	0.000714	3.28	84.32	29.12	0.27
WP-20 Canal	Upper	1300	100-Year	321	-1.23	4.92		5.08	0.001074	3.2	116.11	98.3	0.3
WP-20 Canal	Upper	1201.15*	2-Year	88	-0.9	1.46		1.67	0.00057	3.73	23.56	10	0.43
WP-20 Canal	Upper	1201.15*	5-Year	137	-0.9	2.17		2.48	0.000646	4.46	30.71	10	0.45
WP-20 Canal	Upper	1201.15*	10-Year	175	-0.9	2.66		3.03	0.000697	4.92	35.59	10	0.46
WP-20 Canal	Upper	1201.15*	25-Year	230	-0.9	3.3		3.77	0.000762	5.47	42.03	10	0.47
WP-20 Canal	Upper	1201.15*	50-Year	275	-0.9	3.82		4.35	0.000796	5.83	47.2	10	0.47
WP-20 Canal	Upper	1201.15*	100-Year	321	-0.9	4.37		4.94	0.000808	6.09	53.27	14.2	0.47
WP-20 Canal	Upper	1102.30*	2-Year	88	-0.93	1.39		1.62	0.000594	3.79	23.23	10	0.44
WP-20 Canal	Upper	1102.30*	5-Year	137	-0.93	2.1		2.41	0.000673	4.53	30.27	10	0.46
WP-20 Canal	Upper	1102.30*	10-Year	175	-0.93	2.58		2.97	0.000726	4.99	35.09	10	0.47
WP-20 Canal	Upper	1102.30*	25-Year	230	-0.93	3.21		3.69	0.000792	5.55	41.43	10	0.48
WP-20 Canal	Upper	1102.30*	50-Year	275	-0.93	3.72		4.27	0.000826	5.91	46.55	10	0.48
WP-20 Canal	Upper	1102.30*	100-Year	321	-0.93	4.27		4.86	0.000837	6.17	52.13	12.22	0.48
WP-20 Canal	Upper	1003.46*	2-Year	88	-0.97	1.33		1.56	0.000613	3.83	22.98	10	0.45
WP-20 Canal	Upper	1003.46*	5-Year	137	-0.97	2.02		2.35	0.000696	4.58	29.92	10	0.47
WP-20 Canal	Upper	1003.46*	10-Year	175	-0.97	2.5		2.89	0.00075	5.05	34.67	10	0.48
WP-20 Canal	Upper	1003.46*	25-Year	230	-0.97	3.12		3.61	0.00082	5.62	40.93	10	0.49
WP-20 Canal	Upper	1003.46*	50-Year	275	-0.97	3.63		4.18	0.000853	5.98	46	10	0.49
WP-20 Canal	Upper	1003.46*	100-Year	321	-0.97	4.17		4.78	0.000862	6.24	51.45	10	0.48
WP-20 Canal	Upper	904.615*	2-Year	88	-1.01	1.26		1.49	0.000634	3.87	22.71	10	0.45
WP-20 Canal	Upper	904.615*	5-Year	137	-1.01	1.94		2.28	0.000722	4.64	29.53	10	0.48
WP-20 Canal	Upper	904.615*	10-Year	175	-1.01	2.41		2.82	0.000779	5.12	34.21	10	0.49
WP-20 Canal	Upper	904.615*	25-Year	230	-1.01	3.03		3.53	0.000851	5.7	40.37	10	0.5
WP-20 Canal	Upper	904.615*	50-Year	275	-1.01	3.53		4.1	0.000885	6.06	45.38	10	0.5
WP-20 Canal	Upper	904.615*	100-Year	321	-1.01	4.07		4.69	0.00089	6.31	50.83	10	0.49
WP-20 Canal	Upper	805.769*	2-Year	88	-1.04	1.19		1.43	0.000671	3.95	22.28	10	0.47
WP-20 Canal	Upper	805.769*	5-Year	137	-1.04	1.86		2.2	0.000762	4.73	28.98	10	0.49
WP-20 Canal	Upper	805.769*	10-Year	175	-1.04	2.32		2.74	0.000822	5.22	33.56	10	0.5
WP-20 Canal	Upper	805.769*	25-Year	230	-1.04	2.92		3.44	0.000896	5.81	39.61	10	0.51
WP-20 Canal	Upper	805.769*	50-Year	275	-1.04	3.42		4.01	0.000929	6.17	44.57	10	0.51
WP-20 Canal	Upper	805.769*	100-Year	321	-1.04	3.96		4.6	0.000928	6.42	50.03	10	0.51
WP-20 Canal	Upper	706.923*	2-Year	88	-1.08	1.11		1.36	0.000704	4.02	21.92	10	0.48
WP-20 Canal	Upper	706.923*	5-Year	137	-1.08	1.77		2.13	0.0008	4.81	28.49	10	0.5

HEC-RAS Output - Alternative 4

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Upper	706.923*	10-Year	175	-1.08	2.22		2.66	0.000862	5.31	32.98	10	0.51
WP-20 Canal	Upper	706.923*	25-Year	230	-1.08	2.81		3.35	0.000942	5.91	38.91	10	0.53
WP-20 Canal	Upper	706.923*	50-Year	275	-1.08	3.3		3.91	0.000972	6.27	43.83	10	0.53
WP-20 Canal	Upper	706.923*	100-Year	321	-1.08	3.85		4.51	0.000965	6.51	49.3	10	0.52
WP-20 Canal	Upper	608.077*	2-Year	88	-1.12	1.03		1.29	0.000744	4.09	21.5	10	0.49
WP-20 Canal	Upper	608.077*	5-Year	137	-1.12	1.67		2.05	0.000845	4.9	27.94	10	0.52
WP-20 Canal	Upper	608.077*	10-Year	175	-1.12	2.11		2.57	0.000913	5.41	32.32	10	0.53
WP-20 Canal	Upper	608.077*	25-Year	230	-1.12	2.69		3.26	0.000996	6.03	38.12	10	0.54
WP-20 Canal	Upper	608.077*	50-Year	275	-1.12	3.18		3.82	0.001024	6.4	43	10	0.54
WP-20 Canal	Upper	608.077*	100-Year	321	-1.12	3.73		4.41	0.001008	6.62	48.5	10	0.53
WP-20 Canal	Upper	509.230*	2-Year	88	-1.15	0.94		1.21	0.000811	4.21	20.88	10	0.51
WP-20 Canal	Upper	509.230*	5-Year	137	-1.15	1.56		1.96	0.000919	5.05	27.14	10	0.54
WP-20 Canal	Upper	509.230*	10-Year	175	-1.15	1.99		2.47	0.00099	5.57	31.41	10	0.55
WP-20 Canal	Upper	509.230*	25-Year	230	-1.15	2.55		3.15	0.00108	6.21	37.02	10	0.57
WP-20 Canal	Upper	509.230*	50-Year	275	-1.15	3.04		3.71	0.001101	6.57	41.87	10	0.57
WP-20 Canal	Upper	509.230*	100-Year	321	-1.15	3.6		4.31	0.001068	6.76	47.48	10	0.55
WP-20 Canal	Upper	410.384*	2-Year	88	-1.19	0.84		1.13	0.000884	4.34	20.28	10	0.54
WP-20 Canal	Upper	410.384*	5-Year	137	-1.19	1.44		1.86	0.001001	5.2	26.34	10	0.56
WP-20 Canal	Upper	410.384*	10-Year	175	-1.19	1.86		2.37	0.001076	5.74	30.49	10	0.58
WP-20 Canal	Upper	410.384*	25-Year	230	-1.19	2.4		3.04	0.001175	6.41	35.91	10	0.6
WP-20 Canal	Upper	410.384*	50-Year	275	-1.19	2.88		3.59	0.001189	6.75	40.71	10	0.59
WP-20 Canal	Upper	410.384*	100-Year	321	-1.19	3.46		4.2	0.001132	6.91	46.46	10	0.56
WP-20 Canal	Upper	311.538*	2-Year	88	-1.23	0.72		1.04	0.000989	4.51	19.52	10	0.57
WP-20 Canal	Upper	311.538*	5-Year	137	-1.23	1.3		1.76	0.001118	5.4	25.35	10	0.6
WP-20 Canal	Upper	311.538*	10-Year	175	-1.23	1.7		2.26	0.001201	5.97	29.33	10	0.61
WP-20 Canal	Upper	311.538*	25-Year	230	-1.23	2.22		2.91	0.001314	6.67	34.5	10	0.63
WP-20 Canal	Upper	311.538*	50-Year	275	-1.23	2.7		3.46	0.001308	6.99	39.32	10	0.62
WP-20 Canal	Upper	311.538*	100-Year	321	-1.23	3.3		4.08	0.001214	7.09	45.27	10	0.59
WP-20 Canal	Upper	212.692*	2-Year	88	-1.26	0.56	0.07	0.92	0.00122	4.84	18.19	10	0.63
WP-20 Canal	Upper	212.692*	5-Year	137	-1.26	1.11	0.53	1.63	0.001354	5.77	23.73	10	0.66
WP-20 Canal	Upper	212.692*	10-Year	175	-1.26	1.49	0.85	2.12	0.001437	6.35	27.54	10	0.67
WP-20 Canal	Upper	212.692*	25-Year	230	-1.26	1.97		2.76	0.001578	7.12	32.31	10	0.7
WP-20 Canal	Upper	212.692*	50-Year	275	-1.26	2.47		3.31	0.001512	7.37	37.3	10	0.67
WP-20 Canal	Upper	212.692*	100-Year	321	-1.26	3.11		3.95	0.001338	7.35	43.67	10	0.62
WP-20 Canal	Upper	113.846*	2-Year	88	-1.3	0.04	0.04	0.71	0.003095	6.59	13.36	10	1
WP-20 Canal	Upper	113.846*	5-Year	137	-1.3	0.5	0.5	1.4	0.00307	7.63	17.96	10	1
WP-20 Canal	Upper	113.846*	10-Year	175	-1.3	0.81	0.81	1.88	0.003101	8.28	21.12	10	1
WP-20 Canal	Upper	113.846*	25-Year	230	-1.3	1.4	1.23	2.53	0.002631	8.52	26.99	10	0.91
WP-20 Canal	Upper	113.846*	50-Year	275	-1.3	2.14		3.13	0.00189	7.99	34.42	10	0.76
WP-20 Canal	Upper	113.846*	100-Year	321	-1.3	2.88		3.8	0.001505	7.68	41.82	10	0.66
WP-20 Canal	Upper	15	2-Year	88	-2.2	0.16		0.26	0.000231	2.59	33.93	19.42	0.33
WP-20 Canal	Upper	15	5-Year	137	-2.2	0.81		0.95	0.000212	2.99	45.77	22.06	0.33
WP-20 Canal	Upper	15	10-Year	175	-2.2	1.36		1.51	0.000181	3.15	55.56	24.23	0.32
WP-20 Canal	Upper	15	25-Year	230	-2.2	2.02		2.2	0.000164	3.41	67.44	26.87	0.31
WP-20 Canal	Upper	15	50-Year	275	-2.2	2.67		2.85	0.000138	3.48	79.11	29.47	0.29
WP-20 Canal	Upper	15	100-Year	321	-2.2	3.36		3.55	0.000115	3.5	91.59	32.24	0.27
WP-20 Canal	Lower	6100	2-Year	6.81	-2.82	0.23	-1.62	0.23	0.000007	0.18	37.75	38.25	0.02
WP-20 Canal	Lower	6100	5-Year	13.97	-2.82	0.91	-1.52	0.91	0.000011	0.27	52.47	40.26	0.03
WP-20 Canal	Lower	6100	10-Year	24.67	-2.82	1.46	-1.39	1.47	0.000018	0.38	65.11	41.89	0.04
WP-20 Canal	Lower	6100	25-Year	42.23	-2.82	2.17	-1.21	2.18	0.000026	0.51	82.22	44.12	0.05
WP-20 Canal	Lower	6100	50-Year	61.15	-2.82	2.8	-1.05	2.81	0.000032	0.62	98.21	45.77	0.06
WP-20 Canal	Lower	6100	100-Year	82.32	-2.82	3.49	-0.9	3.5	0.000035	0.71	116.38	47.54	0.06
WP-20 Canal	Lower	6050	2-Year	6.81	-1.7	0.22	-1.34	0.23	0.000028	0.3	22.84	16.14	0.04
WP-20 Canal	Lower	6050	5-Year	13.97	-1.7	0.91	-1.18	0.91	0.000035	0.41	34.34	17.6	0.05
WP-20 Canal	Lower	6050	10-Year	24.67	-1.7	1.46	-1	1.46	0.000052	0.56	44.37	18.73	0.06
WP-20 Canal	Lower	6050	25-Year	42.23	-1.7	2.17	-0.76	2.17	0.00007	0.73	58.12	20.18	0.08

HEC-RAS Output - Alternative 4

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Lower	6050	50-Year	61.15	-1.7	2.79	-0.55	2.81	0.000082	0.86	71.22	21.48	0.08
WP-20 Canal	Lower	6050	100-Year	82.32	-1.7	3.48	-0.33	3.5	0.000086	0.95	86.52	22.95	0.09
WP-20 Canal	Lower	6000	2-Year	6.81	-1.82	0.22	-1.47	0.23	0.000019	0.27	25.54	15.58	0.04
WP-20 Canal	Lower	6000	5-Year	13.97	-1.82	0.91	-1.34	0.91	0.000028	0.38	36.6	16.86	0.05
WP-20 Canal	Lower	6000	10-Year	24.67	-1.82	1.46	-1.16	1.46	0.000044	0.53	46.17	17.89	0.06
WP-20 Canal	Lower	6000	25-Year	42.23	-1.82	2.16	-0.94	2.17	0.000064	0.71	59.24	19.16	0.07
WP-20 Canal	Lower	6000	50-Year	61.15	-1.82	2.79	-0.74	2.8	0.000078	0.85	71.64	20.3	0.08
WP-20 Canal	Lower	6000	100-Year	82.32	-1.82	3.48	-0.54	3.49	0.000085	0.96	86.06	21.62	0.08
WP-20 Canal	Lower	5969		Pedestrian Walkway Culvert									
WP-20 Canal	Lower	5950	2-Year	6.81	-1.96	0.22	-1.51	0.22	0.000021	0.27	25.08	16.45	0.04
WP-20 Canal	Lower	5950	5-Year	13.97	-1.96	0.9	-1.35	0.9	0.000029	0.38	36.55	17.4	0.05
WP-20 Canal	Lower	5950	10-Year	24.67	-1.96	1.44	-1.15	1.44	0.000045	0.53	46.22	18.46	0.06
WP-20 Canal	Lower	5950	25-Year	42.23	-1.96	2.13	-0.91	2.13	0.000067	0.71	59.68	20.88	0.07
WP-20 Canal	Lower	5950	50-Year	61.15	-1.96	2.73	-0.69	2.74	0.00008	0.84	72.59	22	0.08
WP-20 Canal	Lower	5950	100-Year	82.32	-1.96	3.38	-0.48	3.39	0.000086	0.94	87.35	23.22	0.09
WP-20 Canal	Lower	5900	2-Year	6.81	-2.01	0.22	-1.52	0.22	0.000022	0.28	24.45	15.5	0.04
WP-20 Canal	Lower	5900	5-Year	13.97	-2.01	0.9	-1.34	0.9	0.000031	0.39	35.51	16.97	0.05
WP-20 Canal	Lower	5900	10-Year	24.67	-2.01	1.44	-1.18	1.44	0.000048	0.55	44.94	17.92	0.06
WP-20 Canal	Lower	5900	25-Year	42.23	-2.01	2.12	-0.93	2.13	0.000069	0.73	57.62	19.13	0.07
WP-20 Canal	Lower	5900	50-Year	61.15	-2.01	2.72	-0.72	2.73	0.000086	0.88	69.43	20.18	0.08
WP-20 Canal	Lower	5900	100-Year	82.32	-2.01	3.37	-0.51	3.39	0.000095	0.99	82.99	21.55	0.09
WP-20 Canal	Lower	5850	2-Year	6.81	-2.13	0.22	-1.68	0.22	0.000015	0.25	27.11	15.04	0.03
WP-20 Canal	Lower	5850	5-Year	13.97	-2.13	0.89	-1.52	0.9	0.000024	0.37	37.56	15.86	0.04
WP-20 Canal	Lower	5850	10-Year	24.67	-2.13	1.43	-1.32	1.44	0.000041	0.53	46.3	16.52	0.06
WP-20 Canal	Lower	5850	25-Year	42.23	-2.13	2.12	-1.09	2.13	0.000064	0.73	57.87	17.35	0.07
WP-20 Canal	Lower	5850	50-Year	61.15	-2.13	2.72	-0.89	2.73	0.000084	0.89	68.52	18.36	0.08
WP-20 Canal	Lower	5850	100-Year	82.32	-2.13	3.37	-0.68	3.38	0.000099	1.02	81.01	20.15	0.09
WP-20 Canal	Lower	5800	2-Year	6.81	-2.07	0.22	-1.61	0.22	0.000016	0.25	26.8	15.43	0.03
WP-20 Canal	Lower	5800	5-Year	13.97	-2.07	0.89	-1.46	0.9	0.000025	0.37	37.66	16.64	0.04
WP-20 Canal	Lower	5800	10-Year	24.67	-2.07	1.43	-1.3	1.44	0.000042	0.53	46.87	17.54	0.06
WP-20 Canal	Lower	5800	25-Year	42.23	-2.07	2.11	-1.07	2.12	0.000063	0.71	59.23	18.77	0.07
WP-20 Canal	Lower	5800	50-Year	61.15	-2.07	2.71	-0.87	2.73	0.00008	0.86	70.74	19.67	0.08
WP-20 Canal	Lower	5800	100-Year	82.32	-2.07	3.36	-0.67	3.38	0.00009	0.98	83.87	20.73	0.09
WP-20 Canal	Lower	5750	2-Year	6.81	-2.04	0.22	-1.56	0.22	0.000017	0.27	24.91	16.01	0.04
WP-20 Canal	Lower	5750	5-Year	13.97	-2.04	0.89	-1.37	0.89	0.000024	0.41	34.36	17.38	0.05
WP-20 Canal	Lower	5750	10-Year	24.67	-2.04	1.43	-1.18	1.43	0.000038	0.59	41.89	18.37	0.06
WP-20 Canal	Lower	5750	25-Year	42.23	-2.04	2.11	-0.94	2.12	0.000057	0.82	51.4	19.36	0.08
WP-20 Canal	Lower	5750	50-Year	61.15	-2.04	2.7	-0.74	2.72	0.000072	1.02	59.74	20.51	0.09
WP-20 Canal	Lower	5750	100-Year	82.32	-2.04	3.35	-0.54	3.37	0.000082	1.2	68.8	21.88	0.1
WP-20 Canal	Lower	5711		Kasey Street									
WP-20 Canal	Lower	5650	2-Year	6.81	-2.49	0.22	-2.17	0.22	0.000011	0.25	27.35	17.42	0.03
WP-20 Canal	Lower	5650	5-Year	13.97	-2.49	0.89	-2.01	0.89	0.000021	0.39	35.7	19.36	0.04
WP-20 Canal	Lower	5650	10-Year	24.67	-2.49	1.43	-1.82	1.43	0.000039	0.58	42.84	20.9	0.06
WP-20 Canal	Lower	5650	25-Year	42.23	-2.49	2.1	-1.56	2.11	0.00006	0.81	52.27	22.84	0.07
WP-20 Canal	Lower	5650	50-Year	61.15	-2.49	2.68	-1.33	2.7	0.000077	1.01	60.45	24.52	0.09
WP-20 Canal	Lower	5650	100-Year	82.32	-2.49	3.31	-1.09	3.33	0.000089	1.19	69.17	26.32	0.09
WP-20 Canal	Lower	5550	2-Year	6.81	-2.55	0.22	-2.12	0.22	0.000008	0.19	35.06	17.48	0.02
WP-20 Canal	Lower	5550	5-Year	13.97	-2.55	0.89	-1.97	0.89	0.000014	0.29	47.5	19.43	0.03
WP-20 Canal	Lower	5550	10-Year	24.67	-2.55	1.42	-1.8	1.43	0.000024	0.42	58.3	20.99	0.04
WP-20 Canal	Lower	5550	25-Year	42.23	-2.55	2.1	-1.56	2.1	0.000038	0.58	73.11	22.94	0.06
WP-20 Canal	Lower	5550	50-Year	61.15	-2.55	2.68	-1.35	2.69	0.00005	0.7	87.04	24.64	0.07
WP-20 Canal	Lower	5550	100-Year	82.32	-2.55	3.31	-1.14	3.32	0.000057	0.8	102.99	26.46	0.07
WP-20 Canal	Lower	5500	2-Year	35.81	-2.59	0.19	-1.61	0.21	0.000231	1.05	34.16	17.37	0.13
WP-20 Canal	Lower	5500	5-Year	56.97	-2.59	0.86	-1.36	0.88	0.000246	1.23	46.4	19.32	0.14

HEC-RAS Output - Alternative 4

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Lower	5500	10-Year	78.67	-2.59	1.39	-1.14	1.42	0.000264	1.38	57.01	73.83	0.15
WP-20 Canal	Lower	5500	25-Year	112.23	-2.59	2.05	-0.84	2.09	0.000287	1.57	71.55	78.8	0.16
WP-20 Canal	Lower	5500	50-Year	143.15	-2.59	2.64	-0.6	2.68	0.000288	1.68	85.31	83.13	0.16
WP-20 Canal	Lower	5500	100-Year	178.32	-2.59	3.26	-0.37	3.31	0.000283	1.76	101.11	87.92	0.16
WP-20 Canal	Lower	5400	2-Year	35.81	-2.66	0.17	-1.56	0.19	0.000239	1.06	33.66	17.25	0.13
WP-20 Canal	Lower	5400	5-Year	56.97	-2.66	0.83	-1.32	0.86	0.000254	1.25	45.74	19.08	0.14
WP-20 Canal	Lower	5400	10-Year	78.67	-2.66	1.36	-1.12	1.39	0.000273	1.4	56.16	72.66	0.15
WP-20 Canal	Lower	5400	25-Year	112.23	-2.66	2.02	-0.82	2.06	0.000298	1.59	70.47	77.37	0.16
WP-20 Canal	Lower	5400	50-Year	143.15	-2.66	2.61	-0.6	2.65	0.000299	1.7	84.08	81.5	0.16
WP-20 Canal	Lower	5400	100-Year	178.32	-2.66	3.23	-0.36	3.28	0.000332	1.77	101.03	102.14	0.17
WP-20 Canal	Lower	5300	2-Year	35.81	-2.72	0.15	-1.6	0.16	0.00023	1.05	34.09	17.28	0.13
WP-20 Canal	Lower	5300	5-Year	56.97	-2.72	0.81	-1.36	0.83	0.000246	1.23	46.13	18.99	0.14
WP-20 Canal	Lower	5300	10-Year	78.67	-2.72	1.33	-1.15	1.36	0.000266	1.39	56.44	20.34	0.15
WP-20 Canal	Lower	5300	25-Year	112.23	-2.72	1.99	-0.87	2.03	0.000292	1.59	70.43	22.04	0.16
WP-20 Canal	Lower	5300	50-Year	143.15	-2.72	2.57	-0.64	2.62	0.000333	1.69	84.58	27.04	0.17
WP-20 Canal	Lower	5300	100-Year	178.32	-2.72	3.2	-0.41	3.24	0.000339	1.73	103.12	43.48	0.17
WP-20 Canal	Lower	5246	2-Year	35.81	-2.76	0.14	-1.68	0.15	0.000191	0.98	36.62	17.95	0.12
WP-20 Canal	Lower	5246	5-Year	56.97	-2.76	0.8	-1.43	0.82	0.000208	1.16	48.99	19.34	0.13
WP-20 Canal	Lower	5246	10-Year	78.67	-2.76	1.32	-1.22	1.35	0.000228	1.32	59.4	20.44	0.14
WP-20 Canal	Lower	5246	25-Year	112.23	-2.76	1.98	-0.96	2.02	0.000258	1.53	73.35	22.01	0.15
WP-20 Canal	Lower	5246	50-Year	143.15	-2.76	2.56	-0.73	2.6	0.000268	1.65	86.52	23.59	0.15
WP-20 Canal	Lower	5246	100-Year	178.32	-2.76	3.18	-0.51	3.22	0.000272	1.75	101.71	25.69	0.16
WP-20 Canal	Lower	5229	2-Year	35.81	-2.76	0.05	-1.03	0.14	0.001388	2.42	14.82	17.76	0.32
WP-20 Canal	Lower	5229	5-Year	56.97	-2.76	0.68	-0.68	0.8	0.0014	2.8	20.32	19.1	0.33
WP-20 Canal	Lower	5229	10-Year	78.67	-2.76	1.17	-0.38	1.33	0.001491	3.16	24.9	20.13	0.34
WP-20 Canal	Lower	5229	25-Year	112.23	-2.76	1.79	0.03	1.99	0.001634	3.62	30.98	21.48	0.37
WP-20 Canal	Lower	5229	50-Year	143.15	-2.76	2.34	0.37	2.57	0.001645	3.89	36.77	22.98	0.37
WP-20 Canal	Lower	5229	100-Year	178.32	-2.76	2.93	0.72	3.19	0.001635	4.11	43.43	24.82	0.38
WP-20 Canal	Lower	5205		Annette Drive									
WP-20 Canal	Lower	5181	2-Year	35.81	-2.38	0.09		0.13	0.000413	1.47	24.4	21.73	0.18
WP-20 Canal	Lower	5181	5-Year	56.97	-2.38	0.74		0.79	0.000418	1.77	32.13	23.78	0.19
WP-20 Canal	Lower	5181	10-Year	78.67	-2.38	1.24		1.3	0.00045	2.06	38.13	25.09	0.2
WP-20 Canal	Lower	5181	25-Year	112.23	-2.38	1.85		1.95	0.000508	2.47	45.49	26.69	0.22
WP-20 Canal	Lower	5181	50-Year	143.15	-2.38	2.36		2.48	0.000542	2.77	51.62	28.06	0.24
WP-20 Canal	Lower	5181	100-Year	178.32	-2.38	2.87		3.02	0.000582	3.09	57.68	29.43	0.25
WP-20 Canal	Lower	5163	2-Year	35.81	-2.38	0.1	-1.62	0.12	0.000176	0.89	40.02	21.77	0.12
WP-20 Canal	Lower	5163	5-Year	56.97	-2.38	0.76	-1.4	0.77	0.000177	1.04	54.92	23.82	0.12
WP-20 Canal	Lower	5163	10-Year	78.67	-2.38	1.26	-1.21	1.29	0.000186	1.17	67.39	25.16	0.13
WP-20 Canal	Lower	5163	25-Year	112.23	-2.38	1.89	-0.96	1.92	0.000203	1.34	83.7	26.8	0.13
WP-20 Canal	Lower	5163	50-Year	143.15	-2.38	2.42	-0.75	2.45	0.00021	1.46	98.14	28.21	0.14
WP-20 Canal	Lower	5163	100-Year	178.32	-2.38	2.94	-0.54	2.98	0.000219	1.58	113.19	29.62	0.14
WP-20 Canal	Lower	5100	2-Year	35.81	-2.46	0.09		0.11	0.00018	0.9	39.73	21.82	0.12
WP-20 Canal	Lower	5100	5-Year	56.97	-2.46	0.74		0.76	0.000182	1.04	54.8	24.25	0.12
WP-20 Canal	Lower	5100	10-Year	78.67	-2.46	1.25		1.27	0.000189	1.17	67.5	25.65	0.13
WP-20 Canal	Lower	5100	25-Year	112.23	-2.46	1.88		1.91	0.000204	1.33	84.11	27.37	0.13
WP-20 Canal	Lower	5100	50-Year	143.15	-2.46	2.4		2.44	0.00021	1.45	98.85	28.8	0.14
WP-20 Canal	Lower	5100	100-Year	178.32	-2.46	2.92		2.96	0.000216	1.56	114.2	30.21	0.14
WP-20 Canal	Lower	5000	2-Year	35.81	-2.57	0.07	-1.68	0.09	0.00019	0.92	39.05	21.78	0.12
WP-20 Canal	Lower	5000	5-Year	56.97	-2.57	0.72	-1.46	0.74	0.000194	1.05	54.34	25.02	0.13
WP-20 Canal	Lower	5000	10-Year	78.67	-2.57	1.23	-1.25	1.25	0.000197	1.17	67.45	26.53	0.13
WP-20 Canal	Lower	5000	25-Year	112.23	-2.57	1.86	-0.99	1.89	0.000208	1.33	84.62	28.32	0.14
WP-20 Canal	Lower	5000	50-Year	143.15	-2.57	2.38	-0.78	2.42	0.00021	1.43	99.86	29.76	0.14
WP-20 Canal	Lower	5000	100-Year	178.32	-2.57	2.9	-0.56	2.94	0.000214	1.54	115.7	31.2	0.14
WP-20 Canal	Lower	4900	2-Year	35.81	-2.69	0.05	-1.73	0.07	0.000197	0.93	38.5	21.55	0.12
WP-20 Canal	Lower	4900	5-Year	56.97	-2.69	0.7	-1.49	0.72	0.000206	1.06	53.86	25.66	0.13

HEC-RAS Output - Alternative 4

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Lower	4900	10-Year	78.67	-2.69	1.21	-1.29	1.23	0.000205	1.17	67.44	27.52	0.13
WP-20 Canal	Lower	4900	25-Year	112.23	-2.69	1.84	-1.03	1.87	0.000211	1.32	85.19	29.27	0.14
WP-20 Canal	Lower	4900	50-Year	143.15	-2.69	2.36	-0.8	2.39	0.00021	1.42	100.93	30.73	0.14
WP-20 Canal	Lower	4900	100-Year	178.32	-2.69	2.88	-0.57	2.92	0.000212	1.52	117.28	32.18	0.14
WP-20 Canal	Lower	4800	2-Year	35.81	-2.81	0.03	-1.77	0.05	0.000201	0.94	37.98	21.12	0.12
WP-20 Canal	Lower	4800	5-Year	56.97	-2.81	0.68	-1.53	0.7	0.000217	1.07	53.27	25.98	0.13
WP-20 Canal	Lower	4800	10-Year	78.67	-2.81	1.19	-1.33	1.21	0.000216	1.17	67.28	28.48	0.13
WP-20 Canal	Lower	4800	25-Year	112.23	-2.81	1.82	-1.05	1.84	0.000216	1.31	85.64	30.24	0.14
WP-20 Canal	Lower	4800	50-Year	143.15	-2.81	2.34	-0.82	2.37	0.000211	1.4	101.91	31.73	0.14
WP-20 Canal	Lower	4800	100-Year	178.32	-2.81	2.86	-0.59	2.9	0.000211	1.5	118.79	33.2	0.14
WP-20 Canal	Lower	4750	2-Year	35.81	-2.87	0.02	-1.79	0.04	0.0002	0.95	37.84	20.83	0.12
WP-20 Canal	Lower	4750	5-Year	56.97	-2.87	0.67	-1.55	0.69	0.000221	1.07	53.04	26.08	0.13
WP-20 Canal	Lower	4750	10-Year	78.67	-2.87	1.18	-1.34	1.2	0.000221	1.17	67.2	28.95	0.14
WP-20 Canal	Lower	4750	25-Year	112.23	-2.87	1.81	-1.06	1.83	0.000218	1.31	85.86	30.74	0.14
WP-20 Canal	Lower	4750	50-Year	143.15	-2.87	2.33	-0.83	2.36	0.000212	1.4	102.42	32.23	0.14
WP-20 Canal	Lower	4750	100-Year	178.32	-2.87	2.85	-0.6	2.89	0.00021	1.49	119.56	33.72	0.14
WP-20 Canal	Lower	4600	2-Year	35.81	-3.05	-0.01	-1.87	0.01	0.000198	0.94	37.99	20.86	0.12
WP-20 Canal	Lower	4600	5-Year	56.97	-3.05	0.64	-1.62	0.66	0.000221	1.08	52.86	25.75	0.13
WP-20 Canal	Lower	4600	10-Year	78.67	-3.05	1.15	-1.4	1.17	0.000234	1.17	67.07	30.14	0.14
WP-20 Canal	Lower	4600	25-Year	112.23	-3.05	1.77	-1.11	1.8	0.000224	1.29	86.71	32.26	0.14
WP-20 Canal	Lower	4600	50-Year	143.15	-3.05	2.3	-0.87	2.33	0.000213	1.37	104.12	33.79	0.14
WP-20 Canal	Lower	4600	100-Year	178.32	-3.05	2.82	-0.63	2.85	0.000217	1.46	122.27	36.74	0.14
WP-20 Canal	Lower	4500	2-Year	35.81	-3.17	-0.03	-1.93	-0.01	0.000196	0.93	38.48	21.35	0.12
WP-20 Canal	Lower	4500	5-Year	56.97	-3.17	0.62	-1.66	0.64	0.000211	1.07	53.09	25.07	0.13
WP-20 Canal	Lower	4500	10-Year	78.67	-3.17	1.12	-1.43	1.15	0.000234	1.17	67.05	30.04	0.14
WP-20 Canal	Lower	4500	25-Year	112.23	-3.17	1.75	-1.13	1.78	0.000229	1.29	87.23	33.3	0.14
WP-20 Canal	Lower	4500	50-Year	143.15	-3.17	2.28	-0.9	2.31	0.000214	1.36	105.25	34.85	0.14
WP-20 Canal	Lower	4500	100-Year	178.32	-3.17	2.8	-0.66	2.83	0.000217	1.43	124.5	38.68	0.14
WP-20 Canal	Lower	4400	2-Year	35.81	-3.29	-0.04	-1.99	-0.03	0.000185	0.91	39.31	21.54	0.12
WP-20 Canal	Lower	4400	5-Year	56.97	-3.29	0.6	-1.71	0.61	0.000192	1.06	53.84	23.99	0.12
WP-20 Canal	Lower	4400	10-Year	78.67	-3.29	1.1	-1.46	1.12	0.000227	1.17	67.31	29.53	0.14
WP-20 Canal	Lower	4400	25-Year	112.23	-3.29	1.73	-1.16	1.75	0.000234	1.28	87.74	34.35	0.14
WP-20 Canal	Lower	4400	50-Year	143.15	-3.29	2.26	-0.92	2.29	0.000223	1.34	106.66	37.39	0.14
WP-20 Canal	Lower	4400	100-Year	178.32	-3.29	2.78	-0.69	2.81	0.000216	1.41	126.91	40.42	0.14
WP-20 Canal	Lower	4300	2-Year	35.81	-3.41	-0.06	-2.04	-0.05	0.000171	0.88	40.49	21.8	0.11
WP-20 Canal	Lower	4300	5-Year	56.97	-3.41	0.58	-1.76	0.6	0.000177	1.03	55.15	23.92	0.12
WP-20 Canal	Lower	4300	10-Year	78.67	-3.41	1.08	-1.49	1.1	0.000212	1.16	68.03	28.62	0.13
WP-20 Canal	Lower	4300	25-Year	112.23	-3.41	1.7	-1.19	1.73	0.000243	1.27	88.31	35.95	0.14
WP-20 Canal	Lower	4300	50-Year	143.15	-3.41	2.24	-0.95	2.26	0.000224	1.32	108.33	39.08	0.14
WP-20 Canal	Lower	4300	100-Year	178.32	-3.41	2.76	-0.73	2.79	0.000212	1.38	129.48	41.96	0.14
WP-20 Canal	Lower	4200	2-Year	35.81	-3.53	-0.08	-2.1	-0.07	0.000156	0.86	41.89	22.11	0.11
WP-20 Canal	Lower	4200	5-Year	56.97	-3.53	0.56	-1.79	0.58	0.000164	1	56.71	24.19	0.12
WP-20 Canal	Lower	4200	10-Year	78.67	-3.53	1.06	-1.53	1.08	0.00019	1.14	69.23	27.27	0.13
WP-20 Canal	Lower	4200	25-Year	112.23	-3.53	1.68	-1.22	1.71	0.000244	1.26	89.07	36.84	0.14
WP-20 Canal	Lower	4200	50-Year	143.15	-3.53	2.22	-1	2.24	0.000221	1.3	109.78	39.99	0.14
WP-20 Canal	Lower	4200	100-Year	178.32	-3.53	2.74	-0.79	2.77	0.000205	1.36	131.33	47.91	0.14
WP-20 Canal	Lower	4100	2-Year	35.81	-3.65	-0.09	-2.16	-0.08	0.00014	0.82	43.66	22.47	0.1
WP-20 Canal	Lower	4100	5-Year	56.97	-3.65	0.55	-1.82	0.56	0.00015	0.97	58.69	24.52	0.11
WP-20 Canal	Lower	4100	10-Year	78.67	-3.65	1.04	-1.56	1.06	0.000167	1.1	71.22	26.45	0.12
WP-20 Canal	Lower	4100	25-Year	112.23	-3.65	1.66	-1.27	1.68	0.000227	1.24	90.23	35.87	0.14
WP-20 Canal	Lower	4100	50-Year	143.15	-3.65	2.19	-1.08	2.22	0.000218	1.29	111.24	40.88	0.14
WP-20 Canal	Lower	4100	100-Year	178.32	-3.65	2.72	-0.88	2.75	0.000199	1.34	133.27	72.39	0.13
WP-20 Canal	Lower	4000	2-Year	35.81	-3.77	-0.1	-2.22	-0.09	0.000123	0.78	45.77	22.9	0.1
WP-20 Canal	Lower	4000	5-Year	56.97	-3.77	0.53	-1.86	0.55	0.000135	0.93	61.04	24.92	0.11
WP-20 Canal	Lower	4000	10-Year	78.67	-3.77	1.03	-1.61	1.04	0.000162	1.06	74.1	28.69	0.12
WP-20 Canal	Lower	4000	25-Year	112.23	-3.77	1.64	-1.37	1.66	0.000222	1.19	94.23	39.39	0.14

HEC-RAS Output - Alternative 4

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Lower	4000	50-Year	143.15	-3.77	2.17	-1.17	2.2	0.000225	1.21	118.56	49.65	0.14
WP-20 Canal	Lower	4000	100-Year	178.32	-3.77	2.7	-0.97	2.73	0.000209	1.22	146.62	57.38	0.13
WP-20 Canal	Lower	3900	2-Year	35.81	-3.88	-0.11	-2.28	-0.11	0.000108	0.74	48.09	23.36	0.09
WP-20 Canal	Lower	3900	5-Year	56.97	-3.88	0.52	-1.89	0.54	0.000122	0.9	63.65	25.56	0.1
WP-20 Canal	Lower	3900	10-Year	78.67	-3.88	1.01	-1.71	1.03	0.000137	1.03	76.57	27.14	0.11
WP-20 Canal	Lower	3900	25-Year	112.23	-3.88	1.62	-1.47	1.64	0.000174	1.2	93.77	31.72	0.12
WP-20 Canal	Lower	3900	50-Year	143.15	-3.88	2.15	-1.27	2.17	0.000213	1.26	113.37	41.84	0.14
WP-20 Canal	Lower	3900	100-Year	178.32	-3.88	2.68	-1.07	2.7	0.000197	1.31	136.09	44.63	0.13
WP-20 Canal	Lower	3800	2-Year	35.81	-4	-0.12	-2.21	-0.12	0.000092	0.7	50.84	23.88	0.09
WP-20 Canal	Lower	3800	5-Year	56.97	-4	0.51	-2.01	0.52	0.000112	0.85	67.04	27.45	0.1
WP-20 Canal	Lower	3800	10-Year	78.67	-4	1	-1.83	1.02	0.00013	0.97	81.23	30.57	0.1
WP-20 Canal	Lower	3800	25-Year	112.23	-4	1.6	-1.59	1.62	0.000151	1.11	100.78	34.42	0.11
WP-20 Canal	Lower	3800	50-Year	143.15	-4	2.13	-1.39	2.15	0.000191	1.17	122.16	46.81	0.13
WP-20 Canal	Lower	3800	100-Year	178.32	-4	2.66	-1.19	2.68	0.000188	1.19	150.57	73.42	0.13
WP-20 Canal	Lower	3700	2-Year	52.81	-3.89	-0.15	-1.99	-0.13	0.000232	1.1	48.16	23.29	0.13
WP-20 Canal	Lower	3700	5-Year	83.97	-3.89	0.48	-1.73	0.5	0.000263	1.32	63.38	25.12	0.15
WP-20 Canal	Lower	3700	10-Year	112.67	-3.89	0.96	-1.52	0.99	0.000281	1.49	75.81	26.35	0.15
WP-20 Canal	Lower	3700	25-Year	157.23	-3.89	1.55	-1.24	1.6	0.000314	1.71	91.85	27.84	0.17
WP-20 Canal	Lower	3700	50-Year	197.15	-3.89	2.07	-1.02	2.12	0.000384	1.83	107.74	46.8	0.18
WP-20 Canal	Lower	3700	100-Year	241.32	-3.89	2.6	-0.8	2.65	0.000393	1.84	138.99	85.68	0.19
WP-20 Canal	Lower	3600	2-Year	52.81	-3.72	-0.18	-1.88	-0.16	0.000293	1.2	44.15	22.44	0.15
WP-20 Canal	Lower	3600	5-Year	83.97	-3.72	0.44	-1.61	0.47	0.000324	1.43	58.77	24.45	0.16
WP-20 Canal	Lower	3600	10-Year	112.67	-3.72	0.92	-1.4	0.96	0.00034	1.59	70.88	25.89	0.17
WP-20 Canal	Lower	3600	25-Year	157.23	-3.72	1.51	-1.12	1.56	0.000373	1.82	86.6	27.59	0.18
WP-20 Canal	Lower	3600	50-Year	197.15	-3.72	2.02	-0.9	2.08	0.000426	1.94	101.68	40.73	0.19
WP-20 Canal	Lower	3600	100-Year	241.32	-3.72	2.55	-0.67	2.61	0.000465	2	120.68	83.26	0.2
WP-20 Canal	Lower	3500	2-Year	52.81	-3.54	-0.22	-1.77	-0.19	0.00038	1.32	40.15	21.61	0.17
WP-20 Canal	Lower	3500	5-Year	83.97	-3.54	0.4	-1.49	0.44	0.000403	1.55	54.17	23.64	0.18
WP-20 Canal	Lower	3500	10-Year	112.67	-3.54	0.88	-1.28	0.92	0.000416	1.71	65.86	25.21	0.19
WP-20 Canal	Lower	3500	25-Year	157.23	-3.54	1.46	-0.99	1.52	0.00045	1.94	81.14	27.16	0.2
WP-20 Canal	Lower	3500	50-Year	197.15	-3.54	1.97	-0.77	2.04	0.000488	2.06	95.62	31.09	0.21
WP-20 Canal	Lower	3500	100-Year	241.32	-3.54	2.49	-0.54	2.56	0.000522	2.13	113.41	74.35	0.22
WP-20 Canal	Lower	3300	2-Year	52.81	-3.19	-0.34	-1.55	-0.3	0.000724	1.66	31.85	19.87	0.23
WP-20 Canal	Lower	3300	5-Year	83.97	-3.19	0.28	-1.25	0.33	0.000683	1.88	44.77	21.99	0.23
WP-20 Canal	Lower	3300	10-Year	112.67	-3.19	0.76	-1.02	0.82	0.00066	2.02	55.67	23.64	0.23
WP-20 Canal	Lower	3300	25-Year	157.23	-3.19	1.33	-0.74	1.41	0.000678	2.25	69.83	25.62	0.24
WP-20 Canal	Lower	3300	50-Year	197.15	-3.19	1.83	-0.51	1.92	0.000675	2.37	83.14	28.06	0.24
WP-20 Canal	Lower	3300	100-Year	241.32	-3.19	2.34	-0.27	2.44	0.000712	2.44	98.91	33.58	0.25
WP-20 Canal	Lower	3200	2-Year	52.81	-3.02	-0.45	-1.43	-0.39	0.001145	1.95	27.11	18.84	0.29
WP-20 Canal	Lower	3200	5-Year	83.97	-3.02	0.18	-1.12	0.25	0.00096	2.12	39.64	21.06	0.27
WP-20 Canal	Lower	3200	10-Year	112.67	-3.02	0.66	-0.9	0.74	0.000879	2.24	50.22	22.76	0.27
WP-20 Canal	Lower	3200	25-Year	157.23	-3.02	1.24	-0.61	1.33	0.00087	2.46	63.85	24.79	0.27
WP-20 Canal	Lower	3200	50-Year	197.15	-3.02	1.74	-0.37	1.84	0.000816	2.57	76.8	26.57	0.27
WP-20 Canal	Lower	3200	100-Year	241.32	-3.02	2.25	-0.14	2.36	0.000847	2.64	91.35	59.62	0.27
WP-20 Canal	Lower	3139	2-Year	52.81	-2.91	-0.51	-1.92	-0.47	0.000592	1.6	32.99	18.2	0.21
WP-20 Canal	Lower	3139	5-Year	83.97	-2.91	0.12	-1.62	0.17	0.00062	1.86	45.17	20.47	0.22
WP-20 Canal	Lower	3139	10-Year	112.67	-2.91	0.6	-1.39	0.66	0.000631	2.03	55.49	22.21	0.23
WP-20 Canal	Lower	3139	25-Year	157.23	-2.91	1.17	-1.08	1.25	0.000681	2.29	68.73	24.26	0.24
WP-20 Canal	Lower	3139	50-Year	197.15	-2.91	1.68	-0.83	1.77	0.000672	2.42	81.47	26.08	0.24
WP-20 Canal	Lower	3139	100-Year	241.32	-2.91	2.18	-0.57	2.28	0.000682	2.53	95.26	55.14	0.25
WP-20 Canal	Lower	3119	2-Year	52.81	-2.91	-0.53	-1.92	-0.49	0.000604	1.61	32.76	18.16	0.21
WP-20 Canal	Lower	3119	5-Year	83.97	-2.91	0.1	-1.63	0.16	0.000631	1.87	44.89	20.42	0.22
WP-20 Canal	Lower	3119	10-Year	112.67	-2.91	0.59	-1.4	0.65	0.000625	2.04	55.14	22.16	0.23
WP-20 Canal	Lower	3119	25-Year	157.23	-2.91	1.15	-1.09	1.24	0.000655	2.32	67.8	24.2	0.24
WP-20 Canal	Lower	3119	50-Year	197.15	-2.91	1.66	-0.83	1.75	0.000613	2.48	79.38	26.02	0.24
WP-20 Canal	Lower	3119	100-Year	241.32	-2.91	2.16	-0.57	2.27	0.000586	2.66	90.86	53.11	0.24

HEC-RAS Output - Alternative 4

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Lower	3090		Spartan High School Parking Lot East									
WP-20 Canal	Lower	3073	2-Year	52.81	-3.58	-0.57	-2.33	-0.53	0.000609	1.71	30.8	14.75	0.21
WP-20 Canal	Lower	3073	5-Year	83.97	-3.58	0.05	-1.98	0.11	0.00076	2.05	40.87	17.76	0.24
WP-20 Canal	Lower	3073	10-Year	112.67	-3.58	0.52	-1.69	0.6	0.000826	2.26	49.83	20.07	0.25
WP-20 Canal	Lower	3073	25-Year	157.23	-3.58	1.07	-1.31	1.17	0.000892	2.56	61.34	22.73	0.27
WP-20 Canal	Lower	3073	50-Year	197.15	-3.58	1.55	-1	1.67	0.00087	2.73	72.29	60.9	0.27
WP-20 Canal	Lower	3073	100-Year	241.32	-3.58	2.03	-0.66	2.16	0.000814	2.9	83.26	94.51	0.27
WP-20 Canal	Lower	3040	2-Year	52.81	-3.58	-0.59	-2.33	-0.55	0.000625	1.73	30.49	14.64	0.21
WP-20 Canal	Lower	3040	5-Year	83.97	-3.58	0.02	-1.98	0.09	0.000783	2.08	40.39	17.63	0.24
WP-20 Canal	Lower	3040	10-Year	112.67	-3.58	0.49	-1.69	0.57	0.000851	2.29	49.24	19.92	0.26
WP-20 Canal	Lower	3040	25-Year	157.23	-3.58	1.03	-1.31	1.14	0.000964	2.59	60.79	22.57	0.28
WP-20 Canal	Lower	3040	50-Year	197.15	-3.58	1.52	-0.99	1.64	0.001044	2.71	72.63	47.02	0.29
WP-20 Canal	Lower	3040	100-Year	241.32	-3.58	2.01	-0.66	2.13	0.00112	2.76	87.37	89.24	0.3
WP-20 Canal	Lower	3000	2-Year	52.81	-3.59	-0.62	-2.36	-0.57	0.000606	1.68	31.36	15.66	0.21
WP-20 Canal	Lower	3000	5-Year	83.97	-3.59	-0.01	-1.99	0.05	0.000731	2.01	41.77	18.49	0.24
WP-20 Canal	Lower	3000	10-Year	112.67	-3.59	0.46	-1.72	0.54	0.000784	2.21	50.96	20.68	0.25
WP-20 Canal	Lower	3000	25-Year	157.23	-3.59	1	-1.33	1.1	0.000884	2.5	62.81	23.19	0.27
WP-20 Canal	Lower	3000	50-Year	197.15	-3.59	1.49	-1.01	1.6	0.000956	2.63	74.87	39.12	0.28
WP-20 Canal	Lower	3000	100-Year	241.32	-3.59	1.97	-0.68	2.08	0.001018	2.69	89.6	83.45	0.29
WP-20 Canal	Lower	2900	2-Year	52.81	-3.62	-0.67	-2.41	-0.63	0.000503	1.53	34.56	17.92	0.19
WP-20 Canal	Lower	2900	5-Year	83.97	-3.62	-0.07	-2.05	-0.01	0.000582	1.82	46.1	20.44	0.21
WP-20 Canal	Lower	2900	10-Year	112.67	-3.62	0.4	-1.77	0.46	0.000617	2.01	56.09	22.39	0.22
WP-20 Canal	Lower	2900	25-Year	157.23	-3.62	0.93	-1.4	1.02	0.000697	2.29	68.62	26.61	0.24
WP-20 Canal	Lower	2900	50-Year	197.15	-3.62	1.41	-1.12	1.51	0.000759	2.43	81.25	69.51	0.25
WP-20 Canal	Lower	2900	100-Year	241.32	-3.62	1.89	-0.85	1.99	0.0008	2.51	96.1	100.34	0.26
WP-20 Canal	Lower	2800	2-Year	52.81	-3.64	-0.7	-2.48	-0.68	0.00037	1.35	39.26	19.86	0.17
WP-20 Canal	Lower	2800	5-Year	83.97	-3.64	-0.11	-2.15	-0.07	0.000432	1.62	51.78	22.11	0.19
WP-20 Canal	Lower	2800	10-Year	112.67	-3.64	0.36	-1.9	0.41	0.000463	1.8	62.45	23.87	0.2
WP-20 Canal	Lower	2800	25-Year	157.23	-3.64	0.88	-1.58	0.95	0.000535	2.08	75.55	36.69	0.21
WP-20 Canal	Lower	2800	50-Year	197.15	-3.64	1.36	-1.33	1.43	0.000591	2.22	88.68	61.6	0.23
WP-20 Canal	Lower	2800	100-Year	241.32	-3.64	1.83	-1.07	1.91	0.000645	2.33	103.74	126.14	0.24
WP-20 Canal	Lower	2705	2-Year	52.81	-3.67	-0.72	-2.64	-0.7	0.000198	1.06	49.94	22.81	0.13
WP-20 Canal	Lower	2705	5-Year	83.97	-3.67	-0.13	-2.38	-0.1	0.000244	1.31	63.95	24.36	0.14
WP-20 Canal	Lower	2705	10-Year	112.67	-3.67	0.33	-2.19	0.37	0.000272	1.49	75.5	25.55	0.15
WP-20 Canal	Lower	2705	25-Year	157.23	-3.67	0.86	-1.92	0.9	0.000345	1.76	89.2	27.96	0.17
WP-20 Canal	Lower	2705	50-Year	197.15	-3.67	1.32	-1.7	1.38	0.000463	1.88	104.97	38.02	0.2
WP-20 Canal	Lower	2705	100-Year	241.32	-3.67	1.79	-1.48	1.85	0.000462	1.95	123.93	113.13	0.2
WP-20 Canal	Lower	2685	2-Year	52.81	-4.27	-0.72	-3.25	-0.71	0.00009	0.83	63.37	24.38	0.09
WP-20 Canal	Lower	2685	5-Year	83.97	-4.27	-0.13	-2.98	-0.11	0.000118	1.09	77.04	25.9	0.1
WP-20 Canal	Lower	2685	10-Year	112.67	-4.27	0.34	-2.78	0.36	0.000138	1.28	87.68	30.03	0.12
WP-20 Canal	Lower	2685	25-Year	157.23	-4.27	0.86	-2.52	0.9	0.000176	1.58	99.67	39.35	0.13
WP-20 Canal	Lower	2685	50-Year	197.15	-4.27	1.32	-2.29	1.37	0.000197	1.79	110.33	43.91	0.14
WP-20 Canal	Lower	2685	100-Year	241.32	-4.27	1.78	-2.08	1.85	0.000217	1.99	120.98	109.87	0.15
WP-20 Canal	Lower	2660		Spartan High School Parking Lot West									
WP-20 Canal	Lower	2639	2-Year	52.81	-4.53	-0.74	-3.42	-0.73	0.000111	0.89	59.36	23.78	0.1
WP-20 Canal	Lower	2639	5-Year	83.97	-4.53	-0.15	-3.13	-0.13	0.000147	1.15	72.74	26.99	0.11
WP-20 Canal	Lower	2639	10-Year	112.67	-4.53	0.3	-2.89	0.33	0.00017	1.36	83.11	29.47	0.13
WP-20 Canal	Lower	2639	25-Year	157.23	-4.53	0.79	-2.57	0.84	0.000215	1.66	94.53	32.21	0.14
WP-20 Canal	Lower	2639	50-Year	197.15	-4.53	1.23	-2.32	1.28	0.000242	1.89	104.55	34.61	0.16
WP-20 Canal	Lower	2639	100-Year	241.32	-4.53	1.65	-2.06	1.72	0.000269	2.11	114.24	47.04	0.17
WP-20 Canal	Lower	2614	2-Year	52.81	-3.93	-0.75	-2.83	-0.73	0.000234	1.15	46.02	20.82	0.14
WP-20 Canal	Lower	2614	5-Year	83.97	-3.93	-0.17	-2.53	-0.14	0.000308	1.43	58.84	23.59	0.16
WP-20 Canal	Lower	2614	10-Year	112.67	-3.93	0.28	-2.29	0.32	0.000355	1.61	70	26.06	0.17
WP-20 Canal	Lower	2614	25-Year	157.23	-3.93	0.77	-1.97	0.83	0.000436	1.88	83.56	28.79	0.19

HEC-RAS Output - Alternative 4

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Lower	2614	50-Year	197.15	-3.93	1.21	-1.72	1.28	0.000469	2.04	96.7	31.2	0.2
WP-20 Canal	Lower	2614	100-Year	241.32	-3.93	1.64	-1.46	1.71	0.000496	2.18	110.47	38.83	0.21
WP-20 Canal	Lower	2500	2-Year	52.81	-3.99	-0.79	-2.68	-0.76	0.000322	1.25	42.09	21.54	0.16
WP-20 Canal	Lower	2500	5-Year	83.97	-3.99	-0.22	-2.34	-0.18	0.000388	1.52	55.11	24.11	0.18
WP-20 Canal	Lower	2500	10-Year	112.67	-3.99	0.23	-2.08	0.27	0.000422	1.7	66.26	26.1	0.19
WP-20 Canal	Lower	2500	25-Year	157.23	-3.99	0.71	-1.75	0.77	0.000515	1.98	79.58	32.88	0.21
WP-20 Canal	Lower	2500	50-Year	197.15	-3.99	1.15	-1.49	1.22	0.000548	2.12	92.85	48.02	0.22
WP-20 Canal	Lower	2500	100-Year	241.32	-3.99	1.57	-1.24	1.65	0.000571	2.26	106.98	66.47	0.23
WP-20 Canal	Lower	2400	2-Year	52.81	-4.05	-0.83	-2.62	-0.8	0.000405	1.35	39.17	21.46	0.18
WP-20 Canal	Lower	2400	5-Year	83.97	-4.05	-0.26	-2.26	-0.22	0.000476	1.61	52.17	24.7	0.2
WP-20 Canal	Lower	2400	10-Year	112.67	-4.05	0.18	-1.99	0.23	0.000503	1.77	63.64	27.21	0.2
WP-20 Canal	Lower	2400	25-Year	157.23	-4.05	0.65	-1.65	0.72	0.000575	2.04	77.08	29.38	0.22
WP-20 Canal	Lower	2400	50-Year	197.15	-4.05	1.09	-1.39	1.16	0.000586	2.19	90.19	31.35	0.23
WP-20 Canal	Lower	2400	100-Year	241.32	-4.05	1.51	-1.13	1.59	0.000618	2.32	103.93	40.54	0.24
WP-20 Canal	Lower	2350	2-Year	52.81	-4.07	-0.85	-2.59	-0.82	0.000424	1.37	38.53	21.32	0.18
WP-20 Canal	Lower	2350	5-Year	83.97	-4.07	-0.29	-2.24	-0.25	0.000496	1.64	51.34	24.49	0.2
WP-20 Canal	Lower	2350	10-Year	112.67	-4.07	0.15	-1.97	0.2	0.000523	1.8	62.66	26.98	0.21
WP-20 Canal	Lower	2350	25-Year	157.23	-4.07	0.62	-1.64	0.69	0.000608	2.07	76	29.65	0.23
WP-20 Canal	Lower	2350	50-Year	197.15	-4.07	1.05	-1.38	1.13	0.000617	2.21	89.32	31.96	0.23
WP-20 Canal	Lower	2350	100-Year	241.32	-4.07	1.47	-1.12	1.56	0.000634	2.34	103.16	34.49	0.24
WP-20 Canal	Lower	2300	2-Year	52.81	-4.1	-0.87	-2.58	-0.84	0.000428	1.38	38.38	21.3	0.18
WP-20 Canal	Lower	2300	5-Year	83.97	-4.1	-0.31	-2.25	-0.27	0.000501	1.64	51.08	24.41	0.2
WP-20 Canal	Lower	2300	10-Year	112.67	-4.1	0.12	-1.99	0.18	0.000529	1.81	62.32	26.86	0.21
WP-20 Canal	Lower	2300	25-Year	157.23	-4.1	0.59	-1.65	0.66	0.000617	2.08	75.46	29.48	0.23
WP-20 Canal	Lower	2300	50-Year	197.15	-4.1	1.02	-1.39	1.1	0.000639	2.22	88.71	32.32	0.24
WP-20 Canal	Lower	2300	100-Year	241.32	-4.1	1.44	-1.13	1.53	0.000665	2.34	102.96	35.73	0.24
WP-20 Canal	Lower	2245	2-Year	52.81	-4.13	-0.88	-2.75	-0.86	0.00027	1.17	45.15	22.72	0.15
WP-20 Canal	Lower	2245	5-Year	83.97	-4.13	-0.33	-2.45	-0.3	0.000335	1.44	58.41	25.24	0.17
WP-20 Canal	Lower	2245	10-Year	112.67	-4.13	0.11	-2.23	0.15	0.000369	1.61	69.87	27.23	0.18
WP-20 Canal	Lower	2245	25-Year	157.23	-4.13	0.57	-1.92	0.63	0.000459	1.89	83.01	29.95	0.2
WP-20 Canal	Lower	2245	50-Year	197.15	-4.13	1	-1.68	1.06	0.000498	2.04	96.54	33.09	0.21
WP-20 Canal	Lower	2245	100-Year	241.32	-4.13	1.42	-1.44	1.49	0.000527	2.17	111.08	39.67	0.22
WP-20 Canal	Lower	2219	2-Year	52.81	-4.14	-0.87	-3.38	-0.87	0.00006	0.63	83.19	35.04	0.07
WP-20 Canal	Lower	2219	5-Year	83.97	-4.14	-0.32	-3.17	-0.31	0.000079	0.82	102.99	38.24	0.08
WP-20 Canal	Lower	2219	10-Year	112.67	-4.14	0.12	-2.99	0.14	0.000088	0.95	118.81	39.91	0.09
WP-20 Canal	Lower	2219	25-Year	157.23	-4.14	0.59	-2.76	0.61	0.000111	1.16	135.62	39.95	0.11
WP-20 Canal	Lower	2219	50-Year	197.15	-4.14	1.02	-2.57	1.05	0.000121	1.3	151.14	39.99	0.11
WP-20 Canal	Lower	2219	100-Year	241.32	-4.14	1.44	-2.38	1.47	0.000132	1.45	166.21	40.03	0.12
WP-20 Canal	Lower	2198		Spartan Drive									
WP-20 Canal	Lower	2177	2-Year	52.81	-4.25	-0.88	-3.34	-0.87	0.000056	0.61	86.29	35.05	0.07
WP-20 Canal	Lower	2177	5-Year	83.97	-4.25	-0.32	-3.14	-0.31	0.000075	0.79	106.21	36.24	0.08
WP-20 Canal	Lower	2177	10-Year	112.67	-4.25	0.12	-2.97	0.13	0.000088	0.92	122.21	36.63	0.09
WP-20 Canal	Lower	2177	25-Year	157.23	-4.25	0.58	-2.76	0.6	0.000114	1.13	139.38	37.04	0.1
WP-20 Canal	Lower	2177	50-Year	197.15	-4.25	1.02	-2.58	1.04	0.000129	1.27	155.42	37.42	0.11
WP-20 Canal	Lower	2177	100-Year	241.32	-4.25	1.43	-2.4	1.46	0.000144	1.41	171.15	37.79	0.12
WP-20 Canal	Lower	2000	2-Year	67.81	-3.83	-0.9	-2.82	-0.89	0.000165	0.96	71	33.48	0.12
WP-20 Canal	Lower	2000	5-Year	106.97	-3.83	-0.36	-2.58	-0.33	0.000204	1.19	89.84	35.42	0.13
WP-20 Canal	Lower	2000	10-Year	141.67	-3.83	0.08	-2.41	0.1	0.000243	1.33	106.18	40.4	0.15
WP-20 Canal	Lower	2000	25-Year	194.23	-3.83	0.53	-2.17	0.57	0.000308	1.54	125.96	46.37	0.16
WP-20 Canal	Lower	2000	50-Year	242.15	-3.83	0.96	-1.98	1	0.000332	1.65	146.98	51.96	0.17
WP-20 Canal	Lower	2000	100-Year	293.32	-3.83	1.38	-1.79	1.42	0.000343	1.73	169.8	57.42	0.18
WP-20 Canal	Lower	1900	2-Year	67.81	-3.93	-0.92	-2.92	-0.9	0.000146	0.92	73.87	33.78	0.11
WP-20 Canal	Lower	1900	5-Year	106.97	-3.93	-0.37	-2.68	-0.35	0.000189	1.15	92.75	36.28	0.13
WP-20 Canal	Lower	1900	10-Year	141.67	-3.93	0.06	-2.51	0.08	0.000221	1.3	109.25	40.36	0.14
WP-20 Canal	Lower	1900	25-Year	194.23	-3.93	0.5	-2.27	0.54	0.000276	1.51	128.32	44.46	0.16

HEC-RAS Output - Alternative 4

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Lower	1900	50-Year	242.15	-3.93	0.93	-2.08	0.97	0.000298	1.64	148.02	48.33	0.16
WP-20 Canal	Lower	1900	100-Year	293.32	-3.93	1.34	-1.88	1.39	0.000311	1.74	169.13	58.1	0.17
WP-20 Canal	Lower	1850	2-Year	67.81	-3.98	-0.92	-2.97	-0.91	0.000138	0.9	75.33	33.93	0.11
WP-20 Canal	Lower	1850	5-Year	106.97	-3.98	-0.38	-2.74	-0.36	0.000181	1.13	94.25	36.51	0.12
WP-20 Canal	Lower	1850	10-Year	141.67	-3.98	0.04	-2.56	0.07	0.000211	1.28	110.69	40.3	0.14
WP-20 Canal	Lower	1850	25-Year	194.23	-3.98	0.49	-2.32	0.53	0.000265	1.5	129.59	44.26	0.15
WP-20 Canal	Lower	1850	50-Year	242.15	-3.98	0.92	-2.12	0.96	0.000287	1.62	149.13	48.01	0.16
WP-20 Canal	Lower	1850	100-Year	293.32	-3.98	1.33	-1.94	1.38	0.000301	1.73	169.79	52.58	0.17
WP-20 Canal	Lower	1750	2-Year	67.81	-4.09	-0.94	-3.07	-0.93	0.000121	0.86	78.67	34.27	0.1
WP-20 Canal	Lower	1750	5-Year	106.97	-4.09	-0.4	-2.85	-0.38	0.000164	1.09	97.69	37.19	0.12
WP-20 Canal	Lower	1750	10-Year	141.67	-4.09	0.03	-2.67	0.05	0.000192	1.24	114.25	40.65	0.13
WP-20 Canal	Lower	1750	25-Year	194.23	-4.09	0.47	-2.43	0.5	0.000243	1.46	133.01	44.25	0.15
WP-20 Canal	Lower	1750	50-Year	242.15	-4.09	0.89	-2.24	0.93	0.000265	1.59	152.38	55.86	0.16
WP-20 Canal	Lower	1750	100-Year	293.32	-4.09	1.3	-2.05	1.35	0.00028	1.7	172.76	66.8	0.16
WP-20 Canal	Lower	1650	2-Year	67.81	-4.19	-0.95	-3.17	-0.94	0.000108	0.83	81.74	34.59	0.1
WP-20 Canal	Lower	1650	5-Year	106.97	-4.19	-0.41	-2.95	-0.4	0.000156	1.06	101.04	38.99	0.12
WP-20 Canal	Lower	1650	10-Year	141.67	-4.19	0.01	-2.77	0.03	0.000187	1.19	118.59	43.99	0.13
WP-20 Canal	Lower	1650	25-Year	194.23	-4.19	0.45	-2.53	0.48	0.00024	1.4	138.96	49.16	0.15
WP-20 Canal	Lower	1650	50-Year	242.15	-4.19	0.87	-2.34	0.9	0.000261	1.51	160.65	54.13	0.15
WP-20 Canal	Lower	1650	100-Year	293.32	-4.19	1.28	-2.15	1.32	0.000273	1.59	183.99	63.84	0.16
WP-20 Canal	Lower	1600	2-Year	67.81	-4.24	-0.95	-3.23	-0.94	0.000102	0.81	83.3	34.75	0.09
WP-20 Canal	Lower	1600	5-Year	106.97	-4.24	-0.42	-2.99	-0.41	0.000155	1.04	102.95	40.7	0.12
WP-20 Canal	Lower	1600	10-Year	141.67	-4.24	0	-2.82	0.02	0.000188	1.17	121.39	46.83	0.13
WP-20 Canal	Lower	1600	25-Year	194.23	-4.24	0.43	-2.58	0.46	0.000241	1.36	143.16	59.85	0.15
WP-20 Canal	Lower	1600	50-Year	242.15	-4.24	0.85	-2.39	0.89	0.00026	1.45	166.75	84.06	0.15
WP-20 Canal	Lower	1600	100-Year	293.32	-4.24	1.27	-2.2	1.3	0.000269	1.52	192.44	101.59	0.16
WP-20 Canal	Lower	1500	2-Year	67.81	-4.34	-0.96	-3.33	-0.95	0.000092	0.78	86.47	35.06	0.09
WP-20 Canal	Lower	1500	5-Year	106.97	-4.34	-0.44	-3.1	-0.42	0.000133	1.01	105.71	38.74	0.11
WP-20 Canal	Lower	1500	10-Year	141.67	-4.34	-0.02	-2.91	0	0.000161	1.15	122.72	42.63	0.12
WP-20 Canal	Lower	1500	25-Year	194.23	-4.34	0.41	-2.68	0.44	0.00021	1.37	141.88	46.62	0.14
WP-20 Canal	Lower	1500	50-Year	242.15	-4.34	0.83	-2.48	0.86	0.000225	1.49	163.66	80.25	0.15
WP-20 Canal	Lower	1500	100-Year	293.32	-4.34	1.24	-2.29	1.28	0.000213	1.57	206.16	115.91	0.14
WP-20 Canal	Lower	1450	2-Year	67.81	-4.39	-0.97	-3.37	-0.96	0.000087	0.77	88.08	35.23	0.09
WP-20 Canal	Lower	1450	5-Year	106.97	-4.39	-0.44	-3.15	-0.43	0.000127	1	107.46	38.98	0.11
WP-20 Canal	Lower	1450	10-Year	141.67	-4.39	-0.03	-2.97	-0.01	0.000152	1.14	124.38	42.2	0.12
WP-20 Canal	Lower	1450	25-Year	194.23	-4.39	0.4	-2.74	0.43	0.000198	1.36	143.1	45.49	0.13
WP-20 Canal	Lower	1450	50-Year	242.15	-4.39	0.82	-2.53	0.85	0.000219	1.49	162.66	48.7	0.14
WP-20 Canal	Lower	1450	100-Year	293.32	-4.39	1.23	-2.35	1.27	0.000232	1.6	185.3	64.55	0.15
WP-20 Canal	Lower	1400	2-Year	67.81	-4.44	-0.97		-0.96	0.000082	0.76	89.7	35.39	0.08
WP-20 Canal	Lower	1400	5-Year	106.97	-4.44	-0.45		-0.43	0.000132	0.97	109.84	42.58	0.11
WP-20 Canal	Lower	1400	10-Year	141.67	-4.44	-0.03		-0.01	0.000164	1.1	128.95	49.32	0.12
WP-20 Canal	Lower	1400	25-Year	194.23	-4.44	0.39		0.42	0.000214	1.28	151.42	56.21	0.14
WP-20 Canal	Lower	1400	50-Year	242.15	-4.44	0.81		0.84	0.000226	1.38	176.52	66.07	0.14
WP-20 Canal	Lower	1400	100-Year	293.32	-4.44	1.22		1.25	0.000215	1.44	209.22	96	0.14
WP-20 Canal	Lower	1300	2-Year	67.81	-4.55	-0.98	-3.53	-0.97	0.000075	0.73	93.39	36.53	0.08
WP-20 Canal	Lower	1300	5-Year	106.97	-4.55	-0.46	-3.31	-0.45	0.000115	0.94	113.64	41.56	0.1
WP-20 Canal	Lower	1300	10-Year	141.67	-4.55	-0.05	-3.13	-0.03	0.000139	1.08	131.6	45.44	0.11
WP-20 Canal	Lower	1300	25-Year	194.23	-4.55	0.37	-2.89	0.4	0.000183	1.28	151.55	49.39	0.13
WP-20 Canal	Lower	1300	50-Year	242.15	-4.55	0.79	-2.69	0.82	0.000203	1.4	172.74	53.27	0.14
WP-20 Canal	Lower	1300	100-Year	293.32	-4.55	1.2	-2.51	1.23	0.000217	1.5	195.4	57.12	0.14
WP-20 Canal	Lower	1250	2-Year	67.81	-4.6	-0.98	-3.59	-0.97	0.000071	0.71	95.09	36.76	0.08
WP-20 Canal	Lower	1250	5-Year	106.97	-4.6	-0.47	-3.35	-0.45	0.000107	0.93	115.07	40.68	0.1
WP-20 Canal	Lower	1250	10-Year	141.67	-4.6	-0.05	-3.18	-0.04	0.00013	1.07	132.45	43.75	0.11
WP-20 Canal	Lower	1250	25-Year	194.23	-4.6	0.36	-2.94	0.39	0.000172	1.28	151.4	46.86	0.13
WP-20 Canal	Lower	1250	50-Year	242.15	-4.6	0.78	-2.74	0.81	0.000193	1.41	171.3	49.92	0.13
WP-20 Canal	Lower	1250	100-Year	293.32	-4.6	1.19	-2.55	1.22	0.000208	1.52	192.35	52.96	0.14

HEC-RAS Output - Alternative 4

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WP-20 Canal	Lower	1150	2-Year	67.81	-4.7	-0.99	-3.68	-0.98	0.000066	0.69	98.65	38.25	0.08
WP-20 Canal	Lower	1150	5-Year	106.97	-4.7	-0.47	-3.46	-0.46	0.000103	0.89	119.59	43.52	0.1
WP-20 Canal	Lower	1150	10-Year	141.67	-4.7	-0.07	-3.28	-0.05	0.000126	1.02	138.29	47.73	0.11
WP-20 Canal	Lower	1150	25-Year	194.23	-4.7	0.35	-3.04	0.37	0.000168	1.22	159.4	55.2	0.12
WP-20 Canal	Lower	1150	50-Year	242.15	-4.7	0.76	-2.85	0.79	0.000169	1.33	186.47	76.53	0.13
WP-20 Canal	Lower	1150	100-Year	293.32	-4.7	1.17	-2.66	1.2	0.000166	1.42	222.89	107.57	0.13
Schneider Cana	Upper	29400	2-Year	112	-3.88	-0.64		-0.63	0.000066	0.74	150.45	52.95	0.08
Schneider Cana	Upper	29400	5-Year	174	-3.88	0.02		0.03	0.000084	0.93	186.19	55.58	0.09
Schneider Cana	Upper	29400	10-Year	222	-3.88	0.49		0.51	0.000092	1.04	213.28	57.5	0.1
Schneider Cana	Upper	29400	25-Year	291	-3.88	1.03		1.05	0.000105	1.19	244.57	59.64	0.1
Schneider Cana	Upper	29400	50-Year	348	-3.88	1.49		1.51	0.000112	1.28	272.46	62.34	0.11
Schneider Cana	Upper	29400	100-Year	405	-3.88	1.93		1.95	0.000117	1.34	306.45	94.6	0.11
Schneider Cana	Upper	29300	2-Year	112	-3.89	-0.65		-0.64	0.000066	0.74	150.63	52.96	0.08
Schneider Cana	Upper	29300	5-Year	174	-3.89	0.01		0.02	0.000084	0.93	186.27	55.58	0.09
Schneider Cana	Upper	29300	10-Year	222	-3.89	0.49		0.5	0.000092	1.04	213.31	57.49	0.1
Schneider Cana	Upper	29300	25-Year	291	-3.89	1.02		1.04	0.000105	1.19	244.51	59.62	0.1
Schneider Cana	Upper	29300	50-Year	348	-3.89	1.48		1.5	0.00011	1.28	273.26	73.06	0.11
Schneider Cana	Upper	29300	100-Year	405	-3.89	1.91		1.94	0.00011	1.35	306.73	78.83	0.11
Schneider Cana	Upper	29200	2-Year	112	-3.9	-0.66	-3.29	-0.65	0.000066	0.74	150.82	52.98	0.08
Schneider Cana	Upper	29200	5-Year	174	-3.9	0	-3.08	0.01	0.000084	0.93	186.38	55.6	0.09
Schneider Cana	Upper	29200	10-Year	222	-3.9	0.48	-2.93	0.49	0.000092	1.04	213.39	57.52	0.1
Schneider Cana	Upper	29200	25-Year	291	-3.9	1.01	-2.75	1.03	0.000105	1.19	244.52	59.64	0.1
Schneider Cana	Upper	29200	50-Year	348	-3.9	1.47	-2.59	1.49	0.00011	1.28	272.28	61.48	0.11
Schneider Cana	Upper	29200	100-Year	405	-3.9	1.9	-2.47	1.93	0.000113	1.35	299.45	63.22	0.11
Schneider Cana	Upper	29100	2-Year	112	-3.91	-0.66	-3.3	-0.65	0.000066	0.74	151	52.99	0.08
Schneider Cana	Upper	29100	5-Year	174	-3.91	-0.01	-3.08	0	0.000084	0.93	186.46	55.6	0.09
Schneider Cana	Upper	29100	10-Year	222	-3.91	0.47	-2.94	0.48	0.000092	1.04	213.42	57.51	0.1
Schneider Cana	Upper	29100	25-Year	291	-3.91	1	-2.75	1.02	0.000105	1.19	244.47	59.63	0.1
Schneider Cana	Upper	29100	50-Year	348	-3.91	1.46	-2.61	1.48	0.00011	1.28	272.2	61.46	0.11
Schneider Cana	Upper	29100	100-Year	405	-3.91	1.89	-2.48	1.92	0.000113	1.35	299.35	63.2	0.11
Schneider Cana	Upper	29000	2-Year	112	-3.92	-0.67		-0.66	0.000065	0.74	151.18	53	0.08
Schneider Cana	Upper	29000	5-Year	174	-3.92	-0.02		0	0.000084	0.93	186.54	55.6	0.09
Schneider Cana	Upper	29000	10-Year	222	-3.92	0.46		0.48	0.000091	1.04	213.46	57.5	0.1
Schneider Cana	Upper	29000	25-Year	291	-3.92	0.99		1.01	0.000105	1.19	244.42	59.61	0.1
Schneider Cana	Upper	29000	50-Year	348	-3.92	1.44		1.47	0.000108	1.28	275.83	80.39	0.11
Schneider Cana	Upper	29000	100-Year	405	-3.92	1.88		1.91	0.000108	1.34	315.53	120.07	0.11
Schneider Cana	Upper	28900	2-Year	112	-3.93	-0.68	-3.31	-0.67	0.000065	0.74	151.37	53.02	0.08
Schneider Cana	Upper	28900	5-Year	174	-3.93	-0.03	-3.11	-0.01	0.000084	0.93	186.64	55.62	0.09
Schneider Cana	Upper	28900	10-Year	222	-3.93	0.45	-2.96	0.47	0.000091	1.04	213.53	57.52	0.1
Schneider Cana	Upper	28900	25-Year	291	-3.93	0.98	-2.77	1	0.000105	1.19	244.42	59.63	0.1
Schneider Cana	Upper	28900	50-Year	348	-3.93	1.43	-2.63	1.46	0.000109	1.28	274.3	79.19	0.11
Schneider Cana	Upper	28900	100-Year	405	-3.93	1.87	-2.49	1.9	0.000109	1.35	306.06	99.41	0.11
Schneider Cana	Upper	28800	2-Year	112	-3.94	-0.68		-0.67	0.000065	0.74	151.55	53.03	0.08
Schneider Cana	Upper	28800	5-Year	174	-3.94	-0.03		-0.02	0.000084	0.93	186.72	55.62	0.09
Schneider Cana	Upper	28800	10-Year	222	-3.94	0.44		0.46	0.000091	1.04	213.56	57.51	0.1
Schneider Cana	Upper	28800	25-Year	291	-3.94	0.97		0.99	0.000105	1.19	244.37	60.26	0.1
Schneider Cana	Upper	28800	50-Year	348	-3.94	1.42		1.45	0.000108	1.28	275.2	80.03	0.11
Schneider Cana	Upper	28800	100-Year	405	-3.94	1.86		1.89	0.000105	1.34	324.72	138.05	0.11
Schneider Cana	Upper	28700	2-Year	112	-3.95	-0.69	-3.33	-0.68	0.000065	0.74	151.74	53.05	0.08
Schneider Cana	Upper	28700	5-Year	174	-3.95	-0.04	-3.13	-0.03	0.000084	0.93	186.82	55.63	0.09
Schneider Cana	Upper	28700	10-Year	222	-3.95	0.43	-2.98	0.45	0.000091	1.04	213.62	57.52	0.1
Schneider Cana	Upper	28700	25-Year	291	-3.95	0.96	-2.8	0.98	0.000106	1.19	244.34	66.13	0.1
Schneider Cana	Upper	28700	50-Year	348	-3.95	1.41	-2.64	1.44	0.000108	1.27	280.87	99.34	0.11
Schneider Cana	Upper	28700	100-Year	405	-3.95	1.85	-2.52	1.88	0.000106	1.33	325.34	122.21	0.11
Schneider Cana	Upper	28600	2-Year	112	-3.96	-0.69	-3.34	-0.69	0.000064	0.74	151.92	53.06	0.08

HEC-RAS Output - Alternative 4

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Upper	28600	5-Year	174	-3.96	-0.05	-3.13	-0.04	0.000083	0.93	186.91	55.63	0.09
Schneider Cana	Upper	28600	10-Year	222	-3.96	0.42	-2.99	0.44	0.000091	1.04	213.67	57.52	0.1
Schneider Cana	Upper	28600	25-Year	291	-3.96	0.94	-2.8	0.97	0.000106	1.19	244.3	68.03	0.1
Schneider Cana	Upper	28600	50-Year	348	-3.96	1.4	-2.66	1.43	0.00011	1.28	271.91	84.25	0.11
Schneider Cana	Upper	28600	100-Year	405	-3.96	1.84	-2.52	1.86	0.000109	1.33	324.98	119.52	0.11
Schneider Cana	Upper	28500	2-Year	112	-3.97	-0.7	-3.35	-0.69	0.000064	0.74	152.11	53.07	0.08
Schneider Cana	Upper	28500	5-Year	174	-3.97	-0.06	-3.15	-0.05	0.000083	0.93	187	71.85	0.09
Schneider Cana	Upper	28500	10-Year	222	-3.97	0.41	-3	0.43	0.000091	1.04	213.71	95.5	0.09
Schneider Cana	Upper	28500	25-Year	291	-3.97	0.93	-2.82	0.96	0.000106	1.19	244.26	107.15	0.1
Schneider Cana	Upper	28500	50-Year	348	-3.97	1.39	-2.67	1.42	0.00011	1.28	271.84	120.72	0.11
Schneider Cana	Upper	28500	100-Year	405	-3.97	1.83	-2.54	1.85	0.000113	1.35	298.95	126.07	0.11
Schneider Cana	Upper	28400	2-Year	112	-3.98	-0.71	-3.37	-0.7	0.000064	0.74	152.31	53.09	0.08
Schneider Cana	Upper	28400	5-Year	174	-3.98	-0.07	-3.16	-0.05	0.000083	0.93	187.1	55.65	0.09
Schneider Cana	Upper	28400	10-Year	222	-3.98	0.4	-3.01	0.42	0.000091	1.04	213.78	57.54	0.09
Schneider Cana	Upper	28400	25-Year	291	-3.98	0.92	-2.82	0.95	0.000106	1.19	245.17	79.09	0.1
Schneider Cana	Upper	28400	50-Year	348	-3.98	1.38	-2.68	1.4	0.000108	1.28	279.88	123.81	0.11
Schneider Cana	Upper	28400	100-Year	405	-3.98	1.82	-2.54	1.84	0.000102	1.31	348.8	131.6	0.1
Schneider Cana	Upper	28300	2-Year	112	-3.99	-0.71	-3.37	-0.71	0.000064	0.73	152.51	53.11	0.08
Schneider Cana	Upper	28300	5-Year	174	-3.99	-0.08	-3.16	-0.06	0.000082	0.93	188.01	63.17	0.09
Schneider Cana	Upper	28300	10-Year	222	-3.99	0.39	-3.02	0.41	0.000088	1.03	219.18	67.58	0.09
Schneider Cana	Upper	28300	25-Year	291	-3.99	0.91	-2.83	0.94	0.000099	1.18	254.99	73.4	0.1
Schneider Cana	Upper	28300	50-Year	348	-3.99	1.37	-2.69	1.39	0.000098	1.26	303.97	142.08	0.1
Schneider Cana	Upper	28300	100-Year	405	-3.99	1.81	-2.56	1.83	0.000092	1.29	366.47	143.55	0.1
Schneider Cana	Upper	28200	2-Year	112	-4	-0.72		-0.71	0.000063	0.73	152.7	53.12	0.08
Schneider Cana	Upper	28200	5-Year	174	-4	-0.08		-0.07	0.000083	0.93	187.3	55.67	0.09
Schneider Cana	Upper	28200	10-Year	222	-4	0.39		0.4	0.000091	1.04	213.9	57.55	0.09
Schneider Cana	Upper	28200	25-Year	291	-4	0.9		0.93	0.000106	1.19	244.27	63.17	0.1
Schneider Cana	Upper	28200	50-Year	348	-4	1.36		1.38	0.000107	1.26	296.08	130.73	0.11
Schneider Cana	Upper	28200	100-Year	405	-4	1.8		1.82	0.0001	1.3	354.29	138.56	0.1
Schneider Cana	Upper	28100	2-Year	112	-4.01	-0.73	-3.39	-0.72	0.000063	0.73	152.89	53.13	0.08
Schneider Cana	Upper	28100	5-Year	174	-4.01	-0.09	-3.19	-0.08	0.000083	0.93	187.39	55.67	0.09
Schneider Cana	Upper	28100	10-Year	222	-4.01	0.38	-3.04	0.39	0.000091	1.04	213.95	57.55	0.09
Schneider Cana	Upper	28100	25-Year	291	-4.01	0.89	-2.85	0.91	0.000104	1.19	248.41	78.82	0.1
Schneider Cana	Upper	28100	50-Year	348	-4.01	1.35	-2.71	1.37	0.000103	1.27	292.99	109.42	0.1
Schneider Cana	Upper	28100	100-Year	405	-4.01	1.79	-2.58	1.81	0.000098	1.31	342.38	115.22	0.1
Schneider Cana	Upper	28000	2-Year	112	-4.02	-0.73		-0.72	0.000063	0.73	153.09	53.15	0.08
Schneider Cana	Upper	28000	5-Year	174	-4.02	-0.1		-0.09	0.000083	0.93	187.49	55.68	0.09
Schneider Cana	Upper	28000	10-Year	222	-4.02	0.37		0.38	0.000091	1.04	214.01	60.37	0.09
Schneider Cana	Upper	28000	25-Year	291	-4.02	0.88		0.9	0.000103	1.18	261.92	120.98	0.1
Schneider Cana	Upper	28000	50-Year	348	-4.02	1.34		1.36	0.0001	1.23	320.47	130.72	0.1
Schneider Cana	Upper	28000	100-Year	405	-4.02	1.78		1.8	0.000093	1.25	378.1	131.6	0.1
Schneider Cana	Upper	27900	2-Year	112	-4.03	-0.74	-3.41	-0.73	0.000063	0.73	153.29	53.17	0.08
Schneider Cana	Upper	27900	5-Year	174	-4.03	-0.11	-3.2	-0.1	0.000083	0.93	187.59	55.69	0.09
Schneider Cana	Upper	27900	10-Year	222	-4.03	0.36	-3.06	0.38	0.000091	1.04	214.06	57.56	0.09
Schneider Cana	Upper	27900	25-Year	291	-4.03	0.87	-2.87	0.89	0.000103	1.19	251.56	89.3	0.1
Schneider Cana	Upper	27900	50-Year	348	-4.03	1.33	-2.73	1.35	0.000102	1.26	289.97	118.8	0.1
Schneider Cana	Upper	27900	100-Year	405	-4.03	1.77	-2.59	1.79	0.000096	1.3	356.7	136.7	0.1
Schneider Cana	Upper	27800	2-Year	112	-4.04	-0.75	-3.43	-0.74	0.000062	0.73	153.48	53.17	0.08
Schneider Cana	Upper	27800	5-Year	174	-4.04	-0.12	-3.21	-0.1	0.000082	0.93	187.67	55.68	0.09
Schneider Cana	Upper	27800	10-Year	222	-4.04	0.35	-3.07	0.37	0.000091	1.04	214.1	83.1	0.09
Schneider Cana	Upper	27800	25-Year	291	-4.04	0.86	-2.88	0.88	0.000106	1.19	244.07	127.64	0.1
Schneider Cana	Upper	27800	50-Year	348	-4.04	1.32	-2.74	1.34	0.000095	1.2	335.7	130.72	0.1
Schneider Cana	Upper	27800	100-Year	405	-4.04	1.76	-2.61	1.78	0.000089	1.22	393.48	131.6	0.1
Schneider Cana	Upper	27700	2-Year	112	-4.05	-0.75	-3.43	-0.74	0.000062	0.73	153.69	53.19	0.08
Schneider Cana	Upper	27700	5-Year	174	-4.05	-0.13	-3.22	-0.11	0.000082	0.93	187.78	67.11	0.09
Schneider Cana	Upper	27700	10-Year	222	-4.05	0.34	-3.08	0.36	0.000091	1.04	214.16	74.17	0.09

HEC-RAS Output - Alternative 4

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Upper	27700	25-Year	291	-4.05	0.85	-2.9	0.87	0.000106	1.19	244.05	82.86	0.1
Schneider Cana	Upper	27700	50-Year	348	-4.05	1.31	-2.75	1.33	0.000103	1.24	315.13	130.71	0.1
Schneider Cana	Upper	27700	100-Year	405	-4.05	1.75	-2.61	1.77	0.000095	1.26	377.27	150.68	0.1
Schneider Cana	Upper	27600	2-Year	112	-4.06	-0.76	-3.44	-0.75	0.000062	0.73	153.89	53.2	0.08
Schneider Cana	Upper	27600	5-Year	174	-4.06	-0.13	-3.23	-0.12	0.000082	0.93	187.87	55.7	0.09
Schneider Cana	Upper	27600	10-Year	222	-4.06	0.33	-3.09	0.35	0.000091	1.04	214.21	57.56	0.09
Schneider Cana	Upper	27600	25-Year	291	-4.06	0.84	-2.9	0.86	0.000106	1.19	245.11	73.47	0.1
Schneider Cana	Upper	27600	50-Year	348	-4.06	1.3	-2.76	1.32	0.000108	1.27	283.63	114.51	0.11
Schneider Cana	Upper	27600	100-Year	405	-4.06	1.74	-2.62	1.76	0.000103	1.32	342.48	131.59	0.11
Schneider Cana	Upper	27500	2-Year	112	-4.07	-0.76	-3.45	-0.76	0.000062	0.73	154.1	53.23	0.08
Schneider Cana	Upper	27500	5-Year	174	-4.07	-0.14	-3.24	-0.13	0.000082	0.93	187.98	55.72	0.09
Schneider Cana	Upper	27500	10-Year	222	-4.07	0.32	-3.1	0.34	0.00009	1.04	214.28	57.57	0.09
Schneider Cana	Upper	27500	25-Year	291	-4.07	0.83	-2.92	0.85	0.000106	1.19	244.1	64.25	0.1
Schneider Cana	Upper	27500	50-Year	348	-4.07	1.28	-2.77	1.31	0.000108	1.28	278.59	90.29	0.11
Schneider Cana	Upper	27500	100-Year	405	-4.07	1.72	-2.64	1.75	0.000106	1.33	333.41	131.6	0.11
Schneider Cana	Upper	27400	2-Year	112	-4.08	-0.77	-3.46	-0.76	0.000061	0.73	154.3	53.24	0.08
Schneider Cana	Upper	27400	5-Year	174	-4.08	-0.15	-3.26	-0.14	0.000082	0.93	188.08	55.72	0.09
Schneider Cana	Upper	27400	10-Year	222	-4.08	0.31	-3.12	0.33	0.00009	1.04	214.33	57.58	0.09
Schneider Cana	Upper	27400	25-Year	291	-4.08	0.82	-2.92	0.84	0.000106	1.19	243.95	59.6	0.1
Schneider Cana	Upper	27400	50-Year	348	-4.08	1.27	-2.78	1.3	0.000111	1.28	271.45	61.42	0.11
Schneider Cana	Upper	27400	100-Year	405	-4.08	1.71	-2.64	1.74	0.000114	1.36	298.8	81.78	0.11
Schneider Cana	Upper	27300	2-Year	112	-4.09	-0.78	-3.47	-0.77	0.000061	0.72	154.51	53.26	0.07
Schneider Cana	Upper	27300	5-Year	174	-4.09	-0.16	-3.26	-0.15	0.000082	0.92	188.19	55.73	0.09
Schneider Cana	Upper	27300	10-Year	222	-4.09	0.3	-3.12	0.32	0.00009	1.04	214.39	57.58	0.09
Schneider Cana	Upper	27300	25-Year	291	-4.09	0.81	-2.94	0.83	0.000106	1.19	243.91	59.6	0.1
Schneider Cana	Upper	27300	50-Year	348	-4.09	1.26	-2.79	1.29	0.000111	1.28	271.38	61.42	0.11
Schneider Cana	Upper	27300	100-Year	405	-4.09	1.7	-2.66	1.73	0.000114	1.35	299.91	69.57	0.11
Schneider Cana	Upper	27200	2-Year	112	-4.1	-0.78	-3.48	-0.77	0.000061	0.72	154.71	53.27	0.07
Schneider Cana	Upper	27200	5-Year	174	-4.1	-0.17	-3.27	-0.15	0.000082	0.92	188.28	55.73	0.09
Schneider Cana	Upper	27200	10-Year	222	-4.1	0.3	-3.13	0.31	0.00009	1.04	214.43	57.58	0.09
Schneider Cana	Upper	27200	25-Year	291	-4.1	0.8	-2.95	0.82	0.000106	1.19	243.86	59.58	0.1
Schneider Cana	Upper	27200	50-Year	348	-4.1	1.25	-2.8	1.28	0.000111	1.28	271.29	61.4	0.11
Schneider Cana	Upper	27200	100-Year	405	-4.1	1.69	-2.66	1.72	0.000114	1.36	298.59	63.91	0.11
Schneider Cana	Upper	27100	2-Year	112	-4.11	-0.79	-3.49	-0.78	0.000061	0.72	154.92	53.29	0.07
Schneider Cana	Upper	27100	5-Year	174	-4.11	-0.17	-3.28	-0.16	0.000081	0.92	188.39	55.74	0.09
Schneider Cana	Upper	27100	10-Year	222	-4.11	0.29	-3.14	0.3	0.00009	1.03	214.5	57.59	0.09
Schneider Cana	Upper	27100	25-Year	291	-4.11	0.79	-2.95	0.81	0.000106	1.19	243.84	59.59	0.1
Schneider Cana	Upper	27100	50-Year	348	-4.11	1.24	-2.81	1.26	0.000124	1.27	273.2	68.17	0.11
Schneider Cana	Upper	27100	100-Year	405	-4.11	1.68	-2.68	1.71	0.00013	1.33	304.28	73.59	0.12
Schneider Cana	Upper	27000	2-Year	112	-4.12	-0.79	-3.5	-0.79	0.00006	0.72	155.13	53.3	0.07
Schneider Cana	Upper	27000	5-Year	174	-4.12	-0.18	-3.29	-0.17	0.000081	0.92	188.49	55.75	0.09
Schneider Cana	Upper	27000	10-Year	222	-4.12	0.28	-3.15	0.29	0.00009	1.03	214.55	57.59	0.09
Schneider Cana	Upper	27000	25-Year	291	-4.12	0.78	-2.96	0.8	0.000106	1.19	243.79	59.58	0.1
Schneider Cana	Upper	27000	50-Year	348	-4.12	1.23	-2.82	1.25	0.000111	1.28	271.08	61.39	0.11
Schneider Cana	Upper	27000	100-Year	405	-4.12	1.66	-2.68	1.69	0.000114	1.36	298.31	63.14	0.11
Schneider Cana	Upper	26900	2-Year	112	-4.13	-0.8	-3.51	-0.79	0.00006	0.72	155.34	53.32	0.07
Schneider Cana	Upper	26900	5-Year	174	-4.13	-0.19	-3.3	-0.18	0.000081	0.92	188.59	55.76	0.09
Schneider Cana	Upper	26900	10-Year	222	-4.13	0.27	-3.16	0.28	0.00009	1.03	214.61	57.59	0.09
Schneider Cana	Upper	26900	25-Year	291	-4.13	0.77	-2.97	0.79	0.000106	1.19	243.76	59.58	0.1
Schneider Cana	Upper	26900	50-Year	348	-4.13	1.22	-2.83	1.24	0.000111	1.28	271.01	64.78	0.11
Schneider Cana	Upper	26900	100-Year	405	-4.13	1.65	-2.7	1.68	0.000114	1.36	298.22	87.28	0.11
Schneider Cana	Upper	26800	2-Year	112	-4.14	-0.81	-3.52	-0.8	0.00006	0.72	155.56	53.33	0.07
Schneider Cana	Upper	26800	5-Year	174	-4.14	-0.2	-3.31	-0.19	0.000081	0.92	188.7	55.76	0.09
Schneider Cana	Upper	26800	10-Year	222	-4.14	0.26	-3.17	0.28	0.00009	1.03	214.66	57.6	0.09
Schneider Cana	Upper	26800	25-Year	291	-4.14	0.75	-2.98	0.78	0.000106	1.19	243.72	59.58	0.1
Schneider Cana	Upper	26800	50-Year	348	-4.14	1.2	-2.84	1.23	0.000111	1.28	270.94	61.38	0.11

HEC-RAS Output - Alternative 4

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Upper	26800	100-Year	405	-4.14	1.64	-2.7	1.67	0.000114	1.36	298.12	71.28	0.11
Schneider Cana	Upper	26700	2-Year	112	-4.15	-0.81	-3.53	-0.8	0.00006	0.72	155.77	53.35	0.07
Schneider Cana	Upper	26700	5-Year	174	-4.15	-0.21	-3.32	-0.19	0.000081	0.92	188.81	60.53	0.09
Schneider Cana	Upper	26700	10-Year	222	-4.15	0.25	-3.18	0.27	0.00009	1.03	214.72	68.14	0.09
Schneider Cana	Upper	26700	25-Year	291	-4.15	0.74	-2.99	0.77	0.000106	1.19	243.68	76.51	0.1
Schneider Cana	Upper	26700	50-Year	348	-4.15	1.19	-2.85	1.22	0.000112	1.28	270.87	96.11	0.11
Schneider Cana	Upper	26700	100-Year	405	-4.15	1.63	-2.72	1.66	0.000104	1.31	338.37	109.19	0.11
Schneider Cana	Upper	26600	2-Year	112	-4.16	-0.82	-3.54	-0.81	0.000059	0.72	155.99	53.37	0.07
Schneider Cana	Upper	26600	5-Year	174	-4.16	-0.22	-3.33	-0.2	0.000081	0.92	188.92	55.78	0.09
Schneider Cana	Upper	26600	10-Year	222	-4.16	0.24	-3.19	0.26	0.00009	1.03	214.79	57.61	0.09
Schneider Cana	Upper	26600	25-Year	291	-4.16	0.73	-3	0.76	0.000106	1.19	243.65	59.58	0.1
Schneider Cana	Upper	26600	50-Year	348	-4.16	1.18	-2.86	1.21	0.000112	1.29	270.81	115.28	0.11
Schneider Cana	Upper	26600	100-Year	405	-4.16	1.62	-2.73	1.65	0.000107	1.31	343.47	131.56	0.11
Schneider Cana	Upper	26500	2-Year	112	-4.17	-0.82	-3.55	-0.82	0.000059	0.72	156.21	53.38	0.07
Schneider Cana	Upper	26500	5-Year	174	-4.17	-0.22	-3.34	-0.21	0.000081	0.92	189.02	55.79	0.09
Schneider Cana	Upper	26500	10-Year	222	-4.17	0.23	-3.2	0.25	0.00009	1.03	214.84	57.61	0.09
Schneider Cana	Upper	26500	25-Year	291	-4.17	0.72	-3.01	0.75	0.000106	1.19	243.6	64.15	0.1
Schneider Cana	Upper	26500	50-Year	348	-4.17	1.17	-2.87	1.2	0.000112	1.29	270.72	94.33	0.11
Schneider Cana	Upper	26500	100-Year	405	-4.17	1.61	-2.74	1.64	0.000115	1.36	297.89	117.23	0.11
Schneider Cana	Upper	26400	2-Year	112	-4.18	-0.83	-3.56	-0.82	0.000059	0.72	156.43	53.4	0.07
Schneider Cana	Upper	26400	5-Year	174	-4.18	-0.23	-3.35	-0.22	0.000081	0.92	189.13	55.79	0.09
Schneider Cana	Upper	26400	10-Year	222	-4.18	0.22	-3.21	0.24	0.00009	1.03	214.9	57.61	0.09
Schneider Cana	Upper	26400	25-Year	291	-4.18	0.71	-3.02	0.73	0.000107	1.19	243.56	63.39	0.1
Schneider Cana	Upper	26400	50-Year	348	-4.18	1.16	-2.88	1.19	0.000112	1.29	270.65	79.58	0.11
Schneider Cana	Upper	26400	100-Year	405	-4.18	1.6	-2.74	1.63	0.000115	1.36	297.8	86.3	0.11
Schneider Cana	Upper	26300	2-Year	112	-4.19	-0.84	-3.58	-0.83	0.000059	0.71	156.65	53.42	0.07
Schneider Cana	Upper	26300	5-Year	174	-4.19	-0.24	-3.37	-0.23	0.00008	0.92	189.24	55.8	0.09
Schneider Cana	Upper	26300	10-Year	222	-4.19	0.21	-3.22	0.23	0.00009	1.03	214.96	57.62	0.09
Schneider Cana	Upper	26300	25-Year	291	-4.19	0.7	-3.03	0.72	0.000107	1.19	243.52	68.81	0.1
Schneider Cana	Upper	26300	50-Year	348	-4.19	1.15	-2.89	1.17	0.000112	1.29	270.57	82.73	0.11
Schneider Cana	Upper	26300	100-Year	405	-4.19	1.59	-2.75	1.61	0.000115	1.36	297.7	91.85	0.11
Schneider Cana	Upper	26200	2-Year	112	-4.2	-0.84	-3.59	-0.83	0.000058	0.71	156.87	53.43	0.07
Schneider Cana	Upper	26200	5-Year	174	-4.2	-0.25	-3.38	-0.23	0.00008	0.92	189.34	55.8	0.09
Schneider Cana	Upper	26200	10-Year	222	-4.2	0.21	-3.23	0.22	0.00009	1.03	215.01	57.61	0.09
Schneider Cana	Upper	26200	25-Year	291	-4.2	0.69	-3.04	0.71	0.000107	1.19	244.17	67.26	0.1
Schneider Cana	Upper	26200	50-Year	348	-4.2	1.14	-2.9	1.16	0.000111	1.28	279.33	89.3	0.11
Schneider Cana	Upper	26200	100-Year	405	-4.2	1.57	-2.77	1.6	0.000108	1.34	325.68	111.91	0.11
Schneider Cana	Upper	26100	2-Year	112	-4.21	-0.85	-3.59	-0.84	0.000058	0.71	157.09	53.45	0.07
Schneider Cana	Upper	26100	5-Year	174	-4.21	-0.26	-3.38	-0.24	0.00008	0.92	189.46	55.82	0.09
Schneider Cana	Upper	26100	10-Year	222	-4.21	0.2	-3.24	0.21	0.000089	1.03	215.08	57.62	0.09
Schneider Cana	Upper	26100	25-Year	291	-4.21	0.68	-3.05	0.7	0.000107	1.2	243.44	59.56	0.1
Schneider Cana	Upper	26100	50-Year	348	-4.21	1.13	-2.91	1.15	0.000111	1.29	271.53	83.41	0.11
Schneider Cana	Upper	26100	100-Year	405	-4.21	1.56	-2.77	1.59	0.000112	1.36	303.3	103.72	0.11
Schneider Cana	Upper	26000	2-Year	112	-4.22	-0.85		-0.85	0.000058	0.71	157.32	53.47	0.07
Schneider Cana	Upper	26000	5-Year	174	-4.22	-0.26		-0.25	0.00008	0.92	189.58	55.83	0.09
Schneider Cana	Upper	26000	10-Year	222	-4.22	0.19		0.2	0.000089	1.03	215.15	57.64	0.09
Schneider Cana	Upper	26000	25-Year	291	-4.22	0.67		0.69	0.000107	1.2	243.42	59.57	0.1
Schneider Cana	Upper	26000	50-Year	348	-4.22	1.12		1.14	0.000112	1.29	270.37	61.35	0.11
Schneider Cana	Upper	26000	100-Year	405	-4.22	1.55		1.58	0.000114	1.36	303.04	114.87	0.11
Schneider Cana	Upper	25900	2-Year	112	-4.23	-0.86	-3.61	-0.85	0.000058	0.71	157.54	53.48	0.07
Schneider Cana	Upper	25900	5-Year	174	-4.23	-0.27	-3.4	-0.26	0.00008	0.92	189.68	55.83	0.09
Schneider Cana	Upper	25900	10-Year	222	-4.23	0.18	-3.26	0.19	0.000089	1.03	215.19	57.63	0.09
Schneider Cana	Upper	25900	25-Year	291	-4.23	0.66	-3.08	0.68	0.000107	1.2	243.35	66.78	0.1
Schneider Cana	Upper	25900	50-Year	348	-4.23	1.1	-2.93	1.13	0.000112	1.29	270.26	78.64	0.11
Schneider Cana	Upper	25900	100-Year	405	-4.23	1.54	-2.79	1.57	0.000115	1.36	297.33	97.67	0.11

HEC-RAS Output - Alternative 4

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Upper	25800	2-Year	112	-4.24	-0.87	-3.62	-0.86	0.000057	0.71	157.77	53.5	0.07
Schneider Cana	Upper	25800	5-Year	174	-4.24	-0.28	-3.41	-0.27	0.00008	0.92	189.79	55.84	0.09
Schneider Cana	Upper	25800	10-Year	222	-4.24	0.17	-3.27	0.19	0.000089	1.03	215.26	57.63	0.09
Schneider Cana	Upper	25800	25-Year	291	-4.24	0.65	-3.09	0.67	0.000107	1.2	243.31	59.55	0.1
Schneider Cana	Upper	25800	50-Year	348	-4.24	1.09	-2.94	1.12	0.000112	1.29	270.19	61.33	0.11
Schneider Cana	Upper	25800	100-Year	405	-4.24	1.53	-2.8	1.56	0.000115	1.36	297.24	63.06	0.11
Schneider Cana	Upper	25700	2-Year	112	-4.25	-0.87	-3.63	-0.86	0.000057	0.71	158	53.52	0.07
Schneider Cana	Upper	25700	5-Year	174	-4.25	-0.29	-3.43	-0.27	0.00008	0.92	189.91	55.85	0.09
Schneider Cana	Upper	25700	10-Year	222	-4.25	0.16	-3.28	0.18	0.000089	1.03	215.33	57.64	0.09
Schneider Cana	Upper	25700	25-Year	291	-4.25	0.64	-3.1	0.66	0.000107	1.2	243.28	59.55	0.1
Schneider Cana	Upper	25700	50-Year	348	-4.25	1.08	-2.95	1.11	0.000112	1.29	270.12	61.33	0.11
Schneider Cana	Upper	25700	100-Year	405	-4.25	1.52	-2.81	1.55	0.000115	1.36	297.15	88.22	0.11
Schneider Cana	Middle	25600	2-Year	191.19	-5.74	-0.87	-4.44	-0.86	0.000044	0.71	270.22	76.34	0.07
Schneider Cana	Middle	25600	5-Year	293.03	-5.74	-0.29	-4.15	-0.28	0.000066	0.93	315.66	79.64	0.08
Schneider Cana	Middle	25600	10-Year	367.33	-5.74	0.16	-3.97	0.17	0.000075	1.04	351.88	82.18	0.09
Schneider Cana	Middle	25600	25-Year	469.77	-5.74	0.64	-3.75	0.66	0.00009	1.2	391.72	84.89	0.1
Schneider Cana	Middle	25600	50-Year	551.85	-5.74	1.08	-3.59	1.1	0.000096	1.28	430.16	109.76	0.1
Schneider Cana	Middle	25600	100-Year	630.68	-5.74	1.51	-3.45	1.54	0.00011	1.34	470.17	127.72	0.11
Schneider Cana	Middle	25500	2-Year	191.19	-5.74	-0.88		-0.87	0.000047	0.7	272.08	81.26	0.07
Schneider Cana	Middle	25500	5-Year	293.03	-5.74	-0.3		-0.28	0.000077	0.91	323.51	95.94	0.09
Schneider Cana	Middle	25500	10-Year	367.33	-5.74	0.15		0.17	0.00009	1	368.92	107.24	0.09
Schneider Cana	Middle	25500	25-Year	469.77	-5.74	0.63		0.65	0.000107	1.11	422.9	119.29	0.1
Schneider Cana	Middle	25500	50-Year	551.85	-5.74	1.07		1.09	0.000111	1.15	478.49	130.54	0.11
Schneider Cana	Middle	25500	100-Year	630.68	-5.74	1.51		1.53	0.000109	1.17	537.71	141.54	0.11
Schneider Cana	Middle	25400	2-Year	191.19	-5.74	-0.88	-4.44	-0.87	0.000045	0.7	272.27	79.39	0.07
Schneider Cana	Middle	25400	5-Year	293.03	-5.74	-0.3	-4.15	-0.29	0.000068	0.92	319.65	84.67	0.08
Schneider Cana	Middle	25400	10-Year	367.33	-5.74	0.14	-3.97	0.16	0.000077	1.03	358.25	88.74	0.09
Schneider Cana	Middle	25400	25-Year	469.77	-5.74	0.62	-3.75	0.64	0.000092	1.17	401.31	93.08	0.1
Schneider Cana	Middle	25400	50-Year	551.85	-5.74	1.06	-3.59	1.08	0.000097	1.24	443.46	97.13	0.1
Schneider Cana	Middle	25400	100-Year	630.68	-5.74	1.49	-3.45	1.52	0.0001	1.3	486.62	110.06	0.1
Schneider Cana	Middle	25364	2-Year	191.19	-5.92	-0.88	-4.59	-0.88	0.00004	0.67	285.55	82.21	0.06
Schneider Cana	Middle	25364	5-Year	293.03	-5.92	-0.31	-4.3	-0.3	0.000059	0.88	333.85	85.55	0.08
Schneider Cana	Middle	25364	10-Year	367.33	-5.92	0.14	-4.11	0.15	0.000067	0.99	372.41	87.92	0.08
Schneider Cana	Middle	25364	25-Year	469.77	-5.92	0.61	-3.89	0.63	0.000099	1.12	418.49	108.84	0.1
Schneider Cana	Middle	25364	50-Year	551.85	-5.92	1.05	-3.72	1.07	0.000098	1.18	467.53	112.29	0.1
Schneider Cana	Middle	25364	100-Year	630.68	-5.92	1.48	-3.57	1.51	0.000098	1.22	517.29	119.93	0.1
Schneider Cana	Middle	25300	2-Year	191.19	-6.02	-0.89	-4.58	-0.88	0.000042	0.68	282.75	82.63	0.06
Schneider Cana	Middle	25300	5-Year	293.03	-6.02	-0.31	-4.29	-0.3	0.000061	0.88	331.25	86.05	0.08
Schneider Cana	Middle	25300	10-Year	367.33	-6.02	0.13	-4.1	0.15	0.000069	0.99	369.95	88.33	0.09
Schneider Cana	Middle	25300	25-Year	469.77	-6.02	0.6	-3.88	0.62	0.000084	1.14	412.04	92.13	0.1
Schneider Cana	Middle	25300	50-Year	551.85	-6.02	1.04	-3.71	1.07	0.000101	1.21	456.13	108.06	0.1
Schneider Cana	Middle	25300	100-Year	630.68	-6.02	1.48	-3.56	1.5	0.000114	1.24	506.84	125.68	0.11
Schneider Cana	Middle	25200	2-Year	191.19	-6.17	-0.89	-4.61	-0.88	0.000044	0.68	279.35	83.39	0.07
Schneider Cana	Middle	25200	5-Year	293.03	-6.17	-0.32	-4.3	-0.31	0.000064	0.89	328.09	86.68	0.08
Schneider Cana	Middle	25200	10-Year	367.33	-6.17	0.12	-4.1	0.14	0.000071	1	367.01	88.95	0.09
Schneider Cana	Middle	25200	25-Year	469.77	-6.17	0.59	-3.87	0.61	0.000086	1.15	409.54	93.12	0.1
Schneider Cana	Middle	25200	50-Year	551.85	-6.17	1.03	-3.71	1.06	0.000107	1.22	454.17	111.73	0.11
Schneider Cana	Middle	25200	100-Year	630.68	-6.17	1.46	-3.56	1.49	0.000122	1.24	507.04	132.58	0.11
Schneider Cana	Middle	25100	2-Year	191.19	-6.32	-0.9	-4.68	-0.89	0.000045	0.69	277.48	83.35	0.07
Schneider Cana	Middle	25100	5-Year	293.03	-6.32	-0.33	-4.35	-0.31	0.000066	0.9	326.24	87.6	0.08
Schneider Cana	Middle	25100	10-Year	367.33	-6.32	0.12	-4.14	0.13	0.000075	1	365.82	91.35	0.09
Schneider Cana	Middle	25100	25-Year	469.77	-6.32	0.58	-3.9	0.6	0.000089	1.15	409.39	95.32	0.1
Schneider Cana	Middle	25100	50-Year	551.85	-6.32	1.02	-3.73	1.04	0.000103	1.22	453.13	107.81	0.1
Schneider Cana	Middle	25100	100-Year	630.68	-6.32	1.45	-3.58	1.48	0.000104	1.26	505.45	131.47	0.11
Schneider Cana	Middle	25000	2-Year	191.19	-6.48	-0.9	-4.77	-0.89	0.000045	0.69	277.27	83.47	0.07
Schneider Cana	Middle	25000	5-Year	293.03	-6.48	-0.33	-4.42	-0.32	0.000068	0.9	326.39	89.44	0.08

HEC-RAS Output - Alternative 4

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Middle	25000	10-Year	367.33	-6.48	0.11	-4.21	0.12	0.000076	1	366.73	93.09	0.09
Schneider Cana	Middle	25000	25-Year	469.77	-6.48	0.57	-3.94	0.59	0.00009	1.14	410.89	96.63	0.1
Schneider Cana	Middle	25000	50-Year	551.85	-6.48	1.01	-3.77	1.03	0.000092	1.22	454.34	106.25	0.1
Schneider Cana	Middle	25000	100-Year	630.68	-6.48	1.44	-3.6	1.47	0.000091	1.27	505.3	130.14	0.1
Schneider Cana	Middle	24900	2-Year	191.19	-6.63	-0.91	-4.86	-0.9	0.000045	0.69	279.03	83.94	0.07
Schneider Cana	Middle	24900	5-Year	293.03	-6.63	-0.34	-4.49	-0.33	0.000067	0.89	328.22	89.89	0.08
Schneider Cana	Middle	24900	10-Year	367.33	-6.63	0.1	-4.27	0.12	0.000076	1	368.84	94.21	0.09
Schneider Cana	Middle	24900	25-Year	469.77	-6.63	0.57	-4.01	0.59	0.000089	1.14	413.33	97.47	0.1
Schneider Cana	Middle	24900	50-Year	551.85	-6.63	1	-3.82	1.03	0.000092	1.21	456.66	101.48	0.1
Schneider Cana	Middle	24900	100-Year	630.68	-6.63	1.43	-3.65	1.46	0.00009	1.26	507.9	136.14	0.1
Schneider Cana	Middle	24800	2-Year	191.19	-6.78	-0.91	-4.95	-0.9	0.000042	0.68	283.13	83.53	0.06
Schneider Cana	Middle	24800	5-Year	293.03	-6.78	-0.35	-4.58	-0.33	0.000064	0.88	331.95	89.61	0.08
Schneider Cana	Middle	24800	10-Year	367.33	-6.78	0.09	-4.35	0.11	0.000074	0.99	372.39	94.34	0.09
Schneider Cana	Middle	24800	25-Year	469.77	-6.78	0.56	-4.08	0.58	0.000087	1.13	417.02	98.04	0.1
Schneider Cana	Middle	24800	50-Year	551.85	-6.78	0.99	-3.9	1.02	0.00009	1.2	460.52	100.91	0.1
Schneider Cana	Middle	24800	100-Year	630.68	-6.78	1.43	-3.73	1.45	0.000089	1.25	515.08	141.97	0.1
Schneider Cana	Middle	24700	2-Year	191.19	-6.93	-0.91	-5.05	-0.91	0.000039	0.66	289.29	82.27	0.06
Schneider Cana	Middle	24700	5-Year	293.03	-6.93	-0.35	-4.67	-0.34	0.00006	0.87	337.28	88.61	0.08
Schneider Cana	Middle	24700	10-Year	367.33	-6.93	0.09	-4.45	0.1	0.00007	0.97	377.25	93.57	0.09
Schneider Cana	Middle	24700	25-Year	469.77	-6.93	0.55	-4.19	0.57	0.000084	1.11	421.64	98.49	0.09
Schneider Cana	Middle	24700	50-Year	551.85	-6.93	0.99	-4	1.01	0.000087	1.19	465.28	101.23	0.1
Schneider Cana	Middle	24700	100-Year	630.68	-6.93	1.42	-3.83	1.44	0.000094	1.24	510.2	110.89	0.1
Schneider Cana	Middle	24600	2-Year	191.19	-7.09	-0.92	-5.16	-0.91	0.000034	0.64	297.94	80.02	0.06
Schneider Cana	Middle	24600	5-Year	293.03	-7.09	-0.36	-4.8	-0.35	0.000054	0.85	344.63	86.81	0.08
Schneider Cana	Middle	24600	10-Year	367.33	-7.09	0.08	-4.58	0.09	0.000065	0.96	383.79	92.11	0.08
Schneider Cana	Middle	24600	25-Year	469.77	-7.09	0.54	-4.33	0.56	0.00008	1.1	427.45	97.69	0.09
Schneider Cana	Middle	24600	50-Year	551.85	-7.09	0.98	-4.14	1	0.000084	1.17	471.09	101.47	0.1
Schneider Cana	Middle	24600	100-Year	630.68	-7.09	1.41	-4	1.43	0.000091	1.22	515.87	110.44	0.1
Schneider Cana	Middle	24500	2-Year	191.19	-7.24	-0.92		-0.91	0.000029	0.62	309.4	78.13	0.05
Schneider Cana	Middle	24500	5-Year	293.03	-7.24	-0.36		-0.35	0.000048	0.83	354.36	84.02	0.07
Schneider Cana	Middle	24500	10-Year	367.33	-7.24	0.07		0.09	0.000058	0.94	392.31	89.81	0.08
Schneider Cana	Middle	24500	25-Year	469.77	-7.24	0.53		0.55	0.000074	1.08	434.89	95.88	0.09
Schneider Cana	Middle	24500	50-Year	551.85	-7.24	0.97		0.99	0.00008	1.15	477.97	101.66	0.09
Schneider Cana	Middle	24500	100-Year	630.68	-7.24	1.4		1.42	0.000084	1.21	522.97	108.1	0.1
Schneider Cana	Middle	24400	2-Year	191.19	-7.39	-0.92		-0.92	0.000025	0.59	322.27	77.93	0.05
Schneider Cana	Middle	24400	5-Year	293.03	-7.39	-0.37		-0.36	0.000041	0.8	366.45	80.94	0.07
Schneider Cana	Middle	24400	10-Year	367.33	-7.39	0.07		0.08	0.000051	0.91	402.69	86.24	0.07
Schneider Cana	Middle	24400	25-Year	469.77	-7.39	0.53		0.54	0.000067	1.06	443.65	93.05	0.09
Schneider Cana	Middle	24400	50-Year	551.85	-7.39	0.96		0.98	0.000075	1.14	485.6	100.19	0.09
Schneider Cana	Middle	24400	100-Year	630.68	-7.39	1.39		1.41	0.000082	1.19	530.8	109.44	0.1
Schneider Cana	Middle	24300	2-Year	191.19	-7.54	-0.92		-0.92	0.000022	0.57	336.9	77.84	0.05
Schneider Cana	Middle	24300	5-Year	293.03	-7.54	-0.37		-0.36	0.000036	0.77	380.88	80.67	0.06
Schneider Cana	Middle	24300	10-Year	367.33	-7.54	0.07		0.08	0.000043	0.88	416.44	82.88	0.07
Schneider Cana	Middle	24300	25-Year	469.77	-7.54	0.52		0.54	0.000058	1.03	455.24	88.73	0.08
Schneider Cana	Middle	24300	50-Year	551.85	-7.54	0.96		0.97	0.000068	1.11	495.55	98.02	0.09
Schneider Cana	Middle	24300	100-Year	630.68	-7.54	1.38		1.41	0.000078	1.17	540.14	110.1	0.09
Schneider Cana	Middle	24200	2-Year	191.19	-7.7	-0.93		-0.92	0.000019	0.54	352.79	77.81	0.04
Schneider Cana	Middle	24200	5-Year	293.03	-7.7	-0.37		-0.36	0.000031	0.74	396.63	80.49	0.06
Schneider Cana	Middle	24200	10-Year	367.33	-7.7	0.06		0.07	0.000038	0.85	432.04	82.59	0.07
Schneider Cana	Middle	24200	25-Year	469.77	-7.7	0.52		0.53	0.000049	1	470.07	84.79	0.07
Schneider Cana	Middle	24200	50-Year	551.85	-7.7	0.95		0.97	0.00006	1.09	508.17	93.93	0.08
Schneider Cana	Middle	24200	100-Year	630.68	-7.7	1.38		1.4	0.000071	1.14	551.24	107.63	0.09
Schneider Cana	Middle	24100	2-Year	191.19	-7.78	-0.93		-0.92	0.000016	0.52	367.82	77.68	0.04
Schneider Cana	Middle	24100	5-Year	293.03	-7.78	-0.37		-0.37	0.000028	0.71	411.5	80.34	0.06
Schneider Cana	Middle	24100	10-Year	367.33	-7.78	0.06		0.07	0.000034	0.82	446.79	82.43	0.06
Schneider Cana	Middle	24100	25-Year	469.77	-7.78	0.51		0.53	0.000044	0.97	484.67	84.61	0.07

HEC-RAS Output - Alternative 4

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Middle	24100	50-Year	551.85	-7.78	0.94		0.96	0.000053	1.06	522.2	91.14	0.08
Schneider Cana	Middle	24100	100-Year	630.68	-7.78	1.37		1.39	0.000062	1.12	563.32	101.79	0.08
Schneider Cana	Middle	24000	2-Year	191.19	-7.81	-0.93		-0.92	0.000019	0.54	351.06	76.61	0.04
Schneider Cana	Middle	24000	5-Year	293.03	-7.81	-0.38		-0.37	0.000031	0.74	394.04	79.29	0.06
Schneider Cana	Middle	24000	10-Year	367.33	-7.81	0.05		0.07	0.000039	0.86	428.84	81.65	0.07
Schneider Cana	Middle	24000	25-Year	469.77	-7.81	0.51		0.52	0.000051	1.01	466.61	86.06	0.08
Schneider Cana	Middle	24000	50-Year	551.85	-7.81	0.94		0.96	0.000059	1.09	504.87	91.29	0.08
Schneider Cana	Middle	24000	100-Year	630.68	-7.81	1.36		1.38	0.000067	1.16	545.59	100.88	0.09
Schneider Cana	Middle	23900	2-Year	191.19	-7.84	-0.93		-0.93	0.000021	0.57	335.95	75.49	0.05
Schneider Cana	Middle	23900	5-Year	293.03	-7.84	-0.38		-0.37	0.000035	0.77	378.18	78.2	0.06
Schneider Cana	Middle	23900	10-Year	367.33	-7.84	0.05		0.06	0.000044	0.89	412.63	81.88	0.07
Schneider Cana	Middle	23900	25-Year	469.77	-7.84	0.5		0.52	0.000058	1.04	450.69	87.07	0.08
Schneider Cana	Middle	23900	50-Year	551.85	-7.84	0.93		0.95	0.000066	1.13	489.26	92.04	0.09
Schneider Cana	Middle	23900	100-Year	630.68	-7.84	1.35		1.38	0.000072	1.19	529.53	98.72	0.09
Schneider Cana	Middle	23800	2-Year	191.19	-7.86	-0.93		-0.93	0.000024	0.59	322.27	74.31	0.05
Schneider Cana	Middle	23800	5-Year	293.03	-7.86	-0.39		-0.38	0.00004	0.81	363.94	78.36	0.07
Schneider Cana	Middle	23800	10-Year	367.33	-7.86	0.04		0.06	0.00005	0.92	398.51	82.21	0.07
Schneider Cana	Middle	23800	25-Year	469.77	-7.86	0.49		0.51	0.000064	1.08	436.37	86.78	0.08
Schneider Cana	Middle	23800	50-Year	551.85	-7.86	0.92		0.94	0.000072	1.16	474.74	91.86	0.09
Schneider Cana	Middle	23800	100-Year	630.68	-7.86	1.35		1.37	0.000078	1.23	514.76	97.07	0.09
Schneider Cana	Middle	23700	2-Year	191.19	-7.89	-0.94	-6.02	-0.93	0.000027	0.62	310.8	73.84	0.05
Schneider Cana	Middle	23700	5-Year	293.03	-7.89	-0.39	-5.61	-0.38	0.000045	0.83	352.33	78.35	0.07
Schneider Cana	Middle	23700	10-Year	367.33	-7.89	0.04	-5.36	0.05	0.000055	0.95	386.75	81.9	0.08
Schneider Cana	Middle	23700	25-Year	469.77	-7.89	0.48	-5.06	0.5	0.00007	1.11	424.18	85.6	0.09
Schneider Cana	Middle	23700	50-Year	551.85	-7.89	0.91	-4.85	0.94	0.000078	1.19	461.97	90.78	0.09
Schneider Cana	Middle	23700	100-Year	630.68	-7.89	1.34	-4.66	1.36	0.000084	1.26	501.49	96.04	0.1
Schneider Cana	Middle	23600	2-Year	191.19	-7.92	-0.94		-0.93	0.000029	0.63	301.46	73.51	0.06
Schneider Cana	Middle	23600	5-Year	293.03	-7.92	-0.4		-0.39	0.000048	0.86	342.57	77.74	0.07
Schneider Cana	Middle	23600	10-Year	367.33	-7.92	0.03		0.05	0.000059	0.98	376.59	81.08	0.08
Schneider Cana	Middle	23600	25-Year	469.77	-7.92	0.48		0.5	0.000075	1.14	413.49	84.76	0.09
Schneider Cana	Middle	23600	50-Year	551.85	-7.92	0.9		0.93	0.000083	1.22	450.56	88.92	0.1
Schneider Cana	Middle	23600	100-Year	630.68	-7.92	1.33		1.35	0.000089	1.29	489.27	94.38	0.1
Schneider Cana	Middle	23500	2-Year	191.19	-7.95	-0.94		-0.94	0.000031	0.65	294.3	72.54	0.06
Schneider Cana	Middle	23500	5-Year	293.03	-7.95	-0.4		-0.39	0.000051	0.88	334.67	76.6	0.07
Schneider Cana	Middle	23500	10-Year	367.33	-7.95	0.02		0.04	0.000062	1	368.08	79.87	0.08
Schneider Cana	Middle	23500	25-Year	469.77	-7.95	0.47		0.49	0.000079	1.16	404.31	83.58	0.09
Schneider Cana	Middle	23500	50-Year	551.85	-7.95	0.89		0.92	0.000087	1.25	440.74	87.15	0.1
Schneider Cana	Middle	23500	100-Year	630.68	-7.95	1.32		1.34	0.000092	1.32	478.41	92.03	0.1
Schneider Cana	Middle	23400	2-Year	191.19	-7.97	-0.95		-0.94	0.000032	0.66	289.28	70.81	0.06
Schneider Cana	Middle	23400	5-Year	293.03	-7.97	-0.41		-0.4	0.000053	0.89	328.62	75	0.08
Schneider Cana	Middle	23400	10-Year	367.33	-7.97	0.02		0.03	0.000065	1.02	361.28	78.46	0.08
Schneider Cana	Middle	23400	25-Year	469.77	-7.97	0.46		0.48	0.000082	1.18	396.72	82.14	0.09
Schneider Cana	Middle	23400	50-Year	551.85	-7.97	0.88		0.91	0.00009	1.28	432.46	85.69	0.1
Schneider Cana	Middle	23400	100-Year	630.68	-7.97	1.31		1.33	0.000095	1.34	469.27	89.2	0.1
Schneider Cana	Middle	23300	2-Year	191.19	-8	-0.95		-0.94	0.000031	0.67	287.12	68.37	0.06
Schneider Cana	Middle	23300	5-Year	293.03	-8	-0.41		-0.4	0.000053	0.9	324.96	72.74	0.08
Schneider Cana	Middle	23300	10-Year	367.33	-8	0.01		0.03	0.000065	1.03	356.65	76.51	0.08
Schneider Cana	Middle	23300	25-Year	469.77	-8	0.45		0.47	0.000084	1.2	391.07	80.26	0.1
Schneider Cana	Middle	23300	50-Year	551.85	-8	0.87		0.9	0.000092	1.3	425.96	83.9	0.1
Schneider Cana	Middle	23300	100-Year	630.68	-8	1.29		1.32	0.000097	1.37	461.98	87.49	0.1
Schneider Cana	Middle	23200	2-Year	191.19	-8.18	-0.95		-0.95	0.00003	0.67	287.27	66.4	0.06
Schneider Cana	Middle	23200	5-Year	293.03	-8.18	-0.42		-0.41	0.000052	0.9	323.88	70.68	0.07
Schneider Cana	Middle	23200	10-Year	367.33	-8.18	0		0.02	0.000064	1.04	354.53	74.19	0.08
Schneider Cana	Middle	23200	25-Year	469.77	-8.18	0.44		0.46	0.000083	1.21	387.75	77.81	0.1
Schneider Cana	Middle	23200	50-Year	551.85	-8.18	0.86		0.89	0.000092	1.31	421.49	81.46	0.1
Schneider Cana	Middle	23200	100-Year	630.68	-8.18	1.28		1.31	0.000098	1.38	456.49	85.32	0.11

HEC-RAS Output - Alternative 4

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Middle	23100	2-Year	191.19	-8.04	-0.96		-0.95	0.000022	0.59	325.79	70.75	0.05
Schneider Cana	Middle	23100	5-Year	293.03	-8.04	-0.42		-0.41	0.000036	0.8	364.02	72.41	0.06
Schneider Cana	Middle	23100	10-Year	367.33	-8.04	0		0.01	0.000045	0.93	394.86	73.57	0.07
Schneider Cana	Middle	23100	25-Year	469.77	-8.04	0.44		0.46	0.000058	1.1	427.25	75.21	0.08
Schneider Cana	Middle	23100	50-Year	551.85	-8.04	0.86		0.88	0.000066	1.2	459.52	77.29	0.09
Schneider Cana	Middle	23100	100-Year	630.68	-8.04	1.28		1.3	0.000071	1.28	492.34	79.34	0.09
Schneider Cana	Middle	23000	2-Year	191.19	-8.06	-0.96		-0.95	0.000021	0.58	328.35	71.91	0.05
Schneider Cana	Middle	23000	5-Year	293.03	-8.06	-0.43		-0.42	0.000036	0.8	367.1	73.63	0.06
Schneider Cana	Middle	23000	10-Year	367.33	-8.06	0		0.01	0.000045	0.92	398.53	75.41	0.07
Schneider Cana	Middle	23000	25-Year	469.77	-8.06	0.43		0.45	0.000058	1.09	431.73	77.26	0.08
Schneider Cana	Middle	23000	50-Year	551.85	-8.06	0.85		0.88	0.000065	1.19	464.75	79.05	0.09
Schneider Cana	Middle	23000	100-Year	630.68	-8.06	1.27		1.3	0.00007	1.27	498.21	80.82	0.09
Schneider Cana	Middle	22900	2-Year	191.19	-8.08	-0.96		-0.95	0.000021	0.58	331.47	73.28	0.05
Schneider Cana	Middle	22900	5-Year	293.03	-8.08	-0.43		-0.42	0.000036	0.79	371.01	75.53	0.06
Schneider Cana	Middle	22900	10-Year	367.33	-8.08	-0.01		0	0.000044	0.91	403.15	77.16	0.07
Schneider Cana	Middle	22900	25-Year	469.77	-8.08	0.43		0.44	0.000057	1.08	436.97	78.83	0.08
Schneider Cana	Middle	22900	50-Year	551.85	-8.08	0.85		0.87	0.000064	1.17	470.58	80.46	0.09
Schneider Cana	Middle	22900	100-Year	630.68	-8.08	1.27		1.29	0.000068	1.25	504.56	82.07	0.09
Schneider Cana	Middle	22800	2-Year	191.19	-8.09	-0.96		-0.96	0.000021	0.57	335.6	74.97	0.05
Schneider Cana	Middle	22800	5-Year	293.03	-8.09	-0.43		-0.42	0.000035	0.78	375.9	77.11	0.06
Schneider Cana	Middle	22800	10-Year	367.33	-8.09	-0.01		0	0.000043	0.9	408.62	78.62	0.07
Schneider Cana	Middle	22800	25-Year	469.77	-8.09	0.42		0.44	0.000056	1.06	442.96	80.19	0.08
Schneider Cana	Middle	22800	50-Year	551.85	-8.09	0.84		0.86	0.000062	1.16	477.07	81.71	0.08
Schneider Cana	Middle	22800	100-Year	630.68	-8.09	1.26		1.28	0.000066	1.23	511.53	83.22	0.09
Schneider Cana	Middle	22700	2-Year	191.19	-8.11	-0.96		-0.96	0.000021	0.56	340.72	76.46	0.05
Schneider Cana	Middle	22700	5-Year	293.03	-8.11	-0.44		-0.43	0.000034	0.77	381.68	78.49	0.06
Schneider Cana	Middle	22700	10-Year	367.33	-8.11	-0.02		0	0.000042	0.89	414.91	79.94	0.07
Schneider Cana	Middle	22700	25-Year	469.77	-8.11	0.42		0.43	0.000054	1.04	449.7	81.42	0.08
Schneider Cana	Middle	22700	50-Year	551.85	-8.11	0.84		0.86	0.00006	1.14	484.28	82.87	0.08
Schneider Cana	Middle	22700	100-Year	630.68	-8.11	1.25		1.28	0.000065	1.21	519.25	85.37	0.09
Schneider Cana	Middle	22600	2-Year	191.19	-8.13	-0.97		-0.96	0.00002	0.55	346.54	77.77	0.05
Schneider Cana	Middle	22600	5-Year	293.03	-8.13	-0.44		-0.43	0.000033	0.76	388.08	79.75	0.06
Schneider Cana	Middle	22600	10-Year	367.33	-8.13	-0.02		-0.01	0.000041	0.87	421.77	81.13	0.07
Schneider Cana	Middle	22600	25-Year	469.77	-8.13	0.41		0.43	0.000052	1.03	456.98	82.56	0.08
Schneider Cana	Middle	22600	50-Year	551.85	-8.13	0.83		0.85	0.000058	1.12	491.98	83.95	0.08
Schneider Cana	Middle	22600	100-Year	630.68	-8.13	1.25		1.27	0.000063	1.2	527.59	87.47	0.09
Schneider Cana	Middle	22500	2-Year	191.19	-8.14	-0.97		-0.96	0.000019	0.54	352.72	79.01	0.05
Schneider Cana	Middle	22500	5-Year	293.03	-8.14	-0.44		-0.43	0.000032	0.74	394.81	80.94	0.06
Schneider Cana	Middle	22500	10-Year	367.33	-8.14	-0.02		-0.01	0.000039	0.86	428.93	82.28	0.07
Schneider Cana	Middle	22500	25-Year	469.77	-8.14	0.41		0.42	0.00005	1.01	464.54	83.66	0.08
Schneider Cana	Middle	22500	50-Year	551.85	-8.14	0.83		0.84	0.000056	1.1	499.95	85.25	0.08
Schneider Cana	Middle	22500	100-Year	630.68	-8.14	1.24		1.26	0.000062	1.18	536.34	89.46	0.08
Schneider Cana	Middle	22400	2-Year	191.19	-8.16	-0.97	-6.21	-0.96	0.000018	0.53	359.75	80.17	0.04
Schneider Cana	Middle	22400	5-Year	293.03	-8.16	-0.44	-5.87	-0.44	0.000031	0.73	402.35	82.08	0.06
Schneider Cana	Middle	22400	10-Year	367.33	-8.16	-0.03	-5.65	-0.02	0.000037	0.84	436.89	83.39	0.06
Schneider Cana	Middle	22400	25-Year	469.77	-8.16	0.4	-5.4	0.42	0.000048	0.99	472.88	84.73	0.07
Schneider Cana	Middle	22400	50-Year	551.85	-8.16	0.82	-5.23	0.84	0.000054	1.08	508.81	87.31	0.08
Schneider Cana	Middle	22400	100-Year	630.68	-8.16	1.24	-5.07	1.26	0.000063	1.15	546.42	94.97	0.08
Schneider Cana	Middle	22300	2-Year	191.19	-8.18	-0.97	-6.24	-0.97	0.000017	0.52	367.49	81.33	0.04
Schneider Cana	Middle	22300	5-Year	293.03	-8.18	-0.45	-5.9	-0.44	0.000029	0.71	410.59	83.18	0.06
Schneider Cana	Middle	22300	10-Year	367.33	-8.18	-0.03	-5.71	-0.02	0.000036	0.82	445.53	84.45	0.06
Schneider Cana	Middle	22300	25-Year	469.77	-8.18	0.4	-5.49	0.41	0.000046	0.97	481.88	85.76	0.07
Schneider Cana	Middle	22300	50-Year	551.85	-8.18	0.82	-5.32	0.83	0.000055	1.06	518.8	92.25	0.08
Schneider Cana	Middle	22300	100-Year	630.68	-8.18	1.23	-5.16	1.25	0.000063	1.13	559.02	101.48	0.08
Schneider Cana	Middle	22200	2-Year	191.19	-8.19	-0.97		-0.97	0.000016	0.51	375.49	82.39	0.04

HEC-RAS Output - Alternative 4

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Middle	22200	5-Year	293.03	-8.19	-0.45		-0.44	0.000028	0.7	419.06	84.23	0.06
Schneider Cana	Middle	22200	10-Year	367.33	-8.19	-0.03		-0.02	0.000034	0.81	454.39	85.48	0.06
Schneider Cana	Middle	22200	25-Year	469.77	-8.19	0.39		0.41	0.000046	0.96	491.37	89.67	0.07
Schneider Cana	Middle	22200	50-Year	551.85	-8.19	0.81		0.83	0.000055	1.04	530.65	98.34	0.08
Schneider Cana	Middle	22200	100-Year	630.68	-8.19	1.22		1.24	0.000062	1.1	573.21	106.94	0.08
Schneider Cana	Middle	22100	2-Year	191.19	-8.21	-0.97	-6.53	-0.97	0.000015	0.5	383.93	83.45	0.04
Schneider Cana	Middle	22100	5-Year	293.03	-8.21	-0.45	-6.21	-0.45	0.000026	0.68	427.97	85.27	0.05
Schneider Cana	Middle	22100	10-Year	367.33	-8.21	-0.04	-6.01	-0.03	0.000033	0.79	463.83	88.35	0.06
Schneider Cana	Middle	22100	25-Year	469.77	-8.21	0.39	-5.75	0.4	0.000046	0.93	502.78	95.52	0.07
Schneider Cana	Middle	22100	50-Year	551.85	-8.21	0.81	-5.57	0.82	0.000054	1.01	544.33	103.71	0.08
Schneider Cana	Middle	22100	100-Year	630.68	-8.21	1.22	-5.4	1.24	0.000059	1.07	588.93	123.76	0.08
Schneider Cana	Middle	22000	2-Year	191.19	-8.23	-0.98	-6.76	-0.97	0.000015	0.49	393.21	84.52	0.04
Schneider Cana	Middle	22000	5-Year	293.03	-8.23	-0.45	-6.42	-0.45	0.000025	0.67	437.83	87.83	0.05
Schneider Cana	Middle	22000	10-Year	367.33	-8.23	-0.04	-6.21	-0.03	0.000033	0.77	475.39	93.13	0.06
Schneider Cana	Middle	22000	25-Year	469.77	-8.23	0.38	-5.95	0.4	0.000045	0.91	516.44	100.74	0.07
Schneider Cana	Middle	22000	50-Year	551.85	-8.23	0.8	-5.76	0.82	0.000052	0.99	560	108.44	0.08
Schneider Cana	Middle	22000	100-Year	630.68	-8.23	1.21	-5.59	1.23	0.000054	1.04	608.77	127.5	0.08
Schneider Cana	Middle	21900	2-Year	191.19	-8.29	-0.98	-6.93	-0.97	0.000014	0.47	404.16	87.21	0.04
Schneider Cana	Middle	21900	5-Year	293.03	-8.29	-0.46	-6.58	-0.45	0.000024	0.65	450.41	90.9	0.05
Schneider Cana	Middle	21900	10-Year	367.33	-8.29	-0.04	-6.36	-0.03	0.00003	0.75	488.7	93.85	0.06
Schneider Cana	Middle	21900	25-Year	469.77	-8.29	0.38	-6.09	0.39	0.00004	0.89	529.25	97.9	0.07
Schneider Cana	Middle	21900	50-Year	551.85	-8.29	0.8	-5.9	0.81	0.000045	0.97	570.8	107.18	0.07
Schneider Cana	Middle	21900	100-Year	630.68	-8.29	1.21	-5.72	1.23	0.00005	1.03	614.39	142.43	0.08
Schneider Cana	Middle	21800	2-Year	191.19	-8.48	-0.98	-6.86	-0.97	0.000015	0.5	385.75	80.22	0.04
Schneider Cana	Middle	21800	5-Year	293.03	-8.48	-0.46	-6.51	-0.45	0.000025	0.68	427.88	82.48	0.05
Schneider Cana	Middle	21800	10-Year	367.33	-8.48	-0.05	-6.3	-0.04	0.000031	0.79	462.37	84.29	0.06
Schneider Cana	Middle	21800	25-Year	469.77	-8.48	0.37	-6.03	0.39	0.000041	0.94	498.28	86.15	0.07
Schneider Cana	Middle	21800	50-Year	551.85	-8.48	0.79	-5.84	0.81	0.000047	1.03	534.61	93.76	0.07
Schneider Cana	Middle	21800	100-Year	630.68	-8.48	1.2	-5.67	1.22	0.00005	1.1	578.42	111.07	0.08
Schneider Cana	Middle	21700	2-Year	191.19	-8.68	-0.98	-6.84	-0.98	0.000017	0.51	376.87	84.18	0.04
Schneider Cana	Middle	21700	5-Year	293.03	-8.68	-0.46	-6.5	-0.46	0.00003	0.69	421.95	90.25	0.06
Schneider Cana	Middle	21700	10-Year	367.33	-8.68	-0.05	-6.28	-0.04	0.000037	0.8	460.13	94.63	0.06
Schneider Cana	Middle	21700	25-Year	469.77	-8.68	0.37	-6.02	0.38	0.000049	0.94	500.86	99.08	0.07
Schneider Cana	Middle	21700	50-Year	551.85	-8.68	0.78	-5.83	0.8	0.000054	1.02	542.84	103.56	0.08
Schneider Cana	Middle	21700	100-Year	630.68	-8.68	1.2	-5.67	1.21	0.000059	1.08	586.66	108.98	0.08
Schneider Cana	Middle	21600	2-Year	191.19	-8.87	-0.98	-6.89	-0.98	0.000017	0.53	363.3	77.85	0.04
Schneider Cana	Middle	21600	5-Year	293.03	-8.87	-0.47	-6.52	-0.46	0.000031	0.72	404.78	83.23	0.06
Schneider Cana	Middle	21600	10-Year	367.33	-8.87	-0.06	-6.31	-0.04	0.000039	0.83	439.95	87.53	0.07
Schneider Cana	Middle	21600	25-Year	469.77	-8.87	0.36	-6.05	0.38	0.000051	0.98	477.46	91.48	0.08
Schneider Cana	Middle	21600	50-Year	551.85	-8.87	0.78	-5.87	0.79	0.000058	1.07	516.06	95.21	0.08
Schneider Cana	Middle	21600	100-Year	630.68	-8.87	1.19	-5.71	1.21	0.000062	1.13	556.01	100.45	0.08
Schneider Cana	Middle	21500	2-Year	191.19	-9.06	-0.98	-7	-0.98	0.000017	0.54	352.73	72.65	0.04
Schneider Cana	Middle	21500	5-Year	293.03	-9.06	-0.47	-6.62	-0.46	0.000031	0.75	390.86	75.9	0.06
Schneider Cana	Middle	21500	10-Year	367.33	-9.06	-0.06	-6.4	-0.05	0.000039	0.87	422.57	78.5	0.07
Schneider Cana	Middle	21500	25-Year	469.77	-9.06	0.36	-6.14	0.37	0.000052	1.03	455.85	81.14	0.08
Schneider Cana	Middle	21500	50-Year	551.85	-9.06	0.77	-5.95	0.79	0.000058	1.13	489.83	83.57	0.08
Schneider Cana	Middle	21500	100-Year	630.68	-9.06	1.18	-5.78	1.2	0.000063	1.2	524.54	85.55	0.09
Schneider Cana	Lower	21400	2-Year	236	-9.26	-0.99	-6.99	-0.98	0.000027	0.69	344.32	69.33	0.05
Schneider Cana	Lower	21400	5-Year	360	-9.26	-0.48	-6.59	-0.46	0.000049	0.95	380.67	73.5	0.07
Schneider Cana	Lower	21400	10-Year	458	-9.26	-0.07	-6.33	-0.05	0.000065	1.11	411.49	77.67	0.09
Schneider Cana	Lower	21400	25-Year	594	-9.26	0.34	-5.99	0.37	0.000091	1.34	444.37	81.88	0.1
Schneider Cana	Lower	21400	50-Year	709	-9.26	0.75	-5.73	0.78	0.000108	1.48	478.66	102.79	0.11
Schneider Cana	Lower	21400	100-Year	824	-9.26	1.16	-5.5	1.2	0.000122	1.6	514.52	118.77	0.12
Schneider Cana	Lower	21300	2-Year	236	-9.45	-0.99	-7.2	-0.98	0.000027	0.7	337.48	66.09	0.05
Schneider Cana	Lower	21300	5-Year	360	-9.45	-0.48	-6.79	-0.47	0.000049	0.97	371.93	69.71	0.07
Schneider Cana	Lower	21300	10-Year	458	-9.45	-0.08	-6.51	-0.06	0.000065	1.14	400.92	75.71	0.09

HEC-RAS Output - Alternative 4

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Schneider Cana	Lower	21300	25-Year	594	-9.45	0.33	-6.16	0.36	0.000088	1.38	435.65	111.14	0.1
Schneider Cana	Lower	21300	50-Year	709	-9.45	0.74	-5.89	0.77	0.000101	1.53	486.8	124.46	0.11
Schneider Cana	Lower	21300	100-Year	824	-9.45	1.14	-5.64	1.19	0.00011	1.64	538.24	128.78	0.11
Schneider Cana	Lower	21200	2-Year	236	-9.64	-0.99	-7.43	-0.99	0.000027	0.71	332.01	63.08	0.05
Schneider Cana	Lower	21200	5-Year	360	-9.64	-0.49	-7.01	-0.47	0.00005	0.99	364.73	66.55	0.07
Schneider Cana	Lower	21200	10-Year	458	-9.64	-0.09	-6.72	-0.06	0.000067	1.17	392.15	69.32	0.09
Schneider Cana	Lower	21200	25-Year	594	-9.64	0.32	-6.36	0.35	0.000094	1.41	420.85	72.13	0.1
Schneider Cana	Lower	21200	50-Year	709	-9.64	0.72	-6.08	0.76	0.000113	1.57	450.68	75.52	0.11
Schneider Cana	Lower	21200	100-Year	824	-9.64	1.13	-5.82	1.17	0.00013	1.71	481.81	78.9	0.12
Schneider Cana	Lower	21100	2-Year	236	-9.84	-1	-7.68	-0.99	0.000027	0.72	328.37	60.28	0.05
Schneider Cana	Lower	21100	5-Year	360	-9.84	-0.49	-7.26	-0.48	0.00005	1	359.48	63.61	0.07
Schneider Cana	Lower	21100	10-Year	458	-9.84	-0.09	-6.95	-0.07	0.000068	1.19	385.56	66.27	0.09
Schneider Cana	Lower	21100	25-Year	594	-9.84	0.31	-6.58	0.34	0.000095	1.44	412.78	68.95	0.1
Schneider Cana	Lower	21100	50-Year	709	-9.84	0.71	-6.3	0.75	0.000114	1.61	441.54	75.67	0.11
Schneider Cana	Lower	21100	100-Year	824	-9.84	1.11	-6.03	1.16	0.000128	1.75	472.59	78.54	0.12
Schneider Cana	Lower	21000	2-Year	236	-9.45	-1	-7.36	-0.99	0.000031	0.73	324.62	65.84	0.06
Schneider Cana	Lower	21000	5-Year	360	-9.45	-0.5	-6.93	-0.48	0.000055	1.01	358.2	68.45	0.08
Schneider Cana	Lower	21000	10-Year	458	-9.45	-0.1	-6.63	-0.08	0.000072	1.19	385.99	70.54	0.09
Schneider Cana	Lower	21000	25-Year	594	-9.45	0.3	-6.24	0.33	0.0001	1.43	414.63	72.62	0.11
Schneider Cana	Lower	21000	50-Year	709	-9.45	0.7	-5.96	0.74	0.000118	1.6	444.09	74.71	0.12
Schneider Cana	Lower	21000	100-Year	824	-9.45	1.1	-5.7	1.15	0.000131	1.74	476.73	86.82	0.12
Lateral Canal	South	12247.75	2-Year	81.19	-1.94	0.1	-0.44	0.21	0.003081	2.66	30.5	28.64	0.45
Lateral Canal	South	12247.75	5-Year	123.03	-1.94	0.83	-0.17	0.92	0.001318	2.34	52.61	31.37	0.32
Lateral Canal	South	12247.75	10-Year	150.33	-1.94	1.38	-0.03	1.45	0.000823	2.15	70.06	33.09	0.26
Lateral Canal	South	12247.75	25-Year	187.77	-1.94	2.1	0.14	2.16	0.000519	1.98	94.81	35.38	0.21
Lateral Canal	South	12247.75	50-Year	213.85	-1.94	2.76	0.24	2.81	0.000342	1.8	118.86	37.12	0.18
Lateral Canal	South	12247.75	100-Year	238.68	-1.94	3.46	0.34	3.5	0.000234	1.64	145.48	38.8	0.15
Lateral Canal	South	12200	2-Year	81.19	-2.76	0.06	-1.39	0.12	0.000891	2.03	39.94	20.74	0.26
Lateral Canal	South	12200	5-Year	123.03	-2.76	0.79	-1.06	0.87	0.0008	2.18	56.4	24.19	0.25
Lateral Canal	South	12200	10-Year	150.33	-2.76	1.34	-0.86	1.41	0.000657	2.14	70.36	26.79	0.23
Lateral Canal	South	12200	25-Year	187.77	-2.76	2.07	-0.62	2.13	0.000526	2.06	91.2	31.09	0.21
Lateral Canal	South	12200	50-Year	213.85	-2.76	2.74	-0.47	2.79	0.000402	1.88	113.82	40.27	0.19
Lateral Canal	South	12200	100-Year	238.68	-2.76	3.45	-0.33	3.49	0.000292	1.68	141.72	58.19	0.16
Lateral Canal	South	12150	2-Year	81.19	-2.33	0.02	-1.28	0.08	0.000912	2.04	39.83	21.52	0.26
Lateral Canal	South	12150	5-Year	123.03	-2.33	0.76	-0.97	0.83	0.00077	2.16	56.86	24.52	0.25
Lateral Canal	South	12150	10-Year	150.33	-2.33	1.31	-0.8	1.38	0.000619	2.11	71.09	26.77	0.23
Lateral Canal	South	12150	25-Year	187.77	-2.33	2.04	-0.58	2.11	0.000475	2.05	91.81	29.6	0.2
Lateral Canal	South	12150	50-Year	213.85	-2.33	2.72	-0.44	2.77	0.000343	1.9	112.33	34.83	0.18
Lateral Canal	South	12150	100-Year	238.68	-2.33	3.43	-0.31	3.48	0.000251	1.76	135.23	48.67	0.15
Lateral Canal	South	12095		Pedestrian Walkway Bridge									
Lateral Canal	South	12000	2-Year	81.19	-2.88	-0.31	-1.91	-0.27	0.000526	1.65	49.17	24.28	0.2
Lateral Canal	South	12000	5-Year	123.03	-2.88	0.48	-1.63	0.53	0.000451	1.77	69.61	27.44	0.2
Lateral Canal	South	12000	10-Year	150.33	-2.88	1.08	-1.45	1.13	0.000362	1.73	86.93	29.86	0.18
Lateral Canal	South	12000	25-Year	187.77	-2.88	1.86	-1.25	1.9	0.000285	1.69	111.2	32.95	0.16
Lateral Canal	South	12000	50-Year	213.85	-2.88	2.57	-1.11	2.61	0.000214	1.58	135.76	35.81	0.14
Lateral Canal	South	12000	100-Year	238.68	-2.88	3.31	-0.99	3.35	0.00016	1.46	163.41	38.77	0.13
Lateral Canal	South	11900	2-Year	81.19	-3.06	-0.35	-2.09	-0.32	0.000437	1.55	52.51	24.82	0.19
Lateral Canal	South	11900	5-Year	123.03	-3.06	0.44	-1.8	0.48	0.000387	1.67	73.54	28.01	0.18
Lateral Canal	South	11900	10-Year	150.33	-3.06	1.05	-1.63	1.1	0.000314	1.64	91.43	30.45	0.17
Lateral Canal	South	11900	25-Year	187.77	-3.06	1.83	-1.42	1.87	0.000251	1.61	116.39	33.57	0.15
Lateral Canal	South	11900	50-Year	213.85	-3.06	2.55	-1.29	2.59	0.00019	1.51	141.62	36.45	0.14
Lateral Canal	South	11900	100-Year	238.68	-3.06	3.3	-1.16	3.33	0.000144	1.4	169.92	39.44	0.12
Lateral Canal	South	11800	2-Year	81.19	-3.24	-0.39	-2.27	-0.36	0.000361	1.45	56.11	25.39	0.17
Lateral Canal	South	11800	5-Year	123.03	-3.24	0.41	-1.98	0.45	0.000331	1.58	77.71	28.6	0.17
Lateral Canal	South	11800	10-Year	150.33	-3.24	1.03	-1.82	1.07	0.000273	1.56	96.16	31.07	0.16

HEC-RAS Output - Alternative 4

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Lateral Canal	South	11800	25-Year	187.77	-3.24	1.81	-1.6	1.85	0.000222	1.54	121.77	34.21	0.14
Lateral Canal	South	11800	50-Year	213.85	-3.24	2.54	-1.47	2.57	0.00017	1.45	147.65	37.11	0.13
Lateral Canal	South	11800	100-Year	238.68	-3.24	3.29	-1.35	3.32	0.00013	1.35	176.6	40.11	0.11
Lateral Canal	South	11700	2-Year	81.19	-3.42	-0.42	-2.45	-0.39	0.000299	1.35	59.97	25.99	0.16
Lateral Canal	South	11700	5-Year	123.03	-3.42	0.38	-2.16	0.42	0.000284	1.5	82.11	29.2	0.16
Lateral Canal	South	11700	10-Year	150.33	-3.42	1	-2	1.04	0.000238	1.49	101.09	31.7	0.15
Lateral Canal	South	11700	25-Year	187.77	-3.42	1.79	-1.79	1.83	0.000196	1.47	127.34	34.85	0.14
Lateral Canal	South	11700	50-Year	213.85	-3.42	2.52	-1.65	2.55	0.000152	1.39	153.86	37.77	0.12
Lateral Canal	South	11700	100-Year	238.68	-3.42	3.28	-1.52	3.3	0.000117	1.3	183.44	40.79	0.11
Lateral Canal	South	11600	2-Year	81.19	-3.6	-0.45	-2.63	-0.42	0.000248	1.27	64.05	26.62	0.14
Lateral Canal	South	11600	5-Year	123.03	-3.6	0.36	-2.35	0.39	0.000244	1.42	86.72	29.83	0.15
Lateral Canal	South	11600	10-Year	150.33	-3.6	0.98	-2.18	1.02	0.000207	1.42	106.21	32.34	0.14
Lateral Canal	South	11600	25-Year	187.77	-3.6	1.78	-1.97	1.81	0.000174	1.41	133.1	35.51	0.13
Lateral Canal	South	11600	50-Year	213.85	-3.6	2.51	-1.82	2.54	0.000136	1.33	160.23	38.44	0.12
Lateral Canal	South	11600	100-Year	238.68	-3.6	3.27	-1.71	3.29	0.000105	1.25	190.45	41.47	0.1
Lateral Canal	South	11500	2-Year	81.19	-3.78	-0.47	-2.81	-0.44	0.000207	1.19	68.35	27.25	0.13
Lateral Canal	South	11500	5-Year	123.03	-3.78	0.34	-2.53	0.36	0.00021	1.34	91.53	30.47	0.14
Lateral Canal	South	11500	10-Year	150.33	-3.78	0.97	-2.36	1	0.000181	1.35	111.52	32.99	0.13
Lateral Canal	South	11500	25-Year	187.77	-3.78	1.76	-2.14	1.79	0.000154	1.35	139.02	36.17	0.12
Lateral Canal	South	11500	50-Year	213.85	-3.78	2.5	-2.01	2.52	0.000122	1.28	166.77	39.12	0.11
Lateral Canal	South	11500	100-Year	238.68	-3.78	3.26	-1.89	3.28	0.000095	1.21	197.6	42.15	0.1
Lateral Canal	South	11400	2-Year	81.19	-3.96	-0.48	-2.99	-0.46	0.000173	1.11	72.84	27.91	0.12
Lateral Canal	South	11400	5-Year	123.03	-3.96	0.32	-2.7	0.34	0.000181	1.27	96.54	31.12	0.13
Lateral Canal	South	11400	10-Year	150.33	-3.96	0.95	-2.54	0.98	0.000159	1.28	117.02	33.65	0.12
Lateral Canal	South	11400	25-Year	187.77	-3.96	1.75	-2.32	1.78	0.000137	1.29	145.12	36.84	0.11
Lateral Canal	South	11400	50-Year	213.85	-3.96	2.49	-2.19	2.51	0.000109	1.23	173.48	39.8	0.1
Lateral Canal	South	11400	100-Year	238.68	-3.96	3.25	-2.06	3.27	0.000086	1.16	204.91	42.84	0.09
Lateral Canal	South	11300	2-Year	81.19	-4.14	-0.5	-3.17	-0.48	0.000145	1.05	77.52	28.57	0.11
Lateral Canal	South	11300	5-Year	123.03	-4.14	0.3	-2.88	0.33	0.000157	1.21	101.73	31.78	0.12
Lateral Canal	South	11300	10-Year	150.33	-4.14	0.94	-2.72	0.96	0.000139	1.23	122.68	34.31	0.11
Lateral Canal	South	11300	25-Year	187.77	-4.14	1.74	-2.51	1.76	0.000122	1.24	151.39	37.51	0.11
Lateral Canal	South	11300	50-Year	213.85	-4.14	2.48	-2.37	2.5	0.000098	1.19	180.33	40.48	0.1
Lateral Canal	South	11300	100-Year	238.68	-4.14	3.24	-2.24	3.26	0.000078	1.12	212.38	43.53	0.09
Lateral Canal	South	11200	2-Year	81.19	-4.32	-0.51	-3.35	-0.49	0.000123	0.99	82.38	29.24	0.1
Lateral Canal	South	11200	5-Year	123.03	-4.32	0.29	-3.07	0.31	0.000136	1.15	107.09	32.45	0.11
Lateral Canal	South	11200	10-Year	150.33	-4.32	0.93	-2.9	0.95	0.000123	1.17	128.52	34.99	0.11
Lateral Canal	South	11200	25-Year	187.77	-4.32	1.73	-2.69	1.75	0.000109	1.19	157.82	38.19	0.1
Lateral Canal	South	11200	50-Year	213.85	-4.32	2.47	-2.55	2.49	0.000089	1.14	187.35	41.17	0.09
Lateral Canal	South	11200	100-Year	238.68	-4.32	3.24	-2.43	3.25	0.000071	1.08	219.99	44.23	0.09
Lateral Canal	South	11100	2-Year	81.19	-4.5	-0.52	-3.53	-0.51	0.000104	0.93	87.4	29.92	0.1
Lateral Canal	South	11100	5-Year	123.03	-4.5	0.28	-3.24	0.3	0.000118	1.09	112.62	33.12	0.1
Lateral Canal	South	11100	10-Year	150.33	-4.5	0.92	-3.07	0.94	0.000108	1.12	134.51	35.67	0.1
Lateral Canal	South	11100	25-Year	187.77	-4.5	1.72	-2.87	1.74	0.000097	1.14	164.4	58.4	0.1
Lateral Canal	South	11100	50-Year	213.85	-4.5	2.46	-2.73	2.48	0.00008	1.1	194.51	71.26	0.09
Lateral Canal	South	11100	100-Year	238.68	-4.5	3.23	-2.61	3.25	0.000065	1.05	227.75	94.36	0.08
Lateral Canal	South	11000	2-Year	143.19	-4.68	-0.57	-3.3	-0.53	0.000285	1.57	91.46	30.46	0.16
Lateral Canal	South	11000	5-Year	220.03	-4.68	0.22	-2.88	0.27	0.000344	1.89	116.54	33.59	0.18
Lateral Canal	South	11000	10-Year	275.33	-4.68	0.85	-2.62	0.91	0.000335	1.99	138.57	36.12	0.18
Lateral Canal	South	11000	25-Year	348.77	-4.68	1.65	-2.3	1.72	0.000313	2.07	168.71	39.31	0.18
Lateral Canal	South	11000	50-Year	406.85	-4.68	2.4	-2.07	2.46	0.000271	2.04	199.28	42.31	0.17
Lateral Canal	South	11000	100-Year	462.68	-4.68	3.17	-1.87	3.22	0.000517	1.94	239.08	96.12	0.21
Lateral Canal	South	10900	2-Year	143.19	-4.86	-0.59	-3.48	-0.56	0.000247	1.49	96.26	31.08	0.15
Lateral Canal	South	10900	5-Year	220.03	-4.86	0.19	-3.06	0.24	0.000306	1.81	121.65	34.19	0.17
Lateral Canal	South	10900	10-Year	275.33	-4.86	0.82	-2.8	0.88	0.000301	1.91	144.09	36.73	0.17
Lateral Canal	South	10900	25-Year	348.77	-4.86	1.62	-2.48	1.68	0.000285	2	174.78	39.93	0.17
Lateral Canal	South	10900	50-Year	406.85	-4.86	2.37	-2.26	2.43	0.000345	1.91	213.48	66.45	0.18

HEC-RAS Output - Alternative 4

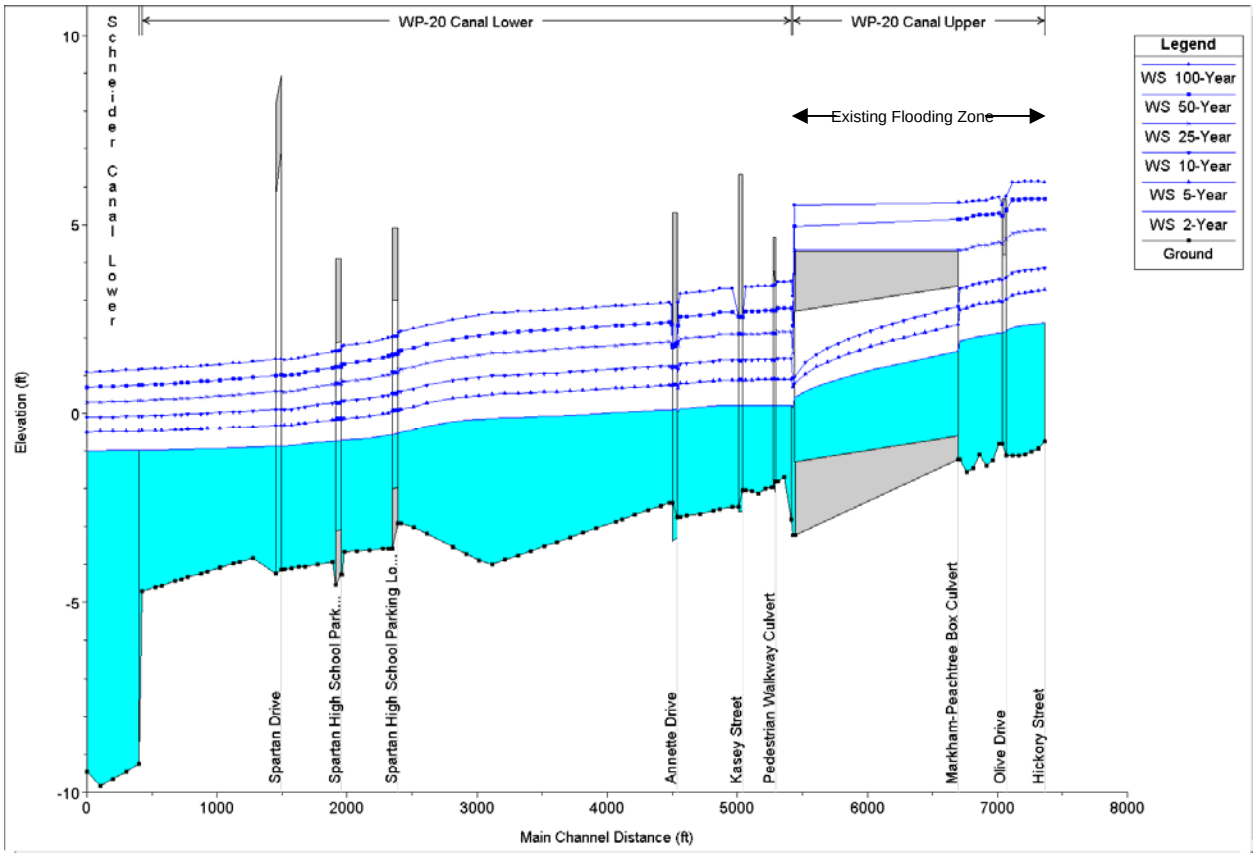
River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Lateral Canal	South	10900	100-Year	462.68	-4.86	3.14	-2.05	3.19	0.000235	1.77	269.9	108.29	0.15
Lateral Canal	South	10800	2-Year	143.19	-5.04	-0.61	-3.66	-0.58	0.000215	1.41	101.26	31.72	0.14
Lateral Canal	South	10800	5-Year	220.03	-5.04	0.16	-3.24	0.21	0.000272	1.73	126.97	34.81	0.16
Lateral Canal	South	10800	10-Year	275.33	-5.04	0.8	-2.98	0.85	0.00027	1.84	149.81	37.34	0.16
Lateral Canal	South	10800	25-Year	348.77	-5.04	1.6	-2.66	1.66	0.000259	1.93	181.05	40.55	0.16
Lateral Canal	South	10800	50-Year	406.85	-5.04	2.34	-2.44	2.4	0.000228	1.91	212.46	43.54	0.15
Lateral Canal	South	10800	100-Year	462.68	-5.04	3.11	-2.23	3.17	0.000191	1.88	246.76	71.05	0.14
Lateral Canal	South	10670	2-Year	143.19	-5.49	-0.7	-2.81	-0.63	0.000584	2.22	64.56	28.72	0.23
Lateral Canal	South	10670	5-Year	220.03	-5.49	0.04	-2.3	0.15	0.000653	2.72	80.81	32.16	0.25
Lateral Canal	South	10670	10-Year	275.33	-5.49	0.66	-2.03	0.79	0.000606	2.91	94.51	35.22	0.25
Lateral Canal	South	10670	25-Year	348.77	-5.49	1.45	-1.7	1.6	0.000554	3.12	111.89	39.11	0.24
Lateral Canal	South	10670	50-Year	406.85	-5.49	2.19	-1.46	2.35	0.000478	3.17	128.31	42.78	0.23
Lateral Canal	South	10670	100-Year	462.68	-5.49	2.96	-1.24	3.12	0.000409	3.19	145.2	58.98	0.22
Lateral Canal	South	10633		Spartan Drive									
Lateral Canal	South	10596	2-Year	143.19	-5.09	-0.81	-3.21	-0.75	0.000308	1.86	76.84	33.94	0.18
Lateral Canal	South	10596	5-Year	220.03	-5.09	-0.2	-2.84	-0.11	0.000428	2.44	90.12	35.07	0.21
Lateral Canal	South	10596	10-Year	275.33	-5.09	0.25	-2.6	0.36	0.000473	2.75	100.02	35.91	0.23
Lateral Canal	South	10596	25-Year	348.77	-5.09	0.73	-2.32	0.88	0.000543	3.15	110.57	40.52	0.25
Lateral Canal	South	10596	50-Year	406.85	-5.09	1.16	-2.1	1.34	0.00056	3.39	120.16	48.54	0.26
Lateral Canal	South	10596	100-Year	462.68	-5.09	1.58	-1.91	1.78	0.000566	3.58	129.4	57	0.26
Lateral Canal	South	10500	2-Year	143.19	-5.18	-0.81	-3.35	-0.78	0.000208	1.36	105.4	34.29	0.14
Lateral Canal	South	10500	5-Year	220.03	-5.18	-0.2	-3.02	-0.16	0.000283	1.74	126.63	35.42	0.16
Lateral Canal	South	10500	10-Year	275.33	-5.18	0.25	-2.81	0.31	0.000308	1.93	143	36.27	0.17
Lateral Canal	South	10500	25-Year	348.77	-5.18	0.74	-2.57	0.82	0.000352	2.17	161.01	37.56	0.18
Lateral Canal	South	10500	50-Year	406.85	-5.18	1.19	-2.38	1.27	0.000396	2.28	178.61	42.49	0.2
Lateral Canal	South	10500	100-Year	462.68	-5.18	1.62	-2.22	1.7	0.000424	2.34	198.09	48.19	0.2
Lateral Canal	South	10400	2-Year	143.19	-5.27	-0.83	-3.52	-0.8	0.000175	1.28	111.71	34.63	0.13
Lateral Canal	South	10400	5-Year	220.03	-5.27	-0.23	-3.21	-0.18	0.000245	1.66	132.91	35.76	0.15
Lateral Canal	South	10400	10-Year	275.33	-5.27	0.23	-3.01	0.28	0.000292	1.84	149.66	39.28	0.17
Lateral Canal	South	10400	25-Year	348.77	-5.27	0.71	-2.76	0.78	0.000369	2.05	170.28	45.7	0.19
Lateral Canal	South	10400	50-Year	406.85	-5.27	1.15	-2.58	1.22	0.000394	2.12	191.79	51.56	0.19
Lateral Canal	South	10400	100-Year	462.68	-5.27	1.58	-2.41	1.65	0.000417	2.15	215.27	59.68	0.2
Lateral Canal	South	10300	2-Year	143.19	-5.36	-0.84	-3.7	-0.82	0.000149	1.21	117.94	34.97	0.12
Lateral Canal	South	10300	5-Year	220.03	-5.36	-0.25	-3.39	-0.21	0.000249	1.56	140.85	42.43	0.15
Lateral Canal	South	10300	10-Year	275.33	-5.36	0.2	-3.19	0.25	0.000293	1.71	161.34	48.44	0.16
Lateral Canal	South	10300	25-Year	348.77	-5.36	0.68	-2.94	0.74	0.000354	1.87	186.29	56.43	0.18
Lateral Canal	South	10300	50-Year	406.85	-5.36	1.13	-2.77	1.18	0.000374	1.91	213.53	66.18	0.19
Lateral Canal	South	10300	100-Year	462.68	-5.36	1.56	-2.6	1.61	0.000349	1.9	243.31	72.25	0.18
Lateral Canal	South	10200	2-Year	143.19	-5.45	-0.86	-3.88	-0.84	0.000152	1.13	127.21	43.86	0.12
Lateral Canal	South	10200	5-Year	220.03	-5.45	-0.27	-3.56	-0.24	0.000233	1.42	155.4	52.53	0.15
Lateral Canal	South	10200	10-Year	275.33	-5.45	0.18	-3.37	0.22	0.000269	1.52	181	61.57	0.16
Lateral Canal	South	10200	25-Year	348.77	-5.45	0.66	-3.12	0.7	0.000291	1.64	212.41	79.34	0.16
Lateral Canal	South	10200	50-Year	406.85	-5.45	1.1	-2.94	1.15	0.000273	1.67	245.72	98.37	0.16
Lateral Canal	South	10200	100-Year	462.68	-5.45	1.54	-2.78	1.58	0.000236	1.66	290.88	157.36	0.15
Lateral Canal	South	10100	2-Year	143.19	-5.55	-0.87	-4.05	-0.85	0.000134	0.99	144.16	55.41	0.11
Lateral Canal	South	10100	5-Year	220.03	-5.55	-0.28	-3.73	-0.26	0.000189	1.22	179.66	65.72	0.13
Lateral Canal	South	10100	10-Year	275.33	-5.55	0.16	-3.54	0.19	0.000189	1.31	210.02	69.77	0.13
Lateral Canal	South	10100	25-Year	348.77	-5.55	0.64	-3.3	0.68	0.000197	1.43	244.58	75.7	0.14
Lateral Canal	South	10100	50-Year	406.85	-5.55	1.09	-3.12	1.12	0.000179	1.47	279.7	92.77	0.13
Lateral Canal	South	10100	100-Year	462.68	-5.55	1.52	-2.96	1.56	0.000159	1.49	319.16	148.17	0.13
Lateral Canal	South	10050	2-Year	143.19	-5.59	-0.87	-4.12	-0.86	0.000118	0.92	156.1	61.68	0.1
Lateral Canal	South	10050	5-Year	220.03	-5.59	-0.29	-3.82	-0.27	0.000156	1.13	194.62	69.53	0.12
Lateral Canal	South	10050	10-Year	275.33	-5.59	0.16	-3.62	0.18	0.00016	1.21	226.91	84.25	0.12
Lateral Canal	South	10050	25-Year	348.77	-5.59	0.64	-3.38	0.66	0.000169	1.32	263.82	99.73	0.13
Lateral Canal	South	10050	50-Year	406.85	-5.59	1.08	-3.21	1.11	0.000149	1.33	319.76	117.36	0.12

HEC-RAS Output - Alternative 4

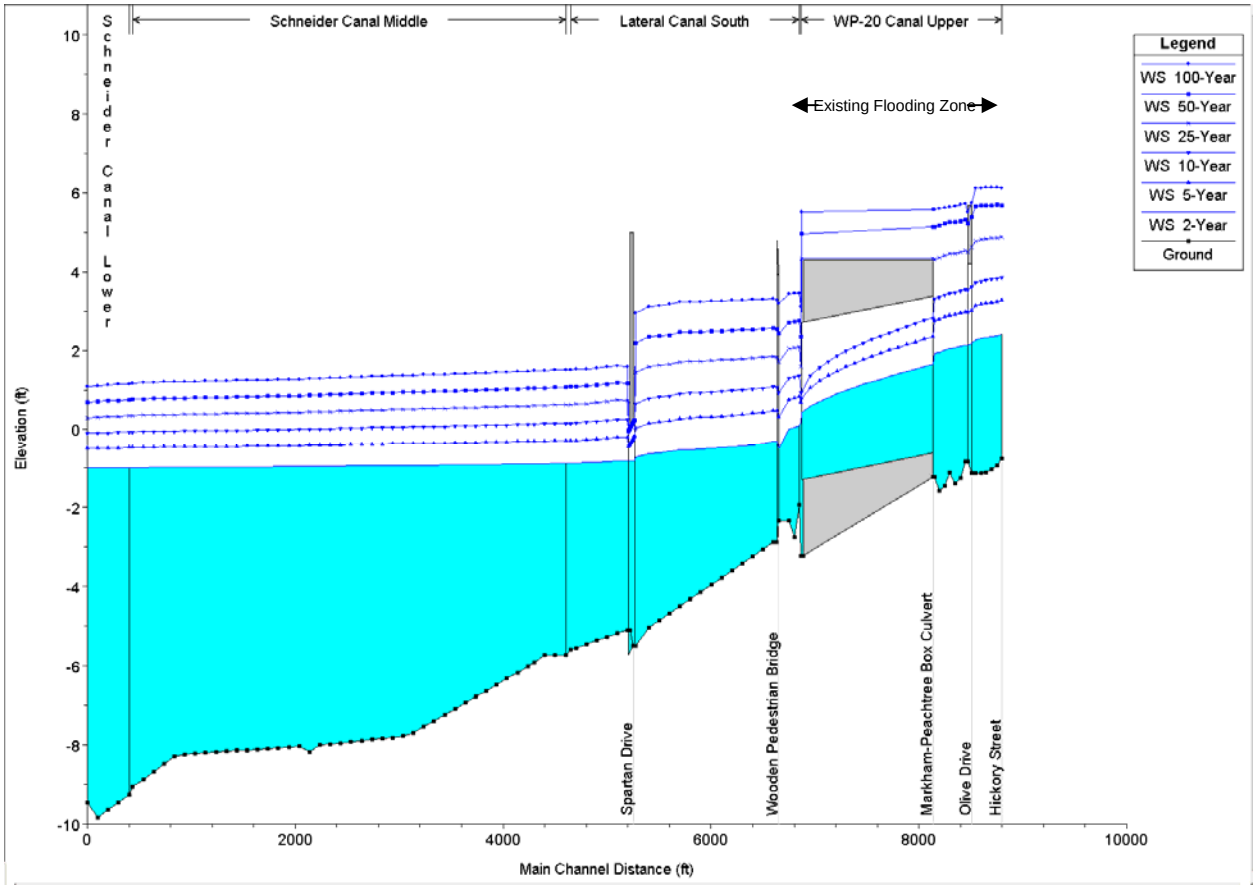
River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Lateral Canal	South	10050	100-Year	462.68	-5.59	1.52	-3.05	1.55	0.000131	1.33	376.73	136.89	0.12

APPENDIX I

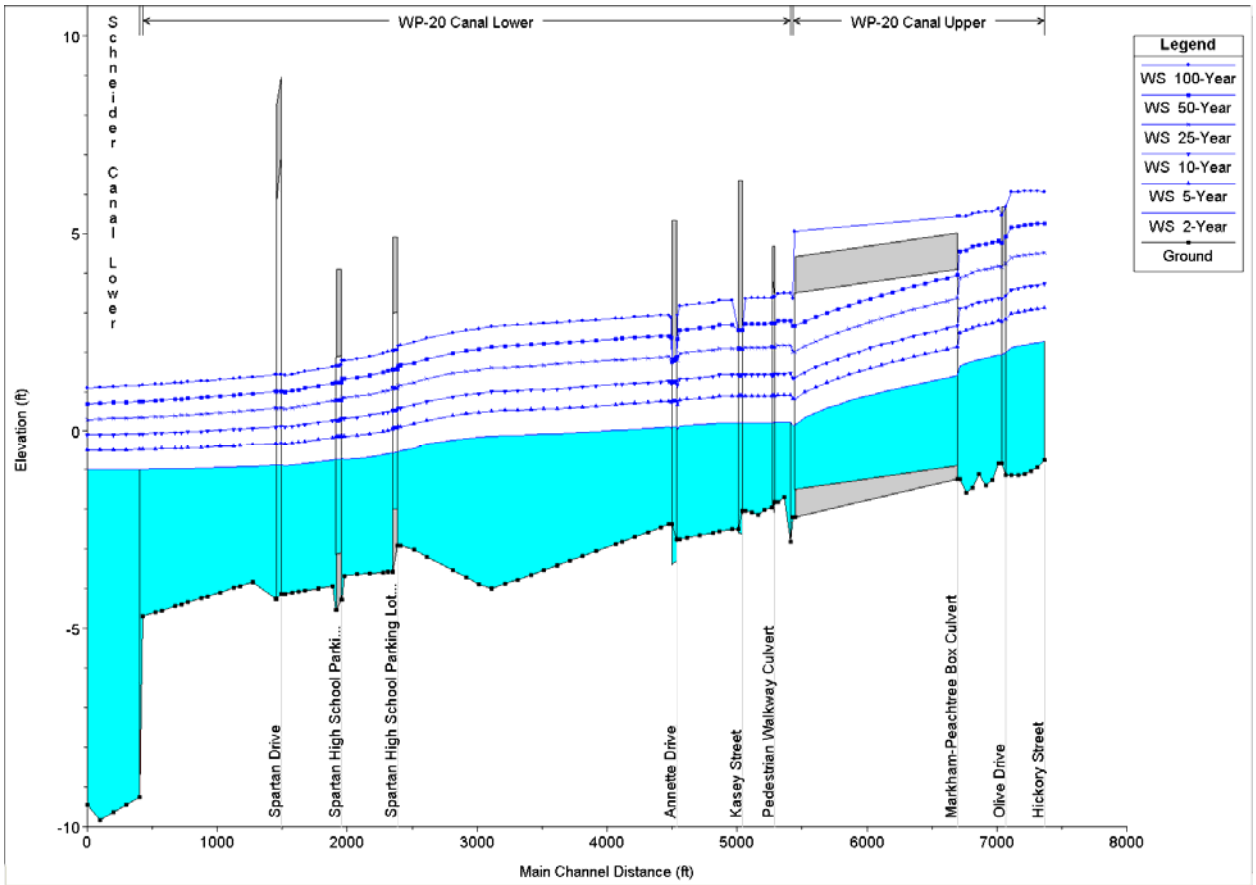
HEC-RAS WATER SURFACE PROFILES



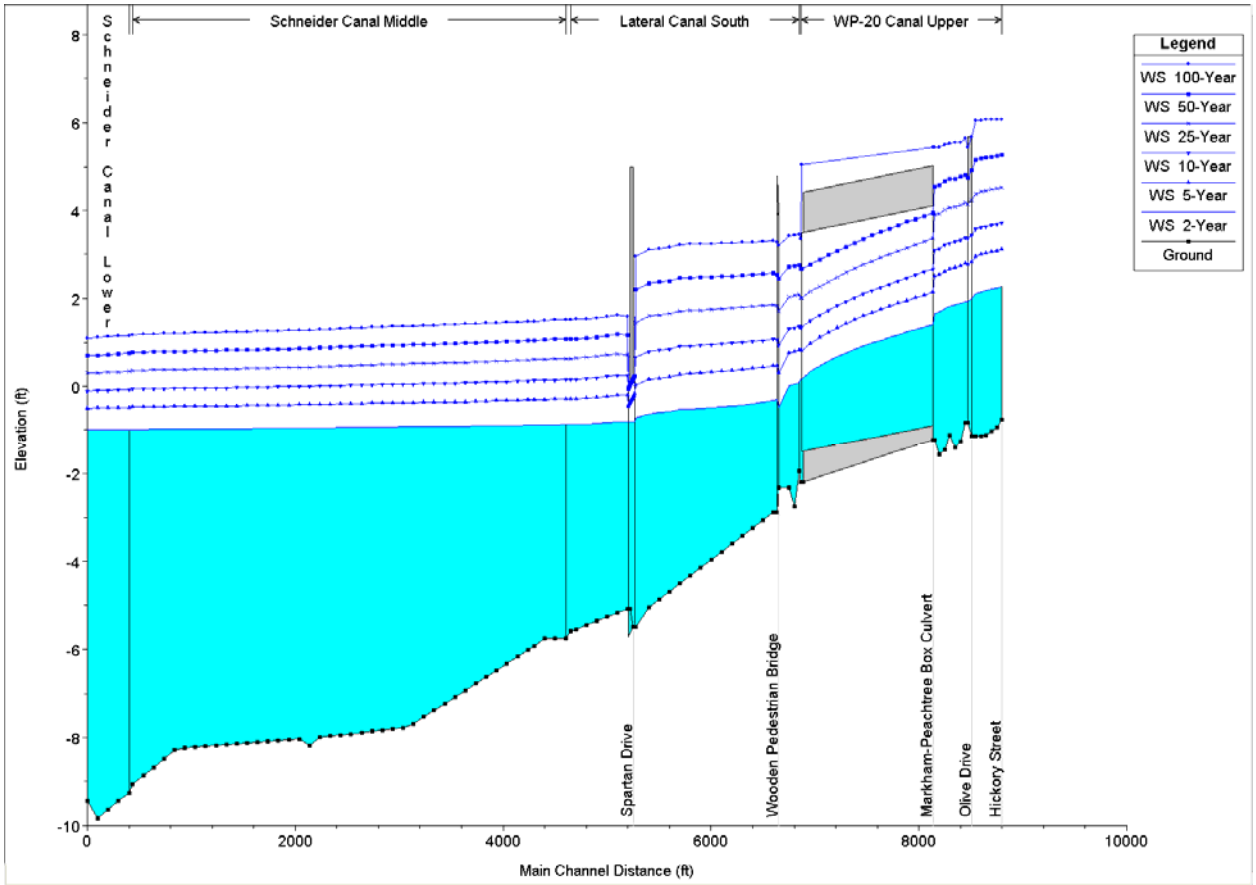
HICKORY STREET TO SCHNEIDER PUMP STATION THROUGH WP-20



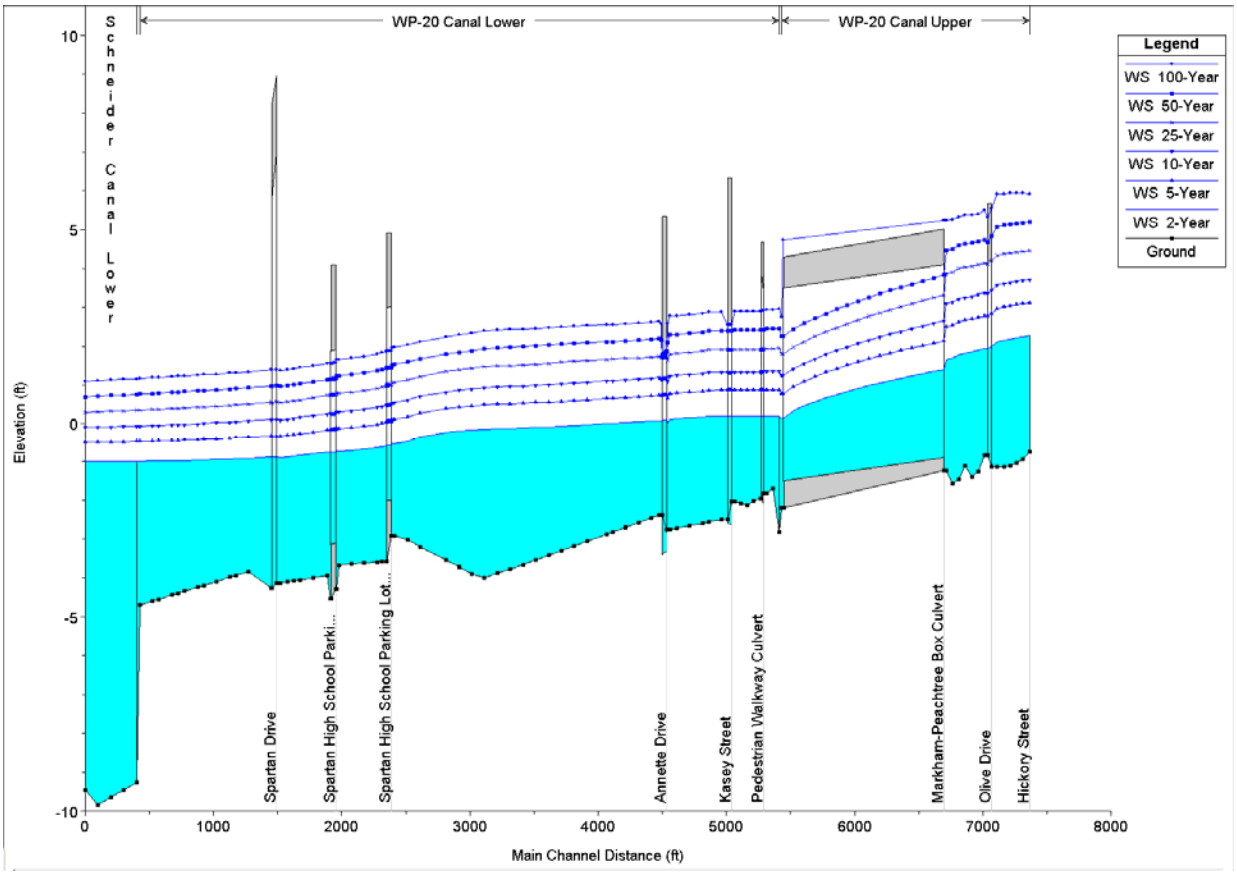
HICKORY STREET TO SCHNEIDER PUMP STATION THROUGH SOUTHSIDE LATERAL



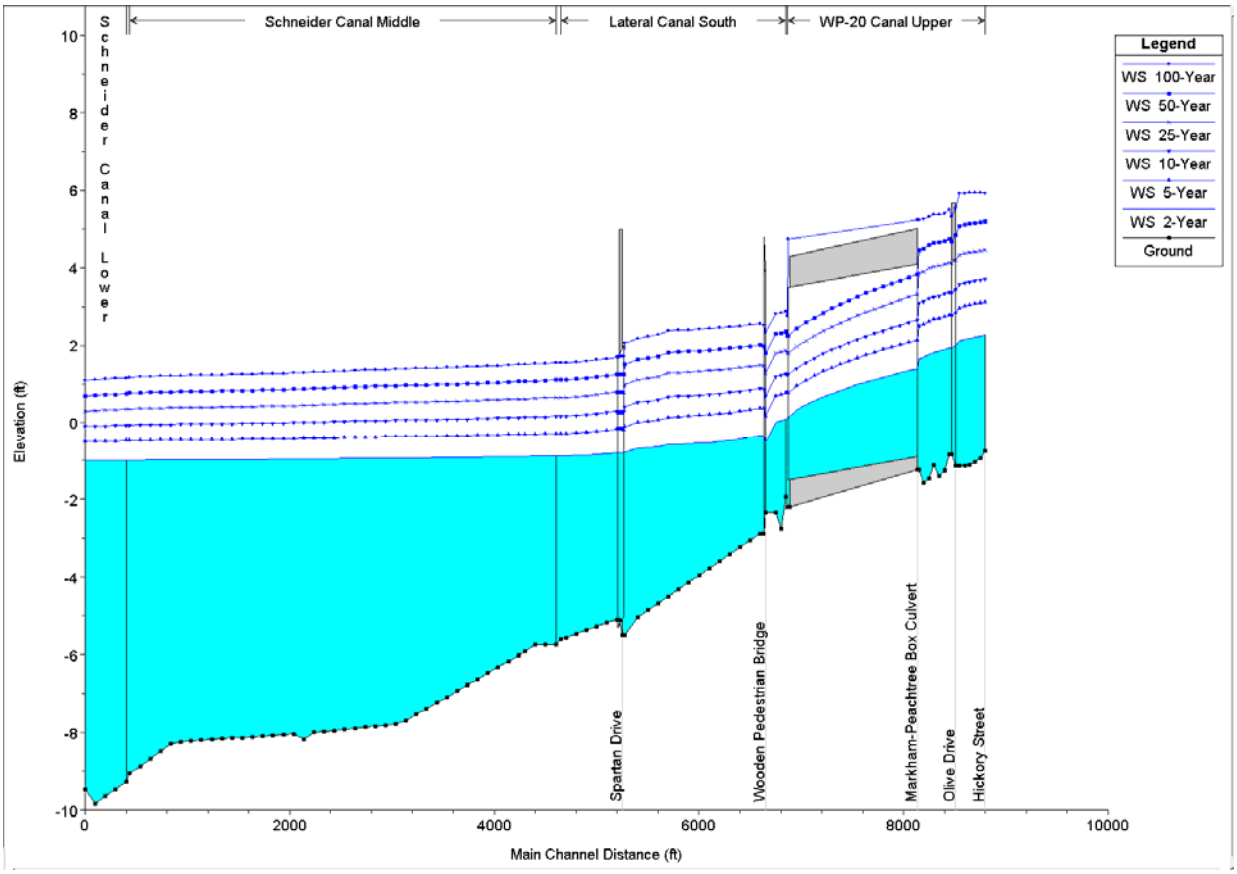
HICKORY STREET TO SCHNEIDER PUMP STATION THROUGH WP-20



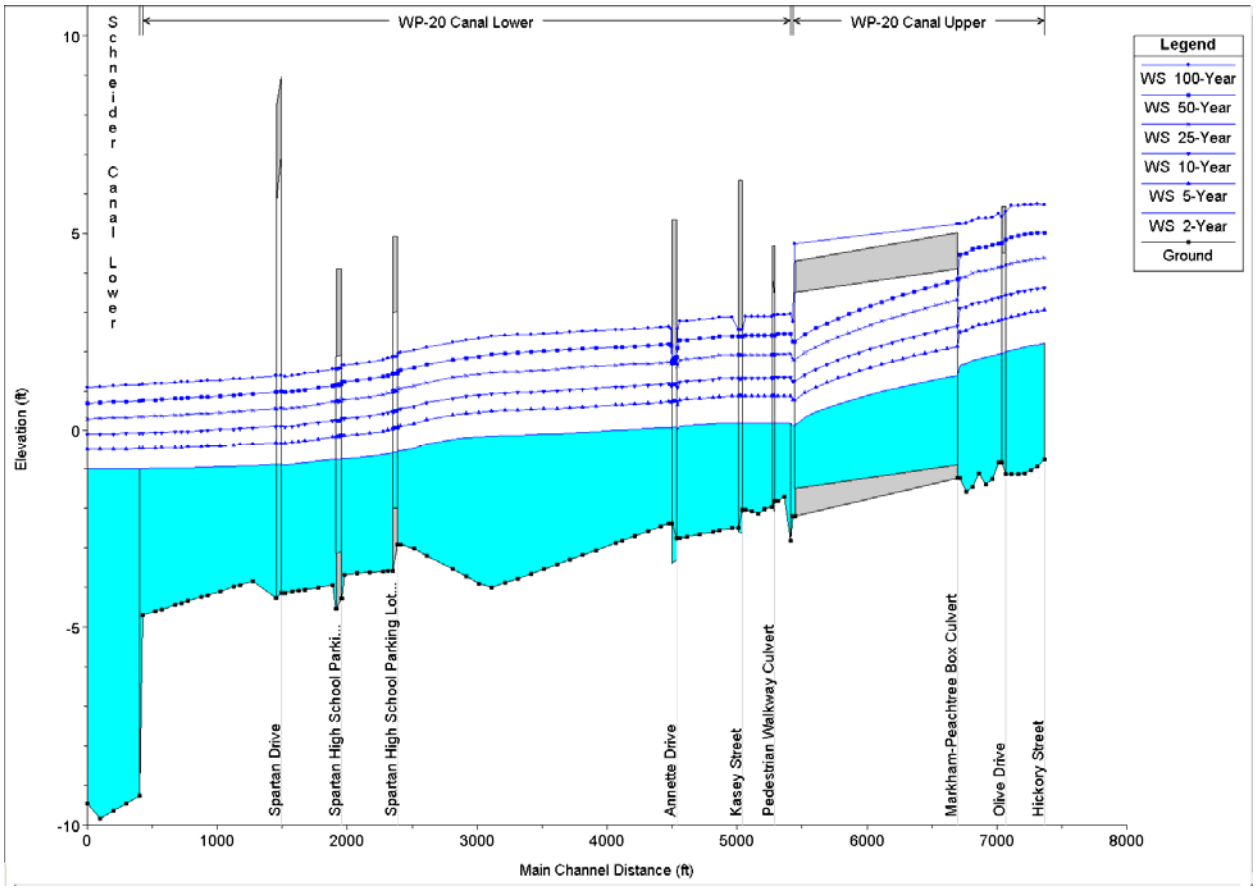
HICKORY STREET TO SCHNEIDER PUMP STATION THROUGH SOUTHSIDE LATERAL



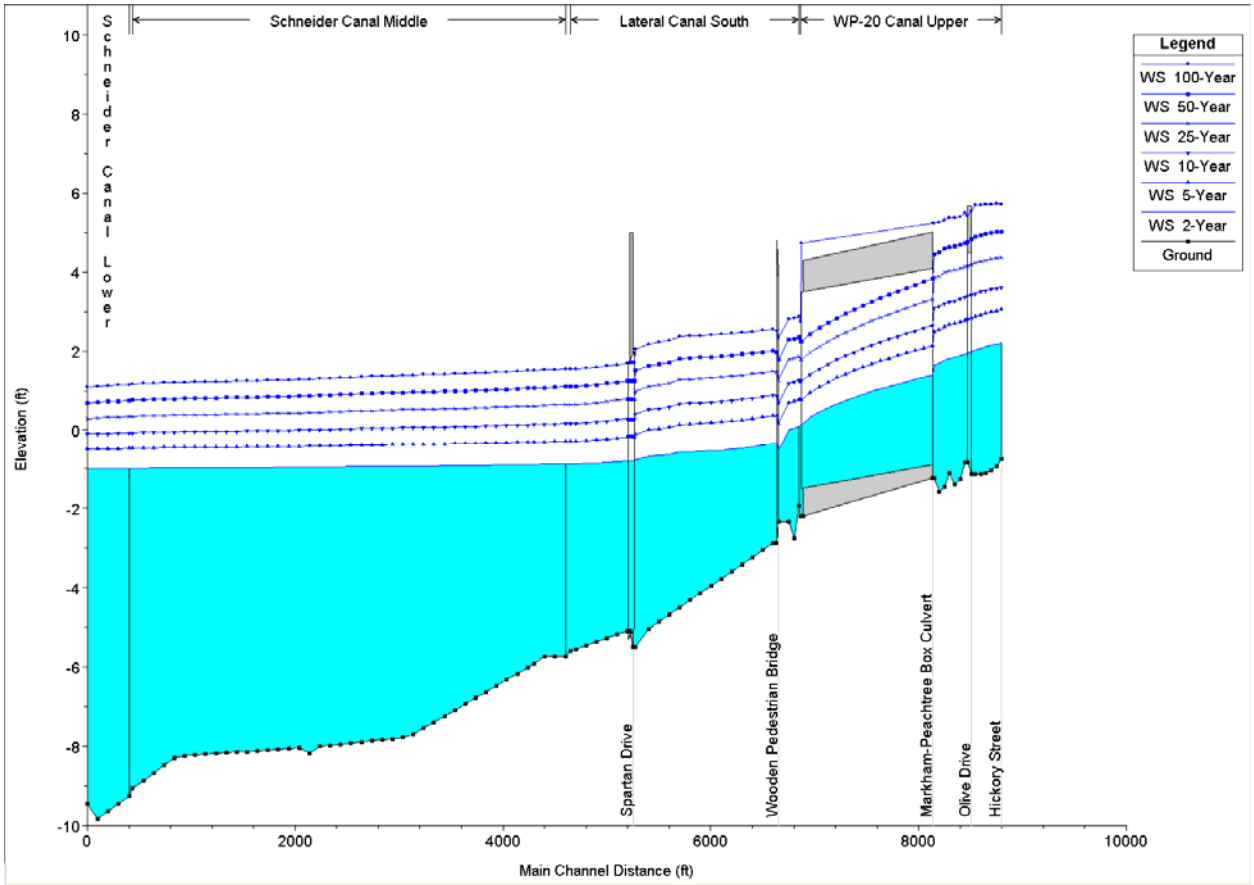
HICKORY STREET TO SCHNEIDER PUMP STATION THROUGH WP-20



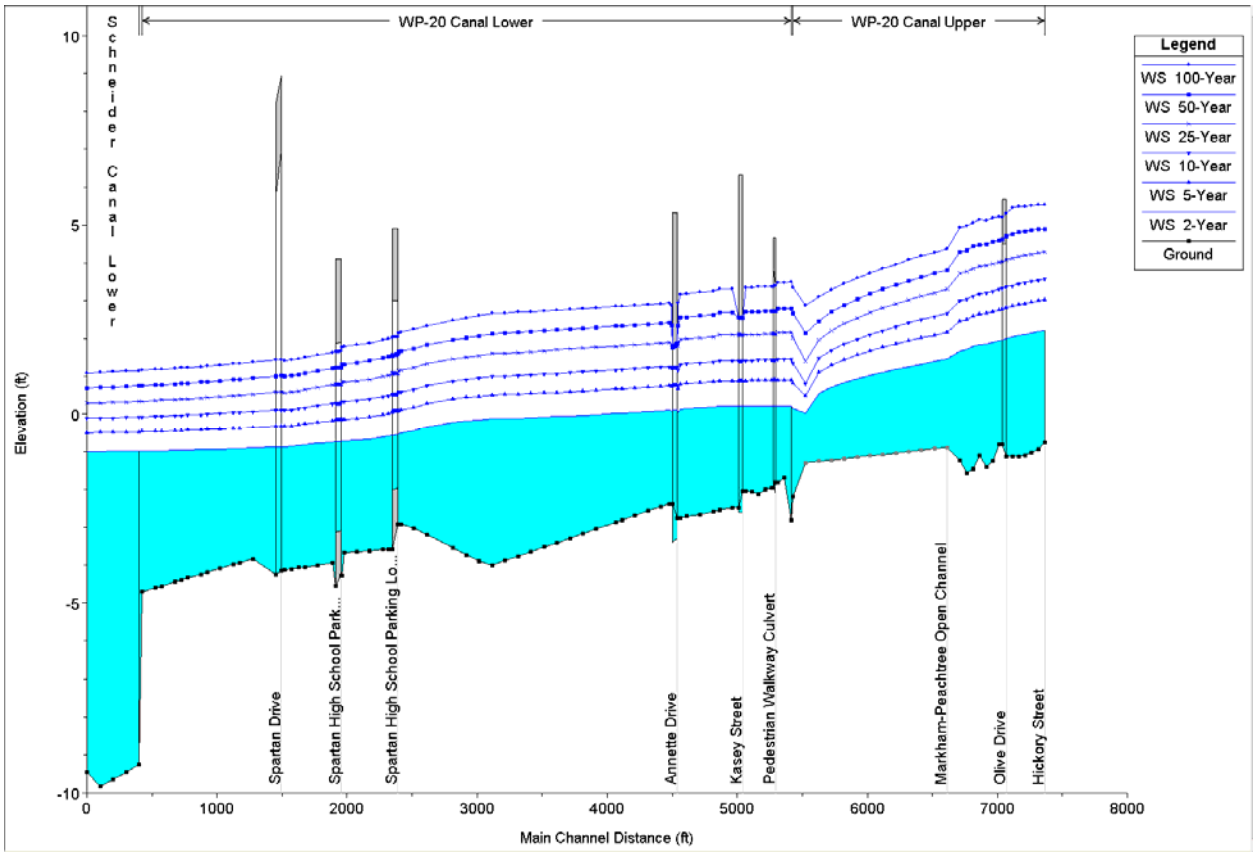
HICKORY STREET TO SCHNEIDER PUMP STATION THROUGH SOUTHSIDE LATERAL



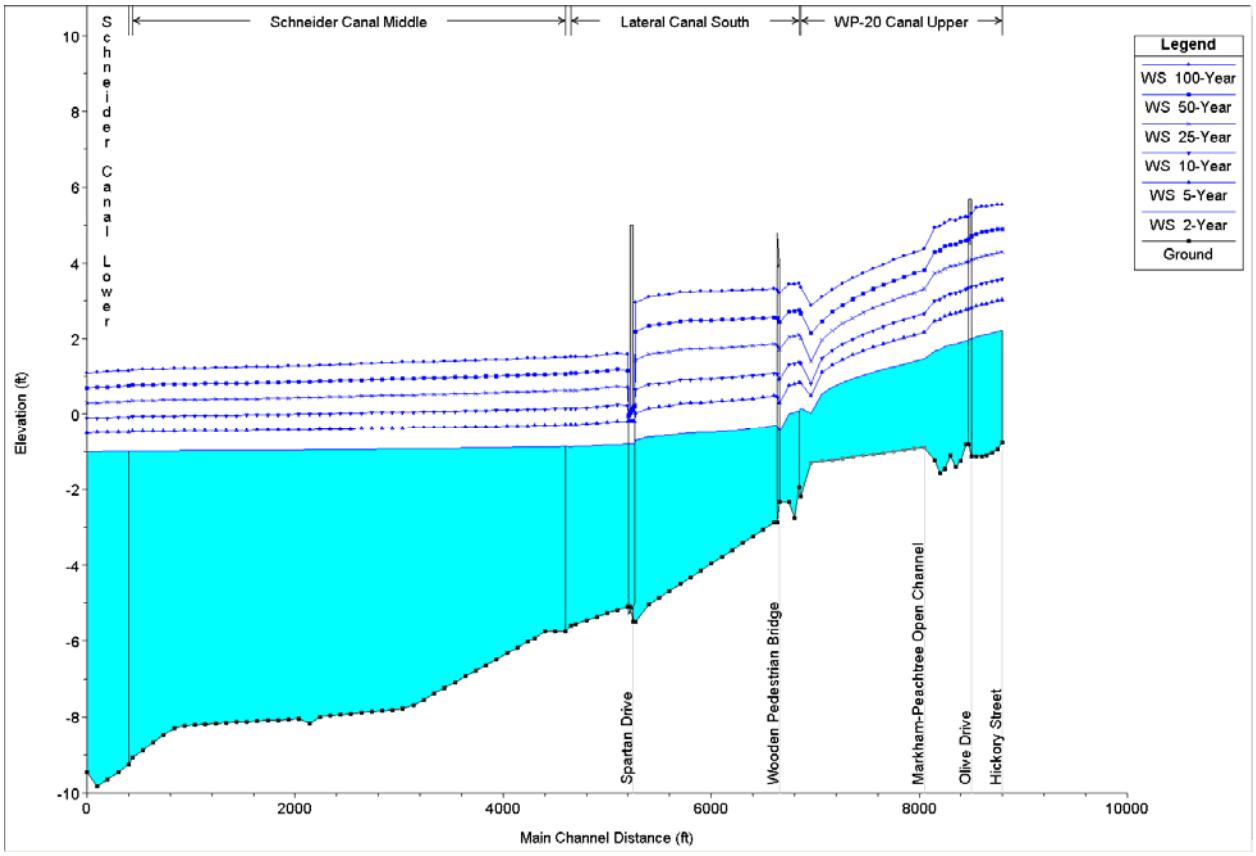
HICKORY STREET TO SCHNEIDER PUMP STATION THROUGH WP-20



HICKORY STREET TO SCHNEIDER PUMP STATION THROUGH SOUTHSIDE LATERAL



HICKORY STREET TO SCHNEIDER PUMP STATION THROUGH WP-20



HICKORY STREET TO SCHNEIDER PUMP STATION THROUGH SOUTHSIDE LATERAL

APPENDIX J

CONCEPTUAL COST ESTIMATE

VOLKERT

ALTERNATIVE 1

COST & QUANTITY ESTIMATE -- GENERAL

Item No.	Item Description	Unit	Estimated Unit Price	Estimated Quantity	Estimated Cost
	Surveying (Boundary/Topo) - Initial	LS	$ 12,280.00	1	$ 12,280.00
	Geotechnical Invesitation - Initial	LS	$ 7,250.00	1	$ 7,250.00
	Utility Coordination & Relocation	LS	$ 90,000.00	1	$ 90,000.00
	ROW Acquisition - Drainage Servitude / Temp. Easements	LS	$ 50,000.00	1	$ 50,000.00
	Engineering Design (8.57% - Facility Planning and Control Fee Sched. 2011)	LS	$ 221,615.00	1	$ 221,615.00
	Construction Phase Services (Volkert CEI and Geotechnical CEI)	LS	$ 258,594.00	1	$ 258,594.00
				TOTAL ESTIMATED COST	**$ 639,739.00**

COST & QUANTITY ESITIMATE -- CLOSED-TOP BOX CULVERT (OPTION A)

Item No.	Item Description	Unit	Estimated Unit Price	Estimated Quantity	Estimated Cost
727-01-00100	Mobilization	LS	$ 223,267.00	1	$ 223,267.00
201-01-00200	Clearing and Grubbing (Selective)	LS	$ 52,000.00	1	$ 52,000.00
202-01-00100	Removal of Structures and Obstructions	LS	$ 58,500.00	1	$ 58,500.00
202-02-06020	Removal of Concrete Box Culverts	LF	$ 98.00	1270	$ 124,460.00
202-02-12000	Removal of Fence	LF	$ 7.00	2000	$ 14,000.00
202-02-26000	Removal of Manholes	EA	$ 2,275.00	10	$ 22,750.00
202-02-32120	Removal of Pipe (Storm Drain) (30" RCP, 24" RCP)	LF	$ 46.00	40	$ 1,840.00
203-01-00100	General Excavation	CY	$ 13.00	7500	$ 97,500.00
203-02-00100	Drainage Excavation	CY	$ 18.00	500	$ 9,000.00
203-04-00200	Nonplastic Embankment (Sand)	CY	$ 27.00	3525	$ 95,175.00
203-07-00200	Borrow (Vehicular Measurement) (Selected Soils)	CY	$ 25.00	1400	$ 35,000.00
203-08-00100	Geotextile Fabric	SY	$ 2.00	6000	$ 12,000.00
204-02-00100	Temporary Hay or Straw Bales	EA	$ 16.00	50	$ 800.00
204-05-00200	Temporary Sediment Check Dams (Stone)	EA	$ 780.00	5	$ 3,900.00
204-06-00100	Temporary Silt Fencing	LF	$ 3.00	500	$ 1,500.00
204-07-00100	Temporary Stone Construction Entrance	EA	$ 13,000.00	3	$ 39,000.00
402-01-00100	Traffic Maintenance Aggregate (Vehicular Measurement)	CY	$ 98.00	300	$ 29,400.00
701-04-02060	Storm Drain Pipe Arch (30" Equiv. RCPA)	LF	$ 111.00	35	$ 3,885.00
701-04-01040	Storm Drain Pipe Arch (24" Equiv. RCPA)	LF	$ 85.00	100	$ 8,500.00
705-09-00100	Rebuilt Residential Fence (type and size varies)	LF	$ 70.00	2000	$ 140,000.00
714-01-00600	Slab Sodding (St. Augustine)	SY	$ 10.00	3000	$ 30,000.00
715-01-00100	Topsoil	CY	$ 22.00	1000	$ 22,000.00
726-01-00100	Bedding Material	CY	$ 124.00	750	$ 93,000.00
739-01-00100	Hydro-Seeding	ACRE	$ 1,950.00	3	$ 5,850.00
740-01-00100	Construction Layout	LS	$ 20,000.00	1	$ 20,000.00
803-05-00100	Temporary Sheeting	LS	$ 292,500.00	1	$ 292,500.00
805-01-00200	Class A Concrete (Pipe Headwalls)	CY	$ 748.00	10	$ 7,480.00
805-01-00300	Class A Concrete (Box Culvert Headwalls)	CY	$ 1,105.00	30	$ 33,150.00
805-12-21100	Reinforced Concrete Box Culverts (10'x5')(Precast)	CY	$ 748.00	1260	$ 942,480.00
806-01-00100	Deformed Reinforcing Steel	LB	$ 1.50	6000	$ 9,000.00
NS-201-00001	Tree and Stump Removal (36" max diameter)	EA	$ 500.00	6	$ 3,000.00
S-001	Residential Home Inspections (Pre/Post Construction)	EA	$ 1,000.00	25	$ 25,000.00
S-002	De-watering & Temporary Pumping	LS	$ 130,000.00	1	$ 130,000.00
				TOTAL ESTIMATED COST	**$ 2,585,937.00**

TOTAL ESTIMATED PROJECT COST: $ 3,225,676.00

VOLKERT

ALTERNATIVE 2

COST & QUANTITY ESTIMATE -- GENERAL

Item No.	Item Description	Unit	Estimated Unit Price	Estimated Quantity	Estimated Cost
	Surveying (Boundary/Topo) - Initial	LS	$ 12,280.00	1	$ 12,280.00
	Geotechnical Invesitation - Initial	LS	$ 7,250.00	1	$ 7,250.00
	Utility Coordination & Relocation	LS	$ 90,000.00	1	$ 90,000.00
	ROW Acquisition - Drainage Servitude / Temp. Easements	LS	$ 50,000.00	1	$ 50,000.00
	Engineering Design (8.57% - Facility Planning and Control Fee Sched. 2011)	LS	$ 248,682.00	1	$ 248,682.00
	Construction Phase Services (Volkert CEI and Geotechnical CEI)	LS	$ 290,178.00	1	$ 290,178.00
				TOTAL ESTIMATED COST	**$ 698,390.00**

COST & QUANTITY ESTIMATE -- SPARTAN DRIVE CULVERT REPLACEMENT (OPTION B)

Item No.	Item Description	Unit	Estimated Unit Price	Estimated Quantity	Estimated Cost
727-01-00100	Mobilization	LS	$ 28,713.00	1	$ 28,713.00
202-02-06140	Removal of Curbs (Concrete)	LF	$ 15.00	120	$ 1,800.00
202-02-12000	Removal of Fence	LF	$ 7.00	240	$ 1,680.00
202-02-32100	Removal of Pipe (Cross Drain) (87" x 63" RCP)	LF	$ 75.00	128	$ 9,600.00
203-01-00100	General Excavation	CY	$ 13.00	150	$ 1,950.00
203-02-00100	Drainage Excavation	CY	$ 18.00	60	$ 1,080.00
203-04-00200	Nonplastic Embankment (Sand)	CY	$ 27.00	300	$ 8,100.00
203-08-00100	Geotextile Fabric	SY	$ 2.00	900	$ 1,800.00
204-02-00100	Temporary Hay or Straw Bales	EA	$ 16.00	30	$ 480.00
204-05-00200	Temporary Sediment Check Dams (Stone)	EA	$ 780.00	1	$ 780.00
204-06-00100	Temporary Silt Fencing	LF	$ 3.00	400	$ 1,200.00
204-07-00100	Temporary Stone Construction Entrance	EA	$ 13,000.00	1	$ 13,000.00
302-02-02020	Class II Base Course (6" Thick) (Soil Cement)	SY	$ 25.00	235	$ 5,875.00
601-01-00300	Portland Cement Concrete Pavement (9" Thick)	SY	$ 115.00	215	$ 24,725.00
705-09-00100	Rebuilt Residential Fence (type and size varies)	LF	$ 62.00	240	$ 14,880.00
707-01-00100	Concrete Curb	LF	$ 60.00	160	$ 9,600.00
713-01-00100	Temporary Signs & Barricades	LS	$ 5,000.00	1	$ 5,000.00
726-01-00100	Bedding Material	CY	$ 124.00	250	$ 31,000.00
739-01-00100	Hydro-Seeding	ACRE	$ 1,950.00	0.5	$ 975.00
805-12-04060	Reinforced Concrete Box Culverts (10' x 7') (Precast)	LF	$ 1,200.00	128	$ 153,600.00
				TOTAL ESTIMATED COST	**$ 315,838.00**

COST & QUANTITY ESITIMATE -- CLOSED-TOP BOX CULVERT (OPTION A)

Item No.	Item Description	Unit	Estimated Unit Price	Estimated Quantity	Estimated Cost
727-01-00100	Mobilization	LS	$ 223,267.00	1	$ 223,267.00
201-01-00200	Clearing and Grubbing (Selective)	LS	$ 52,000.00	1	$ 52,000.00
202-01-00100	Removal of Structures and Obstructions	LS	$ 58,500.00	1	$ 58,500.00
202-02-06020	Removal of Concrete Box Culverts	LF	$ 98.00	1270	$ 124,460.00
202-02-12000	Removal of Fence	LF	$ 7.00	2000	$ 14,000.00
202-02-26000	Removal of Manholes	EA	$ 2,275.00	10	$ 22,750.00
202-02-32120	Removal of Pipe (Storm Drain) (30" RCP, 24" RCP)	LF	$ 46.00	40	$ 1,840.00
203-01-00100	General Excavation	CY	$ 13.00	7500	$ 97,500.00
203-02-00100	Drainage Excavation	CY	$ 18.00	500	$ 9,000.00
203-04-00200	Nonplastic Embankment (Sand)	CY	$ 27.00	3525	$ 95,175.00
203-07-00200	Borrow (Vehicular Measurement) (Selected Soils)	CY	$ 25.00	1400	$ 35,000.00
203-08-00100	Geotextile Fabric	SY	$ 2.00	6000	$ 12,000.00
204-02-00100	Temporary Hay or Straw Bales	EA	$ 16.00	50	$ 800.00
204-05-00200	Temporary Sediment Check Dams (Stone)	EA	$ 780.00	5	$ 3,900.00
204-06-00100	Temporary Silt Fencing	LF	$ 3.00	500	$ 1,500.00
204-07-00100	Temporary Stone Construction Entrance	EA	$ 13,000.00	3	$ 39,000.00
402-01-00100	Traffic Maintenance Aggregate (Vehicular Measurement)	CY	$ 98.00	300	$ 29,400.00
701-04-02060	Storm Drain Pipe Arch (30" Equiv. RCPA)	LF	$ 111.00	35	$ 3,885.00
701-04-01040	Storm Drain Pipe Arch (24" Equiv. RCPA)	LF	$ 85.00	100	$ 8,500.00
705-09-00100	Rebuilt Residential Fence (type and size varies)	LF	$ 70.00	2000	$ 140,000.00
714-01-00600	Slab Sodding (St. Augustine)	SY	$ 10.00	3000	$ 30,000.00
715-01-00100	Topsoil	CY	$ 22.00	1000	$ 22,000.00
726-01-00100	Bedding Material	CY	$ 124.00	750	$ 93,000.00
739-01-00100	Hydro-Seeding	ACRE	$ 1,950.00	3	$ 5,850.00
740-01-00100	Construction Layout	LS	$ 20,000.00	1	$ 20,000.00
803-05-00100	Temporary Sheeting	LS	$ 292,500.00	1	$ 292,500.00
805-01-00200	Class A Concrete (Pipe Headwalls)	CY	$ 748.00	10	$ 7,480.00
805-01-00300	Class A Concrete (Box Culvert Headwalls)	CY	$ 1,105.00	30	$ 33,150.00
805-12-21100	Reinforced Concrete Box Culverts (10'x5')(Precast)	CY	$ 748.00	1260	$ 942,480.00
806-01-00100	Deformed Reinforcing Steel	LB	$ 1.50	6000	$ 9,000.00
NS-201-00001	Tree and Stump Removal (36" max diameter)	EA	$ 500.00	6	$ 3,000.00
S-001	Residential Home Inspections (Pre/Post Construction)	EA	$ 1,000.00	25	$ 25,000.00
S-002	De-watering & Temporary Pumping	LS	$ 130,000.00	1	$ 130,000.00
				TOTAL ESTIMATED COST	**$ 2,585,937.00**

TOTAL ESTIMATED PROJECT COST: $ 3,600,165.00

VOLKERT

ALTERNATIVE 3

COST & QUANTITY ESTIMATE -- GENERAL

Item No.	Item Description	Unit	Estimated Unit Price	Estimated Quantity	Estimated Cost
	Surveying (Boundary/Topo) - Initial	LS	$ 12,280.00	1	$ 12,280.00
	Geotechnical Invesitation - Initial	LS	$ 7,250.00	1	$ 7,250.00
	Utility Coordination & Relocation	LS	$ 90,000.00	1	$ 90,000.00
	ROW Acquisition - Drainage Servitude / Temp. Easements	LS	$ 50,000.00	1	$ 50,000.00
	Engineering Design (8.57% - Facility Planning and Control Fee Sched. 2011)	LS	$ 274,211.00	1	$ 274,211.00
	Construction Phase Services (Volkert CEI and Geotechnical CEI)	LS	$ 319,966.00	1	$ 319,966.00
				TOTAL ESTIMATED COST	**$ 753,707.00**

COST & QUANTITY ESTIMATE -- OLIVE DRIVE BRIDGE REPLACEMENT (OPTION C)

Item No.	Item Description	Unit	Estimated Unit Price	Estimated Quantity	Estimated Cost
727-01-00100	Mobilization	LS	$ 27,080.00	1	$ 27,080.00
202-02-04000	Removal of Bridge	LS	$ 22,500.00	1	$ 22,500.00
203-01-00100	General Excavation	CY	$ 13.00	200	$ 2,600.00
204-02-00100	Temporary Hay or Straw Bales	EA	$ 15.60	20	$ 312.00
204-05-00200	Temporary Sediment Check Dam	EA	$ 780.00	1	$ 780.00
204-06-00100	Temporary Silt Fencing	LA	$ 2.93	200	$ 586.00
204-07-00100	Temporary Stone Construction Entrance	EA	$ 13,000.00	1	$ 13,000.00
302-02-02020	Class II Base Course (6" Thick) (Soil Cement)	SY	$ 25.00	120	$ 3,000.00
601-01-00300	Portland Cement Concrete Pavement (9" Thick)	SY	$ 115.00	115	$ 13,225.00
707-01-00100	Concrete Curb	LF	$ 60.00	80	$ 4,800.00
713-01-00100	Temporary Signs & Barricades	LS	$ 5,000.00	1	$ 5,000.00
740-01-00100	Construction Layout	LS	$ 5,000.00	1	$ 5,000.00
NS-01-00000	Precast Panel Bridge	LS	$ 200,000.00	1	$ 200,000.00
				TOTAL ESTIMATED COST	**$ 297,883.00**

COST & QUANTITY ESTIMATE -- SPARTAN DRIVE CULVERT REPLACEMENT (OPTION B)

Item No.	Item Description	Unit	Estimated Unit Price	Estimated Quantity	Estimated Cost
727-01-00100	Mobilization	LS	$ 28,713.00	1	$ 28,713.00
202-02-06140	Removal of Curbs (Concrete)	LF	$ 15.00	120	$ 1,800.00
202-02-12000	Removal of Fence	LF	$ 7.00	240	$ 1,680.00
202-02-32100	Removal of Pipe (Cross Drain) (87" x 63" RCP)	LF	$ 75.00	128	$ 9,600.00
203-01-00100	General Excavation	CY	$ 13.00	150	$ 1,950.00
203-02-00100	Drainage Excavation	CY	$ 18.00	60	$ 1,080.00
203-04-00200	Nonplastic Embankment (Sand)	CY	$ 27.00	300	$ 8,100.00
203-08-00100	Geotextile Fabric	SY	$ 2.00	900	$ 1,800.00
204-02-00100	Temporary Hay or Straw Bales	EA	$ 16.00	30	$ 480.00
204-05-00200	Temporary Sediment Check Dams (Stone)	EA	$ 780.00	1	$ 780.00
204-06-00100	Temporary Silt Fencing	LF	$ 3.00	400	$ 1,200.00
204-07-00100	Temporary Stone Construction Entrance	EA	$ 13,000.00	1	$ 13,000.00
302-02-02020	Class II Base Course (6" Thick) (Soil Cement)	SY	$ 25.00	235	$ 5,875.00
601-01-00300	Portland Cement Concrete Pavement (9" Thick)	SY	$ 115.00	215	$ 24,725.00
705-09-00100	Rebuilt Residential Fence (type and size varies)	LF	$ 62.00	240	$ 14,880.00
707-01-00100	Concrete Curb	LF	$ 60.00	160	$ 9,600.00
713-01-00100	Temporary Signs & Barricades	LS	$ 5,000.00	1	$ 5,000.00
726-01-00100	Bedding Material	CY	$ 124.00	250	$ 31,000.00
739-01-00100	Hydro-Seeding	ACRE	$ 1,950.00	0.5	$ 975.00
805-12-04060	Reinforced Concrete Box Culverts (10' x 7') (Precast)	LF	$ 1,200.00	128	$ 153,600.00
				TOTAL ESTIMATED COST	**$ 315,838.00**

...CONTINUED ON NEXT PAGE

VOLKERT

...CONTINUED FROM PREVIOUS PAGE

COST & QUANTITY ESITIMATE -- CLOSED-TOP BOX CULVERT (OPTION A)

Item No.	Item Description	Unit	Estimated Unit Price	Estimated Quantity	Estimated Cost
727-01-00100	Mobilization	LS	$ 223,267.00	1	$ 223,267.00
201-01-00200	Clearing and Grubbing (Selective)	LS	$ 52,000.00	1	$ 52,000.00
202-01-00100	Removal of Structures and Obstructions	LS	$ 58,500.00	1	$ 58,500.00
202-02-06020	Removal of Concrete Box Culverts	LF	$ 98.00	1270	$ 124,460.00
202-02-12000	Removal of Fence	LF	$ 7.00	2000	$ 14,000.00
202-02-26000	Removal of Manholes	EA	$ 2,275.00	10	$ 22,750.00
202-02-32120	Removal of Pipe (Storm Drain) (30" RCP, 24" RCP)	LF	$ 46.00	40	$ 1,840.00
203-01-00100	General Excavation	CY	$ 13.00	7500	$ 97,500.00
203-02-00100	Drainage Excavation	CY	$ 18.00	500	$ 9,000.00
203-04-00200	Nonplastic Embankment (Sand)	CY	$ 27.00	3525	$ 95,175.00
203-07-00200	Borrow (Vehicular Measurement) (Selected Soils)	CY	$ 25.00	1400	$ 35,000.00
203-08-00100	Geotextile Fabric	SY	$ 2.00	6000	$ 12,000.00
204-02-00100	Temporary Hay or Straw Bales	EA	$ 16.00	50	$ 800.00
204-05-00200	Temporary Sediment Check Dams (Stone)	EA	$ 780.00	5	$ 3,900.00
204-06-00100	Temporary Silt Fencing	LF	$ 3.00	500	$ 1,500.00
204-07-00100	Temporary Stone Construction Entrance	EA	$ 13,000.00	3	$ 39,000.00
402-01-00100	Traffic Maintenance Aggregate (Vehicular Measurement)	CY	$ 98.00	300	$ 29,400.00
701-04-02060	Storm Drain Pipe Arch (30" Equiv. RCPA)	LF	$ 111.00	35	$ 3,885.00
701-04-01040	Storm Drain Pipe Arch (24" Equiv. RCPA)	LF	$ 85.00	100	$ 8,500.00
705-09-00100	Rebuilt Residential Fence (type and size varies)	LF	$ 70.00	2000	$ 140,000.00
714-01-00600	Slab Sodding (St. Augustine)	SY	$ 10.00	3000	$ 30,000.00
715-01-00100	Topsoil	CY	$ 22.00	1000	$ 22,000.00
726-01-00100	Bedding Material	CY	$ 124.00	750	$ 93,000.00
739-01-00100	Hydro-Seeding	ACRE	$ 1,950.00	3	$ 5,850.00
740-01-00100	Construction Layout	LS	$ 20,000.00	1	$ 20,000.00
803-05-00100	Temporary Sheeting	LS	$ 292,500.00	1	$ 292,500.00
805-01-00200	Class A Concrete (Pipe Headwalls)	CY	$ 748.00	10	$ 7,480.00
805-01-00300	Class A Concrete (Box Culvert Headwalls)	CY	$ 1,105.00	30	$ 33,150.00
805-12-21100	Reinforced Concrete Box Culverts (10'x5')(Precast)	CY	$ 748.00	1260	$ 942,480.00
806-01-00100	Deformed Reinforcing Steel	LB	$ 1.50	6000	$ 9,000.00
NS-201-00001	Tree and Stump Removal (36" max diameter)	EA	$ 500.00	6	$ 3,000.00
S-001	Residential Home Inspections (Pre/Post Construction)	EA	$ 1,000.00	25	$ 25,000.00
S-002	De-watering & Temporary Pumping	LS	$ 130,000.00	1	$ 130,000.00
				TOTAL ESTIMATED COST	$ 2,585,937.00

TOTAL ESTIMATED PROJECT COST: $ 3,953,365.00

VOLKERT

ALTERNATIVE 4

COST & QUANTITY ESTIMATE -- GENERAL

Item No.	Item Description	Unit	Estimated Unit Price	Estimated Quantity	Estimated Cost
	Surveying (Boundary/Topo) - Initial	LS	$ 12,280.00	1	$ 12,280.00
	Geotechnical Invesitation - Initial	LS	$ 7,250.00	1	$ 7,250.00
	Utility Coordination & Relocation	LS	$ 90,000.00	1	$ 90,000.00
	ROW Acquisition - Drainage Servitude / Temp. Easements	LS	$ 50,000.00	1	$ 50,000.00
	Engineering Design (8.57% - Facility Planning and Control Fee Sched. 2011)	LS	$ 295,814.00	1	$ 295,814.00
	Construction Phase Services (Volkert CEI and Geotechnical CEI)	LS	$ 345,174.00	1	$ 345,174.00
				TOTAL ESTIMATED COST	**$ 800,518.00**

COST & QUANTITY ESTIMATE -- OLIVE DRIVE BRIDGE REPLACEMENT (OPTION C)

Item No.	Item Description	Unit	Estimated Unit Price	Estimated Quantity	Estimated Cost
727-01-00100	Mobilization	LS	$ 27,080.00	1	$ 27,080.00
202-02-04000	Removal of Bridge	LS	$ 22,500.00	1	$ 22,500.00
203-01-00100	General Excavation	CY	$ 13.00	200	$ 2,600.00
204-02-00100	Temporary Hay or Straw Bales	EA	$ 15.60	20	$ 312.00
204-05-00200	Temporary Sediment Check Dam	EA	$ 780.00	1	$ 780.00
204-06-00100	Temporary Silt Fencing	LA	$ 2.93	200	$ 586.00
204-07-00100	Temporary Stone Construction Entrance	EA	$ 13,000.00	1	$ 13,000.00
302-02-02020	Class II Base Course (6" Thick) (Soil Cement)	SY	$ 25.00	120	$ 3,000.00
601-01-00300	Portland Cement Concrete Pavement (9" Thick)	SY	$ 115.00	115	$ 13,225.00
707-01-00100	Concrete Curb	LF	$ 60.00	80	$ 4,800.00
713-01-00100	Temporary Signs & Barricades	LS	$ 5,000.00	1	$ 5,000.00
740-01-00100	Construction Layout	LS	$ 5,000.00	1	$ 5,000.00
NS-01-00000	Precast Panel Bridge	LS	$ 200,000.00	1	$ 200,000.00
				TOTAL ESTIMATED COST	**$ 297,883.00**

COST & QUANTITY ESITIMATE -- CONCRETE-LINED OPEN CHANNEL (OPTION D)

Item No.	Item Description	Unit	Estimated Unit Price	Estimated Quantity	Estimated Cost
727-01-00100	Mobilization	LS	$ 286,715.00	1	$ 286,715.00
201-01-00200	Clearing and Grubbing (Selective)	LS	$ 52,000.00	1	$ 52,000.00
202-01-00100	**Removal of Structures and Obstructions**	**LS**	**$ 58,500.00**	**1**	**$ 58,500.00**
202-02-06020	Removal of Concrete Box Culverts	LF	$ 98.00	1270	$ 124,460.00
202-02-12000	Removal of Fence	LF	$ 7.00	2000	$ 14,000.00
202-02-26000	Removal of Manholes	EA	$ 2,275.00	10	$ 22,750.00
202-02-32120	Removal of Pipe (Storm Drain) (30" RCP, 24" RCP)	LF	$ 46.00	40	$ 1,840.00
203-01-00100	General Excavation	CY	$ 13.00	7500	$ 97,500.00
203-02-00100	Drainage Excavation	CY	$ 18.00	500	$ 9,000.00
203-04-00200	Nonplastic Embankment (Sand)	CY	$ 27.00	3525	$ 95,175.00
203-07-00200	Borrow (Vehicular Measurement) (Selected Soils)	CY	$ 25.00	1400	$ 35,000.00
203-08-00100	Geotextile Fabric	SY	$ 2.00	6000	$ 12,000.00
204-02-00100	Temporary Hay or Straw Bales	EA	$ 16.00	50	$ 800.00
204-05-00200	Temporary Sediment Check Dams (Stone)	EA	$ 780.00	5	$ 3,900.00
204-06-00100	Temporary Silt Fencing	LF	$ 3.00	500	$ 1,500.00
204-07-00100	Temporary Stone Construction Entrance	EA	$ 13,000.00	3	$ 39,000.00
402-01-00100	Traffic Maintenance Aggregate (Vehicular Measurement)	CY	$ 98.00	300	$ 29,400.00
701-04-02060	Storm Drain Pipe Arch (30" Equiv. RCPA)	LF	$ 111.00	35	$ 3,885.00
701-04-01040	Storm Drain Pipe Arch (24" Equiv. RCPA)	LF	$ 85.00	100	$ 8,500.00
705-06-00000	Chain-Link Fence (8-foot Height)	LF	$ 140.00	2600	$ 364,000.00
705-09-00100	Rebuilt Residential Fence (type and size varies)	LF	$ 70.00	2600	$ 182,000.00
714-01-00600	Slab Sodding (St. Augustine)	SY	$ 10.00	3000	$ 30,000.00
715-01-00100	Topsoil	CY	$ 22.00	1000	$ 22,000.00
726-01-00100	Bedding Material	CY	$ 124.00	750	$ 93,000.00
739-01-00100	Hydro-Seeding	ACRE	$ 1,950.00	3	$ 5,850.00
740-01-00100	Construction Layout	LS	$ 20,000.00	1	$ 20,000.00
803-05-00100	Temporary Sheeting	LS	$ 292,500.00	1	$ 292,500.00
805-01-00200	Class A Concrete (Channel)	CY	$ 748.00	1227	$ 917,796.00
806-01-00100	Deformed Reinforcing Steel	LB	$ 1.50	102958	$ 154,437.00
S-003	6x6x6 Reinforcing Mesh	SY	$ 8.00	2294	$ 18,352.00
NS-201-00001	Tree and Stump Removal (36" max diameter)	EA	$ 500.00	6	$ 3,000.00
S-001	Residential Home Inspections (Pre/Post Construction)	EA	$ 1,000.00	25	$ 25,000.00
S-002	De-watering & Temporary Pumping	LS	$ 130,000.00	1	$ 130,000.00
				TOTAL ESTIMATED COST	**$ 3,153,860.00**

TOTAL ESTIMATED PROJECT COST: $ 4,252,261.00

APPENDIX D

AGENCY CORRESPONDENCE

From:	Schexnayder, Jamie
To:	Linda.Hardy@LA.GOV; Amy.F.Powell@usace.army.mil; gutierrez.raul@epa.gov; cmichon@wlf.la.gov; Karl.Morgan@la.gov
Cc:	Sparn, Tiffany; Holmes, Leashina; Pitts, Melanie; Christoffersen, Hering
Subject:	Request for Solicitation of Views (SOV) for Markham-Peachtree Channel Reconstruction
Date:	Friday, May 15, 2015 10:44:06
Attachments:	image001.png image002.png Markham-Peachtree Channel Reconstruction SOV Consultation Information.pdf Phase-1-Deliverables-Markham-Peachtree-Drainage-1-20-2015-Markham-Peacht...pdf

---

U.S. Department of Homeland Security
May 15, 2015
Agency

Federal Emergency Management Agency

FEMA-DR 1603/1607 LA
Louisiana Recovery Office
1500 Main St., Baton Rouge, LA 70802

FEMA

MEMORANDUM TO: See Distribution

SUBJECT: Scoping Notification/Solicitation of Views
St. Tammany Parish, Markham-Peachtree Channel Reconstruction, HMGP# 1603-0321, FEMA-1603-DR-LA

To Whom It May Concern:

The Department of Homeland Security's Federal Emergency Management Agency (FEMA) is mandated by the U.S. Congress to administer Federal disaster assistance pursuant to the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), PL 93-288, as amended. Section 404 and Section 406 of the Stafford Act authorizes FEMA's Hazard Mitigation Program to provide funds to states and local governments to implement long-term hazard mitigation measures after a major disaster declaration. FEMA is considering providing Hazard Mitigation Grant Program funding for the attached project in relation to Hurricanes Katrina and Rita (FEMA-1603/1607-DR-LA).

Please review the attached project description to determine whether your office has any objections to the proposed project and whether any permits from your office would need to be obtained. The applicant is the St. Tammany Parish Government.

This project is the applicant's request to improve the drainage canal from the Olive Street Bridge to the existing Markham-Peachtree box culvert, and replace the existing Markham-

Peachtree box culvert with a 10' x 6' typical section concrete-lined open channel with vertical side walls. The project site is located at Latitude 30.2529 and Longitude -89.781917, Slidell, Louisiana. The applicant has applied for a Coastal Use Permit (CUP). See attached application.

To ensure compliance with the National Environmental Policy Act (NEPA), Executive Orders (EOs), and other applicable Federal regulations, FEMA-EHP will be preparing an Environmental Assessment (EA). To assist us in preparation of the EA, FEMA-EHP requests that your office review the attached documents for a determination as to the requirements of any formal consultations, regulatory permits, determinations, or authorizations.

We would appreciate your comments on this project within fifteen (15) days. If we do not receive comments from you within this time period, we will assume that you have no concerns or issues with the proposed project. If appropriate, FEMA will add the condition that the applicant will be required to obtain applicable permits from your office.

Comments may be emailed to Merina.Christoffersen@fema.dhs.gov or mailed to the attention of Merina Christoffersen, Environmental Department, at the address above. For questions regarding this matter, please contact Merina Christoffersen, Environmental Protection Specialist at (541) 968-4761.

Sincerely,

Tiffany Spann-Winfield,
Deputy Environmental Liaison Officer, FEMA LRO
FEMA 1603/1607-DR-LA

Distribution: LDEQ, USEPA, LDWF, LDNR, USACE

Attachments: Scope of Work
Joint Permit Application submitted by the Applicant

Jamie Scheunayder, CFM
Environmental Protection Specialist
FEMA Region VI – LRO
1500 Main Street
Baton Rouge, LA 70802
BB (225) 200-4961
jamie.scheunayder@fema.dhs.gov

FEMA

U.S. Department of Homeland Security
Federal Emergency Management Agency
FEMA-1603/1607 -DR-LA
FEMA Louisiana Recovery Office
Environmental/Historic Preservation
1500 Main Street
Baton Rouge, LA 70802

May 18, 2015

Pam Breaux
State Historic Preservation Officer
Department of Culture, Recreation & Tourism
P.O. Box 44247
Baton Rouge LA 70804

RE: Section 106 Review Consultation, Hurricane Katrina, FEMA-1603-DR-LA
Applicant: **City of Slidell, Louisiana**
Undertakings: **City Barn Drainage Improvements Project,**
Latitude 30.273241 and Longitude -89.788288,
Eastwood Drainage Improvements Project,
Latitude 30.277724 and Longitude -89.760399, and
Markham-Peachtree Storm Drain Line Improvements Project,
Latitude 30.253132 and Longitude -89.784820,
Slidell, Louisiana in St. Tammany Parish
(HMGP Project# 1603-0321)
Determination: **No Effect to Historic Properties**

Dear Ms. Breaux:

The Federal Emergency Management Agency (FEMA) will be providing funds authorized under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, P.L. 93-288, as amended, in response to the following major Disaster Declarations:

FEMA-1603-DR-LA, dated August 29, 2005, as amended.

FEMA, through its 404 Hazard Mitigation Grant Program (HMGP) proposes to fund Drainage Improvement (Undertaking) as requested by the City of Slidell (Applicant) (see Figure 1 for project locations). FEMA is initiating Section 106 review for the above referenced properties in accordance with the Louisiana State-Specific Programmatic Agreement among FEMA, the Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP), the Louisiana State Historic Preservation Officer of the Department of Culture Recreation and Tourism (SHPO), the Alabama-Coushatta Tribe of Texas (ACTT), the Chitimacha Tribe of Louisiana (CTL), the Choctaw Nation of Oklahoma (CNO), the Jena Band of Choctaw Indians (JBCI), the Mississippi Band of Choctaw Indians (MBCI), the Seminole Tribe of Florida (STF), and the Advisory Council on Historic Preservation (ACHP) regarding FEMA's Hazard Mitigation Grant Program (2011 LA HMGP PA) dated January 31st, 2011 and providing the State Historic Preservation Office with the opportunity to consult on the proposed Undertaking. Documentation in this letter is consistent with the requirements in 36 CFR §800.11(d).

Description of the Undertaking

The undertaking is intended to improve drainage infrastructure in three (3) separate areas of the City of Slidell. The locations referenced include: 1) the City Barn Drainage Improvements Project, 2) the Eastwood Drainage Improvements Project, and 3) the Markham-Peachtree Storm Drain Line Improvements Project. See

Figure 1 showing locations and Right-of-Ways (ROW) and/or Areas of Potential Effect (APE) for the proposed projects.

The City Barn Drainage Pump

The City Barn Drainage Pump Station is located near the historic area of Slidell between the railroad and Bayou Bonfouca. The Scope of Work (SOW) for the City Barn Drainage Improvements Project APE at the station calls for removing and reconstructing an access ramp from a parking area to a pumping station situated on the confluence of Bayous Pattosat and Bonfouca, expanding the size of the station from approximately 8.5 x 14 meters (28 x 45 feet) to 8.5 x 20 meters (28 x 65 feet) by adding a precast working deck measuring approximately 6 x 8.5 meters (20 x 28 feet) to the existing deck, installing a new diesel driven vertical-type drainage pump, dredging the channel bottom of the Bayou Pattosat to allow for the installation of the new pump, installing an outlet pipe from the new pump through a levee and into Bayou Bonfouca, and excavating an area measuring approximately 12 x 61 meter (40 x 200 feet) along the western side of Bayou Pattosat in order to expand the width of the inlet channel. See Figures 2-3, details for the design plans for details of the SOW.

Eastwood Storm Drain Line

The St. Tammany Parish Eastwood Storm Drain Line Improvements Project is located in Lakewood Subdivision in Slidell. The existing drainage system is composed of reinforced concrete pipe and box culverts buried along the back yards of properties between Fremaux Avenue and Eastwood Drive and storm water enters the system through curb and grate inlets along the roadways of the subdivision. The SOW for this project includes the filling and plugging of the existing 36 inch reinforced concrete pipe and 32 by 36 inch box culvert and replacing the drain system with a four by six feet precast reinforced concrete box culvert along the southern side Fremaux Avenue. An extension of the existing box culvert with dual five by eight feet reinforced concrete box culverts is also required. As part of the project, the southern part of the asphalt street, some sidewalks and driveways, and drainage inlets along Fremaux Avenue will be removed and replaced. The SOW meets allowances defined in the Louisiana State-Specific Programmatic Agreement Regarding FEMA's Hazard Mitigation Grant Program dated January 31, 2011 (2011 LA HMGP PA), Appendix C: Programmatic Allowances, Items I.A., II.B.1, V.D., and V.G. Due to this, FEMA will not be developing an APE nor will we be consulting further on this portion of the Undertaking.

Markham-Peachtree Storm Drain Line

The SOW for the Markham-Peachtree Storm Drain Line Improvement Project APE calls for re-grading and shaping 55 meters (180 feet) of a drainage ditch from an existing box culvert to an existing bridge located on Olive Drive, removing 103 meters (337 feet) of existing underground box culvert which is to be replaced with an open ditch, and removing 286 meters (939 feet) of existing box culvert which is to be replaced with an open top flume structure measuring six feet in height by ten feet in width. Additional ground disturbing activities will include clearing vegetation and debris; removing trees and obstructions such as two metal sheds, two frame sheds, two aboveground swimming pools, and fences from the utility easement or servitude; excavation and embankment; scarification and compaction that will include undercutting and replacing unsuitable soils; building storm drains; rerouting pool drainage; construction of erosion control systems using granular material as backfill; relocating and adjusting water distribution systems; removing materials for building retaining walls and foundations; and sheet piling driving for flume walls and wing walls. Additionally, a wooded area adjacent to the ROW, on property owned by the Lakeside Swim Club, will be used during construction as a staging and/or parking area.

Areas of Potential Effect (APE)

In accordance with Stipulation VII.B.1 of the 2011 LA HMGP PA, the APE for both the standing structures and archaeology is defined as the individual facility when an undertaking is limited to retrofit as defined in

36 CFR 68.2(b) of an individual facility's interior or exterior as defined in 44 CFR 206.201(c) with associated ground disturbance.

The City Barn Drainage Pump: APE
The APE for the City Barn Drainage Improvements Project consists of two areas where excavating will be done and an area that will be used as a staging area. A plan view encompassing all the areas is shown in Figure 2. Photos of the area attached (Figures 4-8).

The first area is situated on the levee containing outlet pipes extending west from the pumps into Bayou Bonfouca and the Bayou Pattosat channel adjacent to the levee. The a section of levee that will be excavated in order for a new outlet pipe to be set in measures approximately eight meters (26 feet) from north to south by 14 meters (46 feet) from west to east encompassing a total of 112 square meters (0.03 acres). Figure 3 is profile view of new pump and outlet pipe running through the levee and Figure 4, 5 and 6 are photographs of the existing pumping station and levee between Bayous Pattosat and Bonfouca. The second area is located on the southern bankline of Bayou Pattosat where soil will be dredged from the bayou and hauled away along a road situated between the bayou and the neighboring Textron facility (Figure 7). The bankline that will be removed measures approximately 28 meters (92 feet) from north to south by 127 meters (417 feet) from west to east encompassing a total of 3,556 square meters (0.36 acres). The area to be used for staging purposes is situated within an open area northwest of the pumping station and is presently being used for storing pipes and other drainage maintenance type materials (Figure 8). The area measures approximately 72 meters (236 feet) from northwest to southeast by 83 meters (272 feet) from southwest to northeast including areas that are presently being used for storage purposes. The area equals 5,976 square meters (1.48 acres).

Markham-Peachtree Storm Drain Line: APE
The APE for the Markham-Peachtree Improvements Project consists of the construction Right-of-Way (ROW) and the wooded area to the north of the Lakeside Swim Club, located at 497 Cumberland Street. The location of the APE is shown in Figure 9. The APE encompasses all construction work and staging for this project and is approximately 1.69 acres in size.

Identification and Evaluation

Historic Properties within the APE were identified based on FEMA's review of the National Register of Historic Places (NRHP) database, the Louisiana Cultural Resources Map, historic map research conducted on March 4, 2015, and a site visit conducted on November 1, 2009 and March 17, 2015 by FEMA Historic Preservation staff. This data was evaluated by FEMA using the National Register (NR) Criteria.

The City Barn Drainage Pump
Based on data provided by the LA SHPO's Office, FEMA learned that Sites 16ST145, 16ST152, 16ST205, and 16ST228 were located within one half of a mile of the APE of the City Barn Drainage Improvements Project and Site 16ST225 was located within one mile of the APE (Figure 10 and Figure 11). Site 16ST145 is the presently used Our Lady of Lourdes Catholic Cemetery with the earliest grave marker dating to 1835 and the eligibility status of the site being listed on the National Register of Historic Places (NRHP) has not been determined. Site 16ST152, the Salmen Brick Factory or Salmen Brothers Brick and Lumber Company was reported as a brick and lumber yard with remains of multiple brick floors, a foundation, and four machinery piers (Williams et al 1996; Hunter and Duay 1998; Ryan and Duplantis 2001; Eberwine et al. 2007) and had previously been determined as being eligible for listing on the NRHP. Site 16ST205, Brock Elementary Locus 1, was an historic artifact scatter dating from the early to mid-20th century and lacking in depositional integrity to consider it eligible for listing on the NRHP (Eberwine et al. 2007). Site 16ST228 was the former Our Lady of Lourdes Catholic Church Compound which consisted of late 19th to early 20th century features representing a brick facade foundation footing, brick pier footings, and a concrete swimming pool and had been determined as being ineligible for listing on the (NRHP) (Martin and Wolke 2010). Site

16ST225 was an historic artifact scatter representing a circa 1900 dump that had been determined as being ineligible for listing on the NRHP.

Additionally, FEMA reviewed a series of aerial images and historic topographic maps for this location provided via NETR Online (www.historicalaerials.com). Aerial Images and USGS Topo maps reflect the current landscape from the present to c. 1980, when the current drainage way is photo revised on to the location. Prior to 1980, land form to be removed is either non-existent as represented through the 1969 aerial image or partially non-existent as demonstrated on the USGS quad maps that date from 1964 to 1935. Generally speaking, the drainage area is larger and towards the south. The earliest available 7.5' USGS map of this location is the Slidell Quad from 1935. On this map the location appears to be an extension of Bayou Bonfouca into a turning basin to support the Salmen Bick Factor (Figure 13).

Because of the APE's close proximity to Bayou Bonfouca and the former location of the Salmen Brick Factory, Site 16ST152 two visits to the APE were conducted. The first visit was done on October 1, 2009 by Jason Emery, FEMA's SHPO liaison, and Pamela Pyatt, an HMGP Specialist/Archaeologist for FEMA. During the visit, three shovel tests were excavated along the section of property on the west side of the bayou. No intact cultural deposits were identified and the soils appeared to mottled mixture of sediments deposited during the last few decades of the twentieth century (Figure 12). FEMA Archaeologists Jason Emery and Maria Tavassi revisited the APE on March 17, 2006 and confirmed that the newly proposed ground disturbing activities would be confined to previously disturbed or recently deposited areas.

Markham-Peachtree Storm Drain Line

FEMA Archaeologists Jason Emery and Maria Tavassi revisited the APE on March 17, 2006 and confirmed that the newly proposed ground disturbing activities appeared to be confined to previously disturbed areas and found no indication of archaeological deposits within the linear APE or the Staging APE.

Records review indicate that two archaeological sites: 16ST153, the Guzman site, and 16ST225 are within approximately 1.15 miles and 0.90 miles APE of the Markham-Peachtree project (Figure 13) and (Figure 14). Site 16ST153, the Guzman site, was a sparse brick and artifact scatter most likely representing an early 20th century house or camp and had been determined as being ineligible for listing on the NRHP and a stated before, Site 16ST225 was an historic artifact scatter representing a circa 1900 dump that had been determined as being ineligible for listing on the NRHP.

As noted in the undertaking, obstructions such as two metal sheds, two frame sheds, two above-ground swimming pools, and fences will be removed from the utility easement or servitude. All of these were built in the last 20 years and none of them meet the NRHP-eligibility criteria.

Additionally, FEMA archaeologists investigated the triangular Staging APE on May 1, 2015. The area was predominantly inundated with water (Figure 15) and contained shrubs and saplings (Figure 16), testing of the soils was limited to two shovel tests excavated in areas that were higher in elevation and dry enough to be tested. The first shovel test was dug near the westernmost extent of the property and the second was dug near the southeastern side of the property. See Figure 9 for locations of the shovel tests (STP1 and STP2). Soils in both tests were a mottled mixture of recently deposited sediments (Figure 17) most likely associated with the construction of the buried box culvert adjacent to the wooded area and no intact cultural deposits were identified.

Based on the available evidence, it is unlikely that intact NRHP-eligible archaeological deposits would encountered during the implementation of this undertaking, as the Slidell City Barn APE is either man-made berm, heavily utilized industrial area, or not containing archaeological deposits; and the Markham-Peachtree APE is either heavily disturbed by earlier drainage activities or not void of archaeological deposits as demonstrated through limited shovel testing.

Assessment of Effects

Based on the aforementioned identification and evaluation, FEMA has determined that there are no historic properties as defined in 36 CFR 800.16(l) within the APEs of the City Barn Drainage Improvements Project, the Eastwood Drainage Improvements Project, or the Markham-Peachtree Storm Drain Line Improvement Project. Therefore, FEMA has determined a finding of **No Historic Properties Affected** for this Undertaking and is submitting this Undertaking to you for your review and comment. FEMA requests your comments within 15 days.

We look forward to your concurrence with this determination. Should you have any questions or need additional information regarding this Undertaking, please contact me at (504) 247-7771 or jerame.cramer@fema.dhs.gov, or Kathryn Wollan, Lead Historic Preservation Specialist at (504) 289-1941 or kathryn.wollan@fema.dhs.gov Jason Emery, Lead Historic Preservation Specialist at (504) 570-7292 or jason.emery@fema.dhs.gov.

Sincerely,

Jerame J. Cramer
Environmental Liaison Officer
FEMA-DR-1603-LA, FEMA-DR-1607-LA

References

Eberwine, James E., George Abry and William P. Athens
2007 *Results of the 2007 Phase I Cultural Resources Survey and Archaeological Inventory of the Brock Elementary School Project in St. Tammany Parish, Louisiana.* R. Christopher Goodwin and Associates, Inc. Submitted to the St. Tammany Parish School Board. Report on file at the Division of Archaeology, Louisiana Department of Culture, Recreation and Tourism, Baton Rouge.

Hunter, Don O. and Sylvia Duay
1998 *Cultural Resources Survey and Significance Evaluations of a Proposed Electrical Substation Site and Power Transmission Corridor, Slidell, St. Tammany Parish, Louisiana.* Coastal Environments, Inc. Submitted to the Central Louisiana Electric Company (CLECO). Report on file at the Division of Archaeology, Louisiana Department of Culture, Recreation and Tourism, Baton Rouge.

Martin, Robert W. and Dale Wolke
2010 *Cultural Reconnaissance Survey and Archaeological Monitoring of the Slidell City Hall Administrative Complex Building #2, St. Tammany Parish, Louisiana.* Department of Homeland Security, Federal Emergency Management Agency, New Orleans. Report on file at the Division of Archaeology, Louisiana Department of Culture, Recreation and Tourism, Baton Rouge.

Ryan, Joanne and Brad Duplantis
2001 *The Salmen Brick Factory, Archaeological Data Recovery at 16ST152, Slidell, St. Tammany Parish, Louisiana.* Coastal Environments, Inc. Submitted to the Central Louisiana Electric Company (CLECO). Report on file at the Division of Archaeology, Louisiana Department of Culture, Recreation and Tourism, Baton Rouge.

Williams, Lois, Katherine Grandine, Kevin Hymel, Thomas Ferro, and William P. Athens
1996 *Cultural Resources Survey and Testing of the Schneider Canal Hurricane Protection Project, Slidell, St. Tammany Parish, Louisiana.* R. Christopher Goodwin and Associates, Inc. Submitted to NOEDCOE. Report on file at the Division of Archaeology, Louisiana Department of Culture, Recreation and Tourism, Baton Rouge.

CC: File
State Historic Preservation Office

Enclosures

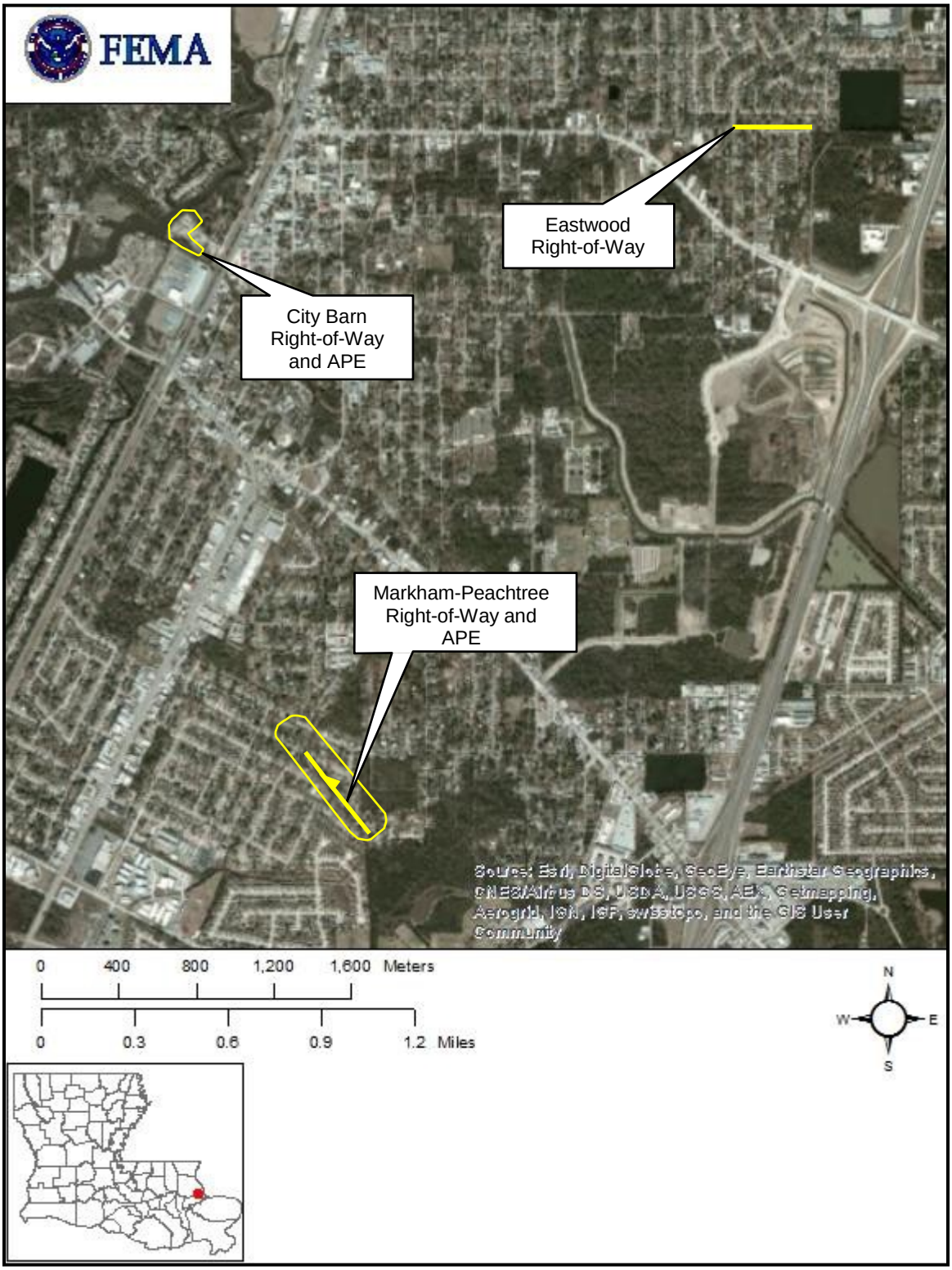


Figure 1. Aerial Image showing the proposed locations of the City Barn, Eastwood, and Markham-Peachtree Drainage Improvements Projects in Slidell, Louisiana.

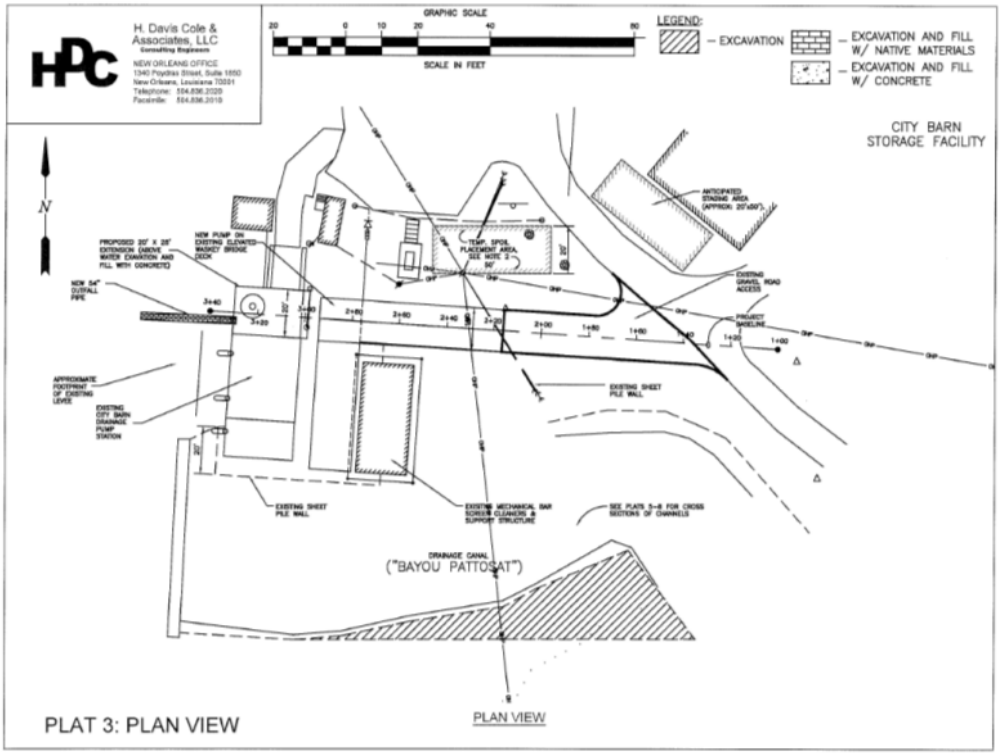


Figure 2. H. Davis Cole & Associates Consulting Engineers plan view for the **City Barn Drainage** Improvements Project in Slidell.

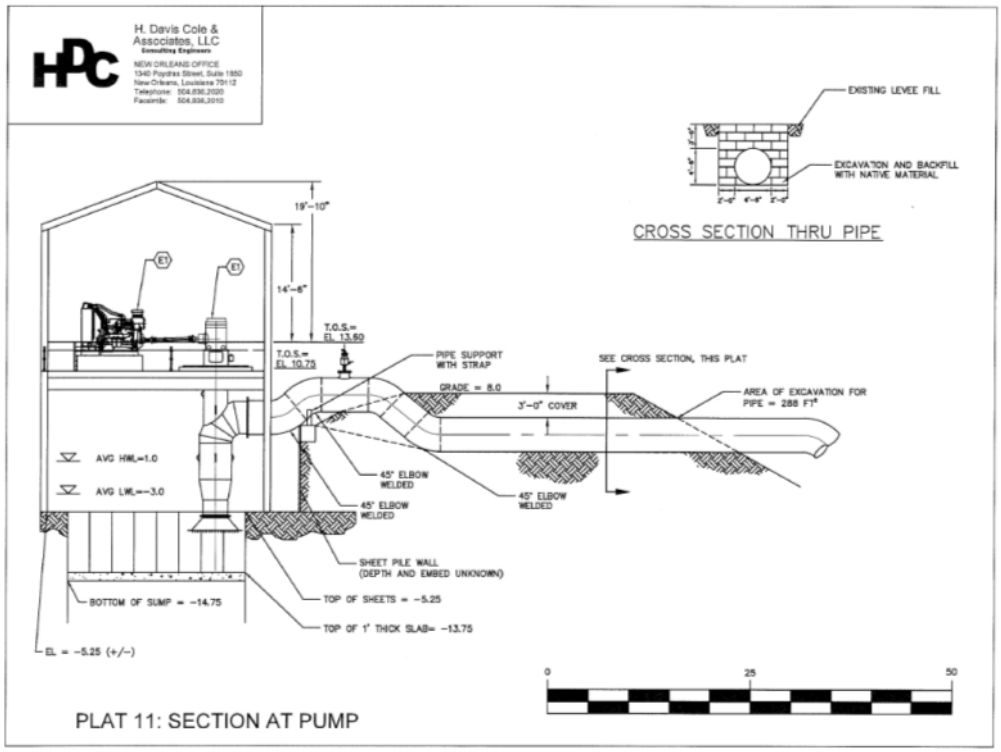


Figure 3. H. Davis Cole & Associates Consulting Engineers profile view of new pump and outlet pipe running through levee for the **City Barn Drainage** Improvements Project in Slidell.

Figure 4. View of outlet pipes from pumping station for **City Barn Drainage** on Bayou Pattosat through earthen embankment facing southwest.

Figure 5. **City Barn Drainage** : Northwest facing view of earthen embankment (overlooking Bayou Bonfouca) that will be impacted during construction.

Figure 6. **City Barn Drainage**: Northwest facing view of an existing outlet pipe on the Bayou Bonfouca side of the earthen embankment.

Figure 7. **City Barn Drainage**: Land along Bayou Pattosat facing south and road between the land along Bayou Pattosat and the Textron facility facing south.

Figure 8. **City Barn Drainage**: Area east of the pumping station proposed to be used as a staging area for the City Barn Drainage Improvements Project in Slidell.

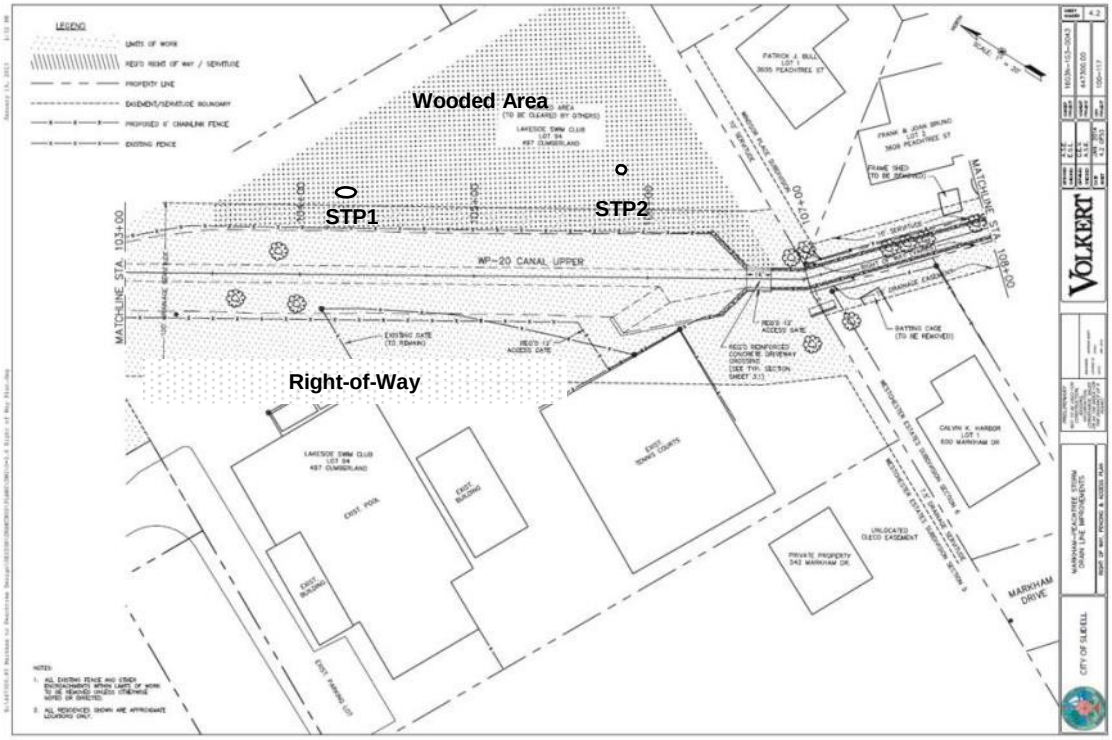


Figure 9. **Markham-Peachtree Drainage Way**: Staging Area APE shown in relation to the construction Right-of-Way (adapted from Volkert Engineering Services' construction plan).

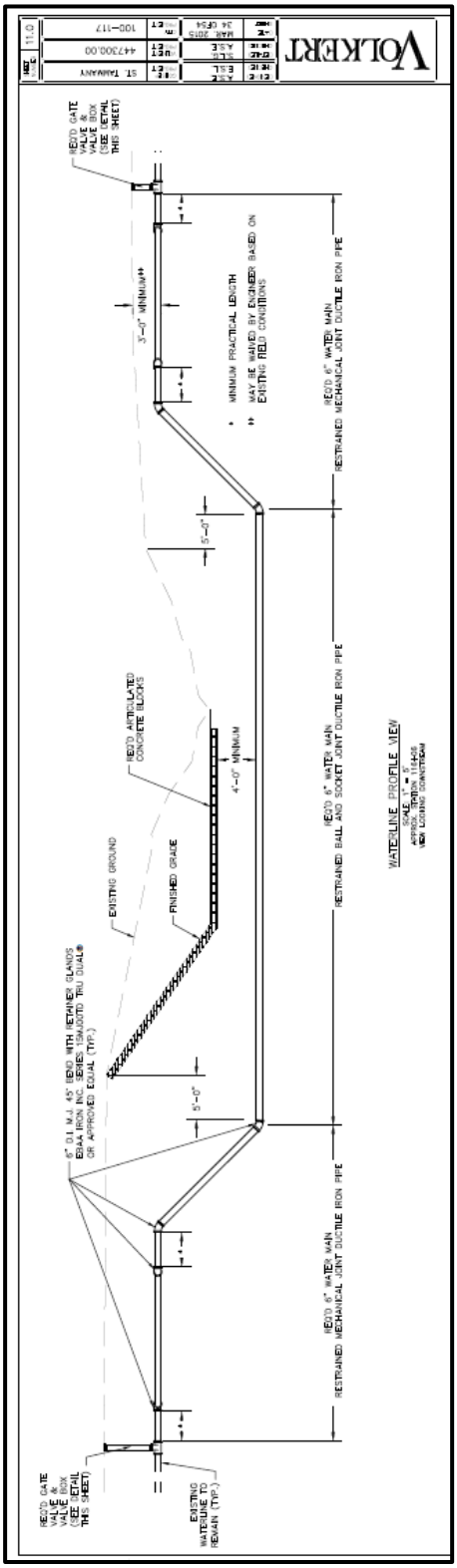
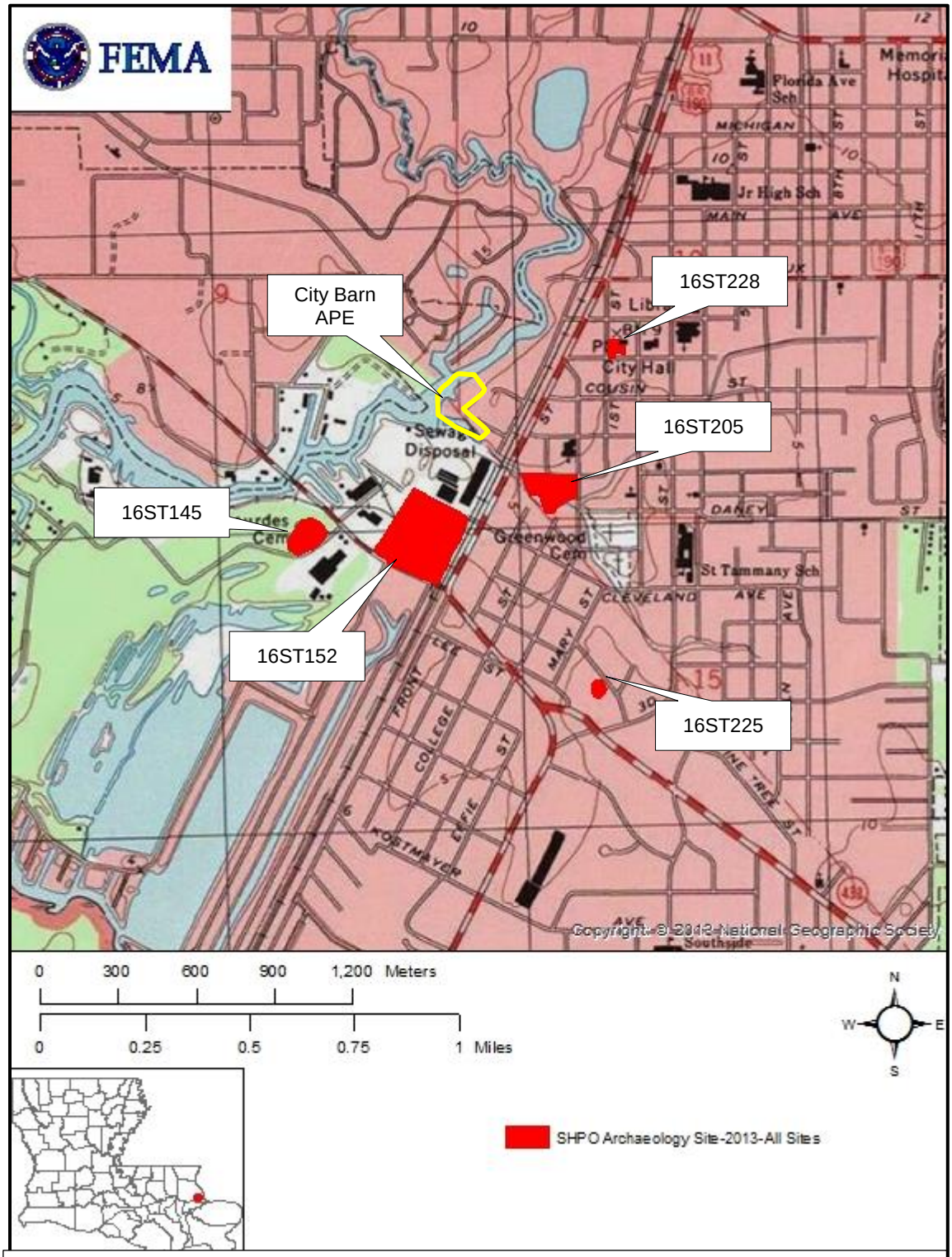


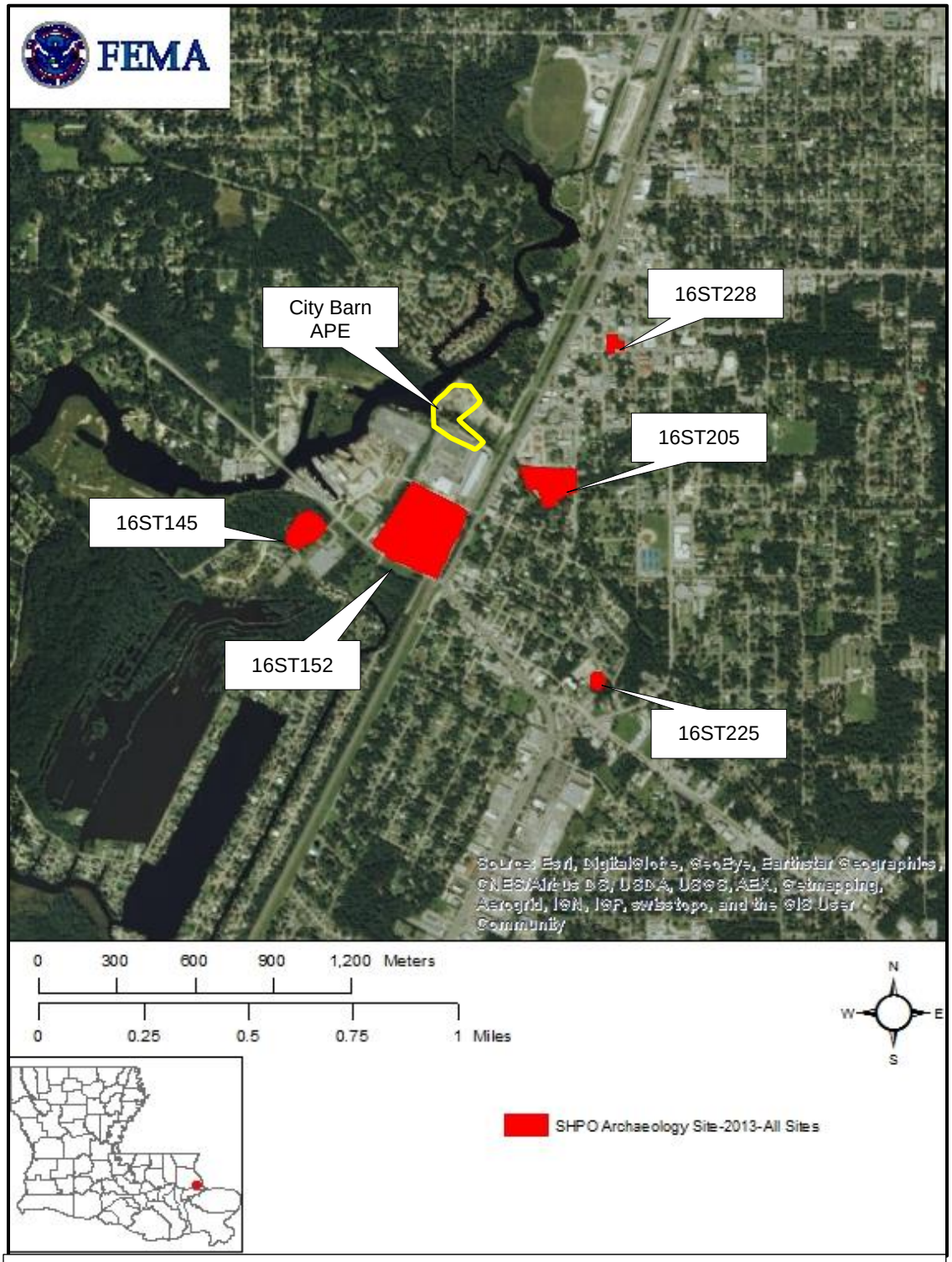
Figure 10. **Markham-Peachtree Drainage Way**: Detail of how the current drainage way will be typically altered to increase the drainage capacity. The dashed line is the existing ditch profile and the dark-hashed line is the intended final profile. Also, shows how the project addresses pipeline crossings.

Figure 11. **Markham-Peachtree Drain Line**: Photograph of the Staging APE for the Drain Line Improvements Project shown on the left in relation to the construction Right-of-Way shown in the center.



CONFIDENTIAL DO NOT DISCLOSE. This document was prepared by the Environmental and Historic Preservation section of the Federal Emergency Management Agency or their contractor. This map is protected from public disclosure in accordance with Section 304 of the National Historic Preservation Act, 16 U.S.C. 470, and 36 CFR 800.11 (c).

Figure 12. Excerpt of USGS Slidell 1998 7.5' quadrangle map showing the APE for the Markham-Peachtree Drainage Improvements Project in Slidell (Scale 1:24,000).



CONFIDENTIAL DO NOT DISCLOSE. This document was prepared by the Environmental and Historic Preservation section of the Federal Emergency Management Agency or their contractor. This map is protected from public disclosure in accordance with Section 304 of the National Historic Preservation Act, 16 U.S.C. 470, and 36 CFR 800.11 (c).

Figure 13. Aerial image showing the APE for the Markham-Peachtree Drainage Improvements Project in Slidell (Scale 1:24,000).

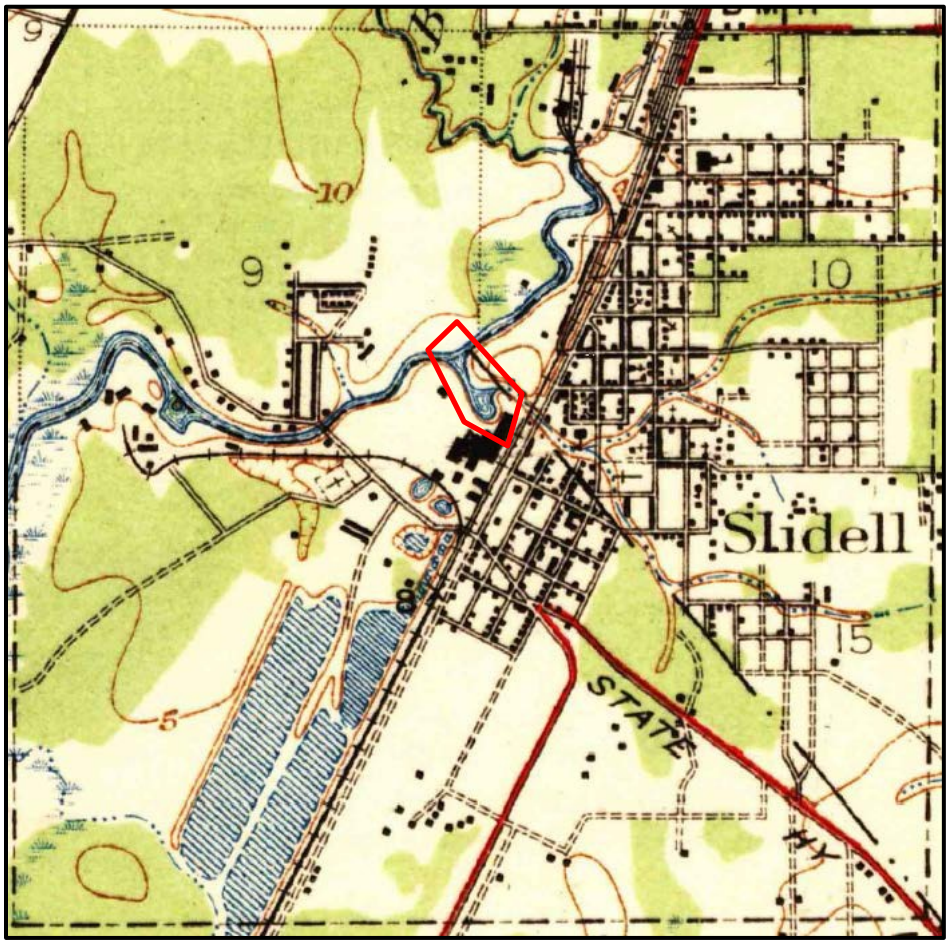
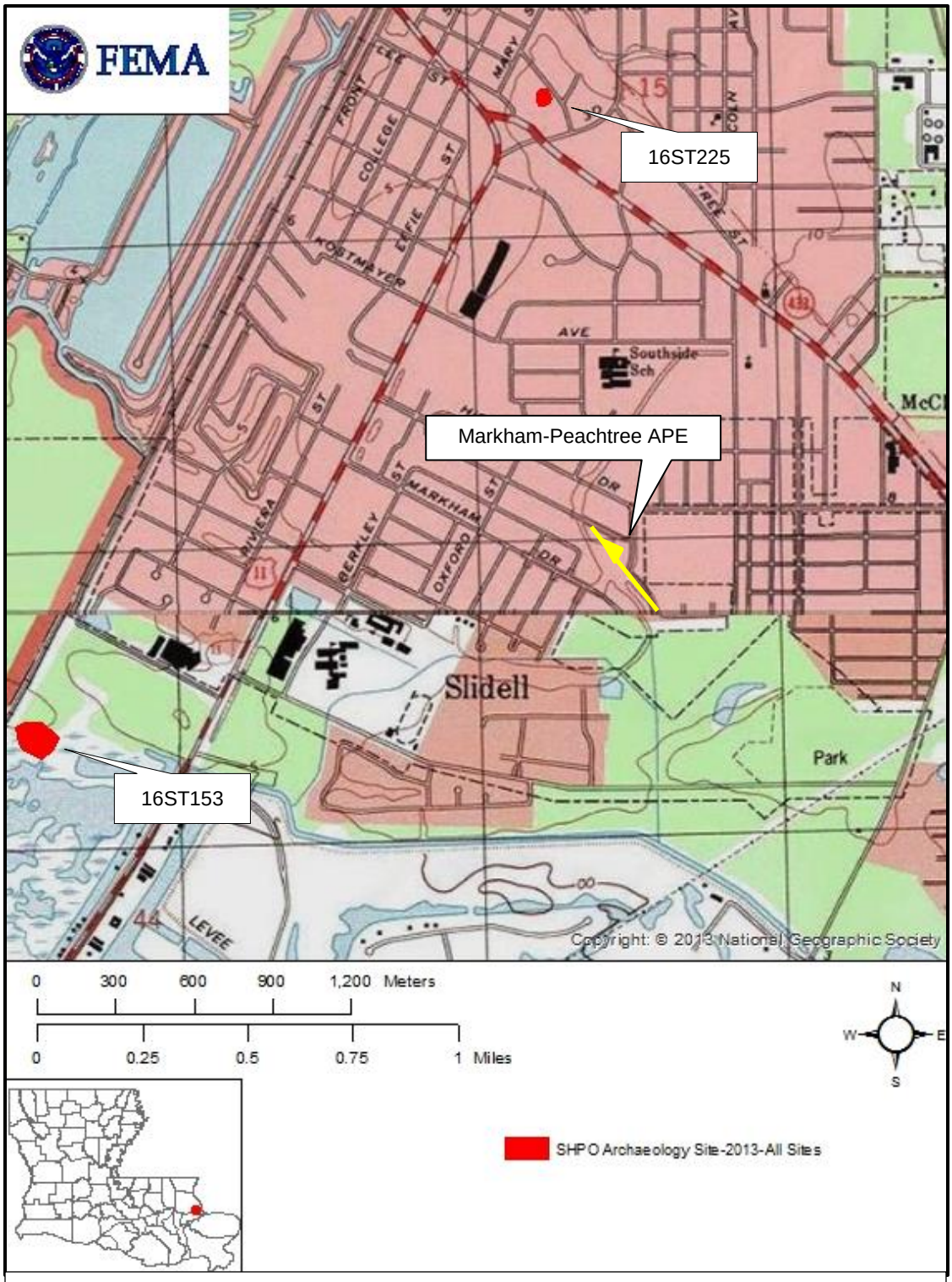


Figure 14. Detail of the 1935 15' Slidell Map, Note the interpreted turning basin outlined in red.

Figure 15. Shovel test along Bayou Pattosat shoving the mottled mixture of sediments.



CONFIDENTIAL DO NOT DISCLOSE. This document was prepared by the Environmental and Historic Preservation section of the Federal Emergency Management Agency or their contractor. This map is protected from public disclosure in accordance with Section 304 of the National Historic Preservation Act, 16 U.S.C. 470, and 36 CFR 800.11 (c).

Figure 16. Excerpt from the 1998 USGS Slidell 7.5' quadrangle map showing the Area of Potential Effect for the Markham-Peachtree Drainage Project in Slidell (Scale 1:24,000).

CONFIDENTIAL DO NOT DISCLOSE. This document was prepared by the Environmental and Historic Preservation section of the Federal Emergency Management Agency or their contractor. This map is protected from public disclosure in accordance with Section 304 of the National Historic Preservation Act, 16 U.S.C. 470, and 36 CFR 800.11 (c).

Figure 17. Aerial image showing the Area of Potential Effect for the City Barn Drainage Improvements Project in Slidell (Scale 1:24,000).

Figure 18. Photograph showing an example of areas inundated with water in the APE of the Markham-Peachtree Drainage Improvements Project APE facing northwest.

Figure 19. Photograph showing dense shrubs and saplings in the APE of the Markham-Peachtree Drainage Improvements Project APE facing northwest.

Figure 20. Photograph of STP2 in the APE of the Markham-Peachtree Drainage Improvements Project facing east.

APPENDIX E
PUBLIC NOTICE
8-STEP PROCESS
FONSI

PUBLIC NOTICE
FEMA NOTICE OF AVAILABILITY
DRAFT ENVIRONMENTAL ASSESSMENT
DRAFT FINDING OF NO SIGNIFICANT IMPACT
MITIGATION PROPOSAL FOR THE
CITY OF SLIDELL MARKHAM-PEACHTREE DRAINAGE
STORM DRAIN LINE REPLACEMENTS AND IMPROVEMENTS
SLIDELL, ST TAMMANY PARISH, LOUISIANA

Interested parties are hereby notified that the Federal Emergency Management Agency (FEMA) has prepared a draft Environmental Assessment (EA) and draft Finding of No Significant Impact (FONSI) in compliance with the National Environmental Policy Act (NEPA). The purpose of the EA is to assess the effects on the human and natural environment for the Markham-Peachtree Storm Drain Line Improvements Project, which consists of three sections of work: 1) re-grading, re-shaping and re-vegetating 180 linear feet of WP-20 Drainage Canal spanning from the existing Olive Drive bridge structure to an existing box culvert, 2) the removal of 337 linear feet of the existing box culvert and replacing the culvert with an open, vegetated channel, and 3) the removal of 939 linear feet of existing box culvert to be replaced with a ten foot wide by six foot tall open top concrete flume structure, which flows to an existing 10 foot wide by 4 foot tall concrete box culvert outfall. A total of 5,144 cubic yards (cy) would be excavated for this project, and 1,396 cy of fill would be placed, consisting of sediment, gravel, crushed stone and concrete. FEMA has recognized 16 repetitive flood loss structures in this vicinity, and the main purpose for this project is to reduce repetitive flooding impacts and improve the hydraulic performance of this section of the WP-20 Drainage Canal, which flows into the West Schneider Drainage Basin, which drains to Lake Ponchartrain via the Schneider Canal Pump Station.

A portion of the culvert is located within a 15 foot wide right of way (ROW) between the Windsor Place and Westchester Estates Subdivisions, and within a 15 foot wide easement along the back of lots 1-11 of Westchester Estates to the west of the ROW. There is also a 10 foot wide public servitude to the east of the ROW along the back of lots 1-12 of the Windsor Place Subdivision. Existing property fences cross over the ROW, currently closing off any access to the drainage servitude and limiting work space. Several facilities and structures will be demolished as a result of this mitigation proposal. A list of adjacent landowners was submitted in a March 30, 2015 Joint Permit Application sent to the US Army Corps of Engineers and the State of Louisiana for Work Within the Louisiana Coastal Zone, outlining this culvert removal to open channel proposal.

The purpose of the draft EA is to analyze the potential environmental impacts associated with the preferred action and alternatives. The draft EA evaluates a No Action Alternative; the Preferred Action Alternative, which is to construct an open channel that is mostly vegetated to alleviate flooding, and an Alternative Action which would include a combinations of drainage improvements such as installation of larger box culverts. The draft FONSI is FEMA's finding that the preferred action will not have a significant effect on the human and natural environment.

The draft EA and draft FONSI are available for review at the following locations: 1) Slidell Branch Library at 555 Robert Boulevard in Slidell, Louisiana 70458 Monday-Thursday 9:00 a.m. – 8:00 p.m., Friday-Saturday 9:00 a.m. – 5:00 p.m. and 2) the Lacombe Branch Library 28027 US-190, Lacombe, Louisiana 70445 Monday-Tuesday 10:00 a.m.– 6:00 p.m., Wednesday Noon to 8:00 p.m. and Thursday-Friday 10:00 a.m. – 6:00 p.m. This public notice will run in the local newspaper, The Times-Picayune, on Wednesday, May 20, Friday, May 22, 2015 and Sunday May 24, 2015. This public notice will also run in the local newspaper, The St Tammany Farmer, on Thursdays, May 21 and May 28, 2015. The documents can also be downloaded from FEMA's website at http://www.fema.gov/resource-document-library. There will be a 15 day comment period, beginning on June 4, 2015 and concluding on June 19, 2015 at 4 p.m. Comments may be mailed to: DEPARTMENT OF HOMELAND SECURITY-FEMA EHP, 1500 MAIN STREET, BATON ROUGE, LOUISIANA 70802. Comments may be emailed to: FEMA-NOMA@dhs.gov or faxed to 225-346-5848. Verbal comments will be

accepted or recorded at 504-427-8000. If no substantive comments are received, the draft EA and associated FONSI will become final.

8-STEP PROCESS

DATE: 05/17/2015
PREPARED BY: Merina Christoffersen, Environmental Specialist, and Gerard Ducote, Environmental Floodplain Specialist
PROJECT: HMGP 1603-0321 St. Tammany Parish – Markham-Peachtree Channel Reconstruction
LOCATION: Slidell, LA

EO 11988-FLOODPLAIN MANAGEMENT
EO 11990-WETLAND PROTECTION

STEP 1 **Determine whether the proposed action is located in a wetland and/or The 100-yr floodplain (500-year floodplain for critical actions [44 CFR 9.4]), or whether it has the potential to affect or be affected by a floodplain or a wetland (see 44 CFR 9.7).**

St. Tammany Parish enrolled in the National Flood Insurance Program (NFIP) on April 23, 1971. The project is located within a FEMA mapped floodplain. Preliminary Digital Flood Insurance Map (DFIRM) Panel 22103C0495F, dated 04/30/2008, places this project in Zone "AE" Base Flood Elevation (BFE) 11 feet NAVD88.

STEP 2 **Notify the public at the earliest possible time of the intent to carry out an action in a floodplain or wetland, and involve the affected and interested public in the decision making process (see 44 CFR 9.8).**

A cumulative public notice concerning the Hazard Mitigation Grant Program (HMGP) Assistance in floodplain and wetland areas will be or has been published in the New Orleans Times-Picayune, Baton Rouge Advocate, Lafayette Daily Advertiser, Lake Charles American Press, Hammond Star, Monroe News-Star, Shreveport Times, and the Alexandria Daily Town Talk.

STEP 3 **Identify and evaluate practicable alternatives to locating the proposed action in a floodplain or wetland (including alternative sites, actions and the "no action" option) [see 44 CFR 9.9]. If a practicable alternative exists outside the floodplain or wetland, FEMA must locate the action at the alternative site.**

Channel Reconstruction (Proposed Action)

The preferred alternative is to improve the open vegetated drainage canal from the Olive Street Bridge to the existing Markham-Peachtree box culvert, and replace the existing Markham-Peachtree box culvert with a 10' x 6' typical section concrete-lined open channel with vertical side walls.

At the Markham/Peachtree site the applicant proposes to modify an existing canal and box culvert to improve drainage. The flows drain to Lake Ponchartrain via the Schneider Canal Pump Station. Beginning at the Olive Street Bridge crossing the stream would have the vegetation of the right bank removed, excavated, and laid back for approximately 185 linear feet to a 2:1 slope. Another 650 linear feet of the stream would have both banks laid back to a 2:1 slope, and the applicant would reseed and revegetate the banks.

The applicant would also remove any debris, trees or brush immediately upstream and downstream of the existing box culvert for the removal of 337 linear feet of the culvert, and would replace the culvert with an open, vegetated channel.

Removal of an additional 939 linear feet of existing box culvert would be replaced with a ten foot wide by six foot tall open top concrete flume structure, which would flow to an existing 10 foot wide by 4 foot tall concrete box culvert outfall. The new culvert would be installed on a minimum 12 inch compacted aggregate base. This would require the excavation of materials from the area below the existing box in order to accommodate the larger box. It may also be necessary to remove and replace additional soil material. Some grading may also be necessary along the banks adjacent to the culvert to provide an appropriate grade for drainage to the top of the culvert. The newly constructed channel would empty downstream at a splashdown site where a concrete apron would be installed at two (2) converging drainage canals.

In addition to the new structure, wing walls would be installed to provide better flow characteristics for the channel as well as to help protect the channel banks from erosion at the entrance and exit and allow for better flow to the outfall. Minimum 8-foot high 90 gage chain-link fence must be constructed along both sides of the channel in the easement to prevent people and pets from entering or falling into the open channel. Ramps at each end for maintenance equipment entry points must also be constructed.

Per the H&H study, this alternative provides easier access to the channel for maintenance than the closed-top box culvert option. Also, this alternative is intended to remove the 11" allowance between the top of the culvert opening and the top of the ground which can cause an obstruction to flow in large storm events.

Hydraulically the open channel is a substantial improvement over the closed-top box culvert, such that the improvements to the Olive Drive Bridge as described above are no longer necessary.

This alternative allows the flow from the 100-year storm to flow through the Markham-Peachtree open channel without overtopping the banks and prevents virtually all upstream flooding up to a 100-year storm event. This alternative offers no significant improvement from the existing conditions in a 500-year event.

Dismissed Alternatives:

Option A, includes the replacement of the existing buried 10’ x 4’ box culvert with a 10’ x 5’ box culvert. The new pre-cast box culvert would be installed on a minimum 12” compacted aggregate base. This Alternative would require the removal of the existing culvert and removal of any debris, trees or brush immediately upstream and downstream of the culvert. This item would require the excavation of material from the area below the existing box in order to accommodate the larger culvert. In addition to the new box culvert, new wing walls would be installed to provide better flow characteristics for the channel as well as to help protect the channel banks from erosion at the culvert entrance and exit and allow for better flow into the box culvert. Sized inlet openings would also be placed in the top of the new box at the same locations as were on the existing structure at a minimum.

Other box culvert sizes were also evaluated including a 10’ x 6’ culvert, an 8’ x 6’ culvert, and a double 7’ x 5’ culvert as well as other standard sizes. Each of these options was dismissed due to reasons that included inefficient cover over the box, limited right-of-way, or no significant change in hydraulics. If this alternative were chosen, the proposed box-culvert modifications alone would not allow the 100-year storm to flow through the culvert, without significantly increasing the elevation of the top of the culvert thus removing the swale over the culvert which drains the adjacent properties. The proposed culvert replacement would greatly reduce the limits of flooding upstream of and along the new culvert, but would not have a significant impact downstream of the new culvert (Volkert, 2014). Therefore, this alternative was not considered effective and will not be carried forward.

Option B includes improving the Markham-Peachtree box culvert as described above in Option A and to upsize the culverts under Spartan Drive at the crossing of South Lateral Canal from the existing 7.25’ x 5.25’ culverts to 10’ x 7’ culverts. These modifications may decrease the water surface elevation by up to one (1) foot immediately upstream of Spartan Drive thus allowing decreases further upstream along the existing flooding area.

The additional modifications to the Spartan Drive crossing of the South Lateral Canal would significantly decrease water surface elevations thus removing additional structures from flood zones in 50-year and 100-year storms.

If this alternative were chosen, the improvement would still not be enough to allow the 100-year storm event to flow through the culvert without overflowing through the swale and there would be an increase in the demand on the Schneider Canal pump station (Volkert, 2014). Therefore, this alternative was not considered effective and will not be carried forward.

No Action

Implementation of the No Action Alternative would entail no hazard mitigation measures for the project area within the W-20 watershed. Consequently, this alternative would not provide any type of protection to residents of the area during peak flow events or other emergency situations. Under this alternative, water damage would likely continue to occur and both insured and uninsured losses would be experienced. This alternative would perpetuate the "damage-repair-damage" cycle thus requiring additional funding to be drawn from the National Flood Insurance Program as well as depleting local and National disaster funds.

STEP 4 **Identify the full range or potential direct or indirect impacts associated with, the occupancy or modification of floodplains and wetlands and the potential direct and indirect support of floodplain and wetland development that could result from the proposed action (see 44 CFR 9.10).**

The reconstruction of the Markham-Peachtree Channel and associated culvert replacement drainage improvements will be coordinated and comply with the local floodplain administration. All required permits will be obtained and kept for permanent documentation. The proposed activities will have minimal potential to impact the floodplain.

STEP 5 **Minimize the potential adverse impacts and support to or within floodplains and wetlands to be identified under step # 4, restore and preserve the natural and beneficial values served by floodplains, and preserve and enhance the natural and beneficial values served by wetlands (see 44 CFR 9.11).**

The project site is subject to flooding during major storm events. Since 2008 the project area has been damaged by flooding multiple times. If left unprotected, future storm events have the potential to repeatedly damage homes in this area.

Per the Hydrology and Hydraulics Study (H &H) prepared by Volkert March 2014, within the project area there are a total of 106 structures that fall within the 100 year flood limits. Of these structures, 17 have had repetitive loss claims. There are also 51 structures that fall within the 50 year flood limits.

Of these 51 structures, 14 have had repetitive loss claims. Repetitive loss data is based on information provided by FEMA in June 2008. All repetitive loss structures are located at WP-20 Canal Upper, between Hickory Street and the downstream outlet of the Markham-Peachtree box culvert (Volkert, 2014). Currently, the applicant, City of Slidell, needs to protect its residents within the project area from the 100

STEP 6 **Reevaluate the proposed action to determine first, if it is still practicable in light of its exposure to flood hazards, the extent to which it will aggravate the hazards to others. And its potential to disrupt floodplain and wetland values and second, if alternatives preliminarily rejected at step # 3 are practicable in light of the information gained in steps # 4 and # 5. FEMA shall not act in a floodplain or wetland unless it is the only practicable location (see 44 CFR 9.9).**

The actions proposed are located in the only practicable location. There are no other practicable alternate locations outside the floodplain available.

STEP 7 **Prepare and provide the public with a finding and public explanation of any final decision that the floodplain or wetland is the only practicable alternative (see 44 CFR 9.12).**

The EA went out for public review from May 20, 2015 to June 19, 2015.

STEP 8 **Review the implementation and post-implementation phases of the proposed action to ensure that the requirements of the order are fully implemented. Oversight responsibility shall be integrated into existing processes.**

APPROVAL CONDITIONED ON REVIEWS OF IMPLEMENTATION AND POST IMPLEMENTATION PHASES TO INSURE COMPLIANCE OF THE ORDER(S)

Project has been reviewed for compliance with 44 CFR Part 9.

U.S. Department of Homeland Security
Louisiana Recovery Office
1500 Main Street
Baton Rouge, LA 70802

FEMA

DRAFT FINDING OF NO SIGNIFICANT IMPACT
for the
CITY OF SLIDELL MARKHAM-PEACHTREE DRAINAGE
STORM DRAIN LINE REPLACEMENTS AND IMPROVEMENTS
SLIDELL, ST TAMMANY PARISH, LOUISIANA *FEMA-1603-DR-LA*

BACKGROUND

In accordance with 44 CFR Part 10, FEMA regulations to implement the National Environmental Policy Act (NEPA), an Environmental Assessment (EA) was prepared. The purpose of the EA was to analyze the potential environmental impacts associated with laying back the banks and revegetating an open channel, and removing box culvert and replacing it with open channel and open concrete flume, and to determine whether to prepare an Environmental Impact Statement (EIS) or Finding of No Significant Impact (FONSI). The need for the proposed action is to improve the Markham-Peachtree neighborhood drainage canal capacity; thereby, reducing the risk of future damage from flooding.

The alternatives considered include 1) No Action, 2) Placement of additional concrete box culvert (Eliminated from further consideration as it would not improve drainage), and 3) Construction of an open channel, with removal of box culvert, resulting in an 1,172 feet of vegetated banks (Proposed Action).

Specifically, at the Markham/Peachtree site the applicant proposes to modify an existing canal and box culvert to improve drainage. Specifically, beginning at the Olive Street Bridge crossing the canal would have the vegetation of the right bank removed, excavated, and laid back for approximately 185 linear feet to a 2:1 slope. Another 650 linear feet of the canal would have both banks laid back to a 2:1 slope, and the applicant would reseed and revegetate the banks.

The applicant would also remove any debris, trees or brush immediately upstream and downstream of the existing box culvert for the removal of 337 linear feet of the culvert, and would replace the culvert with an open, vegetated channel.

Removal of an additional 939 linear feet of existing box culvert would be replaced with a ten foot wide by six foot tall open top concrete flume structure, which would flow to an existing 10 foot wide by 4 foot tall concrete box culvert outfall. The new culvert would be installed on a minimum 12 inch compacted aggregate base. This would require the excavation of materials from the area below the existing box in order to accommodate the larger box. It may also be necessary to remove and replace additional soil material. Some grading may also be necessary along the banks adjacent to the culvert to provide an

appropriate grade for drainage to the top of the culvert. The newly constructed channel would empty downstream at a splashdown site where a concrete apron would be installed at two (2) converging drainage canals.

In addition to the new structure, wing walls would be installed to provide better flow characteristics for the channel as well as to help protect the channel banks from erosion at the entrance and exit and allow for better flow to the outfall. Minimum 8-foot high 90 gage chain-link fence must be constructed along both sides of the channel in the easement.

FINDINGS

FEMA has evaluated the proposed project for significant adverse impacts to geology, soils, water resources (surface water, groundwater, and wetlands), floodplains, coastal resources, air quality, biological resources (vegetation, fish and wildlife, Federally-listed threatened or endangered species and critical habitats), cultural resources, socioeconomics (including minority and low income populations), safety, noise, and hazardous materials. The results of these evaluations as well as consultations and input from other federal and state agencies are presented in the EA.

CONDITIONS

The following conditions must be met as part of the implementation of the project. Failure to comply with these conditions may jeopardize federal funds:

- Any changes or modifications to the proposed project will require a revised determination. Off-site locations of activities such as borrow, disposals, haul- and detour roads, and work mobilization site developments may be subject to USACE regulatory requirements.

- A Department of the Army Section 404 permit and Rivers and Harbors Act Section 10 permit may be required prior to the deposition or redistribution of dredged or fill material. Applicant must contact USACE prior to any work in the waterway or the wetland.

- If any of the proposed work is located in wetlands or other areas subject to the jurisdiction of the U.S. Army Corps of Engineers (USACE), USACE should be contacted directly to inquire about the possible necessity for permits. If a USACE permit is required, part of the application process may involve a water quality certification from LDEQ.

- Construction contractor is required to obtain applicable Louisiana Pollutant Discharge Elimination System (LPDES) permit, and implement stormwater pollution prevention plan.

- The applicant is required to coordinate with the local floodplain administrator regarding floodplain permit(s) or authorizations prior to the start of any activities.

- All coordination pertaining to these activities and applicant compliance with any conditions should be documented and copies forwarded to the state and FEMA for inclusion in the permanent project files.

- As per 44 CFR 9.11 (d) (9), mitigation or minimization standards must be applied, where possible. The replacement of building contents, materials and equipment should be, where possible, wet or dry-proofed, elevated, or relocated to or above the Preliminary DFIRM BFE or local floodplain ordinances, whichever is more stringent.

- All precautions must be observed to control nonpoint source pollution from construction activities. LDEQ has stormwater general permits for construction areas equal to or greater than one (1) acre. The applicant must contact the LDEQ Water Permits Division at (225) 219-9371 to determine if the proposed project requires a permit.

- Any renovation or remodeling must comply with Louisiana Administrative Code (LAC) 33:III.Chapter 28, Lead-Based Paint Activities; LAC 33:III.Chapter 27, Asbestos-Containing Materials in Schools and State Buildings (includes all training and accreditation); and LAC 33:III.5151, Emission Standard for Asbestos for any renovations or demolitions.

- If any solid or hazardous wastes, or soils and/or groundwater contaminated with hazardous constituents are encountered during the project, notification to LDEQ's Single-Point-of-Contact (SPOC) at (225) 219-3640 is required. Additionally, precautions must be taken to protect workers from these hazardous constituents.

- The contractor must observe all precautions to protect the groundwater of the region.

- The applicant is responsible for coordinating with and obtaining any required permit(s) from the LDNR Coastal Management Division prior to initiating work. The applicant shall comply with all conditions of the required permit. All coordination pertaining to these activities and applicant compliance with any conditions should be documented and copies forwarded to the state and FEMA for inclusion in the permanent project files.

- Any changes to the scope or location of the proposed project or if the project has not been initiated one year from the date of the solicitation of views (May 15, 2016), the applicant is responsible for coordinating with United States Fish and Wildlife Service.

- The applicant is responsible for complying with the Toxic Substances Control Act (TSCA) Section 402(c)(3) requirements as well as to the satisfaction of the governing local, state, and federal agencies to ensure that project activities are managed, administered, and/or handled by certified/accredited technicians, contractors, and providers. The applicant is responsible complying with all local, state, and federal laws and ensuring that project activities are coordinated with the LDEQ for abatement activities.

- If hazardous materials are unexpectedly encountered in the project area during the proposed construction operations, appropriate measures for the proper assessment, remediation, management and disposal of the contamination would be initiated in accordance with applicable federal, state, and local regulations. The contractor would be required to take appropriate measures to prevent, minimize, and control the spill of hazardous materials in the construction area.

- The LDNR Office of Conservation should be contacted at (225) 342-5540 if any unregistered wells of any type are encountered during construction work.

- If archaeological artifacts or features (prehistoric or historic) are discovered during the course of FEMA funded work, the Applicant must ensure that their Contractor stops work in the vicinity of the discovery and takes all reasonable measures to avoid and minimize harm to the discovery. The Applicant shall inform GOHSEP and FEMA of the discovery and FEMA will deploy an archaeologist to the location to conduct a site condition assessment. The Applicant will not proceed with work until FEMA has completed consultation with the SHPO on the treatment of the discovery.

- If human remains are discovered during the course of FEMA funded work, the Applicant and the Applicant's Contractor are responsible for immediately halting work within the vicinity of the human remains finding. The Applicant will immediately notify GOHSEP, FEMA, the local Police Department, and the local Coroner's Office of the discovery. The local Coroner's Office will assess the nature and age of the human skeletal remains. If the Coroner's Office determines that the human skeletal remains are older than 50 years of age, the Louisiana Division of Archaeology will take jurisdiction over the remains. Within twenty-four (24) hours, FEMA will notify the Louisiana Division of Archaeology (225-342-8170) of the finding. Within seventy-two (72) hours, FEMA will take the lead in working with the Louisiana Division of Archaeology and other interested parties, as necessary, to ensure compliance with the Louisiana Unmarked Human Burial Sites Preservation Act (R.S. 8:671 *et seq.*) and other applicable laws. In addition, the Applicant must afford FEMA the opportunity to comply with the "Human Remains Policy" set forth by the Advisory Council on Historic Preservation (ACHP).

Failure to comply with these conditions may make part or all of these projects ineligible for FEMA funding.

CONCLUSIONS

Based upon the incorporated EA, and in accordance with Presidential Executive Orders 12898 (Environmental Justice), 11988 (Floodplain Management), and 11990 (Wetland Protection), FEMA has determined that the proposed action implemented with the conditions and mitigation measures outlined above and in the EA will not have any significant adverse effects on the quality of the natural and human environment. As a result of this FONSI, an Environmental Impact Statement will not be prepared (44 CFR Part 10.8) and the proposed action alternative as described in the EA may proceed.

APPROVALS

_____

Kevin Jaynes Date
Regional Environmental Officer
Region VI
FEMA 1603-1607-DR-LA

_____

Thomas "Mike" Womack Date
Director of the Louisiana Recovery Office
Region VI
FEMA 1603-1607-DR-LA