IFC Submittal

ReTRAC Drainage Report Reno, Nevada

VOLUME 1

Prepared for:

RENO

Prepared by:

Stantec

80100603
December 2004

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PROFESSIONAL ENGINEER-STATE OF NEVADA
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ReTRAC DRAINAGE REPORT

1. INTRODUCTION

1.1 Project Description

This report provides a hydrologic and hydraulic evaluation of the Reno Railroad Corridor, ReTRAC project that consists of lowering the rail within a trench through the City of Reno. The area of interest extends generally from the Union Pacific Railroad (UPRR) crossing at West Second Street east to the railroad crossing at Sutro Street. Potential flooding sources for the project include the Truckee River and the watershed area up gradient of the project site. A multi-purpose barrier wall is proposed to border the entire depressed rail section. One of the functions of this barrier wall will be to prevent any potential floodwaters from the Truckee River or the watershed area up gradient of the project site from entering the depressed rail section.

A series of storm drain systems are proposed to intercept storm runoff from the watershed area upgradient of the depressed rail section. The existing storm drain crossing and flow path will remain in its current configuration for the West Second Street and Vine Street storm drain systems. A large portion of the proposed storm drain system will be located on the north side of the railroad corridor and extend from Arlington Street on the west, to Wells Avenue on the east. It will generally run parallel to the railroad corridor and intercept flows from existing storm drain systems that currently cross under the existing railroad tracks. Storm runoff will be conveyed by gravity flow to the Truckee River, discharging at the Wells outfall structure. The storm drain system located in Vine Street will be routed under the proposed trench through an inverted siphon. Capacity for this system will remain as existing and the discharge location will remain the same.

1.2 Scope of Work

Granite Construction initiated the ReTRAC Drainage Report under contract with the City of Reno in October 2002. The report was prepared for Parson Transportation Group as a subcontractor to Granite Construction and the City of Reno. Preparation for the project was divided into the following tasks:

- Compile and review existing studies
- Analyze and prepare an existing conditions 100-year hydrologic model of the upstream watershed
- Analyze localized areas of flooding in the railroad corridor area
- Identify and address flooding impacts from the Truckee River
- Develop a trench drainage plan
- Determine the existing capacity of the storm conveyance system in the subsurface (storm drain) and above ground systems
- Design storm drain systems to convey the capacity of the existing subsurface storm drain system
- Analyze the proposed roadway improvements to ensure conveyance of above ground runoff does not negatively impact adjacent properties
- Design a storm drain outfall structure conducive to the Truckee River environment

1.3 Limitations

The ReTRAC Drainage Report was prepared for the limited purpose of evaluating the impacts of offsite watersheds on the project and to analyze proposed improvements for the project. It is not the intent of this scope of work to identify or solve existing flooding problem areas within the City of Reno, but to ensure the ReTRAC project does not increase existing flooding conditions. The intent of these analyses and the associated drainage designs have therefore been prepared to provide the backup data necessary to demonstrate that the project does not only maintain existing flooding conditions, but improves flooding conditions in some areas, for a wide range of storms up to and including the 100-year event. The drainage analysis is not to be used as a Reno Master Drainage Plan. The results of these analyses should not be used for any other purpose than those explicitly stated above without written verification from Stantec.

2. PREVIOUS STUDIES

1. WRC Nevada, Incorporated

   WRC Nevada, Incorporated prepared a number of studies for the Evans Creek watershed. The two published reports are the Evans Creek (Block N Watershed) Hydrologic Evaluation of Proposed Detention Site Phase 1 Technical Memorandum, dated August 22, 2000 and the supplement dated September 1, 2000.

2. Nimbus Engineers

   Nimbus Engineers prepared a report for the Peavine Mountain watershed.

3. City of Reno

   The City of Reno, with technical assistance from the Soil Conservation Service, prepared a Watershed Work Plan for the Peavine Mountain watershed. The work plan covers an area of approximately 6,300 acres in Washoe County. The report is dated March 1958.

4. FEMA FIRM/ Flood Hazard Designations

   The project area is shown on the Federal Emergency Management (FEMA) Flood Insurance Rate Map (FIRM) for Washoe County, Nevada and Incorporated Areas, panels 2987 and 2995 of 3350, dated September 30, 1994.

3. HYDROLOGIC METHODOLOGY

The methodology used for the preparation of the hydrologic models was based upon the City of Reno Public Works Design Manual, Washoe County's Hydrologic Criteria and Drainage Design Manual (HC&DDM), discussions with the City of Reno staff and current engineering standard practices.

The policy of the City of Reno and Washoe County is to require local detention storage from new developments to limit flows from a 5-year storm (Q_5) to their pre-development conditions. Additionally they require detention storage for other storms up to and including the 100-year storm (Q_{100}) if the capacity of the downstream storm drainage facilities will be exceeded. The capacity of the downstream conveyance system must be analyzed to determine the requirements.

The U.S. Army Corp of Engineer's (COE) Flood Hydrograph package, HEC-1, Version 4.1 was used to perform the hydrologic modeling for the study area. The HEC-1 models were prepared based upon the Soil Conservation Service's (SCS) Unit Hydrograph method outlined in Washoe County's HC&DDM. The following four models were developed for the Drainage Report:

W2ND_EX.DAT – West Second Street watershed, existing conditions
W2ND_DET.DAT – West Second Street watershed, interim conditions

WESTKEY.DAT – West Keystone watershed
ReT_IFC.DAT – ReTRAC watershed from Vine Street to Wells Avenue

Copies of the HEC-1 models and model input parameters can be found in Appendix 1.

3.1 Basin Areas

The overall watershed was delineated utilizing United States Geological Survey (USGS) 7.5-minute quadrangle maps for the Reno area. These maps were used for delineating individual sub-basins in the upper Peavine watersheds. The WRC report mentioned above was used as the basis for the Evans Creek watershed areas. The majority of the developed areas within the City of Reno were divided into sub-basins using a 2-foot contour map provided by the city. Additional resources in determining basin boundaries included Nevada Department of Transportation highway plans, major roadway profiles, and field investigation supplemented by spot surveys.

The quadrangle maps and the City of Reno 2-foot contour map were both positioned in real orientation within AutoCAD 2000. Boundaries were then drawn and exported into Geographic Information Systems (GIS) format, where sub-basin area calculations were performed.

3.2 Precipitation

Precipitation within the HEC-1 program was modeled using a balanced storm distribution (PH card). Precipitation values were obtained from the National Weather Service's NOAA Atlas 2.

3.3 Curve Numbers

The Soil Conservation Service (SCS), U.S. Department of Agriculture curve number method was used to determine curve number values for use in the hydrologic models. Hydrologic soil groups for each basin were determined using information from the SCS Soil Survey of Washoe County, Nevada, South Part. Land uses were obtained from the Washoe County Assessors Parcel Base for the entire watershed and aerial photos were used to assist in classifying each basin's land use and cover designations, respectively. An Antecedent Moisture Condition II was used per the Washoe County HCDDM. Runoff curve numbers for each applicable land use, according to soil group, were taken from the HC&DDM and the SCS's Technical Release 55.

Article 420 "Storm Drainage Requirements", section 110.420.20 (a), states that new development must address land uses in the Comprehensive Plan, existing uses or Storm Drainage Master Plans, whichever produces the greater runoff. There are no Comprehensive Plans or Storm Drain Master Plans that include the watersheds analyzed for this project. Existing uses were therefore used for the Land Use calculations.

3.4 Lag Times

Two methods of computing lag times were used according to the SCS dimensionless unit hydrograph method. The lag parameter is equal to the lag (in hours) between the center of mass of rainfall excess and the peak of the unit hydrograph. For drainage basins less than one square mile and whose slopes are less than ten percent, the lag time parameter equals 60% of the time of concentration for the individual basin. The concentration time is composed of an initial overland flow time plus a travel time. The initial time was calculated according to Equation 702 of the Washoe County HCDDM, while the following travel time was estimated by measuring the travel length and dividing by an estimated flow velocity. Flow velocities were estimated with Figure 701 of the Washoe County HC&DDM. This figure gives velocities for different land cover types with respect to the ground slope.

For basins larger than one square mile and whose slopes exceed ten percent, the lag time is influenced more by the concentrated flow time. Equation 710 of the Washoe County HCDDM, based upon analysis by the United States Bureau of Reclamation, was used in computing lag time parameters for applicable basins within the watershed.

3.5 Hydrograph Routing

The Muskingum-Cunge routing technique was used to route the hydrographs within the HEC-1 models. Channel properties for small natural channels were based upon topographic information and field investigations.

4. HYDROLOGIC MODEL

The ReTRAC drainage watershed covers an area of approximately 14.5 square miles. Elevation ranges from a high of 6603-feet at Upper Peavine to a low of 4492-feet at Record Street and the UPRR. In the higher elevations of the numerous ranges, ground cover consists of a mixture of shrubs, sagebrush and grasses in undeveloped areas and single and multi-family residential and commercial areas. The lower elevations of downtown Reno are almost completely developed by casinos, business commercial and single-family residences.

Surface runoff terminates at various points on the Truckee River. Currently there are outfall points at West Second Street, Washington Street, Arlington Avenue, Evans Avenue, Record Street and Park Street. These outfall points drain a series of storm drain systems servicing the downtown area and extend north of the freeway to the base of Peavine Mountain.

Overland flow in the watersheds generally travels in a southeast direction towards the Truckee River. Interstate 80 acts as an east-west divider between the railroad corridor and Peavine Mountain. Overland flow reaching the freeway becomes channelized and forced under the freeway or through the overpasses at specific points. The flow continues in a southeast direction and enters the river along the north bank. The following sections summarize the existing drainage patterns within the overall region.

4.1 West Second Street Watershed

The West Second Street watershed covers approximately 0.52 square miles of land with a concentration point at the West Second Street railroad underpass. The area is predominately residential, with scattered park areas and cemeteries. Storm runoff originates behind the Albertson's shopping center on the southeast corner of N. McCarran Boulevard and Mae Anne Parkway. Runoff in the residential areas is conveyed via gutter flow in a southeast direction to Interstate 80. At Interstate 80 flow is channelized in a V-ditch running along the north side of the Interstate until it outlets at the Stoker Avenue overpass. Flow then travels south on Stoker Avenue to the intersection at Fourth Street where it splits between Fourth Street and West Second Street. A small portion of the flow travels south to the West Second Street underpass where it is conveyed to the Truckee River. The majority of the flow travels east on Fourth Street and is detained in a natural detention area located several hundred feet east of the intersection of Fourth Street and Stoker Avenue. Flow exceeding the detention area elevation of 4528-feet travels overland to the West Second Street railroad underpass where all overland flow is conveyed south to the Truckee River.

There are two storm drain systems servicing this basin. The first system, servicing the natural detention basin on Fourth Street, is composed of a 24" RCP that turns into two 18" RCPs and outlets just east of the West Second Street railroad underpass. The second system, located just west of the West Second Street railroad underpass, extends up Stoker and services the residential area along Seventh Street. The outlet is a 36" RCP located west of the West Second Street railroad underpass.

The 100-year peak flow rate for the watershed is 416 cfs. Of this flow 39 cfs is conveyed in the 24-inch RCP and 92 cfs is conveyed in the 36-inch RCP. The resulting overland flow through the West Second Street underpass is 123 cfs with a peak storage of 162 cfs in the natural detention area north of West Fourth Street at a 100-year water surface elevation of 4528.35. Flow exceeding this elevation is conveyed overland in the street section via the West Second Street underpass to the Truckee River. The existing conditions HEC-1 hydrologic model is located in the Hydrology section of the appendix and the StormCad hydraulic analyses for the storm drain conveyance capacities are located in the W. Second St. section of the appendix.

4.2 West Keystone Watershed

The West Keystone basin is located at Keystone Avenue between Interstate 80 and the Union Pacific Railroad. The basin area is approximately 0.08 square miles. Runoff begins at the south edge of Interstate 80 with no contribution from areas north of Interstate 80. The basin is composed largely of downtown commercial and multi-residential. Flow travels southeast to a sump located in Fourth Street approximately 300' west of Keystone Avenue. Once sump elevation is exceeded, flow travels south to the Union Pacific Railroad where it is conveyed east in the UPRR right-of-way. One storm drain system services the area. A

30" RCP conveys flow from the sump in Fourth Street east to the Vine Street Strom Drain system at Fourth Street. A 15" RCP conveys the localized drainage on Keystone Avenue, between the Union Pacific Railroad and Fourth Street, to the 30" RCP.

The 100-year peak flow rate for the watershed is 91 cfs. Of this flow 37.5 cfs is conveyed in the underground storm drain. See the report entitled *ReTRAC Drainage Memorandum for the Keystone Avenue Storm Drain System* and Addenda located in Appendix 2.

4.3 Vine Watershed

The Vine Watershed covers an area of approximately 0.98 square miles and terminates at the north side of Interstate 80 and Vine Street at the Vine Street Sump. Watershed basins draining to the Vine Watershed cover an area of approximately 8.2 square miles and range in elevation from a high of 6603-feet at the top of Peavine Mountain to a low of 4552-feet at the Vine Street sump. Watershed basins Elmcrest, Lower Peavine, Upper Peavine, Sprout, West Wash and East Wash all concentrate at the Vine Street Sump. The watershed has a mixture of rural land in the higher elevations and residential neighborhoods in the lower elevations. The watershed also has four existing detention basin dam structures to capture overland flow and protect surrounding residential areas.

Storm runoff originates near the ridgeline of Peavine Mountain, in watershed basins Upper Peavine, East Wash and Sprout. Runoff is conveyed in natural ephemeral streams and channels southeast towards Interstate 80. Flow in watershed basin East Wash is detained in a dam structure labeled the East Wash Dam. An overflow spillway releases flow from the East Wash dam capacity to another dam labeled the West Wash Dam. This structure captures flow from basin West Wash. Flows downstream of the structure are conveyed in a south-east direction towards the Vine Street sump located on the north side of Interstate 80.

A third detention dam, labeled Upper Peavine Dam, detains flow from the Upper Peavine watershed basin. The fourth detention dam is labeled Lower Peavine Dam and detains flow from watershed basins Sprout and Lower Peavine. Flow exceeding the detention capacity is released to surface streets and continues south-east to the Vine Street sump. All watershed basins in the Vine area ultimately drain to the Vine Street sump. All four dams were designed to effectively detain the upstream 100-year event flows.

The Vine Street Storm Drain system services the residential areas throughout the Vine Watershed including the four detention dams previously discussed. This system combines at the Vine Street sump where a large drop inlet accepts overland flow to an underground 84" RCP. A pair of 10'x4' RCBs next to the Vine Street sump, convey excess flow south, under the freeway, and returns it to its natural flow pattern. The Vine Street Storm Drain system conveys flow south under the freeway and eventually discharges into the Truckee River at Arlington Avenue. See the report entitled *ReTRAC Hydrologic and Hydraulic Design Memorandum for the Vine Street Storm Drain System* located in Appendix 2.

4.4 Washington Watershed

The Washington watershed is approximately 0.06 square miles in area and drains to the Vine Street sump where it combines with flows from the Vine watershed. The land cover for the basin is mainly single and multi residential housing. There is a small area in the northern portion of the watershed containing utility structures. Flows from Washington watershed are conveyed west along 7th St. to the Vine St. Sump.

4.5 Ralston, Sierra and Virginia Watersheds

The Ralston, Sierra and Virginia watersheds are all small areas upstream of Interstate 80. These watersheds do not cause a significant increase to the overall peak flow rate at the trench corridor due to the timing of the hydrographs. The land uses for these watersheds are mainly a mixture of single and multi residential housing. Small-scattered areas of commercial land use can be found throughout the watersheds. Flows from these watersheds are conveyed south over the I-80 bridges into Downtown West.

4.6 Downtown West Watershed

The Downtown West watershed basin is bounded by Interstate 80 on the north, Union Pacific Railroad on the south, Keystone Avenue on the west and Center Street on the east. The majority of the basin is developed with downtown commercial and industrial. Flow in this basin is predominately the result of overland flow from the Vine Watershed. Flow travels south-east from Vine Street, splitting at various intersections. Eventually flow recombines along Third Street and travels east, parallel to the Union Pacific Railroad. Flow remains in Third Street until West Street where flow begins to split over the UPRR tracks and travel south towards the Truckee River. Approximately 165cfs splits over the UPRR tracks between West Street and Virginia Street. The majority of the flow remains in Third Street and continues east on Plaza Street towards Center Street.

Properties in the downtown area are currently affected by the existing conditions 100-year event. Flow is not fully contained in the street sections and will meander throughout adjacent properties. In many places the existing Union Pacific Railroad profile elevation is higher than adjacent properties along Third Street. The UPRR tracks act as a levee containing the flow in Third Street and restricting flow from traveling south towards the Truckee River.

There are multiple storm drain systems servicing the Downtown West Watershed. The Vine Street Storm Drain system conveys flow from upstream of Interstate 80 and collects flow along Vine Street. The system crosses UPRR tracks near Third Street and continues south-east to the Arlington outfall point in the Truckee River.

The Washington Street system collects flow along Washington Street and crosses the UPRR tracks at Washington Street just south of Third Street. The flow continues south to the Washington outfall point in the Truckee River.

The Arlington Street box system collects flow from the Bell Street system and the Sands Hotel Property and conveys it south to the Arlington Street outfall point in the Truckee River. The system crosses the UPRR tracks at Arlington Street and Third Street.

The Plaza Street Storm Drain system begins at Sierra Street and collects flow along Third Street and Plaza Street. The flow continues east on Plaza Street to Evans Avenue. The Plaza Street system crosses the UPRR tracks at Evans Avenue and continues south to the Evans outfall point in the Truckee River.

A storm drain system collects flow along Fourth Street beginning at Nevada Street. The system continues in Fourth Street to Record Street. The system crosses the UPRR tracks at Record Street, just south of Plaza Street and outlets at the Record Street outfall point in the Truckee River.

4.7 Evans Watershed

Backup data for the upper Evans watershed was taken from the WRC report mentioned above including soils, land use, curve numbers, lag times, detention and routing data. The data from the WRC report closely matched our preliminary watershed analysis.

The Evans Watershed covers an area of approximately 4.8 square miles. Elevation ranges from a high of 5260-feet at the ridgeline of Peavine Mountain to a low point of 4667 at Evans Avenue Interstate 80 Bridge. The area is a mixture of rural and residential. All of the University of Nevada, Reno is contained within the Evans Watershed.

Surface runoff begins at the ridgeline of Peavine Mountain and is conveyed in natural ephemeral streams and channels south to McCarran Blvd. Flow is forced under McCarran Blvd. through a 48" RCP and a 10'x10' RCB. The flow passes through a portion of Rancho San Rafael Park and is detained in a sump on the west slope of Sierra Street. Flow exceeding detention capacity travels southeast through the University of Nevada, Reno and concentrates at the Evans Avenue Interstate 80 Bridge.

The Record Street Storm Drain system services the University of Nevada, Reno beginning at the Rancho San Rafael Park detention area. The system travels southeast through the University and conveys flow under Interstate 80 via an inverted siphon. The system continues south through the Downtown East basin to the Record Street outfall point in the Truckee River.

The Evans watershed was studied in detail by WRC Nevada Inc. WRC Nevada, Inc. prepared a number of studies for the Evans Creek watershed. The two published reports are the *Evans Creek (Block N Watershed) Hydrologic Evaluation of Proposed Detention Site Phase 1 Technical Memorandum*, dated August 22, 2000 and the supplement dated September 1, 2000. Portions of these reports were used for our hydrologic analyses. Please refer to the WRC Nevada, Inc. *Evans Creek Block N Hydrologic Analysis Watershed Map, Figure 2* for the Evans Creek watershed basins utilized in portions of the hydrologic analysis.

4.8 Downtown East Watershed

Downtown East Watershed is bounded by Interstate 80 to the north, Union Pacific Railroad to the south, Center Street to the west and Wells Avenue to the East. The majority of the area is developed with downtown commercial and industrial. Flow in this basin is predominately the result of overland flow from the Evans Watershed. Flow passes over the Evans Avenue Bridge at Interstate 80 and travels south on Evans Avenue. Flow continues in a southeast direction, splitting at various intersections.

A high point runs along Record Street near the Union Pacific Reno Branch. Approximately 50% of the total 100-year event overland flow passes over the high point and travels in a northeast direction away from the project site. Approximately 50% of the total 100-year event overland flow travels south from Evans Avenue and Record Street to Fourth Street where approximately 15% of the total 100-year event overland flow travels east on Fourth Street. The remaining flow continues south over the UPRR tracks between Evans Avenue and Record Street to the Truckee River.

Two storm drain systems service the Downtown East Watershed. The Evans Avenue Storm Drain System collects flow along Evans Avenue and the Fourth Street system services a portion of Downtown West. The Evans system crosses the UPRR trench south of Plaza and travels south to the Evans Avenue outfall point in the Truckee River.

The second system is the Record Street Storm Drain system that collects flow along Record Street and conveys flow from Evans Watershed servicing the University of Nevada, Reno. The Record system crosses the UPRR tracks just east of the Union Pacific Reno Branch connection, south of Fourth Street, and continues south to the Record Street outfall point in the Truckee River.

5. EXISTING CONDITIONS HYDRAULIC ANALYSIS

Existing hydraulic analyses were performed on overland flows throughout the downtown Reno area. The Truckee River is the final drainage point of overland flows for the northern portion of the Reno area. In existing conditions overland flow meanders throughout the downtown area. Cross sections were analyzed in various parts of the downtown area to determine flow characteristics during the 100-year storm event. Most of the emphasis was on Third Street, which runs parallel to the Union Pacific Railroad tracks and conveys a large portion of the 100-year storm event. Figures 5a-c in the appendix show the existing conditions flow patterns and cross section locations. The following discussion summarizes the existing hydraulic properties in the downtown area.

5.1 West Second Street

The 100-year peak flow rate for the watershed is 416 cfs. Of this flow 39 cfs is conveyed in a 24-inch RCP and 92 cfs is conveyed in a 36-inch RCP. The resulting overland flow through the West Second Street underpass is 123 cfs with a peak storage of 162 cfs in the natural detention area north of West Fourth Street at a 100-year water surface elevation of 4528.33. Flow exceeding this elevation is conveyed overland in the street section via the West Second Street underpass to the Truckee River. The existing conditions StormCad hydraulic analyses for the storm drain conveyance capacities are located in the W. Second St. section of the appendix.

5.2 Vine Street (South of Interstate 80)

In the 100-year event, 244 cfs of overland flow passes through Interstate 80 and travels south on Vine Street. Cross sections were analyzed on Vine Street, between Fifth Street and Fourth Street. Any overland flow on Vine Street will travel south to Fifth Street where it begins to split east through the Gold Dust West Hotel and Casino parking lot. At the intersection of Fourth Street and Vine Street all flow has split east and travels down Fourth Street to the next intersection. As a result, the Vine Street Union Pacific Railroad crossing, near Third Street, does not have substantial overland flow. The area is limited to nuisance flow and a hydraulic analysis of the area was not needed. See the Hydraulics section in Appendix 2.

5.3 Washington Street (South of Fourth Street)

The majority of overland flow on Washington Street is from Vine Street. Flow on Fourth Street, from the Vine Street Interstate 80 crossing, splits at the intersection of Fourth Street and Washington Street. Cross sections were analyzed at the intersection of Fourth Street and Vine Street and also at the Washington Street Union Pacific Railroad crossing near Third Street. Approximately 315 cfs flows to the intersection of Fourth Street and Washington Street. A flow of 233 cfs splits south on Washington to the intersection of at Third Street. There the entire flow is forced east on Third Street by the Union Pacific Railroad tracks. Flow along Third Street is not contained in the street section and may impact adjacent properties. See the Hydraulics section in Appendix 2.

5.4 Ralston Street (South of Fourth Street)

The 100-year event overland flow affecting the intersection of Ralston and Third Street is 328 cfs. A flow of 77 cfs splits from the intersection of Fourth Street and Ralston Street and travels south on Ralston Street. This combines with 251 cfs traveling east on Third Street from Washington Street. Additional cross sections were taken on Third Street between Ralston Street and Arlington Avenue. The total flow continues east along Third Street parallel to the Union Pacific Railroad tracks. The overland flow is not contained in the street section and may impact adjacent properties. See the Hydraulics section in Appendix 2.

5.5 Arlington Avenue (South of Fourth Street)

Cross sections were analyzed on Arlington Avenue where it intersects Fourth Street and Third Street. A flow of 110 cfs impacts the intersection of Fourth Street and Arlington Avenue. Of that flow 61 cfs splits south on Arlington Avenue and combines with 328 cfs on Third Street. A total of 389 cfs impacts the intersection of Arlington Avenue and Third Street. Additional cross sections were taken on Third Street between Arlington Avenue and West Street to identify splits over the Union Pacific Railroad. The total flow continues east on Third Street. Flow along Third Street is not contained in the street section and may impact adjacent properties. See the Hydraulics section in Appendix 2.

An existing box culvert storm drain crosses under Arlington Street. This system collects flow from the Bell Street system and the Sands Hotel Property and conveys it south to the Arlington Street outfall point in the Truckee River. The system crosses the UPRR tracks at Arlington Street and Third Street. The inlet capacity of all catch basins contributing to the system was analyzed to determine the amount of flow conveyed by the system.

5.6 West Street (South of Fourth Street)

A total of 436 cfs impacts the intersection of Third Street and West Street. A flow of 47 cfs travels south from a split at Fourth Street and combines with 389 cfs traveling east on Third Street, from Arlington Avenue. Cross sections were analyzed on Arlington Avenue at the intersections of Fourth Street and Third Street. Additional cross sections were analyzed on Third Street between West Street and Sierra Street. Water surface elevations showed a split over the Union Pacific Railroad tracks. A weir model was developed and analyzed in conjunction with the Third Street cross sections. A total of 31 cfs splits over the UPRR tracks. The remaining 405 cfs remains traveling east in Third Street. Flow along Third Street is not contained in the street section and may impact adjacent properties. See the Hydraulics section in Appendix 2.

5.7 Sierra Street (South of Fourth Street)

Cross section analyses show a total of 477 cfs impacting the intersection of Third Street and Sierra Street. A flow of 72 cfs travels south from Fourth Street to combine with 405 cfs on Third Street. The 477 cfs does not impact the UPRR tracks at the intersection of Third Street and Sierra Street. Additional cross sections taken along Third Street between Sierra Street and Virginia Street show a split over the UPRR tracks. Weir analysis resulted in 61 cfs splitting over the UPRR tracks and the remaining 416 cfs continuing east on Third Street. See the Hydraulics section in Appendix 2.

5.8 Virginia Street (South of Fourth Street)

Cross sections were analyzed along Virginia Street at the intersections of Third Street and Plaza Street. A flow of 416 cfs travels east on Third Street to the intersection of Virginia Street and Third Street and combines with an additional 35 cfs from downtown rainfall. Analysis shows 73 cfs splitting south on Virginia Street. The remaining 378 cfs travels east on Plaza Street. Flow along Third Street and Plaza Street is not contained in the street section and may impact adjacent properties. See the Hydraulics section in Appendix 2.

5.9 Center Street (South of Fourth Street)

Cross sections were analyzed at the intersection of Plaza Street and Center Street. 378 cfs travels east on Plaza Street from Virginia Street. No splitting occurs at the intersection and the flow continues east on Plaza Street. Flow along Plaza Street is not contained in the street section and may impact adjacent properties. See the Hydraulics section in Appendix 2.

5.10 Lake Street (South of Fourth Street)

Cross sections were analyzed at the intersection of Plaza Street and Lake Street. 378 cfs travels east on Plaza Street from Center Street. No splitting occurs at the intersection and the flow continues east on Plaza Street. Flow along Plaza Street is not contained in the street section and may impact adjacent properties. See the Hydraulics section in Appendix 2.

5.11 Evans Avenue (South of Interstate 80)

A peak 100-year event flow of 1125fs travels over the Evans Avenue Bridge at Interstate 80. A minor amount of flow (48cfs) also travels over the Center Street Bridge at Interstate 80 and eventually combines with the Evans Avenue flow.

Cross sections were analyzed throughout the Evans Avenue vicinity. See Figures 5b and 5c for cross section locations. After a series of splits along Evans Avenue and Record Street a total of 388cfs reaches the Union Pacific Railroad North Reno Branch Spur at Fourth Street where it Fourth Street and heads south to the Truckee River. The remaining

271cfs travels east along Fourth Street. Flow along Evans Avenue is not contained in the street section and may impact adjacent properties. See the Hydraulics section in Appendix 2.

5.12 Record Street (South of Sixth Street)

Flow affecting Record Street comes primarily from Evans Avenue. Cross sections were analyzed along Record Street at the intersections of Sixth Street and Fourth Street. A detailed analysis was also prepared for a large industrial area surrounding Record Street and the Union Pacific Reno Branch Railroad. See Figures 5b and 5c for cross section locations. The flow along Record Street is not contained in the street section and may impact adjacent properties.

5.13 Park Street (South of Fourth Street)

Cross sections were analyzed at the intersection of Fourth Street and Park Street. A flow of 271fs from Evans Avenue travels east on Fourth Street to the intersection at Park Street. Approximately 75cfs splits south on Park Street. Flow continues south over the Union Pacific Railroad tracks to the Truckee River. The remaining 196cfs continues east on Fourth Street. Flow in Fourth Street is not contained in the street sections and may impact adjacent properties.

5.14 Wells Avenue (South of Fourth Street)

Cross sections were analyzed at the intersection of Wells Avenue and Fourth Street. 192cfs travels east on Fourth Street to the intersection at Wells Avenue. No flow splits south on Wells Avenue. The total flow remains in Fourth Street and continues east. Flow in Fourth Street is not contained in the street section and may impact adjacent properties.

5.15 Morrill Avenue to Sutro Street (South of Fourth Street)

Hydraulic calculations in this area were unnecessary due to topographic features. Flow continues east on Fourth Street from Wells Avenue. Any splits south will eventually turn east and not cross the Union Pacific Railroad. Flow eventually returns to Fourth Street and continues east past the project boundaries. Flow in Fourth Street is not contained in the street section and may impact adjacent properties.

6. PROPOSED CONDITIONS HYDRAULIC ANALYSIS

Proposed improvements affecting hydraulics are trench wall installation along Third Street, elimination of existing Union Pacific Railroad natural drainage crossings, roadway profile improvements at existing street crossings and storm drain relocations due to the proposed trench section. It is assumed that the Third Street profile will remain as existing with the exception of roadway intersection profile adjustments and trench wall encroachments. Proposed improvements were designed to minimize the impact to the existing 100-year event drainage patterns and convey existing storm drain capacities of disturbed systems. Water surface elevations were not increased in the downtown area and drainage patterns remain as existing. The following discussion summarizes the proposed hydraulic properties in the downtown area.

6.1 West Second Street

Proposed improvements in the West Second Street Watershed will include an interim and final condition. During the interim condition the proposed shoofly improvements will effectively eliminate the flood flow conveyance of the West Second Street underpass south to the Truckee River. Final proposed improvements will convey the existing flows through a culvert to the south side of the final railroad improvements.

During the interim condition of the shoofly construction and operation (approximately 18 months), the West Second Street underpass conveyance will be severed due to the shoofly fill. The 24-inch and 36-inch RCP's will remain functional. The reduction in conveyance by severing the West Second Street underpass will increase flooding elevations in West Fourth Street and the ponding area north of West Fourth Street.

An interim condition hydrologic and hydraulic analysis was prepared to determine the effects of the reduction in conveyance during construction of the trench. The 100-year peak flow rate that will be conveyed through the functioning 24-inch and 36-inch RCP's is 133-cfs. The reduction in conveyance will increase the 100-year water surface elevation north of the UPRR by 0.30-feet with a total storage of 283 cfs, which will impact adjacent properties. Granite Construction is aware of and has assumed this risk for the interim condition. The shoofly will be protected from flood flows in the 100-year event by the existing UPRR embankment, which exceeds elevation 4529.5 in all adjacent areas.

Proposed final improvements will consist of 330-feet of 48-inch RCP culvert to be placed along West Second Street. The proposed culvert will convey the resulting 100-year flow (123cfs) under the West Second Street Bridge and proposed shoofly. It is assumed the storm drain systems in West Second Street and West Fourth Street are designed for the 5-year event. Therefore a low flow design will not be required. A velocity dissipation structure will be required at the outlet of the proposed culvert. The outlet structure will be connected to a proposed storm drain in Dickerson Rd. to drain residual water. Flow released from the outlet structure in the 100-year event will return to its historic flow pattern. Hydraulic backup data is located in the West Second Street section of the appendix.

6.2 Keystone Avenue

Improvements in the Keystone watershed basin involve trench wall installation and raising the Keystone Avenue profile at the UPRR crossing. These improvements eliminate the natural drainage crossing just west of Keystone Avenue and alter the surface drainage of properties surrounding the new Keystone Avenue profile. The storm drain inlets of properties affected by the Keystone Avenue improvements will be upsized to convey the localized 100-year storm event flows. This will eliminate potential localized flooding in the 100-year event caused by the increased Keystone Avenue profile elevation.

A 36" RCP culvert will be installed under the new Keystone Avenue profile to convey 100-year storm event flows affected by the elimination of the existing drainage crossing. Approximately 53.5cfs will travel east, in a v-ditch, to a proposed inlet in the Vine Street Storm Drain system. Due to differences in concentration times, the Vine Street Storm Drain system will have ample capacity to convey the Keystone flow to the Truckee River. See the Keystone Avenue section in the appendix for specific drainage design and calculations.

6.3 Vine Street

Improvements affecting the Vine Street watershed involve trench section installation and raising the Vine Street profile at the UPRR crossing. The proposed trench section disrupts the existing Vine Street Storm Drain profile. The Vine Street Storm Drain system will be relocated to accommodate the proposed trench section. An inverted siphon, installed on an offset alignment, will convey the existing flow under the trench and back to its existing alignment.

Flow will also be accepted from the proposed Washington Street storm drain alignment. See the Washington Street section in the appendix.

The capacity of the proposed inverted siphon is 98% of original. The difference in capacity will flow east on Third Street, following the 100-year storm event overland flow path. The additional 19 cfs will back up the Keystone outlet channel not adversely impact adjacent properties.

The proposed Vine Street profile will not adversely affect existing drainage. The existing UPRR crossing is limited to nuisance flow and no hydraulic analysis is needed for proposed conditions. See the Vine Street section in the appendix for specific drainage design and calculations.

6.4 Washington Street

Proposed improvements at Washington Street are trench wall installation and raising the Washington Street profile at the UPRR crossing. The proposed trench section disrupts the existing Washington Street Storm Drain system. The Washington Street Storm Drain system will be rerouted to connect to the proposed inverted siphon in Vine Street. A 30" RCP will convey flow west on Third Street to the Vine Street Storm Drain system and ultimately the Truckee River. The Washington Street Storm Drain capacity will remain as existing. A flap gate will be installed at the Vine Street Storm Drain connection point to prevent backwater in the Washington Street Storm Drain system during the 50-year storm event.

The proposed Washington Street profile at the UPRR crossing will not significantly affect the water surface elevation of the 100-year storm event. The 100-year storm event overland flow patterns will remain as existing. See the Washington Street section and the West Third Street Storm Drain section in the appendix for specific drainage design and calculations.

6.5 Ralston Street

Proposed improvements at Ralston Street are raising the Ralston Street profile at the UPRR crossing. The proposed Ralston Street profile will not significantly affect the water surface elevation of the 100-year storm event. The 100-year overland storm event flow patterns will remain as existing. See the Ralston Street section in the appendix for specific drainage design and calculations.

6.6 Arlington Avenue

Proposed improvements at Arlington Street are trench wall installation and raising the Arlington Street profile at the UPRR crossing. The proposed trench section conflicts with the existing Arlington Street Storm Drain system. The Arlington Street Storm Drain system will be rerouted east to connect with the Plaza Street Storm Drain system and ultimately connect with the proposed Evans Storm Drain system, which will outlet at the proposed Wells Avenue outfall structure. A 30" RCP will connect to the Arlington Storm Drain system at the Sands Hotel sump and travel east on Third Street to the proposed Plaza Street Storm Drain system. The Plaza Street Storm Drain system will be upsized to accept the additional flow and existing capacity within the system will be maintained. See the "East Third Street Storm Drain" section in the appendix for specific drainage design.

The proposed Arlington Street profile at the UPRR crossing will not significantly affect the water surface elevation of the 100-year storm event. The 100-year overland storm event flow patterns will remain as existing. See the Arlington Street section in the appendix for hydraulic calculations.

6.7 West Street

Proposed improvements at West Street are raising the West Street profile at the UPRR crossing. The proposed West Street profile will not significantly affect the water surface elevation of the 100-year storm event. The 100-year overland storm event flow patterns will remain as existing. See the West Street section in the appendix for specific drainage design and calculations.

6.8 Sierra Street

Proposed improvements at Sierra Street are changing the Sierra Street profile at the UPRR crossing and installation of the proposed trench section. The proposed trench section will eliminate existing 100-year storm event drainage patterns, which conveyed 33 cfs overland south to the Truckee River. The proposed Sierra Street profile will allow the 33 cfs from Third Street to spilt south on Sierra Street in the 100-year storm event.

The proposed Sierra Street profile will not adversely affect the 100-year storm event water surface elevation on Third Street. The 100-year overland flow patterns of Third Street will remain as existing. See the Sierra Street section in the appendix for hydraulic calculations and weir analysis.

6.9 Virginia Street

Proposed improvements at Virginia Street are changing the Virginia Street profile at the UPRR crossing and installation of the proposed trench section. The proposed trench section will eliminate existing 100-year storm event drainage patterns that conveyed 133 cfs overland south to the Truckee River. The proposed Virginia Street profile will allow 129cfs from Third Street to spilt south on Virginia Street in the 100-year storm event.

The proposed Virginia Street profile will not significantly affect the 100-year storm event water surface elevation on Third Street. The 100-year overland flow patterns of Third Street will remain as existing. See the Virginia Street section in the appendix for hydraulic calculations and weir analysis.

6.10 Center Street

Proposed improvements at Center Street are changing the Center Street profile at the UPRR crossing. The proposed Center Street profile will not significantly affect the water surface elevation of the 100-year storm event. The 100-year overland storm event flow patterns will remain as existing. See the Center Street section in the appendix for specific drainage design and calculations.

6.11 Lake Street

Proposed improvements at Lake Street are changing the Lake Street profile at the UPRR crossing. The proposed Lake Street profile will not significantly affect the water surface elevation of the 100-year storm event. The 100-year overland storm event flow patterns will remain as existing. See the Lake Street section in the appendix for specific drainage design and calculations.

6.12 Evans Avenue

Proposed improvements at Evans Avenue are installation of the trench wall and changing the Evans Avenue profile at the UPRR crossing. The Evans Avenue Storm Drain profile and the elimination of existing 100-year event overland drainage patterns will be affected by the proposed trench. A proposed storm drain system called Evans Avenue Storm Drain will route the flow east along the north side of the trench to the proposed Wells Avenue outfall structure where it will enter the Truckee River. The proposed system will convey flows from the proposed East Third Street Storm Drain, the existing Evans Avenue Storm Drain system and the existing Record Street Storm Drain system.

The 100-year overland flow will be intercepted at the west side of Evans Avenue and conveyed via a 66-inch RCP to the proposed Evans Avenue Storm Drain.

The proposed Evans Avenue profile will not affect the water surface elevation of the 100-year storm event. The 100-year overland storm event flow patterns will remain as existing. See the Evans Avenue section and the Evans Avenue Storm Drain section in the appendix for specific drainage design and calculations.

6.13 Record Street

Proposed improvements affecting Record Street are the installation of the trench wall. The system will be rerouted to connect to the proposed Evans Avenue Storm Drain system which will convey flow east to the proposed Wells Avenue outfall structure. The proposed 84-inch storm drain will intercept and convey the 100-year overland peak flow rate to the Wells Outfall structure. See the Evans Avenue Storm Drain section for specific improvements and calculations.

6.14 Park Street

Proposed improvements affecting Park Street are the installation of the trench wall. The proposed trench wall eliminates the existing 100-year storm event drainage pattern, which conveyed 75cfs south to the Truckee River. A proposed v-ditch will convey the flow into the proposed Evans Avenue Storm Drain system where it will enter the Truckee River via the Wells outfall structure. See the Park Street section in the appendix for hydraulic calculations.

6.15 Wells Avenue / Outfall Structure

The proposed Evans Avenue Storm Drain system outlets at the proposed Wells Avenue outfall structure. The structure consists of a 9'x6' RCB with an energy dissipation structure and two 42" diameter tideflex for backflow prevention. The proposed structure is designed to outlet 625cfs at less than 6fps into the Truckee River. The structure conforms to Fish and Wildlife standards and protects against unnatural erosion in the Truckee River. See the Outfall Structure section in the appendix for design details and calculations.

6.16 Morrill Avenue to Sutro Street

No proposed improvements affect the area between Morrill Avenue and Sutro Street. Overland flow remains in Fourth Street where it travels east past the project boundaries.

7. TRENCH DRAINAGE

Union Pacific Railroad requires the 50-year storm event flow be conveyed in a channel within the trench and the 100-year storm event flow remains below the top of tie of the rail. Flow will be conveyed in a 3-ft rectangular channel of varying height to a sump located near the proposed Evans Avenue Bridge. A series of pumps will drain the water to the proposed Evans Avenue Storm Drain system. Complete design of this system can be found in the IFC ReTRAC Trench Drainage Report.

8. FLOOD WALLS

Floodwalls will be required to protect the trench from potential offsite flooding sources. Included in the Flood Walls section of the appendix is the required floodwall elevations in relation to the proposed railroad station alignment. It is recommended that the floodwalls extend a minimum of 1-foot above the 100-year water surface elevation in all locations.

9. TRUCKEE RIVER

The Truckee River is a potential flooding source for the proposed Union Pacific Railroad trench project. Current flood boundary data for the Truckee River is taken from the Flood Insurance Rate Maps (FIRMs) for Washoe County, Nevada and Incorporated Areas prepared by the Federal Management Agency (FEMA). The proposed south trench floodwall elevations have been designed to the Truckee River 500-year flood event as dictated by the FIRM. This ensures adequate protection against Truckee River flood events.

10. CONCLUSIONS

This report provides the hydrologic and hydraulic evaluation for the Reno Railroad Corridor, ReTRAC project from the UPRR crossing at West Second Street east to the railroad crossing at Sutro Street. Potential flooding sources for the project include the Truckee River and the watershed area up gradient of the project site.

A series of storm drain systems are proposed to intercept storm runoff from the watershed area upgradient of the depressed rail section and a multi-purpose barrier wall is proposed to border the entire depressed rail section to prevent any potential floodwaters from the Truckee River or the watershed area upgradient of the project site from entering the depressed rail section. Existing overland flow patterns and 100-year water surface elevations have been maintained.

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4. Department of Transportation, Federal Highway Administration, *Hydraulic Engineering Circular No. 11, Design of Riprap Revetment*, March 1989.
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11. U.S. Department of Commerce National Technical Information Service, Federal Highway Administration, *Hydraulic Design of Energy Dissipators for Culverts and Channels*, September 1983.
12. Washoe County, *Hydrologic Criteria and Drainage Design Manual*, December 1996.
13. WRC Nevada Inc., *Evans Creek (Block N Watershed) Hydrologic Evaluation of Proposed Detention Site Phase 1 Technical Memorandum*, August 22, 2000.
14. WRC Nevada Inc., *Evans Creek (Block N Watershed) Hydrologic Evaluation of Proposed Detention Site Phase 1 Technical Memorandum Supplement*, September 1, 2000.

Appendices

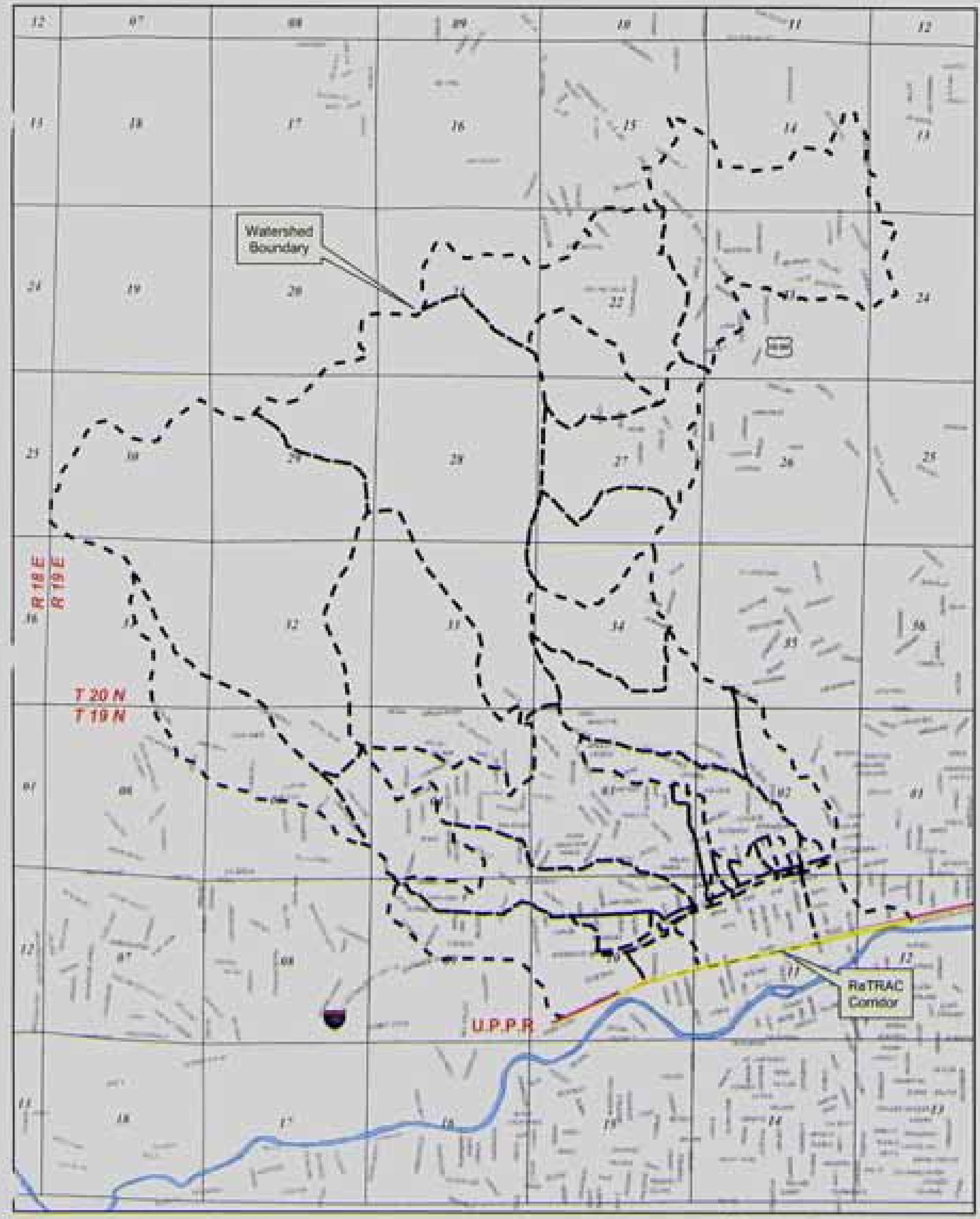
APPENDIX (Volume 1)

1. Hydrology
    a. Hydrologic Model Parameters
    b. 100-Year, 24-Hour Event HEC-1 Model (W2ND_DET.DAT)
    c. 100-Year, 24-Hour Event HEC-1 Model (WESTKEY.DAT)
    d. 100-Year, 24-Hour Event HEC-1 Model (ReT100.DAT)
    e. Hydrologic Backup Data

2. Hydraulics

APPENDIX 2 (Volume 2)

1. W. Second St
2. Keystone Ave.
3. Vine St.
4. Washington St.
5. Ralston St.
6. Arlington Ave.
7. West St.
8. Sierra St.
9. Virginia St.
10. Center St.
11. Lake St.
12. Evans Ave.
13. Record St.
14. Park St.
15. Wells Ave.
16. Morrill to Sutro
17. Trench Drainage
18. Floodwalls
19. Truckee River
20. Memorandum



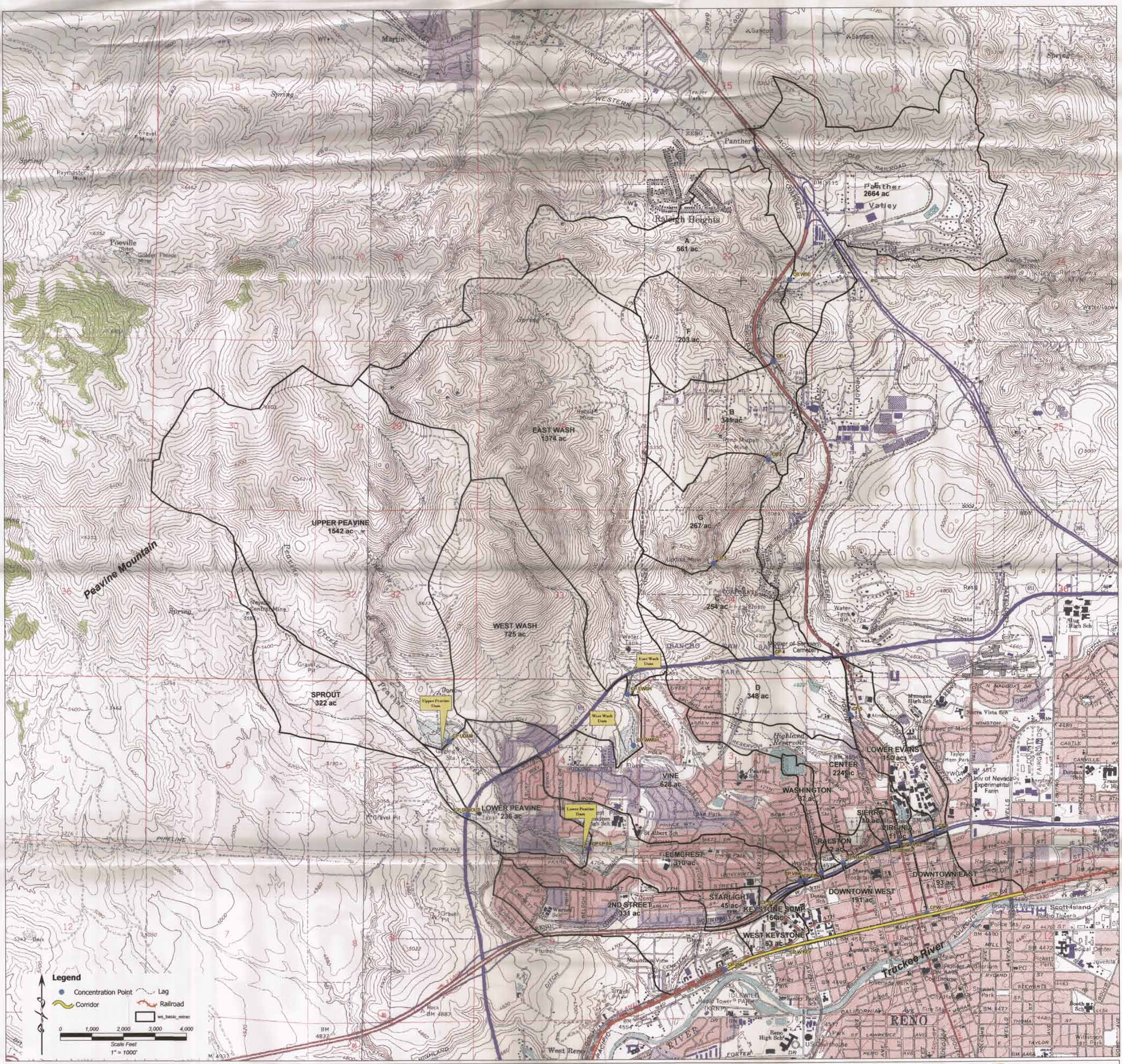
IFC Reno ReTRAC Drainage Report
Vicinity Map
Figure 1

Washoe County, Nevada

Date: December, 2004

1" = 4,000'

Stantec Consulting



RENO

Date: December, 2004

IFC Reno ReTRAC Drainage Report
Watershed Map
Figure 2

Washoe County, Nevada

Areas, for basins A-F, taken from "Evans Creek (Block N Watershed) Hydrologic Evaluation of Proposed Detention Site Phase I Technical Memorandum" by WRC signed and stamped on August 23, 2000 and revised by IFC Dated May, 2002

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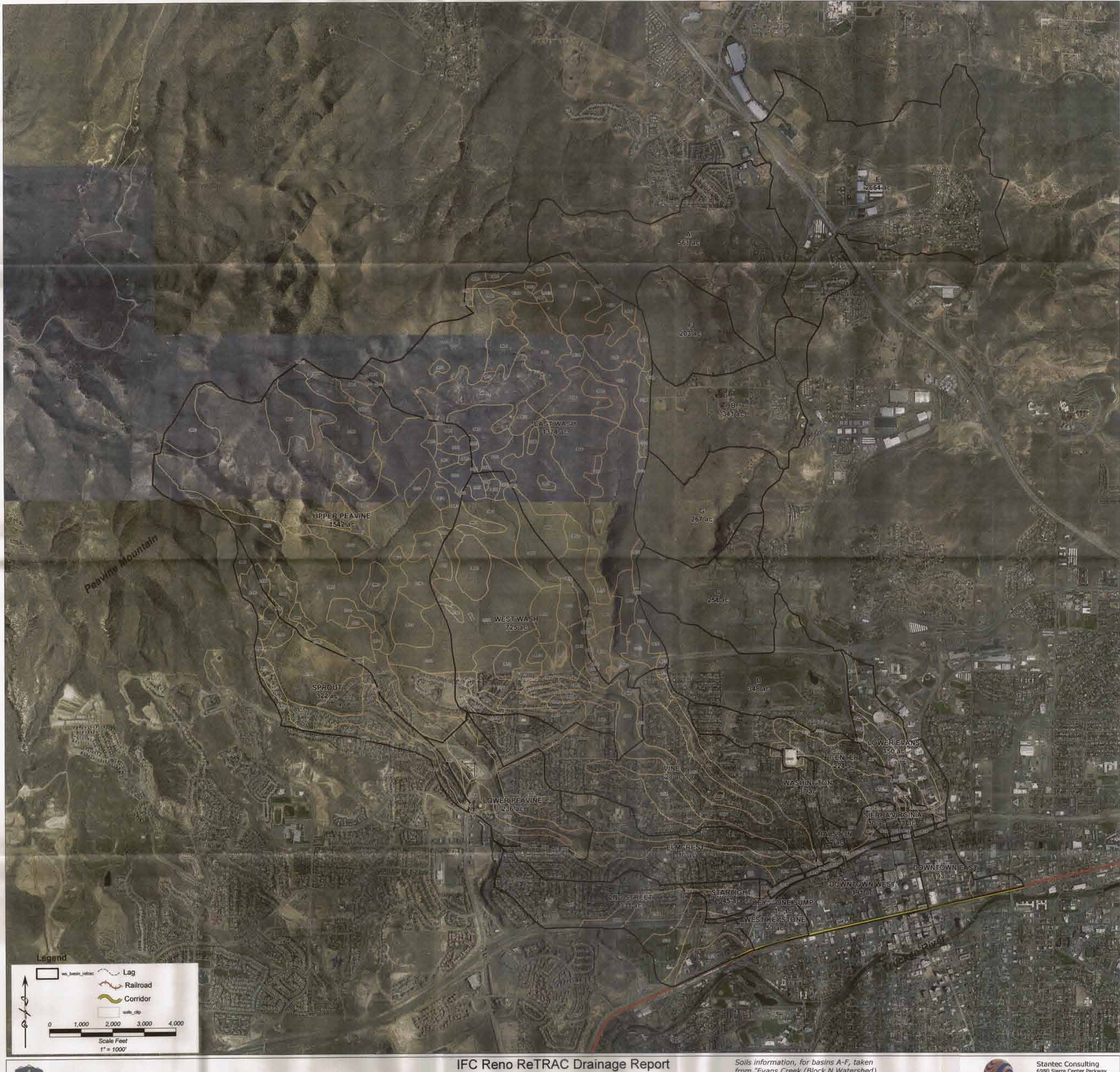

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Date: December, 2004

IFC Reno ReTRAC Drainage Report
Soils Map
Figure 3

Washoe County, Nevada

Soils information, for basins A-F, taken from "Evans Creek (Block N Watershed) Hydrologic Evaluation of Proposed Detention Site Phase I Technical Memorandum" by WRC signed and stamped on August 23, 2000 and revised by WRC dated May, 2002

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RENO

IFC Reno ReTRAC Drainage Report
Land Use Map
Figure 4

Washoe County, Nevada

Landuse information, for basins A-F, taken from "Evans Creek (Block N Watershed) Hydrologic Evaluation of Proposed Detention Site Phase I Technical Memorandum" by WRC signed and stamped on August 23, 2000 and revised by WRC dated May, 2002

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Date: December, 2004

Date: December, 2004

200 100
Scale Feet
1" = 200'

Legend

- Existing Storm Drain System
- Cross Sections

IFC Reno ReTRAC Drainage Report

100-Yr Existing Hydraulic Work Maps
West 2[nd] Street to Keystone Avenue

Figure 5a

Washoe County, Nevada

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200 100
Scale Feet
1" = 200'

Legend

Existing Storm Drain System
Cross Section

IFC Reno ReTRAC Drainage Report

100-Yr Existing Hydraulic Work Maps
Keystone Avenue to Lake Street

Figure 5b

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Legend

Existing Storm Drain System

Cross Sections

200 100

Scale Feet

1" = 200'

Date: December, 2004

IFC Reno ReTRAC Drainage Report

100-Yr Existing Hydraulic Work Maps
Lake Street to Sutro Street

Figure 5c

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Legend

Proposed Storm Drain System

proposed_flow_100

Existing Storm Drain System

Cross Sections

IFC Reno ReTRAC Drainage Report

100-Yr Proposed Hydraulic Work Maps
West 2 nd Street to Keystone Avenue

Figure 5d

Washoe County, Nevada

RENO

200 100
Scale Feet
1" = 200'

Date: December, 2004

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200 100
Scale Feet
1" = 200'

Date: December, 2004

Legend

- Proposed Storm Drain System
- Existing Storm Drain System
- Cross Sections

IFC Reno ReTRAC Drainage Report

100-Yr Proposed Hydraulic Work Maps
Keystone Avenue to Lake Street

Figure 5e

Washoe County, Nevada

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Date: December, 2004

200 100
Scale Feet
1" = 200'

Legend

Proposed Storm Drain System

Existing Storm Drain System

Cross Sections

IFC Reno ReTRAC Drainage Report

100-Yr Proposed Hydraulic Work Maps
Lake Street to Sutro Street

Figure 5f

Washoe County, Nevada

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500 250 0 500 1,000
Scale Feet
1" = 500'

Date: December, 2004

IFC Reno ReTRAC Drainage Report
Effective FEMA FIRM Map
Figure 6

Washoe County, Nevada

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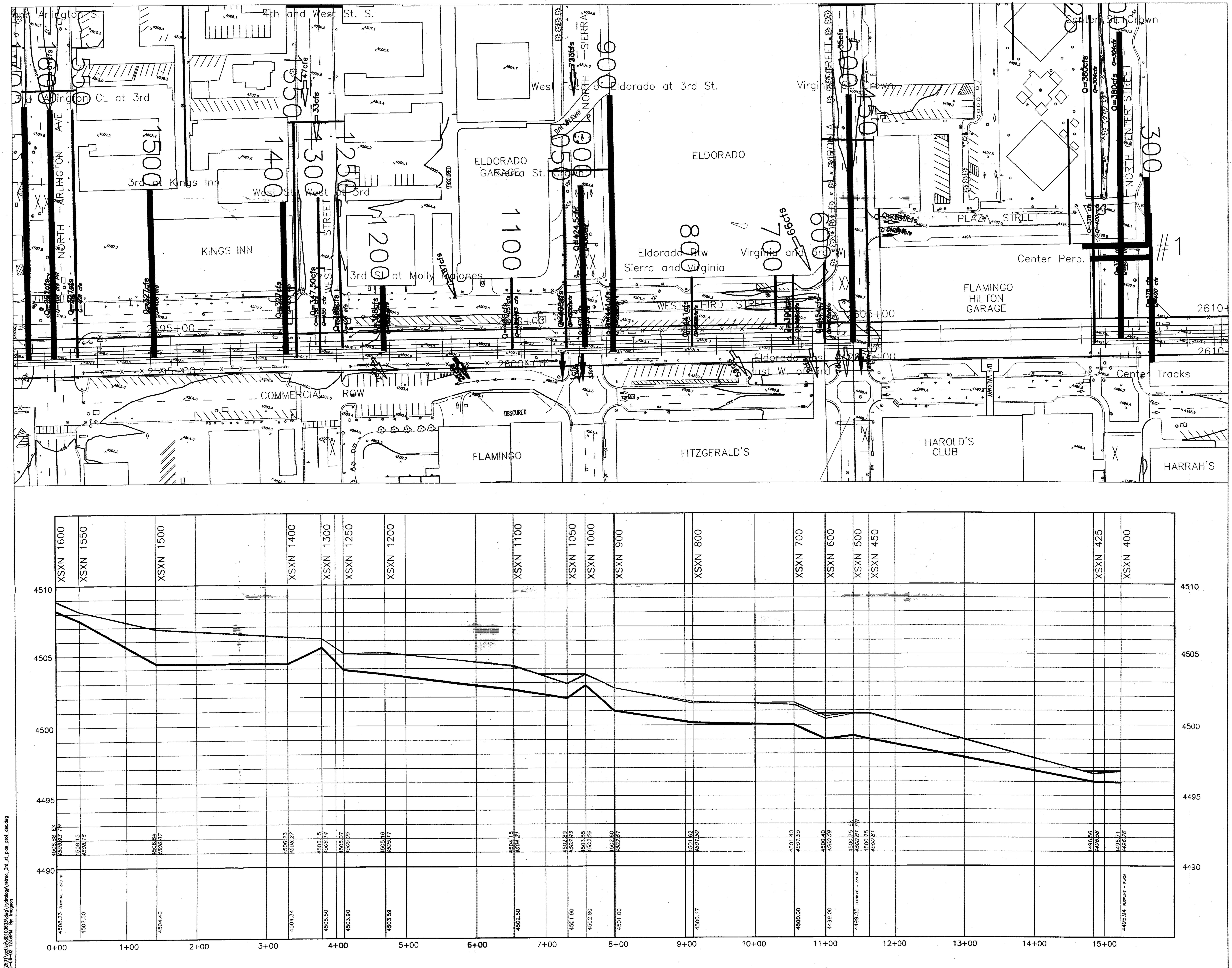

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Consultants

Legend

- EXISTING WATER ELEVATION
- PROPOSED WATER ELEVATION
- FLOWLINE
- EXISTING SPLIT FLOW
- PROPOSED SPLIT FLOW

Notes

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD

File Name:	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project

IFC RENO ReTRAC DRAINAGE REPORT

Reno NV U.S.A.

Title

3RD & PLAZA STREETS 100-YR
WEIR WSEL PLAN & PROFILE
ARLINGTON TO CENTER

Project No.	Scale
80100603	AS SHOWN

Drawing No.	Sheet	Revision
7.0	7 of 7	0

ORIGINAL SHEET – ARCH D

Hydrology

Summary of HEC-1 Parameters

Basin	Area (mi^2)	CN	Lag (hr)
WEST WASH	1.13	83	0.94
VINE	0.98	90	0.62
SPROUT	0.50	82	0.44
DOWNTOWN EAST	0.15	92	0.53
WEST KEYSTONE	0.08	90	0.30
STARLIGHT	0.07	93	0.15
WASHINGTON	0.06	92	0.24
RALSTON	0.02	92	0.09
VIRGINIA	0.02	92	0.09
SIERRA	0.02	92	0.08
LOWER EVANS	0.23	93	0.37
ELMCREST	0.48	89	0.56
CENTER	0.35	92	0.44
DOWNTOWN WEST	0.30	93	0.50
EVANS AVE	4.16	83	1.76
UPPER PEAVINE	2.41	81	1.15
KEYSTONE SUMP	0.02	98	0.12
EAST WASH	2.15	80	1.47
LOWER PEAVINE	0.37	88	0.32
RANCHO	0.40	89	0.30

Basin Areas

BASIN	ACRES	MILES sq
WEST WASH	725.5	1.134
VINE	628.0	0.981
SPROUT	322.0	0.503
DOWNTOWN EAST	92.8	0.145
WEST KEYSTONE	53.2	0.083
STARLIGHT	45.4	0.071
WASHINGTON	37.4	0.058
RALSTON	11.6	0.018
VIRGINIA	10.8	0.017
SIERRA	10.3	0.016
LOWER EVANS	150.2	0.235
ELMCREST	310.0	0.484
CENTER	224.0	0.350
DOWNTOWN WEST	190.8	0.298
KEYSTONE SUMP	15.8	0.025
EVANS AVE	2664.1	4.163
UPPER PEAVINE	1542.2	2.410
EAST WASH	1374.4	2.148
LOWER PEAVINE	235.9	0.369
RANCHO	254.2	0.397

US BUREAU OF RECLAMATION METHOD

BASIN	K_n	L (ft)	L_c (ft)	EL_{hi} (ft)	EL_{lo} (ft)	S (ft/mi)	T_{LAG} (hr)
WEST WASH	0.08	11928	7366	5800	4742	468	0.94
VINE	0.05	13563.3	7034	5050	4552	194	0.70
SPROUT	----	----	----	----	----	----	----
DOWNTOWN EAST	----	----	----	----	----	----	----
WEST KEYSTONE	----	----	----	----	----	----	----
STARLIGHT	----	----	----	----	----	----	----
WASHINGTON	----	----	----	----	----	----	----
RALSTON	----	----	----	----	----	----	----
VIRGINIA	----	----	----	----	----	----	----
SIERRA	----	----	----	----	----	----	----
LOWER EVANS	----	----	----	----	----	----	----
ELMCREST	----	----	----	----	----	----	----
CENTER	----	----	----	----	----	----	----
DOWNTOWN WEST	----	----	----	----	----	----	----
EVANS AVE	0.08	25058.5	12193	5260	4667	125	1.76
UPPER PEAVINE	0.09	16811.1	7092	6603	5000	503	1.15
EAST WASH	0.09	17762	11302	5955	4850	328	1.47
LOWER PEAVINE	----	----	----	----	----	----	----
RANCHO	----	----	----	----	----	----	----

Time of Concentration Lag Equation

BASIN	CN	R	L_i (ft)	Hi_i (ft)	Lo_i (ft)	S_i (%)	T_i (min)	L_1 (ft)	Hi_1 (ft)	Lo_1 (ft)	S_1 (%)	V_1 (ft/s)	T_1 (min)	T_c (min)	T_{lag} (hr)
VINE	90	0.80	50	5050	5050	1.0	3.84	13513	5049.5	4552	3.7	3.90	57.74	61.58	0.62
SPROUT	82	0.69	500	6000	5920	16.0	6.57	12760.7	5920	4900	8.0	5.75	37.01	43.58	0.44
DOWNTOWN EAST	92	0.82	50	4515	4515	1.0	3.51	4327	4515	4492	0.5	1.47	49.20	52.70	0.53
WEST KEYSTONE	90	0.80	250	4552	4551	0.4	11.63	2280	4551	4528	1.0	2.04	18.61	30.24	0.30
STARLIGHT	93	0.84	50	4682	4682	1.0	3.34	2930	4681.5	4560	4.1	4.14	11.80	15.14	0.15
WASHINGTON	92	0.82	50	4680	4680	1.0	3.51	4209	4680	4557	2.9	3.47	20.23	23.74	0.24
RALSTON	92	0.82	50	4604	4604	1.0	3.51	1407	4604	4550	3.8	3.96	5.92	9.42	0.09
VIRGINIA	92	0.82	50	4563	4563	1.0	3.51	1360	4563	4515	3.5	3.80	5.97	9.47	0.09
SIERRA	92	0.82	50	4596	4596	1.0	3.51	1324	4596	4516	6.0	4.98	4.43	7.94	0.08
LOWER EVANS	93	0.84	50	4590	4590	1.0	3.34	5084	4590	4512	1.5	2.51	33.76	37.10	0.37
ELMCREST	89	0.78	50	4900	4900	1.0	4.01	11128	4900	4552	3.1	3.59	51.63	55.64	0.56
CENTER	92	0.82	50	4810	4810	1.0	3.51	8927	4810	4515	3.3	3.69	40.30	43.80	0.44
DOWNTOWN WEST	93	0.84	100	4552	4550	2.5	3.49	5387	4550	4500	0.9	1.95	46.08	49.57	0.50
KEYSTONE SUMP	98	0.90	50	4612	4611	2.0	1.99	2100	4611	4550	2.9	3.46	10.10	12.09	0.12
LOWER PEAVINE	88	0.77	50	4940	4940	1.0	4.18	6141	4940	4745	3.2	3.62	28.29	32.47	0.32
RANCHO	89	0.78	50	4889	4889	1.0	4.01	6740	4889	4592.8	4.4	4.26	26.38	30.39	0.30

Muskingum-Cunge routing paramaters

Route	from	Elevation (ft)	to	Elevation (ft)	Length (ft)	Slope	n	Shape	WD (ft)	Z
RTVINE	WEST WASH	4726	VINE	4552	7730	2.25%	0.016	TRAP	50.0	1
RTCPW	VINE	4550	DOWNTOWN WEST	4500	5335	0.94%	0.020	TRAP	50.0	1
RTLPEA	SPROUT	4900	LOWER PEAVINE	4745	4168	3.72%	0.016	TRAP	50.0	1
RTCPW	WEST KEYSTONE	4530	DOWNTOWN WEST	4500	4482	0.67%	0.016	TRAP	50.0	1
RTVINE	WASHINGTON	4557	VINE	4552	500	1.00%	0.020	TRAP	50.0	1
RTCPW	RALSTON	4550	DOWNTOWN WEST	4500	4415	1.13%	0.020	TRAP	50.0	1
RTCPW	VIRGINIA	4515	DOWNTOWN WEST	4500	2725.2	0.55%	0.020	TRAP	60.0	1
RTCPW	SIERRA	4516	DOWNTOWN WEST	4500	3117	0.51%	0.020	TRAP	60.0	1
RTCPE	LOWER EVANS	4512	DOWNTOWN EAST	4492	3684.2	0.54%	0.020	TRAP	50.0	1
RTCPW	LOWER PEAVINE/VINE	4550	DOWNTOWN WEST	4500	5335.1	0.94%	0.020	TRAP	50.0	1
RTCPE	CENTER	4514	DOWNTOWN EAST	4492	4314.9	0.51%	0.020	TRAP	50.0	1
RTLPEA	UPPER PEAVINE	5000	LOWER PEAVINE	4745	6173	4.13%	0.016	TRAP	50.0	1
RTWWDAM	EAST WASH	4850	WEST WASH	4742	1705.8	6.33%	0.016	TRAP	50.0	1
RTELM	LOWER PEAVINE	4745	ELMCREST	4552	7817	2.47%	0.016	TRAP	50.0	1
RTPV	KEYSTONE SUMP	4570	VINE	4550	1915	1.04%	0.013	CIRC	3.5	----

```
1*****************************************                  *****************************************
 *                                       *                  *                                       *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                  *   U.S. ARMY CORPS OF ENGINEERS        *
 *              JUN   1998               *                  *   HYDROLOGIC ENGINEERING CENTER       *
 *            VERSION 4.1                *                  *         609 SECOND STREET             *
 *                                       *                  *      DAVIS, CALIFORNIA 95616          *
 * RUN DATE   06DEC04  TIME  10:52:56    *                  *          (916) 756-1104               *
 *                                       *                  *                                       *
*****************************************                  *****************************************


                              X     X  XXXXXXX   XXXXX          X
                              X     X  X        X     X        XX
                              X     X  X        X               X
                              XXXXXXX  XXXX     X        XXXXX  X
                              X     X  X        X               X
                              X     X  X        X     X         X
                              X     X  XXXXXXX   XXXXX         XXX


         THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

         THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
         THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
         NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
         DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
         KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM


1                                       HEC-1 INPUT                                                   PAGE  1

        LINE      ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

                  *DIAGRAM
          1       ID        STANTEC CONSULTING INC.   RENO, NEVADA
          2       ID
          3       ID        RENO RETRAC
          4       ID
          5       ID        WEST SECOND STREET, WEST FOURTH STREET, STOKER AND DICKERSON
          6       ID        WITH DETENTION TO BE PROVIDED SOUTH OF WEST FOURTH STREET
          7       ID
          8       ID        FILE:  W2ND_EX.DAT
          9       ID        JOB#:  80100603
         10       ID        DATE:  APRIL 2003
         11       ID
         12       ID
         13       IT       5                      300
         14       IO       3        0

         15       KK    W2ND        HYDROGRAPH FOR WEST SECOND STREET UNDERPASS
         16       BA     .52
         17       PH            0.001    0.48    0.87    1.45    1.57    1.66    1.85    2.33    2.80
         18       LS               90
         19       UD      .5
```

```
        20          KK     DET  NATURAL DETENTION AREA NORTH OF W. FOURTH ST AND EAST OF CEMETARY RD
        21          RS       1    STOR       0
        22          SA    0.05     1.0    2.09     4.0    5.87    6.66    7.17    7.68    8.20    9.67
        23          SE    4523    4524    4525    4526    4527    4528 4528.25  4528.5 4528.75  4529.5
        24          SQ       0       0       0       0   109.4   124.9   195.6   321.8   484.3  1132.3
        25          KO               2
        26          ZZ
1
             SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE     (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.     (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

   15        W2ND
               V
               V
   20         DET

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1****************************************                                      ****************************************
 *                                        *                                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)    *                                    *   U.S. ARMY CORPS OF ENGINEERS       *
 *              JUN   1998                *                                    *   HYDROLOGIC ENGINEERING CENTER      *
 *            VERSION 4.1                 *                                    *        609 SECOND STREET             *
 *                                        *                                    *     DAVIS, CALIFORNIA 95616          *
 *  RUN DATE   06DEC04  TIME  10:52:56    *                                    *         (916) 756-1104               *
 *                                        *                                    *                                      *
 ****************************************                                      ****************************************



                                   STANTEC CONSULTING INC.   RENO, NEVADA

                                   RENO RETRAC

                                   WEST SECOND STREET, WEST FOURTH STREET, STOKER AND DICKERSON
                                   WITH DETENTION TO BE PROVIDED SOUTH OF WEST FOURTH STREET

                                   FILE:  W2ND_EX.DAT
                                   JOB#:  80100603
                                   DATE:  APRIL 2003


   14 IO          OUTPUT CONTROL VARIABLES
                        IPRNT          3  PRINT CONTROL
                        IPLOT          0  PLOT CONTROL
                        QSCAL         0.  HYDROGRAPH PLOT SCALE

      IT          HYDROGRAPH TIME DATA
                         NMIN          5  MINUTES IN COMPUTATION INTERVAL
                        IDATE     1    0  STARTING DATE
                        ITIME       0000  STARTING TIME
                           NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                       NDDATE     2    0  ENDING DATE
                       NDTIME       0055  ENDING TIME
                        ICENT         19  CENTURY MARK
```

COMPUTATION INTERVAL .08 HOURS
TOTAL TIME BASE 24.92 HOURS

ENGLISH UNITS

DRAINAGE AREA	SQUARE MILES
PRECIPITATION DEPTH	INCHES
LENGTH, ELEVATION	FEET
FLOW	CUBIC FEET PER SECOND
STORAGE VOLUME	ACRE-FEET
SURFACE AREA	ACRES
TEMPERATURE	DEGREES FAHRENHEIT

*** ***

```
              **************
              *            *
  15 KK       *    W2ND    *              HYDROGRAPH FOR WEST SECOND STREET UNDERPASS
              *            *
              **************
```

SUBBASIN RUNOFF DATA

16 BA SUBBASIN CHARACTERISTICS
TAREA .52 SUBBASIN AREA

PRECIPITATION DATA

17 PH DEPTHS FOR 0-PERCENT HYPOTHETICAL STORM

..... HYDRO-35			.... TP-40					.... TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
.48	.87	1.45	1.57	1.66	1.85	2.33	2.80	.00	.00	.00	.00

STORM AREA = .00

18 LS SCS LOSS RATE

STRTL	.22	INITIAL ABSTRACTION
CRVNBR	90.00	CURVE NUMBER
RTIMP	.00	PERCENT IMPERVIOUS AREA

19 UD SCS DIMENSIONLESS UNITGRAPH
TLAG .50 LAG

***

UNIT HYDROGRAPH
32 END-OF-PERIOD ORDINATES

31.	92.	189.	318.	416.	460.	460.	421.	368.	294.
217.	168.	130.	104.	81.	62.	49.	38.	29.	23.
18.	14.	11.	8.	7.	5.	4.	3.	3.	2.
1.	0.								

*** *** *** *** ***

HYDROGRAPH AT STATION W2ND

TOTAL RAINFALL = 2.80, TOTAL LOSS = 1.00, TOTAL EXCESS = 1.80

```
  PEAK FLOW      TIME                               MAXIMUM AVERAGE FLOW
                                         6-HR        24-HR       72-HR     24.92-HR
+   (CFS)        (HR)
                           (CFS)
+     416.      12.58                    80.          25.         24.         24.
                          (INCHES)      1.424        1.800       1.800       1.800
                           (AC-FT)       39.          50.         50.         50.

                          CUMULATIVE AREA =      .52 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

            **************
            *            *
  20 KK     *      DET   *      NATURAL DETENTION AREA NORTH OF W. FOURTH ST AND EAST OF CEMETARY RD
            *            *
            **************

  25 KO          OUTPUT CONTROL VARIABLES
                      IPRNT            3  PRINT CONTROL
                      IPLOT            2  PLOT CONTROL
                      QSCAL           0.  HYDROGRAPH PLOT SCALE

               HYDROGRAPH ROUTING DATA

     RS          STORAGE ROUTING
                      NSTPS            1  NUMBER OF SUBREACHES
                       ITYP         STOR  TYPE OF INITIAL CONDITION
                     RSVRIC          .00  INITIAL CONDITION
                          X          .00 WORKING R AND D COEFFICIENT

  22 SA               AREA          .1       1.0       2.1       4.0       5.9       6.7       7.2       7.7       8.2       9.7

  23 SE          ELEVATION     4523.00   4524.00   4525.00   4526.00   4527.00   4528.00   4528.25   4528.50   4528.75   4529.50

  24 SQ          DISCHARGE          0.        0.        0.        0.      109.      125.      196.      322.      484.     1132.

                                                                  ***

                                                  COMPUTED STORAGE-ELEVATION DATA

            STORAGE         .00       .42      1.94      4.93      9.84     16.10     17.82     19.68     21.67     28.36
          ELEVATION     4523.00   4524.00   4525.00   4526.00   4527.00   4528.00   4528.25   4528.50   4528.75   4529.50


      ***             ***              ***              ***              ***

                            HYDROGRAPH AT STATION      DET

  PEAK FLOW      TIME                               MAXIMUM AVERAGE FLOW
                                         6-HR        24-HR       72-HR     24.92-HR
+   (CFS)        (HR)
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                                    (CFS)
+      246.     12.92                           75.         23.         22.          22.
                                 (INCHES)     1.345       1.612       1.612        1.612
                                 (AC-FT)        37.         45.         45.          45.

  PEAK STORAGE    TIME                           MAXIMUM AVERAGE STORAGE
                                                6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)        (HR)
        19.     12.92                            9.          4.          4.           4.

   PEAK STAGE     TIME                            MAXIMUM AVERAGE STAGE
                                                6-HR       24-HR       72-HR     24.92-HR
+   (FEET)        (HR)
    4528.35     12.92                      4526.84     4525.15     4525.07      4525.07

                                 CUMULATIVE AREA =       .52 SQ MI

1                                                          STATION       DET

                                 (I) INFLOW,   (O) OUTFLOW
           0.        50.       100.       150.       200.       250.       300.       350.       400.       450.         0.         0.         0.
                                                                                          (S) STORAGE
           0.         0.         0.         0.         0.         0.         0.         5.        10.        15.        20.         0.         0.
 DAHRMN PER
  10000    1I---------.---------.---------.---------.---------.---------S---------.---------.---------.---------.---------.---------.
  10005    2I         .         .         .         .         .         S         .         .         .         .         .         .
  10010    3I         .         .         .         .         .         S         .         .         .         .         .         .
  10015    4I         .         .         .         .         .         S         .         .         .         .         .         .
  10020    5I         .         .         .         .         .         S         .         .         .         .         .         .
      5    6I         .         .         .         .         .         S         .         .         .         .         .         .
      0    7I         .         .         .         .         .         S         .         .         .         .         .         .
  10035    8I         .         .         .         .         .         S         .         .         .         .         .         .
  10040    9I         .         .         .         .         .         S         .         .         .         .         .         .
  10045   10I         .         .         .         .         .         S         .         .         .         .         .         .
  10050   11I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  10055   12I         .         .         .         .         .         S         .         .         .         .         .         .
  10100   13I         .         .         .         .         .         S         .         .         .         .         .         .
  10105   14I         .         .         .         .         .         S         .         .         .         .         .         .
  10110   15I         .         .         .         .         .         S         .         .         .         .         .         .
  10115   16I         .         .         .         .         .         S         .         .         .         .         .         .
  10120   17I         .         .         .         .         .         S         .         .         .         .         .         .
  10125   18I         .         .         .         .         .         S         .         .         .         .         .         .
  10130   19I         .         .         .         .         .         S         .         .         .         .         .         .
  10135   20I         .         .         .         .         .         S         .         .         .         .         .         .
  10140   21I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  10145   22I         .         .         .         .         .         S         .         .         .         .         .         .
  10150   23I         .         .         .         .         .         S         .         .         .         .         .         .
  10155   24I         .         .         .         .         .         S         .         .         .         .         .         .
  10200   25I         .         .         .         .         .         S         .         .         .         .         .         .
  10205   26I         .         .         .         .         .         S         .         .         .         .         .         .
  10210   27I         .         .         .         .         .         S         .         .         .         .         .         .
  10215   28I         .         .         .         .         .         S         .         .         .         .         .         .
  10220   29I         .         .         .         .         .         S         .         .         .         .         .         .
  10225   30I         .         .         .         .         .         S         .         .         .         .         .         .
      0   31I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
      5   32I         .         .         .         .         .         S         .         .         .         .         .         .
  10240   33I         .         .         .         .         .         S         .         .         .         .         .         .
  10245   34I         .         .         .         .         .         S         .         .         .         .         .         .
  10250   35I         .         .         .         .         .         S         .         .         .         .         .         .
  10255   36I         .         .         .         .         .         S         .         .         .         .         .         .
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10300	371	.	.	.	.	.	S	.	.	.	.	.	.
10305	381	.	.	.	.	.	S	.	.	.	.	.	.
10310	391	.	.	.	.	.	S	.	.	.	.	.	.
15	401	.	.	.	.	.	S	.	.	.	.	.	.
0	411	.	.	.	.	.	S	.	.	.	.	.	.
10325	421	.	.	.	.	.	S	.	.	.	.	.	.
10330	431	.	.	.	.	.	S	.	.	.	.	.	.
10335	441	.	.	.	.	.	S	.	.	.	.	.	.
10340	451	.	.	.	.	.	S	.	.	.	.	.	.
10345	461	.	.	.	.	.	S	.	.	.	.	.	.
10350	471	.	.	.	.	.	S	.	.	.	.	.	.
10355	481	.	.	.	.	.	S	.	.	.	.	.	.
10400	491	.	.	.	.	.	S	.	.	.	.	.	.
10405	501	.	.	.	.	.	S	.	.	.	.	.	.
10410	511	.	.	.	.	.	S	.	.	.	.	.	.
10415	521	.	.	.	.	.	S	.	.	.	.	.	.
10420	531	.	.	.	.	.	S	.	.	.	.	.	.
10425	541	.	.	.	.	.	S	.	.	.	.	.	.
10430	551	.	.	.	.	.	S	.	.	.	.	.	.
10435	561	.	.	.	.	.	S	.	.	.	.	.	.
10440	571	.	.	.	.	.	S	.	.	.	.	.	.
10445	581	.	.	.	.	.	S	.	.	.	.	.	.
10450	591	.	.	.	.	.	S	.	.	.	.	.	.
10455	601	.	.	.	.	.	S	.	.	.	.	.	.
10500	611	.	.	.	.	.	S	.	.	.	.	.	.
10505	621	.	.	.	.	.	S	.	.	.	.	.	.
10510	631	.	.	.	.	.	S	.	.	.	.	.	.
10515	641	.	.	.	.	.	S	.	.	.	.	.	.
10520	651	.	.	.	.	.	S	.	.	.	.	.	.
5	661	.	.	.	.	.	S	.	.	.	.	.	.
0	671	.	.	.	.	.	S	.	.	.	.	.	.
10535	681	.	.	.	.	.	S	.	.	.	.	.	.
10540	691	.	.	.	.	.	S	.	.	.	.	.	.
10545	701	.	.	.	.	.	S	.	.	.	.	.	.
10550	711	.	.	.	.	.	S	.	.	.	.	.	.
10555	721	.	.	.	.	.	S	.	.	.	.	.	.
10600	731	.	.	.	.	.	S	.	.	.	.	.	.
10605	741	.	.	.	.	.	S	.	.	.	.	.	.
10610	751	.	.	.	.	.	S	.	.	.	.	.	.
10615	761	.	.	.	.	.	S	.	.	.	.	.	.
10620	771	.	.	.	.	.	S	.	.	.	.	.	.
10625	781	.	.	.	.	.	S	.	.	.	.	.	.
10630	791	.	.	.	.	.	S	.	.	.	.	.	.
10635	801	.	.	.	.	.	S	.	.	.	.	.	.
10640	811	.	.	.	.	.	S	.	.	.	.	.	.
10645	821	.	.	.	.	.	S	.	.	.	.	.	.
10650	831	.	.	.	.	.	S	.	.	.	.	.	.
10655	841	.	.	.	.	.	S	.	.	.	.	.	.
10700	851	.	.	.	.	.	S	.	.	.	.	.	.
10705	861	.	.	.	.	.	S	.	.	.	.	.	.
10710	871	.	.	.	.	.	S	.	.	.	.	.	.
10715	881	.	.	.	.	.	S	.	.	.	.	.	.
10720	891	.	.	.	.	.	S	.	.	.	.	.	.
10725	9001	.	.	.	.	.	S	.	.	.	.	.	.
0	9101	.	.	.	.	.	S	.	.	.	.	.	.
5	9201	.	.	.	.	.	S	.	.	.	.	.	.
10740	9301	.	.	.	.	.	S	.	.	.	.	.	.
10745	9401	.	.	.	.	.	S	.	.	.	.	.	.
10750	9501	.	.	.	.	.	S	.	.	.	.	.	.
10755	9601	.	.	.	.	.	S	.	.	.	.	.	.

```
10800  9701I        .         .         .         .         .         .S        .         .         .         .         .         .
10805  9801I        .         .         .         .         .         .S        .         .         .         .         .         .
10810  9901I        .         .         .         .         .         .S        .         .         .         .         .         .
   15 10001I        .         .         .         .         .         .S        .         .         .         .         .         .
    0 10101I. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
10825 10201I        .         .         .         .         .         .S        .         .         .         .         .         .
10830 10301I        .         .         .         .         .         .S        .         .         .         .         .         .
10835 10401I        .         .         .         .         .         .S        .         .         .         .         .         .
10840 10501I        .         .         .         .         .         .S        .         .         .         .         .         .
10845 10601I        .         .         .         .         .         .S        .         .         .         .         .         .
10850 10701I        .         .         .         .         .         .S        .         .         .         .         .         .
10855 1080 I        .         .         .         .         .         .S        .         .         .         .         .         .
10900 1090 I        .         .         .         .         .         . S       .         .         .         .         .         .
10905 1100 I        .         .         .         .         .         . S       .         .         .         .         .         .
10910 1110 I  . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
10915 1120 I        .         .         .         .         .         . S       .         .         .         .         .         .
10920 1130 I        .         .         .         .         .         . S       .         .         .         .         .         .
10925 1140 I        .         .         .         .         .         . S       .         .         .         .         .         .
10930 1150 I        .         .         .         .         .         . S       .         .         .         .         .         .
10935 1160 I        .         .         .         .         .         . S       .         .         .         .         .         .
10940 1170 I        .         .         .         .         .         . S       .         .         .         .         .         .
10945 11801I        .         .         .         .         .         .  S      .         .         .         .         .         .
10950 11901I        .         .         .         .         .         .  S      .         .         .         .         .         .
10955 12001I        .         .         .         .         .         .  S      .         .         .         .         .         .
11000 12101I. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . .
11005 12201I        .         .         .         .         .         .  S      .         .         .         .         .         .
11010 12301I        .         .         .         .         .         .  S      .         .         .         .         .         .
11015 1240 I        .         .         .         .         .         .  S      .         .         .         .         .         .
11020 1250 I        .         .         .         .         .         .  S      .         .         .         .         .         .
    5 1260 I        .         .         .         .         .         .  S      .         .         .         .         .         .
 ..30 1270 I        .         .         .         .         .         .   S     .         .         .         .         .         .
11035 1280 I        .         .         .         .         .         .   S     .         .         .         .         .         .
11040 1290 I        .         .         .         .         .         .   S     .         .         .         .         .         .
11045 1300 I        .         .         .         .         .         .   S     .         .         .         .         .         .
11050 1310 I  . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . .
11055 1320 I        .         .         .         .         .         .   S     .         .         .         .         .         .
11100 1330 I        .         .         .         .         .         .   S     .         .         .         .         .         .
11105 1340 I        .         .         .         .         .         .   S     .         .         .         .         .         .
11110 1350 I        .         .         .         .         .         .    S    .         .         .         .         .         .
11115 1360 I        .         .         .         .         .         .    S    .         .         .         .         .         .
11120 1370  I       .         .         .         .         .         .    S    .         .         .         .         .         .
11125 1380  I       .         .         .         .         .         .    S    .         .         .         .         .         .
11130 1390  I       .         .         .         .         .         .    S    .         .         .         .         .         .
11135 1400  I       .         .         .         .         .         .     S   .         .         .         .         .         .
11140 1410 . I  . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . .
11145 1420   I      .         .         .         .         .         .     S   .         .         .         .         .         .
11150 1430     I    .         .         .         .         .         .     S   .         .         .         .         .         .
11155 1440        I .         .         .         .         .         .      S  .         .         .         .         .         .
11200 1450          . I       .         .         .         .         .       S .         .         .         .         .         .
11205 1460          .         I         .         .         .         .        S.         .         .         .         .         .
11210 147.O         .         .         .I        .         .         .         S         .         .         .         .         .
11215 148.     O    .         .         .         .    I    .         .         .  S      .         .         .         .         .
11220 149.          . O       .         .         .         .         .I        .     S   .         .         .         .         .
11225 150.          .         .O        .         .         .         .         .   I    S.         .         .         .         .
    0 151.  . . . . . . . . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . .I.S. . . . . . . . . . . . . . . . . .
    5 152.          .         .  O      .         .         .         .         .         .  I   S  .         .         .         .
11240 153.          .         .   O     .         .         .         .         .         I         .S        .         .         .
11245 154.          .         .         .   O     .         .         .         .  I      .         .   S     .         .         .
11250 155.          .         .         .         .   O     .         .  I      .         .         .     S   .         .         .
11255 156.          .         .         .         .        O.  I      .         .         .         .      S  .         .         .
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11300 157.          .         .         .         .   I    0.         .         .         .         .      S  .         .         .
11305 158.          .         .         .     I   .     0   .         .         .         .         .      S  .         .         .
11310 159.          .         .         I         .0        .         .         .         .         .     S   .         .         .
11315 160.          .         .    I    .      0  .         .         .         .         .    S    .         .         .
11320 161. . . . . . . . . . .I. . . . . .0. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . .
11325 162.          .      I  0         .         .         .         .         .         .  S      .         .         .
11330 163.          .    I    .     0   .         .         .         .         .         .  S      .         .         .
11335 164.          .  I      .    0    .         .         .         .         .         . S       .         .         .
11340 165.          .I        .    0    .         .         .         .         .         .S        .         .         .
11345 166.          I         .   0     .         .         .         .         .         S         .         .         .
11350 167.         I.         .   0     .         .         .         .         .        S.         .         .         .
11355 168.        I .         .   0     .         .         .         .         .       S .         .         .         .
11400 169.       I  .         .   0     .         .         .         .         .      S  .         .         .         .
11405 170.       I  .         .  0      .         .         .         .         .    S    .         .         .         .
11410 171. . . . I . . . . . . . .0. . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . .
11415 172.      I   .         .  0      .         .         .         .         .  S      .         .         .         .
11420 173.     I    .         . 0       .         .         .         .         . S       .         .         .         .
11425 174.     I    .         . 0       .         .         .         .         .S        .         .         .         .
11430 175.     I    .         . 0       .         .         .         .         S         .         .         .         .
11435 176.    I     .        0.         .         .         .         .        S.         .         .         .         .
11440 177.    I     .      0  .         .         .         .         .       S .         .         .         .         .
11445 178.    I     .    0    .         .         .         .         .      S  .         .         .         .         .
11450 179.    I     .   0     .         .         .         .         .     S   .         .         .         .         .
11455 180.    I     . 0       .         .         .         .         .    S    .         .         .         .         .
11500 181. . I . . .0. . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . .
11505 182.    I     0         .         .         .         .         .   S     .         .         .         .         .
11510 183.   I     0.         .         .         .         .         .   S     .         .         .         .         .
11515 184.    I   0 .         .         .         .         .         .   S     .         .         .         .         .
11520 185.    I   0 .         .         .         .         .         .  S      .         .         .         .         .
11525 186.    I  0  .         .         .         .         .         .  S      .         .         .         .         .
11530 187.    I  0  .         .         .         .         .         .  S      .         .         .         .         .
11535 188.    I 0   .         .         .         .         .         .  S      .         .         .         .         .
11540 189.     IO   .         .         .         .         .         .  S      .         .         .         .         .
11545 190.     IO   .         .         .         .         .         .  S      .         .         .         .         .
11550 191. . . .IO . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . .
11555 192.     IO   .         .         .         .         .         . S       .         .         .         .         .
11600 193.     IO   .         .         .         .         .         . S       .         .         .         .         .
11605 194.     IO   .         .         .         .         .         . S       .         .         .         .         .
11610 195.     IO   .         .         .         .         .         . S       .         .         .         .         .
11615 196.     I    .         .         .         .         .         . S       .         .         .         .         .
11620 197.     I    .         .         .         .         .         . S       .         .         .         .         .
11625 198.     I    .         .         .         .         .         . S       .         .         .         .         .
11630 199.     I    .         .         .         .         .         . S       .         .         .         .         .
11635 200.     I    .         .         .         .         .         . S       .         .         .         .         .
11640 201. . . .I. . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . .
11645 202.     I    .         .         .         .         .         . S       .         .         .         .         .
11650 203.     I    .         .         .         .         .         . S       .         .         .         .         .
11655 204.     I    .         .         .         .         .         . S       .         .         .         .         .
11700 205.     I    .         .         .         .         .         . S       .         .         .         .         .
11705 206.     I    .         .         .         .         .         . S       .         .         .         .         .
11710 207.     I    .         .         .         .         .         . S       .         .         .         .         .
11715 208.     I    .         .         .         .         .         . S       .         .         .         .         .
11720 209.     I    .         .         .         .         .         . S       .         .         .         .         .
11725 210.     I    .         .         .         .         .         . S       .         .         .         .         .
11730 211. . . IO. . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . .
11735 212.    IO    .         .         .         .         .         . S       .         .         .         .         .
11740 213.    IO    .         .         .         .         .         . S       .         .         .         .         .
11745 214.    IO    .         .         .         .         .         . S       .         .         .         .         .
11750 215.    IO    .         .         .         .         .         . S       .         .         .         .         .
11755 216.    IO    .         .         .         .         .         . S       .         .         .         .         .
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11800 217.   IO   .    .    .    .    .    .    .S   .    .    .    .    .
11805 218.   I    .    .    .    .    .    .    .S   .    .    .    .    .
11810 219.   I    .    .    .    .    .    .    .S   .    .    .    .    .
11815 220.   I    .    .    .    .    .    .    .S   .    .    .    .    .
    ) 221. . I . . . . . . . . . . . . . . . . .S . . . . . . . . . . . . . . .
   25 222.   I    .    .    .    .    .    .    .S   .    .    .    .    .
11830 223.   I    .    .    .    .    .    .    .S   .    .    .    .    .
11835 224.   I    .    .    .    .    .    .    .S   .    .    .    .    .
11840 225.  IO    .    .    .    .    .    .    .S   .    .    .    .    .
11845 226.  IO    .    .    .    .    .    .    .S   .    .    .    .    .
11850 227.  IO    .    .    .    .    .    .    .S   .    .    .    .    .
11855 228.  IO    .    .    .    .    .    .    .S   .    .    .    .    .
11900 229.  IO    .    .    .    .    .    .    .S   .    .    .    .    .
11905 230.  IO    .    .    .    .    .    .    .S   .    .    .    .    .
11910 231. .I. . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . .
11915 232.  I     .    .    .    .    .    .    .S   .    .    .    .    .
11920 233.  I     .    .    .    .    .    .    .S   .    .    .    .    .
11925 234.  I     .    .    .    .    .    .    .S   .    .    .    .    .
11930 235.  I     .    .    .    .    .    .    .S   .    .    .    .    .
11935 236.  I     .    .    .    .    .    .    .S   .    .    .    .    .
11940 237.  I     .    .    .    .    .    .    .S   .    .    .    .    .
11945 238.  I     .    .    .    .    .    .    .S   .    .    .    .    .
11950 239.  I     .    .    .    .    .    .    .S   .    .    .    .    .
11955 240.  I     .    .    .    .    .    .    .S   .    .    .    .    .
12000 241. .I. . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . .
12005 242.  I     .    .    .    .    .    .    .S   .    .    .    .    .
12010 243.  I     .    .    .    .    .    .    .S   .    .    .    .    .
12015 244.  I     .    .    .    .    .    .    .S   .    .    .    .    .
12020 245.  I     .    .    .    .    .    .    .S   .    .    .    .    .
    5 246.  I     .    .    .    .    .    .    .S   .    .    .    .    .
    ) 247.  I     .    .    .    .    .    .    .S   .    .    .    .    .
12035 248.  I     .    .    .    .    .    .    .S   .    .    .    .    .
12040 249.  I     .    .    .    .    .    .    .S   .    .    .    .    .
12045 250.  I     .    .    .    .    .    .    .S   .    .    .    .    .
12050 251. IO. . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . .
12055 252. IO     .    .    .    .    .    .    .S   .    .    .    .    .
12100 253. IO     .    .    .    .    .    .    .S   .    .    .    .    .
12105 254. IO     .    .    .    .    .    .    .S   .    .    .    .    .
12110 255. IO     .    .    .    .    .    .    .S   .    .    .    .    .
12115 256. IO     .    .    .    .    .    .    .S   .    .    .    .    .
12120 257. IO     .    .    .    .    .    .    .S   .    .    .    .    .
12125 258. I      .    .    .    .    .    .    .S   .    .    .    .    .
12130 259. I      .    .    .    .    .    .    .S   .    .    .    .    .
12135 260. I      .    .    .    .    .    .    .S   .    .    .    .    .
12140 261. I . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . .
12145 262. I      .    .    .    .    .    .    .S   .    .    .    .    .
12150 263. I      .    .    .    .    .    .    .S   .    .    .    .    .
12155 264. I      .    .    .    .    .    .    .S   .    .    .    .    .
12200 265. I      .    .    .    .    .    .    .S   .    .    .    .    .
12205 266. I      .    .    .    .    .    .    .S   .    .    .    .    .
12210 267. I      .    .    .    .    .    .    .S   .    .    .    .    .
12215 268. I      .    .    .    .    .    .    .S   .    .    .    .    .
12220 269. I      .    .    .    .    .    .    .S   .    .    .    .    .
12225 270. I      .    .    .    .    .    .    .S   .    .    .    .    .
   30 271. I . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . .
    5 272. I      .    .    .    .    .    .    .S   .    .    .    .    .
  240 273. I      .    .    .    .    .    .    .S   .    .    .    .    .
12245 274. I      .    .    .    .    .    .    .S   .    .    .    .    .
12250 275. I      .    .    .    .    .    .    .S   .    .    .    .    .
12255 276. I      .    .    .    .    .    .    .S   .    .    .    .    .
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12300 277. I        .         .         .         .         .         .         .S        .         .         .         .         .
12305 278. I        .         .         .         .         .         .         .S        .         .         .         .         .
12310 279. I        .         .         .         .         .         .         .S        .         .         .         .         .
[illegible]15 280. I        .         .         .         .         .         .         .S        .         .         .         .         .
[illegible] 281. I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . .
12325 282. I        .         .         .         .         .         .         .S        .         .         .         .         .
12330 283. I        .         .         .         .         .         .         .S        .         .         .         .         .
12335 284. I        .         .         .         .         .         .         .S        .         .         .         .         .
12340 285. I        .         .         .         .         .         .         .S        .         .         .         .         .
12345 286. I        .         .         .         .         .         .         .S        .         .         .         .         .
12350 287. I        .         .         .         .         .         .         .S        .         .         .         .         .
12355 288. I        .         .         .         .         .         .         .S        .         .         .         .         .
20000 289. I        .         .         .         .         .         .         .S        .         .         .         .         .
20005 290. I        .         .         .         .         .         .         .S        .         .         .         .         .
20010 291. I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . .
20015 292. I        .         .         .         .         .         .         .S        .         .         .         .         .
20020 293. I        .         .         .         .         .         .         .S        .         .         .         .         .
20025 294.IO        .         .         .         .         .         .         .S        .         .         .         .         .
20030 295.IO        .         .         .         .         .         .         .S        .         .         .         .         .
20035 296.IO        .         .         .         .         .         .         .S        .         .         .         .         .
20040 297.IO        .         .         .         .         .         .         .S        .         .         .         .         .
20045 298.I         .         .         .         .         .         .         .S        .         .         .         .         .
20050 299IO         .         .         .         .         .         .         S         .         .         .         .         .
20055 300IO--------.---------.---------.---------.---------.---------.---------S---------.---------.---------.---------.---------.
1
1
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RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+										
	HYDROGRAPH AT									
+		W2ND	416.	12.58	80.	25.	24.	.52		
	ROUTED TO									
+		DET	246.	12.92	75.	23.	22.	.52		
+									4528.35	12.92

*** NORMAL END OF HEC-1 ***

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1*****************************************                                                        ****************************************
*                                       *                                                        *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                                        *   U.S. ARMY CORPS OF ENGINEERS       *
*              JUN   1998               *                                                        *   HYDROLOGIC ENGINEERING CENTER      *
*            VERSION 4.1                *                                                        *          609 SECOND STREET           *
*                                       *                                                        *      DAVIS, CALIFORNIA 95616         *
* RUN DATE   06DEC04  TIME  10:40:44    *                                                        *          (916) 756-1104              *
*                                       *                                                        *                                      *
*****************************************                                                        ****************************************
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X     X  XXXXXXX   XXXXX           X
X     X  X        X     X         XX
X     X  X        X                X
XXXXXXX  XXXX     X        XXXXX   X
X     X  X        X                X
X     X  X        X     X          X
X     X  XXXXXXX   XXXXX          XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM


```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

              *DIAGRAM
  1           ID        STANTEC CONSULTING INC.   RENO, NEVADA
  2           ID
  3           ID        RENO RETRAC
  4           ID
  5           ID        WEST SECOND STREET, WEST FOURTH STREET, STOKER AND DICKERSON
  6           ID        WITH DETENTION TO BE PROVIDED SOUTH OF WEST FOURTH STREET
  7           ID        INTERIM SHOOFLY CONDITION
  8           ID
  9           ID        FILE:  W2ND_DET.DAT
 10           ID        JOB#:  80100603
 11           ID        DATE:  APRIL 2003
 12           ID
 13           ID
 14           IT        5                   300
 15           IO        3       0

 16           KK    W2ND        HYDROGRAPH FOR WEST SECOND STREET UNDERPASS
 17           BA     .52
 18           PH           0.001    0.48    0.87    1.45    1.57    1.66    1.85    2.33    2.80
 19           LS               90
 20           UD      .5
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```
        21            KK     DET  NATURAL DETENTION AREA NORTH OF W. FOURTH ST AND EAST OF CEMETARY RD
        22            KM          WITH WEST SECOND STREET UNDERPASS SEVERED
        23            RS       1    STOR       0
        24            SA    0.05     1.0    2.09     4.0    5.87    6.66    9.67
        25            SE    4523    4524    4525    4526    4527    4528  4529.5
        26            SQ       0       0       0       0   109.4   124.9  144.37
        27            KO               2
        28            ZZ
1
             SCHEMATIC DIAGRAM OF STREAM NETWORK
INPUT
 LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

  NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

  16        W2ND
               V
             . V
  21         DET

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1****************************************                         ****************************************
*                                       *                         *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                         *   U.S. ARMY CORPS OF ENGINEERS       *
*              JUN   1998               *                         *   HYDROLOGIC ENGINEERING CENTER      *
*           VERSION 4.1                 *                         *         609 SECOND STREET            *
*                                       *                         *      DAVIS, CALIFORNIA 95616         *
*  RUN DATE   06DEC04  TIME  10:40:44   *                         *          (916) 756-1104              *
*                                       *                         *                                      *
 ****************************************                         ****************************************


                              STANTEC CONSULTING INC.   RENO, NEVADA

                              RENO RETRAC

                              WEST SECOND STREET, WEST FOURTH STREET, STOKER AND DICKERSON
                              WITH DETENTION TO BE PROVIDED SOUTH OF WEST FOURTH STREET
                              INTERIM SHOOFLY CONDITION

                              FILE:  W2ND_DET.DAT
                              JOB#:  80100603
                              DATE:  APRIL 2003


  15 IO        OUTPUT CONTROL VARIABLES
                    IPRNT          3  PRINT CONTROL
                    IPLOT          0  PLOT CONTROL
                    QSCAL         0.  HYDROGRAPH PLOT SCALE

     IT        HYDROGRAPH TIME DATA
                     NMIN          5  MINUTES IN COMPUTATION INTERVAL
                    IDATE     1    0  STARTING DATE
                    ITIME       0000  STARTING TIME
                       NQ        300  NUMBER OF HYDROGRAPH ORDINATES
```

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            NDDATE       2    0  ENDING DATE
            NDTIME         0055  ENDING TIME
            ICENT            19  CENTURY MARK

         COMPUTATION INTERVAL     .08 HOURS
              TOTAL TIME BASE   24.92 HOURS

ENGLISH UNITS
     DRAINAGE AREA          SQUARE MILES
     PRECIPITATION DEPTH    INCHES
     LENGTH, ELEVATION      FEET
     FLOW                   CUBIC FEET PER SECOND
     STORAGE VOLUME         ACRE-FEET
     SURFACE AREA           ACRES
     TEMPERATURE            DEGREES FAHRENHEIT


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

         **************
         *            *
 16 KK   *     W2ND   *            HYDROGRAPH FOR WEST SECOND STREET UNDERPASS
         *            *
         **************

            SUBBASIN RUNOFF DATA

 BA           SUBBASIN CHARACTERISTICS
                    TAREA           .52  SUBBASIN AREA

              PRECIPITATION DATA

 18 PH                               DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
              ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
              5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                .48     .87    1.45    1.57    1.66    1.85    2.33    2.80     .00     .00     .00     .00

                                                   STORM AREA =       .00

 19 LS        SCS LOSS RATE
                    STRTL           .22  INITIAL ABSTRACTION
                   CRVNBR         90.00  CURVE NUMBER
                    RTIMP           .00  PERCENT IMPERVIOUS AREA

 20 UD        SCS DIMENSIONLESS UNITGRAPH
                     TLAG           .50  LAG

                                                             ***

                                                        UNIT HYDROGRAPH
                                                    32 END-OF-PERIOD ORDINATES
             31.       92.      189.      318.      416.      460.      460.      421.      368.      294.
            217.      168.      130.      104.       81.       62.       49.       38.       29.       23.
             18.       14.       11.        8.        7.        5.        4.        3.        3.        2.
              1.        0.

     ***          ***          ***          ***          ***
```

HYDROGRAPH AT STATION WZND

TOTAL RAINFALL = 2.80, TOTAL LOSS = 1.00, TOTAL EXCESS = 1.80

FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 416.	12.58		80.	25.	24.	24.
		(INCHES)	1.424	1.800	1.800	1.800
		(AC-FT)	39.	50.	50.	50.

CUMULATIVE AREA = .52 SQ MI

*** ***

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          **************
          *            *
 21 KK    *     DET    *      NATURAL DETENTION AREA NORTH OF W. FOURTH ST AND EAST OF CEMETARY RD
          *            *
          **************
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WITH WEST SECOND STREET UNDERPASS SEVERED

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 27 KO        OUTPUT CONTROL VARIABLES
                    IPRNT          3  PRINT CONTROL
                    IPLOT          2  PLOT CONTROL
                    QSCAL          0.  HYDROGRAPH PLOT SCALE

            HYDROGRAPH ROUTING DATA

 23 RS        STORAGE ROUTING
                    NSTPS          1  NUMBER OF SUBREACHES
                     ITYP       STOR  TYPE OF INITIAL CONDITION
                   RSVRIC        .00  INITIAL CONDITION
                        X        .00 WORKING R AND D COEFFICIENT
```

24 SA	AREA	.1	1.0	2.1	4.0	5.9	6.7	9.7
25 SE	ELEVATION	4523.00	4524.00	4525.00	4526.00	4527.00	4528.00	4529.50
26 SQ	DISCHARGE	0.	0.	0.	0.	109.	125.	144.

***

COMPUTED STORAGE-ELEVATION DATA

STORAGE	.00	.42	1.94	4.93	9.84	16.10	28.27
ELEVATION	4523.00	4524.00	4525.00	4526.00	4527.00	4528.00	4529.50

*** *** *** *** ***

HYDROGRAPH AT STATION DET

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)				

```
                         (CFS)
+    133.    13.25                  75.       23.       22.       22.
                       (INCHES)    1.345     1.612     1.612     1.612
                        (AC-FT)     37.       45.       45.       45.

     STORAGE   TIME                      MAXIMUM AVERAGE STORAGE
                                   6-HR     24-HR     72-HR   24.92-HR
+  (AC-FT)     (HR)
      21.    13.25                  11.        5.        4.        4.

  PEAK STAGE   TIME                      MAXIMUM AVERAGE STAGE
                                   6-HR     24-HR     72-HR   24.92-HR
+   (FEET)     (HR)
   4528.65   13.25              4527.06   4525.21   4525.13   4525.13

                        CUMULATIVE AREA =      .52 SQ MI

1                                                        STATION      DET

                         (I) INFLOW,  (O) OUTFLOW
          0.       50.     100.     150.     200.     250.     300.     350.     400.     450.       0.       0.       0.
                                                                                (S) STORAGE
          0.        0.       0.       0.       0.       0.       0.      10.      20.      30.       0.       0.       0.
 DAHRMN PER
  10000   1I---------.---------.---------.---------.---------.---------S---------.---------.---------.---------.---------.---------.
  10005   2I         .         .         .         .         .         S         .         .         .         .         .         .
  10010   3I         .         .         .         .         .         S         .         .         .         .         .         .
  10015   4I         .         .         .         .         .         S         .         .         .         .         .         .
  10020   5I         .         .         .         .         .         S         .         .         .         .         .         .
      5   6I         .         .         .         .         .         S         .         .         .         .         .         .
          7I         .         .         .         .         .         S         .         .         .         .         .         .
  10035   8I         .         .         .         .         .         S         .         .         .         .         .         .
  10040   9I         .         .         .         .         .         S         .         .         .         .         .         .
  10045  10I         .         .         .         .         .         S         .         .         .         .         .         .
  10050  11I . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  10055  12I         .         .         .         .         .         S         .         .         .         .         .         .
  10100  13I         .         .         .         .         .         S         .         .         .         .         .         .
  10105  14I         .         .         .         .         .         S         .         .         .         .         .         .
  10110  15I         .         .         .         .         .         S         .         .         .         .         .         .
  10115  16I         .         .         .         .         .         S         .         .         .         .         .         .
  10120  17I         .         .         .         .         .         S         .         .         .         .         .         .
  10125  18I         .         .         .         .         .         S         .         .         .         .         .         .
  10130  19I         .         .         .         .         .         S         .         .         .         .         .         .
  10135  20I         .         .         .         .         .         S         .         .         .         .         .         .
  10140  21I . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  10145  22I         .         .         .         .         .         S         .         .         .         .         .         .
  10150  23I         .         .         .         .         .         S         .         .         .         .         .         .
  10155  24I         .         .         .         .         .         S         .         .         .         .         .         .
  10200  25I         .         .         .         .         .         S         .         .         .         .         .         .
  10205  26I         .         .         .         .         .         S         .         .         .         .         .         .
  10210  27I         .         .         .         .         .         S         .         .         .         .         .         .
  10215  28I         .         .         .         .         .         S         .         .         .         .         .         .
  10220  29I         .         .         .         .         .         S         .         .         .         .         .         .
  10225  30I         .         .         .         .         .         S         .         .         .         .         .         .
  10230  31I . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
         32I         .         .         .         .         .         S         .         .         .         .         .         .
  10240  33I         .         .         .         .         .         S         .         .         .         .         .         .
  10245  34I         .         .         .         .         .         S         .         .         .         .         .         .
  10250  35I         .         .         .         .         .         S         .         .         .         .         .         .
  10255  36I         .         .         .         .         .         S         .         .         .         .         .         .
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10300	37I	.	.	.	.	.	S	.	.	.	.	.	.
10305	38I	.	.	.	.	.	S	.	.	.	.	.	.
10310	39I	.	.	.	.	.	S	.	.	.	.	.	.
10315	40I	.	.	.	.	.	S	.	.	.	.	.	.
)	41I	. . .	. . .	. . .	. . .	. . .	S	. . .	. . .	. . .	. . .	. . .	. . .
5	42I	.	.	.	.	.	S	.	.	.	.	.	.
10330	43I	.	.	.	.	.	S	.	.	.	.	.	.
10335	44I	.	.	.	.	.	S	.	.	.	.	.	.
10340	45I	.	.	.	.	.	S	.	.	.	.	.	.
10345	46I	.	.	.	.	.	S	.	.	.	.	.	.
10350	47I	.	.	.	.	.	S	.	.	.	.	.	.
10355	48I	.	.	.	.	.	S	.	.	.	.	.	.
10400	49I	.	.	.	.	.	S	.	.	.	.	.	.
10405	50I	.	.	.	.	.	S	.	.	.	.	.	.
10410	51I	. . .	. . .	. . .	. . .	. . .	S	. . .	. . .	. . .	. . .	. . .	. . .
10415	52I	.	.	.	.	.	S	.	.	.	.	.	.
10420	53I	.	.	.	.	.	S	.	.	.	.	.	.
10425	54I	.	.	.	.	.	S	.	.	.	.	.	.
10430	55I	.	.	.	.	.	S	.	.	.	.	.	.
10435	56I	.	.	.	.	.	S	.	.	.	.	.	.
10440	57I	.	.	.	.	.	S	.	.	.	.	.	.
10445	58I	.	.	.	.	.	S	.	.	.	.	.	.
10450	59I	.	.	.	.	.	S	.	.	.	.	.	.
10455	60I	.	.	.	.	.	S	.	.	.	.	.	.
10500	61I	. . .	. . .	. . .	. . .	. . .	S	. . .	. . .	. . .	. . .	. . .	. . .
10505	62I	.	.	.	.	.	S	.	.	.	.	.	.
10510	63I	.	.	.	.	.	S	.	.	.	.	.	.
10515	64I	.	.	.	.	.	S	.	.	.	.	.	.
10520	65I	.	.	.	.	.	S	.	.	.	.	.	.
5	66I	.	.	.	.	.	S	.	.	.	.	.	.
)	67I	.	.	.	.	.	S	.	.	.	.	.	.
10535	68I	.	.	.	.	.	S	.	.	.	.	.	.
10540	69I	.	.	.	.	.	S	.	.	.	.	.	.
10545	70I	.	.	.	.	.	S	.	.	.	.	.	.
10550	71I	. . .	. . .	. . .	. . .	. . .	S	. . .	. . .	. . .	. . .	. . .	. . .
10555	72I	.	.	.	.	.	S	.	.	.	.	.	.
10600	73I	.	.	.	.	.	S	.	.	.	.	.	.
10605	74I	.	.	.	.	.	S	.	.	.	.	.	.
10610	75I	.	.	.	.	.	S	.	.	.	.	.	.
10615	76I	.	.	.	.	.	S	.	.	.	.	.	.
10620	77I	.	.	.	.	.	S	.	.	.	.	.	.
10625	78I	.	.	.	.	.	S	.	.	.	.	.	.
10630	79I	.	.	.	.	.	S	.	.	.	.	.	.
10635	80I	.	.	.	.	.	S	.	.	.	.	.	.
10640	81I	. . .	. . .	. . .	. . .	. . .	S	. . .	. . .	. . .	. . .	. . .	. . .
10645	82I	.	.	.	.	.	S	.	.	.	.	.	.
10650	83I	.	.	.	.	.	S	.	.	.	.	.	.
10655	84I	.	.	.	.	.	S	.	.	.	.	.	.
10700	85I	.	.	.	.	.	S	.	.	.	.	.	.
10705	86I	.	.	.	.	.	S	.	.	.	.	.	.
10710	87I	.	.	.	.	.	S	.	.	.	.	.	.
10715	88I	.	.	.	.	.	S	.	.	.	.	.	.
10720	89I	.	.	.	.	.	S	.	.	.	.	.	.
10725	900I	.	.	.	.	.	S	.	.	.	.	.	.
10730	910I	. . .	. . .	. . .	. . .	. . .	S	. . .	. . .	. . .	. . .	. . .	. . .
5	920I	.	.	.	.	.	S	.	.	.	.	.	.
40	930I	.	.	.	.	.	S	.	.	.	.	.	.
10745	940I	.	.	.	.	.	S	.	.	.	.	.	.
10750	950I	.	.	.	.	.	S	.	.	.	.	.	.
10755	960I	.	.	.	.	.	S	.	.	.	.	.	.

```
10800  970I        .         .         .         .         .         S         .         .         .         .         .         .
10805  980I        .         .         .         .         .         S         .         .         .         .         .         .
10810  990I        .         .         .         .         .         S         .         .         .         .         .         .
10815 1000I        .         .         .         .         .         S         .         .         .         .         .         .
    ) 1010I. . . . . . . . . . . . . . . . . . . . . . . . . . . . .S . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
   25 1020I        .         .         .         .         .         S         .         .         .         .         .         .
10830 1030I        .         .         .         .         .         S         .         .         .         .         .         .
10835 1040I        .         .         .         .         .         .S        .         .         .         .         .         .
10840 1050I        .         .         .         .         .         .S        .         .         .         .         .         .
10845 1060I        .         .         .         .         .         .S        .         .         .         .         .         .
10850 1070I        .         .         .         .         .         .S        .         .         .         .         .         .
10855 1080 I       .         .         .         .         .         .S        .         .         .         .         .         .
10900 1090 I       .         .         .         .         .         .S        .         .         .         .         .         .
10905 1100 I       .         .         .         .         .         .S        .         .         .         .         .         .
10910 1110 I . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . .
10915 1120 I       .         .         .         .         .         .S        .         .         .         .         .         .
10920 1130 I       .         .         .         .         .         .S        .         .         .         .         .         .
10925 1140 I       .         .         .         .         .         .S        .         .         .         .         .         .
10930 1150 I       .         .         .         .         .         .S        .         .         .         .         .         .
10935 1160 I       .         .         .         .         .         .S        .         .         .         .         .         .
10940 1170 I       .         .         .         .         .         .S        .         .         .         .         .         .
10945 1180I        .         .         .         .         .         .S        .         .         .         .         .         .
10950 1190I        .         .         .         .         .         .S        .         .         .         .         .         .
10955 1200I        .         .         .         .         .         .S        .         .         .         .         .         .
11000 1210I. . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . .
11005 1220I        .         .         .         .         .         .S        .         .         .         .         .         .
11010 1230I        .         .         .         .         .         . S       .         .         .         .         .         .
11015 1240 I       .         .         .         .         .         . S       .         .         .         .         .         .
11020 1250 I       .         .         .         .         .         . S       .         .         .         .         .         .
    5 1260 I       .         .         .         .         .         . S       .         .         .         .         .         .
    0 1270 I       .         .         .         .         .         . S       .         .         .         .         .         .
11035 1280 I       .         .         .         .         .         . S       .         .         .         .         .         .
11040 1290 I       .         .         .         .         .         . S       .         .         .         .         .         .
11045 1300 I       .         .         .         .         .         . S       .         .         .         .         .         .
11050 1310 I . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . .
11055 1320 I       .         .         .         .         .         . S       .         .         .         .         .         .
11100 1330 I       .         .         .         .         .         . S       .         .         .         .         .         .
11105 1340 I       .         .         .         .         .         . S       .         .         .         .         .         .
11110 1350 I       .         .         .         .         .         . S       .         .         .         .         .         .
11115 1360 I       .         .         .         .         .         . S       .         .         .         .         .         .
11120 1370  I      .         .         .         .         .         . S       .         .         .         .         .         .
11125 1380  I      .         .         .         .         .         .  S      .         .         .         .         .         .
11130 1390  I      .         .         .         .         .         .  S      .         .         .         .         .         .
11135 1400  I      .         .         .         .         .         .  S      .         .         .         .         .         .
11140 1410 . I . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . .
11145 1420   I     .         .         .         .         .         .  S      .         .         .         .         .         .
11150 1430     I   .         .         .         .         .         .  S      .         .         .         .         .         .
11155 1440       I .         .         .         .         .         .  S      .         .         .         .         .         .
11200 1450         . I       .         .         .         .         .   S     .         .         .         .         .         .
11205 1460         .         I         .         .         .         .   S     .         .         .         .         .         .
11210 147.0        .         .         .I        .         .         .    S    .         .         .         .         .         .
11215 148.     O   .         .         .         .    I    .         .     S   .         .         .         .         .         .
11220 149.         .  O      .         .         .         .         .I      S .         .         .         .         .         .
11225 150.         .         .O        .         .         .         .         S   I     .         .         .         .         .
   30 151. . . . . . . . . . . .O. . . . . . . . . . . . . . . . . . . . . S . . . .I. . . . . . . . . . . . . . . . . . . . .
    5 152.         .         .   O     .         .         .         .         .   S     .  I      .         .         .         .
11240 153.         .         .    O    .         .         .         .         .     S   I         .         .         .         .
11245 154.         .         .    O    .         .         .         .         .  I   S  .         .         .         .         .
11250 155.         .         .     O   .         .         .         .  I      .        S.         .         .         .         .
11255 156.         .         .     O   .         .         .  I      .         .         S         .         .         .         .
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11300 157.          .         .     O   .         .   I     .         .         .         .S        .         .         .         .
11305 158.          .         .      O  .     I   .         .         .         .         .S        .         .         .         .
11310 159.          .         .      O  I         .         .         .         .         .S        .         .         .         .
11315 160.          .         .    I O  .         .         .         .         .         .S        .         .         .         .
      161.  . . . . . . . . . .I. . .O. . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . .
   25 162.          .      I  .      O  .         .         .         .         .         .S        .         .         .         .
11330 163.          .    I    .     O   .         .         .         .         .         .S        .         .         .         .
11335 164.          .  I      .     O   .         .         .         .         .         S         .         .         .         .
11340 165.          .I        .     O   .         .         .         .         .         S         .         .         .         .
11345 166.          I         .     O   .         .         .         .         .        S.         .         .         .         .
11350 167.         I.         .     O   .         .         .         .         .        S.         .         .         .         .
11355 168.        I .         .     O   .         .         .         .         .       S .         .         .         .         .
11400 169.       I  .         .    O    .         .         .         .         .      S  .         .         .         .         .
11405 170.       I  .         .    O    .         .         .         .         .      S  .         .         .         .         .
11410 171.  . . I . . . . . . . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . .
11415 172.      I   .         .    O    .         .         .         .         .    S    .         .         .         .         .
11420 173.     I    .         .   O     .         .         .         .         .    S    .         .         .         .         .
11425 174.     I    .         .   O     .         .         .         .         .   S     .         .         .         .         .
11430 175.     I    .         .   O     .         .         .         .         .  S      .         .         .         .         .
11435 176.    I     .         .  O      .         .         .         .         .  S      .         .         .         .         .
11440 177.    I     .         .  O      .         .         .         .         . S       .         .         .         .         .
11445 178.    I     .         .  O      .         .         .         .         . S       .         .         .         .         .
11450 179.    I     .         . O       .         .         .         .         .S        .         .         .         .         .
11455 180.    I     .         . O       .         .         .         .         S         .         .         .         .         .
11500 181.  . I . . . . . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . .
11505 182.    I     .       O .         .         .         .         .        S.         .         .         .         .         .
11510 183.   I      .     O   .         .         .         .         .        S.         .         .         .         .         .
11515 184.    I     .   O     .         .         .         .         .       S .         .         .         .         .         .
11520 185.    I     .  O      .         .         .         .         .       S .         .         .         .         .         .
    5 186.    I     . O       .         .         .         .         .       S .         .         .         .         .         .
    0 187.    I     .O        .         .         .         .         .      S  .         .         .         .         .         .
11535 188.    I     O         .         .         .         .         .      S  .         .         .         .         .         .
11540 189.     I   O.         .         .         .         .         .      S  .         .         .         .         .         .
11545 190.     I  O .         .         .         .         .         .      S  .         .         .         .         .         .
11550 191.  . .I. O . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . .
11555 192.     I O  .         .         .         .         .         .      S  .         .         .         .         .         .
11600 193.     I O  .         .         .         .         .         .      S  .         .         .         .         .         .
11605 194.     I O  .         .         .         .         .         .     S   .         .         .         .         .         .
11610 195.     I O  .         .         .         .         .         .     S   .         .         .         .         .         .
11615 196.     IO   .         .         .         .         .         .     S   .         .         .         .         .         .
11620 197.     IO   .         .         .         .         .         .     S   .         .         .         .         .         .
11625 198.     IO   .         .         .         .         .         .     S   .         .         .         .         .         .
11630 199.     IO   .         .         .         .         .         .     S   .         .         .         .         .         .
11635 200.     IO   .         .         .         .         .         .     S   .         .         .         .         .         .
11640 201.  . .IO . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . .
11645 202.     IO   .         .         .         .         .         .     S   .         .         .         .         .         .
11650 203.     IO   .         .         .         .         .         .     S   .         .         .         .         .         .
11655 204.     I    .         .         .         .         .         .     S   .         .         .         .         .         .
11700 205.     I    .         .         .         .         .         .     S   .         .         .         .         .         .
11705 206.     I    .         .         .         .         .         .     S   .         .         .         .         .         .
11710 207.     I    .         .         .         .         .         .     S   .         .         .         .         .         .
11715 208.     I    .         .         .         .         .         .     S   .         .         .         .         .         .
11720 209.     I    .         .         .         .         .         .     S   .         .         .         .         .         .
11725 210.     I    .         .         .         .         .         .     S   .         .         .         .         .         .
   30 211.  . IO. . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . .
    5 212.    IO    .         .         .         .         .         .     S   .         .         .         .         .         .
  740 213.    IO    .         .         .         .         .         .     S   .         .         .         .         .         .
11745 214.    IO    .         .         .         .         .         .     S   .         .         .         .         .         .
11750 215.    IO    .         .         .         .         .         .     S   .         .         .         .         .         .
11755 216.    IO    .         .         .         .         .         .     S   .         .         .         .         .         .
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11800 217.   IO   .     .     .     .     .     .   S  .     .     .     .     .     .
11805 218.   IO   .     .     .     .     .     .   S  .     .     .     .     .     .
11810 219.   I    .     .     .     .     .     .   S  .     .     .     .     .     .
  815 220.   I    .     .     .     .     .     .   S  .     .     .     .     .     .
    0 221. . I . . . . . . . . . . . . . . . . . .  S . . . . . . . . . . . . . . . . . .
   25 222.   I    .     .     .     .     .     .   S  .     .     .     .     .     .
11830 223.   I    .     .     .     .     .     .   S  .     .     .     .     .     .
11835 224.   I    .     .     .     .     .     .   S  .     .     .     .     .     .
11840 225.  IO    .     .     .     .     .     .   S  .     .     .     .     .     .
11845 226.  IO    .     .     .     .     .     .   S  .     .     .     .     .     .
11850 227.  IO    .     .     .     .     .     .   S  .     .     .     .     .     .
11855 228.  IO    .     .     .     .     .     .   S  .     .     .     .     .     .
11900 229.  IO    .     .     .     .     .     .   S  .     .     .     .     .     .
11905 230.  IO    .     .     .     .     .     .   S  .     .     .     .     .     .
11910 231. .IO . . . . . . . . . . . . . . . . . .  S . . . . . . . . . . . . . . . . . .
11915 232.  I     .     .     .     .     .     .   S  .     .     .     .     .     .
11920 233.  I     .     .     .     .     .     .   S  .     .     .     .     .     .
11925 234.  I     .     .     .     .     .     .   S  .     .     .     .     .     .
11930 235.  I     .     .     .     .     .     .   S  .     .     .     .     .     .
11935 236.  I     .     .     .     .     .     .   S  .     .     .     .     .     .
11940 237.  I     .     .     .     .     .     .   S  .     .     .     .     .     .
11945 238.  I     .     .     .     .     .     .   S  .     .     .     .     .     .
11950 239.  I     .     .     .     .     .     .   S  .     .     .     .     .     .
11955 240.  I     .     .     .     .     .     .   S  .     .     .     .     .     .
12000 241. .I. . . . . . . . . . . . . . . . . . .  S . . . . . . . . . . . . . . . . . .
12005 242.  I     .     .     .     .     .     .   S  .     .     .     .     .     .
12010 243.  I     .     .     .     .     .     .   S  .     .     .     .     .     .
12015 244.  I     .     .     .     .     .     .   S  .     .     .     .     .     .
12020 245.  I     .     .     .     .     .     .   S  .     .     .     .     .     .
    5 246.  I     .     .     .     .     .     .   S  .     .     .     .     .     .
    0 247.  I     .     .     .     .     .     .   S  .     .     .     .     .     .
12035 248.  I     .     .     .     .     .     .   S  .     .     .     .     .     .
12040 249.  I     .     .     .     .     .     .   S  .     .     .     .     .     .
12045 250.  I     .     .     .     .     .     .   S  .     .     .     .     .     .
12050 251. IO. . . . . . . . . . . . . . . . . . .  S . . . . . . . . . . . . . . . . . .
12055 252. IO     .     .     .     .     .     .   S  .     .     .     .     .     .
12100 253. IO     .     .     .     .     .     .   S  .     .     .     .     .     .
12105 254. IO     .     .     .     .     .     .   S  .     .     .     .     .     .
12110 255. IO     .     .     .     .     .     .   S  .     .     .     .     .     .
12115 256. IO     .     .     .     .     .     .  S   .     .     .     .     .     .
12120 257. IO     .     .     .     .     .     .  S   .     .     .     .     .     .
12125 258. I      .     .     .     .     .     .  S   .     .     .     .     .     .
12130 259. I      .     .     .     .     .     .  S   .     .     .     .     .     .
12135 260. I      .     .     .     .     .     .  S   .     .     .     .     .     .
12140 261. I . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . .
12145 262. I      .     .     .     .     .     .  S   .     .     .     .     .     .
12150 263. I      .     .     .     .     .     .  S   .     .     .     .     .     .
12155 264. I      .     .     .     .     .     .  S   .     .     .     .     .     .
12200 265. I      .     .     .     .     .     .  S   .     .     .     .     .     .
12205 266. I      .     .     .     .     .     .  S   .     .     .     .     .     .
12210 267. I      .     .     .     .     .     .  S   .     .     .     .     .     .
12215 268. I      .     .     .     .     .     .  S   .     .     .     .     .     .
12220 269. I      .     .     .     .     .     .  S   .     .     .     .     .     .
12225 270. I      .     .     .     .     .     .  S   .     .     .     .     .     .
   30 271. I . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . .
    5 272. I      .     .     .     .     .     .  S   .     .     .     .     .     .
12240 273. I      .     .     .     .     .     .  S   .     .     .     .     .     .
12245 274. I      .     .     .     .     .     .  S   .     .     .     .     .     .
12250 275. I      .     .     .     .     .     .  S   .     .     .     .     .     .
12255 276. I      .     .     .     .     .     .  S   .     .     .     .     .     .
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12300 277. I       .          .          .          .          .          .    S     .          .          .          .          .          .
12305 278. I       .          .          .          .          .          .    S     .          .          .          .          .          .
12310 279. I       .          .          .          .          .          .    S     .          .          .          .          .          .
12315 280. I       .          .          .          .          .          .    S     .          .          .          .          .          .
      281. I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
12325 282. I       .          .          .          .          .          .    S     .          .          .          .          .          .
12330 283. I       .          .          .          .          .          .    S     .          .          .          .          .          .
12335 284. I       .          .          .          .          .          .    S     .          .          .          .          .          .
12340 285. I       .          .          .          .          .          .    S     .          .          .          .          .          .
12345 286. I       .          .          .          .          .          .    S     .          .          .          .          .          .
12350 287. I       .          .          .          .          .          .    S     .          .          .          .          .          .
12355 288. I       .          .          .          .          .          .    S     .          .          .          .          .          .
20000 289. I       .          .          .          .          .          .    S     .          .          .          .          .          .
20005 290. I       .          .          .          .          .          .    S     .          .          .          .          .          .
20010 291. I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
20015 292. I       .          .          .          .          .          .    S     .          .          .          .          .          .
20020 293. I       .          .          .          .          .          .    S     .          .          .          .          .          .
20025 294.IO       .          .          .          .          .          .    S     .          .          .          .          .          .
20030 295.IO       .          .          .          .          .          .    S     .          .          .          .          .          .
20035 296.IO       .          .          .          .          .          .    S     .          .          .          .          .          .
20040 297.IO       .          .          .          .          .          .    S     .          .          .          .          .          .
20045 298.I        .          .          .          .          .          .    S     .          .          .          .          .          .
20050 299IO        .          .          .          .          .          .    S     .          .          .          .          .          .
20055 300IO--------.---------.---------.---------.---------.---------.----S----.---------.---------.---------.---------.---------.
1
1
```

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
	HYDROGRAPH AT									
+		W2ND	416.	12.58	80.	25.	24.	.52		
	ROUTED TO									
+		DET	133.	13.25	75.	23.	22.	.52		
+									4528.65	13.25

*** NORMAL END OF HEC-1 ***

```
1****************************************                              ****************************************
*                                       *                              *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                              *   U.S. ARMY CORPS OF ENGINEERS       *
*             JUN   1998                *                              *   HYDROLOGIC ENGINEERING CENTER      *
*            VERSION 4.1                *                              *        609 SECOND STREET             *
*                                       *                              *    DAVIS, CALIFORNIA 95616           *
*  RUN DATE   06DEC04  TIME  11:08:46   *                              *        (916) 756-1104                *
*                                       *                              *                                      *
****************************************                              ****************************************


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

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM


```
 LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

              *DIAGRAM
   1          ID
   2          ID      STANTEC CONSULTING INC.   RENO, NEVADA
   3          ID
   4          ID      RENO RETRAC
   5          ID
   6          ID      FILE:  WESTKEY.DAT
   7          ID      JOB#:  80100603
   8          ID      DATE:  APRIL 2003
   9          ID
  10          ID
  11          IT      5                      300
  12          IO      3       0
              *

  13          KK    WKEY      HYDROGRAPH WEST KEYSTONE AVENUE
  14          BA    .083
  15          PH                        0.48    0.87     1.4    1.62    1.76    2.03    2.50    2.97
  16          LS              90
  17          UD    0.3
  18          ZZ
```
1

```
              SCHEMATIC DIAGRAM OF STREAM NETWORK
INPUT
 LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

 NO.       (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

  13        WKEY

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             JUN   1998                *
*           VERSION 4.1                 *
*                                       *
* RUN DATE   06DEC04  TIME  11:08:46    *
*                                       *
*****************************************

*****************************************
*                                       *
*   U.S. ARMY CORPS OF ENGINEERS        *
*   HYDROLOGIC ENGINEERING CENTER       *
*         609 SECOND STREET             *
*      DAVIS, CALIFORNIA 95616          *
*          (916) 756-1104               *
*                                       *
*****************************************



                      STANTEC CONSULTING INC.   RENO, NEVADA

                      RENO RETRAC

                      FILE:  WESTKEY.DAT
                      JOB#:  80100603
                      DATE:  APRIL 2003


 12 IO        OUTPUT CONTROL VARIABLES
                 IPRNT          3  PRINT CONTROL
                 IPLOT          0  PLOT CONTROL
                 QSCAL          0.  HYDROGRAPH PLOT SCALE

   IT         HYDROGRAPH TIME DATA
                  NMIN          5  MINUTES IN COMPUTATION INTERVAL
                 IDATE      1   0  STARTING DATE
                 ITIME       0000  STARTING TIME
                    NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                NDDATE      2   0  ENDING DATE
                NDTIME       0055  ENDING TIME
                 ICENT         19  CENTURY MARK

              COMPUTATION INTERVAL     .08 HOURS
                   TOTAL TIME BASE   24.92 HOURS

        ENGLISH UNITS
            DRAINAGE AREA          SQUARE MILES
            PRECIPITATION DEPTH    INCHES
            LENGTH, ELEVATION      FEET
            FLOW                   CUBIC FEET PER SECOND
            STORAGE VOLUME         ACRE-FEET
            SURFACE AREA           ACRES
            TEMPERATURE            DEGREES FAHRENHEIT
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*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

         **************
         *            *
  13 KK  *    WKEY    *        HYDROGRAPH WEST KEYSTONE AVENUE
         *            *
         **************

            SUBBASIN RUNOFF DATA

  14 BA       SUBBASIN CHARACTERISTICS
                    TAREA        .08  SUBBASIN AREA

              PRECIPITATION DATA

  15 PH                          DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
              ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
              5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                .48     .87    1.40    1.62    1.76    2.03    2.50    2.97     .00     .00     .00     .00

                                            STORM AREA =      .08

  16 LS       SCS LOSS RATE
                    STRTL        .22  INITIAL ABSTRACTION
                   CRVNBR      90.00  CURVE NUMBER
                    RTIMP        .00  PERCENT IMPERVIOUS AREA

      D       SCS DIMENSIONLESS UNITGRAPH
                    TLAG         .30  LAG

                                                       ***

                                                  UNIT HYDROGRAPH
                                              20 END-OF-PERIOD ORDINATES
          16.        53.       101.       117.       108.        84.        54.        36.        25.        16.
          11.         7.         5.         3.         2.         2.         1.         1.         0.         0.

     ***             ***             ***             ***             ***

                    HYDROGRAPH AT STATION     WKEY

  TOTAL RAINFALL =    2.97, TOTAL LOSS =    1.01, TOTAL EXCESS =    1.96

 PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                               6-HR        24-HR        72-HR      24.92-HR
+   (CFS)      (HR)
                      (CFS)
+       91.    12.33             14.          4.           4.           4.
                    (INCHES)   1.552       1.956        1.956        1.956
                     (AC-FT)      7.          9.           9.           9.

                    CUMULATIVE AREA =      .08 SQ MI

1

                                                  RUNOFF SUMMARY
                                            FLOW IN CUBIC FEET PER SECOND
                                          TIME IN HOURS,  AREA IN SQUARE MILES
```

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT									
+		WKEY	91.	12.33	14.	4.	4.	.08		

*** NORMAL END OF HEC-1 ***

```
1****************************************                 ****************************************
*                                        *                *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)    *                *   U.S. ARMY CORPS OF ENGINEERS       *
*             JUN   1998                 *                *   HYDROLOGIC ENGINEERING CENTER      *
*           VERSION 4.1                  *                *         609 SECOND STREET            *
*                                        *                *      DAVIS, CALIFORNIA 95616         *
*  RUN DATE   06DEC04  TIME  10:16:50    *                *          (916) 756-1104              *
*                                        *                *                                      *
****************************************                 ****************************************
```

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

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
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DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM


```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

            *DIAGRAM
            ID
            ID      STANTEC CONSULTING INC.   RENO, NEVADA
            ID
            ID      RENO RETRAC
            ID
            ID      FILE:  RET_IFC.DAT
            ID      JOB#:  80100603
            ID      DATE:  DECEMBER 2004
            ID
            ID
            ID      THIS MODEL INCLUDES UPSTREAM OF I-80 FOR VINE STREET, RALSTON STREET,
            ID      SIERRA STREET AND VIRGINIA STREET ROUTED AND COMBINED WITH WEST DOWNTOWN
            ID      AT CENTER STREET AND THE UPRR
            ID      COMBINED WITH EVANS AND CENTER STREET WATERSHEDS AND DOWNTOWN EAST
            ID      COMBINED AT THE UPRR NEAR RECORD STREET
            ID
            ID      LANDUSE INFORMATION, FOR BASINS A-F, TAKEN FROM "EVANS CREEK (BLOCK N
            ID      WATERSHED) HYDROLOGIC EVALUATION OF PROPOSED DETENTION SITE PHASE I
            ID      TECHNICAL MEMORANDUM" BY WRC SIGNED AND STAMPED ON AUGUST 23, 2000
            ID      AND REVISED BY WRC DATED MAY, 2002.
            ID
```

```
  22          ID
  23          ID
  24          IT      5                        600
  25          IO      3       0
              *

  26          KK    UPEA  HYDROGRAPH UPPER PEAVINE WATERSHED
  27          KM         UPPER PEAVINE WATERSHED
  28          BA    2.410
  29          PH                      0.48    0.87     1.4    1.62    1.76    2.03    2.50    2.97
  30          LS              81
  31          UD     1.15
              *
              * ***************************************************************************
              *        UPPER PEAVINE DAM
              *   DATA OBTAINED FROM NIMBUS REPORT
              * ***************************************************************************

  32          KK  UPVDAM  ROUTE UPPER PEAVINE WATERSHED THROUGH UPPER PEAVINE DAM
  33          KM       RT UPEA THROUGH UPVDAM
              *       1
  34          RS       1    STOR       0
  35          SV       0      25 .    53      90     130     175     227     285     310
  36          SE    4985    4990    4995    5000    5005    5010    5015    5020    5022
  37          SQ       0      20      40      60      67      78     278     580
  38          SE  4998.5  4999.9    5000  5000.2  5000.4  5020.0    5021    5022
              *
1                                        HEC-1 INPUT                                                  PAGE  2

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


  39          KK  RTLPEA  ROUTE OUTLET OF UPPER PEAVINE DAM TO LOWER PEAVINE DAM
  40          KM       RT UPVDAM TO CPLPEA
  41          RD    6173    .041    .016            TRAP      50       1
              *

  42          KK  SPROUT  HYDROGRAPH SPROUT WATERSHED
  43          BA   0.503
  44          LS              82
  45          UD    0.44
              *

  46          KK  RTLPEA  ROUTE SPROUT TO CPLPEA
  47          RD    4168   .0372    .016            TRAP      50       1
              *

  48          KK    LPEA  HYDROGRAPH LOWER PEAVINE WATERSHED
  49          BA   0.369
  50          LS              88
  51          UD    0.32
              *

  52          KK  CPLPEA  COMBINE UPPER PEAVINE, SPROUT AND LOWER PEAVINE AT LOWER PEAVINE DAM
  53          KM
  54          HC       3
              *
              * ***************************************************************************
              *        LOWER PEAVINE DAM
              *   DATA OBTAINED FROM NIMBUS REPORT
```

```
          * ******************************************************************************

  55      KK  LPVDAM
  56      KM      ROUTE THRU LOWER PEAVINE DAM
          *       1
  57      RS       1    STOR       0
  58      SV       0       5      13      23      30      35      55      65     100     125
  59      SE  4737.5  4740.0    4745  4750.0  4752.5  4754.0    4758  4760.0    4765    4768
  60      SQ       0       0      20      40      60      72      88     288     300     488
  61      SE  4737.5    4750    4751  4751.7    4752  4752.2    4765  4766.8    4767    4768
          *

  62      KK  RT ELM  ROUTE LOWER PEAVINE DAM TO CP ELMCREST
  63      KM      RT LPVDAM TO CP ELM
  64      RD    7817    .025    .016            TRAP      50       1
          *

  65      KK     ELM  HYDROGRAPH ELMCREST WATERSHED
  66      KM     ELMCREST
  67      BA    .484
  68      LS              89
  69      UD    0.56
          *
```

```
  70      KK  CP ELM
  71      KM     COMBINE LOWER PEAVINE WITH ELMCREST
  72      HC       2
          *

  73      KK   EWASH  HYDROGRAPH EAST WASH
  74      BA   2.148
  75      LS              80
  76      UD    1.47
          *
          * ******************************************************************************
          *              EAST WASH DAM
          *     DATA OBTAINED FROM NIMBUS REPORT
          * ******************************************************************************

  77      KK   EWDAM  (ATLTERED USING DATA FROM WASHOE COUNTY TOPO AND DESIGN PLAN FROM THE
          *           PEAVINE MOUNTAIN WATERSHED WORK PLAN REPORT FROM THE CITY OF RENO)
  78      KM      ROUTE THRU EAST WASH DAM
          *       1
  79      RS       1    STOR       0
  80      SV       0       2       5      11      21      35      50      60      64      80
  81      SE    4820    4825    4830    4835    4840    4845    4848    4850  4850.5    4854
  82      SQ       0       0      10      33    33.5      34     109     284     384     584
  83      SE    4820    4848  4848.5    4849  4849.5    4850  4850.5    4851  4851.5    4852
          *

  84      KK   WWDAM  ROUTE EST WASHINTON TO WEST WASHINTON DAM
  85      RD    1706   0.063   0.016            TRAP      50       1
          *

  86      KK   WWASH  HYDROGRAPH WEST WASH
  87      BA   1.134
```

```
  88          LS              83
  89          UD    0.94
              *

  90          KK  CPWWSH  COMBINE EAST WASH AND WEST WASH AT WEST WASH DAM
  91          HC       2
              *            2
              *
              * ****************************************************************************
              *            WEST WASH DAM
              *    DATA OBTAINED FROM NIMBUS REPORT
              * ****************************************************************************

  92          KK    WWDAM
              *            2
  93          KM      ROUTE THRU WEST WASH DAM
  94          RS       1    STOR       0
  95          SV       0      25      50      75     130     183     240     317     385     460
  96          SE    4744    4745    4750    4755    4760    4765    4770    4775    4780    4785
  97          SQ       0       0      57      75     175     375     775    1375    2900    3775
  98          SE    4744    4754  4754.5    4779  4779.5    4780    4781    4782    4784    4785
              *
1                                          HEC-1 INPUT                                              PAGE  4

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


  99          KK  RTVINE
 100          KM      ROUTE WEST WASH DAM TO CP VINE
 101          RD    7730  .0225    .016            TRAP      50       1
              *

 102          KK    VINE  HYDROGRAPH VINE STREET WATERSHED
 103          BA    .981
 104          LS              90
 105          UD    0.62
              *

 106          KK    WASH     HYDROGRAPH WASHINGTON STREET
 107          BA     .06
 108          LS              92
 109          UD    0.24
              *

 110          KK  RTVINE     ROUTE WASHINTON TO CPVINE
 111          RD     500   0.010   0.020            TRAP      50       1
              *

 112          KK  CPVINE
 113          KM      COMBINE PEAVINE EAST
 114          HC       3
              *

 115          KK    STAR     HYDROGRAPH STARLIGHT BASIN
 116          BA     .07
 117          LS              93
 118          UD    .015
              *

 119          KK  KYSUMP     HYDROGRAPH KEYSTONE SUMP
```

```
120          BA   0.025
121          LS             98
122          UD    0.12
             *

123          KK  CPKYSR     COMBINE KEYSTONE AND STARLIGHT
124          HC       2
             *

125          KK    RTPV     ROUTE STARLIGHT AND KEYSTONE SUMP TO VINE
126          RD    1915     .01    .013             CIRC     3.5
             *

127          KK    CP PV
128          KM      COMBINE PEAVINE EAST, PEAVINE WEST, CPKYSR
129          HC       3
             *              2
             *  ******************************************************************************
             *  DOWNSTREAM OF INTERSTATE I-80
             *  ******************************************************************************
1                                       HEC-1 INPUT                                          PAGE  5

LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


130          KK  RT CPW     ROUTE VINE STREET TO CPW (VIRGINIA AT UPRR)
131          KM      ROUTE CPPV TO CPW
132          RD    5335   .0094     .02             TRAP      50       1
             *

133          KK  RALSTN     HYDROGRAPH RALSTON STREET UPSTREAM OF I-80  A=11.62 AC
134          BA   0.018
135          LS             92
136          UD     .09
             *

137          KK  RT CPW     ROUTE RALSTON STREET TO CPW
138          KM      ROUTE RALSTN TO DTW
139          RD    4415   .0113     .02             TRAP      50       1
             *

140          KK  SIERRA     HYDROGRAPH SIERRA STREET UPSTREAM OF I-80  A=10.28 AC
141          BA  0.0161
142          LS             92
143          UD    0.08
             *

144          KK  RT CPW     ROUTE SIERRA STREET TO CPW
145          KM      ROUTE SIERRA TO CPW
146          RD    3117   .0051     .02             TRAP      60       1
             *

147          KK   VA ST     HYDROGRAPH VIRGINIA STREET UPSTREAM OF I-80 A=10.83 AC
148          BA   .0169
149          LS             92
150          UD    0.09
             *

151          KK  RT CPW     ROUTE VIRGINIA STREET TO CPW
152          KM      ROUTE VA ST TO CPW
```

```
153          RD   2725  .0055    .02            TRAP     60       1
             *

154          KK    DTW    HYDROGRAPH DTW (DOWNTOWN WEST) A=200 AC
155          BA  .2981
156          LS            93
157          UD    .50
             *

158          KK    CPW    COMBINE VINE RALSTN SIERRA AND VA ST WITH DTW AT CPW
159          HC      5
             *

160          KK RTEAST
161          RD   1200   .005    .03            TRAP     50       5
             *
             * ****************************************************************************
             *  EVANS WATERSHED TAKEN FROM WRC MODEL
             * ****************************************************************************
             *
```



```
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

162          KK      E sub basin
163          BA  1.291
164          PH          .001   0.34   0.67   1.18   1.34   1.47   1.73   2.24   2.75
165          LS            83
166          UD   0.90
             *

167          KK   RT-1A route sub basin E to sub basin A
168          RD   1050 0.0133  0.030            TRAP     10       3
             *

169          KK   RT-1B route sub basin E to sub basin A
170          RD    430 0.0233  0.030            TRAP     30       2
             *

171          KK   RT-1C route sub basin E to sub basin A
172          RD    335 0.0119  0.030            TRAP     20       2
             *

173          KK   RT-1E route sub basin E to sub basin A
174          RD   1005 0.0299  0.035            TRAP     20       3
             *

175          KK      A sub basin
176          BA  0.854
177          PH          .001   0.35   0.68   1.19   1.36   1.49   1.76   2.29   2.82
178          LS            80
179          UD   0.79
             *

180          KK      F sub basin
181          BA  0.317
182          PH          .001   0.35   0.68   1.19   1.36   1.49   1.76   2.29   2.82
183          LS            76
184          UD   0.32
```

```
                  *

 185              KK    CP-1 combine sub basins A, E, and F
 186              HC       3
                  *

 187              KK   RT-2A route CP-1 to sub basin B
 188              RD     410  0.0293   0.035           TRAP      20        3
                  *

 189              KK   RT-2B route CP-1 to sub basin B
 190              RD    1140  0.0123   0.045           TRAP      50        3
                  *
1                                    HEC-1 INPUT                                         PAGE  7

LINE              ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


 191              KK   RT-2C route CP-1 to sub basin B
 192              RD    2070  0.0251   0.040           TRAP      50        3
                  *

 193              KK       B sub basin
 194              BA   0.538
 195              PH            .001     0.35     0.68     1.20     1.37     1.50     1.76     2.29     2.81
 196              LS              82
 197              UD    0.43
                  *

 198              KK    CP-2 combine CP-1 with sub basin B
 199              HC       2
                  *

 200              KK   RT-3A route CP-2 to sub basin G
 201              RD    1640  0.0232   0.030           TRAP      50        3
                  *

 202              KK   RT-3B route CP-2 to sub basin G
 203              RD     780  0.0179   0.035           TRAP      20        3
                  *

 204              KK   RT-3C route CP-2 to sub basin G
 205              RD     655  0.0214   0.045           TRAP      20        3
                  *

 206              KK   RT-3D route CP-2 to sub basin G
 207              RD    1555  0.0283   0.035           TRAP      20        3
                  *

 208              KK       G sub basin
 209              BA   0.426
 210              PH            .001     0.35     0.69     1.21     1.38     1.51     1.78     2.30     2.81
 211              LS              77
 212              UD     .51
                  *

 213              KK    CP-3 combine CP-2 with sub basin G
 214              HC       2
                  *
```

```
215          KK   RT-4A route CP-3 to sub basin C
216          RD    2085  0.0240   0.040            TRAP      40       3
             *

217          KK   RT-4B route CP-3 to sub basin C
218          RD    1820  0.0264   0.050            TRAP      50      50
             *
```



```
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


219          KK       C sub basin
220          BA   0.396
221          PH            .001    0.35    0.69    1.21    1.37    1.50    1.77    2.28    2.79
222          LS              83
223          UD    0.61
             *

224          KK    CP-4 combine CP-3 with sub basin C
225          HC       2
             *

226          KK  MCCARR MCCARRAN BLVD DETENTION BASIN
227          KM          CURRENTLY 48" CMP AND 10' X 10' RCBC
228          RS       1    STOR       0
229          SA       0    0.01    0.16    0.30    0.54    0.84    1.30    1.80    2.28    2.79
230          SA    3.41    3.99    4.60    6.94
231          SE    4658    4660    4662    4664    4666    4668    4670    4672    4674    4676
232          SE    4678    4680    4682    4684
233          SQ       0       0    65.6    92.7   113.5     461   763.8   968.7  1135.3  1279.6
234          SQ  1526.9  1738.9  1927.5  2099.1  2257.6  2405.6    2545  2558.5  2608.3  3111.8
235          SE    4658    4660    4661    4662    4663    4664    4665    4666    4667    4668
236          SE    4670    4672    4674    4676    4678    4680    4682  4682.2  4682.5    4684
             *  4660     7.8    0.65     0.5
             *  4680      10     3.0     1.5
             *

237          KK    RT-5 route CP-4 to sub basin D
238          RD    3450  0.0191   0.030            TRAP      50      50
             *

239          KK       D sub basin
240          BA   0.557
241          PH            .001    0.35    0.68    1.20    1.37    1.49    1.75    2.26    2.76
242          LS              84
243          UD    0.59
             *

244          KK    CP-5 combine CP-4 with sub basin D
245          HC       2
             *

246          KK  SIERRA SIERRA ST DETENTION BASIN
247          KM          CURRENTLY OVAL 68" X 43" RCP
248          RS       1    STOR       0
249          SA       0    0.05    0.75    1.19    1.83    2.58
250          SE    4592    4594    4596    4598    4600    4602
251          SQ       0    38.5      72    94.2   112.2   127.6   141.3   153.9   165.5   176.3
252          SQ   186.5   196.1   205.4   214.2   217.6   363.1   842.6    1506  2311.1
```

```
 253        SE   4592   4594  4594.5   4595  4595.5   4596  4596.5   4597  4597.5   4598
 254        SE  4598.5   4599  4599.5   4600  4600.2  4600.5   4601  4601.5   4602
            *   4592  12.568    0.65    0.5
            *   4598     183    3.0     1.5
            *
```



```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


 255        KK    RT-8 ROUTE CP-5 THROUGH WATERSHED 8
 256        RD    5648  0.0152   0.018            TRAP      50      50
            *

 257        KK       8 WATERSHED 8 (UNIVERSITY AREA NORTH OF I80)
 258        BA    0.23
 259        PH            .001    0.34    0.66    1.17    1.33    1.45    1.71    2.23    2.74
 260        LS              92
 261        UD    0.48
            *

 262        KK    CP-6 COMBINE RT-8 AND WATERSHED 8 NEAR EVANS ST BRIDGE
 263        HC       2
            *
            *   RT-9 ROUTE CP-6 THROUGH WATERSHED 9
            *   3053  0.0062   0.018            TRAP      50      50
            *

 264        KK   RT-9A ROUTE CP-6 THROUGH WATERSHED 9
 265        RD    3053   .0062    .045            TRAP     200      50
            *

 266        KK  CENTER     HYDROGRAPH CENTER STREET WATERSHED UPSTREAM OF I-80
            *       BASIN DATA FROM STANTEC WATERSHEDS
 267        BA    0.35
 268        LS              92
 269        UD     0.4
            *

 270        KK  RT CPE     ROUTE CENTER STREET FLOWS TO CPE
 271        RD    4315    .033     .02            TRAP      60       1
            *

 272        KK       9 WATERSHED 9 (AREA SOUTH OF I80 AND NORTH OF RAILROAD)
            *     BASIN AREA MODIFIED TO REFLECT STANTEC WATERSHEDS
            *   0.35
 273        BA   0.145
 274        LS              91
 275        UD     0.5
            *

 276        KK    CP-7 COMBINE RT-9 AND WATERSHED 9
 277        HC       3
            *

 278        KK   CPALL
 279        HC       2
 280        ZZ
```

1

SCHEMATIC DIAGRAM OF STREAM NETWORK

```
INPUT
 LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

  NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

             UPEA
                V
                V
  32       UPVDAM
                V
                V
  39       RTLPEA
                .
                .
  42            .      SPROUT
                .           V
                .           V
  46            .      RTLPEA
                .           .
                .           .
  48            .           .         LPEA
                .           .            .
                .           .            .
  52       CPLPEA.........................
                V
                V
  55       LPVDAM
                V
                V
           RT ELM
                .
                .
  65            .         ELM
                .           .
                .           .
  70       CP ELM...........
                .
                .
  73            .       EWASH
                .           V
                .           V
  77            .       EWDAM
                .           V
                .           V
  84            .       WWDAM
                .           .
                .           .
  86            .           .        WWASH
                .           .            .
                .           .            .
  90            .      CPWWSH.............
                .           V
                .           V
  92            .       WWDAM
                .           V
                .           V
                .      RTVINE
                .           .
                .           .
 102            .           .         VINE
```

```
              .           .           .
              .           .           .
106           .           .           .        WASH
              .           .           .           V
              .           .           .           V
110           .           .           .      RTVINE
              .           .           .           .
              .           .           .           .
112           .      CPVINE........................
              .           .
              .           .
115           .           .        STAR
              .           .           .
              .           .           .
119           .           .           .      KYSUMP
              .           .           .           .
              .           .           .           .
123           .           .      CPKYSR............
              .           .           V
              .           .           V
125           .           .        RTPV
              .           .           .
              .           .           .
127       CP PV........................
              V
              V
130      RT CPW
              .
              .
              .      RALSTN
              .           V
              .           V
137           .      RT CPW
              .           .
              .           .
140           .           .      SIERRA
              .           .           V
              .           .           V
144           .           .      RT CPW
              .           .           .
              .           .           .
147           .           .           .       VA ST
              .           .           .           V
              .           .           .           V
151           .           .           .      RT CPW
              .           .           .           .
              .           .           .           .
154           .           .           .           .         DTW
              .           .           .           .           .
              .           .           .           .           .
158         CPW................................................
              V
              V
160      RTEAST
              .
              .
162           .           E
              .           V
              .           V
167           .       RT-1A
```

```
                                .
          .                     V
          .                     V
169       .                 RT-1B
          .                     V
          .                     V
171       .                 RT-1C
          .                     V
          .                     V
173       .                 RT-1E
          .                     .
          .                     .
175       .                     .          A
          .                     .          .
          .                     .          .
180       .                     .          .          F
          .                     .          .          .
          .                     .          .          .
185       .                  CP-1.......................
          .                     V
          .                     V
187       .                 RT-2A
          .                     V
          .                     V
189       .                 RT-2B
          .                     V
          .                     V
191       .                 RT-2C
          .                     .
          .                     .
          .                     .          B
          .                     .          .
          .                     .          .
198       .                  CP-2............
          .                     V
          .                     V
200       .                 RT-3A
          .                     V
          .                     V
202       .                 RT-3B
          .                     V
          .                     V
204       .                 RT-3C
          .                     V
          .                     V
206       .                 RT-3D
          .                     .
          .                     .
208       .                     .          G
          .                     .          .
          .                     .          .
213       .                  CP-3............
          .                     V
          .                     V
215       .                 RT-4A
          .                     V
          .                     V
217       .                 RT-4B
          .                     .
          .                     .
219       .                     .          C
```

```
                .            .           .
                .            .           .
 224            .         CP-4............
                .            V
                .            V
 __3            .        MCCARR
                .            V
                .            V
 237            .          RT-5
                .            .
                .            .
 239            .            .           D
                .            .           .
                .            .           .
 244            .         CP-5............
                .            V
                .            V
 246            .        SIERRA
                .            V
                .            V
 255            .          RT-8
                .            .
                .            .
 257            .            .           8
                .            .           .
                .            .           .
 262            .         CP-6............
                .            V
                .            V
                .         RT-9A
                .            .
                .            .
 266            .            .      CENTER
                .            .           V
                .            .           V
 270            .            .      RT CPE
                .            .           .
                .            .           .
 272            .            .           .          9
                .            .           .          .
                .            .           .          .
 276            .         CP-7.......................
                .            .
                .            .
 278        CPALL............

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1*****************************************                    ****************************************
*                                        *                    *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)    *                    *   U.S. ARMY CORPS OF ENGINEERS       *
*              JUN   1998                *                    *   HYDROLOGIC ENGINEERING CENTER      *
*             VERSION 4.1                *                    *         609 SECOND STREET            *
*                                        *                    *      DAVIS, CALIFORNIA 95616         *
* RUN DATE   06DEC04  TIME   10:16:50    *                    *          (916) 756-1104              *
*                                        *                    *                                      *
******************************************                    ****************************************
```

```
                    STANTEC CONSULTING INC.   RENO, NEVADA

                    RENO RETRAC

                    FILE:  RET_IFC.DAT
                    JOB#:  80100603
                    DATE:  DECEMBER 2004


                    THIS MODEL INCLUDES UPSTREAM OF I-80 FOR VINE STREET, RALSTON STREET,
                    SIERRA STREET AND VIRGINIA STREET ROUTED AND COMBINED WITH WEST DOWNTOWN
                    AT CENTER STREET AND THE UPRR
                    COMBINED WITH EVANS AND CENTER STREET WATERSHEDS AND DOWNTOWN EAST
                    COMBINED AT THE UPRR NEAR RECORD STREET

                    LANDUSE INFORMATION, FOR BASINS A-F, TAKEN FROM "EVANS CREEK (BLOCK N
                    WATERSHED) HYDROLOGIC EVALUATION OF PROPOSED DETENTION SITE PHASE I
                    TECHNICAL MEMORANDUM" BY WRC SIGNED AND STAMPED ON AUGUST 23, 2000
                    AND REVISED BY WRC DATED MAY, 2002.



 25 IO          OUTPUT CONTROL VARIABLES
                      IPRNT          3  PRINT CONTROL
                      IPLOT          0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE

    ;T          HYDROGRAPH TIME DATA
                       NMIN          5  MINUTES IN COMPUTATION INTERVAL
                      IDATE      1    0  STARTING DATE
                      ITIME       0000  STARTING TIME
                         NQ        600  NUMBER OF HYDROGRAPH ORDINATES
                     NDDATE      3    0  ENDING DATE
                     NDTIME       0155  ENDING TIME
                      ICENT         19  CENTURY MARK

                 COMPUTATION INTERVAL     .08 HOURS
                      TOTAL TIME BASE   49.92 HOURS

       ENGLISH UNITS
           DRAINAGE AREA         SQUARE MILES
           PRECIPITATION DEPTH   INCHES
           LENGTH, ELEVATION     FEET
           FLOW                  CUBIC FEET PER SECOND
           STORAGE VOLUME        ACRE-FEET
           SURFACE AREA          ACRES
           TEMPERATURE           DEGREES FAHRENHEIT


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


         **************
         *            *
 26 KK   *     UPEA   *       HYDROGRAPH UPPER PEAVINE WATERSHED
         *            *
```

****

UPPER PEAVINE WATERSHED

SUBBASIN RUNOFF DATA

28 BA SUBBASIN CHARACTERISTICS

TAREA 2.41 SUBBASIN AREA

PRECIPITATION DATA

29 PH DEPTHS FOR 0-PERCENT HYPOTHETICAL STORM

..... HYDRO-35			.... TP-40					.... TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
.48	.87	1.40	1.62	1.76	2.03	2.50	2.97	.00	.00	.00	.00

STORM AREA = 2.41

30 LS SCS LOSS RATE

STRTL .47 INITIAL ABSTRACTION

CRVNBR 81.00 CURVE NUMBER

RTIMP .00 PERCENT IMPERVIOUS AREA

31 UD SCS DIMENSIONLESS UNITGRAPH

TLAG 1.15 LAG

***

UNIT HYDROGRAPH

71 END-OF-PERIOD ORDINATES

20.	57.	106.	168.	244.	333.	443.	569.	691.	800.
875.	931.	968.	975.	972.	956.	915.	868.	818.	763.
695.	619.	539.	471.	416.	370.	329.	294.	264.	239.
214.	191.	171.	150.	134.	121.	107.	96.	86.	76.
68.	60.	53.	48.	43.	38.	34.	31.	27.	25.
22.	19.	17.	15.	14.	12.	11.	10.	9.	8.
8.	7.	6.	5.	4.	4.	3.	2.	2.	1.
0.									

*** *** *** *** ***

HYDROGRAPH AT STATION UPEA

TOTAL RAINFALL = 2.96, TOTAL LOSS = 1.68, TOTAL EXCESS = 1.28

	PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
				6-HR	24-HR	72-HR	49.92-HR
+	(CFS)	(HR)					
			(CFS)				
+	683.	13.33		263.	83.	40.	40.
			(INCHES)	1.017	1.283	1.283	1.283
			(AC-FT)	131.	165.	165.	165.

CUMULATIVE AREA = 2.41 SQ MI

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**************
*            *
32 KK   *   UPVDAM   *      ROUTE UPPER PEAVINE WATERSHED THROUGH UPPER PEAVINE DAM
*            *
**************
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RT UPEA THROUGH UPVDAM

HYDROGRAPH ROUTING DATA

34 RS STORAGE ROUTING

	NSTPS	1	NUMBER OF SUBREACHES
	ITYP	STOR	TYPE OF INITIAL CONDITION
	RSVRIC	.00	INITIAL CONDITION
	X	.00	WORKING R AND D COEFFICIENT

35 SV	STORAGE	.0	25.0	53.0	90.0	130.0	175.0	227.0	285.0	310.0
36 SE	ELEVATION	4985.00	4990.00	4995.00	5000.00	5005.00	5010.00	5015.00	5020.00	5022.00
37 SQ	DISCHARGE	0.	20.	40.	60.	67.	78.	278.	580.	
38 SE	ELEVATION	4998.50	4999.90	5000.00	5000.20	5000.40	5020.00	5021.00	5022.00	

***

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	.00	25.00	53.00	78.90	89.26	90.00	91.60	93.20	130.00	175.00
OUTFLOW	.00	.00	.00	.00	20.00	40.00	60.00	67.00	69.58	72.39
ELEVATION	4985.00	4990.00	4995.00	4998.50	4999.90	5000.00	5000.20	5000.40	5005.00	5010.00

STORAGE	227.00	285.00	297.50	310.00
OUTFLOW	75.19	78.00	278.00	580.00
ELEVATION	5015.00	5020.00	5021.00	5022.00

*** *** *** *** ***

HYDROGRAPH AT STATION UPVDAM

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 68.	19.33		68.	42.	21.	21.
		(INCHES)	.263	.653	.667	.667
		(AC-FT)	34.	84.	86.	86.

PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE			
			6-HR	24-HR	72-HR	49.92-HR
+ (AC-FT)	(HR)					
113.	19.33		111.	96.	67.	67.

PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE			
			6-HR	24-HR	72-HR	49.92-HR
+ (FEET)	(HR)					
2.87	19.33		5002.68	5000.78	4996.07	4996.07

CUMULATIVE AREA = 2.41 SQ MI

*** ***

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          **************
          *            *
39 KK     *   RTLPEA   *      ROUTE OUTLET OF UPPER PEAVINE DAM TO LOWER PEAVINE DAM
          *            *
          **************
                        RT UPVDAM TO CPLPEA

            HYDROGRAPH ROUTING DATA

41 RD         MUSKINGUM-CUNGE CHANNEL ROUTING
                    L       6173.  CHANNEL LENGTH
                    S       .0410  SLOPE
                    N        .016  CHANNEL ROUGHNESS COEFFICIENT
                   CA         .00  CONTRIBUTING AREA
                SHAPE        TRAP  CHANNEL SHAPE
                   WD       50.00  BOTTOM WIDTH OR DIAMETER
                    Z        1.00  SIDE SLOPE
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***

COMPUTED MUSKINGUM-CUNGE PARAMETERS

COMPUTATION TIME STEP

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	1.66	1.60	5.00	1234.60	75.04	890.00	.67	8.35

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	1.66	1.60	5.00		75.04	890.00	.67	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8571E+02 EXCESS= .0000E+00 OUTFLOW= .8571E+02 BASIN STORAGE= .7929E-01 PERCENT ERROR= -.1

*** *** *** *** ***

HYDROGRAPH AT STATION RTLPEA

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 75.	14.83		68.	42.	21.	21.
		(INCHES)	.263	.653	.667	.667
		(AC-FT)	34.	84.	86.	86.

CUMULATIVE AREA = 2.41 SQ MI

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*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

         **************
         *            *
  KK     *   SPROUT   *      HYDROGRAPH SPROUT WATERSHED
         *            *
         **************

           SUBBASIN RUNOFF DATA

 43 BA       SUBBASIN CHARACTERISTICS
                  TAREA         .50  SUBBASIN AREA

             PRECIPITATION DATA

 29 PH                          DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
            ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
            5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
              .48     .87    1.40    1.62    1.76    2.03    2.50    2.97     .00     .00     .00     .00

                                          STORM AREA =      .50

 44 LS       SCS LOSS RATE
                  STRTL         .44  INITIAL ABSTRACTION
                 CRVNBR       82.00  CURVE NUMBER
                  RTIMP         .00  PERCENT IMPERVIOUS AREA

 45 UD       SCS DIMENSIONLESS UNITGRAPH
                  TLAG          .44  LAG

                                                        ***

                                              UNIT HYDROGRAPH
                                          28 END-OF-PERIOD ORDINATES
             41.      124.      255.      407.      489.      503.      465.      400.      309.      222.
            166.      127.       97.       72.       54.       41.       31.       23.       18.       13.
             10.        8.        6.        5.        4.        3.        2.        1.

    ***          ***          ***          ***          ***

                  HYDROGRAPH AT STATION    SPROUT

  TOTAL RAINFALL =    2.97, TOTAL LOSS =    1.61, TOTAL EXCESS =    1.35

 PEAK FLOW    TIME                      MAXIMUM AVERAGE FLOW
                               6-HR       24-HR       72-HR     49.92-HR
+   (CFS)     (HR)
                      (CFS)
+     299.    12.50              59.        18.          9.          9.
                   (INCHES)    1.098      1.354       1.354       1.354
                    (AC-FT)      29.        36.         36.         36.

                  CUMULATIVE AREA =      .50 SQ MI

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
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          **************
          *            *
  KK      *   RTLPEA   *      ROUTE SPROUT TO CPLPEA
          *            *
          **************

            HYDROGRAPH ROUTING DATA

 47 RD        MUSKINGUM-CUNGE CHANNEL ROUTING
                     L        4168.  CHANNEL LENGTH
                     S        .0372  SLOPE
                     N         .016  CHANNEL ROUGHNESS COEFFICIENT
                    CA          .00  CONTRIBUTING AREA
                 SHAPE         TRAP  CHANNEL SHAPE
                    WD        50.00  BOTTOM WIDTH OR DIAMETER
                     Z         1.00  SIDE SLOPE

                                                 ***
                         COMPUTED MUSKINGUM-CUNGE PARAMETERS
                              COMPUTATION TIME STEP
               ELEMENT    ALPHA      M        DT       DX       PEAK    TIME TO    VOLUME    MAXIMUM
                                                                          PEAK               CELERITY
                                            (MIN)     (FT)     (CFS)    (MIN)      (IN)      (FPS)

                 MAIN      1.59     1.60     4.92   2084.00   295.58   757.21      1.35      14.13


                                    INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL


                 MAIN      1.59     1.60     5.00             294.91   755.00      1.35


CONTINUITY SUMMARY (AC-FT) - INFLOW= .3631E+02 EXCESS= .0000E+00 OUTFLOW= .3633E+02 BASIN STORAGE= .5013E-02 PERCENT ERROR=    .0



     ***           ***           ***           ***           ***

                       HYDROGRAPH AT STATION    RTLPEA

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                 6-HR       24-HR      72-HR     49.92-HR
+   (CFS)       (HR)
                        (CFS)
+     295.     12.58               59.         18.         9.          9.
                     (INCHES)    1.098       1.354      1.354       1.354
                      (AC-FT)      29.         36.        36.         36.

                      CUMULATIVE AREA =     .50 SQ MI



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 48 KK      *     LPEA  *       HYDROGRAPH LOWER PEAVINE WATERSHED
            *           *
            *************

               SUBBASIN RUNOFF DATA

 49 BA           SUBBASIN CHARACTERISTICS
                      TAREA          .37  SUBBASIN AREA

                 PRECIPITATION DATA

 29 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .48     .87    1.40    1.62    1.76    2.03    2.50    2.97     .00     .00     .00     .00

                                                STORM AREA =      .37

 50 LS           SCS LOSS RATE
                      STRTL          .27  INITIAL ABSTRACTION
                     CRVNBR        88.00  CURVE NUMBER
                      RTIMP          .00  PERCENT IMPERVIOUS AREA

 51 UD           SCS DIMENSIONLESS UNITGRAPH
                      TLAG           .32  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 21 END-OF-PERIOD ORDINATES
               63.       201.       397.       489.       472.       391.       269.       179.       125.        87.
               59.        41.        27.        19.        13.         9.         6.         5.         3.         2.
                1.

      ***          ***          ***          ***          ***

                        HYDROGRAPH AT STATION      LPEA

   TOTAL RAINFALL =     2.97, TOTAL LOSS =     1.18, TOTAL EXCESS =     1.79

  PEAK FLOW      TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR        24-HR        72-HR      49.92-HR
+   (CFS)        (HR)
                          (CFS)
+     354.       12.42                  57.          18.           9.           9.
                        (INCHES)     1.432        1.790        1.790        1.790
                         (AC-FT)        28.          35.          35.          35.

                        CUMULATIVE AREA =      .37 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

            **************
            *            *
 52 KK      *   CPLPEA   *      COMBINE UPPER PEAVINE, SPROUT AND LOWER PEAVINE AT LOWER PEAVINE DAM
            *            *
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              **************

  56 HC          HYDROGRAPH COMBINATION
                       ICOMP           3  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                  ***

     ***              ***              ***              ***              ***

                          HYDROGRAPH AT STATION   CPLPEA

  PEAK FLOW      TIME                                 MAXIMUM AVERAGE FLOW
                                            6-HR        24-HR        72-HR      49.92-HR
+   (CFS)        (HR)
                          (CFS)
+     600.      12.50                       152.          77.          38.          38.
                        (INCHES)            .432         .871         .898         .898
                         (AC-FT)             76.         152.         157.         157.

                         CUMULATIVE AREA =     3.28 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

              **************
              *            *
     KK       *   LPVDAM   *
              *            *
              **************
                              ROUTE THRU LOWER PEAVINE DAM

                 HYDROGRAPH ROUTING DATA

  57 RS          STORAGE ROUTING
                      NSTPS             1  NUMBER OF SUBREACHES
                       ITYP          STOR  TYPE OF INITIAL CONDITION
                     RSVRIC           .00  INITIAL CONDITION
                          X           .00 WORKING R AND D COEFFICIENT

  58 SV           STORAGE          .0      5.0     13.0     23.0     30.0     35.0     55.0     65.0    100.0    125.0

  59 SE         ELEVATION     4737.50  4740.00  4745.00  4750.00  4752.50  4754.00  4758.00  4760.00  4765.00  4768.00

  60 SQ         DISCHARGE          0.       0.      20.      40.      60.      72.      88.     288.     300.     488.

  61 SE         ELEVATION     4737.50  4750.00  4751.00  4751.70  4752.00  4752.20  4765.00  4766.80  4767.00  4768.00

                                                                  ***

                                           COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

              STORAGE        .00     5.00    13.00    23.00    25.80    27.76    28.60    29.16    30.00    35.00
```

OUTFLOW	.00	.00	.00	.00	20.00	40.00	60.00	72.00	72.37	74.25
ELEVATION	4737.50	4740.00	4745.00	4750.00	4751.00	4751.70	4752.00	4752.20	4752.50	4754.00

STORAGE	55.00	65.00	100.00	115.00	116.67	125.00
OUTFLOW	79.25	81.75	88.00	288.00	300.00	488.00
ELEVATION	4758.00	4760.00	4765.00	4766.80	4767.00	4768.00

*** *** *** *** ***

HYDROGRAPH AT STATION LPVDAM

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 78.	24.33		78.	66.	33.	33.
		(INCHES)	.221	.745	.766	.766
		(AC-FT)	39.	130.	134.	134.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	49.92-HR
+ (AC-FT)	(HR)				
51.	24.42	51.	41.	26.	26.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	49.92-HR
+ (FEET)	(HR)				
4757.30	24.42	4757.14	4755.01	4749.42	4749.42

CUMULATIVE AREA = 3.28 SQ MI

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            **************
            *            *
62 KK       *   RT ELM   *      ROUTE LOWER PEAVINE DAM TO CP ELMCREST
            *            *
            **************
```

RT LPVDAM TO CP ELM

HYDROGRAPH ROUTING DATA

64 RD MUSKINGUM-CUNGE CHANNEL ROUTING

L	7817.	CHANNEL LENGTH
S	.0250	SLOPE
N	.016	CHANNEL ROUGHNESS COEFFICIENT
CA	.00	CONTRIBUTING AREA
SHAPE	TRAP	CHANNEL SHAPE
WD	50.00	BOTTOM WIDTH OR DIAMETER
Z	1.00	SIDE SLOPE

***

COMPUTED MUSKINGUM-CUNGE PARAMETERS

COMPUTATION TIME STEP

ELEMENT	ALPHA	M	DT	DX	PEAK	TIME TO PEAK	VOLUME	MAXIMUM CELERITY

```
                                              (MIN)      (FT)     (CFS)    (MIN)       (IN)      (FPS)

                   MAIN       1.30      1.60       5.00  1116.71    111.50    785.00        .77       7.53


                                   INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL


                   MAIN       1.30      1.60       5.00              111.50    785.00        .77


CONTINUITY SUMMARY (AC-FT) - INFLOW= .1341E+03 EXCESS= .0000E+00 OUTFLOW= .1342E+03 BASIN STORAGE= .1511E+00 PERCENT ERROR=   -.2


      ***          ***          ***          ***          ***

                     HYDROGRAPH AT STATION   RT ELM

  PEAK FLOW     TIME                         MAXIMUM AVERAGE FLOW
                                  6-HR        24-HR       72-HR      49.92-HR
+   (CFS)       (HR)
                       (CFS)
+     111.     13.08                78.         66.         33.         33.
                     (INCHES)      .221        .745        .767        .767
                      (AC-FT)       39.        130.        134.        134.

                      CUMULATIVE AREA =    3.28 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
 65 KK      *      ELM   *      HYDROGRAPH ELMCREST WATERSHED
            *            *
            **************
                        ELMCREST

              SUBBASIN RUNOFF DATA

 67 BA         SUBBASIN CHARACTERISTICS
                    TAREA          .48  SUBBASIN AREA

               PRECIPITATION DATA

 29 PH                           DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
               ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
               5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 .48     .87    1.40    1.62    1.76    2.03    2.50    2.97     .00     .00     .00     .00

                                            STORM AREA =       .48

 66 LS         SCS LOSS RATE
                   STRTL         .25  INITIAL ABSTRACTION
                  CRVNBR       89.00  CURVE NUMBER
                   RTIMP         .00  PERCENT IMPERVIOUS AREA
```

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 69 UD        SCS DIMENSIONLESS UNITGRAPH
                  TLAG        .56  LAG

                                                        ***

                                              UNIT HYDROGRAPH
                                          36 END-OF-PERIOD ORDINATES
            22.      66.     130.     222.     314.     368.     387.     383.     349.     308.
           253.     193.     151.     121.      98.      79.      62.      50.      40.      32.
            25.      20.      16.      13.      10.       8.       7.       5.       4.       4.
             3.       2.       2.       1.       1.       0.

      ***          ***         ***          ***          ***

                  HYDROGRAPH AT STATION      ELM

   TOTAL RAINFALL =    2.97, TOTAL LOSS =    1.10, TOTAL EXCESS =    1.87

  PEAK FLOW    TIME                       MAXIMUM AVERAGE FLOW
                                 6-HR       24-HR       72-HR      49.92-HR
+   (CFS)      (HR)
                        (CFS)
+     344.    12.67               77.         24.         12.          12.
                      (INCHES)   1.487       1.871       1.871        1.871
                       (AC-FT)    38.         48.         48.          48.

                     CUMULATIVE AREA =      .48 SQ MI

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

          **************
          *            *
 70 KK    *   CP ELM   *
          *            *
          **************

                     COMBINE LOWER PEAVINE WITH ELMCREST

 72 HC         HYDROGRAPH COMBINATION
                   ICOMP          2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                        ***

      ***          ***         ***          ***          ***

                  HYDROGRAPH AT STATION    CP ELM

  PEAK FLOW    TIME                       MAXIMUM AVERAGE FLOW
                                 6-HR       24-HR       72-HR      49.92-HR
+   (CFS)      (HR)
                        (CFS)
+     344.    12.67              140.         88.         44.          44.
                      (INCHES)    .346        .871        .909         .909
                       (AC-FT)    70.        175.        182.         182.

                     CUMULATIVE AREA =     3.77 SQ MI
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*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

          ***************
          *             *
 73 KK    *   EWASH     *    HYDROGRAPH EAST WASH
          *             *
          ***************

            SUBBASIN RUNOFF DATA

 74 BA       SUBBASIN CHARACTERISTICS
                   TAREA        2.15  SUBBASIN AREA

             PRECIPITATION DATA

 29 PH                          DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
             ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
             5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
               .48     .87    1.40    1.62    1.76    2.03    2.50    2.97     .00     .00     .00     .00

                                          STORM AREA =     2.15

 75 LS       SCS LOSS RATE
                   STRTL          .50  INITIAL ABSTRACTION
                  CRVNBR        80.00  CURVE NUMBER
                   RTIMP          .00  PERCENT IMPERVIOUS AREA

 76 UD       SCS DIMENSIONLESS UNITGRAPH
                    TLAG         1.47  LAG

                                                ***

                                           UNIT HYDROGRAPH
                                      90 END-OF-PERIOD ORDINATES
            11.        26.        52.        81.       115.       156.       201.       258.       318.       389.
           460.       521.       575.       617.       649.       672.       682.       686.       683.       679.
           656.       632.       606.       578.       547.       513.       475.       431.       386.       347.
           311.       285.       260.       237.       216.       198.       182.       168.       155.       141.
           130.       118.       107.        97.        90.        82.        75.        69.        63.        57.
            52.        48.        44.        40.        36.        33.        30.        28.        25.        23.
            21.        19.        18.        16.        15.        14.        12.        11.        10.         9.
             9.         8.         7.         7.         6.         6.         6.         5.         5.         4.
             4.         3.         3.         3.         2.         2.         1.         1.         1.         0.

     ***          ***          ***          ***          ***

                    HYDROGRAPH AT STATION    EWASH

  TOTAL RAINFALL =    2.96, TOTAL LOSS =    1.74, TOTAL EXCESS =    1.22

      FLOW      TIME                       MAXIMUM AVERAGE FLOW
                                   6-HR        24-HR        72-HR      49.92-HR
 +   (CFS)      (HR)
                          (CFS)
 +    477.     13.67               219.         71.          34.          34.
```

(INCHES)	.949	1.221	1.221	1.221
(AC-FT)	109.	140.	140.	140.

CUMULATIVE AREA = 2.15 SQ MI

*** ***

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         **************
         *            *
77 KK    *    EWDAM   *      (ATLTERED USING DATA FROM WASHOE COUNTY TOPO AND DESIGN PLAN FROM THE
         *            *
         **************
```

ROUTE THRU EAST WASH DAM

HYDROGRAPH ROUTING DATA

79 RS STORAGE ROUTING

NSTPS	1	NUMBER OF SUBREACHES
ITYP	STOR	TYPE OF INITIAL CONDITION
RSVRIC	.00	INITIAL CONDITION
X	.00	WORKING R AND D COEFFICIENT

80 SV	STORAGE	.0	2.0	5.0	11.0	21.0	35.0	50.0	60.0	64.0	80.0
SE	ELEVATION	4820.00	4825.00	4830.00	4835.00	4840.00	4845.00	4848.00	4850.00	4850.50	4854.00
82 SQ	DISCHARGE	0.	0.	10.	33.	34.	34.	109.	284.	384.	584.
83 SE	ELEVATION	4820.00	4848.00	4848.50	4849.00	4849.50	4850.00	4850.50	4851.00	4851.50	4852.00

***

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	.00	2.00	5.00	11.00	21.00	35.00	50.00	52.50	55.00	57.50
OUTFLOW	.00	.00	.00	.00	.00	.00	.00	10.00	33.00	33.50
ELEVATION	4820.00	4825.00	4830.00	4835.00	4840.00	4845.00	4848.00	4848.50	4849.00	4849.50

STORAGE	60.00	64.00	66.29	68.57	70.86	80.00
OUTFLOW	34.00	109.00	284.00	384.00	584.00	1384.00
ELEVATION	4850.00	4850.50	4851.00	4851.50	4852.00	4854.00

*** *** *** *** ***

HYDROGRAPH AT STATION EWDAM

	FLOW	TIME		MAXIMUM AVERAGE FLOW			
				6-HR	24-HR	72-HR	49.92-HR
+	(CFS)	(HR)					
			(CFS)				
+	256.	14.83		120.	45.	22.	22.
			(INCHES)	.519	.784	.785	.785

		(AC-FT)	59.	90.	90.	90.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	49.92-HR
+ (AC-FT)	(HR)				
66.	14.83	64.	57.	40.	40.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	49.92-HR
+ (FEET)	(HR)				
4850.92	14.83	4850.47	4849.32	4841.40	4841.40

CUMULATIVE AREA = 2.15 SQ MI

*** ***

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        **************
        *            *
 84 KK  *    WWDAM   *      ROUTE EST WASHINTON TO WEST WASHINTON DAM
        *            *
        **************
```

HYDROGRAPH ROUTING DATA

85 RD MUSKINGUM-CUNGE CHANNEL ROUTING

L	1706.	CHANNEL LENGTH
S	.0630	SLOPE
N	.016	CHANNEL ROUGHNESS COEFFICIENT
CA	.00	CONTRIBUTING AREA
SHAPE	TRAP	CHANNEL SHAPE
WD	50.00	BOTTOM WIDTH OR DIAMETER
Z	1.00	SIDE SLOPE

***

COMPUTED MUSKINGUM-CUNGE PARAMETERS

ELEMENT	ALPHA	M	COMPUTATION TIME STEP DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	2.06	1.60	1.81	853.00	255.93	893.31	.78	15.69
INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL								
MAIN	2.06	1.60	5.00		255.04	895.00	.78	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8990E+02 EXCESS= .0000E+00 OUTFLOW= .8991E+02 BASIN STORAGE= .1553E-02 PERCENT ERROR= .0

*** *** *** *** ***

HYDROGRAPH AT STATION WWDAM

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 255.	14.92		120.	45.	22.	22.
		(INCHES)	.518	.783	.785	.785
		(AC-FT)	59.	90.	90.	90.

CUMULATIVE AREA = 2.15 SQ MI

*** ***

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          **************
          *            *
 86 KK    *   WWASH    *       HYDROGRAPH WEST WASH
          *            *
          **************
```

SUBBASIN RUNOFF DATA

87 BA SUBBASIN CHARACTERISTICS

TAREA 1.13 SUBBASIN AREA

PRECIPITATION DATA

PH DEPTHS FOR 0-PERCENT HYPOTHETICAL STORM

..... HYDRO-35			.... TP-40					.... TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
.48	.87	1.40	1.62	1.76	2.03	2.50	2.97	.00	.00	.00	.00

STORM AREA = 1.13

88 LS SCS LOSS RATE

STRTL .41 INITIAL ABSTRACTION

CRVNBR 83.00 CURVE NUMBER

RTIMP .00 PERCENT IMPERVIOUS AREA

89 UD SCS DIMENSIONLESS UNITGRAPH

TLAG .94 LAG

***

UNIT HYDROGRAPH

58 END-OF-PERIOD ORDINATES

14.	44.	83.	133.	195.	272.	362.	439.	497.	535.
554.	557.	551.	523.	490.	454.	411.	361.	305.	258.
224.	195.	170.	149.	131.	114.	100.	86.	75.	66.
57.	50.	43.	38.	32.	28.	25.	22.	19.	16.
14.	12.	11.	9.	8.	7.	6.	6.	5.	5.
4.	3.	3.	2.	2.	1.	1.	0.		

*** *** *** *** ***

HYDROGRAPH AT STATION WWASH

TOTAL RAINFALL = 2.97, TOTAL LOSS = 1.55, TOTAL EXCESS = 1.42

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 421.	13.08		138.	43.	21.	21.
		(INCHES)	1.135	1.419	1.419	1.419
		(AC-FT)	69.	86.	86.	86.

CUMULATIVE AREA = 1.13 SQ MI

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          ***************
          *             *
 90 KK    *   CPWWSH    *      COMBINE EAST WASH AND WEST WASH AT WEST WASH DAM
          *             *
          ***************

 91 HC        HYDROGRAPH COMBINATION
                   ICOMP          2  NUMBER OF HYDROGRAPHS TO COMBINE
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*** *** *** *** ***

HYDROGRAPH AT STATION CPWWSH

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 421.	13.08		232.	88.	43.	43.
		(INCHES)	.657	1.000	1.004	1.004
		(AC-FT)	115.	175.	176.	176.

CUMULATIVE AREA = 3.28 SQ MI

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          ***************
          *             *
 92 KK    *    WWDAM    *
          *             *
          ***************

                        ROUTE THRU WEST WASH DAM

         HYDROGRAPH ROUTING DATA

 94 RS        STORAGE ROUTING
                   NSTPS          1  NUMBER OF SUBREACHES
```

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              ITYP        STOR  TYPE OF INITIAL CONDITION
             RSVRIC        .00  INITIAL CONDITION
                  X        .00 WORKING R AND D COEFFICIENT

    SV        STORAGE         .0     25.0     50.0     75.0    130.0    183.0    240.0    317.0    385.0    460.0

 96 SE      ELEVATION    4744.00  4745.00  4750.00  4755.00  4760.00  4765.00  4770.00  4775.00  4780.00  4785.00

 97 SQ      DISCHARGE         0.       0.      57.      75.     175.     375.     775.    1375.    2900.    3775.

 98 SE      ELEVATION    4744.00  4754.00  4754.50  4779.00  4779.50  4780.00  4781.00  4782.00  4784.00  4785.00

                                                   ***

                                     COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

         STORAGE       .00    25.00    50.00    70.00    72.50    75.00   130.00   183.00   240.00   317.00
         OUTFLOW       .00      .00      .00      .00    57.00    57.37    61.04    64.71    68.39    72.06
       ELEVATION   4744.00  4745.00  4750.00  4754.00  4754.50  4755.00  4760.00  4765.00  4770.00  4775.00

         STORAGE    371.40   378.20   385.00   400.00   415.00   445.00   460.00
         OUTFLOW     75.00   175.00   375.00   775.00  1375.00  2900.00  3775.00
       ELEVATION   4779.00  4779.50  4780.00  4781.00  4782.00  4784.00  4785.00

     ***          ***          ***          ***          ***

                HYDROGRAPH AT STATION    WWDAM

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                    6-HR        24-HR       72-HR     49.92-HR
+   (CFS)       (HR)
                           (CFS)
+      60.     23.33                  60.          53.         26.          26.
                         (INCHES)    .170         .603        .604         .604
                          (AC-FT)     30.         106.        106.         106.

 PEAK STORAGE   TIME                        MAXIMUM AVERAGE STORAGE
                                    6-HR        24-HR       72-HR     49.92-HR
+  (AC-FT)      (HR)
      115.     23.58                 114.          97.         64.          64.

  PEAK STAGE    TIME                         MAXIMUM AVERAGE STAGE
                                    6-HR        24-HR       72-HR     49.92-HR
+   (FEET)      (HR)
   4758.60     23.50              4758.51      4756.93     4752.62      4752.62

                         CUMULATIVE AREA =     3.28 SQ MI


   ** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


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 99 KK      *    RTVINE  *
            *            *
            **************

                        ROUTE WEST WASH DAM TO CP VINE

              HYDROGRAPH ROUTING DATA

 101 RD          MUSKINGUM-CUNGE CHANNEL ROUTING
                          L        7730.  CHANNEL LENGTH
                          S        .0225  SLOPE
                          N         .016  CHANNEL ROUGHNESS COEFFICIENT
                         CA          .00  CONTRIBUTING AREA
                      SHAPE         TRAP  CHANNEL SHAPE
                         WD        50.00  BOTTOM WIDTH OR DIAMETER
                          Z         1.00  SIDE SLOPE

                                                          ***
                                 COMPUTED MUSKINGUM-CUNGE PARAMETERS
                                       COMPUTATION TIME STEP
                  ELEMENT    ALPHA      M        DT       DX      PEAK   TIME TO    VOLUME   MAXIMUM
                                                                          PEAK               CELERITY
                                                (MIN)    (FT)    (CFS)    (MIN)      (IN)     (FPS)

                    MAIN      1.23     1.60     5.00    966.25   84.86   940.00      .60      6.59


                                      INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL


                    MAIN      1.23     1.60     5.00             84.86   940.00      .60


CONTINUITY SUMMARY (AC-FT) - INFLOW= .1057E+03 EXCESS= .0000E+00 OUTFLOW= .1058E+03 BASIN STORAGE= .1242E-01 PERCENT ERROR=   -.1


      ***           ***           ***           ***           ***

                        HYDROGRAPH AT STATION   RTVINE

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                       6-HR        24-HR       72-HR     49.92-HR
+   (CFS)       (HR)
                         (CFS)
+      85.     15.67                    60.         53.         26.         26.
                       (INCHES)        .170        .604        .605        .605
                        (AC-FT)         30.        106.        106.        106.

                        CUMULATIVE AREA =    3.28 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

           **************
           *            *
 102 KK    *      VINE  *     HYDROGRAPH VINE STREET WATERSHED
           *            *
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**************

SUBBASIN RUNOFF DATA

 :A         SUBBASIN CHARACTERISTICS
                 TAREA          .98  SUBBASIN AREA

            PRECIPITATION DATA

 29 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
            ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
            5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
              .48     .87    1.40    1.62    1.76    2.03    2.50    2.97     .00     .00     .00     .00

                                               STORM AREA =      .98

104 LS      SCS LOSS RATE
                 STRTL          .22  INITIAL ABSTRACTION
                CRVNBR        90.00  CURVE NUMBER
                 RTIMP          .00  PERCENT IMPERVIOUS AREA

105 UD      SCS DIMENSIONLESS UNITGRAPH
                 TLAG           .62  LAG

                                                           ***

                                                      UNIT HYDROGRAPH
                                                  39 END-OF-PERIOD ORDINATES
             35.      105.      203.      342.      507.      631.      701.      716.      695.      637.
            567.      477.      375.      298.      241.      197.      164.      134.      107.       88.
             72.       58.       48.       38.       31.       26.       21.       17.       14.       11.
              9.        8.        7.        5.        4.        3.        2.        2.        1.

    ***         ***         ***         ***         ***

                     HYDROGRAPH AT STATION      VINE

  TOTAL RAINFALL =    2.97, TOTAL LOSS =    1.01, TOTAL EXCESS =    1.95

 PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                   6-HR       24-HR        72-HR     49.92-HR
+   (CFS)      (HR)
                         (CFS)
+     680.    12.67                163.         52.          25.          25.
                       (INCHES)   1.544       1.953        1.953        1.953
                        (AC-FT)     81.        102.         102.         102.

                      CUMULATIVE AREA =      .98 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


           **************
           *            *
106 KK     *     WASH   *         HYDROGRAPH WASHINGTON STREET
           *            *
           **************
```

SUBBASIN RUNOFF DATA

BA SUBBASIN CHARACTERISTICS
TAREA .06 SUBBASIN AREA

PRECIPITATION DATA

29 PH DEPTHS FOR 0-PERCENT HYPOTHETICAL STORM

..... HYDRO-35			.... TP-40					.... TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
.48	.87	1.40	1.62	1.76	2.03	2.50	2.97	.00	.00	.00	.00

STORM AREA = .06

108 LS SCS LOSS RATE
STRTL .17 INITIAL ABSTRACTION
CRVNBR 92.00 CURVE NUMBER
RTIMP .00 PERCENT IMPERVIOUS AREA

109 UD SCS DIMENSIONLESS UNITGRAPH
TLAG .24 LAG

***

UNIT HYDROGRAPH
16 END-OF-PERIOD ORDINATES

19.	66.	101.	97.	72.	42.	26.	16.	10.	6.
4.	2.	1.	1.	1.	0.				

*** *** *** *** ***

HYDROGRAPH AT STATION WASH

TOTAL RAINFALL = 2.97, TOTAL LOSS = .84, TOTAL EXCESS = 2.13

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 79.	12.25		11.	3.	2.	2.
		(INCHES)	1.672	2.133	2.133	2.133
		(AC-FT)	5.	7.	7.	7.

CUMULATIVE AREA = .06 SQ MI

*** ***

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 **************
 *            *
 *   RTVINE   *        ROUTE WASHINTON TO CPVINE
 *            *
 **************
```

KK

HYDROGRAPH ROUTING DATA

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111 RD          MUSKINGUM-CUNGE CHANNEL ROUTING
                        L          500.  CHANNEL LENGTH
                        S         .0100  SLOPE
                        N          .020  CHANNEL ROUGHNESS COEFFICIENT
                       CA           .00  CONTRIBUTING AREA
                    SHAPE          TRAP  CHANNEL SHAPE
                       WD         50.00  BOTTOM WIDTH OR DIAMETER
                        Z          1.00  SIDE SLOPE

                                                  ***

                              COMPUTED MUSKINGUM-CUNGE PARAMETERS
                                   COMPUTATION TIME STEP
                 ELEMENT   ALPHA       M         DT       DX      PEAK    TIME TO    VOLUME   MAXIMUM
                                                                           PEAK               CELERITY
                                               (MIN)     (FT)    (CFS)    (MIN)      (IN)      (FPS)

                   MAIN      .66     1.60       1.69   250.00    79.20    737.33      2.13      4.94


                                  INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL


                   MAIN      .66     1.60       5.00             78.22    740.00      2.13

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6824E+01 EXCESS= .0000E+00 OUTFLOW= .6824E+01 BASIN STORAGE= .9456E-03 PERCENT ERROR=    .0


        ***          ***          ***           ***           ***

                     HYDROGRAPH AT STATION   RTVINE

  PEAK FLOW     TIME                         MAXIMUM AVERAGE FLOW
                                   6-HR       24-HR      72-HR     49.92-HR
+   (CFS)       (HR)
                        (CFS)
+       78.    12.33                 11.          3.         2.          2.
                      (INCHES)    1.672       2.133      2.133       2.133
                       (AC-FT)       5.          7.         7.          7.

                     CUMULATIVE AREA =      .06 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            ***************
            *             *
 112 KK     *    CPVINE   *
            *             *
            ***************
                             COMBINE PEAVINE EAST

 114 HC         HYDROGRAPH COMBINATION
                     ICOMP            3  NUMBER OF HYDROGRAPHS TO COMBINE

                                                  ***
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***   ***   ***   ***   ***

HYDROGRAPH AT STATION   CPVINE

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 712.	12.67		195.	101.	52.	52.
		(INCHES)	.420	.869	.932	.932
		(AC-FT)	97.	200.	215.	215.

CUMULATIVE AREA =   4.32 SQ MI

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           **************
           *            *
 115 KK    *    STAR    *          HYDROGRAPH STARLIGHT BASIN
           *            *
           **************
```

SUBBASIN RUNOFF DATA

BA   SUBBASIN CHARACTERISTICS
TAREA   .07 SUBBASIN AREA

PRECIPITATION DATA

29 PH   DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM

..... HYDRO-35			.... TP-40					.... TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
.48	.87	1.40	1.62	1.76	2.03	2.50	2.97	.00	.00	.00	.00

STORM AREA =   .07

117 LS   SCS LOSS RATE
STRTL   .15 INITIAL ABSTRACTION
CRVNBR   93.00 CURVE NUMBER
RTIMP   .00 PERCENT IMPERVIOUS AREA

118 UD   SCS DIMENSIONLESS UNITGRAPH
TLAG   .01 LAG

***

UNIT HYDROGRAPH
5 END-OF-PERIOD ORDINATES

403.   113.   22.   4.   0.

***   ***   ***   ***   ***

HYDROGRAPH AT STATION   STAR

TOTAL RAINFALL =   2.97, TOTAL LOSS =   .74, TOTAL EXCESS =   2.23

```
 PEAK FLOW      TIME                         MAXIMUM AVERAGE FLOW
                                     6-HR        24-HR       72-HR     49.92-HR
+   (CFS)       (HR)
                         (CFS)
+     193.     12.08                 13.          4.          2.          2.
                       (INCHES)     1.733       2.225       2.225       2.225
                       (AC-FT)        6.          8.          8.          8.

                       CUMULATIVE AREA =      .07 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

           **************
           *            *
 119 KK    *   KYSUMP   *          HYDROGRAPH KEYSTONE SUMP
           *            *
           **************

             SUBBASIN RUNOFF DATA

 120 BA        SUBBASIN CHARACTERISTICS
                    TAREA         .03  SUBBASIN AREA

               PRECIPITATION DATA

     PH                               DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
               ..... HYDRO-35 ......   ............... TP-40 ...............    ........... TP-49 ...........
               5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 .48     .87    1.40    1.62    1.76    2.03    2.50    2.97     .00     .00     .00     .00

                                                  STORM AREA =      .03

 121 LS        SCS LOSS RATE
                    STRTL         .04  INITIAL ABSTRACTION
                   CRVNBR       98.00  CURVE NUMBER
                    RTIMP         .00  PERCENT IMPERVIOUS AREA

 122 UD        SCS DIMENSIONLESS UNITGRAPH
                     TLAG         .12  LAG

                                                             ***

                                                       UNIT HYDROGRAPH
                                                   9 END-OF-PERIOD ORDINATES
              38.       75.       47.       19.        8.        4.        2.        1.        0.

     ***            ***            ***            ***            ***

                       HYDROGRAPH AT STATION   KYSUMP

    OTAL RAINFALL =    2.97, TOTAL LOSS =     .23, TOTAL EXCESS =    2.74

 PEAK FLOW      TIME                         MAXIMUM AVERAGE FLOW
                                     6-HR        24-HR       72-HR     49.92-HR
+   (CFS)       (HR)
```

```
                     (CFS)
+      55.     12.17                 5.          2.          1.           1.
                   (INCHES)      1.998       2.738       2.738        2.738
                    (AC-FT)         3.          4.          4.           4.

                    CUMULATIVE AREA =     .03 SQ MI
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*** ***

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          **************
          *            *
  123 KK  *   CPKYSR   *         COMBINE KEYSTONE AND STARLIGHT
          *            *
          **************

  124 HC       HYDROGRAPH COMBINATION
                   ICOMP            2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                  ***

     ***             ***             ***             ***             ***

                     HYDROGRAPH AT STATION    CPKYSR

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR        24-HR       72-HR     49.92-HR
+     (CFS)     (HR)
                     (CFS)
+     234.     12.08                18.          6.          3.           3.
                   (INCHES)      1.801       2.360       2.360        2.360
                    (AC-FT)         9.         12.         12.          12.

                    CUMULATIVE AREA =     .09 SQ MI
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          **************
          *            *
  125 KK  *     RTPV   *         ROUTE STARLIGHT AND KEYSTONE SUMP TO VINE
          *            *
          **************

             HYDROGRAPH ROUTING DATA

  126 RD       MUSKINGUM-CUNGE CHANNEL ROUTING
                        L        1915.  CHANNEL LENGTH
                        S        .0100  SLOPE
                        N         .013  CHANNEL ROUGHNESS COEFFICIENT
                       CA          .00  CONTRIBUTING AREA
                    SHAPE         CIRC  CHANNEL SHAPE
                       WD         3.50  BOTTOM WIDTH OR DIAMETER
                        Z          .00  SIDE SLOPE
```

***

COMPUTED MUSKINGUM-CUNGE PARAMETERS

COMPUTATION TIME STEP

ELEMENT	ALPHA	M	DT	DX	PEAK	TIME TO PEAK	VOLUME	MAXIMUM CELERITY
			(MIN)	(FT)	(CFS)	(MIN)	(IN)	(FPS)
MAIN	7.62	1.25	1.94	957.50	219.66	727.64	2.36	16.45

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	7.62	1.25	5.00		191.87	730.00	2.36

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1195E+02 EXCESS= .0000E+00 OUTFLOW= .1194E+02 BASIN STORAGE= .2284E-03 PERCENT ERROR= .1

*** *** *** *** ***

HYDROGRAPH AT STATION RTPV

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 192.	12.17		18.	6.	3.	3.
		(INCHES)	1.800	2.359	2.359	2.359
		(AC-FT)	9.	12.	12.	12.

CUMULATIVE AREA = .09 SQ MI

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          **************
          *            *
127 KK    *    CP PV   *
          *            *
          **************
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COMBINE PEAVINE EAST, PEAVINE WEST, CPKYSR

129 HC HYDROGRAPH COMBINATION

ICOMP 3 NUMBER OF HYDROGRAPHS TO COMBINE

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*** *** *** *** ***

HYDROGRAPH AT STATION CP PV

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	49.92-HR
+ (CFS)	(HR)				

```
                    (CFS)
+   1078.    12.67              351.       194.       99.        99.
                  (INCHES)      .399       .883       .938       .938
                  (AC-FT)       174.       385.       409.       409.

                  CUMULATIVE AREA =    8.18 SQ MI
```

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*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

          ***************
          *             *
 130 KK   *    RT CPW   *        ROUTE VINE STREET TO CPW (VIRGINIA AT UPRR)
          *             *
          ***************
                      ROUTE CPPV TO CPW

            HYDROGRAPH ROUTING DATA

 132 RD      MUSKINGUM-CUNGE CHANNEL ROUTING
                  L       5335.  CHANNEL LENGTH
                  S       .0094  SLOPE
                  N        .020  CHANNEL ROUGHNESS COEFFICIENT
                 CA         .00  CONTRIBUTING AREA
              SHAPE        TRAP  CHANNEL SHAPE
                 WD       50.00  BOTTOM WIDTH OR DIAMETER
                  Z        1.00  SIDE SLOPE

                                             ***
                        COMPUTED MUSKINGUM-CUNGE PARAMETERS
                              COMPUTATION TIME STEP
              ELEMENT   ALPHA     M        DT       DX      PEAK    TIME TO   VOLUME   MAXIMUM
                                                                     PEAK              CELERITY
                                          (MIN)    (FT)    (CFS)    (MIN)     (IN)     (FPS)

               MAIN      .64     1.60      5.00  1778.33  1078.59   765.00     .94     12.98

                              INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

               MAIN      .64     1.60      5.00           1078.59   765.00     .94

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4093E+03 EXCESS= .0000E+00 OUTFLOW= .4093E+03 BASIN STORAGE= .1715E+00 PERCENT ERROR=    .0

      ***         ***         ***         ***         ***

                  HYDROGRAPH AT STATION   RT CPW

     FLOW     TIME                      MAXIMUM AVERAGE FLOW
                                6-HR       24-HR      72-HR      49.92-HR
+   (CFS)     (HR)
                    (CFS)
+   1079.    12.75              351.       194.       99.        99.
```

```
                (INCHES)     .399       .883       .938        .938
                (AC-FT)      174.       385.       409.        409.

                CUMULATIVE AREA =    8.18 SQ MI




*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


          **************
          *            *
133 KK    *   RALSTN   *         HYDROGRAPH RALSTON STREET UPSTREAM OF I-80  A=11.62 AC
          *            *
          **************

             SUBBASIN RUNOFF DATA

134 BA        SUBBASIN CHARACTERISTICS
                TAREA          .02  SUBBASIN AREA

              PRECIPITATION DATA

 29 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
              ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
              5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                .48     .87    1.40    1.62    1.76    2.03    2.50    2.97     .00     .00     .00     .00

                                                 STORM AREA =      .02

135 LS        SCS LOSS RATE
                STRTL          .17  INITIAL ABSTRACTION
               CRVNBR        92.00  CURVE NUMBER
                RTIMP          .00  PERCENT IMPERVIOUS AREA

136 UD        SCS DIMENSIONLESS UNITGRAPH
                TLAG           .09  LAG

                                                      ***

                                                   UNIT HYDROGRAPH
                                                7 END-OF-PERIOD ORDINATES
             47.       58.       22.        8.        3.        1.        0.

      ***          ***          ***          ***          ***

                 HYDROGRAPH AT STATION   RALSTN

   TOTAL RAINFALL =    2.97, TOTAL LOSS =     .84, TOTAL EXCESS =    2.13

 PEAK FLOW     TIME                            MAXIMUM AVERAGE FLOW
                                  6-HR        24-HR       72-HR      49.92-HR

+  (CFS)      (HR)
                       (CFS)
     35.     12.17                  3.          1.          0.           0.
                      (INCHES)   1.673       2.133       2.133        2.133
                      (AC-FT)       2.          2.          2.           2.

                      CUMULATIVE AREA =     .02 SQ MI
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*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

          **************
          *            *
137 KK    *   RT CPW   *        ROUTE RALSTON STREET TO CPW
          *            *
          **************
                          ROUTE RALSTN TO DTW

             HYDROGRAPH ROUTING DATA

139 RD         MUSKINGUM-CUNGE CHANNEL ROUTING
                        L       4415.  CHANNEL LENGTH
                        S       .0113  SLOPE
                        N        .020  CHANNEL ROUGHNESS COEFFICIENT
                       CA         .00  CONTRIBUTING AREA
                    SHAPE        TRAP  CHANNEL SHAPE
                       WD       50.00  BOTTOM WIDTH OR DIAMETER
                        Z        1.00  SIDE SLOPE

                                                        ***
                                COMPUTED MUSKINGUM-CUNGE PARAMETERS
                                       COMPUTATION TIME STEP
                 ELEMENT    ALPHA      M        DT       DX      PEAK    TIME TO    VOLUME   MAXIMUM
                                                                           PEAK              CELERITY
                                              (MIN)     (FT)     (CFS)    (MIN)      (IN)     (FPS)

                   MAIN       .70     1.60      5.00   551.88    35.89    750.00     2.14      3.78


                                      INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL


                   MAIN       .70     1.60      5.00             35.89    750.00     2.14


CONTINUITY SUMMARY (AC-FT) - INFLOW= .2047E+01 EXCESS= .0000E+00 OUTFLOW= .2057E+01 BASIN STORAGE= .8935E-02 PERCENT ERROR=   -.9


      ***          ***          ***          ***          ***

                        HYDROGRAPH AT STATION   RT CPW

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                    6-HR       24-HR      72-HR     49.92-HR
+   (CFS)      (HR)
                         (CFS)
+      36.     12.50                  3.          1.         0.          0.
                      (INCHES)     1.682       2.143      2.143       2.143
                       (AC-FT)        2.          2.         2.          2.

                      CUMULATIVE AREA =      .02 SQ MI
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*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

         **************
         *            *
 140 KK  *   SIERRA   *          HYDROGRAPH SIERRA STREET UPSTREAM OF I-80  A=10.28 AC
         *            *
         **************

            SUBBASIN RUNOFF DATA

 141 BA        SUBBASIN CHARACTERISTICS
                     TAREA          .02  SUBBASIN AREA

               PRECIPITATION DATA

  29 PH                                   DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
               ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
               5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 .48     .87    1.40    1.62    1.76    2.03    2.50    2.97     .00     .00     .00     .00

                                                   STORM AREA =       .02

 142 LS        SCS LOSS RATE
                     STRTL          .17  INITIAL ABSTRACTION
                    CRVNBR        92.00  CURVE NUMBER
                     RTIMP          .00  PERCENT IMPERVIOUS AREA

     UD        SCS DIMENSIONLESS UNITGRAPH
                      TLAG          .08  LAG

                                                              ***

                                                         UNIT HYDROGRAPH
                                                     7 END-OF-PERIOD ORDINATES
              50.        50.        16.         5.         2.         1.         0.

     ***             ***            ***              ***              ***

                    HYDROGRAPH AT STATION   SIERRA

   TOTAL RAINFALL =    2.97, TOTAL LOSS =     .84, TOTAL EXCESS =    2.13

 PEAK FLOW     TIME                            MAXIMUM AVERAGE FLOW
                                       6-HR       24-HR        72-HR      49.92-HR
+   (CFS)      (HR)
                          (CFS)
+       31.    12.17                     3.          1.          0.           0.
                       (INCHES)      1.673       2.133       2.133        2.133
                        (AC-FT)         1.          2.          2.           2.

                       CUMULATIVE AREA =      .02 SQ MI

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
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              **************
              *            *
 141 KK       *   RT CPW   *         ROUTE SIERRA STREET TO CPW
              *            *
              **************

                         ROUTE SIERRA TO CPW

                HYDROGRAPH ROUTING DATA

 146 RD           MUSKINGUM-CUNGE CHANNEL ROUTING
                          L         3117.  CHANNEL LENGTH
                          S         .0051  SLOPE
                          N          .020  CHANNEL ROUGHNESS COEFFICIENT
                         CA           .00  CONTRIBUTING AREA
                      SHAPE          TRAP  CHANNEL SHAPE
                         WD         60.00  BOTTOM WIDTH OR DIAMETER
                          Z          1.00  SIDE SLOPE

                                                        ***
                               COMPUTED MUSKINGUM-CUNGE PARAMETERS
                                     COMPUTATION TIME STEP
                ELEMENT   ALPHA      M        DT        DX       PEAK    TIME TO    VOLUME    MAXIMUM
                                                                           PEAK               CELERITY
                                             (MIN)      (FT)    (CFS)     (MIN)      (IN)      (FPS)

                  MAIN      .41     1.61      5.00    389.63    32.05    745.00      2.14      2.64

                                    INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

                  MAIN      .41     1.61      5.00              32.05    745.00      2.14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1831E+01 EXCESS= .0000E+00 OUTFLOW= .1839E+01 BASIN STORAGE= .7828E-02 PERCENT ERROR=   -.8

      ***          ***          ***          ***          ***

                     HYDROGRAPH AT STATION   RT CPW

 PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                   6-HR        24-HR       72-HR     49.92-HR
+  (CFS)       (HR)
                         (CFS)
+     32.     12.42                 3.          1.          0.          0.
                      (INCHES)    1.680       2.141       2.141       2.141
                       (AC-FT)      1.          2.          2.          2.

                     CUMULATIVE AREA =     .02 SQ MI

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

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              *           *
147 KK        *   VA ST   *          HYDROGRAPH VIRGINIA STREET UPSTREAM OF I-80 A=10.83 AC
              *           *
              *************

                SUBBASIN RUNOFF DATA

148 BA            SUBBASIN CHARACTERISTICS
                        TAREA         .02  SUBBASIN AREA

                  PRECIPITATION DATA

 29 PH                                   DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                    .48     .87    1.40    1.62    1.76    2.03    2.50    2.97     .00     .00     .00     .00

                                                     STORM AREA =      .02

149 LS            SCS LOSS RATE
                        STRTL         .17  INITIAL ABSTRACTION
                       CRVNBR       92.00  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

150 UD            SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .09  LAG

                                                                      ***

                                                              UNIT HYDROGRAPH
                                                          7 END-OF-PERIOD ORDINATES
                44.        55.        21.         7.         3.         1.         0.

     ***             ***             ***             ***             ***

                          HYDROGRAPH AT STATION    VA ST

   TOTAL RAINFALL =    2.97, TOTAL LOSS =     .84, TOTAL EXCESS =    2.13

 PEAK FLOW     TIME                              MAXIMUM AVERAGE FLOW
                                         6-HR        24-HR       72-HR      49.92-HR
+   (CFS)      (HR)
                             (CFS)
+      33.     12.17                       3.           1.          0.            0.
                          (INCHES)      1.673        2.133       2.133         2.133
                           (AC-FT)         2.           2.          2.            2.

                          CUMULATIVE AREA =      .02 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

              *************
              *           *
151 KK        *  RT CPW   *          ROUTE VIRGINIA STREET TO CPW
              *           *
              *************
```

ROUTE VA ST TO CPW

HYDROGRAPH ROUTING DATA

:D MUSKINGUM-CUNGE CHANNEL ROUTING

L	2725.	CHANNEL LENGTH
S	.0055	SLOPE
N	.020	CHANNEL ROUGHNESS COEFFICIENT
CA	.00	CONTRIBUTING AREA
SHAPE	TRAP	CHANNEL SHAPE
WD	60.00	BOTTOM WIDTH OR DIAMETER
Z	1.00	SIDE SLOPE

***

COMPUTED MUSKINGUM-CUNGE PARAMETERS

COMPUTATION TIME STEP

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	.43	1.61	5.00	454.17	35.71	745.00	2.14	2.76

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	.43	1.61	5.00		35.71	745.00	2.14	

NUITY SUMMARY (AC-FT) - INFLOW= .1922E+01 EXCESS= .0000E+00 OUTFLOW= .1929E+01 BASIN STORAGE= .7244E-02 PERCENT ERROR= -.7

*** *** *** *** ***

HYDROGRAPH AT STATION RT CPW

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 36.	12.42		3.	1.	0.	0.
		(INCHES)	1.679	2.140	2.140	2.140
		(AC-FT)	2.	2.	2.	2.

CUMULATIVE AREA = .02 SQ MI

*** ***

****
*   *
:K * DTW * HYDROGRAPH DTW (DOWNTOWN WEST) A=200 AC
*   *
****

SUBBASIN RUNOFF DATA

155 BA SUBBASIN CHARACTERISTICS

TAREA .30 SUBBASIN AREA

PRECIPITATION DATA

29 PH DEPTHS FOR 0-PERCENT HYPOTHETICAL STORM

..... HYDRO-35			.... TP-40					.... TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
.48	.87	1.40	1.62	1.76	2.03	2.50	2.97	.00	.00	.00	.00

STORM AREA = .30

156 LS SCS LOSS RATE

STRTL .15 INITIAL ABSTRACTION

CRVNBR 93.00 CURVE NUMBER

RTIMP .00 PERCENT IMPERVIOUS AREA

157 UD SCS DIMENSIONLESS UNITGRAPH

TLAG .50 LAG

***

UNIT HYDROGRAPH

32 END-OF-PERIOD ORDINATES

18.	53.	109.	182.	238.	264.	264.	242.	211.	169.
124.	96.	74.	60.	46.	36.	28.	22.	17.	13.
10.	8.	6.	5.	4.	3.	2.	2.	1.	1.
1.	0.								

*** *** *** *** ***

HYDROGRAPH AT STATION DTW

TOTAL RAINFALL = 2.97, TOTAL LOSS = .74, TOTAL EXCESS = 2.22

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 268.	12.58		55.	18.	9.	9.
		(INCHES)	1.728	2.224	2.224	2.224
		(AC-FT)	27.	35.	35.	35.

CUMULATIVE AREA = .30 SQ MI

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               **************
               *            *
  KK           *     CPW    *        COMBINE VINE RALSTN SIERRA AND VA ST WITH DTW AT CPW
               *            *
               **************
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159 HC HYDROGRAPH COMBINATION

ICOMP 5 NUMBER OF HYDROGRAPHS TO COMBINE

***

*** *** *** *** ***

HYDROGRAPH AT STATION CPW

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 1359.	12.67		413.	213.	109.	109.
		(INCHES)	.451	.929	.990	.990
		(AC-FT)	205.	423.	450.	450.

CUMULATIVE AREA = 8.53 SQ MI

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          **************
          *            *
160 KK    *   RTEAST   *
          *            *
          **************
```

HYDROGRAPH ROUTING DATA

161 RD MUSKINGUM-CUNGE CHANNEL ROUTING

L	1200.	CHANNEL LENGTH
S	.0050	SLOPE
N	.030	CHANNEL ROUGHNESS COEFFICIENT
CA	.00	CONTRIBUTING AREA
SHAPE	TRAP	CHANNEL SHAPE
WD	50.00	BOTTOM WIDTH OR DIAMETER
Z	5.00	SIDE SLOPE

***

COMPUTED MUSKINGUM-CUNGE PARAMETERS

COMPUTATION TIME STEP

ELEMENT	ALPHA	M	DT	DX	PEAK	TIME TO PEAK	VOLUME	MAXIMUM CELERITY
			(MIN)	(FT)	(CFS)	(MIN)	(IN)	(FPS)
MAIN	.40	1.51	2.64	600.00	1353.09	763.65	.99	7.57

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	.40	1.51	5.00		1347.37	765.00	.99

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4505E+03 EXCESS= .0000E+00 OUTFLOW= .4504E+03 BASIN STORAGE= .5510E-01 PERCENT ERROR= .0

```
     ***              ***              ***              ***              ***

                    HYDROGRAPH AT STATION   RTEAST

    FLOW     TIME                            MAXIMUM AVERAGE FLOW
                               6-HR        24-HR       72-HR      49.92-HR
 +  (CFS)    (HR)
                      (CFS)
 +   1347.   12.75             413.        213.        109.         109.
                    (INCHES)   .450        .929        .990         .990
                    (AC-FT)    205.        423.        450.         450.

                   CUMULATIVE AREA =    8.53 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

          ***************
          *             *
 162 KK   *         E   *      sub basin
          *             *
          ***************

             SUBBASIN RUNOFF DATA

 163 BA       SUBBASIN CHARACTERISTICS
                   TAREA         1.29  SUBBASIN AREA

              PRECIPITATION DATA

 164 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
             ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
             5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
               .34     .67    1.18    1.34    1.47    1.73    2.24    2.75     .00     .00     .00     .00

                                                    STORM AREA =       .00

 165 LS       SCS LOSS RATE
                   STRTL         .41  INITIAL ABSTRACTION
                  CRVNBR       83.00  CURVE NUMBER
                   RTIMP         .00  PERCENT IMPERVIOUS AREA

 166 UD       SCS DIMENSIONLESS UNITGRAPH
                   TLAG          .90  LAG

                                                           ***

                                                        UNIT HYDROGRAPH
                                                   56 END-OF-PERIOD ORDINATES
             18.        56.       105.       169.       250.       350.       458.       549.       613.       649.
            660.       658.       635.       598.       555.       506.       447.       376.       317.       272.
            235.       203.       177.       155.       135.       117.        99.        87.        75.        65.
             57.        49.        42.        36.        32.        27.        24.        21.        18.        15.
             13.        12.        10.         9.         8.         7.         6.         5.         5.         4.
              3.         3.         2.         1.         1.         0.

     ***              ***              ***              ***              ***
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HYDROGRAPH AT STATION E

TOTAL RAINFALL = 2.75, TOTAL LOSS = 1.50, TOTAL EXCESS = 1.25

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 393.	13.00		132.	43.	21.	21.
		(INCHES)	.949	1.248	1.248	1.248
		(AC-FT)	65.	86.	86.	86.

CUMULATIVE AREA = 1.29 SQ MI

*** ***

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              **************
              *            *
  167 KK      *    RT-1A   *      route sub basin E to sub basin A
              *            *
              **************
```

HYDROGRAPH ROUTING DATA

RD MUSKINGUM-CUNGE CHANNEL ROUTING

L	1050.	CHANNEL LENGTH
S	.0133	SLOPE
N	.030	CHANNEL ROUGHNESS COEFFICIENT
CA	.00	CONTRIBUTING AREA
SHAPE	TRAP	CHANNEL SHAPE
WD	10.00	BOTTOM WIDTH OR DIAMETER
Z	3.00	SIDE SLOPE

***

COMPUTED MUSKINGUM-CUNGE PARAMETERS

COMPUTATION TIME STEP

ELEMENT	ALPHA	M	DT	DX	PEAK	TIME TO PEAK	VOLUME	MAXIMUM CELERITY
			(MIN)	(FT)	(CFS)	(MIN)	(IN)	(FPS)
MAIN	1.59	1.42	1.88	525.00	392.72	782.23	1.25	9.31

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

ELEMENT	ALPHA	M	DT	DX	PEAK	TIME TO PEAK	VOLUME	MAXIMUM CELERITY
MAIN	1.59	1.42	5.00		391.28	780.00	1.25	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8594E+02 EXCESS= .0000E+00 OUTFLOW= .8594E+02 BASIN STORAGE= .6806E-03 PERCENT ERROR= .0

*** *** *** *** ***

HYDROGRAPH AT STATION RT-1A

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 391.	13.00		132.	43.	21.	21.
		(INCHES)	.948	1.248	1.248	1.248
		(AC-FT)	65.	86.	86.	86.

CUMULATIVE AREA = 1.29 SQ MI

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              **************
              *            *
169 KK        *   RT-1B    *    route sub basin E to sub basin A
              *            *
              **************
```

HYDROGRAPH ROUTING DATA

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170 RD        MUSKINGUM-CUNGE CHANNEL ROUTING
                     L        430.  CHANNEL LENGTH
                     S       .0233  SLOPE
                     N        .030  CHANNEL ROUGHNESS COEFFICIENT
                    CA         .00  CONTRIBUTING AREA
                 SHAPE        TRAP  CHANNEL SHAPE
                    WD       30.00  BOTTOM WIDTH OR DIAMETER
                     Z        2.00  SIDE SLOPE
```

***

COMPUTED MUSKINGUM-CUNGE PARAMETERS

COMPUTATION TIME STEP

ELEMENT	ALPHA	M	DT	DX	PEAK	TIME TO PEAK	VOLUME	MAXIMUM CELERITY
			(MIN)	(FT)	(CFS)	(MIN)	(IN)	(FPS)
MAIN	1.06	1.54	.70	215.00	391.26	780.79	1.25	10.17

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

ELEMENT	ALPHA	M	DT	DX	PEAK	TIME TO PEAK	VOLUME	MAXIMUM CELERITY
MAIN	1.06	1.54	5.00		390.54	785.00	1.25	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8593E+02 EXCESS= .0000E+00 OUTFLOW= .8593E+02 BASIN STORAGE= .4823E-03 PERCENT ERROR= .0

*** *** *** *** ***

HYDROGRAPH AT STATION RT-1B

PEAK FLOW TIME MAXIMUM AVERAGE FLOW

			6-HR	24-HR	72-HR	49.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 391.	13.08		132.	43.	21.	21.
		(INCHES)	.948	1.248	1.248	1.248
		(AC-FT)	65.	86.	86.	86.

CUMULATIVE AREA = 1.29 SQ MI

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          **************
          *            *
171 KK    *    RT-1C   *     route sub basin E to sub basin A
          *            *
          **************
```

HYDROGRAPH ROUTING DATA

172 RD MUSKINGUM-CUNGE CHANNEL ROUTING

L	335.	CHANNEL LENGTH
S	.0119	SLOPE
N	.030	CHANNEL ROUGHNESS COEFFICIENT
CA	.00	CONTRIBUTING AREA
SHAPE	TRAP	CHANNEL SHAPE
WD	20.00	BOTTOM WIDTH OR DIAMETER
Z	2.00	SIDE SLOPE

***

COMPUTED MUSKINGUM-CUNGE PARAMETERS

COMPUTATION TIME STEP

ELEMENT	ALPHA	M	DT	DX	PEAK	TIME TO PEAK	VOLUME	MAXIMUM CELERITY
			(MIN)	(FT)	(CFS)	(MIN)	(IN)	(FPS)
MAIN	1.00	1.51	.63	167.50	390.50	784.43	1.25	8.85

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	1.00	1.51	5.00		390.50	785.00	1.25

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8595E+02 EXCESS= .0000E+00 OUTFLOW= .8595E+02 BASIN STORAGE= .3748E-03 PERCENT ERROR= .0

*** *** *** *** ***

HYDROGRAPH AT STATION RT-1C

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.92-HR
+ (CFS)	(HR)					
		(CFS)				

+ 390.	13.08		132.	43.	21.	21.
		(INCHES)	.948	1.248	1.248	1.248
		(AC-FT)	65.	86.	86.	86.

CUMULATIVE AREA = 1.29 SQ MI

*** ***

```
          **************
          *            *
173 KK    *   RT-1E    *     route sub basin E to sub basin A
          *            *
          **************
```

HYDROGRAPH ROUTING DATA

174 RD MUSKINGUM-CUNGE CHANNEL ROUTING

L	1005.	CHANNEL LENGTH
S	.0299	SLOPE
N	.035	CHANNEL ROUGHNESS COEFFICIENT
CA	.00	CONTRIBUTING AREA
SHAPE	TRAP	CHANNEL SHAPE
WD	20.00	BOTTOM WIDTH OR DIAMETER
Z	3.00	SIDE SLOPE

***

COMPUTED MUSKINGUM-CUNGE PARAMETERS

COMPUTATION TIME STEP

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	1.43	1.48	1.63	502.50	390.18	786.30	1.25	10.27

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	1.43	1.48	5.00		390.00	785.00	1.25	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8596E+02 EXCESS= .0000E+00 OUTFLOW= .8596E+02 BASIN STORAGE= .8070E-03 PERCENT ERROR= .0

*** *** *** *** ***

HYDROGRAPH AT STATION RT-1E

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.92-HR
(CFS)	(HR)					
		(CFS)				
+ 390.	13.08		132.	43.	21.	21.
		(INCHES)	.948	1.248	1.248	1.248
		(AC-FT)	65.	86.	86.	86.

CUMULATIVE AREA =   1.29 SQ MI

*** ***

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          **************
          *            *
175 KK    *        A   *      sub basin
          *            *
          **************
```

SUBBASIN RUNOFF DATA

176 BA   SUBBASIN CHARACTERISTICS
TAREA   .85 SUBBASIN AREA

PRECIPITATION DATA

177 PH   DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM

..... HYDRO-35			.... TP-40					.... TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
.35	.68	1.19	1.36	1.49	1.76	2.29	2.82	.00	.00	.00	.00

STORM AREA =   .00

.S   SCS LOSS RATE
STRTL   .50 INITIAL ABSTRACTION
CRVNBR   80.00 CURVE NUMBER
RTIMP   .00 PERCENT IMPERVIOUS AREA

179 UD   SCS DIMENSIONLESS UNITGRAPH
TLAG   .79 LAG

***

UNIT HYDROGRAPH
49 END-OF-PERIOD ORDINATES

15.	50.	95.	154.	234.	328.	408.	462.	491.	496.
490.	460.	426.	386.	336.	276.	227.	192.	163.	138.
120.	102.	87.	72.	62.	53.	45.	38.	32.	27.
23.	20.	17.	14.	12.	10.	9.	7.	6.	5.
5.	4.	4.	3.	2.	2.	1.	1.	0.	

***   ***   ***   ***   ***

HYDROGRAPH AT STATION   A

TOTAL RAINFALL =   2.82, TOTAL LOSS =   1.70, TOTAL EXCESS =   1.12

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.92-HR
+ S)	(HR)					
		(CFS)				
+ 248.	12.92		78.	26.	12.	12.
		(INCHES)	.848	1.117	1.117	1.117
		(AC-FT)	39.	51.	51.	51.

CUMULATIVE AREA = .85 SQ MI

*** ***

```
         **************
         *            *
180 KK   *          F *     sub basin
         *            *
         **************
```

SUBBASIN RUNOFF DATA

181 BA SUBBASIN CHARACTERISTICS
TAREA .32 SUBBASIN AREA

PRECIPITATION DATA

182 PH DEPTHS FOR 0-PERCENT HYPOTHETICAL STORM

..... HYDRO-35			.... TP-40					.... TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
.35	.68	1.19	1.36	1.49	1.76	2.29	2.82	.00	.00	.00	.00

STORM AREA = .00

LS SCS LOSS RATE
STRTL .63 INITIAL ABSTRACTION
CRVNBR 76.00 CURVE NUMBER
RTIMP .00 PERCENT IMPERVIOUS AREA

184 UD SCS DIMENSIONLESS UNITGRAPH
TLAG .32 LAG

***

UNIT HYDROGRAPH
21 END-OF-PERIOD ORDINATES

54.	172.	341.	420.	406.	336.	232.	154.	107.	74.
51.	35.	23.	16.	11.	8.	5.	4.	3.	2.
1.									

*** *** *** *** ***

HYDROGRAPH AT STATION F

TOTAL RAINFALL = 2.82, TOTAL LOSS = 1.92, TOTAL EXCESS = .90

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 124.	12.42		24.	8.	4.	4.
		(INCHES)	.690	.896	.896	.896
		(AC-FT)	12.	15.	15.	15.

CUMULATIVE AREA = .32 SQ MI

*** ***

```
          **************
          *            *
185 KK    *    CP-1    *      combine sub basins A, E, and F
          *            *
          **************

186 HC         HYDROGRAPH COMBINATION
                   ICOMP           3  NUMBER OF HYDROGRAPHS TO COMBINE

                                                             ***

     ***           ***           ***           ***           ***

                    HYDROGRAPH AT STATION      CP-1

 PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                6-HR       24-HR       72-HR      49.92-HR
+   (CFS)      (HR)
                        (CFS)
+     667.    12.92             233.        77.         37.         37.
                    (INCHES)    .879       1.157       1.157       1.157
                     (AC-FT)    115.        152.        152.        152.

                   CUMULATIVE AREA =    2.46 SQ MI
```

*** ***

```
          **************
          *            *
187 KK    *    RT-2A   *      route CP-1 to sub basin B
          *            *
          **************

            HYDROGRAPH ROUTING DATA

188 RD         MUSKINGUM-CUNGE CHANNEL ROUTING
                         L         410.  CHANNEL LENGTH
                         S        .0293  SLOPE
                         N         .035  CHANNEL ROUGHNESS COEFFICIENT
                        CA          .00  CONTRIBUTING AREA
                     SHAPE         TRAP  CHANNEL SHAPE
                        WD        20.00  BOTTOM WIDTH OR DIAMETER
                         Z         3.00  SIDE SLOPE

                                                             ***
                              COMPUTED MUSKINGUM-CUNGE PARAMETERS
                                   COMPUTATION TIME STEP
               ELEMENT    ALPHA      M        DT        DX       PEAK    TIME TO     VOLUME    MAXIMUM
                                                                          PEAK                 CELERITY
```

			(MIN)	(FT)	(CFS)	(MIN)	(IN)	(FPS)
MAIN	1.41	1.48	.56	205.00	667.22	775.97	1.16	12.12

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	1.41	1.48	5.00		666.87	780.00	1.16

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1520E+03 EXCESS= .0000E+00 OUTFLOW= .1520E+03 BASIN STORAGE= .3354E-03 PERCENT ERROR= .0

*** *** *** *** ***

HYDROGRAPH AT STATION RT-2A

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 667.	13.00		233.	77.	37.	37.
		(INCHES)	.879	1.157	1.157	1.157
		(AC-FT)	115.	152.	152.	152.

CUMULATIVE AREA = 2.46 SQ MI

*** ***

```
           **************
           *            *
189 KK     *    RT-2B   *     route CP-1 to sub basin B
           *            *
           **************
```

HYDROGRAPH ROUTING DATA

190 RD MUSKINGUM-CUNGE CHANNEL ROUTING

L	1140.	CHANNEL LENGTH
S	.0123	SLOPE
N	.045	CHANNEL ROUGHNESS COEFFICIENT
CA	.00	CONTRIBUTING AREA
SHAPE	TRAP	CHANNEL SHAPE
WD	50.00	BOTTOM WIDTH OR DIAMETER
Z	3.00	SIDE SLOPE

***

COMPUTED MUSKINGUM-CUNGE PARAMETERS

COMPUTATION TIME STEP

ELEMENT	ALPHA	M	DT	DX	PEAK	TIME TO PEAK	VOLUME	MAXIMUM CELERITY
			(MIN)	(FT)	(CFS)	(MIN)	(IN)	(FPS)
MAIN	.37	1.55	2.90	570.00	666.67	780.04	1.16	6.55

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	.37	1.55	5.00		666.64	780.00	1.16

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1520E+03 EXCESS= .0000E+00 OUTFLOW= .1520E+03 BASIN STORAGE= .2594E-02 PERCENT ERROR= .0

*** *** *** *** ***

HYDROGRAPH AT STATION RT-2B

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 667.	13.00		233.	77.	37.	37.
		(INCHES)	.878	1.157	1.157	1.157
		(AC-FT)	115.	152.	152.	152.

CUMULATIVE AREA = 2.46 SQ MI

** ***

```
          ***************
          *             *
191 KK    *    RT-2C    *     route CP-1 to sub basin B
          *             *
          ***************
```

HYDROGRAPH ROUTING DATA

192 RD MUSKINGUM-CUNGE CHANNEL ROUTING

L	2070.	CHANNEL LENGTH
S	.0251	SLOPE
N	.040	CHANNEL ROUGHNESS COEFFICIENT
CA	.00	CONTRIBUTING AREA
SHAPE	TRAP	CHANNEL SHAPE
WD	50.00	BOTTOM WIDTH OR DIAMETER
Z	3.00	SIDE SLOPE

***

COMPUTED MUSKINGUM-CUNGE PARAMETERS

COMPUTATION TIME STEP

ELEMENT	ALPHA	M	DT	DX	PEAK	TIME TO PEAK	VOLUME	MAXIMUM CELERITY
			(MIN)	(FT)	(CFS)	(MIN)	(IN)	(FPS)
MAIN	.60	1.55	3.88	1035.00	666.30	783.87	1.16	8.89

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	.60	1.55	5.00		664.71	785.00	1.16

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1520E+03 EXCESS= .0000E+00 OUTFLOW= .1520E+03 BASIN STORAGE= .3519E-02 PERCENT ERROR= .0

*** *** *** *** ***

HYDROGRAPH AT STATION RT-2C

	PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
				6-HR	24-HR	72-HR	49.92-HR
+	(CFS)	(HR)					
			(CFS)				
+	665.	13.08		233.	77.	37.	37.
			(INCHES)	.878	1.158	1.158	1.158
			(AC-FT)	115.	152.	152.	152.

CUMULATIVE AREA = 2.46 SQ MI

*** ***

```
              **************
              *            *
193 KK        *       B    *     sub basin
              *            *
              **************
```

SUBBASIN RUNOFF DATA

194 BA SUBBASIN CHARACTERISTICS
TAREA .54 SUBBASIN AREA

PRECIPITATION DATA

195 PH DEPTHS FOR 0-PERCENT HYPOTHETICAL STORM

..... HYDRO-35			.... TP-40				.... TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
.35	.68	1.20	1.37	1.50	1.76	2.29	2.81	.00	.00	.00	.00

STORM AREA = .00

196 LS SCS LOSS RATE
STRTL .44 INITIAL ABSTRACTION
CRVNBR 82.00 CURVE NUMBER
RTIMP .00 PERCENT IMPERVIOUS AREA

197 UD SCS DIMENSIONLESS UNITGRAPH
TLAG .43 LAG

***

UNIT HYDROGRAPH

```
                                                                28 END-OF-PERIOD ORDINATES
              46.       140.       290.       456.       540.       548.       498.       422.       315.       228.
             170.       130.        98.        73.        55.        41.        30.        23.        17.        13.
              10.         7.         6.         4.         3.         2.         1.         0.

      ***              ***              ***              ***              ***

                         HYDROGRAPH AT STATION        B

     TOTAL RAINFALL =     2.81, TOTAL LOSS =     1.58, TOTAL EXCESS =     1.23

   PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR        24-HR        72-HR     49.92-HR
 +   (CFS)       (HR)
                             (CFS)
 +     261.     12.50                   55.          18.           9.           9.
                          (INCHES)     .949        1.231        1.231        1.231
                           (AC-FT)      27.          35.          35.          35.

                          CUMULATIVE AREA =       .54 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

            **************
            *            *
        KK  *      CP-2  *      combine CP-1 with sub basin B
            *            *
            **************

   199 HC          HYDROGRAPH COMBINATION
                         ICOMP            2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                      ***

      ***              ***              ***              ***              ***

                         HYDROGRAPH AT STATION      CP-2

   PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR        24-HR        72-HR     49.92-HR
 +   (CFS)       (HR)
                             (CFS)
 +     787.     12.92                  286.          94.          45.          45.
                          (INCHES)     .886        1.171        1.171        1.171
                           (AC-FT)     142.         187.         187.         187.

                          CUMULATIVE AREA =      3.00 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

            **************
            *            *
```

```
200 KK      *     RT-3A  *      route CP-2 to sub basin G
            *            *
            **************

               HYDROGRAPH ROUTING DATA

201 RD          MUSKINGUM-CUNGE CHANNEL ROUTING
                         L        1640.  CHANNEL LENGTH
                         S        .0232  SLOPE
                         N         .030  CHANNEL ROUGHNESS COEFFICIENT
                        CA          .00  CONTRIBUTING AREA
                     SHAPE         TRAP  CHANNEL SHAPE
                        WD        50.00  BOTTOM WIDTH OR DIAMETER
                         Z         3.00  SIDE SLOPE

                                                        ***
                                  COMPUTED MUSKINGUM-CUNGE PARAMETERS
                                        COMPUTATION TIME STEP
                ELEMENT     ALPHA      M        DT       DX       PEAK    TIME TO    VOLUME    MAXIMUM
                                                                            PEAK               CELERITY
                                              (MIN)     (FT)     (CFS)    (MIN)      (IN)      (FPS)

                  MAIN        .77     1.55     2.47    820.00    786.25   775.53     1.17      11.07

                                       INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

                  MAIN        .77     1.55     5.00              785.51   775.00     1.17

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1873E+03 EXCESS= .0000E+00 OUTFLOW= .1873E+03 BASIN STORAGE= .2764E-02 PERCENT ERROR=    .0


      ***          ***          ***          ***          ***

                     HYDROGRAPH AT STATION    RT-3A

  PEAK FLOW     TIME                           MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR      49.92-HR
 +   (CFS)      (HR)
                          (CFS)
 +     786.     12.92                 286.         94.         45.          45.
                        (INCHES)      .886       1.171       1.171        1.171
                         (AC-FT)      142.        187.        187.         187.

                       CUMULATIVE AREA =    3.00 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

            **************
            *            *
202 KK      *     RT-3B  *      route CP-2 to sub basin G
            *            *
            **************
```

HYDROGRAPH ROUTING DATA

RD MUSKINGUM-CUNGE CHANNEL ROUTING

L	780.	CHANNEL LENGTH
S	.0179	SLOPE
N	.035	CHANNEL ROUGHNESS COEFFICIENT
CA	.00	CONTRIBUTING AREA
SHAPE	TRAP	CHANNEL SHAPE
WD	20.00	BOTTOM WIDTH OR DIAMETER
Z	3.00	SIDE SLOPE

***

COMPUTED MUSKINGUM-CUNGE PARAMETERS

COMPUTATION TIME STEP

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	1.10	1.48	1.20	390.00	785.55	777.07	1.17	10.81

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	1.10	1.48	5.00		784.87	780.00	1.17	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1873E+03 EXCESS= .0000E+00 OUTFLOW= .1873E+03 BASIN STORAGE= .7907E-03 PERCENT ERROR= .0

*** *** *** *** ***

HYDROGRAPH AT STATION RT-3B

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	49.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 785.	13.00		286.	94.	45.	45.
		(INCHES)	.886	1.171	1.171	1.171
		(AC-FT)	142.	187.	187.	187.

CUMULATIVE AREA = 3.00 SQ MI

*** ***

```
**************
*            *
KK  *   RT-3C  *     route CP-2 to sub basin G
*            *
**************
```

HYDROGRAPH ROUTING DATA

205 RD MUSKINGUM-CUNGE CHANNEL ROUTING

L	655.	CHANNEL LENGTH
S	.0214	SLOPE
N	.045	CHANNEL ROUGHNESS COEFFICIENT
CA	.00	CONTRIBUTING AREA
SHAPE	TRAP	CHANNEL SHAPE
WD	20.00	BOTTOM WIDTH OR DIAMETER
Z	3.00	SIDE SLOPE

***

COMPUTED MUSKINGUM-CUNGE PARAMETERS

COMPUTATION TIME STEP

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	.94	1.48	1.13	327.50	784.57	780.35	1.17	9.68

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	.94	1.48	5.00		784.55	780.00	1.17	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1874E+03 EXCESS= .0000E+00 OUTFLOW= .1874E+03 BASIN STORAGE= .8117E-03 PERCENT ERROR= .0

*** *** *** *** ***

HYDROGRAPH AT STATION RT-3C

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 785.	13.00		286.	94.	45.	45.
		(INCHES)	.886	1.171	1.171	1.171
		(AC-FT)	142.	187.	187.	187.

CUMULATIVE AREA = 3.00 SQ MI

*** ***

```
          **************
          *            *
206 KK    *   RT-3D    *     route CP-2 to sub basin G
          *            *
          **************
```

HYDROGRAPH ROUTING DATA

207 RD MUSKINGUM-CUNGE CHANNEL ROUTING

L	1555.	CHANNEL LENGTH
S	.0283	SLOPE

```
               N        .035  CHANNEL ROUGHNESS COEFFICIENT
              CA         .00  CONTRIBUTING AREA
           SHAPE        TRAP  CHANNEL SHAPE
              WD       20.00  BOTTOM WIDTH OR DIAMETER
               Z        3.00  SIDE SLOPE

                                            ***

                        COMPUTED MUSKINGUM-CUNGE PARAMETERS
                               COMPUTATION TIME STEP
          ELEMENT   ALPHA      M        DT       DX      PEAK    TIME TO     VOLUME    MAXIMUM
                                                                   PEAK                CELERITY
                                       (MIN)    (FT)     (CFS)    (MIN)       (IN)      (FPS)

           MAIN      1.39     1.48     2.05    777.50   783.43   782.59      1.17      12.62


                              INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL


           MAIN      1.39     1.48     5.00             783.34   780.00      1.17


CONTINUITY SUMMARY (AC-FT) - INFLOW= .1874E+03 EXCESS= .0000E+00 OUTFLOW= .1874E+03 BASIN STORAGE= .1595E-02 PERCENT ERROR=    .0



     ***         ***         ***         ***         ***

                HYDROGRAPH AT STATION    RT-3D

     FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                 6-HR      24-HR      72-HR    49.92-HR
+   (CFS)     (HR)
                        (CFS)
+    783.    13.00               286.        94.        45.        45.
                      (INCHES)   .885      1.171      1.171      1.171
                       (AC-FT)   142.       187.       187.       187.

                    CUMULATIVE AREA =    3.00 SQ MI



*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


         ***************
         *             *
208 KK   *         G   *      sub basin
         *             *
         ***************

           SUBBASIN RUNOFF DATA

     BA     SUBBASIN CHARACTERISTICS
               TAREA        .43  SUBBASIN AREA

           PRECIPITATION DATA

210 PH                          DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
```

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     ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
     5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
       .35     .69    1.21    1.38    1.51    1.78    2.30    2.81     .00     .00     .00     .00

                                        STORM AREA =      .00

211 LS         SCS LOSS RATE
                     STRTL         .60  INITIAL ABSTRACTION
                    CRVNBR       77.00  CURVE NUMBER
                     RTIMP         .00  PERCENT IMPERVIOUS AREA

212 UD         SCS DIMENSIONLESS UNITGRAPH
                      TLAG         .51  LAG

                                                         ***

                                                   UNIT HYDROGRAPH
                                              33 END-OF-PERIOD ORDINATES
           25.        72.       147.       249.       328.       369.       371.       345.       303.       249.
          186.       143.       111.        89.        70.        54.        42.        33.        26.        20.
           16.        12.        10.         8.         6.         5.         4.         3.         2.         2.
            1.         1.         0.

     ***              ***              ***              ***              ***

                    HYDROGRAPH AT STATION          G

   TOTAL RAINFALL =     2.81, TOTAL LOSS =     1.87, TOTAL EXCESS =      .94

         FLOW      TIME                         MAXIMUM AVERAGE FLOW
                                    6-HR          24-HR         72-HR       49.92-HR
 +     (CFS)       (HR)
                              (CFS)
 +       137.     12.58                33.          11.            5.            5.
                           (INCHES)   .729         .942          .942          .942
                            (AC-FT)    17.          21.           21.           21.

                           CUMULATIVE AREA =      .43 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


          **************
          *            *
213 KK    *     CP-3   *      combine CP-2 with sub basin G
          *            *
          **************

214 HC         HYDROGRAPH COMBINATION
                     ICOMP              2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                         ***

     ***              ***              ***              ***              ***

                    HYDROGRAPH AT STATION      CP-3
```

```
  PEAK FLOW     TIME                              MAXIMUM AVERAGE FLOW
                                       6-HR         24-HR        72-HR      49.92-HR
+   (CFS)       (HR)
                           (CFS)
+     379.      12.92                  319.          105.          51.          51.
                       (INCHES)        .865         1.143        1.143        1.143
                        (AC-FT)        158.          209.         209.         209.

                        CUMULATIVE AREA =     3.43 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            ***************
            *             *
 215 KK     *    RT-4A    *      route CP-3 to sub basin C
            *             *
            ***************

              HYDROGRAPH ROUTING DATA

 216 RD         MUSKINGUM-CUNGE CHANNEL ROUTING
                          L        2085.  CHANNEL LENGTH
                          S        .0240  SLOPE
                          N         .040  CHANNEL ROUGHNESS COEFFICIENT
                         CA          .00  CONTRIBUTING AREA
                      SHAPE         TRAP  CHANNEL SHAPE
                         WD        40.00  BOTTOM WIDTH OR DIAMETER
                          Z         3.00  SIDE SLOPE

                                                         ***
                                  COMPUTED MUSKINGUM-CUNGE PARAMETERS
                                        COMPUTATION TIME STEP
                  ELEMENT    ALPHA      M         DT        DX       PEAK     TIME TO    VOLUME    MAXIMUM
                                                                              PEAK                 CELERITY
                                                 (MIN)      (FT)     (CFS)     (MIN)      (IN)      (FPS)

                    MAIN       .70     1.54       3.42   1042.50    878.22    776.81      1.14      10.15


                                       INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL


                    MAIN       .70     1.54       5.00              877.43    775.00      1.14


CONTINUITY SUMMARY (AC-FT) - INFLOW= .2088E+03 EXCESS= .0000E+00 OUTFLOW= .2088E+03 BASIN STORAGE= .3290E-02 PERCENT ERROR=     .0


      ***          ***          ***           ***           ***

                         HYDROGRAPH AT STATION     RT-4A

  PEAK FLOW     TIME                              MAXIMUM AVERAGE FLOW
                                       6-HR         24-HR        72-HR      49.92-HR
+   (CFS)       (HR)
```

```
                      (CFS)
+    877.    12.92               318.       105.       51.        51.
                    (INCHES)     .864      1.143      1.143      1.143
                     (AC-FT)     158.       209.       209.       209.

                     CUMULATIVE AREA =    3.43 SQ MI
```

*** ***

```
            **************
            *            *
 217 KK     *    RT-4B   *      route CP-3 to sub basin C
            *            *
            **************

              HYDROGRAPH ROUTING DATA

 218 RD         MUSKINGUM-CUNGE CHANNEL ROUTING
                          L        1820.  CHANNEL LENGTH
                          S        .0264  SLOPE
                          N         .050  CHANNEL ROUGHNESS COEFFICIENT
                         CA          .00  CONTRIBUTING AREA
                      SHAPE         TRAP  CHANNEL SHAPE
                         WD        50.00  BOTTOM WIDTH OR DIAMETER
                          Z        50.00  SIDE SLOPE

                                                 ***
                           COMPUTED MUSKINGUM-CUNGE PARAMETERS
                                COMPUTATION TIME STEP
   ELEMENT   ALPHA     M       DT       DX       PEAK    TIME TO    VOLUME   MAXIMUM
                                                          PEAK               CELERITY
                              (MIN)    (FT)     (CFS)    (MIN)      (IN)     (FPS)

    MAIN      .69     1.36     5.00    910.00   877.61   780.00     1.14      5.13


                        INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL


    MAIN      .69     1.36     5.00             877.61   780.00     1.14
```

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2088E+03 EXCESS= .0000E+00 OUTFLOW= .2088E+03 BASIN STORAGE= .1963E-02 PERCENT ERROR= .0

```
     ***          ***          ***          ***          ***

                     HYDROGRAPH AT STATION    RT-4B

     FLOW     TIME                       MAXIMUM AVERAGE FLOW
                                 6-HR       24-HR      72-HR     49.92-HR
+    (CFS)    (HR)
                      (CFS)
+    878.    13.00               318.       105.       51.        51.
                    (INCHES)     .864      1.143      1.143      1.143
```

```
                    (AC-FT)      158.        209.        209.         209.

                    CUMULATIVE AREA =    3.43 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


          **************
          *            *
219 KK    *          C *     sub basin
          *            *
          **************

            SUBBASIN RUNOFF DATA

220 BA       SUBBASIN CHARACTERISTICS
                  TAREA          .40  SUBBASIN AREA

             PRECIPITATION DATA

221 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
             ..... HYDRO-35 ......    ................ TP-40 ................   ........... TP-49 ...........
             5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
               .35     .69    1.21    1.37    1.50    1.77    2.28    2.79     .00     .00     .00     .00

                                                    STORM AREA =       .00

    LS       SCS LOSS RATE
                  STRTL          .41  INITIAL ABSTRACTION
                 CRVNBR        83.00  CURVE NUMBER
                  RTIMP          .00  PERCENT IMPERVIOUS AREA

223 UD       SCS DIMENSIONLESS UNITGRAPH
                  TLAG           .61  LAG

                                                               ***

                                                         UNIT HYDROGRAPH
                                                    39 END-OF-PERIOD ORDINATES
              15.        44.        85.       144.       212.       263.       290.       293.       282.       257.
             227.       188.       146.       117.        94.        77.        64.        52.        41.        34.
              28.        22.        18.        15.        12.        10.         8.         6.         5.         4.
               3.         3.         2.         2.         2.         1.         1.         0.         0.

      ***           ***           ***            ***            ***

                    HYDROGRAPH AT STATION        C

  TOTAL RAINFALL =    2.79, TOTAL LOSS =    1.51, TOTAL EXCESS =    1.28

PEAK FLOW    TIME                           MAXIMUM AVERAGE FLOW
                                      6-HR        24-HR       72-HR     49.92-HR
    FS)      (HR)
                    (CFS)
+    163.    12.67                     42.          14.          7.          7.
                    (INCHES)         .986        1.279       1.279       1.279
                    (AC-FT)           21.          27.         27.         27.
```

```
                    CUMULATIVE AREA =      .40 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


           ***************
           *             *
 224 KK    *     CP-4    *      combine CP-3 with sub basin C
           *             *
           ***************

 225 HC          HYDROGRAPH COMBINATION
                     ICOMP            2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                    ***

     ***            ***            ***            ***            ***

                    HYDROGRAPH AT STATION     CP-4

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                   6-HR        24-HR       72-HR     49.92-HR
+   (CFS)      (HR)
                         (CFS)
+    1008.    12.92                358.         119.         57.         57.
                      (INCHES)     .872        1.157       1.157       1.157
                       (AC-FT)     178.         236.        236.        236.

                    CUMULATIVE AREA =    3.82 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


           ***************
           *             *
 226 KK    *    MCCARR   *      MCCARRAN BLVD DETENTION BASIN
           *             *
           ***************
                                CURRENTLY 48" CMP AND 10' X 10' RCBC

             HYDROGRAPH ROUTING DATA

 228 RS          STORAGE ROUTING
                     NSTPS            1  NUMBER OF SUBREACHES
                      ITYP         STOR  TYPE OF INITIAL CONDITION
                    RSVRIC          .00  INITIAL CONDITION
                         X          .00 WORKING R AND D COEFFICIENT

      SA            AREA         .0        .0        .2        .3        .5        .8       1.3       1.8       2.3       2.8
                                3.4       4.0       4.6       6.9

 231 SE          ELEVATION   4658.00   4660.00   4662.00   4664.00   4666.00   4668.00   4670.00   4672.00   4674.00   4676.00
                             4678.00   4680.00   4682.00   4684.00
```

233 SQ	DISCHARGE	0.	0.	66.	93.	114.	461.	764.	969.	1135.	1280.
		1527.	1739.	1928.	2099.	2258.	2406.	2545.	2559.	2608.	3112.
SE	ELEVATION	4658.00	4660.00	4661.00	4662.00	4663.00	4664.00	4665.00	4666.00	4667.00	4668.00
		4670.00	4672.00	4674.00	4676.00	4678.00	4680.00	4682.00	4682.20	4682.50	4684.00

***

COMPUTED STORAGE-ELEVATION DATA

STORAGE	.00	.01	.15	.60	1.43	2.80	4.92	8.01	12.08	17.14
ELEVATION	4658.00	4660.00	4662.00	4664.00	4666.00	4668.00	4670.00	4672.00	4674.00	4676.00
STORAGE	23.33	30.72	39.30	50.76						
ELEVATION	4678.00	4680.00	4682.00	4684.00						

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	.00	.01	.04	.15	.34	.60	.95	1.43	2.04	2.80
OUTFLOW	.00	.00	65.60	92.70	113.50	461.00	763.80	968.70	1135.30	1279.60
ELEVATION	4658.00	4660.00	4661.00	4662.00	4663.00	4664.00	4665.00	4666.00	4667.00	4668.00
STORAGE	4.92	8.01	12.08	17.14	23.33	30.72	39.30	40.25	41.74	50.76
OUTFLOW	1526.90	1738.90	1927.50	2099.10	2257.60	2405.60	2545.00	2558.50	2608.30	3111.80
ELEVATION	4670.00	4672.00	4674.00	4676.00	4678.00	4680.00	4682.00	4682.20	4682.50	4684.00

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN 0. TO 969.
THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

*** *** *** *** ***

HYDROGRAPH AT STATION MCCARR

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 1007.	13.00		358.	119.	57.	57.
		(INCHES)	.871	1.157	1.157	1.157
		(AC-FT)	178.	236.	236.	236.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	49.92-HR
+ (AC-FT)	(HR)				
2.	13.00	1.	0.	0.	0.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	49.92-HR
+ (FEET)	(HR)				
4666.23	13.00	4663.78	4661.53	4660.39	4660.39

CUMULATIVE AREA = 3.82 SQ MI

*** ***

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          **************
          *            *
   KK     *    RT-5    *     route CP-4 to sub basin D
          *            *
          **************

             HYDROGRAPH ROUTING DATA

 238 RD         MUSKINGUM-CUNGE CHANNEL ROUTING
                          L       3450.  CHANNEL LENGTH
                          S       .0191  SLOPE
                          N        .030  CHANNEL ROUGHNESS COEFFICIENT
                         CA         .00  CONTRIBUTING AREA
                      SHAPE        TRAP  CHANNEL SHAPE
                         WD       50.00  BOTTOM WIDTH OR DIAMETER
                          Z       50.00  SIDE SLOPE

                                                         ***

                                COMPUTED MUSKINGUM-CUNGE PARAMETERS
                                      COMPUTATION TIME STEP
                 ELEMENT    ALPHA       M         DT       DX       PEAK    TIME TO    VOLUME    MAXIMUM
                                                                              PEAK               CELERITY
                                                 (MIN)     (FT)     (CFS)    (MIN)      (IN)      (FPS)

                  MAIN        .97      1.36       5.00   1150.00   1009.75   785.00     1.16       6.88


                                     INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL


                  MAIN        .97      1.36       5.00             1009.75   785.00     1.16

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2358E+03 EXCESS= .0000E+00 OUTFLOW= .2359E+03 BASIN STORAGE= .2963E-02 PERCENT ERROR=    .0


     ***          ***          ***          ***          ***

                      HYDROGRAPH AT STATION     RT-5

 PEAK FLOW     TIME                       MAXIMUM AVERAGE FLOW
                                   6-HR      24-HR      72-HR     49.92-HR
+  (CFS)       (HR)
                         (CFS)
+    1010.    13.08                358.       119.        57.        57.
                       (INCHES)    .871      1.157      1.157      1.157
                        (AC-FT)    178.       236.       236.       236.

                       CUMULATIVE AREA =    3.82 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


          **************
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          *            *
239 KK    *        D   *      sub basin
          *            *
          **************

             SUBBASIN RUNOFF DATA

240 BA          SUBBASIN CHARACTERISTICS
                      TAREA          .56  SUBBASIN AREA

                PRECIPITATION DATA

241 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .35     .68    1.20    1.37    1.49    1.75    2.26    2.76     .00     .00     .00     .00

                                                         STORM AREA =      .00

242 LS          SCS LOSS RATE
                      STRTL          .38  INITIAL ABSTRACTION
                     CRVNBR        84.00  CURVE NUMBER
                      RTIMP          .00  PERCENT IMPERVIOUS AREA

243 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG          .59  LAG

                                                                    ***

                                                                  UNIT HYDROGRAPH
                                                             37 END-OF-PERIOD ORDINATES
              22.        67.       130.       223.       322.       393.       423.       424.       400.       360.
             311.       247.       192.       154.       124.       102.        83.        66.        54.        43.
              35.        28.        22.        18.        15.        12.        10.         8.         6.         5.
               4.         4.         3.         2.         2.         1.         1.

    ***             ***             ***             ***             ***

                         HYDROGRAPH AT STATION        D

   TOTAL RAINFALL =    2.76, TOTAL LOSS =    1.44, TOTAL EXCESS =    1.32

  PEAK FLOW     TIME                            MAXIMUM AVERAGE FLOW
                                      6-HR        24-HR        72-HR      49.92-HR

+   (CFS)       (HR)
                           (CFS)
+     245.     12.67                   61.          20.          10.          10.
                         (INCHES)    1.020        1.321        1.321        1.321
                         (AC-FT)       30.          39.          39.          39.

                        CUMULATIVE AREA =      .56 SQ MI


 *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


          **************
          *            *
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```
244 KK     *      CP-5  *      combine CP-4 with sub basin D
           *            *
           **************

   HC          HYDROGRAPH COMBINATION
                    ICOMP            2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                 ***

      ***            ***           ***           ***           ***

                       HYDROGRAPH AT STATION      CP-5

  PEAK FLOW      TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR        72-HR      49.92-HR
+   (CFS)        (HR)
                         (CFS)
+     1172.      13.00               415.        139.         67.          67.
                       (INCHES)      .881       1.178        1.178        1.178
                        (AC-FT)      206.        275.         275.         275.

                      CUMULATIVE AREA =    4.38 SQ MI

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

           **************
           *            *
246 KK     *    SIERRA  *      SIERRA ST DETENTION BASIN
           *            *
           **************
                                   CURRENTLY OVAL 68" X 43" RCP

             HYDROGRAPH ROUTING DATA

248 RS         STORAGE ROUTING
                    NSTPS            1  NUMBER OF SUBREACHES
                     ITYP         STOR  TYPE OF INITIAL CONDITION
                   RSVRIC          .00  INITIAL CONDITION
                        X          .00 WORKING R AND D COEFFICIENT

249 SA              AREA        .0        .1        .8       1.2       1.8       2.6

250 SE         ELEVATION   4592.00   4594.00   4596.00   4598.00   4600.00   4602.00

251 SQ         DISCHARGE        0.       39.       72.       94.      112.      128.      141.      154.      166.      176.
                              187.      196.      205.      214.      218.      363.      843.     1506.     2311.

253 SE         ELEVATION   4592.00   4594.00   4594.50   4595.00   4595.50   4596.00   4596.50   4597.00   4597.50   4598.00
                           4598.50   4599.00   4599.50   4600.00   4600.20   4600.50   4601.00   4601.50   4602.00

                                                                 ***

                                              COMPUTED STORAGE-ELEVATION DATA

          STORAGE        .00       .03       .70      2.62      5.62     10.00
        ELEVATION    4592.00   4594.00   4596.00   4598.00   4600.00   4602.00
```

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	.00	.03	.08	.19	.39	.70	1.10	1.55	2.05	2.62
OUTFLOW	.00	38.50	72.00	94.20	112.20	127.60	141.30	153.90	165.50	176.30
ELEVATION	4592.00	4594.00	4594.50	4595.00	4595.50	4596.00	4596.50	4597.00	4597.50	4598.00

STORAGE	3.25	3.96	4.74	5.62	5.99	6.57	7.62	8.76	10.00
OUTFLOW	186.50	196.10	205.40	214.20	217.60	363.10	842.60	1506.00	2311.10
ELEVATION	4598.50	4599.00	4599.50	4600.00	4600.20	4600.50	4601.00	4601.50	4602.00

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN 0. TO 2311.
THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

*** *** *** *** ***

HYDROGRAPH AT STATION SIERRA

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 1175.	13.08		411.	139.	67.	67.
		(INCHES)	.874	1.178	1.178	1.178
		(AC-FT)	204.	275.	275.	275.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	49.92-HR
+(AC-FT)	(HR)				
8.	13.08	6.	2.	1.	1.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	49.92-HR
+ (FEET)	(HR)				
4601.25	13.08	4599.90	4595.21	4593.54	4593.54

CUMULATIVE AREA = 4.38 SQ MI

*** ***

```
          **************
          *            *
255 KK    *     RT-8   *     ROUTE CP-5 THROUGH WATERSHED 8
          *            *
          **************
```

HYDROGRAPH ROUTING DATA

256 RD MUSKINGUM-CUNGE CHANNEL ROUTING

L	5648.	CHANNEL LENGTH
S	.0152	SLOPE
N	.018	CHANNEL ROUGHNESS COEFFICIENT
CA	.00	CONTRIBUTING AREA
SHAPE	TRAP	CHANNEL SHAPE
WD	50.00	BOTTOM WIDTH OR DIAMETER

```
            Z       50.00  SIDE SLOPE

                                                        ***

                               COMPUTED MUSKINGUM-CUNGE PARAMETERS
                                    COMPUTATION TIME STEP
        ELEMENT    ALPHA      M        DT        DX       PEAK    TIME TO     VOLUME    MAXIMUM
                                                                   PEAK                 CELERITY
                                      (MIN)      (FT)     (CFS)    (MIN)       (IN)      (FPS)

          MAIN      1.45     1.36      5.00   1412.00   1226.29    795.00      1.18       9.59

                                   INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

          MAIN      1.45     1.36      5.00             1226.29    795.00      1.18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2751E+03 EXCESS= .0000E+00 OUTFLOW= .2752E+03 BASIN STORAGE= .4815E-02 PERCENT ERROR=     .0


     ***           ***           ***           ***           ***

                      HYDROGRAPH AT STATION     RT-8

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR        24-HR       72-HR      49.92-HR
+   (CFS)       (HR)
                           (CFS)
+    1226.      13.25                 411.         139.         67.          67.
                         (INCHES)     .874        1.178       1.178        1.178
                          (AC-FT)     204.         275.        275.         275.

                        CUMULATIVE AREA =     4.38 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


           **************
           *            *
 257 KK    *         8  *     WATERSHED 8 (UNIVERSITY AREA NORTH OF I80)
           *            *
           **************

              SUBBASIN RUNOFF DATA

 258 BA         SUBBASIN CHARACTERISTICS
                     TAREA          .23  SUBBASIN AREA

                PRECIPITATION DATA

     PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR    2-DAY   4-DAY   7-DAY  10-DAY
                  .34     .66    1.17    1.33    1.45    1.71    2.23    2.74      .00     .00     .00     .00
```

STORM AREA = .00

```
260 LS          SCS LOSS RATE
                     STRTL          .17  INITIAL ABSTRACTION
                    CRVNBR        92.00  CURVE NUMBER
                     RTIMP          .00  PERCENT IMPERVIOUS AREA

261 UD          SCS DIMENSIONLESS UNITGRAPH
                      TLAG          .48  LAG
```

***

UNIT HYDROGRAPH
31 END-OF-PERIOD ORDINATES

15.	45.	93.	154.	198.	212.	209.	186.	158.	120.
89.	68.	54.	42.	32.	25.	19.	15.	11.	9.
7.	5.	4.	3.	2.	2.	2.	1.	1.	0.
0.									

*** *** *** *** ***

HYDROGRAPH AT STATION 8

TOTAL RAINFALL = 2.74, TOTAL LOSS = .82, TOTAL EXCESS = 1.92

```
  PEAK FLOW     TIME                     MAXIMUM AVERAGE FLOW
                               6-HR        24-HR       72-HR     49.92-HR
+   (CFS)       (HR)
                       (CFS)
+     162.     12.58            35.          12.          6.          6.
                     (INCHES)  1.408        1.917       1.917       1.917
                      (AC-FT)    17.          24.         24.         24.

                     CUMULATIVE AREA =      .23 SQ MI
```

*** ***

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          **************
          *            *
262 KK    *     CP-6   *     COMBINE RT-8 AND WATERSHED 8 NEAR EVANS ST BRIDGE
          *            *
          **************

263 HC          HYDROGRAPH COMBINATION
                     ICOMP            2  NUMBER OF HYDROGRAPHS TO COMBINE
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*** *** *** *** ***

HYDROGRAPH AT STATION CP-6

```
  PEAK FLOW     TIME                     MAXIMUM AVERAGE FLOW
                               6-HR        24-HR       72-HR     49.92-HR
+   (CFS)       (HR)
                       (CFS)
```

+ 1303.	13.00		438.	151.	72.	72.
		(INCHES)	.885	1.215	1.215	1.215
		(AC-FT)	217.	299.	299.	299.

CUMULATIVE AREA = 4.61 SQ MI

*** ***

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          **************
          *            *
 264 KK   *    RT-9A   *     ROUTE CP-6 THROUGH WATERSHED 9
          *            *
          **************
```

HYDROGRAPH ROUTING DATA

265 RD MUSKINGUM-CUNGE CHANNEL ROUTING

L	3053.	CHANNEL LENGTH
S	.0062	SLOPE
N	.045	CHANNEL ROUGHNESS COEFFICIENT
CA	.00	CONTRIBUTING AREA
SHAPE	TRAP	CHANNEL SHAPE
WD	200.00	BOTTOM WIDTH OR DIAMETER
Z	50.00	SIDE SLOPE

***

COMPUTED MUSKINGUM-CUNGE PARAMETERS

ELEMENT	ALPHA	M	COMPUTATION TIME STEP DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	.19	1.44	5.00	508.83	1285.19	800.00	1.22	3.30

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	.19	1.44	5.00		1285.19	800.00	1.22

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2987E+03 EXCESS= .0000E+00 OUTFLOW= .2987E+03 BASIN STORAGE= .9759E-02 PERCENT ERROR= .0

*** *** *** *** ***

HYDROGRAPH AT STATION RT-9A

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	49.92-HR
		(CFS)				
+ 1285.	13.33		438.	151.	72.	72.
		(INCHES)	.884	1.215	1.215	1.215
		(AC-FT)	217.	299.	299.	299.

```
                    CUMULATIVE AREA =    4.61 SQ MI




*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


          **************
          *            *
266 KK    *   CENTER   *          HYDROGRAPH CENTER STREET WATERSHED UPSTREAM OF I-80
          *            *
          **************

            SUBBASIN RUNOFF DATA

267 BA        SUBBASIN CHARACTERISTICS
                   TAREA          .35  SUBBASIN AREA

              PRECIPITATION DATA

259 PH                               DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
              ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
              5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                .34     .66    1.17    1.33    1.45    1.71    2.23    2.74     .00     .00     .00     .00

                                                 STORM AREA =      .00

    LS        SCS LOSS RATE
                   STRTL          .17  INITIAL ABSTRACTION
                  CRVNBR        92.00  CURVE NUMBER
                   RTIMP          .00  PERCENT IMPERVIOUS AREA

269 UD        SCS DIMENSIONLESS UNITGRAPH
                    TLAG          .40  LAG

                                                      ***

                                                 UNIT HYDROGRAPH
                                             26 END-OF-PERIOD ORDINATES
             35.      108.      228.      337.      381.      372.      323.      256.      177.      129.
             97.       72.       52.       39.       28.       21.       15.       11.        8.        6.
              5.        4.        3.        2.        1.        0.

     ***          ***          ***          ***          ***

                    HYDROGRAPH AT STATION    CENTER

   TOTAL RAINFALL =    2.74, TOTAL LOSS =     .82, TOTAL EXCESS =    1.92

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                   6-HR        24-HR        72-HR      49.92-HR
+   (CFS)       (HR)
                          (CFS)
+    274.      12.50                 53.          18.           9.           9.
                        (INCHES)   1.408        1.917        1.917        1.917
                        (AC-FT)      26.          36.          36.          36.

                    CUMULATIVE AREA =     .35 SQ MI
```

** ***

```
          ***************
          *             *
 270 KK   *   RT CPE    *        ROUTE CENTER STREET FLOWS TO CPE
          *             *
          ***************
```

HYDROGRAPH ROUTING DATA

271 RD MUSKINGUM-CUNGE CHANNEL ROUTING

L	4315.	CHANNEL LENGTH
S	.0330	SLOPE
N	.020	CHANNEL ROUGHNESS COEFFICIENT
CA	.00	CONTRIBUTING AREA
SHAPE	TRAP	CHANNEL SHAPE
WD	60.00	BOTTOM WIDTH OR DIAMETER
Z	1.00	SIDE SLOPE

***

COMPUTED MUSKINGUM-CUNGE PARAMETERS

COMPUTATION TIME STEP

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	1.04	1.61	5.00	1438.33	274.84	750.00	1.92	10.75

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	1.04	1.61	5.00		274.84	750.00	1.92

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3578E+02 EXCESS= .0000E+00 OUTFLOW= .3579E+02 BASIN STORAGE= .5626E-02 PERCENT ERROR= .0

*** *** *** *** ***

HYDROGRAPH AT STATION RT CPE

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 275.	12.50		53.	18.	9.	9.
		(INCHES)	1.409	1.917	1.917	1.917
		(AC-FT)	26.	36.	36.	36.

CUMULATIVE AREA = .35 SQ MI

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*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

          **************
          *            *
272 KK    *         9  *     WATERSHED 9 (AREA SOUTH OF I80 AND NORTH OF RAILROAD)
          *            *
          **************

             SUBBASIN RUNOFF DATA

273 BA         SUBBASIN CHARACTERISTICS
                    TAREA          .14  SUBBASIN AREA

               PRECIPITATION DATA

259 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
               ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
               5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 .34     .66    1.17    1.33    1.45    1.71    2.23    2.74     .00     .00     .00     .00

                                                  STORM AREA =      .00

274 LS         SCS LOSS RATE
                    STRTL          .20  INITIAL ABSTRACTION
                   CRVNBR        91.00  CURVE NUMBER
                    RTIMP          .00  PERCENT IMPERVIOUS AREA

    UD         SCS DIMENSIONLESS UNITGRAPH
                     TLAG          .50  LAG

                                                               ***

                                                      UNIT HYDROGRAPH
                                                  32 END-OF-PERIOD ORDINATES
                9.        26.        53.        89.       116.       128.       128.       118.       102.        82.
               60.        47.        36.        29.        23.        17.        14.        11.         8.         6.
                5.         4.         3.         2.         2.         1.         1.         1.         1.         0.
                0.         0.

      ***             ***             ***             ***             ***

                    HYDROGRAPH AT STATION        9

  TOTAL RAINFALL =    2.74, TOTAL LOSS =     .91, TOTAL EXCESS =    1.83

 PEAK FLOW      TIME                            MAXIMUM AVERAGE FLOW
                                        6-HR        24-HR        72-HR      49.92-HR

+  (CFS)       (HR)
                           (CFS)
+      96.    12.58                      21.           7.           3.           3.
                         (INCHES)      1.355        1.830        1.830        1.830
                          (AC-FT)        10.          14.          14.          14.

                         CUMULATIVE AREA =      .14 SQ MI
```

*** ***

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          **************
          *            *
276 KK    *    CP-7    *     COMBINE RT-9 AND WATERSHED 9
          *            *
          **************

277 HC          HYDROGRAPH COMBINATION
                    ICOMP            3  NUMBER OF HYDROGRAPHS TO COMBINE

                                                         ***

    ***          ***          ***          ***          ***

                    HYDROGRAPH AT STATION     CP-7
```

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 1381.	13.25		500.	176.	85.	85.
		(INCHES)	.911	1.280	1.281	1.281
		(AC-FT)	248.	349.	349.	349.

CUMULATIVE AREA = 5.10 SQ MI

*** ***

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          **************
          *            *
278 KK    *   CPALL    *
          *            *
          **************

279 HC          HYDROGRAPH COMBINATION
                    ICOMP            2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                         ***

    ***          ***          ***          ***          ***

                    HYDROGRAPH AT STATION     CPALL
```

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 2232.	13.25		912.	386.	194.	194.
		(INCHES)	.622	1.053	1.099	1.099
		(AC-FT)	452.	766.	799.	799.

CUMULATIVE AREA = 13.64 SQ MI

1

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+ HYDROGRAPH AT	UPEA	683.	13.33	263.	83.	40.	2.41		
+ ROUTED TO	UPVDAM	68.	19.33	68.	42.	21.	2.41		
+								5002.87	19.33
+ ROUTED TO	RTLPEA	75.	14.83	68.	42.	21.	2.41		
+ HYDROGRAPH AT	SPROUT	299.	12.50	59.	18.	9.	.50		
+ ROUTED TO	RTLPEA	295.	12.58	59.	18.	9.	.50		
+ HYDROGRAPH AT	LPEA	354.	12.42	57.	18.	9.	.37		
+ 3 COMBINED AT	CPLPEA	600.	12.50	152.	77.	38.	3.28		
+ ROUTED TO	LPVDAM	78.	24.33	78.	66.	33.	3.28		
+								4757.30	24.42
+ ROUTED TO	RT ELM	111.	13.08	78.	66.	33.	3.28		
+ HYDROGRAPH AT	ELM	344.	12.67	77.	24.	12.	.48		
+ 2 COMBINED AT	CP ELM	344.	12.67	140.	88.	44.	3.77		
+ HYDROGRAPH AT	EWASH	477.	13.67	219.	71.	34.	2.15		
+ ROUTED TO	EWDAM	256.	14.83	120.	45.	22.	2.15		
+								4850.92	14.83
+ ROUTED TO	WWDAM	255.	14.92	120.	45.	22.	2.15		
+ HYDROGRAPH AT	WWASH	421.	13.08	138.	43.	21.	1.13		
+ 2 COMBINED AT	CPWWSH	421.	13.08	232.	88.	43.	3.28		
ROUTED TO									

+		WWDAM	60.	23.33	60.	53.	26.	3.28		
+									4758.60	23.50
	ROUTED TO									
+		RTVINE	85.	15.67	60.	53.	26.	3.28		
	HYDROGRAPH AT									
+		VINE	680.	12.67	163.	52.	25.	.98		
	HYDROGRAPH AT									
+		WASH	79.	12.25	11.	3.	2.	.06		
	ROUTED TO									
+		RTVINE	78.	12.33	11.	3.	2.	.06		
	3 COMBINED AT									
+		CPVINE	712.	12.67	195.	101.	52.	4.32		
	HYDROGRAPH AT									
+		STAR	193.	12.08	13.	4.	2.	.07		
	HYDROGRAPH AT									
+		KYSUMP	55.	12.17	5.	2.	1.	.03		
	2 COMBINED AT									
+		CPKYSR	234.	12.08	18.	6.	3.	.09		
	ROUTED TO									
+		RTPV	192.	12.17	18.	6.	3.	.09		
	3 COMBINED AT									
+		CP PV	1078.	12.67	351.	194.	99.	8.18		
	ROUTED TO									
+		RT CPW	1079.	12.75	351.	194.	99.	8.18		
	HYDROGRAPH AT									
+		RALSTN	35.	12.17	3.	1.	0.	.02		
	ROUTED TO									
+		RT CPW	36.	12.50	3.	1.	0.	.02		
	HYDROGRAPH AT									
+		SIERRA	31.	12.17	3.	1.	0.	.02		
	ROUTED TO									
+		RT CPW	32.	12.42	3.	1.	0.	.02		
	HYDROGRAPH AT									
+		VA ST	33.	12.17	3.	1.	0.	.02		
	ROUTED TO									
+		RT CPW	36.	12.42	3.	1.	0.	.02		
	HYDROGRAPH AT									
+		DTW	268.	12.58	55.	18.	9.	.30		
	5 COMBINED AT									
+		CPW	1359.	12.67	413.	213.	109.	8.53		

	ROUTED TO							
+		RTEAST	1347.	12.75	413.	213.	109.	8.53
	HYDROGRAPH AT							
+		E	393.	13.00	132.	43.	21.	1.29
	ROUTED TO							
+		RT-1A	391.	13.00	132.	43.	21.	1.29
	ROUTED TO							
+		RT-1B	391.	13.08	132.	43.	21.	1.29
	ROUTED TO							
+		RT-1C	390.	13.08	132.	43.	21.	1.29
	ROUTED TO							
+		RT-1E	390.	13.08	132.	43.	21.	1.29
	HYDROGRAPH AT							
+		A	248.	12.92	78.	26.	12.	.85
	HYDROGRAPH AT							
+		F	124.	12.42	24.	8.	4.	.32
	3 COMBINED AT							
+		CP-1	667.	12.92	233.	77.	37.	2.46
	ROUTED TO							
+		RT-2A	667.	13.00	233.	77.	37.	2.46
	ROUTED TO							
+		RT-2B	667.	13.00	233.	77.	37.	2.46
	ROUTED TO							
+		RT-2C	665.	13.08	233.	77.	37.	2.46
	HYDROGRAPH AT							
+		B	261.	12.50	55.	18.	9.	.54
	2 COMBINED AT							
+		CP-2	787.	12.92	286.	94.	45.	3.00
	ROUTED TO							
+		RT-3A	786.	12.92	286.	94.	45.	3.00
	ROUTED TO							
+		RT-3B	785.	13.00	286.	94.	45.	3.00
	ROUTED TO							
+		RT-3C	785.	13.00	286.	94.	45.	3.00
	ROUTED TO							
+		RT-3D	783.	13.00	286.	94.	45.	3.00
	HYDROGRAPH AT							
+		G	137.	12.58	33.	11.	5.	.43
	2 COMBINED AT							
+		CP-3	879.	12.92	319.	105.	51.	3.43

	ROUTED TO									
+		RT-4A	877.	12.92	318.	105.	51.	3.43		
	ROUTED TO									
		RT-4B	878.	13.00	318.	105.	51.	3.43		
	HYDROGRAPH AT									
+		C	163.	12.67	42.	14.	7.	.40		
	2 COMBINED AT									
+		CP-4	1008.	12.92	358.	119.	57.	3.82		
	ROUTED TO									
+		MCCARR	1007.	13.00	358.	119.	57.	3.82		
+									4666.23	13.00
	ROUTED TO									
+		RT-5	1010.	13.08	358.	119.	57.	3.82		
	HYDROGRAPH AT									
+		D	245.	12.67	61.	20.	10.	.56		
	2 COMBINED AT									
+		CP-5	1172.	13.00	415.	139.	67.	4.38		
	ROUTED TO									
+		SIERRA	1175.	13.08	411.	139.	67.	4.38		
+									4601.25	13.08
	ROUTED TO									
+		RT-8	1226.	13.25	411.	139.	67.	4.38		
	HYDROGRAPH AT									
+		8	162.	12.58	35.	12.	6.	.23		
	2 COMBINED AT									
+		CP-6	1303.	13.00	438.	151.	72.	4.61		
	ROUTED TO									
+		RT-9A	1285.	13.33	438.	151.	72.	4.61		
	HYDROGRAPH AT									
+		CENTER	274.	12.50	53.	18.	9.	.35		
	ROUTED TO									
+		RT CPE	275.	12.50	53.	18.	9.	.35		
	HYDROGRAPH AT									
+		9	96.	12.58	21.	7.	3.	.14		
	3 COMBINED AT									
+		CP-7	1381.	13.25	500.	176.	85.	5.10		
	2 COMBINED AT									
+		CPALL	2232.	13.25	912.	386.	194.	13.64		

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

INTERPOLATED TO
COMPUTATION INTERVAL

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
RTLPEA	MANE	5.00	75.04	890.00	.67	5.00	75.04	890.00	.67

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8571E+02 EXCESS= .0000E+00 OUTFLOW= .8571E+02 BASIN STORAGE= .7929E-01 PERCENT ERROR= -.1

RTLPEA	MANE	4.92	295.58	757.21	1.35	5.00	294.91	755.00	1.35

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3631E+02 EXCESS= .0000E+00 OUTFLOW= .3633E+02 BASIN STORAGE= .5013E-02 PERCENT ERROR= .0

RT ELM	MANE	5.00	111.50	785.00	.77	5.00	111.50	785.00	.77

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1341E+03 EXCESS= .0000E+00 OUTFLOW= .1342E+03 BASIN STORAGE= .1511E+00 PERCENT ERROR= -.2

WWDAM	MANE	1.81	255.93	893.31	.78	5.00	255.04	895.00	.78

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8990E+02 EXCESS= .0000E+00 OUTFLOW= .8991E+02 BASIN STORAGE= .1553E-02 PERCENT ERROR= .0

RTVINE	MANE	5.00	84.86	940.00	.60	5.00	84.86	940.00	.60

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1057E+03 EXCESS= .0000E+00 OUTFLOW= .1058E+03 BASIN STORAGE= .1242E-01 PERCENT ERROR= -.1

RTVINE	MANE	1.69	79.20	737.33	2.13	5.00	78.22	740.00	2.13

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6824E+01 EXCESS= .0000E+00 OUTFLOW= .6824E+01 BASIN STORAGE= .9456E-03 PERCENT ERROR= .0

RTPV	MANE	1.94	219.66	727.64	2.36	5.00	191.87	730.00	2.36

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1195E+02 EXCESS= .0000E+00 OUTFLOW= .1194E+02 BASIN STORAGE= .2284E-03 PERCENT ERROR= .1

RT CPW	MANE	5.00	1078.59	765.00	.94	5.00	1078.59	765.00	.94

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4093E+03 EXCESS= .0000E+00 OUTFLOW= .4093E+03 BASIN STORAGE= .1715E+00 PERCENT ERROR= .0

RT CPW	MANE	5.00	35.89	750.00	2.14	5.00	35.89	750.00	2.14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2047E+01 EXCESS= .0000E+00 OUTFLOW= .2057E+01 BASIN STORAGE= .8935E-02 PERCENT ERROR= -.9

RT CPW	MANE	5.00	32.05	745.00	2.14	5.00	32.05	745.00	2.14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1831E+01 EXCESS= .0000E+00 OUTFLOW= .1839E+01 BASIN STORAGE= .7828E-02 PERCENT ERROR= -.8

RT CPW MANE 5.00 35.71 745.00 2.14 5.00 35.71 745.00 2.14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1922E+01 EXCESS= .0000E+00 OUTFLOW= .1929E+01 BASIN STORAGE= .7244E-02 PERCENT ERROR= -.7

RTEAST MANE 2.64 1353.09 763.65 .99 5.00 1347.37 765.00 .99

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4505E+03 EXCESS= .0000E+00 OUTFLOW= .4504E+03 BASIN STORAGE= .5510E-01 PERCENT ERROR= .0

RT-1A MANE 1.88 392.72 782.23 1.25 5.00 391.28 780.00 1.25

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8594E+02 EXCESS= .0000E+00 OUTFLOW= .8594E+02 BASIN STORAGE= .6806E-03 PERCENT ERROR= .0

RT-1B MANE .70 391.26 780.79 1.25 5.00 390.54 785.00 1.25

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8593E+02 EXCESS= .0000E+00 OUTFLOW= .8593E+02 BASIN STORAGE= .4823E-03 PERCENT ERROR= .0

RT-1C MANE .63 390.50 784.43 1.25 5.00 390.50 785.00 1.25

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8595E+02 EXCESS= .0000E+00 OUTFLOW= .8595E+02 BASIN STORAGE= .3748E-03 PERCENT ERROR= .0

RT-1E MANE 1.63 390.18 786.30 1.25 5.00 390.00 785.00 1.25

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8596E+02 EXCESS= .0000E+00 OUTFLOW= .8596E+02 BASIN STORAGE= .8070E-03 PERCENT ERROR= .0

RT-2A MANE .56 667.22 775.97 1.16 5.00 666.87 780.00 1.16

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1520E+03 EXCESS= .0000E+00 OUTFLOW= .1520E+03 BASIN STORAGE= .3354E-03 PERCENT ERROR= .0

RT-2B MANE 2.90 666.67 780.04 1.16 5.00 666.64 780.00 1.16

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1520E+03 EXCESS= .0000E+00 OUTFLOW= .1520E+03 BASIN STORAGE= .2594E-02 PERCENT ERROR= .0

RT-2C MANE 3.88 666.30 783.87 1.16 5.00 664.71 785.00 1.16

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1520E+03 EXCESS= .0000E+00 OUTFLOW= .1520E+03 BASIN STORAGE= .3519E-02 PERCENT ERROR= .0

RT-3A MANE 2.47 786.25 775.53 1.17 5.00 785.51 775.00 1.17

```
CONTINUITY SUMMARY (AC-FT) - INFLOW= .1873E+03 EXCESS= .0000E+00 OUTFLOW= .1873E+03 BASIN STORAGE= .2764E-02 PERCENT ERROR=    .0

          RT-3B  MANE        1.20    785.55    777.07     1.17     5.00    784.87    780.00       1.17

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1873E+03 EXCESS= .0000E+00 OUTFLOW= .1873E+03 BASIN STORAGE= .7907E-03 PERCENT ERROR=    .0

          RT-3C  MANE        1.13    784.57    780.35     1.17     5.00    784.55    780.00       1.17

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1874E+03 EXCESS= .0000E+00 OUTFLOW= .1874E+03 BASIN STORAGE= .8117E-03 PERCENT ERROR=    .0

          RT-3D  MANE        2.05    783.43    782.59     1.17     5.00    783.34    780.00       1.17

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1874E+03 EXCESS= .0000E+00 OUTFLOW= .1874E+03 BASIN STORAGE= .1595E-02 PERCENT ERROR=    .0

          RT-4A  MANE        3.42    878.22    776.81     1.14     5.00    877.43    775.00       1.14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2088E+03 EXCESS= .0000E+00 OUTFLOW= .2088E+03 BASIN STORAGE= .3290E-02 PERCENT ERROR=    .0

          RT-4B  MANE        5.00    877.61    780.00     1.14     5.00    877.61    780.00       1.14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2088E+03 EXCESS= .0000E+00 OUTFLOW= .2088E+03 BASIN STORAGE= .1963E-02 PERCENT ERROR=    .0

           RT-5  MANE        5.00   1009.75    785.00     1.16     5.00   1009.75    785.00       1.16

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2358E+03 EXCESS= .0000E+00 OUTFLOW= .2359E+03 BASIN STORAGE= .2963E-02 PERCENT ERROR=    .0

           RT-8  MANE        5.00   1226.29    795.00     1.18     5.00   1226.29    795.00       1.18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2751E+03 EXCESS= .0000E+00 OUTFLOW= .2752E+03 BASIN STORAGE= .4815E-02 PERCENT ERROR=    .0

          RT-9A  MANE        5.00   1285.19    800.00     1.22     5.00   1285.19    800.00       1.22

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2987E+03 EXCESS= .0000E+00 OUTFLOW= .2987E+03 BASIN STORAGE= .9759E-02 PERCENT ERROR=    .0

         RT CPE  MANE        5.00    274.84    750.00     1.92     5.00    274.84    750.00       1.92

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3578E+02 EXCESS= .0000E+00 OUTFLOW= .3579E+02 BASIN STORAGE= .5626E-02 PERCENT ERROR=    .0
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*** NORMAL END OF HEC-1 ***

Parsons Transportation Group Inc. / HNTB Corporation
Joint Venture Design Team for the Tutor – Saliba Team

COMP. INDEX NO. | REV. NO.

SUBJECT: 2ND ST DET. SHEET NO. ____ OF ____

MADE BY ZRB DATE 4/1/03 CHECKED BY ____ DATE ____

Q out

	INLET 4526.84 24" RCP SYSTEM	INLET 4526.5 36" SYSTEM	
4523	0	0	
4524	0	0	
4525	0	0	
4526	0	0	
4527	37 cfs	75 cfs	112
4528	38 cfs	88 cfs	126
4529.5	40 cfs	106 cfs	
4528.64	39 cfs	96 cfs	134

Weir

4528.25	78
4528.50	221
4528.75	406
4529.5	

Worksheet 2: Runoff curve number

oject: ReTRAC | By: ZRB | Date: 3/4/2003

Location: Basin 2ND STREET | Chk | Date:

Mark One   Existing X   Developed X

Runoff curve number (CN)

Soil Name and hydrologic group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connectiod impervious area ratio)	CN 1 per line Table 2-2	Fig. 2-3	Fig. 2-4	Area Mark 1 acres sq. mi. percent	Product of CN X area
A	SEE COMPOSITE CURVE NUMBER LAND USE SHEETS	74.1			0%	0.00
B		83.2			19%	16.18
C		88.3			2%	1.55
D		91.1			79%	71.78
		Totals =			100%	89.514579

CN (weighted) = (total product) / (total area) = 89.514579   Use CN = 90

Worksheet 2: Runoff curve number

Project: ReTRAC By: ZRB Date: 3/4/2003

Location: Basin West Keystone Chk Date:

Mark One Existing X Developed X

Runoff curve number (CN)

Soil Name and hydrologic group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connectiod impervious area ratio)	CN 1 per line Table 2-2	Fig. 2-3	Fig. 2-4	Area Mark 1 acres sq. mi. percent	Product of CN X area
A	SEE COMPOSITE CURVE NUMBER LAND USE SHEETS	83.6			0%	0.00
B		89			83%	73.66
C		92.1			2%	2.03
D		93.6			15%	14.06
		Totals =			100%	89.759547

CN (weighted) = (total product) / (total area) = 89.759547 Use CN = 90

Worksheet 2: Runoff curve number

Project: ReTRAC | By: ZRB | Date: 3/4/2003

Location: Basin UPPER PEAVINE | Chk | Date:

Mark One Existing X Developed X

Runoff curve number (CN)

Soil Name and hydrologic group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connectiod impervious area ratio)	CN 1 per line			Area Mark 1 acres sq. mi. percent	Product of CN X area
		Table 2-2	Fig. 2-3	Fig. 2-4		
A	SEE COMPOSITE CURVE NUMBER LAND USE SHEETS	39.7			0%	0.05
B		61.5			1%	0.63
C		73.3			10%	7.09
D		82.2			89%	73.30
		Totals =			100%	81.07274

CN (weighted) = (total product) / (total area) = 81.07274 Use CN = 81

Worksheet 2: Runoff curve number

Project: ReTRAC By: ZRB Date: 3/4/2003

Location: Basin SPROUT Chk Date:

Mark One Existing X Developed X

Runoff curve number (CN)

Soil Name and hydrologic group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connectiod impervious area ratio)	CN 1 per line Table 2-2	Fig. 2-3	Fig. 2-4	Area Mark 1 acres sq. mi. percent	Product of CN X area
A	SEE COMPOSITE CURVE NUMBER LAND USE SHEETS	54.1			3%	1.62
B		70.6			6%	4.56
C		79.7			36%	28.34
D		85.7			55%	47.13
		Totals =			100%	81.645693

CN (weighted) = (total product) / (total area) = 81.645693 Use CN = **82**

Worksheet 2: Runoff curve number

Project: ReTRAC | By: ZRB | Date: 3/4/2003

Location: Basin LOWER PEAVINE | Chk | Date:

Mark One | Existing X | Developed X

Runoff curve number (CN)

Soil Name and hydrologic group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connectiod impervious area ratio)	CN 1 per line Table 2-2	Fig. 2-3	Fig. 2-4	Area Mark 1 acres sq. mi. percent	Product of CN X area
A	SEE COMPOSITE CURVE NUMBER LAND USE SHEETS	63.3			0%	0.00
B		76.3			0%	0.17
C		83.8			0%	0.00
D		87.9			100%	87.71
		Totals =			100%	87.874677

CN (weighted) = (total product) / (total area) = 87.874677 Use CN = 88

Worksheet 2: Runoff curve number

Project: ReTRAC By: ZRB Date: 3/4/2003

Location: Basin LOWER ~~PEAVINE~~ ELMCREST Chk Date:

Mark One Existing X Developed X

Runoff curve number (CN)

Soil Name and hydrologic group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connectiod impervious area ratio)	CN 1 per line Table 2-2	Fig. 2-3	Fig. 2-4	Area Mark 1 acres sq. mi. percent	Product of CN X area
A	SEE COMPOSITE CURVE NUMBER LAND USE SHEETS	71.6			0%	0.00
B		81.6			15%	12.61
C		87.4			0%	0.29
D		90.2			84%	75.96
		Totals =			100%	88.861852

CN (weighted) = (total product) / (total area) = 88.861852 Use CN = 89

Worksheet 2: Runoff curve number

Project: ReTRAC By: ZRB Date: 3/4/2003

Location: Basin EAST WASH Chk Date:

Mark One Existing X Developed X

Runoff curve number (CN)

Soil Name and hydrologic group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connectiod impervious area ratio)	CN 1 per line Table 2-2	Fig. 2-3	Fig. 2-4	Area Mark 1 acres sq. mi. percent	Product of CN X area
A	SEE COMPOSITE CURVE NUMBER LAND USE SHEETS	39.7			1%	0.20
B		61.4			2%	0.96
C		73.3			14%	10.41
D		82.2			84%	68.83
		Totals =			100%	80.398537

CN (weighted) = (total product) / (total area) = 80.398537 Use CN = 80

Worksheet 2: Runoff curve number

Project: ReTRAC By: ZRB Date: 3/4/2003

Location: Basin WEST WASH Chk Date:

Mark One Existing X Developed X

Runoff curve number (CN)

Soil Name and hydrologic group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connectiod impervious area ratio)	CN 1 per line			Area Mark 1 acres sq. mi. percent	Product of CN X area
		Table 2-2	Fig. 2-3	Fig. 2-4		
A	SEE COMPOSITE CURVE NUMBER LAND USE SHEETS	46.1			0%	0.19
B		65.5			1%	0.62
C		76.1			9%	7.00
D		83.8			89%	74.94
		Totals =			100%	82.760307

CN (weighted) = (total product) / (total area) = 82.760307 Use CN = 83

Worksheet 2: Runoff curve number

Project: ReTRAC By: ZRB Date: 3/4/2003

Location: Basin VINE Chk Date:

Mark One Existing X Developed X

Runoff curve number (CN)

Soil Name and hydrologic group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connectiod impervious area ratio)	CN 1 per line			Area Mark 1 acres sq. mi. percent	Product of CN X area
		Table 2-2	Fig. 2-3	Fig. 2-4		
A	SEE COMPOSITE CURVE NUMBER LAND USE SHEETS	71.5			1%	0.97
B		81.6			3%	2.28
C		87.3			1%	1.21
D		90.1			94%	85.11
		Totals =			100%	89.57029

CN (weighted) = (total product) / (total area) = 89.57029 Use CN = 90

Worksheet 2: Runoff curve number

Project: ReTRAC By: ZRB Date: 3/4/2003

Location: Basin WASHINGTON Chk Date:

Mark One Existing X Developed X

Runoff curve number (CN)

Soil Name and hydrologic group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connectiod impervious area ratio)	CN 1 per line Table 2-2	Fig. 2-3	Fig. 2-4	Area Mark 1 acres sq. mi. percent	Product of CN X area
A	SEE COMPOSITE CURVE NUMBER LAND USE SHEETS	76.2			0%	0.00
B		84.4			0%	0.32
C		89.2			0%	0.01
D		92.2			100%	91.84
		Totals =			100%	92.170182

CN (weighted) = (total product) / (total area) = 92.170182 Use CN = 92

Worksheet 2: Runoff curve number

Project: ReTRAC | By: ZRB | Date: 3/4/2003

Location: Basin STARLIGHT | Chk | Date:

Mark One | Existing X | Developed X

Runoff curve number (CN)

Soil Name and hydrologic group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connectiod impervious area ratio)	CN 1 per line			Area Mark 1 acres sq. mi. percent	Product of CN X area
		Table 2-2	Fig. 2-3	Fig. 2-4		
A	SEE COMPOSITE CURVE NUMBER LAND USE SHEETS	82.2			0%	0.00
B		88.2			0%	0.00
C		91.8			0%	0.39
D		93.4			100%	93.00
		Totals =			100%	93.393161

CN (weighted) = (total product) / (total area) = 93.393161 | Use CN = 93

Worksheet 2: Runoff curve number

Project: ReTRAC By: ZRB Date: 3/4/2003

Location: Basin RALSTON Chk Date:

Mark One Existing X Developed X

Runoff curve number (CN)

Soil Name and hydrologic group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connectiod impervious area ratio)	CN 1 per line			Area Mark 1 acres sq. mi. percent	Product of CN X area
		Table 2-2	Fig. 2-3	Fig. 2-4		
A	SEE COMPOSITE CURVE NUMBER LAND USE SHEETS	78.9			0%	0.00
B		86.1			1%	1.20
C		90.5			0%	0.03
D		92.4			99%	91.09
		Totals =			100%	92.311743

CN (weighted) = (total product) / (total area) = 92.311743 Use CN = 92

Worksheet 2: Runoff curve number

Project: ReTRAC By: ZRB Date: 3/4/2003

Location: Basin SIERRA Chk Date:

Mark One Existing X Developed X

Runoff curve number (CN)

Soil Name and hydrologic group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connectiod impervious area ratio)	CN 1 per line Table 2-2	Fig. 2-3	Fig. 2-4	Area Mark 1 acres sq. mi. percent	Product of CN X area
A	SEE COMPOSITE CURVE NUMBER LAND USE SHEETS	82.2			0%	0.00
B		88.3			25%	22.33
C		91.8			4%	3.36
D		93.4			71%	66.36
		Totals =			100%	92.051579

CN (weighted) = (total product) / (total area) = 92.051579 Use CN = 92

Worksheet 2: Runoff curve number

Project: ReTRAC By: ZRB Date: 3/4/2003

Location: Basin VIRGINIA Chk Date:

Mark One Existing X Developed X

Runoff curve number (CN)

Soil Name, and hydrologic group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connectiod impervious area ratio)	CN 1 per line			Area Mark 1 acres sq. mi. percent	Product of CN X area
		Table 2-2	Fig. 2-3	Fig. 2-4		
A	SEE COMPOSITE CURVE NUMBER LAND USE SHEETS	84.1			0%	0.00
B		89.4			43%	38.16
C		92.6			4%	3.36
D		94			54%	50.47
		Totals =			100%	91.985897

CN (weighted) = (total product) / (total area) = 91.985897 Use CN = 92

Worksheet 2: Runoff curve number

Project: ReTRAC | By: ZRB | Date: 3/4/2003

Location: Basin Downtonw West | Chk | Date:

Mark One Existing X Developed X

Runoff curve number (CN)

Soil Name and hydrologic group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connectiod impervious area ratio)	CN 1 per line Table 2-2	Fig. 2-3	Fig. 2-4	Area Mark 1 acres sq. mi. percent	Product of CN X area
A	SEE COMPOSITE CURVE NUMBER LAND USE SHEETS	89.4			0%	0.00
B		92.8			93%	86.30
C		94.8			2%	1.90
D		95.7			5%	4.79
		Totals =			100%	92.985

CN (weighted) = (total product) / (total area) = 92.985 Use CN = 93

Worksheet 2: Runoff curve number

Project: ReTRAC By: ZRB Date: 3/4/2003

Location: Basin EVANS AVE Chk Date:

Mark One Existing X Developed X

Runoff curve number (CN)

Soil Name and hydrologic group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connectiod impervious area ratio)	CN 1 per line Table 2-2	Fig. 2-3	Fig. 2-4	Area Mark 1 acres sq. mi. percent	Product of CN X area
A	SEE COMPOSITE CURVE NUMBER LAND USE SHEETS	51.4			2%	0.78
B		68.8			3%	1.86
C		78.5			14%	10.68
D		85			82%	69.84
		Totals =			100%	83.166389

CN (weighted) = (total product) / (total area) = 83.166389 Use CN = 83

Worksheet 2: Runoff curve number

Project:	ReTRAC	By: ZRB	Date: 3/4/2003
Location:	Basin LOWER EVANS	Chk	Date:

Mark One Existing X Developed X

Runoff curve number (CN)

Soil Name and hydrologic group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connectiod impervious area ratio)	CN 1 per line Table 2-2	CN 1 per line Fig. 2-3	CN 1 per line Fig. 2-4	Area Mark 1 acres sq. mi. percent	Product of CN X area
A	SEE COMPOSITE CURVE NUMBER LAND USE SHEETS	80.6			0%	0.13
B		87.3			7%	6.09
C		91.1			1%	0.86
D		93			92%	85.47
		Totals =			100%	92.563543

CN (weighted) = (total product) / (total area) = 92.563543 Use CN = 93

Worksheet 2: Runoff curve number

Project: ReTRAC | By: ZRB | Date: 3/4/2003

Location: Basin RANCHO | Chk | Date:

Mark One | Existing X | Developed X

Runoff curve number (CN)

Soil Name and hydrologic group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connectiod impervious area ratio)	CN 1 per line Table 2-2	Fig. 2-3	Fig. 2-4	Area Mark 1 acres sq. mi. percent	Product of CN X area
A	SEE COMPOSITE CURVE NUMBER LAND USE SHEETS	68.5			0%	0.06
B		79.6			0%	0.29
C		86.1			1%	0.52
D		89.5			99%	88.55
		Totals =			100%	89.424502

CN (weighted) = (total product) / (total area) = 89.424502 Use CN = 89

Worksheet 2: Runoff curve number

Project: ReTRAC By: ZRB Date: 3/4/2003

Location: Basin CENTER Chk Date:

Mark One Existing X Developed X

Runoff curve number (CN)

Soil Name and hydrologic group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connectiod impervious area ratio)	CN 1 per line			Area Mark 1 acres sq. mi. percent	Product of CN X area
		Table 2-2	Fig. 2-3	Fig. 2-4		
A	SEE COMPOSITE CURVE NUMBER LAND USE SHEETS	77.2			0%	0.00
B		85.1			2%	1.40
C		89.6			1%	0.75
D		91.8			98%	89.52
		Totals =			100%	91.671125

CN (weighted) = (total product) / (total area) = 91.671125 Use CN = 92

Worksheet 2: Runoff curve number

Project: ReTRAC By: ZRB Date: 3/4/2003

Location: Basin DOWNTOWN EAST Chk Date:

Mark One Existing X Developed X

Runoff curve number (CN)

Soil Name and hydrologic group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connectiod impervious area ratio)	CN 1 per line Table 2-2	CN 1 per line Fig. 2-3	CN 1 per line Fig. 2-4	Area Mark 1 acres sq. mi. percent	Product of CN X area
A	SEE COMPOSITE CURVE NUMBER LAND USE SHEETS	88.8			0%	0.00
B		92.3			93%	86.23
C		94.2			3%	2.48
D		95.2			4%	3.76
		Totals =			100%	92.464553

CN (weighted) = (total product) / (total area) = 92.464553 **Use CN =** 92

ReTRAC Existing Conditions HEC-1 Composite Curve Numbers

Basin	Field description	CN designation	Area	% cover by area	Curve number A	B	C	D	Product CN*Area CN*A	CN*B	CN*C	CN*D
EAST WASH	010	Mixed Grass & Shrub	688549.84	1.15	39	61	73	82	0.4	0.7	0.8	0.9
	012	Mixed Grass & Shrub	58296289.13	97.37	39	61	73	82	38.0	59.4	71.1	79.8
	019	Parks	49978.36	0.08	41	62	75	81	0.0	0.1	0.1	0.1
	020	Res. 1/4 acre	119140.55	0.20	61	75	83	87	0.1	0.1	0.2	0.2
	024	Parks	9436.21	0.02	41	62	75	81	0.0	0.0	0.0	0.0
	040	Commercial, Neigh.	9367.78	0.02	80	87	91	93	0.0	0.0	0.0	0.0
	071	Gravel	200000.56	0.33	76	85	89	91	0.3	0.3	0.3	0.3
	Right of Way	100% Paved	497779.4	0.83	98	98	98	98	0.8	0.8	0.8	0.8
				100.00					39.7	61.4	73.3	82.2
	Total Area		59870541.83									

Basin	Field description	CN designation	Area	% cover by area	Curve number A	B	C	D	Product CN*Area CN*A	CN*B	CN*C	CN*D
UPPER PEAVINE	010	Mixed Grass and Shrub	8136398.5	12.11	39	61	73	82	4.7	7.4	8.8	9.9
	012	Mixed Grass and Shrub	56176802.05	83.62	39	61	73	82	32.6	51.0	61.0	68.6
	017	Mixed Grass and Shrub	1045849.39	1.56	39	61	73	82	0.6	0.9	1.1	1.3
	020	1/4 Acre Res.	1565437.15	2.33	61	75	83	87	1.4	1.7	1.9	2.0
	Right of Way	100% Paved	253745	0.38	98	98	98	98	0.4	0.4	0.4	0.4
				100.00					39.7	61.5	73.3	82.2
	Total Area		67178232									

Basin	Field description	CN designation	Area	% cover by area	Curve number A	B	C	D	Product CN*Area CN*A	CN*B	CN*C	CN*D
EVANS AVE	010	Mixed Grass & Shrub	10619906.24	9.15	39	61	73	82	3.6	5.6	6.7	7.5
	011	Mixed Grass & Shrub	7951515.78	6.85	39	61	73	82	2.7	4.2	5.0	5.6
	012	Mixed Grass & Shrub	39326641.4	33.89	39	61	73	82	13.2	20.7	24.7	27.8

	013	Mixed Grass & Shrub	2833704.24	2.44	39	61	73	82	1.0	1.5	1.8	2.0
	014	Mixed Grass & Shrub	448501.43	0.39	39	61	73	82	0.2	0.2	0.3	0.3
	015	Mixed Grass & Shrub	3050092.69	2.63	39	61	73	82	1.0	1.6	1.9	2.2
	016	Mixed Grass & Shrub	157246.31	0.14	39	61	73	82	0.1	0.1	0.1	0.1
	017	Mixed Grass & Shrub	1976428.39	1.70	39	61	73	82	0.7	1.0	1.2	1.4
	018	Mixed Grass & Shrub	963940.67	0.83	39	61	73	82	0.3	0.5	0.6	0.7
	019	Parks	12474670.38	10.75	41	62	75	81	4.4	6.7	8.1	8.7
	020	Res. 1/4 acre	6998708.18	6.03	61	75	83	87	3.7	4.5	5.0	5.2
	021	Res. 1/4 acre	2212.72	0.00	61	75	83	87	0.0	0.0	0.0	0.0
	022	Res. 1/4 acre	1477913.69	1.27	61	75	83	87	0.8	1.0	1.1	1.1
	023	Res. 1/4 acre	4000239.47	3.45	61	75	83	87	2.1	2.6	2.9	3.0
	024	Parks	1290679.1	1.11	41	62	75	81	0.5	0.7	0.8	0.9
	031	Res. Multi-Unit	491179.96	0.42	77	85	90	92	0.3	0.4	0.4	0.4
	032	Res. Multi-Unit	329416.7	0.28	77	85	90	92	0.2	0.2	0.3	0.3
	033	Res. Multi-Unit	103715.16	0.09	77	85	90	92	0.1	0.1	0.1	0.1
	035	Res. Multi-Unit	1540370.47	1.33	77	85	90	92	1.0	1.1	1.2	1.2
	040	Commercial, Neigh.	1034810.41	0.89	80	87	91	93	0.7	0.8	0.8	0.8
	041	Commercial, Neigh.	186147.63	0.16	80	87	91	93	0.1	0.1	0.1	0.1
	042	Commercial, Neigh.	6567.66	0.01	80	87	91	93	0.0	0.0	0.0	0.0
	050	Industrial	4539925.34	3.91	81	88	91	93	3.2	3.4	3.6	3.6
	051	Industrial	276850.83	0.24	81	88	91	93	0.2	0.2	0.2	0.2
	070	Gravel	1653143.54	1.42	76	85	89	91	1.1	1.2	1.3	1.3
	Right of Way	100% Paved	12311671.46	10.61	98	98	98	98	10.4	10.4	10.4	10.4
				100.00					51.4	68.8	78.5	85.0
	Total Area	116046199.9										

Basin	Field description	CN designation	Area	% cover by area	Curve number A	B	C	D	Product CN*Area CN*A	CN*B	CN*C	CN*D
DOWNTOWN WEST												
	013	Gravel	50375.47	0.61	76	85	89	91	0.5	0.5	0.5	0.6
	014	Gravel	228507.32	2.75	76	85	89	91	2.1	2.3	2.4	2.5
	015	Gravel	42691.28	0.51	76	85	89	91	0.4	0.4	0.5	0.5
	016	Gravel	1112.77	0.01	76	85	89	91	0.0	0.0	0.0	0.0
	017	Gravel	27284.10	0.33	76	85	89	91	0.2	0.3	0.3	0.3
	018	Gravel	677121.08	8.15	76	85	89	91	6.2	6.9	7.3	7.4
	020	Res. 1/4 acre	184701.61	2.22	61	75	83	87	1.4	1.7	1.8	1.9
	024	Parks	20975.99	0.25	41	62	75	81	0.1	0.2	0.2	0.2
	030	Res. Multi-Unit	43813.63	0.53	77	85	90	92	0.4	0.4	0.5	0.5

031	Res. Multi-Unit	44446.38	0.53	77	85	90	92	0.4	0.5	0.5	0.5
032	Res. Multi-Unit	137703.15	1.66	77	85	90	92	1.3	1.4	1.5	1.5
033	Res. Multi-Unit	69086.26	0.83	77	85	90	92	0.6	0.7	0.7	0.8
034	Res. Multi-Unit	214463.35	2.58	77	85	90	92	2.0	2.2	2.3	2.4
040	Commercial, Downtown	1541071.63	18.55	89	92	94	95	16.5	17.1	17.4	17.6
041	Commercial, Downtown	438244.53	5.27	89	92	94	95	4.7	4.9	5.0	5.0
042	Commercial, Downtown	951372.70	11.45	89	92	94	95	10.2	10.5	10.8	10.9
043	Commercial, Downtown	640967.08	7.71	89	92	94	95	6.9	7.1	7.3	7.3
044	Commercial, Downtown	449.88	0.01	89	92	94	95	0.0	0.0	0.0	0.0
050	Industrial	148590.81	1.79	81	88	91	93	1.4	1.6	1.6	1.7
Right of Way	100% Paved	2896943.26	34.86	98	98	98	98	34.2	34.2	34.2	34.2
			100.00					89.4	92.8	94.8	95.7
Total Area		8309546.81									

Basin	Field description	CN designation	Area	% cover by area	Curve number A	B	C	D	Product CN*Area CN*A	CN*B	CN*C	CN*D
CENTER	012	Gravel	666555.71	6.83	76	85	89	91	5.2	5.8	6.1	6.2
	013	Gravel	52367.71	0.54	76	85	89	91	0.4	0.5	0.5	0.5
	014	Gravel	9031.42	0.09	76	85	89	91	0.1	0.1	0.1	0.1
	016	Gravel	2842.72	0.03	76	85	89	91	0.0	0.0	0.0	0.0
	017	Gravel	232945.05	2.39	76	85	89	91	1.8	2.0	2.1	2.2
	018	Gravel	42279.57	0.43	76	85	89	91	0.3	0.4	0.4	0.4
	020	Res. 1/4 acre	3566427.87	36.55	61	75	83	87	22.3	27.4	30.3	31.8
	024	Parks	52945.45	0.54	41	62	75	81	0.2	0.3	0.4	0.4
	025	Res. Multi-Unit	23421.48	0.24	77	85	90	92	0.2	0.2	0.2	0.2
	030	Res. Multi-Unit	301331.29	3.09	77	85	90	92	2.4	2.6	2.8	2.8
	031	Res. Multi-Unit	132278.95	1.36	77	85	90	92	1.0	1.2	1.2	1.2
	032	Res. Multi-Unit	228952.38	2.35	77	85	90	92	1.8	2.0	2.1	2.2
	033	Res. Multi-Unit	89010.71	0.91	77	85	90	92	0.7	0.8	0.8	0.8
	034	Res. Multi-Unit	485143.38	4.97	77	85	90	92	3.8	4.2	4.5	4.6
	040	Commercial, Neigh.	1056747.41	10.83	80	87	91	93	8.7	9.4	9.9	10.1
	041	Commercial, Neigh.	26830.61	0.27	80	87	91	93	0.2	0.2	0.3	0.3
	043	Commercial, Downtown	17932.92	0.18	89	92	94	95	0.2	0.2	0.2	0.2
	070	Paved	241987.57	2.48	98	98	98	98	2.4	2.4	2.4	2.4
	Right of Way	100% Paved	2528795.50	25.92	98	98	98	98	25.4	25.4	25.4	25.4
				100.00					77.2	85.1	89.6	91.8
	Total Area		9757827.70									

Basin	Field description	CN designation	Area	% cover by area	Curve number A	B	C	D	Product CN*Area CN*A	CN*B	CN*C	CN*D
ELMCREST	012	Gravel	33621.21	0.25	76	85	89	91	0.2	0.2	0.2	0.2
	013	Gravel	7311.72	0.05	76	85	89	91	0.0	0.0	0.0	0.0
	014	Gravel	1513.13	0.01	76	85	89	91	0.0	0.0	0.0	0.0
	016	Gravel	55.29	0.00	76	85	89	91	0.0	0.0	0.0	0.0
	017	Gravel	36829.08	0.27	76	85	89	91	0.2	0.2	0.2	0.2
	018	Gravel	7491.34	0.06	76	85	89	91	0.0	0.0	0.0	0.1
	019	Parks	510661.56	3.78	41	62	75	81	1.6	2.3	2.8	3.1
	020	Res. 1/4 acre	7761038.41	57.47	61	75	83	87	35.1	43.1	47.7	50.0
	030	Res. Multi-Unit	88358.71	0.65	77	85	90	92	0.5	0.6	0.6	0.6
	032	Res. Multi-Unit	37166.22	0.28	77	85	90	92	0.2	0.2	0.2	0.3
	033	Res. Multi-Unit	29939.15	0.22	77	85	90	92	0.2	0.2	0.2	0.2
	034	Res. Multi-Unit	30729.89	0.23	77	85	90	92	0.2	0.2	0.2	0.2
	040	Commercial, Neigh.	1680864.84	12.45	80	87	91	93	10.0	10.8	11.3	11.6
	041	Commercial, Neigh.	128221.32	0.95	80	87	91	93	0.8	0.8	0.9	0.9
	070	Gravel	58756.12	0.44	76	85	89	91	0.3	0.4	0.4	0.4
	Right of Way	100% Paved	3092314.90	22.90	98	98	98	98	22.4	22.4	22.4	22.4
				100.00					71.6	81.6	87.4	90.2
	Total Area	13504872.89										

Basin	Field description	CN designation	Area	% cover by area	Curve number A	B	C	D	Product CN*Area CN*A	CN*B	CN*C	CN*D
LOWER EVANS	012	Gravel	54918.27	0.84	76	85	89	91	0.6	0.7	0.7	0.8
	013	Gravel	17587.90	0.27	76	85	89	91	0.2	0.2	0.2	0.2
	014	Gravel	356489.84	5.45	76	85	89	91	4.1	4.6	4.8	5.0
	017	Gravel	28328.28	0.43	76	85	89	91	0.3	0.4	0.4	0.4
	018	Gravel	125012.55	1.91	76	85	89	91	1.5	1.6	1.7	1.7
	019	Park	958.19	0.01	41	62	75	81	0.0	0.0	0.0	0.0
	020	1/4 Acre Res.	667552.35	10.20	61	75	83	87	6.2	7.7	8.5	8.9
	030	Multi Res.	85941.78	1.31	77	85	90	92	1.0	1.1	1.2	1.2
	031	Multi Res.	68900.89	1.05	77	85	90	92	0.8	0.9	0.9	1.0

032	Multi Res.	52737.65	0.81	77	85	90	92	0.6	0.7	0.7	0.7
033	Multi Res.	61083.48	0.93	77	85	90	92	0.7	0.8	0.8	0.9
034	Multi Res.	144089.08	2.20	77	85	90	92	1.7	1.9	2.0	2.0
040	Neighborhood Comm	3674447.87	56.15	80	87	91	93	44.9	48.8	51.1	52.2
041	Neighborhood Comm	3873.41	0.06	80	87	91	93	0.0	0.1	0.1	0.1
043	Neighborhood Comm	85953.68	1.31	80	87	91	93	1.1	1.1	1.2	1.2
050	Industrial	9635.23	0.15	81	88	91	93	0.1	0.1	0.1	0.1
Right of Way	100% Paved	1106737.00	16.91	98	98	98	98	16.6	16.6	16.6	16.6
			100.00					80.6	87.3	91.1	93.0
Total Area		6544247.00									

Basin	Field description	CN designation	Area	% cover by area	Curve number A	B	C	D	Product CN*Area CN*A	CN*B	CN*C	CN*D
SIERRA	013	Gravel	7498.37	1.67	76	85	89	91	1.3	1.4	1.5	1.5
	017	Gravel	3530.82	0.79	76	85	89	91	0.6	0.7	0.7	0.7
	020	1/4 Acre Res.	69595.75	15.54	61	75	83	87	9.5	11.7	12.9	13.5
	030	Multi Res.	30872.7	6.89	77	85	90	92	5.3	5.9	6.2	6.3
	032	Multi Res.	38881.3	8.68	77	85	90	92	6.7	7.4	7.8	8.0
	033	Multi Res.	40246.03	8.98	77	85	90	92	6.9	7.6	8.1	8.3
	034	Multi Res.	85341.21	19.05	77	85	90	92	14.7	16.2	17.1	17.5
	040	Neighborhood Comm.	4399.84	0.98	80	87	91	93	0.8	0.9	0.9	0.9
	041	Neighborhood Comm.	3166.78	0.71	80	87	91	93	0.6	0.6	0.6	0.7
	Right of Way	100% Paved	164406.85	36.70	98	98	98	98	36.0	36.0	36.0	36.0
				100.00					82.2	88.3	91.8	93.4
	Total Area		447939.65									

Basin	Field description	CN designation	Area	% cover by area	Curve number A	B	C	D	Product CN*Area CN*A	CN*B	CN*C	CN*D
VIRGINIA	020	1/4 Acre Res.	28275.48	5.99	61	75	83	87	3.7	4.5	5.0	5.2
	030	Multi Res.	3444.73	0.73	77	85	90	92	0.6	0.6	0.7	0.7
	031	Multi Res.	10500.03	2.23	77	85	90	92	1.7	1.9	2.0	2.0
	032	Multi Res.	34579.78	7.33	77	85	90	92	5.6	6.2	6.6	6.7
	033	Multi Res.	41598.39	8.82	77	85	90	92	6.8	7.5	7.9	8.1

	034	Multi Res.	37517.58	7.95	77	85	90	92	6.1	6.8	7.2	7.3
	040	Neighborhood Comm.	110360.19	23.39	80	87	91	93	18.7	20.3	21.3	21.8
	041	Neighborhood Comm.	9526.78	2.02	80	87	91	93	1.6	1.8	1.8	1.9
	043	Neighborhood Comm.	38486.48	8.16	80	87	91	93	6.5	7.1	7.4	7.6
	Right of Way	100% Paved	157589.72	33.40	98	98	98	98	32.7	32.7	32.7	32.7
				100.00					84.1	89.4	92.6	94.0
	Total Area		471879.15									

Basin	Field description	CN designation	Area	% cover by area	Curve number A	B	C	D	Product CN*Area CN*A	CN*B	CN*C	CN*D
RALSTON	019	Park	51567.87	10.20	41	62	75	81	4.2	6.3	7.6	8.3
	020	1/4 Acre Res.	69397.17	13.72	61	75	83	87	8.4	10.3	11.4	11.9
	030	Multi Res.	49398.71	9.77	77	85	90	92	7.5	8.3	8.8	9.0
	031	Multi Res.	13554.07	2.68	77	85	90	92	2.1	2.3	2.4	2.5
	032	Multi Res.	46871.58	9.27	77	85	90	92	7.1	7.9	8.3	8.5
	033	Multi Res.	41892.56	8.28	77	85	90	92	6.4	7.0	7.5	7.6
	034	Multi Res.	31386.62	6.21	77	85	90	92	4.8	5.3	5.6	5.7
	040	Neighborhood Comm.	16658.81	3.29	80	87	91	93	2.6	2.9	3.0	3.1
	Right of Way	100% Paved	185084.2	36.59	98	98	98	98	35.9	35.9	35.9	35.9
				100.00					78.9	86.1	90.5	92.4
	Total Area		505811.6									

Basin	Field description	CN designation	Area	% cover by area	Curve number A	B	C	D	Product CN*Area CN*A	CN*B	CN*C	CN*D
WASHINGTON	018	Gravel	7602.43	0.47	76	85	89	91	0.4	0.4	0.4	0.4
	019	Park	19405.24	1.19	41	62	75	81	0.5	0.7	0.9	1.0
	020	1/4 Acre Res.	520137.02	31.91	61	75	83	87	19.5	23.9	26.5	27.8
	030	Multi. Res.	62541.18	3.84	77	85	90	92	3.0	3.3	3.5	3.5
	031	Multi. Res.	74147.62	4.55	77	85	90	92	3.5	3.9	4.1	4.2
	032	Multi. Res.	35379.45	2.17	77	85	90	92	1.7	1.8	2.0	2.0
	033	Multi. Res.	2126.02	0.13	77	85	90	92	0.1	0.1	0.1	0.1
	034	Multi. Res.	22663.08	1.39	77	85	90	92	1.1	1.2	1.3	1.3

	071	50% Imperv, 50% Park	380308.98	23.33	70	80	87	93	16.2	18.7	20.2	21.6
	Right of Way	100% Paved	505884.14	31.03	98	98	98	98	30.4	30.4	30.4	30.4
				100.00					76.2	84.4	89.2	92.2
	Total Area		1630195.15									

Basin	Field description	CN designation	Area	% cover by area	Curve number A	B	C	D	Product CN*Area CN*A	CN*B	CN*C	CN*D
STARLIGHT	016	Gravel	591.16	0.03	76	85	89	91	0.0	0.0	0.0	0.0
	020	1/4 Acre Res.	322076.37	16.27	61	75	83	87	9.9	12.2	13.5	14.2
	021	Multi Res.	6719.97	0.34	77	85	90	92	0.3	0.3	0.3	0.3
	030	Multi Res.	166197.13	8.40	77	85	90	92	6.5	7.1	7.6	7.7
	032	Multi Res.	39874.63	2.01	77	85	90	92	1.6	1.7	1.8	1.9
	033	Multi Res.	111714.87	5.64	77	85	90	92	4.3	4.8	5.1	5.2
	034	Multi Res.	154013.17	7.78	77	85	90	92	6.0	6.6	7.0	7.2
	040	Neighborhood Comm.	430757.57	21.76	80	87	91	93	17.4	18.9	19.8	20.2
	043	Downtown Comm.	163189.44	8.25	89	92	94	95	7.3	7.6	7.8	7.8
	Right of Way	100% Paved	584031.14	29.51	98	98	98	98	28.9	28.9	28.9	28.9
				100.00					82.2	88.2	91.8	93.4
	Total Area		1979165.45									

Basin	Field description	CN designation	Area	% cover by area	Curve number A	B	C	D	Product CN*Area CN*A	CN*B	CN*C	CN*D
DOWNTOWN EAST	014	Gravel	86492.81	2.14	76	85	89	91	1.6	1.8	1.9	1.9
	015	Gravel	78871.92	1.95	76	85	89	91	1.5	1.7	1.7	1.8
	016	Gravel	524.76	0.01	76	85	89	91	0.0	0.0	0.0	0.0
	017	Gravel	3991.54	0.10	76	85	89	91	0.1	0.1	0.1	0.1
	018	Gravel	173303.62	4.29	76	85	89	91	3.3	3.6	3.8	3.9
	020	1/4 Acre Res.	90034.64	2.23	61	75	83	87	1.4	1.7	1.8	1.9
	030	Multi Res.	14876.49	0.37	77	85	90	92	0.3	0.3	0.3	0.3
	031	Multi Res.	33858.68	0.84	77	85	90	92	0.6	0.7	0.8	0.8
	032	Multi Res.	97967.69	2.42	77	85	90	92	1.9	2.1	2.2	2.2

	033	Multi Res.	45032.9	1.11	77	85	90	92	0.9	0.9	1.0	1.0
	034	Multi Res.	139538.35	3.45	77	85	90	92	2.7	2.9	3.1	3.2
	040	Downtown Comm.	376453.98	9.31	89	92	94	95	8.3	8.6	8.8	8.8
	041	Downtown Comm.	70137.1	1.73	89	92	94	95	1.5	1.6	1.6	1.6
	042	Downtown Comm.	47696.06	1.18	89	92	94	95	1.1	1.1	1.1	1.1
	043	Downtown Comm.	222007.39	5.49	89	92	94	95	4.9	5.1	5.2	5.2
	044	Downtown Comm.	141606.35	3.50	89	92	94	95	3.1	3.2	3.3	3.3
	050	Industrial	553664.82	13.70	81	88	91	93	11.1	12.1	12.5	12.7
	051	Industrial	82757.81	2.05	81	88	91	93	1.7	1.8	1.9	1.9
	052	Industrial	53889.95	1.33	81	88	91	93	1.1	1.2	1.2	1.2
	070	Irrigation Ditch, Imperv.	170174.16	4.21	98	98	98	98	4.1	4.1	4.1	4.1
	Right of Way	100% Paved	1559687.3	38.58	98	98	98	98	37.8	37.8	37.8	37.8
				100.00					88.8	92.3	94.2	95.2
	Total Area		4042568.3									

Basin	Field description	CN designation	Area	% cover by area	Curve number A	B	C	D	Product CN*Area CN*A	CN*B	CN*C	CN*D
SPROUT	010	Mixed Grass and Shrubs	1970782.14	11.59	39	61	73	82	4.5	7.1	8.5	9.5
	012	Mixed Grass and Shrubs	4622157.61	27.17	39	61	73	82	10.6	16.6	19.8	22.3
	013	Mixed Grass and Shrubs	23033.47	0.14	39	61	73	82	0.1	0.1	0.1	0.1
	014	Mixed Grass and Shrubs	3871.94	0.02	39	61	73	82	0.0	0.0	0.0	0.0
	016	Mixed Grass and Shrubs	363463.19	2.14	39	61	73	82	0.8	1.3	1.6	1.8
	017	Mixed Grass and Shrubs	1335045.83	7.85	39	61	73	82	3.1	4.8	5.7	6.4
	018	Gravel	540247.84	3.18	76	85	89	91	2.4	2.7	2.8	2.9
	019	Park	189438.03	1.11	41	62	75	81	0.5	0.7	0.8	0.9
	020	1/4 Acre Res.	5682204.68	33.40	61	75	83	87	20.4	25.1	27.7	29.1
	034	Multi Res.	347776.62	2.04	77	85	90	92	1.6	1.7	1.8	1.9
	040	Neighborhood Comm.	20390.27	0.12	80	87	91	93	0.1	0.1	0.1	0.1
	063	Mixed Grass and Shrubs	230734.2	1.36	39	61	73	82	0.5	0.8	1.0	1.1
	070	Gravel	65825.36	0.39	76	85	89	91	0.3	0.3	0.3	0.4
	Right of Way	100% Paved	1616374.8	9.50	98	98	98	98	9.3	9.3	9.3	9.3
				100.00					54.1	70.6	79.7	85.7
	Total Area		17011345.98									

% cover Curve number Product CN*Area

Basin	Field description	CN designation	Area	by area	A	B	C	D	CN*A	CN*B	CN*C	CN*D
VINE	010	Gravel	6016.97	0.02	76	85	89	91	0.0	0.0	0.0	0.0
	011	Gravel	98059.31	0.36	76	85	89	91	0.3	0.3	0.3	0.3
	012	Gravel	1312637.76	4.80	76	85	89	91	3.6	4.1	4.3	4.4
	014	Gravel	29413.33	0.11	76	85	89	91	0.1	0.1	0.1	0.1
	016	Gravel	13383.56	0.05	76	85	89	91	0.0	0.0	0.0	0.0
	017	Gravel	151102.27	0.55	76	85	89	91	0.4	0.5	0.5	0.5
	018	Gravel	12499.52	0.05	76	85	89	91	0.0	0.0	0.0	0.0
	019	Park	295119.16	1.08	41	62	75	81	0.4	0.7	0.8	0.9
	020	1/4 Acre Res.	16598732.76	60.67	61	75	83	87	37.0	45.5	50.4	52.8
	021	Multi Res.	122426.09	0.45	77	85	90	92	0.3	0.4	0.4	0.4
	024	Park	439063.79	1.60	41	62	75	81	0.7	1.0	1.2	1.3
	030	Multi Res.	30789.3	0.11	77	85	90	92	0.1	0.1	0.1	0.1
	031	Multi Res.	50711.77	0.19	77	85	90	92	0.1	0.2	0.2	0.2
	032	Multi Res.	70772.49	0.26	77	85	90	92	0.2	0.2	0.2	0.2
	033	Multi Res.	22819.14	0.08	77	85	90	92	0.1	0.1	0.1	0.1
	034	Multi Res.	49721.37	0.18	77	85	90	92	0.1	0.2	0.2	0.2
	040	Neighborhood Comm.	1070909.26	3.91	80	87	91	93	3.1	3.4	3.6	3.6
	041	Neighborhood Comm.	7441.42	0.03	80	87	91	93	0.0	0.0	0.0	0.0
	070	Gravel	309796.63	1.13	76	85	89	91	0.9	1.0	1.0	1.0
	071	Drainage Ditch, Imperv	178482.43	0.65	98	98	98	98	0.6	0.6	0.6	0.6
	Right of Way	100% paved	6487383.83	23.71	98	98	98	98	23.2	23.2	23.2	23.2
				100.00					71.5	81.6	87.3	90.1
	Total Area		27357282.15									

Basin	Field description	CN designation	Area	% cover by area	Curve number A	B	C	D	Product CN*Area CN*A	CN*B	CN*C	CN*D
WEST WASH	010	Mixed Grass and Shrubs	6455442.39	20.43	39	61	73	82	8.0	12.5	14.9	16.8
	012	Mixed Grass and Shrubs	17093830.77	54.09	39	61	73	82	21.1	33.0	39.5	44.4
	016	Mixed Grass and Shrubs	2187.7	0.01	39	61	73	82	0.0	0.0	0.0	0.0
	017	Mixed Grass and Shrubs	804161.23	2.54	39	61	73	82	1.0	1.6	1.9	2.1
	019	Park	175213.29	0.55	41	62	75	81	0.2	0.3	0.4	0.4
	020	1/4 Acre Res.	4990031.61	15.79	61	75	83	87	9.6	11.8	13.1	13.7
	021	Multi Res.	82629.45	0.26	77	85	90	92	0.2	0.2	0.2	0.2
	024	Park	113940.8	0.36	41	62	75	81	0.1	0.2	0.3	0.3

	040	Neighborhood Comm	62622.24	0.20	80	87	91	93	0.2	0.2	0.2	0.2
	070	Gravel	804.56	0.00	76	85	89	91	0.0	0.0	0.0	0.0
	Right of Way	100% Paved	1820303.69	5.76	98	98	98	98	5.6	5.6	5.6	5.6
				100.00					46.1	65.5	76.1	83.8
	Total Area	31601167.72										

Basin	Field description	CN designation	Area	% cover by area	Curve number A	B	C	D	Product CN*Area CN*A	CN*B	CN*C	CN*D
LOWER PEAVINE	012	Mixed Grass and Shrub	1299893.41	12.65	39	61	73	82	4.9	7.7	9.2	10.4
	017	Mixed Grass and Shrub	73585.80	0.72	39	61	73	82	0.3	0.4	0.5	0.6
	019	Park	1025766	9.98	41	62	75	81	4.1	6.2	7.5	8.1
	020	1/4 Acre Res.	3335109.94	32.45	61	75	83	87	19.8	24.3	26.9	28.2
	021	Multi Res.	389317.95	3.79	77	85	90	92	2.9	3.2	3.4	3.5
	024	Park	1023897.88	9.96	41	62	75	81	4.1	6.2	7.5	8.1
	034	Multi Res.	365121.01	3.55	77	85	90	92	2.7	3.0	3.2	3.3
	040	Neighborhood Comm.	15074.97	0.15	80	87	91	93	0.1	0.1	0.1	0.1
	050	Industrial	252904.39	2.46	81	88	91	93	2.0	2.2	2.2	2.3
	070	Gravel	682224.88	6.64	76	85	89	91	5.0	5.6	5.9	6.0
	Right of Way	100% Paved	1814603.7	17.66	98	98	98	98	17.3	17.3	17.3	17.3
				100.00					63.3	76.3	83.8	87.9
	Total Area	10277500	10277500									

Basin	Field description	CN designation	Area	% cover by area	Curve number A	B	C	D	Product CN*Area CN*A	CN*B	CN*C	CN*D
RANCHO	012	Mixed Grass and Shrubs	808960.87	7.30	39	61	73	82	2.8	4.5	5.3	6.0
	017	Mixed Grass and Shrubs	7684.28	0.07	39	61	73	82	0.0	0.0	0.1	0.1
	019	Park	2105667.33	19.01	41	62	75	81	7.8	11.8	14.3	15.4
	020	1/4 Acre Res.	1673521.68	15.11	61	75	83	87	9.2	11.3	12.5	13.1
	024	Park	15076.7	0.14	41	62	75	81	0.1	0.1	0.1	0.1
	034	Multi. Res.	127815.03	1.15	77	85	90	92	0.9	1.0	1.0	1.1
	040	Neighborhood Comm.	5161307.89	46.61	80	87	91	93	37.3	40.5	42.4	43.3
	Right of Way	100% Paved	1174358	10.60	98	98	98	98	10.4	10.4	10.4	10.4
				100.00					68.5	79.6	86.1	89.5

Total Area 11074391

Basin	Field description	CN designation	Area	% cover by area	Curve number A	B	C	D	Product CN*Area CN*A	CN*B	CN*C	CN*D
2ND STREET	014	Gravel	18328.33	0.13	76	85	89	91	0.1	0.1	0.1	0.1
	015	Gravel	272984.05	1.89	76	85	89	91	1.4	1.6	1.7	1.7
	016	Mixed Grass and Shrubs	13289.05	0.09	39	61	73	82	0.0	0.1	0.1	0.1
	017	Mixed Grass and Shrubs	72361.21	0.50	39	61	73	82	0.2	0.3	0.4	0.4
	018	Mixed Grass and Shrubs	806294.59	5.60	39	61	73	82	2.2	3.4	4.1	4.6
	020	1/4 Acre Res.	5060868.72	35.13	61	75	83	87	21.4	26.3	29.2	30.6
	030	Multi Res.	2025.97	0.01	77	85	90	92	0.0	0.0	0.0	0.0
	034	Multi Res.	87977.06	0.61	77	85	90	92	0.5	0.5	0.5	0.6
	035	Multi Res.	455882.3	3.16	77	85	90	92	2.4	2.7	2.8	2.9
	040	Neighborhood Comm.	3131714.95	21.74	80	87	91	93	17.4	18.9	19.8	20.2
	041	Neighborhood Comm.	19685.98	0.14	80	87	91	93	0.1	0.1	0.1	0.1
	043	Neighborhood Comm.	221785.26	1.54	80	87	91	93	1.2	1.3	1.4	1.4
	050	Industrial	109366.05	0.76	81	88	91	93	0.6	0.7	0.7	0.7
	051	Industrial	68505.89	0.48	81	88	91	93	0.4	0.4	0.4	0.4
	070	Drainage Ditch, Imperv	54914.55	0.38	98	98	98	98	0.4	0.4	0.4	0.4
	Freeway	50% Paved, 50% Mixed Gr	784080	5.44	69	80	86	90	3.7	4.3	4.7	4.9
	Right of Way	100% Paved	3225831.78	22.39	98	98	98	98	21.9	21.9	21.9	21.9
				100.00					74.1	83.2	88.3	91.1
	Total Area		14405895.75									

Basin	Field description	CN designation	Area	% cover by area	Curve number A	B	C	D	Product CN*Area CN*A	CN*B	CN*C	CN*D
WEST KEYSTONE	014	Gravel	77699.95	3.35	76	85	89	91	2.5	2.8	3.0	3.0
	020	1/4 Acre Res	11572.88	0.50	61	75	83	87	0.3	0.4	0.4	0.4
	032	Multi Res.	25669.81	1.11	77	85	90	92	0.9	0.9	1.0	1.0
	035	Multi Res.	331271.79	14.28	77	85	90	92	11.0	12.1	12.9	13.1
	040	Downtown Comm.	931706.83	40.18	89	92	94	95	35.8	37.0	37.8	38.2
	041	Downtown Comm.	85436.1	3.68	89	92	94	95	3.3	3.4	3.5	3.5

050	Industrial	198737.27	8.57	81	88	91	93	6.9	7.5	7.8	8.0
051	Industrial	167247.6	7.21	81	88	91	93	5.8	6.3	6.6	6.7
Right of Way	70% Paved, 30% Landscap	489707.88	21.12	81	87	91	93	17.1	18.4	19.2	19.6
			100.00					83.6	88.9	92.1	93.6
Total Area		2319050.11									

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NAME	SOIL_UN	AREA
FREEWAY WR		
	0624	
FREEWAY WR	0624	20.104.06
	0624	**20,104.06**
	1054	
FREEWAY WR	1054	274,671.84
	1054	**274.671.84**
FREEWAY WR		**294.775.90**
SIERRA		
	0624	
SIERRA	0624	121,809.83
	0624	**121,809.83**
	0631	
SIERRA	0631	279,615.31
	0631	**279,615.31**
	1054	
SIERRA	1054	46,514.51
	1054	**46.514.51**
SIERRA		**447.939.65**
VIRGINIA		
	0624	
VIRGINIA	0624	216,567.95
	0624	**216,567.95**
	0631	
VIRGINIA	0631	255,311.20
	0631	**255,311.20**
VIRGINIA		**471,879.15**
RALSTON		
	0624	
RALSTON	0624	7,570.17
	0624	**7,570.17**

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NAME	SOIL_UN	AREA
	1054	
RALSTON	1054	498,241.43
	1054	**498,241.43**
RALSTON		**505,811.60**
JAS		
	0623	
JAS	0623	1,893.75
	0623	**1,893.75**
	0624	
JAS	0624	367,474.70
	0624	**367,474.70**
	0631	
JAS	0631	51,471.32
	0631	**51,471.32**
	0683	
JAS	0683	90,326.80
	0683	**90,326.80**
	1050	
JAS	1050	1,025.88
	1050	**1,025.88**
JAS		**512,192.45**
KEYSTONE SUMP		
	0190	
KEYSTONE SUMP	0190	165,142.84
	0190	**165,142.84**
	0624	
KEYSTONE SUMP	0624	240,131.67
	0624	**240,131.67**
	0683	
KEYSTONE SUMP	0683	150,421.36
	0683	**150,421.36**
	0994	

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NAME	SOIL_UN	AREA
KEYSTONE SUMP	0994	131,366.26
	0994	**131,366.26**
KEYSTONE SUMP		**687,062.14**
FREEWAY RS		
	0624	
FREEWAY RS	0624	144,180.74
	0624	**144,180.74**
	0631	
FREEWAY RS	0631	125,667.00
	0631	**125,667.00**
	1054	
FREEWAY RS	1054	599,154.71
	1054	**599,154.71**
FREEWAY RS		**869,002.45**
FW-IGNORE		
	0624	
FW-IGNORE	0624	145,529.95
FW-IGNORE	0624	59,776.30
FW-IGNORE	0624	59,156.80
FW-IGNORE	0624	313,403.50
FW-IGNORE	0624	170,366.03
FW-IGNORE	0624	106,403.98
FW-IGNORE	0624	249,857.86
	0624	**1,104,494.42**
	0683	
FW-IGNORE	0683	17,762.59
	0683	**17,762.59**
FW-IGNORE		**1,122,257.01**
WASHINGTON		
	0624	
WASHINGTON	0624	5,277.38
	0624	**5,277.38**
	0871	
WASHINGTON	0871	44.93

NAME	SOIL_UN	AREA
	0871	**44.93**
	1050	
WASHINGTON	1050	15,794.08
	1050	**15,794.08**
	1054	
WASHINGTON	1054	1,273,341.55
	1054	**1,273,341.55**
	9998	
WASHINGTON	9998	335,737.22
	9998	**335,737.22**
WASHINGTON		**1,630,195.15**
STARLIGHT		
	0190	
STARLIGHT	0190	1,112,456.98
	0190	**1,112,456.98**
	0683	
STARLIGHT	0683	732,699.73
	0683	**732,699.73**
	0994	
STARLIGHT	0994	106,557.92
	0994	**106,557.92**
	1054	
STARLIGHT	1054	27,450.82
	1054	**27,450.82**
STARLIGHT		**1,979,165.45**
WEST KEYSTONE		
	0190	
WEST KEYSTONE	0190	58,046.71
	0190	**58,046.71**
	0624	
WEST KEYSTONE	0624	2,063,932.73
	0624	**2,063,932.73**

NAME	SOIL_UN	AREA
	0994	
WEST KEYSTONE	0994	197,070.68
	0994	**197,070.68**
WEST KEYSTONE		**2,319,050.11**
DOWNTOWN EAST		
	0624	
DOWNTOWN EAST	0624	3,195,134.78
	0624	**3,195,134.78**
	0669	
DOWNTOWN EAST	0669	847,427.94
	0669	**847,427.94**
DOWNTOWN EAST		**4,042,562.72**
LOWER EVANS		
	0514	
LOWER EVANS	0514	125,822.21
	0514	**125,822.21**
	0623	
LOWER EVANS	0623	142,573.17
	0623	**142,573.17**
	0624	
LOWER EVANS	0624	78,858.67
	0624	**78,858.67**
	0630	
LOWER EVANS	0630	326,172.04
	0630	**326,172.04**
	0631	
LOWER EVANS	0631	3,918.78
	0631	**3,918.78**
	0683	
LOWER EVANS	0683	2,192,343.53
LOWER EVANS	0683	1,344,740.08
	0683	**3,537,083.61**

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NAME	SOIL_UN	AREA
	0871	
LOWER EVANS	0871	206,904.92
	0871	**206,904.92**
	0872	
LOWER EVANS	0872	10,578.00
	0872	**10,578.00**
	1050	
LOWER EVANS	1050	1,946,396.96
	1050	**1,946,396.96**
	1054	
LOWER EVANS	1054	165,817.32
	1054	**165,817.32**
LOWER EVANS		**6,544,125.66**
DOWNTOWN WEST		
	0624	
DOWNTOWN WEST	0624	8,309,546.81
	0624	**8,309,546.81**
DOWNTOWN WEST		**8,309,546.81**
CENTER		
	0624	
CENTER	0624	166,178.17
	0624	**166,178.17**
	0631	
CENTER	0631	1,512,970.26
	0631	**1,512,970.26**
	0683	
CENTER	0683	40,558.51
CENTER	0683	64,867.36
	0683	**105,425.87**
	0871	
CENTER	0871	1,938,851.14
	0871	**1,938,851.14**

NAME	SOIL_UN	AREA
	0872	
CENTER	0872	798,908.86
	0872	**798,908.86**
	1054	
CENTER	1054	2,609,387.31
CENTER	1054	22,157.83
CENTER	1054	2,334,229.42
	1054	**4,965,774.56**
	9998	
CENTER	9998	132,947.96
CENTER	9998	40,717.39
CENTER	9998	96,053.50
	9998	**269,718.84**
CENTER		**9,757,827.70**
LOWER PEAVINE		
	0650	
LOWER PEAVINE	0650	16,634.92
	0650	**16,634.92**
	0653	
LOWER PEAVINE	0653	551,346.55
	0653	**551,346.55**
	0683	
LOWER PEAVINE	0683	521,913.41
LOWER PEAVINE	0683	3,297,690.56
LOWER PEAVINE	0683	1,328,413.91
LOWER PEAVINE	0683	3,858.08
LOWER PEAVINE	0683	3,162.75
LOWER PEAVINE	0683	54,523.83
	0683	**5,209,562.55**
	1050	
LOWER PEAVINE	1050	4,034,164.01
	1050	**4,034,164.01**
	1054	
LOWER PEAVINE	1054	465,792.68
	1054	**465,792.68**
LOWER PEAVINE		**10,277,500.71**

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NAME	SOIL_UN	AREA
ELMCREST		
	0624	
ELMCREST	0624	514,234.10
	0624	**514,234.10**
	0683	
ELMCREST	0683	3,733,603.31
ELMCREST	0683	6,676,213.84
	0683	**10,409,817.16**
	1050	
ELMCREST	1050	2,576,037.64
ELMCREST	1050	339.48
ELMCREST	1050	4,030.87
ELMCREST	1050	413.64
	1050	**2,580,821.64**
ELMCREST		**13,504,872.89**
2ND STREET		
	0190	
2ND STREET	0190	1,878,640.62
	0190	**1,878,640.62**
	0624	
2ND STREET	0624	1,698,267.16
	0624	**1,698,267.16**
	0683	
2ND STREET	0683	6,283,429.96
	0683	**6,283,429.96**
	0994	
2ND STREET	0994	619,491.57
2ND STREET	0994	1,560,920.45
	0994	**2,180,412.02**
	1054	
2ND STREET	1054	2,365,145.99
	1054	**2,365,145.99**
2ND STREET		**14,405,895.75**
SPROUT		

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NAME	SOIL_UN	AREA
	0260	
SPROUT	0260	4,193,230.28
	0260	**4,193,230.28**
	0350	
SPROUT	0350	841,795.46
	0350	**841,795.46**
	0585	
SPROUT	0585	1,098,698.62
SPROUT	0585	104,987.38
	0585	**1,203,686.00**
	0650	
SPROUT	0650	4,802,283.98
	0650	**4,802,283.98**
	0651	
SPROUT	0651	424,378.47
	0651	**424,378.47**
	0652	
SPROUT	0652	294,938.23
SPROUT	0652	30,626.32
	0652	**325,564.56**
	0653	
SPROUT	0653	48,576.64
	0653	**48,576.64**
	0670	
SPROUT	0670	252,823.72
	0670	**252,823.72**
	0683	
SPROUT	0683	306,175.88
SPROUT	0683	890,589.42
SPROUT	0683	519,220.54
SPROUT	0683	225,402.63
	0683	**1,941,388.46**
	0880	
SPROUT	0880	454,148.51
	0880	**454,148.51**

NAME	SOIL_UN	AREA
	0901	
SPROUT	0901	424,450.51
SPROUT	0901	4,053.64
	0901	**428,504.15**
	0991	
SPROUT	0991	1,178,455.13
	0991	**1,178,455.13**
	0994	
SPROUT	0994	130,043.90
SPROUT	0994	9,061.28
SPROUT	0994	18,211.21
SPROUT	0994	2,843.12
SPROUT	0994	171,463.01
SPROUT	0994	22.16
	0994	**331,644.68**
	1050	
SPROUT	1050	573,272.63
	1050	**573,272.63**
	1054	
SPROUT	1054	11,593.32
	1054	**11,593.32**
SPROUT		**17,011,345.98**
VINE		
	0624	
VINE	0624	191,589.03
	0624	**191,589.03**
	0653	
VINE	0653	113,162.73
VINE	0653	2,766,374.52
	0653	**2,879,537.25**
	0683	
VINE	0683	3,493,106.72
VINE	0683	7,181,082.78
	0683	**10,674,189.50**
	0991	
VINE	0991	899,509.23

NAME	SOIL_UN	AREA
	0991	**899,509.23**
	1050	
VINE	1050	5,628,398.34
	1050	**5,628,398.34**
	1054	
VINE	1054	4,680,630.48
VINE	1054	125,769.52
VINE	1054	2,091,497.25
	1054	**6,897,897.25**
	9998	
VINE	9998	119,348.06
VINE	9998	66,813.50
	9998	**186,161.56**
VINE		**27,357,282.15**
WEST WASH		
	0190	
WEST WASH	0190	238,283.65
	0190	**238,283.65**
	0192	
WEST WASH	0192	157,346.63
	0192	**157,346.63**
	0221	
WEST WASH	0221	425,451.42
	0221	**425,451.42**
	0281	
WEST WASH	0281	251,202.63
WEST WASH	0281	336,912.81
	0281	**588,115.45**
	0311	
WEST WASH	0311	6,771,742.46
	0311	**6,771,742.46**
	0312	
WEST WASH	0312	876,599.75
	0312	**876,599.75**

NAME	SOIL_UN	AREA
	0350	
WEST WASH	0350	151,070.82
	0350	**151,070.82**
	0650	
WEST WASH	0650	431,512.25
WEST WASH	0650	830,495.88
	0650	**1,262,008.13**
	0651	
WEST WASH	0651	587,839.88
	0651	**587,839.88**
	0652	
WEST WASH	0652	642,582.25
WEST WASH	0652	230,565.38
	0652	**873,147.63**
	0653	
WEST WASH	0653	218,680.88
WEST WASH	0653	256,752.63
WEST WASH	0653	381,903.49
WEST WASH	0653	338,760.50
WEST WASH	0653	1,186,226.26
	0653	**2,382,323.74**
	0683	
WEST WASH	0683	946,964.10
WEST WASH	0683	153,595.03
	0683	**1,100,559.13**
	0861	
WEST WASH	0861	593,322.68
WEST WASH	0861	9,288.95
WEST WASH	0861	721,267.12
	0861	**1,323,878.75**
	0862	
WEST WASH	0862	6,447.93
	0862	**6,447.93**
	0871	
WEST WASH	0871	244,301.08
	0871	**244,301.08**

NAME	SOIL_UN	AREA
	0872	
WEST WASH	0872	223,905.13
WEST WASH	0872	565,075.96
WEST WASH	0872	1.260.782.75
WEST WASH	0872	112.607.54
	0872	**2.162.371.38**
	0880	
WEST WASH	0880	2.033,270.38
	0880	**2.033.270.38**
	0882	
WEST WASH	0882	1.717,482.63
	0882	**1.717,482.63**
	0901	
WEST WASH	0901	2,208.35
WEST WASH	0901	2,426,130.26
	0901	**2,428,338.61**
	0991	
WEST WASH	0991	439,057.80
	0991	**439,057.80**
	0994	
WEST WASH	0994	1,514,532.13
	0994	**1,514,532.13**
	1050	
WEST WASH	1050	1,491,575.52
	1050	**1,491,575.52**
	1054	
WEST WASH	1054	209,051.75
WEST WASH	1054	292,386.48
	1054	**501,438.23**
	1271	
WEST WASH	1271	2,323,984.63
	1271	**2,323,984.63**
WEST WASH		**31,601,167.72**
EAST WASH		

NAME	SOIL_UN	AREA
	0190	
EAST WASH	0190	618,863.39
	0190	**618,863.39**
	0221	
EAST WASH	0221	338,270.81
	0221	**338,270.81**
	0222	
EAST WASH	0222	36,471.55
	0222	**36,471.55**
	0260	
EAST WASH	0260	540,226.75
	0260	**540,226.75**
	0280	
EAST WASH	0280	97,624.88
EAST WASH	0280	1,712,860.00
EAST WASH	0280	219,143.88
	0280	**2,029,628.75**
	0281	
EAST WASH	0281	2,527,121.48
EAST WASH	0281	25,007.21
EAST WASH	0281	779,268.37
EAST WASH	0281	110,281.93
EAST WASH	0281	216,352.25
EAST WASH	0281	46,893.25
EAST WASH	0281	173,102.13
	0281	**3,878,026.61**
	0310	
EAST WASH	0310	223,165.50
	0310	**223,165.50**
	0311	
EAST WASH	0311	276,062.92
EAST WASH	0311	349,472.50
	0311	**625,535.42**
	0312	
EAST WASH	0312	198,420.20
EAST WASH	0312	858,229.50
	0312	**1,056,649.70**

NAME	SOIL_UN	AREA
	0313	
EAST WASH	0313	2,281,461.75
EAST WASH	0313	95,186.25
EAST WASH	0313	143,026.25
EAST WASH	0313	1,828,557.75
	0313	**4,348,232.00**
	0350	
EAST WASH	0350	6,926,432.04
EAST WASH	0350	8,241.77
EAST WASH	0350	873.75
EAST WASH	0350	91,468.30
	0350	**7,027,015.86**
	0653	
EAST WASH	0653	145,101.42
	0653	**145,101.42**
	0861	
EAST WASH	0861	793,357.05
EAST WASH	0861	71,439.25
	0861	**864,796.31**
	0862	
EAST WASH	0862	199,834.94
	0862	**199,834.94**
	0871	
EAST WASH	0871	573,043.35
EAST WASH	0871	208,499.00
EAST WASH	0871	102,274.75
EAST WASH	0871	612,619.50
EAST WASH	0871	330,596.28
EAST WASH	0871	376,579.63
EAST WASH	0871	781,067.80
EAST WASH	0871	261,228.03
	0871	**3,245,908.34**
	0872	
EAST WASH	0872	572,439.45
EAST WASH	0872	542,460.38
EAST WASH	0872	53,752.28
EAST WASH	0872	906,383.32
EAST WASH	0872	12,382.46
EAST WASH	0872	39,189.21
	0872	**2,126,607.10**
	0873	

NAME	SOIL_UN	AREA
EAST WASH	0873	920.649.13
	0873	**920,649.13**
	0880	
EAST WASH	0880	122,420.70
EAST WASH	0880	241,923.34
EAST WASH	0880	4,918.35
EAST WASH	0880	4.172,677.29
EAST WASH	0880	1,610,596.13
EAST WASH	0880	1,378,409.25
	0880	**7,530,945.05**
	0882	
EAST WASH	0882	3,421,702.00
EAST WASH	0882	1,053,113.25
EAST WASH	0882	581,612.38
	0882	**5,056,427.63**
	0891	
EAST WASH	0891	232,773.50
EAST WASH	0891	130,979.14
	0891	**363,752.64**
	0900	
EAST WASH	0900	221.847.98
EAST WASH	0900	165,556.48
EAST WASH	0900	215,346.76
EAST WASH	0900	1,488,775.00
EAST WASH	0900	3,541,290.25
	0900	**5,632,816.47**
	0901	
EAST WASH	0901	294,716.54
EAST WASH	0901	2,060,997.70
EAST WASH	0901	21,575.75
EAST WASH	0901	9,567,233.78
	0901	**11,944,523.76**
	0991	
EAST WASH	0991	1,117,092.73
	0991	**1,117,092.73**
EAST WASH		**59,870,541.83**
UPPER PEAVINE		
	0190	
UPPER PEAVINE	0190	1,284,660.10

NAME	SOIL_UN	AREA
	0190	**1,284,660.10**
	0221	
UPPER PEAVINE	0221	768,694.83
	0221	**768,694.83**
	0260	
UPPER PEAVINE	0260	311,679.65
UPPER PEAVINE	0260	57,854.57
	0260	**369,534.22**
	0281	
UPPER PEAVINE	0281	240,453.22
UPPER PEAVINE	0281	476,384.20
UPPER PEAVINE	0281	654,745.19
	0281	**1,371,582.61**
	0282	
UPPER PEAVINE	0282	3,289,118.62
UPPER PEAVINE	0282	1,165,980.75
UPPER PEAVINE	0282	784,339.25
UPPER PEAVINE	0282	1,428,736.88
	0282	**6,668,175.50**
	0310	
UPPER PEAVINE	0310	464,597.75
	0310	**464,597.75**
	0311	
UPPER PEAVINE	0311	124,359.28
UPPER PEAVINE	0311	814,102.38
UPPER PEAVINE	0311	2,275,940.01
	0311	**3,214,401.66**
	0312	
UPPER PEAVINE	0312	171,151.38
	0312	**171,151.38**
	0350	
UPPER PEAVINE	0350	2,077,190.13
UPPER PEAVINE	0350	253,065.23
	0350	**2,330,255.36**
	0652	
UPPER PEAVINE	0652	788,370.39

NAME	SOIL_UN	AREA
	0652	**788,370.39**
	0653	
UPPER PEAVINE	0653	2,424,772.69
	0653	**2,424,772.69**
	0683	
UPPER PEAVINE	0683	389,584.79
	0683	**389,584.79**
	0861	
UPPER PEAVINE	0861	586,045.32
UPPER PEAVINE	0861	321,879.13
UPPER PEAVINE	0861	686,709.88
	0861	**1,594,634.32**
	0871	
UPPER PEAVINE	0871	317,585.75
UPPER PEAVINE	0871	324,690.00
UPPER PEAVINE	0871	214,621.75
	0871	**856,897.50**
	0872	
UPPER PEAVINE	0872	280,501.75
	0872	**280,501.75**
	0873	
UPPER PEAVINE	0873	1,616,126.25
	0873	**1,616,126.25**
	0880	
UPPER PEAVINE	0880	17,030,743.74
UPPER PEAVINE	0880	28,330.58
UPPER PEAVINE	0880	62,664.52
	0880	**17,121,738.85**
	0892	
UPPER PEAVINE	0892	2,115,538.22
	0892	**2,115,538.22**
	0901	
UPPER PEAVINE	0901	852,294.79
UPPER PEAVINE	0901	7,543.72
UPPER PEAVINE	0901	2,007,413.70
UPPER PEAVINE	0901	17,054,711.23
UPPER PEAVINE	0901	418,105.28

NAME	SOIL_UN	AREA
UPPER PEAVINE	0901	105,499.14
UPPER PEAVINE	0901	19.748.61
	0901	**20.465,316.48**
	0982	
UPPER PEAVINE	0982	1,184.18
	0982	**1,184.18**
	0991	
UPPER PEAVINE	0991	330.903.50
	0991	**330,903.50**
	1050	
UPPER PEAVINE	1050	1,009.207.00
UPPER PEAVINE	1050	1,364,674.17
	1050	**2.373,881.17**
	1271	
UPPER PEAVINE	1271	176,156.00
	1271	**176,156.00**
UPPER PEAVINE		**67.178,659.49**
Grand Total:		**280,700.660.48**

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NAME	LAND_U	AREA
G		
	012	
G	012	1.17
	012	**1.17**
G		**1.17**
C		
	012	
C	012	3.20
	012	**3.20**
C		**3.20**
B		
	012	
B	012	27.12
B	012	227.87
B	012	18.33
	012	**273.31**
	020	
B	020	250.21
	020	**250.21**
B		**523.52**
A		
	012	
A	012	882.39
	012	**882.39**
A		**882.39**
D		
	012	
D	012	0.59
D	012	41.29
	012	**41.88**
	017	
D	017	85.71
D	017	28.61

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NAME	LAND_U	AREA
	017	**114.32**
	020	
D	020	802.75
D	020	28.65
D	020	3,241.79
D	020	144.83
D	020	0.27
D	020	242.60
	020	**4,460.89**
	034	
D	034	1,326.50
D	034	55.69
	034	**1,382.19**
	040	
D	040	334.56
D	040	147.53
	040	**482.08**
D		**6,481.37**
FW-IGNORE		
	019	
FW-IGNORE	019	10,411.37
	019	**10,411.37**
	030	
FW-IGNORE	030	195.50
	030	**195.50**
	031	
FW-IGNORE	031	15.92
	031	**15.92**
	032	
FW-IGNORE	032	770.56
	032	**770.56**
FW-IGNORE		**11,393.35**
KEYSTONE SUMP		
	014	
KEYSTONE SUMP	014	14,169.00

NAME	LAND_U	AREA
	014	**14,169.00**
	040	
KEYSTONE SUMP	040	4,028.13
KEYSTONE SUMP	040	17,724.57
	040	**21,752.70**
	041	
KEYSTONE SUMP	041	6,850.44
	041	**6,850.44**
	070	
KEYSTONE SUMP	070	13,559.47
	070	**13,559.47**
KEYSTONE SUMP		**56,331.62**
FREEWAY WR		
	018	
FREEWAY WR	018	1,864.46
	018	**1,864.46**
	019	
FREEWAY WR	019	193,465.09
	019	**193,465.09**
	020	
FREEWAY WR	020	395.49
FREEWAY WR	020	30,855.36
FREEWAY WR	020	4,318.44
	020	**35,569.29**
	030	
FREEWAY WR	030	3,886.58
FREEWAY WR	030	1,868.34
	030	**5,754.92**
	033	
FREEWAY WR	033	7,087.63
FREEWAY WR	033	16,635.54
	033	**23,723.17**
	034	
FREEWAY WR	034	480.63

NAME	LAND_U	AREA
	034	**480.63**
FREEWAY WR		**260,857.56**
SIERRA		
	013	
SIERRA	013	7,498.37
	013	**7,498.37**
	017	
SIERRA	017	3,530.82
	017	**3,530.82**
	020	
SIERRA	020	94.47
SIERRA	020	190.90
SIERRA	020	7,459.70
SIERRA	020	10,992.36
SIERRA	020	3,153.24
SIERRA	020	10,941.42
SIERRA	020	5,340.40
SIERRA	020	8,749.51
SIERRA	020	11,431.64
SIERRA	020	6,677.24
SIERRA	020	4,564.87
	020	**69,595.75**
	030	
SIERRA	030	14,095.19
SIERRA	030	8,665.32
SIERRA	030	8,112.19
	030	**30,872.70**
	032	
SIERRA	032	9,061.60
SIERRA	032	5,596.47
SIERRA	032	12,299.80
SIERRA	032	5,596.58
SIERRA	032	6,326.86
	032	**38,881.30**
	033	
SIERRA	033	8.14
SIERRA	033	8,269.21
SIERRA	033	7,137.95
SIERRA	033	10,099.87
SIERRA	033	5,638.53
SIERRA	033	3,908.90
SIERRA	033	202.02

NAME	LAND_U	AREA
SIERRA	033	4,981.40
	033	**40,246.03**
	034	
SIERRA	034	30,530.82
SIERRA	034	12,499.91
SIERRA	034	38,775.59
SIERRA	034	3,534.88
	034	**85,341.21**
	040	
SIERRA	040	140.93
SIERRA	040	4,258.91
	040	**4,399.84**
	041	
SIERRA	041	3,166.78
	041	**3,166.78**
SIERRA		**283,532.80**
VIRGINIA		
	020	
VIRGINIA	020	1,091.78
VIRGINIA	020	6,468.60
VIRGINIA	020	4,803.27
VIRGINIA	020	10,500.03
VIRGINIA	020	5,411.81
	020	**28,275.48**
	030	
VIRGINIA	030	3,444.73
	030	**3,444.73**
	031	
VIRGINIA	031	10,500.03
	031	**10,500.03**
	032	
VIRGINIA	032	15,679.93
VIRGINIA	032	18,899.85
	032	**34,579.78**
	033	
VIRGINIA	033	23,648.59
VIRGINIA	033	5,788.20
VIRGINIA	033	12,161.60

NAME	LAND_U	AREA
	033	**41,598.39**
	034	
VIRGINIA	034	9,749.97
VIRGINIA	034	8,100.09
VIRGINIA	034	13,471.98
VIRGINIA	034	6,195.54
	034	**37,517.58**
	040	
VIRGINIA	040	67,151.99
VIRGINIA	040	4,751.99
VIRGINIA	040	6,999.93
VIRGINIA	040	1,011.71
VIRGINIA	040	16,249.90
VIRGINIA	040	1,736.81
VIRGINIA	040	5,857.97
VIRGINIA	040	6,599.89
	040	**110,360.19**
	041	
VIRGINIA	041	4,114.97
VIRGINIA	041	5,411.81
	041	**9,526.78**
	043	
VIRGINIA	043	12,600.05
VIRGINIA	043	6,395.78
VIRGINIA	043	14,839.99
VIRGINIA	043	4,650.66
	043	**38,486.48**
VIRGINIA		**314,289.43**
RALSTON		
	019	
RALSTON	019	51,567.87
	019	**51,567.87**
	020	
RALSTON	020	6,999.97
RALSTON	020	21,000.00
RALSTON	020	2,901.22
RALSTON	020	7,000.11
RALSTON	020	16,869.05
RALSTON	020	635.24
RALSTON	020	13,991.59
	020	**69,397.17**

NAME	LAND_U	AREA
	030	
RALSTON	030	2,641.81
RALSTON	030	7,000.06
RALSTON	030	3,607.92
RALSTON	030	6,719.76
RALSTON	030	19,003.09
RALSTON	030	8,330.99
RALSTON	030	2,095.09
	030	**49,398.71**
	031	
RALSTON	031	12,159.99
RALSTON	031	333.89
RALSTON	031	1,060.19
	031	**13,554.07**
	032	
RALSTON	032	2,868.14
RALSTON	032	7,000.15
RALSTON	032	1,698.82
RALSTON	032	15,247.29
RALSTON	032	20,057.18
	032	**46,871.58**
	033	
RALSTON	033	5,791.29
RALSTON	033	6,999.97
RALSTON	033	4,579.10
RALSTON	033	18,447.21
RALSTON	033	6,075.01
	033	**41,892.56**
	034	
RALSTON	034	11,359.54
RALSTON	034	20,027.07
	034	**31,386.62**
	040	
RALSTON	040	13,661.60
RALSTON	040	2,997.21
	040	**16,658.81**
RALSTON		**320,727.40**
JAS		
	013	
JAS	013	3,649.33
JAS	013	6,492.82

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NAME	LAND_U	AREA
	013	**10,142.15**
	018	
JAS	018	23,658.56
	018	**23,658.56**
	019	
JAS	019	40,979.17
JAS	019	48,943.45
	019	**89,922.62**
	020	
JAS	020	26,947.57
	020	**26,947.57**
	030	
JAS	030	4,267.47
	030	**4,267.47**
	031	
JAS	031	6,781.45
	031	**6,781.45**
	032	
JAS	032	5,113.29
	032	**5,113.29**
	033	
JAS	033	12,238.21
JAS	033	6,887.42
	033	**19,125.63**
	034	
JAS	034	17,400.24
JAS	034	6,688.06
	034	**24,088.30**
	040	
JAS	040	170,340.09
	040	**170,340.09**
JAS		**380,387.12**
FREEWAY RS		

NAME	LAND_U	AREA
	010	
FREEWAY RS	010	15,780.59
	010	**15,780.59**
	013	
FREEWAY RS	013	18,738.46
FREEWAY RS	013	1.65
FREEWAY RS	013	7,207.91
FREEWAY RS	013	7,972.27
FREEWAY RS	013	9,256.25
FREEWAY RS	013	14,068.71
FREEWAY RS	013	6,820.57
	013	**64,065.82**
	016	
FREEWAY RS	016	1,840.05
	016	**1,840.05**
	017	
FREEWAY RS	017	5,057.25
FREEWAY RS	017	13,830.05
FREEWAY RS	017	431.98
FREEWAY RS	017	476.98
FREEWAY RS	017	47.89
FREEWAY RS	017	405.48
FREEWAY RS	017	647.97
FREEWAY RS	017	647.26
FREEWAY RS	017	486.00
FREEWAY RS	017	324.00
FREEWAY RS	017	34.36
FREEWAY RS	017	377.10
FREEWAY RS	017	647.92
FREEWAY RS	017	647.94
FREEWAY RS	017	323.96
FREEWAY RS	017	644.33
FREEWAY RS	017	647.91
FREEWAY RS	017	323.97
FREEWAY RS	017	647.93
FREEWAY RS	017	423.96
FREEWAY RS	017	5,874.78
FREEWAY RS	017	46.70
FREEWAY RS	017	592.79
FREEWAY RS	017	323.93
FREEWAY RS	017	647.98
FREEWAY RS	017	647.97
FREEWAY RS	017	647.97
FREEWAY RS	017	647.97
FREEWAY RS	017	638.15
FREEWAY RS	017	647.92
FREEWAY RS	017	323.96
FREEWAY RS	017	647.98
FREEWAY RS	017	647.94
FREEWAY RS	017	647.92
FREEWAY RS	017	6.59

NAME	LAND_U	AREA
FREEWAY RS	017	601.33
FREEWAY RS	017	647.95
FREEWAY RS	017	647.97
FREEWAY RS	017	323.94
FREEWAY RS	017	647.97
FREEWAY RS	017	647.95
FREEWAY RS	017	243.65
FREEWAY RS	017	606.83
FREEWAY RS	017	647.97
FREEWAY RS	017	647.93
FREEWAY RS	017	647.99
FREEWAY RS	017	647.92
FREEWAY RS	017	323.96
FREEWAY RS	017	647.97
FREEWAY RS	017	647.93
FREEWAY RS	017	487.33
FREEWAY RS	017	323.97
FREEWAY RS	017	647.94
FREEWAY RS	017	647.94
FREEWAY RS	017	647.93
FREEWAY RS	017	647.93
FREEWAY RS	017	647.93
FREEWAY RS	017	647.94
FREEWAY RS	017	323.95
FREEWAY RS	017	647.97
FREEWAY RS	017	647.93
FREEWAY RS	017	251.99
FREEWAY RS	017	647.92
FREEWAY RS	017	647.98
FREEWAY RS	017	647.97
FREEWAY RS	017	647.97
FREEWAY RS	017	647.97
FREEWAY RS	017	647.97
FREEWAY RS	017	647.95
FREEWAY RS	017	647.97
FREEWAY RS	017	647.97
FREEWAY RS	017	161.97
FREEWAY RS	017	647.96
FREEWAY RS	017	647.97
FREEWAY RS	017	647.95
FREEWAY RS	017	647.97
FREEWAY RS	017	647.93
FREEWAY RS	017	647.97
FREEWAY RS	017	323.93
FREEWAY RS	017	647.97
FREEWAY RS	017	647.98
FREEWAY RS	017	647.94
FREEWAY RS	017	647.97
FREEWAY RS	017	647.95
FREEWAY RS	017	647.97
FREEWAY RS	017	647.92
FREEWAY RS	017	647.97
FREEWAY RS	017	647.96
FREEWAY RS	017	323.96
FREEWAY RS	017	647.99
FREEWAY RS	017	647.92
FREEWAY RS	017	647.97
FREEWAY RS	017	619.32
FREEWAY RS	017	647.95

NAME	LAND_U	AREA
FREEWAY RS	017	647.94
FREEWAY RS	017	647.94
FREEWAY RS	017	647.89
FREEWAY RS	017	647.92
FREEWAY RS	017	323.95
FREEWAY RS	017	647.97
FREEWAY RS	017	647.91
FREEWAY RS	017	647.93
FREEWAY RS	017	602.85
FREEWAY RS	017	539.97
FREEWAY RS	017	756.00
FREEWAY RS	017	755.97
FREEWAY RS	017	755.98
FREEWAY RS	017	377.98
FREEWAY RS	017	755.94
FREEWAY RS	017	755.98
FREEWAY RS	017	319.47
FREEWAY RS	017	647.92
FREEWAY RS	017	323.96
FREEWAY RS	017	647.97
FREEWAY RS	017	647.98
	017	**87,534.20**
	018	
FREEWAY RS	018	4,040.45
	018	**4,040.45**
	020	
FREEWAY RS	020	3,649.38
FREEWAY RS	020	5,149.92
FREEWAY RS	020	3,224.19
FREEWAY RS	020	360.65
FREEWAY RS	020	7,130.84
FREEWAY RS	020	26,400.09
FREEWAY RS	020	1,994.16
FREEWAY RS	020	8,150.66
FREEWAY RS	020	5,871.57
FREEWAY RS	020	25,268.20
	020	**87,199.67**
	024	
FREEWAY RS	024	155,277.58
	024	**155,277.58**
	030	
FREEWAY RS	030	10,392.09
FREEWAY RS	030	8,842.09
FREEWAY RS	030	6,023.93
FREEWAY RS	030	3,332.61
	030	**28,590.72**
	031	

NAME	LAND_U	AREA
FREEWAY RS	031	16.35
FREEWAY RS	031	18,478.96
FREEWAY RS	031	9,076.99
FREEWAY RS	031	11,842.10
	031	**39,414.40**
	032	
FREEWAY RS	032	516.27
FREEWAY RS	032	5,301.19
FREEWAY RS	032	5,772.00
FREEWAY RS	032	384.50
	032	**11,973.96**
	033	
FREEWAY RS	033	51.30
FREEWAY RS	033	7,297.93
FREEWAY RS	033	17,583.03
FREEWAY RS	033	7,503.58
	033	**32,435.84**
	034	
FREEWAY RS	034	22,315.02
FREEWAY RS	034	14,101.35
FREEWAY RS	034	13,994.44
FREEWAY RS	034	12,052.19
FREEWAY RS	034	6,395.83
FREEWAY RS	034	19,082.99
	034	**87,941.82**
	040	
FREEWAY RS	040	4,002.79
FREEWAY RS	040	19,942.72
	040	**23,945.52**
FREEWAY RS		**640,040.62**
WASHINGTON		
	018	
WASHINGTON	018	7,602.43
	018	**7,602.43**
	019	
WASHINGTON	019	19,405.24
	019	**19,405.24**
	020	
WASHINGTON	020	57,248.45
WASHINGTON	020	1,701.55

NAME	LAND_U	AREA
WASHINGTON	020	77,304.48
WASHINGTON	020	8,452.99
WASHINGTON	020	56,786.91
WASHINGTON	020	18,173.07
WASHINGTON	020	54,374.19
WASHINGTON	020	17,512.17
WASHINGTON	020	7,494.09
WASHINGTON	020	5,934.42
WASHINGTON	020	16,653.95
WASHINGTON	020	7,528.98
WASHINGTON	020	7,000.02
WASHINGTON	020	14,000.69
WASHINGTON	020	21,000.63
WASHINGTON	020	13,999.97
WASHINGTON	020	4,793.81
WASHINGTON	020	14,602.20
WASHINGTON	020	7,595.04
WASHINGTON	020	7,000.38
WASHINGTON	020	6,999.97
WASHINGTON	020	27,999.94
WASHINGTON	020	7,000.13
WASHINGTON	020	3,284.82
WASHINGTON	020	14,000.18
WASHINGTON	020	3,836.01
WASHINGTON	020	8,167.07
WASHINGTON	020	7,284.71
WASHINGTON	020	18,274.16
WASHINGTON	020	1,192.57
WASHINGTON	020	2,939.46
	020	**520,137.02**
	030	
WASHINGTON	030	6,334.92
WASHINGTON	030	13,999.97
WASHINGTON	030	951.67
WASHINGTON	030	7,000.01
WASHINGTON	030	6,397.79
WASHINGTON	030	6,405.10
WASHINGTON	030	7,000.01
WASHINGTON	030	7,000.35
WASHINGTON	030	911.64
WASHINGTON	030	2,744.44
WASHINGTON	030	3,795.29
	030	**62,541.18**
	031	
WASHINGTON	031	2,022.66
WASHINGTON	031	6,569.70
WASHINGTON	031	5,988.63
WASHINGTON	031	6,334.45
WASHINGTON	031	6,999.97
WASHINGTON	031	7,000.37
WASHINGTON	031	1,417.26
WASHINGTON	031	6,999.97
WASHINGTON	031	7,000.17
WASHINGTON	031	7,000.03

NAME	LAND_U	AREA
WASHINGTON	031	16,814.43
	031	**74,147.62**
	032	
WASHINGTON	032	1,098.12
WASHINGTON	032	5,058.04
WASHINGTON	032	6,999.97
WASHINGTON	032	7,000.34
WASHINGTON	032	7,000.37
WASHINGTON	032	5,668.13
WASHINGTON	032	2,554.49
	032	**35,379.45**
	033	
WASHINGTON	033	1,807.26
WASHINGTON	033	318.75
	033	**2,126.02**
	034	
WASHINGTON	034	9,437.73
WASHINGTON	034	13,225.35
	034	**22,663.08**
	071	
WASHINGTON	071	380,308.98
	071	**380,308.98**
WASHINGTON		**1,124,311.01**
STARLIGHT		
	016	
STARLIGHT	016	591.16
	016	**591.16**
	020	
STARLIGHT	020	7,999.95
STARLIGHT	020	68,724.72
STARLIGHT	020	128,200.72
STARLIGHT	020	68,160.63
STARLIGHT	020	17,355.22
STARLIGHT	020	31,635.13
	020	**322,076.37**
	021	
STARLIGHT	021	1,119.97
STARLIGHT	021	1,119.97
STARLIGHT	021	4,480.03

NAME	LAND_U	AREA
	021	**6,719.97**
	030	
STARLIGHT	030	40,000.23
STARLIGHT	030	39,900.08
STARLIGHT	030	7,999.87
STARLIGHT	030	7,999.95
STARLIGHT	030	15,999.96
STARLIGHT	030	7,935.73
STARLIGHT	030	16,000.04
STARLIGHT	030	30,361.27
	030	**166,197.13**
	032	
STARLIGHT	032	7,874.12
STARLIGHT	032	8,000.18
STARLIGHT	032	16,000.17
STARLIGHT	032	8,000.16
	032	**39,874.63**
	033	
STARLIGHT	033	8,000.06
STARLIGHT	033	8,000.10
STARLIGHT	033	15,782.15
STARLIGHT	033	8,000.02
STARLIGHT	033	8,000.00
STARLIGHT	033	23,999.92
STARLIGHT	033	7,952.30
STARLIGHT	033	31,980.32
	033	**111,714.87**
	034	
STARLIGHT	034	32,000.36
STARLIGHT	034	122,012.81
	034	**154,013.17**
	040	
STARLIGHT	040	213,141.06
STARLIGHT	040	16,000.08
STARLIGHT	040	8,000.02
STARLIGHT	040	108,569.53
STARLIGHT	040	85,046.88
	040	**430,757.57**
	043	
STARLIGHT	043	77,899.75
STARLIGHT	043	85,289.70
	043	**163,189.44**

NAME	LAND_U	AREA
STARLIGHT		**1,395,134.31**
WEST KEYSTONE		
	014	
WEST KEYSTONE	014	5,820.37
WEST KEYSTONE	014	5,146.63
WEST KEYSTONE	014	2,118.14
WEST KEYSTONE	014	64,614.81
	014	**77,699.95**
	020	
WEST KEYSTONE	020	11,572.88
	020	**11,572.88**
	032	
WEST KEYSTONE	032	25,669.81
	032	**25,669.81**
	035	
WEST KEYSTONE	035	214,340.12
WEST KEYSTONE	035	110,276.91
WEST KEYSTONE	035	6,654.76
	035	**331,271.79**
	040	
WEST KEYSTONE	040	47,317.63
WEST KEYSTONE	040	629,893.08
WEST KEYSTONE	040	167,392.02
WEST KEYSTONE	040	17,168.01
WEST KEYSTONE	040	69,936.08
	040	**931,706.83**
	041	
WEST KEYSTONE	041	34,609.32
WEST KEYSTONE	041	50,826.79
	041	**85,436.10**
	050	
WEST KEYSTONE	050	502.76
WEST KEYSTONE	050	179,049.79
WEST KEYSTONE	050	7,487.88
WEST KEYSTONE	050	11,696.85
	050	**198,737.27**
	051	
WEST KEYSTONE	051	108,147.71
WEST KEYSTONE	051	30,632.96

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NAME	LAND_U	AREA
WEST KEYSTONE	051	28,466.93
	051	**167,247.60**
WEST KEYSTONE		**1,829,342.23**
DOWNTOWN EAST		
	014	
DOWNTOWN EAST	014	7,019.72
DOWNTOWN EAST	014	7,355.70
DOWNTOWN EAST	014	8,358.15
DOWNTOWN EAST	014	16,607.15
DOWNTOWN EAST	014	6,286.58
DOWNTOWN EAST	014	23,730.34
DOWNTOWN EAST	014	17,135.17
	014	**86,492.81**
	015	
DOWNTOWN EAST	015	12,808.16
DOWNTOWN EAST	015	3,965.95
DOWNTOWN EAST	015	6,910.60
DOWNTOWN EAST	015	6,891.16
DOWNTOWN EAST	015	14,058.17
DOWNTOWN EAST	015	23,819.13
DOWNTOWN EAST	015	10,416.30
DOWNTOWN EAST	015	2.45
	015	**78,871.92**
	016	
DOWNTOWN EAST	016	524.76
	016	**524.76**
	017	
DOWNTOWN EAST	017	3,991.54
	017	**3,991.54**
	018	
DOWNTOWN EAST	018	28,029.29
DOWNTOWN EAST	018	7,011.61
DOWNTOWN EAST	018	14,043.87
DOWNTOWN EAST	018	21,796.32
DOWNTOWN EAST	018	18,336.27
DOWNTOWN EAST	018	6,375.02
DOWNTOWN EAST	018	31,649.57
DOWNTOWN EAST	018	1,275.63
DOWNTOWN EAST	018	5,104.63
DOWNTOWN EAST	018	39,681.42
	018	**173,303.62**
	020	

NAME	LAND_U	AREA
DOWNTOWN EAST	020	9,695.24
DOWNTOWN EAST	020	11,603.90
DOWNTOWN EAST	020	2,378.64
DOWNTOWN EAST	020	3,617.22
DOWNTOWN EAST	020	7,478.50
DOWNTOWN EAST	020	23,547.69
DOWNTOWN EAST	020	1,773.14
DOWNTOWN EAST	020	7,193.68
DOWNTOWN EAST	020	7,088.20
DOWNTOWN EAST	020	6,632.94
DOWNTOWN EAST	020	6,767.18
DOWNTOWN EAST	020	2,258.31
	020	**90,034.64**
	030	
DOWNTOWN EAST	030	4,638.69
DOWNTOWN EAST	030	5,576.18
DOWNTOWN EAST	030	4,661.62
	030	**14,876.49**
	031	
DOWNTOWN EAST	031	7,326.75
DOWNTOWN EAST	031	6,798.47
DOWNTOWN EAST	031	5,803.90
DOWNTOWN EAST	031	13,929.56
	031	**33,858.68**
	032	
DOWNTOWN EAST	032	7,014.47
DOWNTOWN EAST	032	7,114.61
DOWNTOWN EAST	032	4,067.14
DOWNTOWN EAST	032	14,271.79
DOWNTOWN EAST	032	7,111.66
DOWNTOWN EAST	032	7,124.81
DOWNTOWN EAST	032	23,035.46
DOWNTOWN EAST	032	7,180.42
DOWNTOWN EAST	032	7,183.42
DOWNTOWN EAST	032	5,068.17
DOWNTOWN EAST	032	8,795.76
	032	**97,967.69**
	033	
DOWNTOWN EAST	033	3,454.66
DOWNTOWN EAST	033	6,998.03
DOWNTOWN EAST	033	14,149.20
DOWNTOWN EAST	033	6,813.02
DOWNTOWN EAST	033	6,757.38
DOWNTOWN EAST	033	6,860.61
	033	**45,032.90**
	034	
DOWNTOWN EAST	034	86,022.64

NAME	LAND_U	AREA
DOWNTOWN EAST	034	1,690.18
DOWNTOWN EAST	034	14,126.24
DOWNTOWN EAST	034	14,636.91
DOWNTOWN EAST	034	2,023.02
DOWNTOWN EAST	034	13,298.13
DOWNTOWN EAST	034	7,741.22
	034	**139,538.35**
	040	
DOWNTOWN EAST	040	6,864.87
DOWNTOWN EAST	040	14,538.60
DOWNTOWN EAST	040	14,188.33
DOWNTOWN EAST	040	3,331.96
DOWNTOWN EAST	040	7,214.69
DOWNTOWN EAST	040	40,530.91
DOWNTOWN EAST	040	24,014.91
DOWNTOWN EAST	040	29,195.73
DOWNTOWN EAST	040	62.53
DOWNTOWN EAST	040	10,586.31
DOWNTOWN EAST	040	131,301.36
DOWNTOWN EAST	040	51,577.31
DOWNTOWN EAST	040	11,730.61
DOWNTOWN EAST	040	9,397.81
DOWNTOWN EAST	040	13,536.48
DOWNTOWN EAST	040	8,361.90
DOWNTOWN EAST	040	10.49
DOWNTOWN EAST	040	9.18
	040	**376,453.98**
	041	
DOWNTOWN EAST	041	15,171.46
DOWNTOWN EAST	041	6,383.10
DOWNTOWN EAST	041	7,013.59
DOWNTOWN EAST	041	6,840.96
DOWNTOWN EAST	041	34,727.99
	041	**70,137.10**
	042	
DOWNTOWN EAST	042	47,696.06
	042	**47,696.06**
	043	
DOWNTOWN EAST	043	11,052.32
DOWNTOWN EAST	043	21,100.71
DOWNTOWN EAST	043	8,758.17
DOWNTOWN EAST	043	13,966.73
DOWNTOWN EAST	043	57,092.84
DOWNTOWN EAST	043	26,303.75
DOWNTOWN EAST	043	23,109.64
DOWNTOWN EAST	043	8,540.36
DOWNTOWN EAST	043	7,225.73
DOWNTOWN EAST	043	19,834.47
DOWNTOWN EAST	043	7,316.50

NAME	LAND_U	AREA
DOWNTOWN EAST	043	14,287.25
DOWNTOWN EAST	043	3,418.93
	043	**222,007.39**
	044	
DOWNTOWN EAST	044	141,606.35
	044	**141,606.35**
	050	
DOWNTOWN EAST	050	10,569.62
DOWNTOWN EAST	050	113,458.01
DOWNTOWN EAST	050	50,052.26
DOWNTOWN EAST	050	21,082.70
DOWNTOWN EAST	050	49,772.68
DOWNTOWN EAST	050	52,491.17
DOWNTOWN EAST	050	33,642.41
DOWNTOWN EAST	050	32,652.51
DOWNTOWN EAST	050	6,468.25
DOWNTOWN EAST	050	47,784.14
DOWNTOWN EAST	050	41,411.80
DOWNTOWN EAST	050	2,603.27
DOWNTOWN EAST	050	14,214.34
DOWNTOWN EAST	050	29,723.45
DOWNTOWN EAST	050	16,273.34
DOWNTOWN EAST	050	7,069.37
DOWNTOWN EAST	050	4,033.45
DOWNTOWN EAST	050	19,905.05
DOWNTOWN EAST	050	456.99
	050	**553,664.82**
	051	
DOWNTOWN EAST	051	1,053.30
DOWNTOWN EAST	051	11,816.00
DOWNTOWN EAST	051	32,109.46
DOWNTOWN EAST	051	37,779.06
	051	**82,757.81**
	052	
DOWNTOWN EAST	052	1,277.66
DOWNTOWN EAST	052	52,612.29
	052	**53,889.95**
	070	
DOWNTOWN EAST	070	152,486.85
DOWNTOWN EAST	070	13,187.85
DOWNTOWN EAST	070	4,499.46
	070	**170,174.16**
DOWNTOWN EAST		**2,482,881.00**
LOWER EVANS		

NAME	LAND_U	AREA
	012	
LOWER EVANS	012	42,079.94
LOWER EVANS	012	6,327.12
LOWER EVANS	012	6,511.22
	012	**54,918.27**
	013	
LOWER EVANS	013	17,380.68
LOWER EVANS	013	207.23
	013	**17,587.90**
	014	
LOWER EVANS	014	108.06
LOWER EVANS	014	52,400.00
LOWER EVANS	014	295,694.16
LOWER EVANS	014	8,103.24
LOWER EVANS	014	184.38
	014	**356,489.84**
	017	
LOWER EVANS	017	4,138.52
LOWER EVANS	017	24,189.76
	017	**28,328.28**
	018	
LOWER EVANS	018	11,820.77
LOWER EVANS	018	19.41
LOWER EVANS	018	62,424.97
LOWER EVANS	018	2,377.66
LOWER EVANS	018	5,853.24
LOWER EVANS	018	42,516.51
	018	**125,012.55**
	019	
LOWER EVANS	019	958.19
	019	**958.19**
	020	
LOWER EVANS	020	17,495.95
LOWER EVANS	020	8,085.80
LOWER EVANS	020	16,065.09
LOWER EVANS	020	44,560.10
LOWER EVANS	020	63,287.11
LOWER EVANS	020	17,211.82
LOWER EVANS	020	13,921.68
LOWER EVANS	020	6,630.57
LOWER EVANS	020	20,099.27
LOWER EVANS	020	7,008.42
LOWER EVANS	020	20,842.64

NAME	LAND_U	AREA
LOWER EVANS	020	29,275.90
LOWER EVANS	020	21,786.24
LOWER EVANS	020	6,092.25
LOWER EVANS	020	6,902.71
LOWER EVANS	020	16,681.18
LOWER EVANS	020	14,344.81
LOWER EVANS	020	5,999.97
LOWER EVANS	020	77,565.24
LOWER EVANS	020	11,039.91
LOWER EVANS	020	23,684.98
LOWER EVANS	020	608.24
LOWER EVANS	020	52,722.28
LOWER EVANS	020	53,910.44
LOWER EVANS	020	61,865.71
LOWER EVANS	020	5,729.80
LOWER EVANS	020	16,521.02
LOWER EVANS	020	27,613.23
	020	**667,552.35**
	030	
LOWER EVANS	030	8,124.98
LOWER EVANS	030	7,452.68
LOWER EVANS	030	6,409.23
LOWER EVANS	030	14,836.39
LOWER EVANS	030	7,187.03
LOWER EVANS	030	8,841.29
LOWER EVANS	030	7,026.45
LOWER EVANS	030	13,482.32
LOWER EVANS	030	5,519.82
LOWER EVANS	030	7,061.59
	030	**85,941.78**
	031	
LOWER EVANS	031	24,360.14
LOWER EVANS	031	5,391.65
LOWER EVANS	031	4,804.59
LOWER EVANS	031	9,550.02
LOWER EVANS	031	5,999.87
LOWER EVANS	031	6,314.56
LOWER EVANS	031	5,520.06
LOWER EVANS	031	6,960.00
	031	**68,900.89**
	032	
LOWER EVANS	032	9,014.25
LOWER EVANS	032	9,919.03
LOWER EVANS	032	7,427.21
LOWER EVANS	032	7,428.84
LOWER EVANS	032	4,759.78
LOWER EVANS	032	8,668.63
LOWER EVANS	032	5,519.92
	032	**52,737.65**

NAME	LAND_U	AREA
	033	
LOWER EVANS	033	23,444.15
LOWER EVANS	033	7,032.03
LOWER EVANS	033	30,607.30
	033	**61,083.48**
	034	
LOWER EVANS	034	31,888.32
LOWER EVANS	034	112,200.76
	034	**144,089.08**
	040	
LOWER EVANS	040	1,414.61
LOWER EVANS	040	15,665.73
LOWER EVANS	040	5,887.97
LOWER EVANS	040	47,247.34
LOWER EVANS	040	3,548,392.81
LOWER EVANS	040	23,648.37
LOWER EVANS	040	15,492.40
LOWER EVANS	040	4,779.67
LOWER EVANS	040	11,918.96
	040	**3,674,447.87**
	041	
LOWER EVANS	041	3,873.41
	041	**3,873.41**
	043	
LOWER EVANS	043	23,290.99
LOWER EVANS	043	62,662.70
	043	**85,953.68**
	050	
LOWER EVANS	050	9,635.23
	050	**9,635.23**
LOWER EVANS		**5,437,510.46**
DOWNTOWN WEST		
	013	
DOWNTOWN WEST	013	5,241.09
DOWNTOWN WEST	013	11,259.72
DOWNTOWN WEST	013	10,766.21
DOWNTOWN WEST	013	15,745.80
DOWNTOWN WEST	013	7,362.65
	013	**50,375.47**

NAME	LAND_U	AREA
	014	
DOWNTOWN WEST	014	10,815.06
DOWNTOWN WEST	014	4,166.98
DOWNTOWN WEST	014	12,289.14
DOWNTOWN WEST	014	9,123.27
DOWNTOWN WEST	014	29,910.57
DOWNTOWN WEST	014	14,140.64
DOWNTOWN WEST	014	6,887.01
DOWNTOWN WEST	014	26,346.87
DOWNTOWN WEST	014	9,146.15
DOWNTOWN WEST	014	5,828.73
DOWNTOWN WEST	014	31,983.58
DOWNTOWN WEST	014	4,550.00
DOWNTOWN WEST	014	5,792.29
DOWNTOWN WEST	014	15,198.37
DOWNTOWN WEST	014	22,569.62
DOWNTOWN WEST	014	5,326.88
DOWNTOWN WEST	014	2,251.03
DOWNTOWN WEST	014	12,244.15
	014	**228,570.32**
	015	
DOWNTOWN WEST	015	42,691.28
	015	**42,691.28**
	016	
DOWNTOWN WEST	016	911.50
DOWNTOWN WEST	016	201.27
	016	**1,112.77**
	017	
DOWNTOWN WEST	017	26,957.87
DOWNTOWN WEST	017	120.45
DOWNTOWN WEST	017	205.79
	017	**27,284.10**
	018	
DOWNTOWN WEST	018	58,095.23
DOWNTOWN WEST	018	7,436.75
DOWNTOWN WEST	018	86,656.00
DOWNTOWN WEST	018	6,882.64
DOWNTOWN WEST	018	5,115.35
DOWNTOWN WEST	018	40,200.47
DOWNTOWN WEST	018	55,352.50
DOWNTOWN WEST	018	10,306.12
DOWNTOWN WEST	018	30,057.04
DOWNTOWN WEST	018	13,928.73
DOWNTOWN WEST	018	28,928.12
DOWNTOWN WEST	018	19,536.79
DOWNTOWN WEST	018	8,172.32
DOWNTOWN WEST	018	14,223.46
DOWNTOWN WEST	018	63,111.11

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NAME	LAND_U	AREA
DOWNTOWN WEST	018	21,503.82
DOWNTOWN WEST	018	7,347.60
DOWNTOWN WEST	018	22,037.11
DOWNTOWN WEST	018	28,862.22
DOWNTOWN WEST	018	12,390.48
DOWNTOWN WEST	018	16,533.73
DOWNTOWN WEST	018	21,503.84
DOWNTOWN WEST	018	19,618.54
DOWNTOWN WEST	018	3,150.22
DOWNTOWN WEST	018	10,041.93
DOWNTOWN WEST	018	5,927.20
DOWNTOWN WEST	018	59,816.18
DOWNTOWN WEST	018	385.58
	018	**677,121.08**
	020	
DOWNTOWN WEST	020	20,849.38
DOWNTOWN WEST	020	7,313.53
DOWNTOWN WEST	020	4,783.72
DOWNTOWN WEST	020	5,098.45
DOWNTOWN WEST	020	9,676.56
DOWNTOWN WEST	020	4,062.34
DOWNTOWN WEST	020	9,930.67
DOWNTOWN WEST	020	6,926.43
DOWNTOWN WEST	020	4,568.39
DOWNTOWN WEST	020	5,322.83
DOWNTOWN WEST	020	7,113.54
DOWNTOWN WEST	020	16,133.31
DOWNTOWN WEST	020	10,525.83
DOWNTOWN WEST	020	4,531.34
DOWNTOWN WEST	020	14,999.88
DOWNTOWN WEST	020	5,176.30
DOWNTOWN WEST	020	4,464.64
DOWNTOWN WEST	020	266.27
DOWNTOWN WEST	020	7,319.17
DOWNTOWN WEST	020	5,625.06
DOWNTOWN WEST	020	8,492.78
DOWNTOWN WEST	020	7,841.86
DOWNTOWN WEST	020	13,679.34
	020	**184,701.61**
	024	
DOWNTOWN WEST	024	20,975.99
	024	**20,975.99**
	030	
DOWNTOWN WEST	030	11,883.33
DOWNTOWN WEST	030	5,108.04
DOWNTOWN WEST	030	5,410.28
DOWNTOWN WEST	030	6,702.38
DOWNTOWN WEST	030	4,426.61
DOWNTOWN WEST	030	2,855.93
DOWNTOWN WEST	030	7,427.06
	030	**43,813.63**

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NAME	LAND_U	AREA
	031	
DOWNTOWN WEST	031	4,672.05
DOWNTOWN WEST	031	13,145.44
DOWNTOWN WEST	031	5,236.21
DOWNTOWN WEST	031	6,226.17
DOWNTOWN WEST	031	6,901.31
DOWNTOWN WEST	031	8,265.21
	031	**44,446.38**
	032	
DOWNTOWN WEST	032	6,996.36
DOWNTOWN WEST	032	13,744.72
DOWNTOWN WEST	032	38,036.63
DOWNTOWN WEST	032	6,715.56
DOWNTOWN WEST	032	4,918.00
DOWNTOWN WEST	032	1,619.05
DOWNTOWN WEST	032	20,156.35
DOWNTOWN WEST	032	4,773.39
DOWNTOWN WEST	032	6,264.25
DOWNTOWN WEST	032	7,227.85
DOWNTOWN WEST	032	27,251.00
	032	**137,703.15**
	033	
DOWNTOWN WEST	033	7,179.09
DOWNTOWN WEST	033	13,999.76
DOWNTOWN WEST	033	6,219.91
DOWNTOWN WEST	033	5,129.03
DOWNTOWN WEST	033	4,339.75
DOWNTOWN WEST	033	7,059.82
DOWNTOWN WEST	033	12,886.66
DOWNTOWN WEST	033	12,272.25
	033	**69,086.26**
	034	
DOWNTOWN WEST	034	7,099.08
DOWNTOWN WEST	034	7,406.13
DOWNTOWN WEST	034	18,915.20
DOWNTOWN WEST	034	9,925.13
DOWNTOWN WEST	034	7,080.78
DOWNTOWN WEST	034	30,999.89
DOWNTOWN WEST	034	12,155.70
DOWNTOWN WEST	034	8,899.31
DOWNTOWN WEST	034	6,463.29
DOWNTOWN WEST	034	105,518.84
	034	**214,463.35**
	040	
DOWNTOWN WEST	040	27,468.31
DOWNTOWN WEST	040	369,824.30
DOWNTOWN WEST	040	128,735.26
DOWNTOWN WEST	040	7,021.82

NAME	LAND_U	AREA
DOWNTOWN WEST	040	7,109.62
DOWNTOWN WEST	040	14,866.27
DOWNTOWN WEST	040	26,455.88
DOWNTOWN WEST	040	9,304.46
DOWNTOWN WEST	040	14,034.83
DOWNTOWN WEST	040	15,536.85
DOWNTOWN WEST	040	28,169.13
DOWNTOWN WEST	040	10,166.33
DOWNTOWN WEST	040	28,657.76
DOWNTOWN WEST	040	127,422.57
DOWNTOWN WEST	040	6,760.09
DOWNTOWN WEST	040	14,055.84
DOWNTOWN WEST	040	21,633.21
DOWNTOWN WEST	040	36,379.42
DOWNTOWN WEST	040	8,874.27
DOWNTOWN WEST	040	155,818.27
DOWNTOWN WEST	040	7,966.83
DOWNTOWN WEST	040	36,565.99
DOWNTOWN WEST	040	49,319.53
DOWNTOWN WEST	040	20,800.98
DOWNTOWN WEST	040	16,750.10
DOWNTOWN WEST	040	7,344.86
DOWNTOWN WEST	040	4,378.09
DOWNTOWN WEST	040	5,126.78
DOWNTOWN WEST	040	14,618.77
DOWNTOWN WEST	040	10,060.00
DOWNTOWN WEST	040	117,269.99
DOWNTOWN WEST	040	16,379.38
DOWNTOWN WEST	040	1,508.19
DOWNTOWN WEST	040	40,108.44
DOWNTOWN WEST	040	6,807.50
DOWNTOWN WEST	040	6,769.92
DOWNTOWN WEST	040	7,973.68
DOWNTOWN WEST	040	8,387.95
DOWNTOWN WEST	040	19,909.56
DOWNTOWN WEST	040	2,623.51
DOWNTOWN WEST	040	10,598.31
DOWNTOWN WEST	040	10,232.72
DOWNTOWN WEST	040	864.85
DOWNTOWN WEST	040	6,364.15
DOWNTOWN WEST	040	35,676.85
DOWNTOWN WEST	040	18,370.21
	040	**1,541,071.63**
	041	
DOWNTOWN WEST	041	37,724.75
DOWNTOWN WEST	041	33,625.19
DOWNTOWN WEST	041	37,193.03
DOWNTOWN WEST	041	28,332.63
DOWNTOWN WEST	041	7,970.50
DOWNTOWN WEST	041	8,215.39
DOWNTOWN WEST	041	14,168.23
DOWNTOWN WEST	041	29,482.38
DOWNTOWN WEST	041	13,525.72
DOWNTOWN WEST	041	53,921.25
DOWNTOWN WEST	041	60,277.60
DOWNTOWN WEST	041	12,724.23

NAME	LAND_U	AREA
DOWNTOWN WEST	041	10,036.99
DOWNTOWN WEST	041	7,090.32
DOWNTOWN WEST	041	7,007.29
DOWNTOWN WEST	041	6,220.11
DOWNTOWN WEST	041	42,841.16
DOWNTOWN WEST	041	15,209.91
DOWNTOWN WEST	041	2,774.69
DOWNTOWN WEST	041	9,903.15
	041	**438,244.53**
	042	
DOWNTOWN WEST	042	122,845.76
DOWNTOWN WEST	042	98,133.00
DOWNTOWN WEST	042	118,323.45
DOWNTOWN WEST	042	121,977.43
DOWNTOWN WEST	042	64,091.90
DOWNTOWN WEST	042	125,364.69
DOWNTOWN WEST	042	96,063.71
DOWNTOWN WEST	042	32,291.50
DOWNTOWN WEST	042	6,565.52
DOWNTOWN WEST	042	5,974.80
DOWNTOWN WEST	042	144,738.72
DOWNTOWN WEST	042	15,002.22
	042	**951,372.70**
	043	
DOWNTOWN WEST	043	27,990.52
DOWNTOWN WEST	043	43,042.36
DOWNTOWN WEST	043	6,713.61
DOWNTOWN WEST	043	17,755.92
DOWNTOWN WEST	043	11,047.23
DOWNTOWN WEST	043	10,640.60
DOWNTOWN WEST	043	14,450.28
DOWNTOWN WEST	043	19,544.98
DOWNTOWN WEST	043	14,639.51
DOWNTOWN WEST	043	14,043.66
DOWNTOWN WEST	043	13,910.78
DOWNTOWN WEST	043	20,845.47
DOWNTOWN WEST	043	39,884.15
DOWNTOWN WEST	043	26,278.33
DOWNTOWN WEST	043	41,977.12
DOWNTOWN WEST	043	39,979.02
DOWNTOWN WEST	043	25,475.48
DOWNTOWN WEST	043	12,431.64
DOWNTOWN WEST	043	42,165.10
DOWNTOWN WEST	043	73,952.84
DOWNTOWN WEST	043	33,907.39
DOWNTOWN WEST	043	14,222.65
DOWNTOWN WEST	043	4,965.21
DOWNTOWN WEST	043	40,553.91
DOWNTOWN WEST	043	30,549.35
	043	**640,967.08**
	044	
DOWNTOWN WEST	044	449.88

NAME	LAND_U	AREA
	044	**449.88**
	050	
DOWNTOWN WEST	050	20,170.49
DOWNTOWN WEST	050	76,050.09
DOWNTOWN WEST	050	52,370.23
	050	**148,590.81**
DOWNTOWN WEST		**5,463,042.04**
CENTER		
CENTER		2,371.74
		2,371.74
	012	
CENTER	012	75,968.20
CENTER	012	89,493.41
CENTER	012	54,459.16
CENTER	012	10,760.15
CENTER	012	127,553.00
CENTER	012	52,069.68
CENTER	012	84,118.95
CENTER	012	31,566.63
CENTER	012	21,967.30
CENTER	012	24,946.70
CENTER	012	7,674.63
CENTER	012	8,035.49
CENTER	012	2,436.60
CENTER	012	6,570.86
CENTER	012	31,335.80
CENTER	012	7,784.44
CENTER	012	7,474.80
CENTER	012	3,046.68
CENTER	012	3,087.67
CENTER	012	8,869.08
CENTER	012	7,295.18
	012	**666,514.42**
	013	
CENTER	013	6,320.88
CENTER	013	6,655.08
CENTER	013	6,000.03
CENTER	013	8,373.47
CENTER	013	25,018.25
	013	**52,367.71**
	014	
CENTER	014	9,031.42
	014	**9,031.42**

NAME	LAND_U	AREA
	016	
CENTER	016	1,250.49
CENTER	016	1,592.23
	016	**2,842.72**
	017	
CENTER	017	157,406.86
CENTER	017	27,954.13
CENTER	017	26,785.35
CENTER	017	209.49
CENTER	017	417.36
CENTER	017	413.04
CENTER	017	410.98
CENTER	017	215.98
CENTER	017	431.98
CENTER	017	431.98
CENTER	017	431.99
CENTER	017	314.95
CENTER	017	629.99
CENTER	017	629.99
CENTER	017	582.10
CENTER	017	323.96
CENTER	017	647.98
CENTER	017	647.97
CENTER	017	242.49
CENTER	017	647.98
CENTER	017	613.62
CENTER	017	0.71
CENTER	017	161.97
CENTER	017	323.96
CENTER	017	647.97
CENTER	017	270.85
CENTER	017	323.93
CENTER	017	647.97
CENTER	017	3.61
CENTER	017	323.96
CENTER	017	647.97
CENTER	017	647.93
CENTER	017	647.95
CENTER	017	647.92
CENTER	017	647.93
CENTER	017	601.22
CENTER	017	647.98
CENTER	017	647.97
CENTER	017	647.97
CENTER	017	323.96
CENTER	017	55.19
CENTER	017	647.94
CENTER	017	647.93
CENTER	017	641.33
CENTER	017	9.79
CENTER	017	647.97
CENTER	017	404.29
CENTER	017	46.65
CENTER	017	324.00
CENTER	017	160.64

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NAME	LAND_U	AREA
CENTER	017	41.09
	017	**232,830.73**
	018	
CENTER	018	21,825.21
CENTER	018	13,454.34
CENTER	018	7,000.01
	018	**42,279.57**
	020	
CENTER	020	168,210.74
CENTER	020	228,518.33
CENTER	020	331,334.47
CENTER	020	243,324.78
CENTER	020	196,555.06
CENTER	020	199,809.33
CENTER	020	157,538.03
CENTER	020	229,602.06
CENTER	020	33,093.18
CENTER	020	97,248.98
CENTER	020	23,822.50
CENTER	020	16,012.13
CENTER	020	16,526.00
CENTER	020	66,356.19
CENTER	020	174,917.84
CENTER	020	76,110.87
CENTER	020	32,267.65
CENTER	020	7,221.07
CENTER	020	66,972.51
CENTER	020	10,786.62
CENTER	020	27,901.26
CENTER	020	72,832.86
CENTER	020	84,768.70
CENTER	020	55,880.57
CENTER	020	3,875.71
CENTER	020	61,013.94
CENTER	020	6,909.14
CENTER	020	29,976.99
CENTER	020	15,568.09
CENTER	020	84,701.98
CENTER	020	6,272.55
CENTER	020	39,072.72
CENTER	020	6,460.68
CENTER	020	6,000.00
CENTER	020	25,699.83
CENTER	020	16,310.16
CENTER	020	26,332.84
CENTER	020	4,508.92
CENTER	020	63,654.09
CENTER	020	72,112.82
CENTER	020	3,643.53
CENTER	020	76,663.16
CENTER	020	31,769.57
CENTER	020	51,911.16
CENTER	020	6,278.09
CENTER	020	7,004.37

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NAME	LAND_U	AREA
CENTER	020	21,671.26
CENTER	020	5,997.09
CENTER	020	12,332.08
CENTER	020	6,165.99
CENTER	020	5,999.99
CENTER	020	13,904.90
CENTER	020	5,985.15
CENTER	020	27,535.75
CENTER	020	26,106.47
CENTER	020	6,076.70
CENTER	020	6,240.23
CENTER	020	6,986.10
CENTER	020	7,000.01
CENTER	020	27,999.95
CENTER	020	14,000.78
CENTER	020	13,999.93
CENTER	020	13,899.97
CENTER	020	48,640.92
CENTER	020	20,999.90
CENTER	020	874.65
CENTER	020	6,999.84
	020	**3,562,769.73**
	024	
CENTER	024	52,945.45
	024	**52,945.45**
	025	
CENTER	025	6,115.40
CENTER	025	6,115.28
CENTER	025	6,115.36
CENTER	025	5,075.44
	025	**23,421.48**
	030	
CENTER	030	5,204.76
CENTER	030	30,000.02
CENTER	030	11,930.91
CENTER	030	6,771.51
CENTER	030	8,270.27
CENTER	030	10,509.14
CENTER	030	8,250.80
CENTER	030	15,731.45
CENTER	030	3,589.03
CENTER	030	3,573.74
CENTER	030	5,732.87
CENTER	030	8,983.88
CENTER	030	5,255.30
CENTER	030	4,866.66
CENTER	030	6,344.76
CENTER	030	6,279.17
CENTER	030	14,028.17
CENTER	030	6,999.18
CENTER	030	5,039.75
CENTER	030	6,538.15

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NAME	LAND_U	AREA
CENTER	030	17,999.99
CENTER	030	15,628.15
CENTER	030	12,000.00
CENTER	030	5,999.99
CENTER	030	12,718.18
CENTER	030	8,708.31
CENTER	030	8,717.44
CENTER	030	6,878.63
CENTER	030	7,000.01
CENTER	030	1,254.68
CENTER	030	5,000.03
CENTER	030	7,000.06
CENTER	030	7,000.00
CENTER	030	7,168.13
CENTER	030	4,358.16
	030	**301,331.29**
	031	
CENTER	031	1,704.35
CENTER	031	3,977.29
CENTER	031	8,395.37
CENTER	031	7,780.97
CENTER	031	6,000.08
CENTER	031	7,264.90
CENTER	031	5,999.93
CENTER	031	6,595.11
CENTER	031	8,714.24
CENTER	031	8,720.51
CENTER	031	10,595.37
CENTER	031	7,000.01
CENTER	031	14,000.53
CENTER	031	7,000.00
CENTER	031	7,099.99
CENTER	031	13,666.86
CENTER	031	1,840.02
CENTER	031	5,923.43
	031	**132,278.95**
	032	
CENTER	032	3,651.39
CENTER	032	9,600.02
CENTER	032	12,046.09
CENTER	032	9,527.97
CENTER	032	7,124.60
CENTER	032	10,901.21
CENTER	032	3,932.04
CENTER	032	8,340.62
CENTER	032	5,973.62
CENTER	032	3,899.43
CENTER	032	7,432.28
CENTER	032	4,100.03
CENTER	032	6,441.11
CENTER	032	12,000.08
CENTER	032	7,836.66
CENTER	032	7,538.41
CENTER	032	5,401.98

NAME	LAND_U	AREA
CENTER	032	12,000.02
CENTER	032	6,595.06
CENTER	032	5,999.97
CENTER	032	5,851.90
CENTER	032	8,711.49
CENTER	032	4,010.34
CENTER	032	5,923.19
CENTER	032	14,000.32
CENTER	032	7,000.15
CENTER	032	7,000.03
CENTER	032	7,000.34
CENTER	032	4,132.21
CENTER	032	7,279.81
CENTER	032	7,700.01
	032	**228,952.38**
	033	
CENTER	033	12,580.68
CENTER	033	6,540.27
CENTER	033	10,536.66
CENTER	033	6,898.33
CENTER	033	1,354.31
CENTER	033	7,072.58
CENTER	033	472.15
CENTER	033	7,514.43
CENTER	033	7,000.15
CENTER	033	7,000.01
CENTER	033	6,832.06
CENTER	033	7,000.34
CENTER	033	6,999.90
CENTER	033	1,208.85
	033	**89,010.71**
	034	
CENTER	034	317,448.06
CENTER	034	13,727.37
CENTER	034	20,438.83
CENTER	034	11,655.98
CENTER	034	47,317.46
CENTER	034	6,166.04
CENTER	034	28,389.12
CENTER	034	17,094.02
CENTER	034	14,000.00
CENTER	034	7,524.32
	034	**483,761.19**
	040	
CENTER	040	15,790.70
CENTER	040	38,661.34
CENTER	040	4,640.86
CENTER	040	239,388.23
CENTER	040	514,773.18
CENTER	040	50,944.96
CENTER	040	10,034.53
CENTER	040	17,954.78

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NAME	LAND_U	AREA
CENTER	040	20,659.73
CENTER	040	12,851.18
CENTER	040	99,683.11
CENTER	040	7,000.03
CENTER	040	10,499.82
CENTER	040	7,363.03
CENTER	040	6,019.86
	040	**1,056,265.33**
	041	
CENTER	041	20,530.76
CENTER	041	6,299.86
	041	**26,830.61**
	043	
CENTER	043	15,583.77
CENTER	043	2,349.16
	043	**17,932.92**
	070	
CENTER	070	27,649.49
CENTER	070	162,959.44
CENTER	070	51,378.64
	070	**241,987.57**
	071	
CENTER	071	348,431.32
	071	**348,431.32**
CENTER		**7,574,157.25**
LOWER PEAVINE		
	012	
LOWER PEAVINE	012	328,630.34
LOWER PEAVINE	012	74,048.70
LOWER PEAVINE	012	111,185.43
LOWER PEAVINE	012	66,142.60
LOWER PEAVINE	012	644,885.02
LOWER PEAVINE	012	48,413.54
LOWER PEAVINE	012	26,587.79
	012	**1,299,893.41**
	017	
LOWER PEAVINE	017	63,045.81
LOWER PEAVINE	017	5,906.78
LOWER PEAVINE	017	4,633.21
	017	**73,585.80**

NAME	LAND_U	AREA
	019	
LOWER PEAVINE	019	298,016.99
LOWER PEAVINE	019	727,749.04
	019	**1,025,766.03**
	020	
LOWER PEAVINE	020	31,682.38
LOWER PEAVINE	020	9,035.64
LOWER PEAVINE	020	8,893.27
LOWER PEAVINE	020	92,643.05
LOWER PEAVINE	020	172,476.00
LOWER PEAVINE	020	290,727.98
LOWER PEAVINE	020	68,850.26
LOWER PEAVINE	020	176,571.06
LOWER PEAVINE	020	217,384.33
LOWER PEAVINE	020	173,344.05
LOWER PEAVINE	020	38,073.81
LOWER PEAVINE	020	244,391.43
LOWER PEAVINE	020	76,924.94
LOWER PEAVINE	020	70,225.36
LOWER PEAVINE	020	216,726.82
LOWER PEAVINE	020	168,297.10
LOWER PEAVINE	020	68,091.53
LOWER PEAVINE	020	109,545.21
LOWER PEAVINE	020	153,274.83
LOWER PEAVINE	020	88,529.81
LOWER PEAVINE	020	103,082.84
LOWER PEAVINE	020	177,431.16
LOWER PEAVINE	020	94,969.64
LOWER PEAVINE	020	132,229.51
LOWER PEAVINE	020	191,815.38
LOWER PEAVINE	020	64,243.18
LOWER PEAVINE	020	95,506.24
LOWER PEAVINE	020	143.12
	020	**3,335,109.94**
	021	
LOWER PEAVINE	021	4,934.08
LOWER PEAVINE	021	2,752.08
LOWER PEAVINE	021	2,400.07
LOWER PEAVINE	021	4,800.12
LOWER PEAVINE	021	4,128.22
LOWER PEAVINE	021	11,229.59
LOWER PEAVINE	021	4,800.03
LOWER PEAVINE	021	11,229.50
LOWER PEAVINE	021	11,229.51
LOWER PEAVINE	021	11,229.51
LOWER PEAVINE	021	11,229.48
LOWER PEAVINE	021	11,229.46
LOWER PEAVINE	021	11,229.40
LOWER PEAVINE	021	11,229.60
LOWER PEAVINE	021	11,229.40
LOWER PEAVINE	021	11,229.43
LOWER PEAVINE	021	11,229.50
LOWER PEAVINE	021	6,118.19

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NAME	LAND_U	AREA
LOWER PEAVINE	021	11,229.60
LOWER PEAVINE	021	3,231.38
LOWER PEAVINE	021	11,229.42
LOWER PEAVINE	021	11,229.45
LOWER PEAVINE	021	5,615.21
LOWER PEAVINE	021	5,612.72
LOWER PEAVINE	021	1,615.30
LOWER PEAVINE	021	5,612.41
LOWER PEAVINE	021	5,612.39
LOWER PEAVINE	021	1,615.27
LOWER PEAVINE	021	11,224.83
LOWER PEAVINE	021	11,224.79
LOWER PEAVINE	021	11,224.79
LOWER PEAVINE	021	11,224.83
LOWER PEAVINE	021	11,226.24
LOWER PEAVINE	021	11,226.26
LOWER PEAVINE	021	11,226.22
LOWER PEAVINE	021	11,224.83
LOWER PEAVINE	021	11,224.80
LOWER PEAVINE	021	11,224.86
LOWER PEAVINE	021	11,224.85
LOWER PEAVINE	021	11,226.25
LOWER PEAVINE	021	11,226.36
LOWER PEAVINE	021	11,226.25
LOWER PEAVINE	021	5,613.47
LOWER PEAVINE	021	3,495.98
LOWER PEAVINE	021	3,495.93
LOWER PEAVINE	021	3,496.08
	021	**389,317.95**
	024	
LOWER PEAVINE	024	33,122.20
LOWER PEAVINE	024	159,098.13
LOWER PEAVINE	024	831,677.55
	024	**1,023,897.88**
	034	
LOWER PEAVINE	034	365,121.01
	034	**365,121.01**
	040	
LOWER PEAVINE	040	15,074.97
	040	**15,074.97**
	050	
LOWER PEAVINE	050	252,904.39
	050	**252,904.39**
	070	
LOWER PEAVINE	070	329,020.11
LOWER PEAVINE	070	244,232.28
LOWER PEAVINE	070	108,972.49

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NAME	LAND_U	AREA
	070	**682,224.88**
LOWER PEAVINE		**8,462,896.26**
2ND STREET		
	014	
2ND STREET	014	18,328.33
	014	**18,328.33**
	015	
2ND STREET	015	78,684.38
2ND STREET	015	194,299.67
	015	**272,984.05**
	016	
2ND STREET	016	77.39
2ND STREET	016	1,358.05
2ND STREET	016	2,115.28
2ND STREET	016	2,206.11
2ND STREET	016	4,468.38
2ND STREET	016	1,348.43
2ND STREET	016	1,715.41
	016	**13,289.05**
	017	
2ND STREET	017	12,088.62
2ND STREET	017	60,272.59
	017	**72,361.21**
	018	
2ND STREET	018	439,913.98
2ND STREET	018	366,380.61
	018	**806,294.59**
	020	
2ND STREET	020	231,180.59
2ND STREET	020	91,299.57
2ND STREET	020	166,809.01
2ND STREET	020	95,872.39
2ND STREET	020	90,308.16
2ND STREET	020	56,204.70
2ND STREET	020	38,151.69
2ND STREET	020	79,948.26
2ND STREET	020	18,485.34
2ND STREET	020	251,426.19
2ND STREET	020	110,509.46
2ND STREET	020	83,289.73
2ND STREET	020	257,200.51
2ND STREET	020	194,813.33

NAME	LAND_U	AREA
2ND STREET	020	194,089.87
2ND STREET	020	223,732.48
2ND STREET	020	341,125.23
2ND STREET	020	333,380.83
2ND STREET	020	161,762.21
2ND STREET	020	11,483.62
2ND STREET	020	122,848.04
2ND STREET	020	235,409.59
2ND STREET	020	56,236.09
2ND STREET	020	239,006.55
2ND STREET	020	115,453.82
2ND STREET	020	212,887.01
2ND STREET	020	2,204.05
2ND STREET	020	143,252.28
2ND STREET	020	103,988.31
2ND STREET	020	362,643.83
2ND STREET	020	355,922.72
2ND STREET	020	18,427.30
2ND STREET	020	26,233.29
2ND STREET	020	35,282.69
	020	**5,060,868.72**
	030	
2ND STREET	030	2,025.97
	030	**2,025.97**
	034	
2ND STREET	034	43,324.37
2ND STREET	034	44,652.69
	034	**87,977.06**
	035	
2ND STREET	035	215,510.50
2ND STREET	035	240,371.81
	035	**455,882.30**
	040	
2ND STREET	040	80,256.12
2ND STREET	040	161,939.33
2ND STREET	040	221,072.32
2ND STREET	040	0.30
2ND STREET	040	196,028.05
2ND STREET	040	4.04
2ND STREET	040	2,260,433.94
2ND STREET	040	164,549.28
2ND STREET	040	47,431.56
	040	**3,131,714.95**
	041	
2ND STREET	041	1,113.44
2ND STREET	041	18,572.54

NAME	LAND_U	AREA
	041	**19,685.98**
	043	
2ND STREET	043	221,785.26
	043	**221,785.26**
	050	
2ND STREET	050	62,964.16
2ND STREET	050	28,047.54
2ND STREET	050	17,387.77
2ND STREET	050	966.58
	050	**109,366.05**
	051	
2ND STREET	051	48,115.15
2ND STREET	051	20,390.75
	051	**68,505.89**
	070	
2ND STREET	070	12,779.59
2ND STREET	070	29,635.94
2ND STREET	070	12,499.03
	070	**54,914.55**
2ND STREET		**10,395,983.97**
ELMCREST		
	012	
ELMCREST	012	10,469.25
ELMCREST	012	3,206.66
ELMCREST	012	1,903.29
ELMCREST	012	9,009.88
ELMCREST	012	9,032.13
	012	**33,621.21**
	013	
ELMCREST	013	7,311.72
	013	**7,311.72**
	014	
ELMCREST	014	1,513.13
	014	**1,513.13**
	016	
ELMCREST	016	55.29

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NAME	LAND_U	AREA
	016	**55.29**
	017	
ELMCREST	017	17,818.08
ELMCREST	017	19,011.00
	017	**36,829.08**
	018	
ELMCREST	018	7,491.34
	018	**7,491.34**
	019	
ELMCREST	019	192,364.83
ELMCREST	019	286,851.05
ELMCREST	019	31,445.69
	019	**510,661.56**
	020	
ELMCREST	020	104,522.45
ELMCREST	020	84,032.58
ELMCREST	020	27,752.82
ELMCREST	020	14,997.35
ELMCREST	020	75,126.08
ELMCREST	020	378,548.28
ELMCREST	020	200,745.79
ELMCREST	020	21,285.42
ELMCREST	020	53,915.58
ELMCREST	020	153,921.89
ELMCREST	020	466,807.79
ELMCREST	020	13,615.52
ELMCREST	020	656,270.64
ELMCREST	020	203,840.21
ELMCREST	020	21,799.36
ELMCREST	020	13,902.56
ELMCREST	020	56,433.22
ELMCREST	020	256,889.90
ELMCREST	020	89,063.14
ELMCREST	020	388.82
ELMCREST	020	120,070.57
ELMCREST	020	35,837.94
ELMCREST	020	115,351.27
ELMCREST	020	245,420.04
ELMCREST	020	218,843.49
ELMCREST	020	263,973.93
ELMCREST	020	595,950.32
ELMCREST	020	289,149.95
ELMCREST	020	228,329.74
ELMCREST	020	54,000.14
ELMCREST	020	153,827.59
ELMCREST	020	121,803.88
ELMCREST	020	191,146.79
ELMCREST	020	112,084.89
ELMCREST	020	194,741.45

NAME	LAND_U	AREA
ELMCREST	020	83,398.67
ELMCREST	020	168,616.24
ELMCREST	020	149,238.45
ELMCREST	020	116,419.31
ELMCREST	020	163,062.32
ELMCREST	020	175,134.98
ELMCREST	020	0.95
ELMCREST	020	171,715.67
ELMCREST	020	40,814.67
ELMCREST	020	129,088.84
ELMCREST	020	76,568.51
ELMCREST	020	39,028.09
ELMCREST	020	225,581.58
ELMCREST	020	138,837.51
ELMCREST	020	64,533.05
ELMCREST	020	9,472.39
ELMCREST	020	106,899.01
ELMCREST	020	57,299.43
ELMCREST	020	10,937.36
	020	**7,761,038.41**
	030	
ELMCREST	030	18,671.85
ELMCREST	030	69,686.86
	030	**88,358.71**
	032	
ELMCREST	032	10,147.14
ELMCREST	032	10,699.89
ELMCREST	032	3,999.98
ELMCREST	032	12,319.22
	032	**37,166.22**
	033	
ELMCREST	033	29,939.15
	033	**29,939.15**
	034	
ELMCREST	034	30,729.89
	034	**30,729.89**
	040	
ELMCREST	040	911,180.78
ELMCREST	040	134,189.43
ELMCREST	040	137,460.72
ELMCREST	040	179,708.98
ELMCREST	040	26,660.67
ELMCREST	040	182,533.08
ELMCREST	040	54,947.03
ELMCREST	040	29,658.62
ELMCREST	040	8,079.74
ELMCREST	040	7,526.50

NAME	LAND_U	AREA
ELMCREST	040	8,919.29
	040	**1,680,864.85**
	041	
ELMCREST	041	30,389.13
ELMCREST	041	52,558.81
ELMCREST	041	7,195.36
ELMCREST	041	14,204.55
ELMCREST	041	23,873.47
	041	**128,221.32**
	070	
ELMCREST	070	32,359.89
ELMCREST	070	26,396.22
	070	**58,756.12**
ELMCREST		**10,412,558.00**
SPROUT		
	010	
SPROUT	010	1,970,782.14
	010	**1,970,782.14**
	012	
SPROUT	012	4,433,370.48
SPROUT	012	40,279.16
SPROUT	012	26,552.35
SPROUT	012	95,582.44
SPROUT	012	16,258.08
SPROUT	012	10,115.09
	012	**4,622,157.61**
	013	
SPROUT	013	23,033.47
	013	**23,033.47**
	014	
SPROUT	014	3,871.94
	014	**3,871.94**
	016	
SPROUT	016	57,924.51
SPROUT	016	266,159.34
SPROUT	016	19,134.58
SPROUT	016	20,244.76
	016	**363,463.19**

NAME	LAND_U	AREA
	017	
SPROUT	017	462.27
SPROUT	017	94,589.01
SPROUT	017	50,053.32
SPROUT	017	791,143.73
SPROUT	017	8,677.43
SPROUT	017	20,842.44
SPROUT	017	17,133.66
SPROUT	017	655.50
SPROUT	017	280,121.73
SPROUT	017	2,941.03
SPROUT	017	26,052.79
SPROUT	017	42,372.92
	017	**1,335,045.83**
	018	
SPROUT	018	11,955.76
SPROUT	018	515,649.35
SPROUT	018	12,642.74
	018	**540,247.84**
	019	
SPROUT	019	36,321.01
SPROUT	019	153,117.02
	019	**189,438.03**
	020	
SPROUT	020	100,044.35
SPROUT	020	88,746.23
SPROUT	020	365.92
SPROUT	020	287,165.55
SPROUT	020	159,257.87
SPROUT	020	170,970.02
SPROUT	020	393,230.90
SPROUT	020	202,088.38
SPROUT	020	166,593.25
SPROUT	020	331,745.86
SPROUT	020	34,887.85
SPROUT	020	240,732.43
SPROUT	020	270,762.84
SPROUT	020	735,617.41
SPROUT	020	16,582.67
SPROUT	020	41,404.15
SPROUT	020	304,912.82
SPROUT	020	28,892.59
SPROUT	020	306,330.23
SPROUT	020	370,438.45
SPROUT	020	27,810.46
SPROUT	020	176,785.15
SPROUT	020	476,078.48
SPROUT	020	185,912.12
SPROUT	020	136,280.24
SPROUT	020	183,329.66
SPROUT	020	202,971.08

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NAME	LAND_U	AREA
SPROUT	020	42,267.70
	020	**5,682,204.68**
	034	
SPROUT	034	347,776.62
	034	**347,776.62**
	040	
SPROUT	040	20,390.27
	040	**20,390.27**
	063	
SPROUT	063	230,734.20
	063	**230,734.20**
	070	
SPROUT	070	65,825.36
	070	**65,825.36**
SPROUT		**15,394,971.18**
VINE		
	010	
VINE	010	6,016.97
	010	**6,016.97**
	011	
VINE	011	98,059.31
	011	**98,059.31**
	012	
VINE	012	30,501.16
VINE	012	89,524.76
VINE	012	14,121.70
VINE	012	77,814.52
VINE	012	97,997.07
VINE	012	9,332.82
VINE	012	6,339.06
VINE	012	29,668.65
VINE	012	218,070.01
VINE	012	185,349.47
VINE	012	5,994.73
VINE	012	5,148.19
VINE	012	58,874.31
VINE	012	214,694.38
VINE	012	14,695.21
VINE	012	6,370.43
VINE	012	89,390.63

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NAME	LAND_U	AREA
VINE	012	10,506.38
VINE	012	42,393.43
VINE	012	41,846.06
VINE	012	7,291.89
VINE	012	6,300.06
VINE	012	7,632.35
VINE	012	28,459.25
VINE	012	7,893.99
VINE	012	6,427.25
	012	**1,312,637.76**
	014	
VINE	014	29,413.33
	014	**29,413.33**
	016	
VINE	016	6,861.09
VINE	016	3,873.61
VINE	016	2,648.86
	016	**13,383.56**
	017	
VINE	017	4,155.18
VINE	017	9,116.62
VINE	017	16,174.10
VINE	017	15,657.54
VINE	017	42,958.99
VINE	017	735.53
VINE	017	3,698.29
VINE	017	27,466.76
VINE	017	10,310.33
VINE	017	2,871.53
VINE	017	3,983.46
VINE	017	4,399.75
VINE	017	8,585.25
VINE	017	988.92
	017	**151,102.27**
	018	
VINE	018	12,499.52
	018	**12,499.52**
	019	
VINE	019	110,906.60
VINE	019	184,212.57
	019	**295,119.16**
	020	
VINE	020	465,761.04
VINE	020	6,345.44
VINE	020	316,061.16

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NAME	LAND_U	AREA
VINE	020	387,369.56
VINE	020	283,505.27
VINE	020	362,241.63
VINE	020	30,441.80
VINE	020	8,987.25
VINE	020	4,238.79
VINE	020	101,516.44
VINE	020	34,557.27
VINE	020	110,562.72
VINE	020	28,401.11
VINE	020	203,678.60
VINE	020	291,924.84
VINE	020	68,973.94
VINE	020	239,911.97
VINE	020	4,579.45
VINE	020	98,499.40
VINE	020	157,983.64
VINE	020	61,893.08
VINE	020	8,889.71
VINE	020	18,247.97
VINE	020	108,899.82
VINE	020	166,506.67
VINE	020	134,604.62
VINE	020	119,415.44
VINE	020	35,872.25
VINE	020	138,735.79
VINE	020	172,308.44
VINE	020	89,380.82
VINE	020	43,200.01
VINE	020	141,564.69
VINE	020	35,665.67
VINE	020	101,398.58
VINE	020	91,042.48
VINE	020	14,471.97
VINE	020	6,472.88
VINE	020	33,311.21
VINE	020	83,654.71
VINE	020	6,171.41
VINE	020	16,490.52
VINE	020	209,085.76
VINE	020	292,397.80
VINE	020	2,008.94
VINE	020	178,642.42
VINE	020	13,227.41
VINE	020	1,013.22
VINE	020	38,528.63
VINE	020	207,936.41
VINE	020	624,236.59
VINE	020	169,192.24
VINE	020	71,182.71
VINE	020	57,705.15
VINE	020	76,168.92
VINE	020	258,424.02
VINE	020	99,806.42
VINE	020	23,163.60
VINE	020	185,553.24
VINE	020	86,689.52
VINE	020	275,021.06
VINE	020	218,265.56

NAME	LAND_U	AREA
VINE	020	219,587.85
VINE	020	218,496.56
VINE	020	120,674.19
VINE	020	225,762.28
VINE	020	301,811.75
VINE	020	137,955.89
VINE	020	101,004.21
VINE	020	309,170.68
VINE	020	191,639.68
VINE	020	94,255.65
VINE	020	79,134.56
VINE	020	255,076.12
VINE	020	251,066.71
VINE	020	188,082.20
VINE	020	227,563.79
VINE	020	202,392.27
VINE	020	273,524.15
VINE	020	273,172.64
VINE	020	181,938.89
VINE	020	139,524.39
VINE	020	356,853.56
VINE	020	21,551.76
VINE	020	255,863.62
VINE	020	16,096.49
VINE	020	50,750.02
VINE	020	127,799.01
VINE	020	527,971.81
VINE	020	162,627.99
VINE	020	73,244.07
VINE	020	113,754.62
VINE	020	62,825.81
VINE	020	174,405.07
VINE	020	309,237.37
VINE	020	79,261.47
VINE	020	281,204.49
VINE	020	83,298.95
VINE	020	505,846.78
VINE	020	103,662.91
VINE	020	261,620.94
VINE	020	189,186.73
VINE	020	53,872.32
VINE	020	28,724.64
VINE	020	47,060.42
VINE	020	249,492.64
VINE	020	166,818.70
VINE	020	62,713.66
VINE	020	74,692.77
VINE	020	68,496.55
VINE	020	55,918.61
VINE	020	21,112.99
VINE	020	41,419.83
VINE	020	221.73
VINE	020	48,207.15
VINE	020	8,290.38
	020	**16,597,930.02**

021

NAME	LAND_U	AREA
VINE	021	6,849.95
VINE	021	1,653.03
VINE	021	7,210.01
VINE	021	212.09
VINE	021	10,332.14
VINE	021	8,476.57
VINE	021	10,457.94
VINE	021	6,790.07
VINE	021	6,958.02
VINE	021	12,652.35
VINE	021	12,123.88
VINE	021	10,458.00
VINE	021	12,278.01
VINE	021	6,971.97
VINE	021	9,002.07
	021	**122,426.09**
	024	
VINE	024	45,004.51
VINE	024	124,357.09
VINE	024	269,691.56
VINE	024	10.90
	024	**439,064.06**
	030	
VINE	030	14,837.45
VINE	030	8,099.31
VINE	030	7,852.54
	030	**30,789.30**
	031	
VINE	031	11,751.74
VINE	031	11,075.67
VINE	031	12,804.85
VINE	031	15,079.52
	031	**50,711.77**
	032	
VINE	032	37,656.09
VINE	032	22,469.95
VINE	032	3,693.62
VINE	032	6,952.82
	032	**70,772.49**
	033	
VINE	033	22,819.14
	033	**22,819.14**
	034	
VINE	034	20,872.99
VINE	034	28,848.38

landuse_20030605

6/5/2003

NAME	LAND_U	AREA
	034	**49,721.37**
	040	
VINE	040	1,533.34
VINE	040	4,249.19
VINE	040	3,249.52
VINE	040	5,835.61
VINE	040	28,878.22
VINE	040	173,300.44
VINE	040	128,999.88
VINE	040	54,396.73
VINE	040	168,084.22
VINE	040	51,364.79
VINE	040	179,517.79
VINE	040	154,589.90
VINE	040	116,917.26
	040	**1,070,916.90**
	041	
VINE	041	7,441.42
	041	**7,441.42**
	070	
VINE	070	104,568.28
VINE	070	80,443.85
VINE	070	43,559.91
VINE	070	44,286.28
VINE	070	36,938.31
	070	**309,796.63**
	071	
VINE	071	178,482.43
	071	**178,482.43**
VINE		**20,869,103.48**
WEST WASH		
	010	
WEST WASH	010	6,455,442.39
	010	**6,455,442.39**
	012	
WEST WASH	012	12,594,392.66
WEST WASH	012	3,049,497.26
WEST WASH	012	955,996.08
WEST WASH	012	158,037.22
WEST WASH	012	19,582.19
WEST WASH	012	29,988.60
WEST WASH	012	283,854.06

landuse_20030605
6/5/2003

NAME	LAND_U	AREA
WEST WASH	012	2,482.71
	012	**17,093,830.77**
	016	
WEST WASH	016	2,187.70
	016	**2,187.70**
	017	
WEST WASH	017	139,357.68
WEST WASH	017	18,899.89
WEST WASH	017	84,008.64
WEST WASH	017	11,397.85
WEST WASH	017	25,933.18
WEST WASH	017	521,586.96
WEST WASH	017	2,977.01
	017	**804,161.23**
	019	
WEST WASH	019	175,213.29
	019	**175,213.29**
	020	
WEST WASH	020	593,823.19
WEST WASH	020	439,657.85
WEST WASH	020	94,834.80
WEST WASH	020	575,584.24
WEST WASH	020	94,525.69
WEST WASH	020	87,756.45
WEST WASH	020	1,153,297.38
WEST WASH	020	26,907.11
WEST WASH	020	167,358.75
WEST WASH	020	154,402.07
WEST WASH	020	4.85
WEST WASH	020	36,661.97
WEST WASH	020	144,225.43
WEST WASH	020	297,162.10
WEST WASH	020	427,010.72
WEST WASH	020	58,851.91
WEST WASH	020	173,588.08
WEST WASH	020	84,779.03
WEST WASH	020	37,402.48
WEST WASH	020	36,633.35
WEST WASH	020	209,871.85
WEST WASH	020	2,643.04
WEST WASH	020	11,110.59
WEST WASH	020	31,678.74
WEST WASH	020	32,872.60
WEST WASH	020	17,387.35
	020	**4,990,031.61**
	021	
WEST WASH	021	9,209.75

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6/5/2003

NAME	LAND_U	AREA
WEST WASH	021	9,124.46
WEST WASH	021	6,832.02
WEST WASH	021	10,248.01
WEST WASH	021	1,893.64
WEST WASH	021	6.36
WEST WASH	021	11,956.10
WEST WASH	021	5,304.94
WEST WASH	021	12,096.01
WEST WASH	021	5,417.93
WEST WASH	021	6,479.64
WEST WASH	021	3,479.43
WEST WASH	021	581.17
	021	**82,629.45**
	024	
WEST WASH	024	113,940.80
	024	**113,940.80**
	040	
WEST WASH	040	62,622.24
	040	**62,622.24**
	070	
WEST WASH	070	804.56
	070	**804.56**
WEST WASH		**29,780,864.03**
EAST WASH		
	010	
EAST WASH	010	16,833.65
EAST WASH	010	638,562.73
EAST WASH	010	33,153.47
	010	**688,549.84**
	012	
EAST WASH	012	57,942,760.11
EAST WASH	012	52,769.74
EAST WASH	012	299,598.61
	012	**58,295,128.47**
	019	
EAST WASH	019	6,036.82
EAST WASH	019	43,941.55
	019	**49,978.36**
	020	
EAST WASH	020	64,690.15

landuse_20030605

6/5/2003

NAME	LAND_U	AREA
EAST WASH	020	54,200.19
	020	**118,890.34**
	024	
EAST WASH	024	9,435.97
	024	**9,435.97**
	040	
EAST WASH	040	1,966.23
EAST WASH	040	5,807.48
EAST WASH	040	1,586.44
	040	**9,360.14**
	071	
EAST WASH	071	200,000.56
	071	**200,000.56**
EAST WASH		**59,371,343.69**
UPPER PEAVINE		
	010	
UPPER PEAVINE	010	7,619.28
UPPER PEAVINE	010	8,128,779.24
	010	**8,136,398.51**
	012	
UPPER PEAVINE	012	54,673,172.02
UPPER PEAVINE	012	302,460.26
UPPER PEAVINE	012	1,201,169.77
	012	**56,176,802.05**
	017	
UPPER PEAVINE	017	1,045,849.39
	017	**1,045,849.39**
	020	
UPPER PEAVINE	020	172,321.62
UPPER PEAVINE	020	170,548.70
UPPER PEAVINE	020	158,247.22
UPPER PEAVINE	020	374,901.68
UPPER PEAVINE	020	28,624.96
UPPER PEAVINE	020	87,478.52
UPPER PEAVINE	020	321,814.90
UPPER PEAVINE	020	169,897.60
UPPER PEAVINE	020	80,857.99
UPPER PEAVINE	020	743.97
	020	**1,565,437.15**

NAME	LAND_U	AREA
UPPER PEAVINE		66,924,487.10
Grand Total:		
		249,194,037.56

Hydraulics

Culvert Calculator Report
VineSt. Sump

ve For: Headwater Elevation

Culvert Summary			
Allowable HW Elevation	4,551.00 ft	Headwater Depth/ Height	2.75
Computed Headwater Elevation	4,549.87 ft	Discharge	834.00 cfs
Inlet Control HW Elev	4,549.87 ft	Tailwater Elevation	4,533.13 ft
Outlet Control HW Elev	4,549.39 ft	Control Type	Inlet Control

Grades			
Upstream Invert	4,530.64 ft	Downstream Invert	4,526.13 ft
Length	440.00 ft	Constructed Slope	0.010250 ft/ft

Hydraulic Profile			
Profile	Pressure	Depth, Downstream	7.00 ft
Slope Type	N/A	Normal Depth	N/A ft
Flow Regime	N/A	Critical Depth	6.76 ft
Velocity Downstream	21.67 ft/s	Critical Slope	0.014927 ft/ft

Section			
Section Shape	Circular	Mannings Coefficient	0.013
Section Material	Concrete	Span	7.00 ft
Section Size	84 inch	Rise	7.00 ft
Number Sections	1		

utlet Control Properties			
Outlet Control HW Elev	4,549.39 ft	Upstream Velocity Head	7.30 ft
Ke	0.20	Entrance Loss	1.46 ft

Inlet Control Properties			
Inlet Control HW Elev	4,549.87 ft	Flow Control	Submerged
Inlet Type	Beveled ring, 45 ° bevels	Area Full	38.5 ft²
K	0.00180	HDS 5 Chart	3
M	2.50000	HDS 5 Scale	1
C	0.03000	Equation Form	1
Y	0.74000		

Culvert Calculator Report
VineSt. Sump Overflow Box

ve For: Headwater Elevation

Culvert Summary			
Allowable HW Elevation	4,551.00 ft	Headwater Depth/ Height	0.80
Computed Headwater Elevation	4,548.70 ft	Discharge	280.00 cfs
Inlet Control HW Elev	4,548.60 ft	Tailwater Elevation	4,546.00 ft
Outlet Control HW Elev	4,548.70 ft	Control Type	Entrance Control

Grades			
Upstream Invert	4,545.50 ft	Downstream Invert	4,544.54 ft
Length	240.00 ft	Constructed Slope	0.004000 ft/ft

Hydraulic Profile			
Profile	S2	Depth, Downstream	1.67 ft
Slope Type	Steep	Normal Depth	1.67 ft
Flow Regime	Supercritical	Critical Depth	1.83 ft
Velocity Downstream	8.39 ft/s	Critical Slope	0.003051 ft/ft

Section			
Section Shape	Box	Mannings Coefficient	0.013
Section Material	Concrete	Span	10.00 ft
Section Size	10 x 4 ft	Rise	4.00 ft
Number Sections	2		

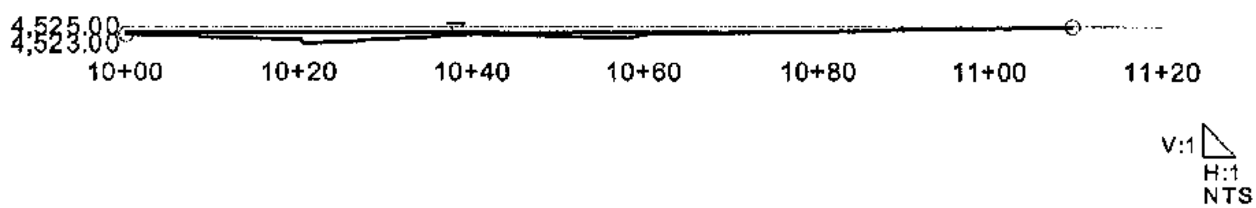
ıtlet Control Properties			
Outlet Control HW Elev	4,548.70 ft	Upstream Velocity Head	0.91 ft
Ke	0.50	Entrance Loss	0.46 ft

Inlet Control Properties			
Inlet Control HW Elev	4,548.60 ft	Flow Control	Unsubmerged
Inlet Type	90 and 15 ° wingwall flares	Area Full	80.0 ft²
K	0.06100	HDS 5 Chart	8
M	0.75000	HDS 5 Scale	2
C	0.04000	Equation Form	1
Y	0.80000		

Washington and 4th
Cross Section for Irregular Channel

Project Description	
Worksheet	Washington &
Flow Element	Irregular Chan
Method	Manning's For
Solve For	Discharge

Section Data		
Mannings Coefficie	0.016	
Slope	0.010000	ft/ft
Water Surface Elev.	4,524.31	ft
Elevation Range	23.00 to 4,525.00	
Discharge	233.89	cfs



Washington and 4th
Worksheet for Irregular Channel

Project Description	
Worksheet	Washington &
Flow Element	Irregular Chani
Method	Manning's Forr
Solve For	Discharge

Input Data		
Slope	010000	ft/ft
Water Surface Elev.	,524.31	ft

Options	
Current Roughness Methc	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.016	
Elevation Range	?3.00 to 4,525.00	
Discharge	233.89	cfs
Flow Area	39.3	ft²
Wetted Perimetei	76.77	ft
Top Width	76.00	ft
Actual Depth	1.31	ft
Critical Elevation	4,524.47	ft
Critical Slope	0.004433	ft/ft
Velocity	5.95	ft/s
Velocity Head	0.55	ft
Specific Energy	4,524.86	ft
Froude Number	1.46	
Flow Type	Supercritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.31 ft.

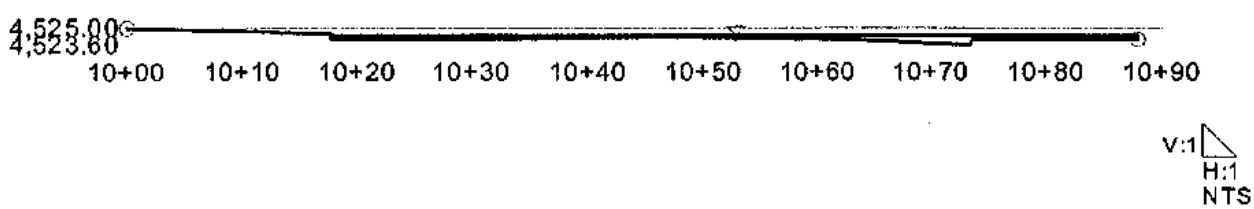
Roughness Segments		
Start Station	End Station	Mannings Coefficient
10+00	11+10	0.016

Natural Channel Points	
Station (ft)	Elevation (ft)
10+00	4,524.00
10+20	4,523.50
10+20	4,523.00
10+40	4,524.00
10+58	4,523.70
10+60	4,524.00
10+61	4,524.00
11+10	4,525.00

4th and Washington
Cross Section for Irregular Channel

Project Description	
Worksheet	4th & Washing
Flow Element	Irregular Chan
Method	Manning's For
Solve For	Discharge

Section Data		
Mannings Coefficiei	0.016	
Slope	0.010000	ft/ft
Water Surface Elev	4,524.31	ft
Elevation Range	23.60 to 4,525.00	
Discharge	83.27	cfs



4th and Washington
Worksheet for Irregular Channel

Project Description	
Worksheet	4th & Washing
Flow Element	Irregular Chan
Method	Manning's For
Solve For	Discharge

Input Data		
Slope	010000	ft/ft
Water Surface Elev.	,524.31	ft

Options	
Current Roughness Meth	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.016	
Elevation Range	23.60 to 4,525.00	
Discharge	83.27	cfs
Flow Area	20.5	ft²
Wetted Perimete	71.05	ft
Top Width	70.16	ft
Actual Depth	0.71	ft
Critical Elevation	4,524.37	ft
Critical Slope	0.005381	ft/ft
Velocity	4.06	ft/s
Velocity Head	0.26	ft
Specific Energy	4,524.57	ft
Froude Number	1.32	
Flow Type	Supercritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.31 ft.

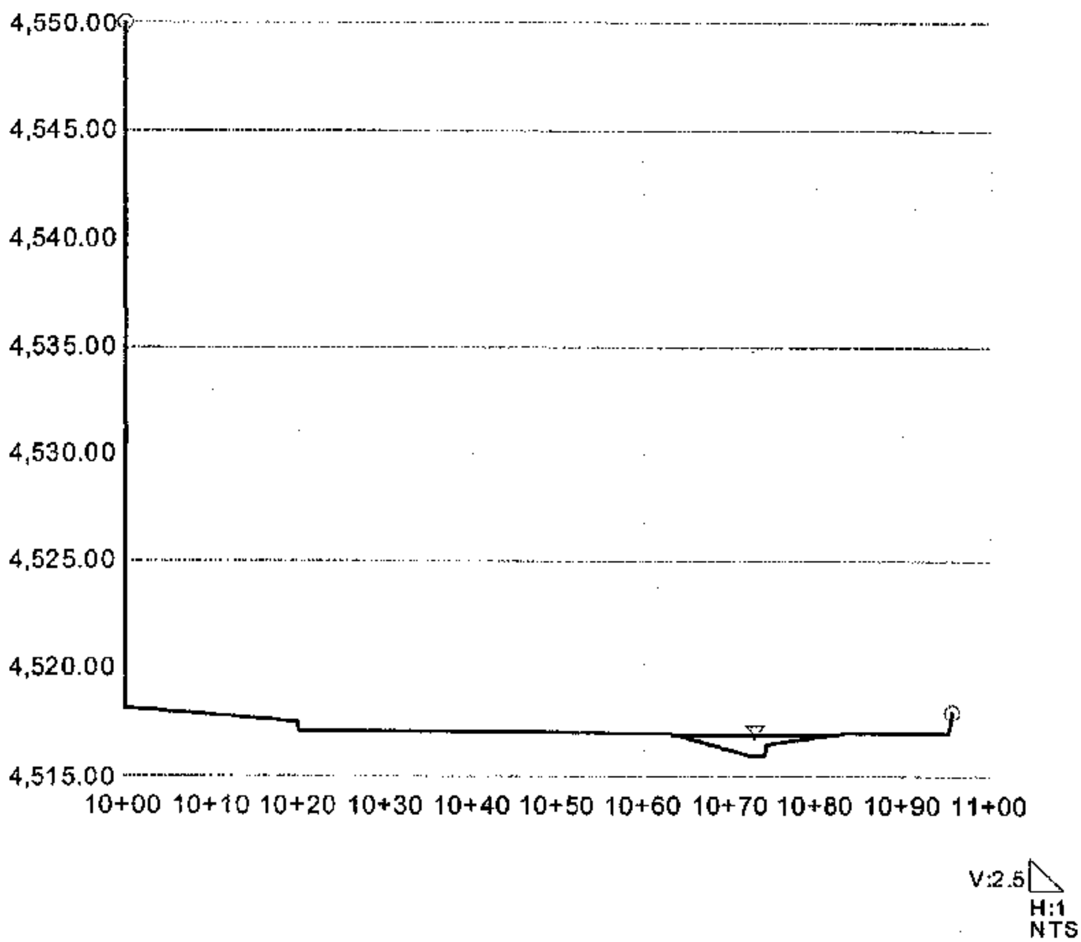
Roughness Segments		
Start Station	End Station	Mannings Coefficient
10+00	10+88	0.016

Natural Channel Points	
Station (ft)	Elevation (ft)
10+00	4,525.00
10+18	4,524.50
10+18	4,524.00
10+25	4,524.00
10+46	4,524.20
10+61	4,524.00
10+73	4,523.60
10+74	4,524.00
10+88	4,524.00

Ralston and 4th E.
Cross Section for Irregular Channel

Project Description	
Worksheet	Ralston and 4th
Flow Element	Irregular Chann
Method	Manning's Form
Solve For	Discharge

Section Data		
Mannings Coefficie	0.016	
Slope	0.010600	ft/ft
Water Surface Elev	4,516.95	ft
Elevation Range	16.00 to 4,550.00	
Discharge	40.79	cfs



Ralston and 4th E.
Worksheet for Irregular Channel

Project Description	
Worksheet	Ralston and 4th
Flow Element	Irregular Chann
Method	Manning's Forr
Solve For	Discharge

Input Data		
Slope	010600	ft/ft
Water Surface Elev.	,516.95	ft

Options	
Current Roughness Methc	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.016	
Elevation Range	16.00 to 4,550.00	
Discharge	40.79	cfs
Flow Area	7.9	ft²
Wetted Perimeter	19.76	ft
Top Width	19.28	ft
Actual Depth	0.95	ft
Critical Elevation	4,517.13	ft
Critical Slope	0.006354	ft/ft
Velocity	5.18	ft/s
Velocity Head	0.42	ft
Specific Energy	4,517.37	ft
Froude Number	1.43	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	10+96	0.016

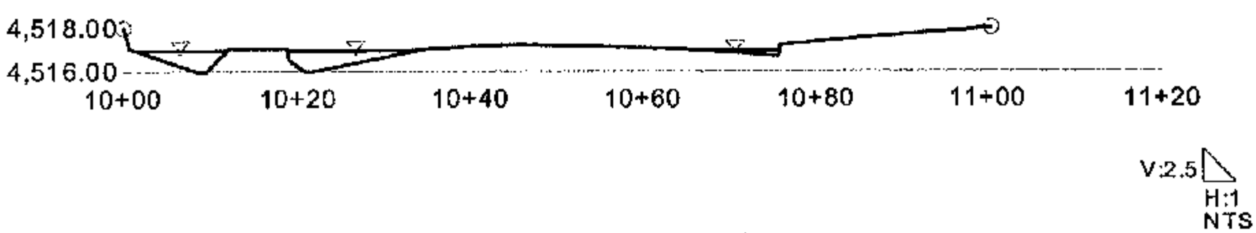
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,550.00
10+00	4,518.20
10+07	4,518.00
10+20	4,517.50
10+20	4,517.10
10+36	4,517.10
10+63	4,517.00
10+72	4,516.00
10+74	4,516.00
10+74	4,516.50
10+84	4,517.00
10+95	4,517.00
10+96	4,518.00

Ralston and 4th S.
Cross Section for Irregular Channel

Project Description	
Worksheet	Ralston and 4th
Flow Element	Irregular Chann
Method	Manning's Forr
Solve For	Discharge

Section Data		
Mannings Coefficiei	0.016	
Slope	0.010000	ft/ft
Water Surface Elev	4,516.95	ft
Elevation Range	16.00 to 4,518.00	
Discharge	77.41	cfs



Ralston and 4th. S.
Worksheet for Irregular Channel

Project Description	
Worksheet	Ralston and 4th
Flow Element	Irregular Chann
Method	Manning's Forr
Solve For	Discharge

Input Data		
Slope	010000	ft/ft
Water Surface Elev	,516.95	ft

Options	
Current Roughness Methc	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.016	
Elevation Range	16.00 to 4,518.00	
Discharge	77.41	cfs
Flow Area	15.3	ft²
Wetted Perimete	37.95	ft
Top Width	37.04	ft
Actual Depth	0.95	ft
Critical Elevation	4,517.10	ft
Critical Slope	0.005330	ft/ft
Velocity	5.06	ft/s
Velocity Head	0.40	ft
Specific Energy	4,517.35	ft
Froude Number	1.39	
Flow Type	Supercritical	

Calculation Messages:
Flow is divided.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
10+00	11+00	0.016

Natural Channel Points	
Station (ft)	Elevation (ft)
10+00	4,518.00
10+01	4,517.00
10+08	4,516.00
10+10	4,516.00
10+12	4,517.00
10+19	4,517.00
10+19	4,516.50
10+21	4,516.00
10+22	4,516.00
10+35	4,517.00

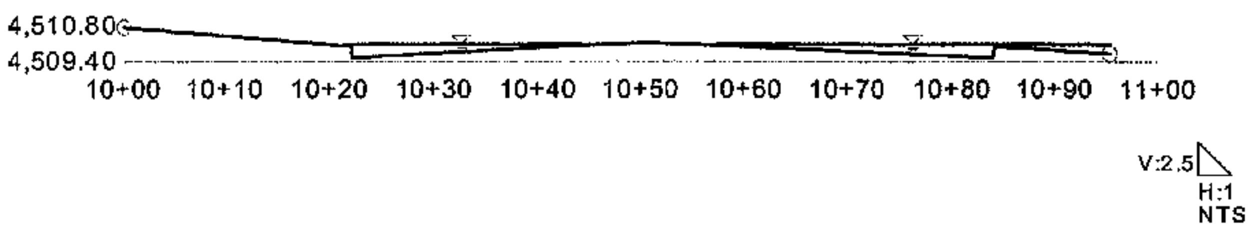
Ralston and 4th. S.
Worksheet for Irregular Channel

Natural Channel Points	
Station (ft)	Elevation (ft)
10+46	4,517.20
10+63	4,517.00
10+76	4,516.70
10+76	4,517.20
11+00	4,518.00

4th and Arlington E.
Cross Section for Irregular Channel

Project Description	
Worksheet	4th and Arlington
Flow Element	Irregular Channel
Method	Manning's Formu
Solve For	Discharge

Section Data		
Mannings Coefficiei	0.016	
Slope	0.009700	ft/ft
Water Surface Elev	4,510.02	ft
Elevation Range	)9.50 to 4,510.70	
Discharge	48.78	cfs



4th and Arlington E.
Worksheet for Irregular Channel

Project Description	
Worksheet	4th and Arlington
Flow Element	Irregular Channel
Method	Manning's Formu
Solve For	Discharge

Input Data		
Slope	009700	ft/ft
Water Surface Elev.	,510.02	ft

Options	
Current Roughness Methc	ɔved Lotter's Method
Open Channel Weighting	ɔved Lotter's Method
Closed Channel Weightin;	Horton's Method

Results		
Mannings Coeffic	0.016	
Elevation Range	)9.50 to 4,510.70	
Discharge	48.78	cfs
Flow Area	14.2	ft²
Wetted Perimete	61.72	ft
Top Width	60.57	ft
Actual Depth	0.52	ft
Critical Elevation	4,510.07	ft
Critical Slope	0.006081	ft/ft
Velocity	3.43	ft/s
Velocity Head	0.18	ft
Specific Energy	4,510.20	ft
Froude Number	1.25	
Flow Type	Supercritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.32 ft.
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	10+95	0.016

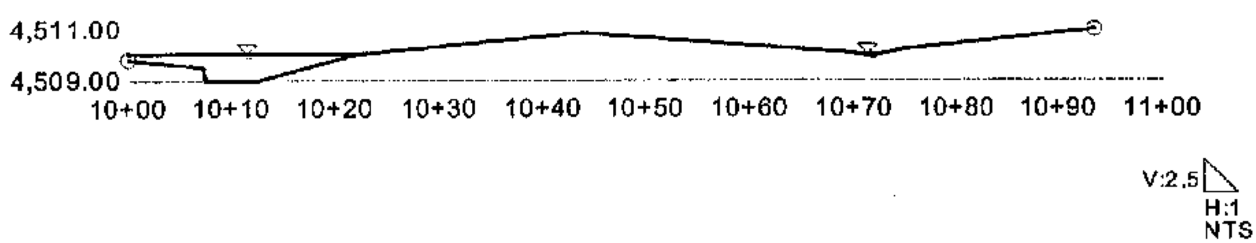
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,510.70
10+22	4,510.00
10+22	4,509.50
10+42	4,510.00
10+51	4,510.10
10+59	4,510.00
10+84	4,509.50
10+84	4,510.00
10+95	4,509.70

4th and Arlington S.
Cross Section for Irregular Channel

Project Description	
Worksheet	4th and Arlington
Flow Element	Irregular Channel
Method	Manning's Formu
Solve For	Discharge

Section Data		
Mannings Coefficiei	0.016	
Slope	0.006000	ft/ft
Water Surface Elev	4,510.02	ft
Elevation Range	)9.00 to 4,511.00	
Discharge	60.14	cfs



4th and Arlington S.
Worksheet for Irregular Channel

Project Description	
Worksheet	4th and Arlington
Flow Element	Irregular Channel
Method	Manning's Formu
Solve For	Discharge

Input Data		
Slope	006000	ft/ft
Water Surface Elev.	,510.02	ft

Options	
Current Roughness Meth	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.016	
Elevation Range	)9.00 to 4,511.00	
Discharge	60.14	cfs
Flow Area	13.2	ft²
Wetted Perimete	26.35	ft
Top Width	25.65	ft
Actual Depth	1.02	ft
Critical Elevation	4,510.09	ft
Critical Slope	0.004889	ft/ft
Velocity	4.55	ft/s
Velocity Head	0.32	ft
Specific Energy	4,510.34	ft
Froude Number	1.12	
Flow Type	Supercritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.22 ft.
Flow is divided.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
10+00	10+93	0.016

Natural Channel Points	
Station (ft)	Elevation (ft)
10+00	4,509.80
10+07	4,509.50
10+07	4,509.00
10+12	4,509.00
10+22	4,510.00
10+44	4,510.80
10+71	4,510.00
10+72	4,509.90
10+72	4,510.00

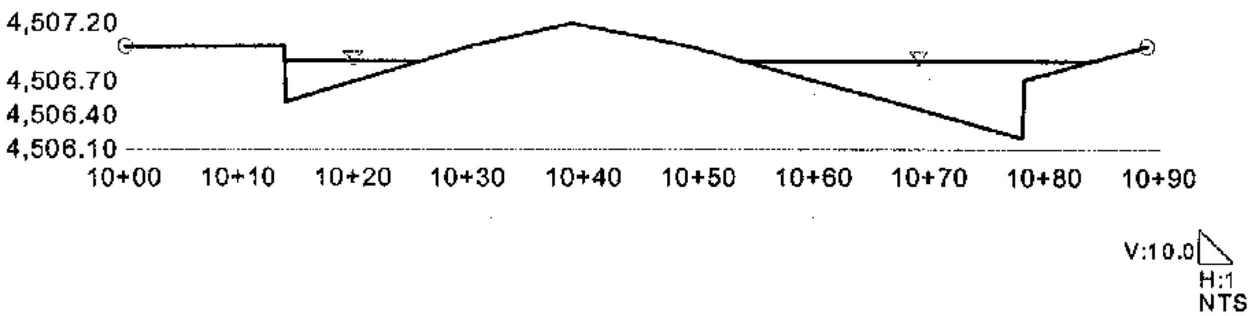
4th and Arlington S.
Worksheet for Irregular Channel

Natural Channel Points	
Station (ft)	Elevation (ft)
10+74	4,510.10
10+74	4,510.20
10+93	4,511.00

4th and West E.
Cross Section for Irregular Channel

Project Description	
Worksheet	4th and West E
Flow Element	Irregular Chan
Method	Manning's For
Solve For	Discharge

Section Data		
Mannings Coefficie	0.016	
Slope	0.009000	ft/ft
Water Surface Elev	4,506.87	ft
Elevation Range	)6.20 to 4,507.20	
Discharge	38.39	cfs



4th and West E.
Worksheet for Irregular Channel

Project Description	
Worksheet	4th and West E
Flow Element	Irregular Chan
Method	Manning's For
Solve For	Discharge

Input Data		
Slope	009000	ft/ft
Water Surface Elev	,506.87	ft

Options	
Current Roughness Meth	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.016	
Elevation Range	)6.20 to 4,507.20	
Discharge	38.39	cfs
Flow Area	10.9	ft²
Wetted Perimete	43.15	ft
Top Width	42.42	ft
Actual Depth	0.67	ft
Critical Elevation	4,506.92	ft
Critical Slope	0.005867	ft/ft
Velocity	3.52	ft/s
Velocity Head	0.19	ft
Specific Energy	4,507.06	ft
Froude Number	1.22	
Flow Type	Supercritical	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	10+89	0.016

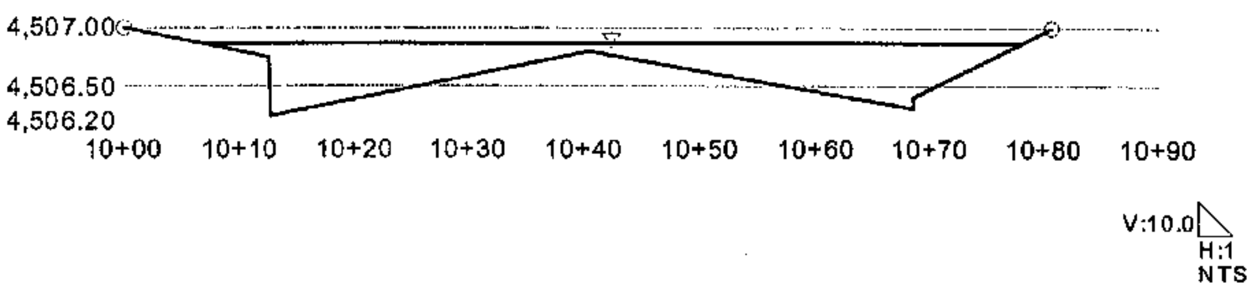
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,507.00
10+14	4,507.00
10+14	4,506.50
10+30	4,507.00
10+39	4,507.20
10+49	4,507.00
10+78	4,506.20
10+78	4,506.70
10+89	4,507.00

4th and West S.
Cross Section for Irregular Channel

Project Description	
Worksheet	4th and West S
Flow Element	Irregular Chan
Method	Manning's For
Solve For	Discharge

Section Data		
Mannings Coefficie	0.016	
Slope	0.003000	ft/ft
Water Surface Elev.	4,506.87	ft
Elevation Range	)6.25 to 4,507.00	
Discharge	47.86	cfs



4th and West S.
Worksheet for Irregular Channel

Project Description	
Worksheet	4th and West S
Flow Element	Irregular Chan
Method	Manning's For
Solve For	Discharge

Input Data		
Slope	003000	ft/ft
Water Surface Elev	,506.87	ft

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weighting	Horton's Method

Results		
Mannings Coeffic	0.016	
Elevation Range	)6.25 to 4,507.00	
Discharge	47.86	cfs
Flow Area	21.2	ft²
Wetted Perimeter	71.98	ft
Top Width	71.51	ft
Actual Depth	0.62	ft
Critical Elevation	4,506.81	ft
Critical Slope	0.005969	ft/ft
Velocity	2.25	ft/s
Velocity Head	0.08	ft
Specific Energy	4,506.95	ft
Froude Number	0.73	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	10+81	0.016

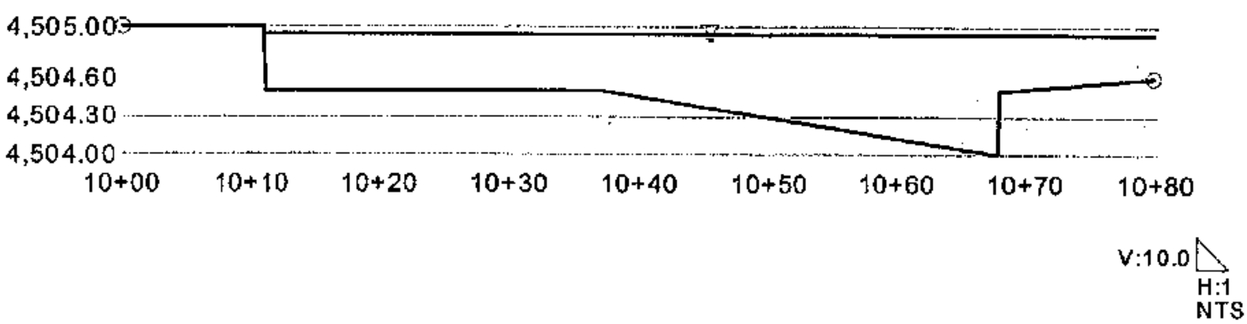
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,507.00
10+13	4,506.75
10+13	4,506.25
10+40	4,506.80
10+68	4,506.30
10+69	4,506.40
10+81	4,507.00

Sierra & 4th
Cross Section for Irregular Channel

Project Description	
Worksheet	Sierra & 4th
Flow Element	Irregular Chan
Method	Manning's For
Solve For	Channel Depth

Section Data		
Mannings Coefficie	0.016	
Slope	0.001000	ft/ft
Water Surface Elev.	4,504.94	ft
Elevation Range	)4.00 to 4,505.00	
Discharge	72.00	cfs



Sierra & 4th
Worksheet for Irregular Channel

Project Description	
Worksheet	Sierra & 4th
Flow Element	Irregular Chani
Method	Manning's For
Solve For	Channel Depth

Input Data		
Slope	001000	ft/ft
Discharg	72.00	cfs

Options	
Current Roughness Meth	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev	4,504.94	ft
Elevation Range	)4.00 to 4,505.00	
Flow Area	37.3	ft²
Wetted Perimeter	69.90	ft
Top Width	68.79	ft
Actual Depth	0.94	ft
Critical Elevation	4,504.72	ft
Critical Slope	0.005505	ft/ft
Velocity	1.93	ft/s
Velocity Head	0.06	ft
Specific Energy	4,505.00	ft
Froude Number	0.46	
Flow Type	Subcritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.33857202 ft.

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	10+80	0.016

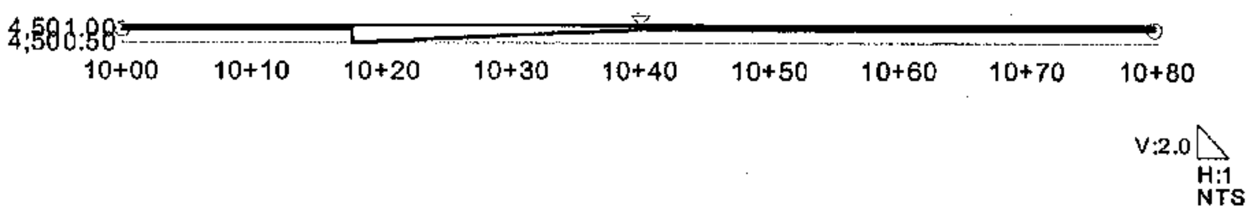
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,505.00
10+11	4,505.00
10+11	4,504.50
10+37	4,504.50
10+68	4,504.00
10+68	4,504.50
10+80	4,504.60

Virginia & 4th
Cross Section for Irregular Channel

Project Description	
Worksheet	Virginia & 4th
Flow Element	Irregular Chan(
Method	Manning's Forr
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.004000	ft/ft
Water Surface Elev.	4,501.14	ft
Elevation Range	)0.50 to 4,501.00	
Discharge	35.00	cfs



Virginia & 4th
Worksheet for Irregular Channel

Project Description	
Worksheet	Virginia & 4th
Flow Element	Irregular Chani
Method	Manning's For
Solve For	Channel Depth

Input Data		
Slope	004000	ft/ft
Discharg	35.00	cfs

Options	
Current Roughness Methc	)ved Lotter's Method
Open Channel Weighting	)ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficiei	0.016	
Water Surface Elev	4,501.14	ft
Elevation Range	)0.50 to 4,501.00	
Flow Area	16.9	ft²
Wetted Perimeter	80.50	ft
Top Width	79.80	ft
Actual Depth	0.64	ft
Critical Elevation	4,501.11	ft
Critical Slope	0.006659	ft/ft
Velocity	2.07	ft/s
Velocity Head	0.07	ft
Specific Energy	4,501.21	ft
Froude Number	0.79	
Flow Type	Subcritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.1401169 ft.

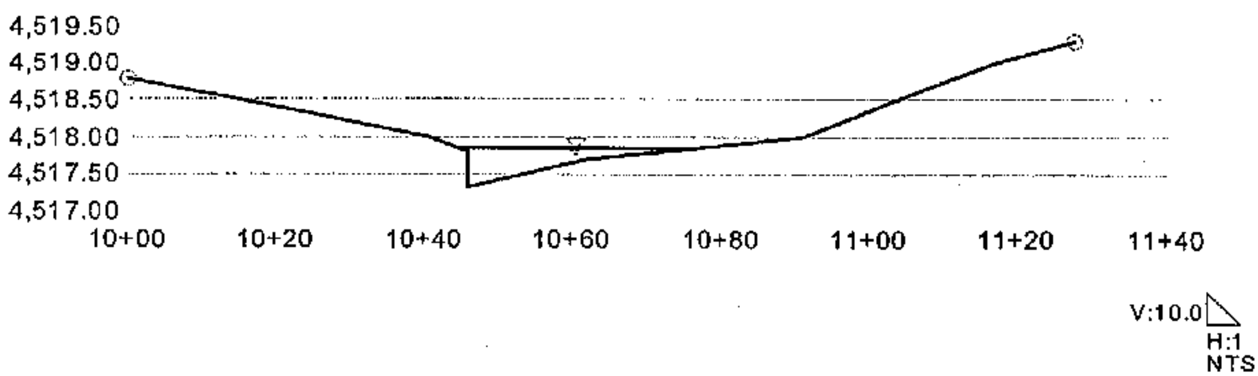
Roughness Segments		
Start Station	End Station	Mannings Coefficient
10+00	10+80	0.016

Natural Channel Points	
Station (ft)	Elevation (ft)
10+00	4,501.00
10+18	4,501.00
10+18	4,500.50
10+40	4,501.00
10+63	4,501.00
10+80	4,501.00

3rd Street 2500
Cross Section for Irregular Channel

Project Description	
Worksheet	3rd_Street 2500 - 3rd. St. (West of Wa
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.007000	ft/ft
Water Surface Elev.	4,517.85	ft
Elevation Range	17.30 to 4,519.30	
Discharge	18.00	cfs



3rd. Street 2500
Worksheet for Irregular Channel

Project Description	
Worksheet	3rd_Street 2500 - 3rd. St. (West of Wa
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	007000	ft/ft
Discharg	18.00	cfs

Options	
Current Roughness Methc	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev	4,517.85	ft
Elevation Range	17.30 to 4,519.30	
Flow Area	6.6	ft²
Wetted Perimeter	31.95	ft
Top Width	31.53	ft
Actual Depth	0.55	ft
Critical Elevation	4,517.86	ft
Critical Slope	0.006368	ft/ft
Velocity	2.72	ft/s
Velocity Head	0.11	ft
Specific Energy	4,517.96	ft
Froude Number	1.05	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	11+28	0.016

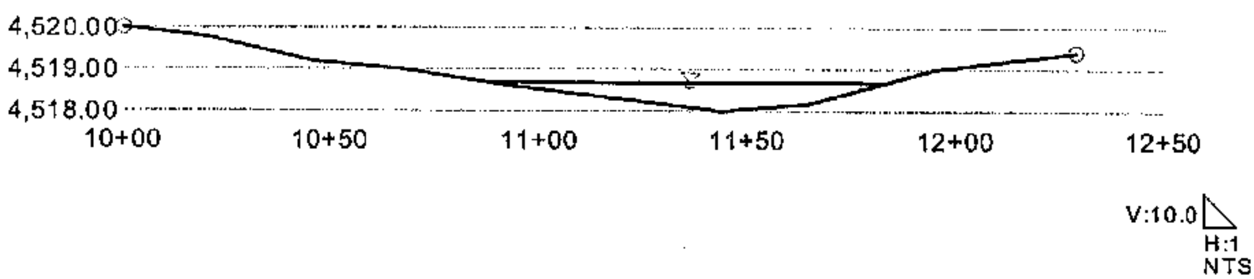
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,518.80
10+41	4,518.00
10+46	4,517.80
10+46	4,517.30
10+62	4,517.70
10+91	4,518.00
11+17	4,519.00
11+28	4,519.30

3rd Street 2400
Cross Section for Irregular Channel

Project Description	
Worksheet	3rd_Street 2400 - 3rd & Was
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.022000	ft/ft
Water Surface Elev	4,518.67	ft
Elevation Range	18.00 to 4,520.00	
Discharge	251.00	cfs



3rd Street 2400
Worksheet for Irregular Channel

Project Description	
Worksheet	3rd_Street 2400 - 3rd & Was
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	022000	ft/ft
Discharg	251.00	cfs

Options	
Current Roughness Meth	oved Lotter's Method
Open Channel Weighting	oved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev.	4,518.67	ft
Elevation Range	18.00 to 4,520.00	
Flow Area	35.2	ft²
Wetted Perimeter	94.21	ft
Top Width	94.20	ft
Actual Depth	0.67	ft
Critical Elevation	4,518.92	ft
Critical Slope	0.004662	ft/ft
Velocity	7.14	ft/s
Velocity Head	0.79	ft
Specific Energy	4,519.46	ft
Froude Number	2.06	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	12+29	0.016

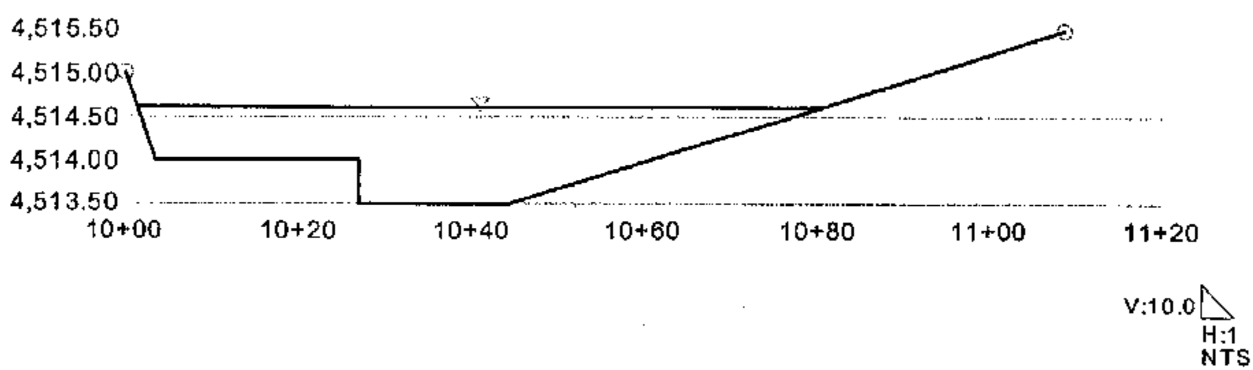
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,520.00
10+20	4,519.80
10+46	4,519.20
10+66	4,519.00
10+93	4,518.60
11+44	4,518.00
11+65	4,518.20
11+95	4,519.00
12+29	4,519.40

3rd Street 2300
Cross Section for Irregular Channel

Project Description	
Worksheet	3rd_Street 2300 - 3rd St. (West of F
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficie	0.016	
Slope	0.004000	ft/ft
Water Surface Elev.	4,514.62	ft
Elevation Range	13.50 to 4,515.50	
Discharge	251.00	cfs



3rd Street 2300
Worksheet for Irregular Channel

Project Description	
Worksheet	3rd_Street 2300 - 3rd St. (West of F
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	004000	ft/ft
Discharg	251.00	cfs

Options	
Current Roughness Methc	ɔved Lotter's Method
Open Channel Weighting	ɔved Lotter's Method
Closed Channel Weighting	Horton's Method

Results		
Mannings Coefficiei	0.016	
Water Surface Elev	4,514.62	ft
Elevation Range	13.50 to 4,515.50	
Flow Area	54.8	ft²
Wetted Perimeter	79.58	ft
Top Width	79.07	ft
Actual Depth	1.12	ft
Critical Elevation	4,514.60	ft
Critical Slope	0.004274	ft/ft
Velocity	4.58	ft/s
Velocity Head	0.33	ft
Specific Energy	4,514.94	ft
Froude Number	0.97	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	11+09	0.016

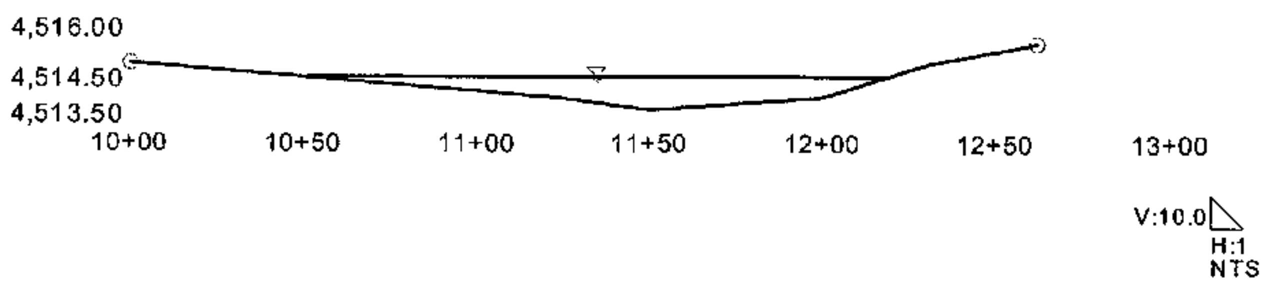
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,515.00
10+04	4,514.00
10+25	4,514.00
10+27	4,514.00
10+27	4,513.50
10+44	4,513.50
10+61	4,514.00
11+09	4,515.50

3rd Street 2200
Cross Section for Irregular Channel

Project Description	
Worksheet	3rd_Street 2200 - 3rd & R
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.004000	ft/ft
Water Surface Elev	4,514.58	ft
Elevation Range	13.60 to 4,515.60	
Discharge	328.00	cfs



3rd Street 2200
Worksheet for Irregular Channel

Project Description	
Worksheet	3rd_Street 2200 - 3rd & R
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	004000	ft/ft
Discharg	328.00	cfs

Options	
Current Roughness Methc	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev	4,514.58	ft
Elevation Range	13.60 to 4,515.60	
Flow Area	86.5	ft²
Wetted Perimeter	166.81	ft
Top Width	166.80	ft
Actual Depth	0.98	ft
Critical Elevation	4,514.55	ft
Critical Slope	0.004692	ft/ft
Velocity	3.79	ft/s
Velocity Head	0.22	ft
Specific Energy	4,514.81	ft
Froude Number	0.93	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	12+62	0.016

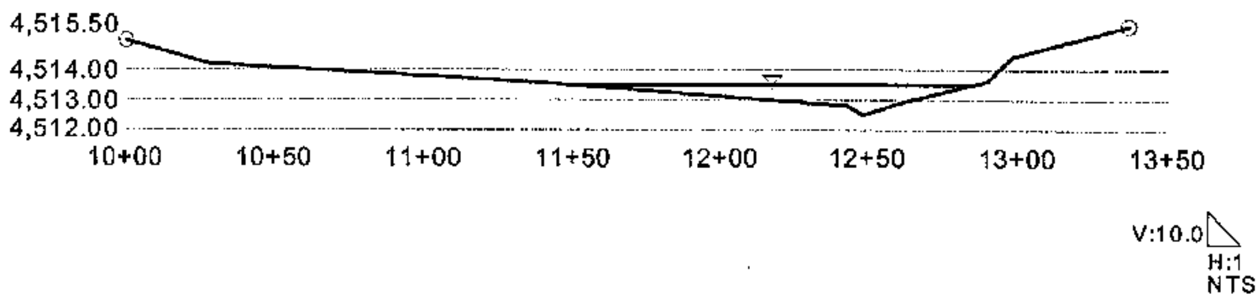
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,515.00
11+23	4,514.00
11+50	4,513.60
12+00	4,514.00
12+31	4,515.00
12+62	4,515.60

3rd Street 2100
Cross Section for Irregular Channel

Project Description	
Worksheet	3rd_Street 2100 - 3rd & Rals
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficie	0.016	
Slope	0.013000	ft/ft
Water Surface Elev.	4,513.52	ft
Elevation Range	12.47 to 4,515.50	
Discharge	328.00	cfs



3rd Street 2100
Worksheet for Irregular Channel

Project Description	
Worksheet	3rd_Street 2100 - 3rd & Rals
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	013000	ft/ft
Discharg	328.00	cfs

Options	
Current Roughness Meth	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev.	4,513.52	ft
Elevation Range	12.47 to 4,515.50	
Flow Area	55.9	ft²
Wetted Perimeter	135.26	ft
Top Width	135.23	ft
Actual Depth	1.05	ft
Critical Elevation	4,513.70	ft
Critical Slope	0.004736	ft/ft
Velocity	5.87	ft/s
Velocity Head	0.54	ft
Specific Energy	4,514.05	ft
Froude Number	1.61	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	13+37	0.016

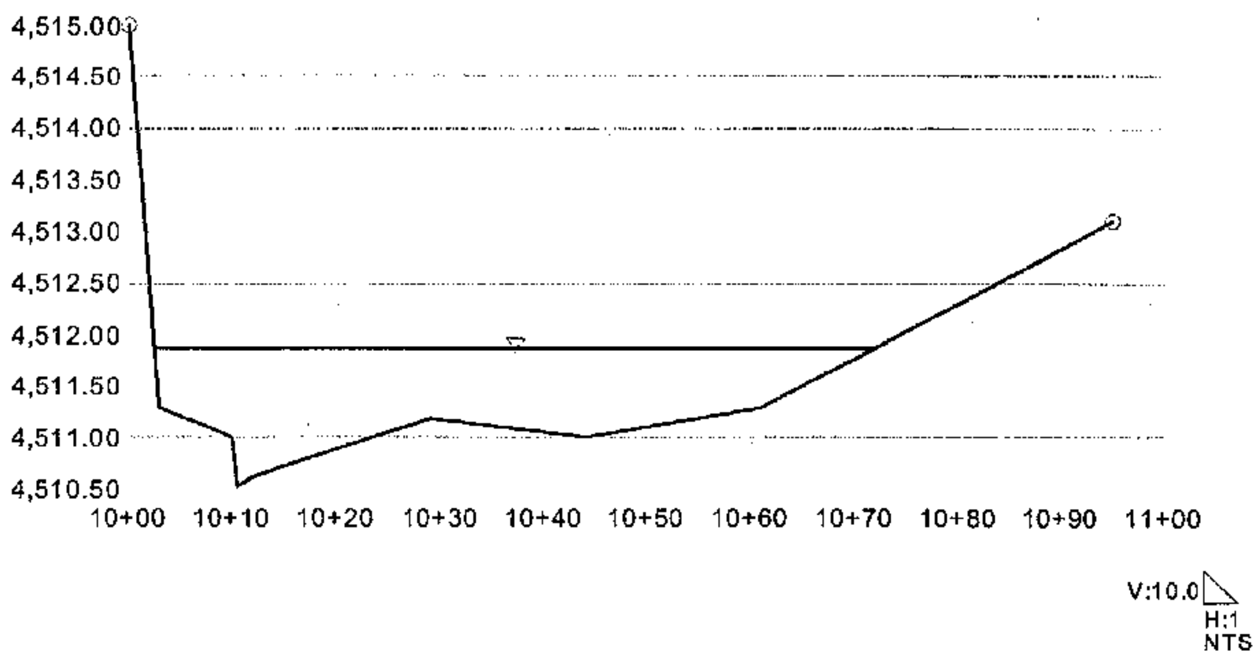
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,515.00
10+28	4,514.20
11+39	4,513.60
12+43	4,512.80
12+48	4,512.47
12+59	4,512.86
12+90	4,513.65
12+98	4,514.48
13+37	4,515.50

3rd Street 2000
Cross Section for Irregular Channel

Project Description	
Worksheet	3rd_Street 2000 - 3rd @
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.007000	ft/ft
Water Surface Elev.	4,511.88	ft
Elevation Range	10.52 to 4,515.00	
Discharge	328.00	cfs



3rd Street 2000
Worksheet for Irregular Channel

Project Description	
Worksheet	3rd_Street 2000 - 3rd @
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	007000	ft/ft
Discharg·	328.00	cfs

Options	
Current Roughness Methc	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficiei	0.016	
Water Surface Elev.	4,511.88	ft
Elevation Range	10.52 to 4,515.00	
Flow Area	51.7	ft²
Wetted Perimeter	69.97	ft
Top Width	69.42	ft
Actual Depth	1.36	ft
Critical Elevation	4,512.03	ft
Critical Slope	0.003966	ft/ft
Velocity	6.35	ft/s
Velocity Head	0.63	ft
Specific Energy	4,512.51	ft
Froude Number	1.30	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	10+95	0.016

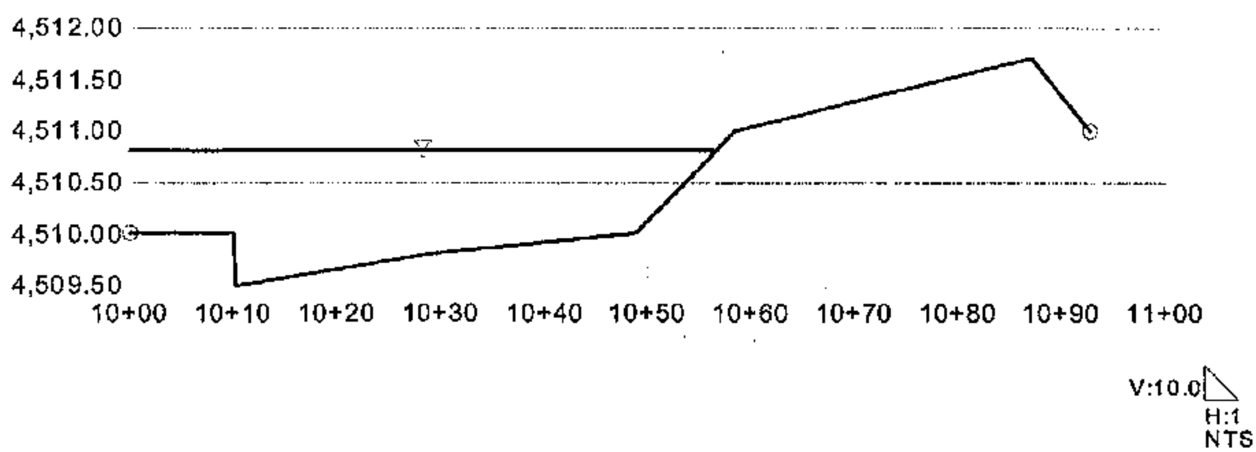
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,515.00
10+03	4,511.29
10+10	4,511.01
10+10	4,510.52
10+12	4,510.62
10+29	4,511.18
10+44	4,511.01
10+61	4,511.30
10+95	4,513.10

3rd Street 1900
Cross Section for Irregular Channel

Project Description	
Worksheet	3rd_Street 1900 - 3rd @
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.005600	ft/ft
Water Surface Elev	4,510.81	ft
Elevation Range	)9.50 to 4,511.70	
Discharge	328.00	cfs



3rd Street 1900
Worksheet for Irregular Channel

Project Description	
Worksheet	3rd_Street 1900 - 3rd @
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	005600	ft/ft
Discharg	328.00	cfs

Options	
Current Roughness Meth	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev	4,510.81	ft
Elevation Range	)9.50 to 4,511.70	
Flow Area	51.2	ft²
Wetted Perimeter	57.75	ft
Top Width	56.48	ft
Actual Depth	1.31	ft
Critical Elevation	4,510.92	ft
Critical Slope	0.003847	ft/ft
Velocity	6.41	ft/s
Velocity Head	0.64	ft
Specific Energy	4,511.45	ft
Froude Number	1.19	
Flow Type	Supercritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.80863905 ft.

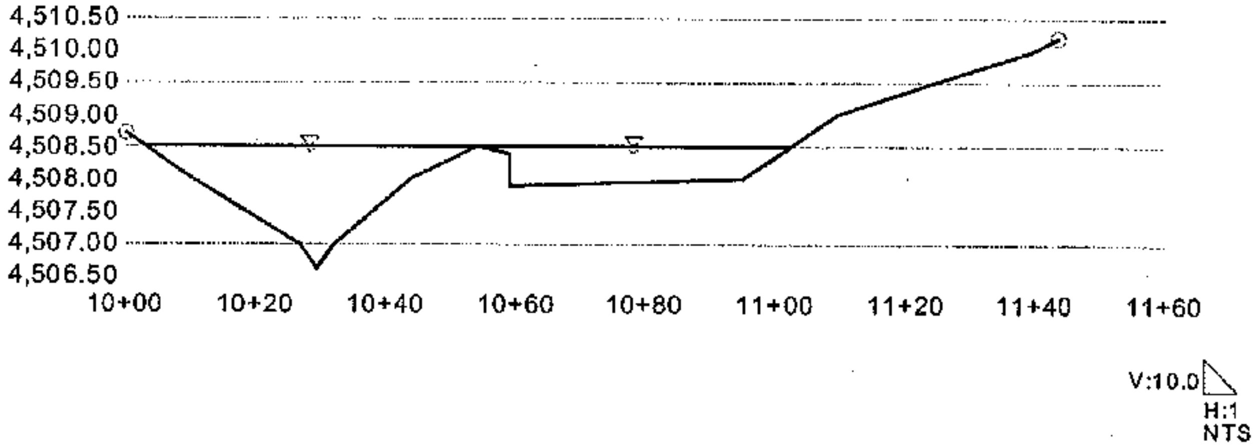
Roughness Segments		
Start Station	End Station	Mannings Coefficient
10+00	10+93	0.016

Natural Channel Points	
Station (ft)	Elevation (ft)
10+00	4,510.00
10+10	4,510.00
10+10	4,509.50
10+29	4,509.80
10+49	4,510.00
10+58	4,511.00
10+87	4,511.70
10+93	4,511.00

3rd Street 1800
Cross Section for Irregular Channel

Project Description	
Worksheet	3rd_Street 1800 - 3rd St. (West of Arl
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.005700	ft/ft
Water Surface Elev.	4,508.50	ft
Elevation Range	)6.60 to 4,510.20	
Discharge	328.00	cfs



3rd Street 1800
Worksheet for Irregular Channel

Project Description	
Worksheet	3rd_Street 1800 - 3rd St. (West of Ari
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	005700	ft/ft
Discharg	328.00	cfs

Options	
Current Roughness Methc	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev	4,508.50	ft
Elevation Range	)6.60 to 4,510.20	
Flow Area	63.4	ft²
Wetted Perimeter	99.92	ft
Top Width	99.33	ft
Actual Depth	1.90	ft
Critical Elevation	4,508.56	ft
Critical Slope	0.004257	ft/ft
Velocity	5.18	ft/s
Velocity Head	0.42	ft
Specific Energy	4,508.92	ft
Froude Number	1.14	
Flow Type	Supercritical	

Calculation Messages:
Flow is divided.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
10+00	11+43	0.016

Natural Channel Points	
Station (ft)	Elevation (ft)
10+00	4,508.70
10+10	4,508.00
10+27	4,507.00
10+29	4,506.60
10+32	4,507.00
10+44	4,508.00
10+54	4,508.50
10+59	4,508.40
10+59	4,507.90
10+95	4,508.00

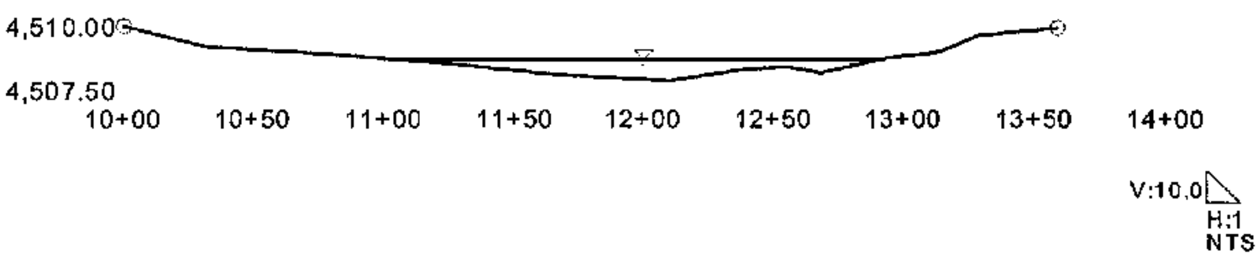
3rd Street 1800
Worksheet for Irregular Channel

Natural Channel Points	
Station (ft)	Elevation (ft)
11+09	4,509.00
11+39	4,510.00
11+43	4,510.20

3rd Street 1700
Cross Section for Irregular Channel

Project Description	
Worksheet	3rd_Street 1700 - 3rd & Arling
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.009000	ft/ft
Water Surface Elev.	4,508.69	ft
Elevation Range	)7.90 to 4,510.00	
Discharge	389.00	cfs



3rd Street 1700
Worksheet for Irregular Channel

Project Description	
Worksheet	3rd_Street 1700 - 3rd & Arling
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	009000	ft/ft
Discharg	389.00	cfs

Options	
Current Roughness Methc	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev	4,508.69	ft
Elevation Range	)7.90 to 4,510.00	
Flow Area	77.8	ft²
Wetted Perimeter	182.05	ft
Top Width	182.04	ft
Actual Depth	0.79	ft
Critical Elevation	4,508.80	ft
Critical Slope	0.004743	ft/ft
Velocity	5.00	ft/s
Velocity Head	0.39	ft
Specific Energy	4,509.08	ft
Froude Number	1.35	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	13+59	0.016

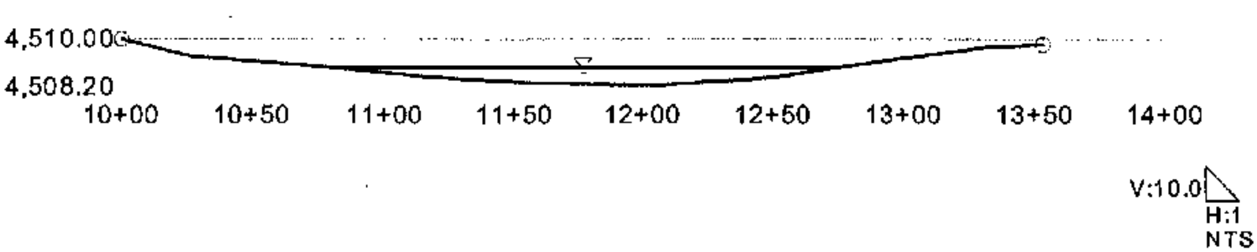
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,510.00
10+31	4,509.23
10+78	4,508.94
11+24	4,508.56
11+66	4,508.13
12+10	4,507.90
12+39	4,508.30
12+55	4,508.39
12+68	4,508.22
12+94	4,508.76
13+14	4,508.96
13+29	4,509.67
13+59	4,509.90

Existing 3rd Street 1600
Cross Section for Irregular Channel

Project Description	
Worksheet	3rd_Street 1600 - Arlington
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.009000	ft/ft
Water Surface Elev.	4,508.88	ft
Elevation Range	)8.23 to 4,510.00	
Discharge	369.00	cfs



Existing 3rd Street 1600
Worksheet for Irregular Channel

Project Description	
Worksheet	3rd_Street 1600 - Arlington
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	009000	ft/ft
Discharg	389.00	cfs

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev.	4,508.88	ft
Elevation Range	)8.23 to 4,510.00	
Flow Area	79.7	ft²
Wetted Perimeter	193.08	ft
Top Width	193.08	ft
Actual Depth	0.65	ft
Critical Elevation	4,508.98	ft
Critical Slope	0.004790	ft/ft
Velocity	4.88	ft/s
Velocity Head	0.37	ft
Specific Energy	4,509.25	ft
Froude Number	1.34	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	13+53	0.016

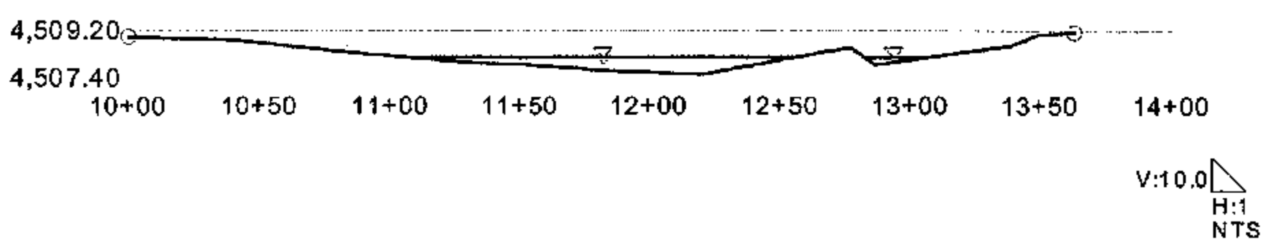
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,510.00
10+26	4,509.35
10+72	4,508.96
11+19	4,508.51
11+60	4,508.31
12+06	4,508.23
12+50	4,508.57
12+90	4,509.11
13+33	4,509.68
13+53	4,509.80

3rd Street 1550
Cross Section for Irregular Channel

Project Description	
Worksheet	3rd_Street 1550 - 3rd & Arling
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.025000	ft/ft
Water Surface Elev.	4,508.15	ft
Elevation Range	)7.50 to 4,509.10	
Discharge	389.00	cfs



3rd Street 1550
Worksheet for Irregular Channel

Project Description	
Worksheet	3rd_Street 1550 - 3rd & Arling
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	025000	ft/ft
Discharg	389.00	cfs

Options	
Current Roughness Methc	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev.	4,508.15	ft
Elevation Range	)7.50 to 4,509.10	
Flow Area	55.3	ft²
Wetted Perimeter	166.61	ft
Top Width	166.59	ft
Actual Depth	0.65	ft
Critical Elevation	4,508.39	ft
Critical Slope	0.004873	ft/ft
Velocity	7.04	ft/s
Velocity Head	0.77	ft
Specific Energy	4,508.92	ft
Froude Number	2.15	
Flow Type	Supercritical	

Calculation Messages:
Flow is divided.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
10+00	13+63	0.016

Natural Channel Points	
Station (ft)	Elevation (ft)
10+00	4,509.00
10+42	4,508.80
10+68	4,508.50
10+90	4,508.35
11+33	4,507.93
11+54	4,507.88
11+83	4,507.63
12+20	4,507.50
12+67	4,508.38
12+77	4,508.50

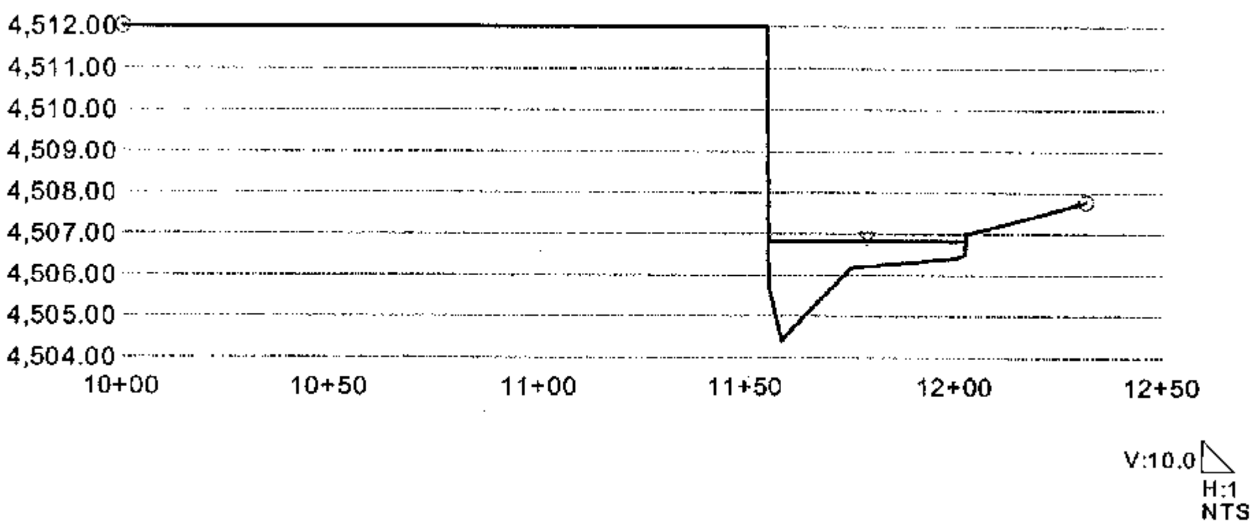
3rd Street 1550
Worksheet for Irregular Channel

Natural Channel Points	
Station (ft)	Elevation (ft)
12+86	4,507.90
13+07	4,508.20
13+38	4,508.60
13+49	4,509.05
13+63	4,509.10

3rd Street 1500
Cross Section for Irregular Channel

Project Description	
Worksheet	3rd_Street 1500 - 3rd @ Ki
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficie	0.016	
Slope	0.009000	ft/ft
Water Surface Elev	4,506.84	ft
Elevation Range	)4.40 to 4,512.00	
Discharge	389.00	cfs



3rd Street 1500
Worksheet for Irregular Channel

Project Description	
Worksheet	3rd_Street 1500 - 3rd @ Ki
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	009000	ft/ft
Discharg	389.00	cfs

Options	
Current Roughness Methc	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficiei	0.016	
Water Surface Elev.	4,506.84	ft
Elevation Range	)4.40 to 4,512.00	
Flow Area	46.1	ft²
Wetted Perimeter	49.20	ft
Top Width	47.50	ft
Actual Depth	2.44	ft
Critical Elevation	4,507.20	ft
Critical Slope	0.003744	ft/ft
Velocity	8.44	ft/s
Velocity Head	1.11	ft
Specific Energy	4,507.95	ft
Froude Number	1.51	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	12+32	0.016

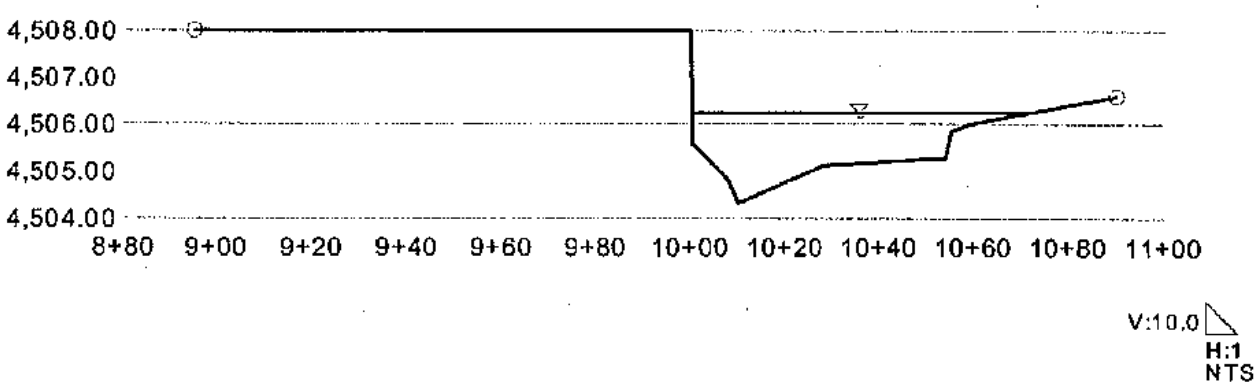
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,512.00
11+44	4,512.00
11+55	4,512.00
11+55	4,505.80
11+58	4,504.40
11+75	4,506.20
12+00	4,506.40
12+03	4,506.50
12+03	4,507.00
12+07	4,507.10
12+32	4,507.80

3rd Street 1400
Cross Section for Irregular Channel

Project Description	
Worksheet	3rd_Street 1400 - 3rd & West
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficie	0.016	
Slope	0.005000	ft/ft
Water Surface Elev.	4,506.23	ft
Elevation Range	)4.34 to 4,508.00	
Discharge	436.00	cfs



3rd Street 1400
Worksheet for Irregular Channel

Project Description	
Worksheet	3rd_Street 1400 - 3rd & West
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	005000	ft/ft
Discharg	436.00	cfs

Options	
Current Roughness Methc	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev.	4,506.23	ft
Elevation Range	)4.34 to 4,508.00	
Flow Area	68.5	ft²
Wetted Perimeter	71.78	ft
Top Width	70.91	ft
Actual Depth	1.89	ft
Critical Elevation	4,506.34	ft
Critical Slope	0.003793	ft/ft
Velocity	6.36	ft/s
Velocity Head	0.63	ft
Specific Energy	4,506.86	ft
Froude Number	1.14	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
8+95	10+90	0.016

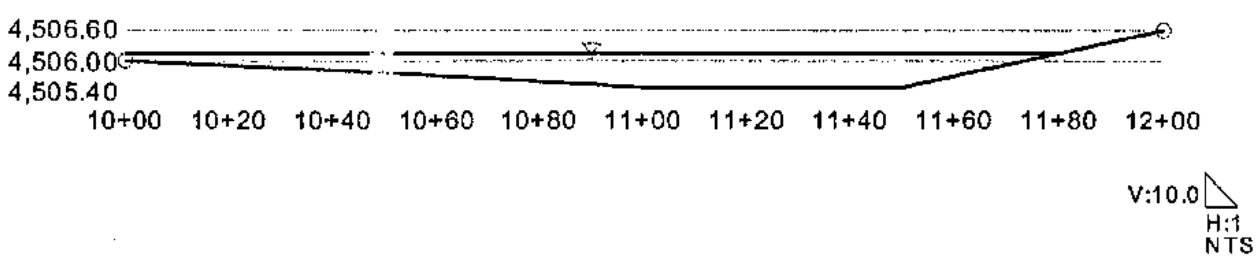
Natural Channel Points

Station (ft)	Elevation (ft)
8+95	4,508.00
10+00	4,508.00
10+00	4,505.60
10+08	4,504.82
10+10	4,504.34
10+28	4,505.13
10+52	4,505.27
10+54	4,505.27
10+55	4,505.85
10+59	4,506.00
10+90	4,506.60

3rd Street 1300
Cross Section for Irregular Channel

Project Description	
Worksheet	3rd_Street 1300 - 3rd &
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.010000	ft/ft
Water Surface Elev.	4,506.15	ft
Elevation Range	)5.50 to 4,506.60	
Discharge	436.00	cfs



3rd Street 1300
Worksheet for Irregular Channel

Project Description	
Worksheet	3rd_Street 1300 - 3rd &
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	010000	ft/ft
Discharg	436.00	cfs

Options	
Current Roughness Methc	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weighting	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev	4,506.15	ft
Elevation Range	)5.50 to 4,506.60	
Flow Area	80.3	ft²
Wetted Perimeter	179.90	ft
Top Width	179.73	ft
Actual Depth	0.65	ft
Critical Elevation	4,506.28	ft
Critical Slope	0.004546	ft/ft
Velocity	5.43	ft/s
Velocity Head	0.46	ft
Specific Energy	4,506.61	ft
Froude Number	1.43	
Flow Type	Supercritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.15415236 ft.

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	12+00	0.016

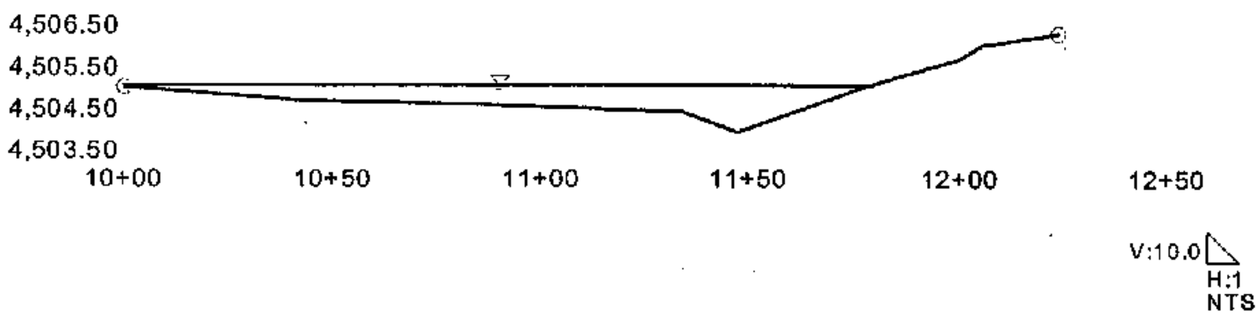
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,506.00
10+50	4,505.80
11+00	4,505.50
11+50	4,505.50
12+00	4,506.60

3rd Street 1250
Cross Section for Irregular Channel

Project Description	
Worksheet	3rd_Street 1250 - 3rd & W
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.008000	ft/ft
Water Surface Elev.	4,505.07	ft
Elevation Range	)3.90 to 4,506.30	
Discharge	436.00	cfs



3rd Street 1250
Worksheet for Irregular Channel

Project Description	
Worksheet	3rd_Street 1250 - 3rd & W
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	008000	ft/ft
Discharg	436.00	cfs

Options	
Current Roughness Methc	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev.	4,505.07	ft
Elevation Range	)3.90 to 4,506.30	
Flow Area	85.8	ft²
Wetted Perimeter	179.43	ft
Top Width	179.33	ft
Actual Depth	1.17	ft
Critical Elevation	4,505.16	ft
Critical Slope	0.004526	ft/ft
Velocity	5.08	ft/s
Velocity Head	0.40	ft
Specific Energy	4,505.47	ft
Froude Number	1.29	
Flow Type	Supercritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.70845086e-1 ft.

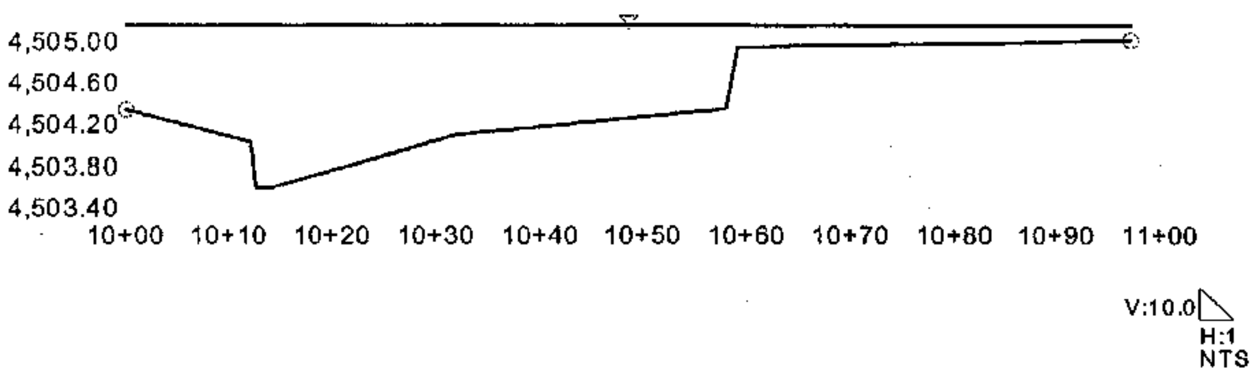
Roughness Segments		
Start Station	End Station	Mannings Coefficient
10+00	12+24	0.016

Natural Channel Points	
Station (ft)	Elevation (ft)
10+00	4,505.00
10+43	4,504.70
10+85	4,504.60
11+34	4,504.40
11+47	4,503.90
11+77	4,505.00
12+00	4,505.70
12+05	4,506.00
12+24	4,506.30

3rd Street 1200
Cross Section for Irregular Channel

Project Description	
Worksheet	3rd_Street 1200 3rd St @ Molly
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.007000	ft/ft
Water Surface Elev.	4,505.16	ft
Elevation Range	)3.59 to 4,505.00	
Discharge	434.00	cfs



3rd Street 1200
Worksheet for Irregular Channel

Project Description	
Worksheet	3rd_Street 1200 3rd St @ Molly
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	007000	ft/ft
Discharg	434.00	cfs

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficier	0.016	
Water Surface Elev	4,505.16	ft
Elevation Range	)3.59 to 4,505.00	
Flow Area	70.0	ft²
Wetted Perimeter	98.32	ft
Top Width	97.00	ft
Actual Depth	1.57	ft
Critical Elevation	4,505.29	ft
Critical Slope	0.004018	ft/ft
Velocity	6.20	ft/s
Velocity Head	0.60	ft
Specific Energy	4,505.75	ft
Froude Number	1.29	
Flow Type	Supercritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.82552297 ft.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
10+00	10+97	0.016

Natural Channel Points	
Station (ft)	Elevation (ft)
10+00	4,504.33
10+12	4,504.03
10+13	4,503.59
10+14	4,503.59
10+32	4,504.10
10+57	4,504.34
10+58	4,504.35
10+59	4,504.93
10+63	4,504.95
10+97	4,505.00

Project________________
Project No.______________
Sheet No.______of______
Calculated by______Date______

WEIR FLOW COMPUTATIONS

LOCATION/DESCRIPTION:

CROSS SECTION PARAMETERS: FILENAME: 1201.SEC

No. of Cross Section Points: 3 Bed Slope:0.00500 Max Elev.:4506.70
Bank Stations..........Left: 1000.0 Right....: 1130.0 Min Elev.:4505.00
Encroachment Stations..Left: Right....: Weir Coef: 2.500

CROSS SECTION POINTS - Elevations & Stations in feet:

No.	Elev.	Sta.	No.	Elev.	Sta.	No.	Elev.	Sta.
1)	4505.00	1000.00	2)	4505.20	1030.00	3)	4506.70	1130.00

COMPUTED PARAMETERS:

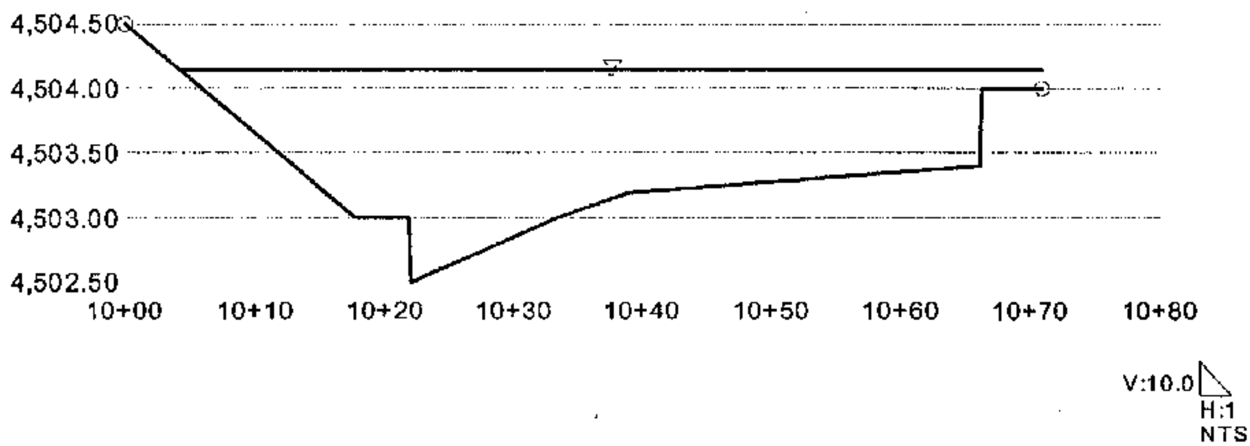
WSEL(ft)	Q(cfs)	H:max(ft)	H:ave(ft)	TW(ft)	A(sf)
4505.13	0.9	0.13	0.06	19.5	1.3
4505.14	1.1	0.14	0.07	21.0	1.5
'505.15	1.3	0.15	0.07	22.5	1.7
05.16	1.5	0.16	0.08	24.0	1.9

NOTES:

3rd Street 1100
Cross Section for Irregular Channel

Project Description	
Worksheet	3rd_Street 1100 - 3rd @ Eldorac
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.007000	ft/ft
Water Surface Elev	4,504.15	ft
Elevation Range	)2.50 to 4,504.50	
Discharge	405.10	cfs



3rd Street 1100
Worksheet for Irregular Channel

Project Description	
Worksheet	3rd_Street 1100 - 3rd @ Eldorac
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	007000	ft/ft
Discharg	405.10	cfs

Options	
Current Roughness Methc	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weighting	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev	4,504.15	ft
Elevation Range	)2.50 to 4,504.50	
Flow Area	57.9	ft²
Wetted Perimeter	67.84	ft
Top Width	66.71	ft
Actual Depth	1.65	ft
Critical Elevation	4,504.33	ft
Critical Slope	0.003798	ft/ft
Velocity	6.99	ft/s
Velocity Head	0.76	ft
Specific Energy	4,504.91	ft
Froude Number	1.32	
Flow Type	Supercritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.14502817 ft.

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	10+71	0.016

Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,504.50
10+18	4,503.00
10+22	4,503.00
10+22	4,502.50
10+33	4,503.00
10+39	4,503.20
10+66	4,503.40
10+66	4,504.00
10+71	4,504.00

Project____________________
Project No.________________
Sheet No.________of________
Calculated by______Date______

WEIR FLOW COMPUTATIONS

LOCATION/DESCRIPTION:

CROSS SECTION PARAMETERS: FILENAME: 1101.SEC

No. of Cross Section Points: 3 Bed Slope:0.00500 Max Elev.:4504.30
Bank Stations..........Left: 1000.0 Right....: 1155.0 Min Elev.:4503.60
Encroachment Stations..Left: Right....: Weir Coef: 2.400

CROSS SECTION POINTS - Elevations & Stations in feet:

No.	Elev.	Sta.	No.	Elev.	Sta.	No.	Elev.	Sta.
1)	4503.60	1000.00	2)	4504.30	1088.00	3)	4504.00	1155.00

COMPUTED PARAMETERS:

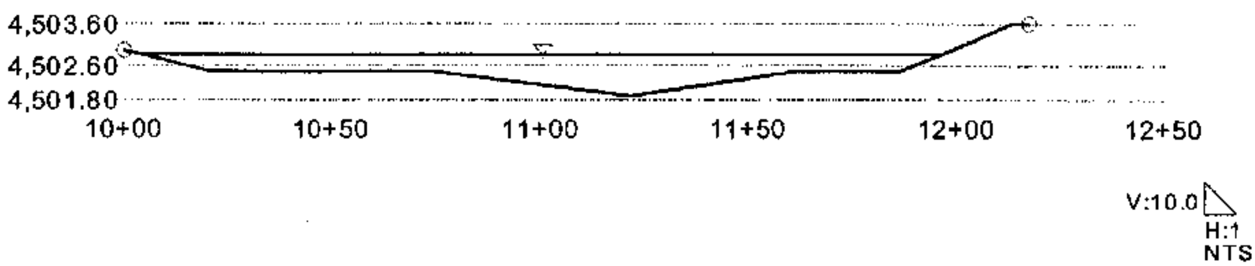
WSEL(ft)	Q(cfs)	H:max(ft)	H:ave(ft)	TW(ft)	A(sf)
4504.13	26.0	0.53	0.20	95.7	19.5
4504.14	27.5	0.54	0.21	99.2	20.5
4504.15	28.9	0.55	0.21	102.6	21.5
04.16	30.5	0.56	0.21	106.2	22.6
4504.17	32.1	0.57	0.22	109.6	23.6
4504.18	33.9	0.58	0.22	113.2	24.8

NOTES:

3rd Street 1050
Cross Section for Irregular Channel

Project Description	
Worksheet	3rd_Street 1050 - 3rd @ Si(
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.007000	ft/ft
Water Surface Elev	4,502.89	ft
Elevation Range	)1.90 to 4,503.60	
Discharge	477.00	cfs



3rd Street 1050
Worksheet for Irregular Channel

Project Description	
Worksheet	3rd_Street 1050 - 3rd @ Si(
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	007000	ft/ft
Discharg	477.00	cfs

Options	
Current Roughness Methc	ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev	4,502.89	ft
Elevation Range	)1.90 to 4,503.60	
Flow Area	96.9	ft²
Wetted Perimeter	192.07	ft
Top Width	192.05	ft
Actual Depth	0.99	ft
Critical Elevation	4,502.97	ft
Critical Slope	0.004508	ft/ft
Velocity	4.92	ft/s
Velocity Head	0.38	ft
Specific Energy	4,503.27	ft
Froude Number	1.22	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	12+18	0.016

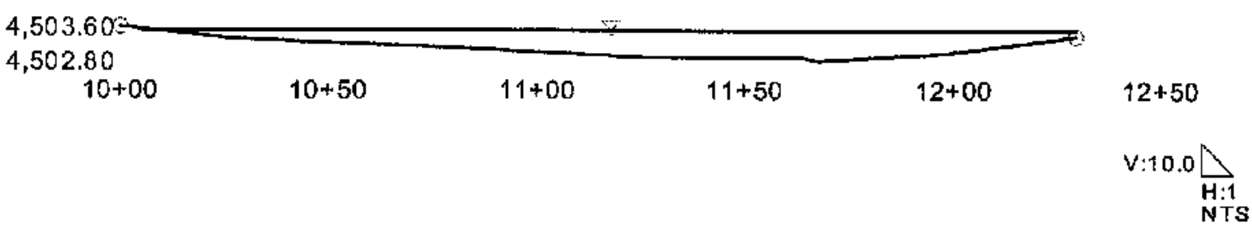
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,503.00
10+21	4,502.50
10+74	4,502.50
11+21	4,501.90
11+61	4,502.50
11+87	4,502.50
11+99	4,503.00
12+14	4,503.60
12+18	4,503.60

3rd Street 1000
Cross Section for Irregular Channel

Project Description	
Worksheet	3rd_Street 1000 - Sierra !
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.007000	ft/ft
Water Surface Elev.	4,503.55	ft
Elevation Range	)2.80 to 4,503.60	
Discharge	476.00	cfs



3rd Street 1000
Worksheet for Irregular Channel

Project Description	
Worksheet	3rd_Street 1000 - Sierra (
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	007000	ft/ft
Discharg	476.00	cfs

Options	
Current Roughness Meth	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev	4,503.55	ft
Elevation Range	)2.80 to 4,503.60	
Flow Area	103.0	ft²
Wetted Perimeter	224.54	ft
Top Width	224.38	ft
Actual Depth	0.75	ft
Critical Elevation	4,503.61	ft
Critical Slope	0.004672	ft/ft
Velocity	4.62	ft/s
Velocity Head	0.33	ft
Specific Energy	4,503.88	ft
Froude Number	1.20	
Flow Type	Supercritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.14980803 ft.

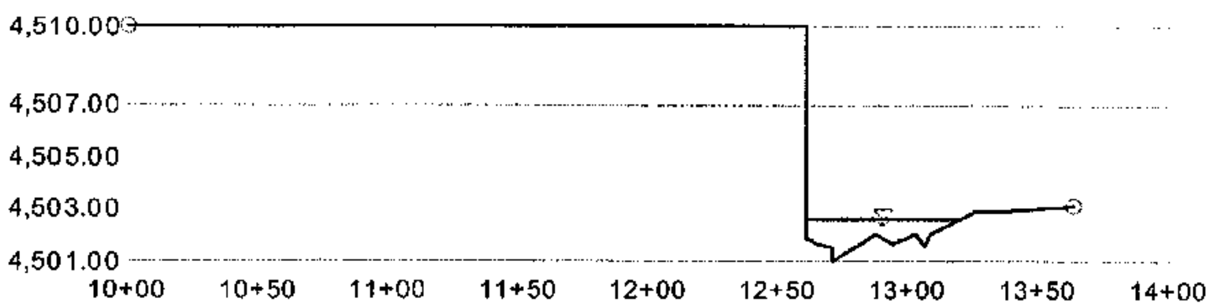
Roughness Segments		
Start Station	End Station	Mannings Coefficient
10+00	12+30	0.016

Natural Channel Points	
Station (ft)	Elevation (ft)
10+00	4,503.60
10+26	4,503.35
10+80	4,503.10
11+26	4,502.90
11+63	4,502.90
11+67	4,502.80
11+98	4,503.00
12+30	4,503.40

3rd Street 900
Cross Section for Irregular Channel

Project Description	
Worksheet	3rd_Street 0900 - 3rd and Si(
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficie	0.016	
Slope	0.017000	ft/ft
Water Surface Elev	4,502.60	ft
Elevation Range	)1.00 to 4,510.00	
Discharge	476.00	cfs



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3rd Street 900
Worksheet for Irregular Channel

Project Description	
Worksheet	3rd_Street 0900 - 3rd and Sl(
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	017000	ft/ft
Discharg(	476.00	cfs

Options	
Current Roughness Methc	)ved Lotter's Method
Open Channel Weighting	)ved Lotter's Method
Closed Channel Weightin(	Horton's Method

Results		
Mannings Coefficie(	0.016	
Water Surface Elev	4,502.60	ft
Elevation Range	)1.00 to 4,510.00	
Flow Area	46.8	ft²
Wetted Perimeter	60.73	ft
Top Width	59.51	ft
Actual Depth	1.60	ft
Critical Elevation	4,503.16	ft
Critical Slope	0.004001	ft/ft
Velocity	10.17	ft/s
Velocity Head	1.61	ft
Specific Energy	4,504.20	ft
Froude Number	2.02	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	13+64	0.016

Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,510.00
10+96	4,510.00
11+42	4,510.00
12+60	4,510.00
12+61	4,501.90
12+65	4,501.70
12+71	4,501.50
12+71	4,501.00
12+87	4,502.00
12+94	4,501.70
13+03	4,502.00
13+06	4,501.60
13+08	4,502.00

3rd Street 900
Worksheet for Irregular Channel

Natural Channel Points

Station (ft)	Elevation (ft)
13+26	4,502.90
13+34	4,502.90
13+64	4,503.10

Project________________

Project No.________________

Sheet No.__________of__________

Calculated by______Date______

WEIR FLOW COMPUTATIONS

LOCATION/DESCRIPTION:

CROSS SECTION PARAMETERS: FILENAME: 1001.SEC

No. of Cross Section Points: 3 Bed Slope:0.00500 Max Elev.:4503.60
Bank Stations..........Left: 1000.0 Right....: 1025.0 Min Elev.:4503.40
Encroachment Stations..Left: Right....: Weir Coef: 2.900

CROSS SECTION POINTS - Elevations & Stations in feet:

No.	Elev.	Sta.	No.	Elev.	Sta.	No.	Elev.	Sta.
1)	4503.40	1000.00	2)	4503.50	1012.00	3)	4503.60	1025.00

COMPUTED PARAMETERS:

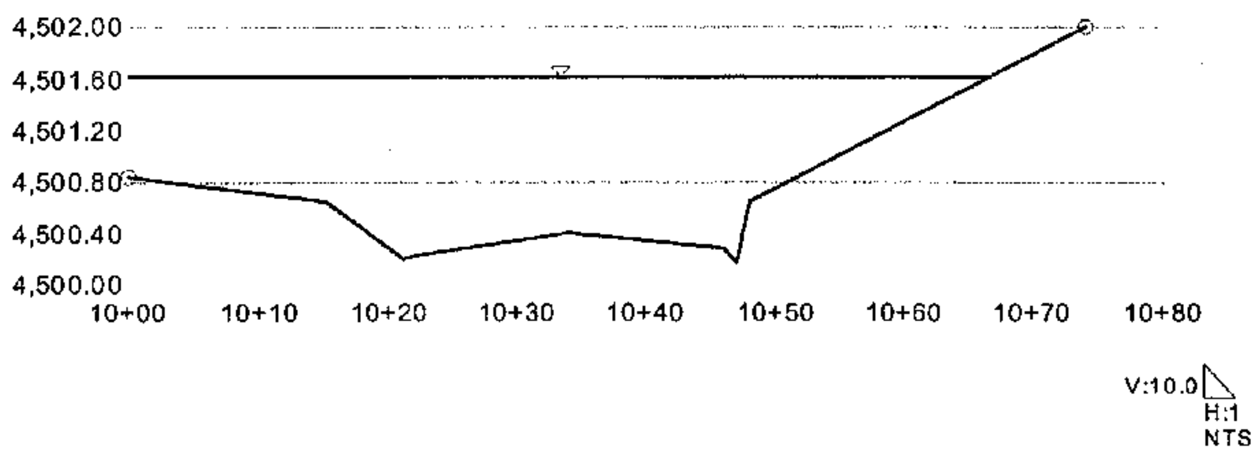
WSEL(ft)	Q(cfs)	H:max(ft)	H:ave(ft)	TW(ft)	A(sf)
4503.51	0.6	0.11	0.05	13.3	0.7
4503.52	0.7	0.12	0.06	14.6	0.9
4503.53	0.8	0.13	0.06	15.9	1.0
4503.54	1.0	0.14	0.07	17.2	1.2
4503.55	1.2	0.15	0.07	18.5	1.4
4503.56	1.4	0.16	0.08	19.8	1.6

NOTES:

3rd Street 800
Cross Section for Irregular Channel

Project Description	
Worksheet	3rd_Street 0800 - 3rd @
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficie	0.016	
Slope	0.006700	ft/ft
Water Surface Elev	4,501.62	ft
Elevation Range	)0.17 to 4,502.00	
Discharge	475.00	cfs



3rd Street 800
Worksheet for Irregular Channel

Project Description	
Worksheet	3rd_Street 0800 - 3rd @
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	006700	ft/ft
Discharg	475.00	cfs

Options	
Current Roughness Meth	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev	4,501.62	ft
Elevation Range	)0.17 to 4,502.00	
Flow Area	64.5	ft²
Wetted Perimeter	67.66	ft
Top Width	66.72	ft
Actual Depth	1.45	ft
Critical Elevation	4,501.84	ft
Critical Slope	0.003673	ft/ft
Velocity	7.36	ft/s
Velocity Head	0.84	ft
Specific Energy	4,502.46	ft
Froude Number	1.32	
Flow Type	Supercritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.78180232 ft.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
10+00	10+74	0.016

Natural Channel Points	
Station (ft)	Elevation (ft)
10+00	4,500.84
10+15	4,500.65
10+21	4,500.20
10+22	4,500.23
10+34	4,500.40
10+46	4,500.28
10+47	4,500.17
10+48	4,500.65
10+74	4,502.00

Project____________________
Project No.________________
Sheet No.__________of__________
Calculated by______Date______

WEIR FLOW COMPUTATIONS

LOCATION/DESCRIPTION:

CROSS SECTION PARAMETERS: FILENAME: 801.SEC

No. of Cross Section Points: 3 Bed Slope:0.00500 Max Elev.:4502.50
Bank Stations..........Left: 0.0 Right....: 112.0 Min Elev.:4501.40
Encroachment Stations..Left: Right....: Weir Coef: 2.500

CROSS SECTION POINTS - Elevations & Stations in feet:

No.	Elev.	Sta.	No.	Elev.	Sta.	No.	Elev.	Sta.
1)	4501.40	0.00	2)	4502.00	38.00	3)	4502.50	112.00

COMPUTED PARAMETERS:

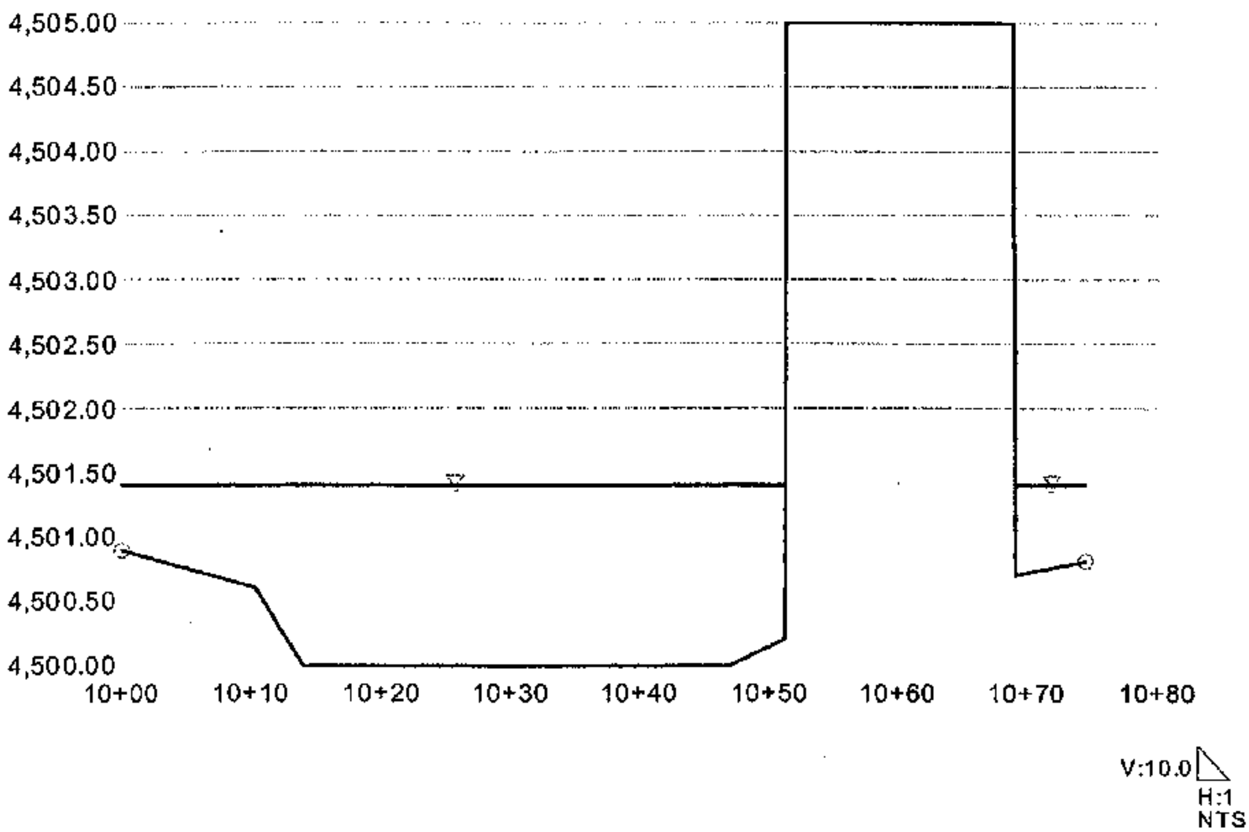
WSEL(ft)	Q(cfs)	H:max(ft)	H:ave(ft)	TW(ft)	A(sf)
4501.57	0.8	0.17	0.08	10.8	0.9
4501.58	0.9	0.18	0.09	11.4	1.0
4501.59	1.0	0.19	0.09	12.0	1.1
4501.60	1.1	0.20	0.10	12.7	1.3
4501.61	1.3	0.21	0.10	13.3	1.4
4501.62	1.4	0.22	0.11	13.9	1.5

NOTES:

3rd Street 700
Cross Section for Irregular Channel

Project Description	
Worksheet	3rd_Street 0700 - 3rd & Virgini
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.004000	ft/ft
Water Surface Elev.	4,501.40	ft
Elevation Range	)0.00 to 4,505.00	
Discharge	416.00	cfs



3rd Street 700
Worksheet for Irregular Channel

Project Description	
Worksheet	3rd_Street 0700 - 3rd & Virgini:
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	004000	ft/ft
Discharg	416.00	cfs

Options	
Current Roughness Meth	oved Lotter's Method
Open Channel Weighting	oved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev	4,501.40	ft
Elevation Range	)0.00 to 4,505.00	
Flow Area	66.2	ft²
Wetted Perimeter	59.72	ft
Top Width	56.68	ft
Actual Depth	1.40	ft
Critical Elevation	4,501.42	ft
Critical Slope	0.003784	ft/ft
Velocity	6.29	ft/s
Velocity Head	0.61	ft
Specific Energy	4,502.02	ft
Froude Number	1.03	
Flow Type	Supercritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.6033153 ft.
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	10+75	0.016

Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,500.90
10+10	4,500.60
10+14	4,500.00
10+47	4,500.00
10+51	4,500.20
10+51	4,505.00
10+69	4,505.00
10+69	4,500.70
10+75	4,500.80

Project____________________
Project No.__________________
Sheet No._________of_________
Calculated by______Date______

WEIR FLOW COMPUTATIONS

LOCATION/DESCRIPTION:

CROSS SECTION PARAMETERS: FILENAME: 701.SEC

No. of Cross Section Points: 3 Bed Slope:0.00500 Max Elev.:4502.00
Bank Stations..........Left: 1000.0 Right....: 1142.0 Min Elev.:4500.80
Encroachment Stations..Left: Right....: Weir Coef: 2.400

CROSS SECTION POINTS - Elevations & Stations in feet:

No.	Elev.	Sta.	No.	Elev.	Sta.	No.	Elev.	Sta.
1)	4500.80	1000.00	2)	4501.00	1060.00	3)	4502.00	1142.00

COMPUTED PARAMETERS:

WSEL(ft)	Q(cfs)	H:max(ft)	H:ave(ft)	TW(ft)	A(sf)
4501.38	55.1	0.58	0.38	91.2	34.7
4501.39	57.2	0.59	0.39	92.0	35.7
4501.40	59.1	0.60	0.39	92.8	36.6
01.41	61.2	0.61	0.40	93.6	37.5
4501.42	63.2	0.62	0.41	94.4	38.4
4501.43	65.4	0.63	0.41	95.3	39.4

NOTES:

3rd Street 600
Worksheet for Irregular Channel

Project Description	
Worksheet	3rd_Street 0600 -3rd & Vi
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	010000	ft/ft
Discharg	451.00	cfs

Options	
Current Roughness Methc	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev.	4,500.83	ft
Elevation Range	99.00 to 4,505.00	
Flow Area	82.2	ft²
Wetted Perimeter	92.73	ft
Top Width	90.81	ft
Actual Depth	1.83	ft
Critical Elevation	4,500.84	ft
Critical Slope	0.003953	ft/ft
Velocity	5.49	ft/s
Velocity Head	0.47	ft
Specific Energy	4,501.30	ft
Froude Number	1.02	
Flow Type	Supercritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.1327222 ft.
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	10+27	0.300
10+27	10+65	0.016
10+65	10+88	0.300
10+88	11+14	0.035

Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,500.70
10+19	4,500.00
10+27	4,499.60
10+62	4,499.00
10+64	4,499.40
10+65	4,505.00

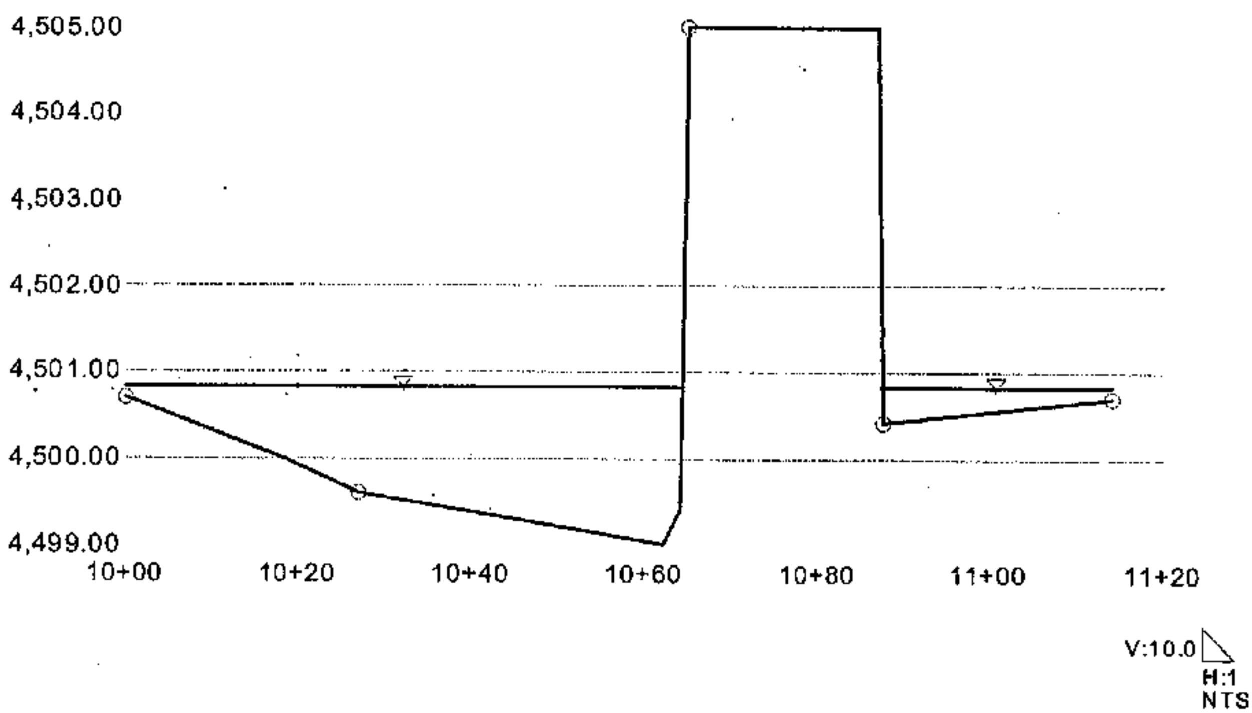
3rd Street 600
Worksheet for Irregular Channel

Natural Channel Points	
Station (ft)	Elevation (ft)
10+87	4,505.00
10+88	4,500.40
11+14	4,500.70

3rd Street 600
Cross Section for Irregular Channel

Project Description	
Worksheet	3rd_Street 0600 -3rd & Vi
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.010000	ft/ft
Water Surface Elev.	4,500.83	ft
Elevation Range	39.00 to 4,505.00	
Discharge	451.00	cfs



Project________________
Project No.____________
Sheet No.________of________
Calculated by______Date______

WEIR FLOW COMPUTATIONS

LOCATION/DESCRIPTION:

CROSS SECTION PARAMETERS: FILENAME: VIRGRAIL.SEC

No. of Cross Section Points: 3 Bed Slope:0.00500 Max Elev.:4500.30
Bank Stations..........Left: 1000.0 Right....: 1083.0 Min Elev.:4500.30
Encroachment Stations..Left: Right....: Weir Coef: 2.900

CROSS SECTION POINTS - Elevations & Stations in feet:

No.	Elev.	Sta.	No.	Elev.	Sta.	No.	Elev.	Sta.
1)	4500.30	1000.00	2)	4500.30	1082.00	3)	4500.30	1083.00

COMPUTED PARAMETERS:

WSEL(ft)	Q(cfs)	H:max(ft)	H:ave(ft)	TW(ft)	A(sf)
4500.71	63.2	0.41	0.41	83.0	34.0
4500.72	65.6	0.42	0.42	83.0	34.9
4500.73	67.9	0.43	0.43	83.0	35.7
[illegible]00.74	70.4	0.44	0.44	83.0	36.6
4500.75	72.7	0.45	0.45	83.0	37.4
4500.76	75.1	0.46	0.46	83.0	38.2

NOTES:

Project__________________

Project No.______________

Sheet No.________of________

Calculated by______Date______

WEIR FLOW COMPUTATIONS

LOCATION/DESCRIPTION:

CROSS SECTION PARAMETERS: FILENAME: 450.SEC

No. of Cross Section Points: 8 Bed Slope:0.00500 Max Elev.:4510.00

Bank Stations..........Left: 1105.0 Right....: 1289.0 Min Elev.:4499.00

Encroachment Stations..Left: Right....: Weir Coef: 2.900

CROSS SECTION POINTS - Elevations & Stations in feet:

No.	Elev.	Sta.	No.	Elev.	Sta.	No.	Elev.	Sta.
1)	4499.00	1105.00	2)	4499.15	1128.00	3)	4499.00	1152.00
4)	4499.00	1160.00	5)	4510.00	1160.50	6)	4510.00	1271.00
7)	4500.00	1271.50	8)	4500.10	1289.00			

COMPUTED PARAMETERS:

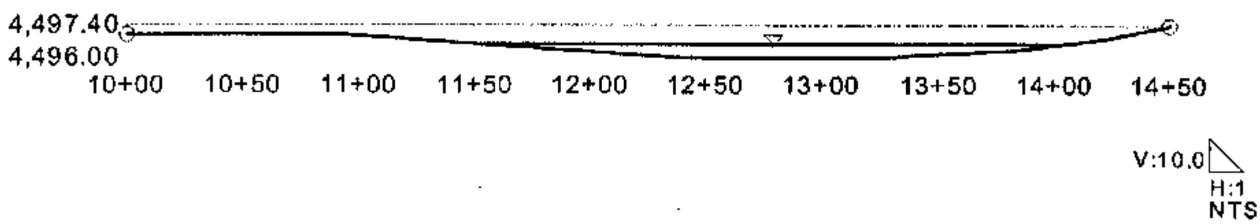
WSEL(ft)	Q(cfs)	H:max(ft)	H:ave(ft)	TW(ft)	A(sf)
4500.71	364.4	1.71	1.41	72.6	102.2
00.72	368.2	1.72	1.42	72.6	102.9
00.73	371.8	1.73	1.43	72.6	103.6
4500.74	375.6	1.74	1.44	72.6	104.4
4500.75	379.2	1.75	1.45	72.6	105.1
4500.76	382.9	1.76	1.46	72.6	105.8

NOTES:

Plaza Street 425
Cross Section for Irregular Channel

Project Description	
Worksheet	3rd_Street 0425 - Center & P
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.005600	ft/ft
Water Surface Elev	4,496.56	ft
Elevation Range	96.00 to 4,497.40	
Discharge	378.00	cfs



Plaza Street 425
Worksheet for Irregular Channel

Project Description	
Worksheet	3rd_Street 0425 - Center & P
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	005600	ft/ft
Discharg	378.00	cfs

Options	
Current Roughness Methc	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficiei	0.016	
Water Surface Elev	4,496.56	ft
Elevation Range	36.00 to 4,497.40	
Flow Area	100.0	ft²
Wetted Perimeter	249.51	ft
Top Width	249.51	ft
Actual Depth	0.56	ft
Critical Elevation	4,496.58	ft
Critical Slope	0.005017	ft/ft
Velocity	3.78	ft/s
Velocity Head	0.22	ft
Specific Energy	4,496.78	ft
Froude Number	1.05	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	14+50	0.016

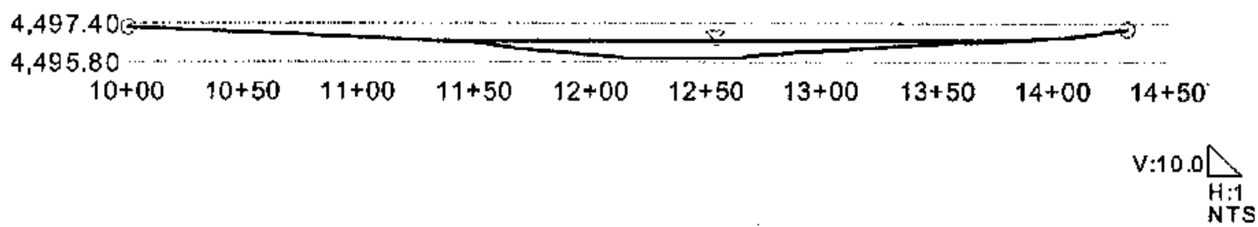
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,497.00
10+92	4,497.00
12+35	4,496.00
13+24	4,496.00
13+85	4,496.30
14+22	4,496.80
14+50	4,497.40

Plaza Street 400
Cross Section for Irregular Channel

Project Description	
Worksheet	3rd_Street 0400 - Center
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.005000	ft/ft
Water Surface Elev	4,496.71	ft
Elevation Range	95.94 to 4,497.30	
Discharge	378.00	cfs



Plaza Street 400
Worksheet for Irregular Channel

Project Description	
Worksheet	3rd_Street 0400 - Center
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	005000	ft/ft
Discharg	378.00	cfs

Options	
Current Roughness Meth	)ved Lotter's Method
Open Channel Weighting	)ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev	4,496.71	ft
Elevation Range	)5.94 to 4,497.30	
Flow Area	104.0	ft²
Wetted Perimeter	252.37	ft
Top Width	252.36	ft
Actual Depth	0.77	ft
Critical Elevation	4,496.71	ft
Critical Slope	0.005014	ft/ft
Velocity	3.64	ft/s
Velocity Head	0.21	ft
Specific Energy	4,496.91	ft
Froude Number	1.00	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	14+32	0.016

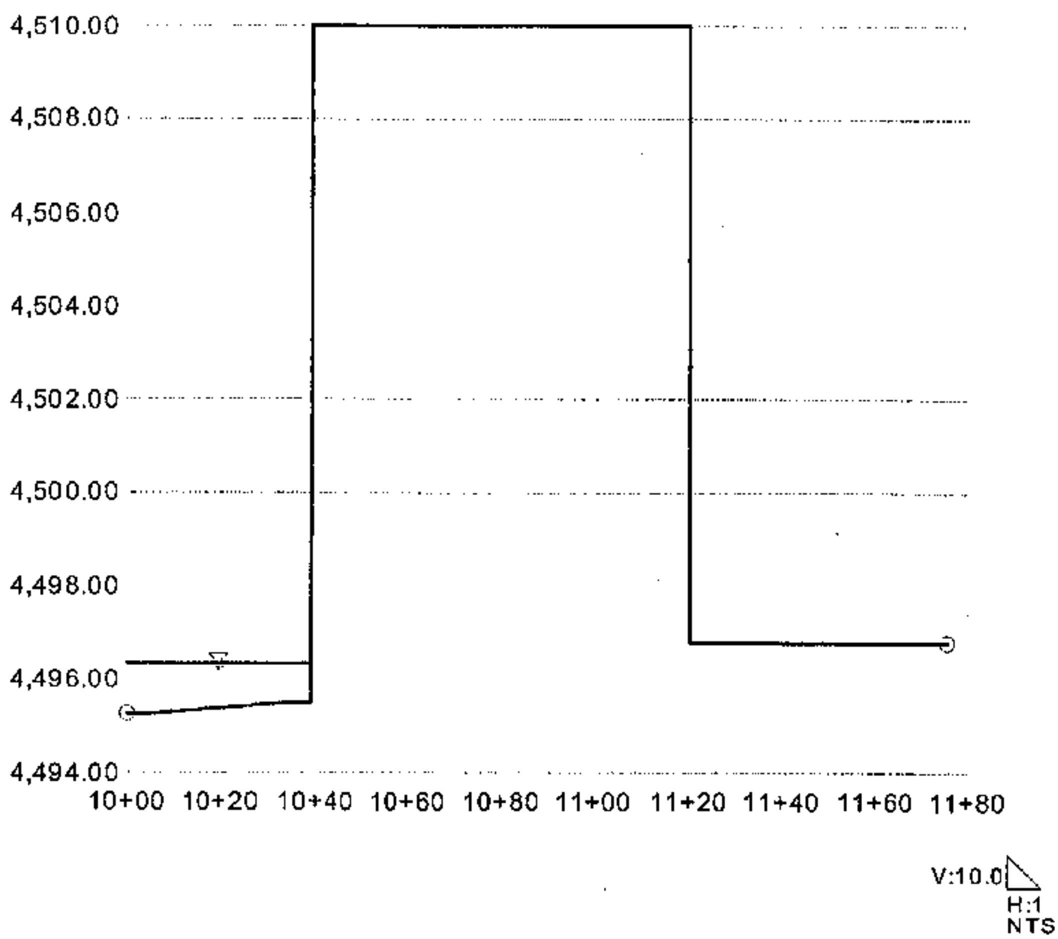
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,497.30
11+51	4,496.60
11+68	4,496.40
12+17	4,496.00
12+63	4,495.94
12+74	4,496.10
13+19	4,496.34
13+58	4,496.60
13+65	4,496.63
14+09	4,496.86
14+32	4,497.20

Plaza Street 300
Cross Section for Irregular Channel

Project Description	
Worksheet	3rd_Street 0300 - Center '
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiel	0.016	
Slope	0.013000	ft/ft
Water Surface Elev.	4,496.34	ft
Elevation Range	95.24 to 4,510.00	
Discharge	378.00	cfs



Plaza Street 300
Worksheet for Irregular Channel

Project Description	
Worksheet	3rd_Street 0300 - Center
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	013000	ft/ft
Discharg	378.00	cfs

Options	
Current Roughness Meth	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev	4,496.34	ft
Elevation Range	95.24 to 4,510.00	
Flow Area	37.7	ft²
Wetted Perimeter	40.93	ft
Top Width	39.01	ft
Actual Depth	1.10	ft
Critical Elevation	4,497.00	ft
Critical Slope	0.004240	ft/ft
Velocity	10.02	ft/s
Velocity Head	1.56	ft
Specific Energy	4,497.90	ft
Froude Number	1.80	
Flow Type	Supercritical	

Calculation Messages:
Water elevation exceeds lowest end station by 1.09678845 ft.

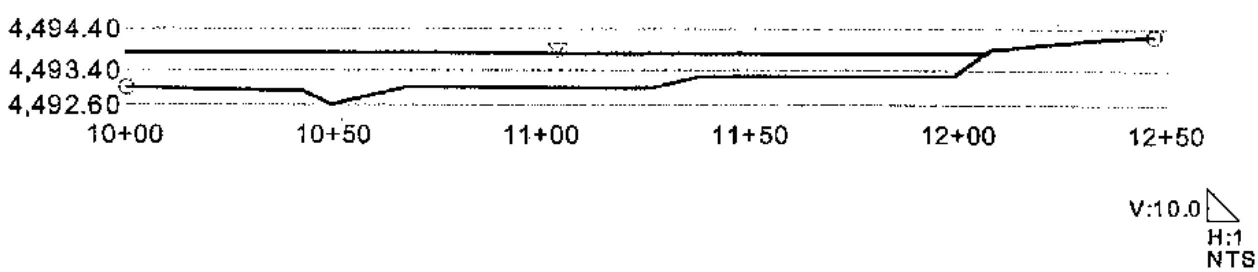
Roughness Segments		
Start Station	End Station	Mannings Coefficient
10+00	11+76	0.016

Natural Channel Points	
Station (ft)	Elevation (ft)
10+00	4,495.24
10+05	4,495.24
10+34	4,495.50
10+39	4,495.50
10+39	4,510.00
11+20	4,510.00
11+20	4,496.80
11+76	4,496.80

Plaza Street 250
Cross Section for Irregular Channel

Project Description	
Worksheet	3rd_Street 0250 - Lake & P
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.001000	ft/ft
Water Surface Elev.	4,493.84	ft
Elevation Range	92.60 to 4,494.25	
Discharge	378.00	cfs



Plaza Street 250
Worksheet for Irregular Channel

Project Description	
Worksheet	3rd_Street 0250 - Lake & P
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	001000	ft/ft
Discharg	378.00	cfs

Options	
Current Roughness Methc	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev	4,493.84	ft
Elevation Range	32.60 to 4,494.25	
Flow Area	155.9	ft²
Wetted Perimeter	207.91	ft
Top Width	207.04	ft
Actual Depth	1.24	ft
Critical Elevation	4,493.55	ft
Critical Slope	0.004794	ft/ft
Velocity	2.42	ft/s
Velocity Head	0.09	ft
Specific Energy	4,493.93	ft
Froude Number	0.49	
Flow Type	Subcritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.83628398 ft.

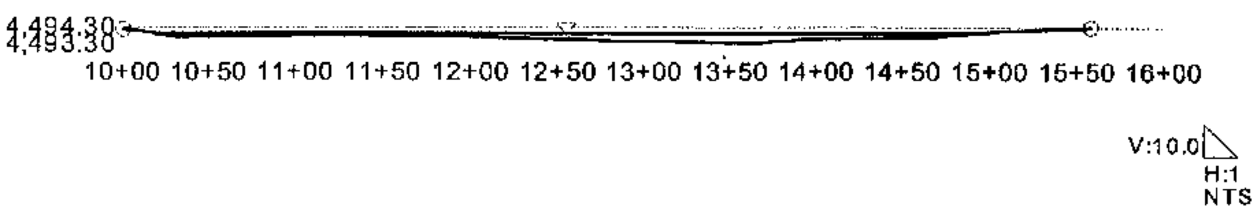
Roughness Segments		
Start Station	End Station	Mannings Coefficient
10+00	12+47	0.016

Natural Channel Points	
Station (ft)	Elevation (ft)
10+00	4,493.00
10+42	4,492.90
10+49	4,492.60
10+67	4,493.00
11+26	4,493.00
11+38	4,493.30
11+99	4,493.30
12+08	4,493.90
12+36	4,494.20
12+47	4,494.25

Plaza Street 200
Cross Section for Irregular Channel

Project Description	
Worksheet	3rd_Street 0200 - 3rd & Lak
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficie	0.016	
Slope	0.007000	ft/ft
Water Surface Elev.	4,493.90	ft
Elevation Range	33.40 to 4,494.30	
Discharge	378.00	cfs



Plaza Street 200
Worksheet for Irregular Channel

Project Description	
Worksheet	3rd_Street 0200 - 3rd & Lak
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	007000	ft/ft
Discharg	378.00	cfs

Options	
Current Roughness Meth	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev	4,493.90	ft
Elevation Range	93.40 to 4,494.30	
Flow Area	120.9	ft²
Wetted Perimeter	473.95	ft
Top Width	473.95	ft
Actual Depth	0.50	ft
Critical Elevation	4,493.92	ft
Critical Slope	0.005777	ft/ft
Velocity	3.13	ft/s
Velocity Head	0.15	ft
Specific Energy	4,494.05	ft
Froude Number	1.09	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	15+58	0.016

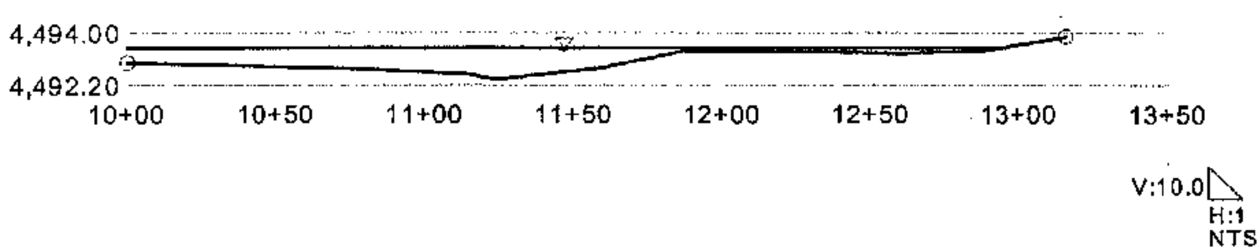
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,494.20
10+11	4,494.00
10+32	4,493.70
11+20	4,493.80
12+06	4,493.70
12+84	4,493.50
13+65	4,493.40
13+98	4,493.60
14+67	4,493.70
15+04	4,494.00
15+58	4,494.30

Plaza Street 150
Cross Section for Irregular Channel

Project Description	
Worksheet	3rd_Street 0150 - Lake & Ce
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.002000	ft/ft
Water Surface Elev	4,493.51	ft
Elevation Range	∂2.40 to 4,493.90	
Discharge	378.00	cfs



Plaza Street 150
Worksheet for Irregular Channel

Project Description	
Worksheet	3rd_Street 0150 - Lake & Ce
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	002000	ft/ft
Discharg	378.00	cfs

Options	
Current Roughness Metho	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev	4,493.51	ft
Elevation Range	92.40 to 4,493.90	
Flow Area	145.4	ft²
Wetted Perimeter	293.80	ft
Top Width	293.27	ft
Actual Depth	1.11	ft
Critical Elevation	4,493.32	ft
Critical Slope	0.004786	ft/ft
Velocity	2.60	ft/s
Velocity Head	0.10	ft
Specific Energy	4,493.61	ft
Froude Number	0.65	
Flow Type	Subcritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.50818432 ft.

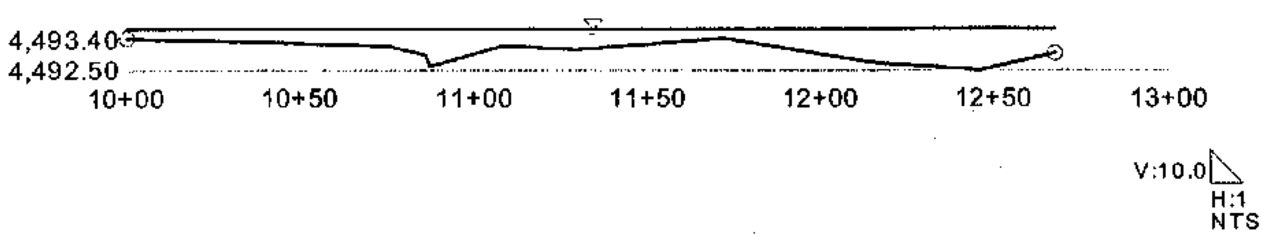
Roughness Segments		
Start Station	End Station	Mannings Coefficient
10+00	13+16	0.016

Natural Channel Points	
Station (ft)	Elevation (ft)
10+00	4,493.00
10+72	4,492.80
11+14	4,492.60
11+23	4,492.40
11+58	4,492.80
11+87	4,493.40
12+10	4,493.40
12+59	4,493.30
12+87	4,493.40
13+16	4,493.90

Plaza Street 100
Cross Section for Irregular Channel

Project Description	
Worksheet	3rd_Street 0100 - 3rd & L:
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficie	0.016	
Slope	0.001000	ft/ft
Water Surface Elev.	4,493.68	ft
Elevation Range	92.50 to 4,493.40	
Discharge	340.00	cfs



Plaza Street 100
Worksheet for Irregular Channel

Project Description	
Worksheet	3rd_Street 0100 - 3rd & L:
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	001000	ft/ft
Discharg	340.00	cfs

Options	
Current Roughness Meth	oved Lotter's Method
Open Channel Weighting	oved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev.	4,493.68	ft
Elevation Range	92.50 to 4,493.40	
Flow Area	162.1	ft²
Wetted Perimeter	268.63	ft
Top Width	267.60	ft
Actual Depth	1.18	ft
Critical Elevation	4,493.44	ft
Critical Slope	0.005216	ft/ft
Velocity	2.10	ft/s
Velocity Head	0.07	ft
Specific Energy	4,493.74	ft
Froude Number	0.48	
Flow Type	Subcritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.67560042 ft.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
10+00	12+68	0.016

Natural Channel Points	
Station (ft)	Elevation (ft)
10+00	4,493.40
10+74	4,493.20
10+86	4,492.90
10+87	4,492.60
11+09	4,493.20
11+29	4,493.10
11+72	4,493.40
12+15	4,492.70
12+46	4,492.50
12+68	4,493.00

Project__________
Project No.__________
Sheet No.______of______
Calculated by______Date______

WEIR FLOW COMPUTATIONS

LOCATION/DESCRIPTION:

CROSS SECTION PARAMETERS: FILENAME: 101.SEC

No. of Cross Section Points: 3 Bed Slope:0.00500 Max Elev.:4493.90
Bank Stations..........Left: 1000.0 Right....: 1094.0 Min Elev.:4493.00
Encroachment Stations..Left: Right....: Weir Coef: 2.400

CROSS SECTION POINTS - Elevations & Stations in feet:

No.	Elev.	Sta.	No.	Elev.	Sta.	No.	Elev.	Sta.
1)	4493.00	1000.00	2)	4493.00	1001.00	3)	4493.90	1094.00

COMPUTED PARAMETERS:

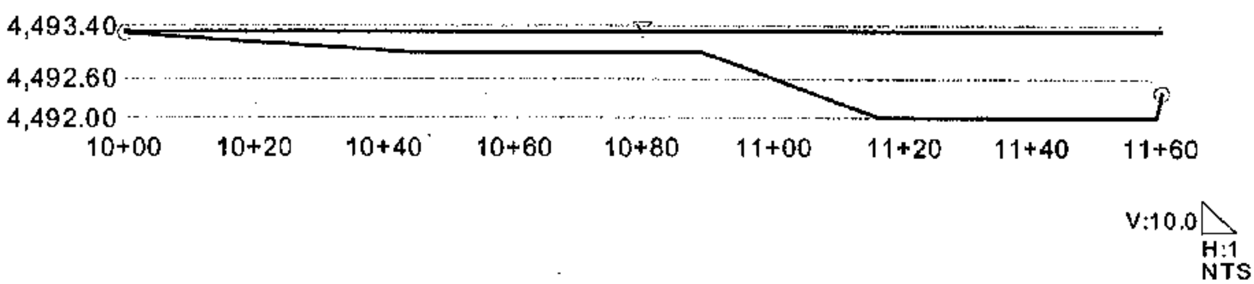
WSEL(ft)	Q(cfs)	H:max(ft)	H:ave(ft)	TW(ft)	A(sf)
4493.65	35.0	0.65	0.33	68.2	22.5
4493.66	36.4	0.66	0.33	69.2	23.2
4493.67	37.8	0.67	0.34	70.2	23.9
93.68	39.2	0.68	0.34	71.3	24.6
4493.69	40.6	0.69	0.35	72.3	25.3
4493.70	42.1	0.70	0.35	73.4	26.0

NOTES:

Plaza Street 90
Cross Section for Irregular Channel

Project Description	
Worksheet	3rd_Street 0090 - P
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.001000	ft/ft
Water Surface Elev	4,493.32	ft
Elevation Range	92.00 to 4,493.30	
Discharge	218.00	cfs



Plaza Street 90
Worksheet for Irregular Channel

Project Description	
Worksheet	3rd_Street 0090 - P
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	001000	ft/ft
Discharg	218.00	cfs

Options	
Current Roughness Meth	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev	4,493.32	ft
Elevation Range	ɔ2.00 to 4,493.30	
Flow Area	101.2	ft²
Wetted Perimeter	161.03	ft
Top Width	160.00	ft
Actual Depth	1.32	ft
Critical Elevation	4,492.84	ft
Critical Slope	0.004260	ft/ft
Velocity	2.15	ft/s
Velocity Head	0.07	ft
Specific Energy	4,493.39	ft
Froude Number	0.48	
Flow Type	Subcritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.91551847 ft.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
10+00	11+60	0.016

Natural Channel Points	
Station (ft)	Elevation (ft)
10+00	4,493.30
10+44	4,493.00
10+89	4,493.00
11+16	4,492.00
11+59	4,492.00
11+60	4,492.40

Project____________________
Project No._________________
Sheet No.________of_________
Calculated by______Date______

WEIR FLOW COMPUTATIONS

LOCATION/DESCRIPTION:

CROSS SECTION PARAMETERS: FILENAME: 91.SEC

No. of Cross Section Points: 3 Bed Slope:0.00500 Max Elev.:4493.00
Bank Stations..........Left: 1000.0 Right....: 1102.0 Min Elev.:4492.40
Encroachment Stations..Left: Right....: Weir Coef: 2.400

CROSS SECTION POINTS - Elevations & Stations in feet:

No.	Elev.	Sta.	No.	Elev.	Sta.	No.	Elev.	Sta.
1)	4492.40	1000.00	2)	4492.40	1001.00	3)	4493.00	1102.00

COMPUTED PARAMETERS:

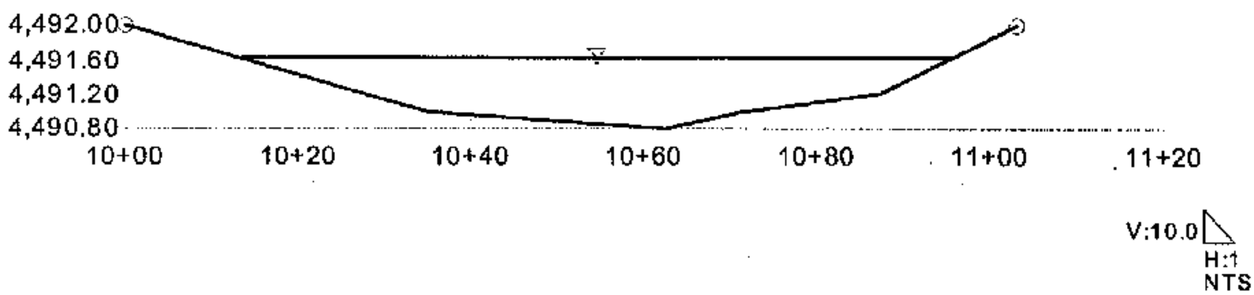
WSEL(ft)	Q(cfs)	H:max(ft)	H:ave(ft)	TW(ft)	A(sf)
4493.30	118.2	0.90	0.60	102.0	61.5
4493.31	121.1	0.91	0.61	102.0	62.5
493.32	123.9	0.92	0.62	102.0	63.5
93.33	126.9	0.93	0.63	102.0	64.6
4493.34	129.7	0.94	0.64	102.0	65.6
4493.35	132.7	0.95	0.65	102.0	66.6

NOTES:

Plaza Street 80
Cross Section for Irregular Channel

Project Description	
Worksheet	3rd_Street 0080 - P
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.007000	ft/ft
Water Surface Elev.	4,491.62	ft
Elevation Range	90.80 to 4,492.00	
Discharge	218.00	cfs



Plaza Street 80
Worksheet for Irregular Channel

Project Description	
Worksheet	3rd_Street 0080 - P
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	007000	ft/ft
Discharg	218.00	cfs

Options	
Current Roughness Methc	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev	4,491.62	ft
Elevation Range	)0.80 to 4,492.00	
Flow Area	43.2	ft²
Wetted Perimeter	82.46	ft
Top Width	82.43	ft
Actual Depth	0.82	ft
Critical Elevation	4,491.71	ft
Critical Slope	0.004476	ft/ft
Velocity	5.05	ft/s
Velocity Head	0.40	ft
Specific Energy	4,492.02	ft
Froude Number	1.23	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	11+03	0.016

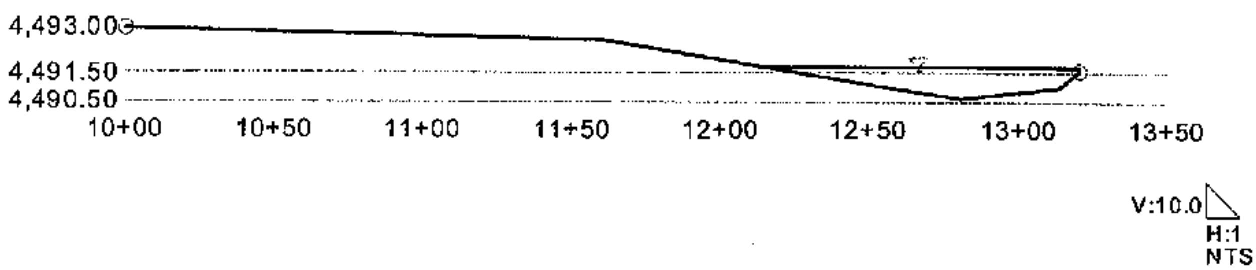
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,492.00
10+35	4,491.00
10+63	4,490.80
10+72	4,491.00
10+88	4,491.20
11+03	4,492.00

Plaza Street 70
Cross Section for Irregular Channel

Project Description	
Worksheet	3rd_Street 0070 - P
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficie	0.016	
Slope	0.002000	ft/ft
Water Surface Elev	4,491.70	ft
Elevation Range	)0.60 to 4,493.00	
Discharge	218.00	cfs



Plaza Street 70
Worksheet for Irregular Channel

Project Description	
Worksheet	3rd_Street 0070 - P
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	002000	ft/ft
Discharg	218.00	cfs

Options	
Current Roughness Methc	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficier	0.016	
Water Surface Elev	4,491.70	ft
Elevation Range	90.60 to 4,493.00	
Flow Area	69.8	ft²
Wetted Perimeter	107.15	ft
Top Width	107.00	ft
Actual Depth	1.10	ft
Critical Elevation	4,491.53	ft
Critical Slope	0.004570	ft/ft
Velocity	3.12	ft/s
Velocity Head	0.15	ft
Specific Energy	4,491.86	ft
Froude Number	0.68	
Flow Type	Subcritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.10499621 ft.

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	13+20	0.016

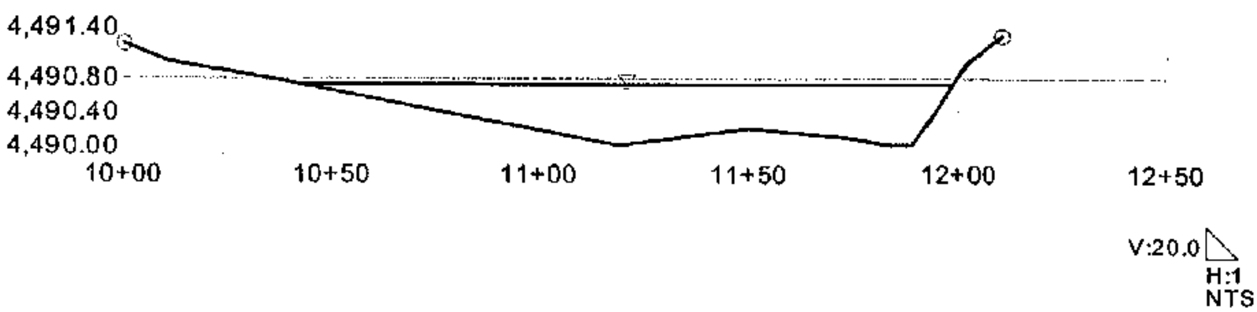
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,493.00
11+60	4,492.60
11+95	4,492.00
12+56	4,491.00
12+80	4,490.60
13+14	4,491.00
13+20	4,491.60

Plaza Street 60
Cross Section for Irregular Channel

Project Description	
Worksheet	3rd_Street 0060 - P
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.002500	ft/ft
Water Surface Elev	4,490.73	ft
Elevation Range	)0.00 to 4,491.30	
Discharge	218.00	cfs



Plaza Street 60
Worksheet for Irregular Channel

Project Description	
Worksheet	3rd_Street 0060 - P
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	002500	ft/ft
Discharg	218.00	cfs

Options	
Current Roughness Meth	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev	4,490.73	ft
Elevation Range	90.00 to 4,491.30	
Flow Area	76.1	ft²
Wetted Perimeter	156.85	ft
Top Width	156.82	ft
Actual Depth	0.73	ft
Critical Elevation	4,490.62	ft
Critical Slope	0.005004	ft/ft
Velocity	2.87	ft/s
Velocity Head	0.13	ft
Specific Energy	4,490.86	ft
Froude Number	0.73	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	12+11	0.016

Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,491.20
10+11	4,491.00
10+35	4,490.80
11+19	4,490.00
11+50	4,490.20
11+73	4,490.10
11+84	4,490.00
11+89	4,490.00
12+03	4,491.00
12+11	4,491.30

Record & 6th Track C.L.
Worksheet for Irregular Channel

Project Description	
Worksheet	#16 6th & Record Trac
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	007000	ft/ft
Water Surface Elev	95.95	ft

Options	
Current Roughness Methc	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.016	
Elevation Range	i.45 to 96.08	
Discharge	39.50	cfs
Flow Area	13.2	ft²
Wetted Perimeter	55.06	ft
Top Width	54.56	ft
Actual Depth	0.50	ft
Critical Elevation	95.96	ft
Critical Slope	0.006007	ft/ft
Velocity	3.00	ft/s
Velocity Head	0.14	ft
Specific Energy	96.09	ft
Froude Number	1.07	
Flow Type	Supercritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.5 ft.

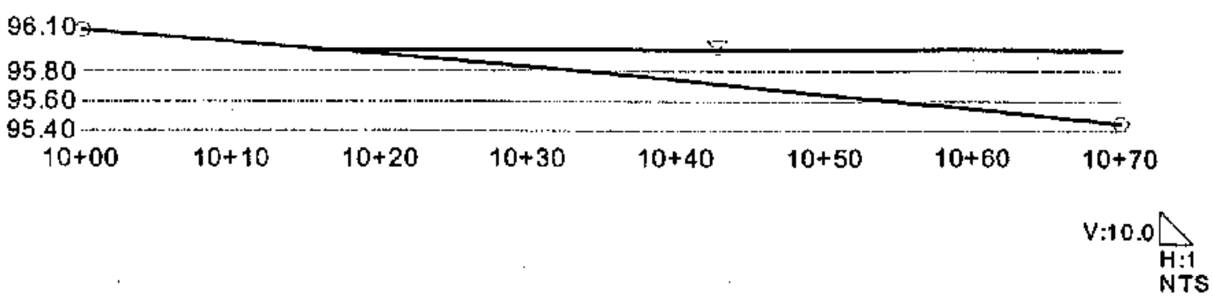
Roughness Segments		
Start Station	End Station	Mannings Coefficient
10+00	10+70	0.016

Natural Channel Points	
Station (ft)	Elevation (ft)
10+00	96.08
10+38	95.76
10+70	95.45

Record Track C.L. @ 6th
Cross Section for Irregular Channel

Project Description	
Worksheet	#16 6th & Record Trac
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data		
Mannings Coefficier	0.016	
Slope	0.007000	ft/ft
Water Surface Elev.	95.95	ft
Elevation Range	;.45 to 96.08	
Discharge	39.50	cfs



Record & 6th S. (Half Section)
Worksheet for Irregular Channel

Project Description	
Worksheet	#16 Record & 6th S. (Track CL to \
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	009000	ft/ft
Water Surface Elev.	95.95	ft

Options	
Current Roughness Methc	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.016	
Elevation Range	.74 to 95.66	
Discharge	245.84	cfs
Flow Area	38.4	ft²
Wetted Perimete	62.16	ft
Top Width	61.00	ft
Actual Depth	1.21	ft
Critical Elevation	96.12	ft
Critical Slope	0.004156	ft/ft
Velocity	6.40	ft/s
Velocity Head	0.64	ft
Specific Energy	96.59	ft
Froude Number	1.42	
Flow Type	Supercritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.34 ft.

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+44	11+05	0.016

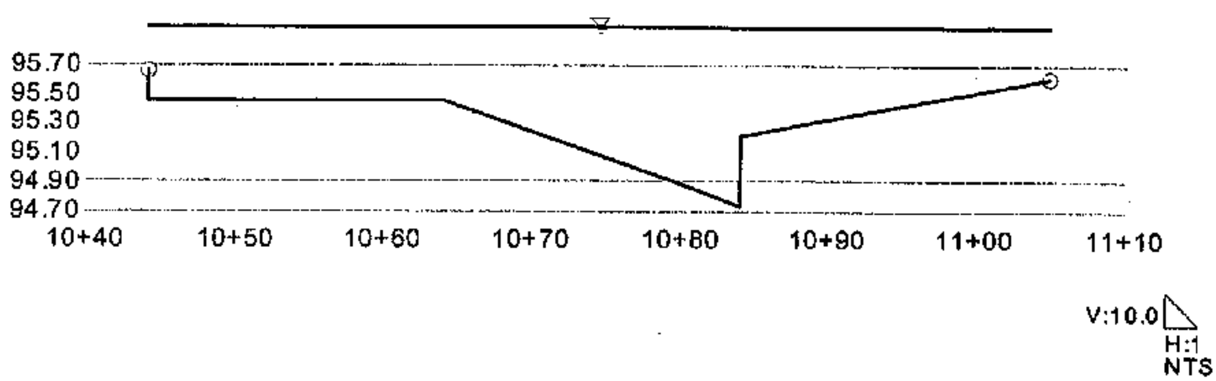
Natural Channel Points

Station (ft)	Elevation (ft)
10+44	95.66
10+44	95.45
10+64	95.45
10+84	94.74
10+84	95.21
11+05	95.61

Record & 6th S. (Half Section)
Cross Section for Irregular Channel

Project Description	
Worksheet	#16 Record & 6th S. (Track CL to \
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data		
Mannings Coefficie	0.016	
Slope	0.009000	ft/ft
Water Surface Elev.	95.95	ft
Elevation Range	·.74 to 95.66	
Discharge	245.84	cfs



Evans & 4th E.
Worksheet for Irregular Channel

#4

Project Description	
Worksheet	#4 4th & Evans
Flow Element	Irregular Chan
Method	Manning's Forr
Solve For	Channel Depth

Input Data		
Slope	002000	ft/ft
Discharg	169.00	cfs

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev	93.16	ft
Elevation Range	.90 to 92.93	
Flow Area	53.8	ft²
Wetted Perimeter	81.72	ft
Top Width	80.00	ft
Actual Depth	1.26	ft
Critical Elevation	93.01	ft
Critical Slope	0.004756	ft/ft
Velocity	3.14	ft/s
Velocity Head	0.15	ft
Specific Energy	93.32	ft
Froude Number	0.68	
Flow Type	Subcritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.48269221 ft.

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	10+80	0.016

Natural Channel Points

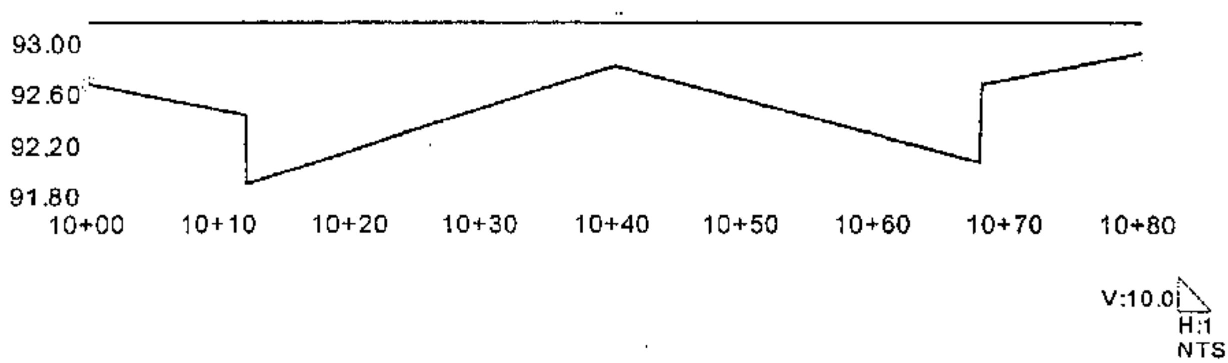
Station (ft)	Elevation (ft)
10+00	92.68
10+12	92.44
10+12	91.90
10+40	92.83
10+68	92.07
10+68	92.69
10+80	92.93

Evans & 4th E.

Cross Section for Irregular Channel

Project Description	
Worksheet	#4 4th & Evans
Flow Element	Irregular Chani
Method	Manning's Forr
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.002000	ft/ft
Water Surface Elev	93.16	ft
Elevation Range	.90 to 92.93	
Discharge	169.00	cfs



Evans & 4th S.
Worksheet for Irregular Channel

Project Description	
Worksheet	#4 Evans & 4tł
Flow Element	Irregular Chan
Method	Manning's For
Solve For	Channel Deptł

Input Data		
Slope	003000	ft/ft
Discharg	163.00	cfs

Options	
Current Roughness Meth	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev	93.16	ft
Elevation Range	:.27 to 93.00	
Flow Area	46.4	ft²
Wetted Perimeter	81.00	ft
Top Width	80.00	ft
Actual Depth	0.89	ft
Critical Elevation	93.09	ft
Critical Slope	0.004750	ft/ft
Velocity	3.51	ft/s
Velocity Head	0.19	ft
Specific Energy	93.35	ft
Froude Number	0.81	
Flow Type	Subcritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.19213129 ft.

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	10+80	0.016

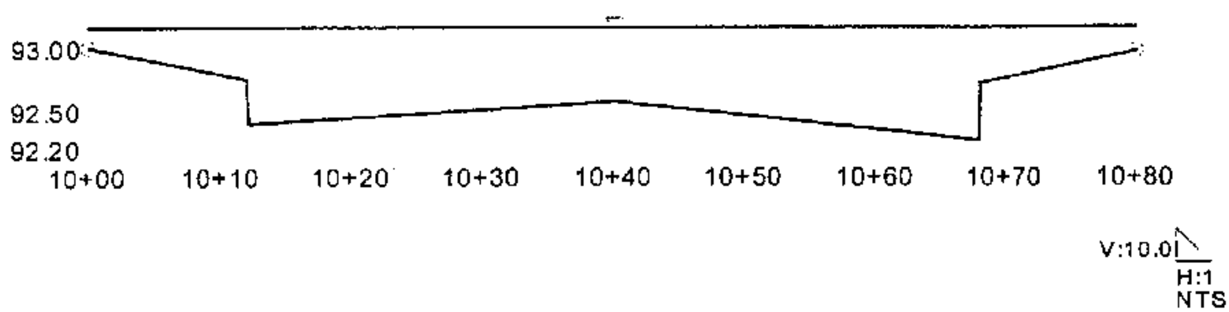
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	93.00
10+12	92.76
10+12	92.41
10+40	92.58
10+68	92.27
10+68	92.73
10+80	92.97

Evans & 4th S.
Cross Section for Irregular Channel

Project Description	
Worksheet	#4 Evans & 4tr
Flow Element	Irregular Chan
Method	Manning's For
Solve For	Channel Deptr

Section Data		
Mannings Coefficiel	0.016	
Slope	0.003000	ft/ft
Water Surface Elev	93.16	ft
Elevation Range	:.27 to 93.00	
Discharge	163.00	cfs



Evans & 5th E.
Worksheet for Irregular Channel

Project Description	
Worksheet	#9 5th & Evans
Flow Element	Irregular Chanı
Method	Manning's Forı
Solve For	Discharge

Input Data		
Slope	006000	ft/ft
Water Surface Elev.	94.49	ft

Options	
Current Roughness Methc	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weighting	Horton's Method

Results		
Mannings Coeffic	0.016	
Elevation Range	ı.07 to 93.87	
Discharge	507.18	cfs
Flow Area	74.2	ft²
Wetted Perimeteı	80.01	ft
Top Width	78.00	ft
Actual Depth	1.42	ft
Critical Elevation	94.63	ft
Critical Slope	0.003762	ft/ft
Velocity	6.84	ft/s
Velocity Head	0.73	ft
Specific Energy	95.22	ft
Froude Number	1.24	
Flow Type	Supercritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.63 ft.

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	10+78	0.016

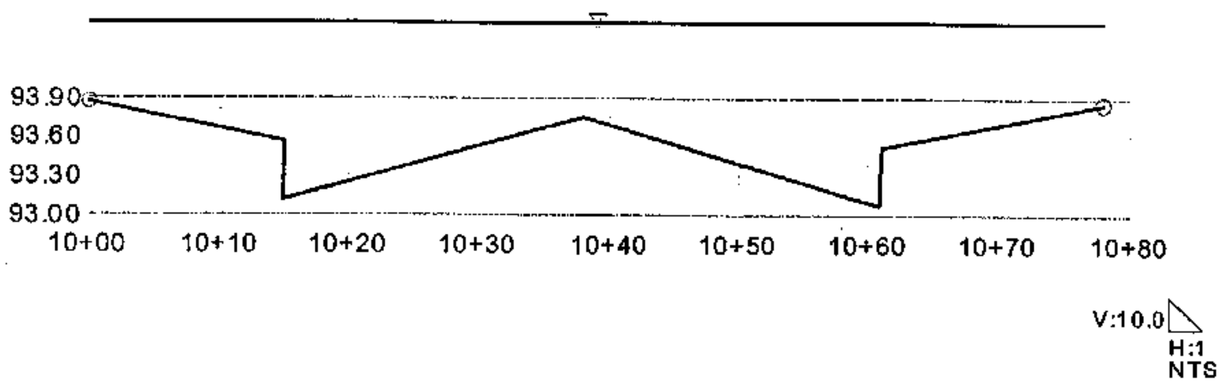
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	93.87
10+15	93.57
10+15	93.11
10+38	93.76
10+61	93.07
10+61	93.52
10+78	93.86

Evans & 5th E.
Cross Section for Irregular Channel

Project Description	
Worksheet	#9 5th & Evans
Flow Element	Irregular Chanı
Method	Manning's Forr
Solve For	Discharge

Section Data		
Mannings Coefficiei	0.016	
Slope	0.006000	ft/ft
Water Surface Elev.	94.49	ft
Elevation Range	ı.07 to 93.87	
Discharge	507.18	cfs



Evans & 5th S.
Worksheet for Irregular Channel

Project Description	
Worksheet	#9 Evans & 5tl
Flow Element	Irregular Chan
Method	Manning's For
Solve For	Discharge

Input Data		
Slope	004000	ft/ft
Water Surface Elev.	94.49	ft

Options	
Current Roughness Meth	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.016	
Elevation Range	1.13 to 94.10	
Discharge	333.02	cfs
Flow Area	65.1	ft²
Wetted Perimete	80.09	ft
Top Width	78.00	ft
Actual Depth	1.36	ft
Critical Elevation	94.48	ft
Critical Slope	0.004115	ft/ft
Velocity	5.12	ft/s
Velocity Head	0.41	ft
Specific Energy	94.90	ft
Froude Number	0.99	
Flow Type	Subcritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.73 ft.

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	10+78	0.016

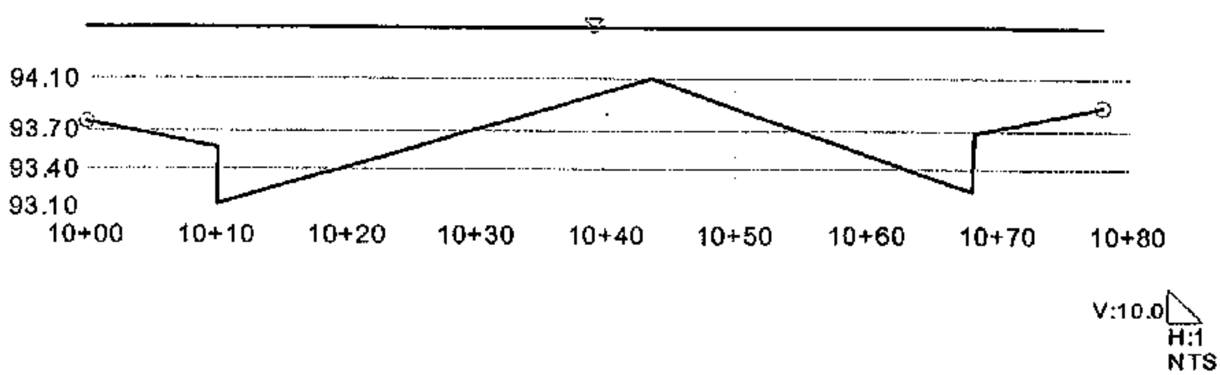
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	93.76
10+10	93.56
10+10	93.13
10+44	94.10
10+68	93.22
10+68	93.68
10+78	93.88

Evans & 5th S.
Cross Section for Irregular Channel

Project Description	
Worksheet	#9 Evans & 5tl
Flow Element	Irregular Chani
Method	Manning's Fon
Solve For	Discharge

Section Data		
Mannings Coefficie	0.016	
Slope	0.004000	ft/ft
Water Surface Elev.	94.49	ft
Elevation Range	ı.13 to 94.10	
Discharge	333.02	cfs



Evans & 6th E.
Worksheet for Irregular Channel

Project Description	
Worksheet	#15 6th & Evans
Flow Element	Irregular Channe
Method	Manning's Formi
Solve For	Discharge

Input Data		
Slope	002000	ft/ft
Water Surface Elev	96.90	ft

Options	
Current Roughness Meth	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.016	
Elevation Range	i.12 to 96.61	
Discharge	285.31	cfs
Flow Area	73.2	ft²
Wetted Perimeter	80.62	ft
Top Width	78.00	ft
Actual Depth	1.78	ft
Critical Elevation	96.71	ft
Critical Slope	0.004270	ft/ft
Velocity	3.90	ft/s
Velocity Head	0.24	ft
Specific Energy	97.14	ft
Froude Number	0.71	
Flow Type	Subcritical	

Calculation Messages:
Water elevation exceeds lowest end station by 1.08 ft.

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	10+78	0.016

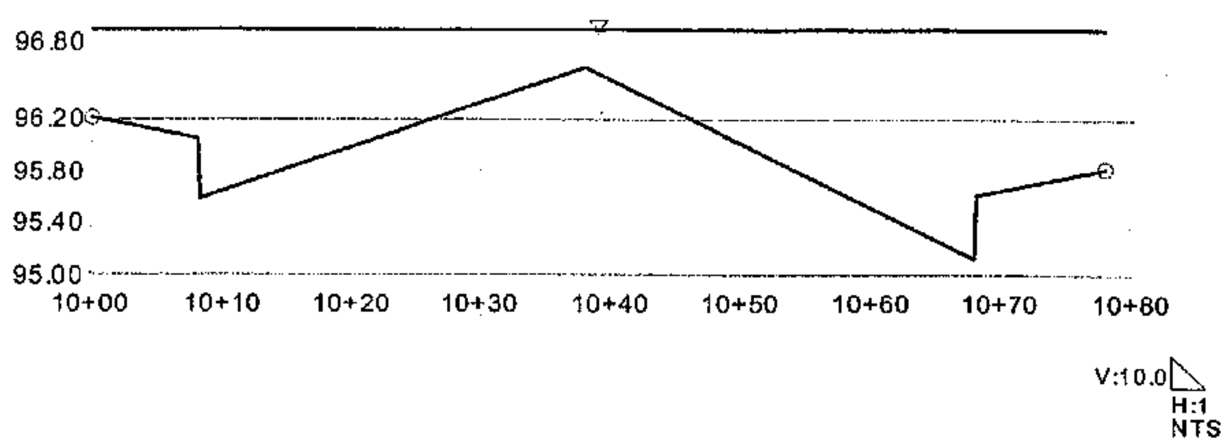
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	96.21
10+05	96.05
10+08	95.58
10+38	96.61
10+68	95.12
10+68	95.62
10+78	95.82

Evans & 6th E.
Cross Section for Irregular Channel

Project Description	
Worksheet	#15 6th & Evans
Flow Element	Irregular Channe
Method	Manning's Form
Solve For	Discharge

Section Data		
Mannings Coefficie	0.016	
Slope	0.002000	ft/ft
Water Surface Elev.	96.90	ft
Elevation Range	i.12 to 96.61	
Discharge	285.31	cfs



Evans & 6th S.
Worksheet for Irregular Channel

Project Description	
Worksheet	#15 Evans & 6tl
Flow Element	Irregular Chann
Method	Manning's Forr
Solve For	Discharge

Input Data		
Slope	003000	ft/ft
Water Surface Elev.	96.90	ft

Options	
Current Roughness Methc	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin;	Horton's Method

Results		
Mannings Coeffic	0.016	
Elevation Range	·.78 to 95.67	
Discharge	838.91	cfs
Flow Area	124.5	ft²
Wetted Perimete	81.60	ft
Top Width	78.00	ft
Actual Depth	2.12	ft
Critical Elevation	96.84	ft
Critical Slope	0.003429	ft/ft
Velocity	6.74	ft/s
Velocity Head	0.71	ft
Specific Energy	97.61	ft
Froude Number	0.94	
Flow Type	Subcritical	

Calculation Messages:
Water elevation exceeds lowest end station by 1.46 ft.

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	10+78	0.016

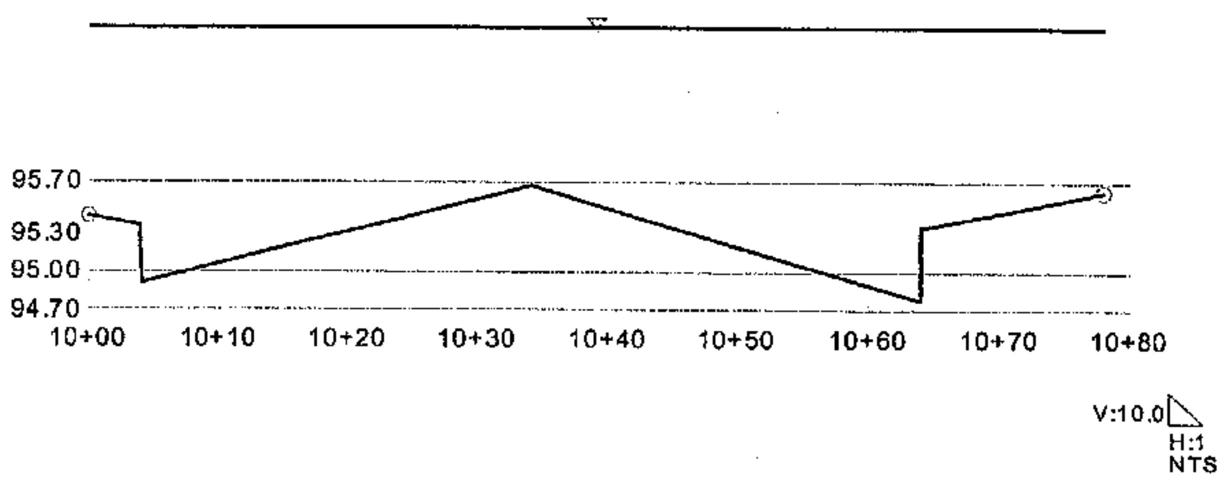
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	95.44
10+04	95.36
10+04	94.91
10+34	95.67
10+64	94.78
10+64	95.34
10+78	95.62

Evans & 6th S.
Cross Section for Irregular Channel

Project Description	
Worksheet	#15 Evans & 6tl
Flow Element	Irregular Chann
Method	Manning's Forr
Solve For	Discharge

Section Data		
Mannings Coefficiei	0.016	
Slope	0.003000	ft/ft
Water Surface Elev.	96.90	ft
Elevation Range	·.78 to 95.67	
Discharge	838.91	cfs



Lake & 4th E.
Worksheet for Irregular Channel

#3

Project Description	
Worksheet	#3 4th & Lake
Flow Element	Irregular Chan
Method	Manning's Fon
Solve For	Discharge

Input Data		
Slope	002000	ft/ft
Water Surface Elev	93.48	ft

Options	
Current Roughness Methc	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.016	
Elevation Range	i.06 to 94.14	
Discharge	7.18	cfs
Flow Area	5.4	ft²
Wetted Perimete	29.37	ft
Top Width	28.74	ft
Actual Depth	0.42	ft
Critical Elevation	93.40	ft
Critical Slope	0.007270	ft/ft
Velocity	1.34	ft/s
Velocity Head	0.03	ft
Specific Energy	93.51	ft
Froude Number	0.55	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	10+85	0.016

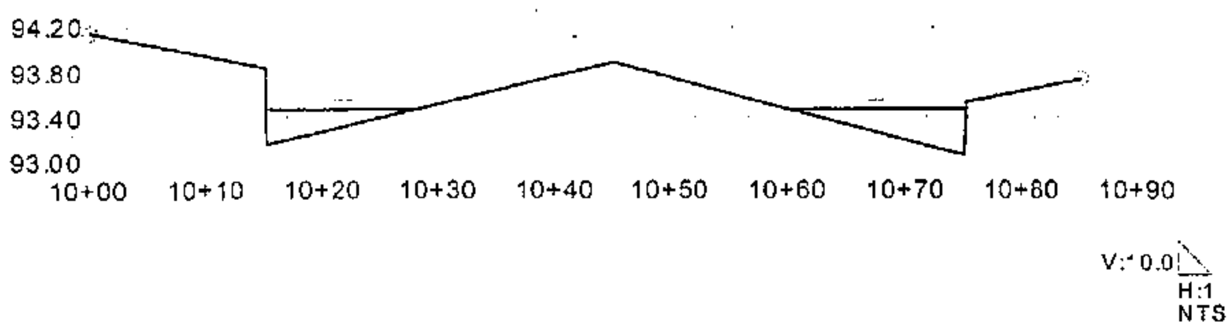
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	94.14
10+15	93.64
10+15	93.16
10+45	93.88
10+75	93.06
10+75	93.54
10+85	93.74

Lake & 4th E.
Cross Section for Irregular Channel

Project Description	
Worksheet	#3 4th & Lake
Flow Element	Irregular Chan
Method	Manning's For
Solve For	Discharge

Section Data		
Mannings Coefficie	0.016	
Slope	0.002000	ft/ft
Water Surface Elev	93.48	ft
Elevation Range	l.06 to 94.14	
Discharge	7.18	cfs



Lake & 4th S.
Worksheet for Irregular Channel

Project Description	
Worksheet	#3 Lake & 4th
Flow Element	Irregular Chann
Method	Manning's Forr
Solve For	Discharge

Input Data		
Slope	004000	ft/ft
Water Surface Elev	93.48	ft

Options	
Current Roughness Methc	oved Lotter's Method
Open Channel Weighting	oved Lotter's Method
Closed Channel Weighting	Horton's Method

Results		
Mannings Coeffic	0.016	
Elevation Range	:.95 to 94.03	
Discharge	20.42	cfs
Flow Area	9.6	ft²
Wetted Perimeter	43.68	ft
Top Width	42.91	ft
Actual Depth	0.53	ft
Critical Elevation	93.44	ft
Critical Slope	0.006485	ft/ft
Velocity	2.13	ft/s
Velocity Head	0.07	ft
Specific Energy	93.55	ft
Froude Number	0.80	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

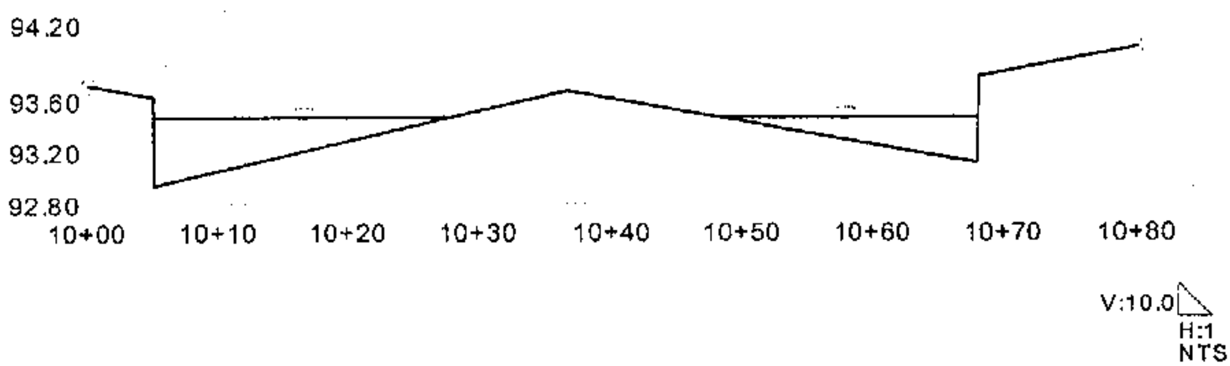
Roughness Segments		
Start Station	End Station	Mannings Coefficient
10+00	10+80	0.016

Natural Channel Points	
Station (ft)	Elevation (ft)
10+00	93.73
10+05	93.63
10+05	92.95
10+37	93.68
10+68	93.13
10+68	93.79
10+80	94.03

Lake & 4th S.
Cross Section for Irregular Channel

Project Description	
Worksheet	#3 Lake & 4th
Flow Element	Irregular Chan
Method	Manning's For
Solve For	Discharge

Section Data		
Mannings Coefficie	0.016	
Slope	0.004000	ft/ft
Water Surface Elev	93.48	ft
Elevation Range	:.95 to 94.03	
Discharge	20.42	cfs



Lake & 5th E.
Worksheet for Irregular Channel

#10

Project Description	
Worksheet	#10 5th & Lake
Flow Element	Irregular Chan
Method	Manning's Forr
Solve For	Discharge

Input Data		
Slope	004000	ft/ft
Water Surface Elev	95.45	ft

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.016	
Elevation Range	.83 to 96.11	
Discharge	11.62	cfs
Flow Area	5.7	ft²
Wetted Perimete	28.29	ft
Top Width	27.82	ft
Actual Depth	0.62	ft
Critical Elevation	95.40	ft
Critical Slope	0.006407	ft/ft
Velocity	2.03	ft/s
Velocity Head	0.06	ft
Specific Energy	95.51	ft
Froude Number	0.79	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	10+80	0.016

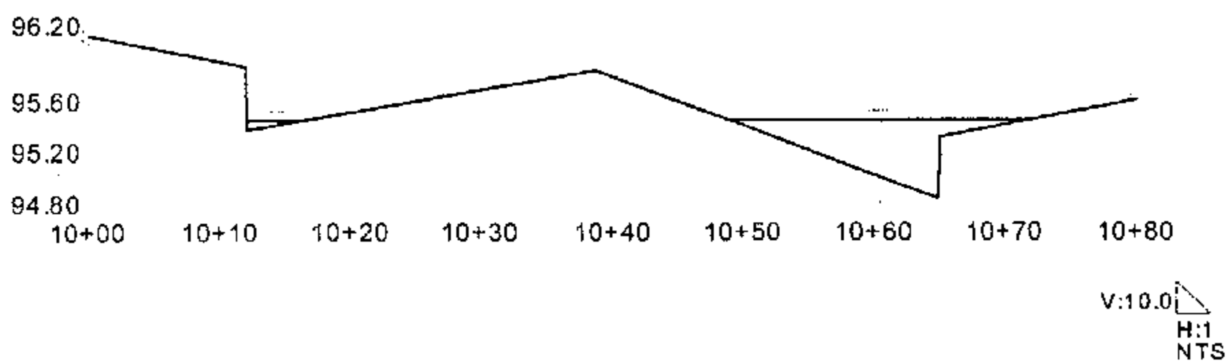
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	96.11
10+12	95.87
10+12	95.37
10+39	95.84
10+65	94.83
10+65	95.31
10+80	95.61

Cross Section for Irregular Channel

Project Description	
Worksheet	#10 5th & Lake
Flow Element	Irregular Chan
Method	Manning's For
Solve For	Discharge

Section Data		
Mannings Coefficier	0.016	
Slope	0.004000	ft/ft
Water Surface Elev	95.45	ft
Elevation Range	..83 to 96.11	
Discharge	11.62	cfs



Worksheet for Irregular Channel

Project Description	
Worksheet	#10 Lake & 5tł
Flow Element	Irregular Chani
Method	Manning's For
Solve For	Discharge

Input Data		
Slope	003000	ft/ft
Water Surface Elev	95.45	ft

Options	
Current Roughness Methc	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.016	
Elevation Range	·.75 to 95.70	
Discharge	27.55	cfs
Flow Area	13.5	ft²
Wetted Perimetei	53.58	ft
Top Width	52.81	ft
Actual Depth	0.70	ft
Critical Elevation	95.38	ft
Critical Slope	0.006243	ft/ft
Velocity	2.03	ft/s
Velocity Head	0.06	ft
Specific Energy	95.51	ft
Froude Number	0.71	
Flow Type	Subcritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.01 ft.
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	10+80	0.016

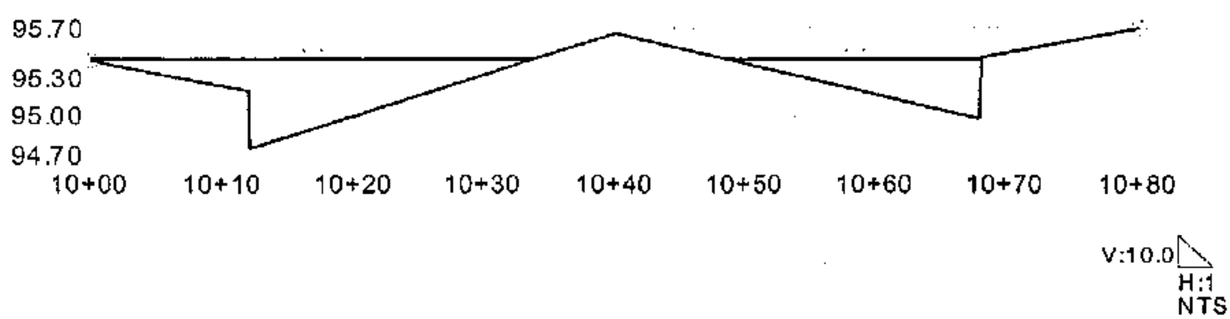
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	95.44
10+12	95.20
10+12	94.75
10+40	95.66
10+68	94.99
10+68	95.46
10+80	95.70

Cross Section for Irregular Channel

Project Description	
Worksheet	#10 Lake & 5th
Flow Element	Irregular Chan
Method	Manning's For
Solve For	Discharge

Section Data		
Mannings Coefficie	0.016	
Slope	0.003000	ft/ft
Water Surface Elev	95.45	ft
Elevation Range	..75 to 95.70	
Discharge	27.55	cfs



Worksheet for Irregular Channel

#14

Project Description	
Worksheet	#14 6th & Lake
Flow Element	Irregular Chan
Method	Manning's For
Solve For	Discharge

Input Data		
Slope	006000	ft/ft
Water Surface Elev	97.21	ft

Options	
Current Roughness Meth	oved Lotter's Method
Open Channel Weighting	oved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.016	
Elevation Range	'.06 to 98.33	
Discharge	0.34	cfs
Flow Area	0.3	ft²
Wetted Perimeter	3.75	ft
Top Width	3.62	ft
Actual Depth	0.15	ft
Critical Elevation	97.20	ft
Critical Slope	0.009525	ft/ft
Velocity	1.25	ft/s
Velocity Head	0.02	ft
Specific Energy	97.23	ft
Froude Number	0.81	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	10+82	0.016

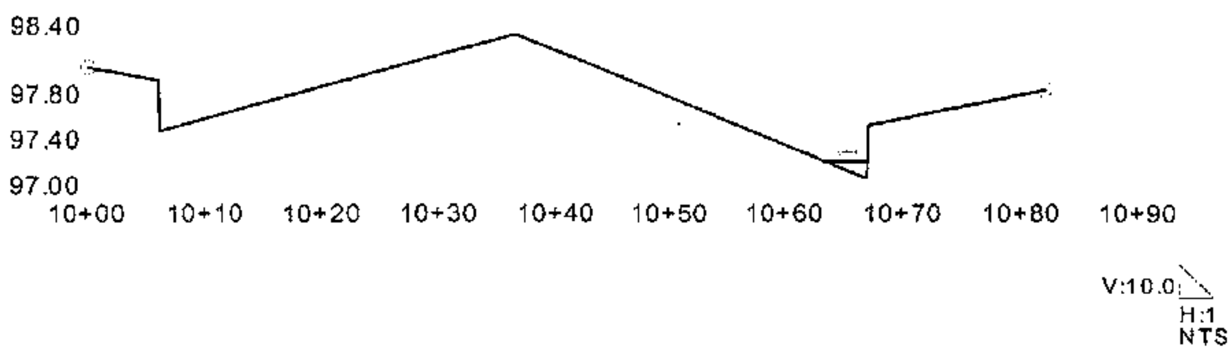
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	98.04
10+06	97.92
10+06	97.47
10+37	98.33
10+67	97.06
10+67	97.53
10+82	97.83

Lake & 6th E.
Cross Section for Irregular Channel

Project Description	
Worksheet	#14 6th & Lake
Flow Element	Irregular Chan
Method	Manning's For
Solve For	Discharge

Section Data		
Mannings Coefficie	0.016	
Slope	0.006000	ft/ft
Water Surface Elev	97.21	ft
Elevation Range	'.06 to 98.33	
Discharge	0.34	cfs



Worksheet for Irregular Channel

Project Description	
Worksheet	#14 Lake & 6tr
Flow Element	Irregular Chan
Method	Manning's For
Solve For	Discharge

Input Data		
Slope	005000	ft/ft
Water Surface Elev	97.21	ft

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.016	
Elevation Range	i.86 to 97.73	
Discharge	20.42	cfs
Flow Area	10.2	ft²
Wetted Perimete	60.33	ft
Top Width	59.91	ft
Actual Depth	0.35	ft
Critical Elevation	97.19	ft
Critical Slope	0.007030	ft/ft
Velocity	2.01	ft/s
Velocity Head	0.06	ft
Specific Energy	97.27	ft
Froude Number	0.86	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	10+78	0.016

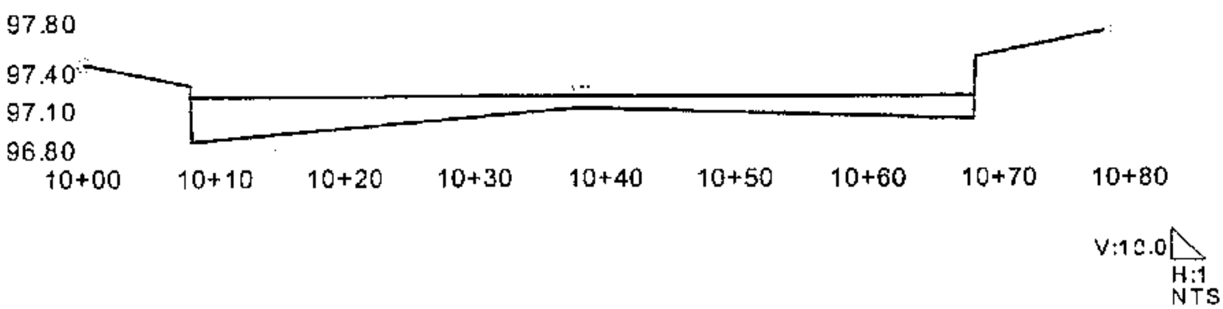
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	97.47
10+08	97.31
10+08	96.86
10+38	97.13
10+68	97.04
10+68	97.53
10+78	97.73

Cross Section for Irregular Channel

Project Description	
Worksheet	#14 Lake & 6th
Flow Element	Irregular Chann
Method	Manning's Forr
Solve For	Discharge

Section Data		
Mannings Coefficiei	0.016	
Slope	0.005000	ft/ft
Water Surface Elev	97.21	ft
Elevation Range	6.86 to 97.73	
Discharge	20.42	cfs



Lake & 7th E.
Worksheet for Irregular Channel

#18

Project Description	
Worksheet	#18 7th & Lake
Flow Element	Irregular Chan
Method	Manning's For
Solve For	Discharge

Input Data		
Slope	003000	ft/ft
Water Surface Elev	100.58	ft

Options	
Current Roughness Meth	oved Lotter's Method
Open Channel Weighting	oved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.016	
Elevation Range	).00 to 101.18	
Discharge	10.32	cfs
Flow Area	6.1	ft²
Wetted Perimeter	31.71	ft
Top Width	31.10	ft
Actual Depth	0.58	ft
Critical Elevation	100.51	ft
Critical Slope	0.006729	ft/ft
Velocity	1.69	ft/s
Velocity Head	0.04	ft
Specific Energy	100.62	ft
Froude Number	0.67	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	10+80	0.016

Natural Channel Points

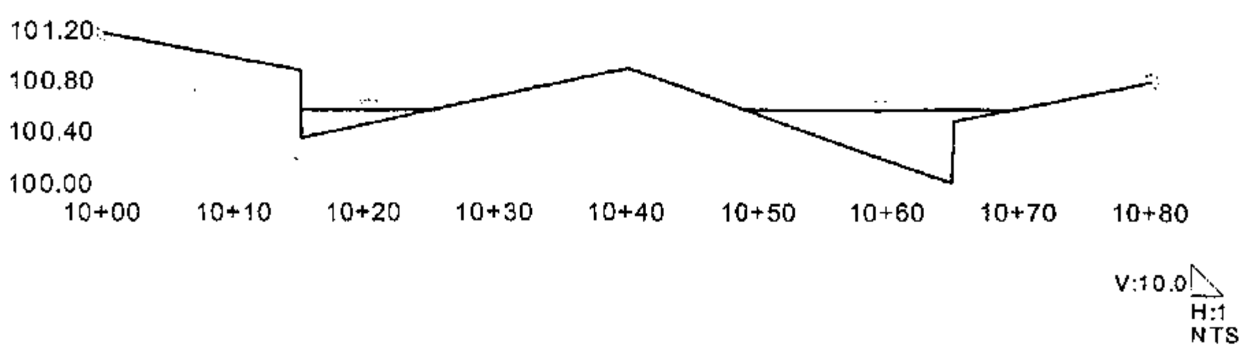
Station (ft)	Elevation (ft)
10+00	101.18
10+15	100.88
10+15	100.35
10+40	100.90
10+65	100.00
10+65	100.49
10+80	100.79

Lake & 7th E.

Cross Section for Irregular Channel

Project Description	
Worksheet	#18 7th & Lake
Flow Element	Irregular Chan
Method	Manning's For
Solve For	Discharge

Section Data		
Mannings Coefficie	0.016	
Slope	0.003000	ft/ft
Water Surface Elev	100.58	ft
Elevation Range	).00 to 101.18	
Discharge	10.32	cfs



Worksheet for Irregular Channel

Project Description	
Worksheet	#18 Lake & 7tl
Flow Element	Irregular Chan
Method	Manning's For
Solve For	Discharge

Input Data		
Slope	005000	ft/ft
Water Surface Elev.	100.58	ft

Options	
Current Roughness Meth	oved Lotter's Method
Open Channel Weighting	oved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.016	
Elevation Range	.97 to 101.02	
Discharge	15.65	cfs
Flow Area	7.1	ft²
Wetted Perimeter	36.25	ft
Top Width	35.70	ft
Actual Depth	0.61	ft
Critical Elevation	100.56	ft
Critical Slope	0.006622	ft/ft
Velocity	2.21	ft/s
Velocity Head	0.08	ft
Specific Energy	100.66	ft
Froude Number	0.88	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	10+76	0.016

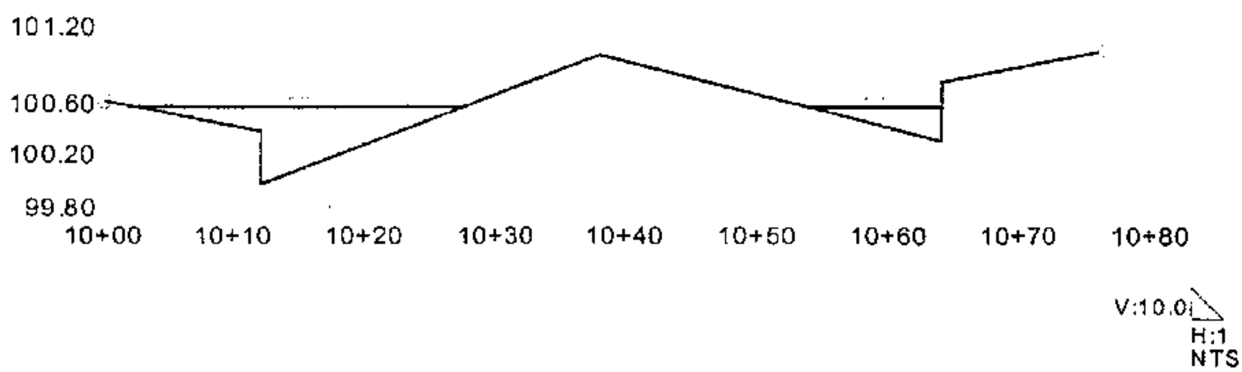
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	100.62
10+12	100.38
10+12	99.97
10+38	100.99
10+64	100.32
10+64	100.78
10+76	101.02

Lake & 7th S.
Cross Section for Irregular Channel

Project Description	
Worksheet	#18 Lake & 7tł
Flow Element	Irregular Chanı
Method	Manning's Forı
Solve For	Discharge

Section Data		
Mannings Coefficieı	0.016	
Slope	0.005000	ft/ft
Water Surface Elev	100.58	ft
Elevation Range	.97 to 101.02	
Discharge	15.65	cfs



Center & 5th E.
Worksheet for Irregular Channel

#11

Project Description	
Worksheet	#11 5th & Cente
Flow Element	Irregular Channe
Method	Manning's Formi
Solve For	Discharge

Input Data		
Slope	003000	ft/ft
Water Surface Elev	98.39	ft

Options	
Current Roughness Metho	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.016	
Elevation Range	'.74 to 99.29	
Discharge	17.87	cfs
Flow Area	9.4	ft²
Wetted Perimetei	40.97	ft
Top Width	40.22	ft
Actual Depth	0.65	ft
Critical Elevation	98.32	ft
Critical Slope	0.006462	ft/ft
Velocity	1.90	ft/s
Velocity Head	0.06	ft
Specific Energy	98.45	ft
Froude Number	0.70	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

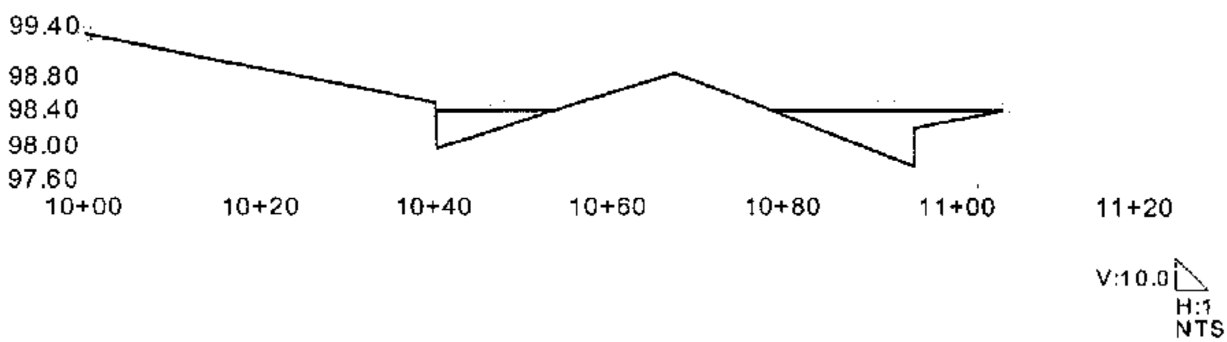
Roughness Segments		
Start Station	End Station	Mannings Coefficient
10+00	11+05	0.016

Natural Channel Points	
Station (ft)	Elevation (ft)
10+00	99.29
10+40	98.49
10+40	97.95
10+68	98.83
10+95	97.74
10+95	98.19
11+05	98.39

Center & 5th E.
Cross Section for Irregular Channel

Project Description	
Worksheet	#11 5th & Cente
Flow Element	Irregular Channe
Method	Manning's Formu
Solve For	Discharge

Section Data		
Mannings Coefficie	0.016	
Slope	0.003000	ft/ft
Water Surface Elev	98.39	ft
Elevation Range	'.74 to 99.29	
Discharge	17.87	cfs



Center & 5th S.
Worksheet for Irregular Channel

Project Description	
Worksheet	#11 Center & 5th
Flow Element	Irregular Channe
Method	Manning's Form
Solve For	Discharge

Input Data		
Slope	004000	ft/ft
Water Surface Elev	98.39	ft

Options	
Current Roughness Meth	oved Lotter's Method
Open Channel Weighting	oved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.016	
Elevation Range	1.24 to 99.46	
Discharge	0.38	cfs
Flow Area	0.4	ft²
Wetted Perimeter	5.08	ft
Top Width	4.95	ft
Actual Depth	0.15	ft
Critical Elevation	98.37	ft
Critical Slope	0.009668	ft/ft
Velocity	1.03	ft/s
Velocity Head	0.02	ft
Specific Energy	98.41	ft
Froude Number	0.66	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	11+20	0.016

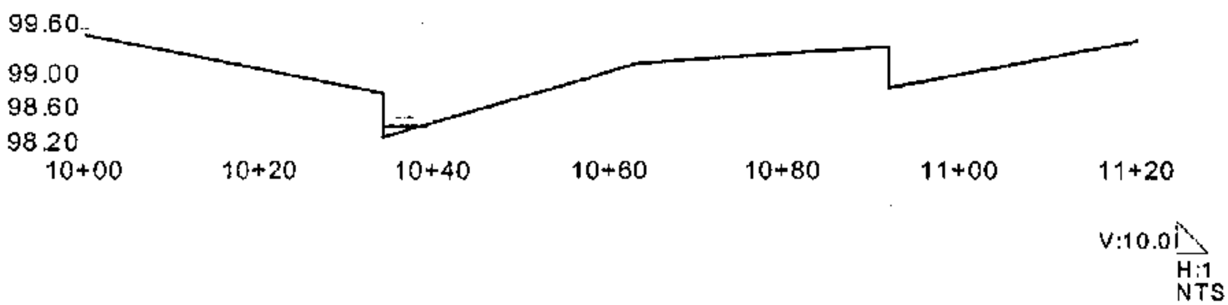
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	99.46
10+34	98.78
10+34	98.24
10+63	99.12
10+92	99.31
10+92	98.83
11+20	99.39

Center & 5th S.
Cross Section for Irregular Channel

Project Description	
Worksheet	#11 Center & 5tl
Flow Element	Irregular Channe
Method	Manning's Formi
Solve For	Discharge

Section Data		
Mannings Coefficiei	0.016	
Slope	0.004000	ft/ft
Water Surface Elev.	98.39	ft
Elevation Range	ι.24 to 99.46	
Discharge	0.38	cfs



Center & 6th E.
Worksheet for Irregular Channel

#13

Project Description	
Worksheet	#13 6th & Cente
Flow Element	Irregular Channe
Method	Manning's Formi
Solve For	Discharge

Input Data		
Slope	001000	ft/ft
Water Surface Elev	100.18	ft

Options	
Current Roughness Methc	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin;	Horton's Method

Results		
Mannings Coeffic	0.016	
Elevation Range	.73 to 101.14	
Discharge	4.39	cfs
Flow Area	4.2	ft²
Wetted Perimetei	20.17	ft
Top Width	19.44	ft
Actual Depth	0.45	ft
Critical Elevation	100.04	ft
Critical Slope	0.007382	ft/ft
Velocity	1.04	ft/s
Velocity Head	0.02	ft
Specific Energy	100.20	ft
Froude Number	0.39	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	10+80	0.016

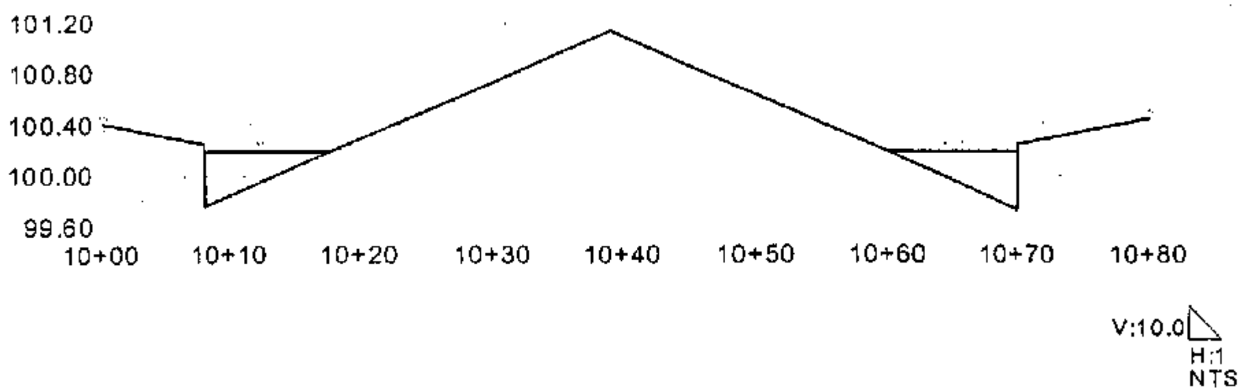
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	100.41
10+08	100.25
10+08	99.76
10+39	101.14
10+70	99.73
10+70	100.25
10+80	100.45

Center & 6th E.
Cross Section for Irregular Channel

Project Description	
Worksheet	#13 6th & Cente
Flow Element	Irregular Channe
Method	Manning's Formı
Solve For	Discharge

Section Data		
Mannings Coefficiei	0.016	
Slope	0.001000	ft/ft
Water Surface Elev	100.18	ft
Elevation Range	.73 to 101.14	
Discharge	4.39	cfs



Worksheet for Irregular Channel

Project Description	
Worksheet	#13 Center & 6tl
Flow Element	Irregular Channe
Method	Manning's Formi
Solve For	Discharge

Input Data		
Slope	003000	ft/ft
Water Surface Elev	100.18	ft

Options	
Current Roughness Methc	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.016	
Elevation Range	.42 to 101.09	
Discharge	18.08	cfs
Flow Area	8.9	ft²
Wetted Perimetei	35.62	ft
Top Width	34.68	ft
Actual Depth	0.76	ft
Critical Elevation	100.11	ft
Critical Slope	0.006316	ft/ft
Velocity	2.02	ft/s
Velocity Head	0.06	ft
Specific Energy	100.24	ft
Froude Number	0.70	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	11+00	0.016

Natural Channel Points

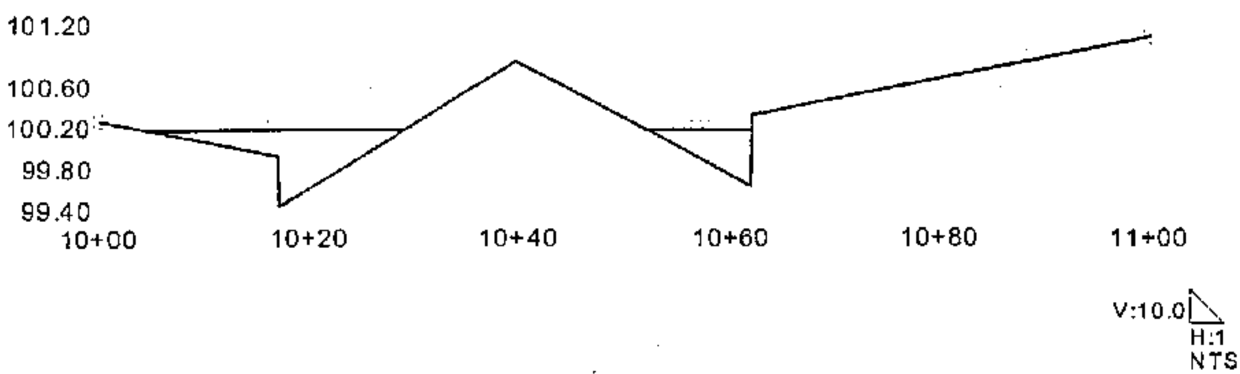
Station (ft)	Elevation (ft)
10+00	100.27
10+17	99.93
10+17	99.42
10+40	100.85
10+62	99.63
10+62	100.33
11+00	101.09

Center & 6th S.

Cross Section for Irregular Channel

Project Description	
Worksheet	#13 Center & 6th
Flow Element	Irregular Channe
Method	Manning's Form
Solve For	Discharge

Section Data		
Mannings Coefficiei	0.016	
Slope	0.003000	ft/ft
Water Surface Elev	100.18	ft
Elevation Range	.42 to 101.09	
Discharge	18.08	cfs



Center & 7th E.
Worksheet for Irregular Channel

#17

Project Description	
Worksheet	#17 7th & Cente
Flow Element	Irregular Channe
Method	Manning's Form
Solve For	Discharge

Input Data		
Slope	005000	ft/ft
Water Surface Elev	103.33	ft

Options	
Current Roughness Methc	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.016	
Elevation Range	?.62 to 103.98	
Discharge	26.05	cfs
Flow Area	10.2	ft²
Wetted Perimete	42.10	ft
Top Width	41.27	ft
Actual Depth	0.71	ft
Critical Elevation	103.31	ft
Critical Slope	0.006171	ft/ft
Velocity	2.55	ft/s
Velocity Head	0.10	ft
Specific Energy	103.43	ft
Froude Number	0.91	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	10+78	0.016

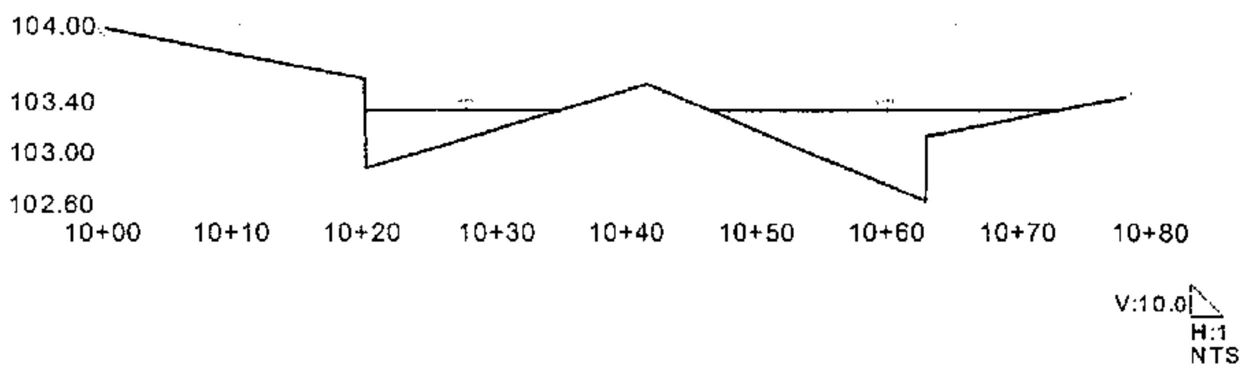
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	103.98
10+20	103.58
10+20	102.88
10+42	103.54
10+63	102.62
10+63	103.13
10+78	103.43

Cross Section for Irregular Channel

Project Description	
Worksheet	#17 7th & Cente
Flow Element	Irregular Channe
Method	Manning's Form
Solve For	Discharge

Section Data		
Mannings Coefficie	0.016	
Slope	0.005000	ft/ft
Water Surface Elev	103.33	ft
Elevation Range	2.62 to 103.98	
Discharge	26.05	cfs



Center & 7th S.
Worksheet for Irregular Channel

Project Description	
Worksheet	#17 Center & 7tl
Flow Element	Irregular Channe
Method	Manning's Formi
Solve For	Discharge

Input Data		
Slope	004000	ft/ft
Water Surface Elev	103.33	ft

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.016	
Elevation Range	2.66 to 103.69	
Discharge	21.42	cfs
Flow Area	9.8	ft²
Wetted Perimetel	43.45	ft
Top Width	42.81	ft
Actual Depth	0.67	ft
Critical Elevation	103.29	ft
Critical Slope	0.006381	ft/ft
Velocity	2.18	ft/s
Velocity Head	0.07	ft
Specific Energy	103.40	ft
Froude Number	0.80	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	10+78	0.016

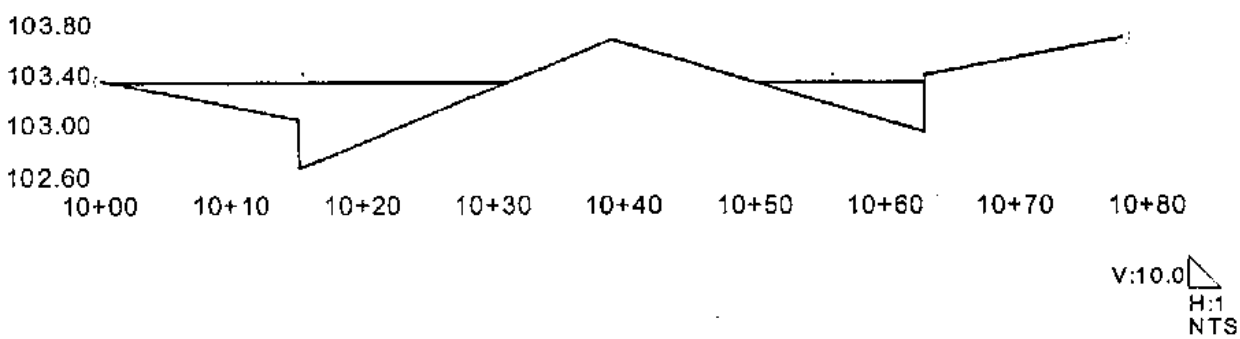
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	103.35
10+15	103.05
10+15	102.66
10+39	103.67
10+63	102.94
10+63	103.39
10+78	103.69

Center & 7th S.
Cross Section for Irregular Channel

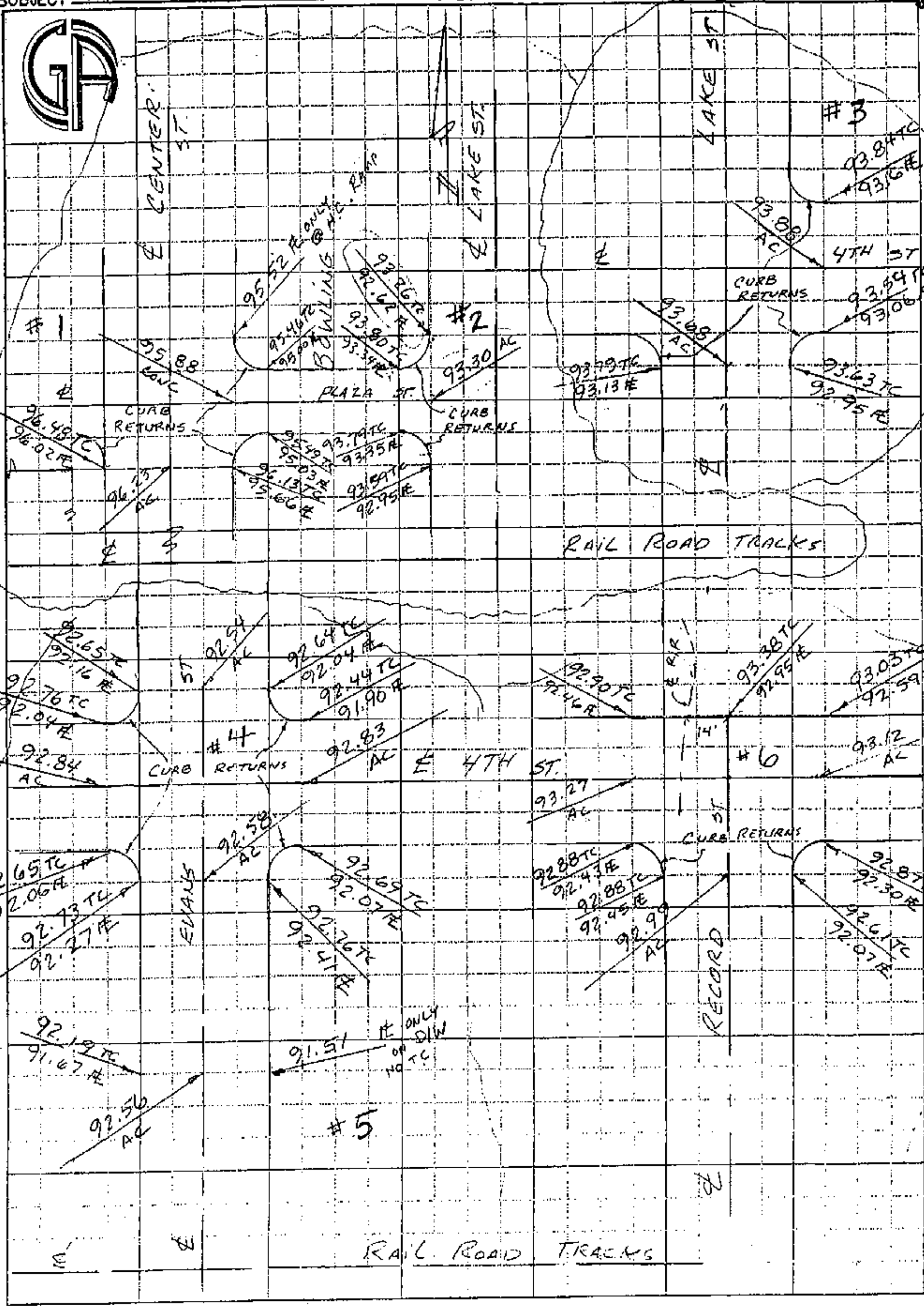
Project Description	
Worksheet	#17 Center & 7tl
Flow Element	Irregular Channe
Method	Manning's Form
Solve For	Discharge

Section Data		
Mannings Coefficiei	0.016	
Slope	0.004000	ft/ft
Water Surface Elev	103.33	ft
Elevation Range	?.66 to 103.69	
Discharge	21.42	cfs



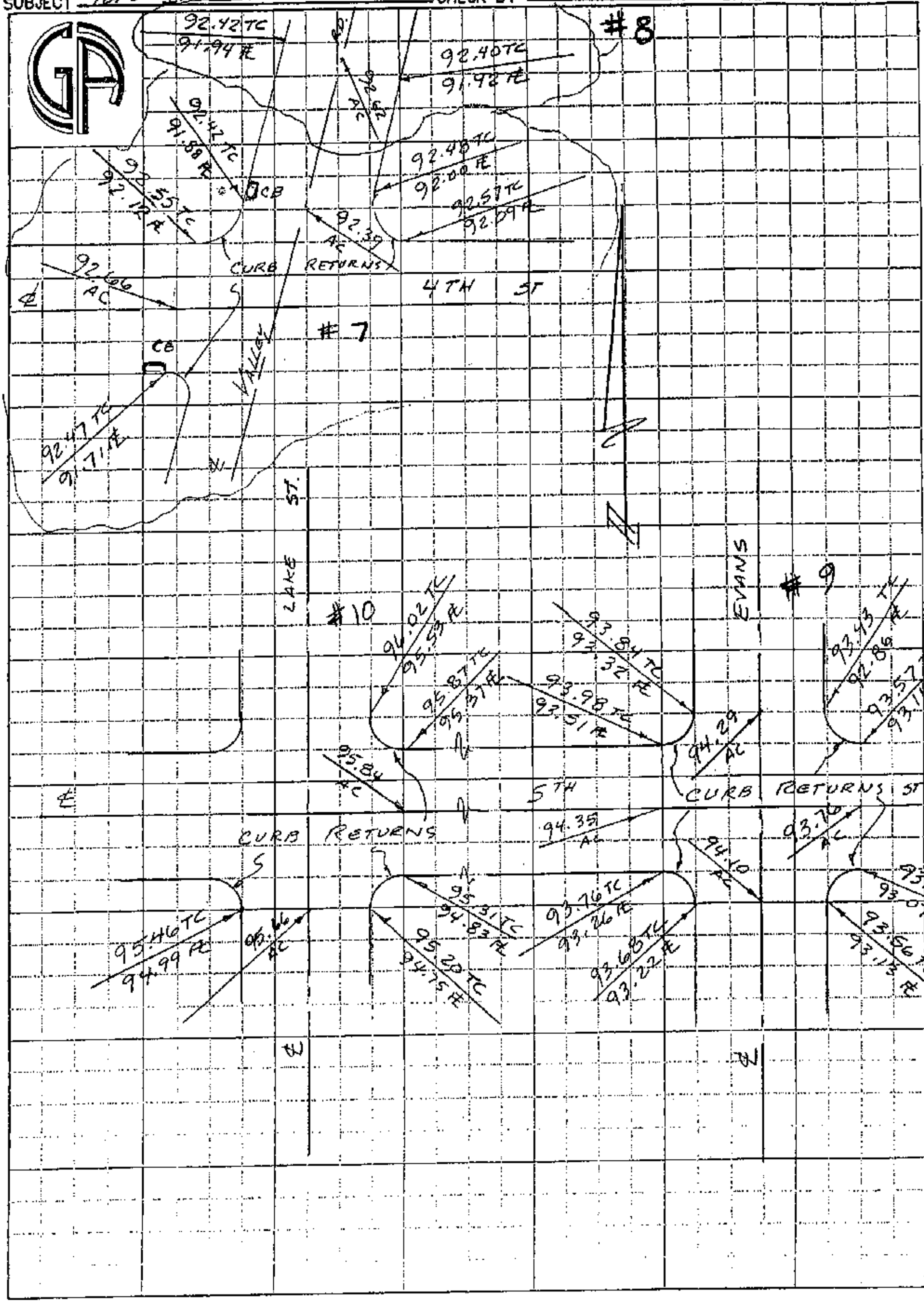
CLIENT Granite JOB NO. 0074-001 BY ________ DATE 6/26/03

SUBJECT Topo Intersections CHECK BY Rudy + Tom DATE ________



CLIENT Granite JOB NO. 0074-001 BY ____ DATE ____

SUBJECT TOPO INTERSECTIONS CHECK BY Rudy & Tom DATE ____



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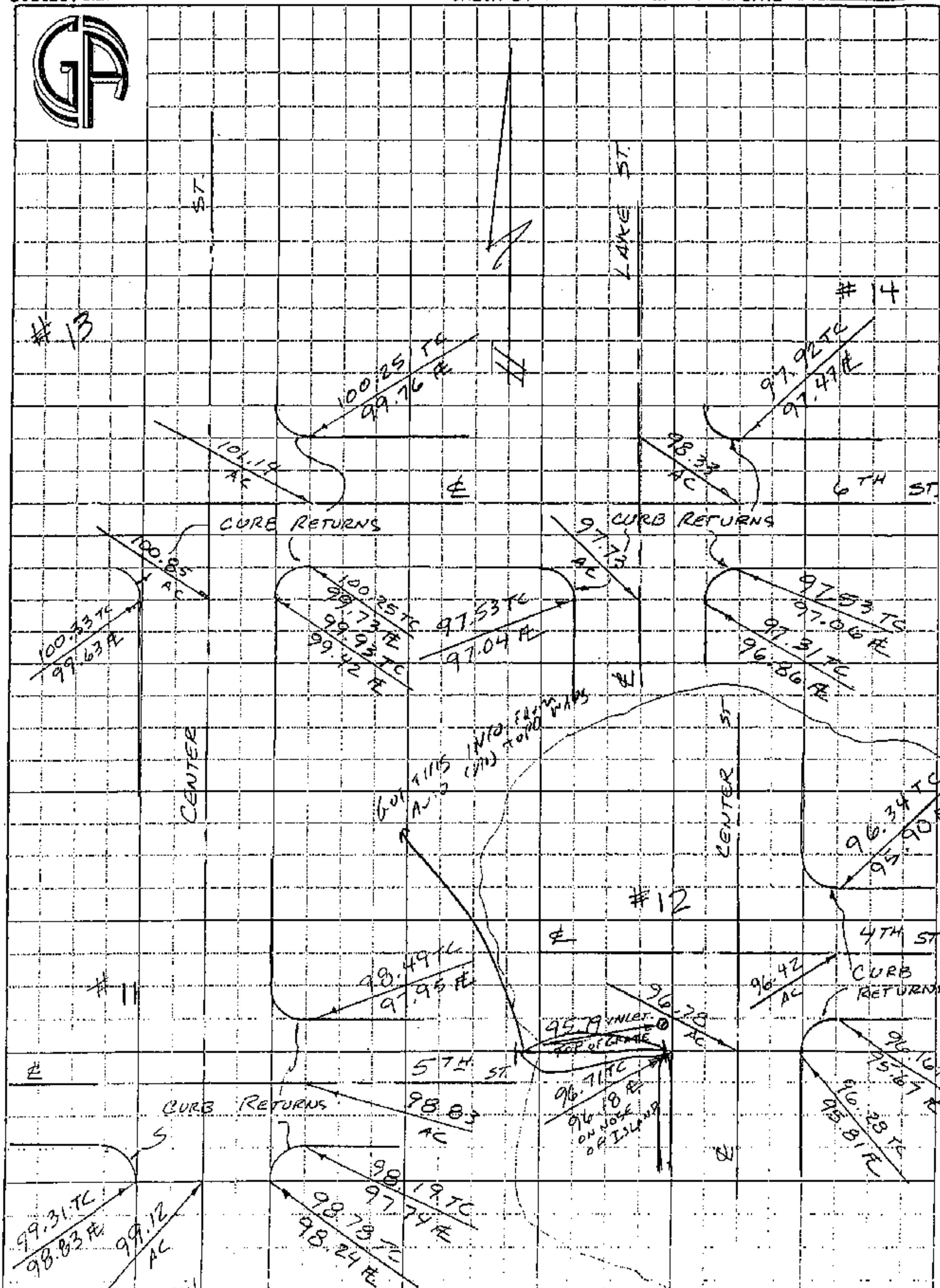
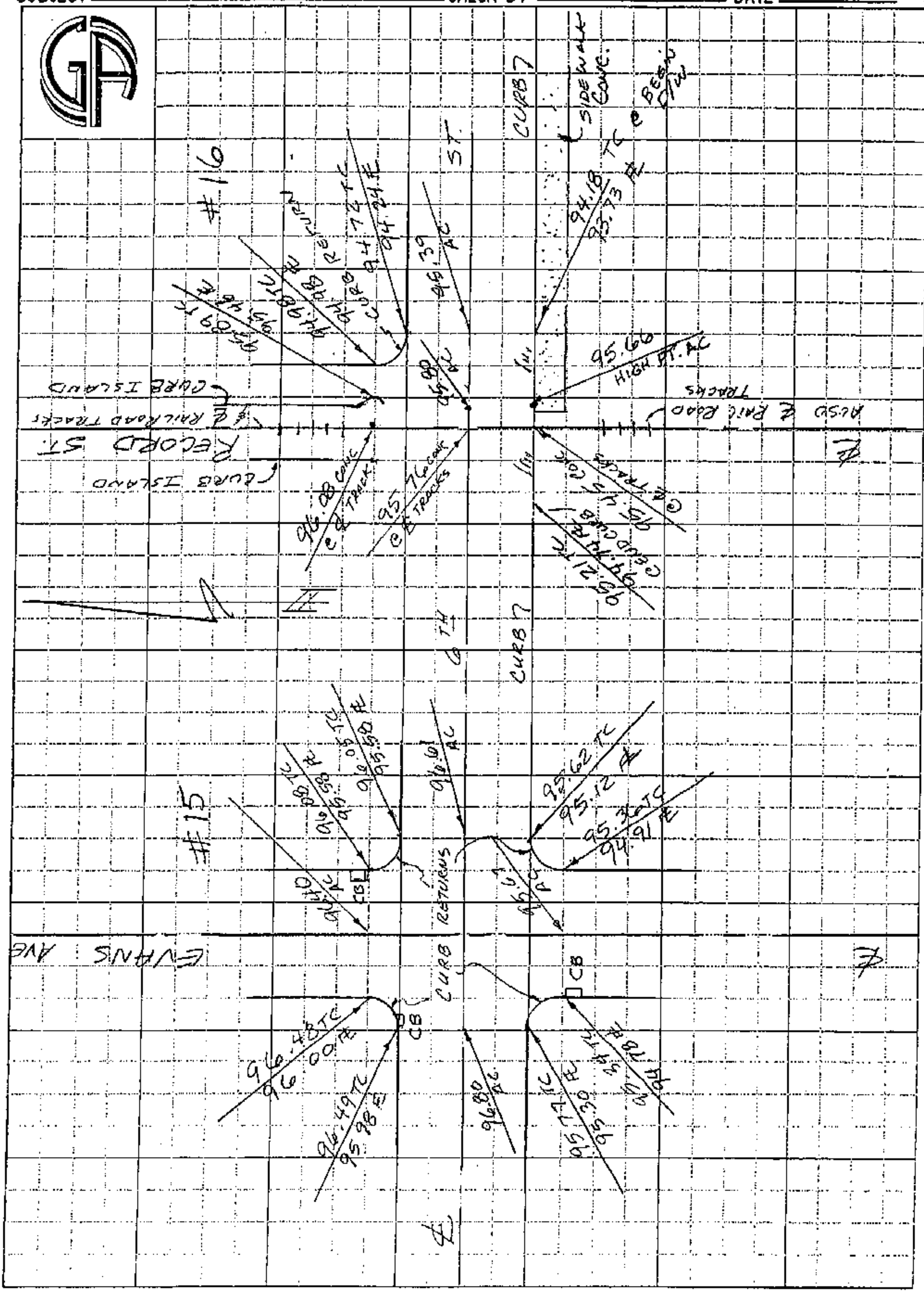
CLIENT GRANITE JOB NO. 0074-001 BY DATE

SUBJECT TOPO INTERSECTIONS CHECK BY RUDY & TOM DATE



CLIENT Granite Const JOB NO. 0074.001 BY ______ DATE 2/27/03

SUBJECT Topo Intersection CHECK BY Rudy & Tom DATE ______



El 95.08

6th & Record El 95.06

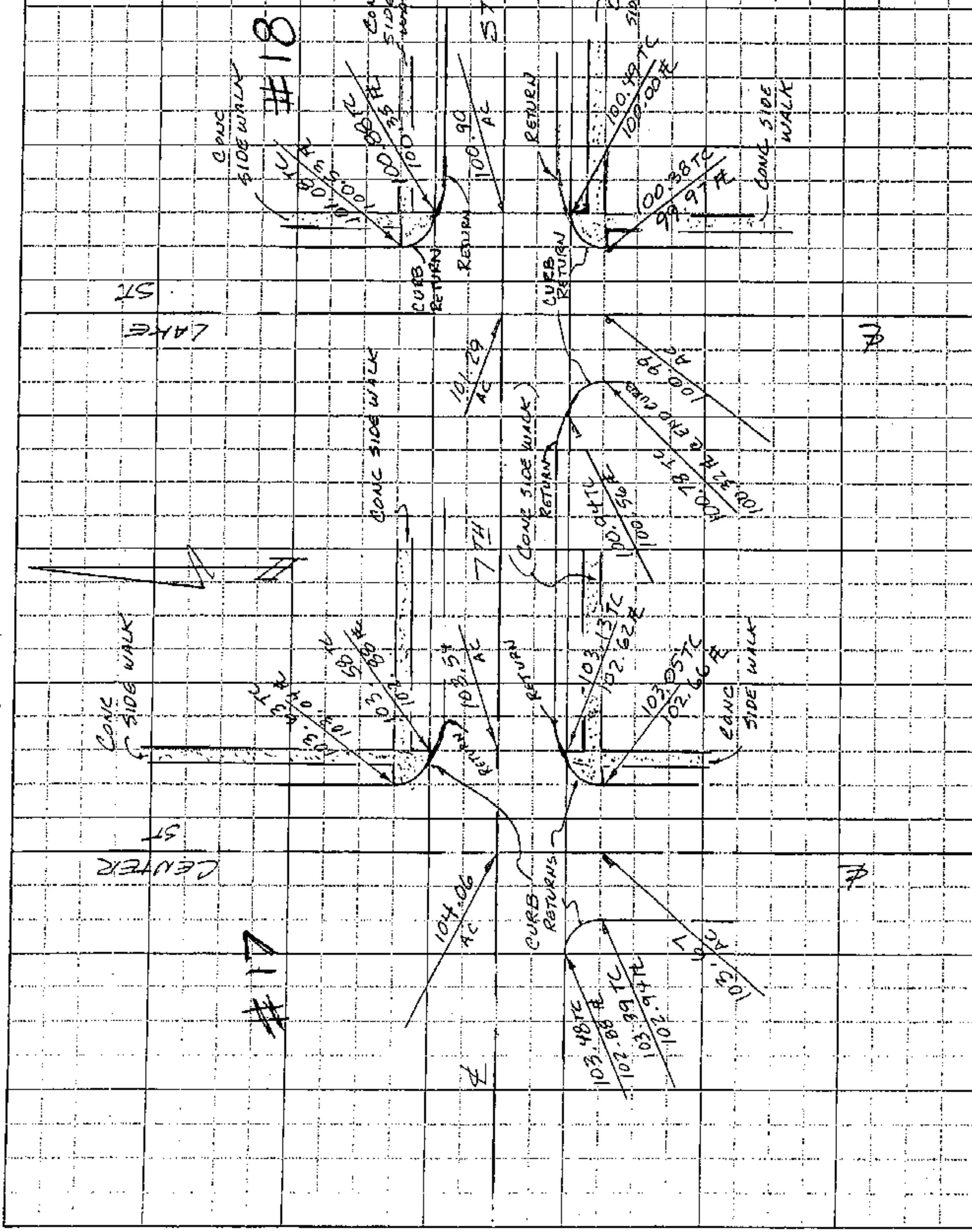
El 96.28

CLIENT Granite Const. JOB NO. 0074-001 BY ______ DATE 2/27/03

SUBJECT Topo Intersection CHECK BY Rudy & Tom DATE ______

NAVD 29

NAVD 88 City of Reno DIFF. 1.5 C-3 55



EL 97.56

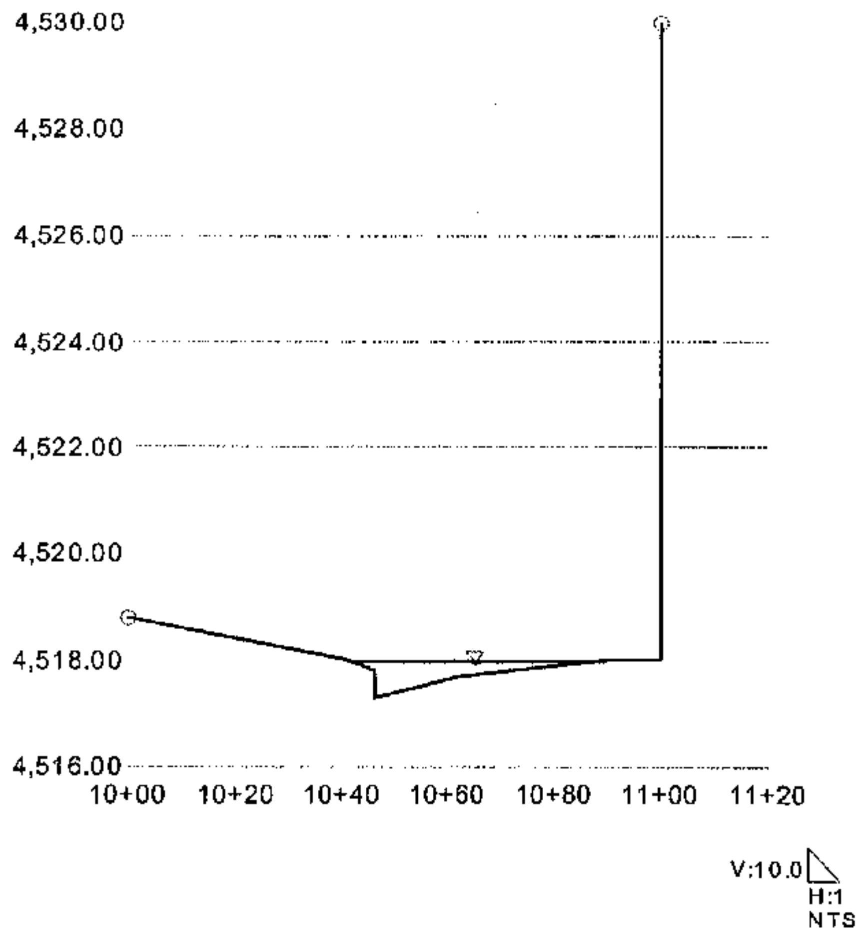
7th CENTER EL-103.69

105.01

3rd Street 2500
Cross Section for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 2500 - 3rd. St. (West of '
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.007000	ft/ft
Water Surface Elev.	4,517.98	ft
Elevation Range	17.30 to 4,530.00	
Discharge	37.00	cfs



Proposed 3rd. Street 2500
Worksheet for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 2500 - 3rd. St. (West of \
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	007000	ft/ft
Dischargı	37.00	cfs

Options	
Current Roughness Methc	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficiei	0.016	
Water Surface Elev	4,517.98	ft
Elevation Range	17.30 to 4,530.00	
Flow Area	12.1	ft²
Wetted Perimeter	48.96	ft
Top Width	48.54	ft
Actual Depth	0.68	ft
Critical Elevation	4,518.01	ft
Critical Slope	0.006170	ft/ft
Velocity	3.06	ft/s
Velocity Head	0.15	ft
Specific Energy	4,518.13	ft
Froude Number	1.08	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	11+00	0.016

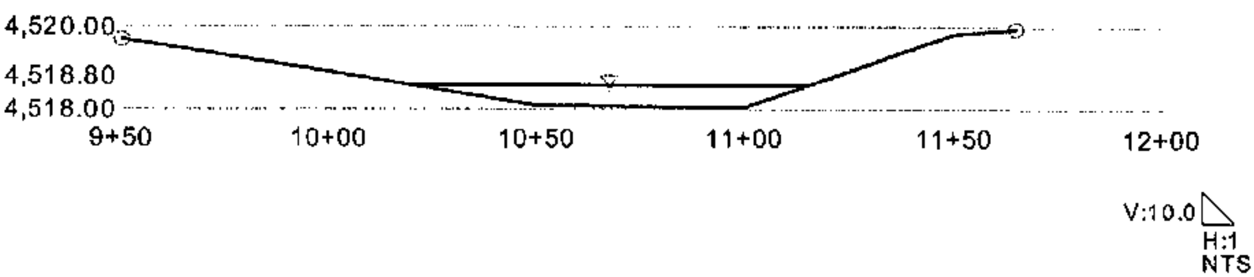
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,518.80
10+41	4,518.00
10+46	4,517.80
10+46	4,517.30
10+62	4,517.70
10+91	4,518.00
11+00	4,518.00
11+00	4,530.00

Proposed 3rd Street 2400
Cross Section for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 2400 - 3rd & V
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.022000	ft/ft
Water Surface Elev	4,518.59	ft
Elevation Range	18.07 to 4,519.97	
Discharge	270.00	cfs



Proposed 3rd Street 2400
Worksheet for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 2400 - 3rd & V
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	022000	ft/ft
Discharg	270.00	cfs

Options	
Current Roughness Meth	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev	4,518.59	ft
Elevation Range	18.07 to 4,519.97	
Flow Area	37.0	ft²
Wetted Perimeter	95.77	ft
Top Width	95.76	ft
Actual Depth	0.52	ft
Critical Elevation	4,518.85	ft
Critical Slope	0.004575	ft/ft
Velocity	7.30	ft/s
Velocity Head	0.83	ft
Specific Energy	4,519.42	ft
Froude Number	2.07	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
9+50	11+65	0.016

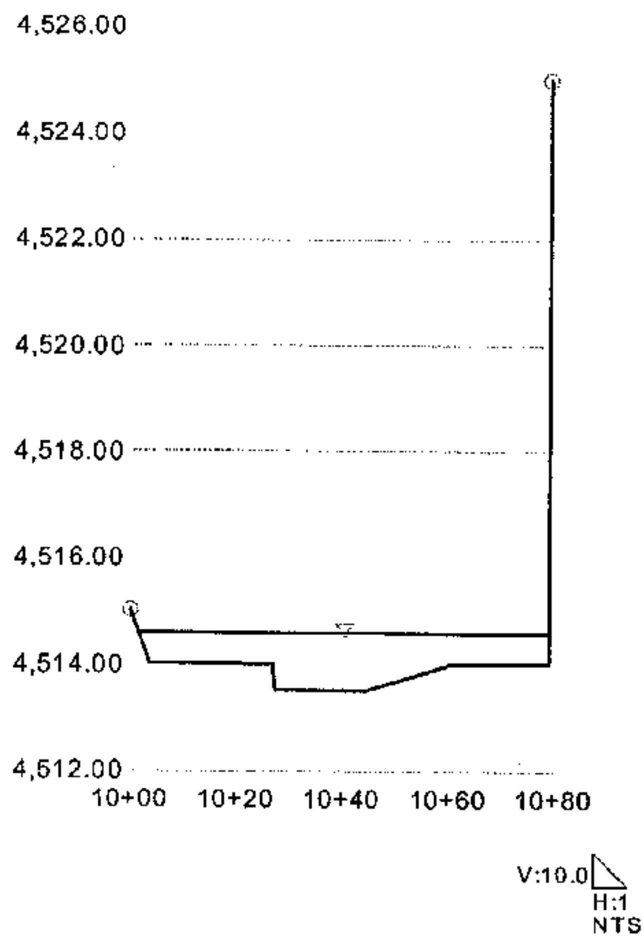
Natural Channel Points

Station (ft)	Elevation (ft)
9+50	4,519.70
10+00	4,518.90
10+50	4,518.10
11+00	4,518.07
11+50	4,519.83
11+65	4,519.97

3rd Street 2300
Cross Section for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 2300 - 3rd St. (West (
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.004000	ft/ft
Water Surface Elev.	4,514.58	ft
Elevation Range	13.50 to 4,525.00	
Discharge	270.00	cfs



3rd Street 2300
Worksheet for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 2300 - 3rd St. (West (
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	004000	ft/ft
Discharg	270.00	cfs

Options	
Current Roughness Meth	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev.	4,514.58	ft
Elevation Range	13.50 to 4,525.00	
Flow Area	57.0	ft²
Wetted Perimeter	78.59	ft
Top Width	77.52	ft
Actual Depth	1.08	ft
Critical Elevation	4,514.56	ft
Critical Slope	0.004233	ft/ft
Velocity	4.74	ft/s
Velocity Head	0.35	ft
Specific Energy	4,514.93	ft
Froude Number	0.97	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	10+79	0.016

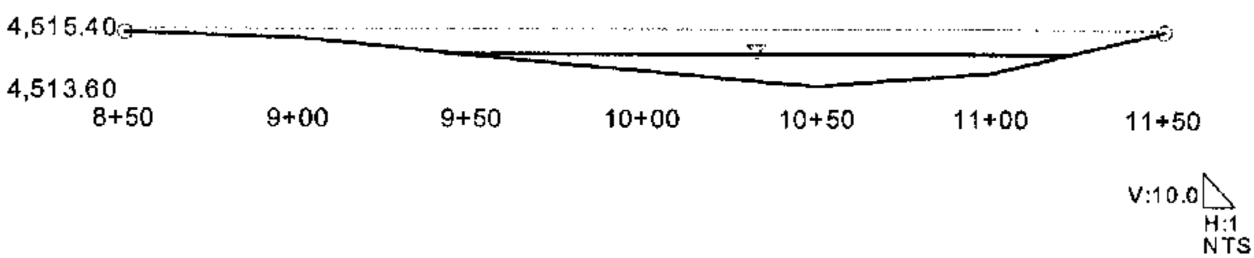
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,515.00
10+04	4,514.00
10+25	4,514.00
10+27	4,514.00
10+27	4,513.50
10+44	4,513.50
10+61	4,514.00
10+79	4,514.00
10+79	4,525.00

Proposed 3rd Street 2200
Cross Section for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 2200 - 3rd ﾓ
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.004000	ft/ft
Water Surface Elev.	4,514.68	ft
Elevation Range	13.77 to 4,515.34	
Discharge	347.00	cfs



Proposed 3rd Street 2200
Worksheet for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 2200 - 3rd ξ
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	004000	ft/ft
Discharg	347.00	cfs

Options	
Current Roughness Methc	wed Lotter's Method
Open Channel Weighting	wed Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev	4,514.68	ft
Elevation Range	13.77 to 4,515.34	
Flow Area	92.5	ft²
Wetted Perimeter	181.15	ft
Top Width	181.14	ft
Actual Depth	0.91	ft
Critical Elevation	4,514.65	ft
Critical Slope	0.004724	ft/ft
Velocity	3.75	ft/s
Velocity Head	0.22	ft
Specific Energy	4,514.90	ft
Froude Number	0.93	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
8+50	11+50	0.016

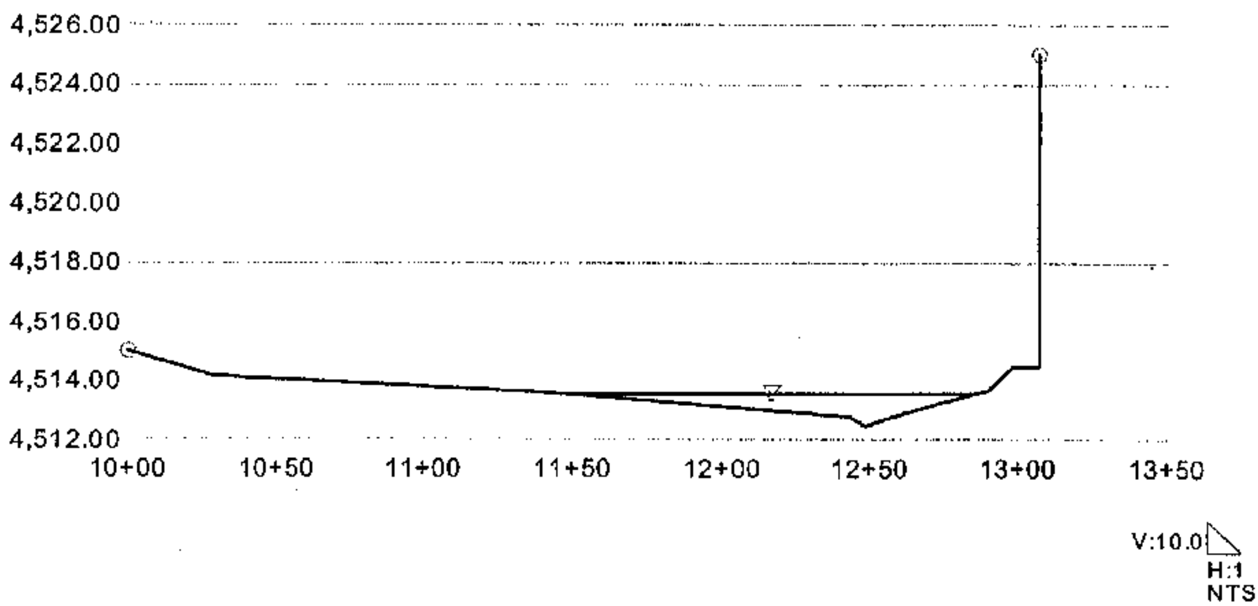
Natural Channel Points

Station (ft)	Elevation (ft)
8+50	4,515.30
9+00	4,515.10
9+50	4,514.60
10+00	4,514.20
10+50	4,513.77
11+00	4,514.12
11+50	4,515.34

3rd Street 2100
Cross Section for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 2100 - 3rd & F
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.013000	ft/ft
Water Surface Elev	4,513.54	ft
Elevation Range	12.47 to 4,525.00	
Discharge	347.00	cfs



3rd Street 2100
Worksheet for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 2100 - 3rd & F
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	013000	ft/ft
Discharg	347.00	cfs

Options	
Current Roughness Methc	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev	4,513.54	ft
Elevation Range	12.47 to 4,525.00	
Flow Area	58.3	ft²
Wetted Perimeter	138.27	ft
Top Width	138.24	ft
Actual Depth	1.07	ft
Critical Elevation	4,513.72	ft
Critical Slope	0.004704	ft/ft
Velocity	5.95	ft/s
Velocity Head	0.55	ft
Specific Energy	4,514.09	ft
Froude Number	1.62	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	13+07	0.016

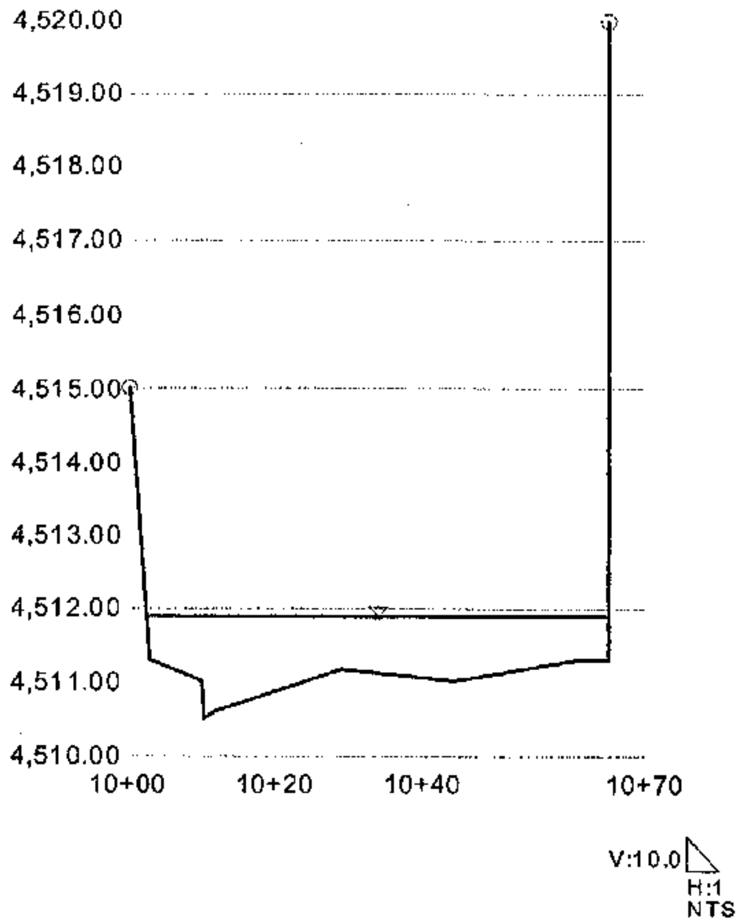
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,515.00
10+28	4,514.20
11+39	4,513.60
12+43	4,512.80
12+48	4,512.47
12+59	4,512.86
12+90	4,513.65
12+98	4,514.48
13+07	4,514.50
13+07	4,525.00

3rd Street 2000
Cross Section for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 2000 - 3rd
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.007000	ft/ft
Water Surface Elev.	4,511.89	ft
Elevation Range	10.52 to 4,520.00	
Discharge	347.00	cfs



3rd Street 2000
Worksheet for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 2000 - 3rd
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	007000	ft/ft
Discharg	347.00	cfs

Options	
Current Roughness Meth	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev.	4,511.89	ft
Elevation Range	10.52 to 4,520.00	
Flow Area	51.4	ft²
Wetted Perimeter	63.61	ft
Top Width	62.49	ft
Actual Depth	1.37	ft
Critical Elevation	4,512.05	ft
Critical Slope	0.003859	ft/ft
Velocity	6.74	ft/s
Velocity Head	0.71	ft
Specific Energy	4,512.60	ft
Froude Number	1.31	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	10+65	0.016

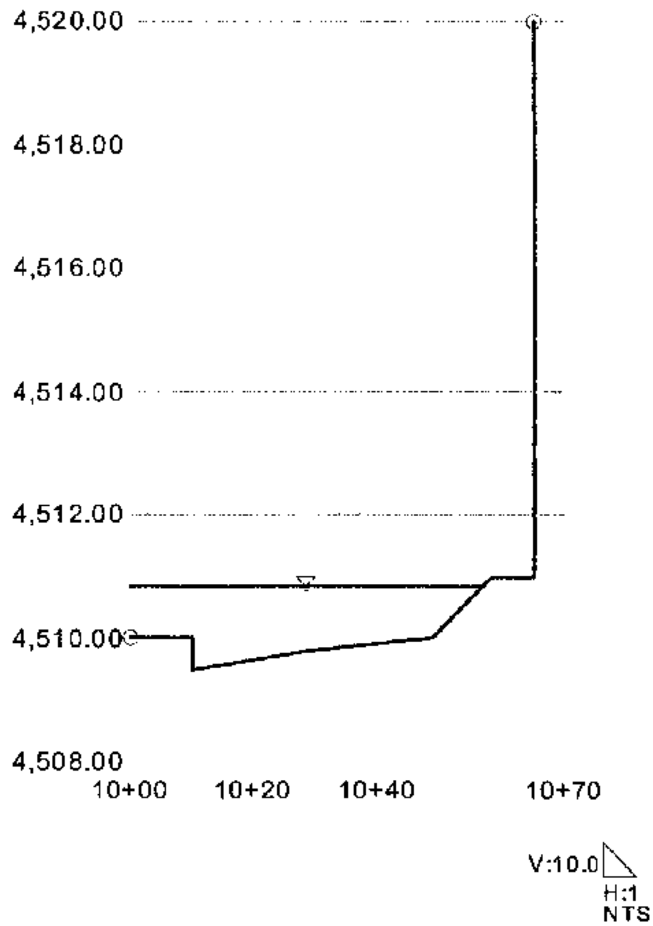
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,515.00
10+03	4,511.29
10+10	4,511.01
10+10	4,510.52
10+12	4,510.62
10+29	4,511.18
10+44	4,511.01
10+61	4,511.30
10+65	4,511.30
10+65	4,520.00

3rd Street 1900
Cross Section for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 1900 - 3rd
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.005600	ft/ft
Water Surface Elev.	4,510.84	ft
Elevation Range	)9.50 to 4,520.00	
Discharge	347.00	cfs



3rd Street 1900
Worksheet for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 1900 - 3rd
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	005600	ft/ft
Discharg	347.00	cfs

Options	
Current Roughness Methc	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev	4,510.84	ft
Elevation Range	)9.50 to 4,520.00	
Flow Area	53.0	ft²
Wetted Perimeter	58.10	ft
Top Width	56.80	ft
Actual Depth	1.34	ft
Critical Elevation	4,511.00	ft
Critical Slope	0.003896	ft/ft
Velocity	6.54	ft/s
Velocity Head	0.66	ft
Specific Energy	4,511.51	ft
Froude Number	1.19	
Flow Type	Supercritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.84195107 ft.

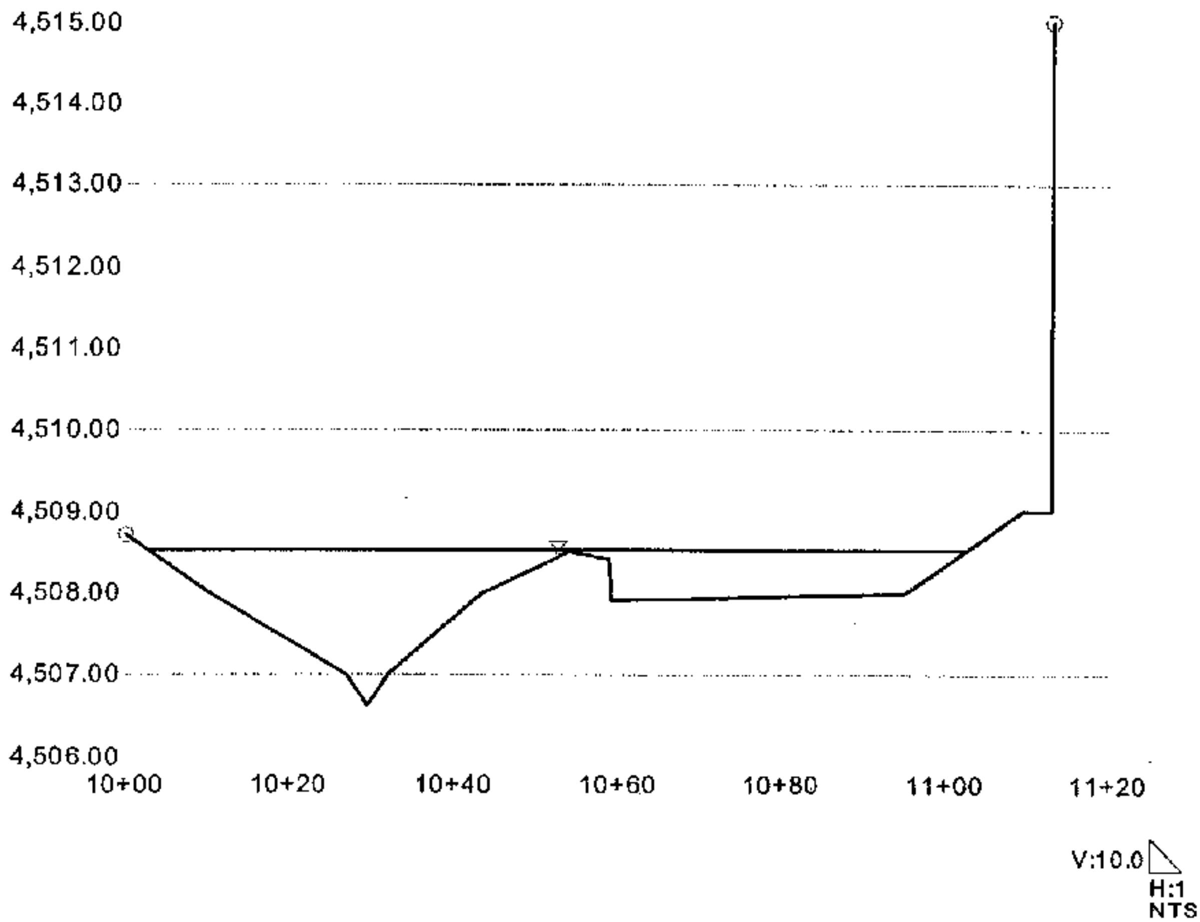
Roughness Segments		
Start Station	End Station	Mannings Coefficient
10+00	10+65	0.016

Natural Channel Points	
Station (ft)	Elevation (ft)
10+00	4,510.00
10+10	4,510.00
10+10	4,509.50
10+29	4,509.80
10+49	4,510.00
10+58	4,511.00
10+65	4,511.00
10+65	4,520.00

3rd Street 1800
Cross Section for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 1800 - 3rd St. (West of
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.005700	ft/ft
Water Surface Elev	4,508.52	ft
Elevation Range	)6.60 to 4,515.00	
Discharge	347.00	cfs



3rd Street 1800
Worksheet for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 1800 - 3rd St. (West of
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	005700	ft/ft
Discharg	347.00	cfs

Options	
Current Roughness Methc	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficiei	0.016	
Water Surface Elev.	4,508.52	ft
Elevation Range	)6.60 to 4,515.00	
Flow Area	65.7	ft²
Wetted Perimeter	100.63	ft
Top Width	100.04	ft
Actual Depth	1.92	ft
Critical Elevation	4,508.59	ft
Critical Slope	0.004212	ft/ft
Velocity	5.28	ft/s
Velocity Head	0.43	ft
Specific Energy	4,508.96	ft
Froude Number	1.15	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	11+13	0.016

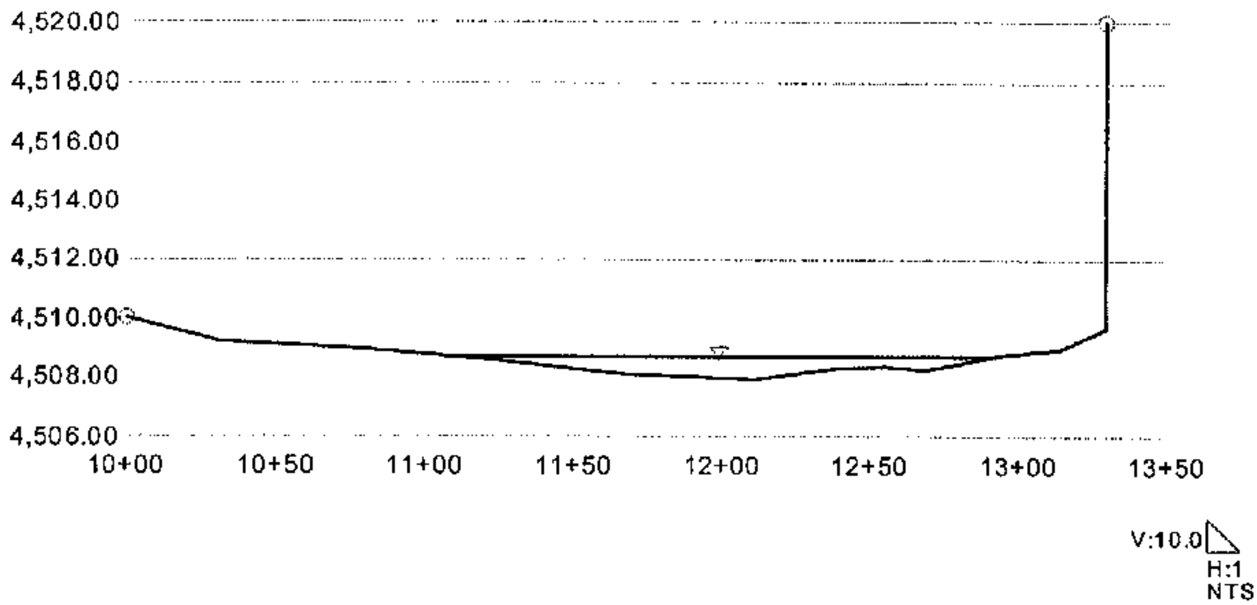
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,508.70
10+10	4,508.00
10+27	4,507.00
10+29	4,506.60
10+32	4,507.00
10+44	4,508.00
10+54	4,508.50
10+59	4,508.40
10+59	4,507.90
10+95	4,508.00
11+09	4,509.00
11+13	4,509.00
11+13	4,515.00

3rd Street 1700
Cross Section for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 1700 - 3rd & Arl
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.009000	ft/ft
Water Surface Elev.	4,508.70	ft
Elevation Range	)7.90 to 4,520.00	
Discharge	408.00	cfs



3rd Street 1700
Worksheet for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 1700 - 3rd & Arl
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	009000	ft/ft
Discharg	408.00	cfs

Options	
Current Roughness Meth	oved Lotter's Method
Open Channel Weighting	oved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev	4,508.70	ft
Elevation Range	)7.90 to 4,520.00	
Flow Area	80.5	ft²
Wetted Perimeter	184.54	ft
Top Width	184.53	ft
Actual Depth	0.80	ft
Critical Elevation	4,508.81	ft
Critical Slope	0.004714	ft/ft
Velocity	5.07	ft/s
Velocity Head	0.40	ft
Specific Energy	4,509.10	ft
Froude Number	1.35	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	13+29	0.016

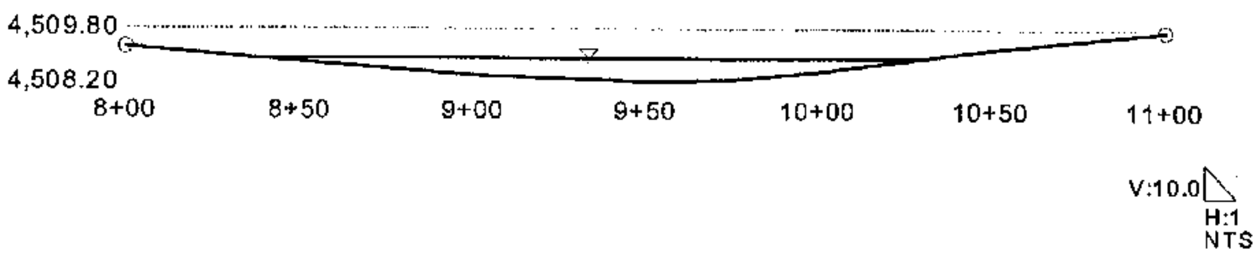
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,510.00
10+31	4,509.23
10+78	4,508.94
11+24	4,508.56
11+66	4,508.13
12+10	4,507.90
12+39	4,508.30
12+55	4,508.39
12+68	4,508.22
12+94	4,508.76
13+14	4,508.96
13+29	4,509.67
13+29	4,520.00

Proposed 3rd Street 1600
Cross Section for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 1600 - Arlingt
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficie	0.016	
Slope	0.009000	ft/ft
Water Surface Elev.	4,508.93	ft
Elevation Range	)8.26 to 4,509.72	
Discharge	408.00	cfs



Proposed 3rd Street 1600
Worksheet for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 1600 - Arlingt
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	009000	ft/ft
Discharg	408.00	cfs

Options	
Current Roughness Methc	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficiei	0.016	
Water Surface Elev	4,508.93	ft
Elevation Range	)8.26 to 4,509.72	
Flow Area	82.5	ft²
Wetted Perimeter	196.17	ft
Top Width	196.17	ft
Actual Depth	0.67	ft
Critical Elevation	4,509.03	ft
Critical Slope	0.004765	ft/ft
Velocity	4.95	ft/s
Velocity Head	0.38	ft
Specific Energy	4,509.31	ft
Froude Number	1.34	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
8+00	11+00	0.016

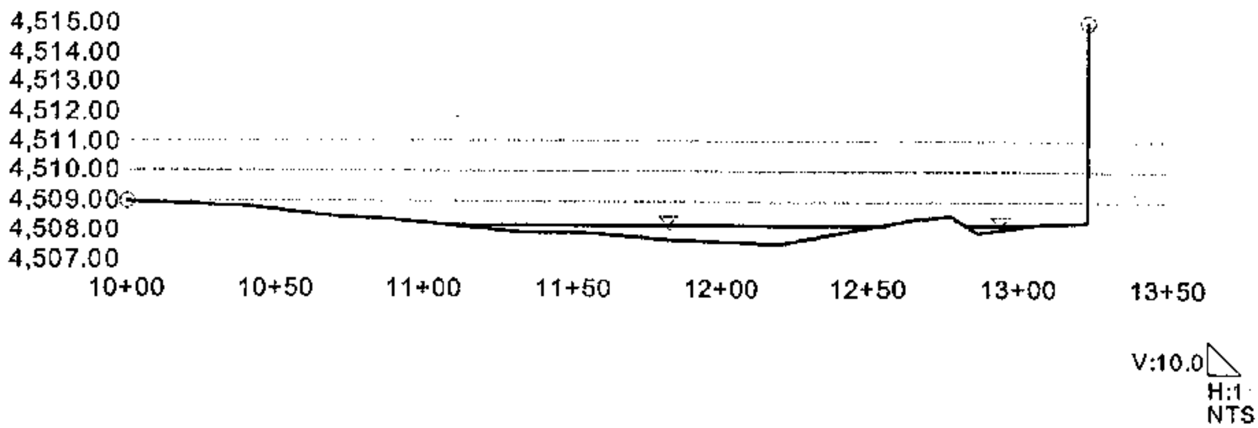
Natural Channel Points

Station (ft)	Elevation (ft)
8+00	4,509.24
8+50	4,508.80
9+00	4,508.40
9+50	4,508.26
9+75	4,508.30
10+00	4,508.55
10+50	4,509.16
11+00	4,509.72

3rd Street 1550
Cross Section for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 1550 - 3rd & Ari
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.025000	ft/ft
Water Surface Elev	4,508.16	ft
Elevation Range	)7.50 to 4,515.00	
Discharge	408.00	cfs



3rd Street 1550
Worksheet for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 1550 - 3rd & Arl
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	025000	ft/ft
Discharg	408.00	cfs

Options	
Current Roughness Methc	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficiei	0.016	
Water Surface Elev.	4,508.16	ft
Elevation Range	)7.50 to 4,515.00	
Flow Area	57.3	ft²
Wetted Perimeter	169.46	ft
Top Width	169.44	ft
Actual Depth	0.66	ft
Critical Elevation	4,508.41	ft
Critical Slope	0.004844	ft/ft
Velocity	7.12	ft/s
Velocity Head	0.79	ft
Specific Energy	4,508.95	ft
Froude Number	2.16	
Flow Type	Supercritical	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	13+23	0.016

Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,509.00
10+42	4,508.80
10+68	4,508.50
10+90	4,508.35
11+33	4,507.93
11+54	4,507.88
11+83	4,507.63
12+20	4,507.50
12+67	4,508.38
12+77	4,508.50

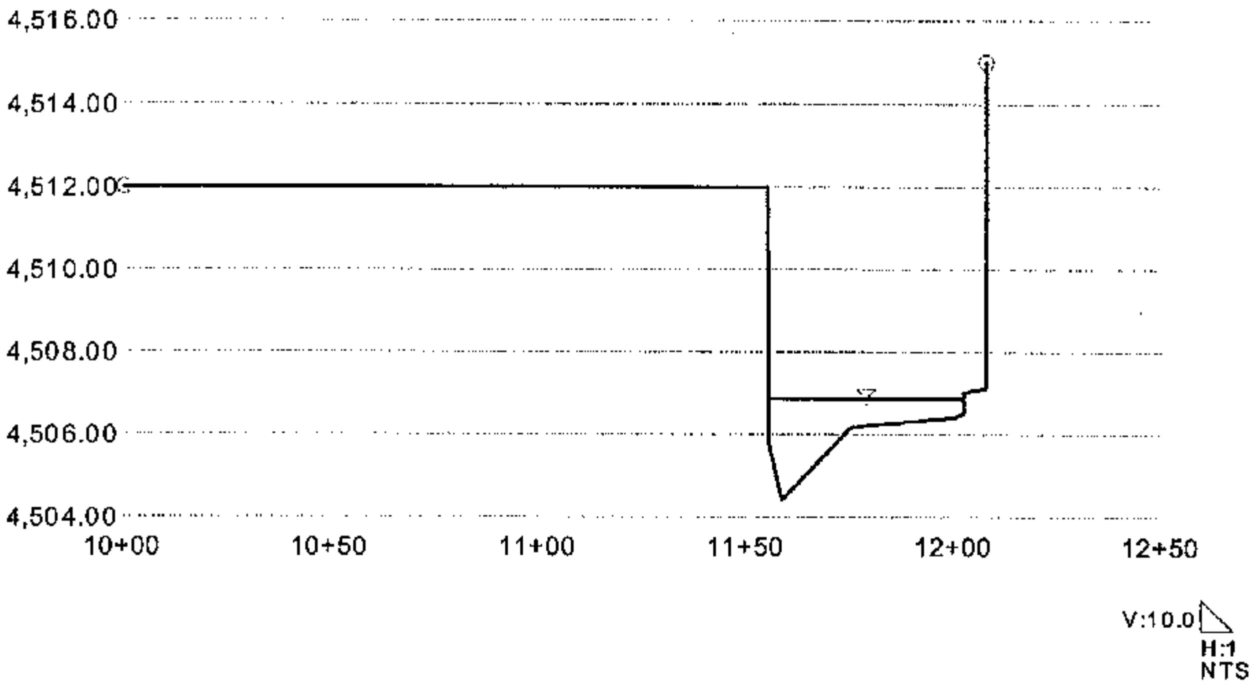
3rd Street 1550
Worksheet for Irregular Channel

Natural Channel Points	
Station (ft)	Elevation (ft)
12+86	4,507.90
13+07	4,508.20
13+23	4,508.30
13+23	4,515.00

3rd Street 1500
Cross Section for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 1500 - 3rd @
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficie:	0.016	
Slope	0.009000	ft/ft
Water Surface Elev.	4,506.87	ft
Elevation Range	)4.40 to 4,515.00	
Discharge	408.00	cfs



3rd Street 1500
Worksheet for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 1500 - 3rd @
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	009000	ft/ft
Discharg	408.00	cfs

Options	
Current Roughness Methc	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficiei	0.016	
Water Surface Elev	4,506.87	ft
Elevation Range	)4.40 to 4,515.00	
Flow Area	47.5	ft²
Wetted Perimeter	49.26	ft
Top Width	47.51	ft
Actual Depth	2.47	ft
Critical Elevation	4,507.22	ft
Critical Slope	0.003688	ft/ft
Velocity	8.60	ft/s
Velocity Head	1.15	ft
Specific Energy	4,508.02	ft
Froude Number	1.52	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	12+08	0.016

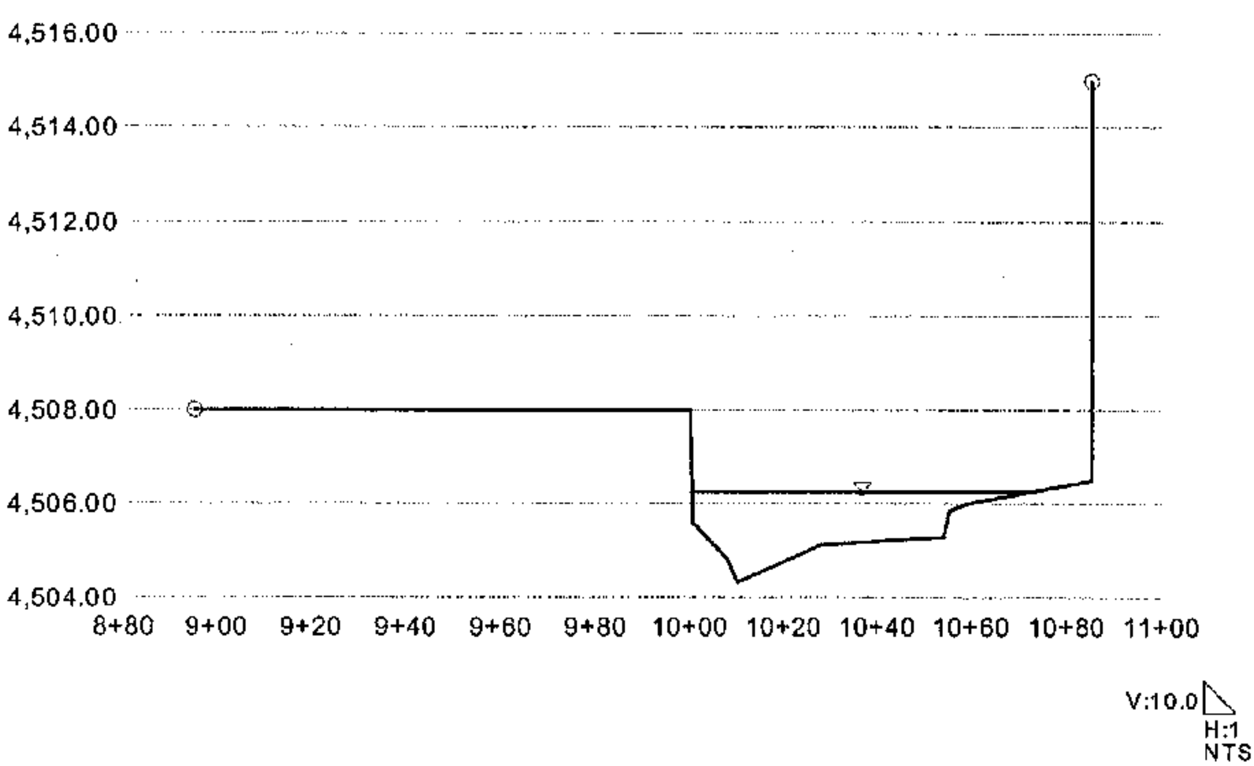
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,512.00
11+44	4,512.00
11+55	4,512.00
11+55	4,505.80
11+58	4,504.40
11+75	4,506.20
12+00	4,506.40
12+03	4,506.50
12+03	4,507.00
12+07	4,507.10
12+08	4,507.10
12+08	4,515.00

3rd Street 1400
Cross Section for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 1400 - 3rd & W
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.005000	ft/ft
Water Surface Elev	4,506.27	ft
Elevation Range	)4.34 to 4,515.00	
Discharge	455.00	cfs



3rd Street 1400
Worksheet for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 1400 - 3rd & W
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	005000	ft/ft
Discharg	455.00	cfs

Options	
Current Roughness Meth	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev	4,506.27	ft
Elevation Range	)4.34 to 4,515.00	
Flow Area	71.0	ft²
Wetted Perimeter	73.72	ft
Top Width	72.81	ft
Actual Depth	1.93	ft
Critical Elevation	4,506.38	ft
Critical Slope	0.003780	ft/ft
Velocity	6.41	ft/s
Velocity Head	0.64	ft
Specific Energy	4,506.90	ft
Froude Number	1.14	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
8+95	10+85	0.016

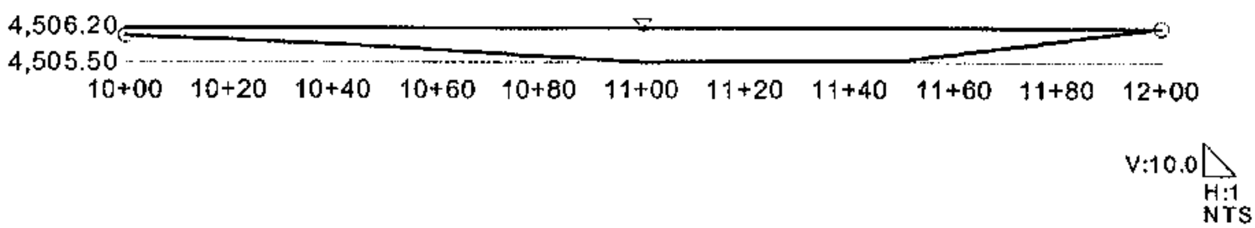
Natural Channel Points

Station (ft)	Elevation (ft)
8+95	4,508.00
10+00	4,508.00
10+00	4,505.60
10+08	4,504.82
10+10	4,504.34
10+28	4,505.13
10+52	4,505.27
10+54	4,505.27
10+55	4,505.85
10+59	4,506.00
10+85	4,506.50
10+85	4,515.00

Proposed 3rd Street 1300
Cross Section for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 1300 - 3r
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.010000	ft/ft
Water Surface Elev	4,506.16	ft
Elevation Range	)5.50 to 4,506.14	
Discharge	455.00	cfs



Proposed 3rd Street 1300
Worksheet for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 1300 - 3r
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	010000	ft/ft
Discharg	455.00	cfs

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev	4,506.16	ft
Elevation Range	)5.50 to 4,506.14	
Flow Area	86.0	ft²
Wetted Perimeter	200.18	ft
Top Width	200.00	ft
Actual Depth	0.66	ft
Critical Elevation	4,506.27	ft
Critical Slope	0.004583	ft/ft
Velocity	5.29	ft/s
Velocity Head	0.43	ft
Specific Energy	4,506.59	ft
Froude Number	1.42	
Flow Type	Supercritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.15765029 ft.

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	12+00	0.016

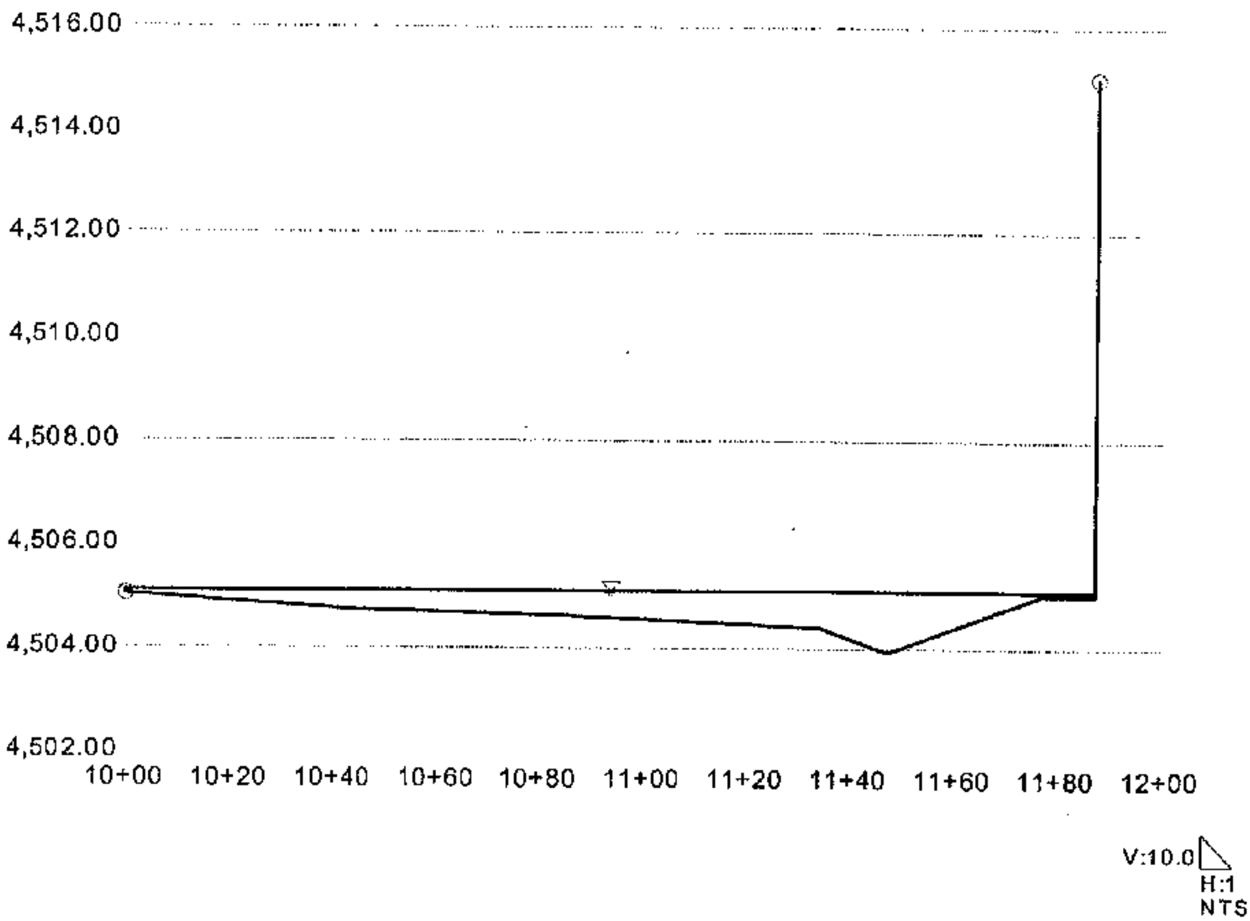
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,506.00
10+50	4,505.80
11+00	4,505.50
11+50	4,505.54
12+00	4,506.14

3rd Street 1250
Cross Section for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 1250 - 3rd ٤
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficie	0.016	
Slope	0.008000	ft/ft
Water Surface Elev	4,505.09	ft
Elevation Range	)3.90 to 4,515.00	
Discharge	455.00	cfs



3rd Street 1250
Worksheet for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 1250 - 3rd ؛
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	008000	ft/ft
Discharg	455.00	cfs

Options	
Current Roughness Methc	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficier	0.016	
Water Surface Elev.	4,505.09	ft
Elevation Range	)3.90 to 4,515.00	
Flow Area	89.6	ft²
Wetted Perimeter	187.21	ft
Top Width	187.00	ft
Actual Depth	1.19	ft
Critical Elevation	4,505.18	ft
Critical Slope	0.004515	ft/ft
Velocity	5.08	ft/s
Velocity Head	0.40	ft
Specific Energy	4,505.49	ft
Froude Number	1.29	
Flow Type	Supercritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.87449815e-1 ft.

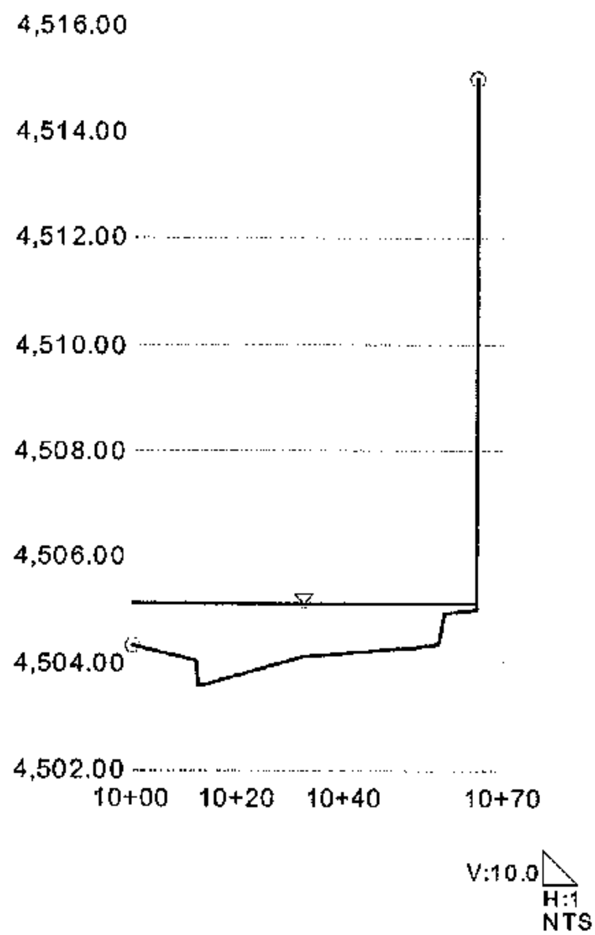
Roughness Segments		
Start Station	End Station	Mannings Coefficient
10+00	11+87	0.016

Natural Channel Points	
Station (ft)	Elevation (ft)
10+00	4,505.00
10+43	4,504.70
10+85	4,504.60
11+34	4,504.40
11+47	4,503.90
11+77	4,505.00
11+87	4,505.00
11+87	4,515.00

Proposed 3rd Street 1200
Cross Section for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 1200 3rd St @ M
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.007000	ft/ft
Water Surface Elev.	4,505.11	ft
Elevation Range	)3.59 to 4,515.00	
Discharge	455.00	cfs



Proposed 3rd Street 1200
Worksheet for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 1200 3rd St @ M
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	007000	ft/ft
Discharg	455.00	cfs

Options	
Current Roughness Meth	oved Lotter's Method
Open Channel Weighting	oved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev	4,505.11	ft
Elevation Range	)3.59 to 4,515.00	
Flow Area	61.5	ft²
Wetted Perimeter	66.23	ft
Top Width	65.00	ft
Actual Depth	1.52	ft
Critical Elevation	4,505.32	ft
Critical Slope	0.003680	ft/ft
Velocity	7.40	ft/s
Velocity Head	0.85	ft
Specific Energy	4,505.96	ft
Froude Number	1.34	
Flow Type	Supercritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.78337978 ft.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
10+00	10+65	0.016

Natural Channel Points	
Station (ft)	Elevation (ft)
10+00	4,504.33
10+12	4,504.03
10+13	4,503.59
10+14	4,503.59
10+32	4,504.10
10+57	4,504.34
10+58	4,504.35
10+59	4,504.93
10+63	4,504.95
10+65	4,505.00

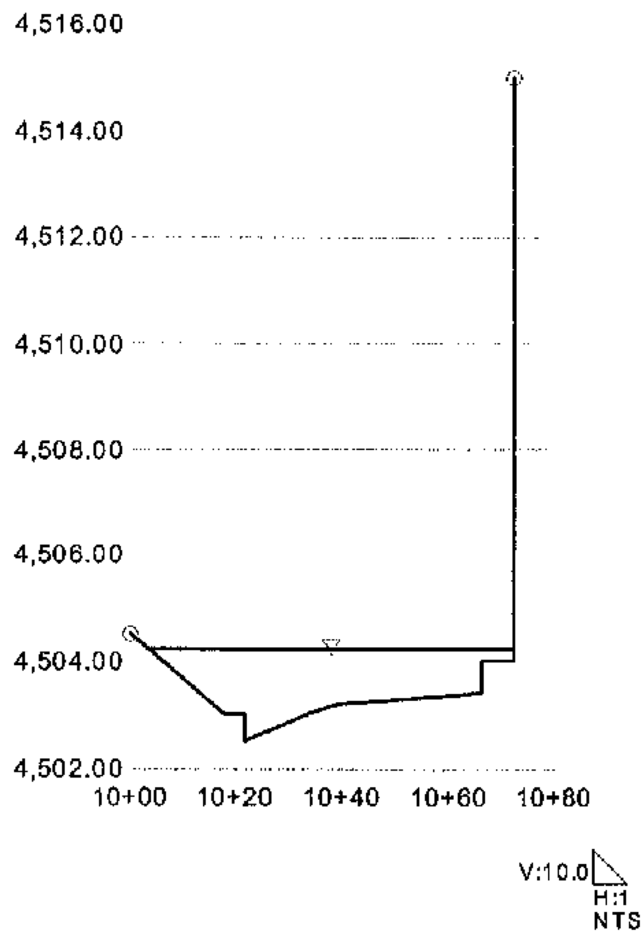
Proposed 3rd Street 1200
Worksheet for Irregular Channel

Natural Channel Points	
Station (ft)	Elevation (ft)
10+65	4,515.00

Proposed 3rd Street 1100
Cross Section for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 1100 - 3rd @ Eldc
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficier	0.016	
Slope	0.007000	ft/ft
Water Surface Elev	4,504.21	ft
Elevation Range	)2.50 to 4,515.00	
Discharge	455.00	cfs



Proposed 3rd Street 1100
Worksheet for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 1100 - 3rd @ Eldc
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	007000	ft/ft
Discharg	455.00	cfs

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev.	4,504.21	ft
Elevation Range	)2.50 to 4,515.00	
Flow Area	62.8	ft²
Wetted Perimeter	69.83	ft
Top Width	68.63	ft
Actual Depth	1.71	ft
Critical Elevation	4,504.42	ft
Critical Slope	0.003727	ft/ft
Velocity	7.24	ft/s
Velocity Head	0.81	ft
Specific Energy	4,505.03	ft
Froude Number	1.33	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	10+72	0.016

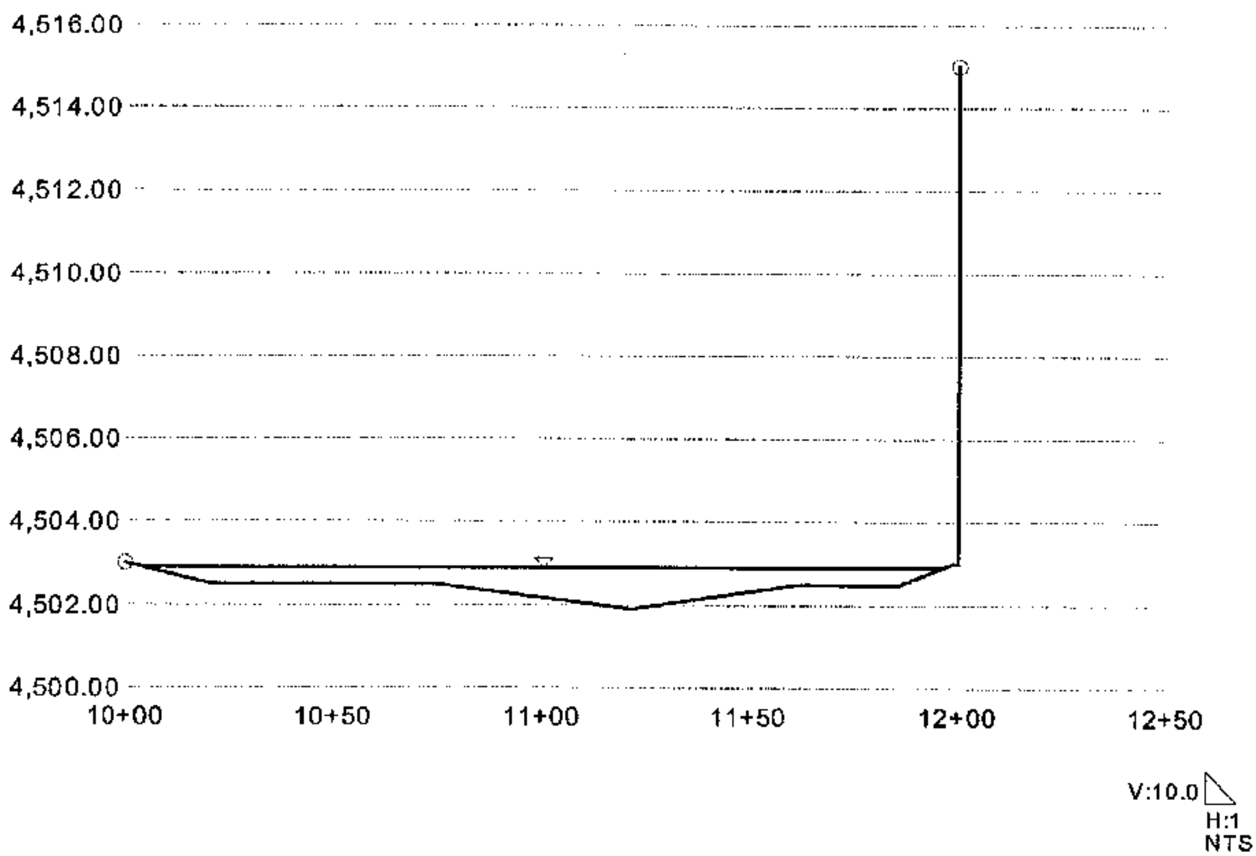
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,504.50
10+18	4,503.00
10+22	4,503.00
10+22	4,502.50
10+33	4,503.00
10+39	4,503.20
10+66	4,503.40
10+66	4,504.00
10+71	4,504.00
10+72	4,504.00
10+72	4,515.00

Proposed 3rd Street 1050
Cross Section for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 1050 - 3rd @
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficie	0.016	
Slope	0.007000	ft/ft
Water Surface Elev	4,502.93	ft
Elevation Range	)1.90 to 4,515.00	
Discharge	527.00	cfs



Proposed 3rd Street 1050
Worksheet for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 1050 - 3rd @
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	007000	ft/ft
Discharg	527.00	cfs

Options	
Current Roughness Methc	)ved Lotter's Method
Open Channel Weighting	)ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficiei	0.016	
Water Surface Elev.	4,502.93	ft
Elevation Range	)1.90 to 4,515.00	
Flow Area	103.3	ft²
Wetted Perimeter	194.27	ft
Top Width	194.25	ft
Actual Depth	1.03	ft
Critical Elevation	4,503.01	ft
Critical Slope	0.004425	ft/ft
Velocity	5.10	ft/s
Velocity Head	0.40	ft
Specific Energy	4,503.33	ft
Froude Number	1.23	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	12+00	0.016

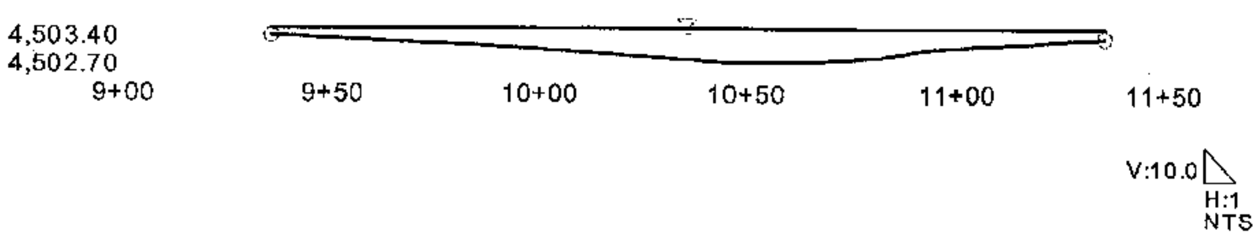
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,503.00
10+21	4,502.50
10+74	4,502.50
11+21	4,501.90
11+61	4,502.50
11+87	4,502.50
11+99	4,503.00
12+00	4,503.00
12+00	4,515.00

Proposed 3rd Street 1000
Cross Section for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 1000 - Sierra Cı
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data		
Mannings Coefficiei	0.016	
Slope	0.007000	ft/ft
Water Surface Elev	4,503.59	ft
Elevation Range	)2.78 to 4,503.40	
Discharge	493.31	cfs



Proposed 3rd Street 1000
Worksheet for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 1000 - Sierra Ci
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	007000	ft/ft
Water Surface Elev.	,503.59	ft

Options	
Current Roughness Methc	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.016	
Elevation Range	)2.78 to 4,503.40	
Discharge	493.31	cfs
Flow Area	100.7	ft²
Wetted Perimetei	201.31	ft
Top Width	200.89	ft
Actual Depth	0.81	ft
Critical Elevation	4,503.66	ft
Critical Slope	0.004510	ft/ft
Velocity	4.90	ft/s
Velocity Head	0.37	ft
Specific Energy	4,503.96	ft
Froude Number	1.22	
Flow Type	Supercritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.23 ft.

Roughness Segments

Start Station	End Station	Mannings Coefficient
9+35	11+36	0.016

Natural Channel Points

Station (ft)	Elevation (ft)
9+35	4,503.40
9+85	4,503.20
10+00	4,503.10
10+33	4,502.86
10+46	4,502.80
10+55	4,502.78
10+71	4,502.82
10+82	4,502.90
10+93	4,503.10
11+07	4,503.19

Proposed 3rd Street 1000
Worksheet for Irregular Channel

Natural Channel Points	
Station (ft)	Elevation (ft)
11+36	4,503.36

Project____________________
Project No.__________________
Sheet No._________of_______
Calculated by______Date______

WEIR FLOW COMPUTATIONS

LOCATION/DESCRIPTION:

CROSS SECTION PARAMETERS: FILENAME: sieropt7.SEC

No. of Cross Section Points: 8 Bed Slope:0.00500 Max Elev.:4503.83
Bank Stations..........Left: 1000.0 Right....: 1078.0 Min Elev.:4503.08
Encroachment Stations..Left: Right....: Weir Coef: 2.600

CROSS SECTION POINTS - Elevations & Stations in feet:

No.	Elev.	Sta.	No.	Elev.	Sta.	No.	Elev.	Sta.
1)	4503.83	1000.00	2)	4503.82	1001.00	3)	4503.75	1011.00
4)	4503.08	1011.01	5)	4503.36	1039.00	6)	4503.08	1066.99
7)	4503.75	1067.00	8)	4503.83	1078.00			

COMPUTED PARAMETERS:

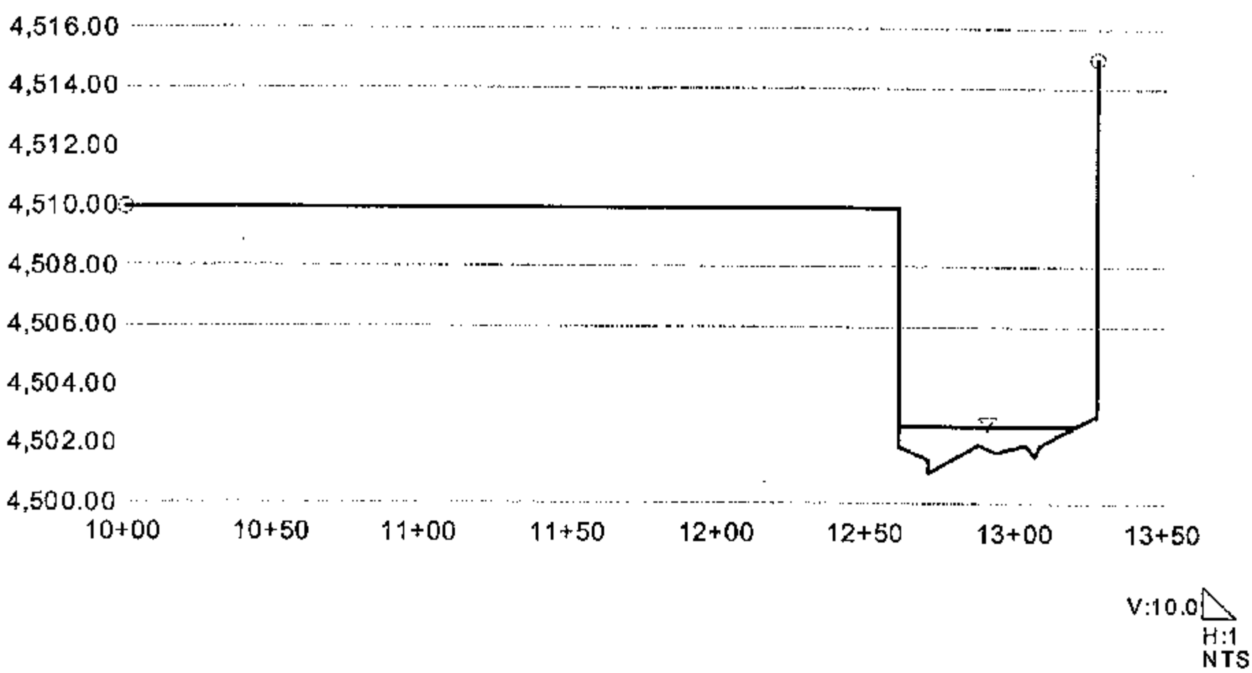
WSEL(ft)	Q(cfs)	H:max(ft)	H:ave(ft)	TW(ft)	A(sf)
4503.59	33.3	0.51	0.37	56.0	20.7

NOTES:

Proposed 3rd Street 900
Cross Section for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 0900 - 3rd and
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.017000	ft/ft
Water Surface Elev.	4,502.61	ft
Elevation Range	)1.00 to 4,515.00	
Discharge	494.00	cfs



Proposed 3rd Street 900
Worksheet for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 0900 - 3rd and
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	017000	ft/ft
Discharg	494.00	cfs

Options	
Current Roughness Methc	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficiei	0.016	
Water Surface Elev.	4,502.61	ft
Elevation Range	)1.00 to 4,515.00	
Flow Area	48.0	ft²
Wetted Perimeter	61.14	ft
Top Width	59.90	ft
Actual Depth	1.61	ft
Critical Elevation	4,503.11	ft
Critical Slope	0.003651	ft/ft
Velocity	10.30	ft/s
Velocity Head	1.65	ft
Specific Energy	4,504.26	ft
Froude Number	2.03	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	13+27	0.016

Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,510.00
10+96	4,510.00
11+42	4,510.00
12+60	4,510.00
12+61	4,501.90
12+65	4,501.70
12+71	4,501.50
12+71	4,501.00
12+87	4,502.00
12+94	4,501.70
13+03	4,502.00
13+06	4,501.60
13+08	4,502.00

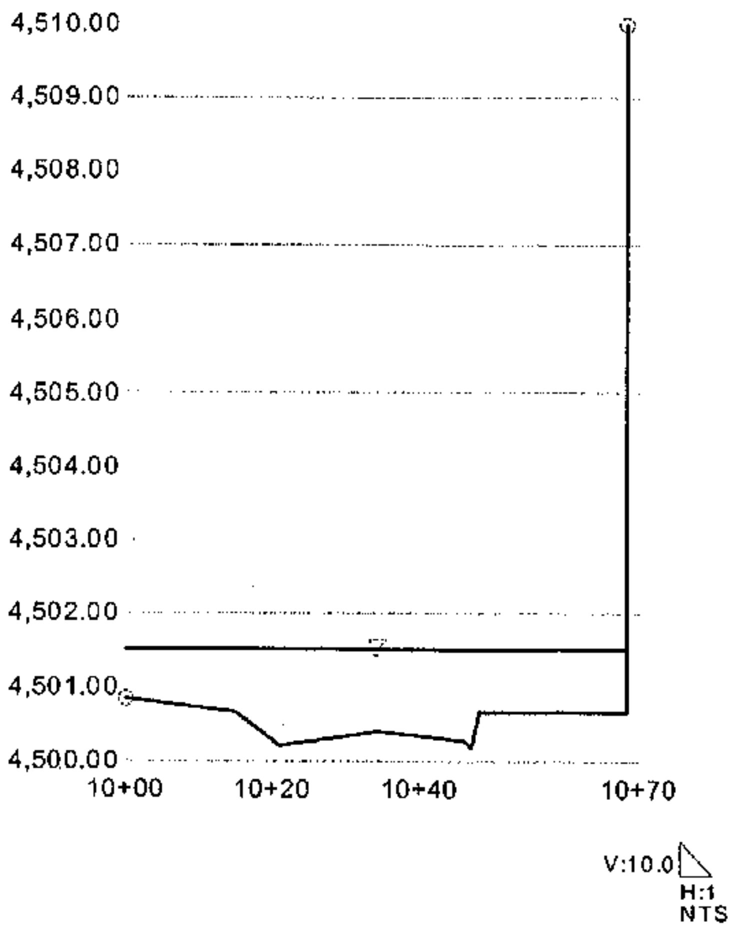
Proposed 3rd Street 900
Worksheet for Irregular Channel

Natural Channel Points	
Station (ft)	Elevation (ft)
13+26	4,502.90
13+27	4,502.90
13+27	4,515.00

Proposed 3rd Street 800
Cross Section for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 0800 - 3r
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.006700	ft/ft
Water Surface Elev.	4,501.50	ft
Elevation Range	)0.17 to 4,510.00	
Discharge	494.00	cfs



Proposed 3rd Street 800
Worksheet for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 0800 - 3r
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	006700	ft/ft
Discharg	494.00	cfs

Options	
Current Roughness Meth	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev.	4,501.50	ft
Elevation Range	)0.17 to 4,510.00	
Flow Area	66.8	ft²
Wetted Perimeter	69.65	ft
Top Width	68.01	ft
Actual Depth	1.33	ft
Critical Elevation	4,501.70	ft
Critical Slope	0.003673	ft/ft
Velocity	7.39	ft/s
Velocity Head	0.85	ft
Specific Energy	4,502.35	ft
Froude Number	1.32	
Flow Type	Supercritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.66359836 ft.

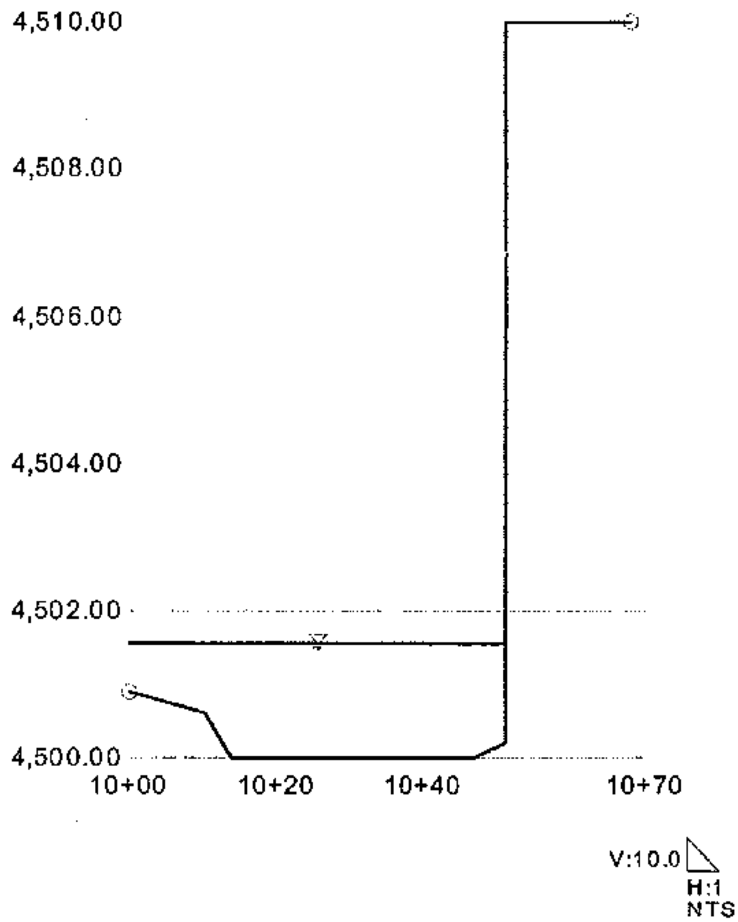
Roughness Segments		
Start Station	End Station	Mannings Coefficient
10+00	10+68	0.016

Natural Channel Points	
Station (ft)	Elevation (ft)
10+00	4,500.84
10+15	4,500.65
10+21	4,500.20
10+22	4,500.23
10+34	4,500.40
10+46	4,500.28
10+47	4,500.17
10+48	4,500.65
10+68	4,500.65
10+68	4,510.00

Proposed 3rd Street 700
Cross Section for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 0700 - 3rd & Virç
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.004000	ft/ft
Water Surface Elev.	4,501.55	ft
Elevation Range	)0.00 to 4,510.00	
Discharge	494.00	cfs



Proposed 3rd Street 700
Worksheet for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 0700 - 3rd & Virç
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	004000	ft/ft
Discharg	494.00	cfs

Options	
Current Roughness Meth	oved Lotter's Method
Open Channel Weighting	oved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficiei	0.016	
Water Surface Elev	4,501.55	ft
Elevation Range	)0.00 to 4,510.00	
Flow Area	70.1	ft²
Wetted Perimeter	53.31	ft
Top Width	51.26	ft
Actual Depth	1.55	ft
Critical Elevation	4,501.61	ft
Critical Slope	0.003504	ft/ft
Velocity	7.05	ft/s
Velocity Head	0.77	ft
Specific Energy	4,502.32	ft
Froude Number	1.06	
Flow Type	Supercritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.64892031 ft.

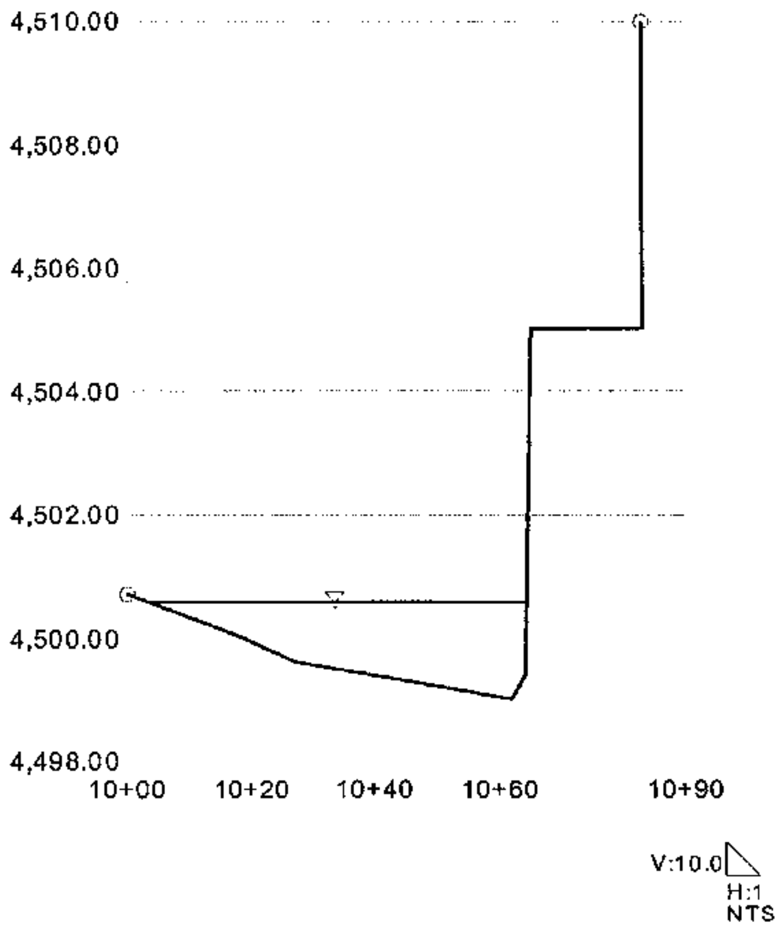
Roughness Segments		
Start Station	End Station	Mannings Coefficient
10+00	10+68	0.016

Natural Channel Points	
Station (ft)	Elevation (ft)
10+00	4,500.90
10+10	4,500.60
10+14	4,500.00
10+47	4,500.00
10+51	4,500.20
10+51	4,510.00
10+68	4,510.00
10+68	4,510.00

Proposed 3rd Street 600
Cross Section for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 0600 -3rd & V
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.010000	ft/ft
Water Surface Elev.	4,500.59	ft
Elevation Range	99.00 to 4,510.00	
Discharge	529.00	cfs



Proposed 3rd Street 600
Worksheet for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 0600 -3rd & V
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	010000	ft/ft
Discharg	529.00	cfs

Options	
Current Roughness Methc	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficiel	0.016	
Water Surface Elev	4,500.59	ft
Elevation Range	39.00 to 4,510.00	
Flow Area	59.0	ft²
Wetted Perimeter	62.24	ft
Top Width	61.18	ft
Actual Depth	1.59	ft
Critical Elevation	4,500.95	ft
Critical Slope	0.003550	ft/ft
Velocity	8.96	ft/s
Velocity Head	1.25	ft
Specific Energy	4,501.83	ft
Froude Number	1.61	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	10+83	0.016

Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,500.70
10+19	4,500.00
10+27	4,499.60
10+62	4,499.00
10+64	4,499.40
10+65	4,505.00
10+83	4,505.00
10+83	4,510.00

Project__________________
Project No.______________
Sheet No.________of________
Calculated by______Date______

WEIR FLOW COMPUTATIONS

LOCATION/DESCRIPTION:

CROSS SECTION PARAMETERS: FILENAME: VIRGOPT8.SEC

No. of Cross Section Points: 7 Bed Slope:0.00500 Max Elev.:4500.48
Bank Stations..........Left: 1000.0 Right....: 1078.0 Min Elev.:4499.73
Encroachment Stations..Left: Right....: Weir Coef: 2.600

CROSS SECTION POINTS - Elevations & Stations in feet:

No.	Elev.	Sta.	No.	Elev.	Sta.	No.	Elev.	Sta.
1)	4500.48	1000.00	2)	4500.39	1017.50	3)	4499.73	1017.51
4)	4499.94	1039.00	5)	4499.73	1060.49	6)	4500.39	1060.50
7)	4500.48	1078.00						

COMPUTED PARAMETERS:

WSEL(ft)	Q(cfs)	H:max(ft)	H:ave(ft)	TW(ft)	A(sf)
4500.76	116.5	1.03	0.66	78.0	51.1
500.77	118.9	1.04	0.67	78.0	51.9
4500.78	121.3	1.05	0.68	78.0	52.7
4500.79	123.8	1.06	0.69	78.0	53.5
4500.80	126.2	1.07	0.70	78.0	54.2
4500.81	128.7	1.08	0.71	78.0	55.0

NOTES:

Project____________________

Project No.________________

Sheet No.________of________

Calculated by______Date______

WEIR FLOW COMPUTATIONS

LOCATION/DESCRIPTION:

CROSS SECTION PARAMETERS: FILENAME: 450.SEC

No. of Cross Section Points: 8 Bed Slope:0.00500 Max Elev.:4510.00

Bank Stations..........Left: 1105.0 Right....: 1289.0 Min Elev.:4499.00

Encroachment Stations..Left: Right....: Weir Coef: 2.900

CROSS SECTION POINTS - Elevations & Stations in feet:

No.	Elev.	Sta.	No.	Elev.	Sta.	No.	Elev.	Sta.
1)	4499.00	1105.00	2)	4499.15	1128.00	3)	4499.00	1152.00
4)	4499.00	1160.00	5)	4510.00	1160.50	6)	4510.00	1271.00
7)	4500.00	1271.50	8)	4500.10	1289.00			

COMPUTED PARAMETERS:

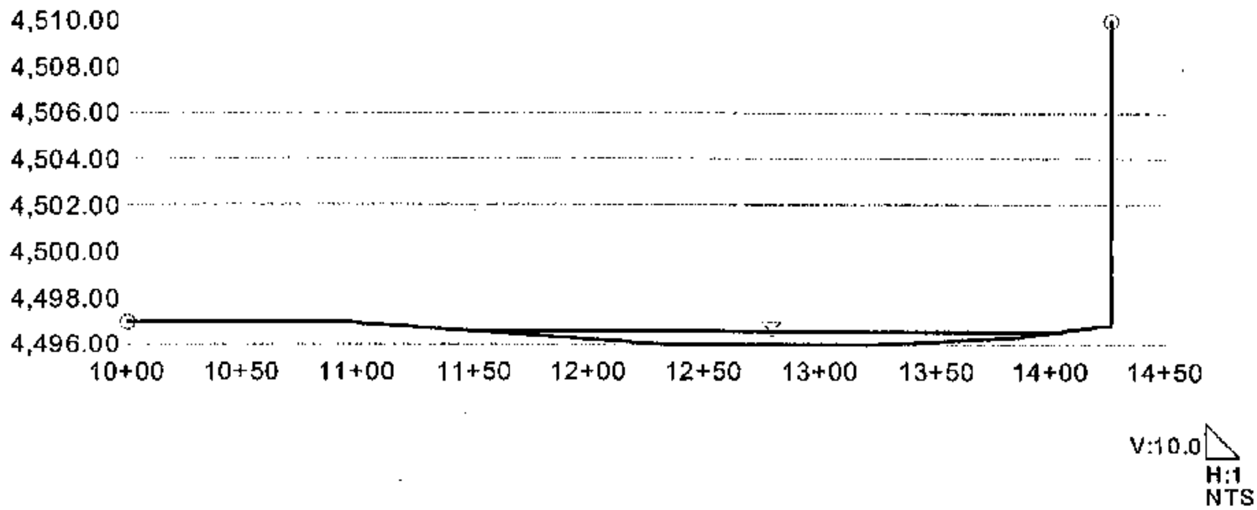
WSEL(ft)	Q(cfs)	H:max(ft)	H:ave(ft)	TW(ft)	A(sf)
4500.76	382.9	1.76	1.46	72.6	105.8
4500.77	386.8	1.77	1.47	72.6	106.5
4500.78	390.5	1.78	1.48	72.6	107.2
4500.79	394.4	1.79	1.49	72.6	108.0
4500.80	398.1	1.80	1.50	72.6	108.7
4500.81	402.0	1.81	1.51	72.6	109.4

NOTES:

Proposed 3rd Street 425
Cross Section for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 0425 - Center ;
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficie	0.016	
Slope	0.005600	ft/ft
Water Surface Elev.	4,496.58	ft
Elevation Range	96.00 to 4,510.00	
Discharge	400.00	cfs



Proposed 3rd Street 425
Worksheet for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 0425 - Center i
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	005600	ft/ft
Discharg	400.00	cfs

Options	
Current Roughness Meth	oved Lotter's Method
Open Channel Weighting	oved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev	4,496.58	ft
Elevation Range	96.00 to 4,510.00	
Flow Area	104.1	ft²
Wetted Perimeter	253.01	ft
Top Width	253.00	ft
Actual Depth	0.58	ft
Critical Elevation	4,496.60	ft
Critical Slope	0.004972	ft/ft
Velocity	3.84	ft/s
Velocity Head	0.23	ft
Specific Energy	4,496.81	ft
Froude Number	1.06	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	14+26	0.016

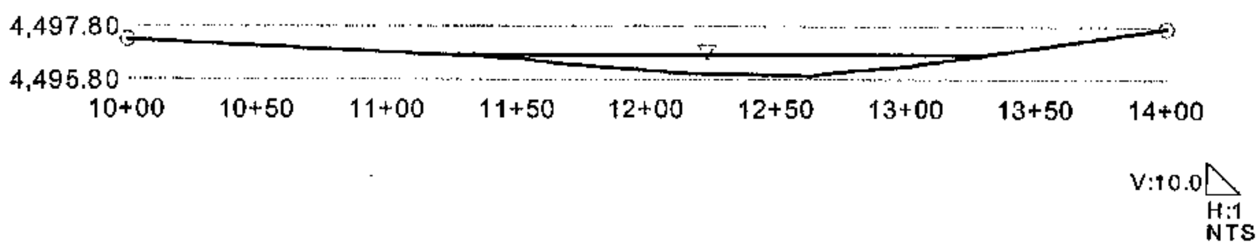
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,497.00
10+92	4,497.00
12+35	4,496.00
13+24	4,496.00
13+85	4,496.30
14+22	4,496.80
14+26	4,496.80
14+26	4,510.00

Proposed Plaza Street 400
Cross Section for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 0400 - Cen
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.005000	ft/ft
Water Surface Elev	4,496.76	ft
Elevation Range	)5.94 to 4,497.77	
Discharge	400.00	cfs



Proposed Plaza Street 400
Worksheet for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 0400 - Cen
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	005000	ft/ft
Discharg	400.00	cfs

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weighting	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev	4,496.76	ft
Elevation Range	95.94 to 4,497.77	
Flow Area	100.7	ft²
Wetted Perimeter	214.26	ft
Top Width	214.25	ft
Actual Depth	0.82	ft
Critical Elevation	4,496.77	ft
Critical Slope	0.004787	ft/ft
Velocity	3.97	ft/s
Velocity Head	0.25	ft
Specific Energy	4,497.01	ft
Froude Number	1.02	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	14+00	0.016

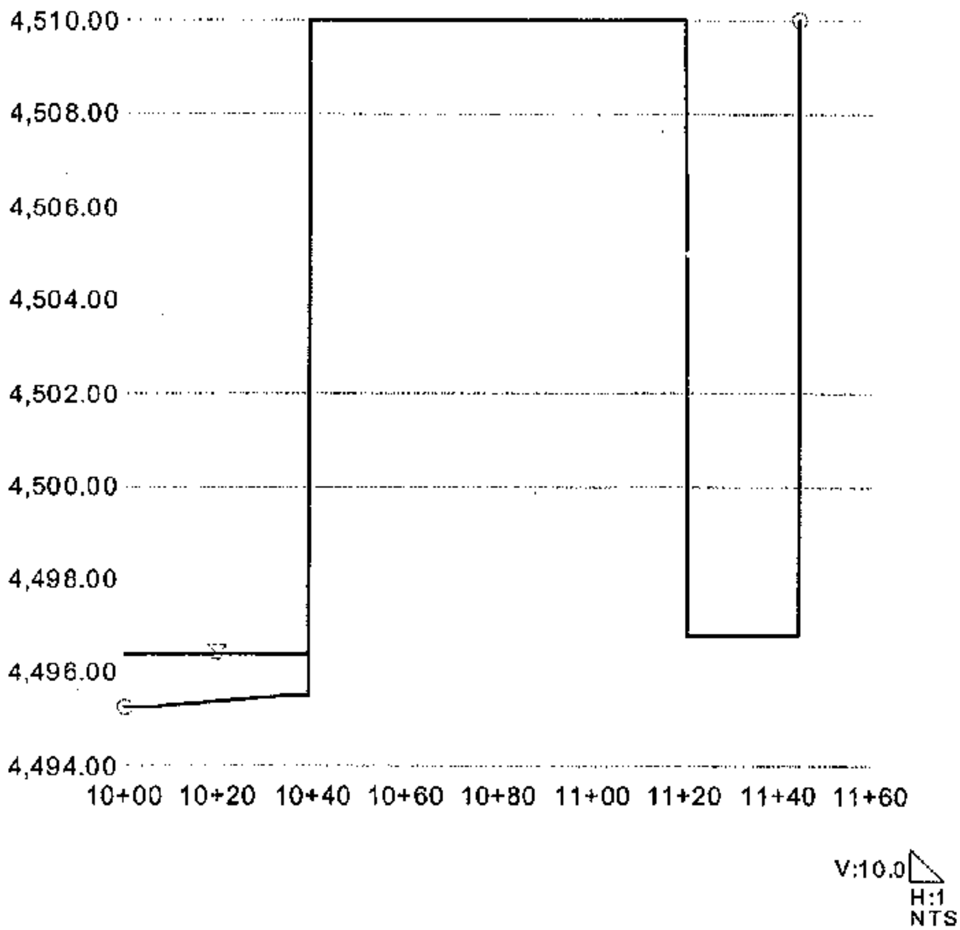
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,497.30
11+51	4,496.60
11+68	4,496.40
12+17	4,496.00
12+63	4,495.94
12+74	4,496.10
13+00	4,496.32
13+50	4,497.06
14+00	4,497.77

Proposed Plaza Street 300
Cross Section for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 0300 - Cent
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.013000	ft/ft
Water Surface Elev.	4,496.37	ft
Elevation Range	95.24 to 4,510.00	
Discharge	400.00	cfs



Proposed Plaza Street 300
Worksheet for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 0300 - Cent
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	013000	ft/ft
Discharg	400.00	cfs

Options	
Current Roughness Methc	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev	4,496.37	ft
Elevation Range	95.24 to 4,510.00	
Flow Area	39.0	ft²
Wetted Perimeter	41.00	ft
Top Width	39.01	ft
Actual Depth	1.13	ft
Critical Elevation	4,496.99	ft
Critical Slope	0.003918	ft/ft
Velocity	10.25	ft/s
Velocity Head	1.63	ft
Specific Energy	4,498.00	ft
Froude Number	1.81	
Flow Type	Supercritical	

Calculation Messages:
Water elevation exceeds lowest end station by 1.13082868 ft.

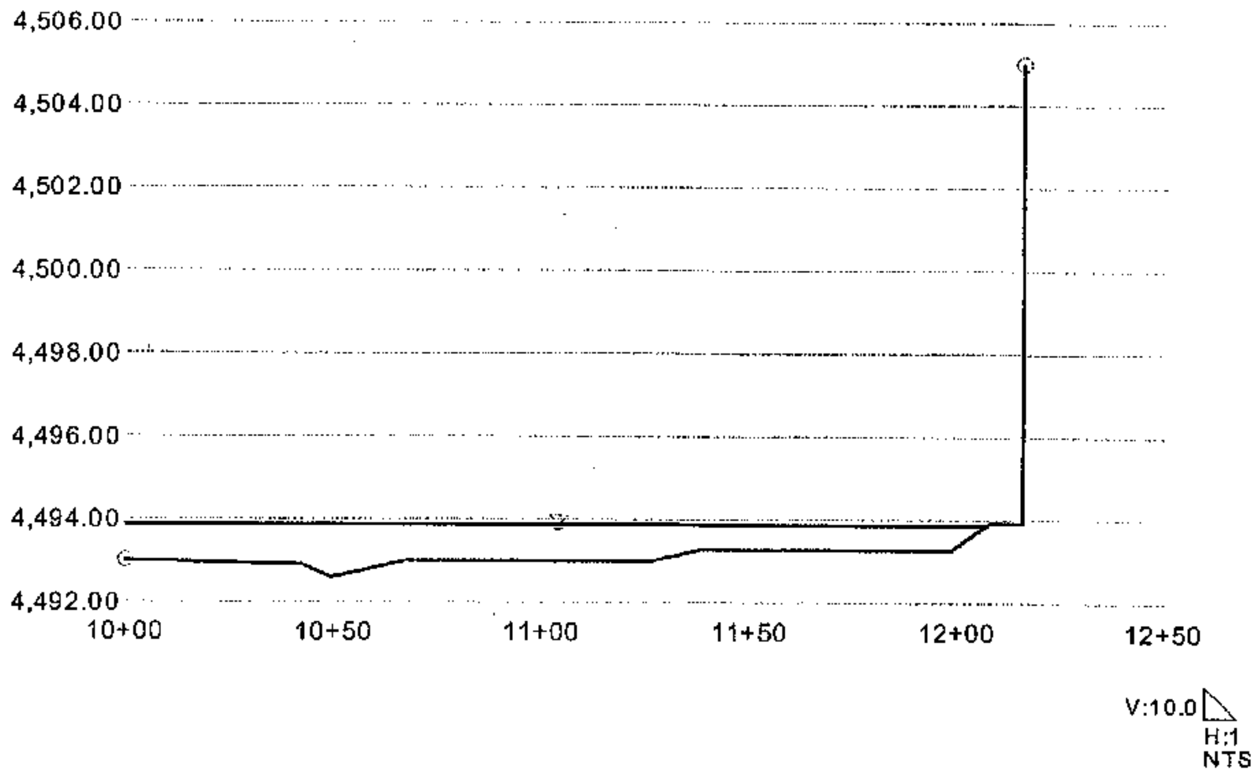
Roughness Segments		
Start Station	End Station	Mannings Coefficient
10+00	11+44	0.016

Natural Channel Points	
Station (ft)	Elevation (ft)
10+00	4,495.24
10+05	4,495.24
10+34	4,495.50
10+39	4,495.50
10+39	4,510.00
11+20	4,510.00
11+20	4,496.80
11+44	4,496.80
11+44	4,510.00

Proposed Plaza Street 250
Cross Section for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 0250 - Lake ê
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.001000	ft/ft
Water Surface Elev.	4,493.86	ft
Elevation Range	32.60 to 4,505.00	
Discharge	400.00	cfs



Proposed Plaza Street 250
Worksheet for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 0250 - Lake {
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	001000	ft/ft
Discharg	400.00	cfs

Options	
Current Roughness Methc	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin;	Horton's Method

Results		
Mannings Coefficiei	0.016	
Water Surface Elev	4,493.86	ft
Elevation Range	32.60 to 4,505.00	
Flow Area	161.4	ft²
Wetted Perimeter	208.34	ft
Top Width	207.44	ft
Actual Depth	1.26	ft
Critical Elevation	4,493.57	ft
Critical Slope	0.004737	ft/ft
Velocity	2.48	ft/s
Velocity Head	0.10	ft
Specific Energy	4,493.96	ft
Froude Number	0.50	
Flow Type	Subcritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.86289858 ft.

Roughness Segments.

Start Station	End Station	Mannings Coefficient
10+00	12+16	0.016

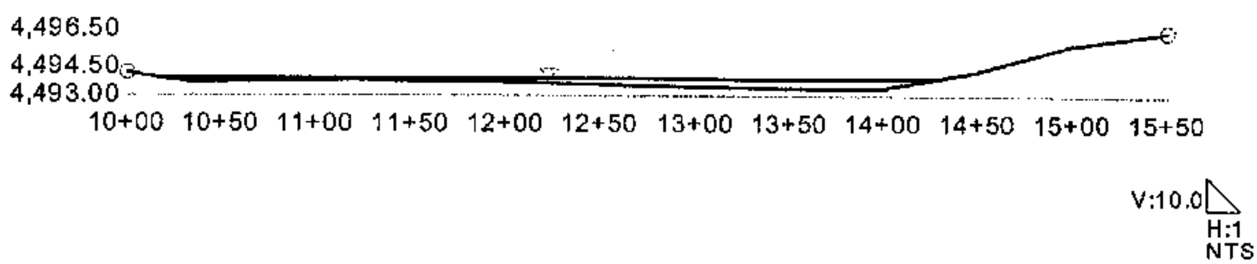
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,493.00
10+42	4,492.90
10+49	4,492.60
10+67	4,493.00
11+26	4,493.00
11+38	4,493.30
11+99	4,493.30
12+08	4,493.90
12+16	4,493.90
12+16	4,505.00

Proposed Plaza Street 200
Cross Section for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 0200 - 3rd & L
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.007000	ft/ft
Water Surface Elev	4,493.92	ft
Elevation Range	›3.40 to 4,496.39	
Discharge	400.00	cfs



Proposed Plaza Street 200
Worksheet for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 0200 - 3rd & L
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	007000	ft/ft
Discharg	400.00	cfs

Options	
Current Roughness Meth	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev.	4,493.92	ft
Elevation Range	33.40 to 4,496.39	
Flow Area	118.3	ft²
Wetted Perimeter	411.79	ft
Top Width	411.78	ft
Actual Depth	0.52	ft
Critical Elevation	4,493.94	ft
Critical Slope	0.005530	ft/ft
Velocity	3.38	ft/s
Velocity Head	0.18	ft
Specific Energy	4,494.09	ft
Froude Number	1.11	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	15+50	0.016

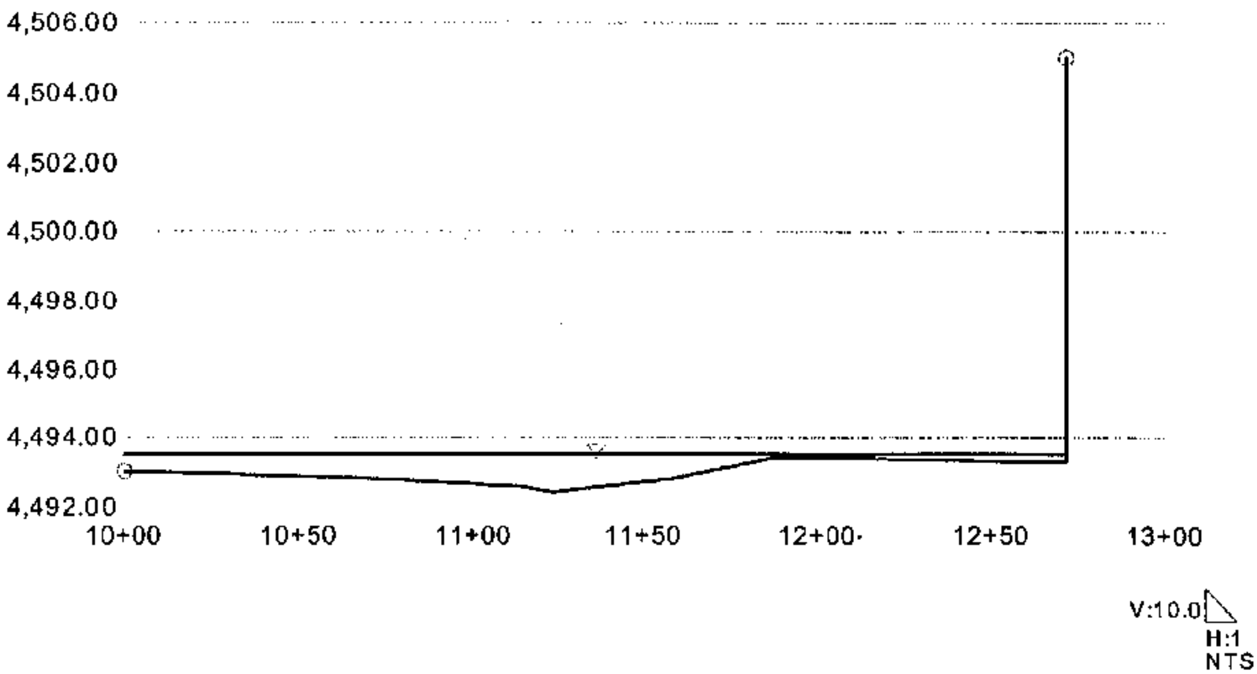
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,494.20
10+11	4,494.00
10+32	4,493.70
11+20	4,493.80
12+06	4,493.70
12+84	4,493.50
13+65	4,493.40
14+00	4,493.40
14+50	4,494.30
15+00	4,495.64
15+50	4,496.39

Proposed Plaza Street 150
Cross Section for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 0150 - Lake &
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.002000	ft/ft
Water Surface Elev.	4,493.52	ft
Elevation Range	)2.40 to 4,505.00	
Discharge	400.00	cfs



Proposed Plaza Street 150
Worksheet for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 0150 - Lake &
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	002000	ft/ft
Discharg	400.00	cfs

Options	
Current Roughness Meth	oved Lotter's Method
Open Channel Weighting	oved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev	4,493.52	ft
Elevation Range	92.40 to 4,505.00	
Flow Area	146.1	ft²
Wetted Perimeter	272.75	ft
Top Width	272.00	ft
Actual Depth	1.12	ft
Critical Elevation	4,493.36	ft
Critical Slope	0.004847	ft/ft
Velocity	2.74	ft/s
Velocity Head	0.12	ft
Specific Energy	4,493.63	ft
Froude Number	0.66	
Flow Type	Subcritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.51801981 ft.

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	12+72	0.016

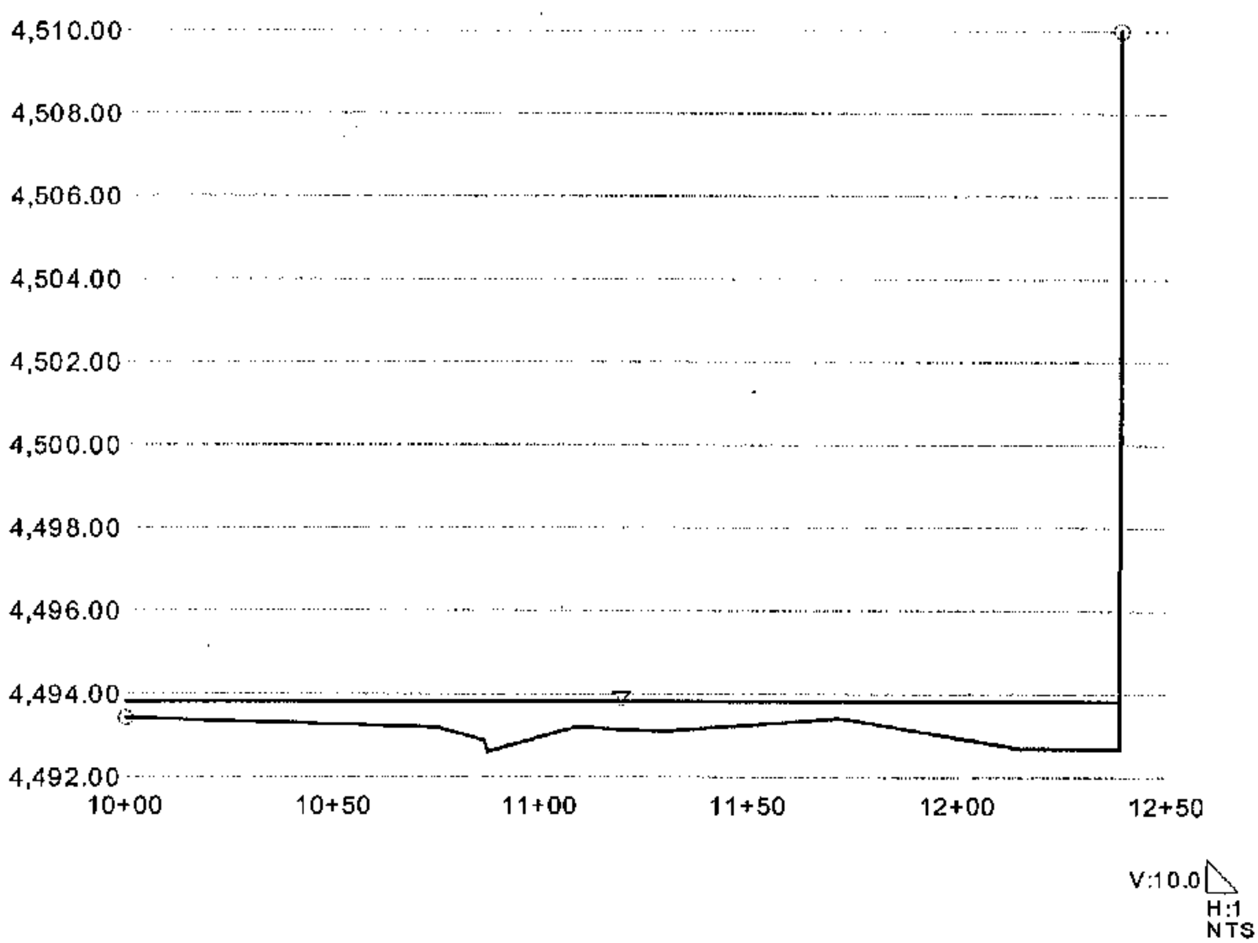
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,493.00
10+72	4,492.80
11+14	4,492.60
11+23	4,492.40
11+58	4,492.80
11+87	4,493.40
12+10	4,493.40
12+59	4,493.30
12+72	4,493.30
12+72	4,505.00

Proposed Plaza Street 100
Cross Section for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 0100 - 3rd & Lake E. (No Cl
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.001000	ft/ft
Water Surface Elev	4,493.84	ft
Elevation Range	92.60 to 4,510.00	
Discharge	400.00	cfs



Proposed Plaza Street 100
Worksheet for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 0100 - 3rd & Lake E. (No Cl
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	001000	ft/ft
Discharg	400.00	cfs

Options	
Current Roughness Methc	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficiei	0.016	
Water Surface Elev.	4,493.84	ft
Elevation Range	32.60 to 4,510.00	
Flow Area	171.0	ft²
Wetted Perimeter	240.65	ft
Top Width	239.01	ft
Actual Depth	1.24	ft
Critical Elevation	4,493.57	ft
Critical Slope	0.004923	ft/ft
Velocity	2.34	ft/s
Velocity Head	0.09	ft
Specific Energy	4,493.92	ft
Froude Number	0.49	
Flow Type	Subcritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.43808923 ft.

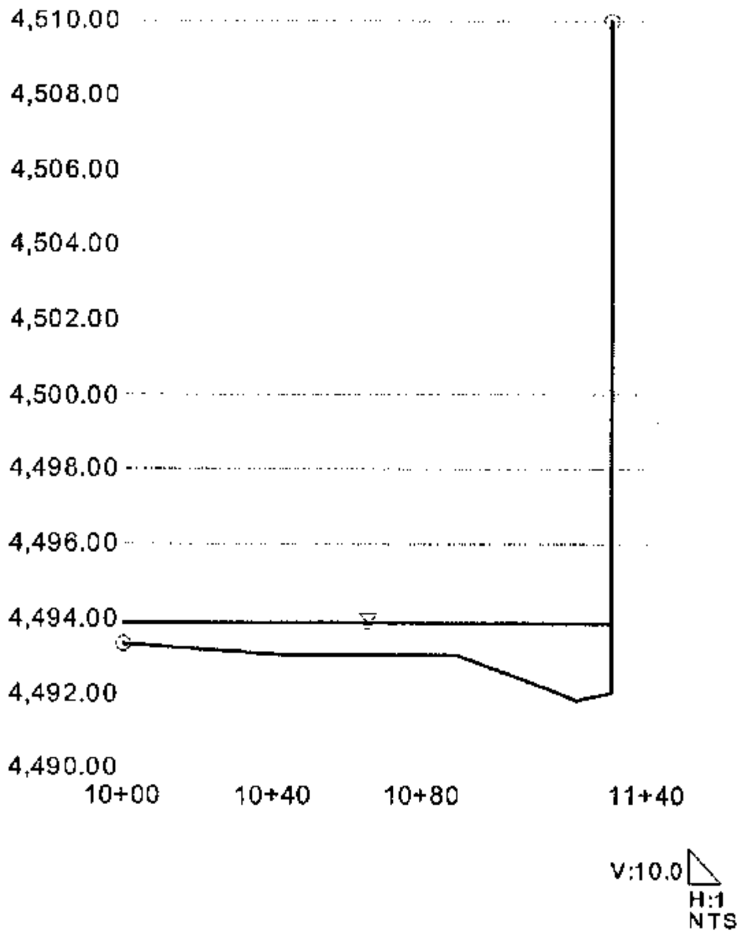
Roughness Segments		
Start Station	End Station	Mannings Coefficient
10+00	12+39	0.016

Natural Channel Points	
Station (ft)	Elevation (ft)
10+00	4,493.40
10+74	4,493.20
10+86	4,492.90
10+87	4,492.60
11+09	4,493.20
11+29	4,493.10
11+72	4,493.40
12+15	4,492.70
12+39	4,492.70
12+39	4,510.00

Proposed Plaza Street 90
Cross Section for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 0090 - Plaza (No Cha
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.001000	ft/ft
Water Surface Elev.	4,493.86	ft
Elevation Range	)1.80 to 4,510.00	
Discharge	400.00	cfs



Proposed Plaza Street 90
Worksheet for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 0090 - Plaza (No Cha
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	001000	ft/ft
Discharg	400.00	cfs

Options	
Current Roughness Methc	›ved Lotter's Method
Open Channel Weighting	›ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficiei	0.016	
Water Surface Elev	4,493.86	ft
Elevation Range	91.80 to 4,510.00	
Flow Area	134.7	ft²
Wetted Perimeter	132.45	ft
Top Width	130.01	ft
Actual Depth	2.06	ft
Critical Elevation	4,493.49	ft
Critical Slope	0.004348	ft/ft
Velocity	2.97	ft/s
Velocity Head	0.14	ft
Specific Energy	4,494.00	ft
Froude Number	0.51	
Flow Type	Subcritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.56447035 ft.

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	11+30	0.016

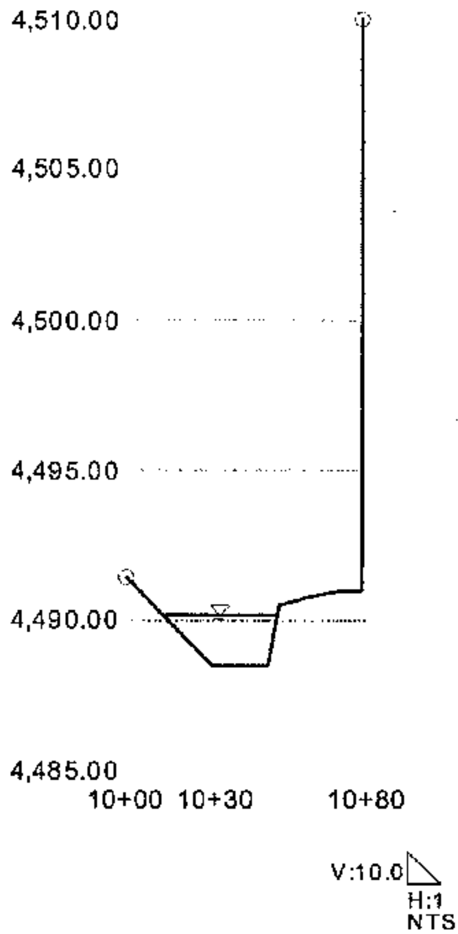
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,493.30
10+44	4,493.00
10+89	4,493.00
11+16	4,492.00
11+21	4,491.80
11+30	4,492.00
11+30	4,510.00

Proposed Plaza Street 80
Cross Section for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 0080 - Plaza (N
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficiei	0.016	
Slope	0.007000	ft/ft
Water Surface Elev.	4,490.14	ft
Elevation Range	38.50 to 4,510.00	
Discharge	400.00	cfs



Proposed Plaza Street 80
Worksheet for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 0080 - Plaza (N
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	007000	ft/ft
Discharg	400.00	cfs

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev	4,490.14	ft
Elevation Range	38.50 to 4,510.00	
Flow Area	45.7	ft²
Wetted Perimeter	38.15	ft
Top Width	37.68	ft
Actual Depth	1.64	ft
Critical Elevation	4,490.48	ft
Critical Slope	0.003381	ft/ft
Velocity	8.76	ft/s
Velocity Head	1.19	ft
Specific Energy	4,491.33	ft
Froude Number	1.40	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	10+78	0.016

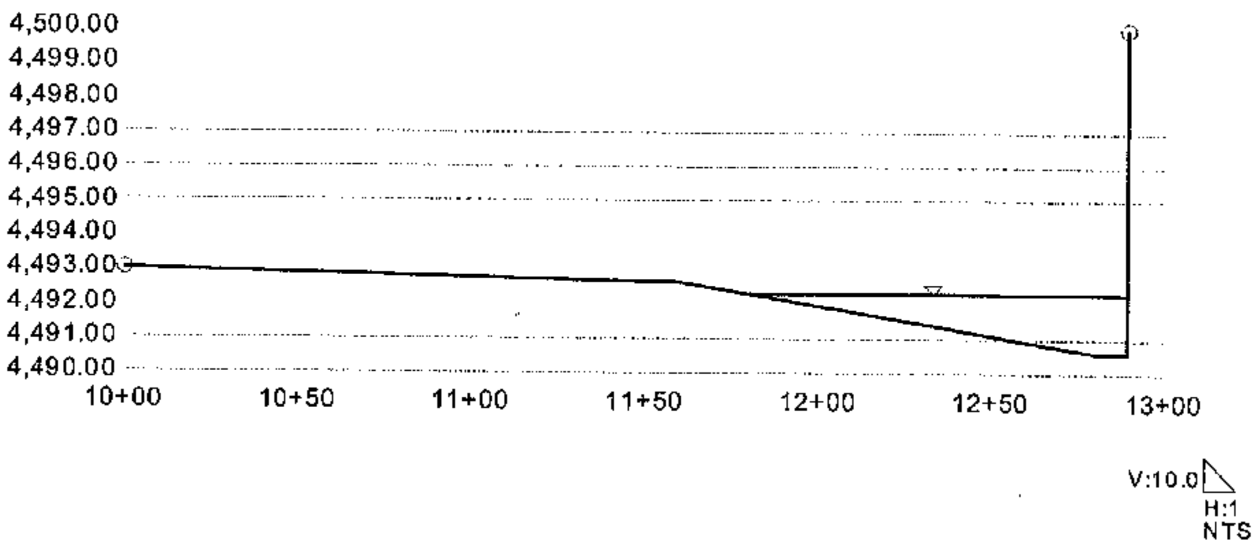
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,491.40
10+29	4,488.50
10+47	4,488.50
10+51	4,490.50
10+63	4,490.80
10+72	4,491.00
10+78	4,491.00
10+78	4,510.00

Proposed 3rd_Street 0070 - Plaza
Cross Section for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 0070
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficie	0.016	
Slope	0.002000	ft/ft
Water Surface Elev	4,492.30	ft
Elevation Range	90.60 to 4,500.00	
Discharge	400.00	cfs



Proposed 3rd_Street 0070 - Plaza
Worksheet for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 0070
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	002000	ft/ft
Discharg	400.00	cfs

Options	
Current Roughness Methc	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev	4,492.30	ft
Elevation Range	90.60 to 4,500.00	
Flow Area	102.7	ft^2
Wetted Perimeter	113.22	ft
Top Width	111.52	ft
Actual Depth	1.70	ft
Critical Elevation	4,492.07	ft
Critical Slope	0.004095	ft/ft
Velocity	3.89	ft/s
Velocity Head	0.24	ft
Specific Energy	4,492.54	ft
Froude Number	0.72	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	12+89	0.016

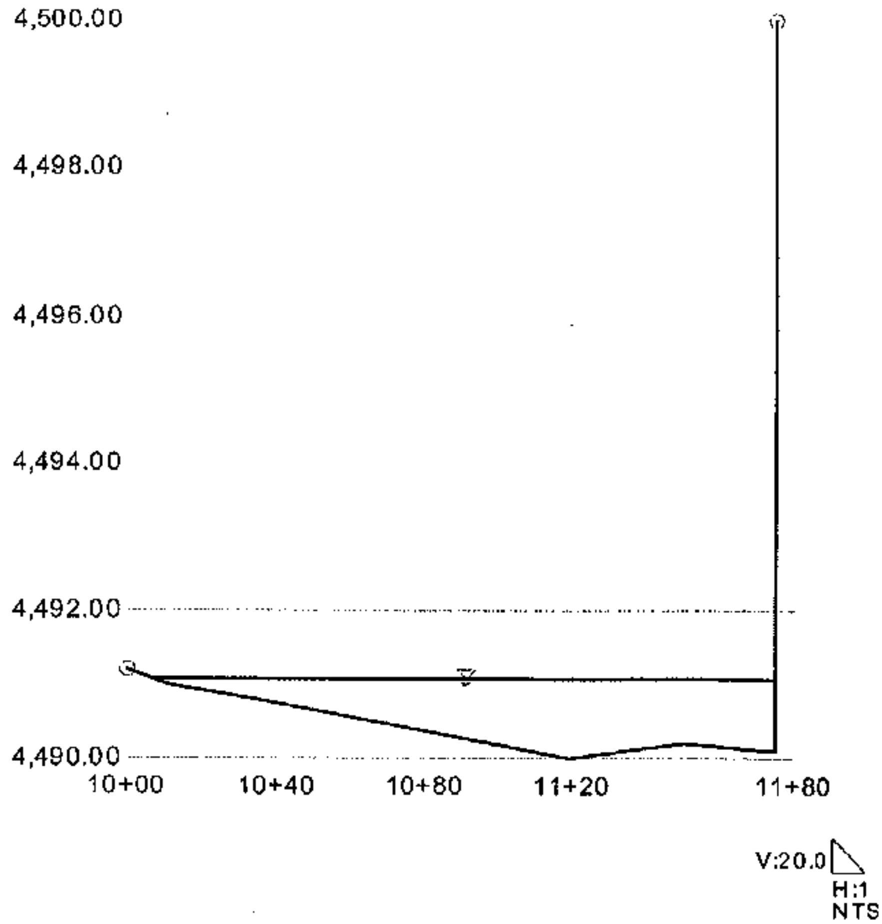
Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,493.00
11+60	4,492.60
11+95	4,492.00
12+56	4,491.00
12+80	4,490.60
12+89	4,490.60
12+89	4,500.00

Proposed 3rd_Street 0060 - Plaza
Cross Section for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 0060
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficie	0.016	
Slope	0.002500	ft/ft
Water Surface Elev	4,491.06	ft
Elevation Range	90.00 to 4,500.00	
Discharge	400.00	cfs



Proposed 3rd_Street 0060 - Plaza
Worksheet for Irregular Channel

Project Description	
Worksheet	Proposed 3rd_Street 0060
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	002500	ft/ft
Discharg	400.00	cfs

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.016	
Water Surface Elev	4,491.06	ft
Elevation Range	90.00 to 4,500.00	
Flow Area	112.7	ft²
Wetted Perimeter	168.82	ft
Top Width	167.86	ft
Actual Depth	1.06	ft
Critical Elevation	4,490.94	ft
Critical Slope	0.004487	ft/ft
Velocity	3.55	ft/s
Velocity Head	0.20	ft
Specific Energy	4,491.26	ft
Froude Number	0.76	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+00	11+75	0.016

Natural Channel Points

Station (ft)	Elevation (ft)
10+00	4,491.20
10+11	4,491.00
10+35	4,490.80
11+19	4,490.00
11+50	4,490.20
11+73	4,490.10
11+75	4,490.10
11+75	4,500.00