RANCHO MURIETA NORTH
INFRASTRUCTURE MASTER PLAN

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AS REPORTED TO THE RMCSD
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I- EXECUTIVE SUMMARY

A- INTRODUCTION

Rancho Murieta is a community located along the eastern border of Sacramento County. The community encompasses 3,500 acres or about five and a half square miles. Land uses included in the approved master plan call for residential development on 1,920 acres of single-family residences, townhouses, apartments, and mobile homes for a total of 5,189 units. Current estimates indicate Rancho Murieta has 2,000 households with a population of over 4,500 persons.

Water, wastewater and storm drainage services for the community are provided by Rancho Murieta Community Services District (CSD), which was formed in 1982.

For the purposes of this report, it is assumed that Murieta Holdings, G.P., by itself and/or in cooperation with other production and custom homebuilders, intends to develop the remaining undeveloped lands at Rancho Murieta (North). These undeveloped lands, to be developed at reduced densities from those shown on the County approved PUD, include:

- The Crest and Greens subdivisions within Rancho Murieta South
- Murieta Hills (the lands laying northerly of Escuela Drive and westerly of Unit 4 – formerly know as Unit 5)
- The Retreats (Retreats West - the lands located northerly of the existing driving range; Retreats East – the lands between Fairways 1 & 9 and westerly of Unit 6; and Retreats North – the lands located between Fairways 9 & 18 and westerly of Unit 6)
- The Terrace (the lands located northerly of Unit 6 and Fairways 6, 7, & 8, southerly of Murieta Parkway and westerly of Unit 3A)
- The Highlands (the lands located easterly of Bass Lake, westerly of Lake Clementia and southerly of Unit 3A)
- The Estates at Lake Clementia (the lands located easterly and northerly of Lake Clementia)
- The Estates at Lake Chesbro (the lands located northeasterly of Lake Chesbro)
- The Estates at Lake Calero (the lands located northerly of Unit 4 and Lake Chesbro surrounding Lake Calero)
- The 52-acre commercial site south of Murieta Drive and east of Jackson Road.

Others are planning to develop the two remaining undeveloped parcels within Rancho Murieta North (the Villas site and the Escuela school site).

The following table lists the County approved PUD vs. the reduced densities used in the master plans.

Unit	Gross Density per Approved PUD	Proposed Gross Density
The Residence of Murieta Hills	2.3 DU/AC	1.7 DU/AC
The Estates at Lake Calero	2.0 DU/AC	0.5 DU/AC
The Estates at Lake Chesbro	1.8 DU/AC	0.9 DU/AC
The Estates at Lake Clementia	1.8 DU/AC	0.6 DU/AC
The Highlands	2.0 DU/AC	1.6 DU/AC
The Terrace	2.8 DU/AC	2.4 DU/AC
River Canyon Estates	0.9 DU/AC	0.7 DU/AC
The Retreat (West)	25 DU/AC	3.7 DU/AC
The Retreat (North)	25 DU/AC	3.6 DU/AC
The Retreat (East)	10 DU/AC	3.6 DU/AC

Infrastructure for the remaining undeveloped parcels in Rancho Murieta South has been identified. This report focuses on improvements required to develop the remaining parcels in Rancho Murieta North.

Accordingly, the purpose of this report is to

- Identify the water, sewer and drainage infrastructure necessary to build out the remaining developable lands within the Rancho Murieta North,
- Evaluate the ability existing facilities to accommodate the proposed development
- Develop an estimate of the probable magnitude of cost for the proposed improvements.

While impacts to existing infrastructure were evaluated, impacts to treatment facility, water supply and the reclamation system were not within the scope of the report.

B- SUMMARY OF FINDINGS

The proposed improvements included water, sewer and drainage improvements totaling approximately $ 9.1 million in construction cost. This is approximately $13.7 million in project cost. Exhibits showing the locations of these facilities are locate in the appendix of this report.

A preliminary estimate of the magnitude of infrastructure cost was prepared for each facility and is summarized in Table 1. A 20% construction contingency was included to account for the general scope of items listed. A 20% project contingency was included for uncertainty in the scope of the project development. An approximate value of 30% was included for plan checking, engineering, inspection and construction surveying.

TABLE 1 : PRELIMINARY ESTIMATE OF THE MAGNITUDE OF COST

Items			Cost
Sewer Infrastructure Costs			$2,305,000
Water Infrastructure Costs			$2,739,000
Drainage Infrastructure Costs			$2,781,000
		Construction Sub total	$7,825,000
	20%	Construction Contingency	$1,565,000
		Construction Cost Estimate	$9,390,000
	20%	Project Contingency	$1,878,000
	5%	Plan Checking	$469,500
	15%	Engineering	$1,408,500
	5%	Inspection	$469,500
	5%	Construction Staking	$469,500
		Project Cost Estimate	$14,090,000

II- INFRASTRUCTURE ELEMENTS

The three elements of this master plan include water, sewer and drainage improvements. An estimate of the probable magnitude of cost estimate was prepared for the proposed infrastructure improvements. Phasing of improvements are identified where appropriate.

Developable areas are approximated for each development. Undevelopable areas included areas that are environmentally sensitive, areas within 100-year flood plains, or on terrain difficult to build. Preliminary alignments for the infrastructure corridors (usually proposed roads) are identified.

A- WATER

The following section describes the proposed water infrastructure improvements. It addresses the methodology, an evaluation of the existing system, the proposed transmission system and the magnitude of water infrastructure costs.

The District gets it drinking water from the Cosumnes River. Water is stored in three reservoirs within the community and treated at the water treatment plant located at the north end of Lake Clementia. The District supplies water to their customers using two separate water systems. One area is served by a gravity system using two storage reservoirs. This gravity system supplies water to services below the elevation of 220'. A hydro-pneumatic tank is used to provide increased pressure to the system that services customers above an elevation of 220'. Exhibit 1 identifies the extent of the two systems.

Methodology

For this master plan, a computer-based model was developed for the hydro-pneumatic system. The model analyzed the existing condition with and without the proposed developments. The models were used to evaluate:

- The affect of the current criteria on the existing system.
- The affect on the proposed developments.
- The sizing of the proposed water infrastructure.

The systems were modeled using Average Daily Flow (ADF), Max Day plus Fire Flow (MD+FF), and Peak Hourly Flows (PH) conditions. The systems performance was evaluated using the District's criteria for each of these conditions.

District records, previous reports and as-builts were used to obtain existing system information including pipe sizes, location, and material, reservoir and pump characteristics, and elevations of existing system facilities.

Demands were estimated using the District standard consumption rates for different land uses and lot size. The developer's planning documents were used to determine future demands. A listing of demands used can be found in the appendix.

Criteria

The District's standards include the following guidelines:

- ADF pressures should be between 40 pounds per square inch (psi) and 125 psi.
- PH pressures should be greater than 30 psi.
- MD+FF pressures should be greater than 20 psi.
- PH and MD+FF velocities shall be less than 7.5 feet per second (fps)
- Blow-off valves are to be installed at the end of dead end runs such as cul-de-sacs.

The ADF demand is estimated using the District standard consumption rates for different land uses and lot size. Other demand rates are derived with the following peaking factors applied to the ADF value:

- Max Day flows apply a peaking factor of 2.2
- Peak Hour flows apply a peaking factor of 4.4 (2*MD=4.4).

Fire flow criteria as defined by the American River Fire Protection District requires the following demands:

Dwelling Size (sf)	Fire Flow (gpm)
≤ 3,600	1,000
3,601 – 4,800	1,750
4,801 – 6,200	2000
> 6,200	2,500

The existing developments within Rancho Murieta are modeled with a 1750gpm fire flow. Two exceptions are first at the northern end of Lake Chesbro (node J-1-EX) where dwelling sizes require a 2000gpm fire flow rate and at the east end of Unit 6 where the size of an existing structure exceeds 7000 SF (2,500gpm)

Generally existing 8" pipes will accommodate an MD+1750gpm fire flow and existing 10" pipes will accommodate a MD+2000gpm fire flow and greater based on velocity requirements.

Fire flows to the proposed developments are modeled as follows:

- The Estates at Murieta Hills is modeled with 1,750gpm fire flow.
- Numerous dwellings at the Estates at Lake Calero will exceed 6,200sf thereby requiring the model to reflect a fire flow of 2500gpm in this area.
- A fire flow of 2,000gpm is modeled at all other proposed development locations.

Only the main looped pipes were modeled. Demand nodes were placed at intersections and key location along a pipe such as a low or high point in the system. The demand for each lot was accounted for at the closest node. The model system layout and a listing of the system configuration can be found in the appendix.

All pipes in the existing systems are asbestos cement pipes (C-value = 135), while all proposed pipes are PVC (C-value = 135).

Analysis

The existing hydro-pneumatic system (Units 3 & 4) was modeled with an elevated tank to simulate the performance of the hydro-pneumatic tank. The existing hydro-pneumatic tank adds approximately 138' min to 185' max of head to the base 300-foot elevation at the tank. This range corresponds to the existing start/stop pump operation settings at 60psi to 80psi. The maximum operating head for the hydro-pneumatic tank is 288' based on original system specifications. The 300-foot base elevation was obtained from a topographic map of the area.

The existing pump provides 60psi (138' head) at 3200gpm flow rate. See existing pump characteristic curve in appendix. The water system models conservatively set the simulated elevated tank at 138' above the base elevation for all existing flow scenarios regardless of higher head values at lower pump flows. This worst-case conservative assumption will assure that all flow scenarios will maintain the minimum adequacy for the system.

Once a working model of the existing system was complete, additions to the physical system were considered for The Residences of Murieta Hills, and eventually for the system at build-out as well.

At flow rates greater than 3200gpm the model is also set at the worst case scenario of 138' head. It is expected that the existing pump system will be improved as needed to maintain existing pressure requirements as flow demands approach 3200gpm.

Each pipe is numbered (P-#), and the junction of two or more pipes is numbered (J-#). Additionally, a suffix is added to the pipe/junction ID to indicate whether it is a portion of the existing system (-EX), the Murieta Hills system (-MH), or the system at build out (-XX). An initial minimum size of 8 inches was set for all proposed pipes then incrementally changed to larger sizes as needed to accommodate the minimum District's standards.

The gravity system was originally designed to accommodate ultimate build-out flows and was not modeled within this master plan.

Results of the Models

Hydro-pneumatic System

The model demonstrates that the existing hydro-pneumatic pump system has the capacity to accommodate the demand of the Murieta Hills development with adequate system pressures. The peak discharge with Murieta Hills (fire flow + MD) is 2,886gpm. Although the existing hydro-pneumatic system is adequate, improvements to the existing pump system is recommended to reduce the existing start/stop cycling of the existing pumps.

A small portion of the Murieta Hills development will encompass elevations below 220'. This area will need pressure-reducing devices placed at individual residences to avoid excessive pressure problems.

At full build out the highest demand of 4,024gpm will be during max day with a 2,500gpm fire flow.

Since the existing pumping system can only accommodate 3,200gpm at 138 feet of head, the existing pump system is not adequate to accommodate the required 4,024gpm flow at full build-out. Existing pumps can be enhanced with the addition of booster/jockey pumps. These new smaller pumps would become the primary pumps to accommodate lower daily flow rates. The existing larger pumps would then assist with the higher fire and peak hour flow rates.

The proposed size of the water main loop at Calero Lake was determined to consist of a combination of 12" and 10" diameter pipes. This loop is the most critical in the system due to the higher elevations and higher 2,500gpm required fire demand. The application of smaller pipe sizes for this loop produces excessive friction losses and cannot accommodate the pressure requirements.

The models verify that the existing residential development on the hydro-pneumatic system meets the District's standards with build-out. The model also shows the proposed infrastructure for the hydro-pneumatic system is sized to meet the District's standards.

The existing upper portion of Unit 6 currently has reports of low pressure at existing residences. It is proposed to connect this gravity system to the hydro-pneumatic system when the upper portion of the Terrace and the River Canyons are developed. An additional gravity transmission line will be required within the Review Canyons projects to accommodate the conversion.

The ultimate build-out model requires the installation of a secondary supply pipe to be routed between the existing pumping facility and the existing pipe network. This pipe will not need to be installed until the last phases of development occurs and velocities begin to exceed 7.5fps in the existing 14" supply pipe P-9-EX. Without this additional pipe, the existing supply pipe will exceed velocities of 8.5fps during a fire scenario.

The following table identifies the minimum pressure values in the full build-out hydro-pneumatic system at different flow scenarios:

TABLE OF MINIMUM PRESSURES AT FULL BUILD-OUT

Scenario	Node of Min Pressure	Pressure (psi)
Avg Day	J-258-CC	43.0
Peak Hour	J-258-CC	39.0
Max Day	J-258-CC	42.0
MD + FF @ J-1-Ex	J-258-CC	36.1
MD + FF @ J-122-MH	J-258-CC	37.5
MD + FF @ J-204-THRC	J-258-CC	37.4
MD + FF @ J-258-CC	J-258-CC	20.9
MD + FF @ J-303-CL	J-258-CC	37.2

Gravity System w/build out

Improvements to the existing gravity system include:

- The installation of an 8" pipe to serve a small portion of the Terrace development that is located below the 220' elevation.
- The Retreats development will trigger the installation of a previously identified 12" line.
- The River Canyon Estates development will trigger the installation of 16" main in combination with the conversion of existing Unit-6 gravity system to hydro-pneumatic system.

The models show that the existing residential development on the gravity system meets the District's standards at build out of the north. The model also shows the proposed infrastructure for the gravity system is sized to meet the District's standards.

Cost Estimate

A preliminary estimate of the magnitude of water infrastructure cost was prepared and is shown in Table 2. A 20% construction contingency was included to account for the general scope of items listed. A 20% project contingency was included for uncertainty in the scope of the project development. Approximately 30% was included for plan checking, engineering, inspection and construction surveying.

This cost estimate did not account for items associated with environmental clearance (if required).

TABLE 2 : PRELIMINARY ESTIMATE OF THE MAGNITUDE OF WATER COST

Water Infrastructure

Items	Quantity	Unit	Unit Price		Cost
Water Main, 8"	23,082	LF	$35		$807,870
Water Main, 10"	27,070	LF	$40		$1,082,800
Water Main, 12"	6,207	LF	$50		$310,350
Water Main, 14"	1443	LF	$60		$86,580
Water Main, 18"	1730	LF	$80		$138400
Valve, 8" Gate	30	Ea	$900		$27,000
Valve, 10" Gate	37	Ea	$1,100		$40,700
Valve, 12" Gate	10	Ea	$2,000		$20,000
Valve, 14" Butterfly	3	Ea	$2,500		$7,500
Valve, 18" Butterfly	3	Ea	$3,750		$11,250
2" Blowoff Valve	5	LS	$2,200		$11,000
Air Release Valve	5	LS	$2,500		$12,500
Pump Station Improvements	1	LS	$225,000		$225,000
				Construction Sub total	$2,780,950
	20%			Construction Contingency	$556,190
				Construction Cost Estimate	$3,337,140
	20%			Project Contingency	$667,428
	5%			Plan Checking	$166,857
	15%			Engineering	$500,571
	5%			Inspection	$166,857
	5%			Construction Staking	$166,857
				Project Cost Estimate	$5,005,710

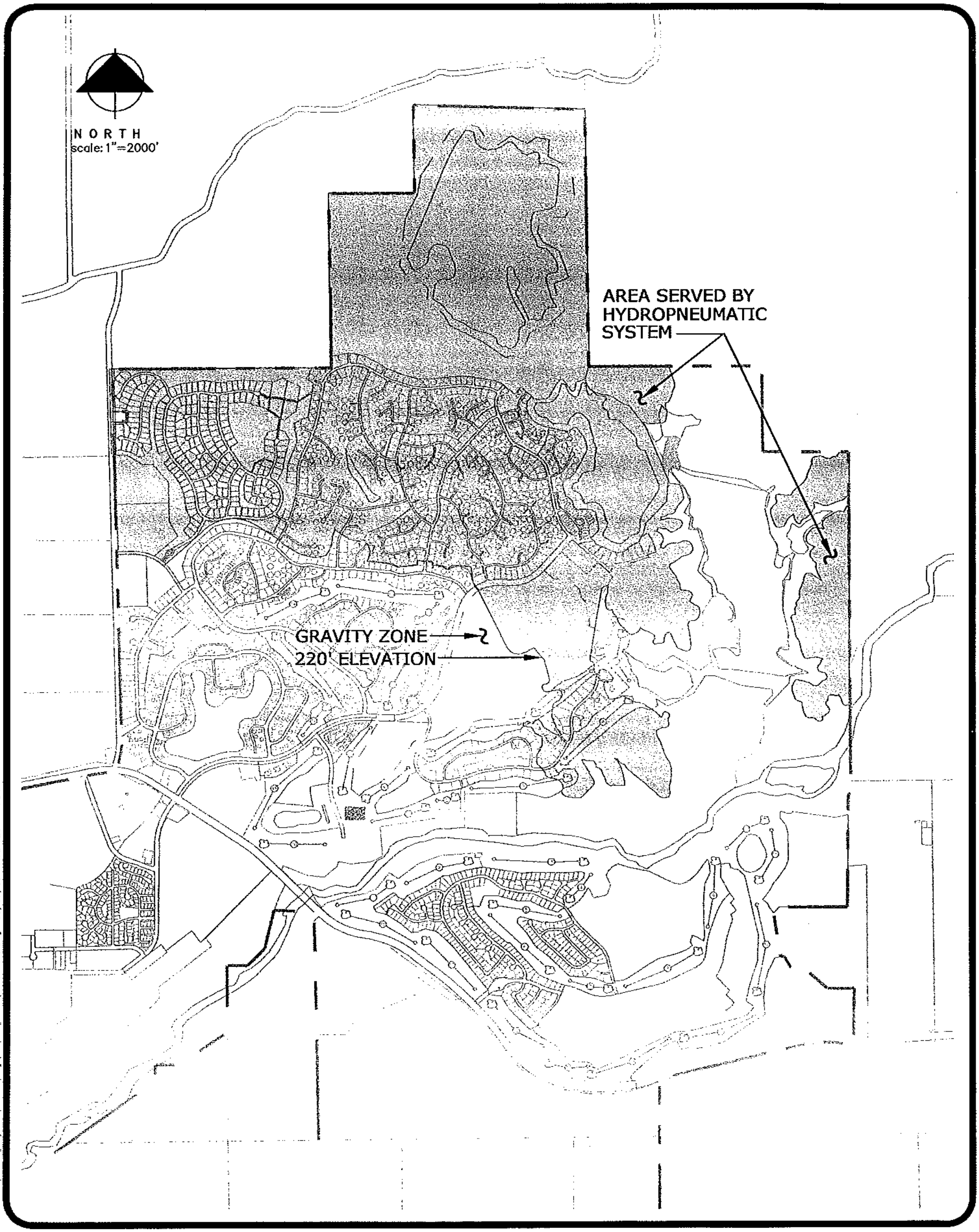

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Exhibit 1
220' Elevation Level

Rancho Murieta North
Infrastructure Master Plan

B- SEWER

The following section describes the proposed sewer infrastructure improvements. It addresses the methodology, proposed collection system, associated lift stations, the magnitude of sewer infrastructure costs and phasing of improvements.

Methodology

In general, the methodology used to identify the proposed sewer infrastructure utilized the design criteria described in the District Standards. The County of Sacramento's criteria were used where the District standards did not address a criterion.

The sewer system was separated into three main sewer service areas designated as A, B & C. Each service area was divided into sub-areas. The boundary of many of the sub-areas was collinear with the entire boundary of the developable areas for the proposed developments. Accordingly, the number of dwelling units for those sub-areas was the same as the development. However, some of the sub-areas included portions of two or three developments. The number of dwelling units for the developments was distributed to the sub-areas proportionally by area. Exhibit 2 shows the sub-areas.

Average Dry Weather Flows (ADWF) for each service sub-area were determined by multiplying the number of dwelling units by 350 gallons per day per dwelling unit (GPD/DU). Average Dry Weather Flows were used to calculate Peak Dry Weather Flows (PDWF) and Peak Wet Weather Flows (PWWF).

The District and County of Sacramento use different methods for calculating peak flows. The District uses a peaking factor of four and does not specify criteria for calculating inflow and infiltration (I/I) flows. However, historically, the District's I/I flows have been calculated by per length of pipe. The County uses a formula, which varies the peaking factor based on the ADWF. Furthermore, the County uses improved I/I data based on a per acre basis. Because the peaking factors and the I/I are interrelated, it is important to use the criteria from the same method to determine these values. In light of the County's improved I/I data, peak flows were determined using the County criteria. When compared, the County's method yields just slightly higher peak flows than the District's method.

Peak Dry Weather Flows (PDWF) were calculated by means of multiplying the Average Dry Weather Flow by the calculated peaking factor. Using the County of Sacramento criteria, inflow was set at 1000 gallon per day per acre (gpd/ac) and infiltration was set at 200 gpd/ac. These I/I flows were added to the PDWF to determine the Peak Wet Weather Flows (PWWF).

Table 3 summarizes the wastewater flows for each service sub-area. The accumulative wastewater flows summarized in Table 4 was used to design the sewer lines and pumps station infrastructure.

TABLE 3: SUB AREA SEWER FLOWS

	Region	Total # DU	Area (acres)	Q_{region} (gpd)	ADWF (mgd)	PF	PDWF (gpm)	I/I (gpm)	PWWF (gpm)
B13	Estates @ Lake Chesbro	61	65	21,350	0.02135	2.015	30	54	84
B12	Estates @ Lake Clementia Sub-Region 1	30	32	10,500	0.0105	2.067	15	27	42
B11	Estates @ Lake Clementia Sub-Region 2	27	29	9,450	0.0095	2.074	14	24	38
B10	The Highlands Sub-Region 1	50	25	17,500	0.0175	2.030	25	21	45
B9	The Highlands Sub-Region 2	62	31	21,700	0.0217	2.014	30	26	56
B7	The Terrace Sub-Region 2,	136	53	47,600		3.500	116	44	160
B8	River Canyon Estates Sub-Region 3								
B6	River Canyon Estates Sub-Region 2	80	55	28,000	0.0280	1.995	39	46	85
B5	River Canyon Estates Sub-Region 1	13	9	4,550	0.0046	2.125	7	8	14
B4	The Terrace Sub-Region 1,	231	111	80,850	0.0809	1.913	107	93	200
B3	The Retreat (North),								
B2	The Retreat (East)								

	Region	Total # DU	Area (acres)	Q_{region} (gpd)	ADWF (mgd)	PF	PDWF (gpm)	I/I (gpm)	PWWF (gpm)
A3	The Estates of Lake Calero	80	151	28,000	0.028	1.995	39	126	165
A2	The Residences of Murieta Hills	245	140	85,750	0.0858	1.908	114	117	230

TABLE 4: ACCUMULATIVE SEWER FLOWS

Region	Total # DU	Pump Station	A_{total} (acres)	Q_{total} (gpd)	$ADWF_{total}$ (mgd)	PF_{pump}	$PDWF_{total}$ (gpm)	I/I_{total} (gpm)	$PWWF_{total}$ (gpm)
Estates @ Lake Chesbro	61	2	65	21,350	0.02135	2.015	30	54	84
Estates @ Lake Clementia Sub-Region 1	30		97	31,850	0.03185	1.985	44	81	125
Estates @ Lake Clementia Sub-Region 2	27		126	41,300	0.0413	1.965	56	105	161
The Highlands Sub-Region 1	50		151	58,800	0.0588	1.938	79	126	205
The Highlands Sub-Region 2	62		182	80,500	0.0805	1.913	107	152	259
The Terrace Sub-Region 2,	136		235	128,100	0.1281	1.876	167	196	363
River Canyon Estates Sub-Region 3		3	235	128,100	0.1281	1.876	167	196	363
River Canyon Estates Sub-Region 2	80	4	290	156,100	0.1561	1.860	202	242	443
River Canyon Estates Sub-Region 1	13		299	160,650	0.16065	1.857	207	249	456
The Terrace Sub-Region 1,	231		410	241,500	0.2415	1.823	306	342	647
The Retreat (North),			410	241,500	0.2415	1.823	306	342	647
The Retreat (East)			410	241,500	0.2415	1.823	306	342	647
		5	410	241,500	0.2415	1.823	306	342	647

Region	Total # DU	Pump Station	A_{total} (acres)	Q_{total} (gpd)	$ADWF_{total}$ (mgd)	PF_{pump}	$PDWF_{total}$ (gpm)	I/I_{total} (gpm)	$PWWF_{total}$ (gpm)
The Estates of Lake Calero	80		151	28,000	0.028	1.995	39	126	165
The Residences of Murieta Hills	238	6	291	111,300	0.1113	1.887	146	243	388

Wastewater Collection Systems

The pipes in the collection system were sized to accommodate the peak wet weather flow (PWWF) at 70% full. Typically, no surcharging is allowed in wastewater collection systems. An n-value of 0.013 was used for the analyses. The system is required to meet a minimum velocity of 2 feet per second during PDWF and a maximum velocity of 10 feet per second for PWWF.

Pipe sizes in this master plan are based on minimum pipe slopes. Actual pipe sizes may be adjusted as allowed given actual pipe slopes. The minimum pipe size is six inches.

Tracer wires and test stations are required with all new sewer pipes.

Murieta Hills

The capacity of the existing sewer collection system through Unit 1 was analyzed to determine if the system could accommodate the wastewater flows from the Murieta Hills development. The analysis showed that portions of the collection system would have to be enlarged to accommodate the additional flows. Specifically, the pipes along west side Laguna Joaquin and some pipes within Lago Dr. would have to be increased from 8 inches to 10 and 12 inches.

Another alternative is to utilize the abandoned 12" force main along Stonehouse Dr. The force main was initially used to convey wastewater from the old pumping station (near the shopping center) to the now abandoned Stonehouse wastewater treatment facility. The 12" force main is too large to accommodate the projected sewer flows from Murieta Hills and The Estates at Lake Calero. It is proposed to install a 6" force main carrier pipe within the existing 12" pipe (casing). However, utilizing this alternative requires constructing a pump station near Escuela Dr. Exhibit 3 shows the two alternatives.

Enlarging the pipes within the existing development, although less expensive, was determined not to be a favorable alternative. Therefore, utilizing the abandon force main and constructing a new pump station is the preferred alternative.

Prior to the use of the existing 12" casing, the casing condition must be assessed. The casing shall be video inspected and submitted for review by the District. If the existing casing is deemed unacceptable then the existing casing cannot be used. A new pipe force main installation or alternative will be required. A tracer wire with test stations must be installed over the existing casing (if used). If the casing if found to be electrically continuous then test stations can be connected directly to the casing and the tracer wire requirement will be eliminated.

Commercial Site

Wastewater from the commercial site will be pumped to the existing pump station located near the firehouse. The commercial site pump station will be a local pump station to be constructed with the development of the site.

The Estates at Lake Calero

The conveyance of wastewater flow for this development could be through either service area A or B. The entire sewer infrastructure within service area B would have to be constructed before this alternative can be developed. Therefore forcing The Estates at Lake Calero to be the final development along the easterly reach of service area B. Alternatively by routing the wastewater flows through service area A (Murieta Hills) this problem would be alleviated. A 6" force main was installed during the construction of Puerto Dr. with Unit 4 anticipating this option. The proposed pump station and gravity lines within Murieta Hills would have to be designed to accommodate the additional wastewater flows. It is recommended that the Estates at Lake Calero utilize the Murieta Hills alternative.

Retreats & Terrace

Wastewater from the Retreat West can flow through the existing collection system in service area A. No major sewer infrastructure will be required.

Wastewater from the Retreats East & North as well as the Terrace can flow into the main pump station for service area B. No major sewer collection infrastructure will be required.

Currently, there exist parallel 4" & 10" force mains that run from the existing Unit 6 lift station 'B' to the old yellow bridge. Currently the 4" force main conveys the wastewater flow from Unit 6. This main ties directly into the 12" force main coming from service area A's main pump station located near the Fire Station. The 12" force main then continues to the wastewater treatment plant (WWTP). This is a temporary configuration. It operates sufficiently because of the low flows coming from the pump station south of Unit 6.

The amount of wastewater generated from the Terrace development will initiate 1) a new pump station/expansion (see below) 2) the parallel 10" force main to be put in use and 3) a new 12" force main running parallel to the exiting 12" force main from the old yellow bridge to the wastewater treatment plant.

There is an opportunity to possibly eliminate the Unit 6 lift station 'A' by routing wastewater flows to the sewer main that will cross the golf course from The Terrace.

River Canyons

Due to the terrain of ridges and valleys at River Canyon Estates there will be two pump stations (#3 and 4) required to move wastewater across the site. Wastewater then continues on by gravity to pump station #5 where it is pumped to the sewage treatment plant. See Pump Stations, below.

In addition to flows generated on site, these pump stations will accommodate wastewater flows generated from Clementia, Chesbro and The Highlands. Therefore development of this infrastructure is required prior to the development of the upstream subdivisions.

The Highlands

Wastewater will flow in a north to south direction towards pump station 3. Piping will be routed between Bass lake and Lake Clementia and through the flood plain area. Depending on final pipe configurations, local pump station(s) may be required to service low-lying areas in the areas adjacent to Bass Lake and Lake Clementia.

Clementia

Wastewater from The Estates at Lake Clementia will flow in a north to south direction then through the flood plain area (Lake Clementia spill way) towards pump station 3. Depending on final pipe configurations, regional pump station(s) may be required to service low-lying areas in the areas adjacent to Lake Clementia.

Chesbro

Wastewater from The Estates at Lake Chesbro will flow in a north to south direction to pump station 2. From pump station 2 wastewater will directed to the sewer pipes in the Highlands. An alternative would be to pump to The Estates at Clementia sewer system, routing depends on the progression of development. A local pump station is required to bridge the low-lying areas of this subdivision.

Pump Stations

The hilly terrain in Rancho Murieta imposes atypical challenges on the proposed sewer infrastructure. To collect and convey wastewater from the proposed developments to the wastewater treatment plant, a series of small pump stations must be constructed. In the extreme case, conveying wastewater from the proposed development north of Lake Chesbro to the wastewater treatment plant, it requires a series of five regional pump stations. All pump stations will be District owned and maintained.

The sewer analysis identified two categories of sewer pump stations; local and regional. Local pump stations are much smaller than regional pump station. Local pump stations identified in this report have a capacity of less than 50 gallons per minute (gpm). They are typically required to convey a small number of resident's wastewater over a ridge, are constructed as part of the subdivision and are not considered an infrastructure improvement. Therefore, a quantitative analysis of the local pump stations was not performed. Regional pump stations identified in this report have a minimum capacity of 100gpm. The Sewer Master Plan shows the approximate locations for both local and regional pump stations.

Pump stations used on the entire Rancho Murieta development shall be from one manufacturer and will be sized consistently. There will be no more than three pump sizes used throughout the project in order to minimize the inventory of spare parts.

Protections against spills from pump stations must meet the requirements of the California Department of Health Services, Division of Drinking Water and Environmental Management standards manual section 5-4.01. Pumping facilities shall be designed to not result in the spillage of wastewater.

Pump Table:

Pump #	Min Size (gpm)	Location
1		Not used, is a local pump station.
2	84	The Estates at Lake Chesbro
3	363	River Canyon Estates
4	443	River Canyon Estates
5	647	Unit 6, Increase Existing Pump System
6	388	The Residence at Murieta Hills

Service Area "A"

The Residents at Murieta Hills, The Retreats West, the commercial site and The Estates at Lake Calero are within Sewer Service Area "A". This area drains into an existing pump station, "Main Lift Station North", located behind the fire station on Murieta Dr. Main Lift Station North has the capacity to serve the entire Sewer Service Area A.

Service Area "B"

The existing pump station located south of Unit 6 is currently designed to serve all 110 dwelling units of Unit 6. As of December 2000, Fifty-four of the 110 units were developed. At ultimate build-out of service area "B" a second pump station, adjacent to the existing pump station, will be required to serve The Retreats' East and North, The Terrace, The Highlands, River Canyon Estates, The Estates at Lake Clementia, and The Estates at Lake Chesbro.

The existing pump station utilizes 2" MP-3127-266 Flygt Grinder Pumps. Based on the pumping curve information supplied by the District, the pumps operate between the ranges of 45gpm at 132 TDH to 87gpm at 98 TDH. According to the as-built plans and design calculations, the pump station has a wet well with a capacity of 355 $ft^3$and operates on a 16.8 minute cycle.

The pump station wet well has capacity to accommodate additional flows from The Retreats East and North but the existing pumps need to be upgraded for this increased flow. Wastewater flows generated by the Terrace development will require the construction of a new wet well and pump.

Cost Estimate

A preliminary estimate of the magnitude of sewer infrastructure cost was prepared and is shown in Table 5. A 20% construction contingency was included to account for the general scope of items listed. A 20% project contingency was included for uncertainty in the scope of the project development. Approximately 30% was included for plan checking, engineering, inspection and construction surveying.

This cost estimate did not account for any cost associated with environmental clearance if required.

TABLE 5 : PRELIMINARY ESTIMATE OF THE MAGNITUDE OF SEWER COST

Sewer Infrastructure

Items	Quantity	Unit	Unit Price		Cost
6" Sewer Lines	9,300	LF	$30		$279,000
8" Sewer Lines	1,000	LF	$35		$35,000
10" Sewer Lines	2,000	LF	$40		$80,000
3" Force Main	1,000	LF	$25		$25,000
6" Force Main	3,000	LF	$35		$105,000
8" Force Main	0	LF	$40		$0
12" Force Main	4,800	LF	$50		$240,000
Manholes	30	Ea	$3,000		$90,000
Force Main Appurtenances	1	LS	$25,000		$25,000
Slip-Line 6" FM	4,400	LF	$20		$88,000
Pump Stations					
PS1	0	LS	$92,000		$0
PS2	1	LS	$127,000		$127,000
PS3	1	LS	$269,000		$269,000
PS4	1	LS	$308,000		$308,000
PS5	1	LS	$392,000		$392,000
PS6	1	LS	$242,000		$242,000
				Construction Sub total	$2,305,000
	20%			Construction Contingency	$461,000
				Construction Cost Estimate	$2,766,000
	20%			Project Contingency	$553,200
	5%			Plan Checking	$138,300
	15%			Engineering	$414,900
	5%			Inspection	$138,300
	5%			Construction Staking	$138,300
				Project Cost Estimate	$4,149,000

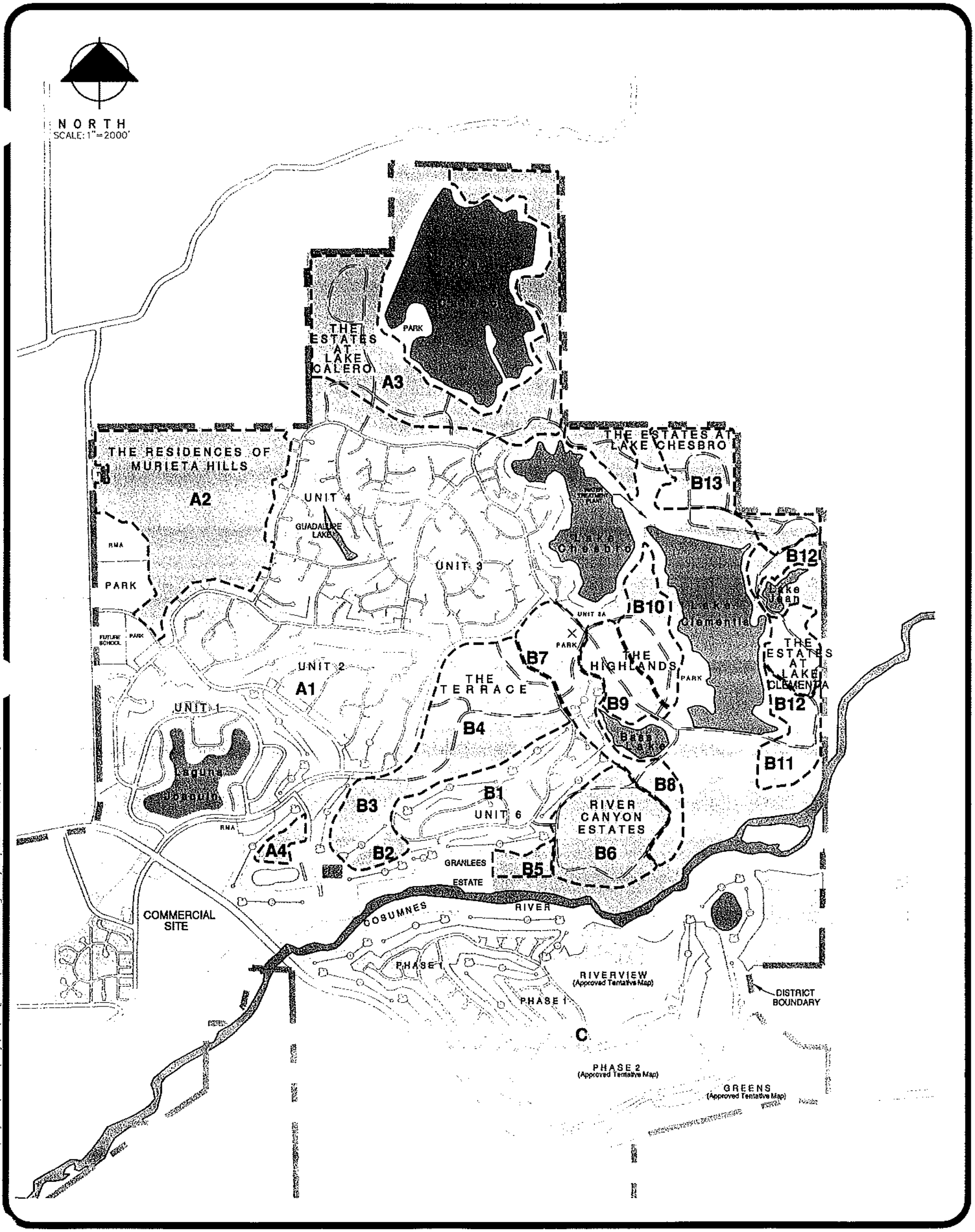

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Exhibit 2

Sewer Service Areas

Rancho Murieta North
Infrastructure Master Plan

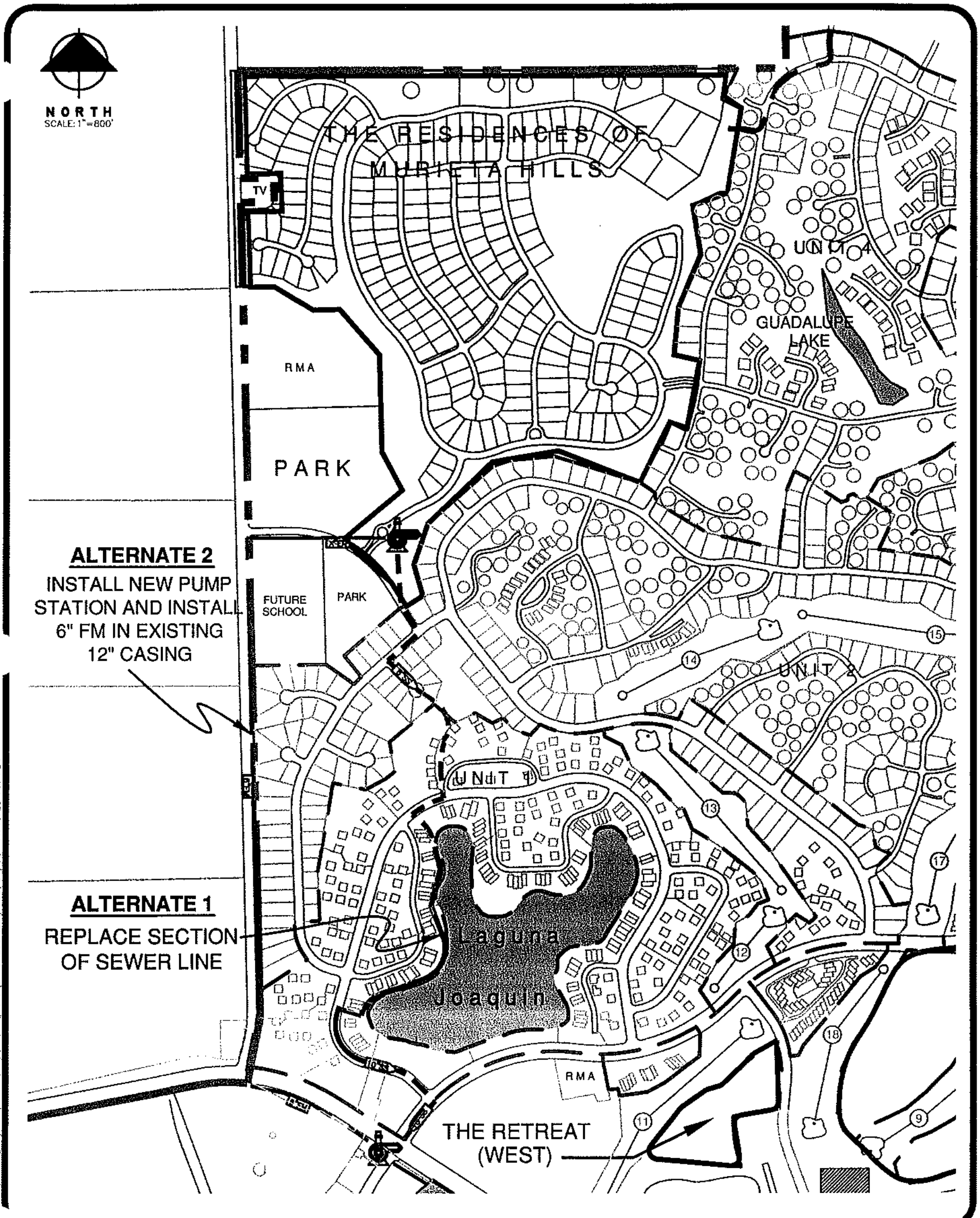

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Exhibit 3

Murieta Hills Service Area

Rancho Murieta North Infrastructure Master Plan

C- DRAINAGE

The following section describes proposed improvements to the storm drainage infrastructure. It addresses the methodology, proposed conveyance systems, adequacy of the existing system, associated culverts, storm quality detention basins and the magnitude of drainage infrastructure costs and phasing of improvements.

Methodology

The Rancho Murieta District Standard and policies were used as the basis of the proposed drainage infrastructure design. The County of Sacramento's criterion was incorporated where the District standards did not address a criterion.

The District's hydrology criteria were used to estimate the storm water runoff of the new developments. The District does not have criteria for estimating runoff from watersheds greater than 160 acres. Therefore, the County of Sacramento methodology was used to verify the adequacy of the conveyance system downstream of Laguna Joaquin.

The drainage facilities associated with the Residences of Murieta Hills watershed are a critical and significant part of this Drainage Master Plan. Therefore, the main focus of this plan pertains to the tributaries and outfall of the Laguna Joaquin.

The remaining Rancho Murieta master plan is conceptual to determine approximate routing of the backbone system. A description of the drainage facilities is included but details will be completed with the development of these small watersheds. Proposed pipes can be substituted with open channels as approved for the subdivision.

Storm Water Quality

According to the Sacramento County Water Resources Department, Rancho Murieta is not included in Sacramento County's National Polluntant Discharge Elimination System (NPDES) PERMIT. In addition, Rancho Murieta is not required to obtain its own NPDES permit due to its small population and location outside of the Sacramento County urbanized area. This has been confirmed by Christine Palisoc of the California Regional Water Quality Control Board, Central Valley Region through a memo to the Sacramento County Water Resources Department.

Even though Rancho Murieta is not required to obtain an NPDES permit, the Rancho Murieta Community Services District proactively adopted "Interim Storm Water Quality Management Criteria" in 1991 to be used until Sacramento county adopted formal criteria. The intent of the criteria was to establish Best Management Practices (BMP) for the removal of pollutants in storm water to the maximum extend practical. Sacramento

County has adopted formal criteria and standards for storm water quality under their NPDES permit. This criteria has been utilized for the design of water quality facilities constructed by recent subdivisions within Rancho Murieta Storm water quality measures identified in this mater plan are compatible with the current Sacramento City/County Drainage Manual criteria for storm water quality requirements.

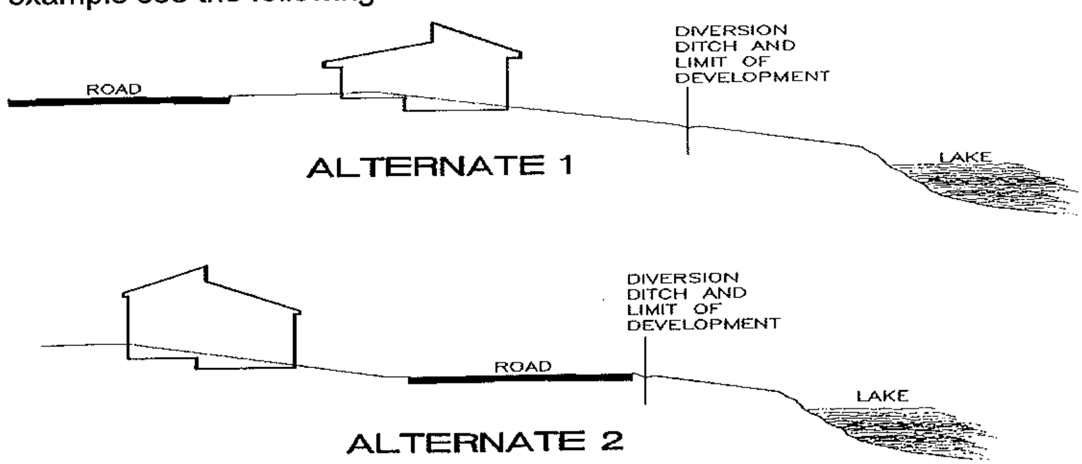
The Rancho Murieta Community Services District is currently in the process of preparing a Stormwater Quality Improvement Plan (SQIP). The purpose of the SQIP is to address storm water quality issues specific to Rancho Murieta. The Rancho Murieta SQIP will utilize construction and post-construction BMP's specified in the Sacramento City/County Drainage Manual as well as others programmatic stormwater quality BMPs. All new developments within Rancho Murieta must meet the requirements of the SQIP.

Drainage Restrictions into the Lakes

Lakes Calero, Clementia and Chesbro are used as the primary source of drinking water for the community. The California Department of Health Services, Division of Drinking Water and Environmental Management, prohibits runoff from urban development from entering these reservoirs. Accordingly, new development within the drainage shed of Lakes Calero, Clementia and Chesbro must construct interceptor drainage facilities to collect urban runoff. The interceptor facilities must be sized to collect flows from the 100-year event.

Storm water runoff from open space areas is allowed to drain into these reservoirs but storm water runoff from developed areas must be routed through a water quality basin and outlet into nearby waterways. These waterways must not enter the Lakes.

Where residential properties are located adjacent to a lake, a diversion ditch or other drainage structure must be constructed to intercept runoff from the development to prevent this runoff from entering the lake. As an example see the following sketch:



Bass Lake is a reclaimed water reservoir; changes in the District's discharge permit prohibit any storm water runoff from entering into a reclamation facility. Accordingly, new development within the drainage shed of Bass Lake must construct interceptor drainage facilities to collect and prevent both urban and open space runoff from entering the Lake. The interceptor facilities must be sized to collect flows from the 100-year event.

To achieve this goal it is recommended that a combination of culverts, storm pipes and diversion ditches be employed to divert the runoff around Bass Lake. This storm water will outlet into a water quality basin.

Lake Jean is available as a water quality / detention basin. If the lake is used for this purpose then no water will be allowed to overflow into the adjacent Lake Clementia. The proposed drainage system will need to accommodate all outflows from Lake Jean to discharge to Cosumnes River.

Water Quality Basins

Water quality basins have been preliminarily sized within this master plan according to the Sacramento City/County Drainage Manual, Volume 2. The Drainage Master Plan depicts the drainage sheds used to size the water quality detention basins. It also shows schematic locations of proposed runoff interceptor facilities. A spreadsheet of water quality sizing calculations can be found in the appendix and tabulated on the Master Plan.

This sizing is based on the assumption that the entire developable area of each subdivision will contribute flows to the water quality basins. Since non-developed areas will be allowed to drain into the Lakes (except Bass Lake) the water quality basins will be smaller than indicated in the calculations based on actual developed areas.

Conveyance System

The drainage conveyance system for the existing development, originally constructed as part of Units 1-4 and Unit 6, drains the storm water runoff into the Cosumnes River. It consists of: open channels, natural streams, culverts, ponds and storm drain pipes that drain approximately 1100 acres. The major drainage systems shall be designed to accommodate a 100-year storm event.

The Residences at Murieta Hills

This development is situated in the upper reaches of a 313-acre watershed. It is one of three watersheds that are tributary to Laguna Joaquin, a 24-acre man-made lake. Above Laguna Joaquin, storm water drains through an existing conveyance system, which includes five culverts and approximately 6,100 LF of open channels and natural swales.

Runoff from Murieta Hills passes through culverts I through V to reach Laguna Joaquin where it combines with runoff from of sub-area 2 and 3. See Exhibit 4 for the drainage shed and culverts analyzed.

It was determined that the existing conveyance system, between the Murieta Hills area and Laguna Joaquin, can accommodate existing 100-year storm event. Table 6 shows the results of calculations for the culverts and channels. A detention basin will be constructed with the development of Murieta Hills to reduce post development peak flows to pre-development peak conditions. See exhibit 7 for plan view of the proposed detention basin.

Existing pre-development watersheds within the Murieta Hills area are split into two similarly sized drainage basins. Post-development construction will modify existing Murieta Hills subbasin sizes and thus modify runoff quantities. The westerly subbasin drains south through culvert II and the easterly subbasin drains south through culverts I and III. Post-development improvements to the subbasins are as follows:

- Under Post-development conditions the westerly basin is reduced in size. This area reduction compensates for the increased runoff per acre. Pre and post-development flow rates are similar. Therefore there are no adverse affects on downstream culverts from this sub-shed.

  Additionally, a small water quality basin is to be constructed in this sub-shed that will further reduce outflow characteristics.

- Under Post-development conditions the easterly sub-shed will increase in size. A water quality/detention basin will be constructed to reduce runoff quantities to maintain pre-development outflow conditions.

Analysis of runoff quantities produced from the pre and post-development conditions were determined using the Sacramento County's methodology.

The Sacramento County charts 2-22 and 2-23 were used to obtain runoff quantities for these small (less than 160 acre) sub-sheds. See the appendix for copies of these charts.

The detention basin was sized using HEC-1 modeling system. The detention basin volumes were then determined by modeling the storage/outflow characteristics of the basin as required to reduce outflow to match pre-development flow rates at the culvert location. See table 6 for outflow rates.

There is a reduction of 49cfs from the easterly sub-shed of Murieta Hills. This reduction was directly applied to all downstream culvert crossings to determine the post-development flow rates at each culvert.

The required detention basin volume of 8.5 ac-ft is added to the required water quality basin size of 3.5 ac-ft for a total basin volume of 12 ac-ft. Total available detention volume within this basin is 16 ac-ft.

TABLE 6-CONVEYANCE SYSTEM BETWEEN MURIETA HILLS AND LAGUNA JOAQUIN

Culvert ID	Existing Culvert Configuration	Area		Flow			Capacity 4	Culvert Configuration Required
		Pre Dev (Ac)	Post Dev (Ac)	Pre-Dev.3 (cfs)	Post-Dev.3 (cfs)	Post-Dev. (cfs)	(cfs)	
I	3 - 36" RCP	92	112	78	118	69 6	115	No Change
II	2 - 36" RCP	88	68	75	76	76	93	No Change
III	1 - 54" CMP 1	110	130	98	130	81 6	93	No Change
IV	1 - 66" CMP 2	88	68	75	76	76	93	No Change
V	1 - 72" CMP	260	260	180	235	186 6	236	No Change
VI	1 - 24" RCP	50	50	n/a	n/a	n/a	n/a	36" RCP

1. Equivalent size to two 65"x40" arc pipes
2. Equivalent size to a 76" x 52" arc pipe
3. Sacramento County method was used to calculate flows using figure 2-22 and 2-23.
4. Capacity calculations assume a one foot freeboard except culvert 3 with 6".
5. Culvert VI is currently under design with the development of The Retreat West.
6. Post development flows reduced with detention basin.

The conveyance system downstream of Laguna Joaquin includes a spillway channel, four culverts and 1,200 LF of open channel. The conveyance system goes under Lago Dr. and Highway 16, then south along the west side of the Murieta Plaza. It continues under Lone Pine drive, then travels west past Murieta village. The channel continues west under one access road and out the on to a flood plain before draining into the Cosumnes River. The drainage shed for this conveyance system, shown in Exhibit 5, encompasses sheds 1, 2 & 3 for a total of 900 acres.

District standards do not address criteria for determining flows from watersheds greater than 160 acres. Therefore, Sacramento County's methodology was utilized to determine the storm runoff. Using the Sacramento County's SACPRE preprocessor with HEC-HMS, the storm runoff into Laguna Joaquin for a 100-year event under pre-development conditions was estimated at 1095 cfs. The runoff increases to 1118 cfs under post development conditions without any upstream reductions from the detention basin in Murieta Hills. (See appendix for calculations and support data).

The estimated runoff under pre-development conditions is higher than a previously reported 100-year event flow, which was estimated between

500-600 cfs. A combination of the following two factors may account for the difference:

- The earlier calculation for this watershed could have assumed the land use plan included a reservoir at the location of Murieta Hills. This would have reduced flows coming from that portion of the shed.
- The previous calculations were determined before the District adopted their drainage criteria. It was determined that similar calculations based on other criteria resulted in flows much less than if determined using the District criteria.

An analysis of weir flow rate vs. weir backwater (detention) in Laguna Joaquin reduces the peak 100-year flow by approximately 148 cfs under post development conditions. Peak flow is reduced from 1118 cfs inflow to 970cfs outflow with a peak reservoir elevation of 149.77' (1.23' freeboard to top of bank). The upstream detention basin in Murieta Hills further reduces these rates.

The spillway and culvert under Lago Dr. can accommodate a 100-year storm event for both the pre and post-development conditions. However, the culverts downstream from the spillway north of Murieta Village cannot accommodate the 100-year flows at either condition.

Table 7 summarizes the drainage calculations for the conveyance system from Laguna Joaquin down past Murieta Village. (See appendix for calculations and support data).

TABLE 7-CONVEYANCE SYSTEM DOWNSTREAM OF LAGUNA JOAQUIN

Culvert ID	Existing Configuration	OutFlow Existing (cfs)	OutFlow Post-Dev (cfs)	Capacity (cfs)	Reconfiguration Required
VII	2 - 6'x6' box	951	970	640	Yes
VIII	Channel	951	970	1004	Maintenance Req
IX	4 - 60" CMP	951	970	570	Yes

Post-Development outflows indicated in table 7 do not account for on-site detention of storm runoff in the Murieta Hills development. On-site detention will reduce post-development flows to at or below existing flow rates.

Under existing conditions, the highway-16 culvert (VII) cannot accommodate the 100-yr storm event without overtopping the highway. It is anticipated that improvements to this structure will be performed with future widening of highway 16 for the construction of an acceleration lane.

The following alternative scenarios have been analyzed for remediation of the culvert capacity deficiency:

- Increasing the size of the culvert or addition of another barrel was investigated. This alternative is preliminarily rejected due to the difficulty of construction given high traffic volumes on highway 16.
- Spillway weir modifications were investigated to utilize the unused detention capacity in Laguna Joaquin. This alternative was rejected for the following reasons: 1) By reducing the 40' weir to 35' the 100-year outflow would be reduced from 970 cfs to 951 cfs (1-foot reservoir freeboard). However, this would not be enough to allow the culvert under Highway 16 to perform properly. 2) By increasing the lake elevation there is a risk of flooding (backwater) problems in existing drainage systems.
- Floodwalls were investigated to increase backwater head and thereby increasing the culvert flow rate. Floodwalls would be no more than 4-feet in height (1-foot freeboard included).
- Modifications to the culvert entrance configuration were investigated to reduce friction losses. A rounded culvert entrance configuration in accordance with FHA chart 10 would reduce the required floodwall height by approximately 1.5 feet. This configuration could be constructed with the expansion of the culvert for highway 16 widening.

Although the existing channel downstream of highway 16 will meet the existing flow requirements this channel is in need of maintenance. The calculated channel capacity was based on design drawings. The following maintenance operations are required:

- Based on a recent survey, the channel bottom contains up to two feet of sedimentation along a significant portion of the alignment. This sedimentation must be removed to maintain the hydraulic properties of the channel.
- The channel friction characteristics (C-value) was based on consistent channel vegetation. There are several trees within the channel that may affect the channel capacity. These trees must be removed.
- There is approximately 300 feet of channel top of bank that is lower than the design elevation top of bank by approximately 1 foot. This stretch is located adjacent to the existing shopping center, any flooding in this area could adversely affect the shopping center therefore repairs must be done.

The culverts (IX) at lone pine drive do not have the capacity to accommodate the 100-year flow without overtopping. The culverts would have to be replaced with three 5'x8' box culverts to meet the capacity of the 100-year flow.

Retreats and Terrace

The Retreats West drains into an existing minor drainage conveyance system that is routed directly into Laguna Joaquin. This conveyance system will be upgraded with the development of The Retreats West to a 36" diameter pipe.

Storm water runoff from The Retreats East and North will cross the golf course and enter the existing storm drain system that was developed for Unit 6. The Unit 6 water quality basin was designed to accommodate runoff from these areas.

Storm drain runoff from The Terrace will connect to the existing drainage system in Unit 6 then flow into the existing water quality basin. The Unit 6 basin was designed to accommodate runoff from this The Terrace.

An area located adjacent to the east boundary of The Terrace encompasses a natural channel that flows into Bass Lake. Due to changes in the District's discharge permit, storm water runoff is prohibited from entering into a reclamation facility. Therefore, a combination of culverts and diversion ditches will be employed to divert the runoff around the lake. These facilities will flow through the golf course east of unit 6 and continue through River Canyon Estates. This system would also enable a portion of The Highlands to drain through this route in order to minimize construction costs in the Highlands.

River Canyon Estates

Drainage runoff from the River Canyon estates will drain into several proposed water quality basins that will outlet directly to Cosumnes River. Multiple basins will probably be required due to the varying topography of ridges and valleys in this area.

The Highlands

Drainage runoff from The Highlands will travel in a north to south direction through a gravity system until it outlets into a proposed water quality basin located near the divide of Bass Lake and Lake Clementia.

Storm water will exit the basin into the flood plain area located just south of Lake Clementia then follow existing spillway channels to Cosumnes River.

The Estates at Lake Clementia

Drainage runoff from The Estates at Lake Clementia will travel in a north to south direction through a gravity system until it outlets into one of two proposed water quality basins. Two basins will be required due to a ridge that splits the site.

Storm water that enters the first basin (located just south of Lake Clementia) will exit into the flood plain area then follow the existing spillway channels to Cosumnes River.

Storm water that enters the second basin (located at the edge of the Cosumnes River) will exit directly into Cosumnes River.

There is a two square mile drainage shed located to the north of The Estates at Lake Clementia and The Estates at Lake Chesbro. This shed drains into Lake Clementia through two natural channels that cross both Estates. The development of these two estates will include provisions to accommodate the existing flow patterns from this watershed into the Lake.

The Estates at Lake Chesbro

Drainage runoff from The Estates at Lake Chesbro travels in a north to south direction until it reaches one of two low-lying locations. Existing topography restricts gravity flow to either The Estates at Lake Clementia or The Highlands gravity system therefore requiring one of the following measures:

- Pump the runoff into the adjacent gravity system (Highlands and Lake Clementia subdivisions). This option is very costly and is not practical given the tremendously large pump size required to remove 100-year storm water from the entire site.
- Install proposed drainage systems at a deep cover to accommodate the low-lying areas. This option is potentially costly given trenching costs in the rock soils type.
- Employ extensive grading in the area to provide a drainage route via significantly raised roadbeds that can span the low-lying areas (if approved for this subdivision).

The costs and requirements associated with these options may prove to be prohibitive to the development of this location. Costs for any of these alternatives are not included in the cost estimate, they are considered to be a local design issue.

These conditions also exist at the Estates at Lake Clementia north of Lake Jean.

The Estates at Lake Calero

Drainage runoff from The Estates at Lake Calero travels in a east to west direction to outlet through one of two water quality basins into existing channels located on the west side of the lake. These channels are currently used for the primary overflow spillway of Lake Calero that follows several miles of Crevis Creek and Deer Creek then outlet to Cosumnes River.

A secondary spillway located on the east side of Lake Calero drains through an existing channel into Lake Clementia. Development on the east side of the Lake Calero will not be allowed to drain into this channel to prevent runoff from developed areas from entering Lake Clementia.

Areas Located Adjacent to Lake Clementia, Lake Chesbro, and Lake Calero

It may be difficult for the gravity drainage systems to serve low-lying areas adjacent to Lake Clementia Lake Chesbro, and Lake Calero. Because developed areas will not be allowed to drain directly to the water supply reservoirs it is anticipated that a combination of the following will be done:

- Keep low-lying areas as open space and allow storm water runoff to enter the lakes.
- Provide a separate drainage system for low-lying areas that is pumped into the gravity system.
- Install the gravity system at a deep cover to allow the system to service the low-lying areas. This may not be feasible at some locations due to the rocky soil type.

Commercial Site

Drainage from the Commercial site will flow in a north to south direction to a water quality basin where it will be pumped out to the Cosumnes River.

Industrial Site

Drainage from the Industrial site will flow in a north to south direction to a water quality basin to be located at the south end of the parcel. Drainage will then outlet through an existing channel to the Cosumnes River.

Cantova Way Undeveloped Parcels

Drainage from these parcels will drain in an east to west direction to a water quality basin then outlet to an existing pump station located on the west side of the parcels.

Cost Estimate

A preliminary estimate of the magnitude of drainage infrastructure cost was prepared and is shown in Table 8. A 20% construction contingency was included to account for the general scope of items listed. A 20% project contingency was included for uncertainty in the scope of the project development. Approximately 30% was included for plan checking, engineering, inspection and construction surveying.

This cost estimate did not account for any cost associated with environmental clearance if required. The cost is based on current prices and it represents year 2000 dollars.

TABLE 8 : PRELIMINARY ESTIMATE OF THE MAGNITUDE OF DRAINAGE COST

Drainage Infrastructure

Items	Quantity	Unit	Unit Price		Cost
Triple 5x8 box culvert	100	LF	$2,000		$200,000
Hyw 16 Inlet Modifications	1	LS	$450,000		$450,000
Water Quality Detention Basin (12 acre-feet) Murieta Hills	1	LS	$90,000		$90,000
Water Quality Detention Basin (1 acre-feet)	11	Ea	$30,000		$330,000
Water Quality Detention Basin (2 acre-feet)	2	Ea	$40,000		$80,000
Diversion Ditches	24,000	LF	$15		$360,000
Storm Drain, 24"	3100	LF	$50		$155,000
Storm Drain, 36"	4800	LF	$80		$384,000
Storm Drain, 48"	2600	LF	$150		$390,000
60" Storm Drain Manhole	12	EA	$3,500		$ 42,000
48" Storm Drain Manhole	28	EA	$2,300		$ 64,400
Pumping Stations	1	EA	$175,000		$175,000
Channel Maintenance	1	LS	$50,000		$ 50,000
				Construction Sub total	$2,770,400
	20%			Construction Contingency	$ 554,080
				Construction Cost Estimate	$3,324,480
	20%			Project Contingency	$664,896
	5%			Plan Checking	$166,224
	15%			Engineering	$498,672
	5%			Inspection	$166,224
	5%			Construction Staking	$166,224
				Project Cost Estimate	$4,987,000

D- Tabulation of System Changes and Triggers

The development of Murieta Hills will trigger the following improvements:

- Installation of waste water pump station #6.
- Install 6" force main in existing 12" pipe on Stonehouse Road.
- Improvement to the existing hydro-pneumatic pump system is recommended to reduce the existing start/stop cycling of the existing pumps.

The widening of Highway 16 for the addition of a right-hand turn acceleration lane will trigger the following improvements:

- Culvert widening modifications are required to facilitate the widening.
- Culvert widening and entrance modifications to improve head-loss characteristics.
- Channel downstream of Laguna Joaquin will need floodwalls or top of bank raised to accommodate the required head at the culverts at highway 16.
- The culverts at Lone Pine Drive will need to be replaced with box culverts.

Channel maintenance is required downstream of Hwy 16 to assure adequate channel hydraulic characteristics.

The development of The Terrace and The Retreats will trigger the following improvements:

- Expand the capacity of the existing pumping facility located south of Unit 6.
- The existing 10" force main parallel to the existing 4" force main to be put in service.
- Install a new 12" force main running parallel to the exiting 12" force main from the old yellow bridge to the wastewater treatment plant.
- Improvements to the existing hydro-pneumatic pump system are required to meet demands.
- The installation of 16" main in combination with the conversion of existing Unit-6 gravity system to hydro-pneumatic system.

The development of The River Canyon Estates will trigger the following improvements:

- Installation of a sewer pump system that can accommodate flows from all upstream subdivisions.

The development of the remaining Estates Subdivisions will trigger various improvements within these subdivisions. See the Master Plan for required improvements.

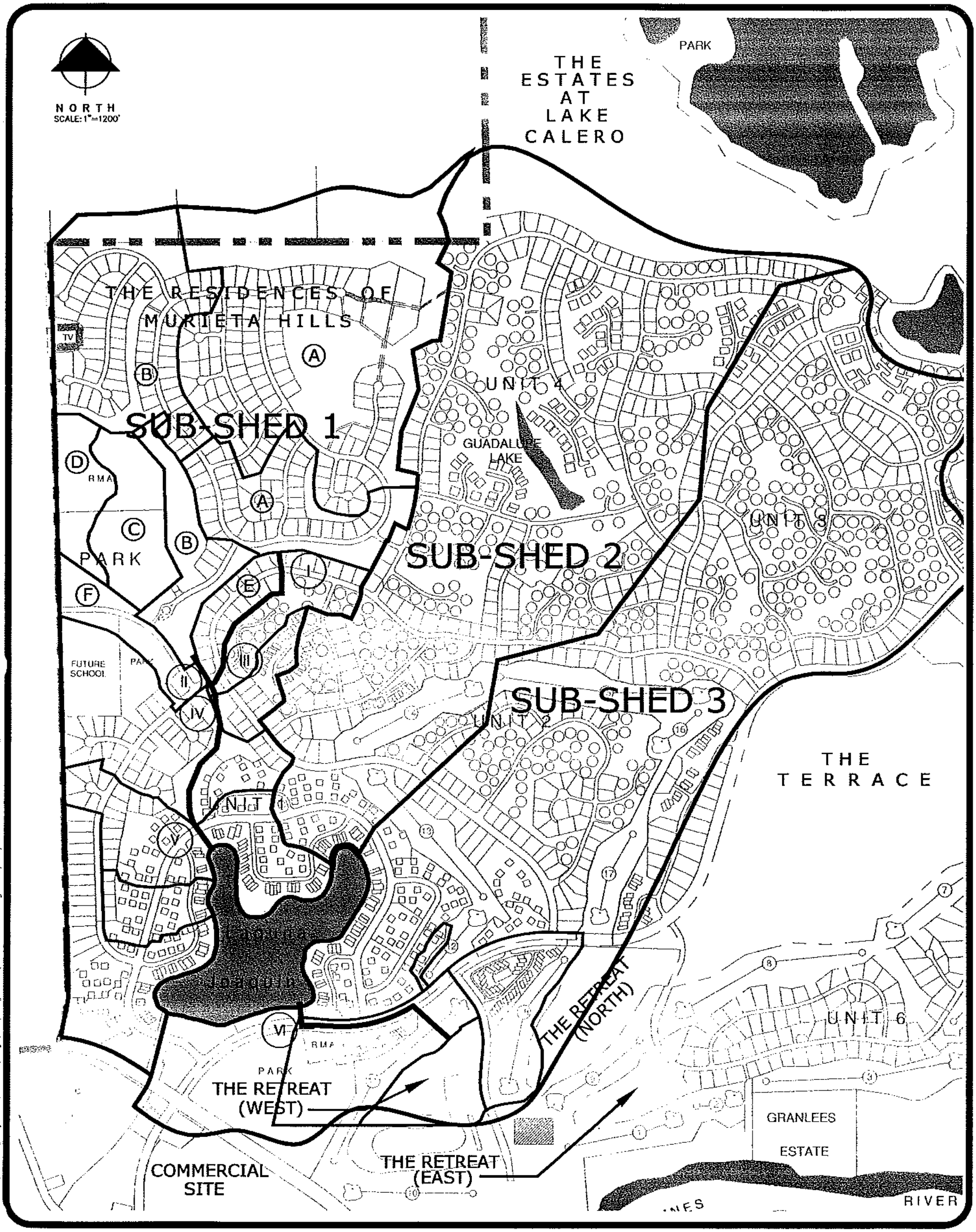


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Exhibit 4

Drainage Conveyance from Murieta Hills to Laguna Joaquin

Rancho Murieta North Infrastructure Master Plan

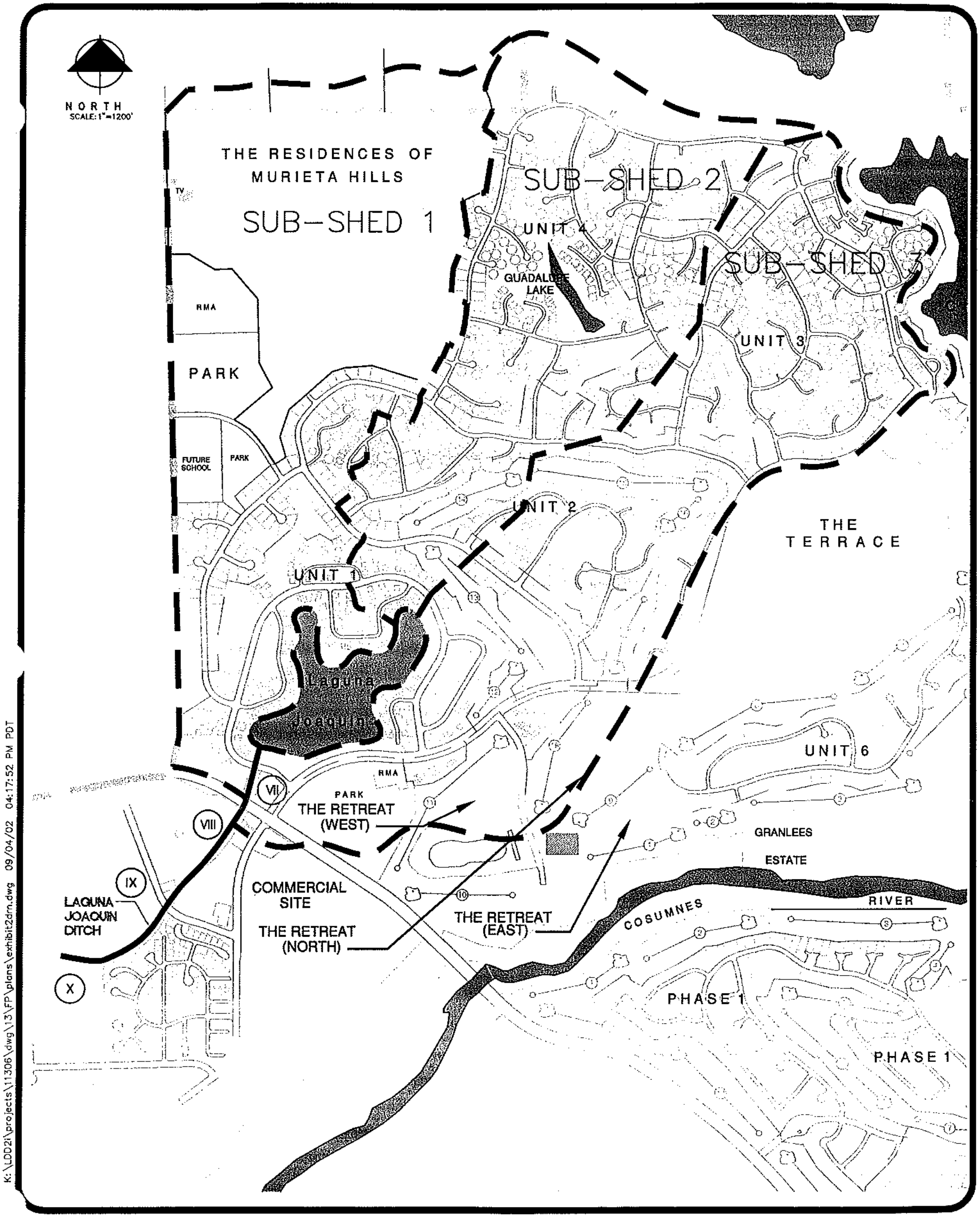

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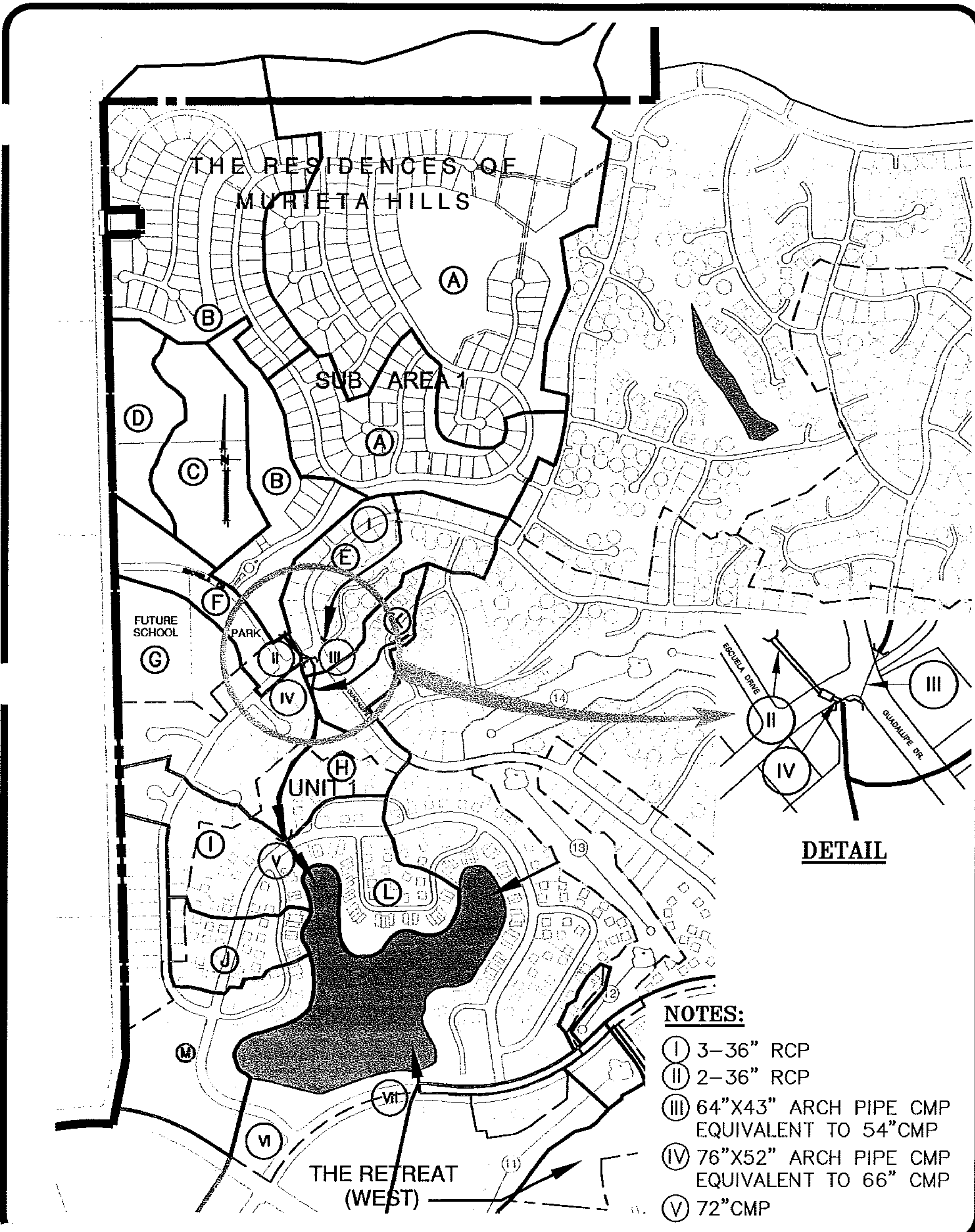
Exhibit 5
Laguna Joaquin Drainage Shed

Rancho Murieta North Infrastructure Master Plan



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AUGUST 2002

Exhibit 6

Drainage Conveyance from Development to Laguna Joaquin

Rancho Murieta North Infrastructure Master Plan

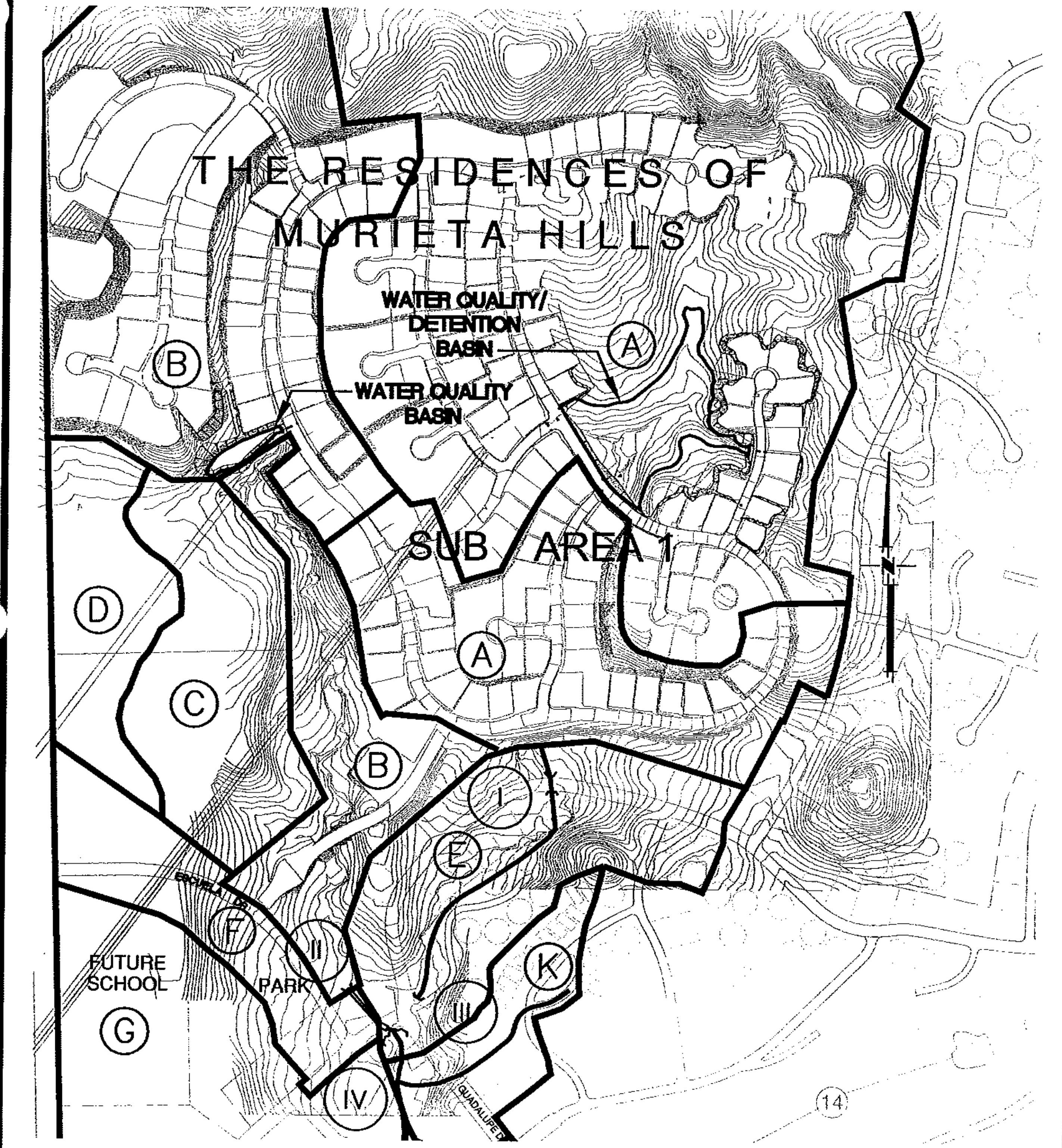

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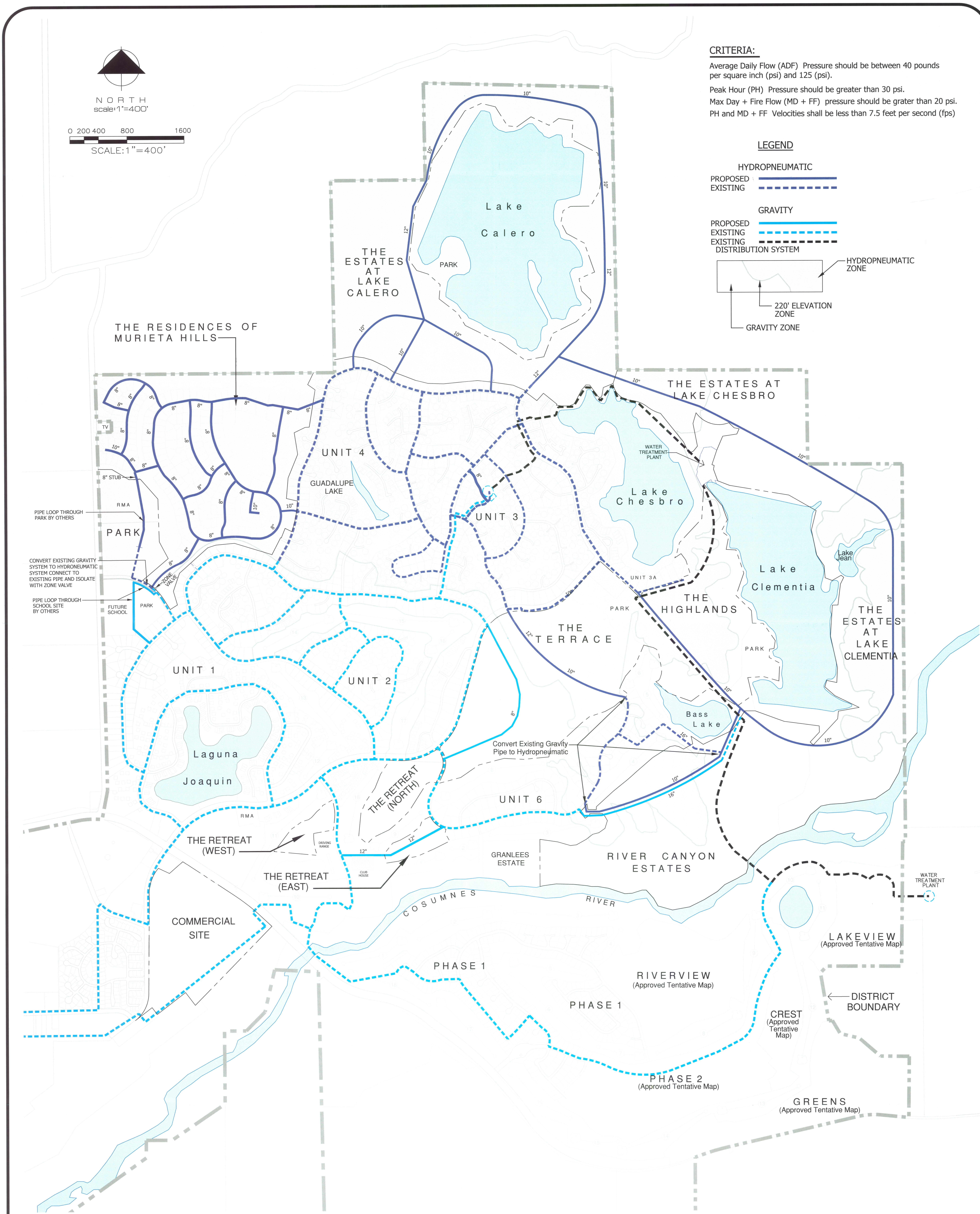
Exhibit 7

Drainage Conveyance from Development to Laguna Joaquin

Rancho Murieta North Infrastructure Master Plan

A- WATER CALCULATIONS



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Water Master Plan

Rancho Murieta North Infrastructure Master Plan

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MAY 2003

Existing Pneumatic System

Node	Circle DU's	Cottage DU's	Large Estate DU's	Town-house DU's	Circle Q	Cottage Q	Large Estate Q	Town-house Q		2.2. AD	2.0. MD	Elev. ft
				Q/DU	550	500	750	350	(AD)	(MD)	(PH)	
J1	3		16		1,650	0	12,000	0	9.48	20.85	41.71	317.60
J3	10	15	15		5,500	7,500	11,250	0	16.84	37.05	74.10	246.70
J4	25		5		13,750	0	3,750	0	12.15	26.74	53.47	241.70
J6	13	2	20		7,150	1,000	15,000	0	16.08	35.37	70.74	260.60
J8	4	15	7		2,200	7,500	5,250	0	10.38	22.84	45.68	242.10
J10	9	30	20		4,950	15,000	15,000	0	24.27	53.40	106.79	277.20
J2	14		3		7,700	0	2,250	0	6.91	15.20	30.40	220.00
J13	14	3	14		7,700	1,500	10,500	0	13.68	30.10	60.19	280.30
J14			5		0	0	3,750	0	2.60	5.73	11.46	257.00
J17	5		20		2,750	0	15,000	0	12.33	27.12	54.24	278.30
J19	7		17		3,850	0	12,750	0	11.53	25.36	50.72	241.20
J33	11		11		6,050	0	8,250	0	9.93	21.85	43.69	232.00
J20	20				11,000	0	0	0	7.64	16.81	33.61	222.20
J23	8	10	12		4,400	5,000	9,000	0	12.78	28.11	56.22	270.40
J24	53		1		29,150	0	750	0	20.76	45.68	91.36	248.00
J25	27		4		14,850	0	3,000	0	12.40	27.27	54.54	235.20
J26	15		13		8,250	0	9,750	0	12.50	27.50	55.00	233.30
J27	30		10	26	16,500	0	7,500	9,100	22.99	50.57	101.14	267.80
					0	0	0	0	0.00	0.00	0.00	
J34	18		8		9,900	0	6,000	0	11.04	24.29	48.58	233.00
J31			10		0	0	7,500	0	5.21	11.46	22.92	262.00
J29	29	12	15	6	15,950	6,000	11,250	2,100	24.51	53.93	107.86	246.70
						Total Sub-System Q			276.01	607.22	1214.43	
						Total System Q			686.42	4010.13	3020.26	

Murieta Hills - Hydropnuematic						
	Q/DU	750	Avg Daily	Max Day	Peak Hour	
Node	Large Estate DU's	Large Estate Q	Q_{gpm} per Upstream Reach	Q_{gpm} per Upstream Reach	Q_{gpm} per Upstream Reach	Elev. ft
J102	10	7,500	5.21	11.46	22.92	269.00
J103	4	3,000	2.08	4.58	9.17	256.00
J104	11	8,250	5.73	12.60	25.21	266.00
J105	10	7,500	5.21	11.46	22.92	260.00
J106	21	15,750	10.94	24.06	48.13	225.00
J107	11	8,250	5.73	12.60	25.21	251.40
J108	14	10,500	7.29	16.04	32.08	218.00
J109	12	9,000	6.25	13.75	27.50	230.00
J110	6	4,500	3.13	6.88	13.75	214.50
J111	8	6,000	4.17	9.17	18.33	213.00
J113	8	6,000	4.17	9.17	18.33	240.40
J114	7	5,250	3.65	8.02	16.04	244.80
J115	3	2,250	1.56	3.44	6.88	240.80
J116	21	15,750	10.94	24.06	48.13	251.00
J117	9	6,750	4.69	10.31	20.63	248.00
J118	13	9,750	6.77	14.90	29.79	219.00
J119	4	3,000	2.08	4.58	9.17	219.00
J120	5	3,750	2.60	5.73	11.46	229.00
J121	7	5,250	3.65	8.02	16.04	268.50
J122	8	6,000	4.17	9.17	18.33	270.50
J123	8	6,000	4.17	9.17	18.33	238.50
J124	0	0	0.00	0.00	0.00	241.70
J127	9	6,750	4.69	10.31	20.63	210.00
J128	13	9,750	6.77	14.90	29.79	205.00
J129	10	7,500	5.21	11.46	22.92	200.00
J132	7	5,250	3.65	8.02	16.04	255.00
	Total Sub-System Q		120.83	265.83	531.67	

Buildout	Q/DU	750		Avg Daily	Max Day	Peak Hour			
Node	Large Estate DU's	Large Estate Q	Q_{gpd} per Upstream Reach	Q_{gpm} per Upstream Reach	Q_{gpm} per Upstream Reach	Q_{gpm} per Upstream Reach	Elev. ft	Unit	
J255-CC	20	15,000	15,000	10.42	22.92	45.83	270	Calero, W	194
J258-CC	20	15,000	15,000	10.42	22.92	45.83	340	Calero, N	205
J254-CC	20	15,000	15,000	10.42	22.92	45.83	330	Calero, E	193
J251-CC	20	15,000	15,000	10.42	22.92	45.83	300	Calero, SE	170
J252-CC	59	44,250	44,250	30.73	67.60	135.21	300	Chesbro	171
J303-CL	59	44,250	44,250	30.73	67.60	135.21	300	Clementia	213
J206-THRC	118	88,500	88,500	61.46	135.21	270.42	240	River Canyon	208
J204-THRC	90	67,500	67,500	46.88	103.13	206.25	280	Terrace	206
J208-THRC	38	28,500	28,500	19.79	43.54	87.08	225	Terrace	207
J205-THRC	112	84,000	84,000	58.33	128.33	256.67	260	Highlands	
	Total Sub-System Q		417,000	289.58	637.08	1274.17			

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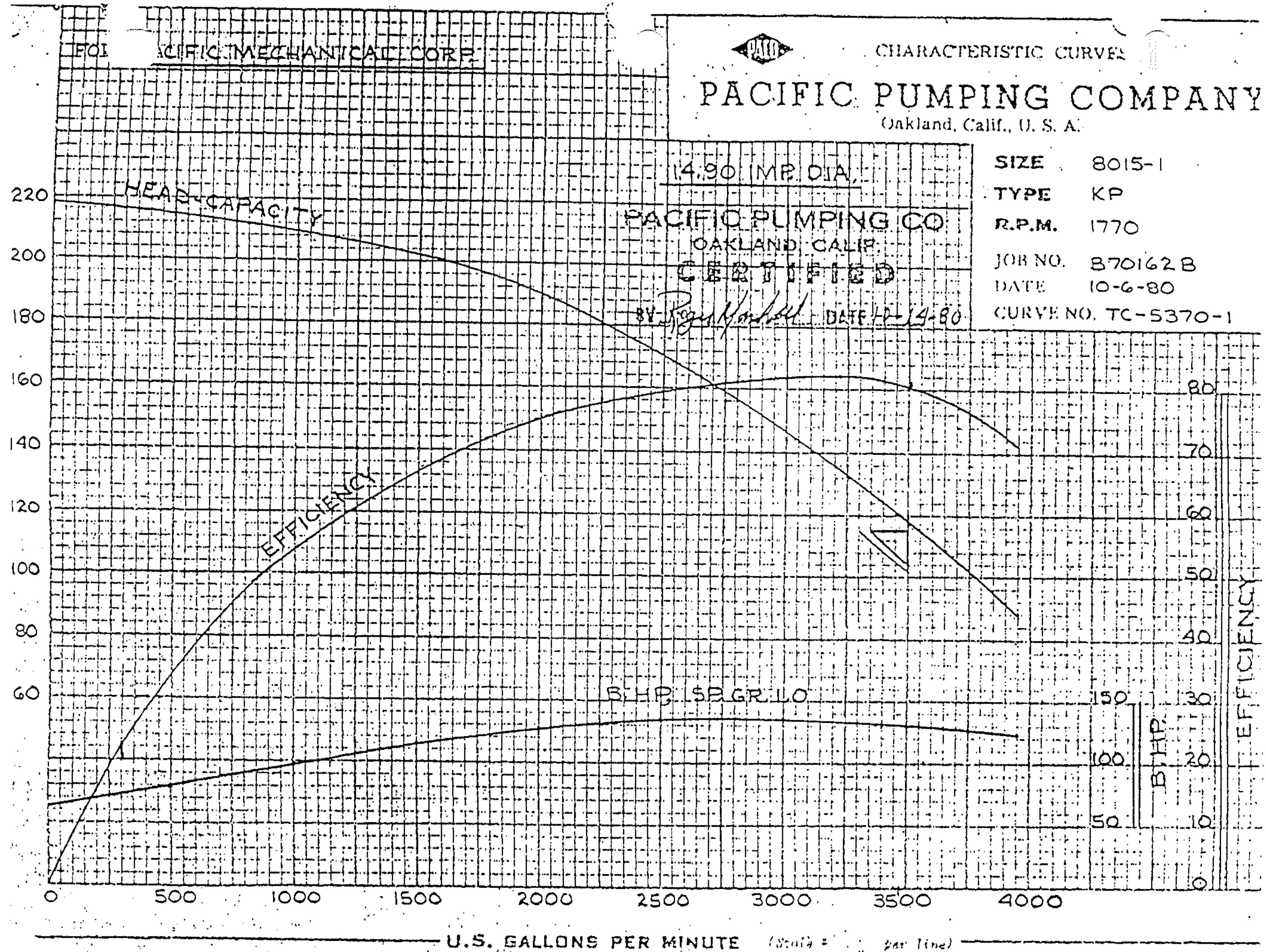
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PACIFIC PUMPING COMPANY
Oakland, Calif., U. S. A.
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JOB NO. 870162B
DATE 10-6-80
CURVE NO. TC-5370-1
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PACIFIC PUMPING CO
OAKLAND CALIF.
CERTIFIED
BY DATE 10-14-80
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B.H.P. SP.GR. 1.0
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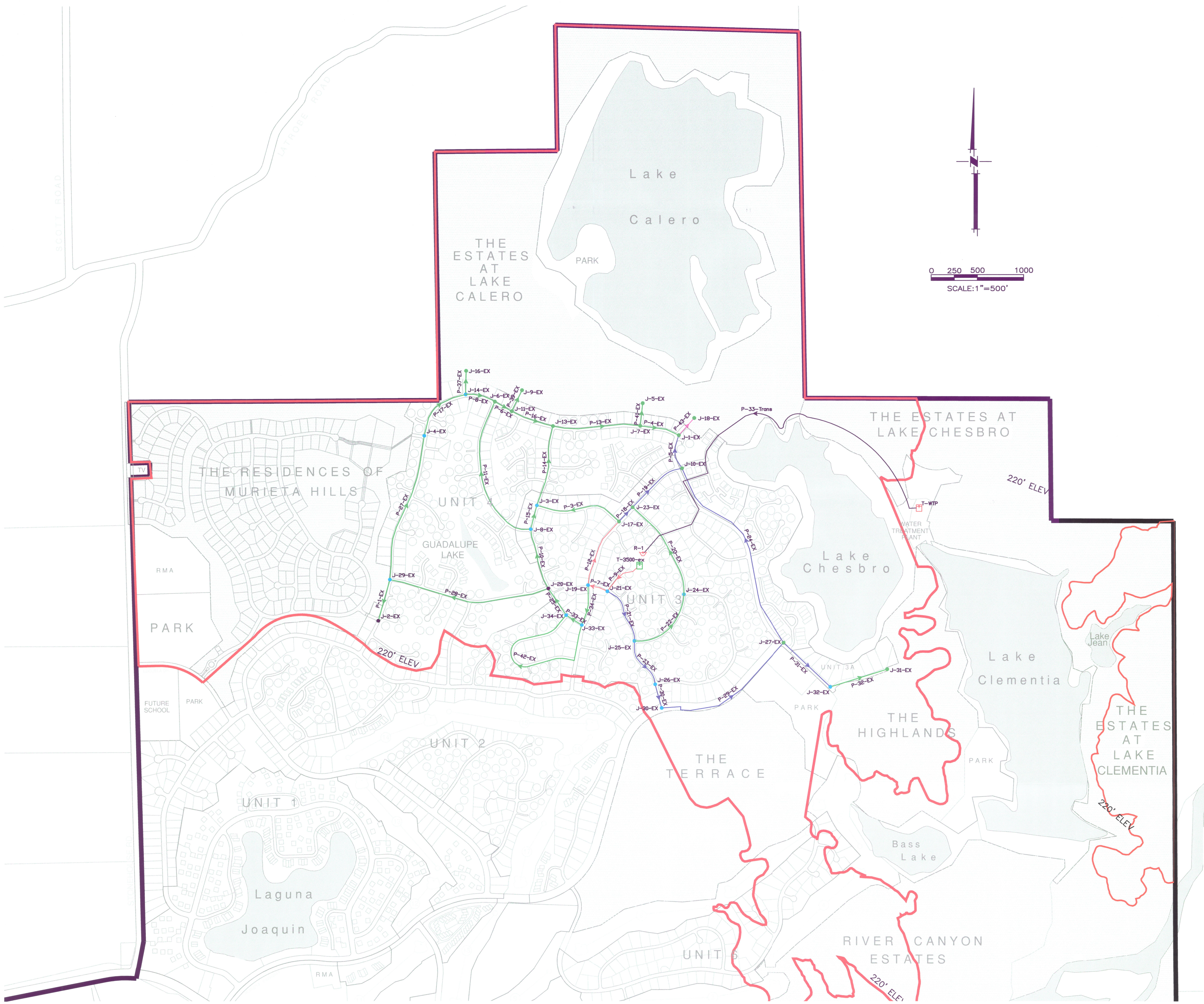
B.H.P.
EFFICIENCY
U.S. GALLONS PER MINUTE (Scale = per line)



Color Coding Legend
Link: Diameter (in)

- <= 6.0
- <= 8.0
- <= 10.0
- <= 12.0
- <= 14.0

Color Coding Legend
Node: Pressure (psi)

- <= 19.99
- <= 29.99
- <= 39.99
- <= 75.00
- <= 90.00

NOTE:
Node pressures represent worst case scenarios.
See Table "Scenario: MD-EX+FF1EX" for 2,000 gpm Fire Flow location.

RANCHO MURIETA NORTH
WATER MASTER PLAN

HYDROPNEUMATIC SYSTEM
EXISTING SCENARIO

RANCHO MURIETA | CALIFORNIA

DATE: 6/06/02 DRAWN BY: GSJ CHK'D BY: REL	MacKAY & SOMPS INFRASTRUCTURE GROUP SAN RAMON, CA (925)901-0690	JOB NO.: 11306-12 DWG. NO.: SHEET 1 OF 1

Scenario: Avg Day - Ex
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Demand (gpm)	Pattern	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-18-EX	323.20	Zone-1	Demand	0.00	Fixed	439.89	50.46
J-1-EX	317.60	Zone-1	Demand	9.48	Fixed	439.89	52.88
J-7-EX	317.20	Zone-1	Demand	0.00	Fixed	439.88	53.05
J-5-EX	313.80	Zone-1	Demand	0.00	Fixed	439.88	54.52
J-9-EX	281.50	Zone-1	Demand	0.00	Fixed	439.86	68.48
J-13-EX	280.30	Zone-1	Demand	13.68	Fixed	439.86	69.00
J-17-EX	278.30	Zone-1	Demand	12.33	Fixed	439.92	69.89
J-10-EX	277.20	Zone-1	Demand	24.27	Fixed	439.89	70.35
J-16-EX	272.00	Zone-1	Demand	0.00	Fixed	439.85	72.58
J-23-EX	270.40	Zone-1	Demand	12.78	Fixed	439.91	73.30
J-27-EX	267.80	Zone-1	Demand	22.99	Fixed	439.89	74.42
J-11-EX	264.90	Zone-1	Demand	0.00	Fixed	439.86	75.66
J-31-EX	262.00	Zone-1	Demand	5.21	Fixed	439.89	76.93
J-6-EX	260.60	Zone-1	Demand	16.08	Fixed	439.85	77.51
J-14-EX	257.00	Zone-1	Demand	2.60	Fixed	439.85	79.07
J-21-EX	252.70	Zone-1	Demand	0.00	Fixed	439.95	80.97
J-24-EX	248.00	Zone-1	Demand	20.76	Fixed	439.91	82.99
J-29-EX	246.70	Zone-1	Demand	24.51	Fixed	439.84	83.52
J-3-EX	246.70	Zone-1	Demand	16.84	Fixed	439.87	83.53
J-32-EX	244.00	Zone-1	Demand	0.00	Fixed	439.89	84.71
J-8-EX	242.10	Zone-1	Demand	10.38	Fixed	439.87	85.52
J-4-EX	241.70	Zone-1	Demand	12.15	Fixed	439.84	85.68
J-19-EX	241.20	Zone-1	Demand	11.53	Fixed	439.94	85.94
J-30-EX	240.00	Zone-1	Demand	0.00	Fixed	439.91	86.45
J-25-EX	235.20	Zone-1	Demand	12.40	Fixed	439.92	88.53
J-26-EX	233.30	Zone-1	Demand	12.50	Fixed	439.91	89.35
J-34-EX	233.00	Zone-1	Demand	11.04	Fixed	439.88	89.46
J-33-EX	232.00	Zone-1	Demand	9.93	Fixed	439.89	89.90
J-20-EX	222.20	Zone-1	Demand	7.64	Fixed	439.87	94.13
J-2-EX	220.00	Zone-1	Demand	6.91	Fixed	439.84	95.06

Scenario: Max Day - Ex
Fire Flow Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Demand (gpm)	Pattern	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-18-EX	323.20	Zone-1	Demand	0.00	Fixed	439.52	50.30
J-1-EX	317.60	Zone-1	Demand	20.86	Fixed	439.52	52.72
J-7-EX	317.20	Zone-1	Demand	0.00	Fixed	439.49	52.88
J-5-EX	313.80	Zone-1	Demand	0.00	Fixed	439.49	54.35
J-9-EX	281.50	Zone-1	Demand	0.00	Fixed	439.38	68.27
J-13-EX	280.30	Zone-1	Demand	30.10	Fixed	439.41	68.81
J-17-EX	278.30	Zone-1	Demand	27.13	Fixed	439.66	69.78
J-10-EX	277.20	Zone-1	Demand	53.39	Fixed	439.54	70.20
J-16-EX	272.00	Zone-1	Demand	0.00	Fixed	439.35	72.37
J-23-EX	270.40	Zone-1	Demand	28.12	Fixed	439.62	73.18
J-27-EX	267.80	Zone-1	Demand	50.58	Fixed	439.54	74.27
J-11-EX	264.90	Zone-1	Demand	0.00	Fixed	439.38	75.45
J-31-EX	262.00	Zone-1	Demand	11.46	Fixed	439.53	76.77
J-6-EX	260.60	Zone-1	Demand	35.38	Fixed	439.37	77.30
J-14-EX	257.00	Zone-1	Demand	5.72	Fixed	439.35	78.85
J-21-EX	252.70	Zone-1	Demand	0.00	Fixed	439.79	80.90
J-24-EX	248.00	Zone-1	Demand	45.67	Fixed	439.62	82.86
J-29-EX	246.70	Zone-1	Demand	53.92	Fixed	439.30	83.29
J-3-EX	246.70	Zone-1	Demand	37.05	Fixed	439.43	83.34
J-32-EX	244.00	Zone-1	Demand	0.00	Fixed	439.54	84.56
J-8-EX	242.10	Zone-1	Demand	22.84	Fixed	439.42	85.33
J-4-EX	241.70	Zone-1	Demand	26.73	Fixed	439.31	85.45
-19-EX	241.20	Zone-1	Demand	25.37	Fixed	439.74	85.85
J-30-EX	240.00	Zone-1	Demand	0.00	Fixed	439.61	86.32
J-25-EX	235.20	Zone-1	Demand	27.28	Fixed	439.66	88.41
J-26-EX	233.30	Zone-1	Demand	27.50	Fixed	439.62	89.22
J-34-EX	233.00	Zone-1	Demand	24.29	Fixed	439.50	89.30
J-33-EX	232.00	Zone-1	Demand	21.85	Fixed	439.54	89.75
J-20-EX	222.20	Zone-1	Demand	16.81	Fixed	439.43	93.94
J-2-EX	220.00	Zone-1	Demand	15.20	Fixed	439.29	94.83

Scenario: Peak Hour - Ex
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Demand (gpm)	Pattern	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-18-EX	323.20	Zone-1	Demand	0.00	Fixed	438.26	49.76
J-1-EX	317.60	Zone-1	Demand	41.71	Fixed	438.26	52.18
J-7-EX	317.20	Zone-1	Demand	0.00	Fixed	438.14	52.30
J-5-EX	313.80	Zone-1	Demand	0.00	Fixed	438.14	53.77
J-9-EX	281.50	Zone-1	Demand	0.00	Fixed	437.77	67.58
J-13-EX	280.30	Zone-1	Demand	60.19	Fixed	437.88	68.14
J-17-EX	278.30	Zone-1	Demand	54.25	Fixed	438.76	69.39
J-10-EX	277.20	Zone-1	Demand	106.79	Fixed	438.33	69.68
J-16-EX	272.00	Zone-1	Demand	0.00	Fixed	437.64	71.63
J-23-EX	270.40	Zone-1	Demand	56.23	Fixed	438.62	72.74
J-27-EX	267.80	Zone-1	Demand	101.16	Fixed	438.33	73.74
J-11-EX	264.90	Zone-1	Demand	0.00	Fixed	437.77	74.75
J-31-EX	262.00	Zone-1	Demand	22.92	Fixed	438.32	76.25
J-6-EX	260.60	Zone-1	Demand	70.75	Fixed	437.72	76.59
J-14-EX	257.00	Zone-1	Demand	11.44	Fixed	437.64	78.12
J-21-EX	252.70	Zone-1	Demand	0.00	Fixed	439.25	80.67
J-24-EX	248.00	Zone-1	Demand	91.34	Fixed	438.62	82.43
J-29-EX	246.70	Zone-1	Demand	107.84	Fixed	437.47	82.50
J-3-EX	246.70	Zone-1	Demand	74.10	Fixed	437.95	82.70
J-32-EX	244.00	Zone-1	Demand	0.00	Fixed	438.33	84.03
J-8-EX	242.10	Zone-1	Demand	45.67	Fixed	437.92	84.68
J-4-EX	241.70	Zone-1	Demand	53.46	Fixed	437.52	84.68
J-19-EX	241.20	Zone-1	Demand	50.73	Fixed	439.05	85.56
J-30-EX	240.00	Zone-1	Demand	0.00	Fixed	438.58	85.87
J-25-EX	235.20	Zone-1	Demand	54.56	Fixed	438.77	88.03
J-34-EX	233.00	Zone-1	Demand	48.58	Fixed	438.21	88.74
J-26-EX	233.30	Zone-1	Demand	55.00	Fixed	438.62	88.79
J-33-EX	232.00	Zone-1	Demand	43.69	Fixed	438.36	89.23
J-20-EX	222.20	Zone-1	Demand	33.62	Fixed	437.95	93.30
J-2-EX	220.00	Zone-1	Demand	30.40	Fixed	437.45	94.03

Scenario: MD+FF1Ex
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Demand (gpm)	Pattern	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-18-EX	323.20	Zone-1	Demand	0.00	Fixed	423.42	43.34
J-1-EX	317.60	Zone-1	Demand	2,020.86	Fixed	423.42	45.76
J-7-EX	317.20	Zone-1	Demand	0.00	Fixed	425.57	46.86
J-5-EX	313.80	Zone-1	Demand	0.00	Fixed	425.57	48.33
J-9-EX	281.50	Zone-1	Demand	0.00	Fixed	430.78	64.55
J-13-EX	280.30	Zone-1	Demand	30.10	Fixed	430.30	64.86
J-10-EX	277.20	Zone-1	Demand	53.39	Fixed	428.17	65.29
J-17-EX	278.30	Zone-1	Demand	27.13	Fixed	434.55	67.57
J-16-EX	272.00	Zone-1	Demand	0.00	Fixed	431.04	68.78
J-23-EX	270.40	Zone-1	Demand	28.12	Fixed	433.30	70.44
J-27-EX	267.80	Zone-1	Demand	50.58	Fixed	430.90	70.53
J-11-EX	264.90	Zone-1	Demand	0.00	Fixed	430.78	71.73
J-31-EX	262.00	Zone-1	Demand	11.46	Fixed	430.89	73.03
J-6-EX	260.60	Zone-1	Demand	35.38	Fixed	430.99	73.68
J-14-EX	257.00	Zone-1	Demand	5.72	Fixed	431.04	75.26
J-21-EX	252.70	Zone-1	Demand	0.00	Fixed	436.92	79.66
J-29-EX	246.70	Zone-1	Demand	53.92	Fixed	431.61	79.96
J-3-EX	246.70	Zone-1	Demand	37.05	Fixed	432.19	80.21
J-24-EX	248.00	Zone-1	Demand	45.67	Fixed	433.97	80.42
J-32-EX	244.00	Zone-1	Demand	0.00	Fixed	430.89	80.82
J-4-EX	241.70	Zone-1	Demand	26.73	Fixed	431.16	81.93
J-8-EX	242.10	Zone-1	Demand	22.84	Fixed	432.19	82.20
-30-EX	240.00	Zone-1	Demand	0.00	Fixed	433.41	83.64
J-19-EX	241.20	Zone-1	Demand	25.37	Fixed	436.14	84.30
J-25-EX	235.20	Zone-1	Demand	27.28	Fixed	434.74	86.29
J-26-EX	233.30	Zone-1	Demand	27.50	Fixed	433.82	86.71
J-34-EX	233.00	Zone-1	Demand	24.29	Fixed	433.96	86.90
J-33-EX	232.00	Zone-1	Demand	21.85	Fixed	434.41	87.53
J-20-EX	222.20	Zone-1	Demand	16.81	Fixed	432.84	91.09
J-2-EX	220.00	Zone-1	Demand	15.20	Fixed	431.60	91.50

Scenario: Peak Hour - Ex
Steady State Analysis
Pipe Report

Label	Material	Hazen-Williams C	Diameter (in)	Length (ft)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)	Pressure Pipe Headloss (ft)	Discharge (gpm)
P-9-EX	Asbestos Cement	135.0	14.0	466.00	2.53	1.61	0.75	1,214.44
P-7-EX	Asbestos Cement	135.0	14.0	220.00	1.84	0.89	0.20	881.90
P-34-EX	Asbestos Cement	135.0	8.0	440.00	1.77	1.59	0.70	-276.53
P-33-Trans	Ductile Iron	130.0	33.0	4,770.00	1.39	0.21	1.00	-3,714.14
P-21-EX	Asbestos Cement	135.0	10.0	641.00	1.36	0.75	0.48	332.53
P-3-EX	Asbestos Cement	135.0	8.0	962.00	1.25	0.84	0.81	-196.10
P-18-EX	Asbestos Cement	135.0	10.0	214.00	1.24	0.64	0.14	-304.29
P-25-EX	Asbestos Cement	135.0	8.0	346.00	1.18	0.75	0.26	-184.26
P-12-EX	Asbestos Cement	135.0	14.0	784.00	1.16	0.38	0.30	554.64
P-33-EX	Asbestos Cement	135.0	8.0	199.00	1.15	0.72	0.14	-180.37
P-19-EX	Asbestos Cement	135.0	10.0	700.00	0.99	0.42	0.29	-241.66
P-23-EX	Asbestos Cement	135.0	10.0	545.00	0.79	0.28	0.15	193.04
P-13-EX	Asbestos Cement	135.0	8.0	952.00	0.68	0.27	0.26	107.12
P-4-EX	Asbestos Cement	135.0	8.0	433.00	0.68	0.28	0.12	107.12
P-28-EX	Asbestos Cement	135.0	8.0	1,769.00	0.68	0.27	0.48	-106.54
P-6-EX	Asbestos Cement	135.0	8.0	210.00	0.64	0.24	0.05	99.86
P-16-EX	Asbestos Cement	135.0	8.0	475.00	0.64	0.24	0.11	99.86
P-8-EX	Asbestos Cement	135.0	8.0	333.00	0.62	0.23	0.08	96.61
P-5-EX	Asbestos Cement	135.0	10.0	384.00	0.61	0.17	0.07	148.83
P-30-EX	Asbestos Cement	135.0	10.0	263.00	0.56	0.15	0.04	-138.04
P-29-EX	Asbestos Cement	135.0	10.0	1,643.00	0.56	0.15	0.24	-138.04
P-17-EX	Asbestos Cement	135.0	8.0	691.00	0.54	0.18	0.12	85.17
P-22-EX	Asbestos Cement	135.0	8.0	821.00	0.54	0.18	0.15	84.94
P-15-EX	Asbestos Cement	135.0	8.0	267.00	0.44	0.12	0.03	69.07
P-11-EX	Asbestos Cement	135.0	8.0	1,700.00	0.43	0.12	0.20	67.50
P-14-EX	Asbestos Cement	135.0	8.0	886.00	0.34	0.07	0.07	-52.93
P-42-EX	Asbestos Cement	135.0	8.0	1,954.00	0.33	0.07	0.14	-52.47
P-10-EX	Asbestos Cement	135.0	8.0	672.00	0.28	0.05	0.04	44.11
P-27-EX	Asbestos Cement	135.0	8.0	1,619.00	0.20	0.03	0.05	31.71
P-1-EX	Asbestos Cement	135.0	8.0	744.00	0.19	0.03	0.02	-30.40
P-32-EX	Asbestos Cement	135.0	8.0	644.00	0.15	0.02	0.01	22.92
P-31-EX	Asbestos Cement	135.0	10.0	694.00	0.09	0.01	3.72e-3	22.92
P-24-EX	Asbestos Cement	135.0	10.0	2,287.00	0.06	2.15e-3	4.91e-3	-13.96
P-20-EX	Asbestos Cement	135.0	8.0	1,128.00	0.04	1.49e-3	1.68e-3	-6.40
P-37-EX	Asbestos Cement	135.0	8.0	253.00	0.00	0.00	0.00	0.00
P-39-EX	Asbestos Cement	135.0	8.0	252.00	0.00	0.00	0.00	0.00
P-41-EX	Asbestos Cement	135.0	8.0	245.00	0.00	0.00	0.00	0.00
P-43-EX	Asbestos Cement	135.0	12.0	249.00	0.00	0.00	0.00	0.00

Scenario: MD+FF1Ex
Steady State Analysis
Pipe Report

Label	Material	Hazen-Williams C	Diameter (in)	Length (ft)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)	Pressure Pipe Headloss (ft)	Discharge (gpm)
P-5-EX	Asbestos Cement	135.0	10.0	384.00	6.16	12.38	4.75	1,509.02
P-9-EX	Asbestos Cement	135.0	14.0	466.00	5.43	6.61	3.08	2,607.23
P-19-EX	Asbestos Cement	135.0	10.0	700.00	4.64	7.33	5.13	-1,136.71
P-18-EX	Asbestos Cement	135.0	10.0	214.00	4.10	5.81	1.24	-1,002.64
P-7-EX	Asbestos Cement	135.0	14.0	220.00	3.87	3.53	0.78	1,856.85
P-4-EX	Asbestos Cement	135.0	8.0	433.00	3.27	4.97	2.15	-511.84
P-13-EX	Asbestos Cement	135.0	8.0	952.00	3.27	4.97	4.73	-511.84
P-21-EX	Asbestos Cement	135.0	10.0	641.00	3.07	3.40	2.18	750.38
P-34-EX	Asbestos Cement	135.0	8.0	440.00	2.89	3.95	1.74	-452.06
P-12-EX	Asbestos Cement	135.0	14.0	784.00	2.87	2.04	1.60	1,379.42
P-25-EX	Asbestos Cement	135.0	8.0	346.00	2.59	3.23	1.12	-405.93
P-3-EX	Asbestos Cement	135.0	8.0	962.00	2.23	2.45	2.36	-349.65
P-33-EX	Asbestos Cement	135.0	8.0	199.00	2.13	2.24	0.45	-333.27
P-23-EX	Asbestos Cement	135.0	10.0	545.00	2.10	1.70	0.92	515.24
P-14-EX	Asbestos Cement	135.0	8.0	886.00	2.07	2.13	1.89	-324.20
P-30-EX	Asbestos Cement	135.0	10.0	263.00	1.99	1.53	0.40	-487.74
P-29-EX	Asbestos Cement	135.0	10.0	1,643.00	1.99	1.53	2.52	-487.74
P-24-EX	Asbestos Cement	135.0	10.0	2,287.00	1.74	1.19	2.72	-425.70
P-33-Trans	Ductile Iron	130.0	33.0	4,770.00	1.39	0.21	1.00	-3,714.14
P-6-EX	Asbestos Cement	135.0	8.0	210.00	1.39	1.02	0.21	-217.73
P-16-EX	Asbestos Cement	135.0	8.0	475.00	1.39	1.02	0.49	-217.73
P-10-EX	Asbestos Cement	135.0	8.0	672.00	1.35	0.97	0.65	212.08
P-22-EX	Asbestos Cement	135.0	8.0	821.00	1.33	0.94	0.77	207.85
P-11-EX	Asbestos Cement	135.0	8.0	1,700.00	1.13	0.70	1.19	177.64
P-28-EX	Asbestos Cement	135.0	8.0	1,769.00	1.13	0.70	1.23	-177.04
P-20-EX	Asbestos Cement	135.0	8.0	1,128.00	1.04	0.59	0.67	162.18
P-27-EX	Asbestos Cement	135.0	8.0	1,619.00	0.69	0.28	0.45	-107.92
P-42-EX	Asbestos Cement	135.0	8.0	1,954.00	0.62	0.23	0.45	-96.95
P-17-EX	Asbestos Cement	135.0	8.0	691.00	0.52	0.16	0.11	-81.19
P-8-EX	Asbestos Cement	135.0	8.0	333.00	0.48	0.14	0.05	-75.47
P-1-EX	Asbestos Cement	135.0	8.0	744.00	0.10	0.01	0.01	-15.20
P-15-EX	Asbestos Cement	135.0	8.0	267.00	0.07	4.57e-3	1.22e-3	-11.60
P-32-EX	Asbestos Cement	135.0	8.0	644.00	0.07	4.41e-3	2.84e-3	11.46
P-31-EX	Asbestos Cement	135.0	10.0	694.00	0.05	1.5e-3	1.04e-3	11.46
P-41-EX	Asbestos Cement	135.0	8.0	245.00	0.00	0.00	0.00	0.00
P-43-EX	Asbestos Cement	135.0	12.0	249.00	0.00	0.00	0.00	0.00
P-37-EX	Asbestos Cement	135.0	8.0	253.00	0.00	0.00	0.00	0.00
P-39-EX	Asbestos Cement	135.0	8.0	252.00	0.00	0.00	0.00	0.00

RANCHO MURIETA NORTH
WATER MASTER PLAN
HYDROPNEUMATIC SYSTEM
EXISTING + MURIETA HILLS SCENARIO

RANCHO MURIETA CALIFORNIA

DATE: 5/05/03
DRAWN BY: GSJ
CHK'D BY: REL

MACKAY & SOMPS
INFRASTRUCTURE GROUP
SAN RAMON, CA (925)901-0690

JOB NO.: 11306-12
DWG. NO.:
SHEET 1 OF 1

Scenario: Avg Day - Ex+MH
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-1-EX	317.60	Zone-1	Demand	9.48	Fixed	439.78	52.83
J-2-EX	220.00	Zone-1	Demand	6.91	Fixed	439.35	94.86
J-3-EX	246.70	Zone-1	Demand	16.84	Fixed	439.66	83.44
J-4-EX	241.70	Zone-1	Demand	12.15	Fixed	439.38	85.48
J-5-EX	313.80	Zone-1	Demand	0.00	Fixed	439.74	54.46
J-6-EX	260.60	Zone-1	Demand	16.08	Fixed	439.57	77.39
J-7-EX	317.20	Zone-1	Demand	0.00	Fixed	439.74	52.99
J-8-EX	242.10	Zone-1	Demand	10.38	Fixed	439.65	85.43
J-9-EX	281.50	Zone-1	Demand	0.00	Fixed	439.60	68.37
J-10-EX	277.20	Zone-1	Demand	24.27	Fixed	439.79	70.31
J-11-EX	264.90	Zone-1	Demand	0.00	Fixed	439.60	75.55
J-13-EX	280.30	Zone-1	Demand	13.68	Fixed	439.65	68.91
J-14-EX	257.00	Zone-1	Demand	2.60	Fixed	439.51	78.92
J-16-EX	272.00	Zone-1	Demand	0.00	Fixed	439.51	72.44
J-17-EX	278.30	Zone-1	Demand	12.33	Fixed	439.84	69.86
J-18-EX	323.20	Zone-1	Demand	0.00	Fixed	439.78	50.41
J-19-EX	241.20	Zone-1	Demand	11.53	Fixed	439.88	85.91
J-20-EX	222.20	Zone-1	Demand	7.64	Fixed	439.65	94.03
J-21-EX	252.70	Zone-1	Demand	0.00	Fixed	439.90	80.95
J-23-EX	270.40	Zone-1	Demand	12.78	Fixed	439.83	73.27
J-24-EX	248.00	Zone-1	Demand	20.76	Fixed	439.83	82.95
J-25-EX	235.20	Zone-1	Demand	12.40	Fixed	439.85	88.50
J-26-EX	233.30	Zone-1	Demand	12.50	Fixed	439.84	89.31
J-27-EX	267.80	Zone-1	Demand	22.99	Fixed	439.80	74.38
J-29-EX	246.70	Zone-1	Demand	24.51	Fixed	439.36	83.31
J-30-EX	240.00	Zone-1	Demand	0.00	Fixed	439.83	86.41
J-31-EX	262.00	Zone-1	Demand	5.21	Fixed	439.80	76.89
J-32-EX	244.00	Zone-1	Demand	0.00	Fixed	439.80	84.67
J-33-EX	232.00	Zone-1	Demand	9.93	Fixed	439.75	89.84
J-34-EX	233.00	Zone-1	Demand	11.04	Fixed	439.72	89.39
J-102-MH	269.00	Zone-1	Demand	5.21	Fixed	439.31	73.65
J-103-MH	256.20	Zone-1	Demand	2.08	Fixed	439.29	79.17
J-104-MH	266.00	Zone-1	Demand	5.73	Fixed	439.29	74.94
J-105-MH	260.00	Zone-1	Demand	5.21	Fixed	439.29	77.53
J-106-MH	225.00	Zone-1	Demand	10.94	Fixed	439.29	92.67
J-107-MH	251.40	Zone-1	Demand	5.73	Fixed	439.29	81.25
J-108-MH	218.00	Zone-1	Demand	7.29	Fixed	439.30	95.70
J-109-MH	230.00	Zone-1	Demand	6.25	Fixed	439.34	90.52
J-110-MH	214.50	Zone-1	Demand	3.12	Fixed	439.33	97.22
J-111-MH	213.00	Zone-1	Demand	4.17	Fixed	439.31	97.86
J-113-MH	240.40	Zone-1	Demand	4.17	Fixed	439.32	86.02
J-114-MH	244.80	Zone-1	Demand	3.65	Fixed	439.33	84.12
J-115-MH	240.80	Zone-1	Demand	1.56	Fixed	439.35	85.86
J-116-MH	240.00	Zone-1	Demand	10.94	Fixed	439.30	86.18
J-117-MH	248.00	Zone-1	Demand	4.69	Fixed	439.30	82.73
J-118-MH	219.00	Zone-1	Demand	6.77	Fixed	439.30	95.26
J-119-MH	219.00	Zone-1	Demand	2.08	Fixed	439.30	95.27
J-120-MH	229.00	Zone-1	Demand	2.60	Fixed	439.32	90.95
J-121-MH	268.50	Zone-1	Demand	3.65	Fixed	439.29	73.86
J-122-MH	270.50	Zone-1	Demand	4.17	Fixed	439.29	72.99
J-123-MH	238.50	Zone-1	Demand	4.17	Fixed	439.33	86.85
J-124-MH	241.70	Zone-1	Demand	0.00	Fixed	439.35	85.47

Scenario: Avg Day - Ex+MH
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-127MH	210.00	Zone-1	Demand	4.69	Fixed	439.31	99.16
J-128MH	205.00	Zone-1	Demand	6.77	Fixed	439.31	101.32
J-129MH	200.00	Zone-1	Demand	5.21	Fixed	439.31	103.48
J-132MH	255.00	Zone-1	Demand	3.65	Fixed	439.30	79.70

Scenario: Peak Hour - Ex+MH
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-1-EX	317.60	Zone-1	Demand	41.71	Fixed	436.57	51.45
J-2-EX	220.00	Zone-1	Demand	30.40	Fixed	429.99	90.81
J-3-EX	246.70	Zone-1	Demand	74.10	Fixed	434.79	81.34
J-4-EX	241.70	Zone-1	Demand	53.46	Fixed	430.39	81.60
J-5-EX	313.80	Zone-1	Demand	0.00	Fixed	435.96	52.82
J-6-EX	260.60	Zone-1	Demand	70.75	Fixed	433.41	74.73
J-7-EX	317.20	Zone-1	Demand	0.00	Fixed	435.96	51.35
J-8-EX	242.10	Zone-1	Demand	45.67	Fixed	434.53	83.21
J-9-EX	281.50	Zone-1	Demand	0.00	Fixed	433.77	65.85
J-10-EX	277.20	Zone-1	Demand	106.79	Fixed	436.81	69.02
J-11-EX	264.90	Zone-1	Demand	0.00	Fixed	433.77	73.03
J-13-EX	280.30	Zone-1	Demand	60.19	Fixed	434.61	66.73
J-14-EX	257.00	Zone-1	Demand	11.44	Fixed	432.39	75.84
J-16-EX	272.00	Zone-1	Demand	0.00	Fixed	432.39	69.36
J-17-EX	278.30	Zone-1	Demand	54.25	Fixed	437.53	68.85
J-18-EX	323.20	Zone-1	Demand	0.00	Fixed	436.57	49.02
J-19-EX	241.20	Zone-1	Demand	50.73	Fixed	438.09	85.14
J-20-EX	222.20	Zone-1	Demand	33.62	Fixed	434.53	91.82
J-21-EX	252.70	Zone-1	Demand	0.00	Fixed	438.51	80.35
J-23-EX	270.40	Zone-1	Demand	56.23	Fixed	437.35	72.19
J-24-EX	248.00	Zone-1	Demand	91.34	Fixed	437.39	81.90
J-25-EX	235.20	Zone-1	Demand	54.56	Fixed	437.71	87.57
J-26-EX	233.30	Zone-1	Demand	55.00	Fixed	437.46	88.29
J-27-EX	267.80	Zone-1	Demand	101.16	Fixed	436.92	73.13
J-29-EX	246.70	Zone-1	Demand	107.84	Fixed	430.01	79.27
J-30-EX	240.00	Zone-1	Demand	0.00	Fixed	437.39	85.36
J-31-EX	262.00	Zone-1	Demand	22.92	Fixed	436.90	75.63
J-32-EX	244.00	Zone-1	Demand	0.00	Fixed	436.91	83.42
J-33-EX	232.00	Zone-1	Demand	43.69	Fixed	436.08	88.25
J-34-EX	233.00	Zone-1	Demand	48.58	Fixed	435.61	87.61
J-102-MH	269.00	Zone-1	Demand	22.92	Fixed	429.23	69.29
J-103-MH	256.20	Zone-1	Demand	9.15	Fixed	429.02	74.73
J-104-MH	266.00	Zone-1	Demand	25.21	Fixed	429.02	70.50
J-105-MH	260.00	Zone-1	Demand	22.92	Fixed	429.06	73.11
J-106-MH	225.00	Zone-1	Demand	48.13	Fixed	429.05	88.24
J-107-MH	251.40	Zone-1	Demand	25.21	Fixed	429.02	76.81
J-108-MH	218.00	Zone-1	Demand	32.08	Fixed	429.16	91.31
J-109-MH	230.00	Zone-1	Demand	27.50	Fixed	429.73	86.37
J-110-MH	214.50	Zone-1	Demand	13.73	Fixed	429.54	92.99
J-111-MH	213.00	Zone-1	Demand	18.33	Fixed	429.23	93.51
J-113-MH	240.40	Zone-1	Demand	18.35	Fixed	429.51	81.78
J-114-MH	244.80	Zone-1	Demand	16.04	Fixed	429.65	79.94
J-115-MH	240.80	Zone-1	Demand	6.88	Fixed	429.85	81.75
J-116-MH	240.00	Zone-1	Demand	48.13	Fixed	429.13	81.79
J-117-MH	248.00	Zone-1	Demand	20.63	Fixed	429.23	78.37
J-118-MH	219.00	Zone-1	Demand	29.79	Fixed	429.15	90.87
J-119-MH	219.00	Zone-1	Demand	9.17	Fixed	429.15	90.88
J-120-MH	229.00	Zone-1	Demand	11.46	Fixed	429.51	86.71
J-121-MH	268.50	Zone-1	Demand	16.06	Fixed	429.03	69.42
J-122-MH	270.50	Zone-1	Demand	18.35	Fixed	429.02	68.55
J-123-MH	238.50	Zone-1	Demand	18.33	Fixed	429.67	82.67
J-124-MH	241.70	Zone-1	Demand	0.00	Fixed	429.96	81.41

Scenario: Peak Hour - Ex+MH
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-127MH	210.00	Zone-1	Demand	20.62	Fixed	429.35	94.85
J-128MH	205.00	Zone-1	Demand	29.79	Fixed	429.35	97.02
J-129MH	200.00	Zone-1	Demand	22.92	Fixed	429.26	99.14
J-132MH	255.00	Zone-1	Demand	16.04	Fixed	429.13	75.30

Scenario: Max Day - Ex+MH
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-18-EX	323.20	Zone-1	Demand	0.00	Fixed	439.03	50.09
J-1-EX	317.60	Zone-1	Demand	20.86	Fixed	439.03	52.51
J-7-EX	317.20	Zone-1	Demand	0.00	Fixed	438.85	52.61
J-5-EX	313.80	Zone-1	Demand	0.00	Fixed	438.85	54.08
J-9-EX	281.50	Zone-1	Demand	0.00	Fixed	438.22	67.77
J-13-EX	280.30	Zone-1	Demand	30.10	Fixed	438.46	68.39
J-17-EX	278.30	Zone-1	Demand	27.13	Fixed	439.30	69.62
J-10-EX	277.20	Zone-1	Demand	53.39	Fixed	439.10	70.01
J-16-EX	272.00	Zone-1	Demand	0.00	Fixed	437.82	71.71
J-122-MH	270.50	Zone-1	Demand	9.17	Fixed	436.83	71.93
J-102-MH	269.00	Zone-1	Demand	11.46	Fixed	436.89	72.60
J-121-MH	268.50	Zone-1	Demand	8.03	Fixed	436.83	72.79
J-23-EX	270.40	Zone-1	Demand	28.12	Fixed	439.25	73.02
J-104-MH	266.00	Zone-1	Demand	12.61	Fixed	436.83	73.87
J-27-EX	267.80	Zone-1	Demand	50.58	Fixed	439.13	74.09
J-11-EX	264.90	Zone-1	Demand	0.00	Fixed	438.22	74.95
J-105-MH	260.00	Zone-1	Demand	11.46	Fixed	436.84	76.47
J-31-EX	262.00	Zone-1	Demand	11.46	Fixed	439.12	76.59
J-6-EX	260.60	Zone-1	Demand	35.38	Fixed	438.11	76.76
J-103-MH	256.20	Zone-1	Demand	4.58	Fixed	436.83	78.11
J-14-EX	257.00	Zone-1	Demand	5.72	Fixed	437.82	78.19
J-132MH	255.00	Zone-1	Demand	8.02	Fixed	436.86	78.64
J-107-MH	251.40	Zone-1	Demand	12.61	Fixed	436.83	80.19
J-21-EX	252.70	Zone-1	Demand	0.00	Fixed	439.58	80.81
J-117-MH	248.00	Zone-1	Demand	10.31	Fixed	436.89	81.68
J-29-EX	246.70	Zone-1	Demand	53.92	Fixed	437.12	82.35
J-24-EX	248.00	Zone-1	Demand	45.67	Fixed	439.26	82.71
J-3-EX	246.70	Zone-1	Demand	37.05	Fixed	438.52	82.95
J-114-MH	244.80	Zone-1	Demand	8.02	Fixed	437.02	83.12
J-32-EX	244.00	Zone-1	Demand	0.00	Fixed	439.13	84.38
J-124-MH	241.70	Zone-1	Demand	0.00	Fixed	437.11	84.50
J-4-EX	241.70	Zone-1	Demand	26.73	Fixed	437.24	84.56
J-115-MH	240.80	Zone-1	Demand	3.43	Fixed	437.08	84.88
J-8-EX	242.10	Zone-1	Demand	22.84	Fixed	438.44	84.90
J-113-MH	240.40	Zone-1	Demand	9.17	Fixed	436.98	85.01
J-116-MH	240.00	Zone-1	Demand	24.06	Fixed	436.86	85.13
J-19-EX	241.20	Zone-1	Demand	25.37	Fixed	439.46	85.73
J-123-MH	238.50	Zone-1	Demand	9.17	Fixed	437.02	85.85
J-30-EX	240.00	Zone-1	Demand	0.00	Fixed	439.26	86.17
J-25-EX	235.20	Zone-1	Demand	27.28	Fixed	439.35	88.28
J-34-EX	233.00	Zone-1	Demand	24.29	Fixed	438.75	88.97
J-26-EX	233.30	Zone-1	Demand	27.50	Fixed	439.28	89.07
J-33-EX	232.00	Zone-1	Demand	21.85	Fixed	438.89	89.46
J-109-MH	230.00	Zone-1	Demand	13.75	Fixed	437.04	89.53
J-120-MH	229.00	Zone-1	Demand	5.73	Fixed	436.98	89.94
J-106-MH	225.00	Zone-1	Demand	24.06	Fixed	436.84	91.61
J-20-EX	222.20	Zone-1	Demand	16.81	Fixed	438.44	93.51
J-2-EX	220.00	Zone-1	Demand	15.20	Fixed	437.12	93.89
J-118-MH	219.00	Zone-1	Demand	14.90	Fixed	436.87	94.21
J-119-MH	219.00	Zone-1	Demand	4.58	Fixed	436.87	94.21
J-108-MH	218.00	Zone-1	Demand	16.04	Fixed	436.87	94.65
J-110-MH	214.50	Zone-1	Demand	6.86	Fixed	436.99	96.21

Scenario: Max Day - Ex+MH
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-111-MH	213.00	Zone-1	Demand	19.17	Fixed	436.89	96.82
J-127MH	210.00	Zone-1	Demand	10.31	Fixed	436.93	98.13
J-128MH	205.00	Zone-1	Demand	14.90	Fixed	436.93	100.29
J-129MH	200.00	Zone-1	Demand	11.46	Fixed	436.90	102.44

Scenario: MD-Ex-MH+FF1Ex
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-1-EX	317.60	Zone-1	Demand	2,020.86	Fixed	421.60	44.97
J-2-EX	220.00	Zone-1	Demand	15.20	Fixed	427.12	89.57
J-3-EX	246.70	Zone-1	Demand	37.05	Fixed	429.51	79.05
J-4-EX	241.70	Zone-1	Demand	26.73	Fixed	427.09	80.17
J-5-EX	313.80	Zone-1	Demand	0.00	Fixed	423.32	47.36
J-6-EX	260.60	Zone-1	Demand	35.38	Fixed	427.31	72.09
J-7-EX	317.20	Zone-1	Demand	0.00	Fixed	423.32	45.89
J-8-EX	242.10	Zone-1	Demand	22.84	Fixed	429.49	81.03
J-9-EX	281.50	Zone-1	Demand	0.00	Fixed	427.25	63.03
J-10-EX	277.20	Zone-1	Demand	53.39	Fixed	426.70	64.65
J-11-EX	264.90	Zone-1	Demand	0.00	Fixed	427.25	70.20
J-13-EX	280.30	Zone-1	Demand	30.10	Fixed	427.10	63.48
J-14-EX	257.00	Zone-1	Demand	5.72	Fixed	427.23	73.62
J-16-EX	272.00	Zone-1	Demand	0.00	Fixed	427.23	67.13
J-17-EX	278.30	Zone-1	Demand	27.13	Fixed	433.42	67.08
J-18-EX	323.20	Zone-1	Demand	0.00	Fixed	421.60	42.55
J-19-EX	241.20	Zone-1	Demand	25.37	Fixed	435.29	83.93
J-20-EX	222.20	Zone-1	Demand	16.81	Fixed	430.17	89.93
J-21-EX	252.70	Zone-1	Demand	0.00	Fixed	436.27	79.38
J-23-EX	270.40	Zone-1	Demand	28.12	Fixed	432.13	69.94
J-24-EX	248.00	Zone-1	Demand	45.67	Fixed	432.96	79.98
J-25-EX	235.20	Zone-1	Demand	27.28	Fixed	433.86	85.91
J-26-EX	233.30	Zone-1	Demand	27.50	Fixed	432.86	86.30
J-27-EX	267.80	Zone-1	Demand	50.58	Fixed	429.69	70.01
J-29-EX	246.70	Zone-1	Demand	53.92	Fixed	427.13	78.02
J-30-EX	240.00	Zone-1	Demand	0.00	Fixed	432.43	83.21
J-31-EX	262.00	Zone-1	Demand	11.46	Fixed	429.69	72.51
J-32-EX	244.00	Zone-1	Demand	0.00	Fixed	429.69	80.30
J-33-EX	232.00	Zone-1	Demand	21.85	Fixed	432.65	86.77
J-34-EX	233.00	Zone-1	Demand	24.29	Fixed	431.95	86.03
J-102-MH	269.00	Zone-1	Demand	11.46	Fixed	426.84	68.26
J-103-MH	256.20	Zone-1	Demand	4.58	Fixed	426.79	73.77
J-104-MH	266.00	Zone-1	Demand	12.61	Fixed	426.79	69.53
J-105-MH	260.00	Zone-1	Demand	11.46	Fixed	426.80	72.13
J-106-MH	225.00	Zone-1	Demand	24.06	Fixed	426.80	87.26
J-107-MH	251.40	Zone-1	Demand	12.61	Fixed	426.79	75.84
J-108-MH	218.00	Zone-1	Demand	16.04	Fixed	426.83	90.30
J-109-MH	230.00	Zone-1	Demand	13.75	Fixed	426.97	85.18
J-110-MH	214.50	Zone-1	Demand	6.86	Fixed	426.96	91.87
J-111-MH	213.00	Zone-1	Demand	19.17	Fixed	426.84	92.47
J-113-MH	240.40	Zone-1	Demand	9.17	Fixed	426.93	80.66
J-114-MH	244.80	Zone-1	Demand	8.02	Fixed	426.97	78.78
J-115-MH	240.80	Zone-1	Demand	3.43	Fixed	427.06	80.55
J-116-MH	240.00	Zone-1	Demand	24.06	Fixed	426.82	80.79
J-117-MH	248.00	Zone-1	Demand	10.31	Fixed	426.84	77.34
J-118-MH	219.00	Zone-1	Demand	14.90	Fixed	426.82	89.87
J-119-MH	219.00	Zone-1	Demand	4.58	Fixed	426.82	89.87
J-120-MH	229.00	Zone-1	Demand	5.73	Fixed	426.93	85.59
J-121-MH	268.50	Zone-1	Demand	8.03	Fixed	426.79	68.45
J-122-MH	270.50	Zone-1	Demand	9.17	Fixed	426.79	67.58
J-123-MH	238.50	Zone-1	Demand	9.17	Fixed	426.97	81.50
J-124-MH	241.70	Zone-1	Demand	0.00	Fixed	427.02	80.14

Scenario: MD-Ex-MH+FF1Ex
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-127MH	210.00	Zone-1	Demand	10.31	Fixed	426.89	93.79
J-128MH	205.00	Zone-1	Demand	14.90	Fixed	426.89	95.95
J-129MH	200.00	Zone-1	Demand	11.46	Fixed	426.86	98.10
J-132MH	255.00	Zone-1	Demand	8.02	Fixed	426.82	74.30

Scenario: MD-Ex-MH+FF122MH
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-1-EX	317.60	Zone-1	Demand	20.86	Fixed	432.69	49.77
J-2-EX	220.00	Zone-1	Demand	15.20	Fixed	391.86	74.32
J-3-EX	246.70	Zone-1	Demand	37.05	Fixed	424.21	76.76
J-4-EX	241.70	Zone-1	Demand	26.73	Fixed	394.79	66.20
J-5-EX	313.80	Zone-1	Demand	0.00	Fixed	429.84	50.18
J-6-EX	260.60	Zone-1	Demand	35.38	Fixed	416.74	67.52
J-7-EX	317.20	Zone-1	Demand	0.00	Fixed	429.84	48.71
J-8-EX	242.10	Zone-1	Demand	22.84	Fixed	422.61	78.06
J-9-EX	281.50	Zone-1	Demand	0.00	Fixed	418.83	59.39
J-10-EX	277.20	Zone-1	Demand	53.39	Fixed	433.60	67.63
J-11-EX	264.90	Zone-1	Demand	0.00	Fixed	418.83	66.57
J-13-EX	280.30	Zone-1	Demand	30.10	Fixed	423.57	61.96
J-14-EX	257.00	Zone-1	Demand	5.72	Fixed	409.56	65.97
J-16-EX	272.00	Zone-1	Demand	0.00	Fixed	409.56	59.48
J-17-EX	278.30	Zone-1	Demand	27.13	Fixed	434.71	67.64
J-18-EX	323.20	Zone-1	Demand	0.00	Fixed	432.69	47.35
J-19-EX	241.20	Zone-1	Demand	25.37	Fixed	435.85	84.17
J-20-EX	222.20	Zone-1	Demand	16.81	Fixed	422.38	86.56
J-21-EX	252.70	Zone-1	Demand	0.00	Fixed	436.84	79.63
J-23-EX	270.40	Zone-1	Demand	28.12	Fixed	434.54	70.98
J-24-EX	248.00	Zone-1	Demand	45.67	Fixed	435.08	80.90
J-25-EX	235.20	Zone-1	Demand	27.28	Fixed	435.73	86.72
J-26-EX	233.30	Zone-1	Demand	27.50	Fixed	435.39	87.39
J-27-EX	267.80	Zone-1	Demand	50.58	Fixed	434.36	72.03
J-29-EX	246.70	Zone-1	Demand	53.92	Fixed	391.87	62.78
J-30-EX	240.00	Zone-1	Demand	0.00	Fixed	435.24	84.43
J-31-EX	262.00	Zone-1	Demand	11.46	Fixed	434.36	74.53
J-32-EX	244.00	Zone-1	Demand	0.00	Fixed	434.36	82.32
J-33-EX	232.00	Zone-1	Demand	21.85	Fixed	429.07	85.22
J-34-EX	233.00	Zone-1	Demand	24.29	Fixed	427.24	84.00
J-102-MH	269.00	Zone-1	Demand	11.46	Fixed	379.84	47.93
J-103-MH	256.20	Zone-1	Demand	4.58	Fixed	364.75	46.94
J-104-MH	266.00	Zone-1	Demand	12.61	Fixed	359.70	40.52
J-105-MH	260.00	Zone-1	Demand	11.46	Fixed	369.53	47.36
J-106-MH	225.00	Zone-1	Demand	24.06	Fixed	369.93	62.67
J-107-MH	251.40	Zone-1	Demand	12.61	Fixed	364.75	49.01
J-108-MH	218.00	Zone-1	Demand	16.04	Fixed	378.30	69.32
J-109-MH	230.00	Zone-1	Demand	13.75	Fixed	387.98	68.32
J-110-MH	214.50	Zone-1	Demand	6.86	Fixed	385.92	74.13
J-111-MH	213.00	Zone-1	Demand	19.17	Fixed	380.09	72.25
J-113-MH	240.40	Zone-1	Demand	9.17	Fixed	385.71	62.84
J-114-MH	244.80	Zone-1	Demand	8.02	Fixed	387.54	61.73
J-115-MH	240.80	Zone-1	Demand	3.43	Fixed	389.96	64.50
J-116-MH	240.00	Zone-1	Demand	24.06	Fixed	377.08	59.28
J-117-MH	248.00	Zone-1	Demand	10.31	Fixed	379.88	57.03
J-118-MH	219.00	Zone-1	Demand	14.90	Fixed	377.26	68.44
J-119-MH	219.00	Zone-1	Demand	4.58	Fixed	377.56	68.57
J-120-MH	229.00	Zone-1	Demand	5.73	Fixed	385.71	67.77
J-121-MH	268.50	Zone-1	Demand	8.03	Fixed	360.85	39.93
J-122-MH	270.50	Zone-1	Demand	1,759.17	Fixed	352.89	35.63
J-123-MH	238.50	Zone-1	Demand	9.17	Fixed	387.74	64.54
J-124-MH	241.70	Zone-1	Demand	0.00	Fixed	390.41	64.31

Scenario: MD-Ex-MH+FF122MH
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-127MH	210.00	Zone-1	Demand	10.31	Fixed	382.93	74.78
J-128MH	205.00	Zone-1	Demand	14.90	Fixed	382.93	76.94
J-129MH	200.00	Zone-1	Demand	11.46	Fixed	380.86	78.21
J-132MH	255.00	Zone-1	Demand	8.02	Fixed	376.68	52.62

Scenario: Peak Hour - Ex+MH
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Discharge (gpm)	Upstream Hyd. Grade (ft)	Downstream Hyd. Grade (ft)	Velocity (ft/s)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)	Calculated Minor Headloss (ft)
P-1-EX	744.00	8.0	Asbestos	135.0	-30.40	429.99	430.01	0.19	0.02	0.03	0.00
P-2-EX	384.00	8.0	PVC	135.0	-229.02	429.96	430.39	1.46	0.43	1.12	0.00
P-3-EX	962.00	8.0	Asbestos	135.0	-378.59	434.79	437.53	2.42	2.73	2.84	0.00
P-4-EX	433.00	8.0	Asbestos	135.0	259.77	436.57	435.96	1.66	0.61	1.42	0.00
P-5-EX	384.00	10.0	Asbestos	135.0	301.48	436.81	436.57	1.23	0.24	0.63	0.00
P-6-EX	210.00	8.0	Asbestos	135.0	291.73	433.77	433.41	1.86	0.37	1.75	0.00
P-7-EX	220.00	14.0	Asbestos	135.0	1,326.21	438.51	438.09	2.76	0.42	1.89	0.00
P-8-EX	333.00	8.0	Asbestos	135.0	393.27	433.41	432.39	2.51	1.02	3.05	0.00
P-9-EX	466.00	14.0	Asbestos	135.0	1,762.19	440.00	438.51	3.67	1.49	3.20	0.00
P-10-EX	672.00	8.0	Asbestos	135.0	5.62	434.53	434.53	0.04	7.93e-4	1.18e-3	0.00
P-11-EX	1,700.00	8.0	Asbestos	135.0	172.30	434.53	433.41	1.10	1.13	0.66	0.00
P-12-EX	784.00	14.0	Asbestos	135.0	786.34	438.09	437.53	1.64	0.56	0.72	0.00
P-13-EX	952.00	8.0	Asbestos	135.0	259.77	435.96	434.61	1.66	1.35	1.42	0.00
P-14-EX	886.00	8.0	Asbestos	135.0	-92.15	434.61	434.79	0.59	0.18	0.21	0.00
P-15-EX	267.00	8.0	Asbestos	135.0	212.34	434.79	434.53	1.36	0.26	0.98	0.00
P-16-EX	475.00	8.0	Asbestos	135.0	291.73	434.61	433.77	1.86	0.83	1.75	0.00
P-17-EX	691.00	8.0	Asbestos	135.0	381.83	432.39	430.39	2.44	2.00	2.89	0.00
P-18-EX	214.00	10.0	Asbestos	135.0	-353.50	437.35	437.53	1.44	0.18	0.84	0.00
P-19-EX	700.00	10.0	Asbestos	135.0	-335.02	436.81	437.35	1.37	0.54	0.76	0.00
P-20-EX	1,128.00	8.0	Asbestos	135.0	37.75	437.39	437.35	0.24	0.05	0.04	0.00
P-21-EX	641.00	10.0	Asbestos	135.0	435.98	438.51	437.71	1.78	0.80	1.24	0.00
P-22-EX	821.00	8.0	Asbestos	135.0	129.09	437.71	437.39	0.82	0.32	0.39	0.00
P-23-EX	545.00	10.0	Asbestos	135.0	252.33	437.71	437.46	1.03	0.25	0.45	0.00
P-24-EX	2,287.00	10.0	Asbestos	135.0	-73.25	436.81	436.92	0.30	0.11	0.05	0.00
P-25-EX	346.00	8.0	Asbestos	135.0	-396.86	434.53	435.61	2.53	1.07	3.10	0.00
P-27-EX	1,619.00	8.0	Asbestos	135.0	99.35	430.39	430.01	0.63	0.39	0.24	0.00
P-28-EX	1,769.00	8.0	Asbestos	135.0	-357.62	430.01	434.53	2.28	4.52	2.56	0.00
P-29-EX	1,643.00	10.0	Asbestos	135.0	-197.33	436.92	437.39	0.81	0.47	0.29	0.00
P-30-EX	263.00	10.0	Asbestos	135.0	-197.33	437.39	437.46	0.81	0.08	0.29	0.00
P-31-EX	694.00	10.0	Asbestos	135.0	22.92	436.92	436.91	0.09	3.72e-3	0.01	0.00
P-32-EX	644.00	8.0	Asbestos	135.0	22.92	436.91	436.90	0.15	0.01	0.02	0.00
P-33-EX	199.00	8.0	Asbestos	135.0	-345.06	435.61	436.08	2.20	0.48	2.39	0.00
P-33-Trar	4,736.00	33.0	PVC	135.0	-3,871.94	418.00	419.00	1.45	1.00	0.21	0.00
P-34-EX	440.00	8.0	Asbestos	135.0	-489.13	436.08	438.09	3.12	2.01	4.57	0.00
P-37-EX	253.00	8.0	Asbestos	135.0	0.00	432.39	432.39	0.00	0.00	0.00	0.00
P-39-EX	252.00	8.0	Asbestos	135.0	0.00	433.77	433.77	0.00	0.00	0.00	0.00
P-41-EX	245.00	8.0	Asbestos	135.0	0.00	435.96	435.96	0.00	0.00	0.00	0.00
P-42-EX	1,954.00	8.0	Asbestos	135.0	-100.38	435.61	436.08	0.64	0.48	0.24	0.00
P-43-EX	249.00	12.0	Asbestos	135.0	0.00	436.57	436.57	0.00	0.00	0.00	0.00
P-101-MH	614.00	8.0	PVC	135.0	42.48	429.05	429.02	0.27	0.03	0.05	0.00
P-103-MH	832.00	8.0	PVC	135.0	35.84	429.16	429.13	0.23	0.03	0.04	0.00
P-104-MH	255.00	10.0	PVC	135.0	-9.15	429.02	429.02	0.04	2.44e-4	9.57e-4	0.00
P-105-MH	327.00	8.0	PVC	135.0	-164.80	429.65	429.85	1.05	0.20	0.61	0.00
P-106-MH	620.00	8.0	PVC	135.0	147.04	429.85	429.54	0.94	0.31	0.49	0.00
P-107-MH	627.00	8.0	PVC	135.0	8.12	429.02	429.02	0.05	1.46e-3	2.34e-3	0.00
P-108-MH	847.00	8.0	PVC	135.0	-10.49	429.05	429.06	0.07	3.17e-3	3.75e-3	0.00
P-110-MH	1,018.00	8.0	PVC	135.0	-146.32	429.23	429.73	0.93	0.50	0.49	0.00
P-112-MH	274.00	8.0	PVC	135.0	102.33	429.23	429.16	0.65	0.07	0.25	0.00
P-113-MH	717.00	8.0	PVC	135.0	-10.48	429.23	429.23	0.07	2.66e-3	3.7e-3	0.00
P-114-MH	579.00	8.0	PVC	135.0	80.12	429.15	429.05	0.51	0.09	0.16	0.00
P-115-MH	377.00	8.0	PVC	135.0	34.41	429.16	429.15	0.22	0.01	0.03	0.00

Scenario: Peak Hour - Ex+MH
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Discharge (gpm)	Upstream Hyd. Grade (ft)	Downstream Hyd. Grade (ft)	Velocity (ft/s)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)	Calculated Minor Headloss (ft)
P-119-MH	155.00	8.0	PVC	135.0	25.24	429.15	429.15	0.16	2.93e-3	0.02	0.00
P-120-MH	414.00	8.0	PVC	135.0	-51.50	429.03	429.06	0.33	0.03	0.07	0.00
P-121-MH	462.00	8.0	PVC	135.0	-20.11	429.02	429.03	0.13	0.01	0.01	0.00
P-122-MH	171.00	8.0	PVC	135.0	-10.15	429.23	429.23	0.06	5.8e-4	3.39e-3	0.00
P-124-MH	184.00	8.0	PVC	135.0	-185.63	429.51	429.65	1.18	0.14	0.76	0.00
P-125-MH	413.00	10.0	PVC	135.0	-18.35	429.51	429.51	0.07	1.46e-3	3.55e-3	0.00
P-126-MH	394.00	8.0	PVC	135.0	3.01	429.02	429.02	0.02	1.53e-4	3.87e-4	0.00
P-127-MH	782.00	8.0	PVC	135.0	-15.34	429.02	429.03	0.10	0.01	0.01	0.00
P-129-MH	599.00	8.0	PVC	135.0	36.87	429.67	429.65	0.24	0.02	0.04	0.00
P-130-MH	212.00	8.0	PVC	135.0	-229.02	429.73	429.96	1.46	0.24	1.12	0.00
P-131-MH	225.00	10.0	PVC	135.0	-318.73	429.85	430.01	1.30	0.16	0.70	0.00
P-132MH	843.00	8.0	PVC	135.0	4.07	429.35	429.35	0.03	5.19e-4	6.15e-4	0.00
P-135MH	470.00	8.0	PVC	135.0	133.31	429.54	429.35	0.85	0.19	0.41	0.00
P-136MH	343.00	8.0	PVC	135.0	107.59	429.35	429.26	0.69	0.10	0.28	0.00
P-137MH	620.00	8.0	PVC	135.0	84.67	429.26	429.15	0.54	0.11	0.18	0.00
P-138MH	303.00	8.0	PVC	135.0	-131.14	429.23	429.35	0.84	0.12	0.40	0.00
P-139MH	291.00	8.0	PVC	135.0	-155.83	429.35	429.51	0.99	0.16	0.55	0.00
P-140MH	430.00	8.0	PVC	135.0	-84.92	429.06	429.13	0.54	0.08	0.18	0.00
P-141MH	314.00	8.0	PVC	135.0	-113.25	429.13	429.23	0.72	0.10	0.30	0.00
P-142MH	326.00	8.0	PVC	135.0	12.29	429.13	429.13	0.08	1.62e-3	4.96e-3	0.00
P-143MH	649.00	8.0	PVC	135.0	-55.20	429.67	429.73	0.35	0.05	0.08	0.00

Scenario: Max Day - Ex+MH
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Discharge (gpm)	Upstream Hyd. Grade (ft)	Downstream Hyd. Grade (ft)	Velocity (ft/s)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)	Calculated Minor Headloss (ft)
P-1-EX	744.00	8.0	Asbestos	135.0	-15.20	437.12	437.12	0.10	0.01	0.01	0.00
P-2-EX	384.00	8.0	PVC	135.0	-118.42	437.11	437.24	0.76	0.13	0.33	0.00
P-3-EX	962.00	8.0	Asbestos	135.0	-192.67	438.52	439.30	1.23	0.78	0.81	0.00
P-4-EX	433.00	8.0	Asbestos	135.0	132.60	439.03	438.85	0.85	0.18	0.41	0.00
P-5-EX	384.00	10.0	Asbestos	135.0	153.46	439.10	439.03	0.63	0.07	0.18	0.00
P-6-EX	210.00	8.0	Asbestos	135.0	149.29	438.22	438.11	0.95	0.11	0.51	0.00
P-7-EX	220.00	14.0	Asbestos	135.0	671.29	439.58	439.46	1.40	0.12	0.54	0.00
P-8-EX	333.00	8.0	Asbestos	135.0	201.95	438.11	437.82	1.29	0.30	0.89	0.00
P-9-EX	466.00	14.0	Asbestos	135.0	891.09	440.00	439.58	1.86	0.42	0.91	0.00
P-10-EX	672.00	8.0	Asbestos	135.0	2.04	438.44	438.44	0.01	1.22e-4	1.82e-4	0.00
P-11-EX	1,700.00	8.0	Asbestos	135.0	88.03	438.44	438.11	0.56	0.33	0.19	0.00
P-12-EX	784.00	14.0	Asbestos	135.0	397.45	439.46	439.30	0.83	0.16	0.20	0.00
P-13-EX	952.00	8.0	Asbestos	135.0	132.60	438.85	438.46	0.85	0.39	0.41	0.00
P-14-EX	886.00	8.0	Asbestos	135.0	-46.79	438.46	438.52	0.30	0.05	0.06	0.00
P-15-EX	267.00	8.0	Asbestos	135.0	108.83	438.52	438.44	0.69	0.08	0.28	0.00
P-16-EX	475.00	8.0	Asbestos	135.0	149.29	438.46	438.22	0.95	0.24	0.51	0.00
P-17-EX	691.00	8.0	Asbestos	135.0	196.23	437.82	437.24	1.25	0.58	0.84	0.00
P-18-EX	214.00	10.0	Asbestos	135.0	-177.66	439.25	439.30	0.73	0.05	0.24	0.00
P-19-EX	700.00	10.0	Asbestos	135.0	-169.17	439.10	439.25	0.69	0.15	0.22	0.00
P-20-EX	1,128.00	8.0	Asbestos	135.0	19.64	439.26	439.25	0.13	0.01	0.01	0.00
P-21-EX	641.00	10.0	Asbestos	135.0	219.80	439.58	439.35	0.90	0.22	0.35	0.00
P-22-EX	821.00	8.0	Asbestos	135.0	65.31	439.35	439.26	0.42	0.09	0.11	0.00
P-23-EX	545.00	10.0	Asbestos	135.0	127.22	439.35	439.28	0.52	0.07	0.13	0.00
P-24-EX	2,287.00	10.0	Asbestos	135.0	-37.68	439.10	439.13	0.15	0.03	0.01	0.00
P-25-EX	346.00	8.0	Asbestos	135.0	-202.34	438.44	438.75	1.29	0.31	0.89	0.00
P-27-EX	1,619.00	8.0	Asbestos	135.0	51.08	437.24	437.12	0.33	0.11	0.07	0.00
P-28-EX	1,769.00	8.0	Asbestos	135.0	-183.49	437.12	438.44	1.17	1.32	0.74	0.00
P-29-EX	1,643.00	10.0	Asbestos	135.0	-99.72	439.13	439.26	0.41	0.13	0.08	0.00
P-30-EX	263.00	10.0	Asbestos	135.0	-99.72	439.26	439.28	0.41	0.02	0.08	0.00
P-31-EX	694.00	10.0	Asbestos	135.0	11.46	439.13	439.13	0.05	1.04e-3	1.5e-3	0.00
P-32-EX	644.00	8.0	Asbestos	135.0	11.46	439.13	439.12	0.07	2.84e-3	4.41e-3	0.00
P-33-EX	199.00	8.0	Asbestos	135.0	-175.56	438.75	438.89	1.12	0.14	0.69	0.00
P-33-Tran	4,736.00	33.0	PVC	135.0	-3,871.94	418.00	419.00	1.45	1.00	0.21	0.00
P-34-EX	440.00	8.0	Asbestos	135.0	-248.47	438.89	439.46	1.59	0.57	1.30	0.00
P-37-EX	253.00	8.0	Asbestos	135.0	0.00	437.82	437.82	0.00	0.00	0.00	0.00
P-39-EX	252.00	8.0	Asbestos	135.0	0.00	438.22	438.22	0.00	0.00	0.00	0.00
P-41-EX	245.00	8.0	Asbestos	135.0	0.00	438.85	438.85	0.00	0.00	0.00	0.00
P-42-EX	1,954.00	8.0	Asbestos	135.0	-51.07	438.75	438.89	0.33	0.14	0.07	0.00
P-43-EX	249.00	12.0	Asbestos	135.0	0.00	439.03	439.03	0.00	0.00	0.00	0.00
P-101-MH	614.00	8.0	PVC	135.0	21.28	436.84	436.83	0.14	0.01	0.01	0.00
P-103-MH	832.00	8.0	PVC	135.0	17.83	436.87	436.86	0.11	0.01	0.01	0.00
P-104-MH	255.00	10.0	PVC	135.0	-4.58	436.83	436.83	0.02	6.1e-5	2.39e-4	0.00
P-105-MH	327.00	8.0	PVC	135.0	-85.57	437.02	437.08	0.55	0.06	0.18	0.00
P-106-MH	620.00	8.0	PVC	135.0	76.44	437.08	436.99	0.49	0.09	0.15	0.00
P-107-MH	627.00	8.0	PVC	135.0	4.09	436.83	436.83	0.03	3.97e-4	6.33e-4	0.00
P-108-MH	847.00	8.0	PVC	135.0	-5.05	436.84	436.84	0.03	8.24e-4	9.73e-4	0.00
P-110-MH	1,018.00	8.0	PVC	135.0	-76.51	436.89	437.04	0.49	0.15	0.15	0.00
P-112-MH	274.00	8.0	PVC	135.0	49.76	436.89	436.87	0.32	0.02	0.07	0.00
P-113-MH	717.00	8.0	PVC	135.0	-1.74	436.89	436.89	0.01	9.16e-5	1.28e-4	0.00
P-114-MH	579.00	8.0	PVC	135.0	40.29	436.87	436.84	0.26	0.03	0.05	0.00
P-115-MH	377.00	8.0	PVC	135.0	15.88	436.87	436.87	0.10	3.02e-3	0.01	0.00

Scenario: Max Day - Ex+MH
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Discharge (gpm)	Upstream Hyd. Grade (ft)	Downstream Hyd. Grade (ft)	Velocity (ft/s)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)	Calculated Minor Headloss (ft)
P-119-MH	155.00	8.0	PVC	135.0	11.30	436.87	436.87	0.07	6.71e-4	4.33e-3	0.00
P-120-MH	414.00	8.0	PVC	135.0	-25.72	436.83	436.84	0.16	0.01	0.02	0.00
P-121-MH	462.00	8.0	PVC	135.0	-10.03	436.83	436.83	0.06	1.59e-3	3.43e-3	0.00
P-122-MH	171.00	8.0	PVC	135.0	-8.57	436.89	436.89	0.05	4.27e-4	2.5e-3	0.00
P-124-MH	184.00	8.0	PVC	135.0	-96.54	436.98	437.02	0.62	0.04	0.23	0.00
P-125-MH	413.00	10.0	PVC	135.0	-9.17	436.98	436.98	0.04	4.27e-4	1.03e-3	0.00
P-126-MH	394.00	8.0	PVC	135.0	1.52	436.83	436.83	0.01	6.1e-5	1.55e-4	0.00
P-127-MH	782.00	8.0	PVC	135.0	-7.65	436.83	436.83	0.05	1.65e-3	2.11e-3	0.00
P-129-MH	599.00	8.0	PVC	135.0	18.99	437.02	437.02	0.12	0.01	0.01	0.00
P-130-MH	212.00	8.0	PVC	135.0	-118.42	437.04	437.11	0.76	0.07	0.33	0.00
P-131-MH	225.00	10.0	PVC	135.0	-165.44	437.08	437.12	0.68	0.05	0.21	0.00
P-132MH	843.00	8.0	PVC	135.0	0.66	436.93	436.93	4.22e-3	0.00	0.00	0.00
P-135MH	470.00	8.0	PVC	135.0	69.58	436.99	436.93	0.44	0.06	0.12	0.00
P-136MH	343.00	8.0	PVC	135.0	55.34	436.93	436.90	0.35	0.03	0.08	0.00
P-137MH	620.00	8.0	PVC	135.0	43.88	436.90	436.87	0.28	0.03	0.05	0.00
P-138MH	303.00	8.0	PVC	135.0	-70.66	436.89	436.93	0.45	0.04	0.13	0.00
P-139MH	291.00	8.0	PVC	135.0	-81.64	436.93	436.98	0.52	0.05	0.17	0.00
P-140MH	430.00	8.0	PVC	135.0	-42.23	436.84	436.86	0.27	0.02	0.05	0.00
P-141MH	314.00	8.0	PVC	135.0	-56.47	436.86	436.89	0.36	0.03	0.08	0.00
P-142MH	326.00	8.0	PVC	135.0	6.23	436.86	436.86	0.04	4.58e-4	1.4e-3	0.00
P-143MH	649.00	8.0	PVC	135.0	-28.16	437.02	437.04	0.18	0.02	0.02	0.00

Scenario: MD-Ex-MH+FF1Ex
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Discharge (gpm)	Upstream Hyd. Grade (ft)	Downstream Hyd. Grade (ft)	Velocity (ft/s)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)	Calculated Minor Headloss (ft)
P-1-EX	744.00	8.0	Asbesto:	135.0	-15.20	427.12	427.13	0.10	0.01	0.01	0.00
P-2-EX	384.00	8.0	PVC	135.0	-90.26	427.02	427.09	0.58	0.08	0.20	0.00
P-3-EX	962.00	8.0	Asbesto:	135.0	-459.20	429.51	433.42	2.93	3.91	4.06	0.00
P-4-EX	433.00	8.0	Asbesto:	135.0	-453.56	421.60	423.32	2.89	1.72	3.97	0.00
P-5-EX	384.00	10.0	Asbesto:	135.0	1,567.30	426.70	421.60	6.40	5.10	13.28	0.00
P-6-EX	210.00	8.0	Asbesto:	135.0	-113.96	427.25	427.31	0.73	0.06	0.31	0.00
P-7-EX	220.00	14.0	Asbesto:	135.0	2,099.28	436.27	435.29	4.38	0.97	4.43	0.00
P-8-EX	333.00	8.0	Asbesto:	135.0	96.83	427.31	427.23	0.62	0.08	0.23	0.00
P-9-EX	466.00	14.0	Asbesto:	135.0	2,891.09	440.00	436.27	6.03	3.73	8.01	0.00
P-10-EX	672.00	8.0	Asbesto:	135.0	216.54	430.17	429.49	1.38	0.68	1.01	0.00
P-11-EX	1,700.00	8.0	Asbesto:	135.0	246.17	429.49	427.31	1.57	2.18	1.28	0.00
P-12-EX	784.00	14.0	Asbesto:	135.0	1,505.83	435.29	433.42	3.14	1.88	2.40	0.00
P-13-EX	952.00	8.0	Asbesto:	135.0	-453.56	423.32	427.10	2.89	3.78	3.97	0.00
P-14-EX	886.00	8.0	Asbesto:	135.0	-369.70	427.10	429.51	2.36	2.41	2.72	0.00
P-15-EX	267.00	8.0	Asbesto:	135.0	52.46	429.51	429.49	0.33	0.02	0.07	0.00
P-16-EX	475.00	8.0	Asbesto:	135.0	-113.96	427.10	427.25	0.73	0.15	0.31	0.00
P-17-EX	691.00	8.0	Asbesto:	135.0	91.11	427.23	427.09	0.58	0.14	0.20	0.00
P-18-EX	214.00	10.0	Asbesto:	135.0	-1,019.50	432.13	433.42	4.16	1.28	5.99	0.00
P-19-EX	700.00	10.0	Asbesto:	135.0	-1,172.76	426.70	432.13	4.79	5.44	7.76	0.00
P-20-EX	1,128.00	8.0	Asbesto:	135.0	181.38	432.96	432.13	1.16	0.82	0.73	0.00
P-21-EX	641.00	10.0	Asbesto:	135.0	791.81	436.27	433.86	3.23	2.41	3.75	0.00
P-22-EX	821.00	8.0	Asbesto:	135.0	227.05	433.86	432.96	1.45	0.91	1.10	0.00
P-23-EX	545.00	10.0	Asbesto:	135.0	537.48	433.86	432.86	2.20	1.00	1.83	0.00
P-24-EX	2,287.00	10.0	Asbesto:	135.0	-447.94	426.70	429.69	1.83	2.99	1.31	0.00
P-25-EX	346.00	8.0	Asbesto:	135.0	-521.95	430.17	431.95	3.33	1.78	5.15	0.00
P-27-EX	1,619.00	8.0	Asbesto:	135.0	-25.88	427.09	427.13	0.17	0.03	0.02	0.00
P-28-EX	1,769.00	8.0	Asbesto:	135.0	-288.60	427.13	430.17	1.84	3.04	1.72	0.00
P-29-EX	1,643.00	10.0	Asbesto:	135.0	-509.98	429.69	432.43	2.08	2.73	1.66	0.00
P-30-EX	263.00	10.0	Asbesto:	135.0	-509.98	432.43	432.86	2.08	0.44	1.66	0.00
P-31-EX	694.00	10.0	Asbesto:	135.0	11.46	429.69	429.69	0.05	1.04e-3	1.5e-3	0.00
P-32-EX	644.00	8.0	Asbesto:	135.0	11.46	429.69	429.69	0.07	2.84e-3	4.41e-3	0.00
P-33-EX	199.00	8.0	Asbesto:	135.0	-423.15	431.95	432.65	2.70	0.69	3.49	0.00
P-33-Trar	4,736.00	33.0	PVC	135.0	-3,871.94	418.00	419.00	1.45	1.00	0.21	0.00
P-34-EX	440.00	8.0	Asbesto:	135.0	-568.09	432.65	435.29	3.63	2.65	6.02	0.00
P-37-EX	253.00	8.0	Asbesto:	135.0	0.00	427.23	427.23	0.00	0.00	0.00	0.00
P-39-EX	252.00	8.0	Asbesto:	135.0	0.00	427.25	427.25	0.00	0.00	0.00	0.00
P-41-EX	245.00	8.0	Asbesto:	135.0	0.00	423.32	423.32	0.00	0.00	0.00	0.00
P-42-EX	1,954.00	8.0	Asbesto:	135.0	-123.09	431.95	432.65	0.79	0.69	0.36	0.00
P-43-EX	249.00	12.0	Asbesto:	135.0	0.00	421.60	421.60	0.00	0.00	0.00	0.00
P-101-MH	614.00	8.0	PVC	135.0	21.32	426.80	426.79	0.14	0.01	0.01	0.00
P-103-MH	832.00	8.0	PVC	135.0	18.45	426.83	426.82	0.12	0.01	0.01	0.00
P-104-MH	255.00	10.0	PVC	135.0	-4.58	426.79	426.79	0.02	6.1e-5	2.39e-4	0.00
P-105-MH	327.00	8.0	PVC	135.0	-106.87	426.97	427.06	0.68	0.09	0.27	0.00
P-106-MH	620.00	8.0	PVC	135.0	83.30	427.06	426.96	0.53	0.11	0.17	0.00
P-107-MH	627.00	8.0	PVC	135.0	4.14	426.79	426.79	0.03	3.97e-4	6.33e-4	0.00
P-108-MH	847.00	8.0	PVC	135.0	-4.63	426.80	426.80	0.03	6.71e-4	7.93e-4	0.00
P-110-MH	1,018.00	8.0	PVC	135.0	-71.10	426.84	426.97	0.45	0.13	0.13	0.00
P-112-MH	274.00	8.0	PVC	135.0	49.23	426.84	426.83	0.31	0.02	0.07	0.00
P-113-MH	717.00	8.0	PVC	135.0	-6.06	426.84	426.84	0.04	9.46e-4	1.32e-3	0.00
P-114-MH	579.00	8.0	PVC	135.0	40.76	426.82	426.80	0.26	0.03	0.05	0.00
P-115-MH	377.00	8.0	PVC	135.0	14.75	426.83	426.82	0.09	2.62e-3	0.01	0.00

Scenario: MD-Ex-MH+FF1Ex
Steady State Analysis
Pipe Report

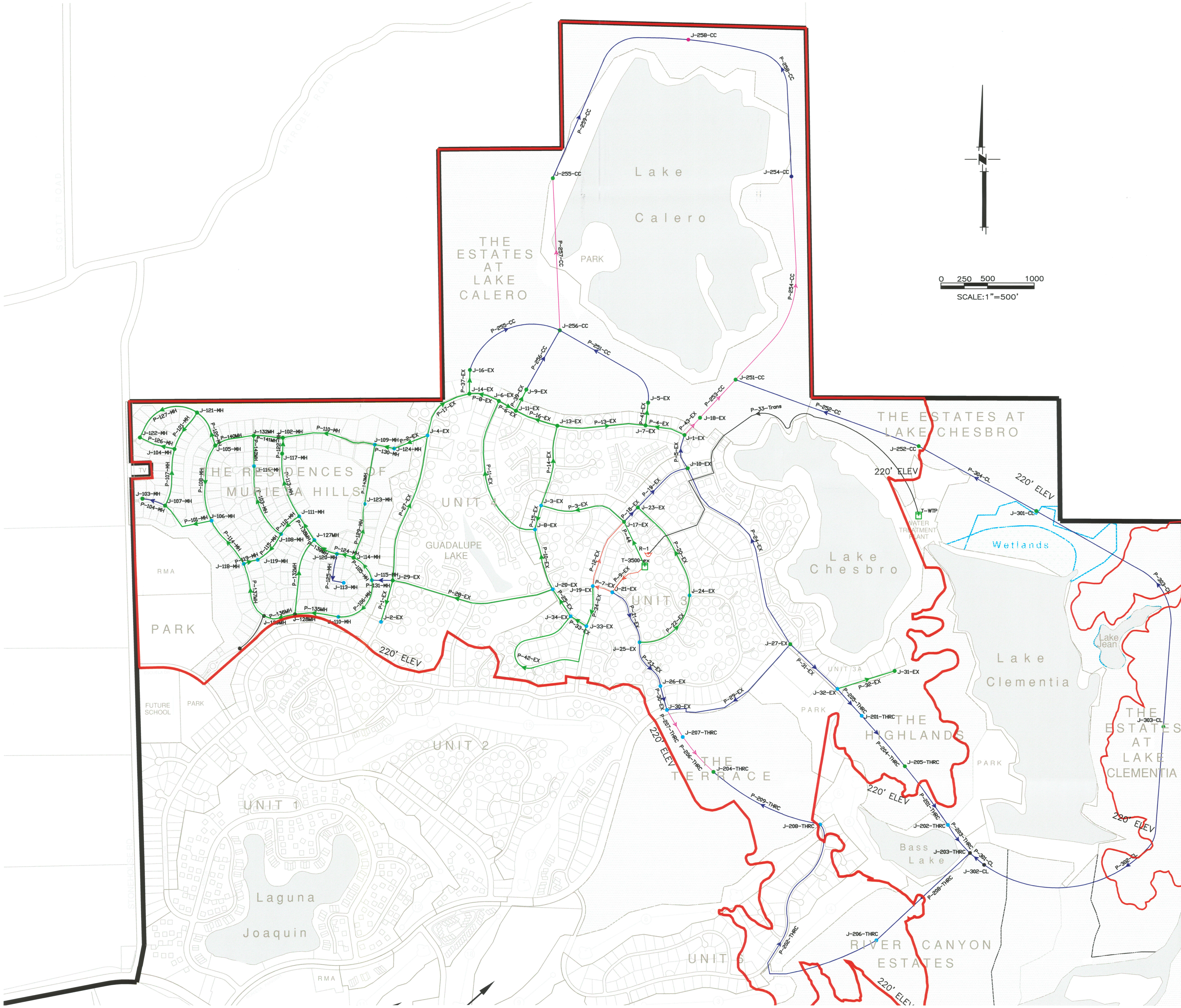
Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Discharge (gpm)	Upstream Hyd. Grade (ft)	Downstream Hyd. Grade (ft)	Velocity (ft/s)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)	Calculated Minor Headloss (ft)
P-119-MH	155.00	8.0	PVC	135.0	10.17	426.82	426.82	0.06	5.49e-4	3.54e-3	0.00
P-120-MH	414.00	8.0	PVC	135.0	-25.67	426.79	426.80	0.16	0.01	0.02	0.00
P-121-MH	462.00	8.0	PVC	135.0	-10.00	426.79	426.79	0.06	1.53e-3	3.3e-3	0.00
P-122-MH	171.00	8.0	PVC	135.0	-4.25	426.84	426.84	0.03	1.22e-4	7.14e-4	0.00
P-124-MH	184.00	8.0	PVC	135.0	-95.09	426.93	426.97	0.61	0.04	0.22	0.00
P-125-MH	413.00	10.0	PVC	135.0	-9.17	426.93	426.93	0.04	3.97e-4	9.61e-4	0.00
P-126-MH	394.00	8.0	PVC	135.0	1.53	426.79	426.79	0.01	0.00	0.00	0.00
P-127-MH	782.00	8.0	PVC	135.0	-7.64	426.79	426.79	0.05	1.53e-3	1.95e-3	0.00
P-129-MH	599.00	8.0	PVC	135.0	-3.76	426.97	426.97	0.02	3.36e-4	5.6e-4	0.00
P-130-MH	212.00	8.0	PVC	135.0	-90.26	426.97	427.02	0.58	0.04	0.20	0.00
P-131-MH	225.00	10.0	PVC	135.0	-193.60	427.06	427.13	0.79	0.06	0.28	0.00
P-132MH	843.00	8.0	PVC	135.0	-4.58	426.89	426.89	0.03	6.71e-4	7.96e-4	0.00
P-135MH	470.00	8.0	PVC	135.0	76.44	426.96	426.89	0.49	0.07	0.15	0.00
P-136MH	343.00	8.0	PVC	135.0	56.95	426.89	426.86	0.36	0.03	0.09	0.00
P-137MH	620.00	8.0	PVC	135.0	45.49	426.86	426.82	0.29	0.03	0.06	0.00
P-138MH	303.00	8.0	PVC	135.0	-74.46	426.84	426.89	0.48	0.04	0.14	0.00
P-139MH	291.00	8.0	PVC	135.0	-80.19	426.89	426.93	0.51	0.05	0.16	0.00
P-140MH	430.00	8.0	PVC	135.0	-41.76	426.80	426.82	0.27	0.02	0.05	0.00
P-141MH	314.00	8.0	PVC	135.0	-55.39	426.82	426.84	0.35	0.03	0.08	0.00
P-142MH	326.00	8.0	PVC	135.0	5.61	426.82	426.82	0.04	3.66e-4	1.12e-3	0.00
P-143MH	649.00	8.0	PVC	135.0	-5.41	426.97	426.97	0.03	7.02e-4	1.08e-3	0.00

Scenario: MD-Ex-MH+FF122MH
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Discharge (gpm)	Upstream Hyd. Grade (ft)	Downstream Hyd. Grade (ft)	Velocity (ft/s)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)	Calculated Minor Headloss (ft)
P-1-EX	744.00	8.0	Asbestos	135.0	-15.20	391.86	391.87	0.10	0.01	0.01	0.00
P-2-EX	384.00	8.0	PVC	135.0	-803.22	390.41	394.79	5.13	4.39	11.43	0.00
P-3-EX	962.00	8.0	Asbestos	135.0	-783.49	424.21	434.71	5.00	10.50	10.91	0.00
P-4-EX	433.00	8.0	Asbestos	135.0	596.10	432.69	429.84	3.80	2.85	6.58	0.00
P-5-EX	384.00	10.0	Asbestos	135.0	616.96	433.60	432.69	2.52	0.91	2.37	0.00
P-6-EX	210.00	8.0	Asbestos	135.0	746.49	418.83	416.74	4.76	2.10	9.98	0.00
P-7-EX	220.00	14.0	Asbestos	135.0	2,119.79	436.84	435.85	4.42	0.99	4.51	0.00
P-8-EX	333.00	8.0	Asbestos	135.0	1,132.07	416.74	409.56	7.23	7.18	21.56	0.00
P-9-EX	466.00	14.0	Asbestos	135.0	2,641.09	440.00	436.84	5.50	3.16	6.77	0.00
P-10-EX	672.00	8.0	Asbestos	135.0	-122.16	422.38	422.61	0.78	0.24	0.35	0.00
P-11-EX	1,700.00	8.0	Asbestos	135.0	420.96	422.61	416.74	2.69	5.88	3.46	0.00
P-12-EX	784.00	14.0	Asbestos	135.0	1,150.28	435.85	434.71	2.40	1.14	1.46	0.00
P-13-EX	952.00	8.0	Asbestos	135.0	596.10	429.84	423.57	3.80	6.27	6.58	0.00
P-14-EX	886.00	8.0	Asbestos	135.0	-180.49	423.57	424.21	1.15	0.64	0.72	0.00
P-15-EX	267.00	8.0	Asbestos	135.0	565.96	424.21	422.61	3.61	1.60	5.98	0.00
P-16-EX	475.00	8.0	Asbestos	135.0	746.49	423.57	418.83	4.76	4.74	9.98	0.00
P-17-EX	691.00	8.0	Asbestos	135.0	1,126.35	409.56	394.79	7.19	14.76	21.36	0.00
P-18-EX	214.00	10.0	Asbestos	135.0	-339.66	434.54	434.71	1.39	0.17	0.78	0.00
P-19-EX	700.00	10.0	Asbestos	135.0	-455.87	433.60	434.54	1.86	0.95	1.35	0.00
P-20-EX	1,128.00	8.0	Asbestos	135.0	144.33	435.08	434.54	0.92	0.54	0.48	0.00
P-21-EX	641.00	10.0	Asbestos	135.0	521.30	436.84	435.73	2.13	1.11	1.73	0.00
P-22-EX	821.00	8.0	Asbestos	135.0	190.00	435.73	435.08	1.21	0.65	0.79	0.00
P-23-EX	545.00	10.0	Asbestos	135.0	304.02	435.73	435.39	1.24	0.35	0.64	0.00
P-24-EX	2,287.00	10.0	Asbestos	135.0	-214.48	433.60	434.36	0.88	0.77	0.34	0.00
P-25-EX	346.00	8.0	Asbestos	135.0	-898.00	422.38	427.24	5.73	4.86	14.05	0.00
P-27-EX	1,619.00	8.0	Asbestos	135.0	296.41	394.79	391.87	1.89	2.93	1.81	0.00
P-28-EX	1,769.00	8.0	Asbestos	135.0	-1,003.36	391.87	422.38	6.40	30.51	17.25	0.00
P-29-EX	1,643.00	10.0	Asbestos	135.0	-276.52	434.36	435.24	1.13	0.88	0.54	0.00
P-30-EX	263.00	10.0	Asbestos	135.0	-276.52	435.24	435.39	1.13	0.14	0.54	0.00
P-31-EX	694.00	10.0	Asbestos	135.0	11.46	434.36	434.36	0.05	1.01e-3	1.45e-3	0.00
P-32-EX	644.00	8.0	Asbestos	135.0	11.46	434.36	434.36	0.07	2.84e-3	4.41e-3	0.00
P-33-EX	199.00	8.0	Asbestos	135.0	-714.46	427.24	429.07	4.56	1.83	9.20	0.00
P-33-Tran	4,736.00	33.0	PVC	135.0	-3,871.94	418.00	419.00	1.45	1.00	0.21	0.00
P-34-EX	440.00	8.0	Asbestos	135.0	-944.14	429.07	435.85	6.03	6.78	15.41	0.00
P-37-EX	253.00	8.0	Asbestos	135.0	0.00	409.56	409.56	0.00	0.00	0.00	0.00
P-39-EX	252.00	8.0	Asbestos	135.0	0.00	418.83	418.83	0.00	0.00	0.00	0.00
P-41-EX	245.00	8.0	Asbestos	135.0	0.00	429.84	429.84	0.00	0.00	0.00	0.00
P-42-EX	1,954.00	8.0	Asbestos	135.0	-207.84	427.24	429.07	1.33	1.83	0.94	0.00
P-43-EX	249.00	12.0	Asbestos	135.0	0.00	432.69	432.69	0.00	0.00	0.00	0.00
P-101-MH	614.00	8.0	PVC	135.0	681.84	369.93	364.75	4.35	5.18	8.44	0.00
P-103-MH	832.00	8.0	PVC	135.0	265.25	378.30	377.08	1.69	1.22	1.47	0.00
P-104-MH	255.00	10.0	PVC	135.0	-4.58	364.75	364.75	0.02	9.16e-5	3.59e-4	0.00
P-105-MH	327.00	8.0	PVC	135.0	-634.69	387.54	389.96	4.05	2.42	7.39	0.00
P-106-MH	620.00	8.0	PVC	135.0	592.52	389.96	385.92	3.78	4.04	6.51	0.00
P-107-MH	627.00	8.0	PVC	135.0	664.66	364.75	359.70	4.24	5.05	8.05	0.00
P-108-MH	847.00	8.0	PVC	135.0	143.09	369.93	369.53	0.91	0.40	0.47	0.00
P-110-MH	1,018.00	8.0	PVC	135.0	-662.32	379.84	387.98	4.23	8.14	8.00	0.00
P-112-MH	274.00	8.0	PVC	135.0	592.66	380.09	378.30	3.78	1.78	6.51	0.00
P-113-MH	717.00	8.0	PVC	135.0	-109.80	379.88	380.09	0.70	0.21	0.29	0.00
P-114-MH	579.00	8.0	PVC	135.0	848.99	377.26	369.93	5.42	7.33	12.66	0.00
P-115-MH	377.00	8.0	PVC	135.0	311.36	378.30	377.56	1.99	0.75	1.98	0.00

Scenario: MD-Ex-MH+FF122MH
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Discharge (gpm)	Upstream Hyd. Grade (ft)	Downstream Hyd. Grade (ft)	Velocity (ft/s)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)	Calculated Minor Headloss (ft)
P-119-MH	155.00	8.0	PVC	135.0	306.78	377.56	377.26	1.96	0.30	1.93	0.00
P-120-MH	414.00	8.0	PVC	135.0	-1,115.14	360.85	369.53	7.12	8.68	20.97	0.00
P-121-MH	462.00	8.0	PVC	135.0	-352.53	359.70	360.85	2.25	1.15	2.49	0.00
P-122-MH	171.00	8.0	PVC	135.0	99.49	379.88	379.84	0.64	0.04	0.24	0.00
P-124-MH	184.00	8.0	PVC	135.0	-744.65	385.71	387.54	4.75	1.83	9.93	0.00
P-125-MH	413.00	10.0	PVC	135.0	-9.17	385.71	385.71	0.04	3.97e-4	9.61e-4	0.00
P-126-MH	394.00	8.0	PVC	135.0	1,004.58	359.70	352.89	6.41	6.81	17.29	0.00
P-127-MH	782.00	8.0	PVC	135.0	-754.59	352.89	360.85	4.82	7.96	10.18	0.00
P-129-MH	599.00	8.0	PVC	135.0	117.98	387.74	387.54	0.75	0.20	0.33	0.00
P-130-MH	212.00	8.0	PVC	135.0	-803.22	387.98	390.41	5.13	2.42	11.43	0.00
P-131-MH	225.00	10.0	PVC	135.0	-1,230.64	389.96	391.87	5.03	1.91	8.49	0.00
P-132MH	843.00	8.0	PVC	135.0	-2.19	382.93	382.93	0.01	1.83e-4	2.17e-4	0.00
P-135MH	470.00	8.0	PVC	135.0	585.66	385.92	382.93	3.74	2.99	6.37	0.00
P-136MH	343.00	8.0	PVC	135.0	568.57	382.93	380.86	3.63	2.07	6.03	0.00
P-137MH	620.00	8.0	PVC	135.0	557.11	380.86	377.26	3.56	3.60	5.81	0.00
P-138MH	303.00	8.0	PVC	135.0	-721.63	380.09	382.93	4.61	2.84	9.37	0.00
P-139MH	291.00	8.0	PVC	135.0	-729.75	382.93	385.71	4.66	2.78	9.57	0.00
P-140MH	430.00	8.0	PVC	135.0	-983.52	369.53	376.68	6.28	7.15	16.62	0.00
P-141MH	314.00	8.0	PVC	135.0	-750.34	376.68	379.84	4.79	3.16	10.08	0.00
P-142MH	326.00	8.0	PVC	135.0	-241.19	376.68	377.08	1.54	0.40	1.23	0.00
P-143MH	649.00	8.0	PVC	135.0	-127.15	387.74	387.98	0.81	0.25	0.38	0.00



0 250 500 1000
SCALE: 1"=500'

Color Coding Legend Link: Diameter (in)
<= 6.0
<= 8.0
<= 10.0
<= 12.0
<= 14.0

Color Coding Legend Node: Pressure (psi)
<= 19.99
<= 29.99
<= 39.99
<= 75.00
<= 90.00

NOTE:
Node pressures represent worst case scenarios.
Scenario: MD-Bldout+FF258CC for 2,500 gpm Fire Flow.

RANCHO MURIETA NORTH WATER MASTER PLAN
HYDROPNEUMATIC SYSTEM BUILDOUT SCENARIO

RANCHO MURIETA — CALIFORNIA

DATE: 7/08/02
DRAWN BY: GSJ
CHK'D BY: REL

MACKAY & SOMPS INFRASTRUCTURE GROUP
SAN RAMON, CA (925)901-0690

JOB NO.: 11306-12
DWG. NO.:
SHEET 1 OF 1

Scenario: Avg Day - Bldout
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Demand (gpm)	Pattern	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-258-CC	340.00	Zone-1	Demand	10.42	Fixed	439.38	42.98
J-254-CC	330.00	Zone-1	Demand	10.42	Fixed	439.38	47.30
J-18-EX	323.20	Zone-1	Demand	0.00	Fixed	439.40	50.25
J-1-EX	317.60	Zone-1	Demand	9.48	Fixed	439.41	52.68
J-7-EX	317.20	Zone-1	Demand	0.00	Fixed	439.40	52.84
J-5-EX	313.80	Zone-1	Demand	0.00	Fixed	439.39	54.31
J-303-CL	300.00	Zone-1	Demand	30.73	Fixed	439.30	60.24
J-301-CL	300.00	Zone-1	Demand	0.00	Fixed	439.32	60.25
J-252-CC	300.00	Zone-1	Demand	30.73	Fixed	439.33	60.25
J-251-CC	300.00	Zone-1	Demand	10.42	Fixed	439.39	60.28
J-9-EX	281.50	Zone-1	Demand	0.00	Fixed	439.38	68.27
J-13-EX	280.30	Zone-1	Demand	13.68	Fixed	439.40	68.80
J-204-THRC	280.00	Zone-1	Demand	46.88	Fixed	439.42	68.94
J-17-EX	278.30	Zone-1	Demand	12.33	Fixed	439.75	69.81
J-10-EX	277.20	Zone-1	Demand	24.27	Fixed	439.46	70.17
J-16-EX	272.00	Zone-1	Demand	0.00	Fixed	439.37	72.37
J-122-MH	270.50	Zone-1	Demand	4.17	Fixed	439.13	72.92
J-23-EX	270.40	Zone-1	Demand	12.78	Fixed	439.66	73.20
J-255-CC	270.00	Zone-1	Demand	10.42	Fixed	439.38	73.25
J-102-MH	269.00	Zone-1	Demand	5.21	Fixed	439.15	73.58
J-121-MH	268.50	Zone-1	Demand	3.65	Fixed	439.13	73.79
J-27-EX	267.80	Zone-1	Demand	22.99	Fixed	439.41	74.21
-104-MH	266.00	Zone-1	Demand	5.73	Fixed	439.13	74.87
J-11-EX	264.90	Zone-1	Demand	0.00	Fixed	439.38	75.45
J-31-EX	262.00	Zone-1	Demand	5.21	Fixed	439.37	76.70
J-6-EX	260.60	Zone-1	Demand	16.08	Fixed	439.38	77.31
J-105-MH	260.00	Zone-1	Demand	5.21	Fixed	439.14	77.46
J-205-THRC	260.00	Zone-1	Demand	58.33	Fixed	439.31	77.54
J-256-CC	260.00	Zone-1	Demand	0.00	Fixed	439.38	77.57
J-14-EX	257.00	Zone-1	Demand	2.60	Fixed	439.36	78.86
J-103-MH	256.20	Zone-1	Demand	2.08	Fixed	439.13	79.11
J-132MH	255.00	Zone-1	Demand	3.65	Fixed	439.14	79.63
J-21-EX	252.70	Zone-1	Demand	0.00	Fixed	439.83	80.92
J-107-MH	251.40	Zone-1	Demand	5.73	Fixed	439.13	81.18
J-117-MH	248.00	Zone-1	Demand	4.69	Fixed	439.15	82.66
J-24-EX	248.00	Zone-1	Demand	20.76	Fixed	439.65	82.88
J-29-EX	246.70	Zone-1	Demand	24.51	Fixed	439.20	83.24
J-3-EX	246.70	Zone-1	Demand	16.84	Fixed	439.48	83.36
J-114-MH	244.80	Zone-1	Demand	3.65	Fixed	439.17	84.05
J-201-THRC	244.00	Zone-1	Demand	0.00	Fixed	439.35	84.47
J-32-EX	244.00	Zone-1	Demand	0.00	Fixed	439.37	84.48
J-8-EX	242.10	Zone-1	Demand	10.38	Fixed	439.47	85.35
J-124-MH	241.70	Zone-1	Demand	0.00	Fixed	439.19	85.40
J-4-EX	241.70	Zone-1	Demand	12.15	Fixed	439.22	85.42
J-115-MH	240.80	Zone-1	Demand	1.56	Fixed	439.19	85.79
J-19-EX	241.20	Zone-1	Demand	11.53	Fixed	439.79	85.88
J-113-MH	240.40	Zone-1	Demand	4.17	Fixed	439.16	85.95
J-116-MH	240.00	Zone-1	Demand	10.94	Fixed	439.14	86.12
J-206-THRC	240.00	Zone-1	Demand	61.46	Fixed	439.30	86.19
-207-THRC	240.00	Zone-1	Demand	0.00	Fixed	439.44	86.24
J-30-EX	240.00	Zone-1	Demand	0.00	Fixed	439.45	86.25
J-123-MH	238.50	Zone-1	Demand	4.17	Fixed	439.18	86.78

Scenario: Avg Day - Bldout
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Demand (gpm)	Pattern	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-25-EX	235.20	Zone-1	Demand	12.40	Fixed	439.65	88.41
J-26-EX	233.30	Zone-1	Demand	12.50	Fixed	439.51	89.17
J-34-EX	233.00	Zone-1	Demand	11.04	Fixed	439.58	89.33
J-33-EX	232.00	Zone-1	Demand	9.93	Fixed	439.62	89.78
J-109-MH	230.00	Zone-1	Demand	6.25	Fixed	439.18	90.46
J-120-MH	229.00	Zone-1	Demand	2.60	Fixed	439.17	90.88
J-106-MH	225.00	Zone-1	Demand	10.94	Fixed	439.14	92.60
J-208-THRC	225.00	Zone-1	Demand	19.79	Fixed	439.37	92.70
J-20-EX	222.20	Zone-1	Demand	7.64	Fixed	439.48	93.96
J-2-EX	220.00	Zone-1	Demand	6.91	Fixed	439.20	94.79
J-202-THRC	220.00	Zone-1	Demand	0.00	Fixed	439.31	94.84
J-118-MH	219.00	Zone-1	Demand	6.77	Fixed	439.14	95.20
J-119-MH	219.00	Zone-1	Demand	2.08	Fixed	439.14	95.20
J-108-MH	218.00	Zone-1	Demand	7.29	Fixed	439.14	95.63
J-110-MH	214.50	Zone-1	Demand	3.12	Fixed	439.17	97.15
J-111-MH	213.00	Zone-1	Demand	4.17	Fixed	439.15	97.79
J-127MH	210.00	Zone-1	Demand	4.69	Fixed	439.15	99.09
J-128MH	205.00	Zone-1	Demand	6.77	Fixed	439.15	101.26
J-129MH	200.00	Zone-1	Demand	5.21	Fixed	439.15	103.42
J-302-CL	195.00	Zone-1	Demand	0.00	Fixed	439.31	105.65
J-203-THRC	195.00	Zone-1	Demand	0.00	Fixed	439.31	105.65

Scenario: Peak Hour - Bldout
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Demand (gpm)	Pattern	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-258-CC	340.00	Zone-1	Demand	45.85	Fixed	430.40	39.09
J-254-CC	330.00	Zone-1	Demand	45.85	Fixed	430.46	43.44
J-18-EX	323.20	Zone-1	Demand	0.00	Fixed	430.77	46.52
J-1-EX	317.60	Zone-1	Demand	41.71	Fixed	430.87	48.98
J-7-EX	317.20	Zone-1	Demand	0.00	Fixed	430.73	49.09
J-5-EX	313.80	Zone-1	Demand	0.00	Fixed	430.61	50.51
J-303-CL	300.00	Zone-1	Demand	135.21	Fixed	429.21	55.88
J-301-CL	300.00	Zone-1	Demand	0.00	Fixed	429.51	56.00
J-252-CC	300.00	Zone-1	Demand	135.21	Fixed	429.65	56.06
J-251-CC	300.00	Zone-1	Demand	45.85	Fixed	430.54	56.45
J-9-EX	281.50	Zone-1	Demand	0.00	Fixed	430.43	64.40
J-13-EX	280.30	Zone-1	Demand	60.19	Fixed	430.75	65.06
J-204-THRC	280.00	Zone-1	Demand	206.27	Fixed	430.97	65.29
J-10-EX	277.20	Zone-1	Demand	106.79	Fixed	431.61	66.77
J-122-MH	270.50	Zone-1	Demand	18.35	Fixed	426.57	67.49
J-102-MH	269.00	Zone-1	Demand	22.92	Fixed	426.77	68.23
J-17-EX	278.30	Zone-1	Demand	54.25	Fixed	436.07	68.23
J-121-MH	268.50	Zone-1	Demand	16.06	Fixed	426.57	68.36
J-16-EX	272.00	Zone-1	Demand	0.00	Fixed	430.16	68.39
J-255-CC	270.00	Zone-1	Demand	45.85	Fixed	430.40	69.36
J-104-MH	266.00	Zone-1	Demand	25.21	Fixed	426.57	69.43
J-27-EX	267.80	Zone-1	Demand	101.16	Fixed	430.81	70.49
-23-EX	270.40	Zone-1	Demand	56.23	Fixed	434.78	71.08
J-11-EX	264.90	Zone-1	Demand	0.00	Fixed	430.45	71.59
J-105-MH	260.00	Zone-1	Demand	22.92	Fixed	426.60	72.04
J-31-EX	262.00	Zone-1	Demand	22.92	Fixed	430.18	72.73
J-205-THRC	260.00	Zone-1	Demand	256.65	Fixed	429.31	73.22
J-6-EX	260.60	Zone-1	Demand	70.75	Fixed	430.39	73.42
J-103-MH	256.20	Zone-1	Demand	9.15	Fixed	426.57	73.67
J-256-CC	260.00	Zone-1	Demand	0.00	Fixed	430.40	73.69
J-132MH	255.00	Zone-1	Demand	16.04	Fixed	426.68	74.24
J-14-EX	257.00	Zone-1	Demand	11.44	Fixed	430.00	74.81
J-107-MH	251.40	Zone-1	Demand	25.21	Fixed	426.57	75.75
J-117-MH	248.00	Zone-1	Demand	20.63	Fixed	426.77	77.31
J-29-EX	246.70	Zone-1	Demand	107.84	Fixed	427.55	78.20
J-114-MH	244.80	Zone-1	Demand	16.04	Fixed	427.20	78.87
J-21-EX	252.70	Zone-1	Demand	0.00	Fixed	437.36	79.85
J-3-EX	246.70	Zone-1	Demand	74.10	Fixed	431.94	80.10
J-124-MH	241.70	Zone-1	Demand	0.00	Fixed	427.52	80.35
J-201-THRC	244.00	Zone-1	Demand	0.00	Fixed	429.88	80.38
J-32-EX	244.00	Zone-1	Demand	0.00	Fixed	430.19	80.51
J-4-EX	241.70	Zone-1	Demand	53.46	Fixed	427.96	80.54
J-24-EX	248.00	Zone-1	Demand	91.34	Fixed	434.55	80.67
J-115-MH	240.80	Zone-1	Demand	6.88	Fixed	427.39	80.69
J-113-MH	240.40	Zone-1	Demand	18.35	Fixed	427.06	80.72
J-116-MH	240.00	Zone-1	Demand	48.13	Fixed	426.68	80.73
J-123-MH	238.50	Zone-1	Demand	18.33	Fixed	427.22	81.61
J-206-THRC	240.00	Zone-1	Demand	270.42	Fixed	429.19	81.81
J-8-EX	242.10	Zone-1	Demand	45.67	Fixed	431.81	82.04
-207-THRC	240.00	Zone-1	Demand	0.00	Fixed	431.31	82.73
J-30-EX	240.00	Zone-1	Demand	0.00	Fixed	431.53	82.83
J-19-EX	241.20	Zone-1	Demand	50.73	Fixed	436.82	84.59

Scenario: Peak Hour - Bldout
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Demand (gpm)	Pattern	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-109-MH	230.00	Zone-1	Demand	27.50	Fixed	427.28	85.31
J-120-MH	229.00	Zone-1	Demand	11.46	Fixed	427.06	85.65
J-26-EX	233.30	Zone-1	Demand	55.00	Fixed	432.43	86.11
J-25-EX	235.20	Zone-1	Demand	54.56	Fixed	434.55	86.21
J-34-EX	233.00	Zone-1	Demand	48.58	Fixed	433.48	86.69
J-106-MH	225.00	Zone-1	Demand	48.13	Fixed	426.60	87.18
J-33-EX	232.00	Zone-1	Demand	43.69	Fixed	434.13	87.41
J-208-THRC	225.00	Zone-1	Demand	87.08	Fixed	430.17	88.72
J-2-EX	220.00	Zone-1	Demand	30.40	Fixed	427.53	89.74
J-118-MH	219.00	Zone-1	Demand	29.79	Fixed	426.69	89.81
J-119-MH	219.00	Zone-1	Demand	9.17	Fixed	426.69	89.81
J-108-MH	218.00	Zone-1	Demand	32.08	Fixed	426.71	90.25
J-202-THRC	220.00	Zone-1	Demand	0.00	Fixed	429.26	90.49
J-20-EX	222.20	Zone-1	Demand	33.62	Fixed	431.95	90.70
J-110-MH	214.50	Zone-1	Demand	13.73	Fixed	427.09	91.93
J-111-MH	213.00	Zone-1	Demand	18.33	Fixed	426.78	92.44
J-127MH	210.00	Zone-1	Demand	20.62	Fixed	426.90	93.79
J-128MH	205.00	Zone-1	Demand	29.79	Fixed	426.90	95.96
J-129MH	200.00	Zone-1	Demand	22.92	Fixed	426.80	98.08
J-302-CL	195.00	Zone-1	Demand	0.00	Fixed	429.24	101.29
J-203-THRC	195.00	Zone-1	Demand	0.00	Fixed	429.24	101.29

Scenario: Max Day - Bldout
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Demand (gpm)	Pattern	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-258-CC	340.00	Zone-1	Demand	22.92	Fixed	437.30	42.07
J-254-CC	330.00	Zone-1	Demand	22.92	Fixed	437.32	46.41
J-18-EX	323.20	Zone-1	Demand	0.00	Fixed	437.41	49.39
J-1-EX	317.60	Zone-1	Demand	20.86	Fixed	437.43	51.82
J-7-EX	317.20	Zone-1	Demand	0.00	Fixed	437.39	51.97
J-5-EX	313.80	Zone-1	Demand	0.00	Fixed	437.36	53.43
J-303-CL	300.00	Zone-1	Demand	67.61	Fixed	436.98	59.23
J-301-CL	300.00	Zone-1	Demand	0.00	Fixed	437.06	59.27
J-252-CC	300.00	Zone-1	Demand	67.61	Fixed	437.10	59.29
J-251-CC	300.00	Zone-1	Demand	22.92	Fixed	437.34	59.39
J-9-EX	281.50	Zone-1	Demand	0.00	Fixed	437.30	67.37
J-13-EX	280.30	Zone-1	Demand	30.10	Fixed	437.40	67.93
J-204-THRC	280.00	Zone-1	Demand	103.14	Fixed	437.47	68.10
J-10-EX	277.20	Zone-1	Demand	53.39	Fixed	437.64	69.38
J-17-EX	278.30	Zone-1	Demand	27.13	Fixed	438.90	69.45
J-16-EX	272.00	Zone-1	Demand	0.00	Fixed	437.22	71.45
J-122-MH	270.50	Zone-1	Demand	9.17	Fixed	436.17	71.64
J-102-MH	269.00	Zone-1	Demand	11.46	Fixed	436.23	72.31
J-255-CC	270.00	Zone-1	Demand	22.92	Fixed	437.30	72.34
J-121-MH	268.50	Zone-1	Demand	8.03	Fixed	436.17	72.51
J-23-EX	270.40	Zone-1	Demand	28.12	Fixed	438.54	72.71
J-27-EX	267.80	Zone-1	Demand	50.58	Fixed	437.43	73.35
I-104-MH	266.00	Zone-1	Demand	12.61	Fixed	436.17	73.59
J-11-EX	264.90	Zone-1	Demand	0.00	Fixed	437.31	74.56
J-31-EX	262.00	Zone-1	Demand	11.46	Fixed	437.25	75.78
J-105-MH	260.00	Zone-1	Demand	11.46	Fixed	436.18	76.18
J-6-EX	260.60	Zone-1	Demand	35.38	Fixed	437.29	76.41
J-205-THRC	260.00	Zone-1	Demand	128.33	Fixed	437.01	76.54
J-256-CC	260.00	Zone-1	Demand	0.00	Fixed	437.30	76.67
J-103-MH	256.20	Zone-1	Demand	4.58	Fixed	436.17	77.82
J-14-EX	257.00	Zone-1	Demand	5.72	Fixed	437.18	77.92
J-132MH	255.00	Zone-1	Demand	8.02	Fixed	436.20	78.36
J-107-MH	251.40	Zone-1	Demand	12.61	Fixed	436.17	79.90
J-21-EX	252.70	Zone-1	Demand	0.00	Fixed	439.26	80.67
J-117-MH	248.00	Zone-1	Demand	10.31	Fixed	436.22	81.39
J-29-EX	246.70	Zone-1	Demand	53.92	Fixed	436.46	82.06
J-24-EX	248.00	Zone-1	Demand	45.67	Fixed	438.47	82.37
J-3-EX	246.70	Zone-1	Demand	37.05	Fixed	437.73	82.61
J-114-MH	244.80	Zone-1	Demand	8.02	Fixed	436.35	82.83
J-201-THRC	244.00	Zone-1	Demand	0.00	Fixed	437.17	83.53
J-32-EX	244.00	Zone-1	Demand	0.00	Fixed	437.25	83.57
J-124-MH	241.70	Zone-1	Demand	0.00	Fixed	436.45	84.22
J-4-EX	241.70	Zone-1	Demand	26.73	Fixed	436.58	84.27
J-8-EX	242.10	Zone-1	Demand	22.84	Fixed	437.69	84.58
J-115-MH	240.80	Zone-1	Demand	3.43	Fixed	436.41	84.59
J-113-MH	240.40	Zone-1	Demand	9.17	Fixed	436.31	84.72
J-116-MH	240.00	Zone-1	Demand	24.06	Fixed	436.20	84.84
J-206-THRC	240.00	Zone-1	Demand	135.21	Fixed	436.98	85.18
J-207-THRC	240.00	Zone-1	Demand	0.00	Fixed	437.57	85.43
'-30-EX	240.00	Zone-1	Demand	0.00	Fixed	437.63	85.46
J-123-MH	238.50	Zone-1	Demand	9.17	Fixed	436.36	85.56
J-19-EX	241.20	Zone-1	Demand	25.37	Fixed	439.11	85.58

Scenario: Max Day - Bldout
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Demand (gpm)	Pattern	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-25-EX	235.20	Zone-1	Demand	27.28	Fixed	438.47	87.90
J-26-EX	233.30	Zone-1	Demand	27.50	Fixed	437.88	88.47
J-34-EX	233.00	Zone-1	Demand	24.29	Fixed	438.16	88.72
J-33-EX	232.00	Zone-1	Demand	21.85	Fixed	438.35	89.23
J-109-MH	230.00	Zone-1	Demand	13.75	Fixed	436.38	89.24
J-120-MH	229.00	Zone-1	Demand	5.73	Fixed	436.31	89.65
J-106-MH	225.00	Zone-1	Demand	24.06	Fixed	436.18	91.32
J-208-THRC	225.00	Zone-1	Demand	43.54	Fixed	437.25	91.78
J-20-EX	222.20	Zone-1	Demand	16.81	Fixed	437.73	93.20
J-2-EX	220.00	Zone-1	Demand	15.20	Fixed	436.45	93.60
J-202-THRC	220.00	Zone-1	Demand	0.00	Fixed	436.99	93.84
J-118-MH	219.00	Zone-1	Demand	14.90	Fixed	436.20	93.93
J-119-MH	219.00	Zone-1	Demand	4.58	Fixed	436.20	93.93
J-108-MH	218.00	Zone-1	Demand	16.04	Fixed	436.21	94.36
J-110-MH	214.50	Zone-1	Demand	6.86	Fixed	436.32	95.92
J-111-MH	213.00	Zone-1	Demand	19.17	Fixed	436.22	96.53
J-127MH	210.00	Zone-1	Demand	10.31	Fixed	436.26	97.84
J-128MH	205.00	Zone-1	Demand	14.90	Fixed	436.26	100.01
J-129MH	200.00	Zone-1	Demand	11.46	Fixed	436.24	102.16
J-302-CL	195.00	Zone-1	Demand	0.00	Fixed	436.99	104.64
J-203-THRC	195.00	Zone-1	Demand	0.00	Fixed	436.99	104.64

Scenario: MD-Bldout+FF1Ex
Fire Flow Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Demand (gpm)	Pattern	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-258-CC	340.00	Zone-1	Demand	22.92	Fixed	423.65	36.18
J-254-CC	330.00	Zone-1	Demand	22.92	Fixed	423.10	40.26
J-18-EX	323.20	Zone-1	Demand	0.00	Fixed	422.80	43.07
J-1-EX	317.60	Zone-1	Demand	2,020.86	Fixed	422.76	45.47
J-7-EX	317.20	Zone-1	Demand	0.00	Fixed	424.22	46.28
J-5-EX	313.80	Zone-1	Demand	0.00	Fixed	424.37	47.81
J-251-CC	300.00	Zone-1	Demand	22.92	Fixed	422.91	53.15
J-252-CC	300.00	Zone-1	Demand	67.61	Fixed	423.16	53.26
J-301-CL	300.00	Zone-1	Demand	0.00	Fixed	423.55	53.43
J-303-CL	300.00	Zone-1	Demand	67.61	Fixed	424.38	53.79
J-9-EX	281.50	Zone-1	Demand	0.00	Fixed	424.93	62.02
J-13-EX	280.30	Zone-1	Demand	30.10	Fixed	425.48	62.78
J-204-THRC	280.00	Zone-1	Demand	103.14	Fixed	428.73	64.31
J-10-EX	277.20	Zone-1	Demand	53.39	Fixed	426.61	64.61
J-16-EX	272.00	Zone-1	Demand	0.00	Fixed	424.86	66.10
J-122-MH	270.50	Zone-1	Demand	9.17	Fixed	424.74	66.70
J-255-CC	270.00	Zone-1	Demand	22.92	Fixed	424.38	66.76
J-102-MH	269.00	Zone-1	Demand	11.46	Fixed	424.79	67.37
J-121-MH	268.50	Zone-1	Demand	8.03	Fixed	424.74	67.56
J-17-EX	278.30	Zone-1	Demand	27.13	Fixed	434.72	67.64
J-104-MH	266.00	Zone-1	Demand	12.61	Fixed	424.74	68.64
J-27-EX	267.80	Zone-1	Demand	50.58	Fixed	426.96	68.83
J-11-EX	264.90	Zone-1	Demand	0.00	Fixed	425.23	69.33
J-23-EX	270.40	Zone-1	Demand	28.12	Fixed	432.80	70.23
J-31-EX	262.00	Zone-1	Demand	11.46	Fixed	426.63	71.19
J-256-CC	260.00	Zone-1	Demand	0.00	Fixed	424.64	71.19
J-6-EX	260.60	Zone-1	Demand	35.38	Fixed	425.27	71.21
J-105-MH	260.00	Zone-1	Demand	11.46	Fixed	424.75	71.24
J-205-THRC	260.00	Zone-1	Demand	128.33	Fixed	426.15	71.85
J-14-EX	257.00	Zone-1	Demand	5.72	Fixed	424.99	72.65
J-103-MH	256.20	Zone-1	Demand	4.58	Fixed	424.74	72.88
J-132MH	255.00	Zone-1	Demand	8.02	Fixed	424.77	73.41
J-107-MH	251.40	Zone-1	Demand	12.61	Fixed	424.74	74.96
J-117-MH	248.00	Zone-1	Demand	10.31	Fixed	424.79	76.45
J-29-EX	246.70	Zone-1	Demand	53.92	Fixed	425.12	77.16
J-114-MH	244.80	Zone-1	Demand	8.02	Fixed	424.92	77.89
J-3-EX	246.70	Zone-1	Demand	37.05	Fixed	428.73	78.72
J-201-THRC	244.00	Zone-1	Demand	0.00	Fixed	426.46	78.90
J-32-EX	244.00	Zone-1	Demand	0.00	Fixed	426.63	78.98
J-124-MH	241.70	Zone-1	Demand	0.00	Fixed	424.93	79.24
J-4-EX	241.70	Zone-1	Demand	26.73	Fixed	424.97	79.25
J-21-EX	252.70	Zone-1	Demand	0.00	Fixed	436.54	79.50
J-115-MH	240.80	Zone-1	Demand	3.43	Fixed	425.04	79.67
J-113-MH	240.40	Zone-1	Demand	9.17	Fixed	424.88	79.78
J-116-MH	240.00	Zone-1	Demand	24.06	Fixed	424.77	79.90
J-24-EX	248.00	Zone-1	Demand	45.67	Fixed	432.81	79.92
J-206-THRC	240.00	Zone-1	Demand	135.21	Fixed	426.22	80.53
J-123-MH	238.50	Zone-1	Demand	9.17	Fixed	424.91	80.61
J-8-EX	242.10	Zone-1	Demand	22.84	Fixed	428.66	80.67
J-207-THRC	240.00	Zone-1	Demand	0.00	Fixed	428.97	81.72
J-30-EX	240.00	Zone-1	Demand	0.00	Fixed	429.13	81.79
J-19-EX	241.20	Zone-1	Demand	25.37	Fixed	435.81	84.16

Scenario: MD-Bldout+FF1Ex
Fire Flow Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Demand (gpm)	Pattern	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-109-MH	230.00	Zone-1	Demand	13.75	Fixed	424.91	84.28
J-120-MH	229.00	Zone-1	Demand	5.73	Fixed	424.88	84.71
J-26-EX	233.30	Zone-1	Demand	27.50	Fixed	430.31	85.19
J-25-EX	235.20	Zone-1	Demand	27.28	Fixed	432.90	85.49
J-34-EX	233.00	Zone-1	Demand	24.29	Fixed	431.66	85.91
J-106-MH	225.00	Zone-1	Demand	24.06	Fixed	424.75	86.38
J-33-EX	232.00	Zone-1	Demand	21.85	Fixed	432.53	86.71
J-208-THRC	225.00	Zone-1	Demand	43.54	Fixed	427.82	87.71
J-2-EX	220.00	Zone-1	Demand	15.20	Fixed	425.12	88.70
J-118-MH	219.00	Zone-1	Demand	14.90	Fixed	424.77	88.98
J-119-MH	219.00	Zone-1	Demand	4.58	Fixed	424.77	88.98
J-202-THRC	220.00	Zone-1	Demand	0.00	Fixed	426.06	89.11
J-108-MH	218.00	Zone-1	Demand	16.04	Fixed	424.78	89.42
J-20-EX	222.20	Zone-1	Demand	16.81	Fixed	429.41	89.60
J-110-MH	214.50	Zone-1	Demand	6.86	Fixed	424.92	90.99
J-111-MH	213.00	Zone-1	Demand	19.17	Fixed	424.79	91.59
J-127MH	210.00	Zone-1	Demand	10.31	Fixed	424.84	92.90
J-128MH	205.00	Zone-1	Demand	14.90	Fixed	424.84	95.07
J-129MH	200.00	Zone-1	Demand	11.46	Fixed	424.81	97.22
J-302-CL	195.00	Zone-1	Demand	0.00	Fixed	425.92	99.86
J-203-THRC	195.00	Zone-1	Demand	0.00	Fixed	426.02	99.90

Scenario: MD-Bldout+FF122MH
Fire Flow Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Demand (gpm)	Pattern	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-258-CC	340.00	Zone-1	Demand	22.92	Fixed	426.71	37.50
J-122-MH	270.50	Zone-1	Demand	1,759.17	Fixed	361.58	39.39
J-254-CC	330.00	Zone-1	Demand	22.92	Fixed	428.23	42.48
J-121-MH	268.50	Zone-1	Demand	8.03	Fixed	369.54	43.69
J-104-MH	266.00	Zone-1	Demand	12.61	Fixed	368.39	44.28
J-18-EX	323.20	Zone-1	Demand	0.00	Fixed	429.15	45.82
J-7-EX	317.20	Zone-1	Demand	0.00	Fixed	426.82	47.40
J-1-EX	317.60	Zone-1	Demand	20.86	Fixed	429.23	48.27
J-5-EX	313.80	Zone-1	Demand	0.00	Fixed	426.15	48.59
J-103-MH	256.20	Zone-1	Demand	4.58	Fixed	373.44	50.70
J-105-MH	260.00	Zone-1	Demand	11.46	Fixed	378.22	51.12
J-102-MH	269.00	Zone-1	Demand	11.46	Fixed	388.56	51.70
J-107-MH	251.40	Zone-1	Demand	12.61	Fixed	373.44	52.77
J-251-CC	300.00	Zone-1	Demand	22.92	Fixed	428.99	55.78
J-252-CC	300.00	Zone-1	Demand	67.61	Fixed	429.02	55.79
J-301-CL	300.00	Zone-1	Demand	0.00	Fixed	429.16	55.85
J-303-CL	300.00	Zone-1	Demand	67.61	Fixed	429.44	55.97
J-132MH	255.00	Zone-1	Demand	8.02	Fixed	385.38	56.38
J-117-MH	248.00	Zone-1	Demand	10.31	Fixed	388.59	60.80
J-9-EX	281.50	Zone-1	Demand	0.00	Fixed	424.92	62.02
J-116-MH	240.00	Zone-1	Demand	24.06	Fixed	385.78	63.04
J-13-EX	280.30	Zone-1	Demand	30.10	Fixed	426.18	63.08
-16-EX	272.00	Zone-1	Demand	0.00	Fixed	422.70	65.17
J-114-MH	244.80	Zone-1	Demand	8.02	Fixed	396.21	65.47
J-204-THRC	280.00	Zone-1	Demand	103.14	Fixed	431.86	65.67
J-29-EX	246.70	Zone-1	Demand	53.92	Fixed	400.24	66.40
J-106-MH	225.00	Zone-1	Demand	24.06	Fixed	378.62	66.43
J-10-EX	277.20	Zone-1	Demand	53.39	Fixed	431.00	66.51
J-113-MH	240.40	Zone-1	Demand	9.17	Fixed	394.37	66.58
J-255-CC	270.00	Zone-1	Demand	22.92	Fixed	425.31	67.16
J-17-EX	278.30	Zone-1	Demand	27.13	Fixed	435.46	67.96
J-115-MH	240.80	Zone-1	Demand	3.43	Fixed	398.43	68.17
J-124-MH	241.70	Zone-1	Demand	0.00	Fixed	399.48	68.23
J-123-MH	238.50	Zone-1	Demand	9.17	Fixed	396.50	68.33
J-11-EX	264.90	Zone-1	Demand	0.00	Fixed	424.87	69.18
J-4-EX	241.70	Zone-1	Demand	26.73	Fixed	404.24	70.29
J-27-EX	267.80	Zone-1	Demand	50.58	Fixed	431.02	70.58
J-6-EX	260.60	Zone-1	Demand	35.38	Fixed	424.01	70.67
J-23-EX	270.40	Zone-1	Demand	28.12	Fixed	434.41	70.92
J-14-EX	257.00	Zone-1	Demand	5.72	Fixed	421.27	71.03
J-256-CC	260.00	Zone-1	Demand	0.00	Fixed	424.97	71.34
J-120-MH	229.00	Zone-1	Demand	5.73	Fixed	394.37	71.51
J-109-MH	230.00	Zone-1	Demand	13.75	Fixed	396.86	72.16
J-118-MH	219.00	Zone-1	Demand	14.90	Fixed	385.94	72.19
J-119-MH	219.00	Zone-1	Demand	4.58	Fixed	386.24	72.32
J-31-EX	262.00	Zone-1	Demand	11.46	Fixed	430.73	72.96
J-108-MH	218.00	Zone-1	Demand	16.04	Fixed	386.99	73.08
J-205-THRC	260.00	Zone-1	Demand	128.33	Fixed	430.32	73.65
J-111-MH	213.00	Zone-1	Demand	19.17	Fixed	388.78	76.01
J-110-MH	214.50	Zone-1	Demand	6.86	Fixed	394.50	77.84
J-2-EX	220.00	Zone-1	Demand	15.20	Fixed	400.24	77.94
J-3-EX	246.70	Zone-1	Demand	37.05	Fixed	427.16	78.04

Scenario: MD-Bldout+FF122MH
Fire Flow Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Demand (gpm)	Pattern	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-127MH	210.00	Zone-1	Demand	10.31	Fixed	391.58	78.52
J-8-EX	242.10	Zone-1	Demand	22.84	Fixed	426.23	79.62
J-21-EX	252.70	Zone-1	Demand	0.00	Fixed	436.97	79.68
J-24-EX	248.00	Zone-1	Demand	45.67	Fixed	434.42	80.62
J-128MH	205.00	Zone-1	Demand	14.90	Fixed	391.58	80.68
J-201-THRC	244.00	Zone-1	Demand	0.00	Fixed	430.59	80.69
J-32-EX	244.00	Zone-1	Demand	0.00	Fixed	430.73	80.75
J-129MH	200.00	Zone-1	Demand	11.46	Fixed	389.52	81.96
J-206-THRC	240.00	Zone-1	Demand	135.21	Fixed	430.29	82.29
J-207-THRC	240.00	Zone-1	Demand	0.00	Fixed	432.04	83.04
J-30-EX	240.00	Zone-1	Demand	0.00	Fixed	432.15	83.09
J-19-EX	241.20	Zone-1	Demand	25.37	Fixed	436.24	84.34
J-34-EX	233.00	Zone-1	Demand	24.29	Fixed	429.58	85.01
J-33-EX	232.00	Zone-1	Demand	21.85	Fixed	430.99	86.05
J-25-EX	235.20	Zone-1	Demand	27.28	Fixed	434.52	86.19
J-26-EX	233.30	Zone-1	Demand	27.50	Fixed	432.89	86.31
J-20-EX	222.20	Zone-1	Demand	16.81	Fixed	425.87	88.07
J-208-THRC	225.00	Zone-1	Demand	43.54	Fixed	431.26	89.20
J-202-THRC	220.00	Zone-1	Demand	0.00	Fixed	430.26	90.92
J-302-CL	195.00	Zone-1	Demand	0.00	Fixed	430.18	101.70
J-203-THRC	195.00	Zone-1	Demand	0.00	Fixed	430.23	101.72

Scenario: MD-Bldout+FF204THRC
Fire Flow Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Demand (gpm)	Pattern	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-258-CC	340.00	Zone-1	Demand	22.92	Fixed	426.45	37.38
J-254-CC	330.00	Zone-1	Demand	22.92	Fixed	426.13	41.57
J-18-EX	323.20	Zone-1	Demand	0.00	Fixed	426.28	44.57
J-1-EX	317.60	Zone-1	Demand	20.86	Fixed	426.39	47.04
J-7-EX	317.20	Zone-1	Demand	0.00	Fixed	426.97	47.47
J-5-EX	313.80	Zone-1	Demand	0.00	Fixed	427.00	48.95
J-303-CL	300.00	Zone-1	Demand	67.61	Fixed	417.27	50.71
J-301-CL	300.00	Zone-1	Demand	0.00	Fixed	420.98	52.32
J-252-CC	300.00	Zone-1	Demand	67.61	Fixed	422.72	53.07
J-204-THRC	280.00	Zone-1	Demand	2,603.14	Fixed	405.67	54.34
J-251-CC	300.00	Zone-1	Demand	22.92	Fixed	426.03	54.50
J-9-EX	281.50	Zone-1	Demand	0.00	Fixed	427.24	63.02
J-13-EX	280.30	Zone-1	Demand	30.10	Fixed	427.62	63.70
J-27-EX	267.80	Zone-1	Demand	50.58	Fixed	416.29	64.21
J-10-EX	277.20	Zone-1	Demand	53.39	Fixed	426.48	64.55
J-31-EX	262.00	Zone-1	Demand	11.46	Fixed	415.65	66.44
J-205-THRC	260.00	Zone-1	Demand	128.33	Fixed	414.69	66.89
J-16-EX	272.00	Zone-1	Demand	0.00	Fixed	427.14	67.09
J-17-EX	278.30	Zone-1	Demand	27.13	Fixed	433.74	67.22
J-122-MH	270.50	Zone-1	Demand	9.17	Fixed	426.75	67.57
J-255-CC	270.00	Zone-1	Demand	22.92	Fixed	426.90	67.85
J-102-MH	269.00	Zone-1	Demand	11.46	Fixed	426.80	68.24
-121-MH	268.50	Zone-1	Demand	8.03	Fixed	426.75	68.43
J-104-MH	266.00	Zone-1	Demand	12.61	Fixed	426.75	69.51
J-23-EX	270.40	Zone-1	Demand	28.12	Fixed	431.28	69.57
J-11-EX	264.90	Zone-1	Demand	0.00	Fixed	427.41	70.27
J-105-MH	260.00	Zone-1	Demand	11.46	Fixed	426.76	72.11
J-6-EX	260.60	Zone-1	Demand	35.38	Fixed	427.42	72.14
J-256-CC	260.00	Zone-1	Demand	0.00	Fixed	427.07	72.25
J-14-EX	257.00	Zone-1	Demand	5.72	Fixed	427.18	73.59
J-103-MH	256.20	Zone-1	Demand	4.58	Fixed	426.75	73.75
J-207-THRC	240.00	Zone-1	Demand	0.00	Fixed	410.75	73.84
J-206-THRC	240.00	Zone-1	Demand	135.21	Fixed	411.23	74.05
J-201-THRC	244.00	Zone-1	Demand	0.00	Fixed	415.31	74.08
J-32-EX	244.00	Zone-1	Demand	0.00	Fixed	415.65	74.23
J-132MH	255.00	Zone-1	Demand	8.02	Fixed	426.78	74.28
J-30-EX	240.00	Zone-1	Demand	0.00	Fixed	414.16	75.31
J-107-MH	251.40	Zone-1	Demand	12.61	Fixed	426.75	75.83
J-117-MH	248.00	Zone-1	Demand	10.31	Fixed	426.80	77.32
J-29-EX	246.70	Zone-1	Demand	53.92	Fixed	427.09	78.00
J-24-EX	248.00	Zone-1	Demand	45.67	Fixed	428.83	78.20
J-114-MH	244.80	Zone-1	Demand	8.02	Fixed	426.93	78.76
J-208-THRC	225.00	Zone-1	Demand	43.54	Fixed	407.14	78.76
J-21-EX	252.70	Zone-1	Demand	0.00	Fixed	435.49	79.04
J-3-EX	246.70	Zone-1	Demand	37.05	Fixed	429.71	79.14
J-26-EX	233.30	Zone-1	Demand	27.50	Fixed	418.41	80.05
J-124-MH	241.70	Zone-1	Demand	0.00	Fixed	426.97	80.12
J-4-EX	241.70	Zone-1	Demand	26.73	Fixed	427.05	80.15
J-115-MH	240.80	Zone-1	Demand	3.43	Fixed	427.02	80.53
J-113-MH	240.40	Zone-1	Demand	9.17	Fixed	426.89	80.65
J-116-MH	240.00	Zone-1	Demand	24.06	Fixed	426.78	80.77
J-8-EX	242.10	Zone-1	Demand	22.84	Fixed	429.66	81.11

Scenario: MD-Bldout+FF204THRC
Fire Flow Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Demand (gpm)	Pattern	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-123-MH	238.50	Zone-1	Demand	9.17	Fixed	426.93	81.48
J-25-EX	235.20	Zone-1	Demand	27.28	Fixed	427.48	83.15
J-19-EX	241.20	Zone-1	Demand	25.37	Fixed	434.83	83.73
J-202-THRC	220.00	Zone-1	Demand	0.00	Fixed	414.39	84.06
J-109-MH	230.00	Zone-1	Demand	13.75	Fixed	426.93	85.16
J-120-MH	229.00	Zone-1	Demand	5.73	Fixed	426.89	85.58
J-34-EX	233.00	Zone-1	Demand	24.29	Fixed	431.79	85.96
J-33-EX	232.00	Zone-1	Demand	21.85	Fixed	432.42	86.67
J-106-MH	225.00	Zone-1	Demand	24.06	Fixed	426.75	87.25
J-2-EX	220.00	Zone-1	Demand	15.20	Fixed	427.08	89.55
J-118-MH	219.00	Zone-1	Demand	14.90	Fixed	426.78	89.85
J-119-MH	219.00	Zone-1	Demand	4.58	Fixed	426.78	89.85
J-20-EX	222.20	Zone-1	Demand	16.81	Fixed	430.18	89.94
J-108-MH	218.00	Zone-1	Demand	16.04	Fixed	426.78	90.29
J-110-MH	214.50	Zone-1	Demand	6.86	Fixed	426.92	91.86
J-111-MH	213.00	Zone-1	Demand	19.17	Fixed	426.80	92.46
J-127MH	210.00	Zone-1	Demand	10.31	Fixed	426.85	93.77
J-203-THRC	195.00	Zone-1	Demand	0.00	Fixed	414.24	94.81
J-302-CL	195.00	Zone-1	Demand	0.00	Fixed	414.41	94.88
J-128MH	205.00	Zone-1	Demand	14.90	Fixed	426.85	95.93
J-129MH	200.00	Zone-1	Demand	11.46	Fixed	426.82	98.08

Scenario: MD-Bldout+FF258CC
Fire Flow Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Demand (gpm)	Pattern	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-258-CC	340.00	Zone-1	Demand	2,522.92	Fixed	388.28	20.88
J-254-CC	330.00	Zone-1	Demand	22.92	Fixed	408.17	33.80
J-18-EX	323.20	Zone-1	Demand	0.00	Fixed	418.81	41.35
J-7-EX	317.20	Zone-1	Demand	0.00	Fixed	418.59	43.85
J-1-EX	317.60	Zone-1	Demand	20.86	Fixed	419.52	44.07
J-5-EX	313.80	Zone-1	Demand	0.00	Fixed	417.55	44.87
J-251-CC	300.00	Zone-1	Demand	22.92	Fixed	417.23	50.70
J-252-CC	300.00	Zone-1	Demand	67.61	Fixed	417.87	50.97
J-301-CL	300.00	Zone-1	Demand	0.00	Fixed	418.62	51.30
J-303-CL	300.00	Zone-1	Demand	67.61	Fixed	420.22	51.99
J-9-EX	281.50	Zone-1	Demand	0.00	Fixed	416.74	58.48
J-13-EX	280.30	Zone-1	Demand	30.10	Fixed	419.05	60.00
J-255-CC	270.00	Zone-1	Demand	22.92	Fixed	409.50	60.32
J-16-EX	272.00	Zone-1	Demand	0.00	Fixed	416.69	62.57
J-204-THRC	280.00	Zone-1	Demand	103.14	Fixed	426.37	63.30
J-10-EX	277.20	Zone-1	Demand	53.39	Fixed	423.92	63.45
J-122-MH	270.50	Zone-1	Demand	9.17	Fixed	417.29	63.48
J-102-MH	269.00	Zone-1	Demand	11.46	Fixed	417.34	64.15
J-121-MH	268.50	Zone-1	Demand	8.03	Fixed	417.30	64.34
J-104-MH	266.00	Zone-1	Demand	12.61	Fixed	417.29	65.42
J-11-EX	264.90	Zone-1	Demand	0.00	Fixed	417.80	66.12
l-17-EX	278.30	Zone-1	Demand	27.13	Fixed	433.26	67.01
-256-CC	260.00	Zone-1	Demand	0.00	Fixed	415.71	67.33
J-27-EX	267.80	Zone-1	Demand	50.58	Fixed	424.27	67.66
J-6-EX	260.60	Zone-1	Demand	35.38	Fixed	417.85	68.00
J-105-MH	260.00	Zone-1	Demand	11.46	Fixed	417.30	68.02
J-14-EX	257.00	Zone-1	Demand	5.72	Fixed	417.30	69.32
J-23-EX	270.40	Zone-1	Demand	28.12	Fixed	431.09	69.49
J-103-MH	256.20	Zone-1	Demand	4.58	Fixed	417.29	69.66
J-31-EX	262.00	Zone-1	Demand	11.46	Fixed	423.82	69.98
J-132MH	255.00	Zone-1	Demand	8.02	Fixed	417.32	70.19
J-205-THRC	260.00	Zone-1	Demand	128.33	Fixed	423.17	70.56
J-107-MH	251.40	Zone-1	Demand	12.61	Fixed	417.29	71.74
J-117-MH	248.00	Zone-1	Demand	10.31	Fixed	417.34	73.23
J-29-EX	246.70	Zone-1	Demand	53.92	Fixed	417.83	74.00
J-114-MH	244.80	Zone-1	Demand	8.02	Fixed	417.50	74.68
J-124-MH	241.70	Zone-1	Demand	0.00	Fixed	417.40	75.98
J-4-EX	241.70	Zone-1	Demand	26.73	Fixed	417.40	75.98
J-115-MH	240.80	Zone-1	Demand	3.43	Fixed	417.71	76.50
J-113-MH	240.40	Zone-1	Demand	9.17	Fixed	417.46	76.57
J-3-EX	246.70	Zone-1	Demand	37.05	Fixed	423.88	76.62
J-116-MH	240.00	Zone-1	Demand	24.06	Fixed	417.32	76.68
J-123-MH	238.50	Zone-1	Demand	9.17	Fixed	417.44	77.38
J-201-THRC	244.00	Zone-1	Demand	0.00	Fixed	423.60	77.66
J-32-EX	244.00	Zone-1	Demand	0.00	Fixed	423.83	77.76
J-8-EX	242.10	Zone-1	Demand	22.84	Fixed	423.72	78.54
J-21-EX	252.70	Zone-1	Demand	0.00	Fixed	435.57	79.08
J-24-EX	248.00	Zone-1	Demand	45.67	Fixed	431.12	79.19
'-206-THRC	240.00	Zone-1	Demand	135.21	Fixed	423.25	79.25
,-207-THRC	240.00	Zone-1	Demand	0.00	Fixed	426.65	80.72
J-30-EX	240.00	Zone-1	Demand	0.00	Fixed	426.84	80.80
J-109-MH	230.00	Zone-1	Demand	13.75	Fixed	417.40	81.04

Scenario: MD-Bldout+FF258CC
Fire Flow Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Demand (gpm)	Pattern	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-120-MH	229.00	Zone-1	Demand	5.73	Fixed	417.46	81.50
J-106-MH	225.00	Zone-1	Demand	24.06	Fixed	417.30	83.16
J-19-EX	241.20	Zone-1	Demand	25.37	Fixed	434.61	83.64
J-26-EX	233.30	Zone-1	Demand	27.50	Fixed	428.23	84.29
J-34-EX	233.00	Zone-1	Demand	24.29	Fixed	428.32	84.46
J-25-EX	235.20	Zone-1	Demand	27.28	Fixed	431.26	84.78
J-33-EX	232.00	Zone-1	Demand	21.85	Fixed	429.65	85.47
J-2-EX	220.00	Zone-1	Demand	15.20	Fixed	417.83	85.55
J-118-MH	219.00	Zone-1	Demand	14.90	Fixed	417.33	85.77
J-119-MH	219.00	Zone-1	Demand	4.58	Fixed	417.33	85.77
J-108-MH	218.00	Zone-1	Demand	16.04	Fixed	417.34	86.20
J-208-THRC	225.00	Zone-1	Demand	43.54	Fixed	425.26	86.60
J-20-EX	222.20	Zone-1	Demand	16.81	Fixed	424.83	87.62
J-202-THRC	220.00	Zone-1	Demand	0.00	Fixed	423.01	87.79
J-110-MH	214.50	Zone-1	Demand	6.86	Fixed	417.54	87.80
J-111-MH	213.00	Zone-1	Demand	19.17	Fixed	417.35	88.37
J-127MH	210.00	Zone-1	Demand	10.31	Fixed	417.41	89.69
J-128MH	205.00	Zone-1	Demand	14.90	Fixed	417.42	91.86
J-129MH	200.00	Zone-1	Demand	11.46	Fixed	417.38	94.00
J-302-CL	195.00	Zone-1	Demand	0.00	Fixed	422.78	98.50
J-203-THRC	195.00	Zone-1	Demand	0.00	Fixed	422.94	98.57

Scenario: MD-Bldout+FF303CL
Fire Flow Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Demand (gpm)	Pattern	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-258-CC	340.00	Zone-1	Demand	22.92	Fixed	426.03	37.20
J-303-CL	300.00	Zone-1	Demand	2,067.61	Fixed	389.14	38.55
J-254-CC	330.00	Zone-1	Demand	22.92	Fixed	425.36	41.24
J-18-EX	323.20	Zone-1	Demand	0.00	Fixed	426.12	44.51
J-301-CL	300.00	Zone-1	Demand	0.00	Fixed	405.19	45.49
J-1-EX	317.60	Zone-1	Demand	20.86	Fixed	426.57	47.12
J-7-EX	317.20	Zone-1	Demand	0.00	Fixed	427.12	47.53
J-252-CC	300.00	Zone-1	Demand	67.61	Fixed	412.73	48.75
J-5-EX	313.80	Zone-1	Demand	0.00	Fixed	427.15	49.01
J-251-CC	300.00	Zone-1	Demand	22.92	Fixed	425.12	54.11
J-204-THRC	280.00	Zone-1	Demand	103.14	Fixed	425.02	62.71
J-9-EX	281.50	Zone-1	Demand	0.00	Fixed	427.40	63.09
J-13-EX	280.30	Zone-1	Demand	30.10	Fixed	427.86	63.81
J-10-EX	277.20	Zone-1	Demand	53.39	Fixed	427.52	65.00
J-16-EX	272.00	Zone-1	Demand	0.00	Fixed	427.30	67.16
J-122-MH	270.50	Zone-1	Demand	9.17	Fixed	426.99	67.67
J-27-EX	267.80	Zone-1	Demand	50.58	Fixed	424.31	67.68
J-17-EX	278.30	Zone-1	Demand	27.13	Fixed	434.82	67.68
J-255-CC	270.00	Zone-1	Demand	22.92	Fixed	426.89	67.85
J-205-THRC	260.00	Zone-1	Demand	128.33	Fixed	417.21	67.98
J-102-MH	269.00	Zone-1	Demand	11.46	Fixed	427.05	68.34
J-121-MH	268.50	Zone-1	Demand	8.03	Fixed	426.99	68.54
-31-EX	262.00	Zone-1	Demand	11.46	Fixed	421.52	68.98
J-104-MH	266.00	Zone-1	Demand	12.61	Fixed	426.99	69.62
J-23-EX	270.40	Zone-1	Demand	28.12	Fixed	432.77	70.21
J-11-EX	264.90	Zone-1	Demand	0.00	Fixed	427.61	70.36
J-105-MH	260.00	Zone-1	Demand	11.46	Fixed	427.00	72.22
J-6-EX	260.60	Zone-1	Demand	35.38	Fixed	427.62	72.23
J-256-CC	260.00	Zone-1	Demand	0.00	Fixed	427.19	72.30
J-14-EX	257.00	Zone-1	Demand	5.72	Fixed	427.37	73.67
J-103-MH	256.20	Zone-1	Demand	4.58	Fixed	426.99	73.86
J-132MH	255.00	Zone-1	Demand	8.02	Fixed	427.02	74.39
J-107-MH	251.40	Zone-1	Demand	12.61	Fixed	426.99	75.93
J-206-THRC	240.00	Zone-1	Demand	135.21	Fixed	415.62	75.95
J-201-THRC	244.00	Zone-1	Demand	0.00	Fixed	420.01	76.11
J-32-EX	244.00	Zone-1	Demand	0.00	Fixed	421.53	76.77
J-117-MH	248.00	Zone-1	Demand	10.31	Fixed	427.05	77.43
J-29-EX	246.70	Zone-1	Demand	53.92	Fixed	427.34	78.12
J-114-MH	244.80	Zone-1	Demand	8.02	Fixed	427.18	78.87
J-3-EX	246.70	Zone-1	Demand	37.05	Fixed	430.25	79.37
J-21-EX	252.70	Zone-1	Demand	0.00	Fixed	436.52	79.49
J-24-EX	248.00	Zone-1	Demand	45.67	Fixed	432.30	79.70
J-124-MH	241.70	Zone-1	Demand	0.00	Fixed	427.21	80.22
J-4-EX	241.70	Zone-1	Demand	26.73	Fixed	427.28	80.25
J-207-THRC	240.00	Zone-1	Demand	0.00	Fixed	425.67	80.29
J-30-EX	240.00	Zone-1	Demand	0.00	Fixed	426.11	80.48
J-115-MH	240.80	Zone-1	Demand	3.43	Fixed	427.27	80.64
J-113-MH	240.40	Zone-1	Demand	9.17	Fixed	427.14	80.75
I-116-MH	240.00	Zone-1	Demand	24.06	Fixed	427.02	80.87
J-8-EX	242.10	Zone-1	Demand	22.84	Fixed	430.19	81.34
J-123-MH	238.50	Zone-1	Demand	9.17	Fixed	427.17	81.59
J-19-EX	241.20	Zone-1	Demand	25.37	Fixed	435.87	84.18

Scenario: MD-Bldout+FF303CL
Fire Flow Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Demand (gpm)	Pattern	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-26-EX	233.30	Zone-1	Demand	27.50	Fixed	428.01	84.20
J-202-THRC	220.00	Zone-1	Demand	0.00	Fixed	414.98	84.32
J-208-THRC	225.00	Zone-1	Demand	43.54	Fixed	421.91	85.15
J-25-EX	235.20	Zone-1	Demand	27.28	Fixed	432.14	85.16
J-109-MH	230.00	Zone-1	Demand	13.75	Fixed	427.17	85.26
J-120-MH	229.00	Zone-1	Demand	5.73	Fixed	427.14	85.68
J-34-EX	233.00	Zone-1	Demand	24.29	Fixed	432.53	86.28
J-33-EX	232.00	Zone-1	Demand	21.85	Fixed	433.23	87.02
J-106-MH	225.00	Zone-1	Demand	24.06	Fixed	427.00	87.35
J-2-EX	220.00	Zone-1	Demand	15.20	Fixed	427.34	89.66
J-118-MH	219.00	Zone-1	Demand	14.90	Fixed	427.03	89.96
J-119-MH	219.00	Zone-1	Demand	4.58	Fixed	427.03	89.96
J-20-EX	222.20	Zone-1	Demand	16.81	Fixed	430.76	90.19
J-108-MH	218.00	Zone-1	Demand	16.04	Fixed	427.03	90.39
J-110-MH	214.50	Zone-1	Demand	6.86	Fixed	427.16	91.96
J-111-MH	213.00	Zone-1	Demand	19.17	Fixed	427.05	92.56
J-127MH	210.00	Zone-1	Demand	10.31	Fixed	427.09	93.88
J-302-CL	195.00	Zone-1	Demand	0.00	Fixed	412.47	94.04
J-203-THRC	195.00	Zone-1	Demand	0.00	Fixed	413.88	94.65
J-128MH	205.00	Zone-1	Demand	14.90	Fixed	427.09	96.04
J-129MH	200.00	Zone-1	Demand	11.46	Fixed	427.06	98.19

Scenario: Peak Hour - Bldout
Steady State Analysis
Pipe Report

Label	Material	Hazen-Williams C	Diameter (in)	Length (ft)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)	Pressure Pipe Headloss (ft)	Discharge (gpm)
P-9-EX	Asbestos Cement	135.0	14.0	466.00	4.99	5.66	2.64	2,396.52
P-18-EX	Asbestos Cement	135.0	10.0	214.00	4.18	6.04	1.29	-1,024.11
P-44-[redacted]	PVC	135.0	8.0	523.00	4.08	7.51	3.93	-639.92
P-34-EX	Asbestos Cement	135.0	8.0	440.00	3.65	6.10	2.69	-572.31
P-19-EX	Asbestos Cement	135.0	10.0	700.00	3.58	4.53	3.17	-876.52
P-21-EX	Asbestos Cement	135.0	10.0	641.00	3.52	4.39	2.81	861.47
P-23-EX	Asbestos Cement	135.0	10.0	545.00	3.30	3.89	2.12	806.93
P-7-EX	Asbestos Cement	135.0	14.0	220.00	3.20	2.48	0.55	1,535.05
P-30-EX	Asbestos Cement	135.0	10.0	263.00	3.07	3.41	0.90	-751.93
P-25-EX	Asbestos Cement	135.0	8.0	346.00	3.06	4.41	1.53	-480.04
P-3-EX	Asbestos Cement	135.0	8.0	962.00	3.02	4.30	4.14	-473.56
P-33-EX	Asbestos Cement	135.0	8.0	199.00	2.61	3.29	0.65	-409.50
P-17-EX	Asbestos Cement	135.0	8.0	691.00	2.47	2.96	2.05	387.02
P-5-EX	Asbestos Cement	135.0	10.0	384.00	2.25	1.92	0.74	550.87
P-28-EX	Asbestos Cement	135.0	8.0	1,769.00	2.25	2.49	4.40	-352.44
P-12-EX	Asbestos Cement	135.0	14.0	784.00	1.90	0.95	0.74	912.00
P-14-EX	Asbestos Cement	135.0	8.0	886.00	1.61	1.35	1.19	-252.66
P-31-EX	Asbestos Cement	135.0	10.0	694.00	1.49	0.90	0.62	365.65
P-8-EX	Asbestos Cement	135.0	8.0	333.00	1.49	1.16	0.39	233.31
P-2-EX	PVC	135.0	8.0	384.00	1.48	1.14	0.44	-231.20
P-130-MH	PVC	135.0	8.0	212.00	1.48	1.14	0.24	-231.20
-33-Trans	PVC	135.0	33.0	4,736.00	1.45	0.21	1.00	-3,871.94
P-206-THRC	PVC	135.0	12.0	501.00	1.43	0.67	0.34	-503.99
P-207-THRC	PVC	135.0	12.0	336.00	1.43	0.67	0.23	503.99
P-205-THRC	PVC	135.0	10.0	388.00	1.40	0.80	0.31	342.73
P-204-THRC	PVC	135.0	10.0	716.00	1.40	0.80	0.57	-342.73
P-131-MH	PVC	135.0	10.0	225.00	1.29	0.69	0.15	-316.55
P-11-EX	Asbestos Cement	135.0	8.0	1,700.00	1.25	0.83	1.42	195.12
P-209-THRC	PVC	135.0	10.0	1,304.00	1.22	0.61	0.80	-297.72
P-124-MH	PVC	135.0	8.0	184.00	1.18	0.76	0.14	-185.61
P-43-EX	Asbestos Cement	135.0	12.0	249.00	1.11	0.42	0.10	-390.12
P-253-CC	PVC	135.0	12.0	556.00	1.11	0.42	0.23	390.12
P-16-EX	Asbestos Cement	135.0	8.0	475.00	1.07	0.63	0.30	167.26
P-37-EX	Asbestos Cement	135.0	8.0	253.00	1.05	0.61	0.15	165.15
P-105-MH	PVC	135.0	8.0	327.00	1.04	0.60	0.20	-163.18
P-29-EX	Asbestos Cement	135.0	10.0	1,643.00	1.01	0.44	0.72	-247.94
P-252-CC	PVC	135.0	10.0	2,092.00	1.00	0.43	0.89	244.14
P-139MH	PVC	135.0	8.0	291.00	0.99	0.55	0.16	-155.80
P-110-MH	PVC	135.0	8.0	1,018.00	0.94	0.49	0.50	-146.90
P-15-EX	Asbestos Cement	135.0	8.0	267.00	0.94	0.49	0.13	146.80
P-106-MH	PVC	135.0	8.0	620.00	0.94	0.49	0.30	146.49
P-41-EX	Asbestos Cement	135.0	8.0	245.00	0.92	0.48	0.12	-144.24
P-24-EX	Asbestos Cement	135.0	10.0	2,287.00	0.89	0.35	0.80	218.87
P-202-THRC	PVC	135.0	10.0	3,017.00	0.86	0.32	0.98	-210.64
P-135MH	PVC	135.0	8.0	470.00	0.85	0.41	0.19	132.76
P-138MH	PVC	135.0	8.0	303.00	0.83	0.40	0.12	-130.72
P-42-EX	Asbestos Cement	135.0	8.0	1,954.00	0.76	0.33	0.65	-119.12
P-4-EX	Asbestos Cement	135.0	8.0	433.00	0.76	0.33	0.14	119.04
-141MH	PVC	135.0	8.0	314.00	0.72	0.31	0.10	-113.37
P-6-EX	Asbestos Cement	135.0	8.0	210.00	0.70	0.28	0.06	108.94
P-136MH	PVC	135.0	8.0	343.00	0.69	0.28	0.09	107.43

Scenario: Peak Hour - Bldout
Steady State Analysis
Pipe Report

Label	Material	Hazen-Williams C	Diameter (in)	Length (ft)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)	Pressure Pipe Headloss (ft)	Discharge (gpm)
P-255-CC	PVC	135.0	10.0	1,194.00	0.67	0.21	0.25	165.15
P-112-MH	PVC	135.0	8.0	274.00	0.65	0.25	0.07	102.37
P-27-EX	Asbestos Cement	135.0	8.0	1,619.00	0.65	0.25	0.41	102.37
P-10-EX	Asbestos Cement	135.0	8.0	672.00	0.60	0.22	0.15	93.99
P-251-CC	PVC	135.0	10.0	1,290.00	0.59	0.16	0.21	144.24
P-20-EX	Asbestos Cement	135.0	8.0	1,128.00	0.58	0.20	0.23	-91.36
P-140MH	PVC	135.0	8.0	430.00	0.54	0.18	0.08	-84.97
P-137MH	PVC	135.0	8.0	620.00	0.54	0.18	0.11	84.51
P-114-MH	PVC	135.0	8.0	579.00	0.51	0.16	0.09	80.07
P-303-CL	PVC	135.0	10.0	3,079.00	0.44	0.10	0.29	-108.93
P-304-CL	PVC	135.0	10.0	1,445.00	0.44	0.10	0.14	108.93
P-39-EX	Asbestos Cement	135.0	8.0	252.00	0.37	0.09	0.02	-58.32
P-143MH	PVC	135.0	8.0	649.00	0.36	0.09	0.06	-56.80
P-201-THRC	PVC	135.0	10.0	784.00	0.35	0.06	0.05	-86.07
P-203-THRC	PVC	135.0	10.0	385.00	0.35	0.06	0.02	86.07
P-120-MH	PVC	135.0	8.0	414.00	0.33	0.07	0.03	-51.51
P-254-CC	PVC	135.0	12.0	2,404.00	0.28	0.03	0.08	100.13
P-101-MH	PVC	135.0	8.0	614.00	0.27	0.05	0.03	42.47
P-129-MH	PVC	135.0	8.0	599.00	0.25	0.04	0.02	38.47
P-208-THRC	PVC	135.0	10.0	1,371.00	0.24	0.03	0.04	-59.79
P-256-CC	PVC	135.0	10.0	728.00	0.24	0.03	0.02	58.32
P-103-MH	PVC	135.0	8.0	832.00	0.23	0.04	0.03	35.77
P-258-CC	PVC	135.0	10.0	2,245.00	0.22	0.03	0.06	54.29
P-115-MH	PVC	135.0	8.0	377.00	0.22	0.03	0.01	34.52
P-1-EX	Asbestos Cement	135.0	8.0	744.00	0.19	0.03	0.02	-30.40
P-119-MH	PVC	135.0	8.0	155.00	0.16	0.02	2.96e-3	25.35
P-13-EX	Asbestos Cement	135.0	8.0	952.00	0.16	0.02	0.02	-25.20
P-32-EX	Asbestos Cement	135.0	8.0	644.00	0.15	0.02	0.01	22.92
P-121-MH	PVC	135.0	8.0	462.00	0.13	0.01	0.01	-20.11
P-301-CL	PVC	135.0	10.0	198.00	0.11	0.01	1.37e-3	26.29
P-302-CL	PVC	135.0	10.0	3,262.00	0.11	0.01	0.02	26.29
P-257-CC	PVC	135.0	12.0	1,638.00	0.11	0.01	0.01	37.41
P-127-MH	PVC	135.0	8.0	782.00	0.10	0.01	0.01	-15.34
P-142MH	PVC	135.0	8.0	326.00	0.08	0.01	1.65e-3	12.36
P-125-MH	PVC	135.0	10.0	413.00	0.07	3.55e-3	1.46e-3	-18.35
P-122-MH	PVC	135.0	8.0	171.00	0.07	3.75e-3	6.41e-4	-10.61
P-108-MH	PVC	135.0	8.0	847.00	0.07	3.78e-3	3.2e-3	-10.53
P-113-MH	PVC	135.0	8.0	717.00	0.06	3.41e-3	2.44e-3	-10.02
P-107-MH	PVC	135.0	8.0	627.00	0.05	2.34e-3	1.46e-3	8.11
P-104-MH	PVC	135.0	10.0	255.00	0.04	9.57e-4	2.44e-4	-9.15
P-259-CC	PVC	135.0	10.0	2,381.00	0.03	8.46e-4	2.01e-3	8.44
P-132MH	PVC	135.0	8.0	843.00	0.03	7.6e-4	6.41e-4	4.46
P-126-MH	PVC	135.0	8.0	394.00	0.02	3.1e-4	1.22e-4	3.01
P-22-EX	Asbestos Cement	135.0	8.0	821.00	1.23e-4	0.00	0.00	-0.02

Scenario: MD-Bldout+FF1Ex
Fire Flow Analysis
Pipe Report

Label	Material	Hazen-Williams C	Diameter (in)	Length (ft)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)	Pressure Pipe Headloss (ft)	Discharge (gpm)
P-9-EX	Asbestos Cement	135.0	14.0	466.00	5.79	7.43	3.46	2,777.18
P-5-EX	Asbestos Cement	135.0	10.0	384.00	5.50	10.02	3.85	1,346.36
P-18-EX	Asbestos Cement	135.0	10.0	214.00	5.18	8.98	1.92	-1,268.68
P-19-EX	Asbestos Cement	135.0	10.0	700.00	5.14	8.85	6.19	-1,258.64
P-44-[redacted]	PVC	135.0	8.0	523.00	4.79	10.09	5.28	-751.03
P-34-EX	Asbestos Cement	135.0	8.0	440.00	4.07	7.47	3.29	-638.38
P-21-EX	Asbestos Cement	135.0	10.0	641.00	4.04	5.68	3.64	990.14
P-25-EX	Asbestos Cement	135.0	8.0	346.00	3.78	6.50	2.25	-592.25
P-7-EX	Asbestos Cement	135.0	14.0	220.00	3.72	3.29	0.72	1,787.04
P-3-EX	Asbestos Cement	135.0	8.0	962.00	3.69	6.23	5.99	-578.52
P-23-EX	Asbestos Cement	135.0	10.0	545.00	3.67	4.75	2.59	899.11
P-30-EX	Asbestos Cement	135.0	10.0	263.00	3.56	4.48	1.18	-871.61
P-33-EX	Asbestos Cement	135.0	8.0	199.00	3.05	4.37	0.87	-477.60
P-14-EX	Asbestos Cement	135.0	8.0	886.00	2.77	3.66	3.25	-434.30
P-4-EX	Asbestos Cement	135.0	8.0	433.00	2.65	3.38	1.46	-415.86
P-12-EX	Asbestos Cement	135.0	14.0	784.00	2.34	1.39	1.09	1,123.29
P-28-EX	Asbestos Cement	135.0	8.0	1,769.00	2.22	2.42	4.28	-347.19
P-11-EX	Asbestos Cement	135.0	8.0	1,700.00	2.00	1.99	3.39	312.58
P-29-EX	Asbestos Cement	135.0	10.0	1,643.00	1.84	1.32	2.17	-450.32
P-13-EX	Asbestos Cement	135.0	8.0	952.00	1.60	1.33	1.26	-250.90
P-39-EX	Asbestos Cement	135.0	8.0	252.00	1.51	1.20	0.30	-237.05
-10-EX	Asbestos Cement	135.0	8.0	672.00	1.46	1.11	0.75	228.25
-33-Trans	PVC	135.0	33.0	4,736.00	1.45	0.21	1.00	-3,871.94
P-209-THRC	PVC	135.0	10.0	1,304.00	1.30	0.69	0.91	-318.15
P-8-EX	Asbestos Cement	135.0	8.0	333.00	1.23	0.82	0.27	193.46
P-207-THRC	PVC	135.0	12.0	336.00	1.20	0.48	0.16	421.29
P-206-THRC	PVC	135.0	12.0	501.00	1.20	0.48	0.24	-421.29
P-202-THRC	PVC	135.0	10.0	3,017.00	1.12	0.53	1.60	-274.61
P-31-EX	Asbestos Cement	135.0	10.0	694.00	1.06	0.47	0.33	258.63
P-302-CL	PVC	135.0	10.0	3,262.00	1.05	0.47	1.54	258.24
P-301-CL	PVC	135.0	10.0	198.00	1.05	0.47	0.09	258.24
P-41-EX	Asbestos Cement	135.0	8.0	245.00	1.05	0.61	0.15	164.96
P-205-THRC	PVC	135.0	10.0	388.00	1.01	0.44	0.17	247.17
P-204-THRC	PVC	135.0	10.0	716.00	1.01	0.44	0.31	-247.17
P-37-EX	Asbestos Cement	135.0	8.0	253.00	0.99	0.55	0.14	-155.21
P-16-EX	Asbestos Cement	135.0	8.0	475.00	0.98	0.53	0.25	153.31
P-256-CC	PVC	135.0	10.0	728.00	0.97	0.40	0.29	237.05
P-131-MH	PVC	135.0	10.0	225.00	0.89	0.35	0.08	-218.72
P-42-EX	Asbestos Cement	135.0	8.0	1,954.00	0.89	0.44	0.87	-138.94
P-259-CC	PVC	135.0	10.0	2,381.00	0.83	0.31	0.73	-204.38
P-105-MH	PVC	135.0	8.0	327.00	0.80	0.37	0.12	-125.72
P-303-CL	PVC	135.0	10.0	3,079.00	0.78	0.27	0.83	190.64
P-304-CL	PVC	135.0	10.0	1,445.00	0.78	0.27	0.39	-190.64
P-258-CC	PVC	135.0	10.0	2,245.00	0.74	0.25	0.55	-181.46
P-43-EX	Asbestos Cement	135.0	12.0	249.00	0.73	0.19	0.05	258.64
P-253-CC	PVC	135.0	12.0	556.00	0.73	0.19	0.11	-258.64
P-15-EX	Asbestos Cement	135.0	8.0	267.00	0.68	0.28	0.07	107.16
P-251-CC	PVC	135.0	10.0	1,290.00	0.67	0.21	0.27	-164.96
-257-CC	PVC	135.0	12.0	1,638.00	0.64	0.15	0.25	227.31
P-255-CC	PVC	135.0	10.0	1,194.00	0.63	0.18	0.22	-155.21
P-124-MH	PVC	135.0	8.0	184.00	0.60	0.21	0.04	-93.29

Scenario: MD-Bldout+FF1Ex
Fire Flow Analysis
Pipe Report

Label	Material	Hazen-Williams C	Diameter (in)	Length (ft)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)	Pressure Pipe Headloss (ft)	Discharge (gpm)
P-24-EX	Asbestos Cement	135.0	10.0	2,287.00	0.58	0.15	0.35	-141.11
P-106-MH	PVC	135.0	8.0	620.00	0.57	0.20	0.12	89.57
P-208-THRC	PVC	135.0	10.0	1,371.00	0.57	0.15	0.21	139.40
P-6-EX	Asbestos Cement	135.0	8.0	210.00	0.53	0.17	0.04	-83.75
P-135MH	PVC	135.0	8.0	470.00	0.53	0.17	0.08	82.71
P-252-CC	PVC	135.0	10.0	2,092.00	0.50	0.12	0.25	-123.03
P-139MH	PVC	135.0	8.0	291.00	0.50	0.15	0.04	-78.39
P-138MH	PVC	135.0	8.0	303.00	0.49	0.15	0.05	-77.28
P-203-THRC	PVC	135.0	10.0	385.00	0.49	0.11	0.04	118.85
P-201-THRC	PVC	135.0	10.0	784.00	0.49	0.11	0.09	-118.85
P-254-CC	PVC	135.0	12.0	2,404.00	0.45	0.08	0.19	-158.54
P-110-MH	PVC	135.0	8.0	1,018.00	0.43	0.11	0.12	-66.63
P-130-MH	PVC	135.0	8.0	212.00	0.42	0.11	0.02	-65.14
P-2-EX	PVC	135.0	8.0	384.00	0.42	0.11	0.04	-65.14
P-22-EX	Asbestos Cement	135.0	8.0	821.00	0.41	0.11	0.09	63.75
P-27-EX	Asbestos Cement	135.0	8.0	1,619.00	0.38	0.09	0.15	-59.35
P-136MH	PVC	135.0	8.0	343.00	0.37	0.09	0.03	58.61
P-141MH	PVC	135.0	8.0	314.00	0.35	0.08	0.02	-54.23
P-112-MH	PVC	135.0	8.0	274.00	0.31	0.06	0.02	48.73
P-137MH	PVC	135.0	8.0	620.00	0.30	0.06	0.04	47.15
P-140MH	PVC	135.0	8.0	430.00	0.26	0.05	0.02	-41.26
P-114-MH	PVC	135.0	8.0	579.00	0.26	0.05	0.03	41.25
P-17-EX	Asbestos Cement	135.0	8.0	691.00	0.21	0.03	0.02	32.53
P-120-MH	PVC	135.0	8.0	414.00	0.16	0.02	0.01	-25.60
P-129-MH	PVC	135.0	8.0	599.00	0.16	0.02	0.01	-24.40
P-101-MH	PVC	135.0	8.0	614.00	0.14	0.01	0.01	21.39
P-103-MH	PVC	135.0	8.0	832.00	0.12	0.01	0.01	19.11
P-20-EX	Asbestos Cement	135.0	8.0	1,128.00	0.12	0.01	0.01	18.08
P-143MH	PVC	135.0	8.0	649.00	0.10	0.01	4.82e-3	15.23
P-1-EX	Asbestos Cement	135.0	8.0	744.00	0.10	0.01	0.01	-15.20
P-115-MH	PVC	135.0	8.0	377.00	0.09	0.01	2.26e-3	13.58
P-32-EX	Asbestos Cement	135.0	8.0	644.00	0.07	4.36e-3	2.81e-3	11.46
P-121-MH	PVC	135.0	8.0	462.00	0.06	3.3e-3	1.53e-3	-9.96
P-113-MH	PVC	135.0	8.0	717.00	0.06	3.02e-3	2.17e-3	-9.38
P-132MH	PVC	135.0	8.0	843.00	0.06	2.93e-3	2.47e-3	-9.20
P-119-MH	PVC	135.0	8.0	155.00	0.06	2.95e-3	4.58e-4	9.00
P-127-MH	PVC	135.0	8.0	782.00	0.05	1.95e-3	1.53e-3	-7.61
P-125-MH	PVC	135.0	10.0	413.00	0.04	1.03e-3	4.27e-4	-9.17
P-142MH	PVC	135.0	8.0	326.00	0.03	9.36e-4	3.05e-4	4.95
P-107-MH	PVC	135.0	8.0	627.00	0.03	6.81e-4	4.27e-4	4.21
P-108-MH	PVC	135.0	8.0	847.00	0.03	6.85e-4	5.8e-4	-4.20
P-104-MH	PVC	135.0	10.0	255.00	0.02	2.39e-4	6.1e-5	-4.58
P-126-MH	PVC	135.0	8.0	394.00	0.01	0.00	0.00	1.56
P-122-MH	PVC	135.0	8.0	171.00	0.01	0.00	0.00	-0.93

Scenario: MD-Bldout+FF122MH
Fire Flow Analysis
Pipe Report

Label	Material	Hazen-Williams C	Diameter (in)	Length (ft)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)	Pressure Pipe Headloss (ft)	Discharge (gpm)
P-17-EX	Asbestos Cement	135.0	8.0	691.00	7.77	24.64	17.02	1,216.67
P-120-MH	PVC	135.0	8.0	414.00	7.12	20.97	8.68	-1,115.20
P-126-MH	PVC	135.0	8.0	394.00	6.41	17.29	6.81	1,004.57
P-140MH	PVC	135.0	8.0	430.00	6.28	16.64	7.15	-984.06
P-28-EX	Asbestos Cement	135.0	8.0	1,769.00	5.83	14.49	25.63	-913.04
P-114-MH	PVC	135.0	8.0	579.00	5.42	12.65	7.32	848.45
P-9-EX	Asbestos Cement	135.0	14.0	466.00	5.39	6.51	3.03	2,585.66
P-130-MH	PVC	135.0	8.0	212.00	5.35	12.39	2.63	-838.97
P-2-EX	PVC	135.0	8.0	384.00	5.35	12.39	4.76	-838.97
P-34-EX	Asbestos Cement	135.0	8.0	440.00	5.25	11.94	5.25	-822.42
P-25-EX	Asbestos Cement	135.0	8.0	346.00	4.95	10.73	3.71	-776.29
P-131-MH	PVC	135.0	10.0	225.00	4.88	8.04	1.81	-1,194.89
P-127-MH	PVC	135.0	8.0	782.00	4.82	10.18	7.96	-754.60
P-141MH	PVC	135.0	8.0	314.00	4.80	10.11	3.18	-751.89
P-124-MH	PVC	135.0	8.0	184.00	4.76	9.96	1.83	-745.73
P-139MH	PVC	135.0	8.0	291.00	4.66	9.60	2.79	-730.82
P-138MH	PVC	135.0	8.0	303.00	4.57	9.25	2.80	-716.28
P-44[redacted]	PVC	135.0	8.0	523.00	4.42	8.69	4.54	-692.55
P-3-EX	Asbestos Cement	135.0	8.0	962.00	4.40	8.62	8.29	-689.63
P-101-MH	PVC	135.0	8.0	614.00	4.35	8.44	5.18	681.79
P-8-EX	Asbestos Cement	135.0	8.0	333.00	4.30	8.25	2.75	673.63
-110-MH	PVC	135.0	8.0	1,018.00	4.27	8.16	8.30	-669.35
-107-MH	PVC	135.0	8.0	627.00	4.24	8.05	5.05	664.61
P-33-EX	Asbestos Cement	135.0	8.0	199.00	3.96	7.08	1.41	-620.17
P-105-MH	PVC	135.0	8.0	327.00	3.87	6.81	2.23	-607.05
P-112-MH	PVC	135.0	8.0	274.00	3.78	6.52	1.79	592.80
P-18-EX	Asbestos Cement	135.0	10.0	214.00	3.74	4.91	1.05	-915.67
P-106-MH	PVC	135.0	8.0	620.00	3.73	6.35	3.93	584.41
P-7-EX	Asbestos Cement	135.0	14.0	220.00	3.73	3.29	0.72	1,787.66
P-19-EX	Asbestos Cement	135.0	10.0	700.00	3.72	4.87	3.41	-910.92
P-135MH	PVC	135.0	8.0	470.00	3.69	6.21	2.92	577.55
P-136MH	PVC	135.0	8.0	343.00	3.62	6.00	2.06	566.88
P-5-EX	Asbestos Cement	135.0	10.0	384.00	3.62	4.62	1.77	885.38
P-137MH	PVC	135.0	8.0	620.00	3.55	5.78	3.58	555.42
P-37-EX	Asbestos Cement	135.0	8.0	253.00	3.50	5.65	1.43	548.76
P-4-EX	Asbestos Cement	135.0	8.0	433.00	3.47	5.56	2.41	543.88
P-21-EX	Asbestos Cement	135.0	10.0	641.00	3.26	3.81	2.44	797.99
P-6-EX	Asbestos Cement	135.0	8.0	210.00	2.94	4.09	0.86	460.82
P-23-EX	Asbestos Cement	135.0	10.0	545.00	2.87	3.00	1.64	701.67
P-30-EX	Asbestos Cement	135.0	10.0	263.00	2.75	2.79	0.73	-674.17
P-15-EX	Asbestos Cement	135.0	8.0	267.00	2.71	3.51	0.94	424.58
P-16-EX	Asbestos Cement	135.0	8.0	475.00	2.37	2.75	1.31	371.91
P-41-EX	Asbestos Cement	135.0	8.0	245.00	2.36	2.72	0.67	-369.88
P-121-MH	PVC	135.0	8.0	462.00	2.25	2.49	1.15	-352.57
P-255-CC	PVC	135.0	10.0	1,194.00	2.24	1.91	2.27	548.76
P-27-EX	Asbestos Cement	135.0	8.0	1,619.00	2.24	2.47	4.00	350.97
P-115-MH	PVC	135.0	8.0	377.00	1.99	1.99	0.75	312.51
P-119-MH	PVC	135.0	8.0	155.00	1.97	1.94	0.30	307.93
-12-EX	Asbestos Cement	135.0	14.0	784.00	1.96	1.00	0.79	939.87
P-103-MH	PVC	135.0	8.0	832.00	1.69	1.46	1.22	264.26
P-11-EX	Asbestos Cement	135.0	8.0	1,700.00	1.58	1.30	2.21	248.19

Scenario: MD-Bldout+FF122MH
Fire Flow Analysis
Pipe Report

Label	Material	Hazen-Williams C	Diameter (in)	Length (ft)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)	Pressure Pipe Headloss (ft)	Discharge (gpm)
P-142MH	PVC	135.0	8.0	326.00	1.53	1.22	0.40	-240.20
P-251-CC	PVC	135.0	10.0	1,290.00	1.51	0.92	1.18	369.88
P-14-EX	Asbestos Cement	135.0	8.0	886.00	1.46	1.11	0.99	-228.00
P-33-Trans	PVC	135.0	33.0	4,736.00	1.45	0.21	1.00	-3,871.94
P-29-EX	Asbestos Cement	135.0	10.0	1,643.00	1.30	0.69	1.14	-317.50
P-258-CC	PVC	135.0	10.0	2,245.00	1.28	0.68	1.52	313.64
P-259-CC	PVC	135.0	10.0	2,381.00	1.19	0.59	1.40	290.72
P-42-EX	Asbestos Cement	135.0	8.0	1,954.00	1.15	0.72	1.41	-180.41
P-13-EX	Asbestos Cement	135.0	8.0	952.00	1.11	0.67	0.64	174.00
P-209-THRC	PVC	135.0	10.0	1,304.00	1.04	0.46	0.60	-253.54
P-207-THRC	PVC	135.0	12.0	336.00	1.01	0.35	0.12	356.67
P-206-THRC	PVC	135.0	12.0	501.00	1.01	0.35	0.18	-356.67
P-143MH	PVC	135.0	8.0	649.00	0.99	0.55	0.36	-155.87
P-10-EX	Asbestos Cement	135.0	8.0	672.00	0.98	0.54	0.36	-153.56
P-31-EX	Asbestos Cement	135.0	10.0	694.00	0.98	0.41	0.28	239.06
P-254-CC	PVC	135.0	12.0	2,404.00	0.95	0.32	0.76	336.57
P-129-MH	PVC	135.0	8.0	599.00	0.94	0.49	0.29	146.70
P-205-THRC	PVC	135.0	10.0	388.00	0.93	0.37	0.15	227.60
P-204-THRC	PVC	135.0	10.0	716.00	0.93	0.37	0.27	-227.60
P-108-MH	PVC	135.0	8.0	847.00	0.91	0.47	0.40	142.59
P-43-EX	Asbestos Cement	135.0	12.0	249.00	0.91	0.29	0.07	-320.64
P-253-CC	PVC	135.0	12.0	556.00	0.91	0.29	0.16	320.64
P-202-THRC	PVC	135.0	10.0	3,017.00	0.86	0.32	0.97	-210.00
P-257-CC	PVC	135.0	12.0	1,638.00	0.76	0.21	0.34	-267.80
P-301-CL	PVC	135.0	10.0	198.00	0.71	0.23	0.05	174.06
P-302-CL	PVC	135.0	10.0	3,262.00	0.71	0.23	0.74	174.06
P-113-MH	PVC	135.0	8.0	717.00	0.67	0.26	0.19	-104.31
P-122-MH	PVC	135.0	8.0	171.00	0.60	0.22	0.04	94.00
P-39-EX	Asbestos Cement	135.0	8.0	252.00	0.57	0.19	0.05	88.91
P-22-EX	Asbestos Cement	135.0	8.0	821.00	0.44	0.12	0.10	69.04
P-303-CL	PVC	135.0	10.0	3,079.00	0.43	0.09	0.28	106.45
P-304-CL	PVC	135.0	10.0	1,445.00	0.43	0.09	0.13	-106.45
P-201-THRC	PVC	135.0	10.0	784.00	0.41	0.08	0.06	-99.27
P-203-THRC	PVC	135.0	10.0	385.00	0.41	0.08	0.03	99.27
P-256-CC	PVC	135.0	10.0	728.00	0.36	0.07	0.05	-88.91
P-208-THRC	PVC	135.0	10.0	1,371.00	0.31	0.05	0.07	74.79
P-252-CC	PVC	135.0	10.0	2,092.00	0.16	0.01	0.03	-38.85
P-20-EX	Asbestos Cement	135.0	8.0	1,128.00	0.15	0.02	0.02	23.37
P-24-EX	Asbestos Cement	135.0	10.0	2,287.00	0.11	0.01	0.02	-27.86
P-1-EX	Asbestos Cement	135.0	8.0	744.00	0.10	0.01	0.01	-15.20
P-32-EX	Asbestos Cement	135.0	8.0	644.00	0.07	4.41e-3	2.84e-3	11.46
P-125-MH	PVC	135.0	10.0	413.00	0.04	1.03e-3	4.27e-4	-9.17
P-132MH	PVC	135.0	8.0	843.00	0.03	6.88e-4	5.8e-4	4.23
P-104-MH	PVC	135.0	10.0	255.00	0.02	2.39e-4	6.1e-5	-4.58

Scenario: MD-Bldout+FF204THRC
Fire Flow Analysis
Pipe Report

Label	Material	Hazen-Williams C	Diameter (in)	Length (ft)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)	Pressure Pipe Headloss (ft)	Discharge (gpm)
P-23-EX	Asbestos Cement	135.0	10.0	545.00	7.23	16.64	9.07	1,770.81
P-30-EX	Asbestos Cement	135.0	10.0	263.00	7.12	16.17	4.25	-1,743.31
P-9-EX	Asbestos Cement	135.0	14.0	466.00	6.68	9.69	4.51	3,204.92
P-206-THRC	PVC	135.0	12.0	501.00	6.21	10.14	5.08	-2,189.79
P-207-THRC	PVC	135.0	12.0	336.00	6.21	10.14	3.41	2,189.79
P-21-EX	Asbestos Cement	135.0	10.0	641.00	6.19	12.49	8.01	1,516.48
P-18-EX	Asbestos Cement	135.0	10.0	214.00	5.93	11.53	2.47	-1,452.03
P-44[redacted]	PVC	135.0	8.0	523.00	5.25	11.96	6.26	-823.30
P-19-EX	Asbestos Cement	135.0	10.0	700.00	4.48	6.86	4.80	-1,096.63
P-24-EX	Asbestos Cement	135.0	10.0	2,287.00	3.55	4.45	10.18	868.25
P-7-EX	Asbestos Cement	135.0	14.0	220.00	3.52	2.96	0.65	1,688.44
P-34-EX	Asbestos Cement	135.0	8.0	440.00	3.45	5.49	2.41	-540.33
P-25-EX	Asbestos Cement	135.0	8.0	346.00	3.15	4.65	1.61	-494.20
P-3-EX	Asbestos Cement	135.0	8.0	962.00	2.98	4.19	4.03	-466.88
P-33-EX	Asbestos Cement	135.0	8.0	199.00	2.56	3.17	0.63	-401.65
P-208-THRC	PVC	135.0	10.0	1,371.00	2.42	2.19	3.01	-592.10
P-12-EX	Asbestos Cement	135.0	14.0	784.00	2.34	1.39	1.09	1,122.74
P-14-EX	Asbestos Cement	135.0	8.0	886.00	2.19	2.37	2.10	-342.94
P-20-EX	Asbestos Cement	135.0	8.0	1,128.00	2.09	2.17	2.45	-327.28
P-252-CC	PVC	135.0	10.0	2,092.00	2.03	1.58	3.30	495.91
P-202-THRC	PVC	135.0	10.0	3,017.00	1.87	1.36	4.10	456.89
P-28-EX	Asbestos Cement	135.0	8.0	1,769.00	1.86	1.75	3.09	-291.14
P-29-EX	Asbestos Cement	135.0	10.0	1,643.00	1.82	1.30	2.14	446.48
P-22-EX	Asbestos Cement	135.0	8.0	821.00	1.80	1.64	1.35	-281.61
P-304-CL	PVC	135.0	10.0	1,445.00	1.75	1.20	1.74	428.31
P-303-CL	PVC	135.0	10.0	3,079.00	1.75	1.20	3.71	-428.31
P-209-THRC	PVC	135.0	10.0	1,304.00	1.69	1.13	1.47	413.35
P-4-EX	Asbestos Cement	135.0	8.0	433.00	1.61	1.34	0.58	-252.11
P-11-EX	Asbestos Cement	135.0	8.0	1,700.00	1.60	1.32	2.25	250.31
P-31-EX	Asbestos Cement	135.0	10.0	694.00	1.52	0.92	0.64	371.19
P-302-CL	PVC	135.0	10.0	3,262.00	1.47	0.88	2.86	-360.70
P-301-CL	PVC	135.0	10.0	198.00	1.47	0.88	0.17	-360.70
P-205-THRC	PVC	135.0	10.0	388.00	1.47	0.87	0.34	359.73
P-204-THRC	PVC	135.0	10.0	716.00	1.47	0.87	0.62	-359.73
P-33-Trans	PVC	135.0	33.0	4,736.00	1.45	0.21	1.00	-3,871.94
P-10-EX	Asbestos Cement	135.0	8.0	672.00	1.19	0.77	0.51	186.25
P-43-EX	Asbestos Cement	135.0	12.0	249.00	1.15	0.45	0.11	-406.24
P-253-CC	PVC	135.0	12.0	556.00	1.15	0.45	0.25	406.24
P-8-EX	Asbestos Cement	135.0	8.0	333.00	1.13	0.70	0.23	177.76
P-13-EX	Asbestos Cement	135.0	8.0	952.00	1.12	0.68	0.65	-175.02
P-39-EX	Asbestos Cement	135.0	8.0	252.00	1.12	0.68	0.17	-174.99
P-203-THRC	PVC	135.0	10.0	385.00	0.95	0.39	0.15	231.40
P-201-THRC	PVC	135.0	10.0	784.00	0.95	0.39	0.30	-231.40
P-16-EX	Asbestos Cement	135.0	8.0	475.00	0.88	0.44	0.21	137.83
P-131-MH	PVC	135.0	10.0	225.00	0.79	0.28	0.06	-194.46
P-42-EX	Asbestos Cement	135.0	8.0	1,954.00	0.75	0.32	0.63	-116.84
P-256-CC	PVC	135.0	10.0	728.00	0.71	0.23	0.17	174.99
P-5-EX	Asbestos Cement	135.0	10.0	384.00	0.71	0.23	0.09	174.99
P-105-MH	PVC	135.0	8.0	327.00	0.69	0.28	0.09	-107.53
P-259-CC	PVC	135.0	10.0	2,381.00	0.65	0.19	0.46	-158.45
P-124-MH	PVC	135.0	8.0	184.00	0.61	0.22	0.04	-95.00

Scenario: MD-Bldout+FF204THRC
Fire Flow Analysis
Pipe Report

Label	Material	Hazen-Williams C	Diameter (in)	Length (ft)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)	Pressure Pipe Headloss (ft)	Discharge (gpm)
P-130-MH	PVC	135.0	8.0	212.00	0.57	0.20	0.04	-89.40
P-2-EX	PVC	135.0	8.0	384.00	0.57	0.20	0.08	-89.40
P-17-EX	Asbestos Cement	135.0	8.0	691.00	0.57	0.19	0.13	88.58
P-15-EX	Asbestos Cement	135.0	8.0	267.00	0.55	0.19	0.05	86.89
P-258-CC	PVC	135.0	10.0	2,245.00	0.55	0.14	0.32	-135.52
P-106-MH	PVC	135.0	8.0	620.00	0.53	0.17	0.11	83.50
P-37-EX	Asbestos Cement	135.0	8.0	253.00	0.53	0.17	0.04	-83.47
P-257-CC	PVC	135.0	12.0	1,638.00	0.51	0.10	0.17	181.37
P-139MH	PVC	135.0	8.0	291.00	0.51	0.16	0.05	-80.09
P-41-EX	Asbestos Cement	135.0	8.0	245.00	0.49	0.15	0.04	77.09
P-135MH	PVC	135.0	8.0	470.00	0.49	0.15	0.07	76.64
P-138MH	PVC	135.0	8.0	303.00	0.48	0.14	0.04	-74.53
P-110-MH	PVC	135.0	8.0	1,018.00	0.45	0.13	0.13	-70.99
P-136MH	PVC	135.0	8.0	343.00	0.36	0.09	0.03	56.99
P-141MH	PVC	135.0	8.0	314.00	0.35	0.08	0.03	-55.36
P-255-CC	PVC	135.0	10.0	1,194.00	0.34	0.06	0.07	-83.47
P-254-CC	PVC	135.0	12.0	2,404.00	0.32	0.04	0.10	-112.60
P-251-CC	PVC	135.0	10.0	1,290.00	0.31	0.05	0.07	-77.09
P-112-MH	PVC	135.0	8.0	274.00	0.31	0.07	0.02	49.22
P-137MH	PVC	135.0	8.0	620.00	0.29	0.06	0.04	45.53
P-140MH	PVC	135.0	8.0	430.00	0.27	0.05	0.02	-41.74
P-114-MH	PVC	135.0	8.0	579.00	0.26	0.05	0.03	40.77
P-6-EX	Asbestos Cement	135.0	8.0	210.00	0.24	0.04	0.01	-37.17
P-27-EX	Asbestos Cement	135.0	8.0	1,619.00	0.18	0.02	0.04	-27.55
P-120-MH	PVC	135.0	8.0	414.00	0.16	0.02	0.01	-25.67
P-101-MH	PVC	135.0	8.0	614.00	0.14	0.01	0.01	21.33
P-103-MH	PVC	135.0	8.0	832.00	0.12	0.01	0.01	18.46
P-1-EX	Asbestos Cement	135.0	8.0	744.00	0.10	0.01	0.01	-15.20
P-115-MH	PVC	135.0	8.0	377.00	0.09	0.01	2.62e-3	14.72
P-32-EX	Asbestos Cement	135.0	8.0	644.00	0.07	4.41e-3	2.84e-3	11.46
P-119-MH	PVC	135.0	8.0	155.00	0.06	3.54e-3	5.49e-4	10.14
P-121-MH	PVC	135.0	8.0	462.00	0.06	3.3e-3	1.53e-3	-10.00
P-127-MH	PVC	135.0	8.0	782.00	0.05	1.95e-3	1.53e-3	-7.64
P-113-MH	PVC	135.0	8.0	717.00	0.04	1.36e-3	9.77e-4	-6.14
P-125-MH	PVC	135.0	10.0	413.00	0.04	9.61e-4	3.97e-4	-9.17
P-142MH	PVC	135.0	8.0	326.00	0.04	1.12e-3	3.66e-4	5.60
P-132MH	PVC	135.0	8.0	843.00	0.03	8.33e-4	7.02e-4	-4.74
P-143MH	PVC	135.0	8.0	649.00	0.03	8.46e-4	5.49e-4	-4.65
P-108-MH	PVC	135.0	8.0	847.00	0.03	7.93e-4	6.71e-4	-4.62
P-129-MH	PVC	135.0	8.0	599.00	0.03	8.15e-4	4.88e-4	-4.52
P-122-MH	PVC	135.0	8.0	171.00	0.03	5.35e-4	9.16e-5	-4.17
P-107-MH	PVC	135.0	8.0	627.00	0.03	6.33e-4	3.97e-4	4.14
P-104-MH	PVC	135.0	10.0	255.00	0.02	2.39e-4	6.1e-5	-4.58
P-126-MH	PVC	135.0	8.0	394.00	0.01	0.00	0.00	1.53

Scenario: MD-Bldout+FF258CC
Fire Flow Analysis
Pipe Report

Label	Material	Hazen-Williams C	Diameter (in)	Length (ft)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)	Pressure Pipe Headloss (ft)	Discharge (gpm)
P-9-EX	Asbestos Cement	135.0	14.0	466.00	6.61	9.50	4.43	3,170.92
P-5-EX	Asbestos Cement	135.0	10.0	384.00	5.91	11.46	4.40	1,447.52
P-19-EX	Asbestos Cement	135.0	10.0	700.00	5.56	10.23	7.16	-1,361.43
P-18-EX	Asbestos Cement	135.0	10.0	214.00	5.54	10.15	2.17	-1,355.15
P-44-[redacted]	PVC	135.0	8.0	523.00	5.47	12.89	6.74	-857.29
P-259-CC	PVC	135.0	10.0	2,381.00	5.16	8.91	21.22	-1,263.39
P-258-CC	PVC	135.0	10.0	2,245.00	5.15	8.86	19.89	1,259.53
P-34-EX	Asbestos Cement	135.0	8.0	440.00	5.09	11.28	4.96	-797.40
P-25-EX	Asbestos Cement	135.0	8.0	346.00	4.80	10.10	3.49	-751.27
P-3-EX	Asbestos Cement	135.0	8.0	962.00	4.70	9.75	9.38	-737.10
P-21-EX	Asbestos Cement	135.0	10.0	641.00	4.44	6.74	4.32	1,086.06
P-7-EX	Asbestos Cement	135.0	14.0	220.00	4.35	4.37	0.96	2,084.86
P-23-EX	Asbestos Cement	135.0	10.0	545.00	4.00	5.56	3.03	978.71
P-30-EX	Asbestos Cement	135.0	10.0	263.00	3.89	5.27	1.39	-951.21
P-33-EX	Asbestos Cement	135.0	8.0	199.00	3.83	6.68	1.33	-600.74
P-257-CC	PVC	135.0	12.0	1,638.00	3.65	3.79	6.21	1,286.32
P-254-CC	PVC	135.0	12.0	2,404.00	3.64	3.77	9.06	1,282.45
P-14-EX	Asbestos Cement	135.0	8.0	886.00	3.44	5.45	4.83	-538.39
P-43-EX	Asbestos Cement	135.0	12.0	249.00	3.12	2.84	0.71	-1,101.11
P-253-CC	PVC	135.0	12.0	556.00	3.12	2.84	1.58	1,101.11
P-41-EX	Asbestos Cement	135.0	8.0	245.00	3.00	4.24	1.04	-470.22
-39-EX	Asbestos Cement	135.0	8.0	252.00	2.98	4.20	1.06	-467.63
P-28-EX	Asbestos Cement	135.0	8.0	1,769.00	2.89	3.96	7.00	-452.64
P-11-EX	Asbestos Cement	135.0	8.0	1,700.00	2.68	3.45	5.87	420.66
P-12-EX	Asbestos Cement	135.0	14.0	784.00	2.63	1.73	1.35	1,262.09
P-16-EX	Asbestos Cement	135.0	8.0	475.00	2.32	2.64	1.25	363.61
P-37-EX	Asbestos Cement	135.0	8.0	253.00	2.22	2.44	0.62	-348.47
P-4-EX	Asbestos Cement	135.0	8.0	433.00	2.08	2.15	0.93	325.54
P-29-EX	Asbestos Cement	135.0	10.0	1,643.00	2.02	1.57	2.57	-493.48
P-251-CC	PVC	135.0	10.0	1,290.00	1.92	1.43	1.85	470.22
P-256-CC	PVC	135.0	10.0	728.00	1.91	1.42	1.03	467.63
P-10-EX	Asbestos Cement	135.0	8.0	672.00	1.80	1.65	1.11	281.82
P-8-EX	Asbestos Cement	135.0	8.0	333.00	1.80	1.64	0.55	281.27
P-33-Trans	PVC	135.0	33.0	4,736.00	1.45	0.21	1.00	-3,871.94
P-209-THRC	PVC	135.0	10.0	1,304.00	1.45	0.85	1.11	-354.59
P-255-CC	PVC	135.0	10.0	1,194.00	1.42	0.82	0.98	-348.47
P-302-CL	PVC	135.0	10.0	3,262.00	1.39	0.78	2.56	339.48
P-301-CL	PVC	135.0	10.0	198.00	1.39	0.78	0.16	339.48
P-207-THRC	PVC	135.0	12.0	336.00	1.30	0.56	0.19	457.73
P-206-THRC	PVC	135.0	12.0	501.00	1.30	0.56	0.28	-457.73
P-202-THRC	PVC	135.0	10.0	3,017.00	1.27	0.67	2.01	-311.05
P-31-EX	Asbestos Cement	135.0	10.0	694.00	1.24	0.64	0.44	303.42
P-205-THRC	PVC	135.0	10.0	388.00	1.19	0.59	0.23	291.96
P-204-THRC	PVC	135.0	10.0	716.00	1.19	0.59	0.42	-291.96
P-131-MH	PVC	135.0	10.0	225.00	1.14	0.54	0.12	-277.87
P-42-EX	Asbestos Cement	135.0	8.0	1,954.00	1.12	0.68	1.33	-174.81
P-303-CL	PVC	135.0	10.0	3,079.00	1.11	0.52	1.60	271.87
P-304-CL	PVC	135.0	10.0	1,445.00	1.11	0.52	0.75	-271.87
-105-MH	PVC	135.0	8.0	327.00	1.07	0.63	0.20	-167.06
P-15-EX	Asbestos Cement	135.0	8.0	267.00	1.03	0.59	0.16	161.67
P-13-EX	Asbestos Cement	135.0	8.0	952.00	0.92	0.48	0.46	-144.68

Scenario: MD-Bldout+FF258CC
Fire Flow Analysis
Pipe Report

Label	Material	Hazen-Williams C	Diameter (in)	Length (ft)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)	Pressure Pipe Headloss (ft)	Discharge (gpm)
P-252-CC	PVC	135.0	10.0	2,092.00	0.83	0.31	0.64	-204.26
P-208-THRC	PVC	135.0	10.0	1,371.00	0.72	0.23	0.32	175.84
P-106-MH	PVC	135.0	8.0	620.00	0.69	0.28	0.17	107.37
P-27-EX	Asbestos Cement	135.0	8.0	1,619.00	0.67	0.27	0.43	-105.65
P-203-THRC	PVC	135.0	10.0	385.00	0.67	0.20	0.08	163.63
P-201-THRC	PVC	135.0	10.0	784.00	0.67	0.20	0.16	-163.63
P-6-EX	Asbestos Cement	135.0	8.0	210.00	0.66	0.26	0.05	-104.01
P-135MH	PVC	135.0	8.0	470.00	0.64	0.24	0.11	100.51
P-124-MH	PVC	135.0	8.0	184.00	0.62	0.23	0.04	-96.97
P-138MH	PVC	135.0	8.0	303.00	0.58	0.20	0.06	-90.77
P-24-EX	Asbestos Cement	135.0	10.0	2,287.00	0.57	0.15	0.35	-139.48
P-139MH	PVC	135.0	8.0	291.00	0.52	0.17	0.05	-82.07
P-22-EX	Asbestos Cement	135.0	8.0	821.00	0.51	0.16	0.13	80.06
P-17-EX	Asbestos Cement	135.0	8.0	691.00	0.47	0.13	0.09	-72.92
P-136MH	PVC	135.0	8.0	343.00	0.43	0.11	0.04	66.60
P-129-MH	PVC	135.0	8.0	599.00	0.40	0.10	0.06	-62.07
P-137MH	PVC	135.0	8.0	620.00	0.35	0.08	0.05	55.14
P-143MH	PVC	135.0	8.0	649.00	0.34	0.07	0.05	52.90
P-112-MH	PVC	135.0	8.0	274.00	0.31	0.06	0.02	48.24
P-141MH	PVC	135.0	8.0	314.00	0.30	0.06	0.02	-46.73
P-110-MH	PVC	135.0	8.0	1,018.00	0.29	0.06	0.06	-45.15
P-114-MH	PVC	135.0	8.0	579.00	0.28	0.05	0.03	44.12
P-140MH	PVC	135.0	8.0	430.00	0.25	0.04	0.02	-38.40
P-20-EX	Asbestos Cement	135.0	8.0	1,128.00	0.22	0.03	0.04	34.39
P-120-MH	PVC	135.0	8.0	414.00	0.16	0.02	0.01	-25.31
P-103-MH	PVC	135.0	8.0	832.00	0.15	0.02	0.01	23.74
P-113-MH	PVC	135.0	8.0	717.00	0.15	0.02	0.01	-23.36
P-101-MH	PVC	135.0	8.0	614.00	0.14	0.01	0.01	21.68
P-132MH	PVC	135.0	8.0	843.00	0.12	0.01	0.01	-19.01
P-1-EX	Asbestos Cement	135.0	8.0	744.00	0.10	0.01	0.01	-15.20
P-122-MH	PVC	135.0	8.0	171.00	0.08	0.01	9.46e-4	13.05
P-32-EX	Asbestos Cement	135.0	8.0	644.00	0.07	4.41e-3	2.84e-3	11.46
P-121-MH	PVC	135.0	8.0	462.00	0.06	3.17e-3	1.46e-3	-9.78
P-115-MH	PVC	135.0	8.0	377.00	0.05	2.51e-3	9.46e-4	8.46
P-127-MH	PVC	135.0	8.0	782.00	0.05	1.83e-3	1.43e-3	-7.51
P-130-MH	PVC	135.0	8.0	212.00	0.04	1.44e-3	3.05e-4	-6.00
P-2-EX	PVC	135.0	8.0	384.00	0.04	1.27e-3	4.88e-4	-6.00
P-125-MH	PVC	135.0	10.0	413.00	0.04	9.61e-4	3.97e-4	-9.17
P-107-MH	PVC	135.0	8.0	627.00	0.03	7.79e-4	4.88e-4	4.50
P-119-MH	PVC	135.0	8.0	155.00	0.02	5.91e-4	9.16e-5	3.88
P-104-MH	PVC	135.0	10.0	255.00	0.02	2.39e-4	6.1e-5	-4.58
P-126-MH	PVC	135.0	8.0	394.00	0.01	7.75e-5	3.05e-5	1.67
P-108-MH	PVC	135.0	8.0	847.00	0.01	7.21e-5	6.1e-5	-1.62
P-142MH	PVC	135.0	8.0	326.00	2.03e-3	0.00	0.00	0.32

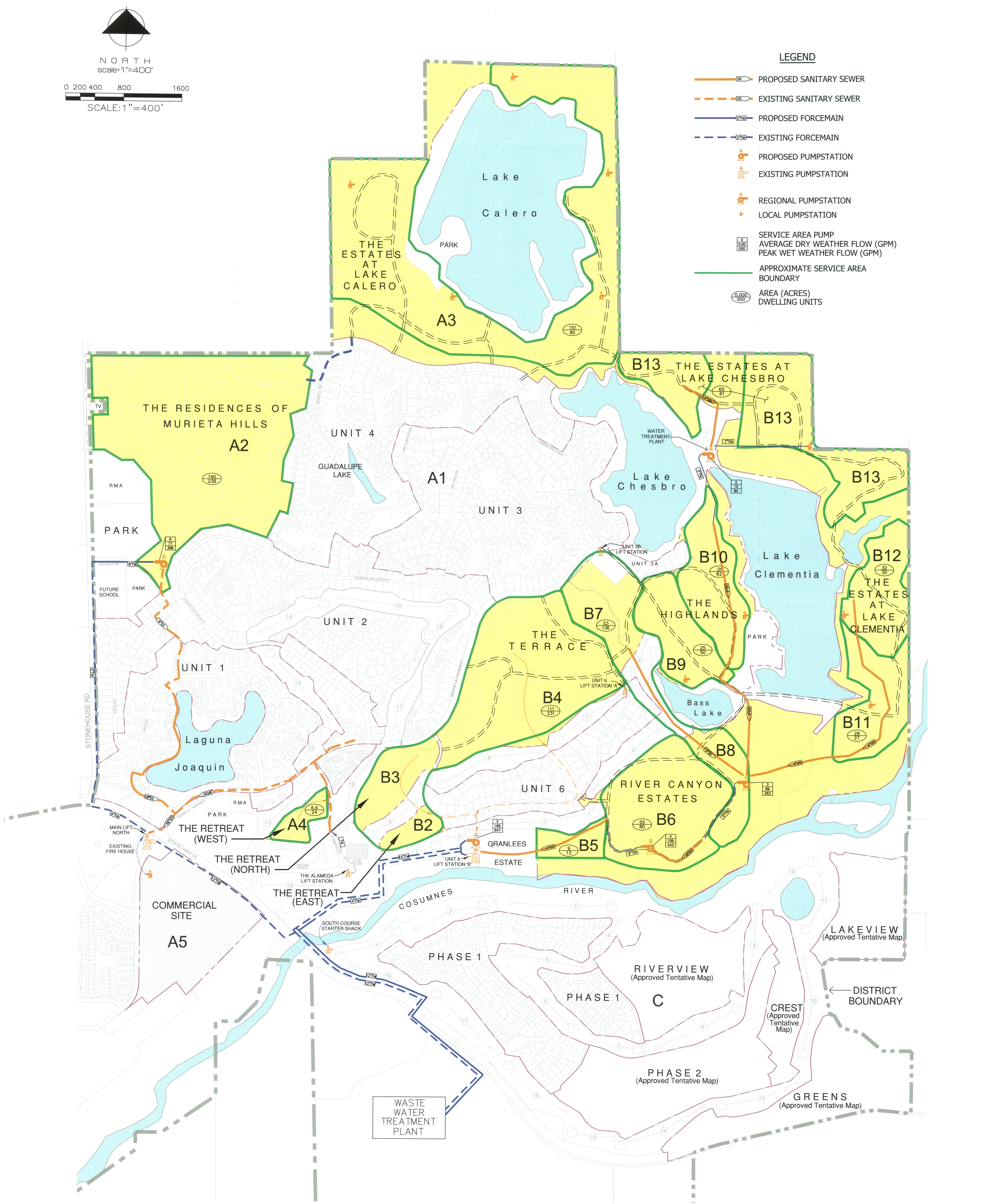
Scenario: MD-Bldout+FF303CL
Fire Flow Analysis
Pipe Report

Label	Material	Hazen-Williams C	Diameter (in)	Length (ft)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)	Pressure Pipe Headloss (ft)	Discharge (gpm)
P-9-EX	Asbestos Cement	135.0	14.0	466.00	5.80	7.47	3.48	2,784.84
P-18-EX	Asbestos Cement	135.0	10.0	214.00	5.37	9.58	2.05	-1,313.88
P-44-[redacted]	PVC	135.0	8.0	523.00	4.74	9.90	5.18	-743.38
P-23-EX	Asbestos Cement	135.0	10.0	545.00	4.72	7.57	4.12	1,156.57
P-19-EX	Asbestos Cement	135.0	10.0	700.00	4.70	7.50	5.25	-1,151.09
P-30-EX	Asbestos Cement	135.0	10.0	263.00	4.61	7.24	1.90	-1,129.07
P-302-CL	PVC	135.0	10.0	3,262.00	4.58	7.15	23.33	1,121.87
P-301-CL	PVC	135.0	10.0	198.00	4.58	7.15	1.42	1,121.87
P-21-EX	Asbestos Cement	135.0	10.0	641.00	4.47	6.84	4.38	1,094.84
P-252-CC	PVC	135.0	10.0	2,092.00	4.14	5.93	12.40	1,013.34
P-303-CL	PVC	135.0	10.0	3,079.00	3.86	5.22	16.06	-945.74
P-304-CL	PVC	135.0	10.0	1,445.00	3.86	5.22	7.54	945.74
P-34-EX	Asbestos Cement	135.0	8.0	440.00	3.62	6.00	2.64	-567.07
P-7-EX	Asbestos Cement	135.0	14.0	220.00	3.52	2.97	0.65	1,690.00
P-31-EX	Asbestos Cement	135.0	10.0	694.00	3.35	4.01	2.79	821.02
P-25-EX	Asbestos Cement	135.0	8.0	346.00	3.33	5.13	1.77	-520.94
P-204-THRC	PVC	135.0	10.0	716.00	3.31	3.91	2.80	-809.56
P-205-THRC	PVC	135.0	10.0	388.00	3.31	3.91	1.52	809.56
P-3-EX	Asbestos Cement	135.0	8.0	962.00	3.19	4.75	4.57	-499.93
P-203-THRC	PVC	135.0	10.0	385.00	2.78	2.84	1.09	681.23
P-201-THRC	PVC	135.0	10.0	784.00	2.78	2.84	2.23	-681.23
-33-EX	Asbestos Cement	135.0	8.0	199.00	2.70	3.48	0.69	-422.36
P-5-EX	Asbestos Cement	135.0	10.0	384.00	2.58	2.48	0.95	632.63
P-209-THRC	PVC	135.0	10.0	1,304.00	2.53	2.38	3.11	-619.39
P-253-CC	PVC	135.0	12.0	556.00	2.43	1.79	1.00	858.08
P-43-EX	Asbestos Cement	135.0	12.0	249.00	2.43	1.79	0.45	-858.08
P-202-THRC	PVC	135.0	10.0	3,017.00	2.35	2.08	6.28	-575.85
P-14-EX	Asbestos Cement	135.0	8.0	886.00	2.35	2.70	2.39	-368.05
P-12-EX	Asbestos Cement	135.0	14.0	784.00	2.29	1.33	1.05	1,097.56
P-206-THRC	PVC	135.0	12.0	501.00	2.05	1.30	0.65	-722.53
P-207-THRC	PVC	135.0	12.0	336.00	2.05	1.30	0.44	722.53
P-28-EX	Asbestos Cement	135.0	8.0	1,769.00	1.96	1.93	3.42	-307.28
P-24-EX	Asbestos Cement	135.0	10.0	2,287.00	1.90	1.40	3.21	465.06
P-208-THRC	PVC	135.0	10.0	1,371.00	1.80	1.27	1.74	440.64
P-11-EX	Asbestos Cement	135.0	8.0	1,700.00	1.72	1.51	2.56	268.84
P-29-EX	Asbestos Cement	135.0	10.0	1,643.00	1.66	1.09	1.80	-406.54
P-4-EX	Asbestos Cement	135.0	8.0	433.00	1.57	1.28	0.56	-246.30
P-33-Trans	PVC	135.0	33.0	4,736.00	1.45	0.21	1.00	-3,871.94
P-39-EX	Asbestos Cement	135.0	8.0	252.00	1.26	0.86	0.22	-197.95
P-10-EX	Asbestos Cement	135.0	8.0	672.00	1.26	0.85	0.57	196.84
P-13-EX	Asbestos Cement	135.0	8.0	952.00	1.19	0.77	0.73	-187.11
P-8-EX	Asbestos Cement	135.0	8.0	333.00	1.19	0.77	0.26	186.36
P-16-EX	Asbestos Cement	135.0	8.0	475.00	0.96	0.52	0.25	150.84
P-259-CC	PVC	135.0	10.0	2,381.00	0.92	0.36	0.86	-224.04
P-20-EX	Asbestos Cement	135.0	8.0	1,128.00	0.86	0.42	0.47	-134.68
P-258-CC	PVC	135.0	10.0	2,245.00	0.82	0.30	0.67	-201.11
P-131-MH	PVC	135.0	10.0	225.00	0.82	0.30	0.07	-200.63
P-256-CC	PVC	135.0	10.0	728.00	0.81	0.29	0.21	197.95
-42-EX	Asbestos Cement	135.0	8.0	1,954.00	0.78	0.35	0.69	-122.86
P-105-MH	PVC	135.0	8.0	327.00	0.72	0.30	0.10	-112.26
P-257-CC	PVC	135.0	12.0	1,638.00	0.70	0.18	0.29	246.96

Scenario: MD-Bldout+FF303CL
Fire Flow Analysis
Pipe Report

Label	Material	Hazen-Williams C	Diameter (in)	Length (ft)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)	Pressure Pipe Headloss (ft)	Discharge (gpm)
P-37-EX	Asbestos Cement	135.0	8.0	253.00	0.69	0.28	0.07	-108.20
P-15-EX	Asbestos Cement	135.0	8.0	267.00	0.61	0.22	0.06	94.83
P-124-MH	PVC	135.0	8.0	184.00	0.60	0.22	0.04	-94.33
P-22-EX	Asbestos Cement	135.0	8.0	821.00	0.57	0.20	0.16	-89.01
P-106-MH	PVC	135.0	8.0	620.00	0.54	0.18	0.11	84.94
P-2-EX	PVC	135.0	8.0	384.00	0.53	0.17	0.07	-83.23
P-130-MH	PVC	135.0	8.0	212.00	0.53	0.17	0.04	-83.23
P-139MH	PVC	135.0	8.0	291.00	0.51	0.16	0.05	-79.43
P-254-CC	PVC	135.0	12.0	2,404.00	0.51	0.10	0.24	-178.19
P-135MH	PVC	135.0	8.0	470.00	0.50	0.15	0.07	78.08
P-138MH	PVC	135.0	8.0	303.00	0.48	0.14	0.04	-75.01
P-17-EX	Asbestos Cement	135.0	8.0	691.00	0.46	0.13	0.09	72.43
P-110-MH	PVC	135.0	8.0	1,018.00	0.45	0.13	0.13	-70.22
P-255-CC	PVC	135.0	10.0	1,194.00	0.44	0.09	0.11	-108.20
P-41-EX	Asbestos Cement	135.0	8.0	245.00	0.38	0.09	0.02	59.20
P-136MH	PVC	135.0	8.0	343.00	0.37	0.09	0.03	57.29
P-141MH	PVC	135.0	8.0	314.00	0.35	0.08	0.03	-55.17
P-112-MH	PVC	135.0	8.0	274.00	0.31	0.07	0.02	49.12
P-6-EX	Asbestos Cement	135.0	8.0	210.00	0.30	0.06	0.01	-47.11
P-137MH	PVC	135.0	8.0	620.00	0.29	0.06	0.04	45.83
P-140MH	PVC	135.0	8.0	430.00	0.27	0.05	0.02	-41.66
P-114-MH	PVC	135.0	8.0	579.00	0.26	0.05	0.03	40.85
P-251-CC	PVC	135.0	10.0	1,290.00	0.24	0.03	0.04	-59.20
P-27-EX	Asbestos Cement	135.0	8.0	1,619.00	0.24	0.04	0.06	-37.53
P-120-MH	PVC	135.0	8.0	414.00	0.16	0.02	0.01	-25.65
P-101-MH	PVC	135.0	8.0	614.00	0.14	0.01	0.01	21.34
P-103-MH	PVC	135.0	8.0	832.00	0.12	0.01	0.01	18.57
P-1-EX	Asbestos Cement	135.0	8.0	744.00	0.10	0.01	0.01	-15.20
P-115-MH	PVC	135.0	8.0	377.00	0.09	0.01	2.56e-3	14.51
P-32-EX	Asbestos Cement	135.0	8.0	644.00	0.07	4.41e-3	2.84e-3	11.46
P-121-MH	PVC	135.0	8.0	462.00	0.06	3.3e-3	1.53e-3	-9.99
P-119-MH	PVC	135.0	8.0	155.00	0.06	3.35e-3	5.19e-4	9.93
P-129-MH	PVC	135.0	8.0	599.00	0.06	3.36e-3	2.01e-3	-9.91
P-127-MH	PVC	135.0	8.0	782.00	0.05	1.95e-3	1.53e-3	-7.63
P-113-MH	PVC	135.0	8.0	717.00	0.04	1.66e-3	1.19e-3	-6.72
P-132MH	PVC	135.0	8.0	843.00	0.04	1.27e-3	1.07e-3	-5.89
P-125-MH	PVC	135.0	10.0	413.00	0.04	1.03e-3	4.27e-4	-9.17
P-142MH	PVC	135.0	8.0	326.00	0.04	1.12e-3	3.66e-4	5.49
P-108-MH	PVC	135.0	8.0	847.00	0.03	7.93e-4	6.71e-4	-4.54
P-107-MH	PVC	135.0	8.0	627.00	0.03	6.81e-4	4.27e-4	4.16
P-122-MH	PVC	135.0	8.0	171.00	0.02	5.35e-4	9.16e-5	-3.59
P-104-MH	PVC	135.0	10.0	255.00	0.02	3.59e-4	9.16e-5	-4.58
P-126-MH	PVC	135.0	8.0	394.00	0.01	0.00	0.00	1.54
P-143MH	PVC	135.0	8.0	649.00	4.7e-3	0.00	0.00	0.74

B- SEWER CALCULATIONS



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Sewer Master Plan

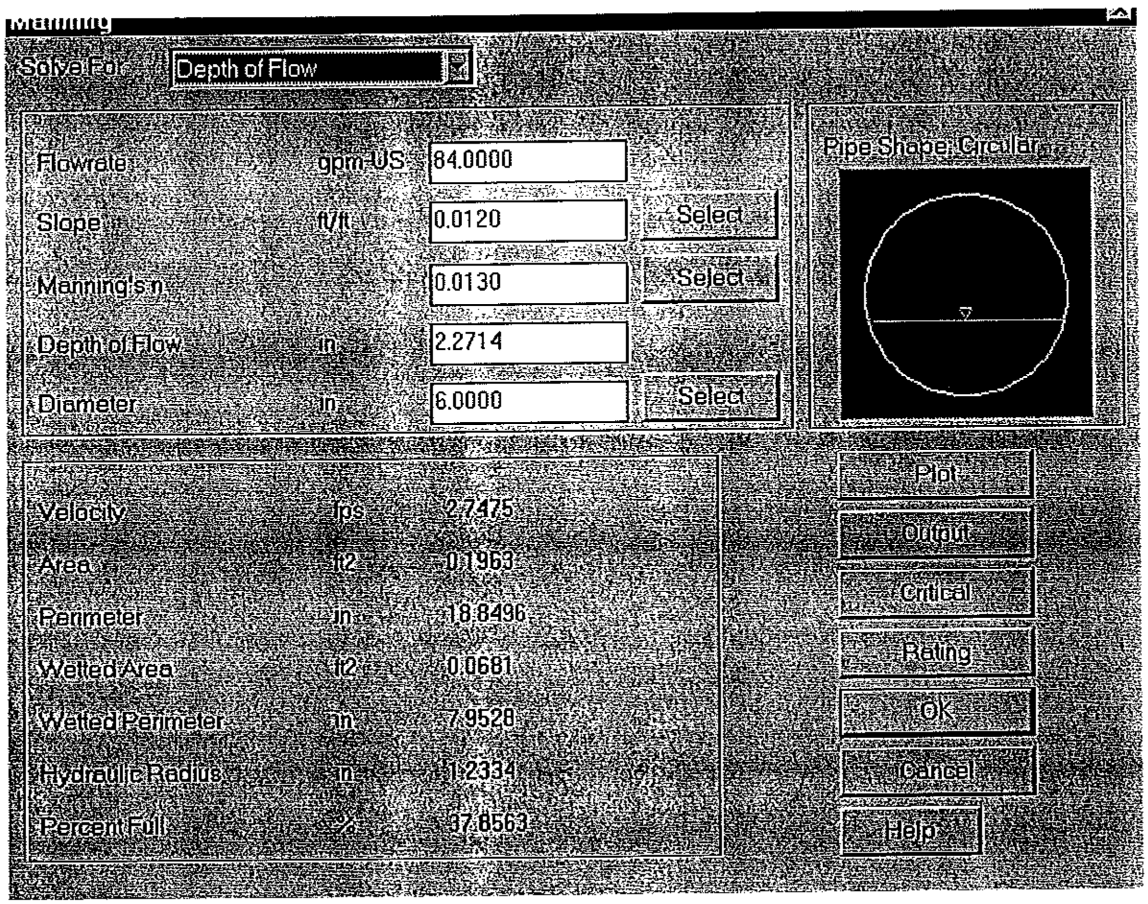
Rancho Murieta North Infrastructure Master Plan

MAY 2003

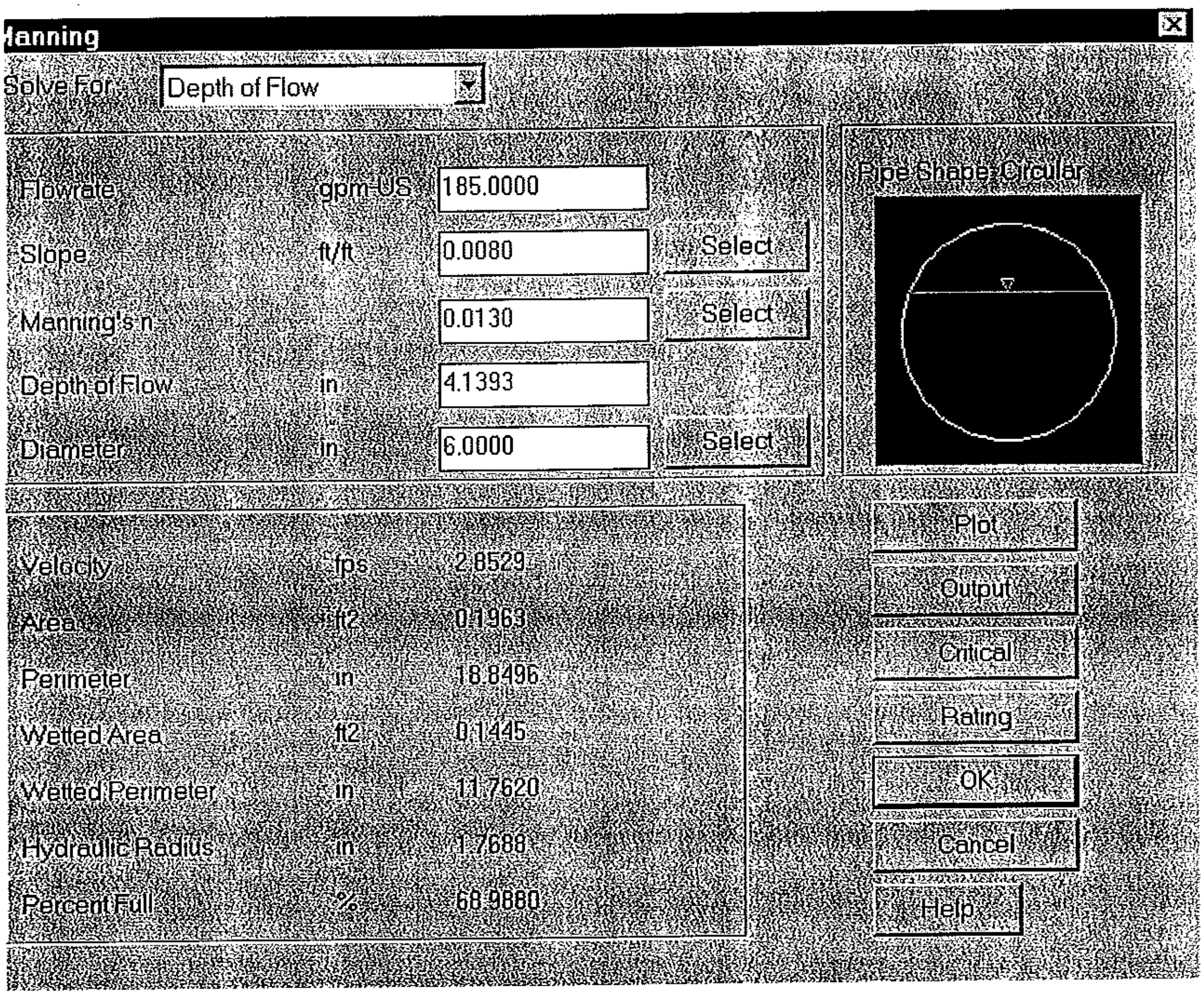
PIPE ANALYSIS						
Gravity Pipe Sizing						Force
Pump Number		Pipe	Flow Rate (gpm)		Min. Pipe	Main
From	To Pump	Size (in)	PDWF	PWWF	Slope (ft/ft)	Size (in)
B13	2	6	30	84	0.012	
Pump 2	3	6	85	185	0.008	3
Pump 3	4	8	202	443	0.010	6
Pump 4	5	10	306	647	0.007	6
B12	3	6	29	57	0.012	
B7	3	6	116	160	0.006	

Pipe Flow Analysis

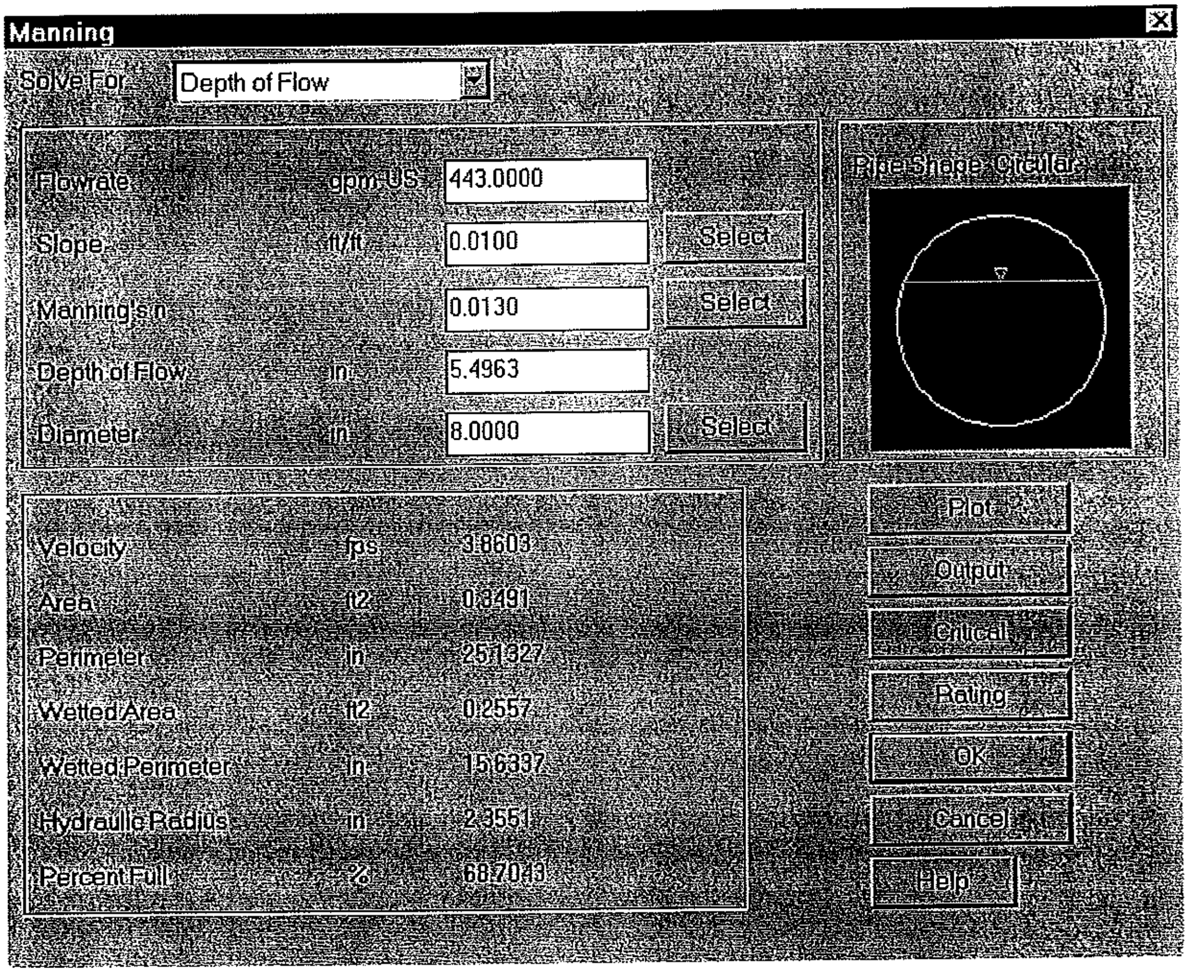
Pipe Tributary Pump 2



Pipe From Pump 2



Pipe From Pump 3



Manning

Solve For: Depth of Flow

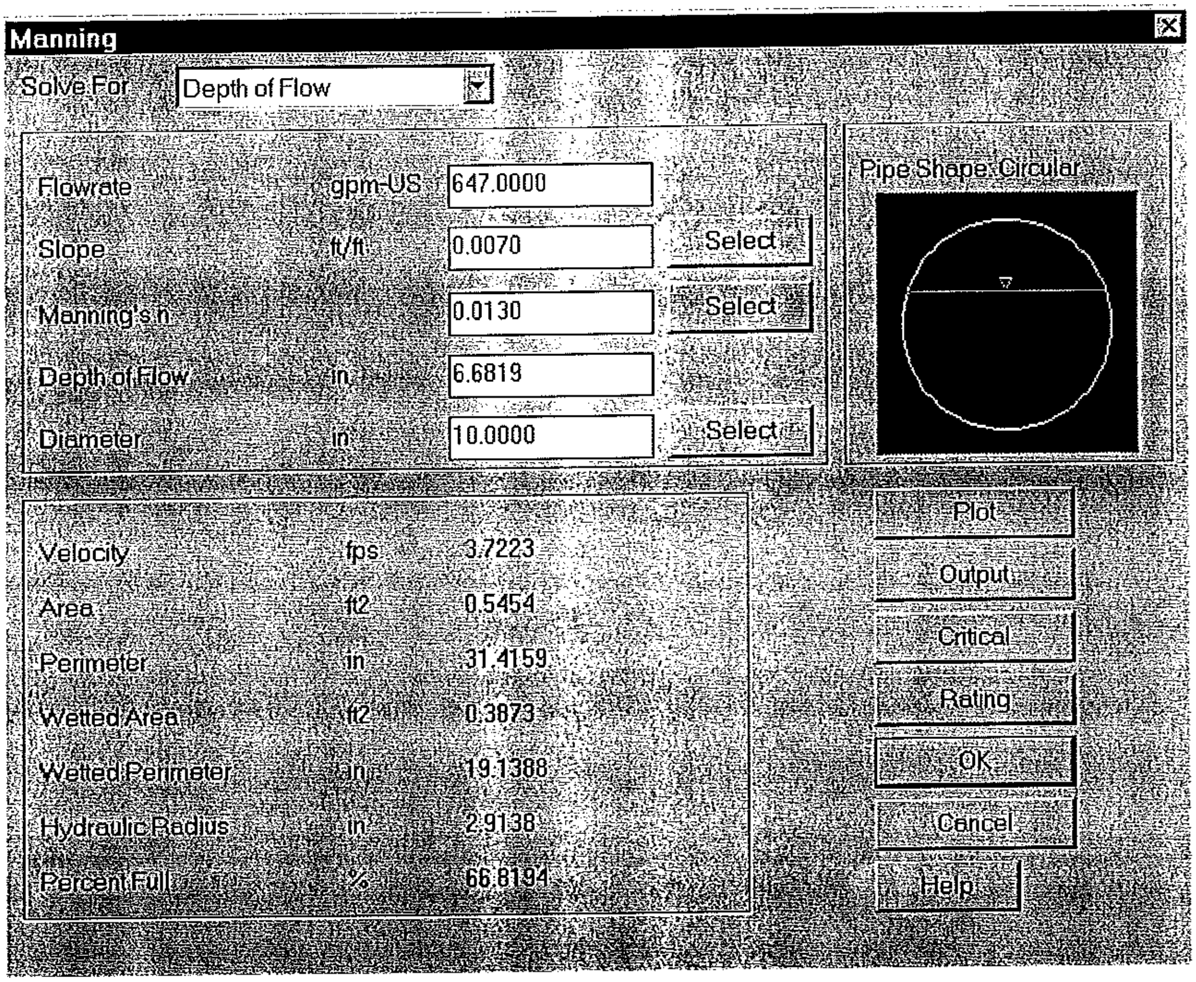
Flowrate	gpm US	443.0000
Slope	ft/ft	0.0100
Manning's n		0.0130
Depth of Flow	in	5.4963
Diameter	in	8.0000

Pipe Shape: Circular

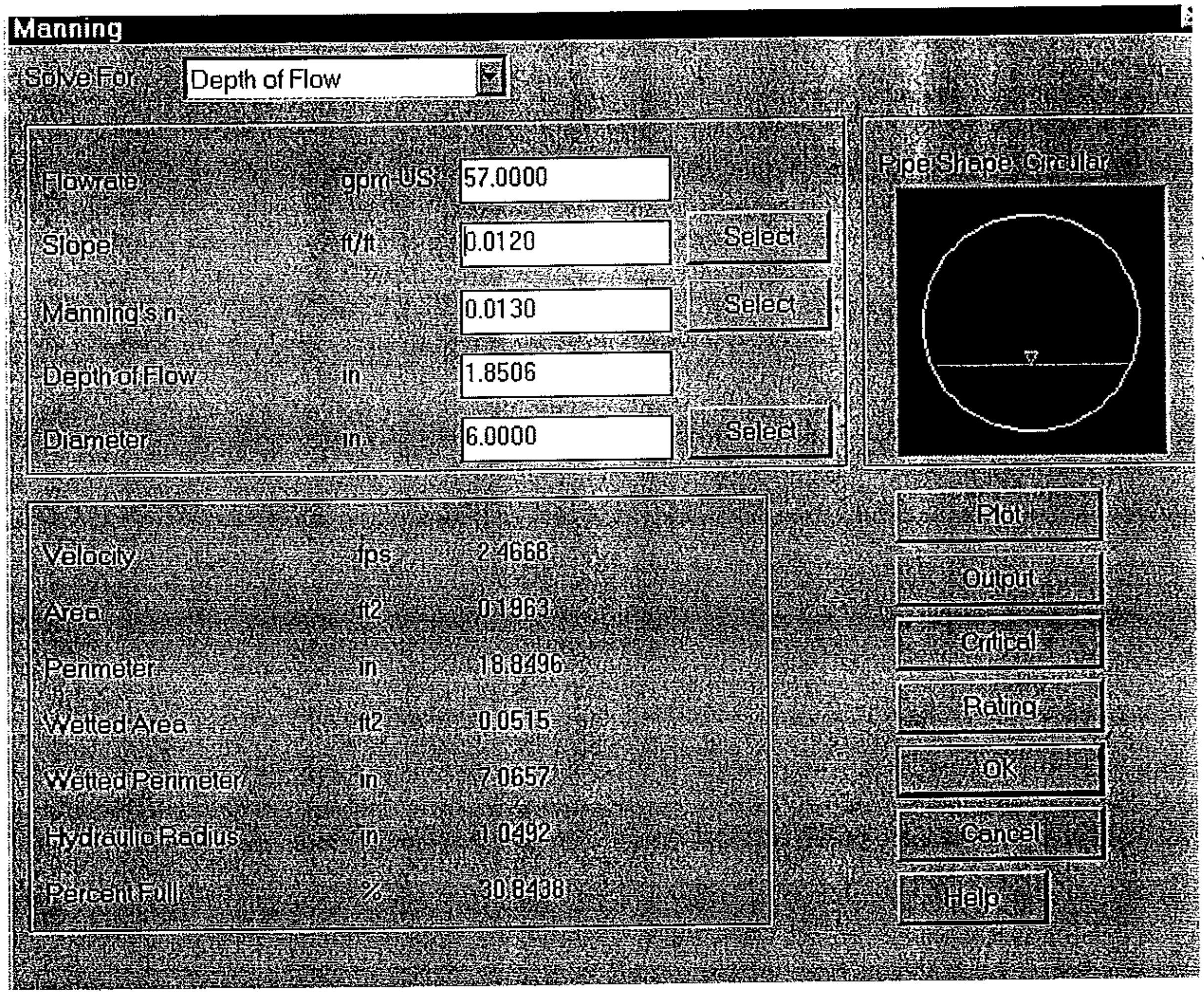
Velocity	fps	3.8603
Area	ft2	0.3491
Perimeter	in	25.1327
Wetted Area	ft2	0.2557
Wetted Perimeter	in	15.6337
Hydraulic Radius	in	2.3551
Percent Full	%	68.7043

Select | Select | Select | Plot | Output | Critical | Rating | OK | Cancel | Help

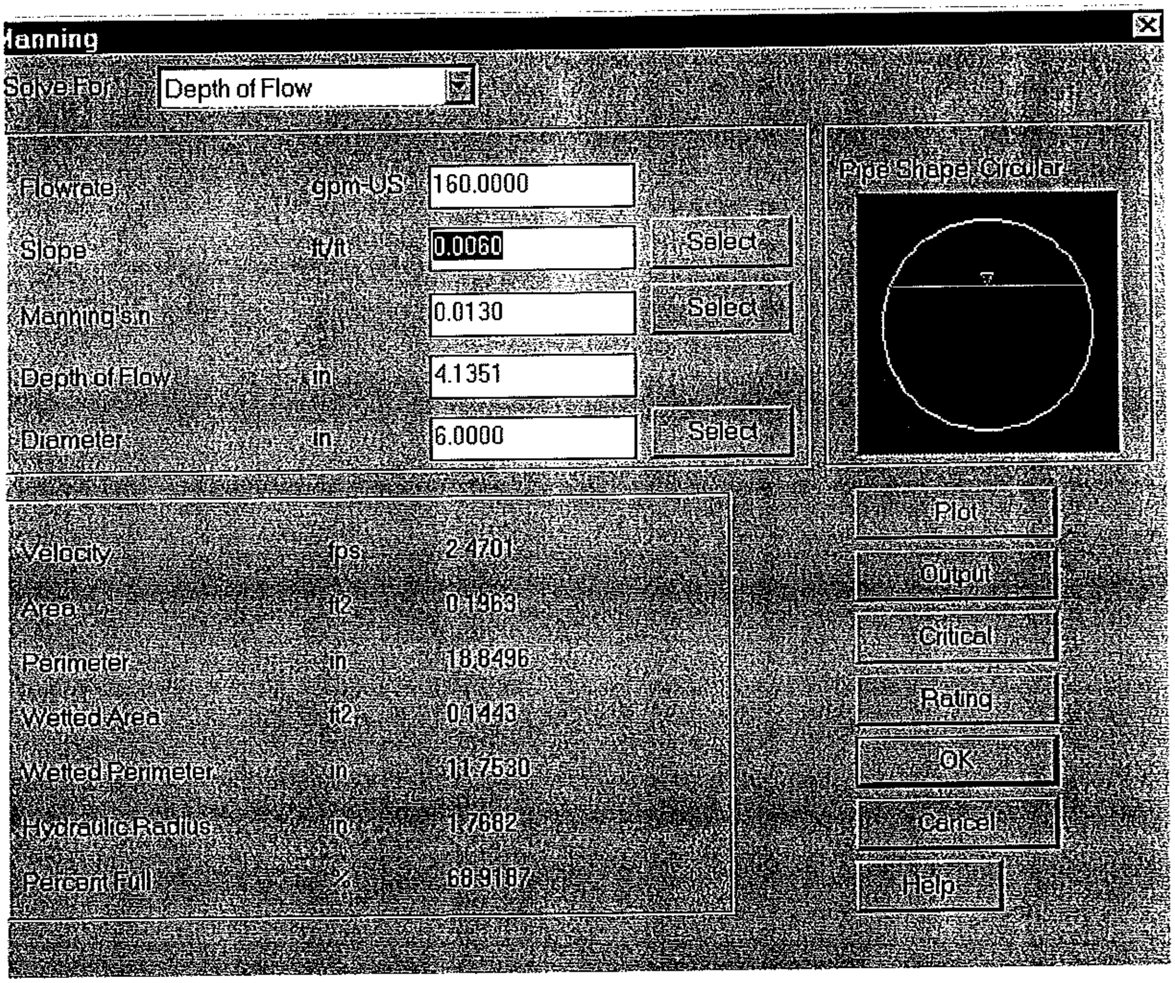
Pipe From Pump 4



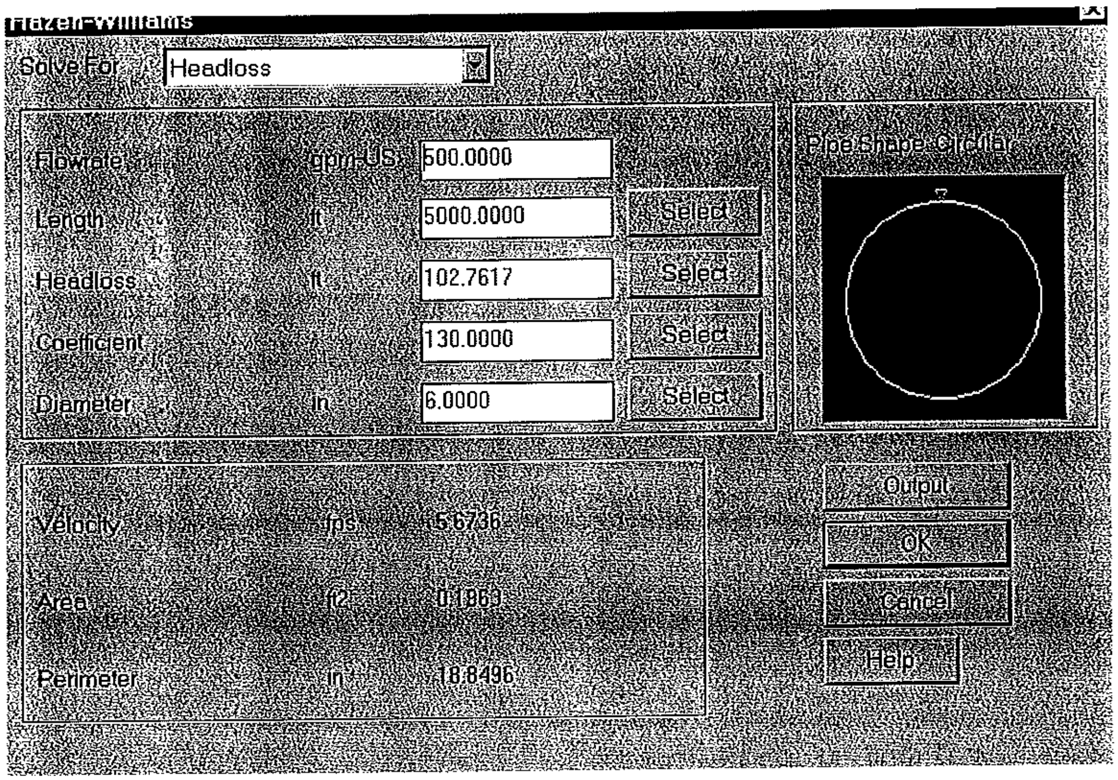
Pipe From B12 to Pump 3



Pipe From B7 to Pump 3



Calculations for Six-Inch Force Main Alternative
From The Residences of Murieta Hills



Given Input Data:

- Shape .... Circular
- Solving for .... Headloss
- Diameter .... 6.0000 in
- Flowrate .... 500.0000 gpm-US (Actual PWWF flowrate, 395 gpm)
- Length .... 5000.0000 ft
- Coefficient 130.0000

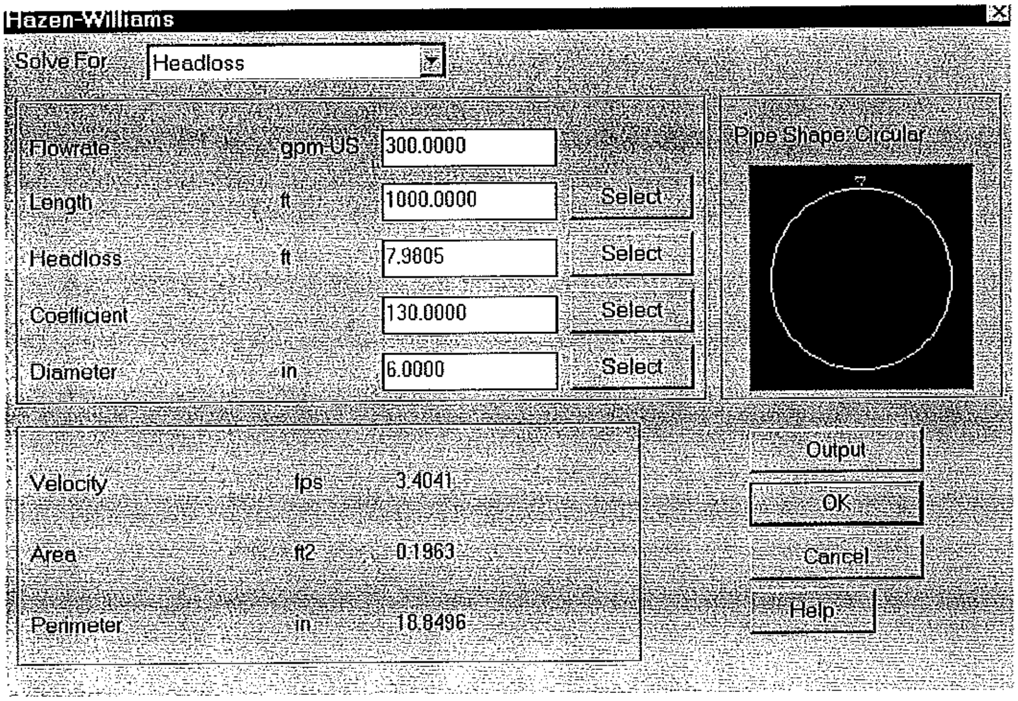
Computed Results:

- Headloss .... 102.7617 ft
- Area 0.1963 ft2
- Perimeter .... 18.8496 in
- Velocity .... 5.6736 fps

Notes:

1. An approximate flowrate of 500 gpm was used assuming that the pump station would be oversized to the next nearest available pump curve and to provide a safety factor.
2. A velocity of 5.7 fps appears reasonable.

Calculations for Six-Inch Force Main From The Estates at Lake Calero to The Residences of Murieta Hills



Hazen-Williams Pipe Calculator

Given Input Data:

- Shape .... Circular
- Solving for .... Headloss
- Diameter .... 6.0000 in
- Flowrate .... 300.0000 gpm-US (Actual PWWF flowrate, 165 gpm)
- Length .... 1000.0000 ft
- Coefficient 130.0000

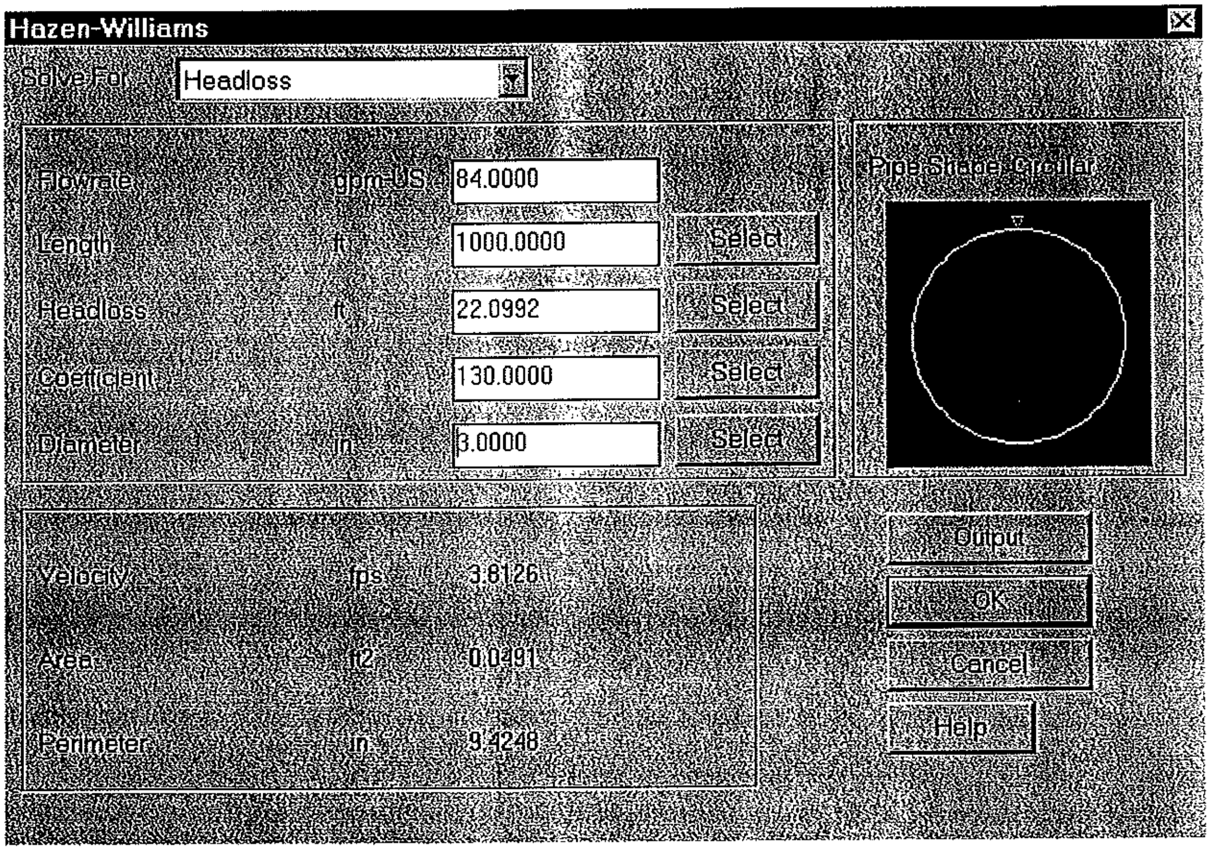
Computed Results:

- Headloss .... 7.9805 ft
- Area 0.1963 ft2
- Perimeter .... 18.8496 in
- Velocity .... 3.4041 fps

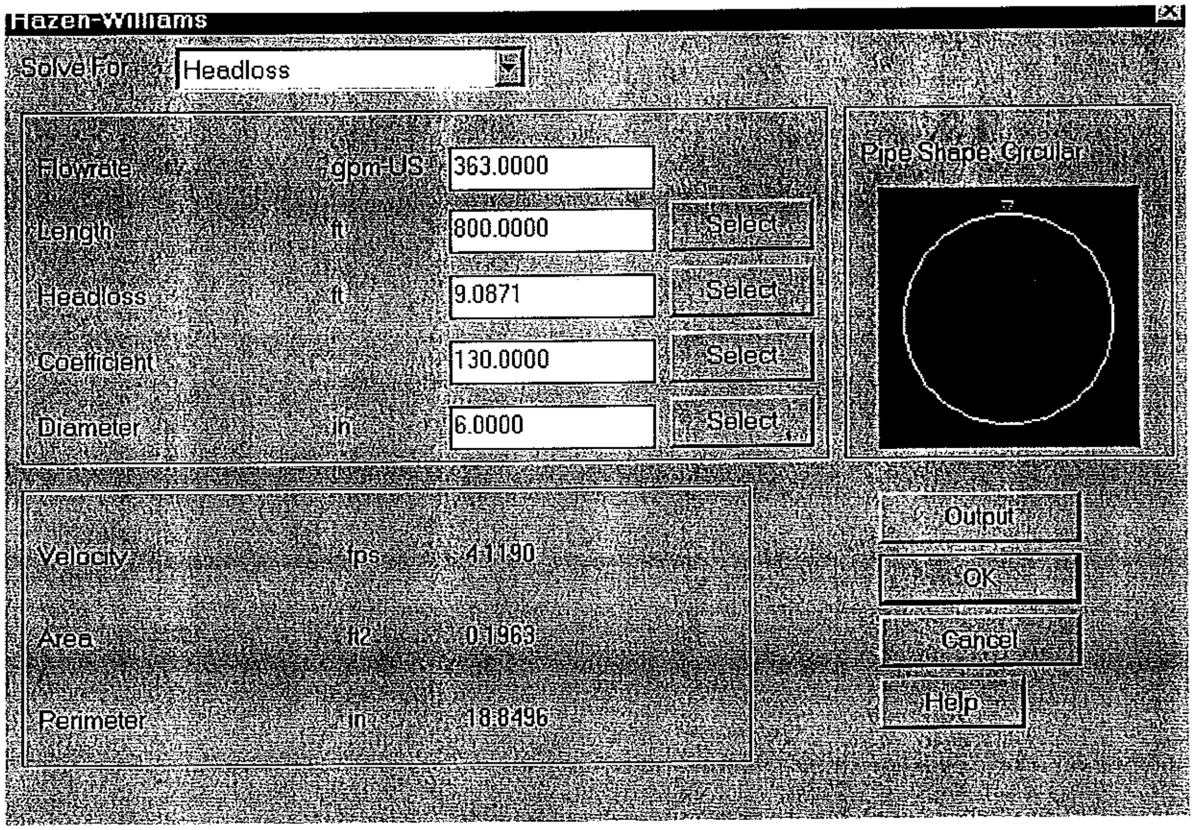
Notes:

1. An approximate flowrate of 300 gpm was used assuming that the pump station would be oversized to the next nearest available pump curve and to provide a safety factor.
2. A velocity of 3.4 fps is reasonable.

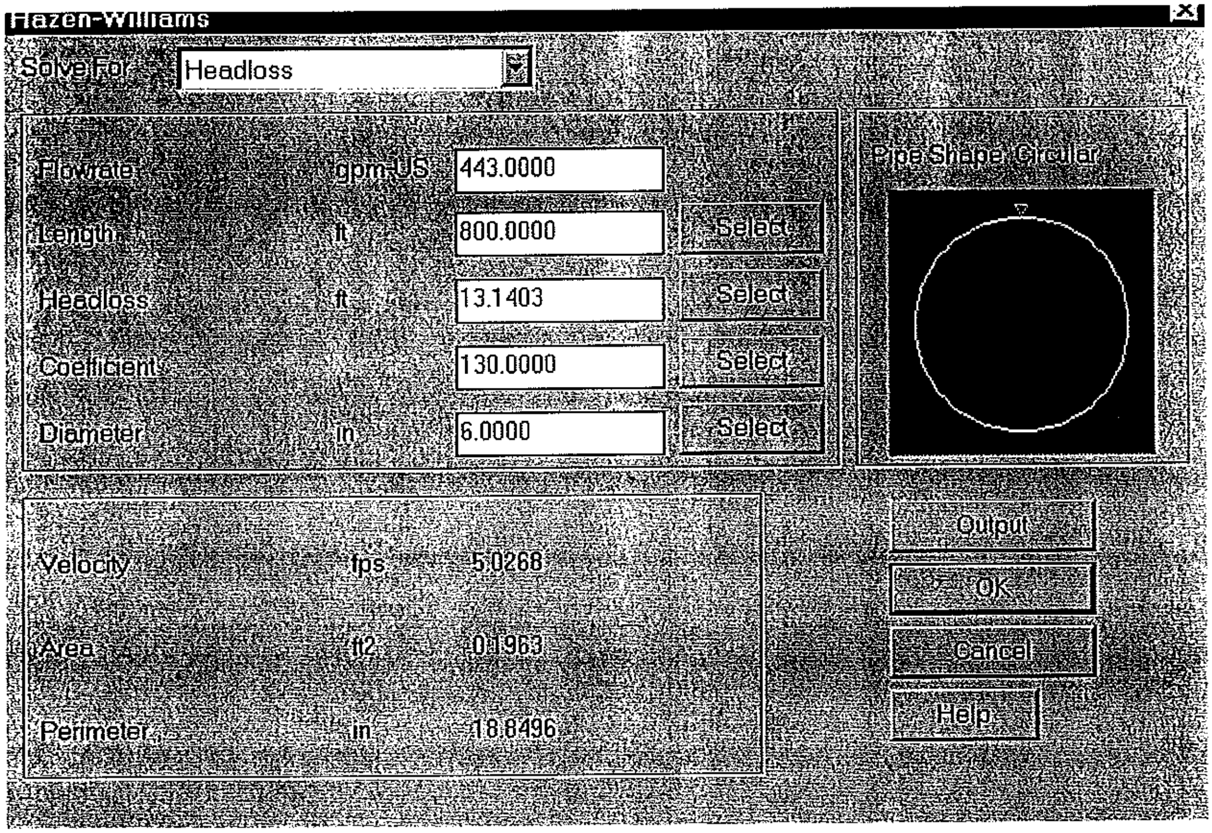
Force Main Sizing from Pump 2



Force Main Sizing from Pump 3



Force Main Sizing from Pump 4



C- DRAINAGE CALCULATIONS

Conveyance System Between Murieta Hills and Laguna Joaquin

Culvert ID	Existing Culvert Configuration	Area: Pre-Dev. (Ac)	Area: Post-Dev. (Ac)	Flow: Pre-Dev. [3] (cfs)	Flow: Post-Dev. [3] (cfs)	Flow: Post-Dev. (cfs)	Capacity [4] (cfs)	Culvert Configuration Required
I	3 - 36"RCP	92	112	78	118	69 [6]	115	No Change
II	2 - 36"RCP	88	68	75	76	76	93	No Change
III	1 - 54"RCP [1]	110	130	98	130	81 [6]	93	No Change
IV	1 - 66"RCP [2]	88	68	75	76	76	93	No Change
V	1 - 72"RCP	260	260	180	235	186 [6]	236	No Change
VI [5]	1 - 24"RCP	50	50	n/a	n/a	n/a	n/a	36"RCP

1. Equivalent size to two 65"x40" arc pipes
2. Equivalent size to 76"x52" arc pipe
3. Sacramento County Method was used to caluclate flows. Figure 2-22 and 2-23.
4. Capacity calculations assume a one foot freeboard except culvert 3 with 6".
5. Culvert VI is in the process of design with the development of The Retreat West.
6. Post Development Flows with Detention Basin.

Conveyance System Downstream of Laguna Joaquin

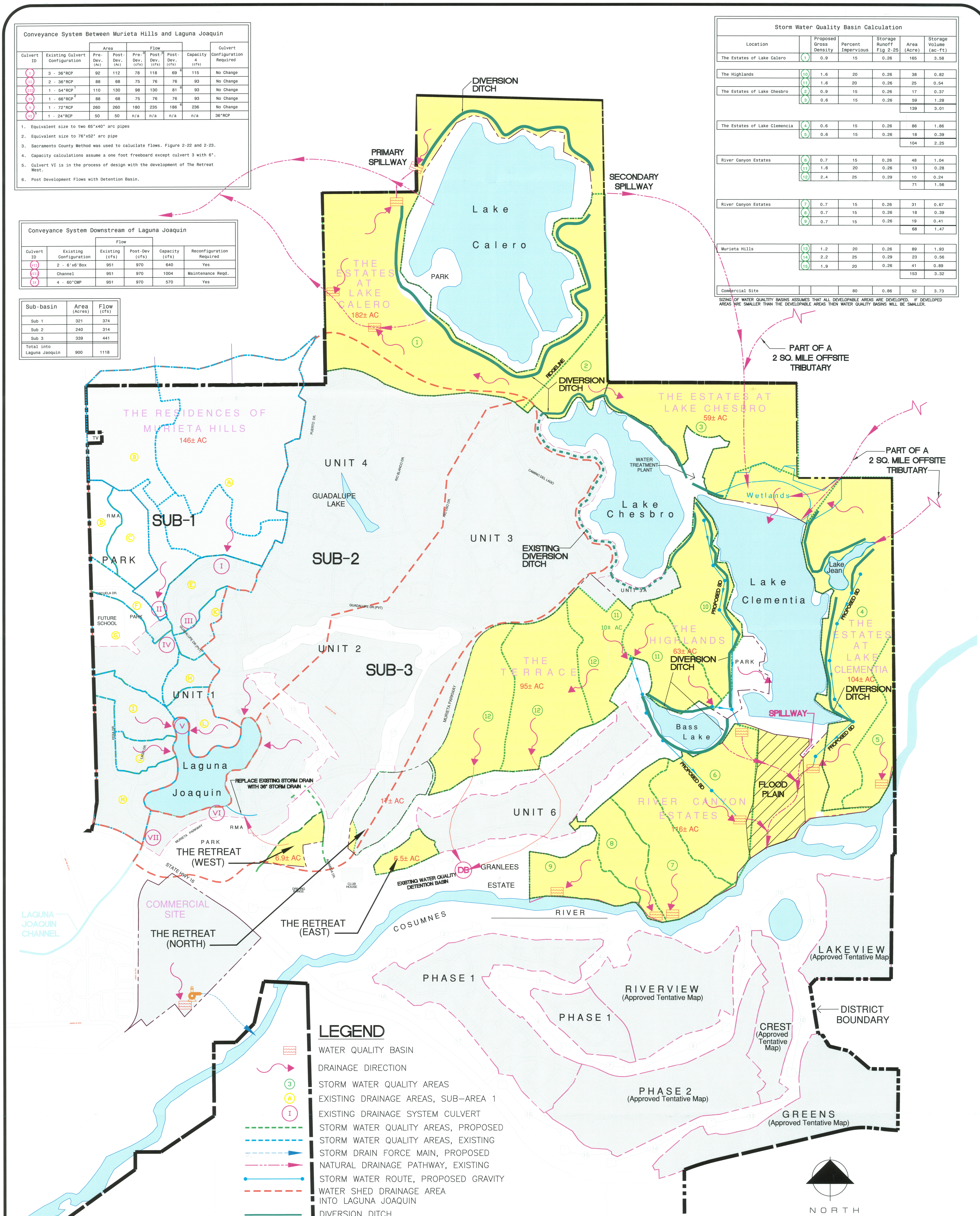
Culvert ID	Existing Configuration	Flow: Existing (cfs)	Flow: Post-Dev (cfs)	Capacity (cfs)	Reconfiguration Required
VII	2 - 6'x6'Box	951	970	640	Yes
VIII	Channel	951	970	1004	Maintenance Reqd.
IX	4 - 60"CMP	951	970	570	Yes

Sub-basin	Area (Acres)	Flow (cfs)
Sub 1	321	374
Sub 2	240	314
Sub 3	339	441
Total into Laguna Jaoquin	900	1118

Storm Water Quality Basin Calculation

Location		Proposed Gross Density	Percent Impervious	Storage Runoff Fig 2-25	Area (Acre)	Storage Volume (ac-ft)
The Estates of Lake Calero	1	0.9	15	0.26	165	3.58
The Highlands	10	1.6	20	0.26	38	0.82
	11	1.6	20	0.26	25	0.54
The Estates of Lake Chesbro	2	0.9	15	0.26	17	0.37
	3	0.6	15	0.26	59	1.28
					139	3.01
The Estates of Lake Clemencia	4	0.6	15	0.26	86	1.86
	5	0.6	15	0.26	18	0.39
					104	2.25
River Canyon Estates	6	0.7	15	0.26	48	1.04
	11	1.6	20	0.26	13	0.28
	12	2.4	25	0.29	10	0.24
					71	1.56
River Canyon Estates	7	0.7	15	0.26	31	0.67
	8	0.7	15	0.26	18	0.39
	9	0.7	15	0.26	19	0.41
					68	1.47
Murieta Hills	13	1.2	20	0.26	89	1.93
	14	2.2	25	0.29	23	0.56
	15	1.9	20	0.26	41	0.89
					153	3.32
Commercial Site			80	0.86	52	3.73

SIZING OF WATER QUALTITY BASINS ASSUMES THAT ALL DEVELOPABLE AREAS ARE DEVELOPED. IF DEVELOPED AREAS ARE SMALLER THAN THE DEVELOPABLE AREAS THEN WATER QUALITY BASINS WILL BE SMALLER.



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Rancho Murieta North Drainage Master Plan

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SCALE: 1"=400'

Rancho Murieta North Infrastructure Master Plan

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MAY 2003

STORM WATER QUALITY BASIN CALCULATION

Storm Water Quality Basin Calculation

Location		Proposed Gross Density	Percent Impervious	Storage Runoff Fig 2-25	Area (Acre)	Storage Volume (ac-ft)
The Estates at Lake Calero	1	0.9	15	0.26	165	3.58
The Hilands	10	1.6	20	0.26	38	0.82
	11	1.6	20	0.26	25	0.54
The Estates at Lake Chesbro	2	0.9	15	0.26	17	0.37
	3	0.6	15	0.26	59	1.28
					139	3.01
The Estates at Lake Clemencia	4	0.6	15	0.26	86	1.86
	5	0.6	15	0.26	18	0.39
					104	2.25
River Canyon Estates	6	0.7	15	0.26	48	1.04
	11	1.6	20	0.26	13	0.28
	12	2.4	25	0.29	10	0.24
					71	1.56
River Canyon Estates	7	0.7	15	0.26	31	0.67
	8	0.7	15	0.26	18	0.39
	9	0.7	15	0.26	19	0.41
					68	1.47
Murieta Hills	13	1.2	20	0.26	89	1.93
	14	2.2	25	0.29	23	0.56
	15	1.9	20	0.26	41	0.89
					153	3.37
Commercial Site			80	0.86	52	3.73

Density Comparison

Unit	Gross Density Per Approved PUD	Proposed Gross Density
The Residences of Murieta Hills	2.3 DU/AC	1.7 DU/AC
The Estates at Lake Calero	2.0 DU/AC	0.9 DU/AC
The Estates at Lake Chesbro	1.8 DU/AC	0.6 DU/AC
The Estates at Lake Clementia	1.8 DU/AC	0.6 DU/AC
The Highlands	2.0 DU/AC	1.6 DU/AC
The Terrace	2.8 DU/AC	2.4 DU/AC
River Canyon Estates	0.9 DU/AC	0.7 DU/AC
The Retreat (West)	25 DU/AC	3.7 DU/AC
The Retreat (North)	25 DU/AC	3.6 DU/AC
The Retreat (East)	10 DU/AC	3.6 DU/AC

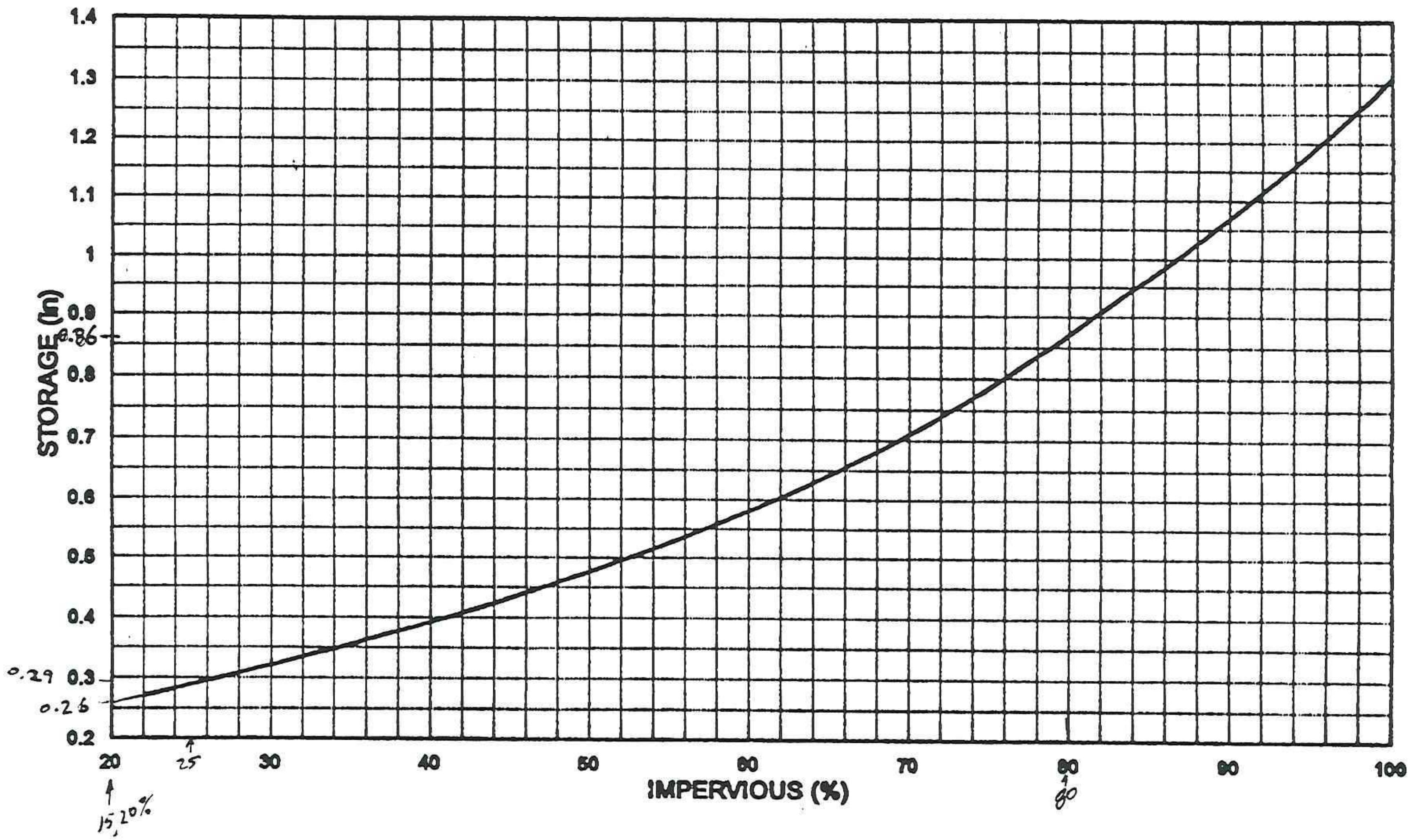
Basin "n" Method (continued)

Determining the Basin "n"

The basin "n" value is dependent on the basin land use and the condition of the main drainage course. For basins with mixed land use and/or varying characteristics of the main drainage course, the basin "n" should be weighted for the areas draining to each type of channel development. Table 7-1 contains recommended basin "n" values[3]. The shaded values in Table 7-1 are normally not used. However, these values may be used for planning purposes to estimate the effect of channelization, or to estimate a composite "n" for large areas with mixed land use and channelization.

Table 7-1. Basin "n" for Unit Hydrograph Lag Equation

Basin Land Use	Percent Impervious	Channelization Description	
		Developed Pipe/Channel	Undeveloped Natural
Highways, Parking	95	0.030	0.067
Commercial, Offices	90	0.031	0.070
Intensive Industrial	85	0.032	0.071
Apartments, High Density Res.	80	0.033	0.072
Mobil Home Park	75	0.034	0.073
Condominiums, Med. Density Res.	70	0.035	0.074
Residential 8-10 du/acre (20-25 du/ha), Ext Industrial	60	0.037	0.076
Residential 6-8 du/acre (15-20 du/ha), Low Density Res., School	50	0.040	0.080
Residential 4-6 du/acre (10-15 du/ha)	40	0.042	0.084
Residential 3-4 du/acre (7.5-10 du/ha)	30	0.046	0.088
Residential 2-3 du/acre (5-7.5 du/ha)	25	0.050	0.090
Residential 1-2 du/acre (2.5-5 du/ha)	20	0.053	0.093
Residential .5-1 du/acre (1-2.5 du/ha)	15	0.056	0.096
Residential .2-.5 du/acre (0.5-1 du/ha), Ag Res.	10	0.060	0.100
Residential <.2 du/acre (0.5 du/ha), Recreation	5	0.065	0.110
Open Space, Grassland, Ag	2	0.070	0.115
Open Space, Woodland, Natural	1	0.075	0.120
Dense Oak, Shrubs, Vines	1	0.080	0.150
Shaded values are normally not used.			



Source: County of Sacramento, Optimization of Storm Water Quality Enhancement by Detention Basin, Sato and Assoc.

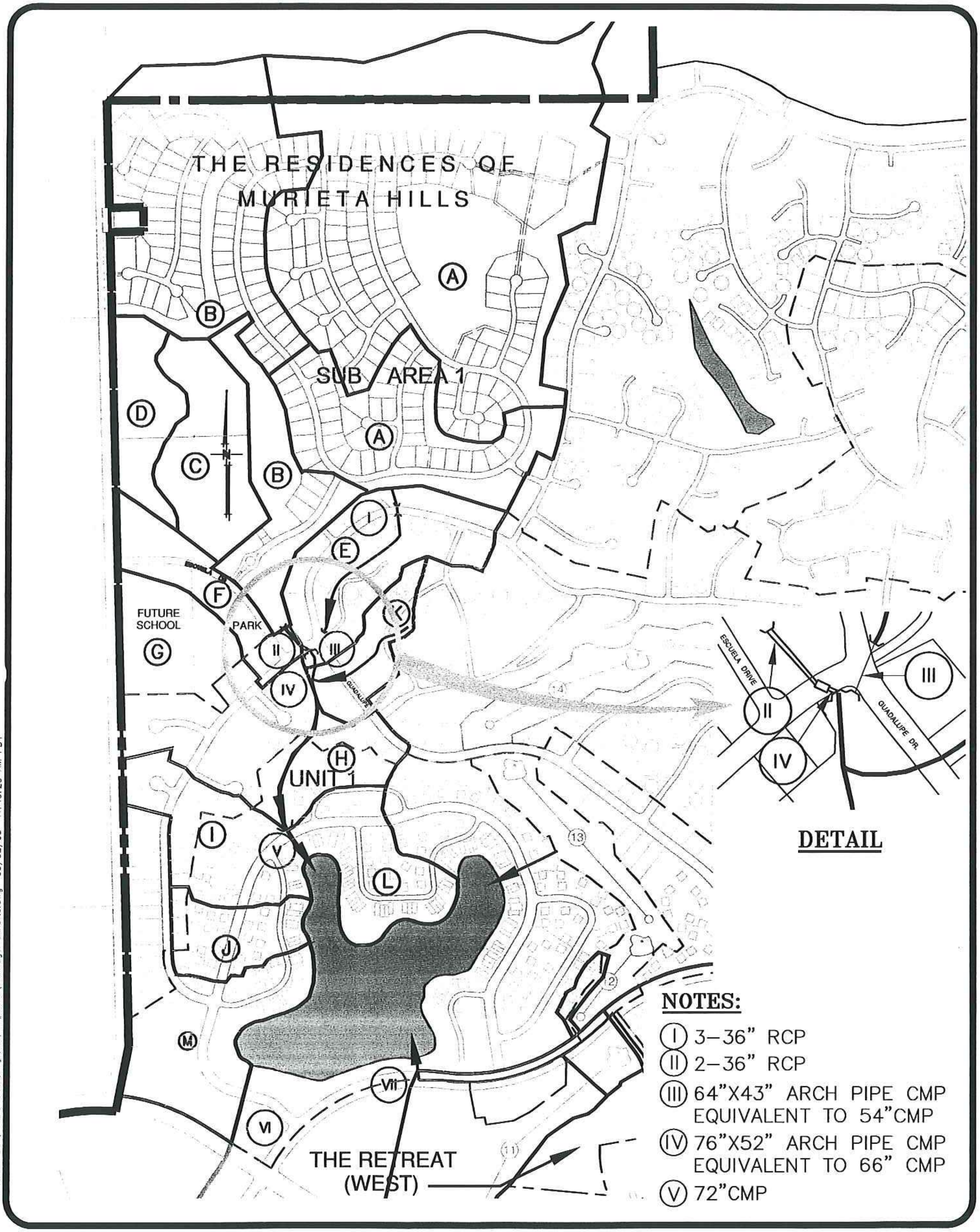
Sato Design Curve for Sizing of Water Quality Dry–Extended Detention Basins

Date December 1996

Figure 2–25

ANALYSIS OF CULVERTS I THROUGH V

Sub Area - 1



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AUGUST 2002

Exhibit 6

Drainage Conveyance from Development to Laguna Joaquin

Rancho Murieta North Infrastructure Master Plan

Percent Impervious and
Area Tabulation Sheet

PERCENT IMPERVIOUS VALUES FOR CULVERTS 1 - 5 UPSTREAM OF LAGUNA JOAQUIN

Post Development Conditions

Sub Area #1					
AREA					
Location	Acre Total	Open Space	2 - 3 DU / Ac	Sum %Imp x A	Weighted % Imp
	% Imperv	1	25		
A	111.7	49.3	62.4	1609.3	14
B	54	22.4	31.6	812.4	15
C	14.2	14.2	0.0	14.2	1
D - Area Drains Off Site			0.0	0.0	
E	17.5		17.5	437.5	25
F	9	4.5	4.5	117.0	13
G	25.7	6.1	19.6	496.1	19
H	7.1	2.0	5.1	129.5	18
I	14.1		14.1	352.5	25
K	6.8		6.8	170.0	25
TOTAL	260.1	98.5	161.6		

Values for Culvert Tributary Areas					
Composite Weighted %Imp					
Culvert Number					
I	II	III	IV	V	
Area					
111.7		111.7		111.7	
	54		54	54	
	14.2		14.2	14.2	
				0	
		17.5		17.5	
				9	
				25.7	
				7.1	
				14.1	
				6.8	
111.7	68.2	129.2	68.2	260.1	Total Area
14	12	16	12	16	Composite % Imp

Pre Development Conditions

Sub Area #1					
AREA					
Location	Acre Total	Open Space	2 - 3 DU / Ac	Sum %Imp x A	Weighted % Imp
	% Imperv	1	25		
A	92	92.0		92.0	1
B	73.7	73.7		73.7	1
C	14.2	14.2		14.2	1
D - Area Drains Off Site					
E	17.5		17.5	437.5	25
F	9	4.5	4.5	117.0	13
G	25.7	6.1	19.6	496.1	19
H	7.1	2.0	5.1	129.5	18
I	14.1		14.1	352.5	25
K	6.8		6.8	170.0	25
TOTAL	260.1	192.5	67.6		

Values for Culvert Tributary Areas					
Composite Weighted %Imp					
Culvert Number					
I	II	III	IV	V	
Area					
92.0		92		92	
	73.7		73.7	73.7	
	14.2		14.2	14.2	
				0	
		17.5		17.5	
				9	
				25.7	
				7.1	
				14.1	
				6.8	
92.0	87.9	109.5	87.9	260.1	Total Area
1	1	5	1	7	Composite % Imp

Sacramento (HEC) Method
To Determine Culvert
Design Flows

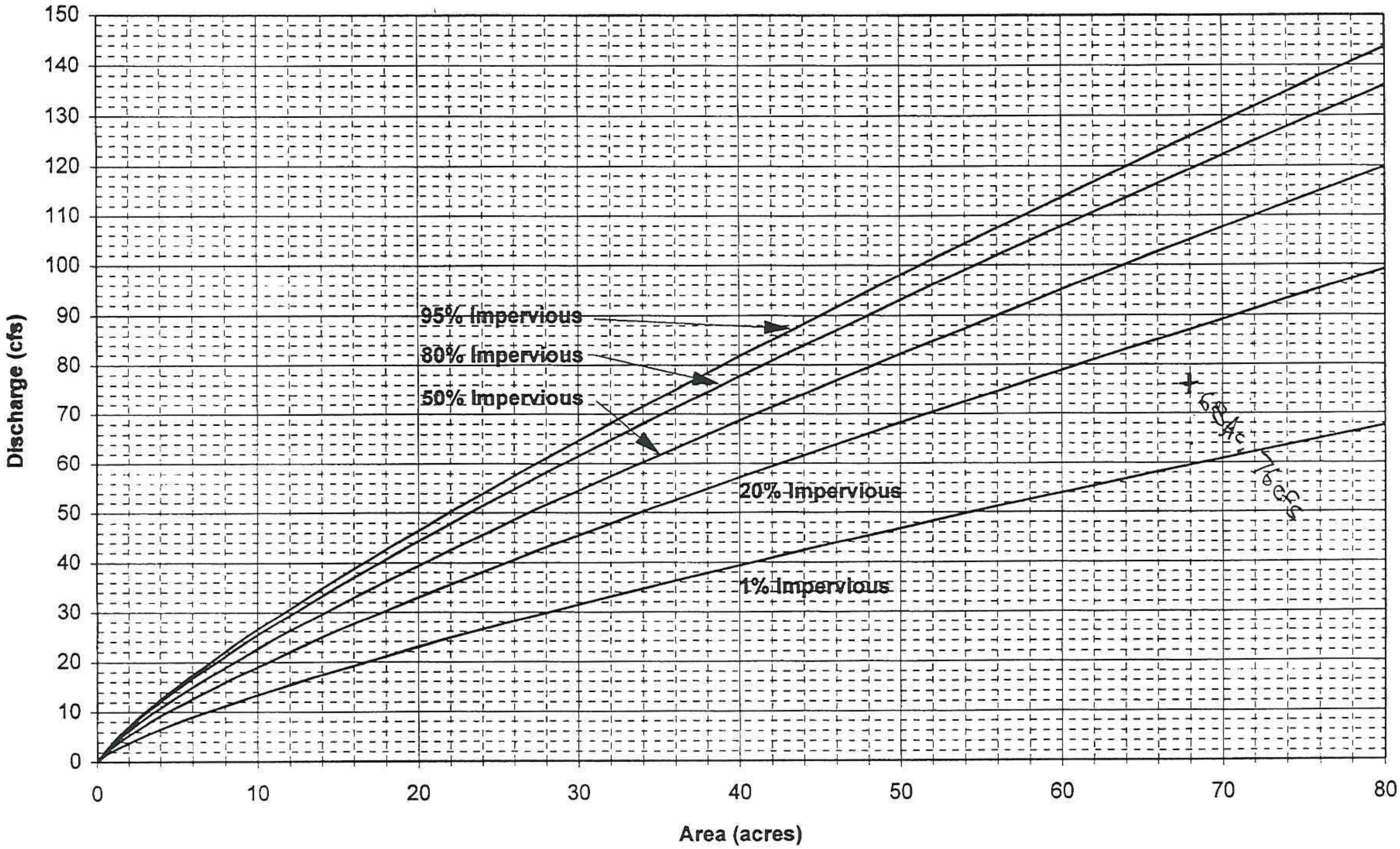
100-Year Peak Flow Sacramento Method

	Pre-Development			
Culvert #	Area (Ac)	Q (cfs)	% Imp	Comments
I	92	78	1%	Flow rates obtained from the Sacramento figures 2-22 and 2-23, see attached charts
II	88	75	1%	
III	110	98	5%	
IV	88	75	1%	
V	260	180	7%	

	Post Development Without Detention Basin			
Culvert #	Area (Ac)	Q (cfs)	% Imp	Comments
I	112	118	14%	
II	68	76	12%	Flow rates obtained from the Sacramento figures 2-22 and 2-23, see attached charts
III	130	130	16%	
IV	68	76	12%	
V	260	235	16%	

	Post Development With Detention Basin			
Culvert #	Area (Ac)	Q (cfs)	% Imp	Comments
I	112	69	14%	Flow rate was obtained from Sacramento SacCalc - HEC method. A reduction of 49cfs from 118cfs shown above without the detention basin.
II	68	76	12%	Flow rate was obtained from the Sacramento figures 2-22 and 2-23, see attached charts
III	130	81	16%	The post-development flow w/o detention basin was reduced by 49cfs.
IV	68	76	12%	Flow rate was obtained from the Sacramento figures 2-22 and 2-23, see attached charts
V	260	186	16%	The post-development flow w/o detention basin was reduced by 49cfs.

Charts 2-22 and 2-23

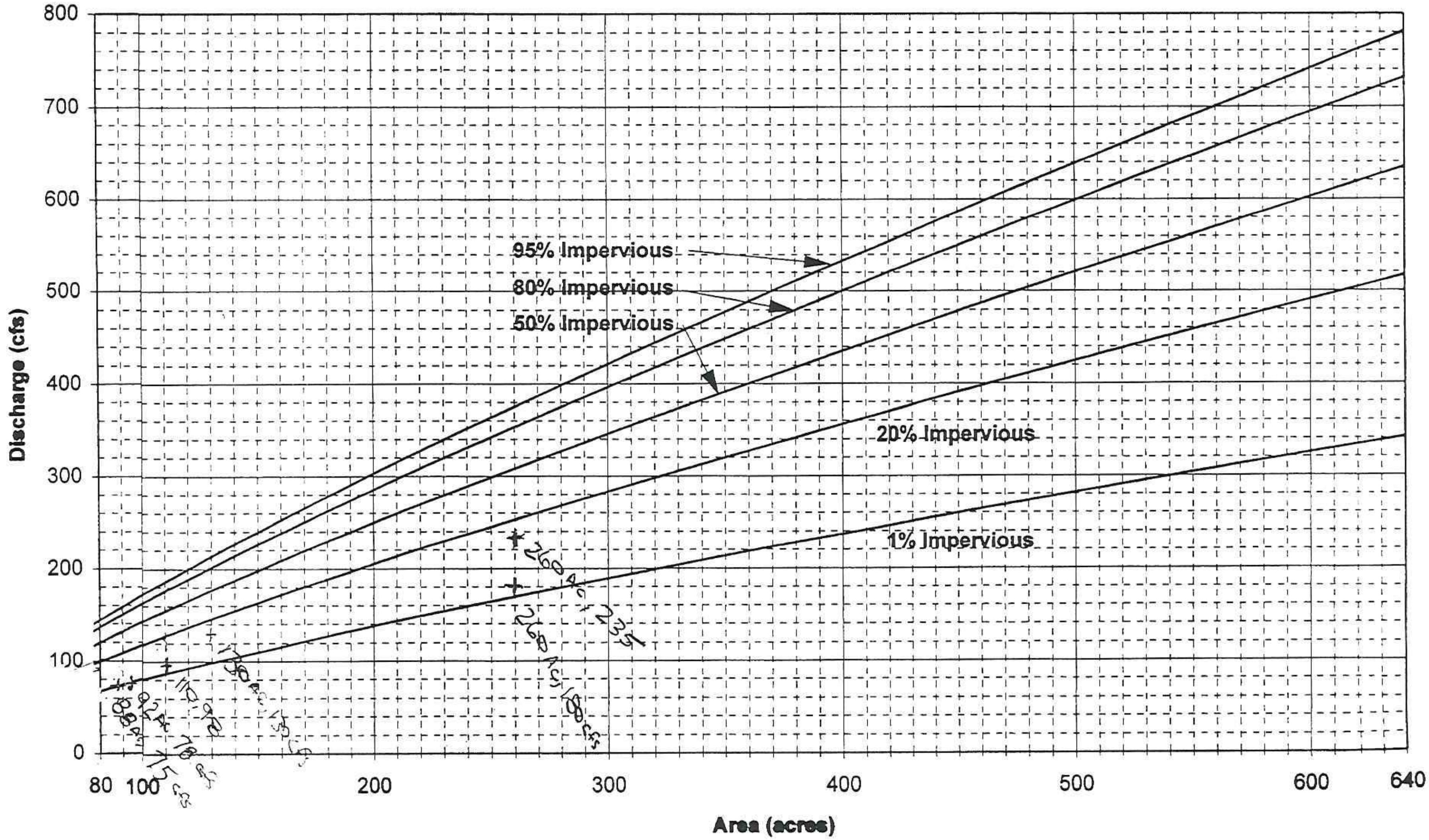


Note: Refer to accompanying disk for assumptions made in deriving this figure.

100–Year Peak Flow
Sacramento Method
Rainfall Zone 3, <80 Acres

Date December 1996

Figure 2–22



Note: Refer to accompanying disk for assumptions made in deriving this figure.

100–Year Peak Flow Sacramento Method Rainfall Zone 3, 80–640 Acres

Date: December 1996

Figure 2–23

HEC- Analysis
Post Development
With Detention Basin

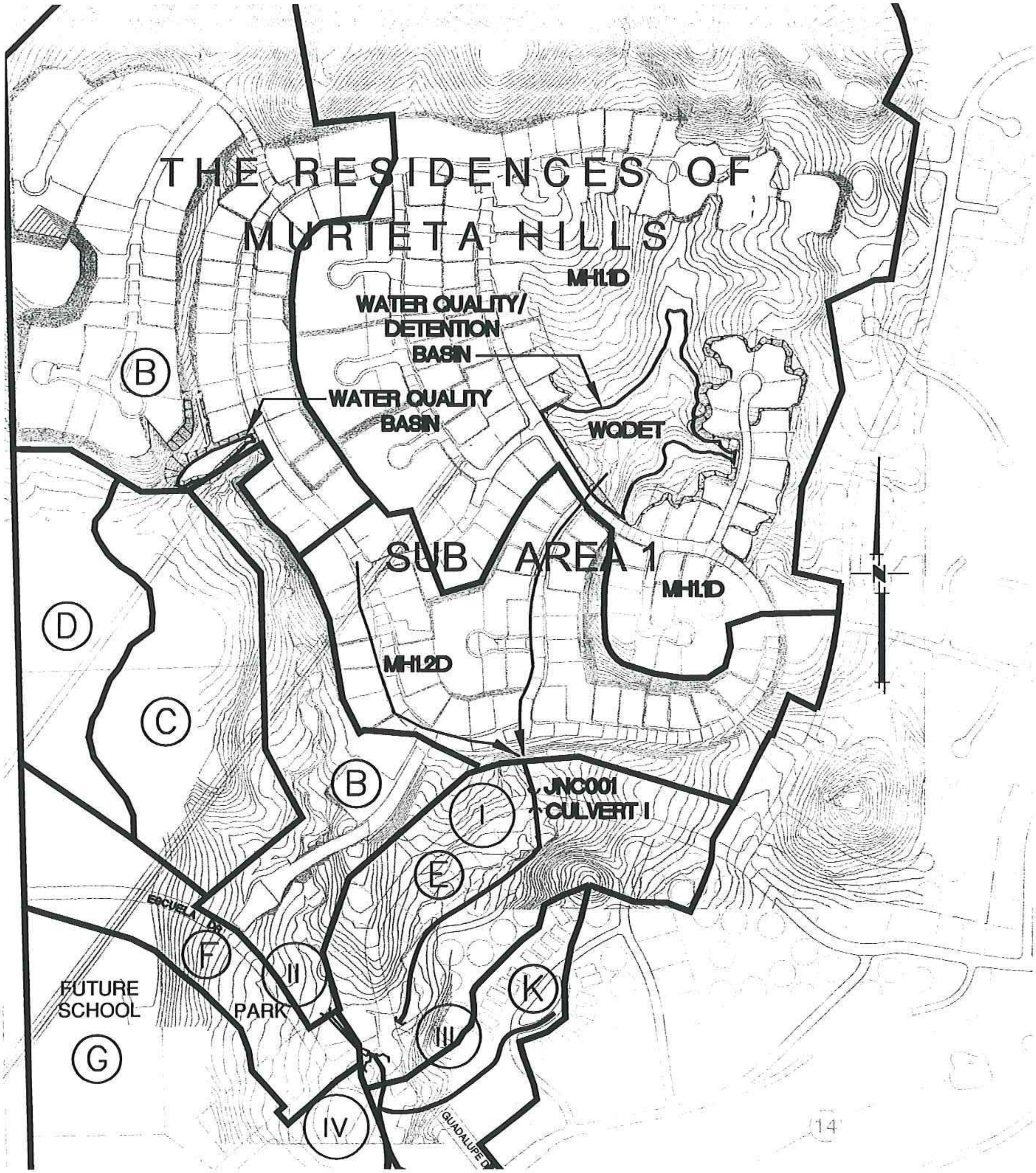


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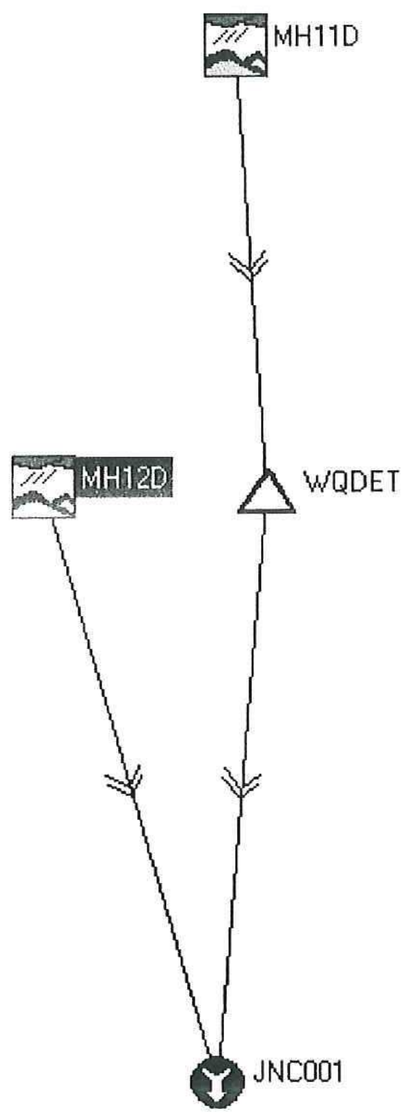
Exhibit 7.1

Drainage Conveyance from Development to Laguna Joaquin

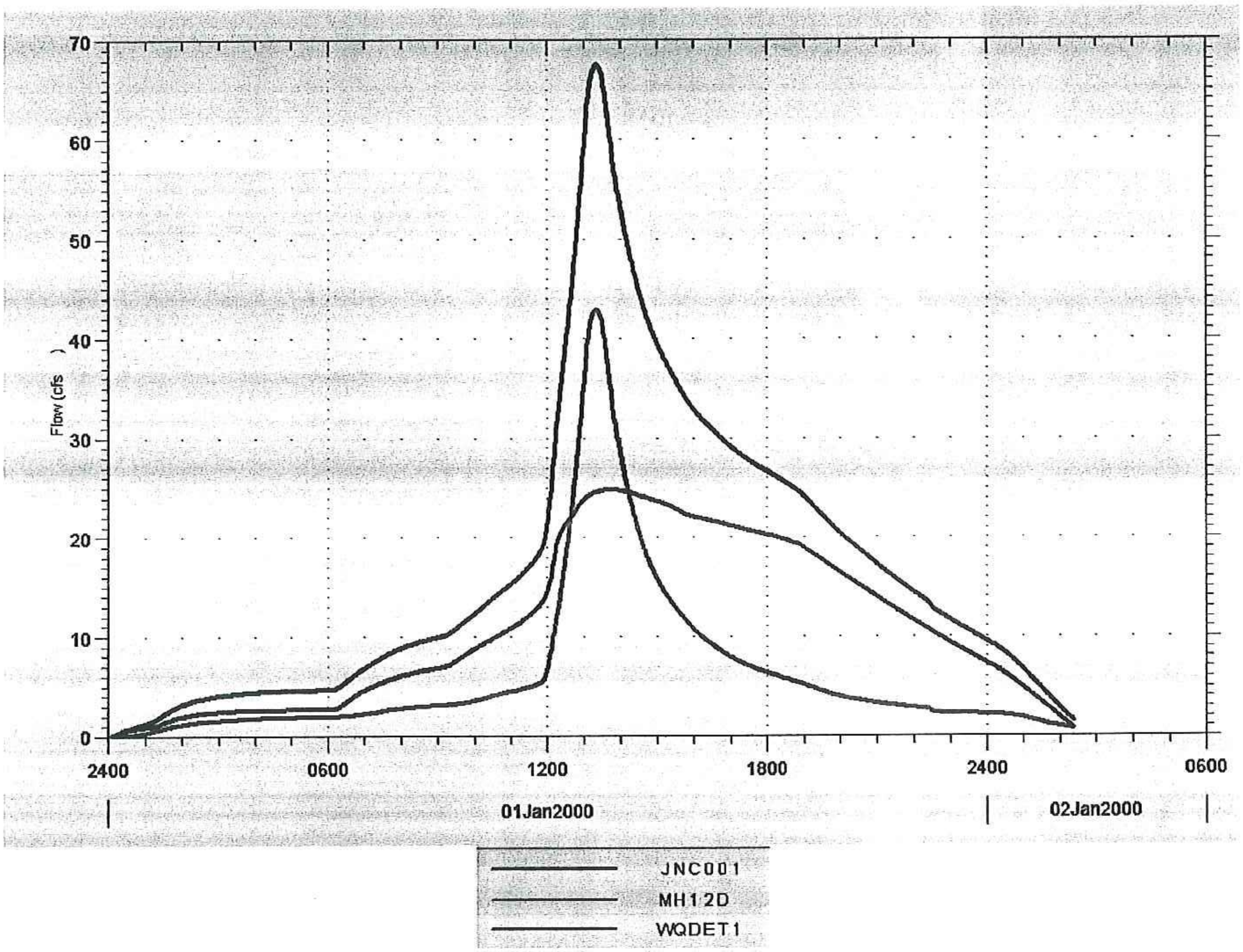
Rancho Murieta North Infrastructure Master Plan

MAY 2002

Tributary to Culvert I



Junction "JNCO01" at Culvert I

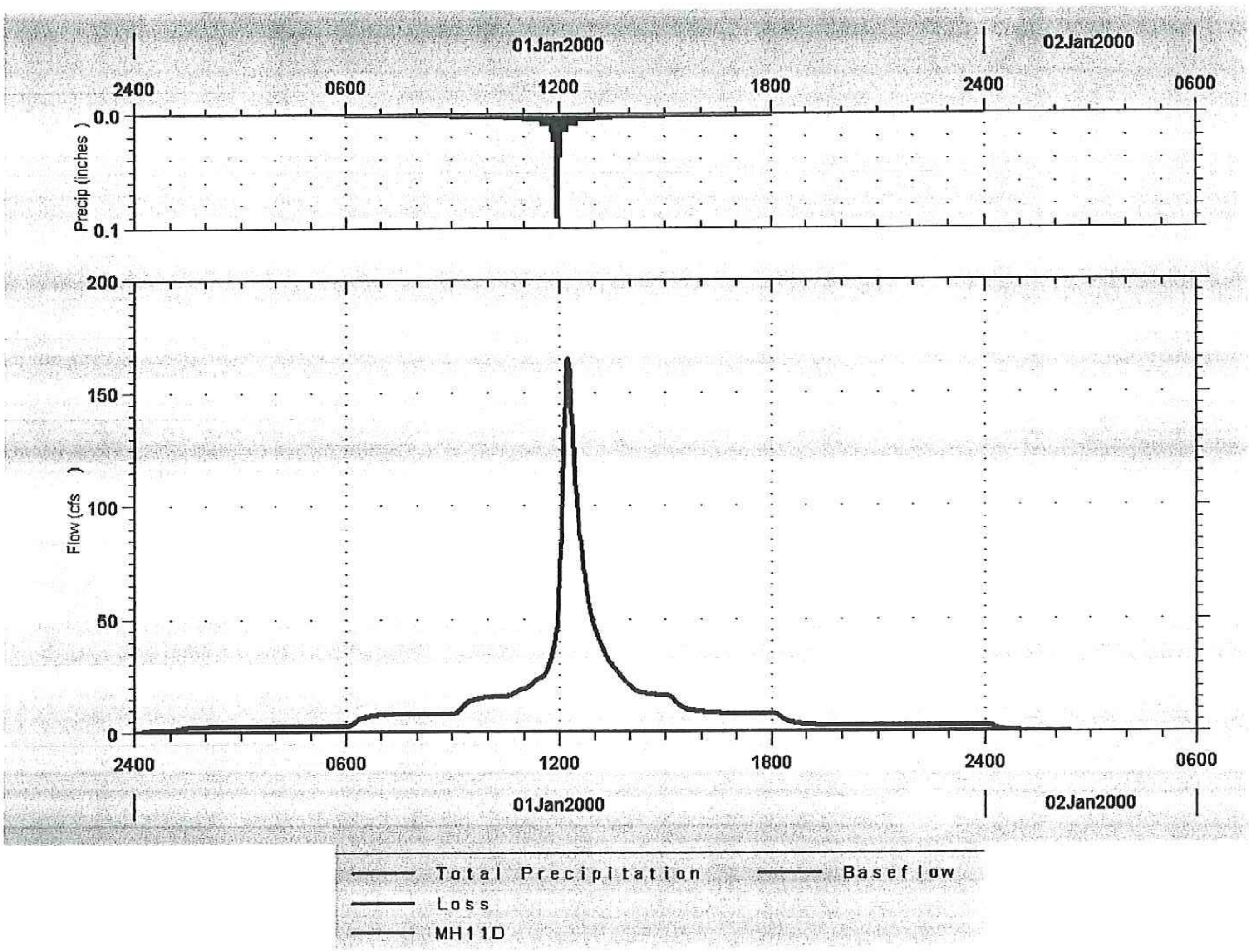


View HEC-1 output

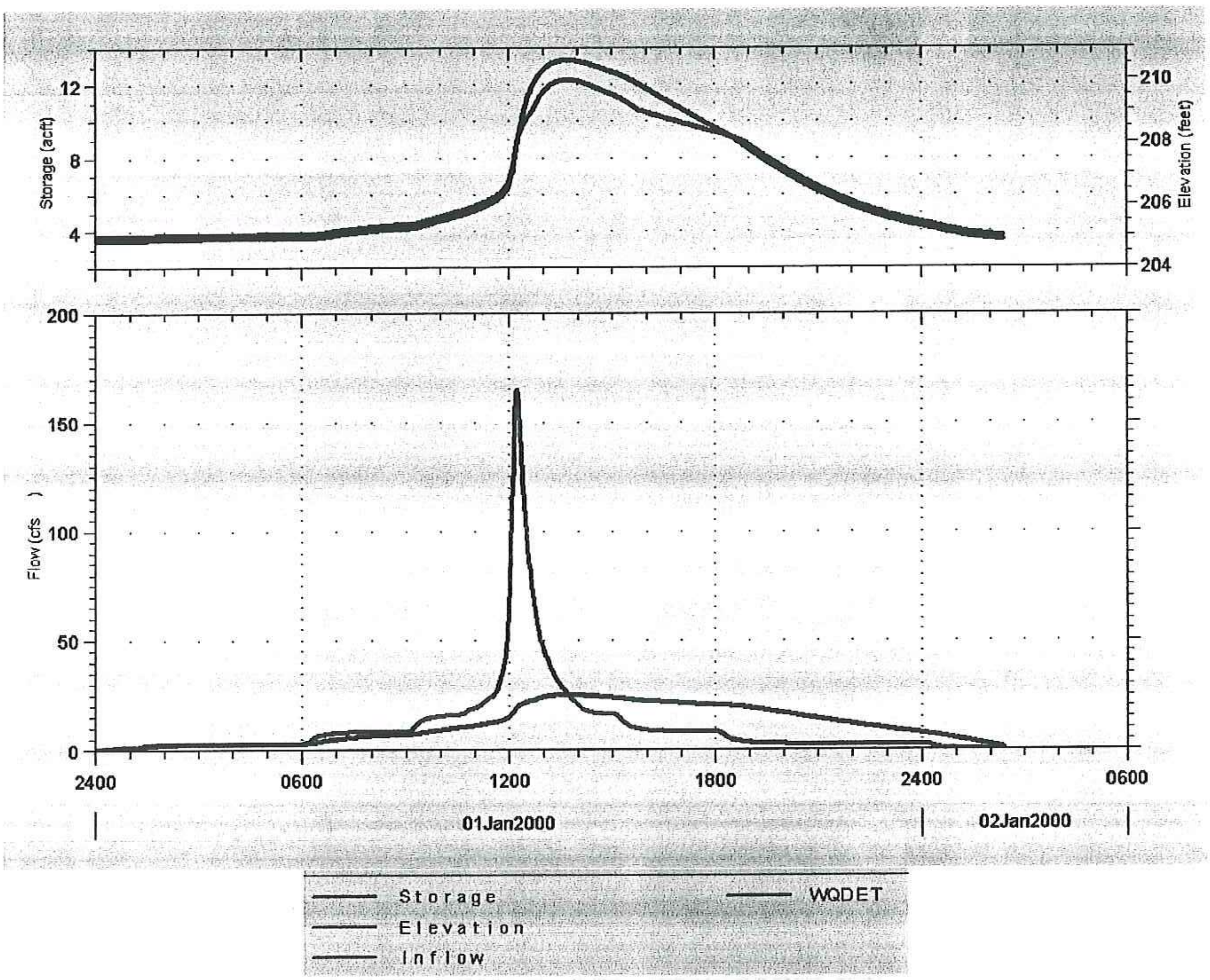
Sacramento method results
(Project: Post Condition)
(100-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
MH12A	43.	12:15	.04			
MH11A	165.	12:15	.14			
WQDET	41.	13:09	.14	.0	12.	
JNC001	69.	12:17	.18			

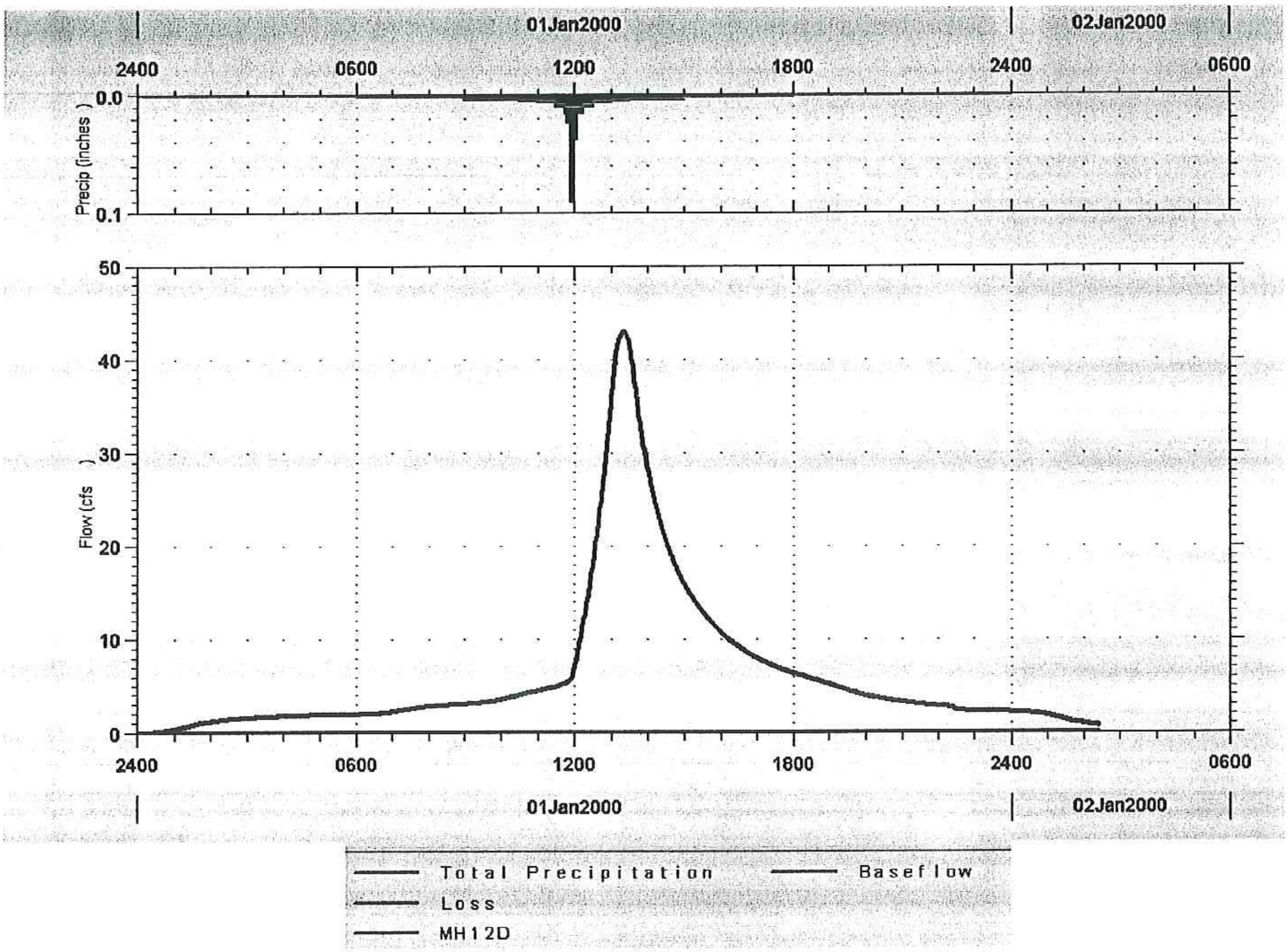
Sub Basin "MH1.1D"



Detention Basin "WQDET"



Sub Basin "MH1.2D"



C:\hmsproj\sc.hecout

Jump to: runoff summary | index

```
INPUT  FILENAME ====>C:\hmsproj\sc.dat
OUTPUT FILENAME ===>C:\hmsproj\sc.hecout
DSS FILENAME ===>hcalc.dss
```

```
***************************************                    *********************
*                                     *                    *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1L) *                   *    U.S. ARMY CORPS
*            JULY   1998              *                    *    HYDROLOGIC ENGIN
*          VERSION 4.1(L)             *                    *           609 SECOND
*                                     *                    *         DAVIS, CALIFO
*  RUN DATE   07MAY03  TIME  14:46:32 *                    *            (916) 756
*                                     *                    *
***************************************                    *********************


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

Special version of HEC-1 with Extra-large array
Modified by David Ford Consulting Engineers (2000)
 Program dimensions:
 Number of hydrograph ordinates: 20000
 Unit hydrograph ordinates: 3000


   THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1K
```

```
THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPU
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77
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
```

```
                                        HEC-1L INPUT                                                  P

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

               * SacCalc, developed by David Ford Consulting Engineers
               * File generated 05/07/2003 14:46:32
               *
  1            ID
               * Lag computation for station MH11A
               *   Lag frequency factor of 1.3 (Table 7-6) for frequency 100 years will be appl
               *   Basin "n" composition (based on Table 7-1)
               *            Developed                      Undeveloped
               *          n   adj n   fract             n   adj n   fract
               *   ------------------------------------------------------
               *      0.030  0.0390  0.0000         0.067  0.0670  0.0000
               *      0.031  0.0403  0.0000         0.070  0.0700  0.0000
               *      0.032  0.0416  0.0000         0.071  0.0710  0.0000
               *      0.033  0.0429  0.0000         0.072  0.0720  0.0000
               *      0.034  0.0442  0.0000         0.073  0.0730  0.0000
               *      0.035  0.0455  0.0000         0.074  0.0740  0.0000
               *      0.037  0.0481  0.0000         0.076  0.0760  0.0000
               *      0.040  0.0520  0.0000         0.080  0.0800  0.0000
               *      0.042  0.0546  0.0000         0.084  0.0840  0.0000
               *      0.046  0.0598  0.0000         0.088  0.0880  0.0000
               *      0.050  0.0650  0.5011         0.090  0.0900  0.0000
               *      0.053  0.0689  0.0000         0.093  0.0930  0.0000
               *      0.056  0.0560  0.0000         0.096  0.0960  0.0000
               *      0.060  0.0600  0.0000         0.100  0.1000  0.0000
               *      0.065  0.0650  0.0000         0.110  0.1100  0.0000
               *      0.070  0.0700  0.0000         0.115  0.1150  0.0000
               *      0.075  0.0750  0.4989         0.120  0.1200  0.0000
               *      0.080  0.0800  0.0000         0.150  0.1500  0.0000
               *   ------------------------------------------------------
               *   Equation (7-1) with L=  0.4006, Lc=  0.2570, S=  232.320, n=0.0700
               *   Resulting lag:   21.0 minutes
               * Lag computation for station MH12A
```

```
*  Lag frequency factor of 1.3 (Table 7-6) for frequency 100 years will be appl
*  Basin "n" composition (based on Table 7-1)
*              Developed                        Undeveloped
*           n    adj n    fract              n    adj n    fract
*  ------------------------------------------------------------
*       0.030  0.0390  0.0000          0.067  0.0670  0.0000
*       0.031  0.0403  0.0000          0.070  0.0700  0.0000
*       0.032  0.0416  0.0000          0.071  0.0710  0.0000
*       0.033  0.0429  0.0000          0.072  0.0720  0.0000
*       0.034  0.0442  0.0000          0.073  0.0730  0.0000
*       0.035  0.0455  0.0000          0.074  0.0740  0.0000
*       0.037  0.0481  0.0000          0.076  0.0760  0.0000
*       0.040  0.0520  0.0000          0.080  0.0800  0.0000
*       0.042  0.0546  0.0000          0.084  0.0840  0.0000
*       0.046  0.0598  0.0000          0.088  0.0880  0.0000
*       0.050  0.0650  0.7706          0.090  0.0900  0.0000
*       0.053  0.0689  0.0000          0.093  0.0930  0.0000
*       0.056  0.0560  0.0000          0.096  0.0960  0.0000
*       0.060  0.0600  0.0000          0.100  0.1000  0.0000
*       0.065  0.0650  0.0000          0.110  0.1100  0.0000
*       0.070  0.0700  0.0000          0.115  0.1150  0.0000
*       0.075  0.0750  0.0000          0.120  0.1200  0.2294
*       0.080  0.0800  0.0000          0.150  0.1500  0.0000
*  ------------------------------------------------------------
*  Equation (7-1) with L=  0.2720, Lc=  0.2331, S=  184.800, n=0.0776
*  Resulting lag:    20.6 minutes
* End of lag computations
*
*  NMIN  JXDATE  JXTIME       NQ
```

HEC-1L INPUT

P

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

  2         IT       1 31DEC99    2400     1586
            *  IPRT    IPLT
  3         IO       3       0
            *

  4         KK  MH12A
            *  JXMIN    Time interval for input data
  5         IN       5
  6         KM
```

```
*
* Design storm construction details
*
* Regional multiplier (zone 3) applied:  1.050
* Elevation adjustment applied, elev: 210.
* Areal adjustment using area:  0.175
*   multiplier from table 4-4: 1.0000
*
* Adjusted depths for each duration from table 4-1: frequency: 100
* Duration----Regional------Elev-----Areal (adjustments)
* 5 min          0.4620     0.4572     0.4572
* 10 min         0.6510     0.6453     0.6453
* 15 min         0.7665     0.7650     0.7650
* 30 min         0.9870     0.9960     0.9960
* 1 hour         1.2705     1.2993     1.2993
* 2 hours        1.5900     1.6503     1.6503
* 3 hours        1.8500     1.9367     1.9367
* 6 hours        2.5000     2.6539     2.6539
* 12 hours       3.3000     3.5625     3.5625
* 24 hours       4.2500     4.6664     4.6664
* 36 hours       5.0900     5.6507     5.6408
* 2 days         5.7000     5.7000     5.7000
* 3 days         6.8000     6.8000     6.8000
* 5 days         8.4200     9.6716     9.6547
* 10 days       11.0100    12.8994    12.8768
* Storm duration:  24, length:  288 ordinates
PB      0
PI  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077
PI  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077
PI  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077
PI  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077
PI  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077
PI  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077
PI  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077
PI  0.0077  0.0077  0.0126  0.0126  0.0126  0.0126  0.0126  0.0126  0.0126  0.0126
PI  0.0126  0.0126  0.0126  0.0126  0.0126  0.0126  0.0126  0.0126  0.0126  0.0126
PI  0.0126  0.0126  0.0126  0.0126  0.0126  0.0126  0.0126  0.0126  0.0126  0.0126
PI  0.0126  0.0126  0.0126  0.0126  0.0126  0.0126  0.0126  0.0126  0.0199  0.0199
PI  0.0199  0.0199  0.0199  0.0199  0.0199  0.0199  0.0199  0.0199  0.0199  0.0199
PI  0.0199  0.0199  0.0199  0.0199  0.0199  0.0199  0.0239  0.0239  0.0239  0.0239
PI  0.0239  0.0239  0.0293  0.0293  0.0293  0.0293  0.0292  0.0293  0.0505  0.0505
PI  0.0505  0.0770  0.1197  0.4572  0.1882  0.0770  0.0770  0.0505  0.0505  0.0505
PI  0.0293  0.0293  0.0293  0.0293  0.0292  0.0293  0.0239  0.0239  0.0239  0.0239
PI  0.0239  0.0239  0.0199  0.0199  0.0199  0.0199  0.0199  0.0199  0.0199  0.0199
```

```
25     PI  0.0199  0.0199  0.0199  0.0199  0.0199  0.0199  0.0199  0.0199  0.0199  0.0199
26     PI  0.0126  0.0126  0.0126  0.0126  0.0126  0.0126  0.0126  0.0126  0.0126  0.0126
```

HEC-1L INPUT

P

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

27     PI  0.0126  0.0126  0.0126  0.0126  0.0126  0.0126  0.0126  0.0126  0.0126  0.0126
28     PI  0.0126  0.0126  0.0126  0.0126  0.0126  0.0126  0.0126  0.0126  0.0126  0.0126
29     PI  0.0126  0.0126  0.0126  0.0126  0.0126  0.0126  0.0077  0.0077  0.0077  0.0077
30     PI  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077
31     PI  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077
32     PI  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077
33     PI  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077
34     PI  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077
35     PI  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077
36     PI  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077  0.0077
       *
       * Precipitation losses computation (Chapter 5)
       *   Computing RTIMP (percent impervious) from land use and table 5-2
       *   Computing CNSTL (infiltration rate) from soil type and table 5-2
       *  TAREA   subbasin area (sq mi)
37     BA  0.0361
       *  STRTL   CNSTL   RTIMP
38     LU    0.10   0.072  19.494
       *
       * Runoff hydrograph computation (Chapter 6)
       *   Using basin lag:  20.6 minutes
       *   Using unit duration (Step 2): 1. min
       *   Lag Time + Unit Duration / 2 (Step 3): 21.09657
       *   Volume of runoff (Step 4) V=     0.970521
39     UI   1.675   4.042   6.543   9.251  11.468  14.770  18.029  21.489  25.319  29.430
40     UI  33.772  38.474  43.816  49.273  53.475  54.608  55.121  54.403  53.136  49.080
41     UI  44.899  40.665  36.870  34.255  31.946  29.356  27.294  25.574  23.793  22.195
42     UI  20.823  19.492  18.254  17.095  16.201  15.209  14.396  13.560  12.802  12.170
43     UI  11.614  10.974  10.425   9.941   9.470   9.083   8.636   8.238   7.862   7.502
44     UI   7.235   6.934   6.750   6.504   6.313   6.078   5.843   5.634   5.476   5.271
45     UI   5.084   4.944   4.773   4.590   4.458   4.306   4.166   4.023   3.885   3.767
46     UI   3.609   3.498   3.384   3.314   3.163   3.058   2.954   2.849   2.769   2.691
47     UI   2.590   2.506   2.427   2.349   2.270   2.192   2.113   2.047   1.974   1.887
48     UI   1.827   1.755   1.702   1.650   1.598   1.545   1.493   1.440   1.388   1.358
49     UI   1.332   1.286   1.252   1.209   1.157   1.118   1.092   1.055   1.012   0.978
50     UI   0.932   0.906   0.880   0.854   0.827   0.801   0.775   0.749   0.723   0.697
```

```
51          UI    0.670   0.662   0.646   0.620   0.593   0.580
52          ZW    C=FLOW F=100YR-24HR A=POST CON
            *

53          KK  MH11A
            *  JXMIN    Time interval for input data
54          IN       5
55          KM
            *
            * Design storm construction details
            *
            * Regional multiplier (zone 3) applied:  1.050
            * Elevation adjustment applied, elev: 260.
            * Areal adjustment using area:  0.175
            *   multiplier from table 4-4: 1.0000
            *
            * Adjusted depths for each duration from table 4-1: frequency: 100
            * Duration----Regional------Elev-----Areal (adjustments)
            * 5 min          0.4620     0.4560     0.4560
            * 10 min         0.6510     0.6440     0.6440
            * 15 min         0.7665     0.7647     0.7647
            * 30 min         0.9870     0.9982     0.9982
            * 1 hour         1.2705     1.3061     1.3061
            * 2 hours        1.5900     1.6646     1.6646
            * 3 hours        1.8500     1.9574     1.9574
            * 6 hours        2.5000     2.6906     2.6906
            * 12 hours       3.3000     3.6250     3.6250
            * 24 hours       4.2500     4.7656     4.7656
            * 36 hours       5.0900     5.7842     5.7741
            * 2 days         5.7000     5.7000     5.7000
            * 3 days         6.8000     6.8000     6.8000
            * 5 days         8.4200     9.9696     9.9521
            * 10 days       11.0100    13.3492    13.3258
            * Storm duration:  24, length:  288 ordinates
```

HEC-1L INPUT

P

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

56          PB       0
57          PI  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079
58          PI  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079
59          PI  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079
```

```
60    PI  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079
61    PI  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079
62    PI  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079
63    PI  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079
64    PI  0.0079  0.0079  0.0130  0.0130  0.0130  0.0130  0.0130  0.0130  0.0130  0.0130
65    PI  0.0130  0.0130  0.0130  0.0130  0.0130  0.0130  0.0130  0.0130  0.0130  0.0130
66    PI  0.0130  0.0130  0.0130  0.0130  0.0130  0.0130  0.0130  0.0130  0.0130  0.0130
67    PI  0.0130  0.0130  0.0130  0.0130  0.0130  0.0130  0.0130  0.0130  0.0204  0.0204
68    PI  0.0204  0.0204  0.0204  0.0204  0.0204  0.0204  0.0204  0.0204  0.0204  0.0204
69    PI  0.0204  0.0204  0.0204  0.0204  0.0204  0.0204  0.0244  0.0244  0.0244  0.0244
70    PI  0.0244  0.0244  0.0299  0.0299  0.0299  0.0299  0.0299  0.0299  0.0513  0.0513
71    PI  0.0513  0.0778  0.1207  0.4560  0.1880  0.0778  0.0778  0.0513  0.0513  0.0513
72    PI  0.0299  0.0299  0.0299  0.0299  0.0299  0.0299  0.0244  0.0244  0.0244  0.0244
73    PI  0.0244  0.0244  0.0204  0.0204  0.0204  0.0204  0.0204  0.0204  0.0204  0.0204
74    PI  0.0204  0.0204  0.0204  0.0204  0.0204  0.0204  0.0204  0.0204  0.0204  0.0204
75    PI  0.0130  0.0130  0.0130  0.0130  0.0130  0.0130  0.0130  0.0130  0.0130  0.0130
76    PI  0.0130  0.0130  0.0130  0.0130  0.0130  0.0130  0.0130  0.0130  0.0130  0.0130
77    PI  0.0130  0.0130  0.0130  0.0130  0.0130  0.0130  0.0130  0.0130  0.0130  0.0130
78    PI  0.0130  0.0130  0.0130  0.0130  0.0130  0.0130  0.0079  0.0079  0.0079  0.0079
79    PI  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079
80    PI  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079
81    PI  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079
82    PI  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079
83    PI  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079
84    PI  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079
85    PI  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079  0.0079
      *
      * Precipitation losses computation (Chapter 5)
      *   Computing RTIMP (percent impervious) from land use and table 5-2
      *   Computing CNSTL (infiltration rate) from soil type and table 5-2
      *  TAREA   subbasin area (sq mi)
86    BA  0.1391
      *  STRTL   CNSTL   RTIMP
87    LU    0.10   0.075  13.027
      *
      * Runoff hydrograph computation (Chapter 6)
      *   Using basin lag:  21.0 minutes
      *   Using unit duration (Step 2): 1. min
      *   Lag Time + Unit Duration / 2 (Step 3): 21.48524
      *   Volume of runoff (Step 4) V=    3.739236
88    UI    6.22   14.96   24.24   34.25   42.68   54.33   66.76   79.25   93.38  108.38
89    UI  124.47  141.28  160.78  181.52  200.47  205.61  208.37  206.79  202.76  191.23
90    UI  175.88  160.22  145.33  133.42  124.79  115.90  106.35  100.11   93.60   86.89
91    UI   81.70   76.57   71.87   67.23   63.47   59.94   56.52   53.47   50.46   47.76
```

```
 92             UI   45.48   43.40   40.98   39.04   37.28   35.53   34.17   32.41   31.04   29.57
 93             UI   28.32   27.29   26.21   25.51   24.60   23.90   23.02   22.15   21.37   20.77
 94             UI   20.02   19.32   18.77   18.17   17.49   16.94   16.44   15.85   15.39   14.78
 95             UI   14.45   13.77   13.39   12.90   12.67   12.17   11.73   11.34   10.95   10.61
 96             UI   10.32    9.99    9.63    9.34    9.05    8.75    8.46    8.17    7.88    7.67
 97             UI    7.33    7.07    6.82    6.58    6.38    6.19    5.99    5.80    5.61    5.41
 98             UI    5.22    5.12    5.02    4.84    4.73    4.56    4.36    4.23    4.13    3.99
```

HEC-1L INPUT   P

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

 99             UI    3.83    3.71    3.53    3.43    3.34    3.24    3.14    3.04    2.95    2.85
100             UI    2.75    2.66    2.56    2.51    2.47    2.37    2.27    2.19
101             ZW   C=FLOW F=100YR-24HR A=POST CON
                *

102             KK  WQDET
                * Detention type V-D, initial condition (V)      3.50
103             KM
104             RS       1    STOR    3.50
105             ZW   C=FLOW
106             ZW   C=STORAGE
107             ZW   C=STAGE
108             SQ     0.0     2.0    25.0    40.0    60.0   280.0
109             SV     0.0     3.5     8.6    12.0    15.0    16.1
110             KM
                *

111             KK  JNC001
112             KM   Culvert I
113             HC       2
114             ZW   C=FLOW
115             ZZ
```

```
****************************************                ********************
*                                      *                *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1L) *                *    U.S. ARMY CORPS
*           JULY   1998                *                *    HYDROLOGIC ENGIN
*         VERSION 4.1(L)               *                *           609 SECOND
*                                      *                *       DAVIS, CALIFO
*  RUN DATE   07MAY03  TIME  14:46:32  *                *          (916) 756
```

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




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

  IT            HYDROGRAPH TIME DATA
                       NMIN             1  MINUTES IN COMPUTATION INTERVAL
                      IDATE       31DEC99  STARTING DATE
                      ITIME          0000  STARTING TIME
                         NQ          1586  NUMBER OF HYDROGRAPH ORDINATES
                     NDDATE        2JAN 0  ENDING DATE
                     NDTIME          0225  ENDING TIME
                      ICENT            19  CENTURY MARK

                COMPUTATION INTERVAL    0.02 HOURS
                     TOTAL TIME BASE   26.42 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


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

                ***************
                *             *
  4 KK          *    MH12A    *
                *             *
```

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

5 IN          TIME DATA FOR INPUT TIME SERIES
                    JXMIN          5  TIME INTERVAL IN MINUTES
                   JXDATE    31DEC99  STARTING DATE
                   JXTIME       2400  STARTING TIME

            SUBBASIN RUNOFF DATA

37 BA         SUBBASIN CHARACTERISTICS
                    TAREA,      0.04  SUBBASIN AREA

              PRECIPITATION DATA

7 PB                STORM       4.67  BASIN TOTAL PRECIPITATION

8 PI            INCREMENTAL PRECIPITATION PATTERN
                   0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0
                   0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0
                   0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0
                   0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0
                   0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0
                   0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0
                   0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0
                   0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0
                   0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0
                   0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0
                   0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0
                   0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0
                   0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0
                   0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0
                   0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0
                   0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0
                   0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0
                   0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0
                   0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0
                   0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0
                   0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0
                   0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0
                   0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0
                   0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0
                   0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0
                   0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0
```

0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0

0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0
0.02	0.02	0.02	0.02	0.02	0.09	0.09	0.09	0.09	0
0.04	0.04	0.04	0.04	0.04	0.02	0.02	0.02	0.02	0
0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0

```
           0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0
           0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0
           0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0
           0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0
           0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0
           0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0
           0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0
           0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0
           0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0
           0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0
           0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0
           0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0
           0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0
           0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0
           0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0
           0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0
           0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0
           0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0
           0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0
           0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0
           0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0
           0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0
           0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0
           0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0
           0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0
           0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0
           0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0
           0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0
           0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0
           0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0

38 LU        UNIFORM LOSS RATE
                 STRTL         0.10   INITIAL LOSS
                 CNSTL         0.07   UNIFORM LOSS RATE
                 RTIMP        19.49   PERCENT IMPERVIOUS AREA

37 UI        INPUT UNITGRAPH, 126 ORDINATES,  VOLUME = 1.00
                1.7       4.0       6.5       9.3      11.5      14.8      18.0      21.5      25.3      2
               33.8      38.5      43.8      49.3      53.5      54.6      55.1      54.4      53.1      4
               44.9      40.7      36.9      34.3      31.9      29.4      27.3      25.6      23.8      2
               20.8      19.5      18.3      17.1      16.2      15.2      14.4      13.6      12.8      1
               11.6      11.0      10.4       9.9       9.5       9.1       8.6       8.2       7.9
                7.2       6.9       6.8       6.5       6.3       6.1       5.8       5.6       5.5
                5.1       4.9       4.8       4.6       4.5       4.3       4.2       4.0       3.9
```

```
3.6        3.5        3.4        3.3        3.2        3.1        3.0        2.8        2.8
2.6        2.5        2.4        2.3        2.3        2.2        2.1        2.0        2.0
1.8        1.8        1.7        1.6        1.6        1.5        1.5        1.4        1.4
1.3        1.3        1.3        1.2        1.2        1.1        1.1        1.1        1.0
0.9        0.9        0.9        0.9        0.8        0.8        0.8        0.7        0.7
0.7        0.7        0.6        0.6        0.6        0.6
                                                ***

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

           HYDROGRAPH AT STATION   MH12A

TOTAL RAINFALL =    4.67, TOTAL LOSS =    1.41, TOTAL EXCESS =    3.26

PEAK FLOW    TIME                         MAXIMUM AVERAGE FLOW
 (CFS)       (HR)                 6-HR        24-HR       72-HR      26.42-HR
   43.      12.25      (CFS)        9.           3.          3.           3.
                     (INCHES)    2.282        3.251       3.258        3.258
                      (AC-FT)       4.           6.          6.           6.

                   CUMULATIVE AREA =     0.04 SQ MI

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

          ***************
          *             *
 53 KK    *    MH11A    *
          *             *
          ***************

 54 IN          TIME DATA FOR INPUT TIME SERIES
                     JXMIN            5  TIME INTERVAL IN MINUTES
                    JXDATE      31DEC99  STARTING DATE
                    JXTIME         2400  STARTING TIME

              SUBBASIN RUNOFF DATA

 86 BA          SUBBASIN CHARACTERISTICS
```

TAREA, 0.14 SUBBASIN AREA

PRECIPITATION DATA

56 PB STORM 4.77 BASIN TOTAL PRECIPITATION

57 PI INCREMENTAL PRECIPITATION PATTERN

0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0

0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
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0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
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0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
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0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0
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0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0
0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0
0.02	0.02	0.02	0.02	0.02	0.09	0.09	0.09	0.09	0
0.04	0.04	0.04	0.04	0.04	0.02	0.02	0.02	0.02	0
0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0

0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0

0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0

87 LU UNIFORM LOSS RATE

STRTL	0.10	INITIAL LOSS
CNSTL	0.08	UNIFORM LOSS RATE
RTIMP	13.03	PERCENT IMPERVIOUS AREA

86 UI INPUT UNITGRAPH, 128 ORDINATES, VOLUME = 1.00

6.2	15.0	24.2	34.3	42.7	54.3	66.8	79.3	93.4	10
124.5	141.3	160.8	181.5	200.5	205.6	208.4	206.8	202.8	19
175.9	160.2	145.3	133.4	124.8	115.9	106.3	100.1	93.6	8
81.7	76.6	71.9	67.2	63.5	59.9	56.5	53.5	50.5	4
45.5	43.4	41.0	39.0	37.3	35.5	34.2	32.4	31.0	2
28.3	27.3	26.2	25.5	24.6	23.9	23.0	22.1	21.4	2
20.0	19.3	18.8	18.2	17.5	16.9	16.4	15.9	15.4	1
14.4	13.8	13.4	12.9	12.7	12.2	11.7	11.3	10.9	1
10.3	10.0	9.6	9.3	9.1	8.8	8.5	8.2	7.9	
7.3	7.1	6.8	6.6	6.4	6.2	6.0	5.8	5.6	
5.2	5.1	5.0	4.8	4.7	4.6	4.4	4.2	4.1	
3.8	3.7	3.5	3.4	3.3	3.2	3.1	3.0	3.0	
2.8	2.7	2.6	2.5	2.5	2.4	2.3	2.2		

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                    HYDROGRAPH AT STATION   MH11A

   TOTAL RAINFALL =     4.77, TOTAL LOSS =     1.58, TOTAL EXCESS =     3.18

 PEAK FLOW      TIME                              MAXIMUM AVERAGE FLOW
  (CFS)         (HR)                   6-HR         24-HR        72-HR      26.42-HR
   165.        12.25         (CFS)      34.           12.          11.           11.
                          (INCHES)    2.276         3.173        3.178         3.178
                           (AC-FT)      17.           24.          24.           24.

                      CUMULATIVE AREA =     0.14 SQ MI


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

           ***************
           *             *
102 KK     *    WQDET    *
           *             *
           ***************


            HYDROGRAPH ROUTING DATA

104 RS        STORAGE ROUTING
                    NSTPS            1 NUMBER OF SUBREACHES,
                     ITYP         STOR  TYPE OF INITIAL CONDITION
                   RSVRIC         3.50  INITIAL CONDITION
                        X         0.00 WORKING R AND D COEFFICIENT

109 SV           STORAGE          0.0       3.5       8.6      12.0      15.0      16.1

108 SQ          DISCHARGE          0.        2.       25.       40.       60.      280.

                                                           ***

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

                    HYDROGRAPH AT STATION   WQDET
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 PEAK FLOW     TIME                            MAXIMUM AVERAGE FLOW
   (CFS)       (HR)                  6-HR        24-HR        72-HR      26.42-HR
     41.      13.15      (CFS)        29.          12.          11.          11.
                       (INCHES)      1.939        3.128        3.180        3.180
                        (AC-FT)        14.          23.          24.          24.

PEAK STORAGE   TIME                          MAXIMUM AVERAGE STORAGE
  (AC-FT)      (HR)                  6-HR        24-HR        72-HR      26.42-HR
     12.      13.13                   10.           6.           5.           5.

                        CUMULATIVE AREA =    0.14 SQ MI

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

          **************
          *            *
 111 KK   *   JNC001   *
          *            *
          **************
                 Culvert I

 113 HC          HYDROGRAPH COMBINATION
                       ICOMP          2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                      ***

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

                   HYDROGRAPH AT STATION   JNC001

 PEAK FLOW     TIME                            MAXIMUM AVERAGE FLOW
   (CFS)       (HR)                  6-HR        24-HR        72-HR      26.42-HR
     69.      12.28      (CFS)        37.          15.          14.          14.
                       (INCHES)      1.957        3.148        3.196        3.196
                        (AC-FT)        18.          29.          30.          30.

                        CUMULATIVE AREA =    0.18 SQ MI
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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
HYDROGRAPH AT	MH12A	43.	12.25	9.	3.	3.	0.04	
HYDROGRAPH AT	MH11A	165.	12.25	34.	12.	11.	0.14	
ROUTED TO	WQDET	41.	13.15	29.	12.	11.	0.14	
2 COMBINED AT	JNC001	69.	12.28	37.	15.	14.	0.18	

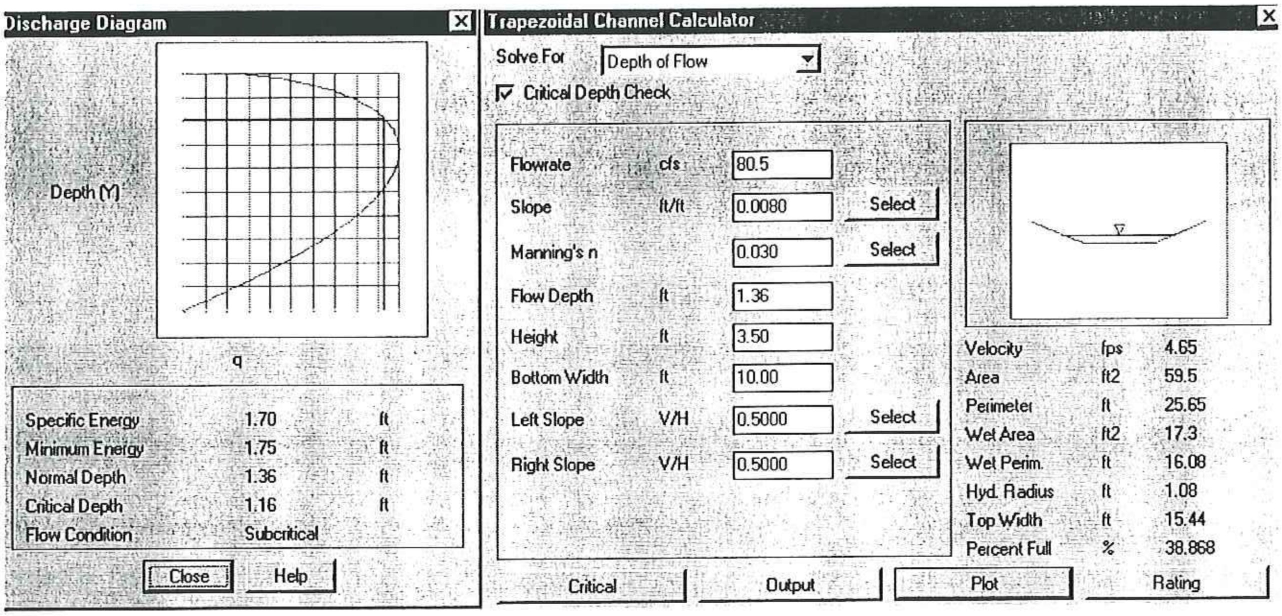
*** NORMAL END OF HEC-1L ***

Index to station computation sections

CULVERT CAPACITY ANALYSIS

Culvert I Analysis
Results
Culvert Meets Ultimate Demands

CULVERT TAILWATER CALCULATION
Channel downstream of Culvert I



Given Input Data:

- Shape .... Trapezoidal
- Solving for .... Depth of Flow
- Flowrate .... 80.5 cfs
- Slope .... 0.0080 ft/ft
- Manning's n .... 0.030 (Grassy/Brushy Growth)
- Height .... 3.50 ft
- Bottom width .... 10.00 ft
- Left slope .... 0.5000 ft/ft (V/H)
- Right slope .... 0.5000 ft/ft (V/H)

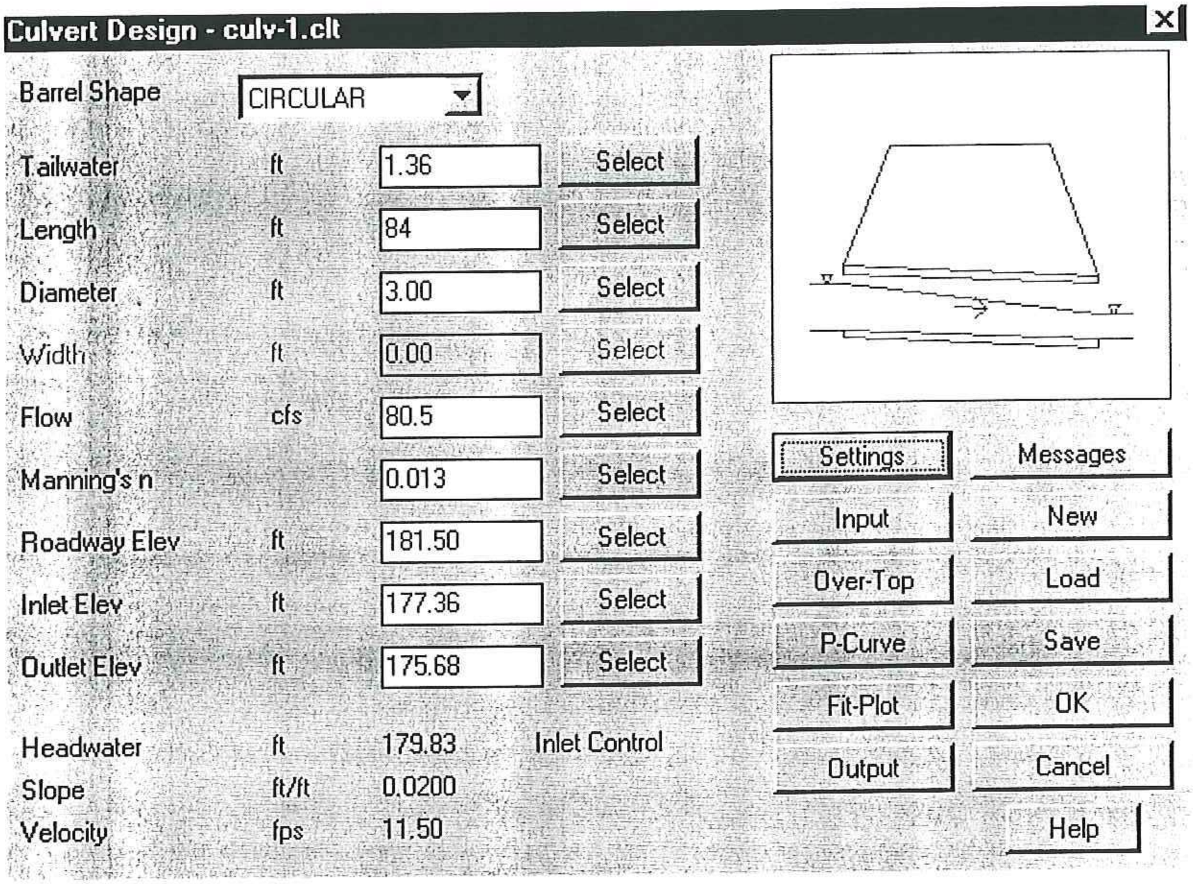
Computed Results:

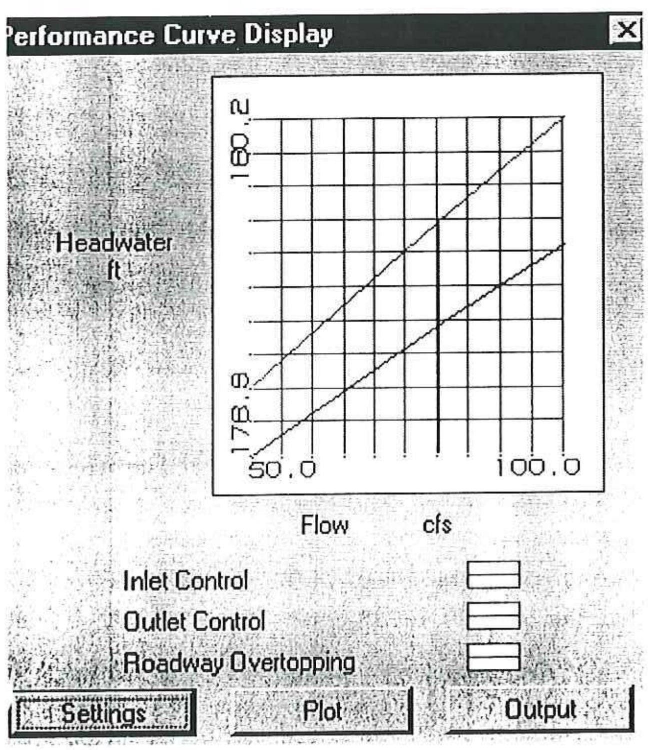
- **Depth .... 1.36 ft**
- Velocity .... 4.65 fps
- Full Flowrate .... 461.9 cfs
- Flow area 17.3 ft2
- Flow perimeter .... 16.08 ft
- Hydraulic radius .... 1.08 ft
- Top width .... 15.44 ft
- Area 59.5 ft2
- Perimeter .... 25.65 ft

Backwater Elevation:

- Channel Flow Line .... 175.70 ft (Approximate per design drawings)
- Depth of Flow .... 1.36 ft
- Backwater Elevation .... 177.06 ft

CULVERT I ANALYSIS





Entered Data:

Shape	Circular
Number of Barrels	3
Solving for	Headwater
Chart Number	1
Scale Number	1
Chart Description	CONCRETE PIPE CULVERT; NO BEVELED RING ENTRANCE
Scale Decsription	SQUARE EDGE ENTRANCE WITH HEADWALL
Overtopping	Off
Flowrate	80.5 cfs
Manning's n	0.013
Roadway Elevation	181.50 ft
Inlet Elevation	177.36 ft
Outlet Elevation	175.68 ft
Diameter	3.00 ft
Length	84 ft
Entrance Loss	0.500
Tailwater	1.36 ft

Computed Results:

Headwater	179.83 ft Inlet Control
Slope	0.0200 ft/ft
Velocity	11.50 fps

cfs	Per Barrel DIS-CHARGE Flow cfs	HEAD-WATER ELEV. ft	INLET CONTROL DEPTH ft	OUTLET CONTROL DEPTH ft	FLOW TYPE	NORMAL DEPTH ft	CRITICAL DEPTH ft	OUTLET VEL. fps	OUTLET DEPTH ft	TAILWATER VEL. fps	TAILWATER DEPTH ft
30 =	10.00	178.71	1.35	0.67	NA	0.66	1.00	8.68	0.66	0.00	1.36
60 =	20.00	179.40	2.04	1.72	NA	0.94	1.44	10.60	0.94	0.00	1.36
90 =	30.00	180.02	2.66	2.21	NA	1.16	1.77	11.86	1.16	0.00	1.36
120 =	40.00	180.63	3.27	2.70	NA	1.36	2.06	12.80	1.36	0.00	1.36

Capacity = 115 cfs (1' Freeboard)

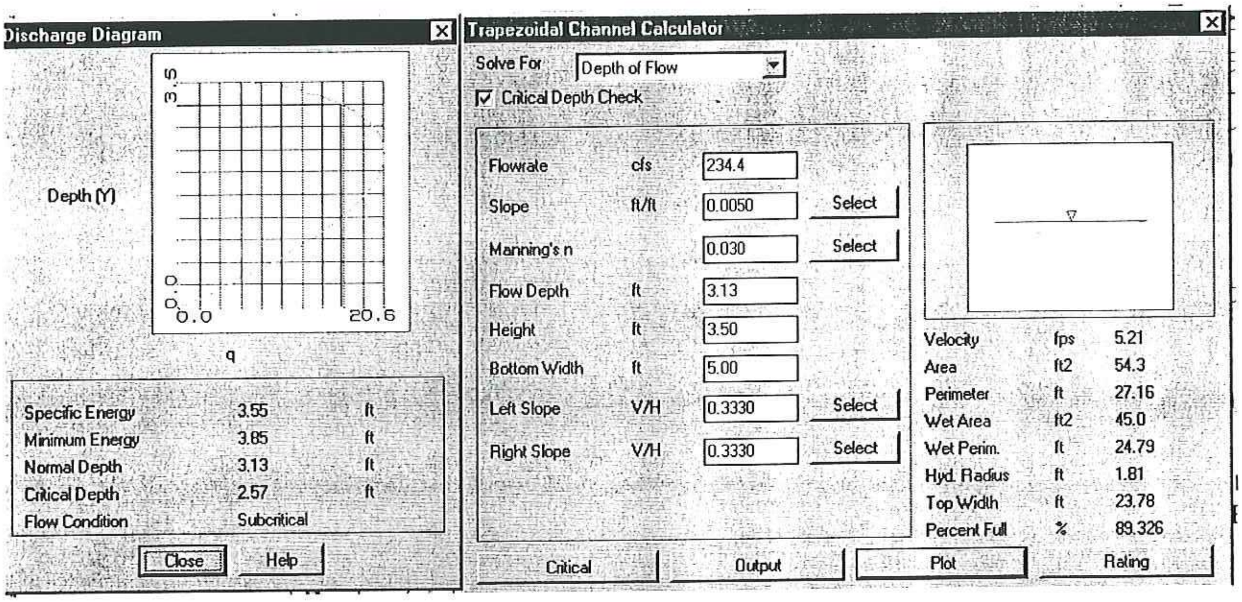
Note:
The culvert crossing Pera Drive consists of two segments connected with a junction box. This culvert was broken into two systems identified as culvert II and culvert IV.

Culvert IV was analyzed with M&S in-house pipe routine that calculates friction losses in pipes and minor losses in junction boxes.

Using the hydraulic grade line in the junction box as the tail-water elevation, Culvert II was analyzed with a culvert analysis routine.

Culvert II and IV Calculations
Results
Culvert II, IV Meets Ultimate Demands

CULVERT TAILWATER CALCULATION
Channel downstream of Culvert IV and III



Given Input Data:

- Shape .... Trapezoidal
- Solving for .... Depth of Flow
- Flowrate .... 234.4 cfs — Total Combined Downstream flow
- Slope .... 0.0050 ft/ft
- Manning's n .... 0.030 (Grassy/Brushy Growth)
- Height .... 3.50 ft
- Bottom width .... 5.00 ft
- Left slope .... 0.3330 ft/ft (V/H)
- Right slope .... 0.3330 ft/ft (V/H)

Computed Results:

- **Depth .... 3.13 ft**
- Velocity .... 5.21 fps
- Full Flowrate .... 301.7 cfs
- Flow area 45.0 ft2
- Flow perimeter .... 24.79 ft
- Hydraulic radius .... 1.81 ft
- Top width .... 23.78 ft
- Area 54.3 ft2
- Perimeter .... 27.16 ft

Backwater Elevation:

- Channel Flow Line .... 164.02 ft (Approximate per design drawings)
- Depth of Flow .... 3.13 ft
- Backwater Elevation .... 167.15 ft

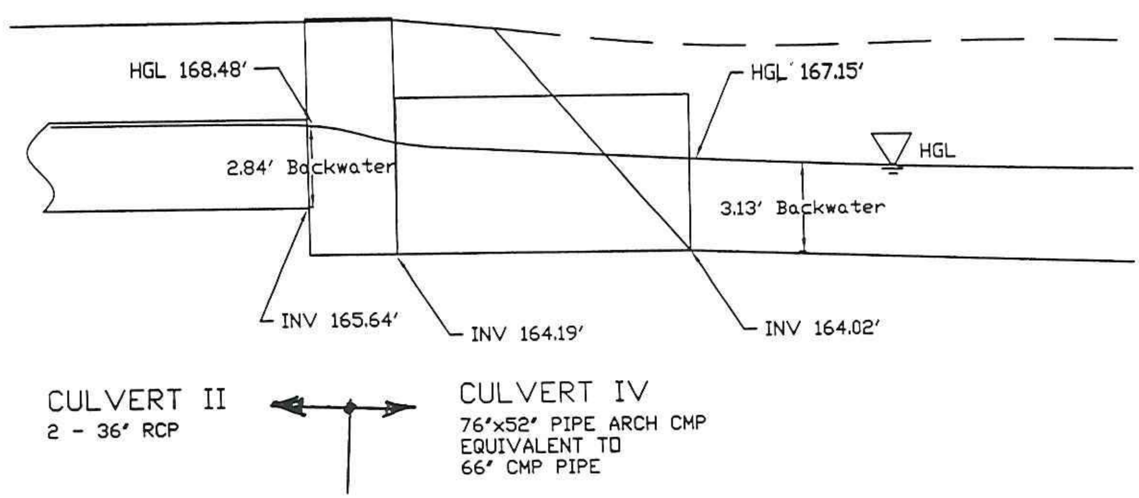
```
                                   Open & Closed System Calculations
                                       For Pipe Flow Analysis
                                           In Pipe - IV
                                      Storm Frequency 100 years
                                          Murieta Hills
                                                                                  Project:11306
Free Board Requirement = 0.00 feet                                                Design :GSJ
File = C:\Tlw\Culv345                                                             Date: 04-09-2002 Time: 10:15:57am
TLW_Hydr                Hydrology                                  Hydraulics     Page  1  of  6  -- version 2.01f

Pt.  Area    dA              Sum          Time            Q   #/=Dia/    Sf  Length Vel. Sect Frict Minor  HGL     MTC   Plan  Flow
 #  Descr.                    A            of     "n"    CiA  SS Width   Sp    Dn        Time Loss  Loss          HGL+  T.C.  Cond.
        (Acres)            (Acres)        Conc.         (cfs)  (in./ft.)     (ft.) (fps) (min)(ft.) (ft.) (ft.)    F.B.  F.L. to Pt.

II        101.40           101.40 101.40 21.3                                                      0.43  170.25  170.25  171.60 EB*
                                                0.013  93.00   2= 36.0 0.0049  195   6.6  0.5  0.95                      167.59
                                                                       0.0060 2.23   8.3  0.4                                 IV
IV        101.40           101.40 101.40 21.7                                                      0.30  167.48  167.48  170.00 BW
                                                0.024  93.00   1= 66.0 0.0026   10   3.9  0.0  0.03                      164.19
                                                                       0.0080 Does not apply                                Chnl
                                                                              Beginning Water Surface = 167.15
```

HGL at the junction box between culverts II and IV is 168.48

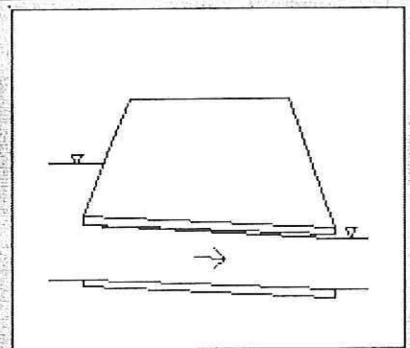
This HGL is used as the tailwater elevation of the following culvert analysis:
(See next page)



CULVERT II ANALYSIS

Culvert Design - culv-2.clt

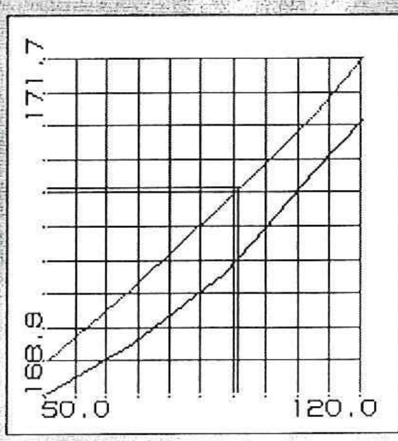
Barrel Shape		CIRCULAR	
Tailwater	ft	2.84	Select
Length	ft	195	Select
Diameter	ft	3.00	Select
Width	ft	0.00	Select
Flow	cfs	93.0	Select
Manning's n		0.013	Select
Roadway Elev	ft	171.60	Select
Inlet Elev	ft	166.81	Select
Outlet Elev	ft	165.64	Select
Headwater	ft	170.61	Inlet Control
Slope	ft/ft	0.0060	
Velocity	fps	8.28	



Settings	Messages
Input	New
Over-Top	Load
P-Curve	Save
Fit-Plot	OK
Output	Cancel
	Help

Performance Curve Display

Headwater ft



Flow cfs

Inlet Control	
Outlet Control	
Roadway Overtopping	

Settings | Plot | Output

Capacity = 93 cfs

Entered Data:

Shape	Circular
Number of Barrels	2
Solving for	Headwater
Chart Number	1
Scale Number	1
Chart Description	CONCRETE PIPE CULVERT; NO BEVELED RING ENTRANCE
Scale Decsription	SQUARE EDGE ENTRANCE WITH HEADWALL
Overtopping	Off
Flowrate	93.0 cfs
Manning's n	0.013
Roadway Elevation	171.60 ft
Inlet Elevation	166.81 ft
Outlet Elevation	165.64 ft
Diameter	3.00 ft
Length	195 ft
Entrance Loss	0.000
Tailwater	2.84 ft

Computed Results:

Headwater	170.61 ft Inlet Control
Slope	0.0060 ft/ft
Velocity	8.28 fps

Per Barrel DIS-CHARGE Flow cfs	HEAD-WATER ELEV. ft	INLET CONTROL DEPTH ft	OUTLET CONTROL DEPTH ft	FLOW TYPE	NORMAL DEPTH ft	CRITICAL DEPTH ft	OUTLET VEL. fps	OUTLET DEPTH ft	TAILWATER VEL. fps	TAILWATER DEPTH ft
25.00	169.18	2.37	2.11	NA	1.47	1.61	7.25	1.47	0.00	2.84
35.00	169.80	2.99	2.53	NA	1.81	1.92	7.86	1.81	0.00	2.84
45.00	170.50	3.69	3.09	NA	2.16	2.19	8.24	2.16	0.00	2.84
55.00	171.22	4.41	3.95	NA	3.00	3.00	7.78	3.00	0.00	2.84
60.00	171.68	4.87	4.36	NA	3.00	3.00	8.49	3.00	0.00	2.84

Heights-of-cover tables

1½" x ¼" Height-of-Cover Limits for Corrugated Steel Pipe H 20, H 25 Load, and E 80 Live Loads

Diameter, Inches	Minimum Cover, Inches	Maximum Cover, Feet Specified Thickness, Inches	
		0.052	0.064
6	12	388	486
8	12	291	365
10	12	233	292

2⅔" x ½" Height-of-Cover Limits for Corrugated Steel Pipe

H 20 and H 25 Live Loads

Diameter or Span, Inches	Minimum Cover, Inches	Maximum Cover, Feet Specified Thickness, Inches					
		0.052	0.064	0.079	0.109	0.138	0.168
12	12	198	248	310			
15		158	199	248			
18		132	166	207			
21		113	142	178	249		
24		99	124	155	218		
30		79	99	124	174		
36		66	83	103	145	186	
42		56	71	88	124	160	195
48			62	77	109	140	171
54				66	93	122	150
60					79	104	128
66					68	88	109
72						75	93
78							79
84	12						66

E 80 Live Loads

Diameter or Span, Inches	Minimum Cover, Inches	Maximum Cover, Feet Specified Thickness, Inches					
		0.052	0.064	0.079	0.109	0.138	0.168
12	12	198	248	310			
15		158	199	248			
18		132	166	207			
21		113	142	178	249		
24		99	124	155	218		
30		79	99	124	174		
36		66	83	103	145	186	
42		56	71	88	124	160	195
48	12		62	77	109	140	171
54	18			66	93	122	150
60					79	104	128
66					68	88	109
72	18					75	93
78	24						79
84	24						66

H 20 and H 25 Live Loads, Pipe-Arch

CULVERT IV

Size		Minimum Structural Thickness, Inches	Minimum Cover, Inches	Maximum Cover, Feet
Round Equivalent, Inches	Span x Rise, Inches			2 Tons/Ft.² Corner Bearing Pressure
15	17 x 13	0.064	12	16**
18	21 x 15	0.064		15**
21	24 x 18	0.064		
24	28 x 20	0.064		
30	35 x 24	0.064		
36	42 x 29	0.064		
42	49 x 33	0.064*		
48	57 x 38	0.064*		
54	64 x 43	0.079*		
60	71 x 47	0.109*		
66	77 x 52	0.109*		
72	83 x 57	0.138*	12	15**

E 80 Live Loads, Pipe-Arch

CULVERT III

Size		Minimum Structural Thickness, Inches	Minimum Cover, Inches	Maximum Cover, Feet
Round Equivalent, Inches	Span x Rise, Inches			3 Tons/Ft.² Corner Bearing Pressure
15	17 x 13	0.079	24	22
18	21 x 15	0.079		
21	24 x 18	0.109		
24	28 x 20	0.109		
30	35 x 24	0.138		
36	42 x 29	0.138		
42	49 x 33	0.138*		
48	57 x 38	0.138*		
54	64 x 43	0.138*		
60	71 x 47	0.138*	24	22

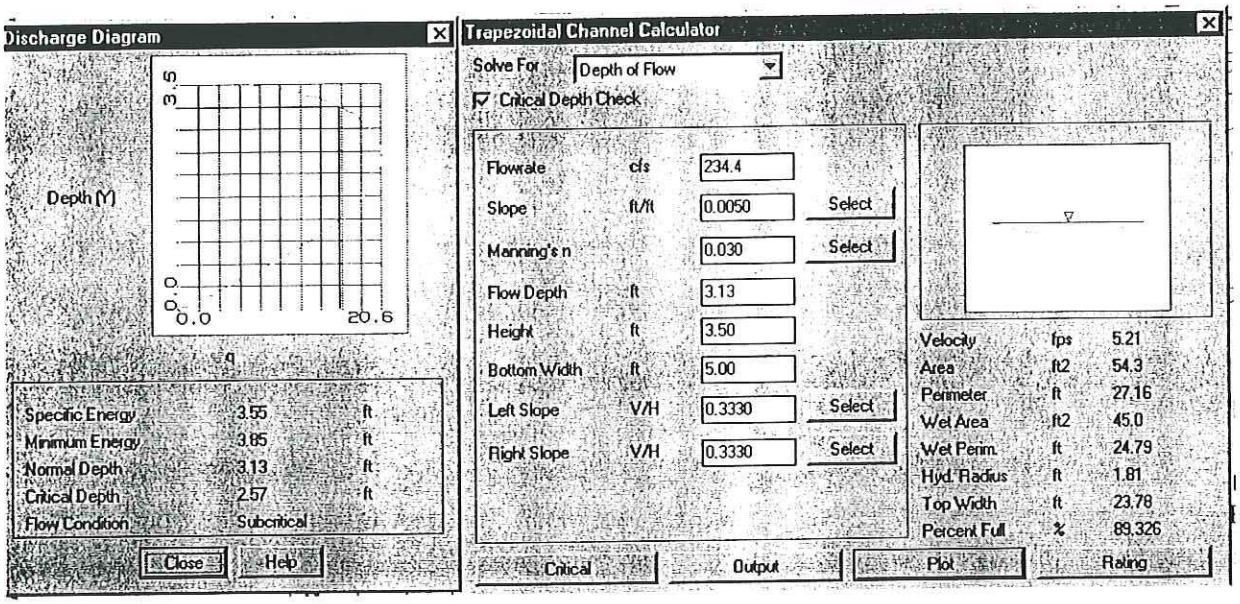
* These values are based on the AISI Flexibility Factor limit (0.0433 x 1.5) for pipe-arch. Due to variations in arching equipment, thicker gages may be required to prevent crimping of the haunches.

** These values were calculated using K = 0.86 as dopted in the AISI Handbook, Fourth Edition, 1993.

Notes on bottom of Page 6 apply to above tables.

Culvert III Calculations
Results
Culvert Meets Ultimate Demand

CULVERT TAILWATER CALCULATION
Channel downstream of Culvert IV and III



Given Input Data:

- Shape .... Trapezoidal
- Solving for .... Depth of Flow
- Flowrate .... 234.4 cfs
- Slope .... 0.0050 ft/ft
- Manning's n .... 0.030 (Grassy/Brushy Growth)
- Height .... 3.50 ft
- Bottom width .... 5.00 ft
- Left slope .... 0.3330 ft/ft (V/H)
- Right slope .... 0.3330 ft/ft (V/H)

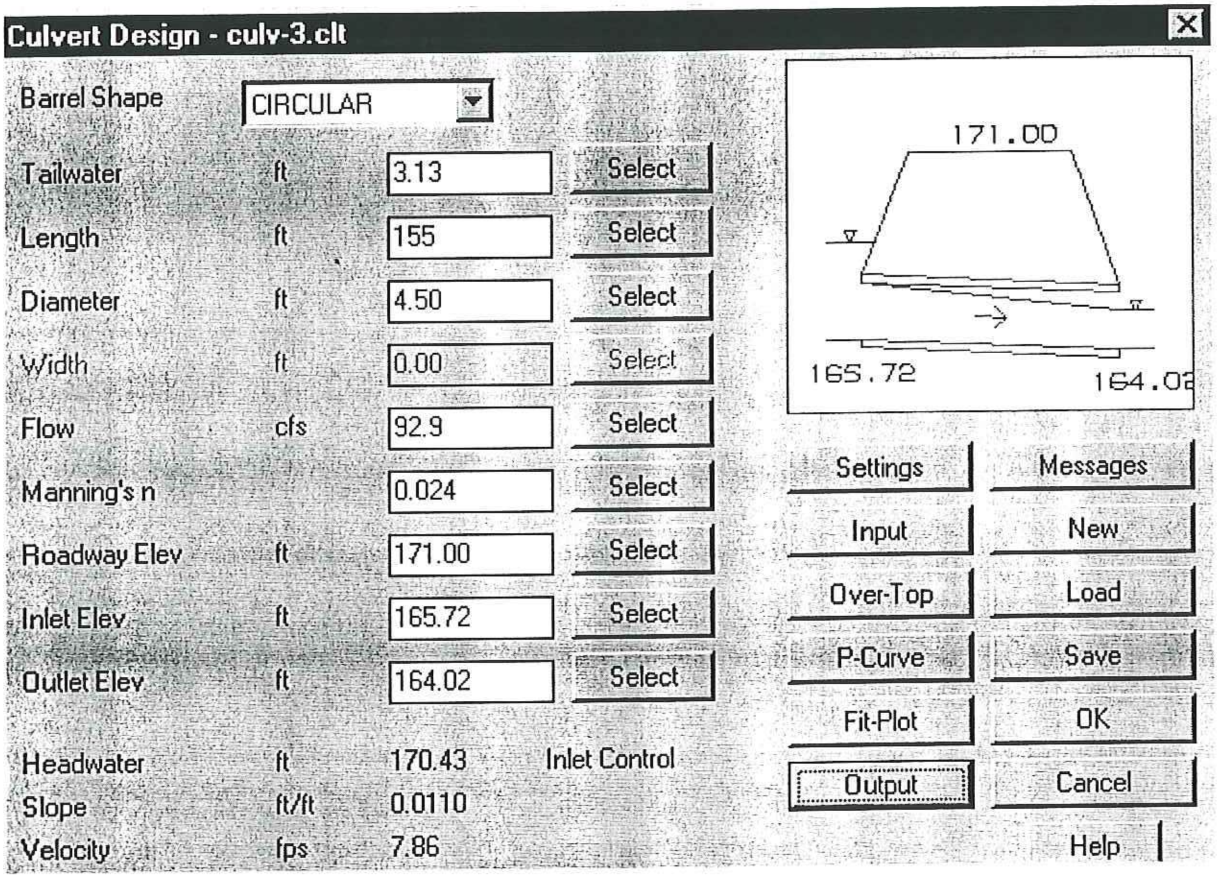
Computed Results:

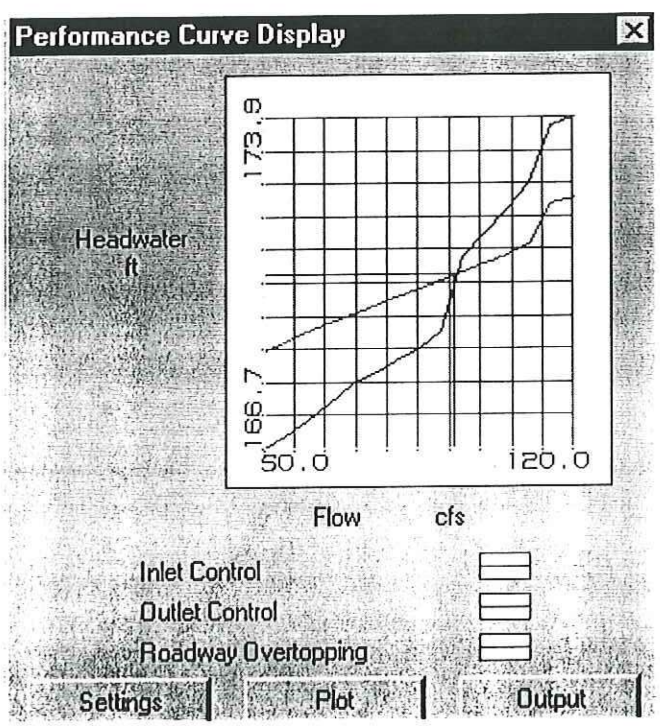
- **Depth .... 3.13 ft**
- Velocity .... 5.21 fps
- Full Flowrate .... 301.7 cfs
- Flow area 45.0 ft2
- Flow perimeter .... 24.79 ft
- Hydraulic radius .... 1.81 ft
- Top width .... 23.78 ft
- Area 54.3 ft2
- Perimeter .... 27.16 ft

Backwater Elevation:

- Channel Flow Line .... 164.02 ft (Approximate per design drawings)
- Depth of Flow .... 3.13 ft
- Backwater Elevation .... 167.15 ft

CULVERT III ANALYSIS





Capacity = 93cfs (6" freeboard)

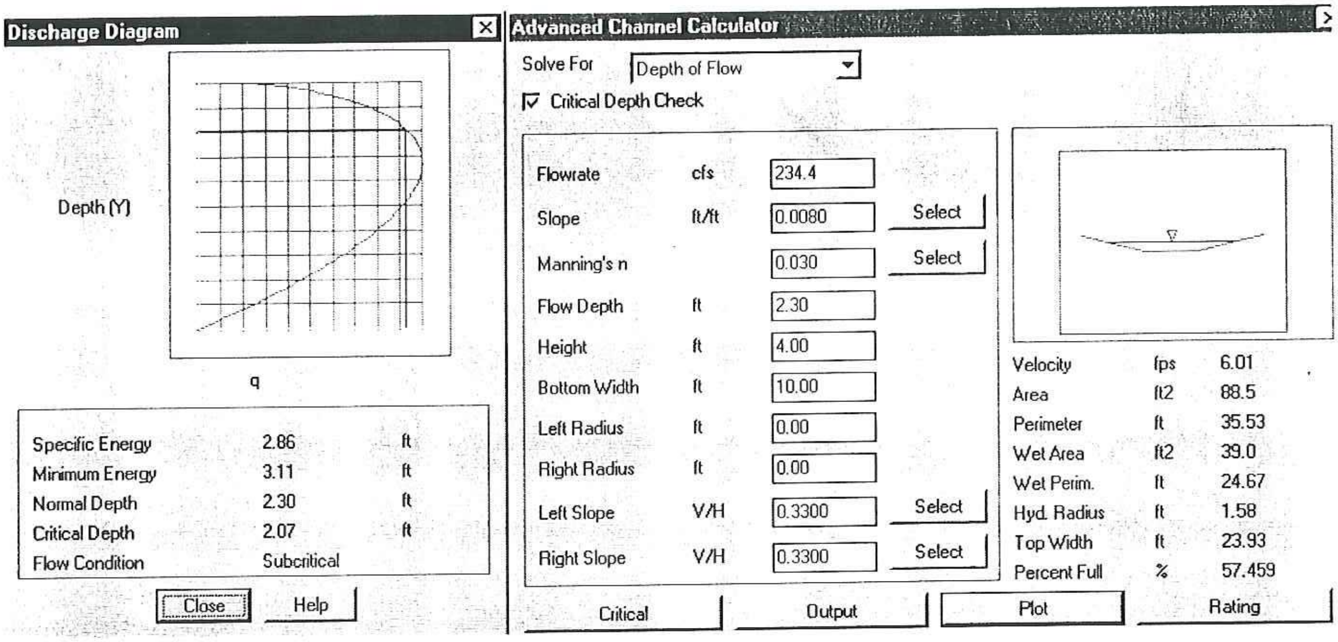
```
Entered Data:
     Shape ...........................  Circular
     Number of Barrels ...............  1
     Solving for .....................  Headwater
     Chart Number ....................  2
     Scale Number ....................  3
     Chart Description ...............  CORRUGATED METAL PIPE CULVERT
     Scale Decsription ...............  PIPE PROJECTING FROM FILL
     Overtopping .....................  Off
     Flowrate ........................  92.9 cfs
     Manning's n .....................  0.024
     Roadway Elevation ...............  171.00 ft
     Inlet Elevation .................  165.72 ft
     Outlet Elevation ................  164.02 ft
     Diameter ........................  4.50 ft
     Length ..........................  155 ft
     Entrance Loss ...................  0.800
     Tailwater .......................  3.13 ft

Computed Results:
     Headwater .......................  170.43 ft Inlet Control
     Slope ...........................  0.0110 ft/ft
     Velocity ........................  7.86 fps
```

DIS-CHARGE Flow cfs	HEAD-WATER ELEV. ft	INLET CONTROL DEPTH ft	OUTLET CONTROL DEPTH ft	FLOW TYPE	NORMAL DEPTH ft	CRITICAL DEPTH ft	OUTLET VEL. fps	OUTLET DEPTH ft	TAILWATER VEL. fps	TAILWATER DEPTH ft
50.00	168.80	3.08	0.95	NA	2.11	2.05	6.83	2.11	0.00	3.13
55.00	169.00	3.28	1.25	NA	2.23	2.15	7.00	2.23	0.00	3.13
60.00	169.19	3.47	1.56	NA	2.35	2.25	7.15	2.35	0.00	3.13
65.00	169.38	3.66	1.94	NA	2.46	2.35	7.29	2.46	0.00	3.13
70.00	169.57	3.85	2.35	NA	2.58	2.44	7.42	2.58	0.00	3.13
75.00	169.76	4.04	2.57	NA	2.70	2.53	7.54	2.70	0.00	3.13
80.00	169.95	4.23	2.83	NA	2.82	2.62	7.64	2.82	0.00	3.13
85.00	170.14	4.42	3.13	NA	2.94	2.70	7.73	2.94	0.00	3.13
90.00	170.32	4.60	3.50	NA	3.06	2.78	7.82	3.06	0.00	3.13
95.00	170.80	4.79	5.08	M2	3.19	2.78	8.04	3.19	0.00	3.13
100.00	171.31	4.98	5.59	M2	3.32	2.78	8.47	3.32	0.00	3.13
105.00	171.86	5.17	6.14	M2	3.46	2.78	8.89	3.46	0.00	3.13
110.00	172.42	5.35	6.70	M2	3.62	2.78	9.32	3.62	0.00	3.13
115.00	173.68	6.25	7.96	M2	4.50	2.78	7.23	4.50	0.00	3.13
120.00	173.86	6.36	8.14	M2	4.50	2.78	7.55	4.50	0.00	3.13

Culvert V Calculations
Results
Culvert Meets Ultimate Demand

CULVERT TAILWATER CALCULATION
Channel downstream of Culvert V



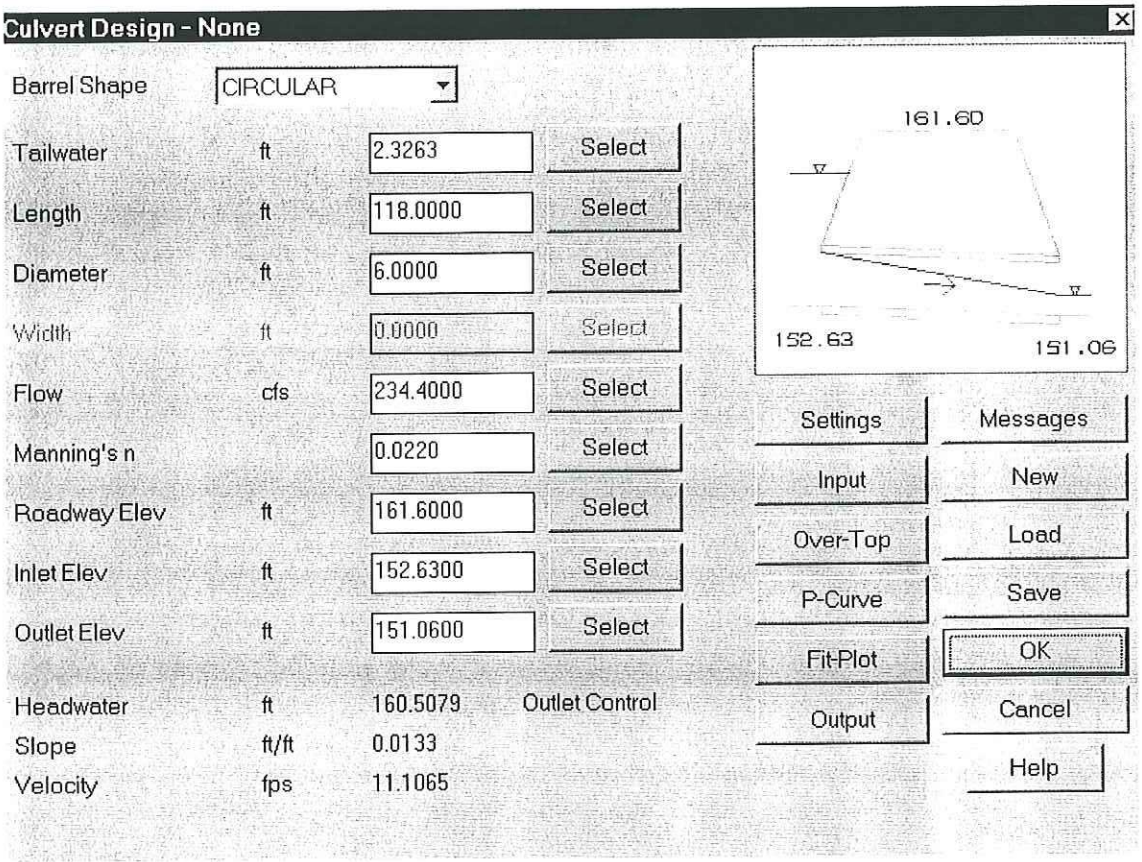
Given Input Data:

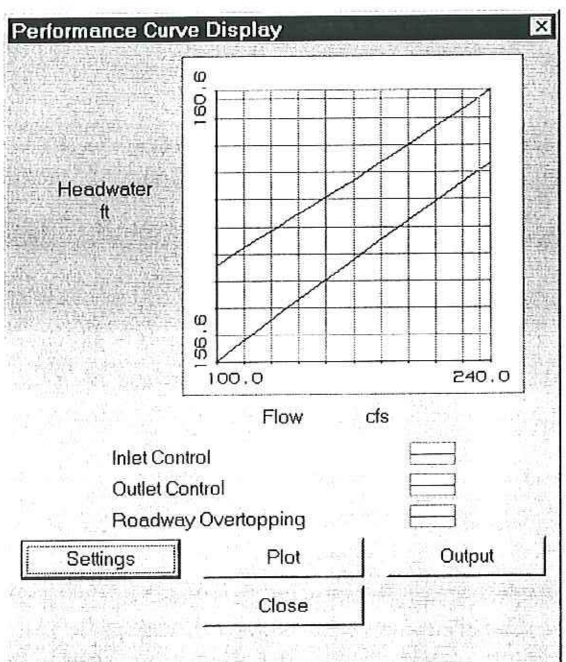
- Shape .... Advanced
- Solving for .... Depth of Flow
- Flowrate .... 234.4 cfs
- Slope .... 0.0080 ft/ft
- Manning's n .... 0.030 (Grassy/Brushy Growth)
- Height .... 4.00 ft
- Bottom width .... 10.00 ft
- Left radius .... 0.00 ft
- Right radius .... 0.00 ft
- Left slope .... 0.3300 ft/ft (V/H)
- Right slope .... 0.3300 ft/ft (V/H)

Computed Results:

- **Depth .... 2.30 ft**
- Velocity .... 6.01 fps
- Full Flowrate .... 720.3 cfs
- Flow area 39.0 ft2
- Flow perimeter .... 24.67 ft
- Hydraulic radius .... 1.58 ft
- Top width .... 23.93 ft
- Area 88.5 ft2
- Perimeter .... 35.53 ft

CULVERT V ANALYSIS





Culvert Calculator

Entered Data:

Shape	Circular
Number of Barrels	1
Solving for	Headwater
Chart Number	2
Scale Number	2
Chart Description	CORRUGATED METAL PIPE CULVERT
Scale Decsription	MITERED TO CONFORM TO SLOPE
Overtopping	Off
Flowrate	234.4000 cfs
Manning's n	0.0220
Roadway Elevation	161.6000 ft
Inlet Elevation	152.6300 ft
Outlet Elevation	151.0600 ft
Diameter	6.0000 ft
Length	118.0000 ft
Entrance Loss	0.5000
Tailwater	2.2984 ft

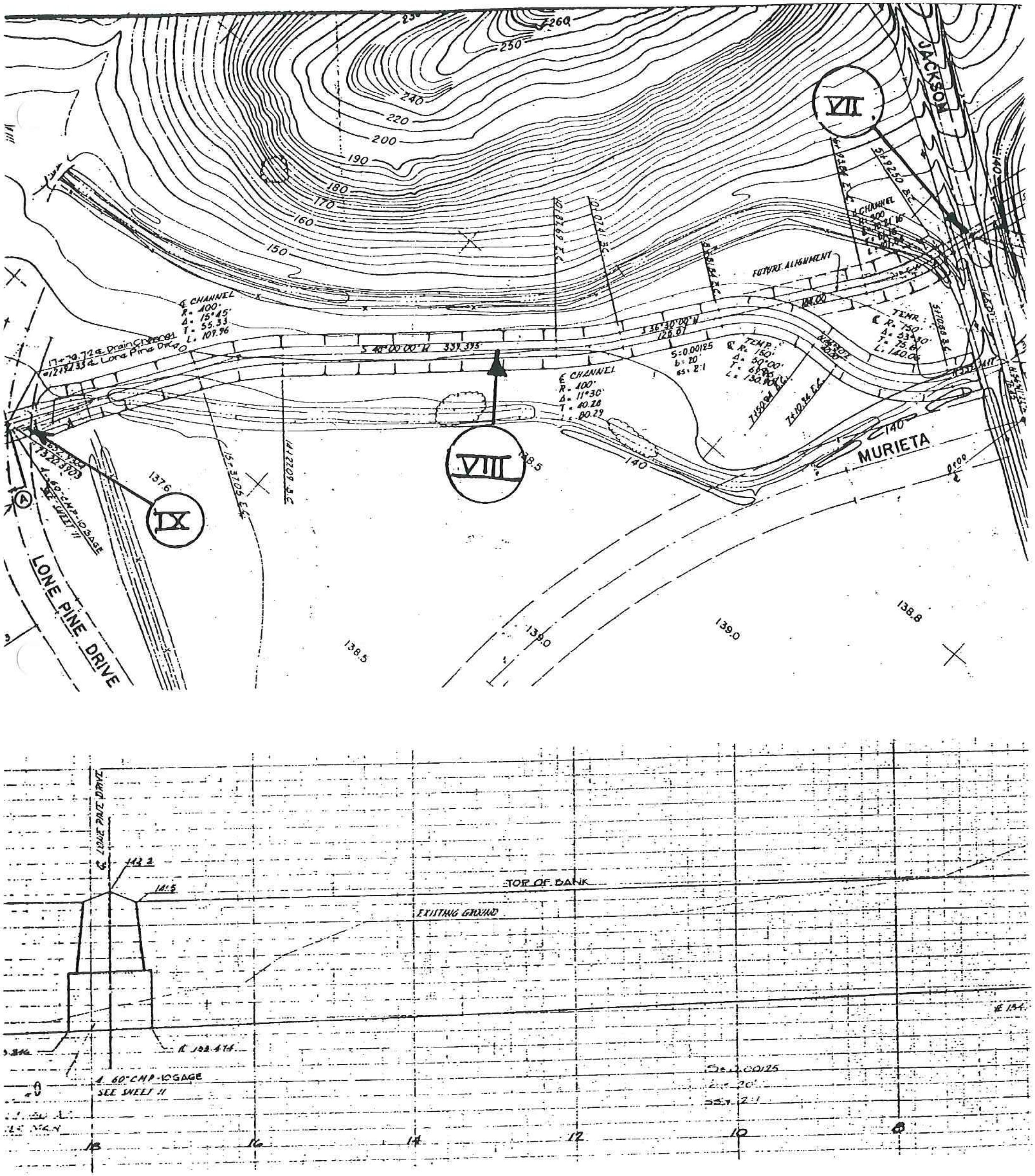
Computed Results:

Headwater	160.5079 ft Outlet Control
Slope	0.0133 ft/ft
Velocity	11.1065 fps

DIS-CHARGE Flow cfs	HEAD-WATER ELEV. ft	INLET CONTROL DEPTH ft	OUTLET CONTROL DEPTH ft	FLOW TYPE	NORMAL DEPTH ft	CRITICAL DEPTH ft	OUTLET VEL. fps	OUTLET DEPTH ft	TAILWATER VEL. fps	TAILWATER DEPTH ft
100.00	158.04	3.98	5.41	NA	2.44	4.19	8.14	2.44	4.71	1.47
110.00	158.23	4.21	5.60	NA	2.57	4.19	8.39	2.57	4.84	1.55
120.00	158.41	4.44	5.78	NA	2.70	4.19	8.63	2.70	4.97	1.62
130.00	158.59	4.66	5.96	NA	2.82	4.19	8.87	2.82	5.09	1.69
140.00	158.77	4.87	6.14	NA	2.95	4.19	9.10	2.95	5.20	1.76
150.00	158.95	5.08	6.32	NA	3.07	4.19	9.32	3.07	5.30	1.82

160.00	159.12	5.29	6.49	NA	3.19	4.19	9.54	3.19	5.40	1.89
170.00	159.30	5.50	6.67	NA	3.31	4.19	9.75	3.31	5.49	1.95
180.00	159.48	5.71	6.85	NA	3.43	4.19	9.96	3.43	5.58	2.01
190.00	159.67	5.91	7.04	NA	3.55	4.19	10.18	3.55	5.67	2.06
200.00	159.85	6.11	7.22	NA	3.67	4.19	10.39	3.67	5.75	2.12
210.00	160.04	6.32	7.41	NA	3.80	4.19	10.59	3.80	5.83	2.17
220.00	160.23	6.52	7.60	NA	3.92	4.19	10.80	3.92	5.91	2.22
230.00	160.42	6.72	7.79	NA	4.05	4.19	11.01	4.05	5.98	2.28
240.00	160.62	6.92	7.99	NA	4.18	4.19	11.22	4.18	6.05	2.33

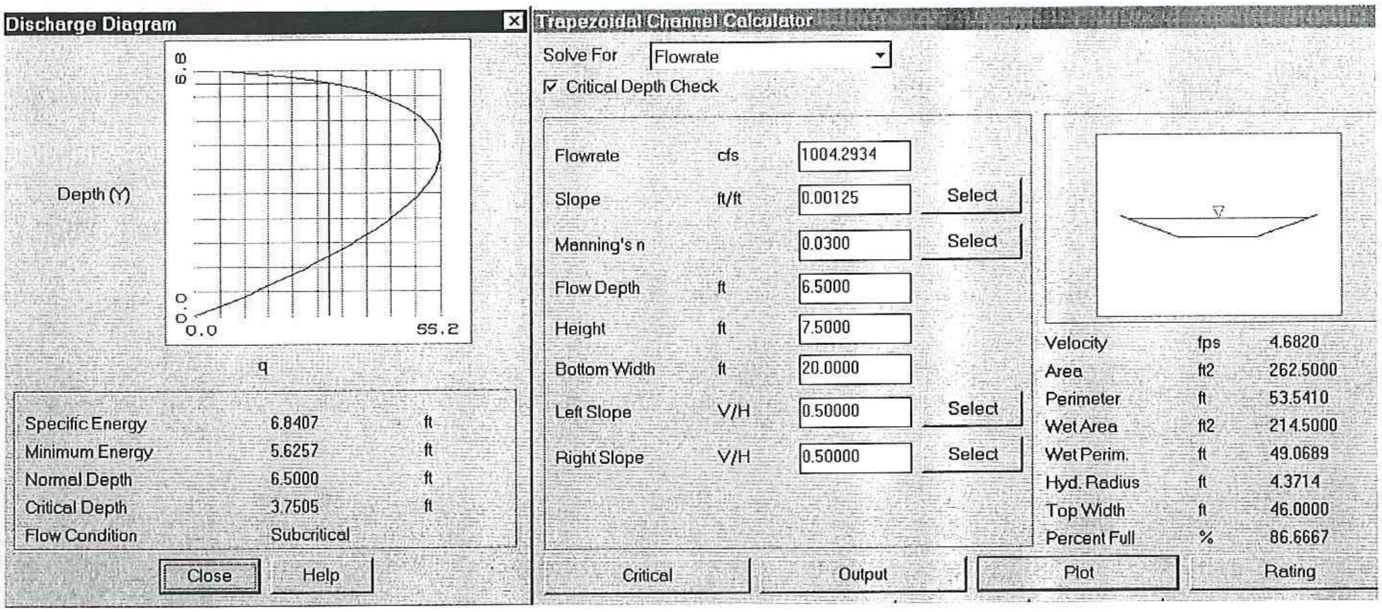
POST DEVELOPMENT
ANALYSIS OF CULVERTS VII AND IX
DOWNSTREAM OF LAGUNA JOAQUIN
100 YEAR OUTFLOW = 970.6 CFS



VIII Drainage Channel Between Culverts VII and IX
From Original Drawings

CAPACITY CHECK OF CHANNELS
(With 1' Freeboard)

Channel VIII - Downstream of Hwy 16

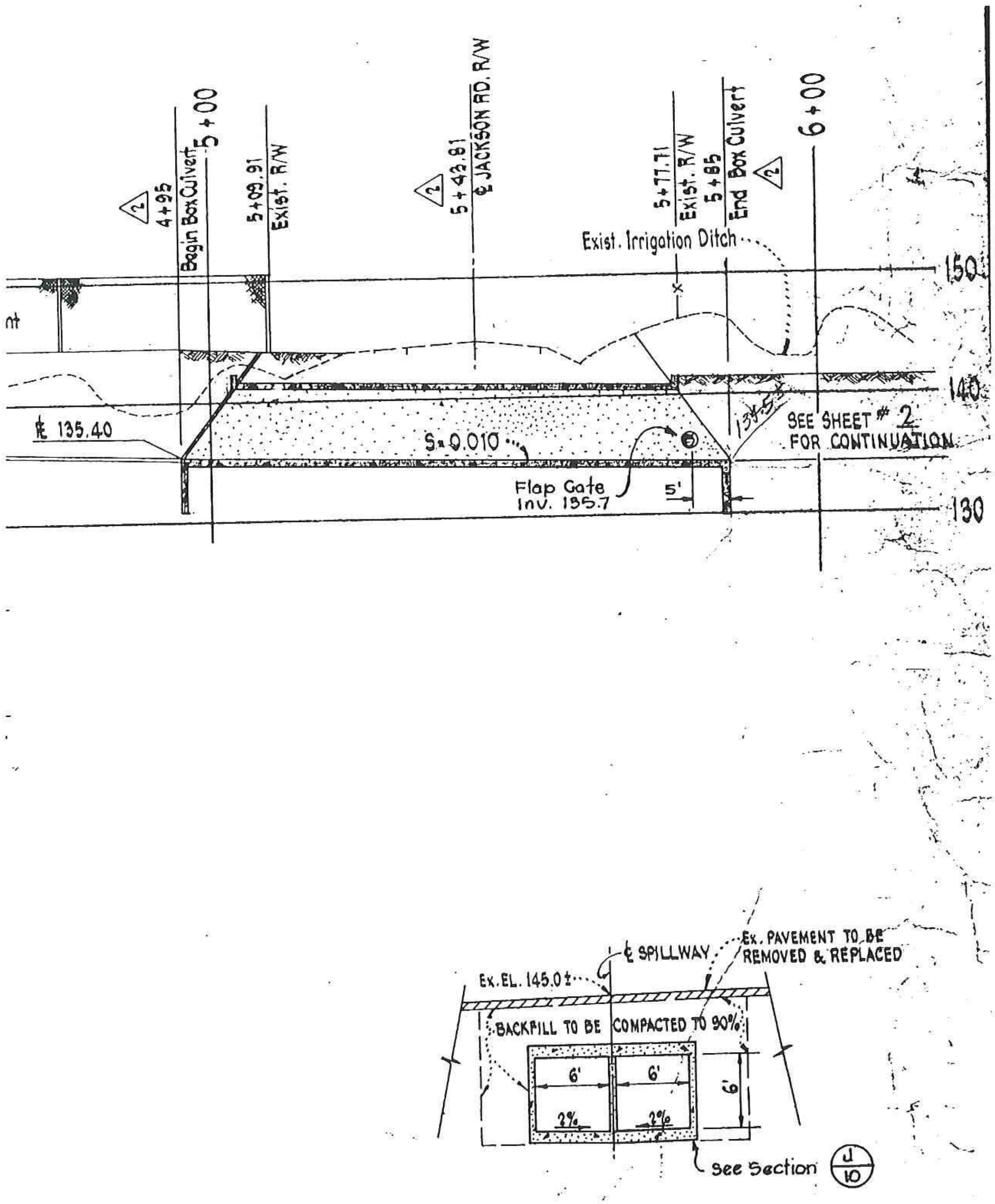


Given Input Data:

- Shape .... Trapezoidal
- Slope .... 0.00125 ft/ft
- Manning's n 0.0300
- Depth .... 6.50 ft
- Height .... 7.50 ft
- Bottom width .... 20.00 ft
- Left slope .... 0.500 ft/ft (V/H)
- Right slope .... 0.500 ft/ft (V/H)

Computed Results:

- **Flowrate Capacity.. 1004.29 cfs**
- Velocity .... 4.68 fps
- Full Flowrate .... 1326.71 cfs
- Flow area 214.50 ft2
- Flow perimeter .... 49.07 ft
- Hydraulic radius .... 4.37 ft
- Top width .... 46.00 ft
- Area 262.50 ft2
- Perimeter .... 53.54 ft
- Percent full .... 86.67 %



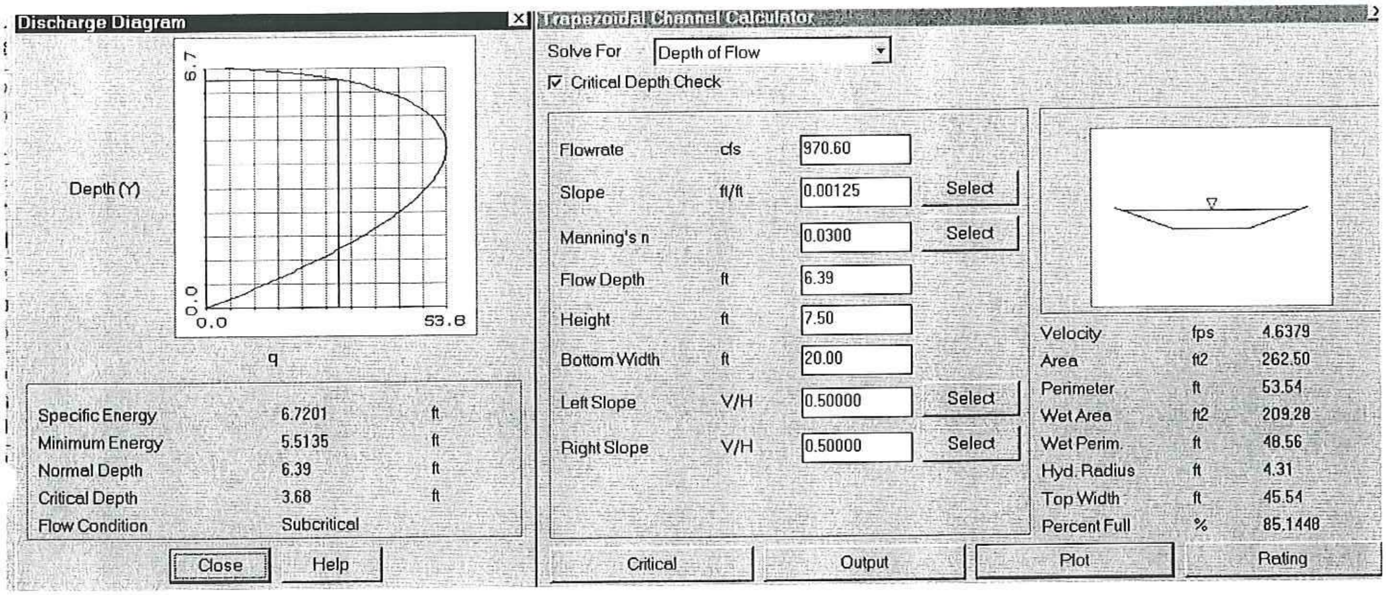
Culvert VII at Jackson Road

From Original Drawings

Calculations for Culvert and Channel Improvements Downstream of Laguna Joaquin

Capacity Check of Culverts

Determine Backwater Elevation of
Channel VIII - Downstream of Hwy 16



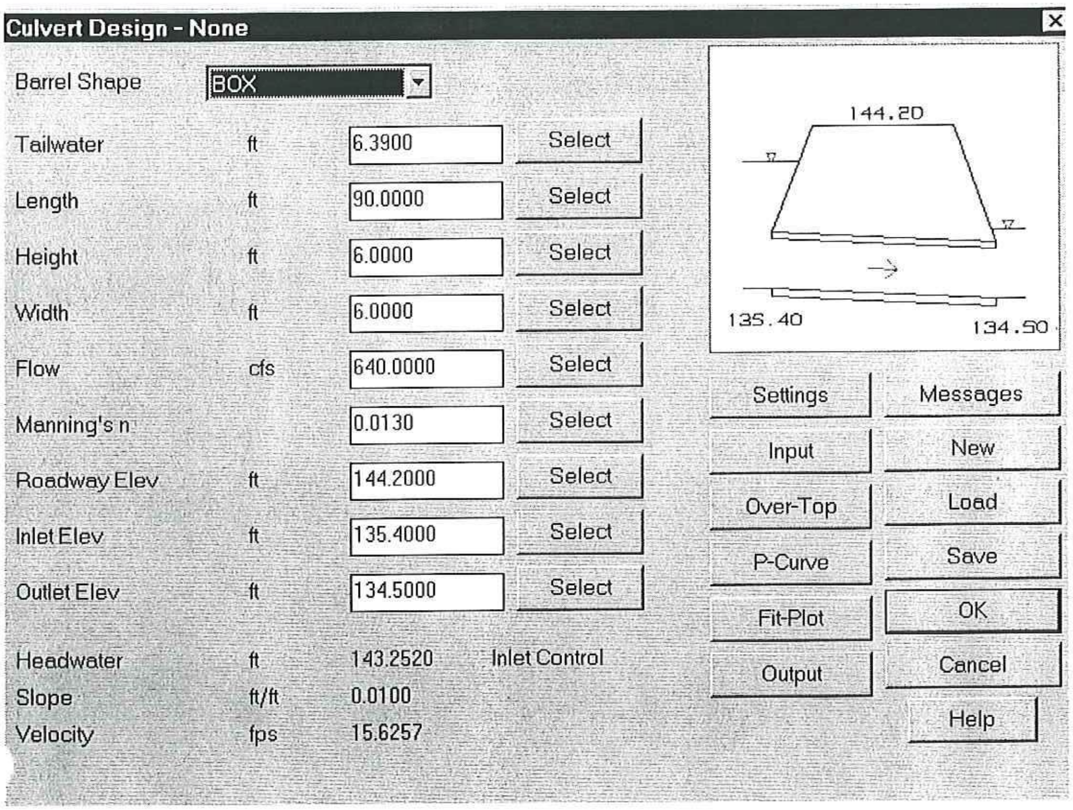
Given Input Data:

- Flowrate .... 970.60 cfs
- Slope .... 0.00125 ft/ft
- Manning's n 0.0300
- Height .... 7.50 ft
- Bottom width .... 20.00 ft
- Left slope .... 0.500 ft/ft (V/H)
- Right slope .... 0.500 ft/ft (V/H)

Computed Results:

- **Depth .... 6.39 ft**
- Velocity .... 4.63 fps
- Full Flowrate .... 1326.71 cfs
- Flow area 209.28 ft2
- Flow perimeter .... 48.56 ft
- Hydraulic radius .... 4.31 ft
- Top width .... 45.54 ft
- Area 262.50 ft2
- Perimeter .... 53.54 ft
- Percent full .... 85.14 %

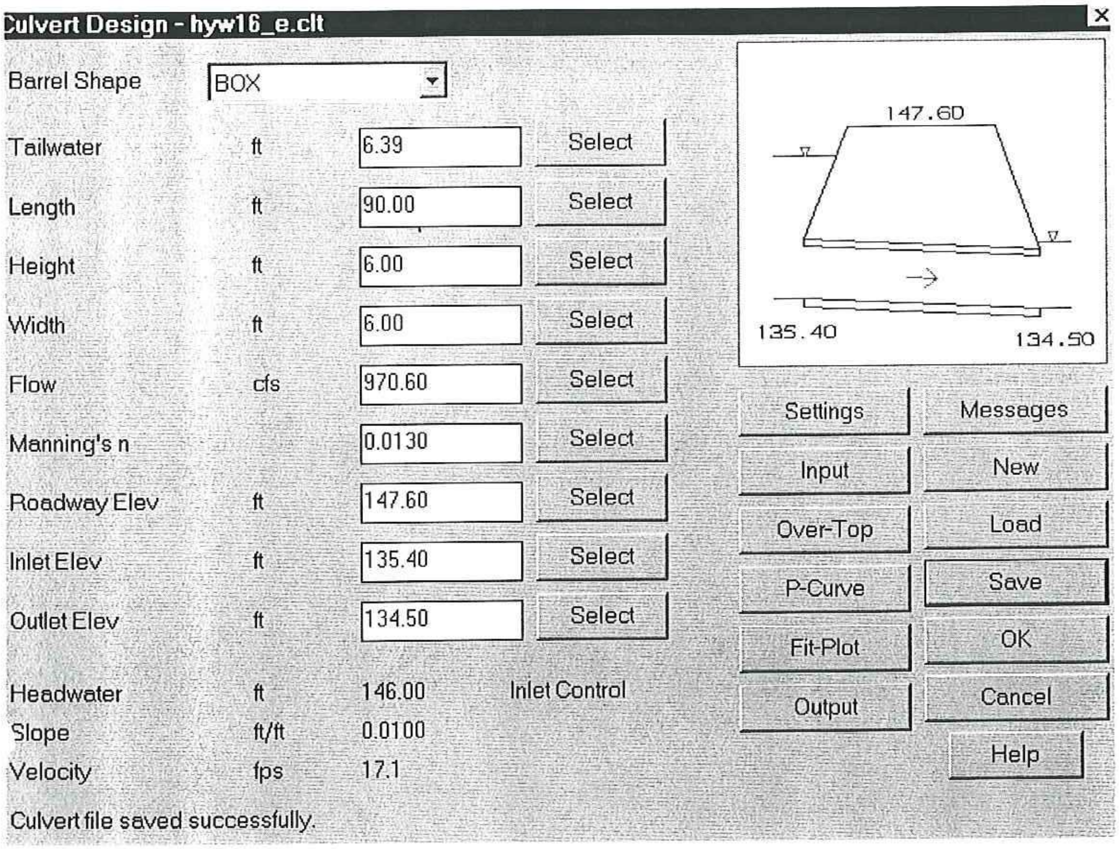
Determine Capacity of Culvert VII at Hwy 16



Entered Data:
- Shape .... Rectangular
- Number of Barrels 2
- Solving for .... Headwater
- Chart Number 8
- Scale Number 2
- Chart Description .... BOX CULVERT WITH FLARED WINGWALLS; NO INLET TOP EDGE BEVEL
- Scale Decsription .... WINGWALLS FLARED 90 OR 15 DEGREES
- Overtopping .... Off
- **Flowrate Capacity .. 640.0000 cfs**
- Manning's n 0.0130
- Roadway Elevation .... 144.2000 ft
- Inlet Elevation .... 135.4000 ft
- Outlet Elevation .... 134.5000 ft
- Height .... 6.0000 ft
- Width .... 6.0000 ft
- Length .... 90.0000 ft
- Entrance Loss 0.2000
- Tailwater .... 6.3900 ft

Computed Results:
- Headwater .... 143.2520 ft Inlet Control
- Slope .... 0.0100 ft/ft
- Velocity .... 15.6257 fps

Required Headwater to Achieve 970.6 cfs
With Modifications to Entrance Configuration

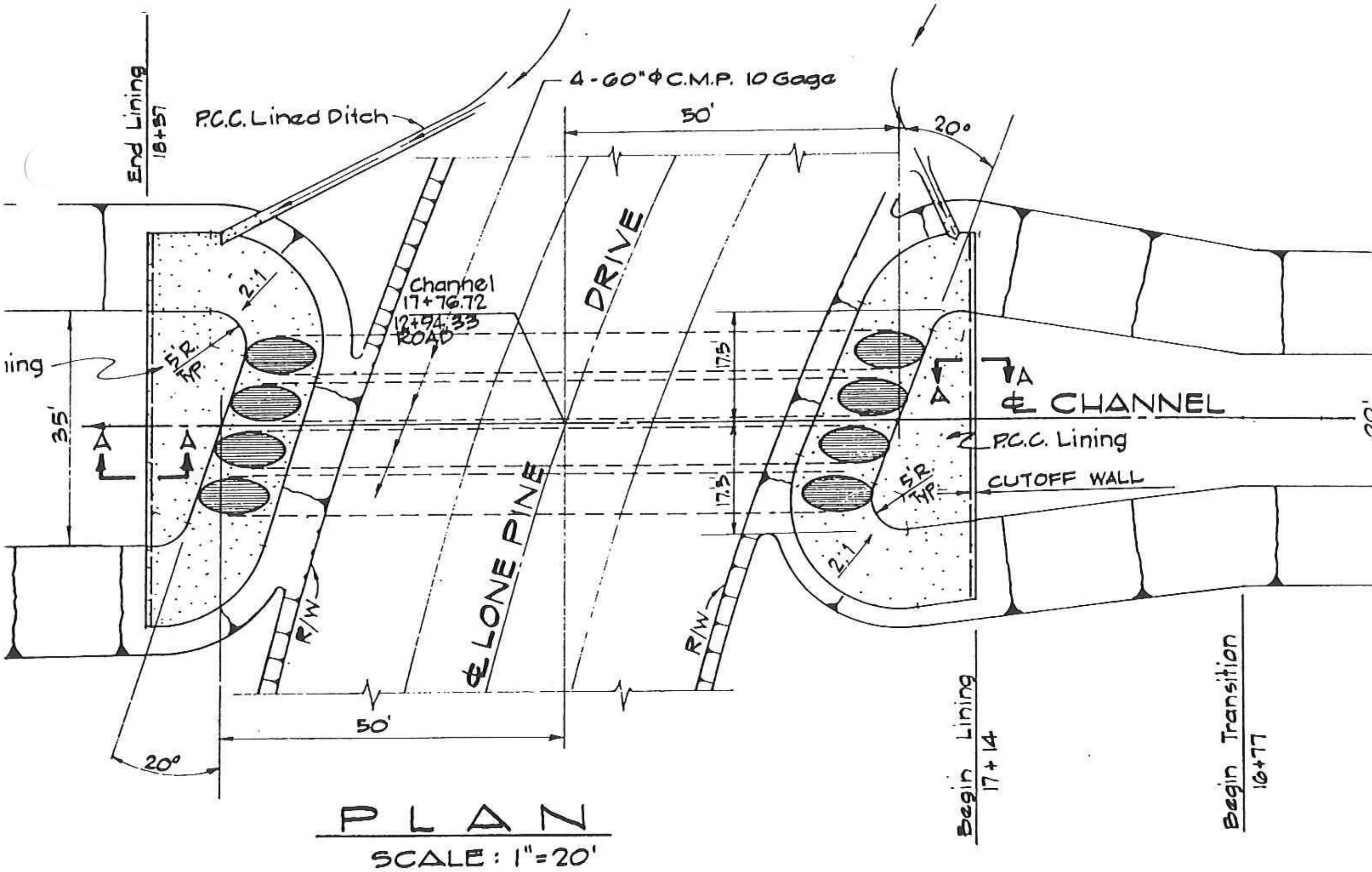


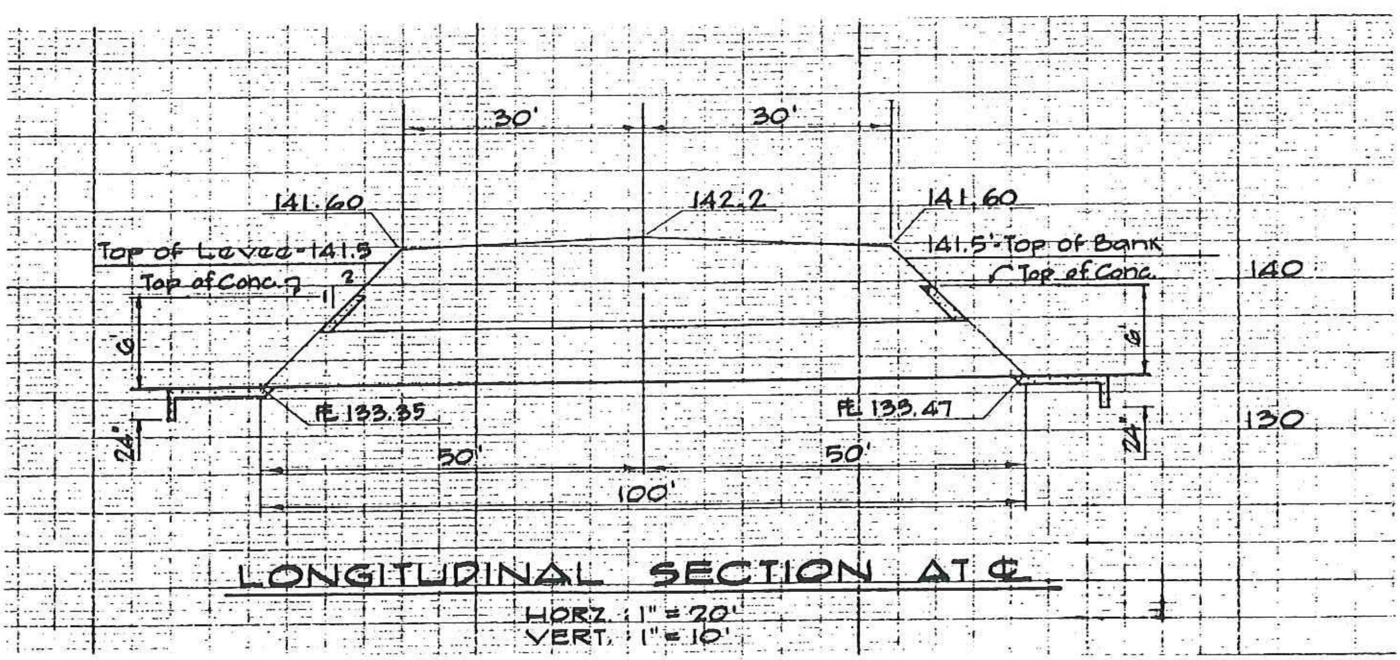
Entered Data:

- Shape .... Rectangular
- Number of Barrels 2
- Solving for .... Headwater
- Chart Number 10
- Scale Number 2
- Chart Description .... BOX CULVERT; 90-DEGREE HEADWALL; CHAMFERED OR BEVELED INLET EDGES
- Scale Decsription .... INLET EDGES BEVELED 1/2-IN/FT AT 45 DEGREES (1:1)
- Overtopping .... Off
- Flowrate .... 970.60 cfs
- Manning's n 0.0130
- Roadway Elevation .... 147.60 ft
- Inlet Elevation .... 135.40 ft
- Outlet Elevation .... 134.50 ft
- Height .... 6.00 ft
- Width .... 6.00 ft
- Length .... 90.00 ft
- Entrance Loss 0.2000
- Tailwater .... 6.39 ft

Computed Results:

- **Headwater .... 146.00 ft Inlet Control**
- Slope .... 0.0100 ft/ft
- Velocity .... 17.14 fps

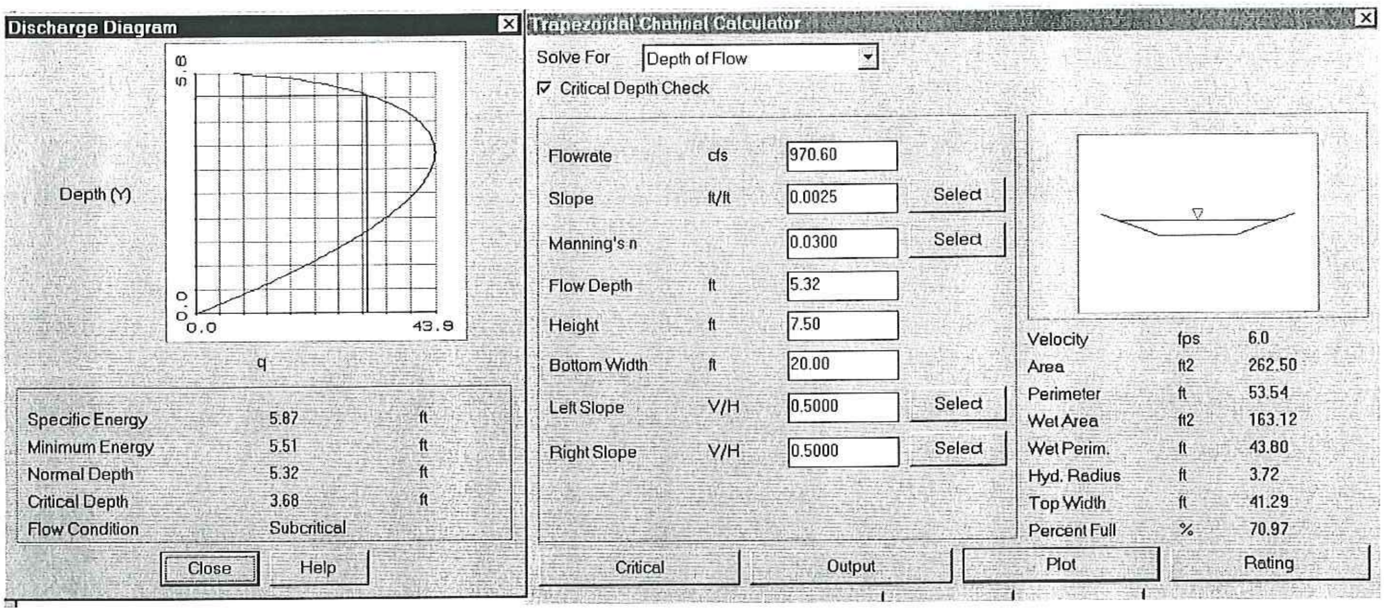




Culvert IX at Lone Pine Drive

From Original Drawings

Determine Backwater Elevation of
Channel Downstream of Culvert IX



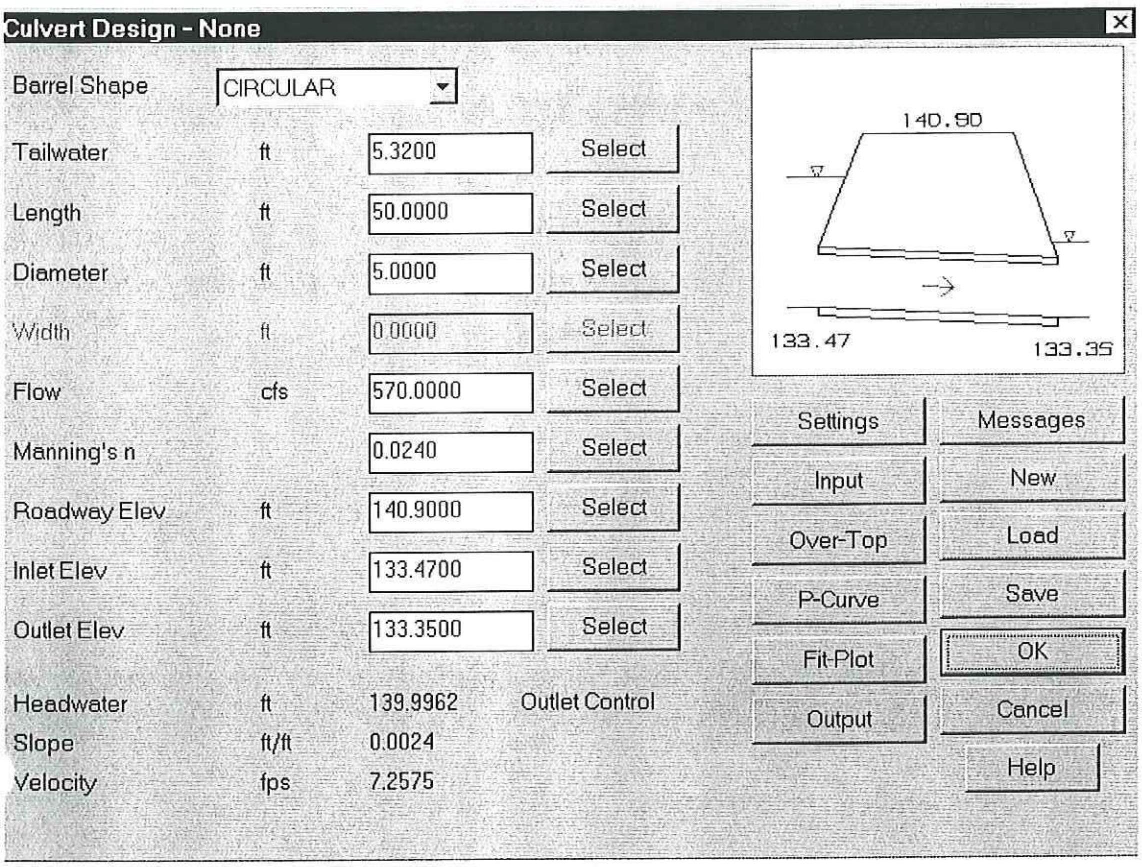
Given Input Data:

- Shape .... Trapezoidal
- Solving for .... Depth of Flow
- Flowrate .... 970.60 cfs
- Slope .... 0.0025 ft/ft
- Manning's n 0.0300
- Height .... 7.50 ft
- Bottom width .... 20.00 ft
- Left slope .... 0.5000 ft/ft (V/H)
- Right slope .... 0.5000 ft/ft (V/H)

Computed Results:

- **Depth .... 5.32 ft**
- Velocity .... 6.0 fps
- Full Flowrate .... 1876.26 cfs
- Flow area 163.12 ft2
- Flow perimeter .... 43.80 ft
- Hydraulic radius .... 3.72 ft
- Top width .... 41.29 ft
- Area 262.50 ft2
- Perimeter .... 53.54 ft
- Percent full .... 70.97 %

Determine Capacity of Culvert IX at Lone Pine Drive



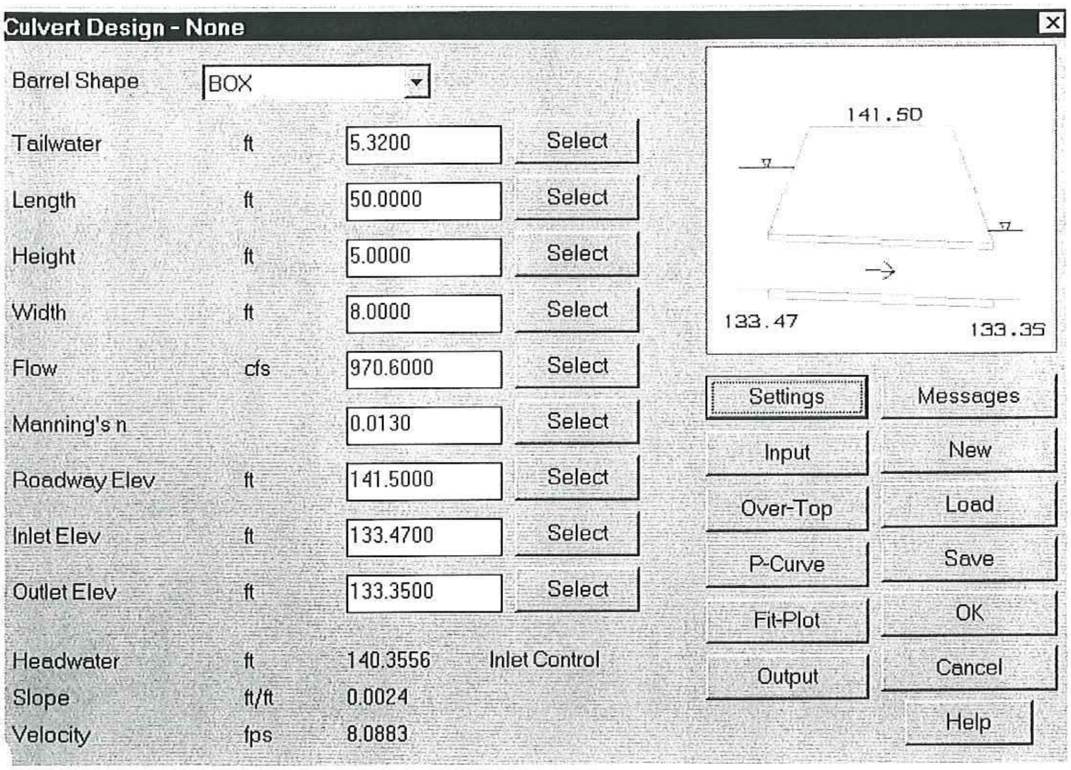
Entered Data:

- Shape .... Circular
- Number of Barrels 4
- Solving for .... Headwater
- Chart Number 2
- Scale Number 2
- Chart Description .... CORRUGATED METAL PIPE CULVERT
- Scale Decsription .... MITERED TO CONFORM TO SLOPE
- Overtopping .... Off
- **Flowrate .... 570.0000 cfs**
- Manning's n 0.0240
- Roadway Elevation .... 140.9000 ft
- Inlet Elevation .... 133.4700 ft
- Outlet Elevation .... 133.3500 ft
- Diameter .... 5.0000 ft
- Length .... 50.0000 ft
- Entrance Loss 0.0000
- Tailwater .... 5.3200 ft

Computed Results:

- Headwater .... 139.9962 ft Outlet Control
- Slope .... 0.0024 ft/ft
- Velocity .... 7.2575 fps

Determine Size of Replacement Culvert IX
Results: Triple 5'x8' Box Culvert



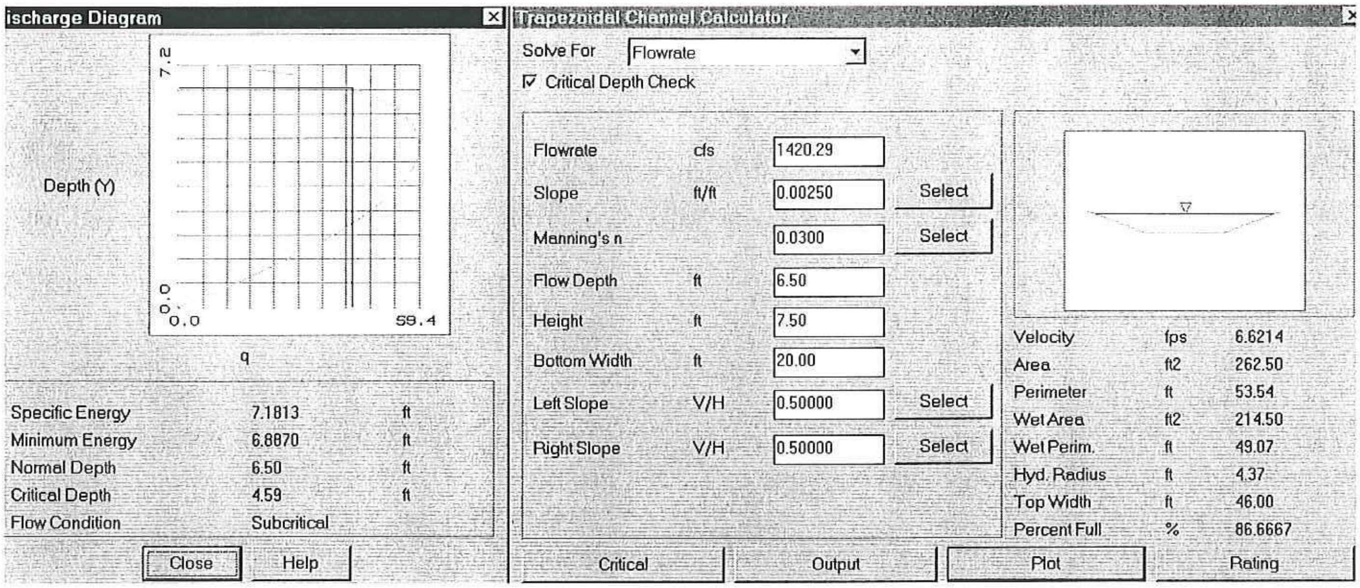
Entered Data:

Shape .... Rectangular
Number of Barrels 3
Solving for .... Headwater
Chart Number 8
Scale Number 2
Chart Description .... BOX CULVERT WITH FLARED WINGWALLS; NO INLET TOP EDGE BEVEL
Scale Decsription .... WINGWALLS FLARED 90 OR 15 DEGREES
Overtopping .... Off
Flowrate .... 970.6000 cfs
Manning's n 0.0130
Roadway Elevation .... 141.5000 ft
Inlet Elevation .... 133.4700 ft
Outlet Elevation .... 133.3500 ft
Height .... 5.0000 ft
Width .... 8.0000 ft
Length .... 50.0000 ft
Entrance Loss 0.2000
Tailwater .... 5.3200 ft

Computed Results:

Headwater .... 140.3556 ft Inlet Control
Slope .... 0.0024 ft/ft
Velocity .... 8.0883 fps

Channel IX - Downstream of Loan Pine Drive
Capacity



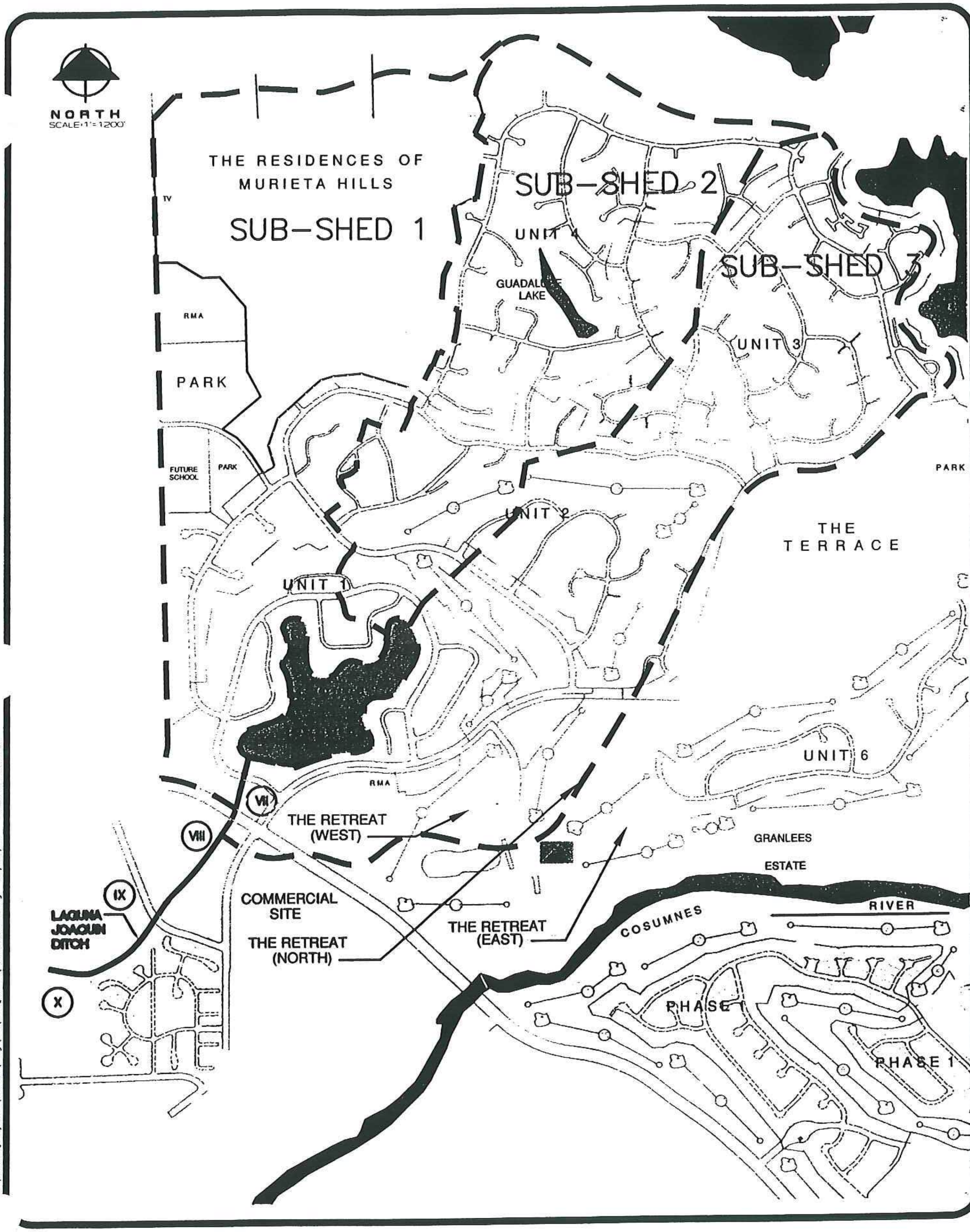
Given Input Data:

Slope .... 0.00250 ft/ft
Manning's n 0.0300
Depth .... 6.50 ft
Height .... 7.50 ft
Bottom width .... 20.00 ft
Left slope .... 0.500 ft/ft (V/H)
Right slope .... 0.500 ft/ft (V/H)

Computed Results:

Flowrate Capacity.. 1420.29 cfs
Velocity .... 6.6214 fps
Full Flowrate .... 1876.26 cfs
Flow area 214.50 ft2
Flow perimeter .... 49.07 ft
Hydraulic radius .... 4.37 ft
Top width .... 46.00 ft
Area 262.50 ft2
Perimeter .... 53.54 ft
Percent full .... 86.67 %

ANALYSIS OF SUB-AREAS 1-3
Per The
SACRAMENTO COUNTY METHOD
(HEC-HMS)



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CIVIL ENGINEERING • PLANNING • LAND SURVEYING
SAN RAMON, CA. 94583 (925) 901-1190

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Exhibit 5
Laguna Joaquin Drainage Shed

Rancho Murieta North Infrastructure Master Plan

% Impervious,
n-Values and
Soil Infiltration

Composite %-Impervious and Lag 'n' - Value

Post Development Conditions							
	AREA						
Location	Acre Total	Open Space	Housing Tract	Laguna Joaquin	Sum %Imp x A	Weighted %Imp	n
	% Imperv	2	25	95			
Sub Area #1	321	87.9	233.1	8.0	6763.3	21	0.093
Sub Area #2	240	40.0	200.0	8.0	5840.0	24	0.090
Sub Area #3	339	46.6	292.4	8.0	8163.2	24	0.090
TOTAL	900	174.5	725.5	24.0			

Pre Development Conditions							
	AREA						
Location	Acre Total	Open Space	Housing Tract	Laguna Joaquin	Sum %Imp x A	Weighted %Imp	n
	% Imperv	2	25	95			
Sub Area #1	321	192.5	128.5	8.0	4357.5	14	0.096
Sub Area #2	240	40.0	200.0	8.0	5840.0	24	0.090
Sub Area #3	339	93.9	245.1	8.0	7075.3	21	0.093
TOTAL	900	326.4	573.6	24.0			

Basin "n" Method (continued)

Determining the Basin "n"

The basin "n" value is dependent on the basin land use and the condition of the main drainage course. For basins with mixed land use and/or varying characteristics of the main drainage course, the basin "n" should be weighted for the areas draining to each type of channel development. Table 7-1 contains recommended basin "n" values[3]. The shaded values in Table 7-1 are normally not used. However, these values may be used for planning purposes to estimate the effect of channelization, or to estimate a composite "n" for large areas with mixed land use and channelization.

Table 7-1. Basin "n" for Unit Hydrograph Lag Equation

Basin Land Use	Percent Impervious	Channelization Description	
		Developed Pipe/Channel	Undeveloped Natural
Highways, Parking	95	0.030	0.067
Commercial, Offices	90	0.031	0.070
Intensive Industrial	85	0.032	0.071
Apartments, High Density Res.	80	0.033	0.072
Mobil Home Park	75	0.034	0.073
Condominiums, Med. Density Res.	70	0.035	0.074
Residential 8-10 du/acre (20-25 du/ha), Ext Industrial	60	0.037	0.076
Residential 6-8 du/acre (15-20 du/ha), Low Density Res., School	50	0.040	0.080
Residential 4-6 du/acre (10-15 du/ha)	40	0.042	0.084
Residential 3-4 du/acre (7.5-10 du/ha)	30	0.046	0.088
Residential 2-3 du/acre (5-7.5 du/ha)	25	0.050	0.090
Residential 1-2 du/acre (2.5-5 du/ha)	20	0.053	0.093
Residential .5-1 du/acre (1-2.5 du/ha)	15	0.056	0.096
Residential .2-.5 du/acre (0.5-1 du/ha), Ag Res.	10	0.060	0.100
Residential <.2 du/acre (0.5 du/ha), Recreation	5	0.065	0.110
Open Space, Grassland, Ag	2	0.070	0.115
Open Space, Woodland, Natural	1	0.075	0.120
Dense Oak, Shrubs, Vines	1	0.080	0.150
Shaded values are normally not used.			

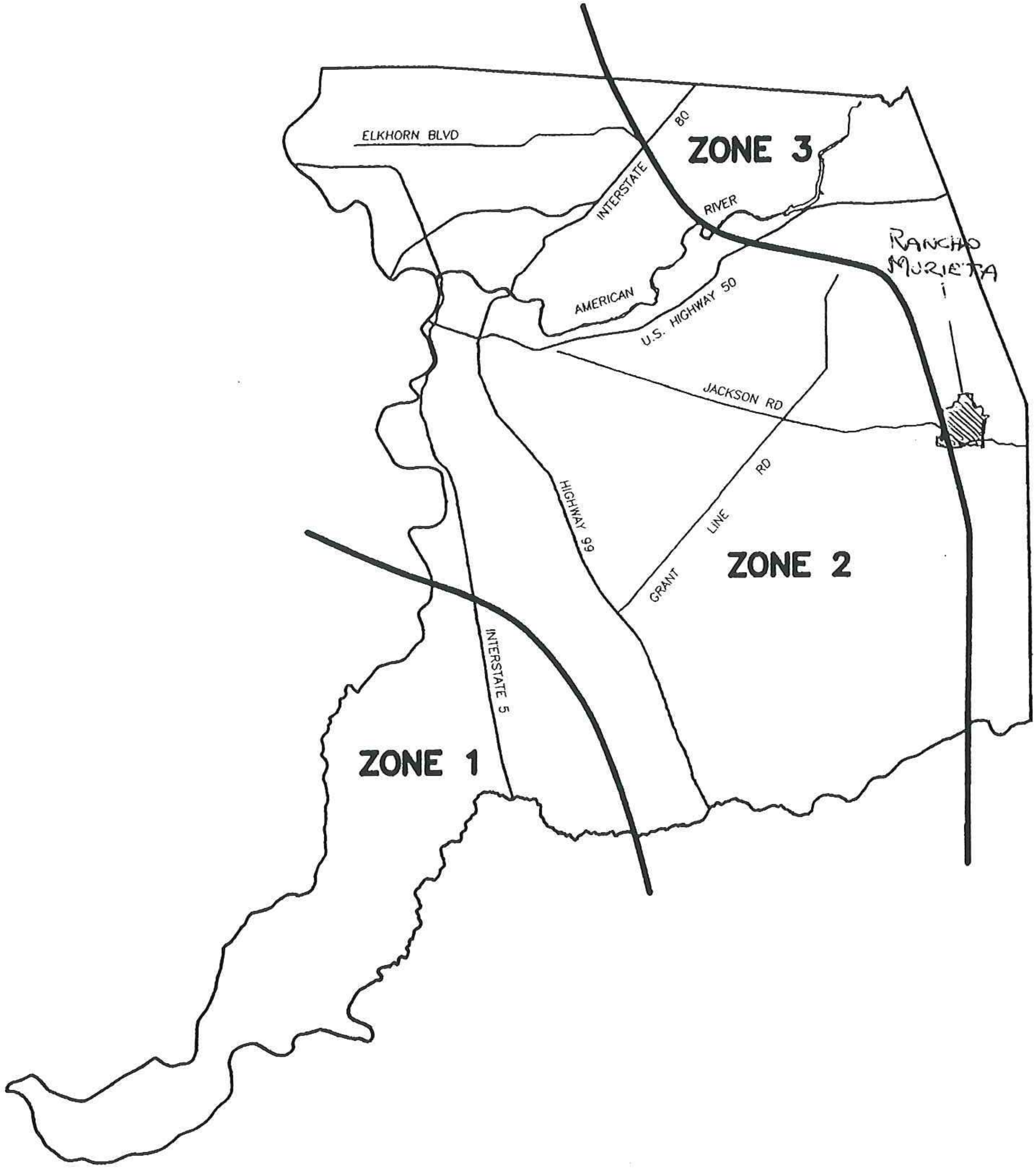
Infiltration (continued)

Constant Losses (Cont.)

Table 5-2. Infiltration Rates by Hydrologic Soil-Cover Groups (inches/hour)

Cover	% Imp	Soil Group		
		B	C	D
Highways, Parking	95	0.14	0.07	0.04
Commercial, Offices	90	0.16	0.08	0.05
Intensive Industrial	85	0.162	0.082	0.052
Apartments, HDR	80	0.165	0.085	0.055
Mobil Home Park	75	0.167	0.087	0.057
Condominiums, MDR	70	0.17	0.09	0.06
Residential: 8-10 du/acre, Ext Indust	60	0.18	0.10	0.07
Residential: 6-8 du/acre, LDR, School	50	0.18	0.10	0.07
Residential: 4-6 du/acre	40	0.18	0.10	0.07
Residential: 3-4 du/acre	30	0.18	0.10	0.07
Residential: 2-3 du/acre	25	0.18	0.10	0.07
Residential: 1-2 du/acre	20	0.18	0.10	0.07
Residential: 0.5-1 du/acre	15	0.18	0.10	0.07
Residential: 0.2-0.5 du/acre, Ag Res	10	0.18	0.10	0.07
Residential: <0.2 du/acre, Recreation	5	0.18	0.10	0.07
Open Space, Grassland, Ag	2	0.18	0.10	0.07
Open Space, Woodland, Natural	1	0.19	0.11	0.08
Dense Oak, Shrubs, Vines	1	0.25	0.16	0.12

*Sacramento County does not contain significant areas of Type "A" soils.



Note : See foldout map in the back of Hydrology Standards for larger scale map of Rainfall Zones.

Sacramento City and County Rainfall Zones Sacramento Method

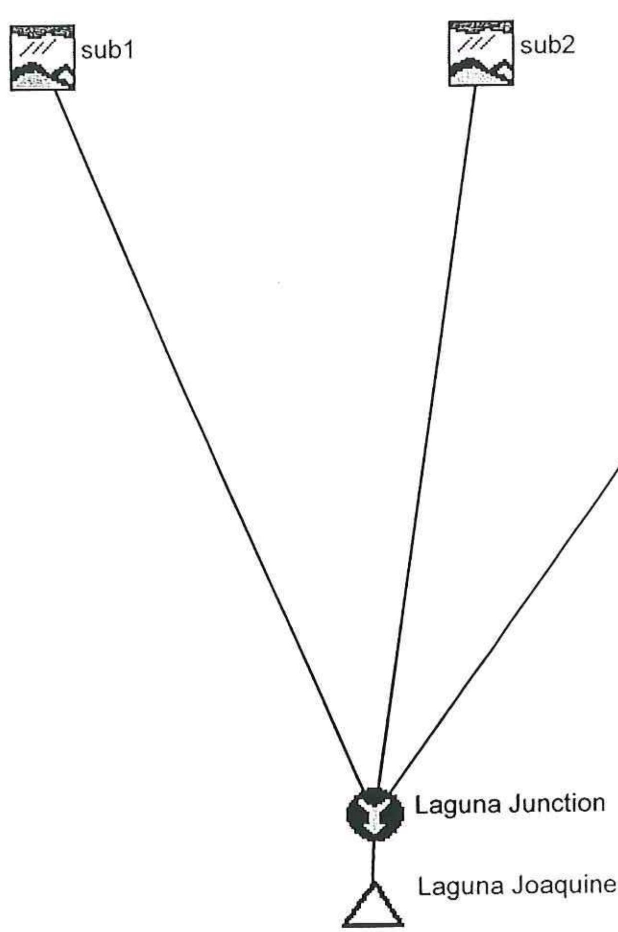
Date **December 1996**

Figure **2-11**

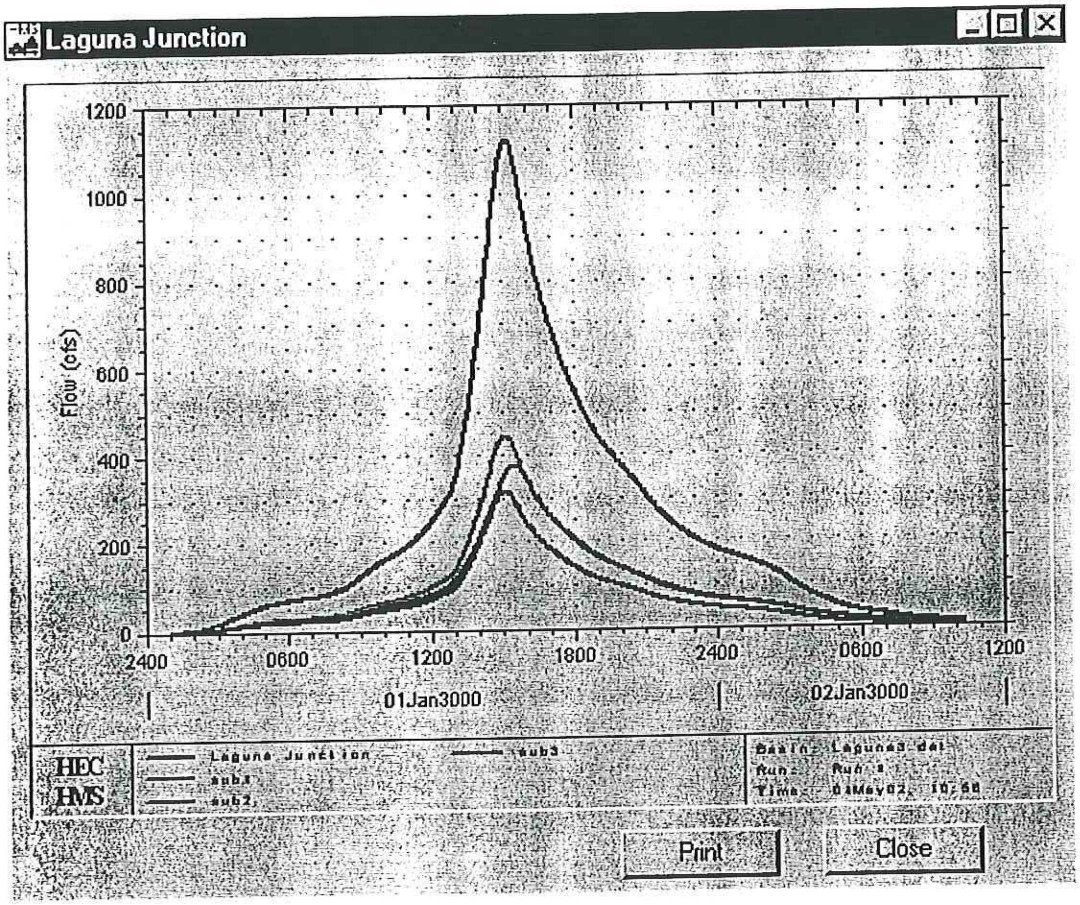
PRE-DEVELOPMENT
LAGUNA JOAQUIN TRIBUTARIES
HEC-HMS

Sub Areas 1-3

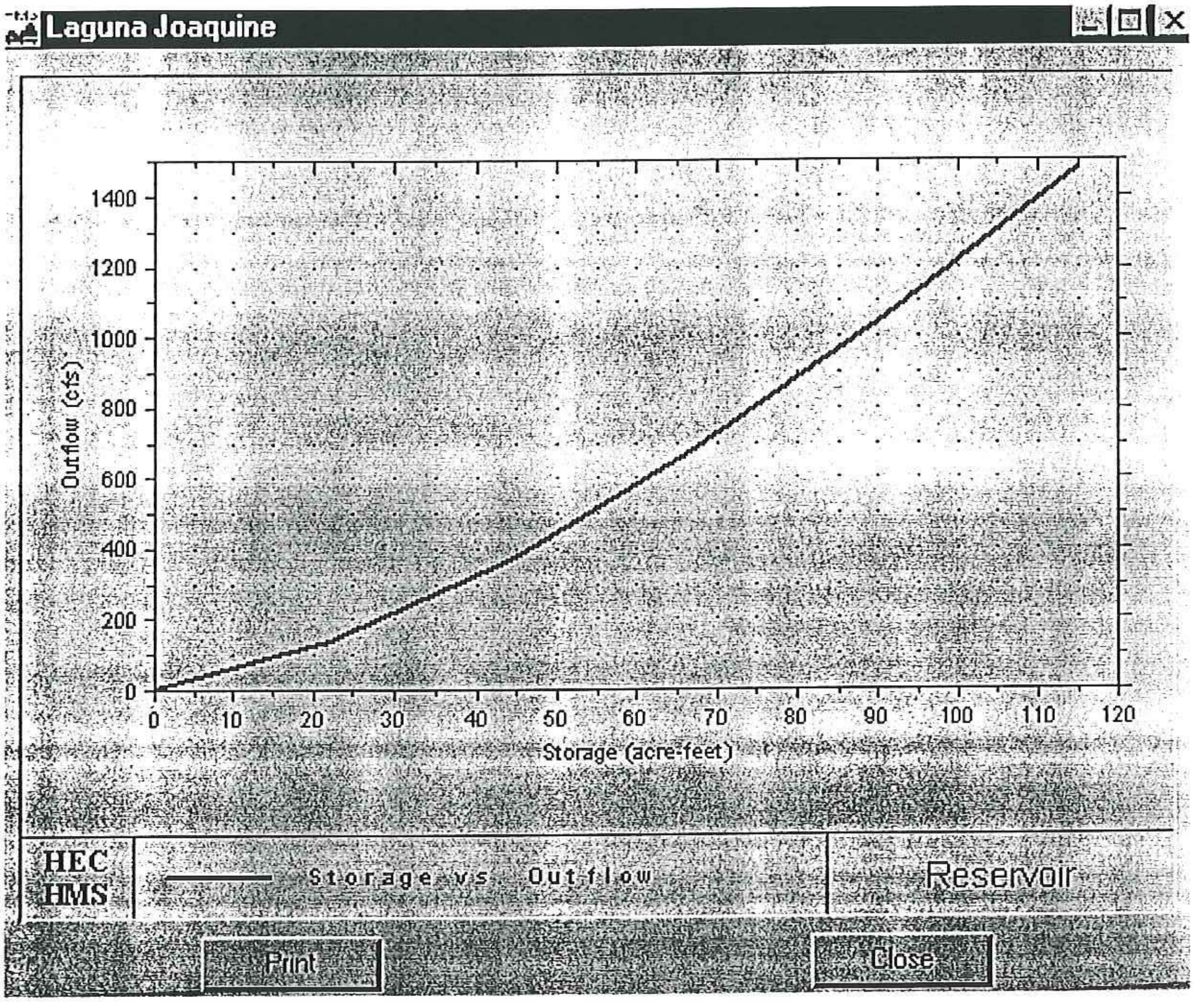
HEC-HMS Project: Laguna3 Basin Model: Laguna3.dat



Laguna Junction and Tributaries



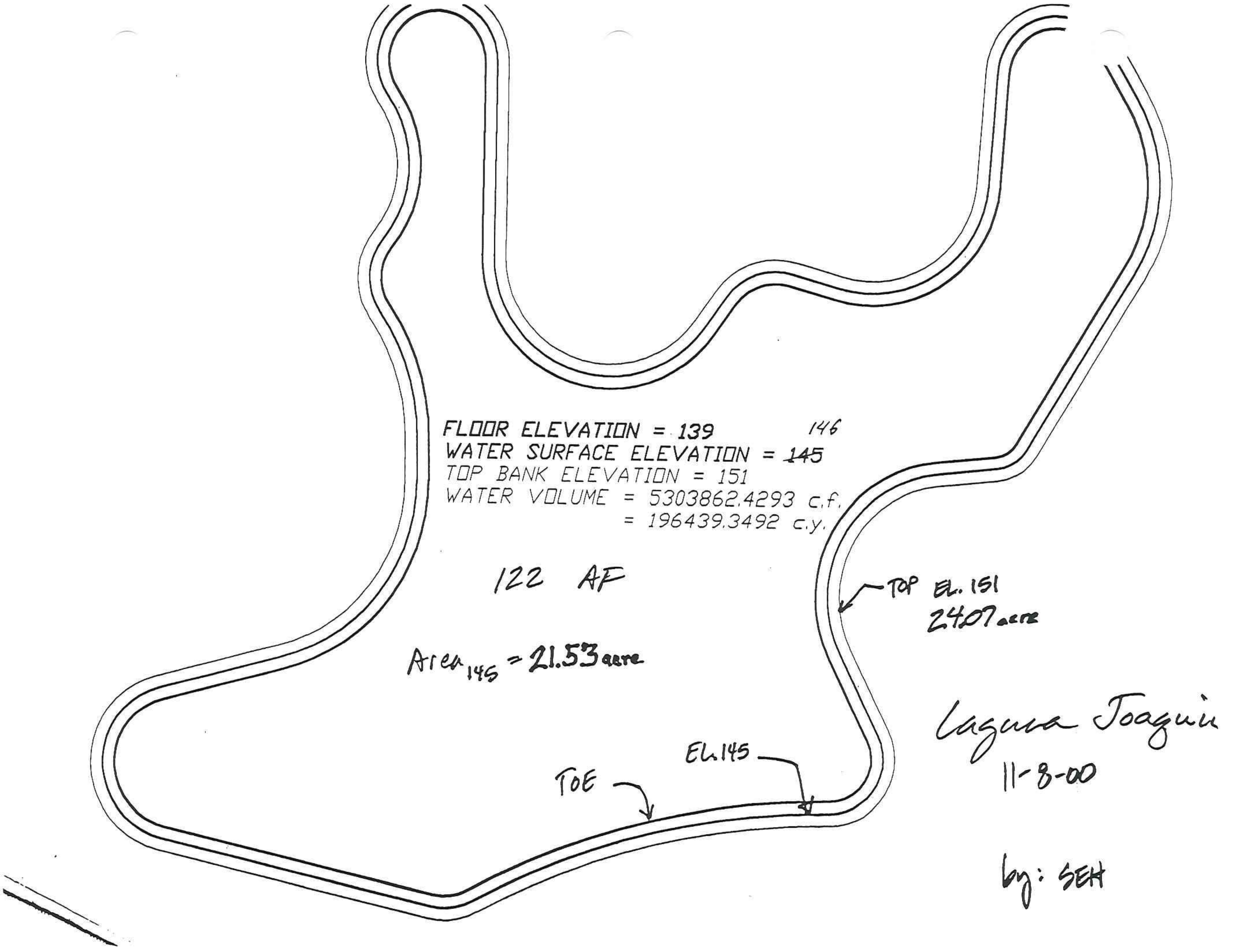
Laguna Joaquin Storage-Outflow



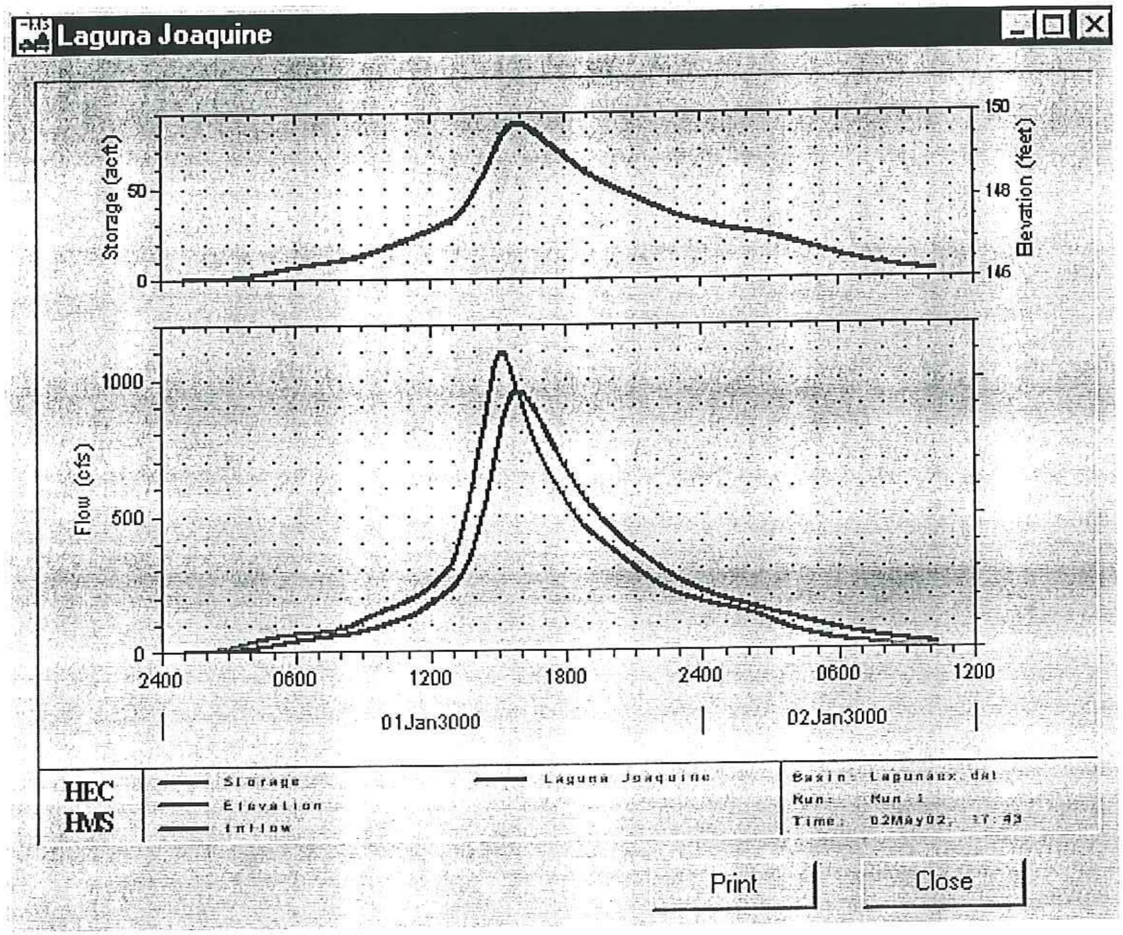
	Storage - Elevation Chart				
	Elev (ft)	Area (Acre)	Avg Area (Acre)	Storage (Acre-ft)	Weir Outflow (cfs)
	145	21.53		0	
			21.74		
	146	21.95		0	0
			22.16		
1	147	22.38		22.16	132
			22.59		
2	148	22.80		44.75	373
			23.01		
3	149	23.22		67.76	686
			23.43		
4	150	23.65		91.20	1056
			23.86		
5	151	24.07		115.05	1476

Weir Coefficient
C= 3.3

Weir Elevation = 146'


FLOOR ELEVATION = 139
WATER SURFACE ELEVATION = ~~145~~ 146
TOP BANK ELEVATION = 151
WATER VOLUME = 5303862.4293 c.f.
= 196439.3492 c.y.
122 AF
Area145 = 21.53 acre
TOP EL. 151
24.07 acre
EL. 145
TOE
Laguna Joaquin
11-8-00
by: SEH

Laguna Joaquin Existing Conditions



Peak Elevation = 149.~~77~~.72

Peak Outflow = 951.28 cfs

Top Elevation = 151.00’

Storage-Outflow Characteristics
Identical to Ultimate conditions.

HMS * Summary of Results

Project : Laguna Ex Run Name : Run 1

Start of Run : 01Jan00 0100 Basin Model : Lagunaex.dat
End of Run : 02Jan00 1018 Met. Model : Lagunaex.dat
Execution Time : 09May02 1415 Control Specs : Lagunaex.dat

Hydrologic Element	Discharge Peak (cfs)	Time of Peak	Volume (ac ft)	Drainage Area (sq mi)
Sub1	363.35	01 Jan 00 1532	217.67	0.502
Sub2	314.09	01 Jan 00 1502	171.45	0.375
Sub3	429.62	01 Jan 00 1510	238.74	0.530
Laguna Junction	1094.9	01 Jan 00 1514	627.86	1.407
Laguna Joaquine	951.28	01 Jan 00 1556	624.31	1.407

HMS * Summary of Results for Laguna

Junction

Project : Laguna Ex   Run Name : Run 1

Start of Run : 01Jan00 0100   Basin Model : Lagunaex.dat

End of Run : 02Jan00 1018   Met. Model : Lagunaex.dat

Execution Time : 09May02 1415   Control Specs : Lagunaex.dat

Date	Time	Inflow (cfs) from Sub1	Inflow (cfs) from Sub2	Inflow (cfs) from Sub3	Outflow (cfs)
01 Jan 00	0100	0.0	0.0	0.0	0.0
01 Jan 00	0102	0.0	0.0	0.0	0.0
01 Jan 00	0104	0.0	0.0	0.0	0.0
01 Jan 00	0106	0.0	0.0	0.0	0.0
01 Jan 00	0108	0.0	0.0	0.0	0.1
01 Jan 00	0110	0.0	0.0	0.0	0.1
01 Jan 00	0112	0.0	0.0	0.0	0.1
01 Jan 00	0114	0.0	0.0	0.1	0.1
01 Jan 00	0116	0.0	0.1	0.1	0.2
01 Jan 00	0118	0.0	0.1	0.1	0.2
01 Jan 00	0120	0.1	0.1	0.1	0.2
01 Jan 00	0122	0.1	0.1	0.1	0.3
01 Jan 00	0124	0.1	0.1	0.1	0.3
01 Jan 00	0126	0.1	0.2	0.2	0.4
01 Jan 00	0128	0.1	0.2	0.2	0.5
01 Jan 00	0130	0.1	0.2	0.2	0.5
01 Jan 00	0132	0.1	0.2	0.3	0.6
01 Jan 00	0134	0.1	0.3	0.3	0.7
01 Jan 00	0136	0.2	0.3	0.3	0.8
01 Jan 00	0138	0.2	0.3	0.4	0.9
01 Jan 00	0140	0.2	0.4	0.4	1.0
01 Jan 00	0142	0.2	0.4	0.4	1.1
01 Jan 00	0144	0.2	0.4	0.5	1.2
01 Jan 00	0146	0.3	0.5	0.5	1.3
01 Jan 00	0148	0.3	0.5	0.6	1.4
01 Jan 00	0150	0.3	0.6	0.6	1.5
01 Jan 00	0152	0.3	0.6	0.7	1.6
01 Jan 00	0154	0.4	0.7	0.7	1.8
01 Jan 00	0156	0.4	0.7	0.8	1.9
01 Jan 00	0158	0.4	0.8	0.9	2.1
01 Jan 00	0200	0.4	0.9	0.9	2.2
01 Jan 00	0202	0.5	0.9	1.0	2.4
01 Jan 00	0204	0.5	1.0	1.1	2.6
01 Jan 00	0206	0.5	1.0	1.2	2.8
01 Jan 00	0208	0.6	1.1	1.3	3.0
01 Jan 00	0210	0.6	1.2	1.3	3.2
01 Jan 00	0212	0.7	1.3	1.4	3.4
01 Jan 00	0214	0.7	1.4	1.5	3.6
01 Jan 00	0216	0.8	1.5	1.6	3.9
01 Jan 00	0218	0.8	1.6	1.8	4.1

Date	Time	Inflow (cfs) from Sub1	Inflow (cfs) from Sub2	Inflow (cfs) from Sub3	Outflow (cfs)
[illegible] an 00	0220	0.9	1.7	1.9	4.4
01 Jan 00	0222	0.9	1.8	2.0	4.7
01 Jan 00	0224	1.0	1.9	2.1	5.0
01 Jan 00	0226	1.1	2.0	2.2	5.3
01 Jan 00	0228	1.1	2.1	2.4	5.6
01 Jan 00	0230	1.2	2.3	2.5	6.0
01 Jan 00	0232	1.3	2.4	2.7	6.3
01 Jan 00	0234	1.3	2.5	2.8	6.7
01 Jan 00	0236	1.4	2.7	3.0	7.1
01 Jan 00	0238	1.5	2.8	3.2	7.5
01 Jan 00	0240	1.6	3.0	3.3	7.9
01 Jan 00	0242	1.7	3.1	3.5	8.4
01 Jan 00	0244	1.8	3.3	3.7	8.8
01 Jan 00	0246	1.9	3.5	3.9	9.3
01 Jan 00	0248	2.0	3.6	4.1	9.7
01 Jan 00	0250	2.1	3.8	4.3	10.2
01 Jan 00	0252	2.2	4.0	4.5	10.7
01 Jan 00	0254	2.3	4.2	4.8	11.2
01 Jan 00	0256	2.4	4.4	5.0	11.8
01 Jan 00	0258	2.5	4.6	5.2	12.4
01 Jan 00	0300	2.7	4.8	5.5	12.9
01 Jan 00	0302	2.8	5.0	5.7	13.5
0[illegible] 00	0304	2.9	5.2	5.9	14.0
[illegible] n 00	0306	3.1	5.4	6.2	14.6
01 Jan 00	0308	3.2	5.6	6.4	15.2
01 Jan 00	0310	3.4	5.8	6.7	15.9
01 Jan 00	0312	3.5	6.0	7.0	16.5
01 Jan 00	0314	3.7	6.2	7.2	17.1
01 Jan 00	0316	3.8	6.4	7.5	17.7
01 Jan 00	0318	4.0	6.7	7.8	18.4
01 Jan 00	0320	4.1	6.9	8.0	19.0
01 Jan 00	0322	4.3	7.1	8.3	19.7
01 Jan 00	0324	4.5	7.3	8.6	20.3
01 Jan 00	0326	4.6	7.5	8.8	21.0
01 Jan 00	0328	4.8	7.8	9.1	21.7
01 Jan 00	0330	5.0	8.0	9.4	22.3
01 Jan 00	0332	5.2	8.2	9.7	23.0
01 Jan 00	0334	5.3	8.4	10.0	23.7
01 Jan 00	0336	5.5	8.6	10.2	24.4
01 Jan 00	0338	5.7	8.8	10.5	25.1
01 Jan 00	0340	5.9	9.0	10.8	25.8
01 Jan 00	0342	6.1	9.3	11.1	26.4
01 Jan 00	0344	6.3	9.5	11.4	27.1
01 Jan 00	0346	6.5	9.7	11.7	27.8
01 Jan 00	0348	6.7	9.9	12.0	28.5
01 Jan 00	0350	6.9	10.1	12.2	29.2
[illegible] 00	0352	7.1	10.3	12.5	29.9
[illegible] n 00	0354	7.3	10.6	12.8	30.6
01 Jan 00	0356	7.5	10.8	13.1	31.3
01 Jan 00	0358	7.7	11.0	13.4	32.1
01 Jan 00	0400	7.9	11.2	13.7	32.8

Date	Time	Inflow (cfs) from Sub1	Inflow (cfs) from Sub2	Inflow (cfs) from Sub3	Outflow (cfs)
an 00	0402	8.1	11.4	14.0	33.5
01 Jan 00	0404	8.3	11.6	14.3	34.2
01 Jan 00	0406	8.6	11.8	14.5	34.9
01 Jan 00	0408	8.8	12.0	14.8	35.6
01 Jan 00	0410	9.0	12.3	15.1	36.4
01 Jan 00	0412	9.2	12.5	15.4	37.1
01 Jan 00	0414	9.5	12.7	15.7	37.8
01 Jan 00	0416	9.7	12.9	15.9	38.5
01 Jan 00	0418	9.9	13.1	16.2	39.2
01 Jan 00	0420	10.1	13.3	16.5	39.9
01 Jan 00	0422	10.4	13.5	16.8	40.6
01 Jan 00	0424	10.6	13.6	17.0	41.2
01 Jan 00	0426	10.8	13.8	17.3	41.9
01 Jan 00	0428	11.0	14.0	17.5	42.6
01 Jan 00	0430	11.2	14.2	17.8	43.2
01 Jan 00	0432	11.5	14.4	18.0	43.9
01 Jan 00	0434	11.7	14.5	18.3	44.5
01 Jan 00	0436	11.9	14.7	18.5	45.1
01 Jan 00	0438	12.1	14.9	18.8	45.7
01 Jan 00	0440	12.3	15.0	19.0	46.3
01 Jan 00	0442	12.5	15.2	19.2	47.0
01 Jan 00	0444	12.7	15.4	19.5	47.5
an 00	0446	12.9	15.5	19.7	48.1
an 00	0448	13.2	15.6	19.9	48.7
01 Jan 00	0450	13.4	15.8	20.1	49.2
01 Jan 00	0452	13.6	15.9	20.3	49.8
01 Jan 00	0454	13.8	16.1	20.5	50.3
01 Jan 00	0456	14.0	16.2	20.7	50.8
01 Jan 00	0458	14.2	16.3	20.9	51.4
01 Jan 00	0500	14.3	16.5	21.0	51.9
01 Jan 00	0502	14.5	16.6	21.2	52.3
01 Jan 00	0504	14.7	16.7	21.4	52.8
01 Jan 00	0506	14.9	16.8	21.6	53.3
01 Jan 00	0508	15.1	16.9	21.8	53.8
01 Jan 00	0510	15.3	17.1	21.9	54.3
01 Jan 00	0512	15.4	17.2	22.1	54.7
01 Jan 00	0514	15.6	17.3	22.3	55.2
01 Jan 00	0516	15.8	17.4	22.4	55.6
01 Jan 00	0518	15.9	17.5	22.6	56.0
01 Jan 00	0520	16.1	17.6	22.7	56.4
01 Jan 00	0522	16.2	17.7	22.9	56.9
01 Jan 00	0524	16.4	17.8	23.0	57.3
01 Jan 00	0526	16.5	17.9	23.2	57.7
01 Jan 00	0528	16.7	18.0	23.3	58.0
01 Jan 00	0530	16.8	18.1	23.5	58.4
01 Jan 00	0532	17.0	18.2	23.6	58.8
n 00	0534	17.1	18.3	23.7	59.2
an 00	0536	17.3	18.4	23.9	59.5
01 Jan 00	0538	17.4	18.5	24.0	59.9
01 Jan 00	0540	17.5	18.6	24.1	60.3
01 Jan 00	0542	17.7	18.7	24.3	60.6

Date	Time	Inflow (cfs) from Sub1	Inflow (cfs) from Sub2	Inflow (cfs) from Sub3	Outflow (cfs)
an 00	0544	17.8	18.8	24.4	60.9
01 Jan 00	0546	17.9	18.9	24.5	61.3
01 Jan 00	0548	18.0	18.9	24.6	61.6
01 Jan 00	0550	18.2	19.0	24.7	61.9
01 Jan 00	0552	18.3	19.1	24.9	62.2
01 Jan 00	0554	18.4	19.2	25.0	62.5
01 Jan 00	0556	18.5	19.3	25.1	62.9
01 Jan 00	0558	18.6	19.3	25.2	63.2
01 Jan 00	0600	18.7	19.4	25.3	63.5
01 Jan 00	0602	18.8	19.5	25.4	63.7
01 Jan 00	0604	18.9	19.6	25.5	64.0
01 Jan 00	0606	19.0	19.6	25.6	64.3
01 Jan 00	0608	19.2	19.7	25.7	64.6
01 Jan 00	0610	19.3	19.8	25.8	64.9
01 Jan 00	0612	19.4	19.8	25.9	65.2
01 Jan 00	0614	19.5	19.9	26.0	65.4
01 Jan 00	0616	19.6	20.0	26.1	65.7
01 Jan 00	0618	19.7	20.1	26.2	65.9
01 Jan 00	0620	19.8	20.1	26.3	66.2
01 Jan 00	0622	19.9	20.2	26.4	66.5
01 Jan 00	0624	20.0	20.2	26.5	66.7
01 Jan 00	0626	20.0	20.3	26.6	66.9
an 00	0628	20.1	20.4	26.7	67.2
an 00	0630	20.2	20.4	26.8	67.4
01 Jan 00	0632	20.3	20.5	26.9	67.7
01 Jan 00	0634	20.4	20.5	26.9	67.9
01 Jan 00	0636	20.5	20.6	27.0	68.1
01 Jan 00	0638	20.6	20.7	27.1	68.3
01 Jan 00	0640	20.7	20.7	27.2	68.6
01 Jan 00	0642	20.7	20.8	27.3	68.8
01 Jan 00	0644	20.8	20.8	27.3	69.0
01 Jan 00	0646	20.9	20.9	27.4	69.2
01 Jan 00	0648	21.0	20.9	27.5	69.4
01 Jan 00	0650	21.1	21.0	27.6	69.6
01 Jan 00	0652	21.1	21.0	27.7	69.8
01 Jan 00	0654	21.2	21.1	27.7	70.0
01 Jan 00	0656	21.3	21.1	27.8	70.2
01 Jan 00	0658	21.4	21.2	27.9	70.4
01 Jan 00	0700	21.4	21.2	27.9	70.6
01 Jan 00	0702	21.5	21.3	28.0	70.8
01 Jan 00	0704	21.6	21.4	28.1	71.1
01 Jan 00	0706	21.7	21.4	28.2	71.3
01 Jan 00	0708	21.8	21.5	28.3	71.5
01 Jan 00	0710	21.9	21.5	28.4	71.8
01 Jan 00	0712	22.0	21.6	28.5	72.0
01 Jan 00	0714	22.1	21.7	28.6	72.3
an 00	0716	22.2	21.8	28.7	72.6
an 00	0718	22.2	21.9	28.8	72.9
01 Jan 00	0720	22.3	22.0	28.9	73.2
01 Jan 00	0722	22.5	22.0	29.0	73.5
01 Jan 00	0724	22.6	22.1	29.1	73.8

Date	Time	Inflow (cfs) from Sub1	Inflow (cfs) from Sub2	Inflow (cfs) from Sub3	Outflow (cfs)
Jan 00	0726	22.7	22.2	29.3	74.2
01 Jan 00	0728	22.8	22.3	29.4	74.6
01 Jan 00	0730	22.9	22.5	29.6	75.0
01 Jan 00	0732	23.1	22.6	29.7	75.4
01 Jan 00	0734	23.2	22.7	29.9	75.7
01 Jan 00	0736	23.3	22.8	30.0	76.1
01 Jan 00	0738	23.5	22.9	30.2	76.6
01 Jan 00	0740	23.6	23.0	30.4	77.0
01 Jan 00	0742	23.7	23.2	30.5	77.5
01 Jan 00	0744	23.9	23.3	30.7	77.9
01 Jan 00	0746	24.0	23.5	30.9	78.4
01 Jan 00	0748	24.2	23.6	31.1	78.9
01 Jan 00	0750	24.3	23.8	31.3	79.4
01 Jan 00	0752	24.5	23.9	31.5	80.0
01 Jan 00	0754	24.7	24.1	31.8	80.6
01 Jan 00	0756	24.9	24.3	32.0	81.2
01 Jan 00	0758	25.0	24.5	32.2	81.7
01 Jan 00	0800	25.2	24.7	32.5	82.4
01 Jan 00	0802	25.4	24.9	32.7	83.0
01 Jan 00	0804	25.6	25.1	33.0	83.7
01 Jan 00	0806	25.8	25.3	33.3	84.3
01 Jan 00	0808	26.0	25.5	33.6	85.1
an 00	0810	26.2	25.7	33.9	85.8
an 00	0812	26.4	26.0	34.2	86.6
01 Jan 00	0814	26.6	26.2	34.5	87.4
01 Jan 00	0816	26.9	26.5	34.8	88.2
01 Jan 00	0818	27.1	26.7	35.2	89.0
01 Jan 00	0820	27.3	27.0	35.5	89.8
01 Jan 00	0822	27.5	27.3	35.8	90.7
01 Jan 00	0824	27.8	27.6	36.2	91.6
01 Jan 00	0826	28.1	27.9	36.5	92.5
01 Jan 00	0828	28.3	28.1	36.9	93.4
01 Jan 00	0830	28.6	28.4	37.3	94.3
01 Jan 00	0832	28.8	28.7	37.8	95.3
01 Jan 00	0834	29.1	29.1	38.2	96.4
01 Jan 00	0836	29.4	29.4	38.6	97.5
01 Jan 00	0838	29.7	29.8	39.1	98.5
01 Jan 00	0840	30.0	30.1	39.5	99.6
01 Jan 00	0842	30.3	30.5	40.0	100.8
01 Jan 00	0844	30.6	30.9	40.5	102.0
01 Jan 00	0846	30.9	31.2	41.0	103.1
01 Jan 00	0848	31.3	31.6	41.5	104.3
01 Jan 00	0850	31.6	32.0	41.9	105.6
01 Jan 00	0852	31.9	32.4	42.5	106.8
01 Jan 00	0854	32.3	32.9	43.0	108.1
01 Jan 00	0856	32.7	33.3	43.6	109.5
n 00	0858	33.1	33.7	44.1	110.9
an 00	0900	33.5	34.1	44.7	112.2
01 Jan 00	0902	33.9	34.5	45.2	113.6
01 Jan 00	0904	34.3	34.9	45.8	114.9
01 Jan 00	0906	34.7	35.3	46.3	116.3

Date	Time	Inflow (cfs) from Sub1	Inflow (cfs) from Sub2	Inflow (cfs) from Sub3	Outflow (cfs)
Jan 00	0908	35.2	35.7	46.9	117.7
01 Jan 00	0910	35.6	36.1	47.4	119.1
01 Jan 00	0912	36.0	36.5	48.0	120.5
01 Jan 00	0914	36.5	36.9	48.5	121.9
01 Jan 00	0916	36.9	37.3	49.1	123.3
01 Jan 00	0918	37.4	37.7	49.6	124.7
01 Jan 00	0920	37.8	38.1	50.2	126.1
01 Jan 00	0922	38.3	38.5	50.7	127.5
01 Jan 00	0924	38.7	38.9	51.2	128.9
01 Jan 00	0926	39.2	39.3	51.8	130.3
01 Jan 00	0928	39.6	39.7	52.3	131.6
01 Jan 00	0930	40.1	40.0	52.8	133.0
01 Jan 00	0932	40.6	40.3	53.3	134.2
01 Jan 00	0934	41.0	40.7	53.8	135.5
01 Jan 00	0936	41.5	41.0	54.3	136.8
01 Jan 00	0938	41.9	41.3	54.8	138.1
01 Jan 00	0940	42.4	41.7	55.3	139.3
01 Jan 00	0942	42.8	42.0	55.8	140.6
01 Jan 00	0944	43.3	42.3	56.2	141.8
01 Jan 00	0946	43.7	42.6	56.6	142.9
01 Jan 00	0948	44.1	42.8	57.0	144.0
01 Jan 00	0950	44.6	43.1	57.4	145.1
ın 00	0952	45.0	43.4	57.8	146.2
.an 00	0954	45.5	43.6	58.3	147.4
01 Jan 00	0956	45.9	43.9	58.6	148.4
01 Jan 00	0958	46.3	44.2	59.0	149.5
01 Jan 00	1000	46.7	44.4	59.4	150.5
01 Jan 00	1002	47.1	44.7	59.8	151.5
01 Jan 00	1004	47.5	44.9	60.2	152.6
01 Jan 00	1006	47.9	45.2	60.5	153.6
01 Jan 00	1008	48.3	45.4	60.9	154.6
01 Jan 00	1010	48.7	45.7	61.3	155.6
01 Jan 00	1012	49.1	45.9	61.6	156.7
01 Jan 00	1014	49.5	46.2	62.0	157.7
01 Jan 00	1016	49.9	46.5	62.4	158.8
01 Jan 00	1018	50.3	46.8	62.8	159.8
01 Jan 00	1020	50.7	47.0	63.1	160.8
01 Jan 00	1022	51.1	47.3	63.5	161.9
01 Jan 00	1024	51.5	47.6	63.9	163.0
01 Jan 00	1026	51.9	47.9	64.3	164.0
01 Jan 00	1028	52.2	48.1	64.7	165.1
01 Jan 00	1030	52.6	48.4	65.1	166.2
01 Jan 00	1032	53.0	48.7	65.5	167.3
01 Jan 00	1034	53.4	49.0	65.9	168.3
01 Jan 00	1036	53.8	49.3	66.3	169.4
01 Jan 00	1038	54.2	49.6	66.7	170.5
n 00	1040	54.6	49.9	67.2	171.6
Jan 00	1042	55.0	50.2	67.6	172.8
01 Jan 00	1044	55.4	50.5	68.0	173.9
01 Jan 00	1046	55.8	50.8	68.4	175.0
01 Jan 00	1048	56.2	51.2	68.8	176.2

Date	Time	Inflow (cfs) from Sub1	Inflow (cfs) from Sub2	Inflow (cfs) from Sub3	Outflow (cfs)
Jan 00	1050	56.6	51.5	69.3	177.4
01 Jan 00	1052	57.0	51.8	69.8	178.6
01 Jan 00	1054	57.4	52.2	70.3	179.8
01 Jan 00	1056	57.8	52.5	70.7	181.1
01 Jan 00	1058	58.2	52.9	71.2	182.3
01 Jan 00	1100	58.6	53.3	71.7	183.6
01 Jan 00	1102	59.1	53.6	72.2	184.9
01 Jan 00	1104	59.5	54.0	72.7	186.2
01 Jan 00	1106	59.9	54.4	73.3	187.6
01 Jan 00	1108	60.3	54.8	73.8	189.0
01 Jan 00	1110	60.8	55.2	74.4	190.4
01 Jan 00	1112	61.2	55.6	74.9	191.8
01 Jan 00	1114	61.7	56.1	75.5	193.3
01 Jan 00	1116	62.2	56.5	76.1	194.8
01 Jan 00	1118	62.6	57.0	76.7	196.3
01 Jan 00	1120	63.1	57.4	77.3	197.8
01 Jan 00	1122	63.6	57.9	77.9	199.3
01 Jan 00	1124	64.1	58.4	78.5	200.9
01 Jan 00	1126	64.5	58.8	79.1	202.5
01 Jan 00	1128	65.0	59.3	79.7	204.1
01 Jan 00	1130	65.5	59.8	80.4	205.7
01 Jan 00	1132	66.0	60.3	81.2	207.5
an 00	1134	66.6	60.8	81.9	209.3
an 00	1136	67.1	61.4	82.6	211.2
01 Jan 00	1138	67.7	62.0	83.3	213.0
01 Jan 00	1140	68.2	62.6	84.1	214.8
01 Jan 00	1142	68.8	63.2	84.9	216.8
01 Jan 00	1144	69.4	63.8	85.7	218.8
01 Jan 00	1146	70.0	64.4	86.5	220.9
01 Jan 00	1148	70.5	65.0	87.3	222.9
01 Jan 00	1150	71.1	65.7	88.2	225.0
01 Jan 00	1152	71.7	66.4	89.0	227.1
01 Jan 00	1154	72.4	67.0	89.9	229.4
01 Jan 00	1156	73.1	67.7	90.9	231.7
01 Jan 00	1158	73.8	68.4	91.8	234.0
01 Jan 00	1200	74.5	69.1	92.7	236.4
01 Jan 00	1202	75.3	69.8	93.7	238.7
01 Jan 00	1204	76.0	70.5	94.6	241.1
01 Jan 00	1206	76.8	71.2	95.6	243.5
01 Jan 00	1208	77.6	71.9	96.5	246.0
01 Jan 00	1210	78.4	72.6	97.5	248.4
01 Jan 00	1212	79.2	73.3	98.5	251.0
01 Jan 00	1214	80.0	74.0	99.5	253.5
01 Jan 00	1216	80.8	74.8	100.4	256.0
01 Jan 00	1218	81.6	75.5	101.4	258.6
01 Jan 00	1220	82.5	76.2	102.4	261.1
an 00	1222	83.3	77.0	103.4	263.7
Jan 00	1224	84.2	77.7	104.5	266.4
01 Jan 00	1226	85.1	78.5	105.5	269.0
01 Jan 00	1228	85.9	79.2	106.5	271.7
01 Jan 00	1230	86.8	80.0	107.6	274.3

Date	Time	Inflow (cfs) from Sub1	Inflow (cfs) from Sub2	Inflow (cfs) from Sub3	Outflow (cfs)
Jan 00	1232	87.7	80.7	108.6	277.1
01 Jan 00	1234	88.7	81.5	109.7	279.8
01 Jan 00	1236	89.7	82.2	110.8	282.6
01 Jan 00	1238	90.6	83.0	111.9	285.5
01 Jan 00	1240	91.5	83.8	113.1	288.4
01 Jan 00	1242	92.6	84.6	114.2	291.5
01 Jan 00	1244	93.7	85.5	115.4	294.6
01 Jan 00	1246	94.8	86.4	116.6	297.8
01 Jan 00	1248	95.9	87.4	117.8	301.1
01 Jan 00	1250	97.0	88.4	119.1	304.5
01 Jan 00	1252	98.4	89.5	120.6	308.4
01 Jan 00	1254	99.8	90.6	122.1	312.5
01 Jan 00	1256	101.7	92.2	124.4	318.2
01 Jan 00	1258	104.0	94.3	127.1	325.4
01 Jan 00	1300	106.4	96.4	130.0	332.9
01 Jan 00	1302	108.2	98.0	132.1	338.3
01 Jan 00	1304	110.2	99.8	134.4	344.3
01 Jan 00	1306	112.6	101.8	137.4	351.8
01 Jan 00	1308	115.5	104.4	141.3	361.3
01 Jan 00	1310	118.4	108.2	145.0	371.6
01 Jan 00	1312	120.7	112.1	148.0	380.8
01 Jan 00	1314	122.9	115.3	150.7	388.8
Jan 00	1316	125.6	117.7	153.8	397.1
Jan 00	1318	129.0	119.9	157.8	406.7
01 Jan 00	1320	132.3	122.2	163.2	417.7
01 Jan 00	1322	134.9	125.3	168.9	429.0
01 Jan 00	1324	137.3	128.8	173.6	439.6
01 Jan 00	1326	140.3	131.9	177.1	449.3
01 Jan 00	1328	143.9	134.4	180.2	458.5
01 Jan 00	1330	147.3	136.8	183.4	467.5
01 Jan 00	1332	149.9	139.5	187.4	476.7
01 Jan 00	1334	152.3	143.0	191.9	487.2
01 Jan 00	1336	155.1	147.7	196.1	498.9
01 Jan 00	1338	158.3	152.7	199.7	510.7
01 Jan 00	1340	161.4	156.6	203.3	521.3
01 Jan 00	1342	164.0	159.8	207.7	531.5
01 Jan 00	1344	166.5	162.8	213.8	543.0
01 Jan 00	1346	170.0	165.7	220.9	556.6
01 Jan 00	1348	174.5	169.4	227.3	571.1
01 Jan 00	1350	178.6	174.4	232.4	585.4
01 Jan 00	1352	181.7	180.0	236.6	598.4
01 Jan 00	1354	184.5	184.8	240.5	609.8
01 Jan 00	1356	187.9	188.3	244.6	620.9
01 Jan 00	1358	192.1	191.5	250.3	633.9
01 Jan 00	1400	195.9	194.5	258.1	648.6
01 Jan 00	1402	199.0	198.1	266.2	663.4
an 00	1404	201.9	203.3	272.8	678.0
Jan 00	1406	205.8	209.9	277.6	693.3
01 Jan 00	1408	210.6	215.8	281.8	708.2
01 Jan 00	1410	215.1	220.3	286.3	721.7
01 Jan 00	1412	218.5	223.6	292.6	734.8

Date	Time	Inflow (cfs) from Sub1	Inflow (cfs) from Sub2	Inflow (cfs) from Sub3	Outflow (cfs)
Jan 00	1414	221.6	226.8	299.7	748.1
01 Jan 00	1416	225.5	230.6	305.7	761.9
01 Jan 00	1418	230.3	235.8	310.3	776.4
01 Jan 00	1420	234.8	240.8	314.5	790.1
01 Jan 00	1422	238.1	244.7	319.7	802.6
01 Jan 00	1424	241.3	248.0	327.1	816.4
01 Jan 00	1426	245.7	251.7	336.5	833.9
01 Jan 00	1428	251.2	256.6	345.3	853.2
01 Jan 00	1430	256.3	263.5	352.0	871.8
01 Jan 00	1432	260.0	270.9	356.9	887.9
01 Jan 00	1434	263.3	277.0	361.4	901.6
01 Jan 00	1436	267.6	281.1	367.1	915.8
01 Jan 00	1438	273.0	284.7	374.7	932.3
01 Jan 00	1440	278.1	287.7	381.8	947.6
01 Jan 00	1442	282.1	291.5	387.0	960.6
01 Jan 00	1444	285.7	296.7	391.1	973.5
01 Jan 00	1446	289.8	301.8	395.6	987.1
01 Jan 00	1448	295.3	304.8	401.5	1001.5
01 Jan 00	1450	302.9	307.0	408.3	1018.2
01 Jan 00	1452	311.1	308.7	413.7	1033.5
01 Jan 00	1454	317.5	309.9	417.1	1044.6
01 Jan 00	1456	322.0	311.2	420.0	1053.2
an 00	1458	325.7	312.6	422.0	1060.4
an 00	1500	329.5	313.8	423.6	1066.8
01 Jan 00	1502	334.5	314.1	425.3	1073.9
01 Jan 00	1504	340.1	313.9	427.0	1081.0
01 Jan 00	1506	344.5	313.9	428.3	1086.7
01 Jan 00	1508	347.4	313.8	429.1	1090.3
01 Jan 00	1510	349.7	313.6	429.6	1092.9
01 Jan 00	1512	352.1	312.9	429.6	1094.6
01 Jan 00	1514	354.2	311.9	428.8	1094.9
01 Jan 00	1516	356.1	310.8	427.3	1094.3
01 Jan 00	1518	357.7	309.6	425.8	1093.1
01 Jan 00	1520	359.2	308.2	424.6	1092.0
01 Jan 00	1522	360.6	305.9	423.6	1090.0
01 Jan 00	1524	361.6	302.0	422.2	1085.9
01 Jan 00	1526	362.4	297.0	419.4	1078.8
01 Jan 00	1528	362.9	292.4	415.0	1070.3
01 Jan 00	1530	363.2	289.1	410.7	1063.1
01 Jan 00	1532	363.3	286.5	407.7	1057.6
01 Jan 00	1534	363.3	284.2	405.3	1052.8
01 Jan 00	1536	363.1	281.8	402.2	1047.1
01 Jan 00	1538	362.9	278.2	397.7	1038.8
01 Jan 00	1540	362.4	273.1	390.9	1026.5
01 Jan 00	1542	361.4	268.0	383.7	1013.1
01 Jan 00	1544	360.2	264.0	378.1	1002.3
an 00	1546	359.2	261.2	374.3	994.7
Jan 00	1548	358.2	258.9	371.3	988.5
01 Jan 00	1550	356.6	256.9	368.3	981.8
01 Jan 00	1552	353.6	254.5	363.9	972.1
01 Jan 00	1554	349.9	251.2	358.9	960.0

Date	Time	Inflow (cfs) from Sub1	Inflow (cfs) from Sub2	Inflow (cfs) from Sub3	Outflow (cfs)
Jan 00	1556	347.1	247.4	354.7	949.2
01 Jan 00	1558	345.2	244.1	351.7	941.0
01 Jan 00	1600	342.9	241.8	349.0	933.7
01 Jan 00	1602	339.3	240.1	345.9	925.2
01 Jan 00	1604	335.2	238.4	342.0	915.6
01 Jan 00	1606	332.2	236.2	337.1	905.5
01 Jan 00	1608	330.0	233.2	332.8	895.9
01 Jan 00	1610	327.4	230.3	329.3	887.0
01 Jan 00	1612	323.4	228.2	326.5	878.2
01 Jan 00	1614	319.2	226.6	324.1	869.9
01 Jan 00	1616	315.9	224.9	321.6	862.4
01 Jan 00	1618	313.6	223.0	317.9	854.5
01 Jan 00	1620	311.0	220.3	313.2	844.6
01 Jan 00	1622	307.3	217.5	308.9	833.7
01 Jan 00	1624	303.3	215.0	305.6	824.0
01 Jan 00	1626	300.1	213.1	303.1	816.4
01 Jan 00	1628	297.8	211.5	301.1	810.4
01 Jan 00	1630	295.6	210.0	299.0	804.7
01 Jan 00	1632	293.1	208.4	296.2	797.7
01 Jan 00	1634	289.9	206.1	293.0	789.1
01 Jan 00	1636	286.0	203.6	290.3	779.8
01 Jan 00	1638	282.4	201.3	288.2	771.9
an 00	1640	279.7	199.5	286.3	765.5
an 00	1642	277.5	198.0	284.0	759.5
01 Jan 00	1644	275.5	196.7	280.9	753.2
01 Jan 00	1646	273.2	195.4	277.5	746.0
01 Jan 00	1648	270.2	193.6	274.5	738.4
01 Jan 00	1650	267.4	191.3	272.2	730.9
01 Jan 00	1652	265.3	189.0	270.2	724.5
01 Jan 00	1654	263.5	187.1	268.6	719.1
01 Jan 00	1656	261.4	185.6	266.6	713.7
01 Jan 00	1658	259.1	184.4	264.1	707.6
01 Jan 00	1700	257.0	183.1	261.7	701.8
01 Jan 00	1702	255.2	181.5	259.8	696.5
01 Jan 00	1704	253.5	179.6	258.1	691.3
01 Jan 00	1706	251.5	178.1	256.3	685.9
01 Jan 00	1708	249.2	176.8	254.2	680.2
01 Jan 00	1710	247.1	175.7	251.3	674.1
01 Jan 00	1712	245.5	174.4	248.3	668.2
01 Jan 00	1714	243.9	173.0	245.8	662.6
01 Jan 00	1716	241.9	171.2	243.9	656.9
01 Jan 00	1718	239.5	169.4	242.2	651.1
01 Jan 00	1720	237.2	168.0	240.7	645.9
01 Jan 00	1722	235.5	166.7	238.9	641.2
01 Jan 00	1724	234.1	165.6	237.0	636.6
01 Jan 00	1726	232.4	164.5	235.3	632.2
n 00	1728	230.5	163.2	233.8	627.5
an 00	1730	228.7	161.6	232.3	622.6
01 Jan 00	1732	227.3	160.0	230.5	617.8
01 Jan 00	1734	225.9	158.5	228.4	612.8
01 Jan 00	1736	224.2	157.3	225.9	607.4

Date	Time	Inflow (cfs) from Sub1	Inflow (cfs) from Sub2	Inflow (cfs) from Sub3	Outflow (cfs)
Jan 00	1738	222.1	156.2	223.8	602.1
01 Jan 00	1740	220.2	155.2	222.0	597.4
01 Jan 00	1742	218.7	154.1	220.4	593.2
01 Jan 00	1744	217.4	152.8	218.9	589.1
01 Jan 00	1746	215.8	151.2	217.3	584.3
01 Jan 00	1748	214.0	149.6	215.4	579.0
01 Jan 00	1750	212.2	148.3	213.6	574.2
01 Jan 00	1752	210.9	147.2	212.0	570.1
01 Jan 00	1754	209.6	146.2	210.5	566.3
01 Jan 00	1756	208.0	145.1	208.9	562.0
01 Jan 00	1758	206.1	143.9	207.2	557.1
01 Jan 00	1800	204.3	142.7	205.1	552.0
01 Jan 00	1802	202.9	141.6	203.0	547.5
01 Jan 00	1804	201.7	140.6	201.1	543.4
01 Jan 00	1806	200.2	139.6	199.6	539.4
01 Jan 00	1808	198.6	138.5	198.1	535.3
01 Jan 00	1810	197.1	137.2	196.8	531.1
01 Jan 00	1812	195.8	135.9	195.3	527.0
01 Jan 00	1814	194.6	134.7	193.5	522.8
01 Jan 00	1816	193.2	133.6	191.5	518.3
01 Jan 00	1818	191.5	132.6	189.7	513.8
01 Jan 00	1820	189.8	131.7	188.2	509.7
an 00	1822	188.5	130.7	186.9	506.1
Jan 00	1824	187.2	129.5	185.6	502.4
01 Jan 00	1826	185.9	128.2	184.2	498.3
01 Jan 00	1828	184.3	127.0	182.6	493.9
01 Jan 00	1830	182.4	126.0	181.1	489.5
01 Jan 00	1832	180.5	125.2	179.8	485.5
01 Jan 00	1834	179.0	124.4	178.7	482.1
01 Jan 00	1836	177.7	123.7	177.5	478.9
01 Jan 00	1838	176.5	122.9	176.3	475.6
01 Jan 00	1840	175.3	121.9	174.8	472.0
01 Jan 00	1842	173.9	120.8	173.4	468.1
01 Jan 00	1844	172.5	119.8	172.1	464.4
01 Jan 00	1846	171.2	119.1	171.0	461.3
01 Jan 00	1848	170.1	118.5	170.1	458.7
01 Jan 00	1850	168.9	117.8	169.2	456.0
01 Jan 00	1852	167.6	117.1	168.1	452.9
01 Jan 00	1854	166.3	116.4	166.9	449.6
01 Jan 00	1856	165.1	115.7	165.9	446.7
01 Jan 00	1858	164.1	115.1	165.0	444.2
01 Jan 00	1900	163.1	114.5	164.1	441.7
01 Jan 00	1902	161.9	113.8	163.0	438.8
01 Jan 00	1904	160.8	113.0	161.8	435.6
01 Jan 00	1906	159.8	112.3	160.5	432.6
01 Jan 00	1908	159.0	111.7	159.4	430.1
an 00	1910	158.1	111.2	158.6	427.8
Jan 00	1912	157.0	110.7	157.8	425.5
01 Jan 00	1914	155.9	110.2	157.0	423.2
01 Jan 00	1916	155.0	109.6	156.2	420.7
01 Jan 00	1918	154.2	108.8	155.2	418.1

Date	Time	Inflow (cfs) from Sub1	Inflow (cfs) from Sub2	Inflow (cfs) from Sub3	Outflow (cfs)
an 00	1920	153.3	108.0	154.2	415.5
01 Jan 00	1922	152.2	107.4	153.4	413.0
01 Jan 00	1924	151.0	106.9	152.6	410.5
01 Jan 00	1926	150.0	106.4	151.9	408.3
01 Jan 00	1928	149.2	106.0	151.1	406.3
01 Jan 00	1930	148.4	105.5	150.2	404.1
01 Jan 00	1932	147.6	105.0	149.1	401.7
01 Jan 00	1934	146.7	104.3	148.1	399.2
01 Jan 00	1936	146.0	103.6	147.3	396.9
01 Jan 00	1938	145.3	103.0	146.6	394.9
01 Jan 00	1940	144.5	102.4	146.0	392.9
01 Jan 00	1942	143.6	101.9	145.2	390.8
01 Jan 00	1944	142.7	101.4	144.4	388.5
01 Jan 00	1946	141.8	100.9	143.7	386.4
01 Jan 00	1948	141.1	100.3	143.0	384.4
01 Jan 00	1950	140.4	99.7	142.3	382.4
01 Jan 00	1952	139.5	99.2	141.6	380.3
01 Jan 00	1954	138.5	98.7	140.8	378.1
01 Jan 00	1956	137.7	98.2	140.0	375.8
01 Jan 00	1958	137.0	97.6	139.2	373.7
01 Jan 00	2000	136.2	97.0	138.4	371.6
01 Jan 00	2002	135.4	96.5	137.7	369.5
in 00	2004	134.4	96.0	137.0	367.4
in 00	2006	133.6	95.5	136.3	365.4
01 Jan 00	2008	132.9	95.0	135.5	363.5
01 Jan 00	2010	132.2	94.5	134.6	361.4
01 Jan 00	2012	131.5	94.0	133.7	359.2
01 Jan 00	2014	130.7	93.3	132.9	356.9
01 Jan 00	2016	130.0	92.6	132.2	354.7
01 Jan 00	2018	129.3	91.9	131.5	352.7
01 Jan 00	2020	128.6	91.3	130.8	350.7
01 Jan 00	2022	127.8	90.7	130.0	348.5
01 Jan 00	2024	126.8	90.2	129.2	346.2
01 Jan 00	2026	125.8	89.7	128.4	343.9
01 Jan 00	2028	125.0	89.2	127.7	341.9
01 Jan 00	2030	124.3	88.6	126.9	339.8
01 Jan 00	2032	123.6	88.0	126.1	337.7
01 Jan 00	2034	122.9	87.3	125.2	335.4
01 Jan 00	2036	122.2	86.6	124.2	333.1
01 Jan 00	2038	121.5	86.0	123.3	330.8
01 Jan 00	2040	120.7	85.4	122.4	328.6
01 Jan 00	2042	120.0	84.7	121.6	326.4
01 Jan 00	2044	119.4	84.0	120.8	324.2
01 Jan 00	2046	118.7	83.4	119.9	322.0
01 Jan 00	2048	117.9	82.7	119.0	319.7
01 Jan 00	2050	117.2	82.1	118.1	317.4
n 00	2052	116.5	81.6	117.2	315.3
in 00	2054	115.8	81.0	116.4	313.2
01 Jan 00	2056	115.1	80.3	115.5	310.9
01 Jan 00	2058	114.2	79.6	114.6	308.4
01 Jan 00	2100	113.4	78.9	113.5	305.9

Date	Time	Inflow (cfs) from Sub1	Inflow (cfs) from Sub2	Inflow (cfs) from Sub3	Outflow (cfs)
Jan 00	2102	112.7	78.2	112.5	303.5
01 Jan 00	2104	112.0	77.6	111.5	301.2
01 Jan 00	2106	111.3	77.0	110.6	299.0
01 Jan 00	2108	110.4	76.5	109.8	296.7
01 Jan 00	2110	109.6	75.9	109.0	294.4
01 Jan 00	2112	108.9	75.2	108.0	292.1
01 Jan 00	2114	108.1	74.5	107.1	289.7
01 Jan 00	2116	107.4	73.8	106.2	287.4
01 Jan 00	2118	106.5	73.2	105.4	285.2
01 Jan 00	2120	105.7	72.7	104.6	283.0
01 Jan 00	2122	105.0	72.1	103.9	281.0
01 Jan 00	2124	104.3	71.6	103.2	279.0
01 Jan 00	2126	103.5	71.0	102.3	276.8
01 Jan 00	2128	102.7	70.3	101.4	274.4
01 Jan 00	2130	101.9	69.7	100.5	272.1
01 Jan 00	2132	101.2	69.1	99.8	270.1
01 Jan 00	2134	100.5	68.7	99.1	268.2
01 Jan 00	2136	99.8	68.2	98.3	266.3
01 Jan 00	2138	99.2	67.7	97.4	264.4
01 Jan 00	2140	98.6	67.3	96.6	262.5
01 Jan 00	2142	97.9	66.8	95.9	260.6
01 Jan 00	2144	97.3	66.4	95.2	258.9
an 00	2146	96.6	65.9	94.5	257.0
an 00	2148	95.8	65.4	93.8	254.9
01 Jan 00	2150	95.0	64.8	93.1	253.0
01 Jan 00	2152	94.4	64.4	92.4	251.2
01 Jan 00	2154	93.7	64.0	91.8	249.5
01 Jan 00	2156	93.0	63.5	91.2	247.8
01 Jan 00	2158	92.3	63.2	90.7	246.1
01 Jan 00	2200	91.6	62.7	90.1	244.4
01 Jan 00	2202	90.9	62.3	89.4	242.6
01 Jan 00	2204	90.3	61.7	88.7	240.8
01 Jan 00	2206	89.6	61.3	88.1	239.0
01 Jan 00	2208	89.0	60.9	87.6	237.4
01 Jan 00	2210	88.3	60.5	87.1	235.9
01 Jan 00	2212	87.7	60.2	86.6	234.5
01 Jan 00	2214	87.1	59.9	86.1	233.1
01 Jan 00	2216	86.6	59.6	85.5	231.7
01 Jan 00	2218	86.1	59.2	84.9	230.2
01 Jan 00	2220	85.6	58.9	84.3	228.7
01 Jan 00	2222	84.9	58.4	83.8	227.1
01 Jan 00	2224	84.3	58.0	83.3	225.5
01 Jan 00	2226	83.7	57.6	82.8	224.0
01 Jan 00	2228	83.2	57.2	82.2	222.6
01 Jan 00	2230	82.7	56.9	81.6	221.2
01 Jan 00	2232	82.1	56.6	81.1	219.9
n 00	2234	81.5	56.4	80.6	218.5
Jan 00	2236	81.0	56.1	80.2	217.3
01 Jan 00	2238	80.5	55.8	79.8	216.2
01 Jan 00	2240	80.1	55.6	79.4	215.0
01 Jan 00	2242	79.7	55.3	78.9	213.9

Date	Time	Inflow (cfs) from Sub1	Inflow (cfs) from Sub2	Inflow (cfs) from Sub3	Outflow (cfs)
Jan 00	2244	79.3	55.0	78.3	212.7
01 Jan 00	2246	78.9	54.7	77.8	211.4
01 Jan 00	2248	78.5	54.3	77.4	210.2
01 Jan 00	2250	78.1	53.9	77.0	209.0
01 Jan 00	2252	77.6	53.5	76.7	207.8
01 Jan 00	2254	77.0	53.3	76.3	206.6
01 Jan 00	2256	76.6	53.0	75.9	205.5
01 Jan 00	2258	76.2	52.8	75.4	204.3
01 Jan 00	2300	75.8	52.6	74.9	203.2
01 Jan 00	2302	75.5	52.3	74.5	202.3
01 Jan 00	2304	75.1	52.1	74.1	201.3
01 Jan 00	2306	74.8	51.9	73.8	200.4
01 Jan 00	2308	74.4	51.7	73.5	199.6
01 Jan 00	2310	74.0	51.4	73.2	198.6
01 Jan 00	2312	73.6	51.1	72.9	197.5
01 Jan 00	2314	73.1	50.7	72.5	196.3
01 Jan 00	2316	72.7	50.4	72.3	195.3
01 Jan 00	2318	72.3	50.1	72.0	194.4
01 Jan 00	2320	72.0	49.9	71.6	193.5
01 Jan 00	2322	71.7	49.7	71.2	192.5
01 Jan 00	2324	71.4	49.5	70.8	191.6
01 Jan 00	2326	71.1	49.3	70.4	190.7
n 00	2328	70.8	49.1	70.1	189.9
an 00	2330	70.4	48.9	69.8	189.1
01 Jan 00	2332	70.0	48.7	69.5	188.2
01 Jan 00	2334	69.5	48.5	69.2	187.3
01 Jan 00	2336	69.2	48.3	68.9	186.4
01 Jan 00	2338	68.8	48.2	68.7	185.7
01 Jan 00	2340	68.5	47.9	68.4	184.8
01 Jan 00	2342	68.2	47.6	68.0	183.8
01 Jan 00	2344	68.0	47.3	67.5	182.8
01 Jan 00	2346	67.7	47.0	67.2	181.8
01 Jan 00	2348	67.4	46.7	66.9	181.0
01 Jan 00	2350	67.1	46.6	66.6	180.3
01 Jan 00	2352	66.7	46.4	66.4	179.5
01 Jan 00	2354	66.3	46.2	66.1	178.6
01 Jan 00	2356	65.9	46.1	65.9	177.9
01 Jan 00	2358	65.6	45.9	65.6	177.1
01 Jan 00	2400	65.3	45.7	65.4	176.4
02 Jan 00	0002	65.1	45.5	65.1	175.8
02 Jan 00	0004	64.8	45.4	64.9	175.1
02 Jan 00	0006	64.5	45.1	64.6	174.2
02 Jan 00	0008	64.0	44.8	64.2	173.0
02 Jan 00	0010	63.6	44.5	63.8	172.0
02 Jan 00	0012	63.3	44.3	63.5	171.1
02 Jan 00	0014	63.1	44.1	63.3	170.4
n 00	0016	62.8	43.9	63.0	169.8
Jan 00	0018	62.6	43.8	62.8	169.2
02 Jan 00	0020	62.4	43.7	62.5	168.6
02 Jan 00	0022	62.1	43.5	62.2	167.8
02 Jan 00	0024	61.9	43.4	61.8	167.0

Date	Time	Inflow (cfs) from Sub1	Inflow (cfs) from Sub2	Inflow (cfs) from Sub3	Outflow (cfs)
an 00	0026	61.6	43.2	61.5	166.3
02 Jan 00	0028	61.2	43.1	61.2	165.5
02 Jan 00	0030	60.8	43.0	61.0	164.8
02 Jan 00	0032	60.6	42.8	60.8	164.2
02 Jan 00	0034	60.3	42.7	60.6	163.6
02 Jan 00	0036	60.1	42.6	60.4	163.1
02 Jan 00	0038	59.9	42.5	60.2	162.5
02 Jan 00	0040	59.7	42.3	60.0	162.0
02 Jan 00	0042	59.5	42.2	59.8	161.5
02 Jan 00	0044	59.3	42.1	59.6	161.0
02 Jan 00	0046	59.1	41.8	59.3	160.3
02 Jan 00	0048	58.9	41.6	59.0	159.5
02 Jan 00	0050	58.8	41.3	58.7	158.7
02 Jan 00	0052	58.6	41.1	58.4	158.1
02 Jan 00	0054	58.4	41.0	58.2	157.5
02 Jan 00	0056	58.1	40.8	58.0	156.9
02 Jan 00	0058	57.8	40.7	57.8	156.3
02 Jan 00	0100	57.4	40.6	57.7	155.7
02 Jan 00	0102	57.2	40.5	57.5	155.1
02 Jan 00	0104	57.0	40.4	57.3	154.6
02 Jan 00	0106	56.8	40.2	57.1	154.1
02 Jan 00	0108	56.6	40.1	56.9	153.6
an 00	0110	56.4	40.0	56.8	153.2
n 00	0112	56.2	39.9	56.6	152.7
Jan 00	0114	56.0	39.8	56.4	152.2
02 Jan 00	0116	55.8	39.6	56.1	151.6
02 Jan 00	0118	55.7	39.5	55.7	150.9
02 Jan 00	0120	55.5	39.3	55.4	150.2
02 Jan 00	0122	55.3	39.2	55.1	149.6
02 Jan 00	0124	55.1	39.1	54.9	149.0
02 Jan 00	0126	54.8	38.9	54.7	148.4
02 Jan 00	0128	54.4	38.8	54.5	147.7
02 Jan 00	0130	54.1	38.6	54.3	146.9
02 Jan 00	0132	53.8	38.3	54.1	146.2
02 Jan 00	0134	53.6	38.0	53.8	145.4
02 Jan 00	0136	53.4	37.7	53.6	144.7
02 Jan 00	0138	53.2	37.5	53.4	144.1
02 Jan 00	0140	53.0	37.3	53.1	143.4
02 Jan 00	0142	52.8	37.1	52.8	142.7
02 Jan 00	0144	52.6	37.0	52.4	141.9
02 Jan 00	0146	52.4	36.8	52.0	141.2
02 Jan 00	0148	52.2	36.6	51.8	140.5
02 Jan 00	0150	52.0	36.4	51.5	139.9
02 Jan 00	0152	51.8	36.2	51.2	139.2
02 Jan 00	0154	51.5	36.1	51.0	138.6
02 Jan 00	0156	51.2	35.9	50.7	137.8
n 00	0158	50.8	35.7	50.5	137.0
an 00	0200	50.4	35.5	50.2	136.1
02 Jan 00	0202	50.1	35.3	50.0	135.4
02 Jan 00	0204	49.9	35.1	49.7	134.7
02 Jan 00	0206	49.6	34.9	49.4	133.9

Date	Time	Inflow (cfs) from Sub1	Inflow (cfs) from Sub2	Inflow (cfs) from Sub3	Outflow (cfs)
Jan 00	0208	49.4	34.6	49.1	133.2
02 Jan 00	0210	49.2	34.4	48.9	132.5
02 Jan 00	0212	49.0	34.2	48.6	131.7
02 Jan 00	0214	48.7	33.9	48.3	130.9
02 Jan 00	0216	48.4	33.7	48.0	130.1
02 Jan 00	0218	48.2	33.4	47.7	129.3
02 Jan 00	0220	47.9	33.2	47.3	128.4
02 Jan 00	0222	47.5	32.9	47.0	127.5
02 Jan 00	0224	47.1	32.6	46.7	126.4
02 Jan 00	0226	46.7	32.3	46.4	125.4
02 Jan 00	0228	46.4	31.8	46.1	124.3
02 Jan 00	0230	46.1	31.4	45.6	123.2
02 Jan 00	0232	45.8	31.1	45.1	122.1
02 Jan 00	0234	45.6	30.8	44.6	120.9
02 Jan 00	0236	45.3	30.4	44.1	119.8
02 Jan 00	0238	45.1	30.1	43.7	118.8
02 Jan 00	0240	44.8	29.8	43.2	117.8
02 Jan 00	0242	44.5	29.5	42.8	116.8
02 Jan 00	0244	44.2	29.1	42.4	115.8
02 Jan 00	0246	43.9	28.8	42.0	114.7
02 Jan 00	0248	43.7	28.5	41.6	113.7
02 Jan 00	0250	43.4	28.2	41.1	112.7
an 00	0252	43.1	27.8	40.7	111.6
an 00	0254	42.8	27.5	40.2	110.5
02 Jan 00	0256	42.4	27.1	39.8	109.3
02 Jan 00	0258	42.1	26.8	39.3	108.2
02 Jan 00	0300	41.7	26.5	38.9	107.0
02 Jan 00	0302	41.2	26.1	38.4	105.8
02 Jan 00	0304	40.7	25.8	38.0	104.5
02 Jan 00	0306	40.3	25.5	37.5	103.3
02 Jan 00	0308	39.9	25.1	37.0	102.1
02 Jan 00	0310	39.5	24.8	36.5	100.9
02 Jan 00	0312	39.2	24.5	35.9	99.6
02 Jan 00	0314	38.8	24.2	35.3	98.3
02 Jan 00	0316	38.5	23.8	34.8	97.1
02 Jan 00	0318	38.1	23.5	34.3	95.9
02 Jan 00	0320	37.7	23.2	33.8	94.7
02 Jan 00	0322	37.4	22.9	33.4	93.6
02 Jan 00	0324	37.0	22.5	32.9	92.5
02 Jan 00	0326	36.7	22.2	32.5	91.4
02 Jan 00	0328	36.3	21.9	32.1	90.3
02 Jan 00	0330	36.0	21.6	31.6	89.2
02 Jan 00	0332	35.6	21.3	31.2	88.2
02 Jan 00	0334	35.3	21.0	30.8	87.1
02 Jan 00	0336	34.9	20.8	30.4	86.1
02 Jan 00	0338	34.6	20.5	30.0	85.1
n 00	0340	34.2	20.2	29.6	84.0
an 00	0342	33.7	19.9	29.3	82.8
02 Jan 00	0344	33.2	19.6	28.9	81.7
02 Jan 00	0346	32.7	19.3	28.6	80.6
02 Jan 00	0348	32.4	18.8	28.2	79.4

Date	Time	Inflow (cfs) from Sub1	Inflow (cfs) from Sub2	Inflow (cfs) from Sub3	Outflow (cfs)
Jan 00	0350	32.0	18.4	27.9	78.3
02 Jan 00	0352	31.6	18.1	27.6	77.4
02 Jan 00	0354	31.3	17.8	27.3	76.4
02 Jan 00	0356	31.0	17.6	27.0	75.5
02 Jan 00	0358	30.7	17.3	26.7	74.7
02 Jan 00	0400	30.3	17.1	26.4	73.8
02 Jan 00	0402	30.0	16.9	26.0	73.0
02 Jan 00	0404	29.7	16.7	25.7	72.1
02 Jan 00	0406	29.5	16.4	25.4	71.3
02 Jan 00	0408	29.2	16.2	25.1	70.5
02 Jan 00	0410	28.9	16.0	24.8	69.8
02 Jan 00	0412	28.6	15.8	24.6	69.0
02 Jan 00	0414	28.3	15.6	24.3	68.3
02 Jan 00	0416	28.1	15.4	24.0	67.5
02 Jan 00	0418	27.8	15.2	23.7	66.7
02 Jan 00	0420	27.6	15.0	23.4	65.9
02 Jan 00	0422	27.3	14.8	23.0	65.1
02 Jan 00	0424	27.1	14.6	22.5	64.2
02 Jan 00	0426	26.8	14.4	22.2	63.4
02 Jan 00	0428	26.6	14.2	21.9	62.7
02 Jan 00	0430	26.3	14.0	21.6	62.0
02 Jan 00	0432	26.1	13.8	21.3	61.3
lan 00	0434	25.9	13.6	21.1	60.6
lan 00	0436	25.6	13.4	20.9	59.9
uz Jan 00	0438	25.4	13.2	20.6	59.1
02 Jan 00	0440	25.2	12.8	20.4	58.3
02 Jan 00	0442	24.9	12.3	20.1	57.4
02 Jan 00	0444	24.7	11.8	19.9	56.4
02 Jan 00	0446	24.4	11.5	19.7	55.6
02 Jan 00	0448	24.0	11.3	19.5	54.7
02 Jan 00	0450	23.6	11.0	19.3	53.9
02 Jan 00	0452	23.3	10.8	19.1	53.2
02 Jan 00	0454	23.1	10.7	18.9	52.6
02 Jan 00	0456	22.9	10.5	18.7	52.0
02 Jan 00	0458	22.7	10.3	18.5	51.5
02 Jan 00	0500	22.5	10.2	18.3	50.9
02 Jan 00	0502	22.3	10.0	18.1	50.3
02 Jan 00	0504	22.1	9.9	17.8	49.8
02 Jan 00	0506	21.9	9.7	17.6	49.2
02 Jan 00	0508	21.7	9.6	17.4	48.7
02 Jan 00	0510	21.5	9.5	17.2	48.2
02 Jan 00	0512	21.3	9.3	17.0	47.6
02 Jan 00	0514	21.1	9.2	16.8	47.1
02 Jan 00	0516	20.9	9.0	16.6	46.6
02 Jan 00	0518	20.8	8.9	16.4	46.1
02 Jan 00	0520	20.6	8.8	16.1	45.5
an 00	0522	20.4	8.7	15.9	45.0
Jan 00	0524	20.2	8.6	15.6	44.4
02 Jan 00	0526	20.1	8.5	15.1	43.7
02 Jan 00	0528	19.9	8.4	14.4	42.7
02 Jan 00	0530	19.7	8.3	13.8	41.8

Date	Time	Inflow (cfs) from Sub1	Inflow (cfs) from Sub2	Inflow (cfs) from Sub3	Outflow (cfs)
Jan 00	0532	19.6	8.2	13.4	41.2
02 Jan 00	0534	19.4	8.1	13.1	40.5
02 Jan 00	0536	19.2	8.0	12.8	40.0
02 Jan 00	0538	19.1	7.9	12.6	39.5
02 Jan 00	0540	18.9	7.8	12.4	39.1
02 Jan 00	0542	18.7	7.7	12.2	38.6
02 Jan 00	0544	18.5	7.6	12.0	38.1
02 Jan 00	0546	18.3	7.5	11.8	37.6
02 Jan 00	0548	18.0	7.4	11.6	37.0
02 Jan 00	0550	17.6	7.3	11.5	36.4
02 Jan 00	0552	17.4	7.2	11.3	35.9
02 Jan 00	0554	17.2	7.1	11.2	35.5
02 Jan 00	0556	17.1	7.0	11.0	35.1
02 Jan 00	0558	16.9	7.0	10.8	34.7
02 Jan 00	0600	16.8	6.9	10.7	34.3
02 Jan 00	0602	16.6	6.8	10.5	33.9
02 Jan 00	0604	16.5	6.7	10.4	33.6
02 Jan 00	0606	16.3	6.6	10.3	33.2
02 Jan 00	0608	16.2	6.5	10.2	32.9
02 Jan 00	0610	16.0	6.5	10.0	32.6
02 Jan 00	0612	15.9	6.4	9.9	32.2
02 Jan 00	0614	15.8	6.3	9.8	31.9
n 00	0616	15.6	6.2	9.7	31.6
n 00	0618	15.5	6.2	9.6	31.2
02 Jan 00	0620	15.4	6.1	9.5	30.9
02 Jan 00	0622	15.3	6.0	9.3	30.6
02 Jan 00	0624	15.2	5.9	9.2	30.3
02 Jan 00	0626	15.0	5.9	9.1	30.0
02 Jan 00	0628	14.9	5.8	9.0	29.7
02 Jan 00	0630	14.8	5.7	8.9	29.5
02 Jan 00	0632	14.7	5.7	8.8	29.2
02 Jan 00	0634	14.6	5.6	8.7	28.9
02 Jan 00	0636	14.5	5.5	8.6	28.6
02 Jan 00	0638	14.4	5.5	8.5	28.4
02 Jan 00	0640	14.3	5.4	8.4	28.1
02 Jan 00	0642	14.2	5.3	8.3	27.8
02 Jan 00	0644	14.0	5.3	8.2	27.5
02 Jan 00	0646	13.9	5.2	8.1	27.3
02 Jan 00	0648	13.8	5.2	8.0	27.0
02 Jan 00	0650	13.7	5.1	7.9	26.8
02 Jan 00	0652	13.6	5.0	7.9	26.5
02 Jan 00	0654	13.5	5.0	7.8	26.3
02 Jan 00	0656	13.4	4.9	7.7	26.0
02 Jan 00	0658	13.3	4.9	7.6	25.8
02 Jan 00	0700	13.2	4.8	7.5	25.5
02 Jan 00	0702	13.1	4.8	7.4	25.3
1 00	0704	13.0	4.7	7.3	25.1
an 00	0706	12.9	4.6	7.2	24.8
02 Jan 00	0708	12.8	4.6	7.2	24.6
02 Jan 00	0710	12.7	4.5	7.1	24.3
02 Jan 00	0712	12.6	4.5	7.0	24.1

Date	Time	Inflow (cfs) from Sub1	Inflow (cfs) from Sub2	Inflow (cfs) from Sub3	Outflow (cfs)
Jan 00	0714	12.5	4.4	6.9	23.9
02 Jan 00	0716	12.4	4.4	6.8	23.6
02 Jan 00	0718	12.3	4.3	6.8	23.4
02 Jan 00	0720	12.2	4.3	6.7	23.2
02 Jan 00	0722	12.1	4.2	6.6	22.9
02 Jan 00	0724	12.0	4.2	6.5	22.7
02 Jan 00	0726	11.9	4.1	6.5	22.4
02 Jan 00	0728	11.7	4.1	6.4	22.2
02 Jan 00	0730	11.6	4.0	6.3	21.9
02 Jan 00	0732	11.3	4.0	6.3	21.6
02 Jan 00	0734	11.1	3.9	6.2	21.2
02 Jan 00	0736	10.8	3.9	6.1	20.8
02 Jan 00	0738	10.7	3.8	6.0	20.6
02 Jan 00	0740	10.6	3.8	6.0	20.3
02 Jan 00	0742	10.4	3.7	5.9	20.1
02 Jan 00	0744	10.3	3.7	5.8	19.9
02 Jan 00	0746	10.2	3.7	5.8	19.6
02 Jan 00	0748	10.1	3.6	5.7	19.4
02 Jan 00	0750	9.9	3.6	5.7	19.2
02 Jan 00	0752	9.8	3.5	5.6	19.0
02 Jan 00	0754	9.7	3.5	5.5	18.8
02 Jan 00	0756	9.6	3.5	5.5	18.5
[illegible] n 00	0758	9.5	3.4	5.4	18.3
[illegible] n 00	0800	9.4	3.4	5.3	18.1
02 Jan 00	0802	9.2	3.4	5.3	17.8
02 Jan 00	0804	9.0	3.3	5.2	17.6
02 Jan 00	0806	8.7	3.3	5.2	17.2
02 Jan 00	0808	8.3	3.2	5.1	16.7
02 Jan 00	0810	7.9	3.2	5.0	16.1
02 Jan 00	0812	7.7	3.2	5.0	15.8
02 Jan 00	0814	7.5	3.1	4.9	15.5
02 Jan 00	0816	7.3	3.1	4.9	15.3
02 Jan 00	0818	7.2	3.1	4.8	15.1
02 Jan 00	0820	7.1	3.0	4.7	14.9
02 Jan 00	0822	7.0	3.0	4.7	14.7
02 Jan 00	0824	6.9	3.0	4.6	14.5
02 Jan 00	0826	6.8	2.9	4.6	14.3
02 Jan 00	0828	6.7	2.9	4.5	14.1
02 Jan 00	0830	6.6	2.9	4.4	13.9
02 Jan 00	0832	6.5	2.8	4.4	13.8
02 Jan 00	0834	6.4	2.8	4.4	13.6
02 Jan 00	0836	6.4	2.8	4.3	13.4
02 Jan 00	0838	6.3	2.7	4.3	13.3
02 Jan 00	0840	6.2	2.7	4.2	13.1
02 Jan 00	0842	6.1	2.7	4.2	13.0
02 Jan 00	0844	6.1	2.6	4.1	12.8
[illegible] n 00	0846	6.0	2.6	4.1	12.7
[illegible] an 00	0848	5.9	2.6	4.0	12.5
02 Jan 00	0850	5.9	2.6	4.0	12.4
02 Jan 00	0852	5.8	2.5	4.0	12.3
02 Jan 00	0854	5.7	2.5	3.9	12.1

Date	Time	Inflow (cfs) from Sub1	Inflow (cfs) from Sub2	Inflow (cfs) from Sub3	Outflow (cfs)
Jan 00	0856	5.7	2.5	3.9	12.0
02 Jan 00	0858	5.6	2.4	3.8	11.9
02 Jan 00	0900	5.6	2.4	3.8	11.7
02 Jan 00	0902	5.5	2.4	3.7	11.6
02 Jan 00	0904	5.4	2.4	3.7	11.5
02 Jan 00	0906	5.4	2.3	3.7	11.4
02 Jan 00	0908	5.3	2.3	3.6	11.2
02 Jan 00	0910	5.3	2.3	3.6	11.1
02 Jan 00	0912	5.2	2.2	3.5	11.0
02 Jan 00	0914	5.2	2.2	3.5	10.9
02 Jan 00	0916	5.1	2.2	3.5	10.8
02 Jan 00	0918	5.1	2.2	3.4	10.6
02 Jan 00	0920	5.0	2.1	3.4	10.5
02 Jan 00	0922	4.9	2.1	3.4	10.4
02 Jan 00	0924	4.9	2.1	3.3	10.3
02 Jan 00	0926	4.8	2.1	3.3	10.2
02 Jan 00	0928	4.8	2.0	3.2	10.1
02 Jan 00	0930	4.7	2.0	3.2	10.0
02 Jan 00	0932	4.7	2.0	3.2	9.9
02 Jan 00	0934	4.6	2.0	3.1	9.7
02 Jan 00	0936	4.6	1.9	3.1	9.6
02 Jan 00	0938	4.5	1.9	3.1	9.5
Jan 00	0940	4.5	1.9	3.0	9.4
Jan 00	0942	4.4	1.9	3.0	9.3
Jan 00	0944	4.4	1.8	3.0	9.2
02 Jan 00	0946	4.4	1.8	2.9	9.1
02 Jan 00	0948	4.3	1.8	2.9	9.0
02 Jan 00	0950	4.3	1.8	2.9	8.9
02 Jan 00	0952	4.2	1.7	2.8	8.8
02 Jan 00	0954	4.2	1.7	2.8	8.7
02 Jan 00	0956	4.1	1.7	2.8	8.6
02 Jan 00	0958	4.1	1.7	2.7	8.5
02 Jan 00	1000	4.0	1.7	2.7	8.4
02 Jan 00	1002	4.0	1.6	2.7	8.3
02 Jan 00	1004	4.0	1.6	2.6	8.2
02 Jan 00	1006	3.9	1.6	2.6	8.1
02 Jan 00	1008	3.9	1.6	2.6	8.0
02 Jan 00	1010	3.8	1.6	2.5	7.9
02 Jan 00	1012	3.8	1.5	2.5	7.8
02 Jan 00	1014	3.8	1.5	2.5	7.8
02 Jan 00	1016	3.7	1.5	2.4	7.7
02 Jan 00	1018	3.7	1.5	2.4	7.6

PRE-DEVELOPMENT
ANALYSIS OF SUB-AREAS 1-3
PER THE SACRAMENTO COUNTY METHOD
(HEC-HMS)

INPUT FILES
SACPRE.INT
SACPRC.PRN
HEC.DAT

```
IDExisting Conditions Tributaries to Laguna Joaquine
ID
ID
IT     2  2MAY 2       1    1000
IO     1       0       0
IN     5
*G 100-YR, 24-HR STORM   3-SUBBASINS     900.000 AC    LENGTHS IN MI   V-2
KK  Sub1
*S  ZONE =3,   ELEV =210 FT,   LAG = 1.26-HOURS
*LN  L =     1.263;  LC =      .983;  SLOPE =  .0184;  BASIN "N" =  .096
BA  .50156
LU   .10     .07   14.00
KK  Sub2
*S  ZONE =3,   ELEV =210 FT,   LAG = 1.03-HOURS
*LN  L =     1.288;  LC =      .593;  SLOPE =  .0159;  BASIN "N" =  .090
BA  .37500
LU   .10     .07   24.00
KK  Sub3
*S  ZONE =3,   ELEV =210 FT,   LAG = 1.08-HOURS
*LN  L =     1.176;  LC =      .708;  SLOPE =  .0174;  BASIN "N" =  .093
BA  .52969
LU   .10     .07   21.00
KKLaguna
HC     3
ZZ
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                                                  SACRAMENTO CITY AND COUNTY HEC-1
PREPROCESSOR
                                                  SUMMARY OUTPUT          MAY  2, 2
002    17:01
                                                                FILE: Lagunaex

Existing Conditions Tributaries to Laguna Joaquine


Storm Recurrence Interval:  100-Years
Storm Duration:              24-Hours
Model Timestep:               2-Minute(s)

            SUBBASIN DATA                                  CONVEYANCE SYSTEM DATA
                        LAND USE - SOIL TYPE - CHANNEL/FLOODPLAIN

  Operation     Area   %     i     Lag      Overland Flow        Gutter Flow            Cha
nnel/Pipe Flow                                                 Soil Type/
 Type   I.D.    (ac)  Imp (in/hr) (min)     Land Use       S      L(ft)     S    T    n
 L(ft)    S      D/W   %                  Land Use             Channelization
-------------------------------------- ----------------------------------------------------
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  A     Sub1     321   14    .07     76
                                        Subbasin 'n' Lag; L = 1.263 mi, Lc =  .983 mi
                                                          Slope =  .0184, Basin n =  .096

  A     Sub2     240   24    .07     62
                                        Subbasin 'n' Lag; L = 1.288 mi, Lc =  .593 mi
                                                          Slope =  .0159, Basin n =  .090

  A     Sub3     339   21    .07     65
                                        Subbasin 'n' Lag; L = 1.176 mi, Lc =  .708 mi
                                                          Slope =  .0174, Basin n =  .093
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C   Laguna  Combine previous  3 hydrographs.
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IDExisting Conditions Tributaries to Laguna Joaquine
ID
ID
IT       2  2MAY 2       1     1000

IO       1         0       0
IN       5
KK   Sub1
PB   0.00
PI   .008      .008      .008      .008      .008      .008      .008      .008      .008      .008
PI   .008      .008      .008      .008      .008      .008      .008      .008      .008      .008
PI   .008      .008      .008      .008      .008      .008      .008      .008      .008      .008
PI   .008      .008      .008      .008      .008      .008      .008      .008      .008      .008
PI   .008      .008      .008      .008      .008      .008      .008      .008      .008      .008
PI   .008      .008      .008      .008      .008      .008      .008      .008      .008      .008
PI   .008      .008      .008      .008      .008      .008      .008      .008      .008      .008
PI   .008      .008      .013      .013      .013      .013      .013      .013      .013      .013
PI   .013      .013      .013      .013      .013      .013      .013      .013      .013      .013
PI   .013      .013      .013      .013      .013      .013      .013      .013      .013      .013
PI   .013      .013      .013      .013      .013      .013      .013      .013      .020      .020
PI   .020      .020      .020      .020      .020      .020      .020      .020      .020      .020
PI   .020      .020      .020      .020      .020      .020      .024      .024      .024      .024
PI   .024      .024      .028      .028      .028      .028      .028      .028      .051      .051
PI   .051      .077      .120      .457      .188      .077      .077      .051      .051      .051
PI   .028      .028      .028      .028      .028      .028      .024      .024      .024      .024
PI   .024      .024      .020      .020      .020      .020      .020      .020      .020      .020
PI   .020      .020      .020      .020      .020      .020      .020      .020      .020      .020
PI   .013      .013      .013      .013      .013      .013      .013      .013      .013      .013
PI   .013      .013      .013      .013      .013      .013      .013      .013      .013      .013
PI   .013      .013      .013      .013      .013      .013      .013      .013      .013      .013
PI   .013      .013      .013      .013      .013      .013      .008      .008      .008      .008
PI   .008      .008      .008      .008      .008      .008      .008      .008      .008      .008
PI   .008      .008      .008      .008      .008      .008      .008      .008      .008      .008
PI   .008      .008      .008      .008      .008      .008      .008      .008      .008      .008
PI   .008      .008      .008      .008      .008      .008      .008      .008      .008      .008
PI   .008      .008      .008      .008      .008      .008      .008      .008      .008      .008
PI   .008      .008      .008      .008      .008      .008      .008      .008      .008      .008
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PI   .008    .008    .008    .008    .008    .008    .008    .008
BA   .502
LU    .10     .07   14.00
UI     7.      7.     16.     16.     27.     27.     38.     38.     46.     46.
UI    61.     61.     73.     73.     89.     89.    104.    104.    122.    122.
UI   139.    139.    160.    183.    183.    204.    204.    209.    209.    211.
UI   211.    209.    209.    204.    204.    187.    187.    170.    170.    153.
UI   153.    138.    138.    129.    119.    119.    109.    109.    102.    102.
UI    95.     95.     87.     87.     82.     82.     76.     76.     71.     71.
UI    66.     66.     63.     63.     59.     59.     55.     52.     52.     49.
UI    49.     46.     46.     44.     44.     42.     42.     39.     39.     38.
UI    38.     36.     36.     34.     34.     32.     32.     31.     31.     29.
UI    28.     28.     27.     27.     26.     26.     25.     25.     24.     24.
UI    23.     23.     22.     22.     22.     22.     21.     21.     20.     20.
UI    19.     19.     19.     18.     18.     17.     17.     17.     17.     16.
UI    16.     16.     16.     15.     15.     15.     15.     14.     14.     14.
UI    14.     13.     13.     13.     12.     12.     12.     12.     11.     11.
UI    11.     11.     11.     11.     10.     10.     10.     10.     10.     10.
UI     9.      9.      9.      9.      9.      9.      8.      8.      8.      8.
UI     8.      7.      7.      7.      7.      7.      7.      7.      7.      6.
UI     6.      6.      6.      6.      6.      6.      6.      5.      5.      5.
UI     5.      5.      5.      5.      5.      5.      5.      5.      5.      5.
UI     4.      4.      4.      4.      4.      4.      4.      4.      4.      4.
UI     4.      4.      3.      3.      3.      3.      3.      3.      3.      3.
UI     3.      3.      3.      3.      3.      3.      3.      3.      3.      3.
UI     3.      3.      3.      2.      2.      2.      2.      2.      2.      2.
KK   Sub2
BA   .375
LU    .10     .07   24.00
UI     6.      6.     15.     24.     24.     34.     34.     42.     56.     56.
UI    67.     81.     81.     95.    111.    111.    127.    127.    146.    167.
UI   167.    186.    190.    190.    193.    190.    190.    186.    186.    171.
UI   155.    155.    140.    126.    126.    117.    109.    109.     99.     99.
UI    93.     86.     86.     80.     75.     75.     70.     65.     65.     60.
UI    60.     57.     53.     53.     50.     47.     47.     45.     42.     42.
UI    40.     40.     38.     36.     36.     34.     32.     32.     31.     29.
UI    29.     28.     28.     26.     26.     26.     24.     24.     24.     23.
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UI    22.      22.      21.      21.      20.      20.      20.      19.      18.      18.
UI    18.      17.      17.      16.      16.      16.      15.      15.      15.      14.
UI    14.      14.      13.      13.      13.      13.      12.      12.      12.      11.
UI    11.      11.      11.      10.      10.      10.      10.      10.       9.       9.
UI     9.       9.       9.       8.       8.       8.       8.       8.       8.       7.
UI     7.       7.       7.       7.       6.       6.       6.       6.       6.       6.
UI     6.       6.       5.       5.       5.       5.       5.       5.       5.       5.
UI     5.       4.       4.       4.       4.       4.       4.       4.       4.       4.
UI     4.       4.       3.       3.       3.       3.       3.       3.       3.       3.
UI     3.       3.       3.       3.       3.       3.       3.       3.       2.       2.
UI     2.       2.       2.       2.       2.       2.       2.       2.       2.
KK   Sub3
BA   .530
LU    .10      .07    21.00
UI     8.       8.      20.      20.      33.      46.      46.      57.      57.      75.
UI    90.      90.     109.     128.     128.     150.     150.     171.     197.     197.
UI   225.     225.     250.     256.     256.     260.     260.     256.     250.     250.
UI   230.     230.     209.     188.     188.     170.     170.     158.     147.     147.
UI   133.     125.     125.     116.     116.     107.     101.     101.      94.      94.
UI    88.      81.      81.      77.      77.      72.      68.      68.      64.      64.
UI    60.      57.      57.      54.      51.      51.      48.      48.      46.      44.
UI    44.      42.      42.      39.      38.      38.      36.      36.      35.      33.
UI    33.      32.      32.      31.      30.      30.      29.      28.      28.      27.
UI    27.      26.      25.      25.      24.      24.      23.      22.      22.      21.
UI    21.      21.      20.      20.      19.      19.      18.      18.      18.      17.
UI    17.      17.      16.      16.      15.      15.      15.      14.      14.      14.
UI    13.      13.      13.      13.      13.      12.      12.      12.      12.      11.
UI    11.      11.      11.      11.      10.      10.      10.       9.       9.       9.
UI     9.       9.       8.       8.       8.       8.       8.       8.       7.       7.
UI     7.       7.       7.       6.       6.       6.       6.       6.       6.       6.
UI     6.       6.       6.       5.       5.       5.       5.       5.       5.       5.
UI     5.       4.       4.       4.       4.       4.       4.       4.       4.       4.
UI     4.       4.       4.       4.       4.       3.       3.       3.       3.       3.
UI     3.       3.       3.       3.       3.       3.       3.       3.
KKLaguna
HC      3
ZZ
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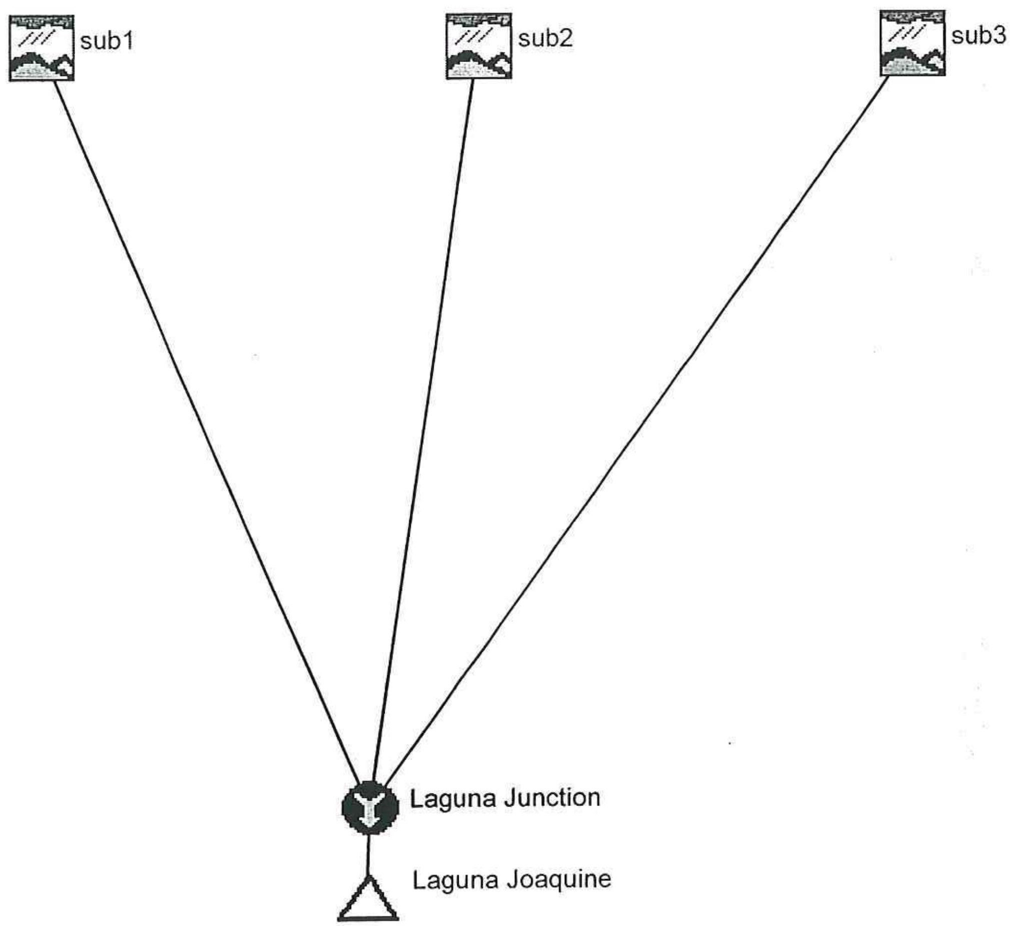
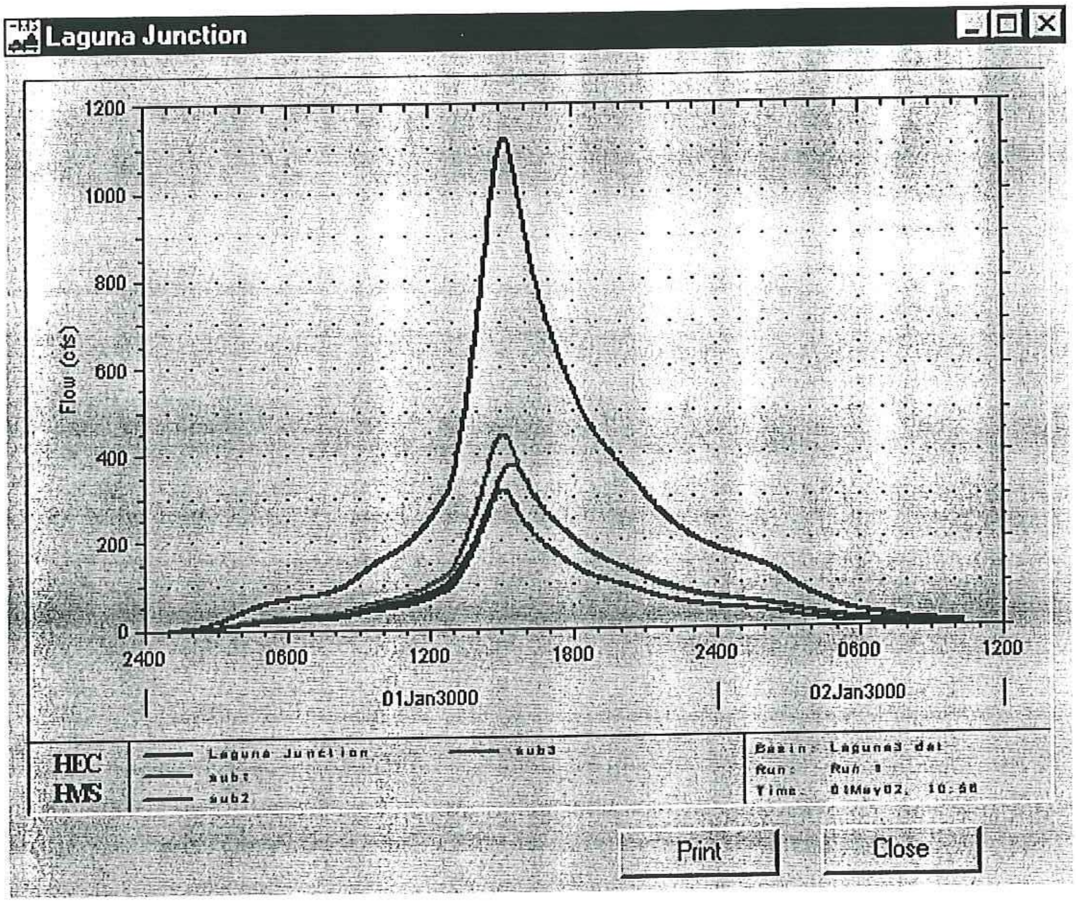
POST DEVELOPMENT
LAGUNA JOAQUIN
TRIBUTARIES
HEC-HMS

Sub Areas 1, 2 and 3

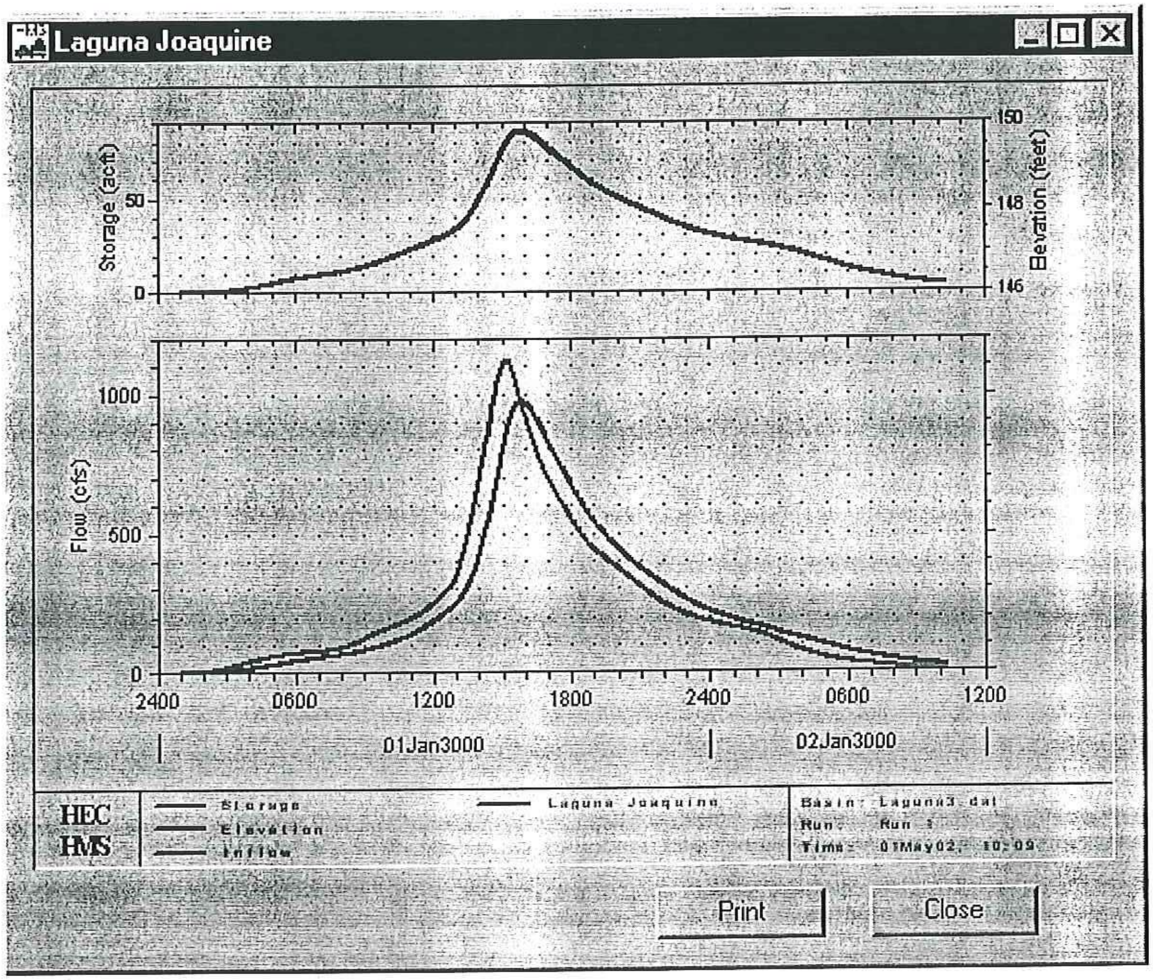
HEC-HMS Project: Laguna3 Basin Model: Laguna3.dat



Laguna Junction and Tributaries



Laguna Joaquin

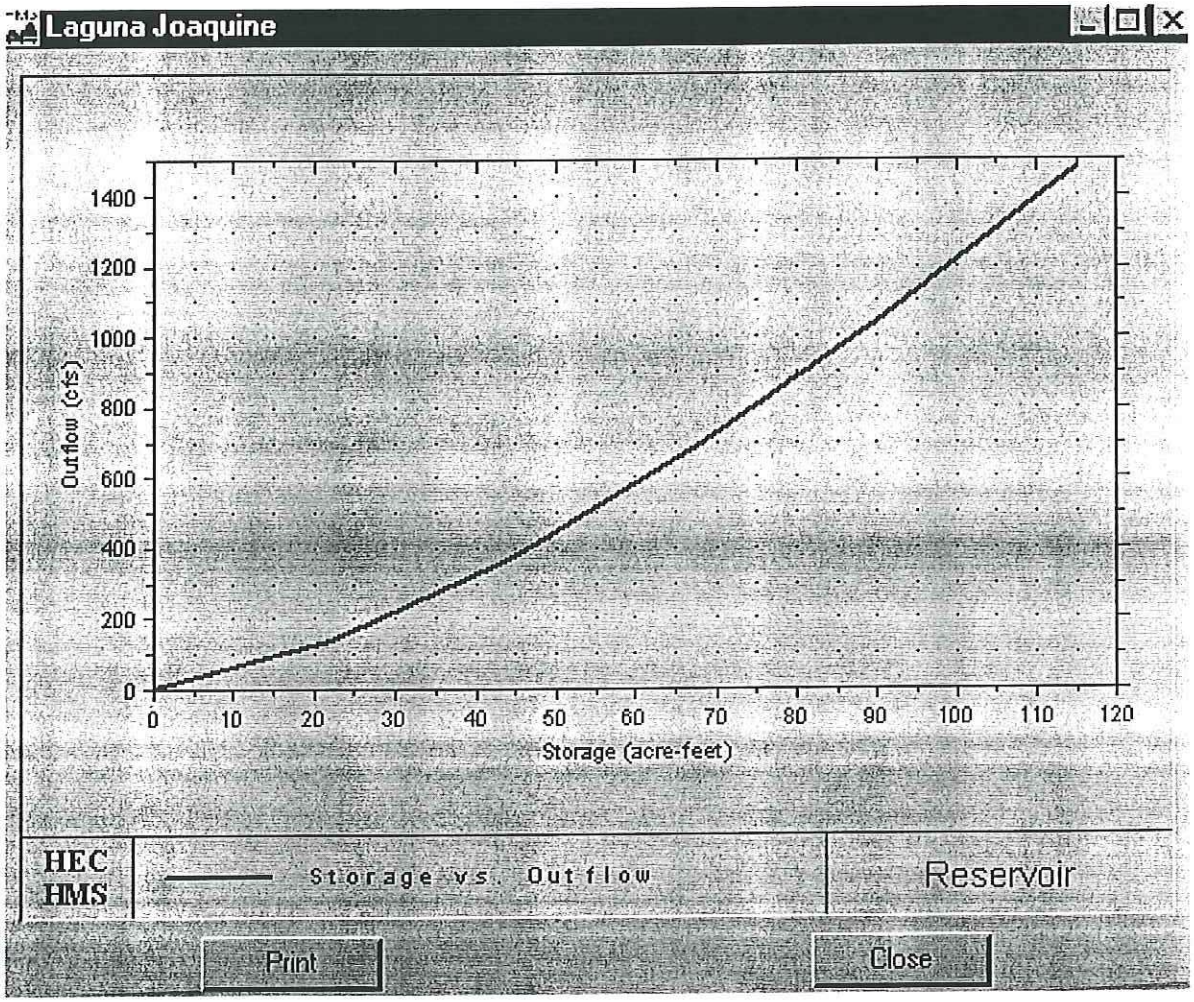


Peak Elevation = 149.77'

Peak Outflow = 970.60 cfs

Top Elevation = 151.00'

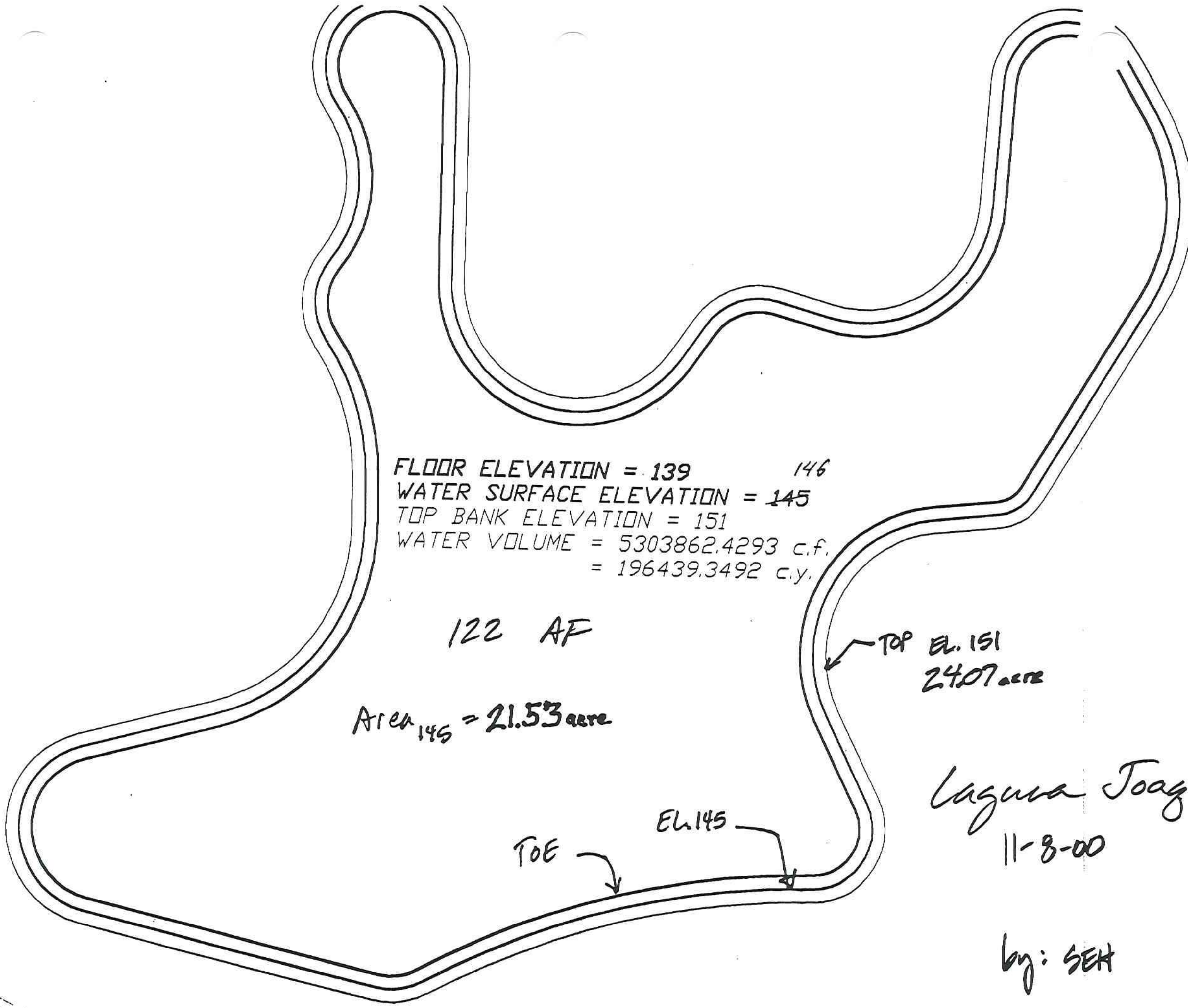
Laguna Joaquin Storage-Outflow



	Storage - Elevation Chart				
	Elev (ft)	Area (Acre)	Avg Area (Acre)	Storage (Acre-ft)	Weir Outflow (cfs)
	145	21.53		0	
			21.74		
	146	21.95		0	0
			22.16		
1	147	22.38		22.16	132
			22.59		
2	148	22.80		44.75	373
			23.01		
3	149	23.22		67.76	686
			23.43		
4	150	23.65		91.20	1056
			23.86		
5	151	24.07		115.05	1476

Weir Coefficient
C= 3.3

Weir Elevation = 146'



Laguna Joaquin
11-8-00

by: SEH

HMS * Summary of Results

Project : Laguna3 Run Name : Run 1

Start of Run	: 01Jan00 0100	Basin Model	: Laguna3.dat
End of Run	: 02Jan00 1018	Met. Model	: Laguna3.dat
Execution Time	: 01May02 0957	Control Specs	: Laguna3.dat

Hydrologic Element	Discharge Peak (cfs)	Time of Peak	Volume (ac ft)	Drainage Area (sq mi)
sub1	374.51	01 Jan 00 1526	225.65	0.502
sub2	314.09	01 Jan 00 1502	171.45	0.375
sub3	441.16	01 Jan 00 1506	242.90	0.530
Laguna Junction	1118.2	01 Jan 00 1510	640.00	1.407
Laguna Joaquin	970.60	01 Jan 00 1552	636.56	1.407

HMS * Summary of Results for Laguna
Joaquine

Project : Laguna3 Run Name : Run 1

Start of Run : 01Jan00 0100 Basin Model : Laguna3.dat
End of Run : 02Jan00 1018 Met. Model : Laguna3.dat
Execution Time : 01May02 1041 Control Specs : Laguna3.dat

Date	Time	Reservoir Storage (ac-ft)	Reservoir Elevation (ft)	Inflow (cfs)	Outflow (cfs)
01 Jan 00	0100	0.000	146.00	0.00	0.00
01 Jan 00	0102	0.000	146.00	0.02	0.00
01 Jan 00	0104	0.000	146.00	0.03	0.00
01 Jan 00	0106	0.000	146.00	0.05	0.00
01 Jan 00	0108	0.000	146.00	0.06	0.00
01 Jan 00	0110	0.001	146.00	0.08	0.00
01 Jan 00	0112	0.001	146.00	0.11	0.00
01 Jan 00	0114	0.001	146.00	0.15	0.01
01 Jan 00	0116	0.002	146.00	0.21	0.01
01 Jan 00	0118	0.002	146.00	0.26	0.01
01 Jan 00	0120	0.003	146.00	0.32	0.02
n 00	0122	0.004	146.00	0.38	0.02
an 00	0124	0.005	146.00	0.44	0.03
01 Jan 00	0126	0.006	146.00	0.51	0.04
01 Jan 00	0128	0.008	146.00	0.59	0.05
01 Jan 00	0130	0.009	146.00	0.68	0.05
01 Jan 00	0132	0.011	146.00	0.77	0.07
01 Jan 00	0134	0.013	146.00	0.86	0.08
01 Jan 00	0136	0.015	146.00	0.95	0.09
01 Jan 00	0138	0.018	146.00	1.04	0.11
01 Jan 00	0140	0.020	146.00	1.16	0.12
01 Jan 00	0142	0.024	146.00	1.29	0.14
01 Jan 00	0144	0.027	146.00	1.43	0.16
01 Jan 00	0146	0.031	146.00	1.57	0.18
01 Jan 00	0148	0.034	146.00	1.70	0.20
01 Jan 00	0150	0.039	146.00	1.84	0.23
01 Jan 00	0152	0.043	146.00	1.99	0.26
01 Jan 00	0154	0.048	146.00	2.16	0.29
01 Jan 00	0156	0.054	146.00	2.34	0.32
01 Jan 00	0158	0.059	146.00	2.54	0.35
01 Jan 00	0200	0.066	146.00	2.73	0.39
01 Jan 00	0202	0.072	146.00	2.92	0.43
01 Jan 00	0204	0.079	146.00	3.13	0.47
01 Jan 00	0206	0.087	146.00	3.36	0.52
01 Jan 00	0208	0.095	146.00	3.61	0.57
n 00	0210	0.104	146.00	3.87	0.62
Jan 00	0212	0.113	146.01	4.13	0.67
01 Jan 00	0214	0.123	146.01	4.40	0.73
01 Jan 00	0216	0.133	146.01	4.69	0.79
01 Jan 00	0218	0.144	146.01	5.01	0.86

Date	Time	Reservoir Storage (ac-ft)	Reservoir Elevation (ft)	Inflow (cfs)	Outflow (cfs)
an 00	0220	0.156	146.01	5.35	0.93
01 Jan 00	0222	0.169	146.01	5.70	1.00
01 Jan 00	0224	0.182	146.01	6.06	1.08
01 Jan 00	0226	0.196	146.01	6.43	1.17
01 Jan 00	0228	0.211	146.01	6.81	1.25
01 Jan 00	0230	0.227	146.01	7.20	1.35
01 Jan 00	0232	0.243	146.01	7.61	1.45
01 Jan 00	0234	0.261	146.01	8.04	1.55
01 Jan 00	0236	0.279	146.01	8.52	1.66
01 Jan 00	0238	0.299	146.01	9.00	1.77
01 Jan 00	0240	0.319	146.01	9.49	1.90
01 Jan 00	0242	0.340	146.02	9.99	2.02
01 Jan 00	0244	0.363	146.02	10.51	2.16
01 Jan 00	0246	0.386	146.02	11.06	2.30
01 Jan 00	0248	0.411	146.02	11.63	2.44
01 Jan 00	0250	0.437	146.02	12.21	2.60
01 Jan 00	0252	0.464	146.02	12.79	2.76
01 Jan 00	0254	0.492	146.02	13.38	2.93
01 Jan 00	0256	0.522	146.02	13.99	3.10
01 Jan 00	0258	0.552	146.02	14.63	3.28
01 Jan 00	0300	0.584	146.03	15.28	3.47
01 Jan 00	0302	0.617	146.03	15.93	3.67
n 00	0304	0.652	146.03	16.58	3.88
an 00	0306	0.687	146.03	17.24	4.09
01 Jan 00	0308	0.724	146.03	17.93	4.31
01 Jan 00	0310	0.762	146.03	18.63	4.53
01 Jan 00	0312	0.802	146.04	19.35	4.77
01 Jan 00	0314	0.843	146.04	20.06	5.01
01 Jan 00	0316	0.885	146.04	20.77	5.26
01 Jan 00	0318	0.928	146.04	21.48	5.52
01 Jan 00	0320	0.973	146.04	22.21	5.78
01 Jan 00	0322	1.019	146.05	22.96	6.06
01 Jan 00	0324	1.066	146.05	23.72	6.34
01 Jan 00	0326	1.114	146.05	24.47	6.63
01 Jan 00	0328	1.164	146.05	25.21	6.92
01 Jan 00	0330	1.215	146.05	25.95	7.23
01 Jan 00	0332	1.267	146.06	26.68	7.54
01 Jan 00	0334	1.321	146.06	27.42	7.85
01 Jan 00	0336	1.375	146.06	28.18	8.18
01 Jan 00	0338	1.431	146.06	28.96	8.51
01 Jan 00	0340	1.488	146.07	29.74	8.85
01 Jan 00	0342	1.546	146.07	30.51	9.19
01 Jan 00	0344	1.605	146.07	31.26	9.55
01 Jan 00	0346	1.666	146.08	32.01	9.90
01 Jan 00	0348	1.727	146.08	32.78	10.27
01 Jan 00	0350	1.790	146.08	33.56	10.64
n 00	0352	1.853	146.08	34.34	11.02
an 00	0354	1.918	146.09	35.11	11.41
01 Jan 00	0356	1.984	146.09	35.87	11.80
01 Jan 00	0358	2.051	146.09	36.63	12.19
01 Jan 00	0400	2.119	146.10	37.40	12.60

Date	Time	Reservoir Storage (ac-ft)	Reservoir Elevation (ft)	Inflow (cfs)	Outflow (cfs)
an 00	0402	2.187	146.10	38.16	13.01
01 Jan 00	0404	2.257	146.10	38.92	13.42
01 Jan 00	0406	2.328	146.10	39.68	13.84
01 Jan 00	0408	2.400	146.11	40.43	14.27
01 Jan 00	0410	2.472	146.11	41.19	14.70
01 Jan 00	0412	2.546	146.11	41.95	15.14
01 Jan 00	0414	2.620	146.12	42.69	15.58
01 Jan 00	0416	2.695	146.12	43.43	16.02
01 Jan 00	0418	2.771	146.12	44.15	16.47
01 Jan 00	0420	2.847	146.13	44.86	16.93
01 Jan 00	0422	2.925	146.13	45.57	17.39
01 Jan 00	0424	3.003	146.14	46.28	17.85
01 Jan 00	0426	3.081	146.14	46.98	18.32
01 Jan 00	0428	3.161	146.14	47.68	18.79
01 Jan 00	0430	3.240	146.15	48.35	19.27
01 Jan 00	0432	3.321	146.15	49.02	19.75
01 Jan 00	0434	3.402	146.15	49.67	20.23
01 Jan 00	0436	3.483	146.16	50.32	20.71
01 Jan 00	0438	3.565	146.16	50.95	21.20
01 Jan 00	0440	3.647	146.16	51.57	21.68
01 Jan 00	0442	3.729	146.17	52.19	22.17
01 Jan 00	0444	3.812	146.17	52.79	22.67
n 00	0446	3.895	146.18	53.37	23.16
an 00	0448	3.979	146.18	53.94	23.66
01 Jan 00	0450	4.062	146.18	54.51	24.15
01 Jan 00	0452	4.146	146.19	55.07	24.65
01 Jan 00	0454	4.230	146.19	55.61	25.15
01 Jan 00	0456	4.314	146.19	56.14	25.65
01 Jan 00	0458	4.398	146.20	56.66	26.15
01 Jan 00	0500	4.482	146.20	57.17	26.65
01 Jan 00	0502	4.566	146.21	57.68	27.15
01 Jan 00	0504	4.650	146.21	58.18	27.65
01 Jan 00	0506	4.734	146.21	58.66	28.15
01 Jan 00	0508	4.818	146.22	59.14	28.65
01 Jan 00	0510	4.902	146.22	59.62	29.15
01 Jan 00	0512	4.986	146.22	60.09	29.65
01 Jan 00	0514	5.070	146.23	60.54	30.14
01 Jan 00	0516	5.153	146.23	60.99	30.64
01 Jan 00	0518	5.237	146.24	61.42	31.14
01 Jan 00	0520	5.320	146.24	61.84	31.63
01 Jan 00	0522	5.403	146.24	62.25	32.13
01 Jan 00	0524	5.486	146.25	62.66	32.62
01 Jan 00	0526	5.569	146.25	63.06	33.11
01 Jan 00	0528	5.651	146.25	63.45	33.60
01 Jan 00	0530	5.733	146.26	63.84	34.09
01 Jan 00	0532	5.815	146.26	64.22	34.58
n 00	0534	5.897	146.27	64.59	35.06
an 00	0536	5.978	146.27	64.96	35.54
01 Jan 00	0538	6.059	146.27	65.33	36.02
01 Jan 00	0540	6.139	146.28	65.68	36.50
01 Jan 00	0542	6.219	146.28	66.02	36.98

Date	Time	Reservoir Storage (ac-ft)	Reservoir Elevation (ft)	Inflow (cfs)	Outflow (cfs)
Jan 00	0544	6.299	146.28	66.37	37.46
01 Jan 00	0546	6.379	146.29	66.71	37.93
01 Jan 00	0548	6.458	146.29	67.05	38.40
01 Jan 00	0550	6.537	146.29	67.38	38.87
01 Jan 00	0552	6.615	146.30	67.70	39.33
01 Jan 00	0554	6.693	146.30	68.01	39.80
01 Jan 00	0556	6.770	146.30	68.33	40.26
01 Jan 00	0558	6.848	146.31	68.63	40.72
01 Jan 00	0600	6.924	146.31	68.93	41.17
01 Jan 00	0602	7.000	146.32	69.23	41.62
01 Jan 00	0604	7.076	146.32	69.53	42.08
01 Jan 00	0606	7.152	146.32	69.82	42.52
01 Jan 00	0608	7.227	146.33	70.11	42.97
01 Jan 00	0610	7.301	146.33	70.39	43.41
01 Jan 00	0612	7.375	146.33	70.67	43.85
01 Jan 00	0614	7.449	146.34	70.95	44.29
01 Jan 00	0616	7.522	146.34	71.22	44.73
01 Jan 00	0618	7.595	146.34	71.49	45.16
01 Jan 00	0620	7.667	146.35	71.75	45.59
01 Jan 00	0622	7.739	146.35	72.01	46.02
01 Jan 00	0624	7.810	146.35	72.26	46.44
01 Jan 00	0626	7.881	146.36	72.50	46.86
Jan 00	0628	7.952	146.36	72.75	47.28
an 00	0630	8.022	146.36	72.99	47.70
01 Jan 00	0632	8.091	146.36	73.23	48.11
01 Jan 00	0634	8.160	146.37	73.46	48.52
01 Jan 00	0636	8.229	146.37	73.69	48.93
01 Jan 00	0638	8.297	146.37	73.91	49.33
01 Jan 00	0640	8.364	146.38	74.14	49.73
01 Jan 00	0642	8.431	146.38	74.36	50.13
01 Jan 00	0644	8.498	146.38	74.58	50.53
01 Jan 00	0646	8.564	146.39	74.80	50.92
01 Jan 00	0648	8.629	146.39	75.01	51.31
01 Jan 00	0650	8.694	146.39	75.22	51.69
01 Jan 00	0652	8.759	146.39	75.43	52.08
01 Jan 00	0654	8.823	146.40	75.63	52.46
01 Jan 00	0656	8.886	146.40	75.83	52.84
01 Jan 00	0658	8.949	146.40	76.03	53.21
01 Jan 00	0700	9.012	146.41	76.23	53.59
01 Jan 00	0702	9.074	146.41	76.47	53.96
01 Jan 00	0704	9.136	146.41	76.70	54.32
01 Jan 00	0706	9.198	146.41	76.94	54.69
01 Jan 00	0708	9.259	146.42	77.17	55.05
01 Jan 00	0710	9.319	146.42	77.40	55.41
01 Jan 00	0712	9.380	146.42	77.66	55.77
01 Jan 00	0714	9.440	146.43	77.96	56.13
an 00	0716	9.500	146.43	78.28	56.49
an 00	0718	9.560	146.43	78.61	56.84
01 Jan 00	0720	9.620	146.43	78.94	57.20
01 Jan 00	0722	9.680	146.44	79.27	57.56
01 Jan 00	0724	9.740	146.44	79.61	57.91

Date	Time	Reservoir Storage (ac-ft)	Reservoir Elevation (ft)	Inflow (cfs)	Outflow (cfs)
Jan 00	0726	9.800	146.44	79.98	58.27
01 Jan 00	0728	9.859	146.44	80.36	58.62
01 Jan 00	0730	9.919	146.45	80.75	58.98
01 Jan 00	0732	9.979	146.45	81.15	59.34
01 Jan 00	0734	10.039	146.45	81.55	59.69
01 Jan 00	0736	10.100	146.45	81.95	60.05
01 Jan 00	0738	10.160	146.46	82.37	60.41
01 Jan 00	0740	10.221	146.46	82.84	60.77
01 Jan 00	0742	10.282	146.46	83.35	61.14
01 Jan 00	0744	10.343	146.47	83.87	61.50
01 Jan 00	0746	10.405	146.47	84.38	61.87
01 Jan 00	0748	10.467	146.47	84.89	62.24
01 Jan 00	0750	10.530	146.47	85.40	62.61
01 Jan 00	0752	10.593	146.48	85.95	62.98
01 Jan 00	0754	10.656	146.48	86.55	63.36
01 Jan 00	0756	10.721	146.48	87.20	63.74
01 Jan 00	0758	10.786	146.49	87.85	64.13
01 Jan 00	0800	10.851	146.49	88.50	64.52
01 Jan 00	0802	10.918	146.49	89.15	64.92
01 Jan 00	0804	10.985	146.49	89.83	65.32
01 Jan 00	0806	11.053	146.50	90.55	65.72
01 Jan 00	0808	11.122	146.50	91.31	66.13
n 00	0810	11.192	146.50	92.10	66.54
an 00	0812	11.263	146.51	92.90	66.97
01 Jan 00	0814	11.334	146.51	93.69	67.39
01 Jan 00	0816	11.407	146.51	94.51	67.83
01 Jan 00	0818	11.482	146.52	95.37	68.27
01 Jan 00	0820	11.557	146.52	96.28	68.72
01 Jan 00	0822	11.633	146.52	97.21	69.17
01 Jan 00	0824	11.711	146.53	98.16	69.63
01 Jan 00	0826	11.791	146.53	99.13	70.11
01 Jan 00	0828	11.871	146.53	100.11	70.59
01 Jan 00	0830	11.953	146.54	101.09	71.07
01 Jan 00	0832	12.037	146.54	102.10	71.57
01 Jan 00	0834	12.122	146.55	103.18	72.07
01 Jan 00	0836	12.208	146.55	104.35	72.59
01 Jan 00	0838	12.297	146.55	105.55	73.11
01 Jan 00	0840	12.387	146.56	106.76	73.65
01 Jan 00	0842	12.479	146.56	107.94	74.20
01 Jan 00	0844	12.573	146.57	109.14	74.76
01 Jan 00	0846	12.668	146.57	110.39	75.33
01 Jan 00	0848	12.766	146.58	111.72	75.91
01 Jan 00	0850	12.866	146.58	113.07	76.50
01 Jan 00	0852	12.967	146.58	114.40	77.10
01 Jan 00	0854	13.071	146.59	115.73	77.72
01 Jan 00	0856	13.177	146.59	117.08	78.35
n 00	0858	13.285	146.60	118.48	78.99
Jan 00	0900	13.394	146.60	119.88	79.64
01 Jan 00	0902	13.506	146.61	121.28	80.31
01 Jan 00	0904	13.620	146.61	122.68	80.98
01 Jan 00	0906	13.736	146.62	124.08	81.67

Date	Time	Reservoir Storage (ac-ft)	Reservoir Elevation (ft)	Inflow (cfs)	Outflow (cfs)
an 00	0908	13.854	146.62	125.52	82.37
01 Jan 00	0910	13.974	146.63	126.97	83.09
01 Jan 00	0912	14.096	146.63	128.41	83.81
01 Jan 00	0914	14.219	146.64	129.84	84.55
01 Jan 00	0916	14.345	146.65	131.26	85.30
01 Jan 00	0918	14.473	146.65	132.68	86.05
01 Jan 00	0920	14.602	146.66	134.09	86.82
01 Jan 00	0922	14.733	146.66	135.51	87.60
01 Jan 00	0924	14.866	146.67	136.93	88.39
01 Jan 00	0926	15.000	146.68	138.33	89.19
01 Jan 00	0928	15.137	146.68	139.68	90.00
01 Jan 00	0930	15.274	146.69	141.00	90.82
01 Jan 00	0932	15.413	146.69	142.30	91.64
01 Jan 00	0934	15.553	146.70	143.60	92.48
01 Jan 00	0936	15.695	146.71	144.90	93.32
01 Jan 00	0938	15.837	146.71	146.17	94.17
01 Jan 00	0940	15.981	146.72	147.40	95.02
01 Jan 00	0942	16.126	146.73	148.59	95.88
01 Jan 00	0944	16.271	146.73	149.76	96.75
01 Jan 00	0946	16.418	146.74	150.91	97.62
01 Jan 00	0948	16.565	146.75	152.06	98.50
01 Jan 00	0950	16.713	146.75	153.20	99.37
an 00	0952	16.862	146.76	154.30	100.26
an 00	0954	17.011	146.77	155.35	101.14
Jan 00	0956	17.160	146.77	156.40	102.03
01 Jan 00	0958	17.310	146.78	157.43	102.93
01 Jan 00	1000	17.460	146.79	158.44	103.82
01 Jan 00	1002	17.611	146.79	159.49	104.72
01 Jan 00	1004	17.762	146.80	160.52	105.61
01 Jan 00	1006	17.914	146.81	161.54	106.51
01 Jan 00	1008	18.065	146.81	162.55	107.42
01 Jan 00	1010	18.217	146.82	163.56	108.32
01 Jan 00	1012	18.370	146.83	164.58	109.23
01 Jan 00	1014	18.522	146.83	165.63	110.13
01 Jan 00	1016	18.676	146.84	166.69	111.04
01 Jan 00	1018	18.829	146.85	167.73	111.96
01 Jan 00	1020	18.983	146.86	168.77	112.87
01 Jan 00	1022	19.137	146.86	169.80	113.79
01 Jan 00	1024	19.292	146.87	170.84	114.71
01 Jan 00	1026	19.446	146.88	171.89	115.63
01 Jan 00	1028	19.602	146.88	172.96	116.55
01 Jan 00	1030	19.757	146.89	174.04	117.47
01 Jan 00	1032	19.913	146.90	175.13	118.40
01 Jan 00	1034	20.070	146.90	176.22	119.33
01 Jan 00	1036	20.227	146.91	177.28	120.27
01 Jan 00	1038	20.384	146.92	178.34	121.20
n 00	1040	20.541	146.93	179.47	122.14
an 00	1042	20.700	146.93	180.66	123.08
01 Jan 00	1044	20.859	146.94	181.86	124.02
01 Jan 00	1046	21.018	146.95	183.04	124.97
01 Jan 00	1048	21.179	146.95	184.19	125.93

Date	Time	Reservoir Storage (ac-ft)	Reservoir Elevation (ft)	Inflow (cfs)	Outflow (cfs)
Jan 00	1050	21.339	146.96	185.34	126.88
01 Jan 00	1052	21.501	146.97	186.54	127.84
01 Jan 00	1054	21.663	146.98	187.80	128.81
01 Jan 00	1056	21.826	146.98	189.11	129.78
01 Jan 00	1058	21.990	146.99	190.42	130.75
01 Jan 00	1100	22.155	147.00	191.73	131.73
01 Jan 00	1102	22.320	147.01	193.04	133.27
01 Jan 00	1104	22.484	147.01	194.38	135.02
01 Jan 00	1106	22.647	147.02	195.77	136.76
01 Jan 00	1108	22.809	147.03	197.20	138.49
01 Jan 00	1110	22.970	147.03	198.68	140.21
01 Jan 00	1112	23.131	147.04	200.16	141.93
01 Jan 00	1114	23.291	147.05	201.63	143.63
01 Jan 00	1116	23.450	147.06	203.12	145.33
01 Jan 00	1118	23.609	147.06	204.67	147.03
01 Jan 00	1120	23.768	147.07	206.26	148.72
01 Jan 00	1122	23.927	147.08	207.89	150.41
01 Jan 00	1124	24.085	147.08	209.54	152.10
01 Jan 00	1126	24.243	147.09	211.21	153.79
01 Jan 00	1128	24.401	147.10	212.89	155.47
01 Jan 00	1130	24.559	147.10	214.57	157.16
01 Jan 00	1132	24.718	147.11	216.31	158.85
n 00	1134	24.876	147.12	218.15	160.54
an 00	1136	25.035	147.13	220.11	162.23
01 Jan 00	1138	25.195	147.13	222.11	163.94
01 Jan 00	1140	25.356	147.14	224.11	165.65
01 Jan 00	1142	25.517	147.15	226.11	167.37
01 Jan 00	1144	25.679	147.15	228.14	169.10
01 Jan 00	1146	25.842	147.16	230.27	170.84
01 Jan 00	1148	26.007	147.17	232.53	172.60
01 Jan 00	1150	26.173	147.18	234.80	174.36
01 Jan 00	1152	26.340	147.18	237.04	176.15
01 Jan 00	1154	26.508	147.19	239.28	177.94
01 Jan 00	1156	26.678	147.20	241.58	179.75
01 Jan 00	1158	26.849	147.21	243.94	181.58
01 Jan 00	1200	27.022	147.21	246.33	183.42
01 Jan 00	1202	27.196	147.22	248.75	185.27
01 Jan 00	1204	27.371	147.23	251.18	187.14
01 Jan 00	1206	27.548	147.24	253.60	189.03
01 Jan 00	1208	27.727	147.24	256.09	190.94
01 Jan 00	1210	27.907	147.25	258.63	192.86
01 Jan 00	1212	28.089	147.26	261.21	194.80
01 Jan 00	1214	28.273	147.27	263.82	196.76
01 Jan 00	1216	28.459	147.28	266.43	198.74
01 Jan 00	1218	28.646	147.29	269.03	200.74
01 Jan 00	1220	28.835	147.29	271.63	202.75
n 00	1222	29.026	147.30	274.28	204.79
Jan 00	1224	29.218	147.31	276.97	206.84
01 Jan 00	1226	29.412	147.32	279.67	208.91
01 Jan 00	1228	29.608	147.33	282.34	210.99
01 Jan 00	1230	29.805	147.34	284.97	213.10

Date	Time	Reservoir Storage (ac-ft)	Reservoir Elevation (ft)	Inflow (cfs)	Outflow (cfs)
Jan 00	1232	30.004	147.35	287.79	215.22
01 Jan 00	1234	30.205	147.35	290.63	217.36
01 Jan 00	1236	30.408	147.36	293.49	219.53
01 Jan 00	1238	30.612	147.37	296.34	221.71
01 Jan 00	1240	30.819	147.38	299.24	223.91
01 Jan 00	1242	31.028	147.39	302.26	226.14
01 Jan 00	1244	31.239	147.40	305.43	228.38
01 Jan 00	1246	31.452	147.41	308.83	230.66
01 Jan 00	1248	31.669	147.42	312.39	232.98
01 Jan 00	1250	31.890	147.43	316.00	235.33
01 Jan 00	1252	32.114	147.44	320.00	237.72
01 Jan 00	1254	32.343	147.45	324.07	240.16
01 Jan 00	1256	32.579	147.46	329.84	242.68
01 Jan 00	1258	32.826	147.47	337.36	245.31
01 Jan 00	1300	33.086	147.48	345.11	248.09
01 Jan 00	1302	33.357	147.49	350.77	250.98
01 Jan 00	1304	33.637	147.51	357.03	253.96
01 Jan 00	1306	33.927	147.52	364.41	257.05
01 Jan 00	1308	34.231	147.53	373.93	260.29
01 Jan 00	1310	34.556	147.55	385.83	263.76
01 Jan 00	1312	34.903	147.56	397.56	267.46
01 Jan 00	1314	35.270	147.58	407.50	271.37
n 00	1316	35.651	147.60	416.12	275.44
an 00	1318	36.044	147.61	424.65	279.63
01 Jan 00	1320	36.450	147.63	433.37	283.96
01 Jan 00	1322	36.869	147.65	443.22	288.43
01 Jan 00	1324	37.304	147.67	454.07	293.06
01 Jan 00	1326	37.755	147.69	464.60	297.88
01 Jan 00	1328	38.221	147.71	474.47	302.85
01 Jan 00	1330	38.700	147.73	483.85	307.95
01 Jan 00	1332	39.190	147.75	492.89	313.18
01 Jan 00	1334	39.693	147.77	503.77	318.54
01 Jan 00	1336	40.215	147.80	518.15	324.11
01 Jan 00	1338	40.763	147.82	533.43	329.95
01 Jan 00	1340	41.332	147.85	546.18	336.02
01 Jan 00	1342	41.917	147.87	556.32	342.25
01 Jan 00	1344	42.511	147.90	565.75	348.59
01 Jan 00	1346	43.114	147.93	576.15	355.02
01 Jan 00	1348	43.733	147.95	589.55	361.62
01 Jan 00	1350	44.374	147.98	606.12	368.46
01 Jan 00	1352	45.041	148.01	622.87	376.28
01 Jan 00	1354	45.727	148.04	637.11	385.62
01 Jan 00	1356	46.423	148.07	648.69	395.09
01 Jan 00	1358	47.124	148.10	660.13	404.63
01 Jan 00	1400	47.833	148.13	673.09	414.27
01 Jan 00	1402	48.553	148.16	688.49	424.08
n 00	1404	49.291	148.20	705.49	434.12
Jan 00	1406	50.047	148.23	721.76	444.41
01 Jan 00	1408	50.816	148.26	735.92	454.87
01 Jan 00	1410	51.593	148.30	748.59	465.45
01 Jan 00	1412	52.377	148.33	762.20	476.12

Date	Time	Reservoir Storage (ac-ft)	Reservoir Elevation (ft)	Inflow (cfs)	Outflow (cfs)
an 00	1414	53.173	148.36	778.20	486.94
01 Jan 00	1416	53.984	148.40	795.71	497.98
01 Jan 00	1418	54.812	148.44	812.71	509.25
01 Jan 00	1420	55.653	148.47	828.10	520.70
01 Jan 00	1422	56.504	148.51	842.30	532.28
01 Jan 00	1424	57.360	148.55	855.74	543.93
01 Jan 00	1426	58.221	148.58	868.94	555.65
01 Jan 00	1428	59.090	148.62	884.49	567.46
01 Jan 00	1430	59.975	148.66	905.28	579.51
01 Jan 00	1432	60.887	148.70	928.20	591.92
01 Jan 00	1434	61.823	148.74	947.77	604.66
01 Jan 00	1436	62.770	148.78	961.85	617.54
01 Jan 00	1438	63.716	148.82	973.38	630.43
01 Jan 00	1440	64.660	148.86	985.12	643.26
01 Jan 00	1442	65.605	148.90	1000.93	656.13
01 Jan 00	1444	66.563	148.95	1019.40	669.16
01 Jan 00	1446	67.531	148.99	1034.79	682.33
01 Jan 00	1448	68.495	149.03	1044.90	696.99
01 Jan 00	1450	69.445	149.07	1053.72	712.01
01 Jan 00	1452	70.380	149.11	1063.84	726.80
01 Jan 00	1454	71.303	149.15	1074.01	741.38
01 Jan 00	1456	72.211	149.19	1082.85	755.75
an 00	1458	73.103	149.23	1090.04	769.85
an 00	1500	73.974	149.26	1096.18	783.63
Jan 00	1502	74.825	149.30	1102.07	797.08
01 Jan 00	1504	75.655	149.34	1108.14	810.21
01 Jan 00	1506	76.466	149.37	1113.83	823.03
01 Jan 00	1508	77.255	149.40	1116.96	835.50
01 Jan 00	1510	78.015	149.44	1118.24	847.52
01 Jan 00	1512	78.745	149.47	1118.22	859.06
01 Jan 00	1514	79.442	149.50	1117.31	870.09
01 Jan 00	1516	80.108	149.53	1116.68	880.62
01 Jan 00	1518	80.744	149.55	1115.93	890.66
01 Jan 00	1520	81.348	149.58	1113.93	900.22
01 Jan 00	1522	81.918	149.60	1108.87	909.23
01 Jan 00	1524	82.445	149.63	1100.88	917.57
01 Jan 00	1526	82.928	149.65	1092.21	925.20
01 Jan 00	1528	83.368	149.67	1084.64	932.16
01 Jan 00	1530	83.770	149.68	1078.29	938.52
01 Jan 00	1532	84.138	149.70	1071.78	944.34
01 Jan 00	1534	84.471	149.71	1063.51	949.60
01 Jan 00	1536	84.764	149.72	1052.97	954.23
01 Jan 00	1538	85.015	149.74	1041.60	958.20
01 Jan 00	1540	85.225	149.74	1030.52	961.52
01 Jan 00	1542	85.398	149.75	1020.86	964.25
01 Jan 00	1544	85.539	149.76	1012.68	966.49
n 00	1546	85.652	149.76	1004.25	968.28
an 00	1548	85.735	149.77	993.41	969.58
01 Jan 00	1550	85.783	149.77	981.54	970.34
01 Jan 00	1552	85.799	149.77	971.04	970.60
01 Jan 00	1554	85.787	149.77	961.56	970.41

Date	Time	Reservoir Storage (ac-ft)	Reservoir Elevation (ft)	Inflow (cfs)	Outflow (cfs)
Jan 00	1556	85.750	149.77	951.61	969.83
01 Jan 00	1558	85.688	149.76	941.79	968.84
01 Jan 00	1600	85.603	149.76	933.09	967.50
01 Jan 00	1602	85.499	149.76	924.99	965.86
01 Jan 00	1604	85.378	149.75	916.83	963.94
01 Jan 00	1606	85.240	149.75	908.24	961.75
01 Jan 00	1608	85.082	149.74	898.49	959.26
01 Jan 00	1610	84.903	149.73	887.56	956.44
01 Jan 00	1612	84.703	149.72	876.75	953.27
01 Jan 00	1614	84.483	149.71	866.65	949.80
01 Jan 00	1616	84.246	149.70	857.18	946.05
01 Jan 00	1618	83.995	149.69	848.77	942.08
01 Jan 00	1620	83.733	149.68	840.63	937.93
01 Jan 00	1622	83.459	149.67	832.26	933.60
01 Jan 00	1624	83.175	149.66	824.42	929.12
01 Jan 00	1626	82.884	149.64	817.63	924.51
01 Jan 00	1628	82.587	149.63	811.03	919.81
01 Jan 00	1630	82.284	149.62	803.59	915.02
01 Jan 00	1632	81.972	149.61	795.21	910.09
01 Jan 00	1634	81.651	149.59	786.80	905.01
01 Jan 00	1636	81.322	149.58	779.36	899.81
01 Jan 00	1638	80.989	149.56	773.06	894.54
an 00	1640	80.653	149.55	767.10	889.24
an 00	1642	80.315	149.53	760.43	883.89
01 Jan 00	1644	79.972	149.52	753.07	878.47
01 Jan 00	1646	79.624	149.51	745.87	872.97
01 Jan 00	1648	79.273	149.49	739.35	867.41
01 Jan 00	1650	78.919	149.48	732.92	861.81
01 Jan 00	1652	78.563	149.46	726.41	856.18
01 Jan 00	1654	78.205	149.44	720.35	850.52
01 Jan 00	1656	77.846	149.43	714.93	844.85
01 Jan 00	1658	77.489	149.41	709.67	839.20
01 Jan 00	1700	77.133	149.40	704.31	833.57
01 Jan 00	1702	76.776	149.38	698.52	827.93
01 Jan 00	1704	76.419	149.37	692.61	822.29
01 Jan 00	1706	76.063	149.35	687.19	816.65
01 Jan 00	1708	75.707	149.34	681.99	811.02
01 Jan 00	1710	75.351	149.32	676.45	805.40
01 Jan 00	1712	74.996	149.31	670.56	799.78
01 Jan 00	1714	74.639	149.29	664.29	794.13
01 Jan 00	1716	74.280	149.28	657.67	788.46
01 Jan 00	1718	73.919	149.26	651.77	782.76
01 Jan 00	1720	73.559	149.25	646.80	777.07
01 Jan 00	1722	73.202	149.23	642.08	771.41
01 Jan 00	1724	72.846	149.22	637.06	765.79
01 Jan 00	1726	72.492	149.20	631.66	760.19
an 00	1728	72.138	149.19	626.17	754.59
an 00	1730	71.785	149.17	620.89	749.01
01 Jan 00	1732	71.433	149.16	616.21	743.44
01 Jan 00	1734	71.084	149.14	611.95	737.93
01 Jan 00	1736	70.738	149.13	607.45	732.46

Date	Time	Reservoir Storage (ac-ft)	Reservoir Elevation (ft)	Inflow (cfs)	Outflow (cfs)
Jan 00	1738	70.395	149.11	602.45	727.03
01 Jan 00	1740	70.052	149.10	597.65	721.61
01 Jan 00	1742	69.712	149.08	593.44	716.24
01 Jan 00	1744	69.376	149.07	589.29	710.92
01 Jan 00	1746	69.041	149.05	584.42	705.63
01 Jan 00	1748	68.707	149.04	578.97	700.34
01 Jan 00	1750	68.373	149.02	573.65	695.06
01 Jan 00	1752	68.039	149.01	569.02	689.78
01 Jan 00	1754	67.708	149.00	564.88	684.74
01 Jan 00	1756	67.378	148.98	560.77	680.26
01 Jan 00	1758	67.049	148.97	556.50	675.78
01 Jan 00	1800	66.721	148.95	552.40	671.32
01 Jan 00	1802	66.394	148.94	548.54	666.87
01 Jan 00	1804	66.069	148.92	544.52	662.44
01 Jan 00	1806	65.744	148.91	540.02	658.02
01 Jan 00	1808	65.418	148.90	535.26	653.59
01 Jan 00	1810	65.092	148.88	530.66	649.15
01 Jan 00	1812	64.766	148.87	526.52	644.71
01 Jan 00	1814	64.441	148.85	522.70	640.29
01 Jan 00	1816	64.118	148.84	518.83	635.89
01 Jan 00	1818	63.796	148.83	514.56	631.51
01 Jan 00	1820	63.473	148.81	510.07	627.12
an 00	1822	63.151	148.80	505.79	622.74
an 00	1824	62.829	148.78	501.76	618.36
Jan 00	1826	62.509	148.77	497.89	614.00
01 Jan 00	1828	62.190	148.76	494.18	609.65
01 Jan 00	1830	61.873	148.74	490.38	605.34
01 Jan 00	1832	61.556	148.73	486.31	601.03
01 Jan 00	1834	61.241	148.71	482.31	596.73
01 Jan 00	1836	60.926	148.70	478.82	592.46
01 Jan 00	1838	60.615	148.69	475.66	588.22
01 Jan 00	1840	60.306	148.67	472.48	584.02
01 Jan 00	1842	60.000	148.66	469.11	579.85
01 Jan 00	1844	59.696	148.65	465.68	575.71
01 Jan 00	1846	59.394	148.63	462.42	571.60
01 Jan 00	1848	59.095	148.62	459.42	567.53
01 Jan 00	1850	58.799	148.61	456.61	563.50
01 Jan 00	1852	58.506	148.60	453.85	559.52
01 Jan 00	1854	58.216	148.58	451.12	555.58
01 Jan 00	1856	57.930	148.57	448.51	551.69
01 Jan 00	1858	57.648	148.56	445.91	547.84
01 Jan 00	1900	57.369	148.55	443.25	544.04
01 Jan 00	1902	57.092	148.53	440.35	540.28
01 Jan 00	1904	56.818	148.52	437.44	536.55
01 Jan 00	1906	56.546	148.51	434.82	532.85
01 Jan 00	1908	56.278	148.50	432.39	529.20
n 00	1910	56.013	148.49	429.86	525.59
Jan 00	1912	55.750	148.48	427.29	522.02
01 Jan 00	1914	55.491	148.46	424.82	518.49
01 Jan 00	1916	55.234	148.45	422.41	515.00
01 Jan 00	1918	54.981	148.44	420.03	511.55

Date	Time	Reservoir Storage (ac-ft)	Reservoir Elevation (ft)	Inflow (cfs)	Outflow (cfs)
Jan 00	1920	54.730	148.43	417.75	508.14
01 Jan 00	1922	54.483	148.42	415.42	504.77
01 Jan 00	1924	54.238	148.41	412.85	501.43
01 Jan 00	1926	53.994	148.40	410.11	498.12
01 Jan 00	1928	53.753	148.39	407.65	494.84
01 Jan 00	1930	53.514	148.38	405.46	491.59
01 Jan 00	1932	53.279	148.37	403.38	488.38
01 Jan 00	1934	53.046	148.36	401.28	485.22
01 Jan 00	1936	52.816	148.35	399.08	482.09
01 Jan 00	1938	52.588	148.34	396.74	478.99
01 Jan 00	1940	52.363	148.33	394.36	475.92
01 Jan 00	1942	52.139	148.32	392.15	472.88
01 Jan 00	1944	51.918	148.31	390.11	469.87
01 Jan 00	1946	51.700	148.30	388.04	466.89
01 Jan 00	1948	51.483	148.29	385.86	463.95
01 Jan 00	1950	51.269	148.28	383.73	461.04
01 Jan 00	1952	51.058	148.27	381.72	458.16
01 Jan 00	1954	50.848	148.26	379.73	455.31
01 Jan 00	1956	50.641	148.25	377.66	452.49
01 Jan 00	1958	50.436	148.25	375.56	449.70
01 Jan 00	2000	50.233	148.24	373.54	446.93
01 Jan 00	2002	50.032	148.23	371.53	444.19
Jan 00	2004	49.832	148.22	369.39	441.48
Jan 00	2006	49.634	148.21	367.05	438.78
01 Jan 00	2008	49.437	148.20	364.74	436.10
01 Jan 00	2010	49.241	148.19	362.54	433.44
01 Jan 00	2012	49.046	148.18	360.50	430.79
01 Jan 00	2014	48.854	148.18	358.50	428.17
01 Jan 00	2016	48.663	148.17	356.40	425.56
01 Jan 00	2018	48.473	148.16	354.26	422.98
01 Jan 00	2020	48.284	148.15	352.11	420.41
01 Jan 00	2022	48.096	148.14	349.92	417.86
01 Jan 00	2024	47.910	148.14	347.73	415.32
01 Jan 00	2026	47.724	148.13	345.65	412.79
01 Jan 00	2028	47.540	148.12	343.64	410.28
01 Jan 00	2030	47.357	148.11	341.56	407.79
01 Jan 00	2032	47.175	148.10	339.38	405.32
01 Jan 00	2034	46.993	148.10	337.19	402.85
01 Jan 00	2036	46.813	148.09	335.04	400.39
01 Jan 00	2038	46.633	148.08	332.96	397.95
01 Jan 00	2040	46.455	148.07	330.84	395.52
01 Jan 00	2042	46.277	148.06	328.59	393.10
01 Jan 00	2044	46.099	148.06	326.19	390.68
01 Jan 00	2046	45.921	148.05	323.76	388.26
01 Jan 00	2048	45.744	148.04	321.41	385.84
01 Jan 00	2050	45.567	148.03	319.14	383.43
n 00	2052	45.390	148.03	316.92	381.02
an 00	2054	45.213	148.02	314.70	378.62
01 Jan 00	2056	45.037	148.01	312.44	376.23
01 Jan 00	2058	44.862	148.00	310.05	373.84
01 Jan 00	2100	44.685	147.99	307.54	371.78

Date	Time	Reservoir Storage (ac-ft)	Reservoir Elevation (ft)	Inflow (cfs)	Outflow (cfs)
Jan 00	2102	44.508	147.99	305.04	369.88
01 Jan 00	2104	44.328	147.98	302.64	367.97
01 Jan 00	2106	44.148	147.97	300.42	366.05
01 Jan 00	2108	43.967	147.96	298.28	364.11
01 Jan 00	2110	43.785	147.96	296.11	362.18
01 Jan 00	2112	43.603	147.95	293.80	360.23
01 Jan 00	2114	43.419	147.94	291.45	358.27
01 Jan 00	2116	43.235	147.93	289.23	356.31
01 Jan 00	2118	43.050	147.92	287.15	354.34
01 Jan 00	2120	42.864	147.91	285.06	352.36
01 Jan 00	2122	42.679	147.91	282.85	350.38
01 Jan 00	2124	42.492	147.90	280.52	348.39
01 Jan 00	2126	42.305	147.89	278.13	346.39
01 Jan 00	2128	42.116	147.88	275.83	344.38
01 Jan 00	2130	41.927	147.87	273.68	342.37
01 Jan 00	2132	41.738	147.86	271.72	340.35
01 Jan 00	2134	41.549	147.86	269.84	338.33
01 Jan 00	2136	41.361	147.85	267.93	336.32
01 Jan 00	2138	41.172	147.84	266.01	334.32
01 Jan 00	2140	40.984	147.83	264.09	332.31
01 Jan 00	2142	40.797	147.82	262.19	330.31
01 Jan 00	2144	40.609	147.81	260.30	328.31
an 00	2146	40.422	147.81	258.39	326.31
n 00	2148	40.235	147.80	256.42	324.32
01 Jan 00	2150	40.048	147.79	254.48	322.32
01 Jan 00	2152	39.861	147.78	252.63	320.33
01 Jan 00	2154	39.675	147.77	250.85	318.35
01 Jan 00	2156	39.489	147.77	249.11	316.37
01 Jan 00	2158	39.304	147.76	247.40	314.40
01 Jan 00	2200	39.120	147.75	245.74	312.43
01 Jan 00	2202	38.937	147.74	244.10	310.48
01 Jan 00	2204	38.754	147.73	242.49	308.53
01 Jan 00	2206	38.573	147.72	240.89	306.60
01 Jan 00	2208	38.392	147.72	239.31	304.67
01 Jan 00	2210	38.213	147.71	237.77	302.76
01 Jan 00	2212	38.035	147.70	236.36	300.86
01 Jan 00	2214	37.858	147.69	234.99	298.97
01 Jan 00	2216	37.682	147.69	233.53	297.09
01 Jan 00	2218	37.507	147.68	231.96	295.23
01 Jan 00	2220	37.333	147.67	230.39	293.38
01 Jan 00	2222	37.160	147.66	228.90	291.53
01 Jan 00	2224	36.988	147.65	227.46	289.70
01 Jan 00	2226	36.817	147.65	226.05	287.88
01 Jan 00	2228	36.648	147.64	224.69	286.07
01 Jan 00	2230	36.479	147.63	223.35	284.27
01 Jan 00	2232	36.312	147.62	222.01	282.49
n 00	2234	36.146	147.62	220.71	280.72
an 00	2236	35.982	147.61	219.50	278.96
01 Jan 00	2238	35.819	147.60	218.38	277.22
01 Jan 00	2240	35.657	147.60	217.27	275.50
01 Jan 00	2242	35.498	147.59	216.08	273.80

Date	Time	Reservoir Storage (ac-ft)	Reservoir Elevation (ft)	Inflow (cfs)	Outflow (cfs)
Jan 00	2244	35.339	147.58	214.84	272.11
01 Jan 00	2246	35.182	147.57	213.52	270.44
01 Jan 00	2248	35.025	147.57	212.12	268.77
01 Jan 00	2250	34.870	147.56	210.76	267.11
01 Jan 00	2252	34.715	147.55	209.51	265.46
01 Jan 00	2254	34.562	147.55	208.33	263.82
01 Jan 00	2256	34.410	147.54	207.25	262.20
01 Jan 00	2258	34.259	147.53	206.27	260.59
01 Jan 00	2300	34.110	147.53	205.29	259.01
01 Jan 00	2302	33.963	147.52	204.23	257.44
01 Jan 00	2304	33.817	147.51	203.16	255.88
01 Jan 00	2306	33.673	147.51	202.16	254.34
01 Jan 00	2308	33.530	147.50	201.24	252.82
01 Jan 00	2310	33.388	147.50	200.26	251.31
01 Jan 00	2312	33.248	147.49	199.14	249.81
01 Jan 00	2314	33.109	147.48	197.98	248.33
01 Jan 00	2316	32.971	147.48	196.94	246.86
01 Jan 00	2318	32.834	147.47	196.02	245.40
01 Jan 00	2320	32.699	147.46	195.18	243.96
01 Jan 00	2322	32.565	147.46	194.38	242.53
01 Jan 00	2324	32.434	147.45	193.59	241.13
01 Jan 00	2326	32.303	147.45	192.74	239.74
an 00	2328	32.175	147.44	191.82	238.37
n 00	2330	32.047	147.44	190.88	237.00
01 Jan 00	2332	31.920	147.43	189.95	235.66
01 Jan 00	2334	31.795	147.42	189.02	234.32
01 Jan 00	2336	31.671	147.42	188.18	233.00
01 Jan 00	2338	31.548	147.41	187.41	231.69
01 Jan 00	2340	31.427	147.41	186.58	230.39
01 Jan 00	2342	31.307	147.40	185.59	229.11
01 Jan 00	2344	31.187	147.40	184.55	227.84
01 Jan 00	2346	31.068	147.39	183.64	226.57
01 Jan 00	2348	30.951	147.39	182.88	225.31
01 Jan 00	2350	30.835	147.38	182.17	224.08
01 Jan 00	2352	30.720	147.38	181.49	222.85
01 Jan 00	2354	30.607	147.37	180.83	221.65
01 Jan 00	2356	30.495	147.37	180.10	220.45
01 Jan 00	2358	30.384	147.36	179.28	219.27
01 Jan 00	2400	30.274	147.36	178.48	218.10
02 Jan 00	0002	30.166	147.35	177.78	216.95
02 Jan 00	0004	30.059	147.35	177.11	215.80
02 Jan 00	0006	29.953	147.34	176.30	214.67
02 Jan 00	0008	29.847	147.34	175.36	213.55
02 Jan 00	0010	29.742	147.33	174.46	212.43
02 Jan 00	0012	29.638	147.33	173.72	211.32
02 Jan 00	0014	29.535	147.32	173.05	210.22
n 00	0016	29.433	147.32	172.35	209.13
an 00	0018	29.332	147.32	171.62	208.06
02 Jan 00	0020	29.233	147.31	170.92	206.99
02 Jan 00	0022	29.134	147.31	170.28	205.94
02 Jan 00	0024	29.036	147.30	169.69	204.90

Date	Time	Reservoir Storage (ac-ft)	Reservoir Elevation (ft)	Inflow (cfs)	Outflow (cfs)
Jan 00	0026	28.940	147.30	169.13	203.87
02 Jan 00	0028	28.845	147.29	168.59	202.86
02 Jan 00	0030	28.751	147.29	168.02	201.86
02 Jan 00	0032	28.658	147.29	167.37	200.87
02 Jan 00	0034	28.566	147.28	166.69	199.89
02 Jan 00	0036	28.475	147.28	166.06	198.92
02 Jan 00	0038	28.385	147.27	165.49	197.96
02 Jan 00	0040	28.296	147.27	164.91	197.01
02 Jan 00	0042	28.208	147.27	164.25	196.07
02 Jan 00	0044	28.121	147.26	163.57	195.14
02 Jan 00	0046	28.034	147.26	162.89	194.22
02 Jan 00	0048	27.948	147.25	162.20	193.30
02 Jan 00	0050	27.863	147.25	161.56	192.39
02 Jan 00	0052	27.779	147.25	161.01	191.49
02 Jan 00	0054	27.695	147.24	160.51	190.60
02 Jan 00	0056	27.613	147.24	160.02	189.72
02 Jan 00	0058	27.532	147.24	159.53	188.85
02 Jan 00	0100	27.451	147.23	158.97	188.00
02 Jan 00	0102	27.371	147.23	158.22	187.15
02 Jan 00	0104	27.292	147.23	157.41	186.30
02 Jan 00	0106	27.212	147.22	156.72	185.45
02 Jan 00	0108	27.134	147.22	156.18	184.61
n 00	0110	27.056	147.21	155.68	183.78
an 00	0112	26.979	147.21	155.18	182.96
U2 Jan 00	0114	26.903	147.21	154.67	182.15
02 Jan 00	0116	26.827	147.20	154.15	181.35
02 Jan 00	0118	26.753	147.20	153.63	180.55
02 Jan 00	0120	26.679	147.20	153.11	179.76
02 Jan 00	0122	26.606	147.19	152.60	178.98
02 Jan 00	0124	26.534	147.19	152.09	178.21
02 Jan 00	0126	26.462	147.19	151.56	177.45
02 Jan 00	0128	26.391	147.19	151.00	176.69
02 Jan 00	0130	26.320	147.18	150.40	175.94
02 Jan 00	0132	26.250	147.18	149.70	175.19
02 Jan 00	0134	26.180	147.18	148.94	174.44
02 Jan 00	0136	26.110	147.17	148.18	173.69
02 Jan 00	0138	26.039	147.17	147.41	172.94
02 Jan 00	0140	25.969	147.17	146.59	172.19
02 Jan 00	0142	25.898	147.16	145.75	171.44
02 Jan 00	0144	25.827	147.16	144.92	170.68
02 Jan 00	0146	25.756	147.16	144.17	169.92
02 Jan 00	0148	25.686	147.15	143.50	169.17
02 Jan 00	0150	25.615	147.15	142.85	168.42
02 Jan 00	0152	25.545	147.15	142.19	167.67
02 Jan 00	0154	25.475	147.14	141.51	166.92
02 Jan 00	0156	25.405	147.14	140.80	166.17
1 00	0158	25.335	147.14	140.07	165.43
an 00	0200	25.265	147.14	139.35	164.68
02 Jan 00	0202	25.195	147.13	138.62	163.94
02 Jan 00	0204	25.125	147.13	137.85	163.20
02 Jan 00	0206	25.055	147.13	137.00	162.45

Date	Time	Reservoir Storage (ac-ft)	Reservoir Elevation (ft)	Inflow (cfs)	Outflow (cfs)
Jan 00	0208	24.985	147.12	136.04	161.70
02 Jan 00	0210	24.914	147.12	135.08	160.94
02 Jan 00	0212	24.843	147.12	134.21	160.18
02 Jan 00	0214	24.771	147.11	133.35	159.42
02 Jan 00	0216	24.699	147.11	132.43	158.65
02 Jan 00	0218	24.626	147.11	131.43	157.87
02 Jan 00	0220	24.553	147.10	130.41	157.09
02 Jan 00	0222	24.479	147.10	129.43	156.31
02 Jan 00	0224	24.405	147.10	128.46	155.52
02 Jan 00	0226	24.330	147.09	127.43	154.72
02 Jan 00	0228	24.255	147.09	126.33	153.91
02 Jan 00	0230	24.178	147.09	125.24	153.10
02 Jan 00	0232	24.101	147.08	124.22	152.28
02 Jan 00	0234	24.024	147.08	123.18	151.45
02 Jan 00	0236	23.946	147.08	122.10	150.61
02 Jan 00	0238	23.867	147.07	121.01	149.77
02 Jan 00	0240	23.787	147.07	119.93	148.92
02 Jan 00	0242	23.707	147.07	118.86	148.07
02 Jan 00	0244	23.626	147.06	117.76	147.21
02 Jan 00	0246	23.545	147.06	116.56	146.34
02 Jan 00	0248	23.462	147.06	115.24	145.46
02 Jan 00	0250	23.378	147.05	113.88	144.56
an 00	0252	23.293	147.05	112.53	143.65
an 00	0254	23.207	147.04	111.19	142.73
Jan 00	0256	23.119	147.04	109.89	141.80
02 Jan 00	0258	23.031	147.04	108.64	140.86
02 Jan 00	0300	22.942	147.03	107.42	139.91
02 Jan 00	0302	22.852	147.03	106.22	138.95
02 Jan 00	0304	22.761	147.02	105.03	137.99
02 Jan 00	0306	22.670	147.02	103.85	137.02
02 Jan 00	0308	22.579	147.02	102.65	136.04
02 Jan 00	0310	22.486	147.01	101.44	135.05
02 Jan 00	0312	22.393	147.01	100.24	134.06
02 Jan 00	0314	22.300	147.00	99.05	133.07
02 Jan 00	0316	22.206	147.00	97.87	132.06
02 Jan 00	0318	22.111	147.00	96.69	131.47
02 Jan 00	0320	22.014	146.99	95.46	130.90
02 Jan 00	0322	21.916	146.99	94.14	130.31
02 Jan 00	0324	21.815	146.98	92.80	129.71
02 Jan 00	0326	21.712	146.98	91.52	129.10
02 Jan 00	0328	21.608	146.97	90.35	128.48
02 Jan 00	0330	21.502	146.97	89.22	127.85
02 Jan 00	0332	21.395	146.96	88.11	127.22
02 Jan 00	0334	21.287	146.96	87.02	126.57
02 Jan 00	0336	21.177	146.95	85.93	125.92
02 Jan 00	0338	21.067	146.95	84.86	125.26
an 00	0340	20.955	146.94	83.80	124.60
Jan 00	0342	20.842	146.94	82.78	123.93
02 Jan 00	0344	20.728	146.93	81.75	123.25
02 Jan 00	0346	20.613	146.93	80.67	122.57
02 Jan 00	0348	20.497	146.92	79.51	121.88

Date	Time	Reservoir Storage (ac-ft)	Reservoir Elevation (ft)	Inflow (cfs)	Outflow (cfs)
Jan 00	0350	20.380	146.92	78.33	121.18
02 Jan 00	0352	20.261	146.91	77.17	120.47
02 Jan 00	0354	20.141	146.91	76.05	119.76
02 Jan 00	0356	20.021	146.90	75.00	119.04
02 Jan 00	0358	19.899	146.90	74.05	118.32
02 Jan 00	0400	19.777	146.89	73.15	117.59
02 Jan 00	0402	19.654	146.89	72.27	116.86
02 Jan 00	0404	19.531	146.88	71.41	116.13
02 Jan 00	0406	19.408	146.87	70.57	115.40
02 Jan 00	0408	19.284	146.87	69.73	114.66
02 Jan 00	0410	19.160	146.86	68.90	113.93
02 Jan 00	0412	19.036	146.86	68.09	113.19
02 Jan 00	0414	18.912	146.85	67.29	112.45
02 Jan 00	0416	18.787	146.85	66.41	111.71
02 Jan 00	0418	18.662	146.84	65.47	110.96
02 Jan 00	0420	18.537	146.83	64.57	110.22
02 Jan 00	0422	18.411	146.83	63.76	109.47
02 Jan 00	0424	18.285	146.82	63.00	108.72
02 Jan 00	0426	18.159	146.82	62.25	107.97
02 Jan 00	0428	18.033	146.81	61.53	107.22
02 Jan 00	0430	17.907	146.81	60.80	106.47
02 Jan 00	0432	17.781	146.80	60.06	105.73
an 00	0434	17.655	146.80	59.34	104.98
an 00	0436	17.530	146.79	58.60	104.23
02 Jan 00	0438	17.404	146.78	57.88	103.48
02 Jan 00	0440	17.278	146.78	57.02	102.74
02 Jan 00	0442	17.152	146.77	56.00	101.98
02 Jan 00	0444	17.025	146.77	54.99	101.23
02 Jan 00	0446	16.897	146.76	54.16	100.47
02 Jan 00	0448	16.770	146.76	53.34	99.71
02 Jan 00	0450	16.642	146.75	52.38	98.95
02 Jan 00	0452	16.513	146.74	51.27	98.19
02 Jan 00	0454	16.383	146.74	50.18	97.41
02 Jan 00	0456	16.253	146.73	49.41	96.64
02 Jan 00	0458	16.123	146.73	48.64	95.87
02 Jan 00	0500	15.993	146.72	47.96	95.09
02 Jan 00	0502	15.863	146.71	47.35	94.32
02 Jan 00	0504	15.734	146.71	46.75	93.56
02 Jan 00	0506	15.606	146.70	46.16	92.79
02 Jan 00	0508	15.477	146.70	45.58	92.03
02 Jan 00	0510	15.350	146.69	45.01	91.27
02 Jan 00	0512	15.223	146.69	44.46	90.51
02 Jan 00	0514	15.096	146.68	43.91	89.76
02 Jan 00	0516	14.970	146.67	43.39	89.01
02 Jan 00	0518	14.845	146.67	42.88	88.27
02 Jan 00	0520	14.720	146.66	42.33	87.52
n 00	0522	14.596	146.66	41.71	86.78
Jan 00	0524	14.471	146.65	41.06	86.05
02 Jan 00	0526	14.348	146.65	40.49	85.31
02 Jan 00	0528	14.225	146.64	40.00	84.58
02 Jan 00	0530	14.102	146.64	39.53	83.85

Date	Time	Reservoir Storage (ac-ft)	Reservoir Elevation (ft)	Inflow (cfs)	Outflow (cfs)
Jan 00	0532	13.980	146.63	39.09	83.13
02 Jan 00	0534	13.860	146.62	38.67	82.41
02 Jan 00	0536	13.739	146.62	38.25	81.69
02 Jan 00	0538	13.620	146.61	37.83	80.99
02 Jan 00	0540	13.502	146.61	37.41	80.28
02 Jan 00	0542	13.384	146.60	37.01	79.58
02 Jan 00	0544	13.267	146.60	36.61	78.89
02 Jan 00	0546	13.151	146.59	36.22	78.20
02 Jan 00	0548	13.036	146.59	35.82	77.51
02 Jan 00	0550	12.921	146.58	35.44	76.83
02 Jan 00	0552	12.808	146.58	35.07	76.15
02 Jan 00	0554	12.695	146.57	34.70	75.48
02 Jan 00	0556	12.583	146.57	34.35	74.82
02 Jan 00	0558	12.472	146.56	34.01	74.16
02 Jan 00	0600	12.362	146.56	33.66	73.50
02 Jan 00	0602	12.253	146.55	33.32	72.85
02 Jan 00	0604	12.144	146.55	32.99	72.21
02 Jan 00	0606	12.036	146.54	32.65	71.57
02 Jan 00	0608	11.930	146.54	32.31	70.93
02 Jan 00	0610	11.824	146.53	31.98	70.30
02 Jan 00	0612	11.719	146.53	31.66	69.68
02 Jan 00	0614	11.614	146.52	31.34	69.06
n 00	0616	11.511	146.52	31.02	68.44
n 00	0618	11.408	146.51	30.71	67.83
02 Jan 00	0620	11.306	146.51	30.39	67.23
02 Jan 00	0622	11.205	146.50	30.09	66.63
02 Jan 00	0624	11.105	146.50	29.79	66.03
02 Jan 00	0626	11.005	146.50	29.49	65.44
02 Jan 00	0628	10.907	146.49	29.21	64.85
02 Jan 00	0630	10.809	146.49	28.92	64.27
02 Jan 00	0632	10.712	146.48	28.64	63.69
02 Jan 00	0634	10.616	146.48	28.36	63.12
02 Jan 00	0636	10.521	146.47	28.08	62.55
02 Jan 00	0638	10.426	146.47	27.81	61.99
02 Jan 00	0640	10.332	146.47	27.54	61.43
02 Jan 00	0642	10.239	146.46	27.26	60.88
02 Jan 00	0644	10.147	146.46	26.98	60.33
02 Jan 00	0646	10.055	146.45	26.70	59.79
02 Jan 00	0648	9.965	146.45	26.43	59.25
02 Jan 00	0650	9.875	146.44	26.16	58.71
02 Jan 00	0652	9.785	146.44	25.90	58.18
02 Jan 00	0654	9.697	146.44	25.64	57.66
02 Jan 00	0656	9.609	146.43	25.38	57.13
02 Jan 00	0658	9.522	146.43	25.11	56.62
02 Jan 00	0700	9.435	146.43	24.85	56.10
02 Jan 00	0702	9.350	146.42	24.58	55.59
n 00	0704	9.264	146.42	24.30	55.09
Jan 00	0706	9.180	146.41	23.94	54.58
02 Jan 00	0708	9.095	146.41	23.50	54.08
02 Jan 00	0710	9.011	146.41	23.09	53.58
02 Jan 00	0712	8.928	146.40	22.75	53.08

Date	Time	Reservoir Storage (ac-ft)	Reservoir Elevation (ft)	Inflow (cfs)	Outflow (cfs)
Jan 00	0714	8.844	146.40	22.46	52.59
02 Jan 00	0716	8.762	146.39	22.18	52.10
02 Jan 00	0718	8.680	146.39	21.92	51.61
02 Jan 00	0720	8.598	146.39	21.65	51.12
02 Jan 00	0722	8.517	146.38	21.37	50.64
02 Jan 00	0724	8.437	146.38	21.10	50.16
02 Jan 00	0726	8.357	146.38	20.79	49.69
02 Jan 00	0728	8.278	146.37	20.49	49.22
02 Jan 00	0730	8.198	146.37	20.07	48.75
02 Jan 00	0732	8.119	146.37	19.51	48.28
02 Jan 00	0734	8.040	146.36	18.95	47.81
02 Jan 00	0736	7.961	146.36	18.60	47.33
02 Jan 00	0738	7.882	146.36	18.26	46.86
02 Jan 00	0740	7.803	146.35	17.96	46.40
02 Jan 00	0742	7.725	146.35	17.72	45.93
02 Jan 00	0744	7.648	146.34	17.49	45.47
02 Jan 00	0746	7.571	146.34	17.26	45.02
02 Jan 00	0748	7.495	146.34	17.03	44.56
02 Jan 00	0750	7.419	146.33	16.82	44.11
02 Jan 00	0752	7.344	146.33	16.61	43.67
02 Jan 00	0754	7.270	146.33	16.41	43.23
02 Jan 00	0756	7.197	146.32	16.22	42.79
0[illegible]n 00	0758	7.124	146.32	16.02	42.36
[illegible]n 00	0800	7.051	146.32	15.83	41.93
02 Jan 00	0802	6.980	146.31	15.64	41.50
02 Jan 00	0804	6.909	146.31	15.45	41.08
02 Jan 00	0806	6.839	146.31	15.28	40.66
02 Jan 00	0808	6.769	146.30	15.11	40.25
02 Jan 00	0810	6.700	146.30	14.94	39.84
02 Jan 00	0812	6.632	146.30	14.78	39.43
02 Jan 00	0814	6.564	146.30	14.62	39.03
02 Jan 00	0816	6.498	146.29	14.46	38.63
02 Jan 00	0818	6.431	146.29	14.30	38.24
02 Jan 00	0820	6.366	146.29	14.14	37.85
02 Jan 00	0822	6.301	146.28	13.99	37.46
02 Jan 00	0824	6.236	146.28	13.83	37.08
02 Jan 00	0826	6.173	146.28	13.68	36.70
02 Jan 00	0828	6.109	146.28	13.53	36.33
02 Jan 00	0830	6.047	146.27	13.38	35.95
02 Jan 00	0832	5.985	146.27	13.24	35.59
02 Jan 00	0834	5.924	146.27	13.09	35.22
02 Jan 00	0836	5.863	146.26	12.95	34.86
02 Jan 00	0838	5.803	146.26	12.81	34.50
02 Jan 00	0840	5.744	146.26	12.67	34.15
02 Jan 00	0842	5.685	146.26	12.53	33.80
02 Jan 00	0844	5.626	146.25	12.39	33.45
[illegible]n 00	0846	5.569	146.25	12.26	33.11
Jan 00	0848	5.512	146.25	12.12	32.77
02 Jan 00	0850	5.455	146.25	11.99	32.43
02 Jan 00	0852	5.399	146.24	11.86	32.10
02 Jan 00	0854	5.343	146.24	11.73	31.77

Date	Time	Reservoir Storage (ac-ft)	Reservoir Elevation (ft)	Inflow (cfs)	Outflow (cfs)
,an 00	0856	5.288	146.24	11.60	31.44
02 Jan 00	0858	5.234	146.24	11.47	31.12
02 Jan 00	0900	5.180	146.23	11.35	30.80
02 Jan 00	0902	5.127	146.23	11.22	30.48
02 Jan 00	0904	5.074	146.23	11.10	30.17
02 Jan 00	0906	5.022	146.23	10.98	29.86
02 Jan 00	0908	4.970	146.22	10.86	29.55
02 Jan 00	0910	4.919	146.22	10.74	29.25
02 Jan 00	0912	4.868	146.22	10.62	28.95
02 Jan 00	0914	4.818	146.22	10.51	28.65
02 Jan 00	0916	4.768	146.21	10.39	28.35
02 Jan 00	0918	4.719	146.21	10.27	28.06
02 Jan 00	0920	4.670	146.21	10.16	27.77
02 Jan 00	0922	4.622	146.21	10.04	27.48
02 Jan 00	0924	4.574	146.21	9.93	27.20
02 Jan 00	0926	4.527	146.20	9.81	26.92
02 Jan 00	0928	4.480	146.20	9.70	26.64
02 Jan 00	0930	4.433	146.20	9.59	26.36
02 Jan 00	0932	4.387	146.20	9.48	26.09
02 Jan 00	0934	4.342	146.20	9.38	25.82
02 Jan 00	0936	4.297	146.19	9.27	25.55
02 Jan 00	0938	4.252	146.19	9.16	25.28
ʾan 00	0940	4.208	146.19	9.05	25.02
an 00	0942	4.164	146.19	8.95	24.76
Uz Jan 00	0944	4.121	146.19	8.84	24.50
02 Jan 00	0946	4.078	146.18	8.73	24.25
02 Jan 00	0948	4.035	146.18	8.63	23.99
02 Jan 00	0950	3.993	146.18	8.52	23.74
02 Jan 00	0952	3.952	146.18	8.42	23.50
02 Jan 00	0954	3.910	146.18	8.32	23.25
02 Jan 00	0956	3.869	146.17	8.22	23.01
02 Jan 00	0958	3.829	146.17	8.13	22.77
02 Jan 00	1000	3.789	146.17	8.03	22.53
02 Jan 00	1002	3.749	146.17	7.93	22.29
02 Jan 00	1004	3.710	146.17	7.84	22.06
02 Jan 00	1006	3.671	146.17	7.74	21.82
02 Jan 00	1008	3.632	146.16	7.65	21.60
02 Jan 00	1010	3.594	146.16	7.56	21.37
02 Jan 00	1012	3.556	146.16	7.47	21.14
02 Jan 00	1014	3.518	146.16	7.38	20.92
02 Jan 00	1016	3.481	146.16	7.29	20.70
02 Jan 00	1018	3.444	146.16	7.20	20.48

HMS * Summary of Results for Laguna Joaquine

Project : Laguna3 Run Name : Run 1

Start of Run	: 01Jan00 0100	Basin Model	: Laguna3.dat
End of Run	: 02Jan00 1018	Met. Model	: Laguna3.dat
Execution Time	: 01May02 1041	Control Specs	: Laguna3.dat

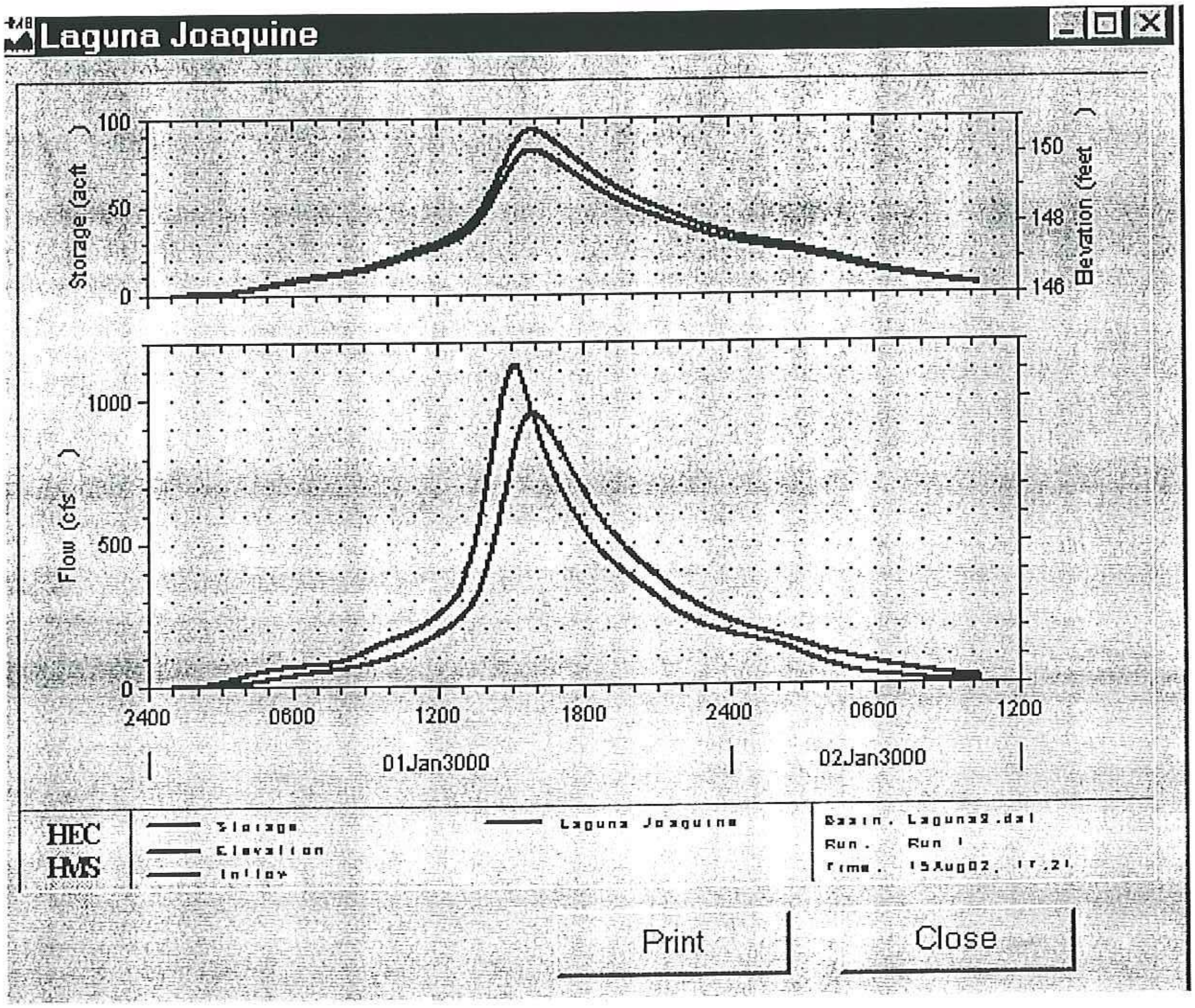
Computed Results

Peak Inflow	: 1118.2 (cfs)	Date/Time of Peak Inflow	: 01 Jan 00 1510
Peak Outflow	: 970.60 (cfs)	Date/Time of Peak Outflow	: 01 Jan 00 1552
Total Inflow	: 8.53 (in)	Peak Storage	: 85.799 (in)
Total Outflow	: 8.48 (in)	Peak Elevation	: 149.77 (in)

POST DEVELOPMENT
ALTERNATIVE
MODIFY WEIR LENGTH FROM 40' TO 35'
REDUCE LAGUNA JOAQUIN
OUTFLOW

Note: This reduces the peak outflows from Laguna Jaoquin from 970 cfs to 951 cfs. This reduction does not eliminate the need to make modifications to the existing culverts at Jackson Road and Lone Pine Drive

Laguna Joaquin w/35' Weir



Peak Elevation = 150.07

Peak Outflow = 951.05 cfs

Top Elevation = 151.00'

The HEC-HMS model output is not included, just these results.

HMS * Summary of Results

Project : Laguna3 Run Name : Run 1

Start of Run : 01Jan00 0100 Basin Model : Laguna3.dat
End of Run : 02Jan00 1018 Met. Model : Laguna3.dat
Execution Time : 15Aug02 1720 Control Specs : Laguna3.dat

Hydrologic Element	Discharge Peak (cfs)	Time of Peak	e (ac ft)	Drainage Area (sq mi)
sub1	374.51	01 Jan 00 1526	225.65	0.502
sub2	314.09	01 Jan 00 1502	171.45	0.375
sub3	441.16	01 Jan 00 1506	242.90	0.530
Laguna Junction	1118.2	01 Jan 00 1510	640.00	1.407
Laguna Joaquine	951.05	01 Jan 00 1556	635.54	1.407

Storage - Elevation Chart

	Elev (ft)	Area (Acre)	Avg Area (Acre)	Storage (Acre-ft)	Weir Outflow (cfs)
	145	21.53		0	
			21.74		
	146	21.95		0	0
			22.16		
1	147	22.38		22.16	116
			22.59		
2	148	22.80		44.75	327
			23.01		
3	149	23.22		67.76	600
			23.43		
4	150	23.65		91.20	924
			23.86		
5	151	24.07		115.05	1291

Weir Coefficient
C= 3.3

Weir Elevation = 146'

RATIONAL METHOD
For the
Design of Drainage Pipes
at the Lakes

Pipe Sizing for the Estates at the Lakes					
	AREA			Sum C x A	Weighted C-Value
Location	Acre Total	Open Space	Housing Tract		
	C-Value	0.25	0.47		
Chesbro SD	76	38.0	38.0	27.4	0.36
Highlands SD	126	63.0	63.0	45.4	0.36
Terrace SD	23	11.5	11.5	8.3	0.36
Clementia SD	86	43.0	43.0	31.0	0.36
TOTAL	311	155.5	155.5		

This data is used for sizing of pipe infrastructure. It assumes that there will be 50% open space and housing tract densities similar to Murieta Hills. These assumptions are conservative because proposed housing tracts will probably be less dense than Murieta Hills. The C-Value of 0.36 is high but provides a factor of safety for pump and pipe sizing. Additionally the tributary areas are probably high because portions of the undeveloped areas will drain directly into the Lakes. Given these unknowns, this conservative approach provides adequate pipe sizes.

Required Pipe Sizes			
Location	Runoff Qty (cfs)	Pipe Diameter	Min. Slope
Chesbro SD	82	36in	1.5%
Highlands SD	110	42in	1.2%
Terrace SD	25	24in	1.2%
Clementia SD	75	36in	1.3%

The Highlands 42" SD diameter assumes that flows from The Estates at Lake Chesbro are routed through The Highlands.

Rational Method

Given Input Data:
Description .... Post -development at the Lakes
IDF Curve .... K:\LDD2i\projects\11306\hd\rm.idf
Rainfall Frequency . 100 year(s)

Area Description	Area ac	Coef	Tc hrs	Intensity in/hr	Flow cfs
Chesbro SD	76.0000	0.3600	0.2500	3.0000	82.0800
Highlands SD	126.0000	0.3600	0.3500	2.4294	110.1981
Terrace SD	23.0000	0.3600	0.2500	3.0000	24.8400
Clementia SD	86.0000	0.3600	0.3500	2.4294	75.2146

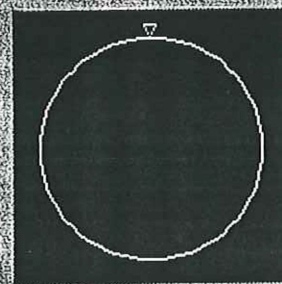
Storm Drain From Lake Chesbro

Manning

Solve For: Slope

Flowrate	cfs	82.0000
Slope	ft/ft	0.0151
Manning's n		0.0130
Depth of Flow	in	36.0000
Diameter	in	36.0000

Pipe Shape: Circular



Velocity	fps	11.6006
Area	ft2	7.0686
Perimeter	in	113.0973
Wetted Area	ft2	7.0686
Wetted Perimeter	in	113.0973
Hydraulic Radius	in	9.0000
Percent Full	%	100.0000

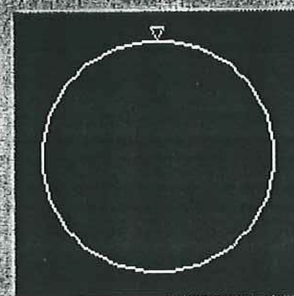
Storm Drain From The Highlands

Manning

Solve For: Slope

Flowrate	cfs	110.0000
Slope	ft/ft	0.0120
Manning's n		0.0130
Depth of Flow	in	42.0000
Diameter	in	42.0000

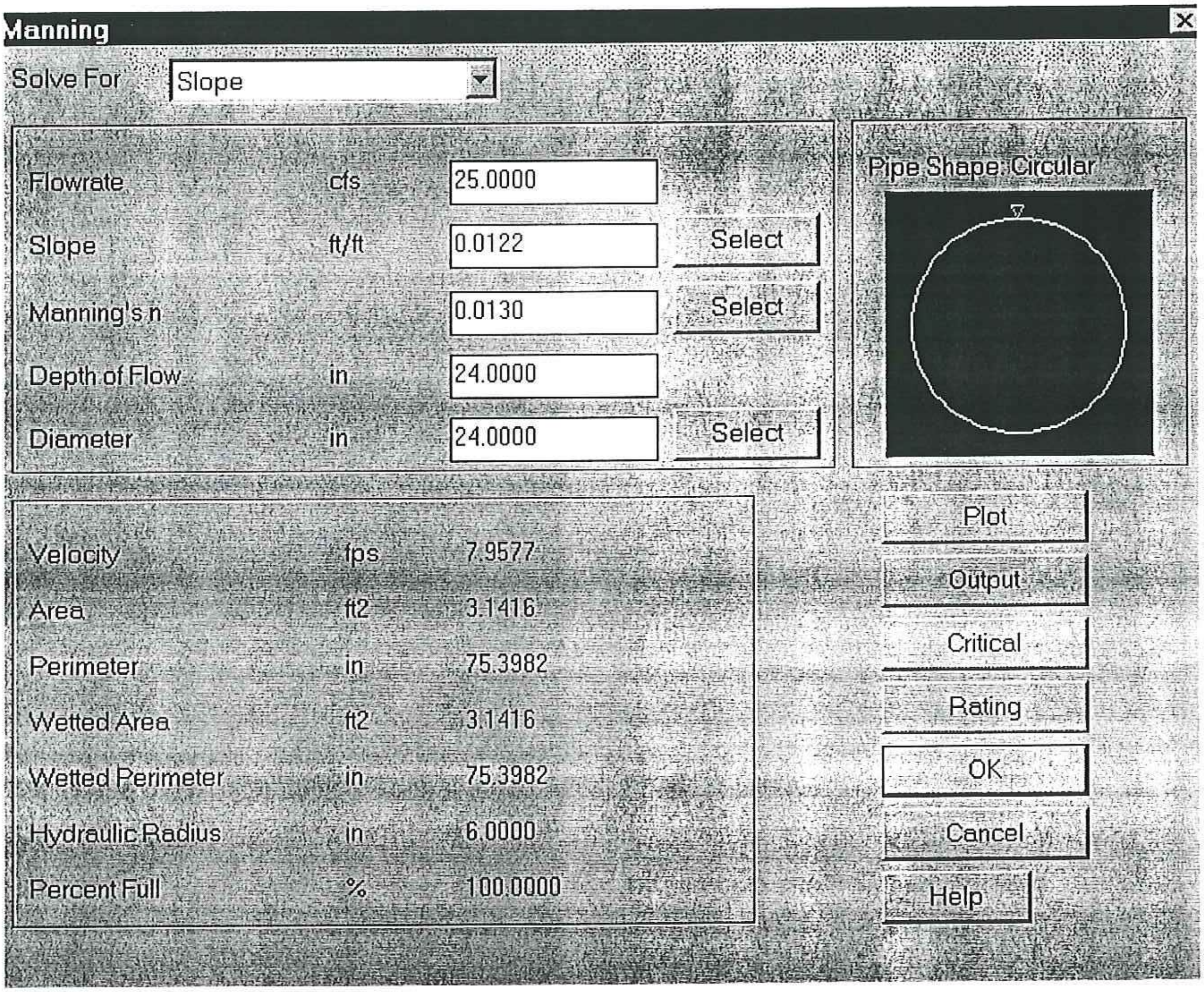
Pipe Shape: Circular



Velocity	fps	11.4332
Area	ft2	9.6211
Perimeter	in	131.9469
Wetted Area	ft2	9.6211
Wetted Perimeter	in	131.9469
Hydraulic Radius	in	10.5000
Percent Full	%	100.0000

Plot | Output | Critical | Rating | OK | Cancel | Help

Storm Drain From The Terrace



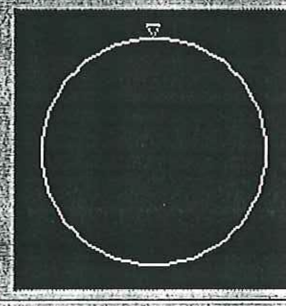
Storm Drain From Lake Clementia

Manning

Solve For: Slope

Flowrate	cfs	75.0000	
Slope	ft/ft	0.0126	Select
Manning's n		0.0130	Select
Depth of Flow	in	36.0000	
Diameter	in	36.0000	Select

Pipe Shape: Circular



Velocity	fps	10.6103
Area	ft2	7.0686
Perimeter	in	113.0973
Wetted Area	ft2	7.0686
Wetted Perimeter	in	113.0973
Hydraulic Radius	in	9.0000
Percent Full	%	100.0000

Plot

Output

Critical

Rating

OK

Cancel

Help