Salt Lake Countywide Watershed Model
Watershed Model Documentation

Prepared for:
Salt Lake County
Public Works Department
Engineering and Flood Control Division
Salt Lake County Government Center
2001 S. State St., Suite N-3100
Salt Lake City, UT 84190-4600

Submitted by:
Stantec Consulting
3995 South 700 East, Suite 300
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GLOSSARY/ACRONYMS

BASINS: Better Assessment Science Integrating Point & Non-point Sources, multi-purpose environmental analysis system that integrates a geographical information system (GIS), national watershed data, and environmental assessment and modeling tools.

CFS: A unit of flow, cubic feet per second.

FORTRAN: Programming language used for HSPF and LOADEST.

HSPF: Hydrologic Simulation Program-FORTRAN, hydrologic and water quality watershed model.

Impervious Area

Effective Impervious Area (EIA): The portion of the total impervious area (TIA) that is directly connected to a drainage collection system. Also commonly referred to as directly connected impervious area (DCIA).

Total Impervious Area (TIA): Total surface area that does not allow for rainwater infiltration.

Model Segmentation: Division of the model area into a group of watersheds with discrete land and channel segments to analyze lumped parameter behavior.

Land Segment: Portions of the watershed that demonstrate similar hydrologic and water quality response.

Meteorological Segment: Portions of the model segment with similar weather conditions.

Soil Segment: Portions of the watershed with similar soil characteristics and topography.

PERLND: The module in HSPF that simulates the water quality and quantity processes which occur on a pervious land segment.

IMPLND: The module in HSPF that simulates the water quality and quantity processes which occur on an impervious land segment.

Channel Segment: Sections of a stream channel with similar morphology and hydraulic behavior.

RCHRES: The module in HSPF that simulates the processes which occur in a single reach of open or closed channel or a completely mixed lake.

FTABLE: The block in HSPF that represents the fixed relationship between depth, surface area, volume, and volume-dependent discharge within a reach.

HUC: Hydrologic Unit Code, hydrologic units are watershed boundaries for the United States (US) that have been delineated and cataloged by the US Geologic Survey.

LOADEST: Load Estimator, a FORTRAN program for estimating constituent loads to streams and rivers.

PRISM: Parameter-elevation Regression on Independent Slopes Model, a climate mapping system developed by the PRISM Climate Group with funding from the USDA Natural Resources Conservation Service, the USDA Forest Service, and the NOAA Office of Global Programs. The model provides gridded precipitation data on a continuous basis throughout the US.

STORET: A storage and retrieval database commonly used by state environmental agencies, EPA, and other fereral agencies to store water quality, biological, and physical data.

TMDL: A Total Maximum Daily Load (TMDL) is a regulatory term in the US Clean Water Act (CWA), describing a value of the maximum amount of a pollutant that a body of water can receive while still meeting water quality standards.

USGS: US Geologic Survey, supplies geologic data for the US such as streamflow data and elevation data.

UDWR: Utah Division of Water Rights, maintains a detailed database of water rights related water diversion flow data.

UDWQ: Utah Division of Water Quality.

UPDES: Utah Pollutant Discharge Elimination System discharge permits issued by Utah Division of Water Quality.

Watershed: The region or area drained by a river, stream, etc. Seventeen (17) watersheds have been designated in Salt Lake County.

Subwatershed: The region or area drained by a portion of a watershed. Twenty-seven (27) subwatersheds have been designated in Salt Lake County, primarily to distinguish between mountain and valley portions of each watershed.

Subbasin: The region or area drained by a portion of a subwatershed, typically a storm drainage catchment or minor tributary.

1.0 WATERSHED MODEL BACKGROUND

Salt Lake County, in partnership with the State of Utah Division of Water Quality (DWQ) has developed this watershed model as a decision support tool in managing water quality and prioritizing improvement projects in the watershed. This decision support tool was identified in the *2009 Salt Lake Countywide Water Quality Stewardship Plan* as an implementation planning project to assist in understanding the complicated and interconnected hydrologic and surface water quality characteristics of Salt Lake County.

Salt Lake County established a Watershed Model Advisory Committee to assist with the development and calibration of the model. Peer review was provided by Utah State University and AQUA TERRA Consultants. The selection of the modeling platform and the scope of the modeling effort were documented as part of the Water Quality Stewardship Plan.

1.1 WATERSHED MODEL OBJECTIVES

The watershed model objectives are listed below:

1. The watershed model will be an on-going drainage and water quality planning and management tool, including future updates to the Water Quality Stewardship Plan.

2. The watershed model will be a decision support tool for potential implementation strategies for the Jordan River Total Maximum Daily Load (TMDL) water quality study. The model may be used for pollutant load estimation, waste load allocation and implementation strategy evaluation for future TMDL water quality studies in Salt Lake County.

3. The watershed model will be a tool for Salt Lake County drainage, flood control and water quality permitting purposes.

4. The watershed model may be used for water quality impact assessments for subbasin-scale proposed actions.

5. The watershed model may be utilized to assess Water Quality Stewardship Plan strategic objectives, such as instream flow analyses and the effect of Utah Lake on the Jordan River and tributaries. The effects of Utah Lake could be modeled by observing the downstream water quality effects of altering the Utah Lake boundary conditions in the model.

1.2 CONSTITUENTS OF CONCERN

The watershed model has the ability to simulate in-stream water quality constituent and pollutant concentrations under various flow and weather conditions. This modeling ability can be used to look at stream segments that have water quality impairments and evaluate potential sources and management solutions. The UDWQ classifies water bodies as impaired if they are exceeding water quality standards. Table 1.1 summarizes the impaired water bodies that lie within the Salt Lake County watershed.

Table 1.1 Stream assessment units on the 2008 DWQ 303(d) list of impaired water bodies within Salt Lake County

Waterbody	Segment Description	Beneficial Use	Cause of Impairment	Source	Miles
Jordan River-1	Farmington Bay upstream contiguous with the Davis County line	3B	Organic Enrichment/Low DO	Stormwater, Municipal and Industrial Point Sources, Agriculture	7.6
		3B	Benthic Macroinvertebrate	Unknown	
Jordan River-2	Davis County line upstream to North Temple Street	2B	E. coli	Stormwater, Natural, Agriculture	4.5
		3B	Organic Enrichment/Low DO	Stormwater, Municipal and Industrial Point Sources	
		3B	Benthic Macroinvertebrate	Unknown	
Jordan River-3	North Temple to 2100 South	2B	E. coli	Stormwater, Natural, Agriculture	4.2
		3B	Organic Enrichment/Low DO	Stormwater, Municipal and Industrial Point Sources, Agriculture	
		3B	Total Phosphorus	Stormwater, Municipal Point Sources, Industrial Point Sources, Agriculture	
Jordan River-4	2100 South to the confluence with Little Cottonwood Creek	4	Salinity/TDS/Chlorides	Stormwater, Natural, Agriculture	9.4
Jordan River-5	Confluence with Little Cottonwood Creek to 7800 South	2B	E. coli	Stormwater, Natural, Agriculture	4.7
		3A	Temperature	Unknown	
		4	Salinity/TDS/Chlorides	Stormwater, Natural, Agriculture	
Jordan River-6	7800 South to Bluffdale Road	3A	Benthic Macroinvertebrate	Unknown	10.3
		3A	Temperature	Unknown	
Jordan River-7	Bluffdale Road to Narrows	3A	Benthic Macroinvertebrate	Unknown	4.2
		3A	Temperature	Unknown	
		4	Salinity/TDS/Chlorides	Stormwater, Municipal and Industrial Point Sources	
Emigration Creek	Emigration Creek and tributaries from Foothill Blvd to headwaters	2B	Pathogens	Stormwater, Septic, Natural	4.3
Big Cottonwood Creek-1	Big Cottonwood Creek and tribs from Jordan River to Big Cottonwood WTP	3A	Temperature	Unknown	9.5
Little Cottonwood Creek-1	Little Cottonwood Creek and tributaries from Jordan River confluence to Metropolitan WTP	3A	Temperature	Unknown	8.7
		3A	Benthic Macroinvertebrate	Unknown	
		4	Salinity/TDS/Chlorides	Stormwater	
Little Cottonwood Creek-2	Little Cottonwood Creek and tributaries from Metropolitan WTP to headwaters	3A	Benthic Macroinvertebrate	Unknown	21.5

The following constituents have been included in the watershed model, based on input from the Watershed Model Advisory Committee:

1. Temperature
2. Total Dissolved Solids (TDS)
3. Total Suspended Solids (TSS)
4. Nitrogen (Organic, Ammonia and Nitrate)
5. Phosphorus (Organic and Orthophosphate)
6. Biochemical Oxygen Demand (BOD)
7. Dissolved Oxygen (DO)

These constituents have been chosen because they are of significant interest for other water quality studies that have been conducted within Salt Lake County. They are of special interest of the Salt Lake County Utah Pollutant Discharge Elimination System (UPDES) stormwater monitoring program as well as for watershed management. They are also of interest in the Jordan River TMDL study and its dissolved oxygen impairment.

The impairment of the Jordan River for dissolved oxygen involves complex physical, chemical and biological interactions. Accurate simulation of dissolved oxygen concentration in the stream system requires calculation of other water quality constituents and stream characteristics including temperature, pH, nutrients (nitrogen and phosphorus), BOD, and algal growth and decomposition.

Constituents of concern related to those on the 303(d) list include phosphorus, ammonia, nitrate, organic nitrogen, dissolved oxygen, BOD, sediment oxygen demand, phytoplankton, periphyton, TDS, temperature, pH, and pathogens.

1.3 POLLUTANT SOURCES

The pollutant sources that occur in the watershed and whether they were explicitly simulated in the model are summarized in Table 1.2. Figure 1.1 shows point and nonpoint sources in Salt Lake County. For a description of point sources, stormwater, and nonpoint pollution sources in Salt Lake County, refer to Chapter 4 (Sections 4.2, 4.3, and 4.4, respectively) of the 2009 Water Quality Stewardship Plan.

Table 1.2 Pollutant sources within Salt Lake County

Pollutant Source	Modeled	Comment
Point Sources		
Wastewater Treatment Plants	Yes	5 existing plants, 1 proposed
Industrial Discharges	Yes	Significant discharges only
Stormwater		
Municipal	Yes	NPDES Phase 1 and 2 permittees
Industrial	No	
Construction	Yes	Assumed percent of watershed.
Nonpoint		
Agriculture – Animal Feeding Operation	Yes	If location data available
Agriculture – Rangeland	Yes	
Agriculture – Cropland	Yes	
Golf Courses and Managed Parks	No	Not explicitly modeled, included in irrigated grassland land cover
Mining including Active, Abandoned, and Sand & Gravel	No	Mining operations generally have zero discharge; abandoned mines not included at this time
On-site Wastewater Management	No	Emigration and Lambs Canyon only
Landfills	No	Landfills have zero discharge
Atmospheric Deposition	No	Not significant source

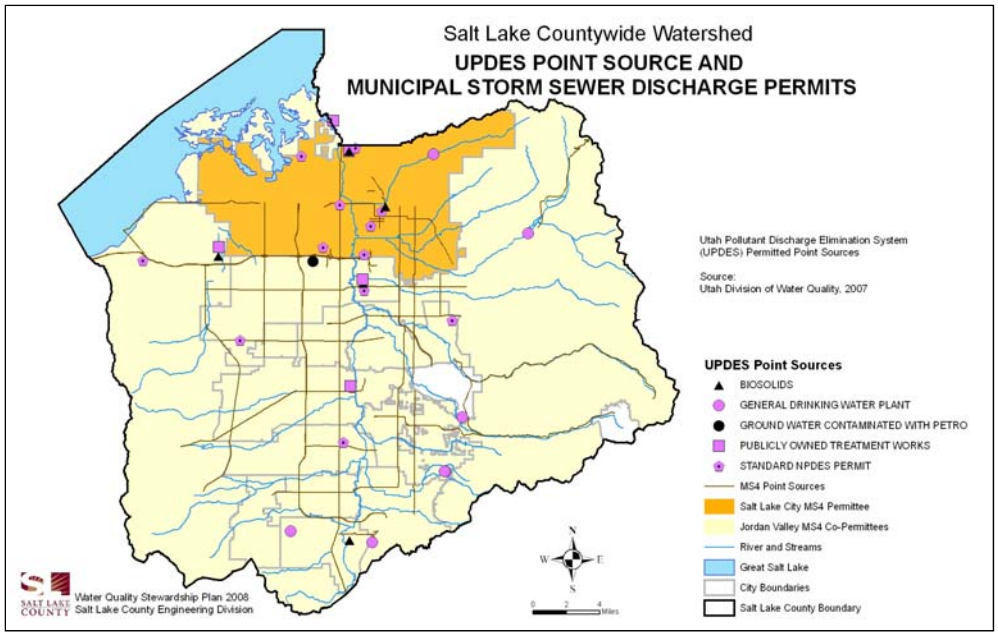


Figure 1.1 UPDES point source and municipal storm sewer discharge permits

No large industrial discharges were included in the model. Figure 1.2 shows and lists the UDPES dischargers within the watershed. Table 1.3 also lists whether or not the discharge will be included in the watershed model.

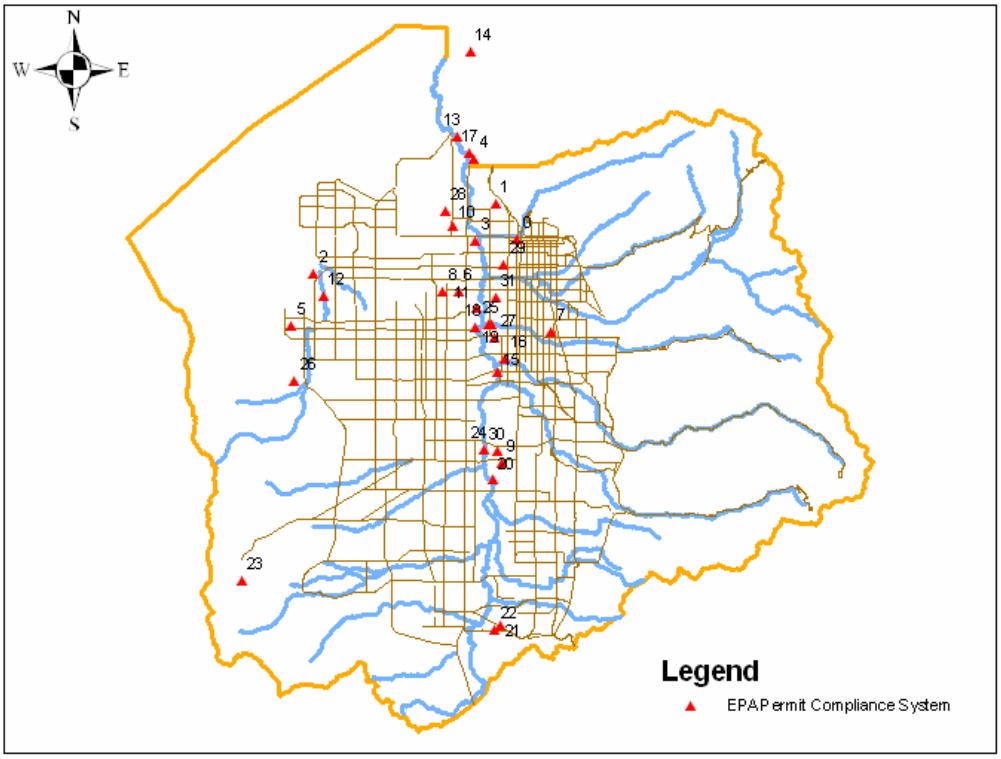


Figure 1.2 EPA Permit Compliance System Dischargers

Table 1.3 UPDES pollutant dischargers in Salt Lake County

FID	NPDES	FACILITY NAME	ACTIVE	INACTIVE DATE	MAJOR	PROCESS DESCRIPTION	RECEIVING WATER	MODEL
0	MN0047333	KENNECOTT CORP	ACTIVE		MINOR	IRON ORES	LAND	NO
1	UT0000019	AMERICAN OIL CO	INACTIVE	5/13/1981	MINOR	PETROLEUM REFINING		NO
2	UT0000051	KENNECOTT COPPER CO	ACTIVE		MAJOR	COPPER ORES	C-7 DITCH & BUTTERFIELD CREEK	NO[1]
3	UT0000116	PACIFICORP--GADSBY	ACTIVE		MINOR	ELECTRICAL SERVICES	S L ABATEMENT CANAL	NO
4	UT0000175	CHEVRON U.S.A., INC	ACTIVE		MAJOR	PETROLEUM REFINING	OIL DRAIN CANAL	NO[1]
5	UT0000477	KENNECOTT (FOUR COURT)	INACTIVE	1/1/1996	MINOR	PHOSPHATIC FERTILIZERS		NO
6	UT0000531	EASTMAN CHRISTENSEN, INC LE	INACTIVE	7/19/1991	MINOR	PLATING AND POLISHING	C-7 DITCH	NO
7	UT0000663	CONCRETE PRODUCTS CO	INACTIVE	9/13/1999	MINOR	CONSTRUCTION SAND & GRAVEL	OIL DRAIN CANAL	NO
8	UT0000701	VARIAN X-RAY TUBE PRODUCTS	ACTIVE		MINOR		UNNAMED DITCH TO C-7 DITCH	NO
9	UT0020281	SOUTH VALLEY WRF	INACTIVE		MAJOR	SEWERAGE SYSTEMS		NO
10	UT0020397	UNISYS CORPORATION	INACTIVE	7/28/1999	MINOR	ELECTRONIC COMPUTERS	CITY DRAIN	NO
11	UT0020826	S SALT LAKE- CITY OF	INACTIVE		MAJOR	SEWERAGE SYSTEMS		NO
12	UT0021440	MAGNA WATER & SEWER DIST	ACTIVE		MAJOR	SEWERAGE SYSTEMS	KERSEY CREEK	YES
13	UT0021628	S DAVIS CO SEWER - SOUTH	ACTIVE		MAJOR	SEWERAGE SYSTEMS	JORDAN RIVER	YES[2]
14	UT0021636	S DAVIS CO SEWER - NORTH	ACTIVE		MAJOR	SEWERAGE SYSTEMS	STATE CANAL	NO[3]
15	UT0021695	CENTRAL VALLEY WTR RFB-MURRAY	INACTIVE	3/10/1988	MAJOR	SEWERAGE SYSTEMS		NO
16	UT0021709	CENTRAL VALLEY WTR RFB-COTTON	INACTIVE	3/10/1988	MAJOR	SEWERAGE SYSTEMS		NO
17	UT0021725	SALT LAKE CITY CORP-WASTE WATE	ACTIVE		MAJOR	SEWERAGE SYSTEMS	OIL DRAIN CANAL	YES
18	UT0021822	CENTRAL VALLEY WTR RFB-GRANGER	INACTIVE	3/10/1988	MAJOR	SEWERAGE SYSTEMS		NO
19	UT0022241	CENTRAL VALLEY WTR RFB-SLC SUB	INACTIVE	6/5/1986	MAJOR	SEWERAGE SYSTEMS		NO
20	UT0022357	SOUTH VALLEY WRF	INACTIVE	5/5/1987	MAJOR	SEWERAGE SYSTEMS		NO
21	UT0024082	UTAH STATE PRISON	TERMINATE	11/10/2005	MINOR	STEAM & AIR-CONDITIONING SUP	DITCH TO JORDAN RIVER	NO
22	UT0024317	UTAH ROSES INC-BLUFFDALE	ACTIVE	6/30/2000	MINOR	STEAM & AIR-CONDITIONING SUP	DITCH TO JORDAN & SALT LAKE CANAL	NO
23	UT0024350	KENNECOTT UT COPPER DIV-MINE	INACTIVE	6/1/1991	MAJOR	COPPER ORES	JORDAN RIVER	NO
24	UT0024384	SOUTH VALLEY WRF	ACTIVE		MAJOR	SEWERAGE SYSTEMS	JORDAN RIVER	YES
25	UT0024392	CENTRAL VALLEY WRF	ACTIVE		MAJOR	SEWERAGE SYSTEMS	MILL CREEK TO JORDAN RIVER	YES
26	UT0024546	ALLIANT TECHSYSTEMS, INC.	INACTIVE	8/31/2002	MINOR	SPACE PROPULSION UNIT & PART	COON CREEK	NO
27	UT0024767	RUBBER ENGINEERING	ACTIVE		MINOR	MECHANICAL RUBBER GOODS	STORM DRAIN TO MILL CREEK	NO
28	UT0024988	SALT LAKE CITY INTRNTNL AIRPRT	ACTIVE		MINOR	AIRPORTS, FLYING FIELDS & SER	CITY DRAIN & SURPLUS CANAL	NO
29	UT0025089	WEIR PUMP SYSTEMS	ACTIVE		MINOR	PUMPS AND PUMPING EQUIP	STORM DRAIN TO THE JORDAN RIVER	NO
30	UT0025101	ARROW PACIFIC PLASTICS	INACTIVE	9/30/1997	MINOR	PLASTIC PIPE	STORM DRAIN TO THE JORDAN RIVER	NO
31	UT0025119	WASATCH CHEMICAL SITE	ACTIVE		MINOR	INDUSTRIAL INORGANIC CHEM	700 WEST DITCH	NO

1: Discharge not anticipated to be significant factor affecting constituents of concern.
2: Placeholder in model without effluent data.
3: Discharge location outside model limits.

2.0 WATERSHED MODEL BUILD

The Salt Lake Countywide watershed water quality model has been built using the Hydrologic Simulation Program-FORTRAN (HSPF) program under the Better Assessment Science Integrating Point and Nonpoint Sources (BASINS) Version 4.0 modeling platform. The model has been constructed to reflect watershed conditions in the Salt Lake County watershed over the course of a twelve-year period from 1994 to 2006. The chosen model period includes both "wet" years and "dry" years that as a whole reflect average watershed conditions.

The model build attempted to simulate the physical setting of Salt Lake County (Figure 2.1) and the major steps of the process included:

1. Delineating sub-basins extents and drainage patterns.
2. Determining model segments for differing precipitation conditions, soils, topography, elevation, snowmelt conditions, and groundwater recharge.
3. Determining the land-use areas and characteristics within each model segment.
4. Determining the drainage patterns and characteristics of model reaches and reservoirs.
5. Determining external sources, losses and diversions.

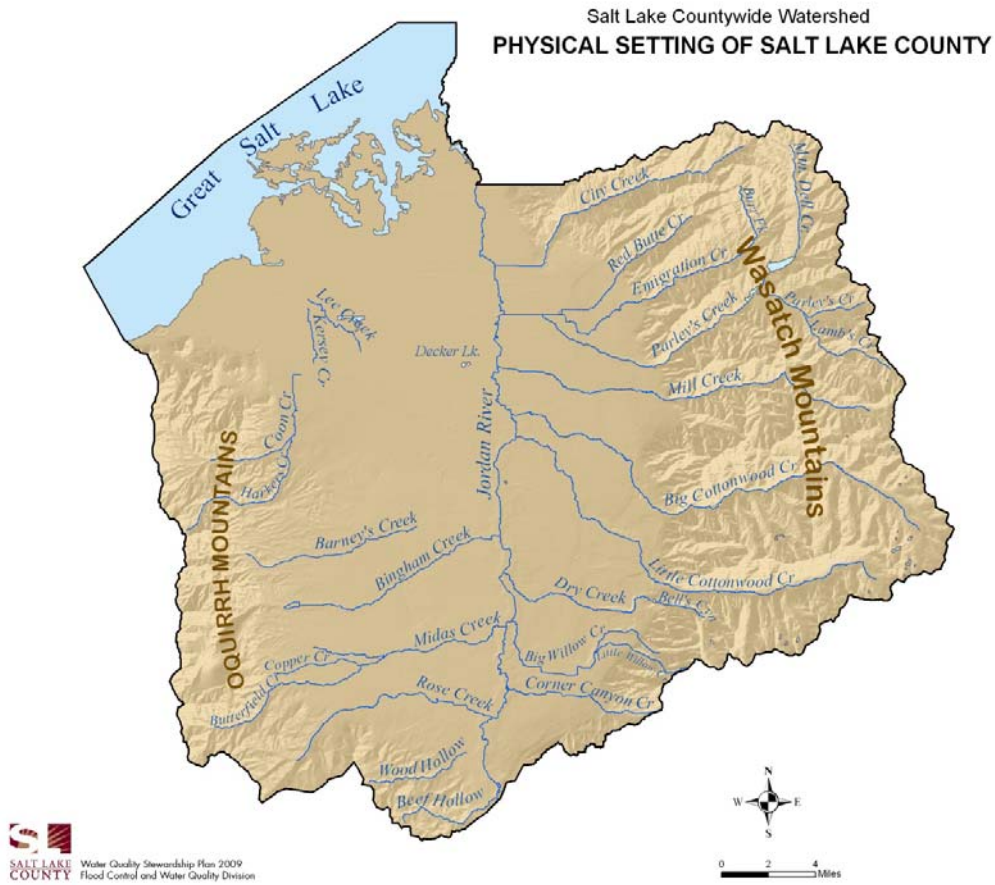


Figure 2.1 The Physical Setting of Salt Lake County

2.1 MODEL

The upstream boundary of the model is the Salt Lake/Utah County line which crosses the Jordan River just upstream of Turner Dam. The downstream boundary of the model is located near the shoreline of the Great Salt Lake and includes areas that drain to the Lower Jordan River, the Goggin Drain, and the C-7 Ditch. The model does not include the areas that drain directly to the Great Salt Lake, but does include parts of Davis County that drain to the Lower Jordan River. The eastern boundary of the model is the County line, which follows the ridgelines through the Wasatch Mountains and the western boundary is the County line, which follows the ridgelines through the Oquirrh Mountains.

2.2 SUBBASIN DELINEATION

The first step of the Salt Lake County Watershed model build process was to delineate watersheds and sub-basins. The delineation was based on the watersheds that were generated as part of the 2009 Water Quality Stewardship Plan (WaQSP) as shown in Figure 2.2. The plan delineated the county into 17 major watersheds and 27 sub-watersheds for management purposes. The Salt Lake County HSPF Watershed model was further delineated into 197 separate sub-basins (see Figure 2.3). In the mountains, the basins were delineated based on the tributary drainages. In the valley, smaller drainages and stormwater catchments (i.e. less than 60-inch diameter outfalls) were combined into larger sub-basins.

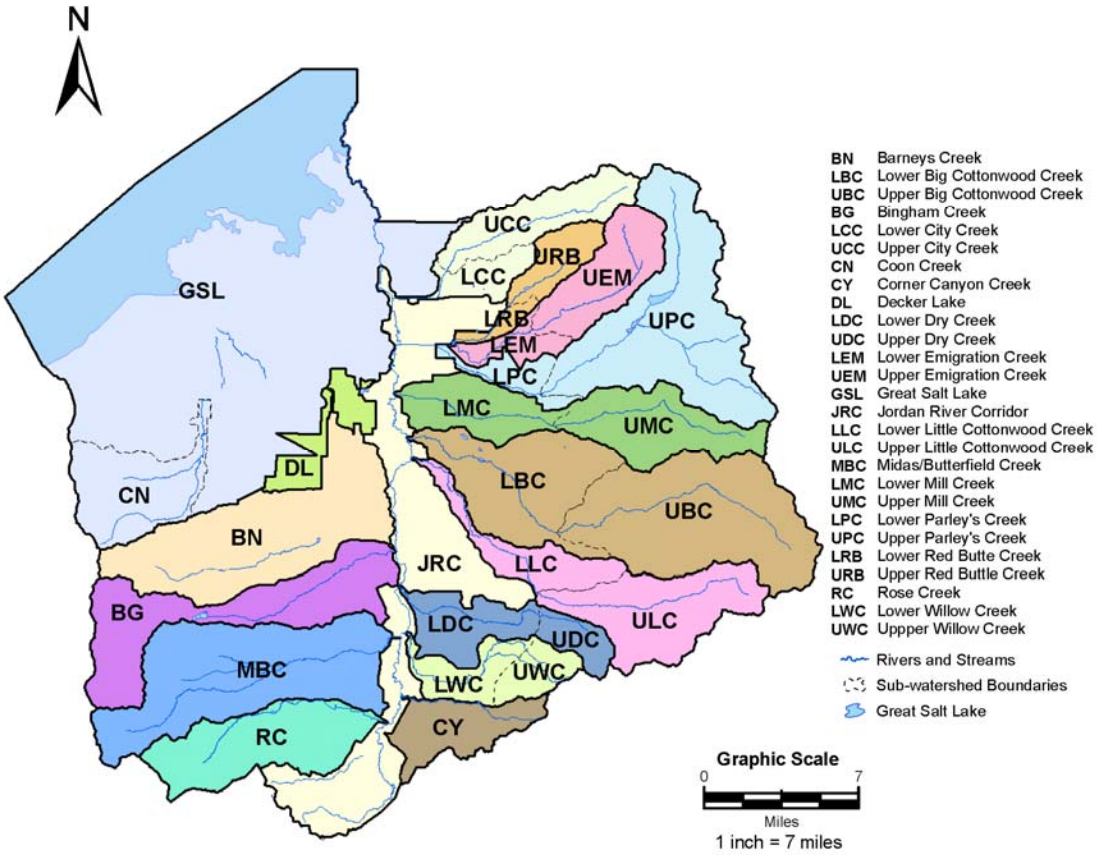


Figure 2.2 Watershed delineation from the Salt Lake County 2009 WaQSP

Other factors were considered in the basin delineation such as: canal drainage, major points of diversion, flow exchange locations where canals cross tributaries, stream flow gages, and water quality sampling stations. Consideration was also given to the way the HSPF model links sub-basins and reaches. Sub-basin divisions were placed where stream reach boundaries needed to be placed. Basins were not just delineated for the model calibration stream flow gages and water quality sites, but were delineated for all available water quality locations (Utah STORET database) and flow data locations (Salt Lake County data and USGS data). The Salt Lake County Phase 1 UPDES stormwater sampling catchments were included in the model as well (six outfalls). The HSPF model sub-basins can be found in Figure 2.3 below.

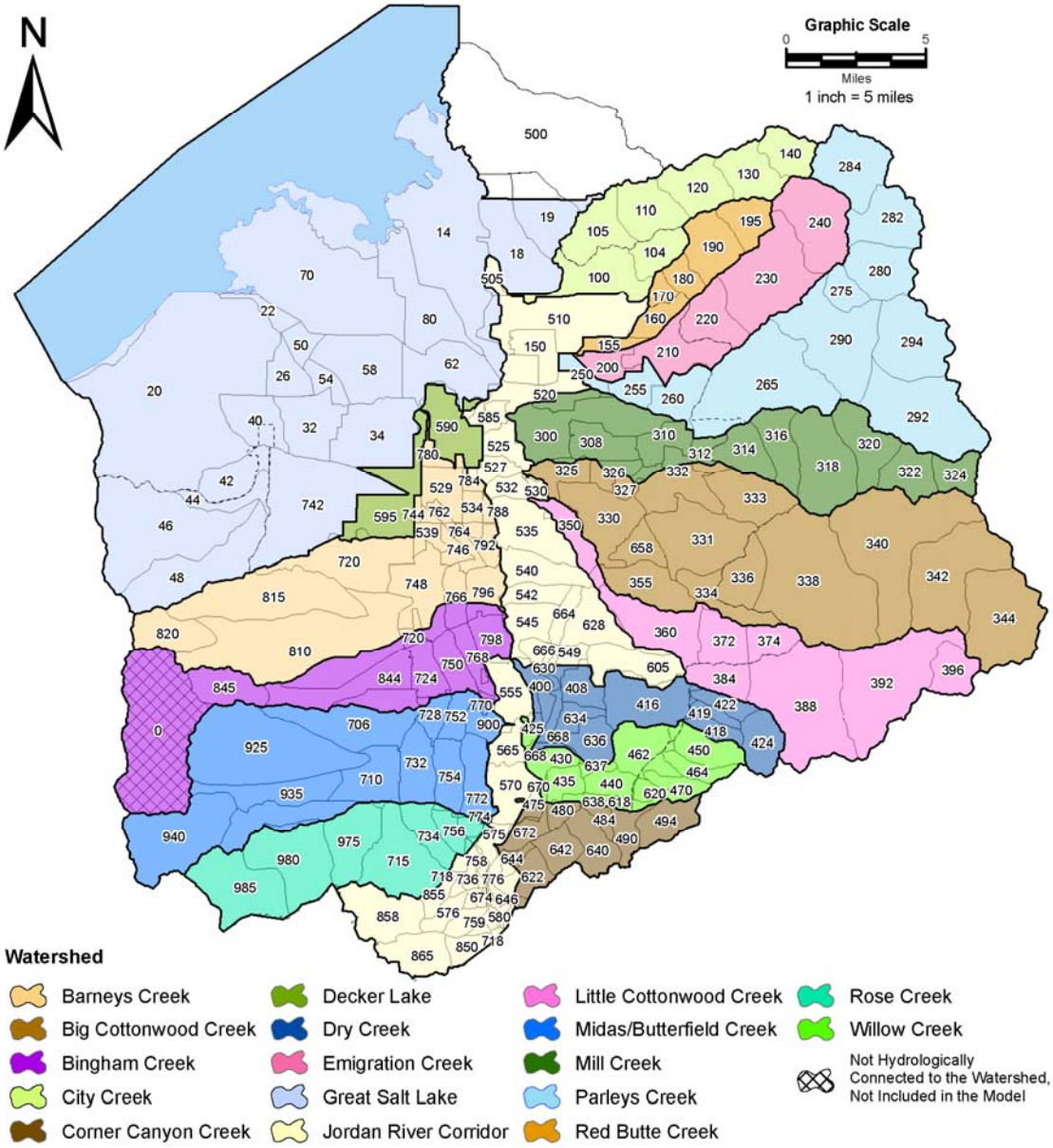


Figure 2.3 HSPF Model Sub-basins with the WaQSP watershed boundaries.

2.3 MODEL SEGMENTATION

The objective in model segmentation was to divide the county into areas with similar hydrologic and water quality response based on meteorological, topographic and soil conditions. The model segmentation was designed to adequately account for the varying responses of different areas in the county. The model parameterization was then adjusted to reflect the specific characteristics that are in each segment.

Model segmentation was conducted by dividing up the watershed into different areas based on the following: meteorological differences, soil differences, topographic differences, groundwater recharge differences, and land-use differences.

2.3.1 Meteorological Segmentation

The model was segmented into areas with similar meteorological characteristics. These characteristics include: precipitation, potential evapotranspiration, wind speed, cloud cover, solar radiation, air temperature, dew-point temperature, and relative humidity.

In Salt Lake County, these meteorological factors can be greatly affected by elevation, aspect, and orographic effects. HSPF does not vary precipitation within a meteorological segment, consequently care was taken when delineating segments to ensure that the elevation bands were followed. Different data stations were used for each segment as well to ensure that the model reflected the dramatic differences in annual precipitation.

HSPF adjusts air temperature based on elevation using an adiabatic lapse rate (which can be specified). This adjustment was carried out for each segment, however temperature data from a station location was used where possible. This was done because Salt Lake County commonly experiences inversions during the winter months where the overlying air mass is warmer than the air temperature in the valley. This condition would not be reflected in the model, but would be reflected in meteorologic data.

The average annual precipitation isohyetal map for Salt Lake County, along with available weather stations, is shown in Figure 2.4. Weather stations and meteorological segments were selected based on the following considerations: period of available data, active status, average annual isohyetals, storm cell timing through the valley and mountains, and complexity of the model.

From the available weather stations, eight were used for the watershed model (Figure 2.5). All eight stations have long term records that span at least from 1990 to 2006 and all except one remain active (Table 2.1). The inactive Salt Lake City East Bench station was augmented with data from the Salt Lake International Airport gage that was scaled based on average annual precipitation values. For stations with limited meteorological variables, the Salt Lake International Airport station was used for the missing variables.

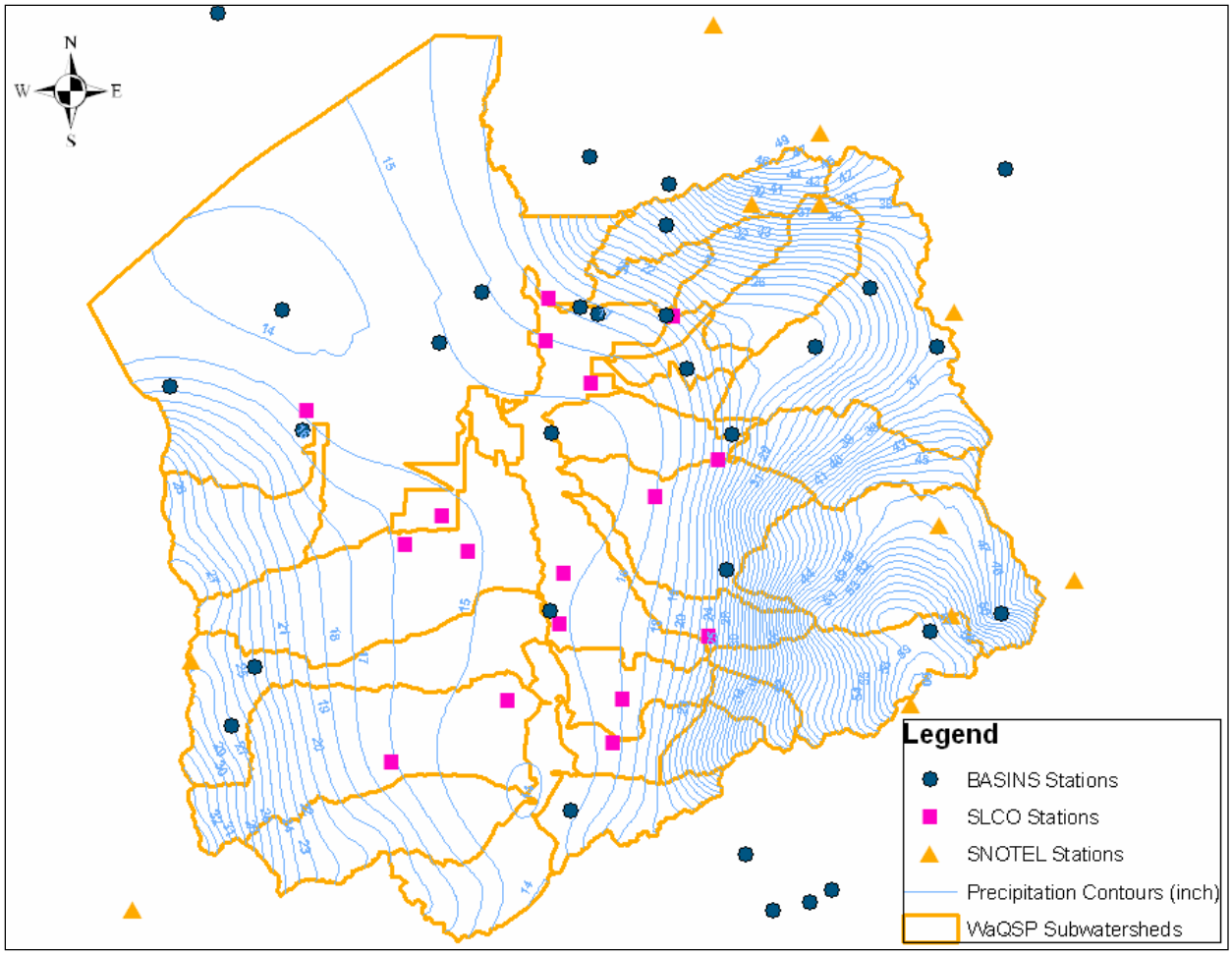


Figure 2.4 Weather stations and average annual precipitation isohyetal map (inches) [Source: NRCS PRISM 2004]

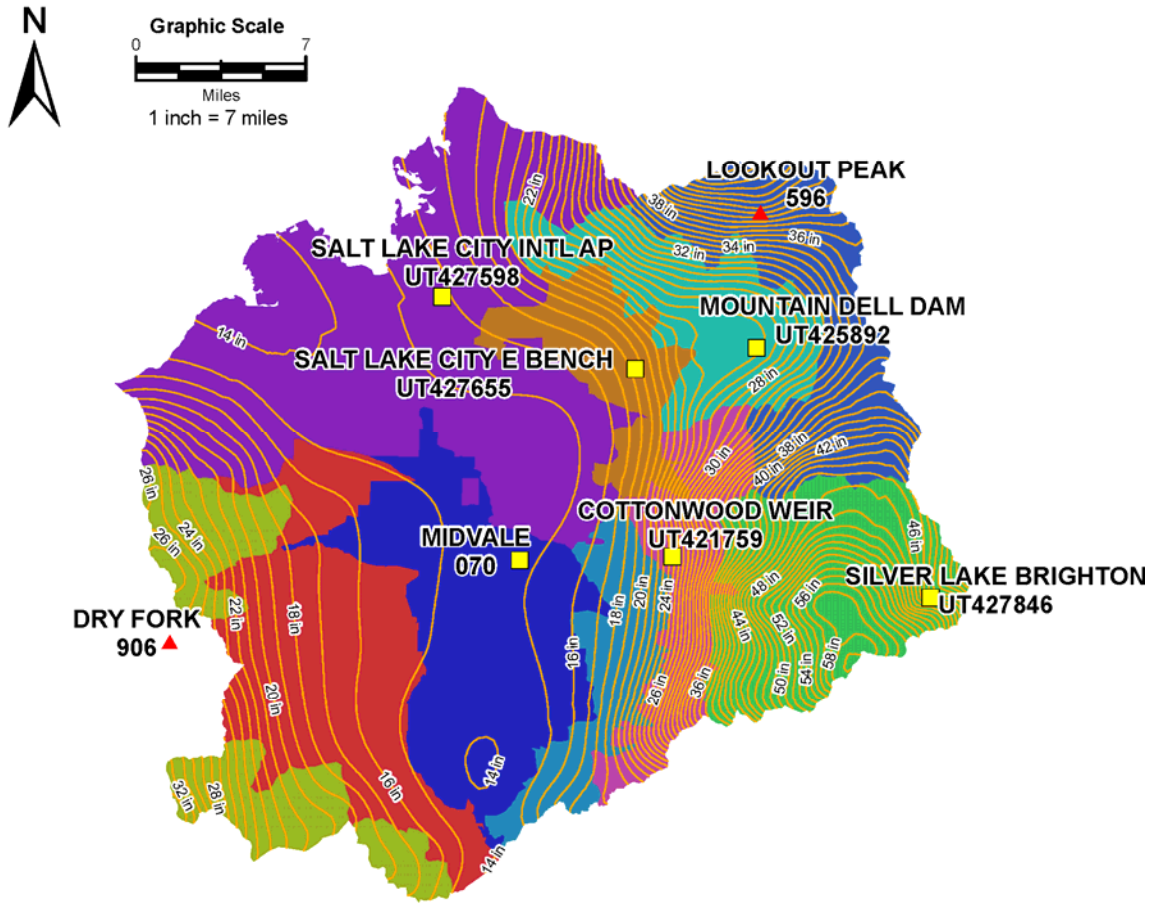


Figure 2.5 Weather Stations used for the Salt Lake County Watershed Model

Table 2.1 Meteorological stations used for the watershed model

Station Name	Sta #	Agency	Elev	Data[1]	Start Date	Status	Applicability
Cottonwood Weir	421759	NCDC	4,960	P,E,T	7/1/1948	Active	SE Bench and Lower SE Wasatch
Mountain Dell Dam	425892	NCDC	5,510	P,E,T	7/1/1948	Active	Lower NE Wasatch
Salt Lake City East Bench	427655	NCDC	4,850	P,E,T	5/1/1990	Inactive 1/31/2005	Northeast Bench
Salt Lake County Public Works Midvale	70	SLCo	4,347	P,W,T,H	1/1/1992	Active	South Salt Lake Valley
Salt Lake International Airport (SLIA)	427598	NWS	4,220	P,E,W, C,S,T,D	1/1/1948	Active	North Salt Lake Valley
Silver Lake Brighton	427846	NCDC	8,740	P,E,T	7/1/1948	Active	SE Wasatch Mountains
SNOTEL Dry Fork	906	NRCS	7,093	P,T	8/30/1994	Active	Oquirrh Mountains
SNOTEL Lookout Peak	596	NRCS	8,200	P,T	10/1/1987	Active	Upper NE Wasatch

1. P: precipitation; E: potential evapotranspiration; W: wind speed; C: cloud cover; S: solar radiation; T: air temperature; D: dewpoint temperature; H: relative humidity

The precipitation data was adjusted within each model segment based on a scaling factor. This scaling factor was used to adjust the precipitation gage data to the average precipitation value for the entire model segment. The precipitation for the entire model segment was calculated using gridded precipitation data available from PRISM. Table 2.2 shows the multiplication factors, the average annual gage data and the average annual PRISM data for the entire segment.

Table 2.2 Precipitation Multiplication Factors

Segment	Met Station	Precipitation Multiplication Factor	Average Annual Gage Precipitation (in)	Average Annual Precipitation from PRISM data (in)
1	SNOTEL Lookout Peak	0.89	40.5	35.9
2	Mountain Dell Dam	1.10	24.3	26.8
3	Silver Lake Brighton	0.98	45.0	43.9
4	Cottonwood Weir	1.13	25.0	28.2
5	SLC East Bench	0.83	24.7	20.4
6	Cottonwood Weir	0.78	25.0	19.6
7	SLCO Midvale	1.06	15.6	16.5
8	SLCO Midvale	1.16	15.6	18.0
9	SNOTEL Dry Fork	0.69	34.7	23.8
10	Salt Lake Int'l AP	1.02	16.5	16.8

2.3.2 Soil Segmentation

The model segments were divided up based on soil types as well. The soil data analysis was based on SSURGO data provided by the NRCS (USDA, 1993). Table 2.3 shows the hydrologic soil groups and the associated areas. The soil segmentation was considered when putting together the parameterization of each model segment.

Table 2.3 Dominant Hydrologic Soil Groups within Each Segment

Segment	Dominant Hydrologic Soil Group	Runoff Potential
1	C	Moderately-high
2	D	High
3	D	High
4	D	High
5	C	Moderately-high
6	B	Moderately-low
7	C	Moderately-high
8	B	Moderately-low
9	C	Moderately-high
10	D	High

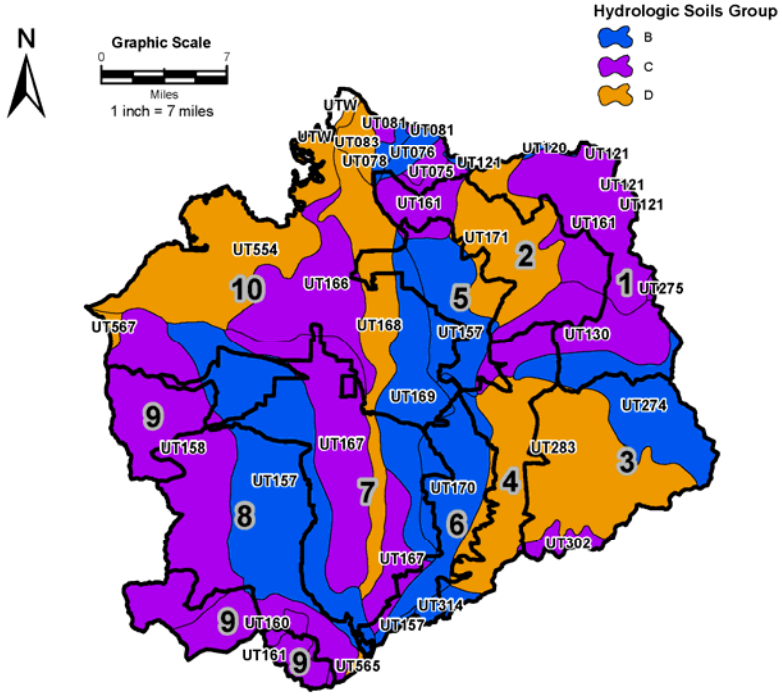


Figure 2.6 Hydrologic soils groups within the Salt Lake County watershed model.

2.3.3 Topographic Segmentation

The elevation characteristics of each segment were also taken into account in model segmentation. The elevation was especially important in modeling the snow hydrology of Salt Lake County. This is due to the significant differences in snow fall accumulation and melt within Salt Lake County. The topographic segmentation was paired with the meteorological segmentation. Table 2.4 and Figure 2.7 show the elevation characteristics of each of the model segments.

Table 2.4 Elevation Characteristics of Each Segment

Segment	Average Elevation (Feet, NAVD 88)	Elevation Description
1	7,510	High Elevation
2	6,100	High Elevation
3	8,860	High Elevation
4	6,700	High-Elevation
5	4,800	Mid-Elevation
6	4,800	Mid-Elevation
7	4,500	Low-Elevation
8	5,200	Mid-Elevation
9	6,500	High Elevation
10	4,450	Low Elevation

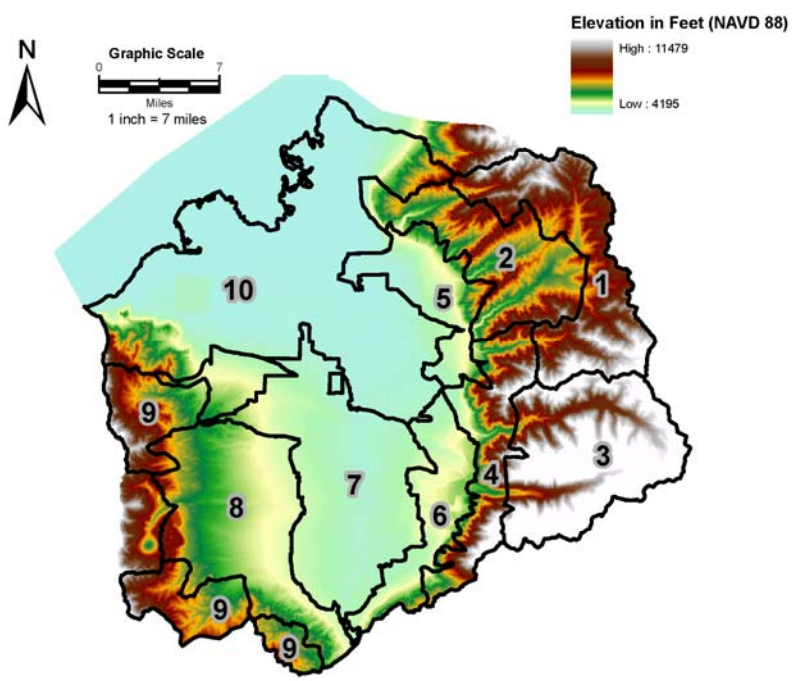


Figure 2.7 Elevations within Salt Lake County

2.3.4 Groundwater Recharge Zones

Groundwater recharge characteristics were also looked at for segmentation. Table 2.5 and Figure 2.8 show the groundwater infiltration characteristics of the model segments.

Table 2.5 Groundwater Recharge Characteristics of the Model Segments

Segment	Met Station	Recharge Zone
1	SNOTEL Lookout Peak	Wasatch Bedrock – NE Canyons
2	Mountain Dell Dam	Wasatch Bedrock – NE Canyons
3	Silver Lake Brighton	Wasatch Bedrock – SE Canyons
4	Cottonwood Weir	Wasatch Bedrock – SE Canyons
5	SLC East Bench	East Bench Primary Recharge Basin Fill
6	Cottonwood Weir	East Bench Primary Recharge Basin Fill
7	SLCO Midvale	Secondary Recharge Basin Fill
8	SLCO Midvale	West Bench Primary Recharge Basin Fill
9	SNOTEL Dry Fork	Oquirrh Bedrock
10	Salt Lake Int'l AP	Discharge

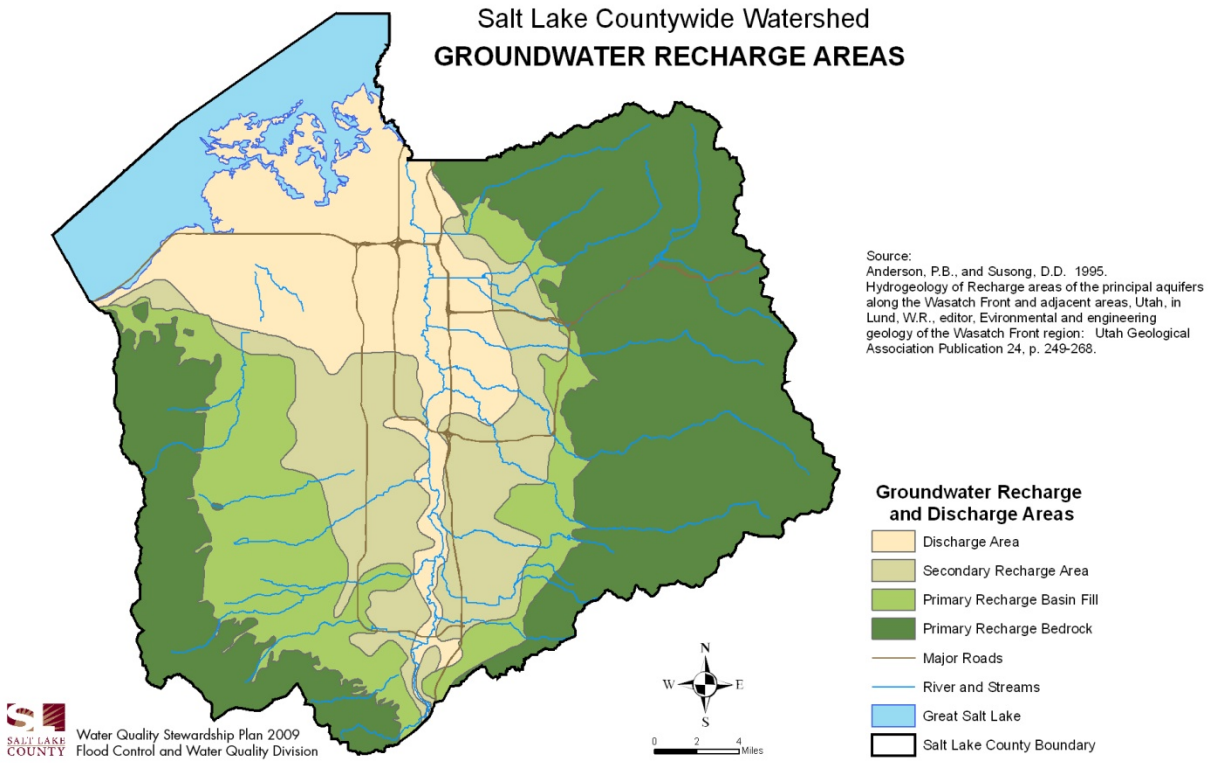


Figure 2.8 Groundwater Recharge Map of Salt Lake County (from the Salt Lake County2009 WaQSP)

2.3.5 Combined Segmentation

The combined segment characteristics are shown below in Table 2.6.

Table 2.6 Combined Segment Characteristics

Segment	Met Station	Average Elevation (Feet, NAVD 88)	Elevation Description	Hydrologic Soil Group	Runoff Potential	Average Annual Precipitation (in)	Groundwater Recharge Zone
1	SNOTEL Lookout Peak	7,510	High Elevation	C	Moderately-high	40.5	Wasatch Bedrock – NE Canyons
2	Mountain Dell Dam	6,100	High Elevation	D	High	24.3	Wasatch Bedrock – NE Canyons
3	Silver Lake Brighton	8,860	High Elevation	D	High	45.0	Wasatch Bedrock – SE Canyons
4	Cottonwood Weir	6,700	High-Elevation	D	High	25.0	Wasatch Bedrock – SE Canyons
5	SLC East Bench	4,800	Mid-Elevation	C	Moderately-high	24.7	East Bench Primary Recharge Basin Fill
6	Cottonwood Weir	4,800	Mid-Elevation	B	Moderately-low	25.0	East Bench Primary Recharge Basin Fill
7	SLCO Midvale	4,500	Low-Elevation	C	Moderately-high	15.6	Secondary Recharge Basin Fill
8	SLCO Midvale	5,200	Mid-Elevation	B	Moderately-low	15.6	West Bench Primary Recharge Basin Fill
9	SNOTEL Dry Fork	6,500	High Elevation	C	Moderately-high	34.7	Oquirrh Bedrock
10	Salt Lake Int'l AP	4,450	Low Elevation	D	High	16.5	Discharge

2.4 LAND USE/LAND COVER ANALYSIS

2.4.1 Pervious Land Segments

Land-use data for the model build came from several sources, these include:

- A Salt Lake County Land Use layer that was developed for the Engineering and Flood Control Division's stormwater monitoring program in 2000 (See Figure 2.9).
- The 2001 National Land Cover Dataset (NLCD) for Salt Lake County, developed by the USGS. (See Figure 2.10)
- A GIS layer that was developed by the Utah Division of Water Resources (UDWR) that inventories agricultural lands, the types of crops, and whether they are irrigated or not irrigated.(See Figure 2.11).

Table 2.7, Table 2.8, Table 2.9, summarize the land-use areas, Table 2.10 shows how the land-uses were combined for use within the HSPF model.

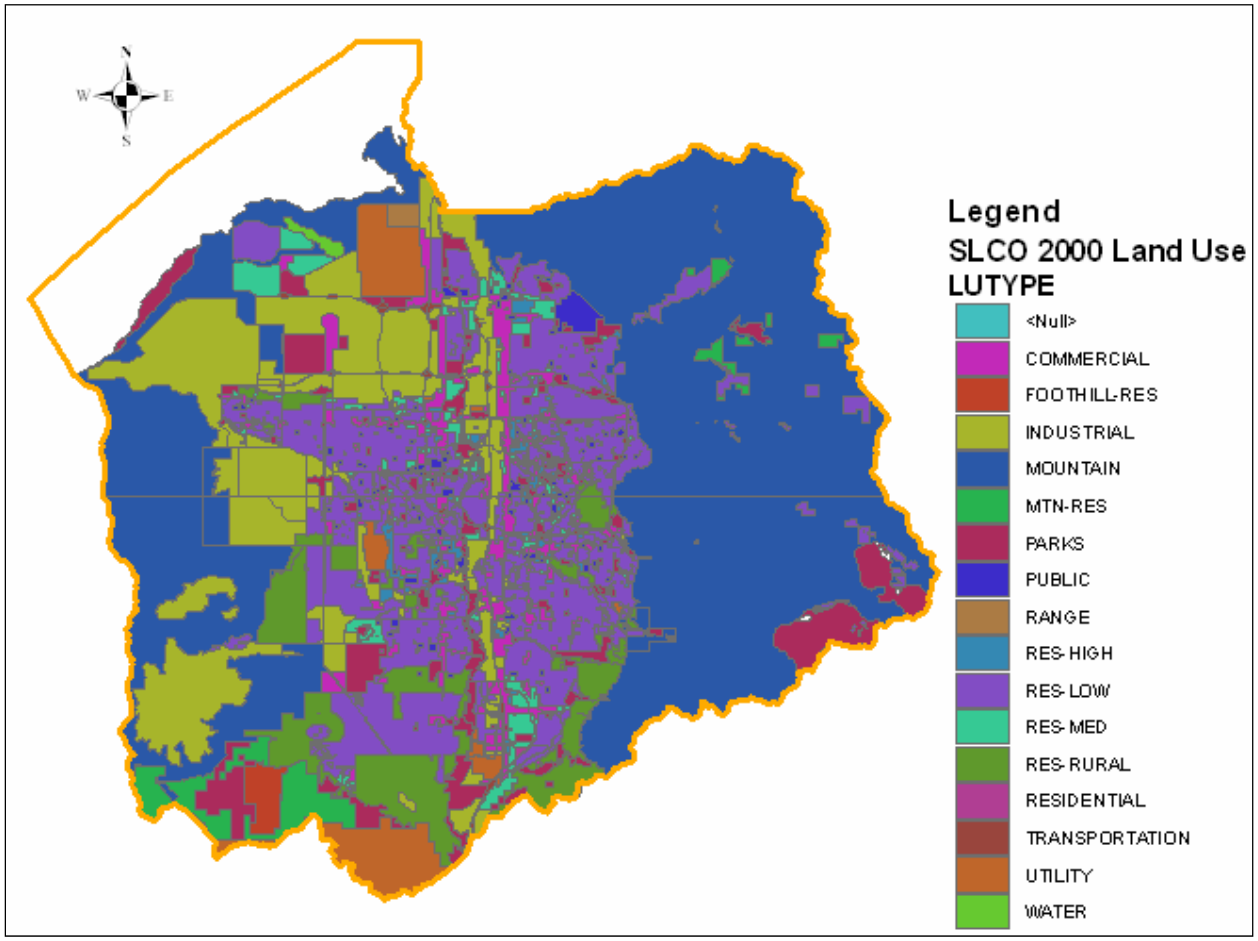


Figure 2.9 Salt Lake County Land-use
(Source: Salt Lake County, 2000)

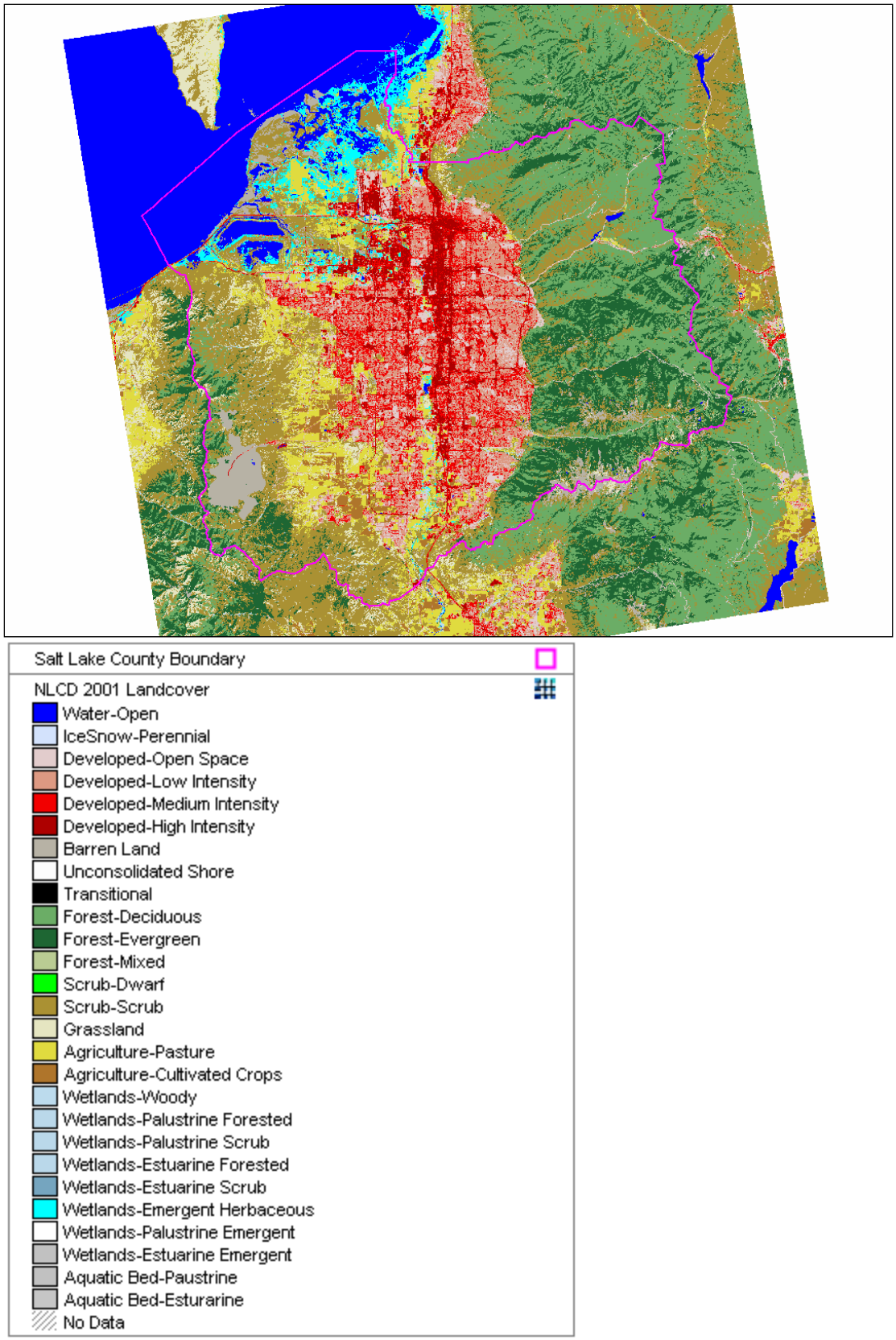


Figure 2.10 2001 NLCD land cover (Source: USGS NLCD)

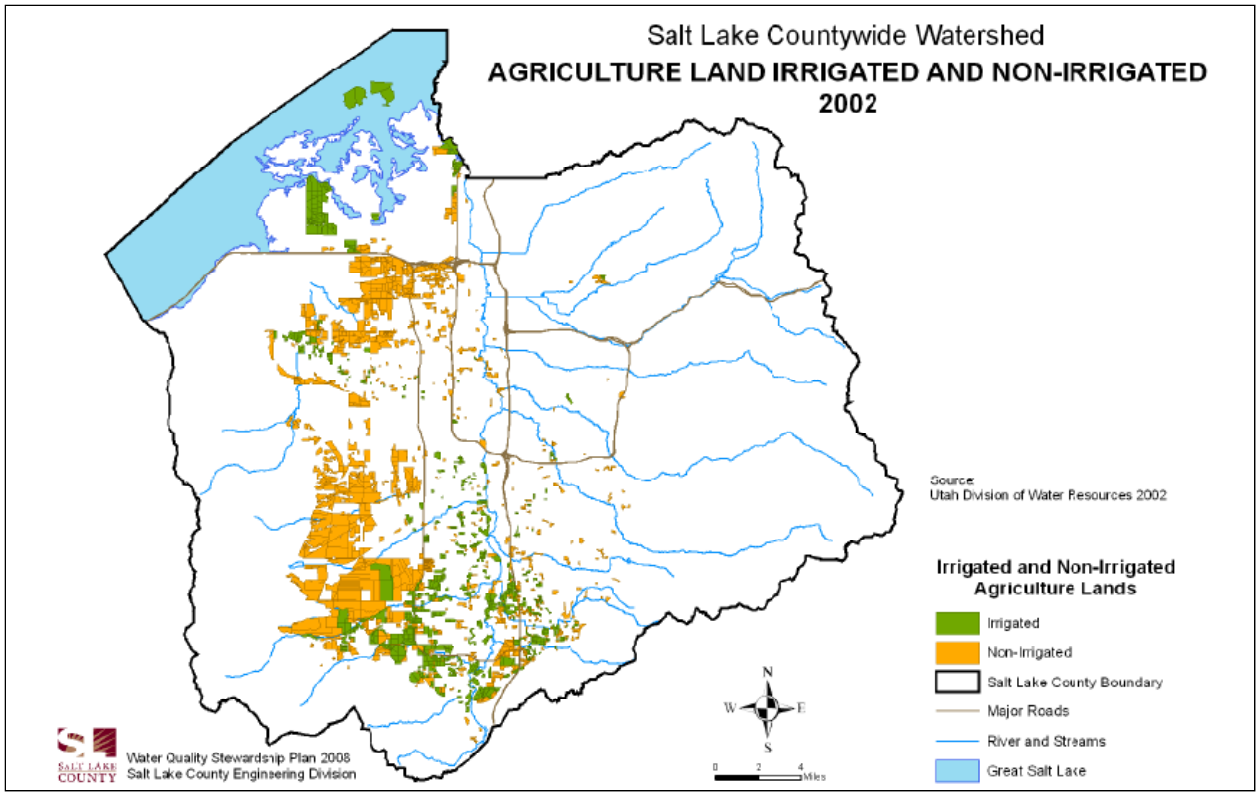


Figure 2.11 Irrigated and non-irrigated land in Salt Lake County (2002)

Table 2.7 Summary of 2000 Salt Lake County land-use

Land Use	Area (ac)	Percent
Commercial	16,176	3.4%
Foothill-Residential	2,352	0.5%
Industrial	64,628	13.7%
Mountain	195,023	41.4%
Mountain-Residential	9,605	2.0%
Parks	32,043	6.8%
Public	5,559	1.2%
Range	751	0.2%
Residential-Rural	28,244	6.0%
Residential-Low	82,473	17.5%
Residential-Medium	10,813	2.3%
Residential-High	4,467	0.9%
Residential	89	0.0%
Transportation	2,668	0.6%
Utility	14,784	3.1%
Water	747	0.2%
(blank)	162	0.0%
Total	470,584	100.0%

Table 2.8 Summary of 2001 NLCD land cover in Salt Lake County

NLCD Land Cover	Area (ac)	Percent
Open Water	36,976	7.1%
Perennial Ice/Snow	1	0.0%
Developed, Open Space	22,316	4.3%
Developed, Low Intensity	57,361	11.1%
Developed, Medium Intensity	43,694	8.4%
Developed, High Intensity	19,124	3.7%
Barren Land (Rock/Sand/Clay)	18,566	3.6%
Deciduous Forest	73,484	14.2%
Evergreen Forest	59,316	11.5%
Mixed Forest	1,158	0.2%
Shrub/Scrub	105,704	20.4%
Grassland/Herbaceous	12,417	2.4%
Pasture/Hay	40,085	7.7%
Cultivated Crops	8,031	1.6%
Woody Wetlands	3,696	0.7%
Emergent Herbaceous Wetlands	15,470	3.0%
Total	517,399	100.0%

Table 2.9 Summary of 2002 DWR agricultural land use in Salt Lake County

Crop	Irrigated	Dry	Total
Alfalfa	5,654		5,654
Corn	508		508
Dry Alfalfa		2	2
Dry Fallow		1,399	1,399
Dry Grain/Seeds		8,575	8,575
Dry Idle		13,218	13,218
Dry Pasture		4,227	4,227
Fallow		196	196
Grain	1,183		1,183
Grass Hay	107		107
Grass/Turf	279		279
Idle		999	999
Onions	7		7
Orchard	43		43
Other Vegetables	234		234
Pasture	4,329		4,329
Sorghum	39		39
Tomatoes	6		6
Total	12,387	28,617	41,003

The amount and type of pervious and impervious land cover was determined for the model through an additional land use/land cover analysis. This analysis included the following steps:

1. Applied the Salt Lake County 2000 land use data set to the urban portion of the County and applied the NLCD land cover data set to the mountain portions.
2. Since the Salt Lake County 2000 land use dataset does a poor job of characterizing agricultural lands, the DWR water related land use data set was used to determine irrigated and non-irrigated agricultural lands. Therefore, the Salt Lake County 2000 land use data will be replaced by the DWR land use data for all irrigated and non-irrigated agricultural parcels.
3. In order to simplify the model, combined similar County land use types and NLCD land cover types into combined land use/land cover (LULC) types based on land management and stormwater quality similarities per Table 2.
4. The public land use consists of publicly owned parcels, including national forest land, shorelands, airport, university, colleges, schools, prisons and government buildings. The Public land and utility was reclassified into the LULC with the most similar hydrologic characteristics.
5. Irrigation was limited to agricultural lands that are in the model segments with significant amounts of irrigated lands.
6. Open water land use and land cover was treated as a pervious land segment in the model; rather, the open water was treated as surface area in the RCHRES routine.
7. Assigned an effective impervious area (EIA) to each developed land use class (Table 2.9). Determine EIA for developed areas and reduce pervious area accordingly, resulting in a pervious and impervious component to developed land use classes. It is assumed that the impervious area in the mountain portion of the watershed (Segments 1, 2, 3, 4, and 9) does not have a formal storm drain system and therefore 0% EIA.

Table 2.10 Land use/land cover designations in the model

Original Land Use or Land Cover	Source	Combined Land Use/Land Cover
Commercial	SLCO	Urban Land - Intense
Foothill-Residential	SLCO	Urban Land - Residential
Industrial	SLCO	Urban Land - Intense
Mountain	SLCO	Open Land/Range
Mountain-Residential	SLCO	Urban Land - Residential
Parks	SLCO	Urban Land - Parks
Range	SLCO	Open Land/Range
Residential-Rural	SLCO	Urban Land - Residential
Residential-Low	SLCO	Urban Land - Residential
Residential-Medium	SLCO	Urban Land – Intense
Residential-High	SLCO	Urban Land – Intense
Residential		Urban Land - Residential
Transportation		Urban Land - Intense
Utility		Urban Land - Intense
Water		None
Open Water	NLCD	None
Perennial Ice/Snow	NLCD	Open Water
Developed, Open Space	NLCD	Urban Land - Parks
Developed, Low Intensity	NLCD	Urban Land - Residential

Table 2.10 Continued.

Original Land Use or Land Cover	Source	Combined Land Use/Land Cover
Developed, Medium Intensity	NLCD	Urban Land - Residential
Developed, High Intensity	NLCD	Urban Land - Intense
Barren Land (Rock/Sand/Clay)	NLCD	Urban Land - Intense
Deciduous Forest	NLCD	Forest
Evergreen Forest	NLCD	Forest
Mixed Forest	NLCD	Forest
Shrub/Scrub	NLCD	Open Land/Range
Grassland/Herbaceous	NLCD	Open Land/Range
Pasture/Hay	NLCD	Agricultural Lands
Cultivated Crops	NLCD	Agricultural Lands
Woody Wetlands	NLCD	Wetlands
Emergent Herbaceous Wetlands	NLCD	Wetlands

2.4.2 Pervious Land Segment Numbering Protocols

Combining applicable pervious land use and land cover classes results in 15 unique pervious land cover types. The total possible pervious land segments (PERLND),due to having 10 segments, is 150: Note that not all pervious land cover types are found in each model segment, so the actual number of PERLNDs might be quite a bit less.

The numbering protocols for the PERLNDs are summarized below.

PERLND	Model Segment
1XX	1
2XX	2
3XX	3
4XX	4
5XX	5
6XX	6
7XX	7
8XX	8
9XX	9
0XX	10

PERLND	Land Use/ Land Cover
XX1	Low Density Residential
XX2	High Density Residential
XX3	Commercial
XX4	Industrial
XX5	Transportation
XX6	Construction
XX7	Parks
XX8	Open Space
XX9	Vacant
X10	Cultivated Crops
X11	Grassland/Pasture
X12	Deciduous Forest
X13	Evergreen Forest
X14	Shrub/Scrub
X15	Wetlands

PERLND	Land Cover	Model Segment
101	Low Density Residential	1
102	High Density Residential	1
etc		
201	Low Density Residential	2
202	High Density Residential	2
etc		

The final PERLND and IMPLND areas used in the model are shown below in Table 2.11 and 2.12.

Table 2.11 PERLNDs that are used in the model

Pervious Land Surface Land-use Description	PERLND Areas Used in Model
Urban - Residential	11, 21, 31, 41, 51, 61, 71, 81, 91, 101
Open Land/Range	12, 22, 32, 42, 52, 62, 72, 82, 92, 102
Forest	13, 23, 33, 43, 53, 63, 73, 83, 93, 103
Wetlands/Open Water	14, 24, 34, 44, 54, 64, 74, 84, 94, 104
Urban Land - Intense	15, 25, 35, 45, 55, 65, 75, 85, 95, 105
Agricultural Land	46, 56, 66, 76, 86, 106
Urban Land - Parks	47, 57, 67, 77, 87, 97, 107

Table 2.12 IMPLNDs by Land-use

Impervious Land Surface Land-use Description	IMPLND Areas Used in Model
Urban - Residential	11, 21, 31, 41, 51, 61, 71, 81, 91, 101
Urban Land - Intense	15, 25, 35, 45, 55, 65, 75, 85, 95, 105
Urban Land - Parks	17, 27, 37, 47, 57, 67, 77, 87, 97, 107

Figure 2.12 below shows the land-use areas that were modeled.

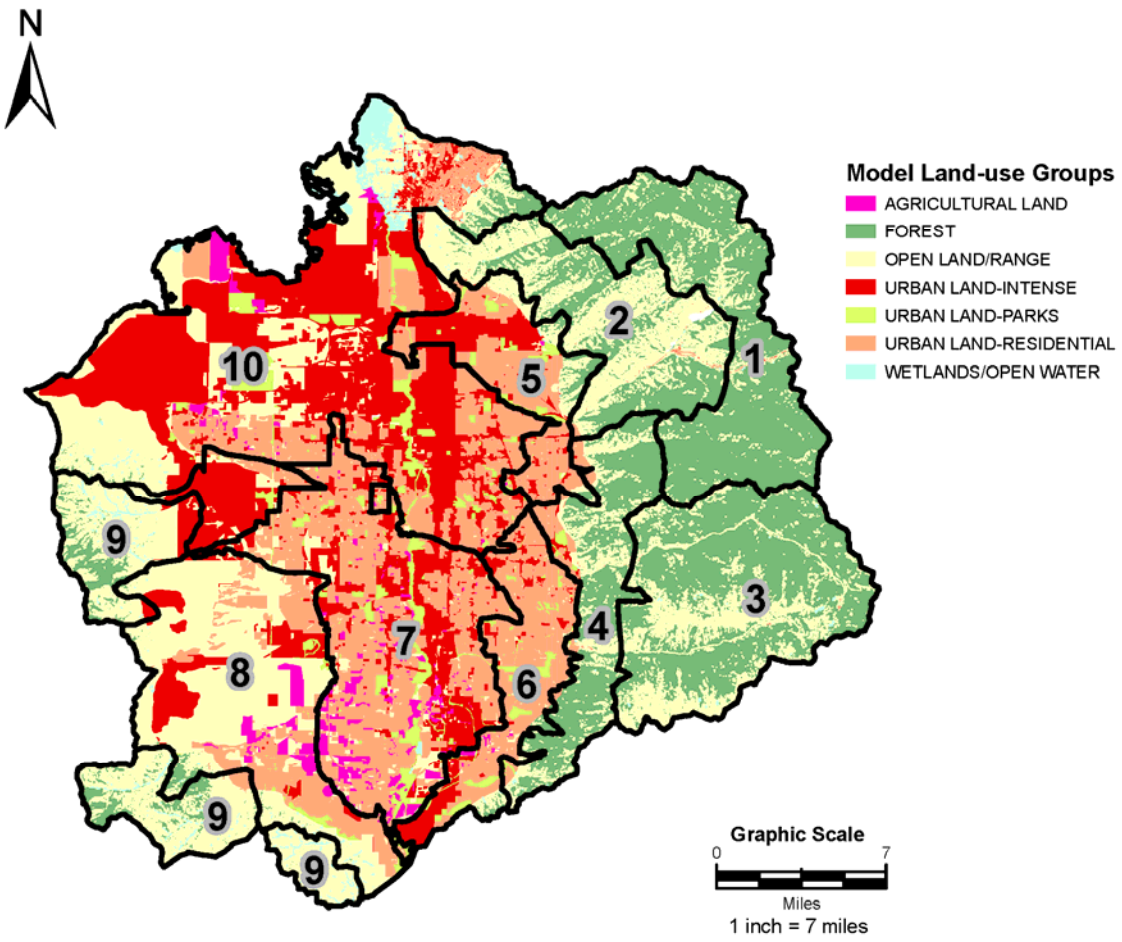


Figure 2.12 Model Land-uses

2.5 REACHES AND RESERVOIRS

HSPF assumes that flow is uniform and completely mixed within a reach. Initial segmentation of streams, canals and drains followed subbasin boundaries using the general rule of one reach per subbasin. The stream channels and canals were further segmented into reaches with similar morphologic and hydraulic characteristics. Additional reaches were added that are representative of locations in the streams with observed flow and water quality data.

Salt Lake County has designated major streams, canals and storm drains as Flood Control Facilities. A summary of the Flood Control Facilities represented in the model as reaches are presented in Table 2.13.

Table 2.13 Flood Control Facilities included in the Jordan River model

Streams	Canals	Drains
• Barneys Creek • Big Cottonwood Creek • Bingham Creek • City Creek • Corner Canyon Creek • Dry Creek • Emigration Creek • Little Cottonwood Creek • Midas/Butterfield/Copper Creek • Mill Creek • Neffs Creek • Parley's Creek/Mountain Dell Canyon/Lamb's Canyon • Red Butte Creek • Rose Creek • Willow Creek • Wood Hollow Creek • Coon/Harkers Canyon • Kersey Creek • Lee Creek	• Draper/Sandy Irrigation Canal • East Jordan Canal • Jordan and Salt Lake City Canal • North Jordan Canal • Provo Reservoir Canal (also referred to as Welby-Jacobs) • South Jordan Canal • Upper Canal • Utah and Salt Lake Canal • Utah Lake Distributing Canal • CWA-1 Drain/City Drain/Sewage Canal • Lee Drain • Riter Canal/C-7 Ditch • Surplus Canal/Goggin Drain	• 800 South Drain • 1300 South Drain • 4100 South Drain • 4700 South Drain • 5400 South Drain • 7200 South Drain • 9000 South Drain • Decker Lake Outlet • Kearns-Chesterfield Drain • North Temple Drain • 8000 West Drain

2.5.1 Reach/Reservoir Numbering Protocols

The numbering for the RCHRESs were grouped by the receiving stream or canal. Subbasins that are conveyed by drains were numbered according to the ultimate receiving water. RCHRESs are limited to three digits.

Subwatershed	RCHRES Series
Jordan River Model	
City Creek	100
Red Butte Creek	150
Emigration Creek	200
Parleys Creek	250
Mill Creek	300
Big Cottonwood Creek	325
Little Cottonwood Creek	350
Dry Creek	400
Willow Creek	425
Corner Canyon Creek	450
Draper/Sandy Irrigation Canal	600
East Jordan Canal	625
Jordan and Salt Lake Canal	650
Upper Canal	675
Welby-Jacob Canal	700
Utah Lake Distributing Canal	720
Utah and Salt Lake Canal	740
South Jordan Canal	760
North Jordan Canal	780
Jordan River Corridor	700
Decker Lake	750
Barneys Creek	800
Bingham Creek	850
Midas/Butterfield Creek	900
Rose Creek	950
Great Salt Lake Model	
Great Salt Lake	000
Coon Creek	020
Lee Creek/Lee Drain	030
Kersey Creek	040
CWA-1 Drain/City Drain/Sewage Canal	050
Riter Canal/C-7 Ditch	060
Surplus Canal/Goggin Drain	070

2.5.2 Stream Hydraulic Modeling

Flow tables (FTABLESs) were developed by using existing HEC-RAS models provided by Salt Lake County for all of the major streams within the county. Each model was used to generate a flow table that gives depth, discharge, surface area, and volume.

An example of a flow table is shown below:

```
 FTABLE  020
Type:   Canal            ***
Stream:  C7 Ditch          ***
Source storage: Countywide HEC-RAS Model***
 rows cols              ***
  12  4
  Depth   Area  Volume Outflow1 ***
     0     0     0     0
   0.23  35.205  104.585     1
   0.42   36.94   117.4      5
   0.78   38.58  136.15     25
   1.05  39.495  149.25    50
   1.43  40.685  167.49    100
   1.96  47.525   195.5    200
   2.94   85.89   257.5     500
   3.37   239.8  354.165   1000
   3.62  334.38  568.085   2000
   4.03  443.455  1025.56   5000
   4.29  465.14  1309.78   7500
 END FTABLE020
```

Figures 2.13 and 2.14 on the following pages show the model stream segments with both their model number and name.

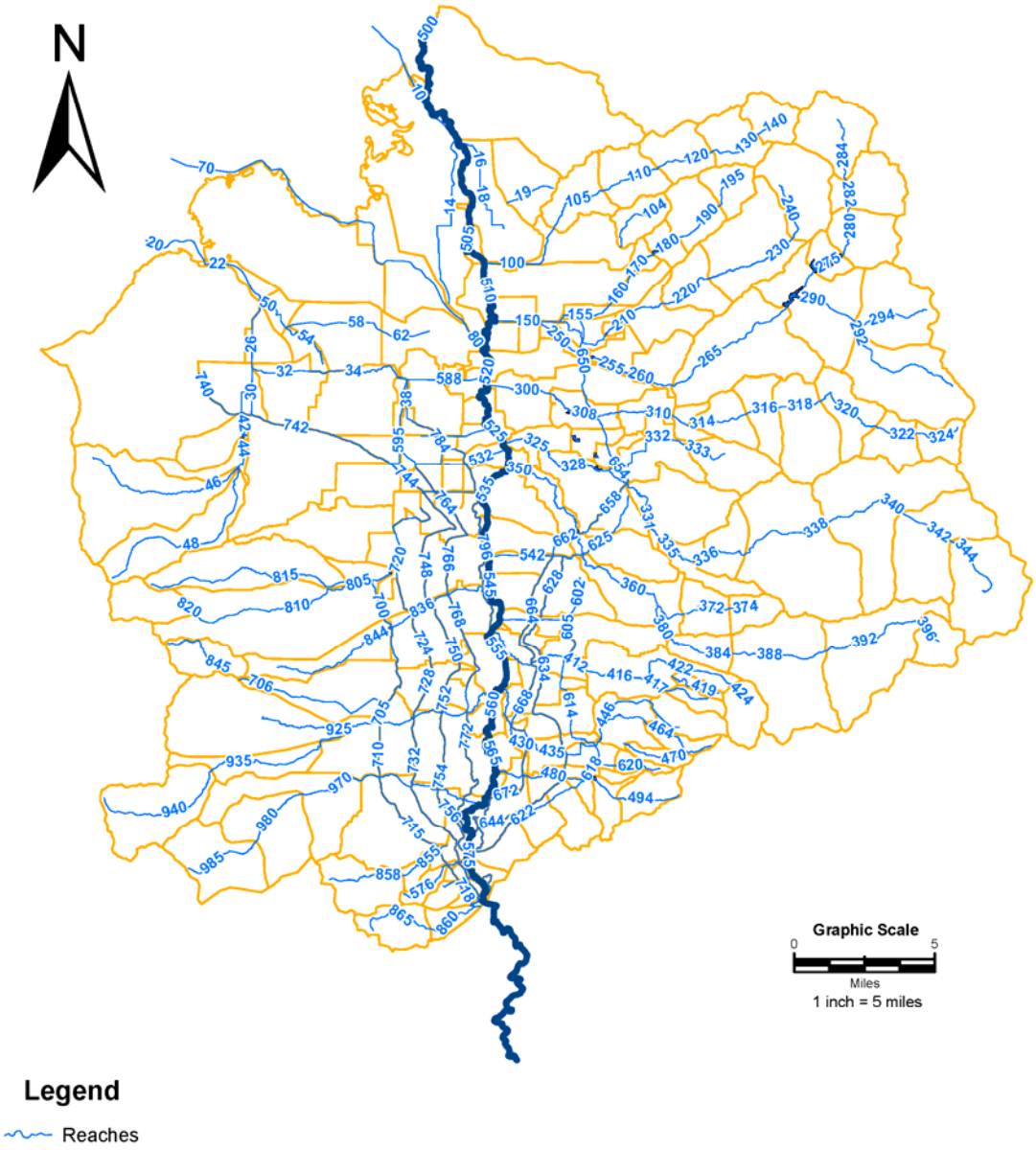


Figure 2.13 Model RCHRES numbers

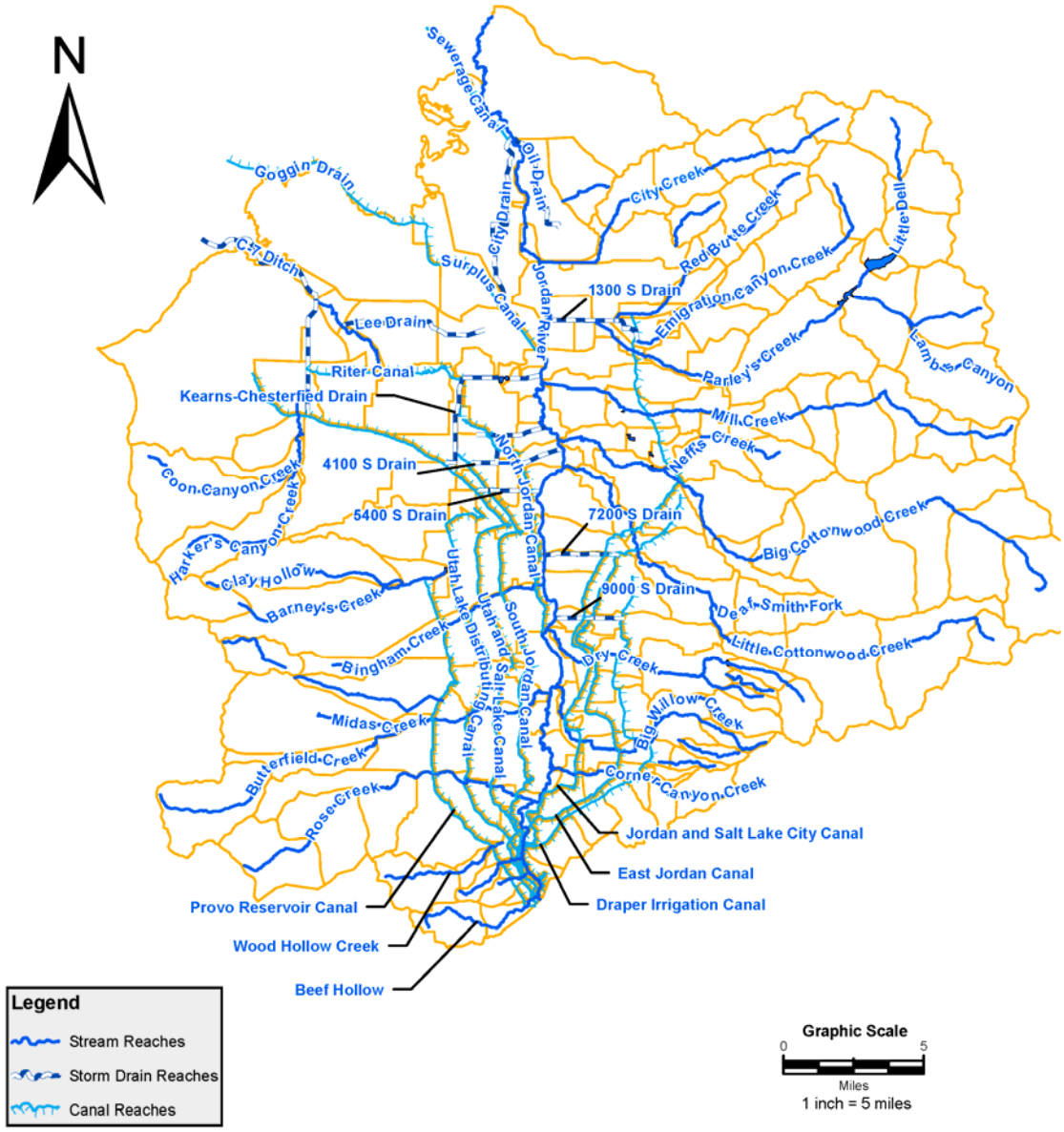


Figure 2.14 Streams that have been modeled

2.5.3 Stormwater and Flood Control Facilities

Salt Lake County maintains inline detention and debris basins for flood control purposes on the tributaries of the Jordan River. The more significant facilities from a hydrologic and/or water quality perspective were included in the model (Tables 2.14 and 2.15).

There are numerous offline detention facilities in the urbanized portion of the County. The facilities are typically extended dry detention basins designed for flood control purposes and not explicitly for stormwater treatment. The general detention criterion for municipalities within the County is to release the 10-year design storm at 0.2 cfs per acre of development. Development within unincorporated Salt Lake County is required to detain stormwater that is in addition to what was assumed in the storm drain master plan for that area, so the standards vary. The detention requirements were generally instituted in the 1990's; older developments generally do not have any detention.

It was not possible to simulate each individual detention basin in the model. For those urbanized subbasins with a significant proportion of development with detention, the methodology was to aggregate all of the ponds into one representative pond. Surface runoff from residential, commercial, industrial and transportation land uses were routed to the pond in proportion to the area that had detention. The pond will then outlet to the receiving water. The release rate will be determined by multiplying the area by 0.2 cfs/acre. The pond volume will be determined by estimating the volume required to detain the 10-year design storm.

Table 2.14 Debris basins maintained by Salt Lake County

Debris Basin	Stream	Area (ac)	Model
City Creek Debris Basin/lower	City Creek	0.41	N
City Creek Debris Basin/upper	City Creek	0.30	N
Corner Canyon Debris Basin	Corner Canyon Creek	7.06	Y
Deaf Smith Debris Basin	Little Cottonwood Creek	0.87	?
Memory Grove Detention Basin	City Creek	0.20	N
Rotary Glen Park Debris Basin	Emigration Creek	0.72	N
Spencers Pond Debris Basin	Big Cottonwood Creek	3.63	Y
Wheeler Farm Detention Basin2	Little Cottonwood Creek	0.73	N

Table 2.15 Significant reservoirs and detention basins in Salt Lake County

Reservoir	Inline	Receiving Stream	Storage Area (ac)	Model
11th Ave Detention Basin		City Creek	4.57	Y
17th and 17th Detention Basin	inline	Emigration Creek	3.97	Y
550 E Detention Basin	inline	Mill Creek	2.67	Y
Big Willow 1 (High Mesa Pond)	inline	Willow Creek	0.03	N
Big Willow 2	inline	Big Willow Creek	1.35	N
Big Willow 3	inline	Willow Creek	1.44	N
Big Willow 4	inline	Willow Creek	0.56	N
Big Willow 5	inline	Willow Creek	1.71	Y
Chandler Drive Detention Basin		City Creek	1.50	N
Clay Hollow Regional Det Basin	inline	Barneys Creek	0.68	N
Creekside Park Detention Basin	inline	Big Cottonwood Creek	15.94	Y
Decker Lake Detention Basin	inline	Decker Lake	33.42	Y
Detention Basin	inline	Midas Creek	2.44	Y
East High Detention Basin		Jordan River	2.93	N
Federal Heights Detention Basin		City Creek	1.01	N
Hercules Detention Basin	inline	Coon Creek	4.83	Y
KUC		Bingham Creek	11.61	N
KUC		Bingham Creek	20.76	N
KUC		Bingham Creek	39.26	N
KUC		Bingham Creek	5.51	N
Liberty Park Pond[1]	inline	Red Butte Creek	6.93	N
Little Dell Reservoir (Flood Control)[2]	inline	Parleys Creek	217.93	Y
Little Hoover Detention Basin	inline	Coon Creek	1.15	N
Little Willow 1 (Cedar Terrace Pond)	inline	Little Willow Creek	2.18	Y
Mountain Dell Reservoir	inline	Parleys Creek	80.64	N
Red Butte Reservoir	inline	Red Butte Creek	13.68	Y
Rose Cr Detention Basin	inline	Rose Creek	5.56	Y
Scotts Ave Detention Basin		Mill Creek	5.49	Y
Shriners Hospital Detention Basin		City Creek	0.41	N
Sugarhouse Detention Basin	inline	Parleys Creek	4.47	Y
Wheeler Farm Detention Basin1	inline	Little Cottonwood Creek	4.46	Y

1: Has been converted to an off-line facility that does not provide detention.
2: Reservoir operated for both water supply and flood control purposes. Release from reservoir will be a time series.

2.6 HYDROLOGY

The Salt Lake Valley has a complex hydrology that has many factors to consider when building a watershed model. The biggest considerations included in this watershed model were:

- The Utah Lake input into the Jordan River.
- Irrigation Canal Diversions
- Irrigated Land Surfaces

2.6.1 Utah Lake Input

The upstream boundary of the model is at the County line at the Narrows. The model required hourly time series of flow and water quality constituents at this location. The UDWR publishes daily flow records at this location (02 Jordan River Combined Flow from 1950 to 2009). The UDWQ has historically sampled at this location (4994720 Jordan River at Narrows); however, no monitoring was conducted between 1996-1998 and 2001-2003. Therefore, the water quality data was be augmented with monitoring from upstream (4994790 Jordan River at Utah Lake Outlet) and downstream (4994600 Jordan River at Bluffdale Road).

The daily flow records were disaggregated to create an hourly time series assuming each hour has the same flow as the average daily rate. his is typically a valid assumption, as the release from Utah Lake is controlled and based on water supply and flood control considerations. During large storms and flood events, the flow may experience some sub-daily variation.

2.6.2 Canal Diversions

The UDWR publishes canal daily flow diversion data for all the major canals in the Salt Lake Valley. This data was obtained from the UDWR database (Table 2.16).

Table 2.16 Canal Diversions.

Canal Name	Model Reach Number	Dataset Storage Number (units in cfs)
South Jordan Canal	776	300
Jordan and Salt Lake City Canal	674	320
North Jordan Canal	798	340
Surplus Canal	80	361
Provo Reservoir Canal	718	120
Utah Lake Distributing Canal	738	140
Utah and Salt Lake Canal	758	160
East Jordan Canal	646	180

2.6.3 Irrigation

Irrigation within this model is limited. Only the irrigation within the agricultural areas of southwestern Salt Lake County were modeled. These areas were based on the UDWR irrigated lands data, as described above. The irrigated areas were modeled as precipitation that was taken out of the flow volume of the canal reach (Table 2.17).

Table 2.17 Irrigated Areas

Irrigation Source	Type	RCHRES Source	PERLND Target
East Jordan Canal	Flood	646	66
Utah and Salt Lake Canal	Flood	758	76
Provo Reservoir Canal	Sprinkler	718	86
Utah Lake Distributing Canal	Flood	738	106

2.6.4 Canal Overflows

Many of the irrigation canals within Salt Lake County have canal overflows. The overflows allow the canals to overflow excess stormwater in adjacent streams. These overflows were modeled where possible within Salt Lake County. The *2003 Southwest Canal and Creek Study* and *2003 Eastside Canal Study* were used to determine the locations of canal overflow locations. The overflows were modeled by placing a second exit from these reaches and generating a flow table that allowed complete spillage at the overflow elevation. The tables were set up so that above the elevation of overflow structures, all of the flow was routed to the overflow.

2.6.5 Water Treatment Plant Diversions

Water treatment plant diversion and consumption data was taken from data provided directly by Salt Lake City Public Utilities (Table 2.18).

Table 2.18 Water Treatment Plant Diversion

Water Treatment Plant	Model Reach Number	Data Storage Number (units in cfs)
City Creek WTP	110	401
Parley's WTP	270	411
Big Cottonwood WTP	335	421
Little Cottonwood WTP	380	431

2.6.6 Wastewater Treatment Plant Sources

Wastewater flow data (Table 2.19) was obtained from flow data reported to UDWQ by each of the plants.

Table 2.19 Wastewater Treatment Plant Sources

Wastewater Treatment Plant	Model Reach Number	Dataset Storage Number (units in cfs)
South Valley Water Reclamation Plant	540	600
Central Valley Water Reclamation Plant	300	650
South Davis South Water Reclamation Plant	500	700
Salt Lake City Water Reclamation Plant	018	750
Magna Water Reclamation Plant	026	800

2.6.7 Groundwater Mountain Block Recharge

The conceptual and computer models for the groundwater flow in the Salt Lake Valley have both recharge and discharge components. This means that some fraction of the recharge from the mountain areas eventually ends up as discharge lower in the tributaries and in the Jordan River. HSPF does not have a mechanism to model this phenomenon directly without complicated routing of timeseries. Groundwater that percolates to the principal aquifer (referred to as deep fraction) is lost from the model. Because of the results of the calibration, this model considers a way to simulate the discharge of the principal aquifer to the Jordan River.

Deep groundwater discharge back into the Jordan River was simulated by providing an external time series as an input to flow in each segment of the upper Jordan River. The principal aquifer recharge was only modeled for the upper Jordan River, it was not modeled for the lower Jordan River (below 2100 South) of the Surplus Canal. Groundwater baseflow was modeled based on a flow per unit length of river with the following values:

- Above 9000 South – 2.25 cfs/mile
- Between 9000 South and 2100 South – 4.0 cfs/mile

These flow rates were determined by looking at published values for mountain block recharge as well as estimating the total amount of water lost into the deep fraction by the model. The published values are summarized in Table 2.20.

Table 2.20 Mountain Block Recharge Estimates

Reference	Annual Recharge Volume							
	(ac-ft)[1]				(in)[2]			
	Wasatch Mountain			Oquirrh Mountain	Wasatch Mountain			Oquirrh Mountain
	Northeast	Southeast	Total		Northeast	Southeast	Total	
Hely et al 1971, Table 21			106,000	29,000			8.27	6.66
Waddell et al 1987, Table 1			118,000	36,000			9.20	8.26
Lambert 1995, Table 5[3]	59,000	33,000	91,000	32,000	9.43	5.03	7.10	7.35
Manning and Solomon 2005, Table 3[4]		16,275				2.67		
		37,285				6.11		

1: Published values.
2: Estimated depths based on areas in Utah DNR bedrock GIS data layer.
3: Breakline at Mill Creek
4: Breakline at Mill Creek, no Willow & Corner Canyon Creeks

2.6.8 Snow

Snow accumulation and melt is an important process in the hydrology of streams that originate in mountain watersheds. The springtime peak flows and summertime base flows are driven by the amount of snow accumulation and rate of snowmelt. Several techniques have been developed to simulate snow in hydrologic models. HSPF has two commonly applied methods: the degree-day method and the energy balance method.

In the degree-day method, the observed air temperatures are converted to degree-days above a threshold. For example, if the threshold for snowmelt is 32 degrees Fahrenheit (°F), a day with a mean daily temperature of 50° F would result in 18 degree-days. A degree-day factor or snowmelt coefficient is then applied to the number of degree-days in order to determine snowmelt. This is a very simple algorithm which only requires precipitation and air temperature to simulate snow accumulation and melt.

The energy balance method is a more sophisticated technique which requires substantially more input data. The energy balance approach calculates each of the possible energy fluxes on the snowpack, including shortwave and longwave solar radiation, sensible heat exchange with the air, condensation, sublimation, advective heat flux from rain and ground heat flux. This method requires precipitation, air temperature, dew point, solar radiation and wind velocity data to simulate snow accumulation and melt.

Based on a previous analysis, it was found that although the degree-day method has reduced complexity and data requirements, it produces adequate results as compared to the energy balance method (von Stackelberg, 2007). Therefore, the degree-day method was used for simulating the snow processes in the Salt Lake County model.

2.6.9 Potential Evapotranspiration

The potential evapotranspiration (PET) that was used in this model was obtained from the BASINS system, which automatically downloads PET data from nearby meteorologic stations. Five different stations were used in this model. These include:

- Salt Lake International Airport (UT 427598)
- Salt Lake City East Bench (UT 427655)
- Cottonwood Weir (UT 421759)
- Mountain Dell Dam (UT 425892)
- Silver Lake Brighton (UT 427846)

Potential evapotranspiration data was also downloaded from the Utah Climate Center (UCC) and compared to the BASINS evapotanspiration. These values were found not to match, so an adjustment factor was applied to adjust the BASINS PET to the UCC data.

2.7 WATER QUALITY

2.7.1 Point Sources

Constituent concentration time series were developed for each of the point sources included in the model. The constituent input was obtained from effluent quality reported to UDWQ by each of the plants, as well as UDWQ monitoring data. The load estimation methodology described under Boundary Conditions above was also be used to develop the time series for the point sources. See Table 2.21.

Table 2.21 Point sources included in models

Point Source	Receiving Water	Comment
Central Valley Water Reclamation Facility	Mill Creek	
Jordan Basin Water Reclamation Facility	Jordan River	Not included in model.
South Davis South Water Reclamation Facility	Jordan River	Placeholder Only
South Valley Water Reclamation Facility	Jordan River	
Magna Water Reclamation Facility	Kersey Creek	
Salt Lake City Water Reclamation Facility	Oil Drain	

2.7.1 Utah Lake Input

The water quality component of the Utah Lake inflow into the Jordan River was determined by using data from the EPA STORET database and load estimator software (Table 2.22).

The LOAD ESTimator (LOADEST) computer program, developed by the USGS, was used to develop an hourly time series of water quality constituents (Runkel et al., 2004). LOADEST is a FORTRAN program for estimating constituent loads in streams and rivers. Given a time series of streamflow, additional data variables, and constituent concentration, LOADEST uses a regression model for the estimation of constituent load over a user-specified time interval. Mean load estimates, standard errors, and 95 percent confidence intervals are developed on a monthly and(or) seasonal basis.

Table 2.22 Utah Lake Outflow Datasets

Dataset	Units	DSN Number
Utah Lake Outflow Flow Rate	cfs	103
Nitrate from Utah Lake	lb/day	108
Ammonia from Utah Lake	lb/day	109
Dissolved Phosphate from Utah Lake	lb/day	110
BOD from Utah Lake	lb/day	111
DO from Utah Lake	lb/day	112
TSS from Utah Lake	lb/day	113
Heat from Utah Lake	Btu/day	115

2.7.2 Groundwater Quality

Groundwater quality for this model was estimated by using literature values. These data came from one study (Thiros S.A., 2003).

In this study, groundwater samples were taken at 30 different sites within the Salt Lake valley, wells varied in depth from 23 to 153 feet (Figure 2.15). Water quality data was taken for major ions, trace elements, nutrients, dissolved organic carbon, pesticides, and volatile organic compounds. Figure 2.15 below, shows the locations that were sampled as part of the study.

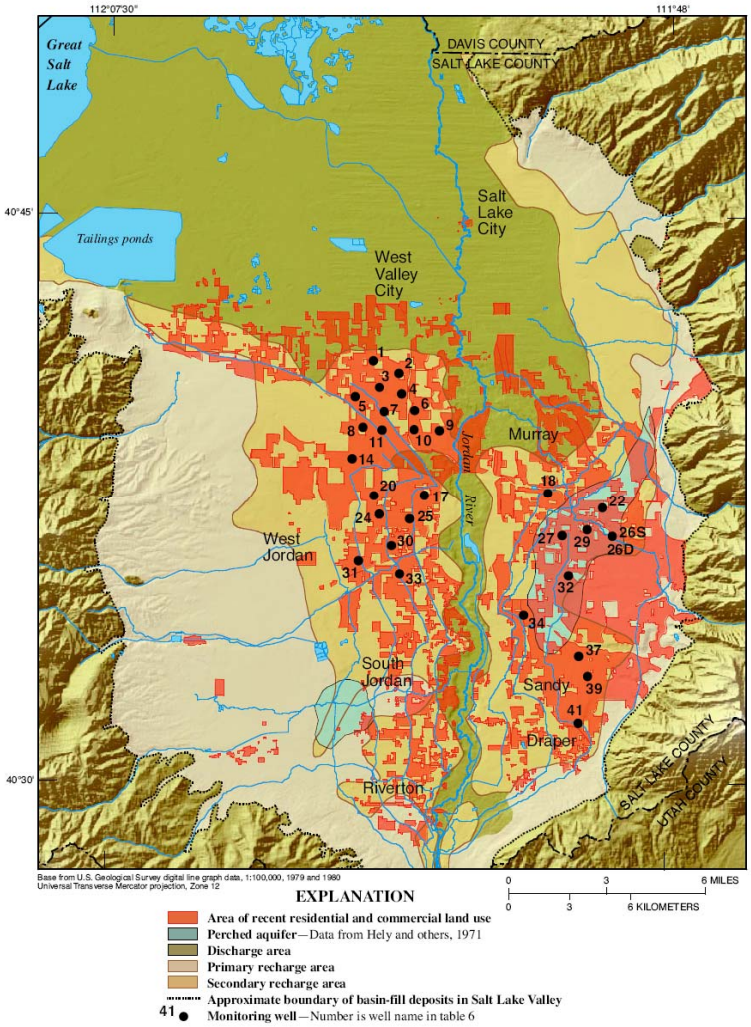


Figure 2.15 Groundwater Data Locations.

3.0 MODEL HYDROLOGY CALIBRATION AND VALIDATION

The model was calibrated for hydrology in order to improve the model performance and build confidence in using the model for watershed planning, regulatory compliance and flood control purposes. The model calibration involved adjusting model parameters such that the simulated (or predicted) results most closely match observed data.

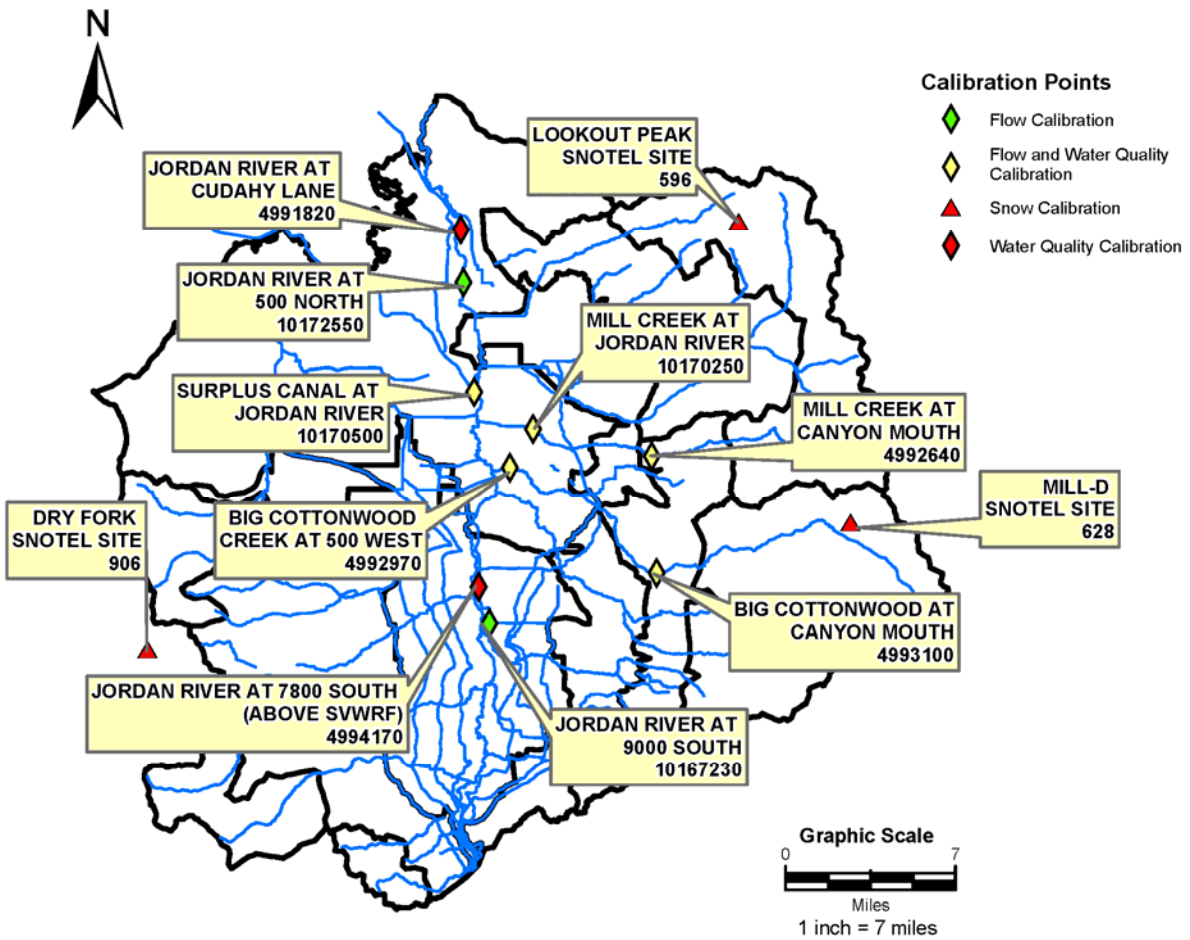


Figure 3.1 Watershed Model Calibration Locations

3.1 CALIBRATION LOCATIONS

Observed flow data and snow depth data was used for the hydrology calibration and validation. See Appendix A for a list of available flow and water quality data in Salt Lake County. Daily flow data was available for both the model calibration period and validation period for all seven flow calibration locations. These flow calibration locations include (Figure 3.1 for the locations on the map):

- Mill Creek at Canyon Mouth (USGS Gage # 4992640, SLCO Gage # 420)
- Mill Creek at Jordan River (USGS Gage # 10170250, SLCO Gage # 490)
- Big Cottonwood Creek above Water Treatment Plant, Salt Lake City Public Utilities (Utilizes data from USGS Gage # 4993100, SLCO Gage # 320, but adds in the Stairs Plant Diversion)
- Jordan River at 9000 South (USGS Gage # 10167230, SLCO Gage # 150)
- Combined Flow at Surplus Canal (USGS Gage # 10170490)
- Jordan River at 500 North (USGS Gage # 10172550, SLCO Gage # 960)

Three locations were chosen for calibration of snow depth within the watersheds. These locations used data from the NRCS Snow Telemetry sites (SNOTEL) (NRCS 2010). Three calibration locations were chosen (see Figure 3.1 for the locations on the map) they are:

- Lookout Peak (Site # 596) – Northern Wasatch Mountains
- Mill-D (Site # 628) – Southern Wasatch Mountains
- Dry Fork (Site # 906) – Oquirrh Mountains

The calibration locations were chosen to be representative of the diverse hydrologic and water quality processes occurring within the County. Sites with relatively robust flow records during the calibration and validation period were required.

The flow calibration locations are summarized in Tables 3.3 and 3.4, and shown in Figure 3.1. These sites were selected based on location within the watershed and availability of data during the calibration period. Several sites were selected on the Jordan River, as well as the northern and central Wasatch tributaries. Due to data limitations, no sites were selected for the Oquirrh Mountains. The number of observations at each location for each constituent is summarized in Appendix A.

Table 3.1 SNOTEL site calibration locations

#	Station Name	Station Number	Agency	Start Date	End Date	Time Step
1	Lookout Peak	596	NRCS	6/23/1988	Active	15-min
2	Mill-D	628	NRCS	10/01/1988	Active	15-min
3	Dry Fork	906	NRCS	10/21/1994	Active	15-min

Table 3.2 Flow gage calibration locations

#	Station Name	Station Number	Agency	Start Date	End Date	Time Step
1	Mill Creek at Canyon Mouth	420	SLCO	10/1/1980	Active	15-min
2	Mill Creek at 480 West	490	SLCO	4/1/1979	Active	15-min
3	Big Cottonwood Creek above Water Treatment Plant – SLC Public Utilities		SLC PU	1/1/1990	Active	Daily
4	Jordan River at 9000 South	150	SLCO	10/1/1991	Active	15-min
5	Combined Jordan River & Surplus Canal	10170490	USGS	12/1/1942	Active	Hourly
6	Jordan River at 500 North	960	SLCO	10/1/1974	Active	15-min

3.2 MODEL PARAMETERIZATION

The initial model parameters were based on calibrated values and acceptable ranges in the literature. References for appropriate model parameter values included the Jordan River QUAL2K model developed for the TMDL, HSPF guidance documentation and peer reviewed literature. The model parameters were then adjusted manually until the simulated results most closely match the observed data.

The order of model parameterization was as follows:

- Snow accumulation and melt.
- Annual Flow Volumes
- Monthly Flow Volumes
- Peak Flows
- Validation Check

An automatic model parameter optimization program was not utilized to assist with the calibration of the model.

3.3 MODEL PERFORMANCE

The calibration methodology used a “weight of evidence” (WOE) approach, which utilizes multiple graphical comparisons and statistical tests to evaluate model performance (Donigian, 2002; Donigian and Love, 2003). Under this approach, there are not any absolute criteria for calibration acceptance; rather, the graphical comparisons and statistical tests are verified to be within acceptable tolerances. The following hydrologic characteristics checked at each calibration location:

- Annual water balance
- Snow depth
- Annual and monthly flow volume
- Graphical comparison of flow hydrographs (storm peak flows, storm recession, snow melt recession, base flow)
- Graphical comparison of flow duration curve
- Graphical comparison of mean daily flow scatter plots with linear regression (slope, intercept and coefficient of determination)

3.4 HYDROLOGY CALIBRATION AND VALIDATION PERIOD

The model calibration period includes years with dry, average and wet precipitation levels. This is an attempt to represent the full range of possible hydrologic conditions. When selecting the calibration period, consideration was given to calibration data availability and land use conditions during the model.

The Utah Division of Water Resources has identified periods of drought from 1895 through 2005 for seven climatic regions in Utah using the Palmer Drought Severity Index (UDWR, 2008). Salt Lake County falls within two climatic regions: North Central and Northern Mountains. As shown in Figure 3.2 on the following page, the North Central region experienced a severe drought between 1999 and 2004, and the Northern Mountains experienced a moderate drought.

Table 3.3 presents a summary of the annual precipitation in the valley and mountain area of Salt Lake County.

Table 3.3 Precipitation depth summary for Salt Lake County

Year	Annual Precip Minus Ave Annual Precip (in)		Precipitation Level
	Valley[1]	Mountain[2]	(Valley–Mountain)
1990	-4.9	-3.0	Dry-Ave
1991	2.2	-0.1	Wet-Ave
1992	-3.5	-8.8	Dry
1993	3.3	14.0	Wet
1994	-0.3	-3.7	Ave
1995	1.3	15.7	Ave-Wet
1996	1.7	3.0	Wet-Ave
1997	1.3	12.0	Ave-Wet
1998	8.2	4.9	Wet
1999	-2.1	3.7	Dry-Ave
2000	0.7	-9.5	Ave-Dry
2001	-0.6	-7.5	Ave-Dry
2002	-5.3	-2.5	Dry-Ave
2003	0.3	-8.8	Ave-Dry
2004	-0.7	-4.6	Ave-Dry
2005	1.3	13.5	Ave-Wet
2006	0.5	5.3	Ave-Wet
2007	-2.3	-7.3	Dry
2008	-3.9	3.5	Dry-Ave

1: NWS Salt Lake International Airport Station – Average annual precipitation 1948-2008 = 15.6 in.
2: SNOTEL Brighton Station – Average annual precipitation 1987-2008 = 40.9 in.

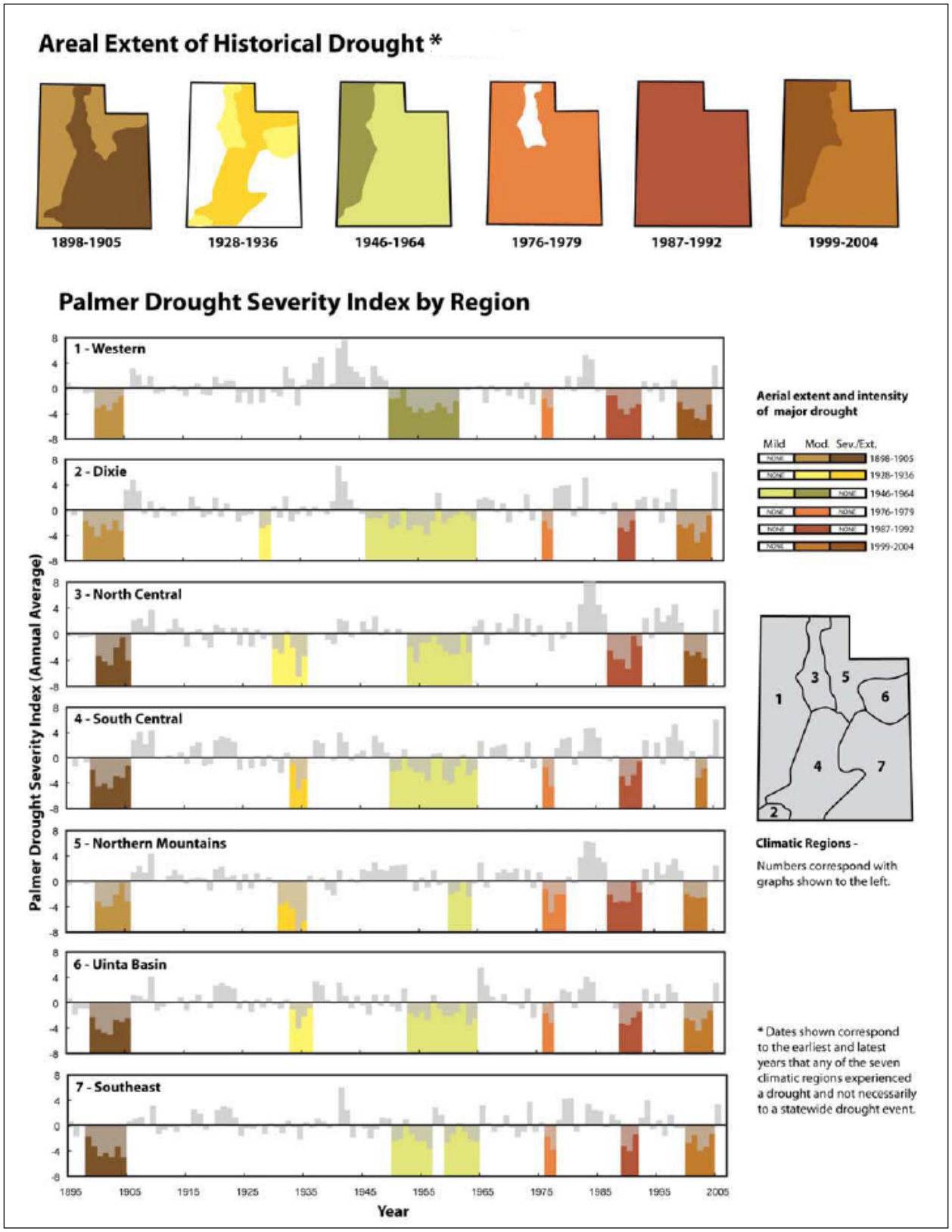


Figure 3.2 Drought Periods in Utah (Source: Utah Division of Water Resources)

Table 3.4 presents a summary of the annual runoff at the Mill Creek stream gage located at the canyon mouth. Mill Creek has limited water withdrawals in the mountain area and therefore is more reflective of natural hydrologic conditions. Average conditions in both of these tables are assumed to occur within plus or minus 10% of the average annual value.

Table 3.4 Runoff summary for Mill Creek at Canyon Mouth (Salt Lake County Stream Gage 420)

Year	Runoff Volume (ac-ft)	Difference from Average (ac-ft)	Runoff Level
1991	7,510	-3,219	Low
1992	4,600	-6,129	Low
1993	11,520	791	Ave
1994	8,250	-2,479	Low
1995	15,690	4,961	High
1996	12,690	1,961	High
1997	13,860	3,131	High
1998	16,490	5,761	High
1999	14,650	3,921	High
2000	6,480	-4,249	Low
2001	5,990	-4,739	Low
2002	7,810	-2,919	Low
2003	10,410	-319	Ave
2004	6,710	-4,019	Low
2005	18,270	7,541	High
Average	10,729		

The calibration period is seven years and includes water years 1998 through 2004. The calibration period was also chosen because the NLCD land cover and imperviousness layers are for 2001, which falls within this period and is representative of more recent land use conditions. The period included 2004 because UDWQ conducted intensive monitoring in the Jordan River basin that year.

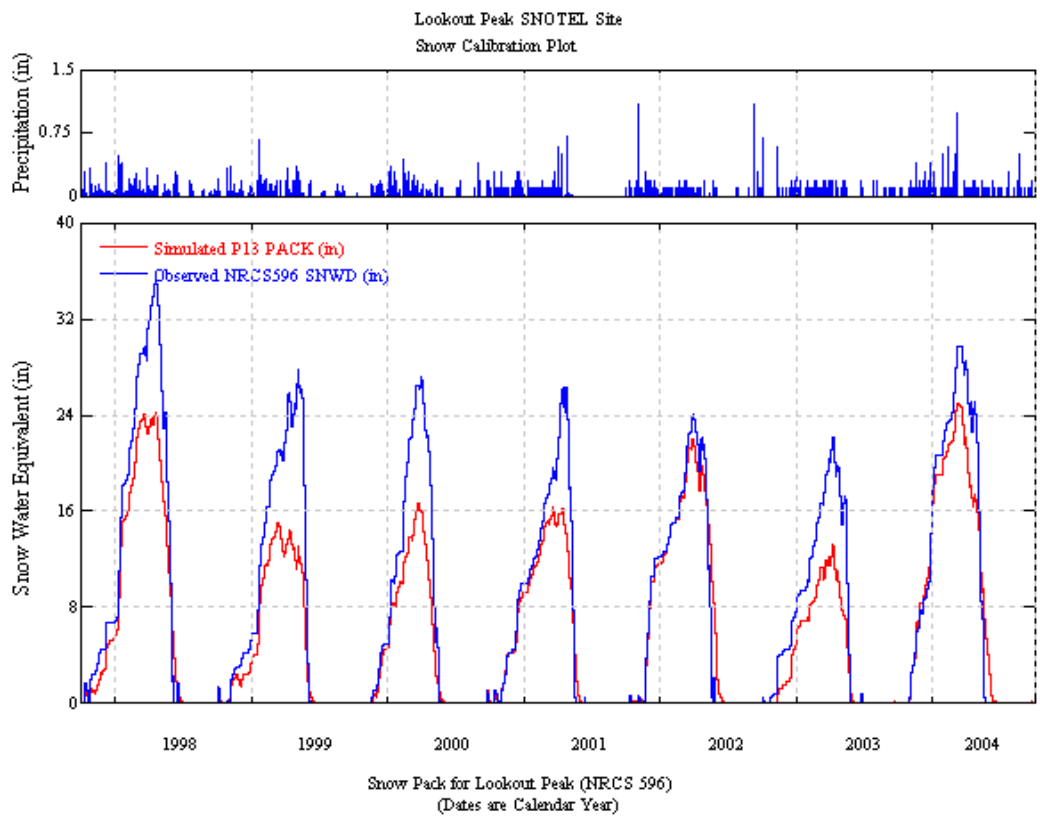
The validation period is five years and includes water years 1995 to 1997 and water years 2005 to 2006. These periods were chosen, because data was available and they encompassed the calibration period well.

- Model Calibration Period: October 1, 1997 to September 30, 2004.
- Model Validation Period: October 1, 1994 to September 30, 1997
  and October 1, 2004 to September 30, 2006

3.5 HYDROLOGY SNOW CALIBRATION

Calibration of the snow hydrology conditions was the first step in the model calibration. The model utilized the degree-day method to simulate the snowpack.

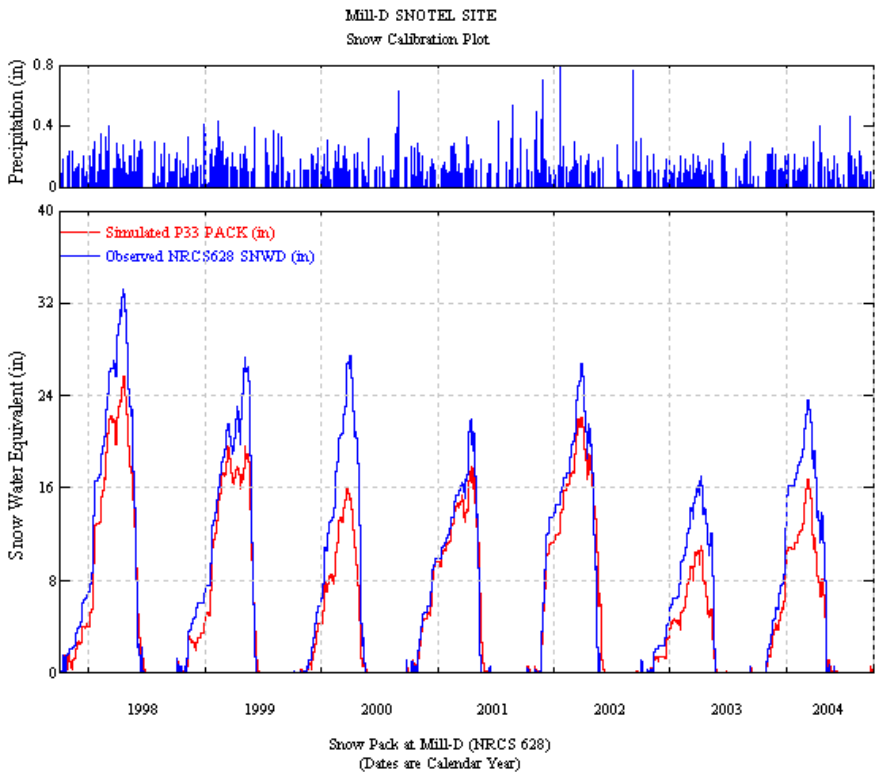
3.5.1 Lookout Peak



Model Fit	Correlation Coefficient	Coefficient of Determination	Model Fit Efficiency (NS)
Daily	0.96	0.92	0.84
Monthly	0.96	0.92	0.84

The Lookout Peak SNOTEL station is located at a higher elevation than the simulated snowpack in PERLND 13. This is why the simulated snowpack appears to be less than the observed snowpack.

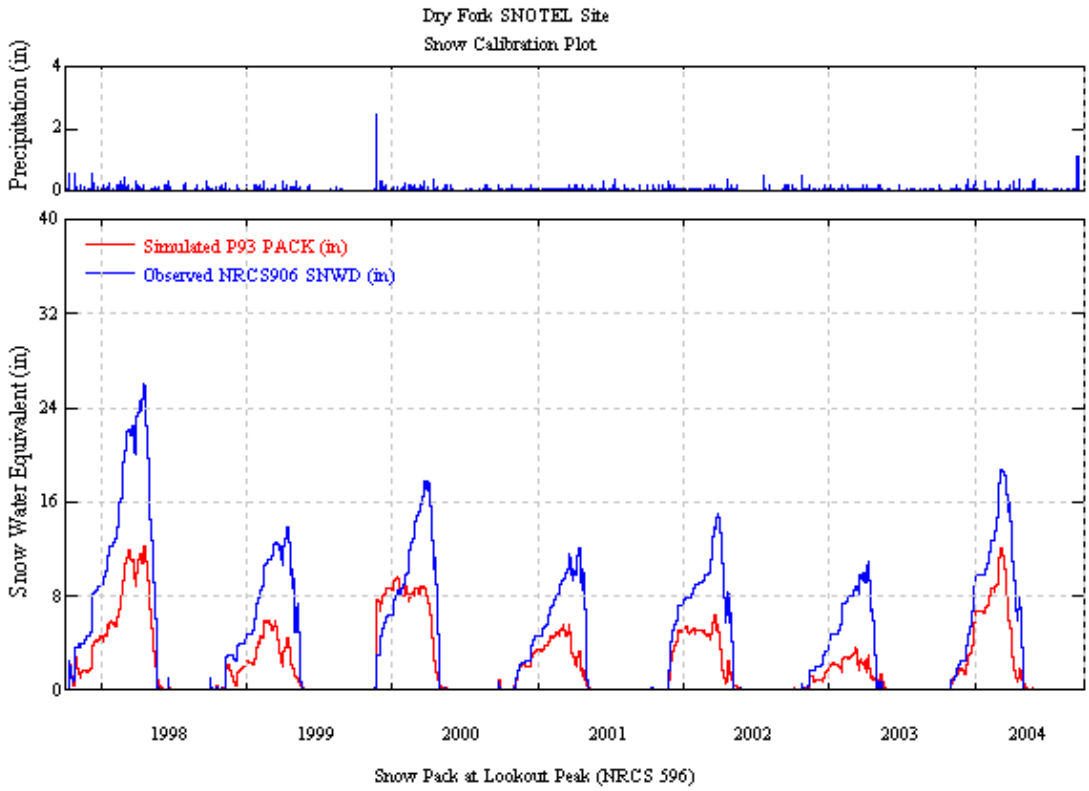
3.5.2 Mill-D



Model Fit	Correlation Coefficient	Coefficient of Determination	Model Fit Efficiency (NS)
Daily	0.97	0.95	0.87
Monthly	0.97	0.95	0.87

The Mill-D SNOTEL site is located at approximately the same elevation as the simulated snowpack in PERLND 33. This means that the simulated and calibrated snow depths are similar in value.

3.5.3 Dry Fork

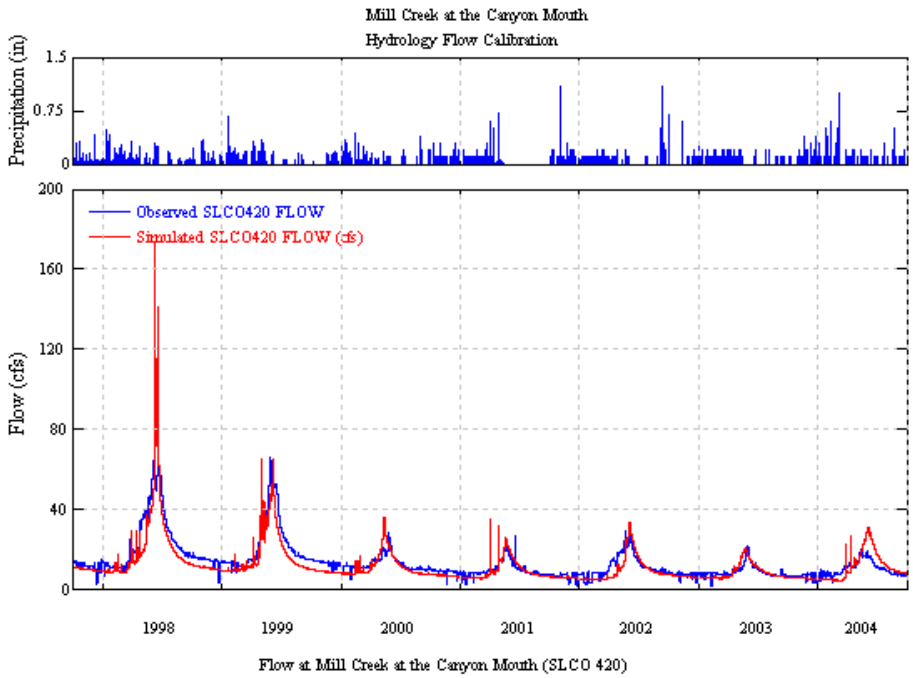


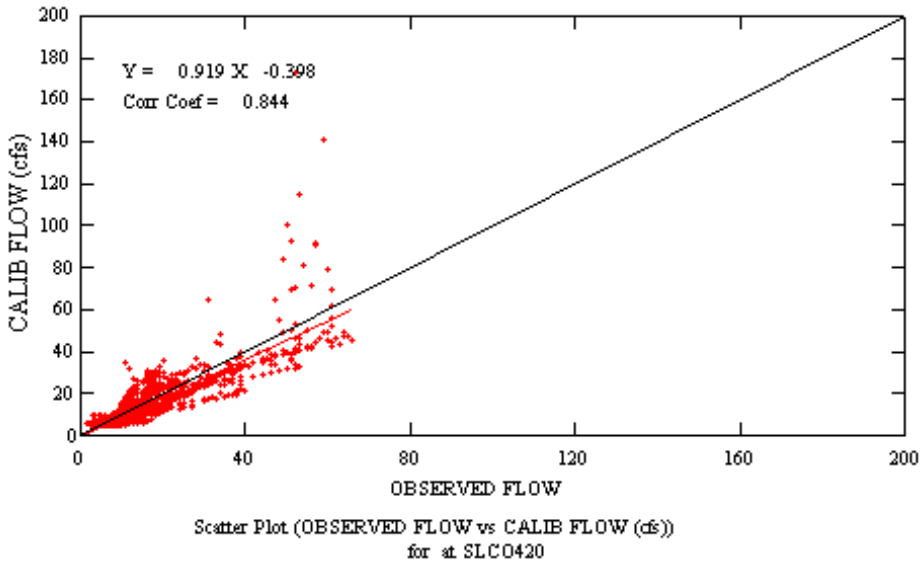
Model Fit	Correlation Coefficient	Coefficient of Determination	Model Fit Efficiency (NS)
Daily	0.90	0.81	0.53
Monthly	0.91	0.83	0.83

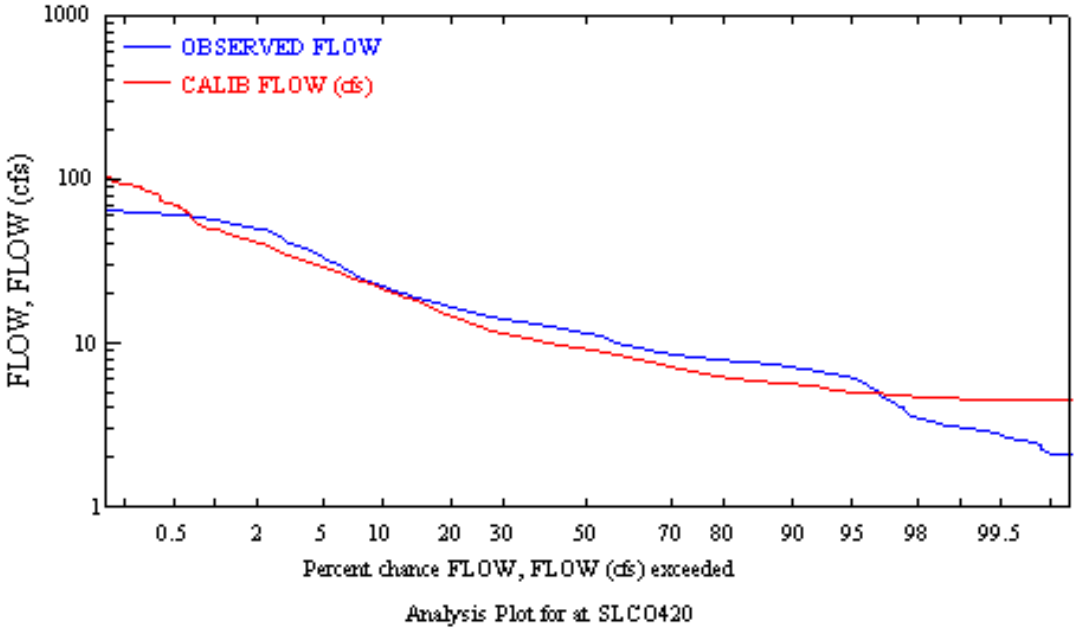
The Dry Fork SNOTEL site is located at a higher elevation than the simulated snowpack in PERLND 93. This means that the simulated and calibrated snow depths are similar in value.

3.6 HYDROLOGY FLOW CALIBRATION

3.6.1 Mill Creek at Canyon Mouth





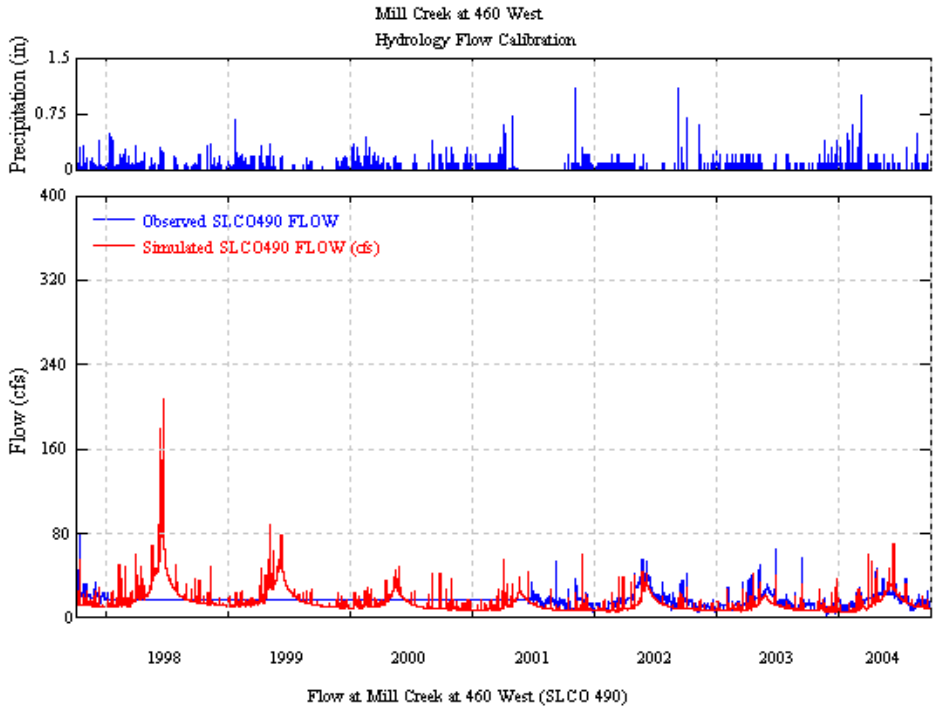


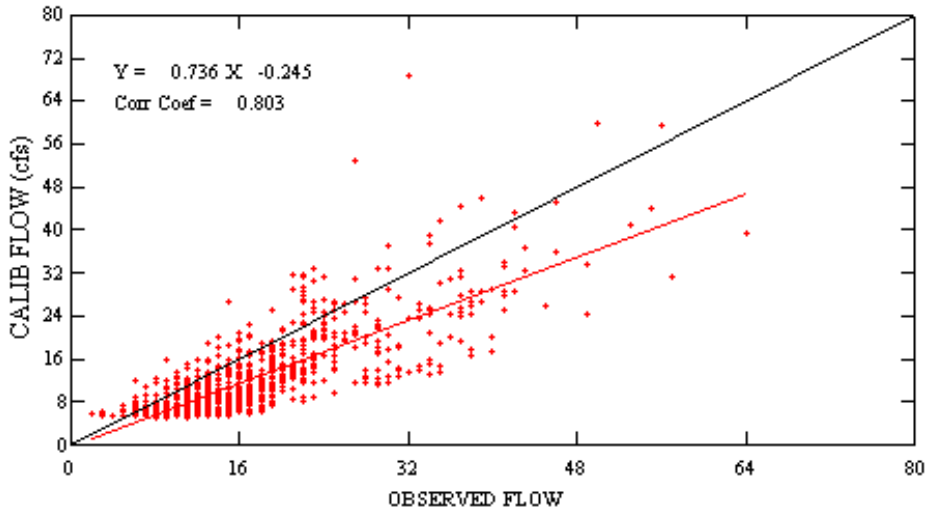
Water Year	Observed	Model	% Difference	Precipitation	Streamflow % of Precipitation
1998	13.83	12.22	-11.7%	53.40	25.90%
1999	12.81	10.18	-20.6%	42.40	30.22%
2000	8.08	6.95	-14.0%	47.40	17.05%
2001	6.05	5.61	-7.3%	34.10	17.74%
2002	6.55	5.66	-13.5%	44.20	14.82%
2003	5.35	5.16	-3.5%	36.70	14.58%
2004	5.80	6.32	9.0%	42.70	13.58%
Average	8.35	7.44	-10.9%	42.99	19.43%

Model Fit	Correlation Coefficient	Coefficient of Determination	Model Fit Efficiency (NS)
Daily	0.84	0.71	0.69
Monthly	0.93	0.87	0.84

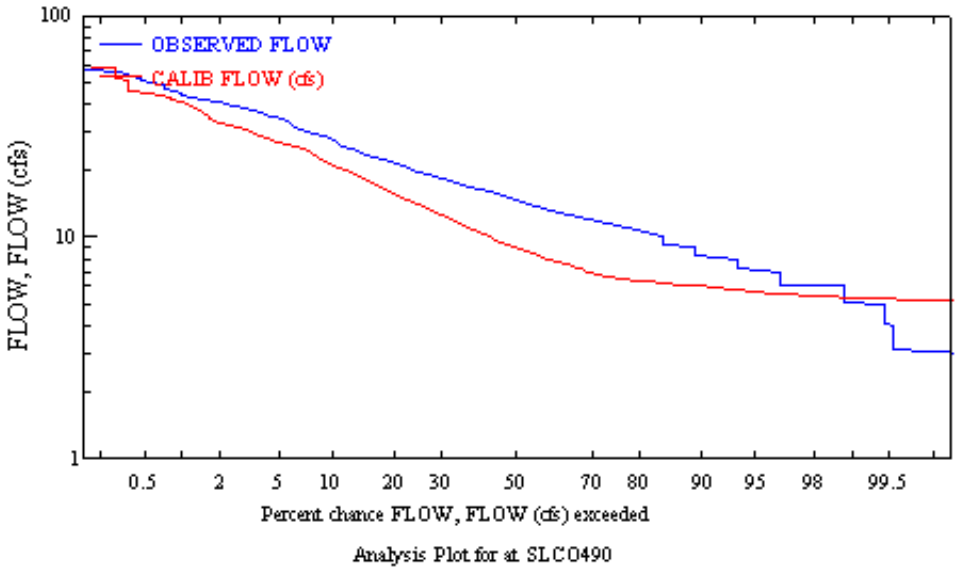
The Mill Creek at Canyon Mouth calibration location was used to attempt to capture model parameters for mountain areas in the Northern Wasatch range. This gage helped with calibration of the major hydrologic parameters within mountain areas such as lower zone storage, infiltration, and deep fraction. The Mill Creek basin exhibited a significant amount of mountain block recharge that was required to reduce runoff rates to observed values.

3.6.2 Mill Creek at Jordan River





Scatter Plot (OBSERVED FLOW vs CALIB FLOW (cfs))
for at SLCO490

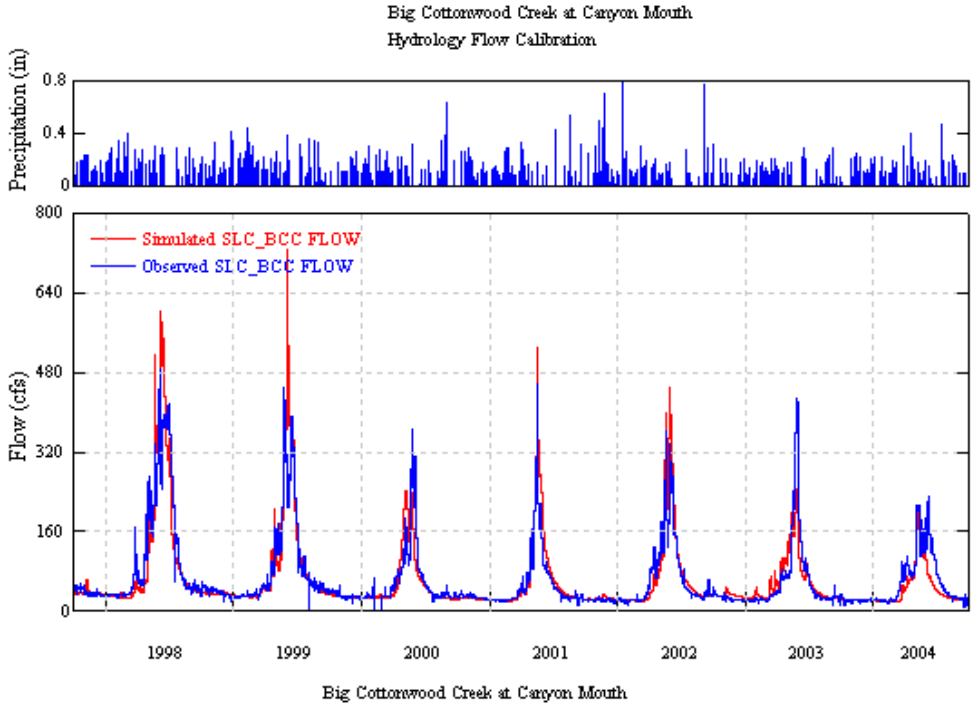


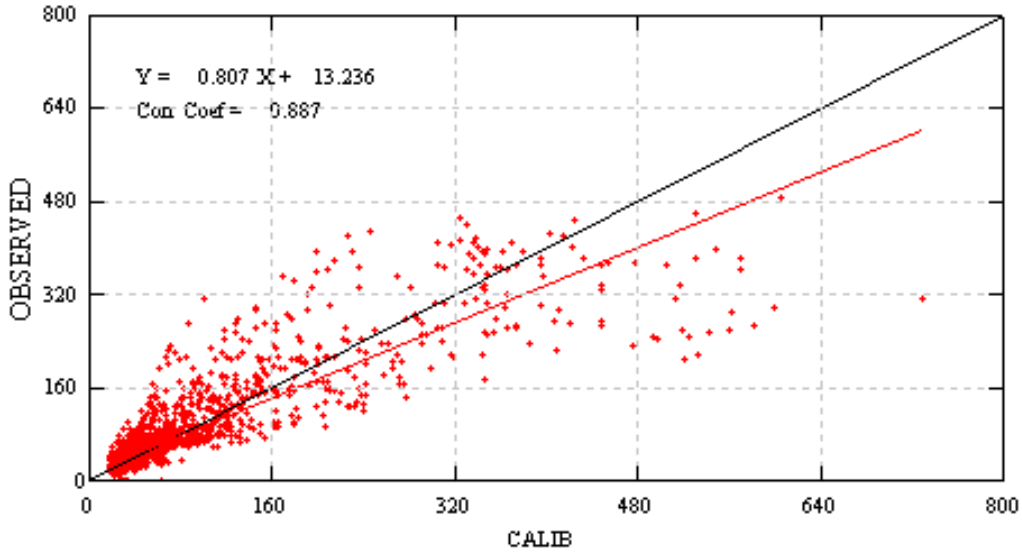
Water Year	Observed	Model	% Difference	Precipitation	Streamflow % of Precipitation
2002	9.05	5.81	-35.8%	16.79	53.9%
2003	7.20	5.00	-30.5%	22.29	32.3%
2004	7.57	6.36	-16.0%	24.01	31.5%
Average	7.94	5.72	-27.9%	21.03	37.8%

Model Fit	Correlation Coefficient	Coefficient of Determination	Model Fit Efficiency (NS)
Daily	**0.80**	**0.64**	**0.38**
Monthly	**0.89**	**0.79**	**0.36**

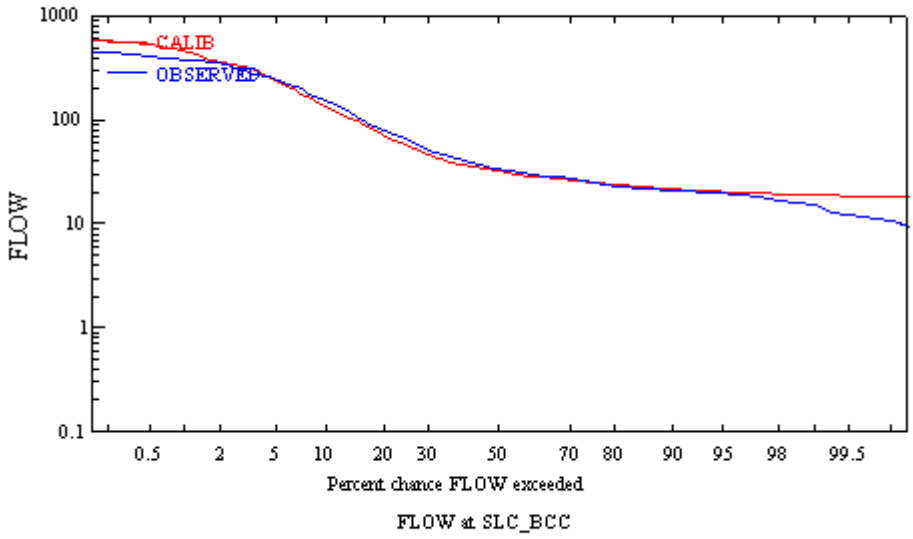
The Mill Creek at the Jordan River gage was used to determine hydrologic parameters within some of the urban areas on the east side of Salt Lake City. This gage has some missing data between 1997 and 2001, which is due to road construction.

3.6.3 Big Cottonwood Creek at USFS Boundary





Scatter Plot (CALIB vs OBSERVED)
for FLOW at SLC_BCC

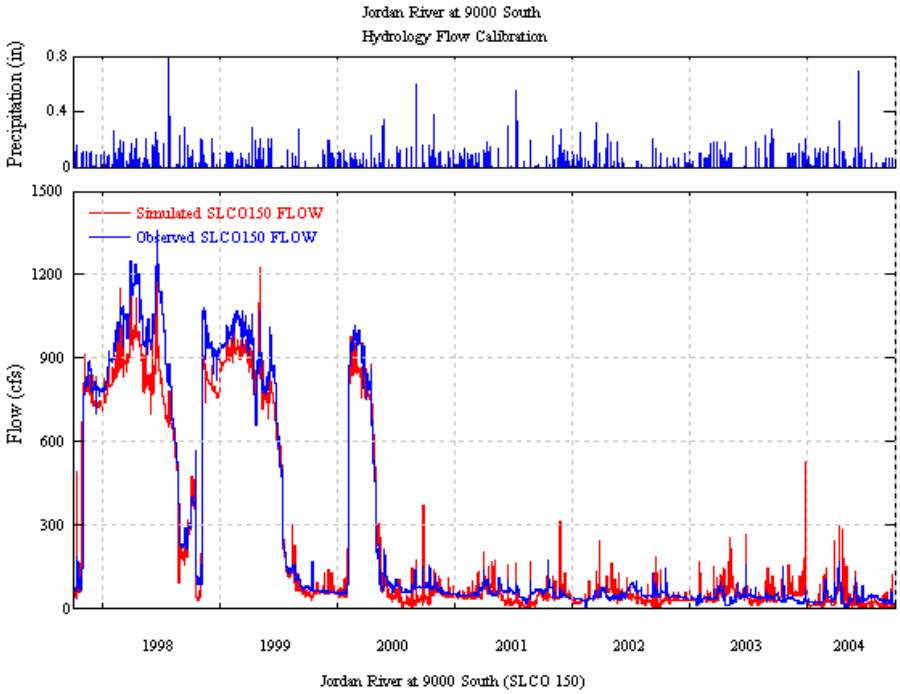


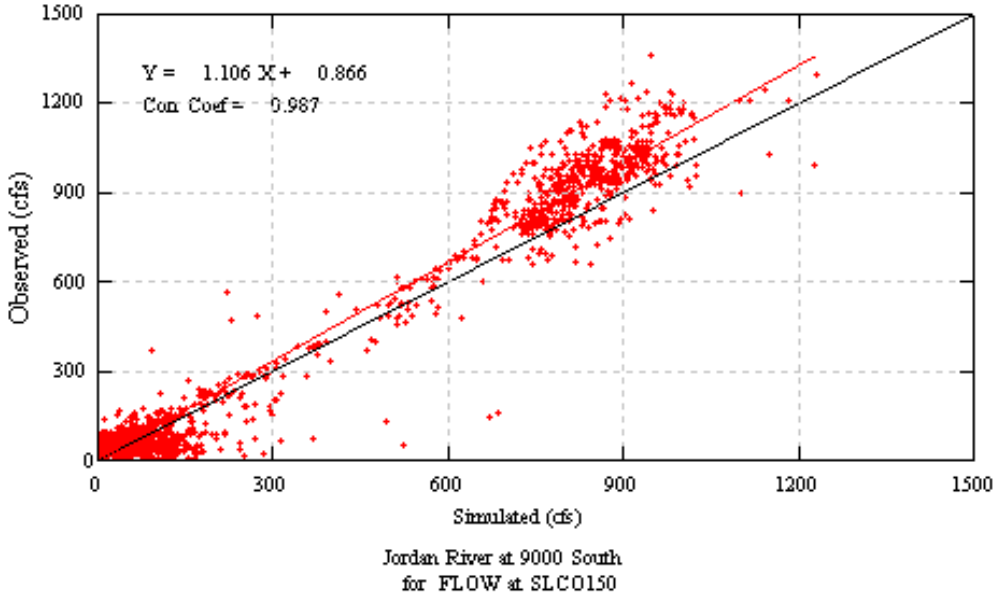
Water Year	Observed	Model	% Difference	Precip	Streamflow % of Precip
1998	27.70	26.80	-3.2%	50.60	54.74%
1999	22.34	23.08	3.3%	41.00	54.48%
2000	14.13	13.35	-5.5%	40.80	34.63%
2001	13.45	14.98	11.4%	39.20	34.31%
2002	15.54	16.63	7.0%	33.80	45.97%
2003	14.33	14.18	-1.0%	38.40	37.31%
2004	14.39	10.79	-25.0%	39.70	36.24%
Average	17.41	17.12	-1.7%	40.50	42.99%

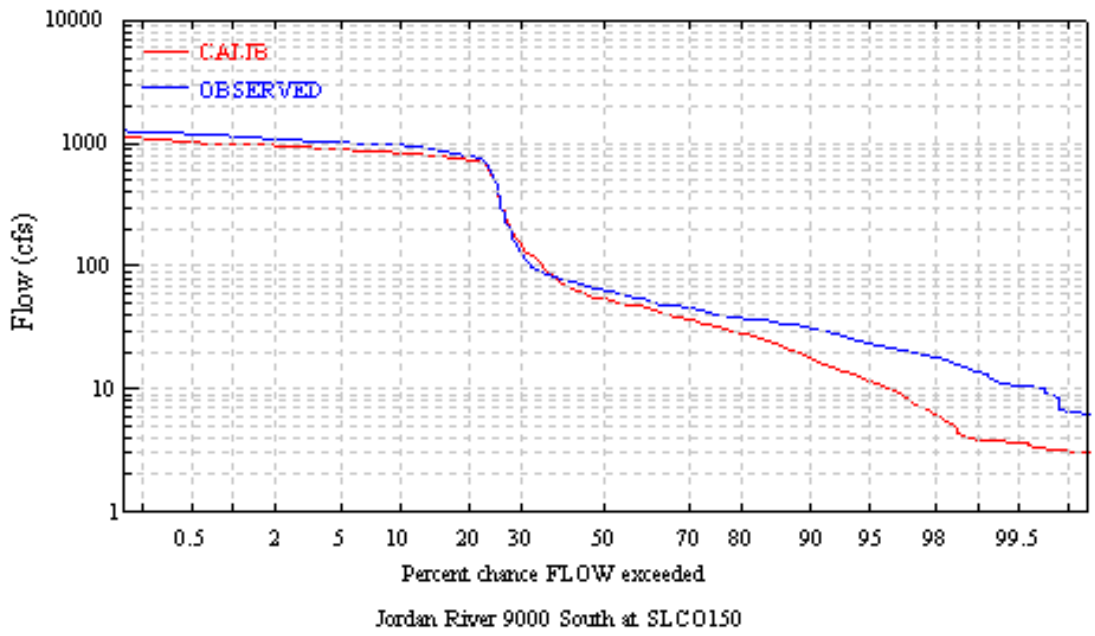
Model Fit	Correlation Coefficient	Coefficient of Determination	Model Fit Efficiency (NS)
Daily	0.89	0.79	0.74
Monthly	0.96	0.92	0.89

The Big Cottonwood Creek at USFS boundary gage was used to calibration mountain parameters on the Southern side of the Wasatch Mountains. This area had less watershed water losses overall and exhibited significantly difference watershed characteristics than the northern part of the Wasatch Mountains.

3.6.4 Jordan River at 9000 South





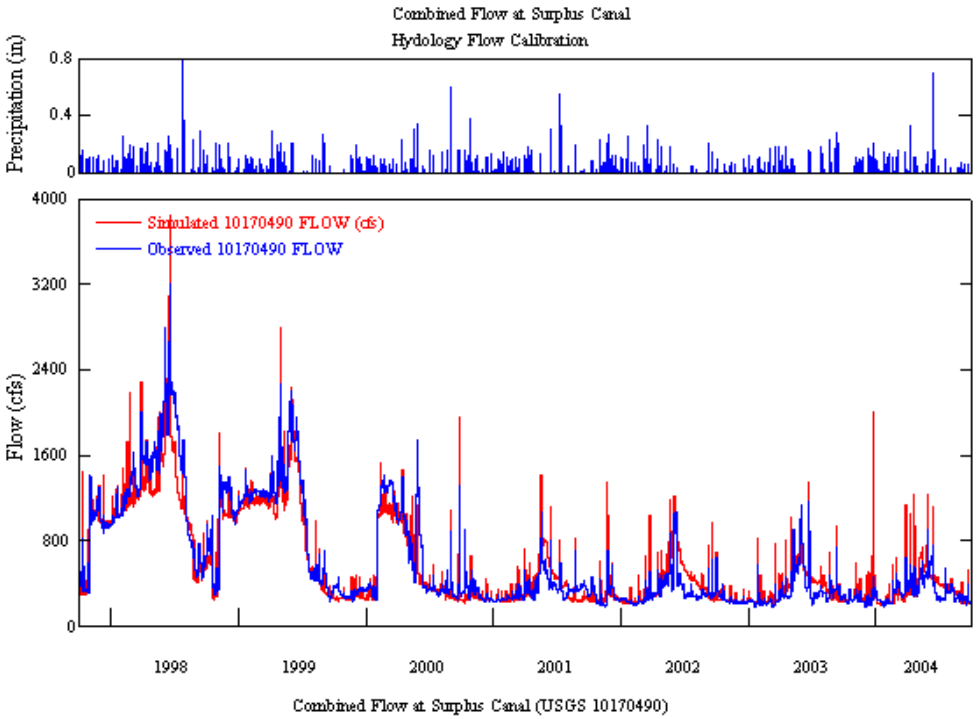


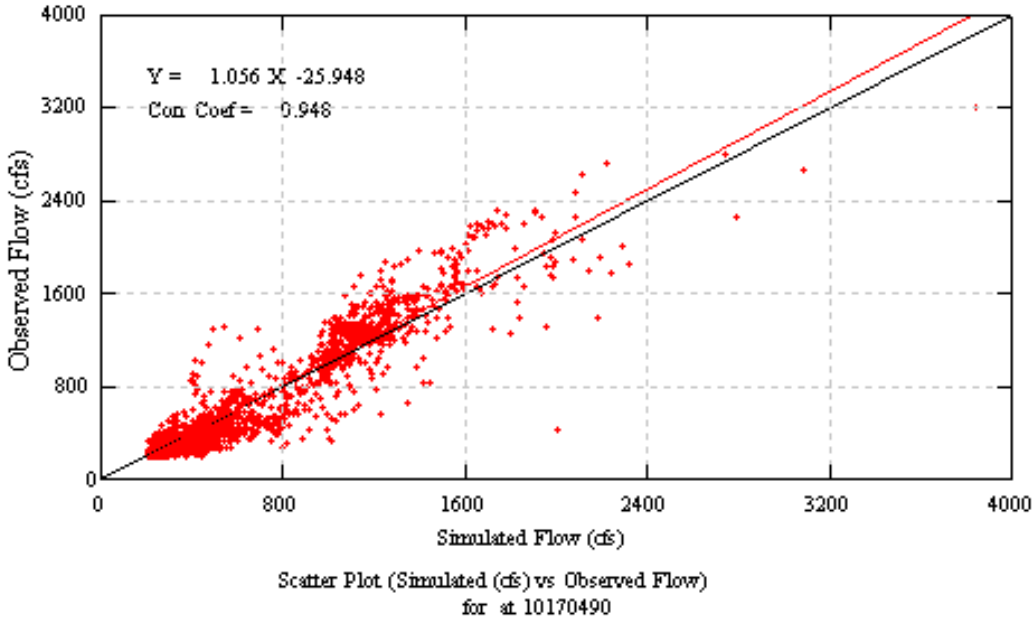
Water Year	Observed	Model	% Difference	Precip	Streamflow % of Precip
1998	74.10	64.43	-13.1%	27.31	271.30%
1999	62.27	56.92	-8.6%	21.03	296.07%
2000	23.98	22.02	-8.2%	25.52	93.98%
2001	5.58	4.47	-19.9%	18.51	30.15%
2002	4.61	4.48	-2.8%	13.93	33.07%
2003	3.90	4.27	9.5%	20.62	18.93%
2004	3.37	3.70	9.8%	21.98	15.33%
Average	25.40	22.90	-9.9%	21.27	119.41%

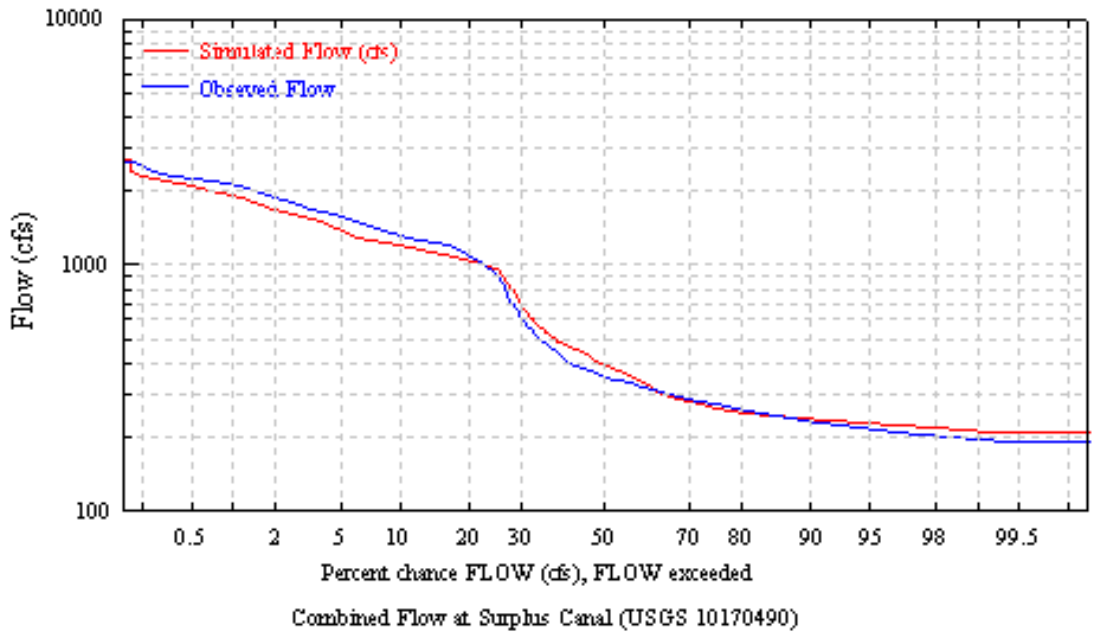
Model Fit	Correlation Coefficient	Coefficient of Determination	Model Fit Efficiency (NS)
Daily	0.99	0.97	0.96
Monthly	0.99	0.99	0.97

The Jordan River at 9000 South gage was used to develop model parameters for the urban areas within the southern part of the Salt Lake Valley. This gage was also used as a check of the Utah Lake point source which is located just upstream of this gage.

3.6.5 Combined Flow at Surplus Canal





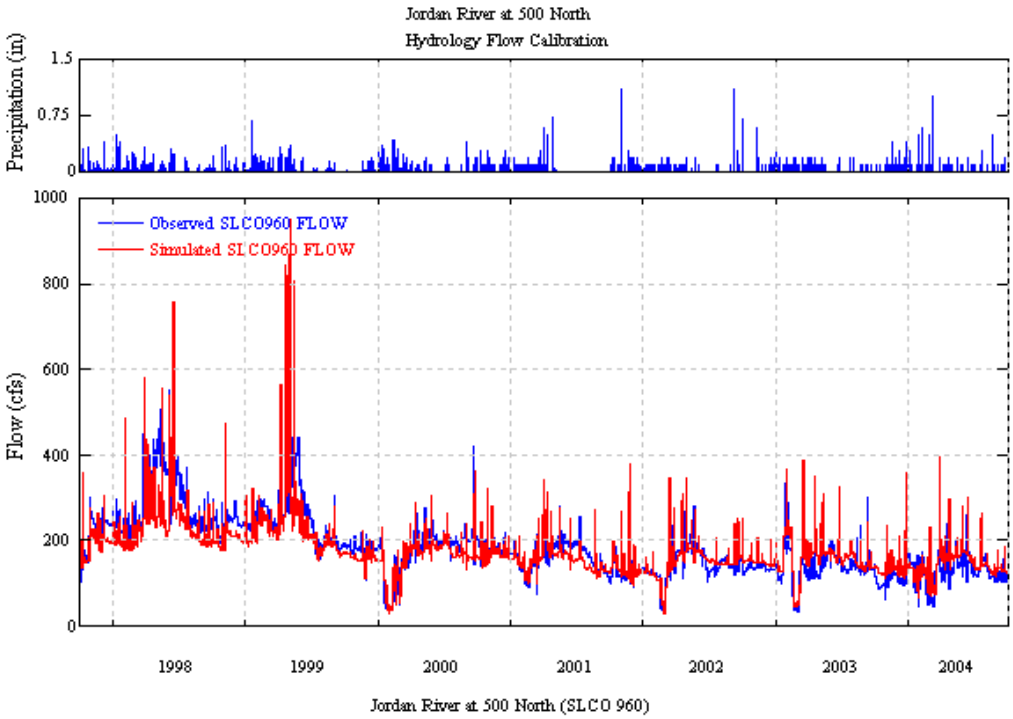


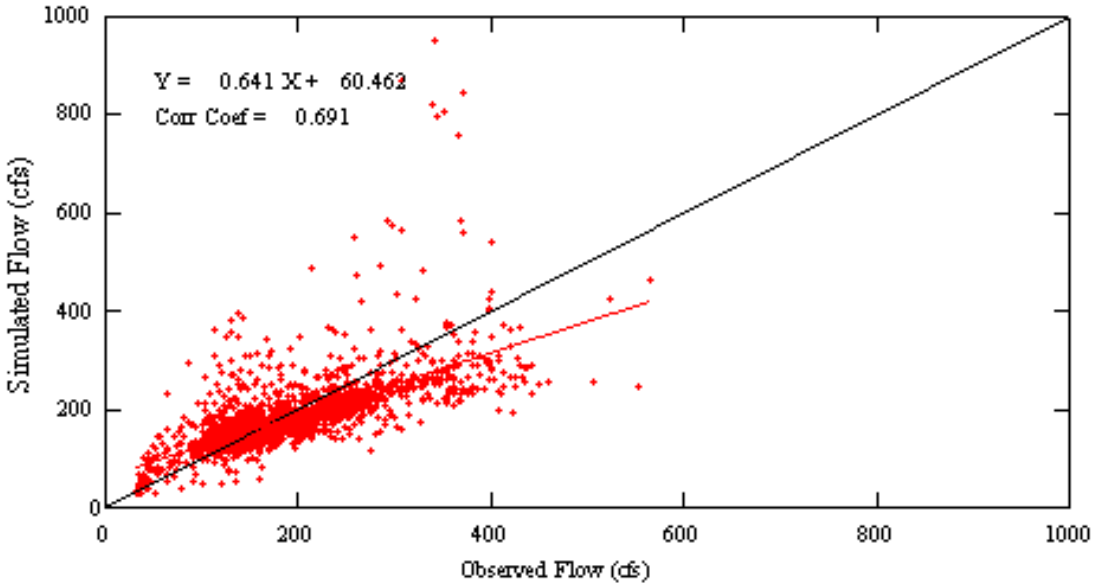
Water Year	Observed	Model	% Difference	Precip	Streamflow % of Precip
1998	34.49	31.66	-8.2%	30.15	114.41%
1999	29.32	26.91	-8.2%	23.08	127.00%
2000	14.73	13.41	-8.9%	27.15	54.23%
2001	6.85	7.69	12.4%	21.22	32.28%
2002	7.09	9.43	32.9%	16.79	42.25%
2003	6.11	7.54	23.4%	22.29	27.40%
2004	6.76	8.17	20.9%	24.01	28.15%
Average	15.05	14.97	-0.5%	23.53	63.96%

Model Fit	Correlation Coefficient	Coefficient of Determination	Model Fit Efficiency (NS)
Daily	0.95	0.90	0.90
Monthly	0.98	0.97	0.95

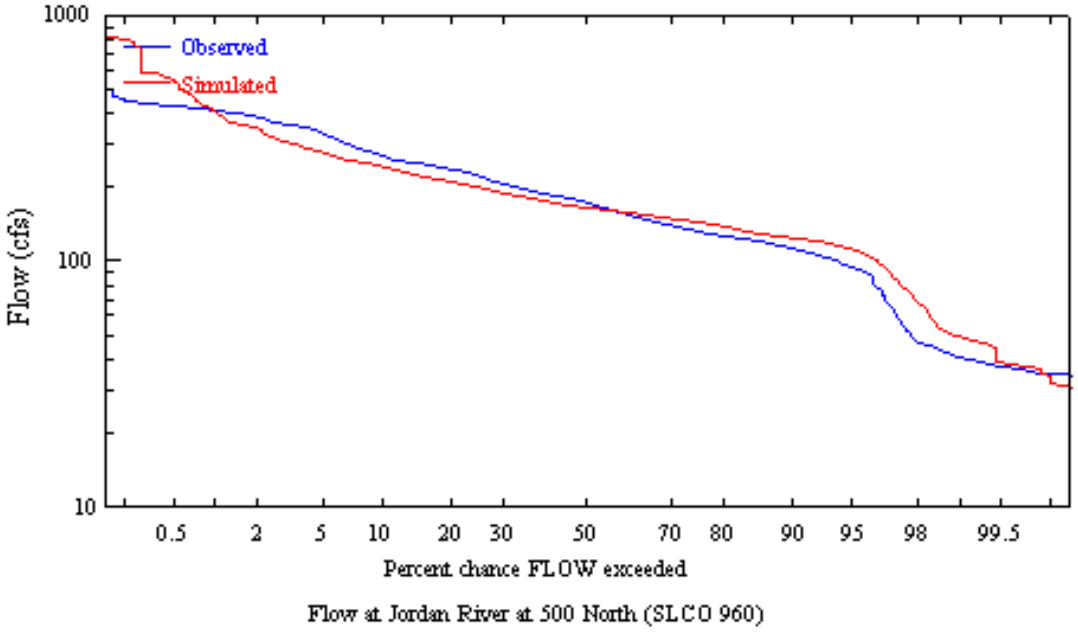
The Combined Flow at Surplus Canal (Jordan River at 2100 South) gage was used to develop model parameters for the urban areas within the central part of the Salt Lake Valley. This gage was also used as a check of the parameters for the major tributaries to the Jordan River on the west side of the valley, where data is limited.

3.6.6 Jordan River at 500 North





Scatter Plot (Observed vs Simulated)
for FLOW at Jordan River at 500 North (SLCO960)



Water Year	Observed	Model	% Difference	Precip	Streamflow % of Precip
1998	28.87	24.53	-15.0%	37.61	76.76%
1999	26.52	25.02	-5.7%	29.78	89.08%
2000	18.57	17.23	-7.2%	30.99	59.93%
2001	17.52	16.92	-3.4%	25.29	69.28%
2002	14.68	15.75	7.3%	27.46	53.45%
2003	14.58	16.99	16.6%	27.74	52.55%
2004	13.16	15.26	16.0%	30.27	43.47%
Average	19.13	18.82	-1.6%	29.88	64.02%

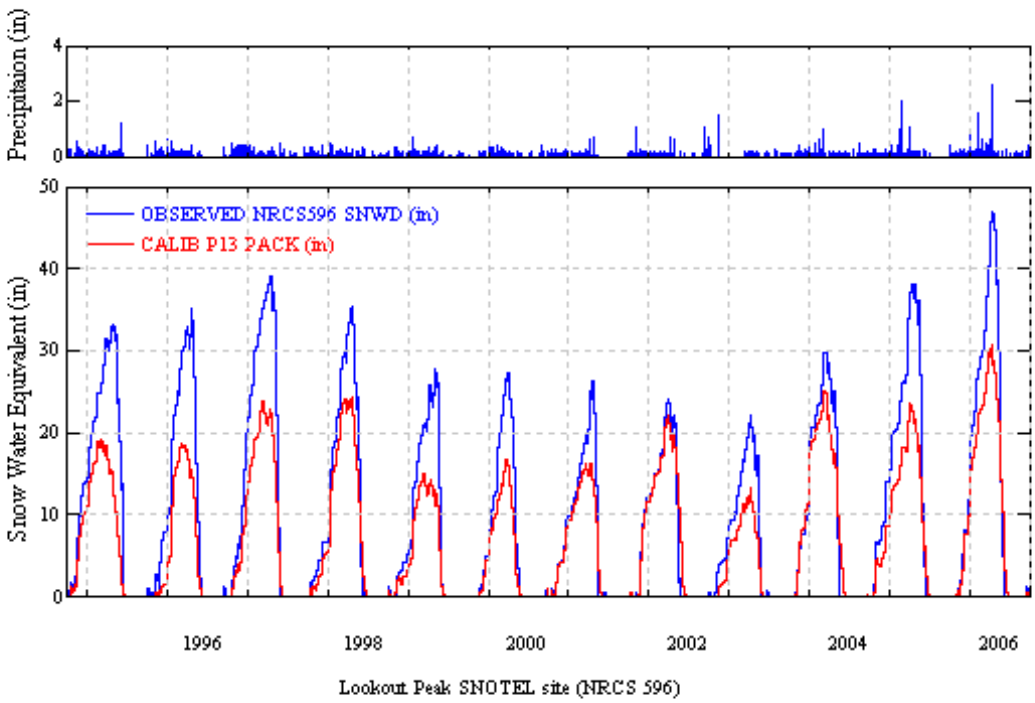
Model Fit	Correlation Coefficient	Coefficient of Determination	Model Fit Efficiency (NS)
Daily	0.69	0.48	0.42
Monthly	0.91	0.82	0.79

The Jordan River at 500 North gage was used to develop model parameters for the urban areas within the northern part of the Salt Lake Valley. This gage was also used as a check of the parameters for Parley's Creek, Red Butte Creek, and City Creek canyon.

3.7 HYDROLOGY SNOW VALIDATION

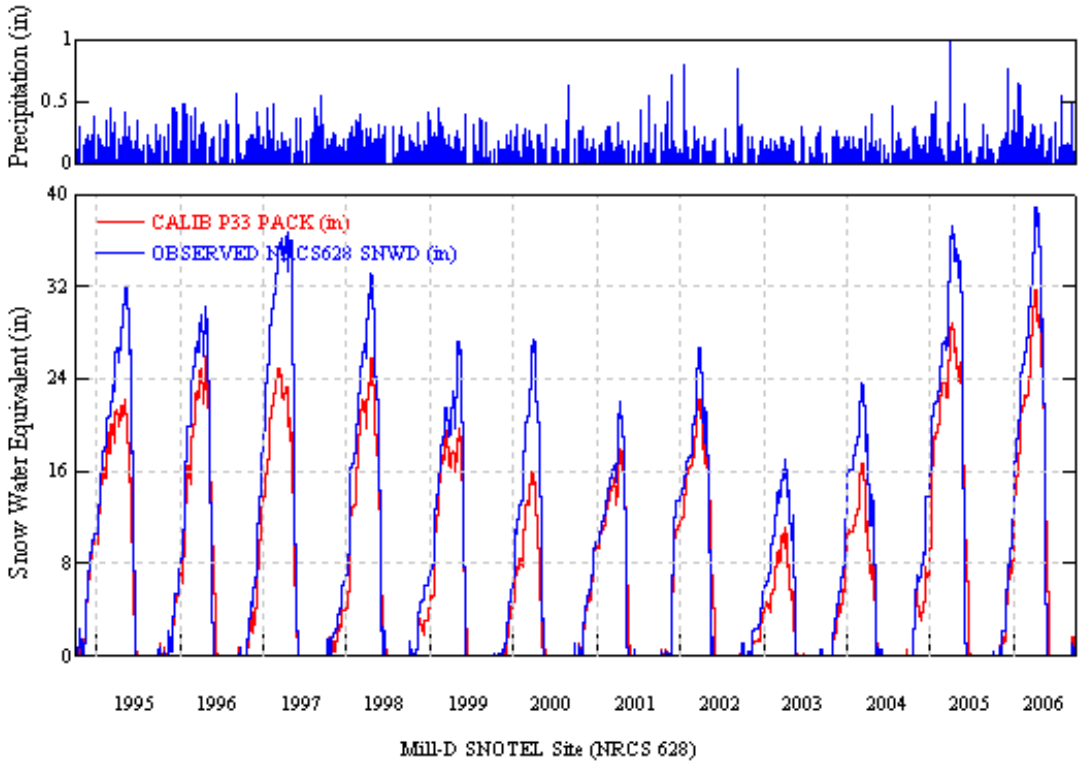
The hydrology validation is similar to the calibration with five additional years of data. This process was used to validate that the model still pertains to years and conditions that were not necessarily calibrated to. The results are shown below, but no discussion is provided.

3.7.1 Lookout Peak



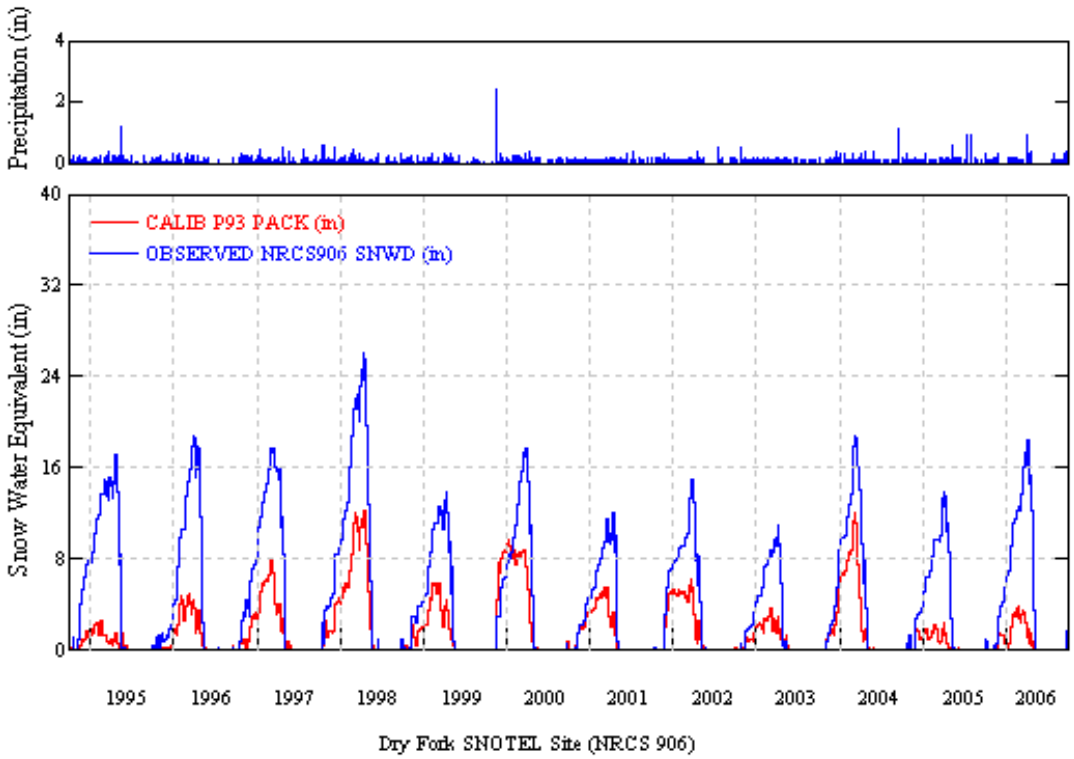
Model Fit	Correlation Coefficient	Coefficient of Determination	Model Fit Efficiency (NS)
Daily	0.95	0.91	0.47
Monthly	0.96	0.92	0.49

3.7.2 Mill-D



Model Fit	Correlation Coefficient	Coefficient of Determination	Model Fit Efficiency (NS)
Daily	0.98	0.95	0.88
Monthly	0.98	0.96	0.88

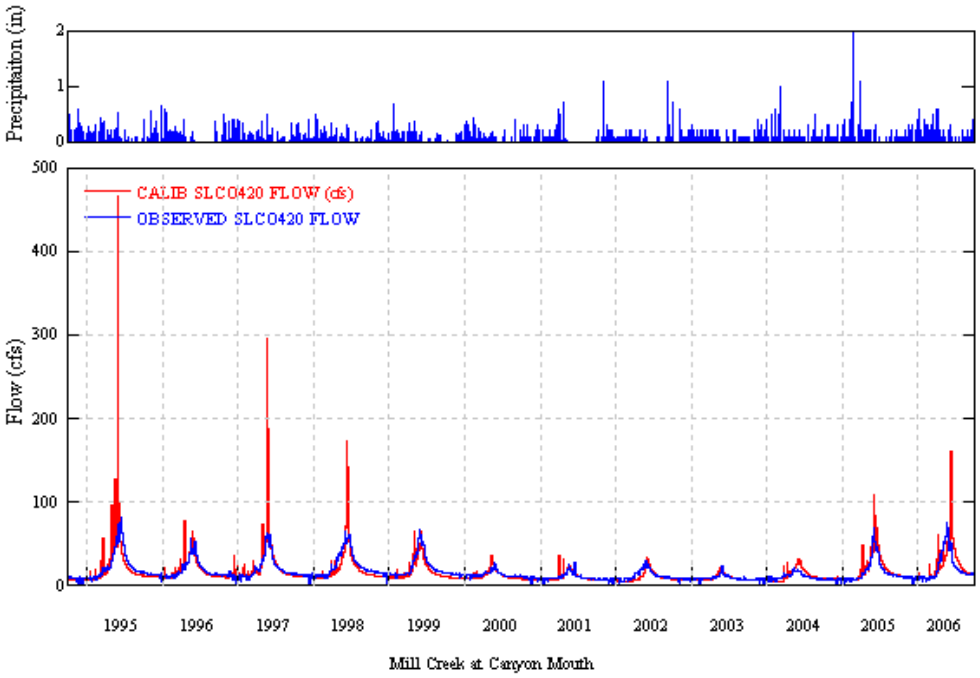
3.7.3 Dry Fork

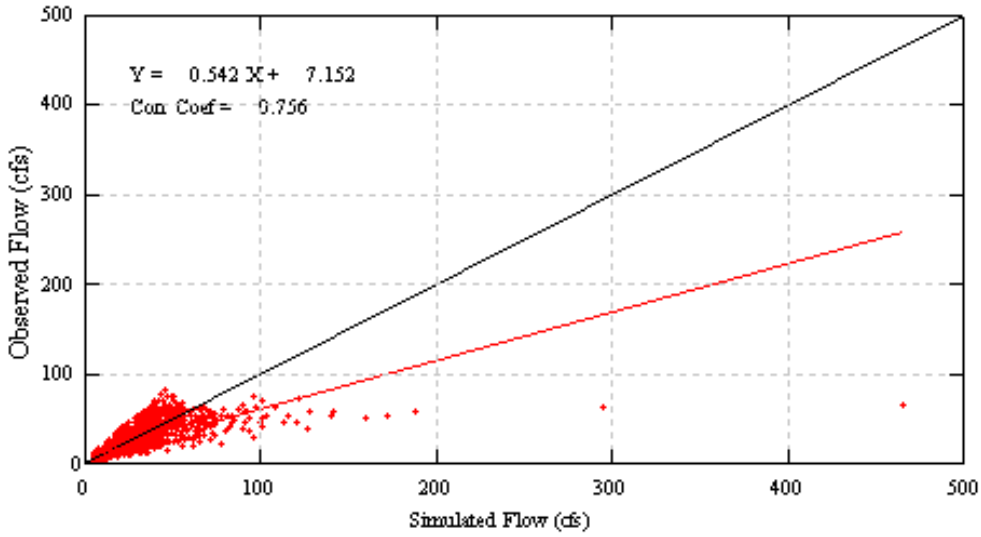


Model Fit	Correlation Coefficient	Coefficient of Determination	Model Fit Efficiency (NS)
Daily	0.81	0.65	0.29
Monthly	0.81	0.66	0.27

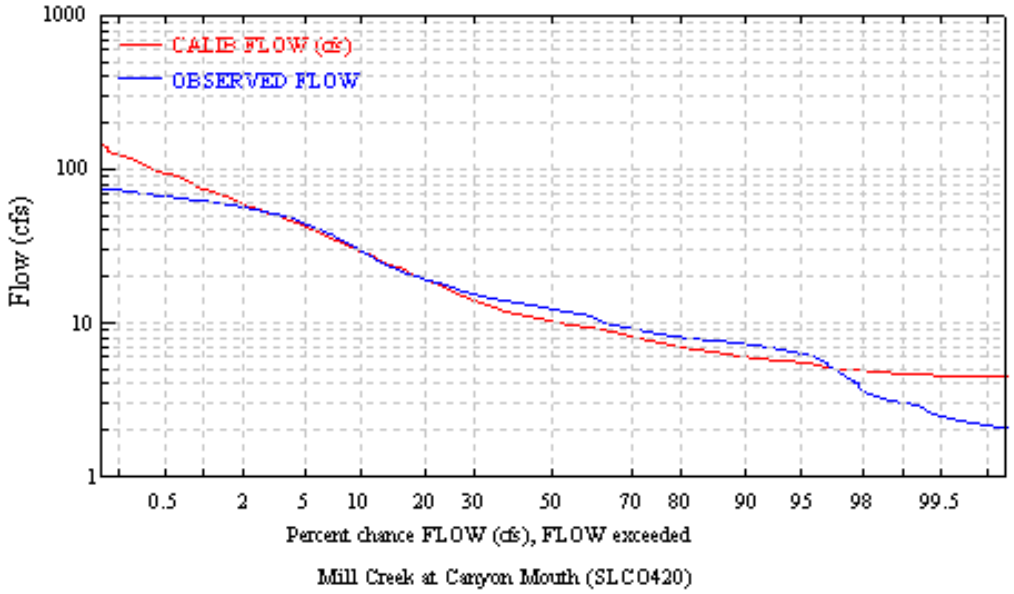
3.8 HYDROLOGY FLOW VALIDATION

3.8.1 Mill Creek at Canyon Mouth





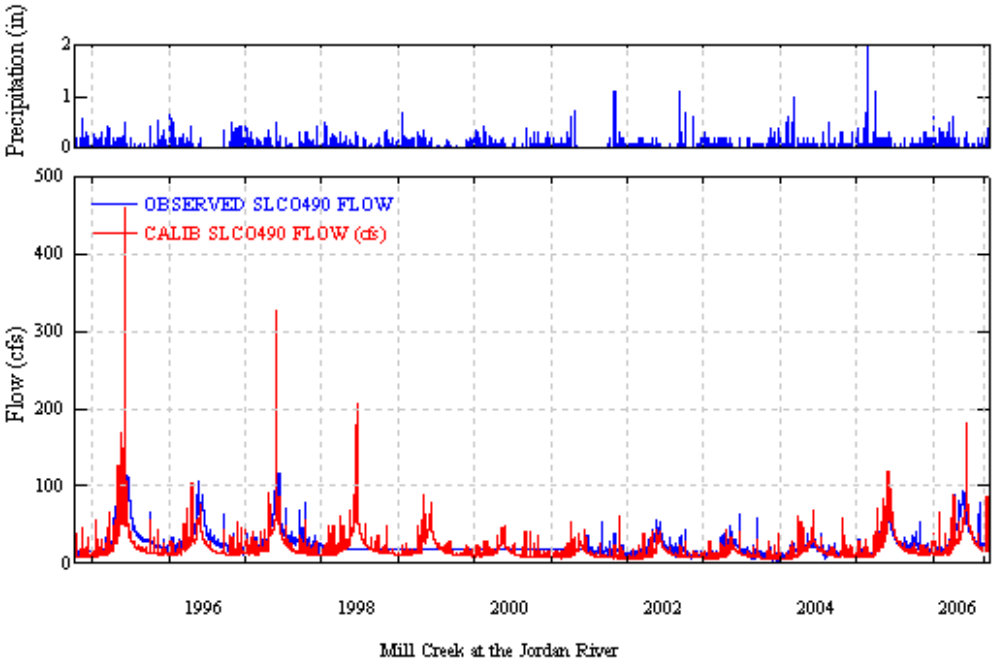
Scatter Plot (CALIB FLOW (cfs) vs OBSERVED FLOW)
for at SLCO420

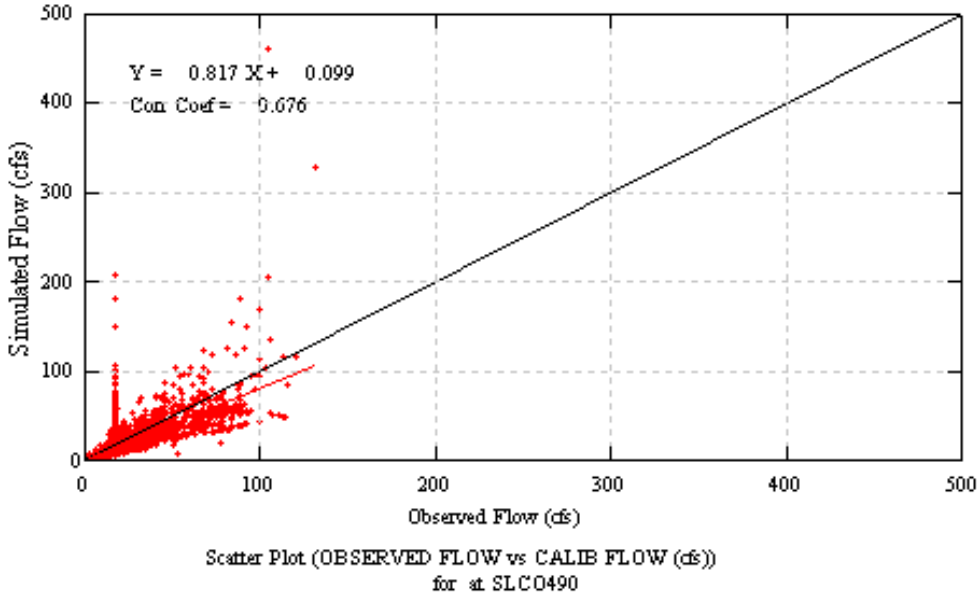


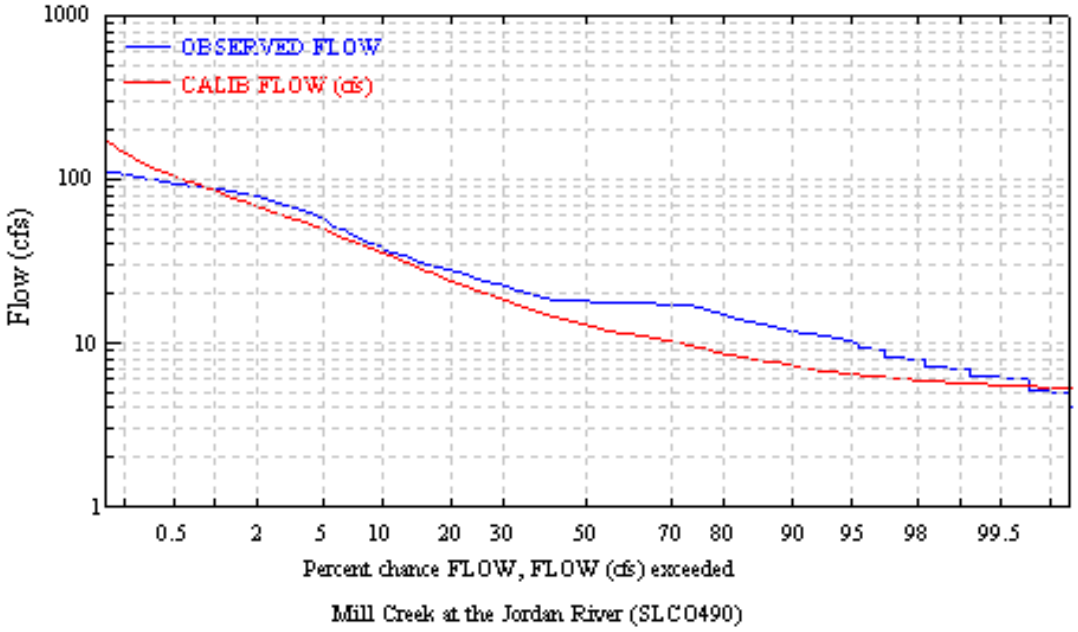
Water Year	Observed	Model	% Difference	Precip	Streamflow % of Precip
1995	12.84	13.11	2.1%	56.20	22.85%
1996	11.21	11.02	-1.7%	57.10	19.63%
1997	11.88	13.35	12.5%	45.60	26.04%
1998	13.83	12.35	-10.7%	53.40	25.90%
1999	12.81	10.42	-18.7%	42.40	30.22%
2000	8.08	7.11	-12.1%	47.40	17.05%
2001	6.05	5.74	-5.2%	34.10	17.74%
2002	6.55	5.76	-12.0%	44.20	14.82%
2003	5.35	5.25	-1.8%	36.70	14.58%
2004	5.80	6.36	9.6%	42.70	13.58%
2005	9.11	10.73	17.8%	58.20	15.66%
2006	11.34	12.92	14.0%	53.00	21.40%
Average	9.57	9.51	-0.6%	42.99	22.27%

Model Fit	Correlation Coefficient	Coefficient of Determination	Model Fit Efficiency (NS)
Daily	0.8	0.64	0.64
Monthly	0.93	0.86	0.86

3.8.2 Mill Creek at Jordan River



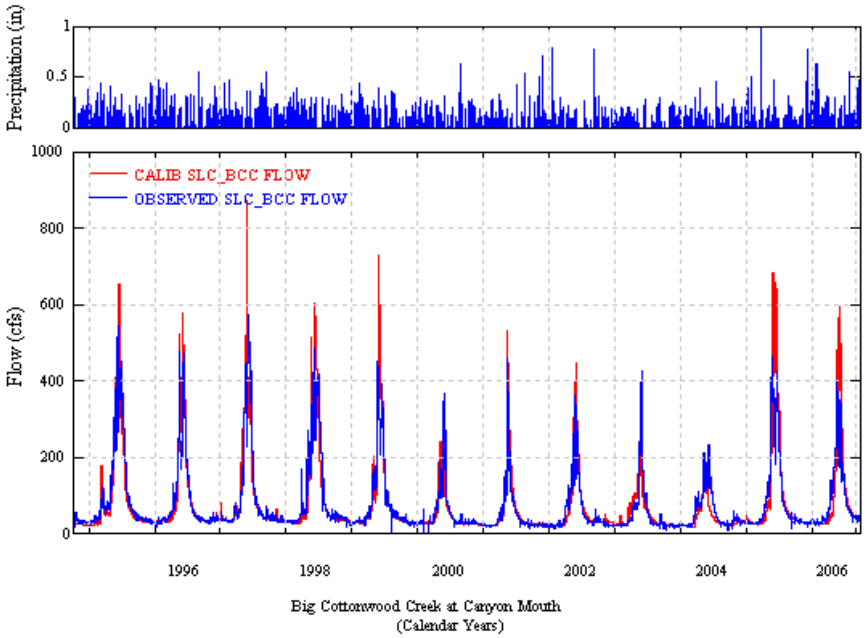


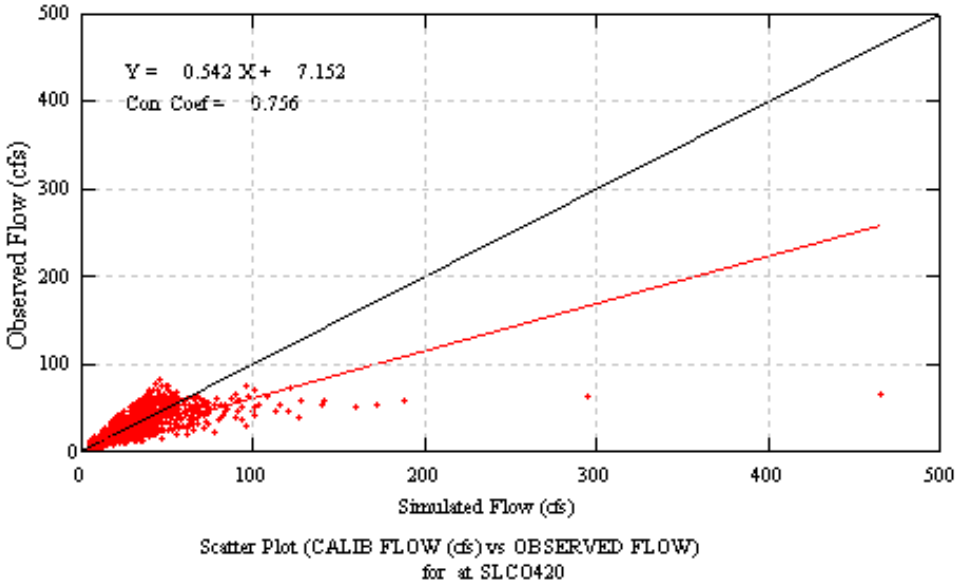


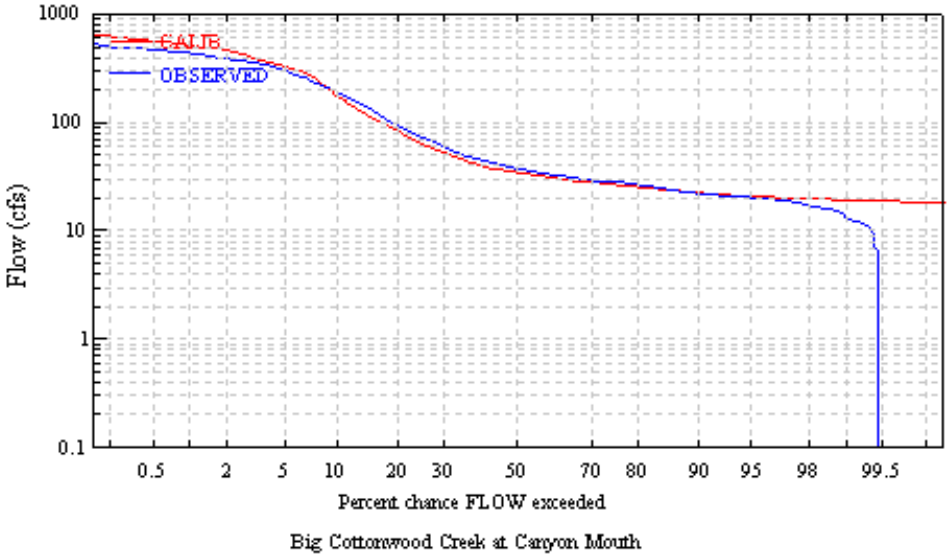
Water Year	Observed	Model	% Difference	Precip	Streamflow % of Precip
1995	16.59	15.14	-8.7%	29.50	56.25%
1996	15.65	10.17	-35.0%	29.32	53.37%
1997	15.54	12.62	-18.8%	27.07	57.43%
2002	9.05	6.53	-27.9%	16.79	53.92%
2003	7.20	5.60	-22.2%	22.29	32.27%
2004	7.57	6.52	-13.9%	24.01	31.54%
2005	11.49	11.14	-3.0%	27.48	41.83%
2006	14.97	12.70	-15.1%	27.92	53.64%
Average	12.26	10.05	-18.0%	21.03	58.29%

Model Fit	Correlation Coefficient	Coefficient of Determination	Model Fit Efficiency (NS)
Daily	0.64	0.4	0.25
Monthly	0.76	0.58	0.53

3.8.3 Big Cottonwood Creek at USFS Boundary



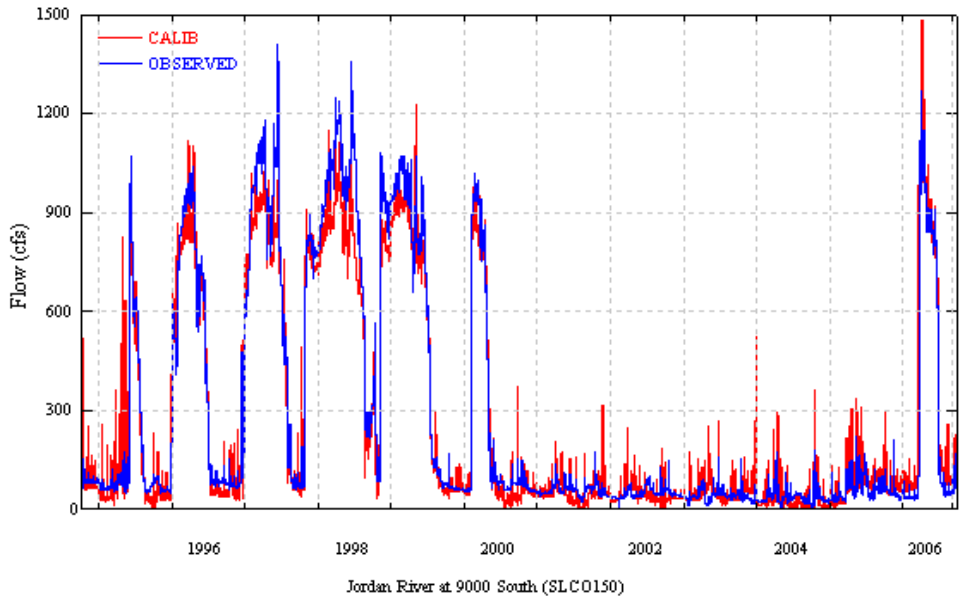


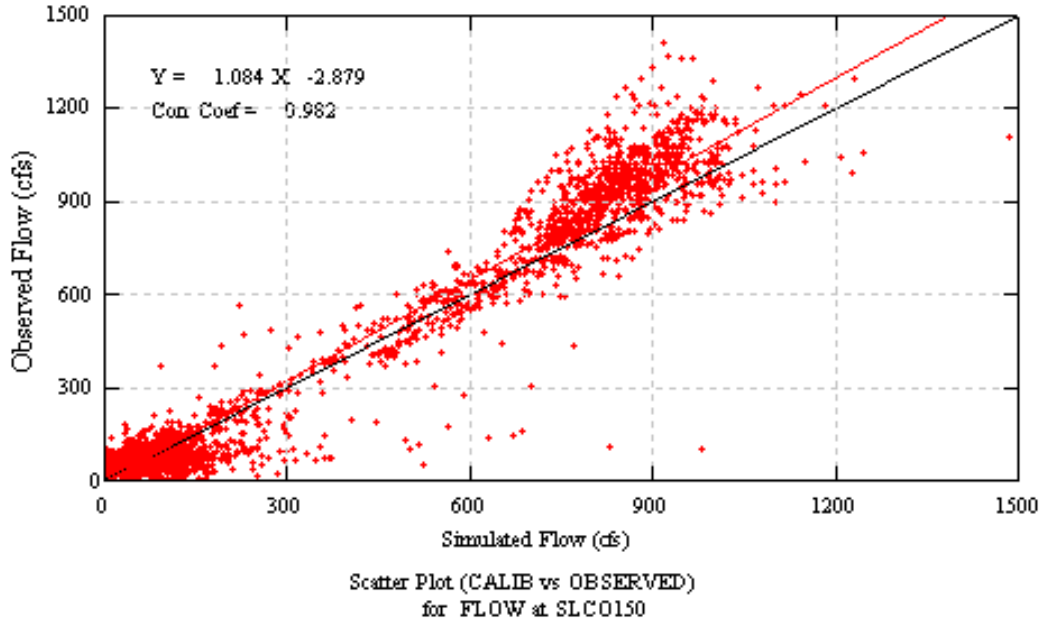


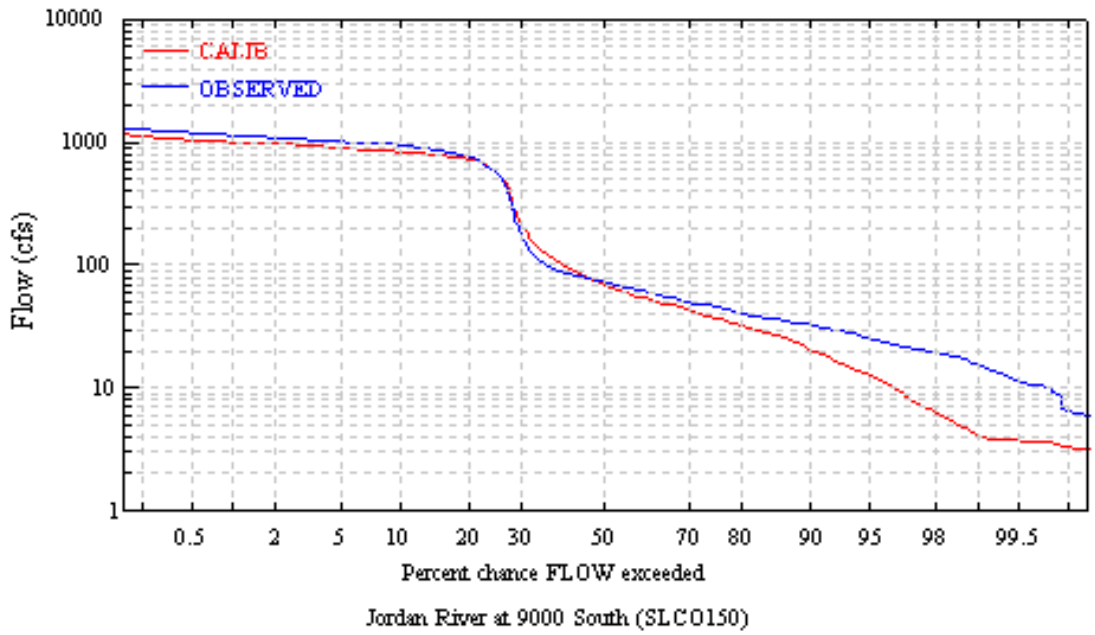
Water Year	Observed	Model	% Difference	Precip	Streamflow % of Precip
1995	29.34	26.11	-11.0%	48.30	60.75%
1996	22.99	23.50	2.2%	55.80	41.20%
1997	26.51	25.82	-2.6%	42.70	62.08%
1998	27.70	26.80	-3.2%	50.60	54.74%
1999	22.34	23.08	3.3%	41.00	54.48%
2000	14.13	13.35	-5.5%	40.80	34.63%
2001	13.45	14.98	11.4%	39.20	34.31%
2002	15.54	16.63	7.0%	33.80	45.97%
2003	14.33	14.18	-1.0%	38.40	37.31%
2004	14.39	10.79	-25.0%	39.70	36.24%
2005	23.22	25.86	11.3%	45.30	51.26%
2006	20.68	23.27	12.5%	48.00	43.08%
Average	20.38	20.36	-0.1%	40.50	50.33%

Model Fit	Correlation Coefficient	Coefficient of Determination	Model Fit Efficiency (NS)
Daily	0.89	0.79	0.71
Monthly	0.94	0.89	0.85

3.8.4 Jordan River at 9000 South



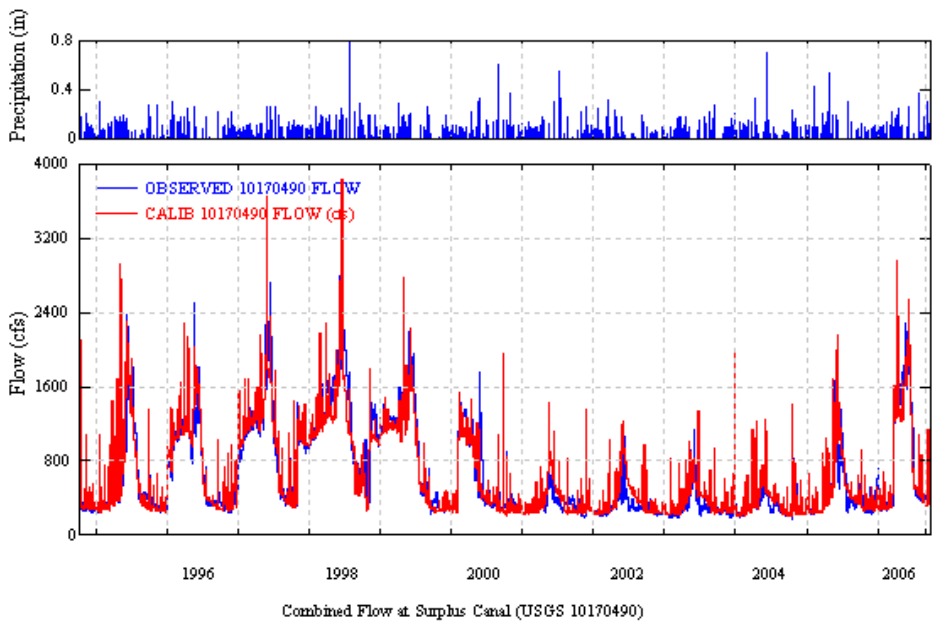


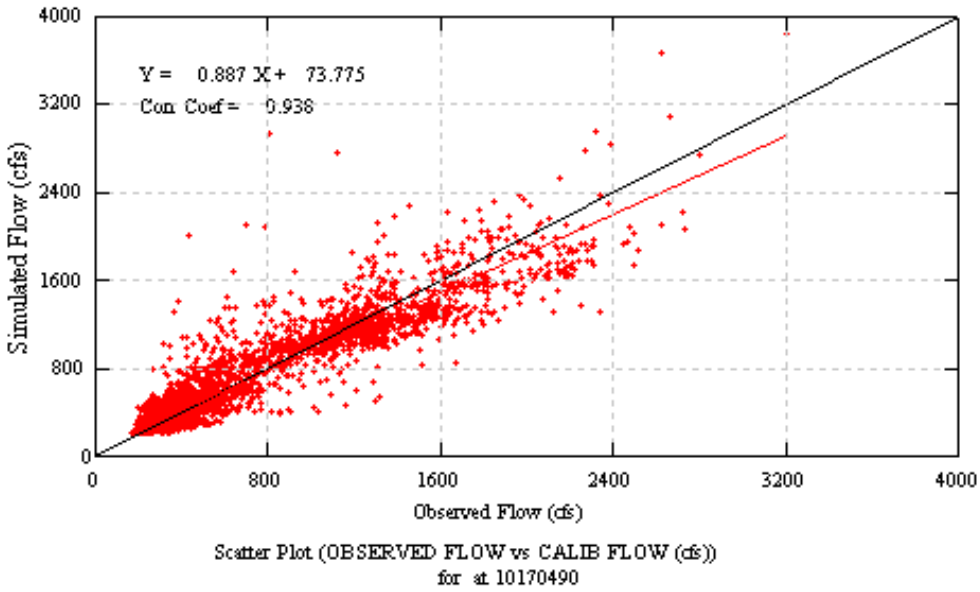


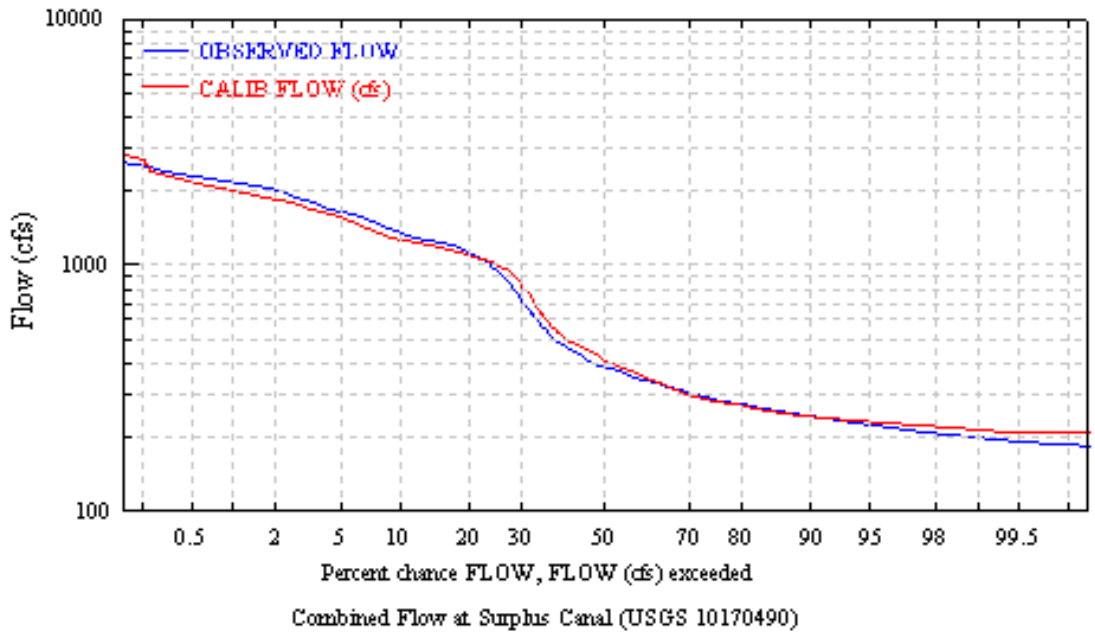
Water Year	Observed	Model	% Difference	Precip	Streamflow % of Precip
1995	15.99	15.44	-3.4%	28.51	56.08%
1996	60.85	35.60	-41.5%	24.20	251.48%
1997	53.25	47.61	-10.6%	25.82	206.22%
1998	74.10	64.43	-13.1%	27.31	271.30%
1999	62.27	56.92	-8.6%	21.03	296.07%
2000	23.98	22.02	-8.2%	25.52	93.98%
2001	5.58	4.47	-19.9%	18.51	30.15%
2002	4.61	4.48	-2.8%	13.93	33.07%
2003	3.90	4.27	9.5%	20.62	18.93%
2004	3.37	3.70	9.8%	21.98	15.33%
2005	4.98	6.41	28.8%	24.45	20.35%
2006	26.13	29.22	11.8%	29.03	90.02%
Average	28.25	24.55	-13.1%	21.27	132.81%

Model Fit	Correlation Coefficient	Coefficient of Determination	Model Fit Efficiency (NS)
Daily	0.98	0.97	0.96
Monthly	0.99	0.99	0.97

3.8.5 Combined Flow at Surplus Canal



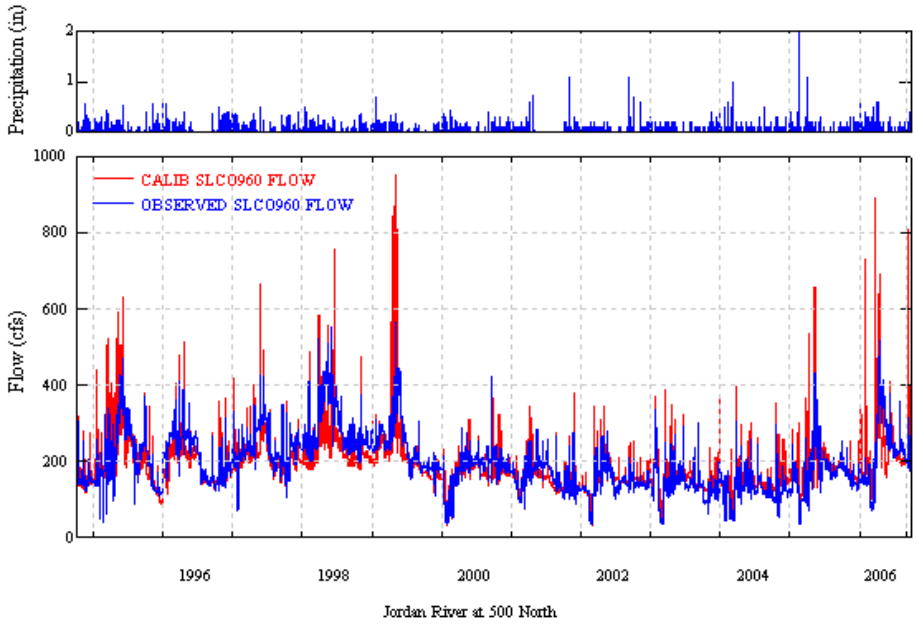


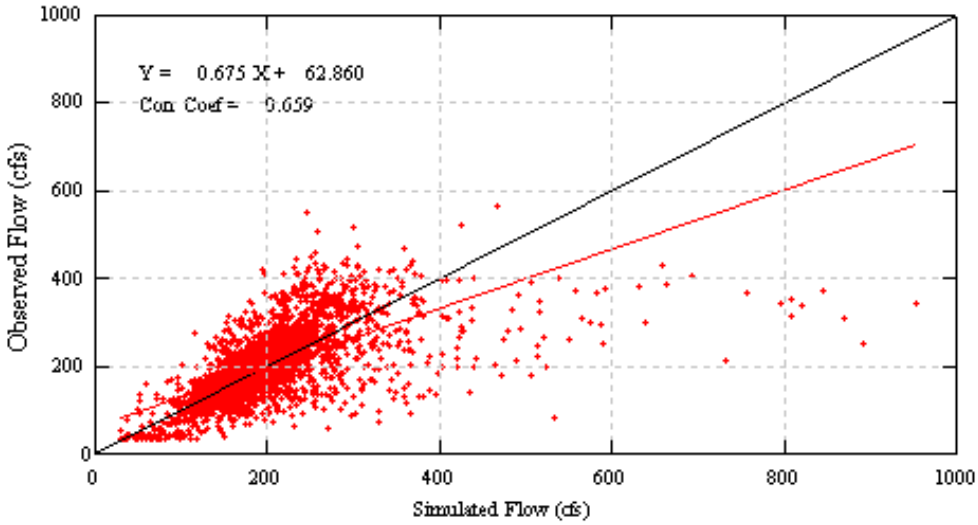


Water Year	Observed	Model	% Difference	Precip	Streamflow % of Precip
1995	15.29	16.28	6.5%	29.50	51.83%
1996	19.18	20.98	9.4%	29.32	65.42%
1997	25.17	25.84	2.7%	27.07	93.00%
1998	34.49	31.66	-8.2%	30.15	114.41%
1999	29.32	26.91	-8.2%	23.08	127.00%
2000	14.73	13.41	-8.9%	27.15	54.23%
2001	6.85	7.69	12.4%	21.22	32.28%
2002	7.09	9.43	32.9%	16.79	42.25%
2003	6.11	7.54	23.4%	22.29	27.40%
2004	6.76	8.17	20.9%	24.01	28.15%
2005	10.88	11.82	8.6%	27.48	39.58%
2006	19.82	18.99	-4.2%	27.92	70.99%
Average	16.31	16.56	1.6%	23.53	69.31%

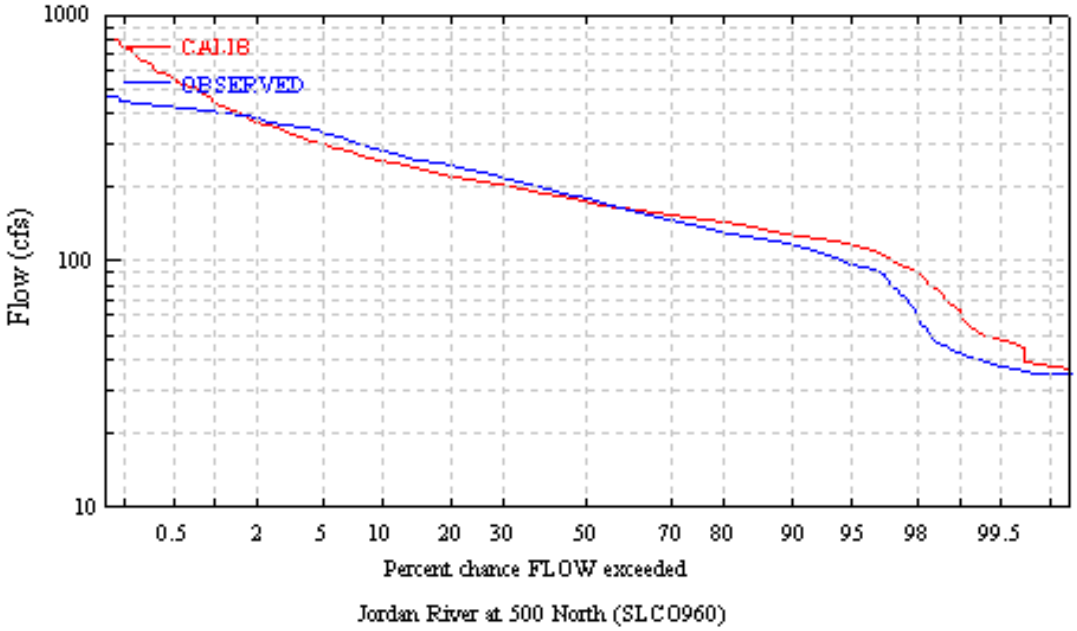
Model Fit	Correlation Coefficient	Coefficient of Determination	Model Fit Efficiency (NS)
Daily	0.94	0.89	0.88
Monthly	0.98	0.96	0.95

3.8.6 Jordan River at 500 North





Scatter Plot (CALIB vs OBSERVED)
for FLOW at SLC0960



Water Year	Observed	Model	% Difference	Precip	Streamflow % of Precip
1995	22.28	22.80	2.3%	38.09	58.50%
1996	21.61	19.83	-8.3%	37.09	58.27%
1997	22.78	22.40	-1.7%	32.57	69.95%
1998	28.87	24.53	-15.0%	37.61	76.76%
1999	26.52	25.02	-5.7%	29.78	89.08%
2000	18.57	17.23	-7.2%	30.99	59.93%
2001	17.52	16.92	-3.4%	25.29	69.28%
2002	14.68	15.75	7.3%	27.46	53.45%
2003	14.58	16.99	16.6%	27.74	52.55%
2004	13.16	15.26	16.0%	30.27	43.47%
2005	16.25	19.90	22.4%	42.29	38.43%
2006	21.69	22.43	3.4%	40.53	53.51%
Average	19.88	19.92	0.2%	29.88	66.52%

Model Fit	Correlation Coefficient	Coefficient of Determination	Model Fit Efficiency (NS)
Daily	0.65	0.43	0.33
Monthly	0.89	0.78	0.76

4.0 MODEL WATER QUALITY CALIBRATION

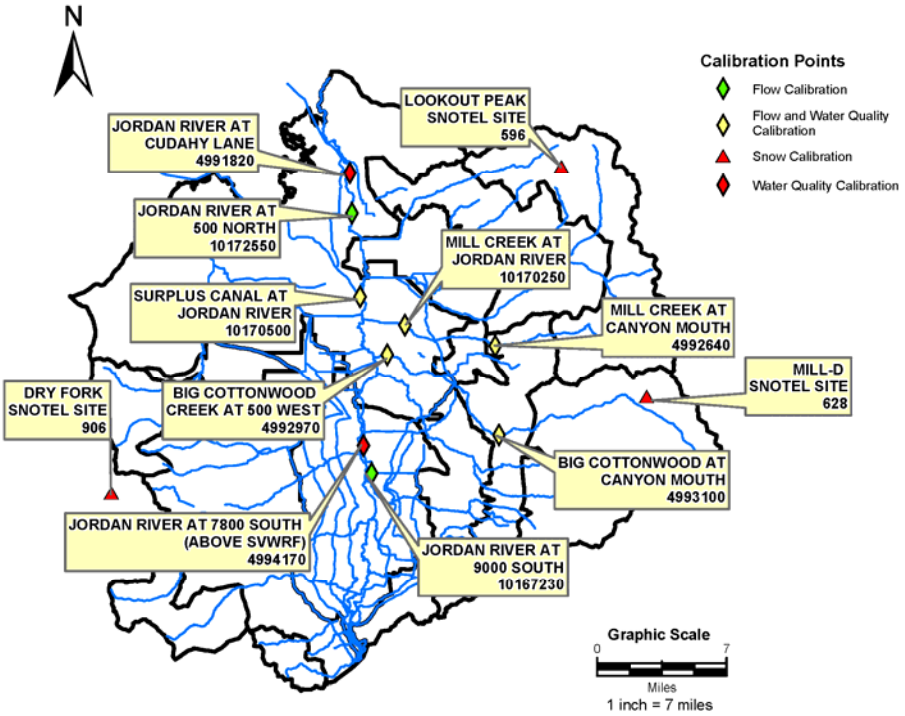
The water quality calibration period was from: 10/01/1994 to 9/30/2006. This part of the model development did not include a separate calibration/validation period. Due to the more limited amount of data, the entire data period was used to develop model parameters.

4.1.1 Water Quality Calibration Locations

The locations that were used for water quality calibration include:

- Mill Creek above CVWRF – Reach 304, Storet ID: 4992540
- Mill Creek at Canyon Mouth – Reach 314, Storet ID: 4992640
- Big Cottonwood Creek at 500 West – Reach 325, Storet ID: 4992970
- Big Cottonwood Creek at the USFS Boundary – Reach 336, Storet ID: 4993100
- Jordan River at Cudahy Lane – Reach 500, Storet ID: 4991820
- Jordan River at 2100 South – Reach 520, Storet ID: 4992320
- Jordan River at 7800 South – Reach 545, Storet ID: 4994170

The calibration locations are located near the hydrology calibration areas as can be seen in Figure 4.1.



4.1 Watershed Model Calibration Locations

The watershed model calibration was conducted in the following order:

- Water Quality Constituent Loadings
- Temperature
- Sediment
- Orthophosphate
- Ammonia
- Nitrate
- Biological Oxygen Demand
- Dissolved Oxygen

The following pages provide a summary of the data and outputs that were examined as part of the water quality calibration of this model.

4.1.1 Water Quality Constituent Loads

The first step in the water quality calibration process was to come up with specific water quality loading targets for each model PERLND and IMPLND. This was first done by looking at sediment. These targets were put together by using both storm water data that was collected by Salt Lake County, a field scale WEPP model of mountainous areas in Mill Creek Canyon, and literature sources (Kirtchner et al, 2001). These loadings are summarized in Table 4.1.

Table 4.1 Sediment Loads and Targets

CODE:	Model PERLND (SOSED) tons per acre	Model IMPLND (SOSLD) tons per acre	Average:	Target: tons per acre	Target Source:
11-Urban-Residential	0.02	0.06	0.04	0.07	SLCo Stormwater Data
12-Open Land/Range	0.16		0.16	3.37	WEPP Model
13-Forest	0.01		0.01	0.05	Kirchner et al., 2001
14-Wetlands	0.01		0.01		
15-Urban Land-Intense	0.03	0.10	0.06	0.15	SLCo Stormwater Data
21-Urban-Residential	0.01	0.09	0.05	0.07	SLCo Stormwater Data
22-Open Land/Range	0.06		0.06	3.37	WEPP Model
23-Forest	0.01		0.01	0.05	Kirchner et al., 2001
24-Wetlands	0.00		0.00		
25-Urban-Residential	0.02	0.14	0.08	0.15	SLCo Stormwater Data
31-Urban Land-Residen	0.01	0.09	0.05	0.07	SLCo Stormwater Data
32-Open Land/Range	0.03		0.03	3.37	WEPP Model
33-Forest	0.00		0.00	0.05	Kirchner et al., 2001
34-Wetlands	0.00		0.00		
35-Urban Land-Intense	0.01	0.15	0.08	0.15	SLCo Stormwater Data
41-Urban-Residential	0.00	0.10	0.05	0.07	SLCo Stormwater Data
42-Open Land/Range	0.06		0.06	3.37	WEPP Model
43-Forest	0.00		0.00	0.05	Kirchner et al., 2001
44-Wetlands	0.00		0.00		
45-Urban Land-Intense	0.01	0.14	0.08	0.15	SLCo Stormwater Data
46-Agricultural Land	0.00		0.00		
47-Urban Land-Parks	0.01		0.01		
51-Urban-Residential	0.00	0.09	0.04	0.07	SLCo Stormwater Data
52-Open Land/Range	0.05		0.05	3.37	WEPP Model
53-Forest	0.00		0.00	0.05	Kirchner et al., 2001
54-Wetlands	0.00		0.00		
55-Urban Land-Intense	0.00	0.13	0.07	0.15	SLCO DATA
56-Agricultural Land	0.00		0.00		
57-Urban Land-Parks	0.00	0.10	0.10		
61-Urban-Residential	0.00	0.09	0.09	0.07	SLCo Stormwater Data
62-Open Land/Range	0.00		0.00	3.37	WEPP Model
63-Forest	0.00		0.00	0.05	Kirchner et al., 2001
64-Wetlands	0.00		0.00		
65-Urban Land-Intense	0.00	0.14	0.07	0.15	SLCo Stormwater Data
66-Agricultural Land	0.00		0.00		
67-Urban Land-Parks	0.00	0.11	0.05		
71-Urban-Residential	0.00	0.08	0.04	0.07	SLCo Stormwater Data
72-Open Land/Range	0.01		0.01	3.37	WEPP Model
74-Wetlands	0.00		0.00		
75-Urban Land-Intense	0.00	0.12	0.06	0.15	SLCo Stormwater Data
76-Agricultural Land	0.00		0.00		
77-Urban Land-Parks	0.00	0.10	0.05		
81-Urban-Residential	0.00	0.08	0.04	0.07	SLCo Stormwater Data
82-Open Land/Range	0.00		0.00	3.37	WEPP Model
83-Forest	0.00		0.00	0.05	Kirchner et al., 2001
84-Wetlands	0.00		0.00		
85-Urban Land-Intense	0.00	0.12	0.06	0.15	SLCo Stormwater Data
86-Agricultural Land	0.00		0.00		
87-Urban Land-Parks	0.00	0.10	0.05		
91-Urban-Residential	0.00	0.08	0.04	0.07	SLCo Stormwater Data
92-Open Land/Range	0.00		0.00	3.37	WEPP Model
93-Forest	0.00		0.00	0.05	Kirchner et al., 2001
94-Wetlands	0.00		0.00		
95-Urban Land-Intense	0.00	0.14	0.07	0.15	SLCo Stormwater Data
97-Urban Land-Parks	0.00	0.10	0.05		
101-Urban-Residential	0.00	0.08	0.04	0.07	SLCo Stormwater Data
102-Open Land/Range	0.00		0.00	3.37	WEPP Model
103-Forest	0.00		0.00	0.05	Kirchner et al., 2001
104-Wetlands	0.00		0.00		
105-Urban Land-Intense	0.01	0.16	0.09	0.15	SLCo Stormwater Data
106-Agricultural Land	0.00		0.00		
107-Urban Land-Parks	0.00	0.10	0.05		

Table 4.2 below summarizes the sediment loads by land-use.

Table 4.2 Sediment Loading Summary by Land Use - Averages

Total Average:	Target: tons/acre	Model: tons/acre
UL-RESIDENTIAL	0.069	0.049
OPEN RANGE	3.4	0.037
FOREST	0.047	0.004
WETLANDS		0.001
UL-INTENSE	0.149	0.071
AGRICULTURAL		0.001
UL-PARKS		0.053

Table 4.3 below summarizes the water quality constituent loads by land use. Target values were taken from literature sources in the MANAGE database (Harmel at al., 2006).

Table 4.3 Water Quality Constituent Loading Summary

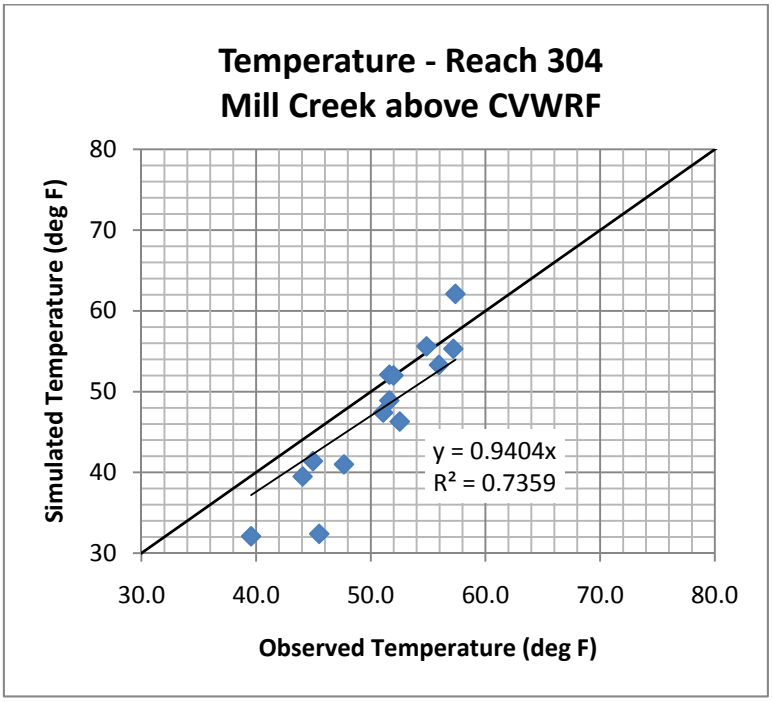
Model Nutrient Load Summary (lb/ac-yr):							
Landuse Code:	1	2	3	4	5	6	7
Landuse:	Urban-Residential	Open Land/Range	Forest	Wetlands	Urban Land - Intense	Agricultural Land	Urban Land - Parks
TAM							
Total Load:	1.13	0.05	0.05	0.03	1.34	0.11	0.77
Total Surface Load:	0.97	0.01	0.01	0.01	0.84	0.01	0.10
NH3 Target:	0.60		0.36		0.80		
NO3							
Total Load:	4.98	0.61	0.60	0.30	6.29	6.03	3.01
Total Surface Load:	1.98	0.12	0.19	0.09	2.10	0.00	1.53
NO3 Target:	1.40	0.30	0.88		2.80		
PO4							
Total Load:	0.46	0.07	0.12	0.06	0.51	0.01	0.42
Total Surface Load:	0.36	0.00	0.00	0.00	0.30	0.13	0.10
PO4 Target:	0.20	0.11	0.27		0.30		
BOD							
Total Load:	27.62	9.74	8.46	5.80	34.63	4.01	24.25
Total Surface Load:	19.94	2.97	2.45	2.16	17.61	0.00	21.27
BOD Target:	19.50				27.70		

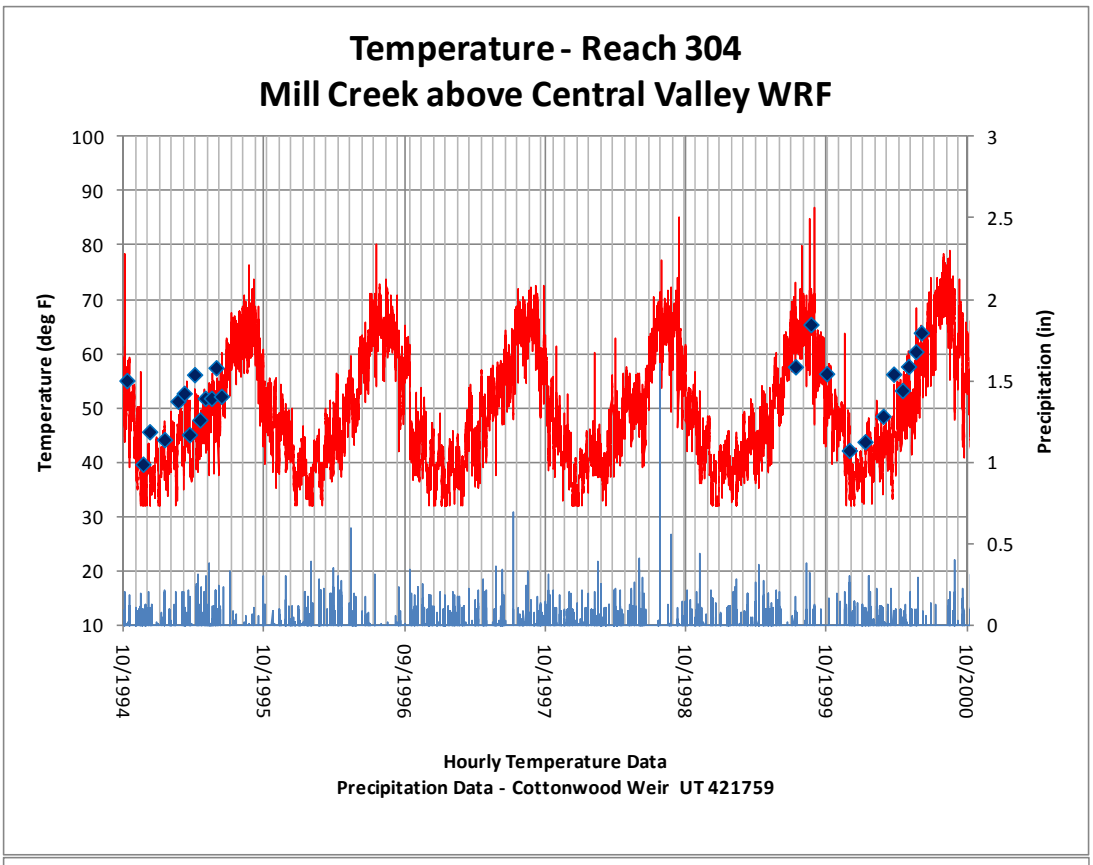
These loading targets were used as a way of obtaining a general idea of water quality constituent loadings. The actual water quality calibration was conducted by looking at instream values of each constituent. This part of the calibration can be seen in the sections below.

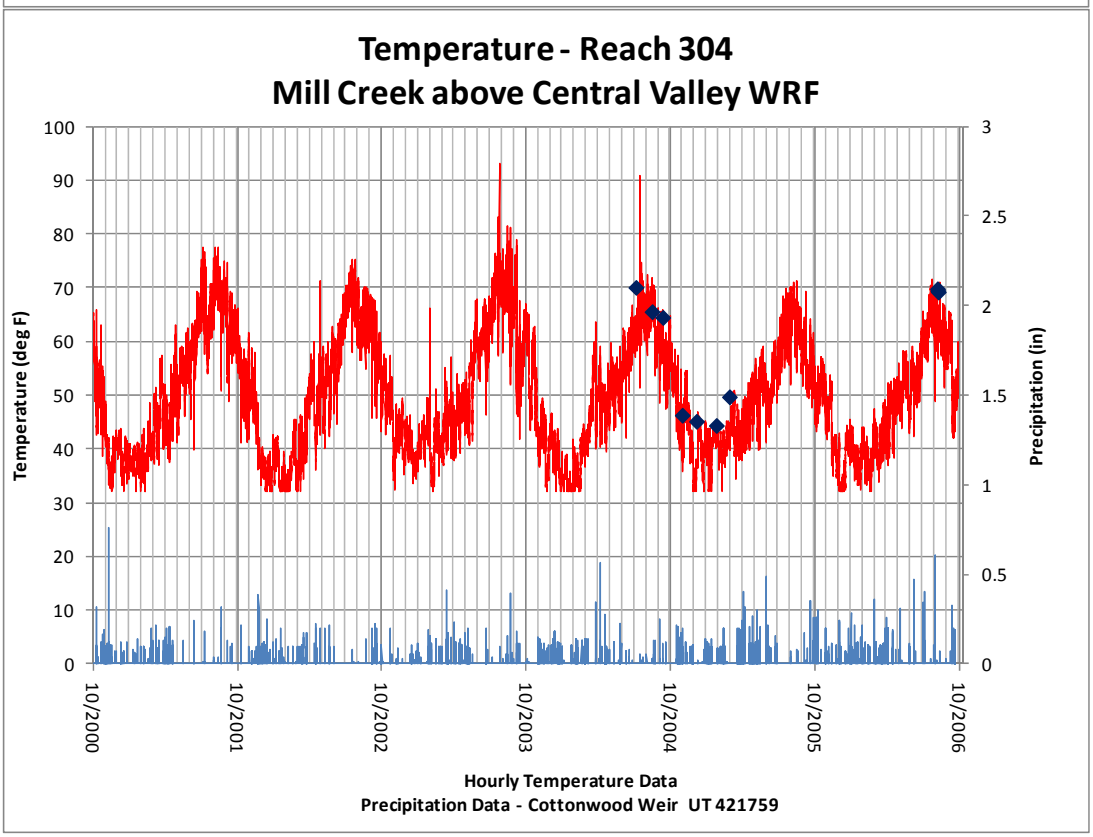
4.1.2 Temperature

4.1.2.1 Mill Creek above Central Valley WRF

Temperature - Reach 304 Mill Creek above CVWRF		
MFE (N-S):	0.59	
Correlation Coeff.:	0.92	
Max Simulated Value	87.0	
Min Simulated Value	32.1	
Max Observed Value	69.9	
Min Observed Value	39.6	
	Observed	Simulated
DATE	TEMP	TW
10/11/1994 1409	54.9	56
11/22/1994 0812	39.6	32
12/09/1994 1518	45.5	32
01/17/1995 0800	44.1	40
02/21/1995 1300	51.1	47
03/09/1995 1603	52.5	46
03/23/1995 0809	45.0	41
04/05/1995 1618	55.9	53
04/19/1995 1502	47.7	41
05/03/1995 1321	51.6	49
05/19/1995 1109	51.6	52
05/31/1995 1514	57.2	55
06/14/1995 0733	52.0	52
07/16/1999 0922	57.4	62
08/25/1999 1310	65.1	70
10/05/1999 1134	56.1	52
12/03/1999 1106	42.1	36
01/13/2000 0914	43.7	40
02/29/2000 1133	48.3	42
03/27/2000 1418	56.0	52
04/19/2000 1603	53.0	50
05/05/2000 1221	57.4	54
05/24/2000 1406	60.2	59
06/07/2000 1428	63.6	60
07/08/2004 1705	69.9	65
08/18/2004 1410	65.4	70
09/14/2004 1608	64.4	57
11/02/2004 1316	46.3	40
12/08/2004 1233	45.1	38
01/27/2005 1221	44.3	42
03/01/2005 1231	49.7	45
08/08/2006 0000	69.7	61
08/09/2006 0000	69.3	60
08/10/2006 0000	69.1	59

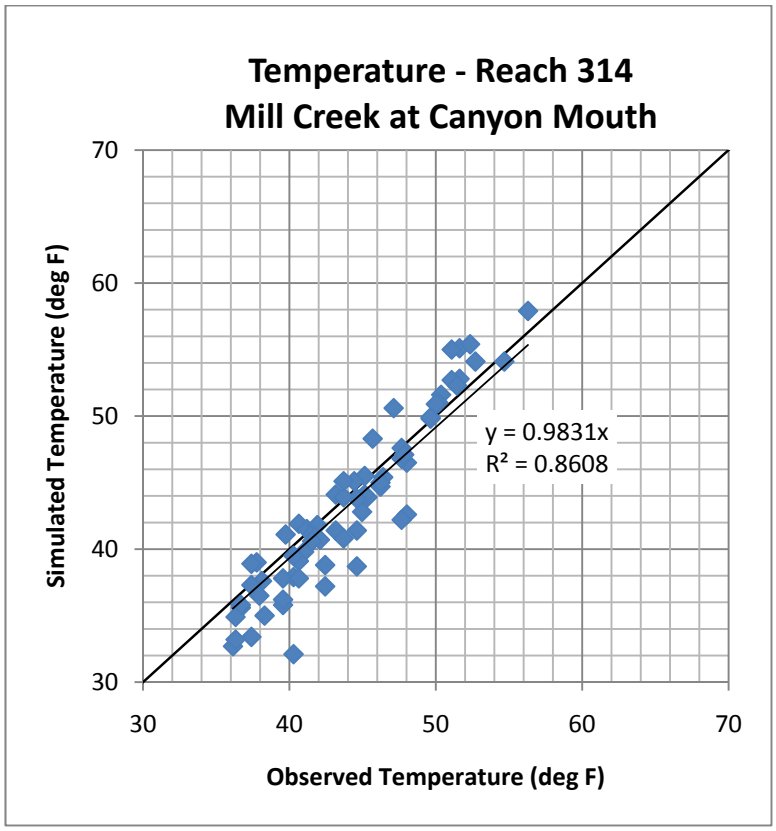


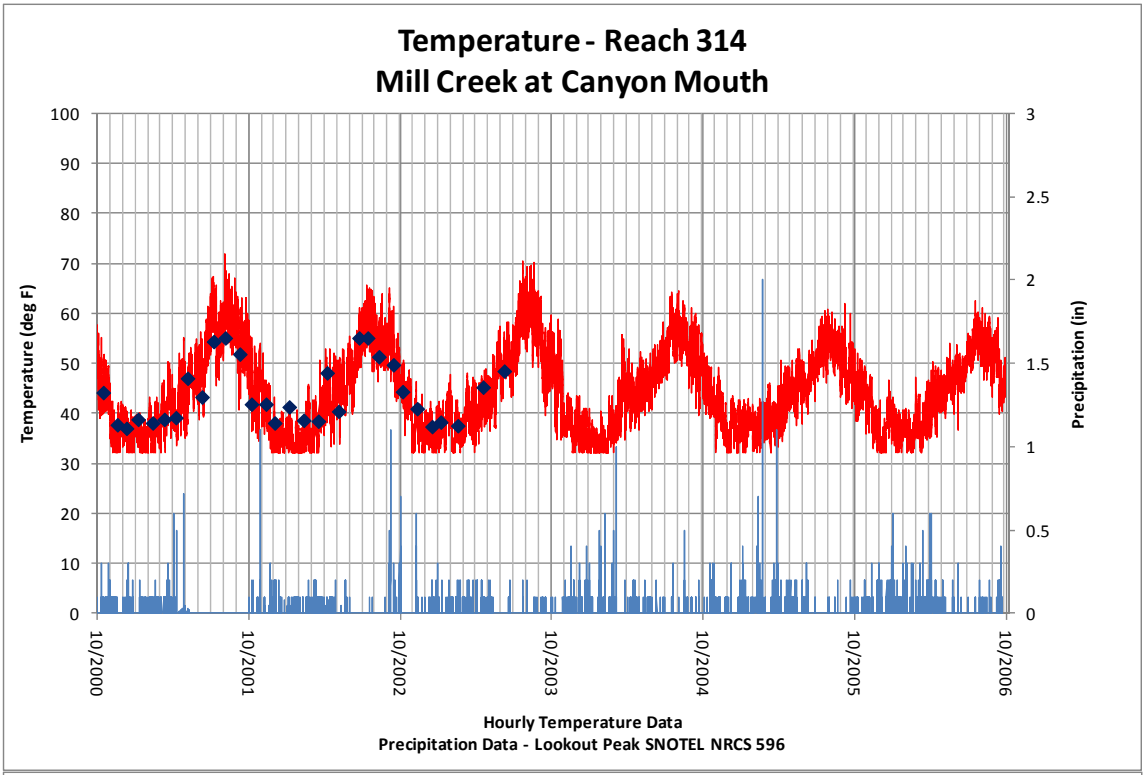

Temperature - Reach 304
Mill Creek above Central Valley WRF
Temperature (deg F)
Precipitation (in)
100
90
80
70
60
50
40
30
20
10
3
2.5
2
1.5
1
0.5
0
10/1994
10/1995
09/1996
10/1997
10/1998
10/1999
10/2000
Hourly Temperature Data
Precipitation Data - Cottonwood Weir UT 421759

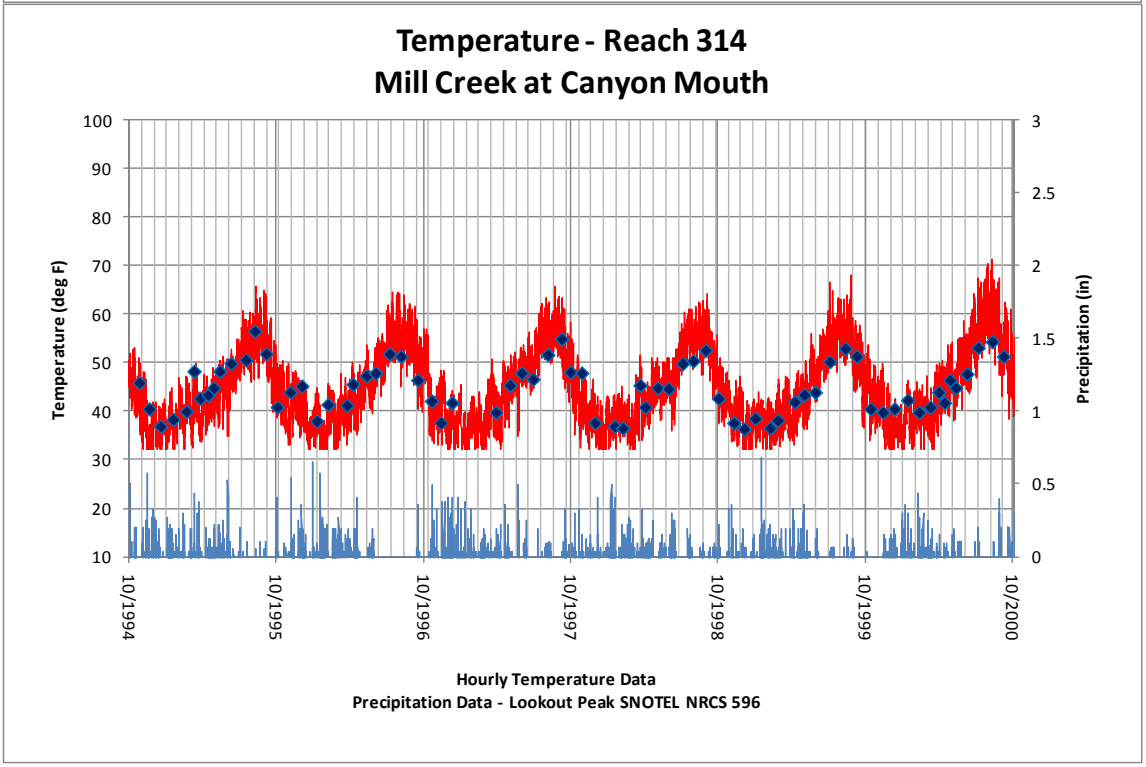

Temperature - Reach 304
Mill Creek above Central Valley WRF
Temperature (deg F)
Precipitation (in)
100
90
80
70
60
50
40
30
20
10
0
3
2.5
2
1.5
1
0.5
0
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006
Hourly Temperature Data
Precipitation Data - Cottonwood Weir UT 421759

4.1.2.2 Mill Creek at Canyon Mouth

Temperature - Reach 314 Mill Creek at Canyon Mouth		
MFE (N-S):	0.76	
Correlation Coeff.:	0.94	
Max Simulated Value	71.80	
Min Simulated Value	32.10	
Max Observed Value	68.00	
Min Observed Value	32.90	
	Observed	Simulated
DATE	TEMP	TW
10/28/1994 1200	46	48
11/22/1994 0800	40	32
12/20/1994 1018	37	36
01/20/1995 1200	38	38
02/22/1995 1000	40	41
03/13/1995 1000	48	43
03/28/1995 1027	42	37
04/17/1995 1118	43	41
05/01/1995 1100	45	39
05/16/1995 1000	48	47
06/13/1995 0918	50	50
07/20/1995 0827	50	52
08/11/1995 0900	56	58
09/08/1995 0800	52	53
10/06/1995 0818	41	42
11/07/1995 0918	44	41
12/06/1995 0900	45	43
01/12/1996 1109	38	39
02/09/1996 0918	41	42
03/27/1996 0900	41	40
04/11/1996 0900	45	44
05/15/1996 0900	47	51
06/06/1996 0900	48	48
07/11/1996 0900	52	55
08/08/1996 0900	51	53
09/19/1996 0900	46	45
10/23/1996 1000	42	42
11/15/1996 1900	37	39
12/13/1996 0900	42	41
04/01/1997 1018	40	36
05/06/1997 0700	45	46
06/04/1997 0609	48	47
07/02/1997 0618	46	45
08/08/1997 0618	51	52
09/11/1997 0612	55	54
10/03/1997 0727	48	47
10/31/1997 0618	48	42
12/03/1997 0600	37	33
01/21/1998 1012	37	36
02/10/1998 0818	36	35
03/25/1998 0624	45	44
04/07/1998 0630	41	39
05/08/1998 0621	45	44
06/04/1998 0627	44	45
07/09/1998 0630	50	50
08/04/1998 0715	50	51
09/04/1998 0518	52	55
10/06/1998 0718	42	39
11/13/1998 0812	37	37
12/09/1998 0727	36	33
01/05/1999 0700	38	35
02/11/1999 0824	36	33
03/02/1999 0806	38	37
04/13/1999 0800	42	41
05/07/1999 0800	43	44
06/03/1999 0618	44	44
07/09/1999 0706	50	51
08/17/1999 0527	53	54
09/14/1999 1215	51	55

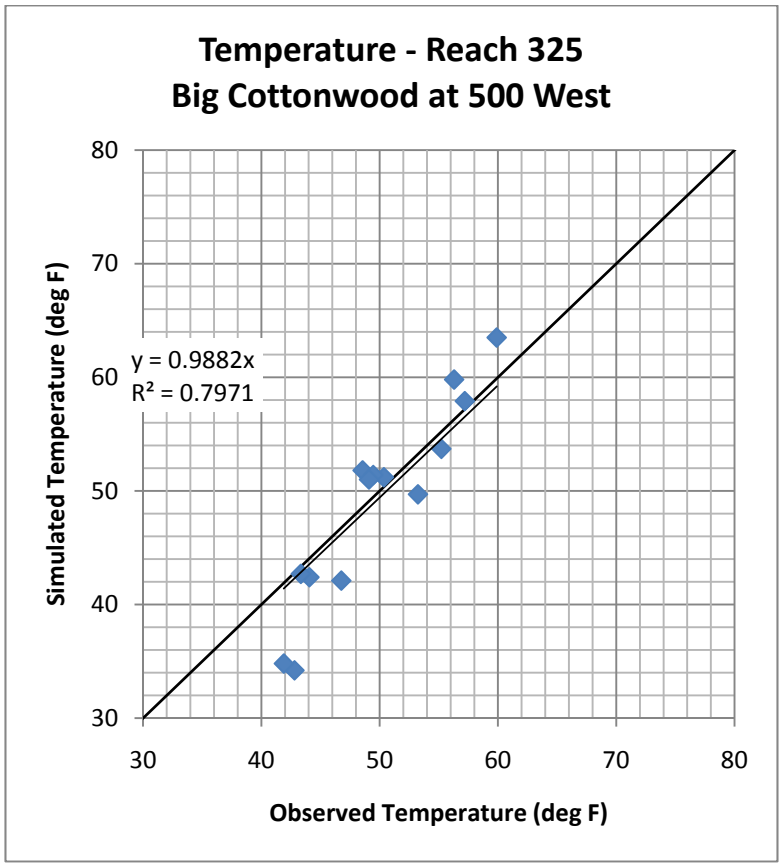


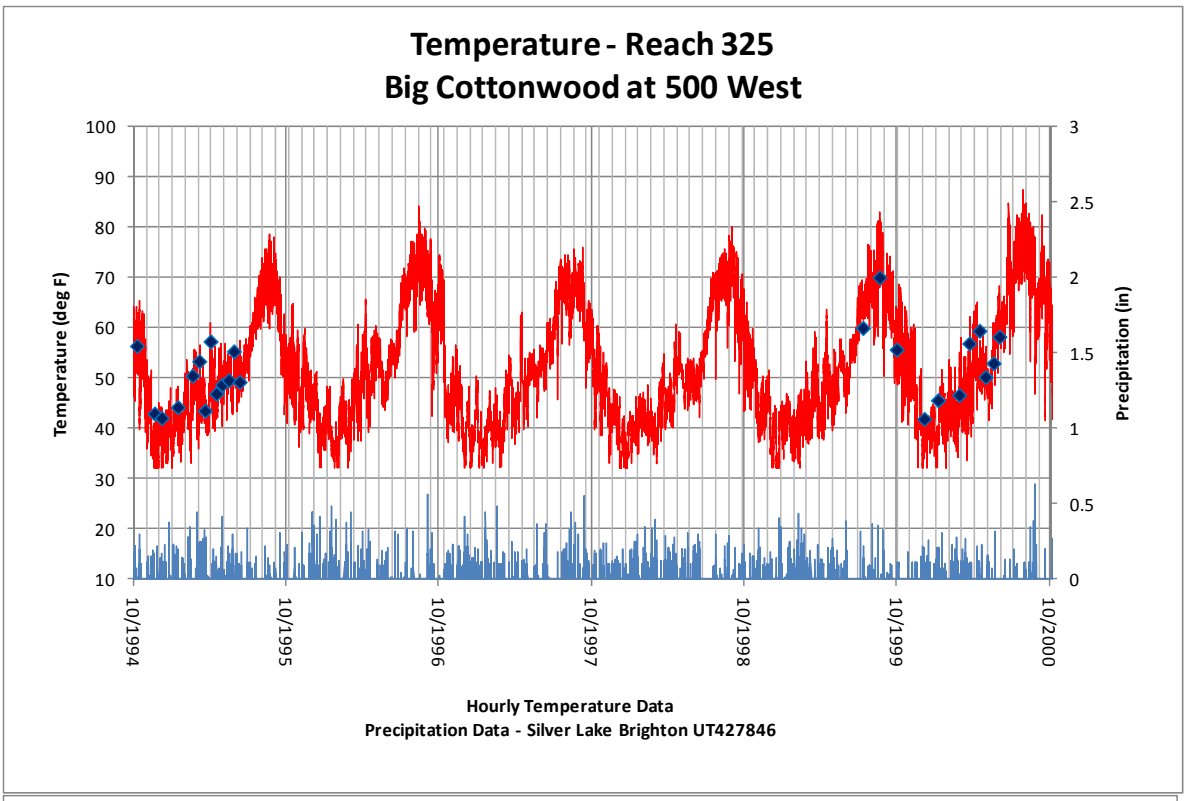

Temperature - Reach 314
Mill Creek at Canyon Mouth
Temperature (deg F)
Precipitation (in)
100
90
80
70
60
50
40
30
20
10
0
3
2.5
2
1.5
1
0.5
0
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006
Hourly Temperature Data
Precipitation Data - Lookout Peak SNOTEL NRCS 596

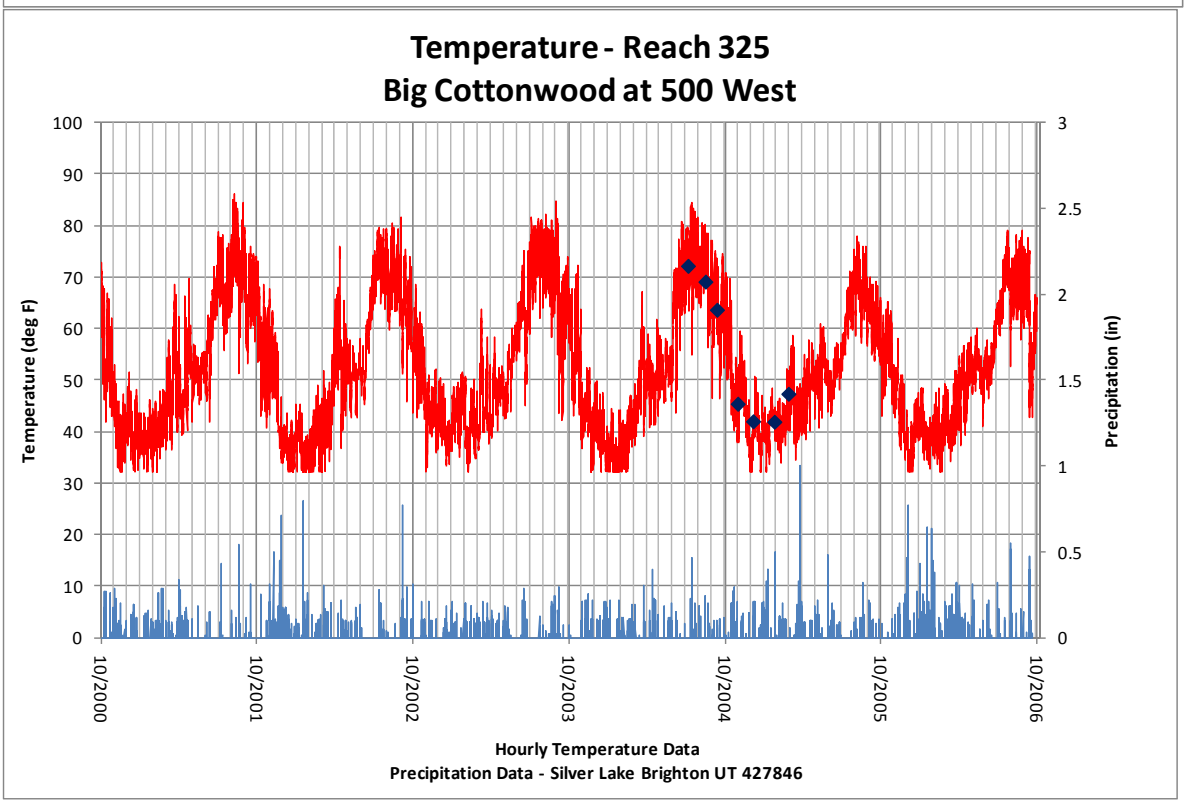

Temperature - Reach 314
Mill Creek at Canyon Mouth
Temperature (deg F)
Precipitation (in)
100
90
80
70
60
50
40
30
20
10
3
2.5
2
1.5
1
0.5
0
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000
Hourly Temperature Data
Precipitation Data - Lookout Peak SNOTEL NRCS 596

4.1.2.3 Big Cottonwood at 500 West

Temperature - Reach 325 Big Cottonwood at 500 West		
MFE (N-S):	0.52	
Correlation Coeff.:	0.92	
Max Simulated Value	87.5	
Min Simulated Value	32.10	
Max Observed Value	63.32	
Min Observed Value	33.8	
	Observed	Simulated
DATE	TEMP	TW
10/11/1994 1418	56	60
11/22/1994 1700	43	34
12/9/1994 1509	42	35
1/17/1995 1400	44	42
2/21/1995 1227	50	51
3/9/1995 1529	53	50
3/23/1995 0818	43	43
4/5/1995 1609	57	58
4/19/1995 1431	47	42
5/3/1995 1314	49	52
5/19/1995 1100	49	51
5/31/1995 1508	55	54
6/14/1995 0803	49	51
7/16/1999 1015	60	64
8/25/1999 1222	70	79
10/5/1999 1206	56	59
12/10/1999 1216	42	41
1/12/2000 1613	45	40
3/3/2000 0803	46	48
3/27/2000 1404	57	61
4/20/2000 1614	59	55
5/5/2000 1205	50	52
5/24/2000 1431	53	57
6/7/2000 1413	58	63
7/8/2004 1534	72	75
8/18/2004 1510	69	77
9/14/2004 1509	64	61
11/2/2004 1131	45	44
12/8/2004 1318	42	38
1/27/2005 1111	42	42
3/1/2005 1307	47	51

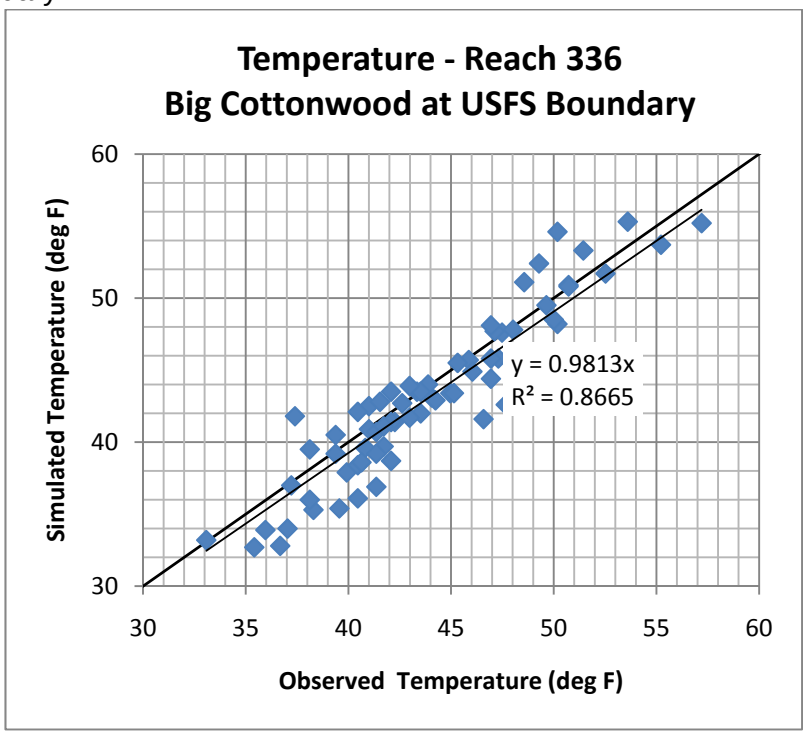


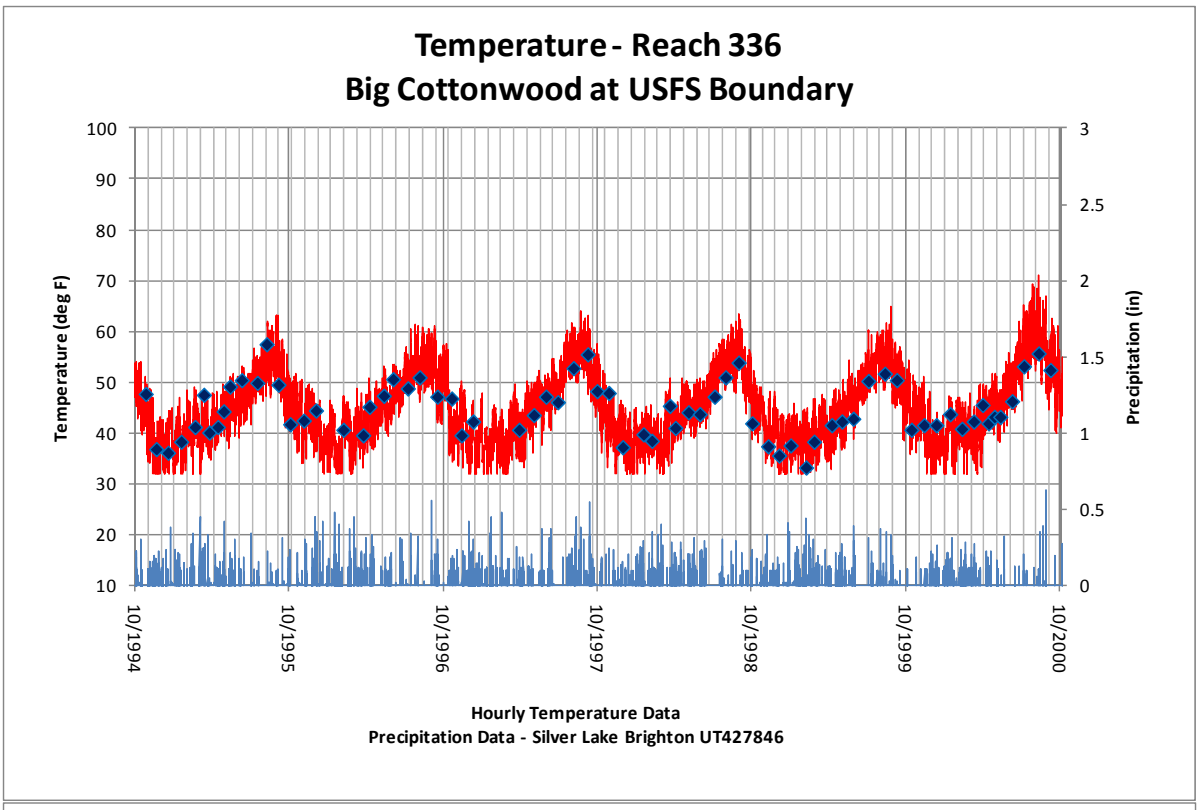

Temperature - Reach 325
Big Cottonwood at 500 West
Temperature (deg F)
Precipitation (in)
100
90
80
70
60
50
40
30
20
10
3
2.5
2
1.5
1
0.5
0
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000
Hourly Temperature Data
Precipitation Data - Silver Lake Brighton UT427846

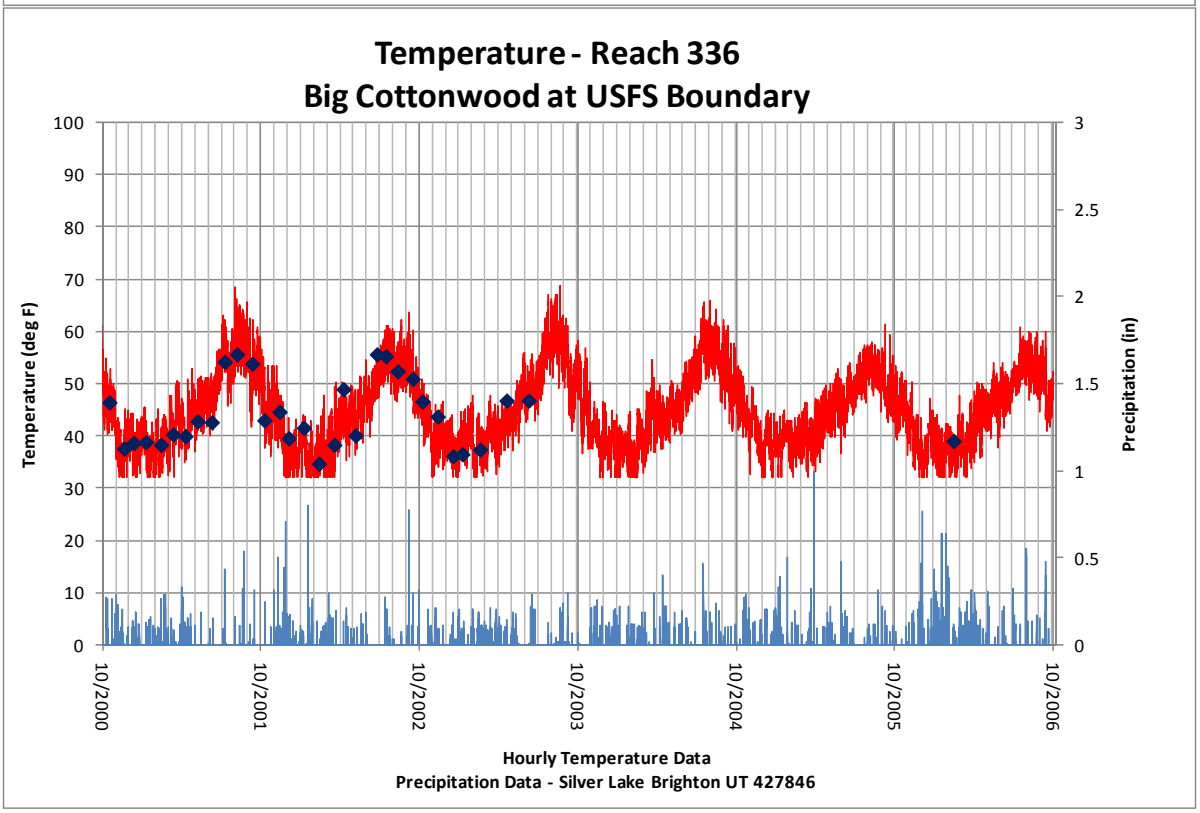

Temperature - Reach 325
Big Cottonwood at 500 West
Temperature (deg F)
Precipitation (in)
100
90
80
70
60
50
40
30
20
10
0
3
2.5
2
1.5
1
0.5
0
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006
Hourly Temperature Data
Precipitation Data - Silver Lake Brighton UT 427846

4.1.2.4 Big Cottonwood at USFS Boundary

Temperature - Reach 325 Big Cottonwood at 500 West		
MFE (N-S):	0.81	
Correlation Coeff.:	0.94	
Max Simulated Value	71.1	
Min Simulated Value	32.1	
Max Observed Value	57.2	
Min Observed Value	33.08	
	Observed	Simulated
DATE	TEMP	TW
10/6/1995 0800	42	43
11/7/1995 0900	42	41
12/6/1995 0818	44	43
2/9/1996 0900	40	42
3/27/1996 0818	39	39
4/11/1996 0818	45	43
5/15/1996 0818	47	48
6/6/1996 0818	50	46
7/11/1996 0818	49	51
8/8/1996 0818	51	51
9/19/1996 0818	47	44
10/23/1996 0918	47	42
11/15/1996 1818	39	41
12/13/1996 0818	42	41
4/1/1997 1027	40	36
5/6/1997 0618	43	44
6/4/1997 0524	47	46
7/2/1997 0600	46	46
8/8/1997 0527	53	52
9/11/1997 0500	55	54
10/3/1997 0709	48	48
10/31/1997 0518	48	43
12/3/1997 0709	37	34
1/21/1998 1027	40	35
2/10/1998 0730	38	35
3/25/1998 0612	45	43
4/7/1998 0612	41	40
5/8/1998 0600	44	44
6/4/1998 0612	44	44
7/9/1998 0606	47	48
8/4/1998 0700	51	51

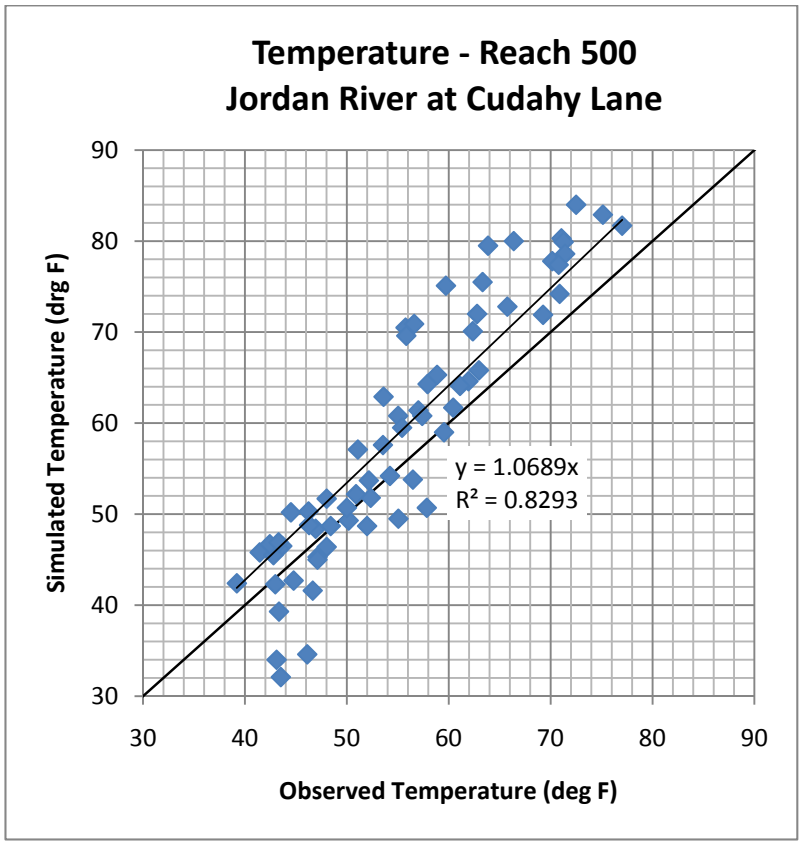


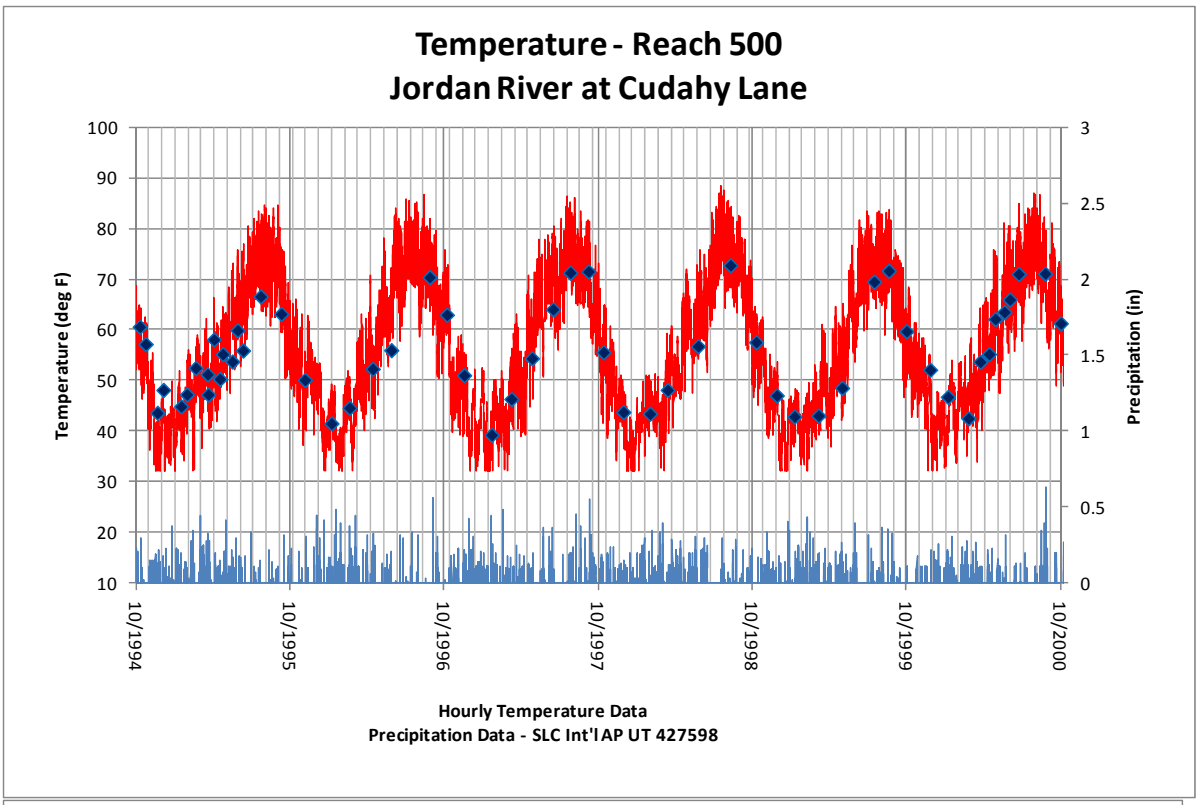

Temperature - Reach 336
Big Cottonwood at USFS Boundary
Temperature (deg F)
Precipitation (in)
100
90
80
70
60
50
40
30
20
10
3
2.5
2
1.5
1
0.5
0
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000
Hourly Temperature Data
Precipitation Data - Silver Lake Brighton UT427846

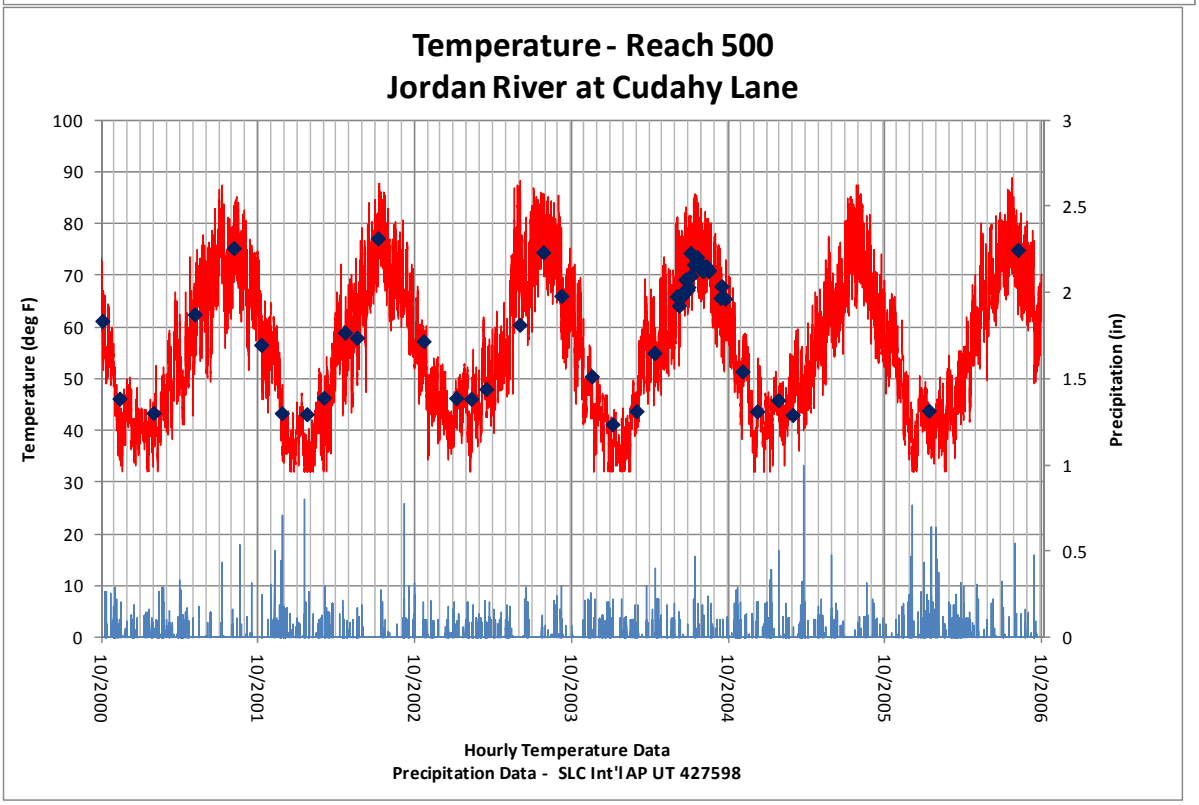

Temperature - Reach 336
Big Cottonwood at USFS Boundary
Temperature (deg F)
Precipitation (in)
100
90
80
70
60
50
40
30
20
10
0
3
2.5
2
1.5
1
0.5
0
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006
Hourly Temperature Data
Precipitation Data - Silver Lake Brighton UT 427846

4.1.2.5 Jordan River at Cudahy Lane

Temperature - Reach 325 Big Cottonwood at 500 West		
MFE (N-S):	0.52	
Correlation Coeff.:	0.92	
Max Simulated Value	87.5	
Min Simulated Value	32.10	
Max Observed Value	63.32	
Min Observed Value	33.8	
	Observed	Simulated
DATE	TEMP	TW
10/11/1994 1418	56	60
11/22/1994 1700	43	34
12/9/1994 1509	42	35
1/17/1995 1400	44	42
2/21/1995 1227	50	51
3/9/1995 1529	53	50
3/23/1995 0818	43	43
4/5/1995 1609	57	58
4/19/1995 1431	47	42
5/3/1995 1314	49	52
5/19/1995 1100	49	51
5/31/1995 1508	55	54
6/14/1995 0803	49	51
7/16/1999 1015	60	64
8/25/1999 1222	70	79
10/5/1999 1206	56	59
12/10/1999 1216	42	41
1/12/2000 1613	45	40
3/3/2000 0803	46	48
3/27/2000 1404	57	61
4/20/2000 1614	59	55
5/5/2000 1205	50	52
5/24/2000 1431	53	57
6/7/2000 1413	58	63
7/8/2004 1534	72	75
8/18/2004 1510	69	77
9/14/2004 1509	64	61
11/2/2004 1131	45	44
12/8/2004 1318	42	38
1/27/2005 1111	42	42
3/1/2005 1307	47	51

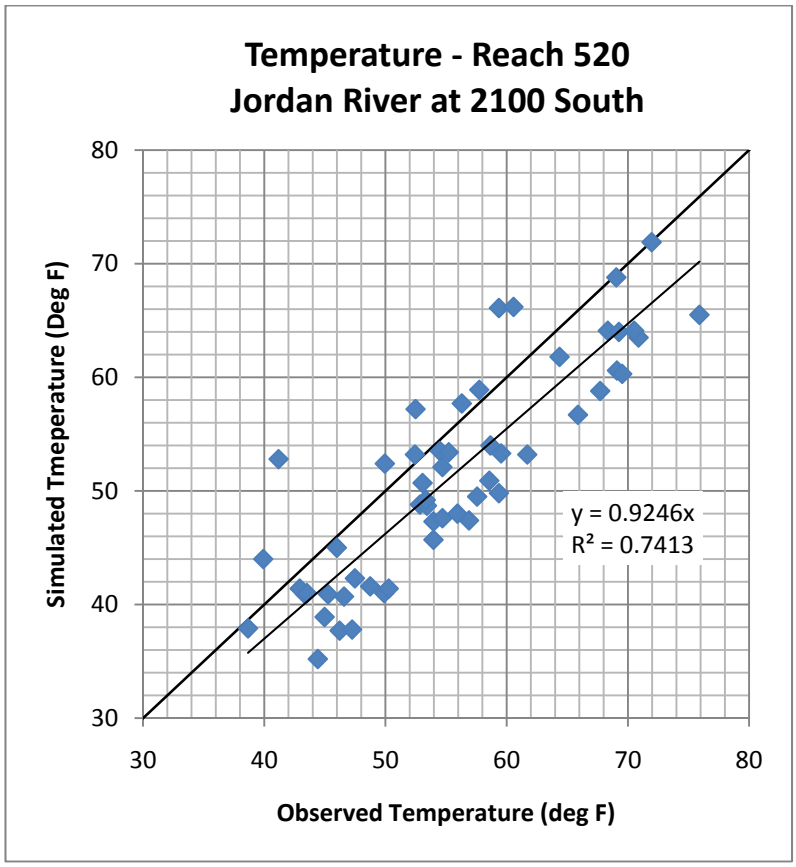


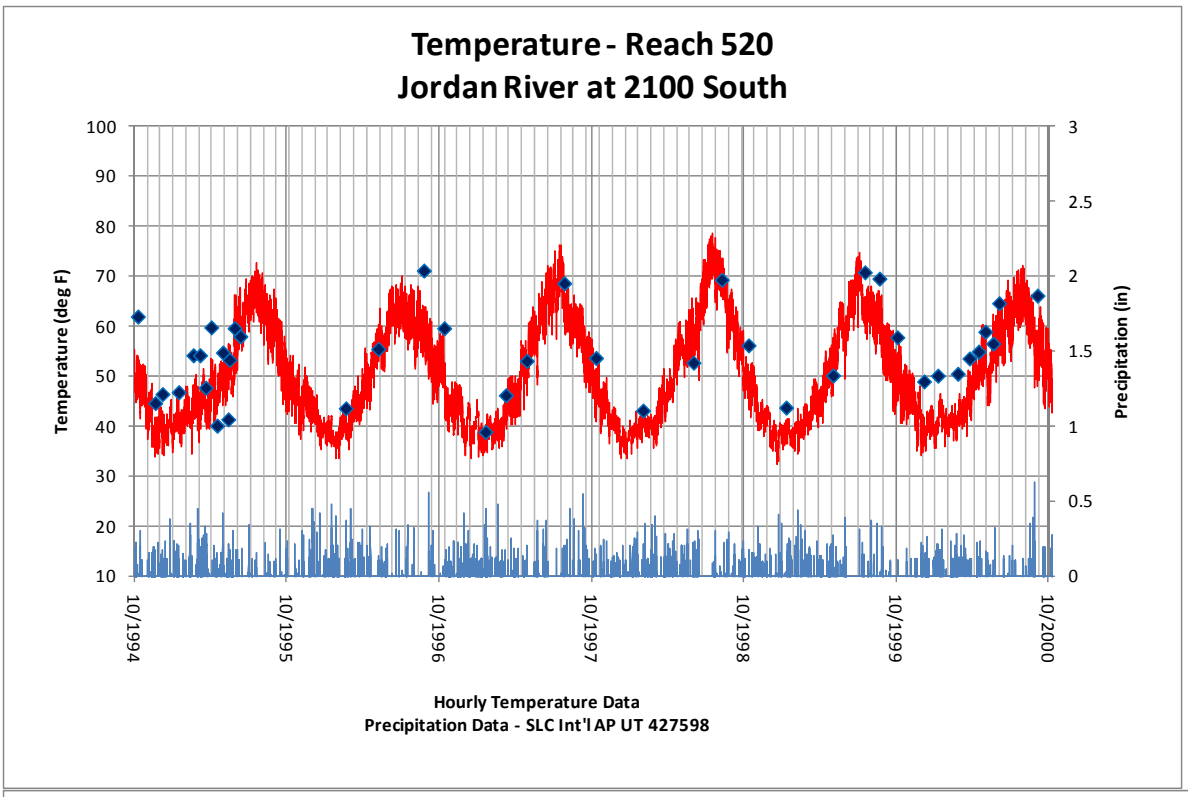

Temperature - Reach 500
Jordan River at Cudahy Lane
Temperature (deg F)
Precipitation (in)
100
90
80
70
60
50
40
30
20
10
3
2.5
2
1.5
1
0.5
0
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000
Hourly Temperature Data
Precipitation Data - SLC Int'l AP UT 427598

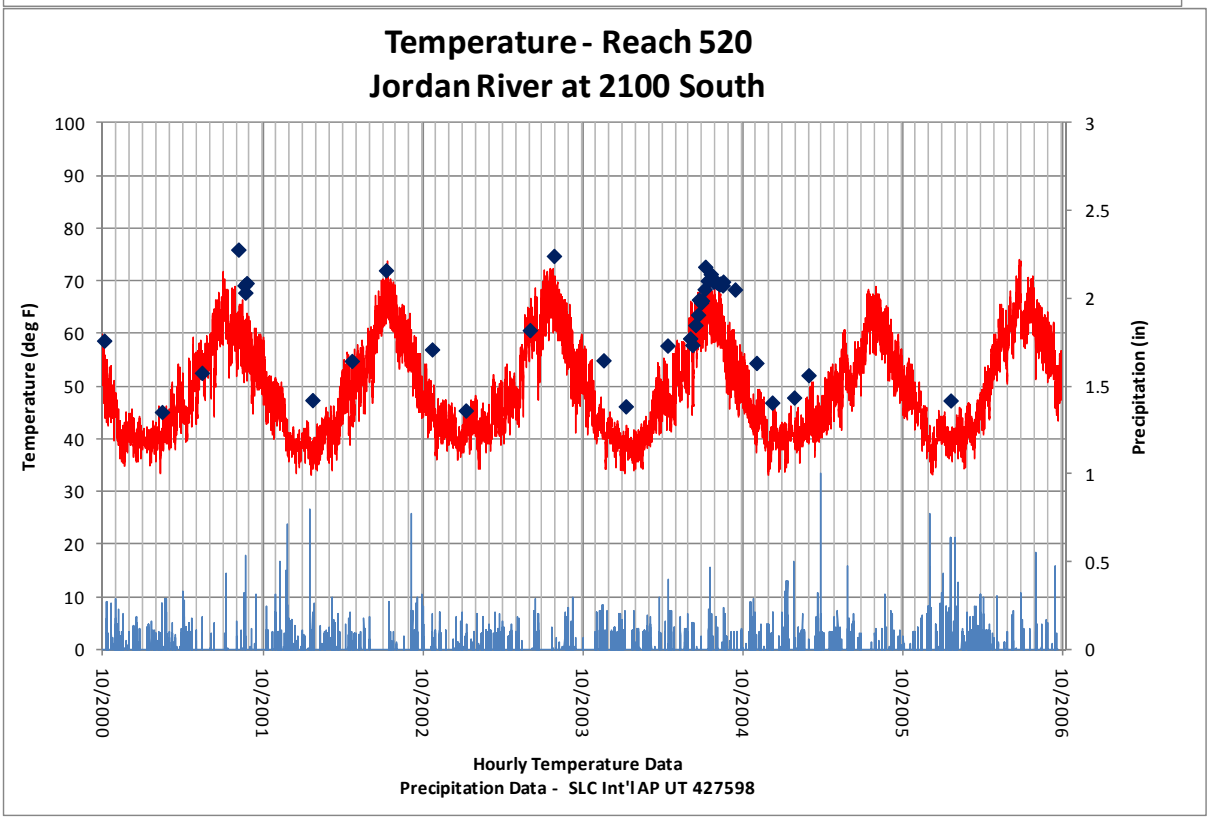

Temperature - Reach 500
Jordan River at Cudahy Lane
Temperature (deg F)
Precipitation (in)
100
90
80
70
60
50
40
30
20
10
0
3
2.5
2
1.5
1
0.5
0
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006
Hourly Temperature Data
Precipitation Data - SLC Int'l AP UT 427598

4.1.2.6 Jordan River at 2100 South

Temperature - Reach 325 Big Cottonwood at 500 West		
MFE (N-S):	0.52	
Correlation Coeff.:	0.92	
Max Simulated Value	87.5	
Min Simulated Value	32.10	
Max Observed Value	63.32	
Min Observed Value	33.8	
	Observed	Simulated
DATE	TEMP	TW
10/11/1994 1418	56	60
11/22/1994 1700	43	34
12/9/1994 1509	42	35
1/17/1995 1400	44	42
2/21/1995 1227	50	51
3/9/1995 1529	53	50
3/23/1995 0818	43	43
4/5/1995 1609	57	58
4/19/1995 1431	47	42
5/3/1995 1314	49	52
5/19/1995 1100	49	51
5/31/1995 1508	55	54
6/14/1995 0803	49	51
7/16/1999 1015	60	64
8/25/1999 1222	70	79
10/5/1999 1206	56	59
12/10/1999 1216	42	41
1/12/2000 1613	45	40
3/3/2000 0803	46	48
3/27/2000 1404	57	61
4/20/2000 1614	59	55
5/5/2000 1205	50	52
5/24/2000 1431	53	57
6/7/2000 1413	58	63
7/8/2004 1534	72	75
8/18/2004 1510	69	77
9/14/2004 1509	64	61
11/2/2004 1131	45	44
12/8/2004 1318	42	38
1/27/2005 1111	42	42
3/1/2005 1307	47	51

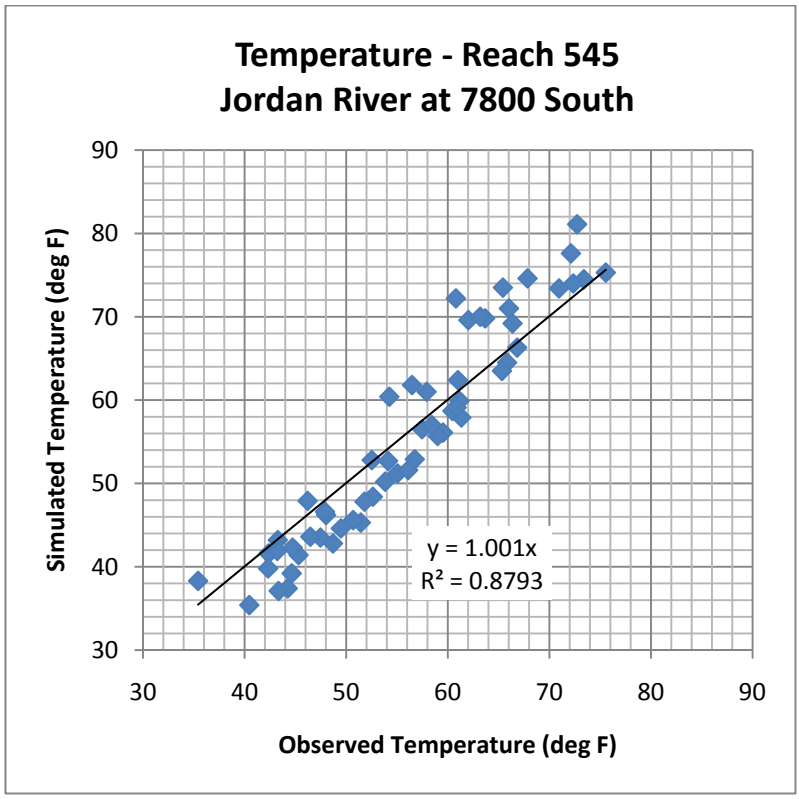


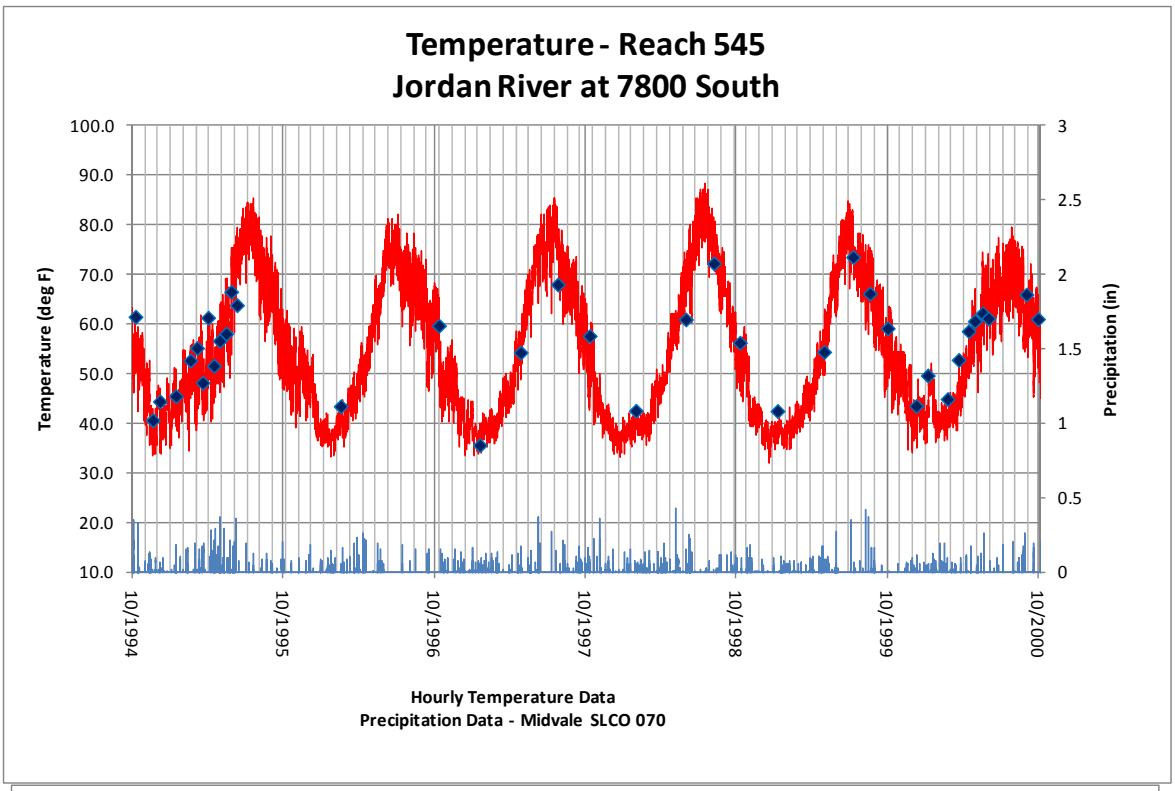

Temperature - Reach 520
Jordan River at 2100 South
Temperature (deg F)
Precipitation (in)
100
90
80
70
60
50
40
30
20
10
3
2.5
2
1.5
1
0.5
0
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000
Hourly Temperature Data
Precipitation Data - SLC Int'l AP UT 427598

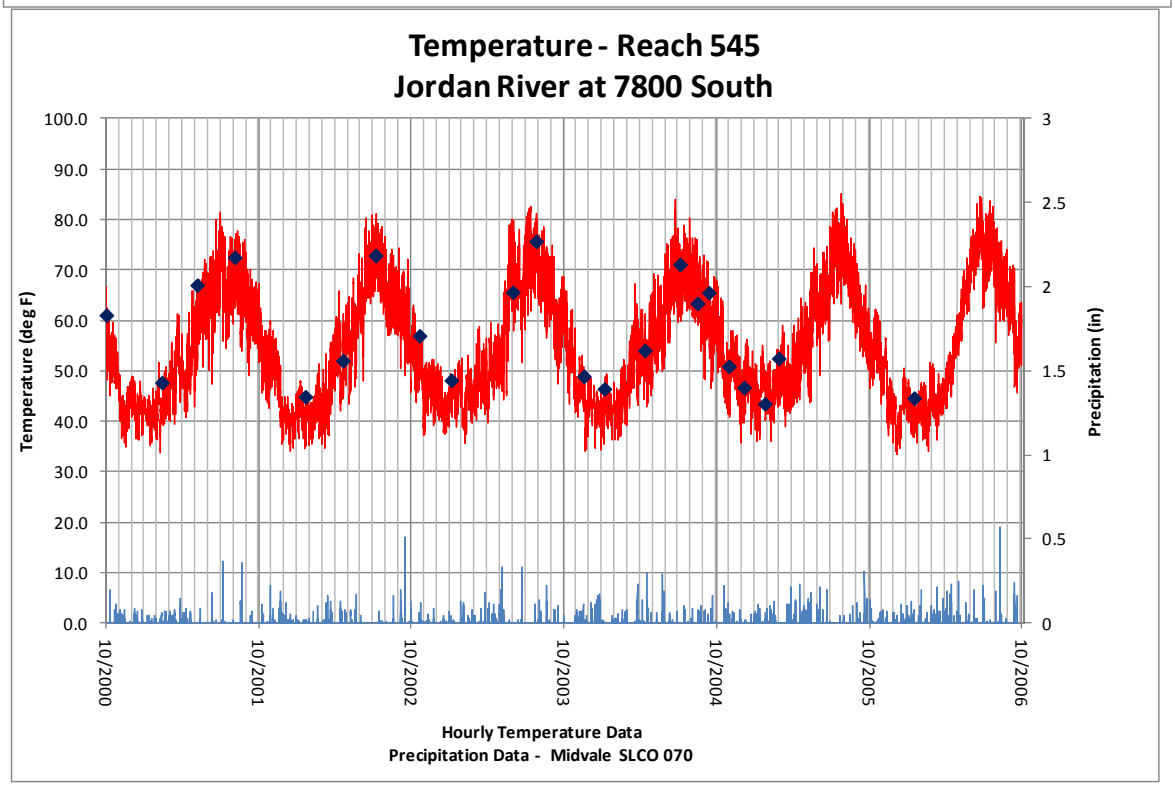

Temperature - Reach 520
Jordan River at 2100 South
Temperature (deg F)
Precipitation (in)
100
90
80
70
60
50
40
30
20
10
0
3
2.5
2
1.5
1
0.5
0
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006
Hourly Temperature Data
Precipitation Data - SLC Int'l AP UT 427598

4.1.2.7 Jordan River at 7800 South

Temperature - Reach 545 Jordan River at 7800 South		
MFE (N-S):	0.52	
Correlation Coeff.:	0.92	
Max Simulated Value	87.5	
Min Simulated Value	32.10	
Max Observed Value	63.32	
Min Observed Value	33.8	
	Observed	Sediment
DATE	TEMP	TW
10/11/1994 1418	56	60
11/22/1994 1700	43	34
12/9/1994 1509	42	35
1/17/1995 1400	44	42
2/21/1995 1227	50	51
3/9/1995 1529	53	50
3/23/1995 0818	43	43
4/5/1995 1609	57	58
4/19/1995 1431	47	42
5/3/1995 1314	49	52
5/19/1995 1100	49	51
5/31/1995 1508	55	54
6/14/1995 0803	49	51
7/16/1999 1015	60	64
8/25/1999 1222	70	79
10/5/1999 1206	56	59
12/10/1999 1216	42	41
1/12/2000 1613	45	40
3/3/2000 0803	46	48
3/27/2000 1404	57	61
4/20/2000 1614	59	55
5/5/2000 1205	50	52
5/24/2000 1431	53	57
6/7/2000 1413	58	63
7/8/2004 1534	72	75
8/18/2004 1510	69	77
9/14/2004 1509	64	61
11/2/2004 1131	45	44
12/8/2004 1318	42	38
1/27/2005 1111	42	42
3/1/2005 1307	47	51



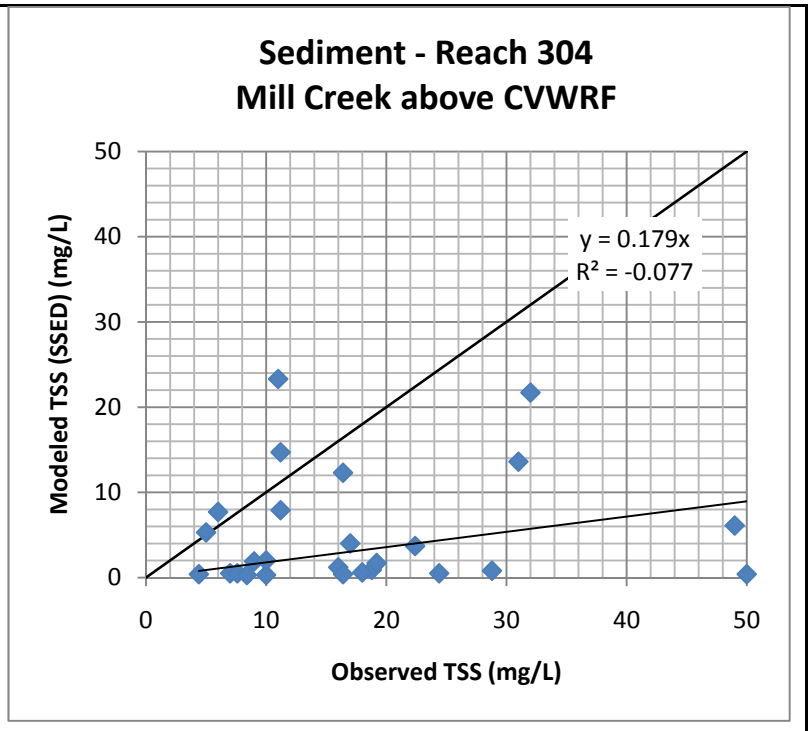

Temperature - Reach 545
Jordan River at 7800 South
Temperature (deg F)
Precipitation (in)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
3
2.5
2
1.5
1
0.5
0
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000
Hourly Temperature Data
Precipitation Data - Midvale SLCO 070

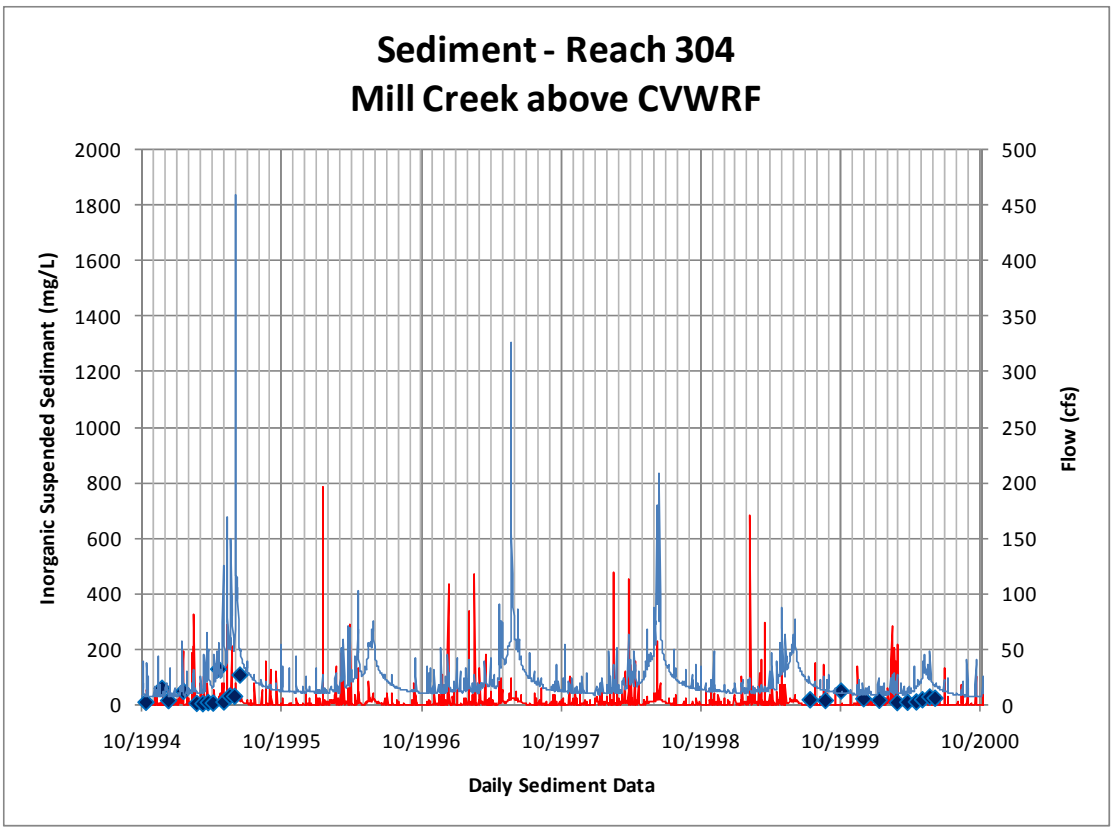

Temperature - Reach 545
Jordan River at 7800 South
Temperature (deg F)
Precipitation (in)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
3
2.5
2
1.5
1
0.5
0
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006
Hourly Temperature Data
Precipitation Data - Midvale SLCO 070

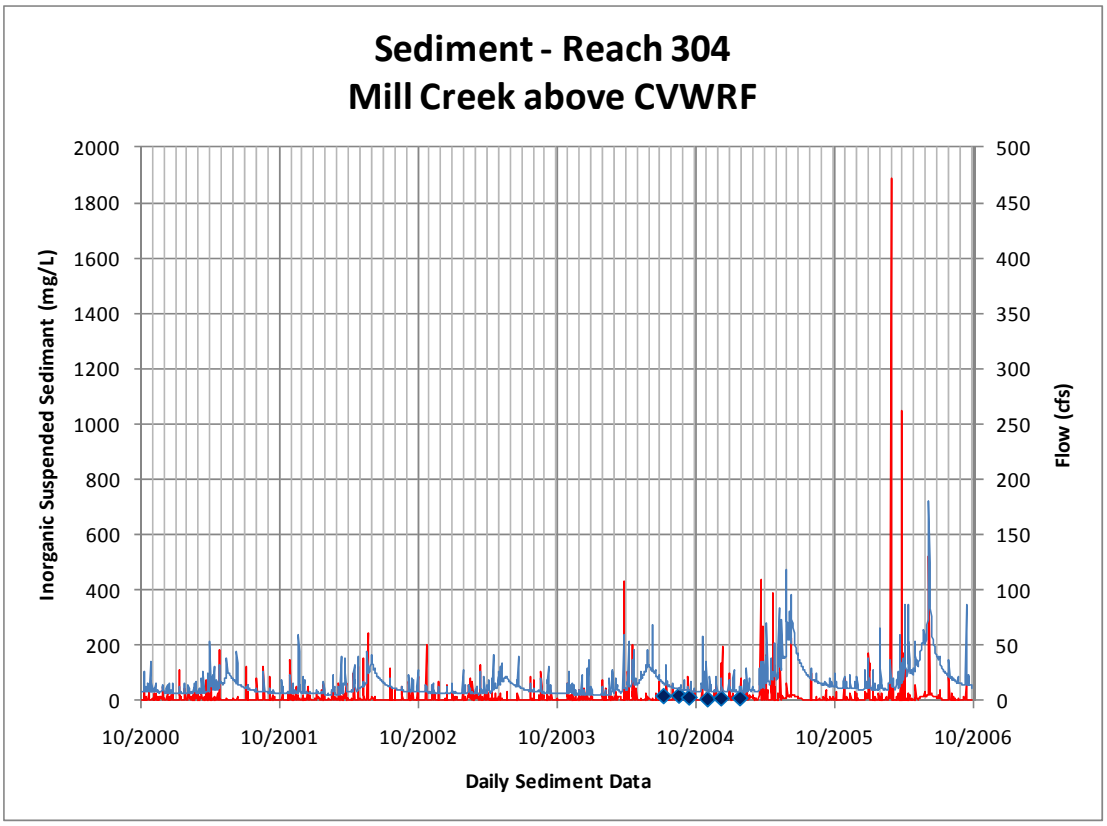
4.1.3 Sediment

4.1.3.1 Mill Creek above CVWRF

Sediment - Reach 304 Mill Creek above CVWRF		
MFE (N-S):	-2.24	
Correlation Coeff.:	-0.06	
	Observed	Modeled
DATE	TSS	SSED-TOT
10/11/1994	10	0
11/22/1994	60	3
12/9/1994	16	1
1/17/1995	49	6
2/21/1995	6	8
3/9/1995	5	5
3/23/1995	9	2
4/5/1995	7	1
4/19/1995	128	12
5/3/1995	11	23
5/19/1995	32	22
5/31/1995	31	14
6/14/1995	107	15
7/16/1999	19	1
8/25/1999	16	0
10/5/1999	50	0
12/3/1999	22	4
1/13/2000	17	4
2/29/2000	9	218
3/27/2000	10	2
4/19/2000	11	8
5/5/2000	19	2
5/24/2000	29	1
6/7/2000	24	1
7/8/2004	16	12
8/18/2004	18	1
9/14/2004	11	15
11/2/2004	4	0
12/8/2004	8	1
1/27/2005	8	0

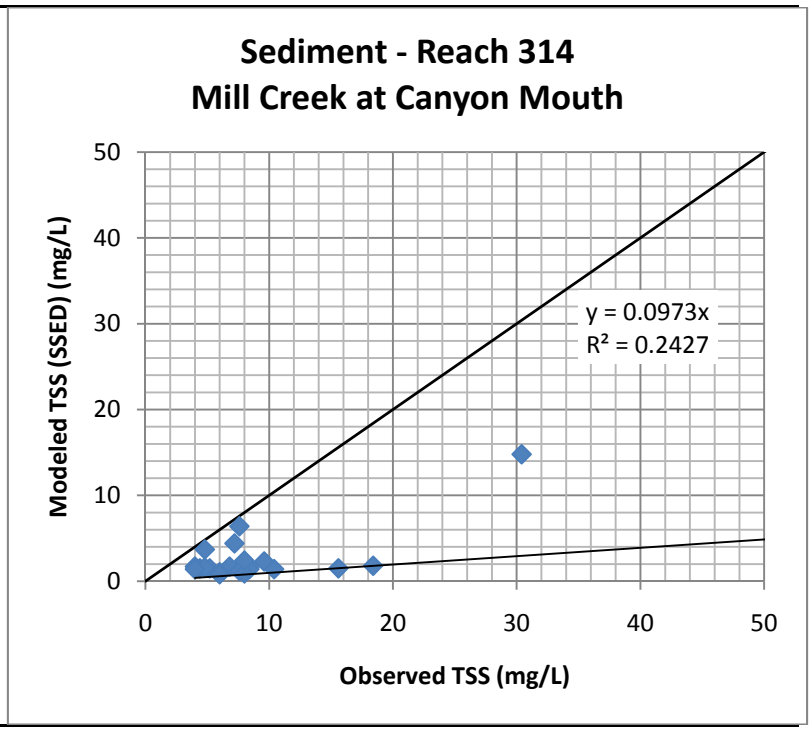


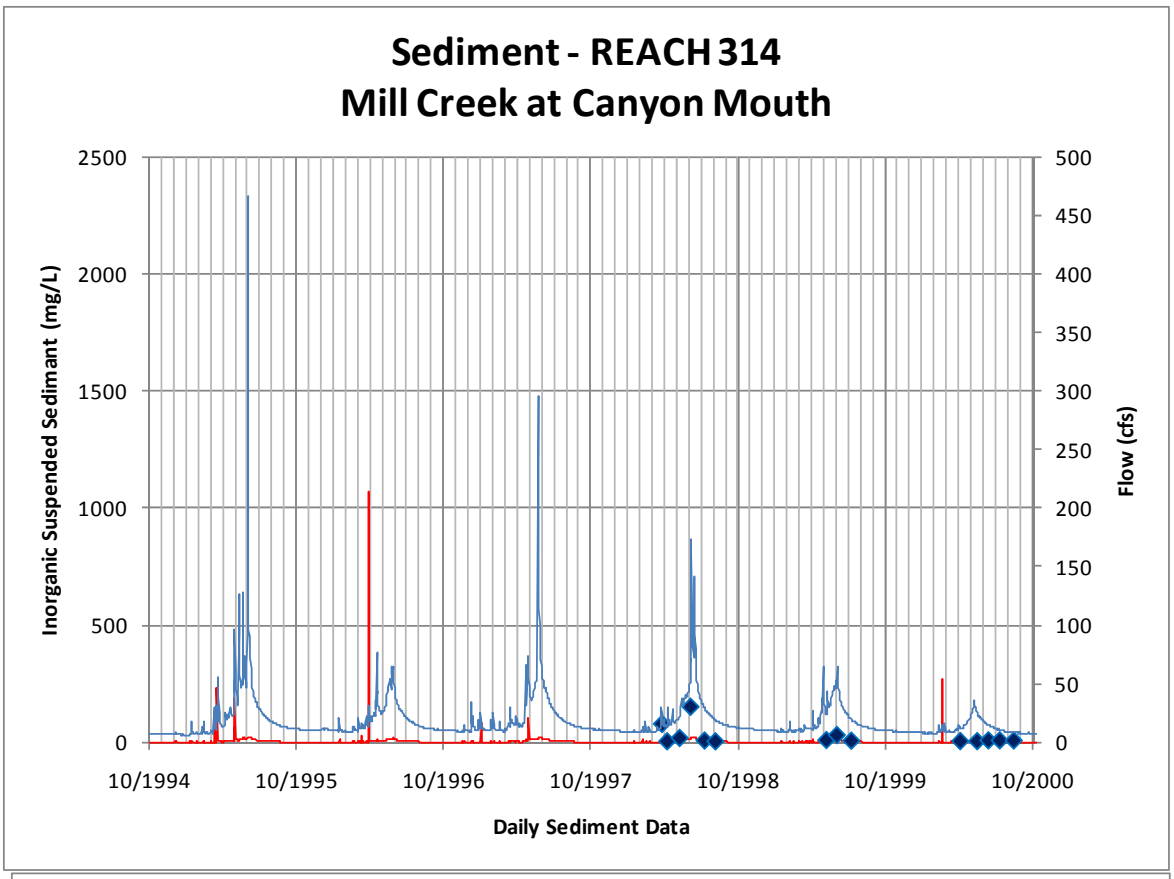

Sediment - Reach 304
Mill Creek above CVWRF
Inorganic Suspended Sedimant (mg/L)
Flow (cfs)
2000
1800
1600
1400
1200
1000
800
600
400
200
0
500
450
400
350
300
250
200
150
100
50
0
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000
Daily Sediment Data

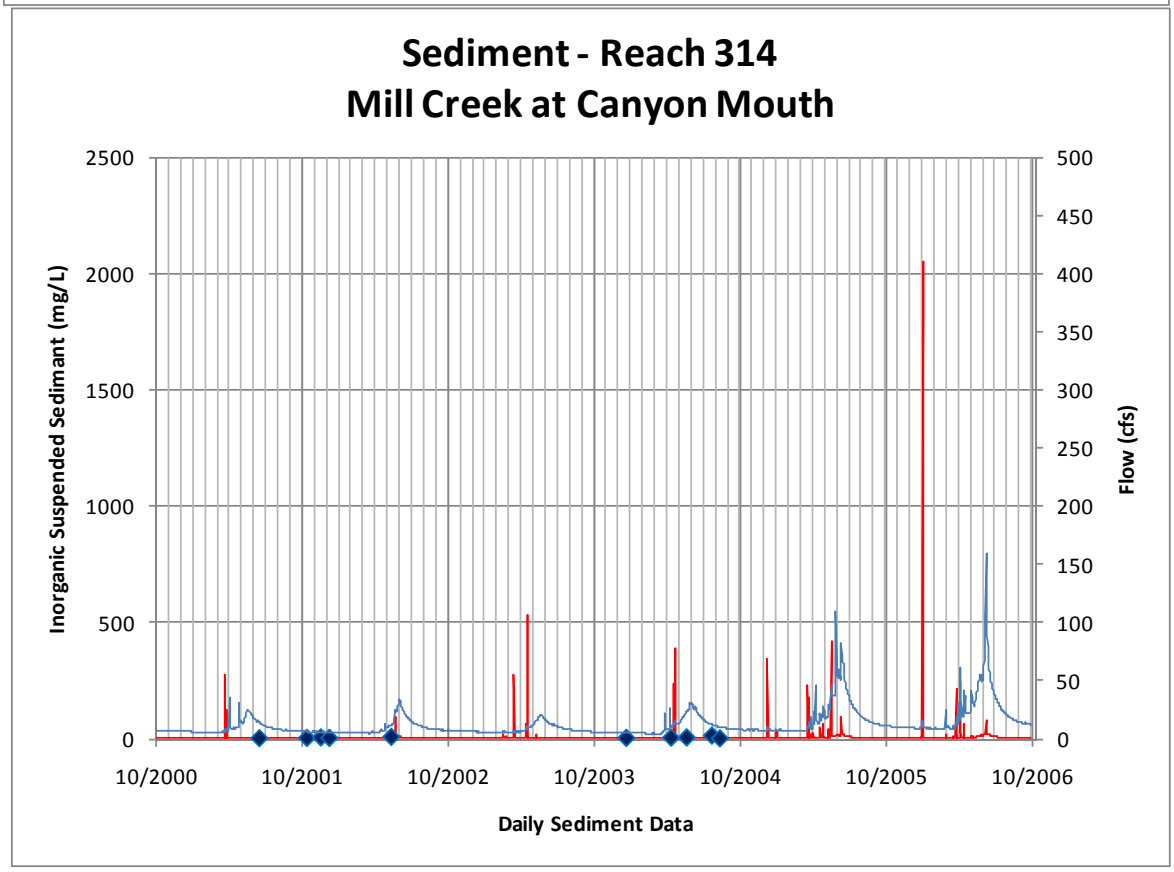

Sediment - Reach 304
Mill Creek above CVWRF
Inorganic Suspended Sedimant (mg/L)
Flow (cfs)
2000
1800
1600
1400
1200
1000
800
600
400
200
0
500
450
400
350
300
250
200
150
100
50
0
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006
Daily Sediment Data

4.1.3.2 Mill Creek at Canyon Mouth

Sediment - Reach 314 Mill Creek at Canyon Mouth		
MFE (N-S):	-0.08	
Correlation Coeff.:	0.64	
	Observed	Modeled
DATE	TSS	SSED-TOT
3/27/1998	78	2
4/9/1998	4	2
5/10/1998	18	2
6/6/1998	150	14
7/11/1998	8	6
8/7/1998	4	2
5/10/1999	10	2
6/5/1999	30	15
7/11/1999	7	2
4/7/2000	5	2
5/19/2000	5	4
6/16/2000	8	2
7/14/2000	8	1
8/18/2000	8	1
6/15/2001	5	2
10/12/2001	6	1
11/16/2001	8	1
12/7/2001	6	1
5/11/2002	10	1
12/20/2003	6	1
4/10/2004	7	4
5/19/2004	8	2
7/21/2004	16	2
8/10/2004	4	1

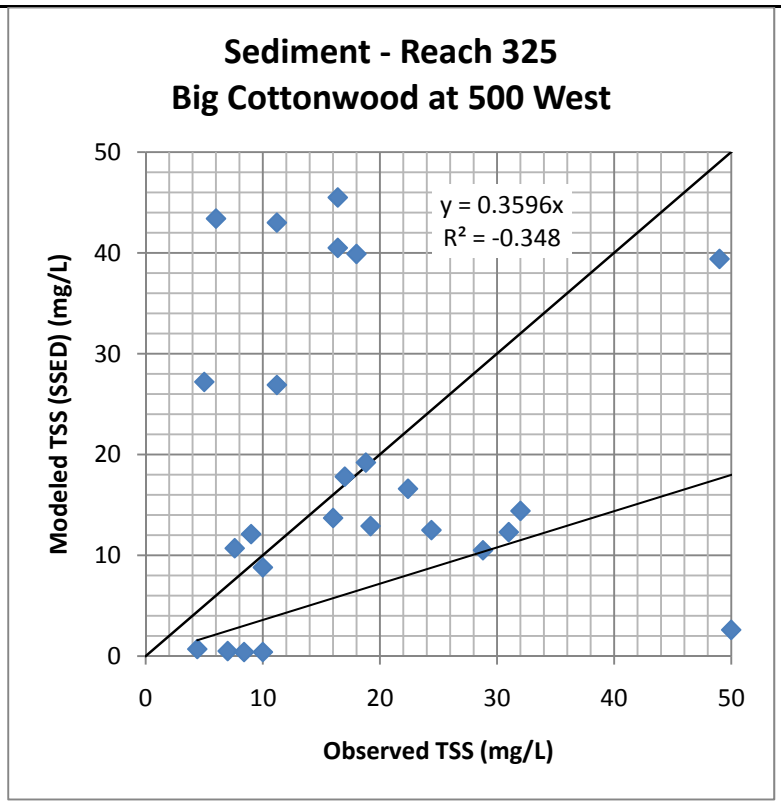


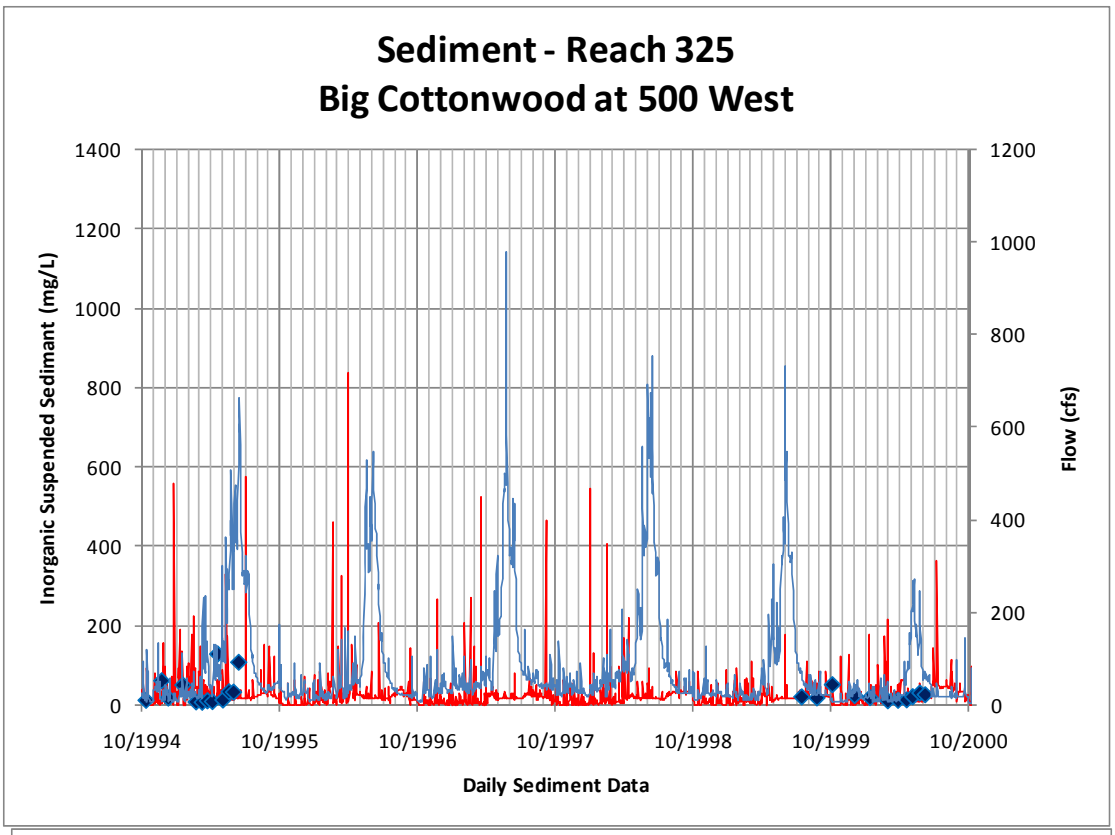

Sediment - REACH 314
Mill Creek at Canyon Mouth
Inorganic Suspended Sedimant (mg/L)
Flow (cfs)
2500
2000
1500
1000
500
0
500
450
400
350
300
250
200
150
100
50
0
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000
Daily Sediment Data

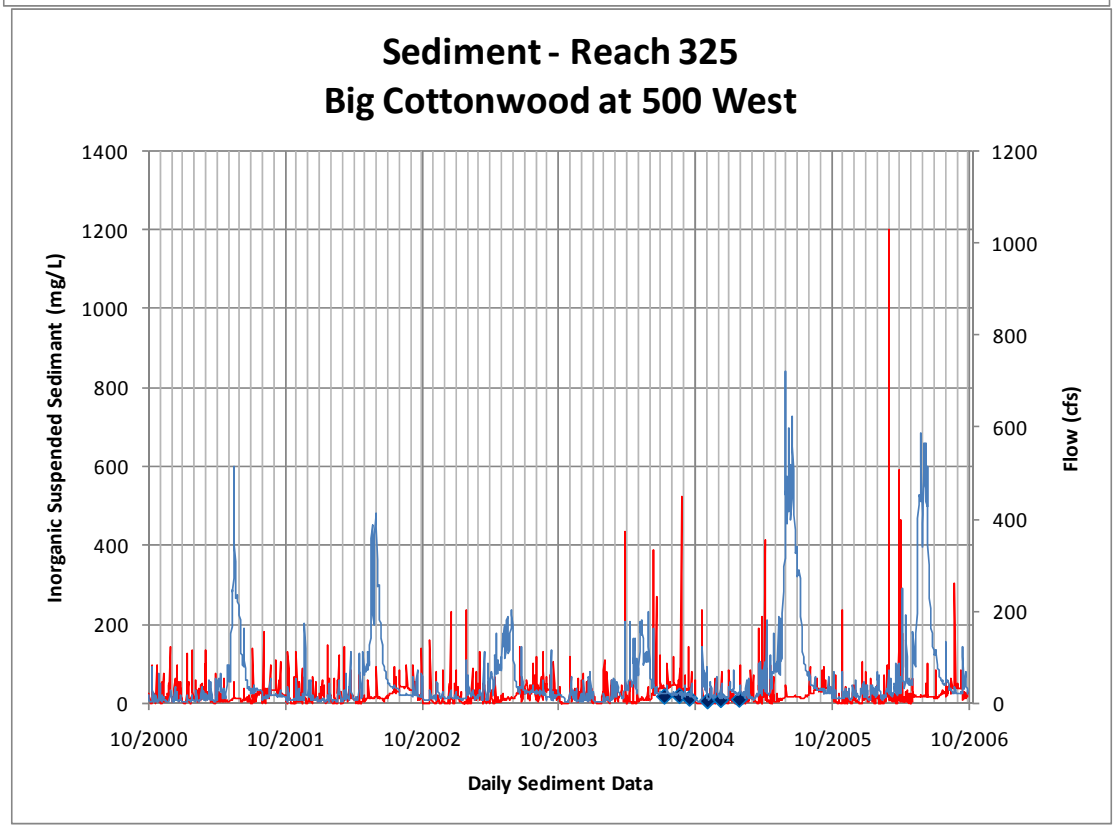

Sediment - Reach 314
Mill Creek at Canyon Mouth
Inorganic Suspended Sedimant (mg/L)
Flow (cfs)
2500
2000
1500
1000
500
0
500
450
400
350
300
250
200
150
100
50
0
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006
Daily Sediment Data

4.1.3.3 Big Cottonwood at 500 West

SEDIMENT - REACH 325 BIG COTTONWOOD AT 500 WEST		
MFE (N-S):	-2.38	
Correlation Coeff.:	-0.15	
	Observed	Modeled
DATE	TSS	SSED-TOT
10/11/1994	10	0
11/22/1994	60	3
12/9/1994	16	14
1/17/1995	49	39
2/21/1995	6	43
3/9/1995	5	27
3/23/1995	9	12
4/5/1995	7	1
4/19/1995	128	17
5/3/1995	11	87
5/19/1995	32	14
5/31/1995	31	12
6/14/1995	107	17
7/16/1999	19	19
8/25/1999	16	41
10/5/1999	50	3
12/3/1999	22	17
1/13/2000	17	18
2/29/2000	9	215
3/27/2000	10	9
4/19/2000	11	27
5/5/2000	19	13
5/24/2000	29	11
6/7/2000	24	13
7/8/2004	16	46
8/18/2004	18	40
9/14/2004	11	43
11/2/2004	4	1
12/8/2004	8	11
1/27/2005	8	0

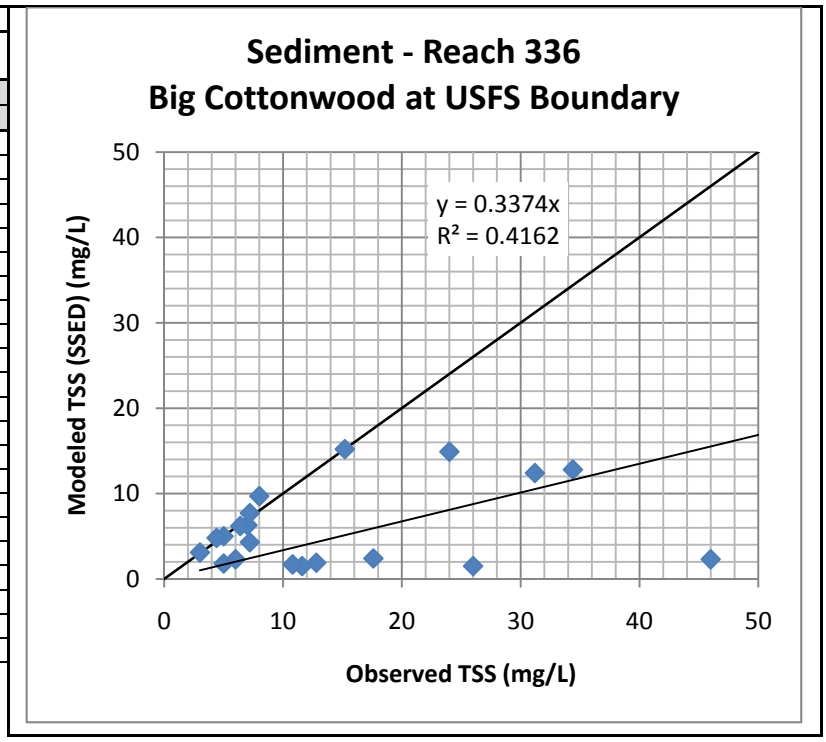


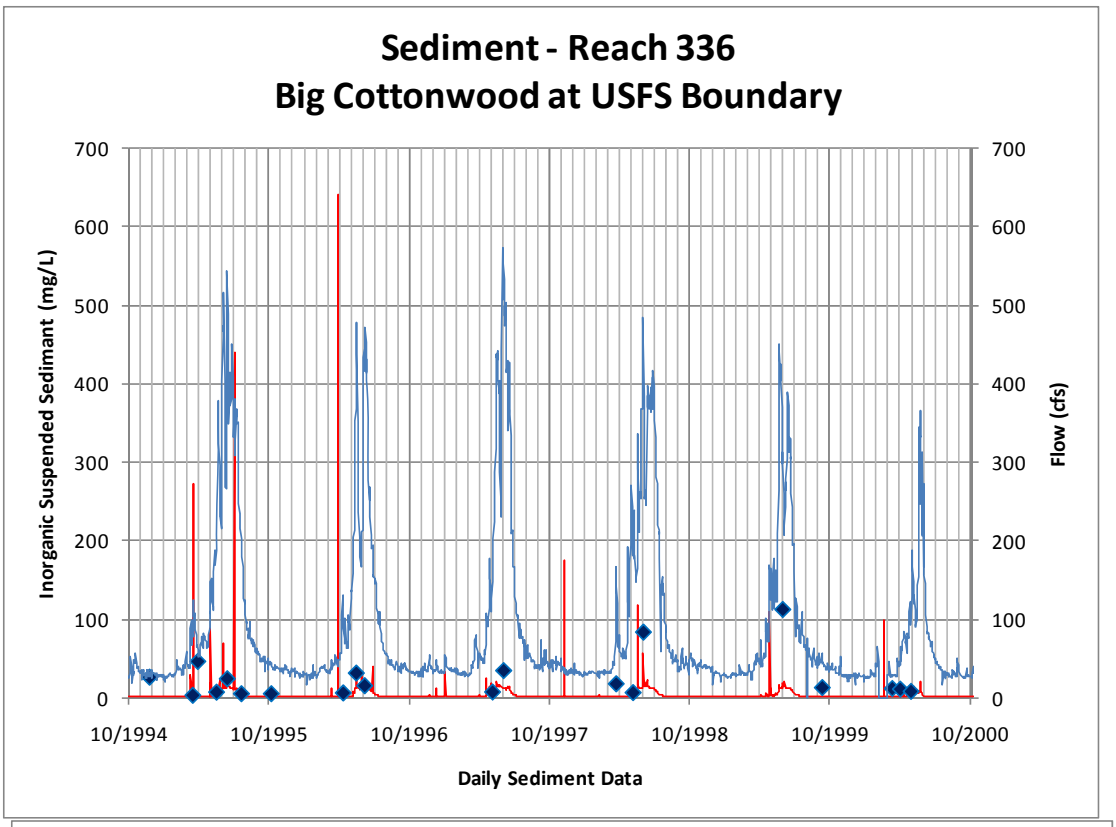

Sediment - Reach 325
Big Cottonwood at 500 West
Inorganic Suspended Sedimant (mg/L)
Flow (cfs)
1400
1200
1000
800
600
400
200
0
1200
1000
800
600
400
200
0
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000
Daily Sediment Data

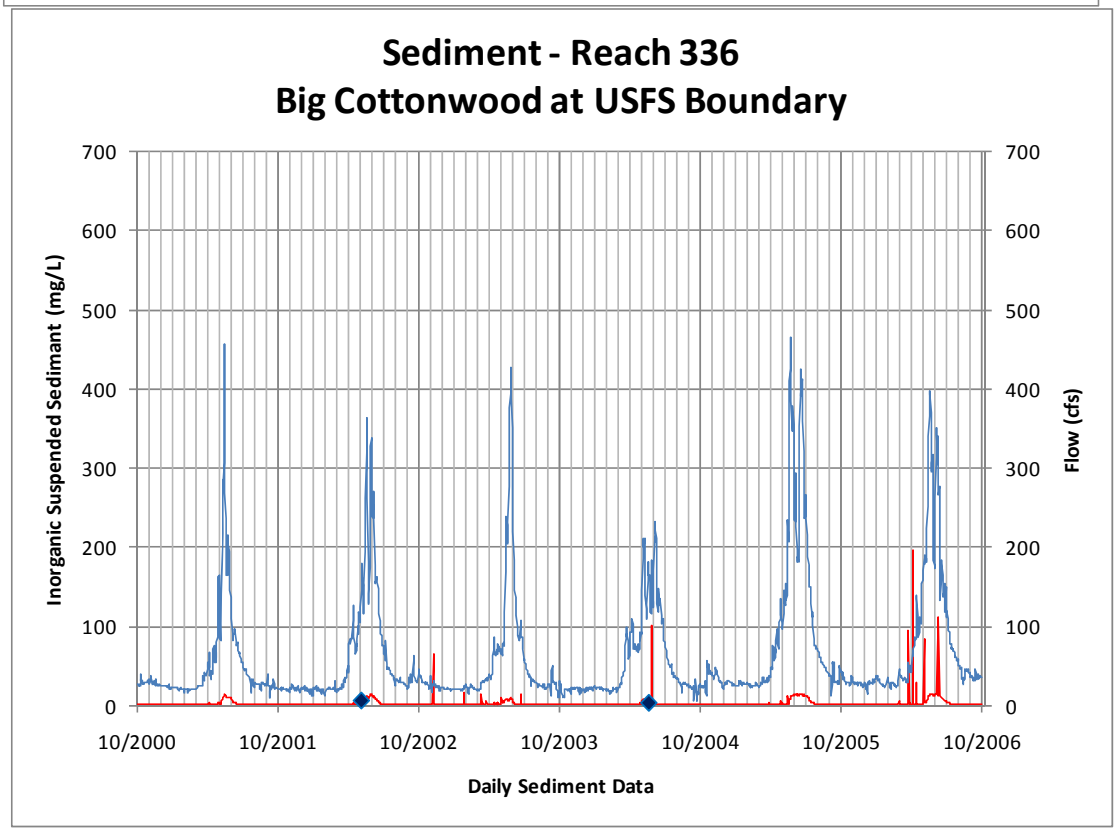

Sediment - Reach 325
Big Cottonwood at 500 West
Inorganic Suspended Sedimant (mg/L)
Flow (cfs)
1400
1200
1000
800
600
400
200
0
1200
1000
800
600
400
200
0
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006
Daily Sediment Data

4.1.3.4 Big Cottonwood at USFS Boundary

SEDIMENT - REACH 336 BIG COTTONWOOD AT USFS BOUNDARY		
MFE (N-S):	0.15	
Correlation Coeff.:	0.66	
	Observed	Modeled
DATE	TSS	SSED-TOT
11/22/1994	26	2
3/15/1995	3	3
3/28/1995	46	2
5/16/1995	7	6
6/13/1995	24	15
7/20/1995	5	5
10/6/1995	5	2
4/11/1996	6	2
5/15/1996	31	12
6/6/1996	15	15
5/6/1997	7	8
6/4/1997	34	13
3/25/1998	18	2
5/8/1998	6	6
6/4/1998	83	58
6/3/1999	112	19
9/14/1999	13	2
3/15/2000	12	2
4/5/2000	11	2
5/3/2000	8	10
5/8/2002	7	4
5/19/2004	4	5

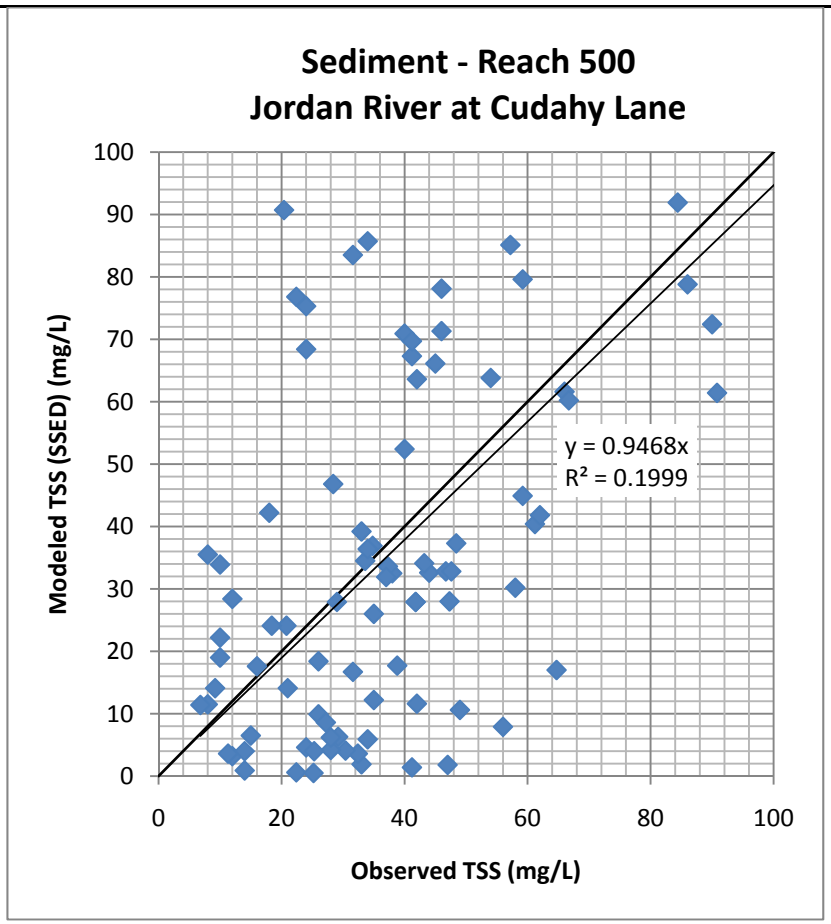


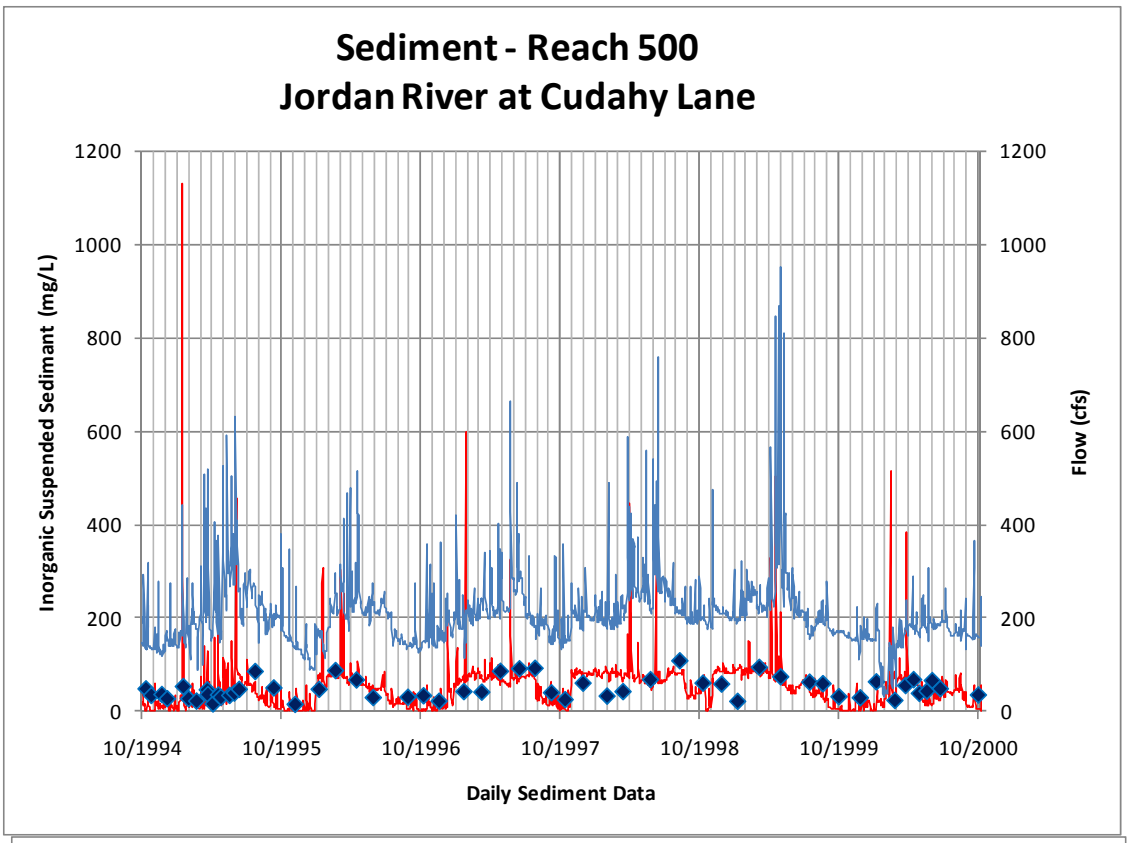

Sediment - Reach 336
Big Cottonwood at USFS Boundary
Inorganic Suspended Sedimant (mg/L)
Flow (cfs)
0
100
200
300
400
500
600
700
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000
Daily Sediment Data

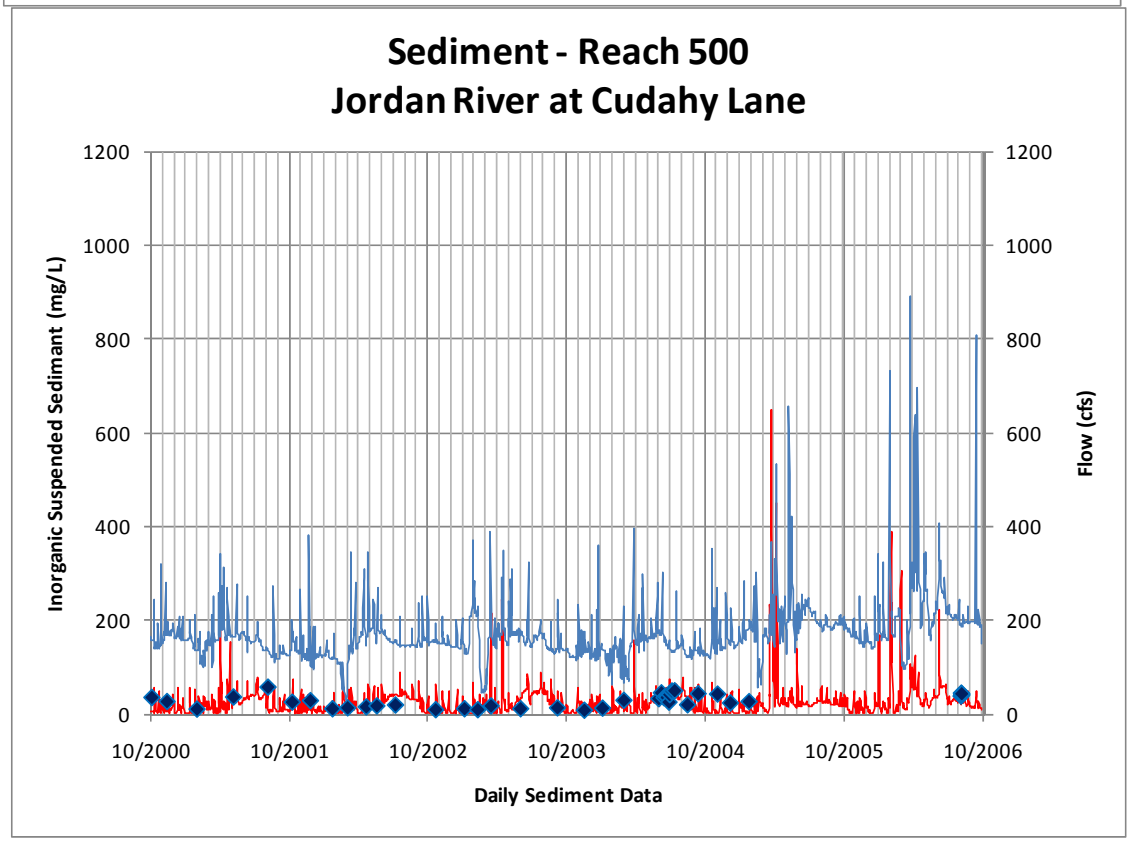

Sediment - Reach 336
Big Cottonwood at USFS Boundary
Inorganic Suspended Sedimant (mg/L)
Flow (cfs)
0
100
200
300
400
500
600
700
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006
Daily Sediment Data

4.1.3.5 Jordan River at Cudahy Lane

Sediment - Reach 500 Jordan River at Cudahy Lane		
MFE (N-S):	-0.85	
Correlation Coeff.:	0.48	
	Observed	Modeled
DATE	TSS	SSED-TOT
10/11/1994	47	2
10/25/1994	33	2
11/22/1994	35	12
12/6/1994	26	18
1/17/1995	52	131
1/31/1995	26	10
2/21/1995	21	14
3/21/1995	45	66
3/23/1995	35	130
4/5/1995	15	7
4/19/1995	34	86
4/26/1995	29	28
5/19/1995	33	39
5/31/1995	38	33
6/13/1995	46	78
7/25/1995	84	48
9/12/1995	49	11
11/7/1995	14	1
1/9/1996	46	71
2/21/1996	86	79
4/16/1996	66	62
5/30/1996	28	47
8/29/1996	29	6
10/9/1996	32	4
11/19/1996	21	24
1/23/1997	41	67
3/11/1997	40	71
4/29/1997	84	92
6/18/1997	90	72
7/29/1997	91	61
9/10/1997	39	18
10/16/1997	24	5
12/2/1997	59	80
2/3/1998	32	84
3/17/1998	41	70
5/28/1998	67	52
8/13/1998	107	82
10/13/1998	59	45
12/1/1998	57	85
1/12/1999	20	91
3/10/1999	93	109
5/5/1999	73	128
7/20/1999	61	40
8/24/1999	58	30
10/5/1999	30	4
11/30/1999	28	4
1/11/2000	62	42
2/29/2000	22	77
3/28/2000	54	64
4/18/2000	67	60
5/3/2000	37	34
5/23/2000	42	12
6/6/2000	65	17
6/27/2000	47	28
10/5/2000	34	6
11/14/2000	25	4
2/1/2001	9	14
5/8/2001	35	26
8/7/2001	56	8
10/10/2001	24	75
11/27/2001	27	9
1/24/2002	10	22
3/5/2002	12	3

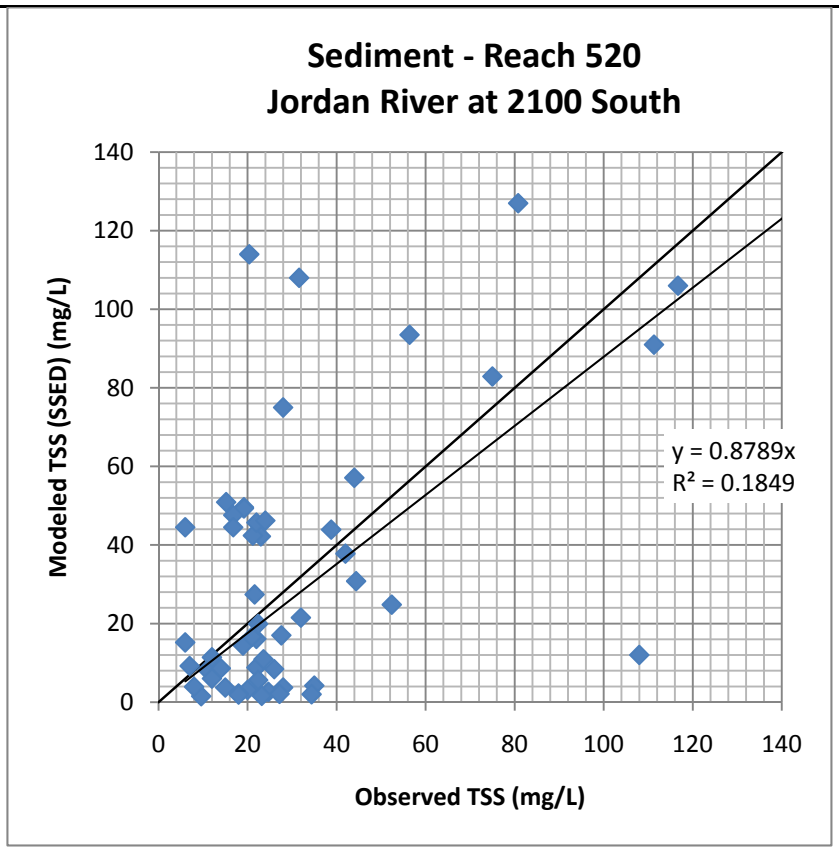


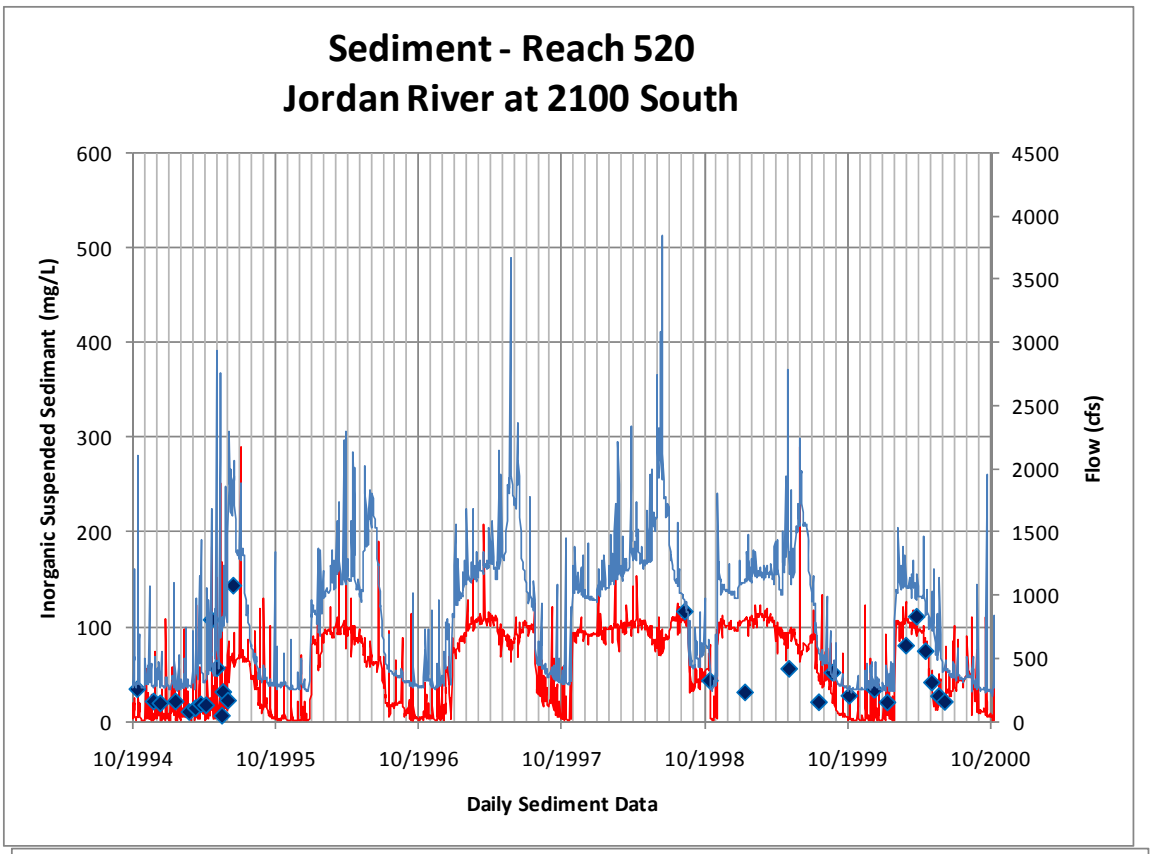

Sediment - Reach 500
Jordan River at Cudahy Lane
Inorganic Suspended Sedimant (mg/L)
Flow (cfs)
1200
1000
800
600
400
200
0
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000
Daily Sediment Data

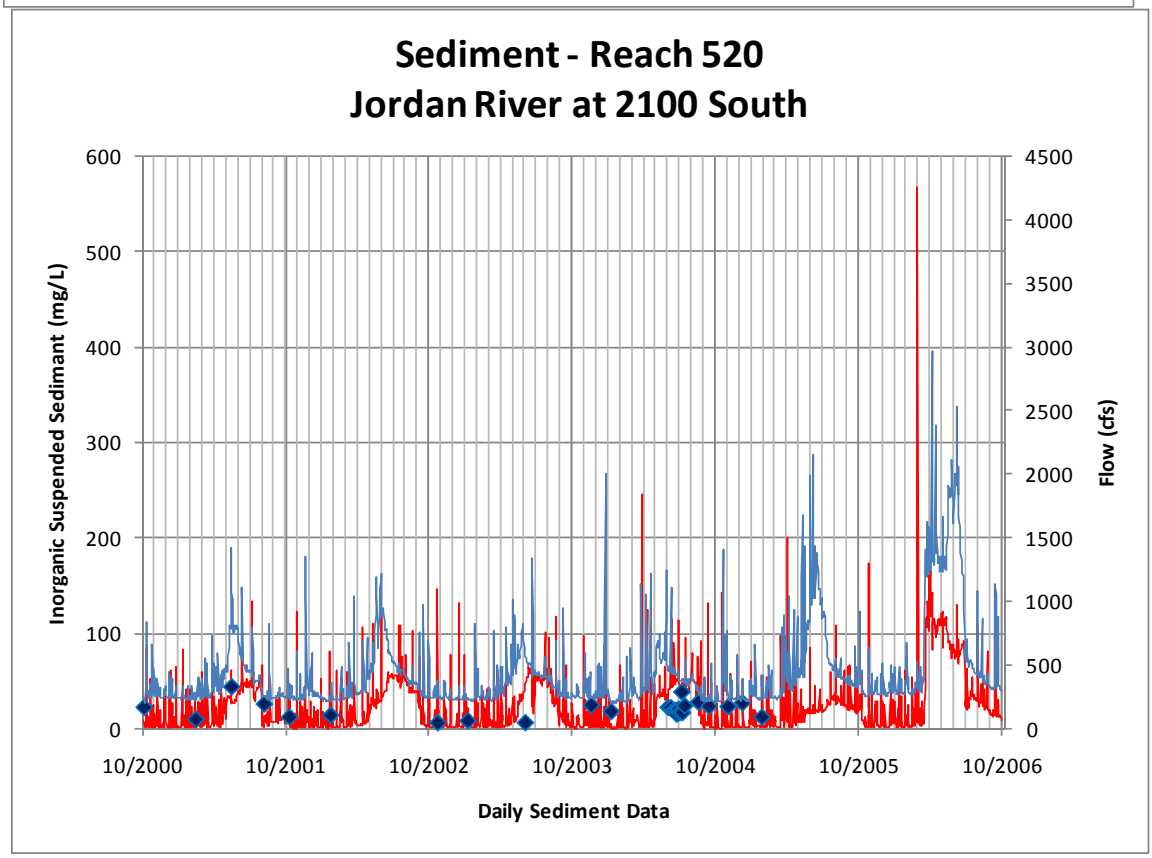

Sediment - Reach 500
Jordan River at Cudahy Lane
Inorganic Suspended Sedimant (mg/L)
Flow (cfs)
1200
1000
800
600
400
200
0
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006
Daily Sediment Data

4.1.3.6 Jordan River at 2100 South

Sediment - Reach 520 Jordan River at 2100 South		
MFE (N-S):	-0.34	
Correlation Coeff.:	0.50	
	Observed	Modeled
DATE	TSS	SSED-TOT
10/11/1994	35	4
11/22/1994	22	9
12/9/1994	20	3
1/17/1995	22	16
2/21/1995	11	8
3/9/1995	15	4
3/23/1995	19	14
4/5/1995	18	2
4/19/1995	108	12
5/3/1995	57	152
5/16/1995	7	9
5/19/1995	32	22
5/31/1995	23	42
6/14/1995	144	63
8/12/1998	117	106
10/15/1998	44	57
1/13/1999	32	108
5/6/1999	56	94
7/21/1999	21	42
8/25/1999	52	25
10/7/1999	28	4
12/10/1999	34	2
1/12/2000	21	17
2/29/2000	81	127
3/27/2000	111	91
4/19/2000	75	83
5/5/2000	42	38
5/23/2000	28	17
6/7/2000	22	27
10/6/2000	22	6
2/15/2001	10	2
5/17/2001	44	31
8/8/2001	26	8
10/11/2001	12	11
1/24/2002	14	9
10/24/2002	6	15
1/9/2003	8	4
6/4/2003	6	45
11/19/2003	25	3
1/9/2004	18	2
6/2/2004	22	20
6/9/2004	22	46
6/16/2004	19	50
6/22/2004	19	49
6/24/2004	15	51
6/29/2004	20	114
7/1/2004	17	48
7/7/2004	39	44
7/8/2004	17	45
7/14/2004	24	46
8/18/2004	28	75
9/14/2004	24	11
11/2/2004	23	2
12/8/2004	27	2
1/27/2005	12	6

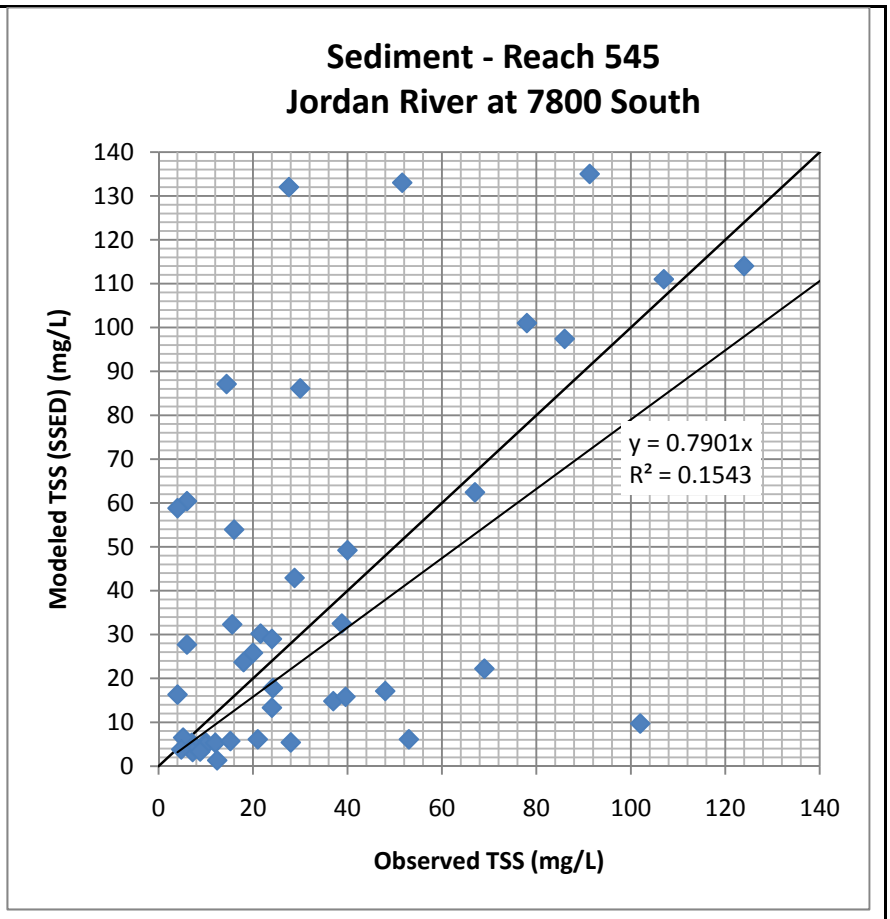


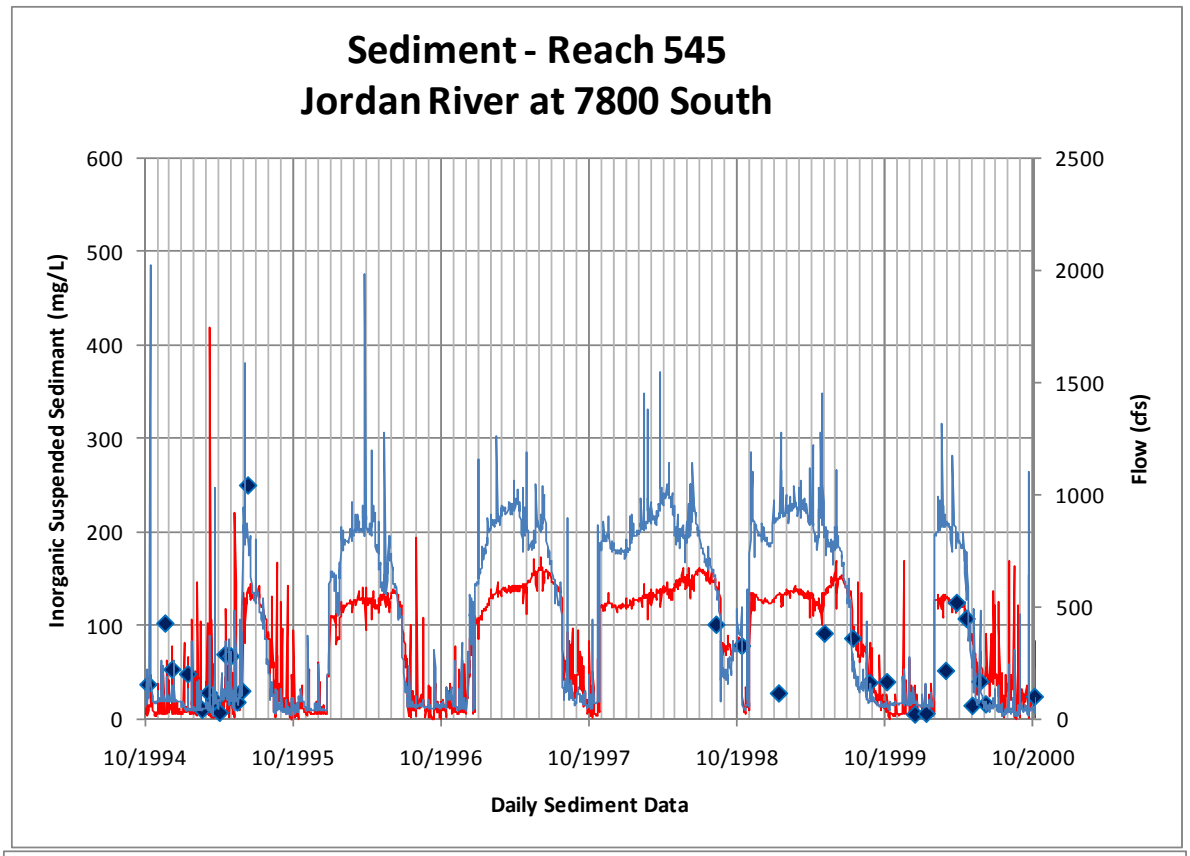

Sediment - Reach 520
Jordan River at 2100 South
Inorganic Suspended Sedimant (mg/L)
Flow (cfs)
Daily Sediment Data
600
500
400
300
200
100
0
4500
4000
3500
3000
2500
2000
1500
1000
500
0
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000

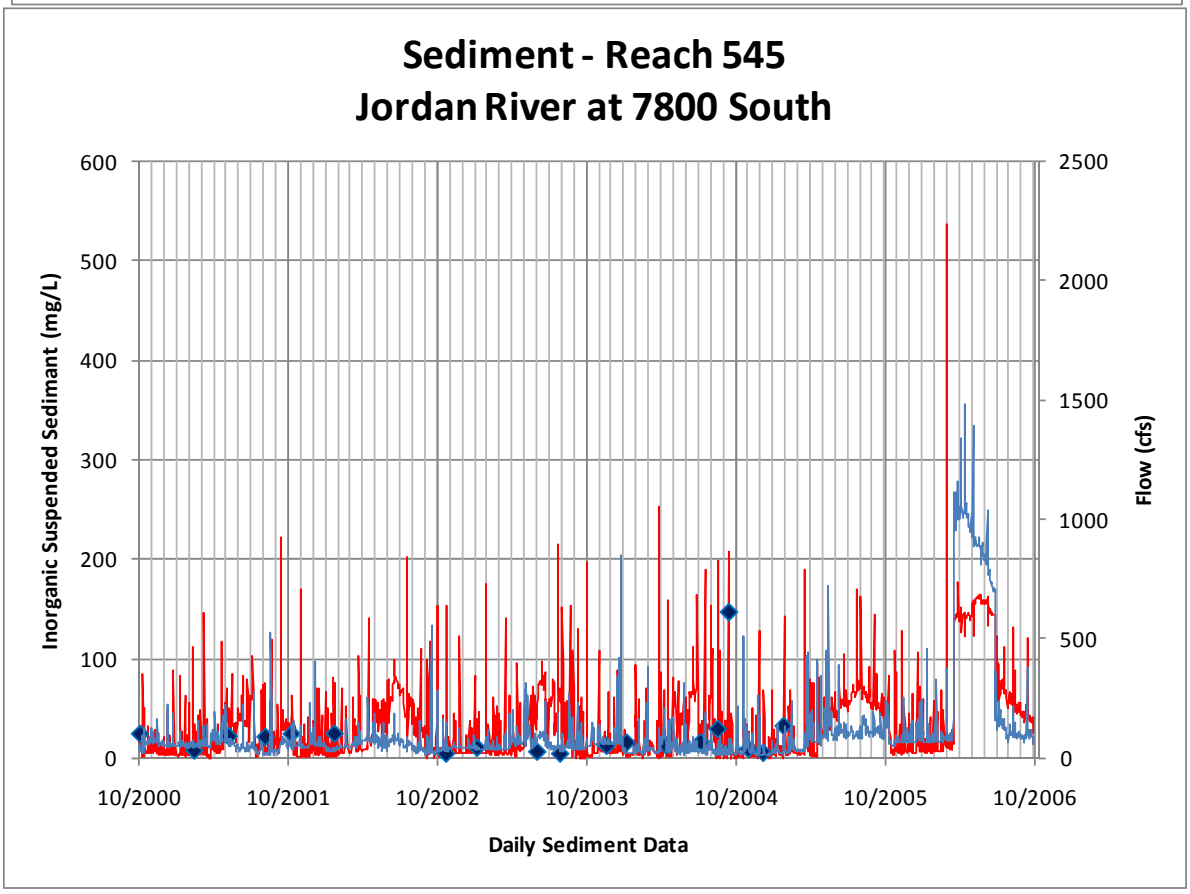

Sediment - Reach 520
Jordan River at 2100 South
Inorganic Suspended Sedimant (mg/L)
Flow (cfs)
Daily Sediment Data
600
500
400
300
200
100
0
4500
4000
3500
3000
2500
2000
1500
1000
500
0
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006

4.1.3.7 Jordan River at 7800 South

Sediment - Reach 545 Jordan River at 7800 South		
MFE (N-S):	0.09	
Correlation Coeff.:	0.31	
	Observed	Modeled
DATE	TSS	SSED-TOT
10/11/1994	37	15
11/22/1994	102	10
12/9/1994	53	6
1/17/1995	48	17
2/21/1995	10	5
3/9/1995	28	5
3/23/1995	20	26
4/5/1995	7	5
4/19/1995	69	22
5/3/1995	67	62
5/19/1995	18	24
5/31/1995	30	86
6/14/1995	249	136
8/12/1998	101	142
10/14/1998	78	101
1/13/1999	28	132
5/6/1999	91	135
7/15/1999	86	97
8/25/1999	39	33
10/7/1999	40	16
12/15/1999	5	7
1/12/2000	6	28
2/29/2000	52	133
3/27/2000	124	114
4/20/2000	107	111
5/5/2000	14	87
5/24/2000	40	49
6/7/2000	16	54
10/5/2000	24	13
2/15/2001	7	3
5/10/2001	22	30
8/8/2001	21	6
10/11/2001	24	29
1/24/2002	24	18
10/24/2002	4	16
1/8/2003	10	5
6/4/2003	6	60
7/30/2003	4	59
11/21/2003	12	5
1/9/2004	15	6
4/15/2004	12	1
7/8/2004	16	32
8/19/2004	29	43
9/15/2004	147	36
11/2/2004	9	3
12/8/2004	5	4
1/27/2005	32	142

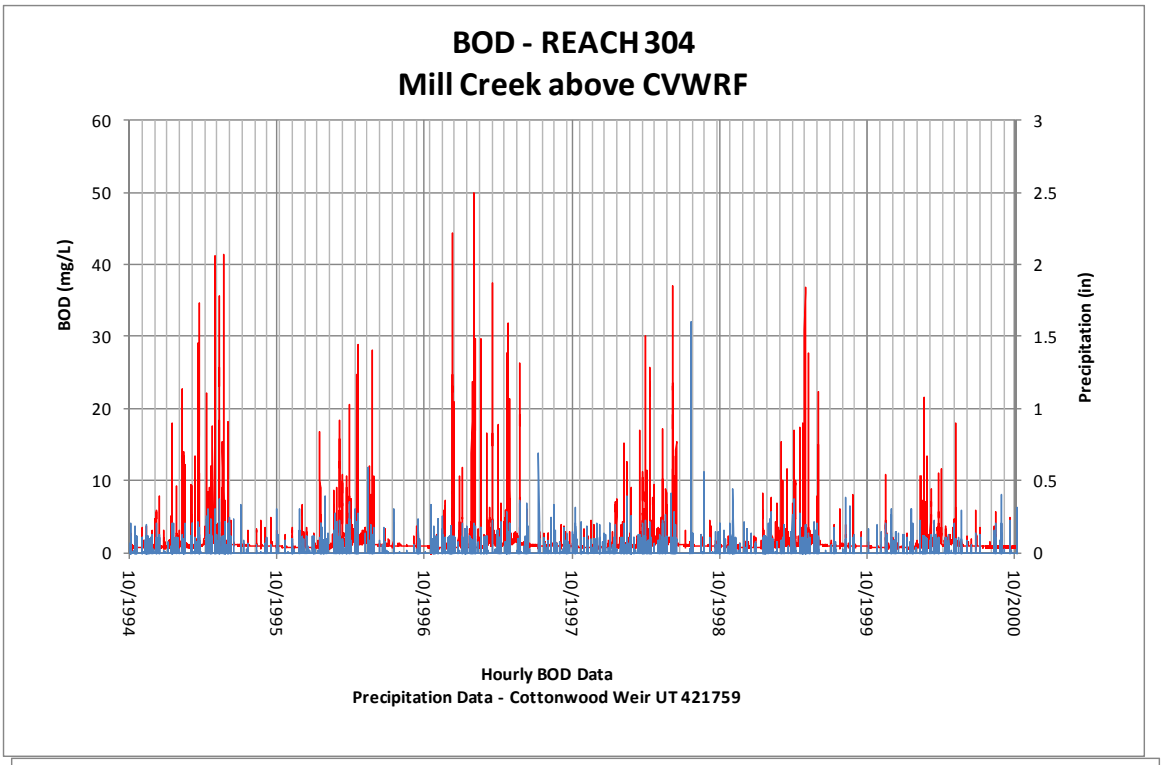


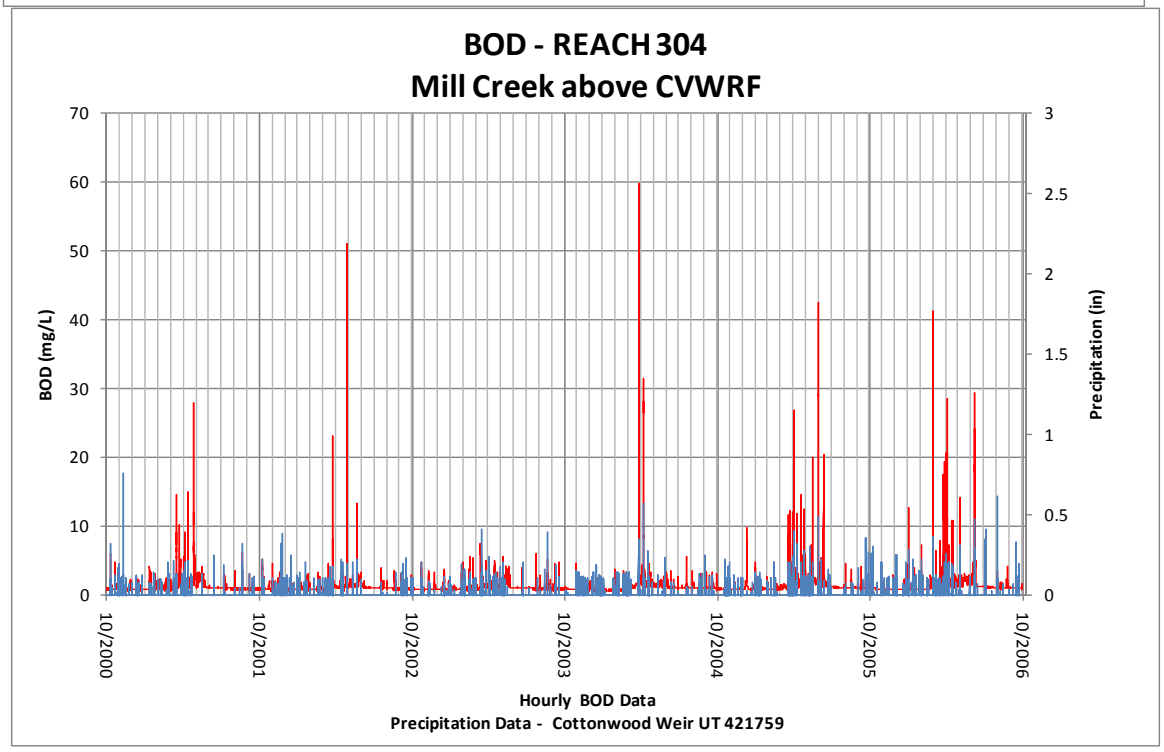

Sediment - Reach 545
Jordan River at 7800 South
Inorganic Suspended Sedimant (mg/L)
Flow (cfs)
600
500
400
300
200
100
0
2500
2000
1500
1000
500
0
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000
Daily Sediment Data


Sediment - Reach 545
Jordan River at 7800 South
Inorganic Suspended Sedimant (mg/L)
Flow (cfs)
600
500
400
300
200
100
0
2500
2000
1500
1000
500
0
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006
Daily Sediment Data

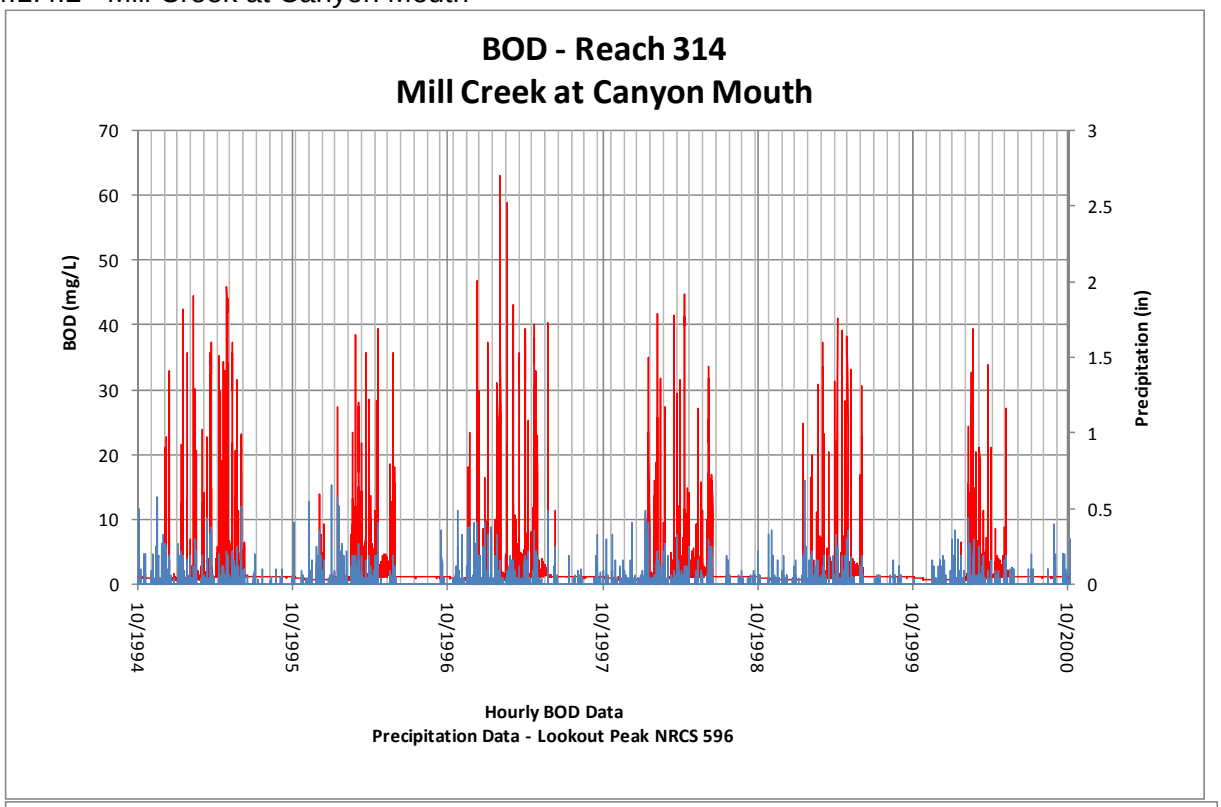
4.1.4 Biological Oxygen Demand

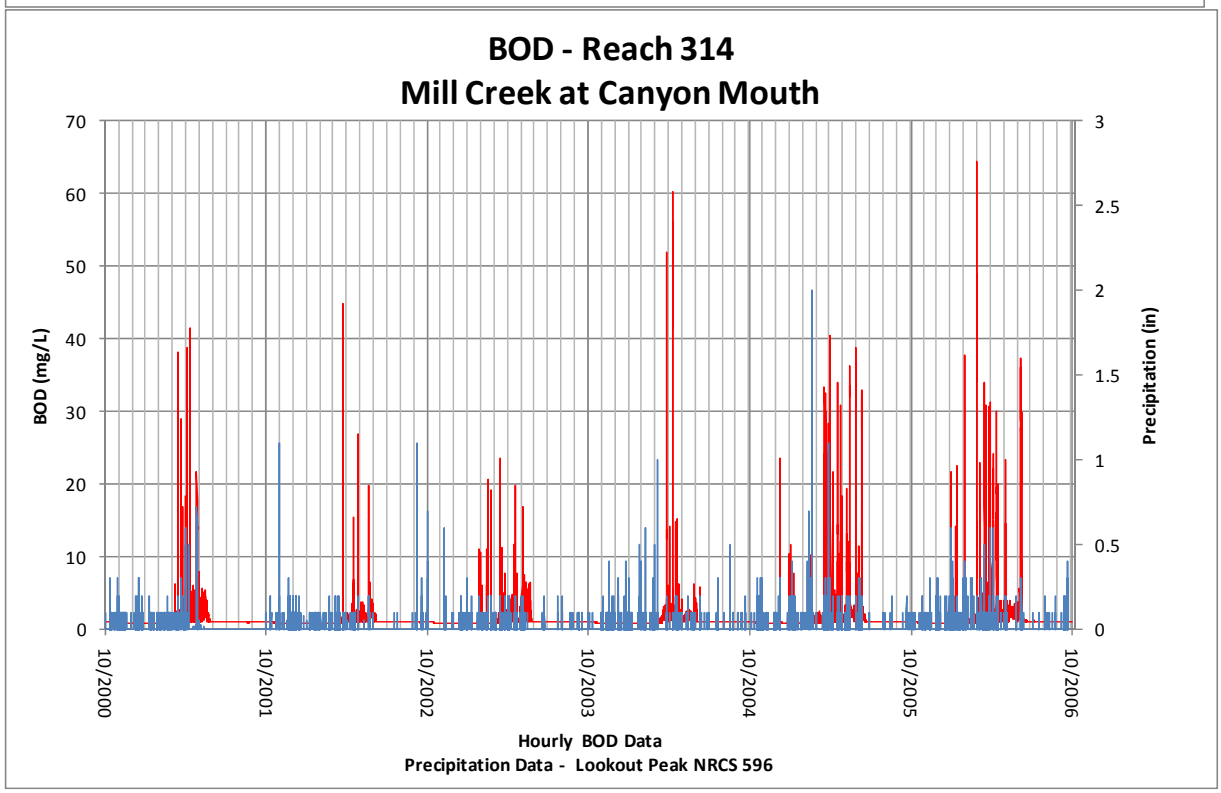
4.1.4.1 Mill Creek above CVWRF



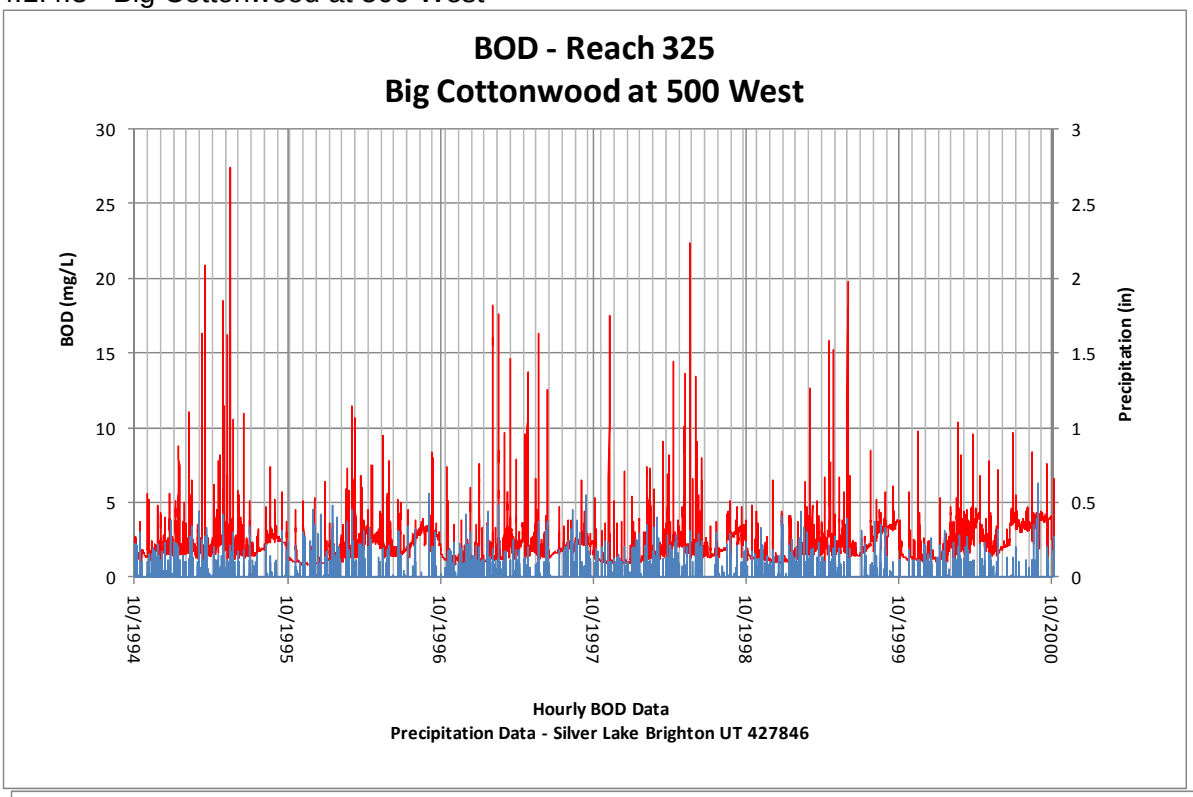


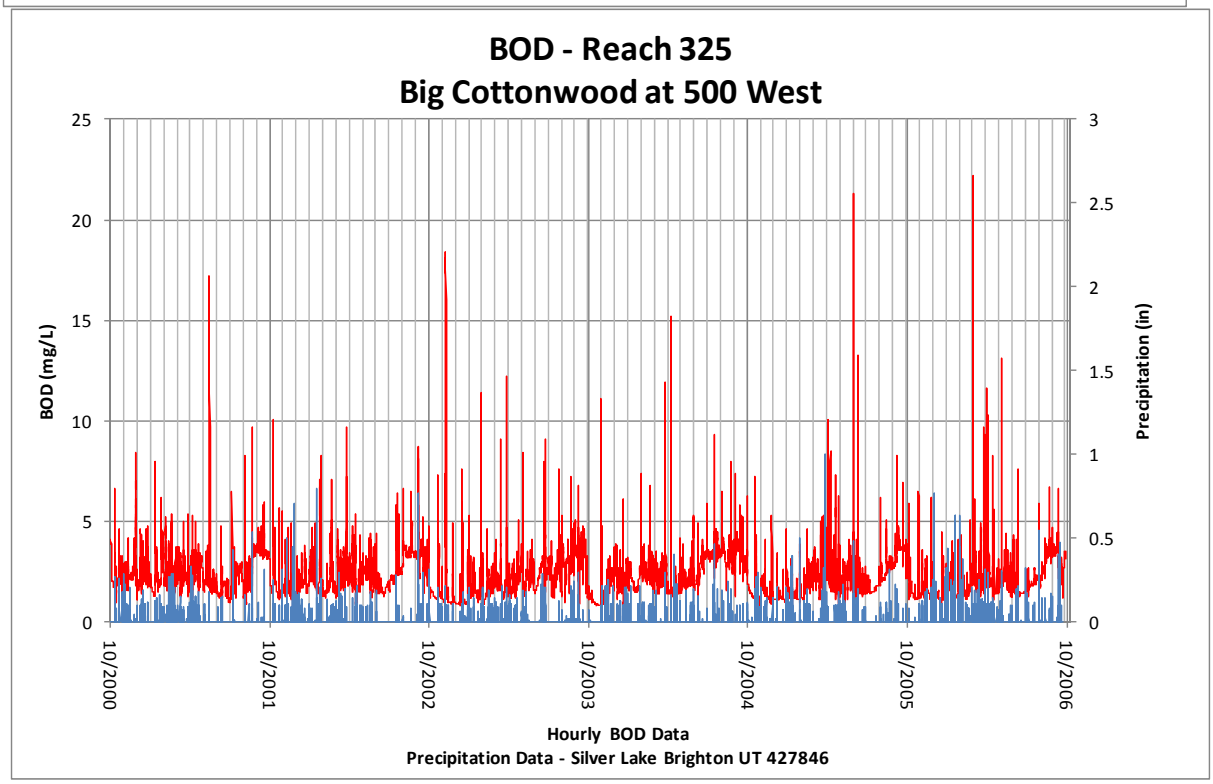
4.1.4.2 Mill Creek at Canyon Mouth



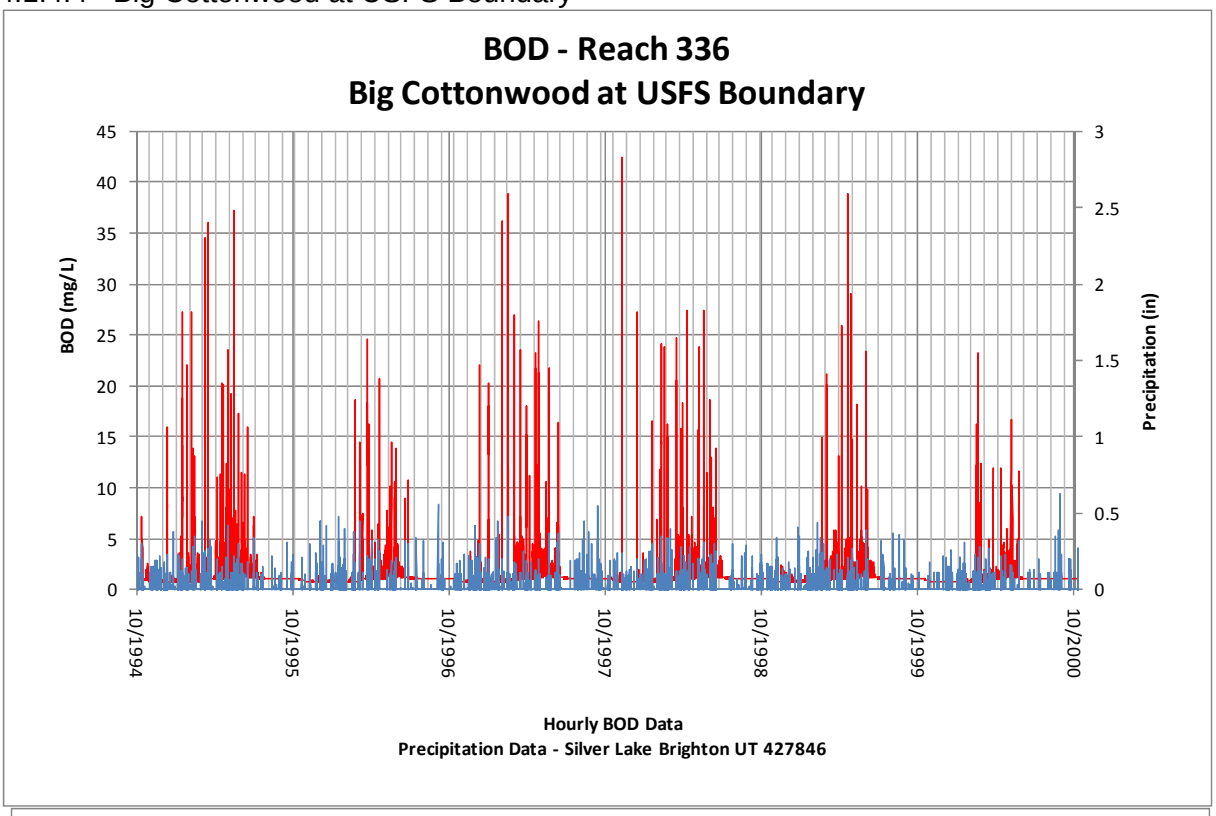


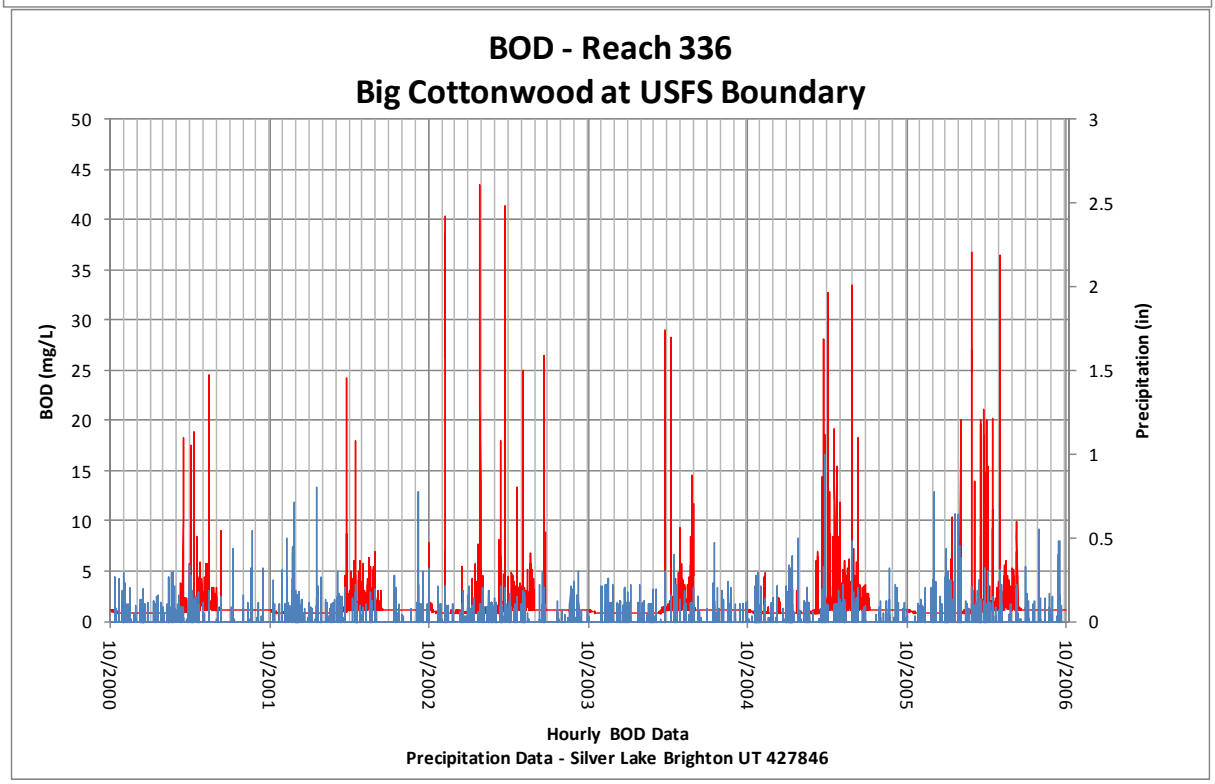
4.1.4.3 Big Cottonwood at 500 West





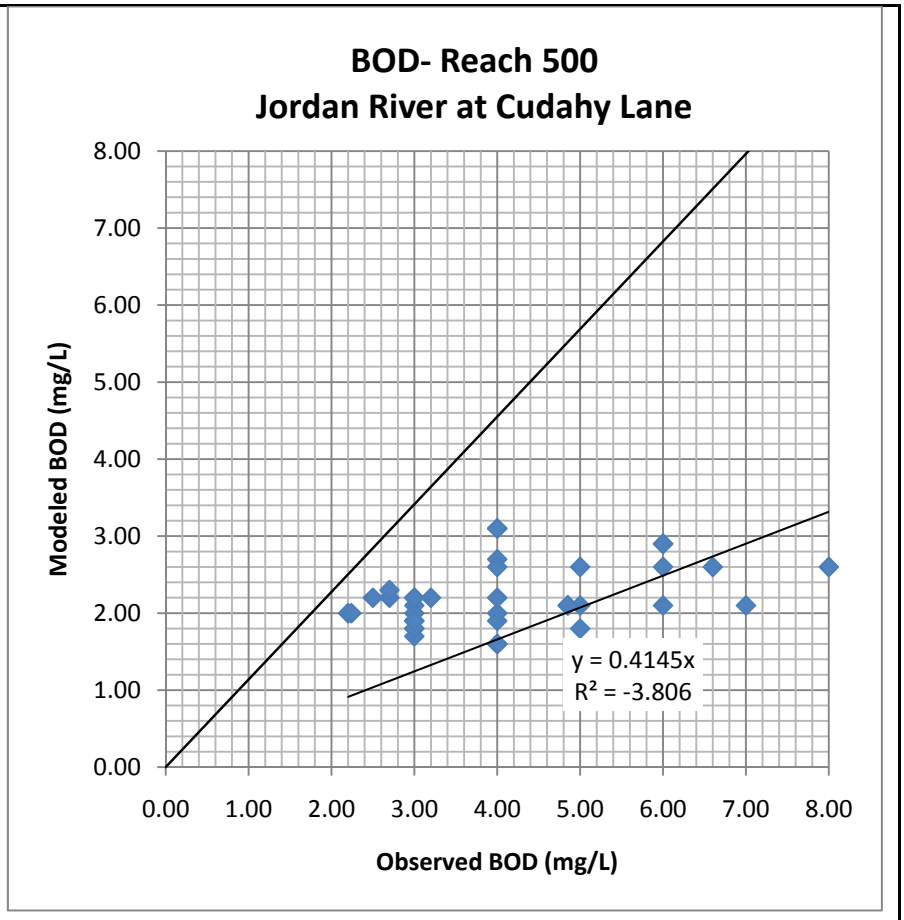
4.1.4.4 Big Cottonwood at USFS Boundary

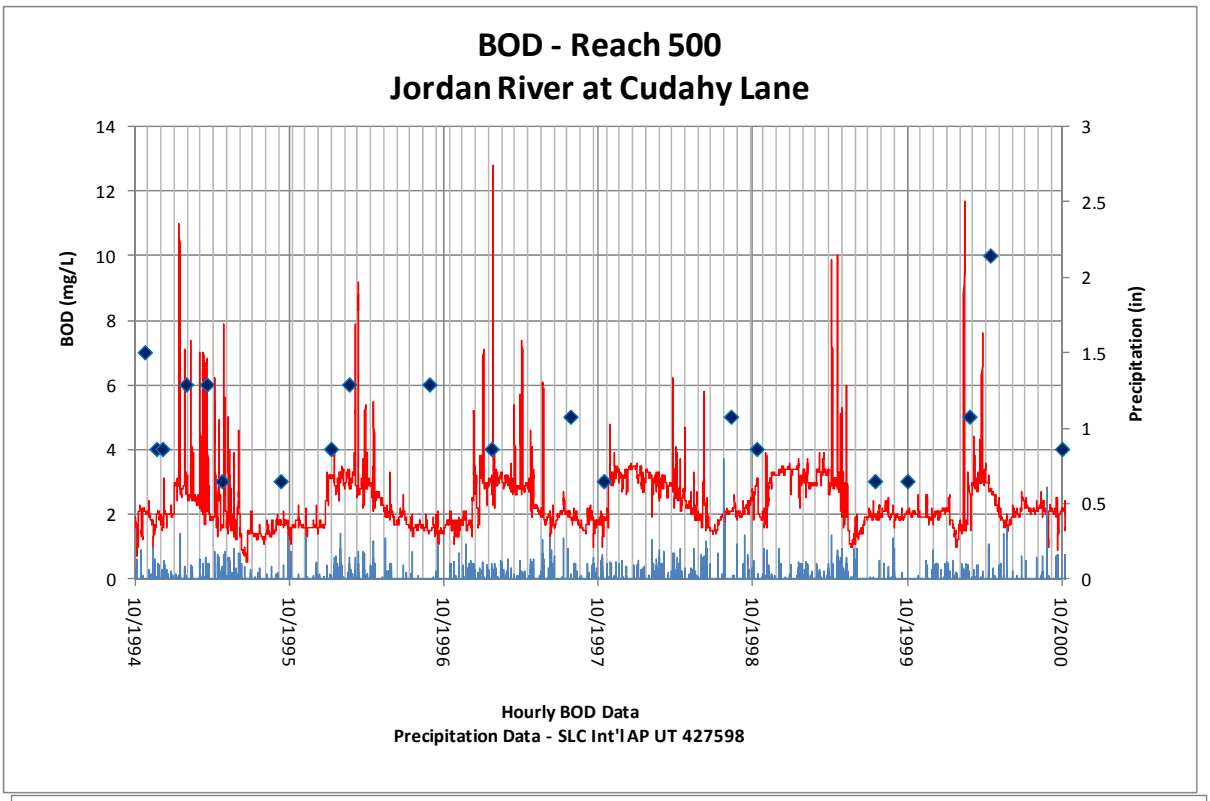


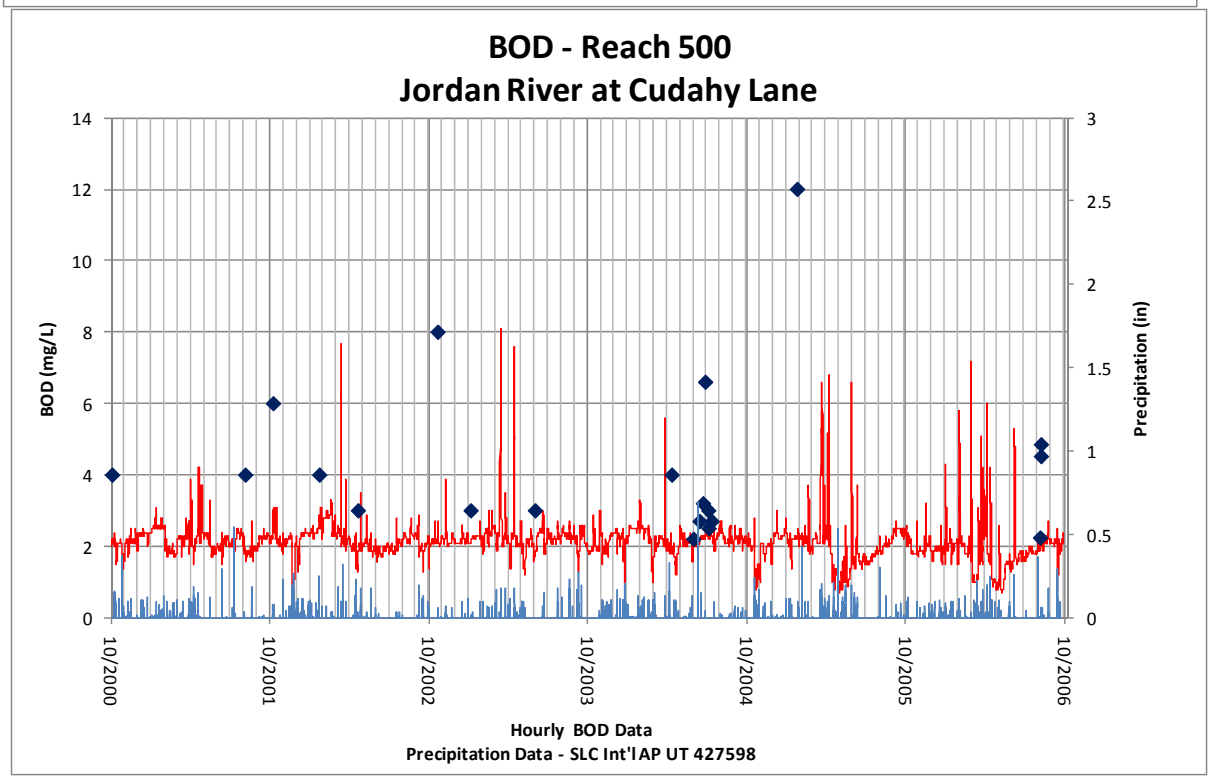


4.1.4.5 Jordan River at Cudahy Lane

BOD - Reach 500 Jordan River at Cudahy Lane		
MFE (N-S):	-1.18	
Correlation Coeff.:	0.31	
	Observed	Modeled
DATE	BOD	BODCONC
10/25/1994 1400	7.00	2.10
11/22/1994 0745	4.00	2.00
12/06/1994 1345	4.00	1.60
01/31/1995 1155	6.00	2.60
03/21/1995 1055	6.00	2.10
04/26/1995 1220	3.00	1.70
09/12/1995 0924	3.00	1.80
01/09/1996 1113	4.00	3.10
02/21/1996 1335	6.00	2.90
08/29/1996 1315	6.00	1.50
01/23/1997 1409	4.00	2.70
07/29/1997 1249	5.00	1.80
10/16/1997 1157	3.00	1.80
08/13/1998 1313	5.00	2.10
10/13/1998 1255	4.00	3.10
07/20/1999 1244	3.00	1.90
10/05/1999 1224	3.00	2.10
02/29/2000 0935	5.00	2.60
04/18/2000 1340	10.00	2.80
10/05/2000 1316	4.00	2.20
08/07/2001 1335	4.00	1.60
10/10/2001 1245	6.00	2.90
01/24/2002 1655	4.00	2.60
04/23/2002 1420	3.00	2.00
10/23/2002 1620	8.00	2.60
01/07/2003 1235	3.00	2.20
06/04/2003 1045	3.00	1.90
04/13/2004 1100	4.00	1.90
06/02/2004 1011	2.20	2.00
06/16/2004 1100	2.70	2.20
06/24/2004 1048	3.20	2.20
06/29/2004 1030	6.60	2.60
07/06/2004 1600	3.00	2.20
07/07/2004 1030	2.50	2.20
07/14/2004 1030	2.70	2.30
01/26/2005 1330	12.00	2.20
08/08/2006 0000	2.24	2.00
08/10/2006 0000	4.85	2.10
08/10/2006 0000	4.85	2.10

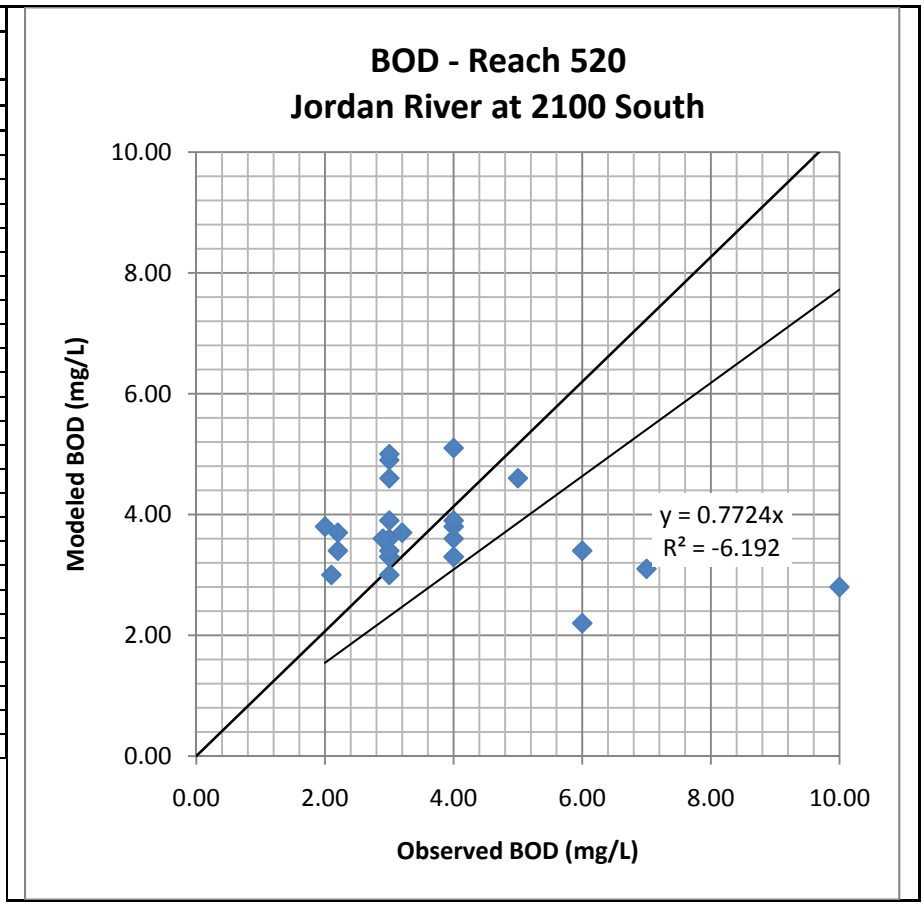


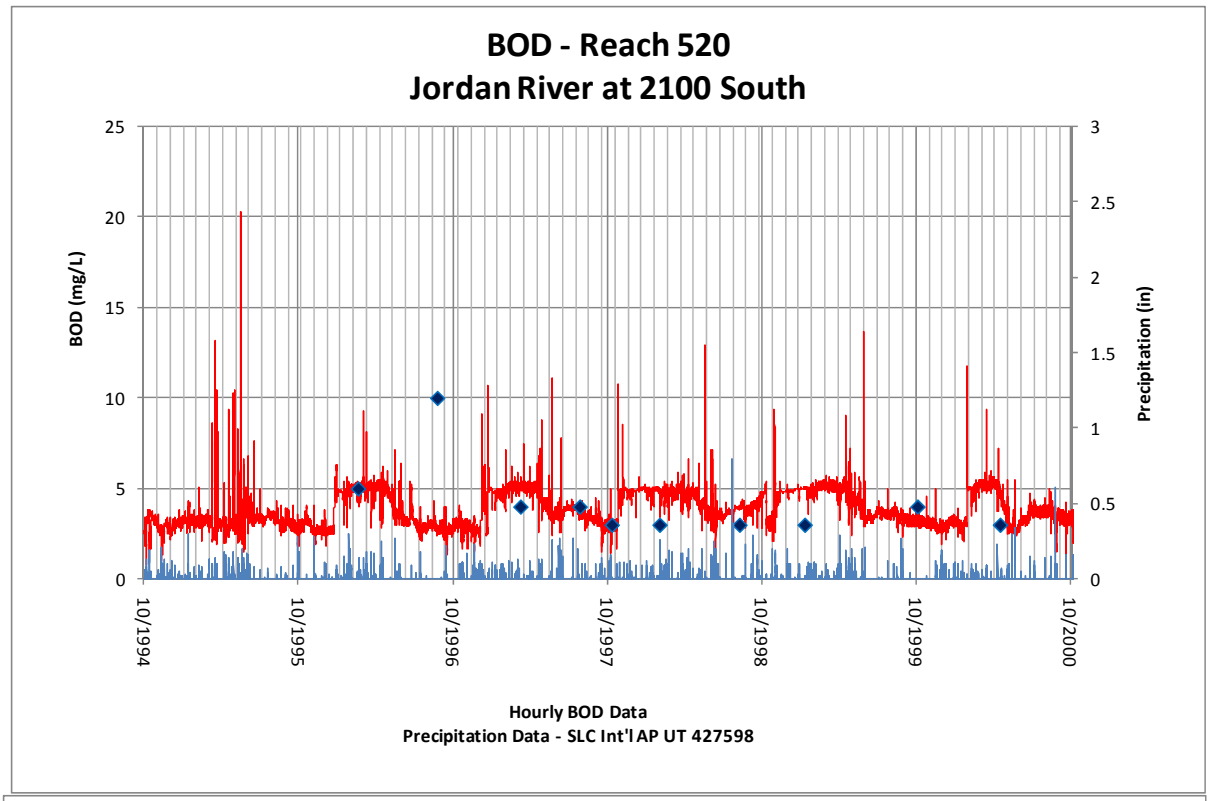

BOD - Reach 500
Jordan River at Cudahy Lane
BOD (mg/L)
Precipitation (in)
14
12
10
8
6
4
2
0
3
2.5
2
1.5
1
0.5
0
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000
Hourly BOD Data
Precipitation Data - SLC Int'l AP UT 427598

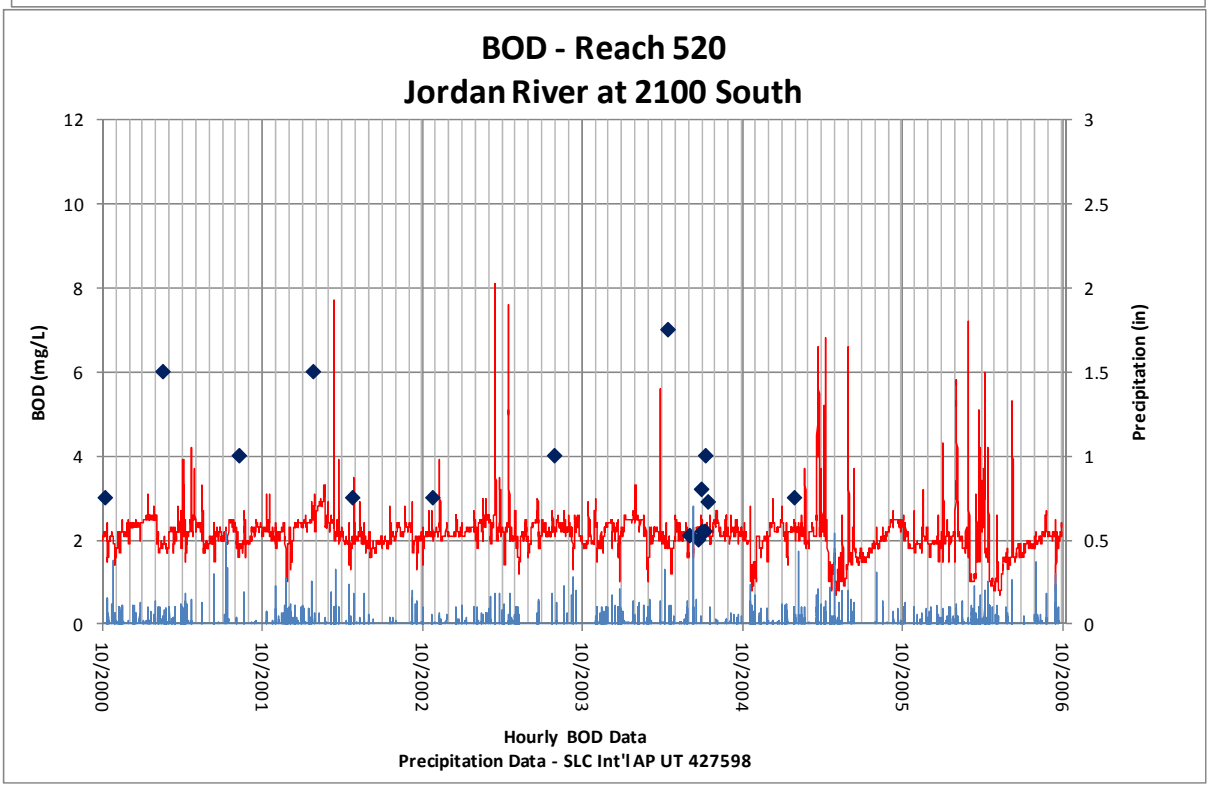

BOD - Reach 500
Jordan River at Cudahy Lane
BOD (mg/L)
Precipitation (in)
14
12
10
8
6
4
2
0
3
2.5
2
1.5
1
0.5
0
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006
Hourly BOD Data
Precipitation Data - SLC Int'l AP UT 427598

4.1.4.6 Jordan River at 2100 South

BOD - Reach 520 Jordan River at 2100 South		
MFE (N-S):	-0.52	
Correlation Coeff.:	-0.37	
	Observed	Modeled
DATE	BOD	BODCONC
2/22/1996 1001	5.00	4.60
8/27/1996 1427	10.00	2.80
3/12/1997 0954	4.00	5.10
7/30/1997 1104	4.00	3.30
10/14/1997 1235	3.00	3.00
2/4/1998 1037	3.00	4.90
8/12/1998 1031	3.00	3.90
1/13/1999 1443	3.00	5.00
10/7/1999 1036	4.00	3.60
4/19/2000 1424	3.00	4.60
10/6/2000 1129	3.00	3.30
2/15/2001 0825	6.00	2.20
8/8/2001 1439	4.00	3.30
1/24/2002 1530	6.00	3.40
4/24/2002 1130	3.00	3.60
10/24/2002 1250	3.00	3.30
7/29/2003 1420	4.00	3.80
4/13/2004 1520	7.00	3.10
6/2/2004 0812	2.10	3.00
6/22/2004 0936	2.00	3.80
6/29/2004 0905	3.20	3.70
7/1/2004 0900	2.20	3.70
7/7/2004 0855	2.20	3.40
7/8/2004 1725	4.00	3.90
7/14/2004 0900	2.90	3.60
1/27/2005 1305	3.00	3.40

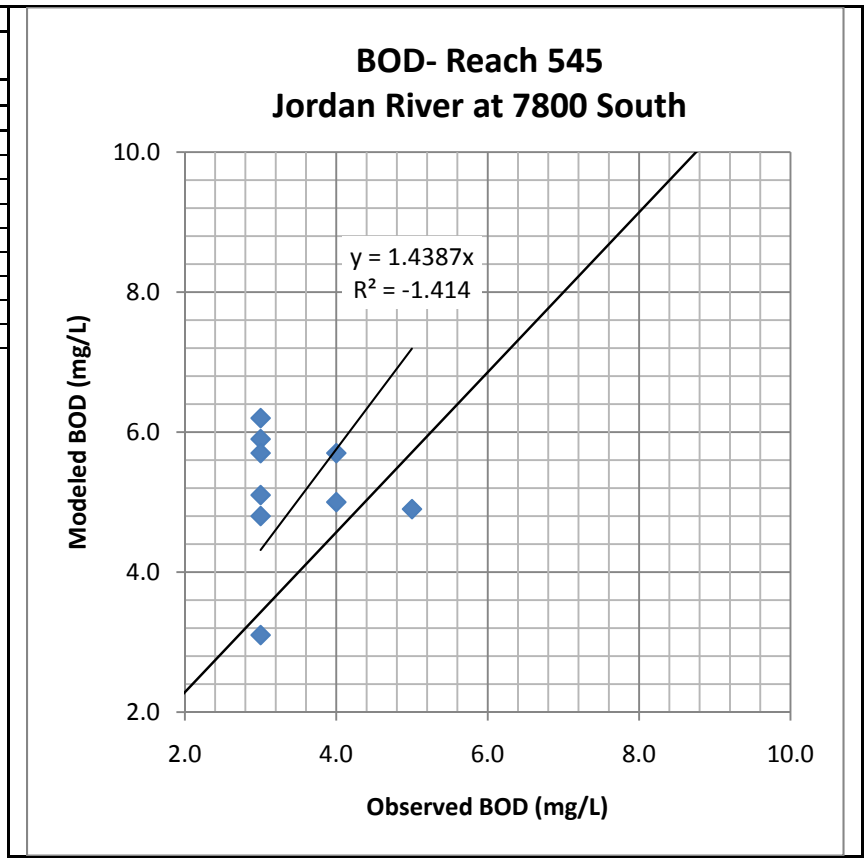


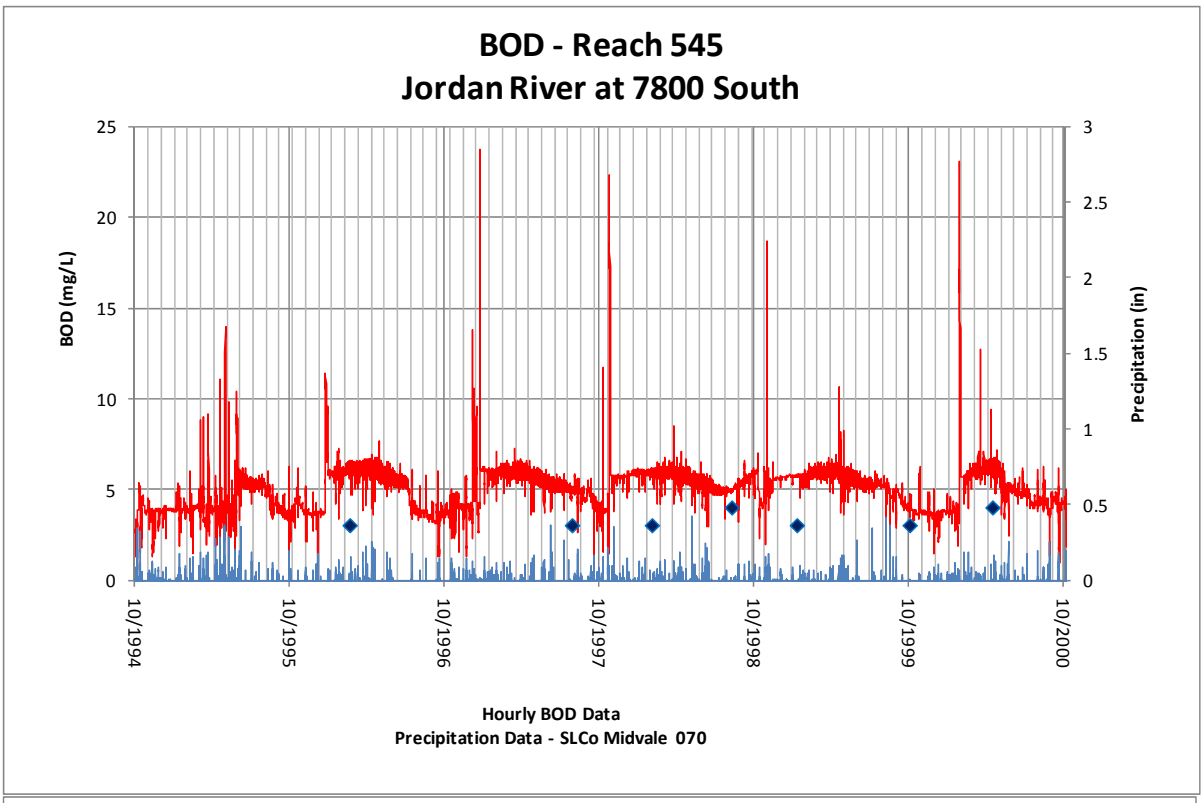

BOD - Reach 520
Jordan River at 2100 South
BOD (mg/L)
Precipitation (in)
25
20
15
10
5
0
3
2.5
2
1.5
1
0.5
0
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000
Hourly BOD Data
Precipitation Data - SLC Int'l AP UT 427598

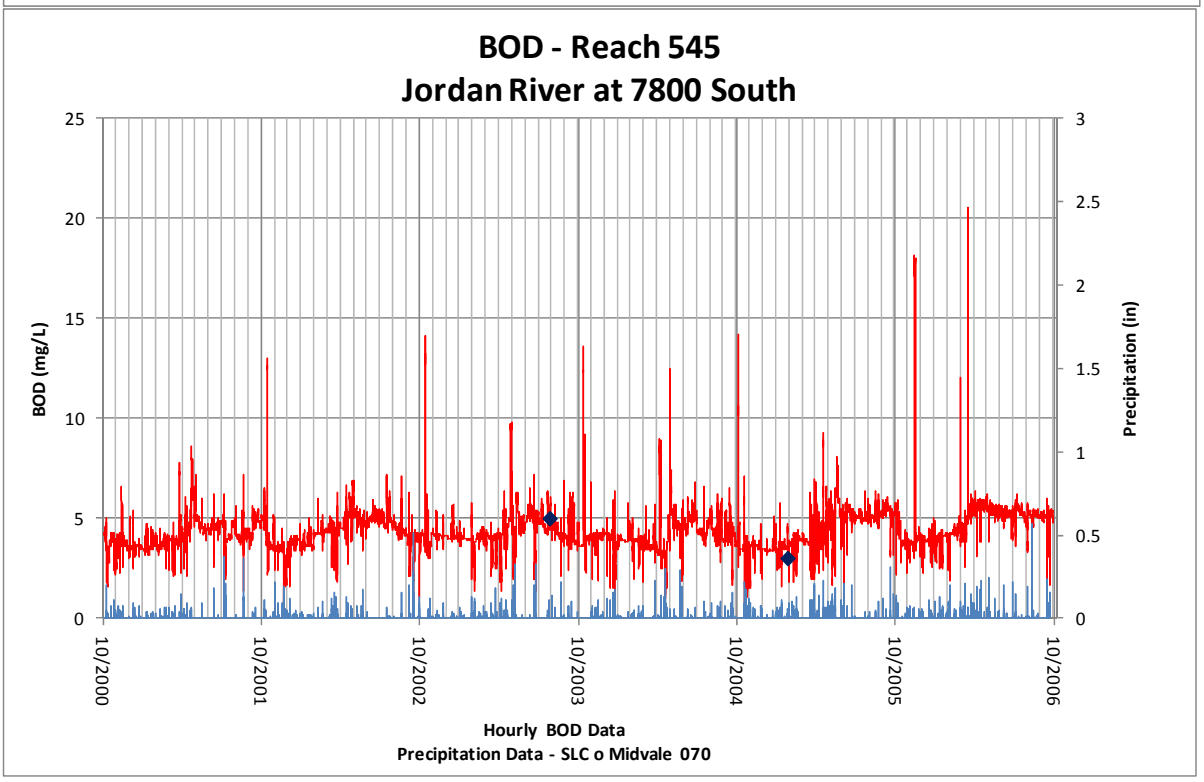

BOD - Reach 520
Jordan River at 2100 South
BOD (mg/L)
Precipitation (in)
12
10
8
6
4
2
0
3
2.5
2
1.5
1
0.5
0
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006
Hourly BOD Data
Precipitation Data - SLC Int'l AP UT 427598

4.1.4.7 Jordan River at 7800 South

BOD - Reach 545 Jordan River at 7800 South		
MFE (N-S):	-7.88	
Correlation Coeff.:	-0.02	
	Observed	Modeled
DATE	BOD	BODCONC
2/20/1996	3.0	6.2
7/30/1997	3.0	5.1
2/4/1998	3.0	5.9
8/12/1998	4.0	5.0
1/13/1999	3.0	5.7
10/7/1999	3.0	4.8
4/20/2000	4.0	5.7
7/30/2003	5.0	4.9
1/27/2005	3.0	3.1



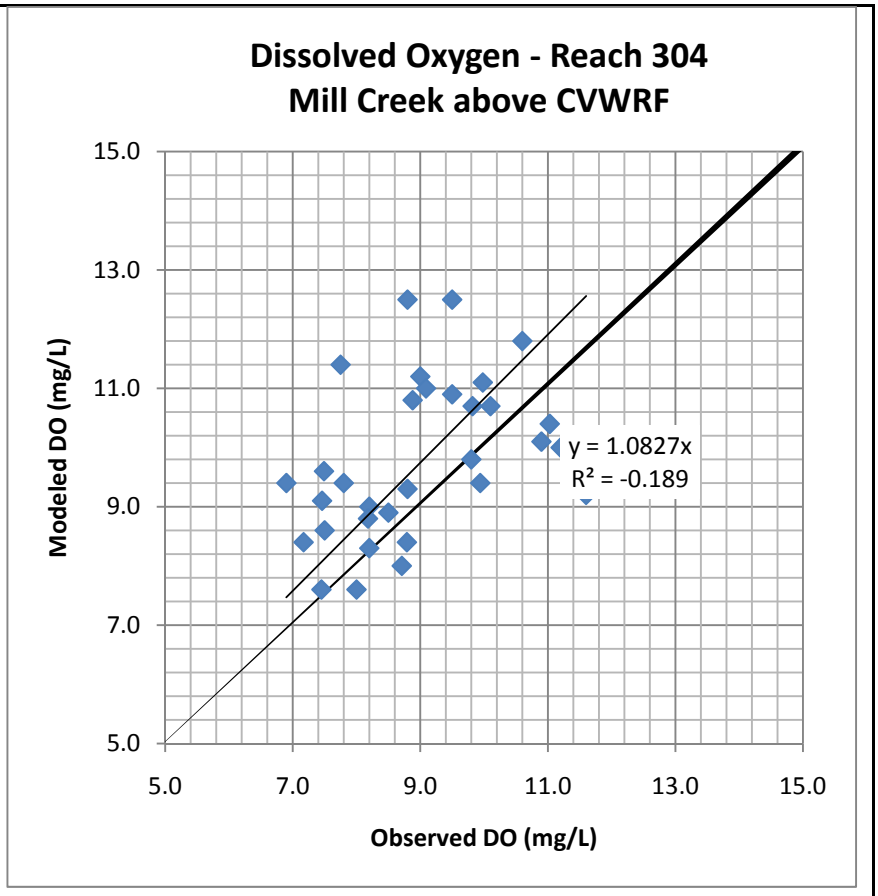

BOD - Reach 545
Jordan River at 7800 South
BOD (mg/L)
Precipitation (in)
25
20
15
10
5
0
3
2.5
2
1.5
1
0.5
0
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000
Hourly BOD Data
Precipitation Data - SLCo Midvale 070

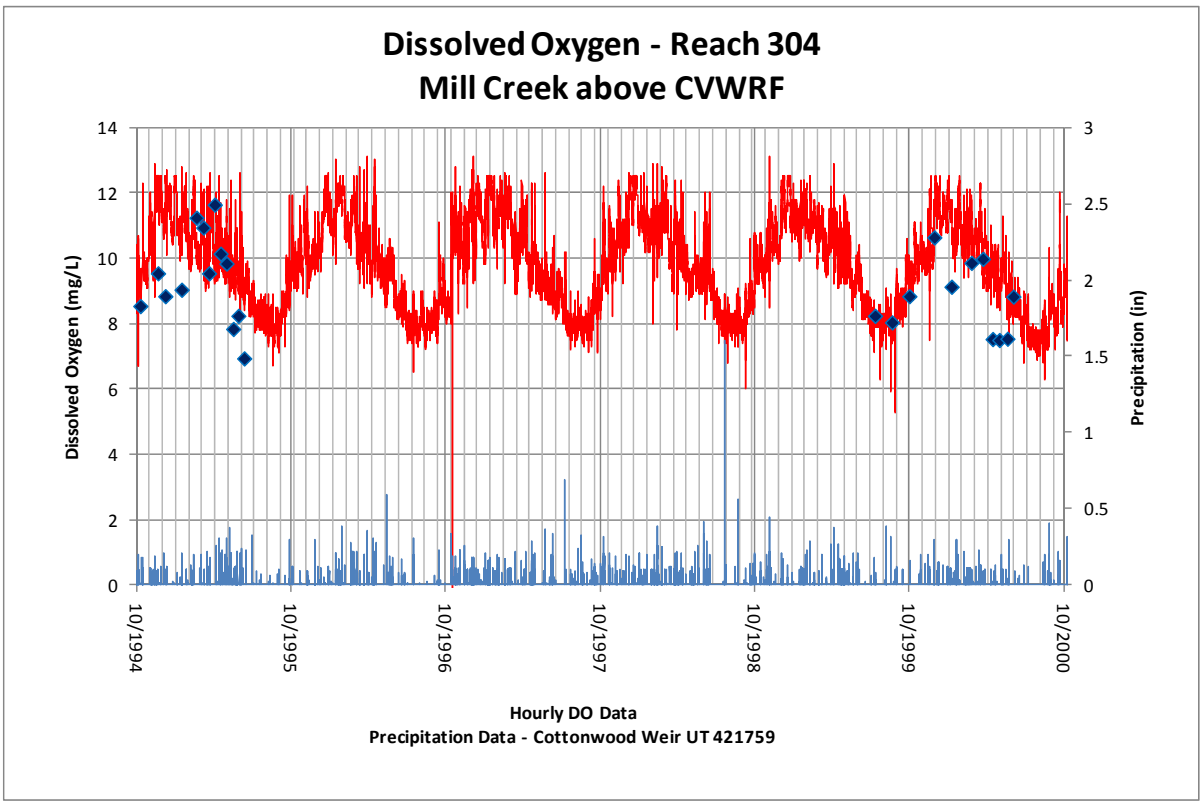

BOD - Reach 545
Jordan River at 7800 South
BOD (mg/L)
Precipitation (in)
25
20
15
10
5
0
3
2.5
2
1.5
1
0.5
0
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006
Hourly BOD Data
Precipitation Data - SLC o Midvale 070

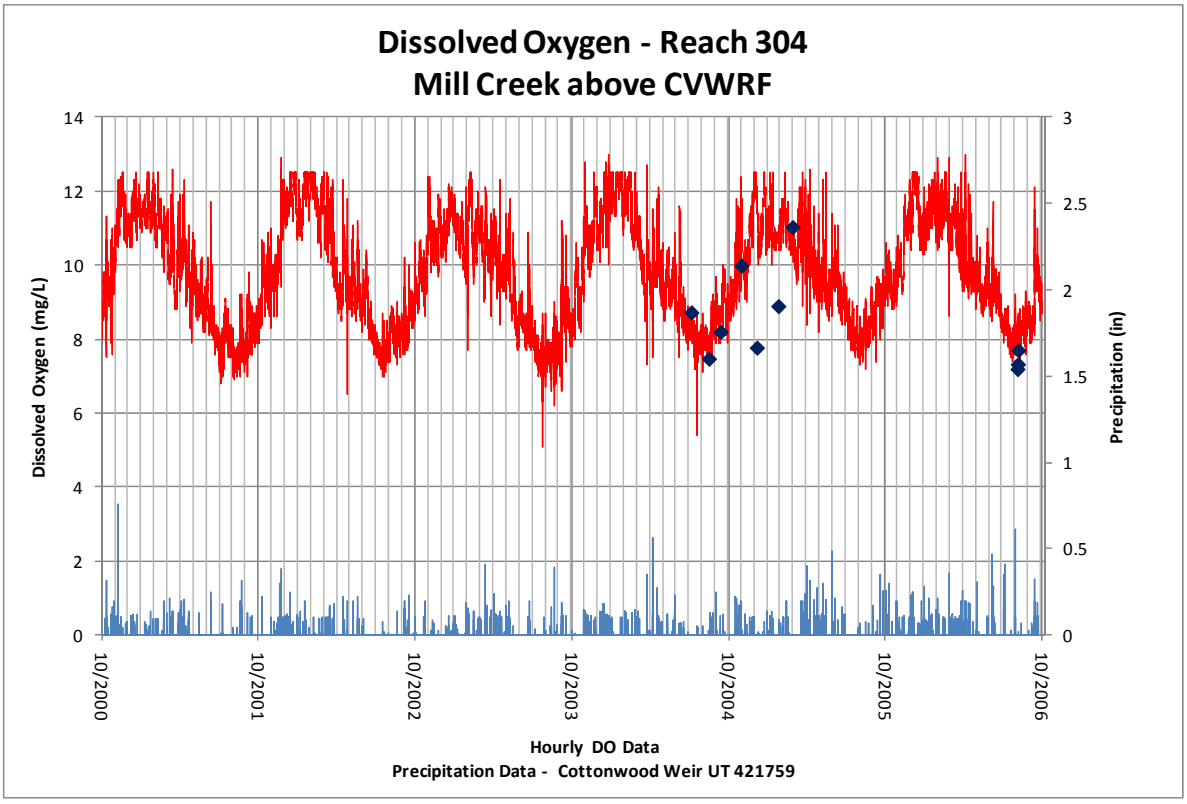
4.1.5 Dissolved Oxygen

4.1.5.1 Mill Creek above CVWRF

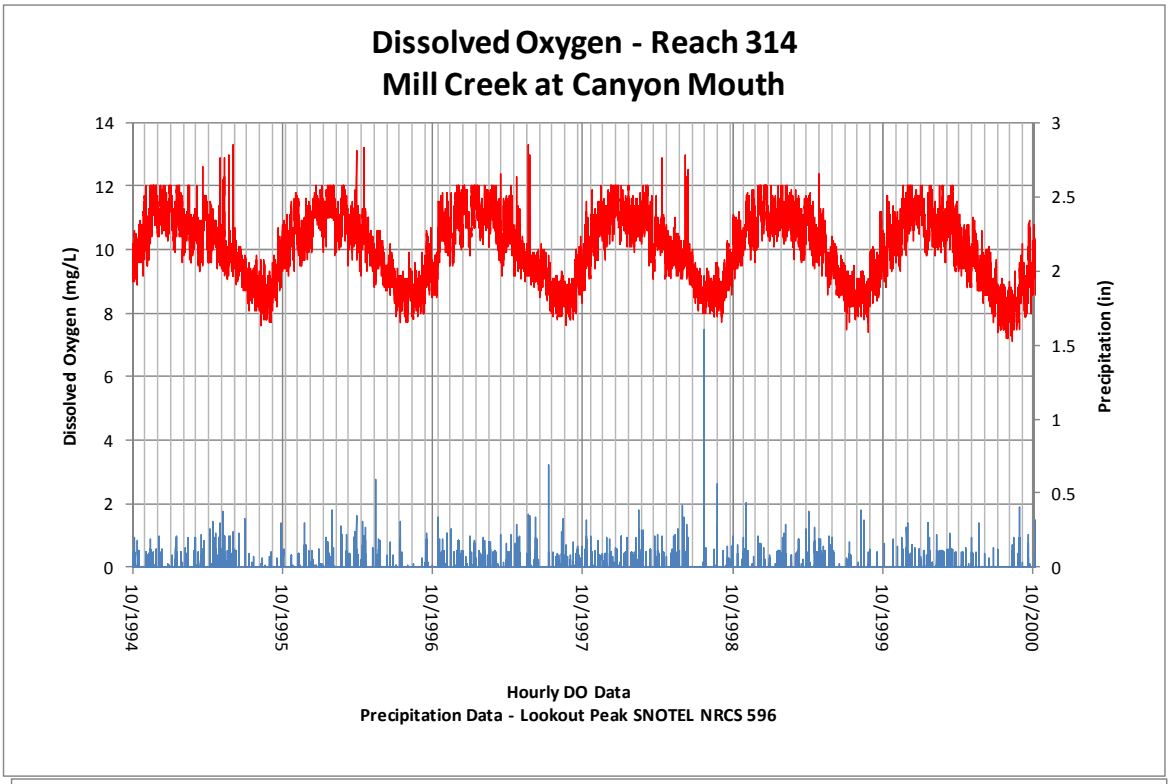
Dissolved Oxygen - Reach 304 Mill Creek above CVWRF		
MFE (N-S):	-0.66	
Correlation Coeff.:	0.43	
	OBSERVED	MODELED
DATE	DO	DOXCONC
10/11/1994	8.5	8.9
11/22/1994	9.5	12.5
12/9/1994	8.8	12.5
1/17/1995	9.0	11.2
2/21/1995	11.2	10.0
3/9/1995	10.9	10.1
3/23/1995	9.5	10.9
4/5/1995	11.6	9.2
4/19/1995	10.1	10.7
5/3/1995	9.8	9.8
5/19/1995	7.8	9.4
5/31/1995	8.2	9.0
6/14/1995	6.9	9.4
7/16/1999	8.2	8.3
8/25/1999	8.0	7.6
10/5/1999	8.8	9.3
12/3/1999	10.6	11.8
1/13/2000	9.1	11.0
2/29/2000	9.8	10.7
3/27/2000	9.9	9.4
4/19/2000	7.5	9.6
5/5/2000	7.5	9.1
5/24/2000	7.5	8.6
6/7/2000	8.8	8.4
7/8/2004	8.7	8.0
8/18/2004	7.5	7.6
9/14/2004	8.2	8.8
11/2/2004	10.0	11.1
12/8/2004	7.8	11.4
1/27/2005	8.9	10.8
3/1/2005	11.0	10.4
8/8/2006	7.2	8.4

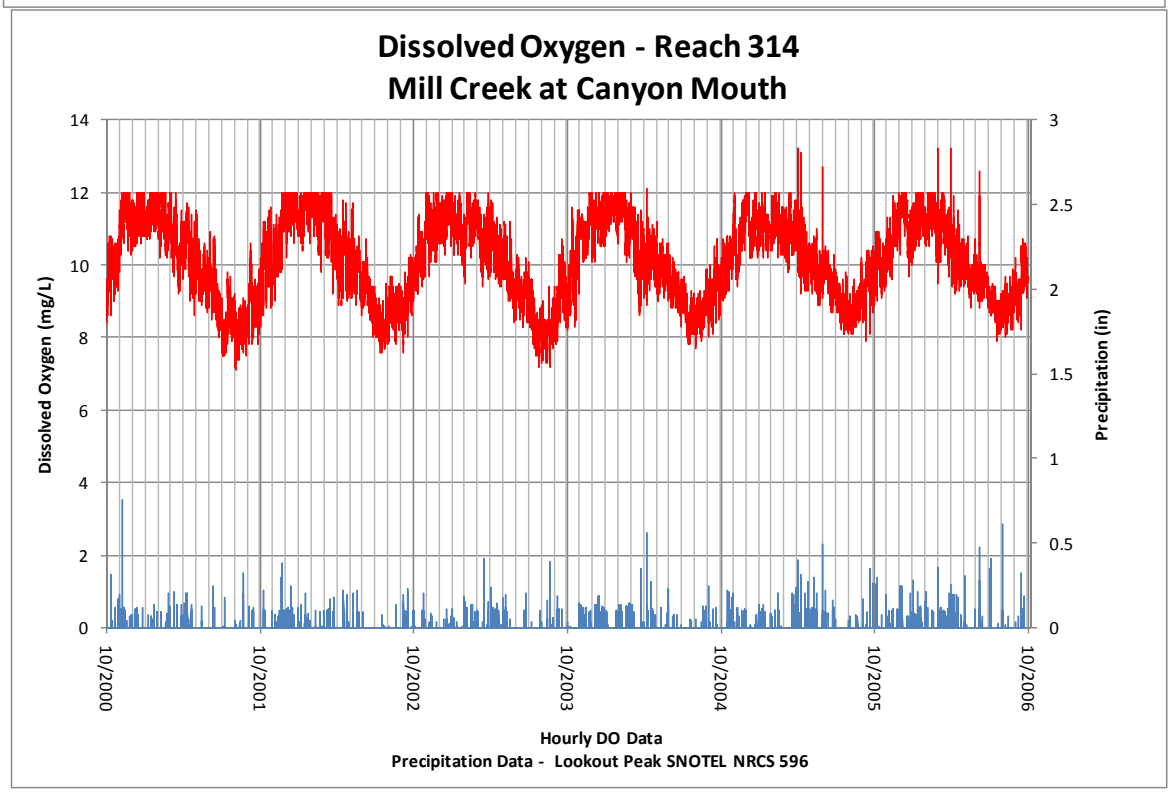



Dissolved Oxygen - Reach 304
Mill Creek above CVWRF
Dissolved Oxygen (mg/L)
Precipitation (in)
14
12
10
8
6
4
2
0
3
2.5
2
1.5
1
0.5
0
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000
Hourly DO Data
Precipitation Data - Cottonwood Weir UT 421759


Dissolved Oxygen - Reach 304
Mill Creek above CVWRF
Dissolved Oxygen (mg/L)
Precipitation (in)
14
12
10
8
6
4
2
0
3
2.5
2
1.5
1
0.5
0
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006
Hourly DO Data
Precipitation Data - Cottonwood Weir UT 421759

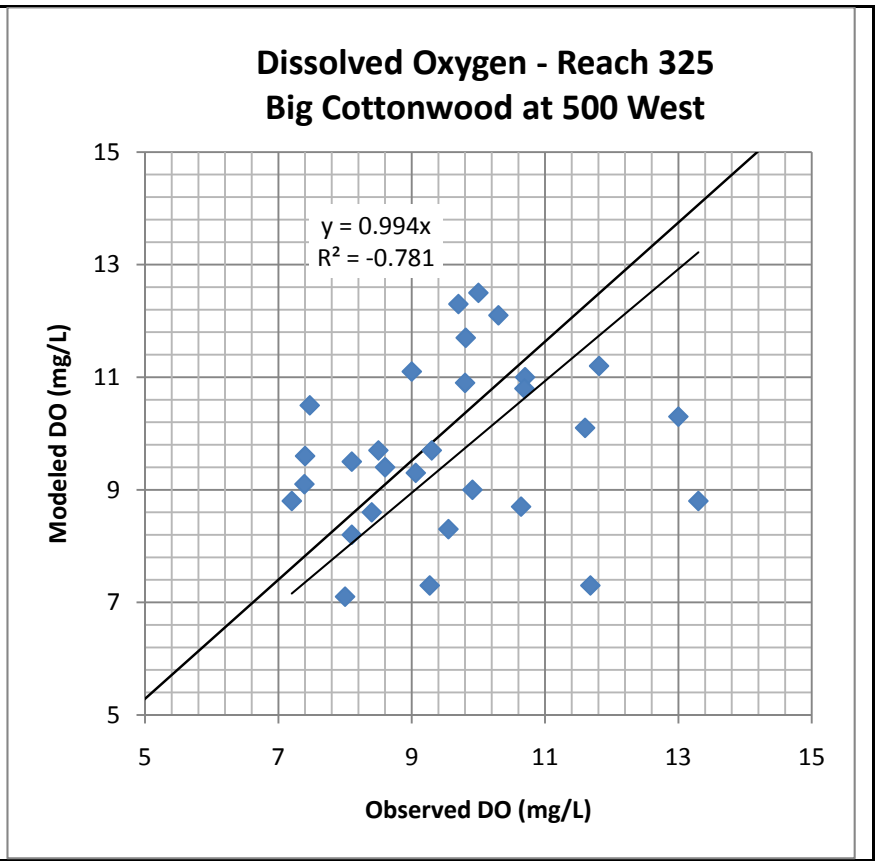
4.1.5.2 Mill Creek at Canyon Mouth

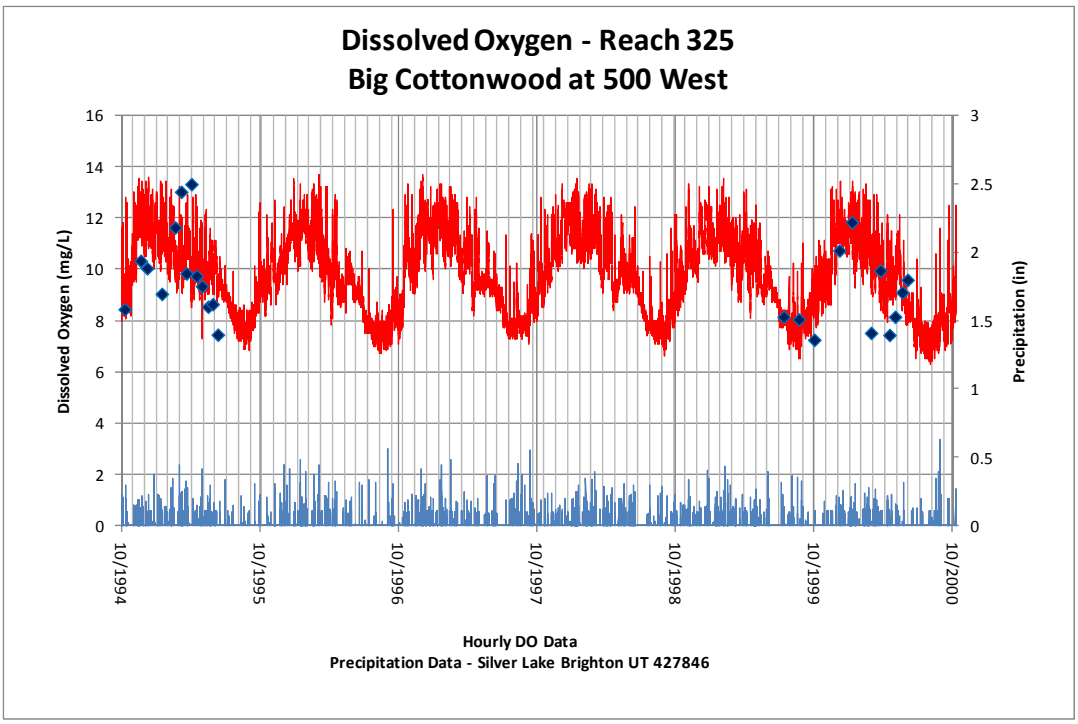


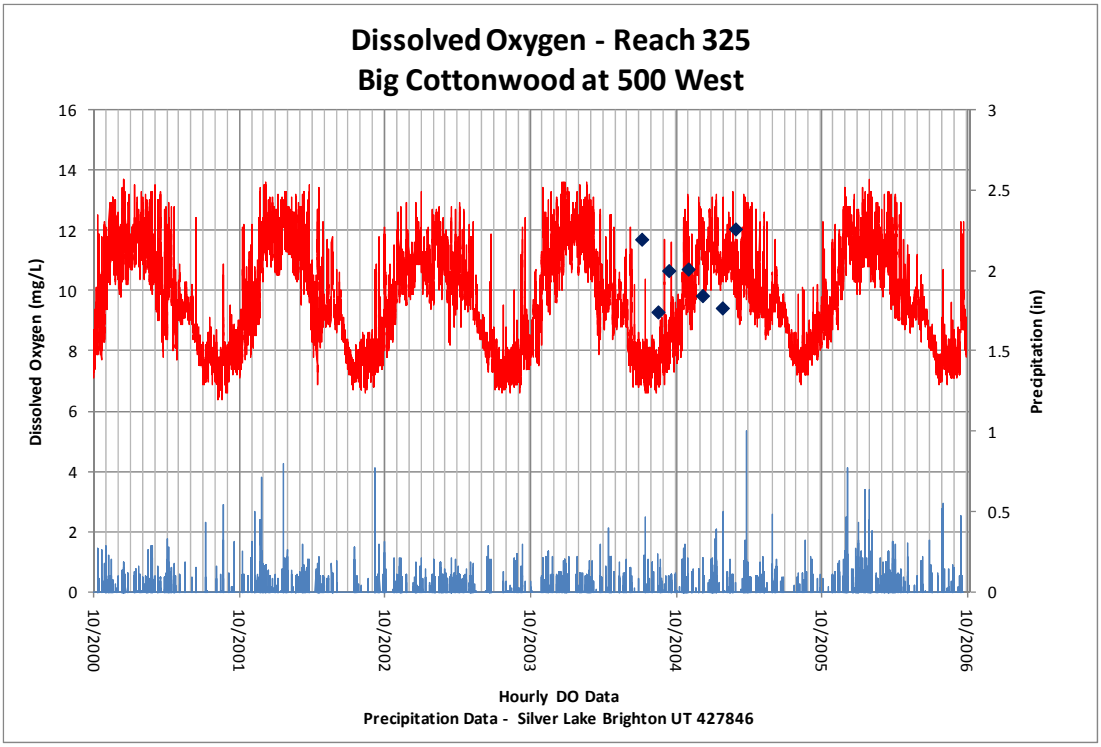


4.1.5.3 Big Cottonwood at 500 West

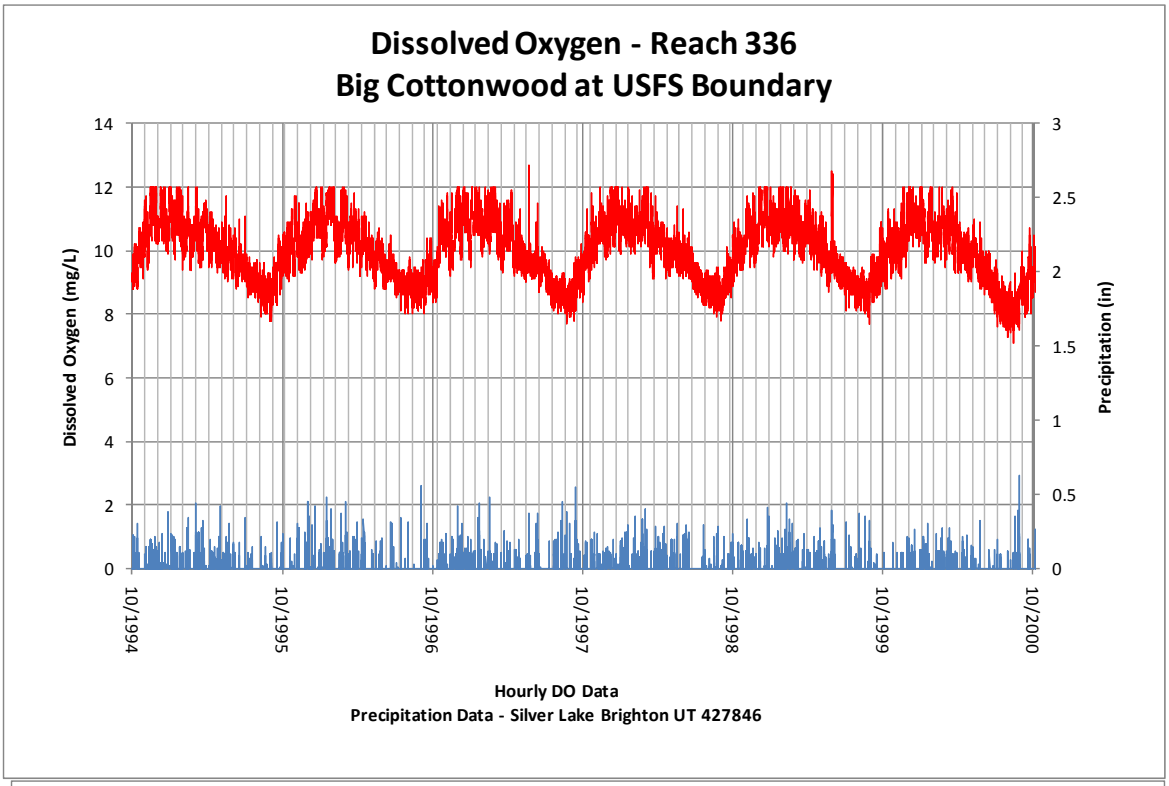
Dissolved Oxygen - Reach 325 Big Cottonwood at 500 West		
MFE (N-S):	-0.47	
Correlation Coeff.:	0.20	
	Observed	Modeled
DATE	DO	DOX
10/11/1994 1430	8	9
11/22/1994 1700	10	12
12/9/1994 1515	10	13
1/17/1995 1400	9	11
2/21/1995 1245	12	10
3/9/1995 1549	13	10
3/23/1995 0830	10	11
4/5/1995 1615	13	9
4/19/1995 1452	10	12
5/3/1995 1324	9	10
5/19/1995 1100	9	10
5/31/1995 1514	9	9
6/14/1995 0805	7	10
7/16/1999 1026	8	8
8/25/1999 1238	8	7
10/5/1999 1211	7	9
12/10/1999 1228	11	11
1/12/2000 1622	12	11
3/3/2000 0805	7	11
3/27/2000 1407	10	9
4/20/2000 1624	7	9
5/5/2000 1209	8	10
5/24/2000 1452	9	9
6/7/2000 1422	10	8
7/8/2004 1557	12	7
8/18/2004 1517	9	7
9/14/2004 1515	11	9
11/2/2004 1152	11	11
12/8/2004 1331	10	12

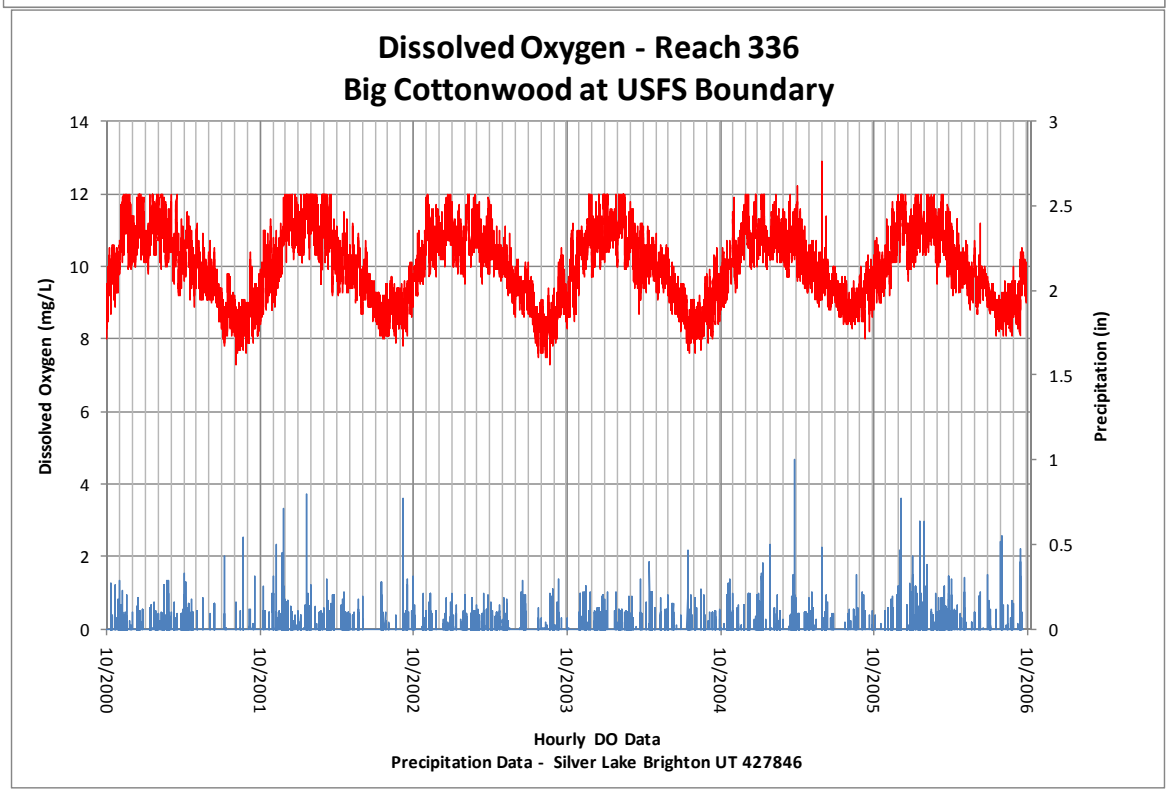



Dissolved Oxygen - Reach 325
Big Cottonwood at 500 West
Dissolved Oxygen (mg/L)
Precipitation (in)
16
14
12
10
8
6
4
2
0
3
2.5
2
1.5
1
0.5
0
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000
Hourly DO Data
Precipitation Data - Silver Lake Brighton UT 427846


Dissolved Oxygen - Reach 325
Big Cottonwood at 500 West
Dissolved Oxygen (mg/L)
Precipitation (in)
16
14
12
10
8
6
4
2
0
3
2.5
2
1.5
1
0.5
0
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006
Hourly DO Data
Precipitation Data - Silver Lake Brighton UT 427846

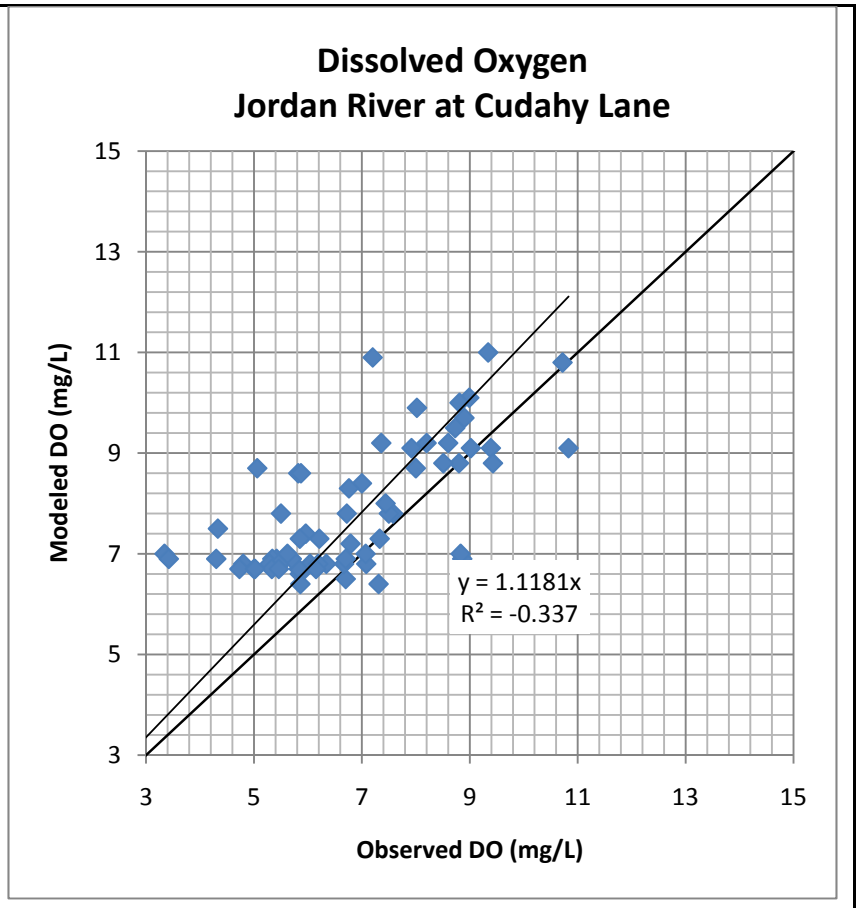
4.1.5.4 Big Cottonwood at USFS Boundary

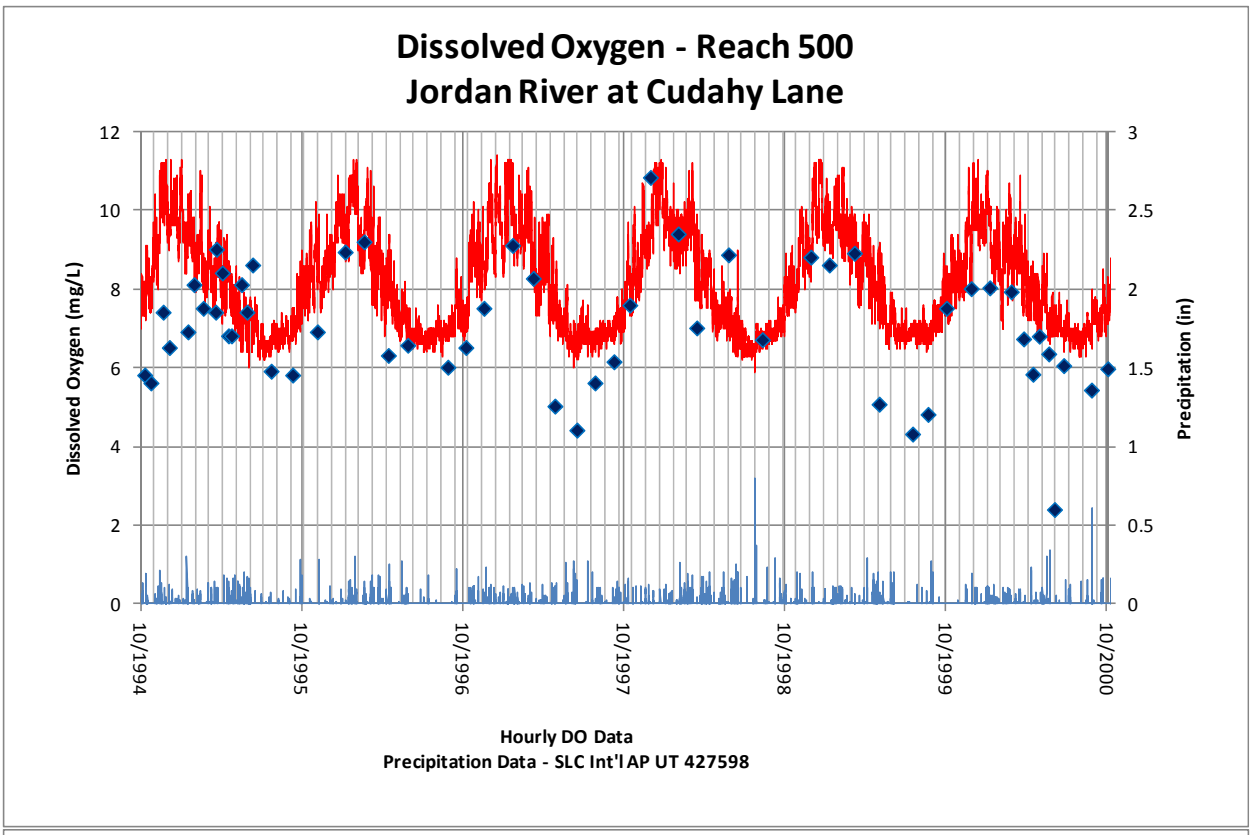


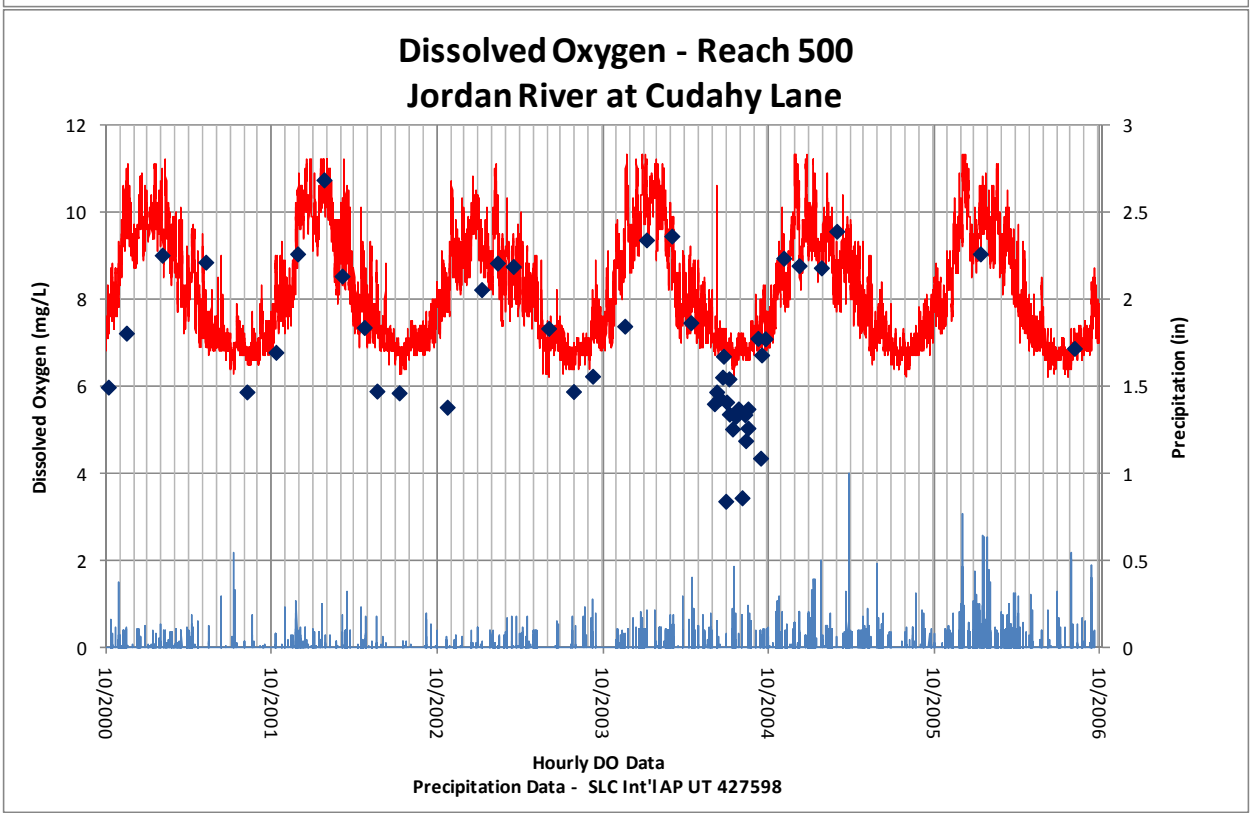


4.1.5.5 Jordan River at Cudahy Lane

Dissolved Oxygen - Reach 500 Jordan River at Cudahy Lane		
MFE (N-S):	0.08	
Correlation Coeff.:	0.68	
	Observed	Modeled
DATE	DO	DOX
10/16/1997 1157	8	8
12/2/1997 1153	11	9
2/3/1998 1320	9	9
3/17/1998 1120	7	8
5/28/1998 1531	9	7
8/13/1998 1313	7	7
12/1/1998 1125	9	9
1/12/1999 1111	9	9
3/10/1999 1000	9	10
5/5/1999 1205	5	9
7/20/1999 1244	4	7
8/24/1999 1153	5	7
10/5/1999 1224	8	8
11/30/1999 1302	8	9
1/11/2000 1613	8	10
2/29/2000 0932	8	9
3/28/2000 1213	7	8
4/18/2000 1339	6	9
5/3/2000 0000	7	7
5/24/2000 1300	6	7
6/6/2000 1318	2	7
6/27/2000 1234	6	7
8/29/2000 1224	5	7
10/5/2000 1314	6	7
11/14/2000 1153	7	11
2/1/2001 1235	9	10
5/8/2001 1507	9	7
8/7/2001 1333	6	7
10/10/2001 1245	7	8
11/27/2001 1112	9	9
1/24/2002 1703	11	11
3/5/2002 1200	9	9
4/23/2002 1417	7	7
5/21/2002 1149	6	9
7/9/2002 1305	6	7
10/23/2002 1626	6	8
1/7/2003 1243	8	9
2/11/2003 1210	9	10
3/18/2003 1236	9	10
6/4/2003 1048	7	6
7/29/2003 1051	6	6
9/9/2003 1208	6	7
11/19/2003 1148	7	9
1/6/2004 1226	9	11
3/2/2004 1143	9	9
4/13/2004 1108	7	8
6/4/2004 1014	6	7
6/9/2004 1100	6	7
6/16/2004 1100	6	7
6/22/2004 1115	6	7
6/24/2004 1045	7	7
6/29/2004 1030	3	7
7/1/2004 1050	6	7
7/6/2004 1559	6	7
7/7/2004 1030	5	7
7/14/2004 1030	5	7
7/21/2004 1005	5	7
7/27/2004 1105	5	7
8/4/2004 1025	3	7
8/10/2004 1105	5	7
8/12/2004 1035	5	7
8/17/2004 1045	5	7
8/17/2004 1112	5	7

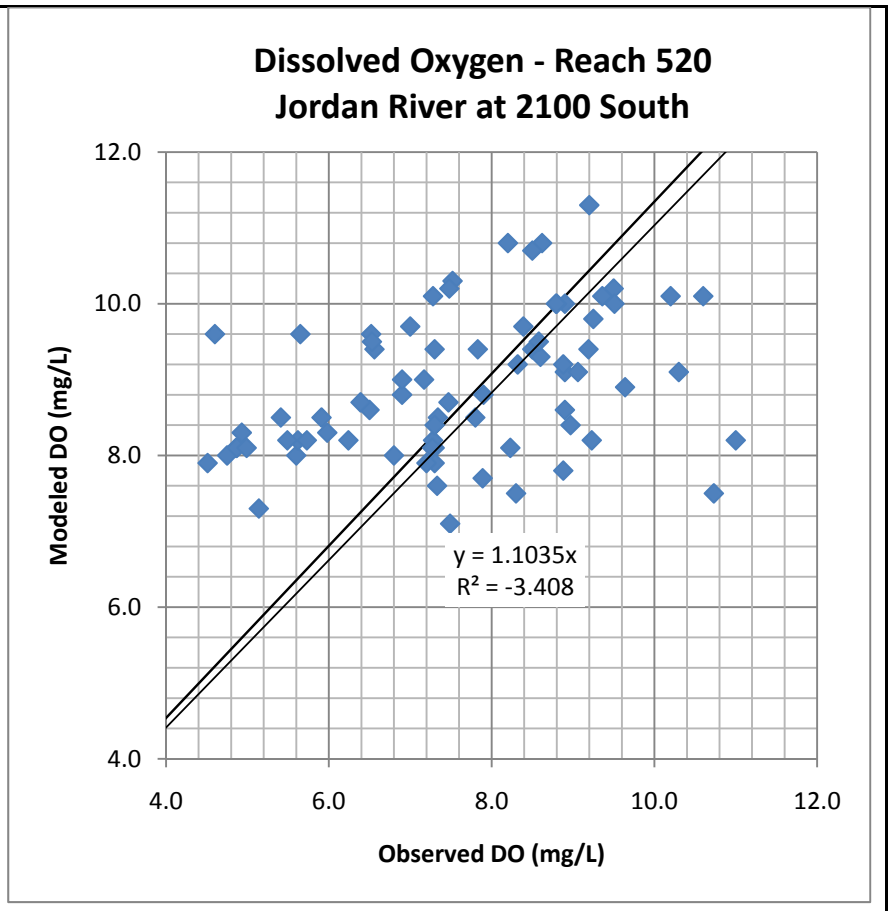


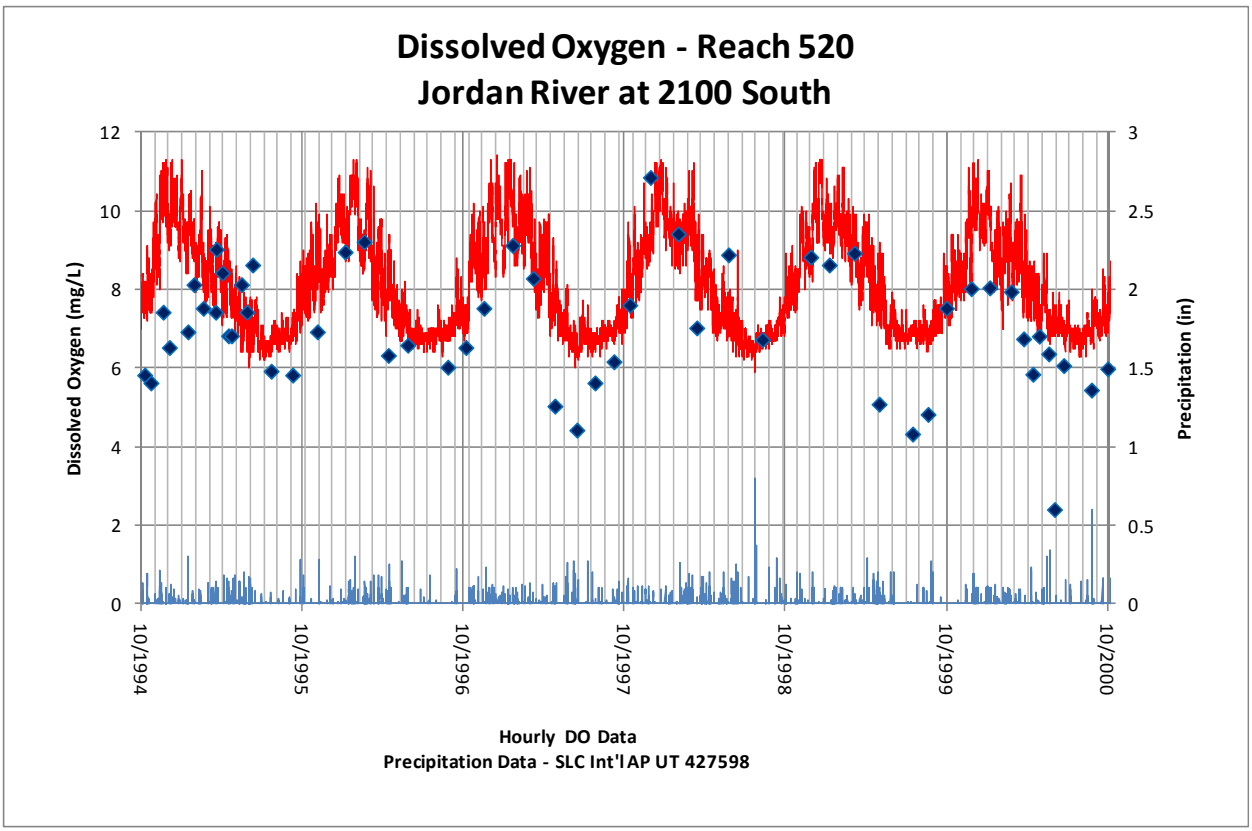

Dissolved Oxygen - Reach 500
Jordan River at Cudahy Lane
Dissolved Oxygen (mg/L)
Precipitation (in)
12
10
8
6
4
2
0
3
2.5
2
1.5
1
0.5
0
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000
Hourly DO Data
Precipitation Data - SLC Int'l AP UT 427598

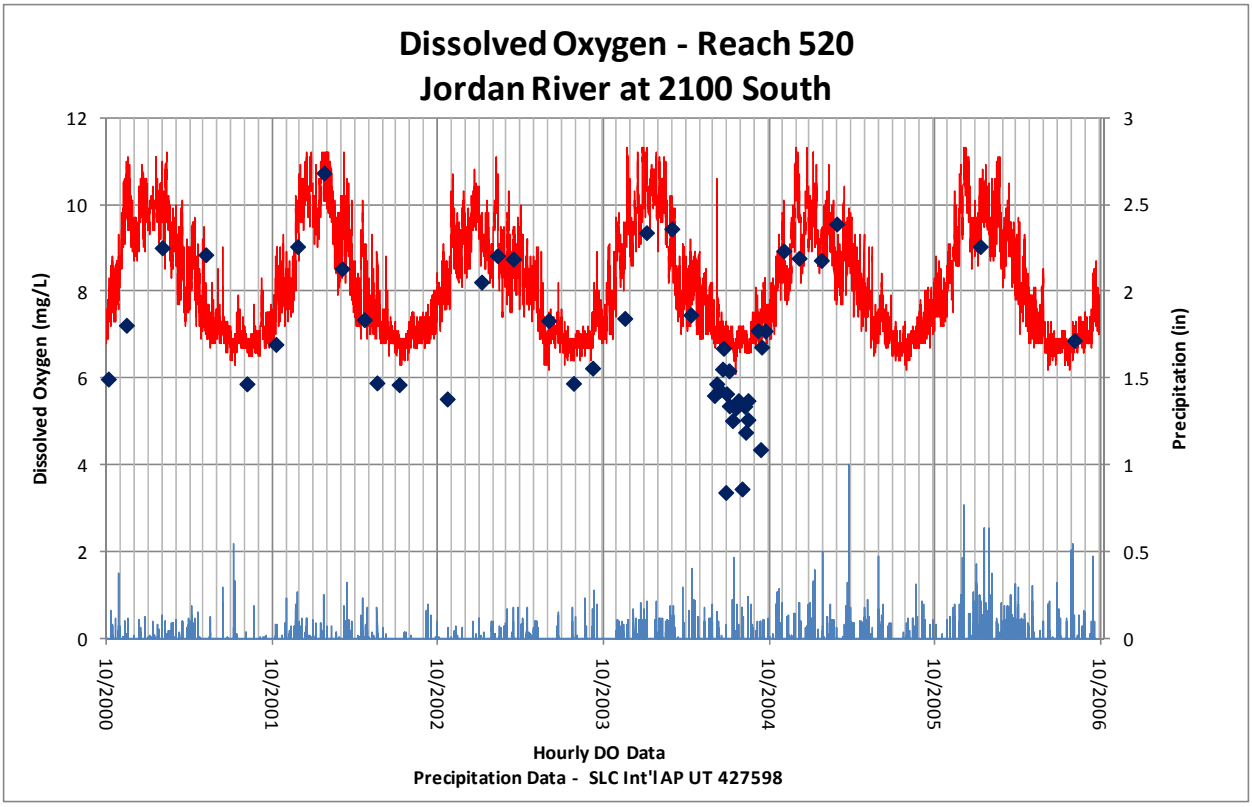

Dissolved Oxygen - Reach 500
Jordan River at Cudahy Lane
Dissolved Oxygen (mg/L)
Precipitation (in)
12
10
8
6
4
2
0
3
2.5
2
1.5
1
0.5
0
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006
Hourly DO Data
Precipitation Data - SLC Int'l AP UT 427598

4.1.5.6 Jordan River at 2100 South

Dissolved Oxygen - Reach 520 Jordan River at 2100 South		
MFE (N-S):	-0.28	
Correlation Coeff.:	0.38	
	Observed	Modeled
DATE	DO	DOXCONC
10/11/1994 1400	6.9	8.8
11/22/1994	8.9	10.0
12/9/1994	8.8	10.0
1/17/1995	7.3	9.4
2/21/1995	10.3	9.1
3/9/1995	11.0	8.2
3/23/1995	8.9	9.1
4/5/1995	12.4	7.9
4/19/1995	9.2	11.3
5/3/1995	7.8	8.5
5/19/1995	7.9	8.8
5/31/1995	7.3	8.1
6/14/1995	6.5	8.6
2/22/1996	8.6	10.8
5/10/1996	7.3	7.9
8/27/1996	7.2	7.9
10/15/1996	6.9	9.0
1/22/1997	10.2	10.1
3/12/1997	8.9	9.2
5/1/1997	8.5	9.4
7/30/1997	7.3	7.6
10/14/1997	8.6	9.3
2/4/1998	9.2	9.4
6/5/1998	6.6	9.4
8/12/1998	7.5	7.1
10/15/1998	8.9	8.6
1/13/1999	10.6	10.1
5/6/1999	9.0	8.4
7/21/1999	8.3	7.5
8/25/1999	6.8	8.0
10/7/1999	7.0	9.7
12/10/1999	9.5	10.2
1/12/2000	8.8	10.0
2/29/2000	9.3	9.8
3/28/2000	6.5	9.6
4/19/2000	7.5	8.7
5/5/2000	7.3	8.5
5/24/2000	8.2	8.1
6/7/2000	9.2	8.2
9/7/2000	7.8	9.4
10/6/2000	7.3	10.1
2/15/2001	8.4	9.7
5/17/2001	9.1	9.1
8/8/2001	5.4	8.5
8/22/2001	5.9	8.5
8/24/2001	6.4	8.7
8/27/2001	7.2	9.0
1/24/2002	7.5	10.3
4/24/2002	6.5	9.5
7/11/2002	5.1	7.3
10/24/2002	5.7	9.6
1/9/2003	7.5	10.2
6/4/2003	8.9	7.8
7/29/2003	7.9	7.7
11/19/2003	4.6	9.6
1/9/2004	8.5	10.7
4/13/2004	9.6	8.9
6/4/2004	7.3	8.2
6/9/2004	7.3	8.4
6/16/2004	6.0	8.3
6/22/2004	6.2	8.2
6/24/2004	5.6	8.0
6/29/2004	5.6	8.2

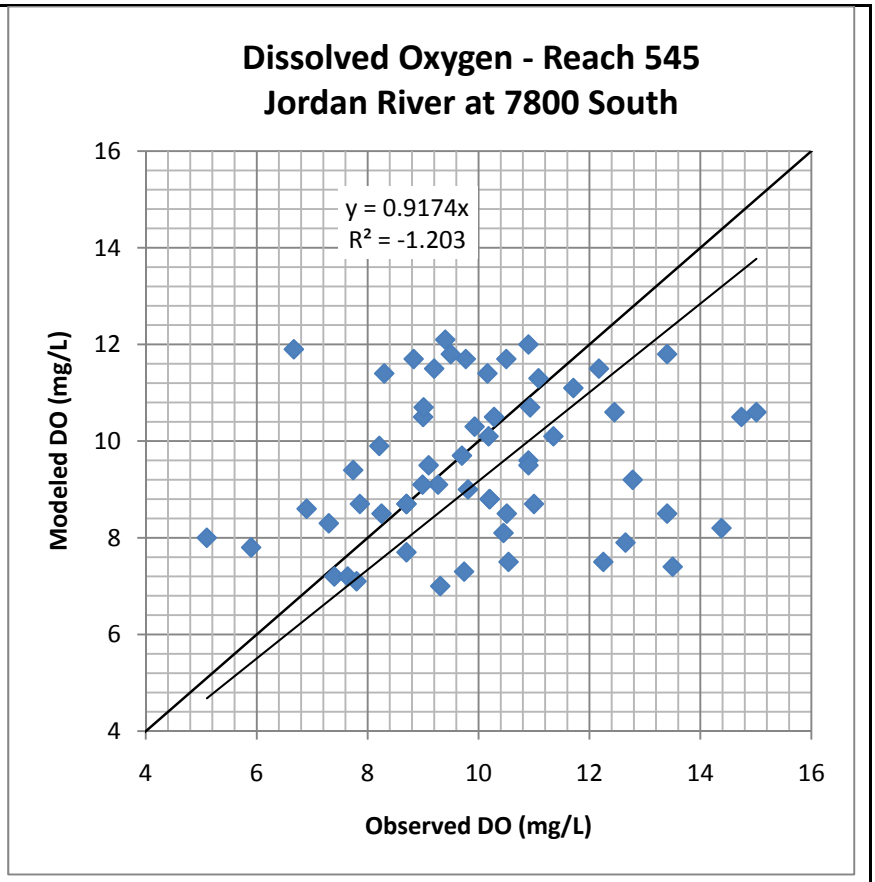


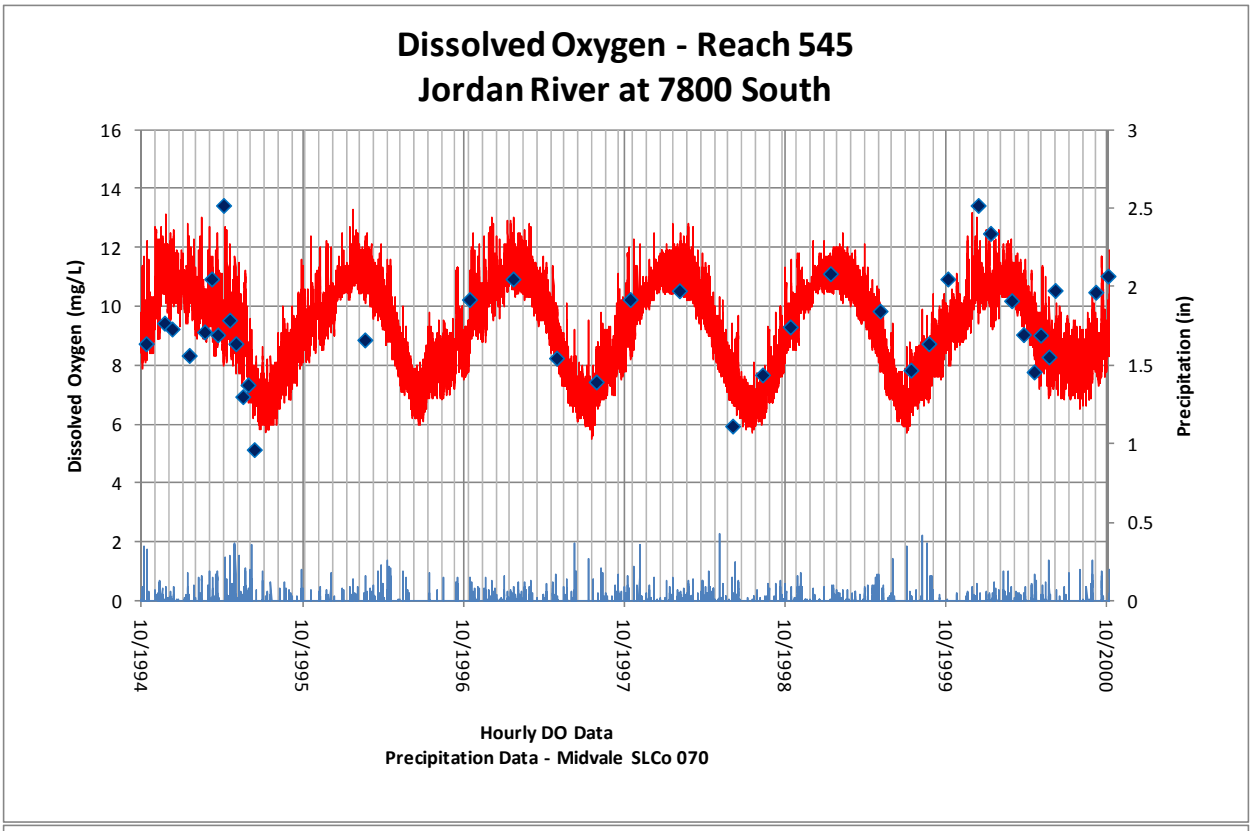

Dissolved Oxygen - Reach 520
Jordan River at 2100 South
Dissolved Oxygen (mg/L)
Precipitation (in)
12
10
8
6
4
2
0
3
2.5
2
1.5
1
0.5
0
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000
Hourly DO Data
Precipitation Data - SLC Int'l AP UT 427598

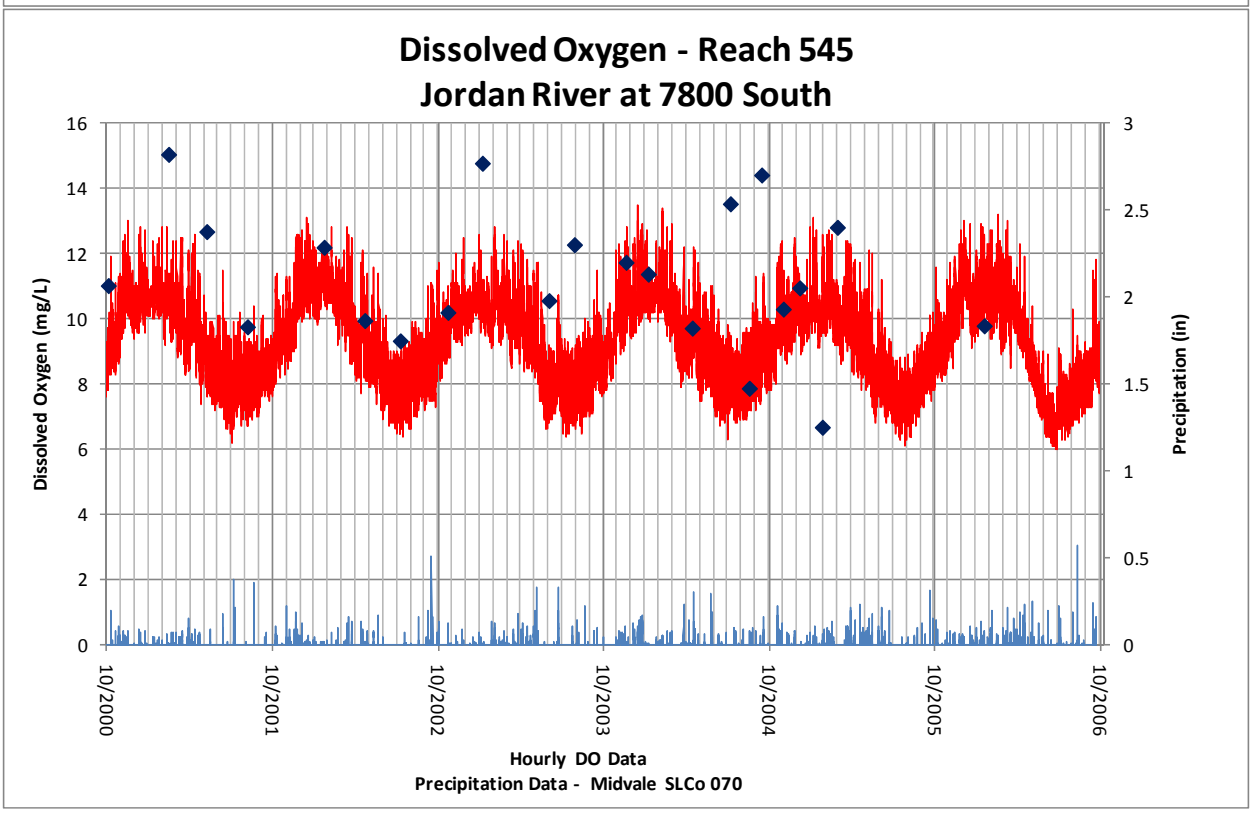

Dissolved Oxygen - Reach 520
Jordan River at 2100 South
Dissolved Oxygen (mg/L)
Precipitation (in)
12
10
8
6
4
2
0
3
2.5
2
1.5
1
0.5
0
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006
Hourly DO Data
Precipitation Data - SLC Int'l AP UT 427598

4.1.5.7 Jordan River at 7800 South

Dissolved Oxygen - Reach 545 Jordan River at 7800 South		
MFE (N-S):	-0.33	
Correlation Coeff.:	0.17	
	OBSERVED	MODELED
DATE	DO	DOXCONC
10/11/1994 1515	9	9
11/22/1994 0930	9	12
12/9/1994 1430	9	12
1/17/1995 1315	8	11
2/21/1995 1200	9	10
3/9/1995 1504	11	10
3/23/1995 0915	9	11
4/5/1995 1450	13	9
4/19/1995 1357	10	12
5/3/1995 1247	9	9
5/19/1995 0930	7	9
5/31/1995 0800	7	8
6/14/1995 0842	5	8
2/20/1996 1416	9	12
10/15/1996 1404	10	9
1/22/1997 1307	11	12
5/1/1997 1120	8	10
7/30/1997 1310	7	7
10/15/1997 1620	10	9
2/4/1998 1426	11	12
6/5/1998 1219	6	8
8/12/1998 1204	8	7
10/14/1998 1319	9	9
1/13/1999 1637	11	11
5/6/1999 1337	10	9
7/15/1999 1637	8	7
8/25/1999 1035	9	8
10/7/1999 1320	11	10
12/15/1999 1146	13	12
1/12/2000 1444	12	11
2/29/2000 1414	10	11
3/27/2000 1256	9	11
4/20/2000 1422	8	9
5/5/2000 1026	9	9
5/24/2000 1103	8	9
6/7/2000 1054	11	9
9/7/2000 1518	10	8
10/5/2000 1323	11	9
2/15/2001 1235	15	11
5/10/2001 1741	13	8
8/8/2001 1226	10	7
1/24/2002 1316	12	12
4/24/2002 0940	10	10
7/11/2002 1300	9	7
10/24/2002 1451	10	10
1/8/2003 1437	15	11
6/4/2003 1419	11	8
7/30/2003 1522	12	8
11/21/2003 1134	12	11
1/9/2004 1219	11	10
4/15/2004 1147	10	10
7/8/2004 1408	14	7
8/19/2004 0912	8	9
9/15/2004 1415	14	8
11/2/2004 1011	10	11
12/8/2004 1432	11	11
1/27/2005 1018	7	12
3/1/2005 1429	13	9
1/19/2006 1100	10	12



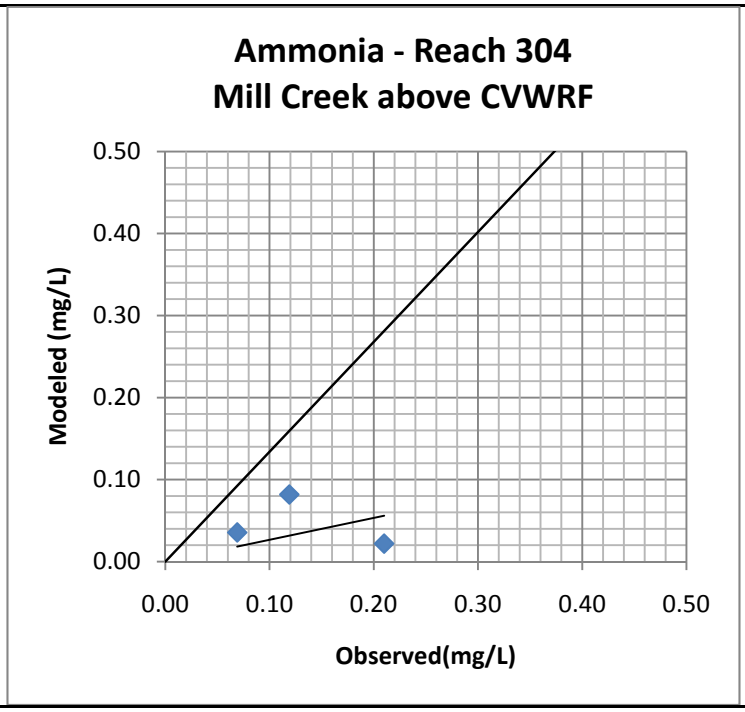

Dissolved Oxygen - Reach 545
Jordan River at 7800 South
Dissolved Oxygen (mg/L)
Precipitation (in)
16
14
12
10
8
6
4
2
0
3
2.5
2
1.5
1
0.5
0
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000
Hourly DO Data
Precipitation Data - Midvale SLCo 070

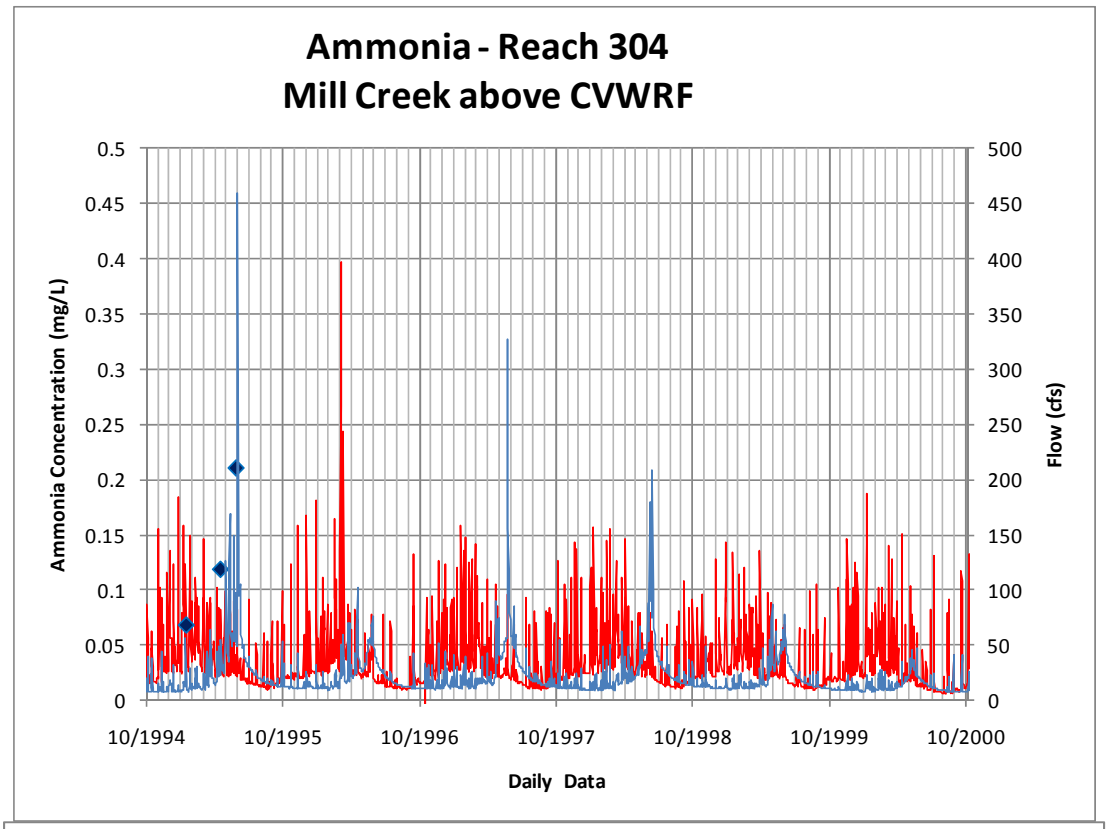

Dissolved Oxygen - Reach 545
Jordan River at 7800 South
Dissolved Oxygen (mg/L)
Precipitation (in)
16
14
12
10
8
6
4
2
0
3
2.5
2
1.5
1
0.5
0
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006
Hourly DO Data
Precipitation Data - Midvale SLCo 070

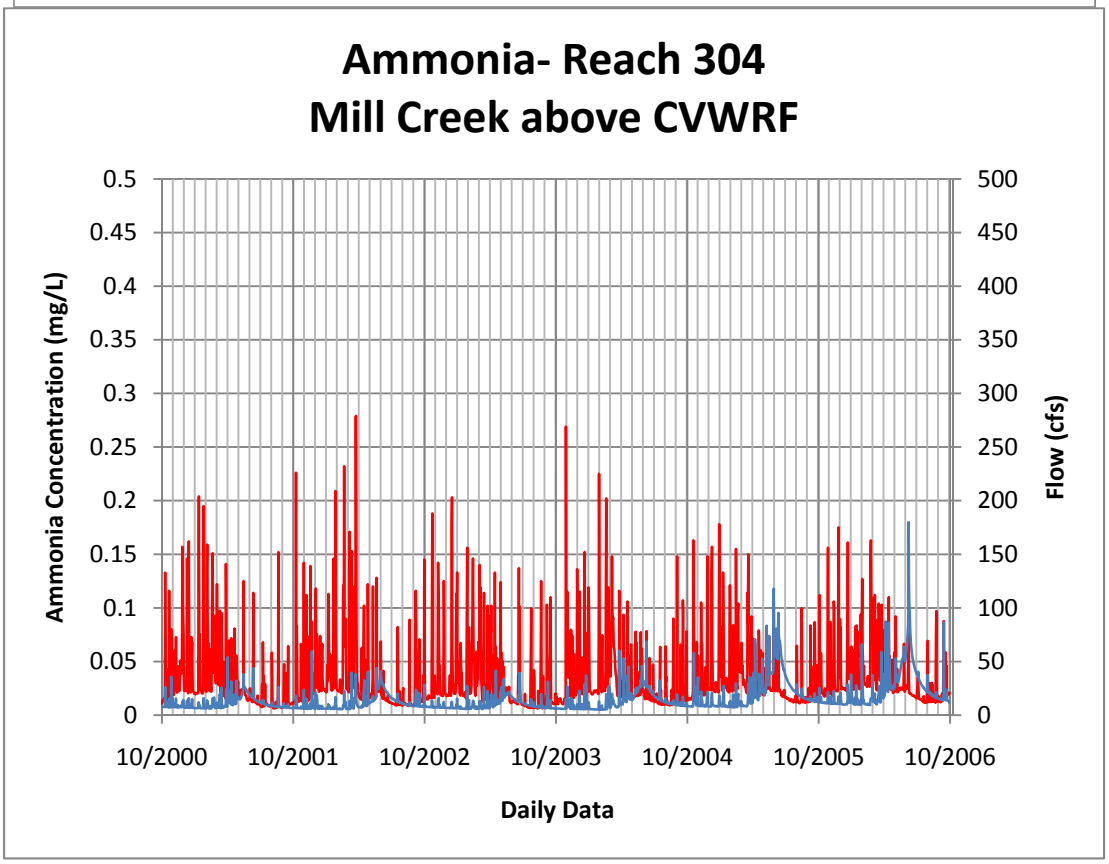
4.1.6 Ammonia

4.1.6.1 Mill Creek above CVWRF

Ammonia - Reach 304 Mill Creek above CVWRF		
MFE (N-S): Correlation Coeff.:		
	Observed	Modeled
DATE	TAM-OUTTOT	TAM-OUTTOT
1/17/1995	0.07	0.04
4/19/1995	0.12	0.08
5/31/1995	0.21	0.02



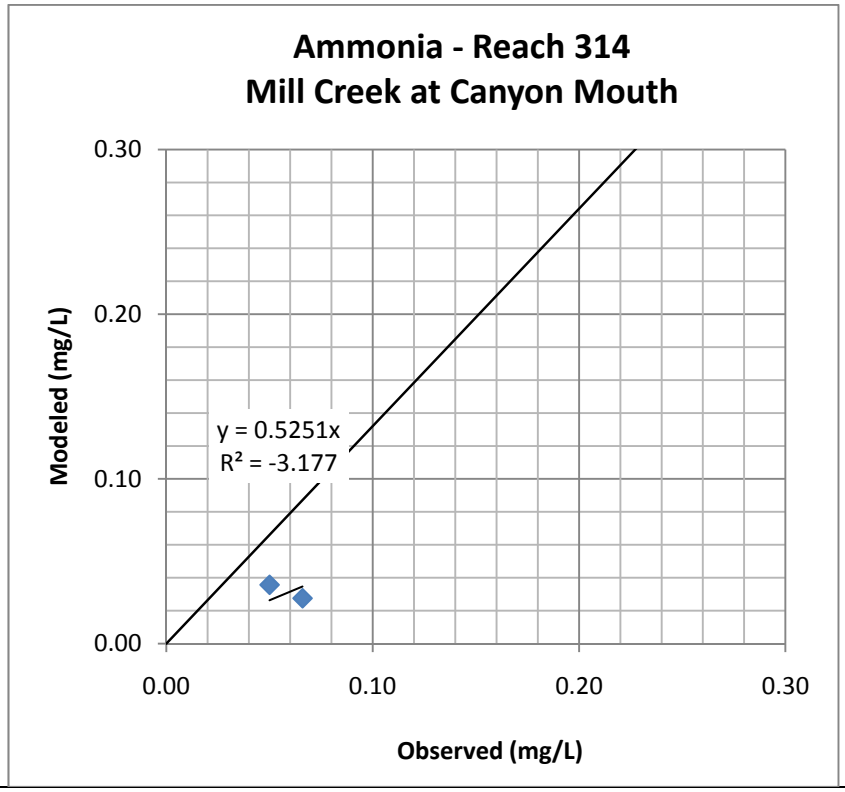

Ammonia - Reach 304
Mill Creek above CVWRF
Ammonia Concentration (mg/L)
Flow (cfs)
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
500
450
400
350
300
250
200
150
100
50
0
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000
Daily Data

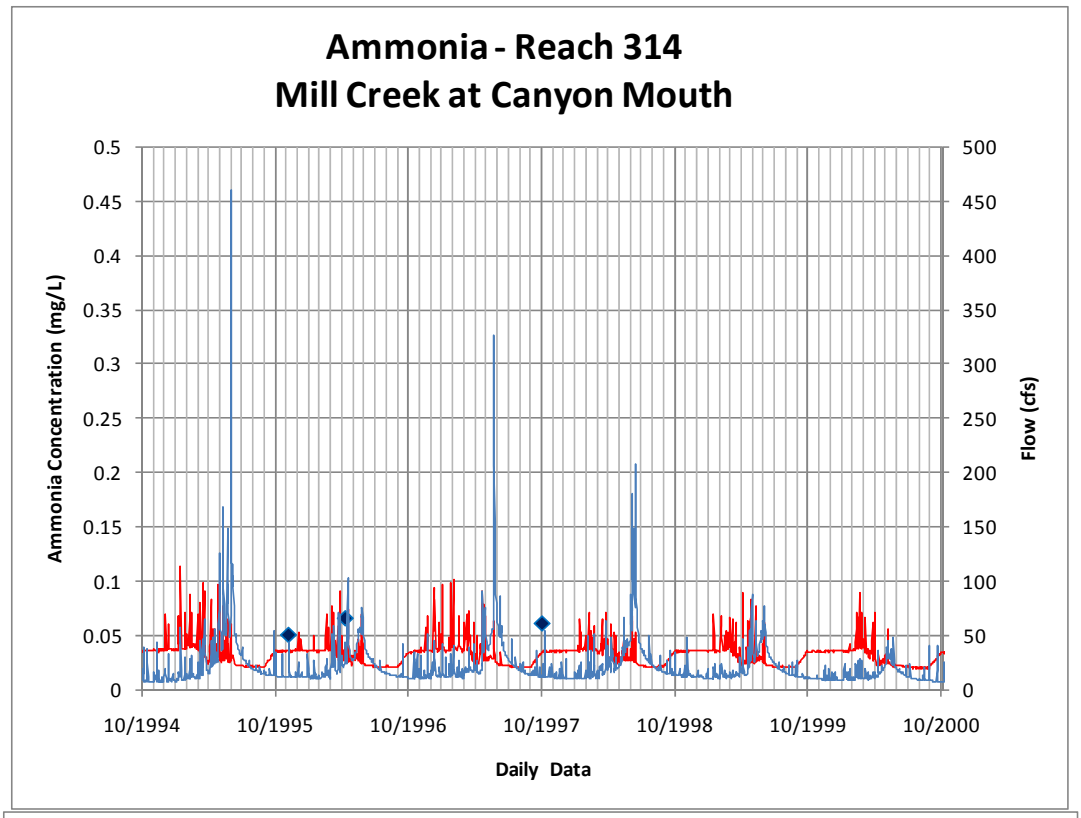

Ammonia- Reach 304
Mill Creek above CVWRF
Ammonia Concentration (mg/L)
Flow (cfs)
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
500
450
400
350
300
250
200
150
100
50
0
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006
Daily Data

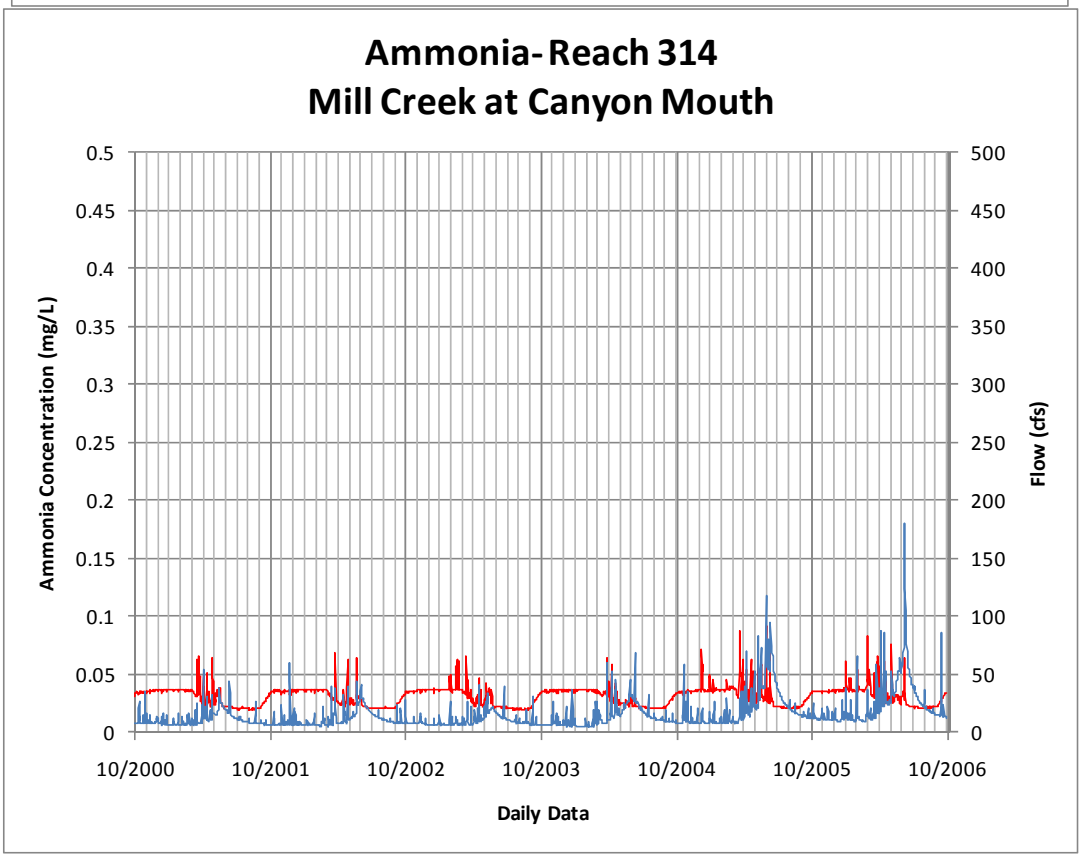
4.1.6.2 Mill Creek at Canyon Mouth

Ammonia - Reach 314 Mill Creek at Canyon Mouth

MFE (N-S):	-16.83	
Correlation Coeff.:	-0.82	
	Observed	Modeled
DATE	TAM-OUTTOT	TAM-OUTTOT
11/7/1995	0.05	0.04
4/11/1996	0.07	0.03
10/3/1997	0.06	0.03



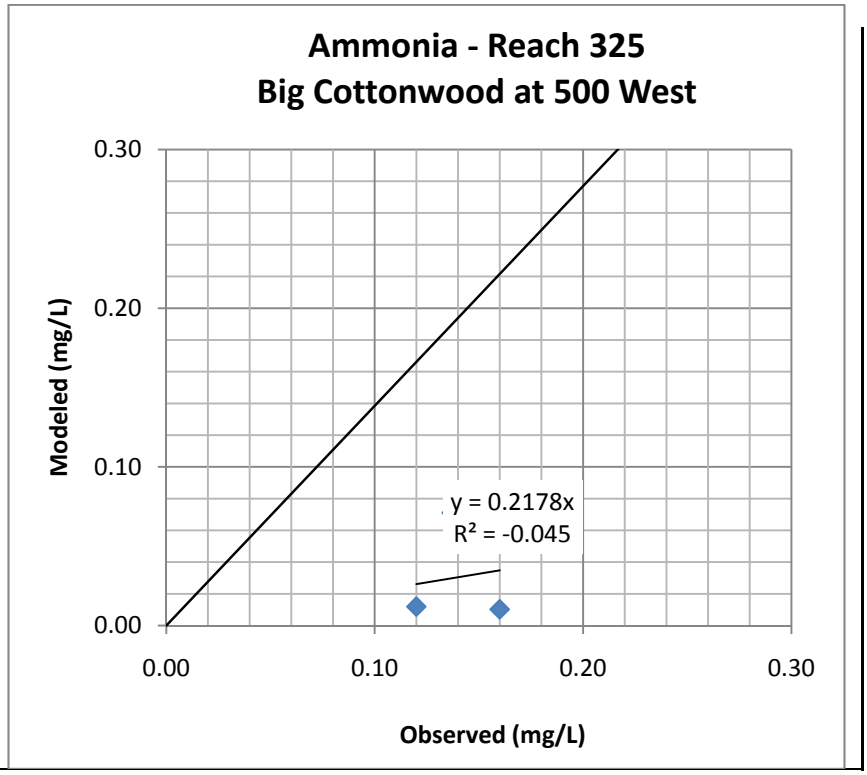

Ammonia - Reach 314
Mill Creek at Canyon Mouth
Ammonia Concentration (mg/L)
Flow (cfs)
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
500
450
400
350
300
250
200
150
100
50
0
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000
Daily Data

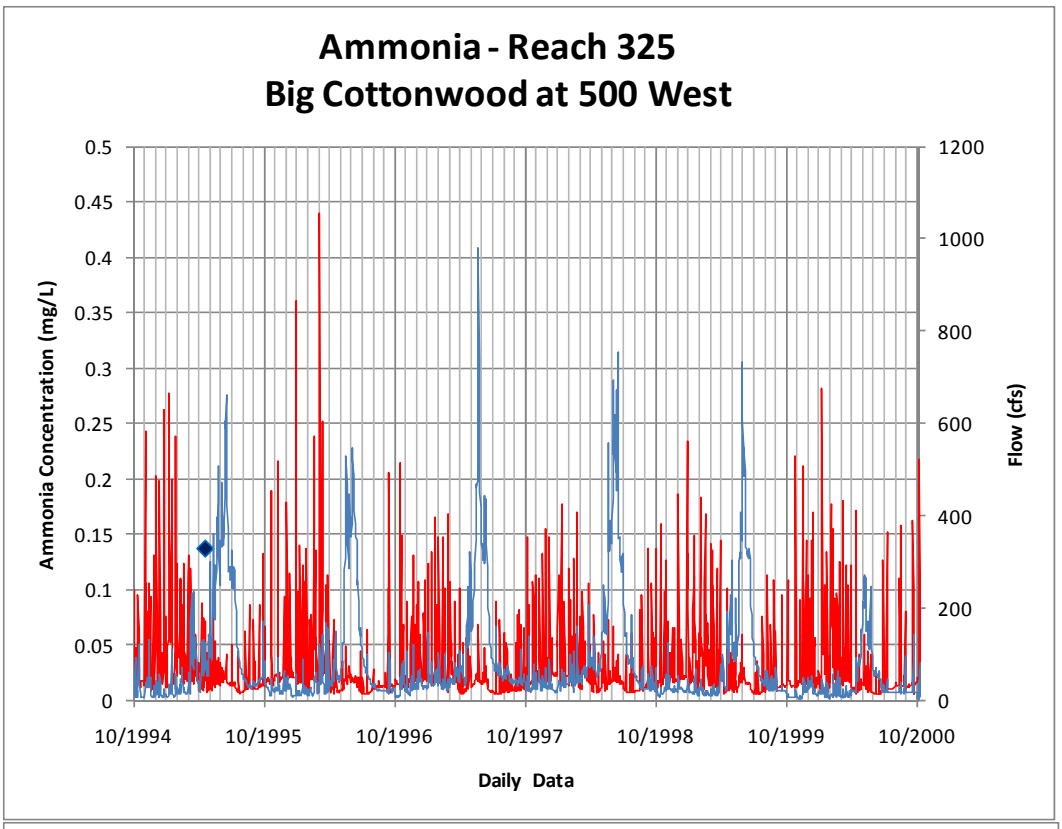

Ammonia- Reach 314
Mill Creek at Canyon Mouth
Ammonia Concentration (mg/L)
Flow (cfs)
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
500
450
400
350
300
250
200
150
100
50
0
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006
Daily Data

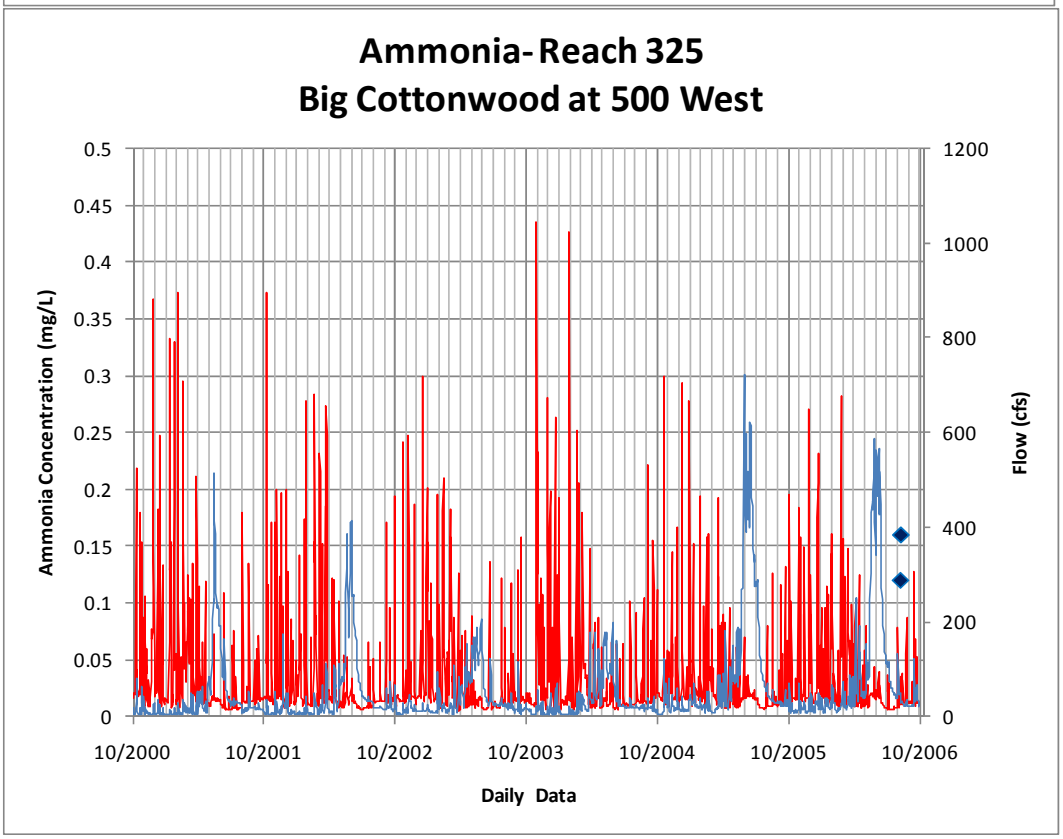
4.1.6.3 Big Cottonwood at 500 West

Ammonia - Reach 325 Big Cottonwood at 500 West

MFE (N-S):	-46.73	
Correlation Coeff.:	-0.11	
	Observed	Modeled
DATE	TAM-OUTTOT	TAM-OUTTOT
4/19/1995	0.14	0.07
8/8/2006	0.12	0.01
8/9/2006	0.16	0.01



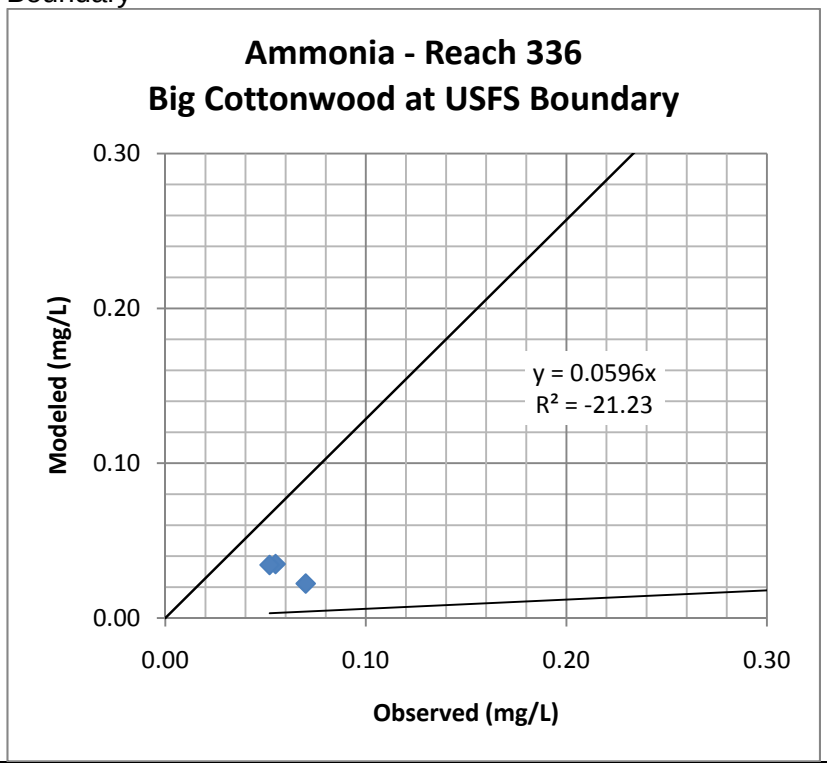

Ammonia - Reach 325
Big Cottonwood at 500 West
Ammonia Concentration (mg/L)
Flow (cfs)
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
0
200
400
600
800
1000
1200
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000
Daily Data

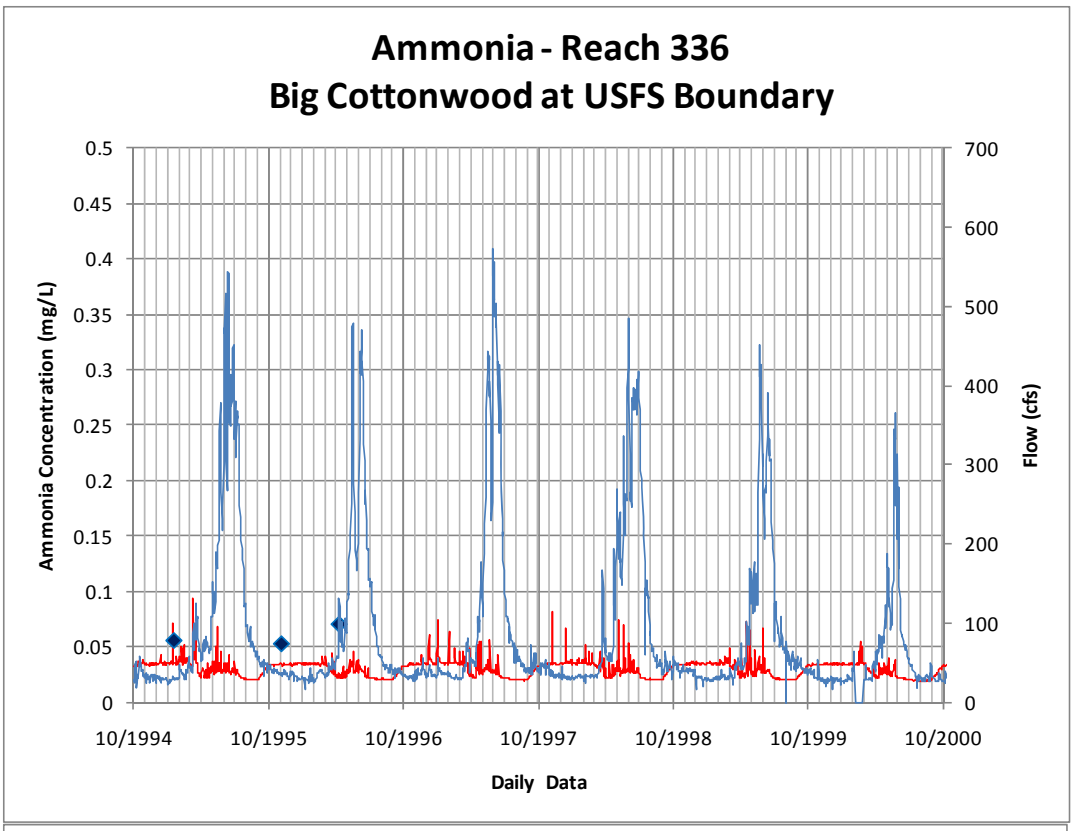

Ammonia- Reach 325
Big Cottonwood at 500 West
Ammonia Concentration (mg/L)
Flow (cfs)
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
0
200
400
600
800
1000
1200
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006
Daily Data

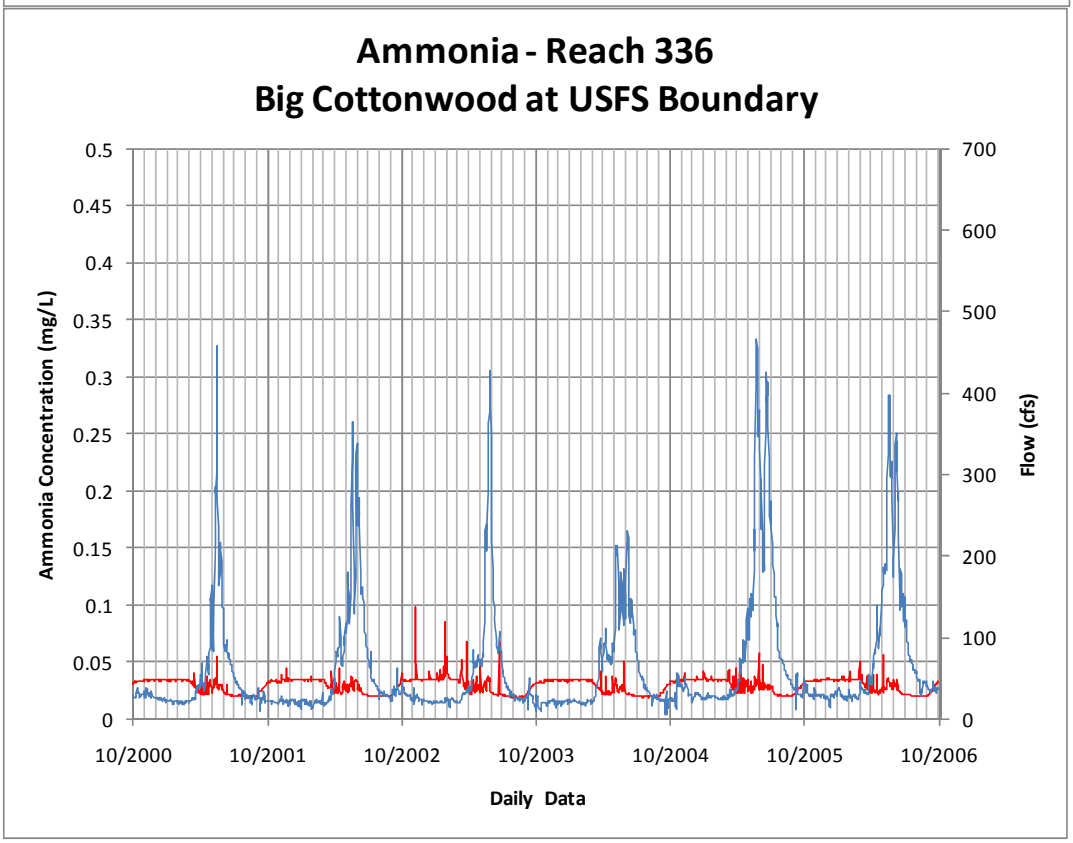
4.1.6.4 Big Cottonwood at USFS Boundary

Ammonia - Reach 336 Big Cottonwood at USFS Boundary

MFE (N-S):	-0.46	
Correlation Coeff.:	0.19	
	Observed	Modeled
DATE	TAM-OUTTOT	TAM-OUTTOT
1/20/1995	0.06	0.03
6/13/1995	0.67	0.03
11/7/1995	0.05	0.03
4/11/1996	0.07	0.02

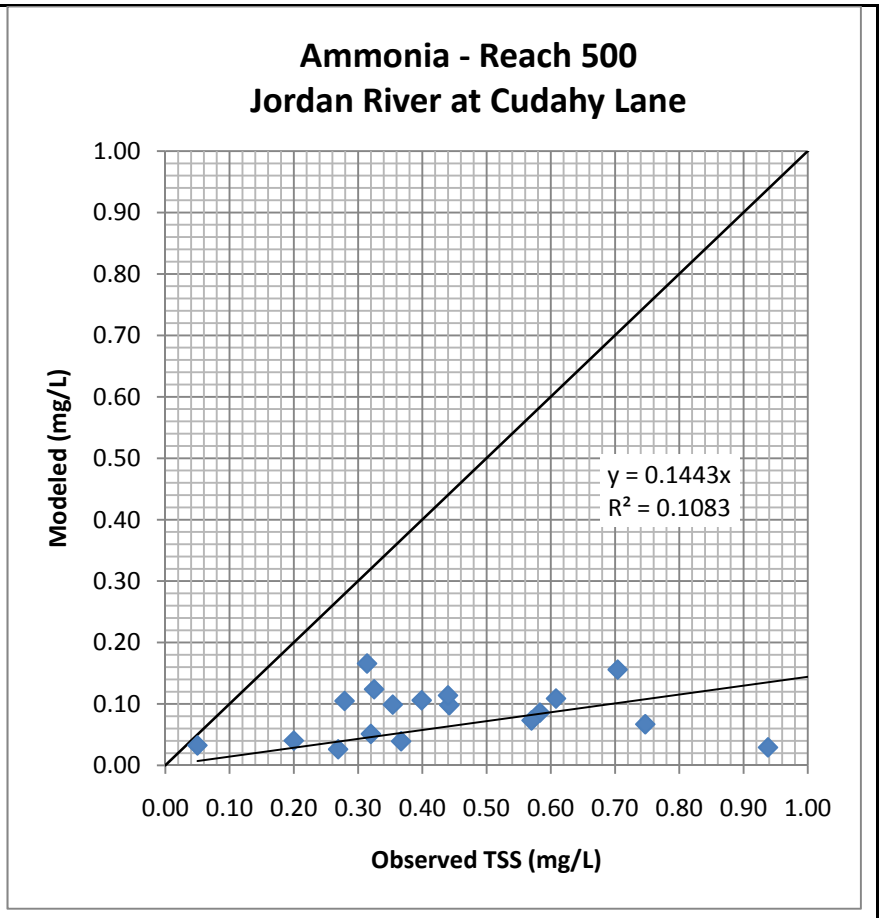


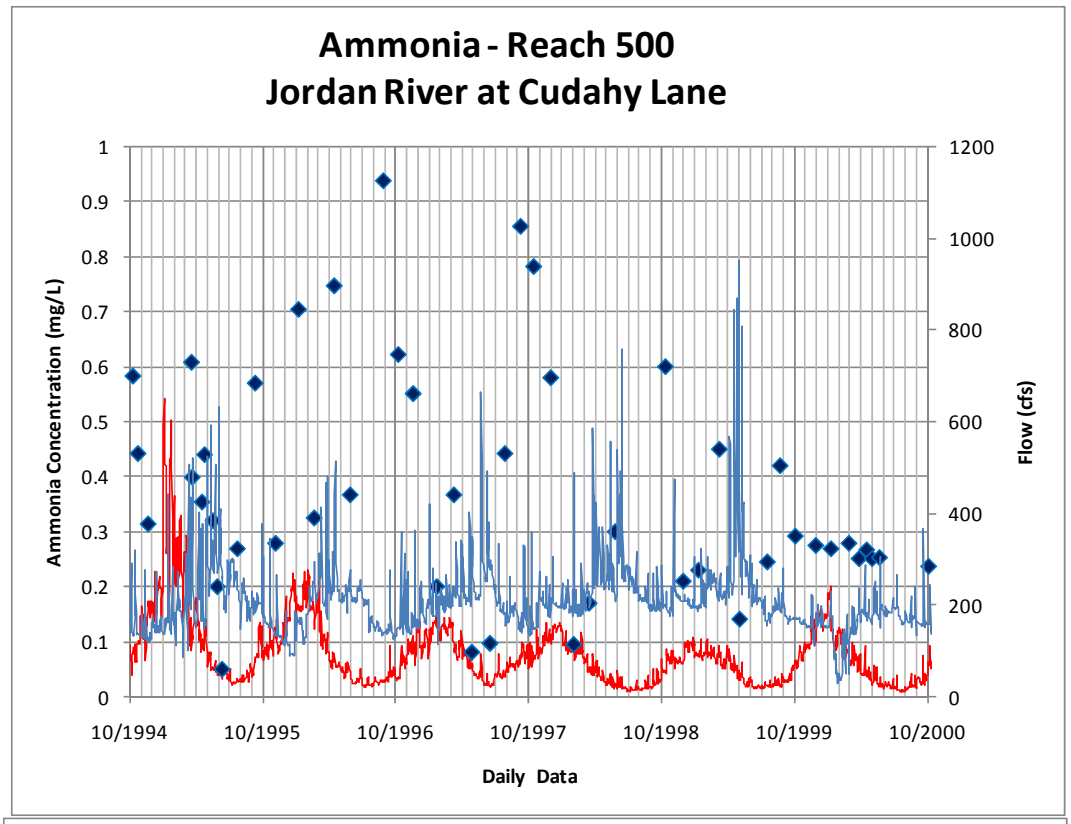

Ammonia - Reach 336
Big Cottonwood at USFS Boundary
Ammonia Concentration (mg/L)
Flow (cfs)
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
700
600
500
400
300
200
100
0
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000
Daily Data

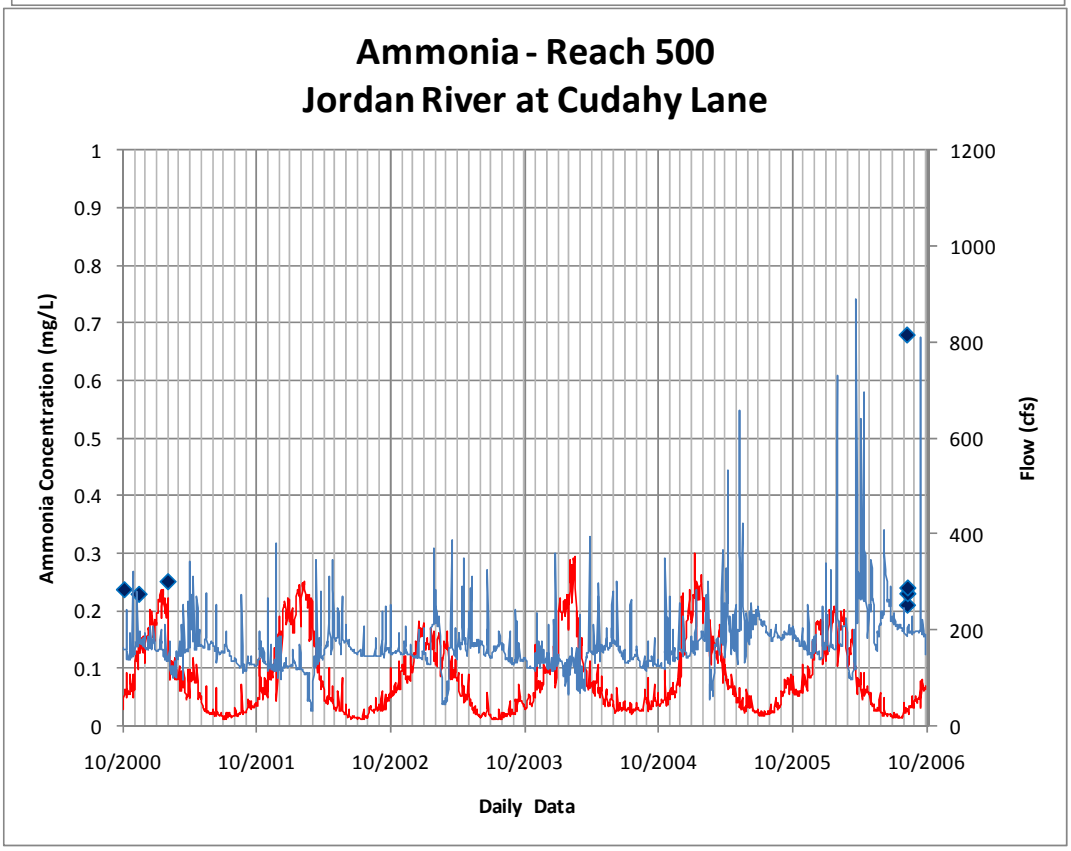

Ammonia - Reach 336
Big Cottonwood at USFS Boundary
Ammonia Concentration (mg/L)
Flow (cfs)
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
700
600
500
400
300
200
100
0
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006
Daily Data

4.1.6.5 Jordan River at Cudahy Lane

Ammonia - Reach 500 Jordan River at Cudahy Lane		
MFE (N-S):	-0.96	
Correlation Coeff.:	0.47	
	Observed	Modeled
DATE	TAM-OUTTOT	TAM-OUTTOT
10/11/1994	0.58	0.09
10/25/1994	0.44	0.10
11/22/1994	0.31	0.17
12/6/1994	1.43	0.14
1/17/1995	1.47	0.19
1/31/1995	1.19	0.36
2/21/1995	1.13	0.23
3/21/1995	0.61	0.11
3/23/1995	0.40	0.11
4/5/1995	1.84	0.13
4/19/1995	0.35	0.10
4/26/1995	0.44	0.11
5/19/1995	0.32	0.05
5/31/1995	0.20	0.04
6/13/1995	0.05	0.03
7/25/1995	0.27	0.03
9/12/1995	0.57	0.07
11/7/1995	0.28	0.11
1/9/1996	0.70	0.16
2/21/1996	0.33	0.12
4/16/1996	0.75	0.07
5/30/1996	0.37	0.04
8/29/1996	0.94	0.03
10/9/1996	0.62	0.03
11/19/1996	0.55	0.09
1/23/1997	0.20	0.12
3/11/1997	0.37	0.09
4/29/1997	0.08	0.06
6/18/1997	0.10	0.02
7/29/1997	0.44	0.04
9/10/1997	0.86	0.06
10/16/1997	0.78	0.07
12/2/1997	0.58	0.10
2/3/1998	0.10	0.08
3/17/1998	0.17	0.05
5/28/1998	0.30	0.02
10/13/1998	0.60	0.05
12/1/1998	0.21	0.06
1/12/1999	0.23	0.07
3/10/1999	0.45	0.09
5/5/1999	0.14	0.03
7/20/1999	0.25	0.02
8/24/1999	0.42	0.02
10/5/1999	0.29	0.06
11/30/1999	0.28	0.10
1/11/2000	0.27	0.19
2/29/2000	0.28	0.08
3/28/2000	0.25	0.05
4/18/2000	0.27	0.05
5/3/2000	0.25	0.02
5/23/2000	0.25	0.02
10/5/2000	0.24	0.06
11/14/2000	0.23	0.16
2/1/2001	0.25	0.20
8/8/2006	0.68	0.03
8/9/2006	0.21	0.03
8/10/2006	0.24	0.03
8/10/2006	0.24	0.03

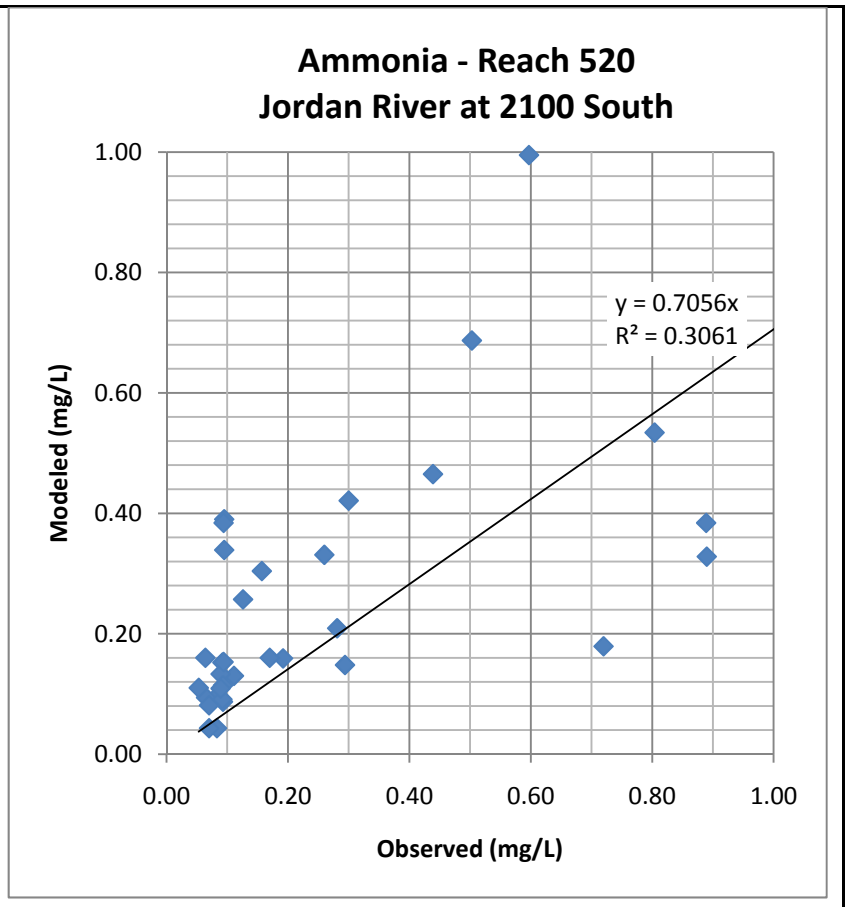


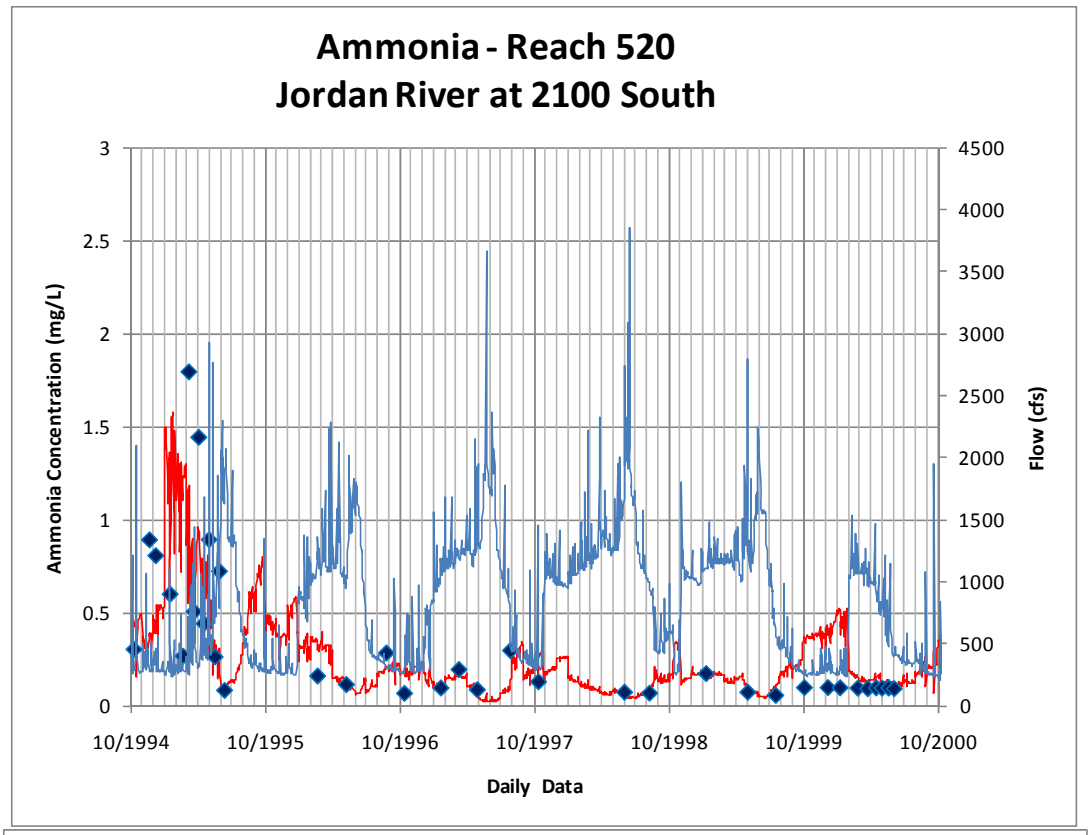

Ammonia - Reach 500
Jordan River at Cudahy Lane
Ammonia Concentration (mg/L)
Flow (cfs)
Daily Data
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1200
1000
800
600
400
200
0
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000

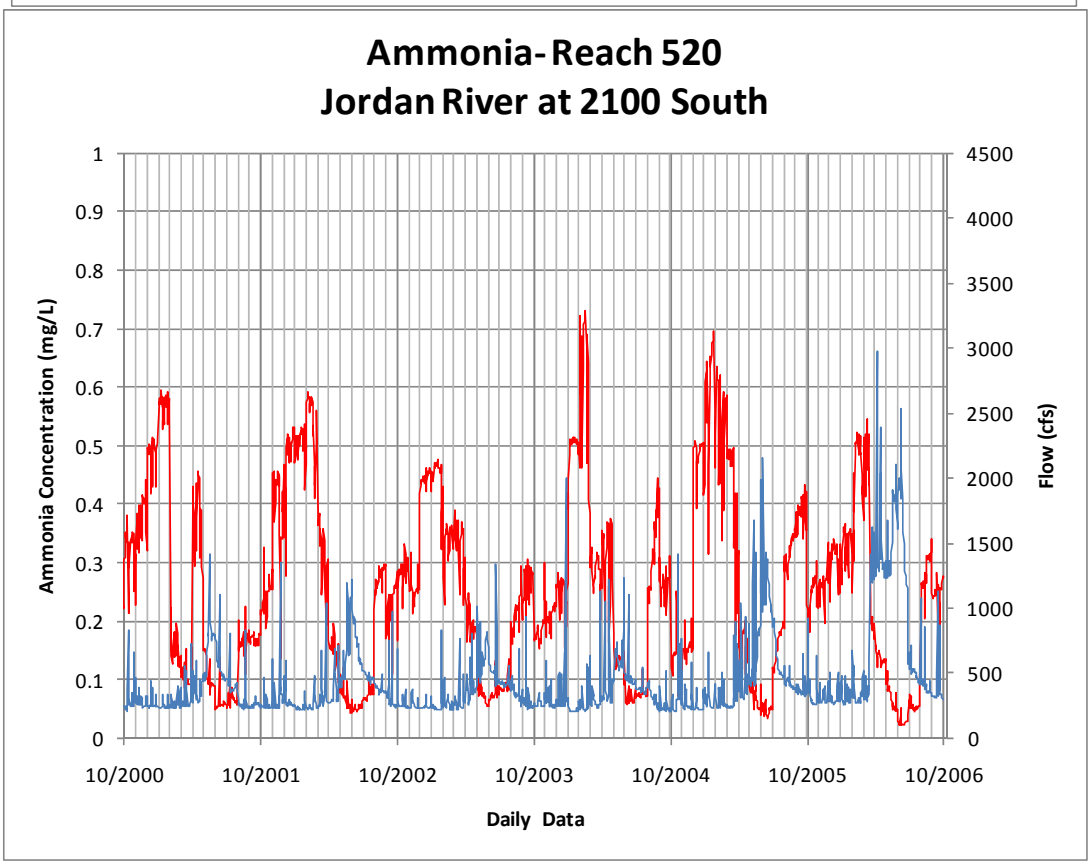

Ammonia - Reach 500
Jordan River at Cudahy Lane
Ammonia Concentration (mg/L)
Flow (cfs)
Daily Data
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1200
1000
800
600
400
200
0
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006

4.1.6.6 Jordan River at 2100 South

Ammonia - Reach 520 Jordan River at 2100 South		
MFE (N-S):	0.45	
Correlation Coeff.:	0.68	
	Observed	Modeled
DATE	TAM-OUTTOT	TAM-OUTTOT
10/11/1994	0.30	0.42
11/22/1994	0.89	0.38
12/9/1994	0.80	0.53
1/17/1995	0.60	1.00
2/21/1995	0.26	1.23
3/9/1995	1.79	1.13
3/23/1995	0.50	0.69
4/5/1995	1.44	0.91
4/19/1995	0.44	0.47
5/3/1995	0.89	0.33
5/19/1995	0.26	0.33
5/31/1995	0.72	0.18
6/14/1995	0.08	0.09
2/22/1996	0.16	0.30
5/10/1996	0.11	0.13
8/27/1996	0.28	0.21
10/15/1996	0.06	0.16
1/22/1997	0.09	0.09
3/12/1997	0.19	0.16
5/1/1997	0.08	0.04
7/30/1997	0.29	0.15
10/14/1997	0.13	0.26
6/5/1998	0.07	0.04
8/12/1998	0.07	0.09
1/13/1999	0.17	0.16
5/6/1999	0.07	0.08
7/21/1999	0.05	0.11
10/7/1999	0.10	0.34
12/10/1999	0.10	0.39
1/12/2000	0.09	0.38
2/29/2000	0.09	0.15
3/27/2000	0.09	0.13
4/19/2000	0.09	0.15
5/5/2000	0.09	0.09
5/23/2000	0.09	0.11
6/7/2000	0.09	0.11

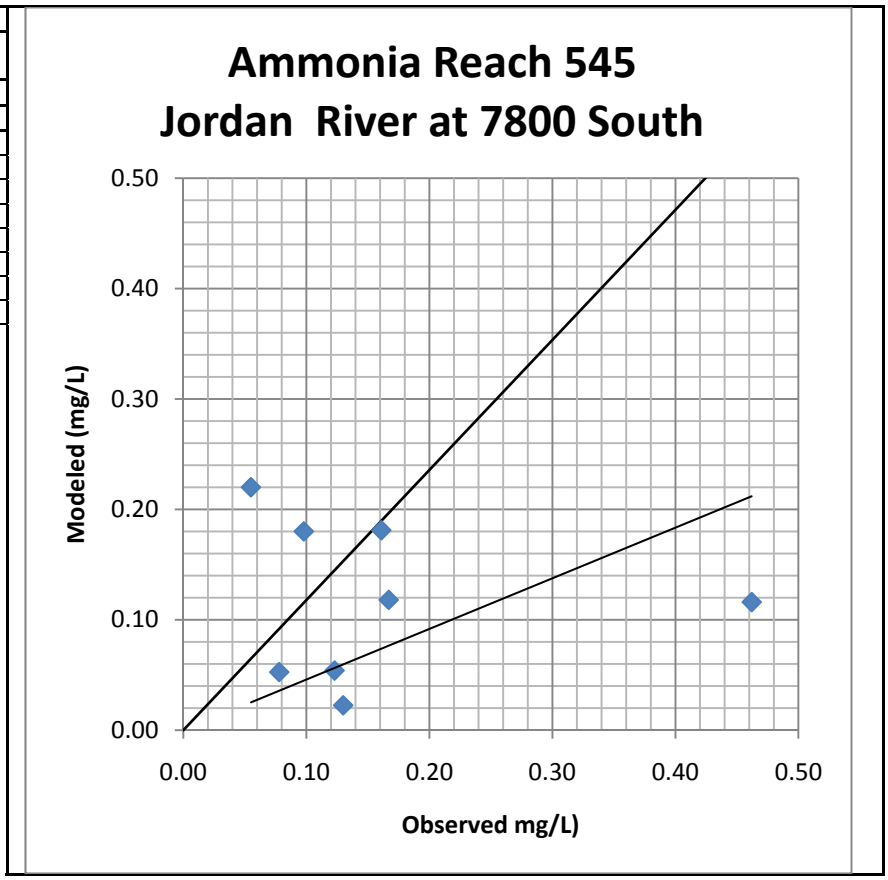


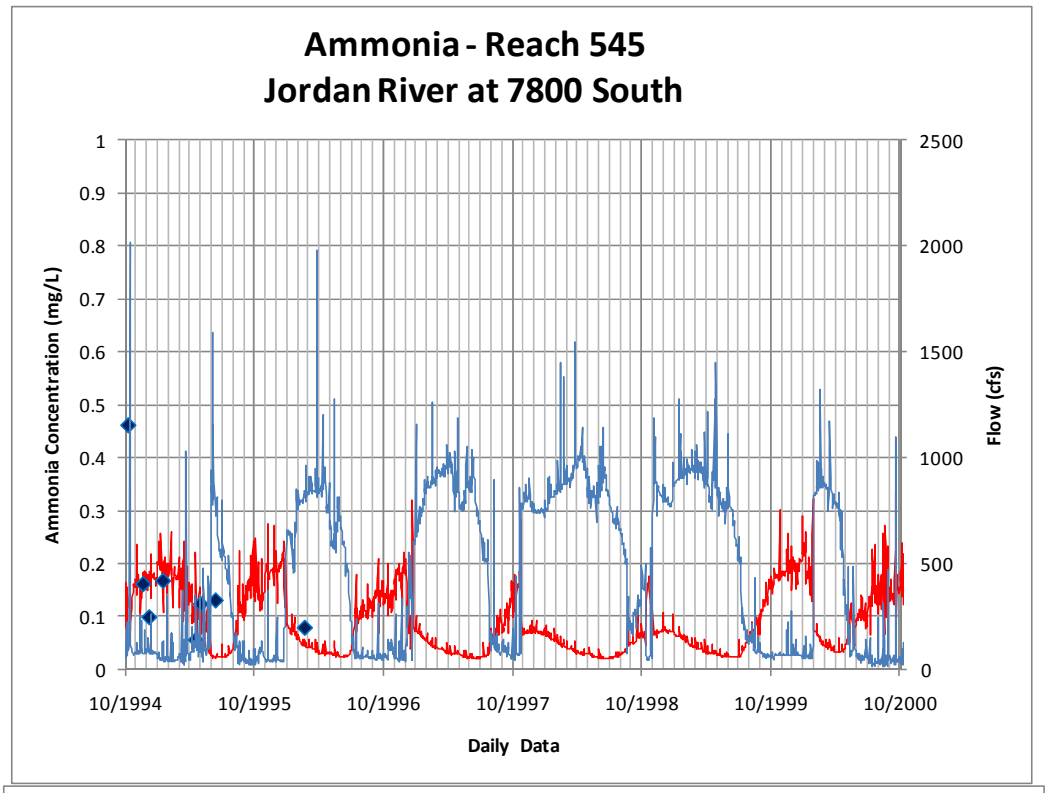

Ammonia - Reach 520
Jordan River at 2100 South
Ammonia Concentration (mg/L)
Flow (cfs)
Daily Data
3
2.5
2
1.5
1
0.5
0
4500
4000
3500
3000
2500
2000
1500
1000
500
0
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000

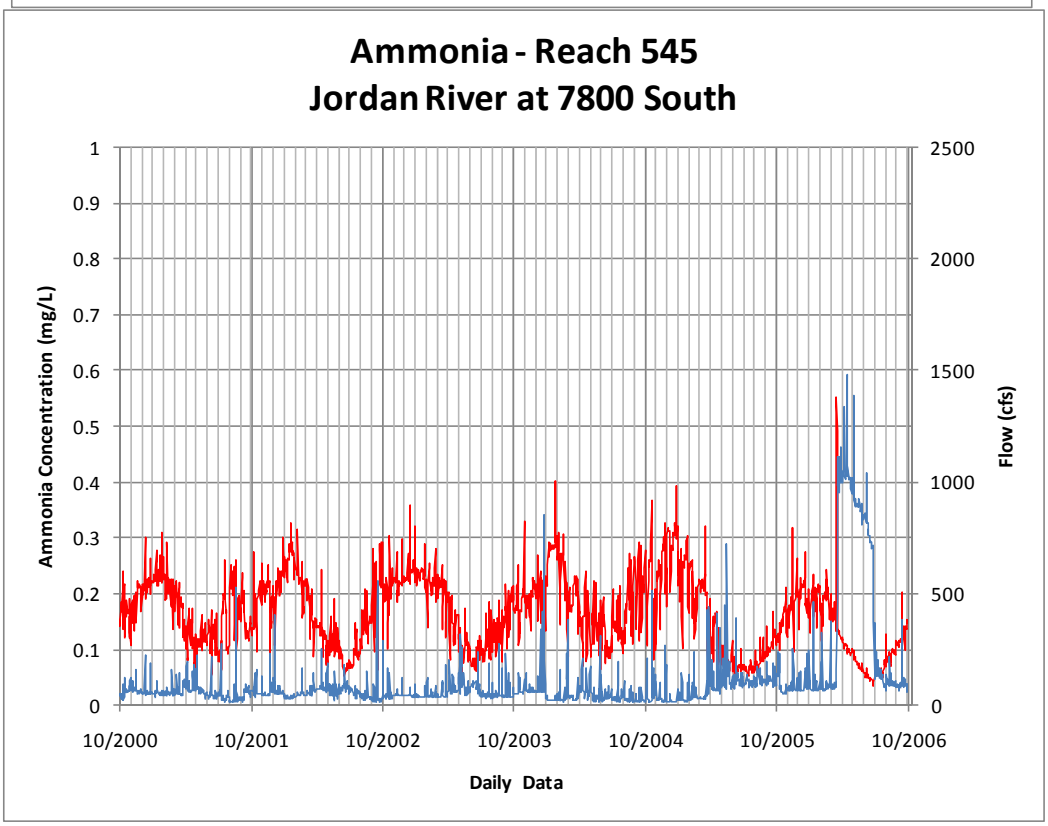

Ammonia- Reach 520
Jordan River at 2100 South
Ammonia Concentration (mg/L)
Flow (cfs)
Daily Data
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
4500
4000
3500
3000
2500
2000
1500
1000
500
0
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006

4.1.6.7 Jordan River at 7800 South

Ammonia - Reach 545 Jordan River at 7800 South		
MFE (N-S):	-0.51	
Correlation Coeff.:	-1.00	
	Observed	Modeled
DATE	TAM-OUTTOT	TAM-OUTTOT
10/11/1994	0.46	0.12
11/22/1994	0.16	0.18
12/9/1994	0.10	0.18
1/17/1995	0.17	0.12
4/19/1995	0.06	0.22
5/3/1995	0.12	0.05
6/14/1995	0.13	0.02
2/20/1996	0.08	0.05



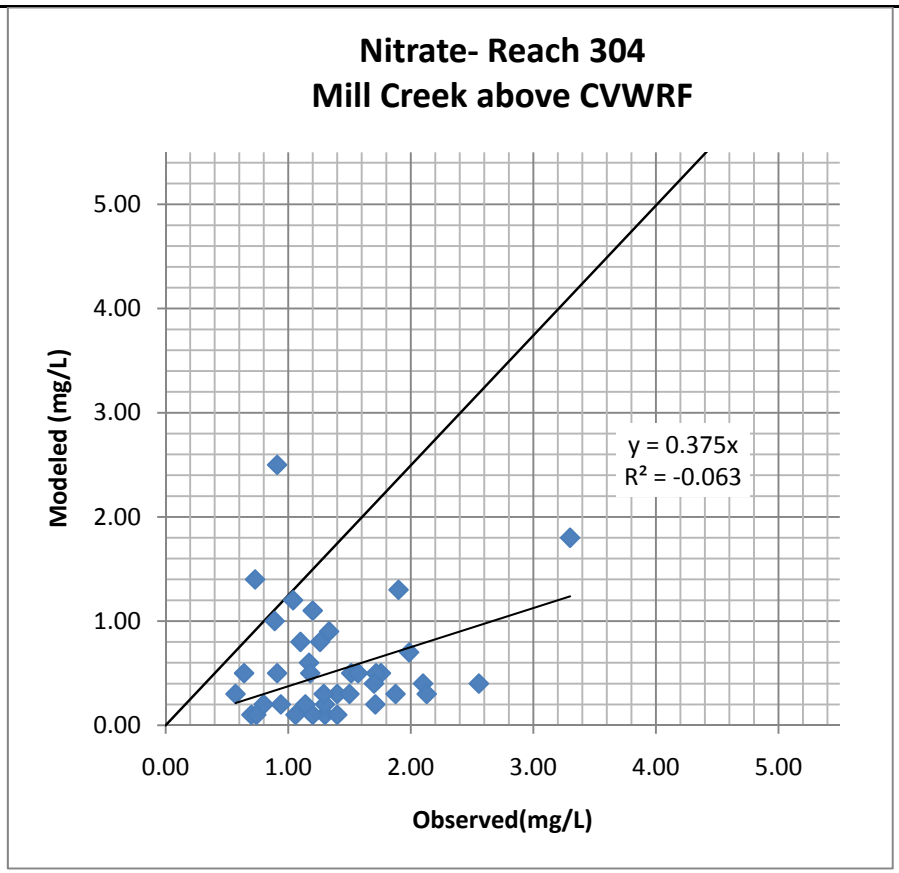

Ammonia - Reach 545
Jordan River at 7800 South
Ammonia Concentration (mg/L)
Flow (cfs)
Daily Data
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
2500
2000
1500
1000
500
0
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000

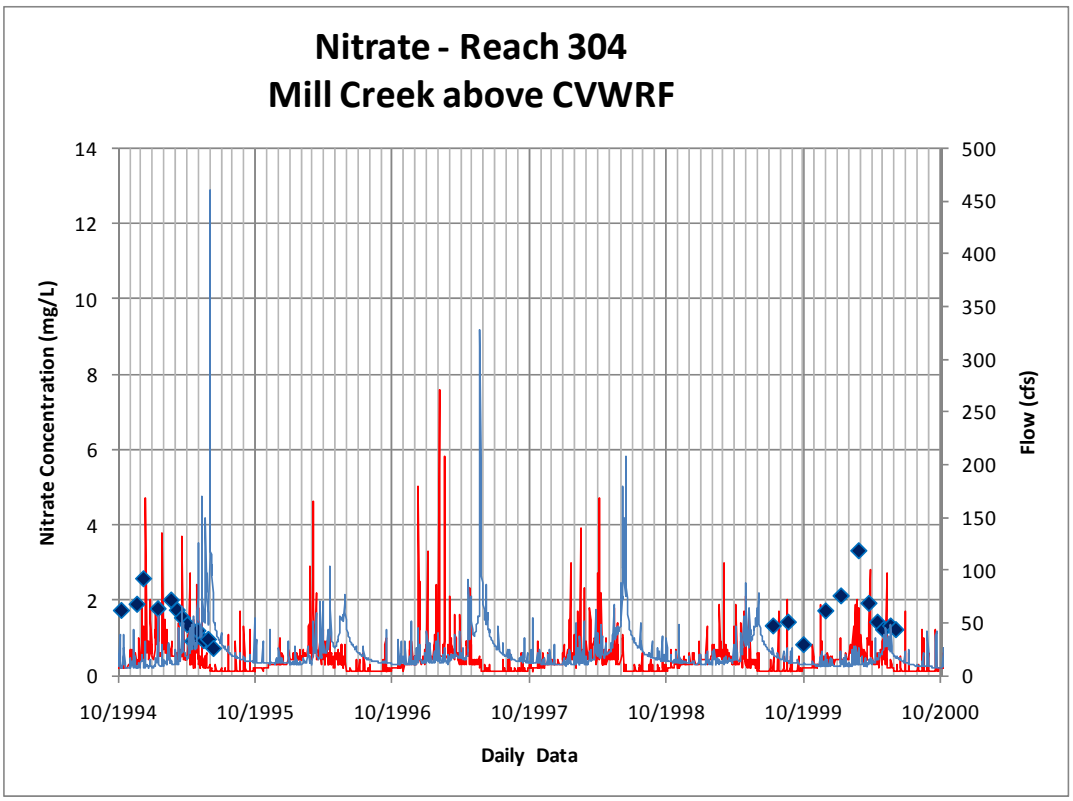

Ammonia - Reach 545
Jordan River at 7800 South
Ammonia Concentration (mg/L)
Flow (cfs)
Daily Data
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
2500
2000
1500
1000
500
0
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006

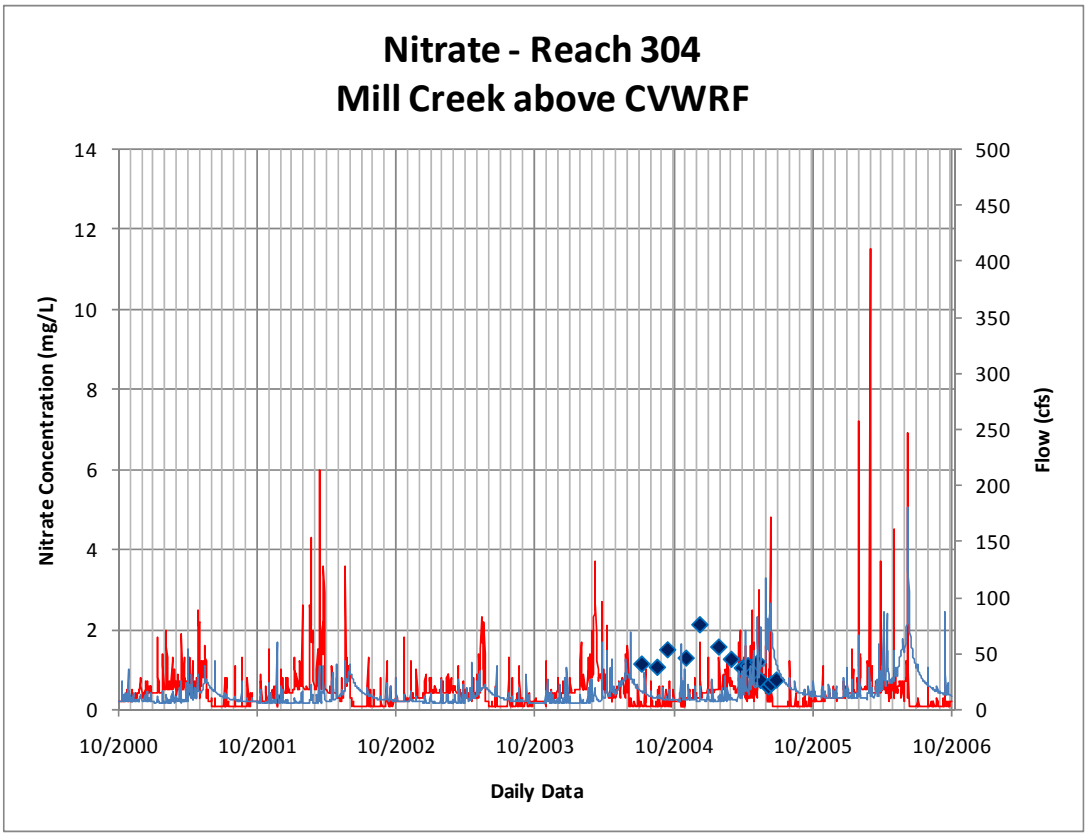
4.1.7 Nitrate

4.1.7.1 Mill Creek above CVWRF

Nitrate - Reach 304 Mill Creek above CVWRF		
MFE (N-S):	-2.73	
Correlation Coeff.:	0.14	
	Observed	Modeled
DATE	NO3	NO3-CONCDIS
10/11/1994	1.71	0.20
11/22/1994	1.88	0.30
12/9/1994	2.56	0.40
1/17/1995	1.76	0.50
2/21/1995	1.99	0.70
3/9/1995	1.72	0.50
3/23/1995	1.51	0.50
4/5/1995	1.33	0.90
4/19/1995	0.89	1.00
5/3/1995	1.17	0.60
5/19/1995	0.91	0.50
5/31/1995	0.94	0.20
6/14/1995	0.70	0.10
7/16/1999	1.30	0.10
8/25/1999	1.40	0.10
10/5/1999	0.80	0.20
12/3/1999	1.70	0.40
1/13/2000	2.10	0.40
2/29/2000	3.30	1.80
3/27/2000	1.90	1.30
4/19/2000	1.40	0.30
5/5/2000	1.20	1.10
5/24/2000	1.30	0.20
6/7/2000	1.20	0.10
7/8/2004	1.14	0.20
8/18/2004	1.06	0.10
9/14/2004	1.50	0.30
11/2/2004	1.29	0.30
12/8/2004	2.13	0.30
1/27/2005	1.57	0.50
3/1/2005	1.26	0.80
3/30/2005	1.04	1.20
4/14/2005	1.10	0.80
4/26/2005	0.91	2.50
5/10/2005	1.18	0.50
5/17/2005	0.73	1.40
6/7/2005	0.57	0.30
6/14/2005	0.64	0.50
6/28/2005	0.74	0.10

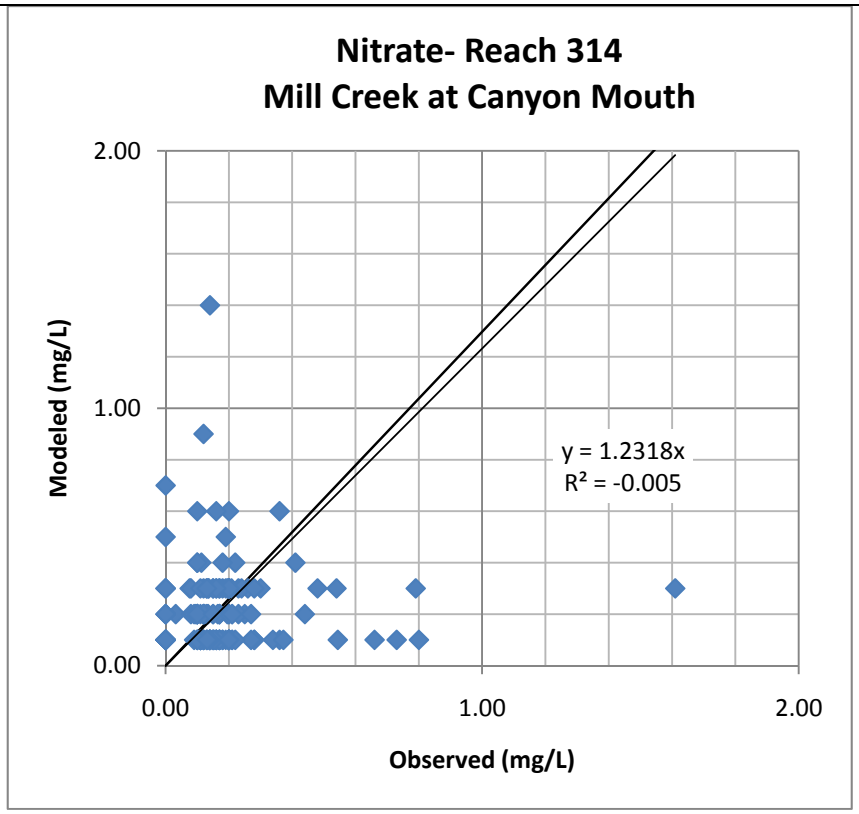


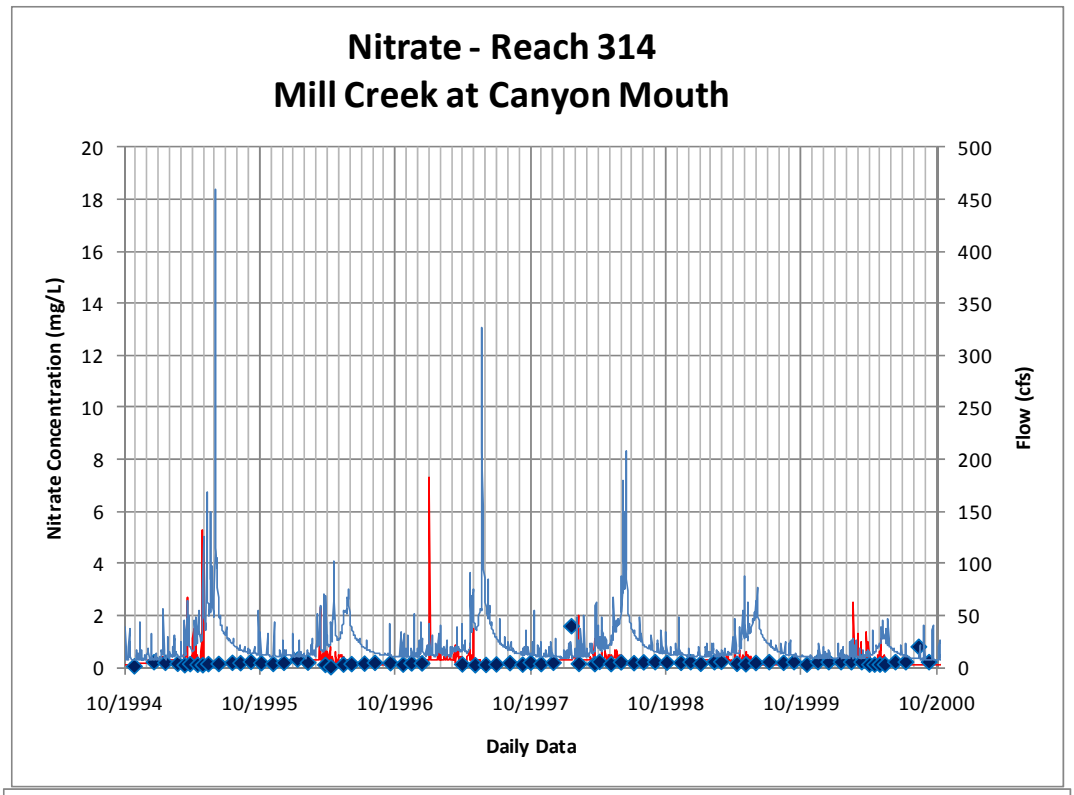

Nitrate - Reach 304
Mill Creek above CVWRF
Nitrate Concentration (mg/L)
Flow (cfs)
Daily Data
0
2
4
6
8
10
12
14
0
50
100
150
200
250
300
350
400
450
500
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000

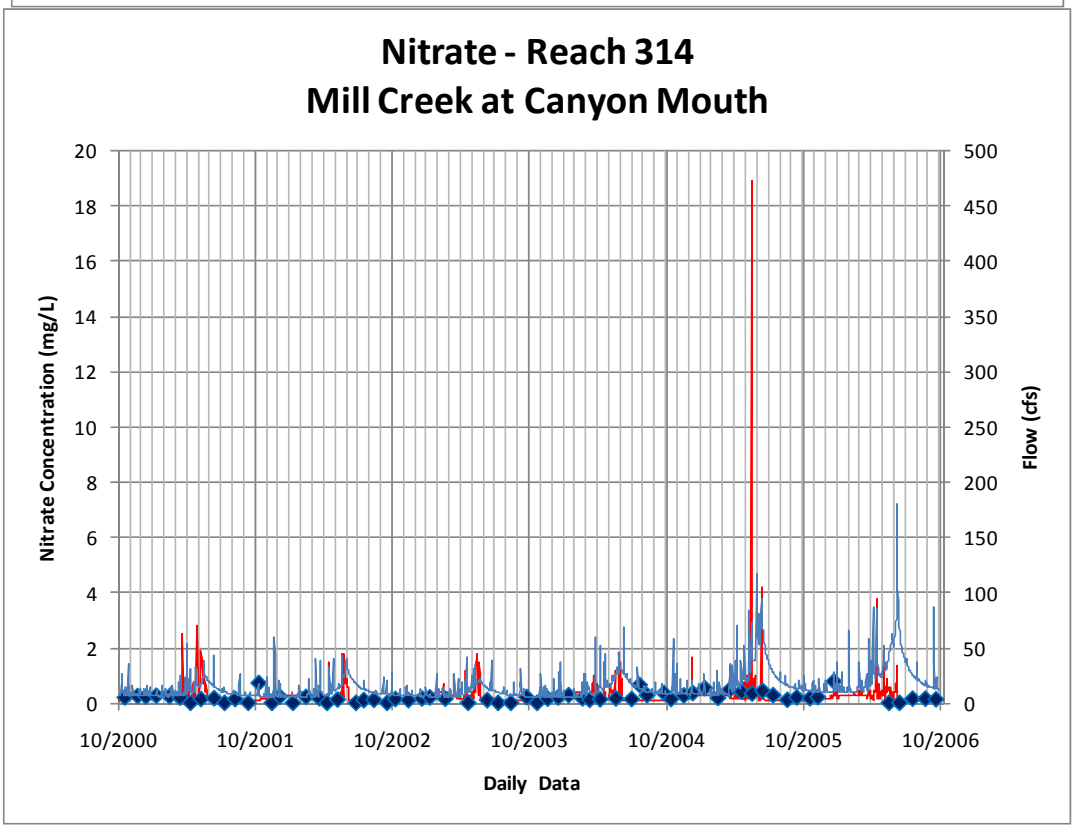

Nitrate - Reach 304
Mill Creek above CVWRF
Nitrate Concentration (mg/L)
Flow (cfs)
Daily Data
0
2
4
6
8
10
12
14
0
50
100
150
200
250
300
350
400
450
500
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006

4.1.7.2 Mill Creek at Canyon Mouth

Nitrate - Reach 314 Mill Creek at Canyon Mouth		
MFE (N-S):	-70.24	
Correlation Coeff.:	0.07	
	Observed	Modeled
DATE	NO3	NO3-CONCDIS
10/28/1994	0.03	0.20
12/20/1994	0.20	0.30
1/20/1995	0.17	0.30
2/22/1995	0.14	0.30
3/13/1995	0.08	0.30
3/28/1995	0.12	0.20
4/17/1995	0.10	0.20
5/1/1995	0.08	0.20
5/16/1995	0.12	0.20
6/13/1995	0.13	0.10
7/20/1995	0.17	0.10
8/11/1995	0.16	0.10
9/8/1995	0.21	0.10
10/6/1995	0.16	0.10
11/7/1995	0.13	0.20
12/6/1995	0.17	0.20
1/12/1996	0.30	0.30
2/9/1996	0.18	0.30
3/27/1996	0.09	0.20
4/11/1996	0.00	0.70
5/15/1996	0.10	0.40
6/6/1996	0.12	0.10
7/11/1996	0.14	0.10
8/8/1996	0.17	0.10
9/19/1996	0.16	0.10
10/23/1996	0.10	0.20
11/15/1996	0.15	0.20
12/13/1996	0.15	0.30
4/1/1997	0.11	0.20
5/6/1997	0.08	0.30
6/4/1997	0.09	0.10
7/2/1997	0.11	0.10
8/8/1997	0.16	0.10
9/11/1997	0.10	0.10
10/3/1997	0.18	0.10
10/31/1997	0.12	0.20
12/3/1997	0.17	0.20
1/21/1998	1.61	0.30
2/10/1998	0.13	0.30
3/25/1998	0.12	0.90
4/7/1998	0.21	0.20
5/8/1998	0.12	0.30
6/4/1998	0.19	0.50
7/9/1998	0.16	0.10
8/4/1998	0.19	0.10
9/4/1998	0.20	0.10
10/6/1998	0.18	0.10
11/13/1998	0.17	0.20
12/9/1998	0.20	0.20
1/5/1999	0.14	0.30
2/11/1999	0.20	0.30
3/2/1999	0.21	0.30
4/13/1999	0.13	0.20
5/7/1999	0.11	0.40
6/3/1999	0.16	0.20
7/9/1999	0.20	0.10
8/17/1999	0.17	0.10
9/14/1999	0.20	0.10
10/19/1999	0.10	0.20
11/18/1999	0.20	0.20
12/17/1999	0.20	0.30
1/19/2000	0.20	0.30
2/16/2000	0.20	0.30
3/15/2000	0.20	0.60

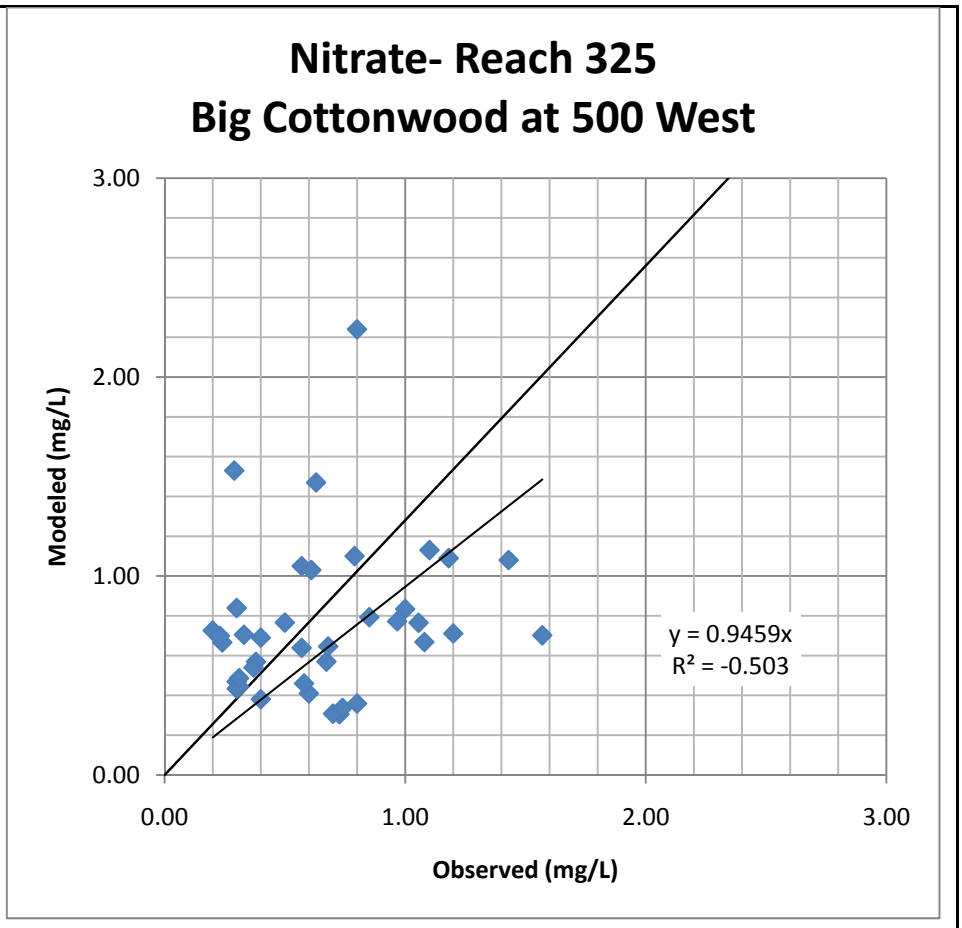


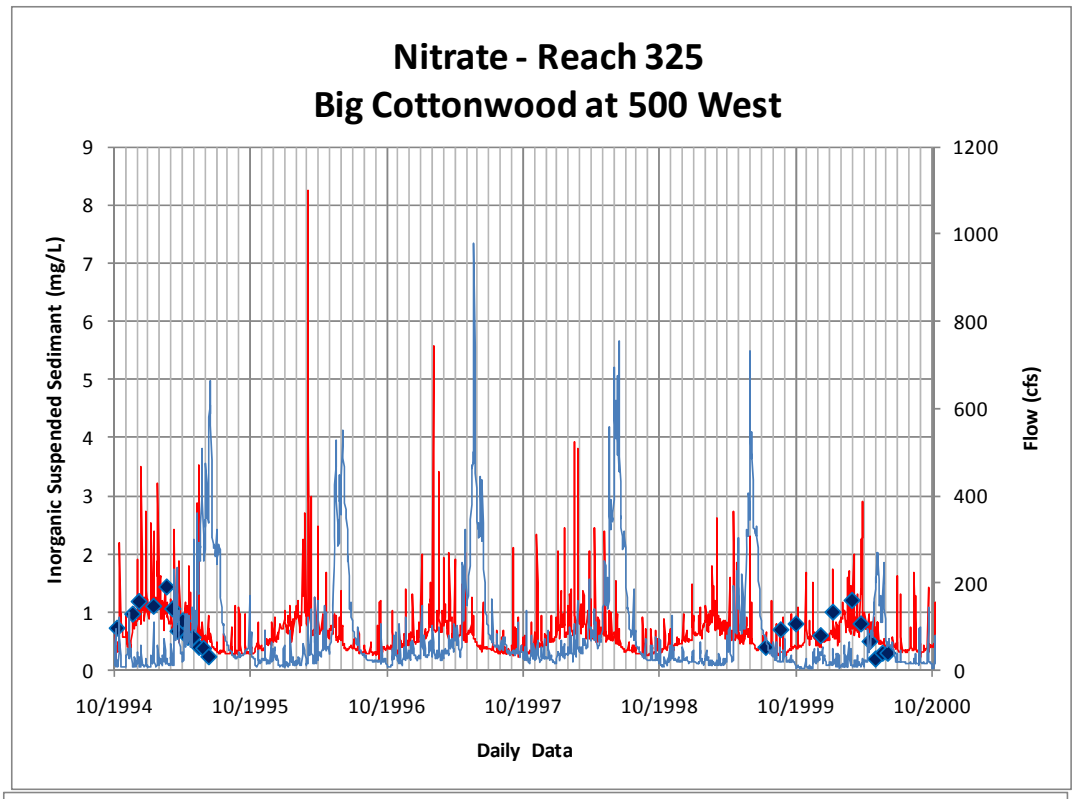

Nitrate - Reach 314
Mill Creek at Canyon Mouth
Nitrate Concentration (mg/L)
Flow (cfs)
Daily Data
0
2
4
6
8
10
12
14
16
18
20
0
50
100
150
200
250
300
350
400
450
500
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000

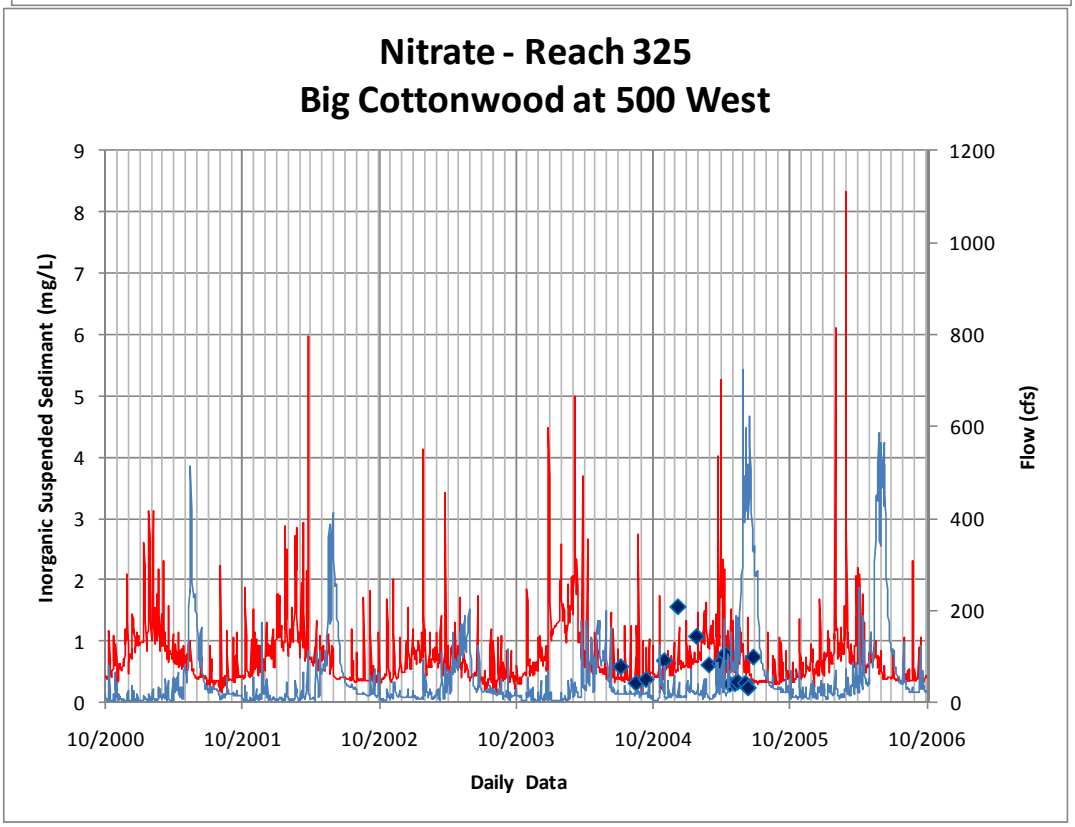

Nitrate - Reach 314
Mill Creek at Canyon Mouth
Nitrate Concentration (mg/L)
Flow (cfs)
Daily Data
0
2
4
6
8
10
12
14
16
18
20
0
50
100
150
200
250
300
350
400
450
500
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006

4.1.7.3 Big Cottonwood at 500 West

Nitrate - Reach 325 Big Cottonwood at 500 West		
MFE (N-S):	0.40	
Correlation Coeff.:	0.61	
	Observed	Modeled
DATE	NO3	NO3-CONCDIS
10/11/1994	0.73	0.31
11/22/1994	0.97	0.77
12/9/1994	1.18	1.09
1/17/1995	1.10	1.13
2/21/1995	1.43	1.08
3/9/1995	1.06	0.77
3/23/1995	0.67	0.57
4/5/1995	0.85	0.79
4/19/1995	0.57	0.64
5/3/1995	0.57	1.05
5/19/1995	0.40	0.69
5/31/1995	0.38	0.57
6/14/1995	0.24	0.67
7/16/1999	0.40	0.38
8/25/1999	0.70	0.31
10/5/1999	0.80	0.36
12/10/1999	0.60	0.41
1/12/2000	1.00	0.83
3/3/2000	1.20	0.71
3/27/2000	0.80	2.24
4/20/2000	0.50	0.77
5/5/2000	0.20	0.73
5/24/2000	0.30	0.47
6/7/2000	0.30	0.43
7/8/2004	0.58	0.46
8/18/2004	0.31	0.44
9/14/2004	0.37	0.54
11/2/2004	0.68	0.65
12/8/2004	1.57	0.70
1/27/2005	1.08	0.67
3/1/2005	0.61	1.03
3/30/2005	0.63	1.47
4/14/2005	0.79	1.10
4/26/2005	0.29	1.53
5/10/2005	0.30	0.84
5/17/2005	0.33	0.71
6/7/2005	0.31	0.49
6/14/2005	0.23	0.70
6/28/2005	0.74	0.34



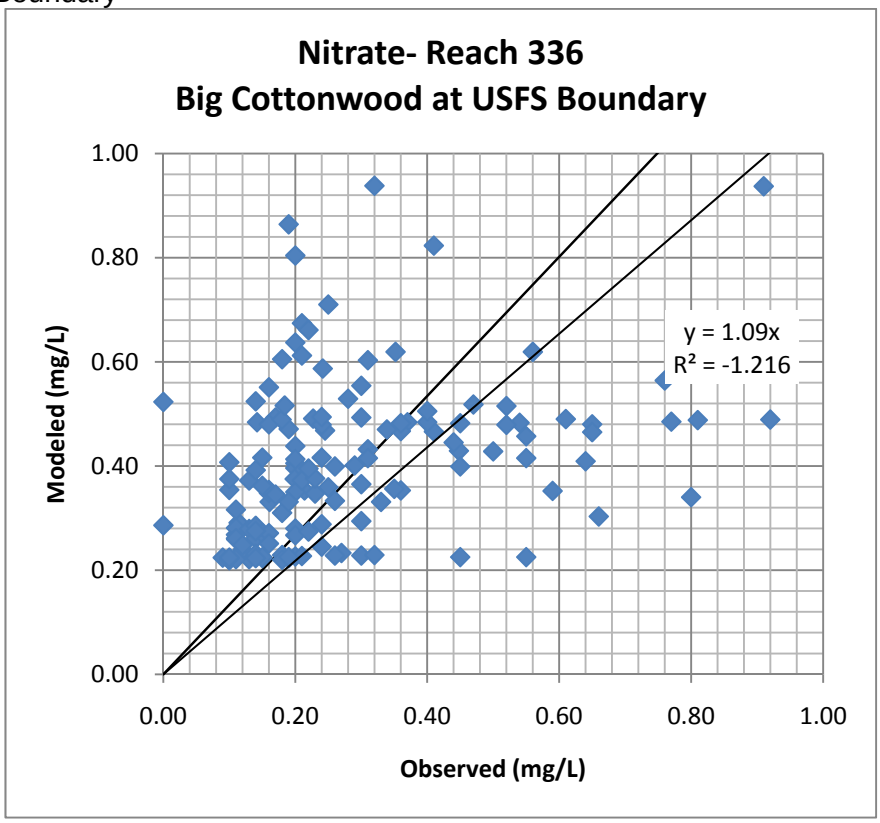

Nitrate - Reach 325
Big Cottonwood at 500 West
Inorganic Suspended Sedimant (mg/L)
Flow (cfs)
0
1
2
3
4
5
6
7
8
9
0
200
400
600
800
1000
1200
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000
Daily Data

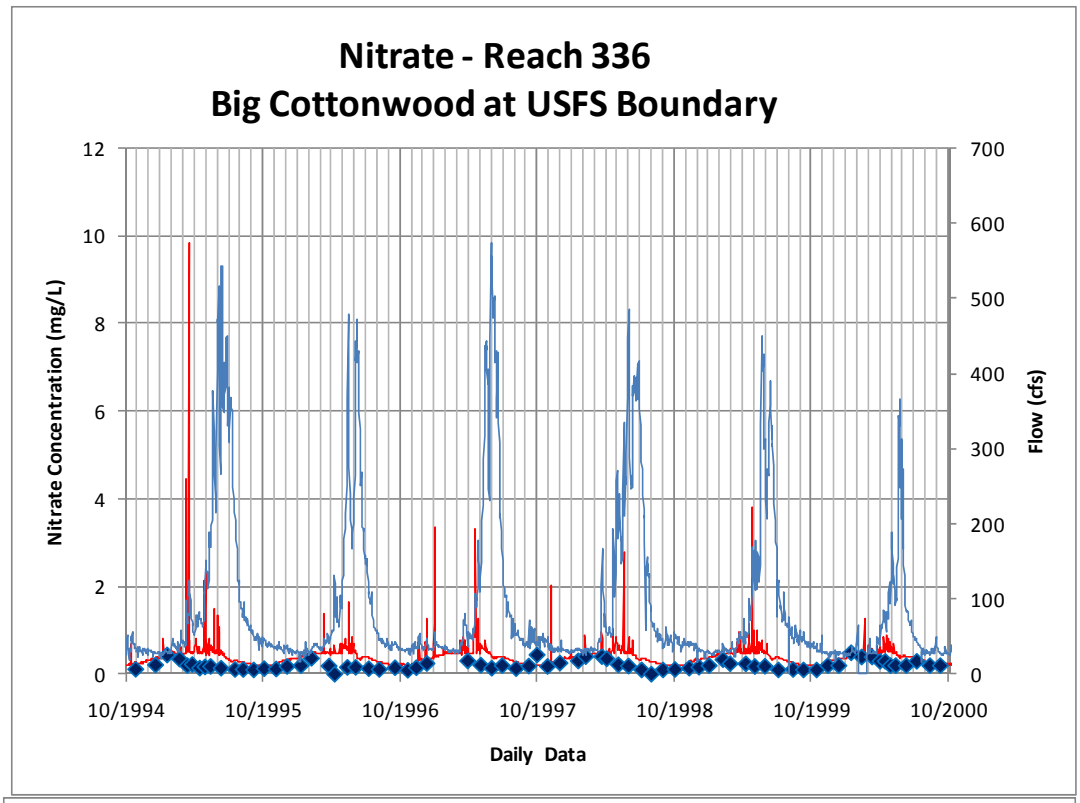

Nitrate - Reach 325
Big Cottonwood at 500 West
Inorganic Suspended Sedimant (mg/L)
Flow (cfs)
0
1
2
3
4
5
6
7
8
9
0
200
400
600
800
1000
1200
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006
Daily Data

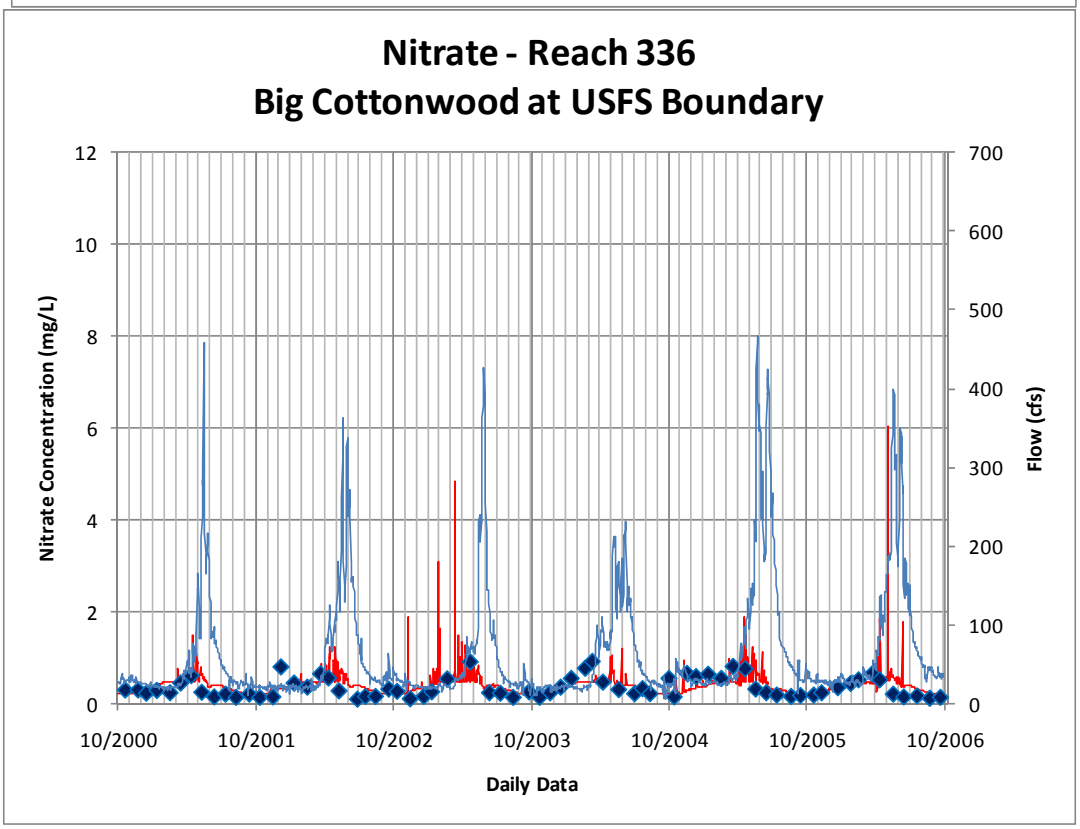
4.1.7.4 Big Cottonwood at USFS Boundary

Nitrate – Reach 336 Big Cottonwood at USFS Boundary

MFE (N-S):	-0.53	
Correlation Coeff.:	0.36	
	Observed	Modeled
DATE	NO3	NO3-CONCDIS
10/28/1994	0.11	0.29
12/20/1994	0.21	0.35
1/20/1995	0.45	0.43
2/22/1995	0.35	0.62
3/15/1995	0.20	0.80
3/28/1995	0.23	0.49
4/17/1995	0.14	0.48
5/1/1995	0.17	0.49
5/16/1995	0.18	0.61
6/13/1995	0.14	0.52
7/20/1995	0.11	0.32
8/11/1995	0.11	0.27
9/8/1995	0.10	0.22
10/6/1995	0.13	0.22
11/7/1995	0.12	0.24
12/6/1995	0.18	0.31
1/12/1996	0.20	0.41
2/9/1996	0.37	0.48
3/27/1996	0.19	0.47
4/11/1996	0.00	0.52
5/15/1996	0.16	0.55
6/6/1996	0.16	0.48
7/11/1996	0.13	0.37
8/8/1996	0.11	0.28
9/19/1996	0.15	0.22
10/23/1996	0.09	0.22
11/15/1996	0.15	0.27
12/13/1996	0.25	0.36
4/1/1997	0.31	0.60
5/6/1997	0.21	0.67
6/4/1997	0.14	0.39
7/2/1997	0.20	0.40
8/8/1997	0.13	0.28
9/11/1997	0.19	0.22
10/3/1997	0.45	0.23
10/31/1997	0.18	0.23
12/3/1997	0.26	0.33
1/21/1998	0.31	0.43
2/10/1998	0.41	0.47
3/25/1998	0.41	0.82
4/7/1998	0.36	0.47
5/8/1998	0.22	0.66
6/4/1998	0.19	0.86
7/9/1998	0.10	0.35
8/4/1998	0.00	0.29
9/4/1998	0.10	0.22
10/6/1998	0.11	0.22
11/13/1998	0.14	0.26
12/9/1998	0.16	0.33
1/5/1999	0.20	0.38
2/11/1999	0.34	0.47
3/2/1999	0.25	0.47
4/13/1999	0.24	0.59
5/7/1999	0.18	0.49
6/3/1999	0.18	0.52
7/9/1999	0.10	0.38
8/17/1999	0.11	0.26
9/14/1999	0.10	0.22
10/19/1999	0.10	0.22
11/18/1999	0.20	0.28
12/17/1999	0.20	0.35
1/19/2000	0.50	0.43
2/16/2000	0.40	0.48
3/15/2000	0.40	0.51

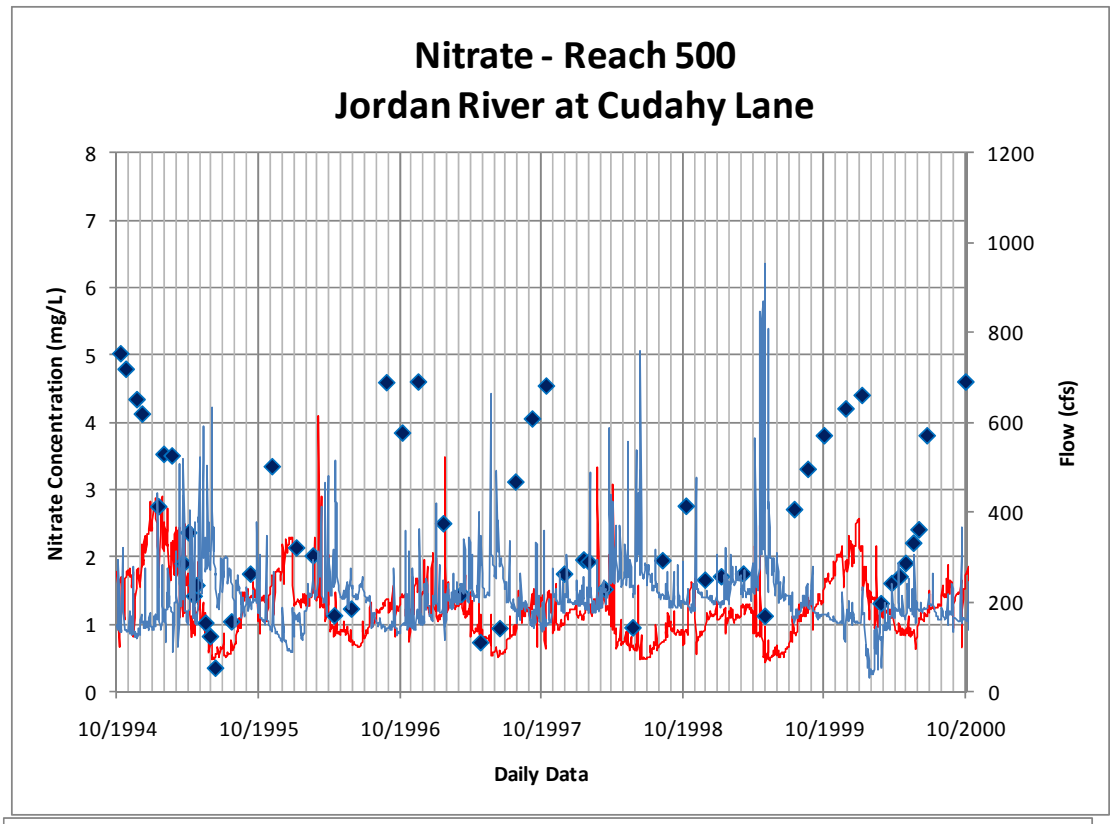


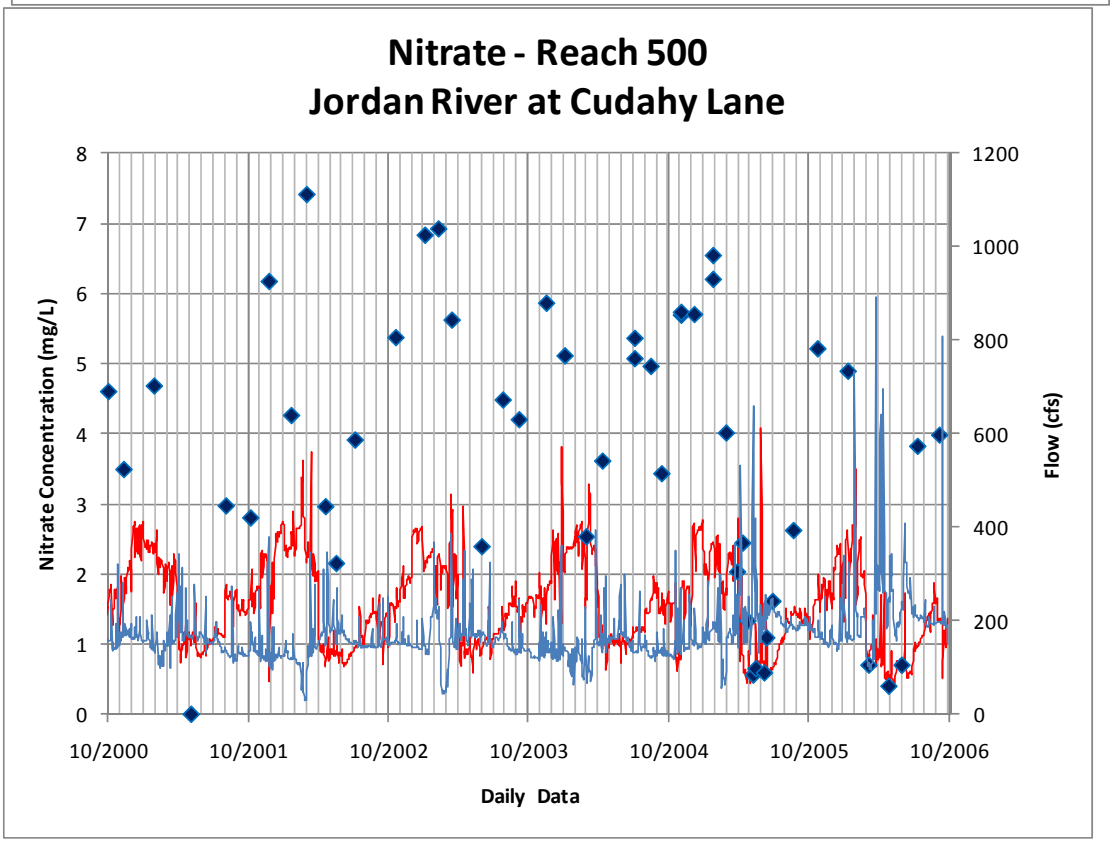

Nitrate - Reach 336
Big Cottonwood at USFS Boundary
Nitrate Concentration (mg/L)
Flow (cfs)
0
2
4
6
8
10
12
0
100
200
300
400
500
600
700
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000
Daily Data


Nitrate - Reach 336
Big Cottonwood at USFS Boundary
Nitrate Concentration (mg/L)
Flow (cfs)
0
2
4
6
8
10
12
0
100
200
300
400
500
600
700
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006
Daily Data

4.1.7.5 Jordan River at Cudahy Lane

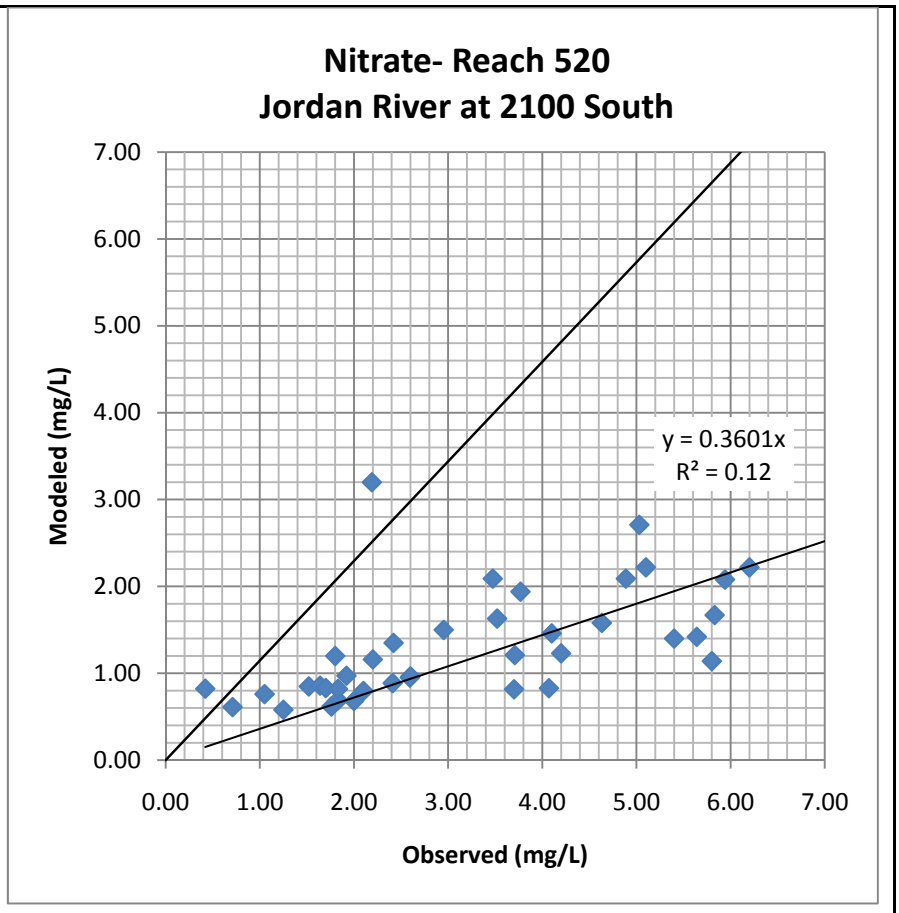
Nitrate - Reach 500 Jordan River at Cudahy Lane		
MFE (N-S):	-0.59	
Correlation Coeff.:	0.73	
	Observed	Modeled
DATE	NO3	NO3-CONCDIS
10/11/1994	5.02	1.70
10/25/1994	4.79	1.74
11/22/1994	4.34	1.79
12/6/1994	4.12	1.85
1/17/1995	2.74	1.55
1/31/1995	3.52	2.46
2/21/1995	3.50	2.23
3/21/1995	1.89	1.13
3/23/1995	1.89	1.45
4/5/1995	2.36	1.43
4/19/1995	1.41	1.01
4/26/1995	1.57	1.12
5/19/1995	1.01	1.00
5/31/1995	0.81	0.78
6/13/1995	0.34	0.55
7/25/1995	1.03	0.66
9/12/1995	1.74	1.42
11/7/1995	3.34	1.68
1/9/1996	2.13	1.32
2/21/1996	2.01	1.55
4/16/1996	1.12	0.83
5/30/1996	1.22	0.77
8/29/1996	4.59	1.37
10/9/1996	3.84	1.40
11/19/1996	4.60	1.56
1/23/1997	2.49	1.27
3/11/1997	1.44	1.31
4/29/1997	0.72	1.14
6/18/1997	0.93	0.58
7/29/1997	3.11	0.94
9/10/1997	4.05	1.23
10/16/1997	4.54	1.29
12/2/1997	1.74	1.06
1/21/1998	1.95	1.15
2/3/1998	1.92	1.29
3/17/1998	1.51	1.30
5/28/1998	0.94	0.68
8/13/1998	1.94	0.74
10/13/1998	2.75	0.92
12/1/1998	1.65	0.92
1/12/1999	1.70	1.12
3/10/1999	1.74	1.27
5/5/1999	1.11	0.46
7/20/1999	2.70	0.86
8/24/1999	3.30	1.24
10/5/1999	3.80	1.58
11/30/1999	4.20	1.94
1/11/2000	4.40	2.07
2/29/2000	1.30	1.21
3/28/2000	1.60	1.10
4/18/2000	1.70	0.84
5/3/2000	1.90	0.91
5/23/2000	2.20	0.92
6/6/2000	2.40	1.08
6/27/2000	3.80	1.15
10/5/2000	4.60	1.74
11/14/2000	3.49	1.92
2/1/2001	4.68	2.36
5/8/2001	0.00	1.14
8/7/2001	2.97	1.65
10/10/2001	2.80	2.08
11/27/2001	6.17	1.08
1/24/2002	4.26	2.48

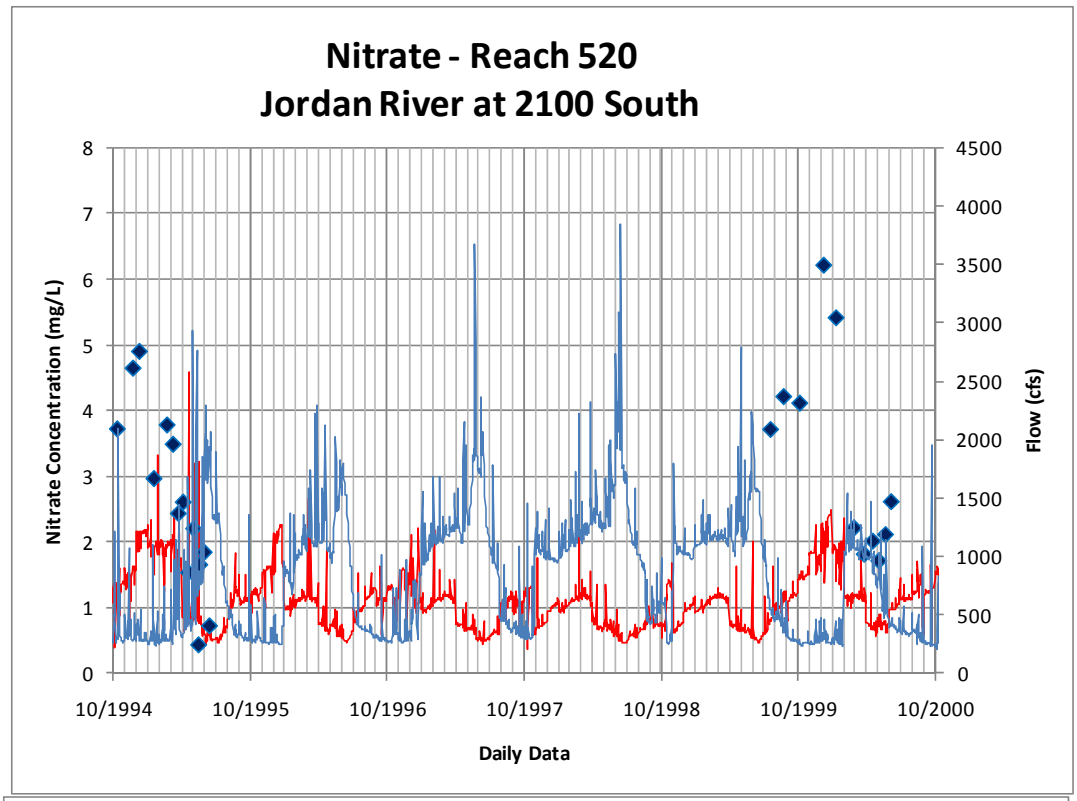

Nitrate - Reach 500
Jordan River at Cudahy Lane
Nitrate Concentration (mg/L)
Flow (cfs)
Daily Data
0
1
2
3
4
5
6
7
8
0
200
400
600
800
1000
1200
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000

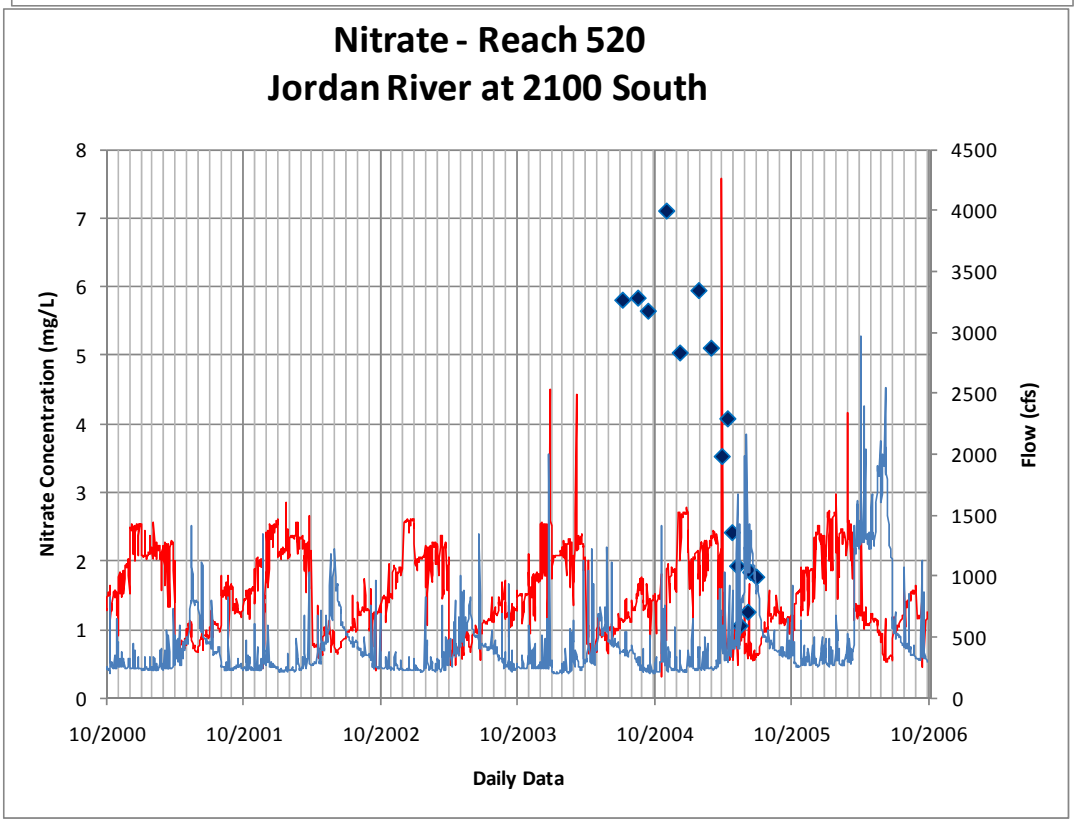

Nitrate - Reach 500
Jordan River at Cudahy Lane
Nitrate Concentration (mg/L)
Flow (cfs)
Daily Data
0
1
2
3
4
5
6
7
8
0
200
400
600
800
1000
1200
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006

4.1.7.6 Jordan River at 2100 South

Nitrate - Reach 520 Jordan River at 2100 South		
MFE (N-S):	-0.59	
Correlation Coeff.:	0.52	
	Observed	Modeled
DATE	NO3	NO3-CONCDIS
10/11/1994	3.71	1.21
11/22/1994	4.63	1.58
12/9/1994	4.89	2.09
1/17/1995	2.95	1.50
2/21/1995	3.77	1.94
3/9/1995	3.47	2.09
3/23/1995	2.42	1.35
4/5/1995	2.59	0.95
4/19/1995	1.52	0.85
5/3/1995	2.19	3.20
5/16/1995	0.42	0.82
5/19/1995	1.64	0.86
5/31/1995	1.83	0.69
6/14/1995	0.71	0.61
7/21/1999	3.70	0.82
8/25/1999	4.20	1.23
10/7/1999	4.10	1.46
12/10/1999	6.20	2.22
1/12/2000	5.40	1.40
2/29/2000	2.20	1.16
3/27/2000	1.80	1.20
4/19/2000	2.00	0.68
5/5/2000	1.70	0.83
5/23/2000	2.10	0.80
6/7/2000	2.60	0.97
7/8/2004	5.80	1.14
8/18/2004	5.83	1.67
9/14/2004	5.64	1.42
11/2/2004	7.10	1.72
12/8/2004	5.03	2.71
1/27/2005	5.94	2.08
3/1/2005	5.10	2.22
3/30/2005	3.52	1.63
4/14/2005	4.07	0.83
4/26/2005	2.41	0.89
5/10/2005	1.92	0.97
5/17/2005	1.05	0.76
6/7/2005	1.25	0.58
6/14/2005	1.83	0.82
6/30/2005	1.76	0.62

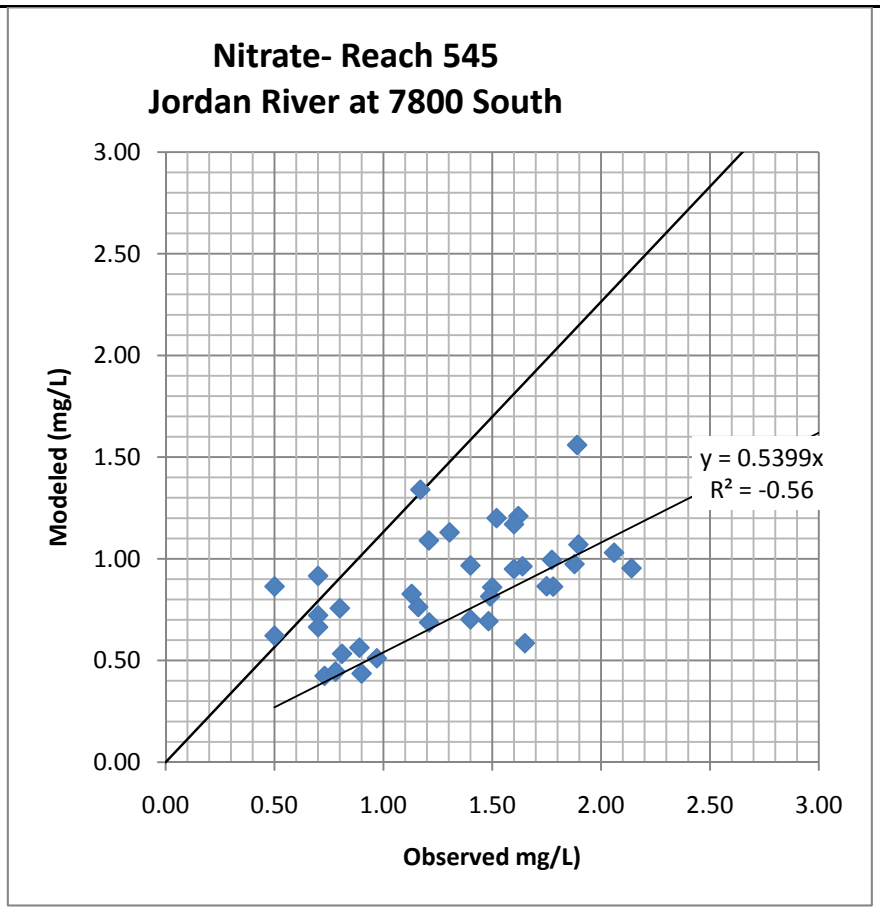


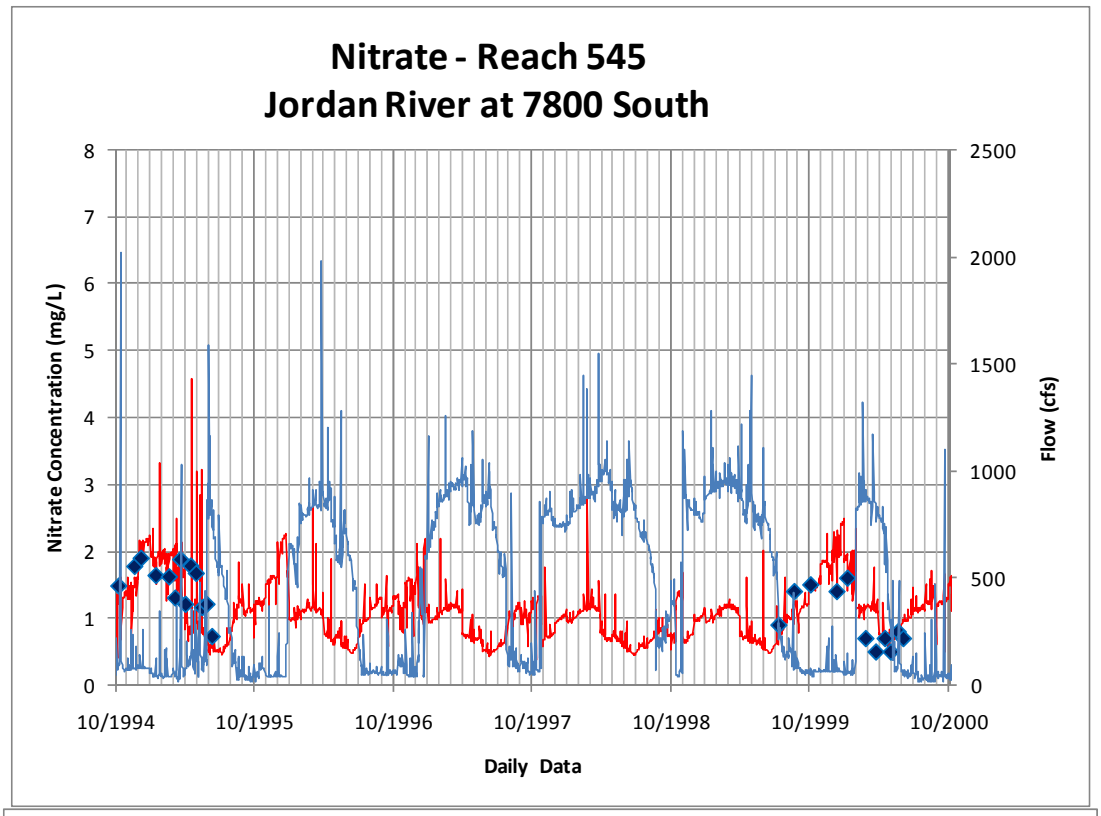

Nitrate - Reach 520
Jordan River at 2100 South
Nitrate Concentration (mg/L)
Flow (cfs)
Daily Data
0
1
2
3
4
5
6
7
8
0
500
1000
1500
2000
2500
3000
3500
4000
4500
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000

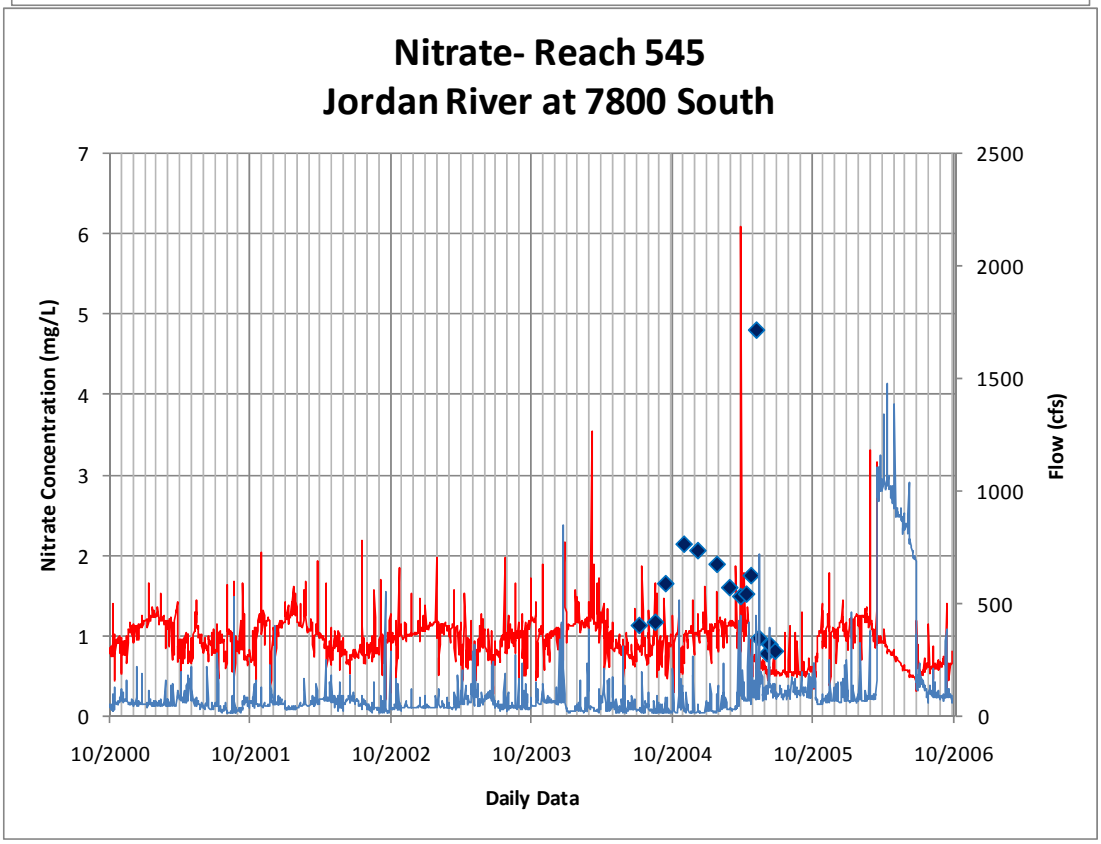

Nitrate - Reach 520
Jordan River at 2100 South
Nitrate Concentration (mg/L)
Flow (cfs)
Daily Data
0
1
2
3
4
5
6
7
8
0
500
1000
1500
2000
2500
3000
3500
4000
4500
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006

4.1.7.7 Jordan River at 7800 South

Nitrate - Reach 545 Jordan River at 7800 South		
MFE (N-S):	-2.96	
Correlation Coeff.:	0.42	
	Observed	Modeled
DATE	NO3	NO3-CONCDIS
10/11/1994	1.48	0.69
11/22/1994	1.77	1.00
12/9/1994	1.90	1.07
1/17/1995	1.64	0.96
2/21/1995	1.62	1.21
3/9/1995	1.30	1.13
3/23/1995	1.88	0.97
4/5/1995	1.21	1.09
4/19/1995	1.78	0.86
5/3/1995	1.67	3.07
5/19/1995	1.16	0.76
5/31/1995	1.21	0.69
6/14/1995	0.73	0.42
7/15/1999	0.90	0.44
8/25/1999	1.40	0.70
10/7/1999	1.50	0.86
12/15/1999	1.40	0.97
1/12/2000	1.60	0.95
2/29/2000	0.70	0.92
3/27/2000	0.50	0.86
4/20/2000	0.70	0.72
5/5/2000	0.50	0.62
5/24/2000	0.80	0.76
6/7/2000	0.70	0.66
7/8/2004	1.13	0.83
8/19/2004	1.17	1.34
9/15/2004	1.65	0.59
11/2/2004	2.14	0.95
12/8/2004	2.06	1.03
1/27/2005	1.89	1.56
3/1/2005	1.60	1.17
3/30/2005	1.49	0.82
4/14/2005	1.52	1.20
4/26/2005	1.75	0.87
5/10/2005	4.80	0.64
5/17/2005	0.97	0.51
6/7/2005	0.78	0.45
6/14/2005	0.89	0.56
6/28/2005	0.81	0.53



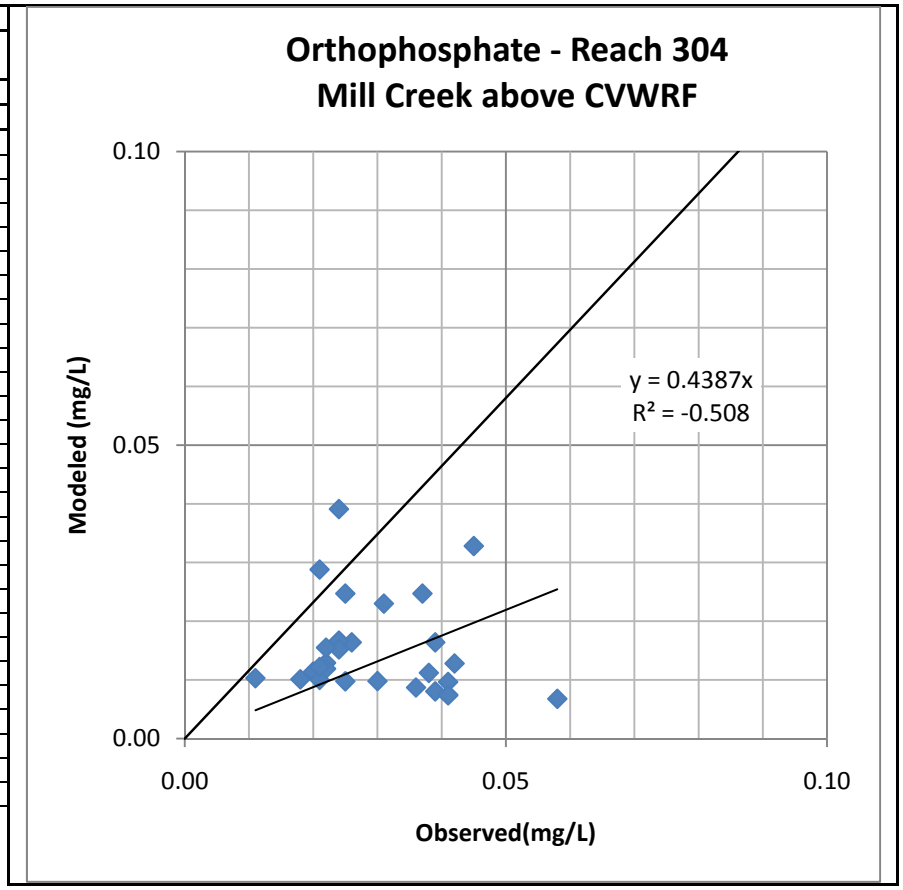

Nitrate - Reach 545
Jordan River at 7800 South
Nitrate Concentration (mg/L)
Flow (cfs)
Daily Data
0
1
2
3
4
5
6
7
8
0
500
1000
1500
2000
2500
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000

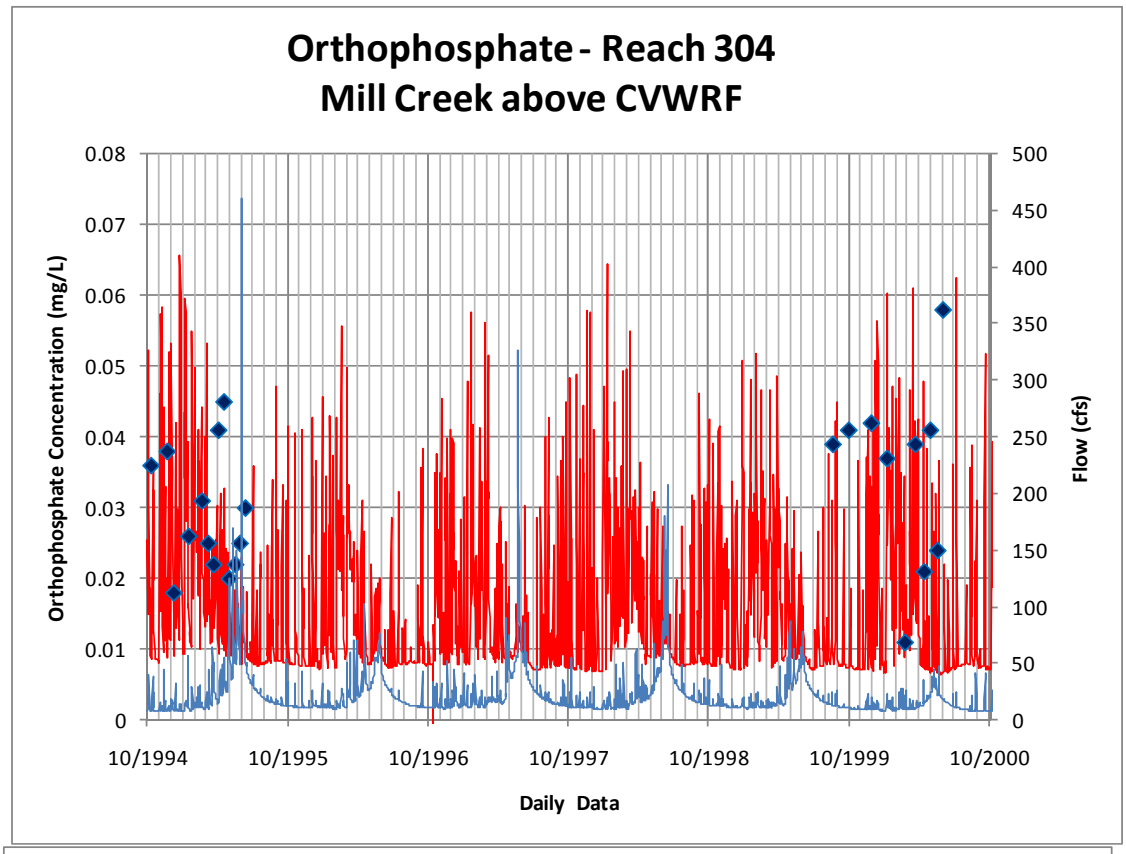

Nitrate- Reach 545
Jordan River at 7800 South
Nitrate Concentration (mg/L)
Flow (cfs)
Daily Data
0
1
2
3
4
5
6
7
0
500
1000
1500
2000
2500
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006

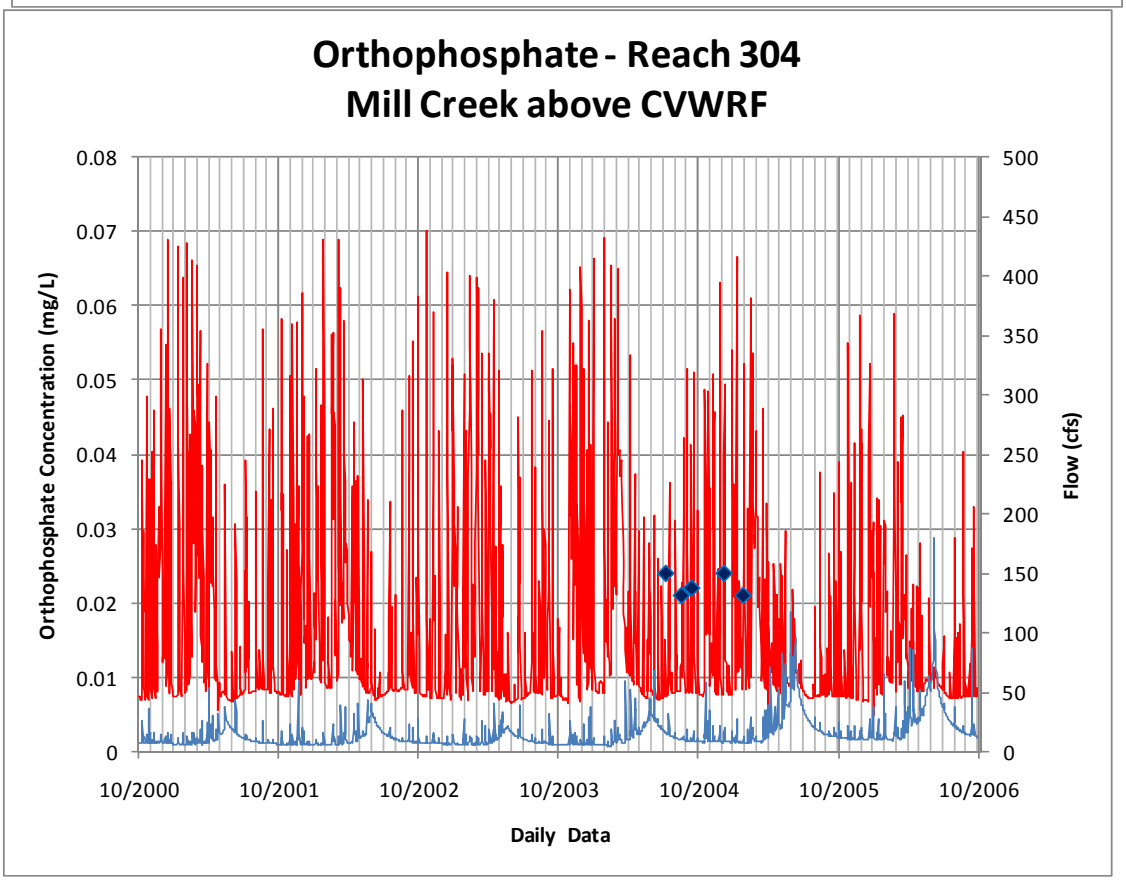
4.1.8 Orthophosphate

4.1.8.1 Mill Creek above CVWRF

Orthophosphate - Reach 304 Mill Creek above CVWRF		
MFE (N-S):	-2.86	
Correlation Coeff.:	-0.12	
	Observed	Modeled
DATE	PO4	PO4-CONCDIS
10/11/1994	0.04	0.01
11/22/1994	0.04	0.01
12/9/1994	0.02	0.01
1/17/1995	0.03	0.02
2/21/1995	0.03	0.02
3/9/1995	0.03	0.02
3/23/1995	0.02	0.01
4/5/1995	0.04	0.01
4/19/1995	0.05	0.03
5/3/1995	0.02	0.01
5/19/1995	0.02	0.01
5/31/1995	0.03	0.01
6/14/1995	0.03	0.01
8/25/1999	0.04	0.01
10/5/1999	0.04	0.01
12/3/1999	0.04	0.01
1/13/2000	0.04	0.02
2/29/2000	0.01	0.01
3/27/2000	0.04	0.02
4/19/2000	0.02	0.01
5/5/2000	0.04	0.01
5/24/2000	0.02	0.02
6/7/2000	0.06	0.01
7/8/2004	0.02	0.02
8/18/2004	0.02	0.01
9/14/2004	0.02	0.02
12/8/2004	0.02	0.04
1/27/2005	0.02	0.03



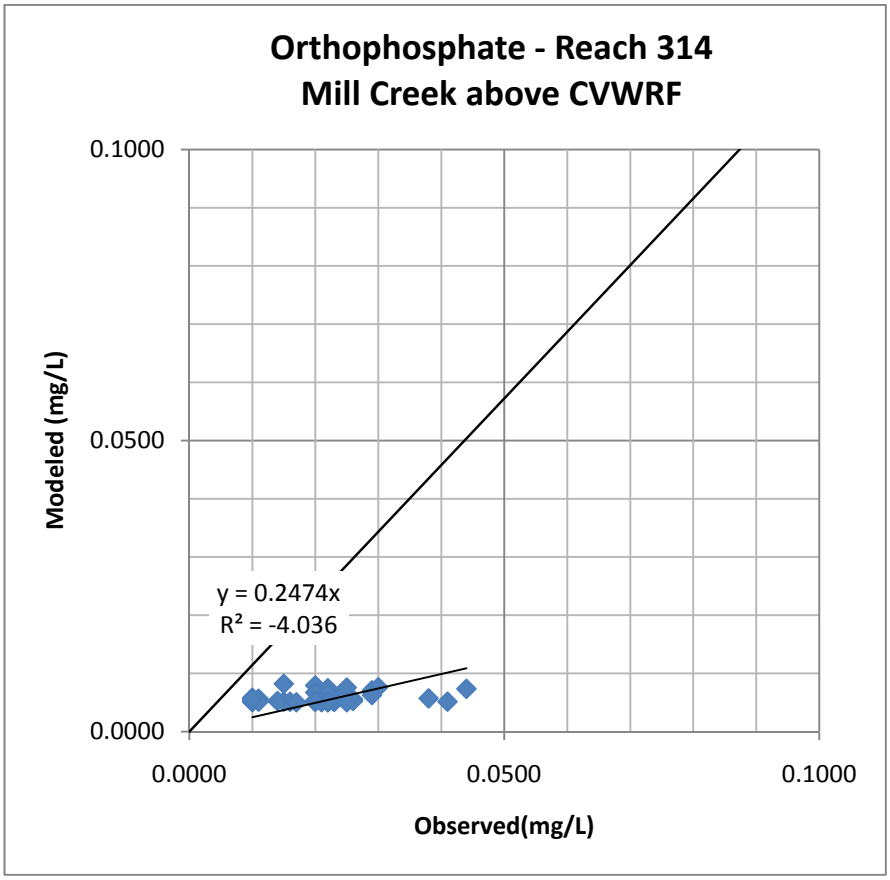

Orthophosphate - Reach 304
Mill Creek above CVWRF
Orthophosphate Concentration (mg/L)
Flow (cfs)
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
500
450
400
350
300
250
200
150
100
50
0
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000
Daily Data

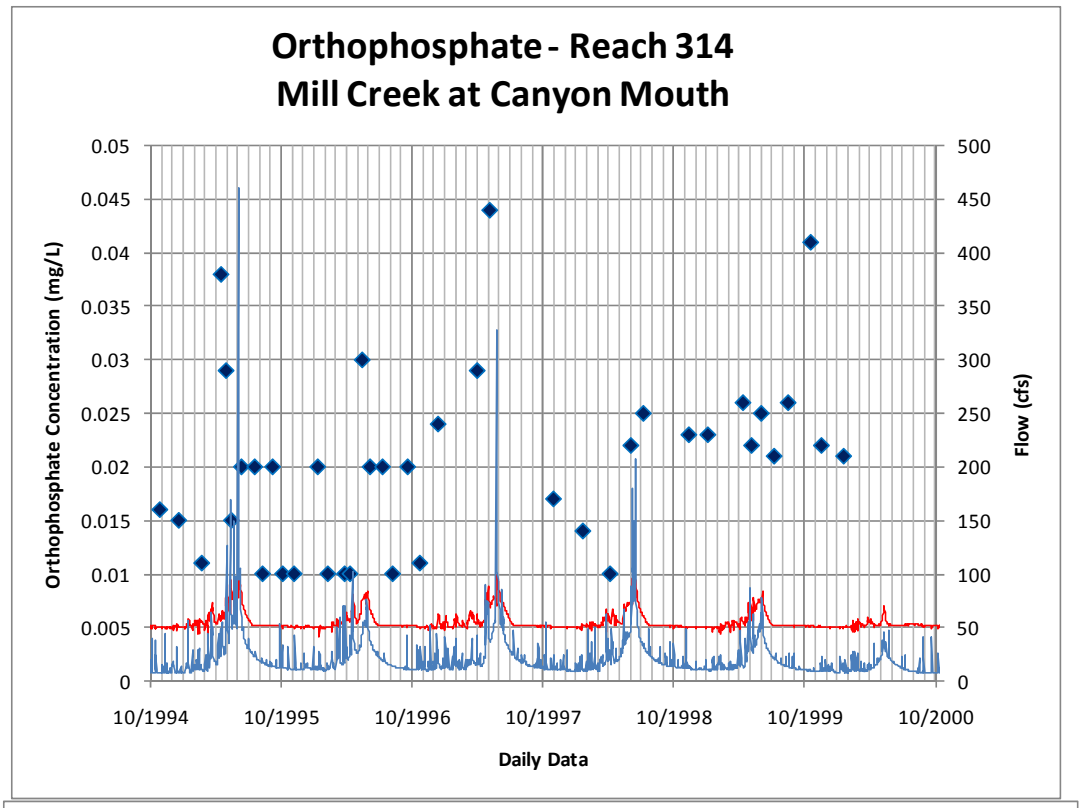

Orthophosphate - Reach 304
Mill Creek above CVWRF
Orthophosphate Concentration (mg/L)
Flow (cfs)
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
500
450
400
350
300
250
200
150
100
50
0
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006
Daily Data

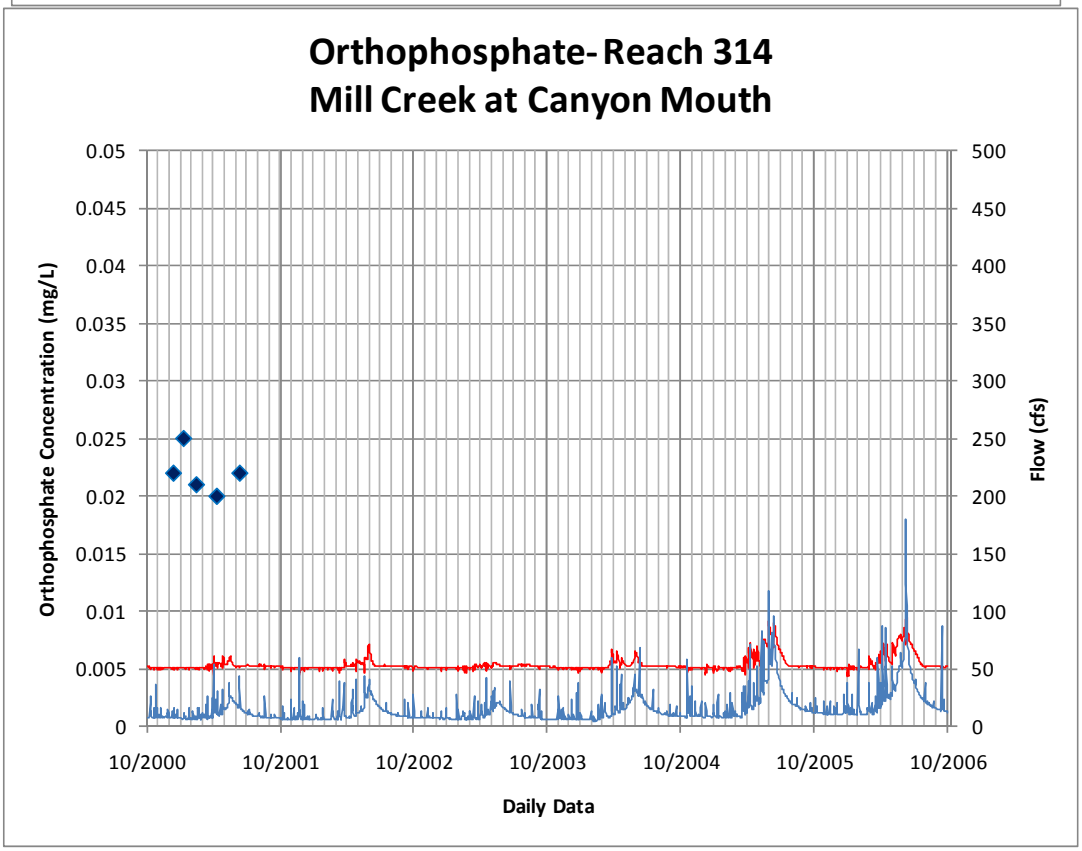
4.1.8.2 Mill Creek at Canyon Mouth

Orthophosphate - Reach 314 Mill Creek at Canyon Mouth

MFE (N-S):	-3.34	
Correlation Coeff.:	0.49	
	Observed	Modeled
DATE	PO4	PO4-CONCDIS
10/28/1994	0.0160	0.0051
12/20/1994	0.0150	0.0051
2/22/1995	0.0110	0.0056
4/17/1995	0.0380	0.0057
5/1/1995	0.0290	0.0071
5/16/1995	0.0150	0.0082
6/13/1995	0.0200	0.0079
7/20/1995	0.0200	0.0052
8/11/1995	0.0100	0.0053
9/8/1995	0.0200	0.0052
10/6/1995	0.0100	0.0052
11/7/1995	0.0100	0.0051
1/12/1996	0.0200	0.0051
2/9/1996	0.0100	0.0051
3/27/1996	0.0100	0.0055
4/11/1996	0.0100	0.0058
5/15/1996	0.0300	0.0076
6/6/1996	0.0200	0.0067
7/11/1996	0.0200	0.0053
8/8/1996	0.0100	0.0052
9/19/1996	0.0200	0.0052
10/23/1996	0.0110	0.0051
12/13/1996	0.0240	0.0060
4/1/1997	0.0290	0.0063
5/6/1997	0.0440	0.0073
10/31/1997	0.0170	0.0050
1/21/1998	0.0140	0.0053
4/7/1998	0.0100	0.0057
6/4/1998	0.0220	0.0075
7/9/1998	0.0250	0.0061
11/13/1998	0.0230	0.0051
1/5/1999	0.0230	0.0051
4/13/1999	0.0260	0.0055
5/7/1999	0.0220	0.0065
6/3/1999	0.0250	0.0076
7/9/1999	0.0210	0.0052
8/17/1999	0.0260	0.0053
10/19/1999	0.0410	0.0051
11/18/1999	0.0220	0.0051
1/19/2000	0.0210	0.0051
12/13/2000	0.0220	0.0050
1/10/2001	0.0250	0.0050
2/14/2001	0.0210	0.0051
4/11/2001	0.0200	0.0053
6/13/2001	0.0220	0.0051



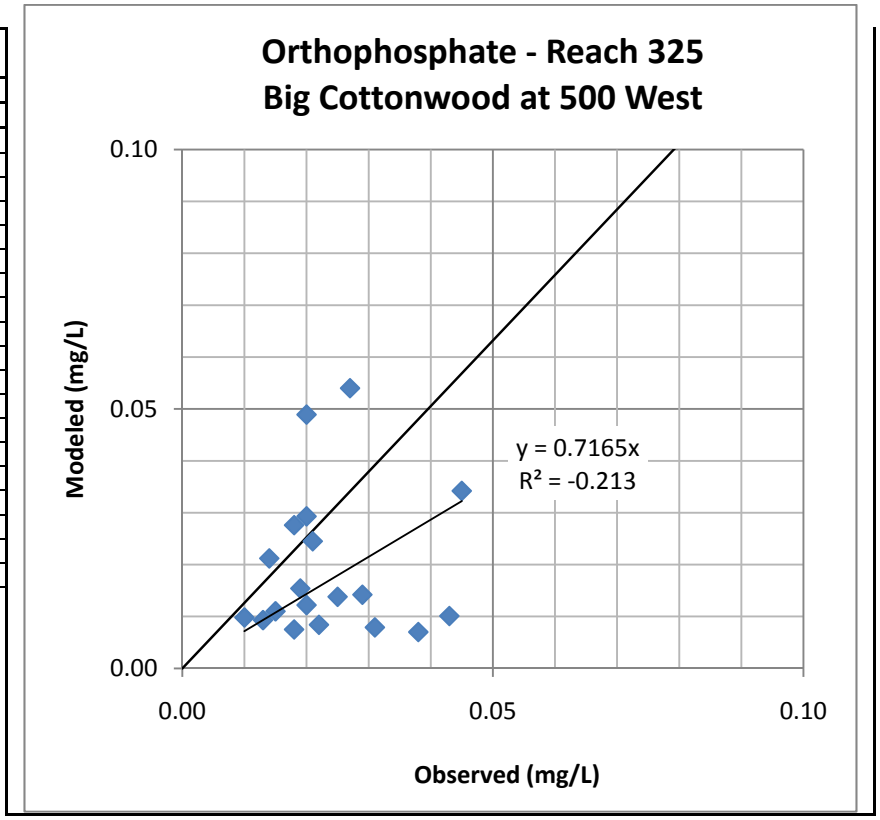

Orthophosphate - Reach 314
Mill Creek at Canyon Mouth
Orthophosphate Concentration (mg/L)
Flow (cfs)
0.05
0.045
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
500
450
400
350
300
250
200
150
100
50
0
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000
Daily Data

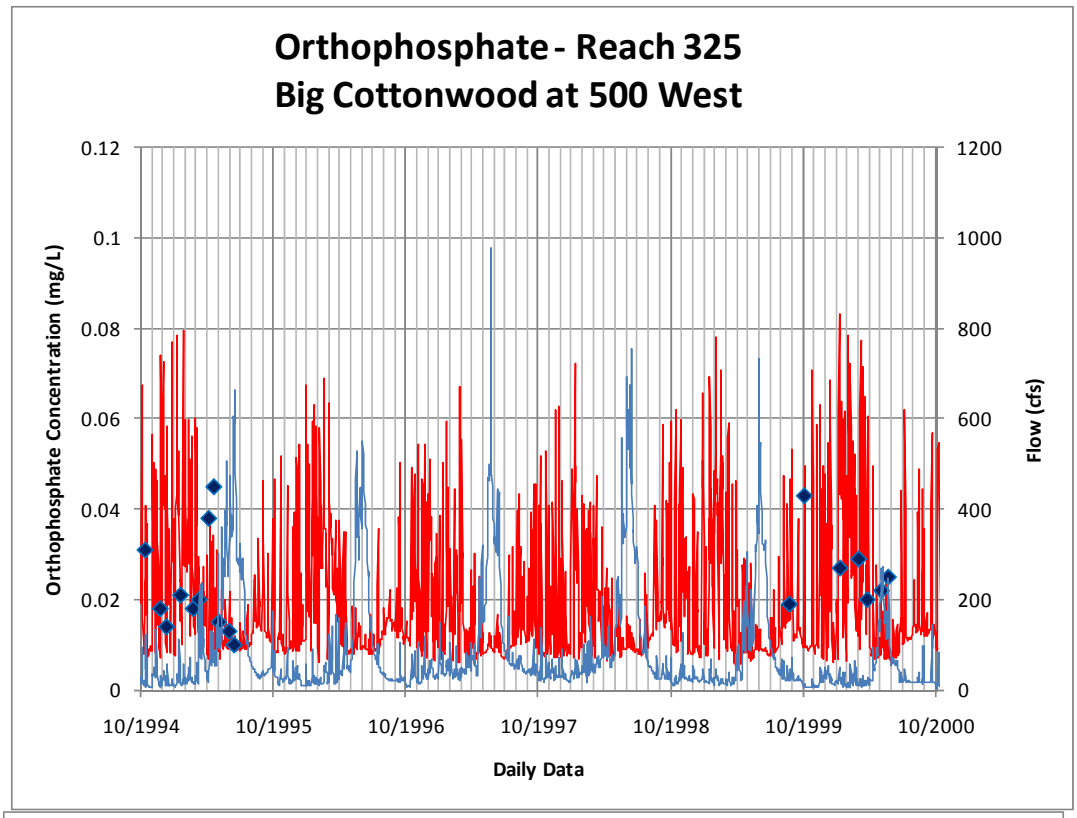

Orthophosphate- Reach 314
Mill Creek at Canyon Mouth
Orthophosphate Concentration (mg/L)
Flow (cfs)
0.05
0.045
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
500
450
400
350
300
250
200
150
100
50
0
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006
Daily Data

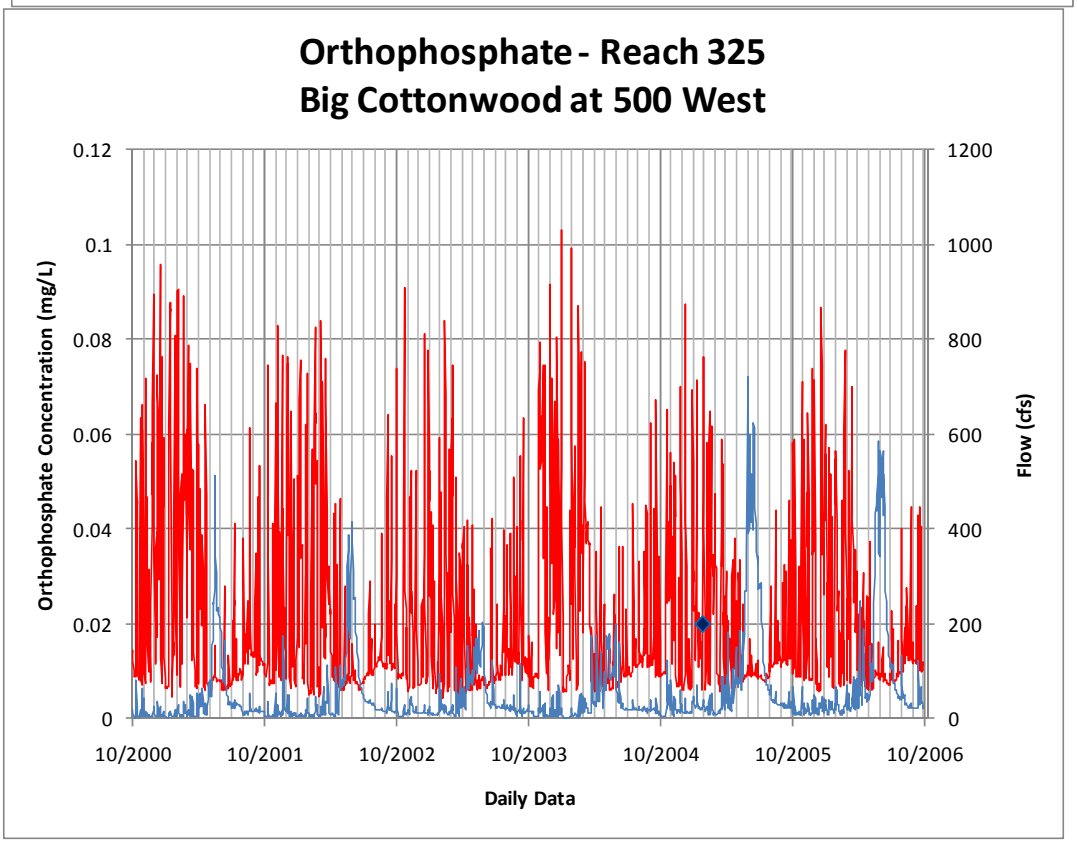
4.1.8.3 Big Cottonwood at 500 West

Orthophosphate - Reach 325 Big Cottonwood at 500 West

MFE (N-S):	-2.02	
Correlation Coeff.:	0.07	
	OBSERVED	MODELED
DATE	PO4	PO4-CONCDIS
10/11/1994	0.03	0.01
11/22/1994	0.02	0.01
12/9/1994	0.01	0.02
1/17/1995	0.02	0.02
2/21/1995	0.02	0.03
3/9/1995	0.02	0.03
4/5/1995	0.04	0.01
4/19/1995	0.05	0.03
5/3/1995	0.02	0.01
5/31/1995	0.01	0.01
6/14/1995	0.01	0.01
8/25/1999	0.02	0.02
10/5/1999	0.04	0.01
1/12/2000	0.03	0.05
3/3/2000	0.03	0.01
3/27/2000	0.02	0.01
5/5/2000	0.02	0.01
5/24/2000	0.03	0.01
1/27/2005	0.02	0.05



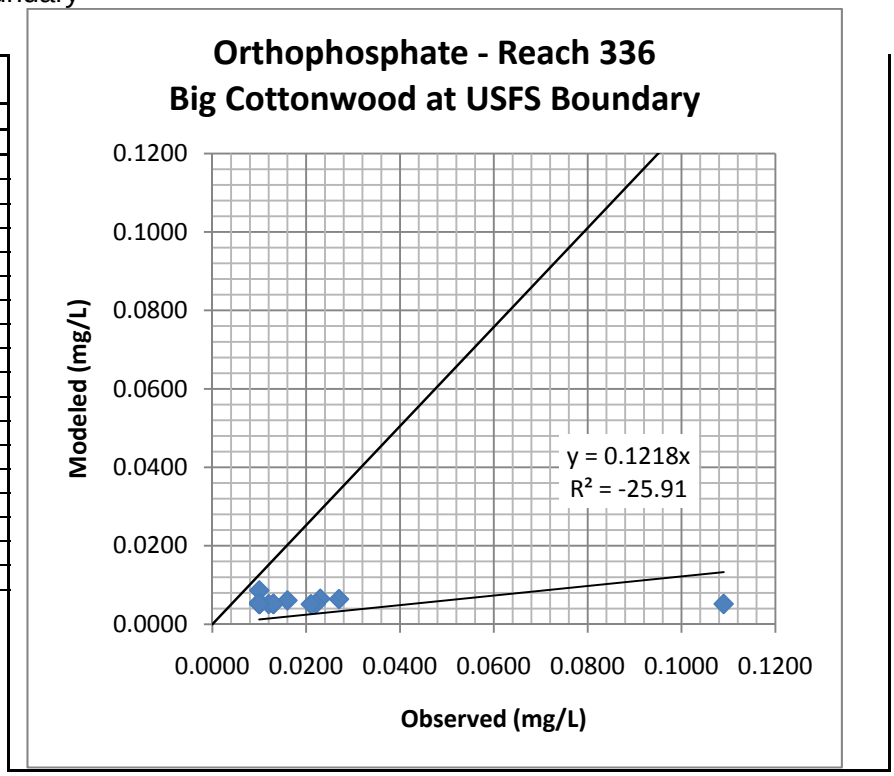

Orthophosphate - Reach 325
Big Cottonwood at 500 West
Orthophosphate Concentration (mg/L)
Flow (cfs)
0.12
0.1
0.08
0.06
0.04
0.02
0
1200
1000
800
600
400
200
0
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000
Daily Data

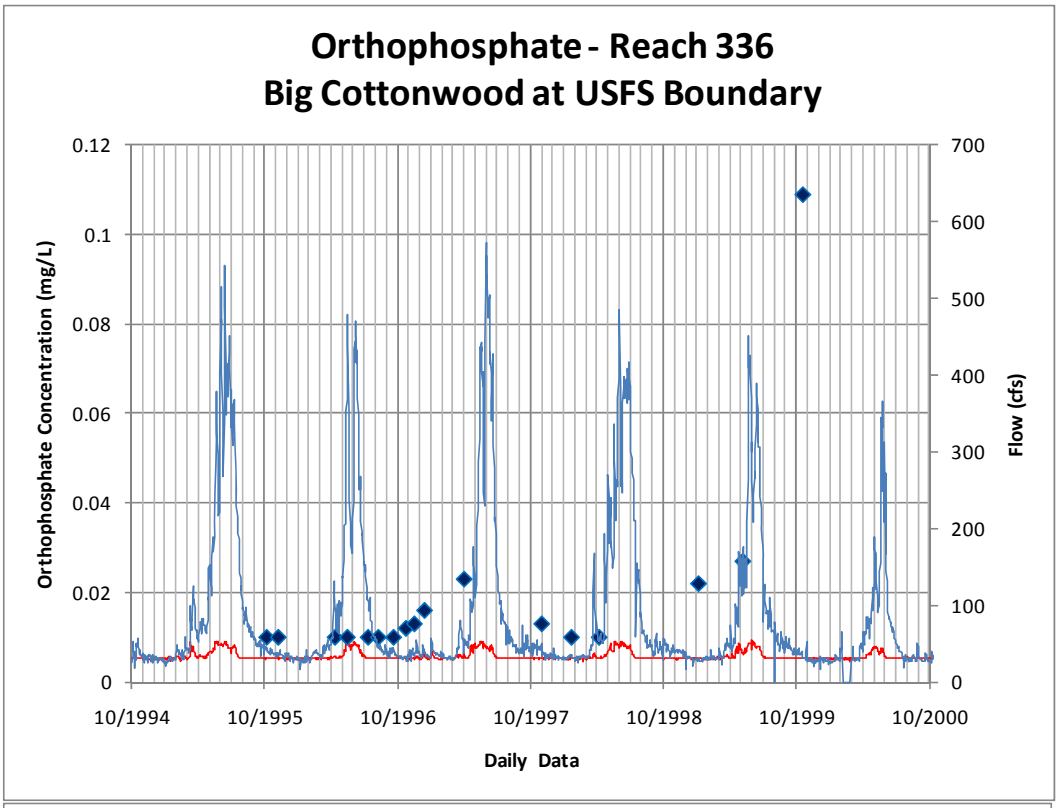

Orthophosphate - Reach 325
Big Cottonwood at 500 West
Orthophosphate Concentration (mg/L)
Flow (cfs)
0.12
0.1
0.08
0.06
0.04
0.02
0
1200
1000
800
600
400
200
0
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006
Daily Data

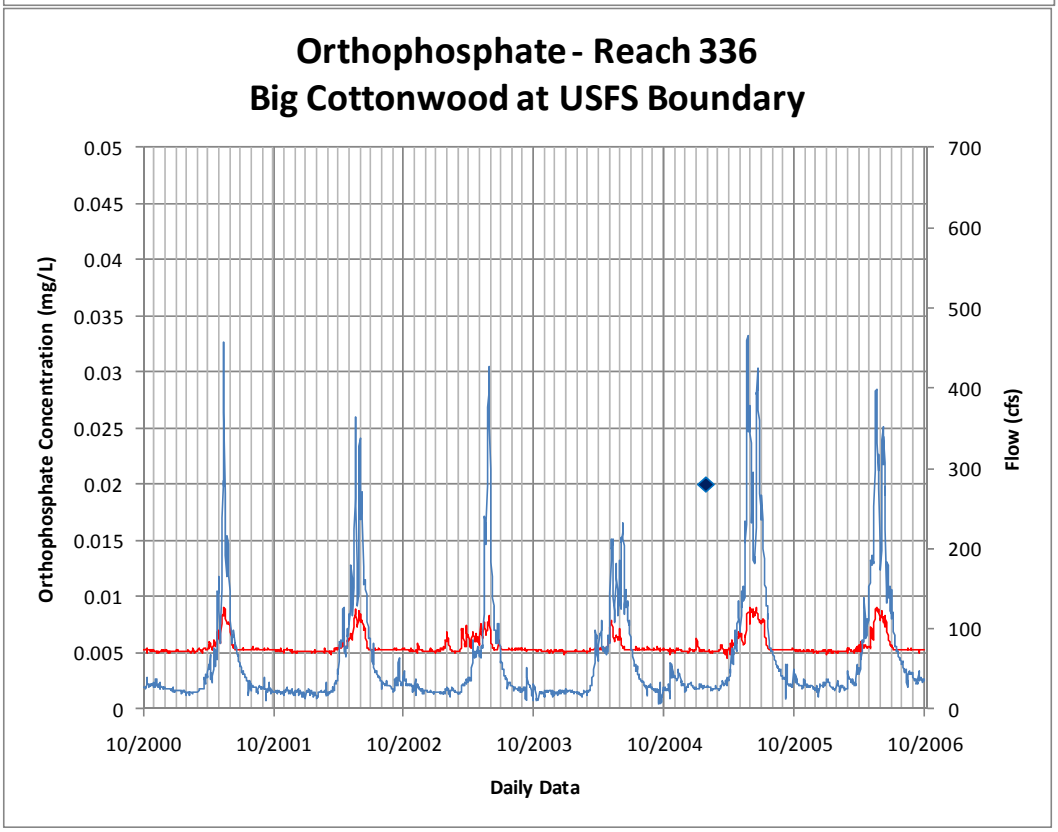
4.1.8.4 Big Cottonwood at USFS Boundary

Orthophosphate - Reach 336 Big Cottonwood at USFS Boundary

MFE (N-S):	-0.38	
Correlation Coeff.:	-0.09	
	Observed	Modeled
DATE	PO4	PO4-CONCDIS
10/6/1995	0.0100	0.00529
11/7/1995	0.0100	0.00517
4/11/1996	0.0100	0.00561
5/15/1996	0.0100	0.00864
7/11/1996	0.0100	0.00529
8/8/1996	0.0100	0.00527
9/19/1996	0.0100	0.00526
10/23/1996	0.0120	0.00517
11/15/1996	0.0130	0.00518
12/13/1996	0.0160	0.00608
4/1/1997	0.0230	0.00650
10/31/1997	0.0130	0.00522
1/21/1998	0.0100	0.00518
4/7/1998	0.0100	0.00533
1/5/1999	0.0220	0.00516
5/7/1999	0.0270	0.00641
10/19/1999	0.1090	0.00518
1/10/2001	0.0210	0.00511

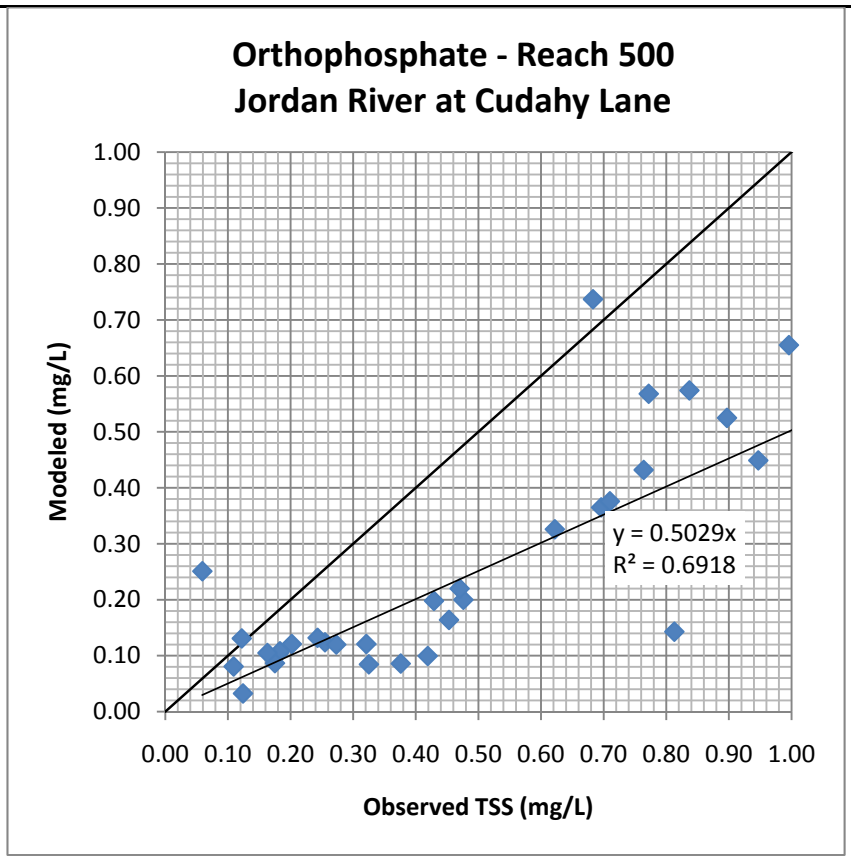


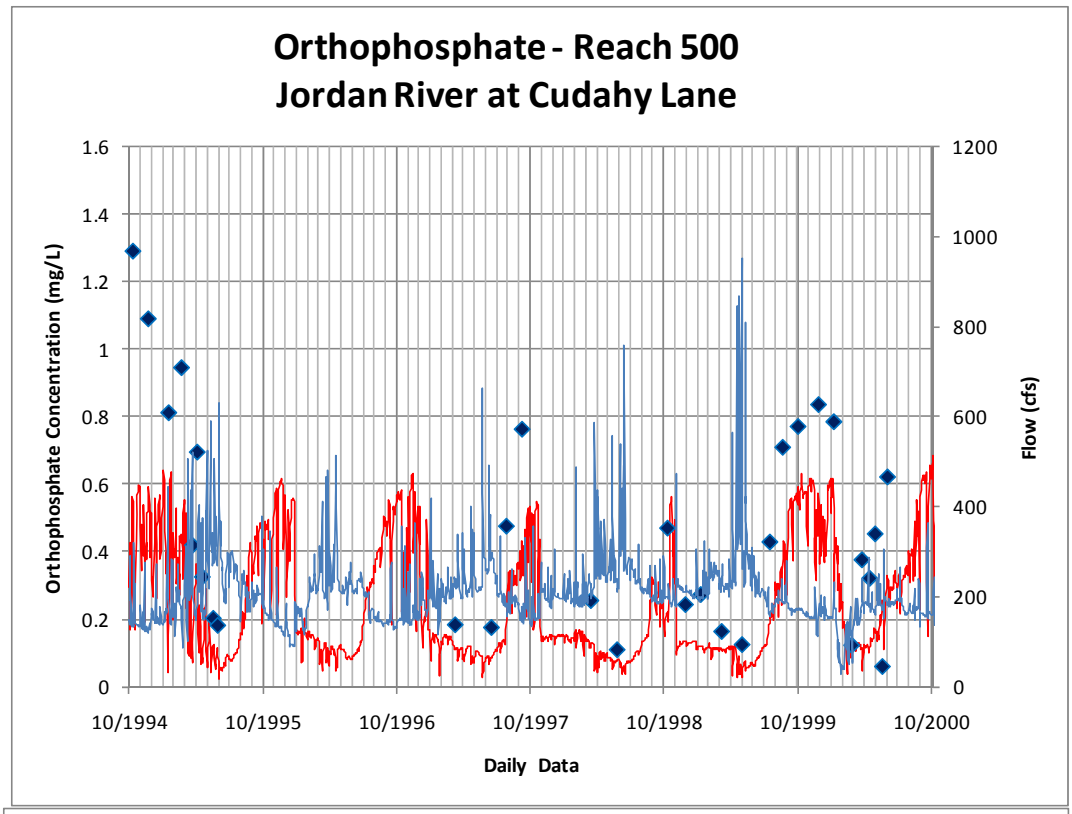

Orthophosphate - Reach 336
Big Cottonwood at USFS Boundary
Orthophosphate Concentration (mg/L)
0.12
0.1
0.08
0.06
0.04
0.02
0
Flow (cfs)
700
600
500
400
300
200
100
0
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000
Daily Data

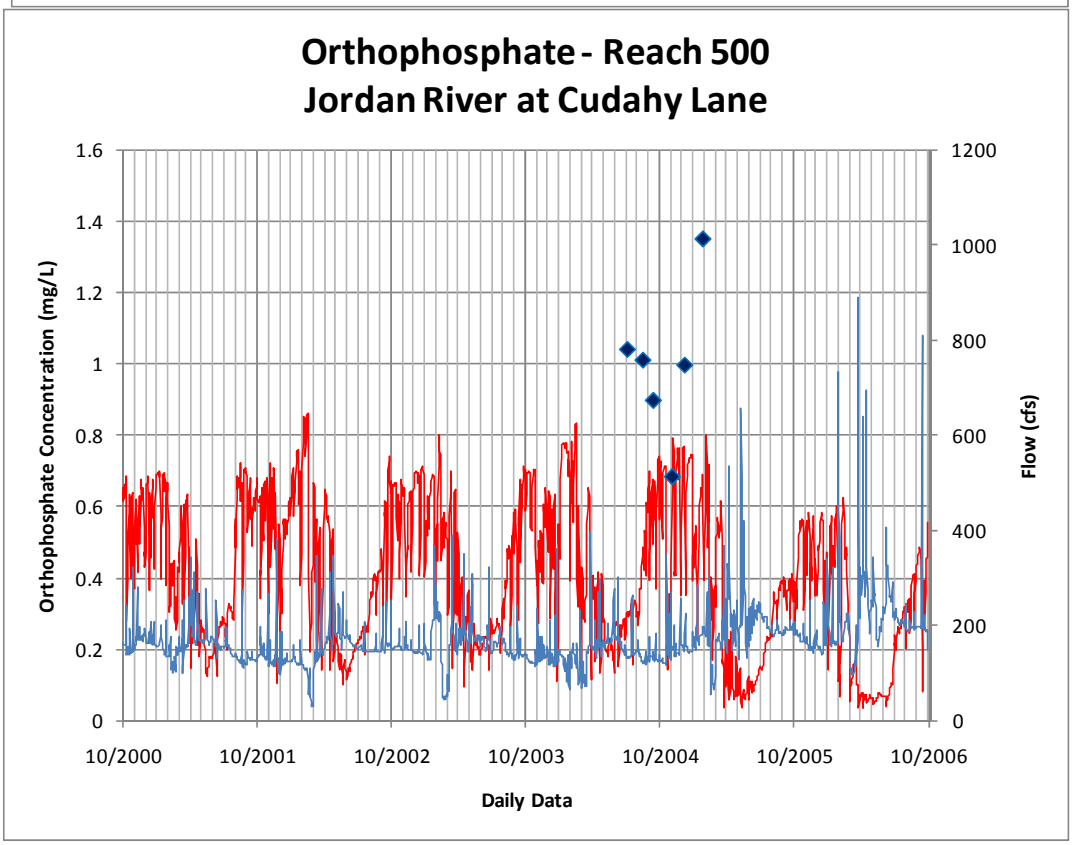

Orthophosphate - Reach 336
Big Cottonwood at USFS Boundary
Orthophosphate Concentration (mg/L)
0.05
0.045
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
Flow (cfs)
700
600
500
400
300
200
100
0
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006
Daily Data

4.1.8.5 Jordan River at Cudahy Lane

Orthophosphate - Reach 500 Jordan River at Cudahy Lane		
MFE (N-S):	0.05	
Correlation Coeff.:	0.83	
	Observed	Modeled
DATE	PO4	PO4-CONCDIS
10/11/1994	1.29	0.55
11/22/1994	1.09	0.55
1/17/1995	0.81	0.14
2/21/1995	0.95	0.45
3/23/1995	0.42	0.10
4/5/1995	0.70	0.37
4/19/1995	0.33	0.08
5/19/1995	0.20	0.12
5/31/1995	0.18	0.10
3/11/1997	0.18	0.11
6/18/1997	0.18	0.09
7/29/1997	0.48	0.20
9/10/1997	0.76	0.43
3/17/1998	0.26	0.12
5/28/1998	0.11	0.08
10/13/1998	0.47	0.22
12/1/1998	0.24	0.13
1/12/1999	0.27	0.12
3/10/1999	0.16	0.11
5/5/1999	0.12	0.03
7/20/1999	0.43	0.20
8/24/1999	0.71	0.38
10/5/1999	0.77	0.57
11/30/1999	0.84	0.57
1/11/2000	0.79	0.32
2/29/2000	0.12	0.13
3/28/2000	0.38	0.09
4/18/2000	0.32	0.12
5/3/2000	0.45	0.16
5/23/2000	0.06	0.25
6/6/2000	0.62	0.33
7/6/2004	1.04	0.30
8/17/2004	1.01	0.49
9/14/2004	0.90	0.53
11/4/2004	0.68	0.74
12/8/2004	1.00	0.66
1/26/2005	1.35	0.69

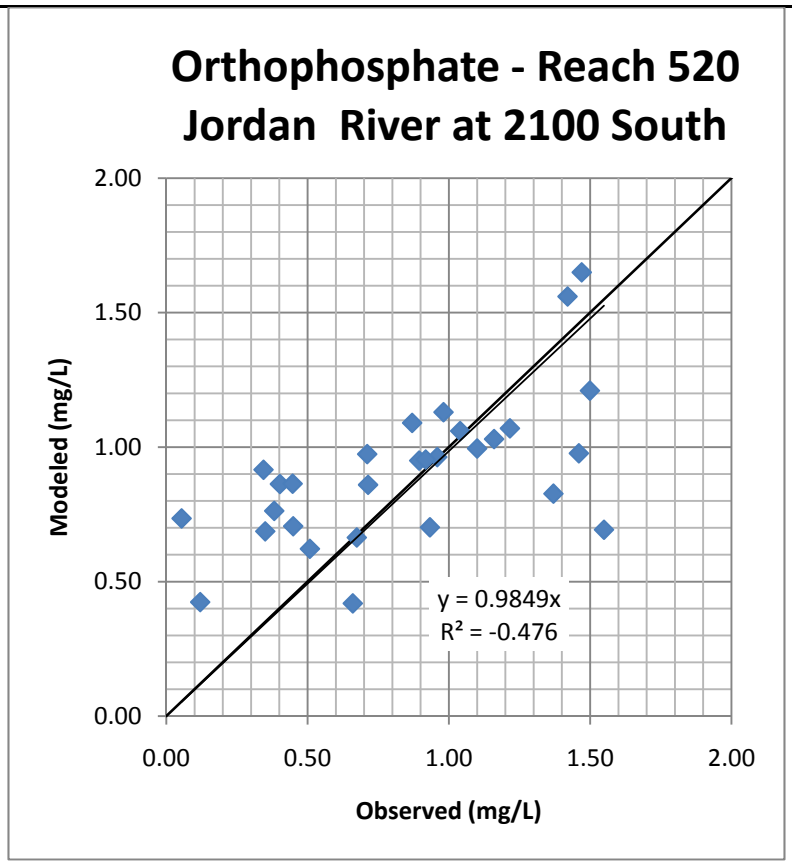


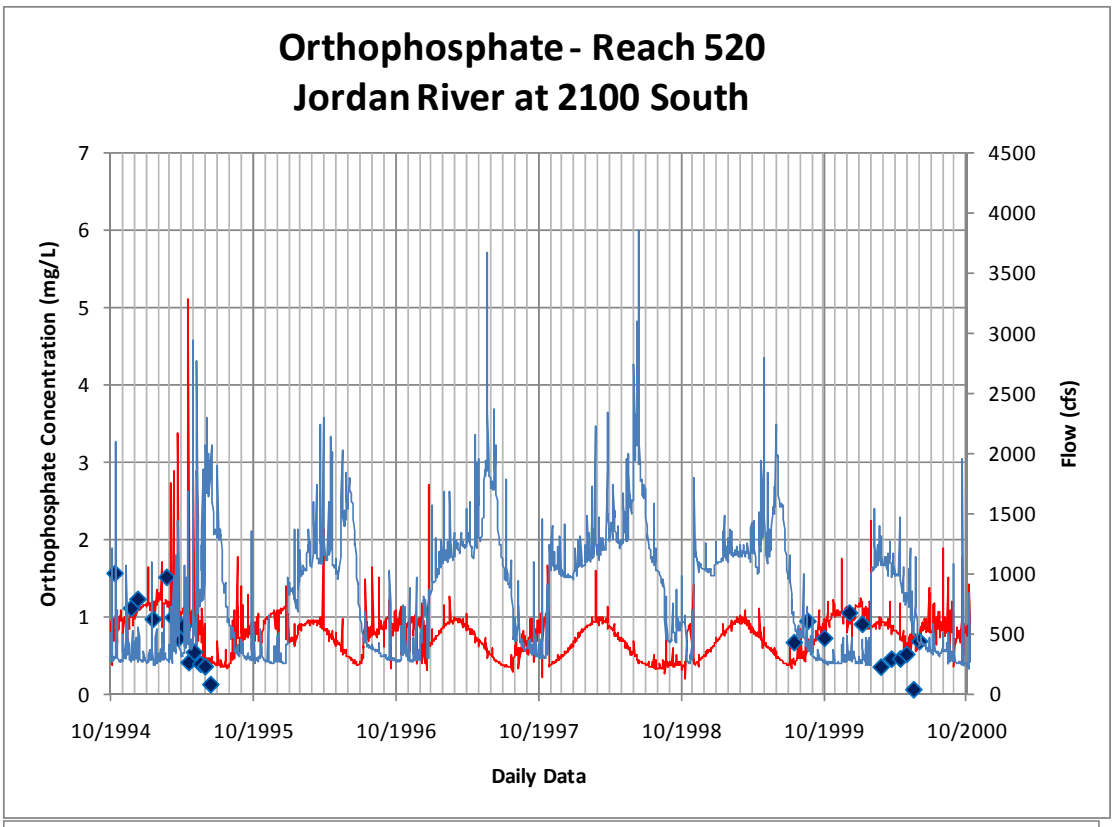

Orthophosphate - Reach 500
Jordan River at Cudahy Lane
Orthophosphate Concentration (mg/L)
Flow (cfs)
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1200
1000
800
600
400
200
0
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000
Daily Data

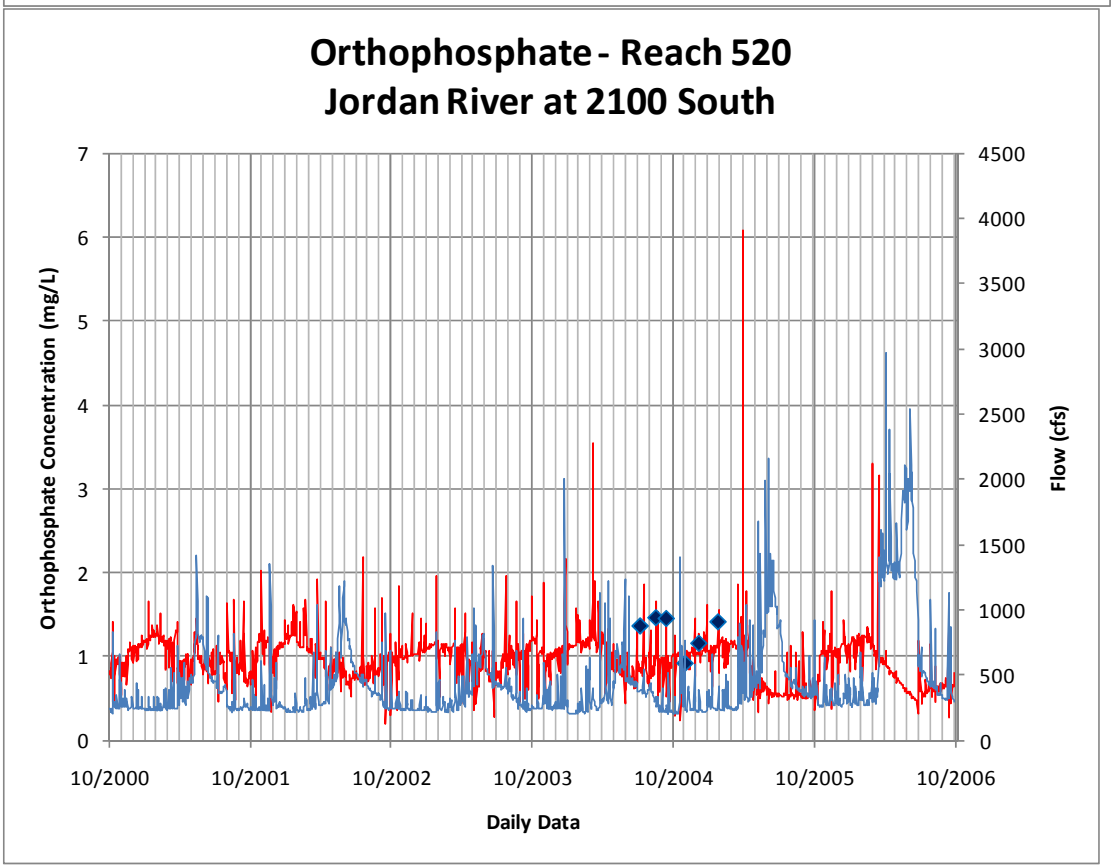

Orthophosphate - Reach 500
Jordan River at Cudahy Lane
Orthophosphate Concentration (mg/L)
Flow (cfs)
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1200
1000
800
600
400
200
0
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006
Daily Data

4.1.8.6 Jordan River at 2100 South

Orthophosphate - Reach 520 Jordan River at 2100 South		
MFE (N-S):	-0.82	
Correlation Coeff.:	0.24	
	Observed	Modeled
DATE	PO4	PO4-CONCDIS
10/11/1994	1.55	0.69
11/22/1994	1.10	1.00
12/9/1994	1.22	1.07
1/17/1995	0.96	0.96
2/21/1995	1.50	1.21
3/9/1995	0.98	1.13
3/23/1995	0.71	0.97
4/5/1995	0.87	1.09
4/19/1995	0.40	0.86
5/3/1995	0.53	3.07
5/19/1995	0.38	0.76
5/31/1995	0.35	0.69
6/14/1995	0.12	0.42
7/21/1999	0.66	0.42
8/25/1999	0.93	0.70
10/7/1999	0.71	0.86
12/10/1999	1.04	1.06
1/12/2000	0.90	0.95
2/29/2000	0.34	0.92
3/27/2000	0.45	0.86
4/19/2000	0.45	0.71
5/5/2000	0.51	0.62
5/23/2000	0.05	0.74
6/7/2000	0.67	0.66
7/8/2004	1.37	0.83
8/18/2004	1.47	1.65
9/14/2004	1.46	0.98
11/2/2004	0.92	0.95
12/8/2004	1.16	1.03
1/27/2005	1.42	1.56

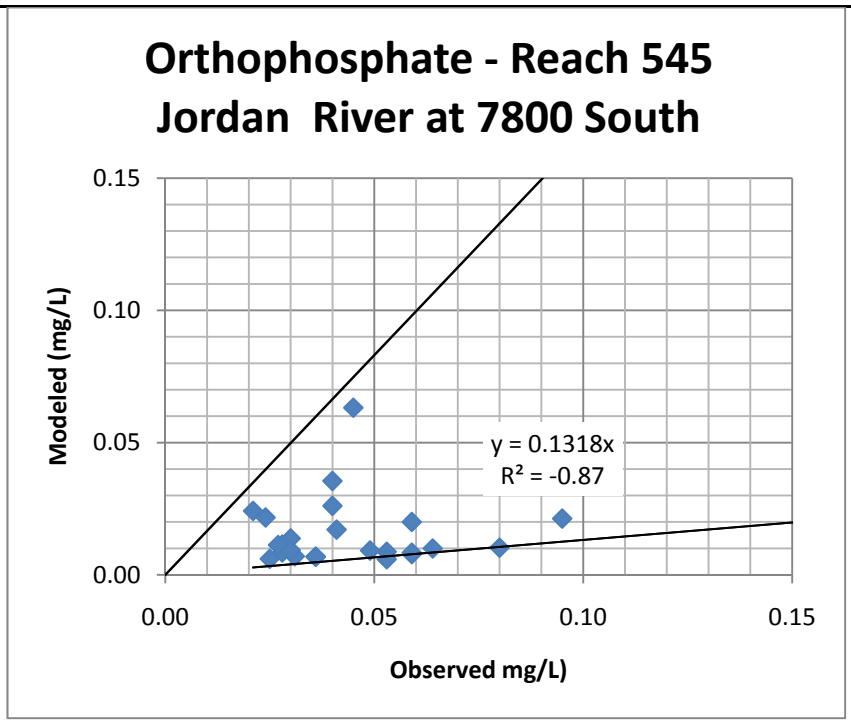


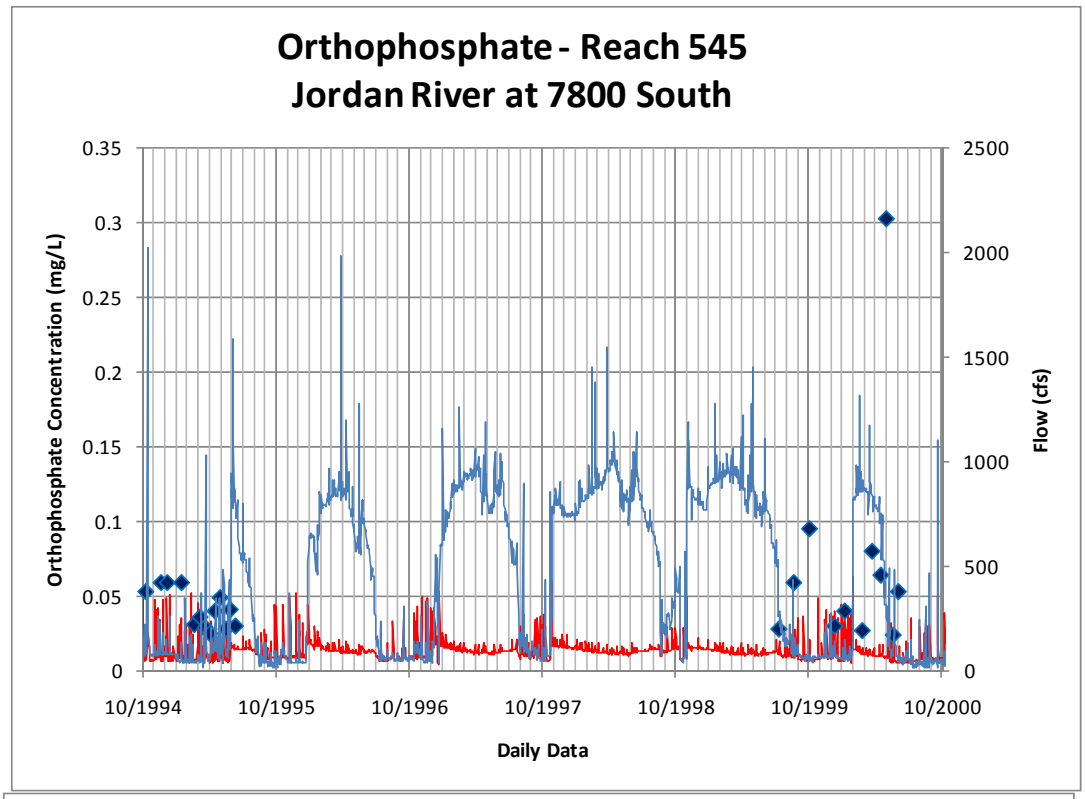

Orthophosphate - Reach 520
Jordan River at 2100 South
Orthophosphate Concentration (mg/L)
Flow (cfs)
Daily Data
0
1
2
3
4
5
6
7
0
500
1000
1500
2000
2500
3000
3500
4000
4500
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000

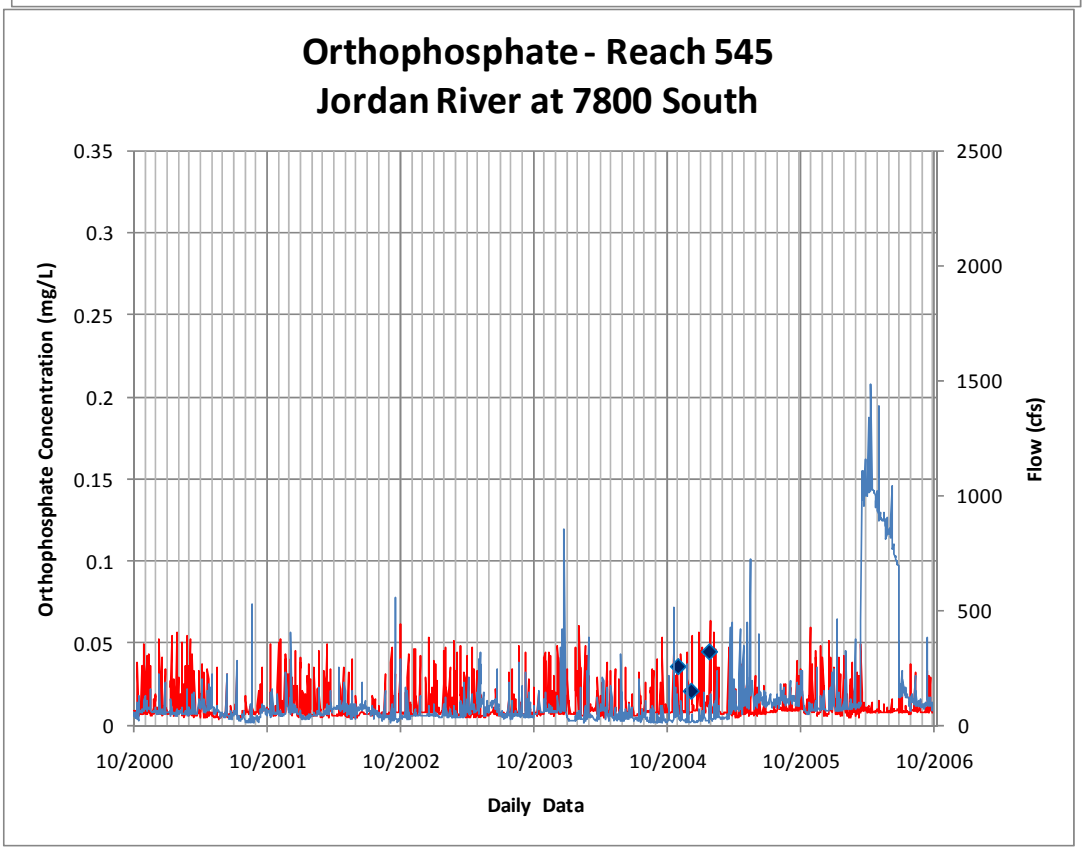

Orthophosphate - Reach 520
Jordan River at 2100 South
Orthophosphate Concentration (mg/L)
Flow (cfs)
Daily Data
0
1
2
3
4
5
6
7
0
500
1000
1500
2000
2500
3000
3500
4000
4500
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006

4.1.8.7 Jordan River at 7800 South

Orthophosphate - Reach 545 Jordan River at 7800 South		
MFE (N-S):	-0.62	
Correlation Coeff.:	-0.09	
	Observed	Modeled
DATE	PO4	PO4-CONCDIS
10/11/1994	0.05	0.01
12/9/1994	0.06	0.01
1/17/1995	0.06	0.02
2/21/1995	0.03	0.01
3/9/1995	0.04	0.01
3/23/1995	0.03	0.01
4/5/1995	0.03	0.01
4/19/1995	0.04	0.04
5/3/1995	0.05	0.01
5/19/1995	0.03	0.01
5/31/1995	0.04	0.02
6/14/1995	0.03	0.01
7/15/1999	0.03	0.01
8/25/1999	0.06	0.01
10/7/1999	0.10	0.02
12/15/1999	0.03	0.01
1/12/2000	0.04	0.03
2/29/2000	0.03	0.01
3/27/2000	0.08	0.01
4/20/2000	0.06	0.01
5/5/2000	0.30	0.01
5/24/2000	0.02	0.02
6/7/2000	0.05	0.01
11/2/2004	0.04	0.01
12/8/2004	0.02	0.02
1/27/2005	0.05	0.06




Orthophosphate - Reach 545
Jordan River at 7800 South
Orthophosphate Concentration (mg/L)
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
2500
2000
1500
1000
500
0
Flow (cfs)
10/1994
10/1995
10/1996
10/1997
10/1998
10/1999
10/2000
Daily Data


Orthophosphate - Reach 545
Jordan River at 7800 South
Orthophosphate Concentration (mg/L)
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
2500
2000
1500
1000
500
0
Flow (cfs)
10/2000
10/2001
10/2002
10/2003
10/2004
10/2005
10/2006
Daily Data

5.0 CONCLUSIONS AND FUTURE MODEL USE

This countywide watershed model simulates both the quantity and quality of surface water and runoff within Salt Lake County. It is broad in scope and covers all the watersheds and major land uses within the county. It provides data on the water quality within the major surface water bodies within the county. It is capable of distinguishing the water quality effects of different land uses and areas within the major watersheds of Salt Lake County. The model also distinguishes between in-stream processes and land surface processes for both hydrology and water quality.

The model is continuous and provides water quality of hydrology estimates for a ten-year period of record. Because of this it can model long term water quality processes such as accumulation over a several year period. It can also provide information on the differences between wet and dry water years as well as large and small snow packs. It can be used to look at the difference between baseflow water quality, runoff water quality, and storm event water quality.

5.1.1 Model Uses

This model can be used as an overall tool for watershed planning. It can be used to screen for problem areas, to estimate the effects of watershed modifications, the effects of watershed improvements, and water quality best management practices. It can also be used to determine sources, fate, and transport of water quality constituents of concern.

5.1.1.1 Storm Water Load Estimates

This model can be used to estimate the water quality loading from storm water runoff within the urban areas of Salt Lake County. The estimates it would provide for this would be broad, but could provide information on the overall effects of stormwater in receiving waters. It can show overall effects of the runoff within the streams during storm events as well as overall water quality loading on an annual basis.

5.1.1.2 Water Quality Best Management Practices

This model can also be used to study the effects of broad scale utilization of water quality best management practices (BMPs). BMPs that could be modeled within this HSPF model include: stream buffer strips, filter strips, major settling basins, and overall watershed wide BMP implementation that would affect constituent buildup or wash-off on a watershed scale.

5.1.1.3 Jordan River Total Maximum Daily Load Study

The State of Utah is currently conducting a Total Maximum Daily Load (TMDL) study of the Jordan River to determine the causes of the dissolved oxygen (DO) impairment in the lower Jordan River. This has been an ongoing process over the last five years. This first phase of this project is largely complete and has determined that the low DO is caused by particulate organic matter and un-dissolved contributors to BOD as well as long term accumulation of oxygen demand in the sediment of the lower Jordan. During the next phases of the TMDL study further water quality studies will be conducted and water quality loading allocations will be determined and implemented.

This watershed model could be used as a tool for this process to determine loading of BOD and organic matter from the upper basins of the Jordan River and compare them to loading from the treatment plants within the Salt Lake Valley. It could also be used to estimate the contributions

of urban stormwater to the Jordan River. The hydraulics and water quality processes within the Jordan River could also be studied with this model to determine areas of scour and accumulation of organic matter and long term trends within the river system.

5.1.2 Model Limitations

This model is very large scale and encompasses the entire watershed. Its parameters are lumped into large areas that encompass entire land-use areas. Changes in parameterization affect large areas of the watershed. This means that the model can not be used to look at specific storm drainage catchments or small areas within the watershed.

The calibration locations were somewhat limited in scope and were located on the Jordan River and the east side of the Salt Lake Valley. There are no calibration locations located on the west side of the Salt Lake Valley. This means that parameterization on the east side of the valley is fairly well known, but the west side of the valley is somewhat limited.

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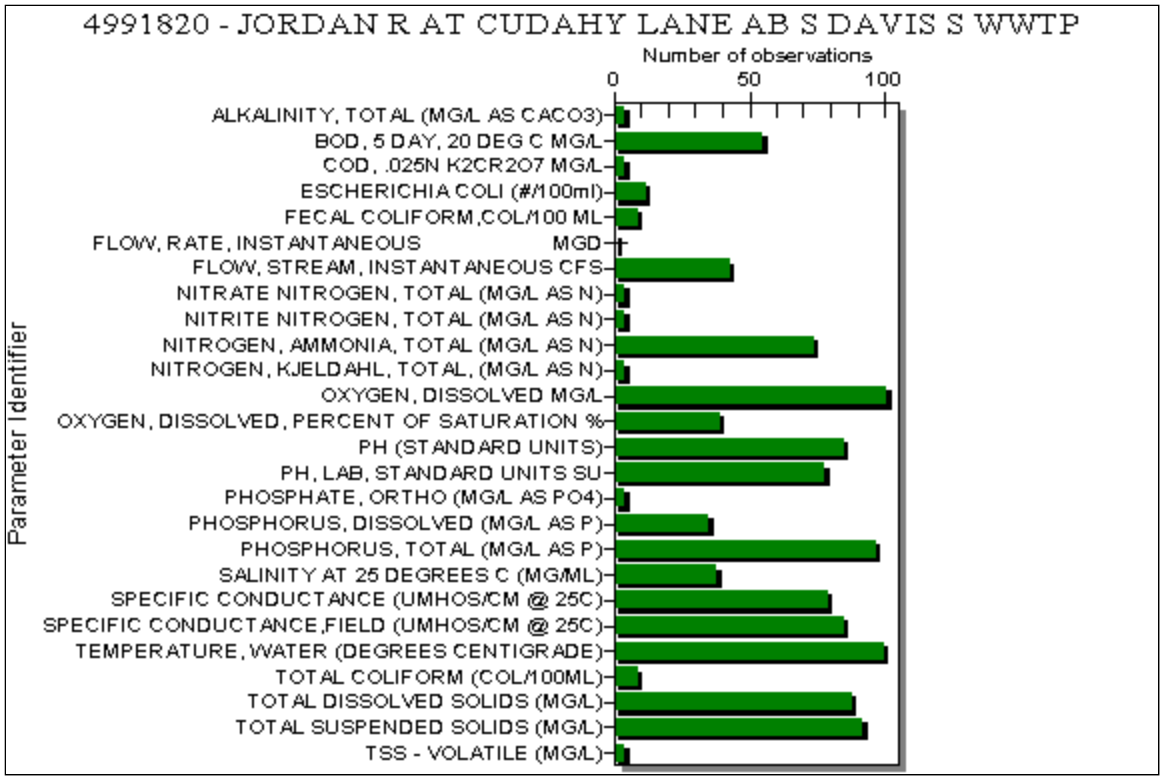
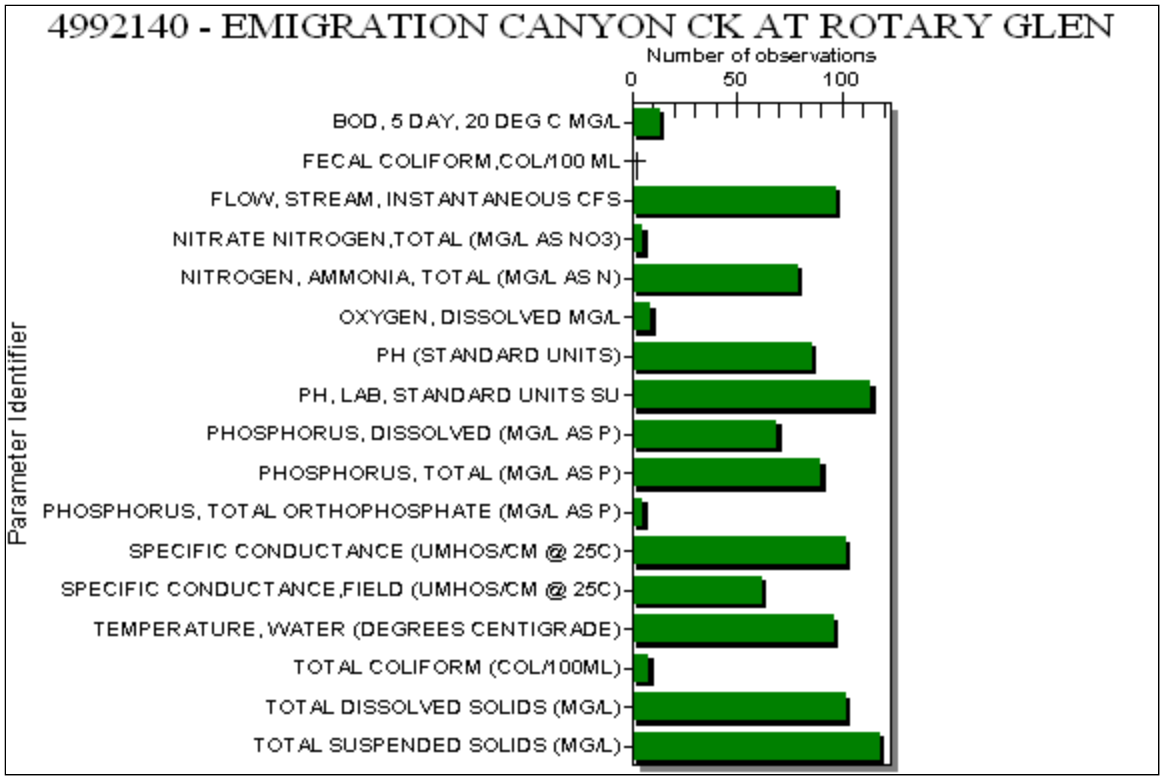
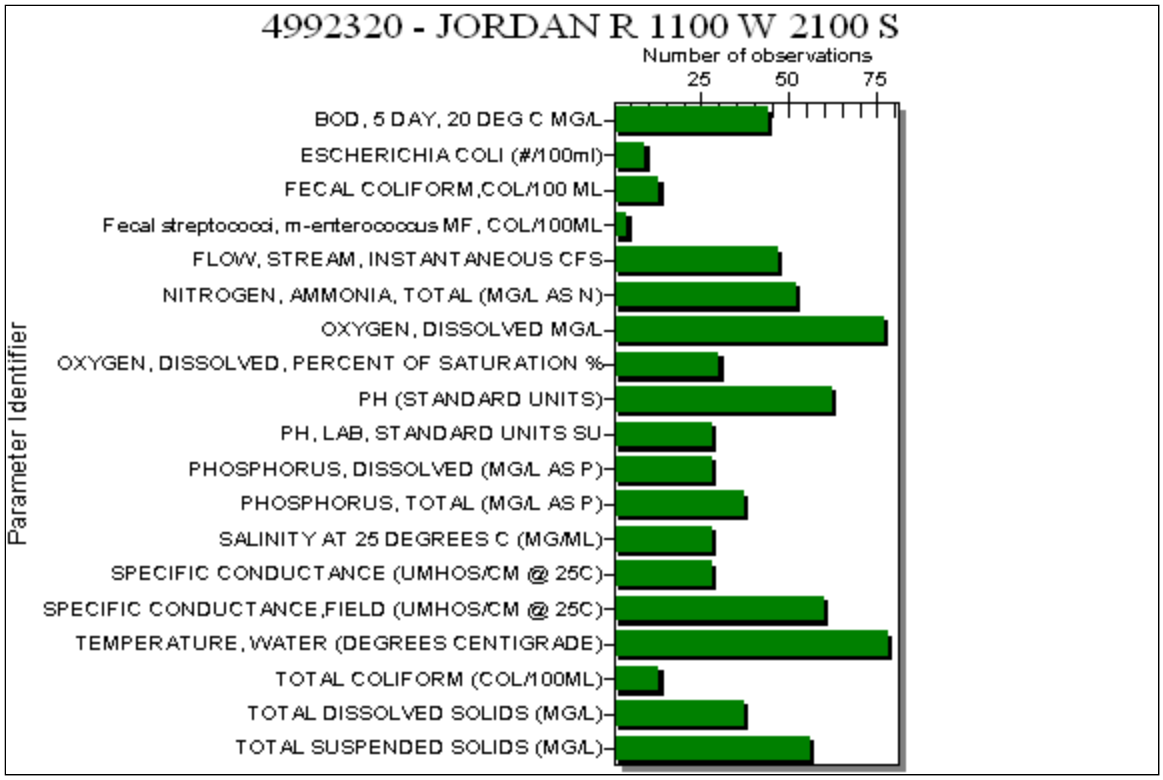
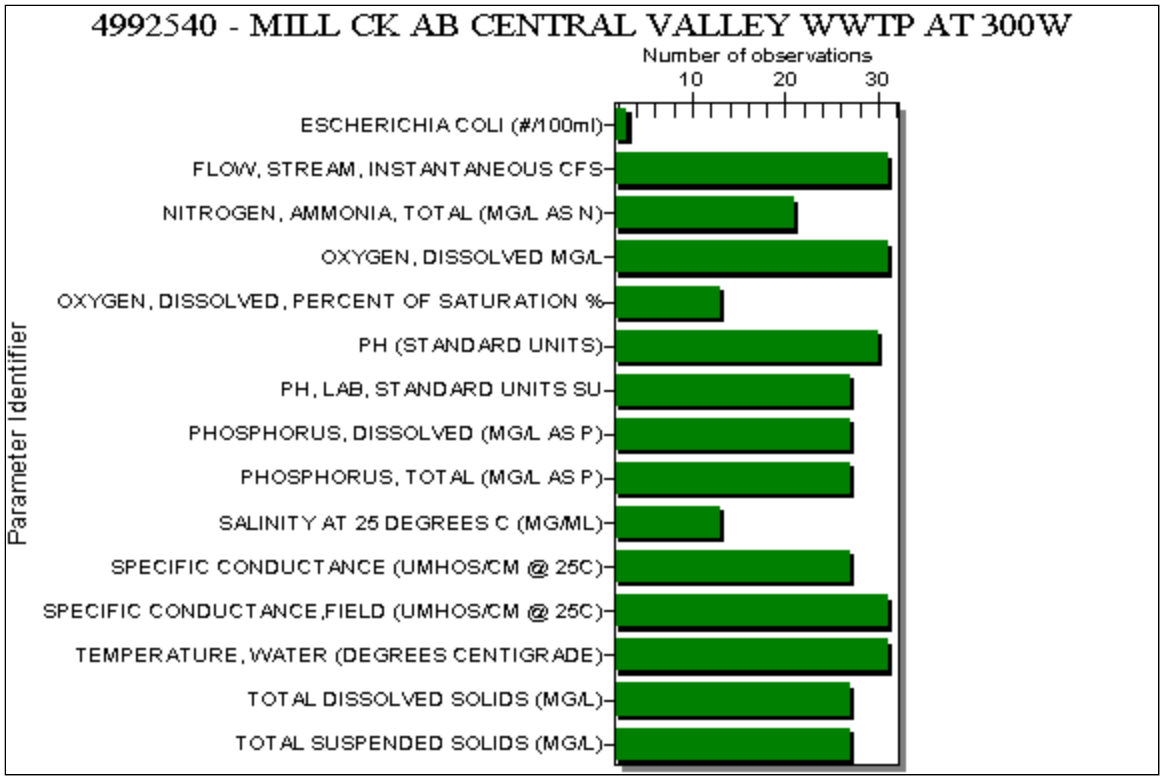
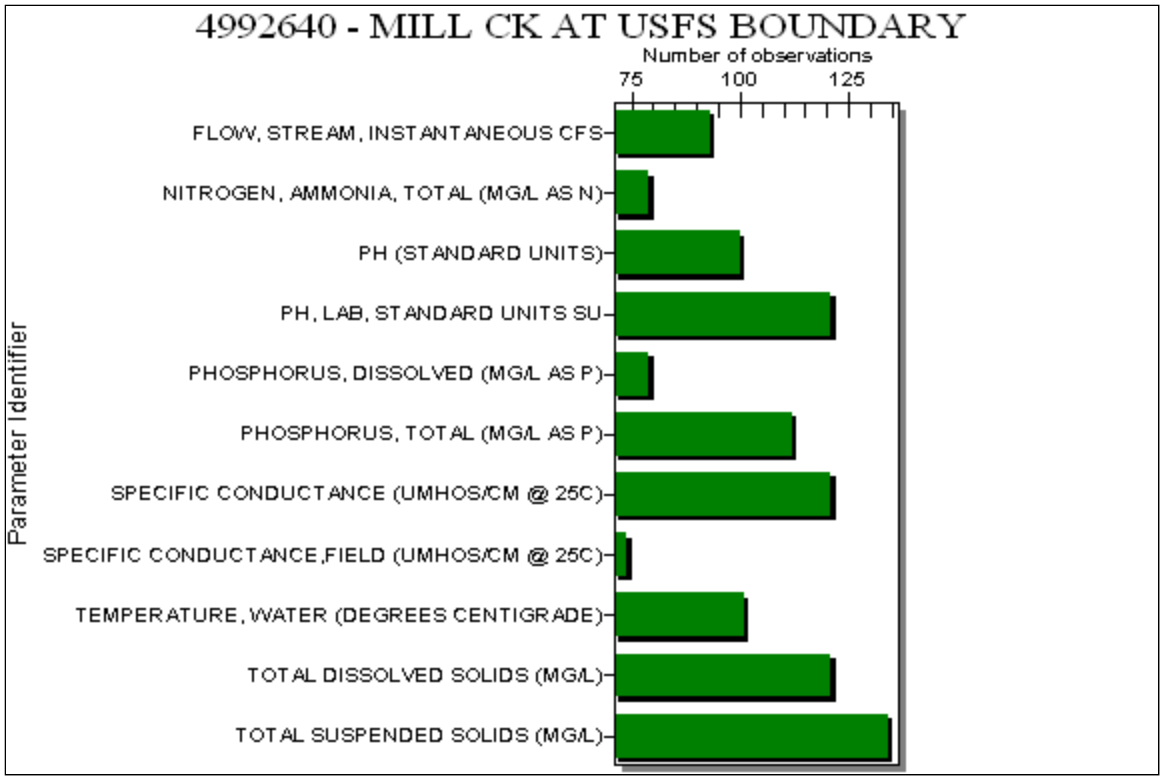
APPENDIX A: DATA AVAILABILITY INVENTORY

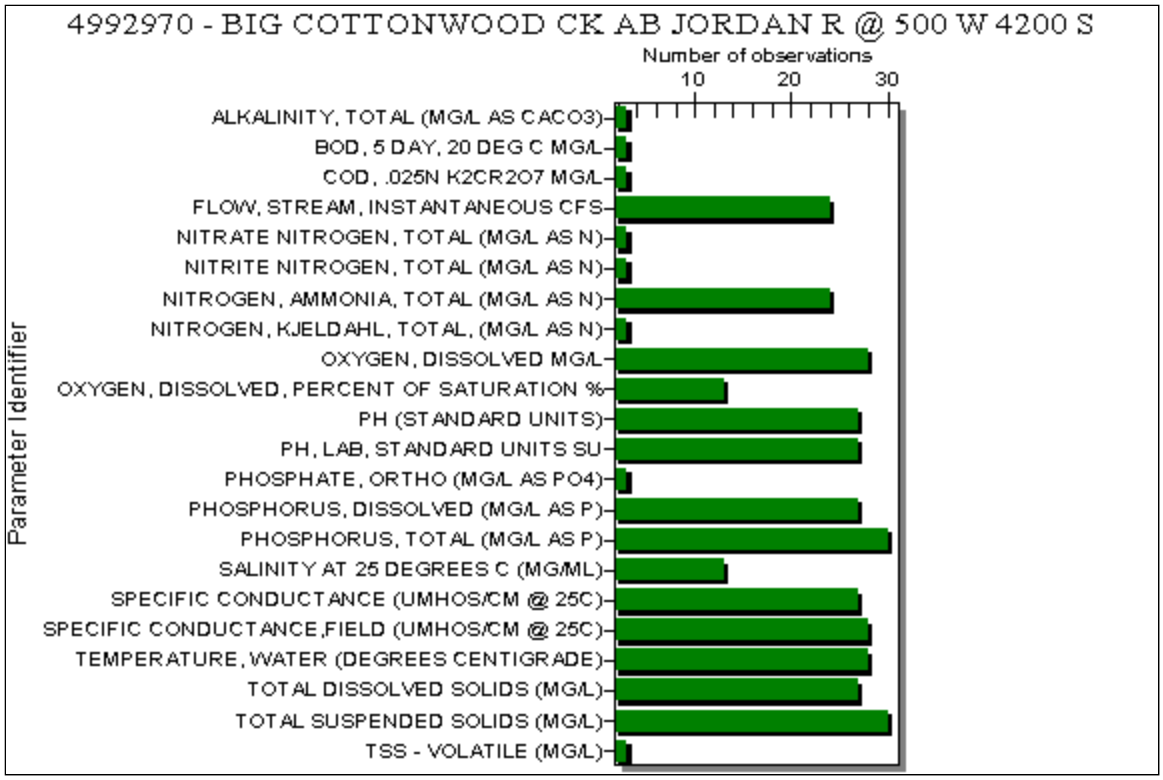

4991820 - JORDAN R AT CUDAHY LANE AB S DAVIS S WWTP
Number of observations
0
50
100
Parameter Identifier
ALKALINITY, TOTAL (MG/L AS CACO3)
BOD, 5 DAY, 20 DEG C MG/L
COD, .025N K2CR2O7 MG/L
ESCHERICHIA COLI (#/100ml)
FECAL COLIFORM,COL/100 ML
FLOW, RATE, INSTANTANEOUS MGD
FLOW, STREAM, INSTANTANEOUS CFS
NITRATE NITROGEN, TOTAL (MG/L AS N)
NITRITE NITROGEN, TOTAL (MG/L AS N)
NITROGEN, AMMONIA, TOTAL (MG/L AS N)
NITROGEN, KJELDAHL, TOTAL, (MG/L AS N)
OXYGEN, DISSOLVED MG/L
OXYGEN, DISSOLVED, PERCENT OF SATURATION %
PH (STANDARD UNITS)
PH, LAB, STANDARD UNITS SU
PHOSPHATE, ORTHO (MG/L AS PO4)
PHOSPHORUS, DISSOLVED (MG/L AS P)
PHOSPHORUS, TOTAL (MG/L AS P)
SALINITY AT 25 DEGREES C (MG/ML)
SPECIFIC CONDUCTANCE (UMHOS/CM @ 25C)
SPECIFIC CONDUCTANCE,FIELD (UMHOS/CM @ 25C)
TEMPERATURE, WATER (DEGREES CENTIGRADE)
TOTAL COLIFORM (COL/100ML)
TOTAL DISSOLVED SOLIDS (MG/L)
TOTAL SUSPENDED SOLIDS (MG/L)
TSS - VOLATILE (MG/L)

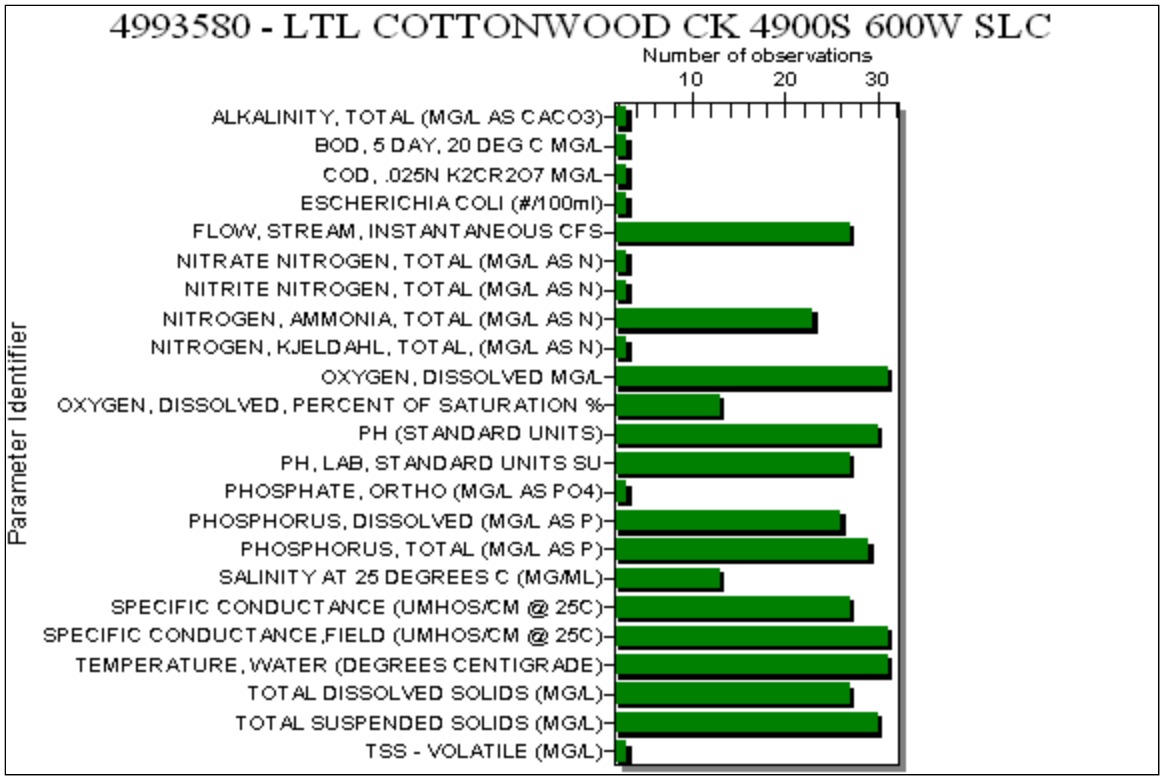

4992140 - EMIGRATION CANYON CK AT ROTARY GLEN
Number of observations
0
50
100
Parameter Identifier
BOD, 5 DAY, 20 DEG C MG/L
FECAL COLIFORM,COL/100 ML
FLOW, STREAM, INSTANTANEOUS CFS
NITRATE NITROGEN,TOTAL (MG/L AS NO3)
NITROGEN, AMMONIA, TOTAL (MG/L AS N)
OXYGEN, DISSOLVED MG/L
PH (STANDARD UNITS)
PH, LAB, STANDARD UNITS SU
PHOSPHORUS, DISSOLVED (MG/L AS P)
PHOSPHORUS, TOTAL (MG/L AS P)
PHOSPHORUS, TOTAL ORTHOPHOSPHATE (MG/L AS P)
SPECIFIC CONDUCTANCE (UMHOS/CM @ 25C)
SPECIFIC CONDUCTANCE,FIELD (UMHOS/CM @ 25C)
TEMPERATURE, WATER (DEGREES CENTIGRADE)
TOTAL COLIFORM (COL/100ML)
TOTAL DISSOLVED SOLIDS (MG/L)
TOTAL SUSPENDED SOLIDS (MG/L)

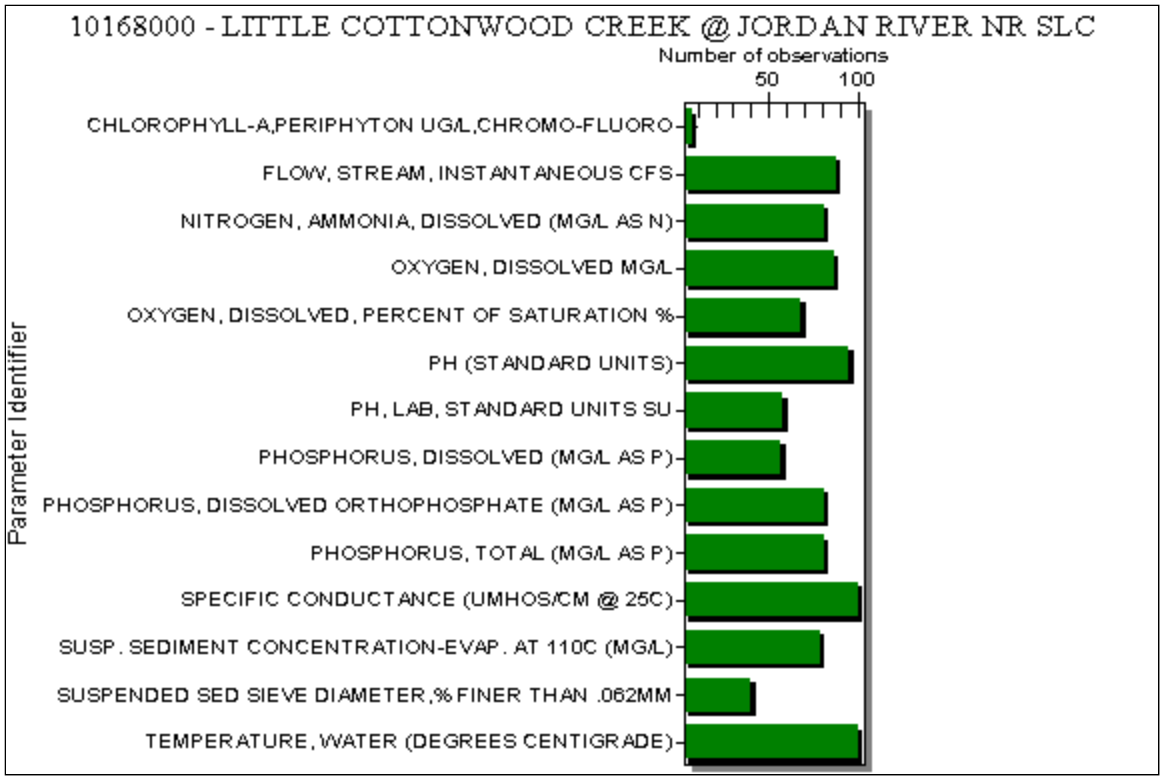

4992320 - JORDAN R 1100 W 2100 S
Number of observations
25
50
75
Parameter Identifier
BOD, 5 DAY, 20 DEG C MG/L
ESCHERICHIA COLI (#/100ml)
FECAL COLIFORM,COL/100 ML
Fecal streptococci, m-enterococcus MF, COL/100ML
FLOW, STREAM, INSTANTANEOUS CFS
NITROGEN, AMMONIA, TOTAL (MG/L AS N)
OXYGEN, DISSOLVED MG/L
OXYGEN, DISSOLVED, PERCENT OF SATURATION %
PH (STANDARD UNITS)
PH, LAB, STANDARD UNITS SU
PHOSPHORUS, DISSOLVED (MG/L AS P)
PHOSPHORUS, TOTAL (MG/L AS P)
SALINITY AT 25 DEGREES C (MG/ML)
SPECIFIC CONDUCTANCE (UMHOS/CM @ 25C)
SPECIFIC CONDUCTANCE,FIELD (UMHOS/CM @ 25C)
TEMPERATURE, WATER (DEGREES CENTIGRADE)
TOTAL COLIFORM (COL/100ML)
TOTAL DISSOLVED SOLIDS (MG/L)
TOTAL SUSPENDED SOLIDS (MG/L)

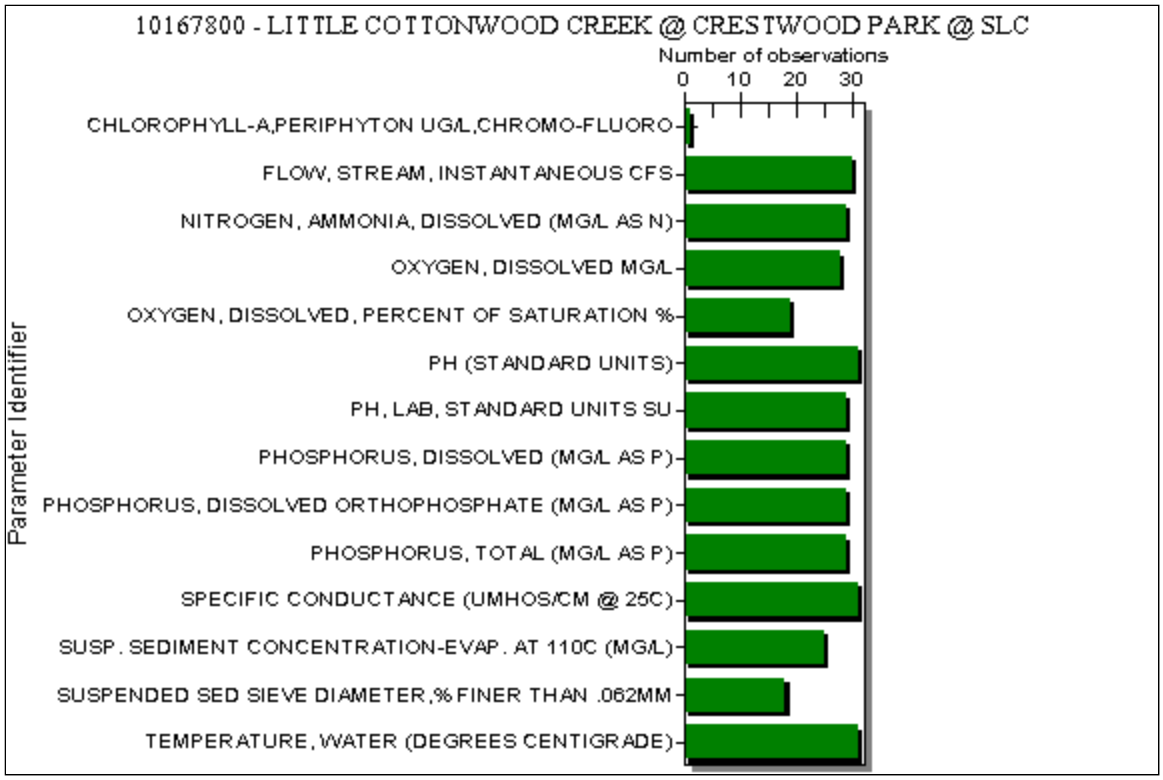

4992540 - MILL CK AB CENTRAL VALLEY WWTP AT 300W
Number of observations
10
20
30
Parameter Identifier
ESCHERICHIA COLI (#/100ml)
FLOW, STREAM, INSTANTANEOUS CFS
NITROGEN, AMMONIA, TOTAL (MG/L AS N)
OXYGEN, DISSOLVED MG/L
OXYGEN, DISSOLVED, PERCENT OF SATURATION %
PH (STANDARD UNITS)
PH, LAB, STANDARD UNITS SU
PHOSPHORUS, DISSOLVED (MG/L AS P)
PHOSPHORUS, TOTAL (MG/L AS P)
SALINITY AT 25 DEGREES C (MG/ML)
SPECIFIC CONDUCTANCE (UMHOS/CM @ 25C)
SPECIFIC CONDUCTANCE,FIELD (UMHOS/CM @ 25C)
TEMPERATURE, WATER (DEGREES CENTIGRADE)
TOTAL DISSOLVED SOLIDS (MG/L)
TOTAL SUSPENDED SOLIDS (MG/L)

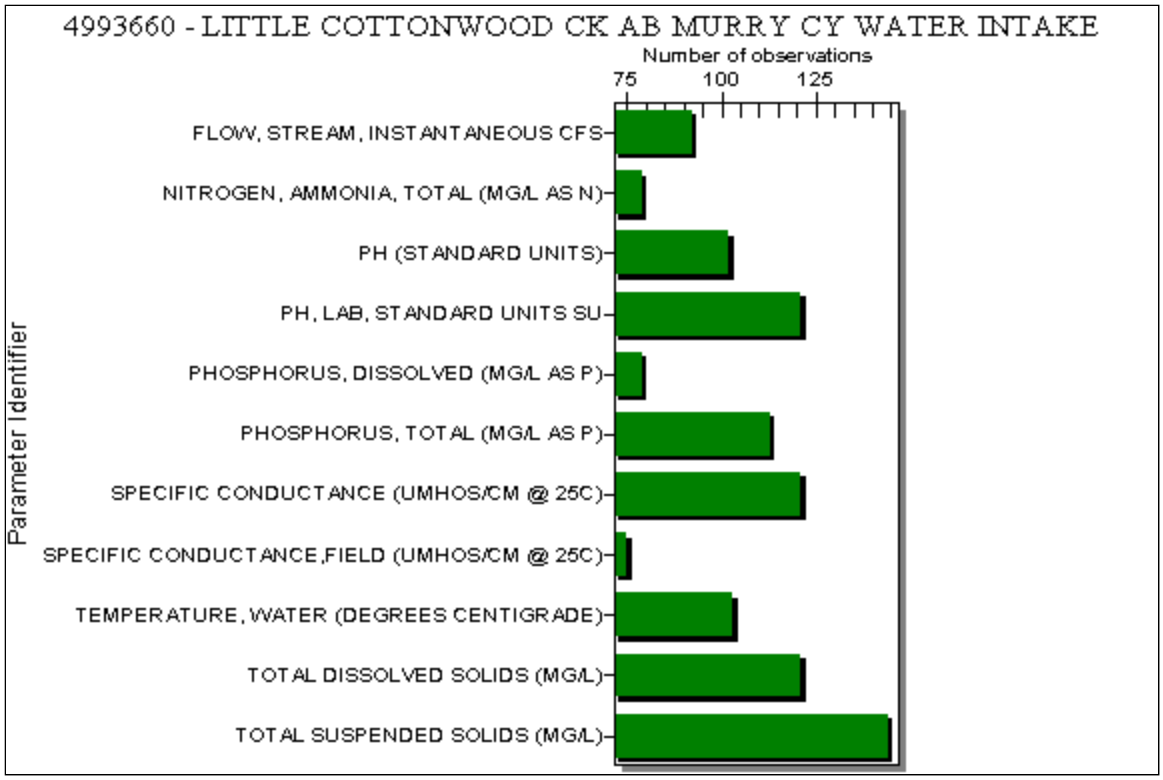

4992640 - MILL CK AT USFS BOUNDARY
Number of observations
75
100
125
Parameter Identifier
FLOW, STREAM, INSTANTANEOUS CFS
NITROGEN, AMMONIA, TOTAL (MG/L AS N)
PH (STANDARD UNITS)
PH, LAB, STANDARD UNITS SU
PHOSPHORUS, DISSOLVED (MG/L AS P)
PHOSPHORUS, TOTAL (MG/L AS P)
SPECIFIC CONDUCTANCE (UMHOS/CM @ 25C)
SPECIFIC CONDUCTANCE,FIELD (UMHOS/CM @ 25C)
TEMPERATURE, WATER (DEGREES CENTIGRADE)
TOTAL DISSOLVED SOLIDS (MG/L)
TOTAL SUSPENDED SOLIDS (MG/L)

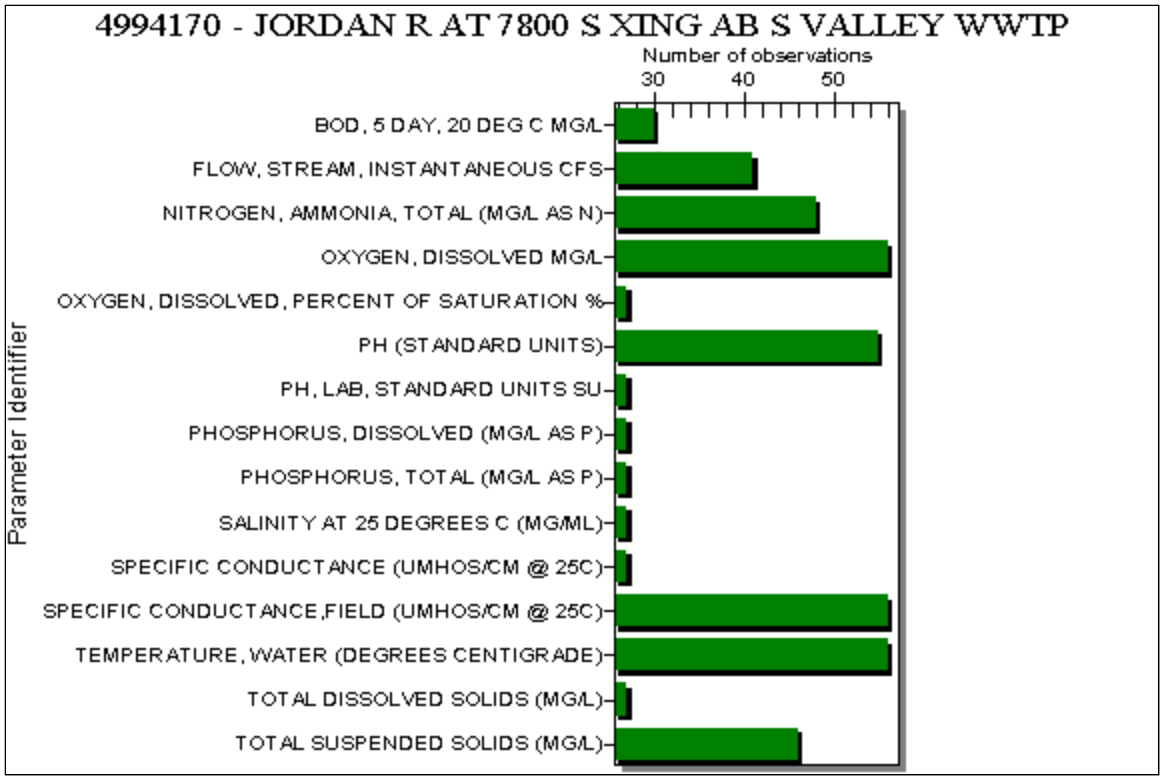

4992970 - BIG COTTONWOOD CK AB JORDAN R @ 500 W 4200 S
Number of observations
10
20
30
Parameter Identifier
ALKALINITY, TOTAL (MG/L AS CACO3)
BOD, 5 DAY, 20 DEG C MG/L
COD, .025N K2CR2O7 MG/L
FLOW, STREAM, INSTANTANEOUS CFS
NITRATE NITROGEN, TOTAL (MG/L AS N)
NITRITE NITROGEN, TOTAL (MG/L AS N)
NITROGEN, AMMONIA, TOTAL (MG/L AS N)
NITROGEN, KJELDAHL, TOTAL, (MG/L AS N)
OXYGEN, DISSOLVED MG/L
OXYGEN, DISSOLVED, PERCENT OF SATURATION %
PH (STANDARD UNITS)
PH, LAB, STANDARD UNITS SU
PHOSPHATE, ORTHO (MG/L AS PO4)
PHOSPHORUS, DISSOLVED (MG/L AS P)
PHOSPHORUS, TOTAL (MG/L AS P)
SALINITY AT 25 DEGREES C (MG/ML)
SPECIFIC CONDUCTANCE (UMHOS/CM @ 25C)
SPECIFIC CONDUCTANCE,FIELD (UMHOS/CM @ 25C)
TEMPERATURE, WATER (DEGREES CENTIGRADE)
TOTAL DISSOLVED SOLIDS (MG/L)
TOTAL SUSPENDED SOLIDS (MG/L)
TSS - VOLATILE (MG/L)

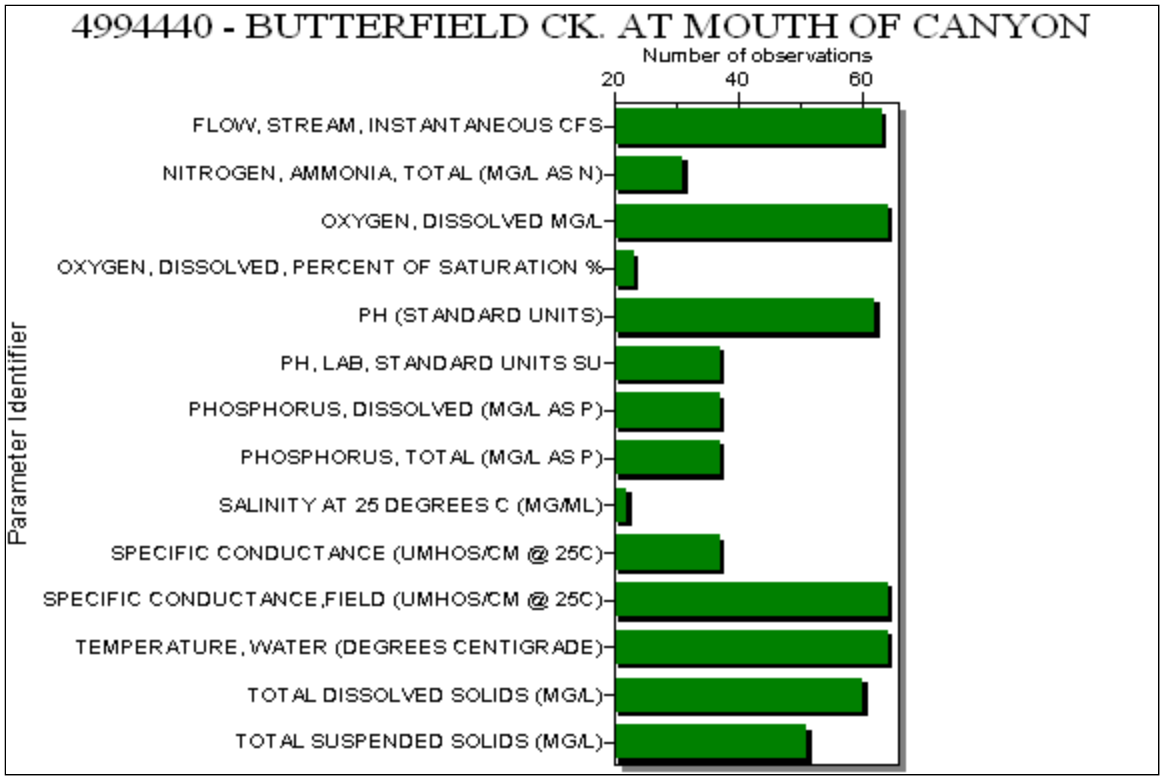

4993580 - LTL COTTONWOOD CK 4900S 600W SLC
Number of observations
10
20
30
Parameter Identifier
ALKALINITY, TOTAL (MG/L AS CACO3)
BOD, 5 DAY, 20 DEG C MG/L
COD, .025N K2CR2O7 MG/L
ESCHERICHIA COLI (#/100ml)
FLOW, STREAM, INSTANTANEOUS CFS
NITRATE NITROGEN, TOTAL (MG/L AS N)
NITRITE NITROGEN, TOTAL (MG/L AS N)
NITROGEN, AMMONIA, TOTAL (MG/L AS N)
NITROGEN, KJELDAHL, TOTAL, (MG/L AS N)
OXYGEN, DISSOLVED MG/L
OXYGEN, DISSOLVED, PERCENT OF SATURATION %
PH (STANDARD UNITS)
PH, LAB, STANDARD UNITS SU
PHOSPHATE, ORTHO (MG/L AS PO4)
PHOSPHORUS, DISSOLVED (MG/L AS P)
PHOSPHORUS, TOTAL (MG/L AS P)
SALINITY AT 25 DEGREES C (MG/ML)
SPECIFIC CONDUCTANCE (UMHOS/CM @ 25C)
SPECIFIC CONDUCTANCE,FIELD (UMHOS/CM @ 25C)
TEMPERATURE, WATER (DEGREES CENTIGRADE)
TOTAL DISSOLVED SOLIDS (MG/L)
TOTAL SUSPENDED SOLIDS (MG/L)
TSS - VOLATILE (MG/L)

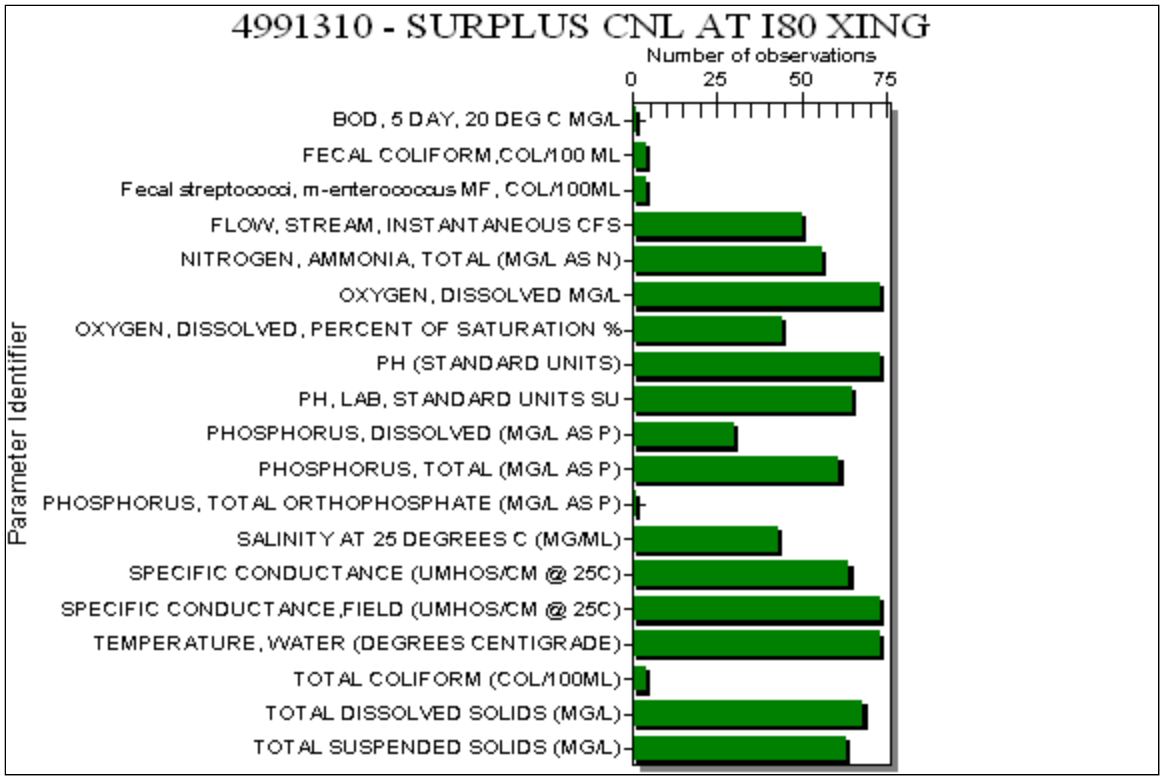

10168000 - LITTLE COTTONWOOD CREEK @ JORDAN RIVER NR SLC
Number of observations
50
100
Parameter Identifier
CHLOROPHYLL-A,PERIPHYTON UG/L,CHROMO-FLUORO
FLOW, STREAM, INSTANTANEOUS CFS
NITROGEN, AMMONIA, DISSOLVED (MG/L AS N)
OXYGEN, DISSOLVED MG/L
OXYGEN, DISSOLVED, PERCENT OF SATURATION %
PH (STANDARD UNITS)
PH, LAB, STANDARD UNITS SU
PHOSPHORUS, DISSOLVED (MG/L AS P)
PHOSPHORUS, DISSOLVED ORTHOPHOSPHATE (MG/L AS P)
PHOSPHORUS, TOTAL (MG/L AS P)
SPECIFIC CONDUCTANCE (UMHOS/CM @ 25C)
SUSP. SEDIMENT CONCENTRATION-EVAP. AT 110C (MG/L)
SUSPENDED SED SIEVE DIAMETER,% FINER THAN .062MM
TEMPERATURE, WATER (DEGREES CENTIGRADE)

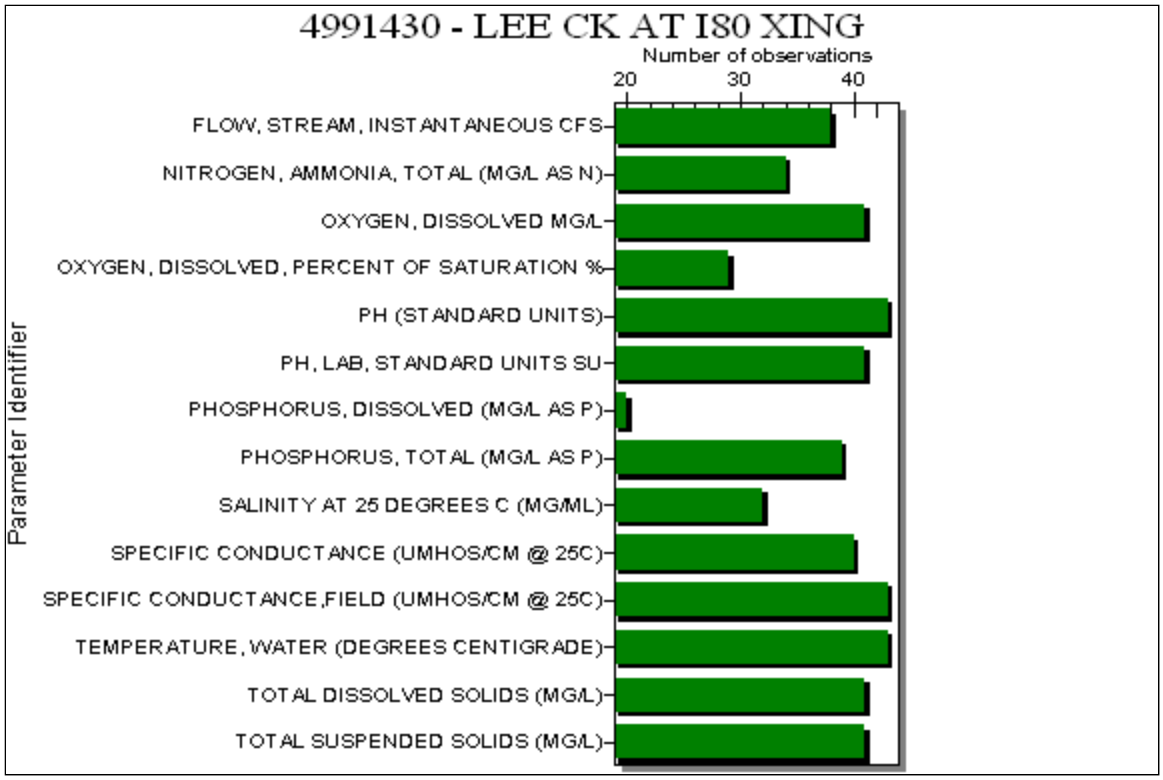

10167800 - LITTLE COTTONWOOD CREEK @ CRESTWOOD PARK @ SLC
Number of observations
0
10
20
30
Parameter Identifier
CHLOROPHYLL-A,PERIPHYTON UG/L,CHROMO-FLUORO
FLOW, STREAM, INSTANTANEOUS CFS
NITROGEN, AMMONIA, DISSOLVED (MG/L AS N)
OXYGEN, DISSOLVED MG/L
OXYGEN, DISSOLVED, PERCENT OF SATURATION %
PH (STANDARD UNITS)
PH, LAB, STANDARD UNITS SU
PHOSPHORUS, DISSOLVED (MG/L AS P)
PHOSPHORUS, DISSOLVED ORTHOPHOSPHATE (MG/L AS P)
PHOSPHORUS, TOTAL (MG/L AS P)
SPECIFIC CONDUCTANCE (UMHOS/CM @ 25C)
SUSP. SEDIMENT CONCENTRATION-EVAP. AT 110C (MG/L)
SUSPENDED SED SIEVE DIAMETER,% FINER THAN .062MM
TEMPERATURE, WATER (DEGREES CENTIGRADE)


4993660 - LITTLE COTTONWOOD CK AB MURRY CY WATER INTAKE
Number of observations
75
100
125
Parameter Identifier
FLOW, STREAM, INSTANTANEOUS CFS
NITROGEN, AMMONIA, TOTAL (MG/L AS N)
PH (STANDARD UNITS)
PH, LAB, STANDARD UNITS SU
PHOSPHORUS, DISSOLVED (MG/L AS P)
PHOSPHORUS, TOTAL (MG/L AS P)
SPECIFIC CONDUCTANCE (UMHOS/CM @ 25C)
SPECIFIC CONDUCTANCE,FIELD (UMHOS/CM @ 25C)
TEMPERATURE, WATER (DEGREES CENTIGRADE)
TOTAL DISSOLVED SOLIDS (MG/L)
TOTAL SUSPENDED SOLIDS (MG/L)


4994170 - JORDAN R AT 7800 S XING AB S VALLEY WWTP
Number of observations
30
40
50
Parameter Identifier
BOD, 5 DAY, 20 DEG C MG/L
FLOW, STREAM, INSTANTANEOUS CFS
NITROGEN, AMMONIA, TOTAL (MG/L AS N)
OXYGEN, DISSOLVED MG/L
OXYGEN, DISSOLVED, PERCENT OF SATURATION %
PH (STANDARD UNITS)
PH, LAB, STANDARD UNITS SU
PHOSPHORUS, DISSOLVED (MG/L AS P)
PHOSPHORUS, TOTAL (MG/L AS P)
SALINITY AT 25 DEGREES C (MG/ML)
SPECIFIC CONDUCTANCE (UMHOS/CM @ 25C)
SPECIFIC CONDUCTANCE,FIELD (UMHOS/CM @ 25C)
TEMPERATURE, WATER (DEGREES CENTIGRADE)
TOTAL DISSOLVED SOLIDS (MG/L)
TOTAL SUSPENDED SOLIDS (MG/L)


4994440 - BUTTERFIELD CK. AT MOUTH OF CANYON
Number of observations
20
40
60
Parameter Identifier
FLOW, STREAM, INSTANTANEOUS CFS
NITROGEN, AMMONIA, TOTAL (MG/L AS N)
OXYGEN, DISSOLVED MG/L
OXYGEN, DISSOLVED, PERCENT OF SATURATION %
PH (STANDARD UNITS)
PH, LAB, STANDARD UNITS SU
PHOSPHORUS, DISSOLVED (MG/L AS P)
PHOSPHORUS, TOTAL (MG/L AS P)
SALINITY AT 25 DEGREES C (MG/ML)
SPECIFIC CONDUCTANCE (UMHOS/CM @ 25C)
SPECIFIC CONDUCTANCE,FIELD (UMHOS/CM @ 25C)
TEMPERATURE, WATER (DEGREES CENTIGRADE)
TOTAL DISSOLVED SOLIDS (MG/L)
TOTAL SUSPENDED SOLIDS (MG/L)


4991310 - SURPLUS CNL AT I80 XING
Number of observations
0
25
50
75
Parameter Identifier
BOD, 5 DAY, 20 DEG C MG/L
FECAL COLIFORM,COL/100 ML
Fecal streptococci, m-enterococcus MF, COL/100ML
FLOW, STREAM, INSTANTANEOUS CFS
NITROGEN, AMMONIA, TOTAL (MG/L AS N)
OXYGEN, DISSOLVED MG/L
OXYGEN, DISSOLVED, PERCENT OF SATURATION %
PH (STANDARD UNITS)
PH, LAB, STANDARD UNITS SU
PHOSPHORUS, DISSOLVED (MG/L AS P)
PHOSPHORUS, TOTAL (MG/L AS P)
PHOSPHORUS, TOTAL ORTHOPHOSPHATE (MG/L AS P)
SALINITY AT 25 DEGREES C (MG/ML)
SPECIFIC CONDUCTANCE (UMHOS/CM @ 25C)
SPECIFIC CONDUCTANCE,FIELD (UMHOS/CM @ 25C)
TEMPERATURE, WATER (DEGREES CENTIGRADE)
TOTAL COLIFORM (COL/100ML)
TOTAL DISSOLVED SOLIDS (MG/L)
TOTAL SUSPENDED SOLIDS (MG/L)


4991430 - LEE CK AT I80 XING
Number of observations
20
30
40
Parameter Identifier
FLOW, STREAM, INSTANTANEOUS CFS
NITROGEN, AMMONIA, TOTAL (MG/L AS N)
OXYGEN, DISSOLVED MG/L
OXYGEN, DISSOLVED, PERCENT OF SATURATION %
PH (STANDARD UNITS)
PH, LAB, STANDARD UNITS SU
PHOSPHORUS, DISSOLVED (MG/L AS P)
PHOSPHORUS, TOTAL (MG/L AS P)
SALINITY AT 25 DEGREES C (MG/ML)
SPECIFIC CONDUCTANCE (UMHOS/CM @ 25C)
SPECIFIC CONDUCTANCE,FIELD (UMHOS/CM @ 25C)
TEMPERATURE, WATER (DEGREES CENTIGRADE)
TOTAL DISSOLVED SOLIDS (MG/L)
TOTAL SUSPENDED SOLIDS (MG/L)

APPENDIX B: MODEL PARAMETERIZATION

PERLND Parameterization

```
  ATEMP-DAT
    <PLS >  El-diff ***
    x - x   (ft)    ***
   11          1500         60
   12          1100         60
   13          2350         60
   14          1300         60
   15          2150         60
   21          -375         60
   22           429         60
   23           968         60
   24           180         60
   25          -978         60
   31          -587         60
   32           653         60
   33          -197         60
   34           709         60
   35           -52         60
   41            50         60
   42          1420         60
   43          2020         60
   44           510         60
   45           100         60
   46           250         60
   47          -250         60
   51          -290         60
   52           616         60
   53          1122         60
   54           145         60
   55          -416         60
   56          -256         60
   57          -283         60
   61          -152         60
   62           303         60
   63          1134         60
   64           464         60
   65          -290         60
   66          -474         60
   67          -103         60
   71         -2589         60
   72         -2518         60
   74         -2742         60
   75         -2625         60
   76         -2600         60
   77         -2671         60
   81         -2207         60
   82         -1703         60
   83         -1009         60
   84         -1391         60
   85         -1908         60
   86         -2232         60
   87         -2172         60
   91         -1906         60
   92          -747         60
   93          -133         60
   94         -1120         60
   95         -1726         60
   97         -1207         60
  101           124         60
  102           477         60
  103          1996         60
  104            43         60
  105            62         60
  106            17         60
  107            32         60
  END ATEMP-DAT

  ICE-FLAG
    <PLS > Ice- ***
    x  - x flag ***
    1  107    1
  END ICE-FLAG

  SNOW-FLAGS
*** <PLS >
*** x -  x SNOP  VKM
    1  107    1    1
  END SNOW-FLAGS

  SNOW-PARM1
*** < PLS>        LAT     MELEV     SHADE    SNOWCF    COVIND     KMELT     TBASE
*** x  - x   degrees      (ft)                          (in)  (in/d.F)       (F)
   11             40      6523       0.5       1.0       3.0      0.05        31
   12             40      7106       0.5       1.0       3.0      0.05        31
   13             40      7367       0.5       1.0       3.0      0.05        31
   14             40      6314       0.5       1.0       3.0      0.05        31
   15             40      6687       0.5       1.0       3.0      0.05        31
   21             40      5045       0.2       1.0       3.0      0.04        33
   22             40      5849       0.2       1.0       3.0      0.04        33
   23             40      6388       0.2       1.0       3.0      0.04        33
   24             40      5600       0.2       1.0       3.0      0.04        33
   25             40      4433       0.2       1.0       3.0      0.04        33
   31             40      8153       0.5       1.1       3.0      0.05        32
   32             40      9393       0.5       1.1       3.0      0.05        32
   33             40      8543       0.5       1.1       3.0      0.05        32
   34             40      9449       0.5       1.1       3.0      0.05        32
   35             40      8688       0.5       1.1       3.0      0.05        32
   41             40      4888       0.5       1.0       3.0      0.03        31
   42             40      6482       0.5       1.0       3.0      0.03        31
   43             40      7077       0.5       1.0       3.0      0.03        31
   44             40      5571       0.5       1.0       3.0      0.03        31
   45             40      4797       0.5       1.0       3.0      0.03        31
   46             40      5269       0.5       1.0       3.0      0.03        31
   47             40      4787       0.5       1.0       3.0      0.03        31
   51             40      4600       0.5       1.0       3.0      0.03        33
   52             40      5506       0.5       1.0       3.0      0.03        33
   53             40      6012       0.5       1.0       3.0      0.03        33
   54             40      5035       0.5       1.0       3.0      0.03        33
   55             40      4474       0.5       1.0       3.0      0.03        33
   56             40      4634       0.5       1.0       3.0      0.03        33
   57             40      4607       0.5       1.0       3.0      0.03        33
   61             40      4808       0.5       1.1       3.0      0.03        32
   62             40      5263       0.5       1.1       3.0      0.03        32
   63             40      6094       0.5       1.1       3.0      0.03        32
   64             40      5424       0.5       1.1       3.0      0.03        32
   65             40      4670       0.5       1.1       3.0      0.03        32
   66             40      4486       0.5       1.1       3.0      0.03        32
   67             40      4857       0.5       1.1       3.0      0.03        32
   71             40      4504       0.5       1.1       3.0      0.03        32
   72             40      4575       0.5       1.1       3.0      0.03        32
   74             40      4351       0.5       1.1       3.0      0.03        32
   75             40      4468       0.5       1.1       3.0      0.03        32
   76             40      4493       0.5       1.1       3.0      0.03        32
   77             40      4422       0.5       1.1       3.0      0.03        32
   81             40      4886       0.5       1.1       3.0      0.03        32
   82             40      5390       0.5       1.1       3.0      0.03        32
   83             40      6084       0.5       1.1       3.0      0.03        32
   84             40      5702       0.5       1.1       3.0      0.03        32
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  85            40      5185       0.5       1.1       3.0      0.03        32
  86            40      4861       0.5       1.1       3.0      0.03        32
  87            40      4921       0.5       1.1       3.0      0.03        32
  91            40      5187       0.5       1.1       3.0      0.03        32
  92            40      6346       0.5       1.1       3.0      0.03        32
  93            40      6960       0.5       1.1       3.0      0.03        32
  94            40      5973       0.5       1.1       3.0      0.03        32
  95            40      5367       0.5       1.1       3.0      0.03        32
  97            40      5886       0.5       1.1       3.0      0.03        32
 101            40      4346       0.5       1.1       3.0      0.03        32
 102            40      4699       0.5       1.1       3.0      0.03        32
 103            40      6218       0.5       1.1       3.0      0.03        32
 104            40      4265       0.5       1.1       3.0      0.03        32
 105            40      4284       0.5       1.1       3.0      0.03        32
 106            40      4239       0.5       1.1       3.0      0.03        32
 107            40      4254       0.5       1.1       3.0      0.03        32
 END SNOW-PARM1

 SNOW-PARM2
   <PLS > ***
   # - #      RDCSN     TSNOW    SNOEVP    CCFACT    MWATER    MGMELT ***
  11  17       0.12       33.       0.1       2.0       .05       .01
  21  27       0.12       33.       0.1       2.0       .03       .01
  31  37       0.12       33.       0.1       2.0       .03       .01
  41  47       0.12       34.       0.1       2.0       .03       .01
  51  57       0.12       33.       0.1       2.0       .03       .01
  61  67       0.12       32.       0.1       2.0       .03       .01
  71  77       0.12       32.       0.1       2.0       .03       .01
  81  87       0.12       32.       0.1       2.0       .03       .01
  91  97       0.12       33.       0.1       2.0       .03       .01
 101 107       0.12       32.       0.1       2.0       .03       .01
 END SNOW-PARM2

 MON-MELT-FAC
   <PLS > Degree-day factor at start of each month ***
   #  - #  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC ***
  11   17 .025 .025 .030 .032 .032 .032 .032 .032 .030 .028 .025 .025
  21   27 .028 .028 .028 .030 .032 .034 .034 .032 .030 .030 .030 .028
  31   37 .048 .048 .050 .050 .052 .054 .054 .052 .050 .050 .050 .048
  41   47 .025 .035 .030 .032 .032 .032 .032 .032 .030 .028 .025 .025
  51   57 .028 .028 .028 .030 .032 .034 .034 .032 .030 .030 .030 .028
  61   67 .028 .028 .028 .030 .032 .034 .034 .032 .030 .030 .030 .028
  71   77 .028 .028 .028 .030 .032 .034 .034 .032 .030 .030 .030 .028
  81   87 .028 .028 .028 .030 .032 .034 .034 .032 .030 .030 .030 .028
  91   97 .028 .028 .028 .030 .032 .034 .034 .032 .030 .030 .030 .028
 101  107 .028 .028 .028 .030 .032 .034 .034 .032 .030 .030 .030 .028
 END MON-MELT-FAC

 SNOW-INIT1
   <PLS > ***
   # -  # Pack-snow  Pack-ice Pack-watr    RDENPF      DULL    PAKTMP***
   1  107       0.4       .00       .04       0.2      400.      32.0
 END SNOW-INIT1

 SNOW-INIT2
   <PLS > ***
   # -  #    COVINX    XLNMLT    SKYCLR***
   1  107      0.50      0.10      0.90
 END SNOW-INIT2

 PWAT-PARM1
*** <PLS >                        Flags
*** x -  x CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE IFFC  HWT IRRG IFRD
  11         1    1    1    1    0    0    0    0    1    1    0    0    0
  12         1    1    1    1    0    0    0    0    1    1    0    0    0
  13         1    1    1    1    0    0    0    0    1    1    0    0    0
  14         1    1    1    1    0    0    0    0    1    1    0    0    0
  15         1    1    1    1    0    0    0    0    1    1    0    0    0
  21         1    1    1    1    0    0    0    0    1    1    0    0    0
  22         1    1    1    1    0    0    0    0    1    1    0    0    0
  23         1    1    1    1    0    0    0    0    1    1    0    0    0
  24         1    1    1    1    0    0    0    0    1    1    0    0    0
  25         1    1    1    1    0    0    0    0    1    1    0    0    0
  31         1    1    1    1    0    0    0    0    1    1    0    0    0
  32         1    1    1    1    0    0    0    0    1    1    0    0    0
  33         1    1    1    1    0    0    0    0    1    1    0    0    0
  34         1    1    1    1    0    0    0    0    1    1    0    0    0
  35         1    1    1    1    0    0    0    0    1    1    0    0    0
  41         1    1    1    1    0    0    0    0    1    1    0    0    0
  42         1    1    1    1    0    0    0    0    1    1    0    0    0
  43         1    1    1    1    0    0    0    0    1    1    0    0    0
  44         1    1    1    1    0    0    0    0    1    1    0    0    0
  45         1    1    1    1    0    0    0    0    1    1    0    0    0
  46         1    1    1    1    0    0    0    0    1    1    0    0    0
  47         1    1    1    1    0    0    0    0    1    1    0    0    0
  51         1    1    1    1    0    0    0    0    1    1    0    0    0
  52         1    1    1    1    0    0    0    0    1    1    0    0    0
  53         1    1    1    1    0    0    0    0    1    1    0    0    0
  54         1    1    1    1    0    0    0    0    1    1    0    0    0
  55         1    1    1    1    0    0    0    0    1    1    0    0    0
  56         1    1    1    1    0    0    0    0    1    1    0    0    0
  57         1    1    1    1    0    0    0    0    1    1    0    0    0
  61         1    1    1    1    0    0    0    0    1    1    0    0    0
  62         1    1    1    1    0    0    0    0    1    1    0    0    0
  63         1    1    1    1    0    0    0    0    1    1    0    0    0
  64         1    1    1    1    0    0    0    0    1    1    0    0    0
  65         1    1    1    1    0    0    0    0    1    1    0    0    0
  66         1    1    1    1    0    0    0    0    1    1    0    0    0
  67         1    1    1    1    0    0    0    0    1    1    0    0    0
  71         1    1    1    1    0    0    0    0    1    1    0    0    0
  72         1    1    1    1    0    0    0    0    1    1    0    0    0
  74         1    1    1    1    0    0    0    0    1    1    0    0    0
  75         1    1    1    1    0    0    0    0    1    1    0    0    0
  76         1    1    1    1    0    0    0    0    1    1    0    0    0
  77         1    1    1    1    0    0    0    0    1    1    0    0    0
  81         1    1    1    1    0    0    0    0    1    1    0    0    0
  82         1    1    1    1    0    0    0    0    1    1    0    0    0
  83         1    1    1    1    0    0    0    0    1    1    0    0    0
  84         1    1    1    1    0    0    0    0    1    1    0    0    0
  85         1    1    1    1    0    0    0    0    1    1    0    0    0
  86         1    1    1    1    0    0    0    0    1    1    0    0    0
  87         1    1    1    1    0    0    0    0    1    1    0    0    0
  91         1    1    1    1    0    0    0    0    1    1    0    0    0
  92         1    1    1    1    0    0    0    0    1    1    0    0    0
  93         1    1    1    1    0    0    0    0    1    1    0    0    0
  94         1    1    1    1    0    0    0    0    1    1    0    0    0
  95         1    1    1    1    0    0    0    0    1    1    0    0    0
  97         1    1    1    1    0    0    0    0    1    1    0    0    0
 101         1    1    1    1    0    0    0    0    1    1    0    0    0
 102         1    1    1    1    0    0    0    0    1    1    0    0    0
 103         1    1    1    1    0    0    0    0    1    1    0    0    0
 104         1    1    1    1    0    0    0    0    1    1    0    0    0
 105         1    1    1    1    0    0    0    0    1    1    0    0    0
 106         1    1    1    1    0    0    0    0    1    1    0    0    0
 107         1    1    1    1    0    0    0    0    1    1    0    0    0
 END PWAT-PARM1

 PWAT-PARM2
```

*** < PLS> *** x - x	FOREST	LZSN (in)	INFILT (in/hr)	LSUR (ft)	SLSUR	KVARY (1/in)	AGWRC (1/day)
11	0.16	6	0.1	424	0.0125	0.5	0.998
12	0.08	6	0.08	180	0.0700	0.5	0.998
13	0.55	7	0.16	200	0.0498	0.5	0.998
14	0.15	7	0.12	313	0.0088	0.5	0.998
15	0.16	6	0.1	347	0.0099	0.5	0.998
21	0.01	3	0.111	200	0.0217	0	0.996
22	0.04	3	0.12	200	0.0409	0	0.996
23	0.13	3	0.16	200	0.0461	0	0.996
24	0	3	0.1	500	0.0018	0	0.996
25	0	3	0.146	200	0.0187	0	0.996
31	0.07	4	0.05	288	0.0079	0.5	0.998
32	0.06	4	0.05	200	0.0427	0.5	0.998
33	0.42	4	0.15	200	0.0444	0.5	0.998
34	0.13	4	0.1	500	0.0024	0.5	0.998
35	0	4	0.05	222	0.0057	0.5	0.998
41	0	6	0.14	356	0.0102	0	0.997
42	0.1	6	0.06	200	0.0513	0	0.997
43	0.2	7	0.16	200	0.0613	0	0.997
44	0.05	6	0.16	200	0.0228	0	0.997
45	0	6	0.14	494	0.0148	0	0.997
46	0	6	0.14	240	0.0063	0	0.997
47	0	6	0.1	200	0.0155	0	0.997
51	0	3	0.202	219	0.0057	0	0.99
52	0.08	3	0.08	200	0.0326	0	0.993
53	0.12	3	0.054	200	0.0476	0	0.993
54	0	3	0.15	200	0.0233	0	0.993
55	0	3	0.198	224	0.0058	0	0.993
56	0	3	0.25	500	0.0012	0	0.993
57	0	3	0.209	417	0.0122	0	0.993
61	0.01	5	0.219	323	0.0091	0	0.996
62	0.04	5	0.11	200	0.0158	0	0.996
63	0.24	5	0.1	200	0.0574	0	0.996
64	0	5	0.11	500	0.0001	0	0.996
65	0	5	0.203	300	0.0083	0	0.996
66	0	5	0.128	500	0.0019	0	0.996
67	0.02	5	0.237	474	0.0141	0	0.996
71	0	3	0.05	250	0.0032	0	0.996
72	0	3	0.01	300	0.0320	0	0.996
74	0	3	0.03	300	0.0014	0	0.996
75	0	3	0.06	250	0.0026	0	0.996
76	0	3	0.06	200	0.0028	0	0.996
77	0	3	0.08	200	0.0043	0	0.996
81	0.08	5	0.12	267	0.0072	0	0.996
82	0.05	5	0.05	255	0.0127	0	0.996
83	0.44	5	0.08	200	0.0486	0	0.996
84	0.04	5	0.08	200	0.0228	0	0.996
85	0.07	5	0.11	320	0.0090	0	0.996
86	0	5	0.16	500	0.0032	0	0.996
87	0.15	5	0.12	396	0.0115	0	0.996
91	0.17	6	0.126	219	0.0056	0	0.996
92	0.12	6	0.076	200	0.0332	0	0.996
93	0.35	6	0.075	200	0.0399	0	0.996
94	0.03	6	0.075	200	0.0258	0	0.996
95	0.19	6	0.119	200	0.0200	0	0.996
97	1	6	0.075	392	0.0114	0	0.996
101	0	3	0.080	200	0.0022	0	0.996
102	0.06	3	0.028	200	0.0009	0	0.996
103	0.07	3	0.092	200	0.0003	0	0.996
104	0	3	0.04	200	0.0018	0	0.996
105	0	3	0.040	200	0.0011	0	0.996
106	0	3	0.046	200	0.0014	0	0.996
107	0	3	0.030	200	0.0040	0	0.996

END PWAT-PARM2

PWAT-PARM3

*** < PLS> *** x - x	PETMAX (deg F)	PETMIN (deg F)	INFEXP	INFILD	DEEPFR	BASETP	AGWETP
11	35	30	2	2	0.3	0	0
12	35	30	2	2	0.3	0	0
13	35	30	2	2	0.3	0	0
14	35	30	2	2	0.3	0	0
15	35	30	2	2	0.3	0	0
21	35	30	2	2	0.2	0	0
22	35	30	2	2	0.2	0.01	0.01
23	35	30	2	2	0.2	0.01	0.01
24	35	30	2	2	0.2	0.03	0.5
25	35	30	2	2	0.2	0	0
31	35	30	2	2	0.2	0	0
32	35	30	2	2	0.1	0.01	0.03
33	35	30	2	2	0.2	0.01	0.03
34	35	30	2	2	0.2	0.03	0.5
35	35	30	2	2	0.2	0	0
41	35	30	2	2	0.2	0	0
42	35	30	2	2	0.2	0.01	0.01
43	35	30	2	2	0.2	0.01	0.01
44	35	30	2	2	0.2	0.03	0.5
45	35	30	2	2	0.2	0	0
46	35	30	2	2	0.2	0	0
47	35	30	2	2	0.2	0	0
51	35	30	2	2	0.05	0	0
52	35	30	2	2	0.05	0	0
53	35	30	2	2	0.05	0	0
54	35	30	2	2	0.05	0.03	0.5
55	35	30	2	2	0.05	0	0
56	35	30	2	2	0.05	0	0
57	35	30	2	2	0.05	0	0
61	35	30	2	2	0.05	0	0
62	35	30	2	2	0.05	0	0
63	35	30	2	2	0.05	0	0
64	35	30	2	2	0.05	0.03	0.5
65	35	30	2	2	0.05	0	0
66	35	30	2	2	0.05	0	0
67	35	30	2	2	0.05	0	0
71	35	30	2	2	0	0	0
72	35	30	2	2	0	0	0
74	35	30	2	2	0	0.03	0.5
75	35	30	2	2	0	0	0
76	35	30	2	2	0	0	0
77	35	30	2	2	0	0	0
81	35	30	2	2	0.1	0	0
82	35	30	2	2	0.05	0	0
83	35	30	2	2	0.05	0	0
84	35	30	2	2	0.05	0.03	0.5
85	35	30	2	2	0.05	0	0
86	35	30	2	2	0.05	0	0
87	35	30	2	2	0.05	0	0
91	35	30	2	2	0.2	0	0
92	35	30	2	2	0.2	0	0
93	35	30	2	2	0.2	0	0
94	35	30	2	2	0.2	0.03	0.5
95	35	30	2	2	0.2	0	0
97	35	30	2	2	0.2	0	0
101	35	30	2	2	0	0	0
102	35	30	2	2	0	0	0
103	35	30	2	2	0	0	0
104	35	30	2	2	0	0.03	0.5

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  105            35        30         2         2         0         0         0
  106            35        30         2         2         0         0         0
  107            35        30         2         2         0         0         0
  END PWAT-PARM3

  PWAT-PARM4
*** <PLS >     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP
*** x -  x      (in)      (in)                        (1/day)
   11            0.2       0.6      0.15         1       0.7       0.7
   12            0.2       0.8       0.1         1       0.7       0.7
   13            0.2         1      0.12         1       0.7       0.7
   14            0.2       0.8      0.15         1       0.7       0.7
   15            0.2       0.6      0.15         1       0.7       0.7
   21            0.2       0.5       0.2         2       0.5       0.7
   22            0.2       0.7      0.08         3       0.5       0.7
   23            0.2       0.9      0.12         3       0.5       0.7
   24            0.2       0.7      0.35         3       0.5       0.7
   25            0.2       0.5       0.2         2       0.5       0.7
   31            0.2       0.3       0.2         2       0.7       0.7
   32            0.2       0.6      0.08         3       0.7       0.7
   33            0.2       0.8      0.12         3       0.7       0.7
   34            0.2       0.6      0.35         3       0.7       0.7
   35            0.2       0.3       0.2         2       0.7       0.7
   41            0.2       0.6       0.2         1       0.7       0.7
   42            0.2       0.8      0.08         2       0.7       0.7
   43            0.2         1      0.12         2       0.7       0.7
   44            0.2       0.8      0.35         2       0.7       0.7
   45            0.2       0.6       0.2         1       0.7       0.7
   46            0.2       0.7      0.35         1       0.7       0.7
   47            0.2       0.7       0.2         1       0.7       0.7
   51            0.2       0.4       0.2         1       0.5       0.7
   52            0.2       0.6      0.08         2       0.5       0.7
   53            0.2       0.8      0.12         2       0.5       0.7
   54            0.2       0.6      0.35         2       0.5       0.7
   55            0.2       0.4       0.2         1       0.5       0.7
   56            0.2       0.5      0.35         2       0.5       0.7
   57            0.2       0.5       0.2         1       0.5       0.7
   61            0.1       0.4       0.2         1       0.5       0.7
   62            0.1       0.6      0.08         2       0.5       0.7
   63            0.1       0.8      0.12         2       0.5       0.7
   64            0.1       0.6       0.2         2       0.5       0.7
   65            0.1       0.4      0.15         1       0.5       0.7
   66            0.1       0.5      0.15         2       0.5       0.7
   67            0.1       0.5       0.2         1       0.5       0.7
   71            0.1       0.2       0.2         1       0.5       0.7
   72            0.1       0.4      0.08         2       0.5       0.7
   74            0.1       0.5       0.2         2       0.5       0.7
   75            0.1       0.2      0.15         1       0.5       0.7
   76            0.1       0.3      0.25         2       0.5       0.7
   77            0.1       0.3       0.2         1       0.5       0.7
   81            0.2       0.4       0.2         1       0.5       0.7
   82            0.2       0.6      0.08         2       0.5       0.7
   83            0.2       0.8      0.12         2       0.5       0.7
   84            0.2       0.5       0.2         2       0.5       0.7
   85            0.2       0.4      0.13         1       0.5       0.7
   86            0.2       0.5       0.2         2       0.5       0.7
   87            0.2       0.5      0.18         1       0.5       0.7
   91            0.2       0.5      0.12         2       0.5       0.7
   92            0.2       0.7      0.08         3       0.5       0.7
   93            0.2       0.9      0.13         3       0.5       0.7
   94            0.2       0.6      0.15         3       0.5       0.7
   95            0.2       0.5      0.15         2       0.5       0.7
   97            0.2       0.6      0.15         2       0.5       0.7
  101            0.2       0.2      0.15         1       0.5       0.7
  102            0.2       0.4      0.08         2       0.5       0.7
  103            0.2       0.6      0.13         2       0.5       0.7
  104            0.2       0.3      0.15         2       0.5       0.7
  105            0.2       0.2      0.15         1       0.5       0.7
  106            0.2       0.3      0.15         2       0.5       0.7
  107            0.2       0.3       0.1         1       0.5       0.7
  END PWAT-PARM4

  PWAT-STATE1
*** < PLS>  PWATER state variables (in)
*** x  - x      CEPS      SURS       UZS      IFWS       LZS      AGWS      GWVS
   11  107      0.01      0.01       1.0      0.01       6.0      3.00      0.01
  END PWAT-STATE1

  MON-INTERCEP
*** <PLS >  Interception storage capacity at start of each month (in)
*** x - x   JAN FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC
   11       0.1  0.1  0.1 0.09  0.1  0.1  0.1  0.1 0.12 0.11  0.1  0.1
   12      0.09 0.09 0.09 0.09  0.1 0.12 0.12 0.12 0.12  0.1 0.09 0.09
   13      0.15 0.15 0.15 0.16 0.17 0.18 0.19 0.19 0.19 0.16 0.15 0.15
   14      0.15 0.15 0.15 0.16 0.17 0.18 0.19 0.19 0.19 0.16 0.15 0.15
   15      0.08 0.08 0.08 0.09  0.1  0.1  0.1  0.1  0.1 0.09 0.08 0.08
   21      0.08 0.08 0.08 0.09  0.1  0.1  0.1  0.1  0.1 0.09 0.08 0.08
   22      0.09 0.09 0.09 0.09  0.1 0.12 0.12 0.12 0.12  0.1 0.09 0.09
   23      0.12 0.12 0.12 0.13 0.14 0.15 0.16 0.16 0.16 0.13 0.12 0.12
   24      0.12 0.12 0.12 0.13 0.14 0.15 0.16 0.16 0.16 0.13 0.12 0.12
   25      0.08 0.08 0.08 0.09  0.1  0.1  0.1  0.1  0.1 0.09 0.08 0.08
   31      0.08 0.08 0.08 0.09  0.1  0.1  0.1  0.1  0.1 0.09 0.08 0.08
   32      0.09 0.09 0.09 0.09  0.1 0.12 0.12 0.12 0.12  0.1 0.09 0.09
   33      0.12 0.12 0.12 0.13 0.14 0.15 0.16 0.16 0.16 0.13 0.12 0.12
   34      0.12 0.12 0.12 0.13 0.14 0.15 0.16 0.16 0.16 0.13 0.12 0.12
   35      0.08 0.08 0.08 0.09  0.1  0.1  0.1  0.1  0.1 0.09 0.08 0.08
   41      0.08 0.08 0.08 0.09  0.1  0.1  0.1  0.1  0.1 0.09 0.08 0.08
   42      0.09 0.09 0.09 0.09  0.1 0.12 0.12 0.12 0.12  0.1 0.09 0.09
   43      0.14 0.14 0.14 0.15 0.16 0.17 0.18 0.18 0.18 0.15 0.14 0.14
   44      0.14 0.14 0.14 0.15 0.16 0.17 0.18 0.18 0.18 0.15 0.14 0.14
   45      0.08 0.08 0.08 0.09  0.1  0.1  0.1  0.1  0.1 0.09 0.08 0.08
   46      0.06 0.06 0.06 0.06  0.1 0.15 0.15 0.15 0.15  0.1 0.06 0.06
   47      0.08 0.08 0.08 0.09  0.1  0.1  0.1  0.1  0.1 0.09 0.08 0.08
   51      0.08 0.08 0.08 0.09  0.1  0.1  0.1  0.1  0.1 0.09 0.08 0.08
   52      0.09 0.09 0.09 0.09  0.1 0.12 0.12 0.12 0.12  0.1 0.09 0.09
   53      0.12 0.12 0.12 0.13 0.14 0.15 0.16 0.16 0.16 0.13 0.12 0.12
   54      0.12 0.12 0.12 0.13 0.14 0.15 0.16 0.16 0.16 0.13 0.12 0.12
   55      0.08 0.08 0.08 0.09  0.1  0.1  0.1  0.1  0.1 0.09 0.08 0.08
   56      0.06 0.06 0.06 0.06  0.1 0.15 0.15 0.15 0.15  0.1 0.06 0.06
   57      0.08 0.08 0.08 0.09  0.1  0.1  0.1  0.1  0.1 0.09 0.08 0.08
   61      0.08 0.08 0.08 0.09  0.1  0.1  0.1  0.1  0.1 0.09 0.08 0.08
   62      0.09 0.09 0.09 0.09  0.1 0.12 0.12 0.12 0.12  0.1 0.09 0.09
   63      0.12 0.12 0.12 0.13 0.14 0.15 0.16 0.16 0.16 0.13 0.12 0.12
   64      0.12 0.12 0.12 0.13 0.14 0.15 0.16 0.16 0.16 0.13 0.12 0.12
   65      0.08 0.08 0.08 0.09  0.1  0.1  0.1  0.1  0.1 0.09 0.08 0.08
   66      0.06 0.06 0.06 0.06  0.1 0.15 0.15 0.15 0.15  0.1 0.06 0.06
   67      0.08 0.08 0.08 0.09  0.1  0.1  0.1  0.1  0.1 0.09 0.08 0.08
   71      0.08 0.08 0.08 0.09  0.1  0.1  0.1  0.1  0.1 0.09 0.08 0.08
   72      0.09 0.09 0.09 0.09  0.1 0.12 0.12 0.12 0.12  0.1 0.09 0.09
   74      0.14 0.14 0.14 0.15 0.16 0.17 0.18 0.18 0.18 0.15 0.14 0.14
   75      0.14 0.14 0.14 0.15 0.16 0.17 0.18 0.18 0.18 0.15 0.14 0.14
   76      0.06 0.06 0.06 0.06  0.1 0.15 0.15 0.15 0.15  0.1 0.06 0.06
   77      0.08 0.08 0.08 0.09  0.1  0.1  0.1  0.1  0.1 0.09 0.08 0.08
   81      0.08 0.08 0.08 0.09  0.1  0.1  0.1  0.1  0.1 0.09 0.08 0.08
   82      0.09 0.09 0.09 0.09  0.1 0.12 0.12 0.12 0.12  0.1 0.09 0.09
   83      0.12 0.12 0.12 0.13 0.14 0.15 0.16 0.16 0.16 0.13 0.12 0.12
   84      0.12 0.12 0.12 0.13 0.14 0.15 0.16 0.16 0.16 0.13 0.12 0.12
   85      0.08 0.08 0.08 0.09  0.1  0.1  0.1  0.1  0.1 0.09 0.08 0.08
```

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   86      0.06 0.06 0.06 0.06  0.1 0.15 0.15 0.15 0.15  0.1 0.06 0.06
   87      0.08 0.08 0.08 0.09  0.1  0.1  0.1  0.1  0.1 0.09 0.08 0.08
   91      0.08 0.08 0.08 0.09  0.1  0.1  0.1  0.1  0.1 0.09 0.08 0.08
   92      0.09 0.09 0.09 0.09  0.1 0.12 0.12 0.12 0.12  0.1 0.09 0.09
   93      0.12 0.12 0.12 0.13 0.14 0.15 0.16 0.16 0.16 0.13 0.12 0.12
   94      0.12 0.12 0.12 0.13 0.14 0.15 0.16 0.16 0.16 0.13 0.12 0.12
   95      0.08 0.08 0.08 0.09  0.1  0.1  0.1  0.1  0.1 0.09 0.08 0.08
   97      0.08 0.08 0.08 0.09  0.1  0.1  0.1  0.1  0.1 0.09 0.08 0.08
  101      0.08 0.08 0.08 0.09  0.1  0.1  0.1  0.1  0.1 0.09 0.08 0.08
  102      0.09 0.09 0.09 0.09  0.1 0.12 0.12 0.12 0.12  0.1 0.09 0.09
  103      0.12 0.12 0.12 0.13 0.14 0.15 0.16 0.16 0.16 0.13 0.12 0.12
  104      0.12 0.12 0.12 0.13 0.14 0.15 0.16 0.16 0.16 0.13 0.12 0.12
  105      0.08 0.08 0.08 0.09  0.1  0.1  0.1  0.1  0.1 0.09 0.08 0.08
  106      0.06 0.06 0.06 0.06  0.1 0.15 0.15 0.15 0.15  0.1 0.06 0.06
  107      0.08 0.08 0.08 0.09  0.1  0.1  0.1  0.1  0.1 0.09 0.08 0.08
  END MON-INTERCEP

  MON-LZETPARM
*** <PLS >  Lower zone evapotransp   parm at start of each month
*** x -  x  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC
   11       0.2  0.2  0.2  0.3  0.4  0.4  0.4  0.4  0.4  0.3  0.2  0.2
   12       0.3  0.3  0.3  0.4  0.5  0.5  0.5  0.5  0.5  0.4  0.3  0.3
   13       0.5  0.5  0.5  0.6  0.7  0.7  0.7  0.7  0.7  0.6  0.5  0.5
   14       0.6  0.6  0.6  0.7  0.8  0.8  0.8  0.8  0.8  0.7  0.6  0.6
   15       0.2  0.2  0.2  0.3  0.4  0.4  0.4  0.4  0.4  0.3  0.2  0.2
   21       0.2  0.2  0.2  0.3  0.4  0.4  0.4  0.4  0.4  0.3  0.2  0.2
   22       0.3  0.3  0.3  0.4  0.5  0.5  0.5  0.5  0.5  0.4  0.3  0.3
   23       0.5  0.5  0.5  0.6  0.7  0.7  0.7  0.7  0.7  0.6  0.5  0.5
   24       0.6  0.6  0.6  0.7  0.8  0.8  0.8  0.8  0.8  0.7  0.6  0.6
   25       0.2  0.2  0.2  0.3  0.4  0.4  0.4  0.4  0.4  0.3  0.2  0.2
   31       0.2  0.2  0.2  0.3  0.4  0.4  0.4  0.4  0.4  0.3  0.2  0.2
   32       0.3  0.3  0.3  0.4  0.5  0.5  0.5  0.5  0.5  0.4  0.3  0.3
   33       0.5  0.5  0.5  0.6  0.7  0.7  0.7  0.7  0.7  0.6  0.5  0.5
   34       0.6  0.6  0.6  0.7  0.8  0.8  0.8  0.8  0.8  0.7  0.6  0.6
   35       0.2  0.2  0.2  0.3  0.4  0.4  0.4  0.4  0.4  0.3  0.2  0.2
   41       0.2  0.2  0.2  0.3  0.4  0.4  0.4  0.4  0.4  0.3  0.2  0.2
   42       0.3  0.3  0.3  0.4  0.5  0.5  0.5  0.5  0.5  0.4  0.3  0.3
   43       0.5  0.5  0.5  0.6  0.7  0.7  0.7  0.7  0.7  0.6  0.5  0.5
   44       0.6  0.6  0.6  0.7  0.8  0.8  0.8  0.8  0.8  0.7  0.6  0.6
   45       0.2  0.2  0.2  0.3  0.4  0.4  0.4  0.4  0.4  0.3  0.2  0.2
   46       0.4  0.4  0.4  0.5  0.6  0.6  0.6  0.6  0.6  0.5  0.4  0.4
   47       0.2  0.2  0.2  0.3  0.4  0.4  0.4  0.4  0.4  0.3  0.2  0.2
   51       0.2  0.2  0.2  0.3  0.4  0.4  0.4  0.4  0.4  0.3  0.2  0.2
   52       0.3  0.3  0.3  0.4  0.5  0.5  0.5  0.5  0.5  0.4  0.3  0.3
   53       0.5  0.5  0.5  0.6  0.7  0.7  0.7  0.7  0.7  0.6  0.5  0.5
   54       0.6  0.6  0.6  0.7  0.8  0.8  0.8  0.8  0.8  0.7  0.6  0.6
   55       0.2  0.2  0.2  0.3  0.4  0.4  0.4  0.4  0.4  0.3  0.2  0.2
   56       0.4  0.4  0.4  0.5  0.6  0.6  0.6  0.6  0.6  0.5  0.4  0.4
   57       0.2  0.2  0.2  0.3  0.4  0.4  0.4  0.4  0.4  0.3  0.2  0.2
   61       0.2  0.2  0.2  0.3  0.4  0.4  0.4  0.4  0.4  0.3  0.2  0.2
   62       0.3  0.3  0.3  0.4  0.5  0.5  0.5  0.5  0.5  0.4  0.3  0.3
   63       0.5  0.5  0.5  0.6  0.7  0.7  0.7  0.7  0.7  0.6  0.5  0.5
   64       0.6  0.6  0.6  0.7  0.8  0.8  0.8  0.8  0.8  0.7  0.6  0.6
   65       0.2  0.2  0.2  0.3  0.4  0.4  0.4  0.4  0.4  0.3  0.2  0.2
   66       0.4  0.4  0.4  0.5  0.6  0.6  0.6  0.6  0.6  0.5  0.4  0.4
   67       0.2  0.2  0.2  0.3  0.4  0.4  0.4  0.4  0.4  0.3  0.2  0.2
   71       0.2  0.2  0.2  0.3  0.4  0.4  0.4  0.4  0.4  0.3  0.2  0.2
   72       0.3  0.3  0.3  0.4  0.5  0.5  0.5  0.5  0.5  0.4  0.3  0.3
   74       0.6  0.6  0.6  0.7  0.8  0.8  0.8  0.8  0.8  0.7  0.6  0.6
   75       0.2  0.2  0.2  0.3  0.4  0.4  0.4  0.4  0.4  0.3  0.2  0.2
   76       0.4  0.4  0.4  0.5  0.6  0.6  0.6  0.6  0.6  0.5  0.4  0.4
   77       0.2  0.2  0.2  0.3  0.4  0.4  0.4  0.4  0.4  0.3  0.2  0.2
   81       0.2  0.2  0.2  0.3  0.4  0.4  0.4  0.4  0.4  0.3  0.2  0.2
   82       0.3  0.3  0.3  0.4  0.5  0.5  0.5  0.5  0.5  0.4  0.3  0.3
   83       0.5  0.5  0.5  0.6  0.7  0.7  0.7  0.7  0.7  0.6  0.5  0.5
   84       0.6  0.6  0.6  0.7  0.8  0.8  0.8  0.8  0.8  0.7  0.6  0.6
   85       0.2  0.2  0.2  0.3  0.4  0.4  0.4  0.4  0.4  0.3  0.2  0.2
   86       0.4  0.4  0.4  0.5  0.6  0.6  0.6  0.6  0.6  0.5  0.4  0.4
   87       0.2  0.2  0.2  0.3  0.4  0.4  0.4  0.4  0.4  0.3  0.2  0.2
   91       0.2  0.2  0.2  0.3  0.4  0.4  0.4  0.4  0.4  0.3  0.2  0.2
   92       0.3  0.3  0.3  0.4  0.5  0.5  0.5  0.5  0.5  0.4  0.3  0.3
   93       0.5  0.5  0.5  0.6  0.7  0.7  0.7  0.7  0.7  0.6  0.5  0.5
   94       0.6  0.6  0.6  0.7  0.8  0.8  0.8  0.8  0.8  0.7  0.6  0.6
   95       0.2  0.2  0.2  0.3  0.4  0.4  0.4  0.4  0.4  0.3  0.2  0.2
   97       0.2  0.2  0.2  0.3  0.4  0.4  0.4  0.4  0.4  0.3  0.2  0.2
  101       0.2  0.2  0.2  0.3  0.4  0.4  0.4  0.4  0.4  0.3  0.2  0.2
  102       0.3  0.3  0.3  0.4  0.5  0.5  0.5  0.5  0.5  0.4  0.3  0.3
  103       0.5  0.5  0.5  0.6  0.7  0.7  0.7  0.7  0.7  0.6  0.5  0.5
  104       0.6  0.6  0.6  0.7  0.8  0.8  0.8  0.8  0.8  0.7  0.6  0.6
  105       0.2  0.2  0.2  0.3  0.4  0.4  0.4  0.4  0.4  0.3  0.2  0.2
  106       0.4  0.4  0.4  0.5  0.6  0.6  0.6  0.6  0.6  0.5  0.4  0.4
  107       0.2  0.2  0.2  0.3  0.4  0.4  0.4  0.4  0.4  0.3  0.2  0.2
  END MON-LZETPARM

***  IRRIG-PARM2
***  <PLS >  IRAREA   IREFF    ARZI   WILTP  FLDCAP   CRDEP   IRAWD  CAPRIS
*** x -  x  (acres)                (in/in) (in/in)    (in)            (in)
***   66         504.9
***   76        5253.9
***   86        2133.8
***  106        2945.4
***  END IRRIG-PARM2

***  IRRIG-SOURCE
*** <PLS ><-----External-----><---Groundwater----><-----------RCHRES----------->
*** x -  x    XPRIOR     XFRAC    GPRIOR     GFRAC    RPRIOR     RFRAC    IRCHNO
***   66              0                    0                    1                646
***   76              0                    0                    1                758
***   86              0                    0                    1                718
***  106              0                    0                    1                738
***  END IRRIG-SOURCE

***  IRRIG-TARGET
***    <PLS >          Irrigation Application Target Fractions ***
***    x -  x  Intercep   Surface     Upper     Lower Active GW ***
***   66              0         1         0         0         0
***   76              0         1         0         0         0
***   86              1         0         0         0         0
***  106              0         1         0         0         0
***  END IRRIG-TARGET


  SED-PARM1
*** <PLS >  Sediment parameters 1
*** x -  x  CRV VSIV SDOP
   11  107    1    2    1
  END SED-PARM1

  SED-PARM2
*** <PLS >      SMPF      KRER      JRER     AFFIX     COVER      NVSI
*** x -  x                                   (/day)           lb/ac-day
   11            1.0      0.37       2.0     0.010       0.0       1.0
   12            1.0      0.33       2.0     0.008       0.1       5.0
   13            1.0      0.31       2.0     0.002       1.0       2.0
   14            1.0      0.36       2.0     0.002       1.0       1.0
   15            1.0      0.39       2.0     0.010       0.0       1.0
   21            1.0      0.30       2.0     0.010       0.0       1.0
   22            1.0      0.23       2.0     0.008       0.1      10.0
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   23          1.0      0.20       2.0     0.002       1.0       2.0
   24          1.0      0.33       2.0     0.002       1.0       1.0
   25          1.0      0.33       2.0     0.010       0.0       1.0
   31          1.0      0.11       2.0     0.010       0.0       1.0
   32          1.0      0.33       2.0     0.008       0.1       2.0
   33          1.0      0.11       2.0     0.002       1.0       2.0
   34          1.0      0.08       2.0     0.002       1.0       1.0
   35          1.0      0.11       2.0     0.010       0.0       1.0
   41          1.0      0.14       2.0     0.010       0.0       1.0
   42          1.0      0.33       2.0     0.008       0.1       2.0
   43          1.0      0.09       2.0     0.002       1.0       2.0
   44          1.0      0.15       2.0     0.002       1.0       1.0
   45          1.0      0.14       2.0     0.010       0.0       1.0
   46          1.0      0.05       2.0     0.010       0.0       2.0
   47          1.0      0.09       2.0     0.010       0.0       1.0
   51          1.0      0.24       2.0     0.010       0.0       1.0
   52          1.0      0.33       2.0     0.008       0.1       2.0
   53          1.0      0.14       2.0     0.002       1.0       2.0
   54          1.0      0.21       2.0     0.002       1.0       1.0
   55          1.0      0.24       2.0     0.010       0.0       1.0
   56          1.0      0.22       2.0     0.010       0.0       2.0
   57          1.0      0.23       2.0     0.010       0.0       1.0
   61          1.0      0.12       2.0     0.010       0.0       1.0
   62          1.0      0.33       2.0     0.008       0.1       2.0
   63          1.0      0.09       2.0     0.002       1.0       2.0
   64          1.0      0.15       2.0     0.002       1.0       1.0
   65          1.0      0.18       2.0     0.010       0.0       1.0
   66          1.0      0.26       2.0     0.010       0.0       2.0
   67          1.0      0.13       2.0     0.010       0.0       1.0
   71          1.0      0.27       2.0     0.010       0.0       1.0
   72          1.0      0.33       2.0     0.008       0.1       2.0
   74          1.0      0.15       2.0     0.002       1.0       1.0
   75          1.0      0.29       2.0     0.010       0.0       1.0
   76          1.0      0.27       2.0     0.010       0.0       2.0
   77          1.0      0.24       2.0     0.010       0.0       1.0
   81          1.0      0.21       2.0     0.010       0.0       1.0
   82          1.0      0.33       2.0     0.008       0.1       2.0
   83          1.0      0.27       2.0     0.002       1.0       2.0
   84          1.0      0.19       2.0     0.002       1.0       1.0
   85          1.0      0.26       2.0     0.010       0.0       1.0
   86          1.0      0.24       2.0     0.010       0.0       2.0
   87          1.0      0.21       2.0     0.010       0.0       1.0
   91          1.0      0.11       2.0     0.010       0.0       1.0
   92          1.0      0.33       2.0     0.008       0.1       2.0
   93          1.0      0.27       2.0     0.002       1.0       2.0
   94          1.0      0.27       2.0     0.002       1.0       1.0
   95          1.0      0.30       2.0     0.010       0.0       1.0
   97          1.0      0.32       2.0     0.010       0.0       1.0
  101          1.0      0.80       2.0     0.010       0.0       5.0
  102          1.0      0.25       2.0     0.008       0.1       2.0
  103          1.0      0.27       2.0     0.002       1.0       2.0
  104          1.0      0.17       2.0     0.002       1.0       1.0
  105          1.0      0.80       2.0     0.010       0.0       5.0
  106          1.0      0.18       2.0     0.010       0.0       2.0
  107          1.0      0.21       2.0     0.010       0.0       1.0
  END SED-PARM2

  SED-PARM3
*** <PLS >  Sediment parameter 3
*** x -  x      KSER      JSER      KGER      JGER
   11          0.50       2.0       0.0       2.5
   12          2.50       2.0       0.0       2.5
   13          2.50       2.0       0.0       2.5
   14          0.10       2.0       0.0       2.5
   15          2.50       2.0       0.0       2.5
   21          0.50       2.0       0.0       2.5
   22          5.00       2.0       0.0       2.5
   23          5.00       2.0       0.0       2.5
   24          0.10       2.0       0.0       2.5
   25          5.00       2.0       0.0       2.5
   31          0.50       2.0       0.0       2.5
   32          2.50       2.5       0.0       2.5
   33          2.50       2.0       0.0       2.5
   34          0.10       2.0       0.0       2.5
   35          2.50       2.0       0.0       2.5
   41          0.50       2.0       0.0       2.5
   42          5.00       2.5       0.0       2.5
   43          5.00       2.0       0.0       2.5
   44          0.10       2.0       0.0       2.5
   45          5.00       2.0       0.0       2.5
   46          5.00       2.0       0.0       2.5
   47          1.00       2.0       0.0       2.5
   51          0.50       2.0       0.0       2.5
   52          5.00       2.5       0.0       2.5
   53          5.00       2.0       0.0       2.5
   54          0.10       2.0       0.0       2.5
   55          5.00       2.0       0.0       2.5
   56          5.00       2.0       0.0       2.5
   57          1.00       2.0       0.0       2.5
   61          0.50       2.0       0.0       2.5
   62          5.00       2.5       0.0       2.5
   63          5.00       2.0       0.0       2.5
   64          0.10       2.0       0.0       2.5
   65          5.00       2.0       0.0       2.5
   66          5.00       2.0       0.0       2.5
   67          1.00       2.0       0.0       2.5
   71          0.50       2.0       0.0       2.5
   72          5.00       2.5       0.0       2.5
   74          0.10       2.0       0.0       2.5
   75          5.00       2.0       0.0       2.5
   76          5.00       2.0       0.0       2.5
   77          1.00       2.0       0.0       2.5
   81          0.50       2.0       0.0       2.5
   82          5.00       2.5       0.0       2.5
   83          5.00       2.0       0.0       2.5
   84          0.10       2.0       0.0       2.5
   85          5.00       2.0       0.0       2.5
   86          5.00       2.0       0.0       2.5
   87          1.00       2.0       0.0       2.5
   91          0.50       2.0       0.0       2.5
   92          5.00       2.5       0.0       2.5
   93          5.00       2.0       0.0       2.5
   94          0.10       2.0       0.0       2.5
   95          5.00       2.0       0.0       2.5
   97          1.00       2.0       0.0       2.5
  101          0.50       2.0       0.0       2.5
  102          5.00       2.5       0.5       2.5
  103          5.00       2.0       0.2       2.5
  104          0.10       2.0       0.0       2.5
  105          5.00       2.0       0.0       2.5
  106          5.00       2.0       0.0       2.5
  107          1.00       2.0       0.0       2.5
  END SED-PARM3

  MON-COVER
*** <PLS >  Monthly values for erosion related cover
*** x -  x  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC
   11      0.75 0.75 0.75 0.78 0.80 0.80 0.80 0.80 0.78 0.76 0.75 0.75
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   12      0.05 0.05 0.05 0.10 0.15 0.15 0.15 0.15 0.15 0.15 0.05 0.05
   13      0.65 0.65 0.65 0.70 0.75 0.75 0.75 0.75 0.75 0.75 0.65 0.65
   14      0.85 0.85 0.85 0.90 0.95 0.95 0.95 0.95 0.95 0.95 0.85 0.85
   15      0.75 0.75 0.75 0.78 0.80 0.80 0.80 0.80 0.78 0.76 0.75 0.75
   21      0.75 0.75 0.75 0.78 0.80 0.80 0.80 0.80 0.78 0.76 0.75 0.75
   22      0.05 0.05 0.05 0.10 0.15 0.15 0.15 0.15 0.15 0.15 0.05 0.05
   23      0.85 0.85 0.85 0.90 0.95 0.95 0.95 0.95 0.95 0.95 0.85 0.85
   24      0.85 0.85 0.85 0.90 0.95 0.95 0.95 0.95 0.95 0.95 0.85 0.85
   25      0.75 0.75 0.75 0.78 0.80 0.80 0.80 0.80 0.78 0.76 0.75 0.75
   31      0.75 0.75 0.75 0.78 0.80 0.80 0.80 0.80 0.78 0.76 0.75 0.75
   32      0.05 0.05 0.05 0.10 0.15 0.15 0.15 0.15 0.15 0.15 0.05 0.05
   33      0.85 0.85 0.85 0.90 0.95 0.95 0.95 0.95 0.95 0.95 0.85 0.85
   34      0.85 0.85 0.85 0.90 0.95 0.95 0.95 0.95 0.95 0.95 0.85 0.85
   35      0.75 0.75 0.75 0.78 0.80 0.80 0.80 0.80 0.78 0.76 0.75 0.75
   41      0.75 0.75 0.75 0.78 0.80 0.80 0.80 0.80 0.78 0.76 0.75 0.75
   42      0.05 0.05 0.05 0.10 0.15 0.15 0.15 0.15 0.15 0.15 0.05 0.05
   43      0.85 0.85 0.85 0.90 0.95 0.95 0.95 0.95 0.95 0.95 0.85 0.85
   44      0.85 0.85 0.85 0.90 0.95 0.95 0.95 0.95 0.95 0.95 0.85 0.85
   45      0.75 0.75 0.75 0.78 0.80 0.80 0.80 0.80 0.78 0.76 0.75 0.75
   46      0.40 0.40 0.25 0.28 0.38 0.65 0.85 0.88 0.88 0.60 0.40 0.35
   47      0.75 0.75 0.75 0.78 0.80 0.80 0.80 0.80 0.78 0.76 0.75 0.75
   51      0.75 0.75 0.75 0.78 0.80 0.80 0.80 0.80 0.78 0.76 0.75 0.75
   52      0.05 0.05 0.05 0.10 0.15 0.15 0.15 0.15 0.15 0.15 0.05 0.05
   53      0.85 0.85 0.85 0.90 0.95 0.95 0.95 0.95 0.95 0.95 0.85 0.85
   54      0.85 0.85 0.85 0.90 0.95 0.95 0.95 0.95 0.95 0.95 0.85 0.85
   55      0.75 0.75 0.75 0.78 0.80 0.80 0.80 0.80 0.78 0.76 0.75 0.75
   56      0.40 0.40 0.25 0.28 0.38 0.65 0.85 0.88 0.88 0.60 0.40 0.35
   57      0.75 0.75 0.75 0.78 0.80 0.80 0.80 0.80 0.78 0.76 0.75 0.75
   61      0.75 0.75 0.75 0.78 0.80 0.80 0.80 0.80 0.78 0.76 0.75 0.75
   62      0.05 0.05 0.05 0.10 0.15 0.15 0.15 0.15 0.15 0.15 0.05 0.05
   63      0.85 0.85 0.85 0.90 0.95 0.95 0.95 0.95 0.95 0.95 0.85 0.85
   64      0.85 0.85 0.85 0.90 0.95 0.95 0.95 0.95 0.95 0.95 0.85 0.85
   65      0.75 0.75 0.75 0.78 0.80 0.80 0.80 0.80 0.78 0.76 0.75 0.75
   66      0.40 0.40 0.25 0.28 0.38 0.65 0.85 0.88 0.88 0.60 0.40 0.35
   67      0.75 0.75 0.75 0.78 0.80 0.80 0.80 0.80 0.78 0.76 0.75 0.75
   71      0.75 0.75 0.75 0.78 0.80 0.80 0.80 0.80 0.78 0.76 0.75 0.75
   72      0.05 0.05 0.05 0.10 0.15 0.15 0.15 0.15 0.15 0.15 0.05 0.05
   74      0.85 0.85 0.85 0.90 0.95 0.95 0.95 0.95 0.95 0.95 0.85 0.85
   75      0.75 0.75 0.75 0.78 0.80 0.80 0.80 0.80 0.78 0.76 0.75 0.75
   76      0.40 0.40 0.25 0.28 0.38 0.65 0.85 0.88 0.88 0.60 0.40 0.35
   77      0.75 0.75 0.75 0.78 0.80 0.80 0.80 0.80 0.78 0.76 0.75 0.75
   81      0.75 0.75 0.75 0.78 0.80 0.80 0.80 0.80 0.78 0.76 0.75 0.75
   82      0.05 0.05 0.05 0.10 0.15 0.15 0.15 0.15 0.15 0.15 0.05 0.05
   83      0.85 0.85 0.85 0.90 0.95 0.95 0.95 0.95 0.95 0.95 0.85 0.85
   84      0.85 0.85 0.85 0.90 0.95 0.95 0.95 0.95 0.95 0.95 0.85 0.85
   85      0.75 0.75 0.75 0.78 0.80 0.80 0.80 0.80 0.78 0.76 0.75 0.75
   86      0.40 0.40 0.25 0.28 0.38 0.65 0.85 0.88 0.88 0.60 0.40 0.35
   87      0.75 0.75 0.75 0.78 0.80 0.80 0.80 0.80 0.78 0.76 0.75 0.75
   91      0.75 0.75 0.75 0.78 0.80 0.80 0.80 0.80 0.78 0.76 0.75 0.75
   92      0.05 0.05 0.05 0.10 0.15 0.15 0.15 0.15 0.15 0.15 0.05 0.05
   93      0.85 0.85 0.85 0.90 0.95 0.95 0.95 0.95 0.95 0.95 0.85 0.85
   94      0.85 0.85 0.85 0.90 0.95 0.95 0.95 0.95 0.95 0.95 0.85 0.85
   95      0.75 0.75 0.75 0.78 0.80 0.80 0.80 0.80 0.78 0.76 0.75 0.75
   97      0.75 0.75 0.75 0.78 0.80 0.80 0.80 0.80 0.78 0.76 0.75 0.75
  101      0.20 0.20 0.20 0.30 0.40 0.40 0.40 0.40 0.30 0.30 0.20 0.20
  102      0.05 0.05 0.05 0.10 0.15 0.15 0.15 0.15 0.15 0.15 0.05 0.05
  103      0.85 0.85 0.85 0.90 0.95 0.95 0.95 0.95 0.95 0.95 0.85 0.85
  104      0.85 0.85 0.85 0.90 0.95 0.95 0.95 0.95 0.95 0.95 0.85 0.85
  105      0.20 0.20 0.20 0.30 0.40 0.40 0.40 0.40 0.30 0.30 0.20 0.20
  106      0.40 0.40 0.25 0.28 0.38 0.65 0.85 0.88 0.88 0.60 0.40 0.35
  107      0.75 0.75 0.75 0.78 0.80 0.80 0.80 0.80 0.78 0.76 0.75 0.75
  END MON-COVER

  SED-STOR
*** <PLS >  Detached sediment storage (tons/acre)
*** x -  x      DETS
   11           0.40
   12           0.10
   13           0.10
   14           0.10
   15           0.40
   21           0.40
   22           0.10
   23           0.10
   24           0.10
   25           0.40
   31           0.40
   32           0.10
   33           0.10
   34           0.10
   35           0.40
   41           0.40
   42           0.10
   43           0.10
   44           0.10
   45           0.40
   46           0.50
   47           0.40
   51           0.40
   52           0.10
   53           0.10
   54           0.10
   55           0.40
   56           0.50
   57           0.40
   61           0.40
   62           0.10
   63           0.10
   64           0.10
   65           0.40
   66           0.50
   67           0.40
   71           0.40
   72           0.10
   74           0.10
   75           0.40
   76           0.50
   77           0.40
   81           0.40
   82           0.10
   83           0.10
   84           0.10
   85           0.40
   86           0.50
   87           0.40
   91           0.40
   92           0.10
   93           0.10
   94           0.10
   95           0.40
   97           0.40
  101           0.40
  102           0.10
  103           0.10
  104           0.10
  105           0.40
  106           0.50
  107           0.40
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  END SED-STOR

  PSTEMP-PARM1
*** <PLS >  Flags for section PSTEMP
*** x -  x SLTV ULTV LGTV TSOP
   11  107    0    0    1    1
  END PSTEMP-PARM1

  PSTEMP-PARM2
*** <PLS >      ASLT      BSLT     ULTP1     ULTP2     LGTP1     LGTP2
*** x -  x   (deg F)   (deg F)             (deg F)             (deg F)
   11   47       36.      0.50       41.      0.50       50.        0.
   51   67       45.      0.50       50.      0.50       50.        0.
   71   87       55.      0.50       60.      0.50       50.        0.
   91   97       36.      0.15       41.      0.15       50.        0.
  101  107       55.      0.15       60.      0.15       50.        0.
  END PSTEMP-PARM2

  MON-ASLT
*** <PLS >  Value of ASLT at start of each month (deg F)
*** x -  x  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC
   11  107  45.  45.  45.  48.  55.  65.  70.  77.  73.  68.  60.  50.
  END MON-ASLT

  MON-BSLT
*** <PLS >  Value of BSLT at start of each month (deg F/F)
*** x -  x  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC
   11  107 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15
  END MON-BSLT

  MON-ULTP1
*** <PLS >  Value of ULTP1 at start of each month in deg F (TSOPFG=1)
*** x -  x  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC
  11   107  32.  32.  32.  32.  32.  33.  44.  44.  40.  37.  35.  32.
  END MON-ULTP1

  MON-ULTP2
*** <PLS >  Value of ULTP2 at start of each month in Deg F/F (TSOPFG=1)
*** x -  x  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC
   11  107 0.00 0.00 0.00 0.00 0.22 0.74 0.40 0.50 0.60 0.36 0.20 0.00
  END MON-ULTP2

  MON-LGTP1
*** <PLS >  Value of LGTP1 at start of each month in Deg F (TSOPFG=1)
*** x -  x  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC
   11   17  40.  40.  40.  40.  42.  42.  44.  45.  44.  42.  40.  40.
   21   27  40.  40.  40.  40.  42.  42.  44.  45.  44.  42.  40.  40.
   31   37  40.  40.  40.  40.  42.  42.  44.  45.  44.  42.  40.  40.
   41   47  40.  40.  40.  40.  42.  42.  44.  45.  44.  42.  40.  40.
   51   57  44.  44.  46.  48.  49.  51.  51.  52.  52.  48.  46.  44.
   61   67  44.  44.  46.  48.  49.  51.  51.  52.  52.  48.  46.  44.
   71   77  48.  48.  52.  58.  60.  63.  63.  64.  60.  55.  52.  48.
   81   87  48.  48.  52.  58.  60.  63.  63.  64.  60.  55.  52.  48.
   91   97  40.  40.  40.  40.  42.  42.  44.  45.  44.  42.  40.  40.
  101  107  48.  48.  52.  58.  60.  63.  63.  64.  60.  55.  52.  48.
  END MON-LGTP1

  PSTEMP-TEMPS
*** <PLS >  Initial temperatures (deg F)
*** x -  x     AIRTC     SLTMP     ULTMP     LGTMP
   11  107      30.       30.       40.       40.
  END PSTEMP-TEMPS

  PWT-PARM1
*** <PLS >  Flags for section PWTGAS
*** x -  x  IDV  ICV  GDV  GVC
   11  107    1    0    1    0
  END PWT-PARM1

  PWT-PARM2
***         Second group of PWTGAS parms
*** <PLS >      ELEV     IDOXP     ICO2P     ADOXP     ACO2P
*** x -  x      (ft)    (mg/l)  (mg C/l)    (mg/l)  (mg C/l)
   11           6523       8.8       0.0       8.8       0.0
   12           7106       8.8       0.0       8.8       0.0
   13           7367       8.8       0.0       8.8       0.0
   14           6314       8.8       0.0       8.8       0.0
   15           6687       8.8       0.0       8.8       0.0
   21           5045       8.8       0.0       8.8       0.0
   22           5849       8.8       0.0       8.8       0.0
   23           6388       8.8       0.0       8.8       0.0
   24           5600       8.8       0.0       8.8       0.0
   25           4433       8.8       0.0       8.8       0.0
   31           8153       8.8       0.0       8.8       0.0
   32           9393       8.8       0.0       8.8       0.0
   33           8543       8.8       0.0       8.8       0.0
   34           9449       8.8       0.0       8.8       0.0
   35           8688       8.8       0.0       8.8       0.0
   41           4888       8.8       0.0       8.8       0.0
   42           6482       8.8       0.0       8.8       0.0
   43           7077       8.8       0.0       8.8       0.0
   44           5571       8.8       0.0       8.8       0.0
   45           4797       8.8       0.0       8.8       0.0
   46           5269       8.8       0.0       8.8       0.0
   47           4787       8.8       0.0       8.8       0.0
   51           4600       8.8       0.0       8.8       0.0
   52           5506       8.8       0.0       8.8       0.0
   53           6012       8.8       0.0       8.8       0.0
   54           5035       8.8       0.0       8.8       0.0
   55           4474       8.8       0.0       8.8       0.0
   56           4634       8.8       0.0       8.8       0.0
   57           4607       8.8       0.0       8.8       0.0
   61           4808       8.8       0.0       8.8       0.0
   62           5263       8.8       0.0       8.8       0.0
   63           6094       8.8       0.0       8.8       0.0
   64           5424       8.8       0.0       8.8       0.0
   65           4670       8.8       0.0       8.8       0.0
   66           4486       8.8       0.0       8.8       0.0
   67           4857       8.8       0.0       8.8       0.0
   71           4504       8.8       0.0       8.8       0.0
   72           4575       8.8       0.0       8.8       0.0
   74           4351       8.8       0.0       8.8       0.0
   75           4468       8.8       0.0       8.8       0.0
   76           4493       8.8       0.0       8.8       0.0
   77           4422       8.8       0.0       8.8       0.0
   81           4886       8.8       0.0       8.8       0.0
   82           5390       8.8       0.0       8.8       0.0
   83           6084       8.8       0.0       8.8       0.0
   84           5702       8.8       0.0       8.8       0.0
   85           5185       8.8       0.0       8.8       0.0
   86           4861       8.8       0.0       8.8       0.0
   87           4921       8.8       0.0       8.8       0.0
   91           5187       8.8       0.0       8.8       0.0
   92           6346       8.8       0.0       8.8       0.0
   93           6960       8.8       0.0       8.8       0.0
   94           5973       8.8       0.0       8.8       0.0
   95           5367       8.8       0.0       8.8       0.0
   97           5886       8.8       0.0       8.8       0.0
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  101           4346       8.8       0.0       8.8       0.0
  102           4699       8.8       0.0       8.8       0.0
  103           6218       8.8       0.0       8.8       0.0
  104           4265       8.8       0.0       8.8       0.0
  105           4284       8.8       0.0       8.8       0.0
  106           4239       8.8       0.0       8.8       0.0
  107           4254       8.8       0.0       8.8       0.0
  END PWT-PARM2

  MON-IFWDOX
*** <PLS > Value at start of each month for interflow DO concentration (mg/l)
*** x -  x  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC
   11  107  11.  10.   8.   7.   6.   5.   5.   5.   7.   8.   9.  10.
  END MON-IFWDOX

  MON-GRNDDOX
*** <PLS >Value at start of each month for groundwater DO concentration (mg/l)
*** x -  x  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC
   11  107   9.   8.   6.   5.   5.   4.   4.   4.   5.   6.   7.   8.
  END MON-GRNDDOX

  PWT-GASES
***                     Initial DO and CO2 concentrations
*** <PLS >     SODOX     SOCO2     IODOX     IOCO2     AODOX     AOCO2
*** x -  x    (mg/l)  (mg C/l)    (mg/l)  (mg C/l)    (mg/l)  (mg C/l)
   11  107       8.8        0.       8.8        0.       8.8        0.
  END PWT-GASES

  NQUALS
*** <PLS >
*** x -  xNQUAL
   11  107    4
  END NQUALS

  QUAL-PROPS
*** NH3+NH4
*** <PLS >  Identifiers and Flags
*** x -  x    QUALID      QTID  QSD VPFW VPFS  QSO  VQO QIFW VIQC QAGW VAQC
   11  107NH3+NH4         LBS     0    0    0    1    0    1    3    1    3
  END QUAL-PROPS

  QUAL-INPUT
*** NH3+NH4
***          Storage on surface and nonseasonal parameters
***          SQO   POTFW   POTFS   ACQOP  SQOLIM   WSQOP    IOQC    AOQC
*** <PLS >  qty/ac qty/ton qty/ton    qty/  qty/ac   in/hr qty/ft3 qty/ft3
*** x -  x                          ac.day
   11        0.365       0       0  0.0046   0.365     0.5       0       0
   12        0.033       0       0  0.0028   0.033     0.7       0       0
   13        0.033       0       0  0.0028   0.033     0.7       0       0
   14        0.033       0       0  0.0028   0.033     0.7       0       0
   15        0.365       0       0  0.0077   0.365     0.5       0       0
   21        0.365       0       0  0.0046   0.365     0.5       0       0
   22        0.033       0       0  0.0028   0.033     0.7       0       0
   23        0.033       0       0  0.0028   0.033     0.7       0       0
   24        0.033       0       0  0.0028   0.033     0.7       0       0
   25        0.365       0       0  0.0077   0.365     0.5       0       0
   31        0.365       0       0  0.0046   0.365     0.5       0       0
   32        0.033       0       0  0.0028   0.033     0.7       0       0
   33        0.033       0       0  0.0028   0.033     0.7       0       0
   34        0.033       0       0  0.0028   0.033     0.7       0       0
   35        0.365       0       0  0.0077   0.365     0.5       0       0
   41        0.365       0       0  0.0046   0.365     0.5       0       0
   42        0.033       0       0  0.0028   0.033     0.7       0       0
   43        0.033       0       0  0.0028   0.033     0.7       0       0
   44        0.033       0       0  0.0028   0.033     0.7       0       0
   45        0.365       0       0  0.0077   0.365     0.5       0       0
   46        0.033       0       0  0.0046   0.033     0.7       0       0
   47        0.365       0       0  0.0046   0.365     0.5       0       0
   51        0.365       0       0  0.0046   0.365     0.5       0       0
   52        0.033       0       0  0.0028   0.033     0.7       0       0
   53        0.033       0       0  0.0028   0.033     0.7       0       0
   54        0.033       0       0  0.0028   0.033     0.7       0       0
   55        0.365       0       0  0.0077   0.365     0.5       0       0
   56        0.033       0       0  0.0046   0.033     0.7       0       0
   57        0.365       0       0  0.0046   0.365     0.5       0       0
   61        0.365       0       0  0.0046   0.365     0.5       0       0
   62        0.033       0       0  0.0028   0.033     0.7       0       0
   63        0.033       0       0  0.0028   0.033     0.7       0       0
   64        0.033       0       0  0.0028   0.033     0.7       0       0
   65        0.365       0       0  0.0077   0.365     0.5       0       0
   66        0.033       0       0  0.0046   0.033     0.7       0       0
   67        0.365       0       0  0.0046   0.365     0.5       0       0
   71        0.365       0       0  0.0067   0.365     0.5       0       0
   72        0.033       0       0  0.0028   0.033     0.7       0       0
   74        0.033       0       0  0.0028   0.033     0.7       0       0
   75        0.365       0       0  0.0108   0.365     0.5       0       0
   76        0.033       0       0  0.0067   0.033     0.7       0       0
   77        0.365       0       0  0.0067   0.365     0.5       0       0
   81        0.365       0       0  0.0046   0.365     0.5       0       0
   82        0.033       0       0  0.0028   0.033     0.7       0       0
   83        0.033       0       0  0.0028   0.033     0.7       0       0
   84        0.033       0       0  0.0028   0.033     0.7       0       0
   85        0.365       0       0  0.0077   0.365     0.5       0       0
   86        0.033       0       0  0.0046   0.033     0.7       0       0
   87        0.365       0       0  0.0046   0.365     0.5       0       0
   91        0.365       0       0  0.0046   0.365     0.5       0       0
   92        0.033       0       0  0.0028   0.033     0.7       0       0
   93        0.033       0       0  0.0028   0.033     0.7       0       0
   94        0.033       0       0  0.0028   0.033     0.7       0       0
   95        0.365       0       0  0.0077   0.365     0.5       0       0
   97        0.365       0       0  0.0046   0.365     0.5       0       0
  101        0.365       0       0  0.0067   0.365     0.5       0       0
  102        0.033       0       0  0.0028   0.033     0.7       0       0
  103        0.033       0       0  0.0028   0.033     0.7       0       0
  104        0.033       0       0  0.0028   0.033     0.7       0       0
  105        0.365       0       0  0.0108   0.365     0.5       0       0
  106        0.033       0       0  0.0028   0.033     0.7       0       0
  107        0.365       0       0  0.0067   0.365     0.5       0       0
  END QUAL-INPUT

  MON-ACCUM
*** NH3+NH4
*** <PLS >  Value at start of each month for accum rate of QUALOF (lb/ac.day)
*** x -  x  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC
   11      0.01 0.01 0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.01 0.01 0.01
   12   14.00340.0040.0050.0120.0120.0120.0120.0120.0120.0080.004.0033
   15   21 0.01 0.01 0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.01 0.01 0.01
   22   24.00340.0040.0050.0120.0120.0120.0120.0120.0120.0080.004.0033
   25   31 0.01 0.01 0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.01 0.01 0.01
   32   34.00340.0040.0050.0120.0120.0120.0120.0120.0120.0080.004.0033
   35   41 0.01 0.01 0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.01 0.01 0.01
   42   44.00340.0040.0050.0120.0120.0120.0120.0120.0120.0080.004.0033
   45      0.01 0.01 0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.01 0.01 0.01
   46     0.0030.0030.0050.007 0.01 0.01 0.01 0.01 0.01 0.010.0050.003
   47   51 0.01 0.01 0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.01 0.01 0.01
   52   54.00340.0040.0050.0120.0120.0120.0120.0120.0120.0080.004.0033
   55      0.01 0.01 0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.01 0.01 0.01
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   56      0.0030.0030.0050.007 0.01 0.01 0.01 0.01 0.01 0.010.0050.003
   57   61 0.01 0.01 0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.01 0.01 0.01
   62   64.00340.0040.0050.0120.0120.0120.0120.0120.0120.0080.004.0033
   65      0.01 0.01 0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.01 0.01 0.01
   66      0.0030.0030.0050.007 0.01 0.01 0.01 0.01 0.01 0.010.0050.003
   67   71 0.01 0.01 0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.01 0.01 0.01
   72   74.00340.0040.0050.0120.0120.0120.0120.0120.0120.0080.004.0033
   75      0.01 0.01 0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.01 0.01 0.01
   76      0.0030.0030.0050.007 0.01 0.01 0.01 0.01 0.01 0.010.0050.003
   77   81 0.01 0.01 0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.01 0.01 0.01
   82   84.00340.0040.0050.0120.0120.0120.0120.0120.0120.0080.004.0033
   85      0.01 0.01 0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.01 0.01 0.01
   86      0.0030.0030.0050.007 0.01 0.01 0.01 0.01 0.01 0.010.0050.003
   87   91 0.01 0.01 0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.01 0.01 0.01
   92   94.00340.0040.0050.0120.0120.0120.0120.0120.0120.0080.004.0033
   95  101 0.01 0.01 0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.01 0.01 0.01
  102  104.00340.0040.0050.0120.0120.0120.0120.0120.0120.0080.004.0033
  105      0.01 0.01 0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.01 0.01 0.01
  106      0.0030.0030.0050.007 0.01 0.01 0.01 0.01 0.01 0.010.0050.003
  107      0.01 0.01 0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.01 0.01 0.01
  END MON-ACCUM

  MON-SQOLIM
*** NH3+NH4
*** <PLS >  Value at start of month for limiting storage of QUALOF (lb/ac)
*** x -  x  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC
   11      0.0510.0540.0580.0690.0690.0690.0690.0690.0690.0580.0540.051
   12   140.0040.0050.0070.0150.0150.0150.0150.0150.0150.0110.0050.004
   15   210.0510.0540.0580.0690.0690.0690.0690.0690.0690.0580.0540.051
   22   240.0040.0050.0070.0150.0150.0150.0150.0150.0150.0110.0050.004
   25   310.0510.0540.0580.0690.0690.0690.0690.0690.0690.0580.0540.051
   32   340.0040.0050.0070.0150.0150.0150.0150.0150.0150.0110.0050.004
   35   410.0510.0540.0580.0690.0690.0690.0690.0690.0690.0580.0540.051
   42   440.0040.0050.0070.0150.0150.0150.0150.0150.0150.0110.0050.004
   45      0.0510.0540.0580.0690.0690.0690.0690.0690.0690.0580.0540.051
   46      0.0080.0080.0130.0330.0510.0510.0380.0360.0330.0250.0130.008
   47   510.0510.0540.0580.0690.0690.0690.0690.0690.0690.0580.0540.051
   52   540.0040.0050.0070.0150.0150.0150.0150.0150.0150.0110.0050.004
   55      0.0510.0540.0580.0690.0690.0690.0690.0690.0690.0580.0540.051
   56      0.0080.0080.0130.0330.0510.0510.0380.0360.0330.0250.0130.008
   57   610.0510.0540.0580.0690.0690.0690.0690.0690.0690.0580.0540.051
   62   640.0040.0050.0070.0150.0150.0150.0150.0150.0150.0110.0050.004
   65      0.0510.0540.0580.0690.0690.0690.0690.0690.0690.0580.0540.051
   66      0.0080.0080.0130.0330.0510.0510.0380.0360.0330.0250.0130.008
   67   710.0510.0540.0580.0690.0690.0690.0690.0690.0690.0580.0540.051
   72   740.0040.0050.0070.0150.0150.0150.0150.0150.0150.0110.0050.004
   75      0.0510.0540.0580.0690.0690.0690.0690.0690.0690.0580.0540.051
   76      0.0080.0080.0130.0330.0510.0510.0380.0360.0330.0250.0130.008
   77   810.0510.0540.0580.0690.0690.0690.0690.0690.0690.0580.0540.051
   82   840.0040.0050.0070.0150.0150.0150.0150.0150.0150.0110.0050.004
   85      0.0510.0540.0580.0690.0690.0690.0690.0690.0690.0580.0540.051
   86      0.0080.0080.0130.0330.0510.0510.0380.0360.0330.0250.0130.008
   87   910.0510.0540.0580.0690.0690.0690.0690.0690.0690.0580.0540.051
   92   940.0040.0050.0070.0150.0150.0150.0150.0150.0150.0110.0050.004
   95  1010.0510.0540.0580.0690.0690.0690.0690.0690.0690.0580.0540.051
  102  1040.0040.0050.0070.0150.0150.0150.0150.0150.0150.0110.0050.004
  105      0.0510.0540.0580.0690.0690.0690.0690.0690.0690.0580.0540.051
  106      0.0080.0080.0130.0330.0510.0510.0380.0360.0330.0250.0130.008
  107      0.0510.0540.0580.0690.0690.0690.0690.0690.0690.0580.0540.051
  END MON-SQOLIM

  MON-IFLW-CONC
*** NH3+NH4
*** <PLS >  Conc of QUAL in interflow outflow for each month (qty/ft3)
*** x -  x  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC
   11      0.15 0.15 0.15 0.12 0.12 0.12 0.12 0.12 0.12 0.15 0.15 0.15
   12   14 0.06 0.06 0.06 0.03 0.03 0.03 0.03 0.03 0.03 0.06 0.06 0.06
   15   21 0.15 0.15 0.15 0.12 0.12 0.12 0.12 0.12 0.12 0.15 0.15 0.15
   22   24 0.06 0.06 0.06 0.03 0.03 0.03 0.03 0.03 0.03 0.06 0.06 0.06
   25   31 0.15 0.15 0.15 0.12 0.12 0.12 0.12 0.12 0.12 0.15 0.15 0.15
   32   34 0.06 0.06 0.06 0.03 0.03 0.03 0.03 0.03 0.03 0.06 0.06 0.06
   35   41 0.15 0.15 0.15 0.12 0.12 0.12 0.12 0.12 0.12 0.15 0.15 0.15
   42   44 0.06 0.06 0.06 0.03 0.03 0.03 0.03 0.03 0.03 0.06 0.06 0.06
   45      0.15 0.15 0.15 0.12 0.12 0.12 0.12 0.12 0.12 0.15 0.15 0.15
   46       0.2  0.2  0.2 0.12 0.12 0.12 0.12 0.12 0.12  0.2  0.2  0.2
   47   51 0.15 0.15 0.15 0.12 0.12 0.12 0.12 0.12 0.12 0.15 0.15 0.15
   52   54 0.06 0.06 0.06 0.03 0.03 0.03 0.03 0.03 0.03 0.06 0.06 0.06
   55      0.15 0.15 0.15 0.12 0.12 0.12 0.12 0.12 0.12 0.15 0.15 0.15
   56       0.2  0.2  0.2 0.12 0.12 0.12 0.12 0.12 0.12  0.2  0.2  0.2
   57   61 0.15 0.15 0.15 0.12 0.12 0.12 0.12 0.12 0.12 0.15 0.15 0.15
   62   64 0.06 0.06 0.06 0.03 0.03 0.03 0.03 0.03 0.03 0.06 0.06 0.06
   65      0.15 0.15 0.15 0.12 0.12 0.12 0.12 0.12 0.12 0.15 0.15 0.15
   66       0.2  0.2  0.2 0.12 0.12 0.12 0.12 0.12 0.12  0.2  0.2  0.2
   67   71 0.15 0.15 0.15 0.12 0.12 0.12 0.12 0.12 0.12 0.15 0.15 0.15
   72   74 0.06 0.06 0.06 0.03 0.03 0.03 0.03 0.03 0.03 0.06 0.06 0.06
   75      0.15 0.15 0.15 0.12 0.12 0.12 0.12 0.12 0.12 0.15 0.15 0.15
   76       0.2  0.2  0.2 0.12 0.12 0.12 0.12 0.12 0.12  0.2  0.2  0.2
   77   81 0.15 0.15 0.15 0.12 0.12 0.12 0.12 0.12 0.12 0.15 0.15 0.15
   82   84 0.06 0.06 0.06 0.03 0.03 0.03 0.03 0.03 0.03 0.06 0.06 0.06
   85      0.15 0.15 0.15 0.12 0.12 0.12 0.12 0.12 0.12 0.15 0.15 0.15
   86       0.2  0.2  0.2 0.12 0.12 0.12 0.12 0.12 0.12  0.2  0.2  0.2
   87   91 0.15 0.15 0.15 0.12 0.12 0.12 0.12 0.12 0.12 0.15 0.15 0.15
   92   94 0.06 0.06 0.06 0.03 0.03 0.03 0.03 0.03 0.03 0.06 0.06 0.06
   95  101 0.15 0.15 0.15 0.12 0.12 0.12 0.12 0.12 0.12 0.15 0.15 0.15
  102  104 0.06 0.06 0.06 0.03 0.03 0.03 0.03 0.03 0.03 0.06 0.06 0.06
  105      0.15 0.15 0.15 0.12 0.12 0.12 0.12 0.12 0.12 0.15 0.15 0.15
  106       0.2  0.2  0.2 0.12 0.12 0.12 0.12 0.12 0.12  0.2  0.2  0.2
  107      0.15 0.15 0.15 0.12 0.12 0.12 0.12 0.12 0.12 0.15 0.15 0.15
  END MON-IFLW-CONC

  MON-GRND-CONC
*** NH3+NH4
*** <PLS >  Value at start of month for conc of QUAL in groundwater (qty/ft3)
*** x -  x  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC
   11       0.1  0.1  0.1 0.08 0.08 0.08 0.08 0.08 0.08  0.1  0.1  0.1
   12   14 0.04 0.04 0.040.0250.0250.0250.0250.0250.025 0.04 0.04 0.04
   15   21  0.1  0.1  0.1 0.08 0.08 0.08 0.08 0.08 0.08  0.1  0.1  0.1
   22   24 0.04 0.04 0.040.0250.0250.0250.0250.0250.025 0.04 0.04 0.04
   25   31  0.1  0.1  0.1 0.08 0.08 0.08 0.08 0.08 0.08  0.1  0.1  0.1
   32   34 0.04 0.04 0.040.0250.0250.0250.0250.0250.025 0.04 0.04 0.04
   35   41  0.1  0.1  0.1 0.08 0.08 0.08 0.08 0.08 0.08  0.1  0.1  0.1
   42   44 0.04 0.04 0.040.0250.0250.0250.0250.0250.025 0.04 0.04 0.04
   45       0.1  0.1  0.1 0.08 0.08 0.08 0.08 0.08 0.08  0.1  0.1  0.1
   46      0.15 0.15 0.15 0.08 0.08 0.08 0.08 0.08 0.08 0.15 0.15 0.15
   47   51  0.1  0.1  0.1 0.08 0.08 0.08 0.08 0.08 0.08  0.1  0.1  0.1
   52   54 0.04 0.04 0.040.0250.0250.0250.0250.0250.025 0.04 0.04 0.04
   55       0.1  0.1  0.1 0.08 0.08 0.08 0.08 0.08 0.08  0.1  0.1  0.1
   56      0.15 0.15 0.15 0.08 0.08 0.08 0.08 0.08 0.08 0.15 0.15 0.15
   57   61  0.1  0.1  0.1 0.08 0.08 0.08 0.08 0.08 0.08  0.1  0.1  0.1
   62   64 0.04 0.04 0.040.0250.0250.0250.0250.0250.025 0.04 0.04 0.04
   65       0.1  0.1  0.1 0.08 0.08 0.08 0.08 0.08 0.08  0.1  0.1  0.1
   66      0.15 0.15 0.15 0.08 0.08 0.08 0.08 0.08 0.08 0.15 0.15 0.15
   67   71  0.1  0.1  0.1 0.08 0.08 0.08 0.08 0.08 0.08  0.1  0.1  0.1
   72   74 0.04 0.04 0.040.0250.0250.0250.0250.0250.025 0.04 0.04 0.04
   75       0.1  0.1  0.1 0.08 0.08 0.08 0.08 0.08 0.08  0.1  0.1  0.1
   76      0.15 0.15 0.15 0.08 0.08 0.08 0.08 0.08 0.08 0.15 0.15 0.15
   77   81  0.1  0.1  0.1 0.08 0.08 0.08 0.08 0.08 0.08  0.1  0.1  0.1
   82   84 0.04 0.04 0.040.0250.0250.0250.0250.0250.025 0.04 0.04 0.04
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   85       0.1  0.1  0.1 0.08 0.08 0.08 0.08 0.08 0.08  0.1  0.1  0.1
   86      0.15 0.15 0.15 0.08 0.08 0.08 0.08 0.08 0.08 0.15 0.15 0.15
   87   91  0.1  0.1  0.1 0.08 0.08 0.08 0.08 0.08 0.08  0.1  0.1  0.1
   92   94 0.04 0.04 0.040.0250.0250.0250.0250.0250.025 0.04 0.04 0.04
   95  101  0.1  0.1  0.1 0.08 0.08 0.08 0.08 0.08 0.08  0.1  0.1  0.1
  102  104 0.04 0.04 0.040.0250.0250.0250.0250.0250.025 0.04 0.04 0.04
  105       0.1  0.1  0.1 0.08 0.08 0.08 0.08 0.08 0.08  0.1  0.1  0.1
  106      0.15 0.15 0.15 0.08 0.08 0.08 0.08 0.08 0.08 0.15 0.15 0.15
  107       0.1  0.1  0.1 0.08 0.08 0.08 0.08 0.08 0.08  0.1  0.1  0.1
  END MON-GRND-CONC

  QUAL-PROPS
*** NO3
*** <PLS >  Identifiers and Flags
*** x -  x    QUALID      QTID  QSD VPFW VPFS  QSO  VQO QIFW VIQC QAGW VAQC
   11  107NO3             LBS     0    0    0    1    1    1    3    1    3
  END QUAL-PROPS

  QUAL-INPUT
*** NO3
***          Storage on surface and nonseasonal parameters
***            SQO   POTFW   POTFS   ACQOP  SQOLIM   WSQOP    IOQC    AOQC
*** <PLS >  qty/ac qty/ton qty/ton    qty/  qty/ac   in/hr qty/ft3 qty/ft3
*** x -  x                          ac.day
   11         2.56       0       0  0.0054     2.8     0.1       0       0
   12         1.28       0       0  0.0011     2.8     0.3       0       0
   13         2.00       0       0  0.0028     2.8     0.4       0       0
   14         0.80       0       0  0.0011     2.8     0.7       0       0
   15         2.80       0       0  0.0112     2.8     0.1       0       0
   21         2.56       0       0  0.0054     2.8     0.1       0       0
   22         1.28       0       0  0.0011     2.8     0.3       0       0
   23         2.00       0       0  0.0028     2.8     0.7       0       0
   24         0.80       0       0  0.0011     2.8     0.7       0       0
   25         2.80       0       0  0.0112     2.8     0.1       0       0
   31         2.56       0       0  0.0054     2.8     0.1       0       0
   32         1.28       0       0  0.0011     2.8     0.3       0       0
   33         2.00       0       0  0.0028     2.8     0.7       0       0
   34         0.80       0       0  0.0011     2.8     0.7       0       0
   35         2.80       0       0  0.0112     2.8     0.1       0       0
   41         2.56       0       0  0.0054     2.8     0.1       0       0
   42         1.28       0       0  0.0011     2.8     0.3       0       0
   43         2.00       0       0  0.0028     2.8     0.7       0       0
   44         0.80       0       0  0.0011     2.8     0.7       0       0
   45         2.80       0       0  0.0112     2.8     0.1       0       0
   46         1.44       0       0  0.0011     2.8     0.7       0       0
   47         2.40       0       0  0.0053     2.8     0.5       0       0
   51         2.56       0       0  0.0054     2.8     0.1       0       0
   52         1.28       0       0  0.0011     2.8     0.3       0       0
   53         2.00       0       0  0.0028     2.8     0.7       0       0
   54         0.80       0       0  0.0011     2.8     0.7       0       0
   55         2.80       0       0  0.0112     2.8     0.1       0       0
   56         1.44       0       0  0.0011     2.8     0.1       0       0
   57         2.40       0       0  0.0053     2.8     0.5       0       0
   61         2.56       0       0  0.0054     2.8     0.1       0       0
   62         1.28       0       0  0.0011     2.8     0.3       0       0
   63         2.00       0       0  0.0028     2.8     0.7       0       0
   64         0.80       0       0  0.0011     2.8     0.7       0       0
   65         2.80       0       0  0.0112     2.8     0.1       0       0
   66         1.44       0       0  0.0011     2.8     0.7       0       0
   67         2.40       0       0  0.0053     2.8     0.5       0       0
   71         2.56       0       0  0.0054     2.8     0.1       0       0
   72         1.28       0       0  0.0011     2.8     0.3       0       0
   74         2.00       0       0  0.0011     2.8     0.7       0       0
   75         0.80       0       0  0.0112     2.8     0.1       0       0
   76         2.80       0       0  0.0011     2.8     0.1       0       0
   77         1.44       0       0  0.0053     2.8     0.1       0       0
   81         2.40       0       0  0.0054     2.8     0.1       0       0
   82         2.56       0       0  0.0011     2.8     0.3       0       0
   83         1.28       0       0  0.0028     2.8     0.7       0       0
   84         2.00       0       0  0.0011     2.8     0.7       0       0
   85         0.80       0       0  0.0112     2.8     0.1       0       0
   86         2.80       0       0  0.0011     2.8     0.1       0       0
   87         1.44       0       0  0.0053     2.8     0.5       0       0
   91         2.40       0       0  0.0054     2.8     0.1       0       0
   92         2.56       0       0  0.0011     2.8     0.3       0       0
   93         1.28       0       0  0.0028     2.8     0.7       0       0
   94         2.00       0       0  0.0011     2.8     0.7       0       0
   95         0.80       0       0  0.0112     2.8     0.1       0       0
   97         2.80       0       0  0.0053     2.8     0.5       0       0
  101         2.40       0       0  0.0054     2.8     0.1       0       0
  102         2.56       0       0  0.0011     2.8     0.3       0       0
  103         1.28       0       0  0.0028     2.8     0.5       0       0
  104         2.00       0       0  0.0011     2.8     0.1       0       0
  105         0.80       0       0  0.0112     2.8     0.1       0       0
  106         2.80       0       0  0.0011     2.8     0.1       0       0
  107         1.44       0       0  0.0053     2.8     0.1       0       0
  END QUAL-INPUT

  MON-ACCUM
*** NO3
*** <PLS >  Value at start of each month for accum rate of QUALOF (lb/ac.day)
*** x -  x  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC
   11     .0043.0043.0049.0049.0054.0059.0065.0065.0059.0059.0054.0049
   12     .0009.0009.0010.0010.0011.0012.0013.0013.0012.0012.0011.0010
   13     .0022.0022.0025.0025.0028.0031.0034.0034.0031.0031.0028.0025
   14     .0009.0009.0010.0010.0011.0012.0013.0013.0012.0012.0011.0010
   15     .0090.0090.0101.0101.0112.0123.0134.0134.0123.0123.0112.0101
   21     .0043.0043.0049.0049.0054.0059.0065.0065.0059.0059.0054.0049
   22     .0009.0009.0010.0010.0011.0012.0013.0013.0012.0012.0011.0010
   23     .0022.0022.0025.0025.0028.0031.0034.0034.0031.0031.0028.0025
   24     .0009.0009.0010.0010.0011.0012.0013.0013.0012.0012.0011.0010
   25     .0090.0090.0101.0101.0112.0123.0134.0134.0123.0123.0112.0101
   31     .0043.0043.0049.0049.0054.0059.0065.0065.0059.0059.0054.0049
   32     .0009.0009.0010.0010.0011.0012.0013.0013.0012.0012.0011.0010
   33     .0022.0022.0025.0025.0028.0031.0034.0034.0031.0031.0028.0025
   34     .0009.0009.0010.0010.0011.0012.0013.0013.0012.0012.0011.0010
   35     .0090.0090.0101.0101.0112.0123.0134.0134.0123.0123.0112.0101
   41     .0080.0080.0090.0090.0100.0110.0120.0120.0110.0110.0100.0090
   42     .0016.0016.0018.0018.0020.0022.0024.0024.0022.0022.0020.0018
   43     .0048.0048.0054.0054.0060.0066.0072.0072.0066.0066.0060.0054
   44     .0016.0016.0018.0018.0020.0022.0024.0024.0022.0022.0020.0018
   45     .0160.0160.0180.0180.0200.0220.0240.0240.0220.0220.0200.0180
   46     .0120.0120.0135.0135.0150.0165.0180.0180.0165.0165.0150.0135
   47     .0080.0080.0090.0090.0100.0110.0120.0120.0110.0110.0100.0090
   51     .0080.0080.0090.0090.0100.0110.0120.0120.0110.0110.0100.0090
   52     .0016.0016.0018.0018.0020.0022.0024.0024.0022.0022.0020.0018
   53     .0048.0048.0054.0054.0060.0066.0072.0072.0066.0066.0060.0054
   54     .0016.0016.0018.0018.0020.0022.0024.0024.0022.0022.0020.0018
   55     .0160.0160.0180.0180.0200.0220.0240.0240.0220.0220.0200.0180
   56     .0120.0120.0135.0135.0150.0165.0180.0180.0165.0165.0150.0135
   57     .0080.0080.0090.0090.0100.0110.0120.0120.0110.0110.0100.0090
   61     .0080.0080.0090.0090.0100.0110.0120.0120.0110.0110.0100.0090
   62     .0016.0016.0018.0018.0020.0022.0024.0024.0022.0022.0020.0018
   63     .0048.0048.0054.0054.0060.0066.0072.0072.0066.0066.0060.0054
   64     .0016.0016.0018.0018.0020.0022.0024.0024.0022.0022.0020.0018
   65     .0160.0160.0180.0180.0200.0220.0240.0240.0220.0220.0200.0180
   66     .0120.0120.0135.0135.0150.0165.0180.0180.0165.0165.0150.0135
   67     .0080.0080.0090.0090.0100.0110.0120.0120.0110.0110.0100.0090
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   71     .0080.0080.0090.0090.0100.0110.0120.0120.0110.0110.0100.0090
   72     .0016.0016.0018.0018.0020.0022.0024.0024.0022.0022.0020.0018
   74     .0016.0016.0018.0018.0020.0022.0024.0024.0022.0022.0020.0018
   75     .0800.0800.0900.0900.1000.1100.1200.1200.1100.1100.1000.0900
   76     .4000.4000.4500.4500.5000.5500.6000.6000.5500.5500.5000.4500
   77     .0080.0080.0090.0090.0100.0110.0120.0120.0110.0110.0100.0090
   81     .0080.0080.0090.0090.0100.0110.0120.0120.0110.0110.0100.0090
   82     .0016.0016.0018.0018.0020.0022.0024.0024.0022.0022.0020.0018
   83     .0048.0048.0054.0054.0060.0066.0072.0072.0066.0066.0060.0054
   84     .0016.0016.0018.0018.0020.0022.0024.0024.0022.0022.0020.0018
   85     .0160.0160.0180.0180.0200.0220.0240.0240.0220.0220.0200.0180
   86     .0120.0120.0135.0135.0150.0165.0180.0180.0165.0165.0150.0135
   87     .0080.0080.0090.0090.0100.0110.0120.0120.0110.0110.0100.0090
   91     .0043.0043.0049.0049.0054.0059.0065.0065.0059.0059.0054.0049
   92     .0009.0009.0010.0010.0011.0012.0013.0013.0012.0012.0011.0010
   93     .0022.0022.0025.0025.0028.0031.0034.0034.0031.0031.0028.0025
   94     .0009.0009.0010.0010.0011.0012.0013.0013.0012.0012.0011.0010
   95     .0090.0090.0101.0101.0112.0123.0134.0134.0123.0123.0112.0101
   97     .0042.0042.0048.0048.0053.0058.0064.0064.0058.0058.0053.0048
  101     .0080.0080.0090.0090.0100.0110.0120.0120.0110.0110.0100.0090
  102     .0016.0016.0018.0018.0020.0022.0024.0024.0022.0022.0020.0018
  103     .0048.0048.0054.0054.0060.0066.0072.0072.0066.0066.0060.0054
  104     .0016.0016.0018.0018.0020.0022.0024.0024.0022.0022.0020.0018
  105     .0800.0800.0900.0900.1000.1100.1200.1200.1100.1100.1000.0900
  106     .4000.4000.4500.4500.5000.5500.6000.6000.5500.5500.5000.4500
  107     .0080.0080.0090.0090.0100.0110.0120.0120.0110.0110.0100.0090
  END MON-ACCUM

  MON-SQOLIM
*** NO3
*** <PLS >  Value at start of month for limiting storage of QUALOF (lb/ac)
*** x -  x  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC
   11     2.5602.5602.8802.8803.2003.5203.8403.8403.5203.5203.2002.880
   12     1.2801.2801.4401.4401.6001.7601.9201.9201.7601.7601.6001.440
   13     2.0002.0002.2502.2502.5002.7503.0003.0002.7502.7502.5002.250
   14     0.8000.8000.9000.9001.0001.1001.2001.2001.1001.1001.0000.900
   15     2.8002.8003.1503.1503.5003.8504.2004.2003.8503.8503.5003.150
   21     2.5602.5602.8802.8803.2003.5203.8403.8403.5203.5203.2002.880
   22     1.2801.2801.4401.4401.6001.7601.9201.9201.7601.7601.6001.440
   23     2.0002.0002.2502.2502.5002.7503.0003.0002.7502.7502.5002.250
   24     0.8000.8000.9000.9001.0001.1001.2001.2001.1001.1001.0000.900
   25     2.8002.8003.1503.1503.5003.8504.2004.2003.8503.8503.5003.150
   31     2.5602.5602.8802.8803.2003.5203.8403.8403.5203.5203.2002.880
   32     1.2801.2801.4401.4401.6001.7601.9201.9201.7601.7601.6001.440
   33     2.0002.0002.2502.2502.5002.7503.0003.0002.7502.7502.5002.250
   34     0.8000.8000.9000.9001.0001.1001.2001.2001.1001.1001.0000.900
   35     2.8002.8003.1503.1503.5003.8504.2004.2003.8503.8503.5003.150
   41     2.5602.5602.8802.8803.2003.5203.8403.8403.5203.5203.2002.880
   42     1.2801.2801.4401.4401.6001.7601.9201.9201.7601.7601.6001.440
   43     2.0002.0002.2502.2502.5002.7503.0003.0002.7502.7502.5002.250
   44     0.8000.8000.9000.9001.0001.1001.2001.2001.1001.1001.0000.900
   45     2.8002.8003.1503.1503.5003.8504.2004.2003.8503.8503.5003.150
   46     1.4401.4401.6201.6201.8001.9802.1602.1601.9801.9801.8001.620
   47     2.4002.4002.7002.7003.0003.3003.6003.6003.3003.3003.0002.700
   51     2.5602.5602.8802.8803.2003.5203.8403.8403.5203.5203.2002.880
   52     1.2801.2801.4401.4401.6001.7601.9201.9201.7601.7601.6001.440
   53     2.0002.0002.2502.2502.5002.7503.0003.0002.7502.7502.5002.250
   54     0.8000.8000.9000.9001.0001.1001.2001.2001.1001.1001.0000.900
   55     2.8002.8003.1503.1503.5003.8504.2004.2003.8503.8503.5003.150
   56     1.4401.4401.6201.6201.8001.9802.1602.1601.9801.9801.8001.620
   57     2.4002.4002.7002.7003.0003.3003.6003.6003.3003.3003.0002.700
   61     2.5602.5602.8802.8803.2003.5203.8403.8403.5203.5203.2002.880
   62     1.2801.2801.4401.4401.6001.7601.9201.9201.7601.7601.6001.440
   63     2.0002.0002.2502.2502.5002.7503.0003.0002.7502.7502.5002.250
   64     0.8000.8000.9000.9001.0001.1001.2001.2001.1001.1001.0000.900
   65     2.8002.8003.1503.1503.5003.8504.2004.2003.8503.8503.5003.150
   66     1.4401.4401.6201.6201.8001.9802.1602.1601.9801.9801.8001.620
   67     2.4002.4002.7002.7003.0003.3003.6003.6003.3003.3003.0002.700
   71     2.5602.5602.8802.8803.2003.5203.8403.8403.5203.5203.2002.880
   72     1.2801.2801.4401.4401.6001.7601.9201.9201.7601.7601.6001.440
   74     0.8000.8000.9000.9001.0001.1001.2001.2001.1001.1001.0000.900
   75     2.8002.8003.1503.1503.5003.8504.2004.2003.8503.8503.5003.150
   76     4.0004.0004.5004.5005.0005.5006.0006.0005.5005.5005.0004.500
   77     2.4002.4002.7002.7003.0003.3003.6003.6003.3003.3003.0002.700
   81     2.5602.5602.8802.8803.2003.5203.8403.8403.5203.5203.2002.880
   82     1.2801.2801.4401.4401.6001.7601.9201.9201.7601.7601.6001.440
   83     2.0002.0002.2502.2502.5002.7503.0003.0002.7502.7502.5002.250
   84     0.8000.8000.9000.9001.0001.1001.2001.2001.1001.1001.0000.900
   85     2.8002.8003.1503.1503.5003.8504.2004.2003.8503.8503.5003.150
   86     1.4401.4401.6201.6201.8001.9802.1602.1601.9801.9801.8001.620
   87     2.4002.4002.7002.7003.0003.3003.6003.6003.3003.3003.0002.700
   91     2.5602.5602.8802.8803.2003.5203.8403.8403.5203.5203.2002.880
   92     1.2801.2801.4401.4401.6001.7601.9201.9201.7601.7601.6001.440
   93     2.0002.0002.2502.2502.5002.7503.0003.0002.7502.7502.5002.250
   94     0.8000.8000.9000.9001.0001.1001.2001.2001.1001.1001.0000.900
   95     2.8002.8003.1503.1503.5003.8504.2004.2003.8503.8503.5003.150
   97     2.4002.4002.7002.7003.0003.3003.6003.6003.3003.3003.0002.700
  101     2.5602.5602.8802.8803.2003.5203.8403.8403.5203.5203.2002.880
  102     1.2801.2801.4401.4401.6001.7601.9201.9201.7601.7601.6001.440
  103     2.0002.0002.2502.2502.5002.7503.0003.0002.7502.7502.5002.250
  104     0.8000.8000.9000.9001.0001.1001.2001.2001.1001.1001.0000.900
  105     2.8002.8003.1503.1503.5003.8504.2004.2003.8503.8503.5003.150
  106     4.0004.0004.5004.5005.0005.5006.0006.0005.5005.5005.0004.500
  107     2.4002.4002.7002.7003.0003.3003.6003.6003.3003.3003.0002.700
  END MON-SQOLIM

  MON-IFLW-CONC
*** NO3
*** <PLS >  Conc of QUAL in interflow outflow for each month (mg/L)
*** x -  x  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC
  11      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
   12      0.16  0.2 0.17 0.13  0.1 0.06 0.03 0.03 0.03 0.06  0.1 0.13
   13      0.32  0.4 0.34 0.26  0.2 0.12 0.06 0.06 0.06 0.12  0.2 0.26
   14      0.08  0.10.0850.065 0.05 0.030.0150.0150.015 0.03 0.050.065
   15      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
   21      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
   22      0.16  0.2 0.17 0.13  0.1 0.06 0.03 0.03 0.03 0.06  0.1 0.13
   23      0.16  0.2 0.17 0.13  0.1 0.06 0.03 0.03 0.03 0.06  0.1 0.13
   24      0.16  0.2 0.17 0.13  0.1 0.06 0.03 0.03 0.03 0.06  0.1 0.13
   25      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
   31       0.6 0.78 0.78 0.78 0.78 0.72 0.66 0.48 0.36 0.36 0.36 0.54
   32       0.2 0.26 0.26 0.26 0.26 0.24 0.22 0.16 0.12 0.12 0.12 0.18
   33       0.4 0.52 0.52 0.52 0.52 0.48 0.44 0.32 0.24 0.24 0.24 0.36
   34       0.1 0.13 0.13 0.13 0.13 0.12 0.11 0.08 0.06 0.06 0.06 0.09
   35       0.8 1.04 1.04 1.04 1.04 0.96 0.88 0.64 0.48 0.48 0.48 0.72
   41      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
   42      0.16  0.2 0.17 0.13  0.1 0.06 0.03 0.03 0.03 0.06  0.1 0.13
   43      0.16  0.2 0.17 0.13  0.1 0.06 0.03 0.03 0.03 0.06  0.1 0.13
   44      0.16  0.2 0.17 0.13  0.1 0.06 0.03 0.03 0.03 0.06  0.1 0.13
   45      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
   46       7.2    9 7.65 5.85  4.5  2.7 1.35 1.35 1.35  2.7  4.5 5.85
   47      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
   51      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
   52      0.64  0.8 0.68 0.52  0.4 0.24 0.12 0.12 0.12 0.24  0.4 0.52
   53      0.64  0.8 0.68 0.52  0.4 0.24 0.12 0.12 0.12 0.24  0.4 0.52
   54      0.64  0.8 0.68 0.52  0.4 0.24 0.12 0.12 0.12 0.24  0.4 0.52
   55       2.4    3 2.55 1.95  1.5  0.9 0.45 0.45 0.45  0.9  1.5 1.95
   56        16   20   17   13   10    6    3    3    3    6   10   13
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   57      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
   61      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
   62      0.64  0.8 0.68 0.52  0.4 0.24 0.12 0.12 0.12 0.24  0.4 0.52
   63      0.64  0.8 0.68 0.52  0.4 0.24 0.12 0.12 0.12 0.24  0.4 0.52
   64      0.64  0.8 0.68 0.52  0.4 0.24 0.12 0.12 0.12 0.24  0.4 0.52
   65       2.4    3 2.55 1.95  1.5  0.9 0.45 0.45 0.45  0.9  1.5 1.95
   66        16   20   17   13   10    6    3    3    3    6   10   13
   67      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
   71      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
   72      0.64  0.8 0.68 0.52  0.4 0.24 0.12 0.12 0.12 0.24  0.4 0.52
   73      0.64  0.8 0.68 0.52  0.4 0.24 0.12 0.12 0.12 0.24  0.4 0.52
   74      0.64  0.8 0.68 0.52  0.4 0.24 0.12 0.12 0.12 0.24  0.4 0.52
   75       2.4    3 2.55 1.95  1.5  0.9 0.45 0.45 0.45  0.9  1.5 1.95
   76        16   20   17   13   10    6    3    3    3    6   10   13
   77      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
   81      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
   82      0.64  0.8 0.68 0.52  0.4 0.24 0.12 0.12 0.12 0.24  0.4 0.52
   83      0.64  0.8 0.68 0.52  0.4 0.24 0.12 0.12 0.12 0.24  0.4 0.52
   84      0.64  0.8 0.68 0.52  0.4 0.24 0.12 0.12 0.12 0.24  0.4 0.52
   85       2.4    3 2.55 1.95  1.5  0.9 0.45 0.45 0.45  0.9  1.5 1.95
   86        16   20   17   13   10    6    3    3    3    6   10   13
   87      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
   91      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
   92      0.64  0.8 0.68 0.52  0.4 0.24 0.12 0.12 0.12 0.24  0.4 0.52
   93      0.64  0.8 0.68 0.52  0.4 0.24 0.12 0.12 0.12 0.24  0.4 0.52
   94      0.64  0.8 0.68 0.52  0.4 0.24 0.12 0.12 0.12 0.24  0.4 0.52
   95       2.4    3 2.55 1.95  1.5  0.9 0.45 0.45 0.45  0.9  1.5 1.95
   97      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
  101      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
  102      0.64  0.8 0.68 0.52  0.4 0.24 0.12 0.12 0.12 0.24  0.4 0.52
  103      0.64  0.8 0.68 0.52  0.4 0.24 0.12 0.12 0.12 0.24  0.4 0.52
  104      0.64  0.8 0.68 0.52  0.4 0.24 0.12 0.12 0.12 0.24  0.4 0.52
  105       2.4    3 2.55 1.95  1.5  0.9 0.45 0.45 0.45  0.9  1.5 1.95
  106      19.2   24 20.4 15.6   12  7.2  3.6  3.6  3.6  7.2   12 15.6
  107      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
  END MON-IFLW-CONC

  MON-GRND-CONC
*** NO3
*** <PLS >  Value at start of month for conc of QUAL in groundwater (mg/L)
*** x -  x  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC
  11      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
   12      0.16  0.2 0.17 0.13  0.1 0.06 0.03 0.03 0.03 0.06  0.1 0.13
   13      0.32  0.4 0.34 0.26  0.2 0.12 0.06 0.06 0.06 0.12  0.2 0.26
   14      0.08  0.10.0850.065 0.05 0.030.0150.0150.015 0.03 0.050.065
   15      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
   21      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
   22      0.16  0.2 0.17 0.13  0.1 0.06 0.03 0.03 0.03 0.06  0.1 0.13
   23      0.16  0.2 0.17 0.13  0.1 0.06 0.03 0.03 0.03 0.06  0.1 0.13
   24      0.16  0.2 0.17 0.13  0.1 0.06 0.03 0.03 0.03 0.06  0.1 0.13
   25      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
   31       0.6 0.78 0.78 0.78 0.78 0.72 0.66 0.48 0.36 0.36 0.36 0.54
   32       0.2 0.26 0.26 0.26 0.26 0.24 0.22 0.16 0.12 0.12 0.12 0.18
   33       0.4 0.52 0.52 0.52 0.52 0.48 0.44 0.32 0.24 0.24 0.24 0.36
   34       0.1 0.13 0.13 0.13 0.13 0.12 0.11 0.08 0.06 0.06 0.06 0.09
   35       0.8 1.04 1.04 1.04 1.04 0.96 0.88 0.64 0.48 0.48 0.48 0.72
   41      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
   42      0.16  0.2 0.17 0.13  0.1 0.06 0.03 0.03 0.03 0.06  0.1 0.13
   43      0.16  0.2 0.17 0.13  0.1 0.06 0.03 0.03 0.03 0.06  0.1 0.13
   44      0.16  0.2 0.17 0.13  0.1 0.06 0.03 0.03 0.03 0.06  0.1 0.13
   45      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
   46       7.2    9 7.65 5.85  4.5  2.7 1.35 1.35 1.35  2.7  4.5 5.85
   47      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
   51      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
   52      0.64  0.8 0.68 0.52  0.4 0.24 0.12 0.12 0.12 0.24  0.4 0.52
   53      0.64  0.8 0.68 0.52  0.4 0.24 0.12 0.12 0.12 0.24  0.4 0.52
   54      0.64  0.8 0.68 0.52  0.4 0.24 0.12 0.12 0.12 0.24  0.4 0.52
   55       2.4    3 2.55 1.95  1.5  0.9 0.45 0.45 0.45  0.9  1.5 1.95
   56        16   20   17   13   10    6    3    3    3    6   10   13
   57      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
   61      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
   62      0.64  0.8 0.68 0.52  0.4 0.24 0.12 0.12 0.12 0.24  0.4 0.52
   63      0.64  0.8 0.68 0.52  0.4 0.24 0.12 0.12 0.12 0.24  0.4 0.52
   64      0.64  0.8 0.68 0.52  0.4 0.24 0.12 0.12 0.12 0.24  0.4 0.52
   65       2.4    3 2.55 1.95  1.5  0.9 0.45 0.45 0.45  0.9  1.5 1.95
   66        16   20   17   13   10    6    3    3    3    6   10   13
   67      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
   71      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
   72      0.64  0.8 0.68 0.52  0.4 0.24 0.12 0.12 0.12 0.24  0.4 0.52
   73      0.64  0.8 0.68 0.52  0.4 0.24 0.12 0.12 0.12 0.24  0.4 0.52
   74      0.64  0.8 0.68 0.52  0.4 0.24 0.12 0.12 0.12 0.24  0.4 0.52
   75       2.4    3 2.55 1.95  1.5  0.9 0.45 0.45 0.45  0.9  1.5 1.95
   76        16   20   17   13   10    6    3    3    3    6   10   13
   77      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
   81      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
   82      0.64  0.8 0.68 0.52  0.4 0.24 0.12 0.12 0.12 0.24  0.4 0.52
   83      0.64  0.8 0.68 0.52  0.4 0.24 0.12 0.12 0.12 0.24  0.4 0.52
   84      0.64  0.8 0.68 0.52  0.4 0.24 0.12 0.12 0.12 0.24  0.4 0.52
   85       2.4    3 2.55 1.95  1.5  0.9 0.45 0.45 0.45  0.9  1.5 1.95
   86        16   20   17   13   10    6    3    3    3    6   10   13
   87      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
   91      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
   92      0.64  0.8 0.68 0.52  0.4 0.24 0.12 0.12 0.12 0.24  0.4 0.52
   93      0.64  0.8 0.68 0.52  0.4 0.24 0.12 0.12 0.12 0.24  0.4 0.52
   94      0.64  0.8 0.68 0.52  0.4 0.24 0.12 0.12 0.12 0.24  0.4 0.52
   95       2.4    3 2.55 1.95  1.5  0.9 0.45 0.45 0.45  0.9  1.5 1.95
   97      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
  101      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
  102      0.64  0.8 0.68 0.52  0.4 0.24 0.12 0.12 0.12 0.24  0.4 0.52
  103      0.64  0.8 0.68 0.52  0.4 0.24 0.12 0.12 0.12 0.24  0.4 0.52
  104      0.64  0.8 0.68 0.52  0.4 0.24 0.12 0.12 0.12 0.24  0.4 0.52
  105       2.4    3 2.55 1.95  1.5  0.9 0.45 0.45 0.45  0.9  1.5 1.95
  106      19.2   24 20.4 15.6   12  7.2  3.6  3.6  3.6  7.2   12 15.6
  107      0.96  1.2 1.02 0.78  0.6 0.36 0.18 0.18 0.18 0.36  0.6 0.78
  END MON-GRND-CONC

  QUAL-PROPS
*** ORTHO P
*** <PLS >  Identifiers and Flags
*** x -  x    QUALID      QTID  QSD VPFW VPFS  QSO  VQO QIFW VIQC QAGW VAQC
   11  107ORTHO P         LBS     1    0    0    0    0    1    3    1    3
  END QUAL-PROPS

  QUAL-INPUT
*** ORTHO P
***          Storage on surface and nonseasonal parameters
***             SQO   POTFW   POTFS   ACQOP  SQOLIM   WSQOP    IOQC    AOQC
*** <PLS >  qty/ac qty/ton qty/ton    qty/  qty/ac   in/hr qty/ft3 qty/ft3
*** x -  x                          ac.day
   11         0.04    0.55       0       0       0     0.6       0       0
   12        0.017   0.035       0       0       0     0.7       0       0
   13        0.017   0.035       0       0       0     0.7       0       0
   14        0.017   0.035       0       0       0     0.7       0       0
   15         0.04    0.55       0       0       0     0.6       0       0
   21         0.04    0.55       0       0       0     0.6       0       0
   22        0.017   0.035       0       0       0     0.7       0       0
   23        0.017   0.035       0       0       0     0.7       0       0
   24        0.017   0.035       0       0       0     0.7       0       0
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   25         0.04    0.55       0       0       0     0.6       0       0
   31         0.04    0.55       0       0       0     0.6       0       0
   32        0.017   0.035       0       0       0     0.7       0       0
   33        0.017   0.035       0       0       0     0.7       0       0
   34        0.017   0.035       0       0       0     0.7       0       0
   35         0.04    0.55       0       0       0     0.6       0       0
   41         0.04    0.55       0       0       0     0.6       0       0
   42        0.017   0.035       0       0       0     0.7       0       0
   43        0.017   0.035       0       0       0     0.7       0       0
   44        0.017   0.035       0       0       0     0.7       0       0
   45         0.04    0.55       0       0       0     0.6       0       0
   46        0.017   0.035       0       0       0     0.7       0       0
   47         0.04    0.55       0       0       0     0.6       0       0
   51         0.04    0.55       0       0       0     0.6       0       0
   52        0.017   0.035       0       0       0     0.7       0       0
   53        0.017   0.035       0       0       0     0.7       0       0
   54        0.017   0.035       0       0       0     0.7       0       0
   55         0.04    0.55       0       0       0     0.6       0       0
   56        0.017   0.035       0       0       0     0.7       0       0
   57         0.04    0.55       0       0       0     0.6       0       0
   61         0.04    0.55       0       0       0     0.6       0       0
   62        0.017   0.035       0       0       0     0.7       0       0
   63        0.017   0.035       0       0       0     0.7       0       0
   64        0.017   0.035       0       0       0     0.7       0       0
   65         0.04    0.55       0       0       0     0.6       0       0
   66        0.017   0.035       0       0       0     0.7       0       0
   67         0.04    0.55       0       0       0     0.6       0       0
   71         0.04    0.55       0       0       0     0.6       0       0
   72        0.017   0.035       0       0       0     0.7       0       0
   74        0.017   0.035       0       0       0     0.7       0       0
   75         0.04    0.55       0       0       0     0.6       0       0
   76        0.017   0.035       0       0       0     0.7       0       0
   77         0.04    0.55       0       0       0     0.6       0       0
   81         0.04    0.55       0       0       0     0.6       0       0
   82        0.017   0.035       0       0       0     0.7       0       0
   83        0.017   0.035       0       0       0     0.7       0       0
   84        0.017   0.035       0       0       0     0.7       0       0
   85         0.04    0.55       0       0       0     0.6       0       0
   86        0.017   0.035       0       0       0     0.7       0       0
   87         0.04    0.55       0       0       0     0.6       0       0
   91         0.04    0.55       0       0       0     0.6       0       0
   92        0.017   0.035       0       0       0     0.7       0       0
   93        0.017   0.035       0       0       0     0.7       0       0
   94        0.017   0.035       0       0       0     0.7       0       0
   95         0.04    0.55       0       0       0     0.6       0       0
   97         0.04    0.55       0       0       0     0.6       0       0
  101         0.04    0.55       0       0       0     0.6       0       0
  102        0.017   0.035       0       0       0     0.7       0       0
  103        0.017   0.035       0       0       0     0.7       0       0
  104        0.017   0.035       0       0       0     0.7       0       0
  105         0.04    0.55       0       0       0     0.6       0       0
  106        0.017   0.035       0       0       0     0.7       0       0
  107         0.04    0.55       0       0       0     0.6       0       0
  END QUAL-INPUT

  MON-ACCUM
*** ORTHO P
*** <PLS >  Value at start of each month for accum rate of QUALOF (lb/ac.day)
*** x -  x  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC
   11      0.01 0.01 0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.01 0.01 0.01
   12   14.00330.0040.0050.0120.0120.0120.0120.0120.0120.0080.004.0033
   15   21 0.01 0.01 0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.01 0.01 0.01
   22   24.00330.0040.0050.0120.0120.0120.0120.0120.0120.0080.004.0033
   25   31 0.01 0.01 0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.01 0.01 0.01
   32   34.00330.0040.0050.0120.0120.0120.0120.0120.0120.0080.004.0033
   35   41 0.01 0.01 0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.01 0.01 0.01
   42   44.00330.0040.0050.0120.0120.0120.0120.0120.0120.0080.004.0033
   45      0.01 0.01 0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.01 0.01 0.01
   46     0.0030.0030.0050.007 0.01 0.01 0.01 0.01 0.01 0.010.0050.003
   47   51 0.01 0.01 0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.01 0.01 0.01
   52   54.00330.0040.0050.0120.0120.0120.0120.0120.0120.0080.004.0033
   55      0.01 0.01 0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.01 0.01 0.01
   56     0.0030.0030.0050.007 0.01 0.01 0.01 0.01 0.01 0.010.0050.003
   57   61 0.01 0.01 0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.01 0.01 0.01
   62   64.00330.0040.0050.0120.0120.0120.0120.0120.0120.0080.004.0033
   65      0.01 0.01 0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.01 0.01 0.01
   66     0.0030.0030.0050.007 0.01 0.01 0.01 0.01 0.01 0.010.0050.003
   67   71 0.01 0.01 0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.01 0.01 0.01
   72   74.00330.0040.0050.0120.0120.0120.0120.0120.0120.0080.004.0033
   75      0.01 0.01 0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.01 0.01 0.01
   76     0.0030.0030.0050.007 0.01 0.01 0.01 0.01 0.01 0.010.0050.003
   77   81 0.01 0.01 0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.01 0.01 0.01
   82   84.00330.0040.0050.0120.0120.0120.0120.0120.0120.0080.004.0033
   85      0.01 0.01 0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.01 0.01 0.01
   86     0.0030.0030.0050.007 0.01 0.01 0.01 0.01 0.01 0.010.0050.003
   87   91 0.01 0.01 0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.01 0.01 0.01
   92   94.00330.0040.0050.0120.0120.0120.0120.0120.0120.0080.004.0033
   95  101 0.01 0.01 0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.01 0.01 0.01
  102  104.00330.0040.0050.0120.0120.0120.0120.0120.0120.0080.004.0033
  105      0.01 0.01 0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.01 0.01 0.01
  106     0.0030.0030.0050.007 0.01 0.01 0.01 0.01 0.01 0.010.0050.003
  107      0.01 0.01 0.01 0.05 0.05 0.05 0.05 0.05 0.05 0.01 0.01 0.01
  END MON-ACCUM

  MON-SQOLIM
*** ORTHO P
*** <PLS >  Value at start of month for limiting storage of QUALOF (lb/ac)
*** x -  x  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC
   11     0.0510.0540.0580.0690.0690.0690.0690.0690.0690.0580.0540.051
   12   140.0040.0050.0070.0150.0150.0150.0150.0150.0150.0110.0050.004
   15   210.0510.0540.0580.0690.0690.0690.0690.0690.0690.0580.0540.051
   22   240.0040.0050.0070.0150.0150.0150.0150.0150.0150.0110.0050.004
   25   310.0510.0540.0580.0690.0690.0690.0690.0690.0690.0580.0540.051
   32   340.0040.0050.0070.0150.0150.0150.0150.0150.0150.0110.0050.004
   35   410.0510.0540.0580.0690.0690.0690.0690.0690.0690.0580.0540.051
   42   440.0040.0050.0070.0150.0150.0150.0150.0150.0150.0110.0050.004
   45     0.0510.0540.0580.0690.0690.0690.0690.0690.0690.0580.0540.051
   46     0.0080.0080.0130.0330.0510.0510.0380.0360.0330.0250.0130.008
   47   510.0510.0540.0580.0690.0690.0690.0690.0690.0690.0580.0540.051
   52   540.0040.0050.0070.0150.0150.0150.0150.0150.0150.0110.0050.004
   55     0.0510.0540.0580.0690.0690.0690.0690.0690.0690.0580.0540.051
   56     0.0080.0080.0130.0330.0510.0510.0380.0360.0330.0250.0130.008
   57   610.0510.0540.0580.0690.0690.0690.0690.0690.0690.0580.0540.051
   62   640.0040.0050.0070.0150.0150.0150.0150.0150.0150.0110.0050.004
   65     0.0510.0540.0580.0690.0690.0690.0690.0690.0690.0580.0540.051
   66     0.0080.0080.0130.0330.0510.0510.0380.0360.0330.0250.0130.008
   67   710.0510.0540.0580.0690.0690.0690.0690.0690.0690.0580.0540.051
   72   740.0040.0050.0070.0150.0150.0150.0150.0150.0150.0110.0050.004
   75     0.0510.0540.0580.0690.0690.0690.0690.0690.0690.0580.0540.051
   76     0.0080.0080.0130.0330.0510.0510.0380.0360.0330.0250.0130.008
   77   810.0510.0540.0580.0690.0690.0690.0690.0690.0690.0580.0540.051
   82   840.0040.0050.0070.0150.0150.0150.0150.0150.0150.0110.0050.004
   85     0.0510.0540.0580.0690.0690.0690.0690.0690.0690.0580.0540.051
   86     0.0080.0080.0130.0330.0510.0510.0380.0360.0330.0250.0130.008
   87   910.0510.0540.0580.0690.0690.0690.0690.0690.0690.0580.0540.051
   92   940.0040.0050.0070.0150.0150.0150.0150.0150.0150.0110.0050.004
   95  1010.0510.0540.0580.0690.0690.0690.0690.0690.0690.0580.0540.051
  102  1040.0040.0050.0070.0150.0150.0150.0150.0150.0150.0110.0050.004
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  105     0.0510.0540.0580.0690.0690.0690.0690.0690.0690.0580.0540.051
  106     0.0080.0080.0130.0330.0510.0510.0380.0360.0330.0250.0130.008
  107     0.0510.0540.0580.0690.0690.0690.0690.0690.0690.0580.0540.051
  END MON-SQOLIM

  MON-IFLW-CONC
*** ORTHO P
*** <PLS >  Conc of QUAL in interflow outflow for each month (mg/L)
*** x -  x  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC
   11      0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05
   12   140.0090.0090.0090.0090.0090.0090.0090.0090.0090.0090.0090.009
   15   21 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05
   22   240.0090.0090.0090.0090.0090.0090.0090.0090.0090.0090.0090.009
   25   31 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05
   32   340.0090.0090.0090.0090.0090.0090.0090.0090.0090.0090.0090.009
   35   41 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05
   42   440.0090.0090.0090.0090.0090.0090.0090.0090.0090.0090.0090.009
   45      0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05
   46       0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1
   47   51 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05
   52   540.0090.0090.0090.0090.0090.0090.0090.0090.0090.0090.0090.009
   55      0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05
   56       0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1
   57   61 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05
   62   640.0090.0090.0090.0090.0090.0090.0090.0090.0090.0090.0090.009
   65      0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05
   66       0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1
   67   71 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05
   72   740.0090.0090.0090.0090.0090.0090.0090.0090.0090.0090.0090.009
   75      0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05
   76       0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1
   77   81 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05
   82   840.0090.0090.0090.0090.0090.0090.0090.0090.0090.0090.0090.009
   85      0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05
   86       0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1
   87   91 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05
   92   940.0090.0090.0090.0090.0090.0090.0090.0090.0090.0090.0090.009
   95  101 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05
  102  1040.0090.0090.0090.0090.0090.0090.0090.0090.0090.0090.0090.009
  105      0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05
  106       0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1
  107      0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05
  END MON-IFLW-CONC

  MON-GRND-CONC
*** ORTHO P
*** <PLS >  Value at start of month for conc of QUAL in groundwater (mg/L)
*** x -  x  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC
   11      0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03
   12   140.0050.0050.0050.0050.0050.0050.0050.0050.0050.0050.0050.005
   15   21 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03
   22   240.0050.0050.0050.0050.0050.0050.0050.0050.0050.0050.0050.005
   25   31 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03
   32   340.0050.0050.0050.0050.0050.0050.0050.0050.0050.0050.0050.005
   35   41 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03
   42   440.0050.0050.0050.0050.0050.0050.0050.0050.0050.0050.0050.005
   45      0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03
   46      0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05
   47   51 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03
   52   540.0050.0050.0050.0050.0050.0050.0050.0050.0050.0050.0050.005
   55      0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03
   56      0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05
   57   61 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03
   62   640.0050.0050.0050.0050.0050.0050.0050.0050.0050.0050.0050.005
   65      0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03
   66      0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05
   67   71 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03
   72   740.0050.0050.0050.0050.0050.0050.0050.0050.0050.0050.0050.005
   75      0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03
   76      0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05
   77   81 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03
   82   840.0050.0050.0050.0050.0050.0050.0050.0050.0050.0050.0050.005
   85      0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03
   86      0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05
   87   91 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03
   92   940.0050.0050.0050.0050.0050.0050.0050.0050.0050.0050.0050.005
   95  101 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03
  102  1040.0050.0050.0050.0050.0050.0050.0050.0050.0050.0050.0050.005
  105      0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03
  106      0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05
  107      0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03
  END MON-GRND-CONC

  QUAL-PROPS
*** BOD
*** <PLS >  Identifiers and Flags
*** x -  x    QUALID      QTID  QSD VPFW VPFS  QSO  VQO QIFW VIQC QAGW VAQC
   11  107BOD             LBS     0    0    0    1    0    1    3    1    3
  END QUAL-PROPS

  QUAL-INPUT
*** BOD
***          Storage on surface and nonseasonal parameters
***             SQO   POTFW   POTFS   ACQOP  SQOLIM   WSQOP    IOQC    AOQC
*** <PLS >  qty/ac qty/ton qty/ton    qty/  qty/ac   in/hr qty/ft3 qty/ft3
*** x -  x                          ac.day
   11            3       0       0     0.8      10     0.4       0       0
   12            1       0       0     0.8      10     0.4       0       0
   13            1       0       0     0.8      10     0.4       0       0
   14            1       0       0     0.8      10     0.4       0       0
   15            3       0       0     0.8      10     0.4       0       0
   21            3       0       0     0.8      10     0.4       0       0
   22            1       0       0     0.8      10     0.4       0       0
   23            1       0       0     0.8      10     0.4       0       0
   24            1       0       0     0.8      10     0.4       0       0
   25            3       0       0     0.8      10     0.4       0       0
   31            3       0       0     0.8      10     0.4       0       0
   32            1       0       0     0.8      10     0.4       0       0
   33            1       0       0     0.8      10     0.4       0       0
   34            1       0       0     0.8      10     0.4       0       0
   35            3       0       0     0.8      10     0.4       0       0
   41            3       0       0     0.8      10     0.4       0       0
   42            1       0       0     0.8      10     0.4       0       0
   43            1       0       0     0.8      10     0.4       0       0
   44            1       0       0     0.8      10     0.4       0       0
   45            3       0       0     0.8      10     0.4       0       0
   46            1       0       0     0.8      10     0.4       0       0
   47            3       0       0     0.8      10     0.4       0       0
   51            3       0       0     0.8      10     0.4       0       0
   52            1       0       0     0.8      10     0.4       0       0
   53            1       0       0     0.8      10     0.4       0       0
   54            1       0       0     0.8      10     0.4       0       0
   55            3       0       0     0.8      10     0.4       0       0
   56            1       0       0     0.8      10     0.4       0       0
   57            3       0       0     0.8      10     0.4       0       0
   61            3       0       0     0.8      10     0.4       0       0
   62            1       0       0     0.8      10     0.4       0       0
   63            1       0       0     0.8      10     0.4       0       0
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   64            1       0       0     0.8      10     0.4       0       0
   65            3       0       0     0.8      10     0.4       0       0
   66            1       0       0     0.8      10     0.4       0       0
   67            3       0       0     0.8      10     0.4       0       0
   71            3       0       0     0.8      10     0.4       0       0
   72            1       0       0     0.8      10     0.4       0       0
   74            1       0       0     0.8      10     0.4       0       0
   75            3       0       0     0.8      10     0.4       0       0
   76            1       0       0     0.8      10     0.4       0       0
   77            1       0       0     0.8      10     0.4       0       0
   81            3       0       0     0.8      10     0.4       0       0
   82            1       0       0     0.8      10     0.4       0       0
   83            1       0       0     0.8      10     0.4       0       0
   84            1       0       0     0.8      10     0.4       0       0
   85            3       0       0     0.8      10     0.4       0       0
   86            1       0       0     0.8      10     0.4       0       0
   87            3       0       0     0.8      10     0.4       0       0
   91            3       0       0     0.8      10     0.4       0       0
   92            1       0       0     0.8      10     0.4       0       0
   93            1       0       0     0.8      10     0.4       0       0
   94            1       0       0     0.8      10     0.4       0       0
   95            3       0       0     0.8      10     0.4       0       0
   97            3       0       0     0.8      10     0.4       0       0
  101            3       0       0     0.8      10     0.4       0       0
  102            1       0       0     0.8      10     0.4       0       0
  103            1       0       0     0.8      10     0.4       0       0
  104            1       0       0     0.8      10     0.4       0       0
  105            3       0       0     0.8      10     0.4       0       0
  106            1       0       0     0.8      10     0.4       0       0
  107            3       0       0     0.8      10     0.4       0       0
  END QUAL-INPUT

  MON-ACCUM
*** BOD
*** <PLS >  Value at start of each month for accum rate of QUALOF (lb/ac.day)
*** x -  x  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC
   11       0.6  0.6  0.6  0.8  0.8  0.8  0.8  0.8  0.8  0.6  0.6  0.6
   12   14 0.18 0.18 0.18 0.24 0.24 0.24 0.28 0.28 0.28 0.28 0.18 0.18
   15   21  0.6  0.6  0.6  0.8  0.8  0.8  0.8  0.8  0.8  0.6  0.6  0.6
   22   24 0.18 0.18 0.18 0.24 0.24 0.24 0.28 0.28 0.28 0.28 0.18 0.18
   25   31  0.6  0.6  0.6  0.8  0.8  0.8  0.8  0.8  0.8  0.6  0.6  0.6
   32   34 0.18 0.18 0.18 0.24 0.24 0.24 0.28 0.28 0.28 0.28 0.18 0.18
   35   41  0.6  0.6  0.6  0.8  0.8  0.8  0.8  0.8  0.8  0.6  0.6  0.6
   42   44 0.18 0.18 0.18 0.24 0.24 0.24 0.28 0.28 0.28 0.28 0.18 0.18
   45       0.6  0.6  0.6  0.8  0.8  0.8  0.8  0.8  0.8  0.6  0.6  0.6
   46      0.41 0.41 0.41 0.65 0.65 0.65 0.65 0.65 0.65 0.41 0.41 0.41
   47   51  0.6  0.6  0.6  0.8  0.8  0.8  0.8  0.8  0.8  0.6  0.6  0.6
   52   54 0.18 0.18 0.18 0.24 0.24 0.24 0.28 0.28 0.28 0.28 0.18 0.18
   55       0.6  0.6  0.6  0.8  0.8  0.8  0.8  0.8  0.8  0.6  0.6  0.6
   56      0.41 0.41 0.41 0.65 0.65 0.65 0.65 0.65 0.65 0.41 0.41 0.41
   57   61  0.6  0.6  0.6  0.8  0.8  0.8  0.8  0.8  0.8  0.6  0.6  0.6
   62   64 0.18 0.18 0.18 0.24 0.24 0.24 0.28 0.28 0.28 0.28 0.18 0.18
   65       0.6  0.6  0.6  0.8  0.8  0.8  0.8  0.8  0.8  0.6  0.6  0.6
   66      0.41 0.41 0.41 0.65 0.65 0.65 0.65 0.65 0.65 0.41 0.41 0.41
   67   71  0.6  0.6  0.6  0.8  0.8  0.8  0.8  0.8  0.8  0.6  0.6  0.6
   72   74 0.18 0.18 0.18 0.24 0.24 0.24 0.28 0.28 0.28 0.28 0.18 0.18
   75       0.6  0.6  0.6  0.8  0.8  0.8  0.8  0.8  0.8  0.6  0.6  0.6
   76      0.41 0.41 0.41 0.65 0.65 0.65 0.65 0.65 0.65 0.41 0.41 0.41
   77   81  0.6  0.6  0.6  0.8  0.8  0.8  0.8  0.8  0.8  0.6  0.6  0.6
   82   84 0.18 0.18 0.18 0.24 0.24 0.24 0.28 0.28 0.28 0.28 0.18 0.18
   85       0.6  0.6  0.6  0.8  0.8  0.8  0.8  0.8  0.8  0.6  0.6  0.6
   86      0.41 0.41 0.41 0.65 0.65 0.65 0.65 0.65 0.65 0.41 0.41 0.41
   87   91  0.6  0.6  0.6  0.8  0.8  0.8  0.8  0.8  0.8  0.6  0.6  0.6
   92   94 0.18 0.18 0.18 0.24 0.24 0.24 0.28 0.28 0.28 0.28 0.18 0.18
   95  101  0.6  0.6  0.6  0.8  0.8  0.8  0.8  0.8  0.8  0.6  0.6  0.6
  102  104 0.18 0.18 0.18 0.24 0.24 0.24 0.28 0.28 0.28 0.28 0.18 0.18
  105       0.6  0.6  0.6  0.8  0.8  0.8  0.8  0.8  0.8  0.6  0.6  0.6
  106      0.41 0.41 0.41 0.65 0.65 0.65 0.65 0.65 0.65 0.41 0.41 0.41
  107       0.6  0.6  0.6  0.8  0.8  0.8  0.8  0.8  0.8  0.6  0.6  0.6
  END MON-ACCUM

  MON-SQOLIM
*** BOD
*** <PLS >  Value at start of month for limiting storage of QUALOF (lb/ac)
*** x -  x  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC
   11        9.   9.   9.  12.  12.  12.  12.  12.  12.   9.   9.   9.
   12   14  1.6  1.6  1.6   2.   2.   2.  2.4  2.4  2.4  2.4  1.6  1.6
   15   21   9.   9.   9.  12.  12.  12.  12.  12.  12.   9.   9.   9.
   22   24  1.6  1.6  1.6   2.   2.   2.  2.4  2.4  2.4  2.4  1.6  1.6
   25   31   9.   9.   9.  12.  12.  12.  12.  12.  12.   9.   9.   9.
   32   34  1.6  1.6  1.6   2.   2.   2.  2.4  2.4  2.4  2.4  1.6  1.6
   35   41   9.   9.   9.  12.  12.  12.  12.  12.  12.   9.   9.   9.
   42   44  1.6  1.6  1.6   2.   2.   2.  2.4  2.4  2.4  2.4  1.6  1.6
   45        9.   9.   9.  12.  12.  12.  12.  12.  12.   9.   9.   9.
   46        6.   6.   8.  12.  12.  12.  9.6  9.6  9.6   6.   6.   6.
   47   51   9.   9.   9.  12.  12.  12.  12.  12.  12.   9.   9.   9.
   52   54  1.6  1.6  1.6   2.   2.   2.  2.4  2.4  2.4  2.4  1.6  1.6
   55        9.   9.   9.  12.  12.  12.  12.  12.  12.   9.   9.   9.
   56        6.   6.   8.  12.  12.  12.  9.6  9.6  9.6   6.   6.   6.
   57   61   9.   9.   9.  12.  12.  12.  12.  12.  12.   9.   9.   9.
   62   64  1.6  1.6  1.6   2.   2.   2.  2.4  2.4  2.4  2.4  1.6  1.6
   65        9.   9.   9.  12.  12.  12.  12.  12.  12.   9.   9.   9.
   66        6.   6.   8.  12.  12.  12.  9.6  9.6  9.6   6.   6.   6.
   67   71   9.   9.   9.  12.  12.  12.  12.  12.  12.   9.   9.   9.
   72   74  1.6  1.6  1.6   2.   2.   2.  2.4  2.4  2.4  2.4  1.6  1.6
   75        9.   9.   9.  12.  12.  12.  12.  12.  12.   9.   9.   9.
   76        6.   6.   8.  12.  12.  12.  9.6  9.6  9.6   6.   6.   6.
   77   81   9.   9.   9.  12.  12.  12.  12.  12.  12.   9.   9.   9.
   82   84  1.6  1.6  1.6   2.   2.   2.  2.4  2.4  2.4  2.4  1.6  1.6
   85        9.   9.   9.  12.  12.  12.  12.  12.  12.   9.   9.   9.
   86        6.   6.   8.  12.  12.  12.  9.6  9.6  9.6   6.   6.   6.
   87   91   9.   9.   9.  12.  12.  12.  12.  12.  12.   9.   9.   9.
   92   94  1.6  1.6  1.6   2.   2.   2.  2.4  2.4  2.4  2.4  1.6  1.6
   95  101   9.   9.   9.  12.  12.  12.  12.  12.  12.   9.   9.   9.
  102  104  1.6  1.6  1.6   2.   2.   2.  2.4  2.4  2.4  2.4  1.6  1.6
  105        9.   9.   9.  12.  12.  12.  12.  12.  12.   9.   9.   9.
  106        6.   6.   8.  12.  12.  12.  9.6  9.6  9.6   6.   6.   6.
  107        9.   9.   9.  12.  12.  12.  12.  12.  12.   9.   9.   9.
  END MON-SQOLIM

  MON-IFLW-CONC
*** BOD
*** <PLS >  Conc of QUAL in interflow outflow for each month (mg/L)
*** x -  x  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC
   11  107  3.0  3.0  3.0  4.0  4.0  4.0  4.0  4.0  4.0  4.0  3.0  3.0
  END MON-IFLW-CONC

  MON-GRND-CONC
*** BOD
*** <PLS >  Value at start of month for conc of QUAL in groundwater (mg/L)
*** x -  x  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC
   11  107  3.0  3.0  3.0  4.0  4.0  4.0  4.0  4.0  4.0  4.0  3.0  3.0
  END MON-GRND-CONC
```

IMPLND Parameterization

```
  ATEMP-DAT
    <ILS >  El-diff ***
    x - x   (ft)    ***
   11          3103          60
   12          3686          60
   13          3947          60
   14          2894          60
   15          3767          60
   21          -375          60
   22           429          60
   23           968          60
   24           180          60
   25          -978          60
   31          -587          60
   32           653          60
   33          -197          60
   34           709          60
   35           -52          60
   41           -72          60
   42          1522          60
   43          2117          60
   44           611          60
   45          -163          60
   46           309          60
   47          -173          60
   51          -290          60
   52           616          60
   53          1122          60
   54           145          60
   55          -416          60
   56          -256          60
   57          -283          60
   61          -152          60
   62           303          60
   63          1134          60
   64           464          60
   65          -290          60
   66          -474          60
   67          -103          60
   71         -2589          60
   72         -2518          60
   74         -2742          60
   75         -2625          60
   76         -2600          60
   77         -2671          60
   81         -2207          60
   82         -1703          60
   83         -1009          60
   84         -1391          60
   85         -1908          60
   86         -2232          60
   87         -2172          60
   91         -1906          60
   92          -747          60
   93          -133          60
   94         -1120          60
   95         -1726          60
   97         -1207          60
  101           124          60
  102           477          60
  103          1996          60
  104            43          60
  105            62          60
  106            17          60
  107            32          60
  END ATEMP-DAT

  ICE-FLAG
    <ILS > Ice- ***
    x  - x flag ***
   11  107    1
  END ICE-FLAG

  SNOW-FLAGS
*** <ILS >
*** x -  x SNOP  VKM
   11  107    1    1
  END SNOW-FLAGS

  SNOW-PARM1
*** < ILS>       LAT     MELEV     SHADE    SNOWCF    COVIND     KMELT     TBASE
*** x  - x   degrees      (ft)                          (in)  (in/d.F)       (F)
   11            40      6523       0.5       1.0       3.0      0.03        32
   12            40      7106       0.5       1.0       3.0      0.03        32
   13            40      7367       0.5       1.0       3.0      0.03        32
   14            40      6314       0.5       1.0       3.0      0.03        32
   15            40      6687       0.5       1.0       3.0      0.03        32
   21            40      5045       0.2       1.0       3.0      0.04        33
   22            40      5849       0.2       1.0       3.0      0.04        33
   23            40      6388       0.2       1.0       3.0      0.04        33
   24            40      5600       0.2       1.0       3.0      0.04        33
   25            40      4433       0.2       1.0       3.0      0.04        33
   31            40      8153       0.5       1.1       3.0      0.05        32
   32            40      9393       0.5       1.1       3.0      0.05        32
   33            40      8543       0.5       1.1       3.0      0.05        32
   34            40      9449       0.5       1.1       3.0      0.05        32
   35            40      8688       0.5       1.1       3.0      0.05        32
   41            40      4888       0.5       1.1       3.0      0.04        32
   42            40      6482       0.5       1.1       3.0      0.04        32
   43            40      7077       0.5       1.1       3.0      0.04        32
   44            40      5571       0.5       1.1       3.0      0.04        32
   45            40      4797       0.5       1.1       3.0      0.04        32
   46            40      5269       0.5       1.1       3.0      0.04        32
   47            40      4787       0.5       1.1       3.0      0.04        32
   51            40      4600       0.5       1.0       3.0      0.03        33
   52            40      5506       0.5       1.0       3.0      0.03        33
   53            40      6012       0.5       1.0       3.0      0.03        33
   54            40      5035       0.5       1.0       3.0      0.03        33
   55            40      4474       0.5       1.0       3.0      0.03        33
   56            40      4634       0.5       1.0       3.0      0.03        33
   57            40      4607       0.5       1.0       3.0      0.03        33
   61            40      4808       0.5       1.1       3.0      0.03        32
   62            40      5263       0.5       1.1       3.0      0.03        32
   63            40      6094       0.5       1.1       3.0      0.03        32
   64            40      5424       0.5       1.1       3.0      0.03        32
   65            40      4670       0.5       1.1       3.0      0.03        32
   66            40      4486       0.5       1.1       3.0      0.03        32
   67            40      4857       0.5       1.1       3.0      0.03        32
   71            40      4504       0.5       1.1       3.0      0.03        32
   72            40      4575       0.5       1.1       3.0      0.03        32
   74            40      4351       0.5       1.1       3.0      0.03        32
   75            40      4468       0.5       1.1       3.0      0.03        32
   76            40      4493       0.5       1.1       3.0      0.03        32
   77            40      4422       0.5       1.1       3.0      0.03        32
   81            40      4886       0.5       1.1       3.0      0.03        32
   82            40      5390       0.5       1.1       3.0      0.03        32
   83            40      6084       0.5       1.1       3.0      0.03        32
   84            40      5702       0.5       1.1       3.0      0.03        32
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   85            40      5185       0.5       1.1       3.0      0.03        32
   86            40      4861       0.5       1.1       3.0      0.03        32
   87            40      4921       0.5       1.1       3.0      0.03        32
   91            40      5187       0.5       1.1       3.0      0.03        33
   92            40      6346       0.5       1.1       3.0      0.03        33
   93            40      6960       0.5       1.1       3.0      0.03        33
   94            40      5973       0.5       1.1       3.0      0.03        33
   95            40      5367       0.5       1.1       3.0      0.03        33
   97            40      5886       0.5       1.1       3.0      0.03        33
  101            40      4346       0.5       1.1       3.0      0.03        32
  102            40      4699       0.5       1.1       3.0      0.03        32
  103            40      6218       0.5       1.1       3.0      0.03        32
  104            40      4265       0.5       1.1       3.0      0.03        32
  105            40      4284       0.5       1.1       3.0      0.03        32
  106            40      4239       0.5       1.1       3.0      0.03        32
  107            40      4254       0.5       1.1       3.0      0.03        32
  END SNOW-PARM1

  SNOW-PARM2
    <ILS > ***
    # -  #     RDCSN     TSNOW    SNOEVP    CCFACT    MWATER    MGMELT ***
   11  17       0.12       33.       0.1       2.0       .03       .01
   21  27       0.12       32.       0.1       2.0       .03       .01
   31  37       0.12       33.       0.1       2.0       .03       .01
   41  47       0.12       34.       0.1       2.0       .03       .01
   51  57       0.12       32.       0.1       2.0       .03       .01
   61  67       0.12       32.       0.1       2.0       .03       .01
   71  77       0.12       32.       0.1       2.0       .03       .01
   81  87       0.12       32.       0.1       2.0       .03       .01
   91  97       0.12       33.       0.1       2.0       .03       .01
  101 107       0.12       32.       0.1       2.0       .03       .01
  END SNOW-PARM2

  MON-MELT-FAC
    <ILS > Degree-day factor at start of each month ***
    #  - #  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC ***
   11   17 .025 .025 .030 .032 .032 .032 .032 .032 .030 .028 .025 .025
   21   27 .028 .028 .028 .030 .032 .034 .034 .032 .030 .030 .030 .028
   31   37 .048 .048 .050 .050 .052 .054 .054 .052 .050 .050 .050 .048
   41   47 .025 .035 .030 .032 .032 .032 .032 .032 .030 .028 .025 .025
   51   57 .028 .028 .028 .030 .032 .034 .034 .032 .030 .030 .030 .028
   61   67 .028 .028 .028 .030 .032 .034 .034 .032 .030 .030 .030 .028
   71   77 .028 .028 .028 .030 .032 .034 .034 .032 .030 .030 .030 .028
   81   87 .028 .028 .028 .030 .032 .034 .034 .032 .030 .030 .030 .028
   91   97 .028 .028 .028 .030 .032 .034 .034 .032 .030 .030 .030 .028
  101  107 .028 .028 .028 .030 .032 .034 .034 .032 .030 .030 .030 .028
  END MON-MELT-FAC

  SNOW-INIT1
    <ILS > ***
    # -  # Pack-snow  Pack-ice Pack-watr    RDENPF      DULL    PAKTMP***
   11  107       0.4       .00       .04       0.2      400.      32.0
  END SNOW-INIT1

  SNOW-INIT2
    <ILS > ***
    # -  #    COVINX    XLNMLT    SKYCLR***
   11  107      0.50      0.10      0.90
  END SNOW-INIT2

  IWAT-PARM1
*** <ILS >        Flags
*** x -  x CSNO RTOP  VRS  VNN RTLI
   11  107    1    1    1    0    0
  END IWAT-PARM1

  IWAT-PARM2
*** <ILS >      LSUR     SLSUR      NSUR     RETSC
*** x -  x      (ft)                          (in)
   11            100   0.12454      0.15       0.1
   12             50   0.35527      0.15       0.1
   13             50   0.49780      0.25       0.1
   14            100   0.08780      0.15       0.1
   15            100   0.09894      0.15       0.1
   21            150   0.21661      0.15       0.1
   22             75   0.40888      0.15       0.1
   23             75   0.4608       0.15       0.1
   24            150   0.0170       0.15       0.1
   25            150   0.18652      0.15       0.1
   31            100   0.07948      0.15       0.1
   32             50   0.42709      0.15       0.1
   33             50   0.44404      0.15       0.1
   34            100   0.02378      0.15       0.1
   35            100   0.05728      0.15       0.1
   41            100   0.10202      0.15       0.1
   42             50   0.51329      0.15       0.1
   43             50   0.61333      0.15       0.1
   44            100   0.22839      0.15       0.1
   45            100   0.14787      0.15       0.1
   46            100   0.06345      0.15       0.1
   47            100   0.15505      0.15       0.1
   51            150   0.05650      0.15       0.1
   52             75   0.32579      0.15       0.1
   53             75   0.47597      0.15       0.1
   54            150   0.23308      0.15       0.1
   55            150   0.05806      0.15       0.1
   56            150   0.01249      0.15       0.1
   57            150   0.12248      0.15       0.1
   61            100   0.09095       0.1       0.1
   62            100   0.15765       0.1       0.1
   63             50   0.57439       0.1       0.1
   64            150   0.00077       0.1       0.1
   65            100   0.08327       0.1       0.1
   66            100   0.01945       0.1       0.1
   67            100   0.14125       0.1       0.1
   71            100   0.03164       0.1       0.1
   72            100   0.03197       0.1       0.1
   74            100   0.01354       0.1       0.1
   75            100   0.02558       0.1       0.1
   76            100   0.02755       0.1       0.1
   77            100   0.04269       0.1       0.1
   81            100   0.07241       0.1       0.1
   82            100   0.12732       0.1       0.1
   83             50   0.48583       0.1       0.1
   84            100   0.22824       0.1       0.1
   85            100   0.09015       0.1       0.1
   86            100   0.03232       0.1       0.1
   87            100   0.11526       0.1       0.1
   91            100   0.05638       0.1       0.1
   92             50   0.33178       0.1       0.1
   93             50   0.39861       0.1       0.1
   94             50   0.25781       0.1       0.1
   95            100   0.20036       0.1       0.1
   97            100   0.11406       0.1       0.1
  101            100   0.02180       0.1       0.1
  102            150   0.00933       0.1       0.1
  103            150   0.00251       0.1       0.1
  104            100   0.01786       0.1       0.1
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  105            100   0.01055       0.1       0.1
  106            100   0.01386       0.1       0.1
  107            100   0.04000       0.1       0.1
  END IWAT-PARM2

  IWAT-PARM3
*** <ILS >    PETMAX    PETMIN
*** x -  x   (deg F)   (deg F)
   11  107       35.       30.
  END IWAT-PARM3

  IWAT-STATE1
*** <ILS >  IWATER state variables (inches)
*** x -  x      RETS      SURS
   11  107      0.00      0.00
  END IWAT-STATE1

  SLD-PARM1
*** <ILS >     Flags
*** x -  x VASD VRSD SDOP
   11  107    0    0    1
  END SLD-PARM1

  SLD-PARM2
***                KEIM      JEIM    ACCSDP    REMSDP
*** <ILS >                           tons/      /day
*** x -  x                          ac.day
   11             0.1       1.8    0.0005      0.05
   12             0.1       1.8    0.0005      0.05
   13             0.1       1.8    0.0005      0.05
   14             0.1       1.8    0.0005      0.05
   15             1.2       1.8    0.0010      0.20
   21             0.1       1.8    0.0005      0.05
   22             0.1       1.8    0.0005      0.05
   23             0.1       1.8    0.0005      0.05
   24             0.1       1.8    0.0005      0.05
   25             1.2       1.8    0.0010      0.20
   31             0.1       1.8    0.0005      0.05
   32             0.1       1.8    0.0005      0.05
   33             0.1       1.8    0.0005      0.05
   34             0.1       1.8    0.0005      0.05
   35             1.2       1.8    0.0010      0.20
   41             0.1       1.8    0.0005      0.05
   42             0.1       1.8    0.0005      0.05
   43             0.1       1.8    0.0005      0.05
   44             0.1       1.8    0.0005      0.05
   45             1.2       1.8    0.0010      0.20
   46             0.8       1.8    0.0005      0.05
   47             0.8       1.8    0.0005      0.05
   51             0.1       1.8    0.0005      0.05
   52             0.1       1.8    0.0005      0.05
   53             0.1       1.8    0.0005      0.05
   54             0.1       1.8    0.0005      0.05
   55             1.2       1.8    0.0010      0.20
   56             0.8       1.8    0.0005      0.05
   57             0.8       1.8    0.0005      0.05
   61             0.1       1.8    0.0005      0.05
   62             0.1       1.8    0.0005      0.05
   63             0.1       1.8    0.0005      0.05
   64             0.1       1.8    0.0005      0.05
   65             1.2       1.8    0.0010      0.20
   66             0.8       1.8    0.0005      0.05
   67             0.8       1.8    0.0005      0.05
   71             0.1       1.8    0.0005      0.05
   72             0.1       1.8    0.0005      0.05
   74             0.1       1.8    0.0005      0.05
   75             1.2       1.8    0.0010      0.20
   76             0.8       1.8    0.0005      0.05
   77             0.8       1.8    0.0005      0.05
   81             0.1       1.8    0.0005      0.05
   82             0.1       1.8    0.0005      0.05
   83             0.1       1.8    0.0005      0.05
   84             0.1       1.8    0.0005      0.05
   85             1.2       1.8    0.0010      0.20
   86             0.8       1.8    0.0005      0.05
   87             0.8       1.8    0.0005      0.05
   91             0.1       1.8    0.0005      0.05
   92             0.1       1.8    0.0005      0.05
   93             0.1       1.8    0.0005      0.05
   94             0.1       1.8    0.0005      0.05
   95             1.2       1.8    0.0010      0.20
   97             0.8       1.8    0.0005      0.05
  101             0.1       1.8    0.0005      0.05
  102             0.1       1.8    0.0005      0.05
  103             0.1       1.8    0.0005      0.05
  104             0.1       1.8    0.0005      0.05
  105             1.2       1.8    0.0010      0.10
  106             0.8       1.8    0.0005      0.05
  107             0.8       1.8    0.0005      0.05
  END SLD-PARM2

  SLD-STOR
*** <ILS >  Solids storage (tons/acre)
*** x -  x
   11  107       0.05
  END SLD-STOR

  IWT-PARM1
*** <ILS >  Flags for section IWTGAS
*** x -  x WTFV CSNO
   11  107    0    1
  END IWT-PARM1

  IWT-PARM2
***          Second group of IWTGAS parms
*** <ILS >      ELEV      AWTF      BWTF
*** x -  x      (ft)   (deg F) (deg F/F)
   11  107     4400.       34.       0.3
  END IWT-PARM2

  MON-AWTF
*** <ILS >  Value of AWTF at start of each month (deg F)
*** x -  x  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC
   11  107 29.0 29.0 30.0 34.0 54.0 63.0 65.0 64.0 60.0 48.0 35.0 30.0
  END MON-AWTF

  MON-BWTF
*** <ILS >  Value of BWTF at start of each month (deg F/F)
*** x -  x  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC
   11  107  .55  .55  .65  .75  .90  1.1  1.2  1.1  1.0  .65  .65  .60
  END MON-BWTF

  NQUALS
*** <ILS >
*** x -  xNQUAL
   11  107     4
  END NQUALS
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```
  QUAL-PROPS
*** NH3 + NH4
*** <ILS >    Identifiers and Flags
*** x -  x      QUALID    QTID  QSD VPFW  QSO  VQO
   11  107NH3+NH4         LBS     0    0    1    0
  END QUAL-PROPS

  QUAL-INPUT
*** NH3 + NH4
***         Storage on surface and nonseasonal parameters
***            SQO   POTFW   ACQOP  SQOLIM   WSQOP
*** <ILS >  qty/ac qty/ton    qty/  qty/ac   in/hr
*** x -  x                   ac.day
   11       0.0297       0  0.0037  0.0756     0.5
   15       0.0297       0  0.0051  0.0756     0.5
   17       0.0297       0  0.0029  0.0756     0.5
   21       0.0297       0  0.0037  0.0756     0.5
   25       0.0297       0  0.0051  0.0756     0.5
   31       0.0297       0  0.0037  0.0756     0.5
   35       0.0297       0  0.0085  0.0756     0.5
   41       0.0297       0  0.0037  0.0756     0.5
   45       0.0297       0  0.0051  0.0756     0.5
   47       0.0297       0  0.0037  0.0756     0.5
   51       0.0297       0  0.0037  0.0756     0.5
   55       0.0297       0  0.0051  0.0756     0.5
   57       0.0297       0  0.0029  0.0756     0.5
   61       0.0297       0  0.0037  0.0756     0.5
   65       0.0297       0  0.0051  0.0756     0.5
   67       0.0297       0  0.0029  0.0756     0.5
   71       0.0297       0  0.0051  0.0756     0.5
   75       0.0297       0  0.0071  0.0756     0.5
   77       0.0297       0  0.0029  0.0756     0.5
   81       0.0297       0  0.0037  0.0756     0.5
   85       0.0297       0  0.0051  0.0756     0.5
   87       0.0297       0  0.0029  0.0756     0.5
   91       0.0297       0  0.0037  0.0756     0.5
   95       0.0297       0  0.0051  0.0756     0.5
   97       0.0297       0  0.0029  0.0756     0.5
  101       0.0297       0  0.0051  0.0756     0.5
  105       0.0297       0  0.0071  0.0756     0.5
  107       0.0297       0  0.0029  0.0756     0.5
  END QUAL-INPUT

  QUAL-PROPS
*** NO3
*** <ILS >    Identifiers and Flags
*** x -  x      QUALID    QTID  QSD VPFW  QSO  VQO
   11  107NO3             LBS     0    0    1    0
  END QUAL-PROPS

  QUAL-INPUT
*** NO3
***         Storage on surface and nonseasonal parameters
***            SQO   POTFW   ACQOP  SQOLIM   WSQOP
*** <ILS >  qty/ac qty/ton    qty/  qty/ac   in/hr
*** x -  x                   ac.day
   11         0.4       0 0.00532  0.2668     0.5
   15         0.4       0  0.0112  0.2668     0.5
   17         0.4       0 0.00532  0.2668     0.5
   21         0.4       0 0.00532  0.2668     0.5
   25         0.4       0  0.0112  0.2668     0.5
   31         0.4       0 0.00532  0.2668     0.5
   35         0.4       0  0.0112  0.2668     0.5
   41         0.4       0 0.00532  0.2668     0.5
   45         0.4       0  0.0112  0.2668     0.5
   47         0.4       0 0.00532  0.2668     0.5
   51         0.4       0 0.00532  0.2668     0.5
   55         0.4       0  0.0112  0.2668     0.5
   57         0.4       0 0.00532  0.2668     0.5
   61         0.4       0 0.00532  0.2668     0.5
   65         0.4       0  0.0112  0.2668     0.5
   67         0.4       0 0.00532  0.2668     0.5
   71         0.4       0 0.00532  0.2668     0.5
   75         0.4       0  0.0112  0.2668     0.5
   77         0.4       0 0.00532  0.2668     0.5
   81         0.4       0 0.00532  0.2668     0.5
   85         0.4       0  0.0112  0.2668     0.5
   87         0.4       0 0.00532  0.2668     0.5
   91         0.4       0 0.00532  0.2668     0.5
   95         0.4       0  0.0112  0.2668     0.5
   97         0.4       0 0.00532  0.2668     0.5
  101         0.4       0 0.00532  0.2668     0.5
  105         0.4       0  0.0112  0.2668     0.5
  107         0.4       0 0.00532  0.2668     0.5
  END QUAL-INPUT

  QUAL-PROPS
*** ORTHO P
*** <ILS >    Identifiers and Flags
*** x -  x      QUALID    QTID  QSD VPFW  QSO  VQO
   11  107ORTHO P         LBS     0    0    1    0
  END QUAL-PROPS

  QUAL-INPUT
*** ORTHO P
***         Storage on surface and nonseasonal parameters
***            SQO   POTFW   ACQOP  SQOLIM   WSQOP
*** <ILS >  qty/ac qty/ton    qty/  qty/ac   in/hr
*** x -  x                   ac.day
   11        0.05       0  0.0034  0.0163     0.5
   15        0.05       0  0.0034  0.0163     0.5
   17        0.05       0  0.0034  0.0163     0.5
   21        0.05       0  0.0034  0.0163     0.5
   25        0.05       0  0.0034  0.0163     0.5
   31        0.05       0  0.0034  0.0163     0.5
   35        0.05       0  0.0034  0.0163     0.5
   41        0.05       0  0.0034  0.0163     0.5
   45        0.05       0  0.0034  0.0163     0.5
   47        0.05       0  0.0034  0.0163     0.5
   51        0.05       0  0.0034  0.0163     0.5
   55        0.05       0  0.0034  0.0163     0.5
   57        0.05       0  0.0034  0.0163     0.5
   61        0.05       0  0.0034  0.0163     0.5
   65        0.05       0  0.0034  0.0163     0.5
   67        0.05       0  0.0034  0.0163     0.5
   71        0.05       0  0.0034  0.0163     0.5
   75        0.05       0  0.0034  0.0163     0.5
   77        0.05       0  0.0034  0.0163     0.5
   81        0.05       0  0.0034  0.0163     0.5
   85        0.05       0  0.0034  0.0163     0.5
   87        0.05       0  0.0034  0.0163     0.5
   91        0.05       0  0.0034  0.0163     0.5
   95        0.05       0  0.0034  0.0163     0.5
   97        0.05       0  0.0034  0.0163     0.5
  101        0.05       0  0.0034  0.0163     0.5
  105        0.05       0  0.0034  0.0163     0.5
  107        0.05       0  0.0034  0.0163     0.5
  END QUAL-INPUT
```

```
  QUAL-PROPS
*** BOD
*** <ILS >    Identifiers and Flags
*** x -  x      QUALID    QTID  QSD VPFW  QSO  VQO
   11  107BOD             LBS     0    0    1    0
  END QUAL-PROPS

  QUAL-INPUT
*** BOD
***          Storage on surface and nonseasonal parameters
***             SQO   POTFW   ACQOP  SQOLIM   WSQOP
*** <ILS >  qty/ac qty/ton    qty/  qty/ac   in/hr
*** x -  x                   ac.day
   11            1       0    0.05       2     0.4
   15            1       0     0.1       2     0.4
   17            1       0     0.1       2     0.4
   21            1       0    0.05       2     0.4
   25            1       0     0.1       2     0.4
   31            1       0    0.05       2     0.4
   35            1       0     0.1       2     0.4
   41            1       0    0.05       2     0.4
   45            1       0     0.1       2     0.4
   47            1       0     0.1       2     0.4
   51            1       0    0.05       2     0.4
   55            1       0     0.1       2     0.4
   57            1       0     0.1       2     0.4
   61            1       0    0.05       2     0.4
   65            1       0     0.1       2     0.4
   67            1       0     0.1       2     0.4
   71            1       0    0.05       2     0.4
   75            1       0     0.1       2     0.4
   77            1       0     0.1       2     0.4
   81            1       0    0.05       2     0.4
   85            1       0     0.1       2     0.4
   87            1       0     0.1       2     0.4
   91            1       0    0.05       2     0.4
   95            1       0     0.1       2     0.4
   97            1       0     0.1       2     0.4
  101            1       0    0.05       2     0.4
  105            1       0     0.1       2     0.4
  107            1       0     0.1       2     0.4
  END QUAL-INPUT
```

RCHRES Parameterization

```
  GEN-INFO
***              Name         Nexits   Unit Systems   Printer
*** RCHRES                               t-series  Engl Metr LKFG
*** x -  x                                 in  out
   10     Sewage Canal            1         1    1   89    0    0    0    0
   14     City Drain              1         1    1   89    0    0    0    0
   16     Northwest Oil Drain     1         1    1   89    0    0    0    0
   18     Northwest Oil Drain     1         1    1   89    0    0    0    0
   19     NW Oil Drain Trib       1         1    1   89    0    0    0    0
   20     C-7 Ditch               1         1    1   89    0    0    0    0
   22     C-7 Ditch               1         1    1   89    0    0    0    0
   26     C-7 Ditch               1         1    1   89    0    0    0    0
   30     8000 West Drain         1         1    1   89    0    0    0    0
   32     Riter Canal             1         1    1   89    0    0    0    0
   34     Riter Canal             1         1    1   89    0    0    0    0
   38     Riter Canal             1         1    1   89    0    0    0    0
   40     Coon Canyon Creek       1         1    1   89    0    0    0    0
   42     Coon Canyon Creek       1         1    1   89    0    0    0    0
   43     Coon Canyon Creek       1         1    1   89    0    0    0    0
   44     Coon Canyon Creek       1         1    1   89    0    0    0    0
   46     Coon Canyon Creek       1         1    1   89    0    0    0    0
   48     Harkers Canyon Creek    1         1    1   89    0    0    0    0
   50     Lee Creek               1         1    1   89    0    0    0    0
   54     Lee Creek               1         1    1   89    0    0    0    0
   58     Lee Drain               1         1    1   89    0    0    0    0
   62     Lee Drain               1         1    1   89    0    0    0    0
   70     Goggin Drain            1         1    1   89    0    0    0    0
   80     Surplus Canal           1         1    1   96    0    0   93    0
  100     City Creek              1         1    1   89    0    0   93    0
  104     Dry Creek (SLC)         1         1    1   89    0    0    0    0
  105     City Creek              1         1    1   89    0    0    0    0
  110     City Creek              2         1    1   89    0    0    0    0
  120     City Creek              1         1    1   89    0    0    0    0
  130     City Creek              1         1    1   89    0    0    0    0
  140     City Creek              1         1    1   89    0    0    0    0
  150     1300 South Drain        1         1    1   89    0    0   93    0
  155     Red Butte Creek         1         1    1   89    0    0   93    0
  160     Red Butte Creek         1         1    1   89    0    0    0    0
  170     Red Butte Creek         1         1    1   89    0    0   93    0
  175     Red Butte Creek         1         1    1   89    0    0    0    0
  180     Red Butte Creek         1         1    1   89    0    0    0    0
  190     Red Butte Creek         1         1    1   89    0    0    0    0
  195     Red Butte Creek         1         1    1   89    0    0    0    0
  200     Emigration Creek        1         1    1   89    0    0   93    0
  202     Emigration Creek        1         1    1   89    0    0    0    0
  205     Emigration Creek        1         1    1   89    0    0    0    0
  210     Emigration Creek        1         1    1   89    0    0    0    0
  220     Emigration Creek        1         1    1   89    0    0    0    0
  230     Emigration Creek        1         1    1   89    0    0   93    0
  240     Emigration Creek        1         1    1   89    0    0    0    0
  250     Parleys Creek           1         1    1   89    0    0   93    0
  252     Parleys Creek           1         1    1   89    0    0    0    0
  255     Parleys Creek           1         1    1   89    0    0    0    0
  260     Parleys Creek           1         1    1   89    0    0    0    0
  265     Parleys Creek           1         1    1   89    0    0   93    0
  270     Mt. Dell Reservoir      2         1    1   89    0    0   93    0
  280     Mountain Dell Canyon    1         1    1   89    0    0   93    0
  282     Mountain Dell Canyon    1         1    1   89    0    0    0    0
  284     Mountain Dell Canyon    1         1    1   89    0    0    0    0
  290     Lambs Canyon            1         1    1   89    0    0    0    0
  292     Lambs Canyon            1         1    1   89    0    0    0    0
  294     Lambs Canyon            1         1    1   89    0    0    0    0
  300     Mill Creek              1         1    1   89    0    0   93    0
  304     Mill Creek              1         1    1   97    0    0   93    0
  305     Mill Creek              1         1    1   89    0    0    0    0
  306     Mill Creek              1         1    1   89    0    0    0    0
  307     Mill Creek              1         1    1   89    0    0    0    0
  308     Mill Creek              1         1    1   89    0    0    0    0
  310     Mill Creek              1         1    1   89    0    0    0    0
  312     Mill Creek              1         1    1   89    0    0    0    0
  314     Mill Creek              1         1    1   91    0    0   93    0
  316     Mill Creek              1         1    1   89    0    0    0    0
  318     Mill Creek              1         1    1   89    0    0    0    0
  320     Mill Creek              1         1    1   89    0    0    0    0
  322     Mill Creek              1         1    1   89    0    0    0    0
  324     Mill Creek              1         1    1   89    0    0    0    0
  325     Big Cottonwood Creek    1         1    1   89    0    0   93    0
  326     Big Cottonwood Creek    1         1    1   89    0    0    0    0
  327     Big Cottonwood Creek    1         1    1   89    0    0    0    0
  328     Big Cottonwood Creek    1         1    1   89    0    0    0    0
  329     Big Cottonwood Creek    1         1    1   89    0    0    0    0
  330     Big Cottonwood Creek    1         1    1   89    0    0    0    0
  331     Big Cottonwood Creek    1         1    1   89    0    0    0    0
  332     Neffs Creek             1         1    1   89    0    0    0    0
  333     Neffs Creek             1         1    1   89    0    0    0    0
  334     Big Cottonwood Creek    1         1    1   89    0    0    0    0
  335     Big Cottonwood Creek    2         1    1   89    0    0    0    0
  336     Big Cottonwood Creek    1         1    1   90    0    0   93    0
  338     Big Cottonwood Creek    1         1    1   89    0    0    0    0
  340     Big Cottonwood Creek    1         1    1   89    0    0    0    0
  342     Big Cottonwood Creek    1         1    1   89    0    0    0    0
  344     Big Cottonwood Creek    1         1    1   89    0    0    0    0
  350     Little Cottonwood       1         1    1   89    0    0   93    0
  352     Little Cottonwood       1         1    1   89    0    0    0    0
  355     Little Cottonwood       1         1    1   89    0    0    0    0
  360     Little Cottonwood       1         1    1   89    0    0    0    0
  370     Deaf Smith Fork         1         1    1   89    0    0   93    0
  372     Deaf Smith Fork         1         1    1   89    0    0    0    0
  374     Deaf Smith Fork         1         1    1   89    0    0    0    0
  380     Little Cottonwood       2         1    1   89    0    0    0    0
  384     Little Cottonwood       1         1    1   94    0    0    0    0
  388     Little Cottonwood       1         1    1   89    0    0    0    0
  392     Little Cottonwood       1         1    1   89    0    0    0    0
  396     Little Cottonwood       1         1    1   89    0    0    0    0
  400     Dry Creek               1         1    1   89    0    0   93    0
  404     Dry Creek               1         1    1   89    0    0    0    0
  408     Dry Creek               1         1    1   89    0    0    0    0
  412     Dry Creek               1         1    1   89    0    0    0    0
  416     Dry Creek               1         1    1   89    0    0    0    0
  417     South Fork Dry Creek    1         1    1   89    0    0   93    0
  418     South Fork Dry Creek    2         1    1   89    0    0    0    0
  419     Mid Fork Dry Creek      2         1    1   89    0    0    0    0
  420     Dry Creek               2         1    1   89    0    0    0    0
  422     Dry Creek               1         1    1   89    0    0   93    0
  424     Dry Creek               1         1    1   89    0    0    0    0
  425     Big Willow Creek        1         1    1   89    0    0   93    0
  430     Big Willow Creek        1         1    1   89    0    0    0    0
  435     Big Willow Creek        1         1    1   89    0    0    0    0
  440     Big Willow Creek        1         1    1   89    0    0    0    0
  442     Big Willow Creek        1         1    1   89    0    0    0    0
  444     Big Willow Creek        1         1    1   89    0    0    0    0
  446     Big Willow Creek        1         1    1   89    0    0   93    0
  450     Big Willow Creek        2         1    1   89    0    0    0    0
  454     Little Willow Creek     1         1    1   89    0    0   93    0
  458     Little Willow Creek     1         1    1   89    0    0    0    0
  462     Little Willow Creek     1         1    1   89    0    0    0    0
  464     Little Willow Creek     2         1    1   89    0    0    0    0
  470     Bear Canyon             2         1    1   89    0    0   93    0
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475	Corner Canyon Creek	1	1	1	89	0	0	93	0
480	Corner Canyon Creek	1	1	1	89	0	0	0	0
484	Corner Canyon Creek	1	1	1	89	0	0	0	0
486	Corner Canyon Creek	1	1	1	89	0	0	0	0
488	Corner Canyon Creek	1	1	1	89	0	0	0	0
490	Corner Canyon Creek	1	1	1	89	0	0	0	0
494	Corner Canyon Creek	2	1	1	89	0	0	0	0
500	Jordan River	1	1	1	89	0	0	93	0
505	Jordan River	1	1	1	98	0	0	93	0
510	Jordan River	1	1	1	89	0	0	93	0
515	Jordan River	1	1	1	89	0	0	93	0
520	Jordan River	2	1	1	89	0	0	93	0
525	Jordan River	1	1	1	89	0	0	93	0
527	4100 South Drain	1	1	1	89	0	0	93	0
528	4100 South Drain	1	1	1	89	0	0	0	0
529	4100 South Drain	1	1	1	89	0	0	0	0
530	Jordan River	1	1	1	89	0	0	93	0
532	4700 South Drain	1	1	1	89	0	0	93	0
534	4700 South Drain	1	1	1	89	0	0	0	0
535	Jordan River	1	1	1	89	0	0	93	0
537	5400 South Drain	1	1	1	89	0	0	93	0
538	5400 South Drain	1	1	1	89	0	0	93	0
539	5400 South Drain	1	1	1	89	0	0	0	0
540	Jordan River	1	1	1	89	0	0	93	0
542	7200 South Drain	1	1	1	89	0	0	93	0
545	Jordan River	1	1	1	89	0	0	93	0
547	9000 South Drain	1	1	1	89	0	0	93	0
548	9000 South Drain	1	1	1	89	0	0	0	0
549	9000 South Drain	1	1	1	89	0	0	0	0
550	Jordan River	1	1	1	95	0	0	93	0
555	Jordan River	2	1	1	89	0	0	93	0
560	Jordan River	1	1	1	89	0	0	93	0
565	Jordan River	1	1	1	89	0	0	93	0
570	Jordan River	1	1	1	89	0	0	93	0
575	Jordan River	3	1	1	89	0	0	93	0
576	Jordan River Trib	1	1	1	89	0	0	93	0
580	Jordan River	1	1	1	89	0	0	93	0
585	Kearns-Chesterfield	1	1	1	89	0	0	93	0
588	Decker Lake	1	1	1	89	0	0	0	0
590	Kearns-Chesterfield	1	1	1	89	0	0	0	0
595	Kearns-Chesterfield	1	1	1	89	0	0	0	0
602	Sandy Irrig Canal	1	1	1	89	0	0	0	0
605	Sandy Irrig Canal	2	1	1	89	0	0	0	0
610	Sandy Irrig Canal	2	1	1	89	0	0	0	0
614	Draper Irrig Canal	1	1	1	89	0	0	0	0
618	Draper Irrig Canal	1	1	1	89	0	0	0	0
620	Cherry Canyon	1	1	1	89	0	0	93	0
622	Draper Irrig Canal	1	1	1	89	0	0	0	0
625	East Jordan Canal	1	1	1	89	0	0	0	0
626	East Jordan Canal	2	1	1	89	0	0	0	0
628	East Jordan Canal	1	1	1	89	0	0	0	0
630	East Jordan Canal	2	1	1	89	0	0	0	0
634	East Jordan Canal	2	1	1	89	0	0	0	0
636	East Jordan Canal	1	1	1	89	0	0	0	0
637	East Jordan Canal	1	1	1	89	0	0	0	0
638	East Jordan Canal	1	1	1	89	0	0	0	0
640	East Jordan Canal	2	1	1	89	0	0	0	0
642	East Jordan Canal	1	1	1	89	0	0	0	0
644	East Jordan Canal	1	1	1	89	0	0	0	0
646	East Jordan Canal	2	1	1	89	0	0	0	0
650	Jordan & SLC Canal	1	1	1	89	0	0	0	0
654	Jordan & SLC Canal	2	1	1	89	0	0	0	0
658	Jordan & SLC Canal	2	1	1	89	0	0	0	0
662	Jordan & SLC Canal	2	1	1	89	0	0	0	0
664	Jordan & SLC Canal	2	1	1	89	0	0	0	0
666	Jordan & SLC Canal	1	1	1	89	0	0	0	0
668	Jordan & SLC Canal	2	1	1	89	0	0	0	0
670	Jordan & SLC Canal	2	1	1	89	0	0	0	0
672	Jordan & SLC Canal	1	1	1	89	0	0	0	0
674	Jordan & SLC Canal	1	1	1	89	0	0	0	0
700	Provo Res Canal	1	1	1	89	0	0	0	0
705	Provo Res Canal	2	1	1	89	0	0	0	0
706	Provo Res Canal Trib	1	1	1	89	0	0	0	0
710	Provo Res Canal	2	1	1	89	0	0	0	0
715	Provo Res Canal	1	1	1	89	0	0	0	0
718	Provo Res Canal	2	1	1	89	0	0	0	0
720	Utah Lake Dist Canal	1	1	1	89	0	0	0	0
724	Utah Lake Dist Canal	2	1	1	89	0	0	0	0
728	Utah Lake Dist Canal	1	1	1	89	0	0	0	0
732	Utah Lake Dist Canal	1	1	1	89	0	0	0	0
734	Utah Lake Dist Canal	2	1	1	89	0	0	0	0
736	Utah Lake Dist Canal	1	1	1	89	0	0	0	0
738	Utah Lake Dist Canal	2	1	1	89	0	0	0	0
740	Utah&Salt Lake Canal	1	1	1	89	0	0	0	0
742	Utah&Salt Lake Canal	2	1	1	89	0	0	0	0
744	Utah&Salt Lake Canal	2	1	1	89	0	0	0	0
746	Utah&Salt Lake Canal	2	1	1	89	0	0	0	0
748	Utah&Salt Lake Canal	1	1	1	89	0	0	0	0
750	Utah&Salt Lake Canal	2	1	1	89	0	0	0	0
752	Utah&Salt Lake Canal	1	1	1	89	0	0	0	0
754	Utah&Salt Lake Canal	2	1	1	89	0	0	0	0
756	Utah&Salt Lake Canal	2	1	1	89	0	0	0	0
758	Utah&Salt Lake Canal	2	1	1	89	0	0	0	0
759	Utah&Salt Lake Canal	1	1	1	89	0	0	0	0
760	South Jordan Canal	1	1	1	89	0	0	0	0
762	South Jordan Canal	2	1	1	89	0	0	0	0
764	South Jordan Canal	2	1	1	89	0	0	0	0
766	South Jordan Canal	1	1	1	89	0	0	0	0
768	South Jordan Canal	2	1	1	89	0	0	0	0
770	South Jordan Canal	1	1	1	89	0	0	0	0
772	South Jordan Canal	2	1	1	89	0	0	0	0
774	South Jordan Canal	2	1	1	89	0	0	0	0
776	South Jordan Canal	1	1	1	89	0	0	0	0
780	North Jordan Canal	1	1	1	89	0	0	0	0
784	North Jordan Canal	2	1	1	89	0	0	0	0
788	North Jordan Canal	2	1	1	89	0	0	0	0
792	North Jordan Canal	2	1	1	89	0	0	0	0
796	North Jordan Canal	1	1	1	89	0	0	0	0
798	North Jordan Canal	1	1	1	89	0	0	0	0
800	Barneys Creek	1	1	1	89	0	0	0	0
805	Barneys Creek	1	1	1	89	0	0	0	0
810	Barneys Creek	1	1	1	89	0	0	0	0
815	Clay Hollow	1	1	1	89	0	0	0	0
820	Barneys Creek	1	1	1	89	0	0	0	0
825	Bingham Creek	1	1	1	89	0	0	93	0
828	Bingham Creek	1	1	1	89	0	0	93	0
832	Bingham Creek	1	1	1	89	0	0	0	0
836	Bingham Creek	1	1	1	89	0	0	0	0
840	Bingham Creek	1	1	1	89	0	0	0	0
844	Bingham Creek	1	1	1	89	0	0	0	0
845	Bingham Creek	1	1	1	89	0	0	0	0
850	Wood Hollow Creek	1	1	1	89	0	0	93	0
855	Wood Hollow Creek	1	1	1	89	0	0	0	0
858	Wood Hollow Creek	1	1	1	89	0	0	0	0
860	Beef Hollow Creek	1	1	1	89	0	0	93	0
865	Beef Hollow Creek	1	1	1	89	0	0	0	0
900	Midas Creek	1	1	1	89	0	0	93	0
905	Midas Creek	1	1	1	89	0	0	0	0

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  910     Midas Creek             1         1    1   89    0    0    0    0
  912     Midas Creek             1         1    1   89    0    0    0    0
  915     Midas Creek             1         1    1   89    0    0    0    0
  920     Midas Creek             1         1    1   89    0    0    0    0
  925     Midas Creek             1         1    1   89    0    0    0    0
  930     Copper Creek            1         1    1   89    0    0    0    0
  935     Butterfield Creek       1         1    1   89    0    0    0    0
  940     Butterfield Creek       1         1    1   89    0    0    0    0
  950     Rose Creek              1         1    1   89    0    0   93    0
  955     Rose Creek              1         1    1   89    0    0    0    0
  960     Rose Creek              1         1    1   89    0    0    0    0
  965     Rose Creek              1         1    1   89    0    0    0    0
  970     Rose Creek              1         1    1   89    0    0    0    0
  972     Rose Creek              1         1    1   89    0    0    0    0
  975     Rose Creek              1         1    1   89    0    0    0    0
  980     Rose Creek              1         1    1   89    0    0    0    0
  985     Rose Creek              1         1    1   89    0    0    0    0
  END GEN-INFO

  HYDR-PARM1
***         Flags for HYDR section
***RCHRES   VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
*** x  - x  FG FG FG FG  possible    exit *** possible    exit     possible    exit
   10        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
   14        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
   16        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
   18        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
   19        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
   20        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
   22        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
   26        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
   30        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
   32        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
   34        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
   38        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
   40        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
   42        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
   43        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
   44        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
   46        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
   48        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
   50        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
   54        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
   58        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
   62        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
   70        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
   80        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  100        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  104        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  105        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  110        0  1  1  1    4  0  0  0  0       0  1  0  0  0       1  1  1  1  1
  120        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  130        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  140        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  150        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  155        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  160        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
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780	0	1	1	1	4	0	0	0	0	0	0	0	0	0	1	1	1	1	1
784	0	1	1	1	4	5	0	0	0	0	0	0	0	0	1	1	1	1	1
788	0	1	1	1	4	5	0	0	0	0	0	0	0	0	1	1	1	1	1
792	0	1	1	1	4	5	0	0	0	0	0	0	0	0	1	1	1	1	1
796	0	1	1	1	4	0	0	0	0	0	0	0	0	0	1	1	1	1	1
798	0	1	1	1	4	0	0	0	0	0	0	0	0	0	1	1	1	1	1

```
  800        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  805        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  810        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  815        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  820        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  825        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  828        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  832        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  836        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  840        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  844        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  845        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  850        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  855        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  858        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  860        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  865        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  900        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  905        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  910        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  912        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  915        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  920        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  925        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  930        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  935        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  940        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  950        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  955        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  960        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  965        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  970        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  972        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  975        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  980        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  985        0  1  1  1    4  0  0  0  0       0  0  0  0  0       1  1  1  1  1
  END HYDR-PARM1

  HYDR-PARM2
*** RCHRES FTBW FTBU        LEN      DELTH      STCOR         KS      DB50
*** x -  x                (miles)      (ft)       (ft)                  (in)
   10         0   10     5.0873       6.0     4206.2        0.5      0.01
   14         0   14     6.7243       6.7     4212.3        0.5      0.01
   16         0   16     1.4975       1.9     4210.0        0.5      0.01
   18         0   18     2.8683      13.1     4210.3        0.5      0.01
   19         0   19     1.9097    1756.9     4271.0        0.5      0.01
   20         0   20     2.7062       2.3     4204.8        0.5      0.01
   22         0   22     2.8182       8.6     4207.1        0.5      0.01
   26         0   26     2.4613      21.7     4215.8        0.5      0.01
   30         0   30     1.6727     213.4     4240.5        0.5      0.01
   32         0   32     2.8241       3.2     4237.5        0.5      0.01
   34         0   34     2.9884       1.2     4239.5        0.5      0.01
   38         0   38     1.7332      47.4     4239.5        0.5      0.01
   40         0   40     1.1238     143.2     4310.7        0.5      0.01
   42         0   42     1.0724     120.5     4453.9        0.5      0.01
   43         0   43     0.1343      26.8     4574.5        0.5      0.01
   44         0   44     1.4491     243.1     4601.2        0.5      0.01
   46         0   46     6.4401    2206.0     4844.3        0.5      0.01
   48         0   48     7.7867    3359.8     4844.3        0.5      0.01
   50         0   50     1.6311       2.6     4215.5        0.5      0.01
   54         0   54     2.3308      20.3     4218.1        0.5      0.01
   58         0   58     3.6198      12.7     4218.1        0.5      0.01
   62         0   62     1.7771       7.4     4230.7        0.5      0.01
   70         0   70     7.8028      11.7     4201.9        0.5      0.01
   80         0   80     7.4099      12.1     4213.6        0.5      0.01
  100         0  100     3.5419     437.9     4216.6        0.5      0.01
  104         0  104     2.6868    1763.2     5155.7        0.5      0.01
  105         0  105     2.6343     501.4     4654.4        0.5      0.01
  110         0  110     2.3118     532.5     5155.9        0.5      0.01
  120         0  120     2.2297     824.7     5688.4        0.5      0.01
  130         0  130     2.0212     931.9     6513.1        0.5      0.01
  140         0  140     1.1126     315.3     7445.0        0.5      0.01
  150         0  150     2.2874      42.6     4221.5        0.5      0.01
  155         0  155     2.1014     377.9     4264.1        0.5      0.01
  160         0  160     1.4282     342.8     4642.0        0.5      0.01
  170         0  170     1.2309     394.3     4984.8        0.5      0.01
  175         0  175     0.2873       5.7     5379.0        0.5      0.01
  180         0  180     0.8024     233.2     5380.0        0.5      0.01
  190         0  190     2.0641     637.6     5613.2        0.5      0.01
  195         0  195     1.6963       8.4     6250.8        0.5      0.01
  200         0  200     1.5320     106.9     4264.2        0.5      0.01
  202         0  202     1.0101     141.9     4371.1        0.5      0.01
  205         0  205     0.2628      23.1     4513.7        0.5      0.01
  210         0  210     2.6544     438.9     4536.8        0.5      0.01
  220         0  220     2.4116     275.0     4975.7        0.5      0.01
  230         0  230     3.9312     539.7     5250.7        0.5      0.01
  240         0  240     2.2834     803.8     5790.3        0.5      0.01
  250         0  250     2.3729     151.3     4241.6        0.5      0.01
  252         0  252     0.1016       6.4     4393.0        0.5      0.01
  255         0  255     1.4844     118.2     4399.4        0.5      0.01
  260         0  260     1.7350     210.9     4517.5        0.5      0.01
  265         0  265     5.3993     736.5     4728.4        0.5      0.01
  270         0  270     0.8131      46.9     5465.0        0.5      0.01
  280         0  280     1.9156     303.8     5777.3        0.5      0.01
  282         0  282     1.0714     215.6     6081.1        0.5      0.01
  284         0  284     2.4205     921.8     6296.7        0.5      0.01
  290         0  290     2.1964     445.6     5511.8        0.5      0.01
  292         0  292     5.1114    1800.8     5957.4        0.5      0.01
  294         0  294     2.9773     909.3     5957.4        0.5      0.01
  300         0  300     2.4182      26.3     4226.7        0.5      0.01
  304         0  304     0.2865       4.6     4252.9        0.5      0.01
  305         0  305     0.2565       8.7     4257.5        0.5      0.01
  306         0  306     0.4873      20.6     4266.3        0.5      0.01
  307         0  307     0.0531       2.5     4284.3        0.5      0.01
  308         0  308     1.8698     236.4     4284.3        0.5      0.01
  310         0  310     2.1544     369.4     4520.7        0.5      0.01
  312         0  312     0.6808     109.4     4890.1        0.5      0.01
  314         0  314     2.3053     594.5     4999.5        0.5      0.01
  316         0  316     1.1924     290.5     5594.0        0.5      0.01
  318         0  318     1.7524     507.1     5884.5        0.5      0.01
  320         0  320     2.8530     952.9     6391.6        0.5      0.01
  322         0  322     1.5794     686.7     7344.5        0.5      0.01
  324         0  324     1.8336     886.9     8031.2        0.5      0.01
  325         0  325     2.1560      23.9     4236.9        0.5      0.01
  326         0  326     0.3805       7.1     4293.2        0.5      0.01
  327         0  327     0.2299       4.9     4320.1        0.5      0.01
  328         0  328     2.2906      57.1     4260.8        0.5      0.01
  329         0  329     0.3047      17.6     4317.9        0.5      0.01
  330         0  330     1.1597      54.7     4335.5        0.5      0.01
  331         0  331     2.9788     280.0     4390.2        0.5      0.01
  332         0  332     3.7887     812.8     4345.5        0.5      0.01
  333         0  333     1.7720    1121.4     5158.3        0.5      0.01
  334         0  334     0.1288       1.3     4668.9        0.5      0.01
  335         0  335     1.4767     331.9     4668.9        0.5      0.01
  336         0  336     2.1461     658.7     5000.8        0.5      0.01
  338         0  338     3.6852    1184.2     5659.5        0.5      0.01
  340         0  340     3.4606     464.0     6843.7        0.5      0.01
  342         0  342     2.1068     471.9     7307.6        0.5      0.01
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344	0	344	2.8549	945.3	7779.5	0.5	0.01
350	0	350	4.2631	135.3	4244.4	0.5	0.01
352	0	352	0.1959	10.8	4379.8	0.5	0.01
355	0	355	0.8524	52.2	4390.6	0.5	0.01
360	0	360	3.9007	315.0	4442.8	0.5	0.01
370	0	370	1.3229	593.1	4757.8	0.5	0.01
372	0	372	1.7937	1916.2	5392.2	0.5	0.01
374	0	374	1.0454	1331.7	7308.3	0.5	0.01
380	0	380	1.4504	301.7	4757.8	0.5	0.01
384	0	384	2.6979	682.2	5059.5	0.5	0.01
388	0	388	3.7269	1647.1	5741.7	0.5	0.01
392	0	392	4.2036	1263.1	7388.8	0.5	0.01
396	0	396	1.1884	696.8	8635.6	0.5	0.01
400	0	400	2.3493	117.2	4293.5	0.5	0.01
404	0	404	0.4995	52.8	4410.7	0.5	0.01
408	0	408	0.9817	35.0	4463.4	0.5	0.01
412	0	412	0.8801	72.8	4498.5	0.5	0.01
416	0	416	4.4099	989.9	4571.3	0.5	0.01
417	0	417	0.8481	423.2	4814.4	0.5	0.01
418	0	418	1.7386	3209.7	5248.3	0.5	0.01
419	0	419	2.2049	3587.8	5269.8	0.5	0.01
420	0	420	0.1099	5.0	5561.1	0.5	0.01
422	0	422	2.3958	2299.2	5566.2	0.5	0.01
424	0	424	0.8929	1828.2	7865.4	0.5	0.01
425	0	425	1.4226	57.6	4312.1	0.5	0.01
430	0	430	1.5401	46.7	4369.7	0.5	0.01
435	0	435	1.6343	61.7	4416.4	0.5	0.01
440	0	440	1.7543	99.5	4478.1	0.5	0.01
442	0	442	0.0901	4.6	4577.6	0.5	0.01
444	0	444	0.3938	24.2	4582.2	0.5	0.01
446	0	446	2.5627	406.7	4606.4	0.5	0.01
450	0	450	1.5806	2209.4	5013.6	0.5	0.01
454	0	454	0.8418	159.5	4606.4	0.5	0.01
458	0	458	0.0763	11.1	4754.8	0.5	0.01
462	0	462	0.9602	446.2	4754.8	0.5	0.01
464	0	464	2.9739	5047.2	5181.8	0.5	0.01
470	0	470	2.4762	3937.5	4967.4	0.5	0.01
475	0	475	1.4444	75.4	4342.2	0.5	0.01
480	0	480	1.6055	54.6	4417.6	0.5	0.01
484	0	484	0.8923	90.6	4472.2	0.5	0.01
486	0	486	0.2169	42.7	4562.8	0.5	0.01
488	0	488	0.2530	53.0	4605.5	0.5	0.01
490	0	490	1.0631	384.2	4658.6	0.5	0.01
494	0	494	2.4341	1831.8	5038.7	0.5	0.01
500	0	500	8.0375	1.9	4210.0	0.5	0.01
505	0	505	4.4404	4.6	4211.9	0.5	0.01
510	0	510	2.6929	5.0	4216.6	0.5	0.01
515	0	515	1.8081	4.2	4221.5	0.5	0.01
520	0	520	1.3687	0.9	4225.8	0.5	0.01
525	0	525	3.3404	10.3	4226.7	0.5	0.01
527	0	527	0.9461	26.6	4247.0	0.5	0.01
528	0	528	1.2989	46.5	4273.6	0.5	0.01
529	0	529	1.9119	101.5	4301.8	0.5	0.01
530	0	530	1.0999	8.9	4236.9	0.5	0.01
532	0	532	1.6387	56.2	4239.4	0.5	0.01
534	0	534	0.7469	19.4	4295.7	0.5	0.01
535	0	535	2.4296	14.5	4245.9	0.5	0.01
537	0	537	0.3226	55.1	4253.0	0.5	0.01
538	0	538	1.4927	98.8	4308.1	0.5	0.01
539	0	539	0.4378	59.9	4406.9	0.5	0.01
540	0	540	1.5640	14.5	4260.4	0.5	0.01
542	0	542	2.6790	178.6	4274.1	0.5	0.01
545	0	545	2.5355	18.1	4274.9	0.5	0.01
547	0	547	1.1216	119.2	4293.0	0.5	0.01
548	0	548	0.2480	56.4	4412.2	0.5	0.01
549	0	549	1.0995	83.3	4468.6	0.5	0.01
550	0	550	0.6890	2.4	4293.0	0.5	0.01
555	0	555	2.7381	19.4	4295.4	0.5	0.01
560	0	560	2.0064	13.4	4314.8	0.5	0.01
565	0	565	1.5547	13.9	4328.3	0.5	0.01
570	0	570	2.0589	21.3	4342.2	0.5	0.01
575	0	575	3.0633	69.4	4363.4	0.5	0.01
576	0	576	3.0095	1351.1	4421.9	0.5	0.01
580	0	580	1.7002	48.1	4432.9	0.5	0.01
585	0	585	1.1506	6.8	4226.7	0.5	0.01
588	0	588	0.4103	6.8	4226.7	0.5	0.01
590	0	590	1.2795	24.5	4226.7	0.5	0.01
595	0	595	3.3883	211.9	4251.2	0.5	0.01
602	0	602	1.4835	28.6	4521.7	0.5	0.01
605	0	605	1.7922	51.9	4498.4	0.5	0.01
610	0	610	1.3871	57.3	4498.4	0.5	0.01
614	0	614	2.6462	3.0	4555.7	0.5	0.01
618	0	618	1.4743	4.2	4558.7	0.5	0.01
620	0	620	2.2715	3335.5	4616.2	0.5	0.01
622	0	622	5.0892	81.4	4481.4	0.5	0.01
625	0	625	2.9489	14.0	4428.1	0.5	0.01
626	0	626	0.7826	10.5	4442.2	0.5	0.01
628	0	628	2.5421	15.9	4452.7	0.5	0.01
630	0	630	2.0075	5.1	4463.5	0.5	0.01
634	0	634	1.8532	4.7	4463.5	0.5	0.01
636	0	636	1.7050	6.1	4468.2	0.5	0.01
637	0	637	0.8056	3.9	4474.2	0.5	0.01
638	0	638	0.8714	5.9	4472.2	0.5	0.01
640	0	640	0.8326	5.9	4472.2	0.5	0.01
642	0	642	1.4861	0.5	4472.2	0.5	0.01
644	0	644	2.8067	4.9	4476.5	0.5	0.01
646	0	646	2.8317	0.5	4481.0	0.5	0.01
650	0	650	3.8585	20.5	4356.9	0.5	0.01
654	0	654	2.9003	12.8	4377.4	0.5	0.01
658	0	658	2.8214	0.9	4390.2	0.5	0.01
662	0	662	1.4903	19.1	4391.1	0.5	0.01
664	0	664	2.5339	1.9	4410.2	0.5	0.01
666	0	666	2.1333	1.4	4410.8	0.5	0.01
668	0	668	3.6186	5.6	4410.8	0.5	0.01
670	0	670	1.1459	1.2	4416.4	0.5	0.01
672	0	672	3.0058	11.4	4417.6	0.5	0.01
674	0	674	1.9692	0.5	4429.0	0.5	0.01
700	0	700	2.0182	15.3	4648.1	0.5	0.01
705	0	705	4.0876	20.9	4663.4	0.5	0.01
706	0	706	5.9099	770.5	4678.4	0.5	0.01
710	0	710	2.0302	10.0	4684.3	0.5	0.01
715	0	715	3.6552	19.6	4694.3	0.5	0.01
718	0	718	2.7972	25.6	4713.9	0.5	0.01
720	0	720	5.4409	5.4	4550.6	0.5	0.01
724	0	724	1.8353	1.8	4556.0	0.5	0.01
728	0	728	2.2012	4.6	4557.8	0.5	0.01
732	0	732	2.3486	1.6	4562.4	0.5	0.01
734	0	734	2.4801	4.9	4564.0	0.5	0.01
736	0	736	1.1805	3.1	4568.9	0.5	0.01
738	0	738	1.9175	31.8	4572.0	0.5	0.01
740	0	740	2.7145	9.6	4444.4	0.5	0.01
742	0	742	5.3866	8.8	4453.9	0.5	0.01
744	0	744	1.5413	4.0	4462.7	0.5	0.01
746	0	746	2.6945	1.7	4466.7	0.5	0.01
748	0	748	2.7962	2.3	4466.0	0.5	0.01
750	0	750	2.5068	12.3	4466.0	0.5	0.01
752	0	752	1.9167	1.2	4478.3	0.5	0.01
754	0	754	2.8589	2.6	4479.5	0.5	0.01

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  756         0  756    3.2685       8.8    4482.1       0.5      0.01
  758         0  758    1.7749       9.9    4481.0       0.5      0.01
  759         0  759    1.1337     553.2    4492.5       0.5      0.01
  760         0  760    0.7549       4.6    4398.9       0.5      0.01
  762         0  762    1.2554       3.4    4403.5       0.5      0.01
  764         0  764    1.9491       1.6    4405.3       0.5      0.01
  766         0  766    2.7277       4.8    4405.3       0.5      0.01
  768         0  768    2.8414       6.7    4410.0       0.5      0.01
  770         0  770    1.9075       0.9    4416.8       0.5      0.01
  772         0  772    3.7870       6.3    4417.6       0.5      0.01
  774         0  774    0.4815       1.8    4423.9       0.5      0.01
  776         0  776    2.4226       5.5    4425.7       0.5      0.01
  780         0  780    1.2966       3.5    4286.8       0.5      0.01
  784         0  784    1.7858       4.9    4290.3       0.5      0.01
  788         0  788    1.1240      13.1    4295.2       0.5      0.01
  792         0  792    2.0254      10.2    4298.1       0.5      0.01
  796         0  796    2.1705       2.5    4298.1       0.5      0.01
  798         0  798    1.9583       5.3    4295.4       0.5      0.01
  800         0  800    0.1784       3.4    4575.0       0.5      0.01
  805         0  805    1.6686     168.0    4578.5       0.5      0.01
  810         0  810    6.2389    1095.3    4746.5       0.5      0.01
  815         0  815    7.8265    2700.7    4857.5       0.5      0.01
  820         0  820    0.4972     202.5    5841.8       0.5      0.01
  825         0  825    0.1888      18.8    4282.0       0.5      0.01
  828         0  828    1.4939     109.1    4300.8       0.5      0.01
  832         0  832    0.6785      56.2    4409.8       0.5      0.01
  836         0  836    0.9556      90.0    4466.0       0.5      0.01
  840         0  840    1.0310     107.4    4556.0       0.5      0.01
  844         0  844    4.7941     462.9    4663.4       0.5      0.01
  845         0  845    3.0201    1852.5    5330.5       0.5      0.01
  850         0  850    0.3505      76.9    4637.2       0.5      0.01
  855         0  855    1.8181     409.2    4714.3       0.5      0.01
  858         0  858    2.9325     824.7    5123.5       0.5      0.01
  860         0  860    2.5305     709.4    4481.0       0.5      0.01
  865         0  865    3.0036    1024.4    5190.4       0.5      0.01
  900         0  900    1.7397     102.8    4314.8       0.5      0.01
  905         0  905    0.9953      61.8    4417.6       0.5      0.01
  910         0  910    1.0974      83.1    4479.4       0.5      0.01
  912         0  912    0.0848       2.5    4562.5       0.5      0.01
  915         0  915    1.3070     119.3    4564.9       0.5      0.01
  920         0  920    1.2243     107.2    4684.3       0.5      0.01
  925         0  925    3.8029     379.7    4791.5       0.5      0.01
  930         0  930    1.2696     120.9    4791.5       0.5      0.01
  935         0  935    4.7189     660.0    4912.4       0.5      0.01
  940         0  940    5.2547    2757.9    5572.4       0.5      0.01
  950         0  950    0.6124      60.5    4363.4       0.5      0.01
  955         0  955    1.1254      58.2    4423.9       0.5      0.01
  960         0  960    1.1366      81.9    4482.1       0.5      0.01
  965         0  965    1.5467     130.4    4564.0       0.5      0.01
  970         0  970    2.2039     230.3    4694.3       0.5      0.01
  972         0  972    0.1203       0.4    4924.3       0.5      0.01
  975         0  975    1.0157     124.2    4924.3       0.5      0.01
  980         0  980    2.7780     465.3    5048.4       0.5      0.01
  985         0  985    3.0823    1272.1    5513.7       0.5      0.01
  END HYDR-PARM2

***  HYDR-IRRIG
***    RCHRES    IREXIT    IRMINV ***
***    x -  x            (ac-ft) ***
***  646              2         0
***  718              2         0
***  738              2         0
***  758              2         0
***  END HYDR-IRRIG

  HYDR-INIT
***          Initial conditions for HYDR section
***RCHRES        VOL  CAT Initial value  of COLIND     initial  value  of OUTDGT
*** x  - x     ac-ft      for each possible   exit  for each possible exit,ft3
   10              1
   14              1
   16              1
   18              1
   19              1
   20              1
   22              1
   26              1
   30              1
   32              1
   34              1
   38              1
   40              1
   42              1
   43              1
   44              1
   46              1
   48              1
   50              1
   54              1
   58              1
   62              1
   70              1
   80              1
  100              1
  104              1
  105              1
  110              1
  120              1
  130              1
  140              1
  150              1
  155              1
  160              1
  170              1
  175              4
  180              1
  190              1
  195              1
  200              1
  202              1
  205              1
  210              1
  220              1
  230              1
  240              1
  250              1
  252              2
  255              1
  260              1
  265              1
  270           2000
  280              1
  282              1
  284              1
  290              1
  292              1
  294              1
  300              1
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  940              1
  950              1
  955              1
  960              1
  965              1
  970              1
  972              1
  975              1
  980              1
  985              1
  END HYDR-INIT

  HT-BED-FLAGS
*** RCHRES Bed Heat Conductance Flags
*** x -  x BDFG TGFG TSTP
   10  985    2    3
  END HT-BED-FLAGS

  HEAT-PARM
*** RCHRES       ELEV     ELDAT    CFSAEX    KATRAD     KCOND     KEVAP
*** x -  x       (ft)      (ft)
   10            4209       -13     0.950     15.00      4.00      2.24
   14            4216        -6     0.950     15.00      4.00      2.24
   16            4211       -11     0.950     15.00      4.00      2.24
   18            4217        -5     0.950     15.00      4.00      2.24
   19            5149      -273     0.950     15.00      4.00      2.24
   20            4206       -16     0.950     15.00      4.00      2.24
   22            4211       -11     0.950     15.00      4.00      2.24
   26            4227         5     0.950     15.00      4.00      2.24
   30            4347       125     0.010      1.00      4.00      1.00
   32            4239        17     0.950     15.00      4.00      2.24
   34            4240        18     0.950     15.00      4.00      2.24
   38            4263        41     0.950     15.00      4.00      2.24
   40            4382       160     0.010      1.00      4.00      1.00
   42            4514       292     0.950     15.00      4.00      2.24
   43            4588       366     0.950     15.00      4.00      2.24
   44            4723       501     0.950     15.00      4.00      2.24
   46            5947     -1213     0.250     15.00      4.00      2.24
   48            6524      -636     0.250     15.00      4.00      2.24
   50            4217        -5     0.950     15.00      4.00      2.24
   54            4228         6     0.950     15.00      4.00      2.24
   58            4224         2     0.950     15.00      4.00      2.24
   62            4234        12     0.950     15.00      4.00      2.24
   70            4208       -14     0.950     15.00      4.00      2.24
   80            4220        -2     0.950     15.00      4.00      2.24
  100            4436      -448     0.010      1.00      4.00      1.00
  104            6037       615     0.500     15.00      4.00      2.24
  105            4905      -517     0.100     15.00      4.00      2.24
  110            5422         0     0.100     15.00      4.00      2.24
  120            6101       679     0.100     15.00      4.00      2.24
  130            6979      1557     0.100     15.00      4.00      2.24
  140            7603      2180     0.100     15.00      4.00      2.24
  150            4243        21     0.010      1.00      4.00      1.00
  155            4453      -431     0.010      1.00      4.00      1.00
  160            4813       -70     0.500     15.00      4.00      2.24
  170            5182      -240     0.250     15.00      4.00      2.24
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175	5382	-40	0.250	15.00	4.00	2.24
180	5497	74	0.250	15.00	4.00	2.24
190	5932	510	0.250	15.00	4.00	2.24
195	6255	833	0.250	15.00	4.00	2.24
200	4318	-566	0.010	1.00	4.00	1.00
202	4442	-442	0.500	15.00	4.00	2.24
205	4525	-359	0.500	15.00	4.00	2.24
210	4756	-128	0.500	15.00	4.00	2.24
220	5113	-309	0.250	15.00	4.00	2.24
230	5520	98	0.250	15.00	4.00	2.24
240	6192	770	0.250	15.00	4.00	2.24
250	4317	95	0.010	1.00	4.00	1.00
252	4396	-488	0.500	15.00	4.00	2.24
255	4458	-425	0.500	15.00	4.00	2.24
260	4623	-261	0.500	15.00	4.00	2.24
265	5097	-326	0.100	15.00	4.00	2.24
270	5488	66	0.100	15.00	4.00	2.24
280	5929	507	0.100	15.00	4.00	2.24
282	6189	767	0.100	15.00	4.00	2.24
284	6758	1335	0.100	15.00	4.00	2.24
290	5735	312	0.100	15.00	4.00	2.24
292	6858	1436	0.100	15.00	4.00	2.24
294	6412	990	0.100	15.00	4.00	2.24
300	4240	18	0.300	15.00	4.00	2.24
304	4255	33	0.300	15.00	4.00	2.24
305	4262	40	0.300	15.00	4.00	2.24
306	4277	55	0.300	15.00	4.00	2.24
307	4286	64	0.300	15.00	4.00	2.24
308	4403	181	0.300	15.00	4.00	2.24
310	4705	-178	0.300	15.00	4.00	2.24
312	4945	-309	0.300	15.00	4.00	2.24
314	5297	43	0.100	15.00	4.00	2.24
316	5739	485	0.100	15.00	4.00	2.24
318	6138	716	0.100	15.00	4.00	2.24
320	6868	1446	0.100	15.00	4.00	2.24
322	7688	2266	0.100	15.00	4.00	2.24
324	8475	3052	0.100	15.00	4.00	2.24
325	4249	27	0.500	15.00	4.00	2.24
326	4297	75	0.500	15.00	4.00	2.24
327	4323	-561	0.500	15.00	4.00	2.24
328	4289	67	0.500	15.00	4.00	2.24
329	4327	105	0.500	15.00	4.00	2.24
330	4363	141	0.500	15.00	4.00	2.24
331	4530	-724	0.100	15.00	4.00	2.24
332	4752	-132	0.500	15.00	4.00	2.24
333	5719	465	0.100	15.00	4.00	2.24
334	4670	-584	0.100	15.00	4.00	2.24
335	4835	-419	0.100	15.00	4.00	2.24
336	5330	76	0.100	15.00	4.00	2.24
338	6252	-2487	0.100	15.00	4.00	2.24
340	7076	-1663	0.100	15.00	4.00	2.24
342	7544	-1195	0.100	15.00	4.00	2.24
344	8252	-486	0.100	15.00	4.00	2.24
350	4312	90	0.500	15.00	4.00	2.24
352	4385	163	0.500	15.00	4.00	2.24
355	4417	-837	0.500	15.00	4.00	2.24
360	4600	-654	0.500	15.00	4.00	2.24
370	5054	-200	0.500	15.00	4.00	2.24
372	6350	1096	0.100	15.00	4.00	2.24
374	7974	-764	0.100	15.00	4.00	2.24
380	4909	-345	0.500	15.00	4.00	2.24
384	5401	147	0.100	15.00	4.00	2.24
388	6565	-2173	0.100	15.00	4.00	2.24
392	8020	-718	0.100	15.00	4.00	2.24
396	8984	245	0.100	15.00	4.00	2.24
400	4352	130	0.750	15.00	4.00	2.24
404	4437	215	0.750	15.00	4.00	2.24
408	4481	259	0.750	15.00	4.00	2.24
412	4535	313	0.750	15.00	4.00	2.24
416	5066	-188	0.750	15.00	4.00	2.24
417	5026	-228	0.750	15.00	4.00	2.24
418	6853	1599	0.250	15.00	4.00	2.24
419	7064	1810	0.250	15.00	4.00	2.24
420	5564	310	0.750	15.00	4.00	2.24
422	6716	1462	0.250	15.00	4.00	2.24
424	8779	41	0.250	15.00	4.00	2.24
425	4341	119	0.750	15.00	4.00	2.24
430	4393	171	0.750	15.00	4.00	2.24
435	4447	225	0.750	15.00	4.00	2.24
440	4528	-726	0.750	15.00	4.00	2.24
442	4580	-674	0.750	15.00	4.00	2.24
444	4594	-660	0.750	15.00	4.00	2.24
446	4810	-444	0.750	15.00	4.00	2.24
450	6118	864	0.250	15.00	4.00	2.24
454	4686	-568	0.750	15.00	4.00	2.24
458	4760	-494	0.750	15.00	4.00	2.24
462	4978	-276	0.750	15.00	4.00	2.24
464	7705	2451	0.250	15.00	4.00	2.24
470	6936	1682	0.250	15.00	4.00	2.24
475	4380	158	0.750	15.00	4.00	2.24
480	4445	-809	0.750	15.00	4.00	2.24
484	4517	-736	0.750	15.00	4.00	2.24
486	4584	-670	0.750	15.00	4.00	2.24
488	4632	-622	0.250	15.00	4.00	2.24
490	4851	-403	0.250	15.00	4.00	2.24
494	5955	701	0.250	15.00	4.00	2.24
500	4211	-11	0.700	15.00	4.00	2.24
505	4214	-8	0.500	15.00	4.00	2.24
510	4219	-665	0.500	15.00	4.00	2.24
515	4224	2	0.500	15.00	4.00	2.24
520	4226	4	0.950	15.00	4.00	2.24
525	4232	10	0.950	15.00	4.00	2.24
527	4260	38	0.010	1.00	4.00	1.00
528	4297	75	0.010	1.00	4.00	1.00
529	4353	131	0.010	1.00	4.00	1.00
530	4241	19	0.950	15.00	4.00	2.24
532	4268	46	0.010	1.00	4.00	1.00
534	4305	83	0.010	1.00	4.00	1.00
535	4253	31	0.950	15.00	4.00	2.24
537	4281	59	0.010	1.00	4.00	1.00
538	4358	136	0.010	1.00	4.00	1.00
539	4437	215	0.010	1.00	4.00	1.00
540	4268	46	0.950	15.00	4.00	2.24
542	4363	141	0.010	1.00	4.00	1.00
545	4284	62	0.500	15.00	4.00	2.24
547	4353	131	0.010	1.00	4.00	1.00
548	4440	218	0.010	1.00	4.00	1.00
549	4510	288	0.010	1.00	4.00	1.00
550	4294	72	0.500	15.00	4.00	2.24
555	4305	83	0.500	15.00	4.00	2.24
560	4322	100	0.500	15.00	4.00	2.24
565	4335	113	0.500	15.00	4.00	2.24
570	4353	131	0.500	15.00	4.00	2.24
575	4398	176	0.500	15.00	4.00	2.24
576	5097	875	0.500	15.00	4.00	2.24
579	4492	270	0.500	15.00	4.00	2.24
580	4457	235	0.500	15.00	4.00	2.24
585	4230	8	0.700	15.00	4.00	2.24

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  588          4230         8     0.700     15.00      4.00      2.24
  590          4239        17     0.700     15.00      4.00      2.24
  595          4357       135     0.010      1.00      4.00      1.00
  602          4536       314     0.010      1.00      4.00      1.00
  605          4524       302     0.950     15.00      4.00      2.24
  610          4527       305     0.950     15.00      4.00      2.24
  614          4557       335     0.950     15.00      4.00      2.24
  618          4561      -693     0.950     15.00      4.00      2.24
  620          6284      1030     0.250     15.00      4.00      2.24
  622          4522      -732     0.950     15.00      4.00      2.24
  625          4435      -819     0.950     15.00      4.00      2.24
  626          4447       225     0.010      1.00      4.00      1.00
  628          4461       239     0.950     15.00      4.00      2.24
  630          4466       244     0.950     15.00      4.00      2.24
  634          4466       244     0.950     15.00      4.00      2.24
  636          4471       249     0.950     15.00      4.00      2.24
  637          4476       254     0.950     15.00      4.00      2.24
  638          4475      -779     0.950     15.00      4.00      2.24
  640          4475      -779     0.950     15.00      4.00      2.24
  642          4472       250     0.950     15.00      4.00      2.24
  644          4479       257     0.950     15.00      4.00      2.24
  646          4481       259     0.950     15.00      4.00      2.24
  650          4367       145     0.010      1.00      4.00      1.00
  654          4384      -500     0.950     15.00      4.00      2.24
  658          4391      -863     0.950     15.00      4.00      2.24
  662          4401       179     0.950     15.00      4.00      2.24
  664          4411       189     0.950     15.00      4.00      2.24
  666          4411       189     0.950     15.00      4.00      2.24
  668          4414       192     0.950     15.00      4.00      2.24
  670          4417       195     0.950     15.00      4.00      2.24
  672          4423       201     0.950     15.00      4.00      2.24
  674          4429       207     0.950     15.00      4.00      2.24
  700          4656       434     0.950     15.00      4.00      2.24
  705          4674       452     0.950     15.00      4.00      2.24
  706          5064       842     0.950     15.00      4.00      2.24
  710          4689       467     0.950     15.00      4.00      2.24
  715          4704       482     0.950     15.00      4.00      2.24
  718          4727       505     0.950     15.00      4.00      2.24
  720          4553       331     0.950     15.00      4.00      2.24
  724          4557       335     0.950     15.00      4.00      2.24
  728          4560       338     0.950     15.00      4.00      2.24
  732          4563       341     0.950     15.00      4.00      2.24
  734          4566       344     0.950     15.00      4.00      2.24
  736          4570       348     0.950     15.00      4.00      2.24
  738          4588       366     0.950     15.00      4.00      2.24
  740          4449       227     0.950     15.00      4.00      2.24
  742          4458       236     0.950     15.00      4.00      2.24
  744          4465       243     0.950     15.00      4.00      2.24
  746          4468       246     0.950     15.00      4.00      2.24
  748          4467       245     0.950     15.00      4.00      2.24
  750          4472       250     0.950     15.00      4.00      2.24
  752          4479       257     0.950     15.00      4.00      2.24
  754          4481       259     0.950     15.00      4.00      2.24
  756          4486       264     0.950     15.00      4.00      2.24
  758          4486       264     0.950     15.00      4.00      2.24
  759          4769       547     0.950     15.00      4.00      2.24
  760          4401       179     0.950     15.00      4.00      2.24
  762          4405       183     0.950     15.00      4.00      2.24
  764          4406       184     0.950     15.00      4.00      2.24
  766          4408       186     0.950     15.00      4.00      2.24
  768          4413       191     0.950     15.00      4.00      2.24
  770          4417       195     0.950     15.00      4.00      2.24
  772          4421       199     0.950     15.00      4.00      2.24
  774          4425       203     0.950     15.00      4.00      2.24
  776          4428       206     0.950     15.00      4.00      2.24
  780          4289        67     0.950     15.00      4.00      2.24
  784          4293        71     0.950     15.00      4.00      2.24
  788          4302        80     0.950     15.00      4.00      2.24
  792          4303        81     0.950     15.00      4.00      2.24
  796          4299        77     0.950     15.00      4.00      2.24
  798          4298        76     0.950     15.00      4.00      2.24
  800          4577       355     0.950     15.00      4.00      2.24
  805          4662       440     0.950     15.00      4.00      2.24
  810          5294      1072     0.950     15.00      4.00      2.24
  815          6208      1986     0.950     15.00      4.00      2.24
  820          5943     -1217     0.250     15.00      4.00      2.24
  825          4291        69     0.950     15.00      4.00      2.24
  828          4355       133     0.950     15.00      4.00      2.24
  832          4438       216     0.950     15.00      4.00      2.24
  836          4511       289     0.950     15.00      4.00      2.24
  840          4610       388     0.950     15.00      4.00      2.24
  844          4895       673     0.950     15.00      4.00      2.24
  845          6257      2035     0.950     15.00      4.00      2.24
  850          4676       454     0.950     15.00      4.00      2.24
  855          4919       697     0.950     15.00      4.00      2.24
  858          5536     -1624     0.250     15.00      4.00      2.24
  860          4836       614     0.250     15.00      4.00      2.24
  865          5703     -1457     0.250     15.00      4.00      2.24
  900          4366       144     0.950     15.00      4.00      2.24
  905          4449       227     0.950     15.00      4.00      2.24
  910          4521       299     0.950     15.00      4.00      2.24
  912          4564       342     0.950     15.00      4.00      2.24
  915          4625       403     0.950     15.00      4.00      2.24
  920          4738       516     0.950     15.00      4.00      2.24
  925          4981       759     0.950     15.00      4.00      2.24
  930          4852       630     0.950     15.00      4.00      2.24
  935          5242      1020     0.950     15.00      4.00      2.24
  940          6951      -209     0.250     15.00      4.00      2.24
  950          4394       172     0.950     15.00      4.00      2.24
  955          4453       231     0.950     15.00      4.00      2.24
  960          4523       301     0.950     15.00      4.00      2.24
  965          4629       407     0.950     15.00      4.00      2.24
  970          4809       587     0.950     15.00      4.00      2.24
  972          4924       702     0.950     15.00      4.00      2.24
  975          4986       764     0.950     15.00      4.00      2.24
  980          5281     -1879     0.250     15.00      4.00      2.24
  985          6150     -1010     0.250     15.00      4.00      2.24
  END HEAT-PARM

  HT-BED-PARM
***         Bed Heat Conduction Parameters for Single and Two-layer Methods
*** RCHRES     MUDDEP     TGRND       KMUD     KGRND
*** x -  x       (ft)   (deg F)      (kcal/m2/C/hr)
   10   99      0.33                  50.       1.4
  100  299      0.33                  50.       1.4
  300  324      0.33                  50.       1.0
  325  349      0.33                  50.       1.4
  350  399      0.33                  50.       1.4
  400  499      0.33                  50.       1.4
  500  599      0.33                  10.       1.4
  600  799      0.33                  50.       1.4
  800  999      0.33                  50.       1.4
  END HT-BED-PARM

  MON-HT-TGRND
*** RCHRES  Monthly values of ground temperatures (deg F)
*** Different monthly temps for mountain and valley reaches
*** x -  x  TG1  TG2  TG3  TG4  TG5  TG6  TG7  TG8  TG9 TG10 TG11 TG12
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```
   10   44   32   32   34   39   53   67   77   77   74   59   50   37
   46   48   32   32   32   32   32   40   54   57   51   46   37   32
   50  100   32   32   34   39   53   67   77   77   74   59   50   37
  105  140   32   32   32   32   32   40   54   57   51   46   37   32
  150  160   32   32   34   39   53   67   77   77   74   59   50   37
  170  195   32   32   32   32   32   40   54   57   51   46   37   32
  205  210   32   32   34   39   53   67   77   77   74   59   50   37
  220  240   32   32   32   32   32   40   54   57   51   46   37   32
  250  260   32   32   34   39   53   67   77   77   74   59   50   37
  265  294   32   32   32   32   32   40   54   57   51   46   37   32
  300  310   32   32   34   39   53   67   77   77   74   59   50   37
  312  324   32   32   32   32   32   40   54   57   51   46   37   32
  325  330   32   32   34   39   53   67   77   77   74   59   50   37
  331        32   32   32   32   32   40   54   57   51   46   37   32
  332        32   32   34   39   53   67   77   77   74   59   50   37
  333  344   32   32   32   32   32   40   54   57   51   46   37   32
  350  370   32   32   34   39   53   67   77   77   74   59   50   37
  372  374   32   32   32   32   32   40   54   57   51   46   37   32
  380        32   32   34   39   53   67   77   77   74   59   50   37
  384  396   32   32   32   32   32   40   54   57   51   46   37   32
  400  416   32   32   34   39   53   67   77   77   74   59   50   37
  418  419   32   32   32   32   32   40   54   57   51   46   37   32
  420        32   32   34   39   53   67   77   77   74   59   50   37
  422  424   32   32   32   32   32   40   54   57   51   46   37   32
  425  446   32   32   34   39   53   67   77   77   74   59   50   37
  450        32   32   32   32   32   40   54   57   51   46   37   32
  454  462   32   32   34   39   53   67   77   77   74   59   50   37
  464  470   32   32   32   32   32   40   54   57   51   46   37   32
  475  486   32   32   34   39   53   67   77   77   74   59   50   37
  488  494   32   32   32   32   32   40   54   57   51   46   37   32
  500  618   32   32   34   39   53   67   77   77   74   59   50   37
  620        32   32   32   32   32   40   54   57   51   46   37   32
  622  815   32   32   34   39   53   67   77   77   74   59   50   37
  820        32   32   32   32   32   40   54   57   51   46   37   32
  825  850   32   32   34   39   53   67   77   77   74   59   50   37
  858  865   32   32   32   32   32   40   54   57   51   46   37   32
  900  935   32   32   34   39   53   67   77   77   74   59   50   37
  940        32   32   32   32   32   40   54   57   51   46   37   32
  950  975   32   32   34   39   53   67   77   77   74   59   50   37
  980  985   32   32   32   32   32   40   54   57   51   46   37   32
  END MON-HT-TGRND

  HEAT-INIT
*** RCHRES        TW    AIRTMP
*** x -  x   (deg F)   (deg F)
   10  985      40.0      34.0
  END HEAT-INIT

  SANDFG
*** RCHRES
*** x -  x SNDFG
   10  985     3
  END SANDFG

  SED-GENPARM
*** RCHRES    BEDWID    BEDWRN       POR
*** x -  x      (ft)      (ft)
   10  985      30.        8.       0.5
  END SED-GENPARM

  SAND-PM
*** RCHRES          D         W       RHO     KSAND    EXPSND
*** x -  x       (in)  (in/sec)  (gm/cm3)
   10          0.005      0.02       2.5       0.1         2
   14          0.005      0.02       2.5       0.1         2
   16          0.005      0.02       2.5       0.1         2
   18          0.005      0.02       2.5       0.1         2
   19          0.005      0.02       2.5       0.1         2
   20          0.005      0.02       2.5       0.1         2
   22          0.005      0.02       2.5       0.1         2
   26          0.005      0.02       2.5       0.1         2
   30          0.005      0.02       2.5       0.1         2
   32          0.005      0.02       2.5       0.1         2
   34          0.005      0.02       2.5       0.1         2
   38          0.005      0.02       2.5       0.1         2
   40          0.005      0.02       2.5       0.1         2
   42          0.005      0.02       2.5       0.1         2
   43          0.005      0.02       2.5       0.1         2
   44          0.005      0.02       2.5       0.1         2
   46          0.005      0.02       2.5       0.1         2
   48          0.005      0.02       2.5       0.1         2
   50          0.005      0.02       2.5       0.1         2
   54          0.005      0.02       2.5       0.1         2
   58          0.005      0.02       2.5       0.1         2
   62          0.005      0.02       2.5       0.1         2
   70          0.005      0.02       2.5       0.1         2
   80          0.005      0.02       2.5       0.1         2
  100          0.005      0.02       2.5       0.1         2
  104          0.005      0.02       2.5       0.1         2
  105          0.005      0.02       2.5       0.1         2
  110          0.005      0.02       2.5       0.1         2
  120          0.005      0.02       2.5       0.1         2
  130          0.005      0.02       2.5       0.1         2
  140          0.005      0.02       2.5       0.1         2
  150          0.005      0.02       2.5       0.1         2
  155          0.005      0.02       2.5       0.1         2
  160          0.005      0.02       2.5       0.1         2
  170          0.005      0.02       2.5       0.1         2
  175          0.005      0.02       2.5       0.1         2
  180          0.005      0.02       2.5       0.1         2
  190          0.005      0.02       2.5       0.1         2
  195          0.005      0.02       2.5       0.1         2
  200          0.005      0.02       2.5       0.1         2
  202          0.005      0.02       2.5       0.1         2
  205          0.005      0.02       2.5       0.1         2
  210          0.005      0.02       2.5       0.1         2
  220          0.005      0.02       2.5       0.1         2
  230          0.005      0.02       2.5       0.1         2
  240          0.005      0.02       2.5       0.1         2
  250          0.005      0.02       2.5       0.1         2
  252          0.005      0.02       2.5       0.1         2
  255          0.005      0.02       2.5       0.1         2
  260          0.005      0.02       2.5       0.1         2
  265          0.005      0.02       2.5       0.1         2
  270          0.005      0.02       2.5       0.1         2
  280          0.005      0.02       2.5       0.1         2
  282          0.005      0.02       2.5       0.1         2
  284          0.005      0.02       2.5       0.1         2
  290          0.005      0.02       2.5       0.1         2
  292          0.005      0.02       2.5       0.1         2
  294          0.005      0.02       2.5       0.1         2
  300          0.005      0.02       2.5       0.1         2
  304          0.005      0.02       2.5       0.1         2
  305          0.005      0.02       2.5       0.1         2
  306          0.005      0.02       2.5       0.1         2
  307          0.005      0.02       2.5       0.1         2
  308          0.005      0.02       2.5       0.1         2
  310          0.005      0.02       2.5       0.1         2
```

312	0.005	0.02	2.5	0.1	2
314	0.005	0.02	2.5	0.1	2
316	0.005	0.02	2.5	0.1	2
318	0.005	0.02	2.5	0.1	2
320	0.005	0.02	2.5	0.1	2
322	0.005	0.02	2.5	0.1	2
324	0.005	0.02	2.5	0.1	2
325	0.005	0.02	2.5	0.1	2
326	0.005	0.02	2.5	0.1	2
327	0.005	0.02	2.5	0.1	2
328	0.005	0.02	2.5	0.1	2
329	0.005	0.02	2.5	0.1	2
330	0.005	0.02	2.5	0.1	2
331	0.005	0.02	2.5	0.1	2
332	0.005	0.02	2.5	0.1	2
333	0.005	0.02	2.5	0.1	2
334	0.005	0.02	2.5	0.1	2
335	0.005	0.02	2.5	0.1	2
336	0.005	0.02	2.5	0.1	2
338	0.005	0.02	2.5	0.1	2
340	0.005	0.02	2.5	0.1	2
342	0.005	0.02	2.5	0.1	2
344	0.005	0.02	2.5	0.1	2
350	0.005	0.02	2.5	0.1	2
352	0.005	0.02	2.5	0.1	2
355	0.005	0.02	2.5	0.1	2
360	0.005	0.02	2.5	0.1	2
370	0.005	0.02	2.5	0.1	2
372	0.005	0.02	2.5	0.1	2
374	0.005	0.02	2.5	0.1	2
380	0.005	0.02	2.5	0.1	2
384	0.005	0.02	2.5	0.1	2
388	0.005	0.02	2.5	0.1	2
392	0.005	0.02	2.5	0.1	2
396	0.005	0.02	2.5	0.1	2
400	0.005	0.02	2.5	0.1	2
404	0.005	0.02	2.5	0.1	2
408	0.005	0.02	2.5	0.1	2
412	0.005	0.02	2.5	0.1	2
416	0.005	0.02	2.5	0.1	2
417	0.005	0.02	2.5	0.1	2
418	0.005	0.02	2.5	0.1	2
419	0.005	0.02	2.5	0.1	2
420	0.005	0.02	2.5	0.1	2
422	0.005	0.02	2.5	0.1	2
424	0.005	0.02	2.5	0.1	2
425	0.005	0.02	2.5	0.1	2
430	0.005	0.02	2.5	0.1	2
435	0.005	0.02	2.5	0.1	2
440	0.005	0.02	2.5	0.1	2
442	0.005	0.02	2.5	0.1	2
444	0.005	0.02	2.5	0.1	2
446	0.005	0.02	2.5	0.1	2
450	0.005	0.02	2.5	0.1	2
454	0.005	0.02	2.5	0.1	2
458	0.005	0.02	2.5	0.1	2
462	0.005	0.02	2.5	0.1	2
464	0.005	0.02	2.5	0.1	2
470	0.005	0.02	2.5	0.1	2
475	0.005	0.02	2.5	0.1	2
480	0.005	0.02	2.5	0.1	2
484	0.005	0.02	2.5	0.1	2
486	0.005	0.02	2.5	0.1	2
488	0.005	0.02	2.5	0.1	2
490	0.005	0.02	2.5	0.1	2
494	0.005	0.02	2.5	0.1	2
500	0.005	0.02	2.5	0.1	2
505	0.005	0.02	2.5	0.1	2
510	0.005	0.02	2.5	0.1	2
515	0.005	0.02	2.5	0.1	2
520	0.005	0.02	2.5	0.1	2
525	0.005	0.02	2.5	0.1	2
527	0.005	0.02	2.5	0.1	2
528	0.005	0.02	2.5	0.1	2
529	0.005	0.02	2.5	0.1	2
530	0.005	0.02	2.5	0.1	2
532	0.005	0.02	2.5	0.1	2
534	0.005	0.02	2.5	0.1	2
535	0.005	0.02	2.5	0.1	2
537	0.005	0.02	2.5	0.1	2
538	0.005	0.02	2.5	0.1	2
539	0.005	0.02	2.5	0.1	2
540	0.005	0.02	2.5	0.1	2
542	0.005	0.02	2.5	0.1	2
545	0.005	0.02	2.5	0.1	2
547	0.005	0.02	2.5	0.1	2
548	0.005	0.02	2.5	0.1	2
549	0.005	0.02	2.5	0.1	2
550	0.005	0.02	2.5	0.1	2
555	0.005	0.02	2.5	0.1	2
560	0.005	0.02	2.5	0.1	2
565	0.005	0.02	2.5	0.1	2
570	0.005	0.02	2.5	0.1	2
575	0.005	0.02	2.5	0.1	2
576	0.005	0.02	2.5	0.1	2
580	0.005	0.02	2.5	0.1	2
585	0.005	0.02	2.5	0.1	2
588	0.005	0.02	2.5	0.1	2
590	0.005	0.02	2.5	0.1	2
595	0.005	0.02	2.5	0.1	2
602	0.005	0.02	2.5	0.1	2
605	0.005	0.02	2.5	0.1	2
610	0.005	0.02	2.5	0.1	2
614	0.005	0.02	2.5	0.1	2
618	0.005	0.02	2.5	0.1	2
620	0.005	0.02	2.5	0.1	2
622	0.005	0.02	2.5	0.1	2
625	0.005	0.02	2.5	0.1	2
626	0.005	0.02	2.5	0.1	2
628	0.005	0.02	2.5	0.1	2
630	0.005	0.02	2.5	0.1	2
634	0.005	0.02	2.5	0.1	2
636	0.005	0.02	2.5	0.1	2
637	0.005	0.02	2.5	0.1	2
638	0.005	0.02	2.5	0.1	2
640	0.005	0.02	2.5	0.1	2
642	0.005	0.02	2.5	0.1	2
644	0.005	0.02	2.5	0.1	2
646	0.005	0.02	2.5	0.1	2
650	0.005	0.02	2.5	0.1	2
654	0.005	0.02	2.5	0.1	2
658	0.005	0.02	2.5	0.1	2
662	0.005	0.02	2.5	0.1	2
664	0.005	0.02	2.5	0.1	2
666	0.005	0.02	2.5	0.1	2
668	0.005	0.02	2.5	0.1	2
670	0.005	0.02	2.5	0.1	2
672	0.005	0.02	2.5	0.1	2

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  674          0.005      0.02       2.5       0.1         2
  700          0.005      0.02       2.5       0.1         2
  705          0.005      0.02       2.5       0.1         2
  706          0.005      0.02       2.5       0.1         2
  710          0.005      0.02       2.5       0.1         2
  715          0.005      0.02       2.5       0.1         2
  718          0.005      0.02       2.5       0.1         2
  720          0.005      0.02       2.5       0.1         2
  724          0.005      0.02       2.5       0.1         2
  728          0.005      0.02       2.5      0.01       1.5
  732          0.005      0.02       2.5       0.1         2
  734          0.005      0.02       2.5       0.1         2
  736          0.005      0.02       2.5       0.1         2
  738          0.005      0.02       2.5       0.1         2
  740          0.005      0.02       2.5       0.1         2
  742          0.005      0.02       2.5       0.1         2
  744          0.005      0.02       2.5       0.1         2
  746          0.005      0.02       2.5       0.1         2
  748          0.005      0.02       2.5       0.1         2
  750          0.005      0.02       2.5       0.1         2
  752          0.005      0.02       2.5       0.1         2
  754          0.005      0.02       2.5       0.1         2
  756          0.005      0.02       2.5       0.1         2
  758          0.005      0.02       2.5       0.1         2
  759          0.005      0.02       2.5       0.1         2
  760          0.005      0.02       2.5       0.1         2
  762          0.005      0.02       2.5       0.1         2
  764          0.005      0.02       2.5       0.1         2
  766          0.005      0.02       2.5       0.1         2
  768          0.005      0.02       2.5       0.1         2
  770          0.005      0.02       2.5       0.1         2
  772          0.005      0.02       2.5       0.1         2
  774          0.005      0.02       2.5       0.1         2
  776          0.005      0.02       2.5       0.1         2
  780          0.005      0.02       2.5       0.1         2
  784          0.005      0.02       2.5       0.1         2
  788          0.005      0.02       2.5       0.1         2
  792          0.005      0.02       2.5       0.1         2
  796          0.005      0.02       2.5       0.1         2
  798          0.005      0.02       2.5       0.1         2
  800          0.005      0.02       2.5       0.1         2
  805          0.005      0.02       2.5       0.1         2
  810          0.005      0.02       2.5       0.1         2
  815          0.005      0.02       2.5       0.1         2
  820          0.005      0.02       2.5       0.1         2
  825          0.005      0.02       2.5       0.1         2
  828          0.005      0.02       2.5       0.1         2
  832          0.005      0.02       2.5       0.1         2
  836          0.005      0.02       2.5       0.1         2
  840          0.005      0.02       2.5       0.1         2
  844          0.005      0.02       2.5       0.1         2
  845          0.005      0.02       2.5       0.1         2
  850          0.005      0.02       2.5       0.1         2
  855          0.005      0.02       2.5       0.1         2
  858          0.005      0.02       2.5       0.1         2
  860          0.005      0.02       2.5       0.1         2
  865          0.005      0.02       2.5       0.1         2
  900          0.005      0.02       2.5       0.1         2
  905          0.005      0.02       2.5       0.1         2
  910          0.005      0.02       2.5       0.1         2
  912          0.005      0.02       2.5       0.1         2
  915          0.005      0.02       2.5       0.1         2
  920          0.005      0.02       2.5       0.1         2
  925          0.005      0.02       2.5       0.1         2
  930          0.005      0.02       2.5       0.1         2
  935          0.005      0.02       2.5       0.1         2
  940          0.005      0.02       2.5       0.1         2
  950          0.005      0.02       2.5       0.1         2
  955          0.005      0.02       2.5       0.1         2
  960          0.005      0.02       2.5       0.1         2
  965          0.005      0.02       2.5       0.1         2
  970          0.005      0.02       2.5       0.1         2
  972          0.005      0.02       2.5       0.1         2
  975          0.005      0.02       2.5       0.1         2
  980          0.005      0.02       2.5       0.1         2
  985          0.005      0.02       2.5       0.1         2
  END SAND-PM

  SILT-CLAY-PM
*** SILT
*** RCHRES          D          W        RHO      TAUCD      TAUCS          M
*** x -  x       (in)  (in/sec)     gm/cm3     lb/ft2     lb/ft2  lb/ft2.d
   10          0.0004     0.0003        2.2     0.0014     0.0017      0.005
   14          0.0004     0.0003        2.2     0.0014     0.0037      0.005
   16          0.0004     0.0003        2.2     0.0027     0.0033      0.005
   18          0.0004     0.0003        2.2     0.0097     0.0117      0.005
   19          0.0004     0.0003        2.2     0.7030     1.4950      0.005
   20          0.0004     0.0003        2.2     0.0330     0.0385      0.005
   22          0.0004     0.0003        2.2     0.0282     0.0324      0.005
   26          0.0004     0.0003        2.2     0.0328     0.0729      0.005
   30          0.0004     0.0003        2.2     0.2350     0.4645      0.005
   32          0.0004     0.0003        2.2     0.0036     0.0157      0.005
   34          0.0004     0.0003        2.2     0.0006     0.0029      0.005
   38          0.0004     0.0003        2.2     0.0257     0.1480      0.005
   40          0.0004     0.0003        2.2     0.2650     0.4840      0.005
   42          0.0004     0.0003        2.2     0.1950     0.3155      0.005
   43          0.0004     0.0003        2.2     0.0000     0.0030      0.005
   44          0.0004     0.0003        2.2     0.2190     0.3815      0.005
   46          0.0004     0.0003        2.2     0.5750     0.9680      0.005
   48          0.0004     0.0003        2.2     0.4300     0.8005      0.005
   50          0.0004     0.0003        2.2     0.0031     0.0065      0.005
   54          0.0004     0.0003        2.2     0.0059     0.0133      0.005
   58          0.0004     0.0003        2.2     0.0033     0.0071      0.005
   62          0.0004     0.0003        2.2     0.0029     0.0060      0.005
   70          0.0004     0.0003        2.2     0.0054     0.0156      0.005
   80          0.0004     0.0003        2.2     0.0282     0.0490      0.005
  100          0.0004     0.0003        2.2     0.1990     0.4465      0.005
  104          0.0004     0.0003        2.2     0.4070     0.9660      0.005
  105          0.0004     0.0003        2.2     0.2420     0.6200      0.005
  110          0.0004     0.0003        2.2     0.0000     0.6270      0.005
  120          0.0004     0.0003        2.2     0.9820     1.4850      0.005
  130          0.0004     0.0003        2.2     0.7050     1.0700      0.005
  140          0.0004     0.0003        2.2     0.3300     0.4865      0.005
  150          0.0004     0.0003        2.2     0.0261     0.1005      0.005
  155          0.0004     0.0003        2.2     0.3420     0.7450      0.005
  160          0.0004     0.0003        2.2     0.5080     0.8950      0.005
  170          0.0004     0.0003        2.2     0.4500     0.8105      0.005
  175          0.0004     0.0003        2.2     0.0003     0.0003      0.005
  180          0.0004     0.0003        2.2     0.5210     0.8140      0.005
  190          0.0004     0.0003        2.2     0.4740     0.8005      0.005
  195          0.0004     0.0003        2.2     0.0075     0.0113      0.005
  200          0.0004     0.0003        2.2     0.2140     0.3825      0.005
  202          0.0004     0.0003        2.2     0.3500     0.5845      0.005
  205          0.0004     0.0003        2.2     0.0060     2.5000      0.005
  210          0.0004     0.0003        2.2     0.4640     0.8090      0.005
  220          0.0004     0.0003        2.2     0.2770     0.4810      0.005
  230          0.0004     0.0003        2.2     0.3580     0.5500      0.005
  240          0.0004     0.0003        2.2     0.8160     1.2050      0.005
```

250	0.0004	0.0003	2.2	0.5670	0.7225	0.005
252	0.0004	0.0003	2.2	0.0470	0.0841	0.005
255	0.0004	0.0003	2.2	0.1900	0.4950	0.005
260	0.0004	0.0003	2.2	0.1520	0.4925	0.005
265	0.0004	0.0003	2.2	0.1400	0.6535	0.005
270	0.0004	0.0003	2.2	0.0000	0.0000	0.005
280	0.0004	0.0003	2.2	0.4940	0.7120	0.005
282	0.0004	0.0003	2.2	0.4440	0.6855	0.005
284	0.0004	0.0003	2.2	0.7840	1.1900	0.005
290	0.0004	0.0003	2.2	0.6460	1.0300	0.005
292	0.0004	0.0003	2.2	0.8840	1.3100	0.005
294	0.0004	0.0003	2.2	0.4820	0.6605	0.005
300	0.0004	0.0003	2.2	0.1870	0.2110	0.005
304	0.0004	0.0003	2.2	0.0974	0.1580	0.005
305	0.0004	0.0003	2.2	0.0000	0.0620	0.005
306	0.0004	0.0003	2.2	0.2190	0.3645	0.005
307	0.0004	0.0003	2.2	0.0000	0.0000	0.005
308	0.0004	0.0003	2.2	0.3470	0.5900	0.005
310	0.0004	0.0003	2.2	0.8200	1.1350	0.005
312	0.0004	0.0003	2.2	0.6250	1.0000	0.005
314	0.0004	0.0003	2.2	0.9150	1.5450	0.005
316	0.0004	0.0003	2.2	0.7580	1.2750	0.005
318	0.0004	0.0003	2.2	0.9010	1.4450	0.005
320	0.0004	0.0003	2.2	0.7720	1.2000	0.005
322	0.0004	0.0003	2.2	0.6150	0.9380	0.005
324	0.0004	0.0003	2.2	0.5700	0.8710	0.005
325	0.0004	0.0003	2.2	0.0647	0.1930	0.005
326	0.0004	0.0003	2.2	0.0017	0.0022	0.005
327	0.0004	0.0003	2.2	0.0000	0.0001	0.005
328	0.0004	0.0003	2.2	0.1190	0.3630	0.005
329	0.0004	0.0003	2.2	0.0000	0.0000	0.005
330	0.0004	0.0003	2.2	0.1960	0.6910	0.005
331	0.0004	0.0003	2.2	0.1730	0.8130	0.005
332	0.0004	0.0003	2.2	0.2840	0.7495	0.005
333	0.0004	0.0003	2.2	0.2500	1.3800	0.005
334	0.0004	0.0003	2.2	0.0000	0.0000	0.005
335	0.0004	0.0003	2.2	0.0000	2.2700	0.005
336	0.0004	0.0003	2.2	1.0000	3.0000	0.005
338	0.0004	0.0003	2.2	1.0000	3.0000	0.005
340	0.0004	0.0003	2.2	0.6050	1.2150	0.005
342	0.0004	0.0003	2.2	0.6480	1.6100	0.005
344	0.0004	0.0003	2.2	0.5890	1.3450	0.005
350	0.0004	0.0003	2.2	0.1030	0.2530	0.005
352	0.0004	0.0003	2.2	0.0000	0.0012	0.005
355	0.0004	0.0003	2.2	0.1010	0.3235	0.005
360	0.0004	0.0003	2.2	0.1400	0.3235	0.005
370	0.0004	0.0003	2.2	0.5750	1.5550	0.005
372	0.0004	0.0003	2.2	1.0000	3.0000	0.005
374	0.0004	0.0003	2.2	1.0000	3.0000	0.005
380	0.0004	0.0003	2.2	0.3150	1.3650	0.005
384	0.0004	0.0003	2.2	0.8430	2.3300	0.005
388	0.0004	0.0003	2.2	1.0000	3.0000	0.005
392	0.0004	0.0003	2.2	0.7990	1.9650	0.005
396	0.0004	0.0003	2.2	0.8070	1.9600	0.005
400	0.0004	0.0003	2.2	0.0951	0.2940	0.005
404	0.0004	0.0003	2.2	0.1880	0.5200	0.005
408	0.0004	0.0003	2.2	0.0580	0.1050	0.005
412	0.0004	0.0003	2.2	0.1220	0.1880	0.005
416	0.0004	0.0003	2.2	0.3060	0.4980	0.005
417	0.0004	0.0003	2.2	0.0000	0.0000	0.005
418	0.0004	0.0003	2.2	0.2800	2.4050	0.005
419	0.0004	0.0003	2.2	0.2100	1.8500	0.005
420	0.0004	0.0003	2.2	0.0000	0.0000	0.005
422	0.0004	0.0003	2.2	1.0000	3.0000	0.005
424	0.0004	0.0003	2.2	1.0000	3.0000	0.005
425	0.0004	0.0003	2.2	0.0637	0.1335	0.005
430	0.0004	0.0003	2.2	0.0564	0.1050	0.005
435	0.0004	0.0003	2.2	0.0674	0.1260	0.005
440	0.0004	0.0003	2.2	0.0488	0.1130	0.005
442	0.0004	0.0003	2.2	0.0001	0.0002	0.005
444	0.0004	0.0003	2.2	0.0590	0.1190	0.005
446	0.0004	0.0003	2.2	0.0000	0.0000	0.005
450	0.0004	0.0003	2.2	0.5350	3.0000	0.005
454	0.0004	0.0003	2.2	0.0000	0.0000	0.005
458	0.0004	0.0003	2.2	0.0001	0.0045	0.005
462	0.0004	0.0003	2.2	0.3240	0.5935	0.005
464	0.0004	0.0003	2.2	0.3400	2.7350	0.005
470	0.0004	0.0003	2.2	0.2860	2.4450	0.005
475	0.0004	0.0003	2.2	0.0610	0.2925	0.005
480	0.0004	0.0003	2.2	0.0380	0.2415	0.005
484	0.0004	0.0003	2.2	0.0639	0.1740	0.005
486	0.0004	0.0003	2.2	0.0733	0.2940	0.005
488	0.0004	0.0003	2.2	0.0010	0.0022	0.005
490	0.0004	0.0003	2.2	0.1270	0.4930	0.005
494	0.0004	0.0003	2.2	0.2230	1.5250	0.005
500	0.0004	0.0003	2.2	0.0025	0.0028	0.005
505	0.0004	0.0003	2.2	0.0220	0.0243	0.005
510	0.0004	0.0003	2.2	0.0408	0.0525	0.005
515	0.0004	0.0003	2.2	0.0422	0.0515	0.005
520	0.0004	0.0003	2.2	0.0077	0.0283	0.005
525	0.0004	0.0003	2.2	0.0424	0.1245	0.005
527	0.0004	0.0003	2.2	0.0127	0.1350	0.005
528	0.0004	0.0003	2.2	0.0000	0.0000	0.005
529	0.0004	0.0003	2.2	0.0162	0.3045	0.005
530	0.0004	0.0003	2.2	0.0760	0.2960	0.005
532	0.0004	0.0003	2.2	0.0095	0.0181	0.005
534	0.0004	0.0003	2.2	0.0061	0.0112	0.005
535	0.0004	0.0003	2.2	0.0581	0.1890	0.005
537	0.0004	0.0003	2.2	0.0249	0.0563	0.005
538	0.0004	0.0003	2.2	0.0116	0.0262	0.005
539	0.0004	0.0003	2.2	0.0275	0.0623	0.005
540	0.0004	0.0003	2.2	0.0893	0.3295	0.005
542	0.0004	0.0003	2.2	0.0148	0.0330	0.005
545	0.0004	0.0003	2.2	0.0402	0.2610	0.005
547	0.0004	0.0003	2.2	0.0163	0.0362	0.005
548	0.0004	0.0003	2.2	0.0470	0.1050	0.005
549	0.0004	0.0003	2.2	0.0138	0.0305	0.005
550	0.0004	0.0003	2.2	0.0271	0.1490	0.005
555	0.0004	0.0003	2.2	0.0083	0.1550	0.005
560	0.0004	0.0003	2.2	0.0339	0.1450	0.005
565	0.0004	0.0003	2.2	0.0516	0.2020	0.005
570	0.0004	0.0003	2.2	0.0510	0.2200	0.005
575	0.0004	0.0003	2.2	0.0653	0.5360	0.005
576	0.0004	0.0003	2.2	0.1200	0.3255	0.005
580	0.0004	0.0003	2.2	0.1230	0.4015	0.005
585	0.0004	0.0003	2.2	0.0057	0.0229	0.005
588	0.0004	0.0003	2.2	0.0000	0.0000	0.005
590	0.0004	0.0003	2.2	0.0087	0.0396	0.005
595	0.0004	0.0003	2.2	0.0344	0.1242	0.005
602	0.0004	0.0003	2.2	0.0195	0.0467	0.005
605	0.0004	0.0003	2.2	0.0261	0.0623	0.005
610	0.0004	0.0003	2.2	0.0199	0.0720	0.005
614	0.0004	0.0003	2.2	0.0014	0.0052	0.005
618	0.0004	0.0003	2.2	0.0029	0.0091	0.005
620	0.0004	0.0003	2.2	0.2980	2.3300	0.005
622	0.0004	0.0003	2.2	0.0086	0.0272	0.005
625	0.0004	0.0003	2.2	0.0199	0.0652	0.005
626	0.0004	0.0003	2.2	0.0366	0.1350	0.005

628	0.0004	0.0003	2.2	0.0762	0.1360	0.005
630	0.0004	0.0003	2.2	0.0194	0.0584	0.005
634	0.0004	0.0003	2.2	0.0148	0.0586	0.005
636	0.0004	0.0003	2.2	0.0159	0.0937	0.005
637	0.0004	0.0003	2.2	0.0320	0.1390	0.005
638	0.0004	0.0003	2.2	0.0418	0.2180	0.005
640	0.0004	0.0003	2.2	0.0456	0.2170	0.005
642	0.0004	0.0003	2.2	0.0015	0.0100	0.005
644	0.0004	0.0003	2.2	0.0036	0.0508	0.005
646	0.0004	0.0003	2.2	0.0003	0.0060	0.005
650	0.0004	0.0003	2.2	0.0000	0.0571	0.005
654	0.0004	0.0003	2.2	0.0000	0.0260	0.005
658	0.0004	0.0003	2.2	0.0015	0.0054	0.005
662	0.0004	0.0003	2.2	0.0626	0.2055	0.005
664	0.0004	0.0003	2.2	0.0033	0.0122	0.005
666	0.0004	0.0003	2.2	0.0023	0.0102	0.005
668	0.0004	0.0003	2.2	0.0054	0.0229	0.005
670	0.0004	0.0003	2.2	0.0000	0.0143	0.005
672	0.0004	0.0003	2.2	0.0000	0.0526	0.005
674	0.0004	0.0003	2.2	0.0000	0.0026	0.005
700	0.0004	0.0003	2.2	0.0172	0.1400	0.005
705	0.0004	0.0003	2.2	0.0127	0.1030	0.005
706	0.0004	0.0003	2.2	0.1380	0.2630	0.005
710	0.0004	0.0003	2.2	0.0081	0.0927	0.005
715	0.0004	0.0003	2.2	0.0083	0.1070	0.005
718	0.0004	0.0003	2.2	0.0019	0.1460	0.005
720	0.0004	0.0003	2.2	0.0116	0.0283	0.005
724	0.0004	0.0003	2.2	0.0023	0.0049	0.005
728	0.0004	0.0003	2.2	0.0036	0.0071	0.005
732	0.0004	0.0003	2.2	0.0024	0.0145	0.005
734	0.0004	0.0003	2.2	0.0051	0.0266	0.005
736	0.0004	0.0003	2.2	0.0029	0.0611	0.005
738	0.0004	0.0003	2.2	0.0000	0.3675	0.005
740	0.0004	0.0003	2.2	0.0309	0.0996	0.005
742	0.0004	0.0003	2.2	0.0143	0.0465	0.005
744	0.0004	0.0003	2.2	0.0202	0.0559	0.005
746	0.0004	0.0003	2.2	0.0051	0.0187	0.005
748	0.0004	0.0003	2.2	0.0053	0.0230	0.005
750	0.0004	0.0003	2.2	0.0242	0.1275	0.005
752	0.0004	0.0003	2.2	0.0033	0.0178	0.005
754	0.0004	0.0003	2.2	0.0046	0.0242	0.005
756	0.0004	0.0003	2.2	0.0092	0.0723	0.005
758	0.0004	0.0003	2.2	0.0125	0.1365	0.005
759	0.0004	0.0003	2.2	0.0934	0.2475	0.005
760	0.0004	0.0003	2.2	0.0245	0.1310	0.005
762	0.0004	0.0003	2.2	0.0102	0.0527	0.005
764	0.0004	0.0003	2.2	0.0032	0.0185	0.005
766	0.0004	0.0003	2.2	0.0071	0.0385	0.005
768	0.0004	0.0003	2.2	0.0108	0.0501	0.005
770	0.0004	0.0003	2.2	0.0018	0.0114	0.005
772	0.0004	0.0003	2.2	0.0055	0.0376	0.005
774	0.0004	0.0003	2.2	0.0066	0.0890	0.005
776	0.0004	0.0003	2.2	0.0025	0.0479	0.005
780	0.0004	0.0003	2.2	0.0111	0.0515	0.005
784	0.0004	0.0003	2.2	0.0098	0.0438	0.005
788	0.0004	0.0003	2.2	0.0388	0.1755	0.005
792	0.0004	0.0003	2.2	0.0184	0.0798	0.005
796	0.0004	0.0003	2.2	0.0047	0.0195	0.005
798	0.0004	0.0003	2.2	0.0089	0.0471	0.005
800	0.0004	0.0003	2.2	0.0000	0.0003	0.005
805	0.0004	0.0003	2.2	0.1560	0.2850	0.005
810	0.0004	0.0003	2.2	0.2420	0.5135	0.005
815	0.0004	0.0003	2.2	0.2330	0.6130	0.005
820	0.0004	0.0003	2.2	0.2940	0.5325	0.005
825	0.0004	0.0003	2.2	0.0886	0.4600	0.005
828	0.0004	0.0003	2.2	0.0908	0.3145	0.005
832	0.0004	0.0003	2.2	0.1480	0.3955	0.005
836	0.0004	0.0003	2.2	0.1090	0.3545	0.005
840	0.0004	0.0003	2.2	0.0551	0.2155	0.005
844	0.0004	0.0003	2.2	0.0680	0.1420	0.005
845	0.0004	0.0003	2.2	0.2180	0.5825	0.005
850	0.0004	0.0003	2.2	0.2470	0.4280	0.005
855	0.0004	0.0003	2.2	0.2370	0.3685	0.005
858	0.0004	0.0003	2.2	0.2440	0.4460	0.005
860	0.0004	0.0003	2.2	0.2590	0.4680	0.005
865	0.0004	0.0003	2.2	0.2730	0.5170	0.005
900	0.0004	0.0003	2.2	0.1350	0.2575	0.005
905	0.0004	0.0003	2.2	0.1370	0.2565	0.005
910	0.0004	0.0003	2.2	0.1130	0.2000	0.005
912	0.0004	0.0003	2.2	0.2750	0.5150	0.005
915	0.0004	0.0003	2.2	0.1640	0.2910	0.005
920	0.0004	0.0003	2.2	0.1450	0.2695	0.005
925	0.0004	0.0003	2.2	0.0785	0.1895	0.005
930	0.0004	0.0003	2.2	0.1080	0.1720	0.005
935	0.0004	0.0003	2.2	0.1080	0.1820	0.005
940	0.0004	0.0003	2.2	0.7000	1.1650	0.005
950	0.0004	0.0003	2.2	0.2930	0.5010	0.005
955	0.0004	0.0003	2.2	0.1020	0.1825	0.005
960	0.0004	0.0003	2.2	0.1780	0.3045	0.005
965	0.0004	0.0003	2.2	0.2200	0.3300	0.005
970	0.0004	0.0003	2.2	0.2180	0.2760	0.005
972	0.0004	0.0003	2.2	0.0000	0.0000	0.005
975	0.0004	0.0003	2.2	0.2110	0.3540	0.005
980	0.0004	0.0003	2.2	0.2980	0.5285	0.005
985	0.0004	0.0003	2.2	0.5090	0.8330	0.005

END SILT-CLAY-PM

SILT-CLAY-PM

*** CLAY						
*** RCHRES	D	W	RHO	TAUCD	TAUCS	M
*** x - x	(in)	(in/sec)	gm/cm3	lb/ft2	lb/ft2	lb/ft2.d
10	0.0001	0.0001	2.0	0.0013	0.0016	0.01
14	0.0001	0.0001	2.0	0.0012	0.0028	0.01
16	0.0001	0.0001	2.0	0.0027	0.0032	0.01
18	0.0001	0.0001	2.0	0.0094	0.0114	0.01
19	0.0001	0.0001	2.0	0.5775	1.1300	0.01
20	0.0001	0.0001	2.0	0.0322	0.0370	0.01
22	0.0001	0.0001	2.0	0.0273	0.0310	0.01
26	0.0001	0.0001	2.0	0.0291	0.0681	0.01
30	0.0001	0.0001	2.0	0.1950	0.4360	0.01
32	0.0001	0.0001	2.0	0.0028	0.0147	0.01
34	0.0001	0.0001	2.0	0.0005	0.0028	0.01
38	0.0001	0.0001	2.0	0.0210	0.1388	0.01
40	0.0001	0.0001	2.0	0.2115	0.4548	0.01
42	0.0001	0.0001	2.0	0.1710	0.3010	0.01
43	0.0001	0.0001	2.0	0.0000	0.0030	0.01
44	0.0001	0.0001	2.0	0.1960	0.3450	0.01
46	0.0001	0.0001	2.0	0.5075	0.9293	0.01
48	0.0001	0.0001	2.0	0.3765	0.7213	0.01
50	0.0001	0.0001	2.0	0.0027	0.0054	0.01
54	0.0001	0.0001	2.0	0.0049	0.0116	0.01
58	0.0001	0.0001	2.0	0.0028	0.0064	0.01
62	0.0001	0.0001	2.0	0.0025	0.0056	0.01
70	0.0001	0.0001	2.0	0.0050	0.0114	0.01
80	0.0001	0.0001	2.0	0.0252	0.0474	0.01
100	0.0001	0.0001	2.0	0.1525	0.3595	0.01
104	0.0001	0.0001	2.0	0.3030	0.6990	0.01
105	0.0001	0.0001	2.0	0.1905	0.5363	0.01

110	0.0001	0.0001	2.0	0.0000	0.5355	0.01
120	0.0001	0.0001	2.0	0.8975	1.4200	0.01
130	0.0001	0.0001	2.0	0.6440	1.0200	0.01
140	0.0001	0.0001	2.0	0.3085	0.4660	0.01
150	0.0001	0.0001	2.0	0.0222	0.0698	0.01
155	0.0001	0.0001	2.0	0.3005	0.6910	0.01
160	0.0001	0.0001	2.0	0.4480	0.7910	0.01
170	0.0001	0.0001	2.0	0.3950	0.7045	0.01
175	0.0001	0.0001	2.0	0.0000	0.0003	0.01
180	0.0001	0.0001	2.0	0.4775	0.7548	0.01
190	0.0001	0.0001	2.0	0.4305	0.7698	0.01
195	0.0001	0.0001	2.0	0.0069	0.0108	0.01
200	0.0001	0.0001	2.0	0.1860	0.3585	0.01
202	0.0001	0.0001	2.0	0.3085	0.5370	0.01
205	0.0001	0.0001	2.0	0.0000	0.9250	0.01
210	0.0001	0.0001	2.0	0.4085	0.7028	0.01
220	0.0001	0.0001	2.0	0.2505	0.4225	0.01
230	0.0001	0.0001	2.0	0.3310	0.5218	0.01
240	0.0001	0.0001	2.0	0.7535	1.1600	0.01
250	0.0001	0.0001	2.0	0.5550	0.6843	0.01
252	0.0001	0.0001	2.0	0.0358	0.0821	0.01
255	0.0001	0.0001	2.0	0.1665	0.4050	0.01
260	0.0001	0.0001	2.0	0.1370	0.3523	0.01
265	0.0001	0.0001	2.0	0.1095	0.4543	0.01
270	0.0001	0.0001	2.0	0.0000	0.0000	0.01
280	0.0001	0.0001	2.0	0.4635	0.6838	0.01
282	0.0001	0.0001	2.0	0.4085	0.6540	0.01
284	0.0001	0.0001	2.0	0.7215	1.1400	0.01
290	0.0001	0.0001	2.0	0.5835	0.9820	0.01
292	0.0001	0.0001	2.0	0.8165	1.2575	0.01
294	0.0001	0.0001	2.0	0.4415	0.6400	0.01
300	0.0001	0.0001	2.0	0.1830	0.2078	0.01
304	0.0001	0.0001	2.0	0.0913	0.1493	0.01
305	0.0001	0.0001	2.0	0.0000	0.0605	0.01
306	0.0001	0.0001	2.0	0.2025	0.3498	0.01
307	0.0001	0.0001	2.0	0.0000	0.0000	0.01
308	0.0001	0.0001	2.0	0.3200	0.5615	0.01
310	0.0001	0.0001	2.0	0.7920	1.0875	0.01
312	0.0001	0.0001	2.0	0.5900	0.9485	0.01
314	0.0001	0.0001	2.0	0.8295	1.4625	0.01
316	0.0001	0.0001	2.0	0.6960	1.1950	0.01
318	0.0001	0.0001	2.0	0.8325	1.3700	0.01
320	0.0001	0.0001	2.0	0.7080	1.1400	0.01
322	0.0001	0.0001	2.0	0.5715	0.8985	0.01
324	0.0001	0.0001	2.0	0.5270	0.8318	0.01
325	0.0001	0.0001	2.0	0.0535	0.1680	0.01
326	0.0001	0.0001	2.0	0.0017	0.0021	0.01
327	0.0001	0.0001	2.0	0.0000	0.0001	0.01
328	0.0001	0.0001	2.0	0.0963	0.3168	0.01
329	0.0001	0.0001	2.0	0.0000	0.0000	0.01
330	0.0001	0.0001	2.0	0.1755	0.5805	0.01
331	0.0001	0.0001	2.0	0.1075	0.6670	0.01
332	0.0001	0.0001	2.0	0.2070	0.7138	0.01
333	0.0001	0.0001	2.0	0.1600	1.3150	0.01
334	0.0001	0.0001	2.0	0.0000	0.0000	0.01
335	0.0001	0.0001	2.0	0.0000	1.6350	0.01
336	0.0001	0.0001	2.0	1.0000	2.9750	0.01
338	0.0001	0.0001	2.0	1.0000	2.8400	0.01
340	0.0001	0.0001	2.0	0.5735	1.0300	0.01
342	0.0001	0.0001	2.0	0.6100	1.3075	0.01
344	0.0001	0.0001	2.0	0.5505	1.0950	0.01
350	0.0001	0.0001	2.0	0.0837	0.2230	0.01
352	0.0001	0.0001	2.0	0.0000	0.0002	0.01
355	0.0001	0.0001	2.0	0.0823	0.2730	0.01
360	0.0001	0.0001	2.0	0.1265	0.2975	0.01
370	0.0001	0.0001	2.0	0.5290	1.3775	0.01
372	0.0001	0.0001	2.0	1.0000	3.0000	0.01
374	0.0001	0.0001	2.0	1.0000	2.8275	0.01
380	0.0001	0.0001	2.0	0.0835	0.9290	0.01
384	0.0001	0.0001	2.0	0.7820	1.8725	0.01
388	0.0001	0.0001	2.0	1.0000	2.8400	0.01
392	0.0001	0.0001	2.0	0.7510	1.6600	0.01
396	0.0001	0.0001	2.0	0.7645	1.6200	0.01
400	0.0001	0.0001	2.0	0.0811	0.2920	0.01
404	0.0001	0.0001	2.0	0.1635	0.5178	0.01
408	0.0001	0.0001	2.0	0.0520	0.0947	0.01
412	0.0001	0.0001	2.0	0.1150	0.1680	0.01
416	0.0001	0.0001	2.0	0.2825	0.4415	0.01
417	0.0001	0.0001	2.0	0.0000	0.0000	0.01
418	0.0001	0.0001	2.0	0.1560	2.2700	0.01
419	0.0001	0.0001	2.0	0.1185	1.7200	0.01
420	0.0001	0.0001	2.0	0.0000	0.0000	0.01
422	0.0001	0.0001	2.0	1.0000	2.8375	0.01
424	0.0001	0.0001	2.0	1.0000	3.0000	0.01
425	0.0001	0.0001	2.0	0.0574	0.1225	0.01
430	0.0001	0.0001	2.0	0.0506	0.0954	0.01
435	0.0001	0.0001	2.0	0.0591	0.1073	0.01
440	0.0001	0.0001	2.0	0.0425	0.0901	0.01
442	0.0001	0.0001	2.0	0.0001	0.0001	0.01
444	0.0001	0.0001	2.0	0.0503	0.0931	0.01
446	0.0001	0.0001	2.0	0.0000	0.0000	0.01
450	0.0001	0.0001	2.0	0.3415	2.8875	0.01
454	0.0001	0.0001	2.0	0.0000	0.0000	0.01
458	0.0001	0.0001	2.0	0.0000	0.0044	0.01
462	0.0001	0.0001	2.0	0.2830	0.5723	0.01
464	0.0001	0.0001	2.0	0.2035	2.6200	0.01
470	0.0001	0.0001	2.0	0.1705	2.3250	0.01
475	0.0001	0.0001	2.0	0.0496	0.2515	0.01
480	0.0001	0.0001	2.0	0.0305	0.1948	0.01
484	0.0001	0.0001	2.0	0.0488	0.1600	0.01
486	0.0001	0.0001	2.0	0.0529	0.2695	0.01
488	0.0001	0.0001	2.0	0.0009	0.0019	0.01
490	0.0001	0.0001	2.0	0.0903	0.4668	0.01
494	0.0001	0.0001	2.0	0.1350	1.4575	0.01
500	0.0001	0.0001	2.0	0.0025	0.0027	0.01
505	0.0001	0.0001	2.0	0.0218	0.0241	0.01
510	0.0001	0.0001	2.0	0.0389	0.0512	0.01
515	0.0001	0.0001	2.0	0.0365	0.0502	0.01
520	0.0001	0.0001	2.0	0.0056	0.0269	0.01
525	0.0001	0.0001	2.0	0.0370	0.1148	0.01
527	0.0001	0.0001	2.0	0.0104	0.1180	0.01
528	0.0001	0.0001	2.0	0.0000	0.0000	0.01
529	0.0001	0.0001	2.0	0.0126	0.2775	0.01
530	0.0001	0.0001	2.0	0.0637	0.2830	0.01
532	0.0001	0.0001	2.0	0.0083	0.0165	0.01
534	0.0001	0.0001	2.0	0.0054	0.0104	0.01
535	0.0001	0.0001	2.0	0.0503	0.1820	0.01
537	0.0001	0.0001	2.0	0.0222	0.0542	0.01
538	0.0001	0.0001	2.0	0.0105	0.0252	0.01
539	0.0001	0.0001	2.0	0.0249	0.0599	0.01
540	0.0001	0.0001	2.0	0.0784	0.3170	0.01
542	0.0001	0.0001	2.0	0.0136	0.0318	0.01
545	0.0001	0.0001	2.0	0.0230	0.2540	0.01
547	0.0001	0.0001	2.0	0.0142	0.0340	0.01
548	0.0001	0.0001	2.0	0.0410	0.0980	0.01
549	0.0001	0.0001	2.0	0.0127	0.0295	0.01
550	0.0001	0.0001	2.0	0.0152	0.1460	0.01
555	0.0001	0.0001	2.0	0.0000	0.1540	0.01

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  560          0.0001    0.0001       2.0    0.0274    0.1420       0.01
  565          0.0001    0.0001       2.0    0.0424    0.2020       0.01
  570          0.0001    0.0001       2.0    0.0448    0.2180       0.01
  575          0.0001    0.0001       2.0    0.0000    0.5263       0.01
  576          0.0001    0.0001       2.0    0.1100    0.3063       0.01
  580          0.0001    0.0001       2.0    0.0993    0.6818       0.01
  585          0.0001    0.0001       2.0    0.0044    0.0182       0.01
  588          0.0001    0.0001       2.0    0.0000    0.0000       0.01
  590          0.0001    0.0001       2.0    0.0076    0.0195       0.01
  595          0.0001    0.0001       2.0    0.0293    0.0760       0.01
  602          0.0001    0.0001       2.0    0.0157    0.0424       0.01
  605          0.0001    0.0001       2.0    0.0212    0.0570       0.01
  610          0.0001    0.0001       2.0    0.0154    0.0650       0.01
  614          0.0001    0.0001       2.0    0.0010    0.0045       0.01
  618          0.0001    0.0001       2.0    0.0022    0.0080       0.01
  620          0.0001    0.0001       2.0    0.1820    2.2425       0.01
  622          0.0001    0.0001       2.0    0.0071    0.0193       0.01
  625          0.0001    0.0001       2.0    0.0162    0.0652       0.01
  626          0.0001    0.0001       2.0    0.0312    0.1350       0.01
  628          0.0001    0.0001       2.0    0.0636    0.1358       0.01
  630          0.0001    0.0001       2.0    0.0151    0.0584       0.01
  634          0.0001    0.0001       2.0    0.0124    0.0585       0.01
  636          0.0001    0.0001       2.0    0.0135    0.0937       0.01
  637          0.0001    0.0001       2.0    0.0293    0.1390       0.01
  638          0.0001    0.0001       2.0    0.0368    0.2180       0.01
  640          0.0001    0.0001       2.0    0.0438    0.2140       0.01
  642          0.0001    0.0001       2.0    0.0013    0.0096       0.01
  644          0.0001    0.0001       2.0    0.0032    0.0494       0.01
  646          0.0001    0.0001       2.0    0.0002    0.0058       0.01
  650          0.0001    0.0001       2.0    0.0000    0.0512       0.01
  654          0.0001    0.0001       2.0    0.0000    0.0240       0.01
  658          0.0001    0.0001       2.0    0.0013    0.0053       0.01
  662          0.0001    0.0001       2.0    0.0533    0.1938       0.01
  664          0.0001    0.0001       2.0    0.0028    0.0114       0.01
  666          0.0001    0.0001       2.0    0.0019    0.0097       0.01
  668          0.0001    0.0001       2.0    0.0045    0.0220       0.01
  670          0.0001    0.0001       2.0    0.0000    0.0128       0.01
  672          0.0001    0.0001       2.0    0.0000    0.0491       0.01
  674          0.0001    0.0001       2.0    0.0000    0.0024       0.01
  700          0.0001    0.0001       2.0    0.0111    0.1238       0.01
  705          0.0001    0.0001       2.0    0.0083    0.0909       0.01
  706          0.0001    0.0001       2.0    0.1200    0.2620       0.01
  710          0.0001    0.0001       2.0    0.0052    0.0776       0.01
  715          0.0001    0.0001       2.0    0.0054    0.0930       0.01
  718          0.0001    0.0001       2.0    0.0000    0.1238       0.01
  720          0.0001    0.0001       2.0    0.0094    0.0261       0.01
  724          0.0001    0.0001       2.0    0.0022    0.0045       0.01
  728          0.0001    0.0001       2.0    0.0034    0.0064       0.01
  732          0.0001    0.0001       2.0    0.0021    0.0139       0.01
  734          0.0001    0.0001       2.0    0.0043    0.0230       0.01
  736          0.0001    0.0001       2.0    0.0026    0.0566       0.01
  738          0.0001    0.0001       2.0    0.0000    0.3408       0.01
  740          0.0001    0.0001       2.0    0.0245    0.0963       0.01
  742          0.0001    0.0001       2.0    0.0113    0.0448       0.01
  744          0.0001    0.0001       2.0    0.0159    0.0549       0.01
  746          0.0001    0.0001       2.0    0.0041    0.0183       0.01
  748          0.0001    0.0001       2.0    0.0045    0.0225       0.01
  750          0.0001    0.0001       2.0    0.0212    0.1240       0.01
  752          0.0001    0.0001       2.0    0.0029    0.0174       0.01
  754          0.0001    0.0001       2.0    0.0039    0.0236       0.01
  756          0.0001    0.0001       2.0    0.0071    0.0706       0.01
  758          0.0001    0.0001       2.0    0.0104    0.1328       0.01
  759          0.0001    0.0001       2.0    0.0856    0.2318       0.01
  760          0.0001    0.0001       2.0    0.0212    0.1310       0.01
  762          0.0001    0.0001       2.0    0.0086    0.0524       0.01
  764          0.0001    0.0001       2.0    0.0028    0.0182       0.01
  766          0.0001    0.0001       2.0    0.0061    0.0375       0.01
  768          0.0001    0.0001       2.0    0.0092    0.0499       0.01
  770          0.0001    0.0001       2.0    0.0016    0.0112       0.01
  772          0.0001    0.0001       2.0    0.0048    0.0364       0.01
  774          0.0001    0.0001       2.0    0.0055    0.0868       0.01
  776          0.0001    0.0001       2.0    0.0021    0.0466       0.01
  780          0.0001    0.0001       2.0    0.0093    0.0497       0.01
  784          0.0001    0.0001       2.0    0.0085    0.0422       0.01
  788          0.0001    0.0001       2.0    0.0334    0.1688       0.01
  792          0.0001    0.0001       2.0    0.0158    0.0770       0.01
  796          0.0001    0.0001       2.0    0.0041    0.0187       0.01
  798          0.0001    0.0001       2.0    0.0081    0.0454       0.01
  800          0.0001    0.0001       2.0    0.0000    0.0003       0.01
  805          0.0001    0.0001       2.0    0.1385    0.2728       0.01
  810          0.0001    0.0001       2.0    0.2020    0.4860       0.01
  815          0.0001    0.0001       2.0    0.2055    0.5708       0.01
  820          0.0001    0.0001       2.0    0.2600    0.4900       0.01
  825          0.0001    0.0001       2.0    0.0646    0.3313       0.01
  828          0.0001    0.0001       2.0    0.0662    0.2250       0.01
  832          0.0001    0.0001       2.0    0.1100    0.3015       0.01
  836          0.0001    0.0001       2.0    0.0813    0.2270       0.01
  840          0.0001    0.0001       2.0    0.0417    0.1300       0.01
  844          0.0001    0.0001       2.0    0.0587    0.1380       0.01
  845          0.0001    0.0001       2.0    0.1990    0.5515       0.01
  850          0.0001    0.0001       2.0    0.2115    0.4048       0.01
  855          0.0001    0.0001       2.0    0.2060    0.3473       0.01
  858          0.0001    0.0001       2.0    0.2170    0.4098       0.01
  860          0.0001    0.0001       2.0    0.2335    0.4335       0.01
  865          0.0001    0.0001       2.0    0.2430    0.4733       0.01
  900          0.0001    0.0001       2.0    0.1160    0.2348       0.01
  905          0.0001    0.0001       2.0    0.1095    0.2400       0.01
  910          0.0001    0.0001       2.0    0.0909    0.1918       0.01
  912          0.0001    0.0001       2.0    0.2430    0.4585       0.01
  915          0.0001    0.0001       2.0    0.1400    0.2745       0.01
  920          0.0001    0.0001       2.0    0.1230    0.2543       0.01
  925          0.0001    0.0001       2.0    0.0690    0.1795       0.01
  930          0.0001    0.0001       2.0    0.0974    0.1630       0.01
  935          0.0001    0.0001       2.0    0.0943    0.1708       0.01
  940          0.0001    0.0001       2.0    0.6370    1.1100       0.01
  950          0.0001    0.0001       2.0    0.2595    0.4748       0.01
  955          0.0001    0.0001       2.0    0.0828    0.1725       0.01
  960          0.0001    0.0001       2.0    0.1510    0.2883       0.01
  965          0.0001    0.0001       2.0    0.1900    0.3195       0.01
  970          0.0001    0.0001       2.0    0.1915    0.2708       0.01
  972          0.0001    0.0001       2.0    0.0000    0.0000       0.01
  975          0.0001    0.0001       2.0    0.1770    0.3333       0.01
  980          0.0001    0.0001       2.0    0.2650    0.5055       0.01
  985          0.0001    0.0001       2.0    0.4455    0.7943       0.01
  END SILT-CLAY-PM

  SSED-INIT
*** RCHRES     Suspended sed concs (mg/l)
*** x -  x      Sand      Silt      Clay
   10  985       5.       25.       25.
  END SSED-INIT

  BED-INIT
*** RCHRES    BEDDEP  Initial bed composition
*** x -  x      (ft)      Sand      Silt      Clay
   10  985       2.      0.80      0.10      0.10
  END BED-INIT
```

```
  BENTH-FLAG
*** RCHRES  Benthic release flag
*** x -  x BENF
   10   26    1
   30         0
   32  525    1
  527  529    0
  530         1
  532  534    0
  535         1
  537  539    0
  540         1
  542         0
  545         0
  548  549    0
  550  590    1
  595         0
  600  999    1
  END BENTH-FLAG

  OX-FLAGS
*** RCHRES Oxygen flags
*** Owens/Churchill/O'Connor-Dobbins formulas selected - Covar method
*** x -  x REAM
   10  985    2
  END OX-FLAGS

  OX-GENPARM
*** RCHRES     KBOD20     TCBOD    KODSET    SUPSAT
*** x -  x       /hr               ft/hr
   10   99     0.009      1.07     0.007      1.15
  100  299     0.009      1.07     0.007      1.15
  300  324     0.009      1.07     0.007      1.15
  325  349     0.009      1.07     0.007      1.15
  350  399     0.009      1.07     0.007      1.15
  400  499     0.009      1.07     0.007      1.15
  500  599     0.009      1.07     0.007      1.15
  600  799     0.009      1.07     0.007      1.15
  800  999     0.009      1.07     0.007      1.15
  END OX-GENPARM

  OX-BENPARM
*** RCHRES     BENOD     TCBEN     EXPOD  BRBOD(1)  BRBOD(2)   EXPREL
*** x -  x  mg/m2.hr                      mg/m2.hr  mg/m2.hr
   10   99        50     1.074      1.22     0.001     0.001     2.82
  100  299        50     1.074      1.22     0.001     0.001     2.82
  300  324        50     1.074      1.22     0.001     0.001     2.82
  325  349        50     1.074      1.22     0.001     0.001     2.82
  350  399        50     1.074      1.22     0.001     0.001     2.82
  400  499        50     1.074      1.22     0.001     0.001     2.82
  500  519       500     1.074      1.22     0.001     0.001     2.82
  520  599       100     1.074      1.22     0.001     0.001     2.82
  600  799        50     1.074      1.22     0.001     0.001     2.82
  800  999        50     1.074      1.22     0.001     0.001     2.82
  END OX-BENPARM

  OX-REAPARM
*** RCHRES    TCGINV      REAK    EXPRED    EXPREV
*** x -  x                 /hr
   10  985     1.024       0.2    -1.673     0.969
  END OX-REAPARM

  OX-INIT
*** RCHRES       DOX       BOD     SATDO
*** x -  x      mg/l      mg/l      mg/l
   10  985      12.8       3.5      13.5
  END OX-INIT

  NUT-FLAGS
*** RCHRES  Nutrient flags
*** x -  x  TAM  NO2  PO4  AMV  DEN ADNH ADPO PHFL
   10  985    1    0    1    0    1    1    1    2
  END NUT-FLAGS

  CONV-VAL1
*** RCHRES      CVBO     CVBPC     CVBPN    BPCNTC
*** x -  x     mg/mg  mols/mol  mols/mol
   10  985      1.63      106.       16.       49.
  END CONV-VAL1

  NUT-BENPARM
*** RCHRES  BRNIT(1)  BRNIT(2)  BRPO4(1)  BRPO4(2)     ANAER
*** x -  x  mg/m2.hr  mg/m2.hr  mg/m2.hr  mg/m2.hr      mg/l
   10   99       0.0       0.0       0.0       0.0     0.001
  100  299       0.0       0.0       0.0       0.0     0.001
  300  324       0.0       0.0       0.0       0.0     0.001
  325  349       0.0       0.0       0.0       0.0     0.001
  350  399       0.0       0.0       0.0       0.0     0.001
  400  499       0.0       0.0       0.0       0.0     0.001
  500  599       0.0       0.0       0.0       0.0     0.001
  600  799       0.0       0.0       0.0       0.0     0.001
  800  999       0.0       0.0       0.0       0.0     0.001
  END NUT-BENPARM

  NUT-NITDENIT
*** RCHRES    KTAM20    KNO220     TCNIT    KNO320     TCDEN    DENOXT
*** x -  x       /hr       /hr                 /hr                mg/l
   10   99     0.125     0.002      1.07     0.002      1.07         5
  100  299     0.125     0.002      1.07     0.002      1.07         5
  300  324     0.125     0.002      1.07     0.002      1.07         5
  325  349     0.125     0.002      1.07     0.002      1.07         5
  350  399     0.125     0.002      1.07     0.002      1.07         5
  400  499     0.125     0.002      1.07     0.002      1.07         5
  500  599     0.125     0.002      1.07     0.002      1.07         5
  600  799     0.125     0.002      1.07     0.002      1.07         5
  800  999     0.125     0.002      1.07     0.002      1.07         5
  END NUT-NITDENIT

  NUT-BEDCONC
*** RCHRES       Bed concentrations of NH4 & PO4 (mg/kg)
*** x -  x  NH4-sand  NH4-silt  NH4-clay  PO4-sand  PO4-silt  PO4-clay
   10  985       40.      100.      100.       50.      250.      250.
  END NUT-BEDCONC

  NUT-ADSPARM
*** RCHRES       Partition coefficients for NH4 AND PO4  (ml/g)
*** x -  x  NH4-sand  NH4-silt  NH4-clay  PO4-sand  PO4-silt  PO4-clay
   10  985       10.      500.      500.      500.     7000.     5000.
  END NUT-ADSPARM

  NUT-DINIT
*** RCHRES       NO3       TAM       NO2       PO4
*** x -  x      mg/l      mg/l      mg/l      mg/l
   10  985        4.       0.1        0.      0.05        7.
  END NUT-DINIT

  NUT-ADSINIT
*** RCHRES        Initial suspended NH4 and PO4 concentrations (mg/kg)
```

```
*** x -  x  NH4-sand  NH4-silt  NH4-clay  PO4-sand  PO4-silt  PO4-clay
   10  985        0.        0.        0.        0.        0.        0.
  END NUT-ADSINIT

  PLNK-FLAGS
*** RCHRES Plankton flags
*** x -  x PHYF ZOOF BALF SDLT AMRF DECF NSFG ZFOO  BNP
   10   26    1    0    1    1    0    1    1    2
   30         0    0    0    0    0    0    0    0
   32  525    1    0    1    1    0    1    1    2
  527  529    0    0    0    0    0    0    0    0
  530         1    0    1    1    0    1    1    2
  532  534    0    0    0    0    0    0    0    0
  535         1    0    1    1    0    1    1    2
  537  539    0    0    0    0    0    0    0    0
  540         1    0    1    1    0    1    1    2
  542         0    0    0    0    0    0    0    0
  545         1    0    1    1    0    1    1    2
  548  549    0    0    0    0    0    0    0    0
  550  590    1    0    1    1    0    1    1    2
  595         0    0    0    0    0    0    0    0
  600  999    1    0    1    1    0    1    1    2
  END PLNK-FLAGS

  PLNK-PARM1
***RC HRES    RATCLP    NONREF    LITSED     ALNPR      EXTB     MALGR    PARADF
*** x  - x                     l/mg.ft                  /ft       /hr
   10   99      0.68       0.5        0.      0.25       0.3     0.085
  100  299      0.68       0.5        0.      0.25       0.3     0.085
  300  324      0.68       0.5        0.      0.25       0.3     0.085
  325  349      0.68       0.5        0.      0.25       0.3     0.085
  350  399      0.68       0.5        0.      0.25       0.3     0.085
  400  499      0.68       0.5        0.      0.25       0.3     0.085
  500  519      0.68       0.5        0.      0.25       1.5     0.085
  520  544      0.68       0.5        0.      0.25       1.0     0.085
  544  599      0.68       0.5        0.      0.25       0.3     0.085
  600  799      0.68       0.5        0.      0.25       0.3     0.085
  800  999      0.68       0.5        0.      0.25       0.3     0.085
  END PLNK-PARM1

  PLNK-PARM2
***RC HRES     CMMLT      CMMN     CMMNP      CMMP    TALGRH    TALGRL    TALGRM
*** x  - x    ly/min      mg/l      mg/l      mg/l     deg F     deg F     deg F
   10  985     0.033     0.045     0.284     0.015       95.      -20.       77.
  END PLNK-PARM2

  PLNK-PARM3
*** RCHRES     ALR20      ALDH      ALDL     OXALD     NALDH     PALDH
*** x -  x       /hr       /hr       /hr       /hr      mg/l      mg/l
   10  985     0.005      0.02     0.005      0.03      0.01     0.002
  END PLNK-PARM3

  PHYTO-PARM
*** RCHRES      SEED    MXSTAY      OREF    CLALDH    PHYSET    REFSET
*** x -  x      mg/l      mg/l     ft3/s      ug/l     ft/hr     ft/hr
   10   99      0.05       0.5      150.       20.     0.005      0.01
  100  299      0.05       0.5      150.       20.     0.005      0.01
  300  324      0.05       0.5      150.       20.     0.005      0.01
  325  349      0.05       0.5      150.       20.     0.005      0.01
  350  399      0.05       0.5      150.       20.     0.005      0.01
  400  499      0.05       0.5      150.       20.     0.005      0.01
  500  519      0.05       0.5      150.       20.     0.005      0.01
  520  544      0.05       0.5      500.       20.     0.005      0.01
  544  599      0.05       0.5      500.       20.     0.005      0.01
  600  799      0.05       0.5      150.       20.     0.005      0.01
  800  999      0.05       0.5      150.       20.     0.005      0.01
  END PHYTO-PARM

  BENAL-PARM
***RC HRES      MBAL    CFBALR    CFBALG    MINBAL     CAMPR     FRAVL    NMAXFX
*** x  - x     mg/m2                        mg/m2      mg/l                  mg/l
   10   99     2500.        1.        1.     1.e-4
  100  299     2500.        1.        1.     1.e-4
  300  324     2500.        1.        1.     1.e-4
  325  349     2500.        1.        1.     1.e-4
  350  399     2500.        1.        1.     1.e-4
  400  499     2500.        1.        1.     1.e-4
  500  519      0.01        1.        1.     1.e-4
  520  544     5000.        1.        1.     1.e-4
  544  599    10000.        1.        1.     1.e-4
  600  799     2500.        1.        1.     1.e-4
  800  999     2500.        1.        1.     1.e-4
  END BENAL-PARM

  PLNK-INIT
*** RCHRES     PHYTO       ZOO     BENAL       ORN       ORP       ORC
*** x -  x      mg/l     org/l     mg/m2      mg/l      mg/l      mg/l
   10  985       0.5      0.03      100.       0.5       0.1       0.5
  END PLNK-INIT

END RCHRES

FTABLES

  FTABLE    010
Name:     Sewage Canal                  ***
RCHRES:         010                     ***
Length:    26,779 ft                    ***
Descrip:  Assumed Width: 40 ft          ***
Height (ft    6.0 ft                    ***
Width (ft)   40.0 ft                    ***
Max Elev:   4,212 ft                    ***
Min Elev:   4,206 ft                    ***
Slope (ft/    0.0002                    ***
Roughness,     0.015                    ***
Stream:    Sewage Canal                 ***
Source storage:                         ***
Source discharge:Salt Lake County       ***
 rows cols                              ***
   10    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
       0.0      0.00     0.000      0.00
       0.2     24.59     0.515      4.02
       0.5     24.59     1.288     18.26
       1.0     24.59     2.577     56.77
       2.0     24.59     5.154    173.09
       3.0     24.59     7.731    327.50
       4.0     24.59    10.308    510.26
       5.0     24.59    12.885    715.25
       6.0     24.59    15.462    938.20
       7.0     24.59    16.000  10000.00
  END FTABLE010

  FTABLE    014
Name:     City Drain                    ***
RCHRES:         014                     ***
Length:    35,396 ft                    ***
```

```
Descrip:  Assumed Width: 30 ft          ***
Height (ft    6.0 ft                    ***
Width (ft)   30.0 ft                    ***
Max Elev:   4,219 ft                    ***
Min Elev:   4,212 ft                    ***
Slope (ft/    0.0002                    ***
Roughness,     0.015                    ***
Stream:   City Drain                    ***
Source storage:                         ***
Source discharge:Salt Lake County       ***
 rows cols                              ***
   10    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
       0.0      0.00     0.000      0.00
       0.2     24.38     4.875      2.77
       0.5     24.38    12.189     12.61
       1.0     24.38    24.377     39.19
       2.0     24.38    48.754    119.49
       3.0     24.38    73.131    226.08
       4.0     24.38    97.509    352.23
       5.0     24.38   121.886    493.74
       6.0     24.38   146.263    647.65
       7.0     24.38   147.000  10000.00
  END FTABLE014

  FTABLE    016
Name:     Northwest Oil Drain           ***
RCHRES:          016                    ***
Length:     7,882 ft                    ***
Descrip:  Assumed Width: 30 ft          ***
Height (ft    6.0 ft                    ***
Width (ft)   30.0 ft                    ***
Max Elev:   4,212 ft                    ***
Min Elev:   4,210 ft                    ***
Slope (ft/    0.0002                    ***
Roughness,     0.015                    ***
Stream:   Northwest Oil Drain           ***
Source storage:                         ***
Source discharge:Salt Lake County       ***
 rows cols                              ***
   10    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
       0.0      0.00     0.000      0.00
       0.2      5.43     0.375     10.10
       0.5      5.43     0.938     43.88
       1.0      5.43     1.876    127.80
       2.0      5.43     3.752    351.00
       3.0      5.43     5.628    612.51
       4.0      5.43     7.503    894.35
       5.0      5.43     9.379   1188.40
       6.0      5.43    11.255   1490.38
       7.0      5.43    11.500  10000.00
  END FTABLE016

  FTABLE    018
Name:     Northwest Oil Drain           ***
RCHRES:          018                    ***
Length:     7,882 ft                    ***
Descrip:  Assumed Width: 30 ft          ***
Height (ft    6.0 ft                    ***
Width (ft)   30.0 ft                    ***
Max Elev:   4,212 ft                    ***
Min Elev:   4,210 ft                    ***
Slope (ft/    0.0002                    ***
Roughness,     0.015                    ***
Stream:   Northwest Oil Drain           ***
Source storage:                         ***
Source discharge:Salt Lake County       ***
 rows cols                              ***
   10    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
       0.0      0.00     0.000      0.00
       0.2      5.43     0.375     10.10
       0.5      5.43     0.938     43.88
       1.0      5.43     1.876    127.80
       2.0      5.43     3.752    351.00
       3.0      5.43     5.628    612.51
       4.0      5.43     7.503    894.35
       5.0      5.43     9.379   1188.40
       6.0      5.43    11.255   1490.38
       7.0      5.43    12.000  10000.00
  END FTABLE018

  FTABLE    019
Type:     Stream                        ***
Stream:   Oil Drain Trib                ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.12      1.17       0.1         1
     0.26      1.87      0.36         5
      0.6      2.99      1.23        25
     0.81      3.67      2.11        50
     1.07      4.48      3.56       100
     1.43      5.44      6.08       200
     2.15      6.91      12.2       500
     2.84      8.29     20.61      1000
      3.9      9.98     34.88      2000
     6.22     12.88     70.27      5000
     7.74     14.59     96.36      7500
  END FTABLE019

  FTABLE    020
Type:     Canal                         ***
Stream:   C7 Ditch                      ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.23    35.205   104.585         1
     0.42     36.94     117.4         5
     0.78     38.58    136.15        25
     1.05    39.495    149.25        50
     1.43    40.685    167.49       100
     1.96    47.525     195.5       200
     2.94     85.89     257.5       500
     3.37     239.8   354.165      1000
     3.62    334.38   568.085      2000
     4.03   443.455   1025.56      5000
     4.29    465.14   1309.78      7500
  END FTABLE020
```

```
  FTABLE    022
Type:     Canal                          ***
Stream:   C7 Ditch                       ***
Source storage: Countywide HEC-RAS Model***
 rows cols                               ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.62    14.325     6.715         1
    0.825     16.82     10.87         5
     1.16     23.19     20.64        25
    1.405    40.725     32.34        50
     1.75    52.975     54.25       100
    2.225    88.965     99.56       200
     3.04    129.01    224.91       500
     3.81    158.22   398.425      1000
     5.34    188.77   638.315      2000
     7.07   288.975   1158.12      5000
    7.945    336.38   1485.04      7500
  END FTABLE022

  FTABLE    026
Name:     C-7 Ditch                      ***
RCHRES:         026                      ***
Type:     Canal                          ***
Length:    12,956 ft                     ***
Descrip:  Assumed Width: 25 ft           ***
Height (ft     6.0 ft                    ***
Width (ft)   25.0 ft                     ***
Max Elev:   4,237 ft                     ***
Min Elev:   4,216 ft                     ***
Slope (ft/    0.0017                     ***
Roughness,     0.015                     ***
Stream:   C-7 Ditch                      ***
Source storage:                          ***
Source discharge:Salt Lake County        ***
 rows cols                               ***
   10    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
      0.0      0.00     0.000      0.00
      0.2      7.44     1.487      6.88
      0.5      7.44     3.718     31.26
      1.0      7.44     7.435     97.18
      2.0      7.44    14.871    296.31
      3.0      7.44    22.306    560.64
      4.0      7.44    29.742    873.49
      5.0      7.44    37.177   1224.41
      6.0      7.44    44.613   1606.09
      7.0      7.44    45.000  10000.00
  END FTABLE026

  FTABLE    030
Name:     8000 West Drain                ***
Type:               RCP                  ***
Length:             8,805 ft             ***
Descrip:            48"                  ***
Avg. Diameter (in)  48.0 in              ***
Max Elev:           4,454 ft             ***
Min Elev:           4,241 ft             ***
Slope (ft/ft):      0.024                ***
Roughness,n:        0.015                ***
Source:    Salt Lake County              ***
 rows cols                               ***
   12    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
      0.0      0.00     0.000      0.00
      0.2      0.80     0.047      0.93
      0.5      0.80     0.183      6.45
      1.0      0.80     0.497     26.55
      1.5      0.80     0.870     57.99
      2.0      0.80     1.270     96.91
      2.5      0.80     1.670    138.47
      3.0      0.80     2.043    176.73
      3.5      0.80     2.357    203.64
      4.0      0.80     2.540    220.00
      5.0      0.80     3.000    300.00
      6.0      0.80     3.500  10000.00
  END FTABLE030

  FTABLE    032
Name:     Riter Canal                    ***
RCHRES:         032                      ***
Type:     Canal                          ***
Length:    14,866 ft                     ***
Descrip:  Assumed Width: 20 ft           ***
Height (ft     5.0 ft                    ***
Width (ft)   20.0 ft                     ***
Max Elev:   4,241 ft                     ***
Min Elev:   4,237 ft                     ***
Slope (ft/    0.0002                     ***
Roughness,     0.015                     ***
Stream:   Riter Canal                    ***
Source storage:                          ***
Source discharge:Salt Lake County        ***
 rows cols                               ***
   10    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
      0.0      0.00     0.000      0.00
      0.2      6.83     1.365      1.97
      0.5      6.83     3.413      8.94
      1.0      6.83     6.825     27.80
      2.0      6.83    13.651     84.77
      3.0      6.83    20.476    160.39
      4.0      6.83    27.302    249.89
      5.0      6.83    34.127    350.28
      6.0      6.83    40.953    459.47
      7.0      6.83    41.000  10000.00
  END FTABLE032

  FTABLE    034
Name:     Riter Canal                    ***
RCHRES:   032                            ***
Type:                                    ***
Length:      14865.8                     ***
Descrip:  Assumed Width: 20 ft           ***
Height (ft         5                     ***
Width (ft)        20                     ***
Max Elev:  4240.6802                     ***
Min Elev:  4237.4902                     ***
Slope (ft/ 0.0002146                     ***
Roughness,     0.015                     ***
Stream:    Riter Canal                   ***
Source storage:                          ***
Source discharge:Salt Lake County        ***
 rows cols                               ***
```

```
   10    4
Depth     Area      Volume    Outflow1  ***
(ft)      (acres)   (acre-ft) (ft3/s)   ***
        0        0         0         0
       0.2      5.51      1.10      5.82
       0.5      5.51      2.75     26.47
         1      5.51      5.51     82.27
         2      5.51     11.01    250.85
         3      5.51     16.52    474.63
         4      5.51     22.03    739.49
         5      5.51     27.54   1036.56
         6      5.51     33.04   1359.69
         7      5.51     33.50  10000.00
  END FTABLE034

  FTABLE    038
Name:     Riter Canal                    ***
RCHRES:         038                      ***
Type:     Canal                          ***
Length:     9,123 ft                     ***
Descrip:  Assumed Width: 20 ft           ***
Height (ft    5.0 ft                     ***
Width (ft)   20.0 ft                     ***
Max Elev:   4,287 ft                     ***
Min Elev:   4,239 ft                     ***
Slope (ft/    0.0052                     ***
Roughness,     0.015                     ***
Stream:   Riter Canal                    ***
Source storage:                          ***
Source discharge:Salt Lake County        ***
 rows cols                               ***
    9    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
       0.0      0.00     0.000      0.00
       0.2      4.19     0.838      9.68
       0.5      4.19     2.094     43.99
       1.0      4.19     4.189    136.74
       2.0      4.19     8.378    416.93
       3.0      4.19    12.566    788.87
       4.0      4.19    16.755   1229.08
       5.0      4.19    20.944   1722.85
       6.0      4.19    25.133   2259.90
  END FTABLE038

  FTABLE    040
Name:     Coon Canyon Creek              ***
Type:             RCP                    ***
Length:           5,916 ft               ***
Descrip:          42"                    ***
Avg. Diameter (in)  42.0 in              ***
Max Elev:         4,453 ft               ***
Min Elev:         4,311 ft               ***
Slope (ft/ft):      0.024                ***
Roughness,n:        0.015                ***
Source:   Salt Lake County               ***
 rows cols                               ***
   11    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
       0.0      0.00     0.000      0.00
       0.2      0.50     0.030      0.86
       0.5      0.50     0.115      5.94
       1.0      0.50     0.308     24.08
       1.5      0.50     0.535     51.63
       2.0      0.50     0.772     84.19
       2.5      0.50     0.999    116.18
       3.0      0.50     1.192    140.17
       3.5      0.50     1.307    150.00
       4.0      0.50     2.000    300.00
       4.5      0.50     2.500  10000.00
  END FTABLE040

  FTABLE    042
Type:     Stream                         ***
Stream:   Coon Canyon Ck 1               ***
Source storage: Countywide HEC-RAS Model***
 rows cols                               ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.09      0.65      0.06         1
     0.22      1.13      0.18         5
     0.46      1.64      0.59        25
     0.67      2.18      1.05        50
     0.84       2.5      1.75       100
     1.07      2.79      2.89       200
     1.59      3.73      5.89       500
     2.24      4.29      9.88      1000
     3.23      5.87      17.3      2000
     5.41     16.38     48.43      5000
     6.74      19.6     68.51      7500
  END FTABLE042

  FTABLE    043
Type:     Detention Pond                 ***
Stream:   Coon Creek                     ***
Name: Hercules Pond                      ***
Source storage: SLC County / (Area Count***
Source discharge:Salt Lake County        ***
 rows cols                               ***
   13    4
    Depth      Area    Volume  Outflow1 ***
       0.0      0.00      0.00      0.00
       0.8      0.02      0.06      3.84
       2.1      0.09      0.20      5.11
       6.0      4.72      1.20      6.11
      12.7     16.19      8.05      6.98
      14.5     17.44     14.43      7.75
      17.4     20.16     24.83      8.45
      20.1     22.74     34.20      9.09
      24.0     25.92     48.09      9.69
      25.1     26.34     60.20     10.26
      25.9     26.56     75.58     10.80
      26.6     26.73     89.53     11.31
      26.7     26.73     90.00   10000.0
  END FTABLE043

  FTABLE    044
Type:     Stream                         ***
Stream:   Coon Canyon Ck 2               ***
Source storage: Countywide HEC-RAS Model***
 rows cols                               ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.27      1.14      0.09         1
     0.38       2.6      0.34         5
```

```
      0.65      4.38      1.17        25
      0.86      5.07      1.98        50
      1.16      5.89      3.27       100
      1.59      7.03      5.53       200
      2.49      9.25     11.22       500
      3.37     12.18     19.63      1000
      4.58     15.39     33.93      2000
      6.83     21.42      71.8      5000
      7.86     24.55     98.76      7500
  END FTABLE044

  FTABLE    046
Type:     Stream                        ***
Stream:   Coon Canyon Ck 3              ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.29      3.47      0.38         1
      0.51      5.95      1.36         5
      0.98     11.83      4.92        25
      1.29     14.63      8.39        50
      1.74     22.29      15.3       100
       2.2     25.83     25.68       200
      3.18     31.96     50.91       500
       4.3     40.54     87.24      1000
      5.97     58.65    156.57      2000
      9.22      90.3    349.55      5000
     11.35       101    476.34      7500
  END FTABLE046

  FTABLE    048
Type:     Stream                        ***
Stream:   Harkers Canyon                ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.28      6.73      0.56         1
       0.5     11.42      1.87         5
      0.94     17.99      6.28        25
      1.24     22.26      10.8        50
      1.67     30.07     18.77       100
      2.25     41.23     33.34       200
      3.35     55.93     69.37       500
      4.63     68.75     118.1      1000
       6.4     94.11     214.5      2000
     10.55    132.58    456.98      5000
     11.87     147.9    622.46      7500
  END FTABLE048

  FTABLE    050
Type:     Stream                        ***
Stream:   Lee Creek                     ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.12     46.99     10.25         1
      0.28     69.28     20.22         5
      0.67    102.84     46.71        25
      1.15    117.32     70.05        50
      1.38    126.51    106.27       100
      1.73    142.41    177.66       200
       2.4    153.96    356.37       500
      3.14    160.79    573.56      1000
      4.26    171.98    762.72      2000
      6.41    181.54   1067.64      5000
      7.36    187.97   1238.33      7500
  END FTABLE050

  FTABLE    054
Type:     Stream                        ***
Stream:   Lee Creek                     ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.92      4.49      0.87         1
      1.05     13.57      2.41         5
      1.26     45.03      9.58        25
      1.41     64.13     17.91        50
      1.63     76.26     32.41       100
      2.26     86.29     68.54       200
      3.88    103.52    167.15       500
      5.72    117.55    306.71      1000
      6.89    146.66    450.27      2000
      8.48     182.1    674.47      5000
      9.47    188.25    806.44      7500
  END FTABLE054

  FTABLE    058
Name:     Lee Drain                     ***
RCHRES:         058                     ***
Type:     Canal                         ***
Length:    19,054 ft                    ***
Descrip:   Assumed Width: 20 ft         ***
Height (ft    6.0 ft                    ***
Width (ft)   20.0 ft                    ***
Max Elev:   4,231 ft                    ***
Min Elev:   4,218 ft                    ***
Slope (ft/    0.0007                    ***
Roughness,     0.015                    ***
Stream:   City Drain                    ***
Source storage:                         ***
Source discharge:Salt Lake County       ***
 rows cols                              ***
   10    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
       0.0      0.00     0.000      0.00
       0.2      8.75     1.750      3.47
       0.5      8.75     4.374     15.76
       1.0      8.75     8.748     48.98
       2.0      8.75    17.497    149.34
       3.0      8.75    26.245    282.56
       4.0      8.75    34.993    440.25
       5.0      8.75    43.742    617.11
       6.0      8.75    52.490    809.47
       7.0      8.75    53.000  10000.00
  END FTABLE058

  FTABLE    062
Name:     Lee Drain                     ***
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RCHRES:         062                          ***
Type:     Canal                              ***
Length:     9,354 ft                         ***
Descrip:  Assumed Width: 12 ft               ***
Height (ft    5.0 ft                         ***
Width (ft)   12.0 ft                         ***
Max Elev:   4,238 ft                         ***
Min Elev:   4,231 ft                         ***
Slope (ft/    0.0008                         ***
Roughness,     0.015                         ***
Stream:   Lee Drain                          ***
Source storage:                              ***
Source discharge:Salt Lake County            ***
 rows cols                                   ***
   10    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
       0.0      0.00     0.000      0.00
       0.2      2.58     0.515      2.27
       0.5      2.58     1.288     10.33
       1.0      2.58     2.577     32.11
       2.0      2.58     5.154     97.92
       3.0      2.58     7.731    185.27
       4.0      2.58    10.308    288.66
       5.0      2.58    12.885    404.62
       6.0      2.58    15.462    530.75
       7.0      2.58    16.000  10000.00
  END FTABLE062

  FTABLE    070
Type:     Canal                              ***
Stream:   Goggin                             ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                   ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.14     30.53      7.64         1
      0.76      38.3     20.85         5
      1.52     46.67     56.75        25
      2.14     49.52     86.78        50
      3.06     53.23    133.76       100
      4.42    127.38     247.8       200
      7.33     513.3    961.79       500
      8.06    726.58   1507.34      1000
      8.88   1230.28   2837.88      2000
     10.32   1597.87   5593.85      5000
     10.98   1663.69   7061.34      7500
  END FTABLE070

  FTABLE    080
Type:     Canal                              ***
Stream:   Surplus Canal                      ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                   ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.13     77.72      78.8         1
                                        ***
      0.27     86.15     92.98         5
      0.47    108.35    130.63        25
      0.65    116.05    162.51        50
      0.86    128.18    210.79       100
      1.09    144.24    286.03       200
      2.07    214.26    479.71       500
      3.97    321.07    828.37      1000
      5.95       541   1528.61      2000
      7.54   1039.61   3158.15      5000
      8.47   1356.35   4332.25      7500
  END FTABLE080

  FTABLE    100
Type:     Stream                             ***
Stream:   City Creek 1                       ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                   ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0      0.00         0
      0.13      1.58      0.16         1
      0.27       2.4      0.51         5
      0.53      3.49      1.67        25
      0.68      4.34      2.84        50
      0.87      5.12      4.70       100
      1.13       6.2      7.98       200
      1.69      8.59     16.07       500
      2.22     10.36     27.36      1000
      2.96     13.06     34.15      2000
      4.29     22.07     75.81      5000
      5.06     26.25    109.96      7500
  END FTABLE100

  FTABLE    104
Type:     Stream                             ***
Stream:   Dry Creek (SLC)                    ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                   ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.22      1.61      0.16         1
      0.42      2.47      0.57         5
      0.81      3.62      1.86        25
      1.12      4.32      3.13        50
      1.56      5.14      5.29       100
       2.2      6.15      8.93       200
      3.46       7.9     17.89       500
      4.88       9.7     30.47      1000
      6.83     12.08     52.14      2000
     10.65     16.68     106.9      5000
     13.02     19.56    147.89      7500
  END FTABLE104

  FTABLE    105
Type:     Stream                             ***
Stream:   City Creek 1                       ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                   ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.54      1.29      0.15         1
      0.94      2.11      0.53         5
      1.57      3.19      1.71        25
      1.95      3.82      2.84        50
      2.44      4.68      4.78       100
      3.02      5.86      8.07       200
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      4.44      8.65     16.92       500
      6.15     10.33     28.69      1000
      8.46     14.21     50.79      2000
     12.27     22.95    111.93      5000
        14      26.1    155.59      7500
  END FTABLE105

  FTABLE    110
Type:     Stream                        ***
Stream:   City Creek 1                  ***
Source storage: Countywide HEC-RAS Model***
Outflow1: Flow remaining in creek       ***
Outflow2: Diversion for water supply - t***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.28      1.19      0.13         1
      0.78      2.13      0.52         5
      1.42      3.35      1.75        25
      1.84      4.05      2.93        50
      2.39      4.88      4.93       100
       3.1      6.03      8.36       200
      4.16     11.97      19.3       500
      5.24     14.51     32.16      1000
      6.37     18.16     55.17      2000
      8.74     26.67    114.56      5000
     10.13     28.78     154.8      7500
  END FTABLE110

  FTABLE    120
Type:     Stream                        ***
Stream:   City Creek 1                  ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.19      1.37      0.14         1
      0.36      2.09      0.48         5
      0.74      3.36      1.64        25
      1.02      4.17       2.8        50
      1.44       5.2      4.78       100
      2.06      6.73      8.26       200
      3.31      9.46     17.01       500
      4.67        13     30.27      1000
       6.7     18.73     53.67      2000
     11.48     26.25    110.26      5000
     13.43     36.56    166.31      7500
  END FTABLE120

  FTABLE    130
Type:     Stream                        ***
Stream:   City Creek 1                  ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.28      1.81      0.14         1
      0.53      3.15       0.5         5
      1.01      5.27      1.76        25
      1.36      6.27      2.94        50
      1.86      7.75      5.06       100
      2.56      9.92      8.68       200
       3.9     13.88     18.09       500
      5.24     17.26     30.78      1000
      7.15     24.23     54.02      2000
      10.6     31.04     108.9      5000
     12.35     36.19    151.71      7500
  END FTABLE130

  FTABLE    140
Type:     Stream                        ***
Stream:   City Creek 1                  ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.32      1.26      0.11         1
      0.63       2.2      0.37         5
      1.21      4.01      1.27        25
      1.64       4.7      2.15        50
      2.22      5.35      3.52       100
      3.03      7.09      6.01       200
      4.52      9.84     12.02       500
       5.8     11.34     19.59      1000
      7.33     14.59     33.75      2000
      9.96     20.44     77.25      5000
     11.34     21.55    104.01      7500
  END FTABLE140

  FTABLE    150
Name:     1300 South Drain              ***
Type:               Box Culvert; (6.5' x***
Length:             12,040 ft           ***
Descrip:            6'x4': 1,480 ft; 5'x***
                    5'x12': 840ft; 6'x12***
                    8.5'x7': 3,463 ft   ***
Height (ft)         6.5 ft              ***
Width (ft):         8.0 ft              ***
Max Elev:           4,264 ft            ***
Min Elev:           4,222 ft            ***
Slope (ft/ft):      0.0035299           ***
Roughness,n:        0.015               ***
Source:   Salt Lake County              ***
Bottom elev.: 4253                      ***
 rows cols                              ***
    8    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
      0.0       0.0      0.00       0.0
      0.2       2.2      0.44      38.9
      0.5       2.2      1.11     101.9
      1.0       2.2      2.21     218.6
      2.0       2.2      4.42     493.6
      4.0       2.2      8.84    1195.9
      6.5       2.2     14.37    2329.7
      7.0       2.2     15.48  100000.0
  END FTABLE150

  FTABLE    155
Type:     Stream                        ***
Stream:   Red Butte Ck 1                ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
```

```
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.29      0.58      0.07         1
     0.55      1.09      0.25         5
     1.05      1.69      0.85        25
     1.48      2.79      1.57        50
     1.78      3.41      2.68       100
     2.16      4.02      4.49       200
     2.81      5.37      8.96       500
     3.28      6.78     15.07      1000
     3.99      8.21     26.13      2000
     5.21     10.21     52.46      5000
     6.03     11.62     72.53      7500
  END FTABLE155

  FTABLE    160
Type:     Stream                        ***
Stream:   Red Butte Ck 1                ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.32      0.53      0.07         1
     0.61      0.98      0.27         5
     1.15      1.62      0.93        25
     1.51      1.98      1.58        50
     2.02       2.4      2.67       100
     2.71      2.96      4.56       200
     4.03      3.95      9.25       500
     5.46      6.88      16.9      1000
     7.34      8.54     29.38      2000
    10.85     18.95     73.88      5000
    12.92     20.95    103.72      7500
  END FTABLE160

  FTABLE    170
Type:     Stream                        ***
Stream:   Red Butte Ck 1                ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.24      0.88      0.07         1
     0.41      1.47      0.27         5
     0.72      2.51      0.91        25
     0.94       3.1      1.53        50
     1.27      3.96      2.63       100
     1.86      5.04      4.56       200
     2.44      6.76      9.37       500
     2.97      7.76     15.64      1000
     3.78      9.59     26.48      2000
     5.46     11.88     52.44      5000
      6.5      13.4     71.51      7500
  END FTABLE170

  FTABLE    175
Type:     Reservoir                     ***
Stream:   Red Butte                     ***
Name: Red Butte                         ***
Source storage: UDWR                    ***
Source discharge: County?               ***
Bottom elev.: 5300                      ***
 rows cols                              ***
   14    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
       10       0.1       0.5         5
       20       0.5       3.5         7
       30         1        11        10
       40         2        26        15
       50         3        51        20
       60         5        91        25
       70         7       151        30
       80         9       231        35
       90        12       336        39
      100        15       471       150
      110        17       631       800
      120        19       811      2000
      130        21      1011      9500
  END FTABLE175

  FTABLE    180
Type:     Stream                        ***
Stream:   Red Butte Ck 2                ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.19      0.41      0.05         1
     0.38      0.75      0.17         5
     0.76      1.18      0.57        25
     1.02      1.47      0.98        50
     1.38      1.88      1.67       100
     1.88         3      3.06       200
     2.93      4.04      6.31       500
     4.09         5     10.82      1000
      5.8      5.64     17.77      2000
      9.4      8.27     36.18      5000
    10.86       9.3     42.85      7500
  END FTABLE180

  FTABLE    190
Type:     Stream                        ***
Stream:   Red Butte Ck 2                ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.15      1.36      0.13         1
     0.31      2.02      0.46         5
     0.71      3.23      1.54        25
     1.04      3.83       2.6        50
     1.48      4.64       4.4       100
     2.13      5.96      7.57       200
     3.43     11.99     17.63       500
     4.91      17.1     32.28      1000
     6.73     23.33     56.51      2000
     9.96     31.08    117.06      5000
    12.46      34.6    159.13      7500
  END FTABLE190

  FTABLE    195
Type:     Stream                        ***
Stream:   Red Butte Ck 2                ***
```

```
Source storage: Countywide HEC-RAS Model***
 rows cols                                 ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.27      0.75      0.09         1
     0.51       1.4      0.34         5
     0.96      2.26      1.17        25
     1.32      4.39      2.19        50
     1.81      7.05      4.19       100
     2.52      8.55      7.16       200
     3.86     13.08     15.52       500
     5.21     16.34     26.77      1000
     6.84     18.85     44.65      2000
    10.02     22.15     85.95      5000
    12.07     24.43    117.85      7500
  END FTABLE195

  FTABLE    200
Name:     Emigration Creek              ***
Length:             8,089 ft            ***
Descrip:            4'x4' Box Culvert   ***
Height (ft)         4.0 ft              ***
Width (ft):         4.0 ft              ***
Max Elev:           4,371 ft            ***
Min Elev:           4,264 ft            ***
Slope (ft/ft):      0.0132              ***
Roughness,n:        0.015               ***
Source:   Salt Lake County              ***
 rows cols                                 ***
    9    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
      0.0      0.00     0.000      0.00
      0.2      0.70     0.149      3.09
      0.5      0.70     0.371     14.04
      1.0      0.70     0.743     43.63
      2.0      0.70     1.486    133.02
      3.0      0.70     2.228    251.69
      4.0      0.70     2.971    392.14
      5.0      0.70     3.714    700.00
      6.0      0.70     5.000   7500.00
  END FTABLE200

  FTABLE    202
Type:     Stream                        ***
Stream:   Emigration Ck 1               ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                 ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.32      0.76      0.09         1
     0.61      1.04      0.21         5
     1.16       1.5      0.68        25
     1.52      1.82      1.16        50
     2.03      2.27      1.98       100
     2.85      3.04      3.42       200
      3.9      4.82      7.56       500
     4.58      5.73     12.61      1000
     5.61      6.96     21.31      2000
     8.02      9.93     44.71      5000
     8.85     11.78     61.79      7500
  END FTABLE202

  FTABLE    205
Type:     Detention Pond                ***
Stream:   Emigration Creek              ***
Name: 17th and 17th                     ***
Source storage: SLC County / (Area Count***
Source Discharge: ?                     ***
Bottom elev.: 4526                      ***
 rows cols                                 ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0      1.99      0.00         0
        2      2.44      0.00         5
        4      2.88      0.03       7.1
        6      3.95      0.13       8.7
       10      4.98      0.92      11.2
       14      6.18      3.01      13.2
       18      7.67      6.86        15
       22      8.78     14.42      16.6
       24      9.26     19.88      17.3
       26      9.80     26.40        18
       27     10.06     30.01       500
       28     10.50     31.00     10000
  END FTABLE205

  FTABLE    210
Type:     Stream                        ***
Stream:   Emigration Ck 3               ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                 ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.29      1.39      0.15         1
     0.46      2.26      0.53         5
        1      3.38      1.74        25
     1.36      4.05      2.93        50
     1.86       4.8      4.91       100
     2.52      5.72      8.26       200
     3.78       7.9     16.86       500
     5.25     10.02     28.55      1000
      7.4     12.69     49.01      2000
    11.53     17.17     100.8      5000
    14.13     20.15    139.83      7500
  END FTABLE210

  FTABLE    220
Type:     Stream                        ***
Stream:   Emigration Ck 3               ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                 ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.19      1.43      0.15         1
     0.34      2.46      0.51         5
     0.59      3.78      1.78        25
     0.71      4.38      2.91        50
     0.87      5.45      4.94       100
     1.12      8.43      8.95       200
      1.7     14.12     19.17       500
     2.37     19.18      34.3      1000
     3.15      24.8     58.64      2000
     4.79     39.32    132.64      5000
```

```
      5.92     43.41    182.53      7500
  END FTABLE220

  FTABLE    230
Type:     Stream                          ***
Stream:   Emigration Ck 3                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.48      1.82      0.22         1
      0.83      3.16      0.76         5
      1.14      5.05      2.51        25
      1.48      6.13      4.27        50
      1.99      7.71       7.3       100
       2.7     10.34     12.65       200
      4.31     16.39     27.27       500
      5.46     22.89     49.43      1000
      6.71     33.95     89.17      2000
      9.15     58.74    207.94      5000
      9.83     67.26    284.74      7500
  END FTABLE230

  FTABLE    240
Type:     Stream                          ***
Stream:   Emigration Ck 3                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.24      1.01      0.13         1
      0.47      1.82      0.45         5
      0.88      3.15      1.59        25
      1.19      3.85      2.71        50
      1.62      4.69      4.58       100
      2.18      6.34      8.01       200
      3.14      9.95     17.31       500
       4.2     13.13     30.14      1000
      5.53     16.83     52.61      2000
      8.29     23.33    109.67      5000
     10.05     24.88    146.47      7500
  END FTABLE240

  FTABLE    250
Type:     Stream                          ***
Stream:   Parleys Creek 1                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.26      0.52      1.53         1
      0.50      0.59      1.65         5
      0.94      0.75      2.02        25
      1.23      0.84      2.32        50
      1.67      0.96      2.80       100
      2.41      1.21      3.58       200
      3.43      1.65      5.47       500
      4.18      2.01      7.90      1000
      5.22      2.58     12.01      2000
      7.27      4.26     21.26      5000
      8.53      5.66     28.79      7500
  END FTABLE250

  FTABLE    252
Type:     Detention Pond                  ***
Stream:   Parleys Creek                   ***
Name: Sugarhouse                          ***
Source storage: SLC County                ***
Source discharge: SLC County              ***
Bottom elevation: 4385.5                  ***
 rows cols                                ***
   23    4
    Depth      Area    Volume  Outflow1 ***
        0      0.00         0         0
      0.5      0.10      0.03        10
      4.5      0.20      0.63       170
      9.5      0.60      2.63       170
     12.7      4.35     27.62       170
     13.5      4.52     30.08       170
     14.5      6.39     45.43       170
     15.5      7.04     52.14       170
     16.5      7.72     59.52       170
     17.5      8.39     67.58       170
     18.5      8.97     76.26       170
     19.5      9.64     85.57       170
     20.5     10.42      95.6       170
     21.5     11.22    106.42       170
     22.5     12.02    118.03       170
     23.5     12.84    130.46        34
     24.5     14.09    143.93       182
     25.5     15.04     158.5       407
     26.5     16.03    174.03       527
     27.5     17.10    190.59       783
     28.5     18.28    208.29      1189
     29.5     20.96    227.91      2576
     30.5     22.13    249.45      4391
  END FTABLE252

  FTABLE    255
Type:     Stream                          ***
Stream:   Parleys Creek 2                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.23      0.96       0.1         1
      0.37      1.32      0.28         5
      0.82      1.98      0.85        25
      1.13      2.56      1.45        50
      1.46      3.24      2.47       100
      1.92      3.96      4.12       200
      2.74       5.1      7.99       500
      3.77      7.44     14.47      1000
      5.11      9.94     25.32      2000
      7.51        38     80.33      5000
      8.06     45.18    111.26      7500
  END FTABLE255

  FTABLE    260
Type:     Stream                          ***
Stream:   Parleys Creek 2                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                ***
   12    4
```

```
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.18      2.14      0.13         1
     0.31      4.22      0.46         5
     0.91      6.98      1.55        25
     1.25       7.4      2.64        50
      1.6      7.91       4.3       100
      2.3      8.56      6.95       200
     3.63      9.96     13.76       500
     4.47     11.96        23      1000
     6.32     15.01     40.05      2000
    10.23     46.49    121.89      5000
    10.84     48.69    162.07      7500
  END FTABLE260

  FTABLE    265
Name:     Parley's Creek                ***
Type:               Assumed 96" RCP     ***
Length:             28,421.0 ft         ***
Avg. Diameter (in)  96 in               ***
Max Elev:           5,465.0 ft          ***
Min Elev:           4,728.4 ft          ***
Slope (ft/ft):      0.0259146           ***
Roughness,n:        0.015               ***
Stream:             Parley's Creek      ***
Source:   Salt Lake County              ***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
      0.0      0.00       0.0       0.0
      0.2      5.20       0.2       1.4
      0.5      5.20       0.9       9.8
      1.0      5.20       2.4      42.4
      2.0      5.20       6.4     174.3
      3.0      5.20      11.2     380.7
      4.0      5.20      16.4     636.2
      5.0      5.20      21.6     909.1
      6.0      5.20      26.4    1160.4
      7.0      5.20      30.4    1337.1
      8.0      5.20      32.8    1500.0
      9.0      5.20      35.0   10000.0
  END FTABLE265

  FTABLE    270
Type:     Reservoir                     ***
Stream:   Mountain Dell Little Dell Comb***
Name: Mountain Dell/Little Dell         ***
Source storage: UDWR                    ***
Source discharge outflow1: UDWR         ***
Bottom elevation: 5420 feet             ***
Outflow1: Flow remaining in creek       ***
Outflow2: Diversion for water supply - t***
 rows cols                              ***
   24    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
        0         0         0         0
       10         2        10        50
       20         6        50        85
       30        14       150       215
       40        28       360       640
       50        48       740       755
       60        68      1320       920
       70        92      2120      1045
       80       120      3180      1170
       90       151      4535      1265
      100       185      6215      1350
      110       205      8191      1655
      120       226     10396      1895
      130       241     11831      1945
      140       252     13376      1995
      150       263     15031      2045
      160       277     16811      2070
      170       292     18736      2120
      180       308     20816      2170
      190       326     23066      2220
      200       340     24994      2241
      210       344     25494      3245
      220       367     28129     18257
      221       500    200000    200000
  END FTABLE270

  FTABLE    280
Type:     Stream                        ***
Stream:   Mtn Dell Ck 2                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.24      0.81       0.1         1
     0.46      1.52      0.37         5
     0.86         3      1.34        25
     1.13      3.82      2.32        50
     1.53      4.75      3.93       100
      2.1      6.61      6.88       200
     3.23     11.81     15.58       500
     4.46     18.97     28.92      1000
     6.26      29.6     56.13      2000
     9.06     39.86    115.52      5000
    10.53     44.61    156.06      7500
  END FTABLE280

  FTABLE    282
Type:     Stream                        ***
Stream:   Mtn Dell Ck 2                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.21      0.84      0.07         1
     0.37      1.29      0.24         5
     0.71      1.98       0.8        25
     0.97       2.5      1.38        50
     1.34         3      2.35       100
     1.87      3.69      3.98       200
     2.88      7.26      9.25       500
     3.98     11.41     17.27      1000
     5.38     15.78     30.54      2000
     7.23     18.95      59.2      5000
     8.11     20.89     75.19      7500
  END FTABLE282

  FTABLE    284
Type:     Stream                        ***
Stream:   Mtn Dell Ck 2                 ***
```

```
Source storage: Countywide HEC-RAS Model***
 rows cols                                 ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.27      1.24      0.14         1
     0.48      2.13       0.5         5
     0.88      3.65      1.75        25
     1.21      4.62      2.99        50
     1.65      5.79      5.12       100
     2.31       6.9      8.68       200
     3.61      8.81     17.45       500
        5     11.08     29.98      1000
     7.07     13.43     51.09      2000
    10.42     17.56    103.13      5000
    11.92      19.5    140.24      7500
  END FTABLE284

  FTABLE    290
Type:     Stream                          ***
Stream:   Lambs Canyon 1                  ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                 ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.24      1.53      0.14         1
     0.46      2.34      0.47         5
      0.9      3.63      1.61        25
     1.25      4.36      2.72        50
     1.74       5.2      4.59       100
     2.41       6.3      7.75       200
     3.78        10     16.73       500
     4.25      12.4     28.27      1000
     5.11     17.31     50.48      2000
      6.4     23.27    104.02      5000
     7.24     26.91    144.06      7500
  END FTABLE290

  FTABLE    292
Type:     Stream                          ***
Stream:   Lambs Canyon 2                  ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                 ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.24      2.99      0.32         1
     0.45      5.07      1.12         5
     0.86      8.77      3.91        25
     1.14     11.76      6.81        50
     1.55     14.17      11.5       100
     2.12     17.41     19.72       200
     3.32     26.99     42.68       500
     4.11     34.04     73.74      1000
     4.92     41.15    124.19      2000
     6.52     52.02    248.55      5000
     7.39     57.18    335.41      7500
  END FTABLE292

  FTABLE    294
Type:     Stream                          ***
Stream:   Lambs Cyn T1                    ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                 ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.2      2.57      0.21         1
     0.37      4.87      0.76         5
     0.79      9.98      2.73        25
      1.1     12.66      4.72        50
     1.57     14.54      7.83       100
     2.08     17.66      13.5       200
     2.86     22.52     26.99       500
      3.7     26.09     45.04      1000
     5.02     29.24      74.5      2000
     7.81     33.94    145.04      5000
      9.6     36.65    195.59      7500
  END FTABLE294

  FTABLE    300
Type:     Stream                          ***
Stream:   Mill Creek 01                   ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                 ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.16      2.56      0.82         1
     0.66      3.64      1.91         5
     1.35      4.95      4.95        25
     1.87      5.71      7.58        50
     2.57      6.71     11.76       100
     3.51      8.73     18.75       200
     5.31     30.55     43.17       500
     6.95     74.52     98.07      1000
     8.74    102.25    190.11      2000
    11.25    132.97    371.44      5000
    12.63    133.93    474.35      7500
  END FTABLE300

  FTABLE    304
Type:     Stream                          ***
Stream:   Mill Creek 01                   ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                 ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.25      0.18      0.04         1
     0.46      0.27      0.12         5
     1.05      0.44      0.37        25
     1.69      0.53      0.63        50
     2.55      0.66      1.06       100
     3.63      0.96       1.8       200
     4.97      2.36      3.87       500
     5.76      6.08      8.12      1000
     6.61      7.91     14.62      2000
     8.11      10.5     28.52      5000
     9.03     11.01      38.1      7500
  END FTABLE304

  FTABLE    305
Type:     Detention Pond                  ***
Stream:   Mill Creek                      ***
Name: 550 E                               ***
Source storage: SLC County  / (Area Coun***
```

```
Source discharge: SLC County            ***
Bottom elevation: 4257                  ***
 rows cols                              ***
    9    4
    Depth      Area    Volume  Outflow1 ***
     4420      0.01      0.00        20
     4421      0.01      0.10        50
     4422      0.02      1.20        66
     4423      0.04      2.20        75
     4424      0.05      7.60       100
     4425      0.08      8.20       108
     4426      0.11     10.00       140
     4427      0.16     14.00       210
     4428      0.23     16.00     10000
  END FTABLE305

  FTABLE    306
Type:     Stream                        ***
Stream:   Mill Creek 02                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.55      0.25      0.04         1
        1      0.36      0.13         5
     1.85      0.54      0.42        25
     2.43      0.66      0.68        50
     3.25       0.8      1.15       100
     4.34      1.01      1.93       200
     5.95      4.33      5.35       500
     6.76      5.79      9.93      1000
     7.72      6.85     16.88      2000
     9.54     12.12     36.25      5000
    10.62     18.23     56.52      7500
  END FTABLE306

  FTABLE    307
Type:     Detention Pond                ***
Stream:   Mill Creek                    ***
Name: Scott Ave                         ***
Source storage: SLC County              ***
Source discharge: SLC County            ***
Bottom elevation: 4275                  ***
 rows cols                              ***
   21    4
    Depth      Area    Volume  Outflow1 ***
        0      0.00      0.00         0
        1      0.29      0.15         0
        2      0.87      0.73         0
        3      1.57      1.95         0
        4      2.38      3.93         0
        5      3.28      6.75         0
        6      4.10     10.44         0
        7      4.54     16.50        78
        8      4.99     21.50       110
        9      5.43     26.90       150
       10      5.88     32.50       180
       11      6.32     38.60       203
       12      6.77     44.80       220
       13      7.21     51.10       240
     13.5      7.43     54.35       325
       14      7.65     57.60       460
    14.17      7.73     58.80       565
     14.5      7.77     60.91       735
       15      7.82     64.10      1143
     15.5      7.88     67.35      1690
       16      7.93     70.60      2385
  END FTABLE307

  FTABLE    308
Type:     Stream                        ***
Stream:   Mill Creek 03                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.28      1.56      0.19         1
     0.57      2.65      0.47         5
     1.04      3.92      1.46        25
     1.44      5.32      2.58        50
     1.76      6.84      4.63       100
     2.03      8.06      7.76       200
     2.59     11.53     15.78       500
     3.27     15.63      27.3      1000
      4.3     30.42     52.01      2000
     5.78     55.34    126.49      5000
     6.96     66.09    180.78      7500
  END FTABLE308

  FTABLE    310
Type:     Stream                        ***
Stream:   Mill Creek 03                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     2.08      2.19      0.76         1
     2.26         3      1.15         5
     2.67      4.27       2.4        25
     2.99      5.13      3.64        50
     3.43      6.18      5.67       100
     4.04      8.52      9.45       200
     5.17     11.73     18.86       500
     6.31     14.66     31.47      1000
     7.89     20.34     55.08      2000
    11.26     29.62    117.22      5000
    13.25     33.82    160.26      7500
  END FTABLE310

  FTABLE    312
Type:     Stream                        ***
Stream:   Mill Creek 03                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.29      0.27      0.04         1
     0.55      0.41      0.12         5
     1.05      0.71       0.4        25
     1.39       0.9      0.69        50
     1.84      1.19       1.2       100
     2.49       1.6       2.1       200
     3.59      2.47      4.45       500
     4.73      5.57      9.41      1000
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      6.25     11.31     19.55      2000
      9.23     16.29        42      5000
     11.07     17.88     56.28      7500
  END FTABLE312

  FTABLE    314
Type:     Stream                        ***
Stream:   Mill Creek 03                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.24      1.36      0.15         1
      0.44      2.02      0.49         5
      0.88      3.08      1.63        25
       1.2      3.71      2.75        50
      1.61      4.44      4.59       100
      2.27      5.29      7.73       200
      3.55      6.86     15.55       500
      4.95      8.56     26.61      1000
      6.89     16.26     51.22      2000
     10.45     30.24    120.02      5000
     11.96     33.07    163.88      7500
  END FTABLE314

  FTABLE    316
Type:     Stream                        ***
Stream:   Mill Creek 03                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.15       0.8      0.07         1
      0.29      1.18      0.25         5
      0.59       1.8      0.86        25
      0.84      2.19      1.47        50
       1.2      2.63      2.48       100
       1.7      3.18      4.21       200
      2.71      4.15      8.46       500
       3.9      5.57     14.77      1000
       5.6     13.14     31.04      2000
      8.93     18.21      65.8      5000
     10.55     20.49     90.66      7500
  END FTABLE316

  FTABLE    318
Type:     Stream                        ***
Stream:   Mill Creek 03                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.29       0.9      0.11         1
      0.53      1.64      0.36         5
      1.01      2.58      1.25        25
      1.37      3.14      2.13        50
      1.86      3.77      3.59       100
      2.55      4.76      6.14       200
      3.87      6.63     12.58       500
      5.33     11.56     23.64      1000
      7.39     16.37     42.35      2000
     10.13     22.59     89.96      5000
     11.57     27.54    127.79      7500
  END FTABLE318

  FTABLE    320
Type:     Stream                        ***
Stream:   Mill Creek 03                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.13      1.91      0.18         1
      0.27      3.09      0.64         5
      0.59      4.66      2.13        25
      0.81      5.58      3.61        50
      1.16      7.19      6.23       100
      1.66      8.99     10.62       200
      2.69     13.35     22.38       500
      3.85      16.7     38.39      1000
      5.72     24.42     69.69      2000
      8.17     32.97    143.41      5000
      9.34      35.1    192.06      7500
  END FTABLE320

  FTABLE    322
Type:     Stream                        ***
Stream:   Mill Creek 03                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.35      1.32      0.11         1
      0.61      2.41      0.39         5
      1.18      3.75      1.33        25
      1.55      4.36      2.23        50
      2.09      5.78      3.95       100
      2.47      6.95      6.67       200
      3.13      9.86     13.78       500
      3.89     11.29     23.02      1000
      5.07     13.17     38.72      2000
      7.62     17.29      79.1      5000
      9.23     21.63     111.8      7500
  END FTABLE322

  FTABLE    324
Type:     Stream                        ***
Stream:   Mill Creek 03                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.13      1.21      0.12         1
      0.21      1.85      0.39         5
      0.46      2.83      1.32        25
      0.67      3.44      2.23        50
      0.98      4.22       3.8       100
      1.43      5.18      6.46       200
      2.39      6.92     13.19       500
       3.5      8.72     22.67      1000
      5.15     11.44     39.16      2000
      8.42     20.54     90.26      5000
```

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     10.52     23.38    123.52      7500
  END FTABLE324

  FTABLE    325
Type:     Stream                        ***
Stream:   Big CottonW 01                ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.23      2.09      0.35         1
     0.49      2.95      1.05         5
     1.03      4.17      3.17        25
      1.4      4.94       5.1        50
     1.88      5.68      8.17       100
     2.54      6.63     13.14       200
     3.76      12.6     26.28       500
      5.1     26.53     53.97      1000
     6.84     52.44     110.8      2000
      9.7     99.63     274.2      5000
    11.31    107.79     379.8      7500
  END FTABLE325

  FTABLE    326
Type:     Detention Pond                ***
Stream:   Big Cottonwood                ***
Name: Hillview                          ***
Source storage: Countywide 3d Surface   ***
Source discharge: Assumed               ***
Bottom elevation: 4288                  ***
 rows cols                              ***
   05    4
    Depth      Area    Volume  Outflow1 ***
        0      0.06      0.00         0
        1      1.01      0.40         5
        2      3.08      2.40        50
        3      6.29      6.97       200
        4      8.92     14.68      1000
  END FTABLE326

  FTABLE    327
Type:     Detention Pond                ***
Stream:   Big Cottonwood                ***
Name:  I-9                              ***
Source storage: Countywide 3d Surface   ***
Source discharge: Assumed               ***
Bottom elevation: 4316                  ***
 rows cols                              ***
   05    4
    Depth      Area    Volume  Outflow1 ***
        0      0.74      0.00         0
        1      2.04      1.56         5
        2      3.91      4.36        50
        3      6.15      9.59       200
        4      7.19     16.28      1000
  END FTABLE327

  FTABLE    328
Type:     Stream                        ***
Stream:   Big CottonW 01                ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.16      2.27       0.3         1
     0.31      3.36      0.93         5
      0.6      4.62      2.91        25
     0.86      5.52      4.73        50
     1.08      6.58       7.7       100
     1.45      7.93     12.59       200
     2.73     10.38     24.32       500
     4.02     20.16      43.3      1000
     5.29      57.1     93.83      2000
     7.07    100.45    225.32      5000
      7.9       114    313.35      7500
  END FTABLE328

  FTABLE    329
Type:     Detention Pond                ***
Stream:   Big Cottonwood Creek          ***
Name: Creekside Park                    ***
Source storage: SLC County              ***
Source discharge: Assumed               ***
Bottom elevation: 4321                  ***
 rows cols                              ***
   08    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
        1      2.03      0.68         1
        3      4.92      7.62         5
        5       9.1     21.64        25
        7     13.01     43.75        50
        9     16.87     73.62       100
       12     20.58     129.8       200
       13     21.07     149.9      7500
  END FTABLE329

  FTABLE    330
Type:     Stream                        ***
Stream:   Big CottonW 02                ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.23      0.75       0.1         1
     0.45       1.2      0.35         5
     0.88      1.73      1.06        25
     1.21      1.98      1.71        50
     1.68      2.31      2.76       100
      2.3      2.69      4.47       200
     3.55      3.41      8.56       500
     4.94      4.27     14.28      1000
     7.06     18.24     35.47      2000
     9.71      30.2     84.67      5000
    10.75     34.59    114.11      7500
  END FTABLE330

  FTABLE    331
Type:     Stream                        ***
Stream:   Big CottonW 02                ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
```

```
      0.17      1.87      0.19         1
      0.31      3.06      0.73         5
      0.73      4.99      2.34        25
      1.05      7.44      4.08        50
       1.5     10.05      7.07       100
      2.12     13.44     11.99       200
      3.45     19.08     24.15       500
      4.96     34.28     47.54      1000
      7.42     53.31     91.16      2000
      9.81    103.87    214.27      5000
     10.75    129.67    305.88      7500
  END FTABLE331

  FTABLE    332
Type:     Stream                        ***
Stream:   Neffs Creek 1                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
      0.00      0.00      0.00         0
      0.18      0.97      0.13         1
      0.34      1.51      0.49         5
      0.72      2.53      1.64        25
      0.86      3.19      2.74        50
      1.06      4.07      4.59       100
      1.36      4.97      7.63       200
      2.00      7.36     15.66       500
      2.77      8.86     26.41      1000
      3.78     10.95     31.24      2000
      5.98     14.68     63.72      5000
      7.47     16.74     88.86      7500
  END FTABLE332

  FTABLE    333
Type:     Stream                        ***
Stream:   Neffs Creek 1                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
         0         0         0         0
      0.09      1.25      0.12         1
      0.25      2.05      0.41         5
       0.6      3.13      1.32        25
      0.87      3.81      2.23        50
      1.27      4.57      3.77       100
      1.84      5.48      6.36       200
      2.98      7.19     12.88       500
      4.16     10.65     23.41      1000
      5.66     20.14     44.53      2000
      8.36     34.98    109.11      5000
      9.65     38.98    148.38      7500
  END FTABLE333

  FTABLE    334
Type:     Debris Basin                  ***
Stream:   Big Cottonwood                ***
Name: Spencers Basin                    ***
Source storage: Countywide 3d Surface   ***
Source discharge: SLC County            ***
Bottom elevation: 4656.8                ***
 rows cols                              ***
   21    4
    Depth      Area    Volume  Outflow1 ***
         0         0         0         0
       2.4      0.00      0.00       100
         4      0.00      0.00       200
       5.2      2.63      1.98       300
       6.2      2.76      4.67       400
       7.2      2.89      7.48       500
       8.4      3.11     11.08       600
       9.4      3.27     14.27       700
        11      3.53     19.72       800
      12.1      3.71     23.71       900
      13.2      3.92     27.90      1000
      14.9      4.30     34.88      1001
     15.35      4.39     36.84      1100
      15.7      4.46     38.38      1200
     16.01      4.53     39.78      1300
      16.3      4.59     41.10      1400
     16.58      4.66     42.39      1500
     17.65      4.93     47.51      2000
        18      5.03     49.25      2200
      18.4      5.15     51.29      2500
     19.05      5.29     54.69     10000
  END FTABLE334

  FTABLE    335
Type:     Stream                        ***
Stream:   Big CottonW 03                ***
Source storage: Countywide HEC-RAS Model***
Outflow1: Flow remaining in creek       ***
Outflow2: Diversion for water supply - t***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
         0         0         0         0
      0.15      1.74      0.12         1
      0.28       2.5      0.38         5
      0.53      3.14       1.2        25
      0.74      3.49      1.98        50
      1.05      3.99      3.28       100
      1.53      4.88      5.56       200
      2.52      6.33     11.14       500
      3.65      8.07     18.95      1000
      5.25     11.24      33.2      2000
      8.47     29.56     91.79      5000
     11.07     35.72    128.96     10000
  END FTABLE335

  FTABLE    336
Type:     Stream                        ***
Stream:   Big CottonW 03                ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
         0         0         0         0
      0.41       1.5      0.14         1
      0.71       2.4      0.49         5
      1.35      4.25       1.7        25
      1.79      4.95      2.85        50
      2.35      5.73      4.77       100
      3.09      6.65      7.97       200
      4.44      9.58     16.58       500
      5.21     13.06     29.22      1000
      6.15     17.43     51.24      2000
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      8.57     23.96    106.93      5000
      9.69     29.79    146.61     10000
  END FTABLE336

  FTABLE    338
Type:     Stream                        ***
Stream:   Big CottonW 03                ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.25       2.9      0.25         1
      0.47       5.3      0.88         5
      0.89      8.34      3.03        25
      1.19      9.64      5.06        50
      1.61     11.17      8.44       100
      2.21     13.14      14.2       200
      3.38     16.34      28.3       500
      4.66     24.01      50.3      1000
       6.5     32.88     91.31      2000
      9.79     43.83    183.16      5000
     11.51      50.3    252.44     10000
  END FTABLE338

  FTABLE    340
Type:     Stream                        ***
Stream:   Big CottonW 03                ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.35      2.26       0.3         1
      0.61      3.51      0.93         5
       1.1      5.52      2.72        25
      1.43      7.35       4.6        50
      1.88     10.38      8.06       100
      2.48     13.21     13.66       200
      3.65     21.27     28.21       500
       4.9     33.64     53.22      1000
      5.94     46.85     99.08      2000
      7.87     55.12    189.57      5000
      9.12     58.33    248.28      7500
  END FTABLE340

  FTABLE    342
Type:     Stream                        ***
Stream:   Big CottonW 03                ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.11      1.79      0.15         1
      0.38      2.72      0.53         5
      0.78      4.19      1.76        25
      1.08      5.15      2.98        50
      1.41      6.33      5.01       100
      1.91      8.41      8.69       200
      3.11     14.56     19.14       500
      4.33     22.52     34.45      1000
      5.27     35.72     65.69      2000
      6.72     45.98    131.83      5000
      7.61     54.61     186.8      7500
  END FTABLE342

  FTABLE    344
Type:     Stream                        ***
Stream:   Big CottonW 03                ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
       0.2      2.45      0.19         1
      0.37      3.89      0.64         5
      0.73      7.41      2.35        25
         1      9.32      4.03        50
      1.39     11.37      6.81       100
      1.93     15.09     11.82       200
      3.09     21.08     24.19       500
      3.97     27.81     42.38      1000
      5.28     37.12     74.61      2000
      7.95      56.1    156.87      5000
      9.05     62.64    213.98      7500
  END FTABLE344

  FTABLE    350
Type:     Stream                        ***
Stream:   Little CottonW 1              ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.11      3.02      0.47         1
      0.25      5.45      1.73         5
      0.81      8.04      5.41        25
       1.1      9.17      8.52        50
      1.53     11.92     13.74       100
      2.13     14.13        22       200
      3.39     18.21     41.08       500
      4.81     34.82     72.88      1000
      6.59     85.71    155.85      2000
      9.13    138.01    379.85      5000
      10.4    181.03    547.84      7500
  END FTABLE350

  FTABLE    352
Type:     Detention Pond                ***
Stream:   Little Cottonwood Creek       ***
Name: Wheeler Farm                      ***
Source storage: Countywide 3d Surface   ***
Source discharge: Assumed               ***
Bottom elevation: 4381                  ***
 rows cols                              ***
   15    4
    Depth      Area    Volume  Outflow1 ***
        0      0.00      0.00         0
        1      0.05      0.01         1
        2      0.07      0.02         2
        3      0.34      0.20         3
        4      0.81      0.74         4
        5      1.84      2.03         5
        6      2.77      4.36        10
        7      4.02      7.71        15
        8      5.33     12.41        25
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         9      6.21     18.21        50
        10      6.81     24.72       100
        11      7.36     31.82       200
        12      7.72     39.36       500
        13      8.04     47.23      1000
        14      8.39     55.45      7500
  END FTABLE352

  FTABLE    355
Type:     Stream                          ***
Stream:   Little CottonW 2                ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.12      0.81      0.06         1
     0.23      1.17       0.2         5
     0.64      1.76      0.81        25
     0.87       1.9      1.15        50
     1.21      2.21      2.07       100
     1.71      2.56      3.36       200
     2.71      3.14      6.36       500
     3.79       3.7     10.32      1000
     5.28     10.09     21.92      2000
     8.09     34.89     70.46      5000
     8.69     42.67     97.91      7500
  END FTABLE355

  FTABLE    360
Type:     Stream                          ***
Stream:   Little CottonW 2                ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.32      2.33      0.24         1
     0.56      3.47      0.82         5
     1.14      5.43      2.86        25
     1.26      6.77      4.73        50
     1.78      8.12       7.8       100
     2.19     10.28        13       200
     3.19     23.21     29.24       500
     4.43     31.48     51.36      1000
     6.21     66.06    108.99      2000
     9.78       185    307.38      5000
    13.92    250.89    482.07      7500
  END FTABLE360

  FTABLE    370
Type:     Stream                          ***
Stream:   Deaf Smith Fk 1                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.25      0.79      0.08         1
     0.47      1.09      0.25         5
     0.93      1.64      0.82        25
      1.3      2.01      1.39        50
     1.84      2.77      2.45       100
     2.59      3.62      4.29       200
     4.21      5.69      9.11       500
     5.66      10.9     18.02      1000
     6.78     17.69     35.05      2000
     8.59     22.17     70.31      5000
      9.4     22.79      92.1      7500
  END FTABLE370

  FTABLE    372
Type:     Stream                          ***
Stream:   Deaf Smith Fk 1                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.24      1.34      0.13         1
     0.44      2.12      0.44         5
     0.87      3.15      1.45        25
      1.2      3.96      2.46        50
     1.68      5.44      4.27       100
     2.35      6.66      7.26       200
      3.6      8.55     14.53       500
     4.92     10.39     24.72      1000
     6.68     12.17     41.64      2000
    10.09     16.89     87.09      5000
       12     18.78    118.75      7500
  END FTABLE372

  FTABLE    374
Type:     Stream                          ***
Stream:   Deaf Smith Fk 1                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.26       0.5      0.05         1
      0.5      1.12      0.22         5
     0.96      2.09      0.77        25
     1.28      2.64      1.34        50
     1.73      3.13      2.29       100
     2.33      3.58      3.86       200
      3.5       4.6       7.8       500
     4.97      8.06     15.18      1000
     6.33     10.28     25.83      2000
     8.96     12.79      51.8      5000
    10.69     14.35     70.55      7500
  END FTABLE374

  FTABLE    380
Type:     Stream                          ***
Stream:   Little CottonW 3                ***
Source storage: Countywide HEC-RAS Model***
Outflow1: Flow remaining in creek         ***
Outflow2: Diversion for water supply - t***
 rows cols                                ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.19      0.95      0.08         1
     0.37      1.63      0.31         5
     0.68      2.44      1.03        25
      0.9       2.9      1.72        50
     1.21      3.49       2.9       100
```

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       1.7      4.14      4.86       200
      2.73      6.16     10.13       500
      3.91      7.67     17.65      1000
      5.52     10.08     30.86      2000
       8.6     17.15     69.76      5000
      9.88     22.17     99.98      7500
  END FTABLE380

  FTABLE    384
Type:     Stream                        ***
Stream:   Little CottonW 3              ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.14      2.11      0.17         1
      0.28      3.39      0.61         5
      0.57      5.06      2.04        25
      0.82      5.87      3.38        50
      1.17      6.88      5.66       100
      1.67      8.06       9.5       200
      2.69      9.91     18.73       500
      3.83     12.55     32.18      1000
      5.48     15.96     55.65      2000
      8.99     28.59    128.18      5000
     10.59     38.73     191.3      7500
  END FTABLE384

  FTABLE    388
Type:     Stream                        ***
Stream:   Little CottonW 3              ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.12      3.45      0.28         1
       0.2      5.71      0.91         5
      0.43      8.02      3.03        25
      0.64     10.27      5.16        50
      0.95     13.16      8.94       100
      1.39     15.93     15.11       200
       2.3     20.38     30.13       500
      3.41     25.33     51.38      1000
      5.07     35.62     90.96      2000
      7.28     45.99    182.32      5000
     10.44     52.73    250.92      7500
  END FTABLE388

  FTABLE    392
Type:     Stream                        ***
Stream:   Little CottonW 3              ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.14      2.68      0.26         1
       0.3      4.29      0.88         5
      0.69      6.97      3.04        25
      0.99      9.22      5.28        50
      1.41     11.68      9.06       100
      2.01     16.69     16.19       200
      3.23     29.03     36.55       500
      4.66     46.51     69.28      1000
      6.78     59.72    119.76      2000
     10.25     74.02    231.21      5000
     12.17     81.01    316.75      7500
  END FTABLE392

  FTABLE    396
Type:     Stream                        ***
Stream:   Little CottonW 3              ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
       0.2      0.64      0.07         1
      0.39      1.12      0.24         5
      0.65      1.81      0.86        25
      0.78      2.14      1.43        50
      0.96      2.59      2.41       100
      1.19      3.41      4.21       200
      1.68      5.12      8.77       500
      2.15       8.6     17.22      1000
      2.87     11.97     31.16      2000
      4.35     18.48     65.76      5000
      5.34      23.1      95.5      7500
  END FTABLE396

  FTABLE    400
Type:     Stream                        ***
Stream:   Dry Creek 1                   ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.48      1.75      0.18         1
      0.87      3.39      0.79         5
       1.6      5.21      2.33        25
      2.06      8.54      4.26        50
      2.72      11.5      7.14       100
      3.49     17.41     13.02       200
      4.89     25.29     27.13       500
      6.47      42.6     49.42      1000
      8.42     55.25     86.42      2000
      11.1     75.58    174.36      5000
     12.15      82.2    231.48      7500
  END FTABLE400

  FTABLE    404
Type:     Stream                        ***
Stream:   Dry Creek 1                   ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.19      0.37      0.04         1
      0.36      0.69      0.15         5
       0.6      1.16      0.42        25
       0.8      2.14      0.88        50
      0.94       2.8       1.5       100
      1.17      4.01      2.65       200
      1.56      5.86      5.19       500
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      1.94      7.18      8.45      1000
      2.45      8.85     14.17      2000
      3.42     10.81     28.16      5000
      4.02     11.97     39.27      7500
  END FTABLE404

  FTABLE    408
Type:     Stream                        ***
Stream:   Dry Creek 1                   ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.23      0.65      0.06         1
      0.43       1.1      0.27         5
      0.85      1.92      0.91        25
      1.16      2.31      1.49        50
      1.57      3.23      2.46       100
      2.09      4.39      4.35       200
      3.18      6.32      8.87       500
      4.52      8.42     15.13      1000
      6.09     10.92     25.83      2000
      9.45     14.27     51.96      5000
     11.09     16.41     71.57      7500
  END FTABLE408

  FTABLE    412
Type:     Stream                        ***
Stream:   Dry Creek 1                   ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.24      0.56      0.06         1
      0.41      1.05       0.2         5
      0.79      1.82      0.85        25
      1.08      2.45      1.46        50
      1.47      3.56      2.44       100
      2.02      4.09      4.03       200
      2.91      5.41      7.91       500
      3.75      6.44     12.79      1000
      5.07      8.22     22.31      2000
      7.19     10.16     43.56      5000
      8.59     11.39     60.09      7500
  END FTABLE412

  FTABLE    416
Type:     Stream                        ***
Stream:   Dry Creek 1                   ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.29      2.94      0.27         1
      0.51      4.95      0.94         5
      0.93      8.34      3.31        25
      1.27     11.43      5.95        50
      1.75     15.64     10.19       100
      2.36     20.67     17.79       200
       3.3     31.01     37.92       500
      4.07     39.43     66.22      1000
      5.02     44.76    107.33      2000
       6.7      51.9    205.96      5000
      7.78     57.44    280.46      7500
  END FTABLE416

  FTABLE    417
Type:     Stream                        ***
Stream:   South Fork Dry Creek          ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
Depth     Area      Volume    Outflow1  ***
        0         0         0         0
      0.27      0.98       0.1         1
      0.52      1.64      0.34         5
      0.98      2.76       1.2        25
       1.3      3.31      2.14        50
      1.73      3.93      3.55       100
      2.41       5.2      6.03       200
      3.16     10.48     14.09       500
      3.99      15.2     26.12      1000
      5.23     17.64     42.71      2000
      7.77     20.23     81.03      5000
      9.46     23.35    111.98      7500
  END FTABLE417

  FTABLE    418
Type:     Stream                        ***
Stream:   South Fork Dry Creek          ***
Source storage: Countywide HEC-RAS Model***
Outflow1: Flow remaining in creek       ***
Outflow2: Diversion for water supply - e***
 rows cols                              ***
   12    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
        0         0         0         0         0
      0.37      1.04      0.11         0         1
      0.71       1.7      0.37         0         5
      1.34      2.68      1.27        25         5
      1.77      3.14      2.13        50         5
      2.33      3.69      3.58       100         5
       3.1      4.43      6.06       200         5
      4.64      5.65     12.12       500         5
      6.35      6.94     20.63      1000         5
      8.87     10.27     37.53      2000         5
     12.88      12.9     74.34      5000         5
      14.8     14.85    100.77      7500         5
  END FTABLE418

  FTABLE    419
Type:     Stream                        ***
Stream:   Middle Fork Dry Creek         ***
Source storage: Countywide HEC-RAS Model***
Outflow1: Flow remaining in creek       ***
Outflow2: Diversion for water supply - e***
 rows cols                              ***
   12    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
        0         0         0         0         0
      0.15      1.25      0.14         0         1
      0.32      1.92      0.46         0         5
      0.79       2.7       1.5        25         5
      1.19      3.21      2.52        50         5
      1.78      3.96      4.28       100         5
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      2.63      4.95      7.31       200         5
      4.34       6.5     14.78       500         5
      6.22      8.09     25.22      1000         5
      8.75     10.23     43.31      2000         5
     13.88     15.17      90.7      5000         5
     16.71     19.16    130.67      7500         5
  END FTABLE419

  FTABLE    420
Type:     Reservoir                       ***
Stream:   Bells Canyon                    ***
Name:     Lower Bells                     ***
Source storage: Interpolated from County***
Bottom elevation: 5511 feet               ***
Outflow1: Flow remaining in creek         ***
Outflow2: Diversion for water supply      ***
 rows cols                                ***
   12    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
        0      0.63      0.00         0         0
        5      0.92      3.86         1         0
       10      1.26      9.28         1         5
       15      1.63     16.47         5        25
       20      2.05     25.64         5        50
       25      2.51     37.02       100        50
       30      3.25     51.37       200        50
       35      3.93     69.28       300        50
       40      4.66     90.74       400        50
       45      5.45    115.99       500        50
       50      6.27    145.24       600        50
       55      7.88    180.54      2000        50
  END FTABLE420

  FTABLE    422
Type:     Stream                          ***
Stream:   Dry Creek 3                     ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.3      1.53      0.15         1
     0.59      2.43      0.52         5
     1.08      3.96      1.79        25
     1.44      4.87      3.04        50
     1.94      5.87      5.11       100
     2.63       7.7      8.84       200
     3.98     11.53      18.9       500
     5.51     15.04     32.09      1000
     7.67     22.01     58.34      2000
    11.77     32.51    124.43      5000
    13.73     37.78     171.6      7500
  END FTABLE422

  FTABLE    424
Type:     Stream                          ***
Stream:   Dry Creek 3                     ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.31      0.42      0.06         1
     0.55      0.74      0.23         5
     0.97      1.78      0.82        25
     1.17      2.17      1.37        50
     1.44      2.69      2.28       100
     1.76      3.27      3.73       200
     2.35      4.39      7.26       500
     3.05      5.59     12.34      1000
     4.15      7.03     20.94      2000
     6.31     10.14     43.56      5000
     7.92     11.73     61.42      7500
  END FTABLE424

  FTABLE    425
Type:     Stream                          ***
Stream:   Big Willow Ck 1                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.36      0.96      0.12         1
     0.65      1.37      0.39         5
     1.19      2.26      1.35        25
     1.54      3.15      2.35        50
     2.03      3.96      3.96       100
      2.7      5.05      6.43       200
     3.44     13.57     14.52       500
      3.8     18.46      25.4      1000
      4.2     23.39     43.39      2000
     4.97     31.38     86.63      5000
     5.43     40.84    121.03      7500
  END FTABLE425

  FTABLE    430
Type:     Stream                          ***
Stream:   Big Willow Ck 1                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.27      1.08      0.17         1
     0.49      1.61      0.49         5
     0.92      2.69       1.7        25
     1.11      3.23      2.79        50
     1.46      4.02      4.62       100
     1.94       8.1      8.31       200
        3     16.44     18.55       500
     4.08     22.45     32.61      1000
     5.64     31.05     56.25      2000
     9.15     42.48     125.6      5000
    10.33     54.31    184.32      7500
  END FTABLE430

  FTABLE    435
Type:     Stream                          ***
Stream:   Big Willow Ck 1                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.32         1      0.16         1
     0.59      1.63      0.53         5
     1.44       2.6      1.81        25
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      1.87      3.97      3.03        50
      2.42      8.73      5.94       100
      3.05      12.4     11.09       200
       3.6     25.84     26.51       500
      4.21     35.35     47.47      1000
      5.24     41.03     77.83      2000
      6.92     49.83    147.15      5000
      7.72     53.82    195.03      7500
  END FTABLE435

  FTABLE    440
Type:     Stream                          ***
Stream:   Big Willow Ck 1                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.32      1.55      0.12         1
       0.6      2.42      0.49         5
      1.14      5.64      2.04        25
       1.5      8.73      3.55        50
      1.99     11.51      6.05       100
      2.63     15.74      10.4       200
      3.88     23.73     21.85       500
      4.51     40.78     41.43      1000
       5.3     47.85     68.85      2000
      6.87     63.66    129.72      5000
      7.64     67.31    173.74      7500
  END FTABLE440

  FTABLE    442
Type:     Detention Pond                  ***
Name: Big Willow 5                        ***
Stream:   Willow Creek                    ***
Source storage: Countywide 3d Surface     ***
Source discharge: Assumed                 ***
Bottom elevation: 4576                    ***
 rows cols                                ***
   05    4
    Depth      Area    Volume  Outflow1 ***
        0      0.00      0.00         0
        2      0.62      0.32         5
        4      1.45      2.46        50
        6      2.51      6.37       100
        8      3.29     12.21      1000
  END FTABLE442

  FTABLE    444
Type:     Stream                          ***
Stream:   Big Willow Ck 2                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.17      0.19      0.02         1
      0.34      0.37      0.08         5
      0.65      0.59      0.31        25
       0.9      0.71      0.52        50
      1.23      0.87      0.85       100
      1.74      1.15      1.41       200
      2.58      3.41      3.74       500
      3.08      4.63      6.59      1000
      3.62      5.47      10.5      2000
      4.91       6.4     20.92      5000
      5.74         7     28.89      7500
  END FTABLE444

  FTABLE    446
Type:     Stream                          ***
Stream:   Big Willow Ck 3                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.22      2.14      0.28         1
      0.44      3.07      0.58         5
      0.88      4.64      2.01        25
      1.24      6.19      3.46        50
      1.76      7.22      5.77       100
      2.48      9.69      9.97       200
       3.9      13.4     20.49       500
      5.37     16.74     34.78      1000
       7.7      25.1     64.59      2000
     10.37     32.14    127.46      5000
     12.04     35.92     174.4      7500
  END FTABLE446

  FTABLE    450
Type:     Stream                          ***
Stream:   Big Willow Ck 3                 ***
Source storage: Countywide HEC-RAS Model***
Outflow1: Flow remaining in creek         ***
Outflow2: Diversion for water supply - e***
 rows cols                                ***
   12    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
        0         0         0         0         0
      0.16      0.75      0.09         0         1
      0.32      1.21      0.32         0         5
      0.73      1.93      1.07        25         5
      1.05      2.36      1.82        50         5
      1.49      2.88      3.07       100         5
      2.07      3.52      5.22       200         5
      3.24      4.79      10.7       500         5
      4.55      6.21     18.67      1000         5
       6.2      8.53     32.73      2000         5
      8.68     12.54     67.85      5000         5
      9.99     15.46     96.29      7500         5
  END FTABLE450

  FTABLE    454
Type:     Stream                          ***
Stream:   L Willow Ck 1                   ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.14      2.79      14.4         1
      0.27       3.2     14.87         5
      0.52      4.06     16.08        25
      0.68      4.58     16.99        50
      0.88      5.11      18.3       100
      1.12      5.64     20.28       200
      1.65      7.61     25.04       500
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      2.13      8.65      30.8      1000
      2.93     10.75     40.63      2000
       4.5     13.83     64.41      5000
      5.28     20.35     85.77      7500
  END FTABLE454

  FTABLE    458
Type:     Detention Pond                 ***
Stream:   Little Willow Creek            ***
Name: Little Willow 1                    ***
Source storage: Countywide 3d Surface    ***
Source discharge: Assumed                ***
Bottom elevation: 4745                   ***
 rows cols                               ***
   15    4
    Depth      Area    Volume  Outflow1 ***
        0      0.00      0.00         0
        1      0.04      0.01         1
        2      0.28      0.15         2
        3      0.46      0.53         3
        5      0.87      1.82         4
        7      1.22      3.95         5
        9      1.49      6.67        15
       11      1.70      9.85        25
       13      1.93     13.47        50
       15      2.13     17.54       100
       17      2.39     22.06       200
       19      2.63     27.06       500
       21      2.92     32.62      1000
       23      3.38     38.90      2000
       25      3.89     46.17      7500
  END FTABLE458

  FTABLE    462
Type:     Stream                         ***
Stream:   L Willow Ck 2                  ***
Source storage: Countywide HEC-RAS Model***
 rows cols                               ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.18      0.63      0.06         1
     0.31      1.03      0.21         5
     0.59      1.78      0.73        25
     0.73      2.14      1.23        50
     0.94      2.67      2.09       100
     1.26      3.65      3.66       200
     1.73      7.18      8.62       500
     2.27      8.89     14.81      1000
     3.08     11.11     25.13      2000
      4.8     16.76     56.76      5000
     5.93     17.68      75.5      7500
  END FTABLE462

  FTABLE    464
Type:     Stream                         ***
Stream:   L Willow Ck 2                  ***
Source storage: Countywide HEC-RAS Model***
Outflow1: Flow remaining in creek        ***
Outflow2: Diversion for water supply - e***
 rows cols                               ***
   12    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
        0         0         0         0         0
     0.27      1.55      0.19         0         1
     0.51      2.48      0.63         0         5
     0.98      3.74      2.12        25         5
     1.36       4.6      3.62        50         5
     1.91      5.62      6.16       100         5
     2.67      6.95     10.49       200         5
     4.15      9.29     21.19       500         5
     5.78     11.73     36.46      1000         5
     8.14      14.9      62.8      2000         5
    12.74     22.11    133.24      5000         5
    15.51     24.74    181.44      7500         5
  END FTABLE464

  FTABLE    470
Type:     Stream                         ***
Stream:   Bear Canyon                    ***
Source storage: Countywide HEC-RAS Model***
Outflow1: Flow remaining in creek        ***
Outflow2: Diversion for water supply - e***
 rows cols                               ***
   12    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
        0         0         0         0         0
     0.26      1.11      0.14         0         1
      0.5      1.97      0.51         0         5
     0.97      3.09      1.73        25         5
     1.33      3.65      2.92        50         5
     1.87      4.43      4.94       100         5
     2.63      5.47      8.41       200         5
     4.09       7.1     16.92       500         5
     5.73      8.65     28.75      1000         5
        8     10.69     49.15      2000         5
    12.33     14.43    100.37      5000         5
    15.29     16.76    138.31      7500         5
  END FTABLE470

  FTABLE    475
Type:     Stream                         ***
Stream:   Corner Cyn Ck 1                ***
Source storage: Countywide HEC-RAS Model***
 rows cols                               ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.12      0.76       0.1         1
      0.3      1.32      0.39         5
     0.72      2.27      1.21        25
     1.01      4.07      2.08        50
     1.42       4.9      3.35       100
     2.08      6.46      5.51       200
     3.04      8.46     10.41       500
     3.47     10.63      16.9      1000
     4.21     12.15      27.3      2000
     5.25     16.71     54.65      5000
     6.11     19.27     74.01      7500
  END FTABLE475

  FTABLE    480
Type:     Stream                         ***
Stream:   Corner Cyn Ck 1                ***
Source storage: Countywide HEC-RAS Model***
 rows cols                               ***
   12    4
    Depth      Area    Volume  Outflow1 ***
```

```
          0         0         0         0
       0.12      1.07      0.14         1
        0.3      1.57       0.5         5
       0.63      2.32      1.56        25
       0.89      2.77      2.55        50
       1.27       3.3      4.16       100
        1.8      3.97      6.83       200
       2.88      5.27     13.33       500
       4.14     12.42     25.63      1000
       5.87     18.77     44.71      2000
       9.14     32.19     99.13      5000
      10.58     34.64     137.1      7500
  END FTABLE480

  FTABLE    484
Type:     Stream                          ***
Stream:   Corner Cyn Ck 1                  ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                 ***
   12    4
    Depth      Area    Volume  Outflow1 ***
          0         0         0         0
       0.28      0.46      0.05         1
       0.52      0.78      0.17         5
       0.98      1.36      0.62        25
       1.29      1.74      1.15        50
       1.75      3.17      1.95       100
       2.39         5      3.98       200
       3.68      6.05      7.65       500
       5.51      9.58     14.19      1000
       6.28     16.92     27.16      2000
       8.07     20.09     55.74      5000
       8.98     21.68     75.49      7500
  END FTABLE484

  FTABLE    486
Type:     Stream                          ***
Stream:   Corner Cyn Ck 1                  ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                 ***
   12    4
    Depth      Area    Volume  Outflow1 ***
          0         0         0         0
       0.35       0.1      0.01         1
       0.67      0.14      0.03         5
       1.28      0.22      0.11        25
       1.68      0.28       0.2        50
       2.22      0.35      0.34       100
       3.03      0.43      0.58       200
       4.32      0.62      1.22       500
        5.4      1.84      2.98      1000
       6.91      2.31      5.13      2000
        8.6      2.39      9.24      5000
       9.64      2.45     11.99      7500
  END FTABLE486

  FTABLE    488
Type:     Debris Basin                    ***
Stream:   Corner Canyon Creek             ***
Name: Corner Canyon                       ***
Source storage: Countywide 3d Surface     ***
Source discharge: SLC County              ***
Bottom elevation: 4608                    ***
 rows cols                                 ***
   13    4
    Depth      Area    Volume  Outflow1 ***
          0      0.18         0         0
       3.75      1.07      3.20        50
        4.2      1.11      3.69      55.8
       4.54      1.14      4.08       100
       4.77      1.16      4.34       150
       4.97      1.17      4.57       200
       5.14      1.19      4.77       250
       5.29      1.20      4.95       300
       5.41      1.20      5.10       350
       5.53      1.21      5.24       400
       5.63      1.22      5.37       450
       5.73      1.23      5.49       500
          6      1.24      5.50     10000
  END FTABLE488

  FTABLE    490
Type:     Stream                          ***
Stream:   Corner Cyn Ck 2                  ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                 ***
   12    4
    Depth      Area    Volume  Outflow1 ***
          0         0         0         0
       0.24      0.63      0.06         1
       0.46      1.23      0.23         5
       0.87      1.72      0.74        25
       1.19      2.02      1.25        50
       1.62      2.39      2.11       100
       2.23      2.88      3.57       200
       3.45      3.96      7.27       500
       4.72      5.07     12.67      1000
        6.3      7.01     22.39      2000
       9.33      13.3     52.67      5000
      11.18     15.19      73.7      7500
  END FTABLE490

  FTABLE    494
Type:     Stream                          ***
Stream:   Corner Cyn Ck 2                  ***
Source storage: Countywide HEC-RAS Model***
Outflow1: Flow remaining in creek         ***
Outflow2: Diversion for water supply - e***
 rows cols                                 ***
   12    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
          0         0         0         0         0
        0.2      1.52      0.17         0         1
       0.38      2.36      0.55         0         5
       0.72      3.74      1.87        25         5
       0.95      4.58      3.17        50         5
       1.24       5.7      5.38       100         5
       1.68      7.77      9.45       200         5
       2.55      9.88        19       500         5
       3.49     12.05     32.42      1000         5
       5.14     15.44     55.48      2000         5
        7.5     22.68    116.94      5000         5
       8.47     25.23    159.68      7500         5
  END FTABLE494

  FTABLE    500
Type:     Stream                          ***
Stream:   Jordan River 01                 ***
```

```
Source storage: Countywide HEC-RAS Model***
 rows cols                                 ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.19     48.47     40.67         1
     0.24     62.29     57.73         5
     0.85      88.6      94.6        25
     0.98    117.41    126.31        50
     1.17    193.53     188.5       100
     1.45    347.68    324.85       200
     1.99    519.84    677.74       500
     2.66    634.99   1108.78      1000
     3.23    710.31   1708.83      2000
     4.18    804.97   2941.04      5000
     4.75    813.75   3693.99      7500
  END FTABLE500

  FTABLE    505
Type:     Stream                          ***
Stream:   Jordan River 01                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                 ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.31     20.14       4.1         1
     0.68     25.07     11.35         5
     1.37     28.44     30.16        25
     1.87     31.19     45.83        50
     2.55      39.5     71.42       100
     3.33     56.75    115.07       200
     4.42     93.47    218.18       500
     5.42    157.88    379.04      1000
     6.68    211.21    645.54      2000
     8.84    270.06   1259.46      5000
    10.06    271.97   1617.89      7500
  END FTABLE505

  FTABLE    510
Type:     Stream                          ***
Stream:   Jordan River 01                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                 ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.38     12.18      2.45         1
     0.66     14.01      5.36         5
     1.25     16.08     13.18        25
     1.67        17     20.19        50
     2.26     17.92     30.92       100
     3.14      19.1     47.72       200
     4.78     22.62     85.06       500
     6.19     32.16    133.08      1000
      7.8     97.42    271.86      2000
     10.5    121.17    610.54      5000
    11.91    123.59    806.37      7500
  END FTABLE510

  FTABLE    515
Type:     Stream                          ***
Stream:   Jordan River 01                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                 ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.24      6.54      0.98         1
     0.42      8.67      2.78         5
     0.78     10.11      7.72        25
     1.11     10.87     11.96        50
     1.65     11.74     18.61       100
     2.49     12.91     29.04       200
     4.29      22.5     56.46       500
     6.27     43.88    111.96      1000
     8.33     69.58    223.31      2000
    10.94     76.64    423.23      5000
    12.51     80.06    548.71      7500
  END FTABLE515

  FTABLE    520
Type:     Stream                          ***
Stream:   Jordan River 01                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                 ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.06      9.45      1.45         1
     0.12     14.14      3.91         5
      0.4     16.45      9.95        25
     0.77     17.51     15.35        50
     1.36     18.97     24.35       100
     2.26     19.56     39.39       200
     3.94     20.58     72.08       500
     5.33     26.08    105.74      1000
     6.85     79.56    193.98      2000
     9.43    126.76    493.45      5000
    11.02    138.03    710.39      7500
  END FTABLE520

  FTABLE    525
Type:     Stream                          ***
Stream:   Jordan River 01                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                 ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.28     15.15      1.86         1
     0.51     19.13      5.14         5
     0.97     21.76     14.16        25
     1.31     23.35     21.77        50
     1.79     24.99     33.43       100
     2.49     26.52     51.42       200
     4.05      29.3     91.83       500
     5.67     37.07    145.51      1000
      7.6    106.56    267.68      2000
    10.22    248.61    706.15      5000
    11.79    280.76    999.48      7500
  END FTABLE525

  FTABLE    527
Name:     4100 South Drain                ***
Type:            Box Culvert; (6.5' x***
Length:            4,980 ft               ***
Descrip:                   18'x24': 2***
```

```
Height (ft)            14.0 ft          ***
Width (ft):            16.0 ft          ***
Max Elev:             4,274 ft          ***
Min Elev:             4,247 ft          ***
Slope (ft/ft):          0.0054          ***
Roughness,n:             0.015          ***
Source:   Salt Lake County              ***
Bottom Ele 4241.0 ft                    ***
 rows cols                              ***
    9    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
       0.0      0.00      0.00       0.0
       0.2      1.80      0.37       7.9
       0.5      1.80      0.91      35.3
       1.0      1.80      1.83     107.9
       2.0      1.80      3.66     319.3
       5.0      1.80      9.15    1234.5
      10.0      1.80     18.29    3155.0
      14.0      1.80     25.61    4835.5
      15.0      1.80     30.00    6000.0
  END FTABLE527

  FTABLE    528
Name:     4100 South Drain              ***
Type:                  RCP              ***
Length:               6,837 ft          ***
Descrip:            24": 1,000 ft; 54": ***
                    24": 1,000 ft; 65": ***
                    90": 2,337 ft       ***
Avg. Diameter (in)     61.0 in          ***
Max Elev:             4,319 ft          ***
Min Elev:             4,274 ft          ***
Slope (ft/ft):       0.0065818          ***
Roughness,n:             0.015          ***
Source:   Salt Lake County              ***
Bottom elev.: 4268                      ***
 rows cols                              ***
   10    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
       0.0      0.0      0.00       0.0
       0.2      0.8      0.04       0.6
       0.5      0.8      0.16       3.9
       1.0      0.8      0.44      16.2
       2.0      0.8      1.16      62.6
       3.0      0.8      1.96     125.3
       4.0      0.8      2.69     184.0
       5.0      0.8      3.17     201.4
       6.0      0.8      4.00     300.0
       7.0      0.8      4.50   10000.0
  END FTABLE528

  FTABLE    529
Name:     4100 South Drain              ***
Type:                  RCP              ***
Ave. Diameter:          61"             ***
Length:              10,064 ft          ***
Descrip:            30": 1,660 ft; 33": ***
                    36": 1,174 ft; 48": ***
                    84": 5,260 ft       ***
Avg. Diameter (in)     71.0 in          ***
Max Elev:             4,403 ft          ***
Min Elev:             4,301 ft          ***
Slope (ft/ft):       0.0101351          ***
Roughness,n:             0.015          ***
Source:   Salt Lake County              ***
Bottom elev.: 4296                      ***
 rows cols                              ***
   10    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
       0.0      0.0      0.00       0.0
       0.2      1.4      0.07       0.7
       0.5      1.4      0.26       5.2
       1.0      1.4      0.71      22.1
       2.0      1.4      1.89      87.6
       3.0      1.4      3.23     182.3
       4.0      1.4      4.57     284.5
       5.0      1.4      5.73     365.2
       6.0      1.4      6.00     500.0
       7.0      1.4      6.50   10000.0
  END FTABLE529

  FTABLE    530
Type:     Stream                        ***
Stream:   Jordan River 01               ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.33      4.31      0.48         1
     0.48      5.31      1.13         5
     0.84      7.24      3.32        25
     1.15      8.07      5.36        50
     1.59      8.45       8.5       100
     2.21      8.98     13.37       200
     3.45      9.81     24.25       500
     4.89      10.7     38.18      1000
     6.72     13.53     61.33      2000
     8.94     33.85    129.28      5000
     10.3      52.8    195.87      7500
  END FTABLE530

  FTABLE    532
Name:     4700 South Drain              ***
Type:                  RCP              ***
Length:               8,626 ft          ***
Descrip:            66"; 84"            ***
Avg. Diameter (in)     75.0 in          ***
Max Elev:             4,295 ft          ***
Min Elev:             4,241 ft          ***
Slope (ft/ft):       0.0062601          ***
Roughness,n:             0.015          ***
Source:   Salt Lake County              ***
 rows cols                              ***
   10    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
       0.0      0.0     0.000      0.00
       0.2      1.2     0.058      0.60
       0.5      1.2     0.228      4.22
       1.0      1.2     0.627     17.98
       2.0      1.2     1.676     71.81
       4.0      1.2     4.106    239.52
       5.0      1.2     5.210    316.51
       6.0      1.2     5.994    346.92
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       7.0       1.2     7.000    500.00
       8.0       1.2     7.500  10000.00
  END FTABLE532

  FTABLE    534
Name:     4700 South Drain              ***
Type:                  RCP              ***
Length:               3,931 ft          ***
Descrip:            54": 1,000 ft; 48": ***
Avg. Diameter (in)     51.0 in          ***
Max Elev:             4,314 ft          ***
Min Elev:             4,295 ft          ***
Slope (ft/ft):          0.005           ***
Roughness,n:            0.015           ***
Source:   Salt Lake County              ***
Bottom Ele 4289.0 ft                    ***
 rows cols                              ***
    9    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
       0.0      0.00      0.00       0.0
       0.2      0.40      0.02       0.4
       0.5      0.40      0.08       3.0
       1.0      0.40      0.23      12.4
       2.0      0.40      0.59      45.8
       3.0      0.40      0.97      86.1
       4.0      0.40      1.25     109.4
       5.0      0.40      2.50     500.0
       6.0      0.40      3.00   10000.0
  END FTABLE534

  FTABLE    535
Type:     Stream                        ***
Stream:   Jordan River 01               ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.1      9.32       0.9         1
     0.16     12.15      2.68         5
     0.46     14.47      7.51        25
      0.7     15.47     11.63        50
     1.07     16.68     18.08       100
     1.63     18.25     28.31       200
     2.79     23.07     51.87       500
     4.16     28.06     84.07      1000
     6.16     42.71    143.68      2000
    10.12     80.99    334.91      5000
    12.08     98.41    477.64      7500
  END FTABLE535

  FTABLE    537
Name:     5400 South Drain              ***
Type:                  RCP              ***
Length:               1704'             ***
Descrip:                66"             ***
Avg. Diameter (in)        66            ***
Max Elev:               4308            ***
Min Elev:               4253            ***
Slope (ft/ft):       0.032277           ***
Roughness,n:            0.015           ***
Source:   Salt Lake County              ***
 rows cols                              ***
    9    4
Depth      Area      Volume    Outflow1  ***
(ft)      (acres)   (acre-ft) (ft3/s)   ***
       0.0      0.00      0.00       0.0
       0.2      0.20      0.01       1.3
       0.5      0.20      0.04       8.9
       1.0      0.20      0.12      37.7
       2.0      0.20      0.31     147.7
       3.0      0.20      0.52     302.2
       4.0      0.20      0.72     459.5
       5.0      0.20      0.89     559.3
       6.0      0.20      1.00   10000.0
  END FTABLE537

  FTABLE    538
Name:     5400 South Drain              ***
Type:                  RCP              ***
Length:               7,857 ft          ***
Descrip:             66"; 84"           ***
Avg. Diameter (in)     75.0 in          ***
Max Elev:             4,407 ft          ***
Min Elev:             4,308 ft          ***
Slope (ft/ft):          0.013           ***
Roughness,n:            0.015           ***
Source:   Salt Lake County              ***
 rows cols                              ***
   10    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
       0.0       0.0     0.000      0.00
       0.2       1.1     0.053      0.85
       0.5       1.1     0.207      6.00
       1.0       1.1     0.571     25.53
       2.0       1.1     1.527    101.97
       3.0       1.1     2.626    214.40
       4.0       1.1     3.740    340.16
       5.0       1.1     4.746    449.49
       6.0       1.1     5.459    492.67
       7.0       1.1     6.000  10000.00
  END FTABLE538

  FTABLE    539
Name:     5400 South Drain              ***
Type:                  RCP              ***
Length:               2,304 ft          ***
Descrip:             42"; 54"           ***
Avg. Diameter (in)     48.0 in          ***
Max Elev:             4,467 ft          ***
Min Elev:             4,407 ft          ***
Slope (ft/ft):       0.025907           ***
Roughness,n:            0.015           ***
Source:   Salt Lake County              ***
 rows cols                              ***
    9    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
       0.0       0.0     0.000      0.00
       0.2       0.2     0.012      0.96
       0.5       0.2     0.048      6.67
       1.0       0.2     0.130     27.45
       2.0       0.2     0.332    100.19
       3.0       0.2     0.535    182.72
       4.0       0.2     0.665    200.38
       5.0       0.2     1.000    300.00
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       6.0       0.2     1.500  10000.00
  END FTABLE539

  FTABLE    540
Type:     Stream                          ***
Stream:   Jordan River 01                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.09      5.42       0.5         1
      0.27      6.42      1.47         5
      0.68      8.52      4.47        25
      0.98       9.1      6.93        50
      1.43      9.69     10.72       100
       2.1     10.39     16.64       200
      3.43     11.87     30.06       500
      4.92     13.67     47.64      1000
      6.99     17.46     77.39      2000
     11.03      36.7    170.56      5000
     13.17     51.47    249.31      7500
  END FTABLE540

  FTABLE    542
Name:     7200 South Drain                ***
Type:                   RCP               ***
Length:              14,101 ft            ***
Descrip:            36": 6,800 ft; 58":7***
Avg. Diameter (in)     47.0 in            ***
Max Elev:             4,453 ft            ***
Min Elev:             4,274 ft            ***
Slope (ft/ft):          0.013             ***
Roughness,n:            0.015             ***
Source:   Salt Lake County                ***
 rows cols                                ***
   11    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
      0.0       0.0     0.000      0.00
      0.2       1.3     0.075      0.67
      0.5       1.3     0.290      4.61
      1.0       1.3     0.785     18.93
      1.5       1.3     1.374     41.24
      2.0       1.3     2.003     68.68
      2.5       1.3     2.628     97.68
      3.0       1.3     3.206    123.81
      3.5       1.3     3.678    140.85
      4.0       1.3     5.000    200.00
      5.0       1.3     5.500  10000.00
  END FTABLE542

  FTABLE    545
Type:     Stream                          ***
Stream:   Jordan River 01                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.16      6.78      0.83         1
      0.33      8.89      2.41         5
      0.57     10.67      6.75        25
      0.82     11.57      10.6        50
      1.26     12.57     16.69       100
      1.96     13.85     26.28       200
      3.46     16.88     48.78       500
      5.16     22.32     80.72      1000
       7.5     28.91    136.09      2000
     11.12     96.58    352.65      5000
     12.63    119.53       521      7500
  END FTABLE545

  FTABLE    547
Name:     9000 South Drain                ***
Type:                   RCP               ***
Length:               5,900 ft            ***
Descrip:            48": 1,300 ft; 66":1***
                    72":2,200; 68":800  ***
Avg. Diameter (in)     68.0 in            ***
Max Elev:             4,412 ft            ***
Min Elev:             4,293 ft            ***
Slope (ft/ft):       0.0202373            ***
Roughness,n:            0.015             ***
Source:   Salt Lake County                ***
 rows cols                                ***
   10    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
      0.0       0.0     0.000      0.00
      0.2       0.8     0.038      1.02
      0.5       0.8     0.148      7.19
      1.0       0.8     0.406     30.43
      2.0       0.8     1.078    119.76
      3.0       0.8     1.836    246.70
      4.0       0.8     2.577    379.46
      5.0       0.8     3.190    473.32
      6.0       0.8     3.500    600.00
      7.0       0.8     4.000  10000.00
  END FTABLE547

  FTABLE    548
Name:     9000 South Drain                ***
Type:                   RCP               ***
Length:               1,306 ft            ***
Descrip:                  42"             ***
Avg. Diameter (in)     42.0 in            ***
Max Elev:             4,469 ft            ***
Min Elev:             4,412 ft            ***
Slope (ft/ft):        0.043042            ***
Roughness,n:            0.015             ***
Source:   Salt Lake County                ***
 rows cols                                ***
   11    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
      0.0       0.0     0.000      0.00
      0.2       0.1     0.007      1.15
      0.5       0.1     0.025      7.95
      1.0       0.1     0.068     32.22
      1.5       0.1     0.118     69.08
      2.0       0.1     0.170    112.64
      2.5       0.1     0.220    155.45
      3.0       0.1     0.263    187.54
      3.5       0.1     0.288    200.00
      4.0       0.1     0.500    250.00
      5.0       0.1     1.000  10000.00
  END FTABLE548
```

```
  FTABLE    549
Name:     9000 South Drain              ***
Type:                  RCP              ***
Length:               5,780 ft          ***
Descrip:            36": 6,800 ft; 58":7***
Avg. Diameter (in)     47.0 in          ***
Max Elev:             4,453 ft          ***
Min Elev:             4,274 ft          ***
Slope (ft/ft):       0.0309516          ***
Roughness,n:             0.015          ***
Source:   Salt Lake County              ***
 rows cols                              ***
   11    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
       0.0       0.0     0.000      0.00
       0.2       0.5     0.031      1.04
       0.5       0.5     0.119      7.20
       1.0       0.5     0.322     29.57
       1.5       0.5     0.563     64.41
       2.0       0.5     0.821    107.28
       2.5       0.5     1.077    152.58
       3.0       0.5     1.314    193.38
       3.5       0.5     1.508    220.00
       4.0       0.5     2.000    300.00
       5.0       0.5     2.500  10000.00
  END FTABLE549

  FTABLE    550
Type:     Stream                        ***
Stream:   Jordan River 01               ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.46       4.3      0.84         1
      0.71      5.16      2.25         5
      1.16      5.92      5.52        25
      1.47      6.35      8.06        50
      1.91      6.86     11.78       100
      2.53      7.46      17.5       200
      3.76      8.59     29.89       500
      5.14     11.58     46.44      1000
      7.38     22.86     85.68      2000
      9.15     45.49    187.56      5000
      9.49     54.73    261.54      7500
  END FTABLE550

  FTABLE    555
Type:     Stream                        ***
Stream:   Jordan River 01               ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.32     13.36      1.22         1
      0.54     15.25      3.33         5
      0.94     17.82      9.11        25
      1.18     19.16     14.12        50
      1.49      20.8     21.99       100
      2.01     22.32     34.27       200
      3.56      28.3     62.66       500
      5.38     58.11    110.25      1000
      7.73    109.25    209.43      2000
     11.21    187.33    495.06      5000
     12.83    199.22    670.02      7500
  END FTABLE555

  FTABLE    560
Type:     Stream                        ***
Stream:   Jordan River 01               ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.18      6.65      0.69         1
      0.36      8.72      2.06         5
      0.73     10.77      5.89        25
      1.01     12.12       9.3        50
      1.41     14.07     14.78       100
         2     16.78     23.62       200
      3.26     29.76     46.35       500
      4.58     37.41     77.58      1000
      6.01     51.64    130.58      2000
      7.84    124.19     301.1      5000
      8.56    144.45    410.59      7500
  END FTABLE560

  FTABLE    565
Type:     Stream                        ***
Stream:   Jordan River 01               ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.21      4.94      0.62         1
      0.31      6.32       1.7         5
      0.53      8.24       5.1        25
      0.78      9.06      7.84        50
      1.18     10.09     12.06       100
      1.82     13.36     19.27       200
      3.09     17.44     36.64       500
      4.39     31.56     63.25      1000
      6.02        59     117.3      2000
      8.62     85.41    269.47      5000
      9.54     94.99    383.58      7500
  END FTABLE565

  FTABLE    570
Type:     Stream                        ***
Stream:   Jordan River 01               ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.35      5.51      0.87         1
      0.65      7.01      2.16         5
      1.05      9.81      5.39        25
      1.33     11.42      8.56        50
      1.71     13.22     13.54       100
      2.26     15.97     21.72       200
       3.4     22.08     40.79       500
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      4.57     37.22     71.37      1000
      6.34     64.45    130.29      2000
      8.19    116.72    297.08      5000
       8.9     129.7    397.15      7500
  END FTABLE570

  FTABLE    575
Type:     Stream                          ***
Stream:   Jordan River 01                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.07       8.2       0.9         1
      0.24     10.72      2.38         5
      0.66     13.97      7.22        25
         1     15.74     11.28        50
      1.47     17.62     17.54       100
      2.12     21.18     27.66       200
      3.35     28.64     51.22       500
      4.61     36.15     82.77      1000
      5.87      49.7    138.47      2000
      7.31      71.8    277.59      5000
       8.1      81.5    376.55      7500
  END FTABLE575

  FTABLE    576
Type:     Stream                          ***
Stream:   Jordan River Tr                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.12       1.8      0.19         1
      0.28      2.75      0.64         5
      0.64      4.18      2.15        25
      0.91      5.09      3.65        50
      1.26       6.3      6.19       100
      1.74      8.01     10.62       200
      2.68     12.03     22.13       500
      3.28     15.85     38.44      1000
       3.8      20.2     67.24      2000
      5.21     26.92    137.63      5000
      6.15     31.97    192.61      7500
  END FTABLE576

  FTABLE    580
Type:     Stream                          ***
Stream:   Jordan 17                       ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.26      2.06      0.26         1
      0.48      3.06      0.75         5
      0.77      4.92      2.53        25
      0.95       5.5      4.02        50
      1.21      6.23      6.42       100
       1.6      7.26     10.36       200
      2.32      9.76     19.36       500
      3.02      13.4      31.6      1000
      3.91     24.94     56.09      2000
      5.47     60.56    145.14      5000
      6.41     72.43    210.19      7500
  END FTABLE580

  FTABLE    585
Name:     Kearns-Chesterfield Drain     ***
RCHRES:          585                    ***
Type:     Assumed 30 ft wide            ***
Length:     6,056 ft                    ***
Descrip:  30-ft wide channel            ***
Height (ft    6.0 ft                    ***
Width (ft)   30.0 ft                    ***
Max Elev:   4,233 ft                    ***
Min Elev:   4,227 ft                    ***
Slope (ft/ft) 0.0011212                 ***
Roughness,     0.015                    ***
Stream:   Kearns-Chesterfield Drain     ***
Source storage:                         ***
Source discharge:Salt Lake County       ***
 rows cols                              ***
   10    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
       0.0      0.00     0.000      0.00
       0.2      4.17     0.834      6.75
       0.5      4.17     2.085     30.67
       1.0      4.17     4.171     95.32
       2.0      4.17     8.342    290.64
       3.0      4.17    12.512    549.92
       4.0      4.17    16.683    856.79
       5.0      4.17    20.854   1201.00
       6.0      4.17    25.025   1575.38
       7.0      4.17    25.500  10000.00
  END FTABLE585

  FTABLE    588
Type:     Pond                            ***
Stream:   Kearns-Chesterfield             ***
Name: Decker Lake                         ***
Source storage: Stantec Consulting        ***
Source discharge: Assumed                 ***
Bottom elevation: 4323.5                  ***
 rows cols                                ***
    9    4
    Depth      Area    Volume  Outflow1 ***
        0      2.37      0.00         0
        1      5.87      3.99         1
        2      9.27     11.50         5
        3     12.46     22.32        15
        4     14.43     35.75        25
        5     16.41     51.16        50
      5.5     24.70     61.37       100
      6.5     31.63     89.46       125
      7.5     50.00    500.00       150
  END FTABLE588

  FTABLE    590
Name:     Kearns-Chesterfield Drain     ***
RCHRES:          590                    ***
Type:     Assumed 30 ft wide            ***
Length:     6,735 ft                    ***
Descrip:  2-6'x10'                      ***
Height (ft    6.0 ft                    ***
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Width (ft)   30.0 ft                    ***
Max Elev:   4,251 ft                    ***
Min Elev:   4,227 ft                    ***
Slope (ft/ 0.0036346                    ***
Roughness,     0.015                    ***
Stream:   Kearns-Chesterfield Drain     ***
Source storage:                         ***
Source discharge:Salt Lake County       ***
 rows cols                              ***
   10    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
       0.0      0.00     0.000      0.00
       0.2      4.64     0.618      8.06
       0.5      4.64     1.546     36.42
       1.0      4.64     3.092    112.10
       2.0      4.64     6.185    335.83
       3.0      4.64     9.277    625.79
       4.0      4.64    12.370    962.06
       5.0      4.64    15.462   1332.73
       6.0      4.64    18.554   1729.92
       7.0      4.64    19.000  10000.00
  END FTABLE590

  FTABLE    595
Name:     Kearns-Chesterfield Drain     ***
RCHRES:           595                   ***
Type:     Assumed 10 ft wide            ***
Length:    17,835 ft                    ***
Descrip:  5' x 10' Box Culvert          ***
Height (ft    5.0 ft                    ***
Width (ft)   10.0 ft                    ***
Max Elev:   4,463 ft                    ***
Min Elev:   4,251 ft                    ***
Slope (ft/ 0.0118793                    ***
Roughness,     0.015                    ***
Stream:   Kearns-Chesterfield Drain     ***
Source storage:                         ***
Source discharge:Salt Lake County       ***
 rows cols                              ***
    9    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
       0.0      0.00     0.000      0.00
       0.2      4.00     0.819      7.19
       0.5      4.00     2.047     31.92
       1.0      4.00     4.094     95.62
       2.0      4.00     8.189    273.92
       3.0      4.00    12.283    492.54
       4.0      4.00    16.378    735.49
       5.0      4.00    20.472    994.46
       6.0      4.00    21.000  10000.00
  END FTABLE595

  FTABLE    602
Name:     Sandy Irrigation Canal        ***
RCHRES:           602                   ***
Type:     Assumed 10 ft wide            ***
Length:     7,809 ft                    ***
Descrip:  10-ft wide                    ***
Height (ft    4.0 ft                    ***
Width (ft)   10.0 ft                    ***
Max Elev:   4,550 ft                    ***
Min Elev:   4,522 ft                    ***
Slope (ft/ 0.0036649                    ***
Roughness,     0.015                    ***
Stream:   Sandy Irrigation Canal        ***
Source storage:                         ***
Source discharge:Salt Lake County       ***
 rows cols                              ***
    9    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
       0.0      0.00     0.000      0.00
       0.2      1.79     0.359      4.00
       0.5      1.79     0.896     17.73
       1.0      1.79     1.793     53.11
       2.0      1.79     3.585    152.14
       3.0      1.79     5.378    273.58
       4.0      1.79     7.171    408.52
       5.0      1.79     8.964    552.36
       6.0      1.79     9.000  10000.00
  END FTABLE602

  FTABLE    605
Name:     Sandy Irrigation Canal                  ***
RCHRES:           605                             ***
Type:     Assumed 10 ft wide                      ***
Length:     9,434 ft                              ***
Descrip:  10-ft wide                              ***
Height (ft    4.0 ft                              ***
Width (ft)   10.0 ft                              ***
Max Elev:   4,550 ft                              ***
Min Elev:   4,498 ft                              ***
Slope (ft/ 0.0055045                              ***
Roughness,     0.015                              ***
Stream:   Sandy Irrigation Canal                  ***
Overflow Assumed: 2.0 ft                          ***
Source storage:                                   ***
Source discharge:Salt Lake County                 ***
 rows cols                                        ***
    8    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
     (ft)   (acres) (acre-ft)   (ft3/s)   (ft3/s) ***
       0.0      0.00     0.000      0.00      0.00
       0.2      2.17     0.433      4.90      0.00
       0.5      2.17     1.083     21.73      0.00
       1.0      2.17     2.166     65.09      0.00
       2.0      2.17     4.331    186.46      0.00
       3.0      2.17     6.497    335.28    400.00
       4.0      2.17     8.663    500.66    400.00
       5.0      2.17    10.829    676.94  10000.00
  END FTABLE605

  FTABLE    610
Name:     Sandy Irrigation Canal                  ***
RCHRES:           610                             ***
Type:     Assumed 10 ft wide                      ***
Length:     7,301 ft                              ***
Descrip:  10-ft wide                              ***
Height (ft    4.0 ft                              ***
Width (ft)   10.0 ft                              ***
Max Elev:   4,556 ft                              ***
Min Elev:   4,498 ft                              ***
Slope (ft/ 0.0078423                              ***
Roughness,     0.015                              ***
Stream:   Sandy Irrigation Canal                  ***
Overflow Assumed: 2.0 ft                          ***
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Source storage:                                     ***
Source discharge:Salt Lake County                   ***
 rows cols                                          ***
    8    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
     (ft)   (acres) (acre-ft)   (ft3/s)   (ft3/s) ***
       0.0      0.00     0.000      0.00      0.00
       0.2      1.68     0.335      5.85      0.00
       0.5      1.68     0.838     25.93      0.00
       1.0      1.68     1.676     77.69      0.00
       2.0      1.68     3.352    222.56      0.00
       3.0      1.68     5.029    222.56    300.00
       4.0      1.68     6.705    222.56    300.00
       5.0      1.68     8.381    222.56  10000.00
  END FTABLE610

  FTABLE    614
Name:     Draper Irrigation Canal       ***
RCHRES:           614                   ***
Type:     Assumed 10 ft wide            ***
Length:    13,929 ft                    ***
Descrip:  10-ft wide                    ***
Height (ft    4.0 ft                    ***
Width (ft)   10.0 ft                    ***
Max Elev:   4,559 ft                    ***
Min Elev:   4,556 ft                    ***
Slope (ft/ 0.0002139                    ***
Roughness,     0.015                    ***
Stream:   Draper Irrigation Canal       ***
Source storage:                         ***
Source discharge:Salt Lake County       ***
 rows cols                              ***
    9    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
       0.0      0.00     0.000      0.00
       0.2      3.20     0.640      0.97
       0.5      3.20     1.599      4.28
       1.0      3.20     3.198     12.83
       2.0      3.20     6.395     36.76
       3.0      3.20     9.593     66.10
       4.0      3.20    12.791     98.70
       5.0      3.20    15.988    133.46
       6.0      3.20    16.000  10000.00
  END FTABLE614

  FTABLE    618
Name:     Draper Irrigation Canal       ***
RCHRES:           618                   ***
Type:     Assumed 10 ft wide            ***
Length:     7,761 ft                    ***
Descrip:  10-ft wide                    ***
Height (ft    4.0 ft                    ***
Width (ft)   10.0 ft                    ***
Max Elev:   4,563 ft                    ***
Min Elev:   4,559 ft                    ***
Slope (ft/ 0.0005347                    ***
Roughness,     0.015                    ***
Stream:   Draper Irrigation Canal       ***
Source storage:                         ***
Source discharge:Salt Lake County       ***
 rows cols                              ***
    9    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
       0.0      0.00     0.000      0.00
       0.2      1.78     0.356      1.53
       0.5      1.78     0.891      6.77
       1.0      1.78     1.782     20.29
       2.0      1.78     3.563     58.12
       3.0      1.78     5.345    104.50
       4.0      1.78     7.126    156.04
       5.0      1.78     8.908    210.99
       6.0      1.78     9.000  10000.00
  END FTABLE618

  FTABLE    620
Type:     Stream                        ***
Stream:   Cherry Canyon                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.26      0.68       0.1         1
      0.5       1.3      0.37         5
     0.97      2.16      1.29        25
     1.36      2.66       2.2        50
     1.92      3.31      3.76       100
     2.72       4.5      6.63       200
     4.28      6.09     13.56       500
     5.96       7.7      23.2      1000
     8.18      9.75     39.79      2000
    12.32     13.62     81.57      5000
    14.83        16    113.43      7500
  END FTABLE620

  FTABLE    622
Name:     Draper Irrigation Canal       ***
RCHRES:           622                   ***
Type:     Assumed 10 ft wide            ***
Length:    26,789 ft                    ***
Descrip:  10-ft wide                    ***
Height (ft    4.0 ft                    ***
Width (ft)   10.0 ft                    ***
Max Elev:   4,563 ft                    ***
Min Elev:   4,481 ft                    ***
Slope (ft/ 0.0030405                    ***
Roughness,     0.015                    ***
Stream:   Draper Irrigation Canal       ***
Source storage:                         ***
Source discharge:Salt Lake County       ***
 rows cols                              ***
    9    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
       0.0      0.00     0.000      0.00
       0.2      6.15     1.230      3.64
       0.5      6.15     3.075     16.15
       1.0      6.15     6.150     48.37
       2.0      6.15    12.300    138.58
       3.0      6.15    18.449    249.18
       4.0      6.15    24.599    372.09
       5.0      6.15    30.749    503.11
       6.0      6.15    31.000  10000.00
  END FTABLE622

  FTABLE    625
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Name:     East Jordan Canal Extension   ***
RCHRES:           625                   ***
Type:     Assumed 8 ft wide             ***
Length:   15,523 ft                     ***
Descrip:  8-ft wide                     ***
Height (ft    4.0 ft                    ***
Width (ft)    8.0 ft                    ***
Max Elev:   4,442 ft                    ***
Min Elev:   4,428 ft                    ***
Slope (ft/ 0.0009051                    ***
Roughness,     0.015                    ***
Stream:   East Jordan Canal Extension   ***
Source storage:                         ***
Source discharge:Salt Lake County       ***
 rows cols                              ***
    9    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
       0.0      0.00     0.000      0.00
       0.2      2.85     0.570      1.58
       0.5      2.85     1.425      6.94
       1.0      2.85     2.851     20.55
       2.0      2.85     5.702     57.77
       3.0      2.85     8.552    102.46
       4.0      2.85    11.403    151.40
       5.0      2.85    14.254    203.02
       6.0      2.85    14.500  10000.00
  END FTABLE625

  FTABLE    626
Name:     East Jordan Canal Extension             ***
RCHRES:           626                             ***
Type:     Assumed 10 ft wide                      ***
Length:     4,119 ft                              ***
Descrip:  10-ft wide                              ***
Height (ft    4.0 ft                              ***
Width (ft)   10.0 ft                              ***
Max Elev:   4,453 ft                              ***
Min Elev:   4,442 ft                              ***
Slope (ft/  0.002549                              ***
Roughness,     0.015                              ***
Stream:   East Jordan Canal Extension             ***
Source storage:                                   ***
Source discharge:Salt Lake County                 ***
Overflow Weir Depth:       1.5                    ***
Channel Depth:            7.54                    ***
 rows cols                                        ***
    8    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
     (ft)   (acres) (acre-ft)   (ft3/s)   (ft3/s) ***
       0.0      0.00     0.000      0.00         0
       0.2      0.95     0.189      3.33         0
       0.5      0.95     0.473     14.78         0
       1.0      0.95     0.946     44.29         0
       2.0      0.95     1.891     44.29       300
       3.0      0.95     2.837     44.29       500
       4.0      0.95     3.783     44.29       700
       5.0      0.95     4.728     44.29     10000
  END FTABLE626

  FTABLE    628
Type:     Stream                          ***
Stream:   Jordan and Salt Lake Canal      ***
Source storage: Utah Lake Dist. Canal     ***
          HEC-RAS Model                   ***
 rows cols                                ***
    9    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
        0         0         0         0
     1.95      2.88      1.46         1
     1.95      3.99      4.92         5
     1.95      4.77      8.48        25
     1.95      5.23     11.93        50
     1.95      5.66     17.77       100
     2.53      6.78     27.54       200
     4.28      7.39     48.72       500
     4.50      7.50     49.00     10000
  END FTABLE628

  FTABLE    630
Type:     Stream                                  ***
Stream:   Jordan and Salt Lake Canal              ***
Source storage: Utah Lake Dist. Canal             ***
          HEC-RAS Model                           ***
Overflow Weir Depth: 1.72 ft                      ***
Channel Depth: 6.44 ft                            ***
 rows cols                                        ***
    7    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
     (ft)   (acres) (acre-ft)   (ft3/s)   (ft3/s) ***
        0         0         0         0         0
     0.72      2.72      0.97         1         0
     1.94      3.31      4.13         5         0
     2.62      3.72      7.14        25         0
     3.46      4.01     10.21        50         0
     4.96      4.05     15.38        50       200
     7.82      6.75     24.27        50     10000
  END FTABLE630

  FTABLE    634
Type:     Stream                                  ***
Stream:   Jordan and Salt Lake Canal              ***
Source storage: Utah Lake Dist. Canal             ***
          HEC-RAS Model                           ***
Overflow Weir Depth: 3.44 ft                      ***
Channel Depth: 8.25 ft                            ***
 rows cols                                        ***
    7    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
     (ft)   (acres) (acre-ft)   (ft3/s)   (ft3/s) ***
        0         0         0         0         0
     0.76      2.95      1.08         1         0
     1.37      3.52      2.77         5         0
     2.62      4.28      8.37        25         0
     3.50      4.52     10.43        50         0
     5.50      4.85     14.14        50       300
     8.69      5.31     20.57        50     10000
  END FTABLE634

  FTABLE    636
Type:     Stream                          ***
Stream:   Jordan and Salt Lake Canal      ***
Source storage: Utah Lake Dist. Canal     ***
          HEC-RAS Model                   ***
 rows cols                                ***
    9    4
    Depth      Area    Volume  Outflow1 ***
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```
      (ft)   (acres) (acre-ft)   (ft3/s) ***
         0         0         0         0
      0.38      2.23      0.63         1
      1.11      2.64      1.75         5
      1.93      3.32      4.69        25
      2.68      3.76      7.49        50
      3.65      4.26     11.97       100
      4.94      4.08     18.86       200
      7.20      4.75     32.42       500
      7.50      5.00     33.00     10000
  END FTABLE636

  FTABLE    637
Type:     Stream                        ***
Stream:   Jordan and Salt Lake Canal    ***
Source storage: Utah Lake Dist. Canal   ***
           HEC-RAS Model                ***
 rows cols                              ***
    9    4
    Depth      Area    Volume  Outflow1 ***
      (ft)   (acres) (acre-ft)   (ft3/s) ***
         0         0         0         0
      0.22      1.66      0.87         1
      0.47      2.20      1.78         5
      1.07      2.62      3.91        25
      1.57      2.91      5.80        50
      2.43      3.51      9.83       100
      4.16      3.88     13.41       200
      9.71      5.36     23.63       500
     10.00      5.50     24.00     10000
  END FTABLE637

  FTABLE    638
Type:     Stream                        ***
Stream:   Jordan and Salt Lake Canal    ***
Source storage: Utah Lake Dist. Canal   ***
           HEC-RAS Model                ***
 rows cols                              ***
    9    4
    Depth      Area    Volume  Outflow1 ***
      (ft)   (acres) (acre-ft)   (ft3/s) ***
         0         0         0         0
      0.64      1.59      0.74         1
      1.20      1.92      1.73         5
      2.23      2.23      4.04        25
      2.98      2.40      5.92        50
      4.24      2.69      9.32       100
      5.22      2.95     12.58       200
      7.34      3.55     20.49       500
      7.50      3.60     21.00     10000
  END FTABLE638

  FTABLE    640
Type:     Stream                                ***
Stream:   Jordan and Salt Lake Canal            ***
Source storage: Utah Lake Dist. Canal           ***
           HEC-RAS Model                        ***
Overflow Weir Depth: 4.24 ft                    ***
Channel Depth: 6.1 ft                           ***
 rows cols                                      ***
    8    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
      (ft)   (acres) (acre-ft)   (ft3/s)   (ft3/s) ***
         0         0         0         0         0
      2.50      3.16      1.69         1         0
      2.69      3.20      2.41         5         0
      3.05      3.36      4.94        25         0
      3.38      3.50      7.17        50         0
      4.32      3.76     10.91       100         0
      5.59      4.13     15.62       100       200
      8.95      5.01     26.46       100     10000
  END FTABLE640

  FTABLE    642
Type:     Stream                        ***
Stream:   Jordan and Salt Lake Canal    ***
Source storage: Utah Lake Dist. Canal   ***
           HEC-RAS Model                ***
 rows cols                              ***
    9    4
    Depth      Area    Volume  Outflow1 ***
      (ft)   (acres) (acre-ft)   (ft3/s) ***
         0         0         0         0
      0.99      3.31      1.38         1
      1.12      3.69      2.47         5
      1.87      4.21      6.01        25
      2.48      4.51      9.07        50
      3.34      4.95     13.86       100
      4.51      5.60     21.72       200
      6.78      6.72     39.97       500
      7.00      6.75     40.00     10000
  END FTABLE642

  FTABLE    644
Type:     Stream                        ***
Stream:   Jordan and Salt Lake Canal    ***
Source storage: Utah Lake Dist. Canal   ***
           HEC-RAS Model                ***
 rows cols                              ***
    9    4
    Depth      Area    Volume  Outflow1 ***
      (ft)   (acres) (acre-ft)   (ft3/s) ***
         0         0         0         0
      0.07      5.63      1.47         1
      0.17      6.89      3.88         5
      0.94      7.80     10.24        25
      1.69      8.30     15.97        50
      2.82      9.06     25.35       100
      4.67     10.43     38.41       200
      8.46     11.26     66.92       500
      9.00     11.50     67.00     10000
  END FTABLE644

  FTABLE    646
Type:     Stream                        ***
Stream:   Jordan and Salt Lake Canal    ***
Source storage: Utah Lake Dist. Canal   ***
           HEC-RAS Model                ***
 rows cols                              ***
    9    4
    Depth      Area    Volume  Outflow1 ***
      (ft)   (acres) (acre-ft)   (ft3/s) ***
         0         0         0         0
      0.43      6.38      2.02         1
      0.76      7.50      5.16         5
      1.58      8.26     13.40        25
      2.31      8.81     20.51        50
      3.44      9.54     31.75       100
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      4.98     10.41     49.50       200
      7.90     12.98     87.05       500
      8.00     13.00     90.00     10000
  END FTABLE646

  FTABLE    650
Type:     Stream                          ***
Stream:   Jordan and Salt Lake Canal      ***
Source storage: Utah Lake Dist. Canal     ***
           HEC-RAS Model                  ***
 rows cols                                ***
    9    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
         0         0         0         0
      0.12      4.66      2.73         1
      0.24      5.64      5.11         5
      0.60      7.21     12.02        25
      0.61      7.82     16.46        50
      0.62      8.11     19.15       100
      0.63      8.45     20.12       200
      0.64      8.68     21.92       500
      0.65      8.70     22.00     10000
  END FTABLE650

***  FTABLE    654
***Original FTABLE based on HEC-RAS
Type:     Stream                                  ***
Stream:   Jordan and Salt Lake Canal              ***
Source storage: Utah Lake Dist. Canal             ***
           HEC-RAS Model                          ***
Overflow Weir Depth: 2 ft                         ***
Channel Depth: 2 ft                               ***
 rows cols                                        ***
***    8    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
     (ft)   (acres) (acre-ft)   (ft3/s)   (ft3/s) ***
***         0         0         0         0         0
***      0.96      4.84      1.98         1         0
***      1.54      5.66      4.32         5         0
***      2.86      6.89     11.82        25       300
***      3.45      7.20     16.86        25       500
***      3.78      7.37     20.63        25       700
***      3.97      7.51     22.17        25       900
***      4.26      7.53     25.14        25     10000
***  END FTABLE654

  FTABLE    654
*** New FTABLE to reduce overflow to Mill Creek
Type:     Stream                                  ***
Stream:   Jordan and Salt Lake Canal              ***
Source storage: Utah Lake Dist. Canal             ***
           HEC-RAS Model                          ***
Overflow Weir Depth: 2 ft                         ***
Channel Depth: 2 ft                               ***
 rows cols                                        ***
    9    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
     (ft)   (acres) (acre-ft)   (ft3/s)   (ft3/s) ***
         0         0         0         0         0
      0.96      4.84      1.98         1         0
      1.54      5.66      4.32        25         0
      2.20      6.28      8.07        50         0
      2.86      6.89     11.82       100         0
      3.45      7.20     16.86       200         0
      3.78      7.37     20.63       200       700
      3.97      7.51     22.17       200       900
      4.26      7.53     25.14       200     10000
  END FTABLE654

***  FTABLE    658
*** Original FTABLE based on HEC-RAS
Type:     Stream                                  ***
Stream:   Jordan and Salt Lake Canal              ***
Source storage: Utah Lake Dist. Canal             ***
           HEC-RAS Model                          ***
Overflow Weir Depth: 2.77 ft                      ***
Channel Depth: 3.75 ft                            ***
 rows cols                                        ***
***    8    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
     (ft)   (acres) (acre-ft)   (ft3/s)   (ft3/s) ***
***         0         0         0         0         0
***      0.12      4.54      1.79         1         0
***      0.69      5.86      4.20         5         0
***      2.34      7.05     11.05        25         0
***      3.10      7.51     15.64        50         0
***      3.20      7.67     20.16        50       300
***      3.20      7.71     23.83        50       500
***      4.11      8.07     31.93        50     10000
***  END FTABLE658

  FTABLE    658
*** New FTABLE to reduce overflow to BCC
Type:     Stream                                  ***
Stream:   Jordan and Salt Lake Canal              ***
Source storage: Utah Lake Dist. Canal             ***
           HEC-RAS Model                          ***
Overflow Weir Depth: 2.77 ft                      ***
Channel Depth: 3.75 ft                            ***
 rows cols                                        ***
    8    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
     (ft)   (acres) (acre-ft)   (ft3/s)   (ft3/s) ***
         0         0         0         0         0
      0.12      4.54      1.79         0         1
      0.69      5.86      4.20         0         5
      2.34      7.05     11.05         0        15
      3.10      7.51     15.64        50        15
      3.20      7.67     20.16       100        15
      3.20      7.71     23.83       200        15
      4.11      8.07     31.93       200     10000
  END FTABLE658

  FTABLE    662
Type:     Stream                                  ***
Stream:   Jordan and Salt Lake Canal              ***
Source storage: Utah Lake Dist. Canal             ***
           HEC-RAS Model                          ***
Overflow Weir Depth: 3.7 ft                       ***
Channel Depth: 6.26 ft                            ***
 rows cols                                        ***
    8    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
     (ft)   (acres) (acre-ft)   (ft3/s)   (ft3/s) ***
         0         0         0         0         0
      0.53      2.73      1.24         1         0
      1.07      3.10      2.59         5         0
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      2.45      3.64      5.91        25         0
      3.12      3.81      8.01        50         0
      3.51      3.90     10.37       100         0
      3.58      4.02     12.60       200         0
      4.98      4.07     17.78       200     10000
  END FTABLE662

  FTABLE    664
Type:     Stream                                   ***
Stream:   Jordan and Salt Lake Canal               ***
Source storage: Utah Lake Dist. Canal              ***
           HEC-RAS Model                           ***
Overflow Weir Depth: 3.35 ft                       ***
Channel Depth: 4.52 ft                             ***
 rows cols                                         ***
    8    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
     (ft)   (acres) (acre-ft)   (ft3/s)   (ft3/s) ***
         0         0         0         0         0
      0.43      4.24      1.75         1         0
      1.00      5.25      3.97         5         0
      2.16      6.79     11.08        25         0
      2.55      7.24     15.90        50         0
      2.85      7.62     21.40       100         0
      3.31      7.45     27.78       200         0
      4.96      8.35     42.32       200     10000
  END FTABLE664

  FTABLE    666
Type:     Stream                           ***
Stream:   Jordan and Salt Lake Canal       ***
Source storage: Utah Lake Dist. Canal      ***
           HEC-RAS Model                   ***
 rows cols                                 ***
    9    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
         0         0         0         0
      1.14      2.61      0.97         1
      1.63      3.62      2.66         5
      2.75      5.11      8.08        25
      3.34      5.77     11.93        50
      4.03      6.38     16.95       100
      5.69      7.05     25.09       200
      7.22      8.69     44.42       500
      7.50      8.70     45.00     10000
  END FTABLE666

  FTABLE    668
Type:     Stream                                   ***
Stream:   Jordan and Salt Lake Canal               ***
Source storage: Utah Lake Dist. Canal              ***
           HEC-RAS Model                           ***
Overflow Weir: 3.83 ft                             ***
Channel Depth: 5.32 ft                             ***
 rows cols                                         ***
    8    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
     (ft)   (acres) (acre-ft)   (ft3/s)   (ft3/s) ***
         0         0         0         0         0
      0.57      4.47      1.73         1         0
      1.12      6.48      4.41         5         0
      2.42      8.34     12.40        25         0
      3.17      9.36     19.37        50         0
      4.09     10.65     30.30       100         0
      5.27     12.45     48.04       100       300
      8.10     14.07     88.26       100     10000
  END FTABLE668

  FTABLE    670
Type:     Stream                                   ***
Stream:   Jordan and Salt Lake Canal               ***
Source storage: Utah Lake Dist. Canal              ***
           HEC-RAS Model                           ***
Overflow Weir: 1.92 ft                             ***
Channel Depth: 4.71 ft                             ***
 rows cols                                         ***
    7    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
     (ft)   (acres) (acre-ft)   (ft3/s)   (ft3/s) ***
         0         0         0         0         0
      0.57      1.72      0.00         1         0
      1.12      2.59      0.86         5         0
      2.42      1.72      2.59        25         0
      3.17      1.72      3.45        25       200
      4.09      2.59      6.03        25       500
      5.27      1.72     10.34        25     10000
  END FTABLE670

  FTABLE    672
Type:     Stream                           ***
Stream:   Jordan and Salt Lake Canal       ***
Source storage: Utah Lake Dist. Canal      ***
           HEC-RAS Model                   ***
 rows cols                                 ***
    9    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
         0         0         0         0
      0.55      4.52      0.00         1
      0.96      4.52      2.26         5
      1.72      4.52      6.78        25
      2.34      4.52      9.04        50
      3.26      4.52     15.83       100
      4.64      4.52     27.13       200
      7.70      4.52     52.00       500
      8.00      4.52     52.50     10000
  END FTABLE672

  FTABLE    674
Type:     Stream                           ***
Stream:   Jordan and Salt Lake Canal       ***
Source storage: Utah Lake Dist. Canal      ***
           HEC-RAS Model                   ***
 rows cols                                 ***
    9    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
         0         0         0         0
      0.62      4.44      0.00         1
      1.00      4.44      1.48         5
      1.77      4.44      4.44        25
      2.40      4.44      5.92        50
      3.34      4.44     10.37       100
      4.72      4.44     17.77       200
      7.61      4.44     34.07       500
      8.00      4.44     34.50     10000
  END FTABLE674
```

```
  FTABLE    700
Name:     Provo Reservoir Canal         ***
RCHRES:          700                    ***
Type:     Assumed 8 ft wide             ***
Length:   10,623 ft                     ***
Descrip:  8-ft wide                     ***
Height (ft    4.0 ft                    ***
Width (ft)    8.0 ft                    ***
Max Elev:   4,663 ft                    ***
Min Elev:   4,648 ft                    ***
Slope (ft/ 0.0014374                    ***
Roughness,     0.015                    ***
Stream:   Provo Reservoir Canal         ***
Source storage:                         ***
Source discharge:Salt Lake County       ***
 rows cols                              ***
    8    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
       0.0      0.00     0.000      0.00
       0.2      1.95     0.390      1.99
       0.5      1.95     0.976      8.75
       1.0      1.95     1.951     25.89
       2.0      1.95     3.902     72.80
       3.0      1.95     5.853    129.12
       4.0      1.95     7.804    190.79
       5.0      1.95     9.755    600.00
  END FTABLE700

  FTABLE    705
Name:     Provo Reservoir Canal                   ***
RCHRES:          705                              ***
Type:     Assumed 8 ft wide                       ***
Length:   21,516 ft                               ***
Descrip:  8-ft wide                               ***
Height (ft    4.0 ft                              ***
Width (ft)    8.0 ft                              ***
Max Elev:   4,684 ft                              ***
Min Elev:   4,663 ft                              ***
Slope (ft/  0.000969                              ***
Roughness,     0.015                              ***
Stream:   Provo Reservoir Canal                   ***
Overflow Assumed: 3.0 ft                          ***
Source storage:                                   ***
Source discharge:Salt Lake County                 ***
 rows cols                                        ***
    8    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
     (ft)   (acres) (acre-ft)   (ft3/s)   (ft3/s) ***
       0.0      0.00     0.000      0.00         0
       0.2      3.95     0.790      1.63         0
       0.5      3.95     1.976      7.18         0
       1.0      3.95     3.952     21.26         0
       2.0      3.95     7.903     59.77         0
       3.0      3.95    11.855    106.01         0
       4.0      3.95    15.806    106.01       200
       5.0      3.95    19.758    106.01     10000
  END FTABLE705

  FTABLE    706
Type:     Stream                          ***
Stream:   Provo Res Can Tr                ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.12     12.53      2.14         1
     0.23     16.91      3.08         5
     0.49     27.04      8.26        25
     0.66     32.71     13.06        50
     0.96      42.6     21.55       100
     1.27     54.18     36.25       200
     1.87     73.13     73.58       500
      2.6     96.83       128      1000
      3.7    121.06    221.51      2000
     6.01    141.05    422.44      5000
     7.04    149.72    561.52      7500
  END FTABLE706

  FTABLE    710
Name:     Provo Reservoir Canal                   ***
RCHRES:          710                              ***
Type:     Assumed 12 ft wide                      ***
Length:   10,687 ft                               ***
Descrip:  12-ft wide                              ***
Height (ft    4.0 ft                              ***
Width (ft)   12.0 ft                              ***
Max Elev:   4,694 ft                              ***
Min Elev:   4,684 ft                              ***
Slope (ft/ 0.0009395                              ***
Roughness,     0.015                              ***
Stream:   Provo Reservoir Canal                   ***
Overflow Assumed: 4.0 ft                          ***
Source storage:                                   ***
Source discharge:Salt Lake County                 ***
 rows cols                                        ***
    7    5
     Depth      Area    Volume  Outflow1  Outflow2***
      (ft)   (acres) (acre-ft)   (ft3/s)   (ft3/s)***
       0.0      0.00     0.000      0.00         0
       0.2      2.94     0.589      2.44         0
       0.5      2.94     1.472     10.88         0
       1.0      2.94     2.944     32.88         0
       2.0      2.94     5.888     95.49         0
       3.0      2.94     8.832       150         0
       4.0      2.94    11.776       200       500
  END FTABLE710

  FTABLE    715
Name:     Provo Reservoir Canal         ***
RCHRES:          715                    ***
Type:     Assumed 8 ft wide             ***
Length:   19,240 ft                     ***
Descrip:  8-ft wide                     ***
Height (ft    4.0 ft                    ***
Width (ft)    8.0 ft                    ***
Max Elev:   4,714 ft                    ***
Min Elev:   4,694 ft                    ***
Slope (ft/ 0.0010213                    ***
Roughness,     0.015                    ***
Stream:   Provo Reservoir Canal         ***
Source storage:                         ***
Source discharge:Salt Lake County       ***
 rows cols                              ***
    9    4
    Depth      Area    Volume  Outflow1 ***
```

```
      (ft)   (acres) (acre-ft)   (ft3/s) ***
        0.0      0.00     0.000      0.00
        0.2      3.53     0.707      1.68
        0.5      3.53     1.767      7.38
        1.0      3.53     3.534     21.83
        2.0      3.53     7.067     61.36
        3.0      3.53    10.601    108.83
        4.0      3.53    14.134    160.82
        5.0      3.53    17.668    215.65
        5.1      3.53    17.700  10000.00
  END FTABLE715

  FTABLE    718
Name:     Provo Reservoir Canal         ***
RCHRES:           718                   ***
Type:     Assumed 10 ft wide            ***
Length:    14,724 ft                    ***
Descrip:  10-ft wide                    ***
Height (ft    4.0 ft                    ***
Width (ft)   10.0 ft                    ***
Max Elev:   4,740 ft                    ***
Min Elev:   4,714 ft                    ***
Slope (ft/  0.001738                    ***
Roughness,     0.015                    ***
Stream:    Provo Reservoir Canal        ***
Source storage:                         ***
Source discharge:Salt Lake County       ***
 rows cols                              ***
    9    4
    Depth      Area    Volume  Outflow1 ***
      (ft)   (acres) (acre-ft)   (ft3/s) ***
        0.0      0.00     0.000      0.00
        0.2      3.38     0.676      2.75
        0.5      3.38     1.690     12.21
        1.0      3.38     3.380     36.57
        2.0      3.38     6.760    104.77
        3.0      3.38    10.140    188.40
        4.0      3.38    13.521    281.32
        5.0      3.38    16.901    380.38
        5.1      3.38    17.000  10000.00
  END FTABLE718

  FTABLE    720
Type:     Stream                        ***
Stream:   Utah Lake Dist. Canal         ***
Source storage: Utah Lake Dist. Canal   ***
           HEC-RAS Model                ***
 rows cols                              ***
    9    4
    Depth      Area    Volume  Outflow1 ***
      (ft)   (acres) (acre-ft)   (ft3/s) ***
         0         0         0         0
      0.17      5.56      3.61         1
      1.13      7.26      7.21         5
      2.60      9.79     19.73        25
      3.66     14.22     32.14        50
      4.95     20.24     56.09       100
      6.33     23.18     89.83       200
      9.52     24.36    168.64       500
     10.00     24.50    169.00     10000
  END FTABLE720

  FTABLE    724
Type:     Stream                                ***
Stream:   Utah Lake Dist. Canal                 ***
Outflow1: Canal                                 ***
Outflow2: Bingham Creek                         ***
Source storage: Utah Lake Dist. Canal           ***
           HEC-RAS Model Sta   8 to   0         ***
Overflow Weir: 40"  from top, weir depth: 20"   ***
Channel Depth: 60"                              ***
 rows cols                                      ***
    6    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
      (ft)   (acres) (acre-ft)   (ft3/s)   (ft3/s) ***
         0         0         0         0         0
      0.97      2.40      0.92         1         0
      1.53      2.95      2.46         5         0
      3.03      4.01      7.47        50         0
      4.21      5.67     12.33       100         0
      5.87      9.57     22.96       150       500
  END FTABLE724

  FTABLE    728
Type:     Stream                        ***
Stream:   Utah Lake Dist. Canal         ***
Source storage: Utah Lake Dist. Canal   ***
           HEC-RAS Model Sta  25 to   8 ***
 rows cols                              ***
    9    4
    Depth      Area    Volume  Outflow1 ***
      (ft)   (acres) (acre-ft)   (ft3/s) ***
         0         0         0         0
      0.97      2.40      0.92         1
      1.53      2.95      2.46         5
      3.03      4.01      7.47        25
      4.21      5.67     12.33        50
      5.87      9.57     22.96       100
      7.14      9.85     37.63       200
     10.80      9.85     69.66       500
     11.00      9.85     70.00     10000
  END FTABLE728

  FTABLE    732
Type:     Stream                        ***
Stream:   Utah Lake Dist. Canal         ***
Source storage: Utah Lake Dist. Canal   ***
           HEC-RAS Model Sta  41 to  25 ***
 rows cols                              ***
    9    4
    Depth      Area    Volume  Outflow1 ***
      (ft)   (acres) (acre-ft)   (ft3/s) ***
         0         0         0         0
      0.27      2.69      0.73         1
      0.78      3.18      1.98         5
      2.20      4.11      5.80        25
      3.45      4.97      9.67        50
      4.90      8.71     17.66       100
      6.51     10.45     28.56       200
      9.80     12.59     65.79       500
     10.00     13.00     66.00     10000
  END FTABLE732

  FTABLE    734
Type:     Stream                                ***
Stream:   Utah Lake Dist. Canal                 ***
Outflow1: Canal                                 ***
Outflow2: Rose Creek                            ***
```

```
Source storage: Utah Lake Dist. Canal              ***
           HEC-RAS Model Sta  58.6 to  41          ***
Bank Depth: 5.0 ft                                 ***
Overflow Weir Depth: 2.5 ft from bottom            ***
 rows cols                                         ***
    5    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
     (ft)   (acres) (acre-ft)   (ft3/s)   (ft3/s) ***
      0.00      0.00      0.00         0         0
      0.68      2.98      0.82         1         0
      1.18      3.54      2.08        50         0
      2.36      4.23      5.72       100         0
      3.28      4.88      9.25       150       500
  END FTABLE734

  FTABLE    736
Type:     Stream                           ***
Stream:   Utah Lake Dist. Canal            ***
Source storage: Utah Lake Dist. Canal      ***
           HEC-RAS Model Sta  68 to  58.***
 rows cols                                 ***
    9    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
        0         0         0         0
      0.42      1.56      0.39         1
      0.91      1.96      1.08         5
      1.94      2.34      2.91        25
      2.72      2.63      4.60        50
      3.88      3.15      7.50       100
      5.48      5.10     13.28       200
      8.30      6.95     26.46       500
      8.50      7.00     27.00     10000
  END FTABLE736

  FTABLE    738
Type:     Stream                           ***
Stream:   Utah Lake Dist. Canal            ***
Source storage: Utah Lake Dist. Canal      ***
           HEC-RAS Model Sta  78 to  68 ***
 rows cols                                 ***
    9    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
        0         0         0         0
      0.20      2.00      0.73         1
      0.37      2.55      1.70         5
      0.91      3.23      4.43        25
      1.57      3.68      6.86        50
      2.53      4.33     10.83       100
      3.95      6.58     18.20       200
      6.89      8.01     35.65       500
      7.00      8.01     36.00     10000
  END FTABLE738

  FTABLE    740
Type:     Stream                           ***
Stream:   Utah and Salt Lake Canal         ***
Source storage: Utah and Salt Lake Canal***
           HEC-RAS Model Sta  10 to  00 ***
 rows cols                                 ***
    9    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
        0         0         0         0
      0.41      3.72      1.05         1
      0.73      4.76      2.59         5
      1.59      5.97      6.91        25
      2.26      6.77     10.85        50
      3.21      7.96     17.32       100
      4.49      9.73     28.31       200
      7.00     17.78     61.10       500
      7.50     17.78     62.00     10000
  END FTABLE740

  FTABLE    742
Type:     Stream                                 ***
Stream:   Utah and Salt Lake Canal               ***
Source storage: Utah and Salt Lake Canal         ***
           HEC-RAS Model Sta  41 to  10          ***
Channel Depth (Sta 1): 5.86 ft                   ***
Wier Depth (assumed 40 in from top): 2.5 ft      ***
 rows cols                                       ***
    8    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
     (ft)   (acres) (acre-ft)   (ft3/s)   (ft3/s) ***
        0         0         0         0         0
      0.41      7.39      2.08         1         0
      0.73      9.44      5.14         5         0
      1.59     11.85     13.72        25         0
      2.26     13.43     21.53        50         0
      3.21     15.80     34.36       100         0
      4.49     19.31     56.17       200         0
      7.00     35.27    121.24       200     10000
  END FTABLE742

  FTABLE    744
*** New FTABLE to reduce overflow to K-C Drain
Type:     Stream                                 ***
Stream:   Utah and Salt Lake Canal               ***
Source storage: Utah and Salt Lake Canal         ***
           HEC-RAS Model Sta  52 to  41          ***
Channel Depth (Sta 44.75): 6.56 ft               ***
Overflow Depth (53  in down): 2.14 ft            ***
 rows cols                                       ***
    8    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
     (ft)   (acres) (acre-ft)   (ft3/s)   (ft3/s) ***
        0         0         0         0         0
      0.41      2.38      0.64         1         0
      0.73      2.99      1.49         5         0
      1.59      3.58      3.92        25         0
      2.26      4.00      6.21        50         0
      3.21      4.62     10.04       200         0
      4.49      5.89     16.74       200       500
      7.00     10.28     35.62       200     10000
  END FTABLE744

***  FTABLE    744
*** Original FTABLE based on HEC-RAS
Type:     Stream                                 ***
Stream:   Utah and Salt Lake Canal               ***
Source storage: Utah and Salt Lake Canal         ***
           HEC-RAS Model Sta  52 to  41          ***
Channel Depth (Sta 44.75): 6.56 ft               ***
Overflow Depth (53  in down): 2.14 ft            ***
 rows cols                                       ***
***    8    5
```

```
    Depth      Area    Volume  Outflow1  Outflow2 ***
     (ft)   (acres) (acre-ft)   (ft3/s)   (ft3/s) ***
***       0         0         0         0         0
***    0.41      2.38      0.64         1         0
***    0.73      2.99      1.49         5         0
***    1.59      3.58      3.92        25         0
***    2.26      4.00      6.21        50         0
***    3.21      4.62     10.04        50       300
***    4.49      5.89     16.74        50       500
***    7.00     10.28     35.62        50     10000
***  END FTABLE744

  FTABLE    746
Type:     Stream                                  ***
Stream:   Utah and Salt Lake Canal                ***
Source storage: Utah and Salt Lake Canal          ***
           HEC-RAS Model Sta  76 to  52           ***
Channel Depth (Sta 56.5): 7.72 ft                 ***
Overflow Weir Depth (42 in from top): 4.22 ft     ***
 rows cols                                        ***
    9    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
     (ft)   (acres) (acre-ft)   (ft3/s)   (ft3/s) ***
       0         0         0         0         0
    0.12      4.56      1.57         1         0
    0.25      5.73      3.05         5         0
    0.77      6.83      7.82        25         0
    1.43      7.48      12.1        50         0
    2.34       8.5     19.21       100         0
    3.65      9.98     30.64       200         0
    4.16     10.64      35.8       250         0
    6.13     17.09     63.78       250     10000
  END FTABLE746

  FTABLE    748
Type:     Stream                            ***
Stream:   Utah and Salt Lake Canal          ***
Source storage: Utah and Salt Lake Canal***
           HEC-RAS Model Sta  95 to  76 ***
 rows cols                                  ***
    9    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
       0         0         0         0
    0.67      4.67      2.09         1
    1.05      5.96      4.61         5
    1.97       7.4     11.35        25
    2.63      8.33     17.08        50
    3.55      9.66     26.18       100
    4.86     11.66     41.26       200
    7.51     20.93     86.76       500
       8        21        90     10000
  END FTABLE748

  FTABLE    750
Type:     Stream                                  ***
Stream:   Utah and Salt Lake Canal                ***
Source storage: Utah and Salt Lake Canal          ***
           HEC-RAS Model Sta 116 to  95           ***
Channel Depth (Sta 95): 9.8 ft                    ***
Overflow Weir Elevation (44 in from top): 6.1 ft  ***
 rows cols                                        ***
    9    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
     (ft)   (acres) (acre-ft)   (ft3/s)   (ft3/s) ***
       0         0         0         0         0
    0.41      4.08      1.54         1         0
    0.67      5.69      3.57         5         0
    1.62      6.89       8.9        25         0
    2.39       7.6     13.62        50         0
    3.48      8.58     21.39       100         0
    4.97     10.28     34.86       200         0
    5.86     12.13     46.79       300       500
    7.86     18.39     73.31       300     10000
  END FTABLE750

  FTABLE    752
Type:     Stream                            ***
Stream:   Utah and Salt Lake Canal          ***
Source storage: Utah and Salt Lake Canal***
           HEC-RAS Model Sta 133 to 116 ***
 rows cols                                  ***
    9    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
       0         0         0         0
    0.58      3.23      1.41         1
    1.03      4.14      3.04         5
     1.9      5.01      7.32        25
    2.58      5.52     11.27        50
    3.55      6.27     17.54       100
    4.95      7.39     27.82       200
    7.86     12.39     55.77       500
       8     12.39        56     10000
  END FTABLE752

  FTABLE    754
Type:     Stream                                  ***
Stream:   Utah and Salt Lake Canal                ***
Source storage: Utah and Salt Lake Canal          ***
           HEC-RAS Model Sta 157 to 133           ***
Depth of Channel (Sta 157): 9.1 ft                ***
Depth of Overflow Weir (47 in from top): 5.2 ft   ***
 rows cols                                        ***
    8    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
     (ft)   (acres) (acre-ft)   (ft3/s)   (ft3/s) ***
       0         0         0         0         0
    0.64      5.66      2.48         1         0
    1.04      7.17      4.86         5         0
    1.76       8.4     11.41        25         0
    2.27      9.18     17.09        50         0
    3.04      10.3     26.19       100         0
    4.49     12.05     41.72       200         0
    7.57     18.13     84.17       200     10000
  END FTABLE754

  FTABLE    756
Type:     Stream                                  ***
Stream:   Utah and Salt Lake Canal                ***
Source storage: Utah and Salt Lake Canal          ***
           HEC-RAS Model Sta 184 to 157           ***
Channel Depth at Rose Creek (Sta. 158.5): 10.1 ft ***
Overflow Weir Depth (43.5 in from top): 6.5 ft    ***
 rows cols                                        ***
    9    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
     (ft)   (acres) (acre-ft)   (ft3/s)   (ft3/s) ***
```

```
         0         0         0         0         0
      0.21      5.99      2.27         1         0
       0.7      7.81      5.11         5         0
      1.68      9.44     12.67        25         0
      2.38     10.37     19.27        50         0
      3.37     11.59     29.88       100         0
      4.78     13.34      47.3       200         0
      5.87     14.69     62.45       300         0
      7.73      16.9     90.31       300     10000
  END FTABLE756

  FTABLE    758
Type:     Stream                          ***
Stream:   Utah and Salt Lake Canal        ***
Source storage: Utah and Salt Lake Canal***
           HEC-RAS Model Sta 195 to 184 ***
 rows cols                                ***
    9    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
         0         0         0         0
      1.23      2.64      1.22         1
      1.81      4.03      2.96         5
      2.89      5.65      7.69        25
      3.64      6.34     11.89        50
      4.69      7.07     18.74       100
      6.17      7.85     29.83       200
      9.07      9.42     55.51       500
       9.5      9.42        56     10000
  END FTABLE758

  FTABLE    759
Type:     Stream                          ***
Stream:   Utah & SLC C T                  ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                ***
   12    4
    Depth      Area    Volume  Outflow1 ***
         0         0         0         0
       0.1      0.88      0.07         1
      0.23      1.34      0.24         5
      0.41      2.13      0.83        25
      0.53      2.66      1.41        50
       0.7      3.15      2.38       100
      0.95      3.76      4.01       200
      1.49      4.68         8       500
      2.13      5.65     13.56      1000
      3.14      6.95     23.19      2000
      5.31      9.85     48.88      5000
      6.71     11.38     68.06      7500
  END FTABLE759


  FTABLE    760
Type:     Stream                          ***
Stream:   South Jordan Canal              ***
Source storage: South Jordan Canal        ***
           HEC-RAS Model                  ***
 rows cols                                ***
    9    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
         0         0         0         0
       0.5      1.23      0.38         1
      0.81      1.48      0.95         5
      1.91      1.82      2.65        25
      2.83      1.88      4.17        50
      4.48      2.65      6.79       100
      6.34      3.79     11.42       200
     11.05      4.01     26.86       500
      11.5      4.01     27.00     10000
  END FTABLE760

  FTABLE    762
Type:     Stream                                  ***
Stream:   South Jordan Canal                      ***
Source storage: South Jordan Canal                ***
           HEC-RAS Model Sta   14 to   1          ***
Channel Depth (Sta. 10.5): 5.64 ft                ***
Overflow Weir Depth (53 in from top): 1.2 ft      ***
 rows cols                                        ***
    8    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
     (ft)   (acres) (acre-ft)   (ft3/s)   (ft3/s) ***
         0         0         0         0         0
      0.63      1.31      0.38         1         0
      1.26      1.65      1.06         5         0
      2.66      2.20      3.18        25         0
      3.64      2.74      5.31        50         0
      5.02      4.07      9.35        50       200
      7.38      4.78     17.59        50       500
     13.61      4.89     45.43        50      1000
  END FTABLE762

  FTABLE    764
Type:     Stream                                  ***
Stream:   South Jordan Canal                      ***
Source storage: South Jordan Canal                ***
           HEC-RAS Model Sta   29 to   14         ***
Channel Depth (Sta24.2): 5.55 ft                  ***
Weir Elevation (48 in): 1.55 ft                   ***
 rows cols                                        ***
    8    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
     (ft)   (acres) (acre-ft)   (ft3/s)   (ft3/s) ***
         0         0         0         0         0
      0.50      2.33      0.72         1         0
      0.81      2.82      1.81         5         0
      1.91      3.46      5.03        25         0
      2.83      3.58      7.92        50         0
      4.48      5.04     12.91       100         0
      6.34      7.21     21.71       100       200
     11.05      7.62     51.05       100      1000
  END FTABLE764

  FTABLE    766
Type:     Stream                          ***
Stream:   South Jordan Canal              ***
Source storage: South Jordan Canal        ***
           HEC-RAS Model Sta   66 to   2***
 rows cols                                ***
    9    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
         0         0         0         0
      0.42      3.26      1.10         1
      0.80      4.12      2.71         5
      1.92      5.24      7.18        25
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      3.06      6.05     11.41        50
      4.66      7.38     18.74       100
      6.42     13.08     33.46       200
      9.85     14.80     69.88       500
     10.00     15.00     70.00     10000
  END FTABLE766

  FTABLE    768
Type:     Stream                                    ***
Stream:   South Jordan Canal                        ***
Source storage: South Jordan Canal                  ***
           HEC-RAS Model Sta   93 to   66           ***
Channel Depth (Sta. 73..5): 5.03 ft                 ***
Weir Depth (31 in from top): 2.44 ft                ***
Canal Capacity: 45 to 70 cfs                        ***
 rows cols                                          ***
    8    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
     (ft)   (acres) (acre-ft)   (ft3/s)   (ft3/s) ***
        0         0         0         0         0
      1.04      3.45      1.44         1         0
      1.58      4.33      3.40         5         0
      2.67      5.71      9.38        25         0
      3.53      6.84     15.04        50         0
      5.61     12.84     26.90       100         0
      7.24     14.59     45.79       100       200
     10.03     15.45     83.32       100      1000
  END FTABLE768

  FTABLE    770
Type:     Stream                          ***
Stream:   South Jordan Canal              ***
Source storage: South Jordan Canal        ***
           HEC-RAS Model Sta  110 to   9***
 rows cols                                ***
    9    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
        0         0         0         0
      0.64      2.52      0.97         1
      1.17      3.17      2.34         5
      2.46      4.03      6.44        25
      3.46      4.88     10.61        50
      5.07      7.07     18.56       100
      7.29     10.17     32.08       200
     10.74     11.75     60.29       500
     11.00     11.75     61.00     10000
  END FTABLE770

  FTABLE    772
Type:     Stream                                    ***
Stream:   South Jordan Canal                        ***
Source storage: South Jordan Canal                  ***
           HEC-RAS Model Sta  144 to  110           ***
Channel Depth (Sta. 121.5): 7.25 ft                 ***
Weir Depth (48 in from top): 3.25 ft                ***
 rows cols                                          ***
    8    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
     (ft)   (acres) (acre-ft)   (ft3/s)   (ft3/s) ***
        0         0         0         0         0
      0.56      5.81      2.01         1         0
      1.04      7.09      4.61         5         0
      2.29      9.10     12.45        25         0
      3.30     11.08     20.31        50         0
      4.46     13.44     34.01       100         0
      6.84     19.87     60.43       100       200
     10.68     22.94    114.81       100     10000
  END FTABLE772

  FTABLE    774
Type:     Stream                                    ***
Stream:   South Jordan Canal                        ***
Source storage: South Jordan Canal                  ***
           HEC-RAS Model Sta  147 to  144           ***
Channel Depth (Sta. 143.5): 9.88 ft                 ***
Weir Depth (44 in from top): 6.21 ft                ***
 rows cols                                          ***
    8    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
     (ft)   (acres) (acre-ft)   (ft3/s)   (ft3/s) ***
        0         0         0         0         0
      1.26      0.55      0.16         1         0
      1.82      0.70      0.48         5         0
      3.07      0.96      1.47        25         0
      3.90      1.09      2.35        50         0
      5.06      1.33      3.69       100         0
      6.68      2.18      6.16       100       300
      9.85      2.60     12.40       100     10000
  END FTABLE774

  FTABLE    776
Type:     Stream                          ***
Stream:   South Jordan Canal              ***
Source storage: South Jordan Canal        ***
           HEC-RAS Model Sta  170 to  14***
 rows cols                                ***
    9    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
        0         0         0         0
      0.15      3.02      0.85         1
      0.36      4.08      2.23         5
      1.45      5.06      6.38        25
      2.32      5.76     10.28        50
      3.54      6.95     16.86       100
      5.21      9.35     28.70       200
      8.20     12.99     58.81       500
      8.50     13.00     59.00     10000
  END FTABLE776

  FTABLE    780
Type:     Stream                          ***
Stream:   North Jordan Canal              ***
Source storage: North Jordan Canal        ***
           HEC-RAS Model Sta  12 to  0  ***
 rows cols                                ***
    9    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
        0         0         0         0
      0.61      1.09      0.34         1
      1.13      1.42      1.02         5
      2.36      1.88      3.21        25
      3.24      2.30      5.25        50
      4.38      2.98      8.56       100
      6.11      3.05     14.00       200
     10.27      3.05     27.03       500
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     10.50      3.05     28.00     10000
  END FTABLE780

  FTABLE    784
Type:     Stream                                  ***
Stream:   North Jordan Canal                      ***
Source storage: North Jordan Canal                ***
           HEC-RAS Model Sta  28 to  12           ***
Channel Depth (Sta. 34.5): 5.45 ft                ***
Weir Depth (25.5 in from top): 3.98 ft            ***
 rows cols                                        ***
    7    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
     (ft)   (acres) (acre-ft)   (ft3/s)   (ft3/s) ***
        0         0         0         0         0
     0.23      1.91      0.54         1         0
     0.62      2.58      1.47         5         0
     1.75      3.48      4.40        25         0
     3.27      4.19      7.27        50         0
     4.96      5.51     12.36       100         0
     6.45      7.12     22.31       100     10000
  END FTABLE784

  FTABLE    788
Type:     Stream                                  ***
Stream:   North Jordan Canal                      ***
Source storage: North Jordan Canal                ***
           HEC-RAS Model Sta   39 to  28          ***
Channel Depth: 4.93 ft                            ***
Weir Depth( 34 in from top): 2.1 ft               ***
 rows cols                                        ***
    7    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
     (ft)   (acres) (acre-ft)   (ft3/s)   (ft3/s) ***
        0         0         0         0         0
     0.22      1.24      0.33         1         0
     0.47      1.69      0.92         5         0
     1.23      2.22      2.60        25         0
     1.84      2.51      4.12        50         0
     2.84      2.87      6.64       100         0
     4.66      3.53     11.34       100     10000
  END FTABLE788

  FTABLE    792
Type:     Stream                                  ***
Stream:   North Jordan Canal                      ***
Source storage: North Jordan Canal                ***
           HEC-RAS Model Sta   58 to  39          ***
Channel Depth (Sta. 21.5): 5.49 ft                ***
Weir Depth (24 in from top): 3.49                 ***
 rows cols                                        ***
    8    5
    Depth      Area    Volume  Outflow1  Outflow2 ***
     (ft)   (acres) (acre-ft)   (ft3/s)   (ft3/s) ***
        0         0         0         0         0
     0.46      2.12      0.64         1         0
     0.92      3.10      1.84         5         0
     1.86      4.29      5.31        25         0
     2.54      4.83      8.35        50         0
     3.50      5.54     13.35       100         0
     5.44      7.61     22.22       200         0
     8.59     10.80     44.88       200     10000
  END FTABLE792

  FTABLE    796
Type:     Stream                          ***
Stream:   North Jordan Canal              ***
Source storage: North Jordan Canal        ***
           HEC-RAS Model Sta   78 to  58***
 rows cols                                ***
    9    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
        0         0         0         0
     0.45      2.92      1.05         1
     0.87      4.00      2.57         5
     1.85      5.27      6.92        25
     2.56      5.92     10.86        50
     3.57      6.82     17.35       100
     5.24      8.95     28.69       200
     9.08     13.54     58.66       500
     9.50     14.00     59.00     10000
  END FTABLE796

  FTABLE    798
Type:     Stream                          ***
Stream:   North Jordan Canal              ***
Source storage: North Jordan Canal        ***
           HEC-RAS Model Sta   96 to  78***
 rows cols                                ***
    9    4
    Depth      Area    Volume  Outflow1 ***
     (ft)   (acres) (acre-ft)   (ft3/s) ***
        0         0         0         0
     0.31      2.97      1.09         1
     0.63      3.85      2.61         5
     1.25      4.93      6.81        25
     1.69      5.55     10.47        50
     2.37      6.44     16.22       100
     3.57      7.53     25.56       200
     7.23     13.29     51.31       500
     7.50     13.50     52.00     10000
  END FTABLE798

  FTABLE    800
Type:     Detention Pond                  ***
Stream:   Barneys Creek                   ***
Name: Barneys                             ***
Source storage: Countywide 3d Surface     ***
Source discharge: Assumed                 ***
Bottom elevation: 4572                    ***
 rows cols                                ***
   08    4
    Depth      Area    Volume  Outflow1 ***
        0      0.66      0.00         0
        1      2.30      1.73         1
        2      3.59      4.67         5
        3      3.60      4.68        15
        4      3.62      4.69        25
        5      4.66      4.92        50
        6      7.12      7.35       100
        7      7.85     11.41     10000
  END FTABLE800

  FTABLE    805
Type:     Stream                          ***
Stream:   Barneys Creek 1                 ***
Source storage: Countywide HEC-RAS Model***
```

```
 rows cols                                 ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.19      1.61      0.17         1
     0.36      2.42      0.45         5
     0.75      3.87      1.45        25
     0.93      4.85      2.47        50
     1.15      6.67      4.28       100
     1.42      8.41      7.26       200
     1.96     10.04     14.07       500
     2.71     14.06     24.68      1000
     3.55     29.95     55.19      2000
     5.18     38.01    114.22      5000
     6.14      38.2    146.98      7500
  END FTABLE805

  FTABLE    810
Type:     Stream                           ***
Stream:   Barneys Creek 1                  ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                 ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.12      5.67      0.46         1
     0.34      8.32      1.53         5
     0.66     12.46      5.11        25
     0.89     14.41      8.45        50
      1.2     17.43     14.16       100
     1.61      20.8     23.85       200
     2.52     28.31     48.67       500
     3.58     37.62     84.41      1000
     5.13     54.37    152.72      2000
     8.33    113.99    381.24      5000
     9.53    142.04    560.83      7500
  END FTABLE810

  FTABLE    815
Type:     Stream                           ***
Stream:   Clay Hollow                      ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                 ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.25      5.57      0.53         1
     0.52      9.08      1.86         5
     0.95     15.95      6.46        25
     1.23     18.74     10.74        50
     1.63     23.01     18.08       100
      2.2     31.32     31.53       200
     3.34     40.31     63.44       500
     4.59     50.27     108.9      1000
     6.44     66.38    188.43      2000
     9.08    110.77    420.49      5000
    10.03    130.74    589.36      7500
  END FTABLE815

  FTABLE    820
Type:     Stream                           ***
Stream:   Barneys Creek 1                  ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                 ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.29      0.93      0.08         1
     0.53       1.5      0.26         5
     1.02      4.82      1.15        25
      1.4      6.33      1.98        50
     1.98      7.61      3.48       100
      2.8      8.29      5.52       200
     4.42      9.79     10.68       500
     6.21     10.68     17.48      1000
     8.49     13.13     30.68      2000
    10.26     15.04      58.2      5000
    11.48     16.48     78.41      7500
  END FTABLE820

  FTABLE    825
Type:     Stream                           ***
Stream:   Bingham L                        ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                 ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.13      0.08      0.01         1
      0.3      0.14      0.05         5
     0.69      0.24      0.16        25
        1       0.3      0.27        50
     1.44      0.38      0.44       100
     2.02      0.48      0.74       200
     3.11      0.66      1.44       500
     4.58      1.52      2.58      1000
     5.74      3.08      5.86      2000
      7.3      3.09     10.76      5000
      8.3      3.09     13.89      7500
  END FTABLE825

  FTABLE    828
Type:     Stream                           ***
Stream:   Bingham Ck 1                     ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                 ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.35      0.61      0.11         1
     0.64      1.09      0.35         5
     1.18      1.96      1.24        25
     1.59      2.41      2.04        50
     2.16      3.02      3.37       100
     2.96      7.91      6.58       200
      4.5     14.05     15.07       500
     6.23     20.46     27.14      1000
     7.81     30.63      51.4      2000
     9.05     37.79     103.8      5000
     9.79     39.46    136.23      7500
  END FTABLE828

  FTABLE    832
Type:     Stream                           ***
Stream:   Bingham Ck 1                     ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                 ***
   12    4
```

```
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.68      0.47      0.12         1
        1      0.75      0.29         5
     1.72       1.5       0.9        25
     2.21      1.79      1.48        50
      2.9      2.08      2.45       100
     3.85      2.38      4.02       200
     5.67      5.17      8.75       500
      7.6       7.8     14.64      1000
      9.3      8.56     23.31      2000
     10.7     14.81     47.69      5000
    11.23     15.16     60.44      7500
  END FTABLE832

  FTABLE    836
Type:     Stream                        ***
Stream:   Bingham Ck 1                  ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.24      0.56      0.09         1
     0.38      0.89      0.24         5
     0.81      1.26      0.72        25
     1.19      1.48      1.17        50
     1.75      1.78      2.01       100
     2.51      2.16      3.33       200
     4.04      3.53      6.69       500
     5.63     10.54     17.21      1000
     6.64     15.27     30.65      2000
     7.94     21.61     61.53      5000
     8.67      24.1     85.36      7500
  END FTABLE836

  FTABLE    840
Type:     Stream                        ***
Stream:   Bingham Ck 1                  ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.07      1.14      0.08         1
     0.15      2.53      0.35         5
     0.32      3.44       1.1        25
     0.46      4.58      1.87        50
     0.65      6.65       3.2       100
     0.94      7.87      5.35       200
     1.57      9.75     10.46       500
      2.2     11.04     17.23      1000
     3.18     12.38     27.17      2000
     4.67     15.74     55.73      5000
     5.29     17.45     73.77      7500
  END FTABLE840

  FTABLE    844
Type:     Stream                        ***
Stream:   Bingham Ck 1                  ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.17      7.13      0.79         1
     0.37      9.89      1.57         5
     0.72     15.96      5.43        25
     1.04     20.61      9.06        50
     1.42     28.79     15.83       100
     1.93     37.62     27.13       200
     2.93      50.3     53.16       500
      4.1     67.45     93.35      1000
     5.71     83.36    158.14      2000
      9.2    149.85    357.44      5000
    12.87    186.03    522.56      7500
  END FTABLE844

  FTABLE    845
Type:     Stream                        ***
Stream:   Bingham Ck 2                  ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.11      1.66      0.15         1
     0.23      2.68      0.54         5
      0.5      3.98      1.81        25
     0.69      4.76      3.04        50
     0.98      5.71      5.14       100
     1.41      6.84      8.67       200
     2.26       8.8     17.35       500
     3.27     10.84     29.55      1000
     4.77     13.65     51.12      2000
     7.87      19.3    106.73      5000
     9.76     24.57    151.27      7500
  END FTABLE845

  FTABLE    850
Type:     Stream                        ***
Stream:   Wood Hollow Ck 1              ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.17       0.2      0.02         1
     0.34      0.31      0.07         5
     0.74      0.81      0.29        25
     1.04      1.07      0.52        50
     1.47      1.22      0.85       100
     2.03       1.4      1.36       200
     3.26      2.66      3.13       500
     4.21      4.55      6.06      1000
     4.99      5.81     10.53      2000
     6.47      6.01     19.44      5000
     7.46      6.01     25.22      7500
  END FTABLE850

  FTABLE    855
Type:     Stream                        ***
Stream:   Wood Hollow Ck 1              ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
```

```
      0.15       1.2      0.12         1
      0.28      2.19      0.41         5
      0.53      3.31      1.38        25
      0.72      3.87      2.32        50
      0.97      4.64      3.92       100
      1.35      5.73      6.71       200
      2.12      8.39      14.1       500
      3.01     13.03     26.25      1000
      4.81     16.66     45.84      2000
      6.85     30.41    108.37      5000
      7.89     32.91    143.07      7500
  END FTABLE855

  FTABLE    858
Type:     Stream                          ***
Stream:   Wood Hollow Ck 1                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                 ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.14       2.1      0.19         1
      0.29      3.38      0.66         5
      0.62      6.75      2.38        25
      0.87      7.91      3.96        50
       1.2      9.39       6.7       100
      1.65     11.51     11.36       200
      2.48     15.45     23.16       500
      3.54      20.9     41.47      1000
      4.55     26.55     72.78      2000
       6.6     36.85    153.13      5000
      7.84     41.56    210.42      7500
  END FTABLE858

  FTABLE    860
Type:     Stream                          ***
Stream:   Beef Hollow Ck 1                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                 ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.23      1.28      0.15         1
      0.44      2.19      0.52         5
      0.81       3.5      1.76        25
      1.02      4.09      2.95        50
      1.36      4.86      4.98       100
      1.86      6.04      8.54       200
      3.14      9.05     17.72       500
       4.2     12.26     31.64      1000
      4.97     17.31     55.95      2000
       6.5     25.03     117.7      5000
      7.56     32.04    171.78      7500
  END FTABLE860

  FTABLE    865
Type:     Stream                          ***
Stream:   Beef Hollow Ck 1                 ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                 ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.35      1.91      0.19         1
      0.66      2.77      0.65         5
      1.25      4.12      2.15        25
      1.65       4.9      3.63        50
      2.19         6      6.18       100
      2.96      7.56     10.62       200
      4.45      10.5     21.82       500
      6.19     14.65     38.14      1000
      7.39     19.64     67.91      2000
      9.36     28.91    143.12      5000
     10.27     33.79    197.57      7500
  END FTABLE865

  FTABLE    900
Type:     Stream                          ***
Stream:   Midas Creek 1                    ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                 ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.23      0.94      0.13         1
      0.55       1.5      0.41         5
      1.03      2.44       1.5        25
      1.37      2.92      2.45        50
      1.84       3.5      3.99       100
      2.48      4.28      6.61       200
      3.73      5.85     13.18       500
      4.71     10.31     23.33      1000
      5.36     13.02     39.57      2000
      6.73     22.66     88.62      5000
      7.63     26.38    121.17      7500
  END FTABLE900

  FTABLE    905
Type:     Stream                          ***
Stream:   Midas Creek 1                    ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                 ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.39      0.58      0.06         1
      0.78      1.07      0.31         5
      1.17      1.78      0.97        25
      1.53      2.06      1.41        50
      1.99         3      2.72       100
      2.54      3.76      4.66       200
      3.81     14.87     12.62       500
      5.32     17.43     22.44      1000
       7.4     19.79     35.93      2000
     11.39     31.04     76.98      5000
     13.74     38.45    106.19      7500
  END FTABLE905

  FTABLE    910
Type:     Stream                          ***
Stream:   Midas Creek 1                    ***
Source storage: Countywide HEC-RAS Model***
 rows cols                                 ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.26      1.16      0.08         1
      0.44      1.81      0.35         5
```

```
      0.84      2.82      0.89        25
      1.13      4.48      1.66        50
      1.55      6.38      3.08       100
      2.13       9.8      5.41       200
      3.26     21.64     13.91       500
      4.52     25.49     22.65      1000
      6.29     27.08     36.86      2000
     10.38     30.26     72.16      5000
     11.53     30.55     94.78      7500
  END FTABLE910

  FTABLE    912
Type:     Detention Pond                 ***
Stream:   Midas Creek                    ***
Name: Midas Creek                        ***
Source storage: SLC County / Area (Count***
Source discharge: SLC County             ***
Bottom elevation: 4561.5                 ***
 rows cols                               ***
   13    4
    Depth      Area    Volume  Outflow1 ***
        0      1.58      0.00         0
      0.5      1.62      0.05     22.73
      1.5      1.67      0.74    128.55
      2.5      1.71      1.66    299.09
      3.5      1.75      3.05    353.24
      4.5      1.80      4.72    374.72
      5.5      1.88      6.50    395.04
      6.5      1.97      8.40    444.27
      7.5      2.06     10.43     471.1
      8.5      2.20     12.58    512.06
      9.5      2.38     14.86    616.96
      9.8      2.46     15.55     655.9
     10.0      2.50     15.60   10000.0
  END FTABLE912

  FTABLE    915
Type:     Stream                         ***
Stream:   Midas Creek 2                  ***
Source storage: Countywide HEC-RAS Model***
 rows cols                               ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.28      0.88      0.09         1
     0.51      1.46      0.32         5
     0.93      2.41      1.03        25
     1.23      3.29      1.81        50
     1.65      4.21      3.26       100
     2.23      4.86      5.31       200
     3.38      6.02     10.13       500
     4.65      8.68     17.52      1000
      6.3     15.11     33.16      2000
     9.14     23.66      76.4      5000
    10.09     24.99     102.6      7500
  END FTABLE915

  FTABLE    920
Type:     Stream                         ***
Stream:   Midas Creek 2                  ***
Source storage: Countywide HEC-RAS Model***
 rows cols                               ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.28      0.97      0.09         1
     0.42      1.43      0.29         5
     0.79      2.15      0.97        25
     1.08      2.51      1.56        50
     1.49      3.03      2.65       100
     2.08      3.63      4.41       200
     3.23      7.12      10.1       500
      4.5      8.51     17.18      1000
     6.31     11.14     29.84      2000
     9.85     15.28      62.6      5000
    12.15     18.72     87.78      7500
  END FTABLE920

  FTABLE    925
Type:     Stream                         ***
Stream:   Midas Creek 2                  ***
Source storage: Countywide HEC-RAS Model***
 rows cols                               ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.23      4.22       0.4         1
     0.35      6.63      1.25         5
     0.87     10.79      4.35        25
     1.09     13.34      7.27        50
     1.55     17.28     12.45       100
     2.16      22.7     21.64       200
     3.31     32.03     44.72       500
     4.63      39.2     76.75      1000
     6.47     54.91    136.71      2000
     9.96     74.59    280.99      5000
    12.98     97.32    407.56      7500
  END FTABLE925

  FTABLE    930
Type:     Stream                         ***
Stream:   Butterfield Ck 1               ***
Source storage: Countywide HEC-RAS Model***
 rows cols                               ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.29      0.98      0.08         1
     0.62      2.05      0.31         5
     1.14      3.05      0.97        25
     1.49       3.8      1.65        50
     1.98      4.77       2.8       100
     2.64      6.12      4.84       200
     3.58      9.54     10.46       500
      4.6     12.54     18.36      1000
     6.02     19.98     35.57      2000
     8.94     38.72      88.4      5000
    10.68     40.42    117.13      7500
  END FTABLE930

  FTABLE    935
Type:     Stream                         ***
Stream:   Butterfield Ck 1               ***
Source storage: Countywide HEC-RAS Model***
 rows cols                               ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
```

```
      0.08      6.56      0.34         1
      0.15     11.56      1.24         5
      0.31     18.29      4.22        25
      0.43     22.55         7        50
      0.59        27     11.97       100
      0.83     33.57      20.3       200
      1.29     43.19     40.49       500
      1.84     62.25     74.06      1000
       2.3     88.38    135.64      2000
      3.17    106.81    247.33      5000
      3.66    124.61    364.03      7500
  END FTABLE935

  FTABLE    940
Type:     Stream                        ***
Stream:   Butterfield Ck 1              ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.23      3.46      0.37         1
      0.49      6.05      1.24         5
      1.04        10      4.28        25
      1.42     11.93      7.19        50
      1.91     14.45     12.14       100
      2.55     19.48     21.09       200
      3.67     26.25     42.97       500
      4.56     36.25     75.55      1000
      6.15     48.19    130.82      2000
      9.14     66.22    274.57      5000
     10.62     75.75    374.52      7500
  END FTABLE940

  FTABLE    950
Type:     Stream                        ***
Stream:   Rose Creek 1                  ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
       0.4      0.26      0.05         1
      0.72      0.47      0.15         5
      1.32       0.7      0.47        25
      1.77      0.84      0.77        50
      2.24      2.09      1.47       100
      2.68      2.77      2.68       200
      3.39      3.21      5.29       500
      4.18      5.77     10.46      1000
      5.36     10.82     20.27      2000
      7.59     13.01      38.6      5000
      8.77     13.55     50.34      7500
  END FTABLE950

  FTABLE    955
Type:     Stream                        ***
Stream:   Rose Creek 1                  ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.13      1.04      0.08         1
      0.25      1.83      0.39         5
      0.53      3.05      1.26        25
      0.73      3.93      2.08        50
      0.98       4.8      3.39       100
      1.32       6.1      5.61       200
      2.07      7.41      10.7       500
      2.96      8.91     17.74      1000
      3.84     11.15     29.63      2000
      6.07     16.34     59.36      5000
      7.43      31.1     95.13      7500
  END FTABLE955

  FTABLE    960
Type:     Stream                        ***
Stream:   Rose Creek 1                  ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.29      0.55      0.07         1
      0.55      0.97      0.26         5
      1.04      1.84      0.94        25
       1.4      6.96      2.14        50
      1.93     10.33      4.09       100
      2.66     11.87      6.63       200
      4.05     14.79     13.23       500
      5.62     22.02     23.11      1000
      7.83      25.1     38.11      2000
     12.95     38.84     79.59      5000
      14.4      46.4    117.18      7500
  END FTABLE960

  FTABLE    965
Type:     Stream                        ***
Stream:   Rose Creek 1                  ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.12      1.13      0.17         1
      0.28      1.74      0.49         5
      0.71      2.73      1.48        25
      1.05       3.3      2.38        50
      1.52      4.07      3.99       100
      2.15      4.97      6.52       200
      3.39      9.47     14.62       500
      4.77     11.49     25.19      1000
      6.66     19.99     48.05      2000
     10.14     31.98    105.36      5000
      11.2      38.5     154.1      7500
  END FTABLE965

  FTABLE    970
Type:     Stream                        ***
Stream:   Rose Creek 1                  ***
Source storage: Countywide HEC-RAS Model***
 rows cols                              ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
      0.34      1.05      0.14         1
      0.62      2.25      0.49         5
```

```
      1.19      5.99      1.89        25
      1.55      7.99      3.16        50
      2.09      9.17      5.11       100
      2.85     10.13      8.37       200
      4.31     11.62     16.31       500
      6.11     26.97     36.22      1000
      6.71      31.4     61.23      2000
      7.84     43.35     129.3      5000
      8.58     52.05    180.19      7500
  END FTABLE970

  FTABLE    972
Type:     Detention Pond                 ***
Stream:   Rose Creek                     ***
Name: Rose Creek                         ***
Source storage: Countywide 3d Surface    ***
Source discharge: Assumed                ***
Bottom elevation: 4916                   ***
 rows cols                               ***
   08    4
    Depth      Area    Volume  Outflow1 ***
        0      0.01      0.00         0
        2      0.35      0.28         1
        4      2.37      2.80         2
        6      3.63      9.14         5
        8      3.96     16.74        25
       10      4.26     24.96        50
       12      4.60     33.82       100
       13      4.81     38.52     10000
  END FTABLE972

  FTABLE    975
Type:     Stream                         ***
Stream:   Rose Creek 2                   ***
Source storage: Countywide HEC-RAS Model***
 rows cols                               ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.18      0.97      0.08         1
     0.35      1.43      0.29         5
      0.7      2.03       0.8        25
     0.98      2.54      1.36        50
     1.38         3      2.29       100
     1.98      3.48      3.82       200
     3.15      4.23      7.55       500
     4.47      5.01     12.68      1000
     6.32       6.1     21.44      2000
     9.96     10.87     48.92      5000
    11.73     12.99     69.73      7500
  END FTABLE975

  FTABLE    980
Type:     Stream                         ***
Stream:   Rose Creek 2                   ***
Source storage: Countywide HEC-RAS Model***
 rows cols                               ***
   12    4
     Depth      Area    Volume  Outflow1***
        0         0         0         0
     0.14      1.35      0.15         1
     0.43      2.31      0.57         5
     0.89      3.72      1.92        25
      1.2      4.51      3.23        50
     1.55      5.53      5.43       100
     2.01      7.01       9.2       200
     2.91     10.45     19.12       500
     4.12     13.77     33.58      1000
     5.61     18.18     58.99      2000
     8.71     36.62    139.33      5000
     11.3     41.81     195.9      7500
  END FTABLE980

  FTABLE    985
Type:     Stream                         ***
Stream:   Rose Creek 2                   ***
Source storage: Countywide HEC-RAS Model***
 rows cols                               ***
   12    4
    Depth      Area    Volume  Outflow1 ***
        0         0         0         0
     0.37      2.06      0.22         1
     0.63       3.5      0.73         5
     1.14      5.97       2.5        25
     1.43      7.69       4.3        50
      1.8      9.69      7.32       100
     2.23      12.2     12.32       200
     3.37     16.45     24.87       500
      4.9     24.53     45.75      1000
        6     35.82     86.08      2000
     7.67     44.99    171.65      5000
     8.75     48.11    228.75      7500
  END FTABLE985
END FTABLES
```