# Oneida Hydroelectric Project
# FERC No. 472

## Water Quality Summary
## 2004-2005

*Prepared for:*

PacifiCorp

*Prepared by:*

Ecosystems Research Institute

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# 1.0 INTRODUCTION

On August 28, 2002, PacifiCorp entered into a settlement agreement with the resource agencies and other intervening parties including the Idaho Department of Environmental Quality concerning the relicensing of the Bear River Projects (FERC Nos. 20, 472, and 2401). As part of the Draft 401 Water Quality Certification in this agreement, PacifiCorp agreed to several investigations associated with the operation of the Oneida Hydroelectric Plant (FERC No. 472), the furthest downstream project licensed under the agreement. The pertinent sections of this agreement relative to the Oneida Hydroelectric Project are as follows:

> *(Section 5). PacifiCorp shall develop a water quality monitoring plan (Oneida WQMP) to monitor for temperature, dissolved oxygen, specific conductance, sediment, nutrients and turbidity. The purpose of the Oneida WQMP is to characterize water quality conditions in the Bear River from Oneida powerhouse to the Idaho/Utah border ("Oneida reach") and to determine the Project's contribution to any violations of water quality criteria as set forth in the Idaho Water Quality Standards and Wastewater Treatment Requirements, IDAPA 58.01.02 (Water Quality Standards). Continuous monitoring consisting of temperature, specific conductance, dissolved oxygen and turbidity will be conducted downstream of Riverdale (at the location identified in paragraph 3) and data will be recorded at a minimum of hourly intervals for a minimum period of 18 months commencing after the new license has been issued by FERC and accepted by PacifiCorp. Monitoring for suspended sediment and nutrients (at a minimum, total and dissolved phosphorus) shall be conducted to establish a statistically significant relationship between these parameters and turbidity as recorded by the continuous monitoring station (i.e., approximately 30 samples during the 18-month monitoring period). Sampling for suspended sediment and nutrients shall be collected to represent the range of flows experienced through course of the annual hydrograph in the Oneida reach. PacifiCorp shall implement the Oneida WQMP upon IDEQ approval pursuant to paragraph 7 below.*

> *(Section 6). If IDEQ determines, based upon data collected by PacifiCorp and any other relevant information, that the operation of the Oneida Project causes or contributes to a violation of Water Quality Standards in the Bear River downstream of the Oneida reach, then within 90 days of IDEQ's request, PacifiCorp shall submit an Oneida Reach Mitigation Plan to IDEQ for approval that describes those measures PacifiCorp shall take, to address the violations caused by the Oneida Project. PacifiCorp must obtain approval of the Oneida Reach Mitigation Plan consistent with the requirement of this certification within 180 days of its submittal. PacifiCorp shall implement and comply with the Mitigation Plan once it is approved by IDEQ. Failure to submit an Oneida Reach Mitigation Plan consistent with this Certification or failure to comply with an approved Mitigation Plan is a violation of the terms of this certification and the FERC license for the Projects.*

The objectives of this investigation were to meet the conditions of Section 5 above. The study was undertaken in cooperation with the Idaho Department of Environmental Quality who selected the monitoring location (county bridge at 3600 South, Figure 1-1) and approved the

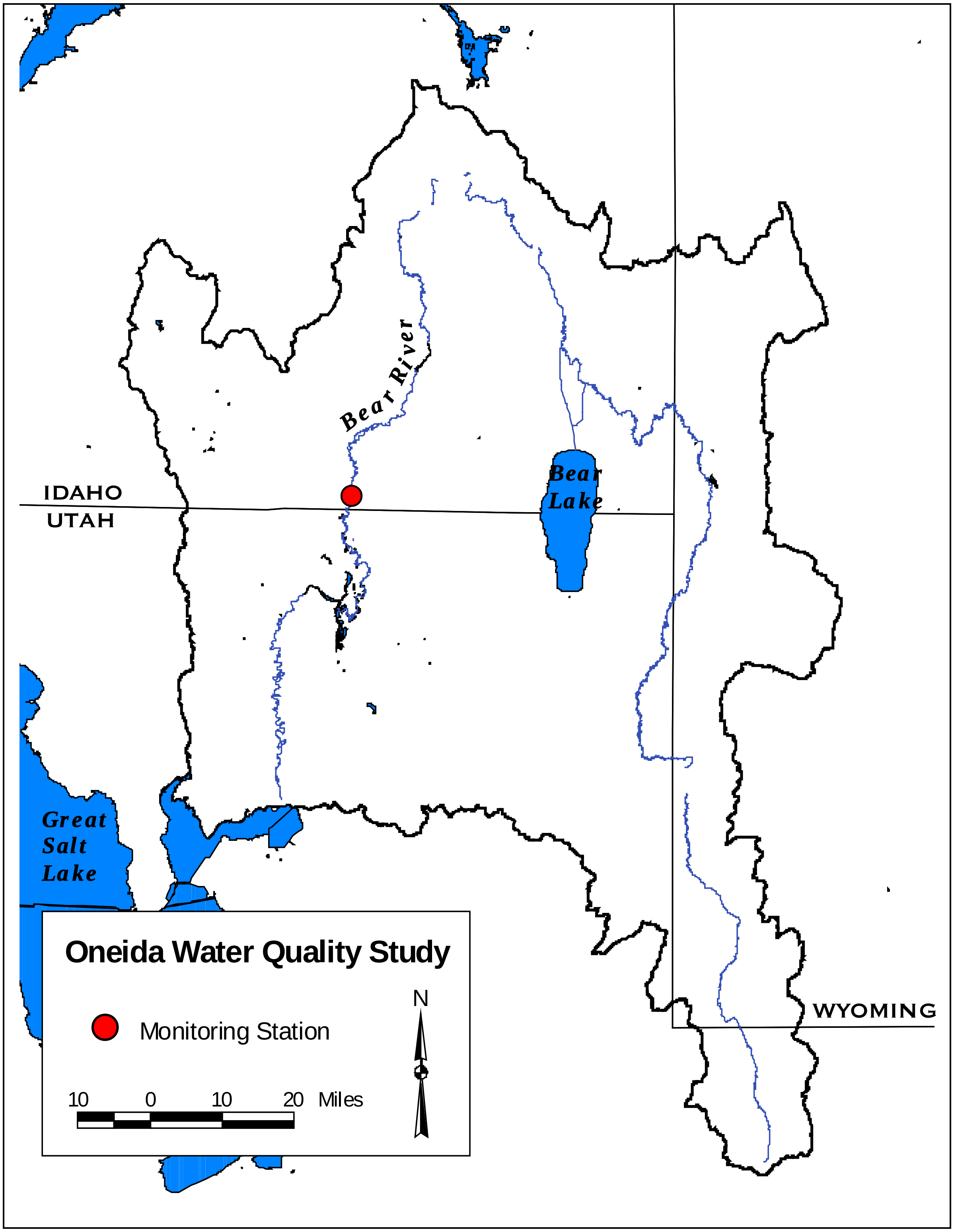



**Figure 1-1.** General location map of study area.

monitoring plan June 18, 2004. The experimental design was for a single continuous monitoring station near the Idaho-Utah border below the Oneida Project. Within the reach of river between the Oneida Hydroelectric Project and the 3600 South Bridge (a distance of approximately 30 river miles), there are a number of tributaries and anthropogenic activities that have been historically shown to affect the ambient water quality parameters measured as part of this study. A brief overview of the historical water quality conditions is warranted in order to place the current data collection into perspective.

# 2.0 HISTORICAL WATER QUALITY CONCERNS

## 2.1 Water Quality Limited Segments Occurring in the Study Area

The Bear River below Oneida Reservoir is the last of four major subbasins in the Idaho portion of the Bear River. This subbasin has six tributaries (5 are on the 303(d) list) of which four are non-designated, and thus assumed to support coldwater aquatic life and secondary contact recreation. Recreation contact is primary or secondary for these tributary streams (Table 2-1). The Bear River in this subbasin is also on the 303(d) list. The entire Bear River in this reach has a coldwater and salmonid spawning designation for aquatic life and primary contact recreation. Nutrients, sediment and flow alteration are the reasons given for the 303(d) listing for the river.

## 2.2 Applicable Water Quality Standards

As noted in Section 2.1, the tributaries and mainstem of the Bear River, as well as Oneida Reservoir have either coldwater, salmonid spawning or are undesignated relative to surface water beneficial use designations (aquatic life). Recreation designations are either primary or secondary contact. The specific numeric water quality standards are described in Table 2-2.

According to the 1998 Idaho Administrative Code 16.01.02.101.01(b), non-designated surface waters in the state are assumed to support cold water aquatic life and primary or secondary contact recreation beneficial uses and the department will apply coldwater aquatic life and primary and secondary recreation criteria to undesignated waters unless the department determines that other criteria are appropriate.

In addition to enforceable numeric standards, the state has narrative standards for pollutants such as nutrients (e.g. phosphorus and nitrate) and sediment. Therefore, numeric criteria established for nutrients or sediment are targets and not standards. Targets, like standards, do serve as a guidance to indicate possible pollution problems. When the concentrations are exceeded, further study is typically recommended. This may include more frequent water quality monitoring, biological monitoring, riparian assessment or additional studies to identify and quantify point and nonpoint sources.

**Table 2-1.** Waters within the Middle Bear River Subbasin (HUC# 16010202) and their designated beneficial uses.

| **WATERS INCLUDED:** | **303(d) LIST** | **BENEFICIAL USES*** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | **ND** | **DWS** | **AWS** | **COLD** | **WARM** | **SS** | **PCR** | **SCR** | **SRW** |
| Bear River - Alexander Dam to Utah Border | X | | | X | X | | X | X | | |
| Cottonwood Creek | X | X | | X | | | | | | |
| Mink Creek | | | | X | X | | X | X | | |
| Battle Creek | X | | | X | X | | | | X | |
| Deep Creek | X | X | | X | | | | | | |
| Fivemile Creek | X | X | | X | | | | | | |
| Weston Creek | X | X | | X | | | | | | |

* ND: Non-designated; DWS: Domestic Water Supply; AWS: Agricultural Water Supply; COLD: Cold Water Communities; WARM: Warm Water Communities; SS: Salmonid Spawning; PCR: Primary Contact Recreation; SCR: Secondary Contact Recreation; SRW: Special Resource Water.

**Table 2-2.** Idaho water quality criteria for the mainstem Bear River and its tributaries.

| PARAMETER | | CRITERIA |
|---|---|---|
| ***RECREATION USE DESIGNATIONS*** | | |
| E. coli: | primary contact (May 1-Sept 30) | Maximum: 406/100 ml and or geometric mean >126/100 ml from 5 samples taken 3 to 5 days over 30 days. |
| | secondary contact | Maximum: 576/100 ml or a geometric mean >126/100 ml from 5 samples taken 3 to 5 days over 30 days. |
| ***AQUATIC LIFE USE DESIGNATIONS (COLDWATER)*** | | |
| Dissolved Oxygen | | ≥6 mg/L |
| pH | | 6.5 - 9.5 |
| Turbidity increase | | ≤ 50 NTUs from background instantaneously |
| | | ≤ 25 NTUs from background for 10 days |
| Temperature | | ≤ 22°C instantaneous maximum & daily average maximum ≤ 19°C |
| Total Dissolved Gas | | ≤110% |
| Ammonia | | dependent on pH and temp |
| ***AQUATIC LIFE USE DESIGNATIONS (SALMONID SPAWNING )*** | | |
| Dissolved Oxygen (water column) | | ≥6 mg/L |
| Dissolved Oxygen (intergravel) | | one day min ≥5 mg/L & 7 day avg ≥6 mg/L |
| Temperature | | ≤ 13°C instantaneous maximum & daily average maximum ≤ 9°C |

Generally, one nutrient, usually phosphorus, is the limiting factor in aquatic environments. Nitrogen to phosphorus ratios in aquatic vegetation have been shown to range from about 10 to 17 parts nitrogen to 1 part phosphorus (Mackenthun 1973). It appears the limiting factor during most of the year in the Bear River in the study reach is phosphorus (Table 2-3). A comparison of readily available (i.e., the form of nutrient in the water column is such that its uptake by plants is easy) phosphorus and nitrogen indicates that phosphorus is the limiting factor.

Water quality targets for sediment and total phosphorus are different based on location within the Bear River depending on whether water flowing past that site discharges into a lake or impoundment (reservoir). For example, water flowing into Alexander Reservoir has a target of 0.05 mg P/l while water flowing in the Bear River below Alexander is 0.075 mg/l. In the case of the Bear River at the Utah-Idaho border, the target was set at 0.050 mg P/l for political reasons (Utah has set a target of 0.05 mg P/l for their criteria and the two states wanted to be consistent in their designations).

In the Bear River, the separation of sites based on downstream receiving waters corresponds to phosphorus targets recommended in the 1986 EPA "Gold Book" which established phosphorus concentrations at levels that prevent the "development of biological nuisances and to control accelerated or cultural eutrophication." The Gold Book recommends for sections of stream that do not discharge into a lake or impoundment (reservoir) a total phosphorus target of 0.1 mg/L. For those reaches that discharge into a lake or reservoir, the Gold Book suggests a threshold of total phosphates as phosphorus of 0.05 mg/L. The 0.05 mg/L target has been proposed for those reaches of the Bear River which discharge into Bear Lake, Alexander Reservoir, and Oneida Reservoir. All other sites, which are considered riverine, were assigned a target of 0.075 mg/L total phosphorus, a 25 percent reduction from that which was recommended in the Gold Book. However, as noted in the previous section of this report, the 0.05 mg/L total phosphorus target was also used for the Bear River below Oneida Reservoir to the stateline, based on the same target set by the state of Utah in their Lower Bear River Water Quality Management Plan (Ecosystems Research Institute 1995). Table 2-4 lists TSS and TP criteria for the Bear River below Oneida Reservoir by hydrologic period.

## 2.3 Summary and Analysis of Existing Hydrology and Water Quality Data

Water quality studies on the Bear River date back to the 1950s. Table 2-5 summarizes these studies by author, year of data collection, area covered by the study and the parameters measured during the investigations. The Idaho Bear River reach (that portion downstream of the Wyoming-Idaho border) has been the subject of water quality investigations starting as early as 1953 (Clyde 1953). The studies focused on suspended sediments and flow. Several studies have also been conducted on the current condition of and influences on water quality in the reach above Bear Lake, extending as far as Woodruff Reservoir in Wyoming down to the Idaho-Utah stateline. Of the studies that have been conducted on Bear River water quality in Idaho (Wyoming-Idaho stateline to the Utah-Idaho stateline) the most extensive has been completed by ERI (1998) and will be described in detail later in this section.

**Table 2-3.** A comparison of total inorganic nitrogen and orthophosphorus concentrations in the Bear River (data are from ERI historical collections).

| Site | Season | NH3 + NH4 (mg N/L) | NO2 (mg N/L) | NO3 (mg N/L) | Total inorganic nitrogen (TIN; mg N/L) | Ortho-phosphorus (OP; mg P/L) | Ratio of TIN to OP |
|---|---|---|---|---|---|---|---|
| Bear River below | WBF | 0.113 | (2) | 0.732 | 0.845 | 0.007 | 120.71 |
| Oneida (BRBO) | LBR | 0.095 | 0.009 | 0.682 | 0.786 | 0.017 | 46.24 |
| | UBR | 0.059 | 0.006 | 0.213 | 0.278 | 0.012 | 23.17 |
| | SBF | 0.066 | 0.012 | 0.328 | 0.406 | 0.024 | 16.92 |
| **BRBO Average:** | | **0.083** | **0.009** | **0.489** | **0.579** | **0.015** | **38.58** |
| Bear River at | WBF | 0.145 | (2) | 0.588 | 0.733 | 0.009 | 81.44 |
| Riverdale (BRR) | LBR | 0.115 | 0.009 | 0.699 | 0.823 | 0.02 | 41.15 |
| | UBR | 0.06 | 0.005 | 0.195 | 0.260 | 0.012 | 21.67 |
| | SBF | 0.06 | 0.01 | 0.174 | 0.244 | 0.013 | 18.77 |
| **BRR Average:** | | **0.095** | **0.008** | **0.414** | **0.515** | **0.013** | **38.15** |
| Bear River at | WBF | 0.065 | 0.03 | 0.913 | 1.008 | 0.033 | 30.55 |
| ID-UT stateline | LBR | | 0.038 | 0.919 | (1) | 0.048 | (1) |
| (BRSL) | UBR | | 0.02 | 0.559 | (1) | 0.031 | (1) |
| | SBF | | 0.018 | 0.386 | (1) | 0.032 | (1) |
| **BRSL Average:** | | **(1)** | **0.027** | **0.694** | **(1)** | **0.036** | **(1)** |

(1) Insufficient data

(2) Nitrate assumed to be 0.0 mg/L

**Table 2-4.** Total suspended solids and total phosphorus criteria applied to mainstem Bear River reaches in the proposed TMDL for the Bear River below Oneida Reservoir. The criteria for total suspended solids changed with hydrologic time period.

| Location | Total Phosphorus (mg/l) Criterion | Total Suspended Solids (mg/l) | |
|---|---|---|---|
| | | Runoff Criterion | Base flow Criterion |
| Bear River below Oneida (BRBO) | 0.050 | 80 | 60 |
| Bear River at ID-UT stateline (BRSL) | 0.050 | 80 | 60 |

**Table 2-5.** A summary of studies completed on the Bear River basin.

| | | LOCATIONS | | | PARAMETERS | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Author** | **Data date** | **BR UT** | **BR ID** | **BR WY** | **Flow** | **Nutrients** | **TSS** | **Salts** | **Metals** | **Bacteria** | **Biological** |
| Thorne & Thorne 1951 | 1949 | X | | | X | | | X | | | |
| Clyde 1953 | 1953 | X | X | | X | | X | | | | |
| Ward & Skoubye 1959 | 1958-59 | X | | | X | X | X | X | X | X | |
| Bangerter 1965 | 1963-67 | X | | | | | | | | | X |
| Waddell 1970 | 1952-68 | X | X | X | X | | X | X | | | |
| Hill et al. 1973 | 1971-72 | X | X | X | X | | | X | | | |
| Israelson et al. 1975 | 1973-74 | X | | | | X | | | | | |
| UWRL 1974a | 1974 | X | | | | X | | | | X | |
| UWRL 1974b | 1974 | X | | | | X | | | | X | |
| Drury et al. 1975 | 1972-73 | X | | | | X | | | | | |
| UWRL 1976 | 1975-76 | X | X | X | X | X | X | X | X | X | |
| Perry 1978 | 1978 | | X | | | | X | X | | X | X |
| Heimer 1978 | 1975-76 | | X | | | | X | | | | |
| Lamarra 1979 | 1977-78 | X | | | | X | | | | | |
| Lamarra & Adams 1980 | 1980 | X | | | X | X | X | | | X | |
| Wienecke et al. 1980 | 1976-77 | X | | | | X | X | | | | |
| Messer et al. 1981 | 1980 | X | X | | X | | X | | | | |
| Rupp & Adams 1981 | 1979-80 | X | | | X | | | | | | |
| UBWPC 1982 | 1975-82 | X | | | | X | X | X | | X | |
| Messer et al. 1984 | 1979-84 | X | | | X | X | | | | | |
| Montgomery 1984 | 1984 | X | | | X | | X | | | | |
| Sorensen et al. 1984 | 1977-83 | X | | | | X | X | X | | | |
| UBWPC 1984 | 1982-84 | X | | | | X | X | X | | X | X |
| Grenney et al. 1985 | 1976-82 | X | | | | X | | | | | |
| UDPC 1985 | 1985 | X | | | | | | | | | X |
| Sorensen et al. 1986 | 1984-85 | X | X | | | X | X | X | X | | |

| | | LOCATIONS | | | PARAMETERS | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Author** | **Data date** | **BR UT** | **BR ID** | **BR WY** | **Flow** | **Nutrients** | **TSS** | **Salts** | **Metals** | **Bacteria** | **Biological** |
| UBWPC 1986a | 1984-86 | X | | | | X | X | X | | X | |
| UBWPC 1986b | 1986 | X | | | | | | | | | X |
| Sorensen et al. 1987 | 1985-86 | X | X | | X | X | | | | | |
| UBWPC 1987 | 1987 | X | | | | | | | | | X |
| UBWPC 1988 | 1986-88 | X | | | | X | X | X | | X | |
| Barker et al. 1989 | 1987 | X | X | | X | X | | X | | | |
| UBWPC 1990 | 1988-90 | X | | | | X | X | X | | X | |
| ERI 1991 | 1990-91 | X | X | | X | X | X | X | | X | |
| PacifiCorp Electric Operations | 1991 | X | | | | | | | | | X |
| UBWPC 1991a | 1988-89 | X | | | | | | | | | X |
| UBWPC 1991b | 1889-90 | X | | | | | | | | | X |
| UDWQ 1992a | 1990-92 | X | | | | X | X | X | | X | |
| BLRC & ERI 1993 | 1991 | | | X | X | X | X | X | | | X |
| UDWQ 1993a | 1990-91 | X | | | | | | | | | X |
| UDWQ 1993b | 1991-92 | X | | | | | | | | | X |
| UDWQ 1993c | 1990-91 | X | | | | | | | | | X |
| UDWQ 1993d | 1991-92 | X | | | | | | | | | X |
| UDWQ 1994a | 1992-93 | X | | | | | | | | | X |
| UDWQ 1994b | 1992-93 | X | | | | | | | | | X |
| UDWQ 1995 | 1993-94 | X | | | | | | | | | X |
| ERI 1995 | 1992-93 | X | | | X | X | X | | X | X | X |
| ERI 1998 | 1994-96 | X | X | | X | X | X | | X | X | X |

Early water quality studies focused on sediments and salinity in the river. Clyde (1953) evaluated sedimentation patterns in the Bear River between Oneida and Cutler reservoirs. Between 1910 and 1950, the river bed raised six feet due to the deposition of over 110,000,000 tons of sediment. He attributed the source to rapid erosion in tributaries below Oneida Reservoir, caused by the natural soil conditions in the upland areas, exacerbated by irrigation and other land use practices. He concluded that fluctuating flows from Oneida had not greatly affected deposition of sediment in the channel. Heimer (1978) measured turbidity and suspended sediments at sites from below Bear Lake to the Utah-Idaho stateline. Based on his 1975 data, sediment loads in the river increased from 98 tons/month (3,000 kg/day) at Soda Springs to 351 tons/month (10,600 kg/day) near Preston, then decreased to 171 tons/month (5,180 kg/day) at the stateline. Waddell (1970), Haws and Hughes (1973), and Hill et al (1973) all summarized water quality data collected in the late 1960s and early 1970s. Most analyses were for major anions and cations only. Over this time period, total dissolved solids (TDS) averaged about 375 mg/liter at the Bear Lake outlet, with little change throughout the Idaho reach.

The first extensive water quality study of the Idaho portion of the Bear River was conducted in 1975 and 1976 (Perry 1978), with samples collected every two weeks at 15 stations. Perry concluded that total suspended solids (TSS) and TDS concentrations responded differently in the reaches above and below Oneida. From Bear Lake to above Oneida, TSS and TDS decreased at higher flows due to a dilution effect. However, below Oneida, solids increased during runoff. He attributed this to high sediment inputs from tributaries below Oneida. High nitrate concentrations in Black Canyon, possibly from Grace wastewater treatment plant (WWTP), and fecal coliform contamination in the river near Preston were also identified as water quality problems.

In the late 1970s, the emphasis shifted to nutrient contamination in the river, with most data collected below Oneida Reservoir by Utah State University Water Research Laboratory. Sorensen et al. (1984, 1986) found increasing TSS and total phosphorus (TP) loads below Oneida to be associated with inputs from tributaries. Most of the phosphorus was associated with the sediment, rather than in dissolved form. A study of the impact of power peaking below Oneida Reservoir demonstrated that total phosphorus increased during peaking events. Sorensen et al. also investigated bio-available phosphorus at the sites they monitored. They indicated that the amount of bio-available phosphorus in the system was related to anthropogenic sources.

Barker et al. (1989) summarized nutrient data collected from Bear Lake outlet to the Idaho-Utah stateline during 1987 and 1988. Average TP concentrations increased from 0.06 mg/liter at Bear Lake outlet to 0.100 mg/liter at stateline. Average orthophosphorus increased from 0.008 to 0.037 mg/liter over the same reach, although on most dates the concentrations were low and relatively constant from site to site. Nitrate concentrations ranged from 0.140 mg/liter at the outlet to 0.860 mg/liter at the stateline.

ERI (1991) reported on data collected in the lower basin during 1990, a low flow year, which included a site below Oneida Reservoir and sites from the Idaho-Utah stateline to below Cutler Reservoir. In this study, the average daily load of TSS increased from 7,000 kg/day below Oneida Reservoir to 24,000 kg/day at the stateline. The average TSS concentration increased from 6 to 50 mg/liter over this reach. Nutrient concentrations were relatively constant or decreased from Oneida to the stateline.

ERI (1998) conducted the most current and extensive water quality investigation on the mainstem Bear River. Twelve sites on the mainstem Bear River were sampled from April 1994 through September 1996 and in 1999-2000. In addition, several point sources, including the Soda Springs WWTP, the Clear Springs fish hatchery and Preston WWTP were also sampled. Several monitoring sites on the mainstem and tributaries were monitored by PacifiCorp as part of their relicensing effort on three hydroelectric facilities in Idaho. Data from several of these sites have also been included in this review of available information. This study represents the basis for the summary and analysis of water quality conditions in the Middle Bear River watershed particularly below Oneida Reservoir.

ERI's (1998) investigation sampled only a limited number of tributaries. In order to more fully define the nonpoint source component of the source inventory, detailed tributary and mainstem synoptic surveys were conducted during 1999-2000, using the same protocol as the 1998 study. These surveys will be discussed in the context of the more extensive 1998 study.

Samples for both studies were collected as subsurface grabs within the mixed zone and in the main channel of the stream. Field parameters (temperature, pH, conductivity, dissolved oxygen) were measured at the site and water samples were collected for nutrient, sediment and salinity analyses and returned to the laboratory for analysis. Flows were measured at the sites where water quality samples were collected. Flows on most of the mainstem Bear River in Idaho, and Soda Creek were obtained from PacifiCorp. Discharge data for the Utah-Idaho stateline were obtained from the U.S. Geological Service (USGS).

### *2.3.1 Hydrology*

For the years used in this specific water quality analysis (1994, 1995, 1999, and 2000), the total water yields from this basin were considered below average for 1994 to 1995 and above average for 1996 and 1999. The seasonal hydrograph was divided into four hydrologically similar periods. These periods, which will be used throughout the analysis in this report are: winter base flow or WBF (November, December, January, and February); lower basin runoff or LBR (March and April); upper basin runoff or UBR (May, June, and July); and summer base flow or SBF (August, September, and October).

### *2.3.2 Temperature, Dissolved Oxygen and pH*

Temperature and dissolved oxygen are important water quality parameters relative to aquatic life. Within the Bear River system in Idaho, both parameters have numeric criteria associated with the coldwater aquatic life beneficial use designated for this segment of the Bear River and its tributaries.

Exceedence of state water quality criteria for coldwater biota for each hydrologic time period and station are shown in Table 2-6. The temperature criterion was exceeded between 0% and 7% of the observations below Oneida Reservoir, depending upon the specific location.

**Table 2-6.** Exceedences of state water quality criteria in mainstem Bear River sites.

| DESCRIPTION | PHYSICAL | | | SOLIDS | NITROGEN | | PHOSPHORUS | |
|---|---|---|---|---|---|---|---|---|
| | **DO (mg/L)** <6 | **pH (SU)** <6.5 or >9.5 | **Temp (°C)** >22 | **TSS (mg/L)** >80 | **$NH_3$ (mg/L)** >4 | **$NO_3$ (mg/L)** >4 | **OP (mg/L)** >0.075 | **TP (mg/L)** >0.075 |
| BR abv Oneida at Hwy Bridge | 3% | 0% | 0% | 0.0% | 0% | 0% | 2.9% | 72.2% |
| BR 1 mile blw Oneida | 0% | 0% | 0% | 0.0% | | 15% | 0.0% | 40.0% |
| BR blw Oneida | 2% | 1% | 3% | 0.0% | 0% | 0% | 0.0% | 5.9% |
| BR at Riverdale | 0% | | 0% | 0.0% | | 14% | 4.8% | 20.0% |
| BR near Preston | 0% | 0% | 7% | 0.0% | | | | 0.0% |
| BR west of Preston | 1% | 0% | 5% | 2.8% | 0% | 0% | 0.0% | 53.5% |
| BR at ID UT stateline | 2% | 0% | 7% | 7.9% | 0% | 1% | 9.1% | 41.8% |

Dissolved oxygen varied widely from station to station on the Bear River in each hydrologic time period. In general, the highest dissolved oxygen concentrations were found during the winter base flow period, followed by lower basin runoff. Upper basin runoff and summer base flow had the lowest overall oxygen levels. This is believed to be the result of the combination of the influences of temperature and flow on the oxygen concentrations in the Bear River system. The numbers of exceedences for dissolved oxygen concentrations for the 1994-1995 and 1999-2000 data sets are shown in Table 2-6. Exceedences ranged from 0% to 3% of the observations.

### 2.3.3 Suspended Solids

The concentrations of total suspended solids were far more variable than for other parameters throughout the study reach. For example, during the two study periods, water leaving Oneida Reservoir and moving downstream to the Utah-Idaho stateline had its highest gain in concentration (61 mg/l) during the winter base flow period as compared to other river reaches upstream of Oneida Reservoir. The same spatial pattern was evident in the concentration of TSS in the three other hydrologic periods, with large increases in TSS occurring from the Oneida outlet to the Utah-Idaho stateline. The data collected in 1999-2000 indicated the major differences between the hydrologic time period was one of magnitude. Lower basin runoff had the highest concentrations of TSS followed by upper basin runoff, summer and winter base flow Using a criterion of 80 mg TSS/l, there were up to 7.8% exceedences for suspended sediments in the mainstem Bear River at the Utah-Idaho stateline (Table 2-6).

In the reach below Oneida Reservoir, the six major tributaries were also sampled as part of the 1999-2000 investigation. The data indicated that with the exception of Cottonwood Creek, these tributaries significantly added suspended solids to the Bear River. As noted in Table 2-7, Deep Creek and Battle Creek had the highest percent exceedences (46.7% and 75%, respectively). These creeks flow into the Bear River from the northwest near Riverdale, Idaho.

### 2.3.4 Nutrients

Using a 4 mg/l concentration for ammonia and nitrate as a pollution indicator, the mainstem Bear River stations below Oneida exceeded criterion from 0% to 15% of the observations (Table 2-6). In this reach of the river, Battle, Deep, Five Mile and Weston creeks exceeded criterion 7% to 13% of the observations (Table 2-7).

Total phosphorus and orthophosphorus are also pollution indicators. Inspection of Table 2-6 indicates that the concentrations of phosphorous measured below the Oneida Reservoir exceeded the proposed criteria of 0.05 mg P/l at least 50% of the observations. The elevated concentrations at the border reflect mostly watershed contributions because the highest elevated concentrations occur in March and April (lower basin runoff) when winter snows are melting off the south and west facing dry farms which are in the drainages of Deep Creek, Battle Creek and 5-mile Creek. These tributaries exceed the TP criteria in 100% of the observations (Table 2-7). In a loading analysis conducted as part of the preliminary TMDL for this reach of the Bear River, it was found that about 30% of the TP gain from the Oneida Reservoir outfall to the Utah-Idaho stateline was attributed to these tributary inflows.

**Table 2-7.** Exceedences in Bear River tributary sites of state water quality criteria.

| DESCRIPTION | PHYSICAL | | | SOLIDS | NITROGEN | | PHOSPHORUS | |
|---|---|---|---|---|---|---|---|---|
| | **DO (mg/L)** <6 | **pH (SU)** <6.5 or >9.5 | **Temp (°C)** >22 | **TSS (mg/L)** >80 | **$NH_3$ (mg/L)** >4 | **$NO_3$ (mg/L)** >4 | **OP (mg/L)** >0.075 | **TP (mg/L)** >0.075 |
| Cottonwood Creek | 0% | 0% | 1% | 0.0% | 0% | 0% | 0.0% | 0.0% |
| Mink Creek | 0% | 0% | 3% | 7.9% | 0% | 0% | 6.3% | 56.8% |
| Battle Creek * | 3% | 0% | 2% | 75.0% | 0% | 13% | 33.3% | 100.0% |
| Deep Creek * | 0% | 0% | 13% | 46.7% | 0% | 7% | 46.7% | 100.0% |
| 5 Mile Creek | 0% | 0% | 7% | 6.7% | 0% | 7% | 93.3% | 100.0% |
| Weston Creek * | 0% | 0% | 7% | 13.3% | 0% | 13% | 0.0% | 73.3% |

* Idaho 303(d) List

# 3.0 METHODS

The following section of this report describes the methods used in the collection, data qualification, and data analysis of the study. As noted previously, a single station (Figure 3-1) was used to collect hourly data for selected water quality parameters. Continuous monitoring data was collected using a YSI Model 6920 water quality probe. The instrument was inspected and field calibrated at least weekly. During some time periods (summer baseflow 2004) the probe was inspected on a daily basis in order to remove organic detritus that congregated around the probe housing and resulted in a significant amount of outlier data points. Section 3.1 describes the procedure for data qualification and outlier identification.

In addition to the continuous electronic data, water quality "grab" samples were collected by technicians from Ecosystems Research Institute (ERI) and returned to the ERI laboratory for determining the concentration of ortho and total phosphorous, as well as total suspended solids. From March to September (runoff through summer baseflow/irrigation season), grab samples were collected every two weeks. The frequency was reduced to monthly sampling from October to February (winter baseflow). This schedule was followed in order that water quality samples collected for total suspended solids (TSS), turbidity and phosphorous corresponded to the range of flows representing the normal hydrograph, which is between 150 cfs and 2000 cfs.

## 3.1 Data Qualification

An important process in the analysis of the data collected at the site was the determination of data acceptance. The criteria used to establish acceptance limits are noted in Table 3-1. These limits were compared to the water quality probe data during regular probe field calibrations. Data were rejected based upon the exceedence of the criteria. The number and percent of accepted data are provided in Table 3-2 and Table 3-3.

## 3.2 Data Merging and Filtration

The following section of this report describes the procedures and protocols (logic) used to further refine (filter) the electronic water quality data logged at the study site. Because the overall objective of the study was to determine if PacifiCorp's activities were resulting in or contributing to violations of the water quality standards in the Bear River below the Oneida site, several additional data sets were acquired and merged with the *in situ* logged electronic data.

In order to accomplish the goal of assigning potential liability to operations of the Oneida Project to water quality violations, the natural perturbations (storm events) in the system needed to be identified within the data. In addition, the transient data anomalies also need to be identified and marked. The overall procedure is described below.

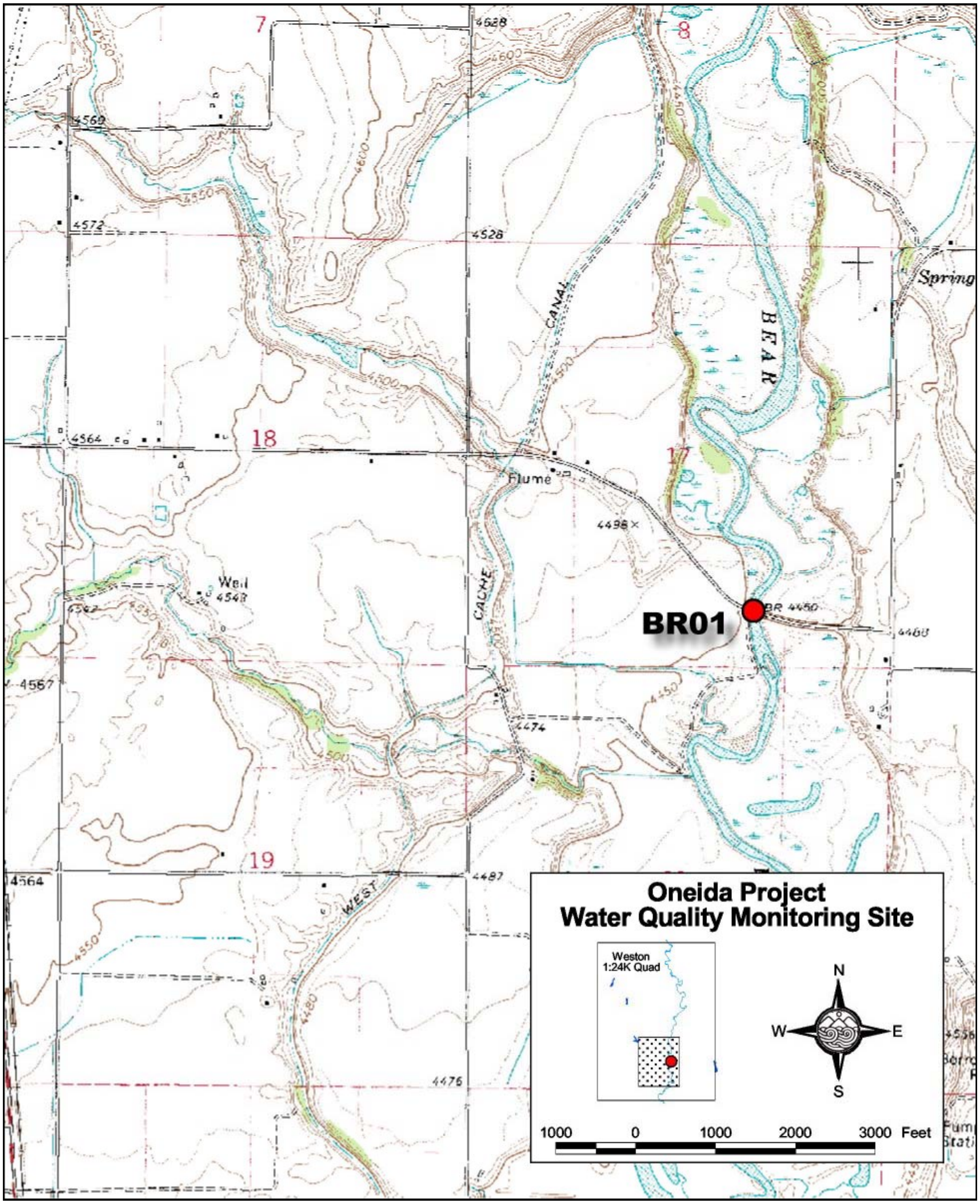



**Figure 3-1.** The location of the monitoring site for the Oneida Water Quality Study.

**Table 3-1.** Rejection criteria for continuous water-quality monitoring sensors.

| **Constituent** | **Manufacturer's Specifications**[a] | **Maximum Allowable Limits (USGS)**[b] |
|---|---|---|
| Water temperature | > ± 0.15°C | > ± 2.0°C |
| Specific Conductance | > ± 0.5 % | > ± 30 % |
| Dissolved oxygen | > ± 0.2 mg/L or ± 2%, whichever is greater | > ± 2.0 mg/L or ± 20%, whichever is greater |
| pH | > ± 0.2 units | > ± 2.0 units |
| Turbidity | > ± 5% or 2 NTU whichever is greater | > ± 30% |

[a] YSI Incorporated. 6-Series Environmental Monitoring Systems Operations Manual
[b] USGS, 2000. WRIR 00-4252, Table 8.

**Table 3-2.** The number and percentage of records in the database rated "acceptable" by parameter, based upon Table 3-1 criteria.

| | ACCEPTABLE RATING | | Percent exceeding state water quality criteria |
|---|---|---|---|
| | **No. of Datapoints** | **Percentage** | |
| Turbidity | 11869 | 100 | See Table 3-3 |
| Dissolved Oxygen | 8691 | 73.2 | 6.9 |
| Temperature | 11869 | 100 | 17.1 |
| Conductivity | 11461 | 96.6 | NA |

**Table 3-3.** The description of the hydrologic intervals used in this study and the associated number of turbidity data points included which met the QA/QC criteria.

| Hydrologic Time Period | Months Included | Number Data Points Accepted | Percentage Accepted |
|---|---|---|---|
| Upper Basin Runoff 2004 | May, June, July | 5974 | 100 |
| Summer Base Flow 2004 | August, September, October | 9162 | 100 |
| Winter Base Flow 2004-2005 | November, December, January, February | 10080 | 100 |
| Lower Basin Runoff 2005 | March, April | 5437 | 100 |
| Upper Basin Runoff 2005 | May, June, July | 8361 | 100 |
| Summer Base Flow 2005 | August, September | 5874 | 100 |

The initial step in the database development involved the merging of three separate hydrologic data sets with the water quality data (temporally matching), which involved the following steps. First, the USGS flow data was obtained and merged with the data from the logged water quality information. According to the standard operating procedure for the study, the frequency of data collection was on an hourly time step, however the study logged data at a 15-minute interval for better resolution and for use in the identification of outliers. The USGS flow data from Station No. 10092700 (Bear River at Idaho-Utah State Line) were merged at a 15-minute interval resolution.

Second, additional flow data collected by PacifiCorp at the outlet channel from Bear Lake (BROC), the outflow from the Soda Plant (BRSO) and the outflow from the Oneida facility (BROO) were combined with the above described data. This data was also at a 15-minute interval. It is believed that these three stations define PacifiCorp's Bear River hydrologic operations, which in turn, affects flows at the monitoring location. For example, the Bear River at BROC defines the time period and the magnitude of flows released out of Bear Lake for down stream irrigation at Cutler Reservoir (below the project site). These releases are not determined by PacifiCorp, but by the irrigation companies which have water delivery contracts with PacifiCorp. The comparison between the flows below Soda and the flows below Oneida define the day-to-day flow changes and thus the specific "micro" impacts experienced at the site. These flows shown at BROO can be regulated on an hourly or on a daily basis throughout the year and are much less in scale when compared to the large seasonal flow releases from Bear Lake in the mid to late summer or the lower or upper basin runoff flows.

Third, the meteorological data was obtained from the Preston Idaho COOP Northwest station 107346 and merged into the data set. This data was only reported as daily totals for a 24-hour period ending between 5:00 PM and 10:00 PM. All data were merged at their reporting times.

At the conclusion of the database development phase (merging of all the data sets), the final step was to clip the hourly data from the complete data set. This reduced data set (11,869 observations) was then used in the analytical process described below. The total data set (47,394 observations) was retained for an analysis of outliers described in Section 3.3.3.

## 3.3 Analytical Procedure

The following section summarizes the process used in the analysis phase of this study. This process systematically qualified or refined the data prior to statistical analysis. It should be noted that the description of the analytical approach is based upon one overriding assumption that the only mechanism of impact caused by PacifiCorp is the short term alteration of flows (operational changes) which can indirectly affect the water quality parameters recorded at the 3600 South station. To that end, great effort was made to define operational hydrologic actions and to dissect these actions from naturally occurring hydrologic events.

### *3.3.1 Hydrologic Time Periods*

In order to facilitate the analysis, the hourly data was divided into four hydrologic time periods. These periods are shown in Table 3-3 and are used throughout this report. The hydrologic time periods are also shown in Figure 3-2.

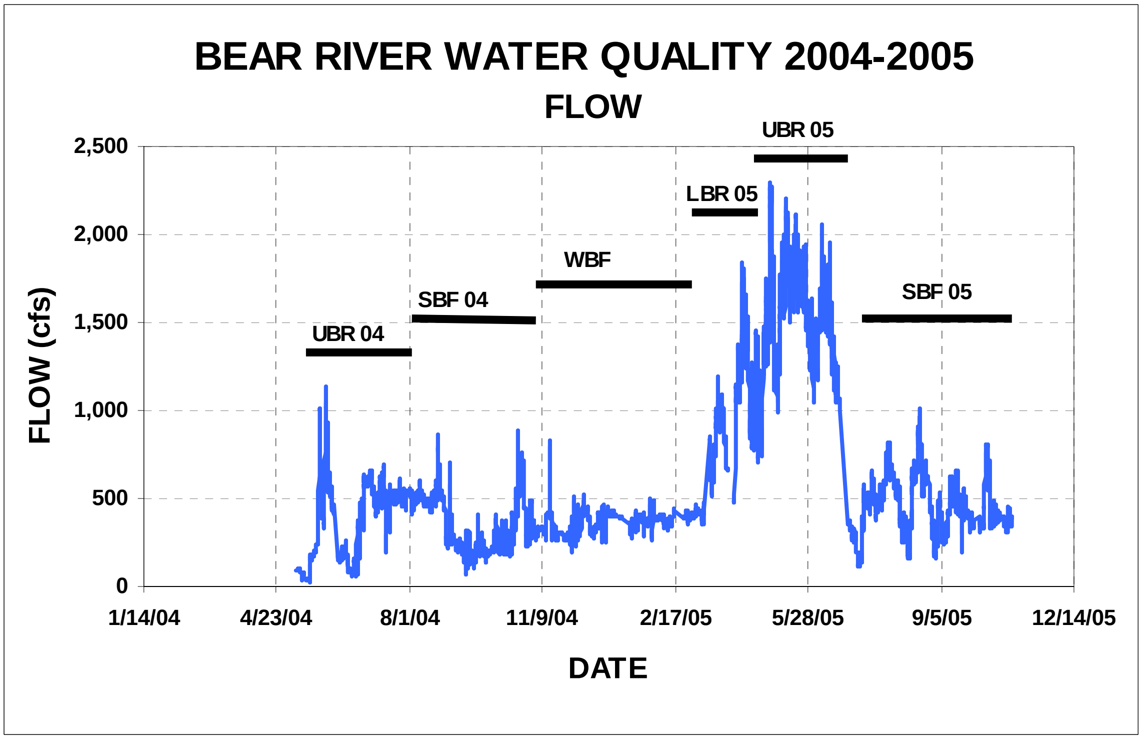



**Figure 3-2.** The documentation of the six hydrologic time periods used in this study.

**Table 3-4.** The number of data points "tagged" within the data set as a result of the analysis of storm events. The percent of the data remaining after the documentation of storm influence is provided.

| Hydrologic Time Period | No. Datapoints Analyzed | No. Days with Precipitation | No. Datapoints Tagged | Percentage of Database Remaining |
|---|---|---|---|---|
| Upper Basin Runoff 2004 | 1944 | 22 | 155 | 92.0 |
| Summer Base Flow 2004 | 2182 | 30 | 282 | 87.1 |
| Winter Base Flow 2004-2005 | 2418 | 8 | 43 | 98.2 |
| Lower Basin Runoff 2005 | 1310 | 20 | 442 | 66.3 |
| Upper Basin Runoff 2005 | 2009 | 25 | 242 | 88.0 |
| Summer Base Flow 2005 | 2006 | 14 | 159 | 92.1 |

### *3.3.2 Storm Event Documentation*

As noted above, storm events are stochastic in nature and affect the water quality parameters at the site. Because there is only one station where data were collected, transient storm events were marked within the database in order to facilitate an analysis of potential PacifiCorp impacts. The identification of storm events followed two steps or procedures. Firstly, any hydrologic changes in the data associated with measurable precipitation were coded within the data. A summary of precipitation events during the project period are shown in Table 3-4. In this initial storm event analysis, a total of 119 days with measurable precipitation occurred over the entire period of the study. Inspection of each event resulted in a change of flow and turbidity in 66 number of events (55.5% of the total storm time). This resulted in a notation of hourly observations ranging from 43 hourly observations during winter baseflow to 442 hourly observations in lower basin runoff. As can be seen in Table 3-4, all hydrologic time periods had data that fell into this category (storm event modified). After this initial filtration, data unaffected by stochastic storm events ranged from 66.3% to 98.2% of the total data, depending upon hydrologic time period.

### *3.3.3 Outlier Identification*

The identification of outliers was undertaken with the hourly data set described in Section 3.2 of this report. Outliers were found to be present in all hydrologic conditions. Field observations during the regular servicing and calibration of the probes indicated that floating or suspended detritus commonly collected on the probe housing especially during summer base flows in 2004. This resulted in sporadic peaks in the turbidity data. These points were tagged based upon the following criteria. Firstly, upon inspection of each data point where large turbidity spikes occurred, if the event was not present before or after the spike, the event was considered a outlier and tagged within the data set. If however, the spike lasted more than a single hourly observation (multiple consecutive hourly observations), the 15 minute data were inspected. If the data indicated that the pattern observed followed a “step function”, all the data were tagged for future analysis. In total, 394 hourly turbidity spikes were categorized as outliers within the database. By far, the vast majority of outliers were encountered in the summer baseflow of 2004. In September of that year, flows in the Bear River were less than 200 cfs. Given this low flow, extensive aquatic macrophytes were observed growing in the river around the study site. In order to keep the probe free from fouling, daily cleaning was necessary. Inspection of the data indicated that the water quality instrument was fouled within only several hours of cleaning. In order to preserve some data for analysis in this time period, the data collected immediately following the clearing of macrophyte debris was deemed usable in the subsequent analysis. A summary of the outliers removed are shown in Table 3-5.

In summary, the documentation of water quality observations at the 3600 Street Bridge corresponding to storm or outlier events has resulted in a dataset that is 85.5% of its initial size. Although all the data remained within the database, the outlier data was not used in the analysis involving the subsequent determination of potential impacts as a result of Oneida Reservoir operations.

**Table 3-5.** The number of data points "tagged" within the data set as outliers. The percent of the data remaining after removal is provided.

| Hydrologic Time Period | No. Datapoints Tagged as Outliers | Percentage of Database Remaining |
|---|---|---|
| Upper Basin Runoff 2004 | 1 | 92.0 |
| Summer Base Flow 2004 | 371 | 70.1 |
| Winter Base Flow 2004-2005 | 15 | 97.6 |
| Lower Basin Runoff 2005 | 2 | 66.1 |
| Upper Basin Runoff 2005 | 3 | 87.8 |
| Summer Base Flow 2005 | 2 | 92.0 |

# 4.0 RESULTS

The following section of this report summarizes the results of the data analysis conducted as part of investigation. The results of this study will be initially presented based upon hydrologic time period. Because of its timing and magnitude, hydrology at the site has a overriding influence on the water quality conditions, and an inter-parameter comparison was warranted.

## 4.1 Upper Basin Runoff 2004

The hydrology data used in this investigation came from two sources and are shown in Figure 4-1. Data for the 3600 South site was obtained from the USGS (Station No. 10092700) while flow data for the remaining sites were provided by PacifiCorp. All the remaining hydrology data presented in this report was obtained from these sources. In Figure 4-1 through Figure 4-5, flow and water quality data are presented for the upper basin runoff period in 2004 (UBR04). As noted in the Methods section, the flows at the project site (Figure 4-1) represent natural hydrologic conditions, irrigation augmentation during base flow, and re-regulation of flows below Oneida Reservoir. In 2004, Bear Lake water was released earlier than normal because of the lack of upper basin runoff flows. The hydrologic year in 2004 was considered a low water year. Bear Lake releases occurred for a brief time in May, as well as in June and July. Irrigation releases were continued after August 1, 2004. The remaining flows passing the study site were from natural sources.

The water quality parameters are plotted in Figures 4-2 through 4-5. Both temperature and dissolved oxygen exhibited diel variations. Temperatures remained relatively consistent in May but showed an overall warming trend during the middle of July, after which it remained constant at about 25°C (±1°C). Dissolved oxygen typically ranged between 6.5 to 9.5 mg/L.

Turbidity measurements during UBR04 were usually less than 50 NTU. The exception included two large peaks that occurred in May. Both peaks exceeded 120 NTU and were associated with large storm events.

## 4.2 Summer Base Flow 2004

The summer base flows for 2004 (SBF04) as well as the water quality data for the same time period are shown in Figures 4-6 through 4-10. The flow data for the Bear Lake outlet shows that irrigation releases continued from the UBR04 period through August ending on September 2, 2004. Flows at the stateline site were very low and relatively stable (200 cfs) until the middle of October when fall storms increased flows to 700 cfs.

As in the UBR04 time period, temperature and dissolved oxygen both exhibited diel variations. Temperatures reached a maximum of 23°C in early August and then continually decreased through the end of October (7°C). Both dissolved oxygen and turbidity had the highest proportion of outliers (94.2% of all outlier data occurred during this period) because of extensive amounts of floating macrophyte piles which lodged on the probe housing. Both dissolved oxygen and turbidity are sensitive to debris fouling. The turbidity data (in an unfouled condition) was typically around 10 NTU. During an October storm event, which increased flows in the river to 700 cfs, turbidity also increased from a base of 5 NTU to a maximum of 70 NTU.

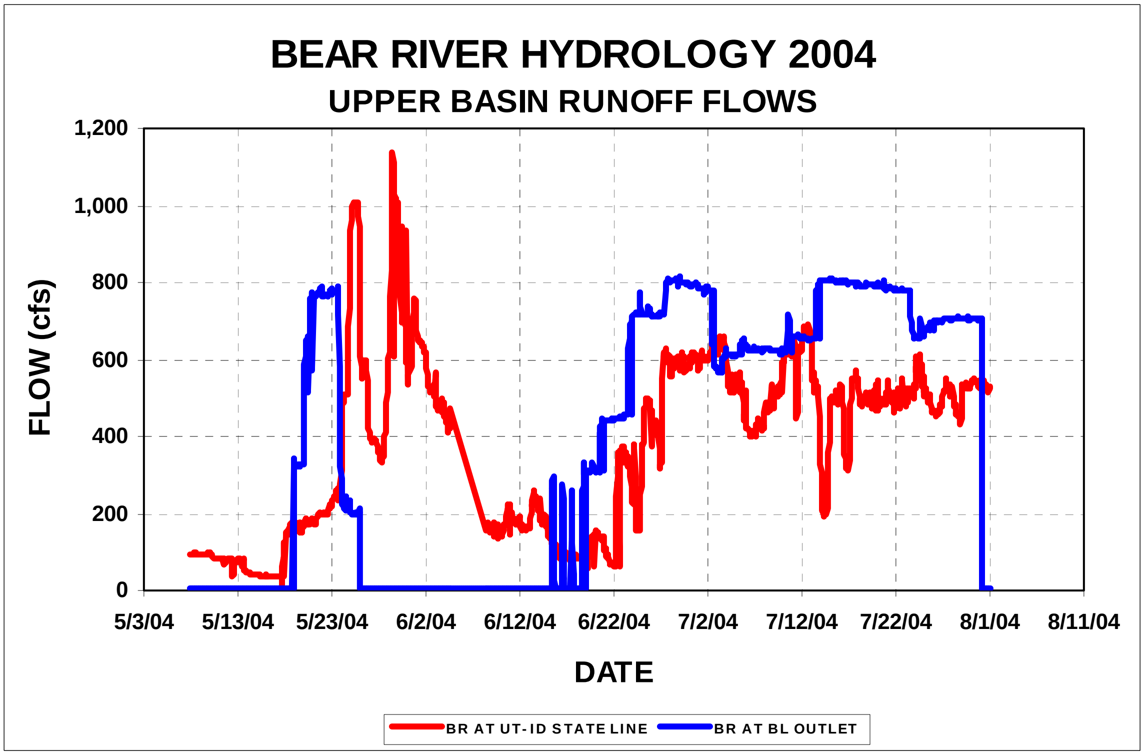



**Figure 4-1.** Upper basin runoff flows for two stations in the Bear River in 2004.

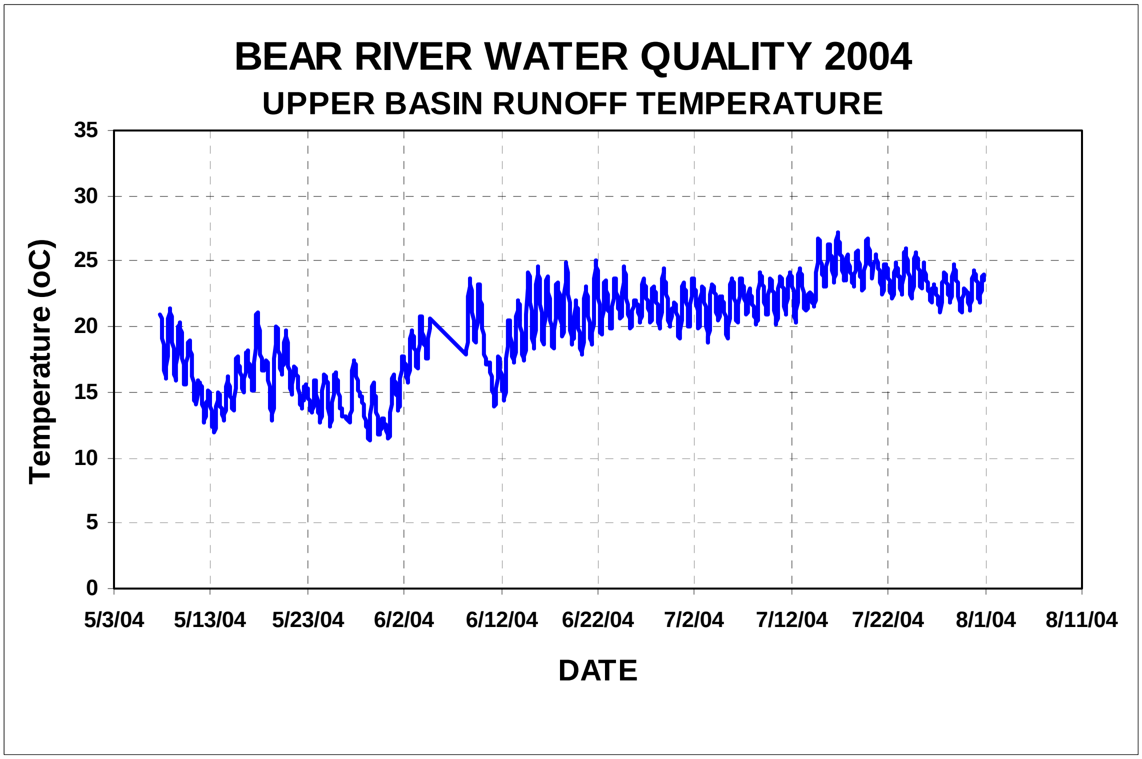



**Figure 4-2.** Continuous temperature at the monitoring site during UBR04.

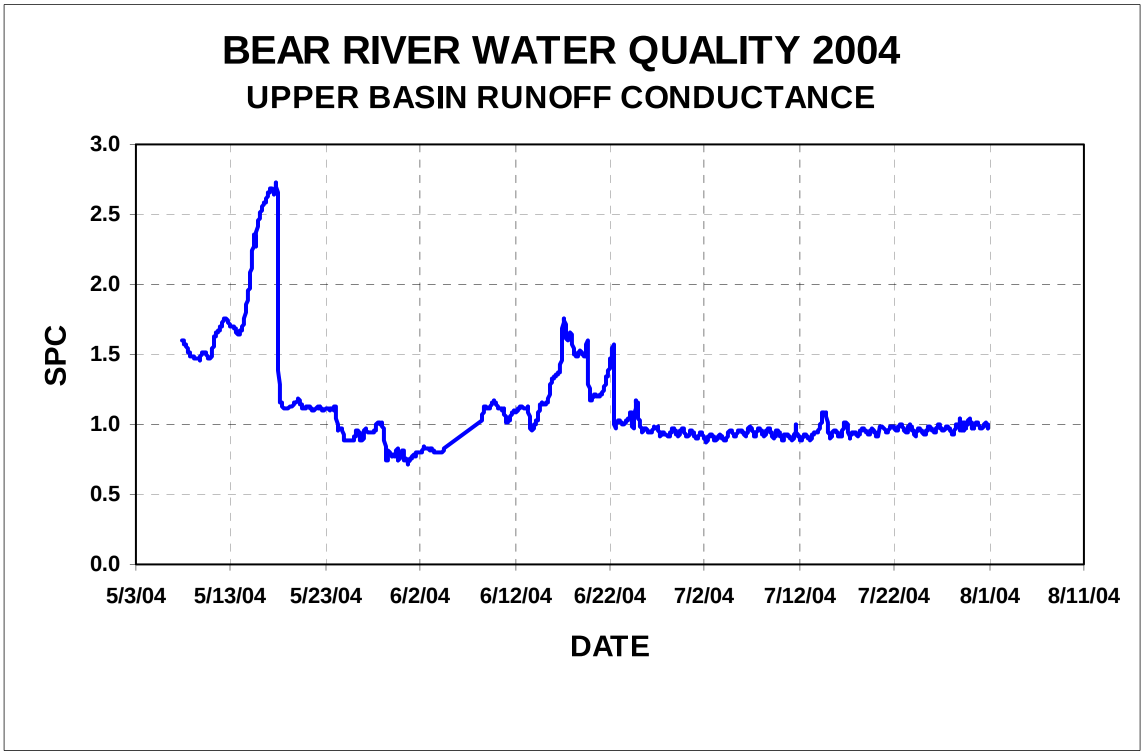



**Figure 4-3.** Continuous conductance at the monitoring site during UBR04.

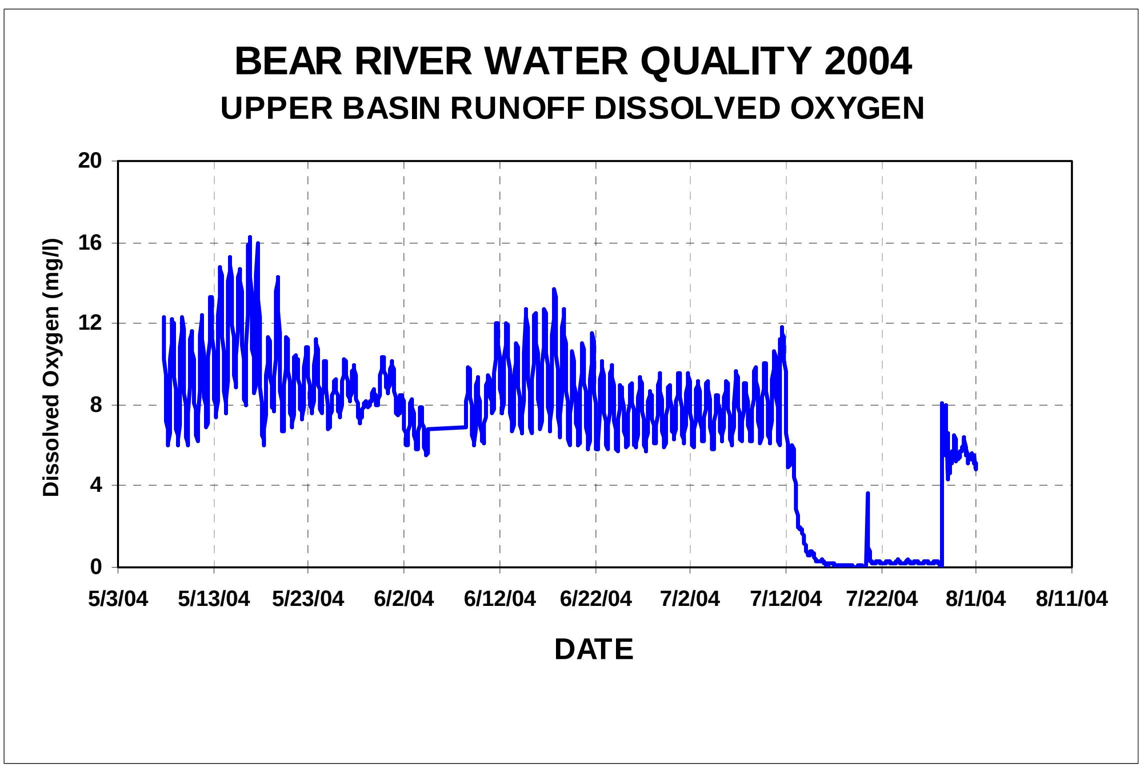



**Figure 4-4.** Continuous dissolved oxygen at the monitoring site during UBR04. Data from 7/12/04 to 08/01/04 were due to probe failure.

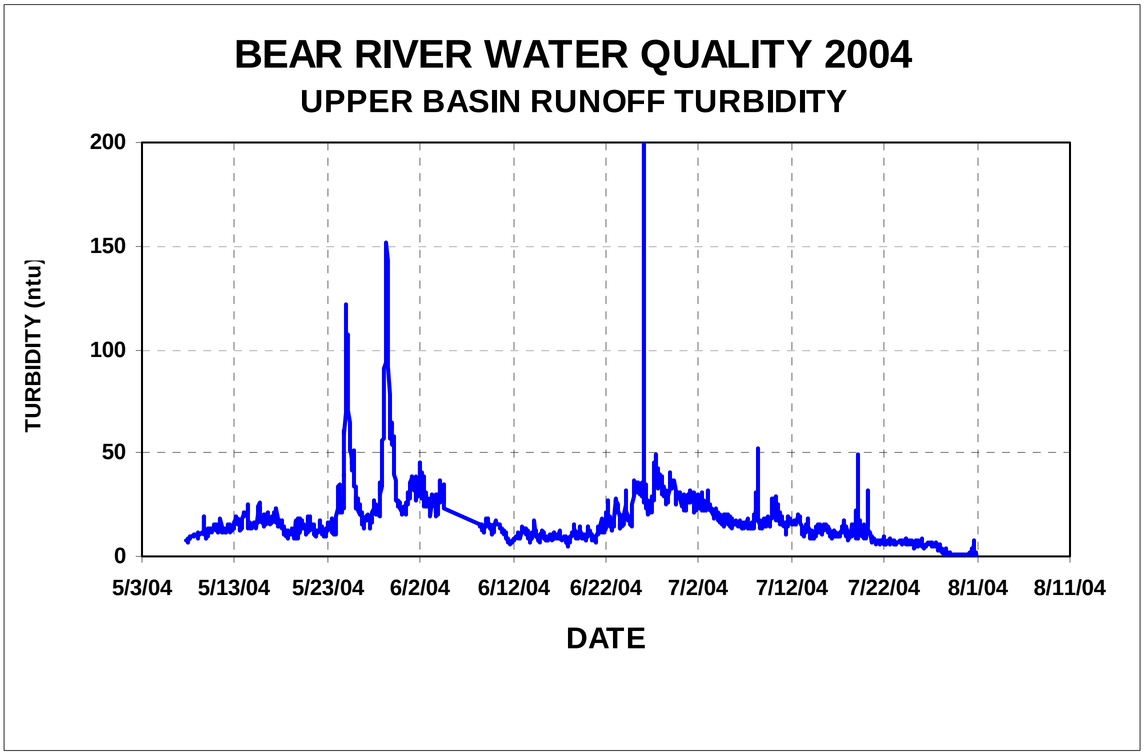



**Figure 4-5.** Continuous turbidity at the monitoring site during UBR04.

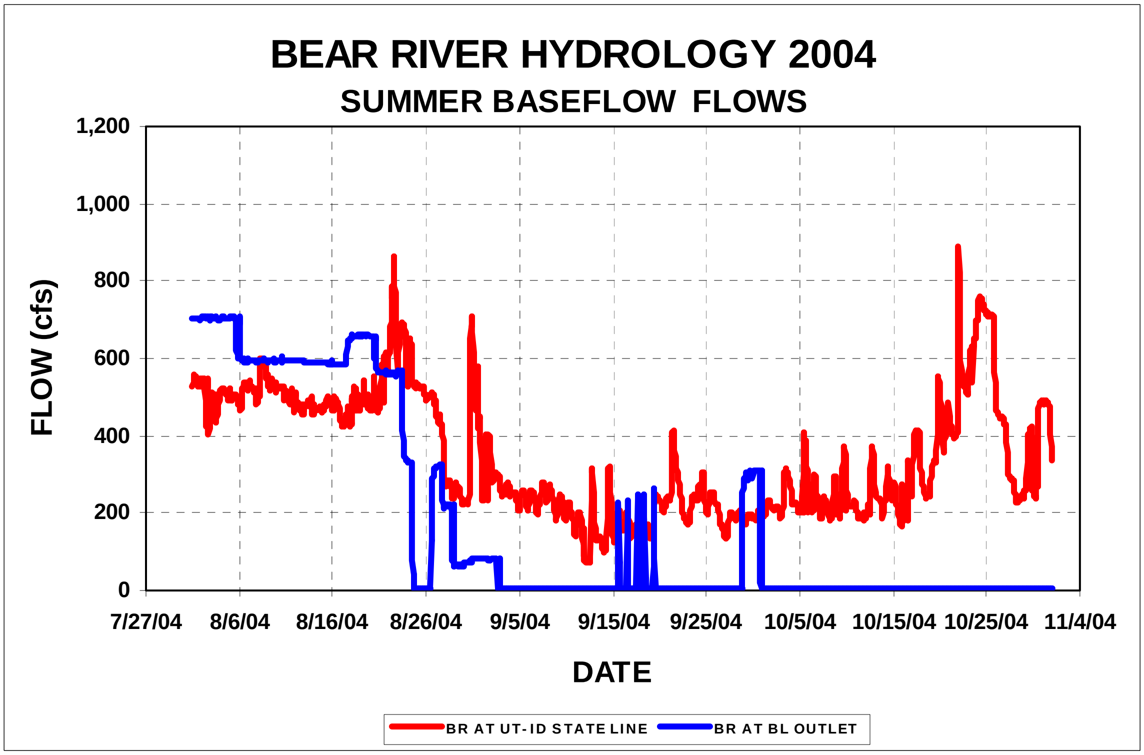



**Figure 4-6.** Summer base flow for two stations in the Bear River in 2004.

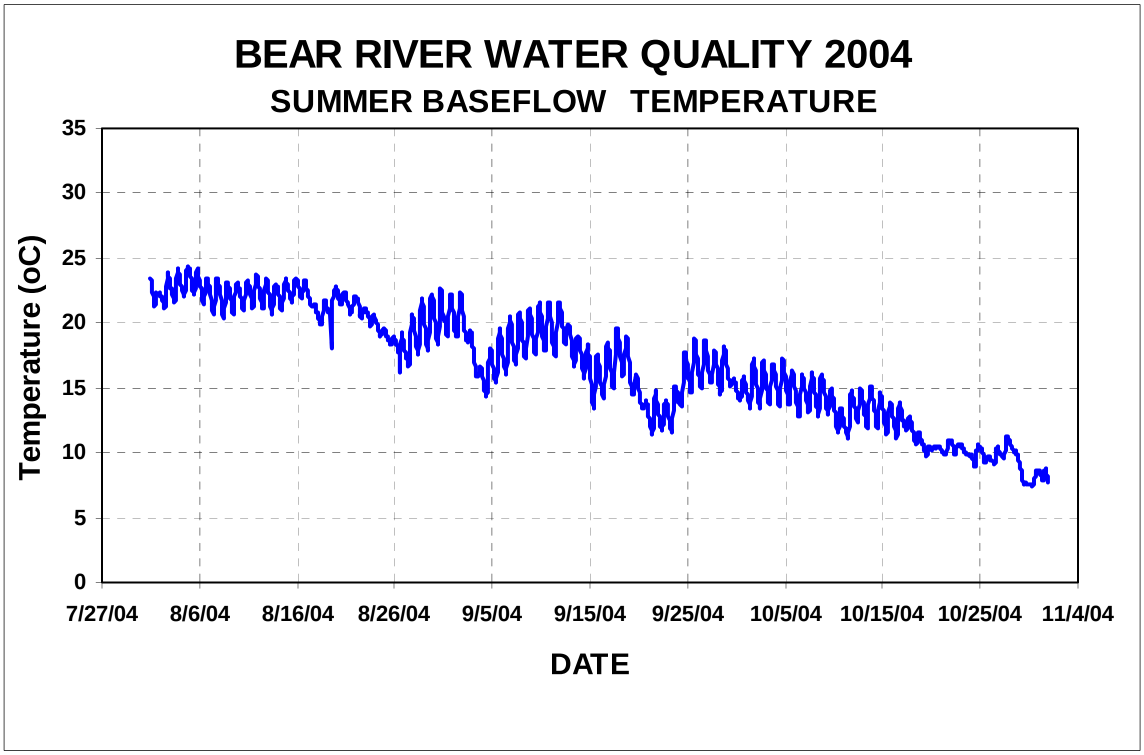



**Figure 4-7.** Continuous temperature at the monitoring site during SBF04.

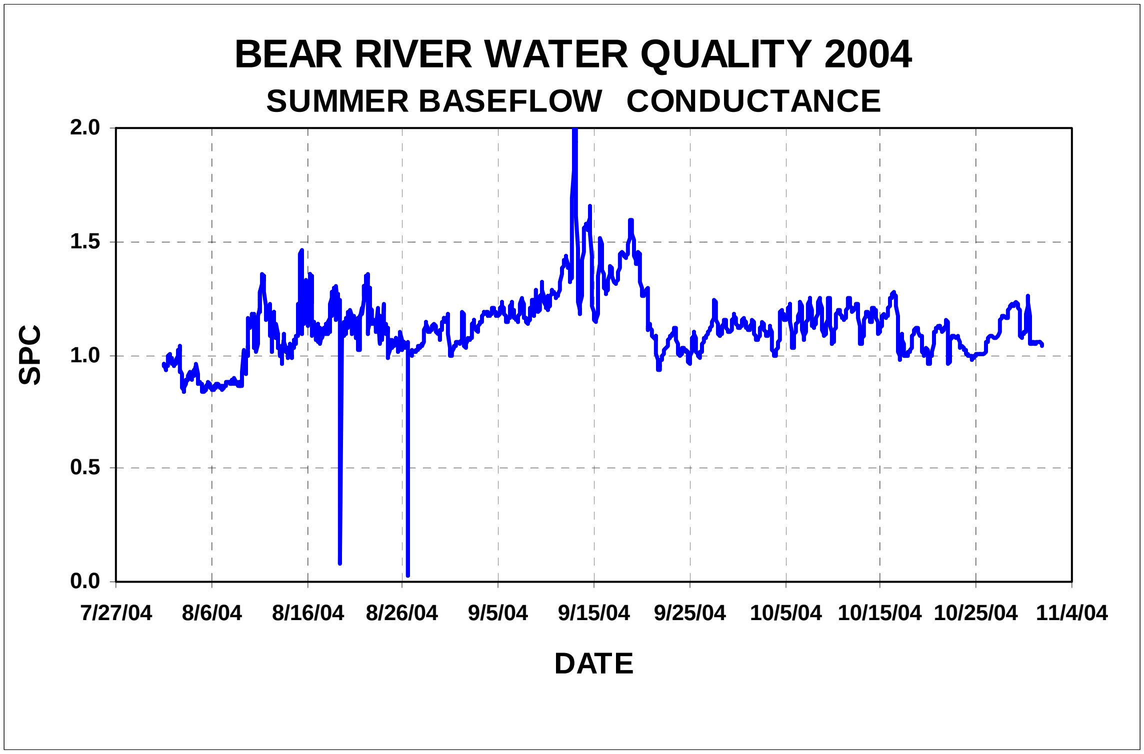



**Figure 4-8.** Continuous conductance at the monitoring site during SBF04.

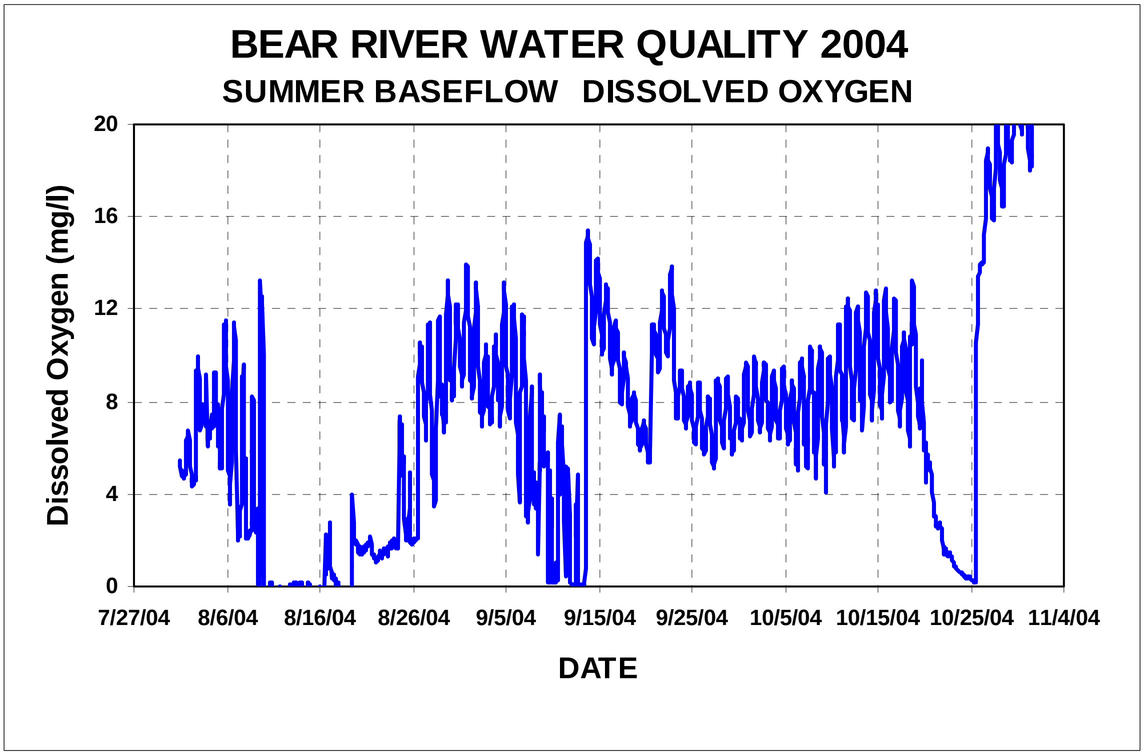



**Figure 4-9.** Continuous dissolved oxygen at the monitoring site during SBF04. Data below 4 mg DO/l were due to probe failure (08/11/04, 09/10/04, 10/20/04).

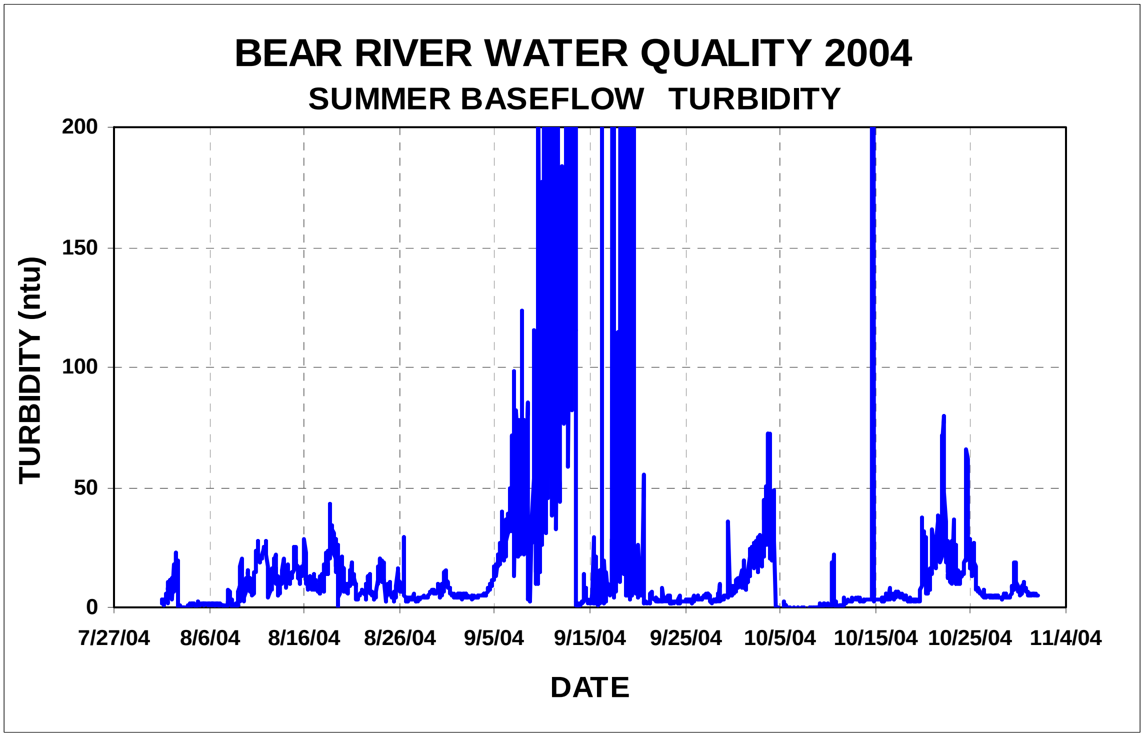



**Figure 4-10.** Continuous turbidity at the monitoring site during SBF04.

### 4.3 Winter Base Flow 2004-2005

The data collected at the 3600 South Bridge site and the stateline gage during winter base flow 2004-2005 (WBF) are shown in Figures 4-11 through 4-15. Of all the data sets collected, this time period represented the most stable conditions in both flow and water quality data. Flows in the river were between 200 and 400 cfs with no flows from Bear Lake being added to the system. Temperatures decreased from 10°C on November 1 to 5°C by January 1, and remained between 0°C and 5°C throughout the hydrologic period. Unlike temperature, which did not show a strong diel periodicity, dissolved oxygen did have daily variations. Because temperatures were reasonable uniform, the variation in oxygen was believed to have been caused by plant photosynthesis and respiration. Inspection of the data shows three turbidity fouling events. One event was associated with a spike in flows while the remaining events were not associated with large-scale flow changes.

### 4.4 Lower Basin Runoff 2005

Inspection of lower basin runoff flows in 2005 (LBR05) in Figure 4-16 shows that the flows at the stateline station did not start to change until March 7, 2005. At that time, flows increased in a linear fashion reaching an initial maximum of 1,120 cfs (from a base of 450 cfs). This initial increase caused a significant increase in turbidity (Figure 4-20). This is consistent with the historical data collected within the basin, which shows that lower basin runoff has the highest ambient turbidity. This data set documents this condition in unprecedented detail. The turbidity, which started at a base level of 5 NTU to 10 NTU, increased to levels over 400 NTU. Although subsequent snow melting also resulted in increased turbidity, levels did not exceed 150 NTU. The highest flows experienced in this time period (over 2,000 cfs on April 29, 2005) were associated with higher elevation runoff. This high flow resulted in a concurrent turbidity of over 250 NTU.

### 4.5 Upper Basin Runoff 2005

Upper basin runoff in 2005 (UBR05) was the first replication of a hydrologic time period for the study. In the 2005 time period, hydrologic conditions were much different than in 2004. First, Bear Lake water was not added to the system in May as had occurred in 2004. In addition, a significant amount of water was in the system as a result of natural flows from the watershed. Two peaks in flow were observed (Figure 4-21), both of which were over 2,000 cfs in magnitude and resulted in turbidity changes at the study site. The first flow peak resulted in turbidity levels in excess of 100 NTU, while the second peak in flow resulted in turbidity levels around 50 NTU. Bear Lake water entered the site on June 20, 2005 and flow steadily increased to a maximum of 800 cfs on July 23, 2005. This flow increase also had an overall increase in background turbidity.

Temperatures in the river showed no pattern relative to the runoff events but did show an overall increase beginning at 10°C on May 1 and reaching 25°C by July 1.

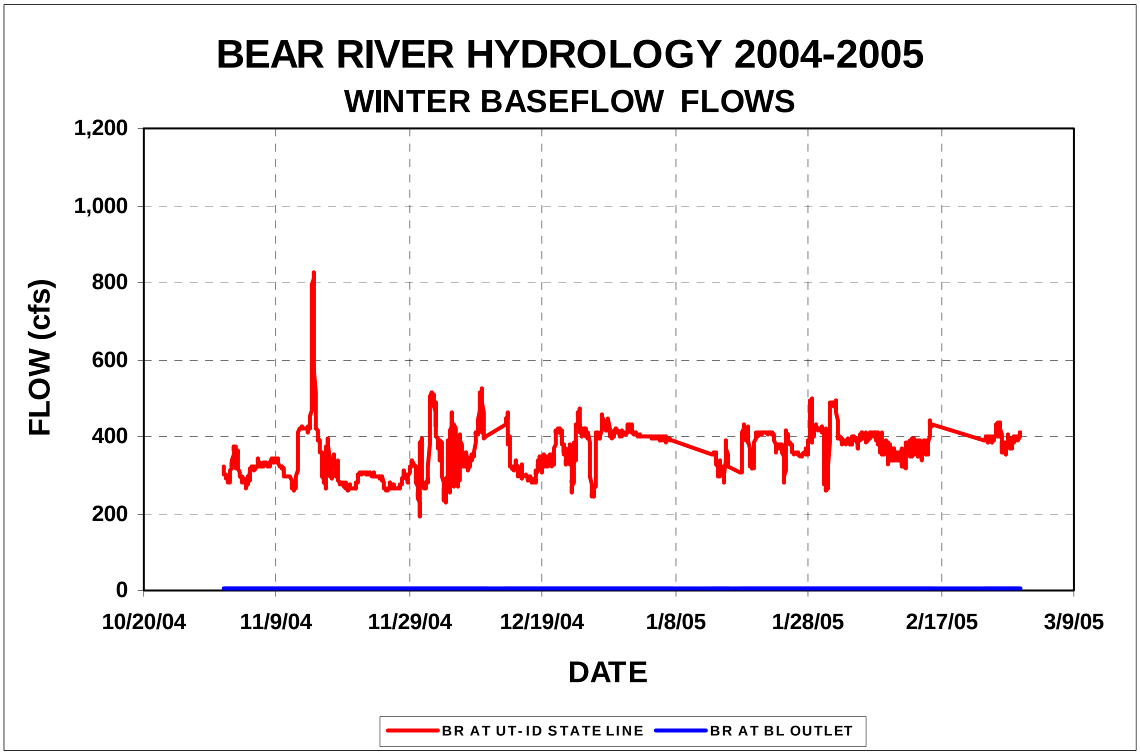



**Figure 4-11.** Winter baseflow for two stations in the Bear River in 2004 and 2005.

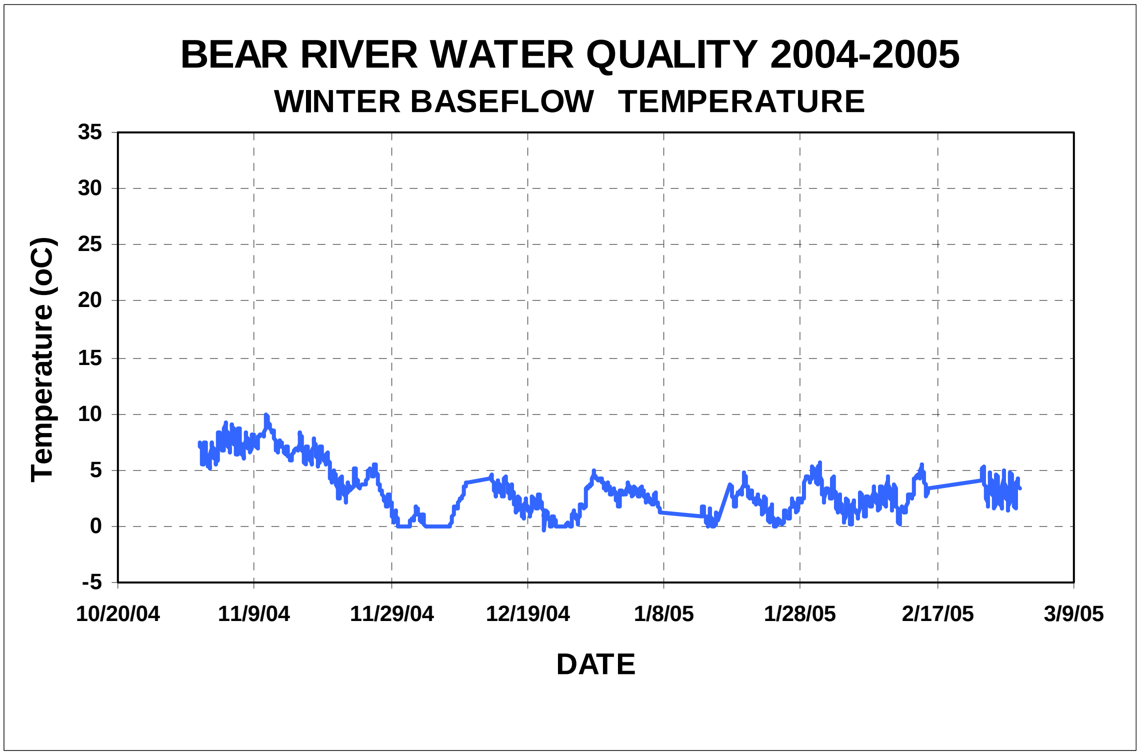



**Figure 4-12.** Continuous temperature at the monitoring site during WBF.

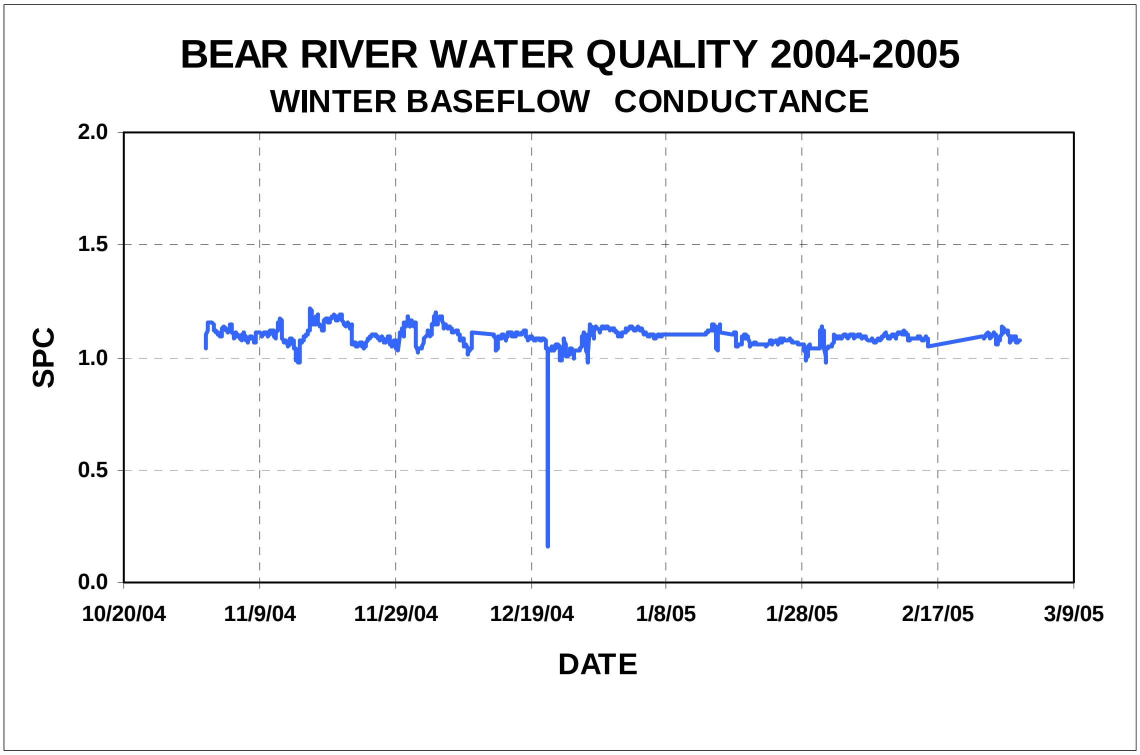



**Figure 4-13.** Continuous conductance at the monitoring site during WBF.

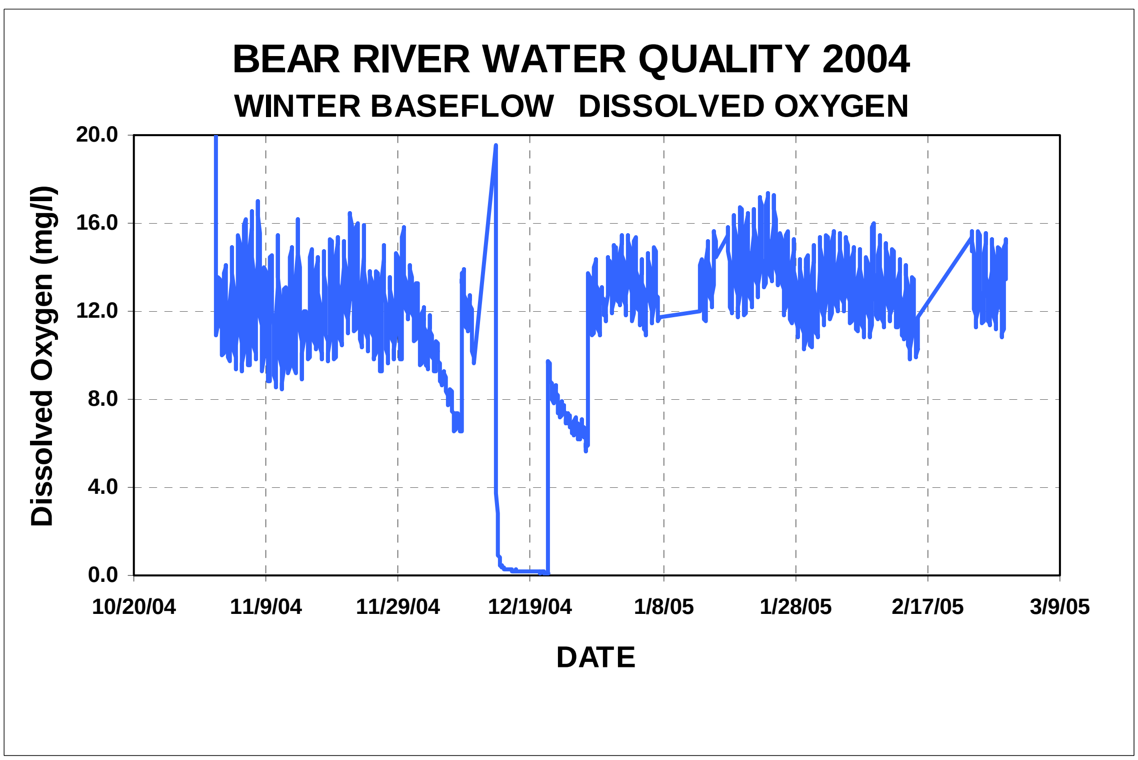



**Figure 4-14.** Continuous dissolved oxygen at the monitoring site during WBF. Data for 12/19/04 represent a probe failure.

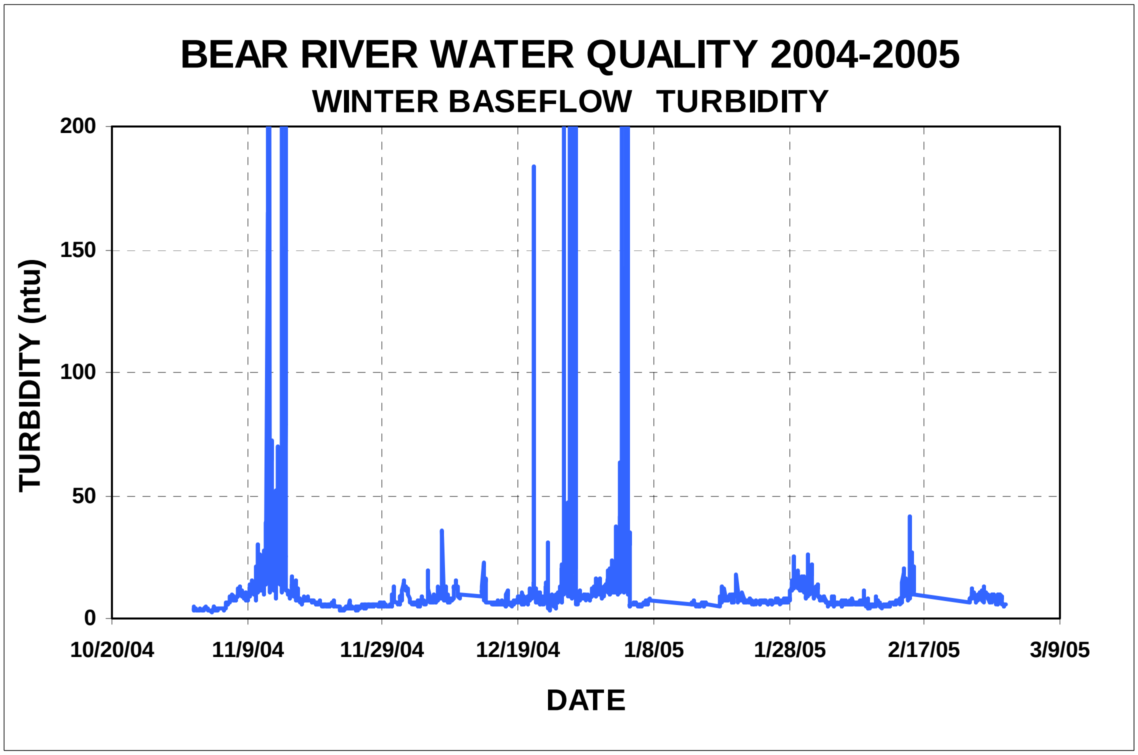



**Figure 4-15.** Continuous turbidity at the monitoring site during WBF.

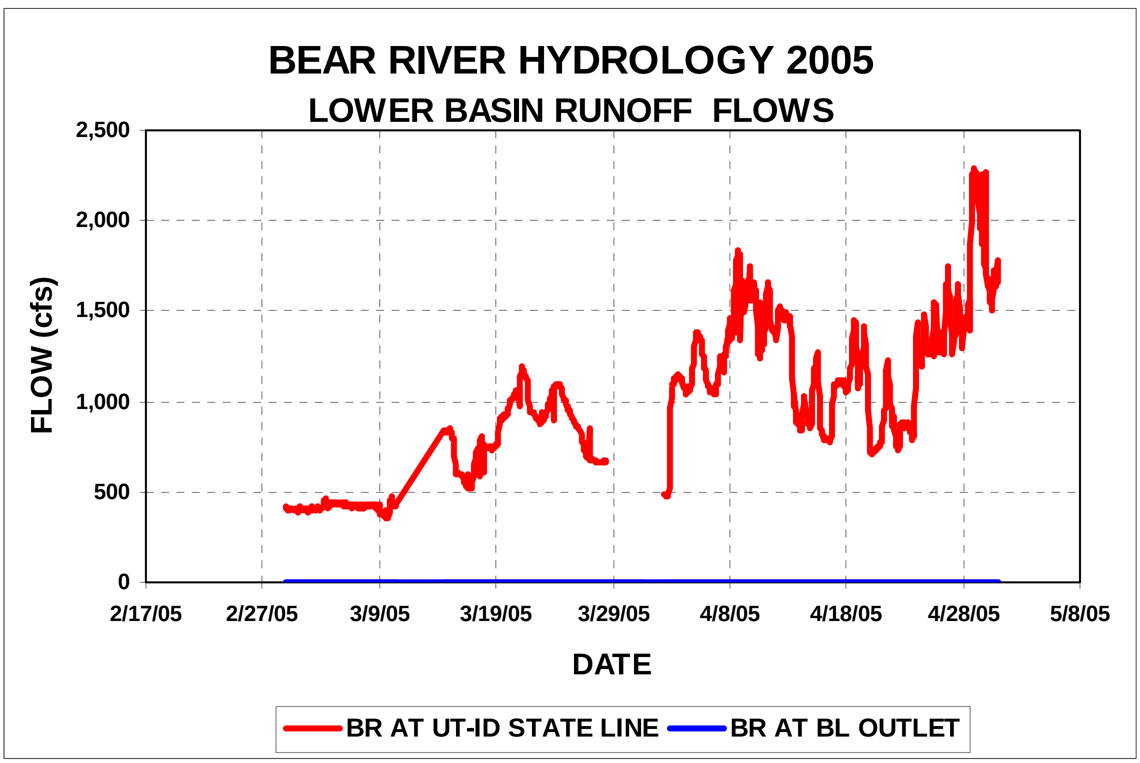



**Figure 4-16.** Lower basin runoff flows for two stations in the Bear River in 2005.

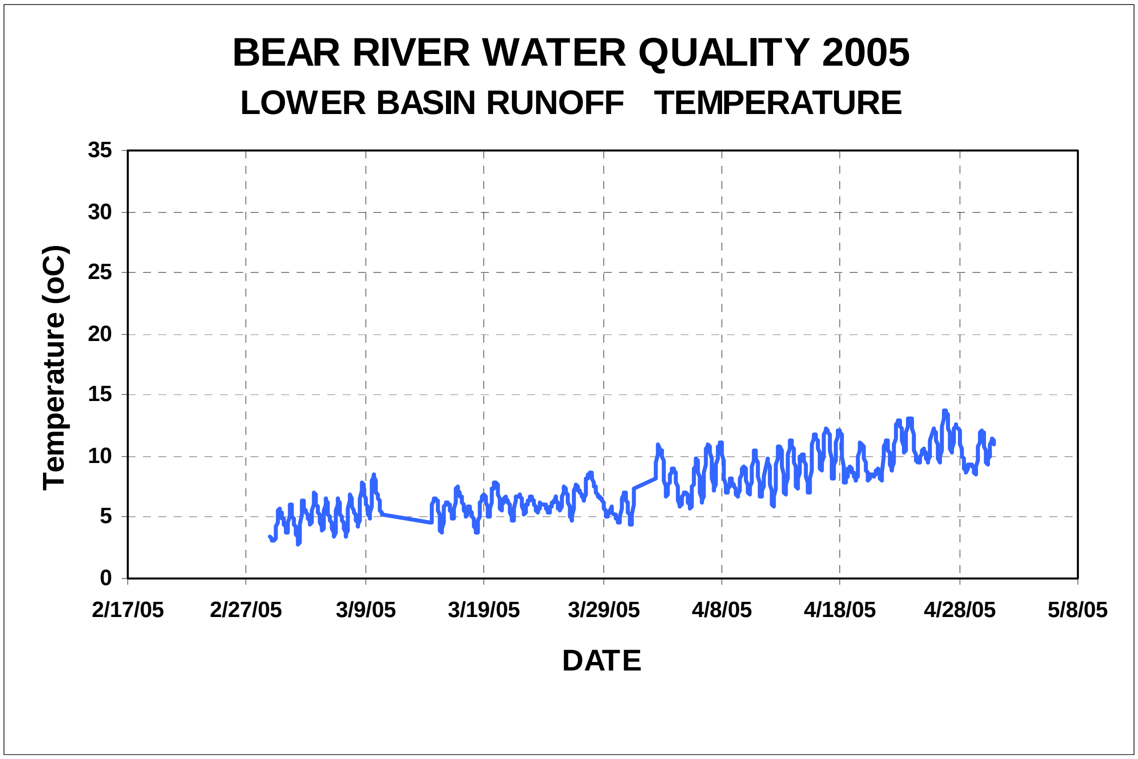



**Figure 4-17.** Continuous temperature at the monitoring site during LBR05.

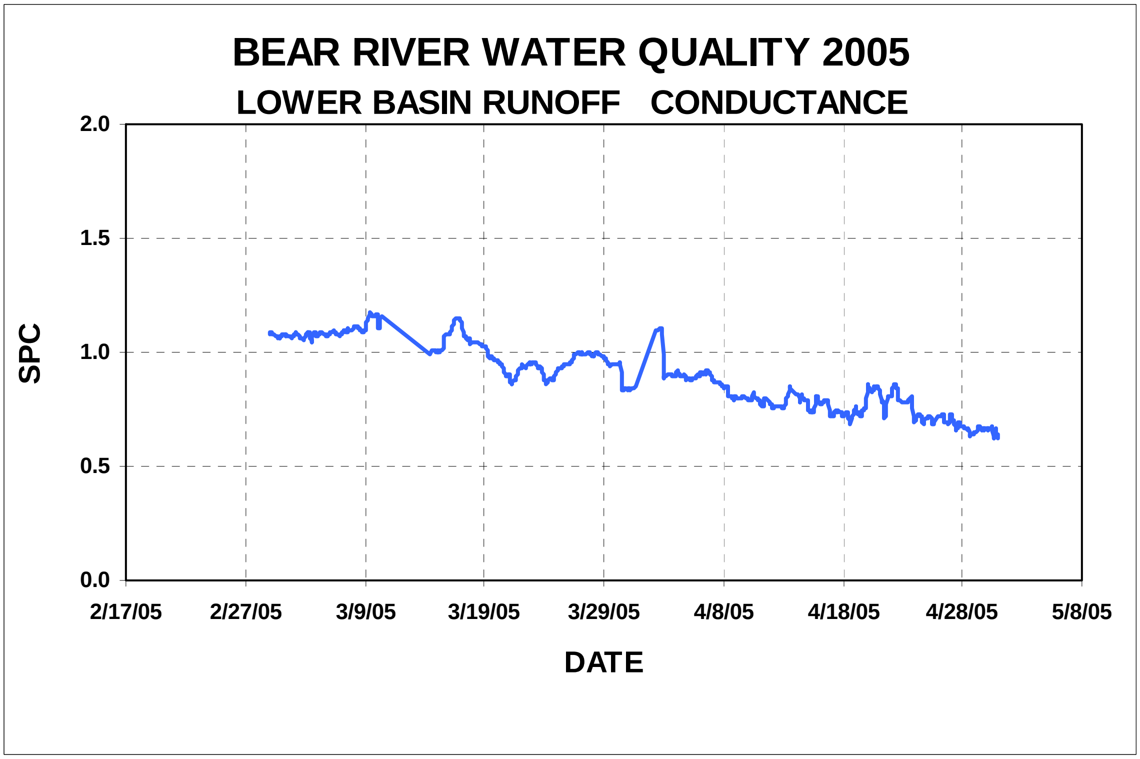



**Figure 4-18.** Continuous conductance at the monitoring site during LBR05.

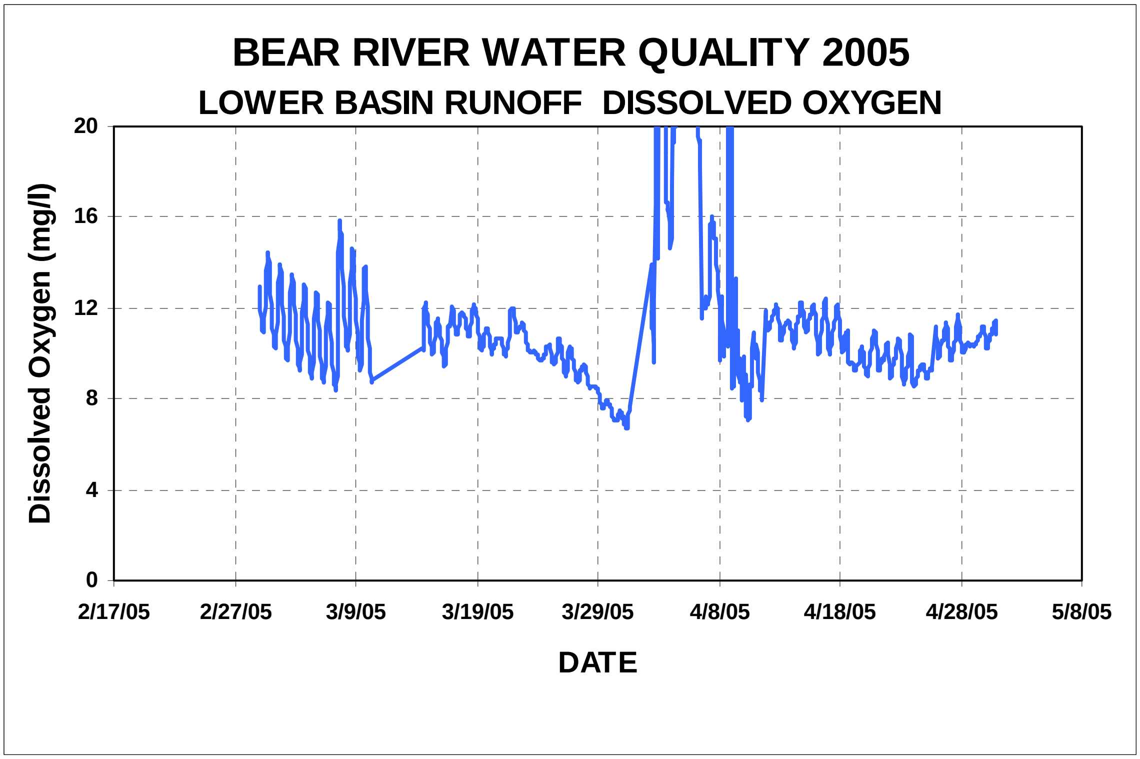



**Figure 4-19.** Continuous dissolved oxygen at the monitoring site during LBR05. Data for 04/04/05 represent a probe failure.

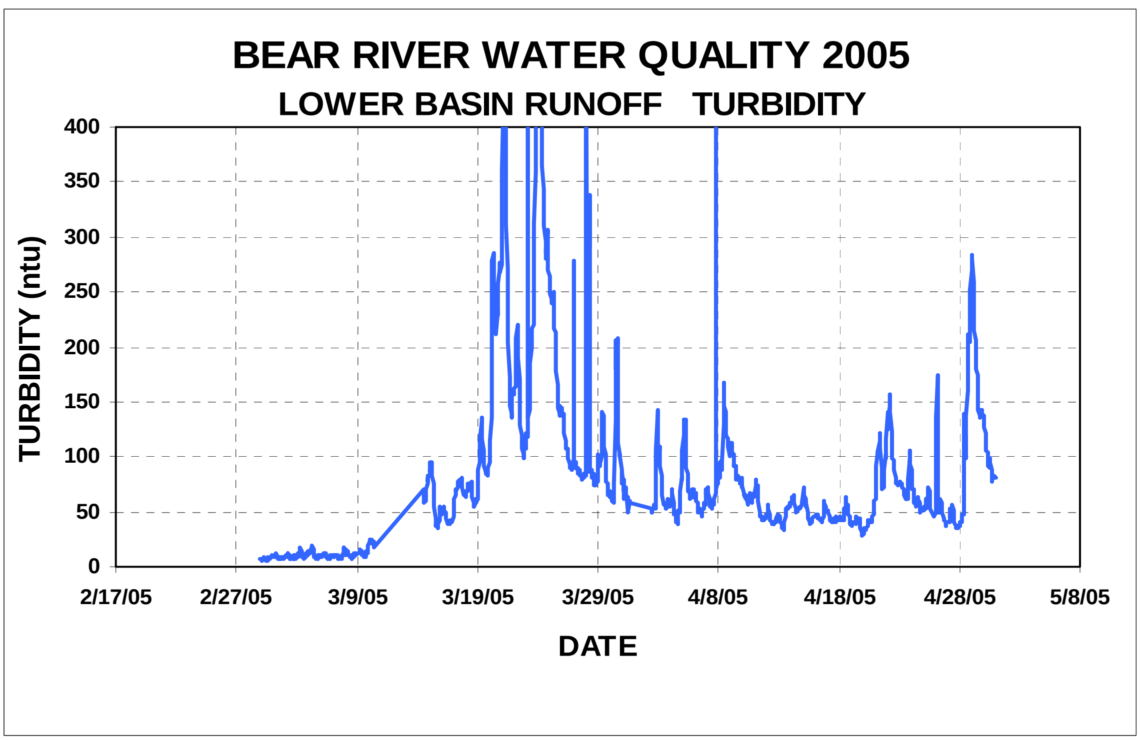



**Figure 4-20.** Continuous turbidity at the monitoring site during LBR05.

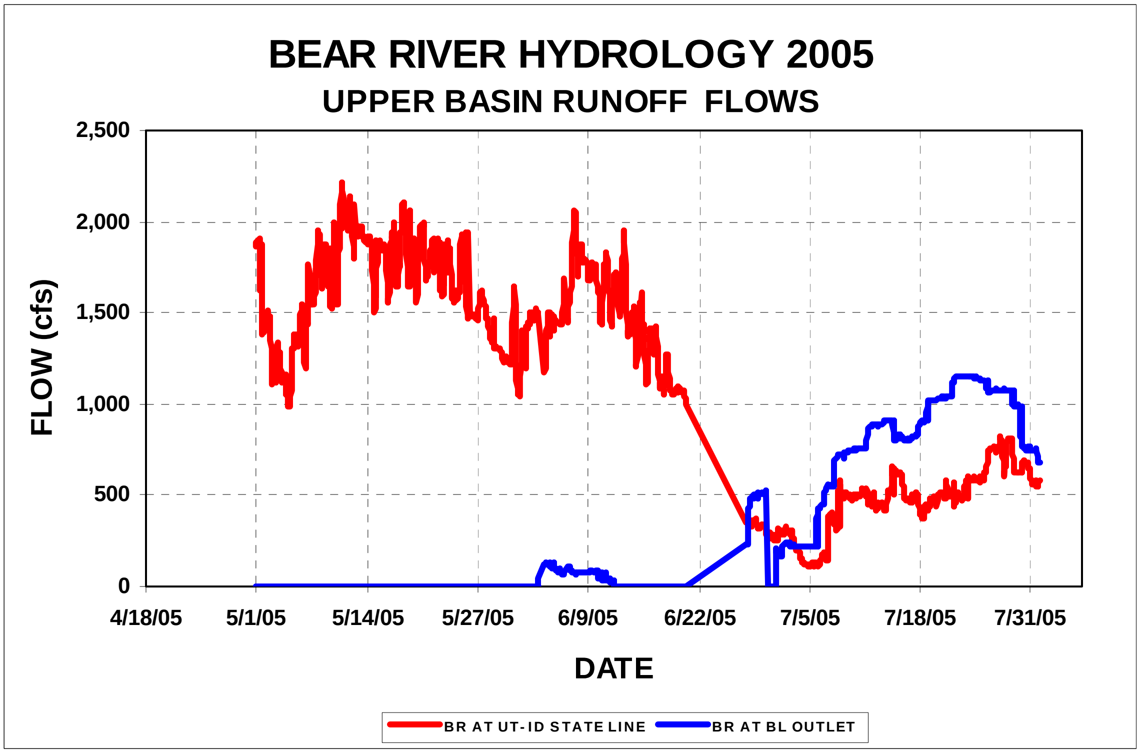



**Figure 4-21.** Upper basin runoff flows for two stations in the Bear River in 2005.

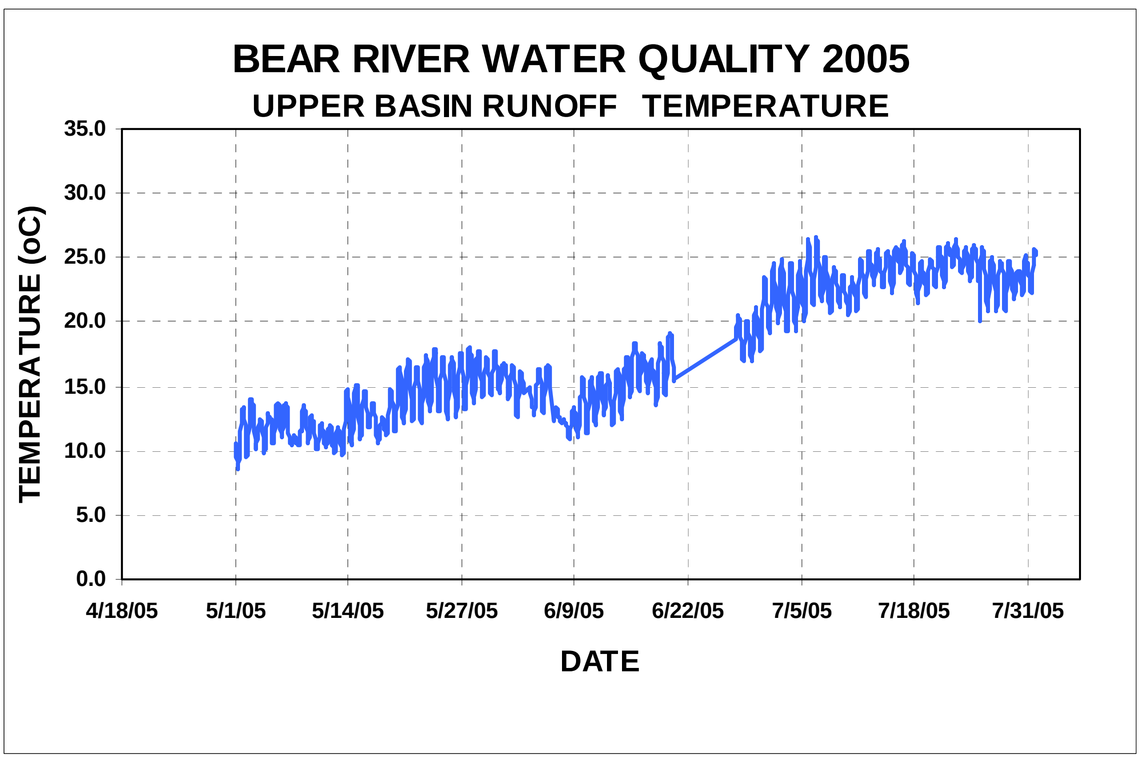



**Figure 4-22.** Continuous temperature at the monitoring site during UBR05.

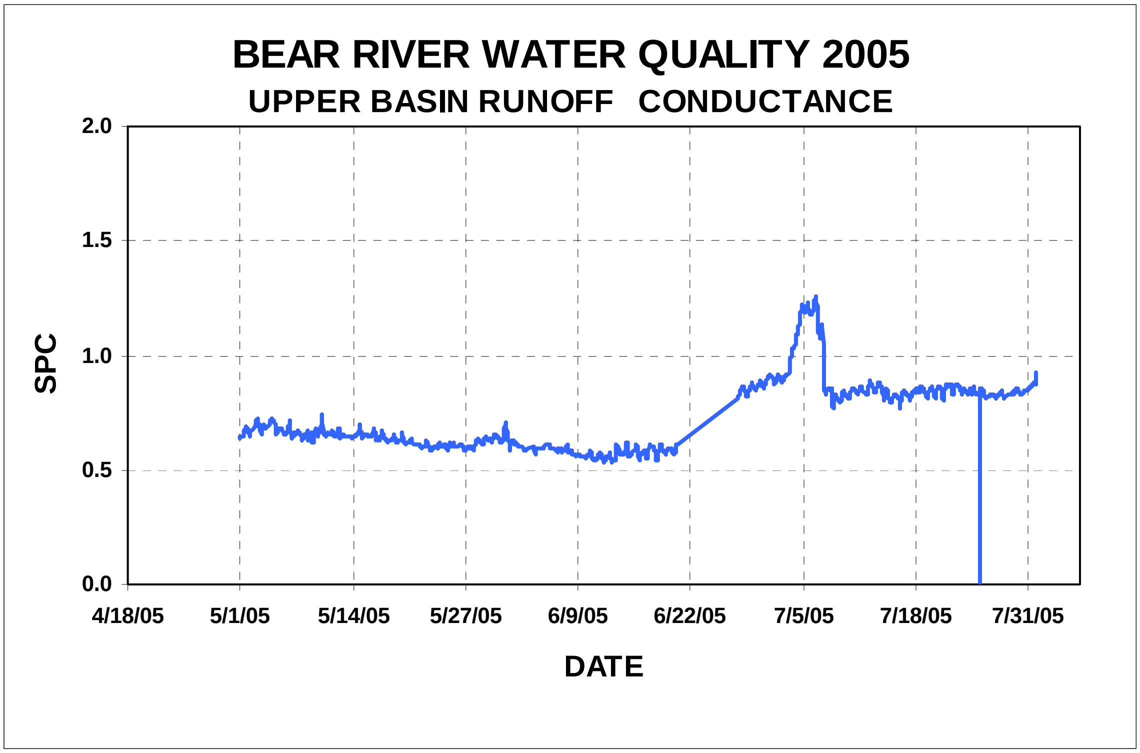



**Figure 4-23.** Continuous conductance at the monitoring site during UBR05.

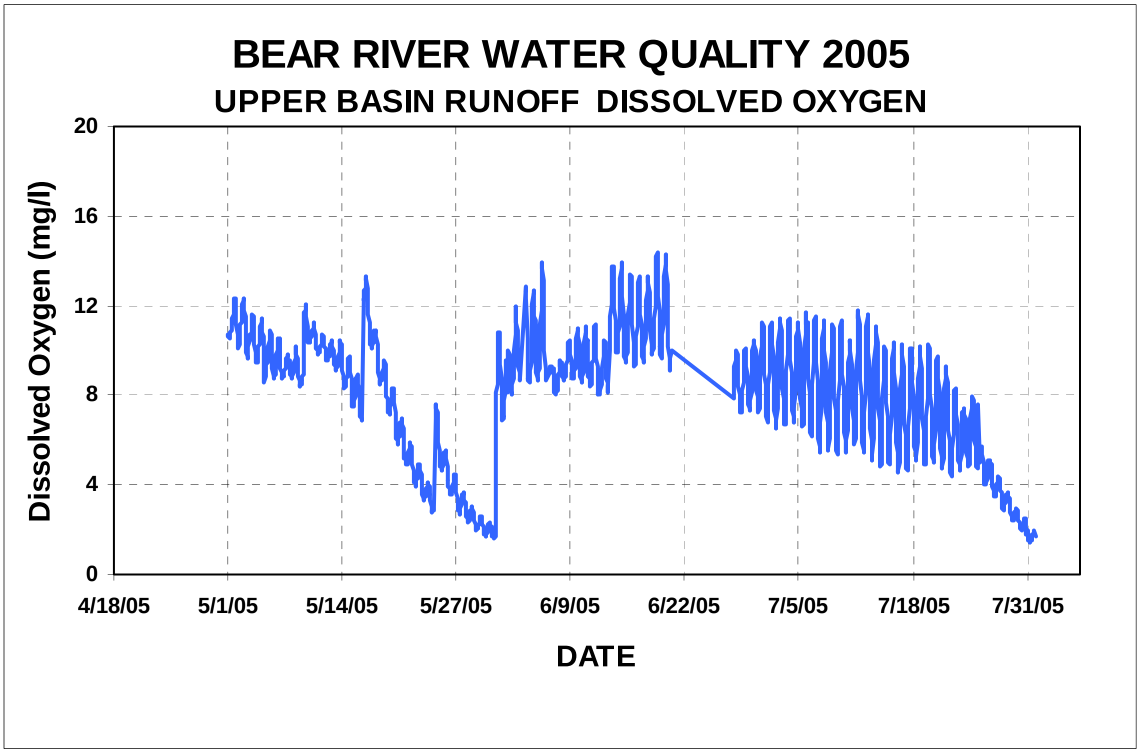



**Figure 4-24.** Continuous dissolved oxygen at the monitoring site during UBR05.

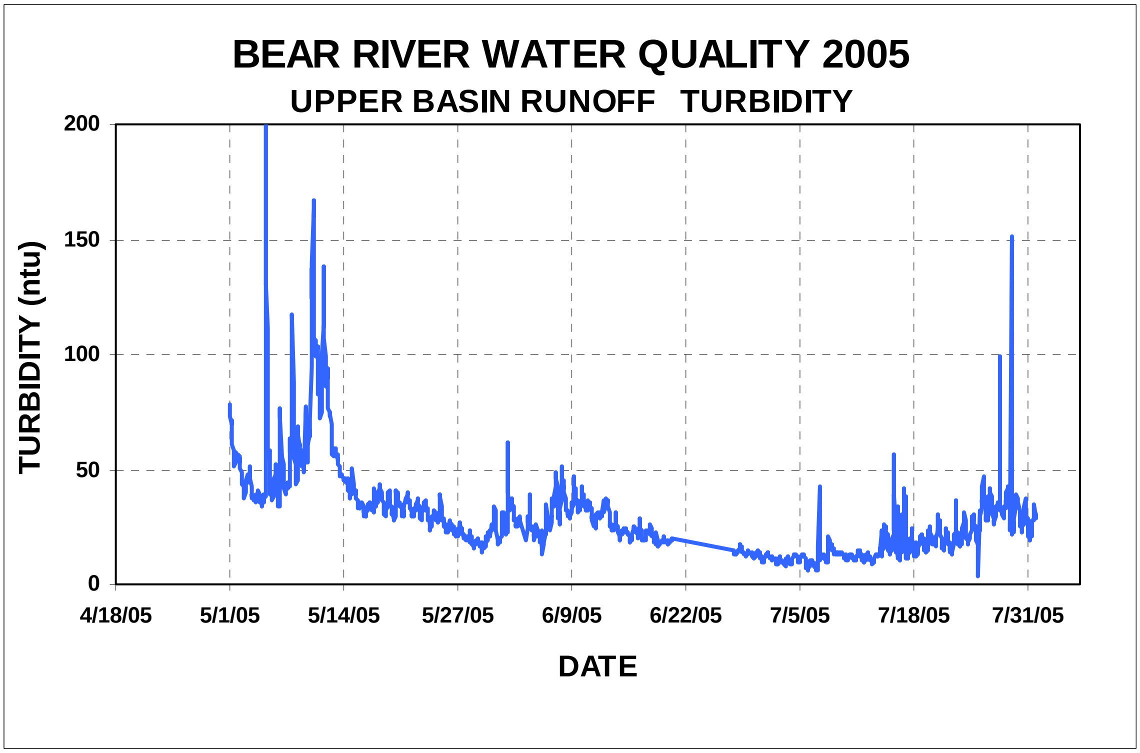



**Figure 4-25.** Continuous turbidity at the monitoring site during UBR05.

## 4.6 Summer Base Flow 2005

As with UBR04 and UBR05, summer base flow in 2005 (SBF05) was a replicate time period relative to the 2004 data. The major difference between the two replicate years was the amount of time Bear Lake water influenced the lows at the project site. In 2004, Bear Lake flows were discontinued in the first week of September, but in 2005 these flows were present in the system until the end of September. This allowed for a higher base flow in 2005 (400 cfs rather than 200 cfs). This resultant higher base flow was reflected in the ambient number of turbidity outliers and the lower degree of probe fouling that was experienced in 2004. Temperature and dissolved oxygen data showed the same pattern between the two years. Several storm events occurring in the middle of October resulted in an increase in background turbidity levels.

## 4.7 Water Quality Grab Samples and Regression Analysis

As part of the settlement agreement, IDEQ required the collection of water quality grab samples from each of the representative hydrologic time periods, with a minimum collection of 30 samples. The parameters included turbidity, total phosphorus, and total suspended solids. Upon completion of the chemical analysis, statistical relationships were to be determined between total phosphorous (mg P/l) and turbidity (NTU), as well as between total suspended solids (mg/l) and turbidity (NTU). These relationships, as well as their statistical significance can be seen in Figures 4-31 and 4-32. In both cases, turbidity as measured at the 3600 South Bridge site was a significant predictor of total phosphorus concentration and total suspended sediment concentrations.

## 4.8 Quantification of PacifiCorp Operations

As noted earlier in this report, hydrologic conditions at the study site (below the Oneida Hydroelectric Project and near the Utah-Idaho border) can be affected by a variety of natural and man-caused events. Natural flows in the river, tributary input within the study reach, augmentation of summer base flows for irrigation, as well as short-term flow manipulations for hydropower production at the Oneida facility all contribute to the observed flows. Because of this mixture of activities, as well as only a single monitoring station, the specific operations of the Oneida facility had to be defined and quantified, as well as sorted out from the other non-project related impacts. To that end, an analysis was undertaken which attempted to dissect out the operational effects on hydrology at the 3600 South Bridge site.

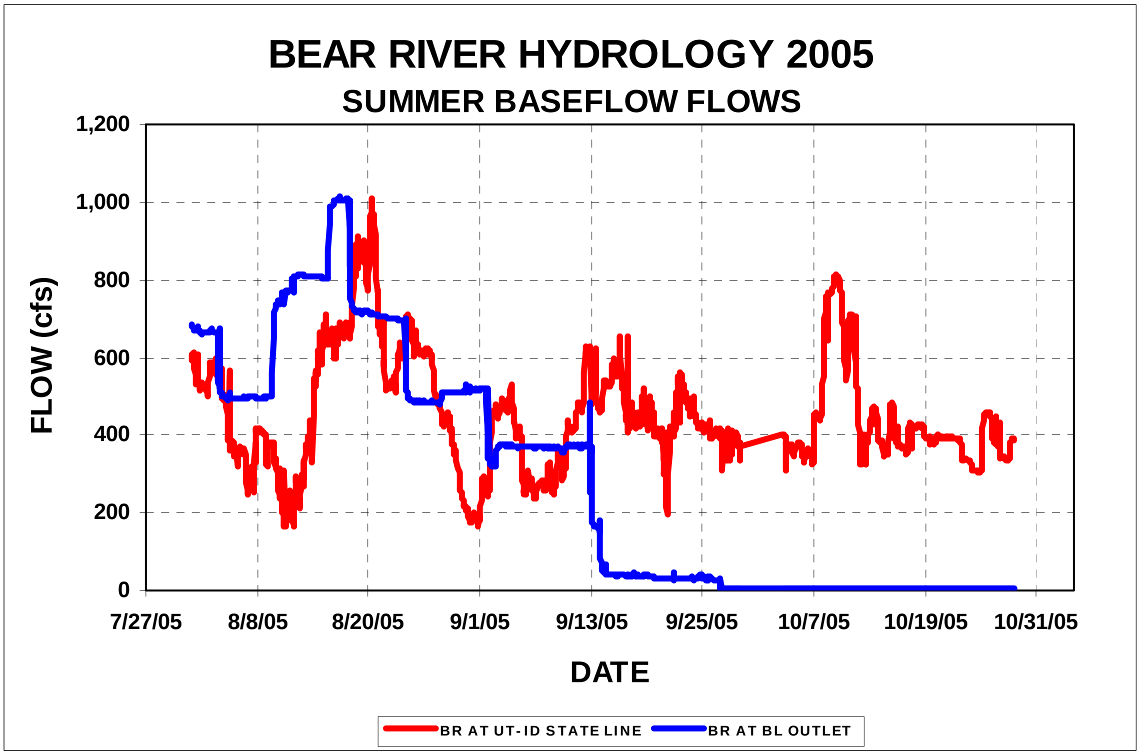



**Figure 4-26.** Summer base flow for two stations in the Bear River in 2005.

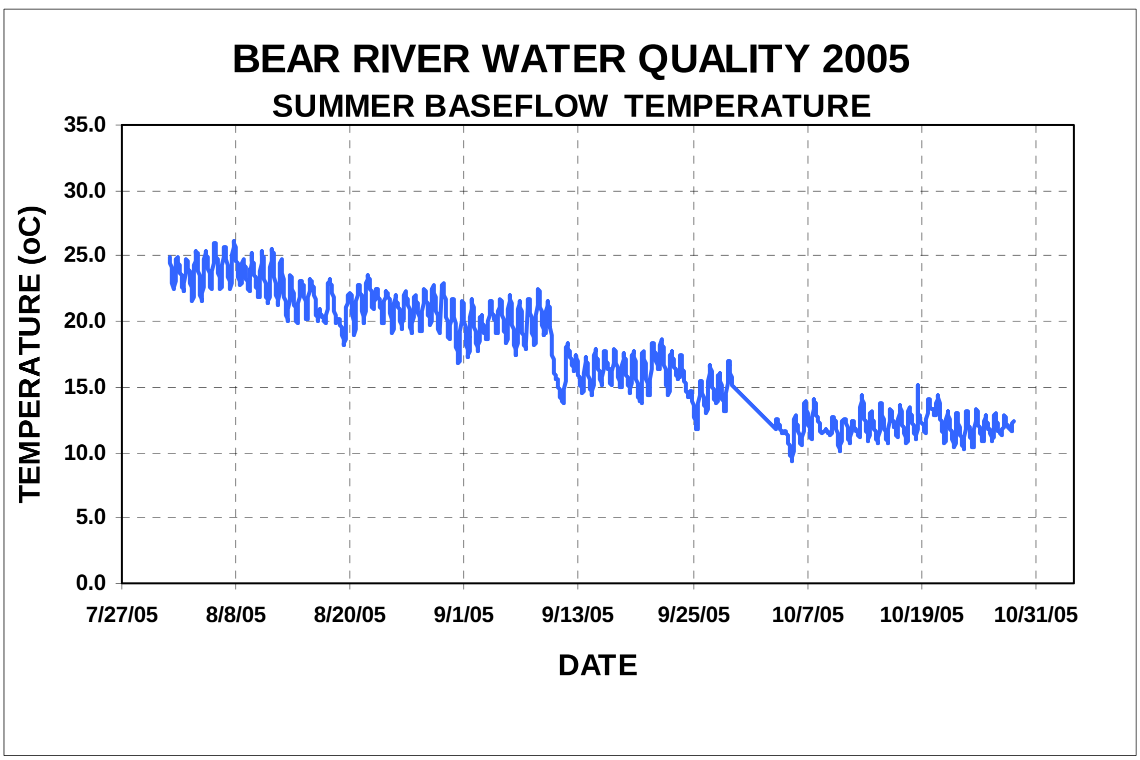



**Figure 4-27.** Continuous temperature at the monitoring site during SBF05.

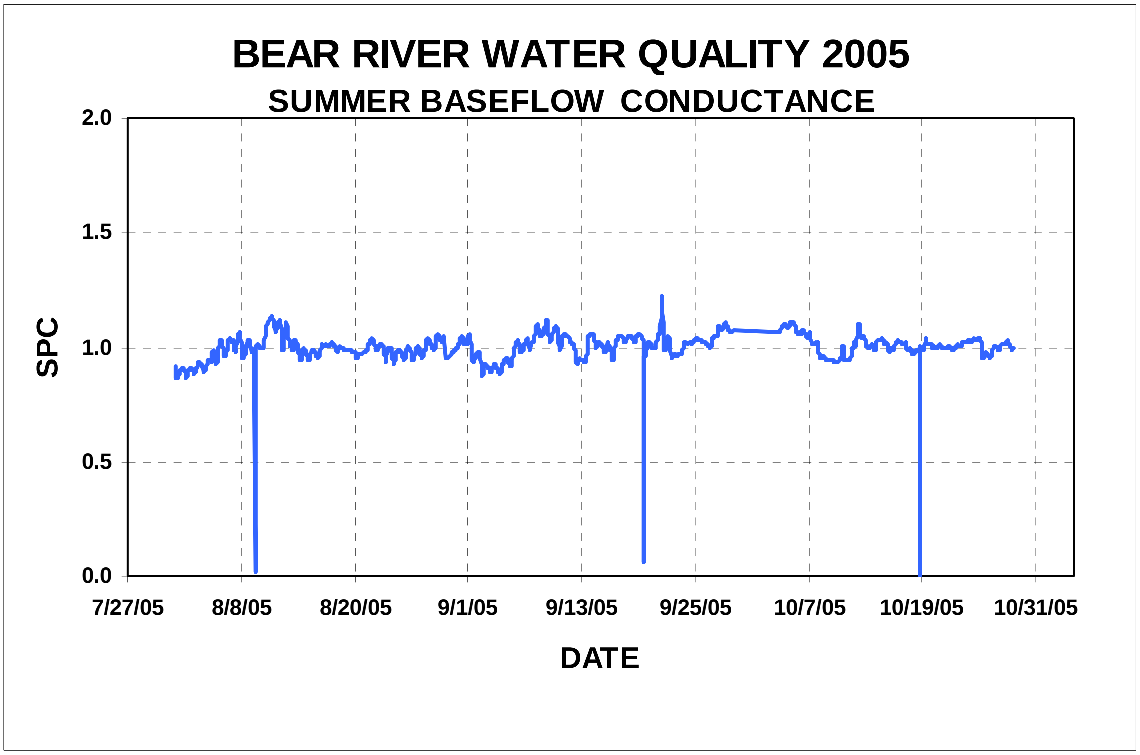



**Figure 4-28.** Continuous conductance at the monitoring site during SBF05.

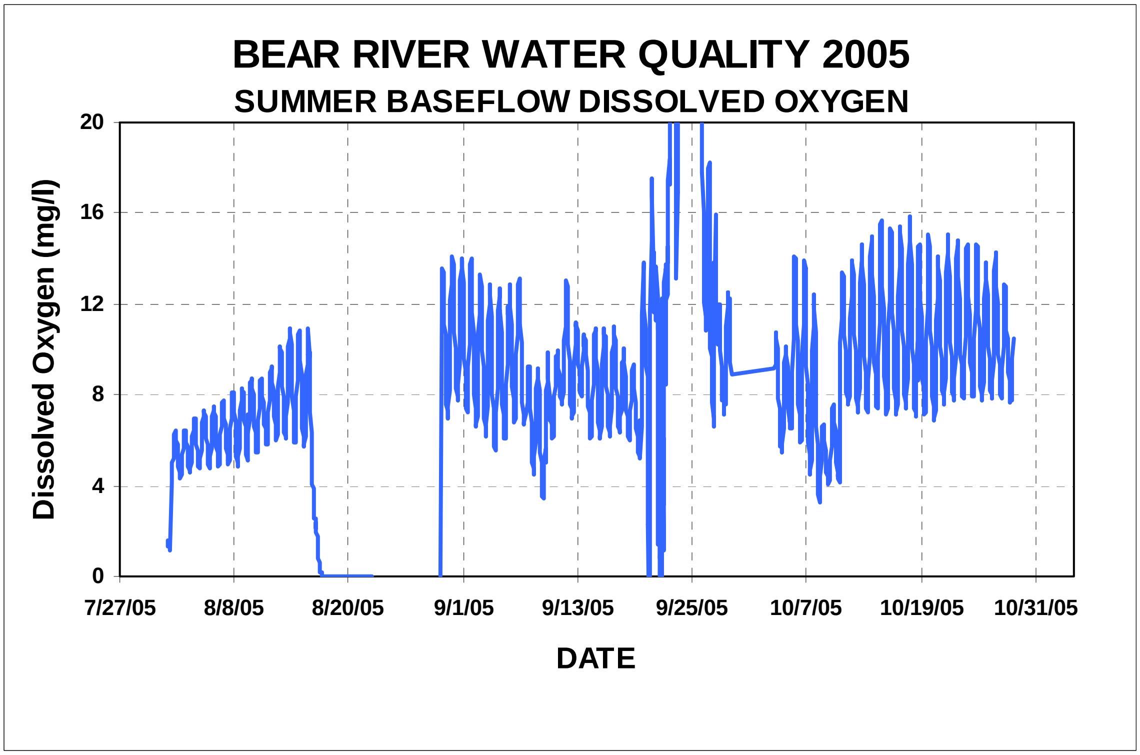



**Figure 4-29.** Continuous dissolved oxygen at the monitoring site during SBF05. Data between 08/16/05 and 08/26/05 were lost due to probe failure.

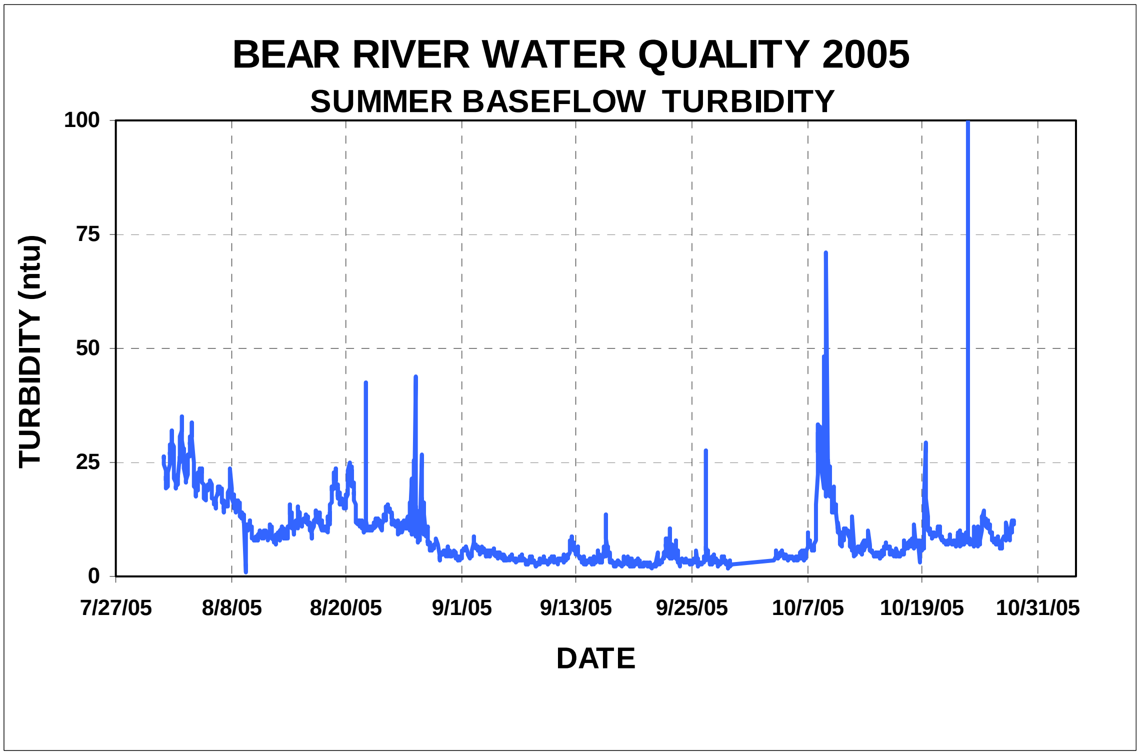



**Figure 4-30.** Continuous turbidity at the monitoring site during SBF05.

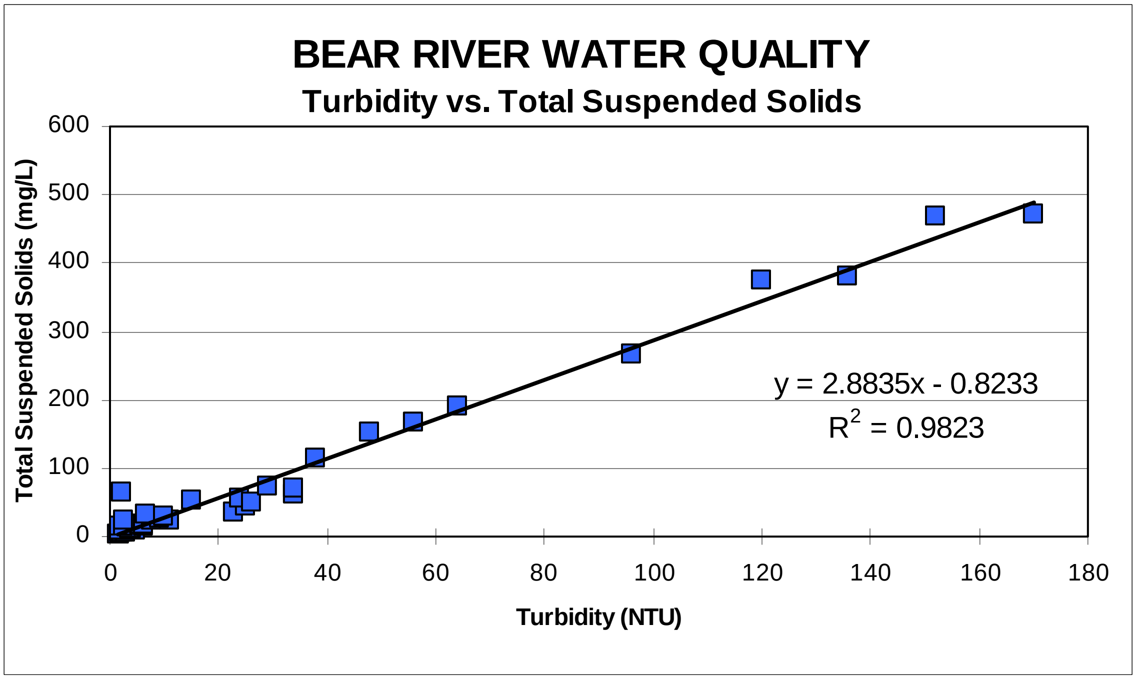



**Figure 4-31.** The statistical relationship between turbidity and total suspended solids for grab samples collected during the study period.

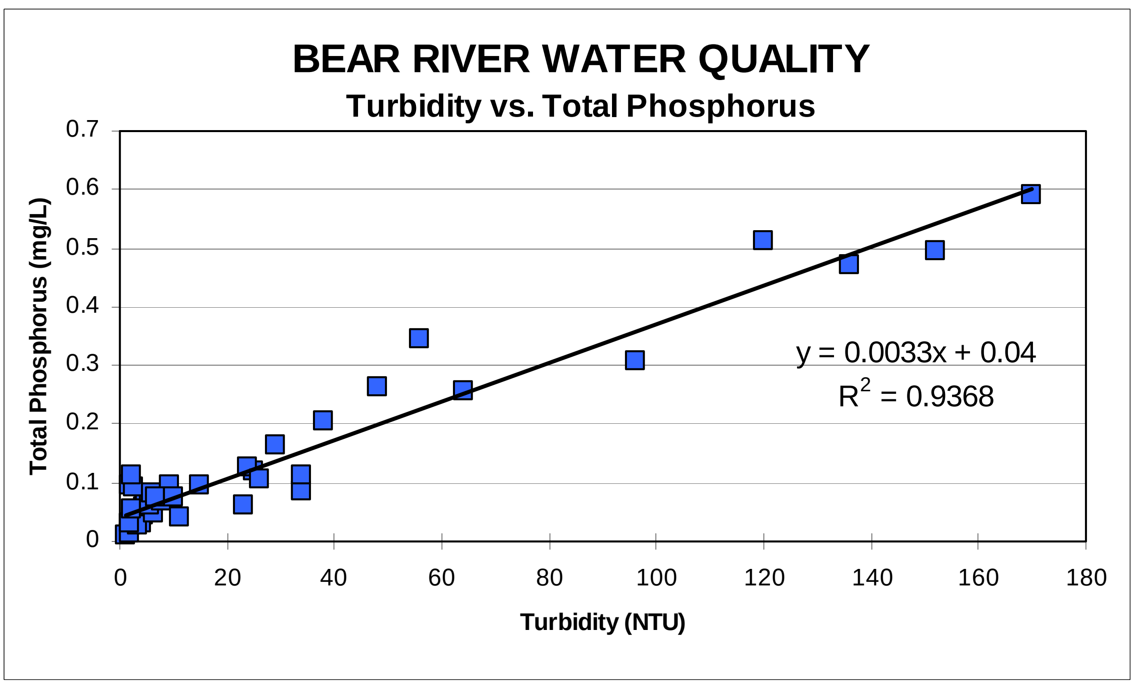



**Figure 4-32.** The statistical relationship between turbidity and total phosphorus for grab samples collected during the study period.

In order to accomplish this goal, the following approach was undertaken. First, the individual hourly data was inspected and divided into "events". An event was defined as an abrupt change in flow conditions as recorded at the USGS stateline station (No. 10092700) lasting at least three hours in length. Typically, events were longer in duration, however, three hours was the threshold for consideration. The event was then categorized as an increasing flow, decreasing flow or stable flow event within the hourly data set. All data was placed into one of the three categories. During the entire study period lasting 18 months, there were 758 events where flow changes occurred. Second, a determination was made as to which of the short-term flow changes were caused by Oneida plant operations. Returning to the hourly-defined events, visual inspection was made between the flows below the Soda plant and flows below the Oneida facility. The assumption was that if flows were different between the two stations, the difference was a result in operational changes at Oneida. The corollary to that assumption is that if no differences were found, then Oneida was under a run-of-river operational mode, with no short-term flow changes.

The comparison between these two stations for each hydrologic time period can be seen in Figures 4-33 through 4-38. Inspection of these figures clearly shows the operations of the Oneida project relative to the water made available below Soda and into the headwaters of Oneida Reservoir. It should be noted, depending upon the hydrologic period, the reach of river between the two projects can be a gaining reach due to watershed inputs (i.e. winter base flow) or a losing reach due to irrigation withdrawals via Last Chance Canal (i.e. June and July 2004 and 2005). Given this information, each "event" was further tagged as an operational event. The distribution of the duration of the increasing flow events in hours can be seen in Figure 4-39. These events were typically greater than six hours in length.

In summary, the hydrologic data which was used at the 3600 South Bridge site was subdivided into "events" based upon flow direction (increasing, decreasing or stable). The data were further categorized based upon operational effects. It should be noted that based upon the information in Section 3.0 of this report, these data also contained tags which indicate storm event influence or the presence of outliers.

## 4.9 PacifiCorp Effects

Once constructed, the hydrologic events were investigated on an individual basis for their impacts upon water quality (specifically turbidity). An example of a sequence of events (and their associated event number) for each hydrologic time period is shown in Figures 4-40 through 4-45. For each event, a regression analysis was conducted to determine if a statistically significant relationship was present between the independent variable (flow) and the dependent variable (turbidity). Inspection of these relationships indicated that there were some significant regressions in the increasing and decreasing flow events but not in the stable flow category. Logic dictated that the increasing flow category should be investigated in greater detail given that in the decreasing flow category, the significant relationships demonstrated that with lower flows, turbidity was also lower.

Further analysis of the increasing flow events indicated that they were interspersed throughout the study period. Figure 4-46 shows where these events occurred over the entire 18 month time period. In total, 251 individual hydrologically increasing events were defined.

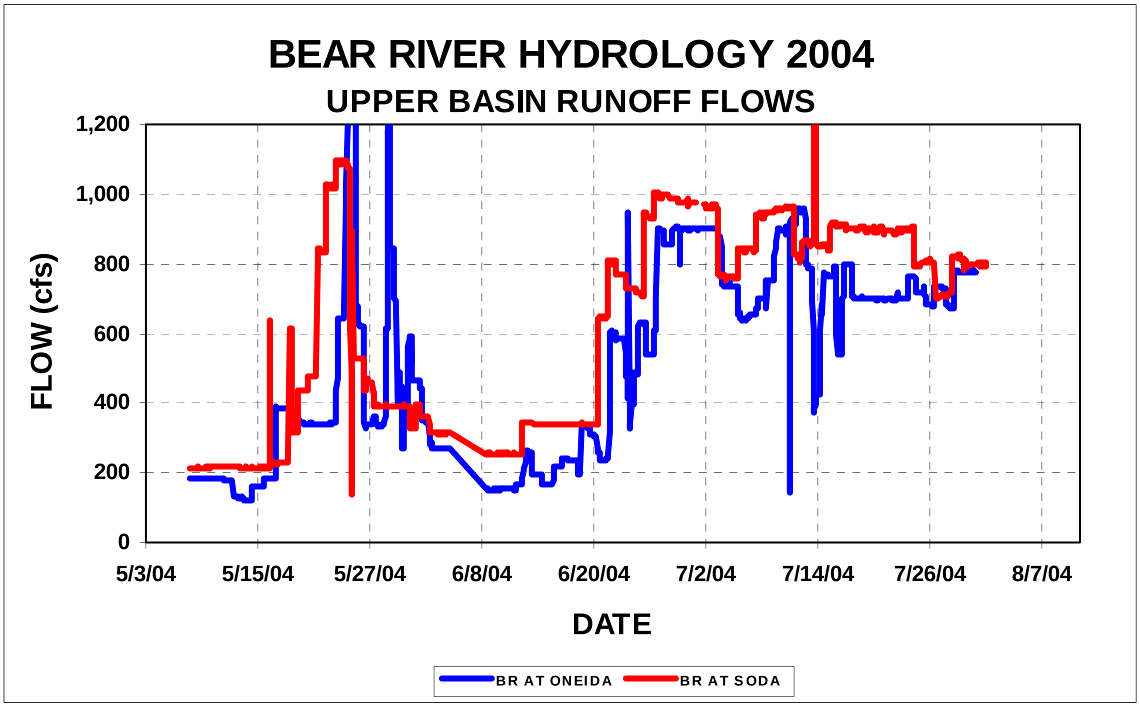



**Figure 4-33.** The flows below the Soda Hydroelectric Project and the Oneida Hydroelectric Project for UBR04.

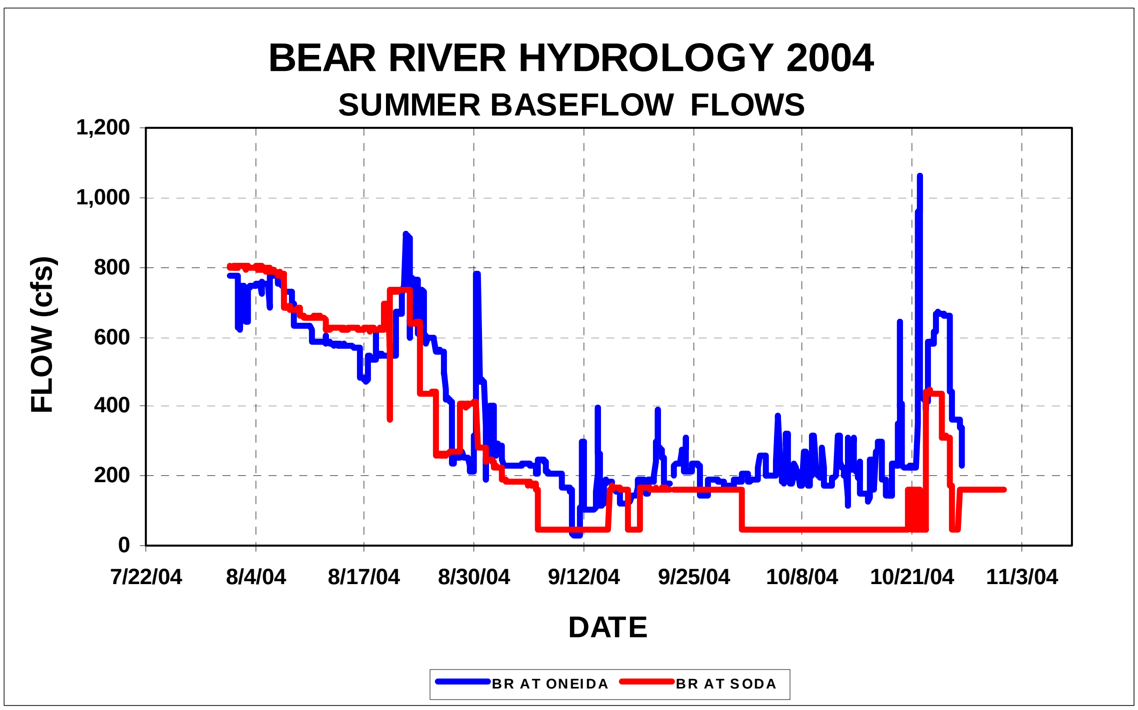



**Figure 4-34.** The flows below the Soda Hydroelectric Project and the Oneida Hydroelectric Project for SBF04.

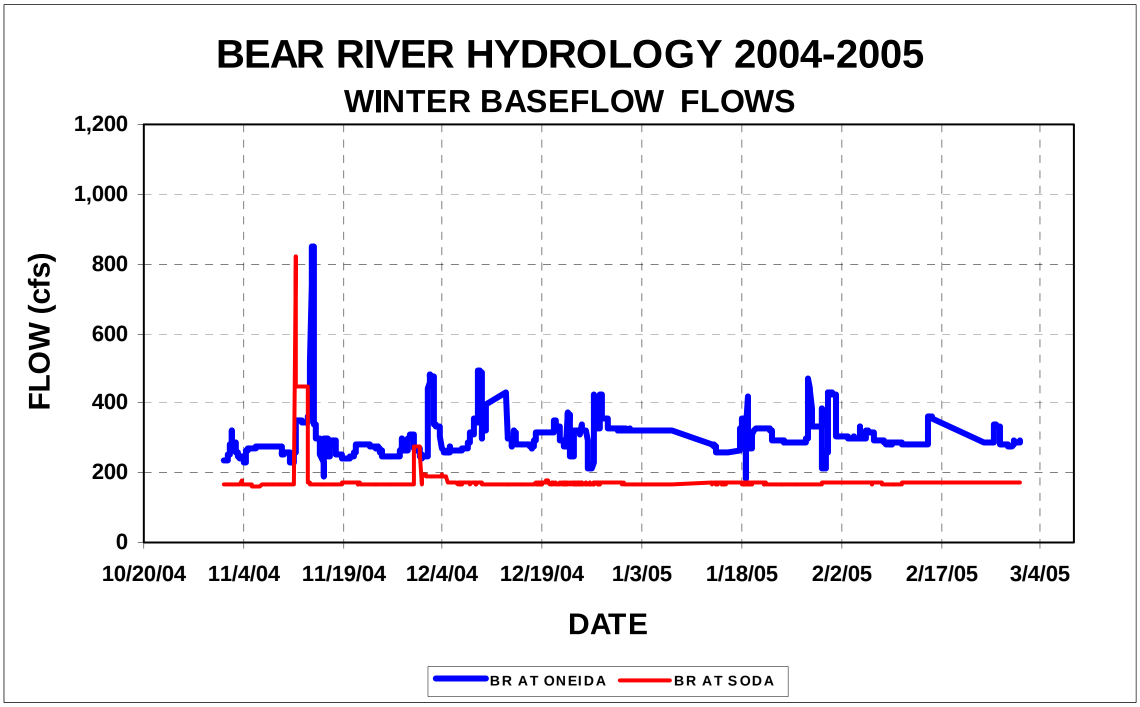



**Figure 4-35.** The flows below the Soda Hydroelectric Project and the Oneida Hydroelectric Project for WBF.

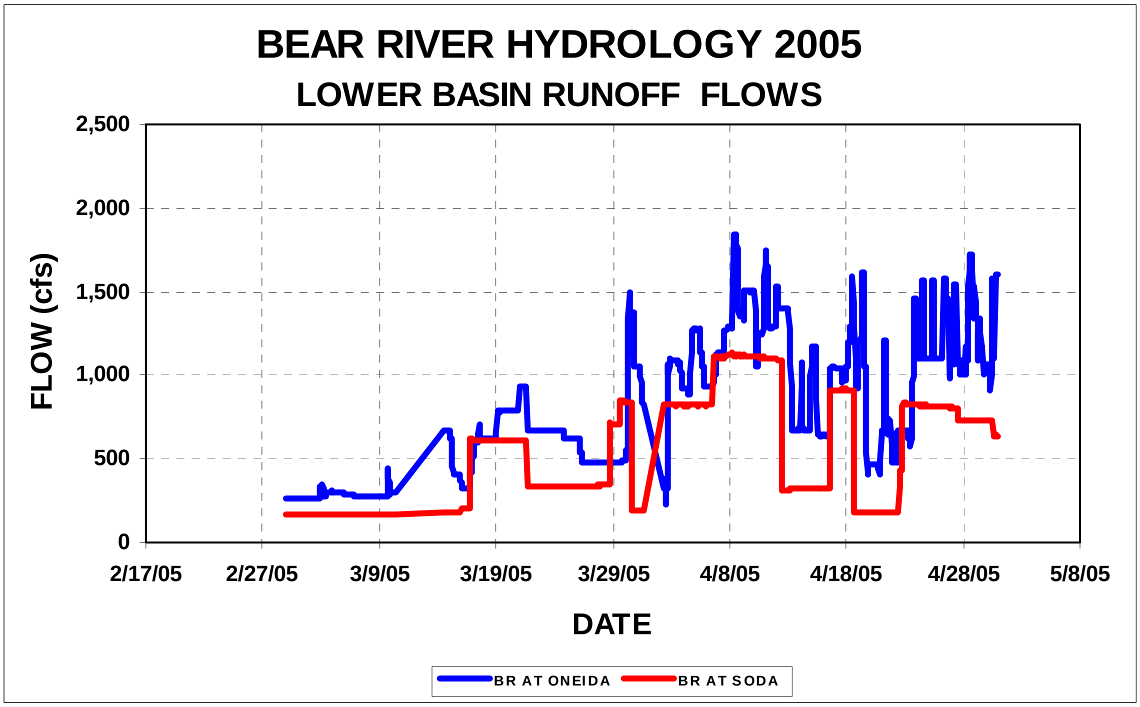



**Figure 4-36.** The flows below the Soda Hydroelectric Project and the Oneida Hydroelectric Project for LBR05.

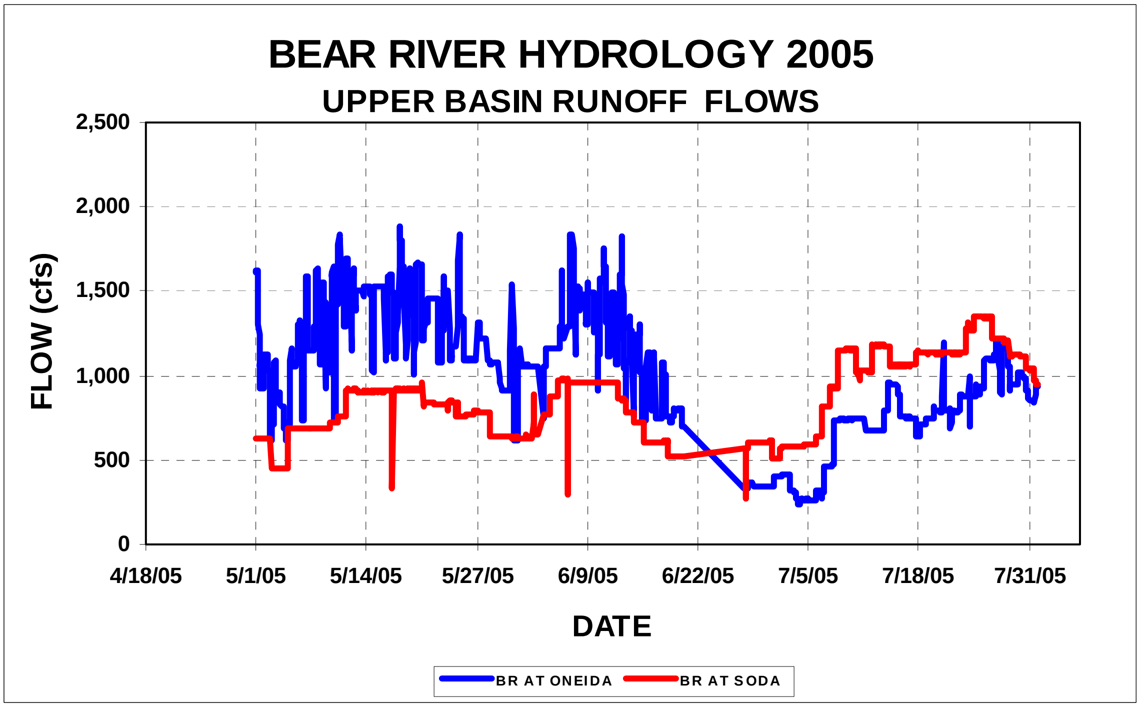



**Figure 4-37.** The flows below the Soda Hydroelectric Project and the Oneida Hydroelectric Project for UBR05.

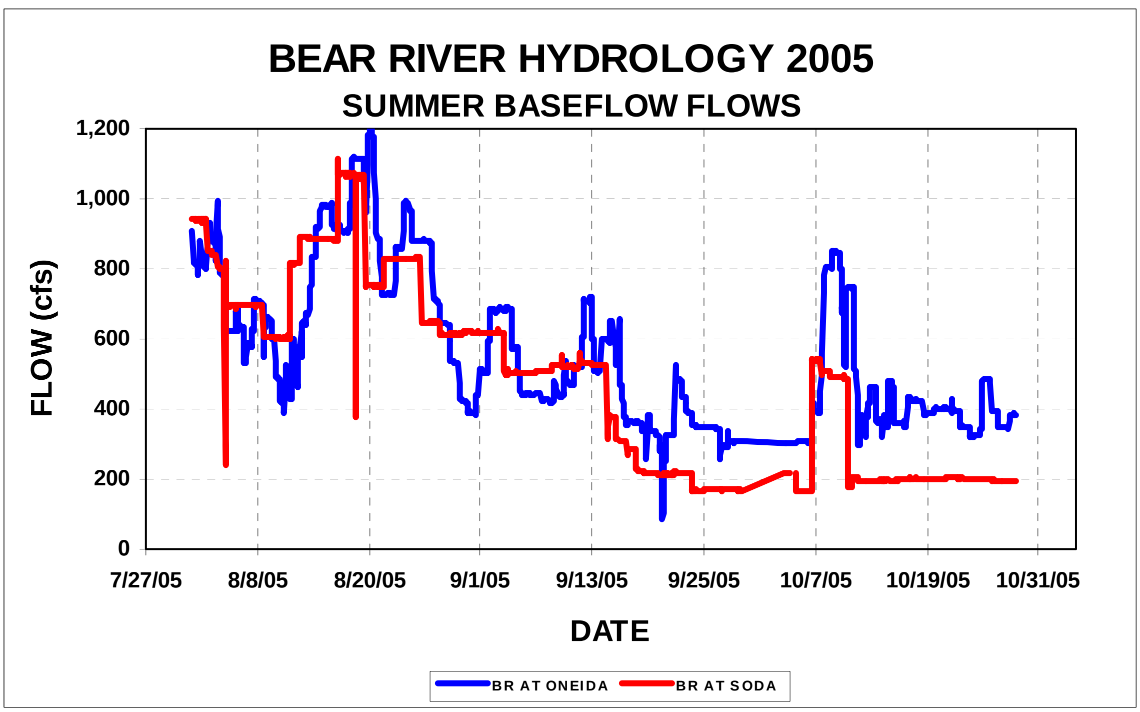



**Figure 4-38.** The flows below the Soda Hydroelectric Project and the Oneida Hydroelectric Project for SBF05.

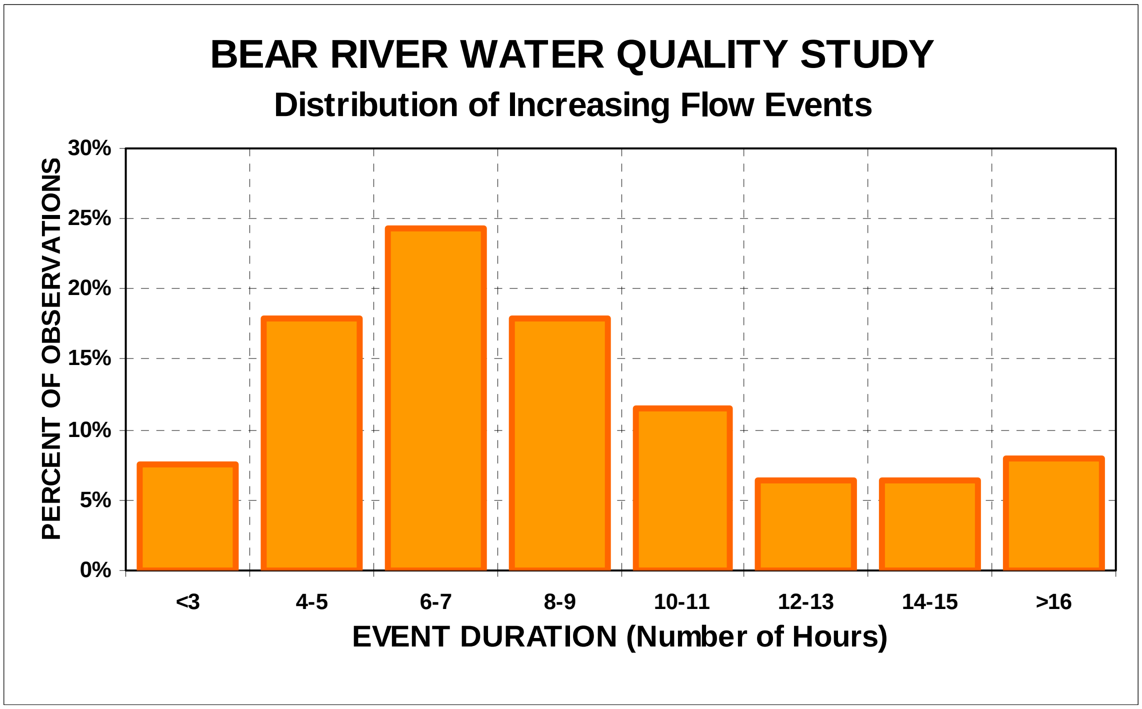



**Figure 4-39.** The frequency distribution of the duration of the increasing flow events documented below Oneida Reservoir in 2004-2005.

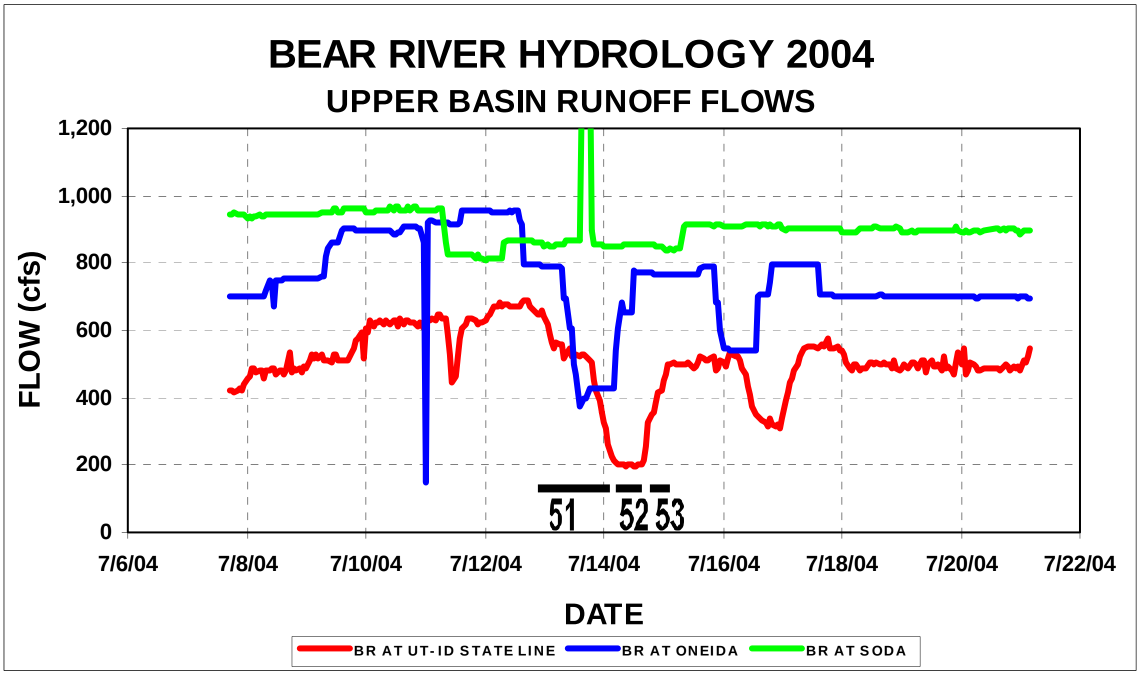



**Figure 4-40.** An example of three sequential events (All Events Nos. 51, 52, and 53) during UBR04 associated with operational effects due to the Oneida Hydroelectric Project. The timing of the event is associated with the flows at the Utah-Idaho stateline station.

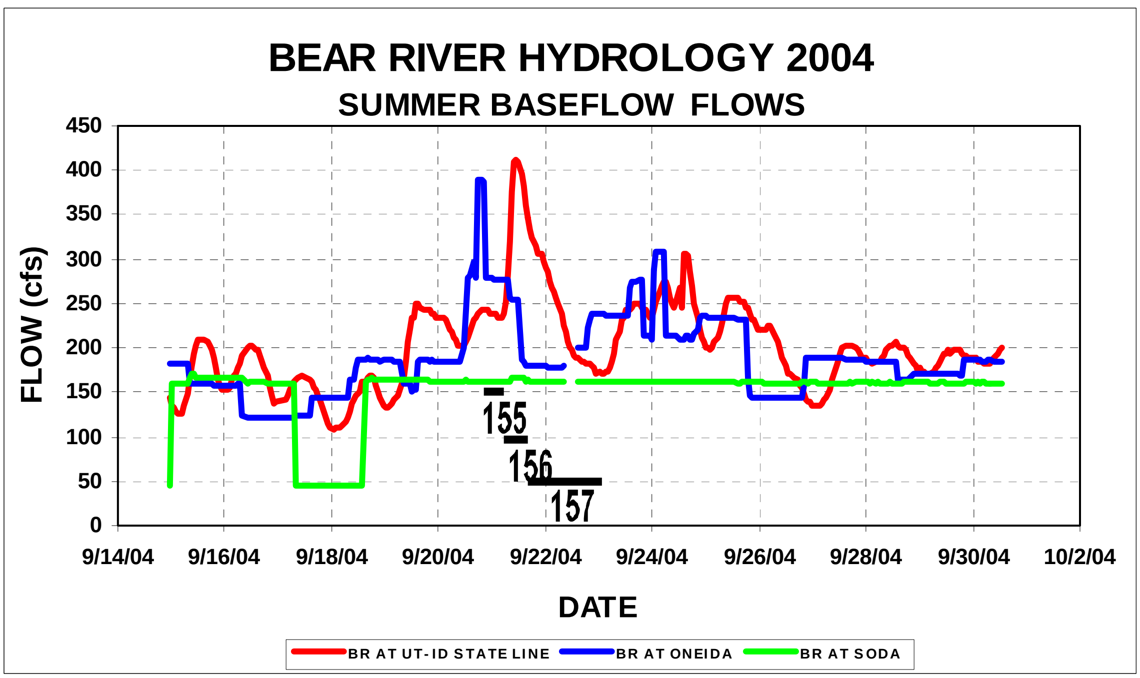



**Figure 4-41.** An example of three sequential events (All Events Nos. 155, 156, and 157) during SBF04 associated with operational effects due to the Oneida Hydroelectric Project. The timing of the event is associated with the flows at the Utah-Idaho stateline station.

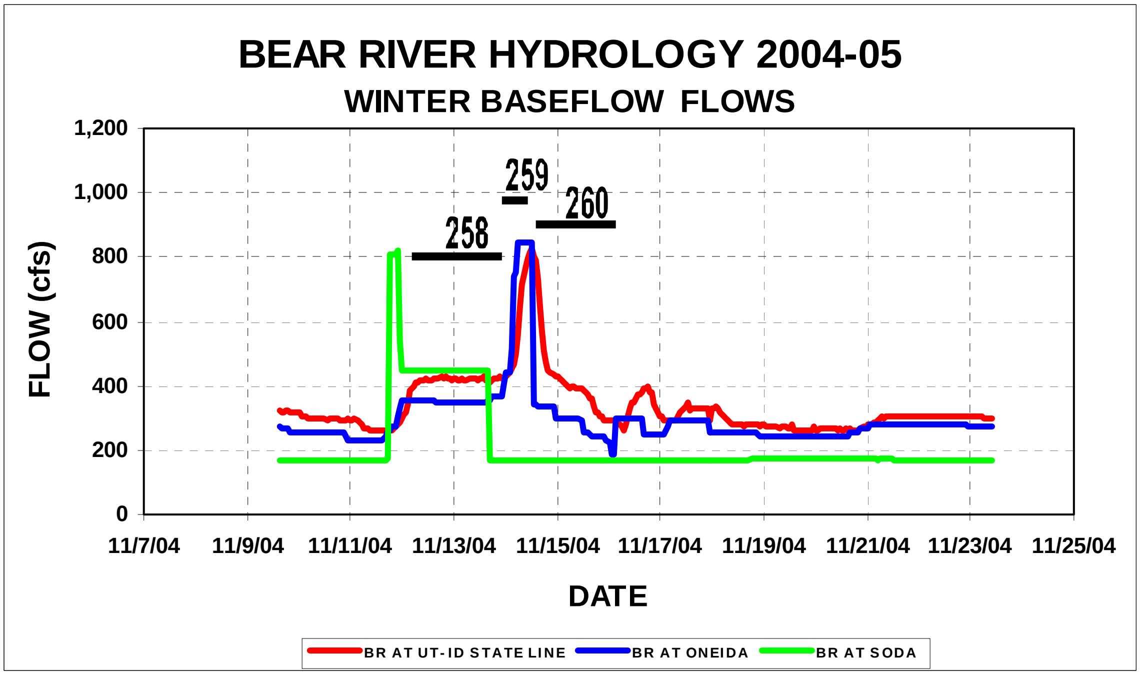



**Figure 4-42.** An example of three sequential events (All Events Nos. 258, 259, and 260) during WBF in 2004/2005 associated with operational effects due to the Oneida Hydroelectric Project. The timing of the event is associated with the flows at the Utah-Idaho stateline station.

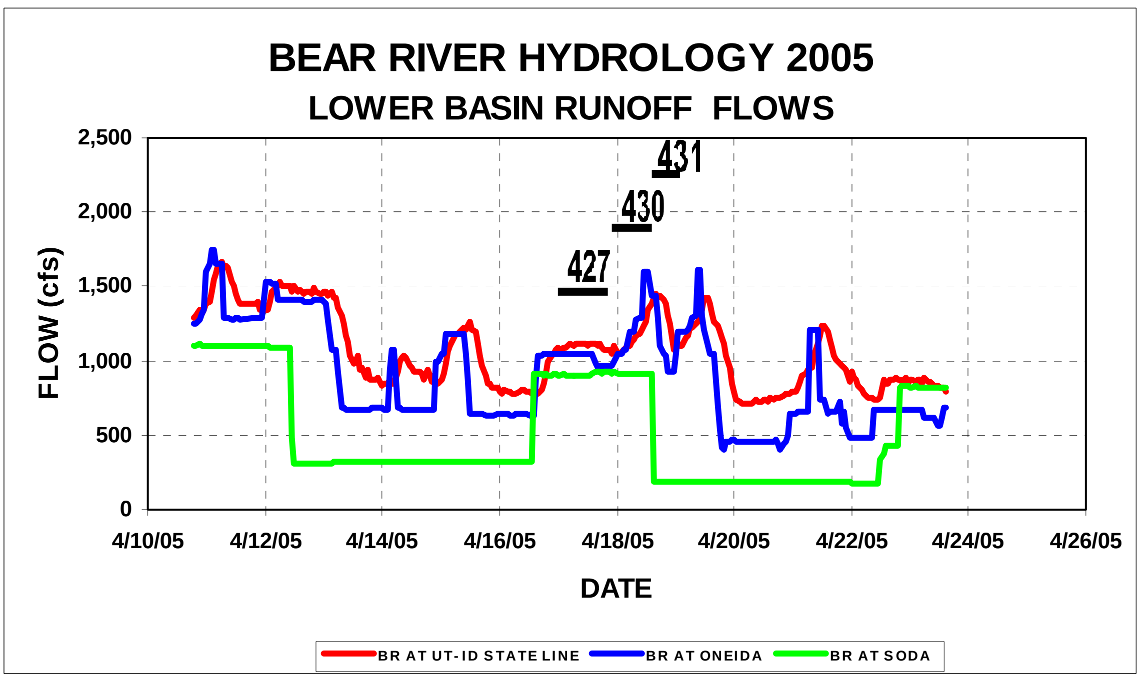



**Figure 4-43.** An example of three sequential events (All Events Nos. 427, 428, and 429) during LBR05 associated with operational effects due to the Oneida Hydroelectric Project. The timing of the event is associated with the flows at the Utah-Idaho stateline station.

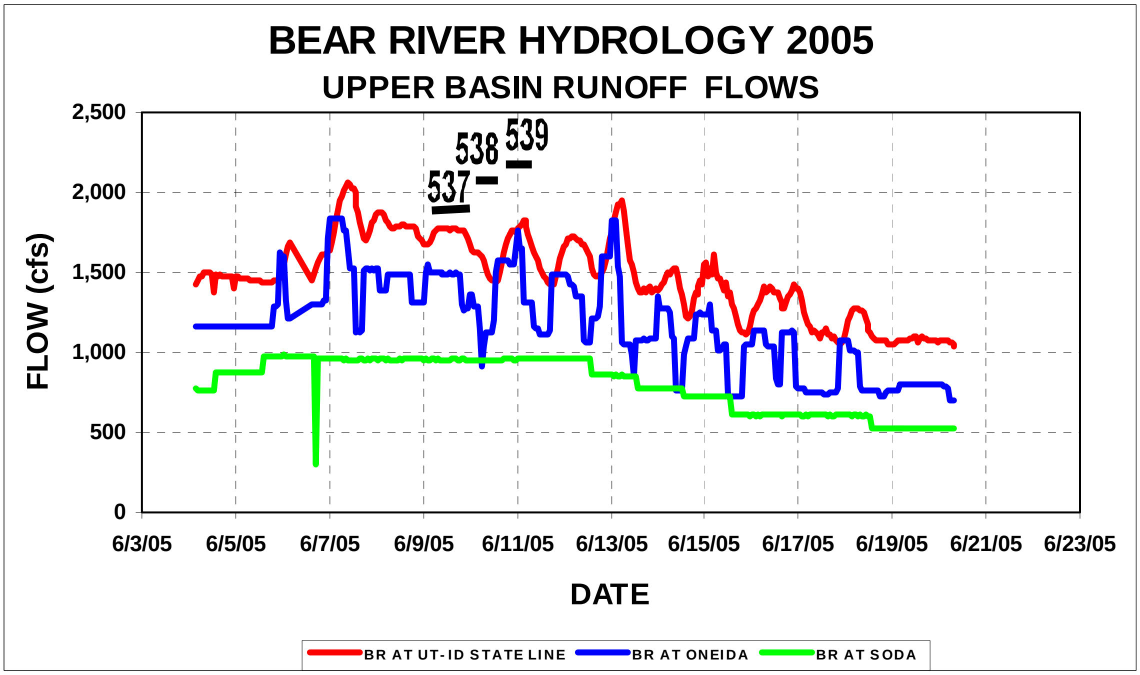



**Figure 4-44.** An example of three sequential events (All Events Nos. 537, 538, and 539) during UBR05 associated with operational effects due to the Oneida Hydroelectric Project. The timing of the event is associated with the flows at the Utah-Idaho stateline station.

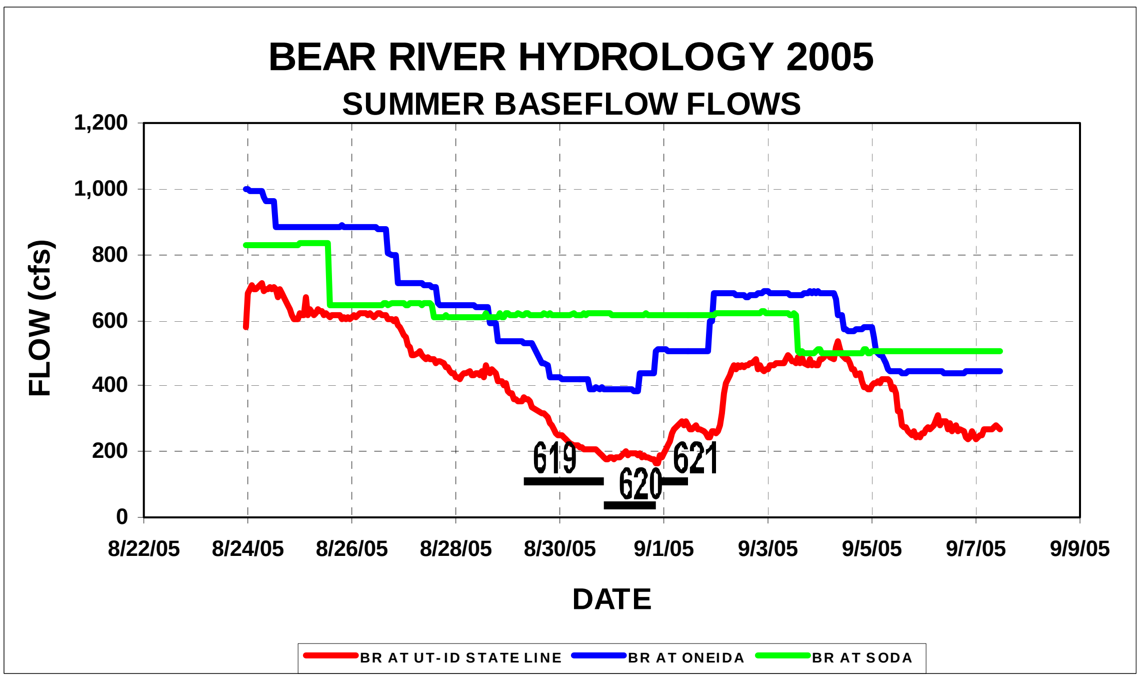



**Figure 4-45.** An example of three sequential events (All Events Nos. 619, 620, and 621) during SBF05 associated with operational effects due to the Oneida Hydroelectric Project. The timing of the event is associated with the flows at the Utah-Idaho stateline station.

Examples of the linear regressions between flow and turbidity for the events shown in Figures 4-40 through 4-45 are provided in Figures 4-47 through 4-52.

## 4.10 Statistical Analysis of Increasing Hydrological Effects

As noted above, 251 events were classified as hydrologically increasing. Within this data subset, 15 were compromised by turbidity outliers. The remaining 236 events were subjected to statistical analysis and their characteristics entered into a smaller database. The characteristics of each event in the database are shown in Table 4-1. This database was used in the determination of compliance with the State of Idaho Department of Environmental Quality Water Quality Standards and can be found in Appendix I.

One characteristic of the increasing hydrologic events was the significance levels of each linear regression calculated between the flow and turbidity within the flow event (as shown in Figures 4-46 to 4-51). Inspection of the 236 individual events indicated that only 96 events had a significance level equal to or less than $p=0.05$. The remaining events did not have a significant linear relationship between flow (as affected by PacifiCorp) and turbidity. It was assumed, therefore, that without a significant relationship, liability for the change in turbidity as a result of flow change could not be assigned to PacifiCorp.

In the 96 remaining events, a comparison was made to the existing numeric criterion for turbidity, as well as the proposed TSS and TP TMDL targets. Specifically the criteria used are as follows.

**Turbidity Numeric Standard:**

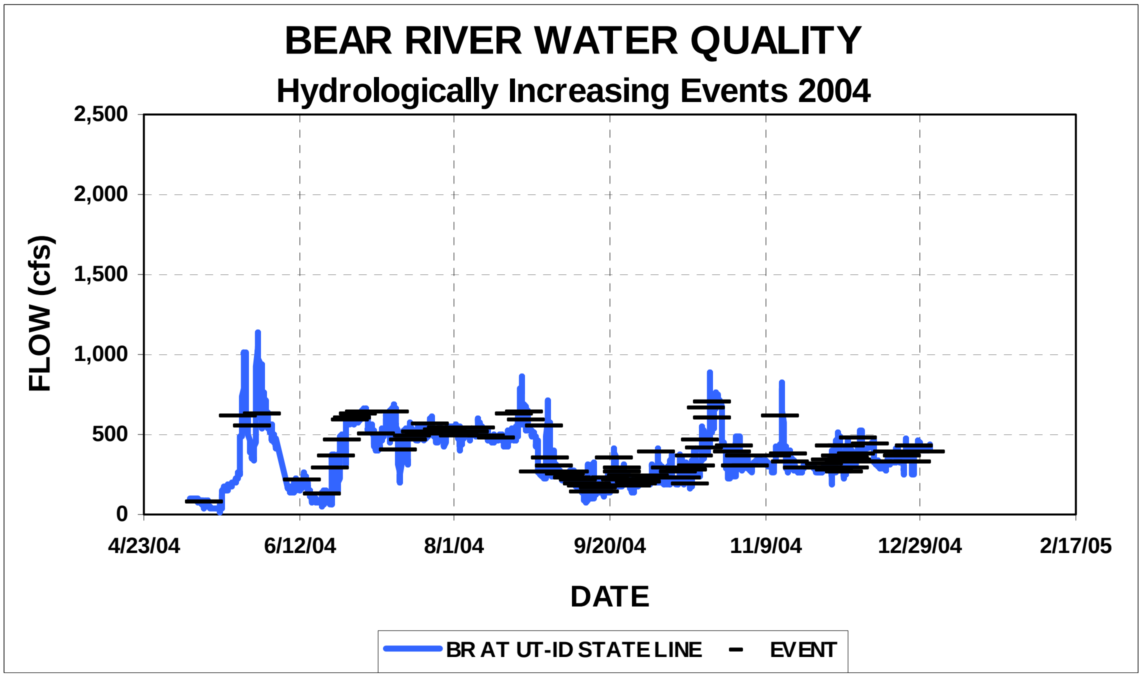
*…Turbidity, below any applicable mixing zone set by the Department, shall not exceed background turbidity by more than fifty (50) NTU instantaneously or more than twenty-five (25) NTU for more than ten (10) consecutive days. (IDAPA 58.01.02, Section 250.02.e).*

**Proposed TMDL Targets:**

*TSS TMDL numbers based on regression equation developed from grab samples collected 2004-2006 ($r^2$=0.98). Baseflow TMDL is 60 mg/L TSS (21.6 NTU), runoff TMDL is 80 mg/L TSS (28.6 NTU).*

*TP TMDL numbers based on regression equation developed from grab samples collected 2004-2006 ($r^2$=0.94). To match Utah's existing TMDL value, the TMDL for this reach is 0.050 mg/L TP (15.1 NTU).*

The maximum turbidity recorded during the event was compared to the numeric criteria or the TMDL target value. In many cases, this represented a "worst case," in that the ambient turbidity occasionally reached a maximum turbidity at an intermediate flow within the event cycle. The results of this comparison are shown in Table 4-2. Within this table, several different analyses are presented. First, a comparison of the gain in turbidity (initial turbidity subtracted from maximum turbidity) was compared to the delta 50 NTU criterion noted above. In this analysis, no events exceeded this criterion that could be attributed to PacifiCorp operations.



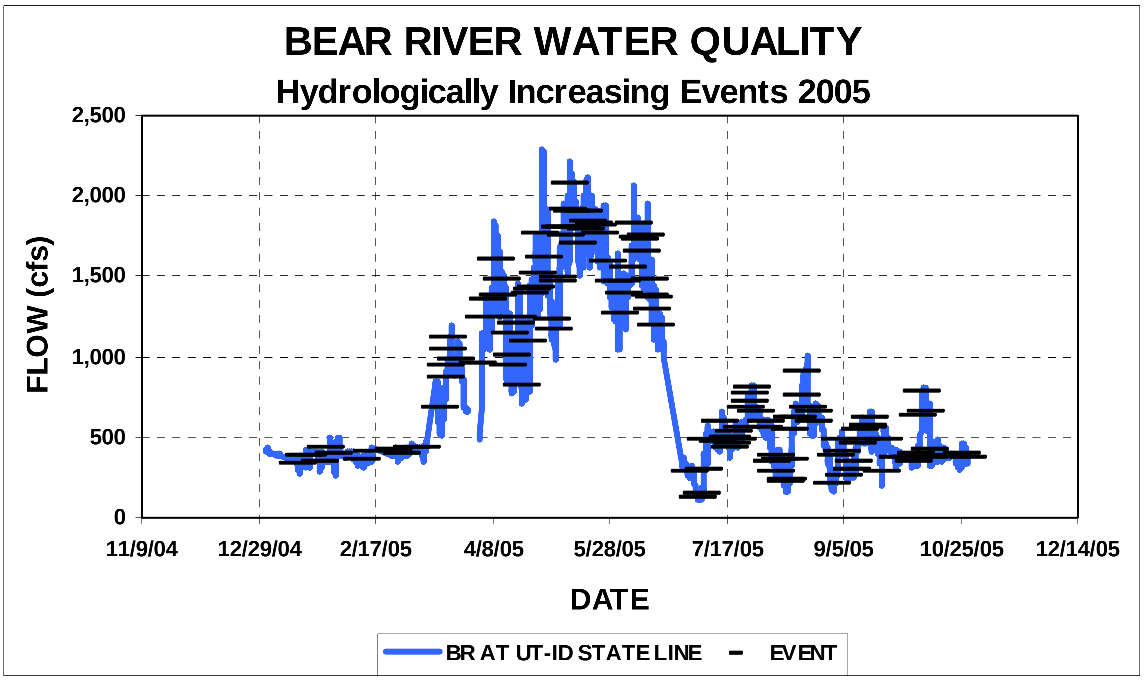
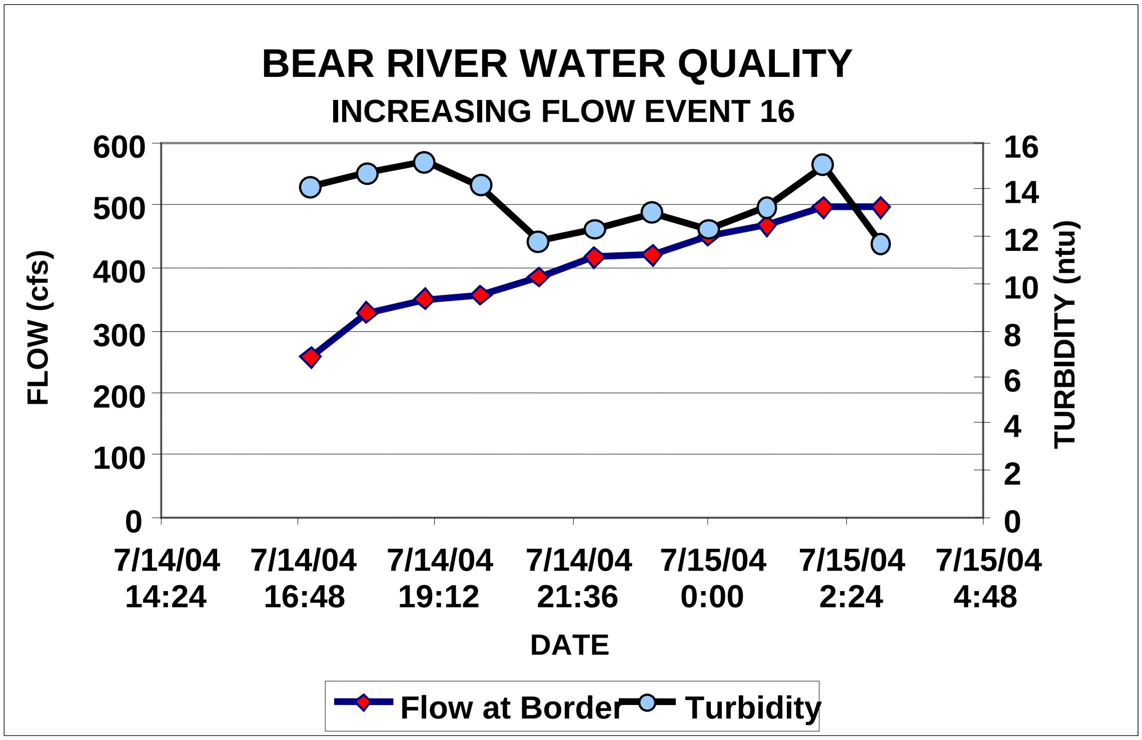




**Figure 4-46.** The temporal location of the 236 hydrologically increasing events (increasing flow events) during the study period.



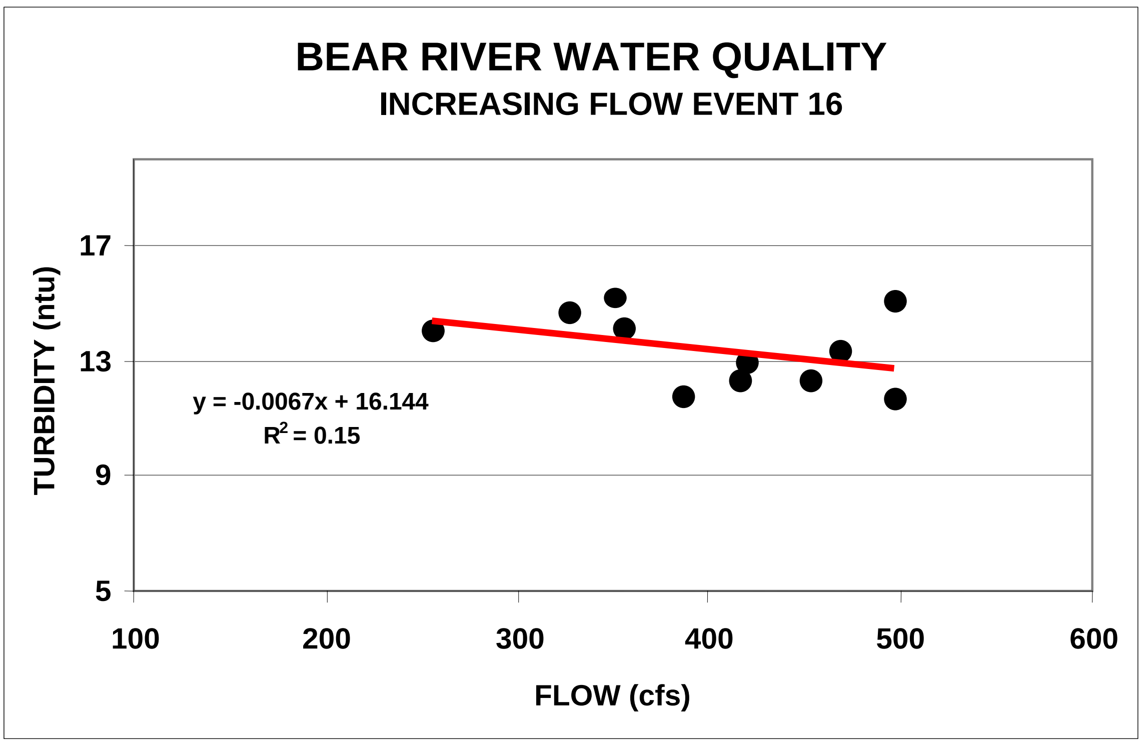




**Figure 4-47.** The temporal (above) and linear regression (below) relationship between flow and turbidity during an Increasing Flow Event (No. 16) in the Bear River during UBR04.

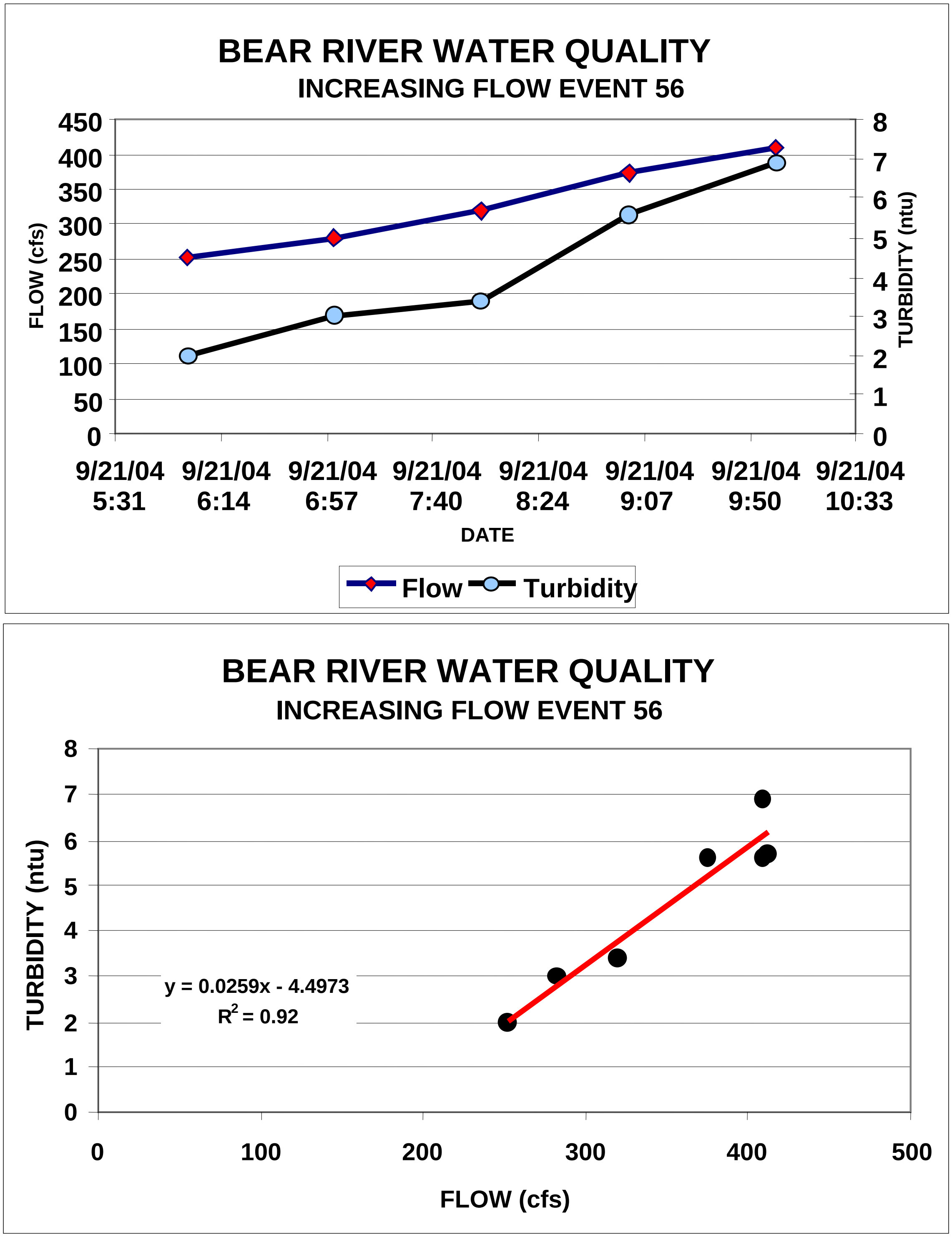
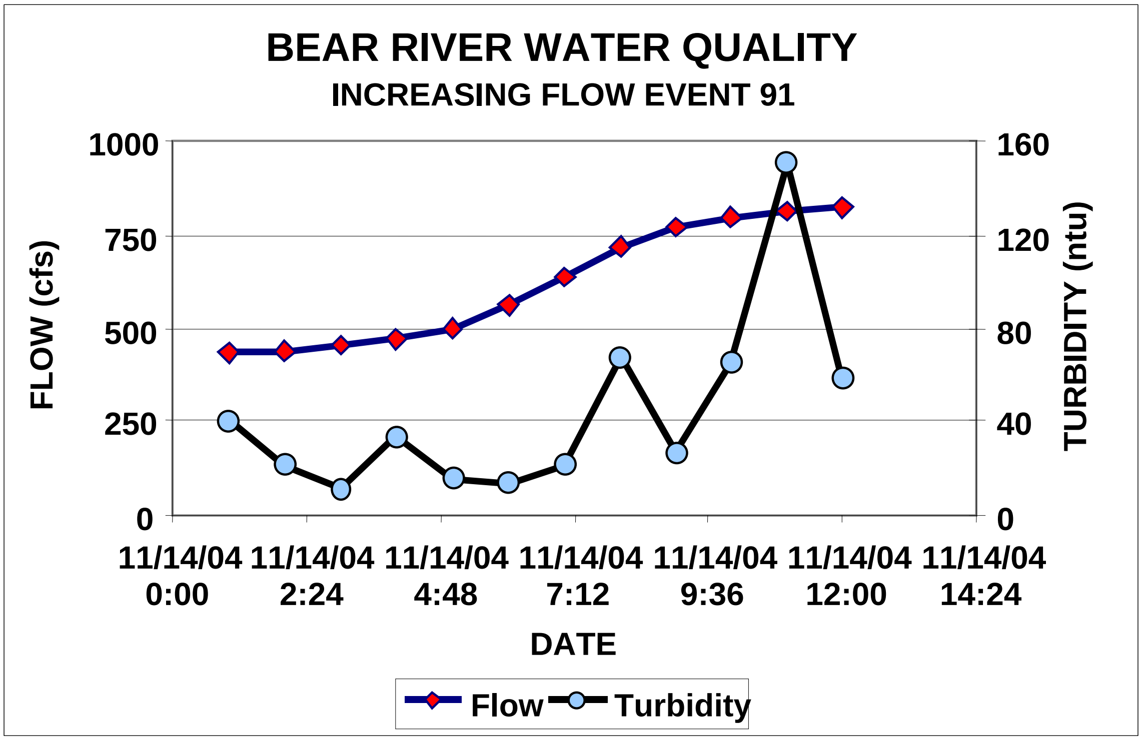



**Figure 4-48.** The temporal (above) and linear regression (below) relationship between flow and turbidity during an Increasing Flow Event (No. 56) in the Bear River in SBF04.



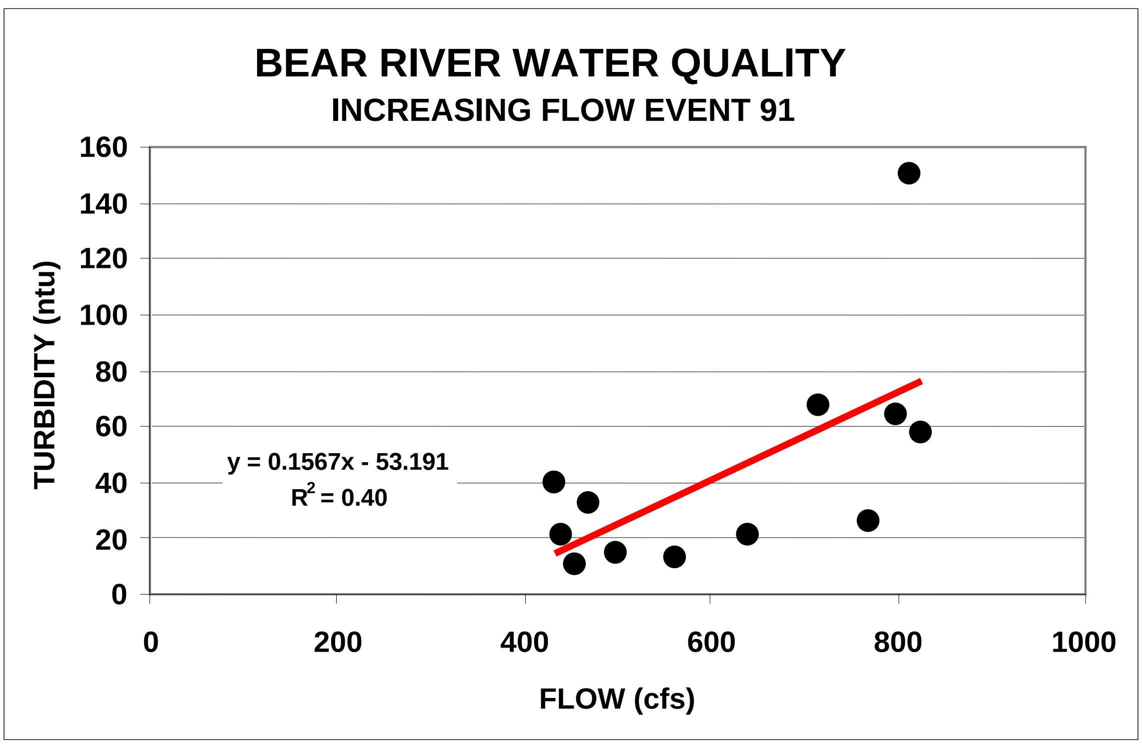
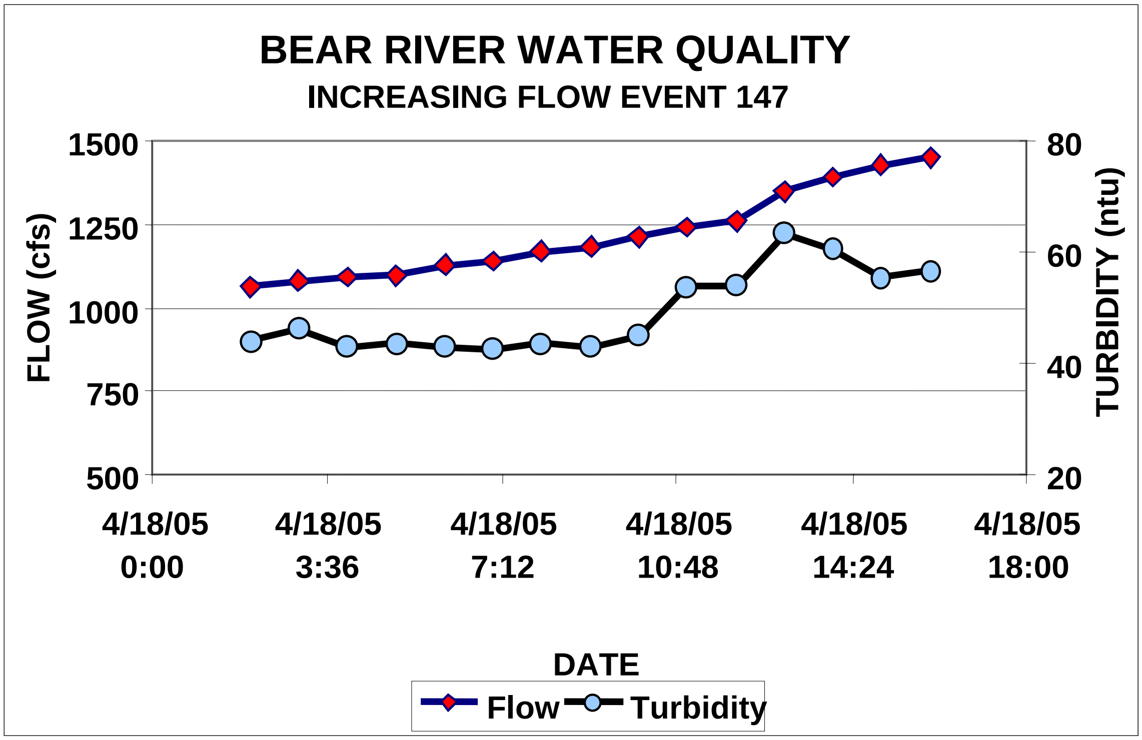




**Figure 4-49.** The temporal (above) and linear regression (below) relationship between flow and turbidity during an Increasing Flow Event (No. 91) in the Bear River in WBF 2004-2005.



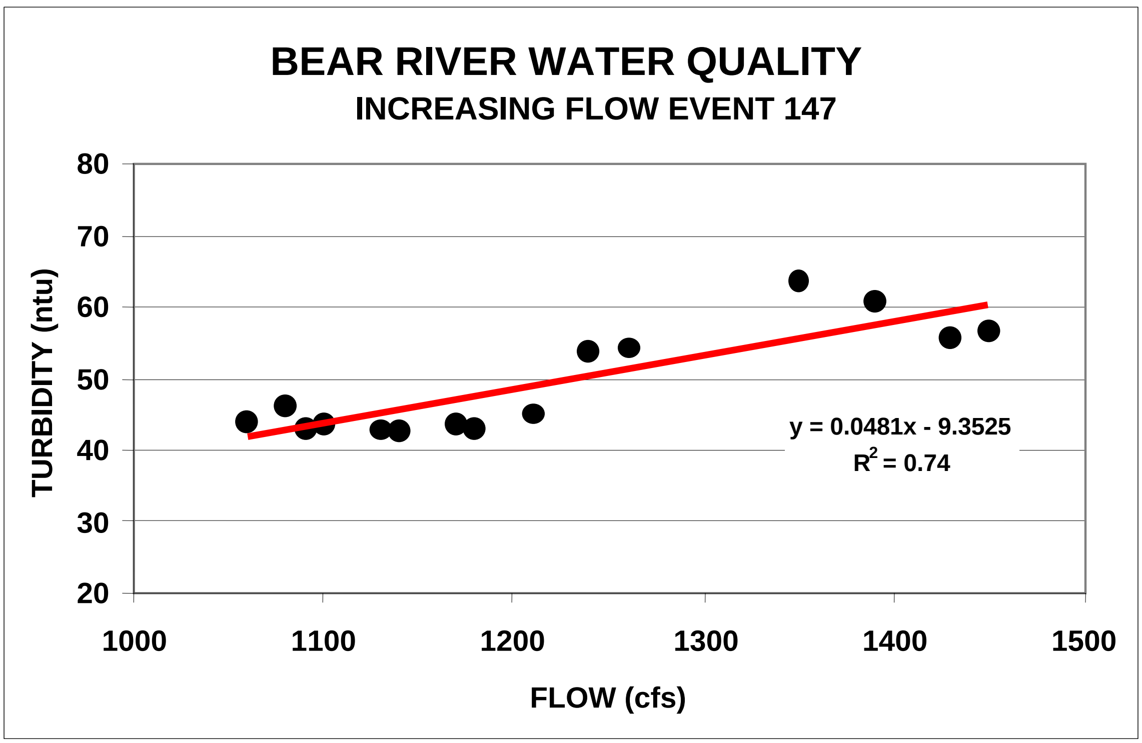
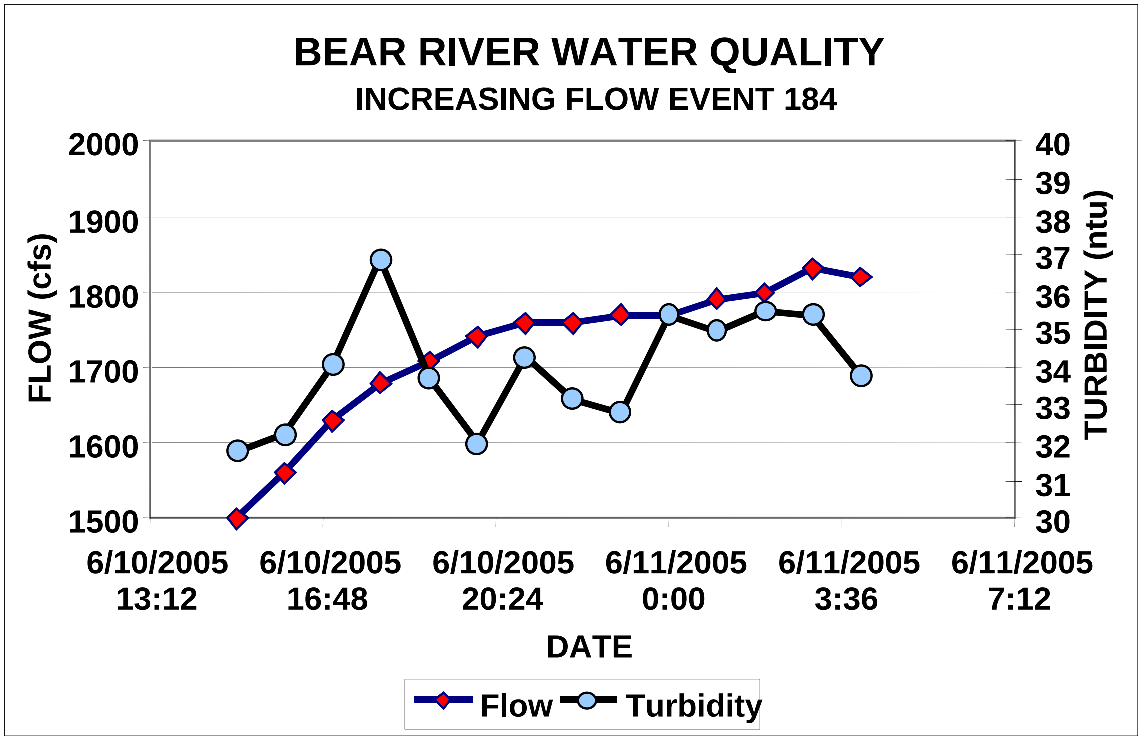




**Figure 4-50.** The temporal (above) and linear regression (below) relationship between flow and turbidity during an Increasing Flow Event (No. 147) in the Bear River in LBR05.



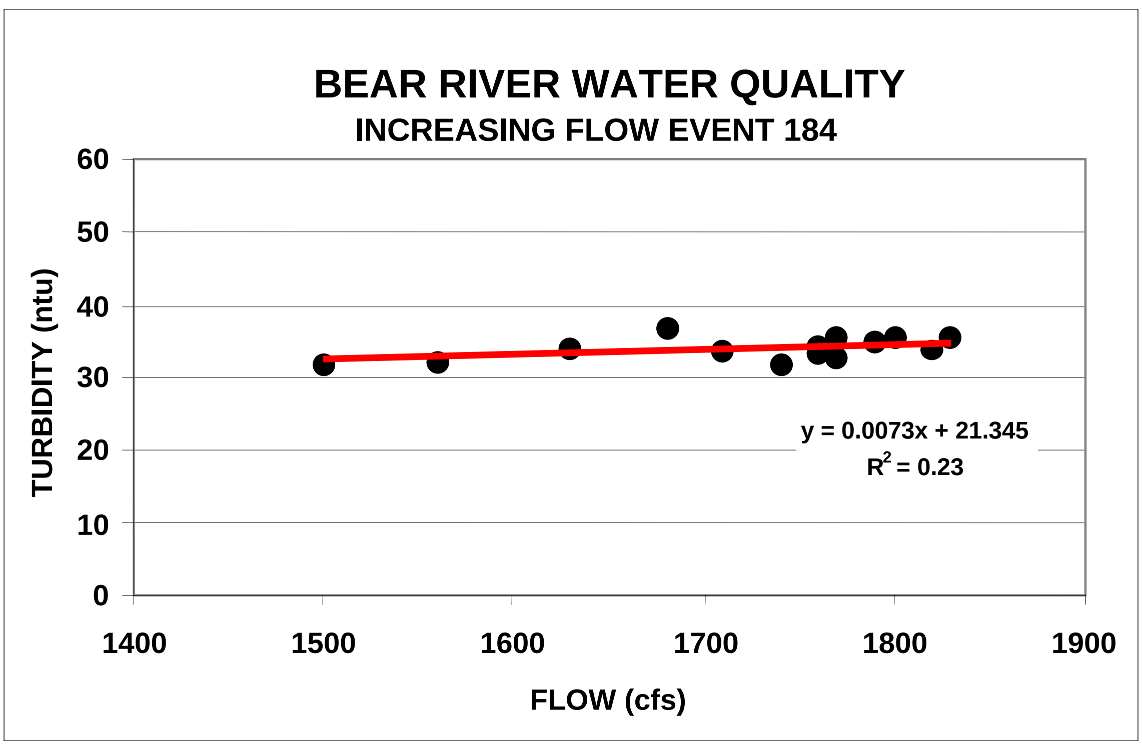
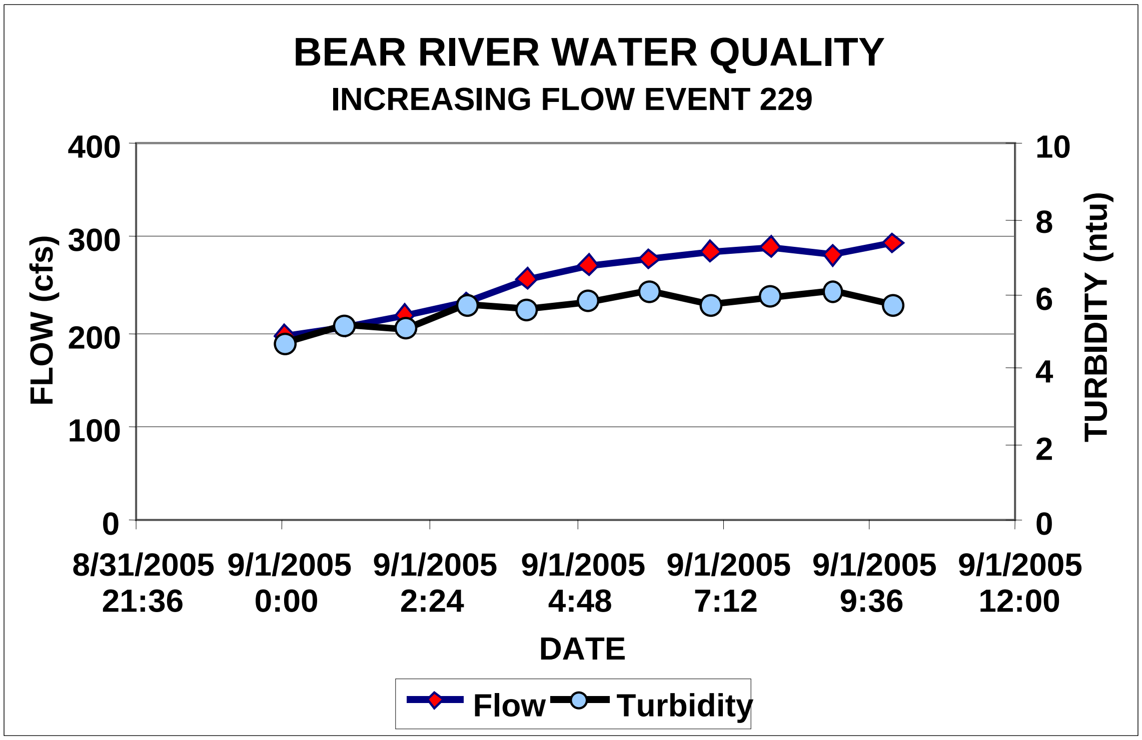




**Figure 4-51.** The temporal (above) and linear regression (below) relationship between flow and turbidity during an Increasing Flow Event (No. 184) in the Bear River in UBR05.



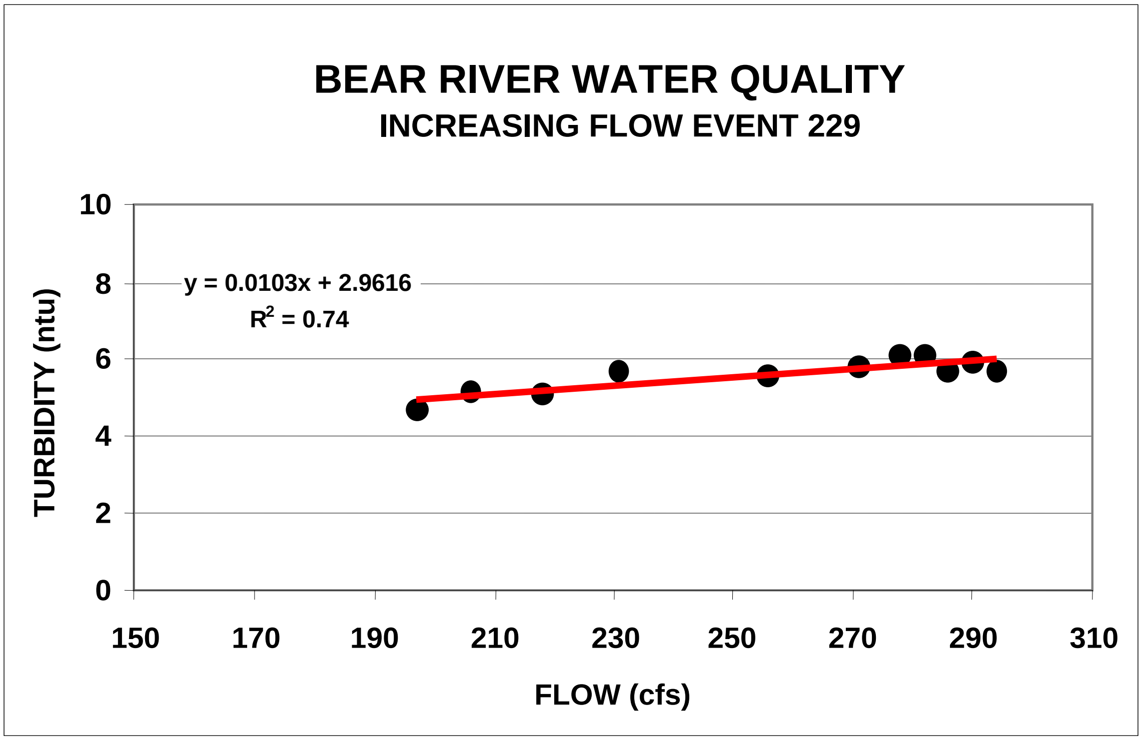




**Figure 4-52.** The temporal (above) and linear regression (below) relationship between flow and turbidity during an Increasing Flow Event (No. 229) in the Bear River in SBF05.

**Table 4-1.** Characteristics of the hydrologically increasing event database.

| | |
|---|---|
| **Turbidity** | |
| | Average |
| | Change in turbidity |
| | Maximum |
| | Minimum |
| | Standard deviation |
| | Count |
| | Turbidity at start of event |
| | Turbidity at end of event |
| **Stage and Flow at UT-ID border** | |
| | Change in stage |
| | Maximum stage |
| | Minimum stage |
| | Change in flow |
| | Maximum flow |
| | Minimum flow |
| **Flow at Oneida** | |
| | Change in flow |
| | Maximum flow |
| | Minimum flow |
| **Flow at Soda** | |
| | Change in flow |
| | Maximum flow |
| | Minimum flow |
| **Analysis Characteristics** | |
| | Regression X-coefficient |
| | Regression Constant |
| | Regression r2 |
| | ANOVA Significance |
| **Miscellaneous Characteristics** | |
| | Number of Hours Included |
| | Hydrologic Time Period |
| | Rain Event or Outlier tag |

**Table 4-2.** Percent exceedence of IDEQ's current numeric criterion for turbidity and proposed TSS and TP TMDL targets (calculated from turbidity data) in database events categorized as hydrologically-increasing and statistically significant at the 0.05 level. Exceedence was based on whether the maximum turbidity recorded in the event exceeded criteria.

| | **Storm-related** | | **Operations-related** | | **TOTAL** | |
|---|---|---|---|---|---|---|
| | **%** | **N** | **%** | **N** | **%** | **N** |
| IDEQ Turbidity Criterion [a] | 3.8 | 9 | 0 | 0 | 3.8 | 9 |
| **Non-exceedence events that subsequently exceeded criteria** (turbstart < criterion) | | | | | | |
| TSS TMDL (Baseflow) [b] | 0.4 | 1 | 0.8 | 2 | 1.3 | 3 |
| TSS TMDL (Runoff) [b] | 1.7 | 4 | 2.1 | 5 | 3.8 | 9 |
| TP TMDL [c] | 2.1 | 5 | 4.2 (2.5) | 10 | 6.4 | 15 |
| **Events already in exceedence** (turbstart > criterion) | | | | | | |
| TSS TMDL (Baseflow) [b] | 0.4 | 1 | 0.4 | 1 | 0.8 | 2 |
| TSS TMDL (Runoff) [b] | 5.5 | 13 | 6.4 | 15 | 11.9 | 28 |
| TP TMDL [c] | 7.6 | 18 | 11.0 (5.5) | 26 | 18.6 | 44 |
| **All exceedence events** | | | | | | |
| TSS TMDL (Baseflow) [b] | 0.8 | 2 | 1.3 | 3 | 2.1 | 5 |
| TSS TMDL (Runoff) [b] | 7.2 | 17 | 8.5 | 20 | 15.7 | 37 |
| TP TMDL [c] | 9.7 | 23 | 15.3 (8.1) | 36 | 25.0 | 59 |

[a] Turbidity, below any applicable mixing zone set by the Department, shall not exceed background turbidity by more than fifty (50) NTU instantaneously or more than twenty-five (25) NTU for more than ten (10) consecutive days. (IDAPA 58.01.02, Section 250.02.e).

[b] TSS TMDL numbers based on regression equation developed from grab samples collected 2004-2006 (r2=0.98). Baseflow TMDL is 60 mg/L TSS (21.6 NTU), runoff TMDL is 80 mg/L TSS (28.6 NTU).

[c] TP TMDL numbers based on regression equation developed from grab samples collected 2004-2006 (r2=0.94). To match Utah's existing TMDL value, the TMDL for this reach is 0.050 mg/L TP (15.1 NTU). The number in parentheses is the percent attributed to PacifiCorp if the TMDL was 0.075 mg/L TP (22.7 NTU), in accordance with EPA guidelines and waters without receiving bodies.

However, the analysis indicated that nine events (3.8%) related to storms did exceed this criterion.

In the comparison to the proposed TSS and TP TMDL target concentrations, two separate comparisons were made. The first comparison was the environmental condition where the initial turbidity was less than the target concentration, but the maximum turbidity during the event exceeded the target level. Under these conditions, storms accounted for five events exceeding the TSS target and PacifiCorp operations accounted for seven exceedence events. For the TP TMDL target (the most stringent of the two targets), storms accounted for five events and PacifiCorp accounted for 10 events (4.2% of the total increasing flow observations or 1.3% of all event observations).

The second comparison was for those increasing flow events where the starting turbidity was already in excess of the TMDL target. In this comparison, storms accounted for 14 events which added total suspended solids to the river already in excess of the target TSS level. PacifiCorp operations accounted for 16 events in this category. In a similar manner, the TP TMDL target had 18 events starting in excess but added to by storms and PacifiCorp had 26 events which added total phosphorous to the water via flow increases.

Further inspection of the “storm-related” category is warranted as it is believed these values are compromised due to external factors and should be treated as separate from PacifiCorp operations. In Appendix I, a summary has been provided which describes the Increasing Flow Event number and the environmental conditions (flow, start turbidity, etc) associated it. Appendix II is a table which expands the storm-influenced events to the hourly data associated within. In the storm-influenced category, 25 events had significant relationships with turbidity and flow. Of these 25 events, 19 were found to exceed the TSS TMDL criteria, either starting below or over the criteria. Inclusive in these 19 events were the 9 instantaneous delta 50 NTU criteria exceedences. A plot of the turbidity/flow relationships for three separate categories is provided in Figure 4-53 to Figure 4-55.

In Figure 4-53, hourly data for all significant ($p=0.05$) regression relationships are plotted as flow vs. turbidity. For the entire data set (all 96 events), the statistical relationship between the two parameters had a coefficient of variation of only 0.20. This indicates that when the entire data sets are combined, flow only explains 20 percent of the variation in turbidity. Inspection of Figure 4-54 shows that the relationship of storm-influenced events (flow vs. turbidity) had a coefficient of variation of 0.14, while the relationship of all significant events that were not storm-influenced had the highest coefficient of variation (0.40). This analysis indicates that removal of storm-influenced events results in a better relationship between flow and turbidity in the Bear River at the UT-ID border station."

In Table 4-3, a detailed summary of the individual events that had statistically significant relationships between flow and turbidity but were removed from the analysis of operational effects is shown. As can be seen from this summary, tagged events occurred in all hydrological time periods, with some resulting in exceedences of state criteria or standards. These events are not considered in the analysis because of the uncertainty of the influence of the storms to the ambient turbidity.

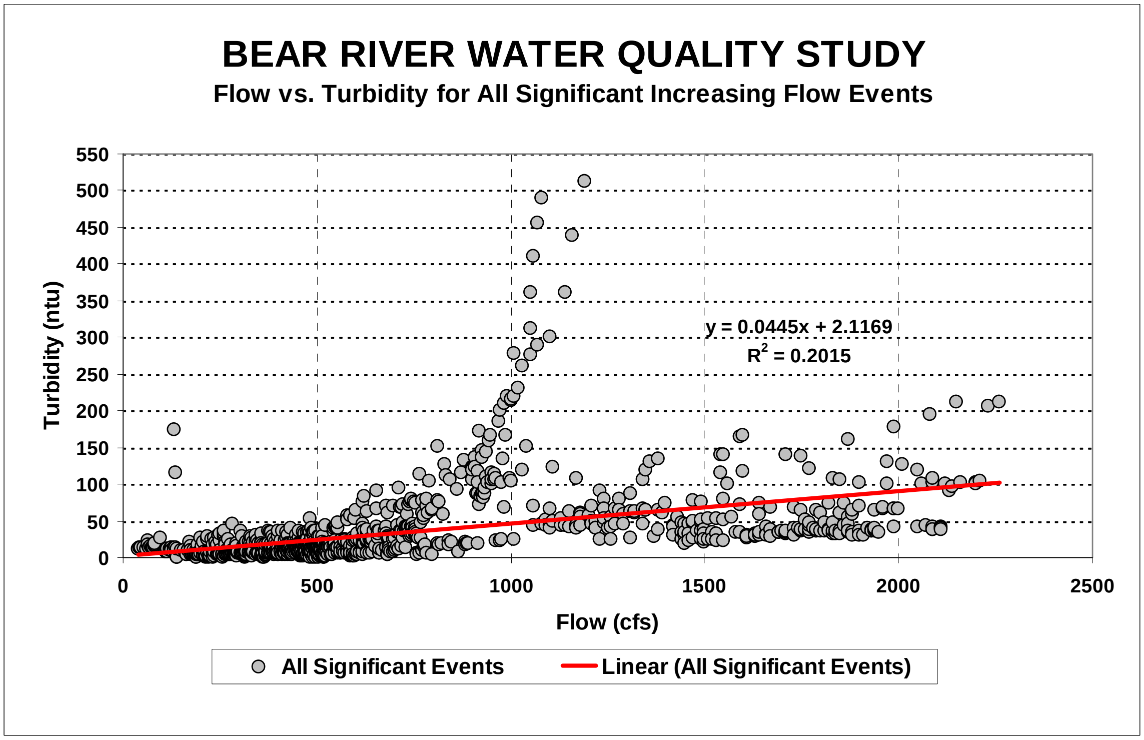



**Figure 4-53.** The hourly data for all significant increasing flow events comparing flow and turbidity in the Bear River at the Idaho-Utah state border.

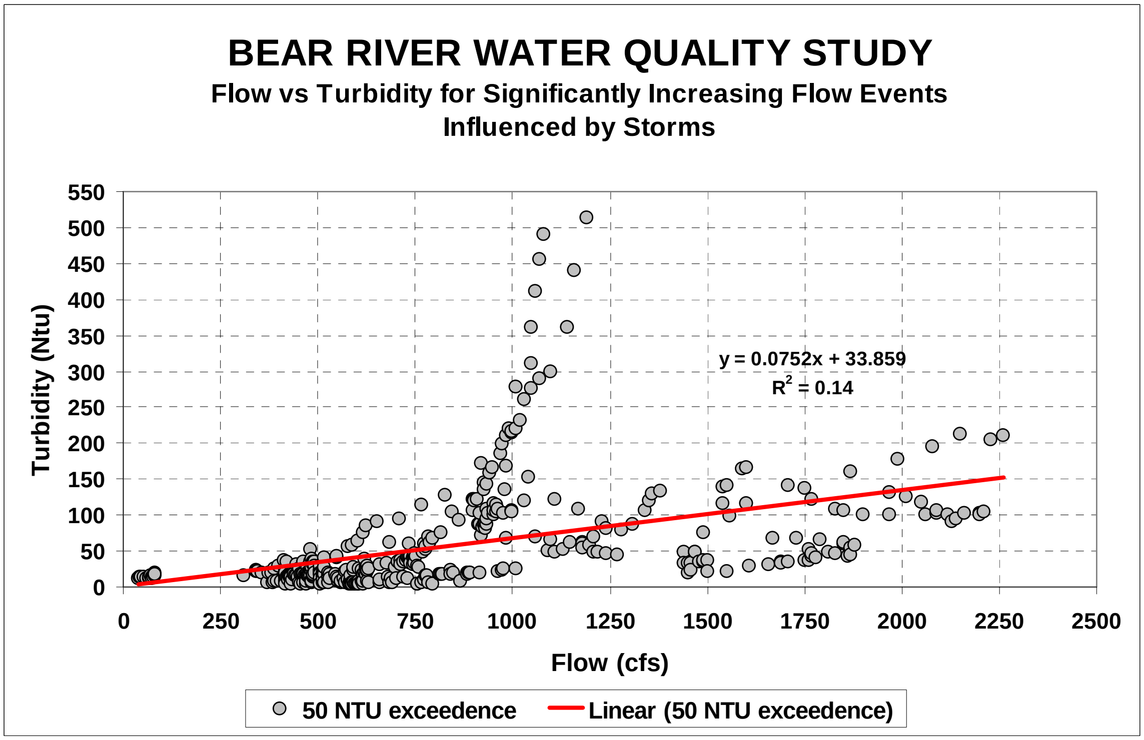



**Figure 4-54.** The hourly data for all significantly increasing flow events comparing flow and turbidity at the Idaho-Utah state border for just outlier and storm-influenced events.

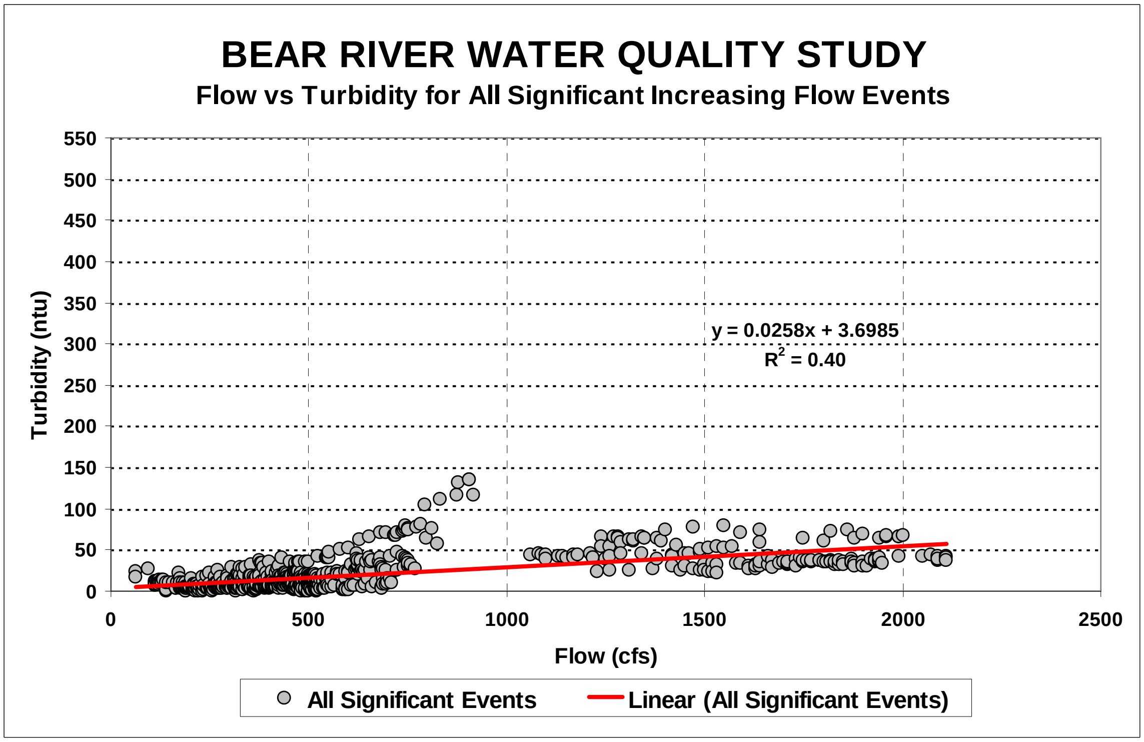



**Figure 4-55.** The hourly data for all significantly increasing flow events comparing flow and turbidity at the Idaho-Utah state border after removing outlier and storm-influenced events.

**Table 4-3.** The details of the storm-influenced events that had significant relationships between flow and turbidity. These tagged events were removed from further analysis relative to operational effects due to PacifiCorp. Hourly data for these events are included in Appendix II.

| Event ID | Hours | Turbidity (NTU) | | | | Flow Change | Hydro Period | Precip (1/100in) | R2 | ANOVA SIG |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Average | Delta Change | Starting | Ending | | | | | |
| 1 | 17 | 15 | 7.8 | 13.5 | 19.5 | 44 | UBR | 2 | 0.356 | 0.009 |
| 2 | 29 | 49 | 106 | 16 | 104 | 689 | UBR | 69 | 0.926 | 0 |
| 3 | 24 | 59 | 133 | 23 | 152 | 698 | UBR | 152 | 0.963 | 0 |
| 14 | 79 | 18 | 39.3 | 15.6 | 25.2 | 215 | UBR | 33 | 0.198 | 0 |
| 32 | 38 | 7 | 16 | 12.6 | 8.3 | 395 | SBF | 2.05 | 0.179 | 0.007 |
| 81 | 11 | 10 | 11.8 | 5.5 | 17.3 | 87 | SBF | 204 | 0.794 | 0 |
| 134 | 15 | 119 | 196.3 | 86.4 | 278.3 | 97 | LBR | 12 | 0.809 | 0 |
| 136 | 5 | 363 | 237.2 | 275.6 | 512.8 | 140 | LBR | 11 | 0.906 | 0.003 |
| 137 | 20 | 233 | 371.3 | 120.8 | 490.2 | 177 | LBR | 52 | 0.848 | 0 |
| 139 | 11 | 85 | 84.9 | 50.9 | 133.9 | 290 | LBR | 76 | 0.905 | 0 |
| 145 | 11 | 58 | 27 | 71.5 | 44.5 | 350 | LBR | 9 | 0.835 | 0 |
| 149 | 32 | 64 | 88.2 | 33.9 | 90.5 | 523 | LBR | 108 | 0.75 | 0 |
| 155 | 14 | 133 | 164.6 | 47.5 | 211.2 | 820 | LBR | 155 | 0.879 | 0 |
| 162 | 6 | 62 | 13.9 | 68.4 | 54.5 | 210 | UBR | 39 | 0.823 | 0.005 |
| 165 | 14 | 117 | 67.4 | 140.4 | 99.6 | 660 | UBR | 60 | 0.698 | 0 |
| 166 | 6 | 110 | 39.8 | 130.6 | 90.8 | 170 | UBR | 17 | 0.959 | 0 |
| 179 | 6 | 35 | 4.4 | 33.6 | 36.4 | 60 | UBR | 31 | 0.809 | 0.006 |
| 181 | 6 | 25 | 16.4 | 18.4 | 34.8 | 240 | UBR | 25 | 0.898 | 0.001 |
| 182 | 4 | 47 | 8 | 51.3 | 44.9 | 110 | UBR | 68 | 0.931 | 0.008 |
| 183 | 6 | 39 | 13.6 | 33.3 | 40 | 90 | UBR | 17 | 0.614 | 0.037 |
| 224 | 11 | 14 | 9.1 | 10.6 | 19.7 | 230 | SBF | 5 | 0.818 | 0 |
| 225 | 34 | 21 | 8.1 | 22.4 | 24.8 | 198 | SBF | 5 | 0.592 | 0.002 |
| 237 | 7 | 6 | 3.7 | 4.2 | 7.8 | 157 | SBF | 15 | 0.937 | 0 |
| 243 | 7 | 6 | 4.3 | 4 | 7.1 | 134 | SBF | 29 | 0.698 | 0.01 |
| 248 | 16 | 22 | 27.6 | 5.6 | 26.1 | 308 | SBF | 15 | 0.888 | 0 |

# 5.0 DISCUSSION

This report has described the existing water quality conditions encountered at the 3600 South Street Bridge and placed the current water quality data collected into an historical perspective. The water quality conditions encountered during 2004 and 2005 fit into this historical framework. In 2004, flows in the Bear River were low when compared to historical watershed yields. This low flow resulted in water quality conditions similar to other low water years. In a similar manner, 2005, a much wetter year, reflected historical data from wetter years.

Comparisons between various gaging stations allowed the dissection of PacifiCorp operations at the Oneida facility when compared to background conditions. Further refining of hydrology into “events” where micro flow changes had occurred allowed an analysis of just increasing flow events associated with a ramping operations. Within this data set, only a fraction of the events had direct links between a change in flow (PacifiCorp operational effect) and a change in turbidity. Of that subset, no events exceeded the numeric state standard and only a few contributed to an exceedence of the proposed TMDL targets for total suspended solids and total phosphorus.

The general observation has been that historical ramping at the Oneida Hydroelectric Project has resulted in increased total suspended solids within the Bear River due to the destabilization of stream banks. In order to further investigate the possible mechanism of turbidity increases associated with increasing flow events, we used the database developed for this investigation to develop a predictive empirical model. Using a multiple regression approach, the following regression equation was built which predicts the final turbidity concentration at the 3600 South Bridge site.

Final Event Turbidity = 15.93+1.01*(Turbidity at Event Start)
+ 0.032*(Event Flow Change at Border)
- 1.716*(Maximum Event Stage at Border)
- 0.033*(Number of Event Hours)

This statistical relationship had a coefficient of variation ($r^2$) of 0.93. It is interesting to note that both maximum event stage and event duration had negative regression coefficients indicating that the higher the maximum stage and the longer the event, the lower the final turbidity (assuming the two other variables are the same).

# 6.0 REFERENCES

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# APPENDIX I.

## Hydrologically Increasing Events Dataset

| EVENT ID | Hours | TurbAvg | TurbChange | TurbMax | TurbMin | TurbSTD | TurbN | TurbStart | TurbEnd | BorderStageChange | Borderflowchange | Oneidaflowchange | Sodaflowchange | HydroPeriod | Code | MaxOfBorderStage | MinOfBorderStage | MaxOfBorderFlow | MinOfBorderFlow | MaxOfSodaFlow | MinOfSodaFlow | MaxOfOneidaFlow | MinOfOneidaFlow | X-coeff | Constant | R2 | Anova Sig |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 17 | 14.6 | 7.8 | 19.5 | 11.7 | 2.3 | 18.0 | 13.5 | 19.5 | 0.4 | 44.0 | 2.0 | 6.0 | UBR | 1.0 | 8.6 | 8.2 | 82.0 | 38.0 | 221.0 | 215.0 | 130.0 | 128.0 | 0.1 | 8.2 | 0.4 | 0.0 |
| 2 | 29 | 49.2 | 106.0 | 122.0 | 16.0 | 35.2 | 30.0 | 16.0 | 104.0 | 1.9 | 689.0 | 628.0 | 960.0 | UBR | 1.0 | 11.3 | 9.5 | 1000.0 | 311.0 | 1096.0 | 136.0 | 1271.0 | 643.0 | 0.2 | -52.5 | 0.9 | 0.0 |
| 3 | 24 | 58.9 | 133.0 | 152.0 | 19.0 | 40.7 | 25.0 | 23.0 | 152.0 | 1.9 | 698.0 | 1118.0 | 6.0 | UBR | 1.0 | 11.4 | 9.5 | 1040.0 | 342.0 | 398.0 | 392.0 | 1456.0 | 338.0 | 0.2 | -57.6 | 1.0 | 0.0 |
| 4 | 16 | 23.8 | 11.0 | 31.0 | 20.0 | 3.3 | 17.0 | 20.0 | 28.0 | 0.6 | 220.0 | 147.0 | 63.0 | UBR | | 10.7 | 10.1 | 757.0 | 537.0 | 392.0 | 329.0 | 592.0 | 445.0 | 0.0 | 0.3 | 0.8 | 0.0 |
| 5 | 9 | 12.4 | 2.7 | 13.5 | 10.8 | 0.9 | 10.0 | 11.5 | 10.8 | 0.3 | 83.0 | 64.0 | 11.0 | UBR | | 9.4 | 9.1 | 260.0 | 177.0 | 347.0 | 336.0 | 260.0 | 196.0 | 0.0 | 13.7 | 0.0 | 0.6 |
| 6 | 24 | 10.5 | 6.6 | 14.2 | 7.6 | 1.5 | 24.0 | 12.7 | 11.3 | 0.5 | 90.0 | 67.0 | 0.0 | UBR | | 9.0 | 8.5 | 156.0 | 66.0 | 341.0 | 341.0 | 334.0 | 267.0 | 0.0 | 10.4 | 0.0 | 1.0 |
| 7 | 19 | 17.0 | 14.9 | 27.1 | 12.2 | 3.7 | 19.0 | 22.8 | 18.6 | 1.1 | 311.0 | 23.0 | 38.0 | UBR | | 9.6 | 8.5 | 375.0 | 64.0 | 807.0 | 769.0 | 604.0 | 581.0 | 0.0 | 24.0 | 0.5 | 0.0 |
| 8 | 17 | 29.5 | 22.3 | 36.8 | 14.5 | 7.6 | 18.0 | 14.7 | 35.2 | 0.9 | 323.0 | 151.0 | 238.0 | UBR | | 10.0 | 9.1 | 497.0 | 174.0 | 945.0 | 707.0 | 632.0 | 481.0 | 0.1 | 5.1 | 0.8 | 0.0 |
| 9 | 7 | 33.7 | 18.3 | 45.2 | 26.9 | 7.1 | 8.0 | 29.1 | 45.2 | 0.8 | 292.0 | 1.0 | 10.0 | UBR | | 10.3 | 9.6 | 620.0 | 328.0 | 999.0 | 989.0 | 899.0 | 898.0 | 0.1 | 5.4 | 0.9 | 0.0 |
| 10 | 30 | 32.7 | 15.1 | 40.1 | 25.0 | 3.7 | 31.0 | 34.8 | 36.0 | 0.2 | 60.0 | 113.0 | 10.0 | UBR | | 10.3 | 10.2 | 617.0 | 557.0 | 987.0 | 977.0 | 909.0 | 796.0 | 0.0 | 11.7 | 0.0 | 0.4 |
| 11 | 41 | 27.1 | 10.1 | 31.4 | 21.3 | 2.6 | 31.0 | 31.3 | 29.2 | 0.1 | 46.0 | 6.0 | 18.0 | UBR | | 10.3 | 10.2 | 624.0 | 578.0 | 985.0 | 967.0 | 903.0 | 897.0 | -0.1 | 68.4 | 0.1 | 0.1 |
| 12 | 15 | 24.8 | 8.3 | 30.5 | 22.2 | 2.2 | 16.0 | 22.9 | 24.4 | 0.2 | 63.0 | 1.0 | 10.0 | UBR | | 10.4 | 10.3 | 658.0 | 595.0 | 971.0 | 961.0 | 902.0 | 901.0 | 0.0 | 43.6 | 0.1 | 0.3 |
| 13 | 13 | 22.3 | 7.2 | 25.2 | 18.0 | 2.0 | 14.0 | 24.4 | 18.0 | 0.1 | 37.0 | 158.0 | 194.0 | UBR | | 10.4 | 10.3 | 661.0 | 624.0 | 959.0 | 765.0 | 900.0 | 742.0 | -0.1 | 68.5 | 0.2 | 0.1 |
| 14 | 79 | 18.5 | 39.3 | 52.4 | 13.1 | 5.7 | 80.0 | 15.6 | 25.2 | 0.6 | 215.0 | 247.0 | 127.0 | UBR | 1.0 | 10.4 | 9.8 | 631.0 | 416.0 | 967.0 | 840.0 | 902.0 | 655.0 | 0.0 | -1.2 | 0.2 | 0.0 |
| 15 | 29 | 17.1 | 5.9 | 20.3 | 14.4 | 1.5 | 30.0 | 14.4 | 18.9 | 0.6 | 228.0 | 157.0 | 62.0 | UBR | | 10.5 | 9.9 | 692.0 | 464.0 | 868.0 | 806.0 | 956.0 | 799.0 | 0.0 | 10.8 | 0.1 | 0.1 |
| 16 | 10 | 13.4 | 3.5 | 15.2 | 11.7 | 1.3 | 11.0 | 14.1 | 11.7 | 0.6 | 241.0 | 6.0 | 18.0 | UBR | | 10.0 | 9.4 | 497.0 | 256.0 | 856.0 | 838.0 | 772.0 | 766.0 | 0.0 | 16.1 | 0.2 | 0.2 |
| 17 | 9 | 10.9 | 2.9 | 12.4 | 9.5 | 0.8 | 10.0 | 9.5 | 11.3 | 0.5 | 210.0 | 0.0 | 7.0 | UBR | | 10.1 | 9.6 | 547.0 | 337.0 | 903.0 | 896.0 | 798.0 | 798.0 | 0.0 | 7.1 | 0.5 | 0.0 |
| 18 | 4 | 12.1 | 6.1 | 15.3 | 9.2 | 2.8 | 5.0 | 9.2 | 15.3 | 0.1 | 26.0 | 0.0 | 0.0 | UBR | | 10.0 | 10.0 | 505.0 | 479.0 | 901.0 | 901.0 | 701.0 | 701.0 | 0.2 | -100.4 | 0.6 | 0.1 |
| 19 | 6 | 7.2 | 1.5 | 7.6 | 6.1 | 0.5 | 7.0 | 7.6 | 7.5 | 0.2 | 65.0 | 5.0 | 8.0 | UBR | | 10.2 | 10.0 | 547.0 | 482.0 | 895.0 | 887.0 | 701.0 | 696.0 | 0.0 | 18.0 | 0.6 | 0.0 |
| 20 | 7 | 7.2 | 2.4 | 8.3 | 5.9 | 0.8 | 8.0 | 7.4 | 8.2 | 0.2 | 79.0 | 16.0 | 8.0 | UBR | | 10.2 | 10.0 | 550.0 | 471.0 | 900.0 | 892.0 | 717.0 | 701.0 | 0.0 | 3.4 | 0.1 | 0.6 |
| 21 | 5 | 7.0 | 1.3 | 7.8 | 6.5 | 0.5 | 6.0 | 6.5 | 6.7 | 0.2 | 79.0 | 0.0 | 8.0 | UBR | | 10.3 | 10.1 | 606.0 | 527.0 | 908.0 | 900.0 | 763.0 | 763.0 | 0.0 | 5.4 | 0.0 | 0.7 |
| 22 | 15 | 6.1 | 1.7 | 6.8 | 5.1 | 0.5 | 16.0 | 5.7 | 5.3 | 0.2 | 82.0 | 5.0 | 11.0 | UBR | | 10.2 | 10.0 | 553.0 | 471.0 | 711.0 | 700.0 | 733.0 | 728.0 | 0.0 | 12.8 | 0.3 | 0.0 |
| 23 | 11 | 1.1 | 1.4 | 2.1 | 0.7 | 0.4 | 12.0 | 1.4 | 1.2 | 0.3 | 94.0 | 0.0 | 15.0 | UBR | | 10.1 | 9.9 | 540.0 | 446.0 | 825.0 | 810.0 | 774.0 | 774.0 | 0.0 | 4.3 | 0.2 | 0.1 |
| 24 | 4 | 1.2 | 0.2 | 1.3 | 1.1 | 0.1 | 5.0 | 1.2 | 1.3 | 0.0 | 17.0 | 0.0 | 4.0 | UBR | | 10.2 | 10.1 | 547.0 | 530.0 | 798.0 | 794.0 | 774.0 | 774.0 | 0.0 | -2.7 | 0.3 | 0.4 |
| 25 | 10 | 1.5 | 2.9 | 3.9 | 1.0 | 0.8 | 11.0 | 1.1 | 3.9 | 0.0 | 10.0 | 0.0 | 8.0 | UBR | | 10.2 | 10.1 | 547.0 | 537.0 | 802.0 | 794.0 | 774.0 | 774.0 | 0.0 | 21.4 | 0.0 | 0.6 |
| 26 | 8 | 0.3 | 0.5 | 0.5 | 0.0 | 0.1 | 9.0 | 0.0 | 0.4 | 0.2 | 73.0 | 80.0 | 12.0 | SBF | | 10.1 | 9.9 | 512.0 | 439.0 | 805.0 | 793.0 | 724.0 | 644.0 | 0.0 | -1.3 | 0.3 | 0.1 |
| 27 | 9 | 0.8 | 1.1 | 1.4 | 0.3 | 0.4 | 10.0 | 0.3 | 1.1 | 0.1 | 41.0 | 1.0 | 4.0 | SBF | | 10.1 | 10.0 | 523.0 | 482.0 | 801.0 | 797.0 | 750.0 | 749.0 | 0.0 | -8.9 | 0.5 | 0.0 |
| 28 | 9 | 1.4 | 1.0 | 1.9 | 0.9 | 0.3 | 10.0 | 0.9 | 1.2 | 0.2 | 73.0 | 5.0 | 0.0 | SBF | | 10.2 | 10.0 | 537.0 | 464.0 | 785.0 | 785.0 | 781.0 | 776.0 | 0.0 | 0.9 | 0.0 | 0.8 |
| 29 | 10 | 3.2 | 6.2 | 7.2 | 1.0 | 2.1 | 11.0 | 2.2 | 1.2 | 0.3 | 106.0 | 40.0 | 8.0 | SBF | | 10.3 | 10.0 | 599.0 | 493.0 | 687.0 | 679.0 | 730.0 | 690.0 | 0.0 | 20.8 | 0.5 | 0.0 |
| 30 | 22 | 22.4 | 9.4 | 28.0 | 18.6 | 2.4 | 23.0 | 23.8 | 28.0 | 0.2 | 56.0 | 0.0 | 7.0 | SBF | | 10.1 | 10.0 | 516.0 | 460.0 | 660.0 | 653.0 | 583.0 | 583.0 | 0.0 | 17.4 | 0.0 | 0.8 |
| 31 | 12 | 18.7 | 12.8 | 24.9 | 12.1 | 4.4 | 13.0 | 24.9 | 12.1 | 0.1 | 37.0 | 0.0 | 3.0 | SBF | | 10.1 | 10.0 | 501.0 | 464.0 | 623.0 | 620.0 | 575.0 | 575.0 | -0.4 | 188.5 | 0.8 | 0.0 |
| 32 | 38 | 7.2 | 16.0 | 18.9 | 2.9 | 3.6 | 39.0 | 12.6 | 8.3 | 0.9 | 395.0 | 301.0 | 97.0 | SBF | 1.0 | 10.9 | 10.0 | 866.0 | 471.0 | 737.0 | 640.0 | 896.0 | 595.0 | 0.0 | 17.4 | 0.2 | 0.0 |
| 33 | 7 | 5.2 | 2.5 | 6.5 | 4.0 | 0.9 | 8.0 | 5.7 | 4.2 | 0.3 | 124.0 | 154.0 | 8.0 | SBF | | 10.5 | 10.3 | 684.0 | 560.0 | 644.0 | 636.0 | 763.0 | 609.0 | 0.0 | 15.2 | 0.7 | 0.0 |
| 34 | 5 | 15.2 | 8.4 | 18.9 | 10.5 | 2.9 | 6.0 | 16.5 | 14.0 | 0.3 | 110.0 | 0.0 | 0.0 | SBF | 1.0 | 10.5 | 10.2 | 650.0 | 540.0 | 438.0 | 438.0 | 605.0 | 605.0 | 0.0 | -1.7 | 0.2 | 0.3 |
| 35 | 9 | 5.1 | 2.9 | 6.6 | 3.7 | 1.0 | 10.0 | 3.9 | 6.6 | 0.1 | 36.0 | 0.0 | 9.0 | SBF | | 9.5 | 9.4 | 278.0 | 242.0 | 408.0 | 399.0 | 250.0 | 250.0 | 0.1 | -13.1 | 0.8 | 0.0 |
| 36 | 8 | 12.5 | 8.9 | 15.7 | 6.8 | 3.8 | 8.0 | 6.8 | 14.5 | 1.2 | 458.0 | 4.0 | 5.0 | SBF | | 10.6 | 9.4 | 707.0 | 249.0 | 284.0 | 279.0 | 474.0 | 470.0 | 0.0 | 0.8 | 0.9 | 0.0 |
| 37 | 5 | 4.8 | 1.7 | 5.7 | 4.0 | 0.6 | 6.0 | 4.3 | 5.7 | 0.3 | 136.0 | 3.0 | 0.0 | SBF | | 9.8 | 9.5 | 399.0 | 263.0 | 244.0 | 244.0 | 400.0 | 397.0 | 0.0 | 3.1 | 0.2 | 0.4 |
| 38 | 6 | 4.2 | 0.7 | 4.6 | 3.9 | 0.2 | 7.0 | 4.2 | 4.2 | 0.0 | 17.0 | 60.0 | 36.0 | SBF | | 9.6 | 9.5 | 307.0 | 290.0 | 223.0 | 187.0 | 288.0 | 228.0 | 0.0 | 7.2 | 0.1 | 0.6 |
| 39 | 12 | 4.8 | 0.8 | 5.1 | 4.3 | 0.2 | 13.0 | 4.7 | 5.1 | 0.1 | 29.0 | 0.0 | 0.0 | SBF | | 9.5 | 9.4 | 278.0 | 249.0 | 185.0 | 185.0 | 228.0 | 228.0 | 0.0 | 1.4 | 0.2 | 0.1 |
| 40 | 10 | 17.0 | 9.0 | 22.2 | 13.2 | 3.3 | 11.0 | 13.6 | 16.7 | 0.1 | 45.0 | 0.0 | 9.0 | SBF | | 9.5 | 9.3 | 260.0 | 215.0 | 184.0 | 175.0 | 233.0 | 233.0 | 0.1 | -10.9 | 0.3 | 0.1 |
| 41 | 9 | 28.5 | 17.3 | 36.8 | 19.5 | 6.0 | 10.0 | 19.5 | 35.8 | 0.1 | 42.0 | 22.0 | 15.0 | SBF | 2.0 | 9.5 | 9.3 | 260.0 | 218.0 | 176.0 | 161.0 | 229.0 | 207.0 | 0.3 | -42.5 | 0.5 | 0.0 |
| 42 | 15 | 52.0 | 85.4 | 98.7 | 13.3 | 25.2 | 15.0 | 98.7 | 22.0 | 0.2 | 78.0 | 19.0 | 0.0 | SBF | 2.0 | 9.5 | 9.3 | 278.0 | 200.0 | 46.0 | 46.0 | 248.0 | 229.0 | -0.1 | 75.6 | 0.0 | 0.7 |
| 43 | 7 | 34.0 | 56.5 | 78.3 | 21.8 | 18.6 | 8.0 | 22.8 | 29.2 | 0.1 | 44.0 | 0.0 | 0.0 | SBF | 2.0 | 9.5 | 9.4 | 275.0 | 231.0 | 46.0 | 46.0 | 208.0 | 208.0 | 0.1 | 19.7 | 0.0 | 0.9 |
| 44 | 11 | 45.4 | 105.5 | 115.1 | 9.6 | 34.9 | 12.0 | 37.2 | 14.4 | 0.2 | 67.0 | 23.0 | 0.0 | SBF | 2.0 | 9.4 | 9.2 | 249.0 | 182.0 | 46.0 | 46.0 | 208.0 | 185.0 | -0.4 | 142.8 | 0.1 | 0.3 |
| 45 | 8 | 78.1 | 131.6 | 177.3 | 45.7 | 48.7 | 8.0 | 177.3 | 129.2 | 0.1 | 40.0 | 3.0 | 0.0 | SBF | 2.0 | 9.4 | 9.2 | 228.0 | 188.0 | 46.0 | 46.0 | 167.0 | 164.0 | -1.6 | 420.8 | 0.2 | 0.2 |
| 46 | 8 | 114.7 | 45.8 | 145.2 | 99.4 | 16.8 | 6.0 | 121.1 | 113.5 | 0.2 | 47.0 | 0.0 | 0.0 | SBF | 2.0 | 9.3 | 9.1 | 203.0 | 156.0 | 46.0 | 46.0 | 31.0 | 31.0 | 0.1 | 105.2 | 0.0 | 0.9 |
| 47 | 6 | 145.5 | 151.5 | 210.3 | 58.8 | 63.1 | 4.0 | 210.3 | 58.8 | 0.9 | 242.0 | 2.0 | 0.0 | SBF | 2.0 | 9.6 | 8.7 | 315.0 | 73.0 | 46.0 | 46.0 | 105.0 | 103.0 | -0.5 | 228.4 | 0.7 | 0.1 |
| 48 | 7 | 49.1 | 173.3 | 174.0 | 0.7 | 76.3 | 6.0 | 174.0 | 0.9 | 0.0 | 8.0 | 287.0 | 0.0 | SBF | 2.0 | 9.0 | 9.0 | 139.0 | 131.0 | 46.0 | 46.0 | 394.0 | 107.0 | -22.0 | 3076.7 | 0.9 | 0.0 |
| 49 | 11 | 5.4 | 12.5 | 13.9 | 1.4 | 4.1 | 12.0 | 1.7 | 8.3 | 0.8 | 217.0 | 71.0 | 0.0 | SBF | | 9.6 | 8.8 | 320.0 | 103.0 | 46.0 | 46.0 | 187.0 | 116.0 | 0.0 | 1.9 | 0.1 | 0.3 |
| 50 | 10 | 7.0 | 28.0 | 29.4 | 1.4 | 9.5 | 11.0 | 2.4 | 21.1 | 0.3 | 83.0 | 22.0 | 12.0 | SBF | 2.0 | 9.3 | 9.0 | 209.0 | 126.0 | 172.0 | 160.0 | 182.0 | 160.0 | 0.0 | 0.5 | 0.0 | 0.1 |
| 51 | 11 | 6.2 | 13.5 | 15.2 | 1.7 | 4.8 | 10.0 | 2.1 | 6.2 | 0.2 | 49.0 | 38.0 | 7.0 | SBF | | 9.3 | 9.1 | 203.0 | 154.0 | 167.0 | 160.0 | 160.0 | 122.0 | 0.0 | 9.6 | 0.0 | 0.8 |
| 52 | 13 | 13.0 | 36.3 | 40.5 | 4.2 | 12.6 | 9.0 | 9.2 | 4.2 | 0.1 | 24.0 | 2.0 | 114.0 | SBF | 2.0 | 9.1 | 9.0 | 166.0 | 142.0 | 160.0 | 46.0 | 124.0 | 122.0 | 0.7 | -90.9 | 0.2 | 0.2 |
| 53 | 20 | 39.1 | 122.3 | 133.1 | 10.8 | 37.2 | 17.0 | 114.6 | 11.2 | 0.3 | 62.0 | 47.0 | 119.0 | SBF | 2.0 | 9.1 | 8.9 | 169.0 | 107.0 | 165.0 | 46.0 | 190.0 | 143.0 | 0.0 | 35.2 | 0.0 | 0.9 |

| EVENT ID | Hours | TurbAvg | TurbChange | TurbMax | TurbMin | TurbSTD | TurbN | TurbStart | TurbEnd | BorderStageChange | Borderflowchange | Oneidaflowchange | Sodaflowchange | HydroPeriod | Code | MaxOfBorderStage | MinOfBorderStage | MaxOfBorderFlow | MinOfBorderFlow | MaxOfSodaFlow | MinOfSodaFlow | MaxOfOneidaFlow | MinOfOneidaFlow | X-coeff | Constant | R2 | Anova Sig |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 54 | 13 | 15.0 | 71.0 | 74.4 | 3.4 | 19.4 | 12.0 | 7.9 | 18.6 | 0.4 | 114.0 | 37.0 | 0.0 | SBF | 1.0 | 9.4 | 9.0 | 249.0 | 135.0 | 165.0 | 165.0 | 187.0 | 150.0 | 0.2 | -23.4 | 0.2 | 0.1 |
| 55 | 8 | 11.1 | 53.3 | 55.1 | 1.8 | 18.7 | 8.0 | 18.4 | 1.9 | 0.1 | 36.0 | 149.0 | 2.0 | SBF | 2.0 | 9.4 | 9.3 | 242.0 | 206.0 | 165.0 | 163.0 | 390.0 | 241.0 | -0.7 | 163.9 | 0.3 | 0.2 |
| 56 | 6 | 4.6 | 4.9 | 6.9 | 2.0 | 1.8 | 7.0 | 2.0 | 5.6 | 0.4 | 160.0 | 22.0 | 4.0 | SBF | | 9.8 | 9.4 | 412.0 | 252.0 | 167.0 | 163.0 | 276.0 | 254.0 | 0.0 | -4.5 | 0.9 | 0.0 |
| 57 | 15 | 2.5 | 3.1 | 4.8 | 1.7 | 0.9 | 16.0 | 2.5 | 1.7 | 0.2 | 75.0 | 40.0 | 0.0 | SBF | | 9.4 | 9.2 | 249.0 | 174.0 | 161.0 | 161.0 | 276.0 | 236.0 | 0.0 | 4.9 | 0.1 | 0.2 |
| 58 | 5 | 2.4 | 0.3 | 2.6 | 2.3 | 0.1 | 6.0 | 2.4 | 2.3 | 0.1 | 33.0 | 95.0 | 0.0 | SBF | | 9.5 | 9.4 | 275.0 | 242.0 | 161.0 | 161.0 | 308.0 | 213.0 | 0.0 | 2.1 | 0.0 | 0.8 |
| 59 | 3 | 2.6 | 0.1 | 2.6 | 2.5 | 0.1 | 4.0 | 2.6 | 2.6 | 0.2 | 62.0 | 3.0 | 0.0 | SBF | | 9.5 | 9.4 | 307.0 | 245.0 | 161.0 | 161.0 | 213.0 | 210.0 | 0.0 | 2.7 | 0.1 | 0.6 |
| 60 | 9 | 2.9 | 0.6 | 3.1 | 2.5 | 0.2 | 10.0 | 2.5 | 2.8 | 0.2 | 50.0 | 0.0 | 0.0 | SBF | | 9.4 | 9.3 | 256.0 | 206.0 | 161.0 | 161.0 | 233.0 | 233.0 | 0.0 | 2.0 | 0.1 | 0.3 |
| 61 | 14 | 3.9 | 3.9 | 5.9 | 2.0 | 1.3 | 14.0 | 3.7 | 2.1 | 0.3 | 61.0 | 3.0 | 1.0 | SBF | | 9.3 | 9.0 | 203.0 | 142.0 | 161.0 | 160.0 | 190.0 | 187.0 | 0.0 | 8.3 | 0.2 | 0.1 |
| 62 | 6 | 3.4 | 3.6 | 6.0 | 2.4 | 1.2 | 7.0 | 2.8 | 2.6 | 0.1 | 18.0 | 0.0 | 1.0 | SBF | | 9.3 | 9.2 | 206.0 | 188.0 | 161.0 | 160.0 | 185.0 | 185.0 | 0.0 | -4.5 | 0.0 | 0.6 |
| 63 | 6 | 4.8 | 1.4 | 5.7 | 4.3 | 0.5 | 7.0 | 4.5 | 5.7 | 0.1 | 20.0 | 0.0 | 1.0 | SBF | | 9.2 | 9.2 | 197.0 | 177.0 | 161.0 | 160.0 | 172.0 | 172.0 | 0.0 | 2.3 | 0.1 | 0.6 |
| 64 | 32 | 11.4 | 14.2 | 21.4 | 7.2 | 3.2 | 33.0 | 9.0 | 21.4 | 0.1 | 43.0 | 26.0 | 114.0 | SBF | | 9.3 | 9.2 | 231.0 | 188.0 | 160.0 | 46.0 | 208.0 | 182.0 | 0.1 | -1.1 | 0.1 | 0.1 |
| 65 | 7 | 27.5 | 27.5 | 44.8 | 17.3 | 9.1 | 8.0 | 17.3 | 36.3 | 0.3 | 109.0 | 2.0 | 0.0 | SBF | 2.0 | 9.5 | 9.2 | 303.0 | 194.0 | 46.0 | 46.0 | 259.0 | 257.0 | 0.2 | -11.3 | 0.5 | 0.0 |
| 67 | 2 | 1.6 | 1.0 | 2.2 | 1.2 | 0.6 | 3.0 | 2.2 | 1.2 | 0.1 | 53.0 | 0.0 | 0.0 | SBF | | 9.8 | 9.6 | 409.0 | 356.0 | 46.0 | 46.0 | 259.0 | 259.0 | 0.0 | 9.2 | 1.0 | 0.1 |
| 71 | 13 | 0.8 | 1.7 | 1.8 | 0.1 | 0.5 | 12.0 | 0.1 | 1.2 | 0.5 | 182.0 | 118.0 | 0.0 | SBF | | 9.7 | 9.2 | 370.0 | 188.0 | 46.0 | 46.0 | 318.0 | 200.0 | 0.0 | -0.8 | 0.6 | 0.0 |
| 72 | 2 | 1.7 | 0.9 | 2.1 | 1.2 | 0.5 | 3.0 | 1.2 | 1.8 | 0.0 | 3.0 | 0.0 | 0.0 | SBF | 1.0 | 9.3 | 9.3 | 231.0 | 228.0 | 46.0 | 46.0 | 175.0 | 175.0 | 0.2 | -44.1 | 0.6 | 0.5 |
| 73 | 13 | 2.8 | 1.7 | 3.8 | 2.1 | 0.5 | 14.0 | 2.4 | 3.5 | 0.5 | 176.0 | 90.0 | 0.0 | SBF | | 9.7 | 9.2 | 370.0 | 194.0 | 46.0 | 46.0 | 314.0 | 224.0 | 0.0 | 1.3 | 0.5 | 0.0 |
| 74 | 4 | 3.1 | 0.3 | 3.2 | 2.9 | 0.2 | 5.0 | 2.9 | 3.2 | 0.1 | 32.0 | 91.0 | 0.0 | SBF | | 9.3 | 9.2 | 235.0 | 203.0 | 46.0 | 46.0 | 311.0 | 220.0 | 0.0 | 1.8 | 0.2 | 0.4 |
| 75 | 4 | 3.2 | 0.3 | 3.4 | 3.1 | 0.1 | 5.0 | 3.4 | 3.2 | 0.2 | 68.0 | 5.0 | 0.0 | SBF | | 9.6 | 9.4 | 320.0 | 252.0 | 46.0 | 46.0 | 220.0 | 215.0 | 0.0 | 3.8 | 0.2 | 0.4 |
| 76 | 4 | 3.2 | 0.3 | 3.4 | 3.1 | 0.1 | 5.0 | 3.1 | 3.3 | 0.1 | 26.0 | 3.0 | 0.0 | SBF | | 9.5 | 9.4 | 278.0 | 252.0 | 46.0 | 46.0 | 150.0 | 147.0 | 0.0 | 0.4 | 0.7 | 0.1 |
| 77 | 9 | 3.8 | 2.3 | 5.4 | 3.1 | 0.7 | 10.0 | 3.9 | 3.6 | 0.1 | 34.0 | 109.0 | 0.0 | SBF | | 9.2 | 9.1 | 203.0 | 169.0 | 46.0 | 46.0 | 249.0 | 140.0 | 0.0 | 4.5 | 0.0 | 0.9 |
| 78 | 9 | 5.4 | 2.8 | 6.7 | 3.9 | 0.9 | 10.0 | 3.9 | 5.7 | 0.3 | 149.0 | 3.0 | 0.0 | SBF | | 9.8 | 9.4 | 416.0 | 267.0 | 46.0 | 46.0 | 301.0 | 298.0 | 0.0 | 1.4 | 0.4 | 0.1 |
| 79 | 8 | 2.9 | 0.6 | 3.2 | 2.6 | 0.2 | 9.0 | 2.9 | 3.0 | 0.2 | 81.0 | 2.0 | 0.0 | SBF | 1.0 | 9.6 | 9.4 | 333.0 | 252.0 | 46.0 | 46.0 | 233.0 | 231.0 | 0.0 | 2.4 | 0.0 | 0.6 |
| 80 | 6 | 11.6 | 35.1 | 37.4 | 2.3 | 12.7 | 7.0 | 2.4 | 37.4 | 0.5 | 207.0 | 98.0 | 0.0 | SBF | 1.0 | 10.1 | 9.6 | 553.0 | 346.0 | 46.0 | 46.0 | 409.0 | 311.0 | 0.1 | -36.4 | 0.5 | 0.1 |
| 81 | 11 | 9.9 | 11.8 | 17.3 | 5.5 | 4.1 | 11.0 | 5.5 | 17.3 | 0.2 | 87.0 | 3.0 | 114.0 | SBF | 1.0 | 9.9 | 9.6 | 457.0 | 370.0 | 160.0 | 46.0 | 229.0 | 226.0 | 0.1 | -42.6 | 0.8 | 0.0 |
| 82 | 5 | 56.1 | 57.1 | 78.5 | 21.4 | 22.3 | 6.0 | 21.4 | 78.5 | 1.2 | 458.0 | 636.0 | 0.0 | SBF | 1.0 | 11.0 | 9.8 | 891.0 | 433.0 | 46.0 | 46.0 | 1061.0 | 425.0 | 0.1 | 3.3 | 0.6 | 0.1 |
| 83 | 11 | 15.8 | 26.7 | 36.8 | 10.1 | 7.9 | 12.0 | 10.9 | 12.3 | 0.3 | 101.0 | 5.0 | 7.0 | SBF | 1.0 | 10.4 | 10.1 | 631.0 | 530.0 | 445.0 | 438.0 | 584.0 | 579.0 | 0.0 | 20.8 | 0.0 | 0.9 |
| 84 | 14 | 13.4 | 7.4 | 16.9 | 9.5 | 1.9 | 15.0 | 11.4 | 16.9 | 0.3 | 130.0 | 58.0 | 1.0 | SBF | 1.0 | 10.7 | 10.4 | 761.0 | 631.0 | 439.0 | 438.0 | 670.0 | 612.0 | 0.0 | 3.4 | 0.1 | 0.2 |
| 85 | 8 | 9.8 | 11.6 | 18.6 | 7.0 | 4.0 | 9.0 | 7.0 | 18.6 | 0.3 | 129.0 | | 0.0 | SBF | 1.0 | 9.8 | 9.5 | 419.0 | 290.0 | 163.0 | 163.0 | | | 0.0 | -6.8 | 0.2 | 0.2 |
| 86 | 9 | 8.6 | 4.1 | 10.3 | 6.2 | 1.2 | 10.0 | 6.2 | 8.5 | 0.5 | 215.0 | | 0.0 | SBF | | 9.9 | 9.4 | 486.0 | 271.0 | 163.0 | 163.0 | | | 0.0 | 3.1 | 0.6 | 0.0 |
| 87 | 8 | 3.3 | 0.8 | 3.7 | 2.9 | 0.3 | 9.0 | 3.4 | 3.2 | 0.1 | 47.0 | 52.0 | 0.0 | WBF | | 9.6 | 9.5 | 333.0 | 286.0 | 164.0 | 164.0 | 315.0 | 263.0 | 0.0 | 4.3 | 0.0 | 0.6 |
| 88 | 3 | 3.3 | 0.1 | 3.4 | 3.3 | 0.1 | 4.0 | 3.3 | 3.4 | 0.1 | 38.0 | 0.0 | 0.0 | WBF | | 9.6 | 9.6 | 375.0 | 337.0 | 164.0 | 164.0 | 286.0 | 286.0 | 0.0 | 2.5 | 0.5 | 0.3 |
| 89 | 10 | 4.0 | 1.0 | 4.3 | 3.3 | 0.3 | 11.0 | 3.6 | 3.9 | 0.1 | 37.0 | 6.0 | 0.0 | WBF | | 9.5 | 9.5 | 315.0 | 278.0 | 167.0 | 167.0 | 270.0 | 264.0 | 0.0 | -0.5 | 0.3 | 0.1 |
| 90 | 9 | 25.1 | 28.8 | 39.7 | 10.9 | 9.6 | 10.0 | 34.1 | 10.9 | 0.3 | 133.0 | 25.0 | 94.0 | WBF | 1.0 | 9.7 | 9.5 | 419.0 | 286.0 | 541.0 | 447.0 | 353.0 | 328.0 | -0.1 | 58.5 | 0.3 | 0.1 |
| 91 | 11 | 43.5 | 140.1 | 150.8 | 10.7 | 39.2 | 12.0 | 39.9 | 57.8 | 1.1 | 392.0 | 408.0 | 4.0 | WBF | 2.0 | 10.8 | 9.8 | 825.0 | 433.0 | 170.0 | 166.0 | 848.0 | 440.0 | 0.2 | -53.2 | 0.4 | 0.0 |
| 92 | 6 | 7.8 | 0.7 | 8.2 | 7.5 | 0.3 | 7.0 | 7.5 | 7.5 | 0.1 | 45.0 | 55.0 | 0.0 | WBF | | 9.7 | 9.6 | 396.0 | 351.0 | 167.0 | 167.0 | 301.0 | 246.0 | 0.0 | 7.1 | 0.0 | 0.8 |
| 93 | 5 | 8.5 | 0.6 | 8.9 | 8.3 | 0.2 | 6.0 | 8.3 | 8.3 | 0.1 | 44.0 | 0.0 | 0.0 | WBF | | 9.6 | 9.5 | 351.0 | 307.0 | 167.0 | 167.0 | 292.0 | 292.0 | 0.0 | 7.0 | 0.1 | 0.6 |
| 94 | 7 | 5.4 | 0.4 | 5.6 | 5.2 | 0.2 | 8.0 | 5.3 | 5.6 | 0.1 | 25.0 | 12.0 | 3.0 | WBF | | 9.5 | 9.4 | 303.0 | 278.0 | 172.0 | 169.0 | 282.0 | 270.0 | 0.0 | 3.4 | 0.2 | 0.3 |
| 95 | 12 | 5.4 | 0.6 | 5.7 | 5.1 | 0.2 | 13.0 | 5.1 | 5.7 | 0.1 | 40.0 | 53.0 | 0.0 | WBF | | 9.5 | 9.4 | 311.0 | 271.0 | 169.0 | 169.0 | 301.0 | 248.0 | 0.0 | 2.7 | 0.4 | 0.0 |
| 96 | 10 | 5.8 | 1.8 | 6.9 | 5.1 | 0.6 | 11.0 | 5.2 | 5.7 | 0.1 | 43.0 | 14.0 | 1.0 | WBF | | 9.6 | 9.5 | 337.0 | 294.0 | 169.0 | 168.0 | 312.0 | 298.0 | 0.0 | 4.2 | 0.0 | 0.7 |
| 97 | 6 | 9.4 | 5.7 | 13.1 | 7.4 | 1.8 | 7.0 | 7.4 | 8.3 | 0.4 | 178.0 | 25.0 | 110.0 | WBF | | 9.7 | 9.3 | 396.0 | 218.0 | 278.0 | 168.0 | 269.0 | 244.0 | 0.0 | 5.4 | 0.2 | 0.3 |
| 98 | 5 | 7.4 | 3.0 | 8.9 | 5.9 | 1.4 | 6.0 | 5.9 | 8.9 | 0.1 | 23.0 | 68.0 | 3.0 | WBF | | 9.5 | 9.4 | 290.0 | 267.0 | 193.0 | 190.0 | 316.0 | 248.0 | 0.1 | -33.1 | 0.9 | 0.0 |
| 99 | 9 | 12.6 | 6.8 | 15.5 | 8.7 | 2.5 | 10.0 | 8.7 | 14.1 | 0.5 | 222.0 | 47.0 | 0.0 | WBF | | 10.0 | 9.5 | 512.0 | 290.0 | 190.0 | 190.0 | 483.0 | 436.0 | 0.0 | -0.4 | 0.9 | 0.0 |
| 100 | 3 | 6.1 | 0.5 | 6.4 | 5.9 | 0.2 | 4.0 | 5.9 | 6.0 | 0.1 | 53.0 | 27.0 | 0.0 | WBF | | 9.6 | 9.6 | 390.0 | 337.0 | 190.0 | 190.0 | 331.0 | 304.0 | 0.0 | 6.6 | 0.0 | 0.8 |
| 101 | 2 | 5.8 | 2.5 | 7.2 | 4.7 | 1.3 | 3.0 | 7.2 | 4.7 | 0.2 | 55.0 | 0.0 | 0.0 | WBF | | 9.5 | 9.3 | 290.0 | 235.0 | 189.0 | 189.0 | 260.0 | 260.0 | 0.0 | 17.9 | 1.0 | 0.0 |
| 102 | 8 | 7.4 | 2.4 | 9.2 | 6.8 | 0.7 | 9.0 | 7.5 | 6.8 | 0.2 | 123.0 | 3.0 | 19.0 | WBF | | 9.6 | 9.4 | 390.0 | 267.0 | 189.0 | 170.0 | 263.0 | 260.0 | 0.0 | 9.0 | 0.1 | 0.5 |
| 103 | 8 | 6.1 | 1.4 | 7.0 | 5.6 | 0.5 | 9.0 | 7.0 | 6.4 | 0.2 | 68.0 | 0.0 | 0.0 | WBF | | 9.9 | 9.7 | 464.0 | 396.0 | 170.0 | 170.0 | 266.0 | 266.0 | 0.0 | 7.1 | 0.0 | 0.7 |
| 104 | 3 | 14.0 | 11.2 | 19.4 | 8.2 | 4.9 | 4.0 | 8.2 | 19.4 | 0.3 | 162.0 | 0.0 | 5.0 | WBF | | 9.8 | 9.4 | 433.0 | 271.0 | 175.0 | 170.0 | 266.0 | 266.0 | 0.1 | -6.7 | 0.9 | 0.0 |
| 105 | 4 | 6.5 | 0.7 | 6.9 | 6.2 | 0.3 | 5.0 | 6.2 | 6.3 | 0.1 | 44.0 | 0.0 | 0.0 | WBF | | 9.5 | 9.4 | 315.0 | 271.0 | 170.0 | 170.0 | 266.0 | 266.0 | 0.0 | 7.3 | 0.0 | 0.8 |
| 106 | 5 | 7.9 | 3.2 | 9.4 | 6.2 | 1.1 | 6.0 | 6.2 | 7.2 | 0.2 | 120.0 | 0.0 | 2.0 | WBF | | 9.7 | 9.5 | 406.0 | 286.0 | 170.0 | 168.0 | 266.0 | 266.0 | 0.0 | 5.5 | 0.1 | 0.5 |
| 107 | 6 | 9.1 | 5.0 | 13.0 | 8.0 | 1.8 | 7.0 | 8.4 | 8.9 | 0.0 | 33.0 | 0.0 | 0.0 | WBF | | 9.6 | 9.6 | 361.0 | 328.0 | 170.0 | 170.0 | 267.0 | 267.0 | 0.0 | -0.7 | 0.0 | 0.7 |
| 108 | 7 | 8.1 | 2.3 | 9.4 | 7.1 | 0.8 | 8.0 | 9.4 | 7.8 | 0.0 | 27.0 | 29.0 | 3.0 | WBF | | 9.6 | 9.6 | 351.0 | 324.0 | 170.0 | 167.0 | 314.0 | 285.0 | 0.0 | 13.4 | 0.0 | 0.7 |
| 109 | 6 | 7.4 | 2.0 | 8.5 | 6.5 | 0.8 | 7.0 | 7.5 | 8.1 | 0.1 | 66.0 | 8.0 | 2.0 | WBF | | 9.7 | 9.6 | 412.0 | 346.0 | 172.0 | 170.0 | 356.0 | 348.0 | 0.0 | -0.3 | 0.5 | 0.1 |
| 110 | 6 | 11.7 | 5.5 | 13.3 | 7.8 | 2.2 | 7.0 | 7.8 | 13.0 | 0.3 | 92.0 | 0.0 | 4.0 | WBF | | 10.0 | 9.7 | 508.0 | 416.0 | 174.0 | 170.0 | 493.0 | 493.0 | 0.1 | -13.8 | 0.8 | 0.0 |

| EVENT ID | Hours | TurbAvg | TurbChange | TurbMax | TurbMin | TurbSTD | TurbN | TurbStart | TurbEnd | BorderStageChange | Borderflowchange | Oneidaflowchange | Sodaflowchange | HydroPeriod | Code | MaxOfBorderStage | MinOfBorderStage | MaxOfBorderFlow | MinOfBorderFlow | MaxOfSodaFlow | MinOfSodaFlow | MaxOfOneidaFlow | MinOfOneidaFlow | X-coeff | Constant | R2 | Anova Sig |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 111 | 2 | 10.1 | 1.9 | 11.1 | 9.2 | 1.0 | 3.0 | 9.2 | 11.1 | 0.1 | 24.0 | 136.0 | 0.0 | WBF | | 9.8 | 9.8 | 453.0 | 429.0 | 169.0 | 169.0 | 433.0 | 297.0 | 0.1 | -21.9 | 0.9 | 0.2 |
| 112 | 2 | 6.5 | 0.2 | 6.6 | 6.4 | 0.1 | 3.0 | 6.5 | 6.6 | 0.0 | 17.0 | 35.0 | 0.0 | WBF | | 9.6 | 9.5 | 337.0 | 320.0 | 169.0 | 169.0 | 314.0 | 279.0 | 0.0 | 3.8 | 0.5 | 0.5 |
| 113 | 14 | 6.2 | 2.6 | 7.6 | 5.0 | 0.8 | 15.0 | 5.2 | 6.6 | 0.1 | 52.0 | 16.0 | 2.0 | WBF | | 9.6 | 9.5 | 346.0 | 294.0 | 171.0 | 169.0 | 314.0 | 298.0 | 0.0 | -5.6 | 0.6 | 0.0 |
| 114 | 8 | 9.2 | 4.2 | 11.7 | 7.5 | 1.4 | 9.0 | 7.5 | 11.1 | 0.2 | 88.0 | 10.0 | 3.0 | WBF | | 9.7 | 9.6 | 416.0 | 328.0 | 171.0 | 168.0 | 348.0 | 338.0 | 0.0 | -1.7 | 0.3 | 0.1 |
| 115 | 2 | 11.6 | 4.5 | 14.4 | 9.9 | 2.4 | 3.0 | 9.9 | 14.4 | 0.1 | 52.0 | 0.0 | 0.0 | WBF | | 9.6 | 9.6 | 380.0 | 328.0 | 168.0 | 168.0 | 248.0 | 248.0 | 0.1 | -16.6 | 0.7 | 0.3 |
| 116 | 23 | 5.8 | 6.3 | 9.4 | 3.1 | 1.4 | 24.0 | 4.4 | 4.5 | 0.5 | 200.0 | 76.0 | 2.0 | WBF | | 9.9 | 9.4 | 471.0 | 271.0 | 170.0 | 168.0 | 324.0 | 248.0 | 0.0 | 4.1 | 0.0 | 0.4 |
| 117 | 8 | 18.9 | 29.6 | 37.5 | 7.9 | 9.0 | 9.0 | 14.4 | 18.5 | 0.4 | 167.0 | 115.0 | 4.0 | WBF | 2.0 | 9.7 | 9.4 | 412.0 | 245.0 | 170.0 | 166.0 | 425.0 | 310.0 | 0.1 | -10.6 | 0.4 | 0.1 |
| 118 | 6 | 6.9 | 3.5 | 8.9 | 5.4 | 1.3 | 7.0 | 5.4 | 8.9 | 0.2 | 61.0 | 69.0 | 0.0 | WBF | | 9.8 | 9.7 | 457.0 | 396.0 | 170.0 | 170.0 | 424.0 | 355.0 | 0.1 | -16.2 | 1.0 | 0.0 |
| 119 | 335 | 9.8 | 9.4 | 14.2 | 4.8 | 4.0 | 11.0 | 13.2 | 4.9 | 0.3 | 135.0 | 65.0 | 1.0 | WBF | | 9.8 | 9.5 | 433.0 | 298.0 | 170.0 | 169.0 | 323.0 | 258.0 | 0.1 | -16.6 | 0.9 | 0.0 |
| 120 | 8 | 5.3 | 1.3 | 6.1 | 4.8 | 0.4 | 9.0 | 4.8 | 5.4 | 0.2 | 104.0 | 0.0 | 2.0 | WBF | | 9.6 | 9.5 | 390.0 | 286.0 | 170.0 | 168.0 | 258.0 | 258.0 | 0.0 | 3.1 | 0.4 | 0.1 |
| 121 | 11 | 8.7 | 7.0 | 13.2 | 6.2 | 1.9 | 12.0 | 6.2 | 8.9 | 0.2 | 114.0 | 18.0 | 2.0 | WBF | | 9.8 | 9.5 | 429.0 | 315.0 | 170.0 | 168.0 | 354.0 | 336.0 | 0.0 | -3.8 | 0.5 | 0.0 |
| 122 | 9 | 9.5 | 3.0 | 10.8 | 7.8 | 0.9 | 10.0 | 7.8 | 10.8 | 0.1 | 72.0 | 3.0 | 0.0 | WBF | | 9.7 | 9.6 | 409.0 | 337.0 | 170.0 | 170.0 | 325.0 | 322.0 | 0.0 | -1.1 | 0.6 | 0.0 |
| 123 | 7 | 6.9 | 1.4 | 7.5 | 6.1 | 0.5 | 8.0 | 7.2 | 6.8 | 0.2 | 122.0 | 0.0 | 0.0 | WBF | | 9.7 | 9.5 | 416.0 | 294.0 | 168.0 | 168.0 | 289.0 | 289.0 | 0.0 | 9.7 | 0.7 | 0.0 |
| 124 | 14 | 10.7 | 8.9 | 15.6 | 6.7 | 2.9 | 15.0 | 8.3 | 15.0 | 0.4 | 150.0 | 153.0 | 0.0 | WBF | | 10.0 | 9.6 | 501.0 | 351.0 | 169.0 | 169.0 | 468.0 | 315.0 | 0.1 | -11.6 | 0.9 | 0.0 |
| 125 | 15 | 14.2 | 12.7 | 22.1 | 9.4 | 4.3 | 16.0 | 10.0 | 11.6 | 0.5 | 227.0 | 170.0 | 0.0 | WBF | | 9.9 | 9.4 | 490.0 | 263.0 | 170.0 | 170.0 | 430.0 | 260.0 | 0.0 | 0.6 | 0.5 | 0.0 |
| 126 | 4 | 5.3 | 1.3 | 6.1 | 4.8 | 0.6 | 5.0 | 5.8 | 5.0 | 0.1 | 55.0 | 0.0 | 0.0 | WBF | | 9.6 | 9.6 | 383.0 | 328.0 | 170.0 | 170.0 | 284.0 | 284.0 | 0.0 | 9.4 | 0.1 | 0.5 |
| 127 | 8 | 16.0 | 15.2 | 26.9 | 11.7 | 5.2 | 9.0 | 11.7 | 21.4 | 0.2 | 88.0 | 4.0 | 3.0 | WBF | | 9.8 | 9.6 | 439.0 | 351.0 | 173.0 | 170.0 | 359.0 | 355.0 | 0.0 | 9.0 | 0.0 | 0.8 |
| 128 | 6 | 10.3 | 2.4 | 11.4 | 9.0 | 0.8 | 7.0 | 10.3 | 9.0 | 0.1 | 34.0 | 4.0 | 0.0 | WBF | | 9.8 | 9.7 | 436.0 | 402.0 | 172.0 | 172.0 | 338.0 | 334.0 | 0.0 | 11.1 | 0.0 | 1.0 |
| 129 | 23 | 7.3 | 5.3 | 10.0 | 4.7 | 1.8 | 24.0 | 9.8 | 6.0 | 0.1 | 22.0 | 10.0 | 0.0 | WBF | | 9.7 | 9.6 | 412.0 | 390.0 | 172.0 | 172.0 | 290.0 | 280.0 | -0.1 | 44.2 | 0.1 | 0.1 |
| 130 | 8 | 12.1 | 8.7 | 17.0 | 8.3 | 2.9 | 9.0 | 10.3 | 17.0 | 0.2 | 58.0 | 73.0 | 0.0 | LBR | | 9.9 | 9.7 | 464.0 | 406.0 | 172.0 | 172.0 | 352.0 | 279.0 | 0.1 | -36.8 | 0.9 | 0.0 |
| 131 | 5 | 19.2 | 10.8 | 23.8 | 13.0 | 4.1 | 6.0 | 13.0 | 23.8 | 0.2 | 85.0 | 78.0 | 0.0 | LBR | | 9.9 | 9.6 | 475.0 | 390.0 | 172.0 | 172.0 | 360.0 | 282.0 | 0.1 | -20.5 | 0.7 | 0.0 |
| 132 | 19 | 66.4 | 39.3 | 80.2 | 40.9 | 12.8 | 20.0 | 42.7 | 76.7 | 0.8 | 289.0 | 297.0 | 7.0 | LBR | | 10.8 | 10.0 | 812.0 | 523.0 | 620.0 | 613.0 | 710.0 | 413.0 | 0.1 | -31.2 | 0.9 | 0.0 |
| 133 | 6 | 121.8 | 31.3 | 135.6 | 104.3 | 12.5 | 7.0 | 104.3 | 117.0 | 0.3 | 124.0 | 5.0 | 0.0 | LBR | | 11.1 | 10.7 | 916.0 | 792.0 | 606.0 | 606.0 | 787.0 | 782.0 | 0.2 | -61.3 | 0.6 | 0.0 |
| 134 | 15 | 119.1 | 196.3 | 278.3 | 82.0 | 56.5 | 16.0 | 86.4 | 278.3 | 0.3 | 97.0 | 5.0 | 0.0 | LBR | 1.0 | 11.3 | 11.0 | 1010.0 | 913.0 | 606.0 | 606.0 | 792.0 | 787.0 | 1.7 | -1509.2 | 0.8 | 0.0 |
| 135 | 6 | 225.7 | 26.7 | 237.7 | 211.0 | 10.3 | 7.0 | 231.3 | 237.7 | 0.1 | 40.0 | 5.0 | 0.0 | LBR | 1.0 | 11.5 | 11.4 | 1060.0 | 1020.0 | 606.0 | 606.0 | 792.0 | 787.0 | 0.2 | -3.6 | 0.1 | 0.4 |
| 136 | 5 | 362.9 | 237.2 | 512.8 | 275.6 | 95.2 | 6.0 | 275.6 | 512.8 | 0.7 | 140.0 | 6.0 | 0.0 | LBR | 1.0 | 11.9 | 11.2 | 1190.0 | 1050.0 | 606.0 | 606.0 | 932.0 | 926.0 | 1.7 | -1507.8 | 0.9 | 0.0 |
| 137 | 20 | 233.4 | 371.3 | 490.2 | 118.9 | 110.4 | 21.0 | 120.8 | 490.2 | 0.5 | 177.0 | 5.0 | 6.0 | LBR | 1.0 | 11.5 | 11.0 | 1080.0 | 903.0 | 336.0 | 330.0 | 670.0 | 665.0 | 1.8 | -1493.1 | 0.8 | 0.0 |
| 138 | 10 | 106.6 | 83.3 | 143.4 | 60.1 | 24.0 | 11.0 | 60.1 | 83.1 | 1.7 | 600.0 | 46.0 | 2.0 | LBR | | 11.7 | 10.0 | 1120.0 | 520.0 | 824.0 | 822.0 | 1095.0 | 1049.0 | 0.0 | 78.5 | 0.1 | 0.5 |
| 139 | 11 | 84.9 | 84.9 | 133.9 | 49.0 | 30.8 | 12.0 | 50.9 | 133.9 | 0.8 | 290.0 | 138.0 | 2.0 | LBR | 1.0 | 12.4 | 11.6 | 1380.0 | 1090.0 | 827.0 | 825.0 | 1280.0 | 1142.0 | 0.3 | -268.9 | 0.9 | 0.0 |
| 140 | 44 | 96.6 | 662.7 | 715.8 | 53.1 | 99.3 | 45.0 | 54.2 | 119.5 | 2.1 | 770.0 | 839.0 | 31.0 | LBR | 1.0 | 13.6 | 11.5 | 1840.0 | 1070.0 | 1132.0 | 1101.0 | 1843.0 | 1004.0 | 0.1 | -74.6 | 0.1 | 0.1 |
| 141 | 5 | 88.0 | 11.6 | 91.7 | 80.1 | 5.0 | 6.0 | 91.4 | 83.2 | 0.3 | 120.0 | 0.0 | 0.0 | LBR | | 13.2 | 12.9 | 1670.0 | 1550.0 | 1114.0 | 1114.0 | 1502.0 | 1502.0 | -0.1 | 226.1 | 0.6 | 0.1 |
| 142 | 15 | 67.0 | 19.9 | 78.8 | 58.9 | 6.0 | 16.0 | 66.5 | 73.5 | 1.1 | 400.0 | 506.0 | 10.0 | LBR | | 13.1 | 12.0 | 1640.0 | 1240.0 | 1112.0 | 1102.0 | 1749.0 | 1243.0 | 0.0 | 16.4 | 0.6 | 0.0 |
| 143 | 4 | 50.3 | 11.3 | 55.7 | 44.4 | 4.4 | 5.0 | 50.9 | 44.4 | 0.4 | 130.0 | 123.0 | 0.0 | LBR | | 12.8 | 12.5 | 1530.0 | 1400.0 | 1092.0 | 1092.0 | 1528.0 | 1405.0 | 0.0 | 115.9 | 0.2 | 0.4 |
| 144 | 3 | 62.3 | 8.3 | 65.9 | 57.6 | 3.5 | 4.0 | 63.3 | 57.6 | 0.5 | 167.0 | 397.0 | 0.0 | LBR | | 11.4 | 10.9 | 1020.0 | 853.0 | 321.0 | 321.0 | 1072.0 | 675.0 | 0.0 | 90.6 | 0.4 | 0.4 |
| 145 | 11 | 58.1 | 27.0 | 71.5 | 44.5 | 9.3 | 12.0 | 71.5 | 44.5 | 1.1 | 350.0 | 526.0 | 5.0 | LBR | 1.0 | 12.1 | 11.1 | 1270.0 | 920.0 | 325.0 | 320.0 | 1177.0 | 651.0 | -0.1 | 148.6 | 0.8 | 0.0 |
| 146 | 7 | 53.8 | 11.5 | 60.0 | 48.5 | 3.6 | 8.0 | 52.0 | 48.5 | 0.7 | 245.0 | 5.0 | 9.0 | LBR | | 11.6 | 10.9 | 1090.0 | 845.0 | 915.0 | 906.0 | 1049.0 | 1044.0 | 0.0 | 72.3 | 0.2 | 0.3 |
| 147 | 13 | 48.8 | 20.9 | 63.5 | 42.6 | 7.3 | 14.0 | 44.0 | 55.7 | 1.1 | 370.0 | 546.0 | 725.0 | LBR | | 12.6 | 11.5 | 1430.0 | 1060.0 | 912.0 | 187.0 | 1595.0 | 1049.0 | 0.1 | -15.1 | 0.7 | 0.0 |
| 148 | 9 | 41.9 | 6.7 | 46.2 | 39.5 | 2.5 | 10.0 | 39.6 | 44.2 | 0.9 | 320.0 | 408.0 | 0.0 | LBR | | 12.5 | 11.6 | 1420.0 | 1100.0 | 183.0 | 183.0 | 1609.0 | 1201.0 | 0.0 | 17.1 | 0.6 | 0.0 |
| 149 | 32 | 64.2 | 88.2 | 122.1 | 33.9 | 30.0 | 33.0 | 33.9 | 90.5 | 1.5 | 523.0 | 808.0 | 1.0 | LBR | 1.0 | 12.0 | 10.5 | 1230.0 | 707.0 | 183.0 | 182.0 | 1213.0 | 405.0 | 0.2 | -90.2 | 0.8 | 0.0 |
| 150 | 8 | 87.1 | 42.9 | 106.6 | 63.7 | 14.7 | 9.0 | 63.7 | 84.0 | 1.8 | 632.0 | 476.0 | 2.0 | LBR | 1.0 | 12.6 | 10.8 | 1440.0 | 808.0 | 825.0 | 823.0 | 1463.0 | 987.0 | 0.0 | 54.6 | 0.2 | 0.2 |
| 151 | 4 | 60.5 | 8.4 | 64.2 | 55.8 | 3.5 | 5.0 | 62.6 | 55.8 | 0.6 | 230.0 | 473.0 | 7.0 | LBR | 1.0 | 12.7 | 12.1 | 1480.0 | 1250.0 | 823.0 | 816.0 | 1568.0 | 1095.0 | 0.0 | 99.9 | 0.6 | 0.1 |
| 152 | 4 | 67.6 | 8.6 | 71.6 | 63.0 | 3.7 | 5.0 | 63.0 | 68.1 | 0.7 | 260.0 | 473.0 | 0.0 | LBR | 1.0 | 12.9 | 12.2 | 1550.0 | 1290.0 | 814.0 | 814.0 | 1568.0 | 1095.0 | 0.0 | 31.1 | 0.5 | 0.2 |
| 153 | 7 | 55.6 | 11.4 | 61.5 | 50.1 | 4.0 | 8.0 | 50.2 | 55.1 | 1.1 | 390.0 | 119.0 | 0.0 | LBR | | 13.1 | 12.1 | 1650.0 | 1260.0 | 812.0 | 812.0 | 1582.0 | 1463.0 | 0.0 | 31.2 | 0.4 | 0.1 |
| 154 | 5 | 51.6 | 11.3 | 56.1 | 44.8 | 3.9 | 6.0 | 50.9 | 44.8 | 0.8 | 280.0 | 475.0 | 0.0 | LBR | | 13.2 | 12.4 | 1650.0 | 1370.0 | 803.0 | 803.0 | 1542.0 | 1067.0 | 0.0 | 70.3 | 0.1 | 0.5 |
| 155 | 14 | 132.6 | 164.6 | 212.0 | 47.4 | 60.4 | 15.0 | 47.5 | 211.2 | 2.2 | 820.0 | 710.0 | 0.0 | LBR | 1.0 | 14.6 | 12.5 | 2260.0 | 1440.0 | 733.0 | 733.0 | 1720.0 | 1010.0 | 0.2 | -195.4 | 0.9 | 0.0 |
| 156 | 4 | 91.6 | 14.9 | 97.9 | 83.0 | 5.8 | 5.0 | 93.5 | 83.0 | 0.6 | 230.0 | 481.0 | 89.0 | LBR | 1.0 | 13.4 | 12.8 | 1730.0 | 1500.0 | 729.0 | 640.0 | 1582.0 | 1101.0 | 0.0 | 170.7 | 0.6 | 0.1 |
| 157 | 5 | 46.7 | 8.5 | 50.9 | 42.4 | 3.1 | 6.0 | 44.6 | 42.4 | 0.6 | 220.0 | 191.0 | 0.0 | UBR | | 12.3 | 11.7 | 1340.0 | 1120.0 | 454.0 | 454.0 | 1087.0 | 896.0 | 0.0 | 58.0 | 0.1 | 0.6 |
| 158 | 16 | 89.3 | 316.7 | 352.4 | 35.7 | 91.4 | 17.0 | 36.1 | 58.6 | 1.2 | 394.0 | 455.0 | 7.0 | UBR | 1.0 | 12.4 | 11.3 | 1380.0 | 986.0 | 692.0 | 685.0 | 1162.0 | 707.0 | 0.2 | -145.7 | 0.1 | 0.2 |
| 159 | 7 | 46.7 | 14.0 | 52.5 | 38.5 | 4.9 | 8.0 | 38.5 | 51.9 | 0.5 | 170.0 | 74.0 | 0.0 | UBR | | 12.9 | 12.4 | 1550.0 | 1380.0 | 689.0 | 689.0 | 1331.0 | 1257.0 | 0.1 | -82.8 | 0.9 | 0.0 |
| 160 | 9 | 56.3 | 28.9 | 76.5 | 47.6 | 10.3 | 10.0 | 76.5 | 51.6 | 1.5 | 560.0 | 447.0 | 2.0 | UBR | 1.0 | 13.5 | 12.0 | 1770.0 | 1210.0 | 689.0 | 687.0 | 1591.0 | 1144.0 | 0.0 | 106.2 | 0.4 | 0.1 |
| 161 | 10 | 77.9 | 59.5 | 117.1 | 57.6 | 20.4 | 11.0 | 62.6 | 67.5 | 0.9 | 340.0 | 344.0 | 1.0 | UBR | 1.0 | 13.9 | 13.0 | 1950.0 | 1610.0 | 687.0 | 686.0 | 1638.0 | 1294.0 | 0.1 | -86.9 | 0.3 | 0.1 |
| 162 | 6 | 62.3 | 13.9 | 68.4 | 54.5 | 5.0 | 7.0 | 68.4 | 54.5 | 0.5 | 210.0 | 347.0 | 9.0 | UBR | 1.0 | 13.7 | 13.2 | 1880.0 | 1670.0 | 693.0 | 684.0 | 1550.0 | 1203.0 | -0.1 | 165.8 | 0.8 | 0.0 |
| 163 | 2 | 57.2 | 2.4 | 58.4 | 56.0 | 1.2 | 3.0 | 58.4 | 56.0 | 0.2 | 70.0 | 410.0 | 0.0 | UBR | | 13.5 | 13.3 | 1780.0 | 1710.0 | 684.0 | 684.0 | 1438.0 | 1028.0 | 0.0 | 107.6 | 0.8 | 0.3 |

| EVENT ID | Hours | TurbAvg | TurbChange | TurbMax | TurbMin | TurbSTD | TurbN | TurbStart | TurbEnd | BorderStage Change | Borderflowc hange | Oneidaflowc hange | Sodaflowcha nge | HydroPerio d | Code | MaxOfBord erStage | MinOfBorde rStage | MaxOfBord erFlow | MinOfBorde rFlow | MaxOfSoda Flow | MinOfSoda Flow | MaxOfOnei daFlow | MinOfOneid aFlow | X-coeff | Constant | R2 | Anova Sig |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 164 | 9 | 61.9 | 13.6 | 66.8 | 53.2 | 5.1 | 10.0 | 53.2 | 66.3 | 1.2 | 470.0 | 923.0 | 2.0 | UBR | | 14.0 | 12.8 | 2000.0 | 1530.0 | 721.0 | 719.0 | 1644.0 | 721.0 | 0.0 | 12.3 | 0.9 | 0.0 |
| 165 | 14 | 117.2 | 67.4 | 166.8 | 99.4 | 23.8 | 15.0 | 140.4 | 99.6 | 1.6 | 660.0 | 419.0 | 38.0 | UBR | 1.0 | 14.5 | 12.9 | 2210.0 | 1550.0 | 757.0 | 719.0 | 1837.0 | 1418.0 | -0.1 | 278.6 | 0.7 | 0.0 |
| 166 | 6 | 109.7 | 39.8 | 130.6 | 90.8 | 15.6 | 7.0 | 130.6 | 90.8 | 0.4 | 170.0 | 117.0 | 15.0 | UBR | 1.0 | 14.3 | 13.9 | 2140.0 | 1970.0 | 925.0 | 910.0 | 1699.0 | 1582.0 | -0.2 | 596.6 | 1.0 | 0.0 |
| 167 | 4 | 69.8 | 8.7 | 74.0 | 65.3 | 3.6 | 5.0 | 72.9 | 65.3 | 0.6 | 170.0 | 225.0 | 8.0 | UBR | | 14.2 | 13.6 | 1990.0 | 1820.0 | 924.0 | 916.0 | 1636.0 | 1411.0 | 0.0 | 163.4 | 0.9 | 0.0 |
| 168 | 6 | 44.2 | 9.4 | 50.7 | 41.3 | 3.1 | 7.0 | 42.7 | 41.3 | 0.8 | 270.0 | 5.0 | 10.0 | UBR | | 13.8 | 13.0 | 1860.0 | 1590.0 | 912.0 | 902.0 | 1530.0 | 1525.0 | 0.0 | 64.4 | 0.1 | 0.4 |
| 169 | 8 | 33.2 | 5.6 | 35.5 | 29.9 | 2.0 | 9.0 | 29.9 | 35.5 | 0.8 | 330.0 | 7.0 | 0.0 | UBR | | 13.9 | 13.0 | 1940.0 | 1610.0 | 908.0 | 908.0 | 1600.0 | 1593.0 | 0.0 | 4.7 | 0.9 | 0.0 |
| 170 | 20 | 38.4 | 9.6 | 43.2 | 33.6 | 2.8 | 21.0 | 42.0 | 38.3 | 1.1 | 450.0 | 632.0 | 9.0 | UBR | | 14.3 | 13.2 | 2110.0 | 1660.0 | 922.0 | 913.0 | 1887.0 | 1255.0 | 0.0 | 20.7 | 0.3 | 0.0 |
| 171 | 6 | 37.1 | 6.9 | 41.2 | 34.3 | 2.5 | 7.0 | 34.3 | 36.5 | 0.9 | 200.0 | 123.0 | 8.0 | UBR | | 14.2 | 13.3 | 1900.0 | 1700.0 | 919.0 | 911.0 | 1638.0 | 1515.0 | 0.0 | -1.3 | 0.5 | 0.1 |
| 172 | 11 | 37.3 | 11.3 | 40.9 | 29.6 | 3.4 | 12.0 | 29.6 | 35.4 | 1.0 | 390.0 | 12.0 | 10.0 | UBR | | 14.0 | 13.0 | 1990.0 | 1600.0 | 919.0 | 909.0 | 1665.0 | 1653.0 | 0.0 | 17.1 | 0.2 | 0.2 |
| 173 | 13 | 34.9 | 10.2 | 39.9 | 29.7 | 3.1 | 14.0 | 39.2 | 30.6 | 0.4 | 180.0 | 0.0 | 8.0 | UBR | | 13.8 | 13.4 | 1910.0 | 1730.0 | 845.0 | 837.0 | 1460.0 | 1460.0 | -0.1 | 128.9 | 0.9 | 0.0 |
| 174 | 13 | 33.6 | 5.0 | 36.4 | 31.4 | 1.7 | 14.0 | 32.1 | 31.4 | 0.6 | 240.0 | 315.0 | 38.0 | UBR | | 13.8 | 13.2 | 1900.0 | 1660.0 | 826.0 | 788.0 | 1588.0 | 1273.0 | 0.0 | 27.1 | 0.0 | 0.5 |
| 175 | 7 | 33.3 | 12.8 | 39.4 | 26.6 | 5.6 | 8.0 | 26.6 | 38.0 | 0.8 | 320.0 | 544.0 | 86.0 | UBR | | 13.9 | 13.0 | 1930.0 | 1610.0 | 840.0 | 754.0 | 1836.0 | 1292.0 | 0.0 | -40.2 | 0.9 | 0.0 |
| 176 | 8 | 25.2 | 4.6 | 27.1 | 22.5 | 1.6 | 9.0 | 24.5 | 22.5 | 0.3 | 100.0 | 97.0 | 7.0 | UBR | | 13.1 | 12.8 | 1620.0 | 1520.0 | 785.0 | 778.0 | 1314.0 | 1217.0 | 0.0 | 33.3 | 0.0 | 0.8 |
| 177 | 9 | 29.3 | 9.7 | 34.1 | 24.4 | 3.4 | 10.0 | 24.4 | 30.5 | 1.1 | 410.0 | 615.0 | 7.0 | UBR | | 13.1 | 12.0 | 1640.0 | 1230.0 | 638.0 | 631.0 | 1543.0 | 928.0 | 0.0 | 1.4 | 0.8 | 0.0 |
| 178 | 6 | 27.8 | 9.6 | 31.3 | 21.7 | 3.5 | 7.0 | 21.7 | 26.3 | 1.0 | 330.0 | 104.0 | 0.0 | UBR | 1.0 | 12.5 | 11.5 | 1400.0 | 1070.0 | 631.0 | 631.0 | 1162.0 | 1058.0 | 0.0 | 8.3 | 0.3 | 0.2 |
| 179 | 6 | 34.9 | 4.4 | 37.4 | 33.0 | 1.6 | 7.0 | 33.6 | 36.4 | 0.2 | 60.0 | 0.0 | 7.0 | UBR | 1.0 | 12.7 | 12.6 | 1500.0 | 1440.0 | 639.0 | 632.0 | 1059.0 | 1059.0 | 0.1 | -59.4 | 0.8 | 0.0 |
| 180 | 13 | 27.2 | 19.8 | 38.9 | 19.1 | 4.8 | 11.0 | 19.1 | 23.7 | 0.9 | 330.0 | 420.0 | 8.0 | UBR | | 12.8 | 11.8 | 1500.0 | 1170.0 | 774.0 | 766.0 | 1165.0 | 745.0 | 0.0 | 1.7 | 0.2 | 0.2 |
| 181 | 6 | 25.4 | 16.4 | 34.8 | 18.4 | 5.8 | 7.0 | 18.4 | 34.8 | 0.6 | 240.0 | 408.0 | 17.0 | UBR | 1.0 | 13.2 | 12.6 | 1690.0 | 1450.0 | 986.0 | 969.0 | 1623.0 | 1215.0 | 0.1 | -64.0 | 0.9 | 0.0 |
| 182 | 4 | 46.8 | 8.0 | 51.3 | 43.3 | 3.1 | 5.0 | 51.3 | 44.9 | 0.3 | 110.0 | 7.0 | 8.0 | UBR | 1.0 | 13.7 | 13.4 | 1870.0 | 1760.0 | 963.0 | 955.0 | 1525.0 | 1518.0 | -0.1 | 169.4 | 0.9 | 0.0 |
| 183 | 6 | 38.8 | 13.6 | 46.9 | 33.3 | 4.8 | 7.0 | 33.3 | 40.0 | 0.2 | 90.0 | 0.0 | 8.0 | UBR | 1.0 | 13.5 | 13.2 | 1780.0 | 1690.0 | 964.0 | 956.0 | 1494.0 | 1494.0 | 0.1 | -154.1 | 0.6 | 0.0 |
| 184 | 13 | 34.0 | 5.1 | 36.9 | 31.8 | 1.5 | 14.0 | 31.8 | 33.8 | 0.9 | 330.0 | 446.0 | 8.0 | UBR | | 13.6 | 12.7 | 1830.0 | 1500.0 | 964.0 | 956.0 | 1757.0 | 1311.0 | 0.0 | 21.3 | 0.2 | 0.1 |
| 185 | 10 | 30.2 | 3.6 | 31.3 | 27.7 | 1.1 | 11.0 | 27.7 | 28.8 | 0.6 | 250.0 | 147.0 | 0.0 | UBR | | 13.3 | 12.7 | 1720.0 | 1470.0 | 957.0 | 957.0 | 1491.0 | 1344.0 | 0.0 | 22.6 | 0.1 | 0.3 |
| 186 | 11 | 35.1 | 5.5 | 37.1 | 31.6 | 1.6 | 12.0 | 31.6 | 33.6 | 1.1 | 450.0 | 767.0 | 8.0 | UBR | | 13.9 | 12.8 | 1950.0 | 1500.0 | 864.0 | 856.0 | 1825.0 | 1058.0 | 0.0 | 25.3 | 0.3 | 0.1 |
| 187 | 7 | 25.5 | 8.4 | 31.0 | 22.6 | 2.5 | 8.0 | 31.0 | 22.6 | 0.3 | 110.0 | 507.0 | 0.0 | UBR | | 12.8 | 12.5 | 1530.0 | 1420.0 | 780.0 | 780.0 | 1272.0 | 765.0 | -0.1 | 105.9 | 0.7 | 0.0 |
| 188 | 8 | 22.9 | 2.8 | 24.2 | 21.4 | 1.0 | 9.0 | 21.4 | 23.9 | 0.9 | 330.0 | 159.0 | 1.0 | UBR | | 12.9 | 12.0 | 1550.0 | 1220.0 | 720.0 | 719.0 | 1247.0 | 1088.0 | 0.0 | 14.2 | 0.4 | 0.1 |
| 189 | 8 | 24.1 | 3.6 | 25.2 | 21.6 | 1.1 | 9.0 | 21.6 | 24.1 | 0.7 | 250.0 | 98.0 | 8.0 | UBR | | 12.5 | 11.8 | 1410.0 | 1160.0 | 610.0 | 602.0 | 1142.0 | 1044.0 | 0.0 | 14.0 | 0.3 | 0.1 |
| 190 | 5 | 24.7 | 6.4 | 29.0 | 22.6 | 2.4 | 6.0 | 22.6 | 23.0 | 0.3 | 110.0 | 344.0 | 0.0 | UBR | | 12.5 | 12.2 | 1420.0 | 1310.0 | 610.0 | 610.0 | 1136.0 | 792.0 | 0.0 | 32.8 | 0.0 | 0.9 |
| 191 | 5 | 24.2 | 3.2 | 26.1 | 22.9 | 1.2 | 6.0 | 22.9 | 23.1 | 0.5 | 180.0 | 68.0 | 7.0 | UBR | | 12.1 | 11.6 | 1270.0 | 1090.0 | 611.0 | 604.0 | 1080.0 | 1012.0 | 0.0 | 24.1 | 0.0 | 1.0 |
| 192 | 5 | 13.2 | 1.2 | 13.6 | 12.4 | 0.4 | 6.0 | 13.2 | 12.4 | 0.1 | 55.0 | 0.0 | 0.0 | UBR | | 9.5 | 9.3 | 315.0 | 260.0 | 511.0 | 511.0 | 408.0 | 408.0 | 0.0 | 15.0 | 0.1 | 0.5 |
| 193 | 6 | 12.0 | 3.0 | 13.1 | 10.1 | 1.1 | 7.0 | 10.1 | 12.9 | 0.1 | 21.0 | 0.0 | 0.0 | UBR | | 8.9 | 8.8 | 135.0 | 114.0 | 598.0 | 598.0 | 266.0 | 266.0 | 0.1 | -1.9 | 0.7 | 0.0 |
| 194 | 15 | 9.5 | 3.1 | 10.4 | 7.3 | 0.8 | 16.0 | 7.3 | 9.8 | 0.3 | 80.0 | 41.0 | 188.0 | UBR | | 9.1 | 8.8 | 191.0 | 111.0 | 822.0 | 634.0 | 319.0 | 278.0 | 0.0 | 7.2 | 0.3 | 0.0 |
| 195 | 8 | 15.4 | 36.4 | 42.9 | 6.5 | 11.0 | 9.0 | 6.5 | 12.3 | 0.7 | 254.0 | 0.0 | 7.0 | UBR | | 9.7 | 8.9 | 396.0 | 142.0 | 822.0 | 815.0 | 464.0 | 464.0 | 0.1 | -1.5 | 0.3 | 0.1 |
| 196 | 6 | 17.6 | 5.4 | 20.7 | 15.3 | 1.8 | 7.0 | 15.3 | 16.5 | 0.6 | 198.0 | 0.0 | 0.0 | UBR | | 10.2 | 9.6 | 578.0 | 380.0 | 927.0 | 927.0 | 737.0 | 737.0 | 0.0 | 14.7 | 0.0 | 0.7 |
| 197 | 6 | 13.4 | 3.6 | 15.4 | 11.8 | 1.4 | 7.0 | 11.8 | 13.8 | 0.3 | 111.0 | 0.0 | 5.0 | UBR | | 10.0 | 9.7 | 530.0 | 419.0 | 1181.0 | 1176.0 | 798.0 | 798.0 | 0.0 | 1.3 | 0.7 | 0.0 |
| 198 | 8 | 22.0 | 10.5 | 25.8 | 15.3 | 4.0 | 9.0 | 15.8 | 24.6 | 0.4 | 120.0 | 11.0 | 116.0 | UBR | | 10.4 | 10.0 | 643.0 | 523.0 | 1176.0 | 1060.0 | 954.0 | 943.0 | 0.1 | -30.4 | 0.9 | 0.0 |
| 199 | 4 | 13.4 | 3.8 | 15.3 | 11.5 | 1.4 | 5.0 | 11.5 | 13.9 | 0.1 | 41.0 | 0.0 | 0.0 | UBR | | 10.0 | 9.9 | 520.0 | 479.0 | 1062.0 | 1062.0 | 751.0 | 751.0 | 0.0 | -1.0 | 0.1 | 0.6 |
| 200 | 6 | 15.2 | 5.2 | 18.6 | 13.4 | 1.9 | 7.0 | 13.4 | 18.6 | 0.2 | 60.0 | 0.0 | 8.0 | UBR | | 9.8 | 9.6 | 453.0 | 393.0 | 1140.0 | 1132.0 | 710.0 | 710.0 | 0.1 | -7.0 | 0.5 | 0.1 |
| 201 | 4 | 19.2 | 2.3 | 20.0 | 17.7 | 0.9 | 5.0 | 19.8 | 19.2 | 0.1 | 47.0 | 0.0 | 8.0 | UBR | | 9.9 | 9.8 | 486.0 | 439.0 | 1135.0 | 1127.0 | 745.0 | 745.0 | 0.0 | 21.6 | 0.0 | 0.9 |
| 202 | 15 | 19.1 | 5.7 | 22.4 | 16.7 | 1.7 | 16.0 | 22.4 | 20.6 | 0.2 | 77.0 | 6.0 | 8.0 | UBR | | 10.0 | 9.8 | 520.0 | 443.0 | 1139.0 | 1131.0 | 792.0 | 786.0 | -0.1 | 51.9 | 0.6 | 0.0 |
| 203 | 3 | 25.4 | 5.0 | 27.5 | 22.5 | 2.2 | 4.0 | 22.5 | 26.7 | 0.3 | 95.0 | 6.0 | 5.0 | UBR | | 10.2 | 9.9 | 581.0 | 486.0 | 1139.0 | 1134.0 | 797.0 | 791.0 | 0.0 | -0.8 | 0.9 | 0.1 |
| 204 | 9 | 15.4 | 4.8 | 17.9 | 13.1 | 1.5 | 10.0 | 17.0 | 14.4 | 0.2 | 66.0 | 5.0 | 9.0 | UBR | | 10.0 | 9.8 | 512.0 | 446.0 | 1138.0 | 1129.0 | 791.0 | 786.0 | -0.1 | 44.1 | 0.7 | 0.0 |
| 205 | 15 | 20.0 | 9.7 | 26.6 | 16.9 | 2.6 | 16.0 | 19.5 | 26.6 | 0.3 | 120.0 | 16.0 | 145.0 | UBR | | 10.2 | 9.9 | 602.0 | 482.0 | 1278.0 | 1133.0 | 887.0 | 871.0 | 0.0 | 2.0 | 0.2 | 0.1 |
| 206 | 19 | 33.8 | 43.4 | 46.8 | 3.4 | 9.4 | 20.0 | 3.4 | 32.6 | 0.4 | 165.0 | 175.0 | 13.0 | UBR | | 10.7 | 10.2 | 757.0 | 592.0 | 1351.0 | 1338.0 | 1099.0 | 924.0 | 0.1 | -21.8 | 0.3 | 0.0 |
| 207 | 10 | 29.7 | 7.1 | 33.6 | 26.5 | 2.7 | 11.0 | 33.0 | 33.4 | 0.2 | 79.0 | 100.0 | 0.0 | UBR | | 10.8 | 10.6 | 821.0 | 742.0 | 1215.0 | 1215.0 | 1205.0 | 1105.0 | 0.0 | 2.4 | 0.1 | 0.3 |
| 208 | 7 | 31.9 | 2.9 | 33.1 | 30.2 | 1.1 | 8.0 | 32.3 | 30.6 | 0.5 | 194.0 | 0.0 | 14.0 | UBR | | 10.8 | 10.3 | 800.0 | 606.0 | 1215.0 | 1201.0 | 1169.0 | 1169.0 | 0.0 | 39.5 | 0.4 | 0.1 |
| 209 | 5 | 36.2 | 6.8 | 39.7 | 32.9 | 3.0 | 6.0 | 32.9 | 39.7 | 0.0 | 8.0 | 110.0 | 84.0 | UBR | | 10.8 | 10.8 | 816.0 | 808.0 | 1210.0 | 1126.0 | 1163.0 | 1053.0 | 0.9 | -654.0 | 0.5 | 0.1 |
| 210 | 9 | 33.4 | 13.1 | 38.9 | 25.8 | 4.7 | 10.0 | 38.9 | 25.8 | 0.2 | 68.0 | 34.0 | 5.0 | UBR | | 10.5 | 10.3 | 688.0 | 620.0 | 1121.0 | 1116.0 | 1024.0 | 990.0 | -0.2 | 138.8 | 0.7 | 0.0 |
| 211 | 7 | 31.3 | 7.7 | 35.1 | 27.4 | 2.7 | 8.0 | 28.3 | 27.4 | 0.2 | 73.0 | 55.0 | 4.0 | SBF | | 10.2 | 10.0 | 585.0 | 512.0 | 854.0 | 850.0 | 934.0 | 879.0 | 0.0 | 18.0 | 0.0 | 0.6 |
| 212 | 4 | 32.4 | 2.8 | 33.6 | 30.8 | 1.4 | 5.0 | 30.8 | 33.0 | 0.1 | 49.0 | 76.0 | 0.0 | SBF | | 10.3 | 10.1 | 606.0 | 557.0 | 804.0 | 804.0 | 912.0 | 836.0 | 0.1 | -2.8 | 0.7 | 0.1 |
| 213 | 8 | 18.9 | 4.8 | 20.9 | 16.1 | 1.8 | 9.0 | 20.9 | 16.1 | 0.1 | 50.0 | 73.0 | 2.0 | SBF | | 9.6 | 9.5 | 370.0 | 320.0 | 697.0 | 695.0 | 696.0 | 623.0 | -0.1 | 46.9 | 0.9 | 0.0 |
| 214 | 4 | 15.9 | 2.1 | 17.0 | 14.9 | 0.8 | 5.0 | 17.0 | 15.3 | 0.1 | 52.0 | 5.0 | 0.0 | SBF | | 9.5 | 9.4 | 315.0 | 263.0 | 698.0 | 698.0 | 589.0 | 584.0 | 0.0 | 26.8 | 1.0 | 0.0 |
| 215 | 4 | 21.0 | 4.5 | 23.6 | 19.1 | 1.9 | 5.0 | 19.1 | 23.6 | 0.2 | 91.0 | 10.0 | 7.0 | SBF | | 9.7 | 9.5 | 419.0 | 328.0 | 698.0 | 691.0 | 716.0 | 706.0 | 0.0 | 4.2 | 0.8 | 0.0 |
| 216 | 6 | 13.0 | 1.8 | 14.2 | 12.4 | 0.7 | 7.0 | 12.6 | 12.4 | 0.1 | 60.0 | 5.0 | 0.0 | SBF | | 9.6 | 9.5 | 380.0 | 320.0 | 606.0 | 606.0 | 661.0 | 656.0 | 0.0 | 13.9 | 0.0 | 0.9 |

| EVENT ID | Hours | TurbAvg | TurbChange | TurbMax | TurbMin | TurbSTD | TurbN | TurbStart | TurbEnd | BorderStageChange | Borderflowchange | Oneidaflowchange | Sodaflowchange | HydroPeriod | Code | MaxOfBorderStage | MinOfBorderStage | MaxOfBorderFlow | MinOfBorderFlow | MaxOfSodaFlow | MinOfSodaFlow | MaxOfOneidaFlow | MinOfOneidaFlow | X-coeff | Constant | R2 | Anova Sig |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 217 | 8 | 9.1 | 1.9 | 10.1 | 8.2 | 0.7 | 9.0 | 8.7 | 10.1 | 0.2 | 63.0 | 94.0 | 7.0 | SBF | | 9.3 | 9.1 | 245.0 | 182.0 | 609.0 | 602.0 | 520.0 | 426.0 | 0.0 | 5.1 | 0.4 | 0.1 |
| 218 | 6 | 10.3 | 2.2 | 11.2 | 9.0 | 0.8 | 7.0 | 9.0 | 10.0 | 0.4 | 130.0 | 130.0 | 7.0 | SBF | | 9.5 | 9.1 | 294.0 | 164.0 | 819.0 | 812.0 | 598.0 | 468.0 | 0.0 | 8.3 | 0.4 | 0.1 |
| 219 | 6 | 8.3 | 2.1 | 9.3 | 7.2 | 0.8 | 7.0 | 8.1 | 9.0 | 0.2 | 55.0 | 75.0 | 70.0 | SBF | | 9.4 | 9.2 | 267.0 | 212.0 | 889.0 | 819.0 | 623.0 | 548.0 | 0.0 | 2.3 | 0.6 | 0.0 |
| 220 | 11 | 9.6 | 2.9 | 10.8 | 7.9 | 0.9 | 12.0 | 7.9 | 8.5 | 0.2 | 110.0 | 49.0 | 8.0 | SBF | | 9.7 | 9.4 | 396.0 | 286.0 | 891.0 | 883.0 | 687.0 | 638.0 | 0.0 | 5.7 | 0.1 | 0.2 |
| 221 | 20 | 11.7 | 6.7 | 15.8 | 9.1 | 1.7 | 21.0 | 10.9 | 11.9 | 0.9 | 211.0 | 82.0 | 1.0 | SBF | | 10.4 | 9.5 | 630.0 | 419.0 | 884.0 | 883.0 | 918.0 | 836.0 | 0.0 | 13.6 | 0.0 | 0.6 |
| 222 | 6 | 13.4 | 4.5 | 15.5 | 11.0 | 1.5 | 7.0 | 11.8 | 13.6 | 0.2 | 69.0 | 1.0 | 2.0 | SBF | | 10.4 | 10.2 | 650.0 | 581.0 | 886.0 | 884.0 | 985.0 | 984.0 | 0.0 | -5.8 | 0.3 | 0.2 |
| 223 | 4 | 9.8 | 2.3 | 10.8 | 8.5 | 1.1 | 5.0 | 8.5 | 10.8 | 0.2 | 74.0 | 0.0 | 8.0 | SBF | | 10.4 | 10.2 | 673.0 | 599.0 | 888.0 | 880.0 | 914.0 | 914.0 | -7.6 | -7.6 | 0.5 | 0.2 |
| 224 | 11 | 14.5 | 9.1 | 19.7 | 10.6 | 3.0 | 12.0 | 10.6 | 19.7 | 0.6 | 230.0 | 137.0 | 699.0 | SBF | 1.0 | 11.0 | 10.4 | 891.0 | 661.0 | 1075.0 | 376.0 | 1118.0 | 981.0 | 0.0 | -15.0 | 0.8 | 0.0 |
| 225 | 34 | 20.6 | 8.1 | 25.0 | 16.9 | 2.6 | 13.0 | 22.4 | 24.8 | 0.5 | 198.0 | 151.0 | 313.0 | SBF | 1.0 | 11.3 | 10.8 | 1010.0 | 812.0 | 1068.0 | 755.0 | 1263.0 | 1112.0 | 0.0 | -9.2 | 0.6 | 0.0 |
| 226 | 4 | 12.2 | 0.3 | 12.4 | 12.1 | 0.1 | 5.0 | 12.3 | 12.1 | 0.1 | 35.0 | 90.0 | 8.0 | SBF | | 10.5 | 10.4 | 700.0 | 665.0 | 757.0 | 749.0 | 868.0 | 778.0 | 0.0 | 16.8 | 0.6 | 0.1 |
| 227 | 11 | 12.2 | 1.7 | 12.8 | 11.1 | 0.5 | 12.0 | 11.1 | 12.4 | 0.3 | 119.0 | 5.0 | 0.0 | SBF | | 10.3 | 10.0 | 639.0 | 520.0 | 829.0 | 829.0 | 864.0 | 859.0 | 9.4 | 0.1 | 0.1 | 0.3 |
| 228 | 7 | 12.6 | 2.4 | 13.6 | 11.2 | 0.8 | 8.0 | 11.2 | 12.2 | 0.3 | 105.0 | 6.0 | 1.0 | SBF | | 10.5 | 10.2 | 707.0 | 602.0 | 830.0 | 829.0 | 996.0 | 990.0 | 0.0 | 0.1 | 0.1 | 0.4 |
| 229 | 30 | 4.8 | 2.5 | 6.1 | 3.6 | 0.8 | 31.0 | 5.0 | 6.1 | 0.4 | 126.0 | 129.0 | 7.0 | SBF | | 9.5 | 9.1 | 290.0 | 164.0 | 623.0 | 616.0 | 513.0 | 384.0 | 0.0 | 1.3 | 0.6 | 0.0 |
| 230 | 6 | 6.7 | 3.5 | 8.6 | 5.1 | 1.3 | 7.0 | 5.1 | 7.2 | 0.4 | 182.0 | 0.0 | 0.0 | SBF | | 9.8 | 9.5 | 460.0 | 278.0 | 619.0 | 619.0 | 683.0 | 683.0 | 0.0 | 0.2 | 0.8 | 0.0 |
| 231 | 8 | 5.4 | 1.4 | 5.9 | 4.5 | 0.4 | 9.0 | 4.5 | 5.2 | 0.2 | 56.0 | 24.0 | 12.0 | SBF | | 10.0 | 9.8 | 516.0 | 460.0 | 514.0 | 502.0 | 689.0 | 665.0 | 0.0 | 3.0 | 0.0 | 0.6 |
| 232 | 10 | 4.7 | 1.3 | 5.4 | 4.1 | 0.4 | 11.0 | 5.4 | 4.6 | 0.1 | 32.0 | 129.0 | 7.0 | SBF | | 9.7 | 9.6 | 422.0 | 390.0 | 509.0 | 502.0 | 579.0 | 450.0 | 0.0 | 11.0 | 0.3 | 0.1 |
| 233 | 10 | 4.0 | 1.1 | 4.5 | 3.4 | 0.4 | 11.0 | 3.4 | 4.5 | 0.2 | 66.0 | 4.0 | 2.0 | SBF | | 9.5 | 9.4 | 311.0 | 245.0 | 505.0 | 503.0 | 446.0 | 442.0 | 0.0 | 0.8 | 0.4 | 0.0 |
| 234 | 11 | 3.2 | 1.6 | 4.1 | 2.5 | 0.5 | 12.0 | 2.9 | 3.2 | 0.2 | 121.0 | 46.0 | 2.0 | SBF | | 9.6 | 9.4 | 370.0 | 249.0 | 528.0 | 526.0 | 481.0 | 435.0 | 0.0 | 1.8 | 0.2 | 0.2 |
| 235 | 12 | 3.5 | 1.9 | 4.6 | 2.7 | 0.6 | 13.0 | 3.0 | 3.9 | 0.3 | 142.0 | 101.0 | 7.0 | SBF | | 9.8 | 9.5 | 436.0 | 294.0 | 525.0 | 518.0 | 540.0 | 439.0 | 0.0 | 0.7 | 0.6 | 0.0 |
| 236 | 10 | 3.8 | 1.7 | 4.7 | 3.0 | 0.4 | 11.0 | 3.8 | 3.0 | 0.2 | 66.0 | 4.0 | 42.0 | SBF | | 9.9 | 9.7 | 482.0 | 416.0 | 558.0 | 516.0 | 522.0 | 518.0 | 0.0 | 4.6 | 0.0 | 0.8 |
| 237 | 7 | 6.0 | 3.7 | 7.9 | 4.2 | 1.5 | 8.0 | 4.2 | 7.8 | 0.4 | 157.0 | 5.0 | 0.0 | SBF | 1.0 | 10.3 | 9.9 | 628.0 | 471.0 | 529.0 | 529.0 | 714.0 | 709.0 | 0.0 | -7.3 | 0.9 | 0.0 |
| 238 | 14 | 3.2 | 1.3 | 3.8 | 2.5 | 0.4 | 15.0 | 2.5 | 3.8 | 0.2 | 83.0 | 88.0 | 2.0 | SBF | | 10.1 | 9.8 | 540.0 | 457.0 | 527.0 | 525.0 | 602.0 | 514.0 | 0.0 | -1.6 | 0.7 | 0.0 |
| 239 | 7 | 4.1 | 2.2 | 5.5 | 3.3 | 0.8 | 8.0 | 3.3 | 3.9 | 0.2 | 65.0 | 48.0 | 0.0 | SBF | | 10.2 | 10.0 | 592.0 | 527.0 | 379.0 | 379.0 | 651.0 | 603.0 | 0.0 | -5.6 | 0.3 | 0.2 |
| 240 | 4 | 4.2 | 1.3 | 5.1 | 3.8 | 0.5 | 5.0 | 3.8 | 5.1 | 0.1 | 31.0 | 5.0 | 0.0 | SBF | | 10.2 | 10.1 | 581.0 | 550.0 | 315.0 | 315.0 | 529.0 | 524.0 | 0.0 | -12.5 | 0.5 | 0.2 |
| 241 | 2 | 8.4 | 9.4 | 13.7 | 4.3 | 4.8 | 3.0 | 4.3 | 13.7 | 0.2 | 69.0 | 0.0 | 0.0 | SBF | | 10.4 | 10.2 | 654.0 | 585.0 | 308.0 | 308.0 | 468.0 | 468.0 | 0.1 | -63.4 | 0.8 | 0.3 |
| 242 | 5 | 3.3 | 2.9 | 5.3 | 2.4 | 1.0 | 6.0 | 2.4 | 3.5 | 0.4 | 202.0 | 0.0 | 4.0 | SBF | | 9.7 | 9.2 | 396.0 | 194.0 | 217.0 | 213.0 | 324.0 | 324.0 | 0.0 | 0.8 | 0.5 | 0.1 |
| 243 | 7 | 5.6 | 4.3 | 8.3 | 4.0 | 1.6 | 8.0 | 4.0 | 7.1 | 0.4 | 134.0 | 0.0 | 0.0 | SBF | 1.0 | 10.1 | 9.7 | 553.0 | 419.0 | 215.0 | 215.0 | 484.0 | 484.0 | 0.0 | -7.7 | 0.7 | 0.0 |
| 244 | 4 | 3.4 | 1.5 | 4.3 | 2.8 | 0.7 | 5.0 | 2.8 | 3.9 | 0.1 | 48.0 | 3.0 | 0.0 | SBF | | 9.7 | 9.6 | 399.0 | 351.0 | 170.0 | 170.0 | 306.0 | 303.0 | 0.0 | -7.2 | 0.8 | 0.0 |
| 245 | 12 | 4.1 | 0.7 | 4.4 | 3.7 | 0.2 | 13.0 | 4.0 | 4.0 | 0.0 | 37.0 | 1.0 | 54.0 | SBF | | 9.6 | 9.6 | 383.0 | 346.0 | 220.0 | 166.0 | 306.0 | 305.0 | 0.0 | 3.1 | 0.0 | 0.6 |
| 246 | 9 | 4.3 | 1.8 | 5.4 | 3.6 | 0.5 | 10.0 | 3.6 | 5.4 | 0.0 | 28.0 | 3.0 | 1.0 | SBF | | 9.6 | 9.6 | 365.0 | 337.0 | 168.0 | 167.0 | 306.0 | 303.0 | 0.0 | -4.4 | 0.3 | 0.1 |
| 247 | 6 | 6.8 | 5.5 | 9.7 | 4.2 | 2.3 | 7.0 | 4.3 | 8.7 | 0.3 | 132.0 | 27.0 | 3.0 | SBF | | 9.9 | 9.6 | 460.0 | 328.0 | 541.0 | 538.0 | 419.0 | 392.0 | 0.0 | -8.7 | 0.9 | 0.0 |
| 248 | 16 | 21.5 | 27.6 | 33.2 | 5.6 | 10.7 | 17.0 | 5.6 | 26.1 | 0.8 | 308.0 | 248.0 | 3.0 | SBF | 1.0 | 10.7 | 9.8 | 761.0 | 453.0 | 509.0 | 506.0 | 807.0 | 559.0 | 0.1 | -35.7 | 0.9 | 0.0 |
| 249 | 5 | 28.8 | 53.5 | 71.2 | 17.7 | 20.9 | 6.0 | 17.7 | 19.8 | 0.1 | 39.0 | 5.0 | 3.0 | SBF | 1.0 | 10.8 | 10.7 | 808.0 | 769.0 | 492.0 | 489.0 | 850.0 | 845.0 | -0.2 | 192.9 | 0.0 | 0.8 |
| 250 | 7 | 8.6 | 3.7 | 10.4 | 6.7 | 1.3 | 8.0 | 6.7 | 10.4 | 0.4 | 144.0 | 10.0 | 310.0 | SBF | | 10.5 | 10.1 | 711.0 | 567.0 | 488.0 | 178.0 | 751.0 | 741.0 | 0.0 | -5.2 | 0.7 | 0.0 |
| 251 | 5 | 5.7 | 1.5 | 6.4 | 4.9 | 0.6 | 6.0 | 4.9 | 6.4 | 0.2 | 78.0 | 44.0 | 3.0 | SBF | | 9.7 | 9.6 | 402.0 | 324.0 | 195.0 | 192.0 | 383.0 | 339.0 | 0.0 | -1.2 | 0.9 | 0.0 |
| 252 | 17 | 6.6 | 2.8 | 7.8 | 5.0 | 0.8 | 18.0 | 5.3 | 7.0 | 0.3 | 110.0 | 89.0 | 5.0 | SBF | | 9.9 | 9.6 | 471.0 | 361.0 | 197.0 | 192.0 | 464.0 | 375.0 | 0.0 | 0.0 | 0.4 | 0.0 |
| 253 | 6 | 6.0 | 3.1 | 8.1 | 5.0 | 1.0 | 7.0 | 5.0 | 6.4 | 0.2 | 78.0 | 4.0 | 4.0 | SBF | | 9.8 | 9.6 | 429.0 | 351.0 | 203.0 | 199.0 | 433.0 | 429.0 | 0.0 | -0.5 | 0.2 | 0.3 |
| 254 | 6 | 10.7 | 5.8 | 13.0 | 7.2 | 2.3 | 7.0 | 7.2 | 12.7 | 0.3 | 130.0 | 0.0 | 0.0 | SBF | | 9.9 | 9.6 | 450.0 | 320.0 | 200.0 | 200.0 | 483.0 | 483.0 | 0.0 | -7.5 | 1.0 | 0.0 |
| 255 | 6 | 10.0 | 3.3 | 12.5 | 9.2 | 1.2 | 7.0 | 9.2 | 9.8 | 0.1 | 47.0 | 4.0 | 0.0 | SBF | 1.0 | 9.7 | 9.6 | 393.0 | 346.0 | 197.0 | 197.0 | 386.0 | 382.0 | 0.0 | -1.4 | 0.2 | 0.3 |

# APPENDIX II.

## Storm-Influenced Hourly Data for Hydrologically Increasing Events

| ID | Event ID | Date | Time | Hydro Period | temp | spcond | DO% | domgl | depth | Turb | Border Stage | Border Flow | Oneida Flow | Soda Flow | ANOVA SIG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 05/12/04 | 10:00 | UBR | 13.13 | 1.761 | 84.3 | 8.8 | 0.747 | 13.5 | 8.29 | 45 | 130 | 221 | 0.009 |
| 2 | 1 | 05/12/04 | 11:00 | UBR | 13.54 | 1.761 | 94.8 | 9.81 | 0.845 | 12.2 | 8.21 | 38 | 130 | 216 | 0.009 |
| 3 | 1 | 05/12/04 | 12:00 | UBR | 13.75 | 1.762 | 100.8 | 10.39 | 0.957 | 13.9 | 8.26 | 42 | 130 | 216 | 0.009 |
| 4 | 1 | 05/12/04 | 13:00 | UBR | 14.11 | 1.758 | 109.3 | 11.17 | 1.033 | 13 | 8.37 | 53 | 130 | 216 | 0.009 |
| 5 | 1 | 05/12/04 | 14:00 | UBR | 14.2 | 1.754 | 113.5 | 11.59 | 1.102 | 11.7 | 8.44 | 61 | 130 | 221 | 0.009 |
| 6 | 1 | 05/12/04 | 15:00 | UBR | 14.32 | 1.747 | 119.7 | 12.18 | 1.141 | 12.4 | 8.49 | 67 | 130 | 221 | 0.009 |
| 7 | 1 | 05/12/04 | 16:00 | UBR | 14.74 | 1.739 | 126.8 | 12.79 | 1.166 | 12.8 | 8.51 | 69 | 130 | 216 | 0.009 |
| 8 | 1 | 05/12/04 | 17:00 | UBR | 15.06 | 1.733 | 132.4 | 13.26 | 1.195 | 14.5 | 8.53 | 72 | 130 | 221 | 0.009 |
| 9 | 1 | 05/12/04 | 18:00 | UBR | 15.09 | 1.729 | 133.2 | 13.34 | 1.226 | 13.4 | 8.55 | 75 | 130 | 216 | 0.009 |
| 10 | 1 | 05/12/04 | 19:00 | UBR | 15.2 | 1.724 | 131.1 | 13.1 | 1.261 | 12.5 | 8.56 | 76 | 130 | 221 | 0.009 |
| 11 | 1 | 05/12/04 | 20:00 | UBR | 15.03 | 1.719 | 124.4 | 12.47 | 1.295 | 15.9 | 8.57 | 78 | 130 | 216 | 0.009 |
| 12 | 1 | 05/12/04 | 21:00 | UBR | 14.77 | 1.715 | 119.2 | 12.02 | 1.342 | 13.4 | 8.58 | 79 | 128 | 216 | 0.009 |
| 13 | 1 | 05/12/04 | 22:00 | UBR | 14.49 | 1.707 | 112.2 | 11.37 | 1.379 | 15 | 8.59 | 81 | 128 | 216 | 0.009 |
| 14 | 1 | 05/12/04 | 23:00 | UBR | 14.19 | 1.704 | 104.2 | 10.64 | 1.377 | 16.4 | 8.59 | 81 | 128 | 216 | 0.009 |
| 15 | 1 | 05/13/04 | 0:00 | UBR | 13.88 | 1.702 | 96.5 | 9.92 | 1.387 | 16.9 | 8.6 | 82 | 128 | 215 | 0.009 |
| 16 | 1 | 05/13/04 | 1:00 | UBR | 13.57 | 1.702 | 91.3 | 9.45 | 1.39 | 18.1 | 8.6 | 82 | 128 | 215 | 0.009 |
| 17 | 1 | 05/13/04 | 2:00 | UBR | 13.25 | 1.7 | 87.3 | 9.1 | 1.384 | 18 | 8.59 | 81 | 128 | 215 | 0.009 |
| 18 | 1 | 05/13/04 | 3:00 | UBR | 12.96 | 1.702 | 82.6 | 8.66 | 1.381 | 19.5 | 8.59 | 81 | 128 | 215 | 0.009 |
| 19 | 2 | 05/23/04 | 23:00 | UBR | 14.8 | 1.13 | 97 | 9.8 | 2.463 | 16 | 9.46 | 311 | 644 | 1096 | 0 |
| 20 | 2 | 05/24/04 | 0:00 | UBR | 14.4 | 1.13 | 92 | 9.4 | 2.633 | 19 | 9.6 | 375 | 643 | 1096 | 0 |
| 21 | 2 | 05/24/04 | 1:00 | UBR | 14.1 | 1.13 | 88 | 9 | 2.773 | 23 | 9.73 | 419 | 643 | 1096 | 0 |
| 22 | 2 | 05/24/04 | 2:00 | UBR | 13.9 | 1.12 | 85 | 8.8 | 2.843 | 26 | 9.83 | 453 | 643 | 1096 | 0 |
| 23 | 2 | 05/24/04 | 3:00 | UBR | 13.6 | 1.08 | 83 | 8.6 | 2.893 | 27 | 9.89 | 475 | 643 | 1096 | 0 |
| 24 | 2 | 05/24/04 | 4:00 | UBR | 13.4 | 1.04 | 81 | 8.5 | 2.913 | 34 | 9.91 | 482 | 643 | 1096 | 0 |
| 25 | 2 | 05/24/04 | 5:00 | UBR | 13.3 | 1 | 78 | 8.2 | 2.913 | 34 | 9.93 | 490 | 643 | 1096 | 0 |
| 26 | 2 | 05/24/04 | 6:00 | UBR | 13.1 | 0.97 | 75 | 7.8 | 2.933 | 35 | 9.94 | 493 | 643 | 1096 | 0 |
| 27 | 2 | 05/24/04 | 7:00 | UBR | 12.8 | 0.96 | 72 | 7.6 | 2.953 | 29 | 9.94 | 493 | 643 | 1096 | 0 |
| 28 | 2 | 05/24/04 | 8:00 | UBR | 12.7 | 0.96 | 72 | 7.6 | 2.983 | 28 | 9.97 | 505 | 957 | 1096 | 0 |
| 29 | 2 | 05/24/04 | 9:00 | UBR | 12.8 | 0.97 | 74 | 7.8 | 3.003 | 21 | 9.98 | 508 | 973 | 1086 | 0 |
| 30 | 2 | 05/24/04 | 10:00 | UBR | 13.1 | 0.97 | 77 | 8.1 | 2.993 | 22 | 9.98 | 508 | 1001 | 1086 | 0 |
| 31 | 2 | 05/24/04 | 11:00 | UBR | 13.6 | 0.97 | 82 | 8.5 | 2.993 | 22 | 9.98 | 508 | 1007 | 1086 | 0 |
| 32 | 2 | 05/24/04 | 12:00 | UBR | 14.2 | 0.97 | 87 | 8.9 | 2.993 | 24 | 9.98 | 508 | 1018 | 1096 | 0 |
| 33 | 2 | 05/24/04 | 13:00 | UBR | 14.6 | 0.97 | 91 | 9.2 | 2.973 | 22 | 9.98 | 508 | 1198 | 1086 | 0 |
| 34 | 2 | 05/24/04 | 14:00 | UBR | 15.2 | 0.97 | 96 | 9.6 | 2.963 | 21 | 9.98 | 508 | 1198 | 1086 | 0 |
| 35 | 2 | 05/24/04 | 15:00 | UBR | 15.7 | 0.97 | 100 | 9.9 | 2.943 | 28 | 9.98 | 508 | 1271 | 1086 | 0 |
| 36 | 2 | 05/24/04 | 16:00 | UBR | 16.1 | 0.97 | 103 | 10.1 | 2.983 | 23 | 10 | 516 | 1271 | 1086 | 0 |
| 37 | 2 | 05/24/04 | 17:00 | UBR | 16.1 | 0.97 | 103 | 10.1 | 3.173 | 40 | 10.1 | 550 | 1264 | 1076 | 0 |
| 38 | 2 | 05/24/04 | 18:00 | UBR | 16.1 | 0.97 | 101 | 9.9 | 3.363 | 39 | 10.3 | 620 | 1264 | 1076 | 0 |

| ID | Event ID | Date | Time | Hydro Period | temp | spcond | DO% | domgl | depth | Turb | Border Stage | Border Flow | Oneida Flow | Soda Flow | ANOVA SIG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 39 | 2 | 05/24/04 | 19:00 | UBR | 16.3 | 0.97 | 99 | 9.7 | 3.473 | 61 | 10.46 | 684 | 1271 | 1076 | 0 |
| 40 | 2 | 05/24/04 | 20:00 | UBR | 16.2 | 0.96 | 96 | 9.4 | 3.563 | 59 | 10.59 | 734 | 1271 | 971 | 0 |
| 41 | 2 | 05/24/04 | 21:00 | UBR | 15.9 | 0.93 | 89 | 8.8 | 3.673 | 70 | 10.72 | 784 | 1271 | 677 | 0 |
| 42 | 2 | 05/24/04 | 22:00 | UBR | 15.8 | 0.92 | 81 | 8 | 3.793 | 105 | 10.87 | 845 | 1264 | 623 | 0 |
| 43 | 2 | 05/24/04 | 23:00 | UBR | 15.9 | 0.91 | 76 | 7.4 | 3.883 | 122 | 11 | 900 | 1271 | 481 | 0 |
| 44 | 2 | 05/25/04 | 0:00 | UBR | 15.9 | 0.9 | 72 | 7.1 | 3.943 | 109 | 11.11 | 936 | 1264 | 266 | 0 |
| 45 | 2 | 05/25/04 | 1:00 | UBR | 15.7 | 0.89 | 69 | 6.9 | 3.983 | 105 | 11.18 | 959 | 1264 | 136 | 0 |
| 46 | 2 | 05/25/04 | 2:00 | UBR | 15.3 | 0.89 | 68 | 6.8 | 4.003 | 102 | 11.23 | 976 | 1264 | 136 | 0 |
| 47 | 2 | 05/25/04 | 3:00 | UBR | 14.8 | 0.89 | 68 | 6.9 | 3.983 | 107 | 11.29 | 997 | 1264 | 897 | 0 |
| 48 | 2 | 05/25/04 | 4:00 | UBR | 14.2 | 0.89 | 68 | 7 | 3.983 | 104 | 11.31 | 1000 | 1264 | 529 | 0 |
| 49 | 3 | 05/28/04 | 9:00 | UBR | 14.9 | 0.99 | 71 | 7.1 | 2.213 | 23 | 9.54 | 342 | 338 | 392 | 0 |
| 50 | 3 | 05/28/04 | 10:00 | UBR | 14.8 | 1 | 71 | 7.2 | 2.193 | 21 | 9.54 | 342 | 338 | 392 | 0 |
| 51 | 3 | 05/28/04 | 11:00 | UBR | 14.7 | 1.01 | 72 | 7.3 | 2.203 | 22 | 9.55 | 346 | 342 | 392 | 0 |
| 52 | 3 | 05/28/04 | 12:00 | UBR | 14.7 | 1.02 | 73 | 7.4 | 2.223 | 20 | 9.57 | 356 | 342 | 392 | 0 |
| 53 | 3 | 05/28/04 | 13:00 | UBR | 14.6 | 1.02 | 75 | 7.6 | 2.253 | 19 | 9.63 | 383 | 342 | 392 | 0 |
| 54 | 3 | 05/28/04 | 14:00 | UBR | 14.6 | 1.02 | 76 | 7.7 | 2.273 | 25 | 9.65 | 390 | 342 | 392 | 0 |
| 55 | 3 | 05/28/04 | 15:00 | UBR | 14.5 | 1.02 | 77 | 7.8 | 2.343 | 28 | 9.68 | 399 | 360 | 392 | 0 |
| 56 | 3 | 05/28/04 | 16:00 | UBR | 14.4 | 1.01 | 77 | 7.8 | 2.373 | 36 | 9.72 | 412 | 364 | 392 | 0 |
| 57 | 3 | 05/28/04 | 17:00 | UBR | 14.2 | 1.01 | 78 | 7.9 | 2.423 | 34 | 9.75 | 422 | 364 | 398 | 0 |
| 58 | 3 | 05/28/04 | 18:00 | UBR | 14 | 1 | 79 | 8.1 | 2.483 | 30 | 9.81 | 446 | 364 | 392 | 0 |
| 59 | 3 | 05/28/04 | 19:00 | UBR | 13.8 | 1 | 79 | 8.1 | 2.533 | 34 | 9.86 | 464 | 617 | 392 | 0 |
| 60 | 3 | 05/28/04 | 20:00 | UBR | 13.6 | 1 | 79 | 8.1 | 2.603 | 39 | 9.92 | 486 | 617 | 392 | 0 |
| 61 | 3 | 05/28/04 | 21:00 | UBR | 13.3 | 1.01 | 78 | 8.1 | 2.713 | 40 | 10 | 516 | 617 | 392 | 0 |
| 62 | 3 | 05/28/04 | 22:00 | UBR | 13.1 | 1.01 | 78 | 8.2 | 2.803 | 43 | 10.1 | 550 | 756 | 392 | 0 |
| 63 | 3 | 05/28/04 | 23:00 | UBR | 12.9 | 1.01 | 78 | 8.1 | 2.863 | 56 | 10.18 | 578 | 756 | 392 | 0 |
| 64 | 3 | 05/29/04 | 0:00 | UBR | 12.8 | 1 | 77 | 8.1 | 2.933 | 57 | 10.21 | 588 | 1177 | 392 | 0 |
| 65 | 3 | 05/29/04 | 1:00 | UBR | 12.6 | 0.99 | 76 | 8 | 2.973 | 64 | 10.25 | 602 | 1456 | 392 | 0 |
| 66 | 3 | 05/29/04 | 2:00 | UBR | 12.5 | 0.97 | 75 | 8 | 2.993 | 76 | 10.29 | 617 | 1201 | 392 | 0 |
| 67 | 3 | 05/29/04 | 3:00 | UBR | 12.4 | 0.95 | 74 | 7.9 | 3.033 | 84 | 10.31 | 624 | 850 | 392 | 0 |
| 68 | 3 | 05/29/04 | 4:00 | UBR | 12.2 | 0.93 | 74 | 7.9 | 3.153 | 91 | 10.39 | 654 | 845 | 392 | 0 |
| 69 | 3 | 05/29/04 | 5:00 | UBR | 12.1 | 0.91 | 74 | 7.9 | 3.283 | 94 | 10.54 | 711 | 845 | 392 | 0 |
| 70 | 3 | 05/29/04 | 6:00 | UBR | 11.9 | 0.88 | 73 | 7.9 | 3.413 | 113 | 10.67 | 765 | 845 | 392 | 0 |
| 71 | 3 | 05/29/04 | 7:00 | UBR | 11.6 | 0.84 | 73 | 7.9 | 3.573 | 127 | 10.83 | 829 | 845 | 392 | 0 |
| 72 | 3 | 05/29/04 | 8:00 | UBR | 11.4 | 0.79 | 74 | 8 | 3.883 | 145 | 11.08 | 926 | 845 | 392 | 0 |
| 73 | 3 | 05/29/04 | 9:00 | UBR | 11.3 | 0.75 | 74 | 8.1 | 4.163 | 152 | 11.42 | 1040 | 845 | 392 | 0 |
| 262 | 14 | 07/07/04 | 4:00 | UBR | 22.18 | 0.937 | 82.9 | 7.2 | 2.982 | 15.6 | 9.78 | 416 | 655 | 840 | 0 |
| 263 | 14 | 07/07/04 | 5:00 | UBR | 21.9 | 0.929 | 78.7 | 6.87 | 2.993 | 18.3 | 9.82 | 429 | 655 | 840 | 0 |
| 264 | 14 | 07/07/04 | 6:00 | UBR | 21.61 | 0.921 | 74.9 | 6.58 | 2.983 | 14.4 | 9.82 | 429 | 655 | 840 | 0 |

| ID | Event ID | Date | Time | Hydro Period | temp | spcond | DO% | domgl | depth | Turb | Border Stage | Border Flow | Oneida Flow | Soda Flow | ANOVA SIG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 265 | 14 | 07/07/04 | 7:00 | UBR | 21.31 | 0.914 | 71.7 | 6.34 | 2.977 | 15.1 | 9.83 | 433 | 655 | 840 | 0 |
| 266 | 14 | 07/07/04 | 8:00 | UBR | 21.09 | 0.912 | 70.1 | 6.22 | 2.976 | 13.7 | 9.83 | 433 | 665 | 942 | 0 |
| 267 | 14 | 07/07/04 | 9:00 | UBR | 21 | 0.914 | 70 | 6.22 | 2.963 | 14.8 | 9.86 | 446 | 670 | 942 | 0 |
| 268 | 14 | 07/07/04 | 10:00 | UBR | 21.08 | 0.919 | 72 | 6.39 | 2.958 | 15.1 | 9.82 | 429 | 670 | 942 | 0 |
| 269 | 14 | 07/07/04 | 11:00 | UBR | 21.21 | 0.928 | 76.2 | 6.74 | 2.959 | 13.4 | 9.81 | 426 | 674 | 942 | 0 |
| 270 | 14 | 07/07/04 | 12:00 | UBR | 21.61 | 0.939 | 82 | 7.21 | 2.954 | 13.8 | 9.8 | 422 | 674 | 942 | 0 |
| 271 | 14 | 07/07/04 | 13:00 | UBR | 21.99 | 0.952 | 87.8 | 7.66 | 2.937 | 13.3 | 9.79 | 419 | 679 | 942 | 0 |
| 272 | 14 | 07/07/04 | 14:00 | UBR | 22.48 | 0.963 | 95.1 | 8.22 | 2.885 | 15.2 | 9.79 | 419 | 699 | 942 | 0 |
| 273 | 14 | 07/07/04 | 15:00 | UBR | 22.95 | 0.971 | 100.8 | 8.63 | 2.84 | 14.7 | 9.79 | 419 | 699 | 942 | 0 |
| 274 | 14 | 07/07/04 | 16:00 | UBR | 22.98 | 0.975 | 104.6 | 8.95 | 2.833 | 14.8 | 9.81 | 426 | 699 | 942 | 0 |
| 275 | 14 | 07/07/04 | 17:00 | UBR | 22.73 | 0.975 | 105.6 | 9.08 | 2.825 | 16.5 | 9.79 | 419 | 699 | 942 | 0 |
| 276 | 14 | 07/07/04 | 18:00 | UBR | 22.64 | 0.975 | 105.7 | 9.11 | 2.858 | 13.7 | 9.79 | 419 | 699 | 942 | 0 |
| 277 | 14 | 07/07/04 | 19:00 | UBR | 22.46 | 0.974 | 104.7 | 9.05 | 2.855 | 15 | 9.78 | 416 | 699 | 950 | 0 |
| 278 | 14 | 07/07/04 | 20:00 | UBR | 22.3 | 0.972 | 103.4 | 8.97 | 2.881 | 13.9 | 9.79 | 419 | 699 | 942 | 0 |
| 279 | 14 | 07/07/04 | 21:00 | UBR | 22.08 | 0.969 | 99.9 | 8.7 | 2.879 | 13.7 | 9.81 | 426 | 699 | 942 | 0 |
| 280 | 14 | 07/07/04 | 22:00 | UBR | 21.95 | 0.964 | 97.7 | 8.53 | 2.945 | 20.1 | 9.79 | 419 | 699 | 942 | 0 |
| 281 | 14 | 07/07/04 | 23:00 | UBR | 21.77 | 0.958 | 93.9 | 8.22 | 2.977 | 16.7 | 9.85 | 439 | 699 | 942 | 0 |
| 282 | 14 | 07/08/04 | 0:00 | UBR | 21.63 | 0.954 | 90.1 | 7.91 | 3.023 | 18.3 | 9.89 | 457 | 699 | 932 | 0 |
| 283 | 14 | 07/08/04 | 1:00 | UBR | 21.5 | 0.947 | 86.6 | 7.63 | 3.063 | 17.5 | 9.91 | 464 | 699 | 940 | 0 |
| 284 | 14 | 07/08/04 | 2:00 | UBR | 21.37 | 0.94 | 82.9 | 7.32 | 3.063 | 21.9 | 9.97 | 486 | 699 | 932 | 0 |
| 285 | 14 | 07/08/04 | 3:00 | UBR | 21.13 | 0.927 | 78.9 | 7 | 3.086 | 31.4 | 9.98 | 490 | 699 | 940 | 0 |
| 286 | 14 | 07/08/04 | 4:00 | UBR | 20.89 | 0.926 | 75.3 | 6.71 | 3.088 | 17.6 | 9.94 | 475 | 699 | 940 | 0 |
| 287 | 14 | 07/08/04 | 5:00 | UBR | 20.72 | 0.921 | 72.9 | 6.51 | 3.098 | 19.1 | 9.95 | 479 | 699 | 947 | 0 |
| 288 | 14 | 07/08/04 | 6:00 | UBR | 20.59 | 0.914 | 70.7 | 6.33 | 3.091 | 17.5 | 9.95 | 479 | 699 | 940 | 0 |
| 289 | 14 | 07/08/04 | 7:00 | UBR | 20.45 | 0.914 | 69.1 | 6.21 | 3.094 | 18.3 | 9.9 | 460 | 699 | 940 | 0 |
| 290 | 14 | 07/08/04 | 8:00 | UBR | 20.32 | 0.921 | 68.4 | 6.17 | 3.111 | 17.1 | 9.95 | 479 | 719 | 947 | 0 |
| 291 | 14 | 07/08/04 | 9:00 | UBR | 20.21 | 0.931 | 69.1 | 6.24 | 3.133 | 52.4 | 9.96 | 482 | 750 | 947 | 0 |
| 292 | 14 | 07/08/04 | 10:00 | UBR | 20.29 | 0.941 | 71.9 | 6.49 | 3.144 | 27.3 | 9.97 | 486 | 744 | 947 | 0 |
| 293 | 14 | 07/08/04 | 11:00 | UBR | 20.52 | 0.949 | 76.1 | 6.83 | 3.145 | 17.8 | 9.98 | 490 | 674 | 947 | 0 |
| 294 | 14 | 07/08/04 | 12:00 | UBR | 20.9 | 0.954 | 82.4 | 7.34 | 3.143 | 15 | 9.93 | 471 | 750 | 947 | 0 |
| 295 | 14 | 07/08/04 | 13:00 | UBR | 21.41 | 0.957 | 88.5 | 7.81 | 3.13 | 17.2 | 9.95 | 479 | 750 | 947 | 0 |
| 296 | 14 | 07/08/04 | 14:00 | UBR | 22.09 | 0.959 | 95.5 | 8.32 | 3.105 | 15.3 | 9.96 | 482 | 750 | 947 | 0 |
| 297 | 14 | 07/08/04 | 15:00 | UBR | 22.82 | 0.962 | 101.9 | 8.75 | 3.104 | 14.5 | 9.92 | 468 | 755 | 947 | 0 |
| 298 | 14 | 07/08/04 | 16:00 | UBR | 23.44 | 0.965 | 107.8 | 9.15 | 3.093 | 13.1 | 9.95 | 479 | 755 | 947 | 0 |
| 299 | 14 | 07/08/04 | 17:00 | UBR | 23.95 | 0.966 | 112.8 | 9.48 | 3.075 | 14.8 | 10.09 | 533 | 755 | 947 | 0 |
| 300 | 14 | 07/08/04 | 18:00 | UBR | 24.1 | 0.967 | 115.8 | 9.7 | 3.078 | 15.5 | 9.94 | 475 | 755 | 947 | 0 |
| 301 | 14 | 07/08/04 | 19:00 | UBR | 24.09 | 0.965 | 117.2 | 9.82 | 3.077 | 13.2 | 9.98 | 490 | 755 | 947 | 0 |
| 302 | 14 | 07/08/04 | 20:00 | UBR | 24.01 | 0.963 | 117.4 | 9.86 | 3.053 | 15.1 | 9.95 | 479 | 755 | 947 | 0 |

| ID | Event ID | Date | Time | Hydro Period | temp | spcond | DO% | domgl | depth | Turb | Border Stage | Border Flow | Oneida Flow | Soda Flow | ANOVA SIG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 303 | 14 | 07/08/04 | 21:00 | UBR | 23.85 | 0.96 | 115.8 | 9.75 | 3.054 | 14.9 | 9.98 | 490 | 755 | 947 | 0 |
| 304 | 14 | 07/08/04 | 22:00 | UBR | 23.69 | 0.955 | 112.8 | 9.53 | 3.089 | 14.7 | 9.94 | 475 | 755 | 947 | 0 |
| 305 | 14 | 07/08/04 | 23:00 | UBR | 23.48 | 0.949 | 108.2 | 9.17 | 3.135 | 18.4 | 9.99 | 493 | 755 | 947 | 0 |
| 306 | 14 | 07/09/04 | 0:00 | UBR | 23.35 | 0.943 | 103.3 | 8.78 | 3.168 | 17.1 | 9.98 | 490 | 754 | 945 | 0 |
| 307 | 14 | 07/09/04 | 1:00 | UBR | 23.17 | 0.94 | 98.2 | 8.37 | 3.182 | 16.4 | 10.04 | 512 | 754 | 945 | 0 |
| 308 | 14 | 07/09/04 | 2:00 | UBR | 23.02 | 0.933 | 93.1 | 7.96 | 3.192 | 14.7 | 10.07 | 527 | 754 | 945 | 0 |
| 309 | 14 | 07/09/04 | 3:00 | UBR | 22.84 | 0.922 | 88.1 | 7.56 | 3.204 | 16.5 | 10.05 | 516 | 754 | 945 | 0 |
| 310 | 14 | 07/09/04 | 4:00 | UBR | 22.57 | 0.914 | 82.8 | 7.15 | 3.202 | 18.5 | 10.07 | 527 | 754 | 945 | 0 |
| 311 | 14 | 07/09/04 | 5:00 | UBR | 22.27 | 0.906 | 77.9 | 6.76 | 3.22 | 18.3 | 10.05 | 516 | 754 | 945 | 0 |
| 312 | 14 | 07/09/04 | 6:00 | UBR | 21.93 | 0.9 | 73.9 | 6.45 | 3.234 | 14.9 | 10.07 | 527 | 759 | 953 | 0 |
| 313 | 14 | 07/09/04 | 7:00 | UBR | 21.58 | 0.898 | 70.6 | 6.21 | 3.236 | 18.7 | 10.04 | 512 | 759 | 953 | 0 |
| 314 | 14 | 07/09/04 | 8:00 | UBR | 21.25 | 0.901 | 68.7 | 6.08 | 3.231 | 15.8 | 10.04 | 512 | 822 | 953 | 0 |
| 315 | 14 | 07/09/04 | 9:00 | UBR | 21.03 | 0.908 | 68.9 | 6.13 | 3.228 | 19.2 | 10.03 | 508 | 843 | 953 | 0 |
| 316 | 14 | 07/09/04 | 10:00 | UBR | 20.97 | 0.917 | 71.5 | 6.36 | 3.222 | 17.8 | 10.02 | 505 | 859 | 953 | 0 |
| 317 | 14 | 07/09/04 | 11:00 | UBR | 20.96 | 0.927 | 76.1 | 6.77 | 3.221 | 18.4 | 10.07 | 527 | 859 | 961 | 0 |
| 318 | 14 | 07/09/04 | 12:00 | UBR | 21.24 | 0.938 | 81.9 | 7.25 | 3.217 | 18 | 10.08 | 530 | 859 | 961 | 0 |
| 319 | 14 | 07/09/04 | 13:00 | UBR | 21.69 | 0.947 | 88.8 | 7.79 | 3.198 | 17.8 | 10.04 | 512 | 859 | 953 | 0 |
| 320 | 14 | 07/09/04 | 14:00 | UBR | 22.26 | 0.952 | 96.1 | 8.34 | 3.189 | 16.1 | 10.04 | 512 | 897 | 953 | 0 |
| 321 | 14 | 07/09/04 | 15:00 | UBR | 22.51 | 0.954 | 101.7 | 8.79 | 3.174 | 16.8 | 10.03 | 508 | 902 | 961 | 0 |
| 322 | 14 | 07/09/04 | 16:00 | UBR | 22.94 | 0.954 | 107.7 | 9.23 | 3.148 | 15.2 | 10.04 | 512 | 902 | 961 | 0 |
| 323 | 14 | 07/09/04 | 17:00 | UBR | 23.36 | 0.954 | 112.8 | 9.59 | 3.155 | 14.9 | 10.04 | 512 | 902 | 961 | 0 |
| 324 | 14 | 07/09/04 | 18:00 | UBR | 23.52 | 0.952 | 116.1 | 9.84 | 3.175 | 18.3 | 10.09 | 533 | 902 | 961 | 0 |
| 325 | 14 | 07/09/04 | 19:00 | UBR | 23.61 | 0.949 | 118.5 | 10.02 | 3.225 | 18.1 | 10.13 | 547 | 902 | 961 | 0 |
| 326 | 14 | 07/09/04 | 20:00 | UBR | 23.65 | 0.948 | 118.6 | 10.02 | 3.28 | 20.5 | 10.2 | 571 | 897 | 961 | 0 |
| 327 | 14 | 07/09/04 | 21:00 | UBR | 23.55 | 0.942 | 115.9 | 9.82 | 3.312 | 22.4 | 10.21 | 574 | 897 | 961 | 0 |
| 328 | 14 | 07/09/04 | 22:00 | UBR | 23.32 | 0.935 | 112.3 | 9.55 | 3.332 | 22.8 | 10.25 | 592 | 897 | 961 | 0 |
| 329 | 14 | 07/09/04 | 23:00 | UBR | 23.1 | 0.924 | 106.8 | 9.12 | 3.369 | 27.8 | 10.05 | 516 | 897 | 961 | 0 |
| 330 | 14 | 07/10/04 | 0:00 | UBR | 22.98 | 0.915 | 101.4 | 8.68 | 3.401 | 25.5 | 10.29 | 606 | 896 | 951 | 0 |
| 331 | 14 | 07/10/04 | 1:00 | UBR | 22.75 | 0.908 | 95.1 | 8.18 | 3.429 | 26.3 | 10.25 | 592 | 896 | 951 | 0 |
| 332 | 14 | 07/10/04 | 2:00 | UBR | 22.59 | 0.903 | 89.6 | 7.73 | 3.459 | 25.9 | 10.35 | 628 | 896 | 951 | 0 |
| 333 | 14 | 07/10/04 | 3:00 | UBR | 22.4 | 0.896 | 84 | 7.27 | 3.48 | 23 | 10.31 | 613 | 896 | 951 | 0 |
| 334 | 14 | 07/10/04 | 4:00 | UBR | 22.1 | 0.89 | 78.7 | 6.85 | 3.495 | 27.7 | 10.34 | 624 | 896 | 959 | 0 |
| 335 | 14 | 07/10/04 | 5:00 | UBR | 21.72 | 0.889 | 74.2 | 6.51 | 3.53 | 25.2 | 10.34 | 624 | 896 | 959 | 0 |
| 336 | 14 | 07/10/04 | 6:00 | UBR | 21.27 | 0.891 | 70.8 | 6.26 | 3.546 | 21.7 | 10.35 | 628 | 896 | 959 | 0 |
| 337 | 14 | 07/10/04 | 7:00 | UBR | 20.82 | 0.894 | 68.6 | 6.13 | 3.571 | 19 | 10.33 | 620 | 896 | 959 | 0 |
| 338 | 14 | 07/10/04 | 8:00 | UBR | 20.44 | 0.902 | 68.2 | 6.13 | 3.58 | 29 | 10.35 | 628 | 896 | 959 | 0 |
| 339 | 14 | 07/10/04 | 9:00 | UBR | 20.18 | 0.91 | 70.1 | 6.33 | 3.594 | 18.1 | 10.34 | 624 | 896 | 959 | 0 |
| 340 | 14 | 07/10/04 | 10:00 | UBR | 20.13 | 0.917 | 74 | 6.7 | 3.594 | 17.2 | 10.32 | 617 | 896 | 967 | 0 |

| ID | Event ID | Date | Time | Hydro Period | temp | spcond | DO% | domgl | depth | Turb | Border Stage | Border Flow | Oneida Flow | Soda Flow | ANOVA SIG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 341 | 14 | 07/10/04 | 11:00 | UBR | 20.32 | 0.924 | 79.4 | 7.15 | 3.595 | 25.2 | 10.36 | 631 | 886 | 959 | 0 |
| 528 | 32 | 08/21/04 | 19:00 | SBF | 21.73 | 1.188 | 15.9 | 1.4 | 3.412 | 5.2 | 10.33 | 592 | 890 | 733 | 0.007 |
| 529 | 32 | 08/21/04 | 20:00 | SBF | 21.86 | 1.182 | 15.8 | 1.38 | 3.407 | 5.3 | 10.28 | 571 | 896 | 733 | 0.007 |
| 530 | 32 | 08/21/04 | 21:00 | SBF | 21.92 | 1.238 | 14.4 | 1.25 | 3.433 | 5.3 | 10.32 | 588 | 896 | 733 | 0.007 |
| 531 | 32 | 08/21/04 | 22:00 | SBF | 21.98 | 1.247 | 13.9 | 1.21 | 3.484 | 5.6 | 10.32 | 588 | 890 | 733 | 0.007 |
| 532 | 32 | 08/21/04 | 23:00 | SBF | 21.98 | 1.285 | 12.5 | 1.09 | 3.537 | 6.4 | 10.39 | 617 | 890 | 733 | 0.007 |
| 533 | 32 | 08/22/04 | 0:00 | SBF | 21.97 | 1.308 | 12.6 | 1.1 | 3.568 | 7.1 | 10.36 | 606 | 890 | 737 | 0.007 |
| 534 | 32 | 08/22/04 | 1:00 | SBF | 21.97 | 1.258 | 12.9 | 1.12 | 3.608 | 6.7 | 10.39 | 617 | 890 | 737 | 0.007 |
| 535 | 32 | 08/22/04 | 2:00 | SBF | 21.94 | 1.241 | 13.2 | 1.16 | 3.601 | 6.1 | 10.42 | 631 | 890 | 737 | 0.007 |
| 536 | 32 | 08/22/04 | 3:00 | SBF | 21.9 | 1.345 | 11.9 | 1.04 | 3.603 | 6.8 | 10.38 | 613 | 890 | 737 | 0.007 |
| 537 | 32 | 08/22/04 | 4:00 | SBF | 21.83 | 1.263 | 12.8 | 1.12 | 3.651 | 6 | 10.49 | 661 | 890 | 737 | 0.007 |
| 538 | 32 | 08/22/04 | 5:00 | SBF | 21.74 | 1.283 | 13.4 | 1.18 | 3.723 | 5.7 | 10.54 | 684 | 885 | 737 | 0.007 |
| 539 | 32 | 08/22/04 | 6:00 | SBF | 21.67 | 1.264 | 12.4 | 1.09 | 3.804 | 6.7 | 10.56 | 692 | 885 | 737 | 0.007 |
| 540 | 32 | 08/22/04 | 7:00 | SBF | 21.54 | 1.359 | 13.6 | 1.2 | 3.86 | 6.1 | 10.72 | 765 | 885 | 737 | 0.007 |
| 541 | 32 | 08/22/04 | 8:00 | SBF | 21.34 | 1.242 | 14.7 | 1.3 | 3.873 | 5.9 | 10.76 | 784 | 692 | 640 | 0.007 |
| 542 | 32 | 08/22/04 | 9:00 | SBF | 21.07 | 1.229 | 15.7 | 1.39 | 3.871 | 4.8 | 10.7 | 757 | 595 | 640 | 0.007 |
| 543 | 32 | 08/22/04 | 10:00 | SBF | 20.48 | 1.09 | 17.7 | 1.59 | 3.867 | 3.5 | 10.7 | 757 | 595 | 640 | 0.007 |
| 544 | 32 | 08/22/04 | 11:00 | SBF | 20.62 | 1.109 | 17.8 | 1.6 | 3.854 | 4.4 | 10.79 | 796 | 648 | 640 | 0.007 |
| 545 | 32 | 08/22/04 | 12:00 | SBF | 20.46 | 1.148 | 17.3 | 1.56 | 3.852 | 9.5 | 10.74 | 773 | 648 | 640 | 0.007 |
| 546 | 32 | 08/22/04 | 13:00 | SBF | 20.38 | 1.15 | 17.4 | 1.57 | 3.831 | 8.3 | 10.93 | 866 | 648 | 640 | 0.007 |
| 849 | 32 | 08/20/04 | 23:00 | SBF | 22.18 | 1.153 | 18.1 | 1.57 | 3.291 | 12.6 | 10 | 471 | 667 | 729 | 0.007 |
| 850 | 32 | 08/21/04 | 0:00 | SBF | 22.02 | 1.112 | 18.5 | 1.61 | 3.299 | 18.9 | 10.01 | 475 | 667 | 733 | 0.007 |
| 851 | 32 | 08/21/04 | 1:00 | SBF | 21.86 | 1.106 | 20.8 | 1.82 | 3.348 | 9.5 | 10.04 | 486 | 667 | 733 | 0.007 |
| 852 | 32 | 08/21/04 | 2:00 | SBF | 21.77 | 1.101 | 19.6 | 1.72 | 3.419 | 10.8 | 10.1 | 508 | 667 | 733 | 0.007 |
| 853 | 32 | 08/21/04 | 3:00 | SBF | 21.66 | 1.071 | 21.2 | 1.86 | 3.492 | 14.1 | 10.15 | 527 | 667 | 733 | 0.007 |
| 854 | 32 | 08/21/04 | 4:00 | SBF | 21.63 | 1.083 | 21.5 | 1.88 | 3.533 | 13.2 | 10.22 | 550 | 667 | 733 | 0.007 |
| 855 | 32 | 08/21/04 | 5:00 | SBF | 21.6 | 1.126 | 20.7 | 1.82 | 3.556 | 10.2 | 10.31 | 585 | 667 | 733 | 0.007 |
| 856 | 32 | 08/21/04 | 6:00 | SBF | 21.5 | 1.154 | 20.4 | 1.79 | 3.56 | 9.9 | 10.29 | 578 | 667 | 733 | 0.007 |
| 857 | 32 | 08/21/04 | 7:00 | SBF | 21.45 | 1.166 | 20.3 | 1.78 | 3.573 | 12.5 | 10.27 | 567 | 667 | 733 | 0.007 |
| 858 | 32 | 08/21/04 | 8:00 | SBF | 21.13 | 1.069 | 20.9 | 1.85 | 3.574 | 9 | 10.29 | 578 | 667 | 733 | 0.007 |
| 859 | 32 | 08/21/04 | 9:00 | SBF | 20.96 | 1.053 | 22.9 | 2.04 | 3.573 | 9.6 | 10.31 | 585 | 667 | 733 | 0.007 |
| 860 | 32 | 08/21/04 | 10:00 | SBF | 20.72 | 1.018 | 23.6 | 2.11 | 3.57 | 2.9 | 10.34 | 595 | 667 | 733 | 0.007 |
| 861 | 32 | 08/21/04 | 11:00 | SBF | 20.69 | 1.025 | 24.3 | 2.17 | 3.553 | 2.9 | 10.36 | 606 | 692 | 733 | 0.007 |
| 862 | 32 | 08/21/04 | 12:00 | SBF | 20.77 | 1.11 | 20.9 | 1.86 | 3.552 | 3.2 | 10.34 | 595 | 722 | 733 | 0.007 |
| 863 | 32 | 08/21/04 | 13:00 | SBF | 20.85 | 1.137 | 16.2 | 1.45 | 3.539 | 3.6 | 10.04 | 600 | 748 | 733 | 0.007 |
| 864 | 32 | 08/21/04 | 14:00 | SBF | 20.89 | 1.172 | 16.5 | 1.47 | 3.533 | 3.9 | 10.35 | 602 | 748 | 733 | 0.007 |
| 865 | 32 | 08/21/04 | 15:00 | SBF | 21.01 | 1.161 | 15.6 | 1.39 | 3.522 | 4.3 | 10.39 | 617 | 748 | 733 | 0.007 |
| 866 | 32 | 08/21/04 | 16:00 | SBF | 21.15 | 1.207 | 15.3 | 1.35 | 3.497 | 4.5 | 10.32 | 588 | 742 | 733 | 0.007 |

| ID | Event ID | Date | Time | Hydro Period | temp | spcond | DO% | domgl | depth | Turb | Border Stage | Border Flow | Oneida Flow | Soda Flow | ANOVA SIG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 867 | 32 | 08/21/04 | 17:00 | SBF | 21.29 | 1.206 | 14.7 | 1.3 | 3.472 | 4.8 | 10.3 | 581 | 742 | 733 | 0.007 |
| 868 | 32 | 08/21/04 | 18:00 | SBF | 21.46 | 1.207 | 15.2 | 1.34 | 3.437 | 4.6 | 10.31 | 585 | 742 | 733 | 0.007 |
| 991 | 81 | 10/20/04 | 10:00 | SBF | 10.38 | 1.011 | 46.9 | 5.23 | 2.334 | 5.5 | 9.64 | 370 | 226 | 46 | 0 |
| 992 | 81 | 10/20/04 | 12:00 | SBF | 10.41 | 1.052 | 46.5 | 5.18 | 2.362 | 6.7 | 9.68 | 386 | 226 | 46 | 0 |
| 993 | 81 | 10/20/04 | 13:00 | SBF | 10.42 | 1.071 | 45.4 | 5.05 | 2.409 | 7.1 | 9.69 | 390 | 226 | 46 | 0 |
| 994 | 81 | 10/20/04 | 14:00 | SBF | 10.43 | 1.083 | 44.8 | 4.99 | 2.441 | 7 | 9.71 | 396 | 226 | 160 | 0 |
| 995 | 81 | 10/20/04 | 15:00 | SBF | 10.48 | 1.092 | 48.6 | 5.41 | 2.462 | 8.2 | 9.74 | 406 | 226 | 160 | 0 |
| 996 | 81 | 10/20/04 | 16:00 | SBF | 10.51 | 1.098 | 45.7 | 5.08 | 2.523 | 7.3 | 9.77 | 419 | 229 | 160 | 0 |
| 997 | 81 | 10/20/04 | 17:00 | SBF | 10.48 | 1.1 | 43.7 | 4.87 | 2.549 | 10 | 9.79 | 426 | 229 | 160 | 0 |
| 998 | 81 | 10/20/04 | 18:00 | SBF | 10.47 | 1.105 | 43.3 | 4.82 | 2.602 | 9.8 | 9.82 | 436 | 226 | 160 | 0 |
| 999 | 81 | 10/20/04 | 19:00 | SBF | 10.44 | 1.112 | 41.4 | 4.61 | 2.635 | 16.3 | 9.84 | 443 | 229 | 160 | 0 |
| 1000 | 81 | 10/20/04 | 20:00 | SBF | 10.4 | 1.117 | 38.6 | 4.3 | 2.688 | 13.7 | 9.86 | 450 | 229 | 160 | 0 |
| 1001 | 81 | 10/20/04 | 21:00 | SBF | 10.34 | 1.119 | 36.8 | 4.11 | 2.673 | 17.3 | 9.88 | 457 | 229 | 160 | 0 |
| 1478 | 134 | 03/19/05 | 15:00 | LBR | 6.93 | 0.982 | 89.7 | 10.88 | 2.994 | 86.4 | 11.04 | 913 | 787 | 606 | 0 |
| 1479 | 134 | 03/19/05 | 16:00 | LBR | 7.16 | 0.981 | 90.9 | 10.96 | 2.985 | 87.7 | 11.05 | 916 | 787 | 606 | 0 |
| 1480 | 134 | 03/19/05 | 17:00 | LBR | 7.36 | 0.978 | 91.9 | 11.02 | 2.967 | 86.9 | 11.08 | 926 | 787 | 606 | 0 |
| 1481 | 134 | 03/19/05 | 18:00 | LBR | 7.43 | 0.974 | 92.5 | 11.07 | 2.965 | 84.4 | 11.09 | 930 | 787 | 606 | 0 |
| 1482 | 134 | 03/19/05 | 19:00 | LBR | 7.52 | 0.97 | 92.8 | 11.09 | 2.978 | 83.3 | 11.07 | 923 | 787 | 606 | 0 |
| 1483 | 134 | 03/19/05 | 20:00 | LBR | 7.68 | 0.967 | 93.2 | 11.09 | 3.004 | 82 | 11.09 | 930 | 787 | 606 | 0 |
| 1484 | 134 | 03/19/05 | 21:00 | LBR | 7.82 | 0.964 | 93.1 | 11.04 | 3.027 | 87.4 | 11.1 | 933 | 792 | 606 | 0 |
| 1485 | 134 | 03/19/05 | 22:00 | LBR | 7.88 | 0.962 | 92.9 | 11 | 3.066 | 89.4 | 11.09 | 930 | 792 | 606 | 0 |
| 1486 | 134 | 03/19/05 | 23:00 | LBR | 7.89 | 0.963 | 92.2 | 10.91 | 3.058 | 95.2 | 11.1 | 933 | 787 | 606 | 0 |
| 1487 | 134 | 03/20/05 | 0:00 | LBR | 7.84 | 0.964 | 90.9 | 10.78 | 3.064 | 99.8 | 11.16 | 953 | 787 | 606 | 0 |
| 1488 | 134 | 03/20/05 | 1:00 | LBR | 7.79 | 0.964 | 89.6 | 10.64 | 3.088 | 108.3 | 11.19 | 963 | 787 | 606 | 0 |
| 1489 | 134 | 03/20/05 | 2:00 | LBR | 7.64 | 0.965 | 88 | 10.48 | 3.104 | 115.4 | 11.16 | 953 | 787 | 606 | 0 |
| 1490 | 134 | 03/20/05 | 3:00 | LBR | 7.39 | 0.967 | 86.2 | 10.33 | 3.132 | 135 | 11.24 | 980 | 787 | 606 | 0 |
| 1491 | 134 | 03/20/05 | 4:00 | LBR | 7.09 | 0.964 | 84.2 | 10.17 | 3.157 | 167.1 | 11.26 | 986 | 787 | 606 | 0 |
| 1492 | 134 | 03/20/05 | 5:00 | LBR | 6.79 | 0.959 | 82.3 | 10.01 | 3.188 | 219.4 | 11.27 | 990 | 787 | 606 | 0 |
| 1493 | 134 | 03/20/05 | 6:00 | LBR | 6.48 | 0.954 | 80.9 | 9.92 | 3.196 | 278.3 | 11.32 | 1010 | 787 | 606 | 0 |
| 1501 | 136 | 03/20/05 | 23:00 | LBR | 6.4 | 0.899 | 87 | 10.69 | 3.483 | 275.6 | 11.22 | 1050 | 926 | 606 | 0.003 |
| 1502 | 136 | 03/21/05 | 0:00 | LBR | 6.35 | 0.9 | 86.8 | 10.69 | 3.528 | 289.2 | 11.52 | 1070 | 932 | 606 | 0.003 |
| 1503 | 136 | 03/21/05 | 1:00 | LBR | 6.27 | 0.901 | 86.3 | 10.64 | 3.622 | 299.8 | 11.6 | 1100 | 932 | 606 | 0.003 |
| 1504 | 136 | 03/21/05 | 2:00 | LBR | 6.18 | 0.9 | 85.3 | 10.54 | 3.712 | 360.6 | 11.72 | 1140 | 932 | 606 | 0.003 |
| 1505 | 136 | 03/21/05 | 3:00 | LBR | 6.01 | 0.891 | 83.6 | 10.38 | 3.726 | 439.3 | 11.8 | 1160 | 932 | 606 | 0.003 |
| 1506 | 136 | 03/21/05 | 4:00 | LBR | 5.8 | 0.878 | 82.1 | 10.24 | 3.731 | 512.8 | 11.87 | 1190 | 932 | 606 | 0.003 |
| 1507 | 137 | 03/23/05 | 2:00 | LBR | 6.47 | 0.958 | 86.9 | 10.66 | 2.723 | 120.8 | 11.01 | 903 | 665 | 330 | 0 |
| 1508 | 137 | 03/23/05 | 3:00 | LBR | 6.43 | 0.959 | 85.7 | 10.52 | 2.717 | 118.9 | 11.01 | 903 | 665 | 330 | 0 |
| 1509 | 137 | 03/23/05 | 4:00 | LBR | 6.35 | 0.959 | 84.7 | 10.42 | 2.716 | 122.3 | 11.03 | 910 | 665 | 330 | 0 |

| ID | Event ID | Date | Time | Hydro Period | temp | spcond | DO% | domgl | depth | Turb | Border Stage | Border Flow | Oneida Flow | Soda Flow | ANOVA SIG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1510 | 137 | 03/23/05 | 5:00 | LBR | 6.24 | 0.957 | 83.5 | 10.3 | 2.714 | 172 | 11.06 | 920 | 665 | 330 | 0 |
| 1511 | 137 | 03/23/05 | 6:00 | LBR | 6.06 | 0.955 | 82.6 | 10.23 | 2.707 | 135.9 | 11.08 | 926 | 665 | 330 | 0 |
| 1512 | 137 | 03/23/05 | 7:00 | LBR | 5.88 | 0.953 | 81.5 | 10.15 | 2.71 | 143 | 11.11 | 936 | 665 | 330 | 0 |
| 1513 | 137 | 03/23/05 | 8:00 | LBR | 5.72 | 0.949 | 80.8 | 10.1 | 2.74 | 158.6 | 11.13 | 943 | 665 | 330 | 0 |
| 1514 | 137 | 03/23/05 | 9:00 | LBR | 5.6 | 0.945 | 80.2 | 10.06 | 2.749 | 166.6 | 11.15 | 949 | 665 | 330 | 0 |
| 1515 | 137 | 03/23/05 | 10:00 | LBR | 5.53 | 0.941 | 79.9 | 10.03 | 2.783 | 185.1 | 11.21 | 970 | 665 | 330 | 0 |
| 1516 | 137 | 03/23/05 | 11:00 | LBR | 5.47 | 0.938 | 79.8 | 10.04 | 2.796 | 199.7 | 11.22 | 973 | 665 | 330 | 0 |
| 1517 | 137 | 03/23/05 | 12:00 | LBR | 5.48 | 0.936 | 79.8 | 10.04 | 2.805 | 210.5 | 11.25 | 983 | 665 | 330 | 0 |
| 1518 | 137 | 03/23/05 | 13:00 | LBR | 5.54 | 0.933 | 80 | 10.05 | 2.846 | 213.3 | 11.3 | 1000 | 665 | 330 | 0 |
| 1519 | 137 | 03/23/05 | 14:00 | LBR | 5.62 | 0.932 | 80.1 | 10.05 | 2.863 | 216 | 11.3 | 1000 | 665 | 330 | 0 |
| 1520 | 137 | 03/23/05 | 15:00 | LBR | 5.78 | 0.934 | 80.8 | 10.08 | 2.879 | 220 | 11.33 | 1010 | 665 | 330 | 0 |
| 1521 | 137 | 03/23/05 | 16:00 | LBR | 5.95 | 0.936 | 81 | 10.07 | 2.906 | 231.5 | 11.37 | 1020 | 665 | 330 | 0 |
| 1522 | 137 | 03/23/05 | 17:00 | LBR | 6.07 | 0.936 | 81.5 | 10.1 | 2.932 | 260 | 11.4 | 1030 | 665 | 330 | 0 |
| 1523 | 137 | 03/23/05 | 18:00 | LBR | 6.14 | 0.932 | 81.7 | 10.1 | 2.978 | 311.3 | 11.45 | 1050 | 665 | 330 | 0 |
| 1524 | 137 | 03/23/05 | 19:00 | LBR | 6.13 | 0.927 | 81.7 | 10.11 | 3.016 | 360.3 | 11.47 | 1050 | 670 | 330 | 0 |
| 1525 | 137 | 03/23/05 | 20:00 | LBR | 6.12 | 0.92 | 81.2 | 10.05 | 3.075 | 410.5 | 11.5 | 1060 | 670 | 330 | 0 |
| 1526 | 137 | 03/23/05 | 21:00 | LBR | 6.12 | 0.913 | 81 | 10.03 | 3.116 | 454.8 | 11.51 | 1070 | 665 | 336 | 0 |
| 1527 | 137 | 03/23/05 | 22:00 | LBR | 6.13 | 0.907 | 80.8 | 10 | 3.152 | 490.2 | 11.54 | 1080 | 665 | 330 | 0 |
| 1539 | 139 | 04/04/05 | 17:00 | LBR | 6.68 | 0.903 | 234.1 | 28.56 | 3.462 | 50.9 | 11.58 | 1090 | 1142 | 825 | 0 |
| 1540 | 139 | 04/04/05 | 18:00 | LBR | 6.82 | 0.902 | 222.3 | 27.03 | 3.567 | 49 | 11.63 | 1110 | 1142 | 825 | 0 |
| 1541 | 139 | 04/04/05 | 19:00 | LBR | 6.98 | 0.896 | 388.7 | 47.08 | 3.685 | 52.4 | 11.7 | 1130 | 1148 | 825 | 0 |
| 1542 | 139 | 04/04/05 | 20:00 | LBR | 7.03 | 0.89 | 290.1 | 35.09 | 3.805 | 60.8 | 11.84 | 1180 | 1268 | 825 | 0 |
| 1543 | 139 | 04/04/05 | 21:00 | LBR | 7 | 0.882 | 364 | 44.07 | 3.901 | 69.4 | 11.95 | 1210 | 1274 | 825 | 0 |
| 1544 | 139 | 04/04/05 | 22:00 | LBR | 6.96 | 0.881 | 206.6 | 25.04 | 4.011 | 80.2 | 12.03 | 1240 | 1274 | 825 | 0 |
| 1545 | 139 | 04/04/05 | 23:00 | LBR | 6.99 | 0.883 | 212.2 | 25.69 | 4.091 | 79.1 | 12.14 | 1280 | 1280 | 825 | 0 |
| 1546 | 139 | 04/05/05 | 0:00 | LBR | 7 | 0.882 | 207.1 | 25.07 | 4.169 | 87.5 | 12.23 | 1310 | 1280 | 827 | 0 |
| 1547 | 139 | 04/05/05 | 1:00 | LBR | 6.97 | 0.883 | 166.6 | 20.18 | 4.237 | 106.1 | 12.31 | 1340 | 1274 | 827 | 0 |
| 1548 | 139 | 04/05/05 | 2:00 | LBR | 6.89 | 0.885 | 260.7 | 31.65 | 4.233 | 119.2 | 12.33 | 1350 | 1274 | 827 | 0 |
| 1549 | 139 | 04/05/05 | 3:00 | LBR | 6.69 | 0.886 | 193.1 | 23.56 | 4.261 | 130 | 12.36 | 1360 | 1274 | 827 | 0 |
| 1550 | 139 | 04/05/05 | 4:00 | LBR | 6.44 | 0.885 | 180.1 | 22.11 | 4.284 | 133.9 | 12.41 | 1380 | 1268 | 827 | 0 |
| 1627 | 145 | 04/15/05 | 1:00 | LBR | 9.4 | 0.785 | 100.6 | 11.49 | 3.737 | 71.5 | 11.06 | 920 | 1049 | 325 | 0 |
| 1628 | 145 | 04/15/05 | 2:00 | LBR | 9.21 | 0.769 | 97.7 | 11.21 | 3.853 | 68 | 11.25 | 983 | 1177 | 320 | 0 |
| 1629 | 145 | 04/15/05 | 3:00 | LBR | 8.88 | 0.75 | 95 | 10.99 | 3.949 | 69.1 | 11.48 | 1060 | 1177 | 325 | 0 |
| 1630 | 145 | 04/15/05 | 4:00 | LBR | 8.36 | 0.744 | 93.2 | 10.91 | 4.03 | 65.4 | 11.6 | 1100 | 1177 | 320 | 0 |
| 1631 | 145 | 04/15/05 | 5:00 | LBR | 7.86 | 0.742 | 91.9 | 10.9 | 4.088 | 62 | 11.75 | 1150 | 1177 | 325 | 0 |
| 1632 | 145 | 04/15/05 | 6:00 | LBR | 7.51 | 0.735 | 91.1 | 10.9 | 4.105 | 59 | 11.86 | 1180 | 1177 | 320 | 0 |
| 1633 | 145 | 04/15/05 | 7:00 | LBR | 7.19 | 0.734 | 91.2 | 10.99 | 4.122 | 55 | 11.85 | 1180 | 1177 | 325 | 0 |
| 1634 | 145 | 04/15/05 | 8:00 | LBR | 6.96 | 0.739 | 92.1 | 11.16 | 4.135 | 57.5 | 11.92 | 1200 | 1177 | 320 | 0 |

| ID | Event ID | Date | Time | Hydro Period | temp | spcond | DO% | domgl | depth | Turb | Border Stage | Border Flow | Oneida Flow | Soda Flow | ANOVA SIG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1635 | 145 | 04/15/05 | 9:00 | LBR | 6.97 | 0.743 | 93.4 | 11.32 | 4.128 | 49 | 11.97 | 1220 | 1177 | 320 | 0 |
| 1636 | 145 | 04/15/05 | 10:00 | LBR | 7.2 | 0.743 | 94.8 | 11.43 | 4.109 | 49.2 | 11.95 | 1210 | 1049 | 320 | 0 |
| 1637 | 145 | 04/15/05 | 11:00 | LBR | 7.6 | 0.741 | 96.6 | 11.52 | 4.033 | 47.1 | 12.02 | 1240 | 867 | 320 | 0 |
| 1638 | 145 | 04/15/05 | 12:00 | LBR | 8.16 | 0.74 | 98.5 | 11.59 | 3.907 | 44.5 | 12.11 | 1270 | 651 | 320 | 0 |
| 1671 | 149 | 04/20/05 | 4:00 | LBR | 8.97 | 0.849 | 79 | 9.11 | 2.499 | 33.9 | 10.52 | 707 | 463 | 183 | 0 |
| 1672 | 149 | 04/20/05 | 5:00 | LBR | 8.87 | 0.843 | 78.2 | 9.04 | 2.526 | 34.4 | 10.52 | 707 | 463 | 183 | 0 |
| 1673 | 149 | 04/20/05 | 6:00 | LBR | 8.67 | 0.837 | 77.7 | 9.03 | 2.563 | 36.1 | 10.54 | 715 | 463 | 183 | 0 |
| 1674 | 149 | 04/20/05 | 7:00 | LBR | 8.41 | 0.833 | 77.6 | 9.08 | 2.598 | 35.7 | 10.55 | 719 | 463 | 183 | 0 |
| 1675 | 149 | 04/20/05 | 8:00 | LBR | 8.11 | 0.83 | 78.1 | 9.2 | 2.62 | 36.4 | 10.57 | 726 | 463 | 183 | 0 |
| 1676 | 149 | 04/20/05 | 9:00 | LBR | 8.02 | 0.828 | 79.1 | 9.34 | 2.646 | 41.6 | 10.59 | 734 | 463 | 183 | 0 |
| 1677 | 149 | 04/20/05 | 10:00 | LBR | 8.19 | 0.83 | 80.7 | 9.49 | 2.663 | 40.2 | 10.58 | 730 | 463 | 183 | 0 |
| 1678 | 149 | 04/20/05 | 11:00 | LBR | 8.34 | 0.832 | 82.6 | 9.67 | 2.699 | 41 | 10.58 | 730 | 463 | 183 | 0 |
| 1679 | 149 | 04/20/05 | 12:00 | LBR | 8.35 | 0.832 | 84.3 | 9.87 | 2.707 | 41.2 | 10.62 | 745 | 463 | 183 | 0 |
| 1680 | 149 | 04/20/05 | 13:00 | LBR | 8.43 | 0.835 | 85.8 | 10.04 | 2.726 | 41.8 | 10.6 | 738 | 463 | 183 | 0 |
| 1681 | 149 | 04/20/05 | 14:00 | LBR | 8.52 | 0.84 | 87.3 | 10.18 | 2.742 | 41.8 | 10.58 | 730 | 463 | 183 | 0 |
| 1682 | 149 | 04/20/05 | 15:00 | LBR | 8.58 | 0.844 | 88.5 | 10.31 | 2.784 | 40.5 | 10.63 | 749 | 463 | 183 | 0 |
| 1683 | 149 | 04/20/05 | 16:00 | LBR | 8.52 | 0.847 | 89.8 | 10.47 | 2.795 | 41 | 10.62 | 745 | 463 | 183 | 0 |
| 1684 | 149 | 04/20/05 | 17:00 | LBR | 8.57 | 0.846 | 91.4 | 10.64 | 2.826 | 42.2 | 10.64 | 753 | 471 | 183 | 0 |
| 1685 | 149 | 04/20/05 | 18:00 | LBR | 8.5 | 0.843 | 92.7 | 10.82 | 2.852 | 42.7 | 10.63 | 749 | 442 | 183 | 0 |
| 1686 | 149 | 04/20/05 | 19:00 | LBR | 8.43 | 0.845 | 93.9 | 10.98 | 2.887 | 46 | 10.63 | 749 | 405 | 183 | 0 |
| 1687 | 149 | 04/20/05 | 20:00 | LBR | 8.41 | 0.848 | 94.4 | 11.04 | 2.924 | 47.4 | 10.68 | 769 | 442 | 183 | 0 |
| 1688 | 149 | 04/20/05 | 21:00 | LBR | 8.45 | 0.849 | 94.3 | 11.02 | 2.978 | 52.7 | 10.7 | 777 | 454 | 183 | 0 |
| 1689 | 149 | 04/20/05 | 22:00 | LBR | 8.51 | 0.849 | 93.8 | 10.94 | 2.985 | 56.8 | 10.7 | 777 | 493 | 183 | 0 |
| 1690 | 149 | 04/20/05 | 23:00 | LBR | 8.58 | 0.847 | 93.1 | 10.84 | 2.996 | 60.1 | 10.69 | 773 | 651 | 183 | 0 |
| 1691 | 149 | 04/21/05 | 0:00 | LBR | 8.7 | 0.843 | 92.1 | 10.69 | 3.05 | 61.4 | 10.73 | 788 | 651 | 182 | 0 |
| 1692 | 149 | 04/21/05 | 1:00 | LBR | 8.84 | 0.836 | 90 | 10.42 | 3.151 | 66.9 | 10.75 | 796 | 646 | 182 | 0 |
| 1693 | 149 | 04/21/05 | 2:00 | LBR | 8.9 | 0.837 | 88 | 10.17 | 3.241 | 74.7 | 10.8 | 816 | 665 | 182 | 0 |
| 1694 | 149 | 04/21/05 | 3:00 | LBR | 8.93 | 0.833 | 84.7 | 9.78 | 3.299 | 91.9 | 10.91 | 862 | 665 | 182 | 0 |
| 1695 | 149 | 04/21/05 | 4:00 | LBR | 8.96 | 0.812 | 81.8 | 9.44 | 3.34 | 106.3 | 11 | 900 | 665 | 182 | 0 |
| 1696 | 149 | 04/21/05 | 5:00 | LBR | 8.97 | 0.79 | 80.3 | 9.27 | 3.364 | 102.3 | 11.05 | 916 | 660 | 182 | 0 |
| 1697 | 149 | 04/21/05 | 6:00 | LBR | 8.84 | 0.783 | 79.8 | 9.23 | 3.387 | 101.6 | 11.12 | 939 | 665 | 182 | 0 |
| 1698 | 149 | 04/21/05 | 7:00 | LBR | 8.62 | 0.783 | 79.9 | 9.3 | 3.478 | 106 | 11.16 | 953 | 1213 | 182 | 0 |
| 1699 | 149 | 04/21/05 | 8:00 | LBR | 8.38 | 0.786 | 80.3 | 9.39 | 3.724 | 113.8 | 11.18 | 959 | 1213 | 182 | 0 |
| 1700 | 149 | 04/21/05 | 9:00 | LBR | 8.14 | 0.783 | 80.9 | 9.52 | 3.985 | 118.8 | 11.38 | 1030 | 1213 | 182 | 0 |
| 1701 | 149 | 04/21/05 | 10:00 | LBR | 8.05 | 0.758 | 81.5 | 9.62 | 4.144 | 122.1 | 11.64 | 1110 | 1213 | 182 | 0 |
| 1702 | 149 | 04/21/05 | 11:00 | LBR | 8.14 | 0.719 | 82.4 | 9.71 | 4.199 | 107.6 | 11.83 | 1170 | 736 | 182 | 0 |
| 1703 | 149 | 04/21/05 | 12:00 | LBR | 8.31 | 0.711 | 83.2 | 9.76 | 4.11 | 90.5 | 12.01 | 1230 | 736 | 182 | 0 |
| 1737 | 155 | 04/28/05 | 6:00 | LBR | 10.18 | 0.666 | 90 | 10.09 | 3.956 | 47.5 | 12.59 | 1440 | 1010 | 733 | 0 |

| ID | Event ID | Date | Time | Hydro Period | temp | spcond | DO% | domgl | depth | Turb | Border Stage | Border Flow | Oneida Flow | Soda Flow | ANOVA SIG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1738 | 155 | 04/28/05 | 7:00 | LBR | 10.01 | 0.667 | 89.5 | 10.08 | 3.994 | 47.4 | 12.66 | 1470 | 1090 | 733 | 0 |
| 1739 | 155 | 04/28/05 | 8:00 | LBR | 9.77 | 0.665 | 89.9 | 10.18 | 4.047 | 48.7 | 12.67 | 1470 | 1090 | 733 | 0 |
| 1740 | 155 | 04/28/05 | 9:00 | LBR | 9.46 | 0.664 | 89.9 | 10.26 | 4.112 | 75.3 | 12.72 | 1490 | 1172 | 733 | 0 |
| 1741 | 155 | 04/28/05 | 10:00 | LBR | 9.21 | 0.661 | 90 | 10.33 | 4.172 | 139.3 | 12.85 | 1540 | 1090 | 733 | 0 |
| 1742 | 155 | 04/28/05 | 11:00 | LBR | 8.98 | 0.663 | 90 | 10.38 | 4.286 | 115.4 | 12.85 | 1540 | 1528 | 733 | 0 |
| 1743 | 155 | 04/28/05 | 12:00 | LBR | 8.82 | 0.665 | 90 | 10.43 | 4.463 | 99.3 | 12.92 | 1560 | 1623 | 733 | 0 |
| 1744 | 155 | 04/28/05 | 13:00 | LBR | 8.76 | 0.663 | 89.9 | 10.43 | 4.717 | 116.5 | 12.45 | 1600 | 1720 | 733 | 0 |
| 1745 | 155 | 04/28/05 | 14:00 | LBR | 8.67 | 0.646 | 90.4 | 10.51 | 4.934 | 137.8 | 13.39 | 1750 | 1528 | 733 | 0 |
| 1746 | 155 | 04/28/05 | 15:00 | LBR | 8.72 | 0.635 | 90.4 | 10.51 | 5.08 | 160 | 13.7 | 1870 | 1720 | 733 | 0 |
| 1747 | 155 | 04/28/05 | 16:00 | LBR | 8.97 | 0.637 | 89.8 | 10.37 | 5.194 | 178.3 | 13.98 | 1990 | 1720 | 733 | 0 |
| 1748 | 155 | 04/28/05 | 17:00 | LBR | 9.18 | 0.64 | 89.8 | 10.32 | 5.254 | 195.3 | 14.21 | 2080 | 1623 | 733 | 0 |
| 1749 | 155 | 04/28/05 | 18:00 | LBR | 9.25 | 0.639 | 90 | 10.32 | 5.313 | 212 | 14.37 | 2150 | 1623 | 733 | 0 |
| 1750 | 155 | 04/28/05 | 19:00 | LBR | 9.3 | 0.64 | 90.4 | 10.35 | 5.359 | 205.2 | 14.54 | 2230 | 1623 | 733 | 0 |
| 1751 | 155 | 04/28/05 | 20:00 | LBR | 9.31 | 0.642 | 90.5 | 10.36 | 5.389 | 211.2 | 14.62 | 2260 | 1623 | 733 | 0 |
| 1809 | 162 | 05/08/05 | 19:00 | UBR | 13.31 | 0.668 | 95.1 | 9.93 | 4.571 | 68.4 | 13.19 | 1670 | 1550 | 686 | 0.005 |
| 1810 | 162 | 05/08/05 | 20:00 | UBR | 13.29 | 0.654 | 93.7 | 9.8 | 4.692 | 67.8 | 13.35 | 1730 | 1550 | 693 | 0.005 |
| 1811 | 162 | 05/08/05 | 21:00 | UBR | 13.29 | 0.633 | 91.9 | 9.6 | 4.784 | 64.8 | 13.51 | 1790 | 1550 | 686 | 0.005 |
| 1812 | 162 | 05/08/05 | 22:00 | UBR | 13.46 | 0.628 | 89.7 | 9.34 | 4.827 | 60.3 | 13.64 | 1850 | 1550 | 686 | 0.005 |
| 1813 | 162 | 05/08/05 | 23:00 | UBR | 13.47 | 0.632 | 87.7 | 9.13 | 4.867 | 61.3 | 13.66 | 1850 | 1203 | 686 | 0.005 |
| 1814 | 162 | 05/09/05 | 0:00 | UBR | 13.28 | 0.632 | 85.9 | 8.98 | 4.823 | 58.8 | 13.73 | 1880 | 1444 | 684 | 0.005 |
| 1815 | 162 | 05/09/05 | 1:00 | UBR | 13.03 | 0.631 | 84.2 | 8.85 | 4.792 | 54.5 | 13.7 | 1870 | 1438 | 684 | 0.005 |
| 1829 | 165 | 05/10/05 | 11:00 | UBR | 10.05 | 0.736 | 94.7 | 10.66 | 4.172 | 140.4 | 12.89 | 1550 | 1418 | 719 | 0 |
| 1830 | 165 | 05/10/05 | 12:00 | UBR | 10.08 | 0.709 | 95.7 | 10.76 | 4.294 | 163.6 | 13 | 1590 | 1418 | 719 | 0 |
| 1831 | 165 | 05/10/05 | 13:00 | UBR | 10.19 | 0.675 | 96.3 | 10.8 | 4.436 | 166.8 | 13.81 | 1600 | 1418 | 719 | 0 |
| 1832 | 165 | 05/10/05 | 14:00 | UBR | 10.56 | 0.659 | 97.7 | 10.86 | 4.565 | 140.3 | 13.29 | 1710 | 1418 | 757 | 0 |
| 1833 | 165 | 05/10/05 | 15:00 | UBR | 11.01 | 0.654 | 99.2 | 10.92 | 4.643 | 121.5 | 13.44 | 1770 | 1425 | 757 | 0 |
| 1834 | 165 | 05/10/05 | 16:00 | UBR | 11.34 | 0.655 | 100.4 | 10.97 | 4.696 | 107.3 | 13.6 | 1830 | 1637 | 757 | 0 |
| 1835 | 165 | 05/10/05 | 17:00 | UBR | 11.64 | 0.66 | 101.7 | 11.03 | 4.783 | 106.2 | 13.64 | 1850 | 1778 | 757 | 0 |
| 1836 | 165 | 05/10/05 | 18:00 | UBR | 11.8 | 0.66 | 102.9 | 11.12 | 4.864 | 101.2 | 13.78 | 1900 | 1837 | 757 | 0 |
| 1837 | 165 | 05/10/05 | 19:00 | UBR | 11.94 | 0.653 | 104.2 | 11.23 | 4.975 | 99.7 | 13.95 | 1970 | 1829 | 757 | 0 |
| 1838 | 165 | 05/10/05 | 20:00 | UBR | 11.98 | 0.647 | 103.7 | 11.16 | 5.078 | 99.4 | 14.15 | 2060 | 1778 | 757 | 0 |
| 1839 | 165 | 05/10/05 | 21:00 | UBR | 12.01 | 0.646 | 102.1 | 10.99 | 5.152 | 102.9 | 14.23 | 2090 | 1815 | 757 | 0 |
| 1840 | 165 | 05/10/05 | 22:00 | UBR | 12.11 | 0.649 | 99.6 | 10.69 | 5.216 | 102.7 | 14.4 | 2160 | 1815 | 757 | 0 |
| 1841 | 165 | 05/10/05 | 23:00 | UBR | 12.09 | 0.652 | 98.7 | 10.59 | 5.255 | 102.7 | 13.92 | 2200 | 1815 | 757 | 0 |
| 1842 | 165 | 05/11/05 | 0:00 | UBR | 11.97 | 0.653 | 96.7 | 10.41 | 5.262 | 103.4 | 14.5 | 2210 | 1522 | 755 | 0 |
| 1843 | 165 | 05/11/05 | 1:00 | UBR | 11.71 | 0.651 | 94.6 | 10.24 | 5.241 | 99.6 | 14.48 | 2200 | 1522 | 755 | 0 |
| 1844 | 166 | 05/11/05 | 17:00 | UBR | 11.42 | 0.668 | 96.3 | 10.49 | 4.964 | 130.6 | 13.93 | 1970 | 1699 | 910 | 0 |
| 1845 | 166 | 05/11/05 | 18:00 | UBR | 11.64 | 0.66 | 98.3 | 10.66 | 5.09 | 126.1 | 14.03 | 2010 | 1685 | 910 | 0 |

| ID | Event ID | Date | Time | Hydro Period | temp | spcond | DO% | domgl | depth | Turb | Border Stage | Border Flow | Oneida Flow | Soda Flow | ANOVA SIG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1846 | 166 | 05/11/05 | 19:00 | UBR | 11.78 | 0.645 | 99.1 | 10.71 | 5.19 | 118.6 | 14.12 | 2050 | 1671 | 910 | 0 |
| 1847 | 166 | 05/11/05 | 20:00 | UBR | 11.9 | 0.643 | 98.9 | 10.66 | 5.25 | 106.8 | 14.22 | 2090 | 1644 | 917 | 0 |
| 1848 | 166 | 05/11/05 | 21:00 | UBR | 12.04 | 0.647 | 98.6 | 10.6 | 5.298 | 99.4 | 14.29 | 2120 | 1630 | 925 | 0 |
| 1849 | 166 | 05/11/05 | 22:00 | UBR | 12.03 | 0.648 | 97.7 | 10.5 | 5.309 | 95.5 | 14.34 | 2140 | 1582 | 917 | 0 |
| 1850 | 166 | 05/11/05 | 23:00 | UBR | 11.95 | 0.648 | 96.1 | 10.35 | 5.302 | 90.8 | 14.31 | 2130 | 1582 | 917 | 0 |
| 1974 | 179 | 06/02/05 | 0:00 | UBR | 16.1 | 0.61 | 99.5 | 9.78 | 4.152 | 33.6 | 12.61 | 1450 | 1059 | 639 | 0.006 |
| 1975 | 179 | 06/02/05 | 1:00 | UBR | 15.87 | 0.609 | 96.7 | 9.55 | 4.184 | 33.5 | 12.59 | 1440 | 1059 | 639 | 0.006 |
| 1976 | 179 | 06/02/05 | 2:00 | UBR | 15.53 | 0.608 | 92.5 | 9.21 | 4.21 | 33 | 12.65 | 1460 | 1059 | 632 | 0.006 |
| 1977 | 179 | 06/02/05 | 3:00 | UBR | 15.1 | 0.607 | 87.2 | 8.76 | 4.223 | 35 | 12.7 | 1480 | 1059 | 632 | 0.006 |
| 1978 | 179 | 06/02/05 | 4:00 | UBR | 14.65 | 0.605 | 82.2 | 8.34 | 4.229 | 37.4 | 12.74 | 1500 | 1059 | 632 | 0.006 |
| 1979 | 179 | 06/02/05 | 5:00 | UBR | 14.15 | 0.601 | 79.3 | 8.14 | 4.216 | 35.3 | 12.71 | 1490 | 1059 | 632 | 0.006 |
| 1980 | 179 | 06/02/05 | 6:00 | UBR | 13.66 | 0.601 | 77.7 | 8.05 | 4.22 | 36.4 | 12.72 | 1490 | 1059 | 632 | 0.006 |
| 1992 | 181 | 06/05/05 | 22:00 | UBR | 16.57 | 0.594 | 127.4 | 12.4 | 4.037 | 18.4 | 12.62 | 1450 | 1299 | 969 | 0.001 |
| 1993 | 181 | 06/05/05 | 23:00 | UBR | 16.59 | 0.594 | 119.5 | 11.63 | 4.065 | 22.4 | 12.64 | 1460 | 1623 | 977 | 0.001 |
| 1994 | 181 | 06/06/05 | 0:00 | UBR | 16.58 | 0.592 | 111.2 | 10.83 | 4.173 | 21.7 | 12.75 | 1500 | 1597 | 978 | 0.001 |
| 1995 | 181 | 06/06/05 | 1:00 | UBR | 16.42 | 0.592 | 102.5 | 10.01 | 4.294 | 22 | 12.89 | 1550 | 1597 | 986 | 0.001 |
| 1996 | 181 | 06/06/05 | 2:00 | UBR | 16.06 | 0.595 | 93.8 | 9.23 | 4.442 | 28.1 | 13.03 | 1610 | 1319 | 978 | 0.001 |
| 1997 | 181 | 06/06/05 | 3:00 | UBR | 15.55 | 0.593 | 88.4 | 8.79 | 4.527 | 30.2 | 13.18 | 1660 | 1215 | 978 | 0.001 |
| 1998 | 181 | 06/06/05 | 4:00 | UBR | 14.96 | 0.593 | 85.5 | 8.62 | 4.506 | 34.8 | 13.24 | 1690 | 1215 | 970 | 0.001 |
| 1999 | 182 | 06/07/05 | 21:00 | UBR | 12.16 | 0.591 | 86.4 | 9.26 | 4.839 | 51.3 | 13.43 | 1760 | 1518 | 955 | 0.008 |
| 2000 | 182 | 06/07/05 | 22:00 | UBR | 12.05 | 0.576 | 88.1 | 9.47 | 4.906 | 47.9 | 13.54 | 1810 | 1525 | 963 | 0.008 |
| 2001 | 182 | 06/07/05 | 23:00 | UBR | 12.08 | 0.578 | 88.2 | 9.48 | 4.953 | 46.5 | 13.61 | 1830 | 1518 | 963 | 0.008 |
| 2002 | 182 | 06/08/05 | 0:00 | UBR | 12.17 | 0.583 | 86.6 | 9.28 | 4.963 | 43.3 | 13.67 | 1860 | 1519 | 963 | 0.008 |
| 2003 | 182 | 06/08/05 | 1:00 | UBR | 12.09 | 0.584 | 84.9 | 9.11 | 4.958 | 44.9 | 13.71 | 1870 | 1519 | 955 | 0.008 |
| 2004 | 183 | 06/09/05 | 3:00 | UBR | 12.34 | 0.565 | 85.4 | 9.12 | 4.639 | 33.3 | 13.24 | 1690 | 1494 | 956 | 0.037 |
| 2005 | 183 | 06/09/05 | 4:00 | UBR | 11.96 | 0.564 | 83.2 | 8.96 | 4.715 | 34.5 | 13.31 | 1710 | 1494 | 964 | 0.037 |
| 2006 | 183 | 06/09/05 | 5:00 | UBR | 11.67 | 0.559 | 81.5 | 8.83 | 4.759 | 37.1 | 13.39 | 1750 | 1494 | 964 | 0.037 |
| 2007 | 183 | 06/09/05 | 6:00 | UBR | 11.43 | 0.557 | 80.5 | 8.77 | 4.776 | 37.2 | 13.43 | 1760 | 1494 | 956 | 0.037 |
| 2008 | 183 | 06/09/05 | 7:00 | UBR | 11.27 | 0.56 | 80.3 | 8.78 | 4.797 | 42.9 | 13.46 | 1770 | 1494 | 964 | 0.037 |
| 2009 | 183 | 06/09/05 | 8:00 | UBR | 11.13 | 0.561 | 80.3 | 8.81 | 4.799 | 46.9 | 13.46 | 1770 | 1494 | 956 | 0.037 |
| 2010 | 183 | 06/09/05 | 9:00 | UBR | 11.07 | 0.561 | 80.8 | 8.88 | 4.811 | 40 | 13.47 | 1780 | 1494 | 956 | 0.037 |
| 2372 | 224 | 08/18/05 | 2:00 | SBF | 22.31 | 0.983 | -0.1 | -0.01 | 2.855 | 10.6 | 10.4 | 661 | 981 | 1067 | 0 |
| 2373 | 224 | 08/18/05 | 3:00 | SBF | 22.14 | 0.981 | -0.1 | -0.01 | 2.885 | 13.1 | 10.45 | 681 | 987 | 1067 | 0 |
| 2374 | 224 | 08/18/05 | 4:00 | SBF | 21.87 | 0.98 | -0.1 | -0.01 | 2.925 | 12.3 | 10.47 | 688 | 981 | 1067 | 0 |
| 2375 | 224 | 08/18/05 | 5:00 | SBF | 21.67 | 0.981 | -0.1 | -0.01 | 2.942 | 11.3 | 10.51 | 704 | 1112 | 1067 | 0 |
| 2376 | 224 | 08/18/05 | 6:00 | SBF | 21.44 | 0.984 | -0.1 | -0.01 | 2.945 | 14.2 | 10.55 | 719 | 1112 | 1067 | 0 |
| 2377 | 224 | 08/18/05 | 7:00 | SBF | 21.16 | 0.988 | -0.1 | -0.01 | 2.962 | 12.3 | 10.58 | 730 | 1118 | 1075 | 0 |
| 2378 | 224 | 08/18/05 | 8:00 | SBF | 20.84 | 0.994 | -0.1 | -0.01 | 3.017 | 12.6 | 10.71 | 780 | 1112 | 1067 | 0 |

| ID | Event ID | Date | Time | Hydro Period | temp | spcond | DO% | domgl | depth | Turb | Border Stage | Border Flow | Oneida Flow | Soda Flow | ANOVA SIG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2379 | 224 | 08/18/05 | 9:00 | SBF | 20.5 | 1.002 | -0.1 | -0.01 | 3.101 | 15.6 | 10.7 | 777 | 1112 | 1067 | 0 |
| 2380 | 224 | 08/18/05 | 10:00 | SBF | 20.25 | 1.007 | -0.1 | -0.01 | 3.136 | 16.2 | 10.71 | 780 | 1112 | 1067 | 0 |
| 2381 | 224 | 08/18/05 | 11:00 | SBF | 19.97 | 1.007 | -0.1 | -0.01 | 3.213 | 17.9 | 10.8 | 816 | 1118 | 1067 | 0 |
| 2382 | 224 | 08/18/05 | 12:00 | SBF | 19.86 | 1.002 | -0.1 | -0.01 | 3.219 | 18.1 | 10.81 | 821 | 1112 | 1067 | 0 |
| 2383 | 224 | 08/18/05 | 13:00 | SBF | 19.92 | 0.996 | 0 | 0 | 3.22 | 19.7 | 10.98 | 891 | 1112 | 376 | 0 |
| 2384 | 225 | 08/18/05 | 22:00 | SBF | 19.89 | 0.986 | -0.1 | -0.01 | 3.285 | 22.4 | 10.86 | 841 | 1112 | 1067 | 0.002 |
| 2385 | 225 | 08/18/05 | 23:00 | SBF | 19.8 | 0.985 | -0.1 | -0.01 | 3.283 | 19.9 | 10.88 | 849 | 1112 | 1067 | 0.002 |
| 2386 | 225 | 08/19/05 | 0:00 | SBF | 19.71 | 0.986 | -0.1 | -0.01 | 3.277 | 19.2 | 10.97 | 887 | 1113 | 1060 | 0.002 |
| 2387 | 225 | 08/19/05 | 1:00 | SBF | 19.51 | 0.986 | -0.1 | -0.01 | 3.304 | 20.2 | 10.96 | 883 | 1113 | 1068 | 0.002 |
| 2388 | 225 | 08/20/05 | 0:00 | SBF | 22.22 | 0.978 | -0.1 | -0.01 | 3.378 | 18.1 | 10.79 | 812 | 1184 | 755 | 0.002 |
| 2389 | 225 | 08/20/05 | 1:00 | SBF | 22.17 | 0.974 | -0.1 | -0.01 | 3.468 | 16.9 | 10.86 | 841 | 1263 | 755 | 0.002 |
| 2390 | 225 | 08/20/05 | 2:00 | SBF | 22.05 | 0.962 | -0.2 | -0.01 | 3.514 | 17.9 | 10.96 | 883 | 1263 | 755 | 0.002 |
| 2391 | 225 | 08/20/05 | 3:00 | SBF | 21.87 | 0.951 | -0.2 | -0.01 | 3.564 | 18.5 | 10.98 | 891 | 1263 | 755 | 0.002 |
| 2392 | 225 | 08/20/05 | 4:00 | SBF | 21.58 | 0.949 | -0.1 | -0.01 | 3.612 | 19.5 | 11.05 | 916 | 1263 | 755 | 0.002 |
| 2393 | 225 | 08/20/05 | 5:00 | SBF | 21.18 | 0.955 | -0.1 | -0.01 | 3.653 | 21.9 | 11.19 | 963 | 1263 | 755 | 0.002 |
| 2394 | 225 | 08/20/05 | 6:00 | SBF | 20.68 | 0.963 | -0.1 | -0.01 | 3.704 | 23.1 | 11.22 | 973 | 1263 | 755 | 0.002 |
| 2395 | 225 | 08/20/05 | 7:00 | SBF | 20.08 | 0.967 | -0.1 | -0.01 | 3.735 | 25 | 11.23 | 976 | 1178 | 755 | 0.002 |
| 2396 | 225 | 08/20/05 | 8:00 | SBF | 19.51 | 0.968 | -0.1 | -0.01 | 3.769 | 24.8 | 11.32 | 1010 | 1178 | 755 | 0.002 |
| 2527 | 237 | 09/12/05 | 2:00 | SBF | 17.31 | 1.014 | 99.6 | 9.54 | 2.246 | 4.2 | 9.87 | 471 | 714 | 529 | 0 |
| 2528 | 237 | 09/12/05 | 3:00 | SBF | 17.2 | 1.014 | 94.2 | 9.04 | 2.298 | 4.9 | 9.91 | 486 | 709 | 529 | 0 |
| 2529 | 237 | 09/12/05 | 4:00 | SBF | 17.06 | 1.012 | 88 | 8.47 | 2.359 | 4.4 | 9.97 | 508 | 709 | 529 | 0 |
| 2530 | 237 | 09/12/05 | 5:00 | SBF | 16.94 | 1.008 | 82.5 | 7.96 | 2.416 | 5.4 | 9.99 | 516 | 709 | 529 | 0 |
| 2531 | 237 | 09/12/05 | 6:00 | SBF | 16.88 | 1 | 78.8 | 7.61 | 2.505 | 6.4 | 10.12 | 560 | 709 | 529 | 0 |
| 2532 | 237 | 09/12/05 | 7:00 | SBF | 16.77 | 0.984 | 76.5 | 7.41 | 2.585 | 6.9 | 10.12 | 560 | 709 | 529 | 0 |
| 2533 | 237 | 09/12/05 | 8:00 | SBF | 16.67 | 0.974 | 73.7 | 7.16 | 2.678 | 7.9 | 10.28 | 617 | 709 | 529 | 0 |
| 2534 | 237 | 09/12/05 | 9:00 | SBF | 16.56 | 0.956 | 71.6 | 6.96 | 2.74 | 7.8 | 10.31 | 628 | 709 | 529 | 0 |
| 2572 | 243 | 09/22/05 | 1:00 | SBF | 16.38 | 1.039 | 32.9 | 3.21 | 2.171 | 4 | 9.72 | 419 | 484 | 215 | 0.01 |
| 2573 | 243 | 09/22/05 | 2:00 | SBF | 16.03 | 1.043 | 74.3 | 7.3 | 2.211 | 4.2 | 9.83 | 457 | 484 | 215 | 0.01 |
| 2574 | 243 | 09/22/05 | 3:00 | SBF | 15.69 | 1.047 | 131.1 | 12.99 | 2.299 | 4 | 9.76 | 433 | 484 | 215 | 0.01 |
| 2575 | 243 | 09/22/05 | 4:00 | SBF | 15.4 | 1.046 | 136.6 | 13.61 | 2.422 | 5.3 | 9.85 | 464 | 484 | 215 | 0.01 |
| 2576 | 243 | 09/22/05 | 5:00 | SBF | 15.17 | 1.042 | 84.6 | 8.47 | 2.512 | 5.5 | 9.98 | 512 | 484 | 215 | 0.01 |
| 2577 | 243 | 09/22/05 | 6:00 | SBF | 14.96 | 1.037 | 130.9 | 13.17 | 2.551 | 8.3 | 9.98 | 512 | 484 | 215 | 0.01 |
| 2578 | 243 | 09/22/05 | 7:00 | SBF | 14.72 | 1.026 | 136.2 | 13.77 | 2.564 | 6.5 | 10.02 | 527 | 484 | 215 | 0.01 |
| 2579 | 243 | 09/22/05 | 8:00 | SBF | 14.48 | 1.009 | 119.8 | 12.18 | 2.553 | 7.1 | 10.1 | 553 | 484 | 215 | 0.01 |
| 2615 | 248 | 10/07/05 | 18:00 | SBF | 14.06 | 1.018 | 120 | 12.32 | 2.067 | 5.6 | 9.84 | 453 | 559 | 506 | 0 |
| 2616 | 248 | 10/07/05 | 19:00 | SBF | 13.93 | 1.018 | 120.3 | 12.38 | 2.1 | 6.8 | 9.88 | 471 | 559 | 506 | 0 |
| 2617 | 248 | 10/07/05 | 20:00 | SBF | 13.7 | 1.017 | 114.4 | 11.83 | 2.167 | 7.7 | 9.92 | 486 | 729 | 506 | 0 |
| 2618 | 248 | 10/07/05 | 21:00 | SBF | 13.39 | 1.019 | 103.3 | 10.76 | 2.218 | 8.9 | 9.98 | 512 | 734 | 506 | 0 |

| ID | Event ID | Date | Time | Hydro Period | temp | spcond | DO% | domgl | depth | Turb | Border Stage | Border Flow | Oneida Flow | Soda Flow | ANOVA SIG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2619 | 248 | 10/07/05 | 22:00 | SBF | 13.1 | 1.014 | 90.8 | 9.52 | 2.267 | 11.9 | 10.04 | 533 | 734 | 506 | 0 |
| 2620 | 248 | 10/07/05 | 23:00 | SBF | 12.9 | 1.004 | 80 | 8.42 | 2.336 | 12.3 | 10.1 | 553 | 734 | 506 | 0 |
| 2621 | 248 | 10/08/05 | 0:00 | SBF | 12.8 | 0.993 | 71.2 | 7.52 | 2.437 | 15.6 | 10.19 | 585 | 781 | 509 | 0 |
| 2622 | 248 | 10/08/05 | 1:00 | SBF | 12.75 | 0.981 | 62.5 | 6.6 | 2.505 | 22.4 | 10.31 | 628 | 807 | 509 | 0 |
| 2623 | 248 | 10/08/05 | 2:00 | SBF | 12.7 | 0.972 | 54.8 | 5.8 | 2.543 | 31.5 | 10.39 | 658 | 807 | 509 | 0 |
| 2624 | 248 | 10/08/05 | 3:00 | SBF | 12.65 | 0.967 | 47.7 | 5.05 | 2.566 | 33.2 | 10.44 | 677 | 807 | 509 | 0 |
| 2625 | 248 | 10/08/05 | 4:00 | SBF | 12.54 | 0.957 | 41.3 | 4.38 | 2.6 | 27.1 | 10.5 | 700 | 807 | 509 | 0 |
| 2626 | 248 | 10/08/05 | 5:00 | SBF | 12.38 | 0.949 | 36.9 | 3.93 | 2.641 | 31.5 | 10.54 | 715 | 807 | 509 | 0 |
| 2627 | 248 | 10/08/05 | 6:00 | SBF | 12.22 | 0.948 | 33.6 | 3.59 | 2.672 | 33 | 10.6 | 738 | 807 | 509 | 0 |
| 2628 | 248 | 10/08/05 | 7:00 | SBF | 12.1 | 0.95 | 30.7 | 3.29 | 2.71 | 31 | 10.62 | 745 | 807 | 509 | 0 |
| 2629 | 248 | 10/08/05 | 8:00 | SBF | 11.97 | 0.951 | 29.9 | 3.22 | 2.738 | 32.4 | 10.63 | 749 | 807 | 509 | 0 |
| 2630 | 248 | 10/08/05 | 9:00 | SBF | 11.79 | 0.956 | 30.9 | 3.33 | 2.756 | 29.1 | 10.65 | 757 | 807 | 509 | 0 |
| 2631 | 248 | 10/08/05 | 10:00 | SBF | 11.59 | 0.959 | 34.8 | 3.77 | 2.769 | 26.1 | 10.66 | 761 | 807 | 509 | 0 |