POWERTECH (USA) INC.

Response: TR RAI-2.5-5(a) and (b)

Wind Speed Units Consistent
and
Additional Wind Data

See Appendix 2.5-D; pg. C-12-13 and C-26-27

POWERTECH (USA) INC.

Response: TR RAI-2.5-4

TR Appendix 2.5-D
"Meteorological Characterization of the Dewey-Burdock Uranium Project Area"

METEOROLOGICAL CHARACTERIZATION OF THE DEWEY-BURDOCK URANIUM PROJECT AREA FALL RIVER AND CUSTER COUNTIES, SOUTH DAKOTA

Topical Report RSI-2008

prepared for

Powertech (USA) Inc.
P.O. Box 812
Edgemont, South Dakota 57735

September 2008

RESPEC
CONSULTING & SERVICES

METEOROLOGICAL CHARACTERIZATION OF THE DEWEY-BURDOCK URANIUM PROJECT AREA FALL RIVER AND CUSTER COUNTIES, SOUTH DAKOTA

Topical Report RSI-2008

by

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September 2008

EXECUTIVE SUMMARY

The purpose of this report is to provide meteorological data needed to assist in demonstrating that operations at the Dewey-Burdock in situ uranium mine can be conducted to meet the requirements set forth in 10 CFR Part 40, "Domestic Licensing of Source Material." This meteorological characterization report will be included in the environmental reports developed to meet the requirements of 10 CFR Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions." Meteorological conditions assist in demonstrating that the facility design, building and operations keep the release of radioactive materials to unrestricted areas to a reasonably achievable level [U.S. Nuclear Regulatory Commission, 1988]. Meteorological information is used "for estimating the maximum potential annual radiation dose to the public and the environmental impact resulting from the routine release of radioactive materials in gaseous and particulate effluents" [U.S. Nuclear Regulatory Commission, 1988].

The proposed Dewey-Burdock project is located in an area in southwestern South Dakota that can be characterized as a semiarid or steppe climate. It lies adjacent to the southwestern extension of the Black Hills. The area experiences abundant sunshine, low relative humidity, and sustained winds that lead to high evaporative demand. There are also large diurnal and annual variations in temperature.

Precipitation in the project area is generally light. Migratory storm systems that originate in the Pacific Ocean release a majority of their moisture over the Rocky or Cascade Mountains. Major precipitation events can occur when these systems regain moisture already present in the area or moisture advected from the Gulf of Mexico. Localized summer convective storms, caused by the Black Hills, can produce heavy precipitation events.

To characterize local and regional weather patterns, data was compared from regional weather stations, the nearest National Weather Service (NWS) station, and a weather station installed in July 2007 within the Dewey-Burdock Uranium Project boundaries.

The nearest NWS station with similar geographic and topographic features to the Dewey-Burdock Uranium Project area was identified at Chadron, Nebraska, which is approximately 63 miles away. Data from this station were ordered from the High Plains Regional Climate Center (HPRCC) and analyzed to determine whether data collected from July 18, 2007, to July 17, 2008, are representative of long-term meteorological conditions (January 1, 1978, to July 17, 2008) in the area. The July 18, 2007, to July 17 2008, time period (current) was used because this is the first consecutive 12-month period in which data was collected from the on-site weather station installed at the Dewey-Burdock Uranium Project site. The parameters analyzed were average daily temperature, wind speed, and precipitation. The average daily temperature at the Chadron station over the current year was 47.8°F, which is 2.7°F cooler than the 30-year average historic daily temperature of 50.5°F. The current year had 32.8 inches of precipitation compared to the average yearly historic precipitation of 18.2 inches and the average daily wind speed over the current year was approximately 1 mile per hour (mph) less than historically (9.8 to 10.8 mph).

The regional analysis was completed by compiling data from nine HPRCC weather stations surrounding the Dewey-Burdock permit area. The data were used to characterize regional trends of temperature, precipitation, as well as growing, heating, and cooling degree days. Only the Oral and Jewel Cave, South Dakota, stations had adequate data to characterize regional wind speed/direction and evapotranspiration. The region has an average daily temperature of 46.7°F and an average annual precipitation accumulation of 16.5 inches. The Oral site was the only site in the region with representative data for wind speed and direction. The wind speed averaged 6.4 mph over the entire period of record with approximately 51 percent of the winds blowing from the southwest. The summer has the lowest relative humidity in the region, averaging 60 percent, while winter has the highest relative humidity, averaging 69 percent. Most evapotranspiration (ET) in the region occurs during the summer months of June, July, and August with an average monthly accumulation of 10.3 inches.

The site-specific analysis was completed using data collected from a weather station installed in approximately the center of the proposed permit boundary. The station is located on a site that is representative of the area within the boundary. Twelve months of data collected from July 18, 2007 to July 17, 2008, were used for this analysis. This Dewey-Burdock station had an average hourly temperature of 45.5°F, accumulated 12.4 inches of precipitation, and mean humidity values ranging from a low of 51 percent in the summer months to a high of 77 percent in the winter months. The average wind speed over the period of record was approximately 5 mph, while calm winds occurred only 1.8 percent of the time. Most ET occurred during the months of July, August, and September with an average monthly accumulation of 10.3 inches.

The basic meteorological parameters of average daily temperature, wind speed, and precipitation from the Dewey-Burdock meteorological station and the Chadron NWS station were compared from July 18, 2007 to July 17, 2008, to determine if the meteorological conditions at Chadron, Nebraska, are representative of the conditions at the Dewey-Burdock Uranium Site. Because of the fact that both the rainfall and the wind speed differed significantly between the two sites, it was determined that weather parameters measured at the Chadron station are not representative of the conditions at the Dewey-Burdock station. Therefore, the historical Chadron, Nebraska, weather data cannot be used to characterize the long-term meteorological conditions at the Dewey-Burdock Uranium Project site. Since there are no other long-term meteorological stations near the project area, it is recommended that data continue to be collected at the Dewey-Burdock station until long-term meteorological trends can be established at the site.

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1.0 INTRODUCTION

The proposed Dewey-Burdock project is located in an area in southwestern South Dakota that can be characterized as a semiarid or steppe climate. It lies adjacent to the southwestern extension of the Black Hills. The area experiences abundant sunshine, low relative humidity, and sustained winds that lead to high evaporative demand. There are also large diurnal and annual variations in temperature.

Precipitation in the project area is generally light. Migratory storm systems that originate in the Pacific Ocean release a majority of their moisture over the Rocky or Cascade Mountains. Major precipitation events can occur when these systems regain moisture already present in the area or moisture advected from the Gulf of Mexico. Localized summer convective storms, caused by the Black Hills, can produce heavy precipitation events.

The purpose of this report is to provide meteorological data needed to assist in demonstrating that operations at the Dewey-Burdock in situ uranium mine can be conducted to meet the requirements set forth in 10 CFR Part 40, "Domestic Licensing of Source Material." This meteorological characterization report will be included in the environmental reports developed to meet the requirements of 10 CFR Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions." Meteorological conditions assist in demonstrating that the facility design, building and operations keep the release of radioactive materials to unrestricted areas to a reasonably achievable level [U.S. Nuclear Regulatory Commission, 1988]. Meteorological information is used "for estimating the maximum potential annual radiation dose to the public and the environmental impact resulting from the routine release of radioactive materials in gaseous and particulate effluents" [U.S. Nuclear Regulatory Commission, 1988].

Data were compiled at each station by time of day, month, and season. Seasons for the purpose of this report are grouped as: winter (December, January, February), spring (March, April, May), summer (June, July, August), and fall (September, October, November).

The objective of this study is to compare meteorological data compiled from a site-specific Dewey-Burdock meteorological site, regional weather stations, and the nearest National Weather Service (NWS) to determine whether data collected at the Dewey-Burdock meteorological site is representative of long-term meteorological conditions and to estimate future weather conditions at the Dewey-Burdock permit area. The findings will be used to assist in the sighting and construction of any mining and storage facilities, to determine the maximum potential annual radiation dose to the surrounding public, and to estimate the environmental impact of routine releases of radioactive material into the atmosphere.

An analysis of current NWS data was performed for the Chadron, Nebraska, station because of its close proximity to the Dewey-Burdock permit area. Meteorological data from the NWS station at Chadron, Nebraska, were ordered from the High Plains Regional Climate Center and analyzed to determine whether data collected at the Dewey-Burdock meteorological site from July 18, 2007 to July 17, 2008, are representative of long-term meteorological conditions (January 1, 1978 to July 17, 2008) in the area. The parameters analyzed were average daily temperature, wind speed, and precipitation. Findings of the current NWS data analysis are provided in Chapter 2.0.

Regional trends of temperature, precipitation, and growing, heating, and cooling degree days were characterized by compiling data from nine weather stations surrounding the Dewey-Burdock permit area. These stations are listed in Table 1-1 and shown on Figure 1-1. Regional humidity patterns were characterized using data from two of the stations (Oral and Jewel Cave) and regional wind speed and direction and evapotranspiration conditions were characterized based on observations recorded at the Oral station. Findings of the regional analysis are provided in Chapter 3.0.

Table 1-1. Meteorological Stations Included in Climatology Analysis [High Plains Regional Climate Center, 2008; South Dakota State University, 2008]

Name	Data Source	Latitude (dddmm)	Longitude (ddmm)	Elevation (ft)	Distance to Dewey-Burdock Site (miles)	Years of Operation
Redbird	HPRCC[a]	104°17'	43°15'	3,890	22.5	1948–2006
Oral	SDSU[b]	103°16'	43°24'	2,960	36.9	1971–2007
Oelrichs	HPRCC	103°14'	43°11'	3,340	42.0	1948–2007
Newcastle	HPRCC	104°14'	43°51'	4,380	28.8	1918–2006
Edgemont	HPRCC	103°49'	43°18'	3,440	13.4	1948–2007
Custer	HPRCC	103°36'	43°46'	5,330	27.5	1926–2007
Ardmore	HPRCC	103°39'	43°04'	3,550	35.8	1948–2007
Angostura	HPRCC	103°26'	43°22'	3,140	27.8	1948–2007
Jewel Cave	SDSU	103°49'	43°43'	5,298	19.2	2004–2008

(a) High Plains Regional Climate Center.

(b) South Dakota State University Climate Web site.

To complete the site-specific analysis, a meteorological site was installed in coordination with the South Dakota State Climatology office at approximately the center of the Dewey-Burdock project area in July 2007. Temperature, precipitation, humidity, wind speed, and

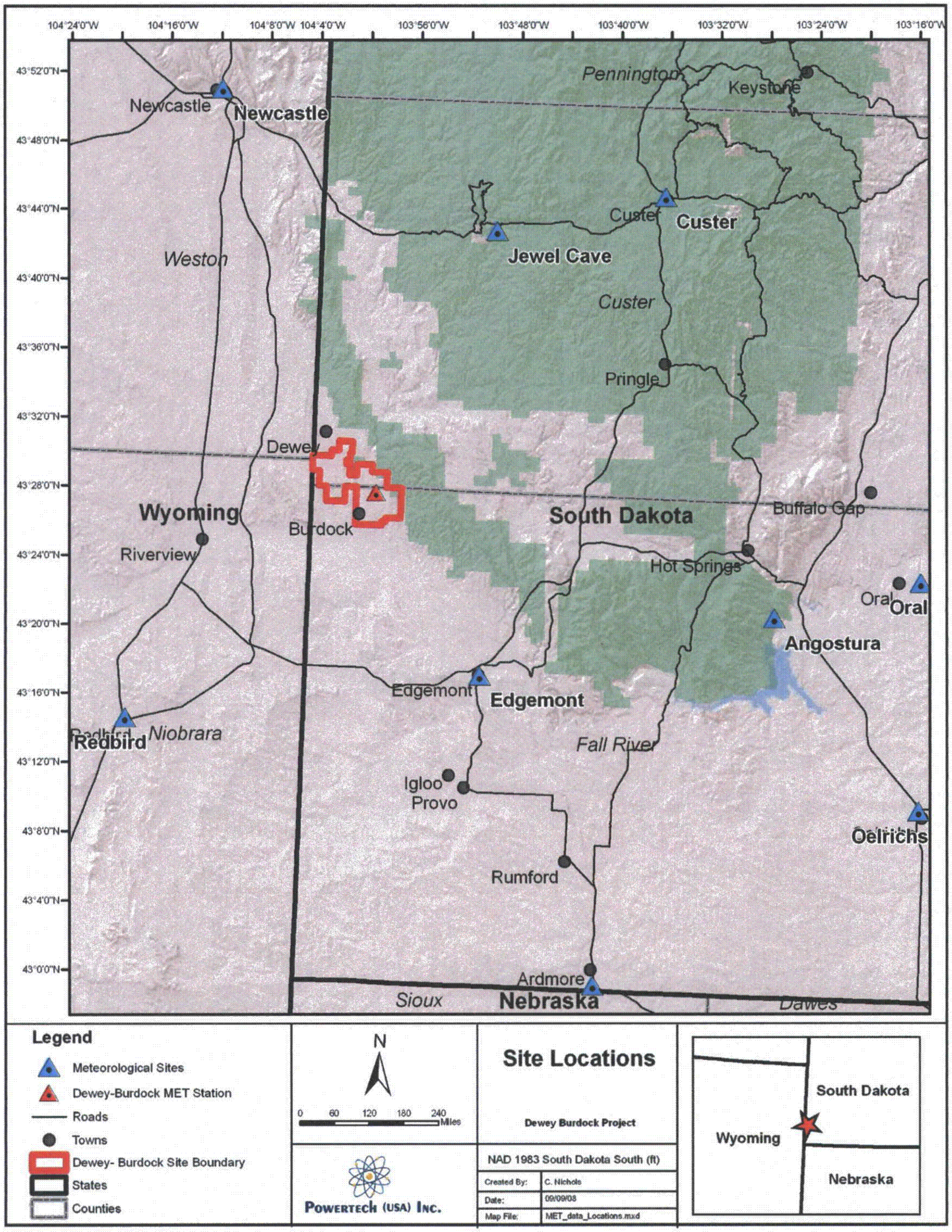

Figure 1-1. Location of Stations Selected to Analyze Regional Climatological Conditions.

direction, solar radiation, and barometric pressure were measured at 1-minute, 5-minute, and hourly time intervals from July 18, 2007 to July 17, 2008. Findings of the site-specific analysis are provided in Chapter 4.0.

Data were compiled at each station by time of day, month, and season. Seasons for the purpose of this report are grouped as: winter (December, January, February), spring (March, April, May), summer (June, July, August), and fall (September, October, November).

To assess the representativeness of the site-specific meteorological observations, weather data recoded between 1978 and 2008 at the nearest NWS station in Chadron, Nebraska, were compared to data collected at the Dewey Burdock meteorological site. These results are presented in Chapter 5.0.

The final chapter of this report, Chapter 6.0, presents conclusions based on findings of the regional and site-specific analyses. Recommendations for future consideration are also provided.

Boxplots used throughout this report provide visual summaries of five data set numbers: minimum, Q1, median, Q3, and maximum. **Minitab** software Version 14.0 was used to construct boxplots. The program automatically orders data from lowest to highest and then calculates the following:

$$n = \text{number of datapoints}$$

$$\text{Minimum} = \text{first number in a dataset}$$

$$Q1 = \text{the datapoint at the } (n+1) \div 4 \text{ position}$$

$$\text{Median} = \text{the datapoint at the } (n+1) \div 2 \text{ position}$$

$$Q3 = \text{the datapoint at the } 3(n+1) \div 4 \text{ position}$$

$$\text{Maximum} = \text{last number in a dataset}$$

$$\text{IQR} = \text{interquartile range} = Q3 - Q1$$

$$\text{Lower Fence} = Q1 - (1.5)(\text{IQR})$$

$$\text{Upper Fence} = Q3 + (1.5)(\text{IQR})$$

Minitab then completes boxplots by drawing:

1. a box from Q1 to Q3
2. a line at the median inside the box
3. a solid line (whisker) from Q1 to the smallest observation inside the lower fence
4. a solid line (whisker) from Q3 to the largest observation inside the upper fence
5. *s to mark outlier observations laying outside the fences.

The following is an example data set representing recorded temperatures in 2008 to illustrate the data provided by a typical boxplot. Statistics of the data are shown below along with a boxplot generated by **Minitab** shown in Figure 1-2.

Example Data Set for Figure 1-2

30	36	39	43	45	48	49	50	55	55	56	56	56	56	56	60	60	62	62
62	62	63	63	63	63	64	65	67	67	67	68	68	70	70	72	79	80	80

where

$$n = 38$$

$$\text{Minimum} = 30$$

$$Q1 = \text{datapoint at } (38+1) \div 4 = 9.75 \text{ position} = 55$$

$$\text{Median} = \text{datapoint at } (38+1) \div 2 = 19.5 \text{ position} = 62$$

$$Q3 = \text{datapoint at } (38+1) \div 4 = 29.25 \text{ position} = 67$$

$$\text{Maximum} = 80$$

$$\text{IQR} = \text{interquartile range} = 67 - 55 = 12$$

$$\text{Lower Fence} = 55 - (1.5)(12) = 37$$

$$\text{Upper Fence} = 67 - (1.5)(12) = 85.$$

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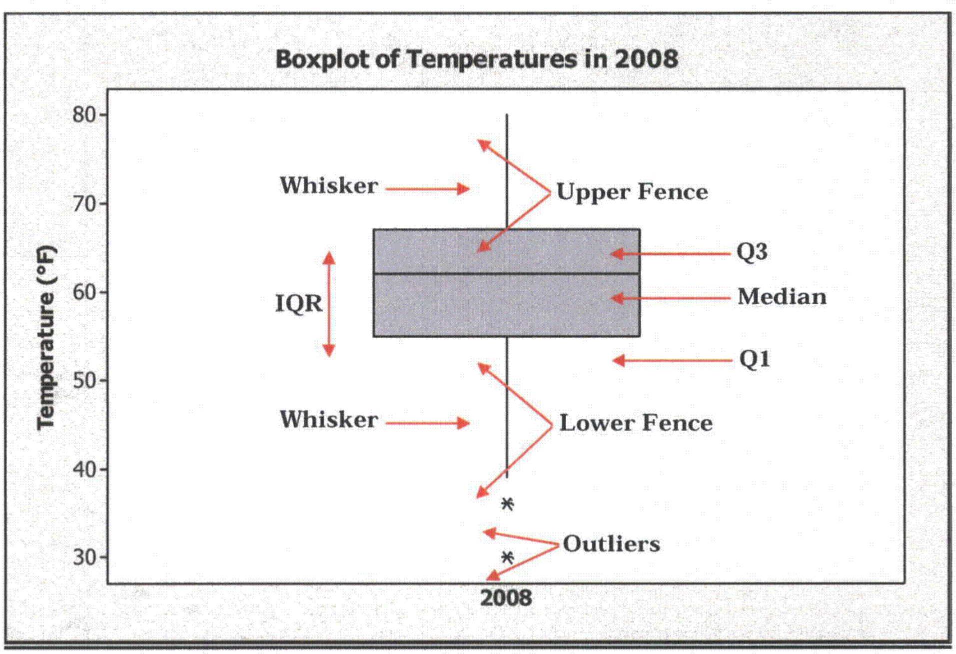

Figure 1-2. Example Boxplot, Generated by **Minitab**, of Recorded Temperatures in 2008 Illustrating the Information Provided on a Boxplot.

Wind roses are also used throughout this report and summarize recorded wind speeds and wind directions. Statistical analysis and visualization of wind data were performed using **WRPLOT View Version 5.3** distributed by Lakes Environmental. This program generates wind rose statistics based on meteorological data. A wind rose depicts the frequency of occurrence of winds in each of the specified wind direction sectors and wind speed classes for a given location and time period. Figure 1-3 is an example of a wind rose. For this example, the wind speeds were separated into six different classes. The wind rose in Figure 1-3 illustrates that the majority of winds come out of the southeast direction.

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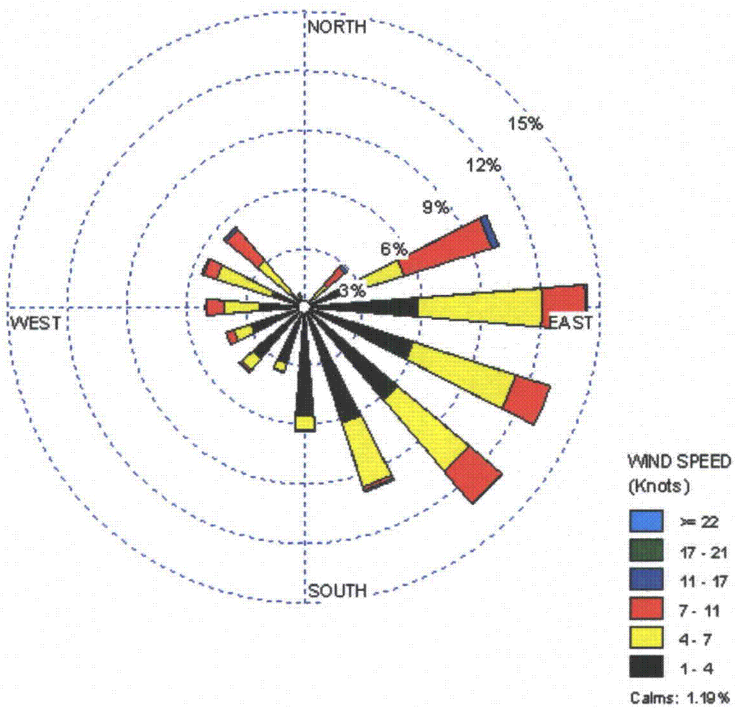

Figure 1-3. Example Wind Rose Illustrating Wind Speed, Frequency, and Direction.

2.0 REGIONAL OVERVIEW

Meteorological data from the NWS station at Chadron, Nebraska, were ordered from the High Plains Regional Climate Center (HPRCC) and analyzed to determine whether data collected at the Dewey-Burdock meteorological site from July 18, 2007 to July 17, 2008, are representative of long-term meteorological conditions (January 1, 1978 to July 17, 2008) in the area. The parameters analyzed were average daily temperature, wind speed, and precipitation.

The average daily temperature at the Chadron station over the last (current) year was 47.8°F, which is 2.7°F cooler than the 30-year average historic daily temperature of 50.5°F. Figure 2-1 displays a boxplot of current and historic temperature data. An interquartile range is defined as the measure of statistical dispersion of data that contains the middle 50 percent of data with 25 percent of data points having lower values and 25 percent of data points having higher values. The interquartile range for the current temperature data is from 30.3°F to 64.5°F with a median value of 48.2°F, compared to the historic data that has an interquartile range from 35.3°F to 68.3°F and a median value of 50.5°F. When looking at the data on a month-by-month basis, the mean value of the current data lies within one standard deviation of the mean value of the historic data (see Appendix A).

The current year had well above the average amount of yearly precipitation. The current year had 32.8 inches of precipitation compared to the average yearly historic precipitation of 18.2 inches.

The average daily wind speed over the current year was approximately 1 mile per hour (mph) less than historically (9.8 to 10.8 mph). Figure 2-2 displays a boxplot of monthly wind speed for the current and historic data. The median value from the current year lies within the interquartile range of the historical data for all months.

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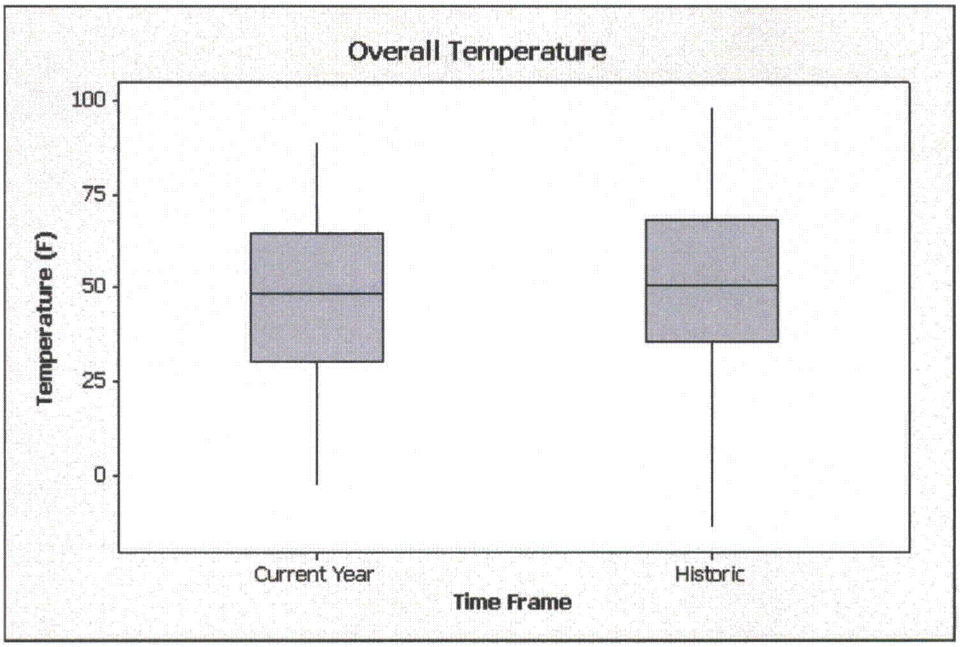

Figure 2-1. Boxplot of Temperature at Chadron, Nebraska, National Weather Service Station.

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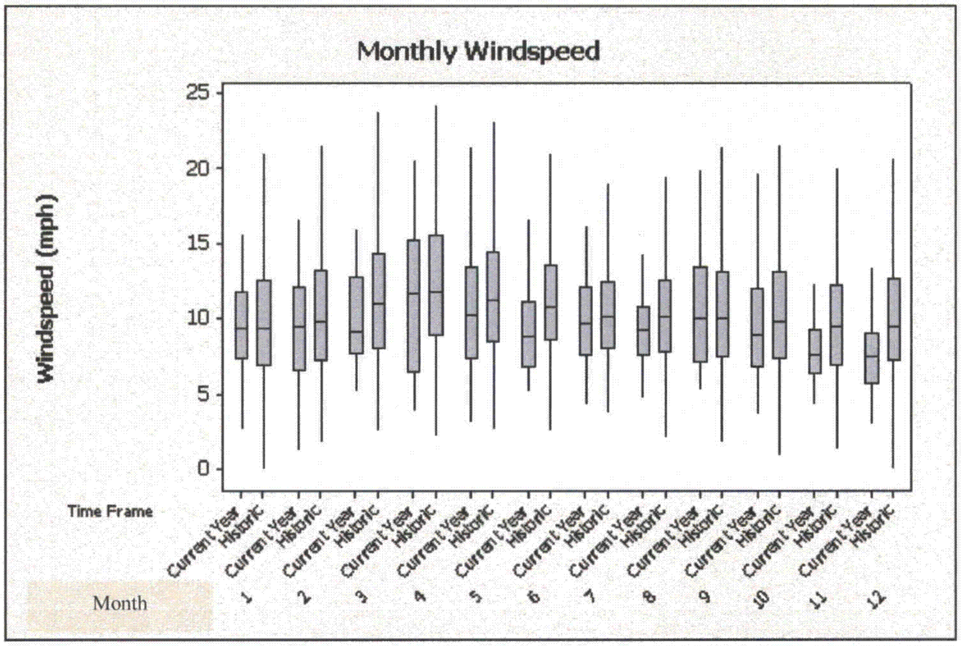

Figure 2-2. Boxplot of Wind Speed by Month at Chadron, Nebraska, National Weather Service Station.

3.0 REGIONAL ANALYSIS

The regional analysis was completed by compiling data from nine HPRCC weather stations surrounding the Dewey-Burdock permit area. The compiled data were used to represent the long-term meteorological conditions of the Dewey-Burdock project region. The data were used to characterize regional trends of temperature, precipitation, as well as growing, heating and cooling degree days. Only the Oral and Jewel Cave, South Dakota, stations had adequate data to characterize regional wind speed/direction and evapotranspiration.

3.1 TEMPERATURE

The annual average temperature in the region is 46.7°F. Figure 3-1 and Table 3-1 display monthly, annual, and seasonal average temperatures. The region has some of its warmest days in the summer months with the hottest month being July (average temperature of 72.8°F). The coldest month of the year is January, with an average temperature of 23°F. The differences seen between stations are largely attributable to elevation. Custer and Jewel Cave have the lowest average temperature primarily because these sites are nearly 1,000 feet higher in elevation than all other sites.

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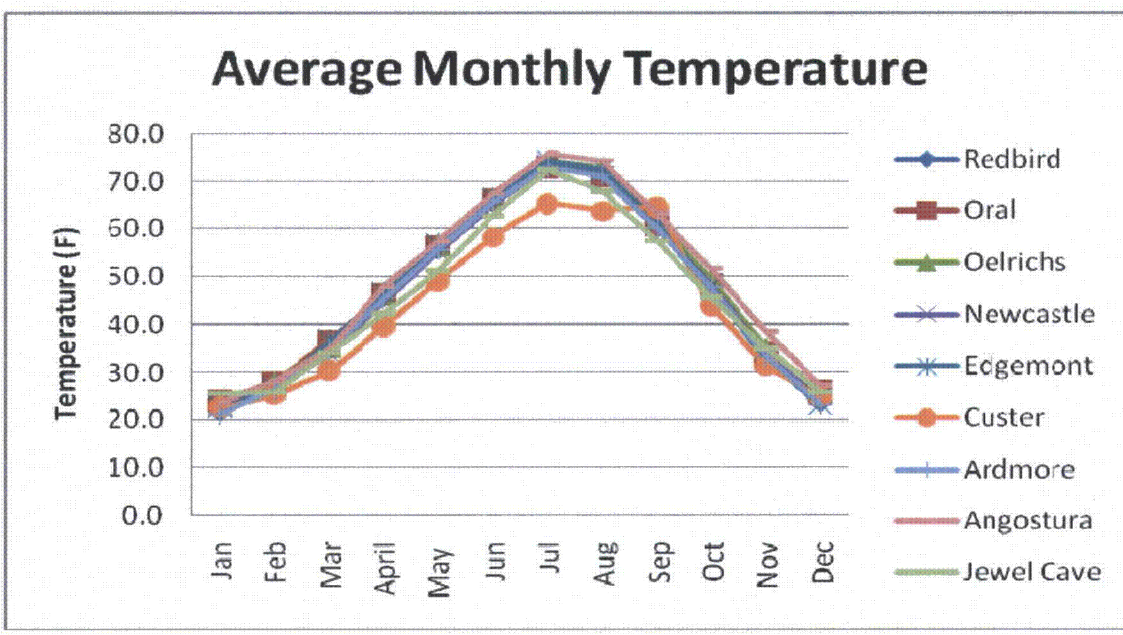

Figure 3-1. Monthly Average and Annual Temperatures for Regional Sites [High Plains Regional Climate Center, 2008; South Dakota State University, 2008].

Table 3-1. Average Monthly, Annual, and Seasonal Temperatures for Regional Sites [High Plains Regional Climate Center, 2008; South Dakota State University, 2008]

Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Winter	Spring	Summer	Fall
Redbird	21.8	27.3	35.1	45.8	55.8	65.5	73.3	71.4	60.4	47.9	33.1	23.8	46.8	24.3	45.6	70.1	47.2
Oral	24.1	27.9	36.6	46.3	56.6	66.2	73.2	71.1	60.7	48.3	34.3	26.1	47.6	26.1	46.5	70.2	47.8
Oelrichs	23.2	28.0	35.4	46.3	56.5	66.3	74.2	72.8	62.1	49.5	35.0	25.7	47.9	25.7	46.1	71.1	48.9
Newcastle	22.8	26.7	34.1	44.9	55.3	64.9	73.3	71.3	60.5	48.2	33.9	25.4	46.8	25.0	44.7	69.8	47.5
Edgemont	22.5	26.3	36.6	46.5	56.8	66.4	74.1	72.3	61.4	47.7	32.9	23.1	47.2	24.0	46.6	70.9	47.3
Custer	22.5	25.3	30.3	39.6	49.1	58.2	65.4	63.8	64.5	43.9	31.4	24.8	42.4	24.2	39.7	62.5	43.3
Ardmore	21.3	26.5	34.8	45.5	55.7	65.6	73.1	71.2	60.2	47.8	33.4	23.3	46.5	23.7	45.3	70.0	47.1
Angostura	23.5	28.1	34.9	47.9	57.5	67.4	75.9	74.3	63.3	51.8	38.4	27.3	49.2	26.3	46.8	72.5	51.2
Jewel Cave	25.5	25.8	34.0	42.2	51.1	62.7	72.5	67.9	57.6	45.6	35.0	25.7	45.5	25.7	42.4	67.7	46.1
Regional Average	23.0	26.9	34.6	45.0	54.9	64.8	72.8	70.7	61.2	47.9	34.2	25.0	46.7	25.0	44.9	69.4	47.4

Figures 3-2 and 3-3 show the average maximum and minimum temperatures in the region. The average maximum temperature is 60.7°F annually, while the annual average minimum temperature is 32.7°F, as shown in Tables 3-2 and 3-3. The highest average maximum temperatures in the region usually occur during the month of July (88.3°F). The lowest minimum temperatures can be found in January with a regional average of 10.4°F.

Figures 3-4 and 3-5 display average diurnal temperature variations by season for the Jewel Cave and Oral sites. These sites were used because they were the only sites that recorded hourly temperatures near the project. As the figures show, there are large variations in diurnal temperature, especially during the summer months.

3.2 PRECIPITATION

Figure 3-6 and Table 3-4 show that this area can be very dry at times with a regional annual average precipitation of 16.5 inches. Most of the precipitation accumulates during May, June, and July (48 percent of the annual). Typically, May is the wettest month of the year for this region with an average accumulation of 2.8 inches. Winter receives roughly 8 percent of the annual accumulated precipitation. January is the driest month of the year with an average accumulation of 0.36 inch of precipitation.

This region receives an average of 38 inches of snowfall each year. As shown in Figure 3-7, most snowfall accumulates during the month of March with a regional average of 8.5 inches. Custer receives the most annual snowfall (48 inches). This can be attributed to the higher elevation and the influence of the Black Hills that surround the region (Figure 3-8).

3.3 GROWING DEGREE DAYS

The graphs shown in Figures 3-9, 3-10, and 3-11 summarize the growing degree, cooling, and heating days for the nine meteorological sites in the area. The data show a similar pattern for all three parameters throughout the sites with the exception of the Jewel Cave and Custer sites, which is likely caused by the higher relative elevation of these two sites.

All degree days calculations used a base temperature of 55°F. Heating and cooling degree days are included to show deviation of the average daily temperature from the chosen base temperature. The number of heating degree days is computed by taking the average of the high and low temperature occurring that day and subtracting it from the base temperature. The number of growing degree days and cooling degree days is computed in the opposite fashion where the base temperature is subtracted from the average of the high and low temperature for the day. Negative values are disregarded for both calculations.

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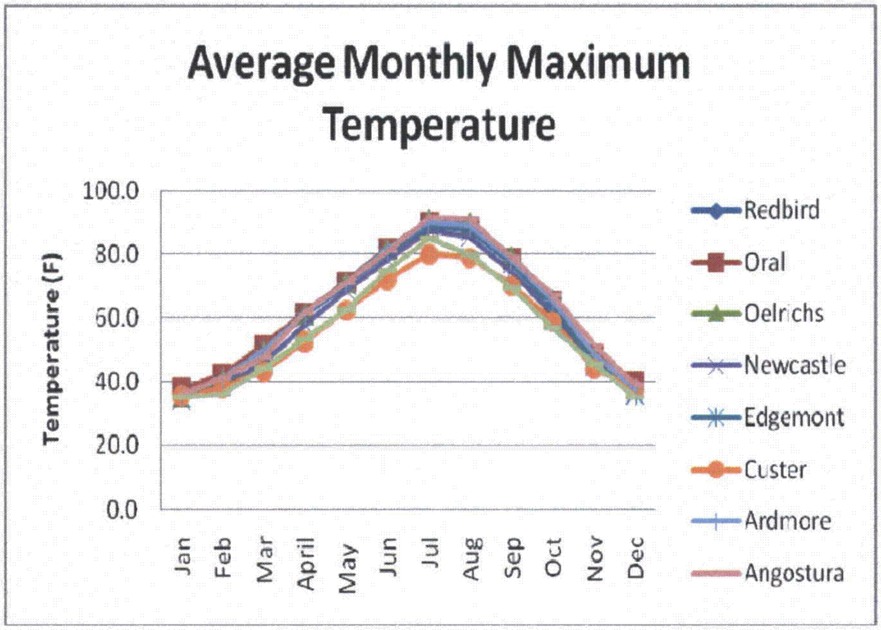

Figure 3-2. Average Monthly Maximum Temperatures for Regional Sites [High Plains Regional Climate Center, 2008; South Dakota State University, 2008].

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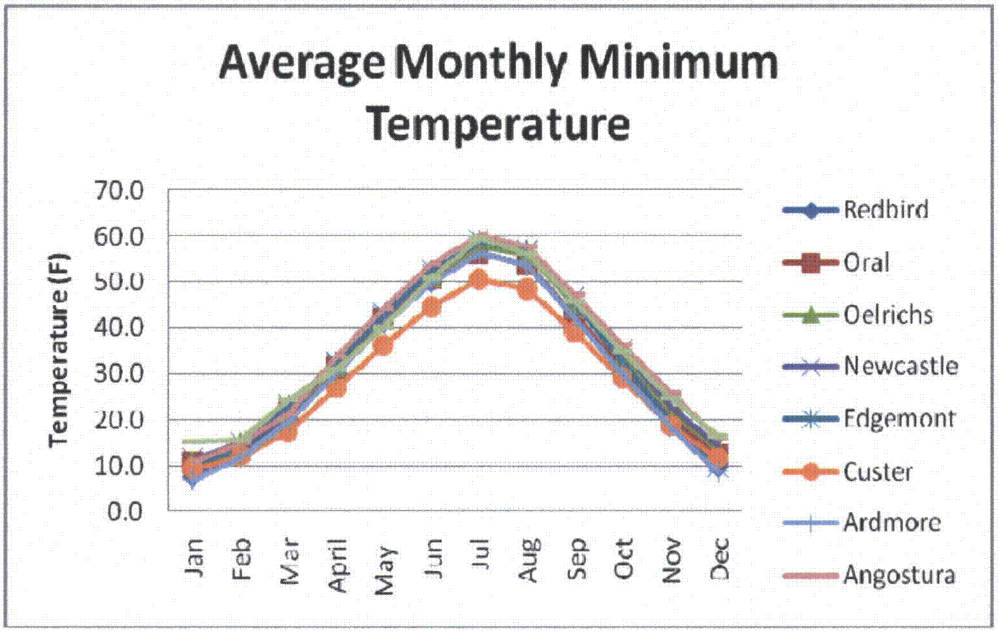

Figure 3-3. Average Monthly Minimum Temperatures for Regional Sites [High Plains Regional Climate Center, 2008; South Dakota State University, 2008].

Table 3-2. Average Monthly, Annual, and Seasonal Maximum Temperatures for Regional Sites [High Plains Regional Climate Center, 2008; South Dakota State University, 2008]

Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Winter	Spring	Summer	Fall
Redbird	35.8	41.3	49.3	60.7	70.6	81.1	90.2	88.9	78.2	65.0	47.4	37.9	62.2	38.3	60.2	86.7	63.5
Oral	37.7	42.2	51.4	61.2	71.2	81.8	90.1	88.5	78.8	65.0	48.3	40.1	63.0	40.0	61.3	86.8	64.0
Oelrichs	35.3	40.8	49.0	60.9	71.0	81.5	90.6	89.7	79.3	65.5	48.0	37.8	62.5	38.0	60.3	87.3	64.2
Newcastle	34.2	38.4	46.0	57.5	68.1	78.2	87.7	85.7	74.3	61.1	45.0	36.3	59.4	36.3	57.2	83.9	60.1
Edgemont	35.2	39.3	49.9	60.6	70.3	80.4	89.0	87.7	77.1	62.8	45.9	36.2	61.2	36.9	60.3	85.7	61.9
Custer	35.5	38.2	43.2	52.4	62.1	71.8	80.2	79.1	69.9	58.7	44.2	37.5	56.1	37.1	52.5	77.0	57.6
Ardmore	35.6	41.2	49.7	61.2	70.8	81.4	90.1	88.9	78.2	65.4	48.4	37.8	62.4	38.2	60.5	86.8	64.0
Angostura	36.2	41.2	47.7	61.6	70.8	80.9	91.4	91.0	79.1	67.2	51.4	39.4	63.2	38.9	60.0	87.8	65.9
Jewel Cave	35.4	36.2	44.3	53.3	62.4	74.6	85.1	80.0	69.2	56.8	45.9	35.4	56.5	35.6	53.3	79.9	57.3
Regional Average	35.7	39.9	47.8	58.8	68.6	79.1	88.3	86.6	76.0	63.1	47.2	37.6	60.7	37.7	58.4	84.7	62.1

Table 3-3. Average Monthly, Annual, and Seasonal Minimum Temperatures for Regional Sites [High Plains Regional Climate Center, 2008; South Dakota State University, 2008]

Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Winter	Spring	Summer	Fall
Redbird	7.8	13.2	21.0	30.8	41.1	49.9	56.3	53.9	42.6	30.9	18.8	9.8	31.4	10.3	31.0	53.4	30.8
Oral	10.6	13.8	22.2	31.3	41.9	50.7	56.4	53.7	42.7	31.6	20.4	12.3	32.3	12.2	31.8	53.6	31.6
Oelrichs	11.1	15.0	21.7	31.7	42.0	51.2	57.7	55.9	45.2	33.6	21.9	13.6	33.4	13.3	31.8	54.9	33.6
Newcastle	11.5	15.0	22.2	32.2	42.4	51.5	59.1	57.0	46.6	35.3	22.8	14.5	34.2	13.6	32.3	55.9	34.9
Edgemont	10.0	13.4	23.2	32.5	43.2	52.4	59.1	56.9	45.6	32.7	19.7	9.9	33.2	11.1	33.0	56.1	32.7
Custer	9.4	12.2	17.4	26.8	36.2	44.6	50.7	48.5	39.2	29.1	18.7	11.8	28.7	11.1	26.8	47.9	29.0
Ardmore	7.0	11.9	19.7	30.0	40.7	49.7	56.2	53.5	42.2	30.2	18.4	8.7	30.7	9.2	30.2	53.1	30.2
Angostura	10.8	15.1	21.5	33.7	44.3	53.9	60.3	57.8	47.4	36.5	25.9	16.0	35.3	14.0	33.2	57.3	36.6
Jewel Cave	15.4	15.7	24.5	31.1	40.0	51.0	59.7	56.3	45.9	35.1	24.8	16.6	34.7	15.9	31.9	55.7	35.3
Regional Average	10.4	13.9	21.5	31.1	41.3	50.5	57.3	54.8	44.2	32.8	21.3	12.6	32.7	12.3	31.3	54.2	32.7

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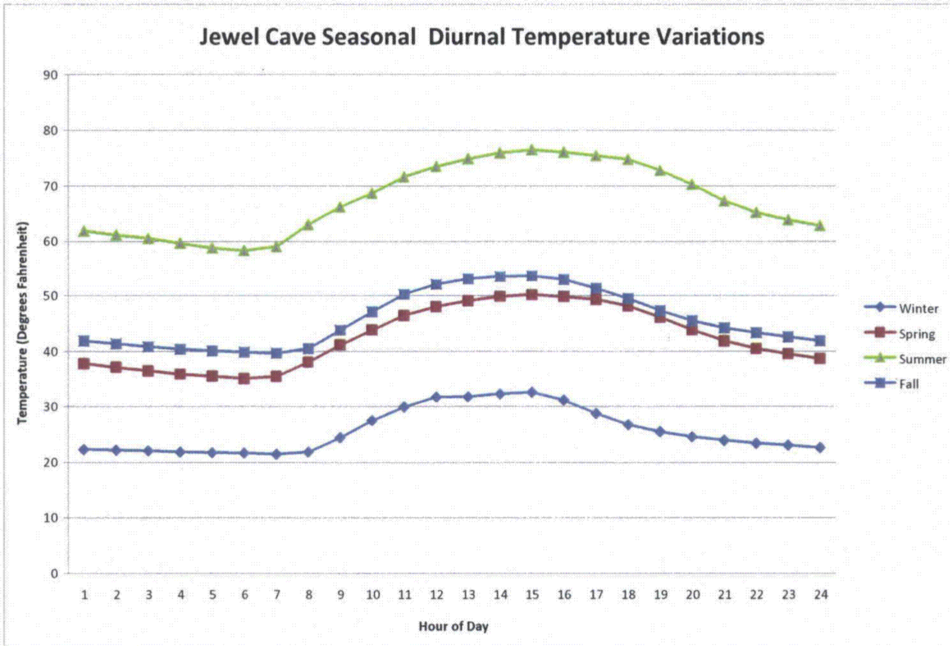

Figure 3-4. Jewel Cave, South Dakota, Seasonal Diurnal Temperature Variations [South Dakota State University, 2008].

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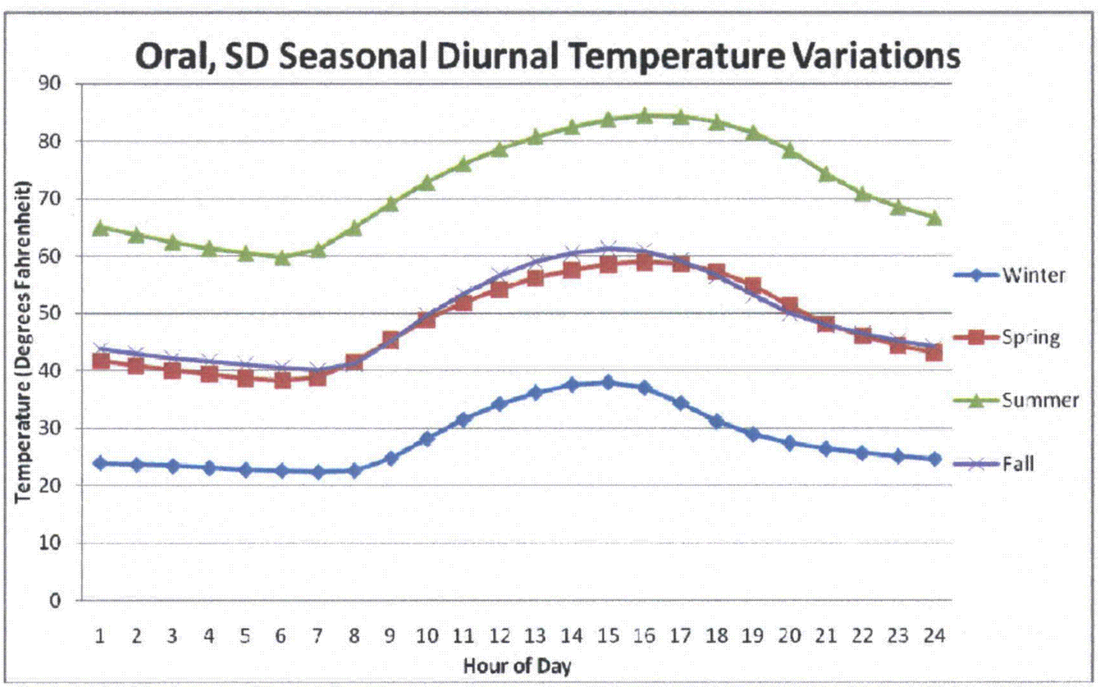

Figure 3-5. Oral, South Dakota, Seasonal Diurnal Temperature Variations [South Dakota State University, 2008].

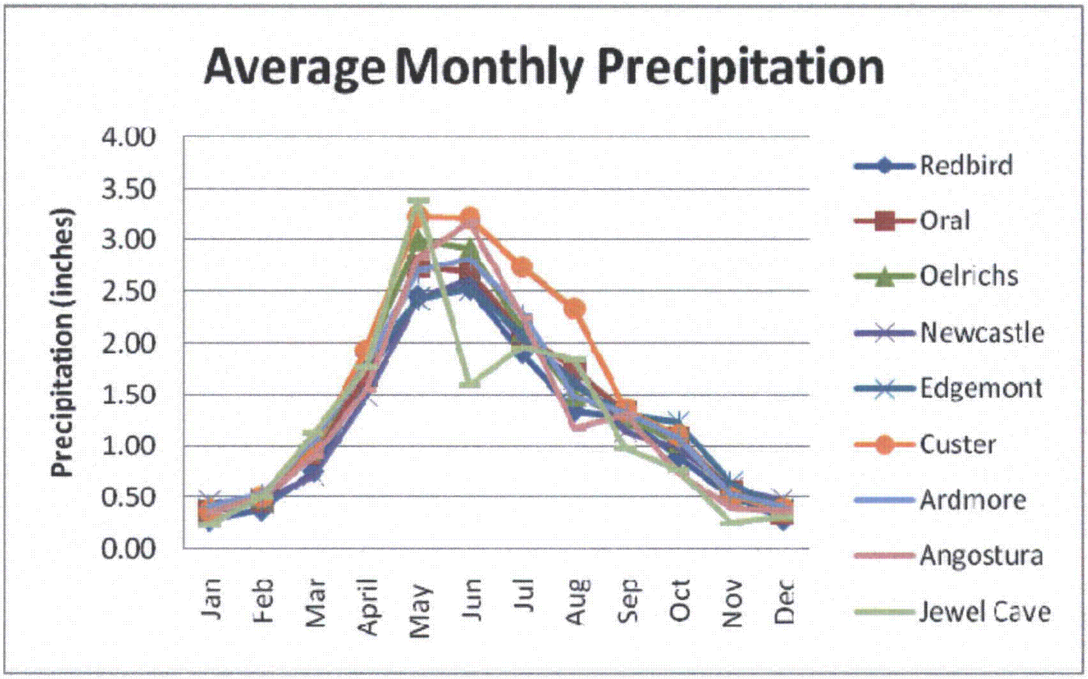

Figure 3-6. Average Monthly Precipitation for Regional Stations [High Plains Regional Climate Center, 2008; South Dakota State University, 2008].

Table 3-4. Average Seasonal and Annual Precipitation for Regional Stations (inches) [High Plains Regional Climate Center, 2008; South Dakota State University, 2008]

Name	Annual	Winter	Spring	Summer	Fall
Redbird	14.29	0.95	4.89	5.77	2.68
Oral	16.10	1.19	5.37	6.54	3.00
Oelrichs	16.50	1.28	5.83	6.54	2.85
Newcastle	15.11	1.41	4.65	6.32	2.73
Edgemont	15.87	1.22	5.26	6.20	3.19
Custer	18.66	1.27	6.15	8.28	2.96
Ardmore	16.35	1.34	5.54	6.56	2.91
Angostura	15.51	1.22	5.26	6.59	2.44
Jewel Cave	20.00	6.30	6.30	5.40	2.00
Region Average	16.49	1.80	5.47	6.47	2.75

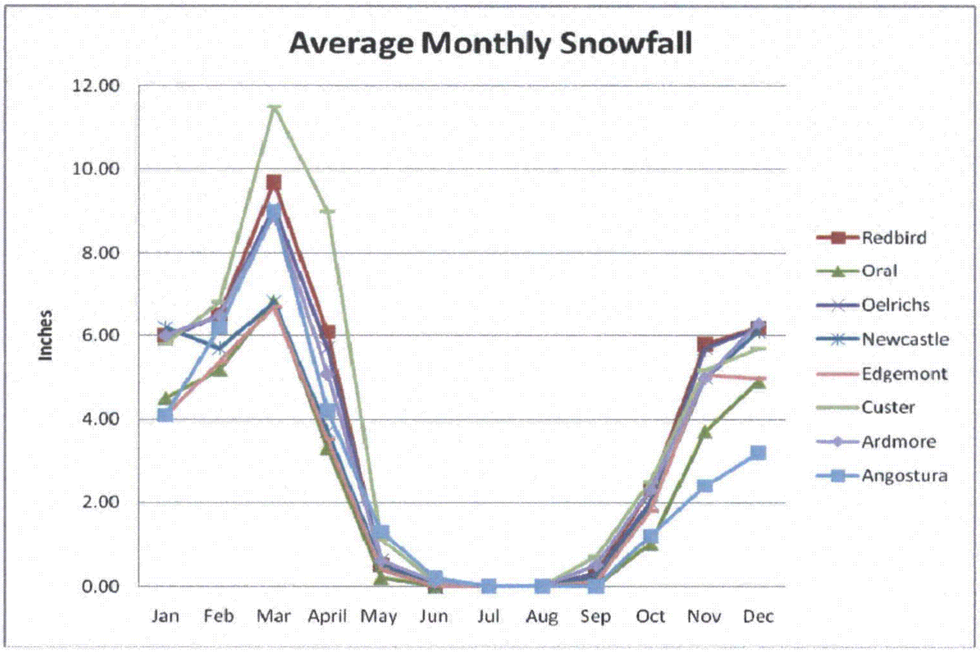

Figure 3-7. Average Monthly Snowfall at Regional Stations [High Plains Regional Climate Center, 2008; South Dakota State University, 2008].

3.4 RELATIVE HUMIDITY

Relative humidity measures the fraction of moisture in the air to saturated moisture content at a certain temperature. This parameter was analyzed for both the Jewel Cave and Oral sites. Figures 3-12 and 3-13 display the relationship of relative humidity to the season and time of day for each site. The figures show that the summer has the lowest relative humidity, averaging 60 percent, while winter has the highest relative humidity, averaging 69 percent.

The relative humidity in this region peaks out in the morning at around 6 a.m. with the minimum falling in the afternoon around 3 p.m. The readings during the peak time average 77 percent at Jewel Cave and 78 percent at the Oral site. The readings with the lowest relative humidity during the day average 53 percent and 42 percent at Jewel Cave and Oral, respectively.

3.5 WIND PATTERNS

The Oral site was the only site in the region with representative data for wind speed and direction. The wind speed averaged 6.4 mph over the entire period of record with approximately 51 percent of the winds blowing from the southwest (Figure 3-14). Over 38 percent of the wind is between 1.2 and 4.6 mph (1 to 4 knots) with calm winds (less than 1.2 mph or 1 knot) occurring 2.5 percent of the time (Figure 3-15).

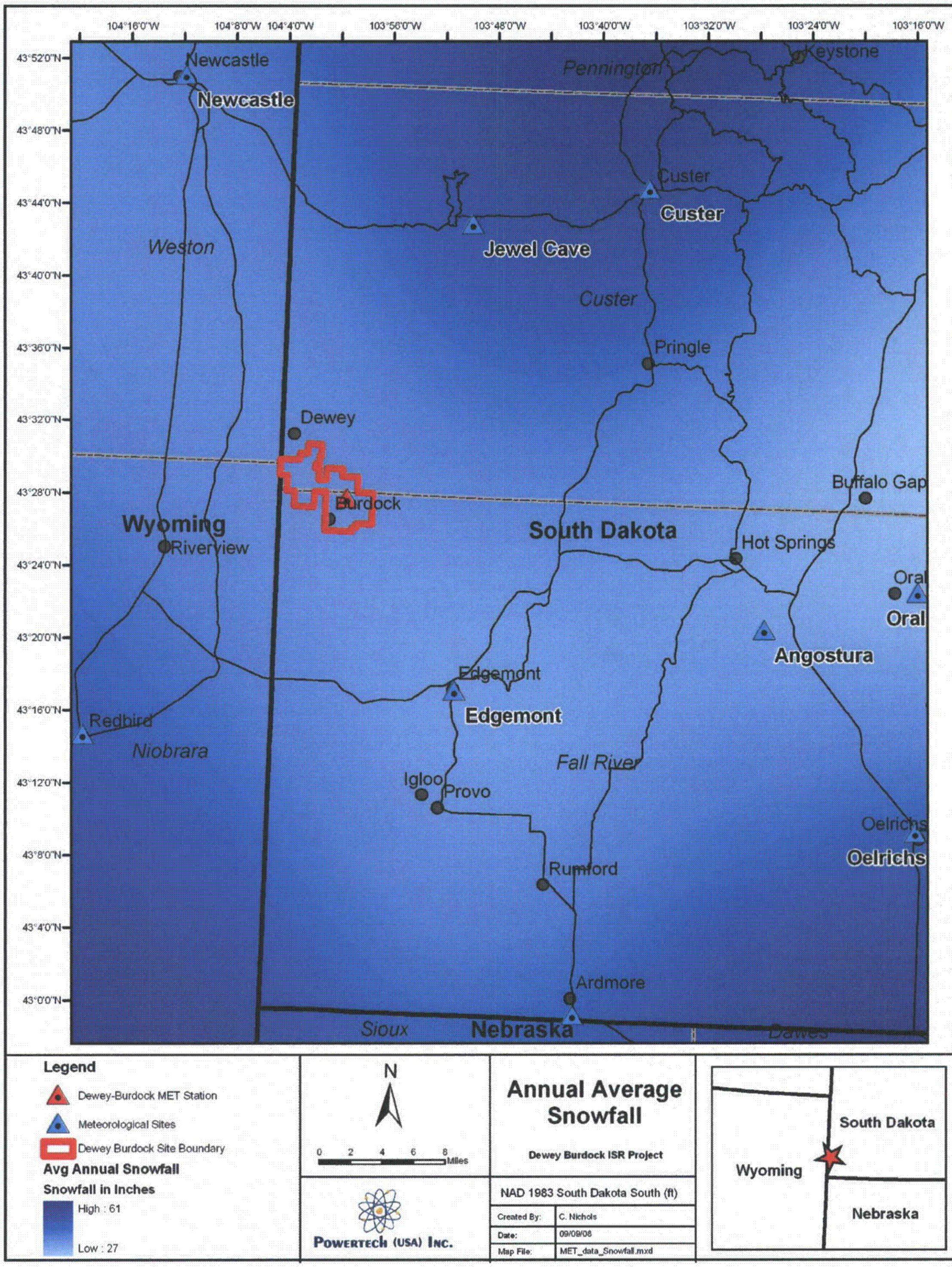

Figure 3-8. Average Snowfall Accumulation throughout the Region [high Plains regional Climate Center, 2008; South Dakota State University, 2008].

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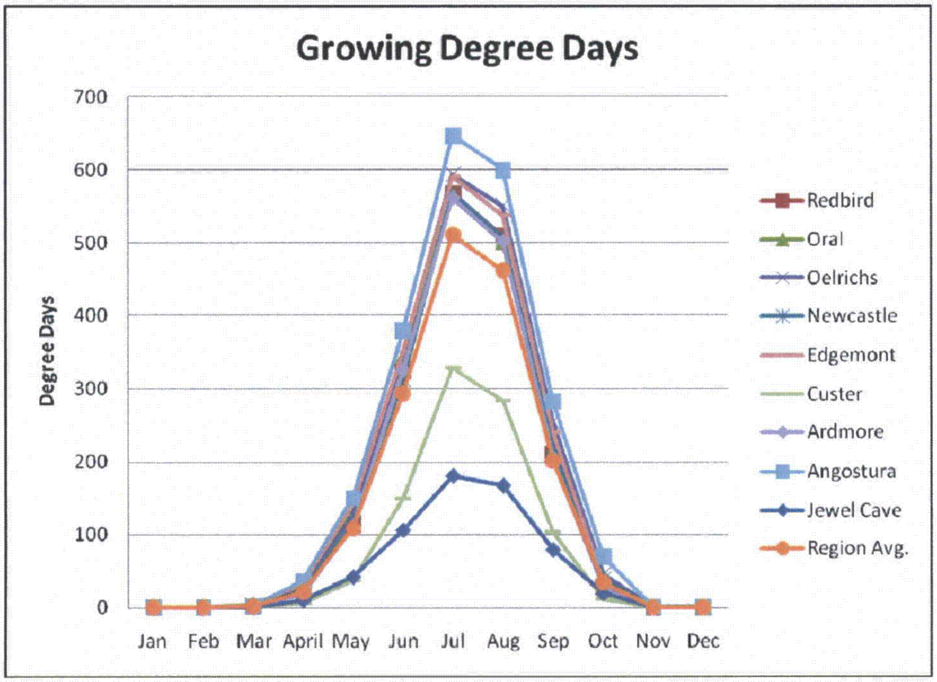

Figure 3-9. Growing Degree Days for Regional Stations [High Plains Regional Climate Center, 2008; South Dakota State University, 2008].

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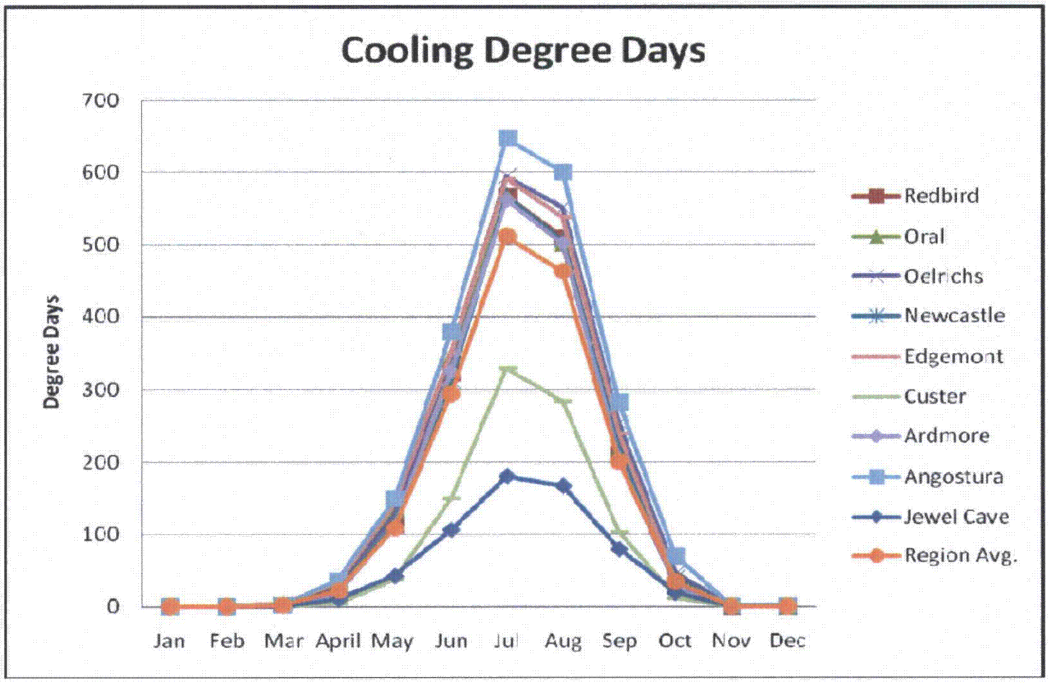

Figure 3-10. Cooling Degree Days for Regional Stations [High Plains Regional Climate Center, 2008; South Dakota State University, 2008].

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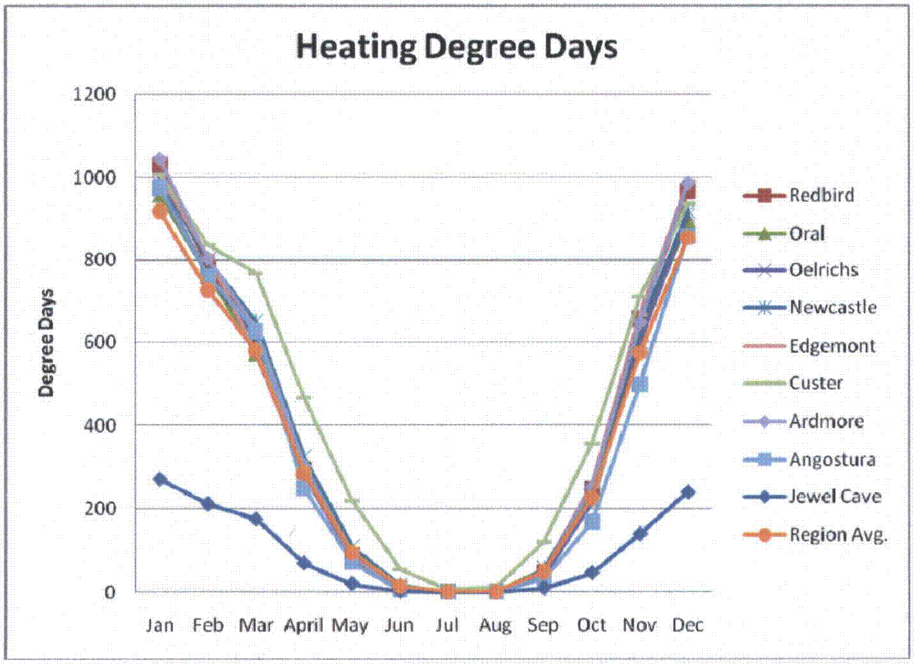

Figure 3-11. Heating Degree Days for Regional Stations [High Plains Regional Climate Center, 2008; South Dakota State University, 2008].

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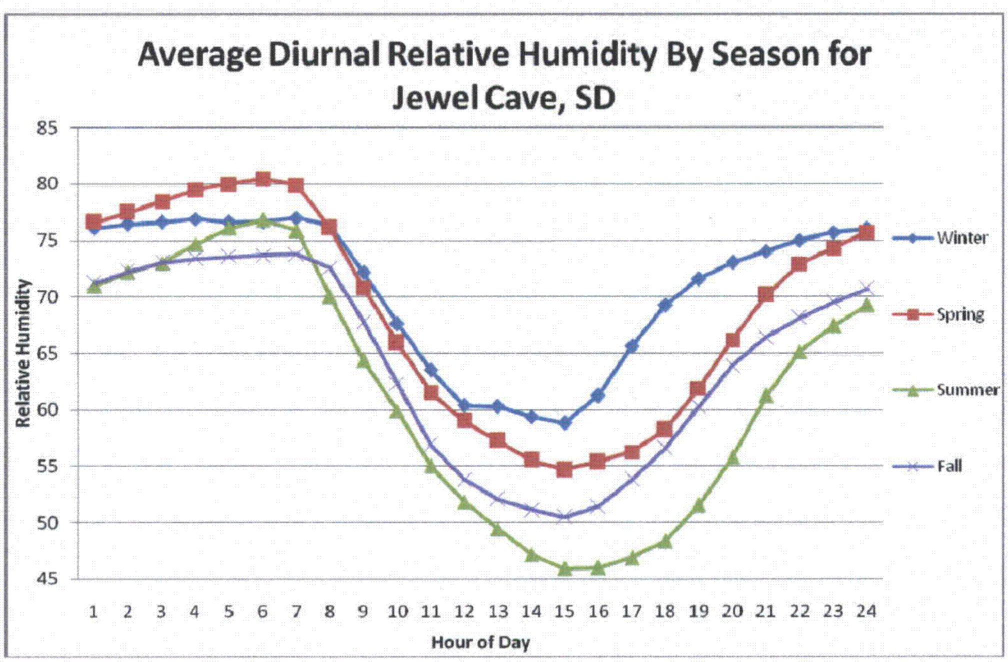

Figure 3-12. Average Diurnal Relative Humidity by Season for Jewel Cave, South Dakota [South Dakota State University, 2008].

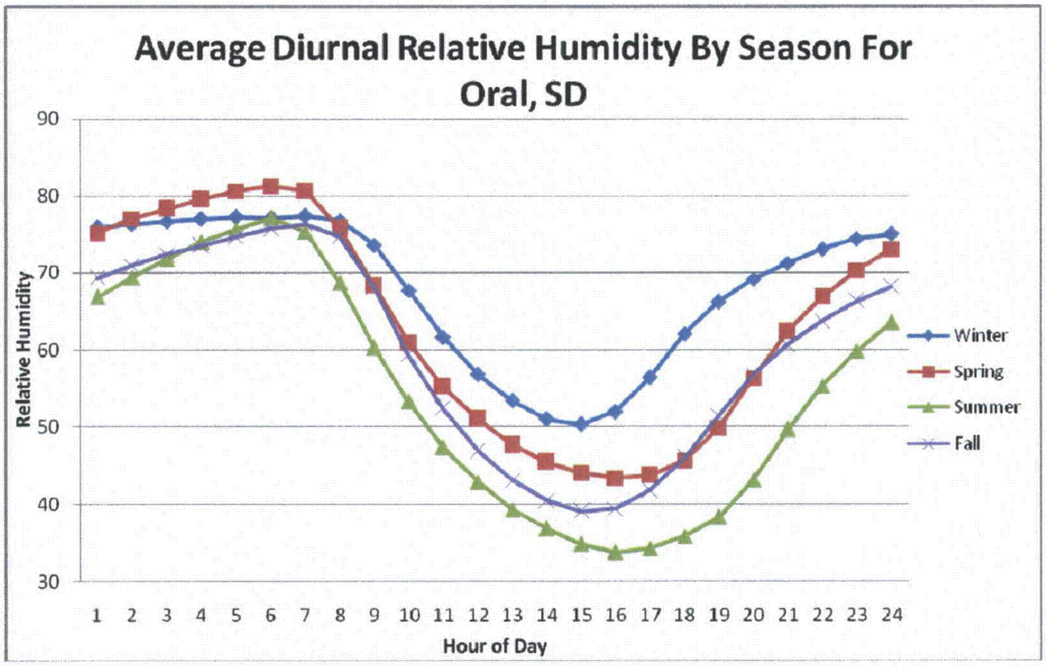

Figure 3-13. Average Diurnal Relative Humidity by Season for Oral, South Dakota [South Dakota State University, 2008].

3.6 EVAPOTRANSPIRATION

The American Society of Civil Engineers (ASCE) Standardized Reference Evapotranspiration Equation was used to calculate daily evapotranspiration (ET) using a tall reference crop. The weather parameters needed to calculate ET using this method are daily maximum and minimum temperature, maximum and minimum relative humidity, total solar radiation, and average wind speed. The Oral site was the only one in the region with all these weather parameters being sampled, and was, therefore, the site used for this analysis. The data were available from May 8, 2003, to July 20, 2008. Figure 3-16 displays a graph of the average accumulated ET for each month. Most ET occurs during the summer months of June, July, and August with an average monthly accumulation of 10.3 inches. During the winter months, low ET (2.8 inches) occurs because of low temperatures and low solar radiation.

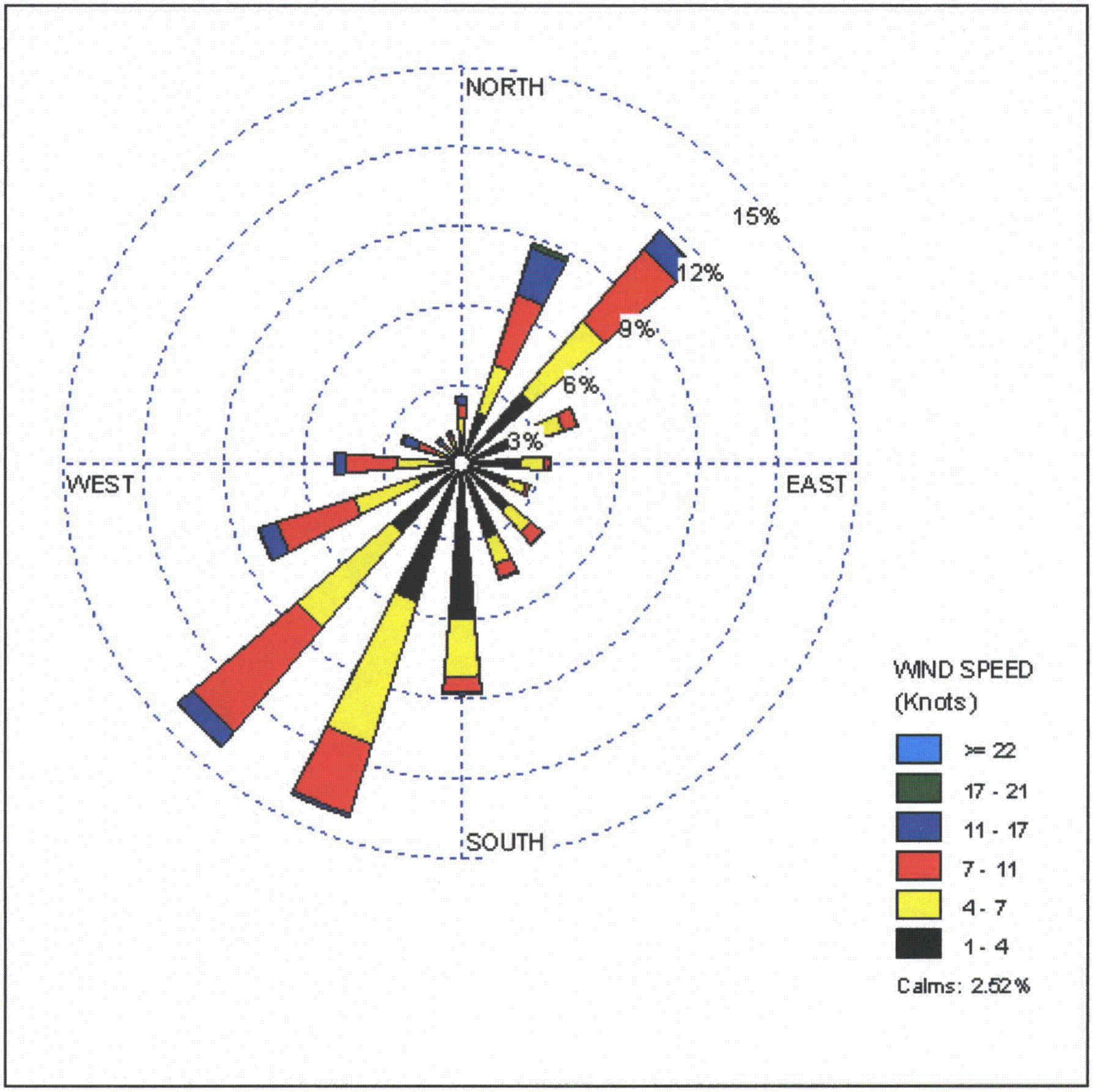

Figure 3-14. Wind Rose of Data For Oral, South Dakota From November 2002 Through July 2008 [South Dakota State University, 2008].

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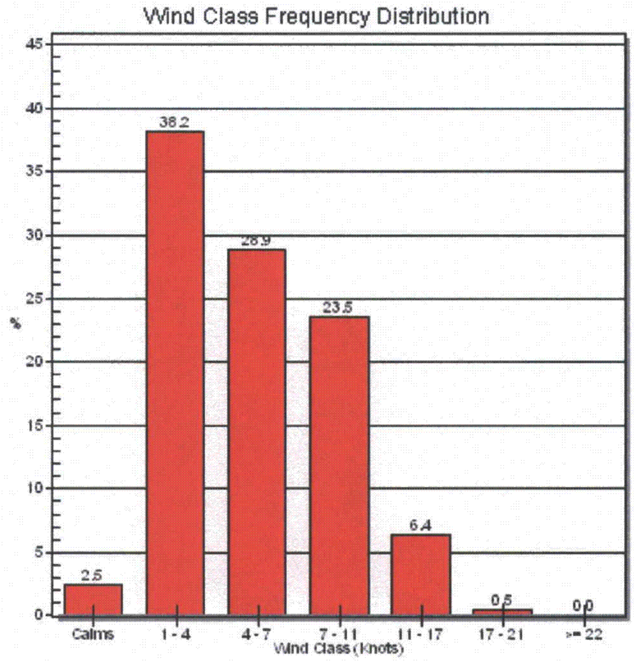

Figure 3-15. Wind Frequency Class Distribution for Oral, South Dakota, From November 2002 Through July 2008 [High Plains Regional Climate Center, 2008; South Dakota State University, 2008].

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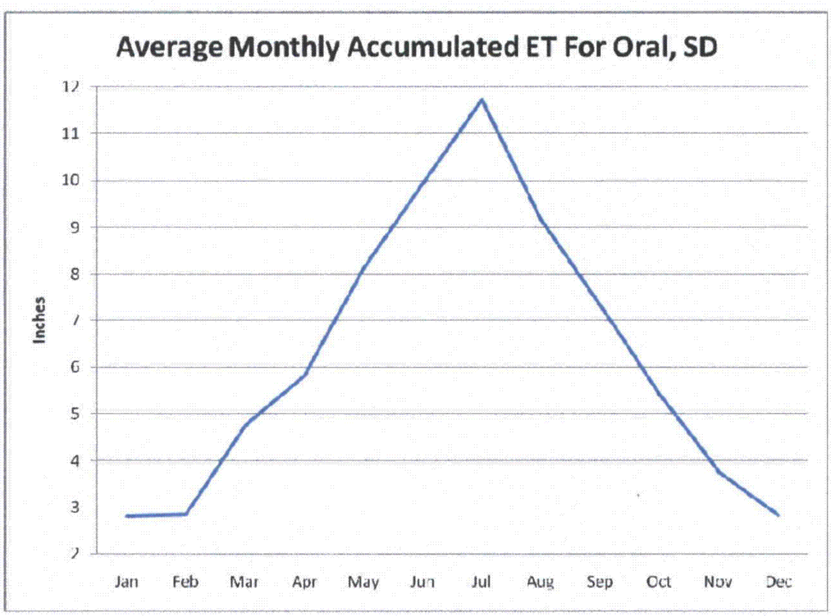

Figure 3-16. Average Monthly Accumulated Evapotranspiration for Oral, South Dakota [High Plains Regional Climate Center, 2008; South Dakota State University, 2008].

4.0 SITE SPECIFIC ANALYSIS

The site-specific analysis was completed using data collected from a weather station installed in approximately the center of the proposed permit boundary. The station is located on a site that is representative of the area within the boundary. Twelve months of data from July 18, 2007 to July 17, 2008 were used for this analysis.

This site was installed in cooperation with the South Dakota State Climatology office in Brookings, South Dakota, according to the standards they use to install their Automatic Weather Data Network (AWDN) stations. The parameters sampled at the site were air temperature, solar radiation, humidity, precipitation, and wind speed/direction at both 3- and 10-meter heights (9.8 and 32.8 feet). Table 4-1 lists the model number and specifications of the sensors that were installed. The accuracy of the sensors used is within the standards required for the NRC permit. All results of the statistical analysis, completed using **Minitab** software version 14.0 for the parameters analyzed, are included in Appendix B.

Table 4-1. Specifications for Weather Instruments Installed to Perform Dewey-Burdock Site-Specific Analysis

Measurement	Model	Manufacturer	Accuracy	Operating Temperature	Required Standard
Precipitation	VR6101	Vaisala	0.01 inch	–40°C to 60°C	0.1 inch
Wind Direction	024A	Met-One	±5 degrees	–50°C to 70°C	±5 degrees
Wind Speed	014A	Met-One	0.25 mph (0.11 m/s)	–50°C to 70°C	1.0 mph (0.5 m/s)
Temperature and RH	HMP45C	Vaisala	±2% for 10–90% RH; ±3% of 90–100% RH	–40°C to 60°C	Consistent with current state of the art
Solar Radiation	L1200X	Lt-Cor	Absolute error in natural daylight is ±5% max; ±3% typical	–40°C to 65°C	Consistent with current state of the art

4.1 TEMPERATURE

The average hourly temperature over the year for the site was 45.5°F. A maximum temperature of 104°F was reached on both July 21, 2007 and August 13, 2007, while the minimum temperature for the period of record was –28°F on January 22, 2008. A boxplot of the average temperature by month is shown in Figure 4-1. July was the warmest month with a median temperature of 76°F with a first quartile value of 69°F and a third quartile value of 85°F. Conversely, December and January were the coolest months with a median temperature of 15°F.

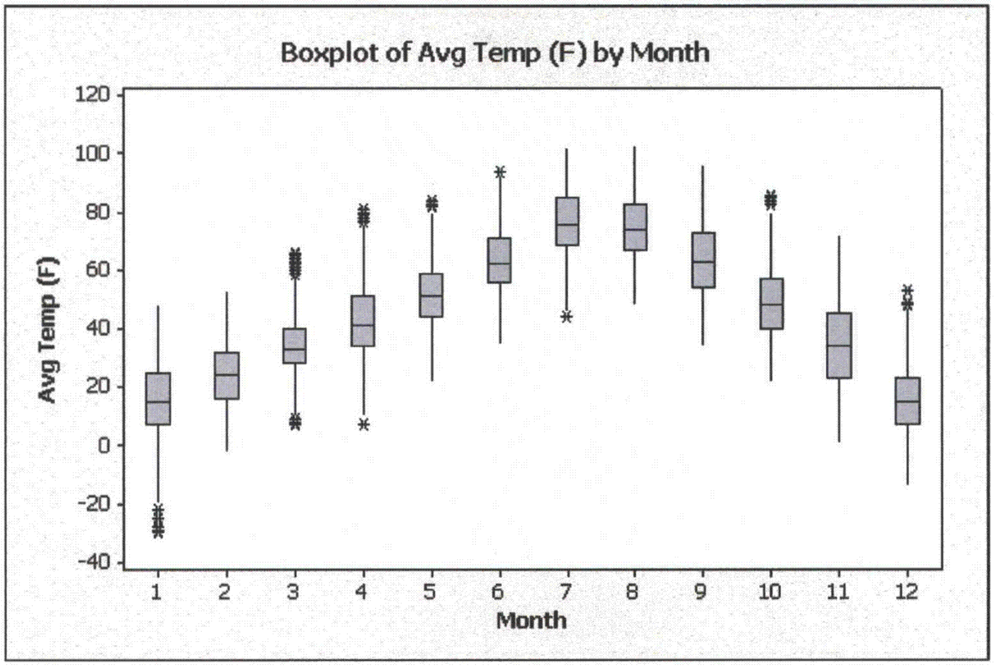

Figure 4-1. Boxplot of Average Temperature (Fahrenheit) by Month From the Dewey-Burdock Meteorological Site [South Dakota State University, 2008].

There were large variations in seasonal and diurnal temperature (Figure 4-2). In the summer season, average temperatures were as low as 60°F at 6 a.m. to 83.6°F at 5 p.m. In the winter season, temperatures varied from an average of 11°F between 7 a.m. and 8 a.m. and rose to nearly 27°F at 4 p.m. The diurnal variations are the result of the lack of relative humidity in the atmosphere at the site, which causes the earth's surface to rapidly absorb and release the energy supplied by the sun.

Figure 4-3 shows a probability plot of average hourly temperature for the year. Temperatures above or below 46°F were expected at the site 50 percent of the time, and temperatures dipped below the freezing mark of 32°F 31 percent of the time.

4.2 PRECIPITATION

Data for this site were collected using a Vaisala VRG 101 all-weather precipitation gauge. The region received 12.42 inches of precipitation during the year of monitoring. Figure 4-4 displays the precipitation totals by month. The largest monthly precipitation total occurred in May (3.8 inches) and the least occurred in November (0.10 inch). The greatest daily precipitation total (1.29 inches) occurred on May 23, 2008. Also on May 23, 2008, the area received 0.71 inch of precipitation between the hours of 8 p.m. and 9 p.m., which was the most intense event of the sampled year.

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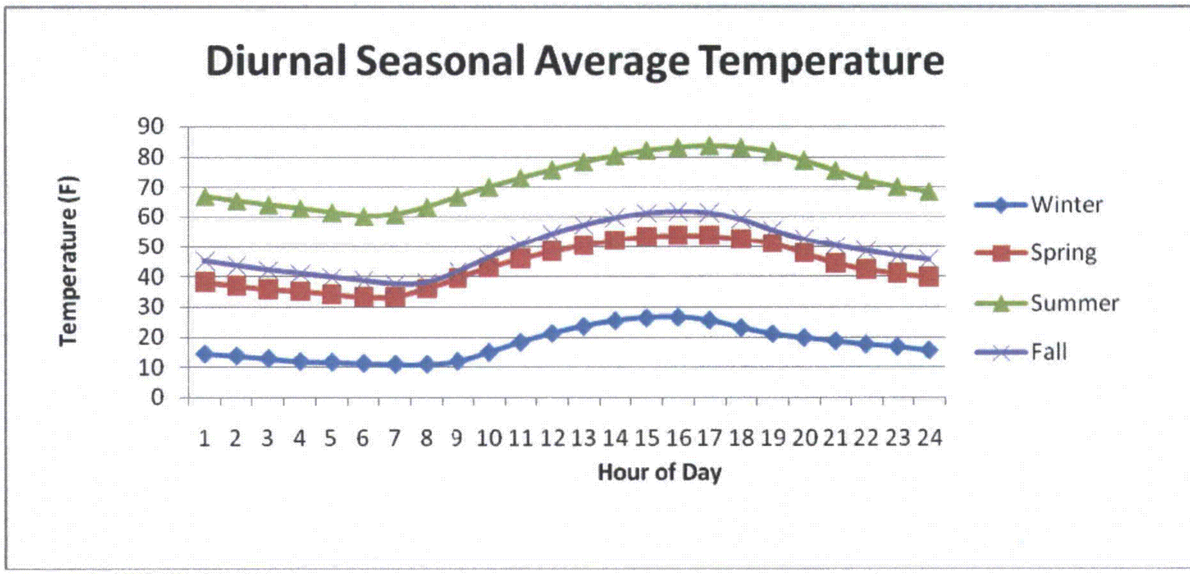

Figure 4-2. Diurnal Average Temperature for the Dewey-Burdock Meteorological Site by Season [South Dakota State University, 2008].

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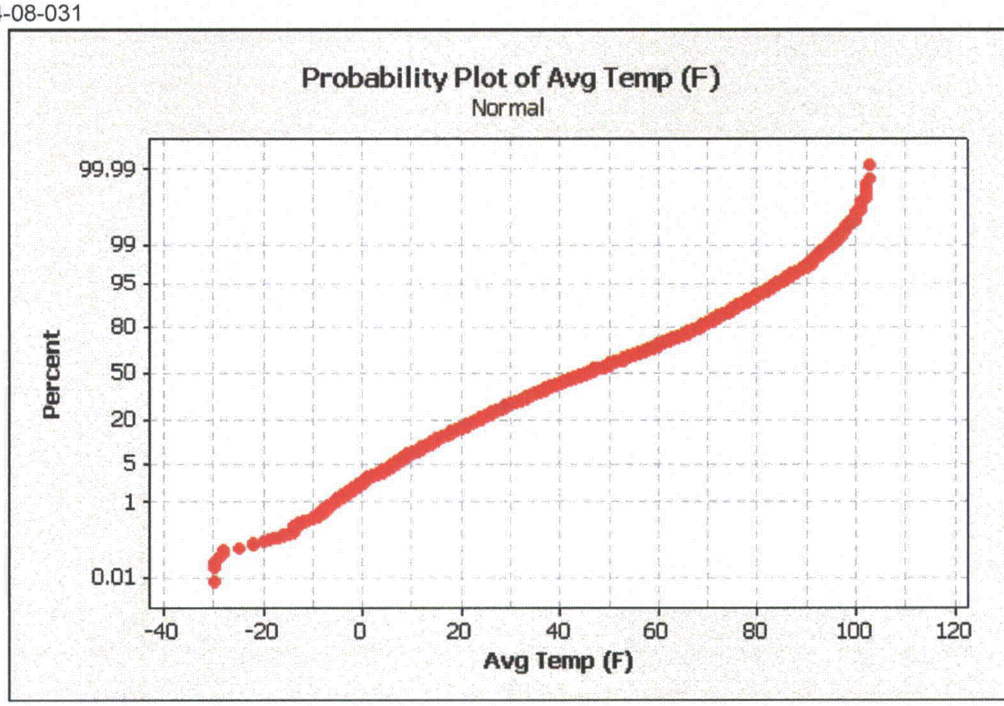

Figure 4-3. Probability Plot of Average Temperature From the Dewey-Burdock Meteorological Site [South Dakota State University, 2008].

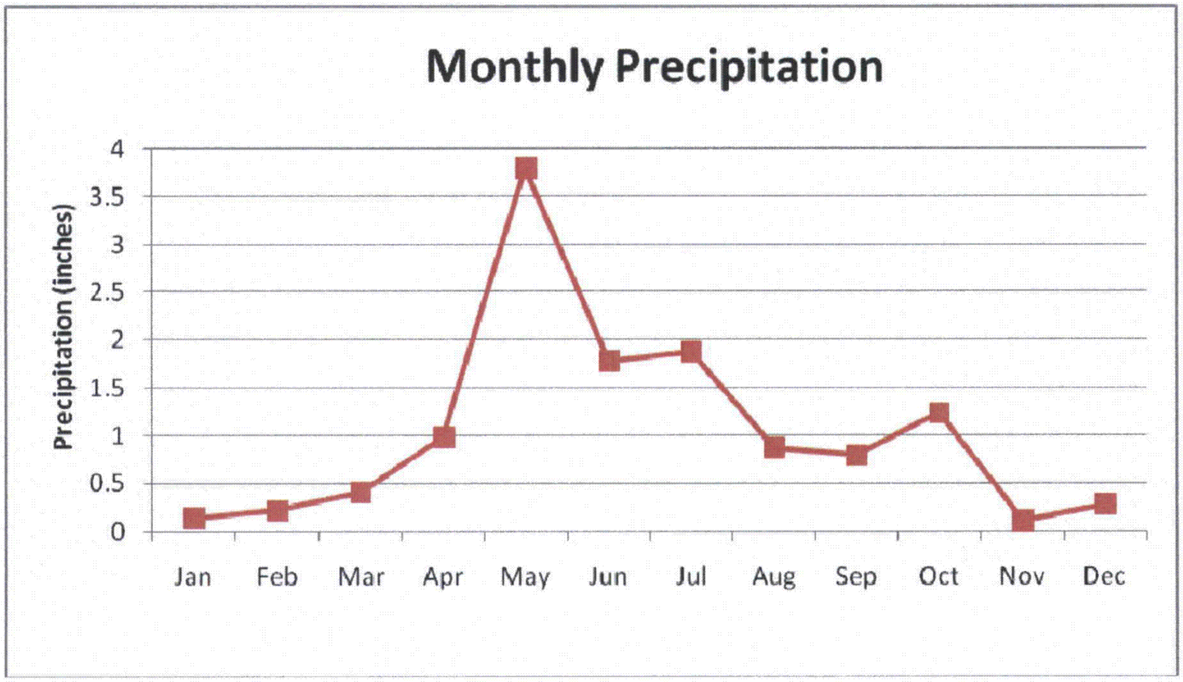

Figure 4-4. Monthly Precipitation From Dewey-Burdock Meteorological Site [South Dakota State University, 2008].

4.3 RELATIVE HUMIDITY

As mentioned in previous sections, the relative humidity at the site is low. Mean values range from a low of 51 percent in the summer months compared to a high of 77 percent in the winter months. Relative humidity values varied greatly throughout the day, especially in the summer and spring months. On average, during the spring, summer, and fall months, relative humidity reached its maximum from 5 a.m. to 7 a.m. and then declined steadily until 4 p.m. to 5 p.m. when it began its evening ascent (Figure 4-5). During the winter months, the diurnal relative humidity range was much less because of less intense and shorter duration solar radiation.

4.4 WIND SPEED AND DIRECTION

Wind speed and direction were measured in the field using Met-One 014A and 024A model sensors. Statistical analysis and visualization of wind data were performed using WRPLOT View Version 5.3 distributed by Lakes Environmental. All data analysis outputs are included in Appendix C. The average wind speed over the period of record was approximately 5 mph, while calm winds occurred only 1.8 percent of the time.

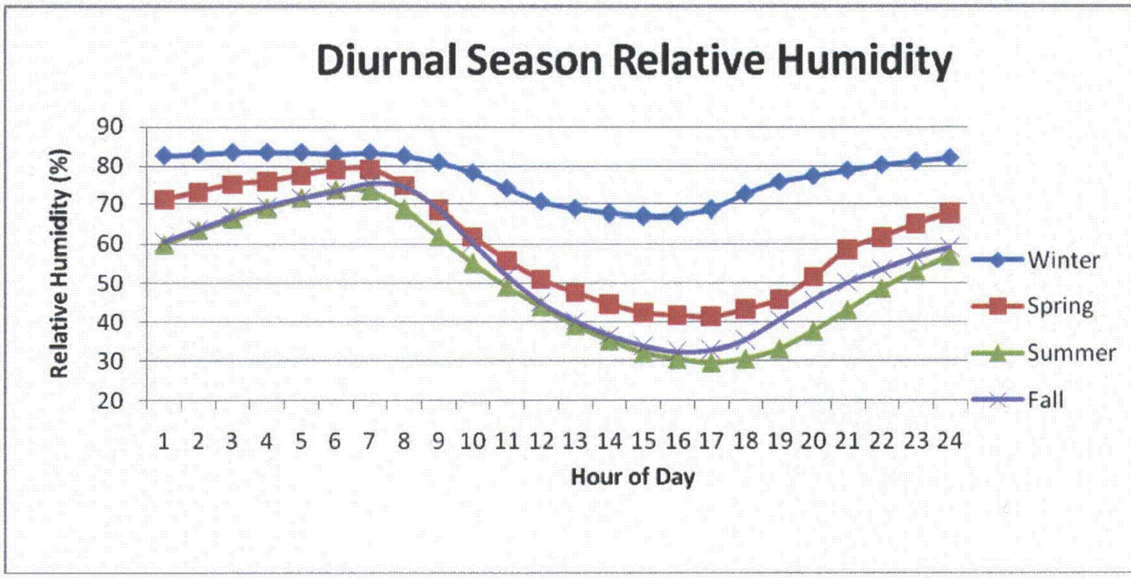

Figure 4-5. Diurnal Relative Humidity by Season From Dewey-Burdock Meteorological Site [South Dakota State University, 2008].

As shown in Table 4-2, a majority of the winds (51 percent) come from the southeast and approximately 55 percent of all winds were less than 4.6 mph. December had the least amount of wind with 7.66 percent of the total winds being classified as calm and having an average wind speed of 2.8 mph. In contrast, May was the windiest month with only 0.41 percent of calm winds and an average wind speed of 6.9 mph. Southeasterly winds were prevalent in the winter months (38 percent of total shown in Figure 4-6) as well as the summer months (56 percent of total shown in Figure 4-7).

4.5 POTENTIAL EVAPOTRANSPIRATION FOR SITE-SPECIFIC DEWEY-BURDOCK

The potential evapotranspiration (ET) data were taken from July 18, 2007, to July 14, 2008. The ASCE Standardized Reference Evapotranspiration Equation for a tall reference crop was used to estimate daily ET. The weather parameters needed to estimate ET using this method are daily, maximum and minimum temperature, maximum and minimum relative humidity, total solar radiation, and average wind speed. Most ET occurred during the months of July, August, and September with an average monthly accumulation of 10.3 inches (Figure 4-8). During the winter, low ET occurs because of low temperatures and low solar radiation. The average ET during the winter months is 1.5 inches.

Table 4-2. Normalized Frequency Distribution of Wind of the Dewey-Burdock Meteorological Site [South Dakota State University, 2008]

Frequency Distribution (Normalized)							
Wind Direction	**Knots**						
	1-4	**4-7**	**7-11**	**11-17**	**17-21**	**≥ 22**	**Total**
348.75-11.25	0.000345	0.000115	0.000000	0.000000	0.000000	0.000000	0.000459
11.25-33.75	0.002526	0.000804	0.000459	0.000115	0.000000	0.000000	0.003904
33.75-56.25	0.012517	0.003790	0.003790	0.000804	0.000230	0.000230	0.021360
56.25- 78.75	0.028250	0.016996	0.021475	0.003330	0.000459	0.000000	0.070510
78.75-101.25	0.057074	0.037322	0.018489	0.001263	0.000000	0.000000	0.114148
101.25- 123.75	0.069936	0.025609	0.011713	0.000000	0.000000	0.000000	0.107258
123.75-146.25	0.070740	0.022738	0.007350	0.000115	0.000115	0.000000	0.101056
146.25-168.75	0.071199	0.015618	0.001378	0.000345	0.000000	0.000000	0.088539
168.75-191.25	0.057533	0.004364	0.000459	0.000230	0.000000	0.000000	0.062586
191.25-213.75	0.035829	0.004364	0.000345	0.000115	0.000000	0.000000	0.040652
213.75-236.25	0.035140	0.005397	0.002182	0.001034	0.000000	0.000000	0.043753
236.25- 258.75	0.030202	0.006890	0.004593	0.001493	0.000115	0.000000	0.043294
258.75- 281.25	0.032269	0.014469	0.004364	0.001952	0.000000	0.000000	0.053055
281.25-303.75	0.027905	0.034566	0.019982	0.002986	0.000000	0.000000	0.085439
303.75-326.25	0.017570	0.040652	0.052710	0.015962	0.000230	0.000000	0.127124
326.25-348.75	0.004364	0.006546	0.006775	0.001263	0.000115	0.000000	0.019063
Subtotal	**0.553399**	**0.240239**	**0.156063**	**0.031006**	**0.001263**	**0.00023**	**0.973702**
Calms							**0.017646**
Missing/Incomplete							**0.008652**
Total							**1.000000**

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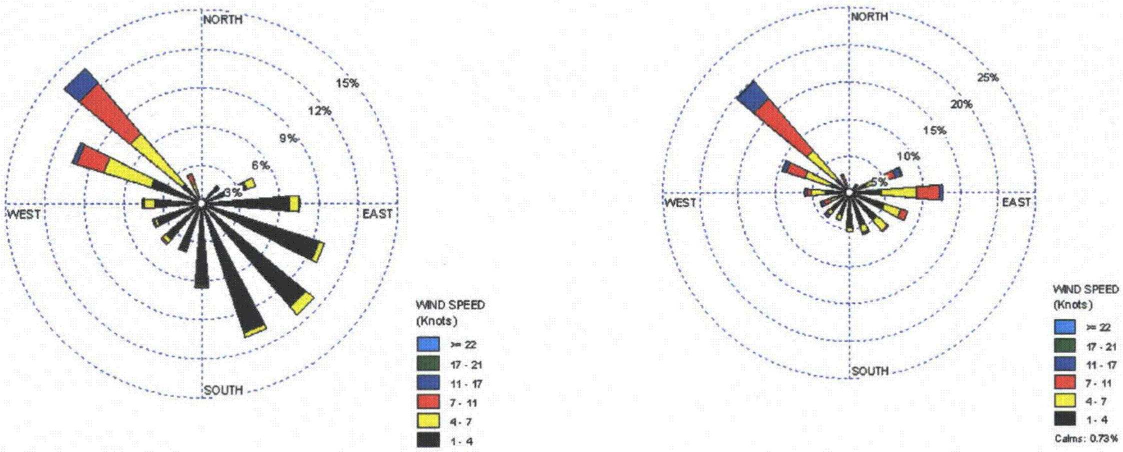

Winter Spring

Figure 4-6. Winter and Spring Wind Rose from Dewey-Burdock Meteorological Site.

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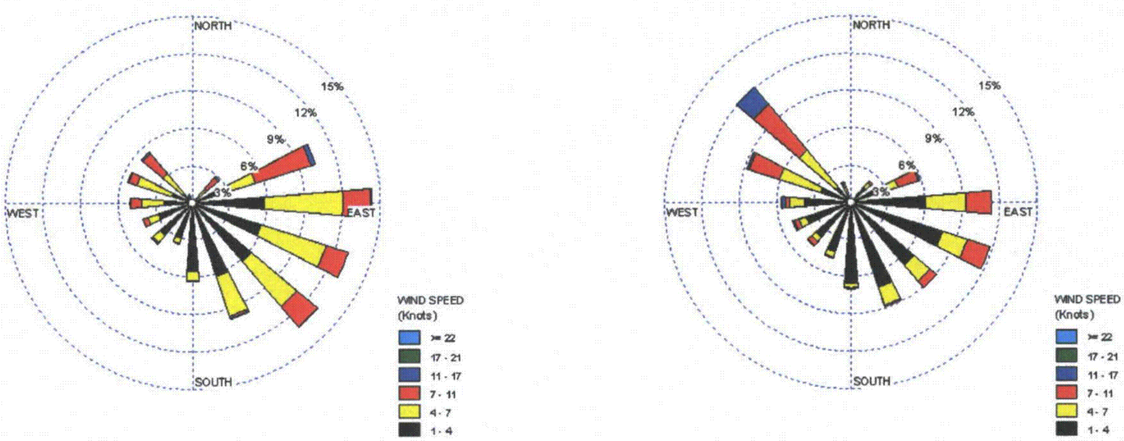

Summer Fall

Figure 4-7. Summer and Fall Wind Rose from Dewey-Burdock Meteorological Site.

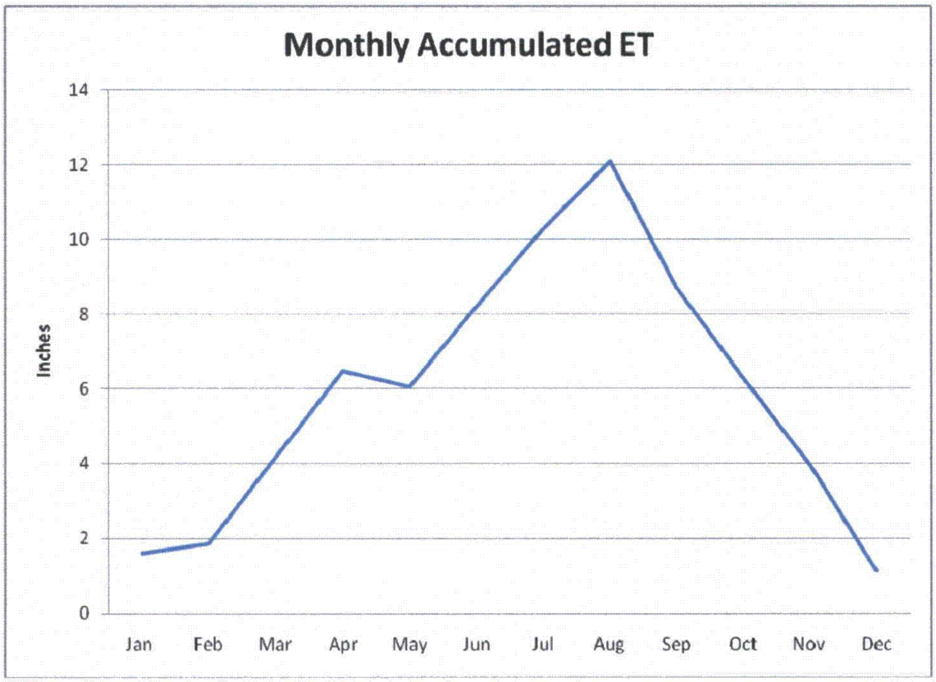

Figure 4-8. Estimated Evapotranspiration Calculated Using Weather Data Collected at the Dewey-Burdock Meteorological Site [South Dakota State University, 2008].

5.0 REPRESENTATIVENESS OF DEWEY-BURDOCK SITE-SPECIFIC DATA

According to the U.S. Nuclear Regulatory Commission Regulatory Guide 3.63, data gathered on a continuous basis for at least a 12-month period must be analyzed to determine if it is representative of long-term meteorological conditions. The same guide recommends to properly assess this, the on-site data be compared to a concurrent period from the closest NWS station. If the closest NWS station data are deemed representative of the project site for a concurrent period of record, then the concurrent period of record data should be compared to historic data from the station to determine if it is representative of long-term meteorological conditions. The closest NWS station with similar topographic and geographic features is at Chadron, Nebraska, that is approximately 63 miles from the Dewey-Burdock Meteorological Station.

The basic meteorological parameters of average daily temperature, wind speed, and precipitation from the Dewey-Burdock meteorological station and the Chadron NWS station were compared from July 18, 2007 to July 17, 2008 to determine first if the meteorological conditions at Chadron, NE are representative of the conditions at the Dewey-Burdock Uranium site. To complete this analysis, basic statistics along with a Mann-Whitney test were performed using **Minitab** Software Version 14 to compare the temperature and wind speed at the two stations. A Mann-Whitney test (also called a 2-sample rank test or 2-sample Wilcoxon rank sum test) is a nonparametric test that compares the equality of two population medians. The hypothesis is:

$$Ho: \eta 1 = \eta 2 \text{ versus } H1: \eta 1 \neq \eta 2$$

where

$$\eta = \text{population median.}$$

All tests were conducted at the 95 percent confidence interval. If the test is significant at 0.05 or greater, then the null hypothesis that the sample medians are equal is accepted.

Table 5-1 displays the mean, median, maximum, minimum, and standard deviation for the average daily temperature and wind speed at the Dewey-Burdock and Chadron NWS meteorological stations. The Chadron NWS station was slightly warmer (mean average daily temperature of 47.9 F) than the Dewey-Burdock station (45.6 F). The results of the Mann-Whitney test generated by **Minitab** Software Version 14 for daily temperature are displayed in Figure 5-1. The test is significant at 0.2287, which is greater than the 0.05 required; hence the null hypothesis stating the median temperature at the two sites is equal is accepted.

Table 5-1. Average Daily Temperature and Wind Speed Comparison Statistics for the Deewey-Burdock and Chadron National Weather Service Meteorological Stations [High Plains Regional Climate Center, 2008; South Dakota State University, 2008]

	Dewey-Burdock Average Temperature (F)	Chadron Average Temperature (F)	Dewey-Burdock Average Wind Speed (mph)	Chadron Average Wind Speed (mph)
Mean	45.6	47.9	7.4	9.8
Median	46.0	48.2	7.0	9.1
Maximum	89.0	89.0	26.6	24.2
Minimum	–9.0	–3.1	1.4	1.2
Standard Deviation	22.6	21.4	3.3	3.9

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```
                              N  Median
Dewey-Burdock Average Temp  365  46.000
Chadron Average Temp        359  48.245


Point estimate for ETA1-ETA2 is -2.085
95.0 Percent CI for ETA1-ETA2 is (-5.474,1.325)
W = 128925.5
Test of ETA1 = ETA2 vs ETA1 not = ETA2 is significant at 0.2287
The test is significant at 0.2287 (adjusted for ties)
```

Figure 5-1. Results of Mann-Whitney Test for Average Daily Temperature Generated by **Minitab** Version 14 Statistical Software.

The Chadron NWS station had stronger mean average daily wind speeds, 9.8 mph compared to 7.4 mph at the Dewey-Burdock station. Figure 5-2 displays the results of the Mann-Whitney test for daily wind speed. Since the test is significant at less than 0.05, the null hypothesis stating the median daily wind speed at the two stations is equal is rejected.

RSI-1764-08-038

```
                               N  Median
Dewey-Burdock Average Wind   343  7.0000
Chadron Average Wind         362  9.1018


Point estimate for ETA1-ETA2 is -2.2649
95.0 Percent CI for ETA1-ETA2 is (-2.7800,-1.7653)
W = 98165.0
Test of ETA1 = ETA2 vs ETA1 not = ETA2 is significant at 0.0000
The test is significant at 0.0000 (adjusted for ties)
```

Figure 5-2. Results of Mann-Whitney Test for Average Daily Temperature Generated by **Minitab** Version 14 Statistical Software.

The precipitation accumulated over the timeframe in this analysis at the two stations was significantly different. The Dewey-Burdock station had 12.4 inches of precipitation compared to 32.8 inches at the Chadron station.

Because of the fact that both the rainfall and the wind speed differed significantly between the two sites, it was determined that weather parameters measured at the Chadron station are not representative of the conditions at the Dewey-Burdock station. Therefore, rigorous statistical analysis comparing the Chadron station historic to current weather data is not necessary.

6.0 CONCLUSIONS AND RECOMMENDATIONS

The objective of the analysis included in this report is to compare meteorological data collected from a site-specific Dewey-Burdock meteorological station with current and historic data collected at regional weather stations and the nearest NWS station. This is completed to determine whether data collected at the Dewey-Burdock meteorological site is representative of long-term meteorological conditions in the region and can therefore be used to assist in the sighting and construction of any mining and storage facilities, to determine the maximum potential annual radiation dose to the surrounding public, and to estimate the environmental impact of routine releases of radioactive material into the atmosphere.

The closest NWS station to the Dewey-Burdock Uranium Project site with similar geographic and topographic features was identified in Chadron, Nebraska, which is approximately 63 miles away. A Mann-Whitney statistical test was used to compare the average daily temperature and wind speed from the two sites from July 18, 2007 to July 17, 2008, which is the earliest complete one year sampling period available at the Dewey-Burdock station. The test found that the median daily temperature at the two sites was statistically the same but that the median daily wind speed was statistically significantly different. The precipitation accumulated at the Chadron station was over 2.5 times that of the Dewey-Burdock station.

Because of the fact that both the rainfall and the wind speed differed significantly between the two sites, it was determined that weather parameters measured at the Chadron station are not representative of the conditions at the Dewey-Burdock station. Therefore, the historical Chadron, Nebraska, weather data cannot be used to characterize the long-term meteorological conditions at the Dewey-Burdock Uranium Project site. Since there are no other long-term NWS meteorological stations near the project area, it is recommended that data continue to be collected at the Dewey-Burdock station until long-term meteorological trends can be established at the site.

7.0 REFERENCES

High Plains Regional Climate Center, 2008. *Historical Climate Data Summaries*, retrieved August 2008 from High Plains Regional Climate Center Web Site: http://www.hprcc.unl.edu/data/historical/

South Dakota State University, 2008. *South Dakota Climate and Weather*, retrieved August 2008 from South Dakota State University Web Site: http://www.climate.sdstate.edu/climate_site/climate_page.htm

U.S. Nuclear Regulatory Commission, Office of Nuclear Regulatory Research, 1988. *Onsite Meteorological Measurement Program For Uranium Recovery Facilities-Data Acquisition and Reporting*, Regulatory Guide 3.63.

APPENDIX A

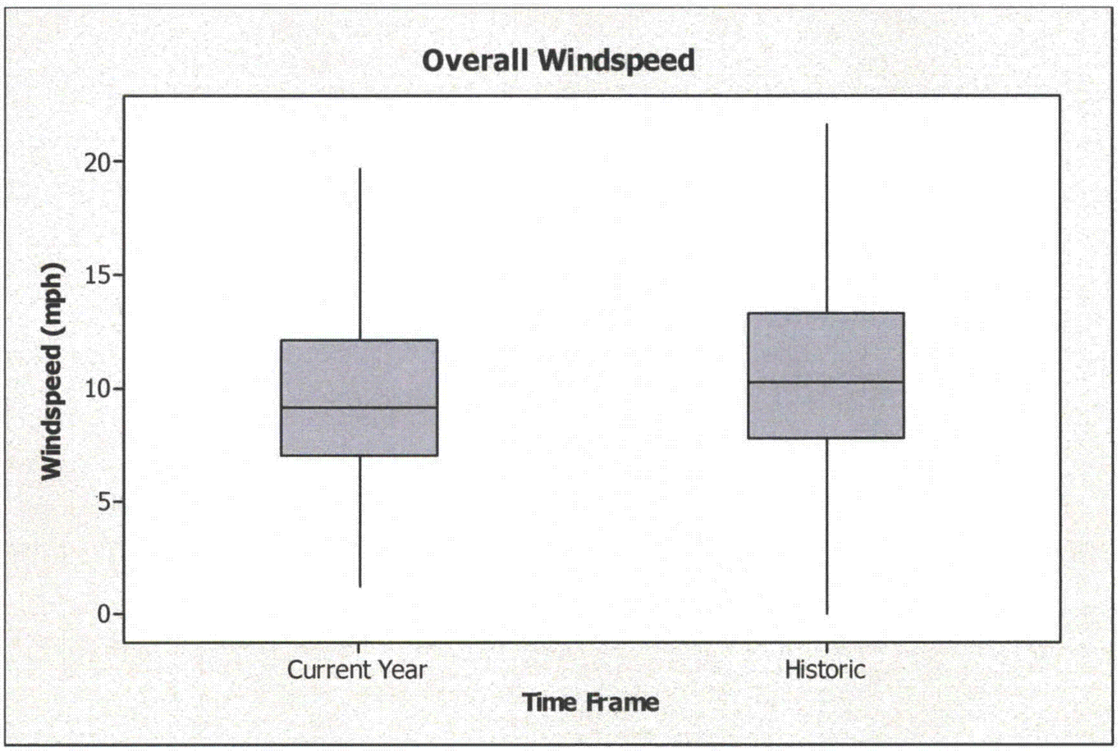
STATISTICAL REPORTS FOR CHADRON, NEBRASKA, METEOROLOGICAL SITE

APPENDIX A
STATISTICAL REPORTS FOR CHADRON, NEBRASKA, METEOROLOGICAL SITE

WIND SPEED ANALYSIS

Descriptive Statistics: Average

Variable	Time Frame	N	N*	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Average	Current Year	363	0	9.766	3.901	1.202	7.003	9.097	12.062	24.197
	Historic	9323	0	10.834	4.380	0.0000	7.705	10.251	13.276	36.090



Descriptive Statistics: Average

Results for Month = 1

Variable	Time Frame	Total Count	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Average	Current Year	31	10.039	4.094	2.628	7.401	9.351	11.741	22.461
	Historic	805	9.969	4.400	0.000	6.872	9.351	12.545	33.099

Results for Month = 2

Variable	Time Frame	Total Count	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Average	Current Year	28	9.265	3.874	1.202	6.539	9.456	12.080	16.662
	Historic	734	10.475	4.672	1.727	7.250	9.768	13.160	33.239

Results for Month = 3

Variable	Time Frame	Total Count	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Average	Current Year	31	10.404	3.879	5.155	7.690	9.111	12.706	24.197
	Historic	806	11.572	4.854	2.488	7.990	10.971	14.349	32.986

Results for Month = 4

Variable	Time Frame	Total Count	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Average	Current Year	30	11.210	4.791	3.812	6.482	11.637	15.219	20.545
	Historic	779	12.533	4.954	2.187	8.901	11.800	15.525	36.090

Results for Month = 5

Variable	Time Frame	Total Count	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Average	Current Year	30	11.037	4.779	3.040	7.314	10.209	13.414	21.464
	Historic	803	11.847	4.651	2.614	8.515	11.193	14.401	29.690

Results for Month = 6

Variable	Time Frame	Total Count	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Average	Current Year	30	9.173	2.852	5.124	6.830	8.768	11.103	16.576
	Historic	779	11.213	3.746	2.507	8.571	10.725	13.566	24.299

Results for Month = 7

Variable	Time Frame	Total Count	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Average	Current Year	31	9.991	3.371	4.327	7.597	9.627	12.062	19.401
	Historic	792	10.542	3.369	0.000	8.053	10.094	12.467	24.818

Results for Month = 8

Variable	Time Frame	Total Count	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Average	Current Year	30	9.421	3.151	2.865	7.624	9.205	10.766	18.912
	Historic	775	10.472	3.429	2.064	7.844	10.132	12.514	24.324

Results for Month = 9

Variable	Time Frame	Total Count	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Average	Current Year	30	10.667	4.215	5.220	7.115	10.023	13.396	19.880
	Historic	750	10.526	4.003	1.749	7.420	9.984	13.051	25.404

Results for Month = 10

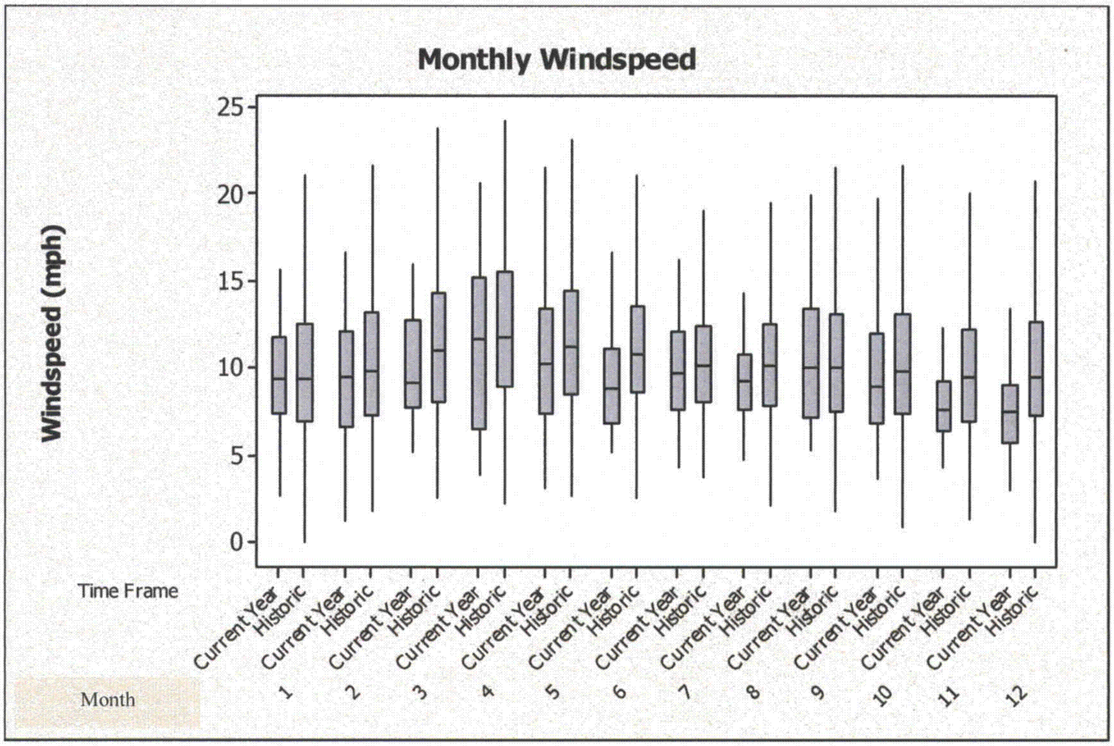
Variable	Time Frame	Total Count	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Average	Current Year	31	9.678	3.770	3.607	6.814	8.911	12.034	19.648
	Historic	775	10.565	4.585	0.895	7.322	9.743	13.080	29.291

Results for Month = 11

Variable	Time Frame	Total Count	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Average	Current Year	30	8.398	3.250	4.316	6.382	7.567	9.261	18.245
	Historic	750	10.062	4.299	1.263	6.878	9.442	12.215	30.728

Results for Month = 12

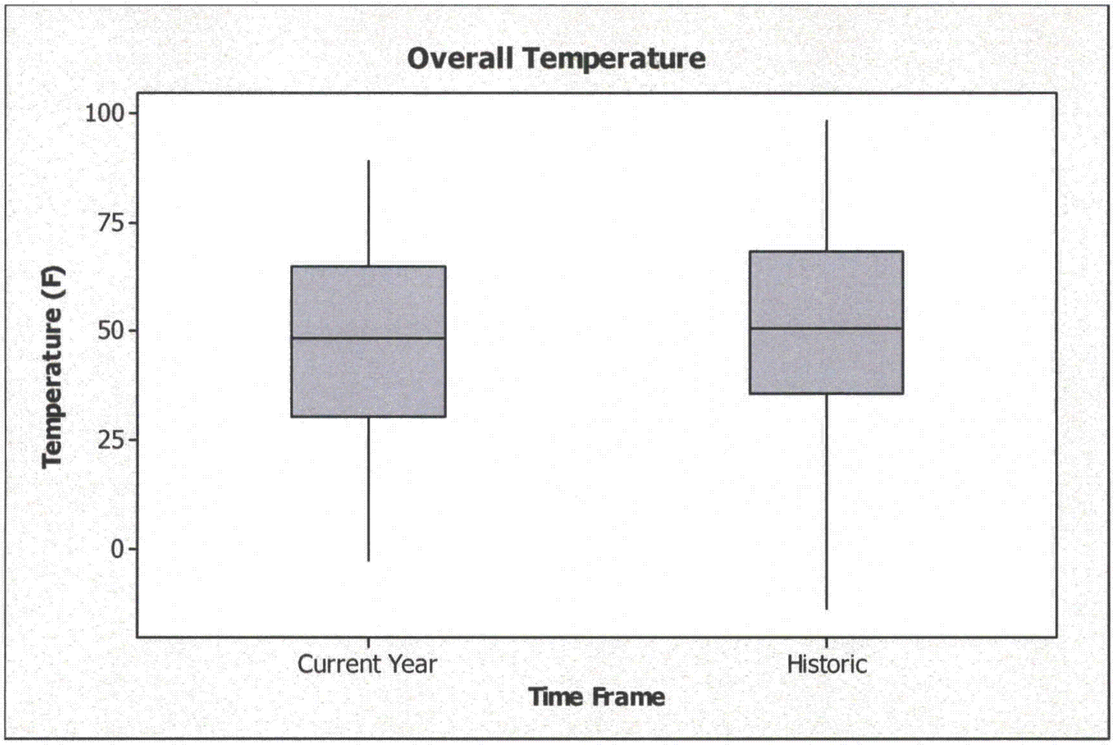
Variable	Time Frame	Total Count	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Average	Current Year	31	7.899	3.515	2.945	5.676	7.419	8.985	18.620
	Historic	775	10.139	4.447	0.000	7.200	9.405	12.690	28.052



TEMPERATURE ANALYSIS

Descriptive Statistics: Average

Variable	Time Frame	N	N*	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Average	Current Year	360	0	47.81	21.42	-3.06	30.29	48.15	64.48	89.00
	Historic	9323	0	50.520	21.204	-22.804	35.285	50.470	68.277	98.060



Descriptive Statistics: Average

Results for Month = 1

Variable	Time Frame	Total Count	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Average	Current Year	31	20.10	11.15	-3.06	11.02	20.90	30.05	41.75
	Historic	805	25.444	13.243	-13.206	16.486	28.325	35.735	52.363

Results for Month = 2

Variable	Time Frame	Total Count	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Average	Current Year	25	26.63	8.83	6.80	22.10	25.57	30.77	44.60
	Historic	734	29.789	14.064	-19.400	21.961	32.404	40.138	56.264

Results for Month = 3

Variable	Time Frame	Total Count	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Average	Current Year	31	35.66	6.83	19.68	31.56	35.21	39.92	49.40
	Historic	806	39.270	11.838	-5.766	32.195	39.824	47.376	67.179

Results for Month = 4

Variable	Time Frame	Total Count	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Average	Current Year	30	44.52	10.23	25.51	37.89	42.09	50.58	66.80
	Historic	779	48.966	10.533	17.825	41.879	48.650	56.150	78.016

Results for Month = 5

Variable	Time Frame	Total Count	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Average	Current Year	30	53.27	8.48	32.77	48.52	54.41	59.74	65.38
	Historic	803	59.470	9.313	32.300	52.925	59.942	66.412	82.085

Results for Month = 6

Variable	Time Frame	Total Count	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Average	Current Year	30	64.19	5.76	53.76	59.61	63.96	68.17	74.60
	Historic	779	70.139	8.401	42.271	64.510	70.600	76.087	90.100

Results for Month = 7

Variable	Time Frame	Total Count	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Average	Current Year	31	77.43	6.60	66.13	73.28	77.70	82.25	89.00
	Historic	792	77.463	7.490	55.772	72.369	77.528	82.714	98.060

Results for Month = 8

Variable	Time Frame	Total Count	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Average	Current Year	30	76.66	7.91	56.86	74.04	78.56	81.44	88.91
	Historic	775	75.797	7.493	49.964	71.150	76.175	81.170	96.080

Results for Month = 9

Variable	Time Frame	Total Count	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Average	Current Year	30	65.18	10.71	47.98	56.67	66.24	74.34	83.08
	Historic	750	65.205	10.569	30.920	57.805	65.806	72.905	92.104

Results for Month = 10

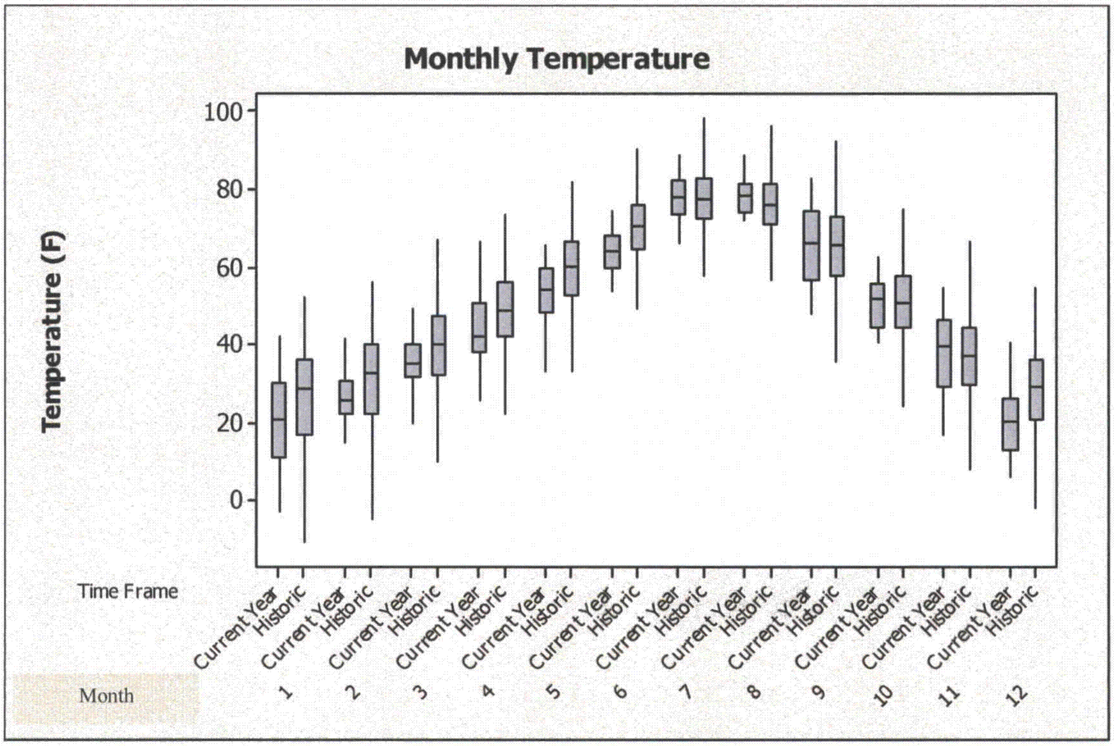
Variable	Time Frame	Total Count	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Average	Current Year	31	50.72	6.48	40.40	44.46	51.80	55.79	62.83
	Historic	775	50.781	9.958	6.935	44.293	51.013	57.740	75.094

Results for Month = 11

Variable	Time Frame	Total Count	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Average	Current Year	30	37.37	10.94	16.48	28.94	39.33	46.27	54.82
	Historic	750	36.365	11.494	-1.710	29.576	37.075	44.349	66.358

Results for Month = 12

Variable	Time Frame	Total Count	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Average	Current Year	31	19.62	8.59	5.98	12.78	20.24	26.15	40.45
	Historic	775	26.888	12.946	-22.804	20.427	28.811	35.960	54.950


Monthly Temperature
Temperature (F)
100
80
60
40
20
0
Time Frame
Current Year
Historic
Month
1
2
3
4
5
6
7
8
9
10
11
12

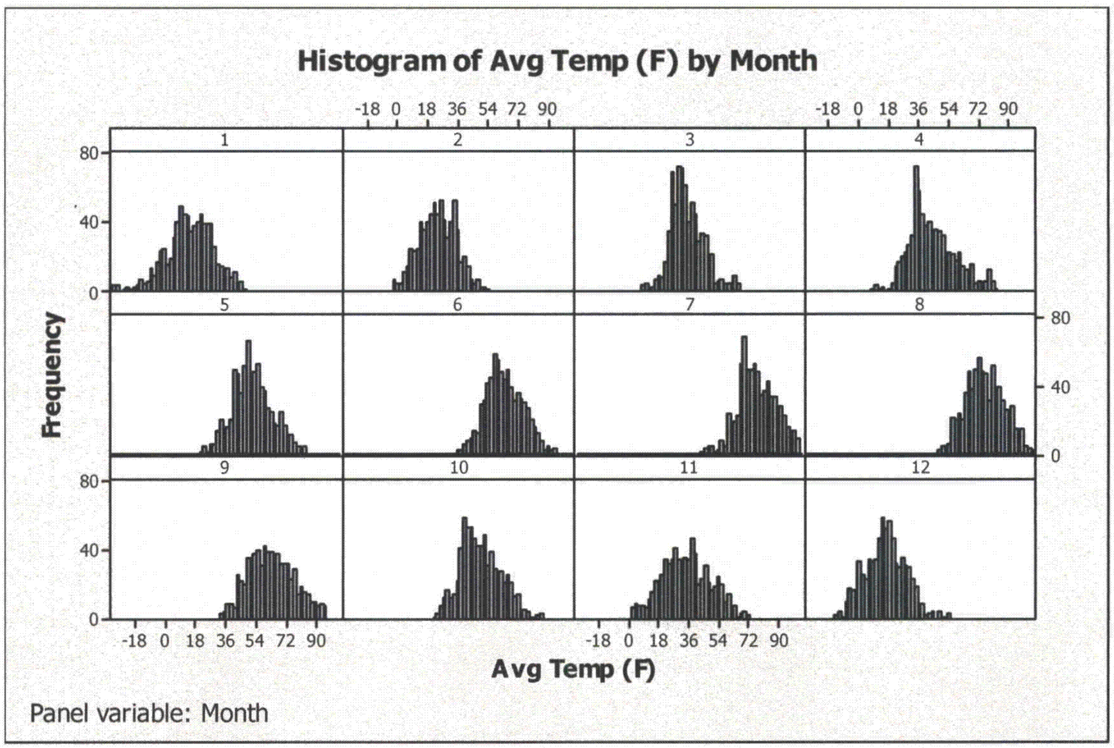
APPENDIX B

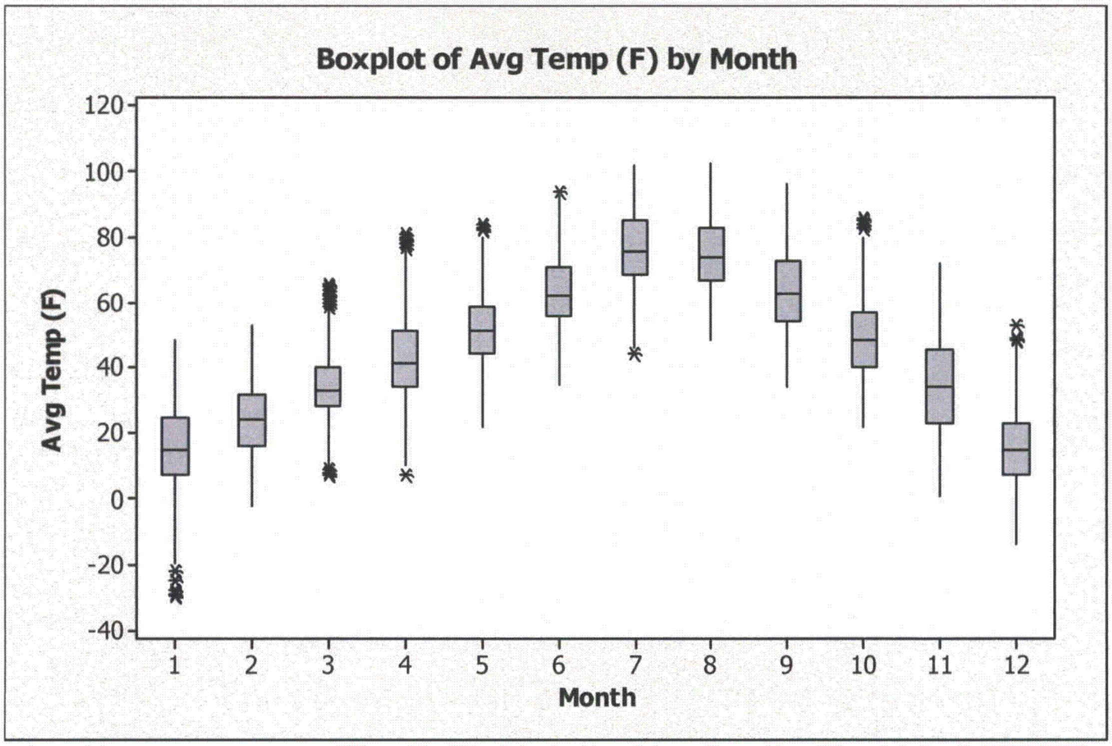
STATISTICAL REPORTS FOR DEWEY-BURDOCK METEOROLOGICAL SITE

APPENDIX B
STATISTICAL REPORTS FOR DEWEY-BURDOCK METEOROLOGICAL SITE

Descriptive Statistics: Avg Temp (F)

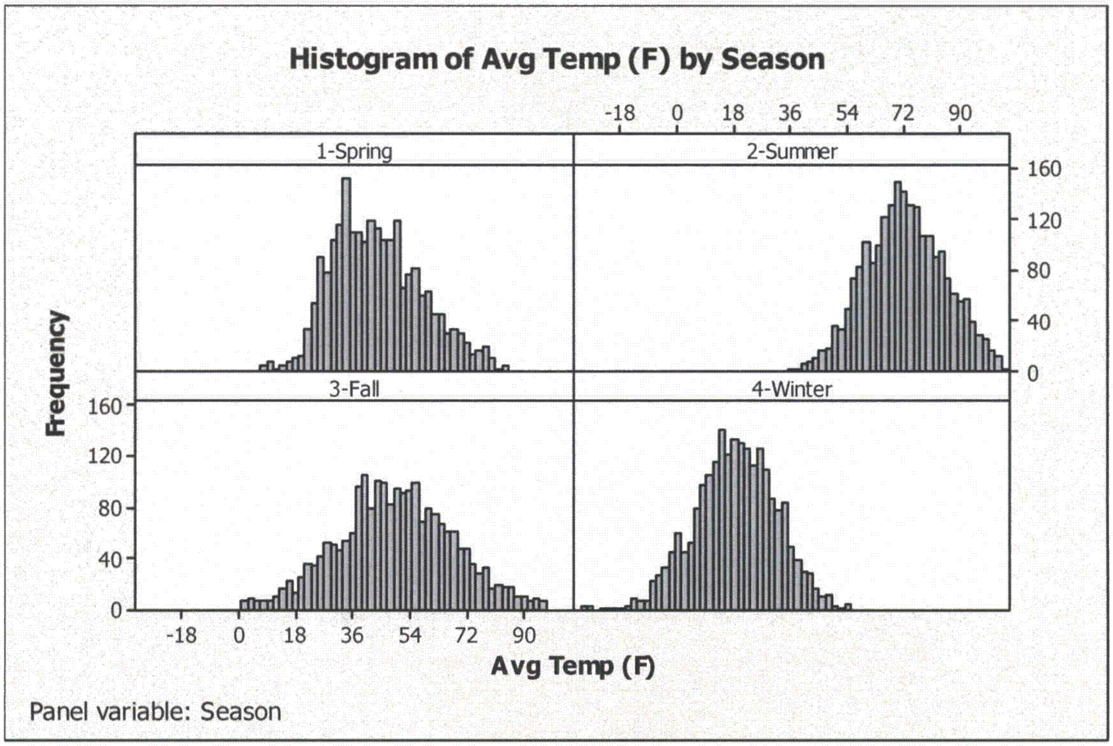
Variable	Month	N	N*	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Avg Temp (F)	1	744	0	14.792	13.859	-30.000	7.000	15.000	25.000	48.000
	2	696	0	23.520	10.861	-2.000	16.000	24.000	32.000	53.000
	3	720	0	34.550	10.040	7.000	28.000	33.000	40.000	66.000
	4	720	0	43.082	13.914	7.000	34.000	41.000	51.000	81.000
	5	744	0	52.173	11.654	22.000	44.000	51.000	59.000	84.000
	6	720	0	63.306	10.914	35.000	56.000	62.000	71.000	94.000
	7	744	0	76.858	11.231	44.000	69.000	76.000	85.000	102.000
	8	744	0	75.160	11.226	48.000	67.000	74.000	83.000	103.000
	9	720	0	63.747	13.787	34.000	54.000	63.000	73.000	96.000
	10	744	0	49.210	12.055	22.000	40.000	48.000	57.000	86.000
	11	720	0	34.061	14.761	1.000	23.000	34.000	45.000	72.000
	12	744	0	15.073	12.085	-14.000	7.000	15.000	23.000	53.000

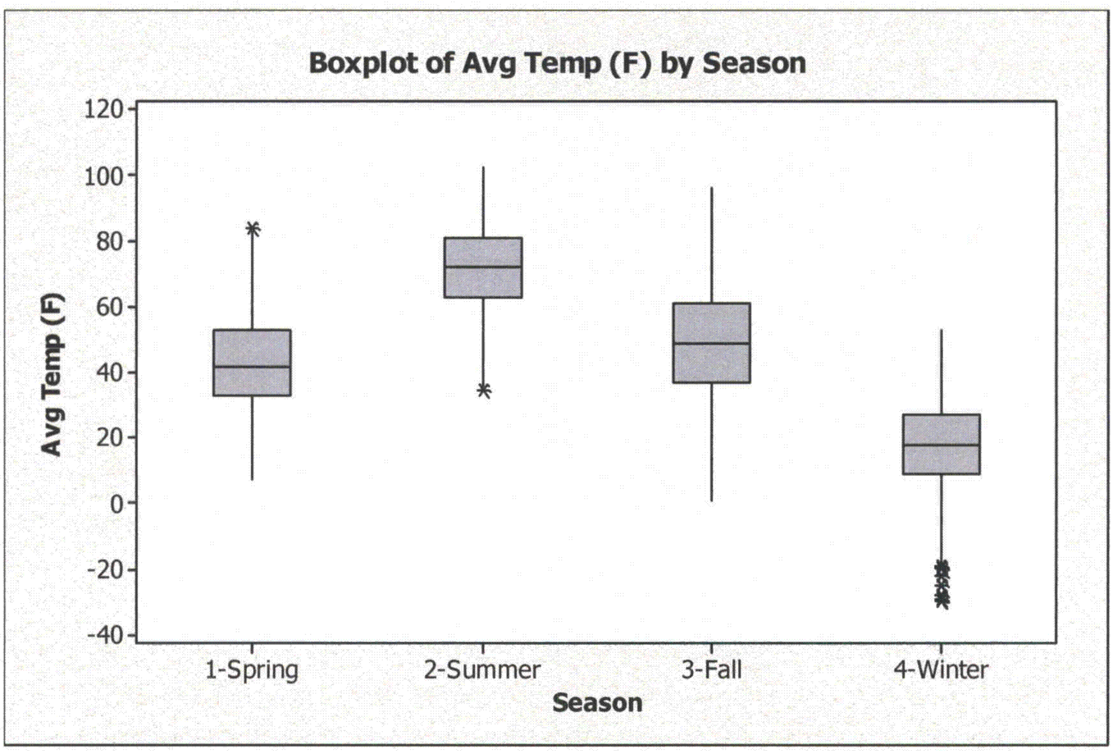




Descriptive Statistics: Avg Temp (F)

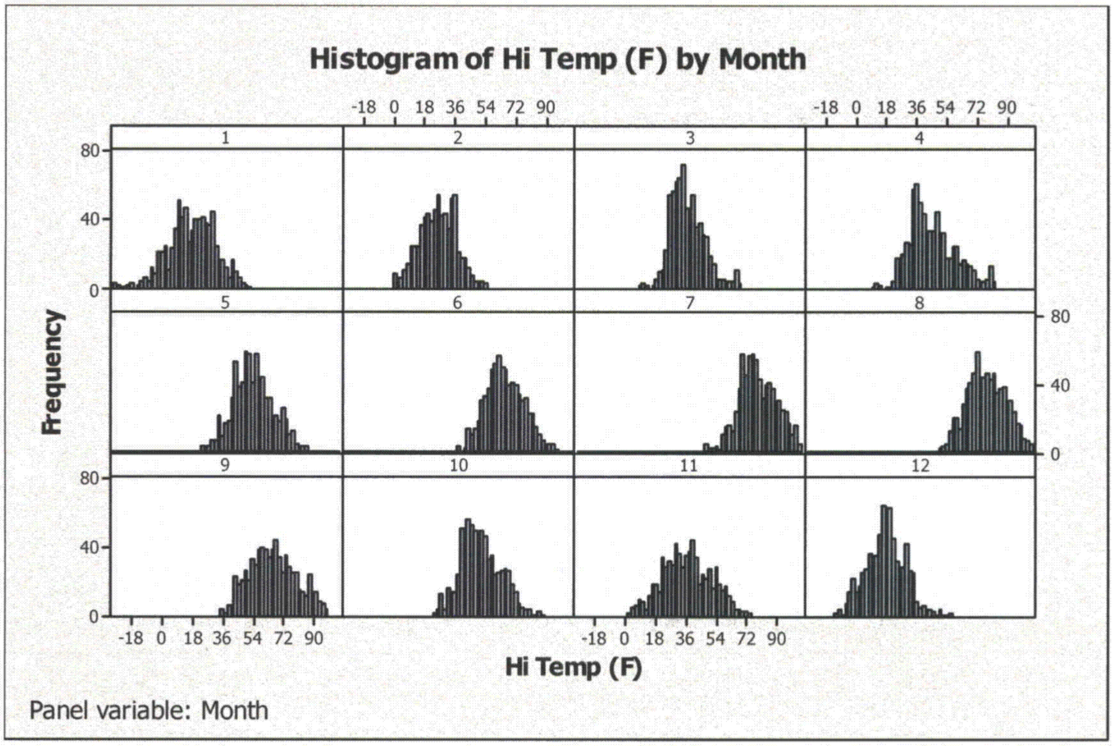
Variable	Season	N	N*	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Avg Temp (F)	1-Spring	2184	0	43.366	13.975	7.000	33.000	42.000	53.000	84.000
	2-Summer	2208	0	71.866	12.636	35.000	63.000	72.000	81.000	103.000
	3-Fall	2184	0	49.008	18.144	1.000	37.000	49.000	61.000	96.000
	4-Winter	2184	0	17.669	12.987	-30.000	9.000	18.000	27.000	53.000

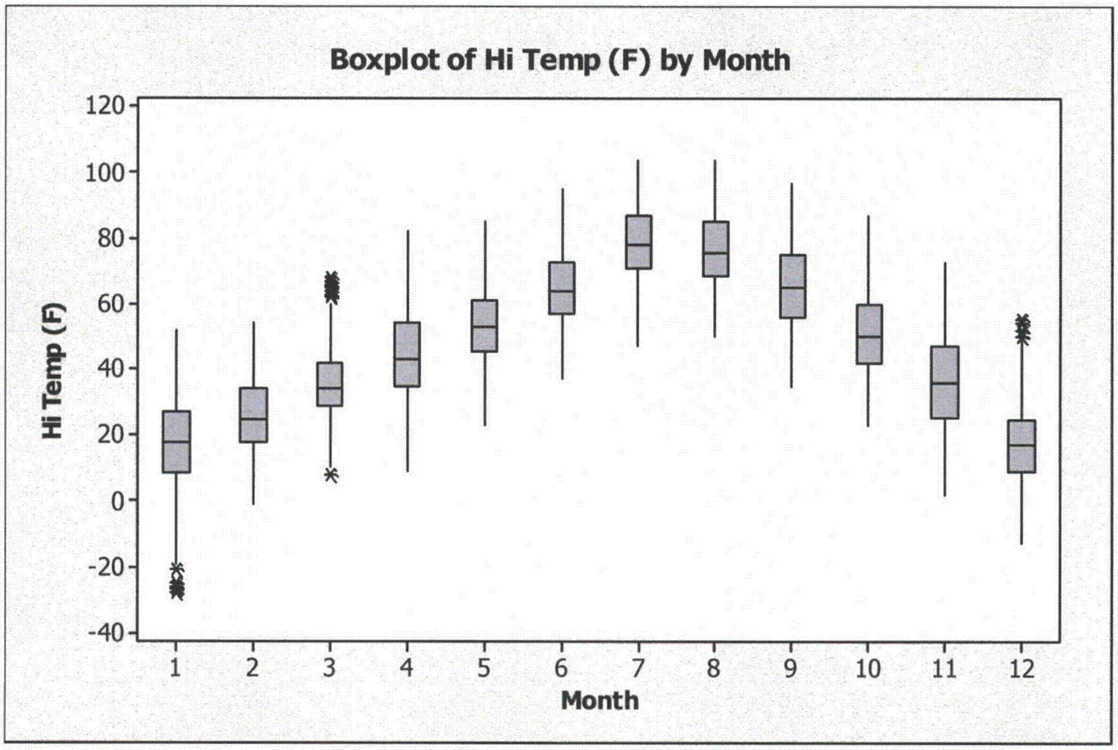

Histogram of Avg Temp (F) by Season
1-Spring
2-Summer
3-Fall
4-Winter
Frequency
Avg Temp (F)
-18 0 18 36 54 72 90
0 40 80 120 160
Panel variable: Season


Boxplot of Avg Temp (F) by Season
Avg Temp (F)
120 100 80 60 40 20 0 -20 -40
1-Spring
2-Summer
3-Fall
4-Winter
Season

Descriptive Statistics: Hi Temp (F)

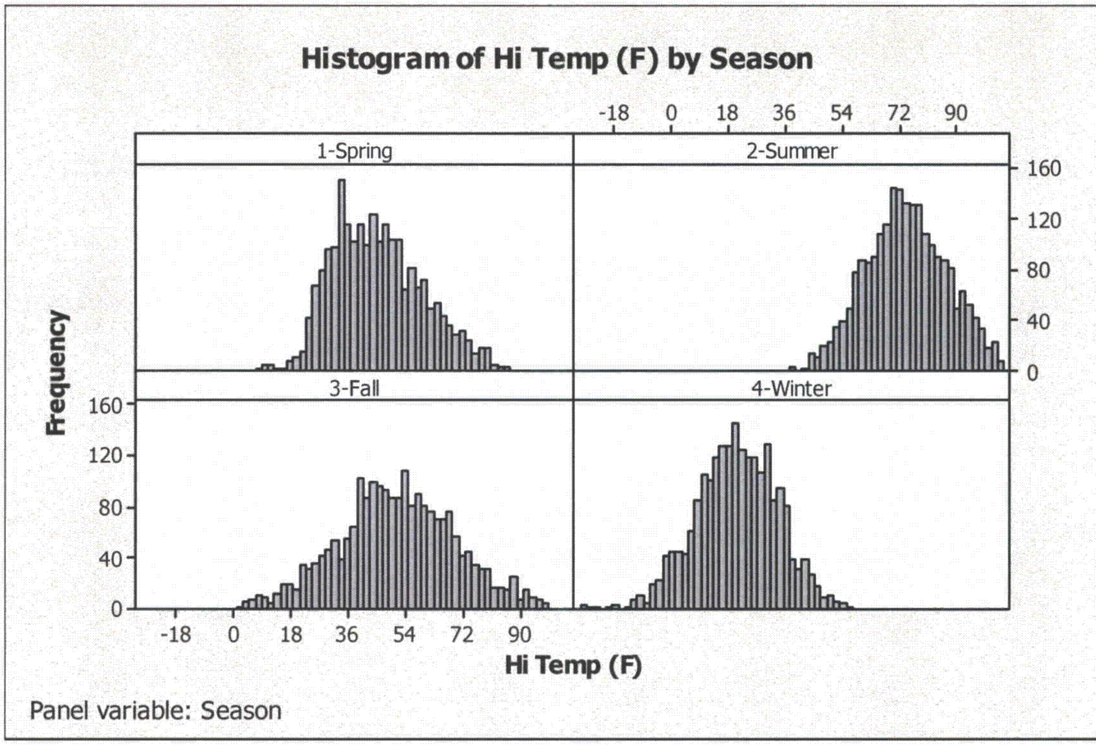
Variable	Month	N	N*	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Hi Temp (F)	1	744	0	17.176	14.043	-28.000	8.250	18.000	27.000	52.000
	2	696	0	25.307	10.827	-1.000	18.000	25.000	34.000	54.000
	3	720	0	36.100	10.286	8.000	29.000	34.000	42.000	68.000
	4	720	0	44.954	14.008	9.000	35.000	43.000	54.000	82.000
	5	744	0	53.663	11.834	23.000	45.000	53.000	61.000	85.000
	6	720	0	65.026	10.932	37.000	57.000	64.000	73.000	95.000
	7	744	0	78.593	11.209	47.000	71.000	78.000	87.000	104.000
	8	744	0	76.902	11.387	50.000	69.000	76.000	85.000	104.000
	9	720	0	65.635	13.798	35.000	56.000	65.000	75.000	97.000
	10	744	0	51.003	12.020	23.000	42.000	50.000	60.000	87.000
	11	720	0	36.133	14.917	2.000	25.250	36.000	47.000	73.000
	12	744	0	17.262	11.831	-13.000	9.000	17.000	25.000	55.000

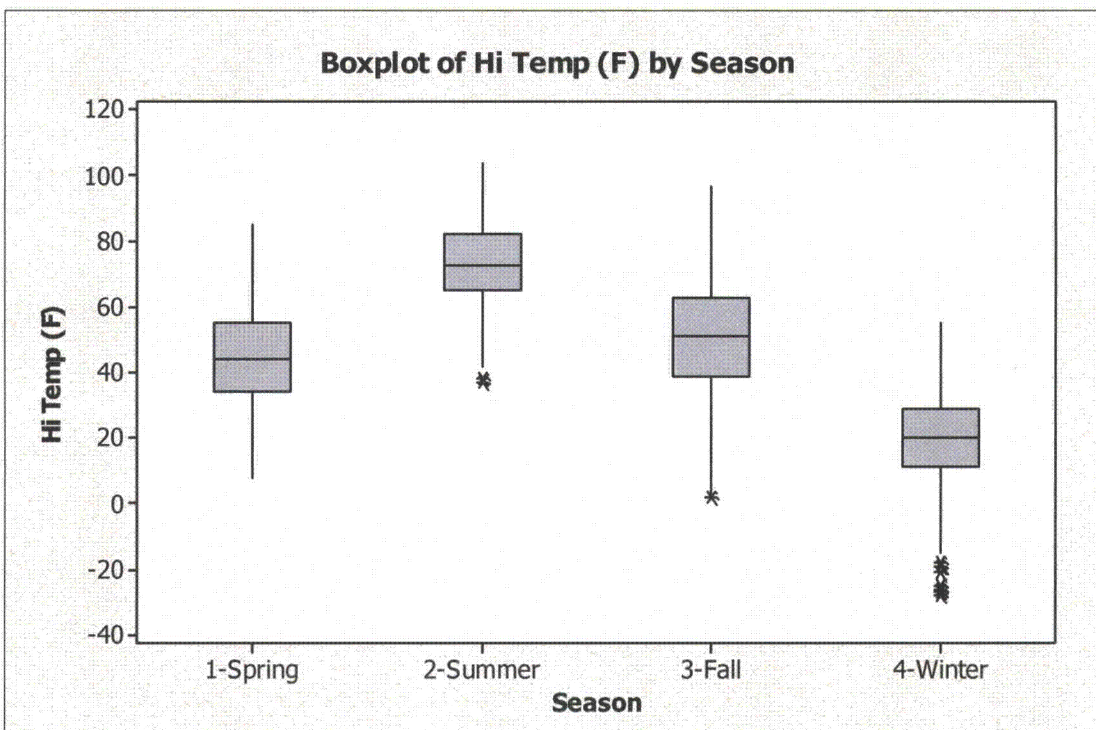




Descriptive Statistics: Hi Temp (F)

Variable	Season	N	N*	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Hi Temp (F)	1-Spring	2184	0	45.002	14.101	8.000	34.000	44.000	55.000	85.000
	2-Summer	2208	0	73.599	12.686	37.000	65.000	73.000	82.000	104.000
	3-Fall	2184	0	50.924	18.130	2.000	39.000	51.000	63.000	97.000
	4-Winter	2184	0	19.797	12.896	-28.000	11.000	20.000	29.000	55.000

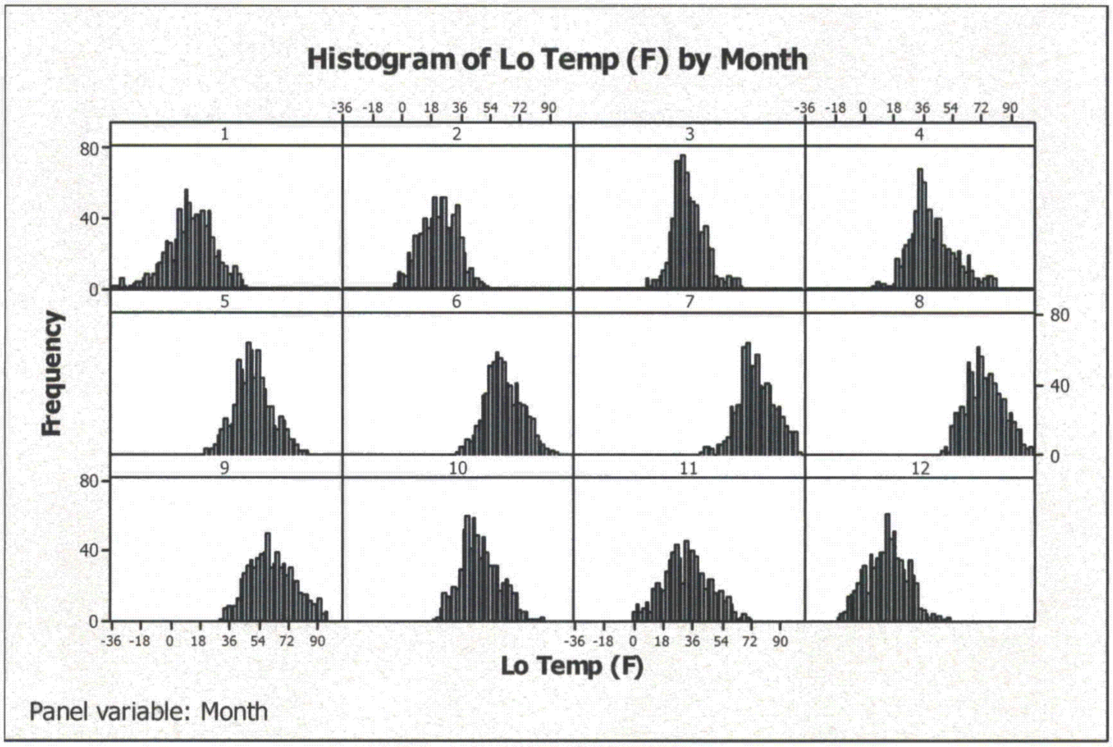


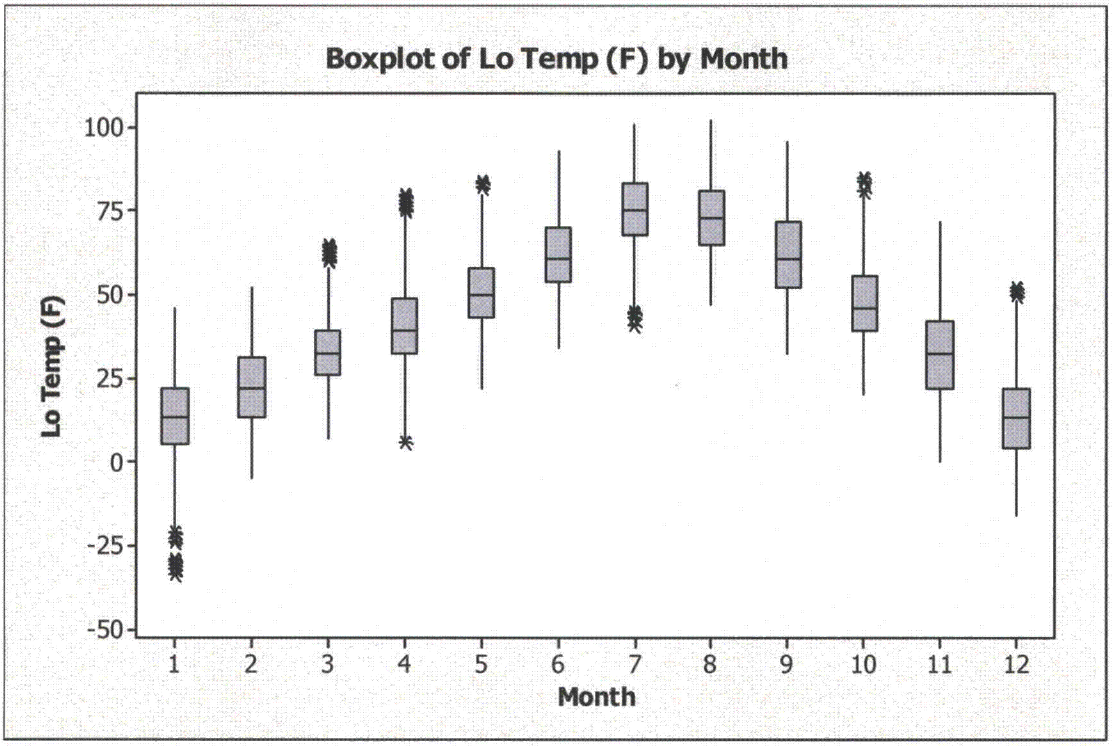


Descriptive Statistics: Lo Temp (F)

Variable	Month	N	N*	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Lo Temp (F)	1	744	0	12.538	13.869	-34.000	5.000	13.000	22.000	46.000

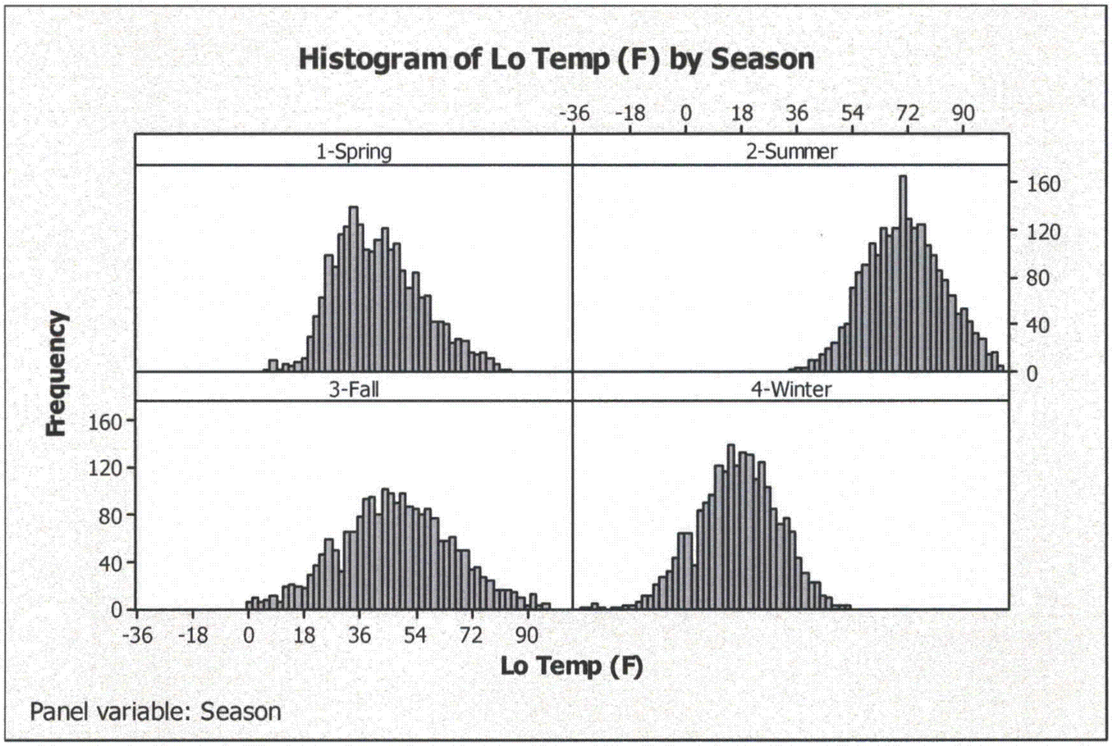
2	696	0	21.797	11.032	-5.000	13.250	22.000	31.000	52.000
3	720	0	32.993	9.890	7.000	26.000	32.000	39.000	65.000
4	720	0	41.326	13.840	6.000	32.000	39.000	49.000	80.000
5	744	0	50.719	11.503	22.000	43.000	50.000	58.000	84.000
6	720	0	61.635	10.928	34.000	54.000	61.000	70.000	93.000
7	744	0	75.144	11.330	41.000	68.000	75.000	83.000	101.000
8	744	0	73.449	11.173	47.000	65.000	73.000	81.000	102.000
9	720	0	61.931	13.775	32.000	52.000	61.000	72.000	96.000
10	744	0	47.539	12.074	20.000	39.000	46.000	55.750	85.000
11	720	0	32.004	14.599	0.000	22.000	32.000	42.000	72.000
12	744	0	12.957	12.541	-16.000	4.000	13.000	22.000	52.000

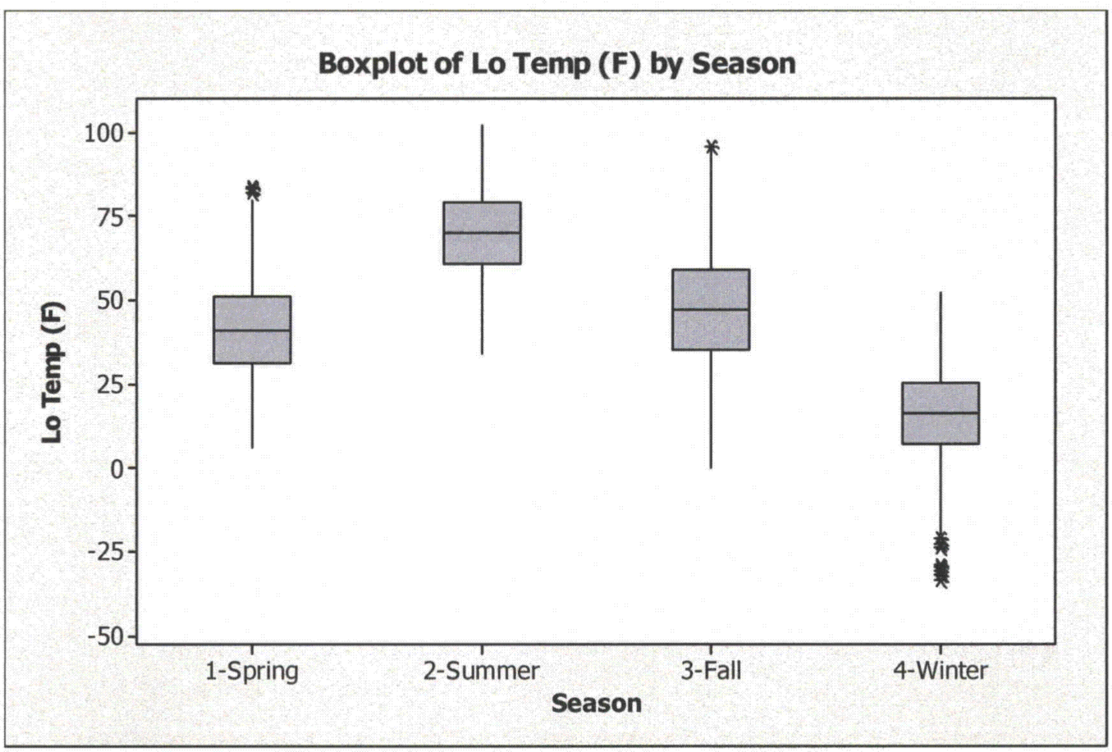




Descriptive Statistics: Lo Temp (F)

Variable	Season	N	N*	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Lo Temp (F)	1-Spring	2184	0	41.779	13.896	6.000	31.000	41.000	51.000	84.000
	2-Summer	2208	0	70.168	12.644	34.000	61.000	70.000	79.000	102.000
	3-Fall	2184	0	47.162	18.168	0.000	35.000	47.000	59.000	96.000
	4-Winter	2184	0	15.631	13.250	-34.000	7.000	16.000	25.000	52.000

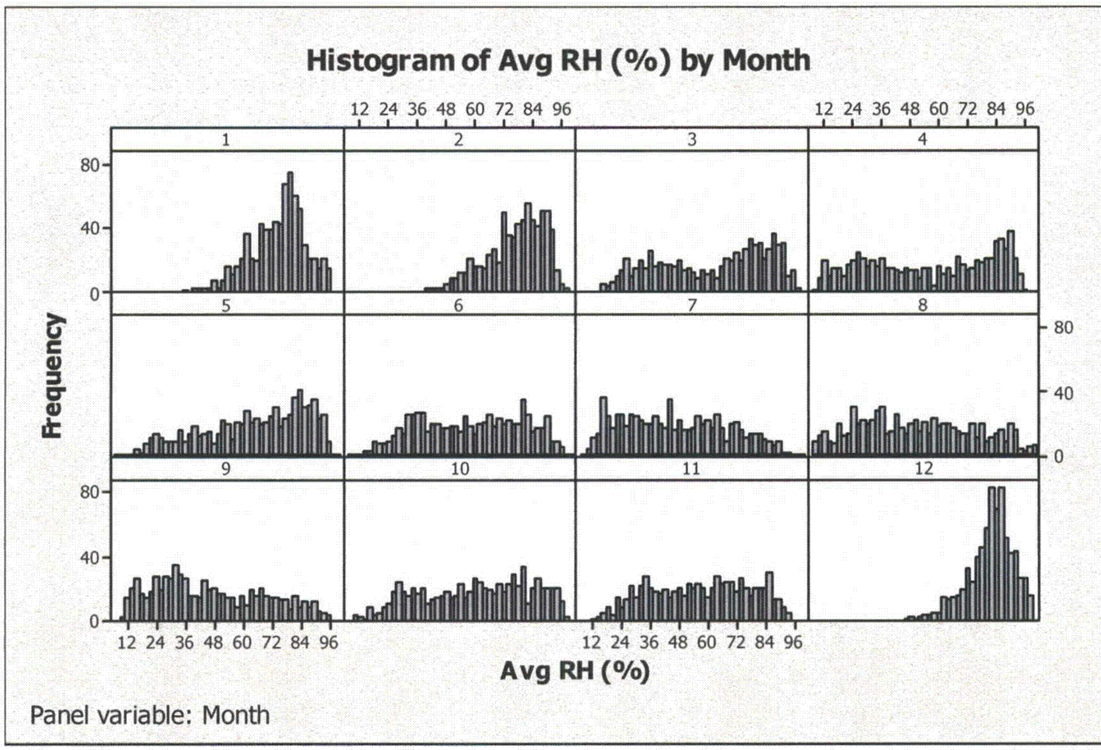


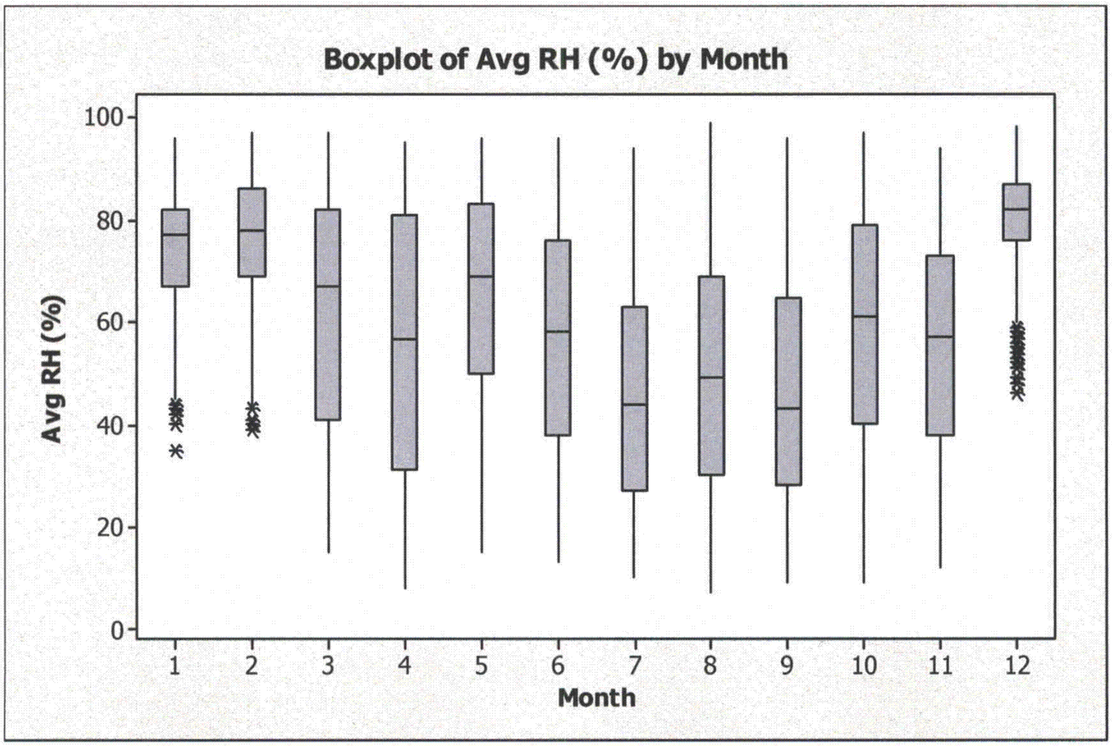


Descriptive Statistics: Avg RH (%)

Variable	Month	N	N*	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Avg RH (%)	1	744	0	74.401	11.316	35.000	67.000	77.000	82.000	96.000

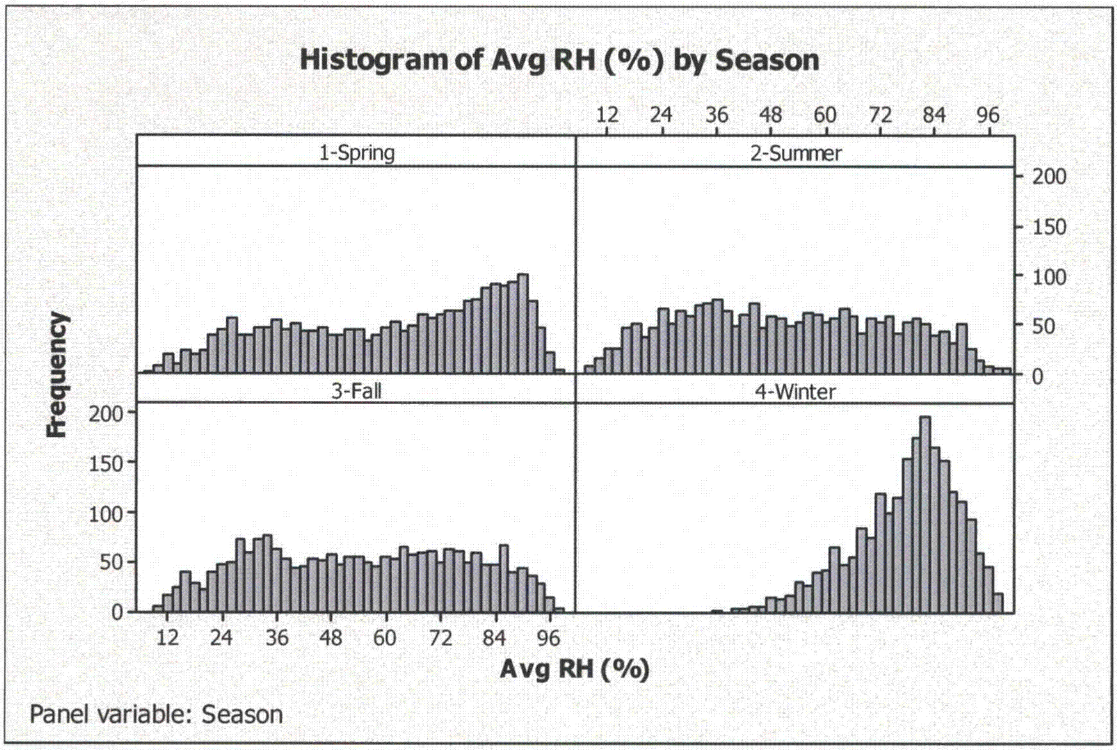
2	696	0	76.204	12.055	39.000	69.000	78.000	86.000	97.000
3	720	0	61.858	22.846	15.000	41.000	67.000	82.000	97.000
4	720	0	55.276	26.033	8.000	31.250	56.500	80.750	95.000
5	744	0	64.849	21.121	15.000	50.000	69.000	83.000	96.000
6	720	0	57.286	21.158	13.000	38.000	58.000	76.000	96.000
7	744	0	45.902	21.533	10.000	27.000	44.000	63.000	94.000
8	744	0	49.981	23.951	7.000	30.000	49.000	69.000	99.000
9	720	0	46.239	22.786	9.000	28.000	43.000	65.000	96.000
10	744	0	59.480	22.502	9.000	40.000	61.000	79.000	97.000
11	720	0	56.265	20.717	12.000	38.000	57.000	73.000	94.000
12	744	0	80.942	9.595	46.000	76.000	82.000	87.000	98.000

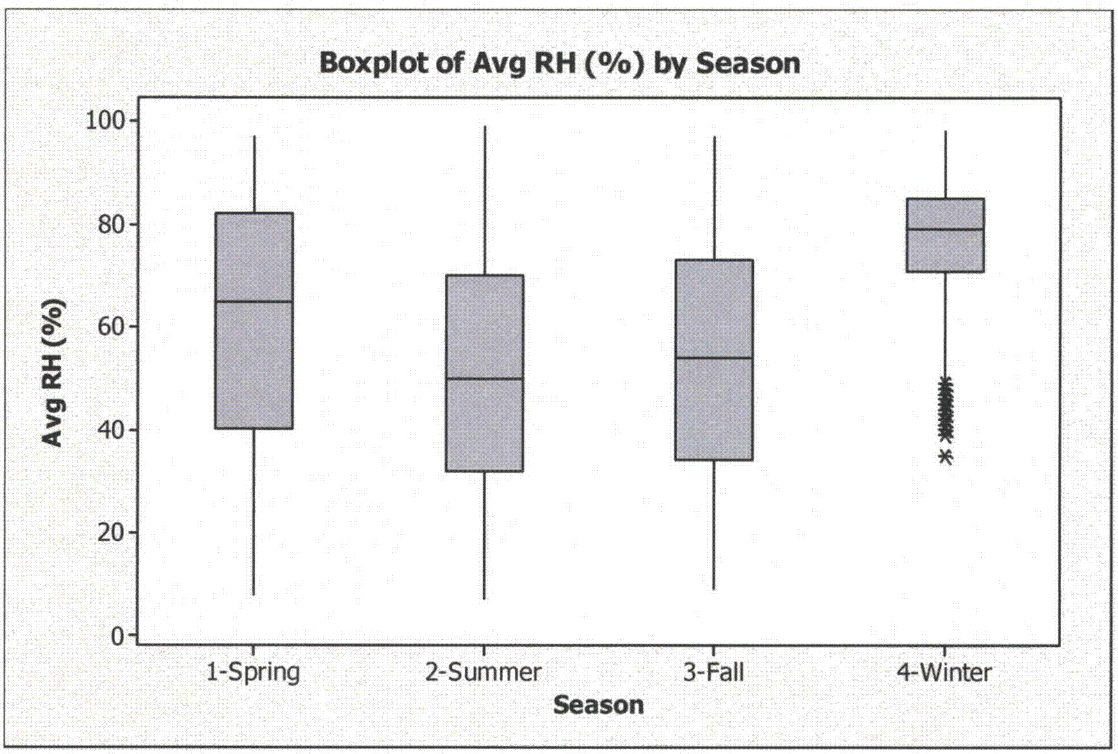




Descriptive Statistics: Avg RH (%)

Variable	Season	N	N*	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Avg RH (%)	1-Spring	2184	0	60.707	23.727	8.000	40.000	65.000	82.000	97.000
	2-Summer	2208	0	50.989	22.739	7.000	32.000	50.000	70.000	99.000
	3-Fall	2184	0	54.055	22.726	9.000	34.000	54.000	73.000	97.000
	4-Winter	2184	0	77.204	11.355	35.000	71.000	79.000	85.000	98.000

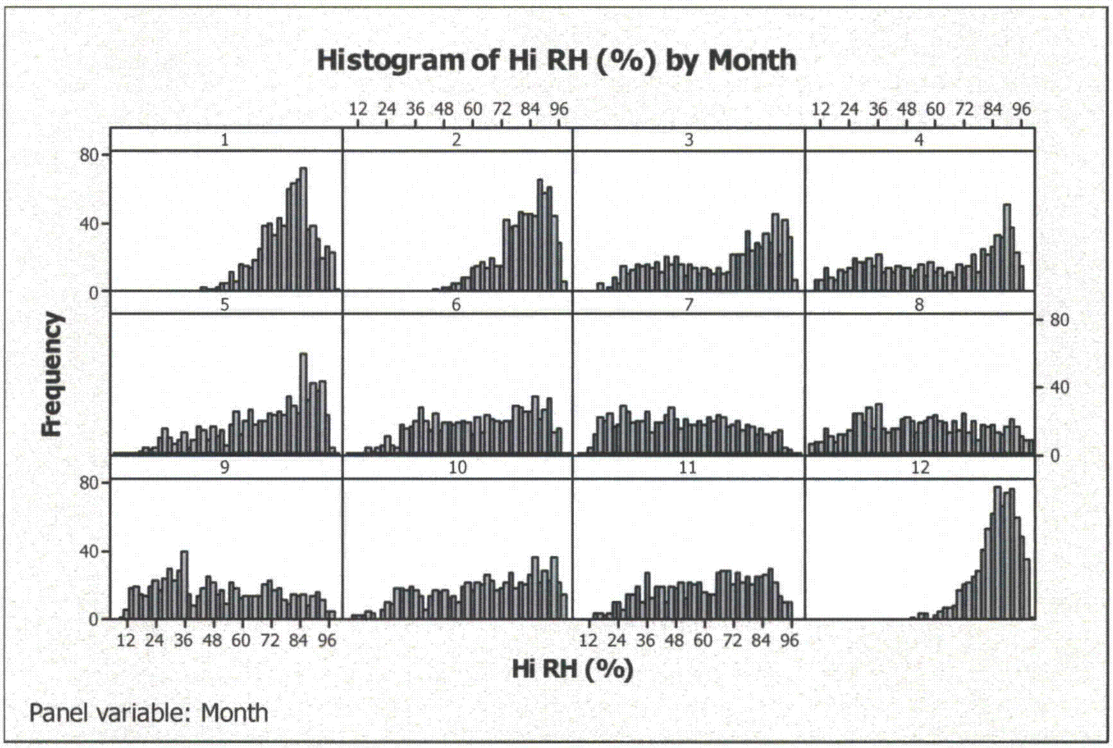


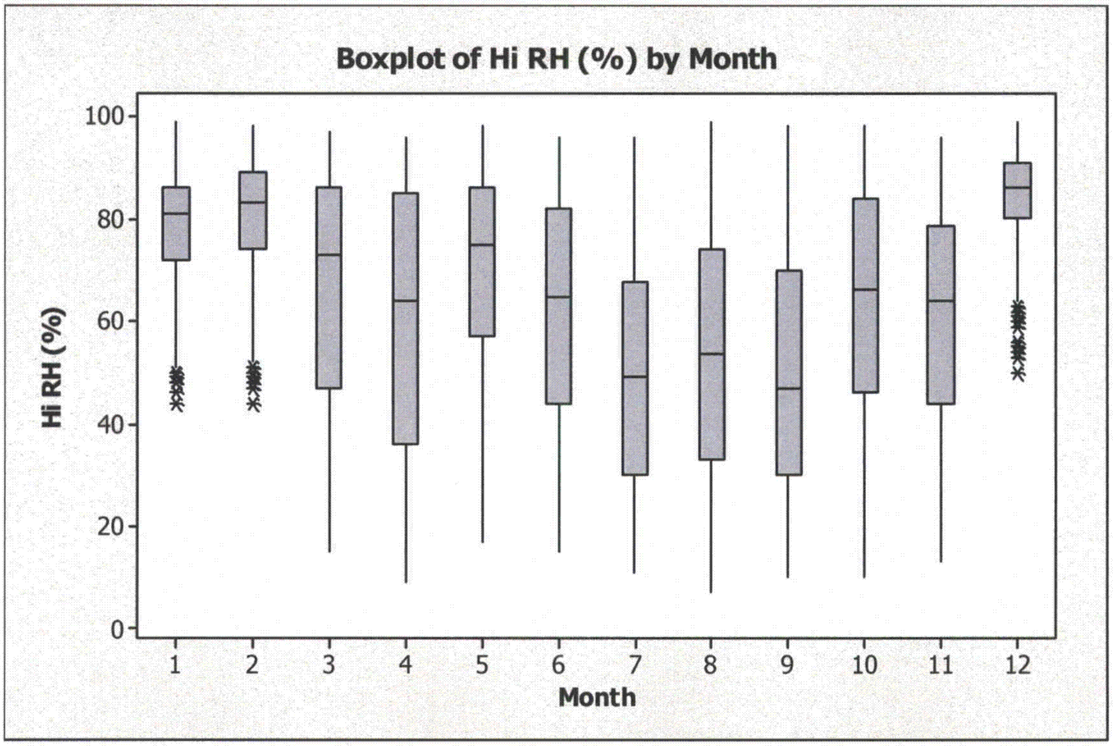


Descriptive Statistics: Hi RH (%)

Variable	Month	N	N*	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Hi RH (%)	1	744	0	79.089	10.652	44.000	72.000	81.000	86.000	99.000

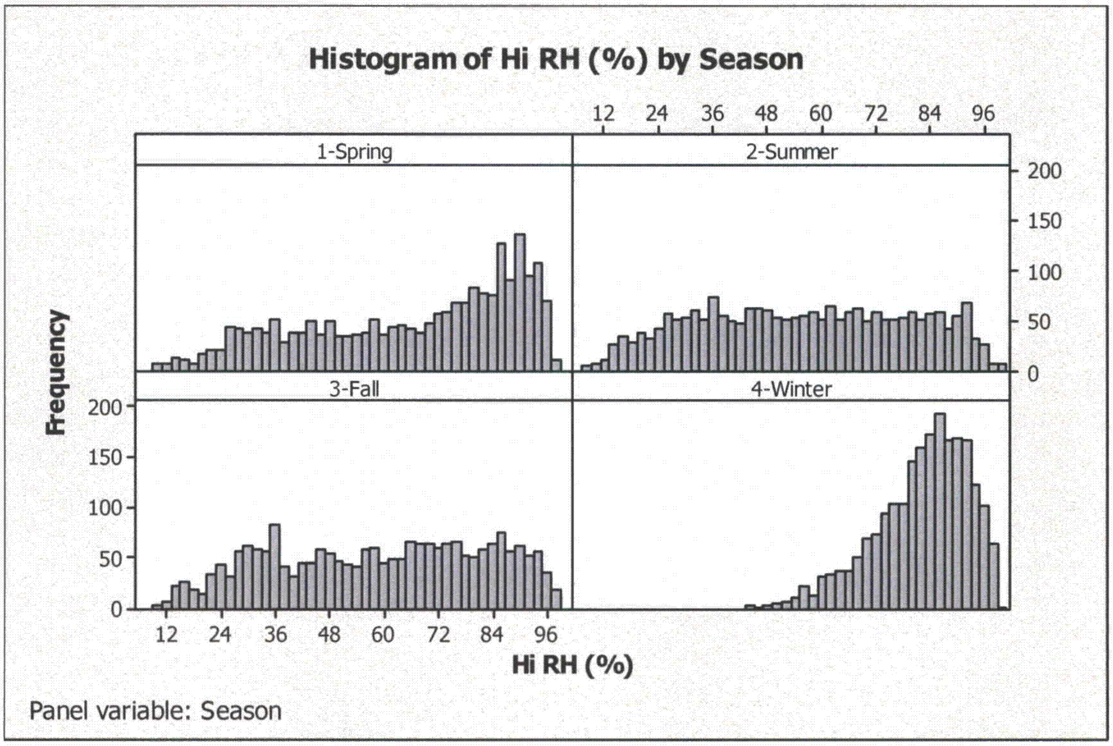
2	696	0	80.704	10.902	44.000	74.000	83.000	89.000	98.000
3	720	0	66.451	22.568	15.000	47.000	73.000	86.000	97.000
4	720	0	60.206	26.101	9.000	36.000	64.000	85.000	96.000
5	744	0	69.940	20.135	17.000	57.000	75.000	86.000	98.000
6	720	0	62.814	21.013	15.000	44.000	65.000	82.000	96.000
7	744	0	49.991	22.415	11.000	30.000	49.000	68.000	96.000
8	744	0	53.909	24.419	7.000	33.000	53.500	74.000	99.000
9	720	0	50.150	23.648	10.000	30.000	47.000	70.000	98.000
10	744	0	63.888	22.670	10.000	46.000	66.500	84.000	98.000
11	720	0	60.954	20.860	13.000	44.000	64.000	78.750	96.000
12	744	0	84.997	8.711	50.000	80.000	86.000	91.000	99.000

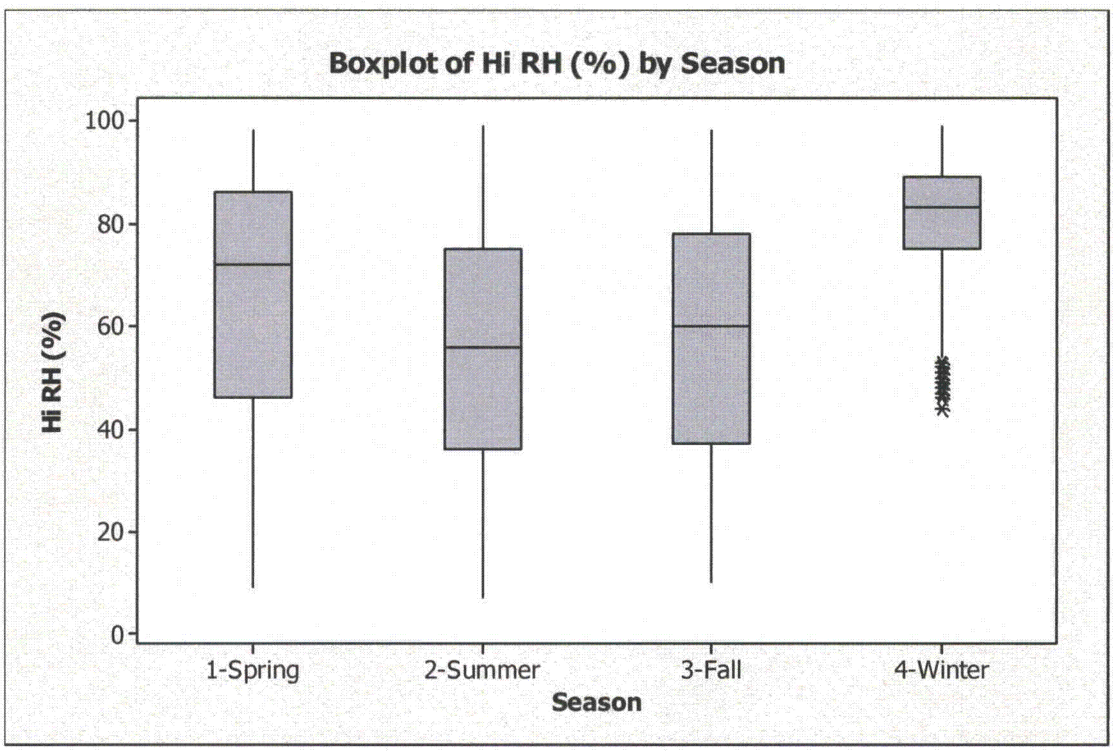




Descriptive Statistics: Hi RH (%)

Variable	Season	N	N*	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Hi RH (%)	1-Spring	2184	0	65.581	23.375	9.000	46.000	72.000	86.000	98.000
	2-Summer	2208	0	55.492	23.286	7.000	36.000	56.000	75.000	99.000
	3-Fall	2184	0	58.392	23.180	10.000	37.000	60.000	78.000	98.000
	4-Winter	2184	0	81.616	10.422	44.000	75.000	83.000	89.000	99.000

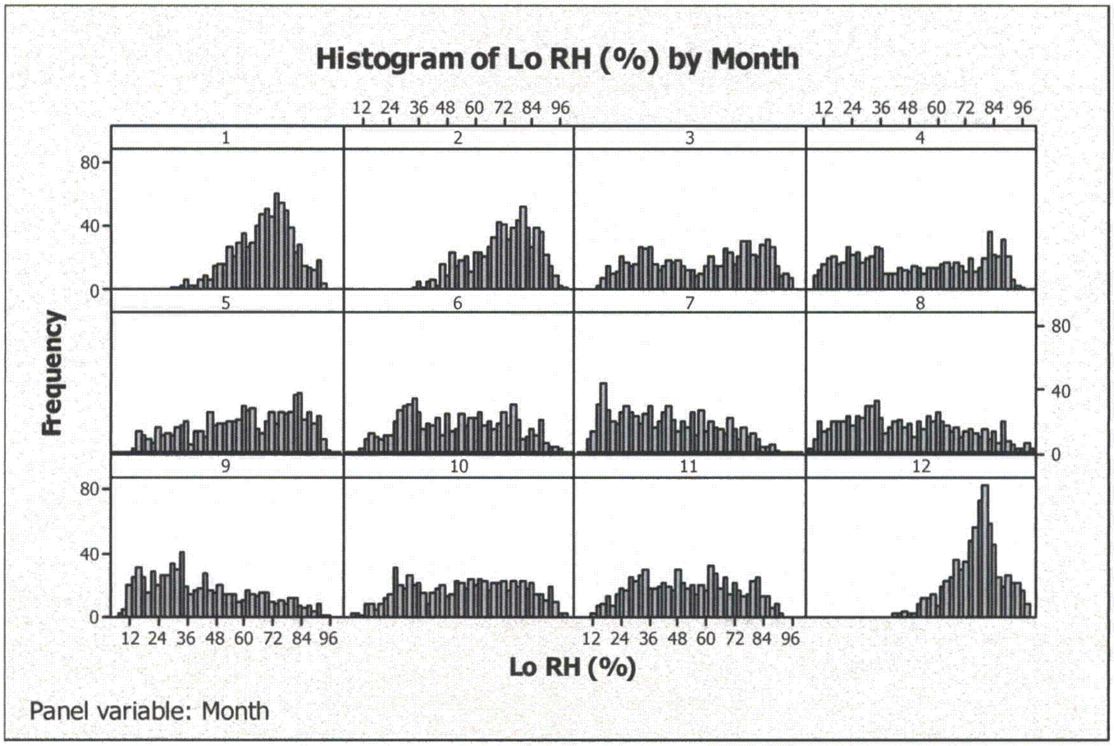


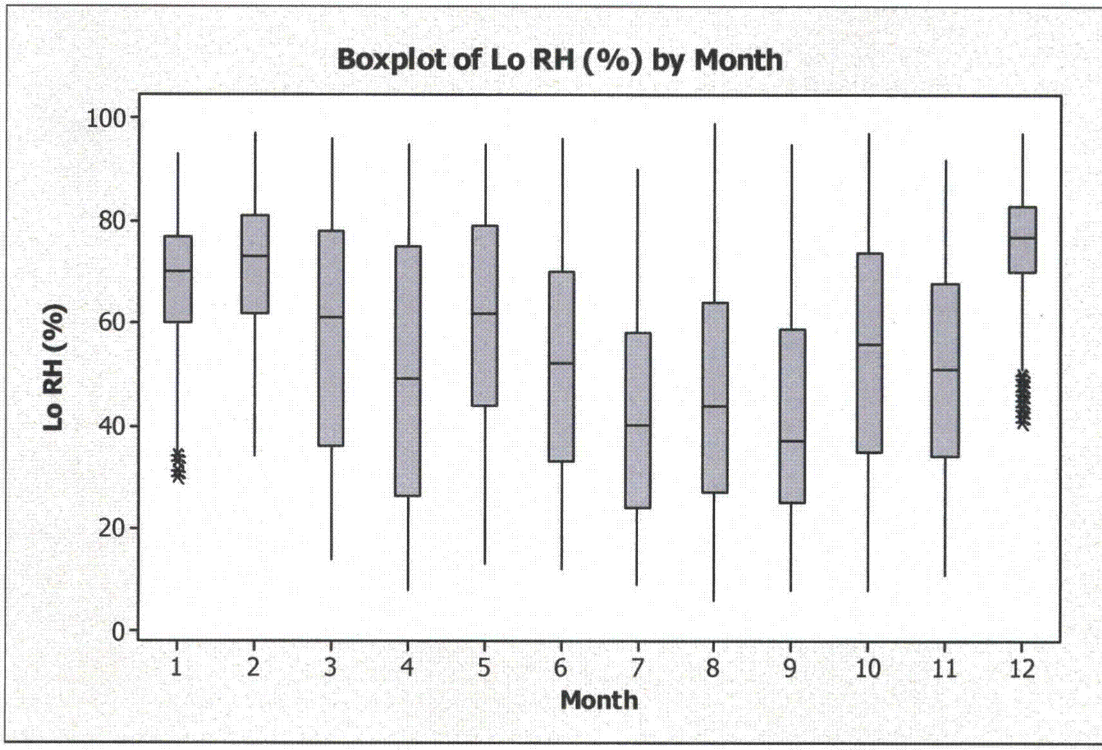


Descriptive Statistics: Lo RH (%)

Variable	Month	N	N*	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Lo RH (%)	1	744	0	68.601	12.330	30.000	60.000	70.000	77.000	93.000

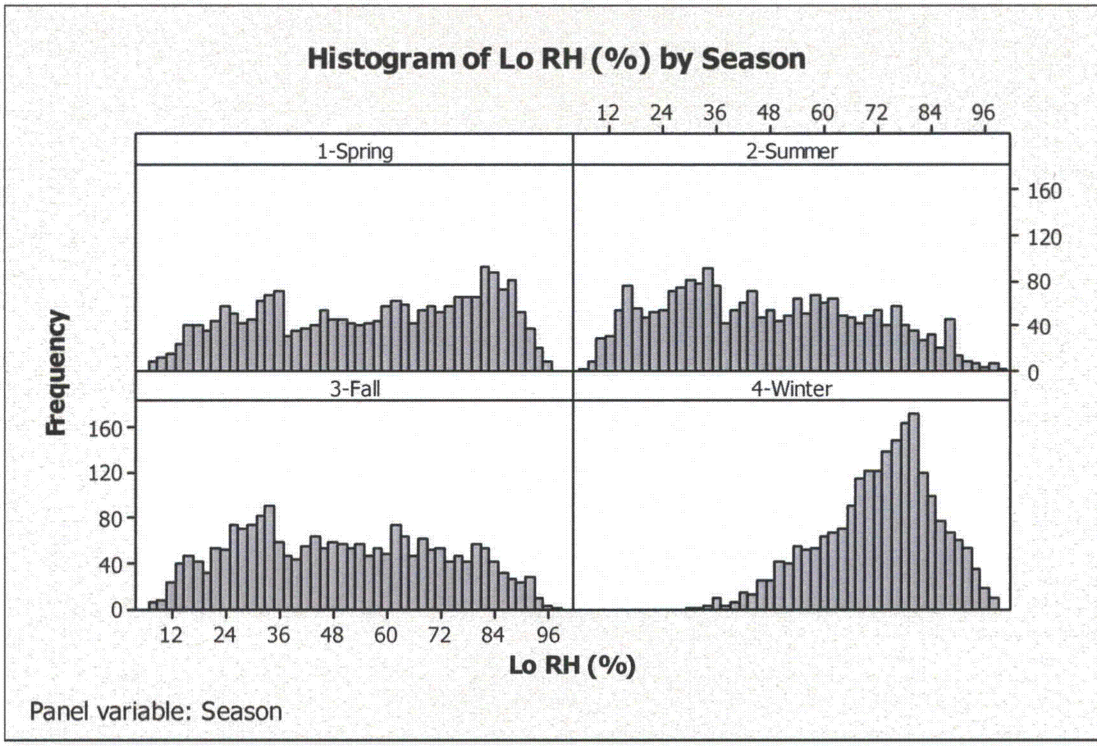
2	696	0	71.119	13.476	34.000	62.000	73.000	81.000	97.000
3	720	0	57.353	22.974	14.000	36.000	61.000	78.000	96.000
4	720	0	50.326	25.874	8.000	26.250	49.000	75.000	95.000
5	744	0	59.954	21.723	13.000	44.000	62.000	79.000	95.000
6	720	0	51.854	21.077	12.000	33.000	52.000	70.000	96.000
7	744	0	42.000	20.728	9.000	24.000	40.000	58.000	90.000
8	744	0	45.991	23.599	6.000	27.000	44.000	64.000	99.000
9	720	0	42.293	21.856	8.000	25.000	37.000	59.000	95.000
10	744	0	54.921	22.251	8.000	35.000	56.000	74.000	97.000
11	720	0	51.574	20.250	11.000	34.000	51.000	68.000	92.000
12	744	0	75.931	11.041	41.000	70.000	77.000	83.000	97.000

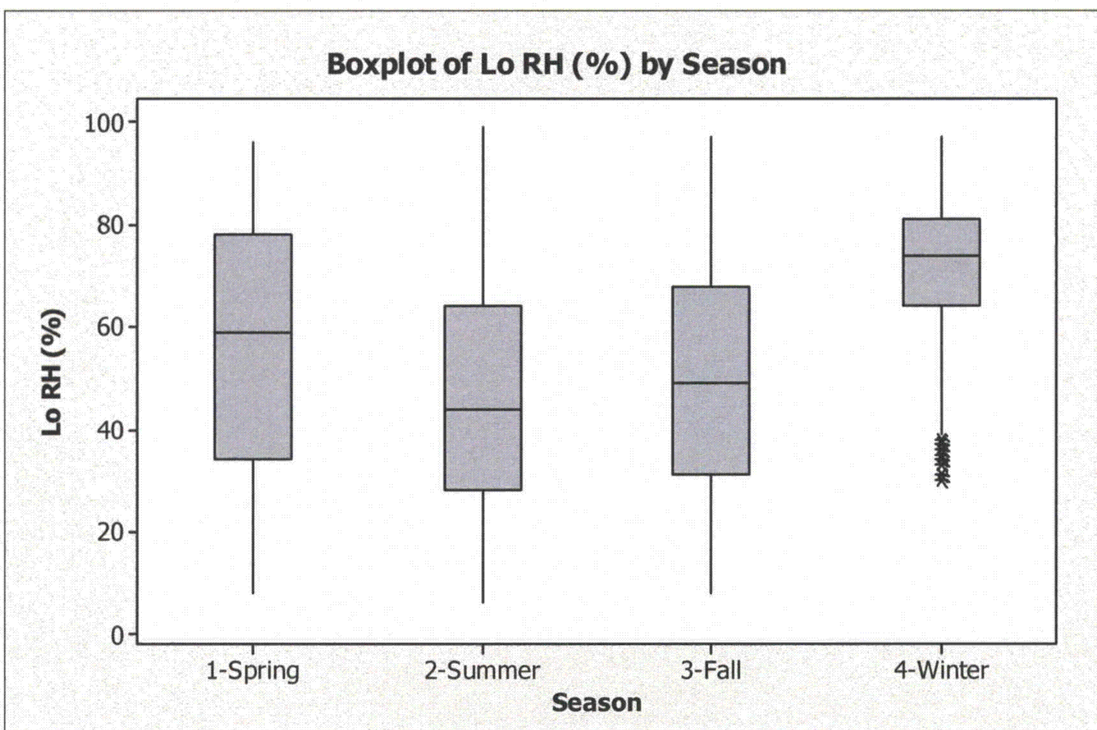




Descriptive Statistics: Lo RH (%)

Variable	Season	N	N*	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Lo RH (%)	1-Spring	2184	0	55.923	23.906	8.000	34.000	59.000	78.000	96.000
	2-Summer	2208	0	46.558	22.206	6.000	28.000	44.000	64.000	99.000
	3-Fall	2184	0	49.654	22.123	8.000	31.000	49.000	68.000	97.000
	4-Winter	2184	0	71.901	12.669	30.000	64.000	74.000	81.000	97.000


Histogram of Lo RH (%) by Season
1-Spring
2-Summer
3-Fall
4-Winter
Frequency
Lo RH (%)
Panel variable: Season
12 24 36 48 60 72 84 96
0 40 80 120 160


Boxplot of Lo RH (%) by Season
Lo RH (%)
0 20 40 60 80 100
1-Spring
2-Summer
3-Fall
4-Winter
Season

Descriptive Statistics: Precip (Inches)

Variable	Month	N	N*	Sum	Maximum
Precip (Inches)	1	744	0	0.130000	0.050000
	2	696	0	0.210000	0.040000
	3	720	0	0.400000	0.130000
	4	720	0	0.980000	0.330000
	5	744	0	3.80000	0.71000
	6	720	0	1.770000	0.420000
	7	744	0	1.870000	0.460000
	8	744	0	0.870000	0.160000
	9	720	0	0.790000	0.140000
	10	744	0	1.230000	0.220000
	11	720	0	0.100000	0.050000
	12	744	0	0.270000	0.040000

APPENDIX C

SITE-SPECIFIC WIND ANALYSIS

APPENDIX C
SITE-SPECIFIC WIND ANALYSIS

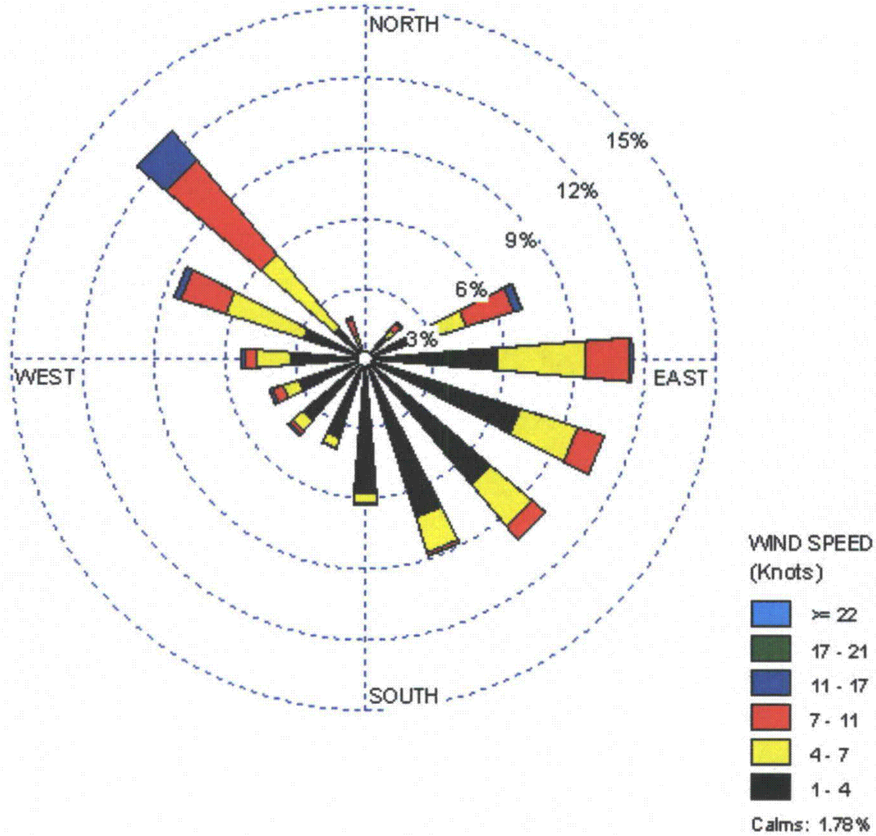
Station ID: 1 Run ID:
Year: 2007 2008
Date Range: July 2007–July 2008
Time Range: 00:00 - 23:00

Frequency Distribution
(Normalized)

Speed Knots

Wind Direction	1 - 4	4 - 7	7 - 11	11 - 17	17 - 21	>= 22	Total
348.75 - 11.25	0.000345	0.000115	0.000000	0.000000	0.000000	0.000000	0.000459
11.25 - 33.75	0.002526	0.000804	0.000459	0.000115	0.000000	0.000000	0.003904
33.75 - 56.25	0.012517	0.003790	0.003790	0.000804	0.000230	0.000230	0.021360
56.25 - 78.75	0.028250	0.016996	0.021475	0.003330	0.000459	0.000000	0.070510
78.75 - 101.25	0.057074	0.037322	0.018489	0.001263	0.000000	0.000000	0.114148
101.25 - 123.75	0.069936	0.025609	0.011713	0.000000	0.000000	0.000000	0.107258
123.75 - 146.25	0.070740	0.022738	0.007350	0.000115	0.000115	0.000000	0.101056
146.25 - 168.75	0.071199	0.015618	0.001378	0.000345	0.000000	0.000000	0.088539
168.75 - 191.25	0.057533	0.004364	0.000459	0.000230	0.000000	0.000000	0.062586
191.25 - 213.75	0.035829	0.004364	0.000345	0.000115	0.000000	0.000000	0.040652
213.75 - 236.25	0.035140	0.005397	0.002182	0.001034	0.000000	0.000000	0.043753
236.25 - 258.75	0.030202	0.006890	0.004593	0.001493	0.000115	0.000000	0.043294
258.75 - 281.25	0.032269	0.014469	0.004364	0.001952	0.000000	0.000000	0.053055
281.25 - 303.75	0.027905	0.034566	0.019982	0.002986	0.000000	0.000000	0.085439
303.75 - 326.25	0.017570	0.040652	0.052710	0.015962	0.000230	0.000000	0.127124
326.25 - 348.75	0.004364	0.006546	0.006775	0.001263	0.000115	0.000000	0.019063
Sub-Total:	0.553399	0.240239	0.156063	0.031006	0.001263	0.000230	0.973702
Calms:							0.017646
Missing/Incomplete:							0.008652
Total:							1.000000

Frequency of Calm Winds: 1.78%
Average Wind Speed: 4.38 Knots



Annual Wind Rose Summary Data

JANUARY

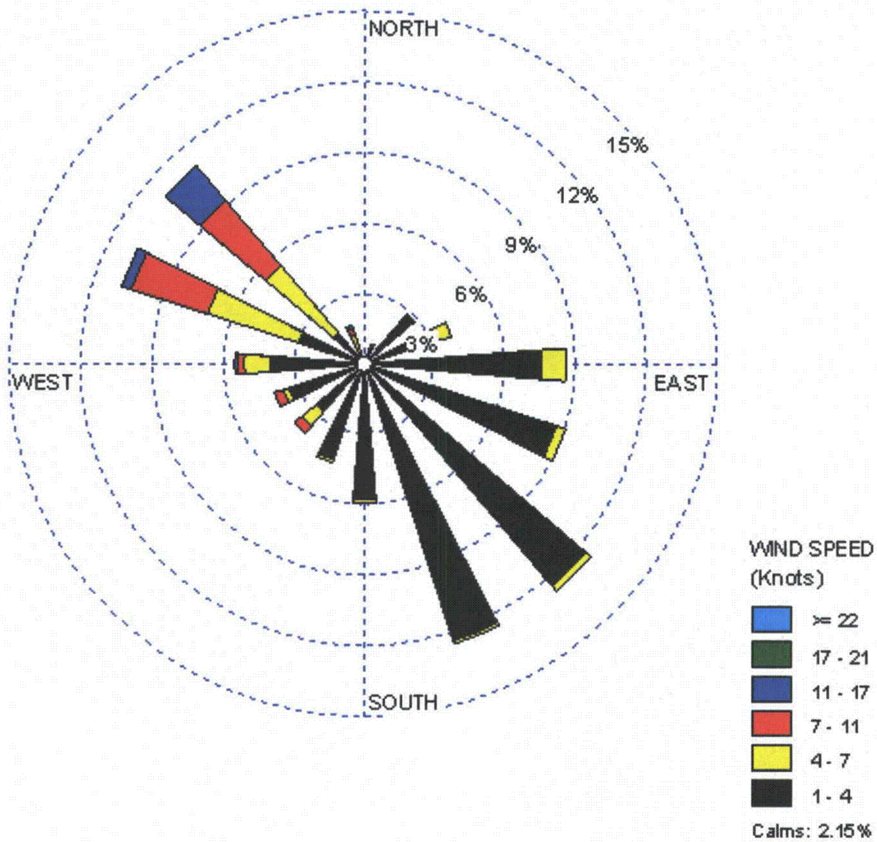
Station ID: 1 Run ID:
Year: 2008
Date Range: Jan 1 - Jan 31
Time Range: 00:00 - 23:00

Frequency Distribution
(Normalized)

Speed Knots

Wind Direction	1 - 4	4 - 7	7 - 11	11 - 17	17 - 21	>= 22	Total
348.75 - 11.25	0.001344	0.000000	0.000000	0.000000	0.000000	0.000000	0.001344
11.25 - 33.75	0.009409	0.000000	0.000000	0.000000	0.000000	0.000000	0.009409
33.75 - 56.25	0.028226	0.000000	0.000000	0.000000	0.000000	0.000000	0.028226
56.25 - 78.75	0.032258	0.006720	0.000000	0.000000	0.000000	0.000000	0.038978
78.75 - 101.25	0.075269	0.010753	0.000000	0.000000	0.000000	0.000000	0.086022
101.25 - 123.75	0.086022	0.004032	0.000000	0.000000	0.000000	0.000000	0.090054
123.75 - 146.25	0.123656	0.002688	0.000000	0.000000	0.000000	0.000000	0.126344
146.25 - 168.75	0.123656	0.001344	0.000000	0.000000	0.000000	0.000000	0.125000
168.75 - 191.25	0.057796	0.001344	0.000000	0.000000	0.000000	0.000000	0.059140
191.25 - 213.75	0.043011	0.001344	0.000000	0.000000	0.000000	0.000000	0.044355
213.75 - 236.25	0.026882	0.008065	0.004032	0.000000	0.000000	0.000000	0.038978
236.25 - 258.75	0.033602	0.002688	0.004032	0.000000	0.000000	0.000000	0.040323
258.75 - 281.25	0.040323	0.010753	0.002688	0.001344	0.000000	0.000000	0.055108
281.25 - 303.75	0.029570	0.040323	0.033602	0.004032	0.000000	0.000000	0.107527
303.75 - 326.25	0.017473	0.037634	0.036290	0.018817	0.000000	0.000000	0.110215
326.25 - 348.75	0.004032	0.009409	0.002688	0.001344	0.000000	0.000000	0.017473
Sub-Total:	0.732527	0.137097	0.083333	0.025538	0.000000	0.000000	0.887805
Calms:							0.019512
Missing/Incomplete:							0.092683
Total:							1.000000

Frequency of Calm Winds: 2.15%
Average Wind Speed: 3.38 Knots


NORTH
15%
12%
9%
6%
3%
WEST
EAST
SOUTH
WIND SPEED
(Knots)
>= 22
17 - 21
11 - 17
7 - 11
4 - 7
1 - 4
Calms: 2.15%

FEBRUARY

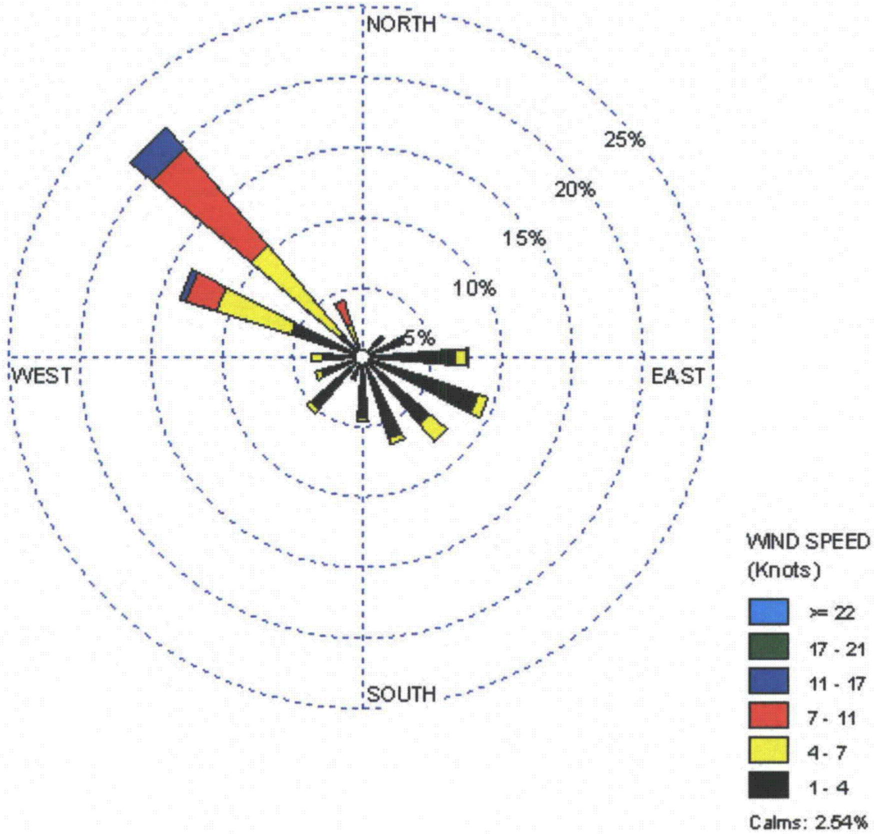
Station ID: 1 Run ID:
Year: 2008
Date Range: Feb 1 - Feb 28
Time Range: 00:00 - 23:00

Frequency Distribution
(Normalized)

Speed Knots

Wind Direction	1 - 4	4 - 7	7 - 11	11 - 17	17 - 21	>= 22	Total
348.75 - 11.25	0.001493	0.000000	0.000000	0.000000	0.000000	0.000000	0.001493
11.25 - 33.75	0.001493	0.000000	0.000000	0.000000	0.000000	0.000000	0.001493
33.75 - 56.25	0.020896	0.000000	0.000000	0.000000	0.000000	0.000000	0.020896
56.25 - 78.75	0.044776	0.007463	0.000000	0.000000	0.000000	0.000000	0.052239
78.75 - 101.25	0.065672	0.008955	0.001493	0.000000	0.000000	0.000000	0.076119
101.25 - 123.75	0.086567	0.007463	0.000000	0.000000	0.000000	0.000000	0.094030
123.75 - 146.25	0.062687	0.016418	0.000000	0.000000	0.000000	0.000000	0.079104
146.25 - 168.75	0.061194	0.004478	0.000000	0.000000	0.000000	0.000000	0.065672
168.75 - 191.25	0.043284	0.002985	0.000000	0.000000	0.000000	0.000000	0.046269
191.25 - 213.75	0.017910	0.000000	0.000000	0.000000	0.000000	0.000000	0.017910
213.75 - 236.25	0.049254	0.002985	0.000000	0.000000	0.000000	0.000000	0.052239
236.25 - 258.75	0.031343	0.004478	0.000000	0.000000	0.000000	0.000000	0.035821
258.75 - 281.25	0.028358	0.008955	0.000000	0.000000	0.000000	0.000000	0.037313
281.25 - 303.75	0.053731	0.055224	0.022388	0.004478	0.000000	0.000000	0.135821
303.75 - 326.25	0.022388	0.082090	0.089552	0.020896	0.000000	0.000000	0.214925
326.25 - 348.75	0.007463	0.017910	0.017910	0.000000	0.000000	0.000000	0.043284
Sub-Total:	0.598507	0.219403	0.131343	0.025373	0.000000	0.000000	0.875335
Calms: 0.022788							
Missing/Incomplete: 0.101877							
Total:							1.000000

Frequency of Calm Winds: 2.54%
Average Wind Speed: 3.91 Knots


NORTH
SOUTH
WEST
EAST
5%
10%
15%
20%
25%
WIND SPEED
(Knots)
>= 22
17 - 21
11 - 17
7 - 11
4 - 7
1 - 4
Calms: 2.54%

MARCH

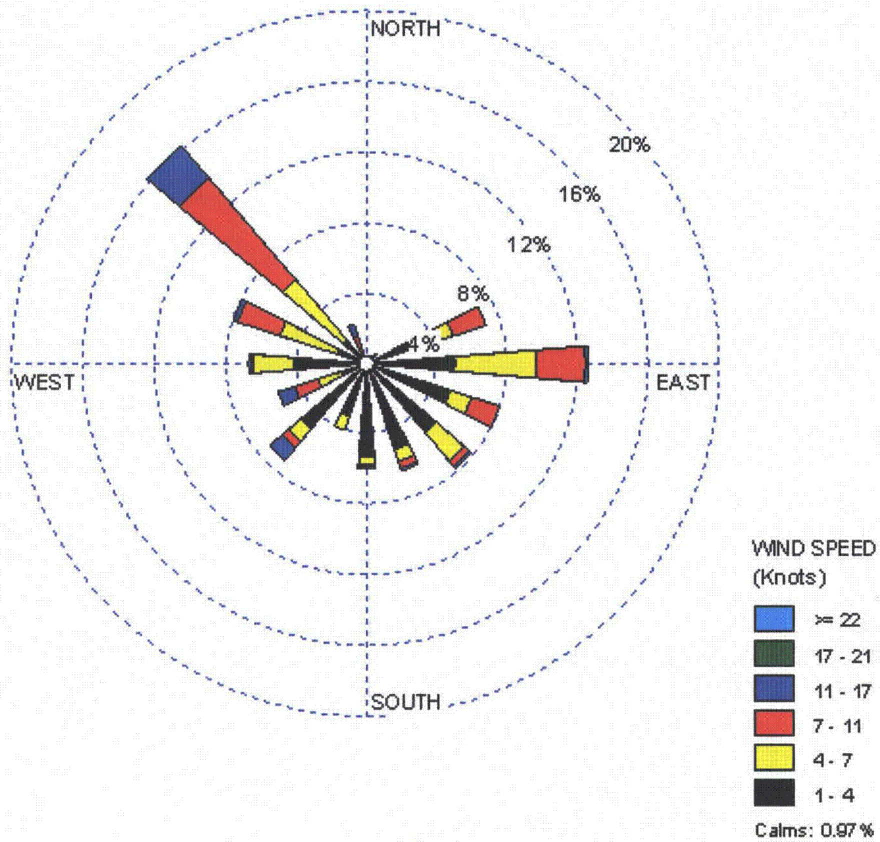
Station ID: 1 Run ID:
Year: 2008
Date Range: Mar 1 - Mar 31
Time Range: 00:00 - 23:00

Frequency Distribution
(Normalized)

Speed Knots

Wind Direction	1 - 4	4 - 7	7 - 11	11 - 17	17 - 21	>= 22	Total
348.75 - 11.25	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
11.25 - 33.75	0.000000	0.000000	0.001389	0.000000	0.000000	0.000000	0.001389
33.75 - 56.25	0.019444	0.000000	0.004167	0.000000	0.000000	0.000000	0.023611
56.25 - 78.75	0.023611	0.020833	0.016667	0.000000	0.000000	0.000000	0.061111
78.75 - 101.25	0.040278	0.047222	0.027778	0.000000	0.000000	0.000000	0.115278
101.25 - 123.75	0.061111	0.030556	0.002778	0.000000	0.000000	0.000000	0.094444
123.75 - 146.25	0.047222	0.022222	0.000000	0.000000	0.000000	0.000000	0.069444
146.25 - 168.75	0.048611	0.013889	0.002778	0.000000	0.000000	0.000000	0.065278
168.75 - 191.25	0.047222	0.006944	0.000000	0.000000	0.000000	0.000000	0.054167
191.25 - 213.75	0.025000	0.005556	0.000000	0.001389	0.000000	0.000000	0.031944
213.75 - 236.25	0.020833	0.002778	0.002778	0.000000	0.000000	0.000000	0.026389
236.25 - 258.75	0.026389	0.008333	0.008333	0.002778	0.001389	0.000000	0.047222
258.75 - 281.25	0.030556	0.022222	0.008333	0.009722	0.000000	0.000000	0.070833
281.25 - 303.75	0.026389	0.036111	0.030556	0.005556	0.000000	0.000000	0.098611
303.75 - 326.25	0.037500	0.056944	0.080556	0.027778	0.000000	0.000000	0.202778
326.25 - 348.75	0.004167	0.008333	0.015278	0.001389	0.000000	0.000000	0.029167
Sub-Total:	0.458333	0.281944	0.201389	0.048611	0.001389	0.000000	0.896985
Calms:							0.007538
Missing/Incomplete:							0.095477
Total:							1.000000

Frequency of Calm Winds: 0.83%
Average Wind Speed: 5.04 Knots


NORTH
20%
16%
12%
8%
4%
WEST
EAST
SOUTH
WIND SPEED
(Knots)
>= 22
17 - 21
11 - 17
7 - 11
4 - 7
1 - 4
Calms: 0.97%

APRIL

Station ID: 1 Run ID:
Year: 2008
Date Range: Apr 1 - Apr 30
Time Range: 00:00 - 23:00

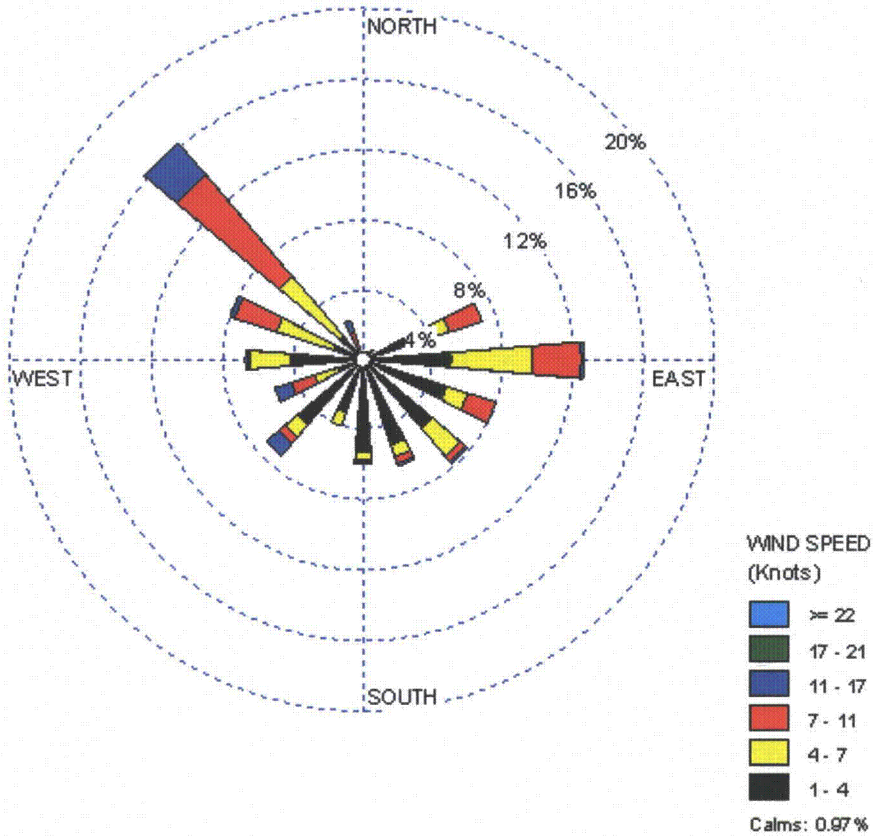
Frequency Distribution
(Normalized)

Speed Knots

Wind Direction	1 - 4	4 - 7	7 - 11	11 - 17	17 - 21	>= 22	Total
348.75 - 11.25	0.001393	0.000000	0.000000	0.000000	0.000000	0.000000	0.001393
11.25 - 33.75	0.005571	0.000000	0.000000	0.000000	0.000000	0.000000	0.005571
33.75 - 56.25	0.005571	0.002786	0.000000	0.000000	0.000000	0.000000	0.008357
56.25 - 78.75	0.029248	0.022284	0.019499	0.000000	0.000000	0.000000	0.071031
78.75 - 101.25	0.050139	0.045961	0.027855	0.001393	0.000000	0.000000	0.125348
101.25 - 123.75	0.050139	0.012535	0.016713	0.000000	0.000000	0.000000	0.079387
123.75 - 146.25	0.051532	0.020891	0.004178	0.001393	0.000000	0.000000	0.077994
146.25 - 168.75	0.051532	0.006964	0.004178	0.001393	0.000000	0.000000	0.064067
168.75 - 191.25	0.052925	0.004178	0.001393	0.001393	0.000000	0.000000	0.059889
191.25 - 213.75	0.032033	0.008357	0.000000	0.000000	0.000000	0.000000	0.040390
213.75 - 236.25	0.048747	0.009749	0.004178	0.009749	0.000000	0.000000	0.072423
236.25 - 258.75	0.015320	0.013928	0.013928	0.009749	0.000000	0.000000	0.052925
258.75 - 281.25	0.041783	0.022284	0.001393	0.001393	0.000000	0.000000	0.066852
281.25 - 303.75	0.018106	0.033426	0.025070	0.002786	0.000000	0.000000	0.079387
303.75 - 326.25	0.018106	0.044568	0.075209	0.023677	0.000000	0.000000	0.161560
326.25 - 348.75	0.004178	0.002786	0.009749	0.006964	0.000000	0.000000	0.023677
Sub-Total:	0.476323	0.250696	0.203343	0.059889	0.000000	0.000000	0.895466

Calms:
0.008816
Missing/Incomplete:
0.095718
Total:
1.000000

Frequency of Calm Winds: 0.97%
Average Wind Speed: 5.17 Knots


NORTH
20%
16%
12%
8%
4%
WEST
EAST
SOUTH
WIND SPEED
(Knots)
>= 22
17 - 21
11 - 17
7 - 11
4 - 7
1 - 4
Calms: 0.97%

MAY

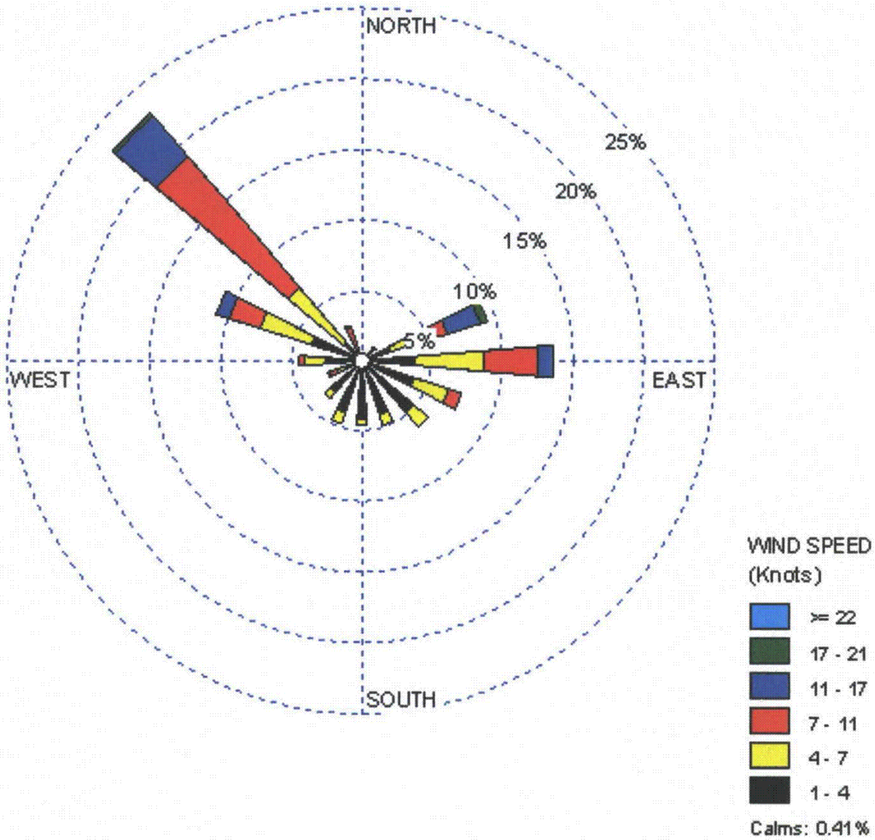
Station ID: 1 Run ID:
Year: 2008
Date Range: May 1 - May 31
Time Range: 00:00 - 23:00

Frequency Distribution
(Normalized)

Speed Knots

Wind Direction	1 - 4	4 - 7	7 - 11	11 - 17	17 - 21	>= 22	Total
348.75 - 11.25	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
11.25 - 33.75	0.002703	0.001351	0.001351	0.000000	0.000000	0.000000	0.005405
33.75 - 56.25	0.001351	0.001351	0.001351	0.004054	0.002703	0.002703	0.013514
56.25 - 78.75	0.021622	0.012162	0.029730	0.024324	0.005405	0.000000	0.093243
78.75 - 101.25	0.037838	0.048649	0.037838	0.010811	0.000000	0.000000	0.135135
101.25 - 123.75	0.039189	0.025676	0.009459	0.000000	0.000000	0.000000	0.074324
123.75 - 146.25	0.048649	0.013514	0.000000	0.000000	0.000000	0.000000	0.062162
146.25 - 168.75	0.040541	0.008108	0.000000	0.000000	0.000000	0.000000	0.048649
168.75 - 191.25	0.041892	0.004054	0.000000	0.000000	0.000000	0.000000	0.045946
191.25 - 213.75	0.039189	0.008108	0.000000	0.000000	0.000000	0.000000	0.047297
213.75 - 236.25	0.029730	0.005405	0.000000	0.000000	0.000000	0.000000	0.035135
236.25 - 258.75	0.012162	0.006757	0.005405	0.001351	0.000000	0.000000	0.025676
258.75 - 281.25	0.025676	0.014865	0.004054	0.000000	0.000000	0.000000	0.044595
281.25 - 303.75	0.037838	0.037838	0.022973	0.009459	0.000000	0.000000	0.108108
303.75 - 326.25	0.017568	0.051351	0.120270	0.037838	0.002703	0.000000	0.229730
326.25 - 348.75	0.005405	0.004054	0.016216	0.000000	0.001351	0.000000	0.027027
Sub-Total:	0.401351	0.243243	0.248649	0.087838	0.012162	0.002703	0.903186
Calms:							0.003676
Missing/Incomplete:							0.093137
Total:							1.000000

Frequency of Calm Winds: 0.41%
Average Wind Speed: 6.00 Knots



NORTH
SOUTH
WEST
EAST
5%
10%
15%
20%
25%
WIND SPEED
(Knots)
>= 22
17 - 21
11 - 17
7 - 11
4 - 7
1 - 4
Calms: 0.41%

JUNE

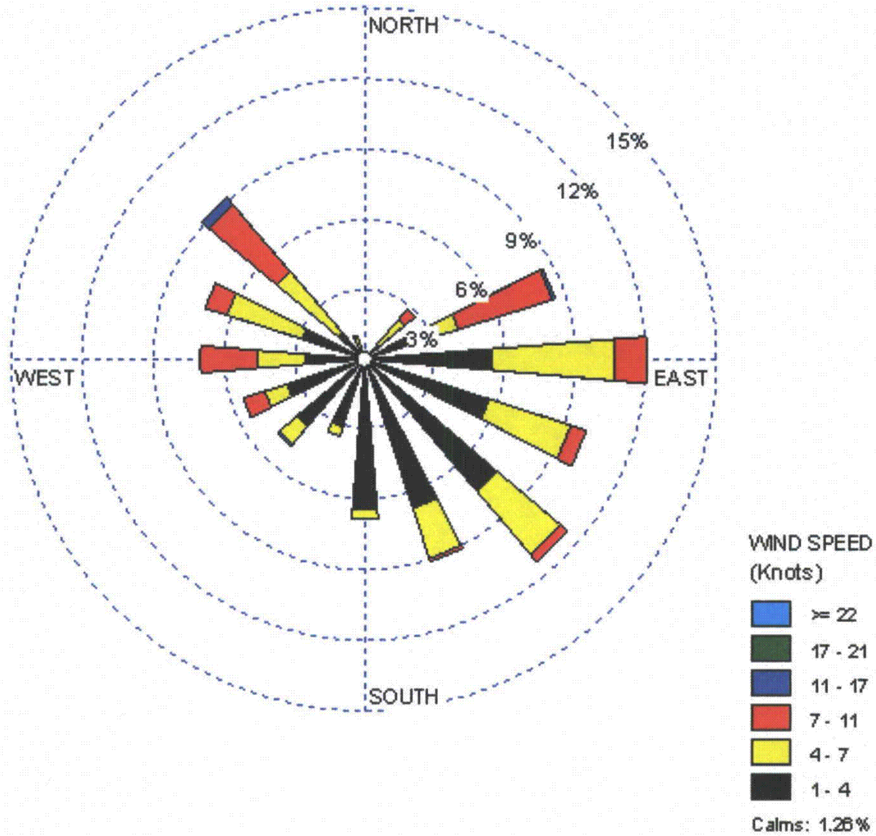
Station ID: 1 Run ID:
Year: 2008
Date Range: Jun 1 - Jun 30
Time Range: 00:00 - 23:00

Frequency Distribution
(Normalized)

Speed Knots

Wind Direction	1 - 4	4 - 7	7 - 11	11 - 17	17 - 21	>= 22	Total
348.75 - 11.25	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
11.25 - 33.75	0.000000	0.001397	0.000000	0.000000	0.000000	0.000000	0.001397
33.75 - 56.25	0.008380	0.013966	0.005587	0.000000	0.000000	0.000000	0.027933
56.25 - 78.75	0.023743	0.018156	0.041899	0.001397	0.000000	0.000000	0.085196
78.75 - 101.25	0.054469	0.051676	0.013966	0.000000	0.000000	0.000000	0.120112
101.25 - 123.75	0.055866	0.036313	0.006983	0.000000	0.000000	0.000000	0.099162
123.75 - 146.25	0.074022	0.034916	0.004190	0.000000	0.000000	0.000000	0.113128
146.25 - 168.75	0.067039	0.022346	0.001397	0.000000	0.000000	0.000000	0.090782
168.75 - 191.25	0.064246	0.004190	0.000000	0.000000	0.000000	0.000000	0.068436
191.25 - 213.75	0.030726	0.004190	0.000000	0.000000	0.000000	0.000000	0.034916
213.75 - 236.25	0.037709	0.009777	0.000000	0.001397	0.000000	0.000000	0.048883
236.25 - 258.75	0.034916	0.009777	0.009777	0.000000	0.000000	0.000000	0.054469
258.75 - 281.25	0.025140	0.020950	0.023743	0.000000	0.000000	0.000000	0.069832
281.25 - 303.75	0.027933	0.033520	0.009777	0.000000	0.000000	0.000000	0.071229
303.75 - 326.25	0.015363	0.033520	0.037709	0.004190	0.000000	0.000000	0.090782
326.25 - 348.75	0.000000	0.009777	0.001397	0.000000	0.000000	0.000000	0.011173
Sub-Total:	0.519553	0.304469	0.156425	0.006983	0.000000	0.000000	0.892677
Calms:							0.011364
Missing/Incomplete:							0.095960
Total:							1.000000

Frequency of Calm Winds: 1.26%
Average Wind Speed: 4.45 Knots


NORTH
15%
12%
9%
6%
3%
WEST
EAST
SOUTH
WIND SPEED
(Knots)
>= 22
17 - 21
11 - 17
7 - 11
4 - 7
1 - 4
Calms: 1.26%

JULY

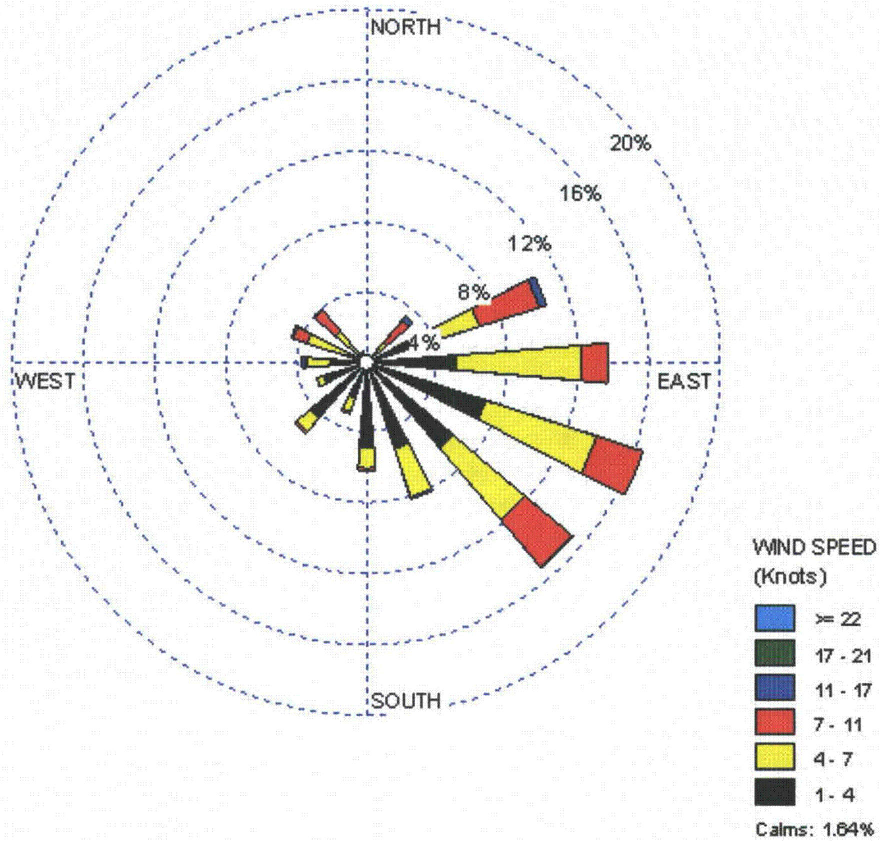
Station ID: 1 Run ID:
Year: 2007
Date Range: Jul 1 - Jul 31
Time Range: 00:00 - 23:00

Frequency Distribution
(Normalized)

Speed Knots

Wind Direction	1 - 4	4 - 7	7 - 11	11 - 17	17 - 21	>= 22	Total
348.75 - 11.25	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
11.25 - 33.75	0.000000	0.001364	0.001364	0.001364	0.000000	0.000000	0.004093
33.75 - 56.25	0.005457	0.009550	0.016371	0.002729	0.000000	0.000000	0.034106
56.25 - 78.75	0.031378	0.035471	0.035471	0.004093	0.000000	0.000000	0.106412
78.75 - 101.25	0.050477	0.070941	0.015007	0.000000	0.000000	0.000000	0.136426
101.25 - 123.75	0.070941	0.065484	0.027285	0.000000	0.000000	0.000000	0.163711
123.75 - 146.25	0.064120	0.053206	0.034106	0.000000	0.001364	0.000000	0.152797
146.25 - 168.75	0.051842	0.028649	0.000000	0.001364	0.000000	0.000000	0.081855
168.75 - 191.25	0.049113	0.010914	0.001364	0.000000	0.000000	0.000000	0.061392
191.25 - 213.75	0.021828	0.008186	0.001364	0.000000	0.000000	0.000000	0.031378
213.75 - 236.25	0.042292	0.009550	0.001364	0.000000	0.000000	0.000000	0.053206
236.25 - 258.75	0.025921	0.004093	0.000000	0.000000	0.000000	0.000000	0.030014
258.75 - 281.25	0.020464	0.013643	0.001364	0.001364	0.000000	0.000000	0.036835
281.25 - 303.75	0.012278	0.023192	0.008186	0.001364	0.000000	0.000000	0.045020
303.75 - 326.25	0.006821	0.016371	0.015007	0.001364	0.000000	0.000000	0.039563
326.25 - 348.75	0.002729	0.000000	0.004093	0.000000	0.000000	0.000000	0.006821
Sub-Total:	0.455662	0.350614	0.162347	0.013643	0.001364	0.000000	0.891224
Calms:							0.014833
Missing/Incomplete:							0.093943
Total:							1.000000

Frequency of Calm Winds: 1.64%
Average Wind Speed: 4.66 Knots


NORTH
20%
16%
12%
8%
4%
WEST
EAST
SOUTH
WIND SPEED
(Knots)
>= 22
17 - 21
11 - 17
7 - 11
4 - 7
1 - 4
Calms: 1.64%

AUGUST

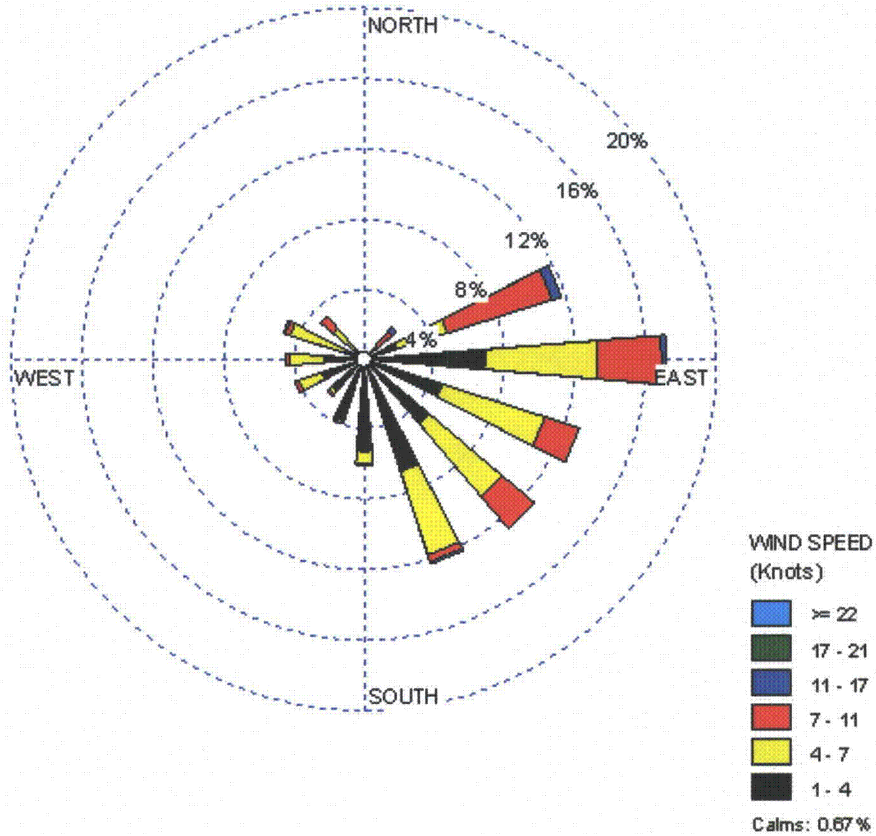
Station ID: 1 Run ID:
Year: 2007
Date Range: Aug 1 - Aug 31
Time Range: 00:00 - 23:00

Frequency Distribution
(Normalized)

Speed Knots

Wind Direction	1 - 4	4 - 7	7 - 11	11 - 17	17 - 21	>= 22	Total
348.75 - 11.25	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
11.25 - 33.75	0.001346	0.001346	0.001346	0.000000	0.000000	0.000000	0.004038
33.75 - 56.25	0.005384	0.004038	0.012113	0.002692	0.000000	0.000000	0.024226
56.25 - 78.75	0.020188	0.029610	0.061911	0.005384	0.000000	0.000000	0.117093
78.75 - 101.25	0.068641	0.063257	0.036339	0.002692	0.000000	0.000000	0.170929
101.25 - 123.75	0.047106	0.060565	0.020188	0.000000	0.000000	0.000000	0.127860
123.75 - 146.25	0.048452	0.053836	0.024226	0.000000	0.000000	0.000000	0.126514
146.25 - 168.75	0.067295	0.049798	0.004038	0.001346	0.000000	0.000000	0.122476
168.75 - 191.25	0.052490	0.006729	0.001346	0.000000	0.000000	0.000000	0.060565
191.25 - 213.75	0.037685	0.001346	0.000000	0.000000	0.000000	0.000000	0.039031
213.75 - 236.25	0.024226	0.002692	0.001346	0.000000	0.000000	0.000000	0.028264
236.25 - 258.75	0.025572	0.013459	0.002692	0.000000	0.000000	0.000000	0.041723
258.75 - 281.25	0.022880	0.020188	0.001346	0.000000	0.000000	0.000000	0.044415
281.25 - 303.75	0.012113	0.032301	0.002692	0.001346	0.000000	0.000000	0.048452
303.75 - 326.25	0.008075	0.014805	0.009421	0.000000	0.000000	0.000000	0.032301
326.25 - 348.75	0.000000	0.001346	0.004038	0.000000	0.000000	0.000000	0.005384
Sub-Total:	0.441454	0.355316	0.183042	0.013459	0.000000	0.000000	0.901099
Calms:							0.006105
Missing/Incomplete:							0.092796
Total:							1.000000

Frequency of Calm Winds: 0.67%
Average Wind Speed: 4.85 Knots


NORTH
20%
16%
12%
8%
4%
WEST
EAST
SOUTH
WIND SPEED
(Knots)
>= 22
17 - 21
11 - 17
7 - 11
4 - 7
1 - 4
Calms: 0.67%

SEPTEMBER

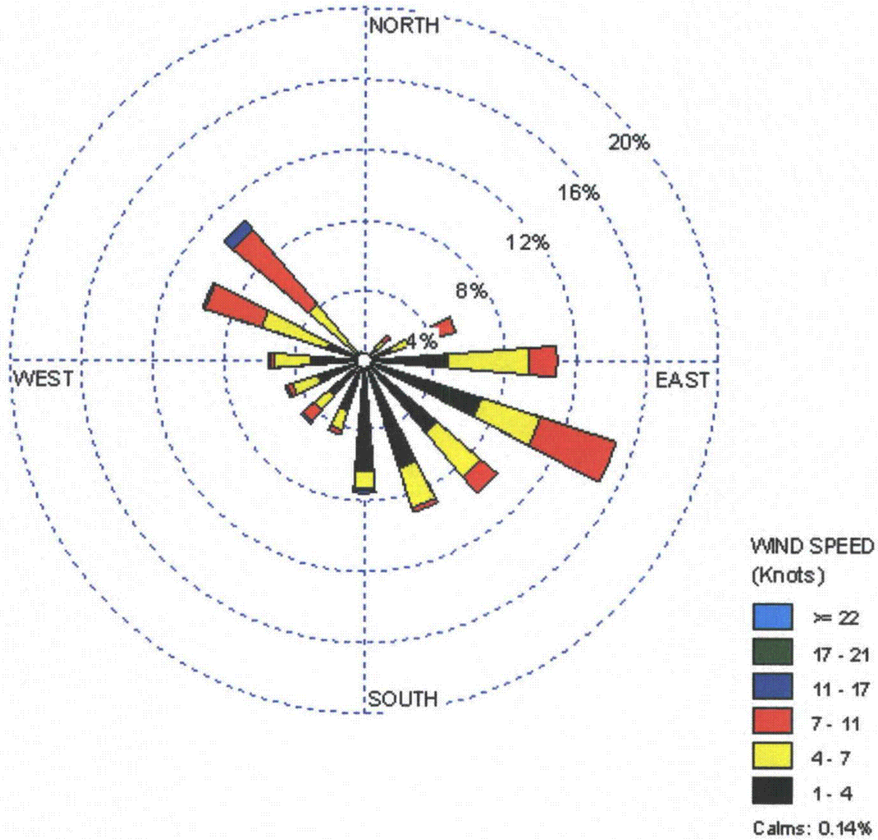
Station ID: 1 Run ID:
Year: 2007
Date Range: Sep 1 - Sep 30
Time Range: 00:00 - 23:00

Frequency Distribution
(Normalized)

Speed Knots

Wind Direction	1 - 4	4 - 7	7 - 11	11 - 17	17 - 21	>= 22	Total
348.75 - 11.25	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
11.25 - 33.75	0.001395	0.000000	0.000000	0.000000	0.000000	0.000000	0.001395
33.75 - 56.25	0.009763	0.005579	0.004184	0.000000	0.000000	0.000000	0.019526
56.25 - 78.75	0.016736	0.026499	0.011158	0.000000	0.000000	0.000000	0.054393
78.75 - 101.25	0.047420	0.046025	0.015342	0.000000	0.000000	0.000000	0.108787
101.25 - 123.75	0.069735	0.034868	0.044630	0.000000	0.000000	0.000000	0.149233
123.75 - 146.25	0.054393	0.032078	0.012552	0.000000	0.000000	0.000000	0.099024
146.25 - 168.75	0.064156	0.023710	0.002789	0.000000	0.000000	0.000000	0.090656
168.75 - 191.25	0.062762	0.009763	0.001395	0.001395	0.000000	0.000000	0.075314
191.25 - 213.75	0.030683	0.011158	0.002789	0.000000	0.000000	0.000000	0.044630
213.75 - 236.25	0.026499	0.011158	0.008368	0.001395	0.000000	0.000000	0.047420
236.25 - 258.75	0.027894	0.015342	0.002789	0.001395	0.000000	0.000000	0.047420
258.75 - 281.25	0.030683	0.020921	0.001395	0.001395	0.000000	0.000000	0.054393
281.25 - 303.75	0.022315	0.039052	0.033473	0.001395	0.000000	0.000000	0.096234
303.75 - 326.25	0.006974	0.034868	0.055788	0.006974	0.000000	0.000000	0.104603
326.25 - 348.75	0.001395	0.001395	0.002789	0.000000	0.000000	0.000000	0.005579
Sub-Total:	0.472803	0.312413	0.199442	0.013947	0.000000	0.000000	0.902900
Calms:							0.001261
Missing/Incomplete:							0.095839
Total:							1.000000

Frequency of Calm Winds: 0.14%
Average Wind Speed: 4.76 Knots



NORTH
SOUTH
EAST
WEST
20%
16%
12%
8%
4%
WIND SPEED
(Knots)
>= 22
17 - 21
11 - 17
7 - 11
4 - 7
1 - 4
Calms: 0.14%

OCTOBER

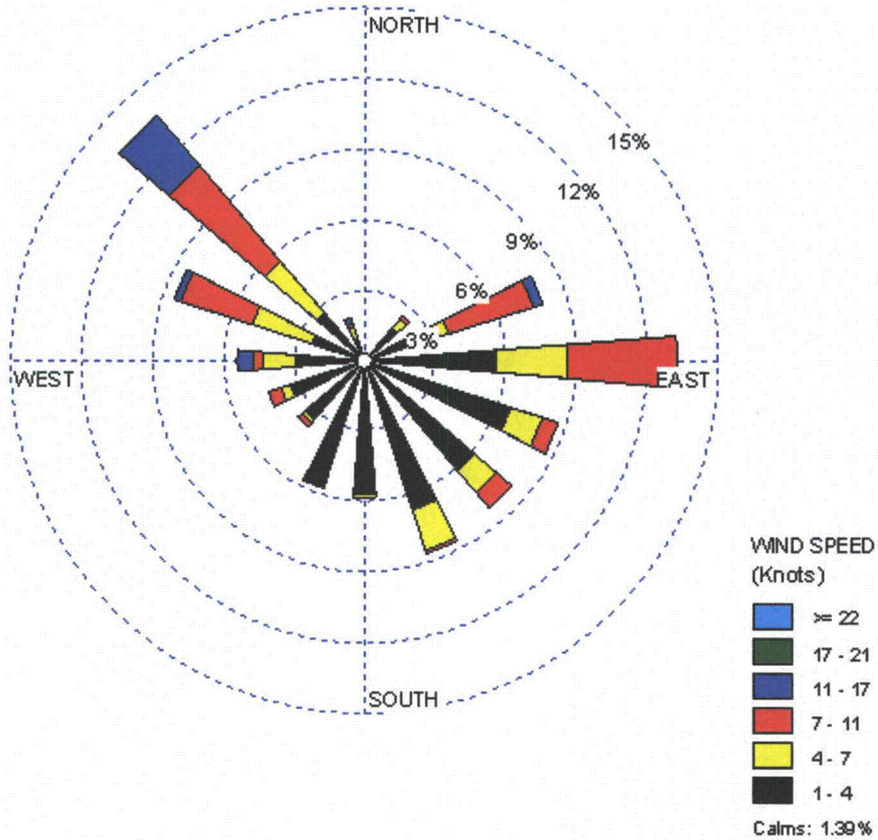
Station ID: 1 Run ID:
Year: 2007
Date Range: Oct 1 - Oct 31
Time Range: 00:00 - 23:00

Frequency Distribution
(Normalized)

Speed Knots

Wind Direction	1 - 4	4 - 7	7 - 11	11 - 17	17 - 21	>= 22	Total
348.75 - 11.25	0.000000	0.001391	0.000000	0.000000	0.000000	0.000000	0.001391
11.25 - 33.75	0.000000	0.002782	0.000000	0.000000	0.000000	0.000000	0.002782
33.75 - 56.25	0.018081	0.005563	0.001391	0.000000	0.000000	0.000000	0.025035
56.25 - 78.75	0.026426	0.011127	0.037552	0.004172	0.000000	0.000000	0.079277
78.75 - 101.25	0.055633	0.030598	0.045897	0.000000	0.000000	0.000000	0.132128
101.25 - 123.75	0.065369	0.013908	0.006954	0.000000	0.000000	0.000000	0.086231
123.75 - 146.25	0.061196	0.012517	0.008345	0.000000	0.000000	0.000000	0.082058
146.25 - 168.75	0.066759	0.018081	0.001391	0.000000	0.000000	0.000000	0.086231
168.75 - 191.25	0.057024	0.001391	0.000000	0.000000	0.000000	0.000000	0.058414
191.25 - 213.75	0.057024	0.000000	0.000000	0.000000	0.000000	0.000000	0.057024
213.75 - 236.25	0.033380	0.001391	0.002782	0.000000	0.000000	0.000000	0.037552
236.25 - 258.75	0.033380	0.004172	0.005563	0.000000	0.000000	0.000000	0.043115
258.75 - 281.25	0.029207	0.013908	0.004172	0.006954	0.000000	0.000000	0.054242
281.25 - 303.75	0.023644	0.026426	0.031989	0.002782	0.000000	0.000000	0.084840
303.75 - 326.25	0.026426	0.029207	0.052851	0.027816	0.000000	0.000000	0.136300
326.25 - 348.75	0.009736	0.005563	0.001391	0.002782	0.000000	0.000000	0.019471
Sub-Total:	0.563282	0.178025	0.200278	0.044506	0.000000	0.000000	0.891824
Calms:							0.012579
Missing/Incomplete:							0.095597
Total:							1.000000

Frequency of Calm Winds: 1.39%
Average Wind Speed: 4.62 Knots


NORTH
15%
12%
9%
6%
3%
WEST
EAST
SOUTH
WIND SPEED
(Knots)
>= 22
17 - 21
11 - 17
7 - 11
4 - 7
1 - 4
Calms: 1.39%

NOVEMBER

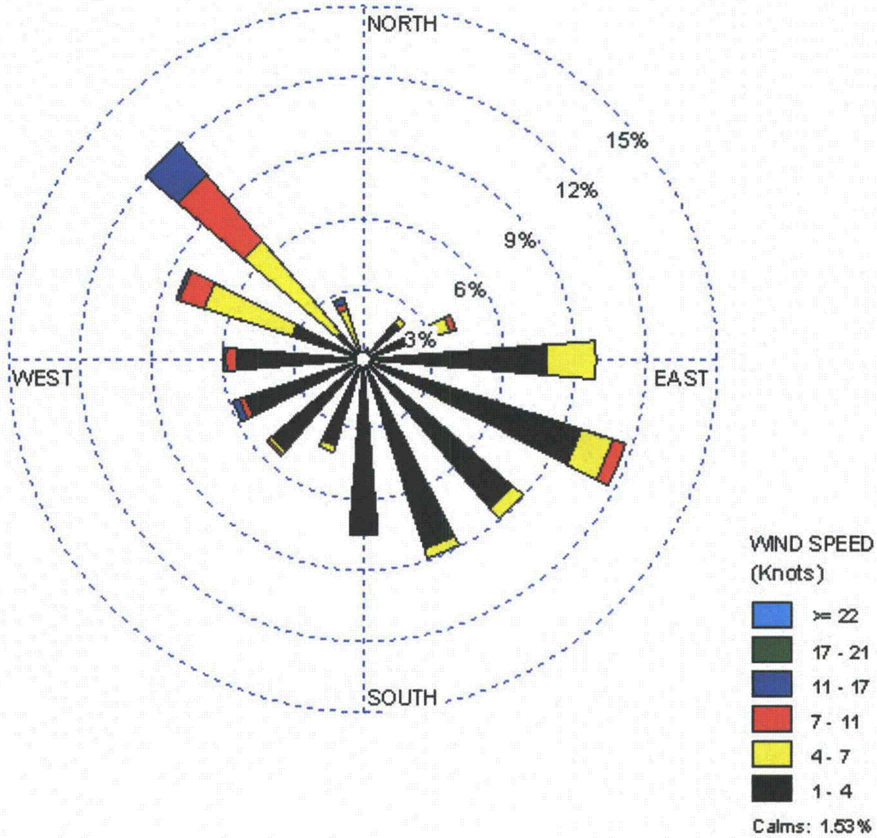
Station ID: 1 Run ID:
Year: 2007
Date Range: Nov 1 - Nov 30
Time Range: 00:00 - 23:00

Frequency Distribution
(Normalized)

Speed Knots

Wind Direction	1 - 4	4 - 7	7 - 11	11 - 17	17 - 21	>= 22	Total
348.75 - 11.25	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
11.25 - 33.75	0.004167	0.001389	0.000000	0.000000	0.000000	0.000000	0.005556
33.75 - 56.25	0.020833	0.002778	0.000000	0.000000	0.000000	0.000000	0.023611
56.25 - 78.75	0.031944	0.006944	0.002778	0.000000	0.000000	0.000000	0.041667
78.75 - 101.25	0.077778	0.020833	0.000000	0.000000	0.000000	0.000000	0.098611
101.25 - 123.75	0.097222	0.013889	0.005556	0.000000	0.000000	0.000000	0.116667
123.75 - 146.25	0.083333	0.005556	0.000000	0.000000	0.000000	0.000000	0.088889
146.25 - 168.75	0.084722	0.004167	0.000000	0.000000	0.000000	0.000000	0.088889
168.75 - 191.25	0.075000	0.000000	0.000000	0.000000	0.000000	0.000000	0.075000
191.25 - 213.75	0.038889	0.002778	0.000000	0.000000	0.000000	0.000000	0.041667
213.75 - 236.25	0.051389	0.001389	0.001389	0.000000	0.000000	0.000000	0.054167
236.25 - 258.75	0.052778	0.000000	0.002778	0.002778	0.000000	0.000000	0.058333
258.75 - 281.25	0.052778	0.001389	0.004167	0.001389	0.000000	0.000000	0.059722
281.25 - 303.75	0.031944	0.038889	0.011111	0.001389	0.000000	0.000000	0.083333
303.75 - 326.25	0.015278	0.051389	0.036111	0.018056	0.000000	0.000000	0.120833
326.25 - 348.75	0.005556	0.016667	0.002778	0.002778	0.000000	0.000000	0.027778
Sub-Total:	0.723611	0.168056	0.066667	0.026389	0.000000	0.000000	0.890704
Calms:							0.013819
Missing/Incomplete:							0.095477
Total:							1.000000

Frequency of Calm Winds: 1.53%
Average Wind Speed: 3.36 Knots


NORTH
SOUTH
WEST
EAST
3%
6%
9%
12%
15%
WIND SPEED
(Knots)
>= 22
17 - 21
11 - 17
7 - 11
4 - 7
1 - 4
Calms: 1.53%

DECEMBER

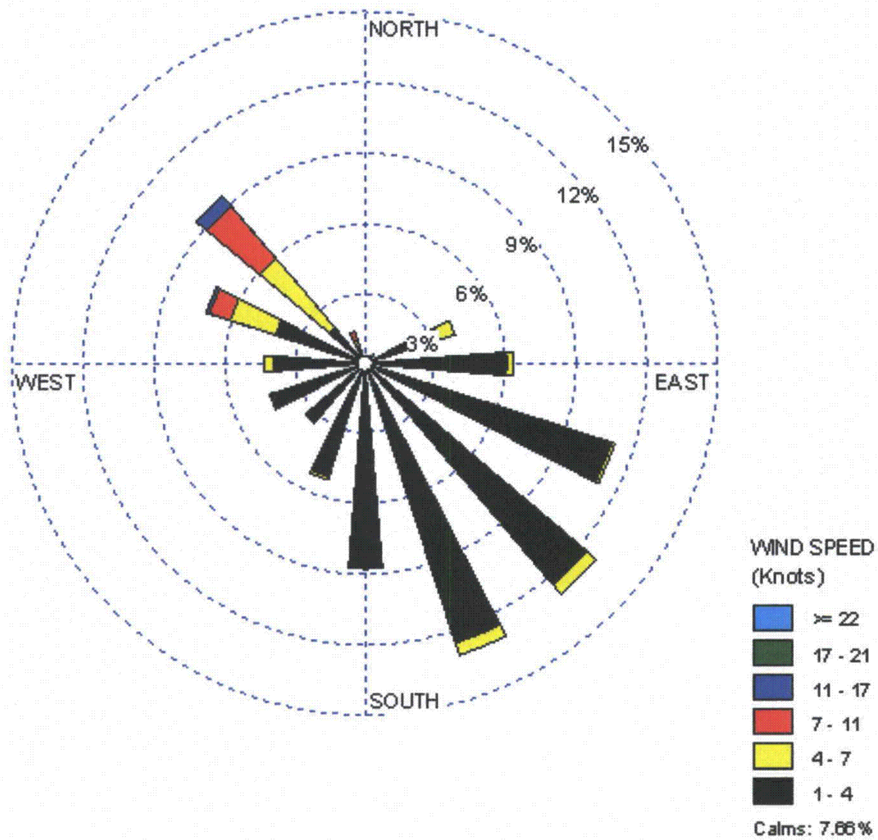
Station ID: 1 Run ID:
Year: 2007
Date Range: Dec 1 - Dec 31
Time Range: 00:00 - 23:00

Frequency Distribution
(Normalized)

Speed Knots

Wind Direction	1 - 4	4 - 7	7 - 11	11 - 17	17 - 21	>= 22	Total
348.75 - 11.25	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
11.25 - 33.75	0.004032	0.000000	0.000000	0.000000	0.000000	0.000000	0.004032
33.75 - 56.25	0.005376	0.000000	0.000000	0.000000	0.000000	0.000000	0.005376
56.25 - 78.75	0.033602	0.006720	0.000000	0.000000	0.000000	0.000000	0.040323
78.75 - 101.25	0.060484	0.002688	0.000000	0.000000	0.000000	0.000000	0.063172
101.25 - 123.75	0.110215	0.001344	0.000000	0.000000	0.000000	0.000000	0.111559
123.75 - 146.25	0.123656	0.005376	0.000000	0.000000	0.000000	0.000000	0.129032
146.25 - 168.75	0.125000	0.005376	0.000000	0.000000	0.000000	0.000000	0.130376
168.75 - 191.25	0.087366	0.000000	0.000000	0.000000	0.000000	0.000000	0.087366
191.25 - 213.75	0.051075	0.001344	0.000000	0.000000	0.000000	0.000000	0.052419
213.75 - 236.25	0.033602	0.000000	0.000000	0.000000	0.000000	0.000000	0.033602
236.25 - 258.75	0.043011	0.000000	0.000000	0.000000	0.000000	0.000000	0.043011
258.75 - 281.25	0.038978	0.004032	0.000000	0.000000	0.000000	0.000000	0.043011
281.25 - 303.75	0.040323	0.020161	0.009409	0.001344	0.000000	0.000000	0.071237
303.75 - 326.25	0.020161	0.038978	0.029570	0.005376	0.000000	0.000000	0.094086
326.25 - 348.75	0.008065	0.002688	0.004032	0.000000	0.000000	0.000000	0.014785
Sub-Total:	0.784946	0.088710	0.043011	0.006720	0.000000	0.000000	0.837805
Calms:							0.069512
Missing/Incomplete:							0.092683
Total:							1.000000

Frequency of Calm Winds: 7.66%
Average Wind Speed: 2.46 Knots


NORTH
15%
12%
9%
6%
3%
WEST
EAST
SOUTH
WIND SPEED
(Knots)
>= 22
17 - 21
11 - 17
7 - 11
4 - 7
1 - 4
Calms: 7.66%

WINTER

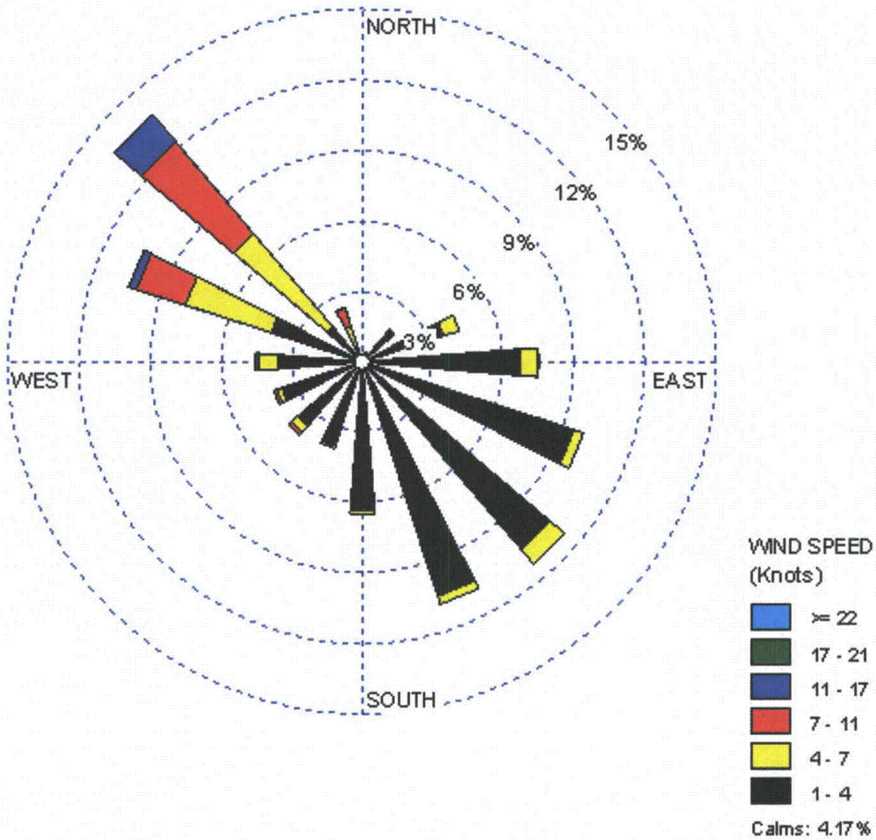
Station ID: 1 Run ID:
Year: 2007 2008
Date Range: Dec 2007-Feb 2008
Time Range: 00:00 - 23:00

Frequency Distribution
(Normalized)

Speed Knots

Wind Direction	1 - 4	4 - 7	7 - 11	11 - 17	17 - 21	>= 22	Total
348.75 - 11.25	0.000927	0.000000	0.000000	0.000000	0.000000	0.000000	0.000927
11.25 - 33.75	0.005097	0.000000	0.000000	0.000000	0.000000	0.000000	0.005097
33.75 - 56.25	0.018072	0.000000	0.000000	0.000000	0.000000	0.000000	0.018072
56.25 - 78.75	0.036608	0.006951	0.000000	0.000000	0.000000	0.000000	0.043559
78.75 - 101.25	0.067192	0.007414	0.000463	0.000000	0.000000	0.000000	0.075070
101.25 - 123.75	0.094532	0.004171	0.000000	0.000000	0.000000	0.000000	0.098703
123.75 - 146.25	0.104727	0.007878	0.000000	0.000000	0.000000	0.000000	0.112604
146.25 - 168.75	0.104727	0.003707	0.000000	0.000000	0.000000	0.000000	0.108434
168.75 - 191.25	0.063485	0.001390	0.000000	0.000000	0.000000	0.000000	0.064875
191.25 - 213.75	0.037998	0.000927	0.000000	0.000000	0.000000	0.000000	0.038925
213.75 - 236.25	0.036145	0.003707	0.001390	0.000000	0.000000	0.000000	0.041242
236.25 - 258.75	0.036145	0.002317	0.001390	0.000000	0.000000	0.000000	0.039852
258.75 - 281.25	0.036145	0.007878	0.000927	0.000463	0.000000	0.000000	0.045412
281.25 - 303.75	0.040778	0.037998	0.021779	0.003244	0.000000	0.000000	0.103800
303.75 - 326.25	0.019926	0.051900	0.050510	0.014829	0.000000	0.000000	0.137164
326.25 - 348.75	0.006487	0.009731	0.007878	0.000463	0.000000	0.000000	0.024560
Sub-Total:	0.708990	0.145968	0.084337	0.018999	0.000000	0.000000	0.925694
Calms:							0.040286
Missing/Incomplete:							0.034020
Total:							1.000000

Frequency of Calm Winds: 4.17%
Average Wind Speed: 3.23 Knots


NORTH
SOUTH
EAST
WEST
3%
6%
9%
12%
15%
WIND SPEED
(Knots)
>= 22
17 - 21
11 - 17
7 - 11
4 - 7
1 - 4
Calms: 4.17%

SPRING

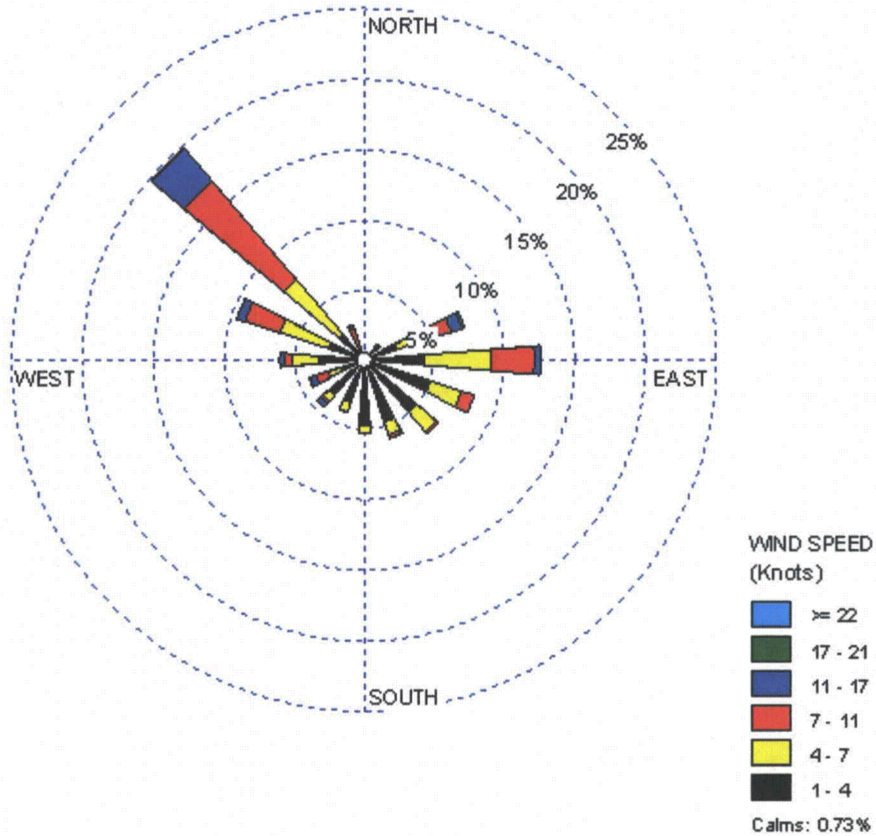
Station ID: 1 Run ID:
Year: 2008
Date Range: Mar 1 - May 31
Time Range: 00:00 - 23:00

Frequency Distribution
(Normalized)

Speed Knots

Wind Direction	1 - 4	4 - 7	7 - 11	11 - 17	17 - 21	>= 22	Total
348.75 - 11.25	0.000459	0.000000	0.000000	0.000000	0.000000	0.000000	0.000459
11.25 - 33.75	0.002755	0.000459	0.000918	0.000000	0.000000	0.000000	0.004132
33.75 - 56.25	0.008724	0.001377	0.001837	0.001377	0.000918	0.000918	0.015152
56.25 - 78.75	0.024793	0.018365	0.022039	0.008264	0.001837	0.000000	0.075298
78.75 - 101.25	0.042700	0.047291	0.031221	0.004132	0.000000	0.000000	0.125344
101.25 - 123.75	0.050046	0.022957	0.009642	0.000000	0.000000	0.000000	0.082645
123.75 - 146.25	0.049128	0.018825	0.001377	0.000459	0.000000	0.000000	0.069789
146.25 - 168.75	0.046832	0.009642	0.002296	0.000459	0.000000	0.000000	0.059229
168.75 - 191.25	0.047291	0.005051	0.000459	0.000459	0.000000	0.000000	0.053260
191.25 - 213.75	0.032140	0.007346	0.000000	0.000459	0.000000	0.000000	0.039945
213.75 - 236.25	0.033058	0.005969	0.002296	0.003214	0.000000	0.000000	0.044536
236.25 - 258.75	0.017906	0.009642	0.009183	0.004591	0.000459	0.000000	0.041781
258.75 - 281.25	0.032599	0.019743	0.004591	0.003673	0.000000	0.000000	0.060606
281.25 - 303.75	0.027548	0.035813	0.026171	0.005969	0.000000	0.000000	0.095500
303.75 - 326.25	0.024334	0.050964	0.092287	0.029844	0.000918	0.000000	0.198347
326.25 - 348.75	0.004591	0.005051	0.013774	0.002755	0.000459	0.000000	0.026630
Sub-Total:	0.444904	0.258494	0.218090	0.065657	0.004591	0.000918	0.959184
Calms:							0.007098
Missing/Incomplete:							0.033718
Total:							1.000000

Frequency of Calm Winds: 0.73%
Average Wind Speed: 5.41 Knots


NORTH
SOUTH
EAST
WEST
5%
10%
15%
20%
25%
WIND SPEED
(Knots)
>= 22
17 - 21
11 - 17
7 - 11
4 - 7
1 - 4
Calms: 0.73%

SUMMER

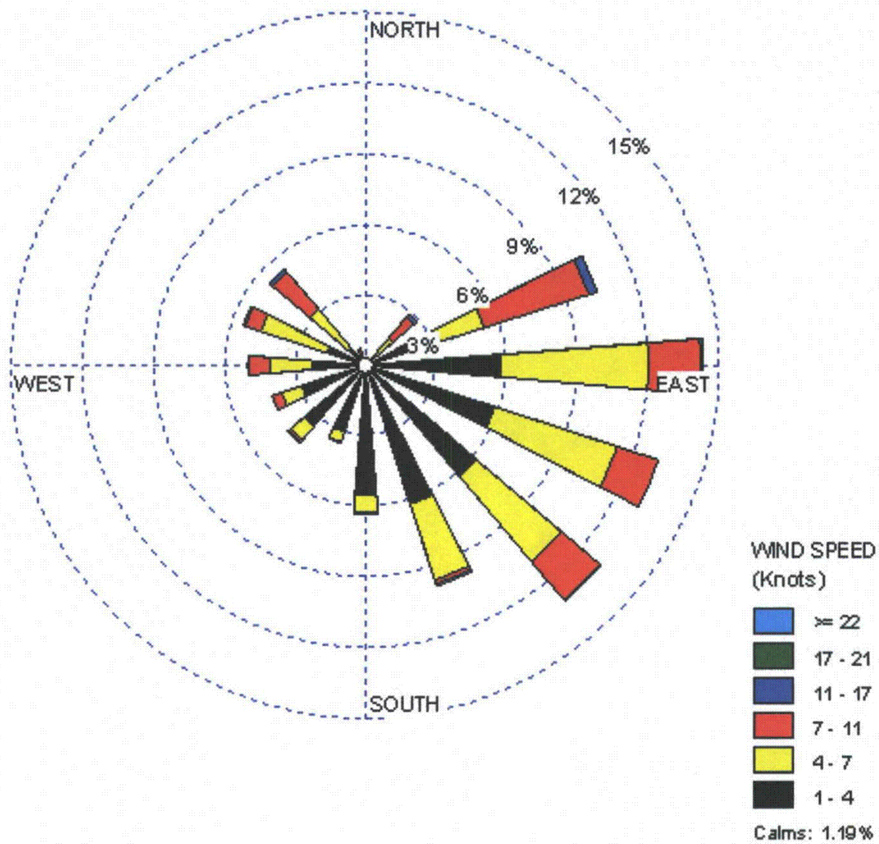
Station ID: 1 Run ID:
Year: 2007 2008
Date Range: Jun 1 - Aug 31
Time Range: 00:00 - 23:00

Frequency Distribution
(Normalized)

Speed Knots

Wind Direction	1 - 4	4 - 7	7 - 11	11 - 17	17 - 21	>= 22	Total
348.75 - 11.25	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
11.25 - 33.75	0.000456	0.001369	0.000912	0.000456	0.000000	0.000000	0.003193
33.75 - 56.25	0.006387	0.009124	0.011405	0.001825	0.000000	0.000000	0.028741
56.25 - 78.75	0.025091	0.027828	0.046533	0.003650	0.000000	0.000000	0.103102
78.75 - 101.25	0.057938	0.062044	0.021898	0.000912	0.000000	0.000000	0.142792
101.25 - 123.75	0.057938	0.054288	0.018248	0.000000	0.000000	0.000000	0.130474
123.75 - 146.25	0.062044	0.047445	0.020985	0.000000	0.000456	0.000000	0.130931
146.25 - 168.75	0.062044	0.033759	0.001825	0.000912	0.000000	0.000000	0.098540
168.75 - 191.25	0.055201	0.007299	0.000912	0.000000	0.000000	0.000000	0.063412
191.25 - 213.75	0.030109	0.004562	0.000456	0.000000	0.000000	0.000000	0.035128
213.75 - 236.25	0.034672	0.007299	0.000912	0.000456	0.000000	0.000000	0.043339
236.25 - 258.75	0.028741	0.009124	0.004106	0.000000	0.000000	0.000000	0.041971
258.75 - 281.25	0.022810	0.018248	0.008668	0.000456	0.000000	0.000000	0.050182
281.25 - 303.75	0.017336	0.029653	0.006843	0.000912	0.000000	0.000000	0.054745
303.75 - 326.25	0.010036	0.021442	0.020529	0.001825	0.000000	0.000000	0.053832
326.25 - 348.75	0.000912	0.003650	0.003193	0.000000	0.000000	0.000000	0.007755
Sub-Total:	0.471715	0.337135	0.167427	0.011405	0.000456	0.000000	0.955026
Calms:							0.011464
Missing/Incomplete:							0.033510
Total:							1.000000

Frequency of Calm Winds: 1.19%
Average Wind Speed: 4.66 Knots


NORTH
15%
12%
9%
6%
3%
WEST
EAST
SOUTH
WIND SPEED
(Knots)
>= 22
17 - 21
11 - 17
7 - 11
4 - 7
1 - 4
Calms: 1.19%

FALL

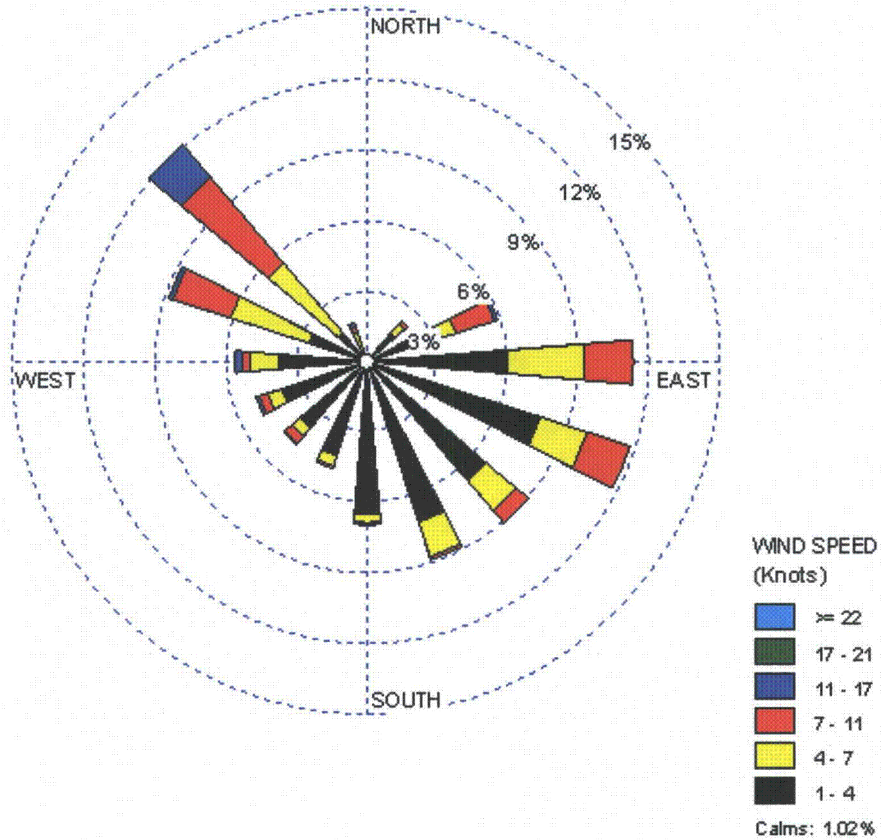
Station ID: 1 Run ID:
Year: 2007
Date Range: Sep 1 - Nov 30
Time Range: 00:00 - 23:00

Frequency Distribution
(Normalized)

Speed Knots

Wind Direction	1 - 4	4 - 7	7 - 11	11 - 17	17 - 21	>= 22	Total
348.75 - 11.25	0.000000	0.000464	0.000000	0.000000	0.000000	0.000000	0.000464
11.25 - 33.75	0.001855	0.001391	0.000000	0.000000	0.000000	0.000000	0.003247
33.75 - 56.25	0.016234	0.004638	0.001855	0.000000	0.000000	0.000000	0.022727
56.25 - 78.75	0.025046	0.014842	0.017161	0.001391	0.000000	0.000000	0.058442
78.75 - 101.25	0.060297	0.032468	0.020408	0.000000	0.000000	0.000000	0.113173
101.25 - 123.75	0.077458	0.020872	0.019017	0.000000	0.000000	0.000000	0.117347
123.75 - 146.25	0.066327	0.016698	0.006957	0.000000	0.000000	0.000000	0.089981
146.25 - 168.75	0.071892	0.015306	0.001391	0.000000	0.000000	0.000000	0.088590
168.75 - 191.25	0.064935	0.003711	0.000464	0.000464	0.000000	0.000000	0.069573
191.25 - 213.75	0.042208	0.004638	0.000928	0.000000	0.000000	0.000000	0.047774
213.75 - 236.25	0.037106	0.004638	0.004174	0.000464	0.000000	0.000000	0.046382
236.25 - 258.75	0.038033	0.006494	0.003711	0.001391	0.000000	0.000000	0.049629
258.75 - 281.25	0.037570	0.012059	0.003247	0.003247	0.000000	0.000000	0.056122
281.25 - 303.75	0.025974	0.034787	0.025510	0.001855	0.000000	0.000000	0.088126
303.75 - 326.25	0.016234	0.038497	0.048237	0.017625	0.000000	0.000000	0.120594
326.25 - 348.75	0.005566	0.007885	0.002319	0.001855	0.000000	0.000000	0.017625
Sub-Total:	0.586735	0.219388	0.155380	0.028293	0.000000	0.000000	0.956093
Calms:							0.009857
Missing/Incomplete:							0.034050
Total:							1.000000

Frequency of Calm Winds: 1.02%
Average Wind Speed: 4.25 Knots


NORTH
15%
12%
9%
6%
3%
WEST
EAST
SOUTH
WIND SPEED
(Knots)
>= 22
17 - 21
11 - 17
7 - 11
4 - 7
1 - 4
Calms: 1.02%

POWERTECH (USA) INC.

Response: TR RAI-2.5-8

TR Section 2.5.3.2.3

Wind Stability Class and Inversion Height

POWERTECH (USA) INC.

Response: TR RAI-2.5-9

TR Appendix 2.5-D; Table 4-1

POWERTECH (USA) INC.

Response: TR RAI-2.5-10

Additional Information on QA/QC for the AWDN and MET Station

Response to the U.S. NRC's Request for Additional Information
Dewey-Burdock Uranium Project-Source Material License Application
Technical Report Submitted August 11, 2009.

POWERTECH (USA) INC.

Response: TR RAI-2.5-11

Additional Information on Calibration Program for the AWDN and MET Station that is Consistent with Regulatory Guide 3.63

Geology and Seismology 2.6

TR RAI-2.6-1

NRC staff requests that the application clarify the presence or absence of the Newcastle Sandstone at the project site.

Response: TR RAI-2.6-1

In the **Site Stratigraphy Section** of the TR (**Section 2.6.2.2**) it is stated: *"At the project the Skull Creek Shale is directly overlain by the Mowry shale and is also considered to be part of the Upper Confining Unit. Normally, the Newcastle Sandstone is present between the Skull Creek Shale and the Mowry Shale, but is absent across the PAA".*

See TR_RAI Response Replacement Pages; Section 2.6-1 for additional information on the Newcastle Sandstone absence at the project site in TR Section 2.6.1.2 and TR Section 2.7.2.2.6.

TR RAI-2.6-2

Please further clarify where the Minnewaste Limestone may be present within the license area (i.e., using logs and other site data). If present, please provide a description of the unit and any anticipated affects the unit may have on the proposed operations.

Response: TR RAI-2.6-2

See TR_RAI Response Replacement Pages; Section 2.6-2 for clarification concerning the Minnewaste Limestone within TR Sections 2.6.1.2.

TR RAI-2.6-3

NRC staff requests a further description of the mineralogy and associated geochemistry of the mineralized zones consistent with NUREG 1569

Response: TR RAI-2.6-3

See TR_RAI-Response and Replacement Pages; Section 2.6-3 for replacement text TR Section 2.6.3

TR RAI-2.6-4

Please provide abandonment records for abandoned water wells within the license area. For abandoned water wells that cannot be documented with abandonment records, please clarify whether such wells that are located at or near wellfields may potentially impact the containment of process fluids

Response: TR RAI-2.6-4

See TR_RAI-Response and Replacement Pages; Section 2.6-4 for Replacement for insertion into TR Section 2.2.3.2.3.

Response: TR RAI-2.6-1

TR Section 2.7.2.2.6

Clarification of the Presence or Absence of the Newcastle Sandstone at the Project Site

Uranium ore bodies developed within channel sand deposits is not unique to the Dewey-Burdock Project. For the past thirty years, ISL mining for uranium has been successfully developed within fluvial channel sands in the States of Texas, Wyoming and Nebraska. A Structure Contour Map to the top of the Morrison for Burdock Wellfield I was developed for the ER RAI (RAI_ER Exhibit WR-6.3). This map is the equivalent to a contour map of the base of the Chilson aquifer. It shows an indication of some east-west scouring into the Morrison within the southern portion of the proposed wellfield. As shown on the cross section in Exhibit 2.7-1a, the thickest portion of the Lower Chilson sand channel generally coincides with this scouring. The lowermost mineralized unit (L1) is contained in this portion of the Lower Chilson.

2.7.2.2.6 *Graneros Group Confining Unit*

The Graneros Group is composed of several geologic formations including the Skull Creek, Newcastle, Mowry, and Belle Fourche. While from a regional stratigraphic perspective this is a true statement, the Newcastle Sandstone is absent across the PAA. In the review of thousands of drill holes across the PAA, it has been determined that the Newcastle Sandstone has been removed by erosion. In a single drill hole log, there is a possible 30-foot thick erosional remnant of Newcastle Sandstone, but it has no lateral continuity.

The group acts as a single unit that confines the Inyan Kara aquifer. In the PAA, the thickness of the Graneros is zero (0) at the outcrop but increases westward to more than 500 feet thick. A core sample was collected from the lower Skull Creek shale; results of geotechnical testing indicate that the shale has a very low vertical permeability of 1.5×10^{-5} ft/day.

2.7.2.2.7 *Alluvial Aquifers*

For the purpose of this report, the alluvial aquifers in the vicinity of the project site consist of any saturated alluvial material along Pass Creek, Beaver Creek, and the Cheyenne River. In general, the thickness of the alluvial material varies from zero (0) to 25 feet, although it can reach 40 feet. Based on water level measurements in five alluvial piezometers, the upper 10 to 15 feet of the alluvium is unsaturated. The alluvial material is typically unconfined although localized areas of confinement may exist where weathered shale and other material has slumped on top of the alluvium. Groundwater level data and groundwater samples were collected for laboratory analyses.

Response: TR RAI-2.6-2

TR Section 2.6.1.2

Clarification of the Presence or Absence of the Minnewaste Limestone at the Project Site

2.6.1.1 Regional Structure

The dominant structural feature in this region is the Black Hills Uplift. This uplift is of Laramide age (65 million years ago) and is an elongate northwest trending dome about 125 miles long and 60 miles wide. Igneous and metamorphic Precambrian-age rock are exposed in the core of the uplift and are surrounded by outward-dipping Paleozoic and Mesozoic rocks that form cuestas and hogbacks around the core of the uplift. Folds constitute the major structural features in the Black Hills. In early Cretaceous time minor deformation along concealed northeast trending structures of Precambrian age affected the courses of the northwest flowing streams and their tributaries, thereby influencing the location of the fluvial sandstone deposits of the Inyan Kara Group.

2.6.1.2 Regional Stratigraphy

The oldest rocks in the region are Precambrian metamorphic rocks and granites. These form the core of the Black Hills Uplift and are exposed at the surfaced of this structural feature. Overlying these crystalline rocks are 2000-3000 feet of Paleozoic sediments. This sedimentary sequence contains several regional aquifers, to include the Deadwood Formation of Cambrian age, the Mississippian Madison Limestone and the Pennsylvanian/Permian-age Minnelusa Formation.

Mesozoic sediments include the Triassic age Spearfish Formation and the Sundance, Unkpapa and Morrison Formations of Jurassic age. The Sundance Formation is a minor aquifer in the southern Black Hills region. A thick sequence of Cretaceous age sediments completes the Mesozoic section.

The Early Cretaceous sediments of the Inyan Kara Group consist of the Lakota Formation and the Fall River Formation and is a transitional unit, exhibiting a change from terrestrial to marine deposition. Regionally, the Lakota Formation contains a Chilson lower Member, a Minnewaste Limestone middle Member and an Fuson upper Member. The basal Lakota Formation (Chilson Member) is a fluvial sequence, which grades upward into marginal marine sediments as the Cretaceous Seaway inundated a stable land surface. Basal units of the Lakota Formation scour into clays of the underlying Morrison Formation and display the depositional nature of a large braided stream system, crossing a broad, flat coastal plain and flowing toward the northwest. Younger fluvial sand units of the Lakota become progressively thinner and less continuous and are separated by thin deposits of overbank and flood plain silts and clays.

The type section for the Minnewaste Limestone middle member is at the falls of the Cheyenne River, 25 miles southeast of the Dewey-Burdock project area and now under the Angostura Reservoir. In Gott's description of the Minnewaste Limestone in USGS Professional Paper 763, he describes this unit in the type locality as being a pure limestone, but grading out laterally to a sandy limestone and to a calcareous sandstone at its margins. He also states that it is discontinuous west and northwest of the type locality, toward the project area.

Where it does occur in the Flint Hill, Edgemont NE and Burdock quadrangles, it generally has a thickness of less than 10 feet. The Minnewaste Limestone crops out approximately 2½ miles east of the permit boundary in the northeastern portion of the Burdock quadrangle. Here, the Minnewaste consists of a series of thin, discontinuous lenticular beds of sandy limestone.

These thin, discontinuous lenticular beds do not extend into the Dewey-Burdock project. A review of all drill hole and geologic lithology logs show the Minnewaste Limestone was not deposited within the PAA.

At the top of the Lakota is the Fuson Member. The Fuson consists of shale with minor beds of fine grained sandstone and siltstone. The Fuson separates the underlying Lakota Formation from the overlying Fall River Formation. The Fall River consists of thick, widespread fluvial sands in the lower portion, grading to thinner, less continuous, marginal sands in the upper part. The Cretaceous Lakota and Fall River Formations are the hosts of the roll front uranium mineralization in the Black Hills region.

Following deposition of the Fall River, this region was covered by the North American Cretaceous Seaway, which resulted in the accumulation of vast thicknesses of marine sediments. From 3000-5000 feet of these marine sediments are represented by the Skull Creek Shale, Newcastle Sandstone (not present in project area), Mowry Shale, Belle Fourche Shale, Greenhorn Formation, Carlisle Shale, Niobrara Formation and Pierre Shale. In Late Cretaceous time, the modern Rocky Mountain Uplift began, forcing the retreat of the Cretaceous seaway.

Unconformably overlying the Cretaceous sediments in the Black Hills region is the Tertiary-age (Oligocene) tuffaceous White River Formation. This thick, tuffaceous sequence was the result of volcanic eruptions to the west and was rich in volcanic fragments. The White River sediments have primarily been removed by erosion and can be found only as erosional remnants. This unit is thought to be the source of the uranium deposits found in the Black Hills region and the Powder River Basin of Wyoming.

The most recent sediments in the region are Quaternary-age deposits consisting of local material derived as a result of post-Laramide-uplift erosion. Recent deposits include alluvium and floodplain terrace deposits.

Refer back to Figure 2.2-3 for a stratigraphic column of the Black Hills.

2.6.2 Site Geology

The site geology is shown in Figure 2.6-2. The Fall River Formation outcrops across the eastern part of the project and the Skull Creek Shale and Mowry Shale outcrops across the western part of the project. The formations dip west and southwest at 2 to 6 degrees.

The geology of the project was developed through the interpretation of data gathered from thousands of exploration drill holes. For each drill hole there was a suite of down-hole electric logs run to characterize natural radioactivity and the lithology (rock type) of the sediments in the subsurface. Resistivity and Self Potential provide the rock types encountered in the subsurface (sandstone, siltstone, shale, etc.). This is further enhanced by a geologist's description of the drill cuttings. Plate 2.6-1 is an example of a "type log" from the project.

POWERTECH (USA) INC.

Response: TR RAI-2.6-3

TR Section 2.6.3

Additional Information Concerning Ore Mineralogy and Geochemistry

present between the Skull Creek Shale and the Mowry Shale, but is absent across the PAA. The Mowry Shale consists of light gray marine shale with minor amounts of siltstone, fine grained sandstone, and a few thin beds of bentonite. Dark-gray to purple and black iron and manganese concretionary zones are common within the shale. The combined Skull Creek Shale – Mowry Shale reaches a thickness of 400 feet in the western part of the project. Plate 2.6-9 is an isopach map showing the combined thickness of these two shale units. In the northeastern portion of the PAA, these units outcrop and have been eroded.

Terrace Deposits - Along the sides of drainages are relatively flat terrace deposits representing floodplains and former levels of streams. The terraces are primarily overbank deposits of clay and silt with gravel beds. Gravel deposits consist of boulders and pebbles of chert, sandstone, and limestone.

Alluvium - The most recent sedimentary units deposited within the PAA are the Quaternary age alluvium deposits. Alluvium is present in the major drainages and their tributaries. The alluvium consists of silt, clay sand and gravel.

Four site cross sections, based on exploration logs, were developed along each orebody to illustrate the relationship between mineralized Inyan Kara sands and their confining units. Plate 2.6-10 shows the locations of the four cross sections. The cross sections were generated in the MVS model and were hung on the elevation of each drill hole. Traces of electric logs of exploration holes were overlain on these cross sections to illustrate the data sources used in the preparation of these sections. Cross sections A-A'', F-F', H-H''', and J-J' show the project stratigraphy and mineralization across the PAA and are presented in Plates 2.6-11, 2.6-12, 2.6-13, and 2.6-14. The Skull Creek Shale thickens from the east to the west. The Fall River Formation is continuous across the area and dips to the west. The Fuson Member of the Lakota thickens and thins across the area. The Chilson Member of the Lakota is continuous across the area and thickens and thins due to channeling. The uranium mineralization in the Fall River occurs in the lower sandstone unit. The mineralized sands in the Chilson Member of the Lakota occur within individual sandstone lenses or channels.

2.6.3 Ore Mineralogy and Geochemistry

Uranium deposits within the project are classic, sandstone, roll-front type deposits, similar to those in Wyoming and Texas. These type deposits are usually "C" shaped in cross section, with the concave side of the deposit extending up-dip, toward the outcrop. Roll-front deposits are a few tens of feet-to-100 or more-feet wide and often thousands of feet long. It is generally believed these epigenetic uranium deposits are the result of uranium minerals leached from the surface environment, transported down-gradient by oxygenated groundwater and precipitated in the subsurface upon encountering a reducing environment at depth. These roll-front deposits are centered at and follow the interface of naturally-occurring chemical boundaries between oxidized and reduced sands (See Figure 2.6-7). Within the PAA, roll front deposits occur at depths of less than 100 feet in the outcrop area of Fall River Formation and at depths of up to 800 feet in the Lakota in the northwest part of the project. The average thickness of this mineralization has been calculated to be 6 feet and the average grade is 0.21 percent U_3O_8.

There is a geochemical "footprint" associated with these uranium roll-front systems, resulting in 1) a reduced zone 2) an oxidized zone and 3) an ore zone. The following is a geological and geochemical description of each of these zones for uranium deposits within the Dewey-Burdock Project. Information included in this description was taken from a 1971 petrographic study of core from the Dewey Area by Homestake-Wyoming Partners, utilizing microscopic, thin section, polished section, x-ray powder diffraction and spectrographic analyses (Honea, 1971).

Reduced Zone – This zone represents the original character of the Inyan Kara sediments, unaffected by any mineralizing events. Today, it is the unaltered portion of the system, ahead of or down-gradient of the roll front. Reduced sandstones are grey in color, pyritic and/or carbonaceous. Organic material consists of carbonized wood fragments and interstitial humates. Pyrite is abundant within the host sandstones and present as very small cubic crystal or as very fine grained aggregates. Marcasite is also present as nodular masses in the sandstones. This disseminated pyrite, resulted from replacement of original iron (magnetite or similar minerals) and organic material. This early-stage pyrite precipitation contains trace amounts of transition metals (Cu, Ni, Zn, Mo and Se) and resulted from either biogenic (bacterial) or inorganic reduction of groundwater sulfate. Plagioclase and potassium feldspar clasts are fresh and, with the exception of localized areas of calcite cementing, calcite is sparce - averaging only 0.15%. A heavy mineral suite (ranging from trace to 3%) of tourmaline, ilmenite, apatite, zircon and garnet is typical of those found in mature, siliceous sandstones.

Oxidized Zone – This portion of the system, behind the roll front, is characterized by the presence of iron oxides - resulting in a brown, pink, orange or red staining of host sandstones. The oxidized zone maps the progression of the down-gradient movement of mineralizing solutions through the host sandstones. Within the oxidized zone, original iron has been altered and is present as hematite or goethite as grain coatings, clastic particles or as pseudomorphs after original pyrite. Goethite is considered to be metastable and is found near the oxidation/reduction boundary, while the more stable hematite is found greater distances up-gradient from the roll front. The heavy mineral leucoxene – a white titanium oxide, is also present as a pseudomorph of ilmenite. All organic material has been destroyed in the oxidized zone, quartz particles will show solution or etching effects and feldspars have been replaced with clays.

In the oxidation process of the original pyrite, it is believed the transition metals (Cu, Ni, Zn, Mo and Se) were liberated and incorporated into the mineralizing solution. This solution was considered to be slightly alkaline and initially having a positive oxidation potential. Uranium was in solution as the anionic uranyl dicarbonate complex. Other metals associated with uranium were also carried in anionic complexes. Within the PAA, the oxidized zone in Inyan Kara sands has been mapped over a lateral distance of 15 miles and found to extend up to 4-5 miles down-dip from the outcrop.

<u>Ore Zone</u> – This portion of the system is located at the oxidation/reduction boundary where metals were precipitated when mineralizing solutions encountered a steep Eh gradient and a strong negative oxidation potential. Sandstones in this zone are greenish-black, black, or dark grey in color. The primary uranium minerals are uraninite and coffinite, which occur interstitial to sand grains and as intergrowths with montroseite (VO(OH)) and pyrite. Other vanadium minerals (Haggite and Doloresite) are found adjacent to the uranium mineralization and extending up to 500 feet into the oxidized portion of the system. Overall, the V:U ratios can be as high as 1.5:1. The high concentrations of uranium and vanadium within the ore zone indicate the original source of these metals were external to the Inyan Kara sediments.

Transition metals were also precipitated at or adjacent to the oxidation/reduction boundary. Native arsenic and selenium are found adjacent to the uranium, in the oxidized portion of the front - filling pore spaces between quartz grains. Molybdenum is found as jordisite adjacent to the uranium on the reduced portion of the front. The relatively low concentrations of transition metals indicate their source could have been internal to the Inyan Kara sediments.

Late stage deposition of calcite and pyrite also appear to be part of the ore-forming process. Filling of pore spaces by nodular and concretionary calcite is found with the uranium mineralization and extending out into the reduced portion of the front. It is believed that uranium was transported as a uranyl dicarbonate complex and carbonate deposition took place along with the precipitation of uranium. Late stage, coarse grained, nodular or concretionary pyrite is also found associated with uranium ore and adjacent to the uranium in the reduced portion of the front.

2.6.4 Historic Uranium Exploration Activities

Uranium was first discovered in the Edgemont District in 1952 by professors from the SDSMT. They mined about 500 pounds of ore and hauled it to Grand Junction, Colorado. The Atomic Energy Commission (AEC) announcement of a new district at Edgemont led to a boom of stacking, mining, and dealing in the summer of 1952. By 1953 the AEC had built a buying station in Edgemont. In July 1956 a 250-ton per-day mill went on stream and soon expanded to a 500-ton-per-day. In 1960 a vanadium circuit was added. Production from the Edgemont District (open pits in the Fall River), some mines in the Powder River basin and several mines in the Northern Black Hills continued until 1972. Susquehanna Western Inc. (SWI) bought the Edgemont mill and took control of the mines in the Edgemont District. Until the late 1960's early 1970's they were the only company active in the Edgemont District.

In 1967, Homestake Mining Company began exploration in the Dewey area. In 1974, Wyoming Mineral Corporation (Westinghouse) acquired the Dewey properties from Homestake. In 1974, TVA bought out the mill and mines from SWI. The mill was shut down, but exploration continued. Besides WMC and TVA, other companies exploring in the district were Union Carbide, Federal Resources, and Kerr McGee. TVA acquired the Dewey Project from WMC in 1978 and continued exploration until 1986. In total, over 4000 exploration drill holes were completed on this project.

In 1981 TVA completed a mine feasibility study on the project deposits. A DES was prepared by TVA to address the potential impacts of a proposed underground mine in the PAA, but the NEPA process was never completed by TVA. Due to falling uranium prices the project leases were allowed to expire. In 1994 EFN acquired the mineral interests within the PAA. Their intention was to mine the uranium deposits by ISL. EFN did no additional exploration drilling on the project. In 2000 the leases were dropped.

In 2005, Powertech (USA) acquired the property, consisting of approximately 10,580 acres. Since the spring of 2007, Powertech (USA) has drilled approximately 115 exploration holes, including 20 monitoring wells on the project. Both the historic and recent drill holes have helped to generate the geologic mode and delineate the extent of the mineralized sands. Figure 2.6-3 is a map showing the location of all known drill holes. Appendix 2.6-A includes a table summarizing all historical exploration drilling. Attachment 2.6.4 presents the plugging and

POWERTECH (USA) INC.

Response: TR RAI-2.6-4

TR Section 2.2.3.2.3 and TR Section 2.6.4

Historical and Recent Uranium Exploration Plugging Records and State Released Surety/Liability Documentation

summary of the results and methods for the groundwater quality monitoring program, as well as the historical TVA data, is presented in Section 2.7 and Appendix 2.7 -J.

2.2.3.2.3 *Study Area Groundwater Use*

In the PAA, the Fall River and Lakota Formations, together forming the Inyan Kara aquifer, are the principal sources of water. An inventory of private water-supply wells within an approximate 2 km radius of the proposed permit boundary was conducted in June 2007, during which about 80 wells were located (see Appendix 2.2-A). Most wells within 2 km of the site serve as water supply for livestock (26), although some wells are used for domestic (10) or other purposes (47) including piezometers, mine dewatering wells, and garden watering.

Wells within 2 km of the site include 24 wells known to obtain water from the Fall River Formation, with 12 of these wells being flowing artesian wells. Based on measurements from flowing wells and estimates from others, an estimated 15 gpm is currently being consumed from the Fall River. Within this same 2 km radius, there are 39 wells currently obtaining water from the Lakota Formation, 14 of which are flowing artesian. The estimated flow from these Lakota wells is 46 gpm. Additionally, 10 wells are completed within an unknown formation of the Inyan Kara aquifer (Fall River, Lakota, or both). The total estimated flow from the Inyan Kara (including wells screened within the Fall River, Lakota, or both) within 2 km of the site is approximately 70 gpm. There are six wells completed in the Sundance/Unkpapa, with four that are flowing. Within 2 km, an additional eight wells are completed into an unknown aquifer. Wells within the project boundary that are currently in use are shown on Figure 2.2-4. Twenty-six wells in the vicinity of the project site were deemed abandoned because of the condition and inactivity of the well; these wells termed abandoned are not considered properly plugged and abandoned.

Groundwater well abandonment reports are not available for wells identified as abandoned or non-verified in Figure 2 and Figure 3 of Appendix 2.2-A. However during development of a well field, and prior to its operation, aquifer pumping tests will be conducted specifically designed to detect faulty abandonment of exploration boreholes or monitoring wells if they exist. This is done by designing a detailed three-dimensional network of observation wells that are screened within the aquifer underlying the mineralized zone, screened within all aquifers that overly the mineralized zone, and screened within the mineralized zone itself. If faulty boreholes exist, their presence and location will be detected by the aquifer pumping tests. Faulty boreholes will be properly abandoned prior to mining operations.

Additionally, a bleed stream within the mineralized zone will always be maintained. Therefore there will always be a pressure gradient resulting in the flow of fluids toward the production wells. During production and restoration while the bleed stream is in place, there is no potential for mining solutions to migrate into other aquifers via faulty boreholes.

Non-verified wells are descscribed in Appendix 2.2-A. The non-verified wells are wells that were not able to be located upon field investigations. If any wells are discovered within the Proposed Action Area and are found to pose a threat to human health or the environment prior to site closure, Powertech will plug and abandon the wells based on procedures described in section 6.1.8 of this document.

Well completion reports and other related data are found in Appendix 2.2-B.

pyrite is also found associated with uranium ore and adjacent to the uranium in the reduced portion of the front.

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Uranium was first discovered in the Edgemont District in 1952 by professors from the SDSMT. They mined about 500 pounds of ore and hauled it to Grand Junction, Colorado. The Atomic Energy Commission (AEC) announcement of a new district at Edgemont led to a boom of stacking, mining, and dealing in the summer of 1952. By 1953 the AEC had built a buying station in Edgemont. In July 1956 a 250-ton per-day mill went on stream and soon expanded to a 500-ton-per-day. In 1960 a vanadium circuit was added. Production from the Edgemont District (open pits in the Fall River), some mines in the Powder River basin and several mines in the Northern Black Hills continued until 1972. Susquehanna Western Inc. (SWI) bought the Edgemont mill and took control of the mines in the Edgemont District. Until the late 1960's early 1970's they were the only company active in the Edgemont District.

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Minutes of the
Board of Minerals and Environment Meeting
Oahe C - Iron Horse Inn
125 West Pleasant Drive
Pierre, South Dakota

1:00 p.m.
May 16 & 17, 1990

CALL TO ORDER AND ROLL CALL: Chairman Richard C. Sweetman called the meeting to order. Secretary Grace Petersen called the roll noting that a quorum was present.

BOARD MEMBERS PRESENT: Richard C. Sweetman, Grace Petersen, Lee McCahren, Vivian Pappel, Linda Hilde, Wilbert Blumhardt, William Taylor, and Charles Kearns.

BOARD MEMBER ABSENT: John Fitzgerald.

OTHERS PRESENT: See attached "Sign-In Sheet."

APPROVAL OF MINUTES FROM APRIL 19, 1990 MEETING: Motion by Taylor, seconded by Pappel, to approve the minutes of April 19, 1990, as mailed. Motion carried.

SURFACE MINING ISSUES: Tom Durkin, Exploration and Mining Program, was administered the oath by William Taylor, and testified regarding surety/reclamation liability releases, and a temporary plugging request. (See attached matrix sheet.)

Regarding the issue of Silver King Mines, Edgemont, SD, EX-5, Mr. Durkin said the request for release of $56,250 was heard before the Board on March 15, 1990. On March 28, 1990, Bud Hollenbeck submitted a petition contesting release of the $56,250 bond, until an inspection could be provided. Mr. Durkin said an inspection was conducted and no positive evidence was found indicating surface damage (alkali) on Mr. Hollenbeck's property resulting from TVA drilling. On May 15, 1990, the Department received a copy of a signed settlement agreement between Mr. Hollenbeck and TVA, conditioned upon release of the EX-5 reclamation bond by the Board of Minerals and Environment.

Motion by Blumhardt, seconded by Kearns, to approve release of the bond in the amount of $56,250 for Silver King Mines, Edgemont, SD, EX-5. Motion carried.

Department of Water and Natural Resources
Exploration and Mining Program
Joe Foss Building, Room 223
523 East Capitol
Pierre, South Dakota 57501
Telephone: (605) 773-4201

RELEASE OF SURETY AND/OR LIABILITY THEREUNDER

Pursuant to SDCL 45-6B-24, 25, 57; 45-6C-23; and 45-6D-29

Operator's Name: Silver King Mines, Inc.

Permit Number: EX-5

Surety Amount or Portion Thereof to be Released: $56,250

Bond/CD Number: [redacted]

Surety Company: Safeco Insurance Company of America

Activity Type:

Mining/Milling ____

Mineral Exploration ____

Uranium Exploration X

A) I hereby request release of surety and/or liability under the above-referenced permit, and affirm the operation to be in full compliance with the terms and conditions of the permit and all laws pending thereunder.

Warren L. Anderson ____ 3/15/90 ____
Operator's Signature — Date

B) I hereby certify that to the best of my knowledge the above-referenced operator is in full compliance with the terms and conditions of the permit and all laws pending thereunder, with the exception of hole #PT-181 located within the Burdock Alkali Mitigation Area. PT-181 could not be located for redrilling or replugging. I recommend the release of surety and/or liability under the above-referenced permit.

Thomas V. Durkin ____ 3/15/90 ____
Inspector's Signature — Date

C) The South Dakota Board of Minerals and Environment finds the operator to be in full compliance with SDCL 45-6B, 45-6C, and 45-6D and hereby orders the release of the surety or portion thereof, and/or liability, as requested by the operator.

Richard P. Sweetman ____ May 16, 1990 ____
Chairman, Board of Minerals & Environment — Date

May 17, 1990

Mr. Chuck Wolff
Tennessee Valley Authority
Uranium Operations Manager's Office
P.O. Box 2957
Casper, WY 82602

RE: South Dakota Exploration Permit EX-5

Dear Mr. Wolff:

Enclosed you will find a copy of the official actions of the South Dakota Board of Minerals and Environment whereby Safeco Insurance Company of America, surety number [redacted], in the amount of $56,250 has been released.

These actions relieve Safeco Insurance Company and Silver King Mines of any further liability as related to permit EX-5.

A copy of these actions will be forwarded to your bonding agency.

Sincerely,

Michael D. Cepak
Program Chief
Exploration and Mining Program
Telephone: (605) 773-4201

Enclosure: Copy of Bond Release

SOUTH Dakota
Department of Agriculture
DIVISION OF CONSERVATION
Anderson Building, Room 322 • Pierre, South Dakota 57501
Phone 605/ 773-3258
Surface Mining Program: 773-4201

April 3, 1979

Mr. Roger M. Caywood
Resident Manager
Silver King Mines, Inc.
Post Office Box 49
Edgemont, SD 57735

Dear Roger:

This letter is to acknowledge receipt of your letter of March 16, 1979 requesting a modification of the hole plugging techniques as outlined in your exploration permit reclamation plan. This requested modification is acceptable under the rules.

As the plugging technique which you outlined in your permit application is more stringent than the minimum standard specified in the rules, you may utilize that method whenever necessary.

Sincerely yours,

Myron C Lindquist

Myron C. Lindquist
Program Director
DIVISION OF CONSERVATION

MCL:jc

Burdock Area Test Holes

3. A brief history of the Burdock test holes is as follows: On June 30, 1986 we submitted our closing report to the DWNR and made reference to addressing the concern expressed by Peterson and Son, Inc. regarding the seepage occuring in the "alkali area" of their property. On September 12, 1986 we submitted to you our investigation of the problem and our proposed plan of mitigation. The TVA contracted with a Newcastle, Wyoming drilling company which carried out the mitigation plan. That work was observed by DWNR inspectors and reported in inspection reports of October 16, 1987 (Tom Durkin) and November 13, 1987 (Dale Snyder).

4. As was noted in those inspection reports, extensive mitigation was conducted at the Burdock site including redrilling of the test holes and replugging them with cement. Tom Durkin's report states that "TVA is very definitely making an earnest attempt to rectify the problem. From field observance it is my opinion that it may be impossible to have every hole redrilled and replugged to depth."

5. To date, TVA has already expended a substantial amount of time and money in trying to rectify the seepage problem. In addition, we have consulted with our attorney, Marv Truhe, as to the proper course of action under these circumstances. Tom Durkin's inspection report states that if reclamation proves unsuccessful then an alternative may be the working out of suitable compensation to the landowner. Dale Snyder's subsequent report also discusses the extensive redrilling efforts and mentions the possible reasons for the continuing water leakage including joints and fractures in the soil, lateral underground infiltration water into the area, or test holes which were not properly plugged. As has been previously pointed out, there are "pre-TVA' exploration drill holes in this area that were left by prior mineral lessees before the State's plugging standards were enacted. Dale Snyder's report also mentions the option of landowner compensation.

6. TVA is now convinced that further redrilling efforts would not be successful in completely eliminating the seepage and has therefore adopted the alternate course of action suggested in the DWNR reports, namely mitigation of the site and compensation to the landowner. We continued negotiations with the landowner this year and on July 12, 1989 reached an agreement whereby a berm was constructed and TVA paid the landowner $7372.00 in full settlement for all damages which had occurred or which may occur as a result of the seepage. Enclosed is a copy of the TVA letter to Peterson and Son, Inc. dated July 12, 1989 (a copy of which was also sent on that date to Tom Durkin). Enclosed also is a copy of the Memorandum of Damage Settlement in which TVA has also agreed to monitor the area for a period of five years and also to maintain the berm that controls the seepage.

Pre-Permit Test Hole

7. As you know, an old test hole (not in the alkali area) which was drilled on the Peterson property several years prior to the issuance of EX-5 is now apparently seeping. That test hole was drilled in March of 1976 and is identified as PT-31. We are currently working with Mr. Peterson to mitigate the seepage and/or compensate him for any potential damages. As indicated, however, the reclamation of this test hole is unrelated to the EX-5 bond release matter.

In conclusion, we feel that whatever seepage that still may be occurring in that area is not as a result of TVA's exploration drill holes. Regardless of whether the seepage is from pre-TVA test holes or from other sources, however, TVA has done everything possible regarding redrilling and replugging efforts, has paid the landowner for all damages sustained, and has received the landowner's approval of the reclamation, including berm construction and maintenance, and ongoing monitoring for a five-year period. Accordingly, we would request your recommendation of approval for the release of the bond at this time. If you still have additional questions following your review of this information, we would be available to meet with you in Pierre to discuss this further.

I also want to advise you that as of December 31, 1989, I will no longer be working for SKM. TVA's decommissioning project in Edgemont is now complete. The SKM/TVA contract for the project will terminate and the Edgemont office of SKM will close at the end of the year. Any further contacts with SKM regarding EX-5 will be handled by Gary Cummings. Gary was formerly general manager for SKM in Edgemont and was the general superintendent in charge of the EX-5 drilling program. He was also involved in the developments outlined in paragraph 2 above. Gary's address and phone number are as follows: Alta Gold Co., P.O. Box 382, Ruth, Nevada, 89319, (702) 289-4470. In addition, TVA has requested that all future correspondence from the State to SKM regarding this matter be copied to Chuck Wolff, Manager of Uranium Operations, Tennessee Valley Authority, P.O. Box 2957, Casper, Wyoming, 82602. Thank you for your consideration and we will wait to hear from you.

Sincerely,

Kurtis T Barker

Kurtis T. Barker
General Manager
Wyoming/South Dakota Projects

MDT/dlg
KTB; 171,89

cc: T. L. Hayslett
D. H. Marks
C. E. Wolff
H. D. Yoder
M. R. P. Central Files
M. D. Truhe
G. W. Cummings
S. R. Havenstrite

Silver King Mines, Inc.
P. O. Box 49
Edgemont, South Dakota 57735

December 21, 1989

RECEIVED
Div. of Nuclear Fuel

DEC 27 1989

Uranium Operations
Casper, Wyoming

CFW received own copy

Mr. Robert D. Townsend, Program Chief
Exploration and Mining Program
South Dakota Department of Water and
Natural Resources
Joe Foss Building
523 E. Capitol
Pierre, South Dakota 57501

RE: EX-5 BOND RELEASE

Dear Mr. Townsend:

I am writing as a follow up to my October 13, 1989 letter to you regarding SKM's request for a bond release on EX-5. We are providing the following additional information that was requested by Tom Durkin in his telephone conversation with Doug Yoder of TVA.

1. As previously reported, to the best of our knowledge the 36 holes mentioned in my October 13, 1989 letter have been properly plugged with low shrink, high sulfate resistant cement grout from the bottom of the hole to within three feet of the surface. The upper three feet of the holes were filled with suitable soil materials.

2. In addition, to the best of our knowledge <u>all</u> of the TVA test holes, whether drilled prior to or after issuance of the EX-5 in 1979, were properly plugged according to the applicable state regulations at the time of drilling. In fact, during the course of the drilling program your department asked SKM to work with the Department to develop and upgrade the State plugging standards. As a result of that combined effort, during which the Department was actively involved in working with SKM and monitoring the drilling program, the State plugging standards changed and evolved. Once again, however, at any given time the hole plugging was conducted in full compliance with the then existing State requirements.

POWERTECH (USA) Inc.
Dewey-Burdock Uranium Exploration Permit No. 404
Table of Exploration Drill Holes by ID, Location, and Abandonment Method

No.	Hole Name[1]	East[2]	North[2]	Elevation	1/4 1/4 Section	Depth to Inyan Kara Aquifer[3]	Top of Inyan Kara Aquifer[3]	Flowing at Surface	Abandonment Method[4]	Comments/Problems[5]
1	DB07-1-1	1039398	433964	3822	SW of SW of 1-7S-1E	NA	NA	No	Gel	Loss of circulation
2	DB07-1-2	1039353	433841	3817	SW of SW of 1-7S-1E	31	3786	No	Gel	Loss of circulation
3	DB07-1-3	1039274	433796	3814	SW of SW of 1-7S-1E	NA	NA	No	Gel	Loss of circulation
4	DB07-1-4	1038964	433190	3802	SW of SW of 1-7S-1E	33	3769	No	Gel	No
5	DB07-1-5	1038849	433280	3806	SW of SW of 1-7S-1E	NA	NA	No	Gel	Loss of circulation
6	DB08-1-6	1043742	433344	3818	SE of SE of 1-7S-1E	NA	NA	No	Well	No
7	DB08-1-7	1042271	434137	3913	SW of SE of 1-7S-1E	NA	NA	No	Well	Loss of circulation
8	DB08-2-1	1035919	436952	3711	SE of NW of 2-7S-1E	74	3637	No	Well	No
9	DB07-3-1	1031018	434086	3642	SW of SE of 3-7S-1E	292	3350	No	Gel	No
10	DB07-3-2	1031080	434187	3643	SW of SE of 3-7S-1E	284	3359	No	Gel	No
11	DB07-3-3	1031113	434264	3644	SW of SE of 3-7S-1E	288	3356	No	Gel	No
12	DB07-3-4	1031478	435151	3650	NW of SE of 3-7S-1E	262	3388	No	Gel	No
13	DB08-3-5	1031715	434959	3648	NW of SE of 3-7S-1E	250	3398	No	Gel	No
14	DB08-3-6	1031701	434958	3650	NW of SE of 3-7S-1E	255	3395	No	Gel	Caving from surface gravel
15	DB08-3-7	1031629	435018	3649	NW of SE of 3-7S-1E	258	3391	No	Gel	Caving from surface gravel
16	DB08-3-8	1031577	435090	3650	NW of SE of 3-7S-1E	263	3387	No	Gel	Caving from surface gravel
17	DB08-5-1	1020684	437010	3629	NW of NE of 5-7S-1E	455	3174	No	Well	No
18	DB07-10-1	1031778	428440	3640	SW of SE of 10-7S-1E	223	3417	No	Gel	No
19	DB07-10-2	1031772	428534	3639	SW of SE of 10-7S-1E	221	3418	No	Gel	No
20	DB07-10-3	1031777	428617	3639	SW of SE of 10-7S-1E	220	3419	No	Gel	No
21	DB07-10-4	1032055	430990	3646	SE of NE of 10-7S-1E	NA	NA	No	Gel	No
22	DB07-10-5	1031788	428852	3636	SW of SE of 10-7S-1E	217	3419	Yes	Cement	Stuck pipe, lost 140'
23	DB07-10-6	1031964	430913	3647	SW of NE of 10-7S-1E	213	3434	No	Gel	No
24	DB07-10-7	1031880	430912	3651	SW of NE of 10-7S-1E	218	3433	No	Gel	Heavy sluffing
25	DB07-10-8	1031804	430908	3655	SW of NE of 10-7S-1E	NA	NA	No	Gel	Heavy sluffing
26	DB07-10-9	1032767	430777	3663	SE of NE of 10-7S-1E	196	3467	No	Gel	No
27	DB07-10-10	1032776	430909	3660	SE of NE of 10-7S-1E	197	3463	No	Gel	No
28	DB07-10-11	1032784	431037	3661	SE of NE of 10-7S-1E	197	3464	No	Gel	No
29	DB07-10-12	1031491	432154	3635	NW of NE of 10-7S-E	NA	NA	No	Gel	Loss of circulation
30	DB07-10-13	1031590	432147	3635	NW of NE of 10-7S-E	265	3370	No	Gel	No
31	DB07-10-14	1031679	432149	3636	NW of NE of 10-7S-E	263	3373	No	Gel	Loss of circulation
32	DB07-10-15	1031786	432142	3638	NW of NE of 10-7S-E	259	3379	No	Gel	No
33	DB07-10-17	1031438	432686	3634	NW of NE of 10-7S-E	272	3362	No	Gel	No
34	DB07-10-19	1031532	432687	3635	NW of NE of 10-7S-E	267	3368	No	Gel	No
35	DB07-10-20	1031584	432680	3635	NW of NE of 10-7S-E	264	3371	No	Gel	No
36	DB07-10-21	1031633	432681	3636	NW of NE of 10-7S-E	264	3372	No	Gel	No
37	DB07-10-22	1031683	432678	3636	NW of NE of 10-7S-E	264	3372	No	Gel	No

No.	Hole Name[1]	East[2]	North[2]	Elevation	1/4 1/4 Section	Depth to Inyan Kara Aquifer[3]	Top of Inyan Kara Aquifer[3]	Flowing at Surface	Abandonment Method[4]	Comments/Problems
38	DB07-10-23	1031936	429714	3638	NW of SE of 10-7S-1E	NA	NA	No	Gel	No
39	DB07-10-24	1031836	429768	3660	NW of SE of 10-7S-1E	233	3427	No	Gel	No
40	DB07-10-25	1031760	429814	3661	NW of SE of 10-7S-1E	237	3424	No	Gel	No
41	DB07-10-26	1031665	429866	3666	NW of SE of 10-7S-1E	245	3421	No	Gel	No
42	DB07-10-27	1032769	430843	3659	SE of NE of 10-7S-1E	195	3464	No	Gel	No
43	DB07-10-28	1032052	430072	3669	NE of SE of 10-7S-1E	229	3440	No	Gel	No
44	DB07-10-40	1031921	432884	3642	NW of NE of 10-7S-E	267	3375	No	Gel	No
45	DB07-10-41	1031966	432961	3644	NW of NE of 10-7S-E	268	3376	No	Gel	No
46	DB07-10-42	1032004	433026	3646	NW of NE of 10-7S-E	263	3383	No	Gel	No
47	DB07-10-43	1032044	433094	3644	NW of NE of 10-7S-E	265	3379	No	Gel	No
48	DB07-11-1	1035258	431257	3728	SE of NW of 11-7S-1E	150	3578	No	Gel	No
49	DB07-11-2	1035138	431266	3718	SE of NW of 11-7S-1E	146	3572	No	Well	No
50	DB07-11-3	1035023	431277	3715	SE of NW of 11-7S-1E	143	3572	No	Gel	Loss of circulation
51	DB07-11-4C	1035075	429985	3701	NE of SW of 11-7S-1E	125	3576	No	Gel	No
52	DB07-11-5	1034857	431900	3703	SE of NW of 11-7S-1E	166	3537	No	Gel	No
53	DB07-11-6	1034982	431895	3707	SE of NW of 11-7S-1E	159	3548	No	Gel	No
54	DB07-11-7	1035117	431891	3712	SE of NW of 11-7S-1E	157	3555	No	Gel	No
55	DB07-11-8	1035612	432705	3731	NE of NW of 11-7S-1E	178	3553	No	Gel	No
56	DB07-11-9	1035718	432696	3726	NE of NW of 11-7S-1E	166	3560	No	Gel	No
57	DB07-11-10	1035836	432693	3723	NE of NW of 11-7S-1E	161	3562	No	Gel	No
58	DB07-11-11C	1035077	429976	3701	NE of SW of 11-7S-1E	127	3574	No	Well	No
59	DB07-11-12	1037709	430209	3728	NE of SE of 11-7S-1E	27	3701	No	Gel	No
60	DB07-11-13	1037716	430384	3742	NE of SE of 11-7S-1E	48	3694	No	Gel	No
61	DB07-11-14C	1035190	429753	3688	NE of SW of 11-7S-1E	102	3586	No	Well	No
62	DB07-11-15	1034969	429757	3691	NE of SW of 11-7S-1E	125	3566	No	Well	No
63	DB07-11-16C	1035126	429971	3698	NE of SW of 11-7S-1E	114	3584	No	Well, Cement	Collapsed casing, abandon
64	DB08-11-17	1035038	429982	3702	NE of SW of 11-7S-1E	123	3579	No	Well	No
65	DB08-11-18	1035113	429979	3700	NE of SW of 11-7S-1E	116	3584	Yes	Well	No
66	DB08-11-19	1035074	430021	3702	NE of SW of 11-7S-1E	125	3577	No	Well	No
67	DB07-11-28	1037995	429879	3718	NE of SE of 11-7S-1E	NA	NA	No	Gel	No
68	DB07-11-29	1038096	429920	3719	NE of SE of 11-7S-1E	NA	NA	No	Gel	No
69	DB07-11-30	1038189	429955	3725	NE of SE of 11-7S-1E	NA	NA	No	Gel	No
70	DB07-11-31	1038289	429994	3731	NE of SE of 11-7S-1E	25	3706	No	Gel	No
71	DB07-12-3	1041096	431847	3767	NE of NW of 12-7S-1E	NA	NA	No	Gel	No
72	DB07-12-4	1040927	431845	3780	NE of NW of 12-7S-1E	NA	NA	No	Gel	No

No.	Hole Name[1]	East[2]	North[2]	Elevation	1/4 1/4 Section	Depth to Inyan Kara Aquifer[3]	Top of Inyan Kara Aquifer[3]	Flowing at Surface	Abandonment Method[4]	Comments/Problems
73	DB07-12-6	1038809	429792	3751	NW of SW of 12-7S-1E	NA	NA	No	Gel	No
74	DB07-15-1	1031705	427800	3624	NW of NE of 15-7S-E	218	3406	No	Well	No
75	DB08-15-2	1028498	427243	3602	NW of NW of 15-7S-1E	296	3306	Yes	Well	No
76	DB08-15-3	1028536	427151	3602	NW of NW of 15-7S-1E	296	3306	Yes	Well	No
77	DB09-21-1	1028628	453319	3822	NE of NE of 21-6S-1E	151	3671	No	Well	No
78	DB09-21-2	1028591	453289	3821	NE of NE of 21-6S-1E	152	3669	No	Well	No
79	DB07-29-1C	1021309	445302	3644	SW of SE of 29-6S-1E	479	3165	Yes	Cement	No
80	DB07-29-2	1020357	445972	3662	NE of SW of 29-6S-1E	525	3137	No	Gel	No
81	DB07-29-3	1019883	446512	3666	NE of SW of 29-6S-1E	534	3132	No	Gel	No
82	DB07-29-4	1020076	446256	3663	NE of SW of 29-6S-1E	530	3133	No	Gel	No
83	DB07-29-5	1019975	446386	3665	NE of SW of 29-6S-1E	534	3131	No	Gel	No
84	DB07-29-6	1019928	446449	3665	NE of SW of 29-6S-1E	533	3132	No	Gel	No
85	DB07-29-7	1020212	446114	3668	NE of SW of 29-6S-1E	530	3138	No	Well	made <1 GPM, perforated
86	DB07-32-1C	1020382	443724	3628	NE of NW of 32-6S-1E	478	3150	Yes	Cement	No
87	DB07-32-2C	1020370	443092	3622	NE of NW of 32-6S-1E	481	3141	No	Gel	No
88	DB07-32-3C	1020327	443724	3628	NE of NW of 32-6S-1E	476	3152	Yes	Well	No
89	DB07-32-4C	1020689	443419	3625	NE of NW of 32-6S-1E	473	3152	Yes	Well	No
90	DB07-32-5	1020081	443735	3625	NE of NW of 32-6S-1E	482	3143	Yes	Well	No
91	DB07-32-6	1018784	440244	3595	SW of SW of 32-6S-1E	442	3153	Yes	Cement	No
92	DB08-32-7	1018944	440127	3594	SW of SW of 32-6S-1E	438	3156	Yes	Cement	No
93	DB08-32-8	1019021	440064	3595	SW of SW of 32-6S-1E	439	3156	Yes	Cement	Stuck pipe, cemented
94	DB08-32-9C	1020363	443708	3628	NE of NW of 32-6S-1E	478	3150	Yes	Well	No
95	DB08-32-10	1020315	443790	3626	NE of NW of 32-6S-1E	477	3149	Yes	Well	No
96	DB08-32-11	1020326	443671	3627	NE of NW of 32-6S-1E	478	3149	Yes	Well	No
97	DB08-32-12	1022349	439357	3590	SE of SE of 32-6S-1E	416	3174	Yes	Well	No
98	DB08-32-13	1022383	439322	3590	SE of SE of 32-6S-1E	415	3175	Yes	Well	No

[1]Core Holes = Hole Names ending in "C"

[2]State Plane Coordinate System

[3]NA = No resistivity log, or drilled on Fall River outcrop

[4]Abandonment Method:

-Gel = All non-flowing drill holes were plugged with bentonite plugging gel that was 20 seconds or more over the viscosity of the drill fluid, then topped off with bentonite plugging chips to the surface.

-Cement = Flowing drill holes were plugged with cement from bottom to within 3 feet of the surface, then topped off with bentonite plugging chips to the surface.

-Well = Borehole was converted to well.

[5]Solution to drilling problems:

-Loss of circulation = Added loss circulation material to drilling mud (Diamond Seal) to seal borehole walls.

-Caving from surface gravel = Installed pvc surface casing to hold back gravel while drilling.

-Heavy sluffing = Modified type and amount of mud additives to better seal off shales and prevent sluffing.

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Hydrology 2.7

TR RAI-2.7-1

Clarify the location of the Satellite Facility shown on TR Figure 2.7-1.

Response: TR RAI-2.7-1

See TR_RAI-Response and Replacement Pages; Section 2.7-1 for replacement Exhibit for the location of the SF and other facilities within the PAA: SR Exhibits 3.1-2 and 3.1-3. The generalized location of the SF on TR Figure 2.7-1 should be disregarded.

TR RAI-2.7-2

Staff is uncertain if standing water in poorly drained areas will hamper access to wells and potentially facilitate well leakage. Please clarify the surface drainage of this area.

Response: TR RAI-2.7-2

See TR_RAI-Response and Replacement Pages, Section 2.7-2 for clarification on surface drainage and figure 2.7-12. Applicable to TR Section 2.7.4.5 Flooding and Erosion in Local Drainages;

TR RAI-2.7-3

Consistent with criteria of Section 2.7.3 of NUREG-1569, please provide appropriate estimates of peak flood discharges and water levels produced by large floods on Pass Creek, Beaver Creek, and local small drainage areas. Please also provide an appropriate estimate of the aerial extent of significant peak flow during flooding of Beaver Creek and Pass Creek in the areas where Dewey Wellfields I and III and Burdock Wellfields III and V. Furthermore, please discuss the safety measures to be undertaken for wellfields and monitoring wells located in areas that may be subject to erosion or inundation.

Response: TR RAI-2.7-3

See TR_RAI-Response and Replacement Pages; Section 2.7-3. For additional information inserted into TR Section 2.7.1.4.4 Floodplain Analysis-Beaver Creek and Pass Creek. see aslo Exhibit 2.7-3.

TR RAI-2.7-4

Please provide an estimate of high water marks of significant channel flow and provide specific plans for the protection of infrastructure (e.g., well heads and header houses) within the high water marks of significant channel flow.

Response: TR RAI-2.7-4

See TR_RAI-Response and Replacement Pages; Section MI-5 for additional information inserted into TR Section 2.7.1.4.5 Flooding and Erosion in Local Drainages. This information includes the peak flow calculations and Table 2.7-12; also included are Tables 2 through 10 and Appendix 2.7-F1 "Subbasin Figures" and Appendix 2.7-F2 "HEC-1 Model Outputs for Burdock and Dewey".

Response: TR RAI-2.7-1

TR Section 2.7.1.1

Supplement Report Exhibits 3.1-2 and 3.1-3.

The generalized location of the SF on TR Figure 2.7-1 should be disregarded.

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Response: TR RAI-2.7-2

TR Section 2.7.1.2

Clarification for Surface Drainage near Railroad Tracks

Figure 2.7-11

2.7.1.4.5 ***Flooding and Erosion in Local Drainages***

There are no significant local drainage systems that could impact the primary facility zone in the western area of the project site (e.g., buildings housing critical processes, or surface impoundments). There are several small, local drainage systems that could occasionally produce flow in small channels that pass through the primary facility zone in the eastern section of the PAA. The largest system drains a 0.5 square mile catchment (measured upstream of the eastern border of the proposed eastern primary facility zone, 0.2 miles south of the Custer-Fall River County line). The average slope of this watershed is 3 percent, and the channel slope just upstream of the primary facility zone is 2 percent. The maximum length of the drainage path from the primary facility zone upstream to the drainage divide is one mile. Several other drainage systems that could occasionally carry flow through the proposed site are similar to this system, but have smaller drainage areas.

Powertech completed additional hydrologic and floodplain analysis of 12 small channels that are tributaries to Beaver and Pass Creeks. All of these channels are ephemeral. They have no base flow and do not contain flowing water except immediately following rain events. Two tributary subbasins (9 and 10) of Beaver Creek were analyzed for peak flows and water surface profiles resulting from the 100-year 24-hour storm. Subbasins 10 and 9 are the upper and lower subbasins of a single channel that is tributary to Beaver Creek. These subbasins are shown on Figure 1 (Appendix.7-F1 HEC-RAS Tables and Subbasin Figures), and Table 2.7-12 gives the areas and 100-year peak flows for each of these subbasins. A total of 10 tributary subbasins of Pass Creek (1, 2, 3, 4, 5, 6, 7, 8, 13, and 14) were analyzed for peak flows and water surface profiles. These subbasins are shown on Figure 1, and the areas and peak flows are shown in Table 2.7-12.
These small catchments could occasionally produce floods with significant flow but relatively short duration. Velocities of concentrated flow created by the existing rainfall runoff processes are high enough to erode these channels. The project operations can be protected from impacts due to erosion and flooding related to these local systems by applying standard engineering methods associated with urban storm water management. Specific structures and facilities should be located out of the drainage paths of these catchments. Construction should not occur in areas where the structure could alter the existing runoff hydrograph or reduce the existing stability of the drainage channels. On-site runoff due to roofs, parking lots and other impervious areas constructed for the project should be managed so that it is released to the natural channel systems without increasing the erosion that would naturally occur due to runoff from the watersheds upstream of the project facilities.

Peak flows and runoff hydrographs were calculated for these subbasins using the U.S. Army Corps of Engineers HEC-1 Flood Hydrograph model and the U.S. Soil Conservation Service (SCS) unit hydrograph methodology. A runoff curve number of 63 was used, consistent with the curve number values used in the hydrologic analysis of the Pass Creek and Beaver Creek watersheds that is presented in Section 2.7 of the TR. This curve number is based on the Soil Survey Geographic (SSURGO) Database, county land use data, and a field inspection of the area. The SCS lag equation was used to calculate the time of concentration for each subbasin. This equation is:

$$t_c = \frac{100L^{0.8}[(1000/CN)-9]^{0.7}}{1900S^{0.5}}$$

where: L = hydraulic length of watershed (longest flow path), ft

CN = SCS runoff curve number

S = average watershed slope, %

tc = time of concentration in minutes

The time of concentration is defined as the time it takes water to flow from the hydraulically most remote point in a basin to the basin outlet. The HEC-1 model uses the lag time (in hours) as an input parameter to compute the runoff hydrograph, where lag time is calculated as 0.6 x tc and is defined as the time from the center of mass of rainfall to the peak of the unit hydrograph. A Type II 24-hour precipitation distribution at 30-minute intervals and the 24-hour precipitation value for the 100-year return period was used in the HEC-1 modelling to calculate the peak flows. The 100-year 24-hour precipitation value was estimated using 28 years of daily precipitation data from the nearest available meteorological station at Edgemont, South Dakota, which is approximately 13 miles southeast of the project site at an elevation of 3,460 feet above mean sea level. A statistical analysis was performed on the daily precipitation data using the Type I Extremal (Gumbel) distribution to determine the 24-hour precipitation value with a 100-year return period, which was 3.83 inches. The HEC-1 model output is given in Appendix 2.7-F2 HEC-1 Model Outputs.

Table 2.7-11:Dewey-Burdock Subbasin Areas and 100-Year Peak Flows Tributary To Subbasin No. Area (square miles) 100-Year 24-Hour Peak Flow (cfs)

Tributary To	Subbasin No.	Area (square miles)	100-Year 24-Hour Peak Flow (cfs)
Pass Creek	1	0.4793	77
Pass Creek	2	0.2625	42
Pass Creek	3	0.5347	61
Pass Creek	4	0.6754	104
Pass Creek	5	0.5479	98
Pass Creek	6	0.4348	31
Pass Creek	7	0.3891	50
Pass Creek	8	0.9785	181
Beaver Creek	9	0.6626	92
Beaver Creek	10	0.6411	122
Pass Creek	13	0.1538	20
Pass Creek	14	0.1936	33

Water surface profiles for the 100-year peak flows were modeled using the U.S. Army Corps of Engineers HEC-RAS model version 4.1. Tables 2 through 9 provide the HEC-RAS model results for each subbasin at selected stations along the alignment of the associated channel. The results shown in the tables include the channel station, peak flow, minimum channel elevation, water surface elevation, critical water surface elevation, energy gradeline elevation, energy gradeline slope, channel velocity, cross-sectional flow area, top width of flow, and Froude number. The water surface elevation determines the extent of flooding during the peak flow. The stationing along each channel, along with the floodplain area associated with the 100-year peak flow, is shown on Figures 2 through 9 in aforementioned Appendix 2.7-F1.

In Section 29, T6S, R1E, a small number of monitoring wells are proposed on the northeast side of the tracks (Exhibit 3.2-1 of the TR). The surface drainage in this area is still dominantly toward the southwest (Figure 2.7-12 below), but the raised track beds do provide some potential for standing water. The potential for collection of water is predominantly immediately adjacent to the north east side of a raised-bed for the railroad tracks. Standing water is not expected in the location of any of the monitor wells as the area is well drained in a south easterly direction along the tracks and to a culvert in the immediate vicinity.

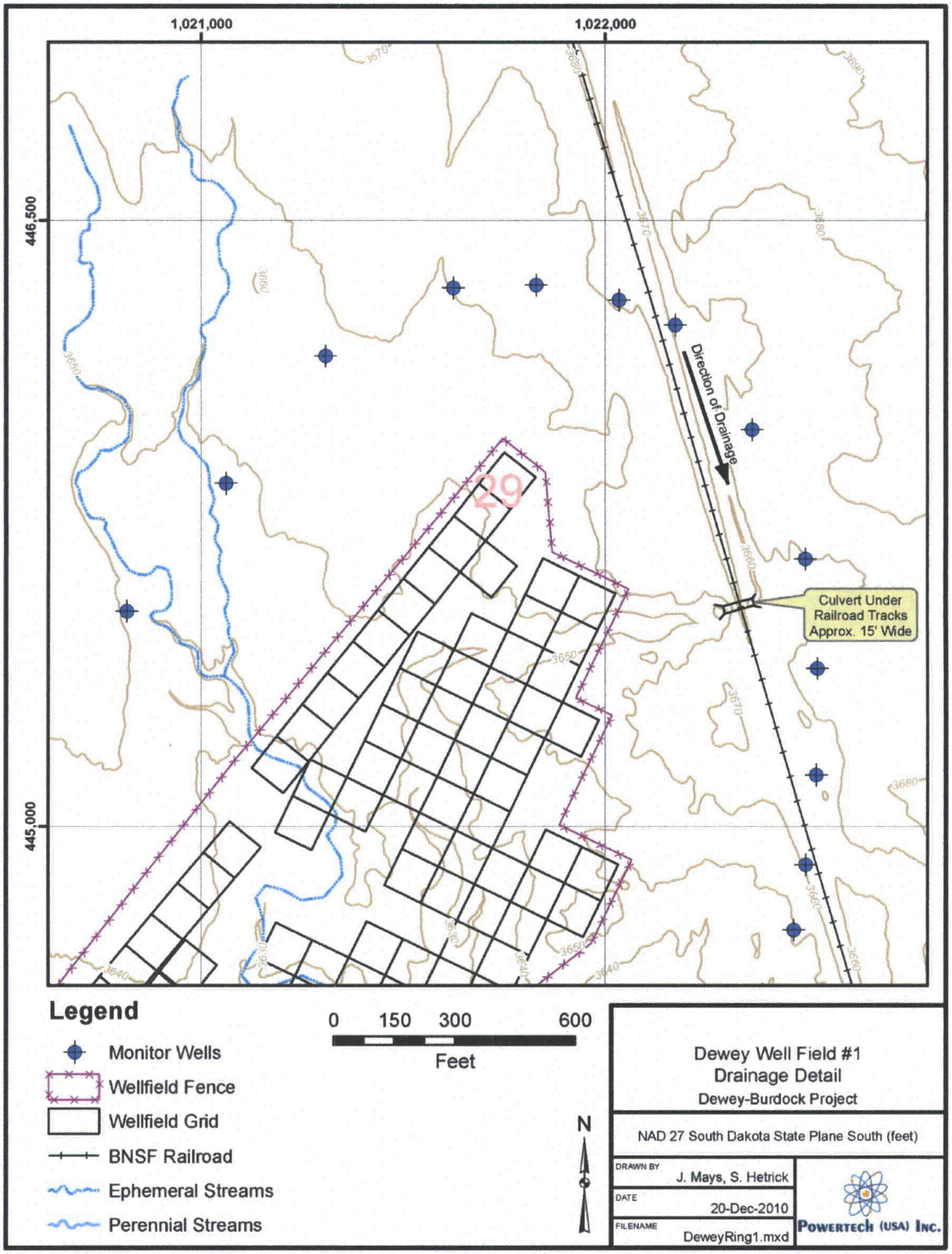

Figure 2.7-11 Dewey Well Field #1 Drainage Detail

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Response: TR RAI-2.7-3

TR Section 2.7.1.4.4

Figures 2.7-10 "100 Year Inundation Map for Beaver Creek" and 2.7-11 "100 Year Inundation Map for Pass Creek"

replaced with

TR Exhibit 2.7-3: Aerial Extent of 100 Year Flood Event fro Beaver and Pass Creeks.

TR Section 2.7.1.4.4 Floodplain Analysis-Beaver Creek and Pass Creek.

100yr	5620
Estimated PMF	65600
50% Estimated PMF	32800

The final flow values used for input to the HEC-RAS model of Pass Creek were 5,620 cfs and 32,800 cfs representing the 100 year and extreme condition floods, respectively. These flow values resulted from a conservative approach to parameter estimation and modeling. The model used the higher CN and a single basin versus many smaller sub-basins with routing. This combination results in a larger instantaneous peak flow entering the stream channel of Pass Creek within the PAA. The extreme condition flood is only included to illustrate the extent of the flood plain during an extremely low probability flood event, and its relation to the primary facility zones. The estimated PMF and 50 percent of the estimated PMF are extremely rare events and represent conditions much more severe than the design scenarios discussed in NRC 1569 for in situ leach extraction operations.

2.7.1.4.4 *Floodplain Analysis – Beaver Creek and Pass Creek*

The stream channels of both Beaver Creek and Pass Creek within the PAA were each modeled using the Hydraulic Engineering Center River Analysis System (HEC-RAS) and the Geospatial River Analysis Extension (HEC-GeoRAS) to determine the spatial representation of the floodplains resulting from the simulated 100-year flood (Exhibit 2.7-3) and extreme condition flood.

HEC-RAS software simulates one-dimensional steady and unsteady river hydraulics. The system can handle a full network of channels, a dendritic system, or a single river reach. HEC-RAS is capable of modeling subcritical, supercritical, and mixed flow regime water surface profiles.

The Geospatial River Analysis Extension (HEC-GeoRAS) is a set of ArcGIS tools specifically designed to process geospatial data for use with HEC-RAS. The extension enables efficient creation of a HEC-RAS import file containing geometric data from an existing digital terrain model (DTM) and a National Hydrography Dataset (NHD) flowlines shapefile. Results exported from HEC-RAS may also be processed using HEC-GeoRAS to create layers and floodplain maps in ArcMap.

The HEC-RAS model is based largely on a framework of geometric data which provides a representation of the physical characteristics of a river. For both Beaver Creek and Pass Creek, HEC-GeoRAS was used to extract the necessary elevation and geometric data for the channel and floodplain from the same DEM developed for the HEC-HMS analysis. The process for each creek was nearly the same except for the extra details required to characterize the two bridges spanning Pass Creek just downstream of the southern portion of the PAA. The road and railroad bridges had the potential to cause backwater effects and were therefore included in the Pass Creek analysis though they were outside of the PAA. The geometry and elevation data of both bridges were measured on April 12, 2008.

The geometry files generated with HEC-GeoRAS in ArcGIS were imported into HEC-RAS and inspected for completeness. For each creek, ineffective flow areas were added where necessary and Manning's n values were assigned for the left overbank, the channel, and the right overbank. Conservative Manning's n values were established during a field inspection of the Beaver Creek and Pass Creek channels within the PAA on May 21, 2008 (Table 2.7-9). Figures 2.7-8 and 2.7-9 are photos of the Beaver Creek and Pass Creek stream channels along with their floodplains taken during the site inspection.

Data entry for the bridges in the downstream section of Pass Creek was manually performed. Low flow calculation methods for the road bridge and railroad bridge included the energy and momentum methods. Pressure and weir methods were used for high flow computation of the road bridge while energy only was used for the railroad bridge.

Table 2.7-9: Manning's n Values for the Beaver Creek and Pass Creek Channels

	Manning's n Value		
Creek	Left Overbank	Channel	Right Overbank
Beaver, upstream	0.060	0.045	0.060
Beaver, downstream	0.053	0.040	0.053
Pass	0.065	0.050	0.065

Note: based on field observations

Two steady flow profiles were created for each creek: the 100-year flood and the extreme condition flood (a 500-year – 1500-year flood for Beaver Creek and 50 percent of the estimated PMF for Pass Creek). Flow estimates generated from PKFQWin and HEC-HMS were entered for each profile of Beaver Creek and Pass Creek, respectively. Downstream boundary conditions used normal depth with updated slopes of the energy grade lines.

Note: location is in the northern extent of the PAA along the South Dewey Road, looking west

Figure 2.7-7: The Beaver Creek Stream Channel and Floodplain

Note: location is in the southwest extent of the PAA, just east of the confluence with Beaver Creek. Photo taken from the road bridge along South Dewey Road, looking east.

Figure 2.7-8: The Pass Creek Stream Channel and Floodplain

Floodplain Analysis – Results. The HEC-RAS analysis involved an iterative procedure of creating a model run – based on an input geometry file and a steady flow profile(s) – and reviewing output summary tables (Appendix 2.7-F1 HEC-RAS Tables and Subbasin Figures) and warning and error messages. From this process, the geometry file was revised multiple times by adding cross sections to adequately balance the energy losses throughout the model for each creek.

The final model results for the spatial representation of the 100-year floodplains for Beaver Creek and Pass Creek within the PAA are shown in Exhibit 2.7-3 Aerial Extent of 100 yr. Flood Event for Beaver Creek and Pass Creek, respectively. The exhibit indicates the relationship of the maximum extent of the 100-year floodplain to the locations of the primary facility zones and the known ore bodies

The final model results for the spatial representation of the extreme condition floodplains for Beaver Creek and Pass Creek within the PAA are shown in Figures 2.7-12 and 2.7-13, respectively. The figures indicate the relationship of the maximum extent of the extreme condition floodplain to the locations of the primary facility zones and the known ore bodies. The horizontal and vertical distances separating the primary facility zones and known ore bodies from the extreme condition floodplain for each creek are shown in Table 2.7-11. The sole purpose of including the extreme condition flood in the analysis for flood and erosion potential is to illustrate that there is very little additional land area inundated by the extreme condition floods than by the 100-year floods. The risk of flood or erosion damage to the PAA facilities from Beaver and Pass Creeks is extremely low.

The inundation maps of Pass Creek indicate that known ore bodies in the upstream section of the creek would become inundated. It is estimated that the water depths would be 15 feet for the 100-year flood and approximately 25 feet for the extreme condition flood.

Table 2.7-10: Proximity Data for the Extreme Condition Floods of Beaver Creek and Pass Creek

Creek	Concern	Horizontal Distance (ft)	Vertical Distance (ft)
Beaver			
	Facilities	2,180	27
	Ore Bodies	165	10
Pass			
	Facilities	1,960	25
	Ore Bodies	180	2

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Response: TR RAI-2.7-4

TR Section 2.7.1.4.4

Appendix 2.7-F1 "Subbasin Figures" and Appendix 2.7-F2 "HEC-1 Model Outputs for Burdock and Dewey".

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Appendix 2.7-F1

HEC-RAS Tables
And
Subbasin Figures

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Table 2
HEC-RAS Model Results for Subbasin 1

HEC-RAS Plan:

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Basin 1 Alignmen	7073.54	PF 1	39.00	3689.98	3690.37	3690.27	3690.42	0.019708	1.82	21.38	73.95	0.60
Basin 1 Alignmen	6900	PF 1	39.00	3687.88	3688.36		3688.39	0.007722	1.33	29.38	81.09	0.39
Basin 1 Alignmen	6600	PF 1	39.00	3683.59	3683.94		3684.00	0.037455	2.08	18.73	86.03	0.79
Basin 1 Alignmen	6300	PF 1	39.00	3677.96	3678.47		3678.51	0.010793	1.58	24.75	67.85	0.46
Basin 1 Alignmen	6000	PF 1	39.00	3671.98	3672.50	3672.47	3672.65	0.045404	3.11	12.53	36.33	0.93
Basin 1 Alignmen	5700	PF 1	39.00	3666.73	3667.56	3667.29	3667.60	0.008617	1.69	23.13	48.37	0.43
Basin 1 Alignmen	5400	PF 1	39.00	3661.97	3662.27	3662.28	3662.37	0.052000	2.56	15.23	65.59	0.94
Basin 1 Alignmen	5100	PF 1	39.00	3657.84	3658.27	3658.08	3658.28	0.006130	0.92	42.33	169.87	0.33
Basin 1 Alignmen	4800	PF 1	39.00	3653.60	3653.84	3653.84	3653.92	0.067588	2.24	17.42	111.73	1.00
Basin 1 Alignmen	4500	PF 1	39.00	3649.31	3649.84	3649.61	3649.86	0.005157	1.06	36.83	105.35	0.32
Basin 1 Alignmen	4200	PF 1	77.00	3643.99	3644.65	3644.64	3644.84	0.046940	3.50	21.97	54.70	0.97
Basin 1 Alignmen	3900	PF 1	77.00	3640.92	3641.69	3641.42	3641.71	0.004352	1.15	67.03	149.23	0.30
Basin 1 Alignmen	3600	PF 1	77.00	3637.96	3638.36	3638.36	3638.49	0.058230	2.79	27.61	113.85	1.00
Basin 1 Alignmen	3300	PF 1	77.00	3634.70	3635.65	3635.10	3635.66	0.001014	0.66	116.69	200.00	0.15
Basin 1 Alignmen	3000	PF 1	77.00	3634.00	3634.55	3634.55	3634.69	0.058317	3.03	25.37	92.25	1.02
Basin 1 Alignmen	2700	PF 1	77.00	3628.48	3630.18	3629.29	3630.19	0.001312	1.01	76.54	84.64	0.19
Basin 1 Alignmen	2400	PF 1	77.00	3627.98	3628.79	3628.79	3629.02	0.047753	3.87	19.89	43.15	1.01
Basin 1 Alignmen	2100	PF 1	77.00	3624.49	3626.24	3625.48	3626.27	0.002733	1.23	62.78	89.34	0.26
Basin 1 Alignmen	1800	PF 1	77.00	3623.78	3624.68		3624.75	0.012404	2.08	36.99	74.12	0.52
Basin 1 Alignmen	1500	PF 1	77.00	3617.91	3619.68		3619.98	0.020841	4.41	17.47	16.29	0.75
Basin 1 Alignmen	1200	PF 1	77.00	3614.17	3616.85		3616.95	0.005767	2.61	29.50	23.00	0.41
Basin 1 Alignmen	900	PF 1	77.00	3612.00	3614.72		3614.81	0.009049	2.42	31.81	39.27	0.47
Basin 1 Alignmen	600	PF 1	77.00	3612.00	3613.54		3613.58	0.002295	1.49	51.78	48.32	0.25
Basin 1 Alignmen	300	PF 1	77.00	3611.77	3612.79	3612.26	3612.82	0.002819	1.35	57.07	71.97	0.27
Basin 1 Alignmen	0	PF 1	77.00	3609.95	3610.38	3610.38	3610.56	0.053844	3.38	22.76	66.20	1.02

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Table 3

HEC-RAS Model Results for Subbasin 2

HEC-RAS Plan: Plan 02 River: Basin 2 Alignmen Reach: Basin 2 Alignmen Profile: PF 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Basin 2 Alignmen	6937.6	PF 1	42.00	3750.06	3750.67	3750.42	3750.70	0.007092	1.40	30.08	72.20	0.38
Basin 2 Alignmen	6900	PF 1	42.00	3749.61	3749.98	3749.98	3750.11	0.056676	2.85	14.73	57.56	0.99
Basin 2 Alignmen	6600	PF 1	42.00	3740.37	3741.03	3740.90	3741.10	0.018227	2.13	19.71	50.87	0.60
Basin 2 Alignmen	6300	PF 1	42.00	3731.78	3732.21	3732.21	3732.36	0.053688	3.05	13.75	46.54	0.99
Basin 2 Alignmen	6000	PF 1	42.00	3724.12	3724.72		3724.77	0.014585	1.81	23.23	64.97	0.53
Basin 2 Alignmen	5700	PF 1	42.00	3717.97	3718.46		3718.57	0.031399	2.72	15.42	41.46	0.79
Basin 2 Alignmen	5400	PF 1	42.00	3709.95	3710.53		3710.63	0.022553	2.56	16.43	37.89	0.68
Basin 2 Alignmen	5100	PF 1	42.00	3703.08	3703.71		3703.80	0.022968	2.42	17.32	43.85	0.68
Basin 2 Alignmen	4800	PF 1	42.00	3697.69	3698.61	3698.39	3698.69	0.013179	2.17	19.38	38.23	0.54
Basin 2 Alignmen	4500	PF 1	42.00	3692.00	3692.67		3692.76	0.032811	2.41	17.45	58.34	0.78
Basin 2 Alignmen	4200	PF 1	42.00	3686.37	3687.02		3687.06	0.012313	1.60	26.26	77.74	0.48
Basin 2 Alignmen	3900	PF 1	42.00	3681.89	3682.29		3682.34	0.020836	1.86	22.60	79.25	0.61
Basin 2 Alignmen	3600	PF 1	42.00	3675.91	3676.68	3676.51	3676.76	0.016667	2.34	17.97	37.75	0.60
Basin 2 Alignmen	3300	PF 1	42.00	3672.69	3673.37	3673.14	3673.41	0.007936	1.46	28.71	69.86	0.40
Basin 2 Alignmen	3000	PF 1	42.00	3667.99	3668.43	3668.42	3668.57	0.048241	3.03	13.85	43.70	0.95
Basin 2 Alignmen	2700	PF 1	42.00	3663.94	3664.50		3664.52	0.006158	1.15	36.61	106.06	0.34
Basin 2 Alignmen	2400	PF 1	42.00	3659.98	3660.47	3660.45	3660.55	0.046614	2.17	19.36	98.48	0.86
Basin 2 Alignmen	2100	PF 1	42.00	3654.33	3655.54	3655.09	3655.58	0.008397	1.68	24.93	51.15	0.43
Basin 2 Alignmen	1800	PF 1	42.00	3649.78	3650.27	3650.27	3650.37	0.054852	2.53	16.63	76.01	0.95
Basin 2 Alignmen	1500	PF 1	42.00	3644.53	3645.50	3645.14	3645.53	0.005528	1.48	28.28	51.30	0.35
Basin 2 Alignmen	1200	PF 1	42.00	3641.93	3642.23		3642.28	0.030392	1.74	24.17	124.11	0.69
Basin 2 Alignmen	900	PF 1	42.00	3638.97	3639.48	3639.27	3639.49	0.004403	0.97	43.31	125.35	0.29
Basin 2 Alignmen	600	PF 1	42.00	3635.99	3636.25	3636.23	3636.32	0.051446	2.19	19.17	103.45	0.90
Basin 2 Alignmen	300	PF 1	42.00	3633.97	3634.41		3634.41	0.002313	0.70	60.22	176.27	0.21
Basin 2 Alignmen	0	PF 1	42.00	3632.00	3632.33	3632.33	3632.45	0.060515	2.78	15.10	64.07	1.01

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Table 4

HEC-RAS Model Results for Subbasin 3

HEC-RAS Plan: Plan 01 River: Basin 3 Alignmen Reach: Basin 3 Alignmen Profile: PF 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Basin 3 Alignmen	9228.02	PF 1	61.00	3801.12	3802.31	3802.24	3802.55	0.033598	3.89	15.67	24.73	0.86
Basin 3 Alignmen	9000	PF 1	61.00	3793.80	3794.32	3794.27	3794.44	0.037378	2.85	21.41	61.32	0.85
Basin 3 Alignmen	8700	PF 1	61.00	3783.93	3784.73	3784.63	3784.90	0.027410	3.26	18.71	34.61	0.78
Basin 3 Alignmen	8400	PF 1	61.00	3773.06	3773.66	3773.66	3773.85	0.052103	3.44	17.74	49.12	1.01
Basin 3 Alignmen	8100	PF 1	61.00	3764.29	3765.07	3764.90	3765.16	0.016985	2.40	25.39	51.92	0.61
Basin 3 Alignmen	7800	PF 1	61.00	3756.62	3757.20	3757.17	3757.30	0.045742	2.56	23.81	92.99	0.89
Basin 3 Alignmen	7500	PF 1	61.00	3749.98	3751.12	3750.83	3751.20	0.011403	2.26	27.02	44.98	0.51
Basin 3 Alignmen	7200	PF 1	61.00	3745.94	3746.58		3746.69	0.020786	2.65	23.04	47.38	0.67
Basin 3 Alignmen	6900	PF 1	61.00	3741.97	3742.50	3742.31	3742.54	0.009762	1.58	38.60	97.77	0.44
Basin 3 Alignmen	6600	PF 1	61.00	3737.33	3737.78		3737.86	0.028717	2.24	27.19	91.44	0.73
Basin 3 Alignmen	6300	PF 1	61.00	3725.94	3727.16	3727.16	3727.55	0.041620	5.01	12.18	15.98	1.01
Basin 3 Alignmen	6000	PF 1	61.00	3719.93	3721.82	3721.11	3721.90	0.005030	2.21	27.59	25.35	0.37
Basin 3 Alignmen	5700	PF 1	61.00	3717.77	3718.38	3718.35	3718.50	0.044668	2.84	21.48	70.61	0.91
Basin 3 Alignmen	5400	PF 1	61.00	3709.96	3710.81		3710.90	0.016292	2.32	26.27	54.63	0.59
Basin 3 Alignmen	5100	PF 1	61.00	3706.32	3707.30		3707.36	0.008860	1.95	31.32	53.85	0.45
Basin 3 Alignmen	4800	PF 1	61.00	3701.95	3702.54	3702.49	3702.68	0.034452	2.95	20.69	52.92	0.83
Basin 3 Alignmen	4500	PF 1	61.00	3696.76	3697.84		3697.88	0.009112	1.79	34.12	68.15	0.45
Basin 3 Alignmen	4200	PF 1	61.00	3691.90	3692.91	3692.85	3693.12	0.034272	3.63	16.82	31.35	0.87
Basin 3 Alignmen	3900	PF 1	61.00	3688.00	3689.39		3689.44	0.006116	1.89	32.25	43.78	0.39
Basin 3 Alignmen	3600	PF 1	61.00	3683.98	3685.20	3685.20	3685.55	0.042843	4.71	12.94	19.12	1.01
Basin 3 Alignmen	3300	PF 1	61.00	3679.98	3681.92	3681.20	3681.98	0.004440	2.01	30.33	29.35	0.35
Basin 3 Alignmen	3000	PF 1	61.00	3677.84	3678.59	3678.59	3678.83	0.047391	3.98	15.34	31.77	1.01
Basin 3 Alignmen	2700	PF 1	61.00	3673.81	3674.70	3674.41	3674.73	0.005729	1.40	43.46	87.78	0.35
Basin 3 Alignmen	2400	PF 1	61.00	3671.93	3672.54		3672.59	0.009096	1.82	33.43	64.63	0.45
Basin 3 Alignmen	2100	PF 1	61.00	3669.94	3670.67		3670.70	0.004628	1.34	45.35	83.54	0.32
Basin 3 Alignmen	1800	PF 1	61.00	3667.73	3668.74		3668.78	0.009495	1.62	37.63	89.78	0.44
Basin 3 Alignmen	1500	PF 1	61.00	3665.89	3666.33		3666.35	0.006914	1.18	51.66	156.36	0.36
Basin 3 Alignmen	1200	PF 1	61.00	3661.73	3662.75		3662.89	0.022602	3.02	20.20	36.23	0.71
Basin 3 Alignmen	900	PF 1	61.00	3657.84	3659.20	3658.67	3659.25	0.007471	1.73	35.26	63.59	0.41
Basin 3 Alignmen	600	PF 1	61.00	3653.80	3654.29	3654.29	3654.45	0.055146	3.21	18.99	60.67	1.01
Basin 3 Alignmen	300	PF 1	61.00	3650.00	3652.34	3651.35	3652.39	0.002459	1.73	35.21	27.20	0.27
Basin 3 Alignmen	0	PF 1	61.00	3649.83	3650.20	3650.20	3650.34	0.059093	2.99	20.42	76.80	1.02

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Table 5

HEC-RAS Model Results for Subbasin 4

HEC-RAS Plan: Plan 01 River: Basin 4 Alignmen Reach: Basin 4 Alignmen Profile: PF 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Basin 4 Alignmen	7235.89	PF 1	104.00	3847.31	3849.25	3848.91	3849.40	0.014269	3.17	32.86	37.04	0.59
Basin 4 Alignmen	7200	PF 1	104.00	3846.46	3848.13	3848.13	3848.55	0.043395	5.20	20.00	24.26	1.01
Basin 4 Alignmen	6900	PF 1	104.00	3831.93	3832.76	3832.86	3833.20	0.061270	5.31	19.57	31.79	1.19
Basin 4 Alignmen	6600	PF 1	104.00	3818.80	3819.41	3819.34	3819.53	0.029175	2.77	37.48	92.70	0.77
Basin 4 Alignmen	6300	PF 1	104.00	3807.75	3808.49	3808.49	3808.77	0.045040	4.23	24.58	44.67	1.01
Basin 4 Alignmen	6000	PF 1	104.00	3797.91	3799.12	3798.86	3799.26	0.015178	2.99	34.73	46.85	0.61
Basin 4 Alignmen	5700	PF 1	104.00	3790.76	3791.61	3791.61	3791.88	0.046339	4.12	25.27	48.92	1.01
Basin 4 Alignmen	5400	PF 1	104.00	3781.51	3782.53	3782.36	3782.68	0.020294	3.08	33.76	54.35	0.69
Basin 4 Alignmen	5100	PF 1	104.00	3774.73	3775.61		3775.77	0.026350	3.23	32.24	58.90	0.77
Basin 4 Alignmen	4800	PF 1	104.00	3764.49	3765.48	3765.48	3765.80	0.043064	4.57	22.77	35.65	1.01
Basin 4 Alignmen	4500	PF 1	104.00	3759.40	3760.36	3760.10	3760.40	0.007819	1.73	59.96	111.75	0.42
Basin 4 Alignmen	4200	PF 1	104.00	3755.68	3756.25	3756.18	3756.36	0.028438	2.69	38.68	98.38	0.76
Basin 4 Alignmen	3900	PF 1	104.00	3749.89	3750.96	3750.68	3751.04	0.012088	2.26	46.03	80.03	0.52
Basin 4 Alignmen	3600	PF 1	104.00	3745.09	3746.04	3745.88	3746.16	0.022983	2.84	36.61	73.11	0.71
Basin 4 Alignmen	3300	PF 1	104.00	3739.93	3740.54		3740.62	0.015148	2.35	44.22	85.70	0.58
Basin 4 Alignmen	3000	PF 1	104.00	3735.98	3737.22	3736.78	3737.32	0.008344	2.54	40.92	45.01	0.47
Basin 4 Alignmen	2700	PF 1	104.00	3731.76	3732.39	3732.36	3732.59	0.040058	3.59	28.99	61.85	0.92
Basin 4 Alignmen	2400	PF 1	104.00	3727.12	3728.44		3728.50	0.006698	2.05	50.78	65.52	0.41
Basin 4 Alignmen	2100	PF 1	104.00	3724.00	3725.46		3725.61	0.015004	3.04	34.20	44.68	0.61
Basin 4 Alignmen	1800	PF 1	104.00	3720.68	3721.95		3722.05	0.009527	2.61	39.79	46.41	0.50
Basin 4 Alignmen	1500	PF 1	104.00	3717.83	3718.85		3718.95	0.011233	2.63	39.54	51.69	0.53
Basin 4 Alignmen	1200	PF 1	104.00	3715.74	3716.63		3716.68	0.005395	1.75	59.48	82.87	0.36
Basin 4 Alignmen	900	PF 1	104.00	3712.09	3712.80	3712.80	3713.01	0.049171	3.70	28.11	66.80	1.01
Basin 4 Alignmen	600	PF 1	104.00	3703.93	3705.05	3704.75	3705.21	0.013648	3.25	31.99	35.09	0.60
Basin 4 Alignmen	300	PF 1	104.00	3701.71	3703.18	3702.53	3703.23	0.003790	1.80	57.66	58.79	0.32
Basin 4 Alignmen	0	PF 1	104.00	3699.68	3700.21	3700.21	3700.39	0.052036	3.42	30.40	84.81	1.01

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Table 6

HEC-RAS Model Results for Subbasins 5, 13, and 14

HEC-RAS Plan: Plan 01 River: Basin 5-13 Align Reach: Basin 5-13 Align Profile: PF 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Basin 5-13 Align	17055.05	PF 1	49.00	3925.97	3926.20	3926.15	3926.21	0.019699	1.03	47.60	387.94	0.52
Basin 5-13 Align	17000	PF 1	49.00	3923.93	3924.33	3924.33	3924.43	0.061192	2.60	18.83	89.04	1.00
Basin 5-13 Align	16500	PF 1	49.00	3861.67	3862.06	3862.32	3863.11	0.474741	8.22	5.96	23.44	2.87
Basin 5-13 Align	16000	PF 1	49.00	3837.70	3838.44	3838.44	3838.69	0.046918	4.03	12.15	24.40	1.01
Basin 5-13 Align	15500	PF 1	49.00	3820.70	3822.15	3821.82	3822.30	0.013472	3.07	15.95	18.70	0.59
Basin 5-13 Align	15000	PF 1	49.00	3809.63	3810.14	3810.14	3810.30	0.054076	3.27	15.00	46.09	1.01
Basin 5-13 Align	14500	PF 1	49.00	3793.98	3795.33	3794.88	3795.40	0.006727	2.14	22.92	27.71	0.41
Basin 5-13 Align	14000	PF 1	49.00	3787.99	3788.94		3789.17	0.030245	3.81	12.86	20.19	0.84
Basin 5-13 Align	13500	PF 1	98.00	3778.92	3779.96	3779.73	3780.07	0.014659	2.66	36.79	57.68	0.59
Basin 5-13 Align	13000	PF 1	98.00	3766.63	3767.36	3767.36	3767.56	0.051916	3.59	27.29	70.63	1.02
Basin 5-13 Align	12500	PF 1	98.00	3753.92	3754.67	3754.41	3754.75	0.010958	2.36	41.52	62.73	0.51
Basin 5-13 Align	12000	PF 1	98.00	3743.70	3744.15	3744.15	3744.30	0.054338	3.13	31.29	102.95	1.00
Basin 5-13 Align	11500	PF 1	98.00	3734.04	3734.67	3734.48	3734.69	0.008068	1.31	75.07	219.46	0.39
Basin 5-13 Align	11000	PF 1	98.00	3724.66	3725.86	3725.86	3725.98	0.061937	2.76	35.56	155.12	1.01
Basin 5-13 Align	10500	PF 1	98.00	3713.85	3714.79	3714.47	3714.86	0.007733	2.05	47.81	68.74	0.43
Basin 5-13 Align	10000	PF 1	98.00	3705.91	3707.00	3707.00	3707.40	0.039463	5.11	19.17	23.59	1.00
Basin 5-13 Align	9500	PF 1	195.00	3699.97	3701.88	3701.25	3701.95	0.005553	2.18	89.59	91.53	0.39
Basin 5-13 Align	9000	PF 1	195.00	3697.35	3698.44	3698.13	3698.51	0.008733	2.02	96.46	155.29	0.45
Basin 5-13 Align	8500	PF 1	195.00	3692.53	3693.32	3693.15	3693.38	0.012176	1.92	101.36	224.77	0.50
Basin 5-13 Align	8000	PF 1	195.00	3688.00	3688.52		3688.56	0.007825	1.54	126.30	280.07	0.41
Basin 5-13 Align	7500	PF 1	195.00	3679.40	3680.07	3680.07	3680.25	0.056117	3.38	57.61	172.18	1.03
Basin 5-13 Align	7000	PF 1	195.00	3669.99	3673.20	3671.81	3673.30	0.005113	2.53	77.07	58.38	0.39
Basin 5-13 Align	6500	PF 1	195.00	3665.97	3669.72		3670.00	0.008680	4.26	45.79	22.49	0.53
Basin 5-13 Align	6000	PF 1	195.00	3662.02	3665.83		3665.94	0.007453	2.61	74.82	71.90	0.45
Basin 5-13 Align	5500	PF 1	195.00	3659.89	3662.73	3661.70	3662.76	0.005374	1.51	129.39	224.20	0.35
Basin 5-13 Align	5000	PF 1	195.00	3655.60	3656.57	3656.57	3656.94	0.041190	4.88	39.98	54.82	1.01
Basin 5-13 Align	4500	PF 1	273.00	3651.86	3653.66	3652.73	3653.70	0.002475	1.67	163.96	137.08	0.27
Basin 5-13 Align	4000	PF 1	273.00	3647.93	3650.15	3650.15	3650.36	0.051246	3.69	73.93	181.44	1.02
Basin 5-13 Align	3500	PF 1	273.00	3645.78	3647.21	3646.57	3647.23	0.002245	1.18	231.80	301.76	0.24
Basin 5-13 Align	3000	PF 1	273.00	3641.99	3644.28	3644.21	3644.39	0.033742	2.69	101.44	292.28	0.81
Basin 5-13 Align	2500	PF 1	273.00	3637.92	3640.67		3640.72	0.003098	1.81	150.92	128.52	0.29
Basin 5-13 Align	2000	PF 1	273.00	3635.96	3638.79	3638.34	3638.83	0.004699	1.69	161.42	212.59	0.34
Basin 5-13 Align	1500	PF 1	273.00	3634.00	3636.57	3636.17	3636.61	0.004201	1.52	179.52	255.10	0.32
Basin 5-13 Align	1000	PF 1	326.00	3630.77	3632.39		3632.55	0.017724	3.18	102.65	141.07	0.66
Basin 5-13 Align	500	PF 1	326.00	3628.88	3630.31		3630.33	0.001926	1.22	266.26	292.71	0.23
Basin 5-13 Align	0	PF 1	326.00	3626.25	3627.34	3627.34	3627.66	0.044020	4.52	72.11	116.77	1.01

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Table 7
HEC-RAS Model Results for Subbasins 6 and 7

HEC-RAS Plan: Plan 01 River: Basin 6-7 Alignm Reach: Basin 6-7 Alignm Profile: PF 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Basin 6-7 Alignm	15450.95	PF 1	35.00	3774.99	3775.34	3775.34	3775.42	0.070179	2.25	15.56	101.55	1.01
Basin 6-7 Alignm	15300	PF 1	35.00	3762.15	3762.61	3762.69	3762.85	0.100217	3.88	9.02	33.56	1.32
Basin 6-7 Alignm	15000	PF 1	35.00	3749.89	3750.45	3750.27	3750.49	0.010612	1.50	23.40	68.53	0.45
Basin 6-7 Alignm	14700	PF 1	35.00	3743.65	3744.11	3744.11	3744.25	0.057553	3.00	11.68	42.85	1.01
Basin 6-7 Alignm	14400	PF 1	35.00	3734.78	3735.41	3735.23	3735.47	0.012830	1.85	18.87	46.13	0.51
Basin 6-7 Alignm	14100	PF 1	35.00	3727.87	3728.22	3728.22	3728.34	0.057753	2.83	12.35	49.43	1.00
Basin 6-7 Alignm	13800	PF 1	35.00	3719.92	3720.88	3720.62	3720.93	0.010434	1.86	18.81	39.15	0.47
Basin 6-7 Alignm	13500	PF 1	35.00	3715.86	3716.14		3716.18	0.026800	1.47	23.83	143.51	0.64
Basin 6-7 Alignm	13200	PF 1	35.00	3711.20	3711.97		3712.01	0.008457	1.60	21.88	48.82	0.42
Basin 6-7 Alignm	12900	PF 1	35.00	3706.66	3707.30	3707.22	3707.43	0.035049	3.00	11.68	29.49	0.84
Basin 6-7 Alignm	12600	PF 1	35.00	3703.91	3704.37		3704.38	0.004681	1.00	35.17	102.72	0.30
Basin 6-7 Alignm	12300	PF 1	35.00	3701.90	3702.22		3702.24	0.012199	1.20	29.19	132.16	0.45
Basin 6-7 Alignm	12000	PF 1	35.00	3697.96	3698.33		3698.35	0.013836	1.30	26.99	119.16	0.48
Basin 6-7 Alignm	11700	PF 1	35.00	3694.61	3695.11		3695.13	0.008541	1.18	29.67	105.39	0.39
Basin 6-7 Alignm	11400	PF 1	35.00	3689.67	3690.29		3690.37	0.038882	2.32	15.10	60.66	0.82
Basin 6-7 Alignm	11100	PF 1	35.00	3685.97	3686.71	3686.40	3686.73	0.005824	1.08	32.35	98.18	0.33
Basin 6-7 Alignm	10800	PF 1	35.00	3682.05	3682.45	3682.45	3682.52	0.069032	2.15	16.26	111.90	1.00
Basin 6-7 Alignm	10500	PF 1	35.00	3675.97	3676.60	3676.30	3676.62	0.004661	1.14	30.63	72.39	0.31
Basin 6-7 Alignm	10200	PF 1	35.00	3674.00	3674.43		3674.47	0.012409	1.74	20.14	52.89	0.50
Basin 6-7 Alignm	9900	PF 1	35.00	3670.15	3670.95		3671.01	0.010742	1.91	18.37	37.71	0.48
Basin 6-7 Alignm	9600	PF 1	50.00	3665.98	3667.04	3666.80	3667.14	0.014768	2.58	19.40	32.09	0.58
Basin 6-7 Alignm	9300	PF 1	50.00	3663.63	3664.48		3664.50	0.005768	1.17	42.79	113.94	0.34
Basin 6-7 Alignm	9000	PF 1	50.00	3661.67	3662.34		3662.37	0.008888	1.22	40.89	141.51	0.40
Basin 6-7 Alignm	8700	PF 1	50.00	3659.94	3660.84		3660.86	0.003218	1.21	41.26	67.64	0.27
Basin 6-7 Alignm	8400	PF 1	50.00	3658.00	3659.28		3659.32	0.009327	1.59	31.48	76.41	0.44
Basin 6-7 Alignm	8100	PF 1	50.00	3655.97	3657.35		3657.39	0.004743	1.61	31.03	44.27	0.34
Basin 6-7 Alignm	7800	PF 1	50.00	3654.00	3655.38		3655.49	0.008892	2.61	19.17	21.08	0.48
Basin 6-7 Alignm	7500	PF 1	50.00	3651.88	3653.81		3653.85	0.003627	1.79	27.99	27.73	0.31
Basin 6-7 Alignm	7200	PF 1	50.00	3650.00	3652.28		3652.36	0.007301	2.22	22.49	26.95	0.43
Basin 6-7 Alignm	6900	PF 1	50.00	3650.00	3650.38		3650.40	0.005712	1.04	47.89	150.84	0.33
Basin 6-7 Alignm	6600	PF 1	70.00	3648.05	3648.86		3648.89	0.004639	1.50	46.57	72.71	0.33
Basin 6-7 Alignm	6300	PF 1	70.00	3645.86	3647.50		3647.55	0.004312	1.71	40.95	49.85	0.33
Basin 6-7 Alignm	6000	PF 1	70.00	3644.00	3646.18		3646.21	0.004616	1.25	56.18	115.56	0.31
Basin 6-7 Alignm	5700	PF 1	70.00	3643.82	3644.53		3644.57	0.006596	1.52	45.98	91.76	0.38
Basin 6-7 Alignm	5400	PF 1	70.00	3641.96	3642.47		3642.51	0.007138	1.45	48.22	109.65	0.39
Basin 6-7 Alignm	5100	PF 1	70.00	3638.41	3639.20		3639.29	0.017793	2.48	28.24	57.05	0.62
Basin 6-7 Alignm	4800	PF 1	70.00	3632.82	3634.39	3633.96	3634.46	0.014647	2.12	32.97	72.47	0.55
Basin 6-7 Alignm	4500	PF 1	70.00	3629.76	3630.65		3630.73	0.010679	2.28	30.76	48.14	0.50
Basin 6-7 Alignm	4200	PF 1	70.00	3628.00	3629.29		3629.31	0.002589	1.26	55.76	73.64	0.25
Basin 6-7 Alignm	3900	PF 1	70.00	3627.99	3628.72		3628.73	0.001513	0.86	81.70	127.39	0.19
Basin 6-7 Alignm	3600	PF 1	70.00	3627.24	3628.19		3628.20	0.002077	0.95	73.67	124.86	0.22

Table 7 (Continued)
HEC-RAS Model Results for Subbasins 6 and 7

HEC-RAS Plan: Plan 01 River: Basin 6-7 Alignm Reach: Basin 6-7 Alignm Profile: PF 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Basin 6-7 Alignm	3300	PF 1	70.00	3625.72	3626.29	3626.29	3626.43	0.054666	3.06	22.87	78.21	1.00
Basin 6-7 Alignm	3000	PF 1	70.00	3620.00	3622.73	3621.66	3622.80	0.004202	2.13	32.94	27.63	0.34
Basin 6-7 Alignm	2700	PF 1	70.00	3619.93	3621.35		3621.43	0.005072	2.23	31.38	28.69	0.38
Basin 6-7 Alignm	2400	PF 1	70.00	3617.98	3619.40		3619.48	0.008561	2.34	29.94	38.07	0.46
Basin 6-7 Alignm	2100	PF 1	70.00	3613.97	3615.92	3615.54	3616.15	0.014794	3.86	18.13	15.87	0.64
Basin 6-7 Alignm	1800	PF 1	70.00	3611.98	3613.28		3613.36	0.006227	2.23	31.39	33.67	0.41
Basin 6-7 Alignm	1500	PF 1	428.00	3609.99	3612.18		3612.27	0.003348	2.37	180.47	110.58	0.33
Basin 6-7 Alignm	1200	PF 1	428.00	3606.00	3611.08		3611.22	0.003623	2.95	145.03	67.17	0.35
Basin 6-7 Alignm	900	PF 1	428.00	3605.90	3610.30		3610.35	0.002250	1.67	255.83	195.43	0.26
Basin 6-7 Alignm	600	PF 1	428.00	3603.94	3609.10		3609.29	0.006125	3.44	124.56	68.17	0.45
Basin 6-7 Alignm	300	PF 1	428.00	3603.79	3607.22	3606.70	3607.32	0.006907	2.61	163.76	148.68	0.44
Basin 6-7 Alignm	0	PF 1	428.00	3599.86	3602.61	3602.61	3603.33	0.033546	6.79	63.07	44.85	1.01

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Table 8
HEC-RAS Model Results for Subbasin 8

HEC-RAS Plan: Plan 01 River: Basin 8 Alignmen Reach: Basin 8 Alignmen Profile: PF 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Basin 8 Alignmen	6900	PF 1	45.00	3777.90	3778.66	3778.36	3778.71	0.007543	1.76	25.63	45.49	0.41
Basin 8 Alignmen	6883.4	PF 1	45.00	3777.73	3778.48		3778.55	0.012173	2.02	22.23	45.68	0.51
Basin 8 Alignmen	6600	PF 1	45.00	3772.51	3773.49	3773.36	3773.65	0.026270	3.29	13.67	23.20	0.76
Basin 8 Alignmen	6300	PF 1	45.00	3767.88	3768.37		3768.42	0.012299	1.80	24.99	61.84	0.50
Basin 8 Alignmen	6000	PF 1	45.00	3763.89	3764.30	3764.19	3764.35	0.015055	1.74	25.83	78.19	0.53
Basin 8 Alignmen	5700	PF 1	45.00	3755.36	3756.76	3756.76	3757.16	0.043422	5.04	8.93	11.71	1.02
Basin 8 Alignmen	5400	PF 1	45.00	3747.96	3749.62	3749.11	3749.73	0.008511	2.70	16.68	16.68	0.48
Basin 8 Alignmen	5100	PF 1	45.00	3743.91	3744.38	3744.38	3744.58	0.050737	3.61	12.45	31.29	1.01
Basin 8 Alignmen	4800	PF 1	45.00	3739.99	3741.09	3740.46	3741.11	0.002488	1.35	33.35	38.24	0.25
Basin 8 Alignmen	4500	PF 1	90.00	3737.76	3738.59		3738.75	0.020743	3.18	28.33	44.19	0.70
Basin 8 Alignmen	4200	PF 1	90.00	3733.98	3734.96	3734.60	3735.03	0.008132	2.14	42.09	58.94	0.45
Basin 8 Alignmen	3900	PF 1	90.00	3729.24	3729.78	3729.78	3729.93	0.055176	3.05	29.53	102.38	1.00
Basin 8 Alignmen	3600	PF 1	90.00	3724.00	3725.13	3724.42	3725.15	0.001112	0.98	91.44	92.08	0.17
Basin 8 Alignmen	3300	PF 1	90.00	3724.00	3724.30		3724.34	0.013643	1.55	57.93	193.12	0.50
Basin 8 Alignmen	3000	PF 1	181.00	3714.72	3715.49	3715.49	3715.71	0.047720	3.79	47.73	106.91	1.00
Basin 8 Alignmen	2700	PF 1	181.00	3710.24	3711.36	3710.93	3711.42	0.005121	1.84	98.36	121.23	0.36
Basin 8 Alignmen	2400	PF 1	181.00	3707.07	3707.68	3707.68	3707.88	0.050376	3.54	51.20	132.67	1.00
Basin 8 Alignmen	2100	PF 1	181.00	3699.93	3701.34	3700.90	3701.49	0.009968	3.05	59.29	56.23	0.52
Basin 8 Alignmen	1800	PF 1	181.00	3695.78	3697.07		3697.36	0.019983	4.27	42.40	41.15	0.74
Basin 8 Alignmen	1500	PF 1	181.00	3691.77	3693.01		3693.15	0.010225	3.00	60.37	60.40	0.53
Basin 8 Alignmen	1200	PF 1	181.00	3687.65	3688.79		3688.98	0.019740	3.55	50.95	64.82	0.71
Basin 8 Alignmen	900	PF 1	181.00	3686.00	3687.77		3687.81	0.001536	1.48	122.37	85.31	0.22
Basin 8 Alignmen	600	PF 1	181.00	3685.83	3687.06		3687.11	0.003913	1.80	100.47	105.21	0.32
Basin 8 Alignmen	300	PF 1	181.00	3683.91	3684.68	3684.52	3684.84	0.019867	3.23	55.97	82.40	0.69
Basin 8 Alignmen	0	PF 1	181.00	3674.00	3676.37	3676.37	3677.00	0.035346	6.39	28.30	22.58	1.01

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Table 9
HEC-RAS Model Results for Subbasins 9 and 10

HEC-RAS Plan: Plan 01 River: Basin 9-10 Align Reach: Basin 9-10 Align Profile: PF 1

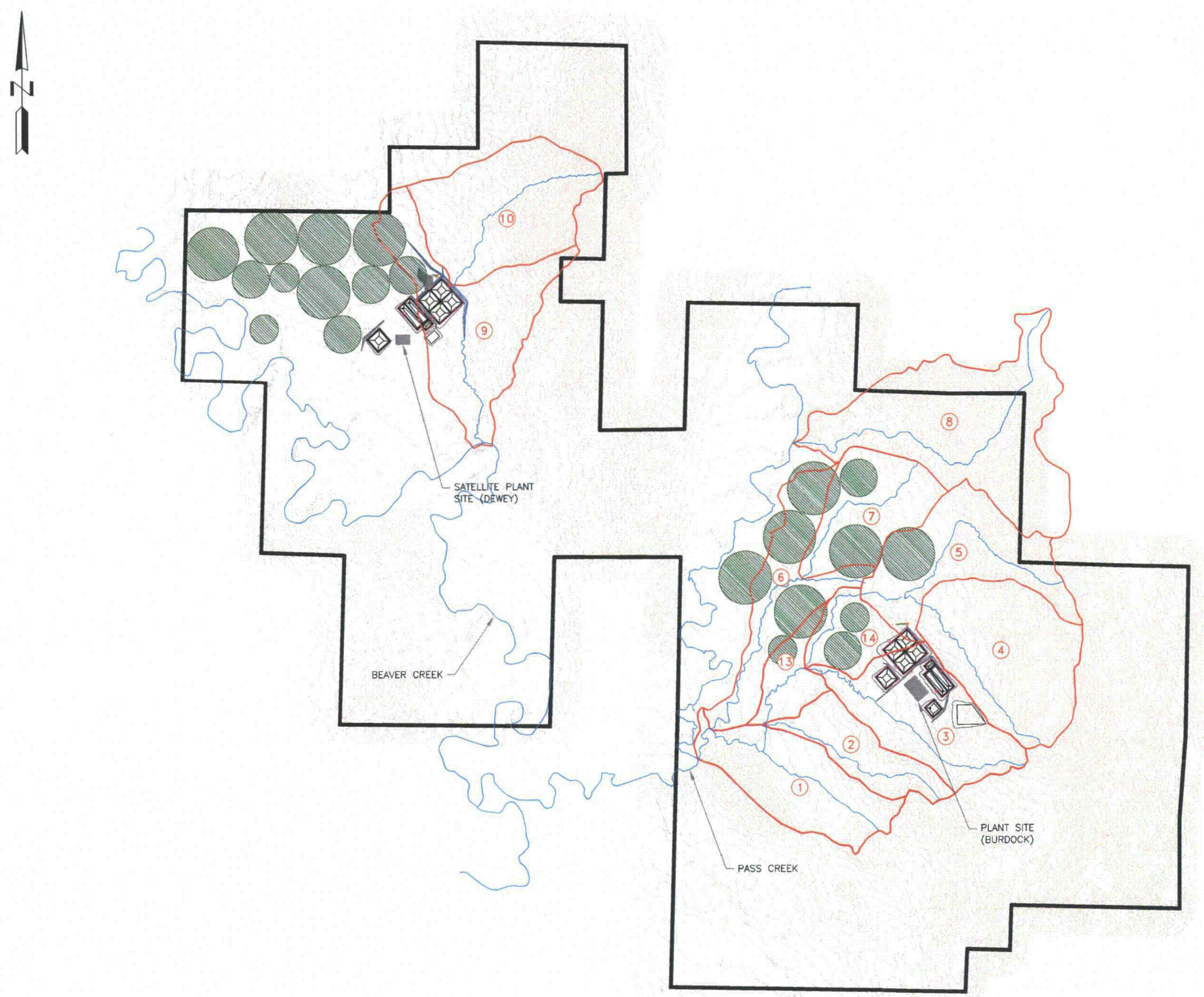
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Basin 9-10 Align	13404.94	PF 1	61.00	3923.38	3924.43	3924.43	3924.75	0.044618	4.53	13.46	21.81	1.02
Basin 9-10 Align	13200	PF 1	61.00	3905.83	3906.79	3907.19	3908.09	0.188802	9.14	6.68	10.98	2.06
Basin 9-10 Align	12900	PF 1	61.00	3865.99	3867.05	3867.27	3867.79	0.099758	6.89	8.85	13.85	1.52
Basin 9-10 Align	12600	PF 1	61.00	3849.88	3850.92	3850.92	3851.27	0.042823	4.72	12.93	19.07	1.01
Basin 9-10 Align	12300	PF 1	61.00	3829.98	3831.32	3831.62	3832.31	0.101559	8.02	7.61	9.27	1.56
Basin 9-10 Align	12000	PF 1	61.00	3815.54	3816.25	3816.22	3816.48	0.038415	3.79	16.09	30.53	0.92
Basin 9-10 Align	11700	PF 1	61.00	3802.83	3803.85	3803.85	3804.18	0.043701	4.58	13.33	20.94	1.01
Basin 9-10 Align	11400	PF 1	61.00	3793.08	3793.64	3793.57	3793.73	0.027088	2.42	25.19	72.29	0.72
Basin 9-10 Align	11100	PF 1	61.00	3781.96	3782.42	3782.42	3782.56	0.054383	3.07	19.85	67.19	1.00
Basin 9-10 Align	10800	PF 1	61.00	3766.01	3766.88	3766.77	3767.03	0.027470	3.12	19.57	38.85	0.77
Basin 9-10 Align	10500	PF 1	61.00	3755.08	3755.61	3755.61	3755.75	0.054462	3.04	20.06	69.08	0.99
Basin 9-10 Align	10200	PF 1	61.00	3743.36	3744.31	3744.31	3744.60	0.045592	4.32	14.12	25.05	1.01
Basin 9-10 Align	9900	PF 1	61.00	3733.88	3734.67	3734.43	3734.76	0.012194	2.37	25.74	41.86	0.53
Basin 9-10 Align	9600	PF 1	122.00	3725.77	3726.39	3726.39	3726.61	0.047515	3.79	32.21	72.01	1.00
Basin 9-10 Align	9300	PF 1	122.00	3715.89	3717.28	3716.91	3717.43	0.012025	3.08	39.55	42.78	0.57
Basin 9-10 Align	9000	PF 1	122.00	3709.64	3710.93	3710.93	3711.31	0.041330	4.97	24.55	32.78	1.01
Basin 9-10 Align	8700	PF 1	122.00	3701.92	3703.69	3703.21	3703.81	0.011870	2.80	43.52	53.85	0.55
Basin 9-10 Align	8400	PF 1	122.00	3695.99	3697.96	3697.88	3698.38	0.030368	5.25	23.25	22.43	0.91
Basin 9-10 Align	8100	PF 1	122.00	3693.88	3694.70		3694.75	0.006168	1.79	68.08	101.15	0.38
Basin 9-10 Align	7800	PF 1	122.00	3690.03	3690.49	3690.49	3690.69	0.049685	3.57	34.18	86.38	1.00
Basin 9-10 Align	7500	PF 1	122.00	3683.98	3684.77	3684.44	3684.83	0.007085	1.88	64.99	99.92	0.41
Basin 9-10 Align	7200	PF 1	122.00	3680.00	3680.66	3680.61	3680.76	0.035486	2.59	47.03	149.00	0.81
Basin 9-10 Align	6900	PF 1	122.00	3675.91	3676.83		3676.88	0.006577	1.82	67.10	102.32	0.40
Basin 9-10 Align	6600	PF 1	122.00	3671.78	3672.37	3672.37	3672.56	0.052236	3.51	34.74	93.39	1.01
Basin 9-10 Align	6300	PF 1	122.00	3659.86	3662.42	3661.57	3662.60	0.006759	3.33	36.68	22.29	0.46
Basin 9-10 Align	6000	PF 1	122.00	3656.92	3660.04		3660.25	0.009144	3.71	32.85	21.08	0.52
Basin 9-10 Align	5700	PF 1	122.00	3653.97	3657.02		3657.27	0.010865	3.98	30.62	20.08	0.57
Basin 9-10 Align	5400	PF 1	122.00	3651.02	3654.25		3654.45	0.008102	3.58	34.12	21.10	0.50
Basin 9-10 Align	5100	PF 1	122.00	3648.08	3650.96		3651.26	0.014455	4.42	27.58	19.17	0.65
Basin 9-10 Align	4800	PF 1	122.00	3645.13	3648.44		3648.59	0.005879	3.11	39.29	23.77	0.43
Basin 9-10 Align	4500	PF 1	122.00	3642.19	3644.49	3644.44	3645.02	0.033954	5.87	20.77	18.09	0.97
Basin 9-10 Align	4200	PF 1	168.00	3637.94	3639.83		3640.03	0.010889	3.63	46.22	36.13	0.57
Basin 9-10 Align	3900	PF 1	168.00	3633.97	3635.98	3635.63	3636.21	0.015155	3.86	43.50	39.84	0.65
Basin 9-10 Align	3600	PF 1	168.00	3628.62	3630.01	3629.88	3630.32	0.026353	4.48	37.47	41.70	0.83
Basin 9-10 Align	3300	PF 1	168.00	3623.99	3625.92		3626.06	0.008661	2.94	57.15	51.91	0.49
Basin 9-10 Align	3000	PF 1	168.00	3619.89	3621.50	3621.35	3621.91	0.024914	5.17	32.53	27.81	0.84
Basin 9-10 Align	2700	PF 1	168.00	3615.88	3617.61		3617.75	0.008564	3.03	55.37	47.49	0.50
Basin 9-10 Align	2400	PF 1	168.00	3611.98	3613.78		3614.06	0.019048	4.21	39.95	38.24	0.73
Basin 9-10 Align	2100	PF 1	196.00	3609.99	3612.59		3612.64	0.002172	1.89	103.72	64.68	0.26

POWERTECH (USA) INC.

Table 9 (Continued)
HEC-RAS Model Results for Subbasins 9 and 10

HEC-RAS Plan: Plan 01 River: Basin 9-10 Align Reach: Basin 9-10 Align Profile: PF 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Basin 9-10 Align	1800	PF 1	196.00	3609.30	3610.45	3610.45	3610.91	0.038416	5.42	36.18	40.12	1.01
Basin 9-10 Align	1500	PF 1	196.00	3602.04	3604.59	3604.02	3604.85	0.010761	4.10	47.83	30.62	0.58
Basin 9-10 Align	1200	PF 1	196.00	3599.97	3602.12		3602.26	0.006930	3.03	64.75	47.43	0.46
Basin 9-10 Align	900	PF 1	196.00	3597.75	3599.57		3599.72	0.010521	3.11	63.04	60.81	0.54
Basin 9-10 Align	600	PF 1	196.00	3594.67	3596.34	3596.03	3596.45	0.011194	2.62	74.74	97.68	0.53
Basin 9-10 Align	300	PF 1	196.00	3589.81	3592.12	3591.75	3592.43	0.016157	4.46	43.92	33.60	0.69
Basin 9-10 Align	0	PF 1	196.00	3584.00	3584.52	3584.52	3584.77	0.046078	3.99	49.09	99.05	1.00



LEGEND:

- EXISTING GROUND SURFACE CONTOUR AND ELEVATION, FEET
- PERMIT BOUNDARY
- WATERSHED BOUNDARIES
- EPHEMERAL CHANNELS
- LAND APPLICATION AREAS

PLAN

2000 0 2000 4000 FEET

1" = 2000' AT FULL SIZE (ANSI D)
1" = 4000' AT HALF SIZE (ANSI B)

CONSULTANT

REF

CHECK SCALES

If this bar does not measure 1 inch this map is not at its original scale

Arch D 24" x 36"

REVISIONS

#	DRAWN	CHECKED	APPROVED	DATE

PLOT DATE 15-Sep-2010 | DATE 25-Aug-2010

DRAWN SH | CHECKED JD

SCALE 1" = 2000' | FILENAME g:\102\00279.13\cad\design\civil 3d\102.00279.13 small drainage basins.dwg

POWERTECH (USA) INC.

FIGURE 1
MINOR SUBBASINS AND CHANNELS

PROJECT DEWEY-BURDOCK PROJECT

COORDS

1

1 OF 10

LEGEND:

3550	EXISTING GROUND SURFACE CONTOUR AND ELEVATION, FEET
	FLOODPLAIN LIMITS

PLAN

300 0 300 600 FEET

1" = 300' AT FULL SIZE (ANSI D)
1" = 600' AT HALF SIZE (ANSI B)

CONSULTANT

REF

CHECK SCALES

If this bar does not measure 1 inch this map is not at its original scale

Arch D 24" x 36"

REVISIONS

#	DRAWN	CHECKED	APPROVED	DATE

POWERTECH (USA) INC.

FIGURE 2
100-YR FLOODPLAIN BOUNDARY
SUBBASIN 1

PLOT DATE	27-Aug-2010	DATE	25-Aug-2010	PROJECT	DEWEY-BURDOCK PROJECT
DRAWN	SH	CHEDKED	JD	COORDS	
SCALE	1" = 300'	FILENAME	g:\102\00279.13\cad\design\civil 3d\102.00279.13 basin 01 hec ras.dwg		

2

2 OF 10

LEGEND:

3550 EXISTING GROUND SURFACE CONTOUR AND ELEVATION, FEET

FLOODPLAIN LIMITS

PLAN

300 0 300 600 FEET

1" = 300' AT FULL SIZE (ANSI D)
1" = 600' AT HALF SIZE (ANSI B)

CONSULTANT	REVISIONS					POWERTECH (USA) INC.	
	#	DRAWN	CHECKED	APPROVED	DATE	FIGURE 3 100-YR FLOODPLAIN BOUNDARY SUBBASIN 2	
REF							
CHECK SCALES If this bar does not measure 1 inch this map is not of its original scale	PLOT DATE 27-Aug-2010		DATE 25-Aug-2010			PROJECT DEWEY-BURDOCK PROJECT	3
	DRAWN SH		CHECKED JD			COORDS	
Arch D 24" x 36"	SCALE 1" = 300'		FILENAME g:\102\00279.13\cad\design\civil 3d\102.00279.13 basin 02 hec ras.dwg				3 OF 10

LEGEND:

3550 — EXISTING GROUND SURFACE CONTOUR AND ELEVATION, FEET

FLOODPLAIN LIMITS

PLAN

400 0 400 800 FEET

1" = 400' AT FULL SIZE (ANSI D)
1" = 800' AT HALF SIZE (ANSI B)

CONSULTANT	REVISIONS				
	#	DRAWN	CHECKED	APPROVED	DATE

REF

CHECK SCALES

If this bar does not measure 1 inch this map is not at its original scale

Arch D 24" x 36"

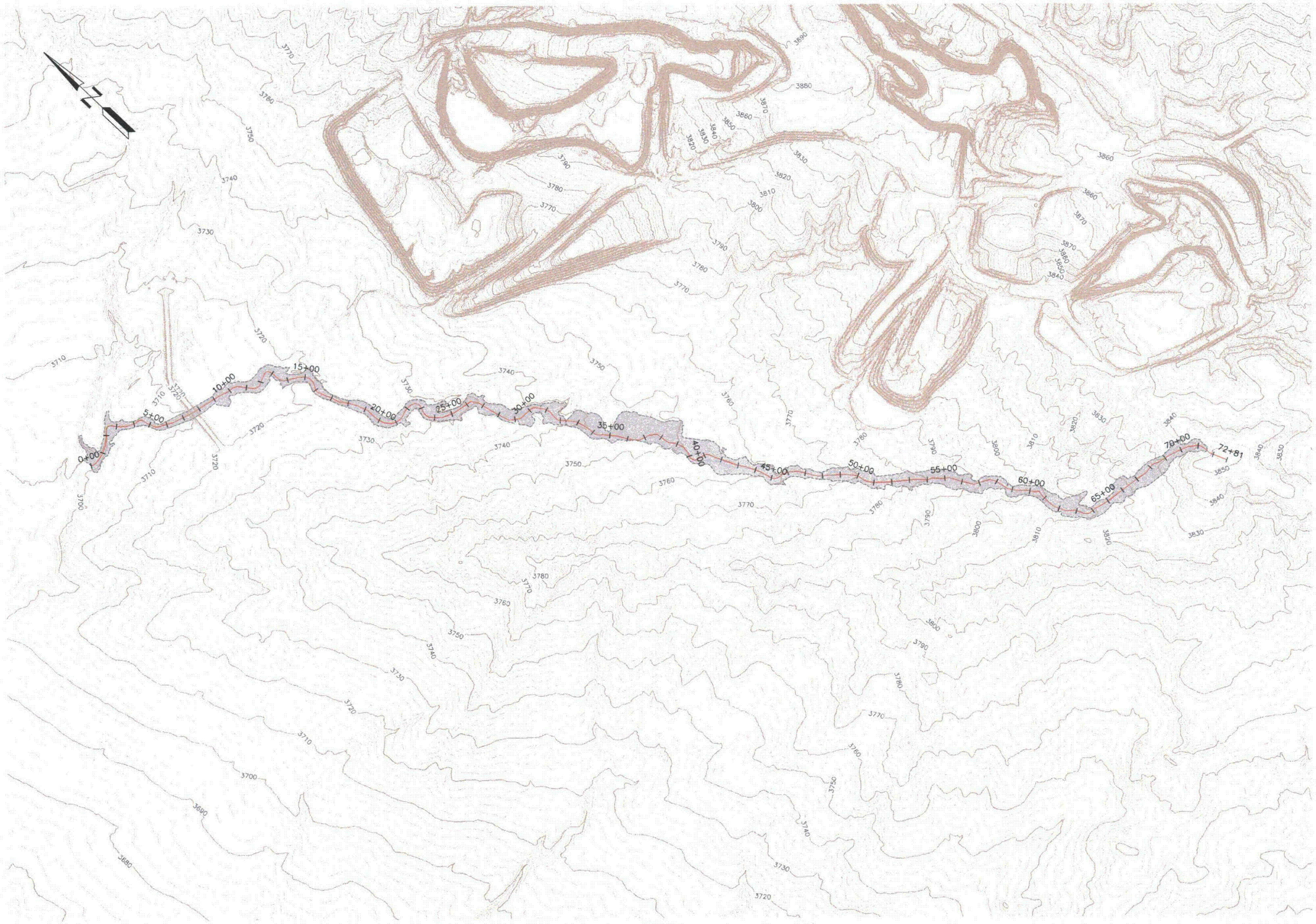
POWERTECH (USA) INC.

FIGURE 4
100-YR FLOODPLAIN BOUNDARY
SUBBASIN 3

PLOT DATE	27-Aug-2010	DATE	25-Aug-2010	PROJECT	DEWEY-BURDOCK PROJECT
DRAWN	SH	CHEDKED	JD	COORDS	
SCALE	1" = 400'	FILENAME	g:\102\00279.13\cad\design\civil 3d\102.00279.13 basin 03 hec ras.dwg		

4

4 OF 10



LEGEND:

3550	EXISTING GROUND SURFACE CONTOUR AND ELEVATION, FEET
	FLOODPLAIN LIMITS

PLAN

300 0 300 600 FEET

1" = 300' AT FULL SIZE (ANSI D)
1" = 600' AT HALF SIZE (ANSI B)

CONSULTANT				
REF				
CHECK SCALES If this bar does not measure 1 inch this map is not at its original scale				
Arch D 24" x 36"				

REVISIONS

#	DRAWN	CHECKED	APPROVED	DATE

POWERTECH (USA) INC.

FIGURE 5
100-YR FLOODPLAIN BOUNDARY
SUBBASIN 4

PLOT DATE 27-Aug-2010	DATE 25-Aug-2010	PROJECT DEWEY-BURDOCK PROJECT	5
DRAWN SH	CHEDKED JD	COORDS	
SCALE 1" = 300'	FILENAME g:\102\00279.13\cad\design\civil 3d\102.00279.13 basin 04 hec ras.dwg		5 OF 10

LEGEND:

- 3550 — EXISTING GROUND SURFACE CONTOUR AND ELEVATION, FEET
- FLOODPLAIN LIMITS

PLAN

500 0 500 1000 FEET

1" = 500' AT FULL SIZE (ANSI D)
1" = 1000' AT HALF SIZE (ANSI B)

CONSULTANT

REVISIONS

#	DRAWN	CHECKED	APPROVED	DATE

POWERTECH (USA) INC.

FIGURE 6
100-YR FLOODPLAIN BOUNDARY
SUBBASINS 5, 13 AND 14

REF

CHECK SCALES

If this bar does not measure 1 inch this map is not at its original scale

Arch D 24" x 36"

PLOT DATE 27-Aug-2010	DATE 25-Aug-2010	PROJECT DEWEY-BURDOCK PROJECT	6
DRAWN SH	CHECKED JD	COORDS	
SCALE 1" = 500'	FILENAME g:\102\00279.13\cad\design\civil 3d\102.00279.13 basin 05-13 hec ras.dwg		6 OF 10

LEGEND:

3550 — EXISTING GROUND SURFACE CONTOUR AND ELEVATION, FEET

FLOODPLAIN LIMITS

PLAN

500 0 500 1000 FEET

1" = 500' AT FULL SIZE (ANSI D)
1" = 1000' AT HALF SIZE (ANSI B)

CONSULTANT	REVISIONS					POWERTECH (USA) INC.
	#	DRAWN	CHECKED	APPROVED	DATE	FIGURE 7 100-YR FLOODPLAIN BOUNDARY SUBBASINS 6 AND 7
REF						
CHECK SCALES If this bar does not measure 1 inch this map is not at its original scale	PLOT DATE 27-Aug-2010		DATE 25-Aug-2010			PROJECT DEWEY-BURDOCK PROJECT — 7
	DRAWN SH		CHEDKED JD			COORDS
Arch D 24" x 36"	SCALE 1" = 500'		FILENAME g:\102\00279.13\cad\design\civil 3d\102.00279.13 basin 06-07 hec ras.dwg			7 OF 10

LEGEND:

3550 — EXISTING GROUND SURFACE CONTOUR AND ELEVATION, FEET

FLOODPLAIN LIMITS

PLAN

300 0 300 600 FEET

1" = 300' AT FULL SIZE (ANSI D)
1" = 600' AT HALF SIZE (ANSI B)

REVISIONS				
#	DRAWN	CHECKED	APPROVED	DATE

CONSULTANT

REF

CHECK SCALES

If this bar does not measure 1 inch this map is not at its original scale

Arch D 24" x 36"

POWERTECH (USA) INC.

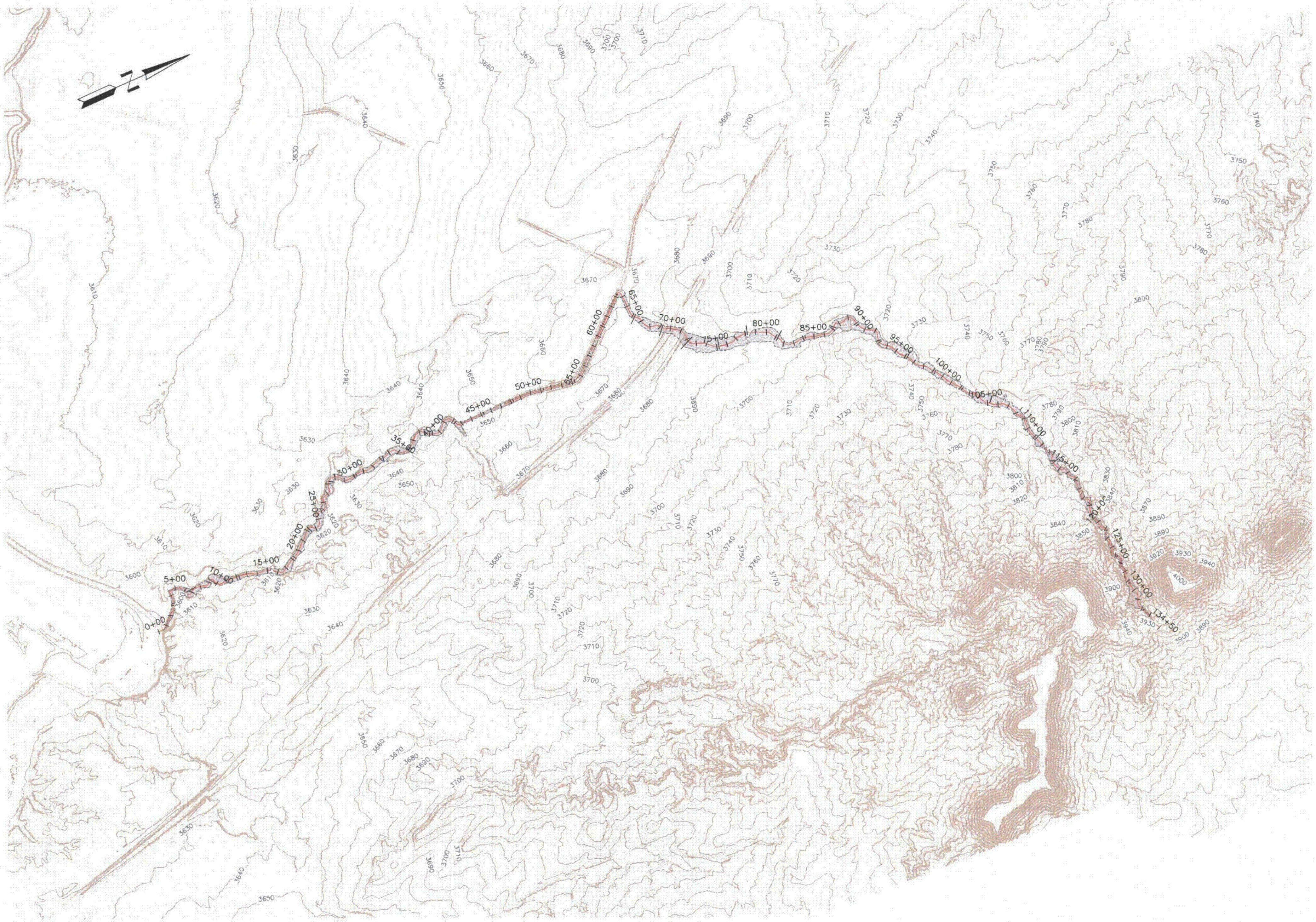
FIGURE 8
100-YR FLOODPLAIN BOUNDARY
SUBBASIN 8

PLOT DATE 27-Aug-2010	DATE 25-Aug-2010	PROJECT DEWEY-BURDOCK PROJECT	8
DRAWN SH	CHECKED JD	COORDS	
SCALE 1" = 300'	FILENAME g:\102\00279.13\cad\design\civil 3d\102.00279.13 basin 08 hec ras.dwg		8 OF 10

LEGEND:

3550 — EXISTING GROUND SURFACE CONTOUR AND ELEVATION, FEET

FLOODPLAIN LIMITS



PLAN

500 0 500 1000 FEET

1" = 500' AT FULL SIZE (ANSI D)
1" = 1000' AT HALF SIZE (ANSI B)

CONSULTANT	REVISIONS				
	#	DRAWN	CHECKED	APPROVED	DATE
REF					
CHECK SCALES If this bar does not measure 1 inch this map is not at its original scale Arch D 24" x 36"					

POWERTECH (USA) INC.

FIGURE 9
100-YR FLOODPLAIN BOUNDARY
SUBBASINS 9 AND 10

PLOT DATE 27-Aug-2010	DATE 25-Aug-2010	PROJECT DEWEY-BURDOCK PROJECT			9
DRAWN SH	CHEDKED JD	COORDS			
SCALE 1" = 500'	FILENAME g:\102\00279.13\cad\design\civil 3d\102.00279.13 basin 09-10 hec ras.dwg				9 OF 10

POWERTECH (USA) INC.

Appendix 2.7-F2

HEC- 1 Model Outputs

B-1 Burdock

B-2 Dewey

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             JUN   1998                *
*           VERSION 4.1                 *
*                                       *
* RUN DATE   06AUG10  TIME  16:42:45    *
*                                       *
*****************************************
```

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

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

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

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

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

   1        ID  DEWEY-BURDOCK PROJECT DV102\279.13
   2        ID  24-HR PEAK FLOWS FOR PASS CREEK TRIBUTARY WATERSHEDS (Burdock Area)
   3        ID  PRECIPITATION INPUT: 24-HOUR TYPE II DISTRIBUTION AT 30-MINUTE INTERVALS
   4        ID  24-HR 100-YR PRECIP VALUE = 3.83 inches
   5        ID  USES SCS UNIT HYDROGRAPH METHOD
   6        ID  tc = (100*L^0.8*[(1000/CN)-9]^0.7)/1900*S^0.5
   7        ID  L=longest flow path; S=channel slope; CN=curve number
   8        ID  TLAG=0.6*tc
   9        ID  SUBBASINS B-1,B-2,B-3,B-4,B-5,B-6,B-7,B-8 SHOWN ON AUTOCAD FILE
  10        ID  DV102\279.13\CAD\Design\JRD-EG.dwg
            *DIAGRAM
  11        JR    PREC    3.83
  12        IT      15                  100
  13        IN      30
  14        IO       5

  15        KK     B-8
  16        KM  RUNOFF FROM SUBBASIN B-8
  17        BA  0.9785
  18        PB       1
  19        PC       0  0.0053  0.0108  0.0164  0.0223  0.0284  0.0347  0.0414  0.0483  0.0555
  20        PC  0.0632  0.0712  0.0797  0.0887  0.0984  0.1089  0.1203  0.1328  0.1467  0.1625
  21        PC  0.1808  0.2042  0.2351  0.2833  0.6632  0.7351  0.7724  0.7989  0.8197   0.838
  22        PC  0.8538  0.8676  0.8801  0.8914  0.9019  0.9115  0.9206  0.9291  0.9371  0.9446
  23        PC  0.9519  0.9588  0.9653  0.9717  0.9777  0.9836  0.9892  0.9947       1
  24        LS              63
  25        UD    0.65
            *

  26        KK     B-5
  27        KM  RUNOFF FROM SUBBASIN B-5
  28        BA   0.548
  29        LS              63
  30        UD    0.73
            *

  31        KK     B-4
  32        KM  RUNOFF FROM SUBBASIN B-4
  33        BA   0.675
  34        LS              63
  35        UD    0.94
            *

  36        KK     P-1
  37        KM  COMBINE HYDROGRAPHS--SUBBASINS B-5, B-4
  38        HC       2
            *

  39        KK    P1>P2
  40        KM  ROUTE P-1 HYDROGRAPH TO P-2
  41        RK    5000    0.01    0.05            TRAP       5       2
            *
```

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

               KK     B-3
               KM  RUNOFF FROM SUBBASIN B-3
               BA   0.535
               LS              63
               UD    1.51
               *

               KK     B-14
               KM  RUNOFF FROM SUBBASIN B-14
               BA   0.194
               LS              63
               UD    0.78
               *

               KK     P-2
               KM  COMBINE HYDROGRAPHS--HYDROGRPAHS P-1, B-3, B-14
               HC       3
               *

               KK    P2>P3
               KM  ROUTE P-2 HYDROGRAPH TO P-3
               RK    3300   0.005    0.05           TRAP      10        2
               *

               KK     B-2
               KM  RUNOFF FROM SUBBASIN B-2
               BA  0.2625
               LS              63
               UD    0.88
               *

               KK     B-13
               KM  RUNOFF FROM SUBBASIN B-13
               BA   0.154
               LS              63
               UD    1.21
               *

               KK     P-3
               KM  COMBINE HYDROGRAPHS--P-3, B-2, B-13
               HC       3
               *

               KK    P3>P4
               KM  ROUTE P-3 HYDROGRAPH TO P-4
               RK    4659   0.006    0.05           TRAP      10        2
               *

               KK     B-7
               KM  RUNOFF--SUBBASIN B-7
               BA   0.389
               LS              63
               UD    1.26
               *
```

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

  79            KK  B-7>P4
  80            KM  ROUTE B-7 HYDROGRAPH TO P-4
  81            RK    9200   0.006     0.05             TRAP       10        2
                *

  82            KK     B-6
  83            KM  RUNOFF--SUBBASIN B-6
  84            BA   0.435
  85            LS               63
  86            UD    3.05
                *

  87            KK     B-1
  88            KM  RUNOFF--SUBBASIN B-1
  89            BA   0.479
  90            LS               63
  91            UD    0.86
                *

  92            KK     P-4
  93            KM  COMBINE HYDROGRAPHS--SUBBASINS P-3, B-7, B-6, B-1
  94            HC       4
                *
  95            ZZ
```

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

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

     15         B-8
                  .
                  .
     26           .       B-5
                  .         .
                  .         .
     31           .         .       B-4
                  .         .         .
                  .         .         .
     36           .       P-1..........
                  .         V
                  .         V
     39           .     P1>P2
                  .         .
                  .         .
     42           .         .       B-3
                  .         .         .
                  .         .         .
     47           .         .         .      B-14
                  .         .         .         .
                  .         .         .         .
     52           .       P-2....................
                  .         V
                  .         V
     55           .     P2>P3
                  .         .
                  .         .
     58           .         .       B-2
                  .         .         .
                  .         .         .
     63           .         .         .      B-13
                  .         .         .         .
                  .         .         .         .
     68           .       P-3....................
                  .         V
                  .         V
     71           .     P3>P4
                  .         .
                  .         .
     74           .         .       B-7
                  .         .         V
                  .         .         V
     79           .         .    B-7>P4
                  .         .         .
                  .         .         .
     82           .         .         .       B-6
                  .         .         .         .
                  .         .         .         .
     87           .         .         .         .       B-1
                  .         .         .         .         .
                  .         .         .         .         .
     92           .       P-4..............................
 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
```

```
*****************************************                    *****************************************
*                                       *                    *                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                    *   U.S. ARMY CORPS OF ENGINEERS        *
*              JUN   1998               *                    *   HYDROLOGIC ENGINEERING CENTER       *
*           VERSION 4.1                 *                    *         609 SECOND STREET             *
*                                       *                    *      DAVIS, CALIFORNIA 95616          *
* RUN DATE   06AUG10  TIME  16:42:45    *                    *          (916) 756-1104               *
*                                       *                    *                                       *
*****************************************                    *****************************************


                    DEWEY-BURDOCK PROJECT DV102\279.13
                    24-HR PEAK FLOWS FOR PASS CREEK TRIBUTARY WATERSHEDS (Burdock Area)
                    PRECIPITATION INPUT: 24-HOUR TYPE II DISTRIBUTION AT 30-MINUTE INTERVALS
                    24-HR 100-YR PRECIP VALUE = 3.83 inches
                    USES SCS UNIT HYDROGRAPH METHOD
                    tc = (100*L^0.8*[(1000/CN)-9]^0.7)/1900*S^0.5
                    L=longest flow path; S=channel slope; CN=curve number
                    TLAG=0.6*tc
                    SUBBASINS B-1,B-2,B-3,B-4,B-5,B-6,B-7,B-8 SHOWN ON AUTOCAD FILE
                    DV102\279.13\CAD\Design\JRD-EG.dwg

 14 IO          OUTPUT CONTROL VARIABLES
                      IPRNT           5  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE

    IT          HYDROGRAPH TIME DATA
                       NMIN          15  MINUTES IN COMPUTATION INTERVAL
                      IDATE       1   0  STARTING DATE
                      ITIME        0000  STARTING TIME
                         NQ         100  NUMBER OF HYDROGRAPH ORDINATES
                     NDDATE       2   0  ENDING DATE
                     NDTIME        0045  ENDING TIME
                      ICENT          19  CENTURY MARK

                COMPUTATION INTERVAL      .25 HOURS
                     TOTAL TIME BASE    24.75 HOURS

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

    JP          MULTI-PLAN OPTION
                      NPLAN           1  NUMBER OF PLANS

    JR          MULTI-RATIO OPTION
                    RATIOS OF PRECIPITATION
                  3.83
```

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION RATIO 1 3.83
HYDROGRAPH AT	B-8	.98	1	FLOW	181.
				TIME	12.75
HYDROGRAPH AT	B-5	.55	1	FLOW	98.
				TIME	12.75
HYDROGRAPH AT	B-4	.68	1	FLOW	104.
				TIME	13.00
2 COMBINED AT	P-1	1.22	1	FLOW	195.
				TIME	12.75
ROUTED TO	P1>P2	1.22	1	FLOW	194.
				TIME	13.00
HYDROGRAPH AT	B-3	.54	1	FLOW	61.
				TIME	13.75
HYDROGRAPH AT	B-14	.19	1	FLOW	33.
				TIME	12.75
3 COMBINED AT	P-2	1.95	1	FLOW	273.
				TIME	13.00
ROUTED TO	P2>P3	1.95	1	FLOW	268.
				TIME	13.25
HYDROGRAPH AT	B-2	.26	1	FLOW	42.
				TIME	13.00
HYDROGRAPH AT	B-13	.15	1	FLOW	20.
				TIME	13.25
3 COMBINED AT	P-3	2.37	1	FLOW	326.
				TIME	13.25
ROUTED TO	P3>P4	2.37	1	FLOW	324.
				TIME	13.25
HYDROGRAPH AT	B-7	.39	1	FLOW	50.
				TIME	13.25
ROUTED TO	B-7>P4	.39	1	FLOW	49.
				TIME	14.00
HYDROGRAPH AT	B-6	.44	1	FLOW	31.
				TIME	15.50
HYDROGRAPH AT	B-1	.48	1	FLOW	77.
				TIME	13.00
4 COMBINED AT	P-4	3.67	1	FLOW	428.
				TIME	13.25

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	DT (INTERPOLATED TO COMPUTATION INTERVAL)	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
FOR PLAN = 1 RATIO= 3.83									
P1>P2	MANE	4.33	194.95	775.13	.81	15.00	194.13	780.00	.81

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5327E+02 EXCESS= .0000E+00 OUTFLOW= .5287E+02 BASIN STORAGE= .4165E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= 3.83									
P2>P3	MANE	3.43	271.90	788.19	.80	15.00	268.48	795.00	.80

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8392E+02 EXCESS= .0000E+00 OUTFLOW= .8324E+02 BASIN STORAGE= .6310E+00 PERCENT ERROR= .1

FOR PLAN = 1 RATIO= 3.83									
P3>P4	MANE	4.20	325.47	800.53	.79	15.00	323.70	795.00	.79

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1011E+03 EXCESS= .0000E+00 OUTFLOW= .1002E+03 BASIN STORAGE= .9793E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= 3.83									
B-7>P4	MANE	14.61	49.60	831.77	.78	15.00	48.77	840.00	.77

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1672E+02 EXCESS= .0000E+00 OUTFLOW= .1626E+02 BASIN STORAGE= .5538E+00 PERCENT ERROR= -.6

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

POWERTECH (USA) INC.

Appendix B-2

HEC-1 Output for Dewey

```
*****************************************                              ***************************************
*                                       *                              *                                     *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                              *   U.S. ARMY CORPS OF ENGINEERS      *
*              JUN   1998               *                              *   HYDROLOGIC ENGINEERING CENTER     *
*           VERSION 4.1                 *                              *         609 SECOND STREET           *
*                                       *                              *      DAVIS, CALIFORNIA 95616        *
*  RUN DATE   14SEP10  TIME  09:54:36   *                              *         (916) 756-1104              *
*                                       *                              *                                     *
*****************************************                              ***************************************


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

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

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

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

ID  DEWEY-BURDOCK PROJECT DV102\279.13
ID  24-HR PEAK FLOWS FOR BEAVER CREEK TRIBUTARY WATERSHEDS
ID  PRECIPITATION INPUT: 24-HOUR TYPE II DISTRIBUTION AT 30-MINUTE INTERVALS
ID  24-HR 100-YR PRECIP VALUE = 3.83 inches
ID  USES SCS UNIT HYDROGRAPH METHOD
ID  tc = (100*L^0.8*[(1000/CN)-9]^0.7)/1900*S^0.5
ID  L=longest flow path; S=watershed slope; CN=curve number
ID  TLAG=0.6*tc
ID  SUBBASINS B-9,B-10 SHOWN ON AUTOCAD FILE
ID  DV102\279.13\CAD\Design\JRD-EG-2.dwg
*DIAGRAM
JR    PREC    3.83
IT      15                   100
IN      30
IO       5

KK    B-10
KM  RUNOFF FROM SUBBASIN B-10
BA  0.6411
PB       1
PC       0  0.0053  0.0108  0.0164  0.0223  0.0284  0.0347  0.0414  0.0483  0.0555
PC  0.0632  0.0712  0.0797  0.0887  0.0984  0.1089  0.1203  0.1328  0.1467  0.1625
PC  0.1808  0.2042  0.2351  0.2833  0.6632  0.7351  0.7724  0.7989  0.8197   0.838
PC  0.8538  0.8676  0.8801  0.8914  0.9019  0.9115  0.9206  0.9291  0.9371  0.9446
PC  0.9519  0.9588  0.9653  0.9717  0.9777  0.9836  0.9892  0.9947       1
LS              63
UD    0.63
*

KK     B-9
KM  RUNOFF FROM SUBBASIN B-9
BA  0.6626
LS              63
UD    1.11
*

KK     P-1
KM  COMBINE HYDROGRAPHS--SUBBASINS B-9, B-10
HC       2
*
ZZ
```

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

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

   15        B-10
               .
               .
               .          B-9
               .            .
               .            .
   31         P-1...........

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION
```

```
*****************************************                                 ***************************************
*                                       *                                 *                                     *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                 *   U.S. ARMY CORPS OF ENGINEERS      *
*              JUN   1998               *                                 *   HYDROLOGIC ENGINEERING CENTER     *
*           VERSION 4.1                 *                                 *         609 SECOND STREET           *
*                                       *                                 *      DAVIS, CALIFORNIA 95616        *
*  RUN DATE   14SEP10  TIME  09:54:36   *                                 *          (916) 756-1104             *
*                                       *                                 *                                     *
*****************************************                                 ***************************************


                          DEWEY-BURDOCK PROJECT DV102\279.13
                          24-HR PEAK FLOWS FOR BEAVER CREEK TRIBUTARY WATERSHEDS
                          PRECIPITATION INPUT: 24-HOUR TYPE II DISTRIBUTION AT 30-MINUTE INTERVALS
                          24-HR 100-YR PRECIP VALUE = 3.83 inches
                          USES SCS UNIT HYDROGRAPH METHOD
                          tc = (100*L^0.8*[(1000/CN)-9]^0.7)/1900*S^0.5
                          L=longest flow path; S=watershed slope; CN=curve number
                          TLAG=0.6*tc
                          SUBBASINS B-9,B-10 SHOWN ON AUTOCAD FILE
                          DV102\279.13\CAD\Design\JRD-EG-2.dwg

 14 IO          OUTPUT CONTROL VARIABLES
                      IPRNT            5  PRINT CONTROL
                      IPLOT            0  PLOT CONTROL
                      QSCAL           0.  HYDROGRAPH PLOT SCALE

    IT          HYDROGRAPH TIME DATA
                       NMIN           15  MINUTES IN COMPUTATION INTERVAL
                      IDATE      1     0  STARTING DATE
                      ITIME         0000  STARTING TIME
                         NQ          100  NUMBER OF HYDROGRAPH ORDINATES
                     NDDATE      2     0  ENDING DATE
                     NDTIME         0045  ENDING TIME
                      ICENT           19  CENTURY MARK

                  COMPUTATION INTERVAL     .25 HOURS
                       TOTAL TIME BASE   24.75 HOURS

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

    JP          MULTI-PLAN OPTION
                      NPLAN            1  NUMBER OF PLANS

    JR          MULTI-RATIO OPTION
                    RATIOS OF PRECIPITATION
                   3.83
```

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION RATIO 1 3.83
HYDROGRAPH AT	B-10	.64	1	FLOW	122.
				TIME	12.50
HYDROGRAPH AT	B-9	.66	1	FLOW	92.
				TIME	13.25
2 COMBINED AT	P-1	1.30	1	FLOW	196.
				TIME	12.75

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

POWERTECH (USA) INC.

Response: TR_RAI-2.7-5

TR_Section 2.7.2.2.8

Corrected Figures

Figure 2.7-15 and Figure 2.7-16

POWERTECH (USA) INC.

Response: TR RAI-2.7-6

TR_Section 2.7.2.2.8

Method for Determining Potentiometric Head for Artesian Wells

Powertech (USA) Inc.

Response: TR RAI-2.7-7

Structure Contour Map of the top of the Fuson

Exhibit 2.7-2

POWERTECH (USA) INC.

Response: TR_RAI-2.7-8

TR_Section 2.7.2.2.8

Updated information and Replacement text

POWERTECH (USA) INC.

Response: TR RAI-2.7-9 and 2.7-10

Information concerning Groundwater/Surface water Interactions for TR Section 2.7.2.2.10.

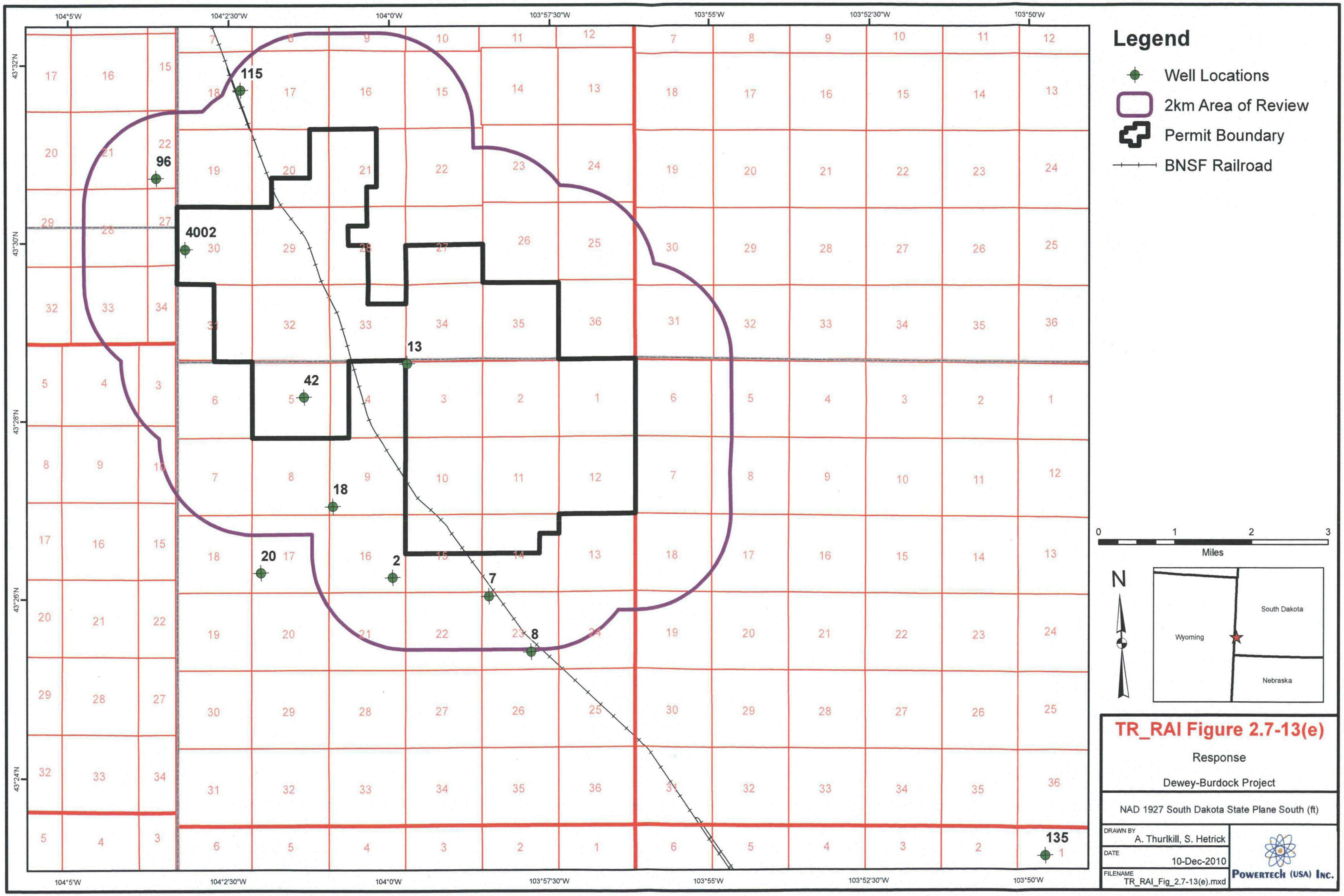
Response to the U.S. NRC's Request for Additional Information
Dewey-Burdock Uranium Project-Source Material License Application
Technical Report Submitted August 11, 2009.

POWERTECH (USA) INC.

Response: TR RAI-2.7-13(e)

Clarification for Location of Inyan Kara Wells

TR_RAI Figure 2.7-13(e)


Legend
Well Locations
2km Area of Review
Permit Boundary
BNSF Railroad
115
96
4002
13
42
18
20
2
7
8
135
104°5'W
104°2'30"W
104°0'W
103°57'30"W
103°55'W
103°52'30"W
103°50'W
43°32'N
43°30'N
43°28'N
43°26'N
43°24'N
0 1 2 3
Miles
N
Wyoming
South Dakota
Nebraska
TR_RAI Figure 2.7-13(e)
Response
Dewey-Burdock Project
NAD 1927 South Dakota State Plane South (ft)
DRAWN BY
A. Thurlkill, S. Hetrick
DATE
10-Dec-2010
FILENAME
TR_RAI_Fig_2.7-13(e).mxd
POWERTECH (USA) INC.

POWERTECH (USA) INC.

Response: TR RAI-2.7-15

Appendix 2.7-G
Attachment A

Parameter by Parameter for Well Data
Statistics for Well Data

and

Appendix 2.7-F
Attachment A

Parameter by Parameter for Surface Water
Statistic for Surface Water

SURFACE WATER QUALITY SITES

RAW DATA

	BVC01												
Analyte	7/24/2007 14:20	8/20/2007 17:07	9/26/2007 12:16	10/17/2007 14:45	11/19/2007 11:30	12/11/2007 12:20	12/11/2007 12:25	1/11/2008 11:15	2/12/2007 10:40 ice	3/9/2008 15:15	4/14/2008 18:43	5/26/2008 14:00	6/17/2008 11:05
A/C Balance (± 5) (%)	0.715	1.06	-4.61	-1.92	-2.71	0.412	-2.7	1.85	ND	3.65	-3.44	0.05	4.51
Alkalinity-Total as CaCO3 (mg/L)	134	112	78	112	196	188	184	214	ND	214	160	84	156
Aluminum-Dissolved (mg/L)	ND	ND	ND	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.1	<0.1	<0.1
Aluminum-Total (mg/L)	ND	ND	ND	0.1	<0.1	0.2	0.2	0.3	ND	0.3	0.5	99.3	4.3
Ammonia (mg/L)	ND	ND	ND	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.1	<0.1	<0.1
Anions (meq/L)	15.2	17.4	17.4	71.6	95.3	49.8	52.3	40.8	ND	59.4	63.4	9.42	59.9
Arsenic-Dissolved (mg/L)	ND	ND	ND	0.001	<0.001	0.002	0.001	<0.001	ND	<0.001	<0.001	<0.001	0.001
Arsenic-Total (mg/L)	0.002	0.002	0.002	0.001	<0.001	0.001	<0.001	<0.001	ND	<0.001	0.002	0.048	0.004
Bacteria, Fecal Coliform (cfu/100ml)	68	2500	<2	76	30	6	14	16	ND	<2	<2	5700	44
Barium-Dissolved (mg/L)	ND	ND	ND	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.1	<0.1	0.1
Barium-Total (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.1	1.1	0.1
BicarboNDte as HCO3 (mg/L)	163	137	85	137	239	229	224	261	ND	261	195	102	190
Boron-Dissolved (mg/L)	ND	ND	ND	0.3	0.6	0.2	0.2	0.2	ND	0.2	0.3	0.2	0.4
Boron-Total (mg/L)	0.2	0.2	0.21	0.3	0.5	0.2	0.2	0.2	ND	0.2	0.3	0.3	0.4
Cadmium-Dissolved (mg/L)	ND	ND	ND	<0.005	<0.005	<0.005	<0.005	<0.005	ND	<0.005	<0.005	<0.005	<0.005
Cadmium-Total (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	ND	<0.005	<0.005	<0.005	<0.005
Calcium-Dissolved (mg/L)	ND	ND	ND	314	379	452	451	499	ND	308	425	75.5	358
Calcium-Total (mg/L)	68.4	73	53	ND	ND	ND	ND	506	ND	295	381	132	362
CarboNDte as CO3 (mg/L)	<5	<5	<5	<5	<5	<5	<5	<5	ND	<5	<5	<5	<5
Cations (meq/L)	15.4	17.8	15.9	68.9	90.3	50.3	49.6	42.3	ND	63.9	59.2	9.43	65.6
Chloride (mg/L)	101	158	141	852	1370	581	610	208	ND	113	973	38	970
Chromium-Dissolved (mg/L)	ND	ND	ND	<0.01	<0.01	<0.01	<0.01	<0.01	ND	<0.01	<0.01	<0.01	<0.01
Chromium-Hexavalent (mg/L)	ND	ND	ND	<0.005	<0.005	<0.005	<0.005	<0.005	ND	<0.005	<0.005	<0.005	<0.005
Chromium-Total (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	ND	<0.05	<0.05	0.19	<0.05

BVC01													
Analyte	7/24/20 07 14:20	8/20/20 07 17:07	9/26/20 07 12:16	10/17/20 07 14:45	11/19/20 07 11:30	12/11/20 07 12:20	12/11/20 07 12:25	1/11/20 08 11:15	2/12/20 07 10:40	3/9/200 8 15:15	4/14/20 08 18:43	5/26/20 08 14:00	6/17/20 08 11:05
Chromium-Trivalent (mg/L)	ND	ND	ND	<0.01	<0.01	<0.01	<0.01	<0.01	ND	<0.01	<0.01	<0.01	<0.01
Conductivity (field, umhos/cm)	ND	1777	1339	5726	7678	4134	ND	2812	ND	1718	5109	860	5650
Conductivity @ 25 C (umhos/cm)	1480	1660	1740	5750	7290	4370	4380	3140	ND	5000	5340	908	5140
Copper-Dissolved (mg/L)	ND	ND	ND	<0.01	<0.01	<0.01	<0.01	<0.01	ND	<0.01	<0.01	<0.01	<0.01
Copper-Total (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ND	<0.01	<0.01	0.11	<0.01
Dissolved Oxygen (field, mg/L)	ND	12.29	10.95	11.13	12.2	11.21	ND	10.07	ND	13.57	9.2	6.86	10.39
flow/discharge (cfs)	ND	1.619	ND	1.101	5.03	ND	ND	ND	ND	ND	ND	ND	ND
Fluoride (mg/L)	0.7	0.6	0.9	0.5	0.2	0.3	0.4	0.4	ND	0.2	<0.1	0.5	0.6
Gross Alpha-Total (pCi/L)	5.9	7.1	6.6	12	65.8	27.9	25.8	12.6	ND	17.4	15.1	18.2	8.9
Gross Beta-Total (pCi/L)	10.3	14.7	9.4	2.7	44.4	14.9	5.7	4.1	ND	12.5	-27.1	12.7	-11.1
Gross Gamma-Total (pCi/L)	ND	ND	ND	<20	<20	1310	1120	<20	ND	<20	ND	ND	ND
Iron-Dissolved (mg/L)	ND	ND	ND	<0.03	0.18	<0.03	<0.03	<0.03	ND	<0.03	<0.03	<0.03	0.03
Iron-Total (mg/L)	0.48	0.66	0.61	0.13	0.05	0.25	0.28	0.29	ND	0.44	0.52	137	3.02
Lead 210-Dissolved (pCi/L)	ND	ND	<1	<1	4.6	11	<1	<1	ND	ND	ND	-1	ND
Lead 210-Suspended (pCi/L)	ND	ND	<1	<1	<1	3	4.4	<1	ND	ND	ND	15.3	ND
Lead 210-Total (pCi/L)	ND	ND	<1	ND	4.6	14	4.4	<1	ND	ND	ND	14	ND
Lead-Dissolved (mg/L)	ND	ND	ND	<0.001	<0.001	<0.001	<0.001	<0.001	ND	<0.001	<0.001	<0.001	<0.001
Lead-Total (mg/L)	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	ND	<0.001	<0.001	0.088	0.002
Magnesium-Dissolved (mg/L)	ND	ND	ND	141	209	110	109	114	ND	129	127	17.2	124
Magnesium-Total (mg/L)	29.5	27.8	28	ND	ND	ND	ND	121	ND	127	128	59.8	130
Manganese-Dissolved (mg/L)	ND	ND	ND	0.08	0.23	0.06	0.06	0.05	ND	0.32	0.83	<0.01	0.73
Manganese-Total (mg/L)	0.15	0.11	0.2	0.16	0.18	0.08	0.09	0.09	ND	0.36	0.98	1.82	0.97
Mercury-Dissolved (mg/L)	ND	ND	ND	<0.001	<0.001	<0.001	<0.001	<0.001	ND	<0.001	<0.001	<0.001	<0.001
Mercury-Total (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	ND	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum-Dissolved (mg/L)	ND	ND	ND	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.1	<0.1	<0.1

Analyte	BVC01 7/24/2007 14:20	8/20/2007 17:07	9/26/2007 12:16	10/17/2007 14:45	11/19/2007 11:30	12/11/2007 12:20	12/11/2007 12:25	1/11/2008 11:15	2/12/2007 10:40	3/9/2008 15:15	4/14/2008 18:43	5/26/2008 14:00	6/17/2008 11:05
Molybdenum-Total (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.1	<0.1	<0.1
Nickel-Dissolved (mg/L)	ND	ND	ND	<0.01	<0.01	<0.01	0.01	<0.01	ND	0.01	<0.01	<0.01	<0.01
Nickel-Total (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	ND	<0.05	<0.05	0.15	<0.05
Nitrogen, Nitrate as N (mg/L)	<0.1	0.1	<0.1	<0.1	<0.1	0.3	0.3	0.4	ND	<0.1	<0.1	0.6	<0.1
pH	8.31	8.8	8.79	7.84	7.77	7.88	7.89	7.68	ND	8.1	8.09	7.69	8.13
pH (field)	ND	8.91	8.87	8.58	8.2	7.94	ND	ND	ND	8.24	8.15	7.95	8.13
Polonium 210-Dissolved (pCi/L)	ND	ND	<1	2.6	1.9	1	1.4	<1	ND	ND	ND	0.3	ND
Polonium 210-Suspended (pCi/L)	ND	ND	<1	<1	2.5	1.6	1.2	1.4	ND	ND	ND	3	ND
Polonium 210-Total (pCi/L)	ND	ND	<1	0	4.4	2.6	2.6	1.4	ND	ND	ND	3.3	ND
Potassium-Dissolved (mg/L)	ND	ND	ND	15	11	5	6	5	ND	12	10	7	8
Potassium-Total (mg/L)	9.5	11.4	11	ND	ND	ND	ND	5.3	ND	11.3	13	37.4	8.8
Radium 226-Dissolved (pCi/L)	ND	ND	<0.2	0.3	<0.2	<0.2	<0.2	<0.2	ND	-0.02	0.1	2	-0.02
Radium 226-Suspended (pCi/L)	ND	ND	<0.2	<0.2	<0.2	0.4	<0.2	<0.2	ND	-0.7	ND	3.1	-0.9
Radium 226-Total (pCi/L)	<0.2	<0.2	<0.2	ND	<0.2	0.4	<0.2	<0.2	ND	-0.7	0.1	5.1	-0.95
Selenium-Dissolved (mg/L)	ND	ND	ND	<0.001	<0.001	0.002	0.002	0.003	ND	<0.001	<0.001	<0.005	<0.001
Selenium-IV-Dissolved (mg/L)	ND	ND	ND	<0.001	<0.001	<0.001	<0.001	<0.001	ND	<0.001	<0.001	0.002	<0.001
Selenium-IV-Total (mg/L)	ND	ND	ND	<0.001	<0.001	<0.001	<0.001	<0.001	ND	<0.001	<0.001	<0.001	<0.001
Selenium-Total (mg/L)	0.002	0.003	0.001	<0.001	<0.001	0.001	0.001	0.003	ND	<0.001	<0.001	<0.001	<0.001
Selenium-VI-Dissolved (mg/L)	ND	ND	ND	<0.001	<0.001	0.002	0.002	0.003	ND	<0.001	<0.001	<0.001	<0.001
Selenium-VI-Total (mg/L)	ND	ND	ND	<0.001	<0.001	0.001	0.001	0.003	ND	<0.001	<0.001	<0.001	<0.001
Silica-Dissolved (mg/L)	ND	ND	ND	<1	1.6	11	11	13	ND	6.9	2.1	2.9	2.2
Silica-Total (mg/L)	2.7	6.2	3.8	ND	ND	ND	ND	14.6	ND	8.2	4.8	51.9	12.9
Silver-Dissolved (mg/L)	ND	ND	ND	<0.005	<0.005	<0.005	<0.005	<0.005	ND	<0.005	<0.005	<0.005	<0.005
Silver-Total (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	ND	<0.005	<0.005	<0.005	<0.005
Sodium Adsorption Ratio (SAR) (meq/L)	ND	ND	ND	11	13	4.7	4.5	1.9	ND	10	6.8	2.5	9.9

	BVC01												
Analyte	7/24/20 07 14:20	8/20/20 07 17:07	9/26/20 07 12:16	10/17/20 07 14:45	11/19/20 07 11:30	12/11/20 07 12:20	12/11/20 07 12:25	1/11/20 08 11:15	2/12/20 07 10:40	3/9/200 8 15:15	4/14/20 08 18:43	5/26/20 08 14:00	6/17/20 08 11:05
Sodium-Dissolved (mg/L)	ND	ND	ND	950	1240	426	412	182	ND	864	625	93	856
Sodium-Total (mg/L)	213	263	242	ND	ND	ND	ND	191	ND	876	659	99	902
Solids-Suspended Sediment SSC @ 105 C (mg/L)	19	47	40	4510	20	13	13	12	ND	11	19	4840	59
Solids-Total Dissolved Calculated (mg/L)	967	1120	1090	4520	5860	3110	3210	2610	ND	4070	3840	609	3830
Solids-Total Dissolved TDS @ 180 C (mg/L)	950	1100	1200	4600	6100	3500	3500	2900	ND	4300	3800	620	4000
Solids-Total Suspended TSS @ 105 C (mg/L)	27	51	31	<5	20	10	12	12	ND	12	17	4600	100
Sulfate (mg/L)	463	511	568	2180	2540	1430	1510	1470	ND	2490	1570	317	1410
TDS Balance (0.80 - 1.20) (dec.%)	0.98	0.96	1.08	1.02	1.04	1.14	1.1	1.09	ND	1.04	0.99	1.01	1.04
Thorium 230-Dissolved (pCi/L)	ND	ND	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	ND	ND	0.3	ND	0.1
Thorium 230-Suspended (pCi/L)	ND	ND	<0.2	0.7	<0.2	<0.2	<0.2	<0.2	ND	0.4	0.8	3.4	0.2
Thorium 230-Total (pCi/L)	ND	ND	<0.2	ND	<0.2	<0.2	<0.2	<0.2	ND	0.4	1.1	3.4	0.3
Thorium 232-Dissolved (mg/L)	ND	ND	ND	<0.005	<0.005	<0.005	<0.005	<0.005	ND	<0.005	<0.005	<0.005	<0.005
Thorium 232-Suspended (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	ND	<0.001	<0.001	0.013	<0.001
Thorium 232-Total (mg/L)	ND	ND	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	ND	<0.005	<0.005	0.04	<0.005
Turbidity (NTU)	ND	21	1.7	2.5	6.4	6.4	ND	8.6	ND	308	11.8	1790	53
Uranium-Dissolved (mg/L)	ND	ND	0.0075	0.0097	0.0182	0.0124	0.0129	0.0134	ND	0.0269	0.0125	0.002	0.0092
Uranium-Suspended (mg/L)	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.0004	<0.0003	ND	0.0009	<0.0003	0.0031	<0.0003
Uranium-Total (mg/L)	0.004	0.0046	0.0076	0.0097	0.018	0.0142	0.0151	0.0139	ND	0.0262	0.0127	0.0109	0.0113
VaNDdium-Dissolved (mg/L)	ND	ND	ND	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.1	<0.1	<0.1
VaNDdium-Total (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.1	0.4	<0.1
Water Temperature (field, deg C)	ND	27.57	16.74	12.14	3.54	-0.08	ND	-0.07	ND	0.18	16.03	12.85	23.83
Zinc-Dissolved (mg/L)	ND	ND	ND	<0.01	<0.01	<0.01	<0.01	<0.01	ND	<0.01	<0.01	<0.01	<0.01
Zinc-Total (mg/L)	<0.01	<0.01	<0.01	<0.01	0.03	<0.01	<0.01	<0.01	ND	<0.01	<0.01	0.54	0.02

Analyte	BVC04												
	8/20/2007 16:08	9/28/2007 8:16	10/17/2007 12:15	11/19/2007 12:30	12/11/2007 10:00	1/11/2008 13:00	2/12/2008 12:25 ice	3/9/2008 11:05	3/9/2008 11:15 duplicate	4/14/2008 14:55	5/26/2008 16:30	6/17/2008 12:20	6/17/2008 12:20
A/C Balance (± 5) (%)	0.739	-3.55	-4.07	-1.84	-2.15	1.72	ND	3.3	-1.79	-6.02	-1.82	9.39	9.39
Alkalinity-Total as CaCO3 (mg/L)	106	110	166	176	190	220	ND	118	116	186	84	148	148
Aluminum-Dissolved (mg/L)	ND	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aluminum-Total (mg/L)	ND	2	0.6	0.2	0.1	0.6	ND	9.9	8.3	0.7	61.3	3.2	3.2
Ammonia (mg/L)	ND	ND	<0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anions (meq/L)	14.6	91.7	94.5	67.4	51	41.7	ND	26.1	27.9	91.1	7.96	46.6	46.6
Arsenic-Dissolved (mg/L)	ND	0.001	<0.001	0.001	<0.001	<0.001	ND	<0.001	<0.001	0.001	<0.001	<0.001	<0.001
Arsenic-Total (mg/L)	0.003	0.002	<0.001	0.001	<0.001	0.001	ND	0.004	0.004	0.003	0.023	0.004	0.004
Bacteria, Fecal Coliform (cfu/100ml)	350	12	62	<2	10	4	ND	32	36	<2	1200	44	44
Barium-Dissolved (mg/L)	ND	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Barium-Total (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.1	<0.1	0.5	0.1	0.1
BicarboNDte as HCO3 (mg/L)	129	134	202	215	232	268	ND	144	141	227	102	180	180
Boron-Dissolved (mg/L)	ND	0.5	0.6	0.4	0.2	0.2	ND	0.2	0.1	0.3	0.2	0.4	0.4
Boron-Total (mg/L)	<0.1	0.4	0.6	0.4	0.2	0.2	ND	0.1	0.1	0.4	0.2	0.4	0.4
Cadmium-Dissolved (mg/L)	ND	<0.005	<0.005	<0.005	<0.005	<0.005	ND	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Cadmium-Total (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	ND	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Calcium-Dissolved (mg/L)	ND	288	382	426	449	463	ND	225	220	455	51.5	300	300
Calcium-Total (mg/L)	77.8	ND	ND	ND	ND	508	ND	217	223	401	81.3	309	309
CarboNDte as CO3 (mg/L)	<5	<5	<5	<5	<5	<5	ND	<5	<5	<5	<5	<5	<5
Cations (meq/L)	14.8	85.4	87.1	65	48.8	43.2	ND	27.9	27	80.8	7.68	56.2	56.2
Chloride (mg/L)	118	1310	1540	1040	601	255	ND	339	364	1730	9	739	739
Chromium-Dissolved (mg/L)	ND	<0.01	<0.01	<0.01	<0.01	<0.01	ND	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Chromium-Hexavalent (mg/L)	ND	<0.005	<0.005	<0.005	<0.005	<0.005	ND	<0.005	0.008	<0.005	<0.005	<0.005	<0.005
Chromium-Total (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	ND	<0.05	<0.05	<0.05	0.08	<0.05	<0.05
Chromium-Trivalent (mg/L)	ND	<0.01	<0.01	<0.01	<0.01	<0.01	ND	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Conductivity (field, umhos/cm)	1450	4712	7157	5416	4055	3022	ND	2015	ND	7186	733	4915	4915

Analyte	BVC04 8/20/2007 16:08	9/28/2007 8:16	10/17/2007 12:15	11/19/2007 12:30	12/11/2007 10:00	1/11/2008 13:00	2/12/2008 12:25	3/9/2008 11:05	3/9/2008 11:15	4/14/2008 14:55	5/26/2008 16:30	6/17/2008 12:20	6/17/2008 12:20
Conductivity @ 25 C (umhos/cm)	1400	7030	7130	5460	4370	3310	ND	2640	2510	7540	784	514	514
Copper-Dissolved (mg/L)	ND	<0.01	<0.01	<0.01	<0.01	<0.01	ND	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Copper-Total (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ND	<0.01	<0.01	<0.01	0.07	<0.01	<0.01
Dissolved Oxygen (field, mg/L)	12.31	6.85	10.45	12.39	11.01	11.37	ND	13.74	ND	12.21	6.54	9.55	9.55
flow/discharge (cfs)	0.493	0.899	ND	4.335	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoride (mg/L)	0.4	<0.1	<0.1	0.5	0.3	0.3	ND	0.4	0.3	<0.1	0.6	0.7	0.7
Gross Alpha-Total (pCi/L)	7	2.3	26.6	34.7	17.1	13.9	ND	6.7	8.8	23.4	12.5	3.9	3.9
Gross Beta-Total (pCi/L)	15.4	<2	14	48.1	11.7	7.2	ND	-2	2.9	2.8	12.9	-12.4	-12.4
Gross Gamma-Total (pCi/L)	ND	<20	<20	1080	1100	<20	ND	<20	<20	ND	ND	ND	ND
Iron-Dissolved (mg/L)	ND	<0.03	<0.03	<0.03	<0.03	<0.03	ND	<0.03	<0.03	0.04	0.04	<0.03	<0.03
Iron-Total (mg/L)	2.48	1.34	0.39	0.31	0.19	0.68	ND	8.65	8.28	0.74	63.1	2.69	2.69
Lead 210-Dissolved (pCi/L)	ND	<1	<1	<1	26	2.2	ND	ND	ND	ND	0.9	ND	ND
Lead 210-Suspended (pCi/L)	ND	<2	<1	<1	8.6	<1	ND	ND	ND	ND	-30	ND	ND
Lead 210-Total (pCi/L)	ND	0	0	<1	35	2.2	ND	ND	ND	ND	33	ND	ND
Lead-Dissolved (mg/L)	ND	<0.001	<0.001	<0.001	<0.001	<0.001	ND	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Lead-Total (mg/L)	0.003	0.001	<0.001	<0.001	<0.001	<0.001	ND	0.007	0.008	<0.001	0.047	0.002	0.002
Magnesium-Dissolved (mg/L)	ND	171	210	140	101	124	ND	53.3	51.9	177	13.2	105	105
Magnesium-Total (mg/L)	24.8	ND	ND	ND	ND	125	ND	53.5	54.8	161	32.8	111	111
Manganese-Dissolved (mg/L)	ND	0.02	0.16	0.1	0.04	0.05	ND	0.08	0.09	0.55	<0.01	0.28	0.28
Manganese-Total (mg/L)	0.41	0.1	0.18	0.1	0.05	0.12	ND	0.28	0.29	0.72	1.34	0.44	0.44
Mercury-Dissolved (mg/L)	ND	<0.001	<0.001	<0.001	<0.001	<0.001	ND	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Mercury-Total (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	ND	<0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum-Dissolved (mg/L)	ND	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum-Total (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel-Dissolved (mg/L)	ND	<0.01	<0.01	<0.01	<0.01	<0.01	ND	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nickel-Total (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	ND	<0.05	<0.05	<0.05	0.08	<0.05	<0.05
Nitrogen, Nitrate as N (mg/L)	0.4	<0.1	<0.1	0.1	0.3	0.4	ND	0.5	0.5	<0.1	0.3	<0.1	<0.1

Analyte	BVC04												
	8/20/2007 16:08	9/28/2007 8:16	10/17/2007 12:15	11/19/2007 12:30	12/11/2007 10:00	1/11/2008 13:00	2/12/2008 12:25	3/9/2008 11:05	3/9/2008 11:15	4/14/2008 14:55	5/26/2008 16:30	6/17/2008 12:20	6/17/2008 12:20
pH	8.48	8.23	7.94	7.97	7.88	7.8	ND	8.09	7.9	7.97	7.71	8.14	8.14
pH (field)	8.82	7.6	8.46	8.18	7.86	7.74	ND	8.12	ND	8.27	8.09	7.52	7.52
Polonium 210-Dissolved (pCi/L)	ND	<1	3	1.3	<1	1.8	ND	ND	ND	ND	0.1	ND	ND
Polonium 210-Suspended (pCi/L)	ND	<2	<1	1.7	2.9	<1	ND	ND	ND	ND	3.7	ND	ND
Polonium 210-Total (pCi/L)	ND	ND	ND	3	2.9	1.8	ND	ND	ND	ND	3.8	ND	ND
Potassium-Dissolved (mg/L)	ND	10	9	7	5	5	ND	5	5	6	6	9	9
Potassium-Total (mg/L)	10.1	ND	ND	ND	ND	5.4	ND	6.6	6.4	14.4	20.4	9.7	9.7
Radium 226-Dissolved (pCi/L)	ND	<0.2	0.5	ND	<0.2	<0.2	ND	0.08	0.06	0.1	-0.06	0.1	0.1
Radium 226-Suspended (pCi/L)	ND	<0.9	<0.2	0.8	0.3	<0.2	ND	2.5	-0.3	0.2	2.2	-0.7	-0.7
Radium 226-Total (pCi/L)	0.7	0.7	ND	0.8	0.3	<0.2	ND	0.1	-0.2	0.3	2.2	-0.53	-0.53
Selenium-Dissolved (mg/L)	ND	0.003	<0.001	0.004	0.002	0.003	ND	0.002	0.001	<0.001	<0.005	<0.001	<0.001
Selenium-IV-Dissolved (mg/L)	ND	0	<0.001	<0.001	<0.001	<0.001	ND	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium-IV-Total (mg/L)	ND	<0.001	<0.001	<0.001	<0.001	<0.001	ND	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium-Total (mg/L)	0.002	<0.001	<0.001	0.004	0.002	0.003	ND	0.002	0.002	<0.001	<0.001	<0.001	<0.001
Selenium-VI-Dissolved (mg/L)	ND	ND	<0.001	0.004	0.002	0.003	ND	<0.001	0.001	<0.001	<0.001	<0.001	<0.001
Selenium-VI-Total (mg/L)	ND	<0.001	<0.001	0.004	0.002	0.003	ND	<0.001	0.001	<0.001	<0.001	<0.001	<0.001
Silica-Dissolved (mg/L)	ND	1	2	9.1	11.9	14.1	ND	7.4	7.2	2.6	2.8	4.1	4.1
Silica-Total (mg/L)	15.5	ND	ND	ND	ND	16.6	ND	54.5	46.3	6	77.6	12.9	12.9
Silver-Dissolved (mg/L)	ND	<0.005	<0.005	<0.005	<0.005	<0.005	ND	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Silver-Total (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	ND	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Sodium Adsorption Ratio (SAR) (meq/L)	ND	ND	12	7.9	4.6	2.4	ND	4.3	4.2	10	2.8	9.4	9.4
Sodium-Dissolved (mg/L)	ND	1100	1160	736	415	224	ND	280	266	995	89	743	743
Sodium-Total (mg/L)	194	ND	ND	ND	ND	259	ND	273	277	1070	96	770	770
Solids-Suspended Sediment SSC @ 105 C (mg/L)	156	86	5820	14	11	24	ND	323	326	40	2700	51	51
Solids-Total Dissolved Calculated (mg/L)	945	5640	5700	4110	3140	2650	ND	1680	1730	5340	516	3090	3090
Solids-Total Dissolved TDS @ 180 C (mg/L)	910	5600	5800	4500	3500	3000	ND	1800	1800	5100	520	3500	3500
Solids-Total Suspended TSS @ 105 C (mg/L)	160	47	16	16	10	25	ND	270	290	32	2200	55	55

Analyte	BVC04												
	8/20/2007 16:08	9/28/2007 8:16	10/17/2007 12:15	11/19/2007 12:30	12/11/2007 10:00	1/11/2008 13:00	2/12/2008 12:25	3/9/2008 11:05	3/9/2008 11:15	4/14/2008 14:55	5/26/2008 16:30	6/17/2008 12:20	6/17/2008 12:20
Sulfate (mg/L)	436	2520	2670	1920	1450	1450	ND	681	736	1860	286	1090	1090
TDS Balance (0.80 - 1.20) (dec.%)	0.97	0.99	1.01	1.09	1.11	1.12	ND	1.06	1.02	0.96	1.02	1.12	1.12
Thorium 230-Dissolved (pCi/L)	ND	1.7	<0.2	<0.2	<0.2	<0.2	ND	0.2	0.1	0.1	ND	ND	ND
Thorium 230-Suspended (pCi/L)	ND	<2	<0.2	<0.2	<0.2	<0.2	ND	0.3	1	0.1	2.1	0.3	0.3
Thorium 230-Total (pCi/L)	ND	ND	ND	<0.2	<0.2	<0.2	ND	0.5	1	0.2	2.1	0.3	0.3
Thorium 232-Dissolved (mg/L)	ND	<0.005	<0.005	<0.005	<0.005	<0.005	ND	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Thorium 232-Suspended (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	ND	0.004	0.004	<0.001	0.009	<0.001	<0.001
Thorium 232-Total (mg/L)	0	<0.005	<0.005	<0.005	<0.005	<0.005	ND	0.005	<0.005	<0.005	0.021	<0.005	<0.005
Turbidity (NTU)	79.5	ND	12.6	9.3	2.9	16.8	ND	226	ND	14.3	1730	33.8	33.8
Uranium-Dissolved (mg/L)	ND	0.014	0.023	0.0189	0.0114	0.0141	ND	0.0056	0.0055	0.0165	0.0017	0.0078	0.0078
Uranium-Suspended (mg/L)	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	ND	0.0014	0.0011	<0.0003	0.0021	<0.0003	<0.0003
Uranium-Total (mg/L)	0.003	0.0137	0.0239	0.0177	0.0135	0.0144	ND	0.0061	0.0062	0.0169	0.0069	0.0097	0.0097
Vanadium-Dissolved (mg/L)	0	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Vanadium-Total (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.1	<0.1	0.2	<0.1	<0.1
Water Temperature (field, deg C)	27.22	10.78	10.05	5.12	-0.04	-0.1	ND	-0.08	ND	16.94	13.06	25.14	25.14
Zinc-Dissolved (mg/L)	ND	<0.01	<0.01	<0.01	<0.01	<0.01	ND	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc-Total (mg/L)	0.01	0.01	<0.01	<0.01	<0.01	ND	ND	ND	0.06	0.04	<0.01	0.27	0.02

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Analyte	7/31/2007 14:35	9/5/2007 17:25	9/5/2007 17:30 duplicate	9/26/2007 12:01	10/17/2007 14:00	11/19/200 7 9:45	12/11/2007 12:05 ice	1/11/2008 10:46 ice	2/10/2008 14:15 dry	3/9/2008 14:15	4/16/2008 15:30	5/26/2008 14:45	6/17/2008 11:38
A/C Balance (± 5) (%)	0.0317	-2.1	-2.45	-4.68	-0.301	-0.593	NA	NA	NA	-4.49	-1.81	1.47	6.05
Alkalinity-Total as CaCO3 (mg/L)	310	196	198	248	320	322	NA	NA	NA	92	248	80	272
Aluminum-Dissolved (mg/L)	NA	NA	NA	NA	<0.1	<0.1	NA	NA	NA	<0.1	<0.1	<0.1	<0.1
Aluminum-Total (mg/L)	NA	NA	NA	NA	0.6	0.1	NA	NA	NA	8.4	<0.1	94.7	5.1
Ammonia (mg/L)	NA	NA	NA	NA	<0.1	<0.1	NA	NA	NA	<0.1	<0.1	<0.1	<0.1
Anions (meq/L)	83.7	47.9	49	91.5	95.6	105	NA	NA	NA	20.8	86.1	3.51	30.3
Arsenic-Dissolved (mg/L)	NA	NA	NA	NA	0.001	<0.001	NA	NA	NA	<0.001	0.001	<0.001	0.001
Arsenic-Total (mg/L)	0.001	0.002	0.002	0.002	0.002	<0.001	NA	NA	NA	0.004	0.001	0.024	0.003
Bacteria, Fecal Coliform (cfu/100ml)	8	160	150	76	4	<2	NA	NA	NA	20	<2	2100	16
Barium-Dissolved (mg/L)	NA	NA	NA	NA	<0.1	<0.1	NA	NA	NA	<0.1	<0.1	<0.1	<0.1
Barium-Total (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	<0.1	<0.1	0.8	0.1
Bicarbonate as HCO3 (mg/L)	378	234	236	302	390	393	NA	NA	NA	112	302	98	332
Boron-Dissolved (mg/L)	NA	NA	NA	NA	0.3	0.2	NA	NA	NA	0.1	0.3	0.1	0.2
Boron-Total (mg/L)	0.4	0.6	0.61	0.34	0.2	0.2	NA	NA	NA	<0.1	0.2	<0.1	0.2
Cadmium-Dissolved (mg/L)	NA	NA	NA	NA	<0.005	<0.005	NA	NA	NA	<0.005	<0.005	<0.005	<0.005
Cadmium-Total (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	<0.005	<0.005	<0.005	<0.005
Calcium-Dissolved (mg/L)	NA	NA	NA	NA	398	411	NA	NA	NA	155	370	29.7	161
Calcium-Total (mg/L)	366	186	191	344	NA	NA	NA	NA	NA	160	366	62	175
Carbonate as CO3 (mg/L)	<5	<5	<5	<5	<5	<5	NA	NA	NA	<5	<5	<5	<5
Cations (meq/L)	83.8	45.9	46.7	83.3	95	104	NA	NA	NA	19	83.1	3.61	34.2
Chloride (mg/L)	125	74	74	138	166	176	NA	NA	NA	249	156	2	78
Chromium-Dissolved (mg/L)	NA	NA	NA	NA	<0.01	<0.01	NA	NA	NA	<0.01	<0.01	<0.01	<0.01
Chromium-Hexavalent (mg/L)	NA	NA	NA	NA	<0.005	<0.005	NA	NA	NA	<0.005	<0.005	<0.005	<0.005
Chromium-Total (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	NA	NA	NA	<0.05	<0.05	0.19	<0.05
Chromium-Trivalent (mg/L)	NA	NA	NA	NA	<0.01	<0.01	NA	NA	NA	<0.01	<0.01	<0.01	<0.01
Conductivity (field, umhos/cm)	NA	4085	NA	3895	6929	7847	NA	NA	NA	3990	6180	350	2897

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Conductivity @ 25 C (umhos/cm)	6580	3990	4030	6450	6940	7530	NA	NA	NA	1860	6600	367	2770
Copper-Dissolved (mg/L)	NA	NA	NA	NA	<0.01	<0.01	NA	NA	NA	<0.01	<0.01	<0.01	<0.01
Copper-Total (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NA	NA	NA	0.01	<0.01	0.1	<0.01
Dissolved Oxygen (field, mg/L)	NA	13.08	NA	10.48	5.17	3.74	NA	NA	NA	12.84	8.13	7.77	7.85
flow/discharge (cfs)	NA	NA	NA	NA	0.002	NA	NA	NA	NA	NA	NA	NA	NA
Fluoride (mg/L)	0.3	0.4	0.4	0.1	0.3	0.3	NA	NA	NA	0.4	<0.1	0.4	0.7
Gross Alpha-Total (pCi/L)	16.9	15.9	16.7	33.8	34.2	27	NA	NA	NA	5.1	5.7	29.1	35.3
Gross Beta-Total (pCi/L)	21.9	18.6	<2	21.9	21.3	<2	NA	NA	NA	4.8	-9.2	22.1	15.5
Gross Gamma-Total (pCi/L)	NA	NA	NA	NA	1070	<20	NA	NA	NA	<20	NA	NA	NA
Iron-Dissolved (mg/L)	NA	NA	NA	NA	0.03	0.06	NA	NA	NA	<0.03	<0.03	0.05	<0.03
Iron-Total (mg/L)	0.15	0.66	0.71	1.1	0.95	0.61	NA	NA	NA	9.12	0.49	88.3	2.99
Lead 210-Dissolved (pCi/L)	NA	NA	NA	<1	3.2	<1	NA	NA	NA	NA	NA	0.5	NA
Lead 210-Suspended (pCi/L)	NA	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	4.4	NA
Lead 210-Total (pCi/L)	NA	NA	NA	<1	NA	<1	NA	NA	NA	NA	NA	5	NA
Lead-Dissolved (mg/L)	NA	NA	NA	NA	<0.001	<0.001	NA	NA	NA	<0.001	<0.001	<0.001	<0.001
Lead-Total (mg/L)	<0.001	0.001	0.001	<0.001	<0.001	<0.001	ND	ND	ND	0.008	<0.001	0.118	0.003
Magnesium-Dissolved (mg/L)	NA	NA	NA	NA	189	201	ND	ND	ND	36	175	9	65.8
Magnesium-Total (mg/L)	188	92	94	172	NA	NA	ND	ND	ND	38.4	171	37.3	70.5
Manganese-Dissolved (mg/L)	0	0	0	NA	2.75	3.01	ND	ND	ND	0.05	0.68	<0.01	0.04
Manganese-Total (mg/L)	1.13	0.2	0.21	0.25	2.94	2.66	ND	ND	ND	0.33	0.68	1.19	0.38
Mercury-Dissolved (mg/L)	NA	NA	NA	NA	<0.001	<0.001	ND	ND	ND	<0.001	<0.001	<0.001	<0.001
Mercury-Total (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	ND	ND	ND	<0.000 1	<0.0001	<0.0001	<0.0001
Molybdenum-Dissolved (mg/L)	NA	NA	NA	NA	<0.1	<0.1	ND	ND	ND	<0.1	<0.1	<0.1	<0.1
Molybdenum-Total (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	ND	ND	<0.1	<0.1	<0.1	<0.1
Nickel-Dissolved (mg/L)	NA	NA	NA	NA	<0.01	<0.01	ND	ND	ND	<0.01	<0.01	<0.01	<0.01
Nickel-Total (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	ND	ND	ND	<0.05	<0.05	0.08	<0.05
Nitrogen, Nitrate as N (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	ND	ND	0.4	<0.1	0.4	<0.1

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pH	7.83	8.3	8.26	8.2	7.57	7.63	ND	ND	ND	7.78	8.03	7.81	8.29
pH (field)	NA	8.44	NA	8.02	8.02	7.47	ND	ND	ND	8.11	8.32	8.17	8.27
Polonium 210-Dissolved (pCi/L)	NA	NA	NA	<1	1.6	1.7	ND	ND	ND	NA	NA	0.5	NA
Polonium 210-Suspended (pCi/L)	NA	NA	NA	<1	<1	2.3	ND	ND	ND	NA	NA	4.1	NA
Polonium 210-Total (pCi/L)	NA	NA	NA	<1	NA	4	ND	ND	ND	NA	NA	4.6	NA
Potassium-Dissolved (mg/L)	NA	NA	NA	NA	15	15	ND	ND	ND	5	26	6	12
Potassium-Total (mg/L)	19	15	15	17	NA	NA	ND	ND	ND	6.7	22.1	27.4	13.2
Radium 226-Dissolved (pCi/L)	NA	NA	NA	<0.2	0.5	NA	ND	ND	ND	0.2	0.3	0.06	0.2
Radium 226-Suspended (pCi/L)	NA	NA	NA	<0.2	<0.2	0.6	ND	ND	ND	1.2	-0.1	4	-0.9
Radium 226-Total (pCi/L)	<0.2	<0.2	<0.2	<0.2	NA	0.6	ND	ND	ND	1.5	0.1	4.1	-0.72
Selenium-Dissolved (mg/L)	NA	NA	NA	NA	<0.001	<0.001	ND	ND	ND	<0.001	<0.001	<0.005	<0.001
Selenium-IV-Dissolved (mg/L)	NA	NA	NA	NA	<0.001	<0.001	ND	ND	ND	<0.001	<0.001	<0.001	<0.001
Selenium-IV-Total (mg/L)	NA	NA	NA	NA	<0.001	<0.001	ND	ND	ND	<0.001	<0.001	<0.001	<0.001
Selenium-Total (mg/L)	0.002	0.002	0.002	0.003	<0.001	<0.001	ND	ND	ND	0.001	<0.001	<0.001	<0.001
Selenium-VI-Dissolved (mg/L)	NA	NA	NA	NA	<0.001	<0.001	ND	ND	ND	<0.001	<0.001	<0.001	<0.001
Selenium-VI-Total (mg/L)	NA	NA	NA	NA	<0.001	<0.001	ND	ND	ND	<0.001	<0.001	<0.001	<0.001
Silica-Dissolved (mg/L)	NA	NA	NA	NA	13	12.4	ND	ND	ND	5.6	6.4	2.6	6.1
Silica-Total (mg/L)	7.2	7.8	8.1	8.6	0	0	ND	ND	ND	45.4	6.3	63.5	18.1
Silver-Dissolved (mg/L)	NA	NA	NA	NA	<0.005	<0.005	ND	ND	ND	<0.005	<0.005	<0.005	<0.005
Silver-Total (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	ND	ND	ND	<0.005	<0.005	<0.005	<0.005
Sodium Adsorption Ratio (SAR) (meq/L)	NA	NA	NA	NA	14	15	ND	ND	ND	3.5	12	1.2	7.9
Sodium-Dissolved (mg/L)	NA	NA	NA	NA	1360	1530	ND	ND	ND	189	1140	28	471
Sodium-Total (mg/L)	1140	657	665	1180	NA	NA	ND	ND	ND	191	1140	30	509
Solids-Suspended Sediment SSC @ 105 C (mg/L)	53	49	56	34	6170	10	ND	ND	ND	424	5	4840	102
Solids-Total Dissolved Calculated (mg/L)	5590	3160	3230	5970	6370	7040	ND	ND	ND	1280	5720	219	2060
Solids-Total Dissolved TDS @ 180 C (mg/L)	5900	3200	3200	5900	6500	7100	ND	ND	ND	1300	5700	400	2200
Solids-Total Suspended TSS @ 105 C (mg/L)	54	54	57	35	12	8	ND	ND	ND	400	8	4400	110

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Sulfate (mg/L)	3550	2010	2060	3970	4060	4520	ND	ND	ND	572	3690	86	1090
TDS Balance (0.80 - 1.20) (dec.%)	1.06	1.02	0.99	0.98	1.03	1	NA	NA	NA	0.98	0.99	1.84	1.07
Thorium 230-Dissolved (pCi/L)	NA	NA	NA	<0.2	<0.2	<0.2	NA	NA	NA	0.1	0.3	0.1	NA
Thorium 230-Suspended (pCi/L)	NA	NA	NA	<0.2	0.9	3.8	NA	NA	NA	0.8	.0.2	2	NA
Thorium 230-Total (pCi/L)	NA	NA	NA	<0.2	NA	3.8	NA	NA	NA	0.8	0.5	2.1	0.08
Thorium 232-Dissolved (mg/L)	NA	NA	NA	NA	<0.005	<0.005	NA	NA	NA	<0.005	<0.005	<0.005	<0.005
Thorium 232-Suspended (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NA	NA	NA	0.005	<0.001	0.017	<0.001
Thorium 232-Total (mg/L)	NA	<0.005	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	<0.005	<0.005	0.046	<0.005
Turbidity (NTU)	NA	19	NA	1	9.9	5.8	NA	NA	NA	7.4	1.5	1798	73.4
Uranium-Dissolved (mg/L)	NA	NA	NA	0.0149	0.0308	0.031	NA	NA	NA	0.0034	0.0324	0.0024	0.0177
Uranium-Suspended (mg/L)	<0.0003	0.0012	0.0012	<0.0003	<0.0003	0.0006	NA	NA	NA	0.002	0.0006	0.0038	<0.0003
Uranium-Total (mg/L)	0.0223	0.0142	0.0142	0.015	0.032	0.0316	NA	NA	NA	0.0043	0.0365	0.0119	0.0214
Vanadium-Dissolved (mg/L)	NA	NA	NA	NA	<0.1	<0.1	NA	NA	NA	<0.1	<0.1	<0.1	<0.1
Vanadium-Total (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	<0.1	<0.1	0.3	<0.1
Water Temperature (field, deg C)	NA	26.35	NA	16	13.11	5.68	NA	NA	NA	7.28	14.97	13.35	27
Zinc-Dissolved (mg/L)	NA	NA	NA	NA	<0.01	0.02	NA	NA	NA	<0.01	<0.01	<0.01	<0.01
Zinc-Total (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	NA	NA	NA	0.05	<0.01	0.46	0.02

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Analyte	7/31/2007 15:10	9/5/2007 18:20	9/26/2007 15:30	10/17/2007 16:00	11/19/2007 15:00	12/11/2007 13:50	1/11/2008 8:30	2/12/2008 9:20	3/9/2008 9:00	4/14/2008 11:00	4/14/2008 11:05 duplicate	4/15/2008 12:30 no sample collected	5/26/2008 13:00	6/17/2008 10:20
A/C Balance (± 5) (%)	1.77	-3.85	-0.328	0.765	-1.58	-3.9	2.85	-5.77	2.67	-1.29	-3.76	ND	-9.14	5.94
Alkalinity-Total as CaCO3 (mg/L)	200	214	324	352	180	182	234	246	92	164	168	ND	90	224
Aluminum-Dissolved (mg/L)	ND	ND	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.1
Aluminum-Total (mg/L)	ND	ND	ND	0.2	0.1	<0.1	<0.1	<0.1	8.8	0.4	0.4	ND	170	5.3
Ammonia (mg/L)	ND	ND	ND	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.1
Anions (meq/L)	57.1	59	88.4	99.1	78	50.6	45.6	48.1	18.1	57.4	63.4	ND	6.07	38.6
Arsenic-Dissolved (mg/L)	ND	ND	ND	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	ND	<0.001	0.001
Arsenic-Total (mg/L)	0.001	0.001	0.001	0.001	0.001	<0.001	<0.001	<0.001	0.003	0.002	0.002	ND	0.029	0.004
Bacteria, Fecal Coliform (cfu/100ml)	180	290	8	200	26	6	2	<2	32	<2	<2	ND	3500	28
Barium-Dissolved (mg/L)	ND	ND	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.1
Barium-Total (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	0.9	0.1
Bicarbonate as HCO3 (mg/L)	244	261	395	429	219	222	285	300	112	200	205	ND	110	273
Boron-Dissolved (mg/L)	ND	ND	ND	0.4	0.4	0.2	0.3	0.2	0.1	0.2	0.2	ND	<0.1	0.2
Boron-Total (mg/L)	0.4	0.54	0.39	0.3	0.3	0.2	0.2	0.2	0.1	0.2	0.2	ND	0.1	0.3
Cadmium-Dissolved (mg/L)	ND	ND	ND	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	ND	<0.005	<0.005
Cadmium-Total (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	ND	<0.005	<0.005
Calcium-Dissolved (mg/L)	ND	ND	ND	492	389	441	525	496	152	407	457	ND	34.3	234
Calcium-Total (mg/L)	311	270	422	ND	ND	ND	515	526	148	430	418	ND	70.8	254
Carbonate as CO3 (mg/L)	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ND	<5	<5
Cations (meq/L)	59.2	54.6	87.8	101	75.6	46.8	48.2	42.9	19.1	55.9	58.8	ND	5.05	43.5
Chloride (mg/L)	386	344	221	269	912	509	258	250	232	780	861	ND	17	337
Chromium-Dissolved (mg/L)	ND	ND	ND	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	ND	<0.01	<0.01
Chromium-Hexavalent (mg/L)	ND	ND	ND	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	ND	0.009	<0.005
Chromium-Total (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	ND	0.19	<0.05
Chromium-Trivalent (mg/L)	ND	ND	ND	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ND	<0.01	<0.01

CHR05														
Analyte	7/31/2007 15:10	9/5/2007 18:20	9/26/2007 15:30	10/17/200 7 16:00	11/19/200 7 15:00	12/11/200 7 13:50	1/11/200 8 8:30	2/12/200 8 9:20	3/9/200 8 9:00	4/14/2008 11:00	4/14/2008 11:05	4/15/2008 12:30	5/26/2008 13:00	6/17/2008 10:20
Conductivity (field, umhos/cm)	ND	4570	4002	6986	6384	3888	3058	3353	1118	4905	ND	4970	510	3721
Conductivity @ 25 C (umhos/cm)	4980	4630	6590	6910	6090	4080	3510	3320	1810	5150	5150	ND	537	3570
Copper-Dissolved (mg/L)	ND	ND	ND	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ND	<0.01	<0.01
Copper-Total (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ND	0.1	<0.01
Dissolved Oxygen (field, mg/L)	ND	12.2	ND	10.08	11.03	11.14	9.22	ND	12.92	9.92	ND	8.85	7.69	7.63
flow/discharge (cfs)	ND	0.092	0.002	0.007	4.115	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoride (mg/L)	0.5	0.4	0.2	0.3	0.4	0.4	0.4	0.5	0.4	<0.1	1	ND	0.4	0.5
Gross Alpha-Total (pCi/L)	16.7	9.7	25.6	23.2	16.8	24.9	19.3	15.7	4	19.8	19.9	ND	29.8	29.9
Gross Beta-Total (pCi/L)	18.7	<2	9.8	11.1	38	12.5	10.8	7.6	4.8	10.2	-0.1	ND	22.4	-1.7
Gross Gamma-Total (pCi/L)	ND	ND	ND	1140	967	<20	<20	<20	<20	ND	ND	ND	40.1	ND
Iron-Dissolved (mg/L)	ND	ND	ND	0.15	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	ND	0.05	<0.03
Iron-Total (mg/L)	0.09	0.25	0.39	0.84	0.24	0.13	0.06	0.1	6.92	0.36	0.43	ND	108	3.41
Lead 210-Dissolved (pCi/L)	ND	ND	<1	6.6	<1	5.9	<1	ND	ND	ND	ND	ND	0.7	ND
Lead 210-Suspended (pCi/L)	ND	ND	<1	3	<1	<1	22	ND	ND	ND	ND	ND	11.2	ND
Lead 210-Total (pCi/L)	ND	ND	<1	ND	<1	5.9	22	ND	ND	ND	ND	ND	12	ND
Lead-Dissolved (mg/L)	ND	ND	ND	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00 1	<0.001	<0.001	ND	<0.001	<0.001
Lead-Total (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.006	<0.001	<0.001	ND	0.11	0.002
Magnesium-Dissolved (mg/L)	ND	ND	ND	380	164	109	136	113	34.2	127	127	ND	10.1	84.9
Magnesium-Total (mg/L)	168	151	330	ND	ND	ND	132	115	35.3	138	134	ND	44.8	92.4
Manganese-Dissolved (mg/L)	ND	ND	ND	1.53	0.16	0.07	0.07	0.12	0.04	0.59	0.59	ND	<0.01	0.16
Manganese-Total (mg/L)	0.12	0.48	0.58	1.69	0.23	0.1	0.13	0.12	0.21	0.73	0.73	ND	1.39	0.53
Mercury-Dissolved (mg/L)	ND	ND	ND	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00 1	<0.001	<0.001	ND	<0.001	<0.001
Mercury-Total (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00 01	<0.001	<0.001	ND	<0.000 1	<0.000 1
Molybdenum-Dissolved (mg/L)	ND	ND	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.1
Molybdenum-Total (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.1
Nickel-Dissolved (mg/L)	ND	ND	ND	<0.01	<0.01	0.01	<0.01	<0.05	<0.01	<0.01	<0.01	ND	<0.01	<0.01
Nickel-Total (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	ND	0.1	<0.05

CHR05														
Analyte	7/31/2007 15:10	9/5/2007 18:20	9/26/2007 15:30	10/17/2007 16:00	11/19/2007 15:00	12/11/2007 13:50	1/11/2008 8:30	2/12/2008 9:20	3/9/2008 9:00	4/14/2008 11:00	4/14/2008 11:05	4/15/2008 12:30	5/26/2008 13:00	6/17/2008 10:20
Nitrogen, Nitrate as N (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	0.4	0.6	0.5	<0.1	<0.1	ND	0.4	<0.1
pH	7.98	8.08	8.09	7.74	7.95	7.9	7.82	7.78	7.67	8.1	8.04	ND	7.78	8.3
pH (field)	ND	8.16	8.01	8.12	8.16	7.95	7.65	7.42	8.24	8.1	ND	8.15	8.19	8.24
Polonium 210-Dissolved (pCi/L)	ND	ND	<1	<1	1.5	2.4	<1	ND	ND	ND	ND	ND	-0.3	ND
Polonium 210-Suspended (pCi/L)	ND	ND	<1	<1	1.3	<1	<1	ND	ND	ND	ND	ND	3.8	ND
Polonium 210-Total (pCi/L)	ND	ND	<1	ND	2.8	3.4	<1	ND	ND	ND	ND	ND	3.5	ND
Potassium-Dissolved (mg/L)	ND	ND	ND	18	12	6	7	5	6	8	8	ND	6	10
Potassium-Total (mg/L)	13.3	14	19	ND	ND	ND	6.2	5.1	6.9	8.4	9.6	ND	31.5	11.7
Radium 226-Dissolved (pCi/L)	ND	ND	<0.2	<0.2	ND	<0.2	<0.2	<0.2	0.07	0.1	0.1	ND	1.4	0.2
Radium 226-Suspended (pCi/L)	ND	ND	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	1.8	0.3	0.5	ND	3.8	-0.7
Radium 226-Total (pCi/L)	<0.2	<0.2	<0.2	ND	<0.2	<0.2	<0.2	<0.2	1.8	0.4	0.5	ND	5.1	-0.48
Selenium-Dissolved (mg/L)	ND	ND	ND	<0.001	<0.001	0.002	0.003	0.002	0.002	<0.001	<0.001	ND	<0.005	<0.001
Selenium-IV-Dissolved (mg/L)	ND	ND	ND	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	ND	<0.001	<0.001
Selenium-IV-Total (mg/L)	ND	ND	ND	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	ND	<0.001	<0.001
Selenium-Total (mg/L)	0.001	0.002	0.003	<0.001	<0.001	0.001	0.003	0.003	0.002	<0.001	<0.001	ND	<0.001	<0.001
Selenium-VI-Dissolved (mg/L)	ND	ND	ND	<0.001	<0.001	0.002	0.002	<0.001	<0.001	<0.001	<0.001	ND	<0.001	<0.001
Selenium-VI-Total (mg/L)	ND	ND	ND	<0.001	<0.001	0.001	0.003	0.002	0.002	<0.001	<0.001	ND	<0.001	<0.001
Silica-Dissolved (mg/L)	ND	ND	ND	10	4.4	10.4	14.1	14	5.6	3.4	3.4	ND	2.9	4.7
Silica-Total (mg/L)	7.4	7.8	11	ND	ND	ND	13.5	16.6	48.3	5.4	5.6	ND	56.4	17.6
Silver-Dissolved (mg/L)	ND	ND	ND	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	ND	<0.005	<0.005
Silver-Total (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	ND	<0.005	<0.005
Sodium Adsorption Ratio (SAR) (meq/L)	ND	ND	ND	8.4	10	4	2.5	2.1	3.8	6.3	6.2	ND	2.1	8
Sodium-Dissolved (mg/L)	ND	ND	ND	1020	974	360	245	200	197	572	580	ND	54	564
Sodium-Total (mg/L)	678	652	897	ND	ND	ND	248	196	196	634	630	ND	58	601
Solids-Suspended Sediment SSC @ 105 C (mg/L)	7	6	18	7040	17	8	<5	11	197	15	18	ND	4840	91
Solids-Total Dissolved Calculated (mg/L)	3710	3730	5720	6450	4900	3100	2920	2950	1160	3540	3860	ND	365	2560

CHR05														
Analyte	7/31/2007 15:10	9/5/2007 18:20	9/26/2007 15:30	10/17/200 7 16:00	11/19/200 7 15:00	12/11/200 7 13:50	1/11/200 8 8:30	2/12/200 8 9:20	3/9/200 8 9:00	4/14/2008 11:00	4/14/2008 11:05	4/15/2008 12:30	5/26/2008 13:00	6/17/2008 10:20
Solids-Total Dissolved TDS @ 180 C (mg/L)	4100	3700	6500	7200	5200	3300	3200	2900	1200	3700	3800	ND	340	2800
Solids-Total Suspended TSS @ 105 C (mg/L)	14	6	23	8	16	7	<5	9	220	19	20	ND	4900	95
Sulfate (mg/L)	2030	2160	4160	4060	2340	1570	1610	1730	463	1540	1710	ND	180	1180
TDS Balance (0.80 - 1.20) (dec.%)	1.1	1	1.13	1.11	1.06	1.07	1.1	1	1.04	1.06	0.99	ND	0.94	1.07
Thorium 230-Dissolved (pCi/L)	ND	ND	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	0.1	ND	0.1	ND	0.1	ND
Thorium 230-Suspended (pCi/L)	ND	ND	<0.2	0.6	<0.2	<0.2	<0.2	0.3	1.4	0.1	0.3	ND	2.2	-0.1
Thorium 230-Total (pCi/L)	ND	ND	<0.2	ND	<0.2	<0.2	<0.2	0.2	1.5	0.1	0.4	ND	2.3	-0.04
Thorium 232-Dissolved (mg/L)	ND	ND	ND	<0.005	<0.005	<0.005	<0.005	<0.005	<0.00 5	<0.005	<0.005	ND	<0.005	<0.005
Thorium 232-Suspended (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	<0.001	<0.001	ND	0.035	<0.001
Thorium 232-Total (mg/L)	ND	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.00 5	<0.005	<0.005	ND	0.046	<0.005
Turbidity (NTU)	ND	1	2	8.3	13.3	3.8	2	12.3	177	12.5	ND	36	1790	59.3
Uranium-Dissolved (mg/L)	ND	ND	0.0346	0.0368	0.0151	0.0125	0.015	0.0143	0.003 9	0.0134	0.0135	ND	0.0028	0.0139
Uranium-Suspended (mg/L)	<0.000 3	0.0003	<0.000 3	<0.0003	<0.0003	0.0004	<0.000 3	<0.000 3	0.003 6	0.0005	<0.000 3	ND	0.0067	<0.000 3
Uranium-Total (mg/L)	0.011	0.0136	0.0348	0.0378	0.0143	0.0152	0.0158	0.0136	0.004 3	0.0141	0.014	ND	0.0122	0.0173
Vanadium-Dissolved (mg/L)	ND	ND	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.1
Vanadium-Total (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	0.3	<0.1
Water Temperature (field, deg C)	ND	25.6	18.83	14.47	6.23	-0.07	-0.09	0.23	-0.008	12.12	ND	15.4	13.3	23.38
Zinc-Dissolved (mg/L)	ND	ND	ND	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	ND	<0.01	<0.01
Zinc-Total (mg/L)	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	0.03	<0.01	<0.01	ND	0.47	0.02

PSC01													
Analyte	7/19/2007 10:45	8/20/2007 12:00 dry	9/26/2007 dry	10/17/2007 13:00 dry	11/19/2007 dry	12/11/2007 dry	1/11/2008 dry	2/12/2008 dry	3/9/2008 dry	4/14/2008 dry	5/26/2008 15:45 dry	6/17/2008 dry	7/18/2008 12:40 passive bottle 2
A/C Balance (± 5) (%)	-2.54	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-4.89
Alkalinity-Total as CaCO3 (mg/L)	56	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	104
Aluminum-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.1
Aluminum-Total (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	233
Ammonia (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.6
Anions (meq/L)	30.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	23.7
Arsenic-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.008
Arsenic-Total (mg/L)	0.003	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.073
Bacteria, Fecal Coliform (cfu/100ml)	4000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.3
Barium-Total (mg/L)	0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.2
Bicarbonate as HCO3 (mg/L)	68	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	127
Boron-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.1
Boron-Total (mg/L)	<0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.6
Cadmium-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.005
Cadmium-Total (mg/L)	<0.005	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.005
Calcium-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	422
Calcium-Total (mg/L)	510	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	949
Carbonate as CO3 (mg/L)	<5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<5
Cations (meq/L)	29	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	21.5
Chloride (mg/L)	2.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2
Chromium-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.01
Chromium-Total (mg/L)	<0.05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.34
Conductivity (field, umhos/cm)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1844
Conductivity @ 25 C (umhos/cm)	1840	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1710
Copper-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.01
Copper-Total (mg/L)	<0.01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.21

PSC01													
Analyte	7/19/2007 10:45	8/20/2007 12:00 dry	9/26/2 007 dry	10/17/2007 13:00 dry	11/19/2 007 dry	12/11/2 007 dry	1/11/2 008 dry	2/12/2 008 dry	3/9/20 08 dry	4/14/2 008 dry	5/26/2008 15:45 dry	6/17/2 008 dry	7/18/2008 12:40 passive bottle 2
Dissolved Oxygen (field, mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	10.26
flow/discharge (cfs)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
Fluoride (mg/L)	0.14	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.2
Gross Alpha-Total (pCi/L)	8.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	7
Gross Beta-Total (pCi/L)	15.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	12.8
Gross Gamma-Total (pCi/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
Iron-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.1
Iron-Total (mg/L)	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	253
Lead-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.001
Lead-Total (mg/L)	0.002	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.144
Magnesium-Dissolved (mg/L)	0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	20.3
Magnesium-Total (mg/L)	30.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	387
Manganese-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.81
Manganese-Total (mg/L)	0.16	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.34
Mercury-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.001
Mercury-Total (mg/L)	<0.001	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.0002
Molybdenum-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.1
Molybdenum-Total (mg/L)	<0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.1
Nickel-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.01
Nickel-Total (mg/L)	<0.05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.33
Nitrogen, Nitrate as N (mg/L)	0.77	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.1
pH	7.16	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.12
pH (field)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	8.12
Potassium-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	10
Potassium-Total (mg/L)	12.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	87.5
Radium 226-Dissolved (pCi/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.3
Radium 226-Suspended (pCi/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.1

PSC01													
Analyte	7/19/2007 10:45	8/20/2007 12:00 dry	9/26/2007 dry	10/17/2007 13:00 dry	11/19/2007 dry	12/11/2007 dry	1/11/2008 dry	2/12/2008 dry	3/9/2008 dry	4/14/2008 dry	5/26/2008 15:45 dry	6/17/2008 dry	7/18/2008 12:40 passive bottle 2
Radium 226-Total (pCi/L)	0.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.4
Selenium-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.005
Selenium-IV-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.001
Selenium-Total (mg/L)	0.002	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium-VI-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.001
Silica-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.2
Silica-Total (mg/L)	16.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	64
Silver-Dissolved (mg/L)	0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.005
Silver-Total (mg/L)	<0.005	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.005
Sodium Adsorption Ratio (SAR) (meq/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.1
Sodium-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4
Sodium-Total (mg/L)	6.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6
Solids-Suspended Sediment SSC @ 105 C (mg/L)	134	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	9760
Solids-Total Dissolved Calculated (mg/L)	2020	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1530
Solids-Total Dissolved TDS @ 180 C (mg/L)	1700	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1600
Solids-Total Suspended TSS @ 105 C (mg/L)	150	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	12000
Sulfate (mg/L)	1400	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1040
TDS Balance (0.80 - 1.20) (dec.%)	0.86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.06
Thorium 230-Dissolved (pCi/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thorium 230-Suspended (pCi/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.2
Thorium 230-Total (pCi/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.2
Thorium 232-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.005
Thorium 232-Suspended (mg/L)	<0.001	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.038
Thorium 232-Total (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.042
Turbidity (NTU)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1780

PSC01													
Analyte	7/19/2007 10:45	8/20/2007 12:00 dry	9/26/2007 dry	10/17/2007 13:00 dry	11/19/2007 dry	12/11/2007 dry	1/11/2008 dry	2/12/2008 dry	3/9/2008 dry	4/14/2008 dry	5/26/2008 15:45 dry	6/17/2008 dry	7/18/2008 12:40 passive bottle 2
Uranium-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0016
Uranium-Suspended (mg/L)	0.0004	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0131
Uranium-Total (mg/L)	0.01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0206
Vanadium-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.1
Vanadium-Total (mg/L)	<0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.5
Water Temperature (field, deg C)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	13.56
Zinc-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.01
Zinc-Total (mg/L)	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.73

PSC02															
Analyte	7/19/2007 11:30	8/20/2007 12:00 dry	9/26/2007 dry	10/17/2007 13:00 dry	11/19/2007 dry	12/11/2007 dry	1/11/2008 dry	2/12/2008 dry	3/9/2008 dry	4/14/2008 dry	5/26/2008 15:45 dry	6/17/2008 dry	7/18/2008 passive bottle 1	7/18/2008 passive bottle 2	7/18/2008 14:25
A/C Balance (± 5) (%)	3.42	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.96	-4.26	ND
Alkalinity-Total as CaCO3 (mg/L)	50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	106	94	ND
Aluminum-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.1	<0.1	ND
Aluminum-Total (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	324	322	ND
Ammonia (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.6	0.4	ND
Anions (meq/L)	14.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	27.6	31.5	ND
Arsenic-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.008	0.003	ND
Arsenic-Total (mg/L)	0.003	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.097	0.107	ND
Bacteria, Fecal Coliform (cfu/100ml)	4400	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.3	0.3	ND
Barium-Total (mg/L)	0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	1.1	ND
Bicarbonate as HCO3 (mg/L)	61	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	129	115	ND
Boron-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.1	<0.1	ND
Boron-Total (mg/L)	<0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.9	0.9	ND
Cadmium-Dissolved (mg/L)	0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.005	<0.005	ND
Cadmium-Total (mg/L)	<0.005	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.005	<0.005	ND
Calcium-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	551	564	ND
Calcium-Total (mg/L)	270	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1710	1780	ND
Carbonate as CO3 (mg/L)	<5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<5	<5	ND
Cations (meq/L)	15.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	29.3	28.9	ND
Chloride (mg/L)	1.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	3	ND
Chromium-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.01	<0.01	ND
Chromium-Total (mg/L)	<0.05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.51	0.52	ND
Conductivity (field, umhos/cm)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1696
Conductivity @ 25 C (umhos/cm)	1240	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2000	2220	ND
Copper-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.01	<0.01	ND

	PSC02														
Analyte	7/19/2007 11:30	8/20/2007 12:00	9/26/2 007	10/17/2007 13:00	11/19/2 007	12/11/2 007	1/11/2 008	2/12/2 008	3/9/2 008	4/14/2 008	5/26/2008 15:45	6/17/2 008	7/18/2008	7/18/2008	7/18/2008 14:25
Copper-Total (mg/L)	<0.01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.33	0.32	ND
Dissolved Oxygen (field, mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	9.51
flow/discharge (cfs)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	62.631
Fluoride (mg/L)	0.14	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.2	0.2	ND
Gross Alpha-Total (pCi/L)	1.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	14.6	33.3	ND
Gross Beta-Total (pCi/L)	11.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-9	-5	ND
Gross Gamma-Total (pCi/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iron-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.06	<0.03	ND
Iron-Total (mg/L)	0.28	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	337	356	ND
Lead-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.001	<0.001	ND
Lead-Total (mg/L)	0.002	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.229	0.24	ND
Magnesium-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	16.8	22.4	ND
Magnesium-Total (mg/L)	18	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	616	607	ND
Manganese-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.8	0.86	ND
Manganese-Total (mg/L)	0.12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	10.8	11.4	ND
Mercury-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.001	<0.001	ND
Mercury-Total (mg/L)	<0.001	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.000 2	<0.000 2	ND
Molybdenum-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.1	<0.1	ND
Molybdenum-Total (mg/L)	<0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.1	<0.1	ND
Nickel-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.01	<0.01	ND
Nickel-Total (mg/L)	<0.05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.54	0.51	ND
Nitrogen, Nitrate as N (mg/L)	0.56	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.1	0.3	ND
pH	7.26	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.21	7.16	ND
pH (field)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	8.1
Potassium-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	8	15	ND
Potassium-Total (mg/L)	8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	106	115	ND
Radium 226-Dissolved (pCi/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.05	0.6	ND

PSC02															
Analyte	7/19/2007 11:30	8/20/2007 12:00	9/26/2007	10/17/2007 13:00	11/19/2007	12/11/2007	1/11/2008	2/12/2008	3/9/2008	4/14/2008	5/26/2008 15:45	6/17/2008	7/18/2008	7/18/2008	7/18/2008 14:25
Radium 226-Suspended (pCi/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	21.3	24.8	ND
Radium 226-Total (pCi/L)	<0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	21.3	25.4	ND
Selenium-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.005	<0.005	ND
Selenium-IV-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.001	<0.001	ND
Selenium-Total (mg/L)	0.003	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium-VI-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.001	<0.001	ND
Silica-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.8	4.7	ND
Silica-Total (mg/L)	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	85.4	84.9	ND
Silver-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.005	<0.005	ND
Silver-Total (mg/L)	<0.005	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.005	<0.005	ND
Sodium Adsorption Ratio (SAR) (meq/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.1	0.1	ND
Sodium-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3	8	ND
Sodium-Total (mg/L)	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5	10	ND
Solids-Suspended Sediment SSC @ 105 C (mg/L)	108	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	35800	24800	ND
Solids-Total Dissolved Calculated (mg/L)	998	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1880	2060	ND
Solids-Total Dissolved TDS @ 180 C (mg/L)	1100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2100	2200	ND
Solids-Total Suspended TSS @ 105 C (mg/L)	140	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	26000	20000	ND
Sulfate (mg/L)	645	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1220	1420	ND
TDS Balance (0.80 - 1.20) (dec.%)	1.07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1	1.08	ND
Thorium 230-Dissolved (pCi/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.1	ND
Thorium 230-Suspended (pCi/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	12.6	20	ND
Thorium 230-Total (pCi/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	12.6	20.1	ND
Thorium 232-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.005	<0.005	ND
Thorium 232-Suspended (mg/L)	<0.001	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.132	0.056	ND
Thorium 232-Total (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.051	0.054	ND
Turbidity (NTU)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1672
Uranium-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0016	0.0172	ND

PSC02														
Analyte	7/19/2007 11:30	8/20/2007 12:00	9/26/2007	10/17/2007 13:00	11/19/2007	12/11/2007	1/11/2008	2/12/2008	3/9/2008	4/14/2008	5/26/2008 15:45	6/17/2008	7/18/2008	7/18/2008	7/18/2008 14:25
Uranium-Suspended (mg/L)	0.0005	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0435	0.0543	ND
Uranium-Total (mg/L)	0.0012	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0311	0.0888	ND
Vanadium-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.1	<0.1	ND
Vanadium-Total (mg/L)	<0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.7	0.8	ND
Water Temperature (field, deg C)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	17.13
Zinc-Dissolved (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.01	0.02	ND
Zinc-Total (mg/L)	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.17	1.22	ND

UNT01	
Analyte	7/18/2008
A/C Balance (± 5) (%)	-7.33
Alkalinity-Total as CaCO3 (mg/L)	<5
Aluminum-Dissolved (mg/L)	0.4
Aluminum-Total (mg/L)	8.1
Ammonia (mg/L)	0.4
Anions (meq/L)	5.89
Arsenic-Dissolved (mg/L)	<0.001
Arsenic-Total (mg/L)	0.03
Barium-Dissolved (mg/L)	<0.1
Barium-Total (mg/L)	<0.1
Bicarbonate as HCO3 (mg/L)	<5
Boron-Dissolved (mg/L)	<0.1
Boron-Total (mg/L)	<0.1
Cadmium-Dissolved (mg/L)	<0.005
Cadmium-Total (mg/L)	<0.005
Calcium-Dissolved (mg/L)	51.6
Calcium-Total (mg/L)	59.2
Carbonate as CO3 (mg/L)	<5
Cations (meq/L)	5.09
Chloride (mg/L)	1
Chromium-Dissolved (mg/L)	<0.01
Chromium-Total (mg/L)	<0.05
Conductivity @ 25 C (umhos/cm)	536
Copper-Dissolved (mg/L)	<0.01
Copper-Total (mg/L)	0.01
Fluoride (mg/L)	0.3
Gross Alpha-Total (pCi/L)	6.1
Gross Beta-Total (pCi/L)	12.6
Gross Gamma-Total (pCi/L)	221
Iron-Dissolved (mg/L)	0.05
Iron-Total (mg/L)	8.93
Lead-Dissolved (mg/L)	<0.001
Lead-Total (mg/L)	0.008
Magnesium-Dissolved (mg/L)	22.4
Magnesium-Total (mg/L)	24.8
Manganese-Dissolved (mg/L)	3.87
Manganese-Total (mg/L)	5.06
Mercury-Dissolved (mg/L)	<0.001
Mercury-Total (mg/L)	<0.0002

UNT01	
Analyte	7/18/2008
Molybdenum-Dissolved (mg/L)	<0.1
Molybdenum-Total (mg/L)	<0.1
Nickel-Dissolved (mg/L)	0.09
Nickel-Total (mg/L)	0.11
Nitrogen, Nitrate as N (mg/L)	0.6
pH	4.91
Potassium-Dissolved (mg/L)	8
Potassium-Total (mg/L)	10.1
Radium 226-Dissolved (pCi/L)	0.2
Radium 226-Suspended (pCi/L)	0.03
Radium 226-Total (pCi/L)	0.3
Selenium-Dissolved (mg/L)	<0.005
Selenium-IV-Dissolved (mg/L)	<0.001
Selenium-VI-Dissolved (mg/L)	<0.001
Silica-Dissolved (mg/L)	0.8
Silica-Total (mg/L)	12.5
Silver-Dissolved (mg/L)	<0.005
Silver-Total (mg/L)	<0.005
Sodium Adsorption Ratio (SAR) (meq/L)	<0.1
Sodium-Dissolved (mg/L)	2.5
Sodium-Total (mg/L)	2
Solids-Suspended Sediment SSC @ 105 C (mg/L)	291
Solids-Total Dissolved Calculated (mg/L)	369
Solids-Total Dissolved TDS @ 180 C (mg/L)	380
Solids-Total Suspended TSS @ 105 C (mg/L)	290
Sulfate (mg/L)	278
TDS Balance (0.80 - 1.20) (dec.%)	1.02
Thorium 230-Dissolved (pCi/L)	ND
Thorium 230-Suspended (pCi/L)	ND
Thorium 230-Total (pCi/L)	-0.02
Thorium 232-Dissolved (mg/L)	<0.005
Thorium 232-Suspended (mg/L)	0.002
Thorium 232-Total (mg/L)	<0.005
Uranium-Dissolved (mg/L)	<0.0003
Uranium-Suspended (mg/L)	<0.0003
Uranium-Total (mg/L)	0.0009
Vanadium-Dissolved (mg/L)	<0.1
Vanadium-Total (mg/L)	0.2
Zinc-Dissolved (mg/L)	0.06

UNT01	
Analyte	7/18/2008
Zinc-Total (mg/L)	0.09

SUB01				
Analyte	9/25/2007 15:25 dry	11/12/2007 13:20 dry	3/24/2008 12:45	6/18/2008 12:00
A/C Balance (± 5) (%)	ND	ND	4.36	1.86
Alkalinity-Total as CaCO3 (mg/L)	ND	ND	38	84
Aluminum-Dissolved (mg/L)	ND	ND	0.2	0.3
Aluminum-Total (mg/L)	ND	ND	22.4	52.8
Ammonia (mg/L)	ND	ND	<0.1	1.2
Anions (meq/L)	ND	ND	2.17	2.54
Arsenic-Dissolved (mg/L)	ND	ND	0.001	0.003
Arsenic-Total (mg/L)	ND	ND	0.005	0.014
Bacteria, Fecal Coliform (cfu/100ml)	ND	ND	44	20
Barium-Dissolved (mg/L)	ND	ND	<0.1	<0.1
Barium-Total (mg/L)	ND	ND	0.1	0.2
Bicarbonate as HCO3 (mg/L)	ND	ND	46	102
Boron-Dissolved (mg/L)	ND	ND	<0.1	0.1
Boron-Total (mg/L)	ND	ND	<0.1	0.2
Cadmium-Dissolved (mg/L)	ND	ND	<0.005	<0.005
Cadmium-Total (mg/L)	ND	ND	<0.005	<0.005
Calcium-Dissolved (mg/L)	ND	ND	21	21.1
Calcium-Total (mg/L)	ND	ND	25.1	30.2
Carbonate as CO3 (mg/L)	ND	ND	<5	<5
Cations (meq/L)	ND	ND	2.37	2.63
Chloride (mg/L)	ND	ND	3	5
Chromium-Dissolved (mg/L)	ND	ND	<0.01	<0.01
Chromium-Hexavalent (mg/L)	ND	ND	<0.01	<0.05
Chromium-Total (mg/L)	ND	ND	<0.05	0.06
Chromium-Trivalent (mg/L)	ND	ND	<0.01	0.06
Conductivity (field, umhos/cm)	ND	ND	240	291
Conductivity @ 25 C (umhos/cm)	ND	ND	230	250
Copper-Dissolved (mg/L)	ND	ND	<0.01	<0.01
Copper-Total (mg/L)	ND	ND	0.02	0.03
Dissolved Oxygen (field, mg/L)	ND	ND	11.58	6.75
Fluoride (mg/L)	ND	ND	0.3	0.6
Gross Alpha-Total (pCi/L)	ND	ND	2.4	16.2
Gross Beta-Total (pCi/L)	ND	ND	5.1	20.2
Gross Gamma-Total (pCi/L)	ND	ND	<20	ND
Iron-Dissolved (mg/L)	ND	ND	0.15	0.31
Iron-Total (mg/L)	ND	ND	15.1	44.1
Lead 210-Dissolved (pCi/L)	ND	ND	ND	0.7
Lead 210-Suspended (pCi/L)	ND	ND	ND	-2.1

SUB01				
Analyte	9/25/2007 15:25	11/12/2007 13:20	3/24/2008 12:45	6/18/2008 12:00
Lead 210-Total (pCi/L)	ND	ND	ND	-1.4
Lead-Dissolved (mg/L)	ND	ND	<0.001	<0.001
Lead-Total (mg/L)	ND	ND	0.009	0.026
Magnesium-Dissolved (mg/L)	ND	ND	4.4	4.4
Magnesium-Total (mg/L)	ND	ND	8.4	15.1
Manganese-Dissolved (mg/L)	ND	ND	0.02	0.24
Manganese-Total (mg/L)	ND	ND	0.18	0.77
Mercury-Dissolved (mg/L)	ND	ND	<0.001	<0.001
Mercury-Total (mg/L)	ND	ND	<0.0001	<0.001
Molybdenum-Dissolved (mg/L)	ND	ND	<0.1	<0.1
Molybdenum-Total (mg/L)	ND	ND	<0.1	<0.1
Nickel-Dissolved (mg/L)	ND	ND	<0.01	<0.01
Nickel-Total (mg/L)	ND	ND	<0.05	<0.05
Nitrogen, Nitrate as N (mg/L)	ND	ND	1.2	<0.1
pH	ND	ND	7.73	7.07
pH (field)	ND	ND	6.47	8.25
Polonium 210-Dissolved (pCi/L)	ND	ND	ND	0.1
Polonium 210-Suspended (pCi/L)	ND	ND	ND	1.3
Polonium 210-Total (pCi/L)	ND	ND	ND	1.4
Potassium-Dissolved (mg/L)	ND	ND	4	8
Potassium-Total (mg/L)	ND	ND	8.3	20.9
Radium 226-Dissolved (pCi/L)	ND	ND	0.2	0.5
Radium 226-Suspended (pCi/L)	ND	ND	1	-0.2
Radium 226-Total (pCi/L)	ND	ND	1.2	0.3
Selenium-Dissolved (mg/L)	ND	ND	<0.001	<0.005
Selenium-IV-Dissolved (mg/L)	ND	ND	<0.001	<0.001
Selenium-IV-Total (mg/L)	ND	ND	<0.001	<0.001
Selenium-Total (mg/L)	ND	ND	0.001	<0.001
Selenium-VI-Dissolved (mg/L)	ND	ND	<0.001	<0.001
Selenium-VI-Total (mg/L)	ND	ND	0.001	<0.001
Silica-Dissolved (mg/L)	ND	ND	8.6	7.9
Silica-Total (mg/L)	ND	ND	104	88.1
Silver-Dissolved (mg/L)	ND	ND	<0.005	<0.005
Silver-Total (mg/L)	ND	ND	<0.005	<0.005
Sodium Adsorption Ratio (SAR) (meq/L)	ND	ND	0.98	1
Sodium-Dissolved (mg/L)	ND	ND	18.9	20
Sodium-Total (mg/L)	ND	ND	17.8	21
Solids-Suspended Sediment SSC @ 105 C (mg/L)	ND	ND	198	393
Solids-Total Dissolved Calculated (mg/L)	ND	ND	162	164

SUB01				
Analyte	9/25/2007 15:25	11/12/2007 13:20	3/24/2008 12:45	6/18/2008 12:00
Solids-Total Dissolved TDS @ 180 C (mg/L)	ND	ND	300	990
Solids-Total Suspended TSS @ 105 C (mg/L)	ND	ND	100	280
Sulfate (mg/L)	ND	ND	59	33
TDS Balance (0.80 - 1.20) (dec.%)	ND	ND	1.86	6.05
Thorium 230-Dissolved (pCi/L)	ND	ND	0.2	ND
Thorium 230-Suspended (pCi/L)	ND	ND	0.2	0.4
Thorium 230-Total (pCi/L)	ND	ND	0.4	0.4
Thorium 232-Dissolved (mg/L)	ND	ND	<0.005	<0.005
Thorium 232-Suspended (mg/L)	ND	ND	0.002	0.004
Thorium 232-Total (mg/L)	ND	ND	<0.005	0.012
Turbidity (NTU)	ND	ND	356	1294
Uranium-Dissolved (mg/L)	ND	ND	<0.0003	0.0003
Uranium-Suspended (mg/L)	ND	ND	0.0006	0.0007
Uranium-Total (mg/L)	ND	ND	0.0011	0.002
Vanadium-Dissolved (mg/L)	ND	ND	<0.1	<0.1
Vanadium-Total (mg/L)	ND	ND	<0.1	<0.1
Water Temperature (field, deg C)	ND	ND	8.98	19.18
Zinc-Dissolved (mg/L)	ND	ND	<0.01	0.01
Zinc-Total (mg/L)	ND	ND	0.06	0.13

SUB02					
Analyte	9/27/2007 18:45	11/12/2007 12:50	2/10/2008 17:00	6/18/2008 13:05	6/18/2008 13:10 duplicate
A/C Balance (± 5) (%)	-4.01	-1.86	-3.33	4.36	3.39
Alkalinity-Total as CaCO3 (mg/L)	92	102	90	96	98
Aluminum-Dissolved (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1
Aluminum-Total (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1
Ammonia (mg/L)	ND	<0.1	<0.1	<0.1	<0.1
Anions (meq/L)	61.6	52.4	54.6	50.6	52.8
Arsenic-Dissolved (mg/L)	0.001	<0.001	0.001	<0.001	<0.001
Arsenic-Total (mg/L)	<0.001	<0.001	<0.001	0.002	0.002
Bacteria, Fecal Coliform (cfu/100ml)	2	<2	<2	<2	<2
Barium-Dissolved (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1
Barium-Total (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1
Bicarbonate as HCO3 (mg/L)	112	124	110	117	119
Boron-Dissolved (mg/L)	0.4	0.5	0.5	0.5	0.5
Boron-Total (mg/L)	0.5	0.4	0.5	0.5	0.5
Cadmium-Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005
Cadmium-Total (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005
Calcium-Dissolved (mg/L)	622	561	538	609	620
Calcium-Total (mg/L)	ND	ND	579	602	627
Carbonate as CO3 (mg/L)	<5	<5	<5	<5	<5
Cations (meq/L)	56.8	50.5	51.1	55.2	56.5
Chloride (mg/L)	23	22	24	19	19
Chromium-Dissolved (mg/L)	<0.01	<0.01	<0.05	<0.01	<0.01
Chromium-Hexavalent (mg/L)	<0.05	<0.005	<0.005	0.005	0.02
Chromium-Total (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05
Chromium-Trivalent (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01
Conductivity (field, umhos/cm)	2171	3743	3523	3676	ND
Conductivity @ 25 C (umhos/cm)	3700	3340	3800	3540	3640
Copper-Dissolved (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01
Copper-Total (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Oxygen (field, mg/L)	7.1	8.82	11.15	10.03	ND
Fluoride (mg/L)	0.4	0.5	0.5	0.9	0.8
Gross Alpha-Total (pCi/L)	82.8	132	131	199	201
Gross Beta-Total (pCi/L)	55.9	83.3	81.5	80.1	88.7
Gross Gamma-Total (pCi/L)	<20	1060	<20	ND	ND
Iron-Dissolved (mg/L)	<0.03	0.08	0.07	0.05	0.06
Iron-Total (mg/L)	0.14	0.23	0.22	0.18	0.25
Lead 210-Dissolved (pCi/L)	<1	<1	ND	-1	-0.9
Lead 210-Suspended (pCi/L)	<1	<1	ND	1.5	-0.5

SUB02					
Analyte	9/27/2007 18:45	11/12/2007 12:50	2/10/2008 17:00	6/18/2008 13:05	6/18/2008 13:10
Lead 210-Total (pCi/L)	ND	<1	ND	0.5	-1.4
Lead-Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001
Lead-Total (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium-Dissolved (mg/L)	212	180	198	204	211
Magnesium-Total (mg/L)	0	0	201	204	207
Manganese-Dissolved (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01
Manganese-Total (mg/L)	0.02	0.02	0.04	<0.01	0.01
Mercury-Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001
Mercury-Total (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum-Dissolved (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum-Total (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel-Dissolved (mg/L)	<0.01	<0.01	<0.05	<0.01	<0.01
Nickel-Total (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate as N (mg/L)	<0.1	0.1	0.2	<0.1	<0.1
pH	7.99	7.78	7.81	8.08	8.06
pH (field)	8.04	7.83	5.55	7.95	0
Polonium 210-Dissolved (pCi/L)	<1	1.8	ND	ND	-0.2
Polonium 210-Suspended (pCi/L)	<1	<1	ND	0.3	0.3
Polonium 210-Total (pCi/L)	ND	1.5	ND	0.3	0.1
Potassium-Dissolved (mg/L)	21	21	23	20	20
Potassium-Total (mg/L)	0	0	23.6	21.1	21.5
Radium 226-Dissolved (pCi/L)	0.6	0.6	0.4	0.7	0.6
Radium 226-Suspended (pCi/L)	<0.2	<0.2	<0.2	-0.4	-0.5
Radium 226-Total (pCi/L)	0	0.6	0.6	0.2	0.1
Selenium-Dissolved (mg/L)	0.006	0.002	0.002	<0.005	<0.005
Selenium-IV-Dissolved (mg/L)	ND	<0.001	<0.001	<0.001	<0.001
Selenium-IV-Total (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium-Total (mg/L)	0.001	0.002	0.002	0.003	0.001
Selenium-VI-Dissolved (mg/L)	ND	0.002	<0.001	0.002	0.001
Selenium-VI-Total (mg/L)	0.001	0.002	0.002	0.003	0.001
Silica-Dissolved (mg/L)	2	2.4	2.8	<0.5	<0.5
Silica-Total (mg/L)	ND	ND	2.9	<0.5	<0.5
Silver-Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005
Silver-Total (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005
Sodium Adsorption Ratio (SAR) (meq/L)	0	1.6	1.6	1.5	1.6
Sodium-Dissolved (mg/L)	163	165	169	172	177
Sodium-Total (mg/L)	ND	ND	175	180	179
Solids-Suspended Sediment SSC @ 105 C (mg/L)	<5	<5	<5	<5	<5
Solids-Total Dissolved Calculated (mg/L)	3950	3400	3510	3390	3520

SUB02					
Analyte	9/27/2007 18:45	11/12/2007 12:50	2/10/2008 17:00	6/18/2008 13:05	6/18/2008 13:10
Solids-Total Dissolved TDS @ 180 C (mg/L)	3900	3900	2900	3800	3800
Solids-Total Suspended TSS @ 105 C (mg/L)	<5	<5	10	7	5
Sulfate (mg/L)	2840	2390	2500	2310	2410
TDS Balance (0.80 - 1.20) (dec.%)	0.99	1.15	0.83	1.12	1.07
Thorium 230-Dissolved (pCi/L)	<0.2	<0.2	0.4	0.1	0.1
Thorium 230-Suspended (pCi/L)	<0.2	0.7	0.4	0.1	0.3
Thorium 230-Total (pCi/L)	ND	<0.2	0.5	0.2	0.4
Thorium 232-Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005
Thorium 232-Suspended (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001
Thorium 232-Total (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005
Turbidity (NTU)	2.1	1.2	1.4	0.5	ND
Uranium-Dissolved (mg/L)	0.164	0.171	0.177	0.175	0.174
Uranium-Suspended (mg/L)	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Uranium-Total (mg/L)	0.168	0.162	0.168	0.19	0.19
Vanadium-Dissolved (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1
Vanadium-Total (mg/L)	<0.1	<0.1	<0.1	<0.1	0.1
Water Temperature (field, deg C)	17.94	8.35	1.05	19.56	ND
Zinc-Dissolved (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc-Total (mg/L)	<0.01	<0.01	<0.02	<0.01	<0.01

SUB03				
Analyte	9/25/2007 17:00 dry	11/12/2007 14:50	2/10/2008 12:35 dry	6/18/2008 14:15
A/C Balance (± 5) (%)	ND	0.0673	ND	4.34
Alkalinity-Total as CaCO3 (mg/L)	ND	<5	ND	<5
Aluminum-Dissolved (mg/L)	ND	0.6	ND	0.6
Aluminum-Total (mg/L)	ND	0.7	ND	1.2
Ammonia (mg/L)	ND	0.1	ND	0.1
Anions (meq/L)	ND	12.9	ND	10.7
Arsenic-Dissolved (mg/L)	ND	<0.001	ND	<0.001
Arsenic-Total (mg/L)	ND	<0.001	ND	0.002
Bacteria, Fecal Coliform (cfu/100ml)	ND	<2	ND	<2
Barium-Dissolved (mg/L)	ND	<0.1	ND	<0.1
Barium-Total (mg/L)	ND	<0.1	ND	<0.1
Bicarbonate as HCO3 (mg/L)	ND	<5	ND	<5
Boron-Dissolved (mg/L)	ND	<0.1	ND	0.2
Boron-Total (mg/L)	ND	<0.1	ND	0.1
Cadmium-Dissolved (mg/L)	ND	<0.005	ND	<0.005
Cadmium-Total (mg/L)	ND	<0.005	ND	<0.005
Calcium-Dissolved (mg/L)	ND	128	ND	130
Calcium-Total (mg/L)	ND	ND	ND	132
Carbonate as CO3 (mg/L)	ND	<5	ND	<5
Cations (meq/L)	ND	12.9	ND	11.7
Chloride (mg/L)	ND	9	ND	2
Chromium-Dissolved (mg/L)	ND	<0.01	ND	<0.01
Chromium-Hexavalent (mg/L)	ND	<0.005	ND	0.006
Chromium-Total (mg/L)	ND	<0.05	ND	<0.05
Chromium-Trivalent (mg/L)	ND	<0.01	ND	<0.01
Conductivity (field, umhos/cm)	ND	1225	ND	1023
Conductivity @ 25 C (umhos/cm)	ND	1080	ND	975
Copper-Dissolved (mg/L)	ND	<0.01	ND	<0.01
Copper-Total (mg/L)	ND	<0.01	ND	<0.01
Dissolved Oxygen (field, mg/L)	ND	10.21	ND	8.94
Fluoride (mg/L)	ND	0.2	ND	0.4
Gross Alpha-Total (pCi/L)	ND	16.6	ND	19.9
Gross Beta-Total (pCi/L)	ND	38.8	ND	21.8
Gross Gamma-Total (pCi/L)	ND	1270	ND	1080
Iron-Dissolved (mg/L)	ND	0.12	ND	0.24
Iron-Total (mg/L)	ND	0.16	ND	1.1
Lead 210-Dissolved (pCi/L)	ND	<1	ND	-3
Lead 210-Suspended (pCi/L)	ND	<1	ND	-0.8

SUB03				
Analyte	9/25/2007 17:00	11/12/2007 14:50	2/10/2008 12:35	6/18/2008 14:15
Lead 210-Total (pCi/L)	ND	<1	ND	-3.8
Lead-Dissolved (mg/L)	ND	<0.001	ND	<0.001
Lead-Total (mg/L)	ND	<0.001	ND	<0.001
Magnesium-Dissolved (mg/L)	ND	53.4	ND	47.4
Magnesium-Total (mg/L)	ND	ND	ND	48.6
Manganese-Dissolved (mg/L)	ND	11.6	ND	8.44
Manganese-Total (mg/L)	ND	12.2	ND	8.43
Mercury-Dissolved (mg/L)	ND	<0.001	ND	<0.001
Mercury-Total (mg/L)	ND	<0.001	ND	<0.001
Molybdenum-Dissolved (mg/L)	ND	<0.1	ND	<0.1
Molybdenum-Total (mg/L)	ND	<0.1	ND	<0.1
Nickel-Dissolved (mg/L)	ND	0.23	ND	0.17
Nickel-Total (mg/L)	ND	0.23	ND	0.17
Nitrogen, Nitrate as N (mg/L)	ND	<0.1	ND	<0.1
pH	ND	4.58	ND	4.4
pH (field)	ND	6.49	ND	6.11
Polonium 210-Dissolved (pCi/L)	ND	<1	ND	0
Polonium 210-Suspended (pCi/L)	ND	<1	ND	0.5
Polonium 210-Total (pCi/L)	ND	2.5	ND	0.5
Potassium-Dissolved (mg/L)	ND	35	ND	16
Potassium-Total (mg/L)	ND	ND	ND	17.9
Radium 226-Dissolved (pCi/L)	ND	4.5	ND	2.6
Radium 226-Suspended (pCi/L)	ND	<0.2	ND	-0.09
Radium 226-Total (pCi/L)	ND	4	ND	2.5
Selenium-Dissolved (mg/L)	ND	<0.001	ND	<0.005
Selenium-IV-Dissolved (mg/L)	ND	<0.001	ND	<0.001
Selenium-IV-Total (mg/L)	ND	<0.001	ND	<0.001
Selenium-Total (mg/L)	ND	<0.001	ND	<0.001
Selenium-VI-Dissolved (mg/L)	ND	<0.001	ND	<0.001
Selenium-VI-Total (mg/L)	ND	<0.001	ND	<0.001
Silica-Dissolved (mg/L)	ND	7.5	ND	2.1
Silica-Total (mg/L)	ND	ND	ND	3.8
Silver-Dissolved (mg/L)	ND	<0.005	ND	<0.005
Silver-Total (mg/L)	ND	<0.005	ND	<0.005
Sodium Adsorption Ratio (SAR) (meq/L)	ND	0.15	ND	<0.1
Sodium-Dissolved (mg/L)	ND	8.2	ND	4
Sodium-Total (mg/L)	ND	ND	ND	5
Solids-Suspended Sediment SSC @ 105 C (mg/L)	ND	<5	ND	37
Solids-Total Dissolved Calculated (mg/L)	ND	851	ND	716

SUB03				
Analyte	9/25/2007 17:00	11/12/2007 14:50	2/10/2008 12:35	6/18/2008 14:15
Solids-Total Dissolved TDS @ 180 C (mg/L)	ND	970	ND	820
Solids-Total Suspended TSS @ 105 C (mg/L)	ND	6	ND	26
Sulfate (mg/L)	ND	699	ND	510
TDS Balance (0.80 - 1.20) (dec.%)	ND	1.14	ND	1.15
Thorium 230-Dissolved (pCi/L)	ND	<0.2	ND	ND
Thorium 230-Suspended (pCi/L)	ND	1.3	ND	0.4
Thorium 230-Total (pCi/L)	ND	<0.2	ND	0.3
Thorium 232-Dissolved (mg/L)	ND	<0.005	ND	<0.005
Thorium 232-Suspended (mg/L)	ND	<0.001	ND	<0.001
Thorium 232-Total (mg/L)	ND	<0.005	ND	<0.005
Turbidity (NTU)	ND	6.6	ND	12.7
Uranium-Dissolved (mg/L)	ND	0.0014	ND	0.0023
Uranium-Suspended (mg/L)	ND	0.0008	ND	0.0004
Uranium-Total (mg/L)	ND	0.0014	ND	0.0031
Vanadium-Dissolved (mg/L)	ND	<0.1	ND	<0.1
Vanadium-Total (mg/L)	ND	<0.1	ND	0.2
Water Temperature (field, deg C)	ND	10.89	ND	31.9
Zinc-Dissolved (mg/L)	ND	0.16	ND	0.1
Zinc-Total (mg/L)	ND	0.17	ND	0.08

SUB04				
Analyte	9/25/2007 16:30 dry	11/12/2007 13:50	2/10/2007 12:00 dry	6/17/2008 14:00
A/C Balance (± 5) (%)	ND	-0.902	ND	2.01
Alkalinity-Total as CaCO3 (mg/L)	ND	<5	ND	<5
Aluminum-Dissolved (mg/L)	ND	1.2	ND	0.4
Aluminum-Total (mg/L)	ND	1.5	ND	0.5
Ammonia (mg/L)	ND	0.3	ND	<0.1
Anions (meq/L)	ND	22.3	ND	6.13
Arsenic-Dissolved (mg/L)	ND	<0.001	ND	<0.001
Arsenic-Total (mg/L)	ND	<0.001	ND	<0.002
Bacteria, Fecal Coliform (cfu/100ml)	ND	<2	ND	<2
Barium-Dissolved (mg/L)	ND	<0.1	ND	<0.1
Barium-Total (mg/L)	ND	<0.1	ND	<0.1
Bicarbonate as HCO3 (mg/L)	ND	<5	ND	<5
Boron-Dissolved (mg/L)	ND	0.1	ND	<0.1
Boron-Total (mg/L)	ND	<0.1	ND	<0.1
Cadmium-Dissolved (mg/L)	ND	0.008	ND	<0.005
Cadmium-Total (mg/L)	ND	0.008	ND	<0.005
Calcium-Dissolved (mg/L)	ND	201	ND	64.8
Calcium-Total (mg/L)	ND	ND	ND	61.7
Carbonate as CO3 (mg/L)	ND	<5	ND	<5
Cations (meq/L)	ND	21.9	ND	6.39
Chloride (mg/L)	ND	18	ND	2
Chromium-Dissolved (mg/L)	ND	<0.01	ND	<0.01
Chromium-Hexavalent (mg/L)	ND	<0.05	ND	<0.005
Chromium-Total (mg/L)	ND	<0.05	ND	<0.05
Chromium-Trivalent (mg/L)	ND	<0.01	ND	<0.01
Conductivity (field, umhos/cm)	ND	1868	ND	562
Conductivity @ 25 C (umhos/cm)	ND	1650	ND	692
Copper-Dissolved (mg/L)	ND	<0.01	ND	<0.01
Copper-Total (mg/L)	ND	<0.01	ND	<0.01
Dissolved Oxygen (field, mg/L)	ND	9.77	ND	9.52
Fluoride (mg/L)	ND	0.6	ND	0.4
Gross Alpha-Total (pCi/L)	ND	13.6	ND	3
Gross Beta-Total (pCi/L)	ND	51.3	ND	13
Gross Gamma-Total (pCi/L)	ND	<20	ND	ND
Iron-Dissolved (mg/L)	ND	1.48	ND	<0.03
Iron-Total (mg/L)	ND	3.73	ND	0.18
Lead 210-Dissolved (pCi/L)	ND	<1	ND	-2.1
Lead 210-Suspended (pCi/L)	ND	<1	ND	6.7

SUB04				
Analyte	9/25/2007 16:30	11/12/2007 13:50	2/10/2007 12:00	6/17/2008 14:00
Lead 210-Total (pCi/L)	ND	<1	ND	3
Lead-Dissolved (mg/L)	ND	0.001	ND	<0.001
Lead-Total (mg/L)	ND	<0.001	ND	<0.001
Magnesium-Dissolved (mg/L)	ND	99.5	ND	27.3
Magnesium-Total (mg/L)	ND	ND	ND	26.8
Manganese-Dissolved (mg/L)	ND	20.4	ND	5.2
Manganese-Total (mg/L)	ND	21.3	ND	5.18
Mercury-Dissolved (mg/L)	ND	<0.001	ND	<0.001
Mercury-Total (mg/L)	ND	<0.001	ND	<0.0001
Molybdenum-Dissolved (mg/L)	ND	<0.1	ND	<0.1
Molybdenum-Total (mg/L)	ND	<0.1	ND	<0.1
Nickel-Dissolved (mg/L)	ND	0.43	ND	0.09
Nickel-Total (mg/L)	ND	0.44	ND	0.1
Nitrogen, Nitrate as N (mg/L)	ND	<0.1	ND	<0.1
pH	ND	4.65	.ND	4.89
pH (field)	ND	7.2	ND	4.68
Polonium 210-Dissolved (pCi/L)	ND	2.2	ND	0.2
Polonium 210-Suspended (pCi/L)	ND	<1	ND	0.2
Polonium 210-Total (pCi/L)	ND	3.4	ND	0.4
Potassium-Dissolved (mg/L)	ND	46	ND	14
Potassium-Total (mg/L)	ND	ND	ND	14.7
Radium 226-Dissolved (pCi/L)	ND	3.4	ND	3.1
Radium 226-Suspended (pCi/L)	ND	<0.2	ND	-0.4
Radium 226-Total (pCi/L)	ND	3.5	ND	2.7
Selenium-Dissolved (mg/L)	ND	<0.001	ND	<0.005
Selenium-IV-Dissolved (mg/L)	ND	<0.001	ND	<0.001
Selenium-IV-Total (mg/L)	ND	<0.001	ND	<0.001
Selenium-Total (mg/L)	ND	<0.001	ND	0.001
Selenium-VI-Dissolved (mg/L)	ND	<0.001	ND	<0.001
Selenium-VI-Total (mg/L)	ND	<0.001	ND	0.001
Silica-Dissolved (mg/L)	ND	16.2	ND	3.7
Silica-Total (mg/L)	ND	ND	ND	3.9
Silver-Dissolved (mg/L)	ND	<0.005	ND	<0.005
Silver-Total (mg/L)	ND	<0.005	ND	<0.005
Sodium Adsorption Ratio (SAR) (meq/L)	ND	0.25	ND	<0.1
Sodium-Dissolved (mg/L)	ND	17.1	ND	2.9
Sodium-Total (mg/L)	ND	ND	ND	3
Solids-Suspended Sediment SSC @ 105 C (mg/L)	ND	12	ND	<5
Solids-Total Dissolved Calculated (mg/L)	ND	1450	ND	412

SUB04				
Analyte	9/25/2007 16:30	11/12/2007 13:50	2/10/2007 12:00	6/17/2008 14:00
Solids-Total Dissolved TDS @ 180 C (mg/L)	ND	1700	ND	450
Solids-Total Suspended TSS @ 105 C (mg/L)	ND	23	ND	<5
Sulfate (mg/L)	ND	1200	ND	291
TDS Balance (0.80 - 1.20) (dec.%)	ND	1.18	ND	1.08
Thorium 230-Dissolved (pCi/L)	ND	0.9	ND	ND
Thorium 230-Suspended (pCi/L)	ND	0.5	ND	0.2
Thorium 230-Total (pCi/L)	ND	<0.2	ND	0.2
Thorium 232-Dissolved (mg/L)	ND	<0.005	ND	<0.005
Thorium 232-Suspended (mg/L)	ND	<0.001	ND	<0.001
Thorium 232-Total (mg/L)	ND	<0.005	ND	<0.005
Turbidity (NTU)	ND	37.3	ND	1.4
Uranium-Dissolved (mg/L)	ND	0.0021	ND	0.0006
Uranium-Suspended (mg/L)	ND	0.0014	ND	<0.0003
Uranium-Total (mg/L)	ND	0.0024	ND	0.0007
Vanadium-Dissolved (mg/L)	ND	<0.1	ND	<0.1
Vanadium-Total (mg/L)	ND	<0.1	ND	<0.1
Water Temperature (field, deg C)	ND	9.53	ND	27.07
Zinc-Dissolved (mg/L)	ND	0.37	ND	0.07
Zinc-Total (mg/L)	ND	0.41	ND	0.06

SUB05				
Analyte	9/27/2007 17:05 dry	11/27/2007 dry	3/24/2008 dry	6/23/2008 dry
A/C Balance (± 5) (%)	ND	ND	ND	ND
Alkalinity-Total as CaCO3 (mg/L)	ND	ND	ND	ND
Aluminum-Dissolved (mg/L)	ND	ND	ND	ND
Aluminum-Total (mg/L)	ND	ND	ND	ND
Ammonia (mg/L)	ND	ND	ND	ND
Anions (meq/L)	ND	ND	ND	ND
Arsenic-Dissolved (mg/L)	ND	ND	ND	ND
Arsenic-Total (mg/L)	ND	ND	ND	ND
Bacteria, Fecal Coliform (cfu/100ml)	ND	ND	ND	ND
Barium-Dissolved (mg/L)	ND	ND	ND	ND
Barium-Total (mg/L)	ND	ND	ND	ND
Bicarbonate as HCO3 (mg/L)	ND	ND	ND	ND
Boron-Dissolved (mg/L)	ND	ND	ND	ND
Boron-Total (mg/L)	ND	ND	ND	ND
Cadmium-Dissolved (mg/L)	ND	ND	ND	ND
Cadmium-Total (mg/L)	ND	ND	ND	ND
Calcium-Dissolved (mg/L)	ND	ND	ND	ND
Calcium-Total (mg/L)	ND	ND	ND	ND
Carbonate as CO3 (mg/L)	ND	ND	ND	ND
Cations (meq/L)	ND	ND	ND	ND
Chloride (mg/L)	ND	ND	ND	ND
Chromium-Dissolved (mg/L)	ND	ND	ND	ND
Chromium-Hexavalent (mg/L)	ND	ND	ND	ND
Chromium-Total (mg/L)	ND	ND	ND	ND
Chromium-Trivalent (mg/L)	ND	ND	ND	ND
Conductivity (field, umhos/cm)	ND	ND	ND	ND
Conductivity @ 25 C (umhos/cm)	ND	ND	ND	ND
Copper-Dissolved (mg/L)	ND	ND	ND	ND
Copper-Total (mg/L)	ND	ND	ND	ND
Dissolved Oxygen (field, mg/L)	ND	ND	ND	ND
Fluoride (mg/L)	ND	ND	ND	ND
Gross Alpha-Total (pCi/L)	ND	ND	ND	ND
Gross Beta-Total (pCi/L)	ND	ND	ND	ND
Gross Gamma-Total (pCi/L)	ND	ND	ND	ND
Iron-Dissolved (mg/L)	ND	ND	ND	ND
Iron-Total (mg/L)	ND	ND	ND	ND
Lead 210-Dissolved (pCi/L)	ND	ND	ND	ND
Lead 210-Suspended (pCi/L)	ND	ND	ND	ND

SUB05				
Analyte	9/27/2007 17:05	11/27/2007	3/24/2008	6/23/2008
Lead 210-Total (pCi/L)	ND	ND	ND	ND
Lead-Dissolved (mg/L)	ND	ND	ND	ND
Lead-Total (mg/L)	ND	ND	ND	ND
Magnesium-Dissolved (mg/L)	ND	ND	ND	ND
Magnesium-Total (mg/L)	ND	ND	ND	ND
Manganese-Dissolved (mg/L)	ND	ND	ND	ND
Manganese-Total (mg/L)	ND	ND	ND	ND
Mercury-Dissolved (mg/L)	ND	ND	ND	ND
Mercury-Total (mg/L)	ND	ND	ND	ND
Molybdenum-Dissolved (mg/L)	ND	ND	ND	ND
Molybdenum-Total (mg/L)	ND	ND	ND	ND
Nickel-Dissolved (mg/L)	ND	ND	ND	ND
Nickel-Total (mg/L)	ND	ND	ND	ND
Nitrogen, Nitrate as N (mg/L)	ND	ND	ND	ND
pH	ND	ND	ND	ND
pH (field)	ND	ND	ND	ND
Polonium 210-Dissolved (pCi/L)	ND	ND	ND	ND
Polonium 210-Suspended (pCi/L)	ND	ND	ND	ND
Polonium 210-Total (pCi/L)	ND	ND	ND	ND
Potassium-Dissolved (mg/L)	ND	ND	ND	ND
Potassium-Total (mg/L)	ND	ND	ND	ND
Radium 226-Dissolved (pCi/L)	ND	ND	ND	ND
Radium 226-Suspended (pCi/L)	ND	ND	ND	ND
Radium 226-Total (pCi/L)	ND	ND	ND	ND
Selenium-Dissolved (mg/L)	ND	ND	ND	ND
Selenium-IV-Dissolved (mg/L)	ND	ND	ND	ND
Selenium-IV-Total (mg/L)	ND	ND	ND	ND
Selenium-Total (mg/L)	ND	ND	ND	ND
Selenium-VI-Dissolved (mg/L)	ND	ND	ND	ND
Selenium-VI-Total (mg/L)	ND	ND	ND	ND
Silica-Dissolved (mg/L)	ND	ND	ND	ND
Silica-Total (mg/L)	ND	ND	ND	ND
Silver-Dissolved (mg/L)	ND	ND	ND	ND
Silver-Total (mg/L)	ND	ND	ND	ND
Sodium Adsorption Ratio (SAR) (meq/L)	ND	ND	ND	ND
Sodium-Dissolved (mg/L)	ND	ND	ND	ND
Sodium-Total (mg/L)	ND	ND	ND	ND
Solids-Suspended Sediment SSC @ 105 C (mg/L)	ND	ND	ND	ND
Solids-Total Dissolved Calculated (mg/L)	ND	ND	ND	ND

SUB05				
Analyte	9/27/2007 17:05	11/27/2007	3/24/2008	6/23/2008
Solids-Total Dissolved TDS @ 180 C (mg/L)	ND	ND	ND	ND
Solids-Total Suspended TSS @ 105 C (mg/L)	ND	ND	ND	ND
Sulfate (mg/L)	ND	ND	ND	ND
TDS Balance (0.80 - 1.20) (dec.%)	ND	ND	ND	ND
Thorium 230-Dissolved (pCi/L)	ND	ND	ND	ND
Thorium 230-Suspended (pCi/L)	ND	ND	ND	ND
Thorium 230-Total (pCi/L)	ND	ND	ND	ND
Thorium 232-Dissolved (mg/L)	ND	ND	ND	ND
Thorium 232-Suspended (mg/L)	ND	ND	ND	ND
Thorium 232-Total (mg/L)	ND	ND	ND	ND
Turbidity (NTU)	ND	ND	ND	ND
Uranium-Dissolved (mg/L)	ND	ND	ND	ND
Uranium-Suspended (mg/L)	ND	ND	ND	ND
Uranium-Total (mg/L)	ND	ND	ND	ND
Vanadium-Dissolved (mg/L)	ND	ND	ND	ND
Vanadium-Total (mg/L)	ND	ND	ND	ND
Water Temperature (field, deg C)	ND	ND	ND	ND
Zinc-Dissolved (mg/L)	ND	ND	ND	ND
Zinc-Total (mg/L)	ND	ND	ND	ND

SUB06

Analyte	9/27/2007 18:10	11/27/2007 9:36	2/10/2008 16:10	6/23/2008 13:45
A/C Balance (± 5) (%)	2.82	-0.00889	-2.74	3.85
Alkalinity-Total as CaCO3 (mg/L)	82	<5	<5	<5
Aluminum-Dissolved (mg/L)	134	131	162	64.4
Aluminum-Total (mg/L)	160	<0.1	166	62.8
Ammonia (mg/L)	ND	3.4	4.5	2
Anions (meq/L)	119	119	154	66.6
Arsenic-Dissolved (mg/L)	0.003	0.004	0.004	0.002
Arsenic-Total (mg/L)	<0.003	0.003	0.004	0.002
Bacteria, Fecal Coliform (cfu/100ml)	<2	<2	<2	<2
Barium-Dissolved (mg/L)	<0.1	<0.1	<0.1	<0.1
Barium-Total (mg/L)	<0.1	<0.1	<0.1	<0.1
Bicarbonate as HCO3 (mg/L)	100	<5	<5	<5
Boron-Dissolved (mg/L)	0.6	<0.1	<0.1	0.2
Boron-Total (mg/L)	0.7	<0.1	<0.1	0.2
Cadmium-Dissolved (mg/L)	0.026	0.026	0.036	0.015
Cadmium-Total (mg/L)	0.03	0.027	0.031	0.019
Calcium-Dissolved (mg/L)	512	471	534	328
Calcium-Total (mg/L)	ND	ND	571	330
Carbonate as CO3 (mg/L)	<5	<5	<5	<5
Cations (meq/L)	126	119	145	72
Chloride (mg/L)	10	7	10	5
Chromium-Dissolved (mg/L)	<0.01	<0.01	<0.05	0.01
Chromium-Hexavalent (mg/L)	<0.05	<0.02	<0.01	<0.005
Chromium-Total (mg/L)	<0.05	<0.05	<0.05	<0.05
Chromium-Trivalent (mg/L)	<0.01	<0.01	<0.01	<0.01
Conductivity (field, umhos/cm)	4125	6255	7140	4126
Conductivity @ 25 C (umhos/cm)	6210	6390	7640	4110
Copper-Dissolved (mg/L)	0.11	0.1	0.13	0.07
Copper-Total (mg/L)	0.14	0.1	0.13	0.06
Dissolved Oxygen (field, mg/L)	6.96	13.32	13.41	9.56
Fluoride (mg/L)	3.7	5.5	7.4	3.9
Gross Alpha-Total (pCi/L)	3070	6780	8750	3570
Gross Beta-Total (pCi/L)	2500	3200	3600	1200
Gross Gamma-Total (pCi/L)	<20	264	675	ND
Iron-Dissolved (mg/L)	4.28	5.74	7.35	1.88
Iron-Total (mg/L)	4.66	5.93	8.22	2.19
Lead 210-Dissolved (pCi/L)	<1	<1	ND	-0.6
Lead 210-Suspended (pCi/L)	<1	<1	ND	3.7
Lead 210-Total (pCi/L)	ND	<1	ND	3.1

SUB06

Analyte	9/27/2007 18:10	11/27/2007 9:36	2/10/2008 16:10	6/23/2008 13:45
Lead-Dissolved (mg/L)	0.001	0.001	0.001	<0.001
Lead-Total (mg/L)	<0.003	0.001	0.001	0.011
Magnesium-Dissolved (mg/L)	771	707	878	436
Magnesium-Total (mg/L)	ND	ND	930	439
Manganese-Dissolved (mg/L)	223	249	299	133
Manganese-Total (mg/L)	215	246	317	0.06
Mercury-Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001
Mercury-Total (mg/L)	<0.001	<0.001	<0.001	<0.0001
Molybdenum-Dissolved (mg/L)	<0.1	<0.1	<0.1	<0.1
Molybdenum-Total (mg/L)	<0.1	<0.1	<0.1	<0.1
Nickel-Dissolved (mg/L)	5.07	5.58	6.45	3.01
Nickel-Total (mg/L)	6.53	<0.05	6.14	3.03
Nitrogen, Nitrate as N (mg/L)	0.4	0.4	0.4	0.6
pH	3.22	3.2	3.19	3.52
pH (field)	3.21	2.82	4.42	3.49
Polonium 210-Dissolved (pCi/L)	<1	1.7	ND	0.3
Polonium 210-Suspended (pCi/L)	4.5	1.4	ND	0.4
Polonium 210-Total (pCi/L)	ND	3.1	ND	0.7
Potassium-Dissolved (mg/L)	27	29	35	17
Potassium-Total (mg/L)	ND	ND	37.1	17.7
Radium 226-Dissolved (pCi/L)	4.3	2.0	2.2	2.2
Radium 226-Suspended (pCi/L)	<0.2	<0.2	1	-0.2
Radium 226-Total (pCi/L)	ND	2	1.8	2
Selenium-Dissolved (mg/L)	0.035	0.014	0.017	0.009
Selenium-IV-Dissolved (mg/L)	0	<0.001	<0.001	<0.001
Selenium-IV-Total (mg/L)	<0.001	<0.001	<0.001	<0.001
Selenium-Total (mg/L)	0.013	0.013	0.016	0.008
Selenium-VI-Dissolved (mg/L)	0	0.014	0.002	0.009
Selenium-VI-Total (mg/L)	0.013	0.013	0.016	0.008
Silica-Dissolved (mg/L)	30	34.1	37.2	10.2
Silica-Total (mg/L)	ND	ND	41.5	11.4
Silver-Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Silver-Total (mg/L)	<0.005	<0.005	<0.005	<0.005
Sodium Adsorption Ratio (SAR) (meq/L)	ND	0.59	0.7	0.44
Sodium-Dissolved (mg/L)	88	86.1	113	52
Sodium-Total (mg/L)	ND	ND	115	54
Solids-Suspended Sediment SSC @ 105 C (mg/L)	10	<5	14	8
Solids-Total Dissolved Calculated (mg/L)	7090	7020	8910	4050
Solids-Total Dissolved TDS @ 180 C (mg/L)	8100	8600	6800	4500

SUB06

Analyte	9/27/2007 18:10	11/27/2007 9:36	2/10/2008 16:10	6/23/2008 13:45
Solids-Total Suspended TSS @ 105 C (mg/L)	5	5	10	14
Sulfate (mg/L)	5030	5700	7330	3180
TDS Balance (0.80 - 1.20) (dec.%)	1.14	1.23	0.77	1.12
Thorium 230-Dissolved (pCi/L)	23.8	27.8	25.2	6.3
Thorium 230-Suspended (pCi/L)	<0.2	1	<0.2	0.2
Thorium 230-Total (pCi/L)	ND	28.8	31.1	6.5
Thorium 232-Dissolved (mg/L)	0.011	0.01	0.013	<0.005
Thorium 232-Suspended (mg/L)	<0.001	<0.001	<0.001	<0.001
Thorium 232-Total (mg/L)	0.01	0.01	0.013	0.005
Turbidity (NTU)	0	0.2	22	10.3
Uranium-Dissolved (mg/L)	5.29	5.84	7.84	3.22
Uranium-Suspended (mg/L)	0.0013	0.0013	0.0019	0.0015
Uranium-Total (mg/L)	7.38	5.83	6.73	3.61
Vanadium-Dissolved (mg/L)	<0.1	<0.1	<0.1	<0.1
Vanadium-Total (mg/L)	<0.1	<0.1	<0.1	<0.1
Water Temperature (field, deg C)	16.2	2.84	0.03	25.12
Zinc-Dissolved (mg/L)	4.31	4.45	6.58	2.99
Zinc-Total (mg/L)	5.55	4.46	7.22	2.92

SUB07				
Analyte	9/27/2007 18:45	11/12/2007 16:45	3/24/2008 11:55	6/23/2008 14:30
A/C Balance (± 5) (%)	2.11	-1.25	-3.45	-16.2
Alkalinity-Total as CaCO3 (mg/L)	<5	<5	<5	<5
Aluminum-Dissolved (mg/L)	1.1	0.5	0.2	0.1
Aluminum-Total (mg/L)	1.7	0.6	0.4	0.8
Ammonia (mg/L)	ND	2.4	2.4	0.2
Anions (meq/L)	10.4	6.18	3.95	3.59
Arsenic-Dissolved (mg/L)	0.001	<0.001	<0.001	<0.001
Arsenic-Total (mg/L)	0.001	<0.001	<0.001	0.002
Bacteria, Fecal Coliform (cfu/100ml)	<2	<2	<2	<2
Barium-Dissolved (mg/L)	<0.1	<0.1	<0.1	<0.1
Barium-Total (mg/L)	<0.1	<0.1	<0.1	<0.1
Bicarbonate as HCO3 (mg/L)	<5	<5	<5	<5
Boron-Dissolved (mg/L)	0.2	<0.1	<0.1	<0.1
Boron-Total (mg/L)	0.3	<0.1	<0.1	<0.1
Cadmium-Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Cadmium-Total (mg/L)	<0.005	<0.005	<0.005	<0.005
Calcium-Dissolved (mg/L)	80	45.6	27.6	21.6
Calcium-Total (mg/L)	ND	ND	27	22.6
Carbonate as CO3 (mg/L)	<5	<5	<5	<5
Cations (meq/L)	10.8	6.03	3.69	2.59
Chloride (mg/L)	10	7	4	2
Chromium-Dissolved (mg/L)	<0.01	<0.01	<0.01	<0.01
Chromium-Hexavalent (mg/L)	<0.005	<0.02	<0.05	<0.005
Chromium-Total (mg/L)	<0.05	<0.05	<0.05	<0.05
Chromium-Trivalent (mg/L)	<0.01	<0.01	<0.01	<0.01
Conductivity (field, umhos/cm)	801	681	414	312
Conductivity @ 25 C (umhos/cm)	972	610	402	283
Copper-Dissolved (mg/L)	0.01	<0.01	<0.01	<0.01
Copper-Total (mg/L)	0.02	<0.01	<0.01	<0.01
Dissolved Oxygen (field, mg/L)	7.65	9.5	10.61	11.74
Fluoride (mg/L)	0.2	0.2	0.2	0.2
Gross Alpha-Total (pCi/L)	5.3	5.1	1.9	5.8
Gross Beta-Total (pCi/L)	33.1	25.8	13.4	12.1
Gross Gamma-Total (pCi/L)	<20	1290	<20	ND
Iron-Dissolved (mg/L)	0.44	0.48	1.58	0.11
Iron-Total (mg/L)	1.6	0.58	1.67	1.47
Lead 210-Dissolved (pCi/L)	<1	<1	ND	-1.4
Lead 210-Suspended (pCi/L)	<1.3	<1	ND	0.6
Lead 210-Total (pCi/L)	ND	<1	ND	-0.8

SUB07				
Analyte	9/27/2007 18:45	11/12/2007 16:45	3/24/2008 11:55	6/23/2008 14:30
Lead-Dissolved (mg/L)	0.003	0.004	<0.001	<0.001
Lead-Total (mg/L)	0.003	0.001	<0.001	0.013
Magnesium-Dissolved (mg/L)	49	26.3	16.4	12.2
Magnesium-Total (mg/L)	ND	ND	16	12.7
Manganese-Dissolved (mg/L)	8.21	5.54	2.85	1.98
Manganese-Total (mg/L)	9.04	5.55	2.76	2.03
Mercury-Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001
Mercury-Total (mg/L)	<0.001	<0.001	<0.0001	<0.0001
Molybdenum-Dissolved (mg/L)	<0.1	<0.1	<0.1	<0.1
Molybdenum-Total (mg/L)	<0.1	<0.1	<0.1	<0.1
Nickel-Dissolved (mg/L)	0.17	0.12	0.06	0.03
Nickel-Total (mg/L)	0.17	0.12	0.07	<0.05
Nitrogen, Nitrate as N (mg/L)	<0.1	0.2	0.4	0.2
pH	3.81	4.12	4.16	4.97
pH (field)	3.83	ND	4.18	4.78
Polonium 210-Dissolved (pCi/L)	<1	1.8	ND	0.4
Polonium 210-Suspended (pCi/L)	<1.3	<1	ND	0.9
Polonium 210-Total (pCi/L)	ND	1.3	ND	1.3
Potassium-Dissolved (mg/L)	38	27	14	10
Potassium-Total (mg/L)	ND	ND	13.7	10.7
Radium 226-Dissolved (pCi/L)	0.8	0.7	0.4	-0.02
Radium 226-Suspended (pCi/L)	<0.3	<0.2	0.5	-0.4
Radium 226-Total (pCi/L)	0	0.5	0.8	-0.38
Selenium-Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.005
Selenium-IV-Dissolved (mg/L)	ND	<0.001	<0.001	<0.001
Selenium-IV-Total (mg/L)	<0.001	<0.001	<0.001	<0.001
Selenium-Total (mg/L)	<0.001	<0.001	<0.001	<0.001
Selenium-VI-Dissolved (mg/L)	ND	<0.001	<0.001	<0.001
Selenium-VI-Total (mg/L)	<0.001	<0.001	<0.001	<0.001
Silica-Dissolved (mg/L)	<1	<0.5	1.4	2.8
Silica-Total (mg/L)	ND	ND	1.4	4.9
Silver-Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Silver-Total (mg/L)	<0.005	<0.005	<0.005	<0.005
Sodium Adsorption Ratio (SAR) (meq/L)	ND	0.17	0.13	<0.1
Sodium-Dissolved (mg/L)	10	6	3.4	2
Sodium-Total (mg/L)	ND	ND	3.5	2
Solids-Suspended Sediment SSC @ 105 C (mg/L)	17	16	<5	26
Solids-Total Dissolved Calculated (mg/L)	682	399	254	225
Solids-Total Dissolved TDS @ 180 C (mg/L)	680	450	220	180

SUB07				
Analyte	9/27/2007 18:45	11/12/2007 16:45	3/24/2008 11:55	6/23/2008 14:30
Solids-Total Suspended TSS @ 105 C (mg/L)	9	8	<5	32
Sulfate (mg/L)	484	357	183	169
TDS Balance (0.80 - 1.20) (dec.%)	0.99	1.13	0.86	0.78
Thorium 230-Dissolved (pCi/L)	0.8	<0.2	0.1	ND
Thorium 230-Suspended (pCi/L)	<0.3	0.9	ND	0.2
Thorium 230-Total (pCi/L)	ND	<0.2	0.1	0.2
Thorium 232-Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Thorium 232-Suspended (mg/L)	<0.001	<0.001	<0.001	<0.001
Thorium 232-Total (mg/L)	<0.005	<0.005	<0.005	<0.005
Turbidity (NTU)	ND	6.2	2.1	41.5
Uranium-Dissolved (mg/L)	0.0011	0.0004	<0.0003	0.0024
Uranium-Suspended (mg/L)	<0.0003	<0.0003	<0.0003	<0.0003
Uranium-Total (mg/L)	0.0013	0.0004	0.0003	0.0006
Vanadium-Dissolved (mg/L)	<0.1	<0.1	<0.1	<0.1
Vanadium-Total (mg/L)	<0.1	<0.1	<0.1	0.1
Water Temperature (field, deg C)	17.57	8.3	12.77	28.38
Zinc-Dissolved (mg/L)	0.17	0.14	0.06	0.04
Zinc-Total (mg/L)	0.2	0.12	0.08	0.02

SUB08				
Analyte	9/26/2007 18:40	11/27/2007 8:35	2/10/2008 15:10	6/23/2008 12:20
A/C Balance (± 5) (%)	-0.475	0.414	6.26	3.86
Alkalinity-Total as CaCO3 (mg/L)	102	136	246	130
Aluminum-Dissolved (mg/L)	ND	<0.1	<0.1	<0.1
Aluminum-Total (mg/L)	ND	<0.1	<0.1	0.3
Ammonia (mg/L)	ND	<0.1	0.4	<0.1
Anions (meq/L)	37.6	36.4	43.5	18.6
Arsenic-Dissolved (mg/L)	ND	<0.001	0.002	0.003
Arsenic-Total (mg/L)	0.003	<0.001	0.002	0.004
Bacteria, Fecal Coliform (cfu/100ml)	4	2	<2	12
Barium-Dissolved (mg/L)	ND	<0.1	<0.1	<0.1
Barium-Total (mg/L)	<0.1	<0.1	<0.1	<0.1
Bicarbonate as HCO3 (mg/L)	90	166	300	149
Boron-Dissolved (mg/L)	ND	0.5	0.7	0.4
Boron-Total (mg/L)	0.48	0.5	0.7	0.4
Cadmium-Dissolved (mg/L)	ND	<0.005	<0.005	<0.005
Cadmium-Total (mg/L)	<0.005	<0.005	<0.005	<0.005
Calcium-Dissolved (mg/L)	ND	134	186	79.4
Calcium-Total (mg/L)	102	ND	181	83.1
Carbonate as CO3 (mg/L)	17	<5	<5	<5
Cations (meq/L)	37.2	36.7	49.3	20.1
Chloride (mg/L)	34	26	42	14
Chromium-Dissolved (mg/L)	ND	<0.01	<0.05	<0.01
Chromium-Hexavalent (mg/L)	ND	<0.005	0.008	<0.005
Chromium-Total (mg/L)	<0.05	<0.05	<0.05	<0.05
Chromium-Trivalent (mg/L)	ND	<0.01	<0.01	<0.01
Conductivity (field, umhos/cm)	2357	3499	4208	1891
Conductivity @ 25 C (umhos/cm)	3630	3160	4180	1800
Copper-Dissolved (mg/L)	ND	<0.01	<0.01	<0.01
Copper-Total (mg/L)	<0.01	<0.01	<0.01	<0.01
Dissolved Oxygen (field, mg/L)	11.58	11.12	7.54	13.11
Fluoride (mg/L)	0.4	0.4	0.4	0.5
Gross Alpha-Total (pCi/L)	<1	4.8	12.2	14.1
Gross Beta-Total (pCi/L)	14	9.7	13.9	11.9
Gross Gamma-Total (pCi/L)	ND	<20	<20	ND
Iron-Dissolved (mg/L)	ND	<0.03	0.03	0.04
Iron-Total (mg/L)	0.11	0.1	0.34	0.53
Lead 210-Dissolved (pCi/L)	<1	4.6	ND	1.9
Lead 210-Suspended (pCi/L)	<1	<1	ND	3.4
Lead 210-Total (pCi/L)	<1	4.6	ND	5.3

SUB08				
Analyte	9/26/2007 18:40	11/27/2007 8:35	2/10/2008 15:10	6/23/2008 12:20
Lead-Dissolved (mg/L)	ND	<0.001	<0.001	<0.001
Lead-Total (mg/L)	<0.001	<0.001	<0.001	0.013
Magnesium-Dissolved (mg/L)	ND	55.9	78.8	31.5
Magnesium-Total (mg/L)	60	ND	78.3	33.5
Manganese-Dissolved (mg/L)	ND	0.09	0.37	0.01
Manganese-Total (mg/L)	0.01	0.05	0.37	0.06
Mercury-Dissolved (mg/L)	ND	<0.001	<0.001	<0.001
Mercury-Total (mg/L)	<0.001	<0.001	<0.001	<0.0001
Molybdenum-Dissolved (mg/L)	ND	<0.1	<0.1-	<0.1
Molybdenum-Total (mg/L)	<0.1	<0.1	<0.1	<0.1
Nickel-Dissolved (mg/L)	ND	<0.01	<0.05	<0.01
Nickel-Total (mg/L)	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate as N (mg/L)	<0.1	0.2	<0.1	<0.1
pH	9.37	7.59	7.54	8.92
pH (field)	9.34	7.79	7.5	9.01
Polonium 210-Dissolved (pCi/L)	<1	<1	ND	ND
Polonium 210-Suspended (pCi/L)	<1	2.3	ND	0.2
Polonium 210-Total (pCi/L)	<1	2.3	ND	0.2
Potassium-Dissolved (mg/L)	ND	13	17	11
Potassium-Total (mg/L)	14	ND	16.1	11.5
Radium 226-Dissolved (pCi/L)	<0.2	0.5	<0.2	-0.1
Radium 226-Suspended (pCi/L)	<0.2	<0.2	1.2	-0.4
Radium 226-Total (pCi/L)	<0.2	0.5	0.4	-0.52
Selenium-Dissolved (mg/L)	ND	<0.001	<0.001	<0.005
Selenium-IV-Dissolved (mg/L)	ND	<0.001	<0.001	<0.001
Selenium-IV-Total (mg/L)	ND	<0.001	<0.001	<0.001
Selenium-Total (mg/L)	0.001	<0.001	<0.001	<0.001
Selenium-VI-Dissolved (mg/L)	ND	<0.001	<0.001	<0.001
Selenium-VI-Total (mg/L)	ND	<0.001	<0.001	<0.001
Silica-Dissolved (mg/L)	ND	7	9.9	<0.5
Silica-Total (mg/L)	<1	ND	11	0.8
Silver-Dissolved (mg/L)	ND	<0.005	<0.005	<0.005
Silver-Total (mg/L)	<0.005	<0.005	<0.005	<0.005
Sodium Adsorption Ratio (SAR) (meq/L)	ND	11	12	7.3
Sodium-Dissolved (mg/L)	ND	576	759	304
Sodium-Total (mg/L)	618	ND	789	324
Solids-Suspended Sediment SSC @ 105 C (mg/L)	<5	11	66	13
Solids-Total Dissolved Calculated (mg/L)	2550	2470	3020	1270
Solids-Total Dissolved TDS @ 180 C (mg/L)	2800	2600	3400	1300

SUB08				
Analyte	9/26/2007 18:40	11/27/2007 8:35	2/10/2008 15:10	6/23/2008 12:20
Solids-Total Suspended TSS @ 105 C (mg/L)	<5	<5	14	7
Sulfate (mg/L)	1880	1580	1790	747
TDS Balance (0.80 - 1.20) (dec.%)	1.11	1.05	1.12	0.99
Thorium 230-Dissolved (pCi/L)	<0.2	<0.2	<0.2	ND
Thorium 230-Suspended (pCi/L)	<0.2	<0.2	<0.2	ND
Thorium 230-Total (pCi/L)	<0.2	<0.2	0.6	0.1
Thorium 232-Dissolved (mg/L)	ND	<0.005	<0.005	<0.005
Thorium 232-Suspended (mg/L)	<0.001	<0.001	<0.001	<0.001
Thorium 232-Total (mg/L)	<0.005	<0.005	<0.005	<0.005
Turbidity (NTU)	1.2	3.6	10.8	8.7
Uranium-Dissolved (mg/L)	0.0017	0.0028	0.0025	0.0026
Uranium-Suspended (mg/L)	<0.0003	0.001	<0.0003	<0.0003
Uranium-Total (mg/L)	0.0017	0.002	0.0023	0.0016
Vanadium-Dissolved (mg/L)	ND	<0.1	<0.1	<0.1
Vanadium-Total (mg/L)	<0.1	<0.1	<0.1	0.1
Water Temperature (field, deg C)	15.77	4.42	-0.15	24.76
Zinc-Dissolved (mg/L)	ND	0.02	0.02	<0.01
Zinc-Total (mg/L)	<0.01	<0.01	<0.04	<0.01

SUB09				
Analyte	9/26/2007 18:25 dry	11/27/2007 dry	3/24/2008 16:25	6/23/2008 12:50
A/C Balance (± 5) (%)	ND	ND	0.04	3.63
Alkalinity-Total as CaCO3 (mg/L)	ND	ND	28	80
Aluminum-Dissolved (mg/L)	ND	ND	<0.1	0.2
Aluminum-Total (mg/L)	ND	ND	4.8	42.8
Ammonia (mg/L)	ND	ND	<0.1	0.8
Anions (meq/L)	ND	ND	2.82	2.36
Arsenic-Dissolved (mg/L)	ND	ND	0.001	0.002
Arsenic-Total (mg/L)	ND	ND	0.002	0.017
Bacteria, Fecal Coliform (cfu/100ml)	ND	ND	<4	190
Barium-Dissolved (mg/L)	ND	ND	<0.1	<0.1
Barium-Total (mg/L)	ND	ND	<0.1	0.2
Bicarbonate as HCO3 (mg/L)	ND	ND	34	98
Boron-Dissolved (mg/L)	ND	ND	0.1	0.1
Boron-Total (mg/L)	ND	ND	0.1	0.2
Cadmium-Dissolved (mg/L)	ND	ND	<0.005	<0.005
Cadmium-Total (mg/L)	ND	ND	<0.005	<0.005
Calcium-Dissolved (mg/L)	ND	ND	18.2	17.4
Calcium-Total (mg/L)	ND	ND	19.1	22.6
Carbonate as CO3 (mg/L)	ND	ND	<5	<5
Cations (meq/L)	ND	ND	2.82	2.54
Chloride (mg/L)	ND	ND	8	4
Chromium-Dissolved (mg/L)	ND	ND	<0.01	<0.01
Chromium-Hexavalent (mg/L)	ND	ND	<0.01	<0.005
Chromium-Total (mg/L)	ND	ND	<0.05	0.05
Chromium-Trivalent (mg/L)	ND	ND	<0.01	0.05
Conductivity (field, umhos/cm)	ND	ND	317	296
Conductivity @ 25 C (umhos/cm)	ND	ND	297	249
Copper-Dissolved (mg/L)	ND	ND	<0.01	<0.01
Copper-Total (mg/L)	ND	ND	0.01	0.02
Dissolved Oxygen (field, mg/L)	ND	ND	9.65	7.94
Fluoride (mg/L)	ND	ND	0.6	0.5
Gross Alpha-Total (pCi/L)	ND	ND	1.2	15.9
Gross Beta-Total (pCi/L)	ND	ND	14.7	20.6
Gross Gamma-Total (pCi/L)	ND	ND	<20	ND
Iron-Dissolved (mg/L)	ND	ND	0.04	0.21
Iron-Total (mg/L)	ND	ND	3.6	37
Lead 210-Dissolved (pCi/L)	ND	ND	ND	-0.9
Lead 210-Suspended (pCi/L)	ND	ND	ND	4.5

SUB09				
Analyte	9/26/2007 18:25	11/27/2007	3/24/2008 16:25	6/23/2008 12:50
Lead 210-Total (pCi/L)	ND	ND	ND	3.6
Lead-Dissolved (mg/L)	ND	ND	<0.001	<0.001
Lead-Total (mg/L)	ND	ND	0.004	0.045
Magnesium-Dissolved (mg/L)	ND	ND	11.1	10.3
Magnesium-Total (mg/L)	ND	ND	12.2	18.3
Manganese-Dissolved (mg/L)	ND	ND	<0.01	0.08
Manganese-Total (mg/L)	ND	ND	0.02	0.23
Mercury-Dissolved (mg/L)	ND	ND	<0.001	<0.001
Mercury-Total (mg/L)	ND	ND	<0.0001	<0.0001
Molybdenum-Dissolved (mg/L)	ND	ND	<0.1	<0.1
Molybdenum-Total (mg/L)	ND	ND	<0.1	<0.1
Nickel-Dissolved (mg/L)	ND	ND	<0.01	<0.01
Nickel-Total (mg/L)	ND	ND	<0.05	<0.05
Nitrogen, Nitrate as N (mg/L)	ND	ND	<0.1	0.3
pH	ND	ND	8.42	7.4
pH (field)	ND	ND	ND	7.91
Polonium 210-Dissolved (pCi/L)	ND	ND	ND	ND
Polonium 210-Suspended (pCi/L)	ND	ND	ND	0.9
Polonium 210-Total (pCi/L)	ND	ND	ND	0.9
Potassium-Dissolved (mg/L)	ND	ND	15	13
Potassium-Total (mg/L)	ND	ND	17	24.9
Radium 226-Dissolved (pCi/L)	ND	ND	0.03	0.1
Radium 226-Suspended (pCi/L)	ND	ND	0.5	-0.06
Radium 226-Total (pCi/L)	ND	ND	0.5	0.04
Selenium-Dissolved (mg/L)	ND	ND	<0.001	<0.005
Selenium-IV-Dissolved (mg/L)	ND	ND	<0.001	<0.001
Selenium-IV-Total (mg/L)	ND	ND	<0.001	<0.001
Selenium-Total (mg/L)	ND	ND	0.001	0.002
Selenium-VI-Dissolved (mg/L)	ND	ND	<0.001	<0.001
Selenium-VI-Total (mg/L)	ND	ND	<0.001	0.002
Silica-Dissolved (mg/L)	ND	ND	1.6	5.9
Silica-Total (mg/L)	ND	ND	19.5	73.4
Silver-Dissolved (mg/L)	ND	ND	<0.005	<0.005
Silver-Total (mg/L)	ND	ND	<0.005	<0.005
Sodium Adsorption Ratio (SAR) (meq/L)	ND	ND	0.62	0.42
Sodium-Dissolved (mg/L)	ND	ND	13.7	9
Sodium-Total (mg/L)	ND	ND	13.4	9
Solids-Suspended Sediment SSC @ 105 C (mg/L)	ND	ND	119	425
Solids-Total Dissolved Calculated (mg/L)	ND	ND	184	149

SUB09				
Analyte	9/26/2007 18:25	11/27/2007	3/24/2008 16:25	6/23/2008 12:50
Solids-Total Dissolved TDS @ 180 C (mg/L)	ND	ND	250	280
Solids-Total Suspended TSS @ 105 C (mg/L)	ND	ND	100	190
Sulfate (mg/L)	ND	ND	95	28
TDS Balance (0.80 - 1.20) (dec.%)	ND	ND	1.37	1.87
Thorium 230-Dissolved (pCi/L)	ND	ND	ND	ND
Thorium 230-Suspended (pCi/L)	ND	ND	0.5	0.4
Thorium 230-Total (pCi/L)	ND	ND	0.5	0.5
Thorium 232-Dissolved (mg/L)	ND	ND	<0.005	<0.005
Thorium 232-Suspended (mg/L)	ND	ND	0.001	0.005
Thorium 232-Total (mg/L)	ND	ND	<0.005	0.01
Turbidity (NTU)	ND	ND	ND	850
Uranium-Dissolved (mg/L)	ND	ND	0.0005	0.0056
Uranium-Suspended (mg/L)	ND	ND	0.0003	0.001
Uranium-Total (mg/L)	ND	ND	0.0008	0.0023
Vanadium-Dissolved (mg/L)	ND	ND	<0.1	<0.1
Vanadium-Total (mg/L)	ND	ND	<0.1	0.1
Water Temperature (field, deg C)	ND	ND	13.51	26.77
Zinc-Dissolved (mg/L)	ND	ND	<0.01	0.01
Zinc-Total (mg/L)	ND	ND	0.02	0.11

SUB10				
Analyte	9/26/2007 dry	11/27/2007 dry	3/24/2008 17:10	6/23/2008 16:25
A/C Balance (± 5) (%)	ND	ND	6.52	5.17
Alkalinity-Total as CaCO3 (mg/L)	ND	ND	54	38
Aluminum-Dissolved (mg/L)	ND	ND	<0.1	0.3
Aluminum-Total (mg/L)	ND	ND	3	35
Ammonia (mg/L)	ND	ND	<0.1	0.3
Anions (meq/L)	ND	ND	27.1	3.73
Arsenic-Dissolved (mg/L)	ND	ND	<0.001	<0.001
Arsenic-Total (mg/L)	ND	ND	0.002	0.01
Bacteria, Fecal Coliform (cfu/100ml)	ND	ND	4	170
Barium-Dissolved (mg/L)	ND	ND	<0.1	<0.1
Barium-Total (mg/L)	ND	ND	<0.1	0.1
Bicarbonate as HCO3 (mg/L)	ND	ND	66	46
Boron-Dissolved (mg/L)	ND	ND	0.1	<0.1
Boron-Total (mg/L)	ND	ND	<0.1	0.1
Cadmium-Dissolved (mg/L)	ND	ND	<0.005	<0.005
Cadmium-Total (mg/L)	ND	ND	<0.005	<0.005
Calcium-Dissolved (mg/L)	ND	ND	248	34
Calcium-Total (mg/L)	ND	ND	255	39.6
Carbonate as CO3 (mg/L)	ND	ND	<5	<5
Cations (meq/L)	ND	ND	30.9	4.14
Chloride (mg/L)	ND	ND	32	3
Chromium-Dissolved (mg/L)	ND	ND	<0.01	<0.01
Chromium-Hexavalent (mg/L)	ND	ND	<0.01	<0.005
Chromium-Total (mg/L)	ND	ND	<0.05	0.05
Chromium-Trivalent (mg/L)	ND	ND	<0.01	0.05
Conductivity (field, umhos/cm)	ND	ND	2233	437
Conductivity @ 25 C (umhos/cm)	ND	ND	2490	419
Copper-Dissolved (mg/L)	ND	ND	<0.01	<0.01
Copper-Total (mg/L)	ND	ND	0.01	0.02
Dissolved Oxygen (field, mg/L)	ND	ND	10.1	10.08
Fluoride (mg/L)	ND	ND	0.2	0.3
Gross Alpha-Total (pCi/L)	ND	ND	9	16.3
Gross Beta-Total (pCi/L)	ND	ND	36.5	22.1
Gross Gamma-Total (pCi/L)	ND	ND	<20	0
Iron-Dissolved (mg/L)	ND	ND	<0.03	0.14
Iron-Total (mg/L)	ND	ND	2.89	33.7
Lead 210-Dissolved (pCi/L)	ND	ND	ND	0.1
Lead 210-Suspended (pCi/L)	ND	ND	ND	5.2

SUB10				
Analyte	9/26/2007	11/27/2007	3/24/2008 17:10	6/23/2008 16:25
Lead 210-Total (pCi/L)	ND	ND	ND	5.3
Lead-Dissolved (mg/L)	ND	ND	<0.001	<0.001
Lead-Total (mg/L)	ND	ND	0.003	0.039
Magnesium-Dissolved (mg/L)	ND	ND	103	14.5
Magnesium-Total (mg/L)	ND	ND	105	20.6
Manganese-Dissolved (mg/L)	ND	ND	0.02	0.04
Manganese-Total (mg/L)	ND	ND	0.04	0.35
Mercury-Dissolved (mg/L)	ND	ND	<0.001	<0.001
Mercury-Total (mg/L)	ND	ND	<0.0001	<0.0001
Molybdenum-Dissolved (mg/L)	ND	ND	<0.1	<0.1
Molybdenum-Total (mg/L)	ND	ND	<0.1	<0.1
Nickel-Dissolved (mg/L)	ND	ND	<0.01	<0.01
Nickel-Total (mg/L)	ND	ND	<0.05	<0.05
Nitrogen, Nitrate as N (mg/L)	ND	ND	<0.1	0.6
pH	ND	ND	8.19	6.96
pH (field)	ND	ND	8.39	6.86
Polonium 210-Dissolved (pCi/L)	ND	ND	ND	ND
Polonium 210-Suspended (pCi/L)	ND	ND	ND	1.1
Polonium 210-Total (pCi/L)	ND	ND	ND	1.1
Potassium-Dissolved (mg/L)	ND	ND	41	13
Potassium-Total (mg/L)	ND	ND	42.3	23.1
Radium 226-Dissolved (pCi/L)	ND	ND	0.1	0.2
Radium 226-Suspended (pCi/L)	ND	ND	1.1	0.6
Radium 226-Total (pCi/L)	ND	ND	1.2	0.8
Selenium-Dissolved (mg/L)	ND	ND	<0.001	<0.005
Selenium-IV-Dissolved (mg/L)	ND	ND	<0.001	<0.001
Selenium-IV-Total (mg/L)	ND	ND	<0.001	<0.001
Selenium-Total (mg/L)	ND	ND	<0.001	<0.001
Selenium-VI-Dissolved (mg/L)	ND	ND	<0.001	<0.001
Selenium-VI-Total (mg/L)	ND	ND	<0.001	<0.001
Silica-Dissolved (mg/L)	ND	ND	<0.5	4.3
Silica-Total (mg/L)	ND	ND	10.4	64.6
Silver-Dissolved (mg/L)	ND	ND	<0.005	<0.005
Silver-Total (mg/L)	ND	ND	<0.005	<0.005
Sodium Adsorption Ratio (SAR) (meq/L)	ND	ND	2.8	0.7
Sodium-Dissolved (mg/L)	ND	ND	208	19
Sodium-Total (mg/L)	ND	ND	209	19
Solids-Suspended Sediment SSC @ 105 C (mg/L)	ND	ND	195	737
Solids-Total Dissolved Calculated (mg/L)	ND	ND	1870	258

SUB10				
Analyte	9/26/2007	11/27/2007	3/24/2008 17:10	6/23/2008 16:25
Solids-Total Dissolved TDS @ 180 C (mg/L)	ND	ND	2100	410
Solids-Total Suspended TSS @ 105 C (mg/L)	ND	ND	250	220
Sulfate (mg/L)	ND	ND	1210	135
TDS Balance (0.80 - 1.20) (dec.%)	ND	ND	1.1	1.59
Thorium 230-Dissolved (pCi/L)	ND	ND	0.1	0.1
Thorium 230-Suspended (pCi/L)	ND	ND	0.5	0.3
Thorium 230-Total (pCi/L)	ND	ND	0.6	0.5
Thorium 232-Dissolved (mg/L)	ND	ND	<0.005	<0.005
Thorium 232-Suspended (mg/L)	ND	ND	0.003	0.005
Thorium 232-Total (mg/L)	ND	ND	<0.005	0.015
Turbidity (NTU)	ND	ND	106	780
Uranium-Dissolved (mg/L)	ND	ND	0.0027	0.0005
Uranium-Suspended (mg/L)	ND	ND	0.0007	0.0008
Uranium-Total (mg/L)	ND	ND	0.0033	0.0022
Vanadium-Dissolved (mg/L)	ND	ND	<0.1	<0.1
Vanadium-Total (mg/L)	ND	ND	<0.1	0.1
Water Temperature (field, deg C)	ND	ND	12.07	32.56
Zinc-Dissolved (mg/L)	ND	ND	<0.01	0.01
Zinc-Total (mg/L)	ND	ND	0.01	0.09

SUB11				
Analyte	9/27/2007 19:49	11/27/2007 10:08	3/24/2008 11:10	6/23/2008 15:10
A/C Balance (± 5) (%)	-4.19	4.5	10.9	7.71
Alkalinity-Total as CaCO3 (mg/L)	122	56	18	6
Aluminum-Dissolved (mg/L)	0.7	<0.1	0.2	0.3
Aluminum-Total (mg/L)	1.2	0.5	1.9	9.6
Ammonia (mg/L)	ND	2.1	<0.1	<0.1
Anions (meq/L)	2.88	1.72	0.66	1.05
Arsenic-Dissolved (mg/L)	0.002	0.002	<0.001	0.001
Arsenic-Total (mg/L)	0.006	0.005	0.004	0.005
Bacteria, Fecal Coliform (cfu/100ml)	14	12	<2	20
Barium-Dissolved (mg/L)	<0.1	<0.1	<0.1	<0.1
Barium-Total (mg/L)	<0.1	<0.1	<0.1	<0.1
Bicarbonate as HCO3 (mg/L)	149	68	22	7
Boron-Dissolved (mg/L)	<0.1	<0.1	<0.1	<0.1
Boron-Total (mg/L)	0.1	<0.1	<0.1	<0.1
Cadmium-Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Cadmium-Total (mg/L)	<0.005	<0.005	<0.005	<0.005
Calcium-Dissolved (mg/L)	22	14.8	6.3	11.2
Calcium-Total (mg/L)	ND	ND	6.7	12.3
Carbonate as CO3 (mg/L)	<5	<5	<5	<5
Cations (meq/L)	2.65	1.88	0.83	1.23
Chloride (mg/L)	4	2	1	<1
Chromium-Dissolved (mg/L)	<0.01	<0.01	<0.01	<0.01
Chromium-Hexavalent (mg/L)	<0.05	<0.005	<0.01	<0.005
Chromium-Total (mg/L)	<0.05	<0.05	<0.05	<0.05
Chromium-Trivalent (mg/L)	<0.01	<0.01	<0.01	<0.01
Conductivity (field, umhos/cm)	168	252	104	158
Conductivity @ 25 C (umhos/cm)	202	188	68.7	131
Copper-Dissolved (mg/L)	<0.01	<0.01	<0.01	<0.01
Copper-Total (mg/L)	<0.01	<0.01	<0.01	<0.01
Dissolved Oxygen (field, mg/L)	3.01	3.66	14.62	8.52
Fluoride (mg/L)	0.4	0.3	0.2	0.2
Gross Alpha-Total (pCi/L)	2.9	2	1.4	9.4
Gross Beta-Total (pCi/L)	10.6	9.1	5.8	10.4
Gross Gamma-Total (pCi/L)	<20	1100	<20	ND
Iron-Dissolved (mg/L)	1.93	0.61	1.7	0.72
Iron-Total (mg/L)	<0.03	31.8	15.7	21.4
Lead 210-Dissolved (pCi/L)	<1	<1	ND	3.2
Lead 210-Suspended (pCi/L)	8.2	<1	ND	5
Lead 210-Total (pCi/L)	ND	<1	ND	8.2

SUB11				
Analyte	9/27/2007 19:49	11/27/2007 10:08	3/24/2008 11:10	6/23/2008 15:10
Lead-Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001
Lead-Total (mg/L)	0.002	0.002	0.003	0.021
Magnesium-Dissolved (mg/L)	6	4.2	1.9	3.2
Magnesium-Total (mg/L)	ND	ND	2.1	4.3
Manganese-Dissolved (mg/L)	1.8	1.52	0.57	0.74
Manganese-Total (mg/L)	2.67	1.66	0.66	0.91
Mercury-Dissolved (mg/L)	<0.001	<0.001	<0.001	<0.001
Mercury-Total (mg/L)	<0.001	<0.001	<0.0001	<0.0001
Molybdenum-Dissolved (mg/L)	<0.1	<0.1	<0.1	<0.1
Molybdenum-Total (mg/L)	<0.1	<0.1	<0.1	<0.1
Nickel-Dissolved (mg/L)	0.03	<0.01	<0.01	<0.01
Nickel-Total (mg/L)	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate as N (mg/L)	<0.1	0.1	<0.1	0.1
pH	7.04	6.41	6.68	5.96
pH (field)	6.97	5.76	7.43	5.47
Polonium 210-Dissolved (pCi/L)	<1	<1	ND	-0.2
Polonium 210-Suspended (pCi/L)	<2	1.8	ND	1.1
Polonium 210-Total (pCi/L)	ND	1.8	ND	0.9
Potassium-Dissolved (mg/L)	13	11	4	6
Potassium-Total (mg/L)	ND	ND	5.2	9
Radium 226-Dissolved (pCi/L)	0.7	ND	0.1	-0.1
Radium 226-Suspended (pCi/L)	<0.4	<0.2	0.8	-0.4
Radium 226-Total (pCi/L)	0	<0.2	0.9	-0.51
Selenium-Dissolved (mg/L)	<0.004	<0.001	<0.001	<0.005
Selenium-IV-Dissolved (mg/L)	ND	<0.001	<0.001	<0.001
Selenium-IV-Total (mg/L)	<0.001	<0.001	<0.001	<0.001
Selenium-Total (mg/L)	<0.001	<0.001	<0.001	<0.001
Selenium-VI-Dissolved (mg/L)	ND	<0.001	<0.001	<0.001
Selenium-VI-Total (mg/L)	<0.001	<0.001	<0.001	<0.001
Silica-Dissolved (mg/L)	8	7.1	0.8	2.6
Silica-Total (mg/L)	ND	ND	6.1	20.1
Silver-Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Silver-Total (mg/L)	<0.005	<0.005	<0.005	<0.005
Sodium Adsorption Ratio (SAR) (meq/L)	ND	0.3	0.24	0.19
Sodium-Dissolved (mg/L)	6	5.1	2.7	3
Sodium-Total (mg/L)	ND	ND	1.9	2
Solids-Suspended Sediment SSC @ 105 C (mg/L)	72	120	77	189
Solids-Total Dissolved Calculated (mg/L)	155	97	42	79
Solids-Total Dissolved TDS @ 180 C (mg/L)	220	140	90	200

SUB11				
Analyte	9/27/2007 19:49	11/27/2007 10:08	3/24/2008 11:10	6/23/2008 15:10
Solids-Total Suspended TSS @ 105 C (mg/L)	79	120	61	74
Sulfate (mg/L)	15	25	12	43
TDS Balance (0.80 - 1.20) (dec.%)	1.43	1.48	2.14	2.56
Thorium 230-Dissolved (pCi/L)	1.6	<0.2	0.2	ND
Thorium 230-Suspended (pCi/L)	<0.4	3	ND	0.1
Thorium 230-Total (pCi/L)	ND	3	0.2	0.2
Thorium 232-Dissolved (mg/L)	<0.005	<0.005	<0.005	<0.005
Thorium 232-Suspended (mg/L)	<0.001	0.001	<0.001	<0.001
Thorium 232-Total (mg/L)	<0.005	<0.005	<0.005	<0.005
Turbidity (NTU)	ND	273	159	447
Uranium-Dissolved (mg/L)	0.0336	0.0009	<0.0003	<0.0003
Uranium-Suspended (mg/L)	0.0004	0.0017	0.0003	<0.0003
Uranium-Total (mg/L)	0.0004	0.0016	<0.0003	0.0008
Vanadium-Dissolved (mg/L)	<0.1	<0.1	<0.1	<0.1
Vanadium-Total (mg/L)	<0.1	<0.1	<0.1	0.1
Water Temperature (field, deg C)	15.18	1.77	6.61	33.7
Zinc-Dissolved (mg/L)	0.04	0.03	<0.01	0.03
Zinc-Total (mg/L)	0.02	<0.01	0.01	0.03