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CALTRANS TAHOE HIGHWAY RUNOFF CHARACTERIZATION AND SAND TRAP EFFECTIVENESS STUDIES

2000-03 MONITORING REPORT

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Executive Summary

This report presents results and data evaluations of the Tahoe Basin Highway Runoff Characterization and Sand Trap Effectiveness Studies conducted by the California Department of Transportation (Caltrans). This report presents data from three years of monitoring in the Lake Tahoe Basin performed from August 2000 to April 2003. This executive summary presents the objectives and key findings of the three-year program.

The key objectives of this program are:

- Assess highway runoff water quality and the impact that runoff event types, land use, and elevation have on the runoff water quality.
- Assess the effectiveness of double barrel sand traps to reduce constituent concentrations in highway runoff and to retain sediments transported with the runoff.
- Characterize the concentration of fine particles (200 microns or less) transported in highway runoff.
- Characterize the sediment retained by the double barrel sand traps and particles discharged from the traps in terms of grain size and chemical content.
- Assess precipitation quality and evaluate the relative contribution of precipitation to constituent concentrations found in Tahoe area highway runoff.

Monitoring and Sampling

Monitoring and sampling was successfully implemented in the Tahoe Basin, but specialty procedures had to be employed and regular on-site maintenance was required.

Water Quality Results

Presented below is a summary of the water quality results from precipitation, runoff, and sand trap sampling.

Precipitation Quality

1. Precipitation appears to be a minor contributor to contaminants observed in the runoff from Caltrans roadways in the Tahoe Basin. Nitrate and dissolved phosphorus are the only two parameters with levels high enough to exert an impact on runoff quality.

2. A comparison of the Year 1, Year 2 and Year 3 mean precipitation values indicate that precipitation concentrations throughout the three-year program are generally consistent with the exception of pH and total copper, which varied year to year.

Runoff Water Quality

1. The majority of the water quality runoff samples were collected from runoff events generated by rain, rain mixed with snow, or snowmelt. During the three-year program only nine percent of the samples were collected from summer thunderstorm events.

2. All 34 constituents and parameters analyzed during the three-year program were consistently found in the runoff samples at levels above their respective reporting limits except for nitrite.

3. Constituent concentrations varied all three years with more differences than similarities based on statistical analyses. Concentrations increased over the three-year period for some parameters, while concentrations decreased in others. No consistency was found among constituent and parameter types (e.g. conventionals, nutrients, total and dissolved metals).

4. The results indicate that the combined Tahoe dataset for Years 1, 2, 3 was statistically different than the combined Statewide dataset for over half of the 25 parameters that were common between the two programs. Tahoe levels were typically higher than Statewide levels except for some of the dissolved metals.

5. Variations in the quality of influent runoff from the six monitoring stations were observed as follows:

   - Levels of EC, TSS, TDS, and chlorides in the samples of runoff were significantly higher after the start of snow management activities. The source is presumed to be the salt and traction sand applied to the roadways to control snow and ice.

   - The conventional parameters and total metals were at higher concentrations in the runoff after initiation of snow management activities. Conversely, nutrient concentrations were lower in runoff samples collected after initiation of snow management activities.

6. The quality of influent runoff from the six monitoring stations varied by site location as follows:

   - Water quality concentrations from the low elevation sites were generally higher than concentrations from the high elevation sites.

   - Water quality concentrations from urban sites were generally higher than concentrations from rural sites.

7. Based on the data, land use type (urban vs. rural) and elevation (low vs. high) appear to exert an indirect impact on runoff water quality as follows:

- High elevation sites tend to have higher precipitation amounts and more frequent and longer periods of freezing conditions.
- Snow management activities in urban areas use more salt per lane mile than rural areas.
- Urban areas typically experience twice the traffic volume as the rural sites in the Tahoe Basin.

8. A comparison of the combined Years 1, 2, 3 dataset for influent runoff concentrations to the stormwater water quality limits established in the Tahoe Basin for surface discharges and infiltration indicated:

   - The mean and median values exceeded all five of the numeric limits established for surface discharges of stormwater in the Tahoe Basin.
   - The mean and median values exceeded the numeric limits established for infiltration of stormwater in the Tahoe Basin for turbidity and iron. The mean and median values for turbidity and oil & grease were below their respective limits. The mean value for total phosphorus was above its limits but the median value was below.
   - Treatment was provided at all six stations downstream of the sampling location.

9. Based on a statistical comparison of six parameters, the runoff quality from the commingled urban site, Snow Creek, was not statistically different from the runoff quality at the Caltrans-only urban site, Tahoe Meadows, or the combined data of all five remaining Caltrans-only sites for a majority of the parameters.

Sand Trap Treatment Effectiveness

1. The influent water quality from the two sand trap monitoring sites varies from the effluent water quality. These variations were greater for concentrations of the "total" parameters and less for the concentrations of the "dissolved" parameters.

2. The comparison between influent and effluent concentrations indicated:

   - Based on relative percent difference (RPD), the sand traps reduce effluent concentrations for 17 of 33 water quality parameters.
   - The sand traps provided little treatment or were a source of contamination for 13 of 34 water quality parameters.
   - For conventional parameters, the sand traps provided the most treatment for TSS and COD. The traps provided little or no treatment for the remaining conventional parameters.

- For nutrients, the sand traps provided the most treatment for ammonia and a little for orthophosphate, dissolved phosphorus and TKN.
- For total metals, the sand traps provided treatment for seven of the eight metals, but not for zinc. For dissolved metals, the sand traps did not provide any significant level of treatment. The sand traps could be a source of zinc.

3. The sand traps did not reduce runoff constituent concentrations to within the established storm water discharge requirements established for the Lake Tahoe Basin.

Sediment Characterization and Sand Trap Removal Effectiveness

Presented below are summaries of the small particle and sediment characterization analyses and the sediment removal effectiveness of the double barrel sand traps.

Small Particle Analysis

1. The grain sizes in the 5 to 12 µm range represent both the highest number and the greatest mass of small particles observed in the runoff samples.

2. None of the particle count results are significantly different for any one of the six influent monitoring sites.

Sediment Characteristics

1. Particle sizes ranged from less than 0.5 µm to greater than 9.5 mm, with the highest percentage in terms of mass between 0.01 and 2 mm.

2. Overall, the grain size distribution is similar between both sites and all three years with the Tahoe Airport site having a higher proportion of finer-grained sediments.

3. Chemical concentrations were relatively consistent across all gain size categories.

4. Phosphorus concentrations in sediment particles increased by over a hundred times after Year 1. The highest values were found in the sediments collected at the Echo Summit sand trap.

Sand Trap Removal Effectiveness – Particles and Sediment

1. The small particle data indicate the sand traps remove a portion of the small particles (200 µm and less).

2. The largest percentage of the captured mass is in the up-gradient barrel.

3. The sediment collected in the up-gradient barrels has a coarser size distribution than the sediment collected in the down-gradient barrel and effluent. The effluent has the finest grain size distribution among the three sampling locations.

Section 1
Introduction

1.1 Background

This report presents results and data evaluations of the Tahoe Basin Highway Runoff Characterization and Sand Trap Effectiveness Studies conducted by the California Department of Transportation (Caltrans). This report presents data from three years of monitoring in the Lake Tahoe Basin performed from August 2000 to April 2003.

View southwest of Lake Tahoe and a highway drain inlet.

Caltrans monitoring projects are designed to provide data to support the Caltrans storm water management program and to comply with various regulatory requirements. The Tahoe Basin Highway Runoff Characterization and San Trap Effectiveness Studies (Tahoe program) are designed to provide data needed in high elevation areas to supplement the existing statewide database that characterizes runoff from various Caltrans facilities and treatment effectiveness of BMPs.

In addition, the Tahoe program was initiated in response to the environmental concerns regarding decreasing clarity of Lake Tahoe, poor forest health, impacted air quality, and increased population growth. A number of government agencies (federal, state, and local), along with business and environmental entities, have been working together to address these concerns.

Caltrans maintains over 109 kilometers of roadways in the Tahoe Basin as well as several maintenance and material storage yards (Caltrans, 2000b). The quality of the storm water runoff from these facilities and impacts of snow management activities need to be established to assist with the overall management of Lake Tahoe and the surrounding watershed.

1.2 Project Overview and Objectives

The goals of the Tahoe Basin Storm Water Monitoring Program (Study) are to:

1. Characterize storm water runoff quality from Caltrans highway facilities located within the Tahoe Basin, including the major factors controlling the quality.

2. Characterize precipitation water quality to evaluate the relative contributions of precipitation to observed constituent concentrations in Tahoe area highway storm water runoff.

3. Evaluate the treatment effectiveness of double-barrel sand traps installed along Caltrans highways in the Tahoe area.

The first year of the Tahoe program (2000-01, hereafter referred to as Year 1) focused on the development and testing of field methods for high elevation and cold weather monitoring and basic data gathering of runoff quality, precipitation quality and sediments at three sites in the southern portion of the basin. Results of the first year monitoring were used to refine both study objectives and monitoring methods to be applied in the Lake Tahoe Basin and possibly in other locations or for other monitoring programs.

The second year of the Tahoe program (2001-02, hereafter referred to as Year 2) focused on operating five additional highway runoff-monitoring stations (for a total of eight stations at six sites). Characterization of precipitation, runoff, and sediment from Caltrans highways in the Tahoe Basin was continued.

The third year of the Tahoe program (2002-03, hereafter referred to as Year 3) focused on continued characterization of precipitation, runoff, and sediment from Caltrans highways in the Tahoe Basin. The objectives of the Tahoe Program are presented below:

Runoff Water Quality

1. Collect data to assess the quality of runoff from urban and rural highways, based on the following assumptions:

   - There are two distinct types of roadway and right-of-way conditions in the basin: urban and rural

   - Rural roadway segments have lower annual average daily traffic (AADT) volumes than urban segments

Typical highway runoff monitoring station.

2. Collect data to assess the quality of highway runoff during snow management operations at both lake-level and mountain pass elevations, based on the assumption that snow management operates under two modes: high elevation and lake-level elevations

3. Collect data to assess quality of highway runoff during different times of the year, based on the assumption that there are generally three types of wet events: early rain events (prior to highway deicing activities), snow melt events, and transitional rain, rain/snow mix events

4. Collect data to assess storm water runoff quality from areas with commingled flow (Caltrans and non-Caltrans runoff), based upon the assumption that the surrounding land use contributes to variations in runoff quality

5. Collect data to assess storm water runoff quality across the Tahoe Basin, based upon the assumption that the storm water runoff quality is dependent upon the monitoring location within the Tahoe Basin

Precipitation Water Quality

1. Collect data to assess precipitation quality, including:

   - Evaluate the variability of rainwater quality in the Tahoe Basin
   - Provide data to evaluate the relative contributions of precipitation to observed constituent concentrations in Tahoe Basin highway runoff

Sediment Trap Effectiveness Study

1. Collect data to assess the effectiveness of the double-barrel sand traps, consisting of:

   - Amount of sediment retained within the sand traps and overflow from the traps
   - Distribution of sediment size fractions retained and overflow
   - Quality of the sediment retained and overflow
   - Quality of storm water influent vs. storm water effluent

1.3 Report Organization

This report is organized as follows:

- Section 2: monitoring site characteristics
- Section 3: monitoring methodology for runoff, precipitation, and sediment
- Section 4: water quality characteristics
- Section 5: sediment characteristics
- Section 6: evaluation of the water quality results

- Section 7: evaluation of the sediment results and removal effectiveness of the double-barrel sand traps
- Section 8: summary of the findings
- Section 9: references
- Section 10: glossary of key terms

Appendices A through I contain the monitoring and analytical results of the Tahoe Program as outlined below:

Appendix A: Hydrographs from monitored runoff events

Appendix B: Water quality analytical data and data quality review

Appendix C: Small particle analytical results

Appendix D: Gravimetric sediment results

Appendix E: Grain size analysis results

Appendix F: Sediment quality analytical results

Appendix G: Statistical analysis methodology

Appendix H: Statistical analysis results

Appendix I: Box plot diagram

Section 2
Monitoring Site Characteristics

2.1 Introduction

This section presents a description of the monitoring site selection criteria, identifies the monitoring site locations, and presents a list of site-specific characteristics.

2.2 Site Selection

Based on the study goals and objectives discussed in Section 1, the following key roadway criteria were identified:

- **Annual Average Daily Traffic (AADT) –** used to investigate the impact of traffic volume on runoff quality. Sites with high and low AADT were selected.

- **Elevation –** used to investigate the impact of elevation on runoff quality. Roadways at higher elevations typically receive higher amounts of precipitation and experience colder temperatures for longer durations. Sites representing both high and low elevations were selected.

- **Geographical distribution -** used to maximize coverage within the basin where Caltrans roadways are located. Sites were selected in the southern, western, and northern portions of the Tahoe Basin.

- **Source of the storm water and snowmelt runoff –** used to investigate runoff that comes from only Caltrans property. Majority of sites were selected with "Caltrans-only" runoff; one site also included runoff from non-Caltrans sources (also referred to as a "commingled source").

- **Presence of double-barrel sand trap –** used to investigate this storm water BMP commonly applied by Caltrans in the Tahoe Basin. Several sites were selected at existing sand trap locations.

2.3 Monitoring Site Locations

A total of six monitoring site locations were selected. The six sites are located at highway drain inlets in the Tahoe Basin along Caltrans right of ways. Monitoring site locations are shown in Figure 2-1.

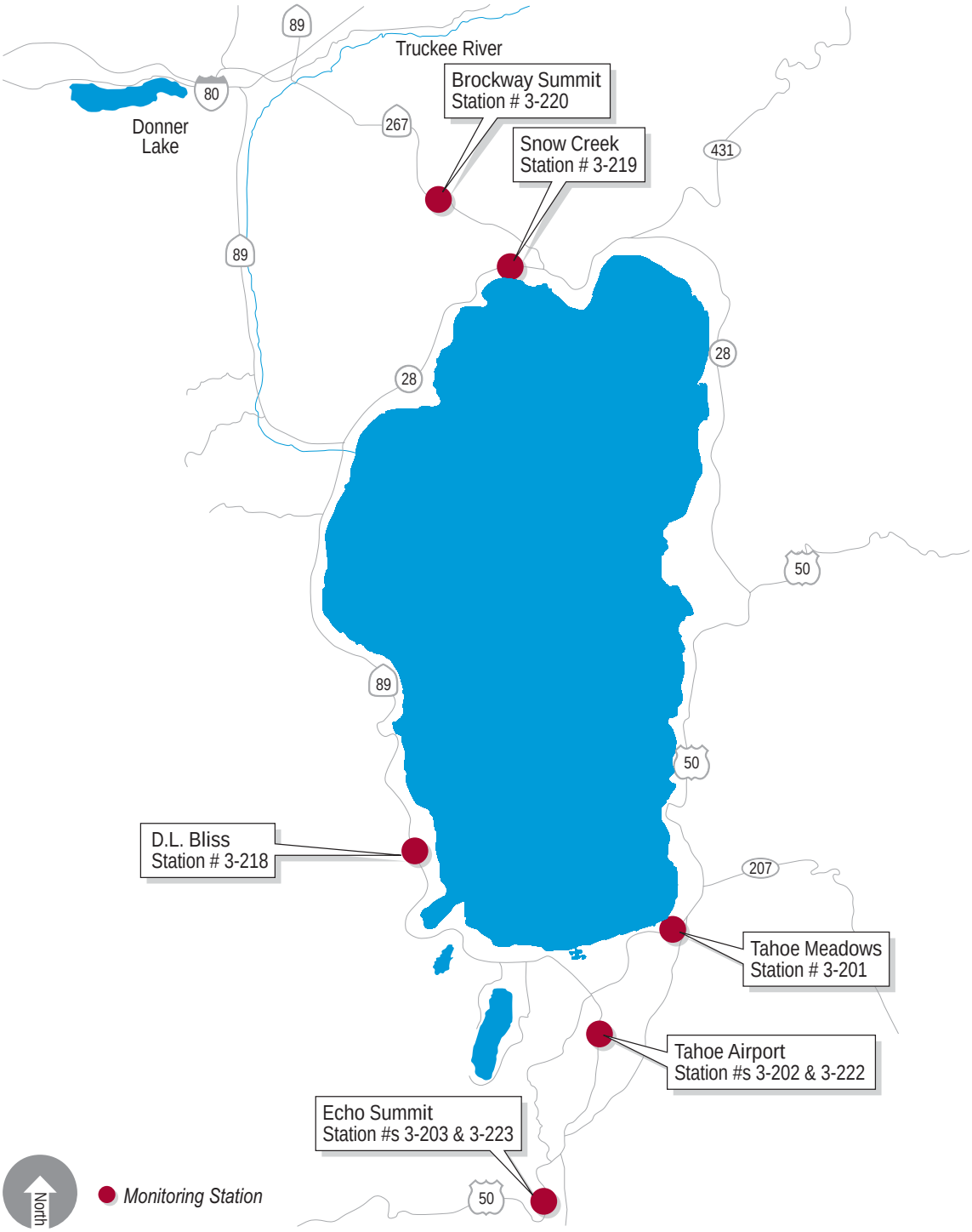


Figure 2-1
Site Location Map

Each of the sites conforms to the selection criteria as listed below:

- Tahoe Meadows
  - Urban area with high AADT
  - Low elevation
  - Southern portion of the basin
  - Caltrans-only runoff

- Tahoe Airport
  - Rural area with low AADT
  - Low elevation
  - Southern portion of the basin
  - Caltrans-only runoff
  - Double-barrel sand trap present

- Echo Summit
  - Rural area with low AADT
  - High elevation
  - Southern portion of the basin
  - Caltrans-only runoff
  - Double-barrel sand trap present

- D.L Bliss
  - Rural area with low AADT
  - High elevation
  - Western portion of the basin
  - Caltrans-only runoff
  - Double-barrel sand trap present

- Snow Creek
  - Urban area with high AADT
  - Low elevation
  - Northern portion of the basin
  - Commingled runoff

- Brockway Summit
  - Rural area with low AADT
  - High elevation
  - Northern portion of the basin
  - Caltrans-only runoff

No sites with high elevation and urban development, or high elevation and high AADT are located in the Tahoe Basin.

2.4 Site Characteristics

A total of eight monitoring stations are located at six sites. Table 2-1 presents a summary of the characteristics of each monitoring site. A site with only a single station monitors runoff directly from the highway. A site with two stations monitors runoff from the highway and discharge from a double-barrel sand trap (effluent). Photos of each station are also provided below.

View north of the Echo Summit site.

View south of the drainage area and sampling equipment at the Tahoe Airport site.

View east of the drainage area and drain inlet at the Tahoe Meadows site.

View east of the equipment housing at the D. L. Bliss site.

View northeast of the Snow Creek site.

View northwest of drainage area and drain inlet at the Brockway Summit site.

Table 2-1
Summary of Monitoring Site Characteristics and Monitoring Equipment

Site Characteristics	***Monitoring Site and Station Numbers***					
	Tahoe Meadows 3-201	***Tahoe Airport 3-202 & 3-222***	***Echo Summit 3-203 & 3-223***	***D.L. Bliss 3-218***	***Snow Creek 3-219***	***Brockway Summit 3-220***
Caltrans District	3	3	3	3	3	3
Lahontan Regional Board Area	Region 6a	Region 6a	Region 6a	Region 6a	Region 6a	Region 6a
Highway	50	50	50	89	28	267
Installation Date	Summer 2000	3-202 Summer 2000 3-222 Summer 2001	3-203 Summer 2000 3-223 Summer 2001	Summer 2001	Summer 2001	Summer 2001
Post Mile	79.79	74.27	67.91	20.63	9	8.14
Longitude	119.56972	119.99939	120.03106	120.10878	120.04005	120.04705
Latitude	38.57139	38.89756	38.82858	38.98864	39.2393	39.25742
Elevation (Meters)	1,900	1,920	2,130	1,950	1,890	1,950
Catchment Area (m^2)	3,237	1,214	2,833	1,012	2,023	1,012
Drainage Type	Urban Highway	Rural Highway	Rural Highway	Rural Highway	Commingled Flow from Urban Highway, Commercial & Residential	Rural Highway
AADT [(1)]	37,000	47,100	11,600	3,000	18,100	8,500
BMP Type	Wetland	Double-Barrel Sand Trap	Double-Barrel Sand Trap	Double-Barrel Sand Trap	Drain Inlet with Sump	Drain Inlet with Sump
Receiving Water Type	Seasonal Wetlands	Intermittent	Intermittent	Intermittent	Seasonal Wetlands	Intermittent
Rain Gauge	No	Yes	Yes	Yes	Yes	Yes
Flow Equipment	Area-Velocity Probe	Bubbler Tube and Weir	Bubbler Tube and Weir	Bubbler Tube and Weir	Area-Velocity Probe	Area-Velocity Probe

(1) Caltrans 2001b

Section 3
Methodology

3.1 Introduction

This section summarizes the monitoring methods utilized for this program. Monitoring methods developed and tested for the Caltrans Tahoe Basin Stormwater Monitoring Program are presented in detail in the *Sampling and Analysis Plan* (Caltrans 2001a). The *Sampling and Analysis Plan* (SAP) describes the analytical constituents, equipment and procedures applied for monitoring precipitation quality, storm water and snowmelt runoff, small particle concentration, and sediment quality. The following subsections summarize methods used to collect and analyze samples of precipitation, highway runoff, and sediment retained in the double-barrel sand traps.

3.2 Precipitation Measurement, Sampling, and Analysis

3.2.1 Precipitation Measurement

Precipitation amounts as rainfall depth is monitored at five of the six monitoring sites. Each of these monitored sites is equipped with a continuously recording tipping-bucket rain gage. Because the rain gages are not heated due to power constraints at the remote sites, they are not able to measure precipitation from snowfall or freezing rain. Off-site heated rain gages maintained by the City of South Lake Tahoe and the Department of Water Resources in the Tahoe basin provided precipitation data for the studies during the cold-weather months.

Typical rain gage used for rainfall depth measurements.

To supplement the precipitation data from the monitoring sites, monthly precipitation data collected at the Meyers Fire Station, the City of South Lake Tahoe, and Tahoe City were compiled. Precipitation monitoring has been performed intermittently at the Meyers Fire Station since 1956 and continuously at the Tahoe City station since 1909. In the fall of 2000, the City of South Lake Tahoe installed a weather station with a heated rain gage. The monthly and annual totals were compiled as a means of comparing precipitation during this three-year program to annual averages. Additional snow pack information was compiled from 13 other monitoring stations located in the Tahoe Basin and Echo Summit area. Precipitation data is presented in Section 4.

3.2.2 Precipitation Sampling Methods

Precipitation samples (rainfall and/or snowfall) for water quality characterization were collected at three monitoring stations (Echo Summit, Tahoe Airport, and Snow Creek). Precautions were taken to minimize any dry deposition or "dryfall." Precipitation samples were collected in a high-density polyethylene (HDPE) liner placed inside of a 5-gallon plastic bucket. The bucket with liner was pole-mounted in an area having a clear opening to the atmosphere, without vertical obstruction.

A green, pole-mounted precipitation sampler is shown in the top left.

Precipitation samples were collected for both rainfall and snowfall events. Collecting a sample of sufficient volume was the most challenging aspect of monitoring for precipitation quality. Close to one inch of rain or melted snow was needed to generate sufficient sample volume to perform all of the required analytical tests. A priority scheme was established when the sample volume was less than the minimum volume required for all the constituents. During snow events, undisturbed snow that had fallen in open areas well away from the road was sometimes collected to supplement the snow collected by the sampler.

3.2.3 Precipitation Analytical Methods

The list of constituents for precipitation characterization and the order in which analyses were performed is shown in Table 3-1.

The constituents for precipitation characterization are a subset of the constituents for runoff characterization and are considered likely to be present in measurable quantities. The constituents and parameters are listed in order of priority starting with the highest at the top. The prioritization is applied if the sample volume is not sufficient to permit a complete analysis.

Limitations in sample volume are common in precipitation monitoring and the goal was to analyze as many of the listed constituents as feasible for each sampled event. Nitrate, nitrite and metals are considered the highest priority for precipitation analysis.

Table 3-1 Constituents for Precipitation Characterization		
Constituent/Parameter	**EPA Method**	**Target Reporting Limit**
Conductivity	120.1	1 mg/L
pH	150.1	0.1
NO_3-N	300	0.1 mg/L
NO_2-N	300	0.1 mg/L
Arsenic (total and dissolved)	200.8	0.5 μg/L
Cadmium (total and dissolved)	200.8	0.2 μg/L
Chromium (total and dissolved)	200.8	1 μg/L
Copper (total and dissolved)	200.8	1 μg/L
Iron (total and dissolved)	6010	25 μg/L
Lead (total and dissolved)	200.8	1 μg/L
Nickel (total and dissolved)	200.8	2 μg/L
Zinc (total and dissolved)	200.8	5 μg/L
Hardness as $CaCO_3$	130.2	2 mg/L
Chloride	300	0.02 mg/L
Total Phosphorus	365.3	0.03 mg/L
Dissolved Orthophosphate	365.3	0.03 mg/L
TKN	351.3	0.1 mg/L

3.3 Highway Runoff Sampling and Analytical Methods

3.3.1 Highway Runoff Sampling Methods

The runoff water quality monitoring method used for this program was designed to provide an estimate of the mean concentration of constituents for a specific runoff event. This concentration is referred to as the event mean concentration (EMC). To generate a close approximation of the EMC, a series of discrete 250-milliliter (mL) aliquots were collected on a flow-weighted basis over the course of each runoff event and combined into a single sample bottle.

Developing a flow-weighted composite was accomplished by collecting a discrete aliquot every time a pre-determined volume of runoff passed the flow measurement device. This volume remained constant for the entire event and was known as the trigger volume. For example, if the trigger volume was set at 100,000 liters (L), a discrete 250 mL aliquot was collected every time 100,000 L of flow passed the measurement device.

Standard flow monitoring equipment consists of an autosampler (front), flow meter (top rear) and a battery (bottom rear) housed in a steel enclosure.

Five of the six runoff monitoring sites are equipped with an autosampler, a continuously recording flow meter, a continuously recording tipping bucket rain gage, and a 12-volt power source as shown in the photograph. Monitoring equipment is housed in a steel enclosure. The Tahoe Meadows site (3-201) contains similar equipment without a tipping bucket rain gauge and is housed in an underground vault.

Depending on site characteristics, runoff flow rates are calculated by one of two methods. One method involves measuring the depth of flow over a weir by means of a bubbler tube, while the second consists of measuring the velocity and area of flow inside a circular pipe. The weir and bubbler tube configurations are typically installed at sites with double-barrel sand traps, while area-velocity meters are used where flow measurements can be obtained from within a pipe. Figures 3-1 and 3-2 illustrate typical flow measurement configurations.

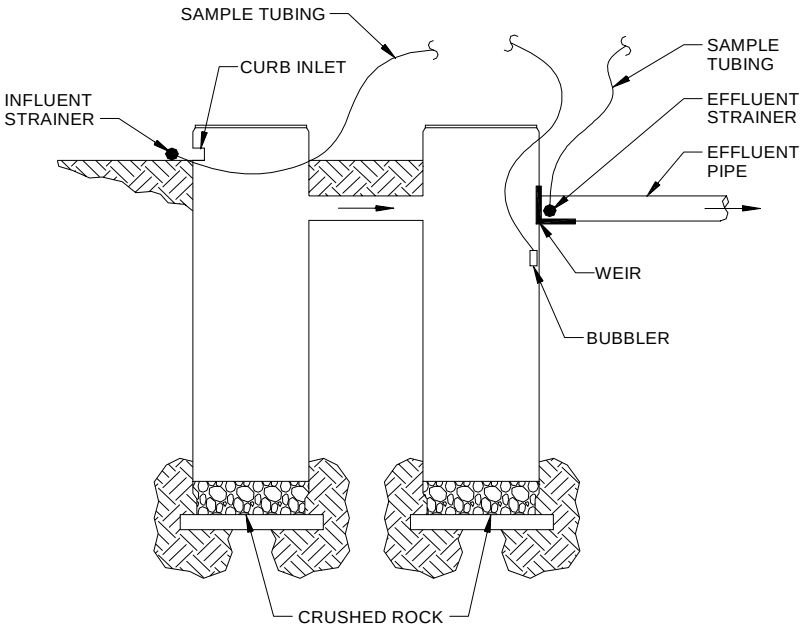


Figure 3-1
Runoff Sampling Equipment Configuration, Double-Barrel Sand Trap

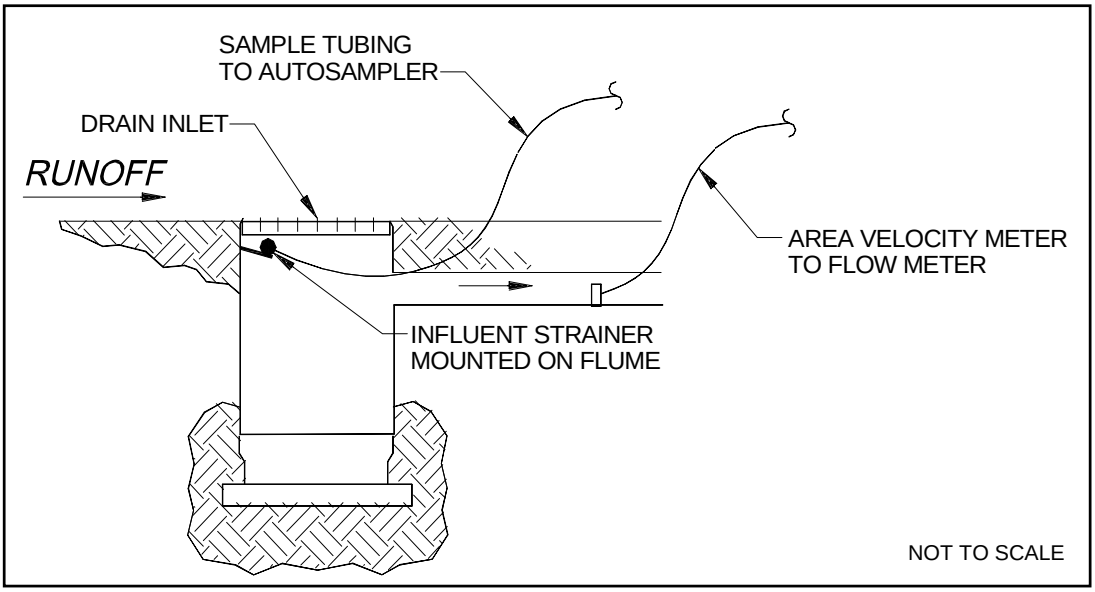


Figure 3-2
Runoff Sampling Equipment Configuration, Drain Inlet

In order to measure flow rates at the sand traps, a weir was installed at the outlet of the second barrel. Using bubbler technology to measure depth of flow over the weir, flow exiting the double-barrel sand traps can be measured. The flow meter converts depth measurements to flow based on the configuration of the weirs. The effluent pipes were installed with enough slope to prevent any backwater impacts.

Each monitoring station is equipped with flow measurement devices and data loggers that are programmed to record measurements at one-minute intervals. Rainfall is recorded at five-minute intervals. Flow measurement methods and limited site description data is presented in Table 3-2.

Table 3-2
Runoff flow Measurement Equipment

Monitoring Station	*Station Setting*	*Flow Measurement Device*	*Equipment Installation Date*
Tahoe Meadows	Low Elevation Urban	Area-Velocity Probe	Sep-00
Tahoe Airport Influent	Low Elevation Rural	Bubbler Tube and Weir	Jul-00
Tahoe Airport Effluent	Low Elevation Rural	Bubbler Tube and Weir	Oct-01
Echo Summit Influent	High Elevation Rural	Bubbler Tube and Weir	Jul-00
Echo Summit Effluent	High Elevation Rural	Bubbler Tube and Weir	Oct-01
D.L. Bliss	High Elevation Rural	Bubbler Tube and Weir	Oct-01
Snow Creek	Low Elevation Urban	Area-Velocity Probe	Oct-01
Brockway Summit	High Elevation Rural	Area-Velocity Probe	Oct-01

After Year 1 of the monitoring program, the Echo Summit and Tahoe Airport sites were modified to study the treatment effectiveness of the double-barrel sand traps. The equipment configuration was modified by interfacing the flow meter with a second autosampler to collect water samples of both the influent and effluent as shown in Figure 3-1. The four remaining sites are designated to characterize the quality of highway runoff and therefore only collect highway runoff samples at the entrance of sand traps or drain inlets (influent only) as shown in Figure 3-2.

Before the start of a targeted runoff event, each of the autosamplers was equipped with a single 10 L polyethylene sample bottle and the flow was programmed with a site specific, target trigger volume. When signaled by the flow meter, each autosampler would collect a 250 mL aliquot. Based on this configuration, a total of 40 discrete aliquots could be collected before the bottle had to be removed and replaced with a clean empty bottle. Bottle change-out procedures where performed by observing weather patterns and runoff intensities during the storms.

Midway through Year 2, automatic shutoff devices were installed in all of the autosamplers. This equipment consisted of a float switch designed by the autosampler manufacturer that could be positioned at the top of the 10 L sample bottles. Based on this configuration, the autosamplers were set to a continuous operation mode which made possible the collection of runoff aliquots until the sample bottles were full. In the previous configuration, the autosamplers were programmed to collect 40 aliquots, which often caused the sampler to complete the program prior to the bottle being full. The continuous mode programming provided more flexibility for sampling runoff events with highly variable volumes.

Runoff monitoring targeted three separate types of runoff events: (1) early rain events, (2) mixed rain and snow events, and (3) snowmelt events. Monitoring procedures initially developed and tested during Year 1 were used and adjusted as needed throughout the study to collect samples under the highly variable environmental conditions that occur during each event. These conditions are described below:

Early Rain Events

Early rain events are those events that occurred between July and October 31 during the three-year study. Runoff from early rain events was not subject to deicing activities. The unpredictable nature of these early events required activating the monitoring stations on days when forecasts called for relatively high chance of afternoon storm events (i.e., greater than 30 percent). The equipment was programmed to maximize the range of runoff volumes that could be adequately sampled.

Rain/Snow Mix Events

Rain/snow mix events occur when rain changes over to snow due to a drop in temperature or snow over to rain when temperatures increase. These events can occur throughout the wet season (October – April) depending on the nature and timing of the weather system that produces the precipitation.

Cold weather sampling activities were hampered by two main difficulties that were not present in moderate and warm weather: snow accumulation and freezing of equipment. To keep the equipment operating and collecting samples required intensive maintenance programs. The maintenance program consisted of the following measures to accommodate these problems:

- Metal housing units to withstand snow accumulation and snow removal activities.
- Regular snow removal around the monitoring site
- Insulation of the sample tubing conduit
- Maintaining a positive gradient from sample intake to the autosampler
- Monitoring air temperature prior to and during sample collection
- Manual removal of ice from the sampling and flow measurement equipment
- Frequent checking of the equipment by field crews

Snowmelt Events

Snowmelt events occur when the temperature rises above freezing and the accumulated snow melts in sufficient quantities to produce runoff. Snowmelt runoff monitoring differs fundamentally from rainfall runoff monitoring in that sampling can be initiated in response to runoff flow in the absence of precipitation. Once substantial snowfall has occurred, field crews tracked weather conditions for the possibility of significant snowmelt. When the desired conditions occur (warming temperatures after a period of snow accumulation or when salt is applied to melt snow accumulated on roads), field crews programmed the automated equipment to collect flow-weighted composite samples of the snowmelt runoff.

The main problem with snowmelt sampling is detecting and sampling low flows. This required the following modifications to the typical runoff monitoring protocols:

- Removing traction sand from intake strainers and flow measurement devices.
- Automatic shut-off devices were added to autosampler programming to allow for continuous sampling until the sample bottle was completely full.

- Clearing snow from sampling stations.
- Various field adjustments to the intake configuration and position and flow sensors to optimize low flow sampling.

Channel cut in snow bank to allow flow to reach the sampling station.

Monitored events included early rain events and summer thunderstorms, mixed rain/snow, and snowmelt. The following problems were common at each site.

- The low flow volume and shallow runoff depth associated snowmelt events would sometimes prevent water quality samples from being collected.
- Freezing of equipment, strainer, bubbler tubes and area/velocity meters impacted data collection and required frequent maintenance activity.
- Melting of accumulated snow in the rain gage would falsely register as precipitation.
- Early rain events are difficult to sample due to the unpredictable timing and precipitation amounts associated with summer rainstorms.

3.3.2 Highway Runoff Analytical Methods

Composite runoff samples were analyzed for the constituents listed in Table 3-3.

3.4 Small Particle Sampling and Analytical Methods

3.4.1 Small Particle Sampling Methods

During Years 2 and 3, sub samples were collected from selected composite samples from each site for measurement of small particles (200 µm or less). Sampling methods consisted of collecting a single discrete aliquot from a thoroughly mixed composite sample.

3.4.2 Small Particle Analytical Method

The electrozone method was used to: count the number of particles, define particle size distributions, and estimate the mass within pre-selected particle size categories.

Table 3-3 ***Constituents for Runoff Characterization***		
Constituent	***EPA or Standard Method*** [(2)]	***Reporting Limit*** [(2)]
Conventionals		
pH	150.1	0.1
Conductivity	120.1	1 mg/L
TSS	160.2	1 mg/L
TDS	160.1	1 mg/L
Hardness as $CaCO_3$	130.2	2 mg/L
TOC/DOC	415.1	1 mg/L
COD	410.1	10 mg/L
Turbidity	180.1	0.05 NTU
Chlorides	300	0.02 mg/L
Oil & Grease[(1)]	1664	1 mg/L
Temperature	NA	0.1 units
Nutrients		
NH_3-N	350.3	0.1 mg/L
NH_2-N	300	0.1 mg/L
NH_3-N	300	0.1 mg/L
TKN	351.3	0.1 mg/L
Total Nitrogen (calculated)	--	0.1
Total Phosphorus	365.3	0.03 mg/L
Dissolved Phosphorus	365.3	0.03 mg/L
Dissolved Ortho-P	365.3	0.03 mg/L
Metals		
Arsenic (total and dissolved)	200.8	0.5 μg/L
Cadmium (total and dissolved)	200.8	0.2 μg/L
Chromium (total and dissolved)	200.8	1 μg/L
Copper (total and dissolved)	200.8	1 μg/L
Iron (total and dissolved)	6010	25 μg/L
Lead (total and dissolved)	200.8	1 μg/L
Nickel (total and dissolved)	200.8	2 μg/L
Zinc (total and dissolved)	200.8	5 μg/L

(1) Year 1 reporting limit was 5mg/L.
(2) Caltrans, 2000a

This method (based on the Coulter principle) measures the electrical current between two electrodes in the liquid on either side of a small aperture, in which a suspension of particles is forced to flow. As the particles pass through the aperture, the impedance between the electrodes changes and produces an electrical pulse having a magnitude proportional to the particle volume. The pulses are electronically scaled, counted and accumulated in size related channels. These results produce a size distribution curve. Typical electrozone analyzers can analyze particles ranging from about 0.4 – 1,200 μm size (equivalent spherical volume diameter) by counting up to 2,000 particles per second. This method was selected after comparing it to other analytical counting techniques.

3.5 Sediment Sampling and Analytical Methods

3.5.1 Sediment Sampling Methods

At the Echo Summit and Tahoe Airport sites, an additional study was conducted to characterize the sediment captured in the double-barrel sand traps in terms of quantity, particle size, and chemical qualities. Figure 3-3 is a diagram of sediment size (diameter in microns [µm]) for various classifications of solids expected in storm water runoff.

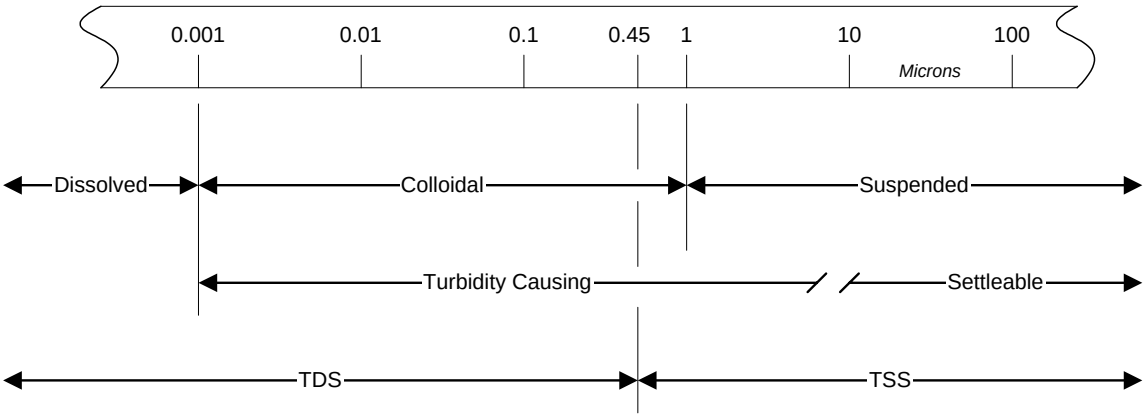


Figure 3-3
Sediment Classification Scale

As shown, storm water runoff will contain dissolved solids (<0.001 µm), colloidal solids (0.001 – 1 µm) and suspended solids (>1 µm). Colloidal solids (if present) and the smaller suspended solids (less than about 10 µm) typically are turbidity causing while the larger suspended solids (greater than about 10 µm) are typically settleable. Settleable solids will settle out due to gravity over time, with the smaller particles requiring longer periods of time to settle. Colloids are microparticles or macromolecules that remain suspended in waters because their gravitational settling is less than 0.01 cm/sec (Stumm et. al 1981). Differentiation between the various categories of solids generally will vary depending on such parameters as particle density, chemical composition (organic versus inorganic), flow rate, and turbulence. The cut-off between turbidity causing and settleable solids is especially sensitive to these parameters and will, therefore, vary depending on site conditions. Conversely, the cut-off between total dissolved solids (TDS) and total suspended solids (TSS), which are determined by standard analytical methods, is operationally defined at 0.45 µm. The 0.45 µm filtrate (measuring TDS) will contain turbidity causing colloids (if present) in addition to dissolved solids, while the particles retained on the 0.45 µm filter (measuring TSS) will consist primarily of particles

in the suspended solids category (both turbidity causing and settleable) with some larger turbidity causing colloids.

The initial sampling methods developed and implemented in Year 1 included a passive filtration collection system to collect particles for characterization of known size, mass, and chemical composition. Figure 3-4 shows a schematic of the particle sampling system employed during Years 1 and 2. This system used filter fabric bags and filter fabric sheets to collect particles transported in the highway runoff. The bags and sheets were applied separately or in combination.

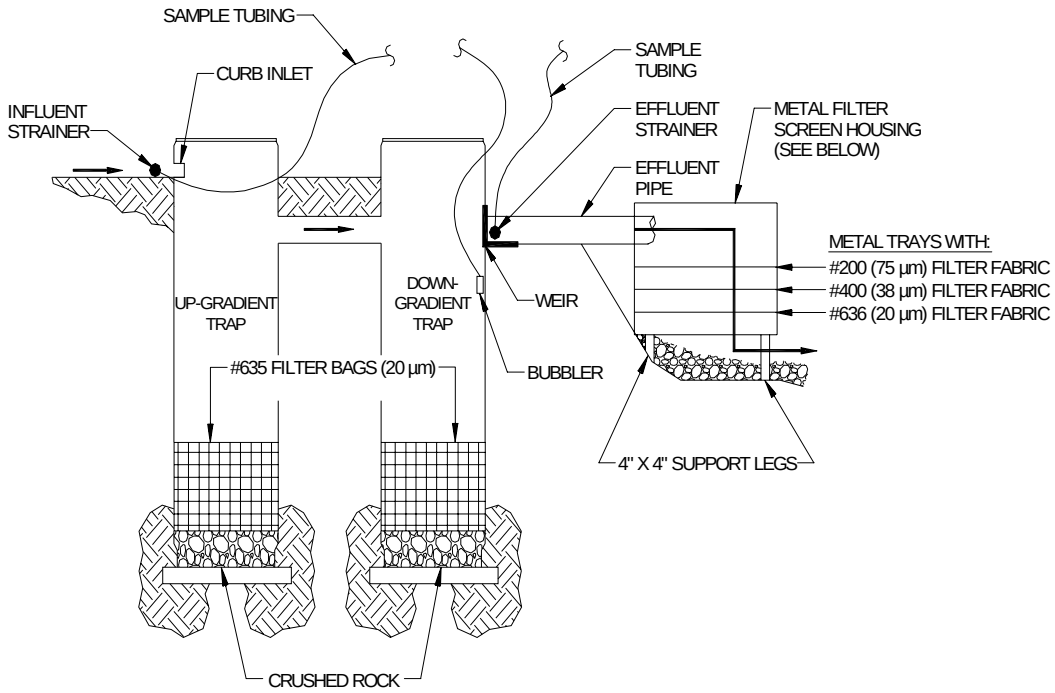


Figure 3-4
Sediment Sampling Equipment Configuration

The filter bags were anchored in the bottom of each barrel (up-gradient and down-gradient) as shown in Figure 3-4. A photograph of the filter bag installed in a barrel is shown in Figure 3-5. The bags were made of a material with a 20-µm pore size that allowed water to drain but retained materials at least 20 µm in diameter or larger.

Barrel with filter bag.

The filter sheets were arranged in a stacked filter box that received effluent from the sand traps as shown in Figure 3-4. Three successively smaller pore size sheets (75 µm, 38 µm, and 20 µm) were used to filter particles. Samples of sediment collected on the filter bags and filter sheets were periodically analyzed. The filter sheets were collected when sufficient material had accumulated, or when water no longer drained in a reasonable time to prevent bypassing. The filter bags were collected as conditions permitted (i.e., system free of ice).

Problems with the passive filtration system included:

- Difficulty in retrieving bags due to the total weight of material contained in the traps, typically exceeding 225 kg (500 lbs) of material.
- Filter bags not passing water due to filter fabric pore spaces clogging with fine grain sediments.
- Filter screens freezing solid with ice causing runoff to bypass the system.
- Retrieval of all the material captured by the filter bags and sheets was often accomplished by scooping the material out of the traps by hand using five gallon buckets. The filter screens were removed by chipping out ice and then allowing trays to thaw out.

Filter box with three trays.

In January 2002, sediment-sampling methods were modified as a result of the problems listed above. Modifications at the Tahoe Airport site included removing the filter bags from the sand traps and replacing the filter fabric screens with a single filter bag with a pore space size of 20 µm. At the Echo Summit site, the filter bags remained in the sand traps, but the filter fabric sheets were removed and replaced with the single filter bag. After Year 2, the filter bags were also removed from the sand traps at the Echo Summit site.

Filter box with single bag.

After removal of the filter bags from the barrels, representative cores and grab samples were collected and combined to create composite sediment samples. Soil samples were collected by using either a continuous core sampler if sediment depths were greater than 6 inches or by collecting grab samples by hand if sediment depths were less than 6 inches. Grab sampling was also often necessary due to the high water content of the sediment in the cans. This typically caused the sandy slurry to run out of the core sampler as it was withdrawn. Core samplers with check valves were also tested but also proved to be ineffective for this material.

Grab sample collection showing the mix of sediment and water.

3.5.2 Sediment Analytical Methods

Prior to sampling, the total volume of sediment in each barrel was estimated using the dimension of the barrel and the measured depth of material in the trap. Once the total dry weight of each subsample was determined in the lab, the total dry weight of material in each barrel was determined using the ratio of subsample volume to the total volume of accumulated sediment in the barrel.

Due to the limited amount of sediment contained in the filter trays at the effluent filter boxes, the entire contents were removed and weighed. The composite sub samples and the filter tray samples were shipped to the lab for analysis of grain size and chemical content. ASTM D422 was used to determine the grain size distribution. Performing the analytical methods listed in Table 3-4 assessed the chemical content of the sediment samples.

Table 3-4 ***Constituents for Sediment Characterization***			
Constituent	***Abbreviation***	***EPA Method***	***Reporting Limit (mg/kg)***
Phosphorus (total)	P	365.3	1
Total Kjeldahl Nitrogen	TKN	351.4	1
Total Organic Carbon	TOC	415.1	50
Cadmium	Cd	6010	0.5
Chromium	Cr		0.5
Copper	Cu		0.5
Lead	Pb		5
Nickel	Ni		2.5
Zinc	Zn		0.5
Iron	Fe		0.5

Section 4
Results: Water Quality Characteristics

This section presents a general discussion of precipitation during the three-year monitoring program and summarizes laboratory analytical results from precipitation and highway runoff samples.

4.1 Precipitation

In the Lake Tahoe Basin, precipitation occurs throughout the year with the majority of precipitation occurring between the months of October and April. Table 4-1 shows monthly precipitation totals over the three-year period beginning in October 2000 and ending in April 2003. Summer months are not included in the data. The total for each October to April period is shown in the last column of the table. Precipitation during Year 1 was below average; Year 2 and Year 3 were near average.

Four weather stations were used to characterize the precipitation that occurred during each of the three years of the study. The City of South Lake Tahoe operated two stations within their borders and the Department of Water Resources operated two stations in the town of Myers and in Tahoe City.

Precipitation amounts vary around the Tahoe Basin with the western side typically receiving more precipitation than either the eastern, southern, or northern portions of the Tahoe Basin. Eastern portions of the Tahoe Basin receive lower precipitation amounts due to a rain shadow affect caused by the mountains. The City of South Lake Tahoe's Sierra House station is located closer to the east side of the Tahoe Basin than the other weather stations, which helps to explain the lower precipitation measurements at this location. The City of South Lake Tahoe's City Lab station is located on the leeward side of a lateral moraine, which may also cause some microclimatic rain shadow conditions.

4.2 Precipitation Quality

Table 4-2 presents analytical results from precipitation samples collected during the three-year monitoring program. The results for each constituent analyzed are presented as annual mean values and as a three-year mean. The Caltrans data analysis tool (DAT) was applied to generate the annual mean values listed in each table. The three-year mean and the 90 percent confidence interval (the interval within which the true mean lies with 90 percent confidence) are presented to define a range for the mean. Annual precipitation results with summary statistics are presented in Appendix B.

The complete precipitation analytical data generated during the three-year monitoring program are provided in tabular format in Appendix B. The data are listed by station number and storm event for each parameter. Any QA/QC flag assigned to an individual data point is shown with the data. Any data point flagged

in Appendix B as inappropriate was not included in Table 4-2 or used for further evaluation. A discussion of the QA/QC results is included in Appendix B.

Table 4-1
Monthly and Historical Precipitation Data

Water Year	*Months*							*Total (mm)*
	Oct.	*Nov.*	*Dec.*	*Jan.*	*Feb.*	*March*	*April*	
City of South Lake Tahoe – City Lab [(1)]								
2000-01	NA	NA	NA	NA	NA	NA	NA	NA
2001-02	17.53	131.83	166.62	24.89	30.48	52.32	34.80	458.47
2002-03	0.76	174.24	206.25	20.57	22.10	44.70	96.27	564.90
City of South Lake Tahoe – Sierra House [(1)]								
2000-01	NA	NA	NA	20.32	42.93	22.61	50.29	NA
2001-02	10.16	84.836	140.462	42.926	33.528	57.658	31.496	401.066
2002-03	0.762	53.34	169.926	16.51	17.78	32.766	71.628	309.372
Meyers Fire Station [(2)]								
2000-01	46.736	30.734	40.894	53.086	84.582	31.496	107.188	394.716
2001-02	25.654	193.04	222.25	62.23	53.848	118.872	38.1	713.994
2002-03	0	164.592	277.622	12.192	23.876	73.152	166.878	718.312
Historical Average	43.688	84.836	129.286	148.844	133.096	104.14	60.198	704.342
Tahoe City Station [(2)]								
2000-01	65.278	49.53	38.862	47.752	123.444	39.624	58.928	423.418
2001-02	21.59	164.084	203.454	80.772	49.022	114.046	49.784	682.752
2002-03	0.508	171.196	247.65	50.038	45.466	56.388	115.316	686.562
Historical Average (mm)	48.26	87.884	144.526	156.972	125.476	96.266	53.848	713.232

[(1)] City of South Lake Tahoe
[(2)] DWR 2003

* No data logged between 4:40 PM 11/12/02-5:30PM 12/03/02
** No data logged between 9:15 AM 11/08/02-7:45AM 11/28/02

Table 4-2
Summary of Precipitation Quality Data: Combined Years 1, 2, 3

Constituent / Parameter	*Units*	*Three-year Sample Size*	*Statistical Summary*					
			Mean Values			*Combined Data Set*		
			Year 1	*Year 2*	*Year 3*	*Mean*	*90% C. I.*	
Conventionals								
pH	pH units	54	6.1	6.8	5.7	6.2	6.0	6.5
EC	umhos/cm	54	50	35	13	27	0	54
TSS	mg/L	11	9	23	NA	13	3	23
TDS	mg/L	11	29	NA	NA	25	2	48
Hardness as CaCO3	mg/L	48	NA	NA	3	NA	NA	NA
Turbidity	NTUs	6	NA	2.4	NA	3.8	0.0	9.1
Chloride	mg/L	54	9	7	2	5	0	12
Nutrients								
Nitrate (as N)	mg/L	55	0.1	0.2	0.1	0.2	0.1	0.2
Nitrite (as N)	mg/L	40	NA	NA	NA	NA	NA	NA
TKN	mg/L	45	0.3	NA	0.3	0.2	0.0	0.5
Total Phosphorus	mg/L	49	NA	NA	NA	0.04	0.02	0.07
Dissolved Phosphorus	mg/L	5	NA	0.08	NA	0.08	-0.02	0.18
Diss. Orthophosphate	mg/L	47	NA	NA	NA	NA	NA	NA
Total Metals								
Arsenic	µg/L	56	NA	NA	NA	NA	NA	NA
Cadmium	µg/L	56	NA	NA	NA	NA	NA	NA
Chromium	µg/L	56	6	NA	1	NA	NA	NA
Copper	µg/L	56	7	3	2	3	2	4
Iron	µg/L	52	1151	199	177	262	120	404
Lead	µg/L	56	2	NA	NA	NA	NA	NA
Nickel	µg/L	56	NA	NA	NA	NA	NA	NA
Zinc	µg/L	56	92	53	58	61	39	82
Dissolved Metals								
Chromium	µg/L	9	NA	NA	NA	NA	NA	NA
Copper	µg/L	9	3	NA	NA	3	1	4
Iron	µg/L	6	NA	NA	NA	NA	NA	NA
Zinc	µg/L	9	52	NA	NA	75	4	147

NA = Not Available (Summary statistics not available for parameters with less than 40% detection limit).
C. I. = Confidence Interval, the interval within which the true mean lies with 90% confidence

Many of the 25 constituents or parameters tested during the three years were not detected at levels above the reporting limits. Those constituents or parameters that did have levels above their respective reporting limits on a consistent basis included EC, chloride, nitrate, TKN, total chromium, total copper, total iron, and total zinc. The values for EC and chloride indicated the samples had a slight level of contamination, probably caused by snow management activities that occur during snow events. Looking at the mean values on a yearly basis, concentrations of the various constituents and parameters decreased each year from Year 1 to Year 3.

4.3 Runoff Flow Results

Runoff was generated at all six sites in response to either a rainfall or snowmelt event. Runoff was typically generated shortly after the rainfall began, continued for the duration of the rain event, and ceased a short time after the rain ended. This pattern was a reflection of the small, and mostly impervious drainage areas. Changes in the rate of flow were directly proportional to changes in rainfall intensity (i.e., higher

rainfall intensities producing higher runoff rates). Figure 4-1 presents a typical hydrograph of runoff generated from a rain event.

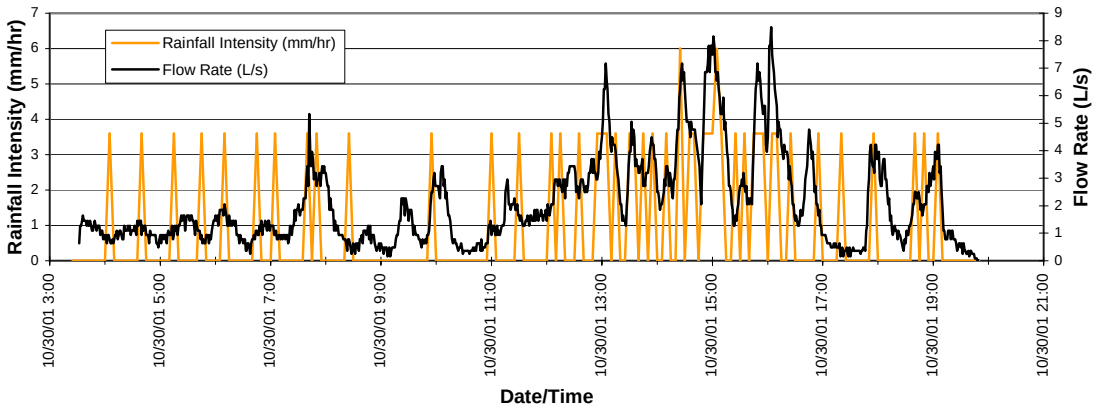


Figure 4-1
Rain Event Hydrograph (Runoff) and Hyetograph (Rainfall)

When the air temperatures were below freezing, the precipitation fell as snow or freezing rain. If the ground surface temperature was above freezing, such as in the early fall or late spring, the snow or ice would melt upon reaching the ground and generate runoff. If the ground surface temperature was below freezing, the snow or ice accumulated on the ground or roadway and remained in place. When the air temperature rose above the freezing point, any accumulated snow or ice would begin to melt and produce runoff. Snowmelt was also observed to be highly dependant on several other factors such as direct sun and application of deicers to the highways. The runoff typically continued until temperatures fell below freezing, or the snow pack was depleted. Changes in the rate of flow were directly proportional to changes in the air temperature (i.e. warmer temperatures producing higher runoff rates).

Daily weather records indicated air temperatures often rose above freezing between 11 a.m. and 5 p.m. throughout the winter season. Runoff would be produced during such periods as long as snow remained on the ground. Once all the snow had melted or was removed by snow removal equipment, no more runoff was produced until after the next snow event. Once the temperature dropped below zero degrees Centigrade, the melt water soon froze again and the runoff ceased. Figure 4-2 presents a typical hydrograph showing a multiple-day snowmelt runoff cycle with the runoff occurring in the afternoon of each day when temperatures rose above the freezing point.

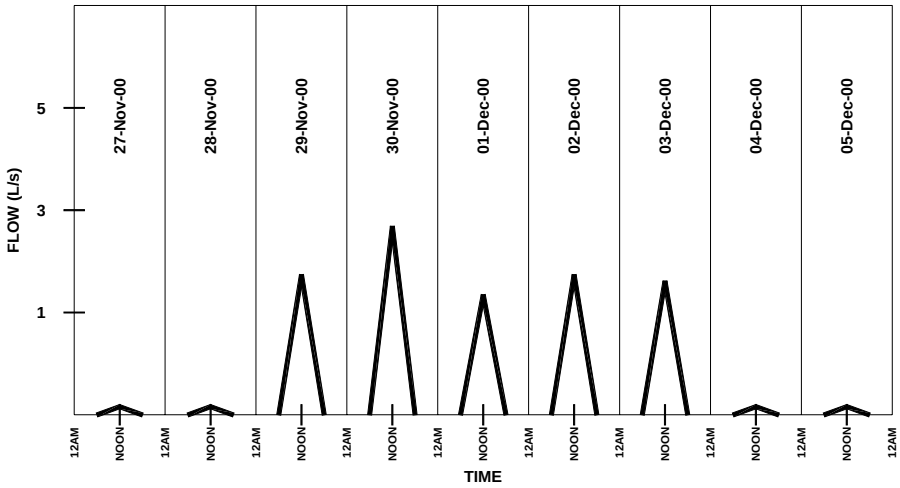


Figure 4-2
Example of Snow Melt Runoff Pattern

Snow management activities conducted by Caltrans along the roadways also impacted the timing and amount of runoff. In response to snow and freezing rain events, Caltrans would perform one or more of the following activities:

- Application of sand, salt and brine to aid in vehicle traction
- Plowing or blowing snow from the active traffic lanes
- Collecting and removing snow from the right of way to an off-site disposal yard, a practice typically performed in the urban area of South Lake Tahoe near the Tahoe Meadows station and Tahoe Vista near the Snow Creek station
- Returning after a snow event to remove any remaining snow from the roadway, shoulder and gutter

The application of salt causes the snow and ice to melt at lower temperatures and sometimes runoff was produced during periods when the air temperature was at or below freezing. This was a common occurrence at the Tahoe Meadows site in South Lake Tahoe where runoff was commonly recorded during snowfall events regardless of the air temperature. Snow management activities also reduced the amount of snow within the roadway drainage area available to produce runoff. As a result, rainfall events produced higher volumes of runoff and peak flow rates than snowmelt events. Rain that fell in the drainage area passed through the monitoring location within a relatively short period. Only a portion of the snow that fell within the drainage area was allowed to remain in the drainage area until it melted. The melting of accumulated snow was often a slow process that occurred over several days with only a small amount of runoff generated on each of the days. In some cases however, snow

with very low moisture content or unusually warm conditions resulted in the snow melting very quickly. In other cases, melted runoff would evaporate as it flowed over warmer pavement or snow would go directly to a water vapor phase through sublimation.

Storm hydrographs for each of the successfully monitored events are provided in Appendix A. An automated to develop these graphs was introduced during Year 2 so the hydrographs for Years 2 and 3 have a slightly different look than the hydrographs for Year 1. These hydrographs provide detailed information on flow rates, flow volumes, flow duration, and sample aliquot collection times for each event. Due to the small catchment areas for the sites, flow durations are short, typically ranging from 2 to 6 hours, although a few events lasted more than 24 hours. Total flow volumes and peak flow rates varied widely as shown on each hydrograph. Attempts were made to calculate runoff coefficients during rain-only events. Under freezing condition, no on-site precipitation data were available at any station. Runoff coefficients are shown on the hydrographs found in Appendix A for rain-only events.

4.4 Runoff Water Quality

Tables 4-3a and 4-3b list the number of influent and effluent samples collected during the three-year monitoring program. The tables show that the majority of samples were collected from snowmelt events, followed by rain/snow mix events.

Table 4-3a
Summary of Monitored Events: Influent

Monitoring Station	*Early Rain Events*	*Rain / Snow Mix Events*	*Snowmelt Events*	*Total Events Sampled per Station*
Tahoe Meadows				
Year 1	0	3	3	6
Year 2	2	5	6	13
Year 3	1	3	7	11
Three Year Total	3	11	16	30
Tahoe Airport Influent				
Year 1	1	2	5	8
Year 2	3	7	6	16
Year 3	1	4	9	14
Three Year Total	5	13	20	38
Echo Summit Influent				
Year 1	2	2	4	8
Year 2	1	4	10	15
Year 3	2	3	6	11
Three Year Total	5	9	20	34
D.L. Bliss				
Year 2	0	8	4	12
Year 3	0	5	6	11
Two Year Total	0	13	10	23
Snow Creek				
Year 2	0	4	7	11
Year 3	1	6	4	11
Two Year Total	1	10	11	22
Brockway Summit				
Year 2	0	3	3	6
Year 3	0	4	4	8
Two Year Total	0	7	7	14
Total Influent Samples by Event Type	14	63	84	161

Table 4-3b
Summary of Monitored Events: Effluent

Monitoring Station	Early Rain Events	Rain / Snow Mix Events	Snowmelt Events	Total Events Sampled per Station
Tahoe Airport Effluent				
Year 2	1	7	6	14
Year 3	1	4	9	14
Two Year Total	2	11	15	28
Echo Summit Effluent				
Year 2	1	3	9	13
Year 3	2	3	6	11
Two Year Total	3	6	15	24
Total Effluent Samples by Event Type	5	17	30	52

Table 4-4 presents annual mean values for each constituent analyzed during the three-year monitoring program at the six influent stations. Table 4-5 presents annual mean values for each constituent analyzed during the three-year monitoring program at the two effluent stations. The Caltrans data analysis tool (DAT) was applied to generate the annual mean values listed in each table. The three-year mean and the 90 percent confidence interval are presented to define a range for the mean. Annual influent and effluent water quality results with summary statistics are presented in Appendix B. Only data meeting the quality objectives of the project were used to generate these summaries.

The individual runoff analytical data points generated during the three-year monitoring program are provided in tabular format in Appendix B. The data are listed by station number and storm event for each parameter. Any QA/QC flag assigned to an individual data point is shown with the data. Any data point flagged in Appendix B as inappropriate was not included in Table 4-4, Table 4-5 or used for further evaluation.

QA/QC procedures were implemented for the sample collection and analysis to document that the water quality data were of known quality and met the project objectives. Procedures were established for both field and laboratory work. A discussion of the QA/QC review process and results is included in Appendix B.

The summary of influent runoff water quality shown in Table 4-4 indicates the concentrations of the conventional constituents were typically above their respective reporting limits. The same is true for concentrations of the nutrients, total metals, and dissolved metals except for nitrite and dissolved cadmium. On a yearly basis, the concentrations tend to decrease from Year 1 to Year 3 except for DOC, TOC, and the nutrients. One notable change is the mean value for the total phosphorus concentration increased around 1 mg/L in Years 1 and 2 to 4.3 mg/L in Year 3.

Table 4-4
Summary of Influent Runoff Water Quality Results: Combined Years 1, 2, 3

Constituent / Parameter	Units	Three Year Sample Size	Statistical Summary					
			Mean Values			Combined Data Set (3 years)		
			Year 1	Year 2	Year 3	Mean	90% C. I.	
Conventionals								
pH	pH units	161	7.3	7.3	7.0	7.2	7.1	7.3
EC	umhos/cm	161	2400	2736	1986	2382	1850	2915
TSS	mg/L	161	989	756	684	759	628	889
TDS	mg/L	161	1854	1449	1083	1354	1068	1641
Hardness as CaCO3	mg/L	161	94	120	111	113	72	155
DOC	mg/L	161	22	21	32	26	16	35
TOC	mg/L	161	25	27	40	32	22	43
COD	mg/L	137	NT	474	456	465	386	545
Turbidity	NTUs	158	575	531	389	477	420	534
Chloride	mg/L	161	1069	983	590	833	612	1053
Oil & grease	mg/L	27	NA	22	17	18	12	24
Nutrients								
NH3-N	mg/L	130	NT	0.4	0.5	0.5	0.3	0.6
Nitrate (as N)	mg/L	159	0.4	0.3	0.3	0.3	0.3	0.4
Nitrite (as N)	mg/L	129	NA	NA	NA	NA	NA	NA
TKN	mg/L	160	1.6	2.4	2.6	2.4	2.0	2.8
Total Phosphorus	mg/L	161	1.30	0.43	4.31	2.14	1.47	2.81
Dissolved Phosphorus	mg/L	133	NT	0.11	0.08	0.10	0.08	0.12
Diss. Orthophosphate	mg/L	161	0.11	0.09	0.06	0.08	0.07	0.09
Total Metals								
Arsenic	µg/L	161	6.1	4.8	3.0	4.2	3.7	4.8
Cadmium	µg/L	161	1.0	0.8	0.6	0.8	0.6	0.9
Chromium	µg/L	161	28	17	15	18	15	20
Copper	µg/L	161	55	39	39	41	36	46
Iron	µg/L	159	32802	16884	14082	17723	14553	20893
Lead	µg/L	161	66	35	28	36	29	44
Nickel	µg/L	161	19	15	13	15	13	16
Zinc	µg/L	161	359	250	253	266	228	305
Dissolved Metals								
Arsenic	µg/L	161	2.5	1.2	1.2	1.4	1.1	1.7
Cadmium	µg/L	161	NA	NA	NA	NA	NA	NA
Chromium	µg/L	161	4	5	4	4	3	5
Copper	µg/L	161	13	8	7	8	7	10
Iron	µg/L	159	832	499	282	451	304	597
Lead	µg/L	161	2	1	NA	NA	NA	NA
Nickel	µg/L	161	4	3	3	3	2	3
Zinc	µg/L	161	56	48	51	50	42	58

NA = Not Available (Statistics are not calculated for data sets with a high number of non-detects)
NT = Not Tested (These constituents were not tested for the first year)
C. I. = Confidence Interval, the interval within which the true mean lies with 90% confidence

Table 4-5
Summary of Effluent Runoff Water Quality Results: Combined Years 2, 3

Constituent / Parameter	Units	Two Year Sample Size	Statistical Summary				
			Mean Values		Combined Data Set (two years)		
			Year 2	Year 3	Mean	90% C. I.	
Conventionals							
pH	pH units	51	7.0	7.1	7.0	6.8	7.2
EC	umhos/cm	51	3704	2073	2904	1703	4105
TSS	mg/L	51	415	352	384	307	461
TDS	mg/L	51	2053	1088	1580	899	2261
Hardness as CaCO3	mg/L	51	83	64	74	55	92
DOC	mg/L	51	15	14	14	10	18
TOC	mg/L	51	18	19	18	14	23
Turbidity	NTUs	51	396	388	392	332	452
Chloride	mg/L	51	1476	576	1035	514	1556
COD	mg/L	51	286	280	283	235	331
Oil & grease	mg/L	5	NA	7	7	3	12
Nutrients							
Nitrate (as N)	mg/L	51	0.3	0.2	0.3	0.2	0.3
TKN	mg/L	51	1.8	1.6	1.7	1.4	2.1
Ammonia (as N)	mg/L	49	0.3	0.3	0.3	0.2	0.4
Nitrite (as N)	mg/l	48	NA	NA	NA	NA	NA
Total Phosphorus	mg/L	51	0.35	3.66	1.97	0.74	3.20
Diss. Orthophosphate	mg/L	51	0.06	0.05	0.06	0.04	0.07
Diss. Phosphorus	mg/L	49	0.07	0.07	0.07	0.06	0.08
Total Metals							
Arsenic	µg/L	51	3.2	2.2	2.7	2.3	3.1
Cadmium	µg/L	51	0.6	0.4	0.5	0.4	0.6
Chromium	µg/L	51	13	11	12	10	14
Copper	µg/L	51	27	30	28	25	31
Iron	µg/L	51	10319	9377	9857	7974	11741
Lead	µg/L	51	25	15	20	16	24
Nickel	µg/L	51	11	10	11	9	12
Zinc	µg/L	51	292	246	269	206	333
Dissolved Metals							
Arsenic	µg/L	51	0.8	1.0	0.9	0.7	1.1
Cadmium	µg/L	51	NA	0.2	0.2	0.1	0.3
Chromium	µg/L	51	3	3	3	2	4
Copper	µg/L	51	7	7	7	5	8
Iron	µg/L	51	397	236	318	237	399
Lead	µg/L	51	NA	NA	NA	NA	NA
Nickel	µg/L	51	3	3	3	2	4
Zinc	µg/L	51	134	98	116	50	183

NA= Not Available (statistics are not calculated for data sets with a high number of non-detects).
C. I. = Confidence Interval, the interval within which the true mean lies with 90% confidence

The summary of effluent runoff water quality in Table 4-5 shows similar trends to the influent data in Table 4-4. All the same constituents and parameters reported concentrations higher than their respective reporting limits. The concentrations during Year 3 tend to be lower than concentrations during Year 2 except for DOC, total phosphorous, total copper, dissolved arsenic, and dissolved copper. Again, the total phosphorus concentration had the biggest change, increasing from 0.4 in Year 2 to 3.7 mg/L in Year 3.

Section 5
Results: Sediment and Small Particle Characterization

This section presents the results from two years of sampling and analysis of small particle size distributions in highway runoff and the results of three years of data regarding sediment grain-size and chemical characterization.

5.1 Small Particle Results

During Year 2 and Year 3, influent and effluent runoff samples were collected from the Echo Summit and Tahoe Airport sites to assess the number of small particles (< 200 µm) per grain diameter interval (i.e., typically every 3 to 5 µm) using the electrozone particle counting method. Table 5-1 lists the number of samples collected per station for each type of runoff event for the Year 2 and Year 3 monitoring. This table shows that the majority of samples were collected from the snowmelt events.

Table 5-1
Summary of Monitored Events: Small Particle Sampling

Monitoring Station	*Early Rain Events*	*Rain/Snow Mix Events*	*Snowmelt Events*	*Total Samples per Station*
Tahoe Airport Influent				
Year 2	0	1	2	3
Year 3	0	0	5	5
Total	0	1	7	8
Tahoe Airport Effluent				
Year 2	0	1	2	3
Year 3	0	0	6	6
Total	0	1	8	9
Echo Summit Influent				
Year 2	0	0	3	3
Year 3	0	0	5	5
Total	0	0	8	8
Echo Summit Effluent				
Year 2	0	0	3	3
Year 3	0	0	5	5
Total	0	0	8	8
Study Total	**0**	**2**	**31**	**33**

To facilitate review of the small particle data, the annual results for each station (influent and effluent) have been averaged and combined to a single chart. These charts are presented as Figures 5-1 through 5-4. The raw results for each individual sample collected during the three-year monitoring period are provided in Appendix C.

The combined results from each of the four monitoring stations show the same general trend; the mid-range grain sizes had the highest number of particles and the largest grain sizes had the smallest number.

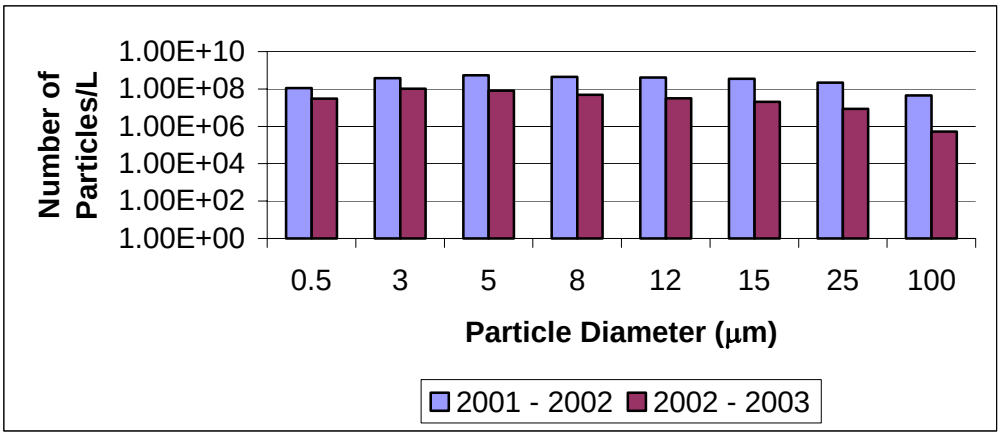


Figure 5-1
Summary of Particle Counting Results – Tahoe Airport Influent: Years 2, 3

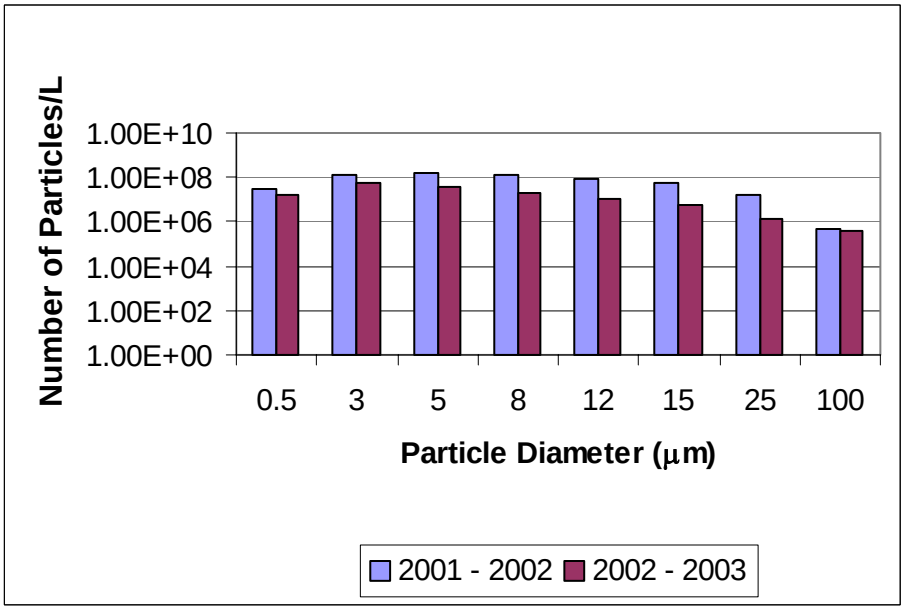


Figure 5-2
Summary of Small Particle Counting Results – Tahoe Airport Effluent: Years 2, 3

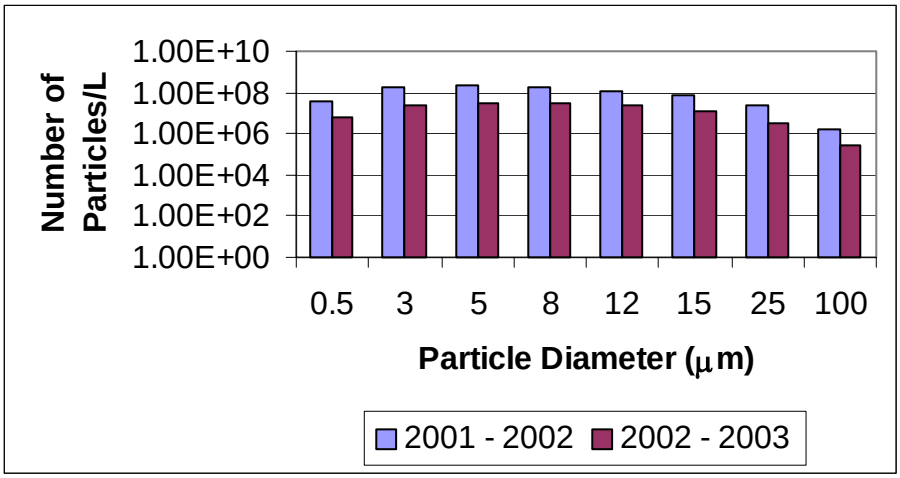


Figure 5-3
Summary of Small Particle Counting Results – Echo Summit Influent: Years 2, 3

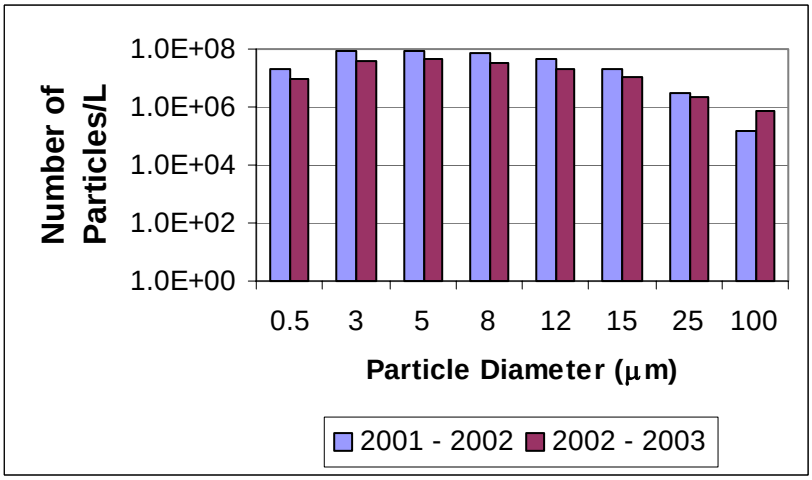


Figure 5-4
Summary of Small Particle Counting Results – Echo Summit Effluent: Years 2, 3

5.2 Sediment Characterization Results

Sediment samples were collected from the double-barrel sand traps at the Tahoe Airport and Echo Summit sites using passive filter systems, sediment core sampling, and sediment grab sampling techniques. Each sample was submitted for grain size and chemical analyses. The mass of sediment was either estimated or measured during each sampling event. Table 5-2 shows the total number of samples collected from each site by year, and the number of samples collected from each sampling location at each site.

Table 5-2 Summary of Sediment Sampling Events				
Monitoring Site	***Upgradient Barrel of Sand Trap***	***Down-Gradient Barrel of Sand Trap***	***Filter Box***	***Total Samples per Site***
Tahoe Airport Site				
Year 1	2	2	3	7
Year 2	3	3	3	9
Year 3	3	3	3	9
Three Year Total	8	8	9	25
Echo Summit Site				
Year 1	2	2	3	7
Year 2	3	3	3	9
Year 3	3	3	3	9
Three Year Total	8	8	9	25
Total Samples by Location	**16**	**16**	**18**	

5.2.1 Gravimetric Results

During each monitoring year, sediment samples were collected from the upgradient barrel, down-gradient barrel, and from the effluent filter box at the Echo Summit and Tahoe Airport sites. Sediment was collected to calculate the mass retained at each sampling location. Table 5-3 summarizes the gravimetric results for each monitoring period at each site. Shaded rows represent periods where the total mass was calculated using the ratio of the dry mass and volume of a subsample to the total in-situ volume of the sediment in the barrel. All other sampling periods represent the actual total dry mass measured by collecting and weighing the entire contents of each barrel and filter box. The table shows the dry mass of the sand retained at each location for a specific sampling period.

Due to frequent flow bypass of the effluent filter boxes, the total mass retained in the effluent filter boxes was not deemed a reliable measurement of sediment exiting the sediment traps. Therefore, the mass of sediment exiting the double-barrel sand traps will be estimated based upon total flow volume from monitored events and the mean TSS concentration of the effluent. These estimates will be presented in Section 7.1. Raw gravimetric data are provided in Appendix D.

Table 5-3
Gravimetric Sample Schedule and Results

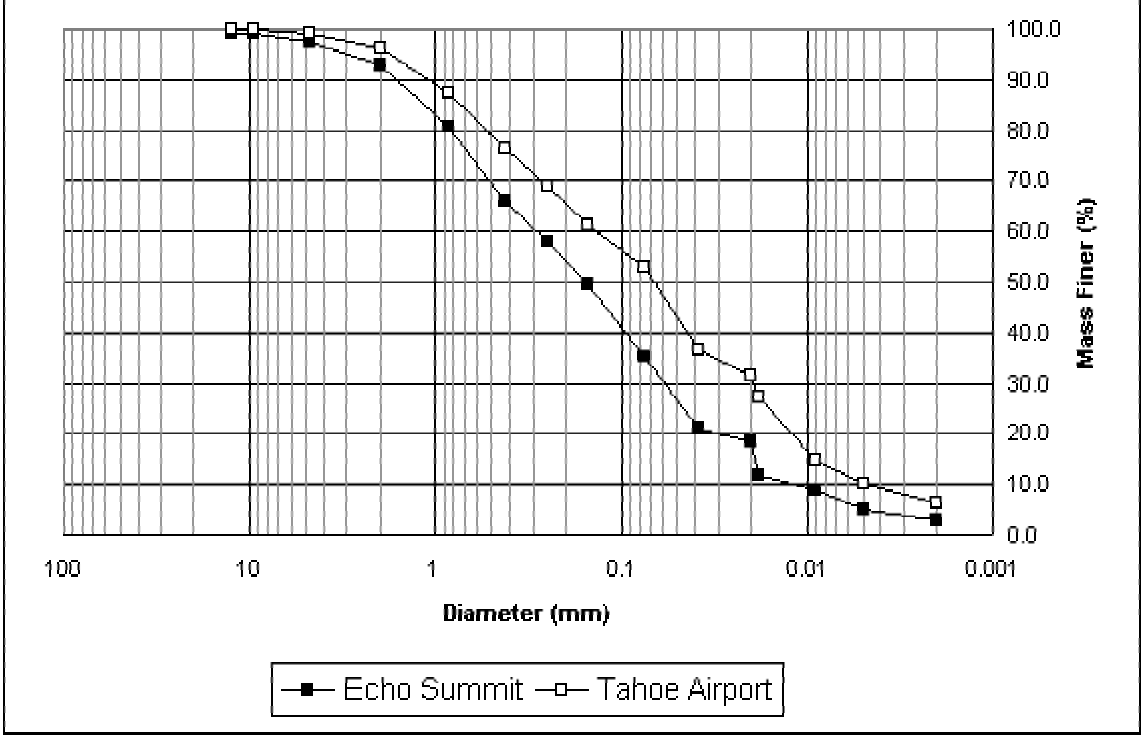
Monitoring Site	Monitoring Year	Sample Location	Beginning Date	Ending Date	Mass (g)
Echo Summit	Year 1	Up Gradient Barrel	1/29/01	3/25/01	829,500
		Down Gradient Barrel	1/29/01	3/25/01	139,000
		Up Gradient Barrel	4/2/01	5/2/01	52,467
		Down Gradient Barrel	4/2/01	5/2/01	10,254
	Year 2	Up Gradient Barrel	7/1/01	10/5/01	78,256
		Down Gradient Barrel	7/1/01	10/5/01	10,964
		Up Gradient Barrel	10/5/01	1/10/02	34,024
		Down Gradient Barrel	10/5/01	1/10/02	14,940
		Up Gradient Barrel	1/10/02	4/12/02	23,720
		Down Gradient Barrel	1/10/02	4/12/02	21,350
	Year 3	Up Gradient Barrel	7/1/02	11/27/02	40,511
		Down Gradient Barrel	7/1/02	11/27/02	17,236
		Up Gradient Barrel	11/27/02	2/28/03	46,137
		Down Gradient Barrel	11/27/02	2/28/03	18,054
		Up Gradient Barrel	2/28/03	5/1/03	42,010
		Down Gradient Barrel	2/28/03	5/1/03	21,002
Tahoe Airport	Year 1	Up Gradient Barrel	12/29/01	4/2/01	72,072
		Down Gradient Barrel	12/29/01	4/2/01	16,088
		Up Gradient Barrel	4/2/01	5/2/01	32,256
		Down Gradient Barrel	4/2/01	5/2/01	18,923
	Year 2	Up Gradient Barrel	7/1/01	10/5/01	43,294
		Down Gradient Barrel	7/1/01	10/5/01	9,137
		Up Gradient Barrel	10/5/01	1/10/02	61,743
		Down Gradient Barrel	10/5/01	1/10/02	13,025
		Up Gradient Barrel	1/10/02	4/12/02	28,521
		Down Gradient Barrel	1/10/02	4/12/02	18,243
	Year 3	Up Gradient Barrel	8/1/02	11/27/02	47,265
		Down Gradient Barrel	8/1/02	11/27/02	11,468
		Up Gradient Barrel	11/27/02	2/28/03	26,767
		Down Gradient Barrel	11/27/02	2/28/03	12,767
		Up Gradient Barrel	2/28/03	5/1/03	27,138
		Down Gradient Barrel	2/28/03	5/1/03	17,133

Note:
Shaded rows represent periods where the total mass was calculated using the ratio of the dry mass and volume of a subsample to the total in-situ volume of the sediment in the barrel.

5.2.2 Grain Size Distribution Results

Grain size distributions of the sediment samples collected from the sand traps and filter boxes were analyzed according to ASTM D422. The individual results are presented in Appendix E. Figures 5-5 through 5-8 summarize these results in both tabular and graphical formats. Figure 5-5 compares the combined grain size distributions between the Echo Summit and Tahoe Airport monitoring sites for the entire three-year sampling period. Figure 5-6 compares the combined grain size distributions between the three sampling locations (up-gradient barrel or trap, down-gradient barrel or trap, and filter box) from both sites for the entire three-year sampling period. Figure 5-7 summarizes the grain size distribution results for each sampling location at the Echo Summit site (3-203 and 3-223). Figure 5-8 summarizes the grain size distribution results for each sampling location at the Tahoe Airport site (3-202 and 3-222). The sudden drop in several of the graphs at 0.07 mm is due to a change in the method from the sieve analysis to the hydrometer method under ASTM D422.

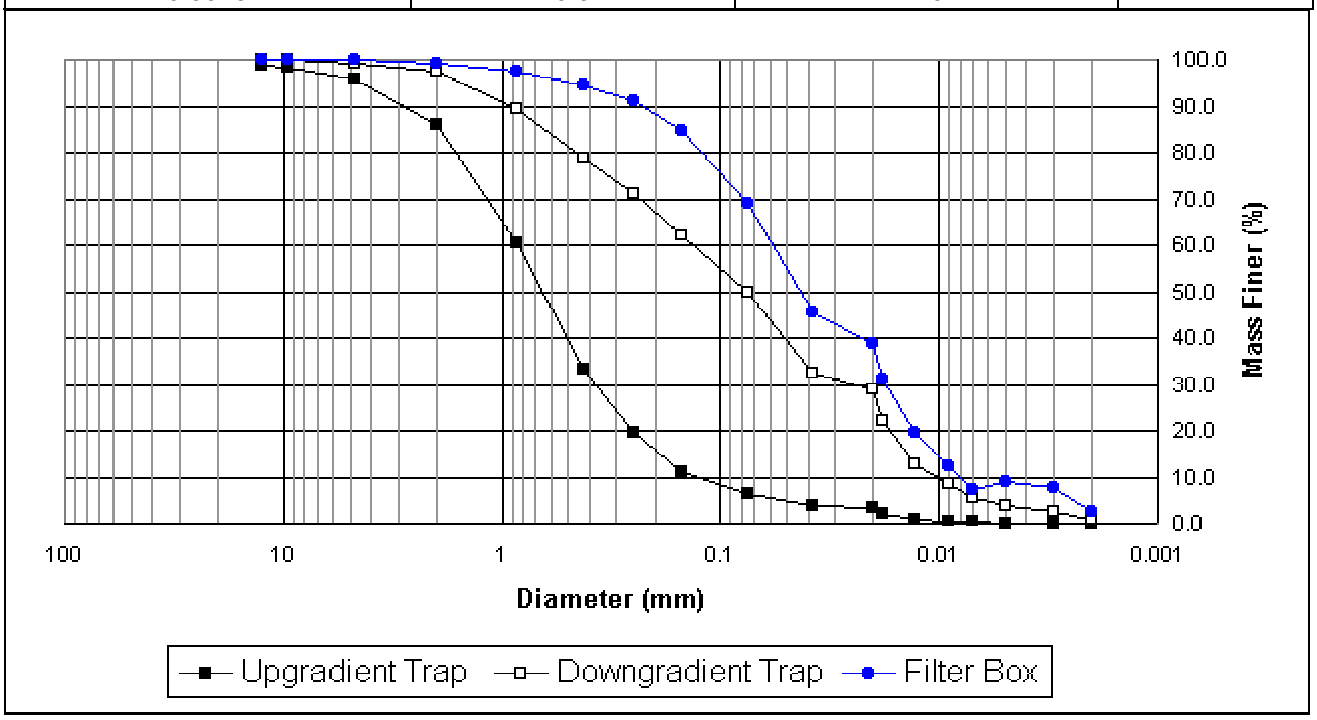
Diameter (mm)	Mass Finer (%)	
	Echo Summit	Tahoe Airport
12.7000	99.1	100.0
9.5300	99.0	99.9
4.7500	97.5	99.3
2.0000	92.8	96.3
0.8500	80.5	87.2
0.4250	66.0	76.3
0.2500	58.0	68.8
0.1500	49.5	61.5
0.0750	35.4	52.9
0.0380	21.0	36.6
0.0200	18.5	31.3
0.0180	11.9	27.2
0.0090	8.8	14.9
0.0050	5.1	10.0
0.0020	2.8	6.5



The mass finer value for each diameter category represents the mean of three-years combined sediment data.

Figure 5-5
Summary of Grain Size Distribution Results
Echo Summit and Tahoe Airport for Combined Years 1, 2, 3

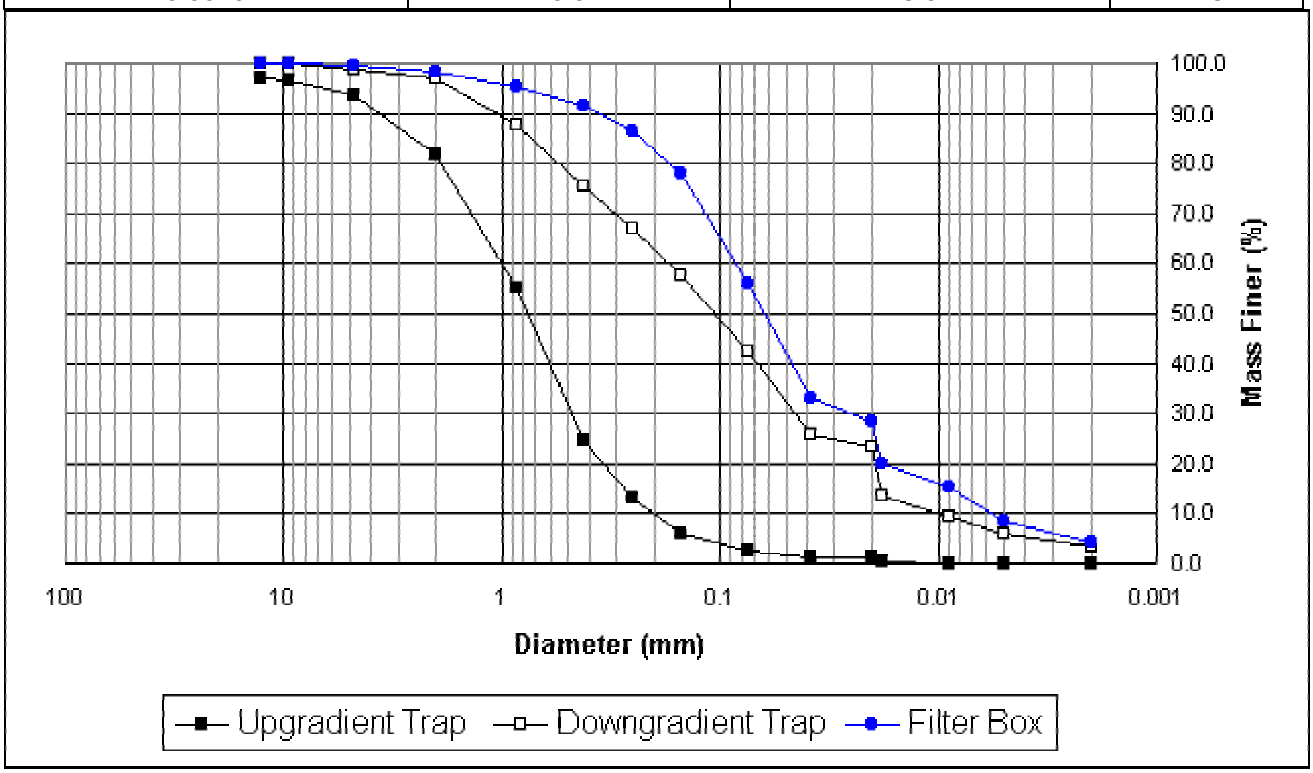
Diameter (mm)	Mass Finer (%)		
	Upgradient Trap	Downgradient Trap	Filter Box
12.7000	98.5	100.0	100.0
9.5300	98.3	100.0	100.0
4.7500	95.7	99.3	99.8
2.0000	86.0	97.4	99.0
0.8500	60.6	89.5	97.5
0.4250	33.3	78.9	94.4
0.2500	19.7	71.0	91.2
0.1500	11.0	62.1	84.6
0.0750	6.5	49.7	69.0
0.0380	3.8	32.5	45.4
0.0200	3.3	28.8	38.7
0.0180	2.2	22.3	31.0
0.0130	0.9	12.9	19.5
0.0090	0.6	8.7	12.1
0.0070	0.3	5.6	7.3
0.0050	0.0	3.8	9.0
0.0030	0.0	2.8	7.5
0.0020	0.0	1.0	2.7



The mass finer value for each diameter category represents the mean of three-years combined sediment data.

Figure 5-6
Summary of Grain Size Distribution Results by Sample Location
Echo Summit and Tahoe Airport for Combined Years 1, 2, 3

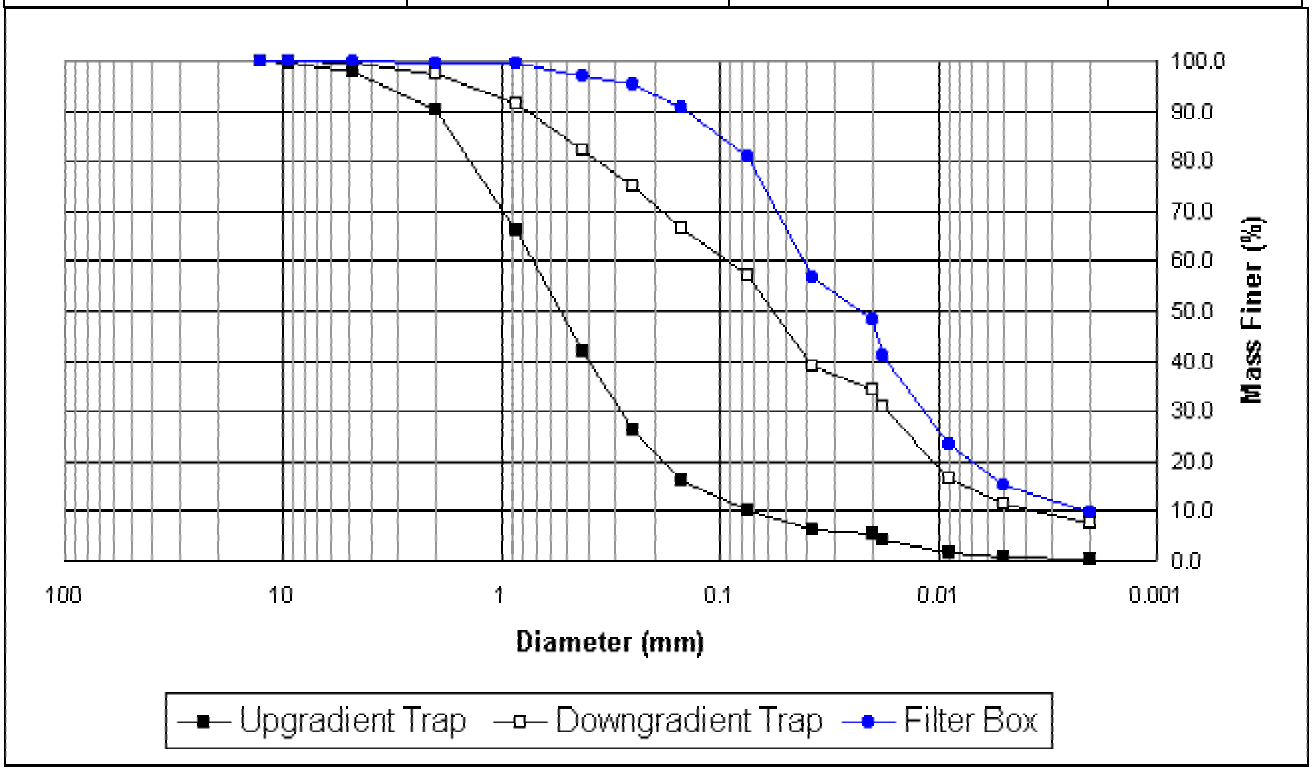
Diameter (mm)	Mass Finer (%)		
	Upgradient Trap	Downgradient Trap	Filter Box
12.7000	97.1	100.0	100.0
9.5300	96.8	100.0	100.0
4.7500	93.5	98.9	99.7
2.0000	81.6	97.1	98.3
0.8500	54.9	87.7	95.3
0.4250	24.6	75.5	91.6
0.2500	13.3	67.1	86.5
0.1500	5.9	57.7	77.8
0.0750	2.7	42.3	56.1
0.0380	1.2	25.8	33.2
0.0200	1.1	23.5	28.4
0.0180	0.3	13.6	19.9
0.0090	0.1	9.4	15.2
0.0050	0.1	5.8	8.5
0.0020	0.0	3.6	4.3



The mass finer value for each diameter category represents the mean of three-years combined sediment data.

Figure 5-7
Grain Size Distribution Results - Echo Summit for Combined Years 1, 2, 3

Diameter (mm)	Mass Finer (%)		
	Upgradient Trap	Downgradient Trap	Filter Box
12.7000	100.0	100.0	100.0
9.5300	99.8	100.0	100.0
4.7500	98.0	99.7	100.0
2.0000	90.4	97.7	99.7
0.8500	66.3	91.4	99.4
0.4250	42.0	82.2	96.9
0.2500	26.1	74.9	95.5
0.1500	16.2	66.5	90.8
0.0750	10.4	57.0	80.8
0.0380	6.5	39.2	56.6
0.0200	5.4	34.2	48.1
0.0180	4.2	31.0	41.1
0.0090	1.7	16.4	23.3
0.0050	1.0	11.6	15.5
0.0020	0.6	7.7	10.0



The mass finer value for each diameter category represents the mean of three-years combined sediment data.

Figure 5-8
Grain Size Distribution Results - Tahoe Airport for Combined Years 1, 2, 3

Figure 5-5 indicates that the grain size distribution is similar at both monitoring stations, with the finer grains slightly more prevalent at the Tahoe Airport site. Grain sizes ranged from less than 0.002 mm to 9.5 mm with the majority of particles falling in the range 0.01 to 2 mm.

Figure 5-6 demonstrates that the up-gradient barrel had a higher percentage of coarse grain particles, and that the effluent samples had a higher percentage of finer grain particles. The down-gradient barrel had a more even or well-graded distribution of grain sizes.

Grain size distributions from the two individual sand traps, Figures 5-7 through 5-8, show the up-gradient barrels with the highest proportion of the coarser grain particles and the filter box with the highest proportion of finer grain sediments.

5.3 Sediment Analytical Results

Samples of the various grain size fractions were composited into five size categories (< 0.02 mm, 0.02 – 0.30 mm, 0.30 – 0.85 mm, 0.85 – 2.00 mm, and > 2.00 mm). Each composite sample was analyzed for the 10 parameters listed along the top row in Tables 5-4, 5-5, and 5-6. The analytical results are presented in Appendix F along with any QA/QC flag assigned to an individual data point.

Tables 5-4 through 5-6 summarize the sediment analytical results for samples collected at the Echo Summit and Tahoe Airport sites. Table 5-4 presents the annual mean values and the combined three-year mean value for each constituent at both sites. In addition, the 90 percent confidence interval is presented to define a range for the combined three-year mean. Tables 5-5 and 5-6 present the annual mean values and the combined three-year mean value for each constituent recorded from each site - Echo Summit monitoring stations 3-203 and 3-223; and the Tahoe Airport monitoring stations 3-202 and 3-222. The 90 percent confidence interval is presented to define a range for the combined three-year mean in each of these tables. The Caltrans data analysis tool (DAT) was used to generate the statistical values shown in the tables. Summary tables presenting annual sediment analytical results for both sites, and for each individual site are presented Appendix F.

For a given parameter analyses were performed for each size fraction listed in Table 5-4. Cadmium was the only parameter that had a relatively low percentage of detection, ranging from 44 to 56 percent. Constituent levels were relatively consistent across the five size-fraction categories. There were some variations in phosphorus; with lower levels detected in particle sizes ranging from 0.30 to 0.85 mm. Further discussion of combined results of the chemical constituents for various particle size fractions from both monitoring sites can be found in Section 7.1.3, *Size Fraction Quality.*

The constituent levels for various size fractions were comparable between the two monitoring sites. The concentrations were within the same order of magnitude. Both sites showed the similar concentrations in the metals across each size fraction.

Table 5-4
Summary Statistics of Sediment Quality Results – Echo Summit and Tahoe Airport Sites: Years 1, 2, 3

Size Fraction (mm)	Statistic		Parameter (mg/kg)									
			TOC	TKN	P	Cd	Cr	Cu	Pb	Ni	Zn	Fe
<0.02	Sample Size		26	26	36	36	37	36	36	36	36	36
	% Detected		100%	100%	94%	56%	100%	100%	100%	100%	100%	100%
	Year 1 Mean		6157	621	4	1.08	19	77	33	15	260	15519
	Year 2 Mean		3368	860	319	0.60	20	39	26	19	327	15249
	Year 3 Mean		0	0	426	0.88	34	86	71	31	460	26244
	Combined Mean		4119	796	284	0.74	23	58	39	21	347	18050
	90% CI Range	Max	5298	909	367	0.92	27	76	53	24	419	20116
		Min	2940	682	201	0.56	19	40	25	18	275	15985
>0.02 - 0.30	3-Year Sample Size		39	39	39	39	39	39	39	39	39	39
	% Detected		100%	100%	97%	56%	100%	100%	100%	100%	100%	100%
	Year 1 Mean		4710	690	5	1.06	17	32	24	14	271	14977
	Year 2 Mean		4590	964	233	0.64	21	34	27	18	337	14586
	Year 3 Mean		4035	726	343	0.53	20	39	29	18	279	17029
	Combined Mean		4441	842	226	0.67	20	35	27	17	307	15408
	90% CI Range	Max	5482	1025	289	0.84	23	40	32	19	369	16821
		Min	3400	658	163	0.50	17	31	22	15	245	13995
>0.30 - 0.85	3-Year Sample Size		39	39	39	39	39	39	39	39	39	39
	% Detected		100%	100%	100%	49%	100%	100%	100%	100%	100%	100%
	Year 1 Mean		6881	699	3	1.31	18	32	24	14	286	14497
	Year 2 Mean		3735	1142	206	0.61	18	31	26	16	329	13126
	Year 3 Mean		2939	723	299	0.48	18	33	24	16	266	15157
	Combined Mean		4055	933	198	0.68	18	32	25	16	302	13997
	90% CI Range	Max	5294	1234	252	0.90	21	38	31	18	392	15866
		Min	2815	632	145	0.47	15	26	19	13	211	12128
>0.85 - 2.00	3-Year Sample Size		38	38	39	39	40	39	39	39	39	39
	% Detected		100%	100%	100%	44%	100%	100%	100%	100%	100%	100%
	Year 1 Mean		7571	790	2	1.22	16	32	22	14	276	14169
	Year 2 Mean		4123	1312	298	0.48	14	26	21	13	288	11248
	Year 3 Mean		3765	1104	290	0.50	19	38	25	17	332	16154
	Combined Mean		4645	1150	242	0.60	16	31	22	14	300	13282
	90% CI Range	Max	6018	1560	314	0.80	19	37	28	17	378	15442
		Min	3273	741	171	0.41	12	25	17	12	221	11121
>2.00	3-Year Sample Size		36	38	39	38	38	38	37	38	38	38
	% Detected		100%	100%	97%	53%	100%	100%	100%	100%	100%	100%
	Year 1 Mean		6671	1051	3	1.20	16	30	21	15	282	13406
	Year 2 Mean		6004	1241	216	0.50	15	28	22	13	304	11428
	Year 3 Mean		2120	1179	319	0.58	19	38	25	17	305	15748
	Combined Mean		5055	1186	210	0.62	16	31	23	15	300	13157
	90% CI Range	Max	6495	1463	257	0.80	19	37	28	17	370	15194
		Min	3614	909	162	0.44	13	26	18	12	231	11119

Note: Refer to Table 3-3 to identify parameters names from the given abbreviations.

Table 5-5
Summary Statistics of Sediment Quality Results – Echo Summit Site: Years 1, 2, 3

Size Fraction (mm)	Statistic		Parameter (mg/kg)									
			TOC	TKN	P	Cd	Cr	Cu	Pb	Ni	Zn	Fe
<0.02	3-Year Sample Size		13	13	17	17	18	17	17	17	17	17
	% Detected		100%	100%	88%	35%	100%	100%	100%	100%	100%	100%
	Year 1 Mean		5025	533	1	1.43	24	108	42	17	222	16300
	Year 2 Mean		3100	801	395	0.50	20	33	26	19	218	15148
	Year 3 Mean		0	0	260	1.04	48	88	111	34	457	30267
	Combined Mean		3692	718	279	0.69	26	60	45	21	261	18087
	90% CI Range	Max	4906	913	396	1.08	32	99	74	27	342	21671
		Min	2479	524	162	0.29	19	22	16	16	181	14503
>0.02 - 0.30	3-Year Sample Size		20	20	20	20	20	20	20	20	20	20
	% Detected		100%	100%	95%	45%	100%	100%	100%	100%	100%	100%
	Year 1 Mean		5043	610	2	1.07	19	28	26	14	179	14160
	Year 2 Mean		4790	1067	315	0.56	22	29	27	18	244	13732
	Year 3 Mean		3095	705	357	0.52	23	37	38	17	251	17618
	Combined Mean		4332	867	265	0.54	22	31	30	17	233	14984
	90% CI Range	Max	5859	1212	361	0.78	26	37	38	20	295	17145
		Min	2805	522	169	0.29	17	25	22	14	171	12822
>0.30 - 0.85	3-Year Sample Size		20	20	20	20	20	20	20	20	20	20
	% Detected		100%	100%	100%	30%	100%	100%	100%	100%	100%	100%
	Year 1 Mean		6093	620	2	1.32	20	29	28	15	214	14225
	Year 2 Mean		2820	1262	302	0.35	18	26	25	16	211	12128
	Year 3 Mean		3163	722	305	0.51	19	27	27	14	205	14425
	Combined Mean		3578	971	243	0.46	19	27	26	15	210	13237
	90% CI Range	Max	5276	1563	324	0.79	24	34	33	20	269	15896
		Min	1879	379	163	0.13	14	20	19	11	150	10577
>0.85 - 2.00	3-Year Sample Size		20	20	20	20	21	20	20	20	20	20
	% Detected		100%	100%	100%	30%	100%	100%	100%	100%	100%	100%
	Year 1 Mean		6875	770	2	1.24	19	30	25	15	194	14003
	Year 2 Mean		4184	1396	289	0.35	15	24	23	13	257	10248
	Year 3 Mean		5185	1125	288	0.52	20	31	27	16	272	15118
	Combined Mean		5023	1189	231	0.45	17	27	25	14	249	12460
	90% CI Range	Max	7107	1879	294	0.78	23	35	33	19	348	15557
		Min	2938	500	169	0.11	12	19	16	10	150	9363
>2.00	3-Year Sample Size		18	20	20	19	19	19	19	19	19	19
	% Detected		100%	100%	95%	32%	100%	100%	100%	100%	100%	100%
	Year 1 Mean		5475	713	2	1.19	19	28	24	16	185	13365
	Year 2 Mean		5940	1417	232	0.00	16	24	27	12	272	10149
	Year 3 Mean		3181	1238	270	0.52	18	27	23	14	281	13038
	Combined Mean		5224	1223	198	0.42	17	26	25	13	256	11738
	90% CI Range	Max	7111	1691	261	0.70	22	33	33	17	359	14288
		Min	3336	754	134	0.13	12	19	17	10	154	9189

Note: Refer to Table 3-3 to identify parameters names from the given abbreviations.

Table 5-6
Summary Statistics of Sediment Quality Results – Tahoe Airport Site: Years 1, 2, 3

Size Fraction (mm)	Statistic		Parameter (mg/kg)									
			TOC	TKN	P	Cd	Cr	Cu	Pb	Ni	Zn	Fe
<0.02	Sample Size		19	19	19	19	19	19	19	19	19	19
	% Detected		100%	84%	100%	89%	100%	100%	100%	100%	100%	100%
	Year 1 Mean		7667	740	9	0.82	13	37	21	12	311	14477
	Year 2 Mean		3610	913	242	0.68	19	44	26	18	436	15350
	Year 3 Mean		0	0	508	0.98	27	85	51	29	461	24233
	Combined Mean		3271	599	138	27.33	28	38	163	7664	1849	10601
	90% CI Range	Max	5040	819	241	49.62	42	44	275	13387	3819	14129
		Min	1503	378	35	5.04	14	33	51	1941	-120	7072
>0.02 - 0.30	Sample Size		19	19	19	19	19	19	19	19	19	19
	% Detected		100%	89%	100%	79%	100%	100%	100%	100%	100%	100%
	Year 1 Mean		4267	797	8	1.21	15	38	21	14	394	16067
	Year 2 Mean		4390	861	150	0.71	20	39	26	19	430	15440
	Year 3 Mean		4975	747	330	0.71	17	41	20	18	306	16440
	Combined Mean		3088	579	86	13.48	19	32	114	5204	1146	10892
	90% CI Range	Max	4214	793	151	24.44	22	38	201	9403	2109	14521
		Min	1963	365	20	2.52	15	26	26	1004	183	7262
>0.30 - 0.85	Sample Size		19	19	19	19	19	19	19	19	19	19
	% Detected		100%	89%	100%	79%	100%	100%	100%	100%	100%	100%
	Year 1 Mean		7933	803	4	1.21	14	35	18	14	382	14860
	Year 2 Mean		4650	1022	110	0.71	19	36	27	17	447	14124
	Year 3 Mean		2715	723	293	0.71	16	40	22	17	327	15888
	Combined Mean		3793	665	64	13.48	19	30	120	5029	1036	10122
	90% CI Range	Max	5945	927	109	24.85	25	38	223	9330	1659	13764
		Min	1640	403	18	2.11	13	22	18	727	413	6480
>0.85 - 2.00	Sample Size		18	18	19	19	19	19	19	19	19	19
	% Detected		100%	89%	100%	79%	100%	100%	100%	100%	100%	100%
	Year 1 Mean		8500	817	2	1.21	13	35	17	13	386	14390
	Year 2 Mean		4056	1219	307	0.71	13	28	19	13	319	12247
	Year 3 Mean		2345	1083	292	0.71	17	44	23	18	392	17190
	Combined Mean		3542	746	168	13.48	16	26	136	5437	675	9071
	90% CI Range	Max	5800	1387	322	25.31	22	35	249	9933	1009	12717
		Min	1283	105	13	1.65	10	18	23	942	340	5426
>2.00	Sample Size		18	18	19	19	19	19	18	19	13	13
	% Detected		100%	94%	100%	79%	100%	100%	100%	100%	100%	100%
	Year 1 Mean		8267	1503	3	1.21	12	33	17	13	411	13460
	Year 2 Mean		6074	1044	201	0.71	14	31	18	14	334	12580
	Year 3 Mean		1412	1120	368	0.71	19	48	27	20	330	18458
	Combined Mean		4538	773	112	13.48	18	28	122	5838	352	12783
	90% CI Range	Max	7083	1186	180	26.39	26	34	233	10662	466	16133
		Min	1993	360	44	0.57	10	21	10	1015	238	9434

Note: Refer to Table 3-3 to identify parameters names from the given abbreviations.

Section 6
Evaluation of the Water Quality Results

6.1 Introduction

This section presents an evaluation of the water quality results. The evaluation consists of a comparison of the Tahoe Basin three-year monitoring runoff and precipitation data to the Caltrans Statewide Stormwater Runoff Characterization Study (Statewide Study), Tahoe Basin Stormwater discharge requirements, and to various factors that may control the quality of the highway runoff within the Tahoe Basin. An evaluation of the water quality treatment effectiveness of the double-barrel sand traps is also presented. The comparisons are made as follows:

- Compare mean values of precipitation quality data collected for individual years of the three-year monitoring program
- Compare mean values from three-year runoff data to three-year precipitation quality data
- Compare runoff data between the individual monitoring years of the Tahoe Basin Study
- Compare runoff quality from highway sites included in the Statewide Study
- Compare runoff quality to limits established for stormwater discharges in the Tahoe Basin
- Compare event type variations from the three-year monitoring program
- Compare lake level versus high elevation runoff quality
- Compare urban versus rural runoff quality
- Compare runoff quality from a commingled site to Caltrans-only sites
- Evaluate the treatment effectiveness of the double-barrel sand traps

6.2 Comparison to Precipitation Quality

Precipitation samples were collected to determine if precipitation was a source of contamination to the runoff from the Caltrans highway systems. Table 6-1 compares the mean values of precipitation quality data collected for each individual monitoring year. In Table 6-1, each column presents the mean results for one parameter for each of the monitoring years. Comparative statistics are presented in the columns comparing the mean values of the constituents to each year. If the difference between two means (for example Year 1 and Year 2) is considered statistically significant (at the 0.1 level of significance) the word “Yes” appears in the row identified as “Statistically Different”. Otherwise, the word “No” appears, which indicates there is

no statistical difference between the two means. A statistical comparison test was applied to calculate the percent difference and to determine whether statistically different precipitation quality occurred by year based on the distribution of the data. The unpaired or two-sided Student's t-test was conducted on the precipitation data. The analysis methodology is presented in Appendix G.

Summary statistics or comparative analyses could not be completed for a majority of the constituents or parameters because of the high percentage of individual data points that were below the reporting limits. Only 24 out of the possible 75 comparative analyses were performed. From this analyses, pH, electric conductivity (EC), chloride, and total copper were the constituents that proved to be statistically different between Year 1 and Year 2. The only constituents statistically different between Year 1 and Year 3 are pH and nitrate. A comparison between Year 2 and Year 3 shows pH, nitrate, total copper, and total iron are the only constituents that are statistically different.

Table 6-1
Comparison of Mean Values for Precipitation Quality Data from 2000-03

Constituent / Parameter	*Units*	*Year 1 Mean*	*Year 2 Mean*	*Year 3 Mean*	*Statistically Different*		
					Year 1 vs. Year 2	*Year 1 vs. Year 3*	*Year 3 vs. Year 2*
Conventionals							
pH	pH units	6.1	6.8	5.7	Yes	Yes	Yes
EC	umhos/cm	50	35	13	Yes	No	No
TSS	mg/L	9	23	NA	No	NA	NA
TDS	mg/L	29	NA	NA	NA	NA	NA
Hardness as CaCO3	mg/L	NA	NA	3	NA	NA	NA
Turbidity	NTUs	NA	2.4	NA	NA	NA	NA
Chloride	mg/L	9	7	2	Yes	No	No
Nutrients							
Nitrate (as N)	mg/L	0.1	0.2	0.1	No	Yes	Yes
Nitrite (as N)	mg/L	NA	NA	NA	NA	NA	NA
TKN	mg/L	0.3	NA	0.3	NA	No	NA
Total Phosphorus	mg/L	NA	NA	NA	NA	NA	NA
Dissolved Phosphorus	mg/L	NA	0.08	NA	NA	NA	NA
Diss. Orthophosphate	mg/L	NA	NA	NA	NA	NA	NA
Total Metals							
Arsenic	µg/L	NA	NA	NA	NA	NA	NA
Cadmium	µg/L	NA	NA	NA	NA	NA	NA
Chromium	µg/L	6	NA	1	NA	No	NA
Copper	µg/L	7	3	2	Yes	No	Yes
Iron	µg/L	1151	199	177	No	No	Yes
Lead	µg/L	2	NA	NA	NA	NA	NA
Nickel	µg/L	NA	NA	NA	NA	NA	NA
Zinc	µg/L	92	53	58	No	No	No
Dissolved Metals	µg/L						
Chromium	µg/L	NA	NA	NA	NA	NA	NA
Copper	µg/L	3	NA	NA	NA	NA	NA
Iron	µg/L	NA	NA	NA	NA	NA	NA
Zinc	µg/L	52	NA	NA	NA	NA	NA

NA = Not Available (Statistics are not calculated for data sets with a high number of non-detects)

In Table 6-2 influent runoff quality data is compared with precipitation quality data for the combined three-year monitoring program. Comparison of the mean values indicates constituent concentrations in the precipitation are lower for all of the parameters when compared to the mean constituent concentrations of the runoff. The pH values were similar between the precipitation and runoff. The concentrations in the precipitation for a majority of the parameters were near or below their respective reporting limits and only a small fraction of the runoff concentrations. The levels for nitrate and dissolved phosphorus in the precipitation samples were comparable to the levels found in the runoff contributing 51% and 72% of the total concentration, respectively. Based on these data, precipitation appears to contribute to the concentrations of nitrate and dissolved phosphorus observed in the runoff from Caltrans roadways in the Tahoe Basin.

Table 6-2
Comparison of Influent Runoff Quality to Precipitation Quality

Constituent/ Parameter	Units	Precipitation Three-Year		Influent Runoff Three-Year		Ratio of Precipitation to Runoff
		Sample Size	Mean	Sample Size	Mean	
Conventionals						
pH	pH units	54	6.2	161	7.2	0.87
EC	umhos/cm	54	27	161	2382	0.01
TSS	mg/L	11	13	164	761	0.02
Hardness as CaCO3	mg/L	48	NA	161	113	NA
Turbidity	NTUs	6	3.8	158	477	0.01
Chloride	mg/L	54	5	161	833	0.01
Nutrients						
Nitrate (as N)	µg/L	55	0.2	159	0.3	0.51
Total Phosphorus	µg/L	49	0.04	161	2.14	0.02
Dissolved Phosphorus	µg/L	5	0.08	133	0.10	0.80
Diss. Orthophosphate	µg/L	47	NA	161	0.08	NA
Total Metals	µg/L					
Cadmium	µg/L	56	NA	161	0.8	NA
Chromium	µg/L	56	NA	161	18	NA
Copper	µg/L	56	3	161	41	0.08
Iron	µg/L	52	262	159	17723	0.01
Lead	µg/L	56	NA	161	36	NA
Nickel	µg/L	56	NA	161	15	NA
Zinc	µg/L	56	61	161	266	0.23

NA = Not Available (Statistics are not calculated for data sets with a high number of non-detects)

6.3 Comparison of Runoff Water Quality Results

This section presents a comparison of the Tahoe Basin three-year monitoring program runoff water quality results. Table 6-3 presents a summary of the data from individual monitoring years. Comparison of the results from the past three years indicates the following for sampled runoff:

- The conventional constituents generally decreased over the three-year monitoring program with the exception of DOC and TOC, which have increased.
- Total and dissolved metals generally decreased through the three-year monitoring program.

- The most significant constituent increase was observed for total phosphorus, which increased significantly in Year 3.

In Table 6-3, the results of the comparative statistics are presented in the final three columns of the table. A statistical comparison test was applied to calculate the percent difference and to determine whether statistically different runoff quality occurred by year based on the distribution of the data. The unpaired or two-sided Student's t-test was conducted on the runoff data. The analysis methodology is presented in Appendix G. If the difference between the two data sets (for example Year 1 and Year 2) is considered statistically significant (at the 0.1 level of significance), the word "Yes" appears in the row identified as "Statistically Different". Otherwise, the word "No" appears, which indicates there is no statistical difference between the two data sets.

Table 6-3
Comparison of Yearly Influent Runoff Water Quality Data

Constituent / Parameter	*Units*	*Year 1 Influent Mean*	*Year 2 Influent Mean*	*Year 3 Influent Mean*	*Statistically Different*		
					Year 1 vs. Year 2	*Year 1 vs. Year 3*	*Year 3 vs. Year 2*
Conventionals							
pH	pH units	7.3	7.3	7.0	No	No	Yes
EC	umhos/cm	2400	2735	1986	No	No	Yes
TSS	mg/L	989	756	684	No	No	Yes
TDS	mg/L	1854	1449	1083	No	No	Yes
Hardness as CaCO3	mg/L	94	120	111	No	No	Yes
DOC	mg/L	22	21	32	No	No	No
TOC	mg/L	25	27	40	No	No	Yes
COD	mg/L	NA	474	456	NA	NA	No
Turbidity	NTUs	575	531	389	No	No	Yes
Chloride	mg/L	1069	983	590	No	No	Yes
Oil & grease	mg/L	NA	22	17	NA	NA	NA
Nutrients							
NH3-N	mg/L	NA	0.4	0.5	NA	NA	Yes
Nitrate (as N)	mg/L	0.4	0.3	0.3	No	No	NA
Nitrite (as N)	mg/L	NA	NA	NA	NA	NA	NA
TKN	mg/L	1.6	2.4	2.6	No	No	Yes
Total Phosphorus	mg/L	1.30	0.4	4.31	No	Yes	Yes
Dissolved Phosphorus	mg/L	NA	0.11	0.08	NA	NA	No
Diss. Orthophosphate	mg/L	0.11	0.09	0.06	No	Yes	NA
Total Metals							
Arsenic	µg/L	6.1	4.8	3.0	No	Yes	Yes
Cadmium	µg/L	1.0	0.8	0.6	No	Yes	Yes
Chromium	µg/L	28	17	15	Yes	Yes	Yes
Copper	µg/L	55	39	39	Yes	Yes	Yes
Iron	µg/L	32802	16884	14082	No	Yes	Yes
Lead	µg/L	66	35	28	No	Yes	Yes
Nickel	µg/L	19	15	13	No	No	Yes
Zinc	µg/L	359	249	253	Yes	No	NA
Dissolved Metals							
Arsenic	µg/L	2.5	1.2	1.2	No	No	NA
Cadmium	µg/L	NA	NA	NA	NA	NA	NA
Chromium	µg/L	4	5	4	No	No	Yes
Copper	µg/L	13	8	7	Yes	Yes	Yes
Iron	µg/L	832	499	282	No	No	Yes
Lead	µg/L	2	1	NA	No	NA	NA
Nickel	µg/L	4	3	3	No	No	Yes
Zinc	µg/L	56	48	51	No	No	NA

NA = Not Available (Statistics are not calculated for data sets with a high number of non-detects

Total chromium, total zinc, total and dissolved copper were the constituents that proved to be statistically different between Year 1 and Year 2. Total phosphorus, dissolved orthophosphate, dissolved copper, and all of the total metals except nickel and zinc were statistically different between Year 1 and Year 3. A comparison between Year 2 and Year 3 shows all of the parameters that were available to undergo statistical analysis, except DOC, COD, and dissolved phosphorus, were statistically different.

6.4 Comparison to Statewide Study

Caltrans monitored the quality of storm water runoff at 29 highway sites throughout California during the three-year monitoring program as part of the Statewide Study. Table 6-4 presents the highway runoff results of the Statewide Study and the Tahoe Basin Study. Only data collected at highway sites were compared. The Statewide Study does not analyze water samples for the chemical oxygen demand (COD), turbidity, chloride, ammonia, nitrite, dissolved phosphorus, oil and grease, and iron (total and dissolved).

Table 6-4
Comparison of Tahoe Basin Highway Runoff to Statewide Highway Runoff: Years 1, 2, 3

Constituent/Parameter	Units	Tahoe Basin Study Highway Influent Runoff Three Year Combined Dataset						Statewide Highway Runoff Three Year Combined Dataset [1]						Statistically Different
		Sample Size	Range Min	Range Max	Mean	Median	SD	Sample Size	Range Min	Range Max	Mean	Median	SD	Tahoe Three-Year Mean vs. Statewide Three-Year Mean
Conventionals														
pH	pH units	161	5.6	9.6	7.2	7.1	0.7	584	4.5	9.0	7.0	7.0	0.7	No
EC	umhos/cm	161	25	21000	2382	1000	3421	584	5	1285	87	65	87	Yes
TSS	mg/L	161	22	5800	759	510	841	584	1	2988	103	58	196	Yes
TDS	mg/L	161	13	12000	1354	610	1841	585	4	1800	83	60	114	Yes
Hardness as CaCO3	mg/L	161	3	2500	113	66	267	585	2	400	34	25	36	Yes
DOC	mg/L	161	1	530	26	13	61	585	1	155	17	11	17	No
TOC	mg/L	161	3	550	32	17	67	586	1	142	20	14	19	No
Nutrients														
Nitrate (as N)	mg/L	159	0.1	2.7	0.3	0.2	0.4	585	0.1	48.0	1.0	0.6	2.5	Yes
TKN	mg/L	160	0.2	19.0	2.4	1.7	2.6	577	0.1	14.5	1.9	1.3	1.9	No
Total Phosphorus	mg/L	161	0.04	19.00	2.14	0.40	4.30	582	0.03	4.69	0.27	0.18	0.41	Yes
Diss. Orthophosphate	mg/L	133	0.03	1.10	0.10	0.07	0.12	580	0.03	2.40	0.10	0.04	0.19	No
Total Metals														
Arsenic	µg/L	161	0.5	25.5	4.2	3.3	3.5	586	0.5	70.0	2.5	0.9	8.0	Yes
Cadmium	µg/L	161	0.2	8.4	0.8	0.4	1.0	586	0.2	30.0	0.6	0.3	1.7	No
Chromium	µg/L	161	1	120	18	13	17	586	1	98	8	6	10	Yes
Copper	µg/L	161	3	287	41	34	33	586	1	270	27	18	29	Yes
Lead	µg/L	161	1	367	36	22	46	586	1	2600	37	8	153	No
Nickel	µg/L	161	2	83	15	12	11	586	1	208	12	8	16	No
Zinc	µg/L	161	16	2130	266	203	247	586	6	1400	144	92	166	Yes
Dissolved Metals	µg/L													
Arsenic	µg/L	161	0.5	20.1	1.4	0.8	2.1	586	0.5	20.0	0.9	0.6	1.4	No
Cadmium	µg/L	161	0.2	2.2	NA	NA	NA	586	0.2	8.4	0.2	0.1	0.5	NA
Chromium	µg/L	161	1	52	4	3	6	586	1	23	3	2	3	Yes
Copper	µg/L	161	1	81	8	6	9	586	1	130	13	9	14	Yes
Lead	µg/L	161	1	14	NA	NA	NA	586	1	480	7	1	35	NA
Nickel	µg/L	161	2	28	3	2	3	586	1	52	5	3	5	Yes
Zinc	µg/L	161	6	284	50	30	52	586	3	1017	60	31	88	No

1. Caltrans, June 2003
SD = Standard Deviation
NA = Not Available (Statistics are not calculated for data sets with a high number of non-detects)

This comparison illustrates that the mean and median values for all of the parameters are generally higher in the Tahoe Basin with the exception of nitrate and dissolved copper, dissolved lead, dissolved nickel and dissolved zinc. The greatest differences between mean and median values are for electrical conductivity (EC), total suspended solids (TSS), and total dissolved solids (TDS).

The range of minimum and maximum values shown in Table 6-4 from the Tahoe Basin Study approximate the range of min/max values from the Statewide Study for the majority of the parameters. The parameters that show a much wider range in the Tahoe Basin included EC, TSS, TDS, TOC, Hardness and DOC. The parameters that show a much wider range in the Statewide Study are total and dissolved lead and dissolved zinc.

These differences are probably due to the application of both sand and salt to the roadways in the Tahoe Basin as part of snow management activities. Sand and salt included in the runoff will increase levels of chloride, EC, TSS, TDS, and possibly total metals. This impact can be observed by comparing the water quality of early rain event runoff to the water quality of mix or snowmelt events in Table 6-6 in Section 6.5. A discussion regarding event type impacts is presented in Section 6.5.

The results of the Tahoe Basin three year monitoring program indicates that mean Tahoe Basin highway runoff concentrations of EC, TSS, TDS, DOC, TOC, TKN, total phosphorus, dissolved orthophosphate, total arsenic, cadmium, chromium, copper, lead, nickel and zinc and dissolved arsenic, cadmium, and chromium are higher than those measured for Statewide highways.

A statistical comparison test was applied to determine whether highway runoff from the Tahoe Basin is statistically different from water quality observed in the Statewide study. If the difference between the two means is considered statistically significant, the word “Yes” appears in the row identified as “Statistically Different”. Otherwise, the word “No” appears, which indicates there is no statistical difference between the two means.

The results indicate that over half of the water quality parameters had statistically different datasets between the Tahoe study and the Statewide study. Of the parameters that are statistically different, the conventional parameters and total metals concentrations in the Tahoe Basin were higher concentrations than those from the Statewide study; while two of the three dissolved metals had lower concentrations in the Tahoe Basin.

6.5 Comparison to Tahoe Basin Stormwater Discharge Limits

The State of California Regional Water Quality Control Board has established water quality limits for storm water that is discharged in the Tahoe Basin to either surface waters or groundwater. Table 6-5 presents a comparison of the Tahoe Basin influent

runoff values to the Tahoe Basin Stormwater Discharge Limits. Surface water runoff that directly enters Lake Tahoe or a tributary is required to be less than the maximum values shown in the column titled "Surface Discharges." Surface water runoff that is directed to infiltrate into the soil is required to be less than the maximum values shown in the column titled "Infiltration Discharges."

Table 6-5
Comparison of Influent Runoff Quality to Stormwater Discharge Limits

Constituent / Parameter	Units	Tahoe Basin 2000-03 Runoff Water Quality				Tahoe Basin Stormwater Limits[1]	
		Range		Mean	Median	Surface Discharges	Infiltration Discharges
		Min	Max				
Turbidity	NTUs	8	2620	477	410	20	200
Oil & grease	mg/L	4	61	18	12	2	40
Total Nitrogen	mg/L	0.1	22.2	2.8	1.9	0.5	5
Total Phosphorus	mg/L	0.04	19.00	2.14	0.40	0.1	1
Total Iron	µg/L	1180	162000	17723	11400	500	4000

1. SWRCB, undated

Shaded cells indicate runoff values higher than limits for both Surface Discharges and Infiltration Systems

The table shows that the mean and maximum influent runoff concentrations for all six stations combined were higher than the surface discharge limits for all of the parameters. Minimum concentrations were lower than surface discharge limits for all parameters except for oil and grease and total iron.

A comparison of the infiltration discharge limits to the influent runoff means indicates that runoff concentrations are generally above the limits except for oil and grease, and total nitrogen. The mean value for total phosphorus, the mean and median values for turbidity and total iron were above their respective limits. Minimum values were lower than the limits for infiltration discharges for all parameters. Maximum values exceeded the limits for infiltration discharges for all parameters.

When comparing runoff mean values to limits for surface and infiltration discharges, the results are consistent for each year of the three-year Tahoe Basin study except that total phosphorus in 2001-02 did not exceed the infiltration discharge limit.

At each sampling location, the highway runoff received treatment after the samples were collected and prior to being discharged. For example, runoff from the Tahoe Meadows site is treated in the Ski Run wetland prior to discharge to Lake Tahoe. Runoff from the Tahoe Airport, Echo Summit, and D.L. Bliss sites are treated first in a double-barrel sand trap, the runoff is then allowed to infiltrate into the soil. Runoff from the Brockway Summit site is treated in a drainage inlet with a sump then by a small rock lined basin followed by a vegetated swale. Runoff from the Snow Creek site is treated first in a single-barrel sand trap and then discharged into a restored wetland. Therefore, the concentrations presented in this report may not represent the concentrations at the receiving water or the point of infiltration.

6.6 Event Type Impacts

Different categories of runoff events occur in the Tahoe Basin as discussed in Section 3.3. Each monitored runoff event was identified as to the type of event it represented. Differences in the runoff quality event category were compared. For example, early rain storms (events that occurred between July and October 31 and not subject to deicing activities) produce immediate runoff, rain/snow mix events produce both immediate and delayed runoff due to snowmelt, and snowmelt events produce runoff without being immediately preceded by precipitation. In addition, runoff from winter precipitation and snowmelt were typically subject to deicing activities (application of sand and salt) that may impact runoff water quality. Deicing activities occurred when freezing temperatures were forecasted. The first deicing activities during the three-year monitoring program typically began at the end of October or the beginning of November. Table 6-6 presents summary statistics for constituents by event type category (early rain, rain/snow mix, and snowmelt). Individual event data is presented in Appendix B.

As shown in Table 6-6, the following event type differences can be observed in the runoff quality:

- Many of the conventional parameters had the lowest concentrations during the early rain events
- Concentrations of DOC and TOC were the highest during the early rain events
- Nutrient concentrations, except total phosphorus, were lower in the runoff samples collected after the initiation of snow management activities
- Dissolved orthophosphate and dissolved phosphorus were at the highest concentrations during early rain events
- Total metals were generally at their lowest concentration during the early rain events with increased concentrations occurring during rain/snow mixed events and snowmelt events.
- Dissolved metals were at their lowest concentration during the snowmelt events

In Table 6-6, each column presents the mean results for one parameter for each of the event types. Summary statistics are presented in the columns comparing the mean values between early rain events and snowmelt events. If the difference between the two means is considered statistically significant (at the 0.1 level of significance), the word “Yes” appears in the row identified as “Statistically Different”. Otherwise, the word “No” appears, which indicates there is no statistical difference between the two means.

Table 6-6
Comparison of Influent Runoff by Event Type

Constituent / Parameter	*Units*	*Early Rain Event Three-Year Mean 1*	*Rain, Rain / Snow Mix Event Three-Year Mean*	*Snowmelt Event Three-Year Mean*	*Statistically Different Early Rain vs. Snowmelt*
Conventionals					
PH	pH units	7.2	7.2	7.1	No
EC	umhos/cm	292	1447	3770	Yes
TSS	mg/L	318	822	778	Yes
TDS	mg/L	257	945	1987	Yes
Hardness as CaCO3	mg/L	159	72	140	No
DOC	mg/L	67	27	14	No
TOC	mg/L	73	33	21	No
COD	mg/L	465	492	437	No
Turbidity	NTUs	210	533	471	Yes
Chloride	mg/L	38	520	1263	Yes
Oil & grease	mg/L	7	26	11	Yes
Nutrients					
NH3-N	mg/L	1.0	0.4	0.5	No
Nitrate (as N)	mg/L	0.7	0.3	0.3	Yes
Nitrite (as N)	mg/L	NA	NA	NA	NA
TKN	mg/L	4.6	1.4	2.1	Yes
Total Phosphorus	mg/L	0.47	3.27	1.49	Yes
Dissolved Phosphorus	mg/L	0.12	0.10	0.09	No
Diss. Orthophosphate	mg/L	0.17	0.08	0.05	Yes
Total Metals					
Arsenic	µg/L	3.8	4.7	3.7	No
Cadmium	µg/L	0.6	0.8	0.8	No
Chromium	µg/L	14	18	18	No
Copper	µg/L	41	7	40	No
Iron	µg/L	6996	45915	18468	Yes
Lead	µg/L	24	39	36	Yes
Nickel	µg/L	14	15	15	No
Zinc	µg/L	202	256	282	Yes
Dissolved Metals	µg/L				
Arsenic	µg/L	1.9	1.6	1.1	No
Cadmium	µg/L	0.2	NA	NA	NA
Chromium	µg/L	6	5	4	No
Copper	µg/L	19	43	6	Yes
Iron	µg/L	276	1237	378	No
Lead	µg/L	1	1	1	No
Nickel	µg/L	6	2	3	No
Zinc	µg/L	70	49	49	No

1. Early Season Rain Events occurred between June and October
NA = Not Available (not calculated for data sets with a high number of non-detects)

The results indicate that less than half of the parameters between early rain events and snowmelt events have data sets that are statistically different. The deicing activities (application of sand and salt) may affect runoff quality differences observed between the early rain storm and the snowmelt events. The significant differences observed in the concentrations of EC, TSS, TDS, Turbidity, and Chloride are typically associated with deicing activities.

6.7 Elevation Impacts

Impact of elevation differences on influent runoff water quality in the Tahoe Basin was evaluated by categorizing monitoring sites into two elevation groups. Low elevation sites are within 200 vertical feet of Lake Tahoe and high elevation sites are at an elevation greater than 200 vertical feet above Lake Tahoe. Low elevation sites are Tahoe Meadows (3-201), Tahoe Airport (3-202), and Snow Creek (3-219). High elevation sites are Echo Summit (3-203), D. L. Bliss (3-218), and Brockway Summit (3-220). Table 6-7 presents summary statistics for constituents by elevation. Individual event data by site and by year is presented in Appendix B. Monitoring station elevations are presented in Table 2-1.

As shown in Table 6-7, the following differences in runoff water quality between high elevation and low elevation sites were observed:

- Runoff from high-elevation monitoring stations generally had lower concentrations of conventional pollutants than low-elevation sites, except chloride. The mean values for hardness, DOC, and TOC at low elevation sites were considerable higher than the mean values at high elevation sites.
- Runoff from high-elevation monitoring stations generally had lower concentrations of nutrients than low-elevation sites.
- Runoff from high-elevation monitoring stations generally had lower concentrations of total and dissolved metals than low-elevation sites.
- The ratio between low-elevation and high-elevation means was 1.5 or greater for 20 out of the 34 parameters or constituents.

Weather and annual average daily traffic (AADT) appear to be the most significant factors that impact runoff quality when considering influences by elevation. Freezing weather conditions directly affect the degree of snow management activities in the Tahoe Basin and high elevation sites tend to have more frequent and longer periods of freezing conditions. At the higher elevations, the orographic effects cause higher amounts of precipitation to be produced. Temperatures are also colder at higher elevations, which extends the winter season and increases the severity of snow or freezing rain events. The amount of salt and sand applied to higher elevation roads was typically higher than the amount applied to lower elevation roads (Caltrans Deicer Report 2001). Comparison of AADT values for the high elevation sites against the low elevations sites indicates that the low elevation sites have approximately three times the traffic volume (Caltrans 2001b).

Table 6-7
Comparison of Runoff Quality to Elevation

Constituent / Parameter	***Units***	***Low Elevation Sites Three-Year Means[1]***	***High Elevation Sites Three-Year Means [2]***	***Ratio of Low Elevation to High Elevation Means***
EC	umhos/cm	2411	2345	1.0
TSS	mg/L	953	506	1.9
TDS	mg/L	1397	1299	1.1
Hardness as CaCO3	mg/L	159	53	3.0
DOC	mg/L	38	9	4.1
TOC	mg/L	48	12	4.1
COD	mg/L	649	243	2.7
Turbidity	NTUs	529	408	1.3
Chloride	mg/L	801	874	0.9
Oil & grease	mg/L	23	13	1.9
Nutrients				
NH3-N	mg/L	0.5	0.4	1.5
Nitrate (as N)	mg/L	0.4	0.2	1.6
Nitrite (as N)	mg/L	NA	NA	NA
TKN	mg/L	3.0	1.6	1.9
Total Phosphorus	mg/L	2.54	1.62	1.6
Dissolved Phosphorus		0.12	0.08	1.5
Diss. Orthophosphate	mg/L	0.09	0.07	1.4
Total Metals				
Arsenic	µg/L	5.0	3.2	1.6
Cadmium	µg/L	1.1	0.4	2.9
Chromium	µg/L	21	13	1.6
Copper	µg/L	51	29	1.7
Iron	µg/L	21919	12250	1.8
Lead	µg/L	45	25	1.8
Nickel	µg/L	17	11	1.5
Zinc	µg/L	349	159	2.2
Dissolved Metals				
Arsenic	µg/L	1.6	1.0	1.6
Cadmium	µg/L	NA	NA	NA
Chromium	µg/L	6	2	2.8
Copper	µg/L	10	6	1.5
Iron	µg/L	505	381	1.3
Lead	µg/L	1	1	1.0
Nickel	µg/L	3	3	1.2
Zinc	µg/L	55	45	1.2

1. Low elevation sites are those within 200 vertical feet above Lake Tahoe and include sites 3-201, 3-202 and 3-219
2. High elevation sites are those more than 200 feet above Lake Tahoe and include sites 3-203, 3-218 and 3-220

Nitrite was not detected at any of the high elevation sites
NA = Not Available (not calculated for data sets with a high number of non-detects)
Shaded cells indicate a ratio of 1.5 or greater

6.8 Impacts of Land Use

The impact of land use on influent runoff quality in the Tahoe Basin was evaluated by comparing results from the urban Tahoe Meadows and Snow Creek sites to the rural Echo Summit, Tahoe Airport, D.L. Bliss, and Brockway Summit sites; and by comparing highway management practices between urban and rural areas.

In the urban areas, a large portion of the accumulated snow is hauled away after every storm, whereas in the rural areas, the snow is plowed to the shoulder. Hauling away the snow reduces the volume of runoff that can be derived from snowmelt. Plowing also reduces the volume of runoff but some portion of the snow is often left along the shoulder. Runoff volumes during snowmelt events will be larger in the rural areas than in the urban areas.

The urban areas experience twice the traffic volume as the rural sites in the Tahoe Basin (Caltrans 2001b). Caltrans yearly Deicer Report indicates more salt and brine are applied to urban roadways and more sand is applied to rural roadway (Caltrans 2001). High traffic volumes and use of deicing materials (sand, salt, and brine) in the urban areas may contribute to higher pollutant concentrations in stormwater runoff.

Table 6-8 presents the comparison of mean values from urban sites to mean values from rural sites. Comparison of these mean values indicates concentrations of the various constituents and parameters in the urban runoff are generally higher than the concentrations in the rural runoff. The mean values for hardness, DOC, TOC, and dissolved chromium from the urban sites were considerable higher than the mean values from rural sites.

6.9 Evaluation of Commingled Runoff

Commingled runoff represents runoff that is generated from both Caltrans highways and non-Caltrans drainage such as urban development or undeveloped land. The Snow Creek Station (3-219) monitored influent runoff that was generated from both a Caltrans highway (Route 29) and a residential development within the community of Tahoe Vista. The remaining five stations monitor influent runoff generated only from Caltrans highways.

To assess the significance that commingling has on runoff quality; two comparisons were performed using the five water quality parameters with stormwater discharge limits. The comparisons were performed as follows:

- The combined Year-2 and Year-3 dataset from the Snow Creek site (commingled flow) was compared against the combined Year-2 and Year-3 dataset from the Tahoe Meadows site (Caltrans-only); the Tahoe Meadows site was used for comparison because like the Snow Creek site, it is located at an urban, low-elevation site.
- The combined Year-2 and Year-3 dataset from stations 3-201, 3-202, 3-203, 3-218, and 3-220 were compared against the combined Year-2 and Year-3 dataset of site 3-219.

Table 6-8
Comparison of Influent Runoff Quality to Land Use

Constituent / Parameter	*Units*	*Urban Site Three-Year Means [1]*	*Rural Site Three-Year Means [2]*	*Ratio of Urban to Rural Means*
Conventionals				
PH	pH units	7.4	7.1	1.0
EC	umhos/cm	2455	2347	1.0
TSS	mg/L	1125	587	1.9
TDS	mg/L	1373	1345	1.0
Hardness as CaCO3	mg/L	206	68	3.0
DOC	mg/L	54	12	4.6
TOC	mg/L	67	15	4.5
COD	mg/L	789	302	2.6
Turbidity	NTUs	503	464	1.1
Chloride	mg/L	798	850	0.9
Oil & grease	mg/L	26	14	1.8
Nutrients				
NH3-N	mg/L	0.6	0.4	1.6
Nitrate (as N)	mg/L	0.5	0.3	1.8
Nitrite (as N)	mg/L	NA	NA	NA
TKN	mg/L	3.8	1.7	2.2
Total Phosphorus	mg/L	3.07	1.68	1.8
Dissolved Phosphorus	mg/L	0.14	0.07	1.8
Diss. Orthophosphate	mg/L	0.11	0.07	1.6
Total Metals				
Arsenic	µg/L	5.2	3.8	1.4
Cadmium	µg/L	1.1	0.6	2.0
Chromium	µg/L	26	14	1.9
Copper	µg/L	57	33	1.7
Iron	µg/L	24834	14168	1.8
Lead	µg/L	58	26	2.3
Nickel	µg/L	19	13	1.5
Zinc	µg/L	397	202	2.0
Dissolved Metals	µg/L			
Arsenic	µg/L	1.6	1.3	1.3
Cadmium	µg/L	NA	NA	NA
Chromium	µg/L	8	3	3.1
Copper	µg/L	11	7	1.7
Iron	µg/L	428	463	0.9
Lead	µg/L	1	1	1.5
Nickel	µg/L	3	3	1.4
Zinc	µg/L	63	44	1.4

1. Urban sites include 3-201 and 3-219
2. Rural sites include sites 3-202, 3-203, 3-218 and 3-220
Nitrite was not detected at any of the rural sites
NA = Not Available (not calculated for data sets with a high number of non-detects)
Shaded cells indicate a ratio of 1.5 or greater

These comparisons were performed to determine:

- Percent Difference (PD) between the commingled EMCs and the Caltrans-only EMCs
- Statistical significance of any difference in the water quality data

6.9.1 Statistical Analysis Overview

A statistical comparison test was applied to calculate the PD and to determine whether commingled flow resulted in statistically different water quality based on the distribution of the data. The unpaired or two-sided Student's t-test was conducted on runoff data from both the commingled site and the Caltrans-only sites. The analysis methodology is presented in Appendix G.

6.9.2 Results of the Statistical Analysis

The results of the statistical water quality analysis are presented below. Detailed output is located in Appendix H.

Snow Creek Influent Runoff Compared to Tahoe Meadows Influent Runoff

The results of the comparison tests using the Snow Creek (3-219) influent runoff data compared to the Tahoe Meadows (3-201) data are summarized in Table 6-9 for each of the five stormwater discharge parameters.

In the table, each column presents the results for one parameter. Summary statistics are presented in the rows for the number of cases, mean, and standard deviation. The result of the percent difference (PD) calculation is presented at the bottom of the table. If the difference between the two means (Snow Creek's and Tahoe Meadow's) is considered statistically significant and the word "Yes" appears in the row identified as "Statistically Different." Otherwise, the word "No" appears, which indicates there is no statistical difference between the means.

Results of the t-tests (at the 0.1 level of statistical significance) showed that for total nitrogen and total iron, the commingled and Caltrans-only datasets were statistically different. In both cases, the PD values were negative, indicating the Caltrans-only concentrations from the Tahoe Meadows site were higher. For the remaining three water quality parameters, no statistical differences were found between the commingled and Caltrans-only datasets. The Snow Creek site had higher mean values for turbidity and total phosphorus and the Tahoe Meadows site had higher concentrations for oil & grease.

Snow Creek Influent Runoff Compared to Caltrans-Only Influent Runoff

The results of the comparison tests using the Snow Creek (3-219) influent runoff data compared to the influent runoff data from the remaining five sites (3-201, 3-202, 3-203, 3-218, and 3-220) representing Caltrans-only runoff are summarized in Table 6-10 for each of the five water quality parameters.

Table 6-9 ***Comparison of Influent Runoff Results - Snow Creek vs. Tahoe Meadows***					
Snow Creek Site 3-219- Two Years Data					
Parameter	***Turbidity NTU***	***Total Nitrogen mg/L***	***Total Phosphorus mg/L***	***Oil and Grease mg/L***	***Total Iron µg/L***
Number of Cases	22	22	22	4	22
Mean	577	3.2	3.58	19	15691
Standard Deviation	299	5.4	5.83	20	8918
Tahoe Meadows Site 3-201- Two Years Data					
Parameter	***Turbidity NTU***	***Total Nitrogen mg/L***	***Total Phosphorus mg/L***	***Oil and Grease mg/L***	***Total Iron mg/L***
Number of Cases	25	25	25	4	25
Mean	487	6.0	2.62	32	27742
Standard Deviation	421	4.2	5.05	25	25784
PD (neg = 3-201 greater)	**30**	**-50**	**17**	**-62**	**-135**
Statistically Different	**No**	**Yes**	**No**	**No**	**Yes**

Table 6-10 ***Comparison of Influent Runoff Results, Snow Creek vs. Caltrans-Only***					
Snow Creek Site 3-219- Two Years Data					
Parameter	***Turbidity NTU***	***Total Nitrogen mg/L***	***Total Phosphorus mg/L***	***Oil and Grease mg/L***	***Total Iron µg/L***
Number of Cases	22	22	22	4	22
Mean	577	3.2	3.58	19	15691
Standard Deviation	299	5.4	5.83	20	8918
Remaining Sites (3-201, 3-202, 3-203, 3-218, 3-220) Combined- Two Years data					
Parameter	***Turbidity NTU***	***Total Nitrogen mg/L***	***Total Phosphorus mg/L***	***Oil and Grease mg/L***	***Total Iron µg/L***
Number of Cases	117	124	117	20	117
Mean	442	2.6	2.02	19	15528
Standard Deviation	319	2.7	4.26	16	15601
PD (neg = 3-201 greater)	**45**	**11**	**27**	**-1**	**2**
Statistically Different	**Yes**	**No**	**No**	**No**	**No**

Results of the t-tests (at the 0.1 level of statistical significance) showed that only turbidity had a statistically significant difference between the commingled and the Caltrans-only datasets. In this case, the mean of the commingled flow from the Snow Creek site is higher. The datasets for the remaining four water quality parameters were determined to be the same (no statistically discernable difference) between commingled and Caltrans-only quality. This is reflective in the relatively low PD values, especially for total nitrogen, oil and grease, and total iron

6.10 Sand Trap Treatment Effectiveness

To assess the treatment effectiveness of the double-barrel sand traps, statistical comparisons were made between the EMC data of 34 water quality parameters representing both influent and effluent concentrations. Using data from Year 2 and Year 3 of the monitoring program, the comparisons were performed as follows:

- The combined influent and effluent dataset from both monitoring stations
- Influent compared to effluent at the Tahoe Airport site (stations 3-202/3-222)
- Influent compared to effluent at the Echo Summit site (stations 3-203/3-223)

These comparisons were performed to determine:

- Percent Difference between the influent and effluent EMCs
- Statistical significance of any difference in the water quality data

6.10.1 Statistical Analysis Overview

A statistical comparison test was applied to determine whether directing runoff through the double barrel sand traps resulted in statistically different water quality. The paired t-test was conducted (at the 0.1 level of statistical significance) using data only from monitored events where both influent and effluent samples were collected during the same event. The analysis methodology is presented in Appendix G.

6.10.2 Results of the Statistical Analyses

Combined Influent and Effluent from Tahoe Airport and Echo Summit Sites

The results of the comparison tests using the combined Year 2 and Year 3 dataset are summarized in Table 6-11 for each of the 33 water quality parameters. Detailed printouts of the statistical analysis are provided in Appendix H.

In Table 6-11, each row presents the results for one parameter. The following statistics are presented in the columns: sample size, mean, and the difference between the influent and effluent means expressed as a percentage. If the difference between the means of the influent and effluent was found to be statistically significant, then the word “Yes” appears in the final two columns identified as “Statistically Different.” Otherwise, the word “No” appears, which indicates there was no statistical difference between the means. The column identified as “Independent assumption” indicates the t-test was performed (at the 0.1 level of statistical significance) assuming each of the 33 parameters was independent of one another. The column identified as “Dependent assumption” indicates the t-test was performed (at the 0.1 level of statistical significance) assuming each of the parameters was dependent upon the remaining 32 parameters.

Table 6-11
Statistical Analyses of Influent and Effluent Data, Tahoe Airport and Echo Summit Sites (Years 2 and 3)

Constituent/ Parameter	Units	Sample Size		Mean		% Difference Inf / Eff	Statistically Different	
		Influent	Effluent	Influent	Effluent		Independent assumption	Dependent assumption
Conventionals								
pH	pH Units	51	51	7.1	7.0	1	No	No
EC	umhos/cm	51	51	2826	2904	-3	No	No
TSS	mg/L	51	51	553	384	31	No	Yes
TDS	mg/L	51	51	1555	1580	-2	No	No
Hardness as CaCO3	mg/L	51	51	76.4	73.8	3	No	No
DOC	mg/L	51	51	13.0	14.2	-9	No	No
TOC	mg/L	51	51	16.7	18.4	-10	No	No
COD	mg/L	51	51	339	283	16	No	No
Turbidity	mg/L	51	51	424	392	8	No	No
Chloride	mg/L	51	51	986	1035	-5	No	No
Nutrients								
Ammonia	mg/L as N	49	49	0.4	0.3	21	No	No
Nitrate	mg/L as N	51	51	0.3	0.3	0	No	No
Nitrite	mg/L as N	51	48	NA	NA	NA	NA	NA
TKN	mg/L as N	51	51	1.9	1.7	7	No	No
Total Phosphorus	mg/L	51	51	1.85	1.97	-7	No	No
Dissolved Phosphorus	mg/L	49	49	0.08	0.07	7	No	No
Orthophosphate	mg/L	51	51	0.061	0.056	9	No	No
Total Metals								
Arsenic	µg/L	51	51	3.1	2.7	13	No	No
Cadmium	µg/L	51	51	0.6	0.5	16	No	No
Chromium	µg/L	51	51	14	12	16	No	No
Copper	µg/L	51	51	36	28	20	No	Yes
Iron	µg/L	52	51	12482	9857	21	No	Yes
Lead	µg/L	51	51	26	20	24	No	Yes
Nickel	µg/L	51	51	13	11	16	No	Yes
Zinc	µg/L	51	51	219	269	-23	No	No
Dissolved Metals	µg/L							
Arsenic	µg/L	51	51	0.9	0.9	9	No	No
Cadmium	µg/L	51	51	NA	0.2	NA	NA	NA
Chromium	µg/L	51	51	3	3	-4	No	No
Copper	µg/L	51	51	6	7	-12	No	No
Iron	µg/L	51	51	333	318	5	No	No
Lead	µg/L	51	51	1	NA	NA	NA	NA
Nickel	µg/L	51	51	3	3	0	No	No
Zinc	µg/L	51	51	48	116	-144	No	Yes

The Inf/Eff Difference column shows 10 constituents with values greater than 10%; the positive value indicates the influent had a higher concentration than the effluent. Conversely, 9 constituents had differences less than –10%; the negative value indicates the effluent had a higher concentration than the influent. The remaining 11 constituents had differences that ranged between –10% and 10%. Insufficient data was available for 3 constituents to make a comparison.

Under the independent assumption, none of influent/effluent constituents were statistically different. Under the dependent assumption, 6 influent/effluent constituents were different. In 5 of these 6 cases, the influent concentrations were higher. The means for the remaining water quality parameters were determined to be similar (no statistically discernable difference).

These results indicate that the sand traps are providing treatment for TSS, the primary parameter. Some treatment may be occurring with most of the total metals, except for zinc. The data indicate that the sand traps may be a source of zinc. The barrels are made of galvanized metal that contains zinc, and the barrels are suspected to be the source of additional zinc in the sand trap effluent.

Tahoe Airport and Echo Summit Evaluations

A similar analysis comparing the site-by-site results from the combined Year 2 and Year 3 dataset are summarized in Table 6-12. Detailed printouts of the statistical analysis are provided in Appendix H.

Table 6-12
Statistical Analyses of Influent vs. Effluent Data, Tahoe Airport and Echo Summit Sites (Two Years)

Constituent / Parameter	Units	Tahoe Airport			Echo Summit		
		% Difference Inf / Eff	Statistically Different		% Difference Inf / Eff	Statistically Different	
			Independent assumption	Dependent assumption		Independent assumption	Dependent assumption
Conventionals							
EC	umhos/cm	3	No	No	-8	No	No
pH	su	0	No	No	2	No	No
Hardness	mg/L	5	No	No	1	No	No
TOC	mg/L	-7	No	No	-16	No	No
DOC	mg/L	-7	No	No	-13	No	No
COD	mg/L	17	No	No	15	No	No
TDS	mg/L	5	No	No	-8	No	No
TSS	mg/L	31	No	No	30	No	No
Turbidity	mg/L	3	No	No	14	No	No
Chloride	mg/L	5	No	No	-13	No	No
Nutrients							
Ammonia	mg/L as N	28	No	No	12	No	No
Nitrite	mg/L as N	NA	NA	NA	NA	NA	NA
Nitrate	mg/L as N	-3	No	No	5	No	No
TKN	mg/L as N	11	No	No	3	No	No
Total Phosphorus	mg/L	-4 *	No	Yes	-11	No	No
Dissolved Phosphorus	mg/L	NA	NA	NA	2	No	No
Orthophosphate	mg/L	9	No	No	9	No	No
Total Metals							
Arsenic	µg/L	16	No	No	8	No	No
Cadmium	µg/L	20	No	No	12	No	No
Chromium	µg/L	17	Yes	Yes	15	No	No
Copper	µg/L	25	No	Yes	15	Yes	Yes
Iron	µg/L	25	No	No	19	No	No
Nickel	µg/L	23	No	Yes	100	Yes	Yes
Lead	µg/L	NA	NA	NA	23	No	No
Zinc	µg/L	-579	Yes	Yes	-47	No	No
Dissolved Metals	µg/L						
Arsenic	µg/L	13	No	No	-2	No	No
Cadmium	µg/L	NA	NA	NA	NA	NA	NA
Chromium	µg/L	NA	NA	NA	10	No	No
Copper	µg/L	-2	No	No	NA	NA	NA
Iron	µg/L	19	No	No	-8	No	No
Nickel	µg/L	-5	No	No	4	No	No
Lead	µg/L	NA	NA	NA	NA	NA	NA
Zinc	µg/L	NA	NA	NA	-162	No	No

* A typographic error was discovered in the June 2003 report. The correction was made in March 2005.

The comparison indicates similar results from each site as follows: no statistical differences in mean concentrations for conventionals, nutrients, or dissolved metals;

and minor differences for total metals with influent concentrations being higher. These results are similar to the findings of the combined data presented in Table 6-11.

6.10.3 Contaminant Removal Effectiveness

Figures 6-1 and 6-2 present a graphical comparison of the individual influent and effluent concentrations from the two sand trap sites in the form of dot-density graphs. The graphs present the distribution of the individual EMC data for a given parameter. Dots are placed along a vertical line corresponding to their concentration. Dots along the same horizontal plane have similar concentrations. The red dots on the left side of the graph are the influent data and blue dots on the right side are the effluent data. Graphs were generated for the parameters with established stormwater discharge limits.

The vertical placement of the individual points and their overall distribution are similar between the influent and effluent data for all four parameters. This indicates very little difference between the influent and effluent data. The same results as demonstrated by the statistical analyses performed in Sections 6.9.1 and 6.9.2.

The stormwater discharge limits for surface discharge and infiltration have been included on the graphs. A horizontal line represents each limit. Dots located above a given dashed line represent data with concentrations higher than a limit and dots below a dashed line represent data with concentrations lower than a limit.

The graphs indicate that the majority of the influent and effluent concentrations are higher than the surface discharge limits for all four parameters. Very few individual points fall below the lower dashed-line representing the surface discharge limit. A comparison of data to the infiltration discharge limits indicates the majority of samples have total nitrogen and total phosphorous concentrations that are lower than the limits. The majority of the samples have total iron and turbidity concentrations that are higher than the limits.

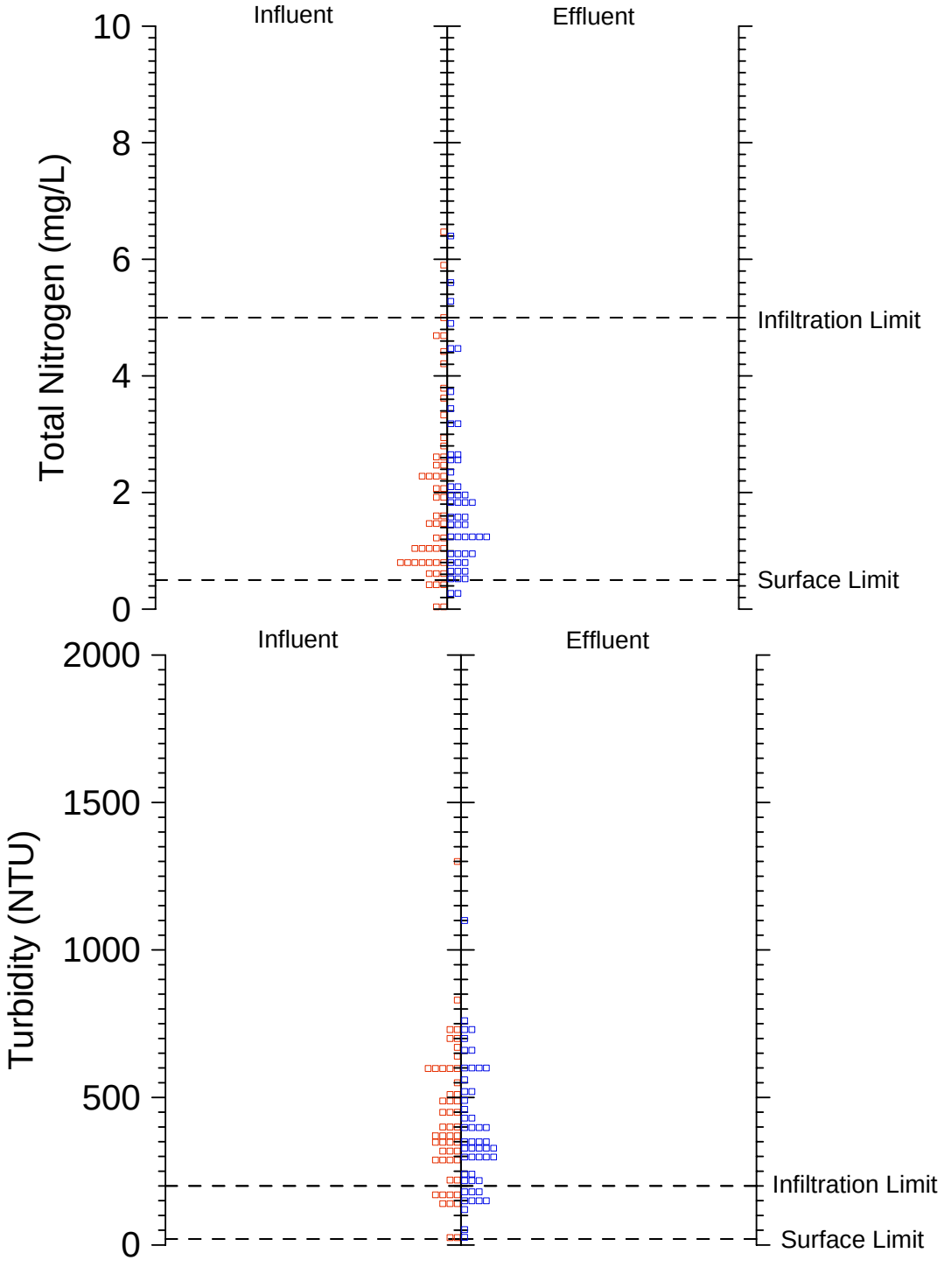


Figure 6-1
Comparison of Runoff Water Quality to Stormwater Discharge Limits; Years 1, 2, 3; Total Nitrogen and Turbidity

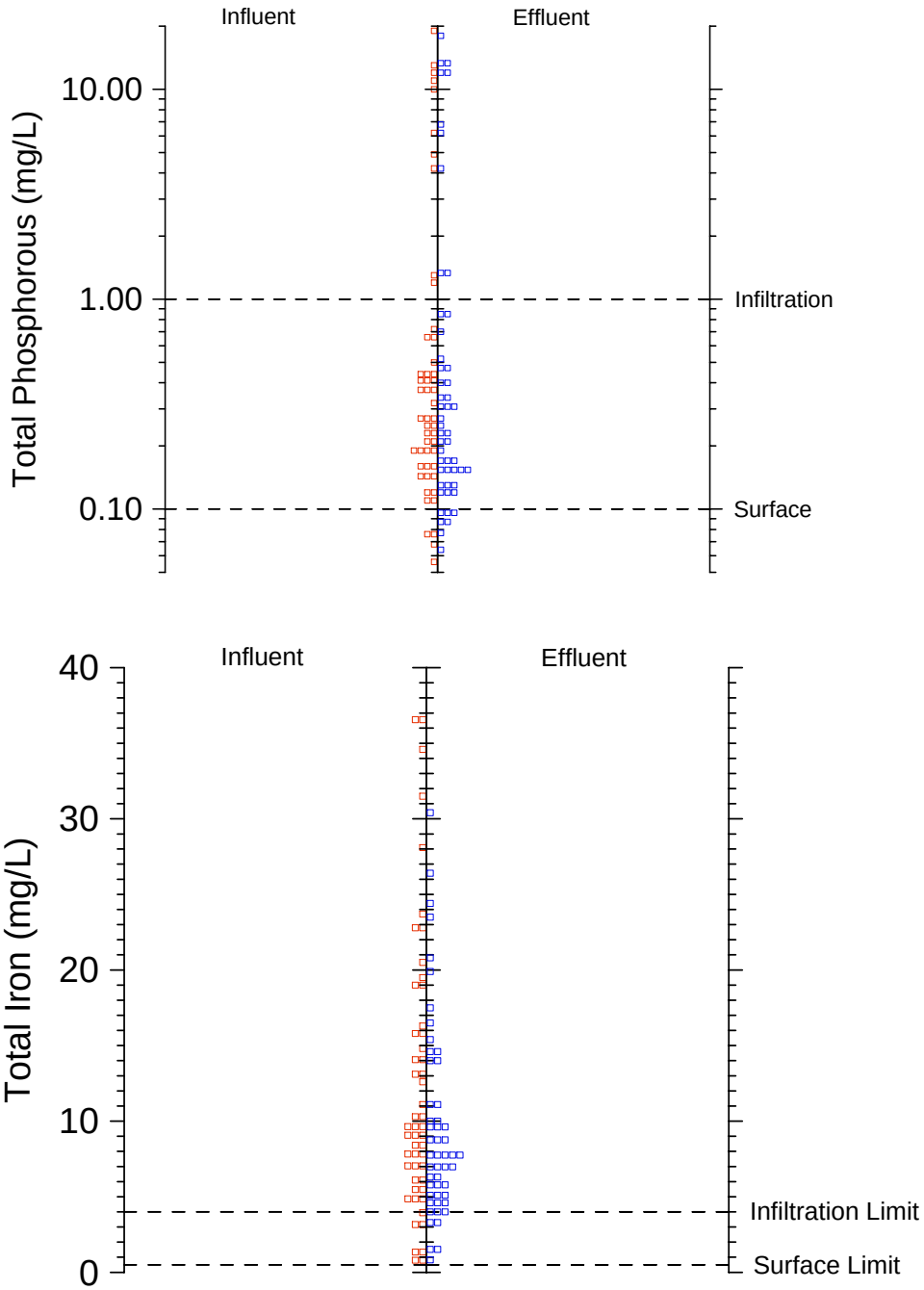


Figure 6-2
Comparison of Runoff Water Quality to Stormwater Discharge Limits; Years 1, 2, 3; Total Phosphorus* and Total Iron

* An error was discovered in TP plot in the June 2003 report. The corrected plot was entered in March 2005.

Section 7
Evaluation of Sediment and Small Particle Results

This section presents an evaluation of the sediment and small particle results from the Tahoe Airport and Echo Summit sites. The evaluations include:

- Comparison of the mass of sediment collected from the up-gradient barrels and down-gradient barrels
- Analysis of grain size distribution of sediment collected from each site
- Comparison of chemical content of various size fractions
- Comparisons of the mass and size of small particles contained in the influent and the effluent

7.1 Sediment Characteristics

The characteristics of the sediment retained by the double-barrel sand traps were evaluated by:

- Comparing the mass of material collected from the up-gradient barrels and down-gradient barrels
- Comparing the grain size distribution of the sediment collected from each barrel, each year, at each site
- Identifying the chemical content of various grain size fractions

7.1.1 Comparison of Mass

Figures 7-1 and 7-2 present a comparison of sediment mass collected during each year of the three-year program at Echo Summit and Tahoe Airport sites. Mass retained in the effluent filter box is not reported because sediment loss occurred when the filters became clogged with sediment or ice resulting in bypassing. In addition, the mass of fine sediments (<0.02 mm) infiltrating through the bottom of the traps and the filter boxes could not be estimated.

The results indicate that the up-gradient barrel retained the highest percentage relative to the down-gradient barrel. Sediment accumulation decreased each year at the Echo Summit sand trap and stayed relatively the same at the Tahoe Airport trap. One reason for the change is that maintenance records maintained by the local Caltrans District indicate less traction is being applied to the highways during snow management activities after Year 1. Trucks tracking cement and sand on to the highway may be the cause of the mass staying the same at the Tahoe Airport site. The

cement plant is located across Highway 50 from the monitoring site and increased operations after Year 1.

An estimate of the amount of material that exited the sand traps with the effluent during Year 2 and Year 3 was determined by multiplying the total volume of flow measured during each runoff event by the mean TSS concentration of the effluent. The total solids load discharged from the Tahoe Airport ranged from 130 to 150 Kg each year and annual loads from the Echo Summit sand trap ranged from 50 to 130 Kg.

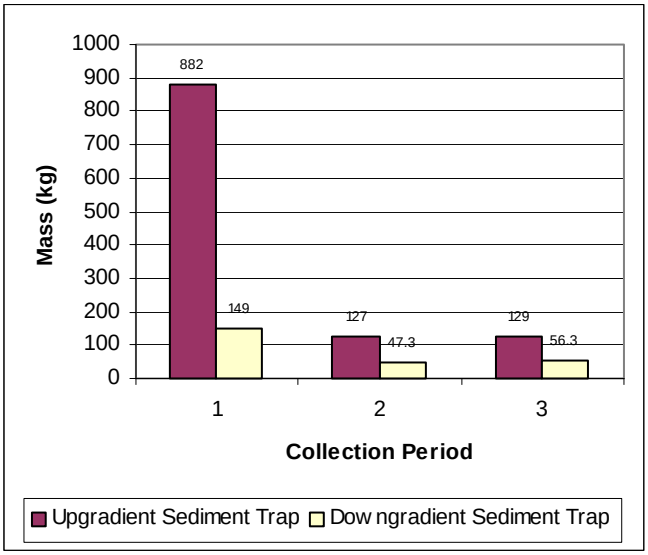


Figure 7-1
Comparison of Sediment Mass from the Echo Summit Site – Years 1, 2, 3

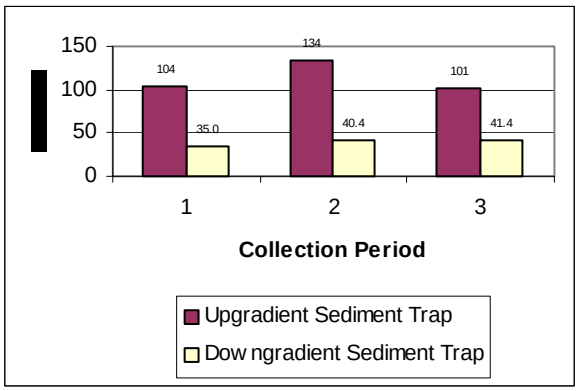


Figure 7-2
Comparison of Sediment Mass from the Tahoe Airport Site – Years 1, 2, 3

7.1.2 Comparison of Sand Size Distributions

Section 5 summarizes grain size distribution results for the Echo Summit and Tahoe Airport sites (Tables 5-5 through 5-8). The results from these sand trap sites indicate the up-gradient barrels retained the larger sediments ranging between about 0.07 – 5.0 mm at both stations. The down-gradient barrels and filter boxes retained the smaller sediments ranging between about <0.0024 – 2.0 mm. In most cases, the sediment found in the down-gradient barrels and the effluent filter boxes had similar grain size distributions.

Figure 7-3 compares the overall grain size distribution for the Echo Summit and Tahoe Airport sites on a year-to-year basis. This figure shows similar grain size distributions at each site for each year, with the Tahoe Airport site having slightly higher proportion of finer-grained sediments than the Echo Summit site.

Grain Size Distribution Results - Echo Summit and Tahoe Airport (2000 - 2003)

	Mass Finer (%)					
	Echo Summit			Tahoe Airport		
Diameter (mm)	**Year 1**	**Year 2**	**Year 3**	**Year 1**	**Year 2**	**Year 3**
12.7000	87.5	98.4	100.0	100.0	100.0	100.0
9.5300	87.5	98.4	99.4	100.0	99.8	100.0
4.7500	87.3	96.7	99.1	99.5	98.8	99.7
2.0000	84.5	92.1	97.0	96.4	94.7	98.2
0.8500	75.0	80.8	91.3	86.5	84.1	91.6
0.4250	65.8	65.6	77.7	76.6	70.2	83.6
0.2500	59.0	56.2	61.0	72.8	63.6	72.1
0.1500	51.6	45.4	50.7	64.6	57.3	64.3
0.0750	34.5	26.3	42.3	59.0	45.6	57.0
0.0380	18.8	15.2	30.9	27.3	32.9	48.3
0.0200	16.6	13.0	24.5	23.1	27.9	41.9
0.0180	14.2	10.0	22.8	19.7	21.7	39.6
0.0090	8.7	6.9	8.1	15.8	15.0	13.9
0.0050	5.4	4.2	5.0	9.7	9.5	10.9
0.0020	3.5	2.2	2.8	5.5	6.2	7.7

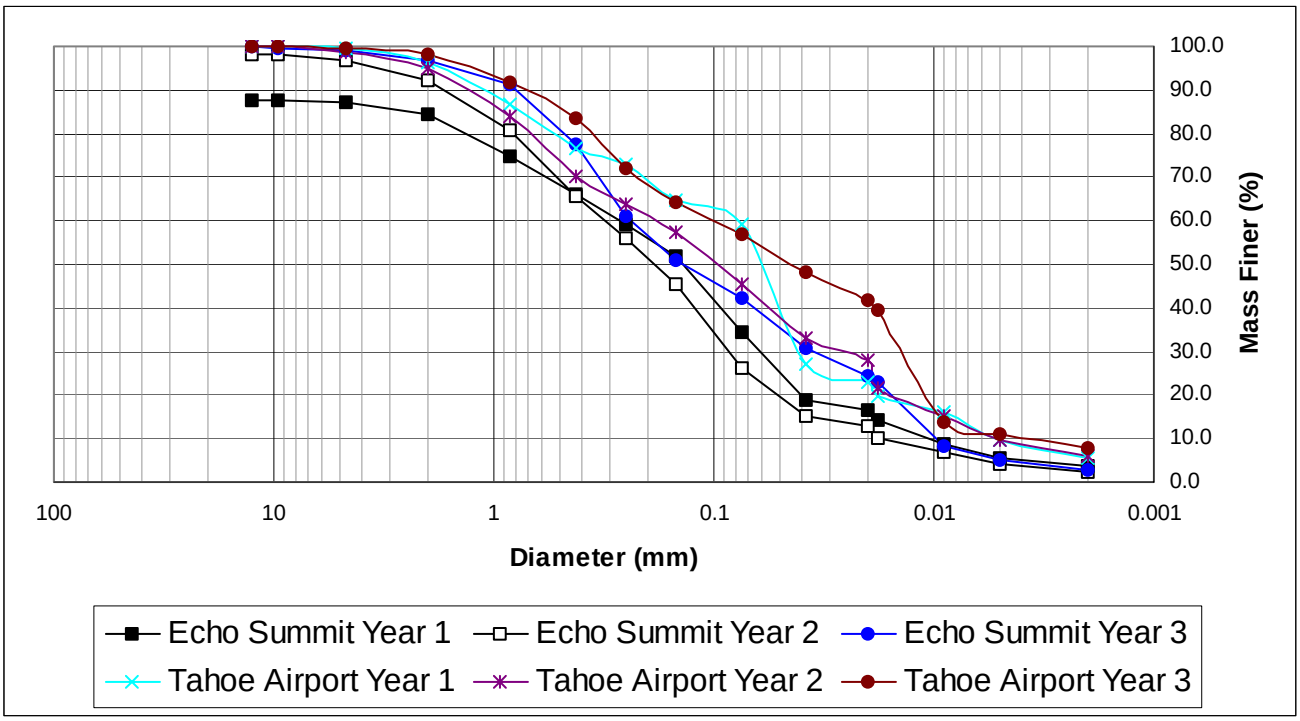


Figure 7-3
Comparison of Grain Size Distributions from Echo Summit and Tahoe Airport Sites: Years 1, 2, 3

7.1.3 Size Fraction Quality

Figures 7-4 through 7-13 present box plots for the combined chemical quality data of the various composite size fractions obtained from sediment samples collected at the Echo Summit and Tahoe Airport sites during the three-year program. The box plots were prepared to enable evaluation of trends between grain size and constituent concentration. Box plots show the median, ranges, and outliers. The elements shown in each box plot are described in Appendix I.

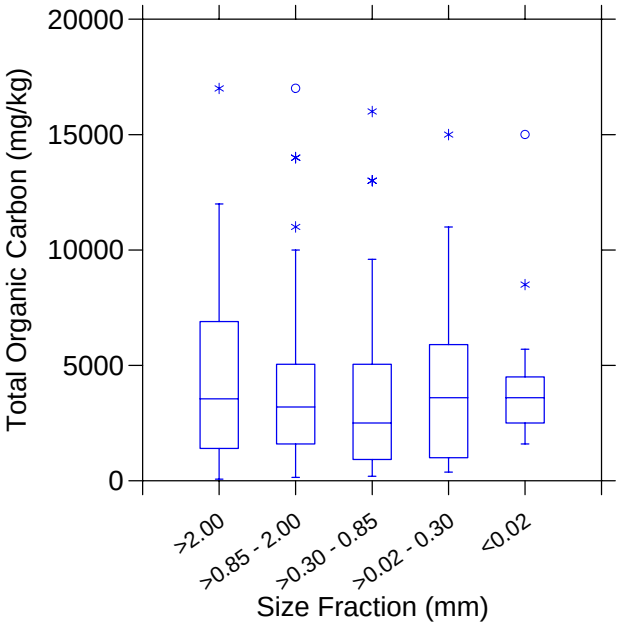


Figure 7-4
Comparison of Chemical Quality versus Size Fraction – Total Organic Carbon: 2000 - 2003

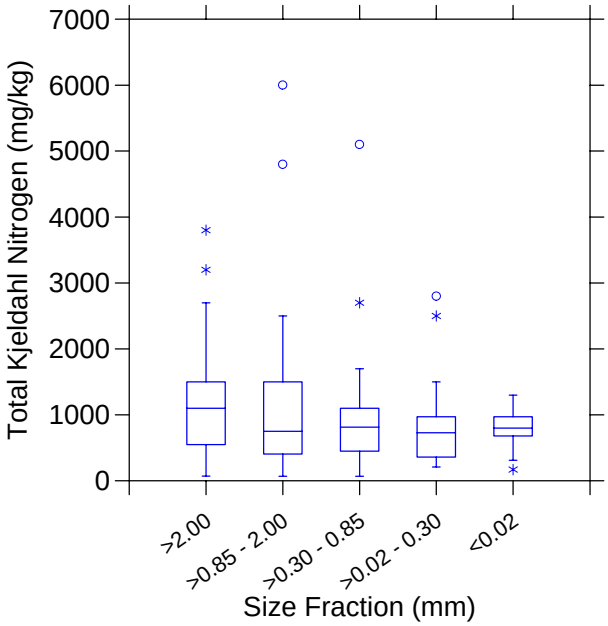


Figure 7-5
Comparison of Chemical Quality versus Size Fraction – Nitrogen: 2000 - 2003

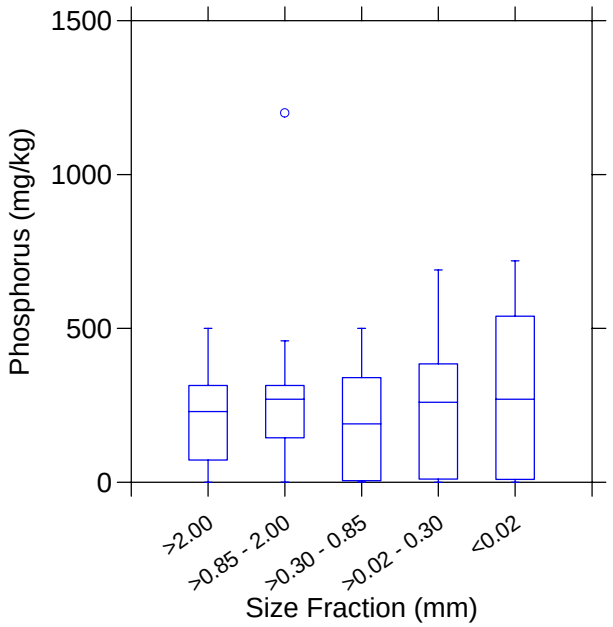


Figure 7-6
Comparison of Chemical Quality versus Size Fraction – Phosphorous: 2000 – 2003

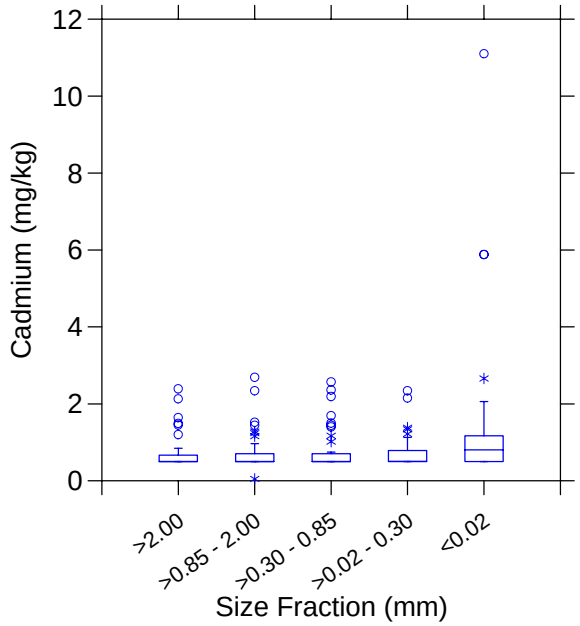


Figure 7-7
Comparison of Chemical Quality versus Size Fraction – Cadmium: 2000 – 2003

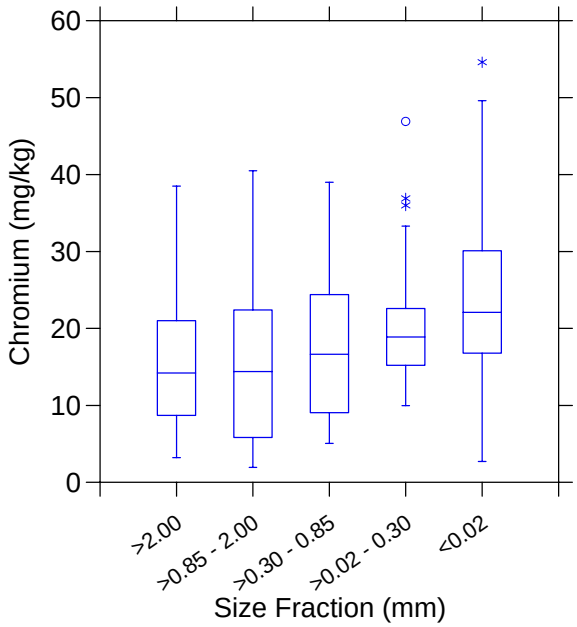


Figure 7-8
Comparison of Chemical Quality versus Size Fraction – Chromium: 2000 – 2003

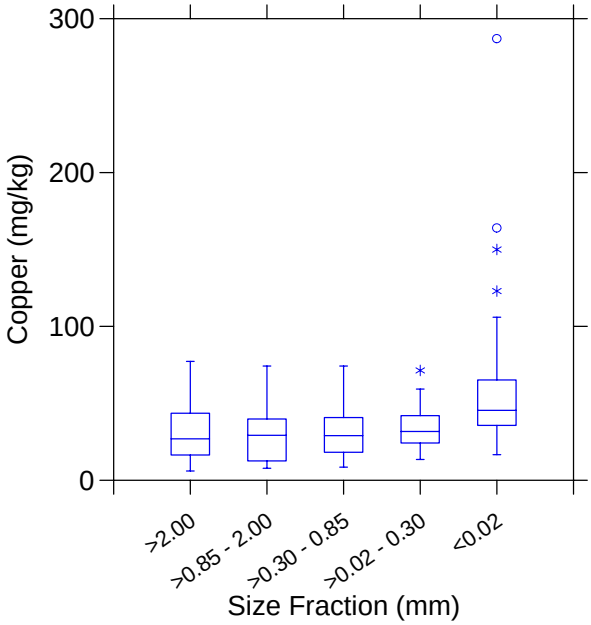


Figure 7-9
Comparison of Chemical Quality versus Size Fraction – Copper: 2000 – 2003

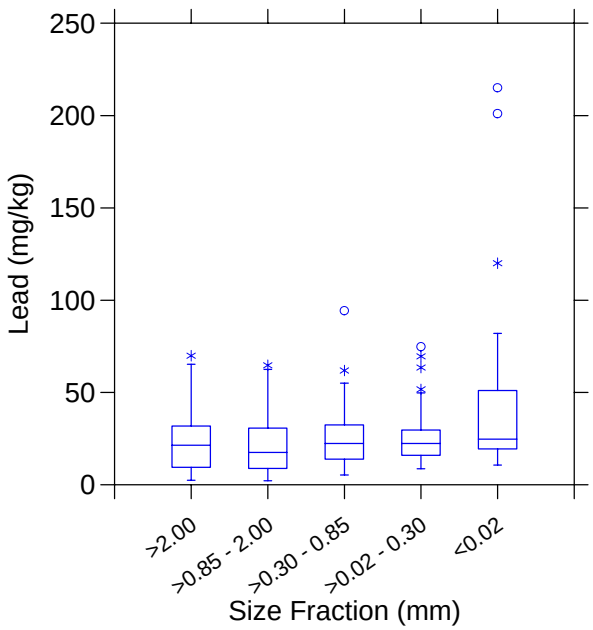


Figure 7-10
Comparison of Chemical Quality versus Size Fraction – Lead: 2000 – 2003

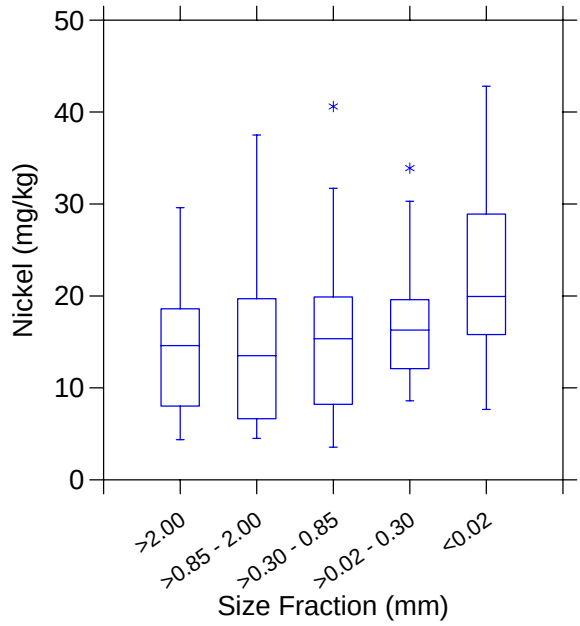


Figure 7-11
Comparison of Chemical Quality versus Size Fraction – Nickel: 2000 – 2003

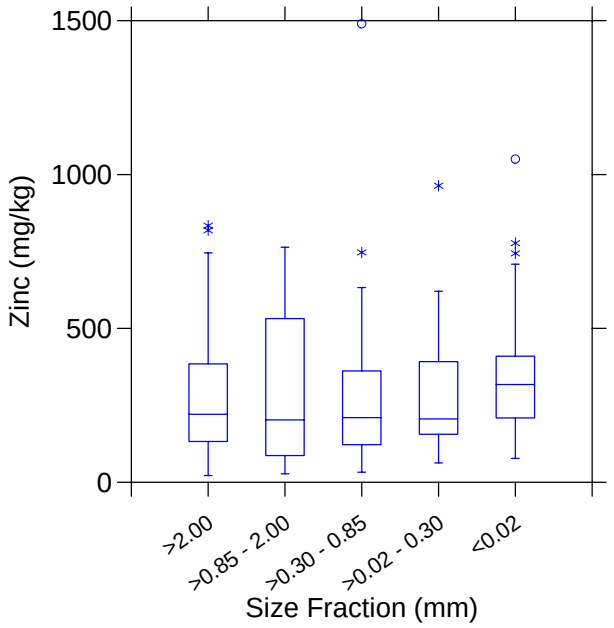


Figure 7-12
Comparison of Chemical Quality versus Size Fraction – Zinc: 2000 – 2003

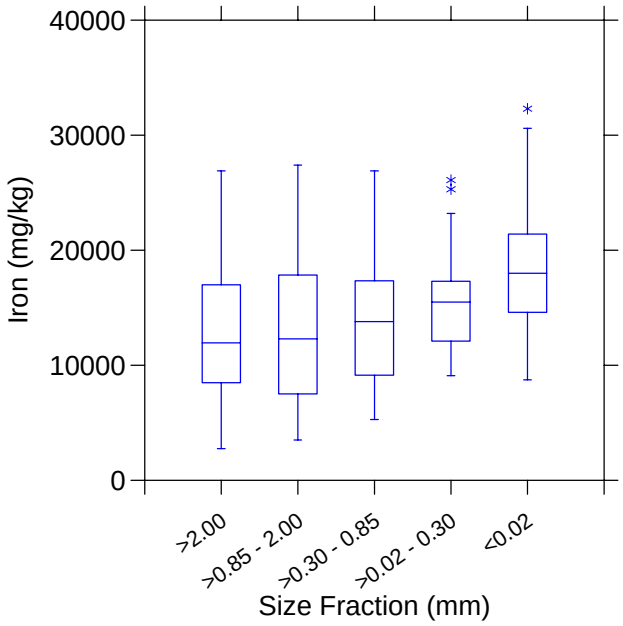


Figure 7-13
Comparison of Chemical Quality versus Size Fraction – Iron: 2000 – 2003

Review of each of the 12 box plots indicates that the median concentration for each chemical parameter is consistent across the various grains. (The median is the horizontal line within each box.) Iron and, possibly chromium, copper, and nickel, exhibited a possible slight trend of increasing concentration with decreasing grain size.

7.2 Particle Removal Effectiveness

The effectiveness of the sand traps to remove small particles from the runoff was evaluated using results from the electrozone sensing particle-counting method performed on samples collected and analyzed during the last two years of the three-year monitoring program. The electrozone sensing uses a particle counting detection limit of 10 particles/liter, and uses 128 size intervals across a range of 0.4 μm to 200 μm. Because the size intervals using electrozone sensing are closely spaced, the conversion of the data from number of particles to volume, and number of particles to mass is considered to be accurate.

The mass was calculated from the number of particles, and the assumption that each particle was spherical in shape with an assumed density of 2.65g/cubic centimeter. This is the density of quartz, a major component of the traction sand.

7.2.1 Results of the Particle Analysis

The number of particles and mass of particles per unit size fraction were plotted to compare influent and effluent results. For the Tahoe Airport site, a summary of the particle distributions is shown in Figures 7-14 and 7-15. For the Echo Summit site, a summary of the particle distributions is shown in Figures 7-16 and 7-17. These figures present averaged results from samples collected at each site during the last two years of the three-year program.

Figures 7-14 and 7-15 show differences between the influent and effluent distributions of the number and mass of small particles at the Tahoe Airport site. The points representing the influent are always above the points representing the effluent. This arrangement indicates the influent had higher numbers and mass in each particle size category. This demonstrates that this sand trap is removing small particles contained in the influent.

However, very little difference between the influent and effluent data is shown in Figures 7-16 and 7-17 that represent small particle numbers and mass at the Echo Summit site. This sand trap is not removing small particles to the same degree as the Tahoe Airport sand trap.

In Figures 7-14 and 7-15, the highest total numbers of particles and the most mass are around the 4-5 μm size range for both the influent and effluent. In Figures 7-16 and 7-17, the highest total numbers of particles and mass are around the 7-8 μm size range for the influent and 6 μm for the effluent.

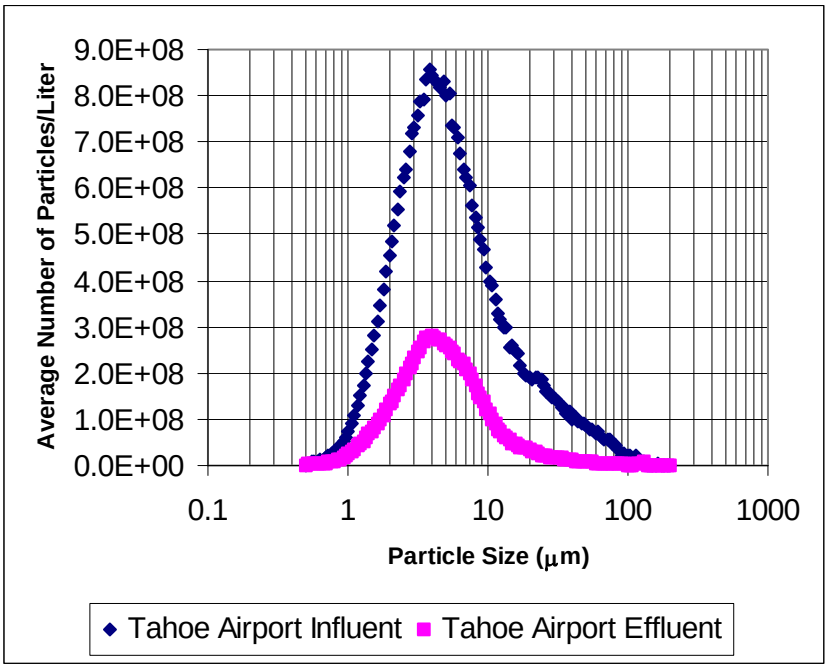


Figure 7-14
Small Particle Counts Tahoe Airport
(Years 2, 3)

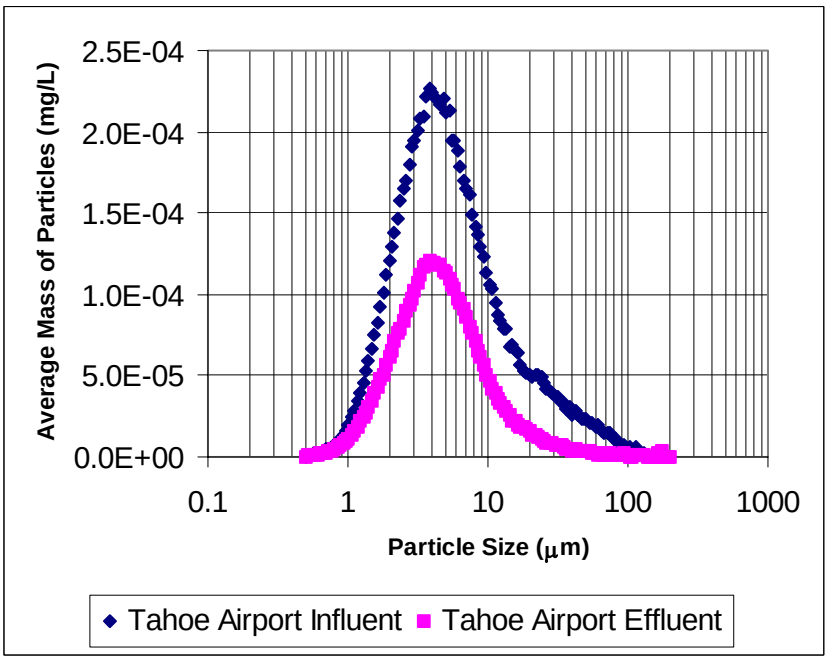


Figure 7-15
Small Particle Mass Tahoe Airport
(Years 2, 3)

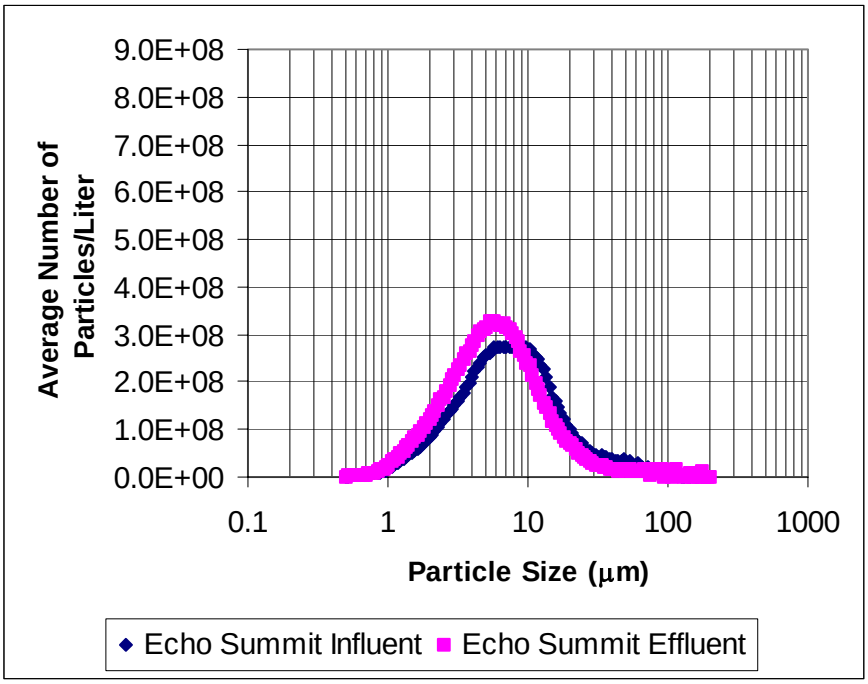


Figure 7-16
Small Particle Counts Echo Summit
(Years 2, 3)

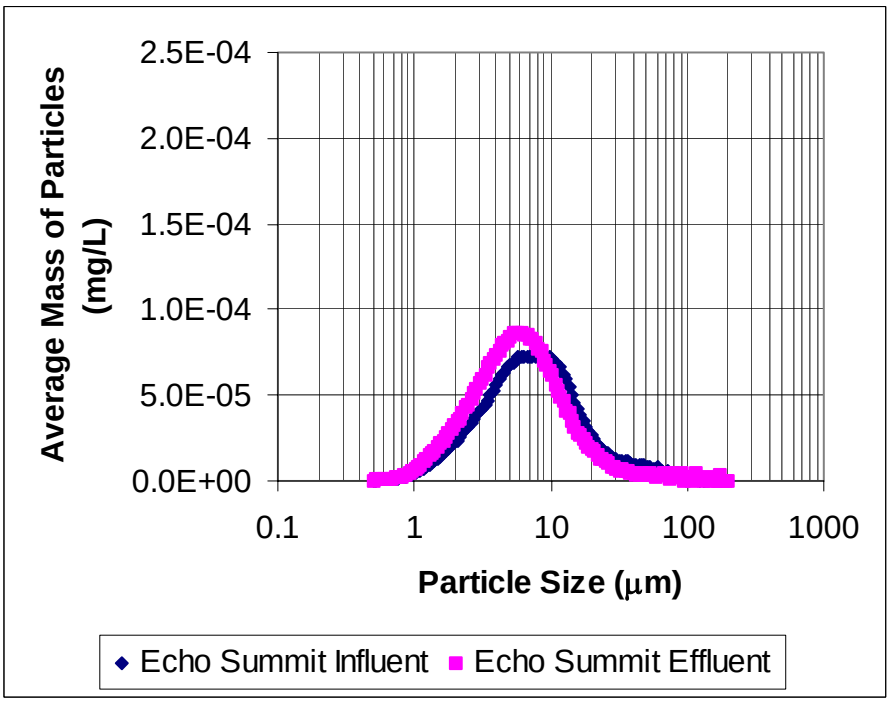


Figure 7-17
Small Particle Mass Echo Summit
(Years 2, 3)

Figures 7-18 and 7-19 show the combined particle-size distribution results, number of particles and mass from two years of data from the Tahoe Airport and Echo Summit sites.

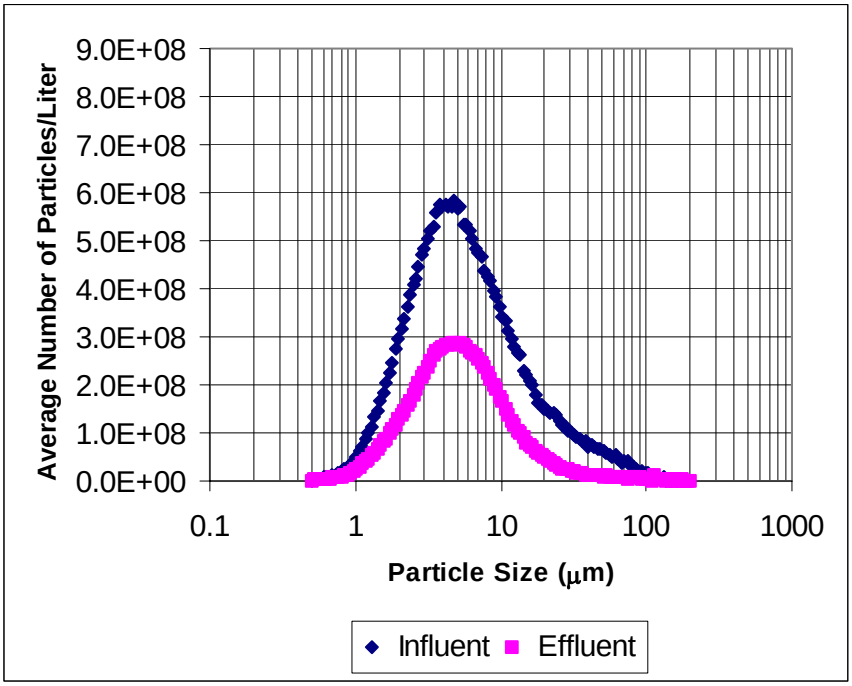


Figure 7-18
Statistical Distribution of Small Particle Numbers

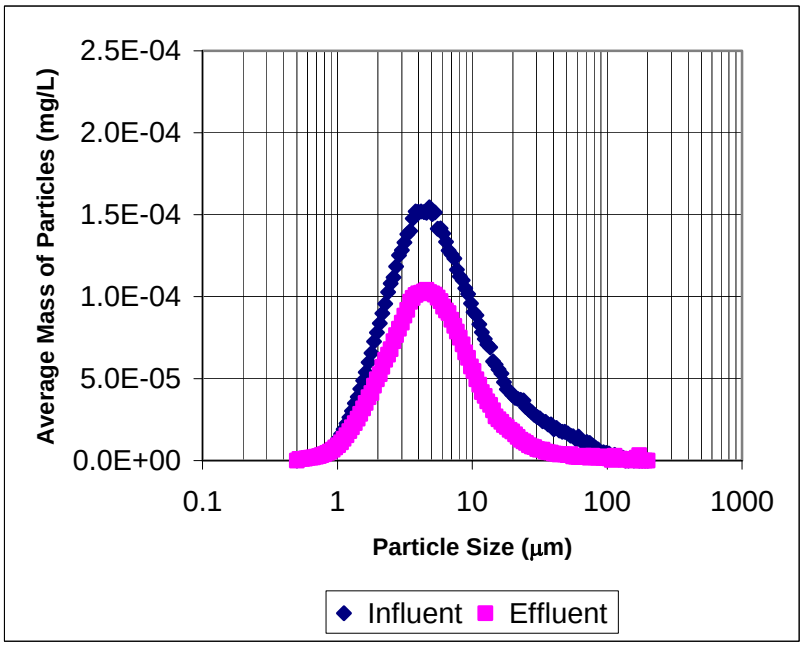


Figure 7-19
Statistical Distribution of Small Particle Mass

Small particle removal effectiveness was also assessed by comparing the total number of particles and mass in the influent with the total number and mass of small particles in the effluent. The two years of data were combined and the number of particles in each grain-size category was totaled. These calculations were performed for the data representing the influent and effluent at both monitoring sites. The results are presented in Table 7-1. Based on the number of particles, the double barrel sand traps removed around 45 percent of the particles within the range of 0.5 µm to 200 µm. The mass difference is 52 percent for both the Echo Summit and Tahoe Airport sites.

Table 7-1
Comparison of Total Particle Counts and Mass for Untreated Runoff and Effluent (Years 2, 3)

Site	***Total particles (particle/L)***	***Total Mass (mg/L)***
Echo Summit Influent Runoff	1.48E+09	0.039
Echo Summit Effluent	8.37E+08	0.018
Untreated- Effluent Difference (%)	44	52
Tahoe Airport Influent Runoff	5.96E+09	0.105
Tahoe Airport Effluent	3.21E+09	0.051
Untreated-Effluent Difference (%)	46	52

Section 8
Summary of Findings and Observations

This section presents a summary of the findings and results of the three-year monitoring program.

8.1 Monitoring and Sampling Results

This section presents a summary of the precipitation, runoff, and sediment monitoring activities and results.

8.1.1 Precipitation

1. Based on historical monthly and seasonal precipitation totals from gages operated by the Department of Water Resources in the Tahoe Basin and North Lahontan Region, precipitation amounts for Year 1 was approximately sixty percent of average, and ninety percent of average for Years 2 and 3.

2. Heated rain gages are required to measure precipitation amounts during the winter season. None of the six monitoring stations operated during this study incorporated heated gages because of the excessive power demands. Heated gages require the station be powered with ac power, because the power demand is too great for batteries (i.e., dc power) to supply power on a continuous basis for extended periods (greater than one day).

3. The precipitation quality sampling equipment employed at three monitoring stations was capable of collecting samples throughout the year. Visual inspections of the samples indicated that contamination from dry fall or other sources (i.e., debris from snow plowing) did occur on occasion.

8.1.2 Runoff Flow

1. The flow monitoring equipment employed at the six monitoring stations was capable of measuring flow rates throughout the year.

2. Cold weather conditions inhibit the ability to measure runoff as follows:

   - Flow measurement equipment is subject to icing which may cause false readings (e.g., higher level readings by the bubbler).

   - Station sites are subject to accumulation of plowed snow, which may divert flow away from drain inlets where the monitoring equipment is installed.

   - Freeze/thaw cycles can damage the area-velocity probe over time.

   - Snowmelt events typically produce low flow rates and shallow depth of runoff. The shallow runoff depth sometimes prevented flow from being measured by the flow-sensing device.

- In pipe installations, area-velocity probes and bubbler tubes are susceptible to being buried by sediment deposits.

3. Runoff was recorded throughout the year; it was produced by summer thunderstorms, frontal rain events, rain/snow mixed events, and melting snow.

4. Rainfall-only events generally generated higher volumes of runoff than snowmelt events.

5. Throughout the winter season, weather patterns occur that can produce runoff from melting snow on a daily basis. Temperatures often rise above freezing starting just before noon and lasting until sunset depending on the degree of direct sun exposure. Snowmelt runoff is often generated during this period of each day. This pattern typically continues until the weather changes (e.g., cold front brings in much colder temperatures and or cloudy weather) or all the snow in the drainage area has melted.

6. Runoff coefficients were determined from rainfall-only events. Runoff coefficients generated from snowmelt or rain/snow mixed events cannot be calculated because:

   - Snow in terms of equivalent water amount is not measured at any of the six stations.

   - An unknown portion of the snow is removed from the drainage area during snow management activities.

   - All the snow does not melt at one time and the snow may accumulate over several snowfall events.

   - Sublimation of snow directly to the vapor phase is not quantified.

8.1.3 Water Quality Sampling

1. The automatic water quality sampling equipment employed at the six monitoring stations was capable of collecting samples throughout the year.

2. In addition to the cold weather conditions noted above that impacted flow monitoring, the following problems inhibited the ability to consistently collect runoff water samples:

   - Sample tubing can be blocked by frozen sample remnants and any blockage has to be removed prior to each sampling event.

   - The small volume and shallow runoff depth sometimes prevented water quality samples from being drawn into the sample intake.

- In pipe installations, intake strainers are susceptible to being buried by sediment deposits.

8.1.4 Sediment Sampling

1. The large volume and mass of sediments retained in the up-gradient sediment traps presented a logistical problem for the removal, sampling and handling of sediments retained in the sand traps.

2. The filter bags installed at the bottom of each barrel clogged with fine particles preventing water from passing through.

3. A similar clogging problem was also encountered at the stacked filters in the effluent filter box. Sediment and or ice clogged the filter's pores, which caused the flow to back up and bypass the box through the top.

4. The filter box design was undersized for the flow volumes and sediment entering the box.

5. To address these problems, the following modifications were implemented:

   - In 2002, a sediment core and grab sampling program was implemented at each sand trap barrel to estimate the total weight of the entire contents and to collect a representative sample without having to remove the entire deposit.

   - In January 2002, the sand trap filter bags from the bottom of the Tahoe Airport sand trap barrels were removed to promote infiltration in each barrel and the three filters fabric screens contained in the filter box were replaced with a single filter bag with the smallest mesh size (20 micron) to improve drainage and capture.

   - In January 2002, the filter bags remained in the sand traps at the Echo Summit site, but the three filter fabric screens in the effluent filter box were removed and replaced with a single filter bag with the smallest mesh size (20 micron) to improve drainage and capture.

   - In April 2002, the filter bags in the sand traps at the Echo Summit site were removed to improve infiltration and drainage of each barrel.

8.2 Water Quality Results

This section presents a summary of the water quality results from precipitation, runoff, and sand trap treatment effectiveness sampling.

8.2.1 Precipitation Quality

1. Precipitation samples were collected to determine if precipitation was a source of contamination in the runoff from the Caltrans roadways in the Tahoe Basin.

Comparison of the mean values indicates constituent concentrations in the precipitation are lower for all of the parameters when compared to the mean constituent concentrations of the runoff. Based on these data, precipitation appears to be a minor contributor to contaminants observed in the runoff from Caltrans roadways in the Tahoe Basin except for nitrate and dissolved phosphorus. Nitrate and dissolved phosphorus were detected at concentrations of 51% and 72%, respectively, of the concentrations detected in the highway runoff. In addition, pH was detected at similar levels as the highway runoff.

2. A comparison of the Year-1, Year-2 and Year-3 mean precipitation values indicates that precipitation concentrations throughout the three-year program are generally consistent except for pH, total iron and total copper.

8.2.2 Runoff Water Quality

1. The majority of the water quality runoff samples was collected from rain, rain mixed with snow, or snowmelt events. During the three-year program only fourteen samples were collected from summer thunderstorm events (9 percent of the total).

2. The 34 constituents and parameters were consistently found in the runoff samples during each of the three years.

3. There are a few similarities in the constituent concentrations between all three years but more differences.

   - Levels of pH and dissolved metals were similar for all three years except for dissolved copper, and iron, which decreased.

   - Levels for the conventional parameters decreased from Year 1 to Year 3 except for hardness, TOC, and DOC, which increased.

   - Levels for nutrients increased from Year 1 to Year 3 except for nitrate, dissolved phosphorus, and dissolved orthophosphate, which decreased.

   - Levels for the total metals decreased from Year 1 to Year 3.

4. The results indicate that Tahoe dataset for 2000-03 was statistically different than the Statewide 2000-03 dataset for over half of the 25 parameters that were common between the two programs. Tahoe levels were typically higher than Statewide levels except for some of the dissolved metals.

5. The quality of influent runoff from the six monitoring stations varied by runoff event type as follows:

- Levels of EC, TSS, TDS, turbidity and chlorides were significantly higher after the start of snow management activities. The source is presumed to be the salt and traction sand applied to the roadways to control snow and ice.

- The conventional parameters and total metals were at higher concentrations in the runoff after initiation of snow management activities. Conversely, nutrient concentrations were lower in runoff samples collected after initiation of snow management activities.

6. The quality of influent runoff from the six monitoring stations varied by site location as follows:

   - Water quality concentrations from low elevation sites were generally higher than concentrations from high elevation sites.

   - Water quality concentrations from urban sites were generally higher than concentrations from rural sites.

7. Based on the data, land use type (urban vs rural) and elevation (low vs high) appear to exert an indirect impact on runoff water quality as follows:

   - High elevation sites tend to have more frequent and longer periods of freezing conditions.

   - Snow management activities in urban areas use more salt per lane mile than rural areas.

   - Urban areas typically experience twice the traffic volume as the rural sites in the Tahoe Basin.

8. A comparison of the 2000-03 dataset for influent runoff concentrations to the stormwater water quality limits established for surface discharges and infiltration indicated:

   - The mean and median values exceeded all five of the numeric limits established for surface discharges of stormwater in the Tahoe Basin.

   - The mean and median values exceeded the numeric limits established for infiltration of stormwater in the Tahoe Basin for turbidity and iron. The mean and median values for total nitrogen and oil & grease were below their respective limits. The mean value for total phosphorus was above its limits but the median value was below.

   - Treatment was provided at all six stations downstream of the sampling location.

9. Based on a comparison of six parameters, the majority of the analyses indicated that the runoff from the commingled site, Snow Creek, was not statistically different from the runoff at the Caltrans-only urban site, Tahoe Meadows; nor statistically different from the combined data of all five remaining Caltrans-only sites.

8.2.3 Sand Trap Treatment Effectiveness

1. The influent water quality from the two sand trap monitoring sites demonstrated variations from the effluent water quality. These variations were greater for concentrations of the "total" parameters and less for the concentrations of the "dissolved" parameters.

2. A comparison of the water quality dataset representing the influent to the dataset representing the effluent indicated:

   - The mean values for the effluent were lower than the mean values for the influent for 17 of the 33 constituents/parameters, indicating some level of treatment.

   - The only statistical differences between the influent and effluent datasets were found for TSS, total copper, total iron, total lead, and total nickel under the assumption that all parameters were dependent on one another.

   - The sand traps could be a source of zinc. The effluent concentrations of zinc for both the total and dissolved fractions were significantly higher than the influent levels. The galvanized sand trap barrels may be the source of zinc.

3. A comparison of the results from the Tahoe Airport site with the results from the Echo Summit site shows similar trends in the level of water quality treatment.

4. The sand traps did not reduce runoff constituent concentrations to within the established storm water discharge requirements established for the Lake Tahoe Basin.

8.3 Sediment Characterizations and Sand Trap Removal Effectiveness

This section presents a summary of the small particle and sediment characterization analyses, along with a summary of the sediment removal effectiveness of the double-barrel sand traps.

8.3.1 Small Particle Analysis

1. Samples were collected from Tahoe Airport and Echo Summit monitoring stations for analysis of small particles of various size fractions from 0.5 to >200 microns contained in both storm and non-storm runoff. Each sample was analyzed using the electrozone method. The findings are presented below:

- The grain sizes in the 5 to 12 µm range represent both the highest number and the greatest mass of small particles observed in the runoff samples.

8.3.2 Sediment Characteristics

1. Grain sizes ranged from less than 0.5 µm to greater than 9.5 mm.

2. The highest percentage in terms of mass was between 0.01 and 2 mm.

3. Phosphorus concentrations in sediment particles increased after Year 1, especially in the sediment collected from the Echo Summit sand trap site.

4. The Year 3 sediment quality data continues to demonstrate the trends observed during the previous 2 years. Each of the parameters was detected above its respective reporting limit in the majority of the samples. Very little variation in the chemical content was observed between the various grain sizes. No strong trends were found.

8.3.3 Sand Trap Removal Effectiveness – Particles and Sediment

1. The small particle data indicate the sand traps remove a portion of the small particles (200 µm and less). The difference between influent and effluent averaged 45 percent of the total number per liter.

2. The gravimetric data demonstrates that the largest percentage of the captured mass is in the up-gradient barrel.

3. The total mass captured at the Echo Summit sand trap site has decreased during each of the three years of the study. Caltrans maintenance records indicate less sand was applied. The total mass captured at the Tahoe Airport sand trap remained relatively the same during each year of the study. Caltrans maintenance records indicate less sand was applied during the 2001-02 season but residue from a local concrete plant may have contributed to the total.

4. The sediment collected in the up-gradient barrels has a coarser size distribution than the sediment collected in the down-gradient barrel and effluent. The effluent has the finest grain size distribution among the three sampling locations.

5. Overall, the grain size distribution is similar between each site and all three years with the Tahoe Airport site having finer-grained sediments.

Section 9
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Section 10
Glossary

AADT	Annual Average Daily Traffic
As	Arsenic
BMP	Best Management Practice
$CaCO_3$	Calcium Carbonate
Caltrans	California Department of Transportation
Cd	Cadmium
CI	Confidence interval
COD	Chemical Oxygen Demand
Cr	Chromium
Cu	Copper
Composite sample	A series of discrete samples collected by the automated sampler and composited at the laboratory.
DAT	Caltrans Data Analysis Tool
Discrete sample	A single or series of samples collected by the automated sampler into one sample bottle.
DOC	Dissolved Organic Carbon
DOP	Dissolved Ortho-Phosphate
Down-gradient trap or barrel	Second barrel in a double barrel sand trap, it receives overflow from the up-gradient barrel
DWR	State of California Department of Water Resources
EC	Electrical conductivity, same as specific conductance
EMC	Event mean concentration. The concentration reported for a flow composite sample.

Fe	Iron
Filter Box	Portion of the passive sediment collection procedure that collects sediments contained in the effluent from the double barrel sand traps
Grab Sample	A single sample collected to represent instantaneous conditions.
HDPE	High-density polyethylene
HRD	Hardness
L	Liter
LCS	Laboratory control sample. A clean matrix spiked with known concentrations of target analytes that is used to evaluate laboratory accuracy, independent of matrix effects.
L/s	Liters per second
LTIMP	Lake Tahoe Interagency Monitoring Program
m	meter
MB	Method blank. Reagent water (Type II) that is taken through the entire analytical procedure and used to evaluate contamination from laboratory procedures or conditions.
µg/Kg	Microgram per Kilogram
µg/L	Microgram per Liter
µm	Micrometers
µmhos/cm	Micromhos per centimeter
mg/Kg	Milligram per Kilogram
mg/L	Milligram per Liter
mg/L	Milligram per Liter
mL	Milliliter

mm	Millimeter
MS/MSD	Matrix spike/matrix spike duplicate. An environmental sample spiked with known concentrations of target analytes that is used to evaluate the accuracy and precision of the laboratory extraction and analysis procedures.
Msl	Mean sea level
NA	Not available
Ni	Nickel
NM	Not meaningful
NO3	Nitrate
NO2	Nitrite
NRCS	Natural Resource Conservation Service
NTU	Nephelometric Turbidity Unit
NWS	National Weather Service
P	Phosphorous
Pb	Lead
POR	Period of Record
QA/QC	Quality Assurance/Quality Control
RPD	Relative percent difference. The RPD is the ratio of the difference between two values to the average of the two values.
RL	Reporting limits. Minimum value that can be reported with confidence for any given parameter as established by a specific laboratory.
Runoff Volume	The volume of storm water that runs over the surface of the ground and into a storm drainage system and receiving water.

SAP	Sampling and Analysis Plan
Sample reporting limit	The lowest concentration that can be reliably achieved within specified limits of precision and accuracy, multiplied by a factor that accounts for sample-specific matrix interference.
SC	Specific Conductance
SSC	Suspended Sediment Concentration
SEM	Scanning electron microscope
SOP	Standard Operating Procedure
Station 3-201	Monitoring station located along HY 50 at Tahoe Meadows residential development in City of South Lake Tahoe
Station 3-202	Monitoring station located along HY 50 near Tahoe Airport (Influent or untreated)
Station 3-203	Monitoring station located along HY 50 below Echo Summit (Influent or untreated)
Station 3-218	Monitoring station located along HY 89 in D. L. Bliss State Park
Station 3-219	Monitoring station located along HY 28 in the town of Tahoe Vista
Station 3-220	Monitoring station located along HY 267 on the south site of Brockway Summit
Station 3-222	Monitoring station located along HY 50 near Tahoe Airport (Effluent or treated)
Station 3-223	Monitoring station located along HY 50 below Echo Summit (Effluent or treated)
SWRCB	State Water Resources Control Board
Tahoe program	Tahoe Basin Stormwater Monitoring Program
TDS	Total Dissolved Solids

TKN	Total Kjeldahl Nitrogen
TOC	Total Organic Carbon
TP	Total Phosphorus
TSS	Total Suspended Solids
Up-gradient trap or barrel	First barrel in a double barrel sand trap, it receives the raw or untreated runoff from the highway
Zn	Zinc

Monitoring Station 3-201 (Highway 50 at Tahoe Meadows - South Lake Tahoe)
Storm Event #1 - October 26, 2000

Station Characteristics

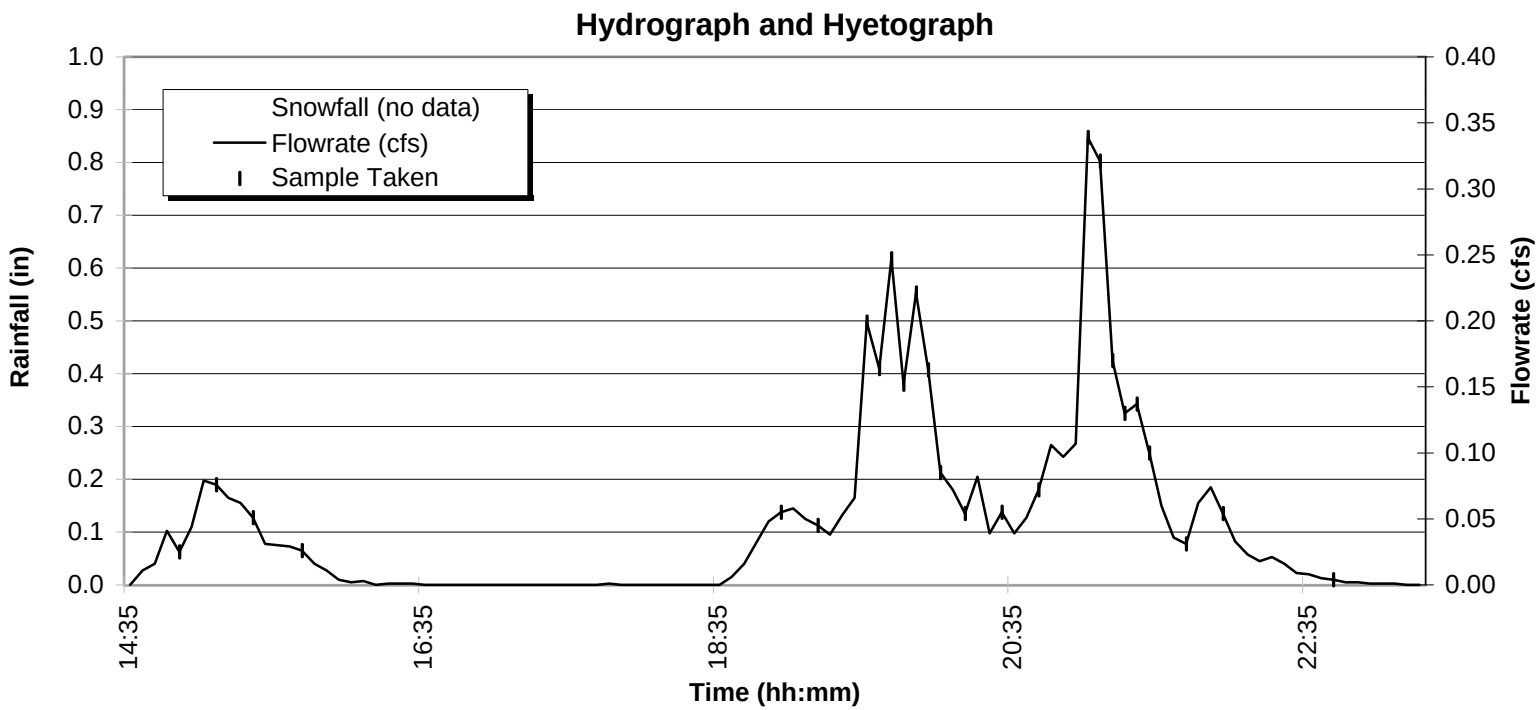
Est. Drainage Area (acres):	0.77
Predicted Runoff Coefficient:	0.9
Actual Runoff Coefficient:	N/A

Precipitation Data Summary

Type of Precipitation:	Mix
Total Precipitation (in.):	N/A
Days Since Last 0.1 in.:	6

Storm Flow Data Summary

Total Flow Volume (cf):	1,427
Peak Flow (cfs):	0.08
Samples Taken:	25
Samples Attempted:	25
Sample Pacing Volume (cf):	55
Estimated % Capture:	>90%



Monitoring Station 3-201 (Highway 50 at Tahoe Meadows - South Lake Tahoe)
Storm Event #2 - January 24, 2001

Station Characteristics

Est. Drainage Area (acres):	0.77
Predicted Runoff Coefficient:	0.9
Actual Runoff Coefficient:	N/A

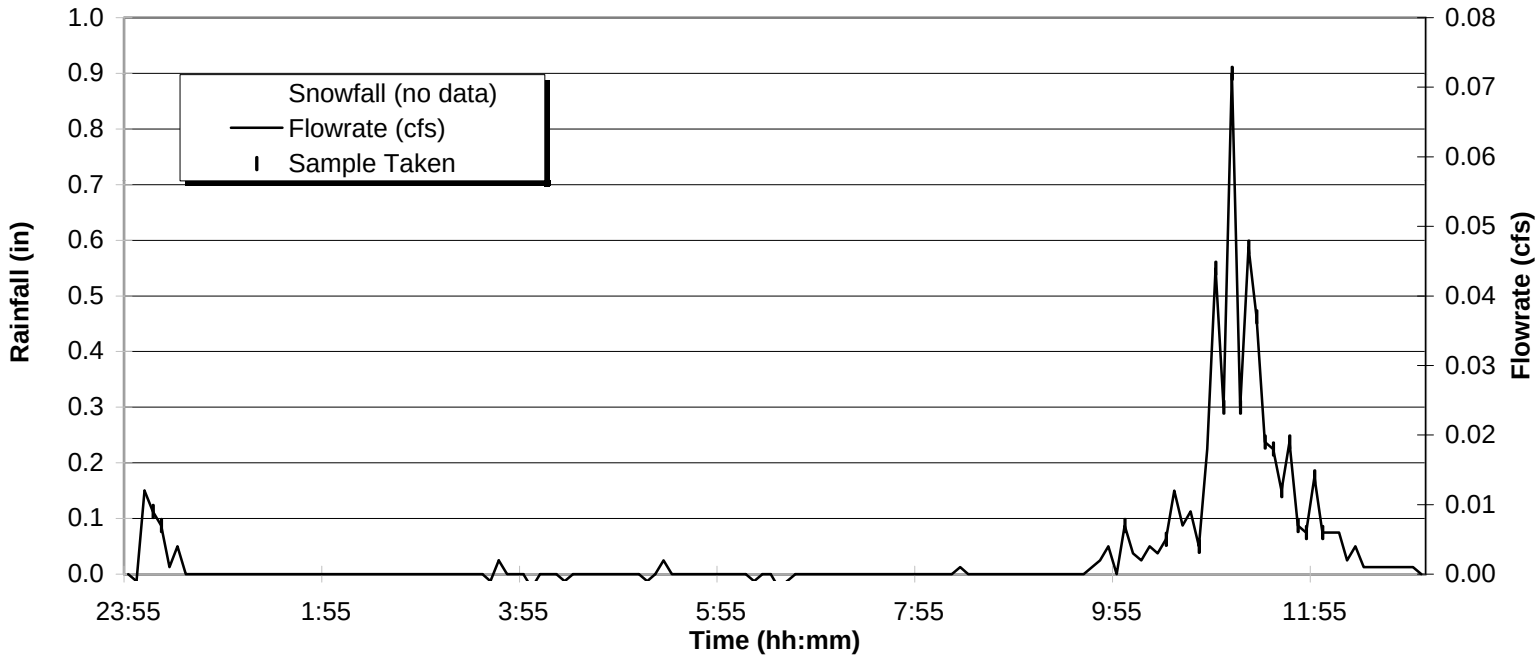
Precipitation Data Summary

Type of Precipitation:	Snow
Total Precipitation (in.):	N/A
Days Since Last 0.1 in.:	1

Storm Flow Data Summary

Total Flow Volume (cf):	145
Peak Flow (cfs):	0.072
Samples Taken:	19
Samples Attempted:	19
Sample Pacing Volume (cf):	8
Estimated % Capture:	>90%

Hydrograph and Hyetograph



Monitoring Station 3-201 (Hgihway 50 at Tahoe Meadows - South Lake Tahoe)
Storm Event #3 - March 8-9, 2001

Station Characteristics

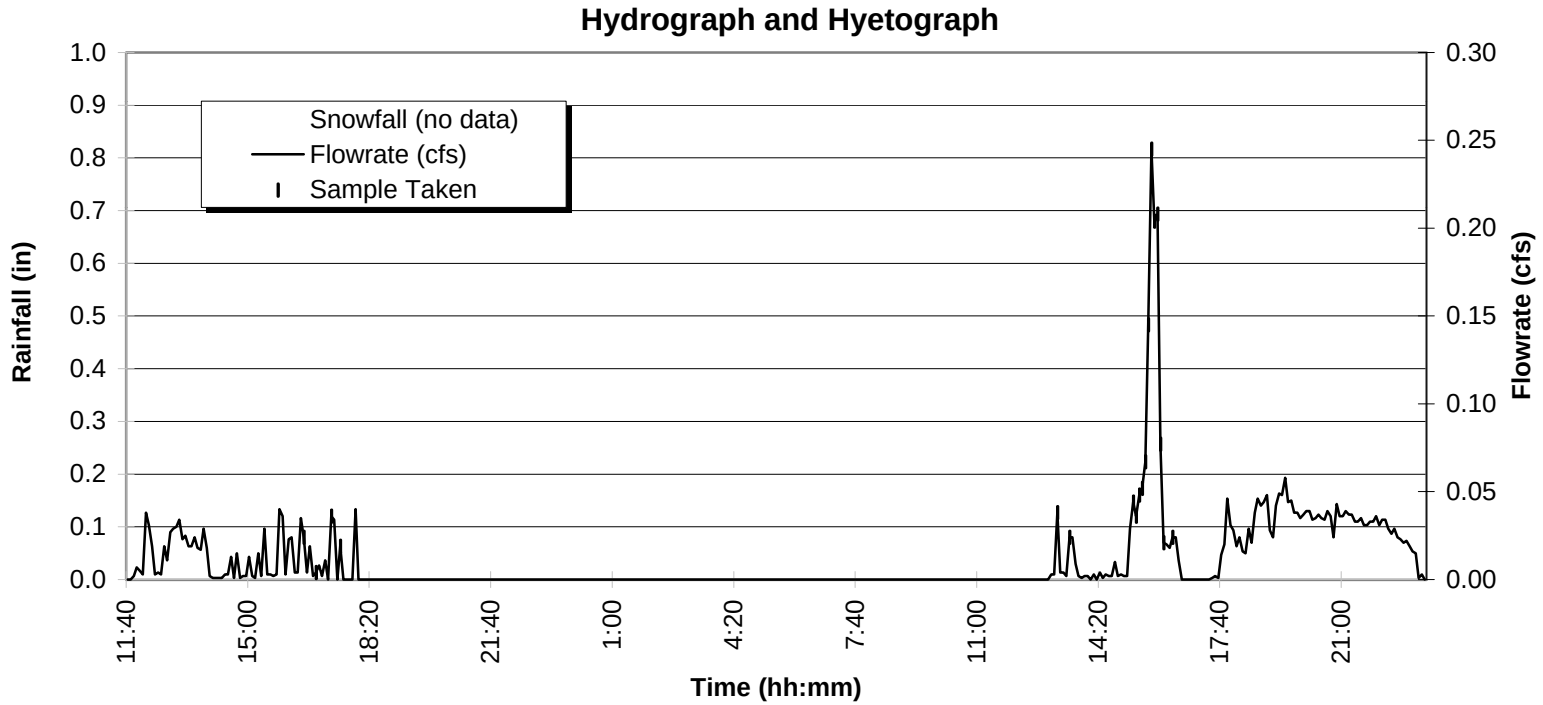
Est. Drainage Area (acres):	0.77
Predicted Runoff Coefficient:	0.9
Actual Runoff Coefficient:	N/A

Precipitation Data Summary

Type of Precipitation:	Snow
Total Precipitation (in.):	N/A
Days Since Last 0.1 in.:	1

Storm Flow Data Summary

Total Flow Volume (cf):	1,355
Peak Flow (cfs):	0.245
Samples Taken:	24
Samples Attempted:	25
Sample Pacing Volume (cf):	55
Estimated % Capture:	>60%



Monitoring Station 3-201 (Highway 50 at Tahoe Meadows - South Lake Tahoe)
Storm Event #4 - March 25, 2001

Station Characteristics

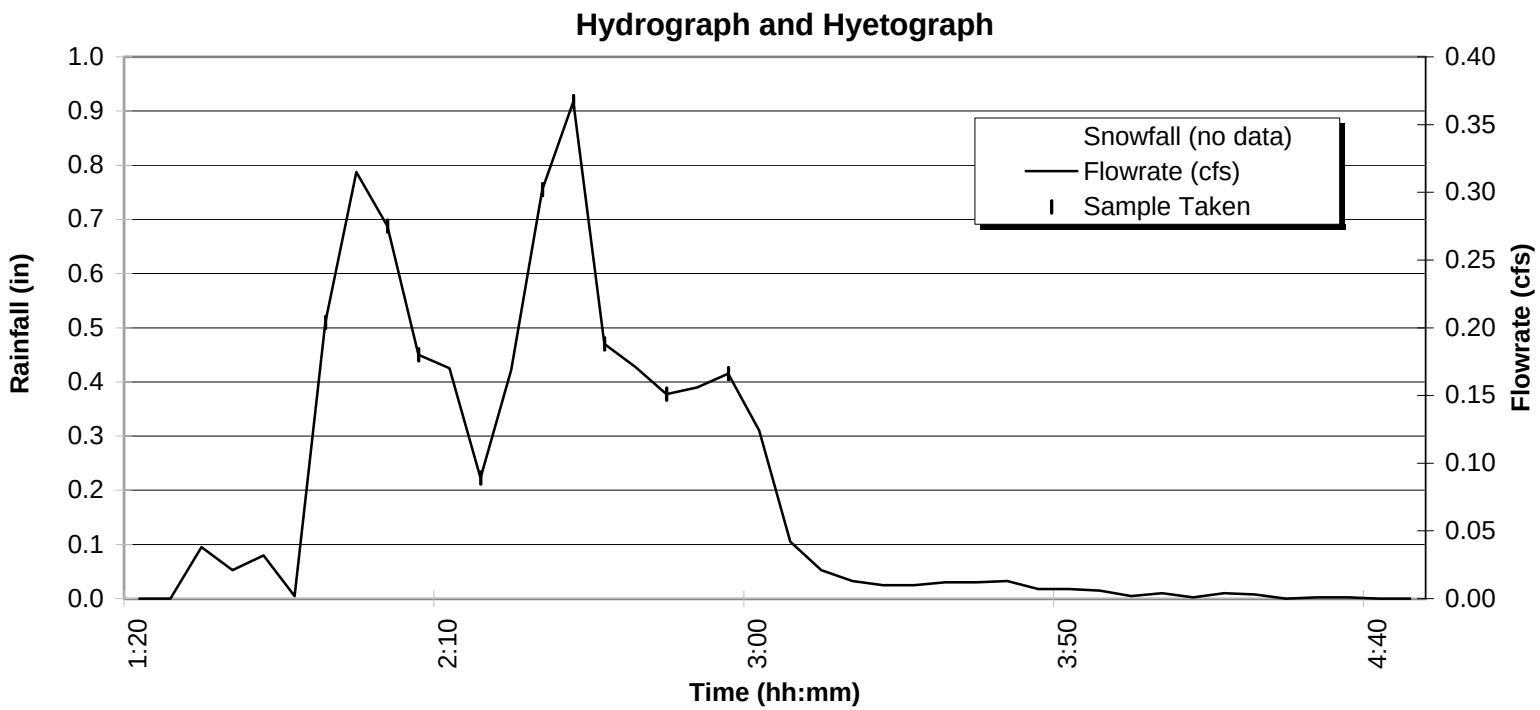
Est. Drainage Area (acres):	0.77
Predicted Runoff Coefficient:	0.9
Actual Runoff Coefficient:	N/A

Precipitation Data Summary

Type of Precipitation:	Snow
Total Precipitation (in.):	N/A
Days Since Last 0.1 in.:	3

Storm Flow Data Summary

Total Flow Volume (cf):	987
Peak Flow (cfs):	0.367
Samples Taken:	9
Samples Attempted:	10
Sample Pacing Volume (cf):	8
Estimated % Capture:	>90%



Monitoring Station 3-201 (Highway 50 at Tahoe Meadows - South Lake Tahoe)
Storm Event #5 - April 18, 2001

Station Characteristics

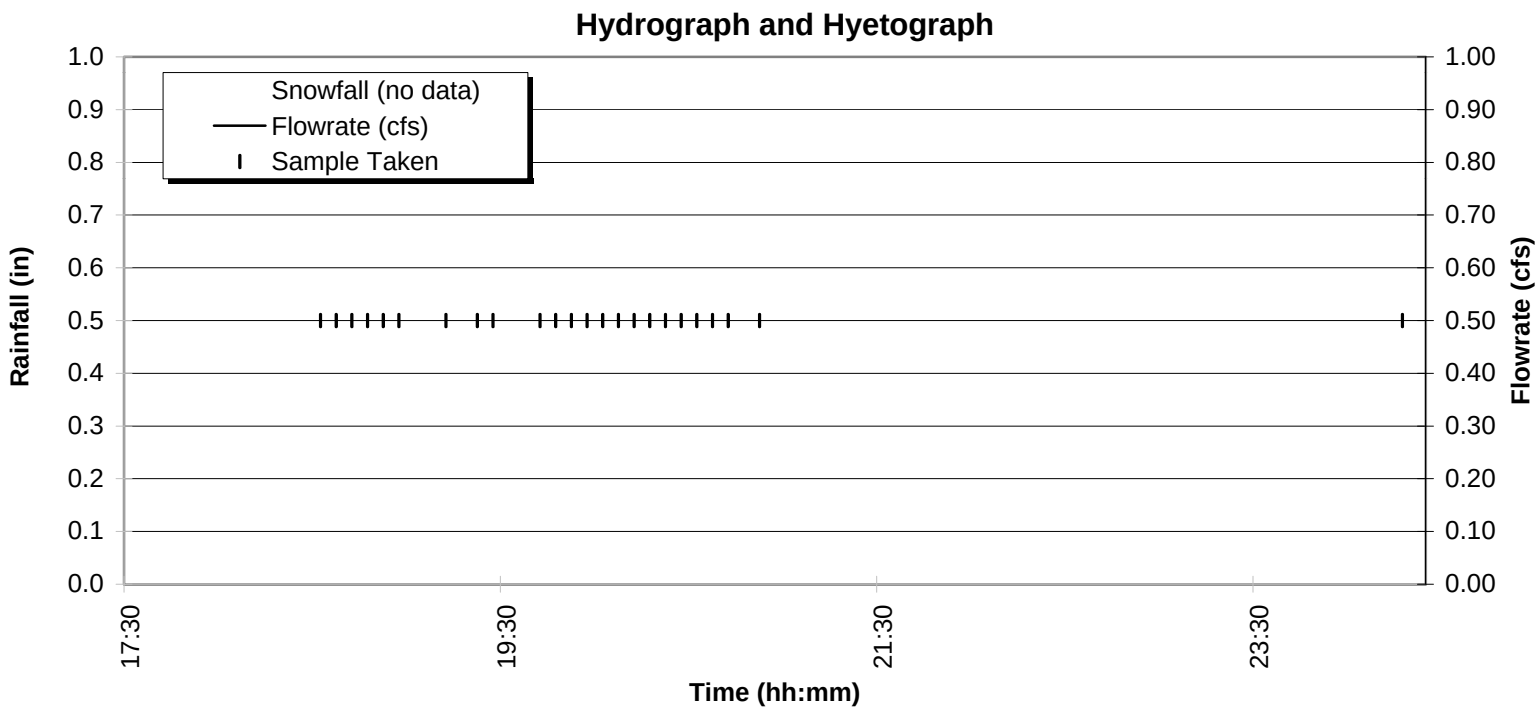
Est. Drainage Area (acres):	0.77
Predicted Runoff Coefficient:	0.9
Actual Runoff Coefficient:	N/A

Precipitation Data Summary

Type of Precipitation:	Mix
Total Precipitation (in.):	N/A
Days Since Last 0.1 in.:	7

Storm Flow Data Summary

Total Flow Volume (cf):	790
Peak Flow (cfs):	N/A
Samples Taken:	36
Samples Attempted:	39
Sample Pacing Volume (cf):	16
Estimated % Capture:	>90%



Monitoring Station 3-201 (Highway 50 at Tahoe Meadows - South Lake Tahoe)
Storm Event #6 - April 20, 2001

Station Characteristics

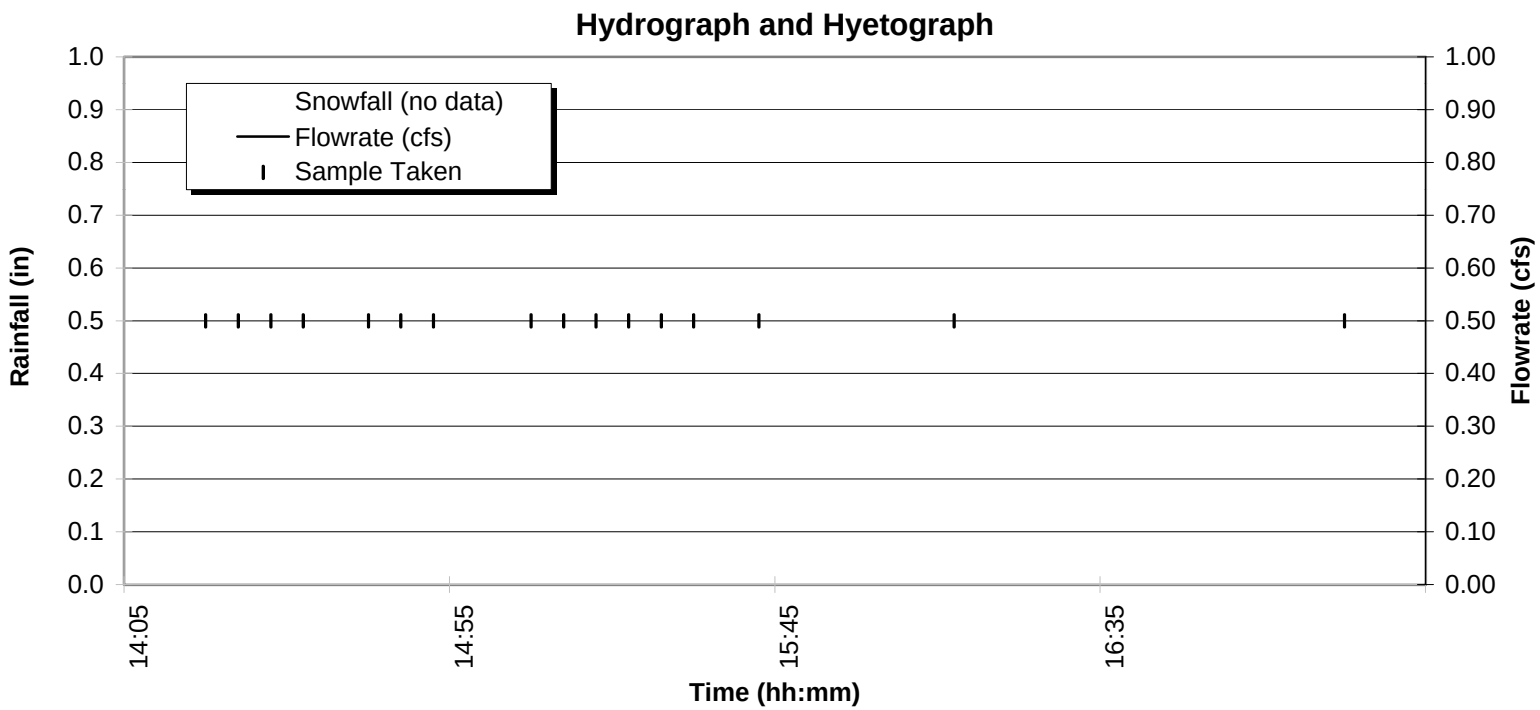
Est. Drainage Area (acres):	0.77
Predicted Runoff Coefficient:	0.9
Actual Runoff Coefficient:	N/A

Precipitation Data Summary

Type of Precipitation:	Mix
Total Precipitation (in.):	N/A
Days Since Last 0.1 in.:	1

Storm Flow Data Summary

Total Flow Volume (cf):	780
Peak Flow (cfs):	N/A
Samples Taken:	20
Samples Attempted:	20
Sample Pacing Volume (cf):	39
Estimated % Capture:	>90%



Monitoring Station 3-202 (Highway 50 at Tahoe Airport)
Storm Event #1 - August 3, 2000

Station Characteristics

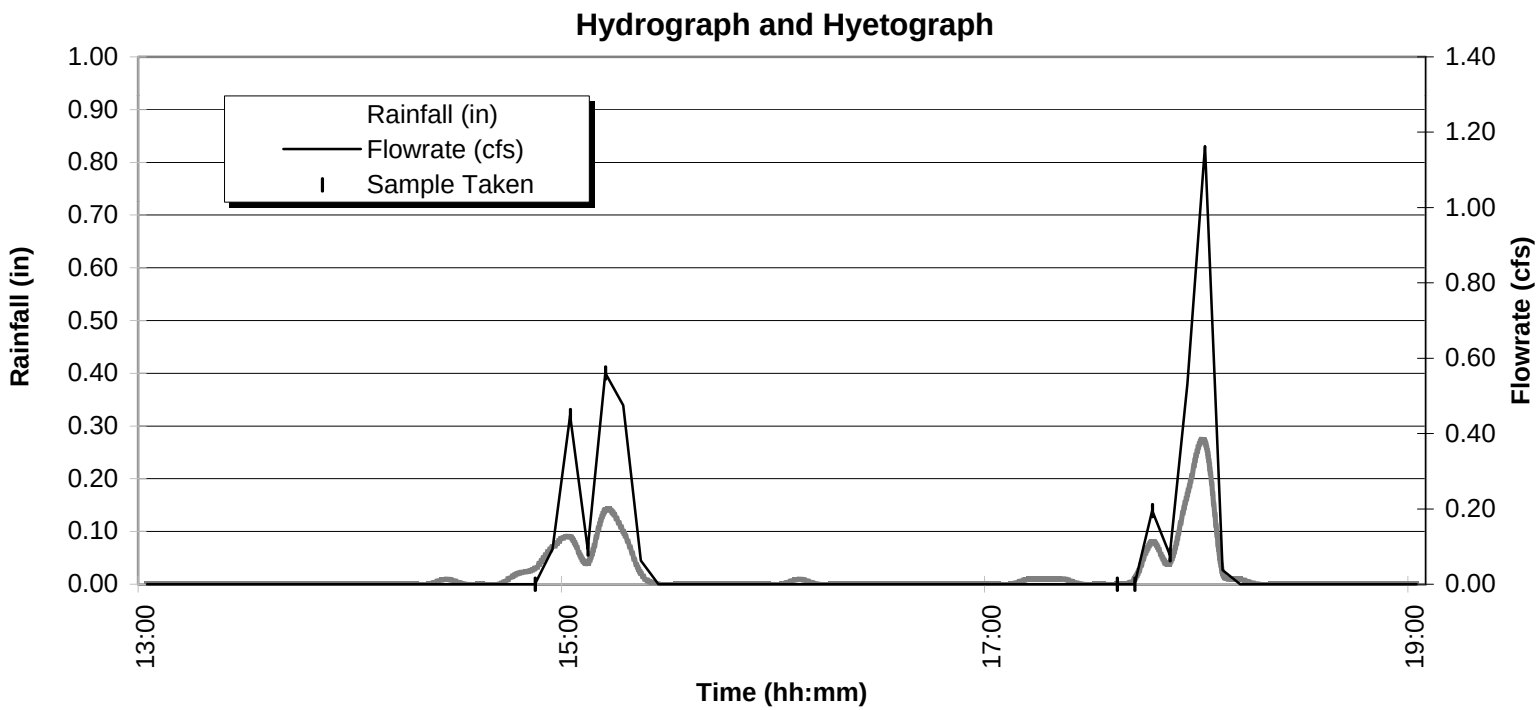
Est. Drainage Area (acres):	0.33
Predicted Runoff Coefficient:	0.8
Actual Runoff Coefficient:	0.81

Precipitation Data Summary

Type of Precipitation:	Rain
Total Precipitation (in.):	1.16
Days Since Last 0.1 in.:	2

Storm Flow Data Summary

Total Flow Volume (cf):	1,121
Peak Flow (cfs):	1.16
Samples Taken:	19
Samples Attempted:	19
Sample Pacing Volume (cf):	15
Estimated % Capture:	>50%



Monitoring Station 3-203 (Highway 50 near Echo Summit)
Storm Event #1 - August 3, 2000

Station Characteristics

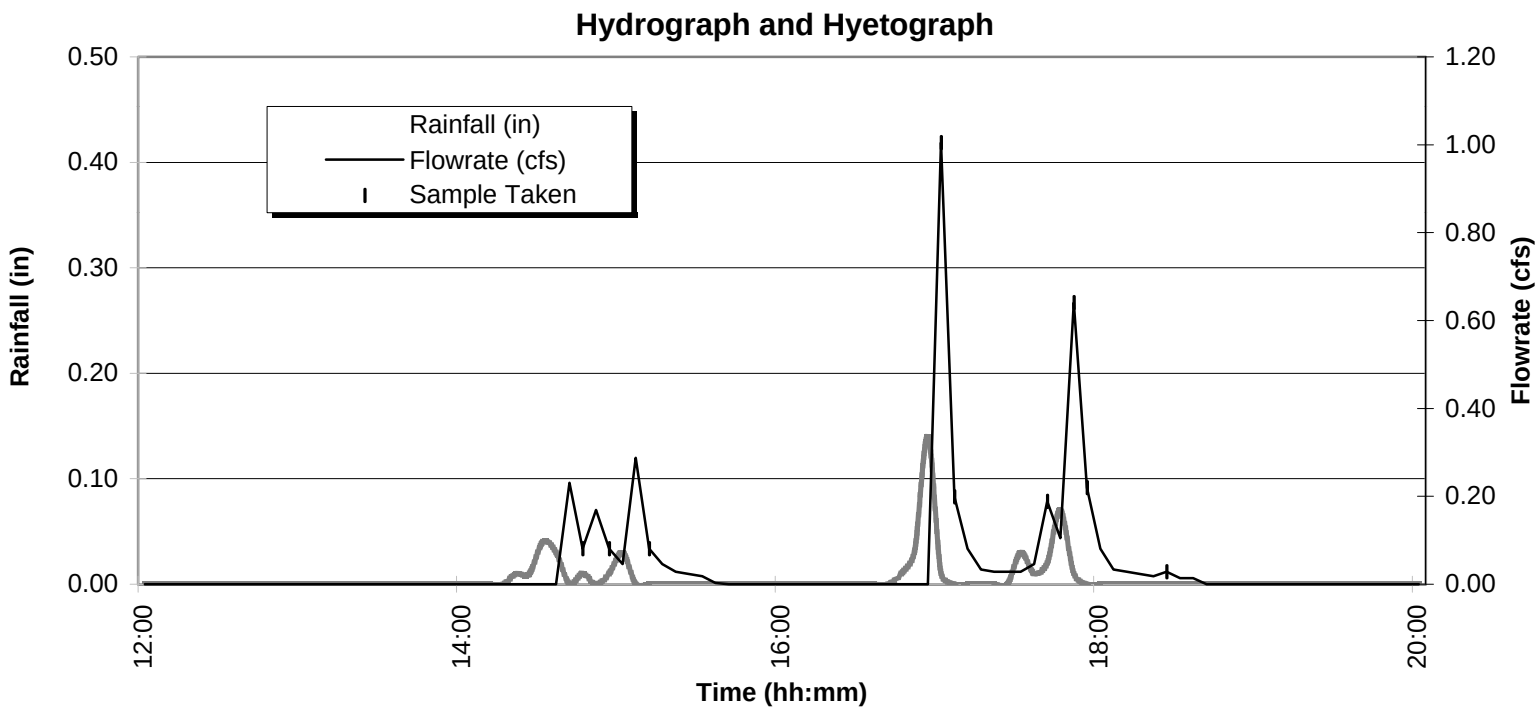
Est. Drainage Area (acres):	0.7
Predicted Runoff Coefficient:	0.95
Actual Runoff Coefficient:	0.99

Precipitation Data Summary

Type of Precipitation:	Rain
Total Precipitation (in.):	0.47
Days Since Last 0.1 in.:	2

Storm Flow Data Summary

Total Flow Volume (cf):	1,181
Peak Flow (cfs):	1.00
Samples Taken:	12
Samples Attempted:	12
Sample Pacing Volume (cf):	98
Estimated % Capture:	>90%



Monitoring Station 3-203 (Highway 50 near Echo Summit)
Storm Event #2 - August 30, 2000

Station Characteristics

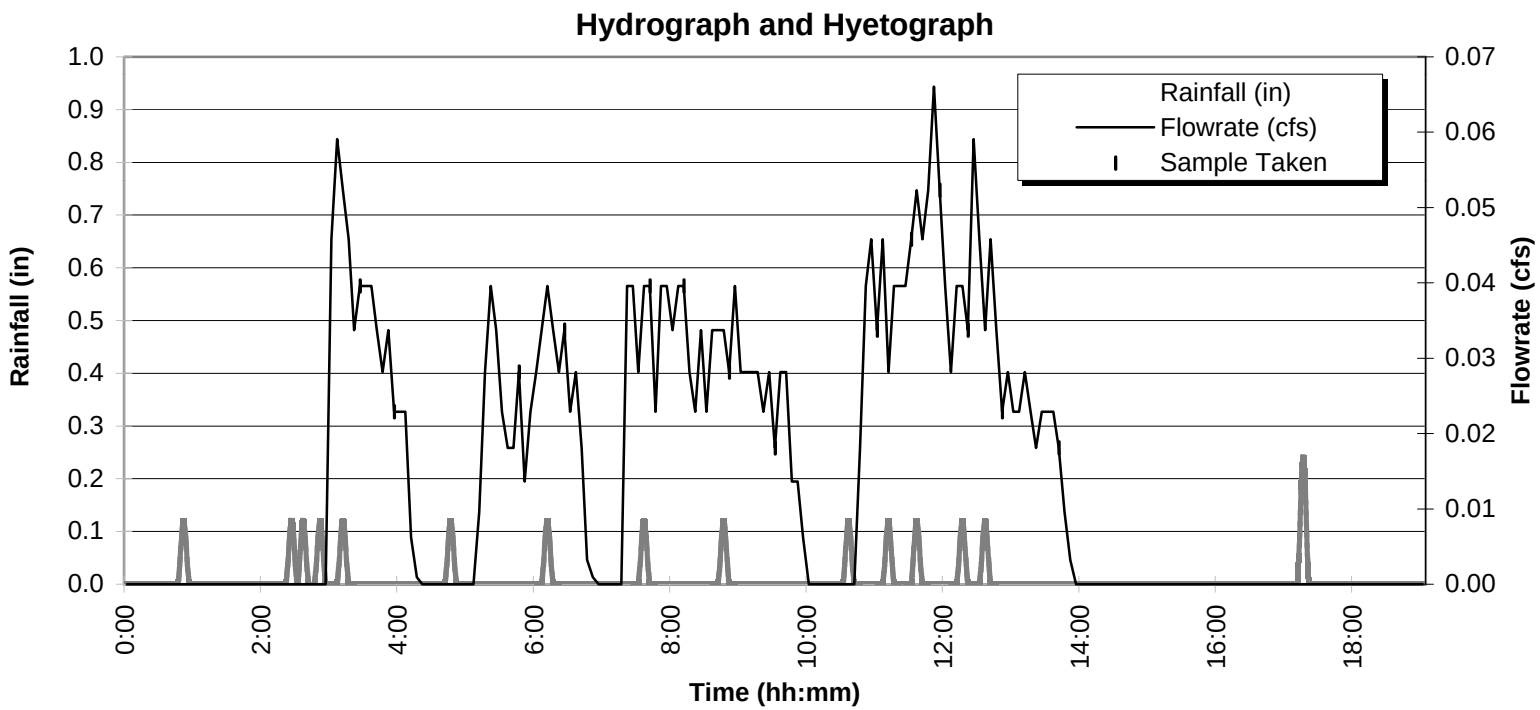
Est. Drainage Area (acres):	0.7
Predicted Runoff Coefficient:	0.95
Actual Runoff Coefficient:	2.43

Precipitation Data Summary

Type of Precipitation:	Rain
Total Precipitation (in.):	0.16
Days Since Last 0.1 in.:	17

Storm Flow Data Summary

Total Flow Volume (cf):	987
Peak Flow (cfs):	0.07
Samples Taken:	14
Samples Attempted:	14
Sample Pacing Volume (cf):	75
Estimated % Capture:	>90%



Monitoring Station 3-203 (Highway 50 near Echo Summit)
Storm Event #3 - October 9-10, 2000

Station Characteristics

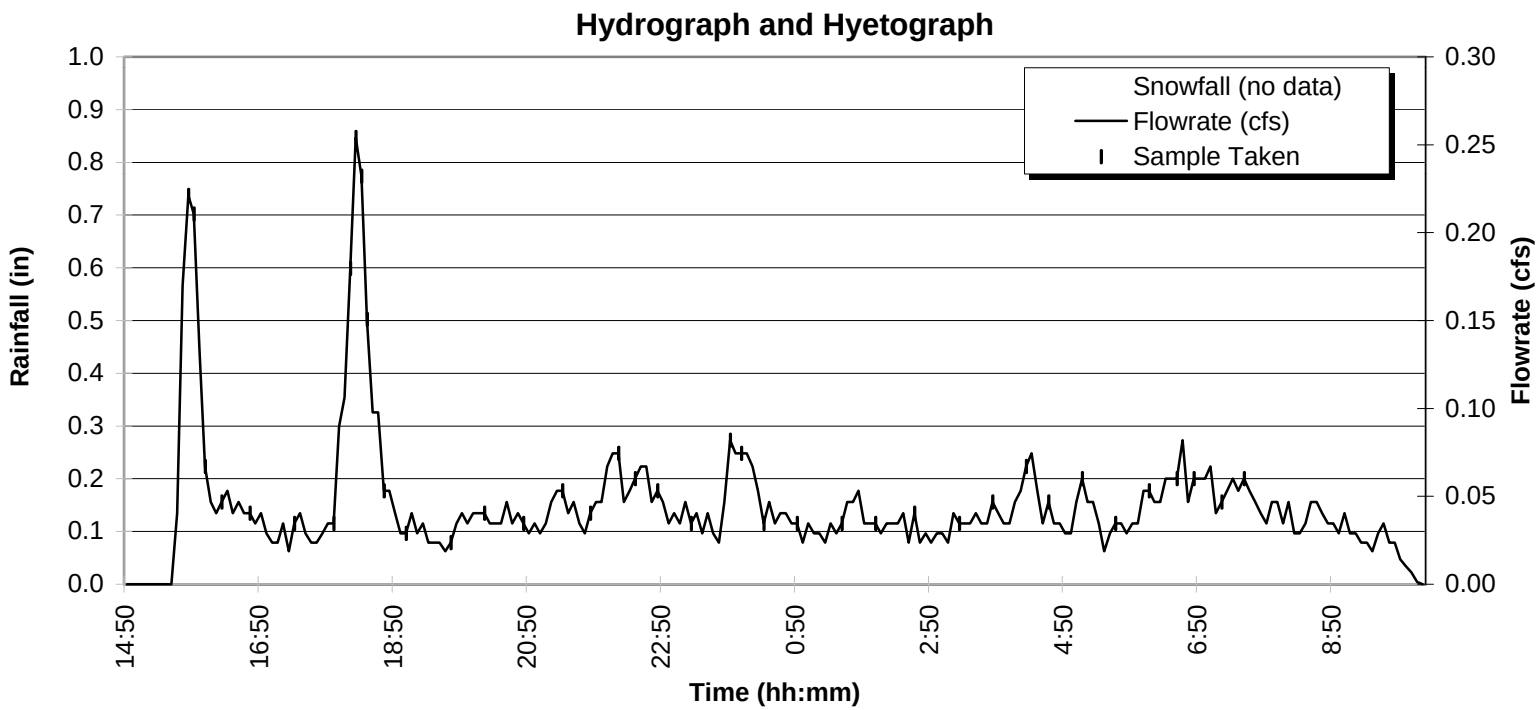
Est. Drainage Area (acres):	0.7
Predicted Runoff Coefficient:	0.95
Actual Runoff Coefficient:	N/A

Precipitation Data Summary

Type of Precipitation:	Mixed
Total Precipitation (in.):	N/A
Days Since Last 0.1 in.:	39

Storm Flow Data Summary

Total Flow Volume (cf):	3,112
Peak Flow (cfs):	0.25
Samples Taken:	40
Samples Attempted:	40
Sample Pacing Volume (cf):	60
Estimated % Capture:	>90%



Monitoring Station 3-203 (Highway 50 near Echo Summit)
Storm Event #4 - October 25-26, 2000

Station Characteristics

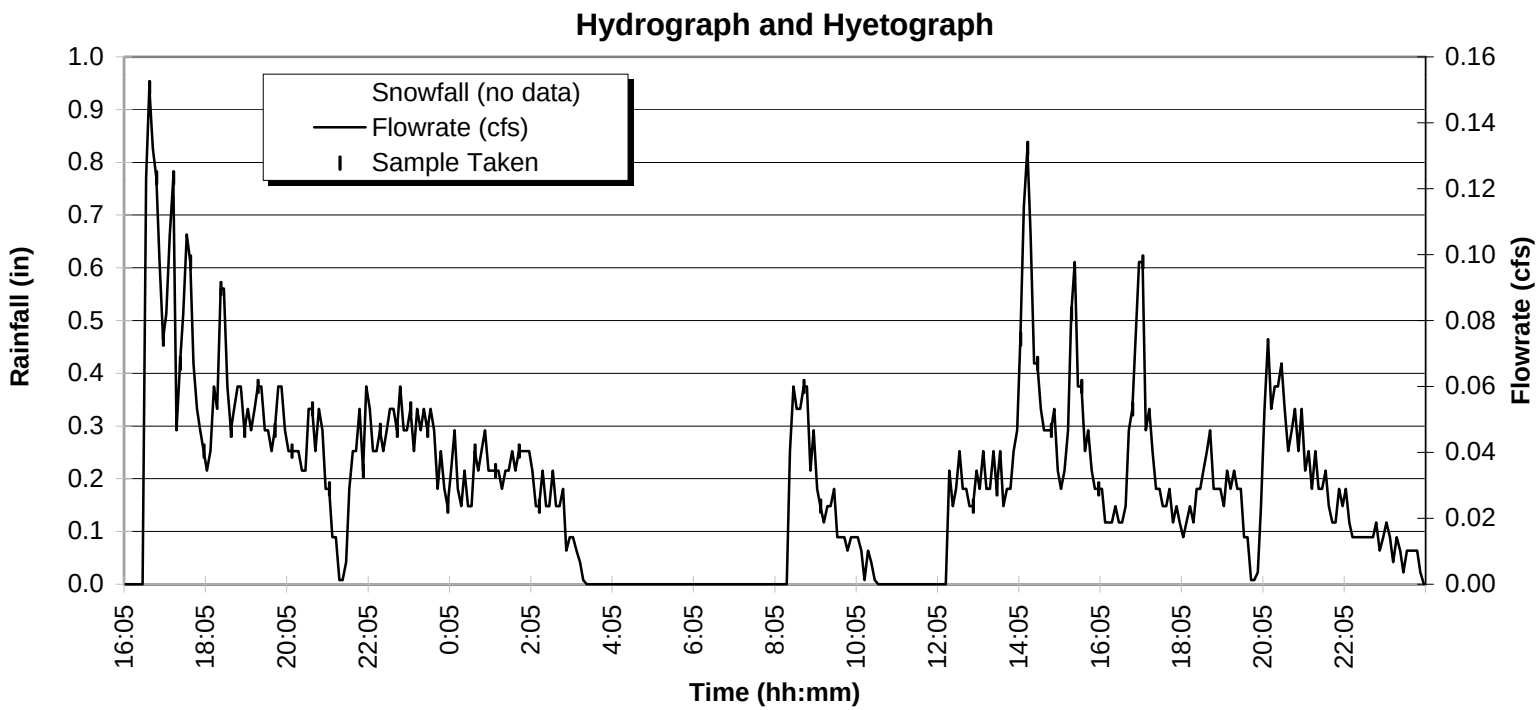
Est. Drainage Area (acres):	0.7
Predicted Runoff Coefficient:	0.95
Actual Runoff Coefficient:	N/A

Precipitation Data Summary

Type of Precipitation:	Snow
Total Precipitation (in.):	N/A
Days Since Last 0.1 in.:	6

Storm Flow Data Summary

Total Flow Volume (cf):	3,475
Peak Flow (cfs):	0.15
Samples Taken:	38
Samples Attempted:	40
Sample Pacing Volume (cf):	30
Estimated % Capture:	>80%



Monitoring Station 3-203 (Highway 50 near Echo Summit)
Storm Event #5 - March 10, 2001

Station Characteristics

Est. Drainage Area (acres):	0.7
Predicted Runoff Coefficient:	0.95
Actual Runoff Coefficient:	N/A

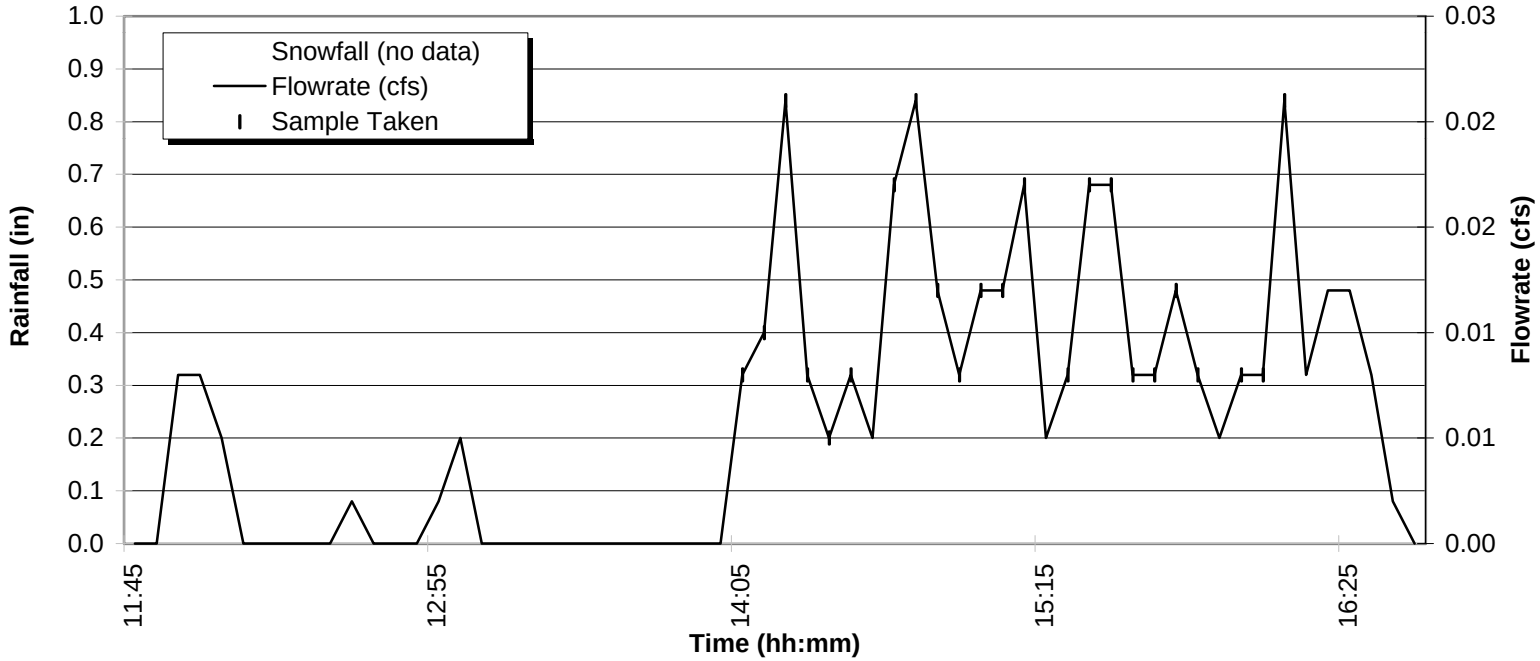
Precipitation Data Summary

Type of Precipitation:	Snow
Total Precipitation (in.):	N/A
Days Since Last 0.1 in.:	1

Storm Flow Data Summary

Total Flow Volume (cf):	108
Peak Flow (cfs):	0.021
Samples Taken:	29
Samples Attempted:	34
Sample Pacing Volume (cf):	5
Estimated % Capture:	>90%

Hydrograph and Hyetograph



Monitoring Station 3-203 (Highway 50 near Echo Summit)
Storm Event #6 - March 11, 2001

Station Characteristics

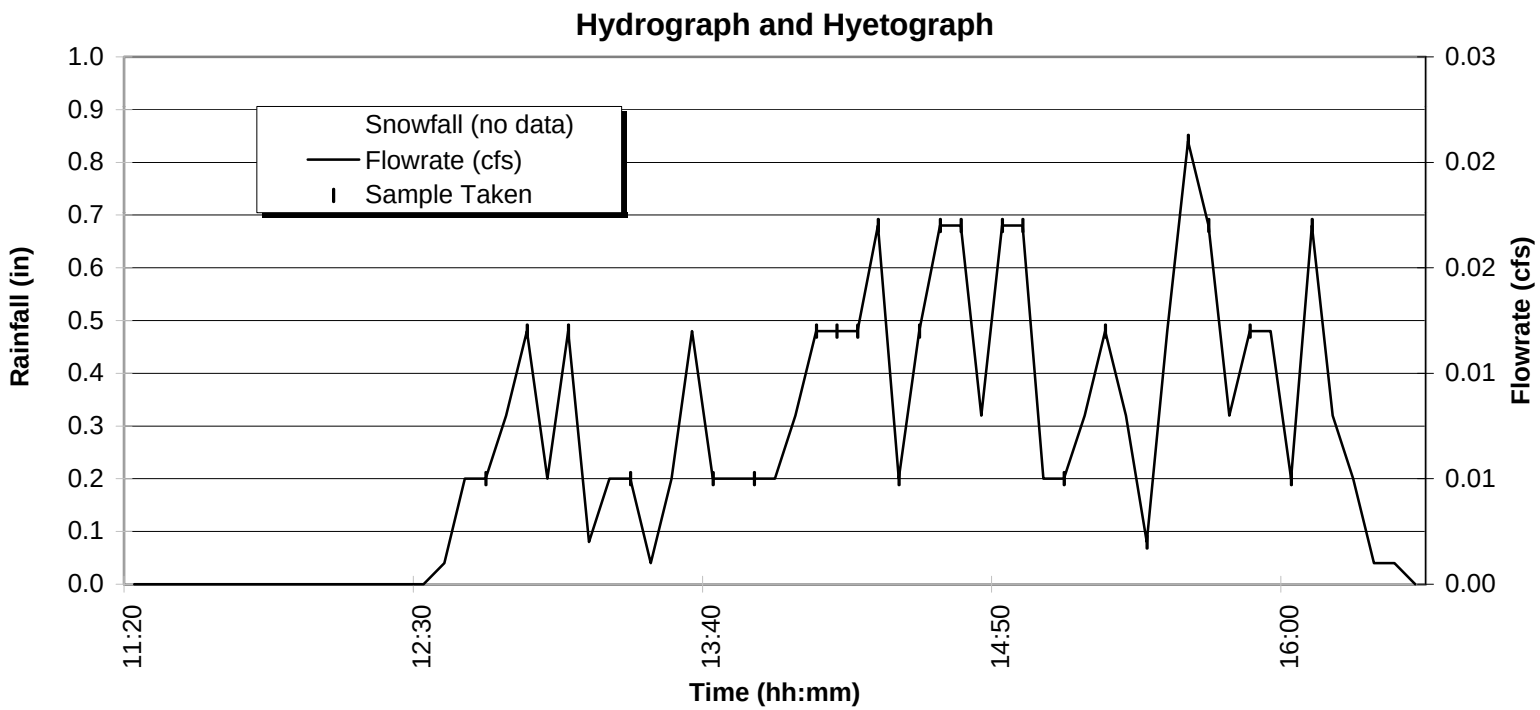
Est. Drainage Area (acres):	0.7
Predicted Runoff Coefficient:	0.95
Actual Runoff Coefficient:	N/A

Precipitation Data Summary

Type of Precipitation:	Snow
Total Precipitation (in.):	N/A
Days Since Last 0.1 in.:	1

Storm Flow Data Summary

Total Flow Volume (cf):	123
Peak Flow (cfs):	0.021
Samples Taken:	24
Samples Attempted:	25
Sample Pacing Volume (cf):	5
Estimated % Capture:	>90%



Monitoring Station 3-203 (Highway 50 near Echo Summit)
Storm Event #7 - April 6, 2001

Station Characteristics

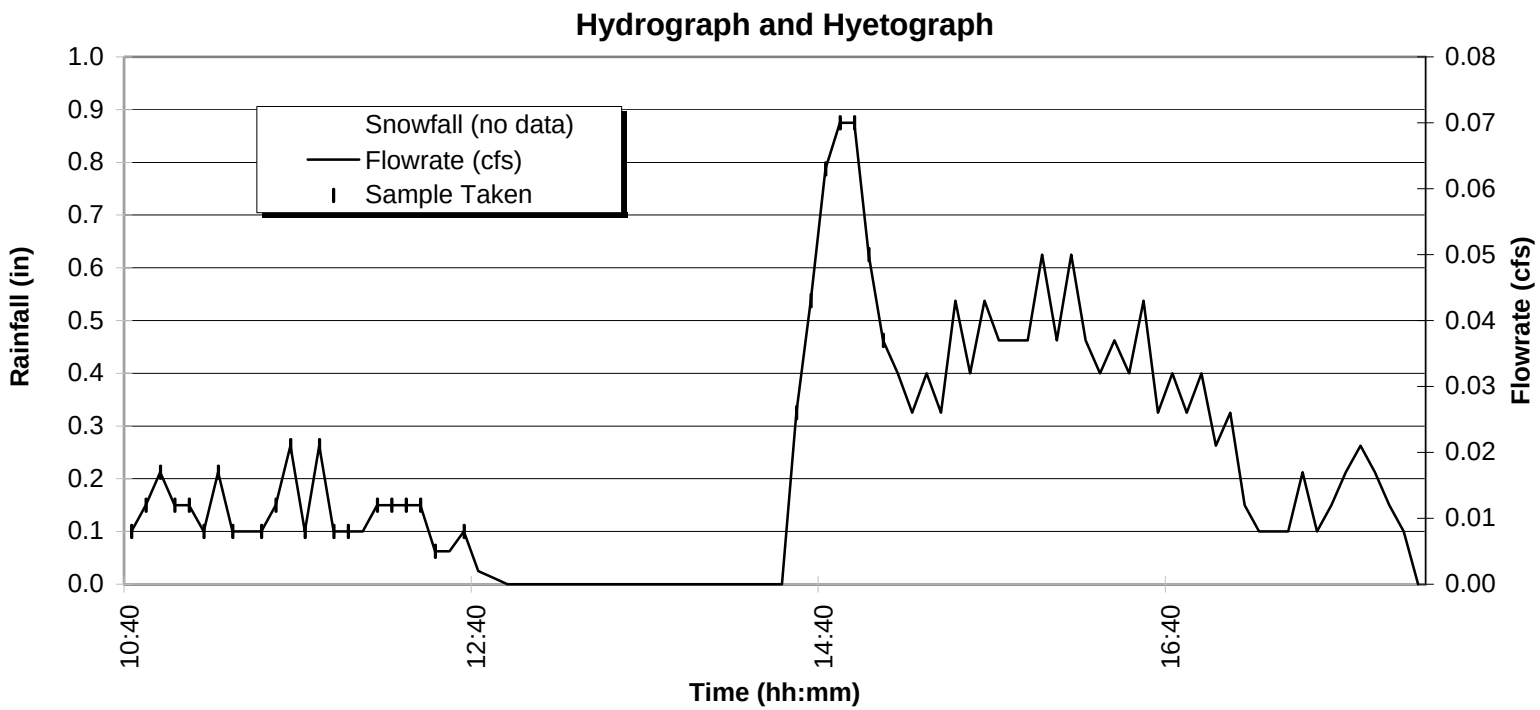
Est. Drainage Area (acres):	0.7
Predicted Runoff Coefficient:	0.95
Actual Runoff Coefficient:	N/A

Precipitation Data Summary

Type of Precipitation:	Snow
Total Precipitation (in.):	N/A
Days Since Last 0.1 in.:	10

Storm Flow Data Summary

Total Flow Volume (cf):	477
Peak Flow (cfs):	0.07
Samples Taken:	28
Samples Attempted:	28
Sample Pacing Volume (cf):	9
Estimated % Capture:	>50%



Monitoring Station 3-203 (Highway 50 near Echo Summit)
Storm Event #8 - April 11, 2001

Station Characteristics

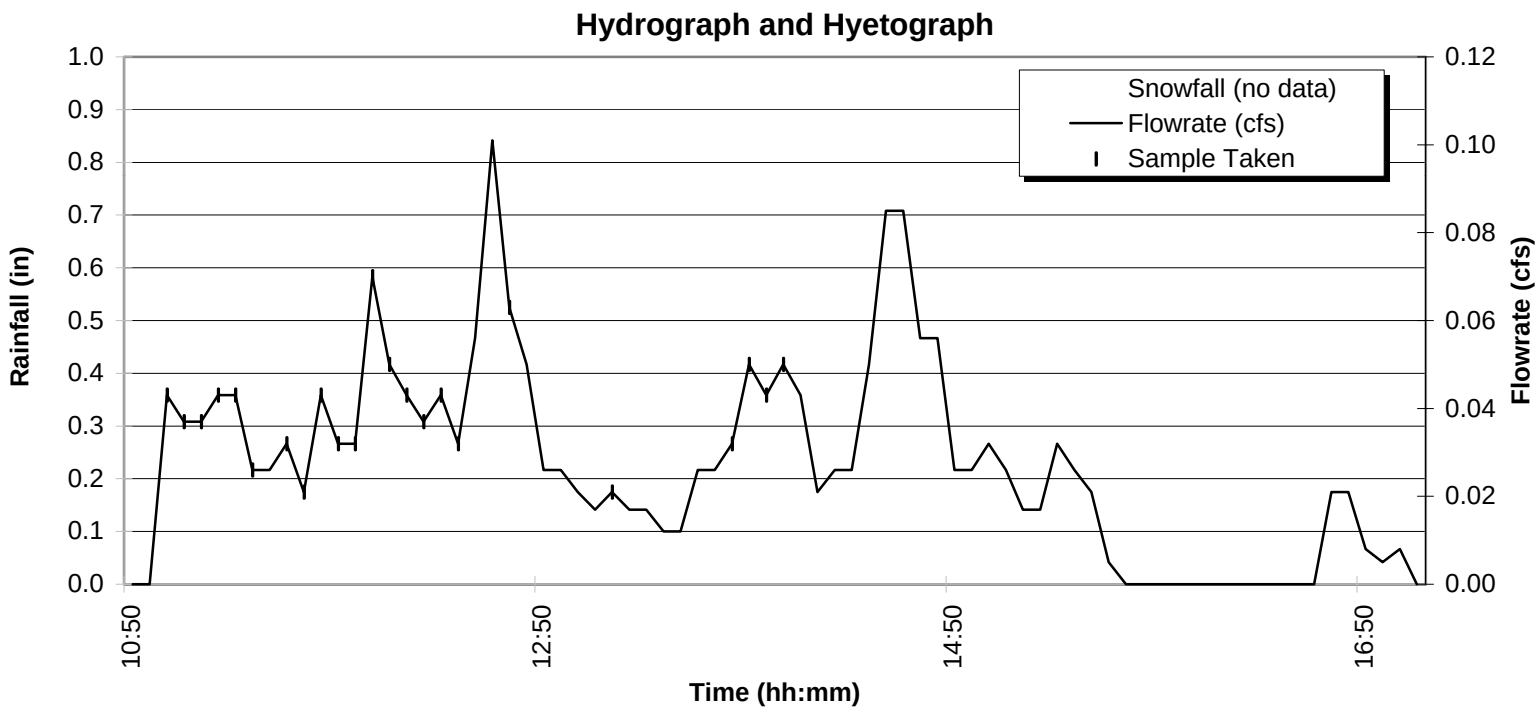
Est. Drainage Area (acres):	0.7
Predicted Runoff Coefficient:	0.95
Actual Runoff Coefficient:	N/A

Precipitation Data Summary

Type of Precipitation:	Mix
Total Precipitation (in.):	N/A
Days Since Last 0.1 in.:	2

Storm Flow Data Summary

Total Flow Volume (cf):	629
Peak Flow (cfs):	0.101
Samples Taken:	28
Samples Attempted:	40
Sample Pacing Volume (cf):	9
Estimated % Capture:	>80%



Monitoring Station 3-202 (Highway 50 at Tahoe Airport)
Storm Event #2 - February 20, 2001

Station Characteristics

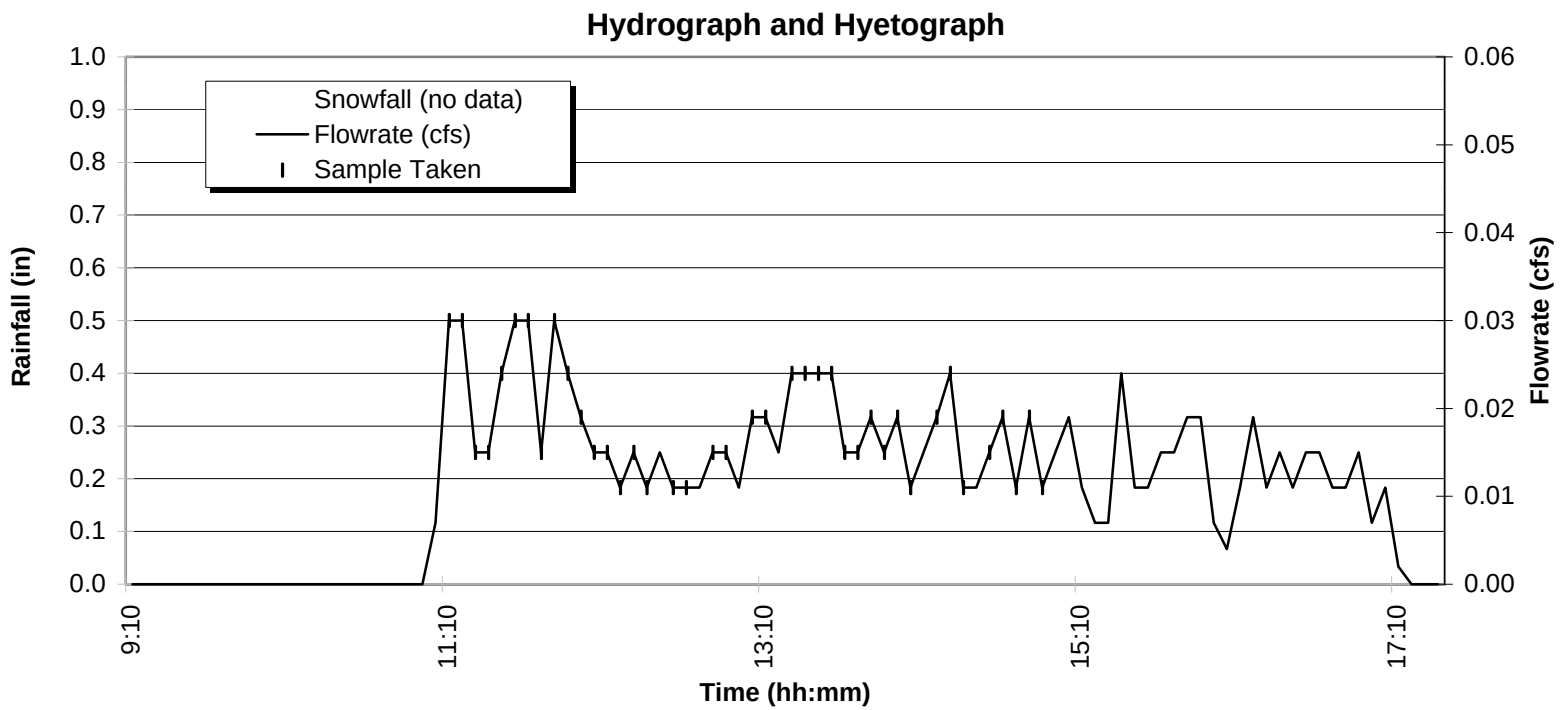
Est. Drainage Area (acres):	0.33
Predicted Runoff Coefficient:	0.8
Actual Runoff Coefficient:	N/A

Precipitation Data Summary

Type of Percipitation:	Snow
Total Precipitation (in.):	N/A
Days Since Last 0.1 in.:	1

Storm Flow Data Summary

Total Flow Volume (cf):	348
Peak Flow (cfs):	0.03
Samples Taken:	40
Samples Attempted:	40
Sample Pacing Volume (cf):	9
Estimated % Capture:	>70%



Monitoring Station 3-202 (Highway 50 at Tahoe Airport)
Storm Event #3 - February 21, 2001

Station Characteristics

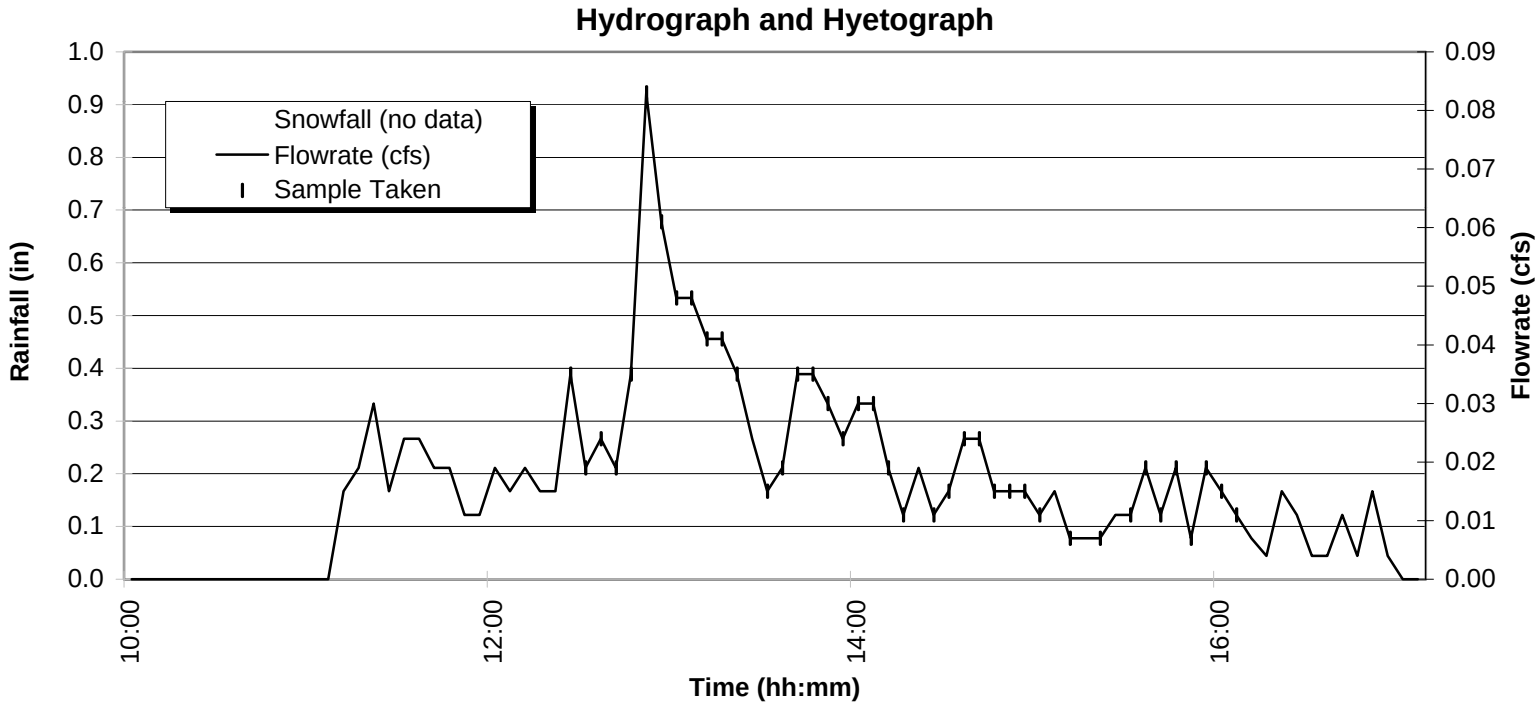
Est. Drainage Area (acres):	0.33
Predicted Runoff Coefficient:	0.8
Actual Runoff Coefficient:	N/A

Precipitation Data Summary

Type of Precipitation:	Snow
Total Precipitation (in.):	N/A
Days Since Last 0.1 in.:	1

Storm Flow Data Summary

Total Flow Volume (cf):	425
Peak Flow (cfs):	0.083
Samples Taken:	40
Samples Attempted:	40
Sample Pacing Volume (cf):	9
Estimated % Capture:	>70%



Monitoring Station 3-202 (Highway 50 at Tahoe Airport)
Storm Event #4 - March 25, 2001

Station Characteristics

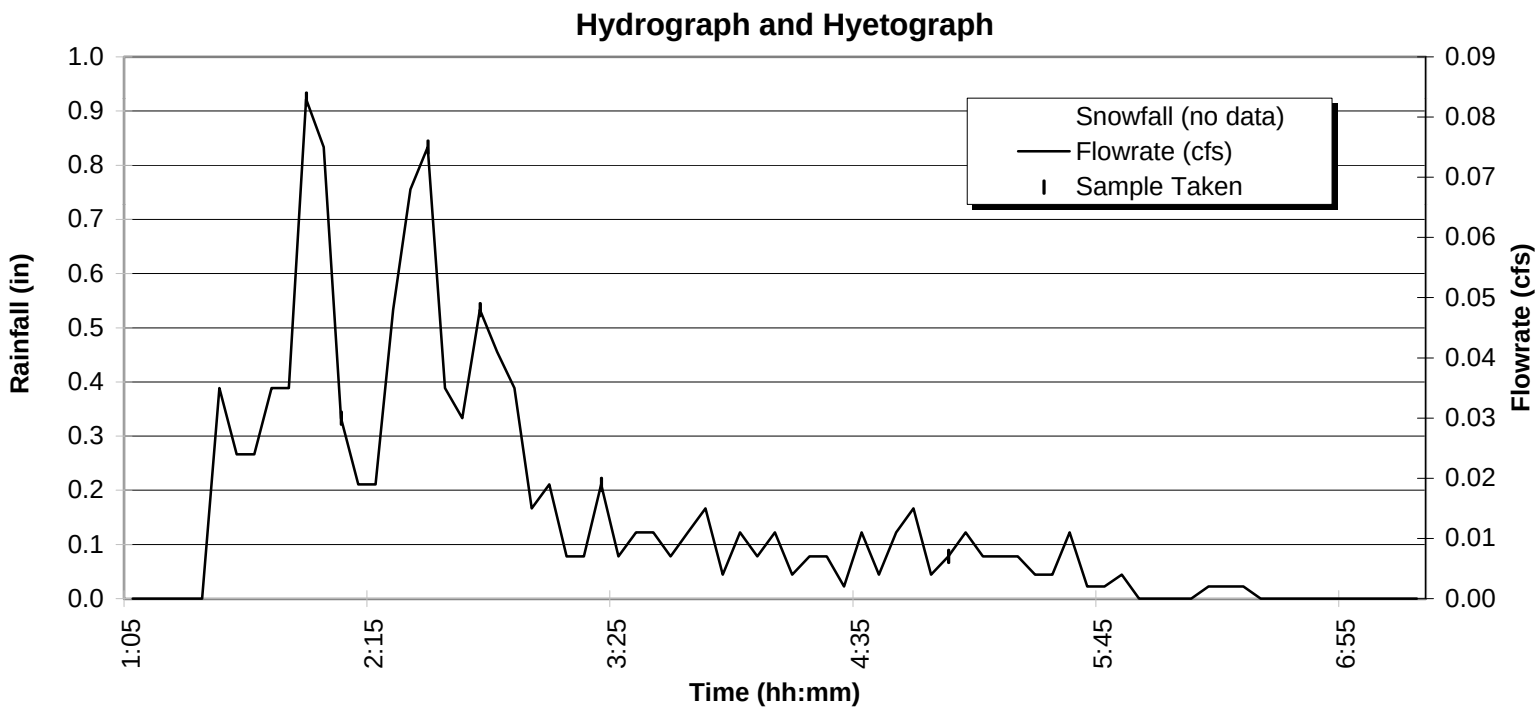
Est. Drainage Area (acres):	0.33
Predicted Runoff Coefficient:	0.8
Actual Runoff Coefficient:	N/A

Precipitation Data Summary

Type of Precipitation:	Snow
Total Precipitation (in.):	N/A
Days Since Last 0.1 in.:	3

Storm Flow Data Summary

Total Flow Volume (cf):	317
Peak Flow (cfs):	0.083
Samples Taken:	6
Samples Attempted:	6
Sample Pacing Volume (cf):	47
Estimated % Capture:	>90%



Monitoring Station 3-202 (Highway 50 at Tahoe Airport)
Storm Event #5 - April 6-7

Station Characteristics

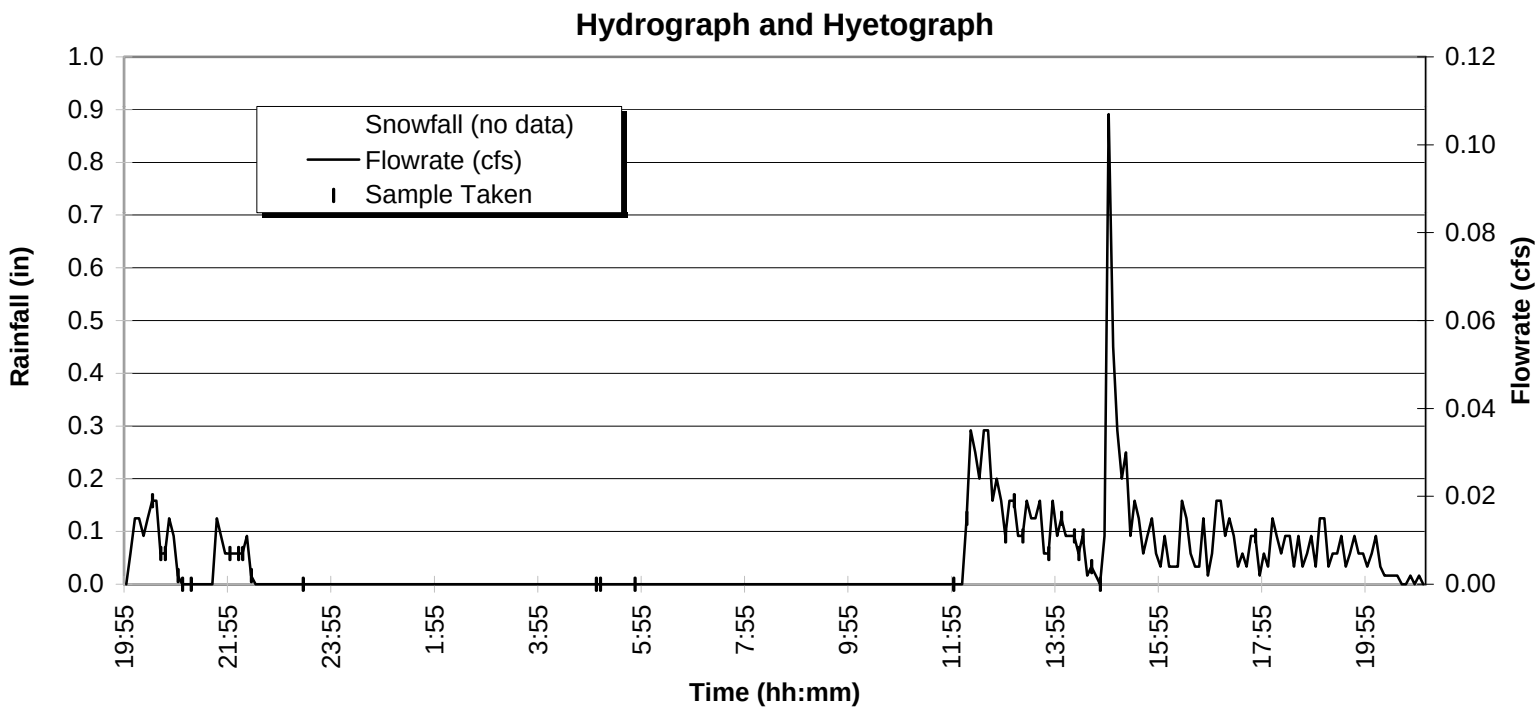
Est. Drainage Area (acres):	0.33
Predicted Runoff Coefficient:	0.8
Actual Runoff Coefficient:	N/A

Precipitation Data Summary

Type of Precipitation:	Snow
Total Precipitation (in.):	N/A
Days Since Last 0.1 in.:	10

Storm Flow Data Summary

Total Flow Volume (cf):	440
Peak Flow (cfs):	0.107
Samples Taken:	27
Samples Attempted:	27
Sample Pacing Volume (cf):	9
Estimated % Capture:	>50%



Monitoring Station 2-202 (Highway 50 at Tahoe Airport)
Storm Event #6 - April 11, 2001

Station Characteristics

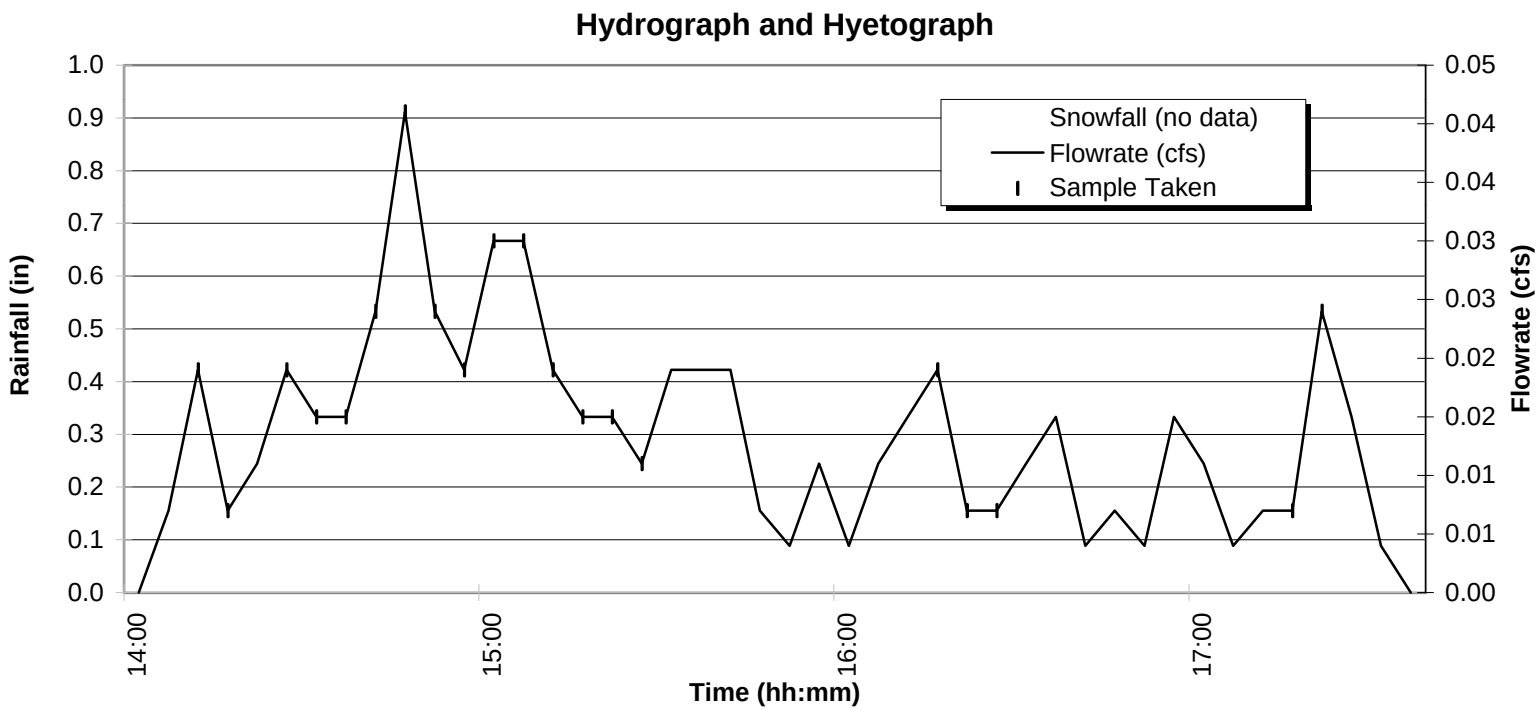
Est. Drainage Area (acres):	0.33
Predicted Runoff Coefficient:	0.8
Actual Runoff Coefficient:	N/A

Precipitation Data Summary

Type of Precipitation:	Snow
Total Precipitation (in.):	N/A
Days Since Last 0.1 in.:	2

Storm Flow Data Summary

Total Flow Volume (cf):	177
Peak Flow (cfs):	0.041
Samples Taken:	20
Samples Attempted:	23
Sample Pacing Volume (cf):	9
Estimated % Capture:	>90%



Monitoring Station 3-202 (Highway 50 at Tahoe Airport)
Storm Event #7 - April 18-19, 2001

Station Characteristics

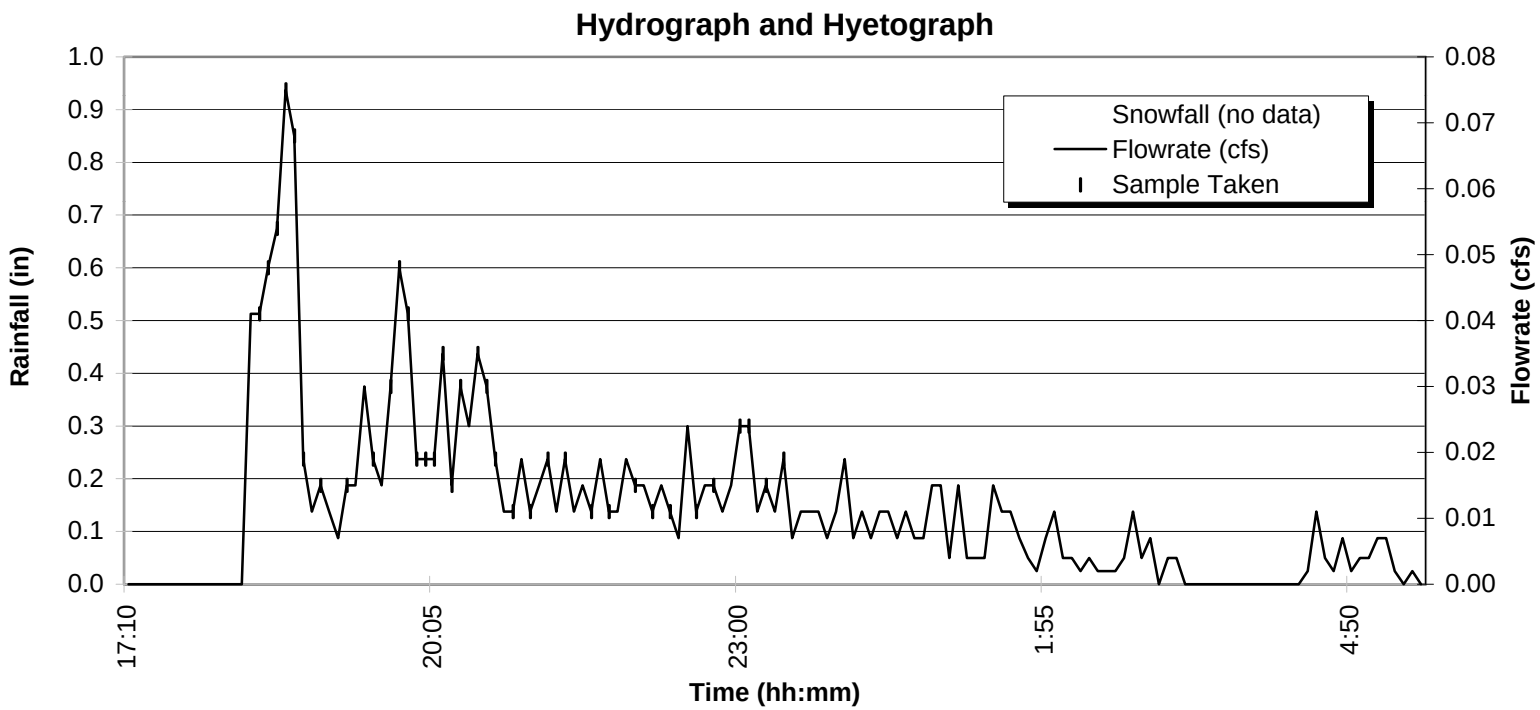
Est. Drainage Area (acres):	0.33
Predicted Runoff Coefficient:	0.8
Actual Runoff Coefficient:	N/A

Precipitation Data Summary

Type of Precipitation:	Mix
Total Precipitation (in.):	N/A
Days Since Last 0.1 in.:	6

Storm Flow Data Summary

Total Flow Volume (cf):	517
Peak Flow (cfs):	0.075
Samples Taken:	36
Samples Attempted:	36
Sample Pacing Volume (cf):	9
Estimated % Capture:	>80%



Monitoring Station 3-202 (Highway 50 at Tahoe Airport)
Storm Event #8 - April 19-20, 2001

Station Characteristics

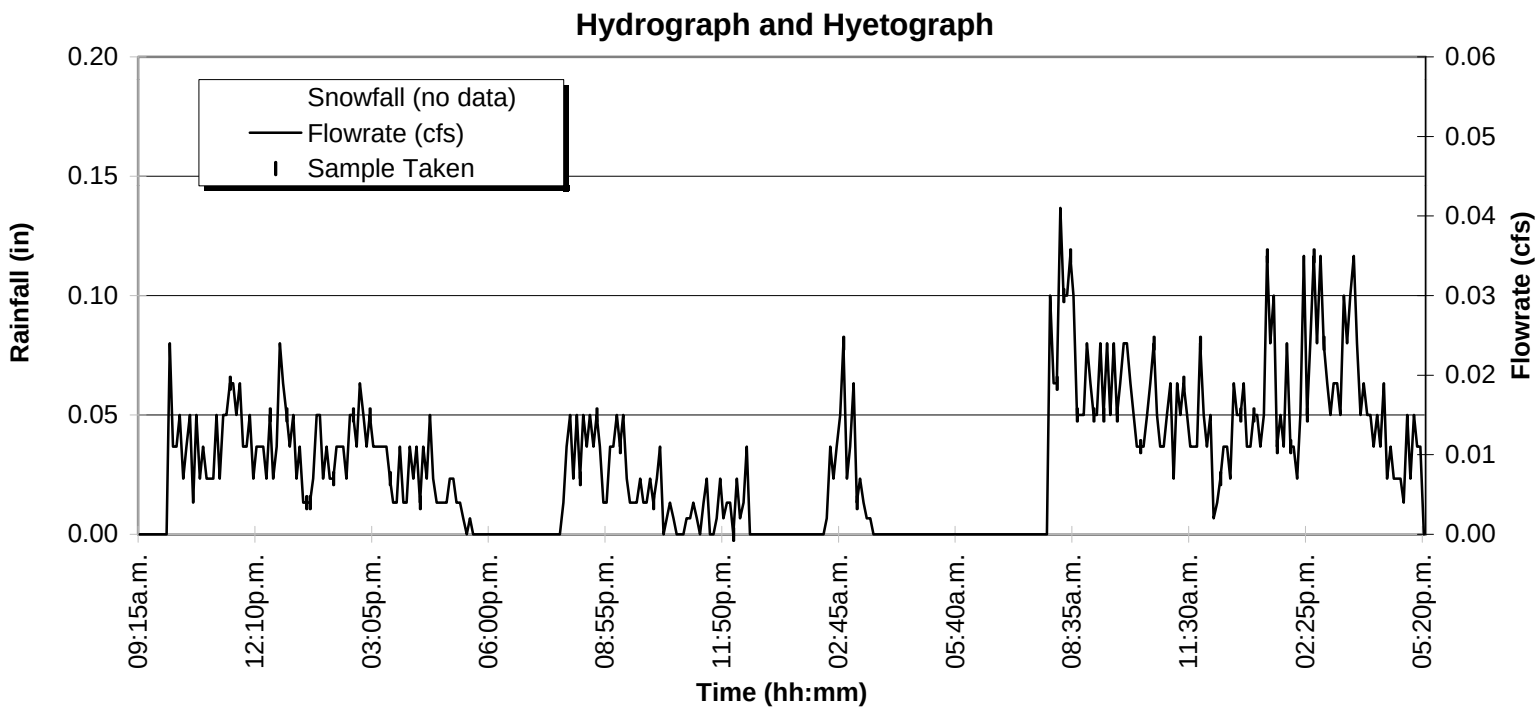
Est. Drainage Area (acres):	0.33
Predicted Runoff Coefficient:	0.8
Actual Runoff Coefficient:	N/A

Precipitation Data Summary

Type of Precipitation:	Mix
Total Precipitation (in.):	N/A
Days Since Last 0.1 in.:	1

Storm Flow Data Summary

Total Flow Volume (cf):	996
Peak Flow (cfs):	0.041
Samples Taken:	37
Samples Attempted:	37
Sample Pacing Volume (cf):	9
Estimated % Capture:	>80%



Appendix A- Monitoring Season 2001-2002

Hydrographs

This section presents the hydrographs for storms used in the database to calculate statistics. The accompanying graphs are not sequentially numbered because of grab samples that were collected throughout the year. Table A-1 describes the event type (composite or grab) and records the percent capture.

Table A-1

Summary of Sample Types and Percent Capture

Event ID	Site 3-201 Tahoe Meadows	Percent Capture	Site 3-202 Tahoe Airport Influent	Percent Capture	Siet 3-222 Tahoe Airport Effluent	Percent Capture	Site 3-203 Echo Summit Influent	Percent Capture	Site 3-223 Echo Summit	Percent Capture	Site 3-218 D.L. Bliss	Percent Capture	Site 3-219 Snow Creek	Percent Capture	Site 3-220 Brockway Summit	Percent Capture
2001-01	C	53	C, G	100*	C	61	G	NA	C	58	C	86	C, G	99	C	89
2001-02	C	97	C, G	81	C	87	C, G	62	C	89	C	70	G	NA	C	81
2001-03	C	89	C, G	61	C	83	C	90	C	86	C, G	88	C, G	94	C, G	84
2001-04	C	92	C, G	87	C	94	G	NA	C	85	C	65	G	NA	G	NA
2001-05	C	93	C	83	C	84	G	NA	C	96	C	98	G	NA	G	NA
2001-06	C	99	G	NA	C	93	G	NA	C	85	G	NA	C, G	93	C	87
2001-07	C	79	G	NA	C	78	G	NA	C	97	C	91	C, G	93	C	98
2001-08	C	92	G	NA	C	89	C, G	76	C	92	C	86	C	92	C	96
2001-09	C	96	C	94	C	73	G	NA	C	82	C, G	96	C	96	G	NA
2001-10	C	89	C, G	84	C	95	C	84	C	93	C	84	C	96	-	-
2001-11	C	90	G	NA	C	69	C	83	C	95	C	94	C	93	-	-
2001-12	C	84	G	NA	C	66	C	85	C	95	G	NA	G	NA	-	-
2001-13	C	89	C	89	C	93	C	97	C	85	C	99	C	93	-	-
2001-14	G	NA	C	92	C	66	C	87	-	-	-	-	G	NA	-	-
2001-15	C	81	C	91	-	-	G	NA	-	-	-	-	C	93	-	-
2001-16	G	NA	C	95	-	-	C	91	-	-	-	-	C, G	91	-	-
2001-17	-	-	C	71	-	-	C	81	-	-	-	-	G	NA	-	-
2001-18	-	-	C	74	-	-	C	94	-	-	-	-	-	-	-	-
2001-19	-	-	C	97	-	-	C	95	-	-	-	-	-	-	-	-
2001-20	-	-	C	93	-	-	C	86	-	-	-	-	-	-	-	-
2001-21	-	-	G	NA	-	-	C	75	-	-	-	-	-	-	-	-
2001-22	-	-	C	91	-	-	G	NA	-	-	-	-	-	-	-	-
2001-23	-	-	G	NA	-	-	C	86	-	-	-	-	-	-	-	-
2001-24	-	-	-	-	-	-	G	NA	-	-	-	-	-	-	-	-

C = Composite Sample

G = Grab Sample

* no data downloaded - no graph available

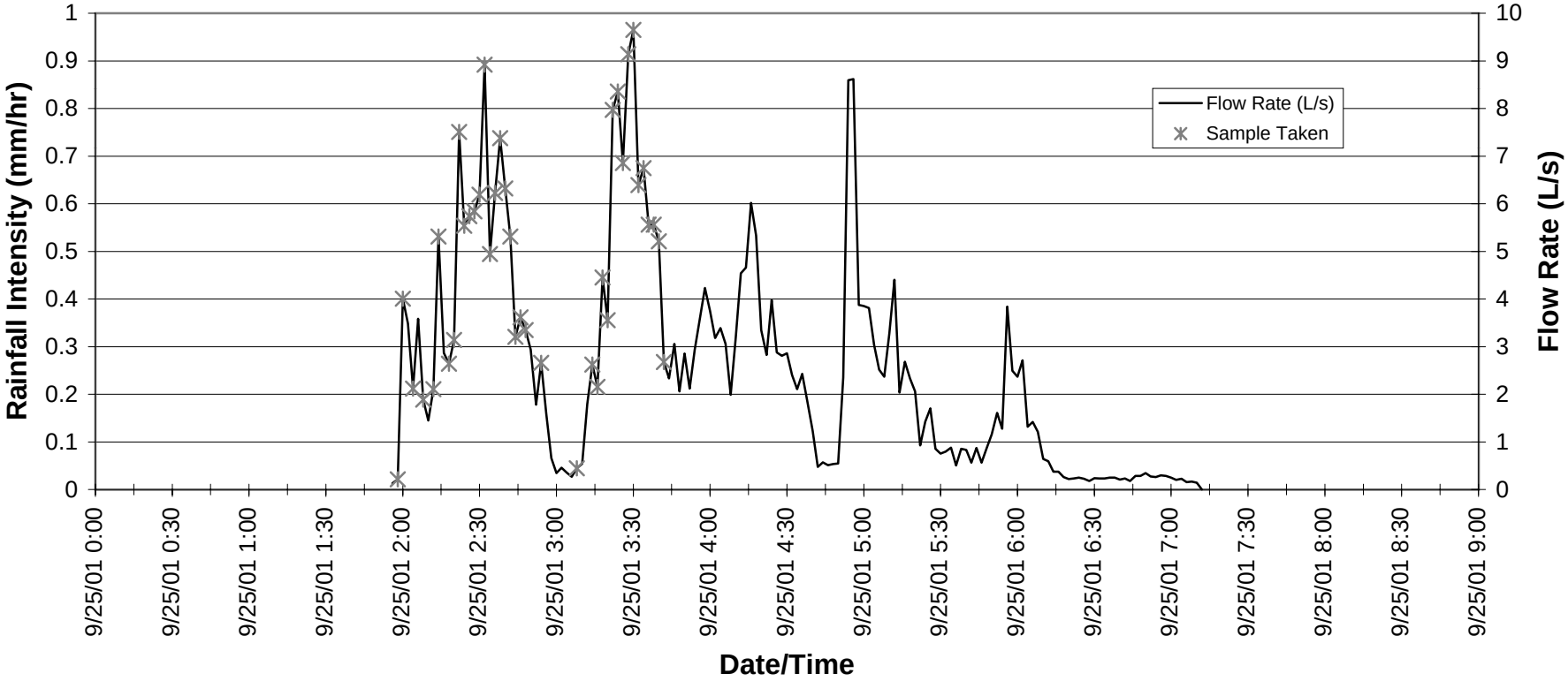
- = No Sample Collected

NA = Not Applicable

Event Summary

Site: Tahoe Meadows (3-201)
Event: 2001-01

Catchment Area (ha): 0.312
Assumed Runoff Coefficient: 0.9



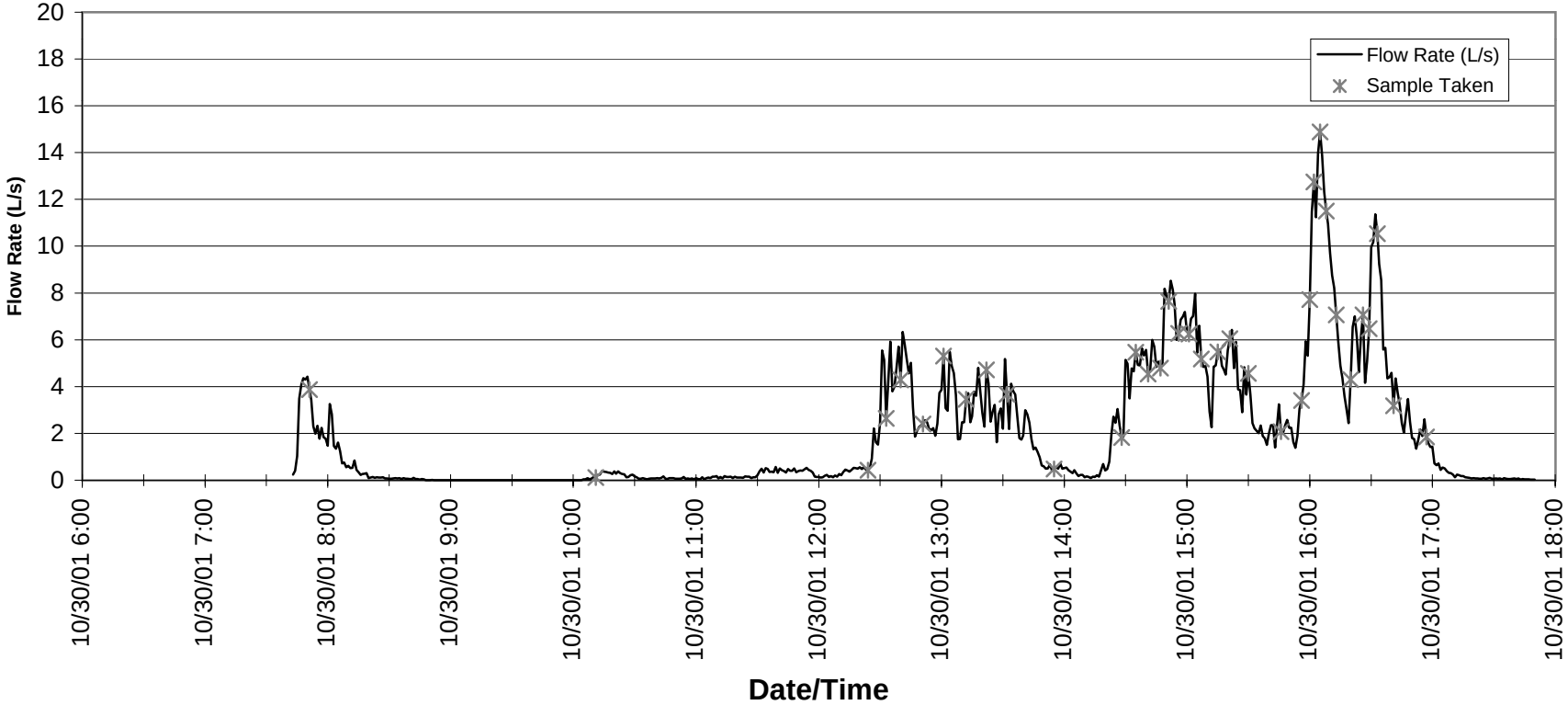
Runoff Data		*Sample Data*	
Start Date/Time:	09/25/01 01:56	Start Date/Time:	09/25/01 01:58
Stop Date/Time:	09/25/01 07:14	Stop Date/Time:	09/25/01 03:42
Total Flow Volume (L):	48392	Estimated Percent Capture:	53%
Peak Flow (L/s):	9.65	Successful Aliquots:	39

Notes: Program Complete .

Event Summary

Site: Tahoe Meadows (3-201)
Event: 2001-02

Catchment Area (ha): 0.312
Assumed Runoff Coefficient: 0.9



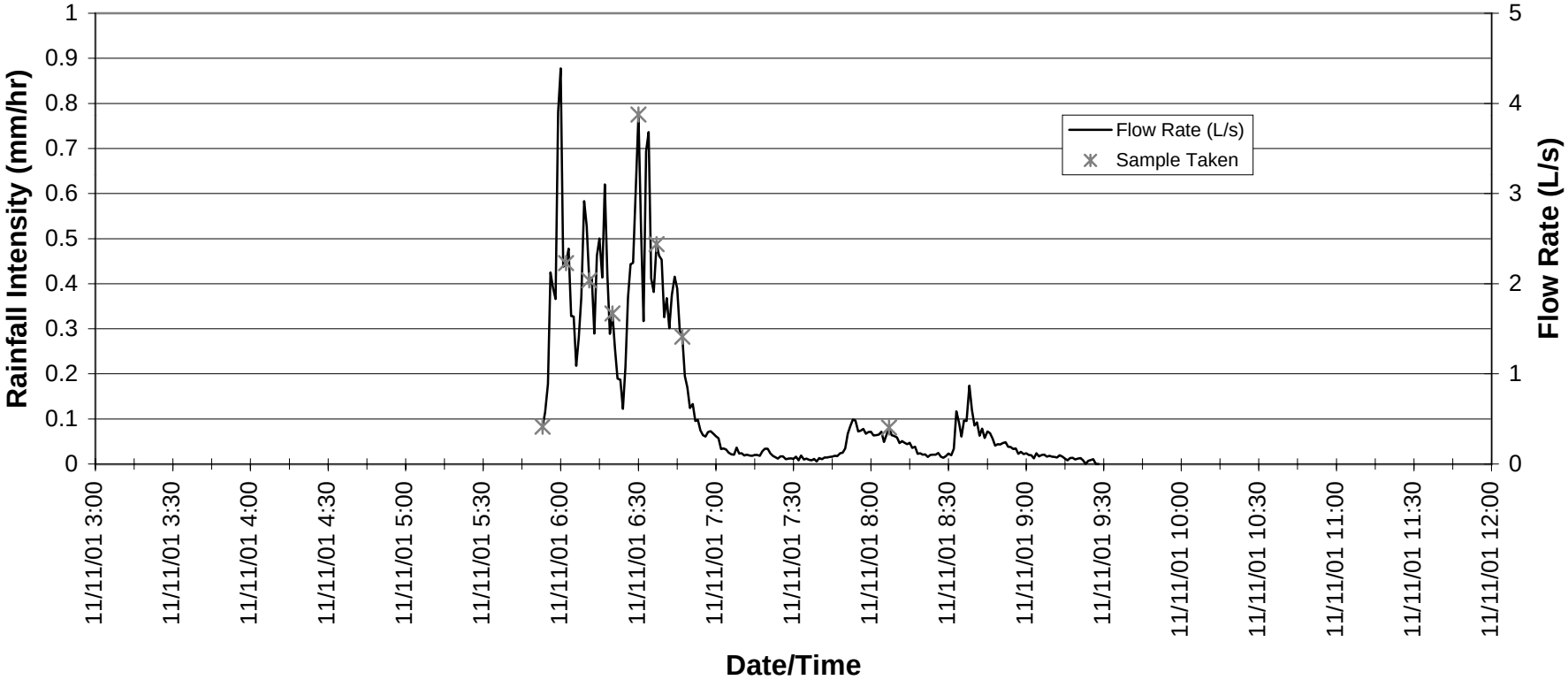
Runoff Data		*Sample Data*	
Start Date/Time:	10/30/01 07:43	Start Date/Time:	10/30/01 07:51
Stop Date/Time:	10/30/01 17:51	Stop Date/Time:	10/30/01 16:57
Total Flow Volume (L):	70548	Estimated Percent Capture:	97%
Peak Flow (L/s):	14.89	Successful Aliquots:	35

Notes:

Event Summary

Site: Tahoe Meadows (3-201)
Event: 2001-03

Catchment Area (ha): 0.312
Assumed Runoff Coefficient: 0.9



Runoff Data

Start Date/Time:	11/11/01 05:53
Stop Date/Time:	11/11/01 09:29
Total Flow Volume (L):	8591
Peak Flow (L/s):	4.39

Sample Data

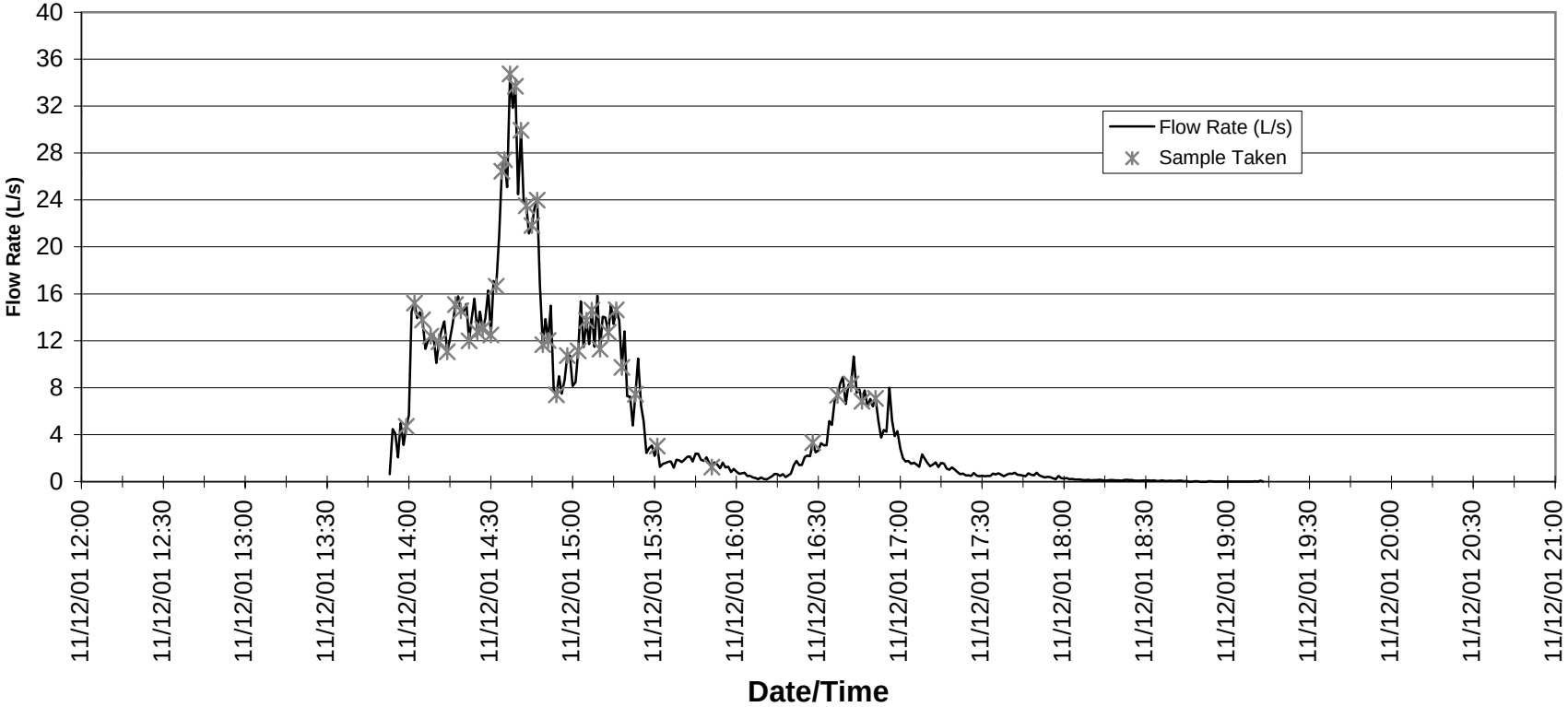
Start Date/Time:	11/11/01 05:53
Stop Date/Time:	11/11/01 08:07
Estimated Percent Capture:	89%
Successful Aliquots:	8

Notes:

Event Summary

Site: Tahoe Meadows (3-201)
Event: 2001-04

Catchment Area (ha): 0.312
Assumed Runoff Coefficient: 0.9



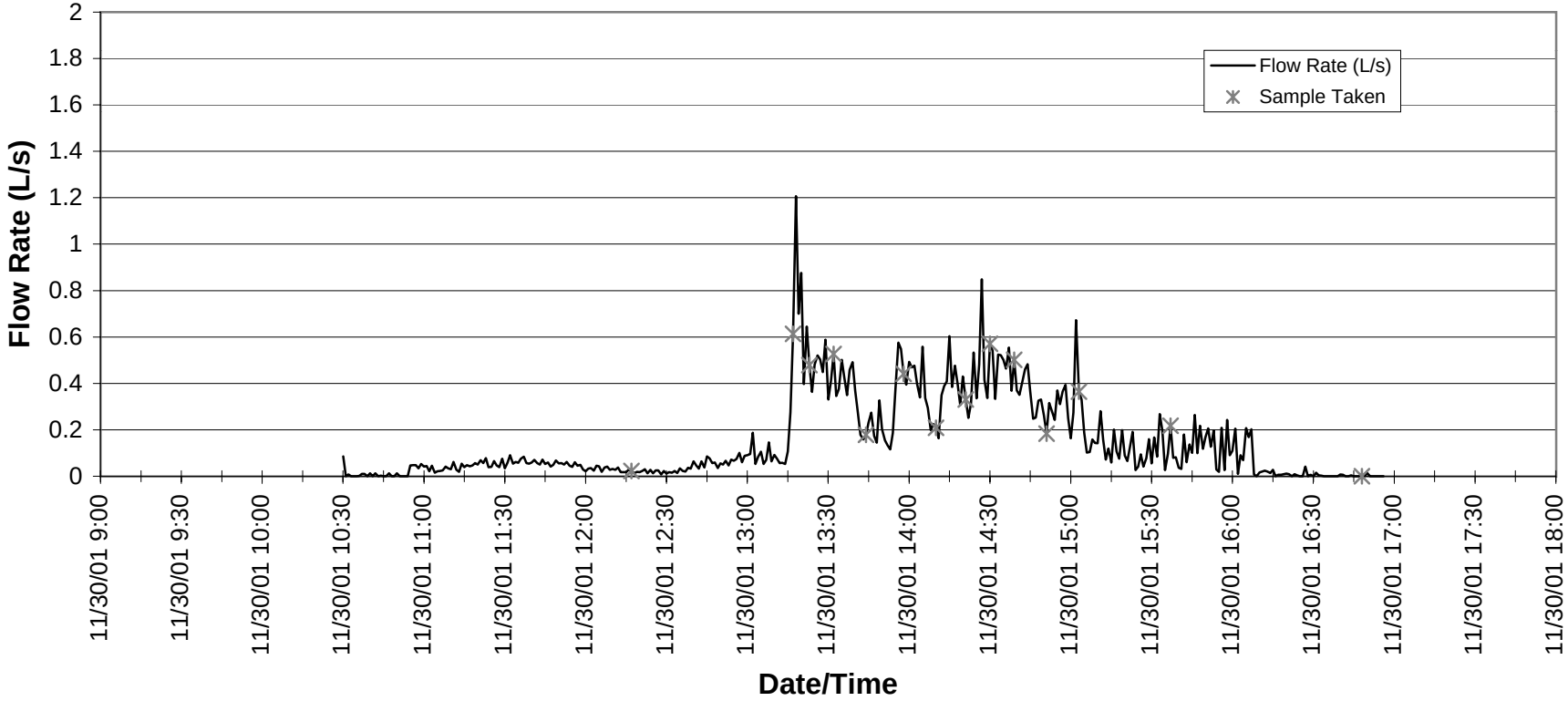
Runoff Data		*Sample Data*	
Start Date/Time:	11/12/01 13:53	Start Date/Time:	11/12/01 13:59
Stop Date/Time:	11/12/01 19:14	Stop Date/Time:	11/12/01 16:51
Total Flow Volume (L):	97416	Estimated Percent Capture:	92%
Peak Flow (L/s):	34.76	Successful Aliquots:	40

Notes:

Event Summary

Site: Tahoe Meadows (3-201)
Event: 2001-05

Catchment Area (ha): 0.312
Assumed Runoff Coefficient: 0.9



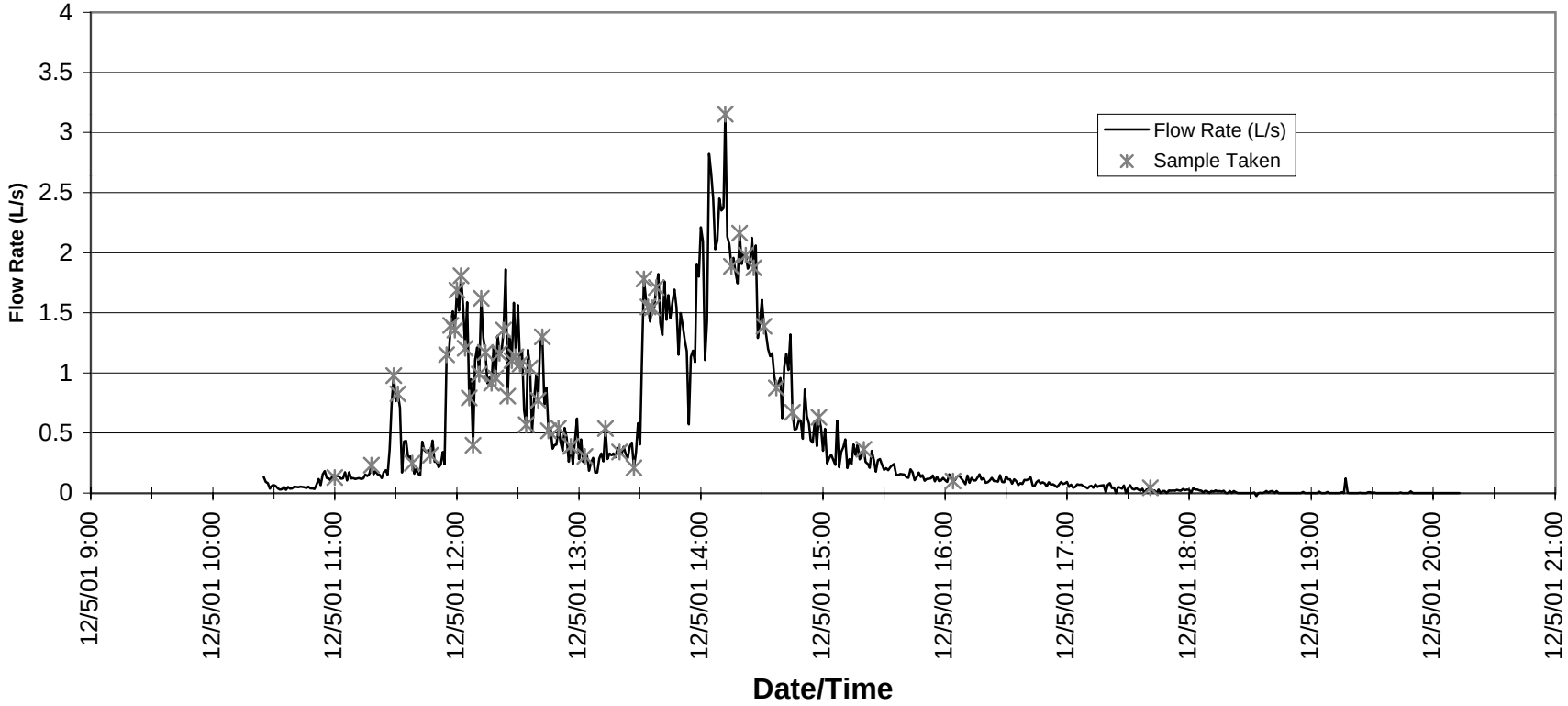
Runoff Data		*Sample Data*	
Start Date/Time:	11/30/01 10:30	Start Date/Time:	11/30/01 12:17
Stop Date/Time:	11/30/01 16:57	Stop Date/Time:	11/30/01 16:48
Total Flow Volume (L):	3475	Estimated Percent Capture:	93%
Peak Flow (L/s):	1.21	Successful Aliquots:	14

Notes: Snow melt event.

Event Summary

Site: Tahoe Meadows (3-201)
Event: 2001-06

Catchment Area (ha): 0.312
Assumed Runoff Coefficient: 0.9



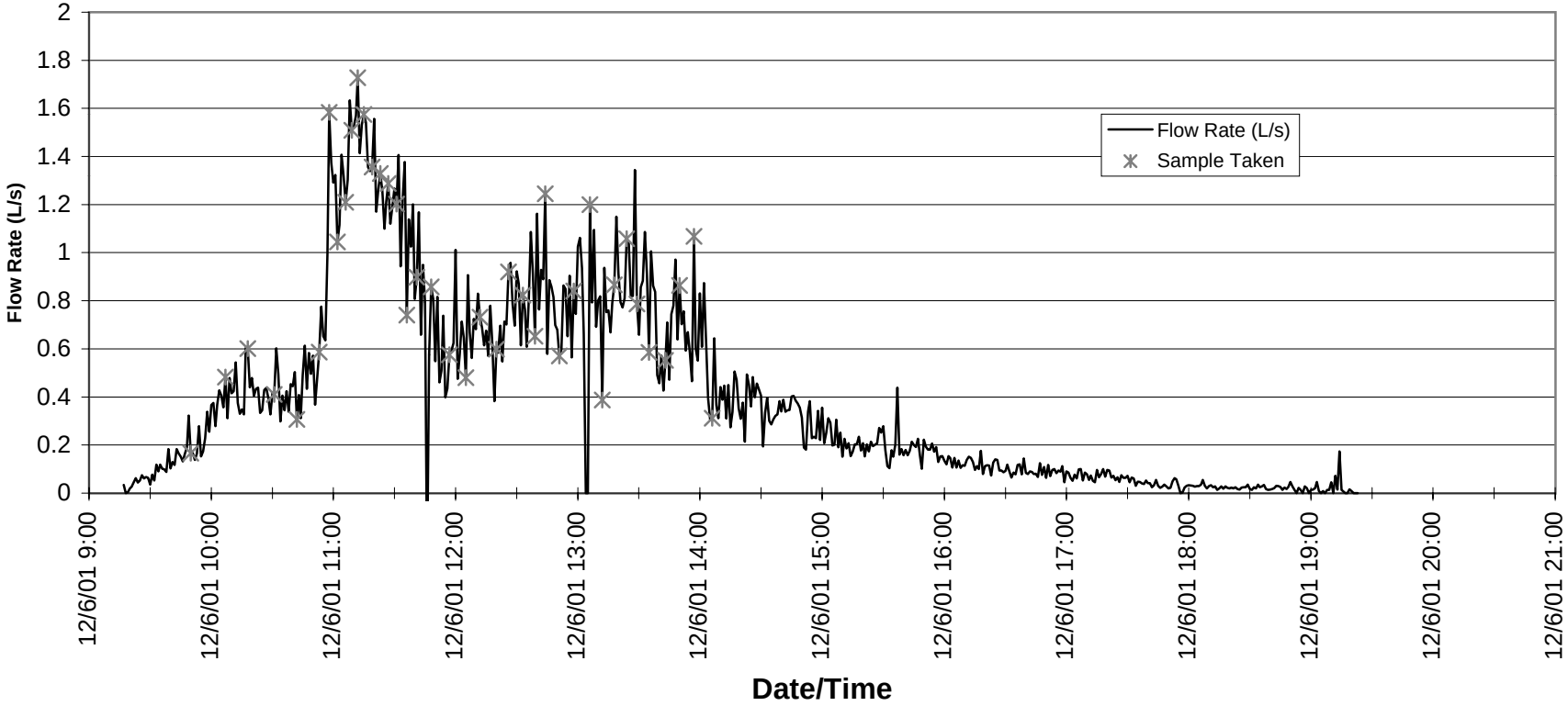
Runoff Data		*Sample Data*	
Start Date/Time:	12/05/01 10:25	Start Date/Time:	12/05/01 11:00
Stop Date/Time:	12/05/01 20:14	Stop Date/Time:	12/05/01 17:41
Total Flow Volume (L):	14582	Estimated Percent Capture:	99%
Peak Flow (L/s):	3.15	Successful Aliquots:	52

Notes: Bottle changed 12/5/01 at 14:00 . Snow melt event.

Event Summary

Site: Tahoe Meadows (3-201)
Event: 2001-07

Catchment Area (ha): 0.312
Assumed Runoff Coefficient: 0.9



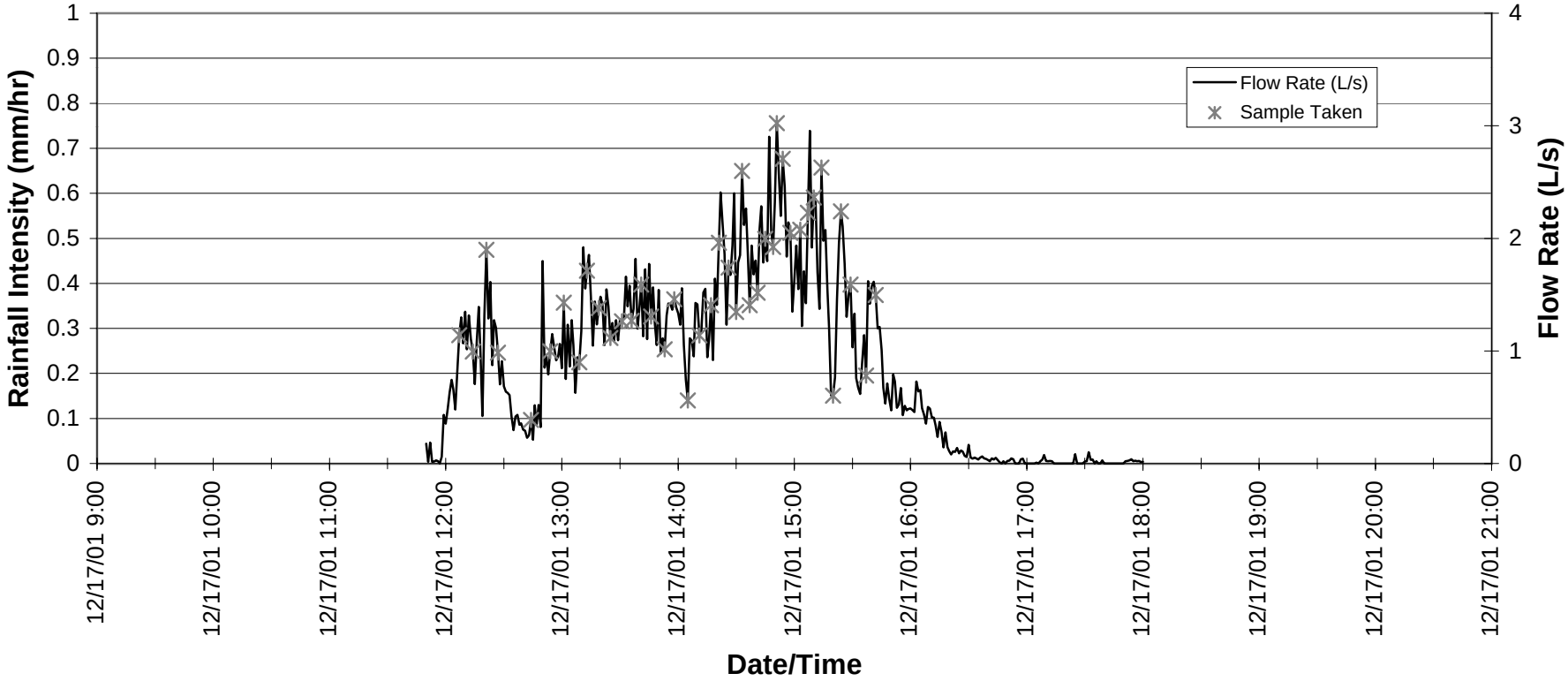
Runoff Data		*Sample Data*	
Start Date/Time:	12/06/01 09:17	Start Date/Time:	12/06/01 09:50
Stop Date/Time:	12/06/01 19:24	Stop Date/Time:	12/06/01 14:06
Total Flow Volume (L):	14181	Estimated Percent Capture:	79%
Peak Flow (L/s):	1.73	Successful Aliquots:	39

Notes: Snow melt event.

Event Summary

Site: Tahoe Meadows (3-201)
Event: 2001-08

Catchment Area (ha): 0.312
Assumed Runoff Coefficient: 0.9



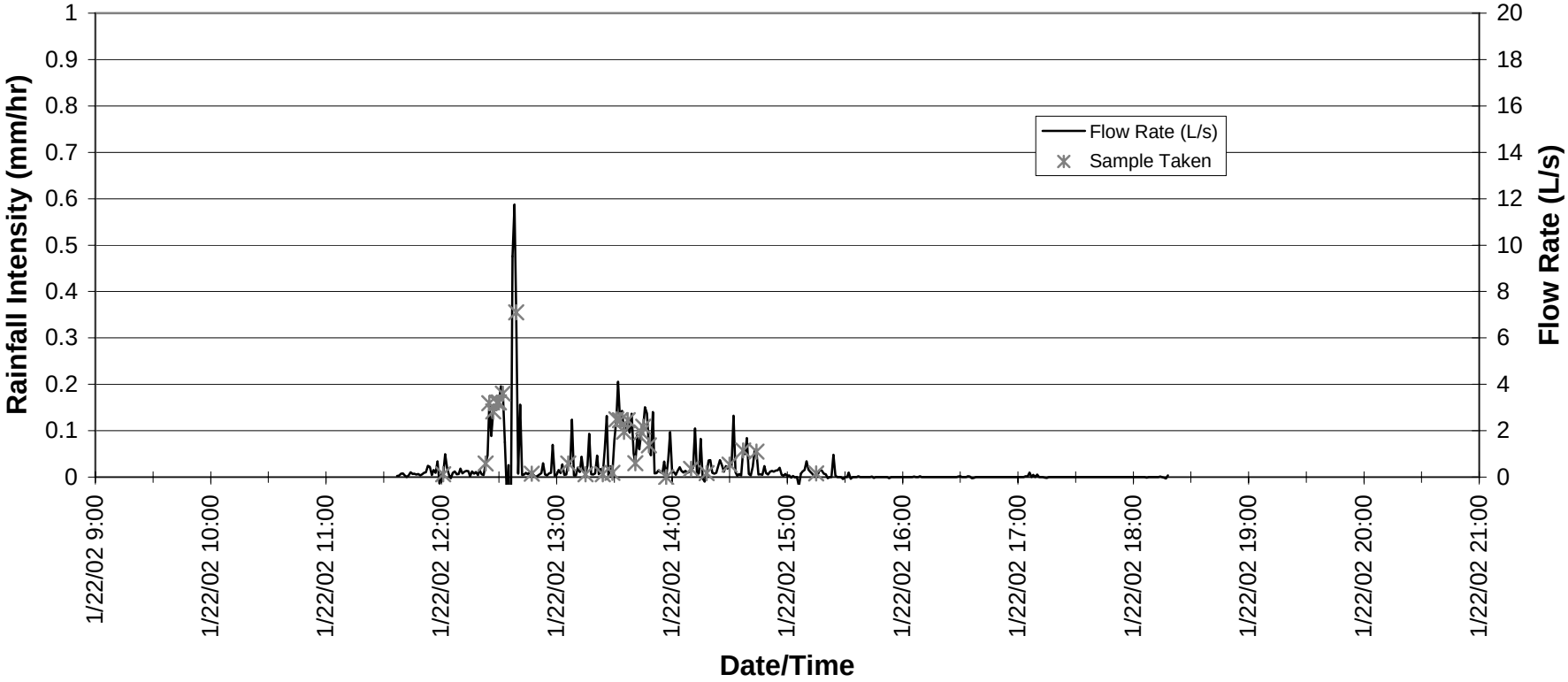
Runoff Data		*Sample Data*	
Start Date/Time:	12/17/01 11:50	Start Date/Time:	12/17/01 12:00
Stop Date/Time:	12/17/01 18:01	Stop Date/Time:	12/17/01 15:42
Total Flow Volume (L):	19308	Estimated Percent Capture:	92%
Peak Flow (L/s):	3.02	Successful Aliquots:	40

Notes:

Event Summary

Site: Tahoe Meadows (3-201)
Event: 2001-09

Catchment Area (ha): 0.312
Assumed Runoff Coefficient: 0.9



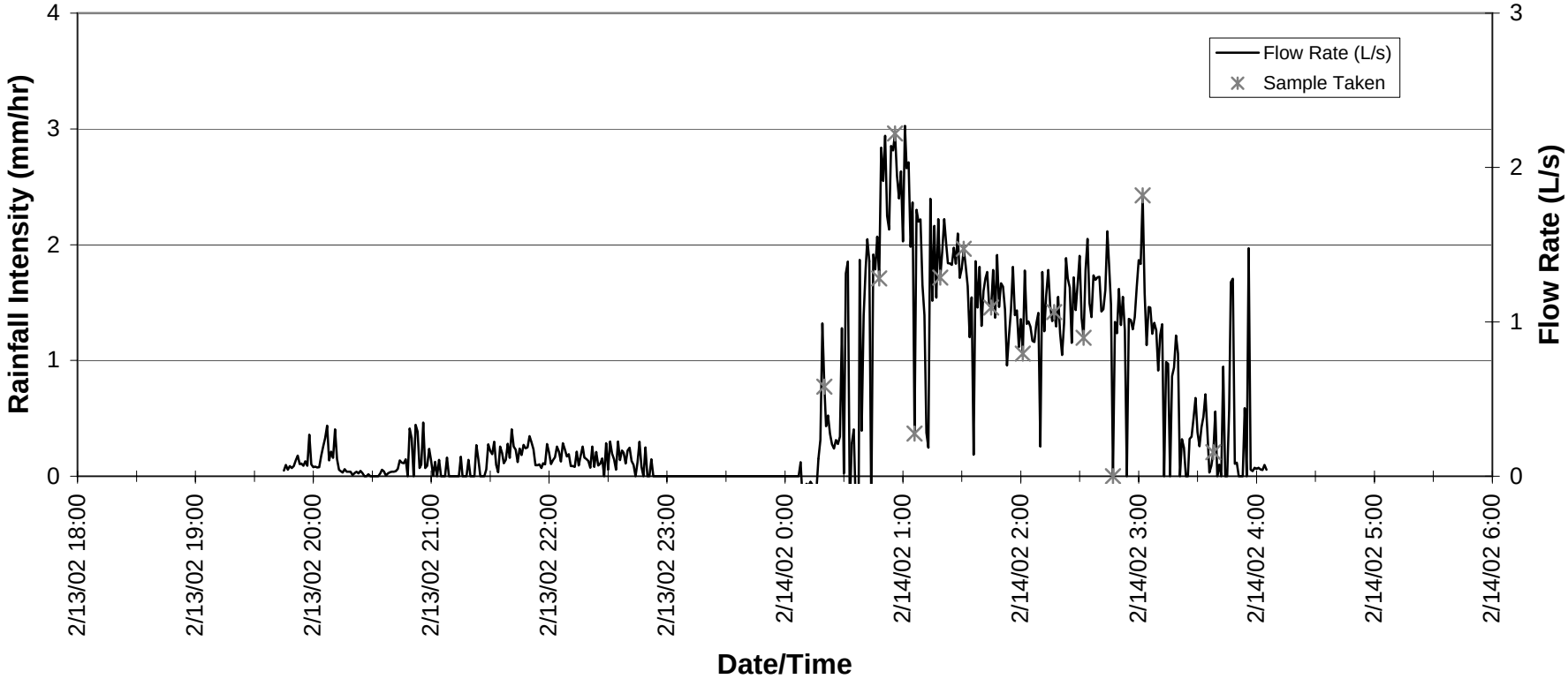
Runoff Data		*Sample Data*	
Start Date/Time:	01/22/02 11:37	Start Date/Time:	01/22/02 12:01
Stop Date/Time:	01/22/02 18:19	Stop Date/Time:	01/22/02 15:15
Total Flow Volume (L):	9751	Estimated Percent Capture:	96%
Peak Flow (L/s):	11.75	Successful Aliquots:	29

Notes:

Event Summary

Site: Tahoe Meadows (3-201)
Event: 2001-10

Catchment Area (ha): 0.312
Assumed Runoff Coefficient: 0.9



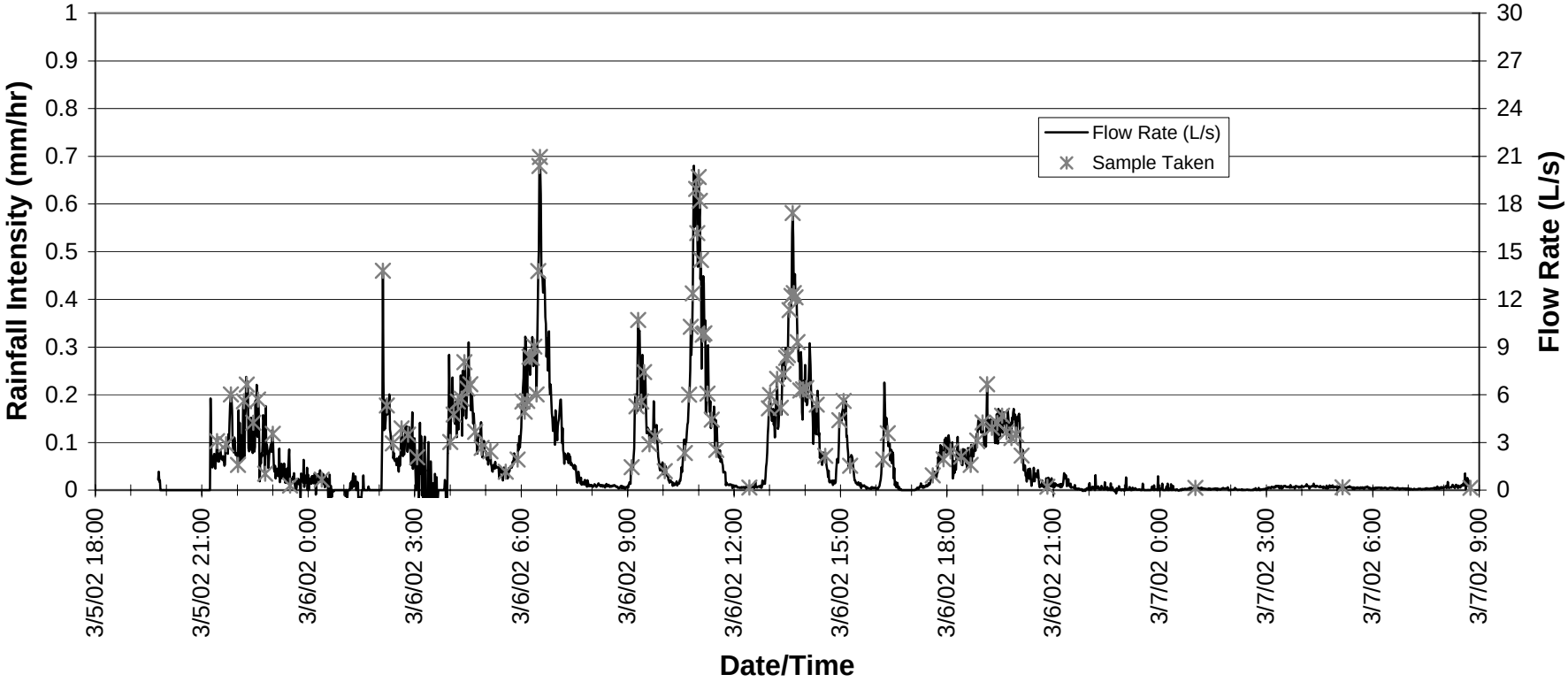
Runoff Data		*Sample Data*	
Start Date/Time:	02/13/02 19:45	Start Date/Time:	02/14/02 00:20
Stop Date/Time:	02/14/02 04:06	Stop Date/Time:	02/14/02 03:38
Total Flow Volume (L):	13635	Estimated Percent Capture:	89%
Peak Flow (L/s):	2.27	Successful Aliquots:	13

Notes: Negative flow readings were set to zero.

Event Summary

Site: Tahoe Meadows (3-201)
Event: 2001-11

Catchment Area (ha): 0.312
Assumed Runoff Coefficient: 0.9



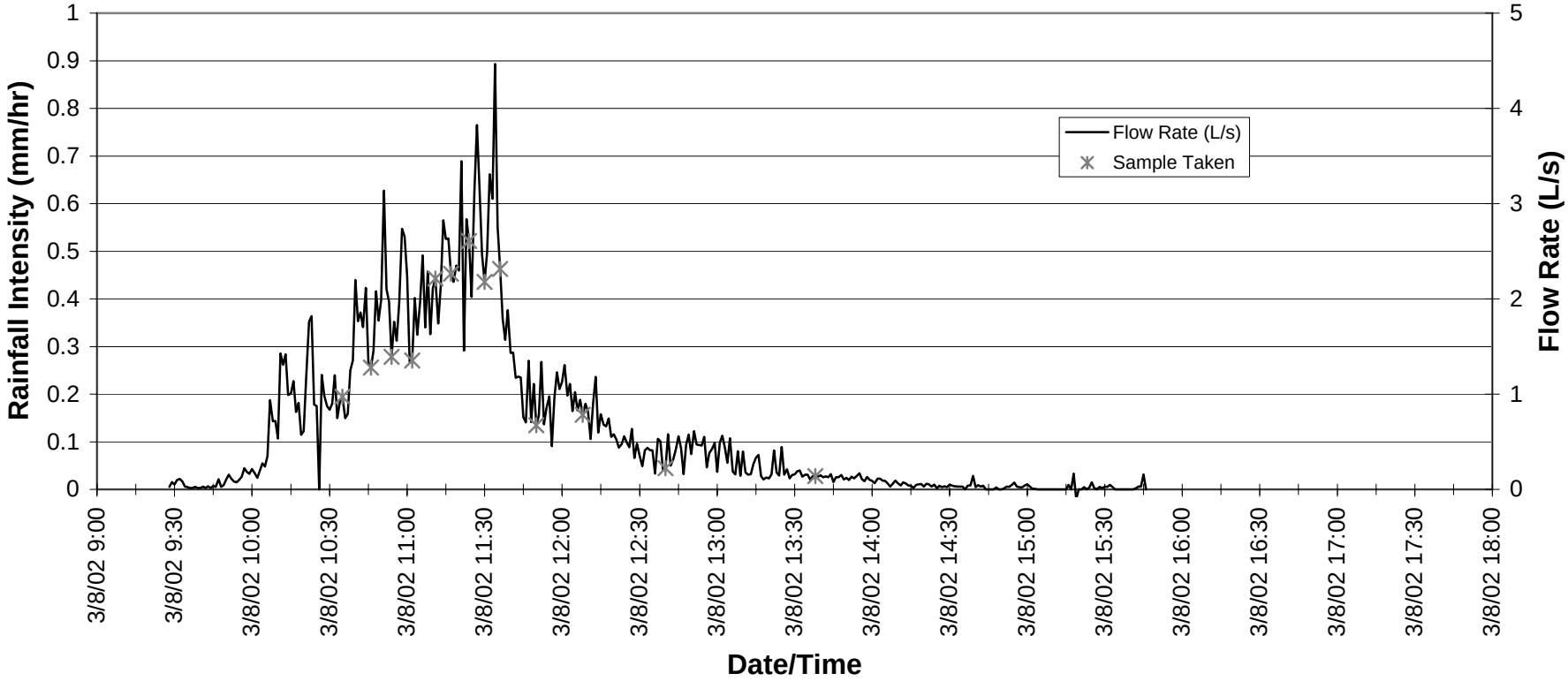
Runoff Data		*Sample Data*	
Start Date/Time:	03/05/02 19:46	Start Date/Time:	03/05/02 21:26
Stop Date/Time:	03/07/02 08:46	Stop Date/Time:	03/07/02 08:45
Total Flow Volume (L):	236033	Estimated Percent Capture:	90%
Peak Flow (L/s):	20.95	Successful Aliquots:	105

Notes: Rain/snow mix event. Snowmelt runoff begain at approximately 9 am. This runoff was not sampled. Bottle was replaced three times.

Event Summary

Site: Tahoe Meadows (3-201)
Event: 2001-12

Catchment Area (ha): 0.312
Assumed Runoff Coefficient: 0.9



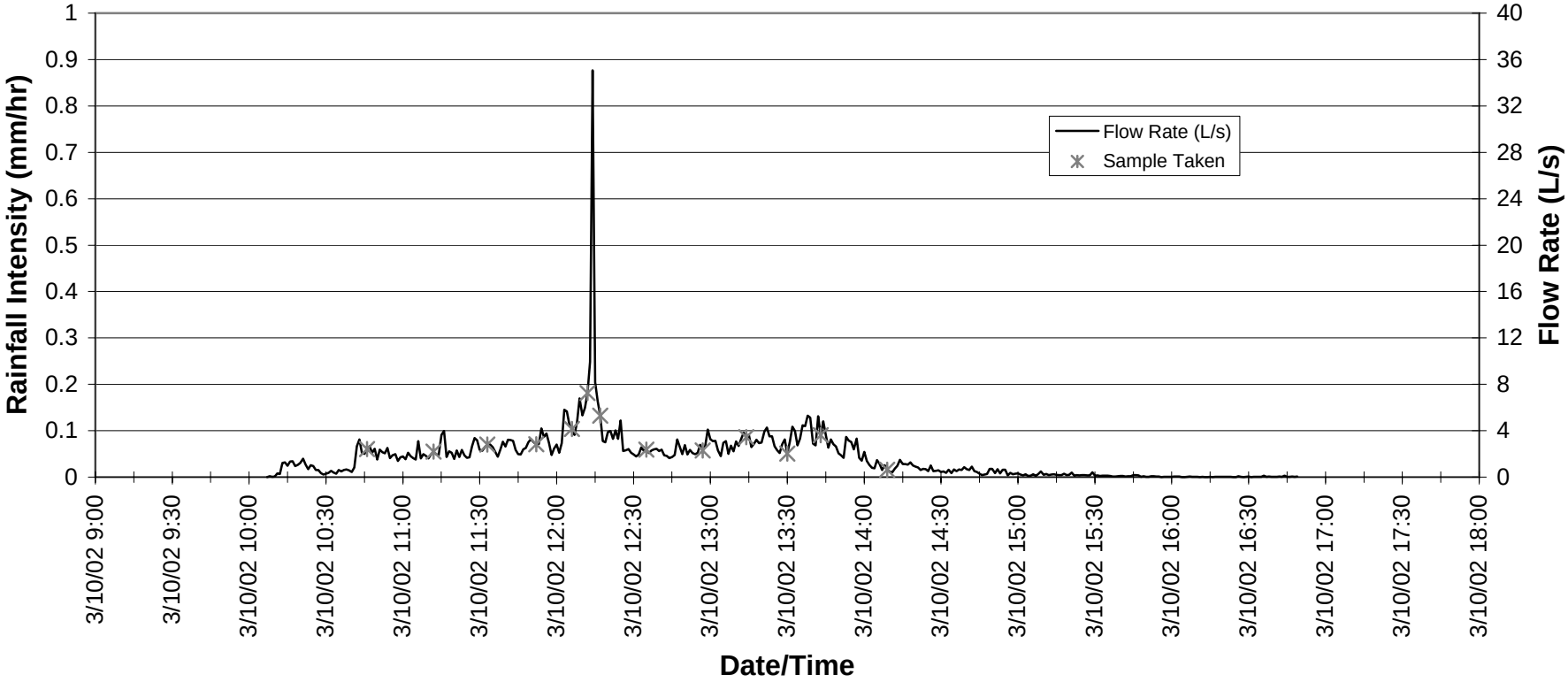
Runoff Data		*Sample Data*	
Start Date/Time:	03/08/02 09:28	Start Date/Time:	03/08/02 10:35
Stop Date/Time:	03/08/02 15:47	Stop Date/Time:	03/08/02 13:38
Total Flow Volume (L):	14345	Estimated Percent Capture:	84%
Peak Flow (L/s):	4.47	Successful Aliquots:	13

Notes: Snowmelt event.

Event Summary

Site: Tahoe Meadows (3-201)
Event: 2001-13

Catchment Area (ha): 0.312
Assumed Runoff Coefficient: 0.9



Runoff Data

Start Date/Time:	03/10/02 10:07
Stop Date/Time:	03/10/02 16:50
Total Flow Volume (L):	40874
Peak Flow (L/s):	35.06

Sample Data

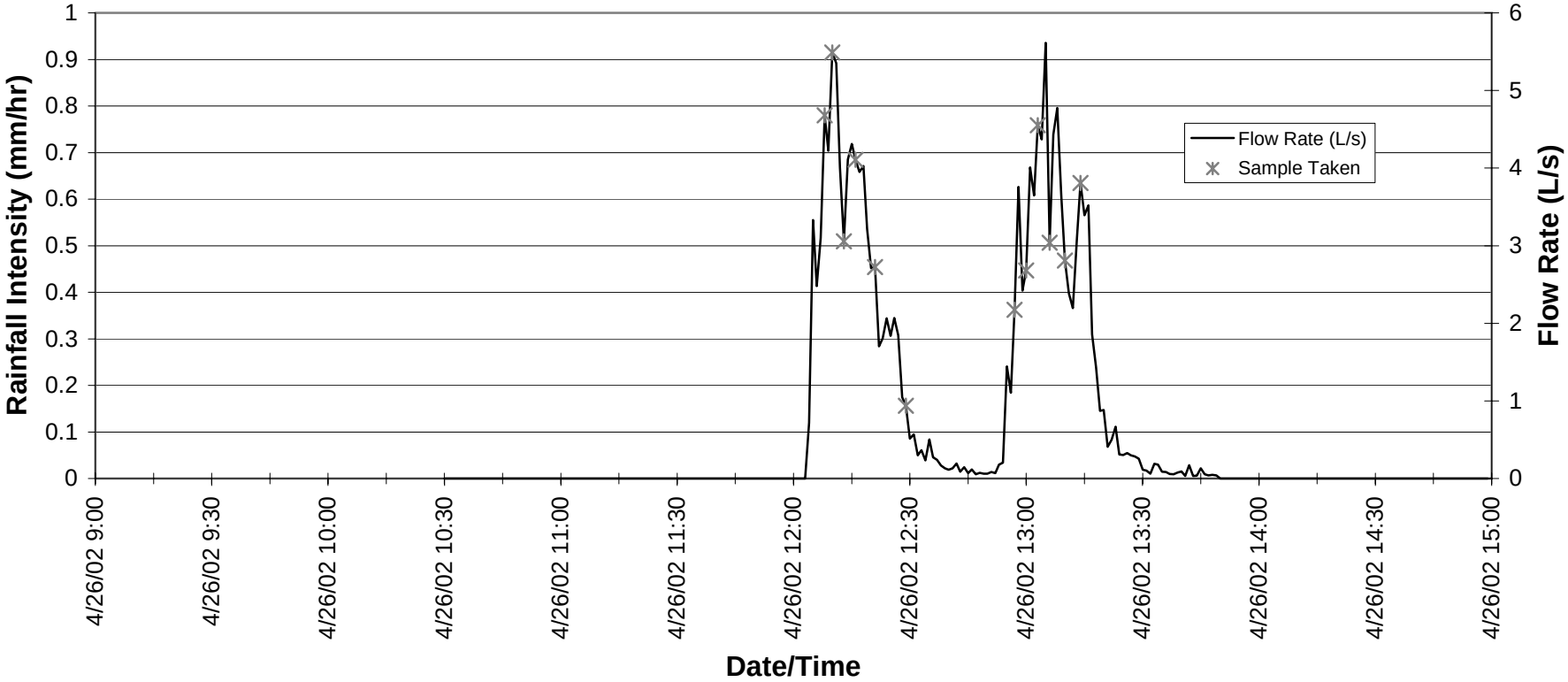
Start Date/Time:	03/10/02 10:46
Stop Date/Time:	03/10/02 14:09
Estimated Percent Capture:	89%
Successful Aliquots:	13

Notes: Snowmelt event.

Event Summary

Site: Tahoe Meadows (3-201)
Event: 2001-15

Catchment Area (ha): 0.312
Assumed Runoff Coefficient: 0.9



Runoff Data

Start Date/Time:	04/26/02 10:30
Stop Date/Time:	04/26/02 15:00
Total Flow Volume (L):	10008
Peak Flow (L/s):	5.61

Sample Data

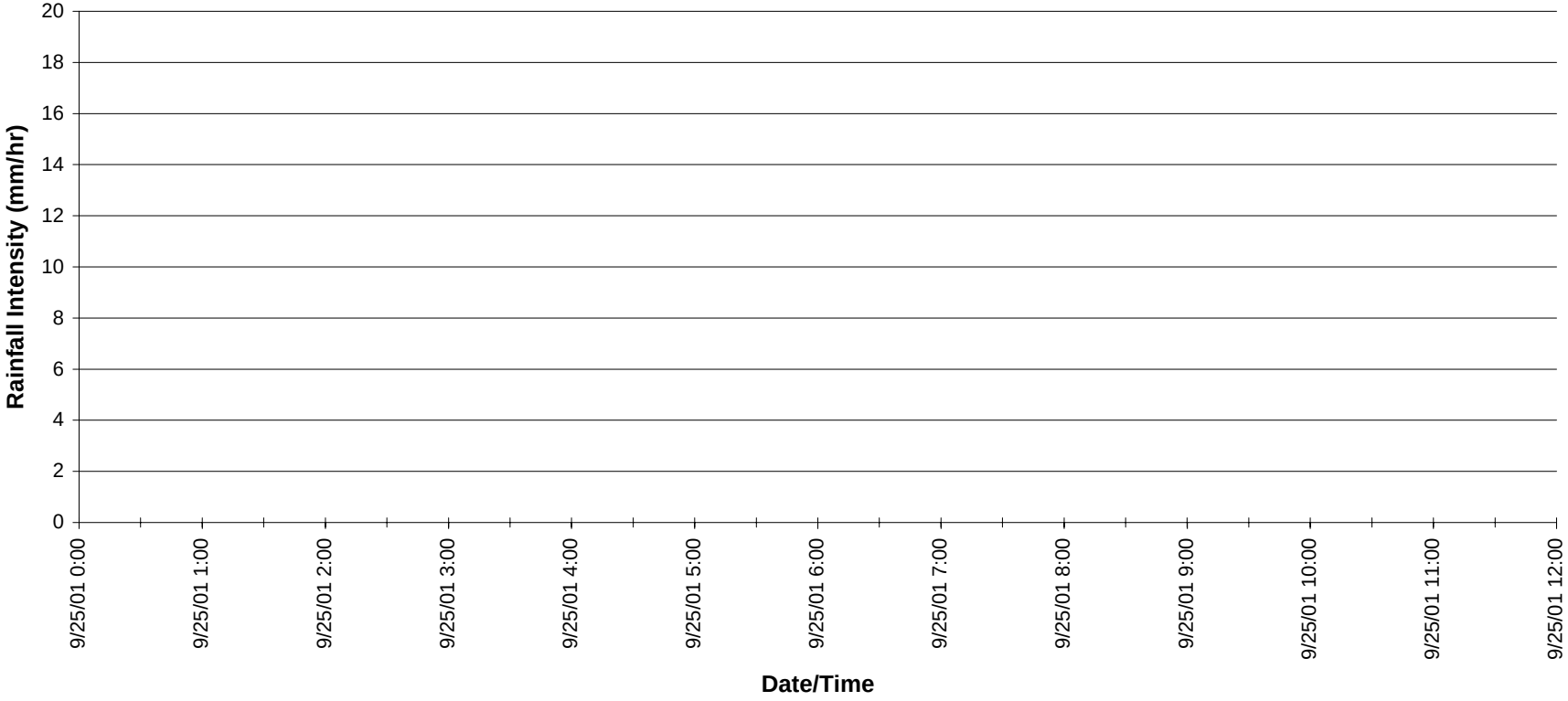
Start Date/Time:	04/26/02 12:08
Stop Date/Time:	04/26/02 13:14
Estimated Percent Capture:	81%
Successful Aliquots:	12

Notes: rain event

Event Summary

Site: Tahoe Airport Influent (3-202)
Event: 2001-01

Catchment Area (ha): 0.138
Assumed Runoff Coefficient: 0.8



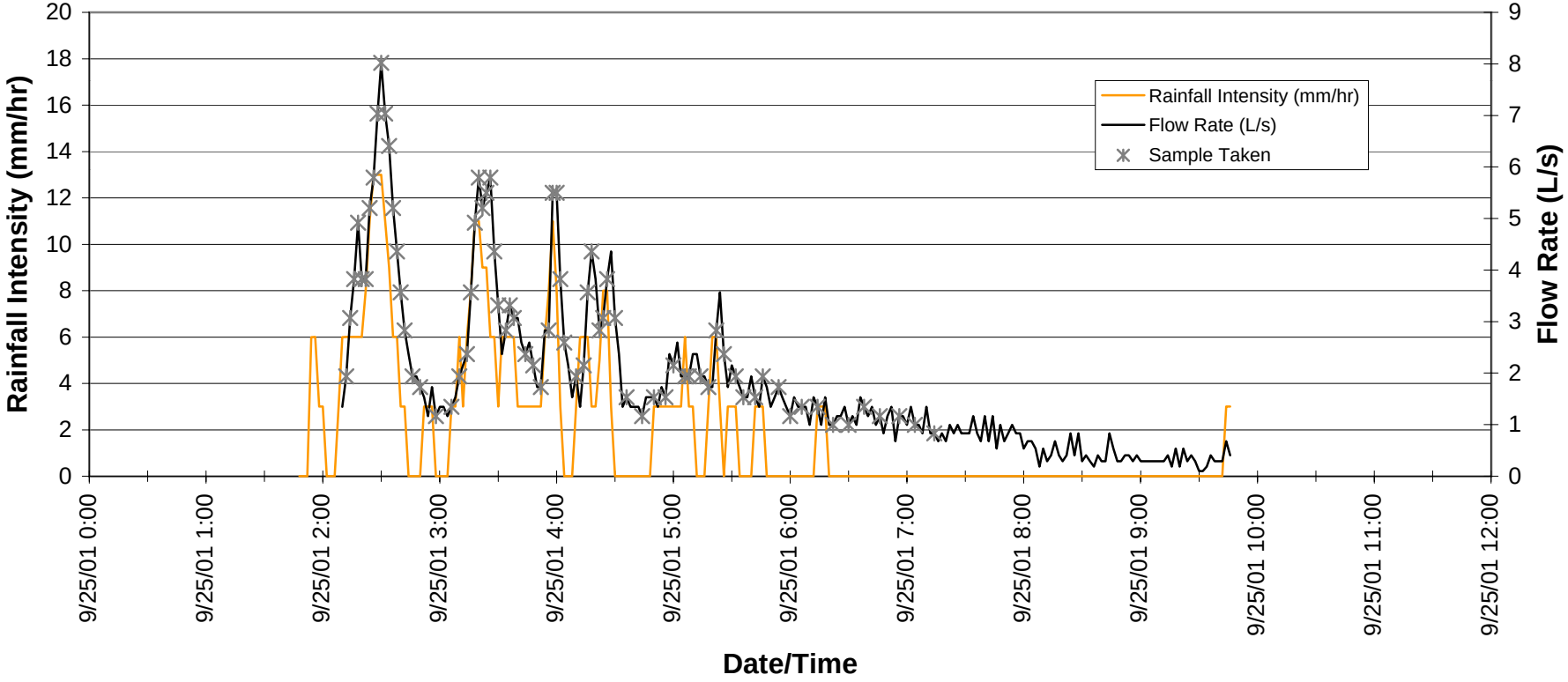
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	08/09/01	Start Date/Time:	08/09/01	Start Date/Time:	08/09/01
Stop Date/Time:	08/09/01	Stop Date/Time:	09/09/01	Stop Date/Time:	08/09/01
				Estimated Percent Capture:	100%

Notes: No graph due to program malfunction.

Event Summary

Site: Tahoe Airport Influent (3-202)
Event: 2001-02

Catchment Area (ha): 0.138
Assumed Runoff Coefficient: 0.8



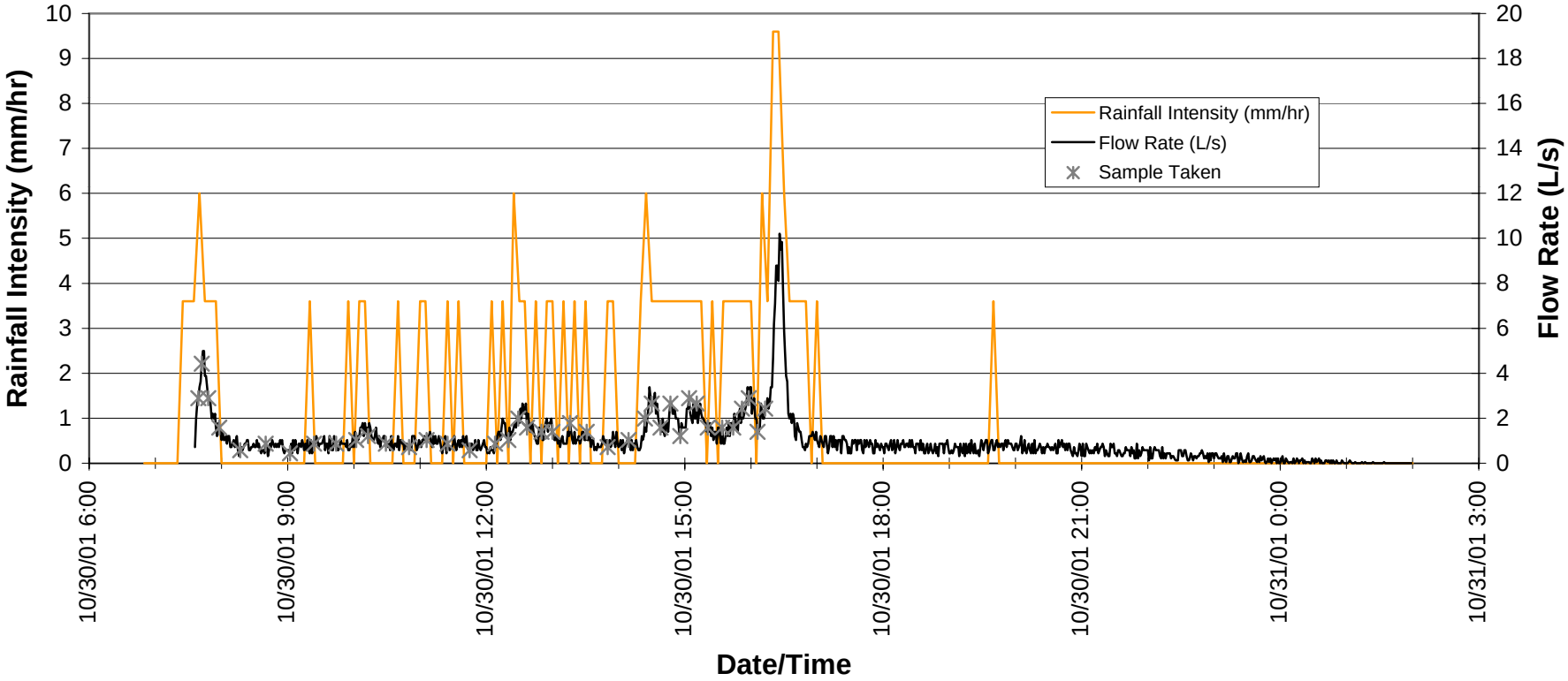
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	09/25/01 01:50	Start Date/Time:	09/25/01 02:10	Start Date/Time:	09/25/01 02:11
Stop Date/Time:	09/25/01 09:46	Stop Date/Time:	09/25/01 09:48	Stop Date/Time:	09/25/01 07:14
Event Rain (mm):	15.90	Total Flow Volume (L):	47471	Estimated Percent Capture:	81%
Max Intensity (mm/hr):	13.00	Peak Flow (L/s):	8.02	Successful Aliquots:	75
		Observed Runoff Coefficient:	2.163		

Notes: Sampler programming was in continuous mode - the bottle was not replaced Last recorded rainfall time used as end time.

Event Summary

Site: Tahoe Airport Influent (3-202)
Event: 2001-03

Catchment Area (ha): 0.138
Assumed Runoff Coefficient: 0.8



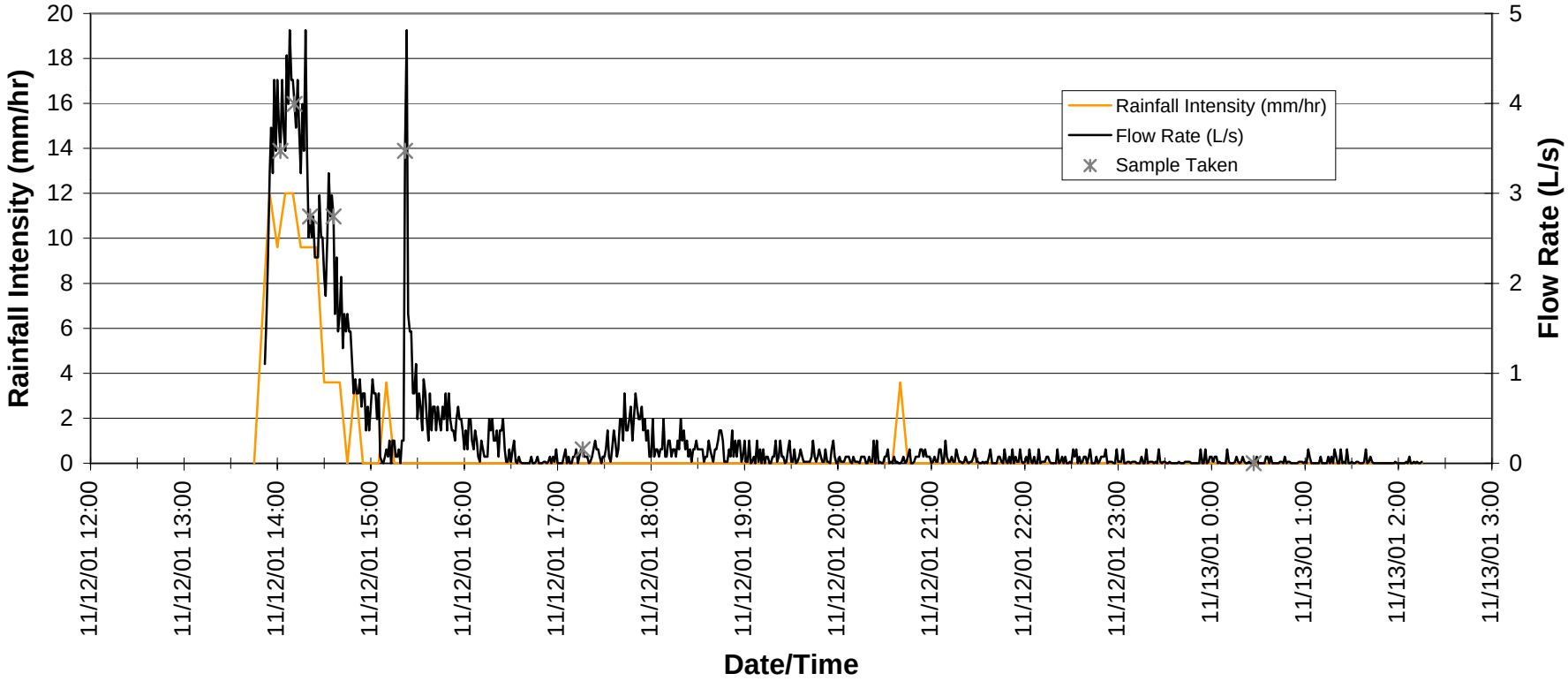
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	10/30/01 06:50	Start Date/Time:	10/30/01 07:36	Start Date/Time:	10/30/01 07:39
Stop Date/Time:	10/30/01 19:40	Stop Date/Time:	10/31/01 02:00	Stop Date/Time:	10/30/01 16:13
Event Rain (mm):	20	Total Flow Volume (L):	63683	Estimated Percent Capture:	61%
Max Intensity (mm/hr):	9.60	Peak Flow (L/s):	10.20	Successful Aliquots:	40
		Observed Runoff Coefficient:	2.307		

Notes:

Event Summary

Site: Tahoe Airport Influent (3-202)
Event: 2001-04

Catchment Area (ha): 0.138
Assumed Runoff Coefficient: 0.8



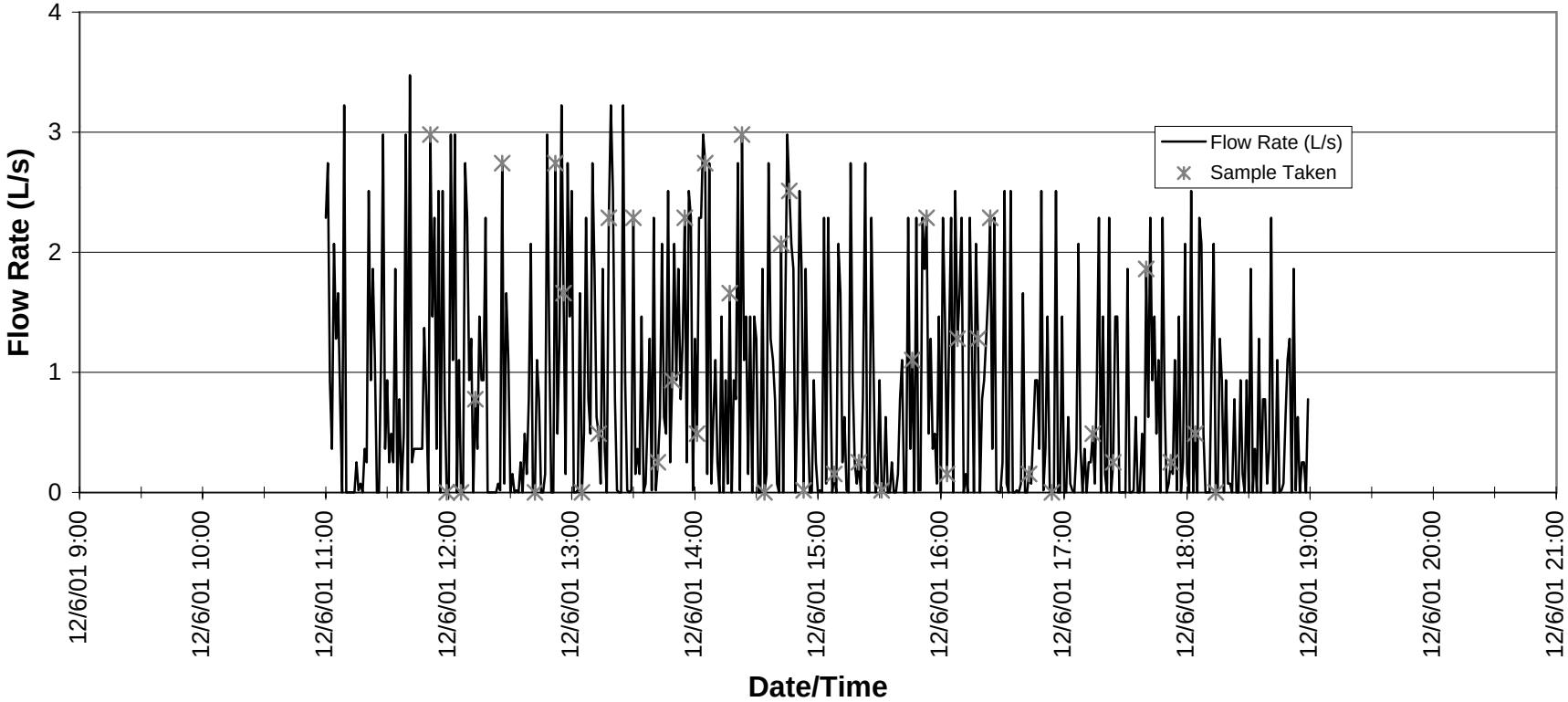
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	11/12/01 13:50	Start Date/Time:	11/12/01 13:52	Start Date/Time:	11/12/01 14:02
Stop Date/Time:	11/13/01 02:15	Stop Date/Time:	11/13/01 02:16	Stop Date/Time:	11/13/01 00:27
Event Rain (mm):	8.50	Total Flow Volume (L):	15486	Estimated Percent Capture:	87%
Max Intensity (mm/hr):	12.00	Peak Flow (L/s):	4.82	Successful Aliquots:	7
		Observed Runoff Coefficient:	1.320		

Notes: Last recorded rainfall time used as end time.

Event Summary

Site: Tahoe Airport Influent (3-202)
Event: 2001-05

Catchment Area (ha): 0.138
Assumed Runoff Coefficient: 0.8



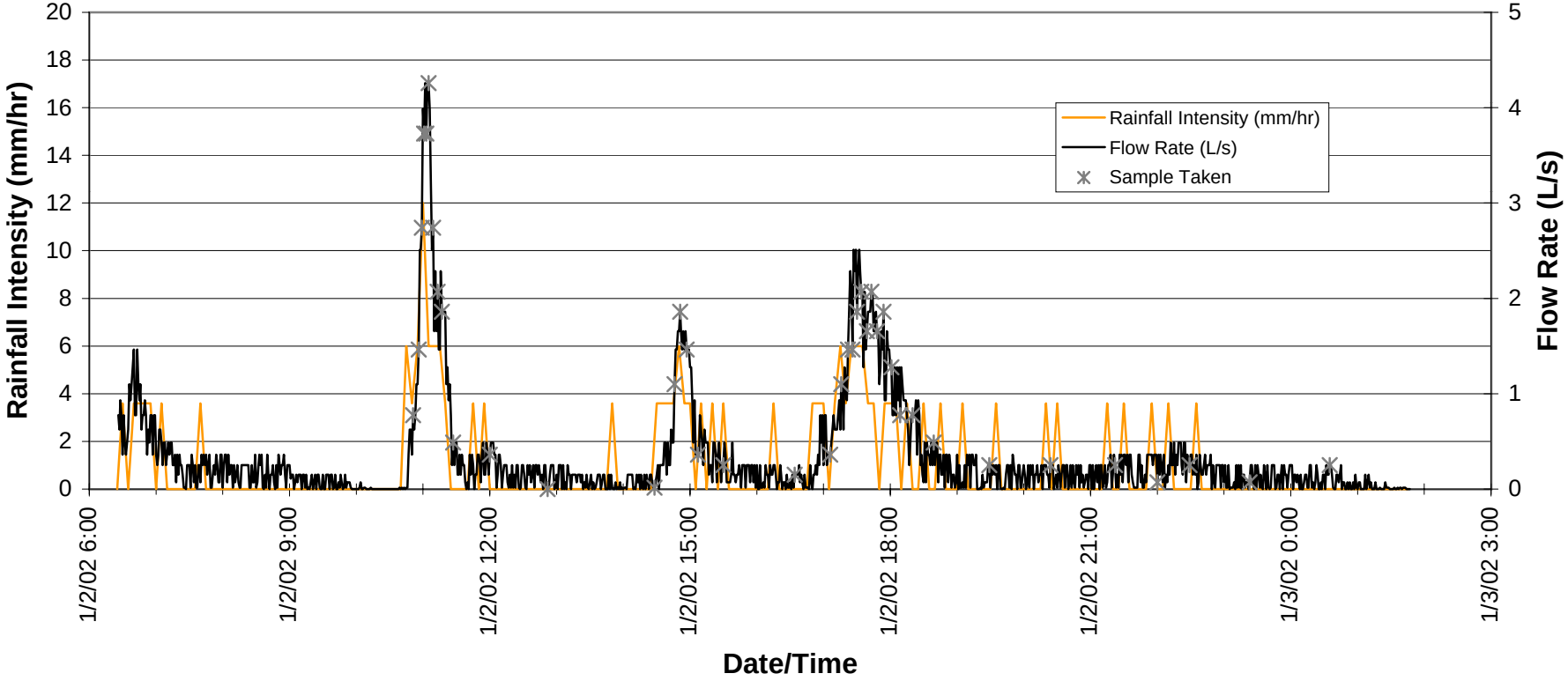
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	12/06/01 11:05	Start Date/Time:	12/06/01 11:00	Start Date/Time:	12/06/01 11:51
Stop Date/Time:	12/06/01 19:00	Stop Date/Time:	12/06/01 19:00	Stop Date/Time:	12/06/01 18:14
Event Rain (mm):	15.10	Total Flow Volume (L):	23577	Estimated Percent Capture:	83%
Max Intensity (mm/hr):	9.60	Peak Flow (L/s):	3.47	Successful Aliquots:	40
		Observed Runoff Coefficient:	1.131		

Notes: Snow melt event. Data noise possibly due to ice formation. Flow began at approximatley 11:00 AM and lasted until 7:00 PM at latest. Last recorded rainfall time used as end time.

Event Summary

Site: Tahoe Airport Influent (3-202)
Event: 2001-10

Catchment Area (ha): 0.138
Assumed Runoff Coefficient: 0.8



Rain Data

Start Date/Time:	01/02/02 06:30
Stop Date/Time:	01/03/02 01:45
Event Rain (mm):	19.20
Max Intensity (mm/hr):	12.00

Runoff Data

Start Date/Time:	01/02/02 06:26
Stop Date/Time:	01/03/02 01:48
Total Flow Volume (L):	23325
Peak Flow (L/s):	4.26
Observed Runoff Coefficient:	0.880

Sample Data

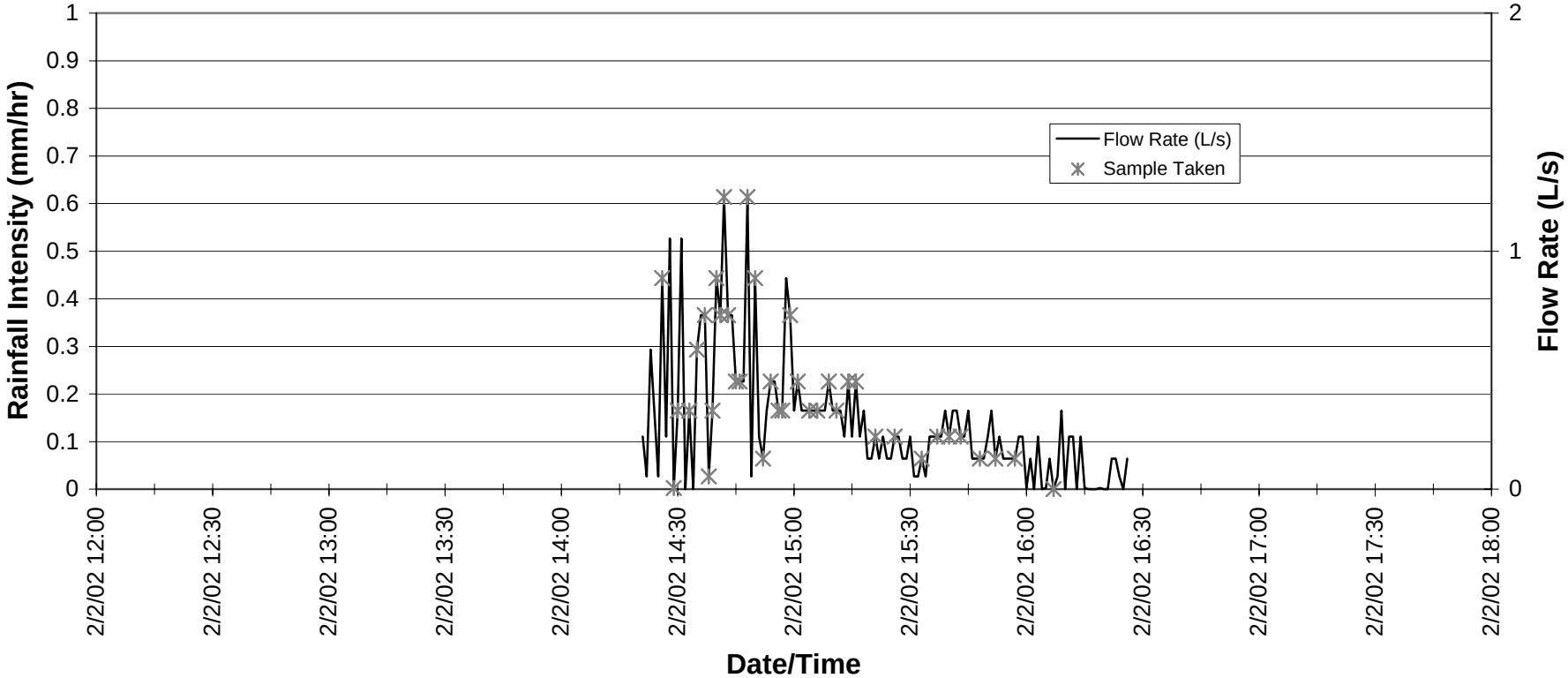
Start Date/Time:	01/02/02 10:51
Stop Date/Time:	01/03/02 00:35
Estimated Percent Capture:	84%
Successful Aliquots:	40

Notes: Last recorded rainfall time used as end time.

Event Summary

Site: Tahoe Airport Influent (3-202)
Event: 2001-13

Catchment Area (ha): 0.138
Assumed Runoff Coefficient: 0.8



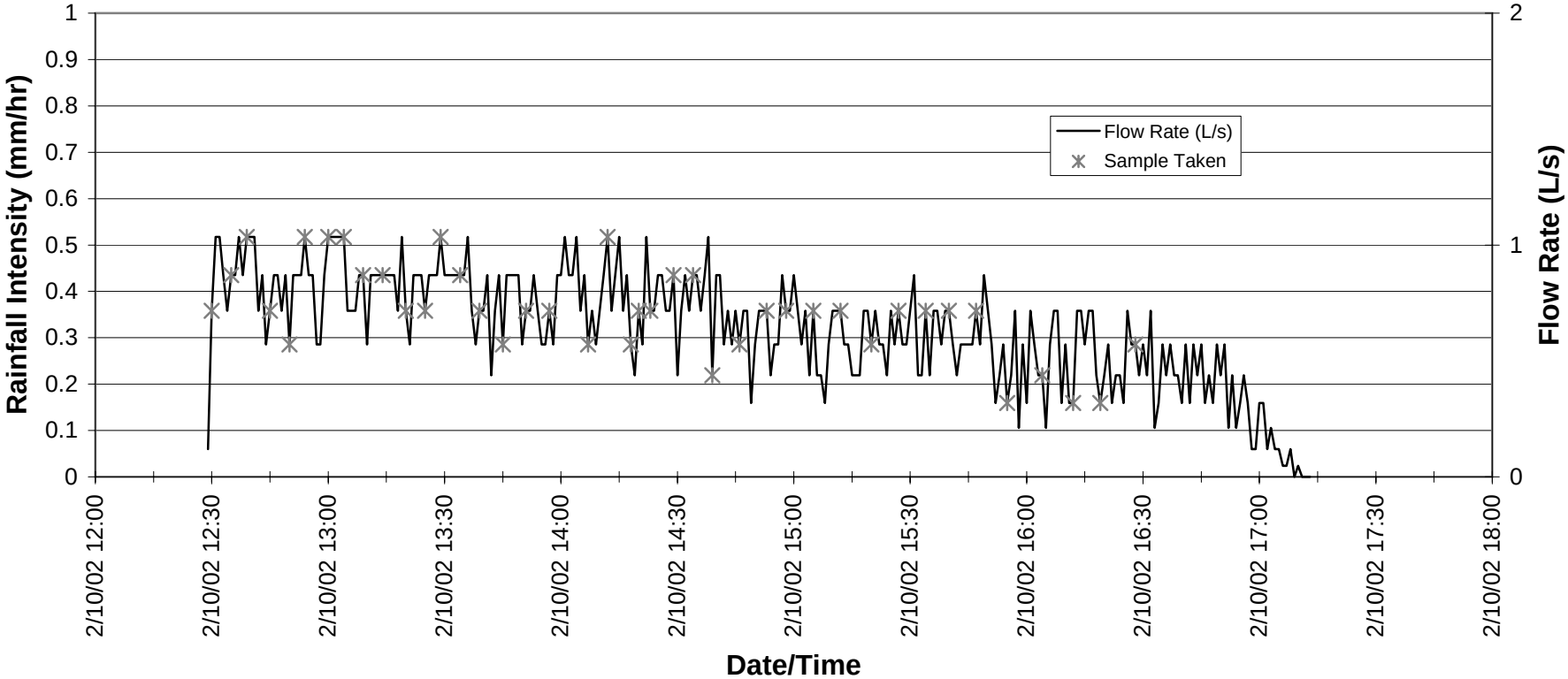
Runoff Data		*Sample Data*	
Start Date/Time:	02/02/02 14:07	Start Date/Time:	02/02/02 14:26
Stop Date/Time:	02/02/02 16:27	Stop Date/Time:	02/02/02 16:07
Total Flow Volume (L):	2105	Estimated Percent Capture:	89%
Peak Flow (L/s):	1.23	Successful Aliquots:	38

Notes: Snowmelt event. Very cold temperatures during the previous night. False flows at start of data likely due to ice in bubbler line.

Event Summary

Site: Tahoe Airport Influent (3-202)
Event: 2001-14

Catchment Area (ha): 0.138
Assumed Runoff Coefficient: 0.8



Runoff Data

Start Date/Time:	02/10/02 12:29
Stop Date/Time:	02/10/02 17:14
Total Flow Volume (L):	10959
Peak Flow (L/s):	1.04

Sample Data

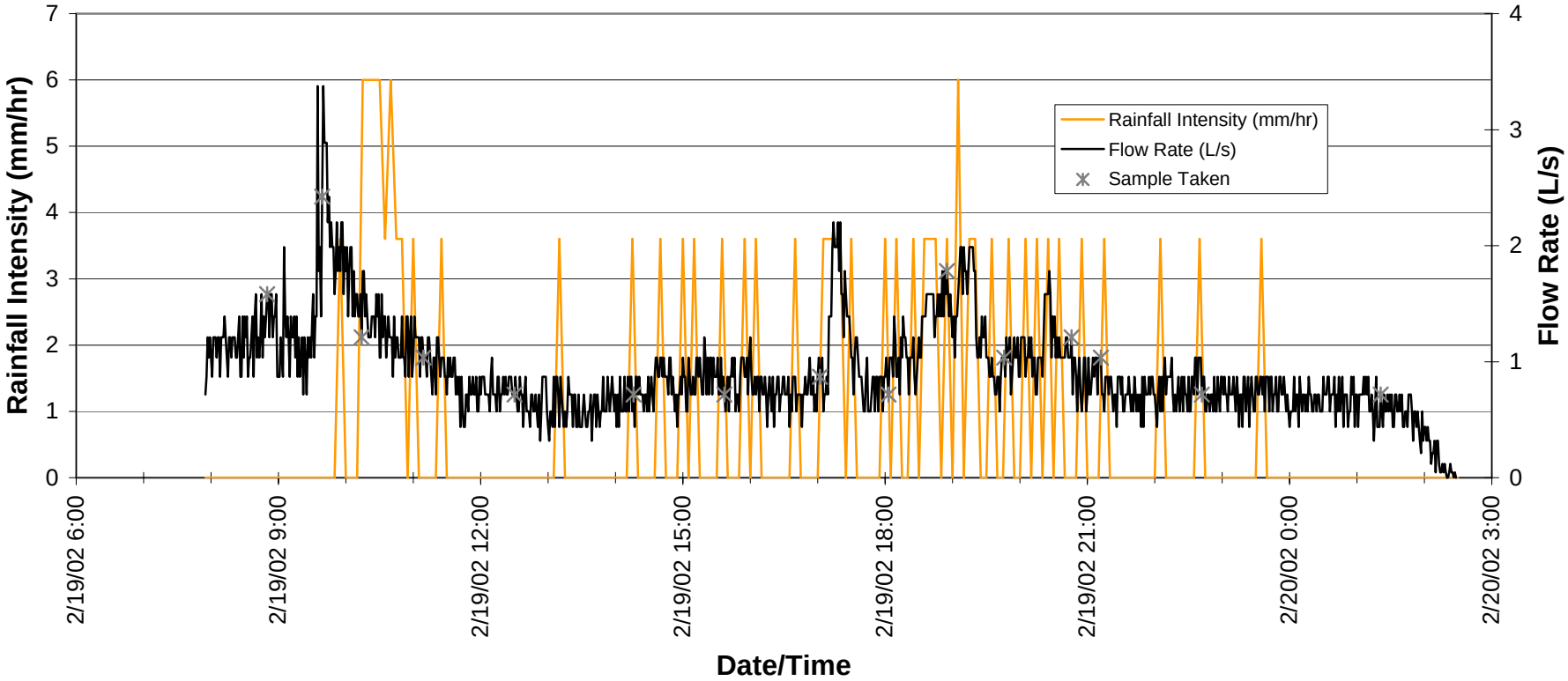
Start Date/Time:	02/10/02 12:30
Stop Date/Time:	02/10/02 16:28
Estimated Percent Capture:	92%
Successful Aliquots:	41

Notes: Snowmelt event.

Event Summary

Site: Tahoe Airport Influent (3-202)
Event: 2001-15

Catchment Area (ha): 0.138
Assumed Runoff Coefficient: 0.8



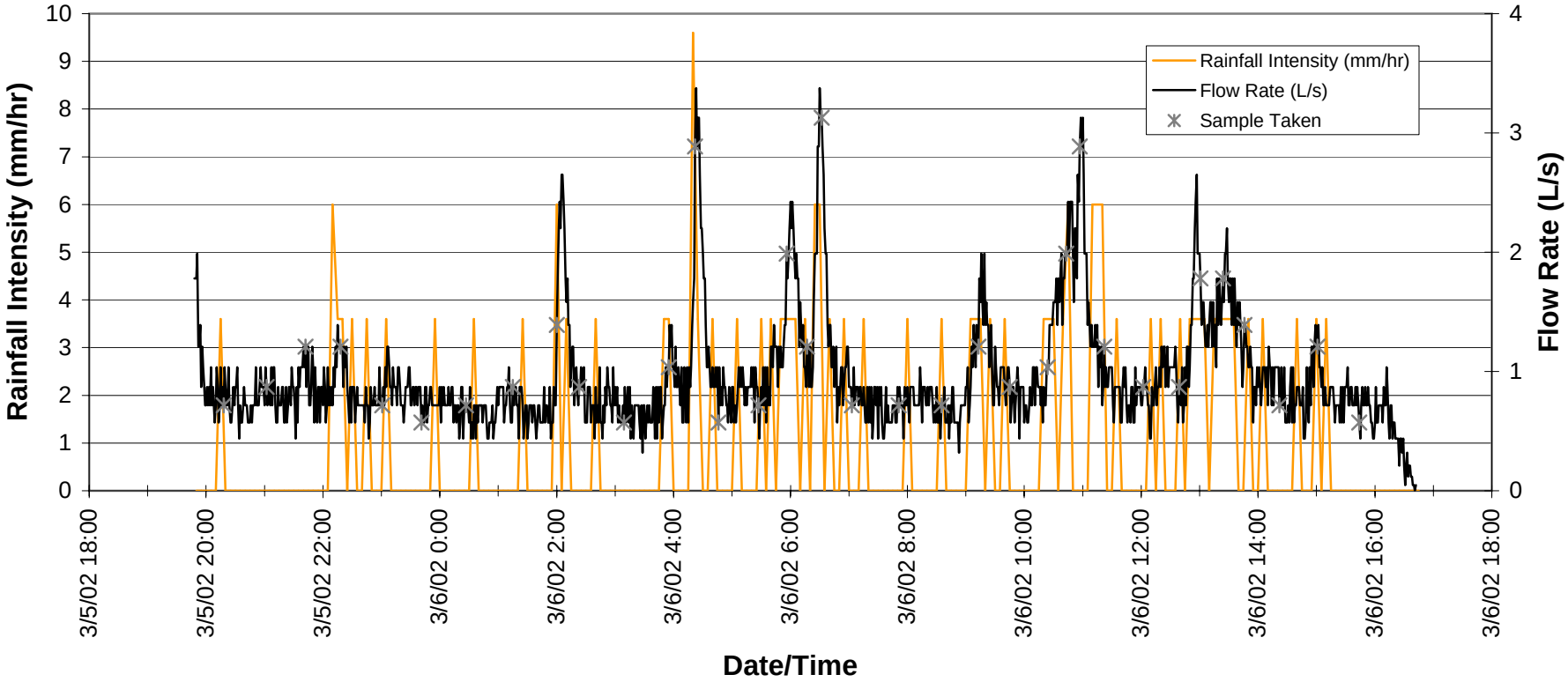
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	02/19/02 09:55	Start Date/Time:	02/19/02 07:55	Start Date/Time:	02/19/02 08:50
Stop Date/Time:	02/20/02 02:30	Stop Date/Time:	02/20/02 02:29	Stop Date/Time:	02/20/02 01:21
Event Rain (mm):	15	Total Flow Volume (L):	61480	Estimated Percent Capture:	91%
Max Intensity (mm/hr):	6.00	Peak Flow (L/s):	3.38	Successful Aliquots:	15
		Observed Runoff Coefficient:	2.970		

Notes: Last recorded rainfall time used as end time.
Rain data is a combination of rainfall and snowfall that melted in rain gauge.

Event Summary

Site: Tahoe Airport Influent (3-202)
Event: 2001-16

Catchment Area (ha): 0.138
Assumed Runoff Coefficient: 0.8



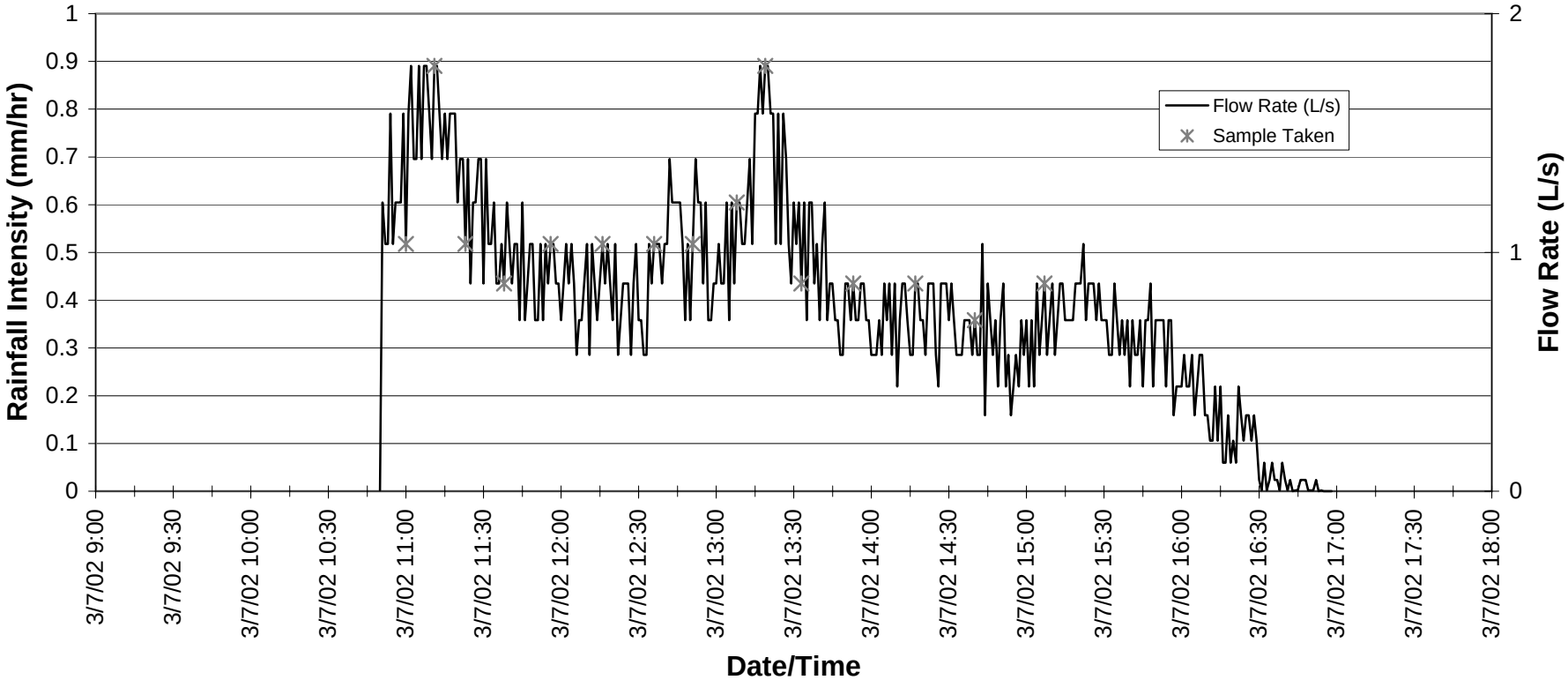
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	03/05/02 20:15	Start Date/Time:	03/05/02 19:48	Start Date/Time:	03/05/02 20:18
Stop Date/Time:	03/06/02 16:45	Stop Date/Time:	03/06/02 16:43	Stop Date/Time:	03/06/02 15:44
Event Rain (mm):	21.30	Total Flow Volume (L):	71607	Estimated Percent Capture:	95%
Max Intensity (mm/hr):	9.60	Peak Flow (L/s):	3.38	Successful Aliquots:	35
		Observed Runoff Coefficient:	2.436		

Notes: Last recorded rainfall time used as end time.

Event Summary

Site: Tahoe Airport Influent (3-202)
Event: 2001-17

Catchment Area (ha): 0.138
Assumed Runoff Coefficient: 0.8



Runoff Data

Start Date/Time:	03/07/02 10:50
Stop Date/Time:	03/07/02 16:59
Total Flow Volume (L):	17709
Peak Flow (L/s):	1.78

Sample Data

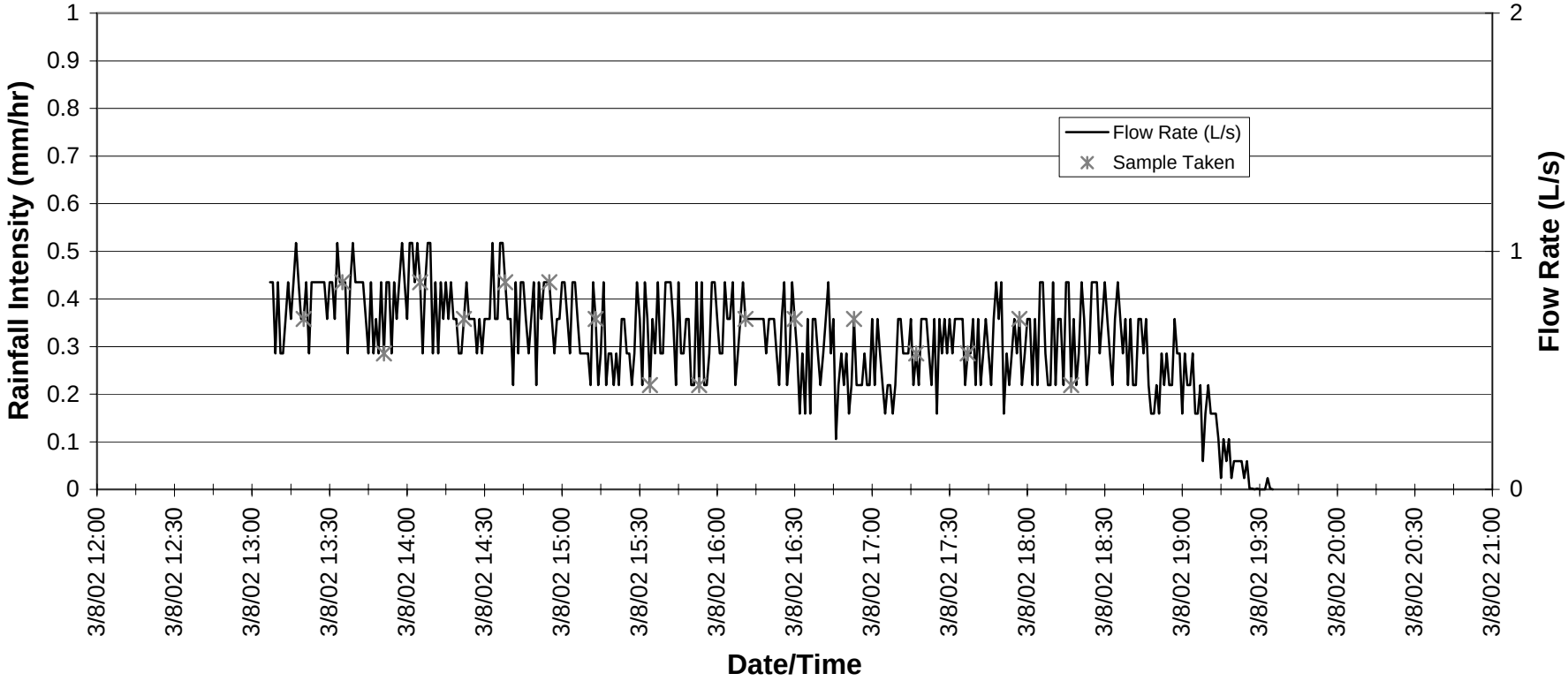
Start Date/Time:	03/07/02 11:00
Stop Date/Time:	03/07/02 15:07
Estimated Percent Capture:	71%
Successful Aliquots:	15

Notes: Rain/snow mix

Event Summary

Site: Tahoe Airport Influent (3-202)
Event: 2001-18

Catchment Area (ha): 0.138
Assumed Runoff Coefficient: 0.8



Runoff Data

Start Date/Time:	03/08/02 13:07
Stop Date/Time:	03/08/02 19:36
Total Flow Volume (L):	14554
Peak Flow (L/s):	1.04

Sample Data

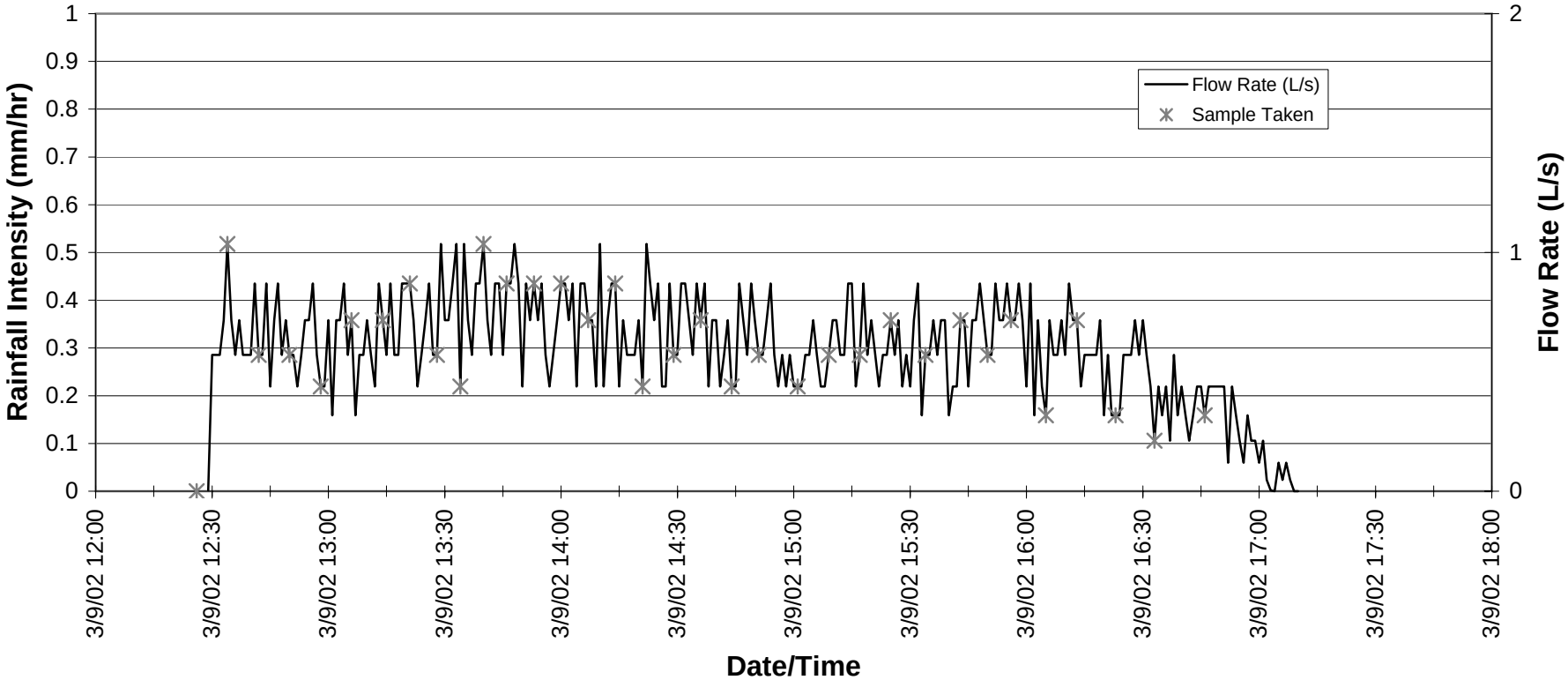
Start Date/Time:	03/08/02 13:20
Stop Date/Time:	03/08/02 18:17
Estimated Percent Capture:	74%
Successful Aliquots:	17

Notes: Snowmelt event. Insufficient coverage due to two samples being missed during very low flows at end of event.

Event Summary

Site: Tahoe Airport Influent (3-202)
Event: 2001-19

Catchment Area (ha): 0.138
Assumed Runoff Coefficient: 0.8



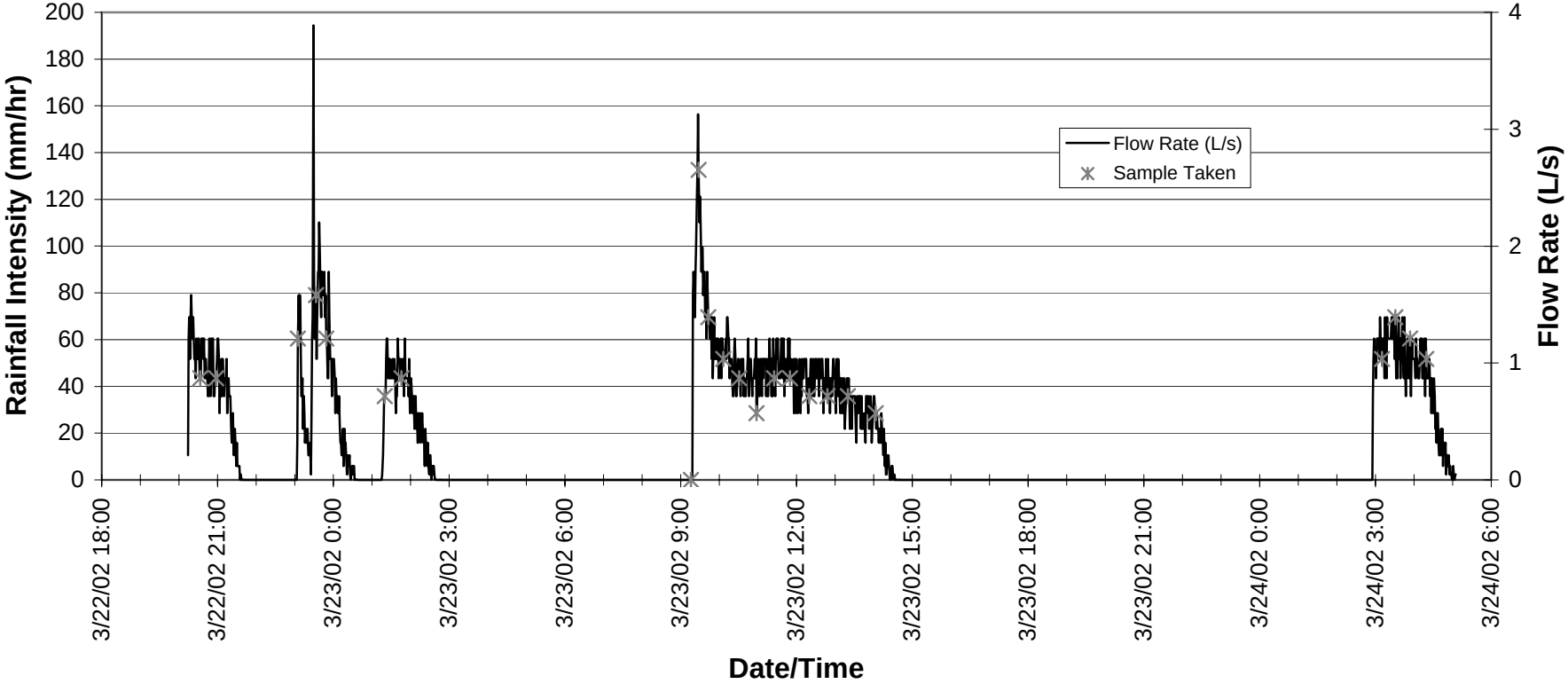
Runoff Data		*Sample Data*	
Start Date/Time:	03/09/02 12:29	Start Date/Time:	03/09/02 12:26
Stop Date/Time:	03/09/02 17:11	Stop Date/Time:	03/09/02 16:46
Total Flow Volume (L):	10127	Estimated Percent Capture:	97%
Peak Flow (L/s):	1.04	Successful Aliquots:	34

Notes: Sampling period extends outside of flow period.

Event Summary

Site: Tahoe Airport Influent (3-202)
Event: 2001-20

Catchment Area (ha): 0.138
Assumed Runoff Coefficient: 0.8



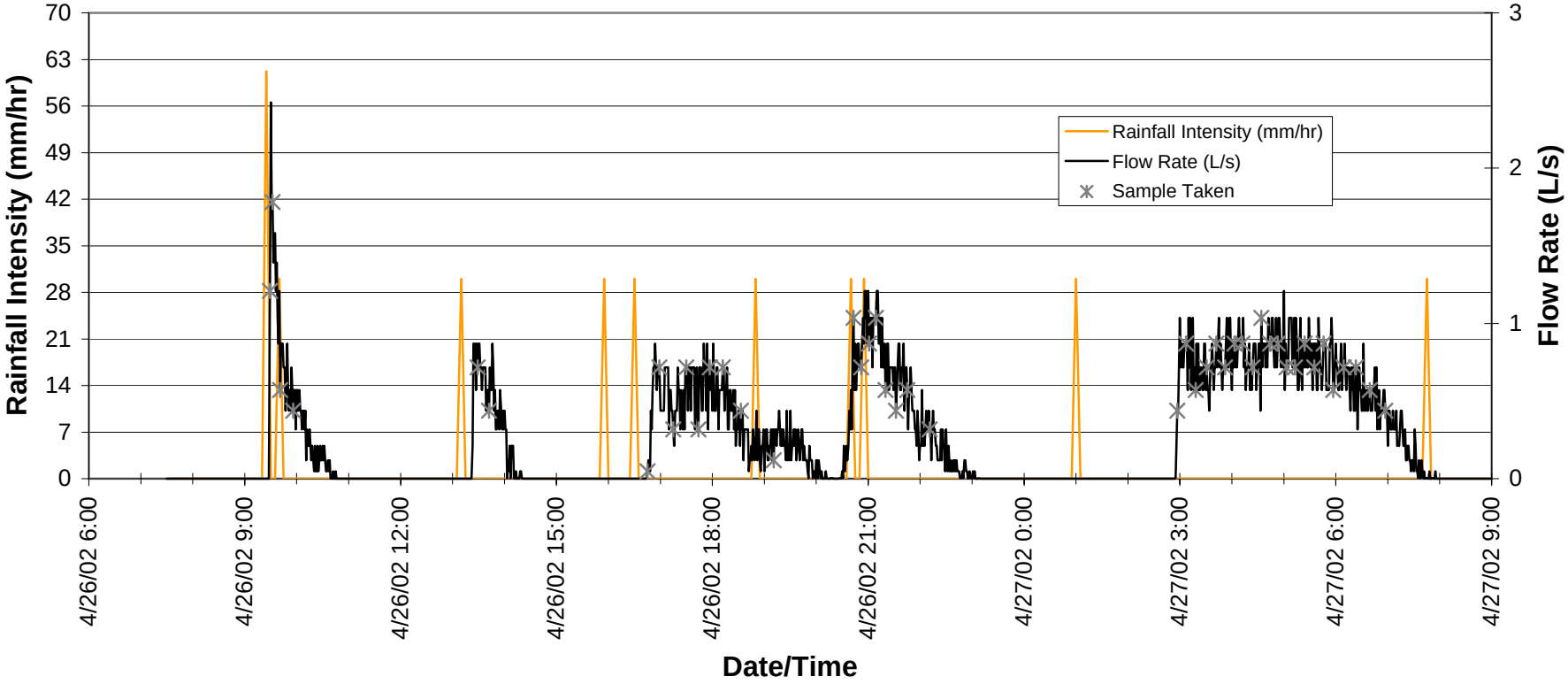
Runoff Data		*Sample Data*	
Start Date/Time:	03/22/02 20:14	Start Date/Time:	03/22/02 20:33
Stop Date/Time:	03/24/02 05:06	Stop Date/Time:	03/24/02 04:19
Total Flow Volume (L):	35405	Estimated Percent Capture:	93%
Peak Flow (L/s):	3.89	Successful Aliquots:	23

Notes: Sporadic rain and snow over weekend. Snow melted as it hit ground. No rain data obtained.

Event Summary

Site: Tahoe Airport Influent (3-202)
Event: 2001-22

Catchment Area (ha): 0.138
Assumed Runoff Coefficient: 0.8



Rain Data

Start Date/Time:	04/26/02 09:25
Stop Date/Time:	04/27/02 01:00
Event Rain (mm):	22.60
Max Intensity (mm/hr):	61.20

Runoff Data

Start Date/Time:	04/26/02 07:30
Stop Date/Time:	04/27/02 09:00
Total Flow Volume (L):	23799
Peak Flow (L/s):	2.42
Observed Runoff Coefficient:	0.763

Sample Data

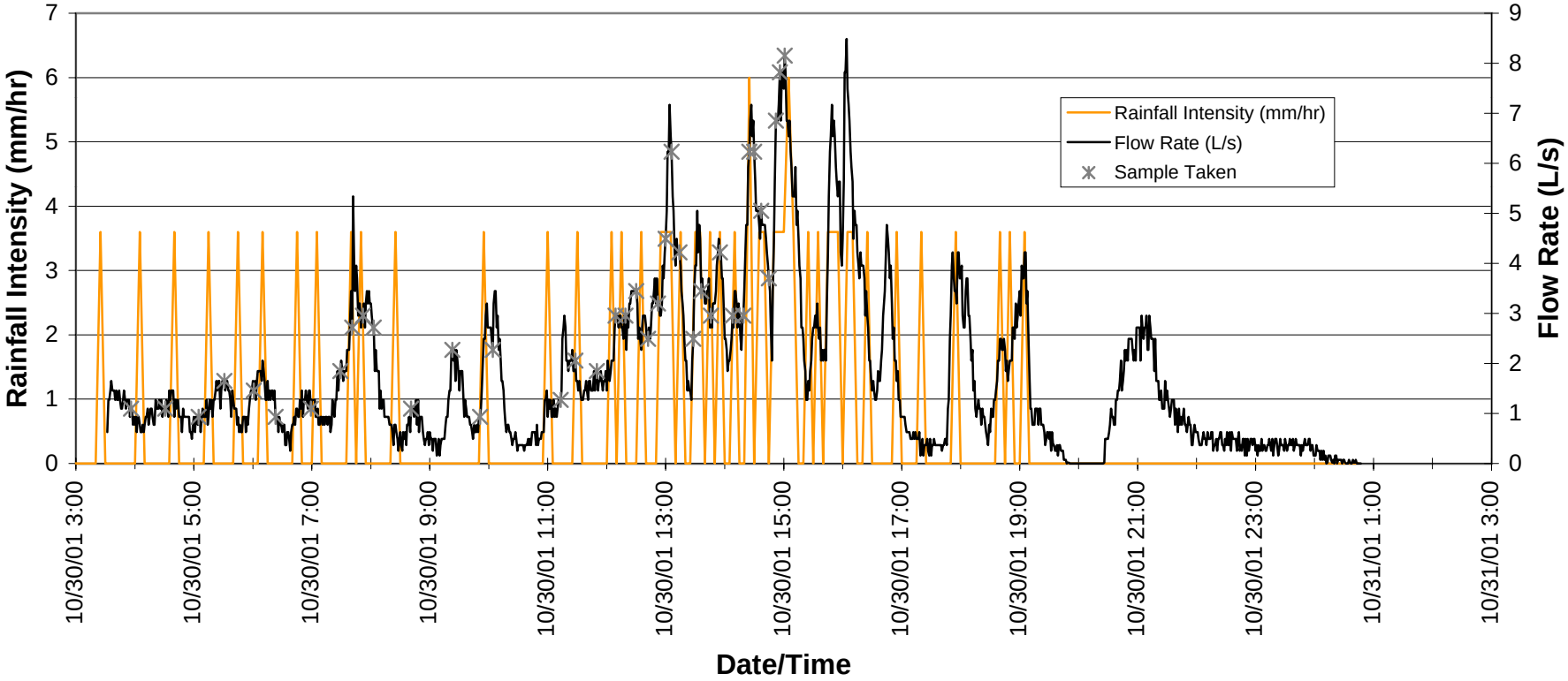
Start Date/Time:	04/26/02 09:29
Stop Date/Time:	04/27/02 06:57
Estimated Percent Capture:	91%
Successful Aliquots:	45

Notes: rain event

Event Summary

Site: Echo Summit Influent (3-203)
Event: 2001-02

Catchment Area (ha): 0.324
Assumed Runoff Coefficient: 0.95



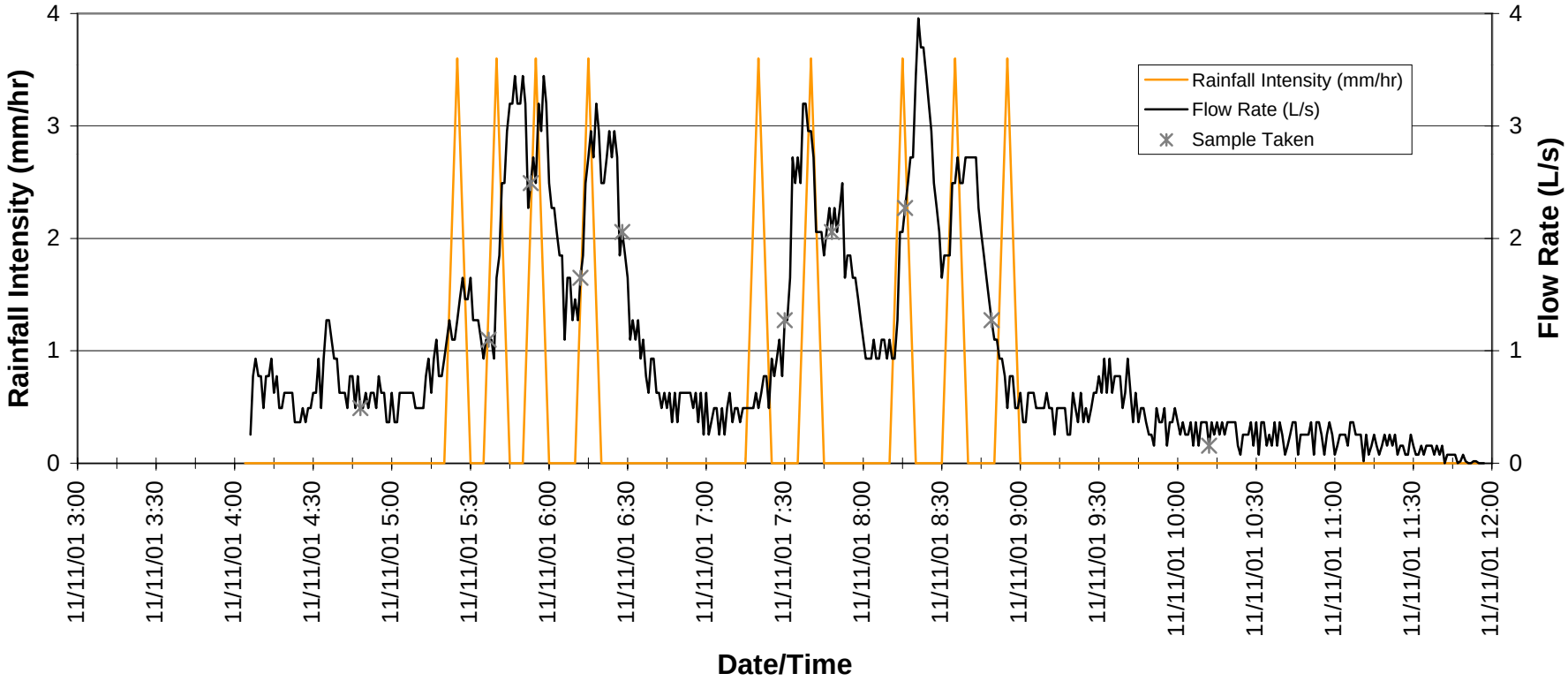
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	10/30/01 03:25	Start Date/Time:	10/30/01 03:32	Start Date/Time:	10/30/01 03:56
Stop Date/Time:	10/31/01 00:45	Stop Date/Time:	10/31/01 00:48	Stop Date/Time:	10/30/01 15:01
Event Rain (mm):	14.80	Total Flow Volume (L):	132722	Estimated Percent Capture:	58%
Max Intensity (mm/hr):	6.00	Peak Flow (L/s):	8.49	Successful Aliquots:	39
		Observed Runoff Coefficient:	2.768		

Notes: Last recorded rainfall time used as end time.

Event Summary

Site: Echo Summit Influent (3-203)
Event: 2001-03

Catchment Area (ha): 0.324
Assumed Runoff Coefficient: 0.95



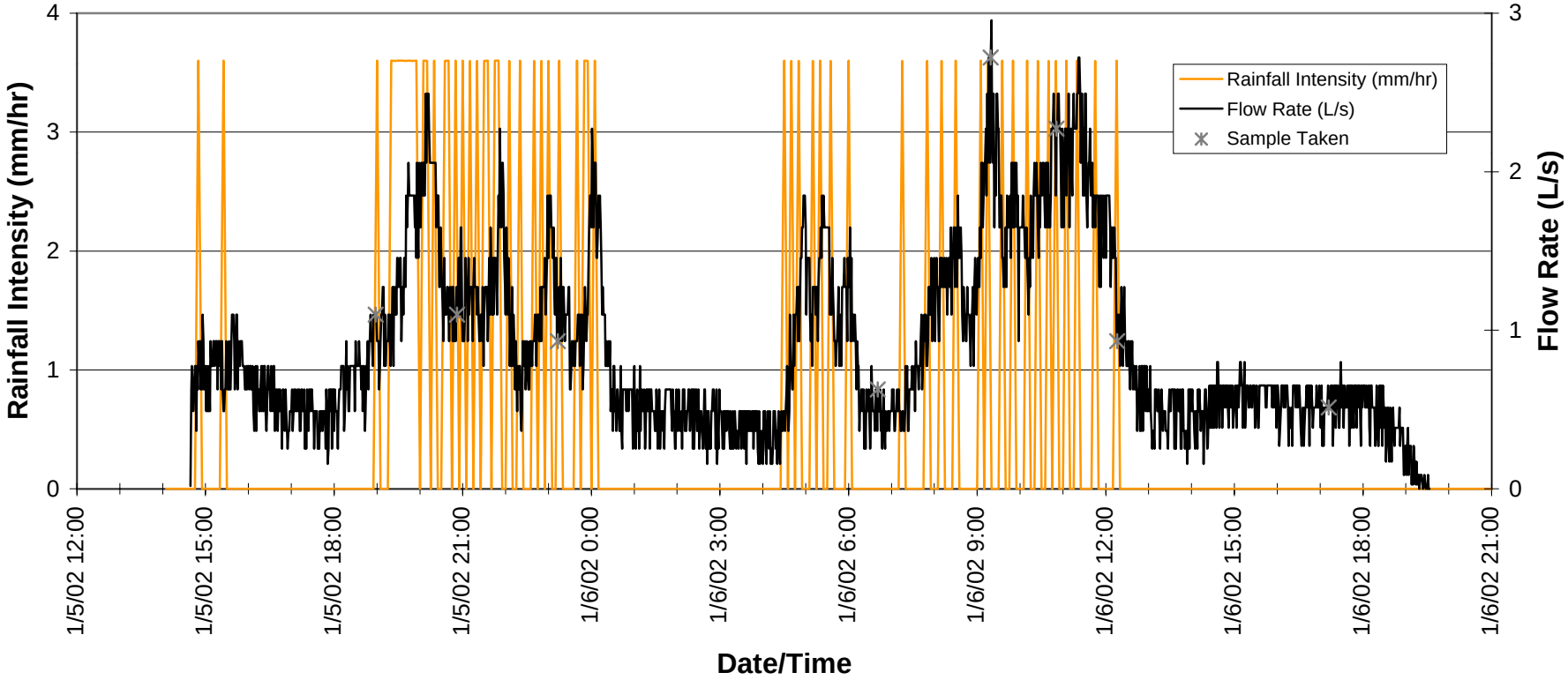
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	11/11/01 04:05	Start Date/Time:	11/11/01 04:06	Start Date/Time:	11/11/01 04:48
Stop Date/Time:	11/11/01 11:55	Stop Date/Time:	11/11/01 11:58	Stop Date/Time:	11/11/01 10:12
Event Rain (mm):	3.	Total Flow Volume (L):	27925	Estimated Percent Capture:	90%
Max Intensity (mm/hr):	3.60	Peak Flow (L/s):	3.96	Successful Aliquots:	10
		Observed Runoff Coefficient:	2.873		

Notes: Last recorded rainfall time used as end time.

Event Summary

Site: Echo Summit Influent (3-203)
Event: 2001-08

Catchment Area (ha): 0.324
Assumed Runoff Coefficient: 0.95



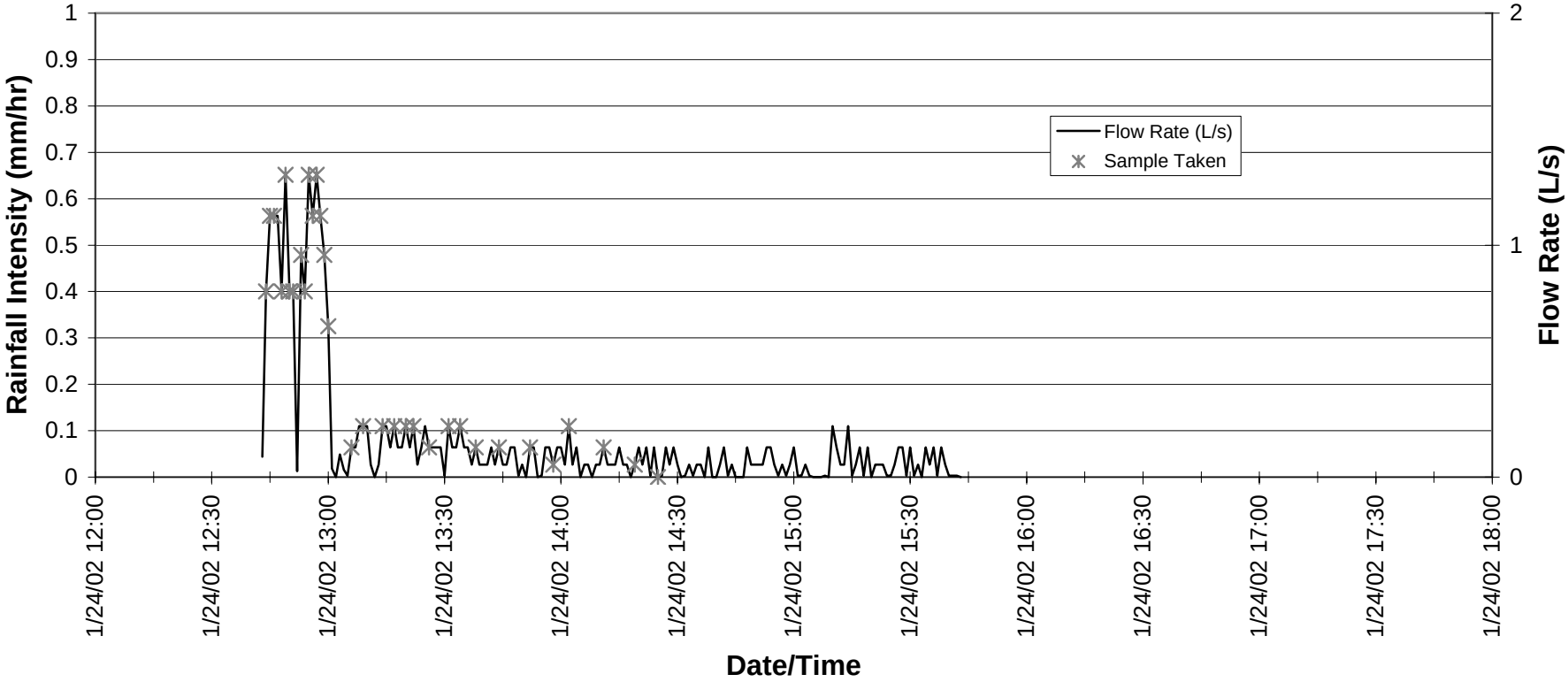
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	01/05/02 14:05	Start Date/Time:	01/05/02 14:39	Start Date/Time:	01/05/02 18:58
Stop Date/Time:	01/06/02 12:15	Stop Date/Time:	01/06/02 19:34	Stop Date/Time:	01/06/02 17:12
Event Rain (mm):	17.40	Total Flow Volume (L):	93306	Estimated Percent Capture:	76%
Max Intensity (mm/hr):	3.60	Peak Flow (L/s):	2.96	Successful Aliquots:	8
		Observed Runoff Coefficient:	1.655		

Notes: An aliquot was attempted on 1/7/02 at 8:30 AM when no flow was recorded. It has not been included in this graph.

Event Summary

Site: Echo Summit Influent (3-203)
Event: 2001-10

Catchment Area (ha): 0.324
Assumed Runoff Coefficient: 0.95



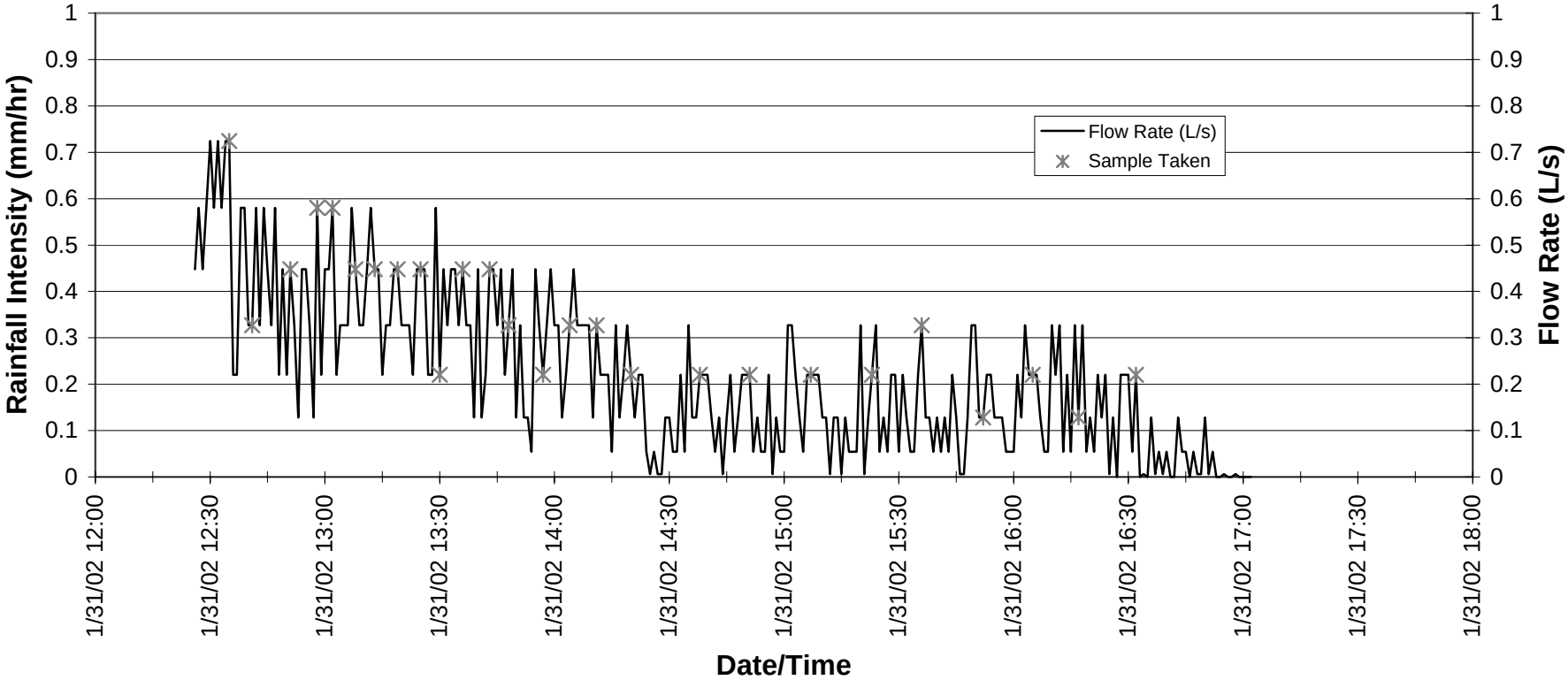
Runoff Data		*Sample Data*	
Start Date/Time:	01/24/02 12:43	Start Date/Time:	01/24/02 12:44
Stop Date/Time:	01/24/02 16:52	Stop Date/Time:	01/24/02 14:25
Total Flow Volume (L):	1713	Estimated Percent Capture:	84%
Peak Flow (L/s):	1.30	Successful Aliquots:	32

Notes: Snowmelt event.

Event Summary

Site: Echo Summit Influent (3-203)
Event: 2001-11

Catchment Area (ha): 0.324
Assumed Runoff Coefficient: 0.95



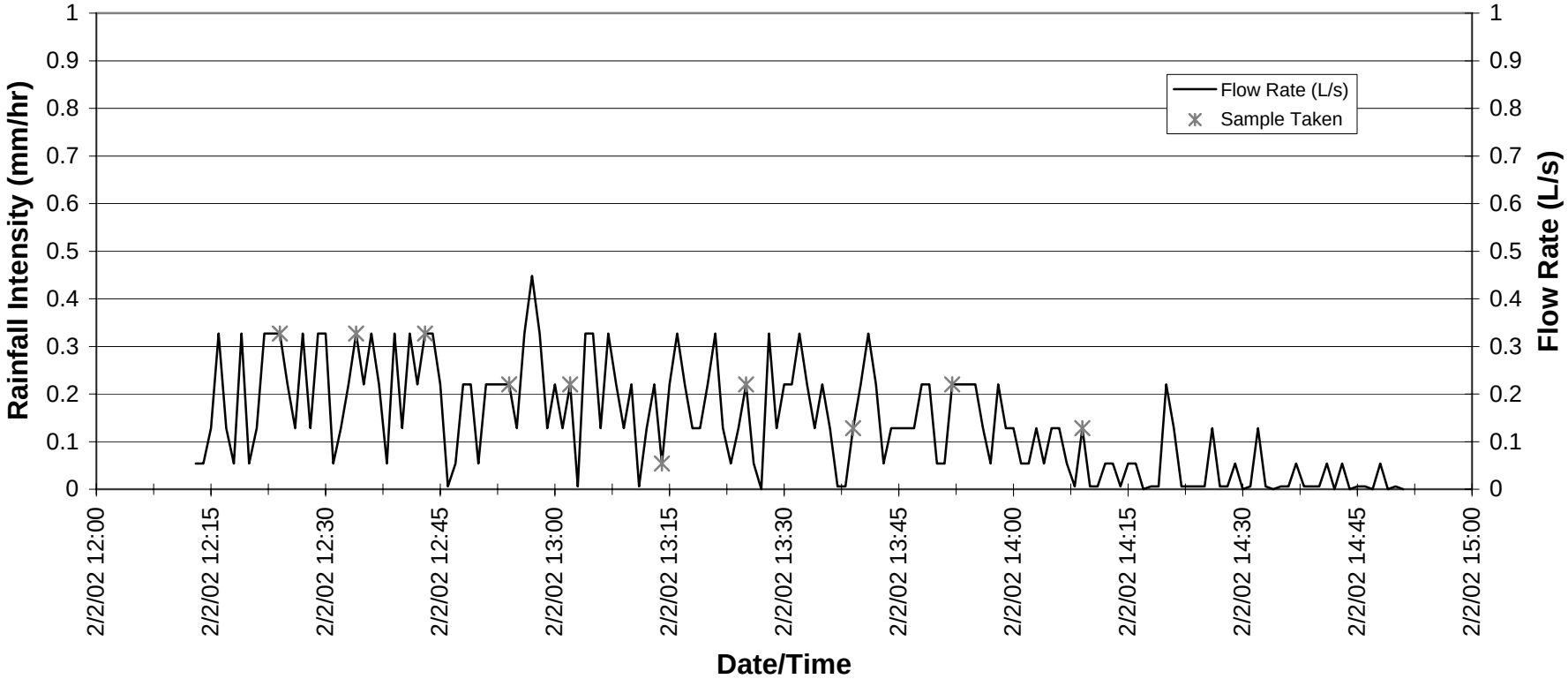
Runoff Data		*Sample Data*	
Start Date/Time:	01/31/02 12:26	Start Date/Time:	01/31/02 12:35
Stop Date/Time:	01/31/02 17:03	Stop Date/Time:	01/31/02 16:32
Total Flow Volume (L):	3662	Estimated Percent Capture:	83%
Peak Flow (L/s):	0.72	Successful Aliquots:	26

Notes: Snowmelt event. False flow occurring at start of data. Actual flows began during set up procedures.

Event Summary

Site: Echo Summit Influent (3-203)
Event: 2001-12

Catchment Area (ha): 0.324
Assumed Runoff Coefficient: 0.95



Runoff Data

Start Date/Time:	02/02/02 12:13
Stop Date/Time:	02/02/02 14:52
Total Flow Volume (L):	1328
Peak Flow (L/s):	0.45

Sample Data

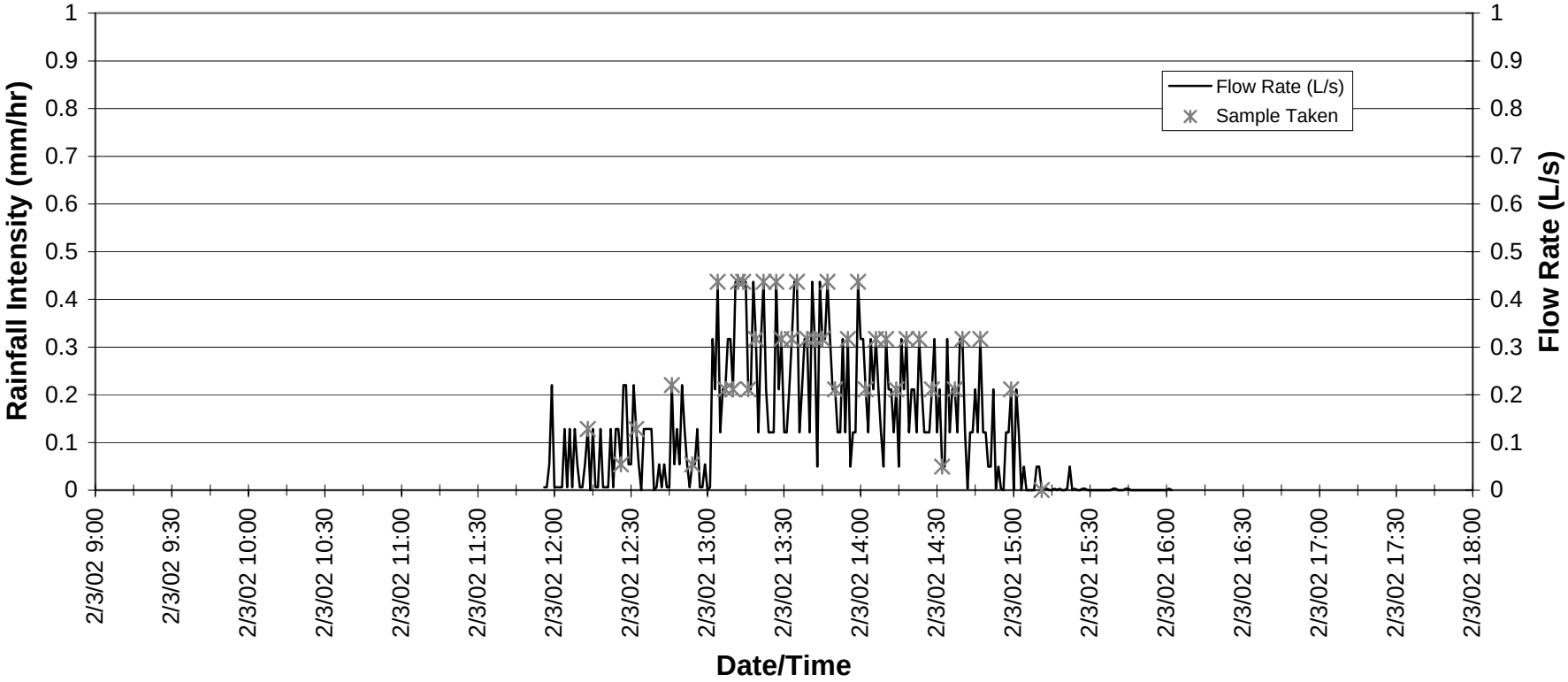
Start Date/Time:	02/02/02 12:24
Stop Date/Time:	02/02/02 14:09
Estimated Percent Capture:	85%
Successful Aliquots:	10

Notes: Snowmelt runoff event. False flow readings at start of data. Actual flows observed to begin at set up time.

Event Summary

Site: Echo Summit Influent (3-203)
Event: 2001-13

Catchment Area (ha): 0.324
Assumed Runoff Coefficient: 0.95



Runoff Data

Start Date/Time:	02/03/02 11:56
Stop Date/Time:	02/03/02 16:03
Total Flow Volume (L):	1861
Peak Flow (L/s):	0.44

Sample Data

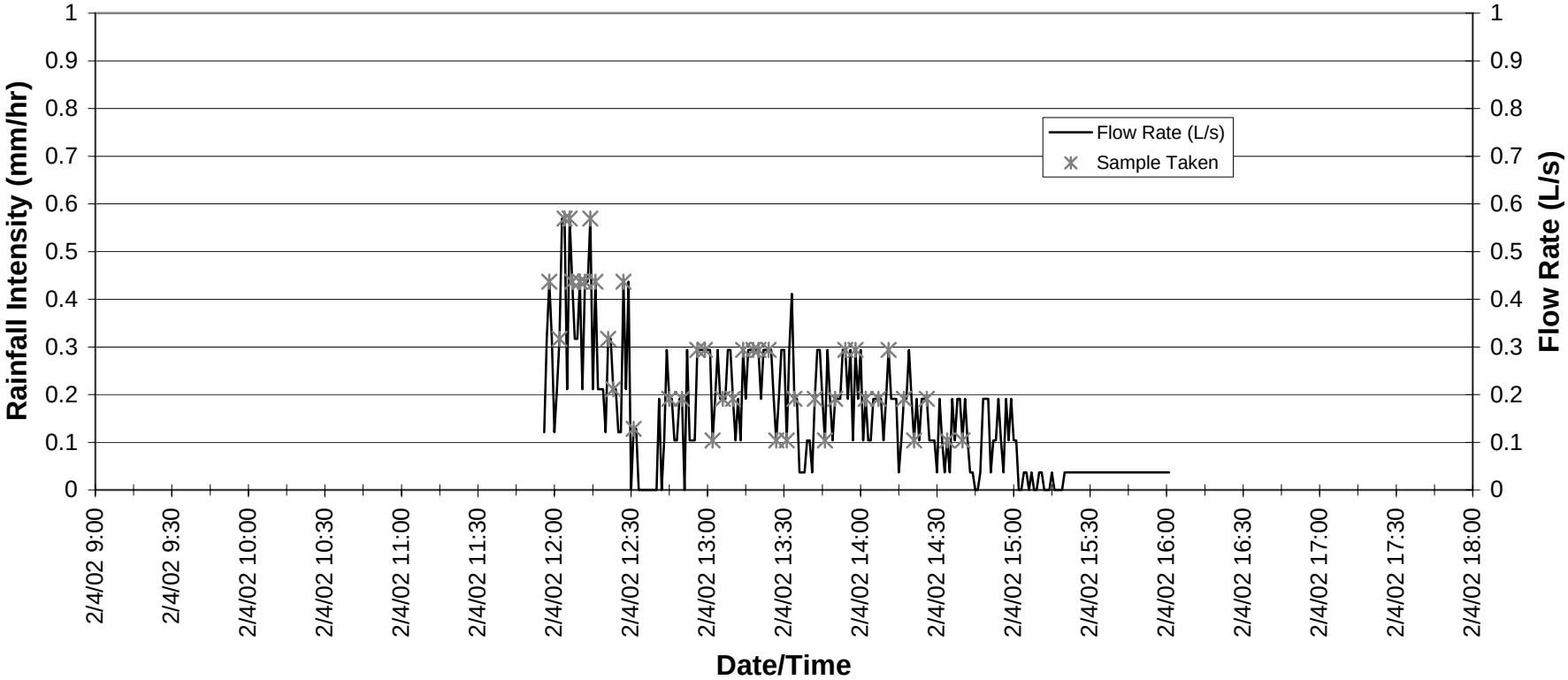
Start Date/Time:	02/03/02 12:13
Stop Date/Time:	02/03/02 15:11
Estimated Percent Capture:	97%
Successful Aliquots:	37

Notes: Snowmelt runoff event.

Event Summary

Site: Echo Summit Influent (3-203)
Event: 2001-14

Catchment Area (ha): 0.324
Assumed Runoff Coefficient: 0.95



Runoff Data

Start Date/Time:	02/04/02 11:56
Stop Date/Time:	02/04/02 16:02
Total Flow Volume (L):	2242
Peak Flow (L/s):	0.57

Sample Data

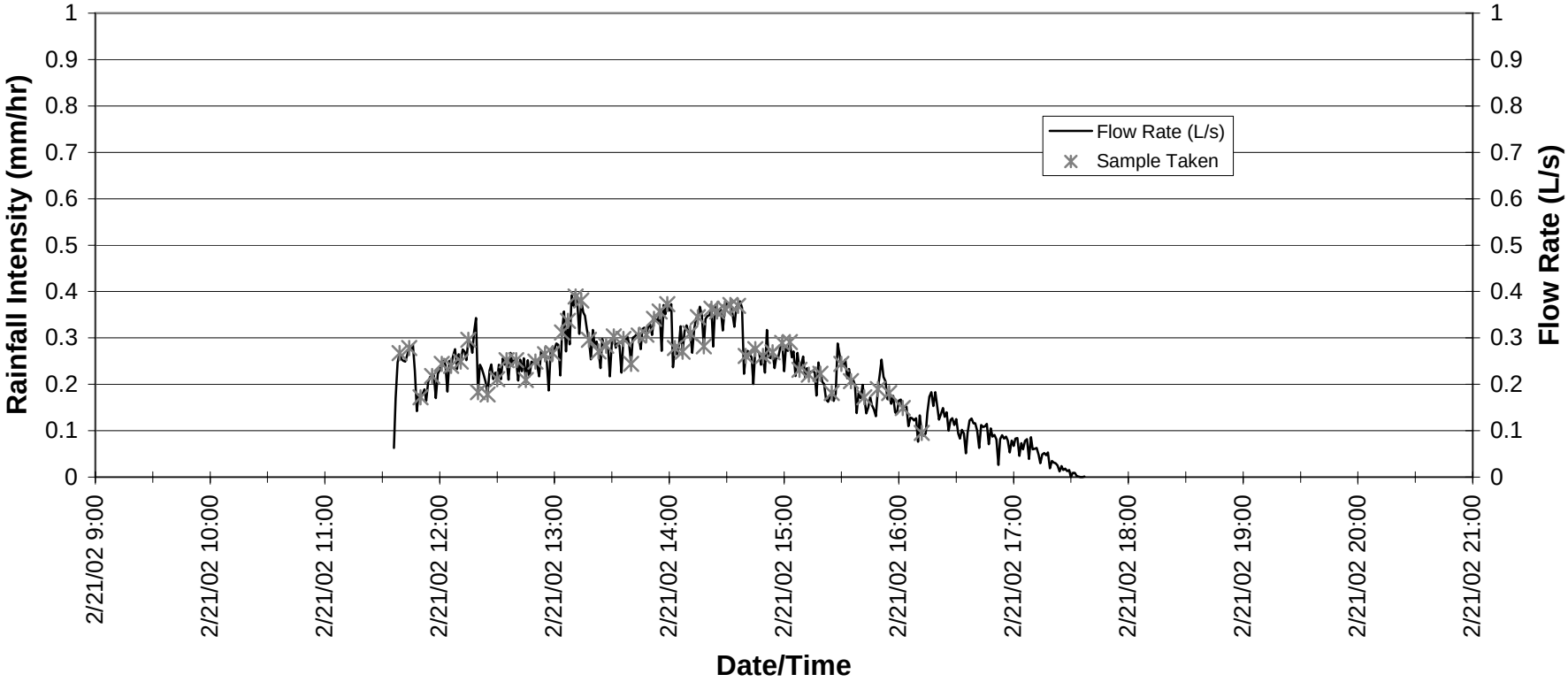
Start Date/Time:	02/04/02 11:58
Stop Date/Time:	02/04/02 14:40
Estimated Percent Capture:	87%
Successful Aliquots:	40

Notes: Snowmelt runoff event.

Event Summary

Site: Echo Summit Influent (3-203)
Event: 2001-16

Catchment Area (ha): 0.324
Assumed Runoff Coefficient: 0.95



Runoff Data

Start Date/Time:	02/21/02 11:36
Stop Date/Time:	02/21/02 19:57
Total Flow Volume (L):	4628
Peak Flow (L/s):	0.39

Sample Data

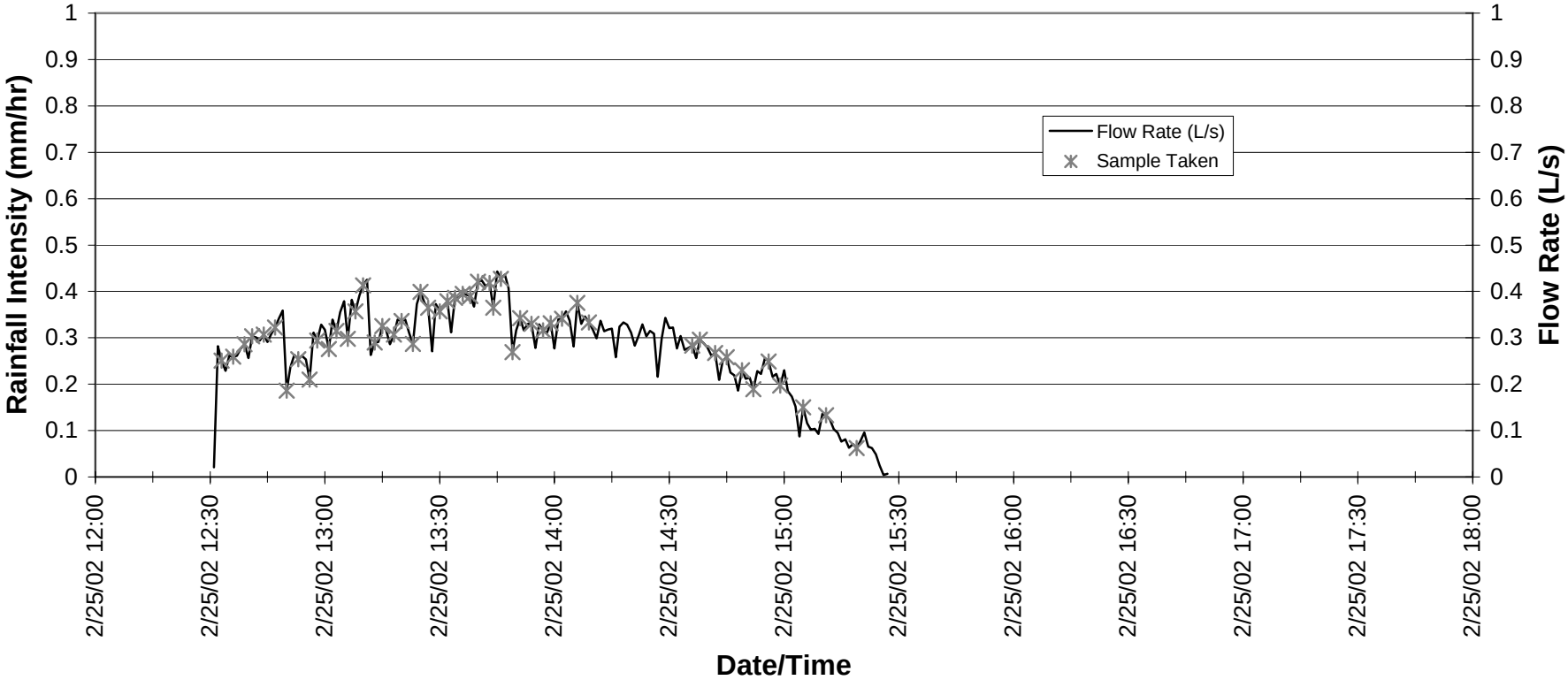
Start Date/Time:	02/21/02 11:39
Stop Date/Time:	02/21/02 16:12
Estimated Percent Capture:	91%
Successful Aliquots:	59

Notes: Sampler reset for 40 more samples at 13:03. Snowmelt event.

Event Summary

Site: Echo Summit Influent (3-203)
Event: 2001-17

Catchment Area (ha): 0.324
Assumed Runoff Coefficient: 0.95



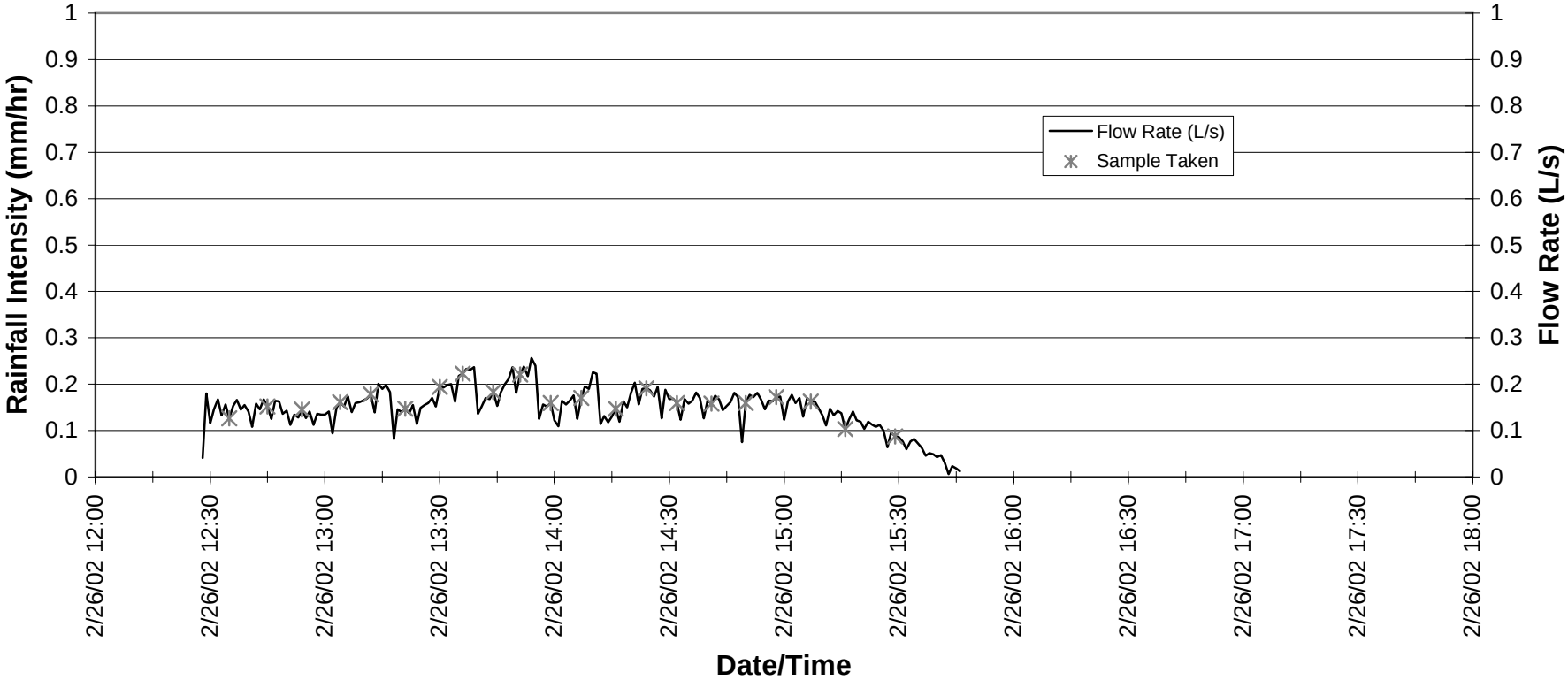
Runoff Data		*Sample Data*	
Start Date/Time:	02/25/02 12:31	Start Date/Time:	02/25/02 12:33
Stop Date/Time:	02/25/02 15:28	Stop Date/Time:	02/25/02 15:19
Total Flow Volume (L):	2912	Estimated Percent Capture:	81%
Peak Flow (L/s):	0.44	Successful Aliquots:	50

Notes: Snowmelt event.

Event Summary

Site: Echo Summit Influent (3-203)
Event: 2001-18

Catchment Area (ha): 0.324
Assumed Runoff Coefficient: 0.95



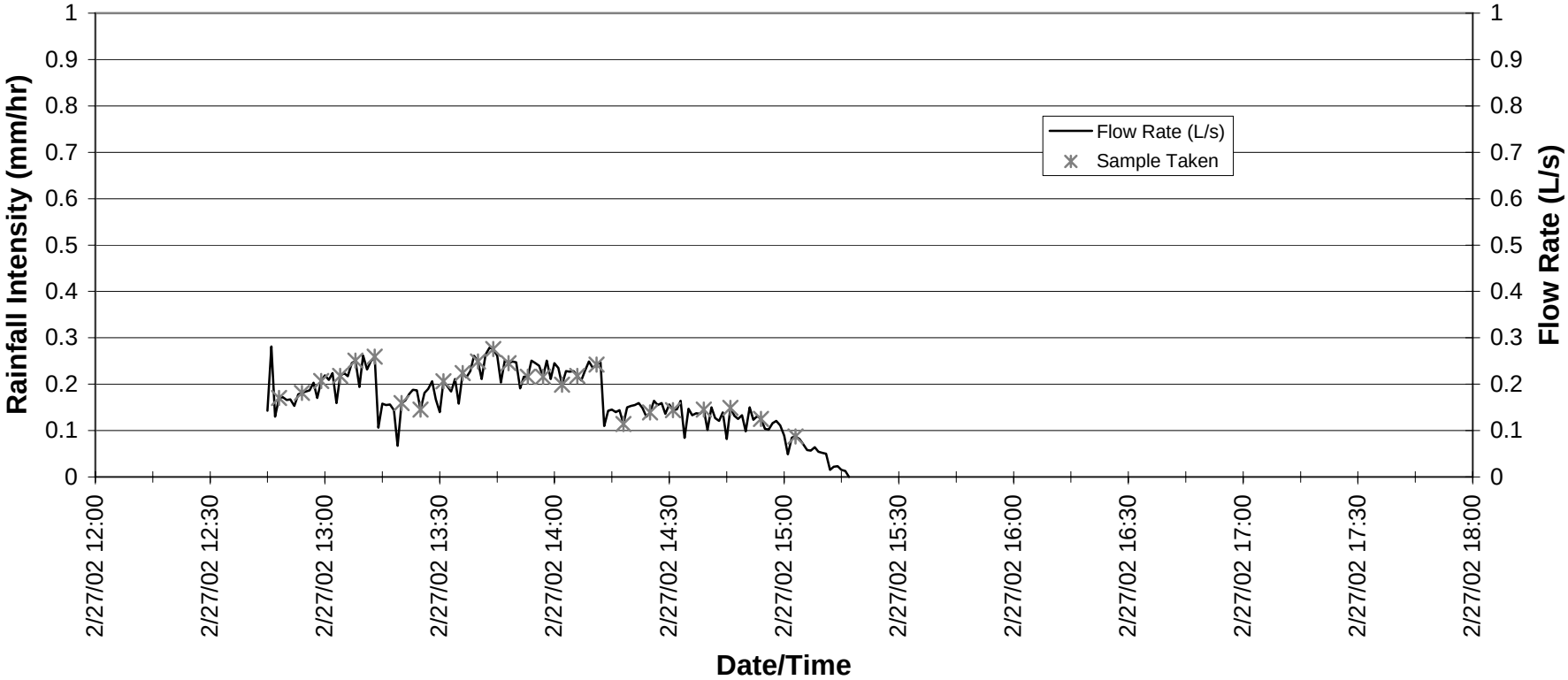
Runoff Data		*Sample Data*	
Start Date/Time:	02/26/02 12:28	Start Date/Time:	02/26/02 12:35
Stop Date/Time:	02/26/02 15:47	Stop Date/Time:	02/26/02 15:29
Total Flow Volume (L):	1756	Estimated Percent Capture:	94%
Peak Flow (L/s):	0.26	Successful Aliquots:	21

Notes: Snowmelt event.

Event Summary

Site: Echo Summit Influent (3-203)
Event: 2001-19

Catchment Area (ha): 0.324
Assumed Runoff Coefficient: 0.95



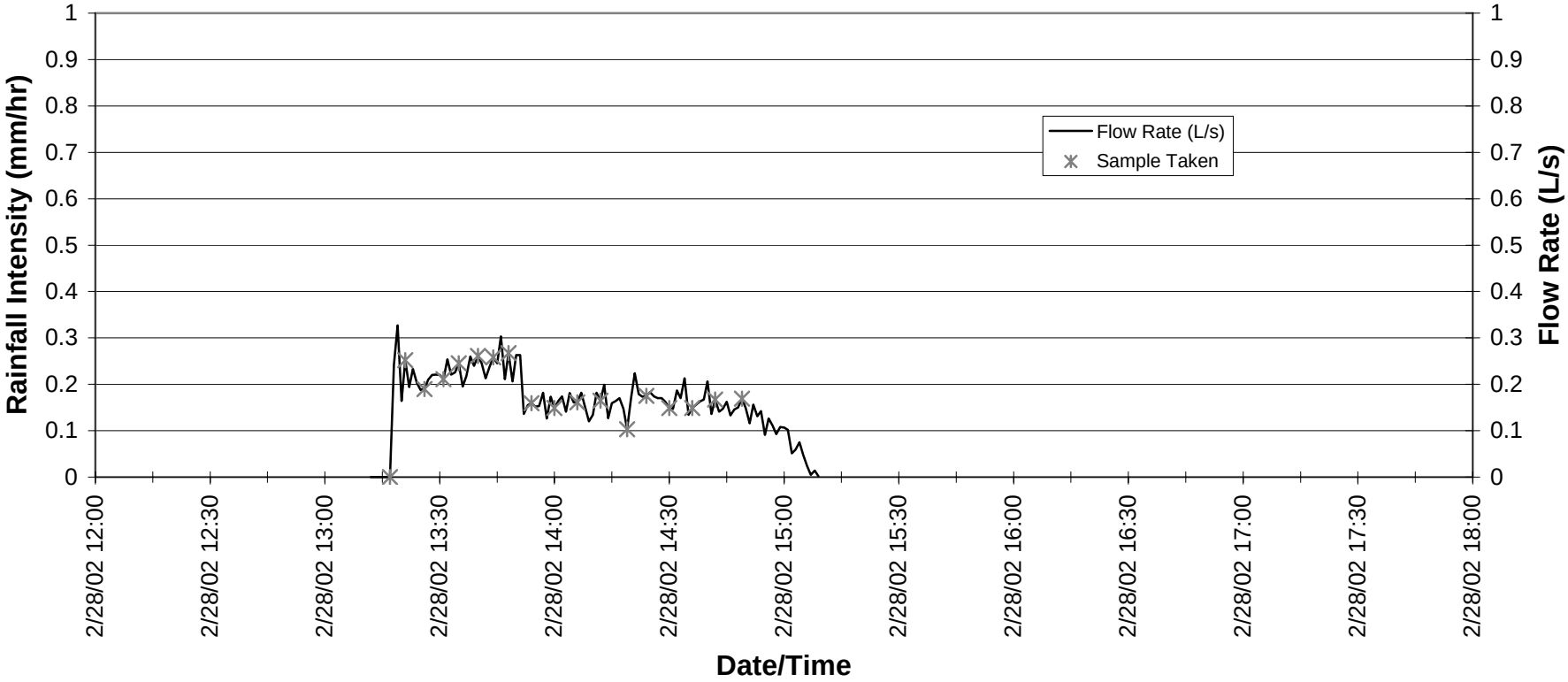
Runoff Data		*Sample Data*	
Start Date/Time:	02/27/02 12:45	Start Date/Time:	02/27/02 12:48
Stop Date/Time:	02/27/02 15:18	Stop Date/Time:	02/27/02 15:03
Total Flow Volume (L):	1517	Estimated Percent Capture:	95%
Peak Flow (L/s):	0.28	Successful Aliquots:	25

Notes: Snowmelt event.

Event Summary

Site: Echo Summit Influent (3-203)
Event: 2001-20

Catchment Area (ha): 0.324
Assumed Runoff Coefficient: 0.95



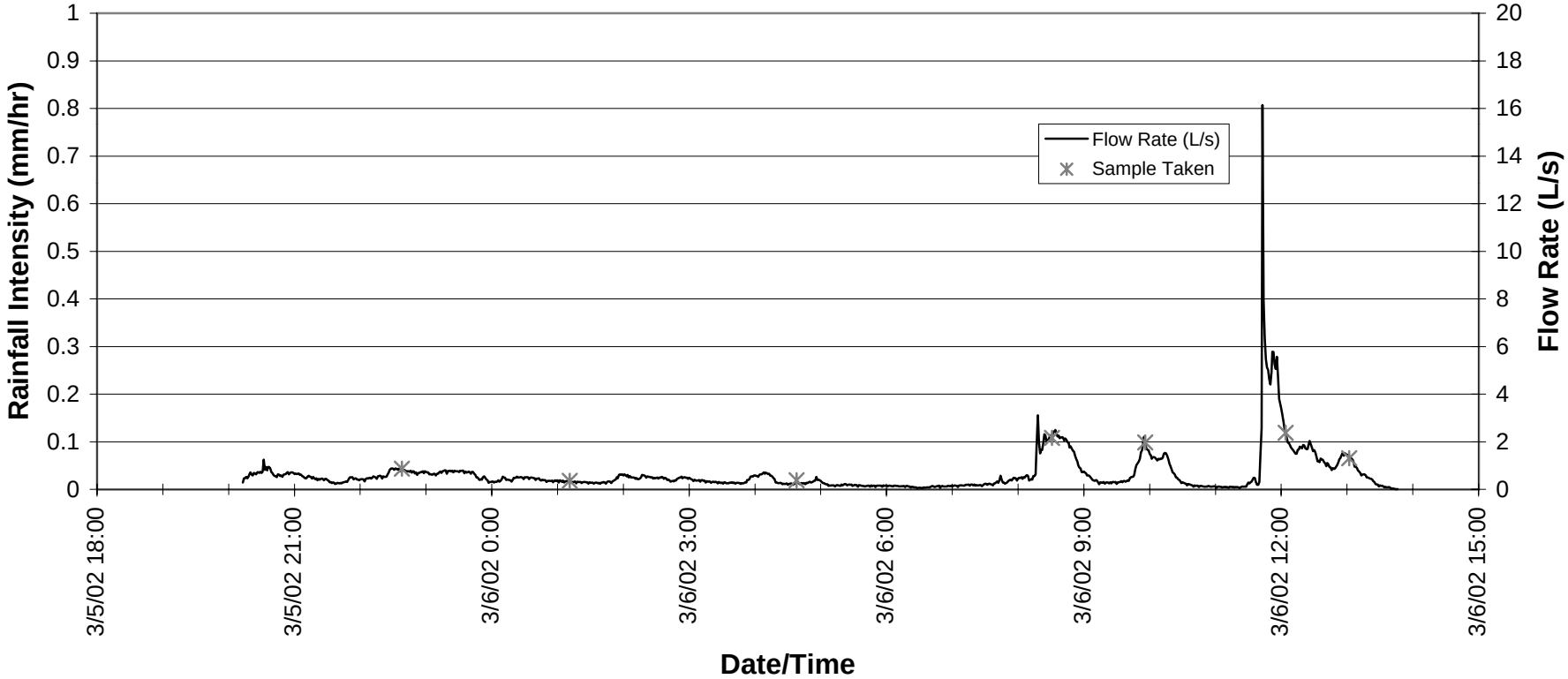
Runoff Data		*Sample Data*	
Start Date/Time:	02/28/02 13:12	Start Date/Time:	02/28/02 13:17
Stop Date/Time:	02/28/02 15:10	Stop Date/Time:	02/28/02 14:49
Total Flow Volume (L):	1138	Estimated Percent Capture:	86%
Peak Flow (L/s):	0.33	Successful Aliquots:	18

Notes: Snowmelt event.

Event Summary

Site: Echo Summit Influent (3-203)
Event: 2001-21

Catchment Area (ha): 0.324
Assumed Runoff Coefficient: 0.95



Runoff Data

Start Date/Time:	03/05/02 20:13
Stop Date/Time:	03/06/02 13:47
Total Flow Volume (L):	40382
Peak Flow (L/s):	16.14

Sample Data

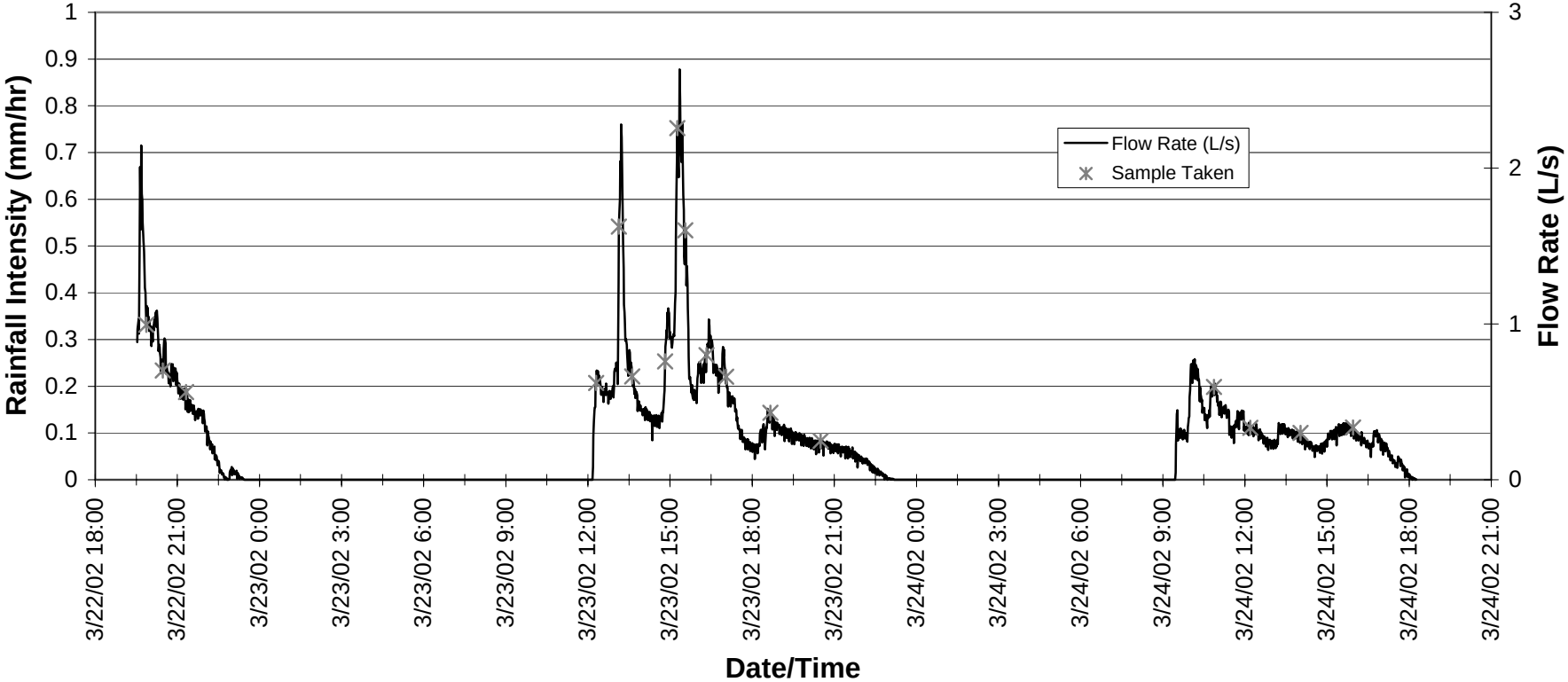
Start Date/Time:	03/05/02 22:38
Stop Date/Time:	03/06/02 13:02
Estimated Percent Capture:	75%
Successful Aliquots:	7

Notes: Rain/snow mix.

Event Summary

Site: Echo Summit Influent (3-203)
Event: 2001-23

Catchment Area (ha): 0.138
Assumed Runoff Coefficient: 0.8



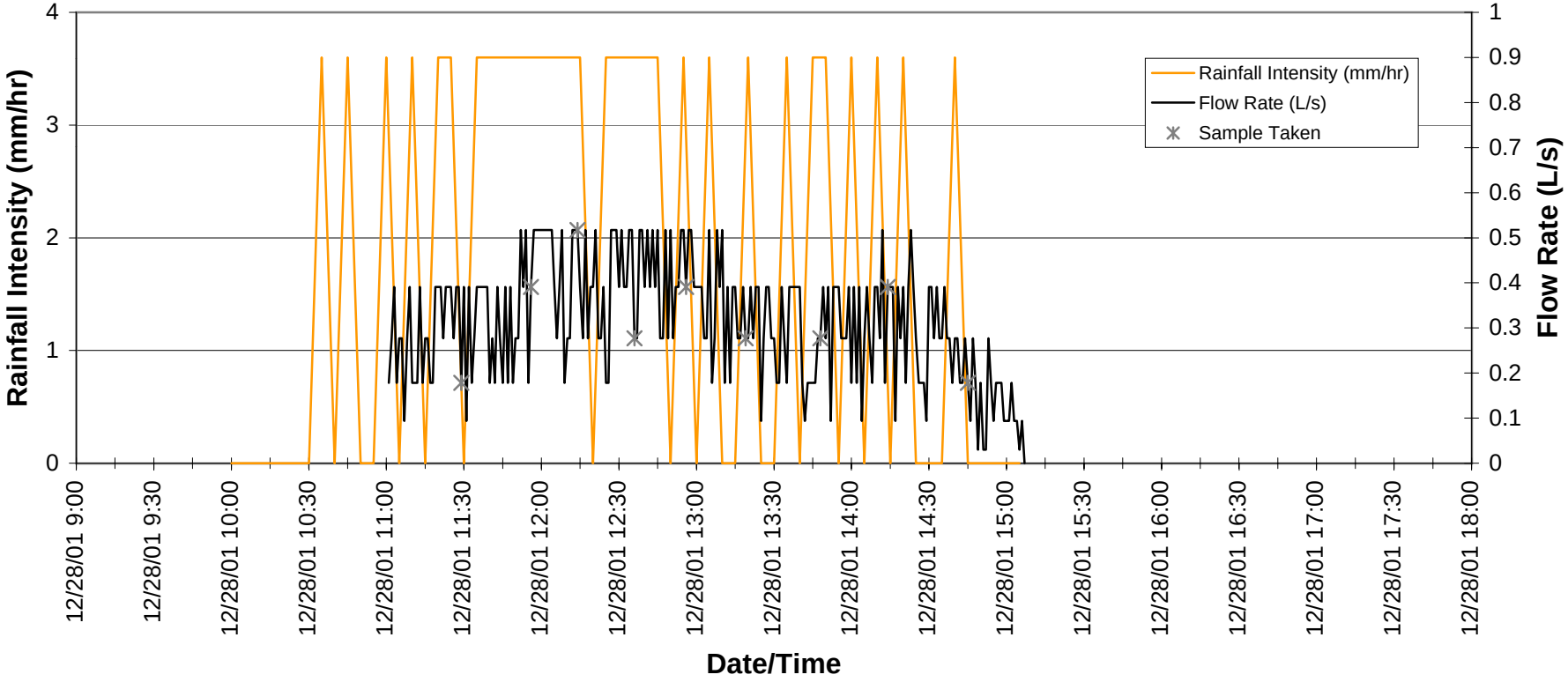
Runoff Data		*Sample Data*	
Start Date/Time:	03/22/02 19:32	Start Date/Time:	03/22/02 19:52
Stop Date/Time:	03/24/02 18:17	Stop Date/Time:	03/24/02 15:57
Total Flow Volume (L):	36200	Estimated Percent Capture:	86%
Peak Flow (L/s):	2.63	Successful Aliquots:	17

Notes: Sporadic snow over 2 days. Snow melted as it hit ground. No rain data.

Event Summary

Site: DL Bliss (3-218)
Event: 2001-01

Catchment Area (ha): 0.109
Assumed Runoff Coefficient: 0.7



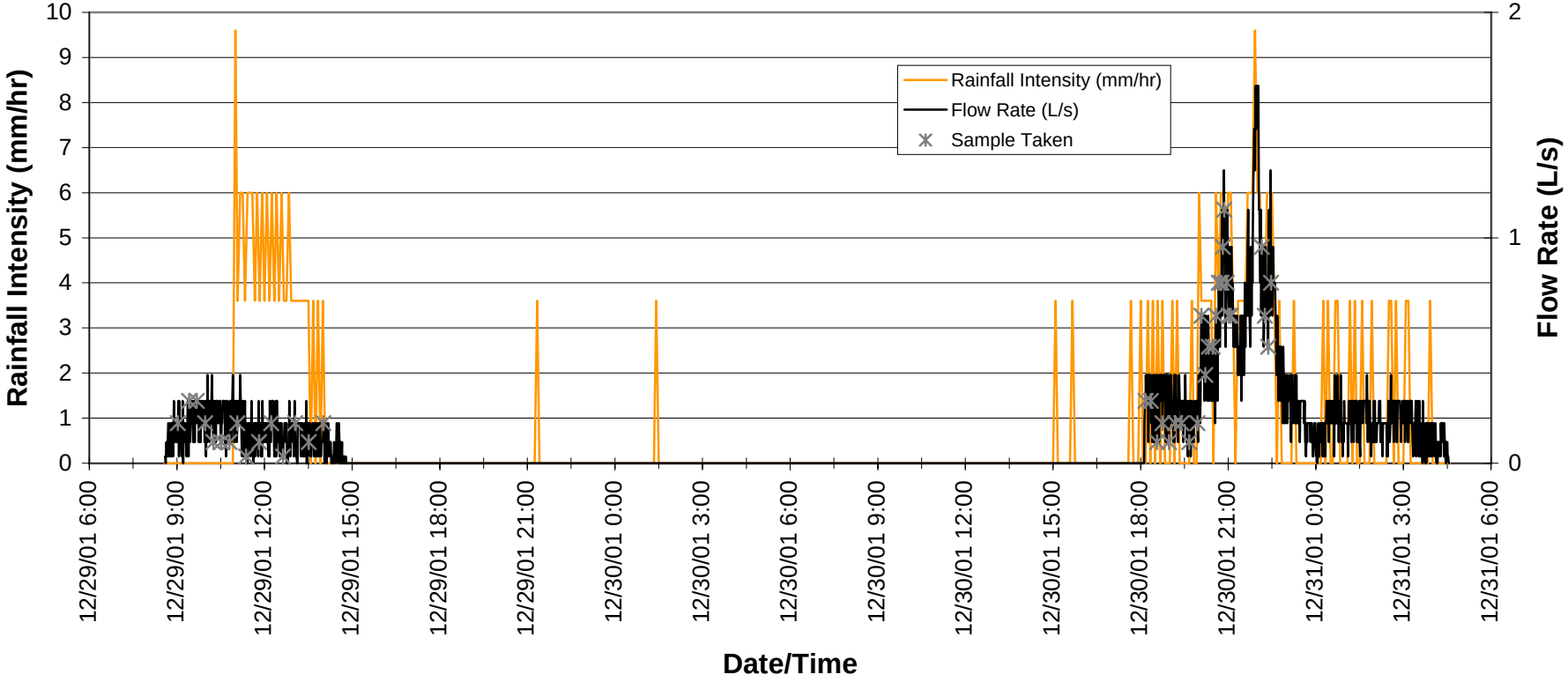
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	12/28/01 10:35	Start Date/Time:	12/28/01 11:01	Start Date/Time:	12/28/01 11:29
Stop Date/Time:	12/28/01 15:05	Stop Date/Time:	12/28/01 15:08	Stop Date/Time:	12/28/01 14:45
Event Rain (mm):	9.	Total Flow Volume (L):	4652	Estimated Percent Capture:	86%
Max Intensity (mm/hr):	3.60	Peak Flow (L/s):	0.52	Successful Aliquots:	9
		Observed Runoff Coefficient:	0.474		

Notes: Last recorded rainfall time used as end time.

Event Summary

Site: DL Bliss (3-218)
Event: 2001-02

Catchment Area (ha): 0.109
Assumed Runoff Coefficient: 0.7



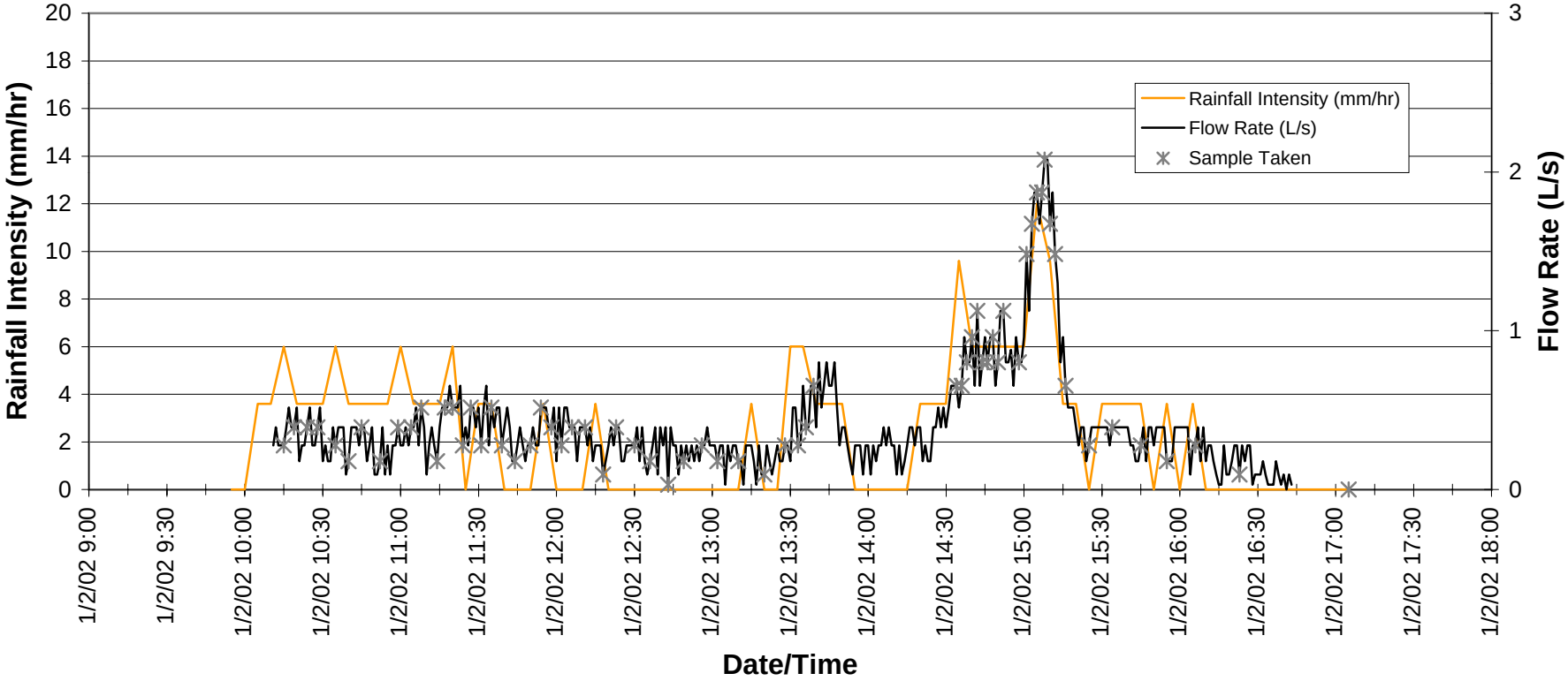
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	12/29/01 11:00	Start Date/Time:	12/29/01 08:36	Start Date/Time:	12/29/01 09:02
Stop Date/Time:	12/29/01 14:00	Stop Date/Time:	12/31/01 04:34	Stop Date/Time:	12/30/01 22:28
Event Rain (mm):	12.80	Total Flow Volume (L):	15881	Estimated Percent Capture:	70%
Max Intensity (mm/hr):	9.60	Peak Flow (L/s):	1.67	Successful Aliquots:	40
		Observed Runoff Coefficient:	1.138		

Notes:

Event Summary

Site: DL Bliss (3-218)
Event: 2001-03

Catchment Area (ha): 0.109
Assumed Runoff Coefficient: 0.7



Rain Data

Start Date/Time:	01/02/02 10:05
Stop Date/Time:	01/02/02 17:05
Event Rain (mm):	17.40
Max Intensity (mm/hr):	12.00

Runoff Data

Start Date/Time:	01/02/02 10:11
Stop Date/Time:	01/02/02 16:44
Total Flow Volume (L):	9330
Peak Flow (L/s):	2.08
Observed Runoff Coefficient:	0.492

Sample Data

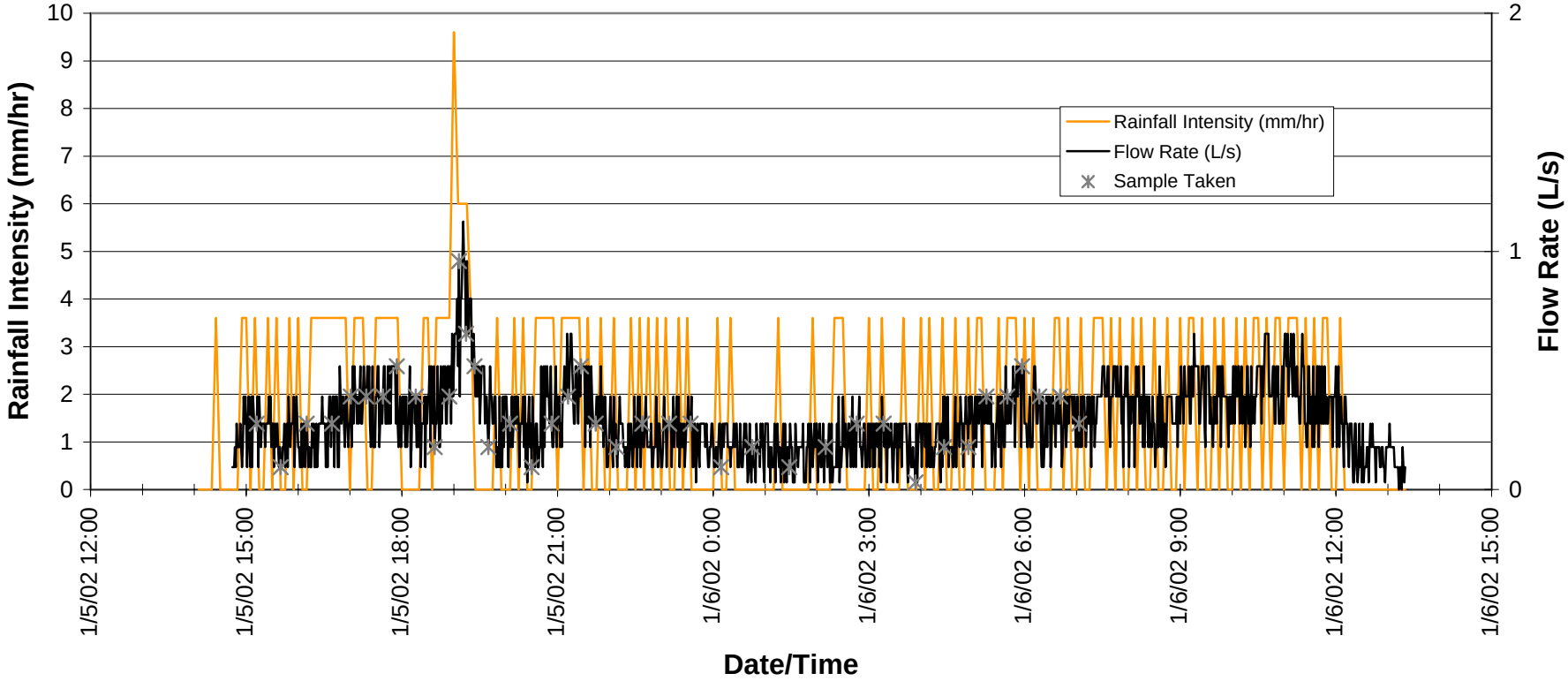
Start Date/Time:	01/02/02 10:15
Stop Date/Time:	01/02/02 17:05
Estimated Percent Capture:	88%
Successful Aliquots:	66

Notes:

Event Summary

Site: DL Bliss (3-218)
Event: 2001-04

Catchment Area (ha): 0.109
Assumed Runoff Coefficient: 0.7



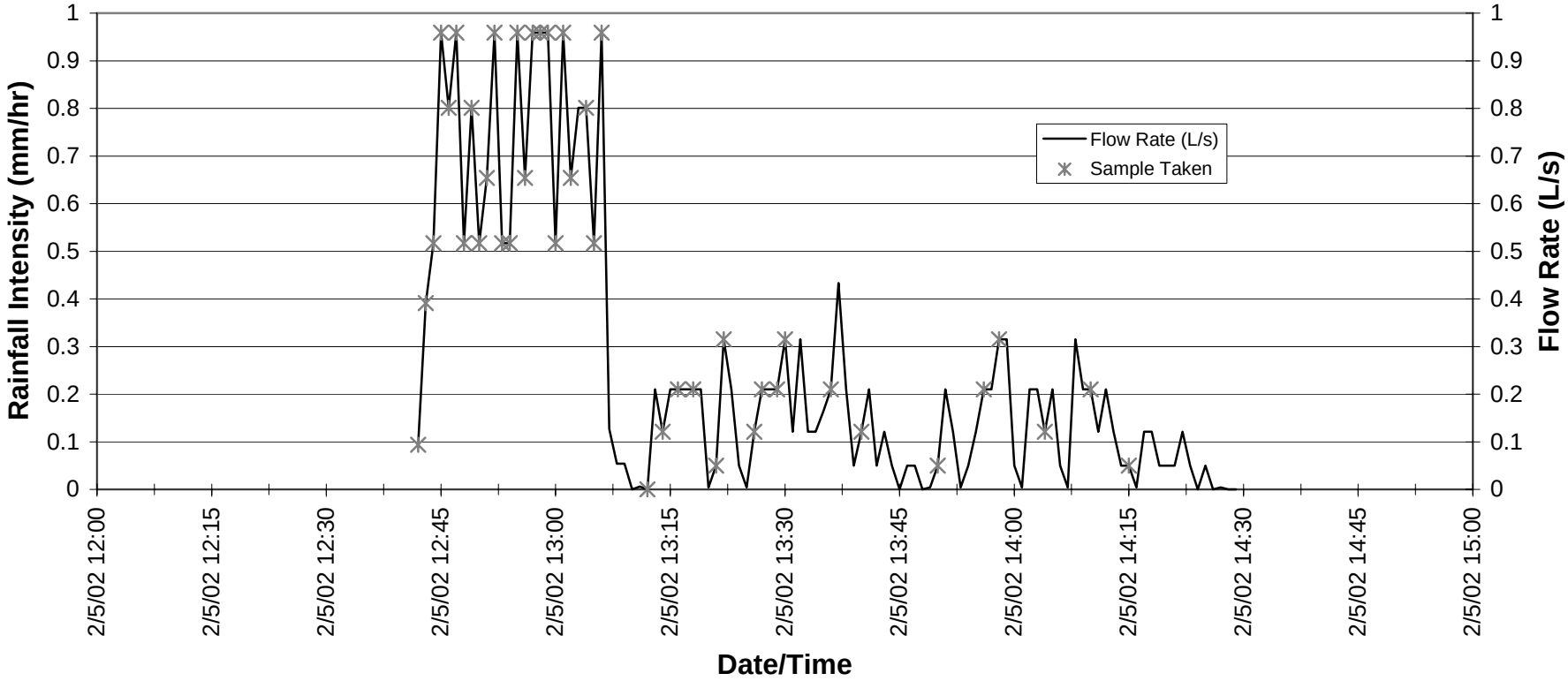
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	01/05/02 14:25	Start Date/Time:	01/05/02 14:44	Start Date/Time:	01/05/02 15:21
Stop Date/Time:	01/06/02 13:20	Stop Date/Time:	01/06/02 13:21	Stop Date/Time:	01/06/02 07:03
Event Rain (mm):	36.20	Total Flow Volume (L):	23615	Estimated Percent Capture:	65%
Max Intensity (mm/hr):	9.60	Peak Flow (L/s):	1.13	Successful Aliquots:	40
		Observed Runoff Coefficient:	0.598		

Notes: Last recorded rainfall time used as end time.

Event Summary

Site: DL Bliss (3-218)
Event: 2001-05

Catchment Area (ha): 0.109
Assumed Runoff Coefficient: 0.7



Runoff Data

Start Date/Time:	02/05/02 12:42
Stop Date/Time:	02/05/02 14:30
Total Flow Volume (L):	1677
Peak Flow (L/s):	0.96

Sample Data

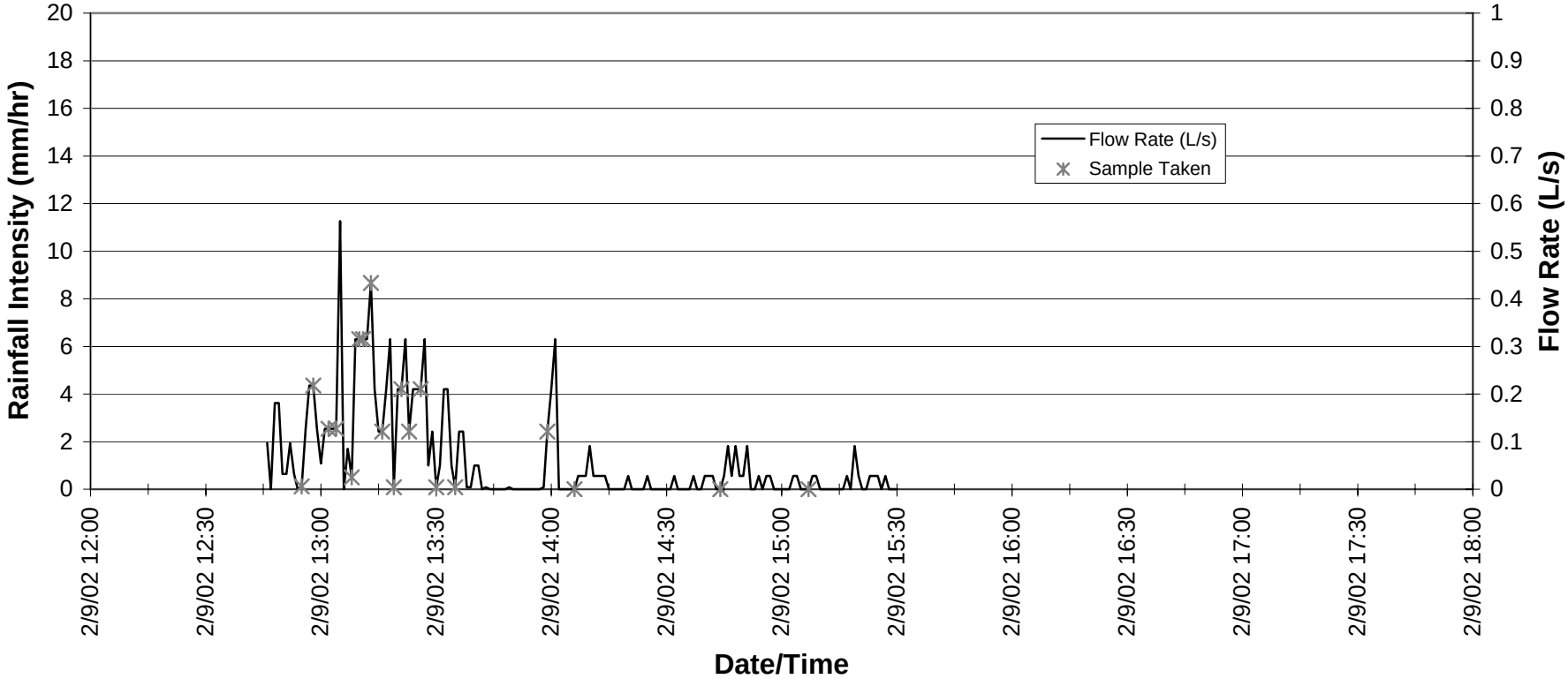
Start Date/Time:	02/05/02 12:42
Stop Date/Time:	02/05/02 14:15
Estimated Percent Capture:	98%
Successful Aliquots:	42

Notes: Snowmelt runoff event.

Event Summary

Site: DL Bliss (3-218)
Event: 2001-07

Catchment Area (ha): 0.109
Assumed Runoff Coefficient: 0.7



Runoff Data

Start Date/Time:	02/09/02 12:46
Stop Date/Time:	02/09/02 15:31
Total Flow Volume (L):	603
Peak Flow (L/s):	0.56

Sample Data

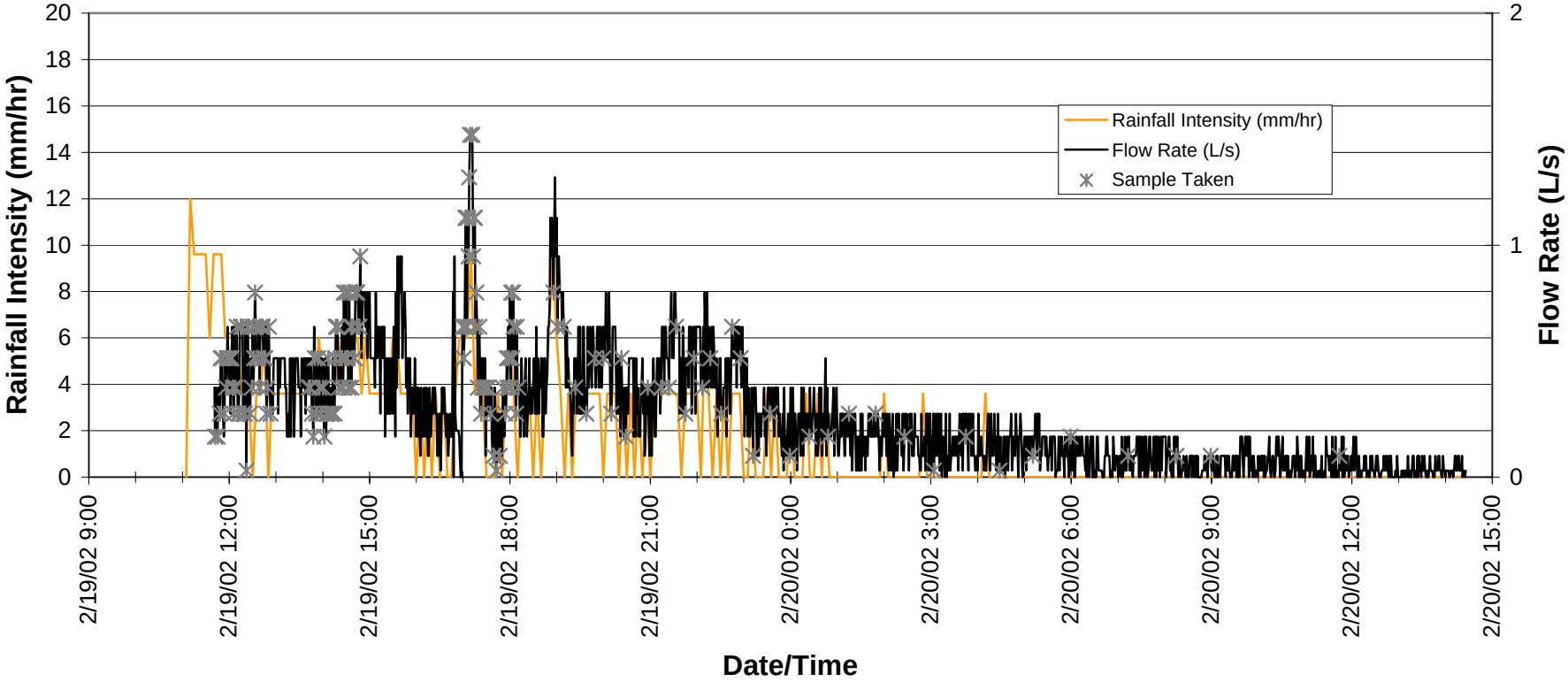
Start Date/Time:	02/09/02 12:55
Stop Date/Time:	02/09/02 15:07
Estimated Percent Capture:	91%
Successful Aliquots:	19

Notes: Snowmelt event.

Event Summary

Site: DL Bliss (3-218)
Event: 2001-08

Catchment Area (ha): 0.109
Assumed Runoff Coefficient: 0.7



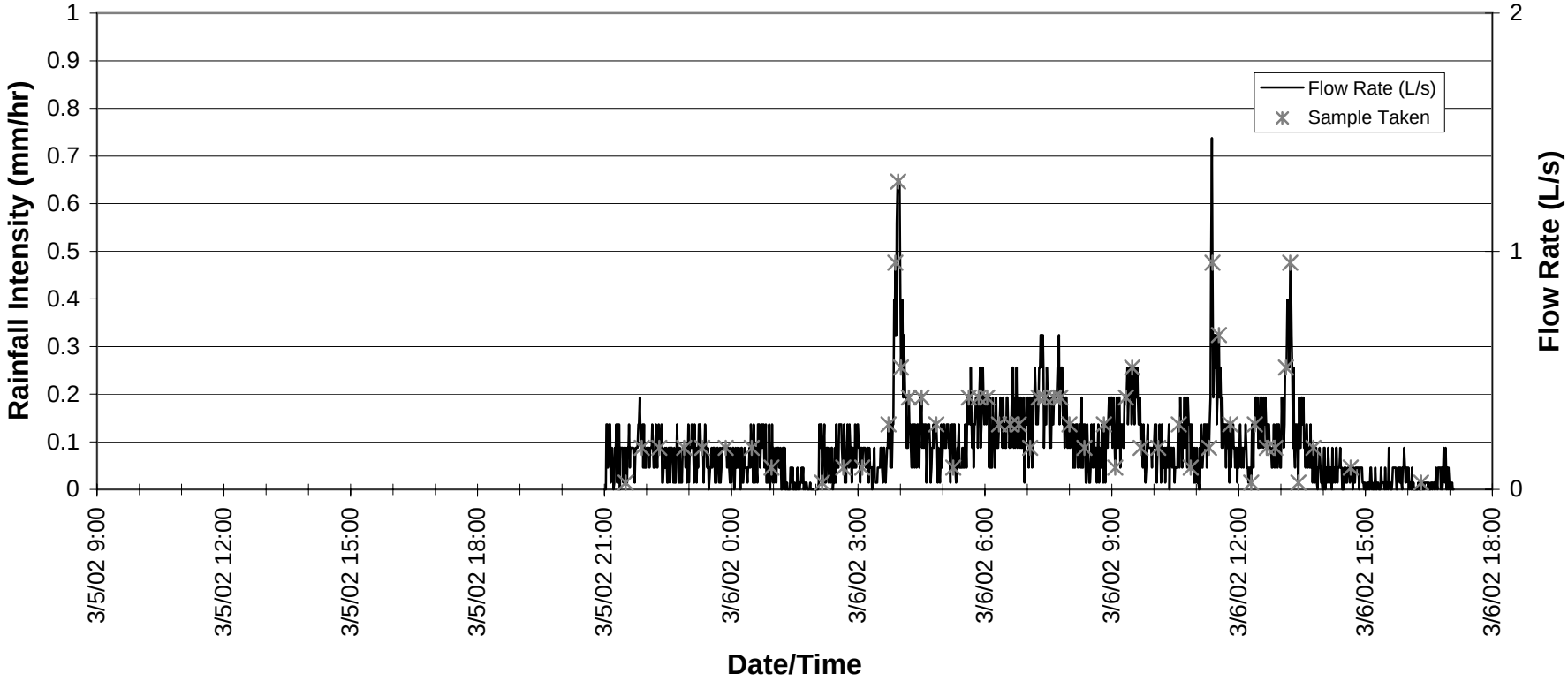
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	02/19/02 11:05	Start Date/Time:	02/19/02 11:41	Start Date/Time:	02/19/02 11:42
Stop Date/Time:	02/20/02 04:10	Stop Date/Time:	02/20/02 14:27	Stop Date/Time:	02/20/02 11:44
Event Rain (mm):	47.30	Total Flow Volume (L):	25299	Estimated Percent Capture:	86%
Max Intensity (mm/hr):	12.00	Peak Flow (L/s):	1.48	Successful Aliquots:	158
		Observed Runoff Coefficient:	0.491		

Notes: 34 samples taken between 15:20 and 17:00 on 2/19/02. Samples not recorded because of program malfunction. Non-representative high flow (likely caused by maintenance activity) around 16:50 was changed to more acurately describe data. Bottle replaced 5 times. Rain data is a combination of rainfall and snowfall that melted in the rain gauge.

Event Summary

Site: DL Bliss (3-218)
Event: 2001-09

Catchment Area (ha): 0.109
Assumed Runoff Coefficient: 0.7



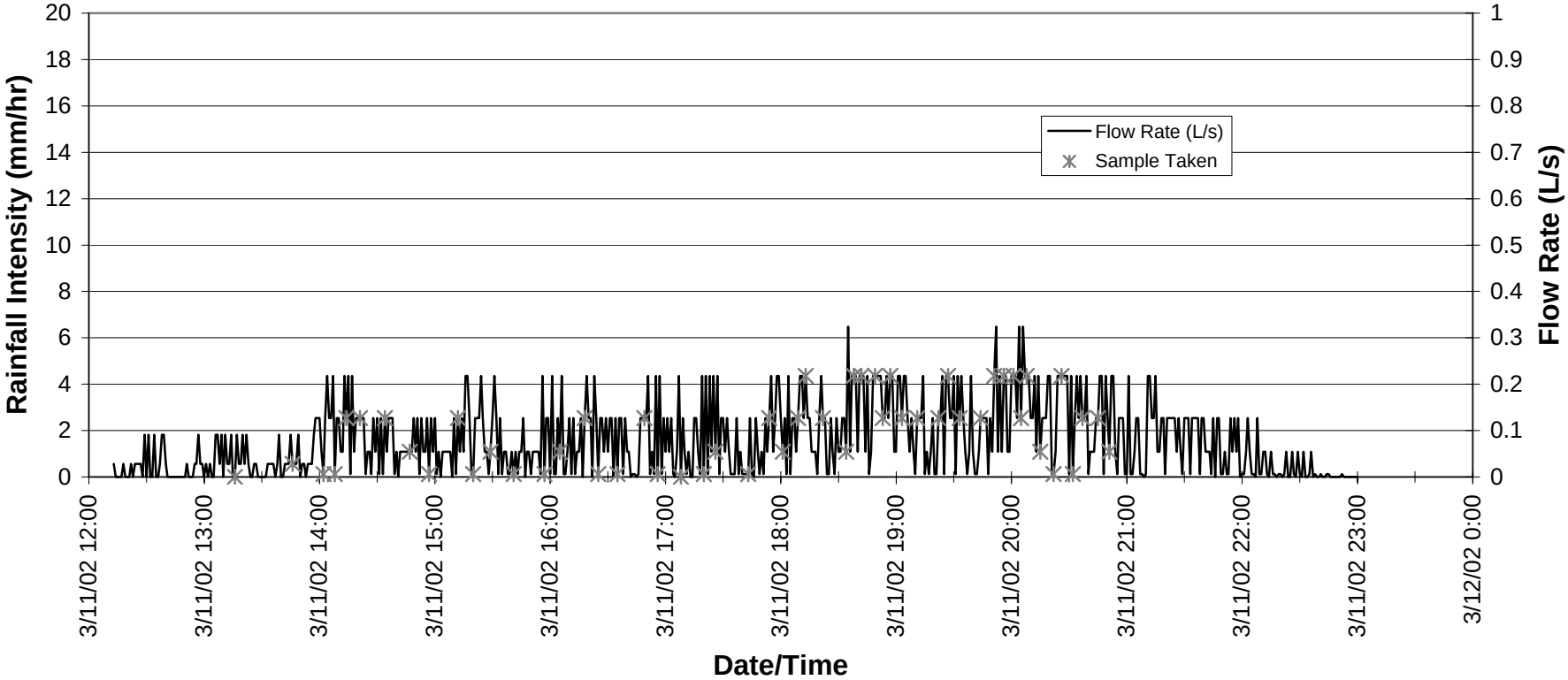
Runoff Data		*Sample Data*	
Start Date/Time:	03/05/02 21:03	Start Date/Time:	03/05/02 21:30
Stop Date/Time:	03/06/02 17:06	Stop Date/Time:	03/06/02 16:19
Total Flow Volume (L):	13353	Estimated Percent Capture:	96%
Peak Flow (L/s):	1.48	Successful Aliquots:	54

Notes: Rain/snow mix. Rain data not recorded because of rain gage malfunction.

Event Summary

Site: DL Bliss (3-218)
Event: 2001-10

Catchment Area (ha): 0.109
Assumed Runoff Coefficient: 0.7



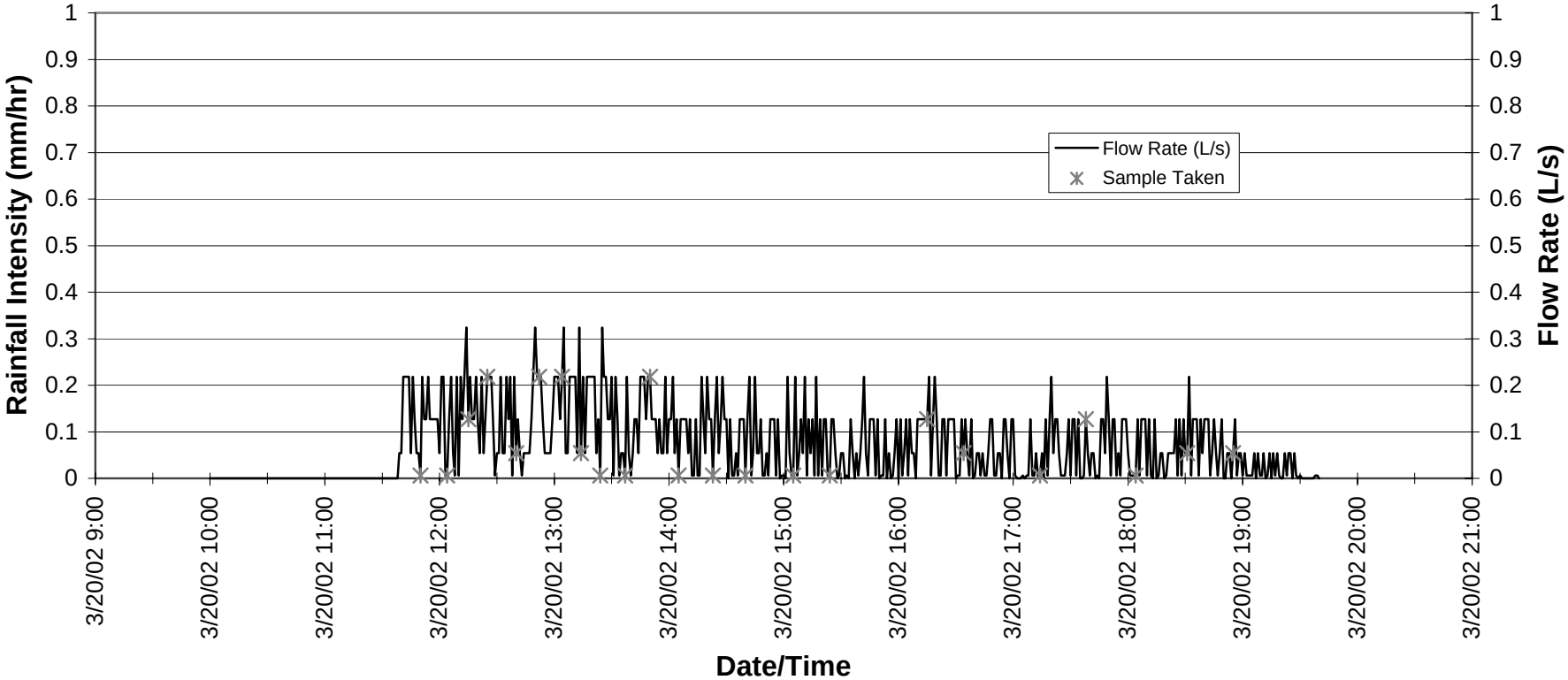
Runoff Data		*Sample Data*	
Start Date/Time:	03/11/02 12:13	Start Date/Time:	03/11/02 13:16
Stop Date/Time:	03/11/02 23:01	Stop Date/Time:	03/11/02 20:51
Total Flow Volume (L):	3091	Estimated Percent Capture:	84%
Peak Flow (L/s):	0.32	Successful Aliquots:	53

Notes: Snowmelt event. Sampler set on continuous mode.

Event Summary

Site: DL Bliss (3-218)
Event: 2001-11

Catchment Area (ha): 0.109
Assumed Runoff Coefficient: 0.7



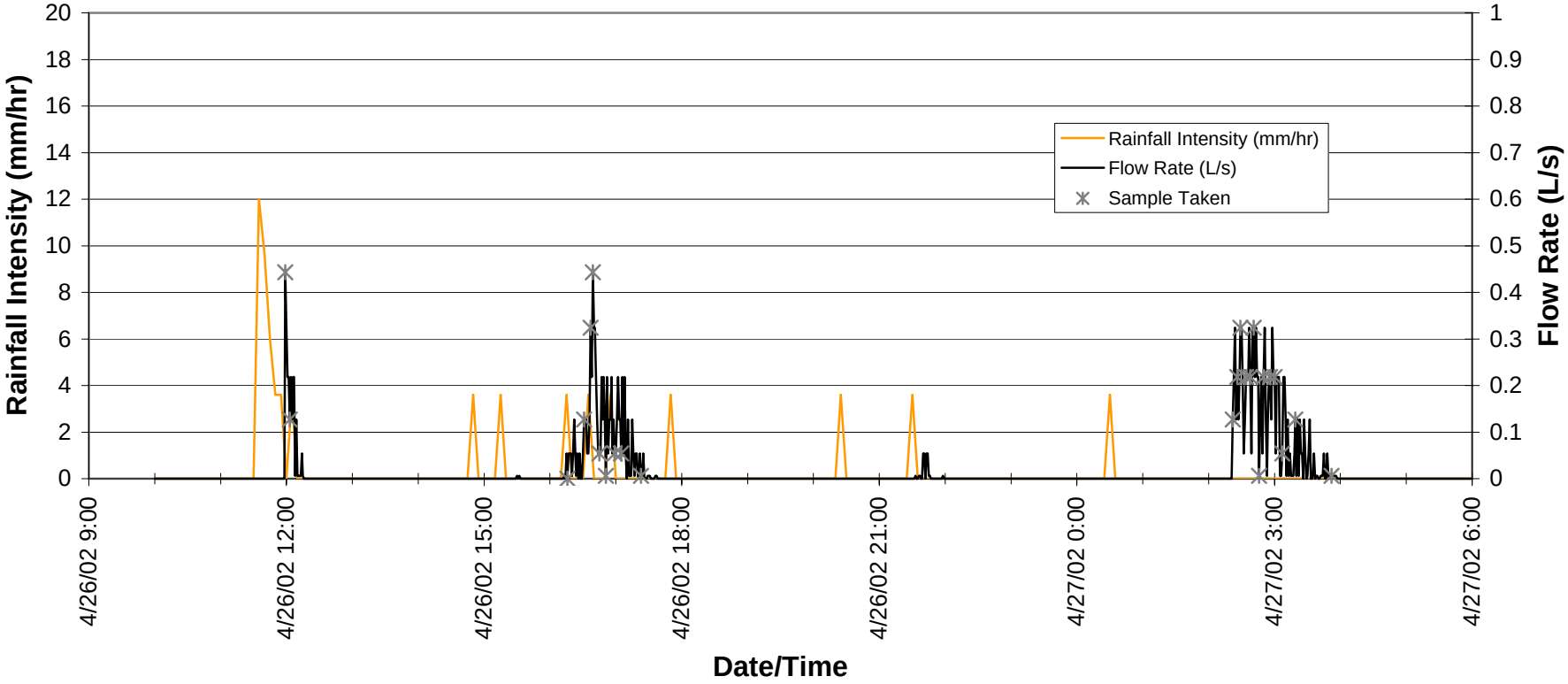
Runoff Data		*Sample Data*	
Start Date/Time:	03/20/02 10:00	Start Date/Time:	03/20/02 11:50
Stop Date/Time:	03/20/02 19:41	Stop Date/Time:	03/20/02 18:55
Total Flow Volume (L):	2451	Estimated Percent Capture:	94%
Peak Flow (L/s):	0.32	Successful Aliquots:	23

Notes: Snow melt event

Event Summary

Site: DL Bliss (3-218)
Event: 2001-13

Catchment Area (ha): 0.109
Assumed Runoff Coefficient: 0.7



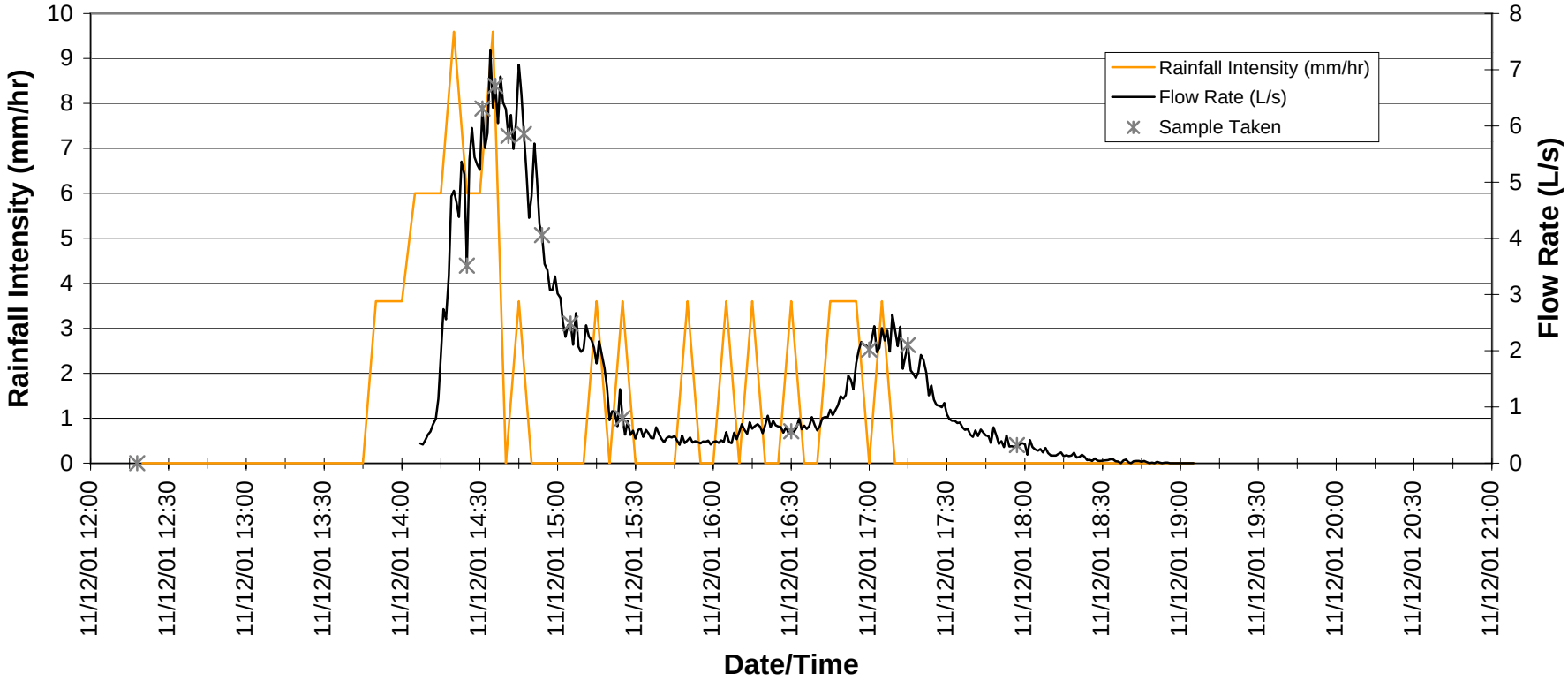
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	04/26/02 11:35	Start Date/Time:	04/26/02 10:00	Start Date/Time:	04/26/02 11:59
Stop Date/Time:	04/27/02 06:00	Stop Date/Time:	04/27/02 06:00	Stop Date/Time:	04/27/02 03:52
Event Rain (mm):	5.90	Total Flow Volume (L):	1201	Estimated Percent Capture:	99%
Max Intensity (mm/hr):	12.00	Peak Flow (L/s):	0.44	Successful Aliquots:	24
		Observed Runoff Coefficient:	0.187		

Notes: rain event

Event Summary

Site: Snow Creek (3-219)
Event: 2001-01

Catchment Area (ha): 0.83
Assumed Runoff Coefficient: 0.7



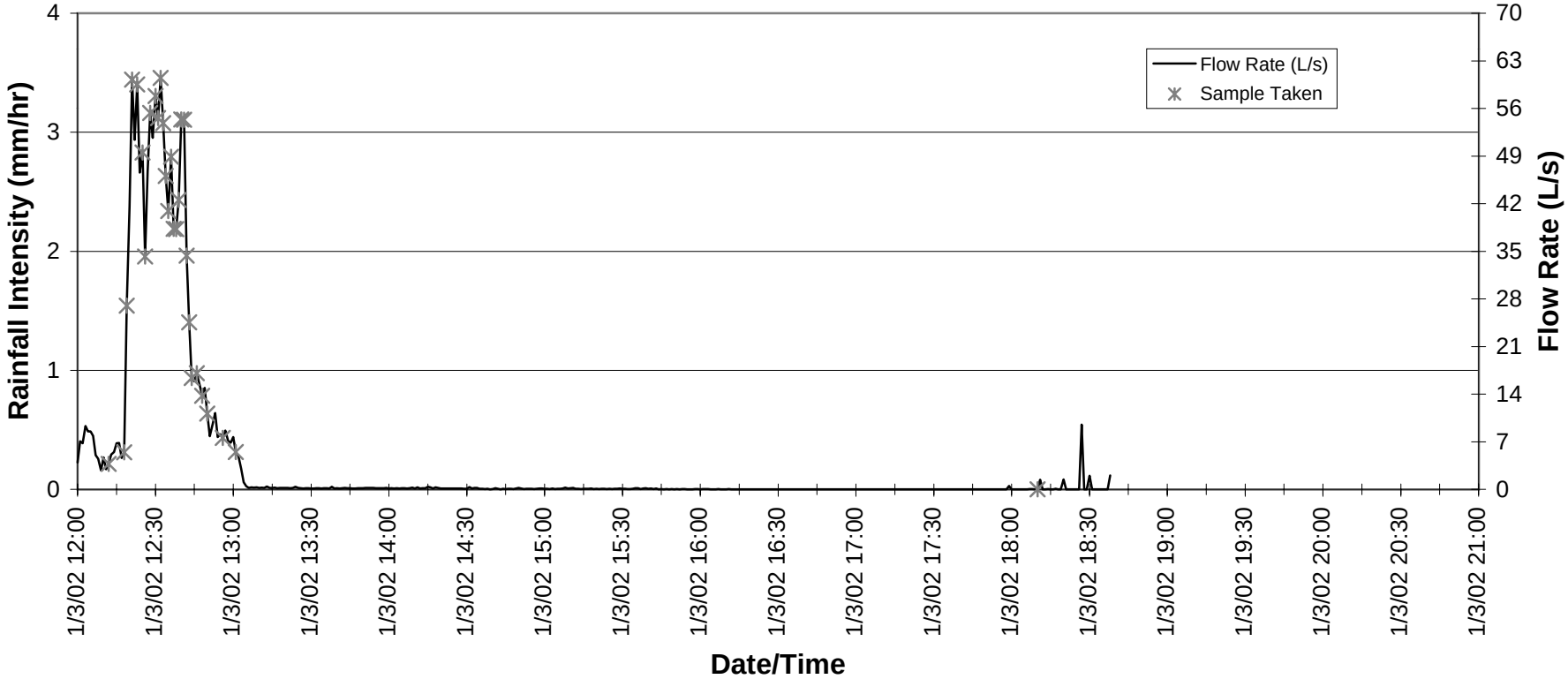
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	11/12/01 13:50	Start Date/Time:	11/12/01 14:07	Start Date/Time:	11/12/01 12:18
Stop Date/Time:	11/12/01 19:05	Stop Date/Time:	11/12/01 19:06	Stop Date/Time:	11/12/01 17:57
Event Rain (mm):	8.30	Total Flow Volume (L):	25324	Estimated Percent Capture:	99%
Max Intensity (mm/hr):	9.60	Peak Flow (L/s):	7.35	Successful Aliquots:	13
		Observed Runoff Coefficient:	0.368		

Notes: Sampling period extends outside of flow period. Last recorded rainfall time used as end time.

Event Summary

Site: Snow Creek (3-219)
Event: 2001-03

Catchment Area (ha): 0.83
Assumed Runoff Coefficient: 0.7



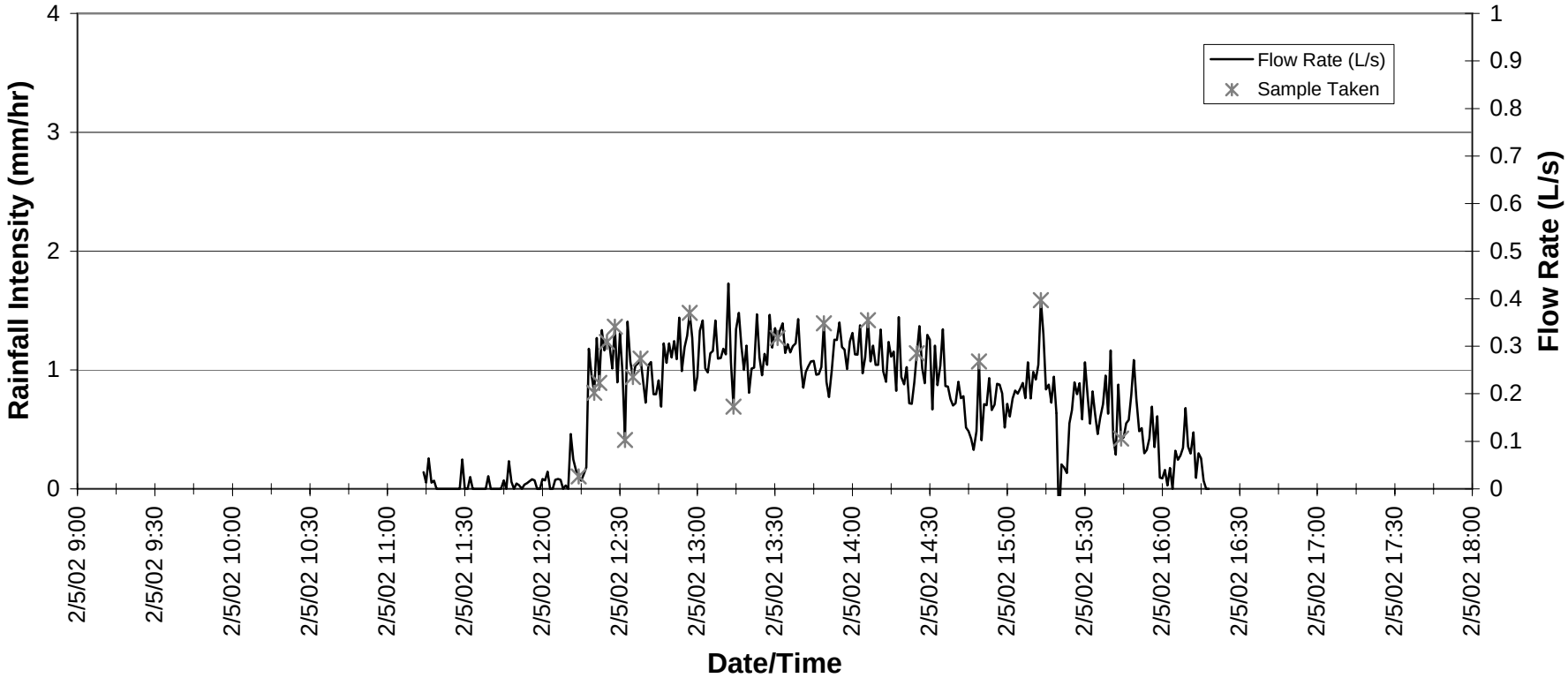
Runoff Data		*Sample Data*	
Start Date/Time:	01/03/02 12:00	Start Date/Time:	01/03/02 12:12
Stop Date/Time:	01/03/02 18:39	Stop Date/Time:	01/03/02 18:10
Total Flow Volume (L):	91442	Estimated Percent Capture:	94%
Peak Flow (L/s):	60.47	Successful Aliquots:	29

Notes: False flow readings due to ice at beginning of data. Flow began at 12:00PM. Flow readings at 18:30 likely due to ice. Snow melt event - no rain occurred.

Event Summary

Site: Snow Creek (3-219)
Event: 2001-06

Catchment Area (ha): 0.83
Assumed Runoff Coefficient: 0.7



Runoff Data

Start Date/Time:	02/05/02 11:14
Stop Date/Time:	02/05/02 16:19
Total Flow Volume (L):	3282
Peak Flow (L/s):	0.43

Sample Data

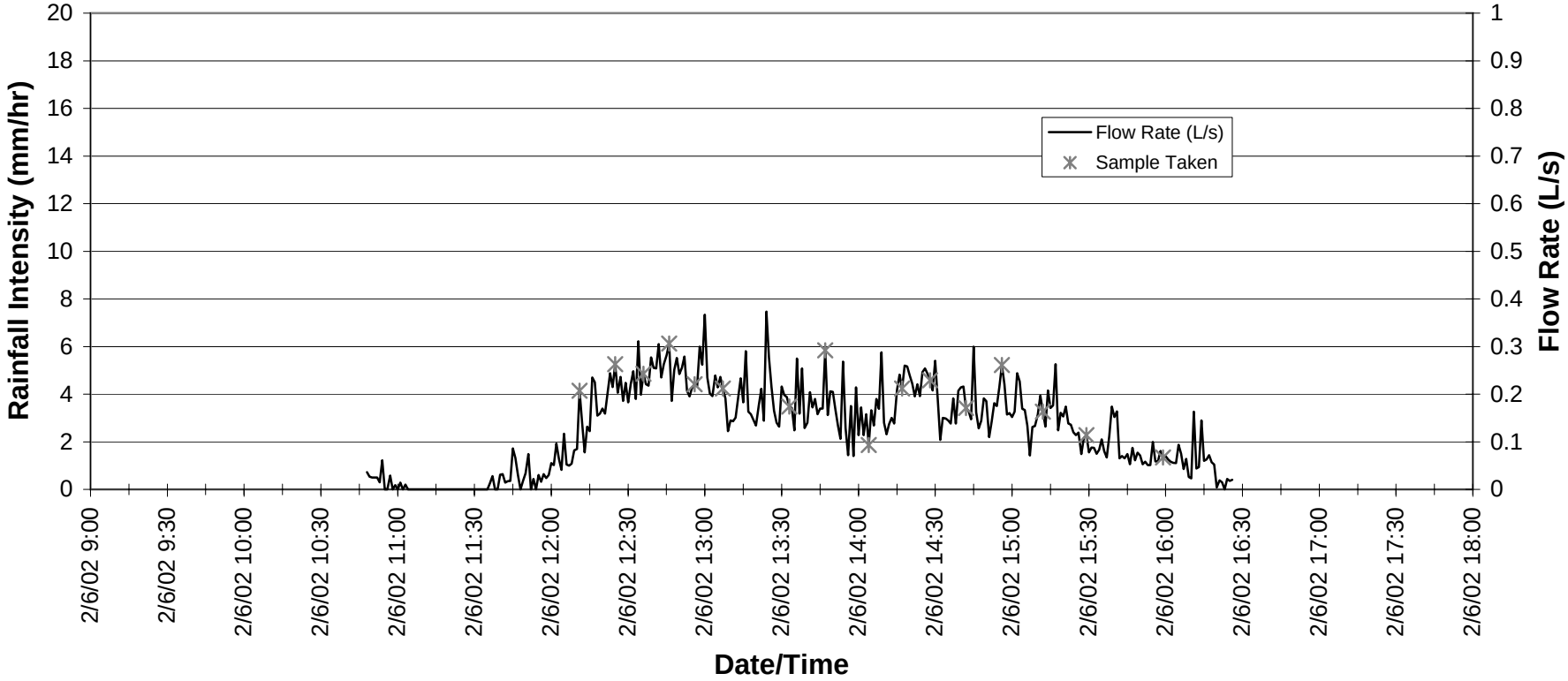
Start Date/Time:	02/05/02 12:14
Stop Date/Time:	02/05/02 15:44
Estimated Percent Capture:	93%
Successful Aliquots:	17

Notes: Snowmelt runoff event.

Event Summary

Site: Snow Creek (3-219)
Event: 2001-07

Catchment Area (ha): 0.83
Assumed Runoff Coefficient: 0.7



Runoff Data

Start Date/Time:	02/06/02 10:48
Stop Date/Time:	02/06/02 16:27
Total Flow Volume (L):	2598
Peak Flow (L/s):	0.37

Sample Data

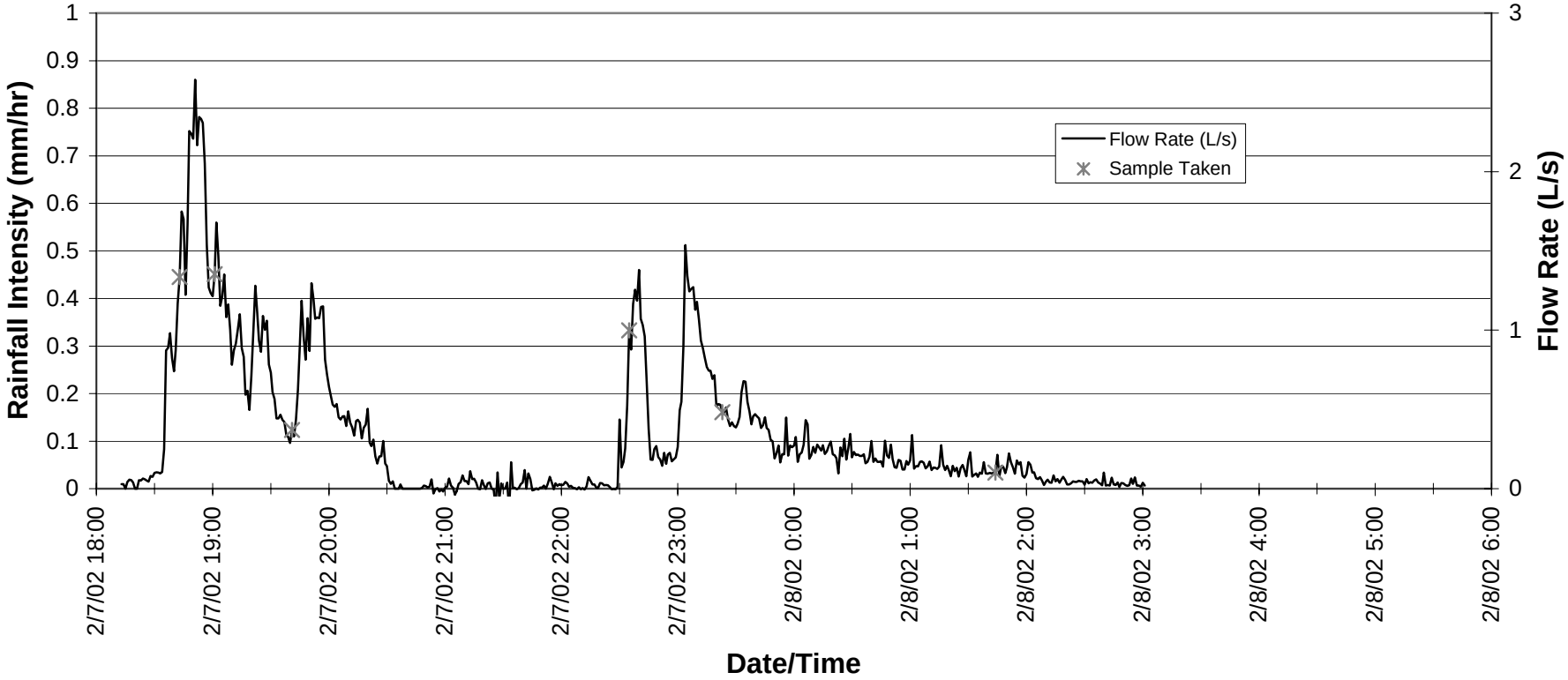
Start Date/Time:	02/06/02 12:11
Stop Date/Time:	02/06/02 15:59
Estimated Percent Capture:	93%
Successful Aliquots:	16

Notes: Snowmelt runoff event.

Event Summary

Site: Snow Creek (3-219)
Event: 2001-08

Catchment Area (ha): 0.83
Assumed Runoff Coefficient: 0.7



Runoff Data

Start Date/Time:	02/07/02 18:13
Stop Date/Time:	02/08/02 05:00
Total Flow Volume (L):	10866
Peak Flow (L/s):	2.58

Sample Data

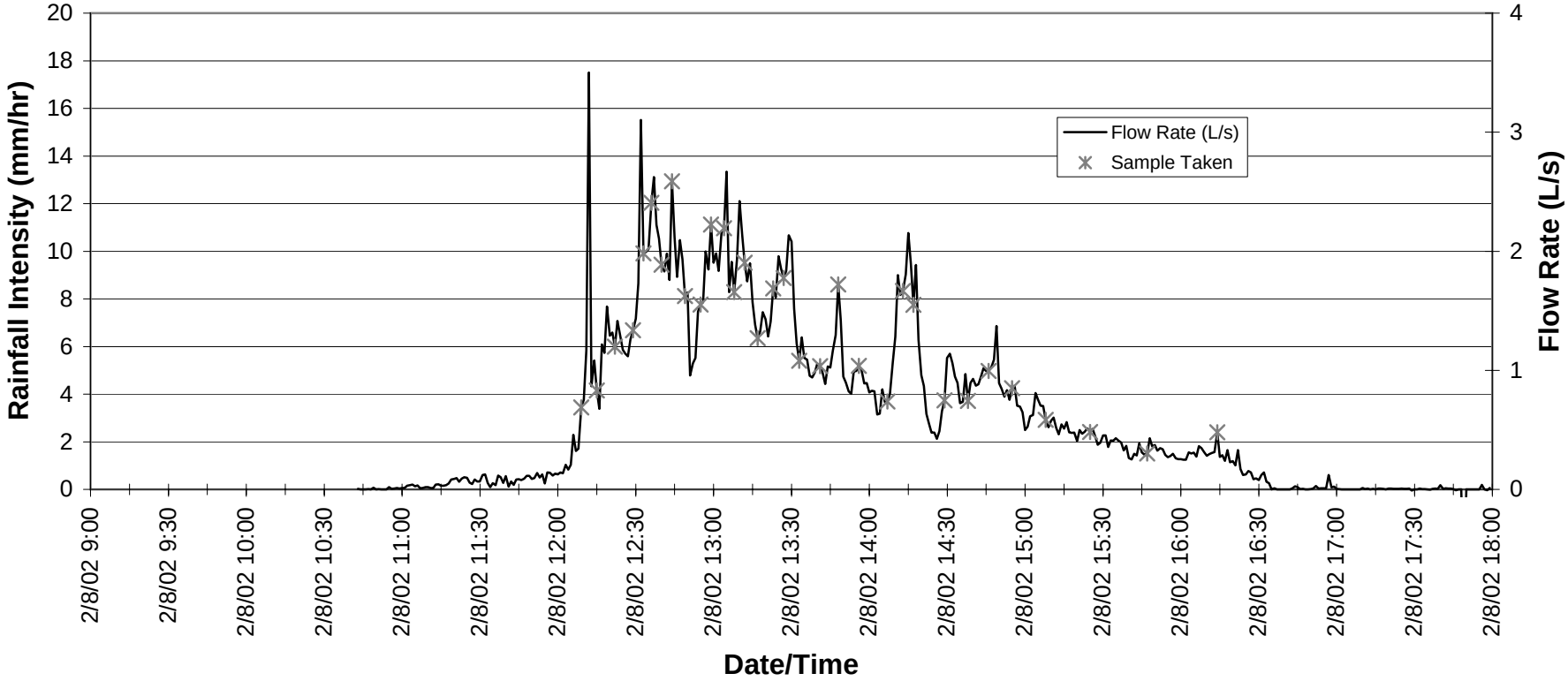
Start Date/Time:	02/07/02 18:43
Stop Date/Time:	02/08/02 01:44
Estimated Percent Capture:	92%
Successful Aliquots:	6

Notes: Rain turned to snow after midnight. Runoff ended by 3:00 AM. Rain gage malfunctioning, no data recorded.

Event Summary

Site: Snow Creek (3-219)
Event: 2001-09

Catchment Area (ha): 0.83
Assumed Runoff Coefficient: 0.7



Runoff Data

Start Date/Time:	02/08/02 10:43
Stop Date/Time:	02/08/02 18:00
Total Flow Volume (L):	16115
Peak Flow (L/s):	3.50

Sample Data

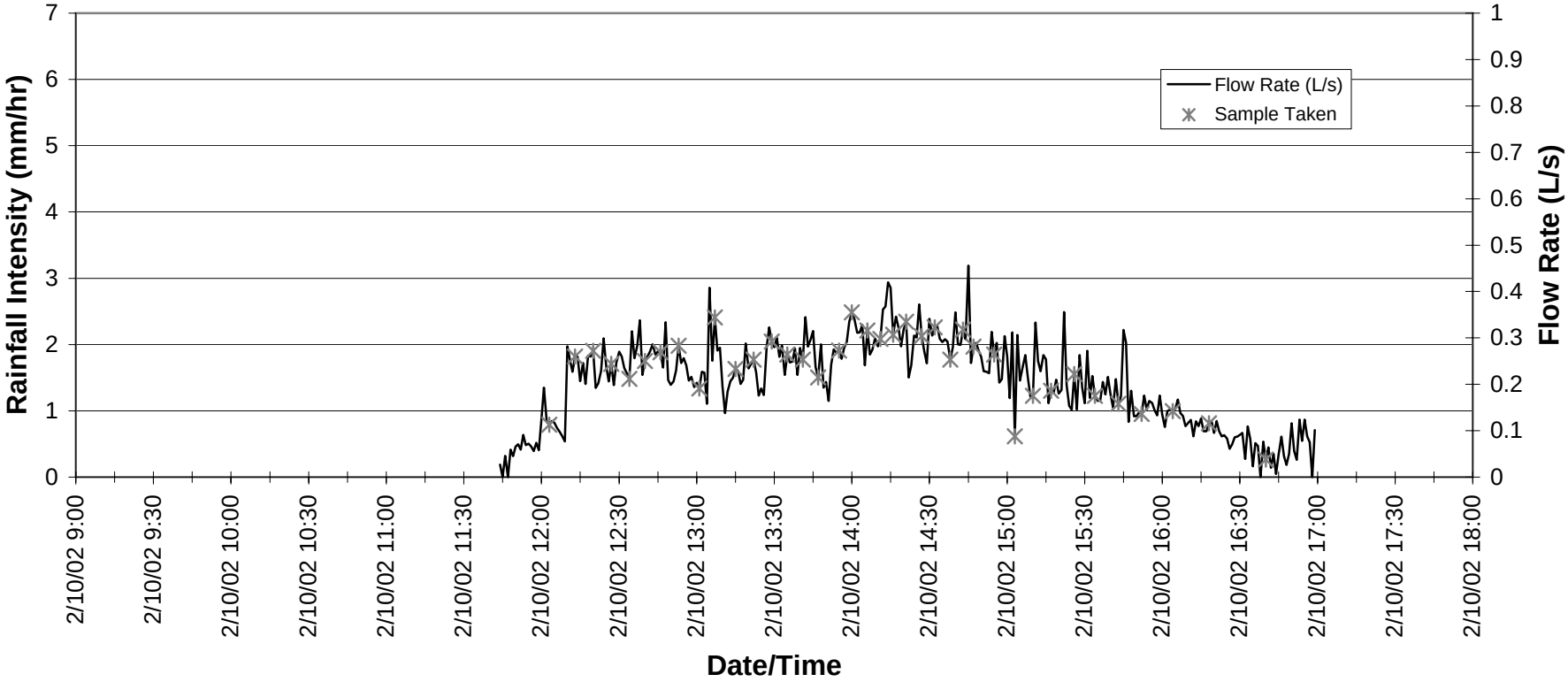
Start Date/Time:	02/08/02 12:09
Stop Date/Time:	02/08/02 16:14
Estimated Percent Capture:	96%
Successful Aliquots:	32

Notes: Snowmelt event. Flow meter reading negative flow and extreamly high flow due to freezing conditions at night. False flow data not included.

Event Summary

Site: Snow Creek (3-219)
Event: 2001-10

Catchment Area (ha): 0.83
Assumed Runoff Coefficient: 0.7



Runoff Data

Start Date/Time:	02/10/02 11:44
Stop Date/Time:	02/10/02 17:00
Total Flow Volume (L):	3861
Peak Flow (L/s):	0.46

Sample Data

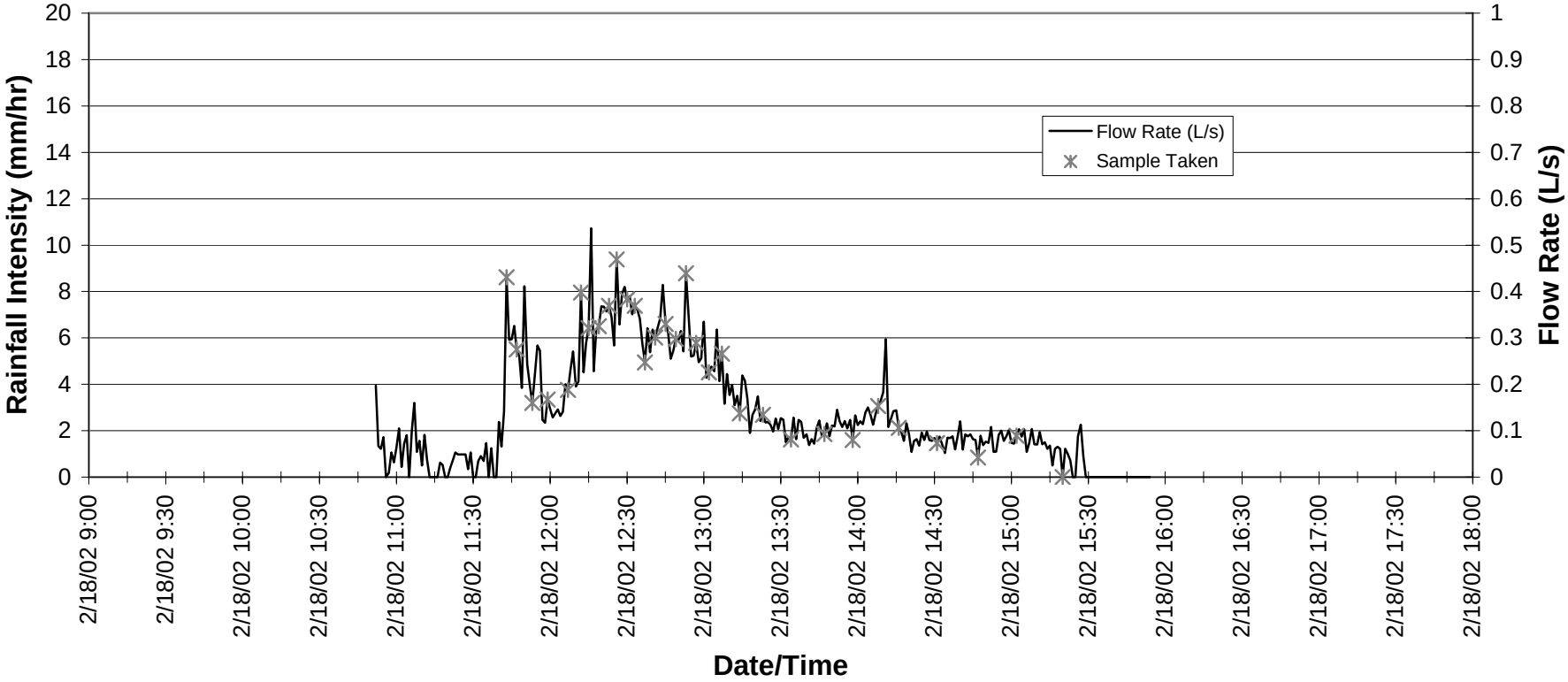
Start Date/Time:	02/10/02 12:03
Stop Date/Time:	02/10/02 16:40
Estimated Percent Capture:	96%
Successful Aliquots:	38

Notes: Snowmelt runoff event.

Event Summary

Site: Snow Creek (3-219)
Event: 2001-11

Catchment Area (ha): 0.83
Assumed Runoff Coefficient: 0.7



Runoff Data

Start Date/Time:	02/18/02 10:52
Stop Date/Time:	02/18/02 15:55
Total Flow Volume (L):	2447
Peak Flow (L/s):	0.54

Sample Data

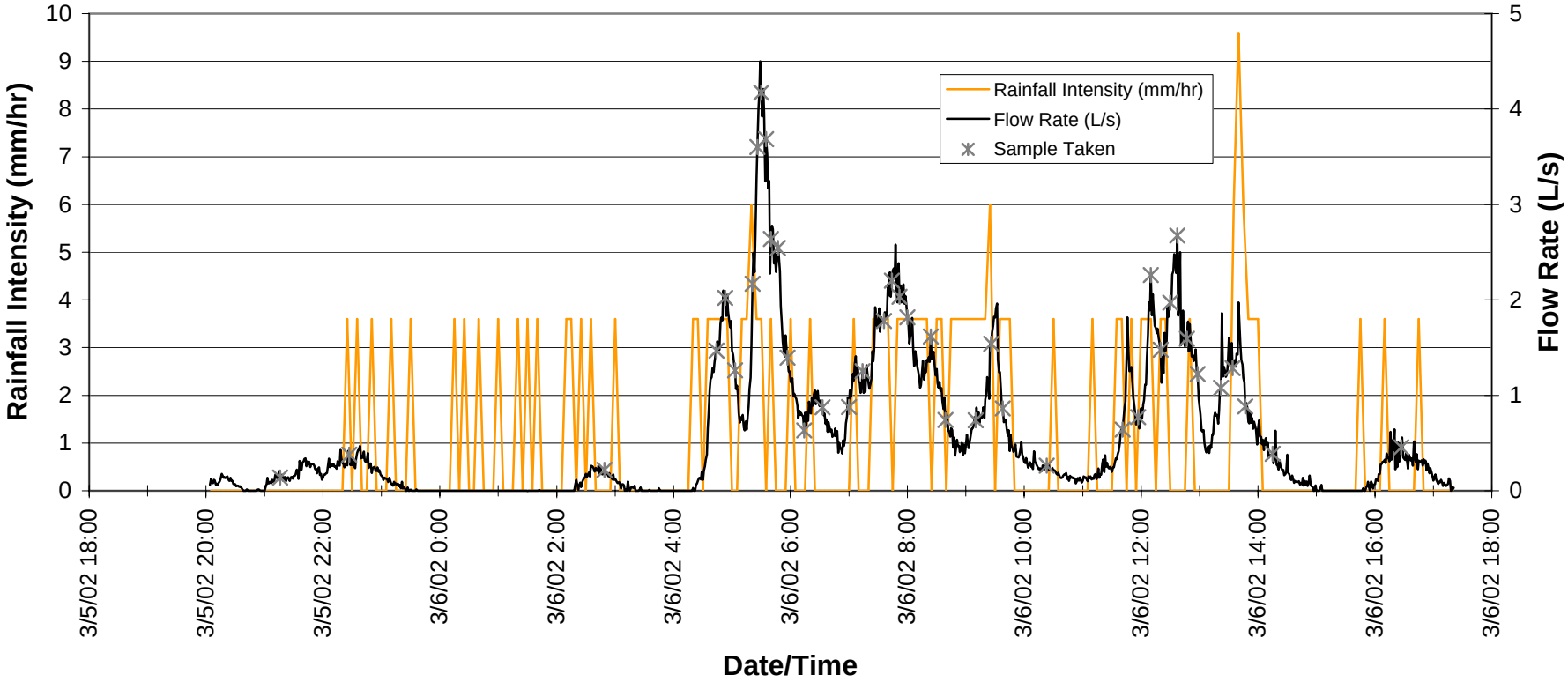
Start Date/Time:	02/18/02 11:43
Stop Date/Time:	02/18/02 15:20
Estimated Percent Capture:	93%
Successful Aliquots:	31

Notes: Snowmelt event.

Event Summary

Site: Snow Creek (3-219)
Event: 2001-13

Catchment Area (ha): 0.83
Assumed Runoff Coefficient: 0.7



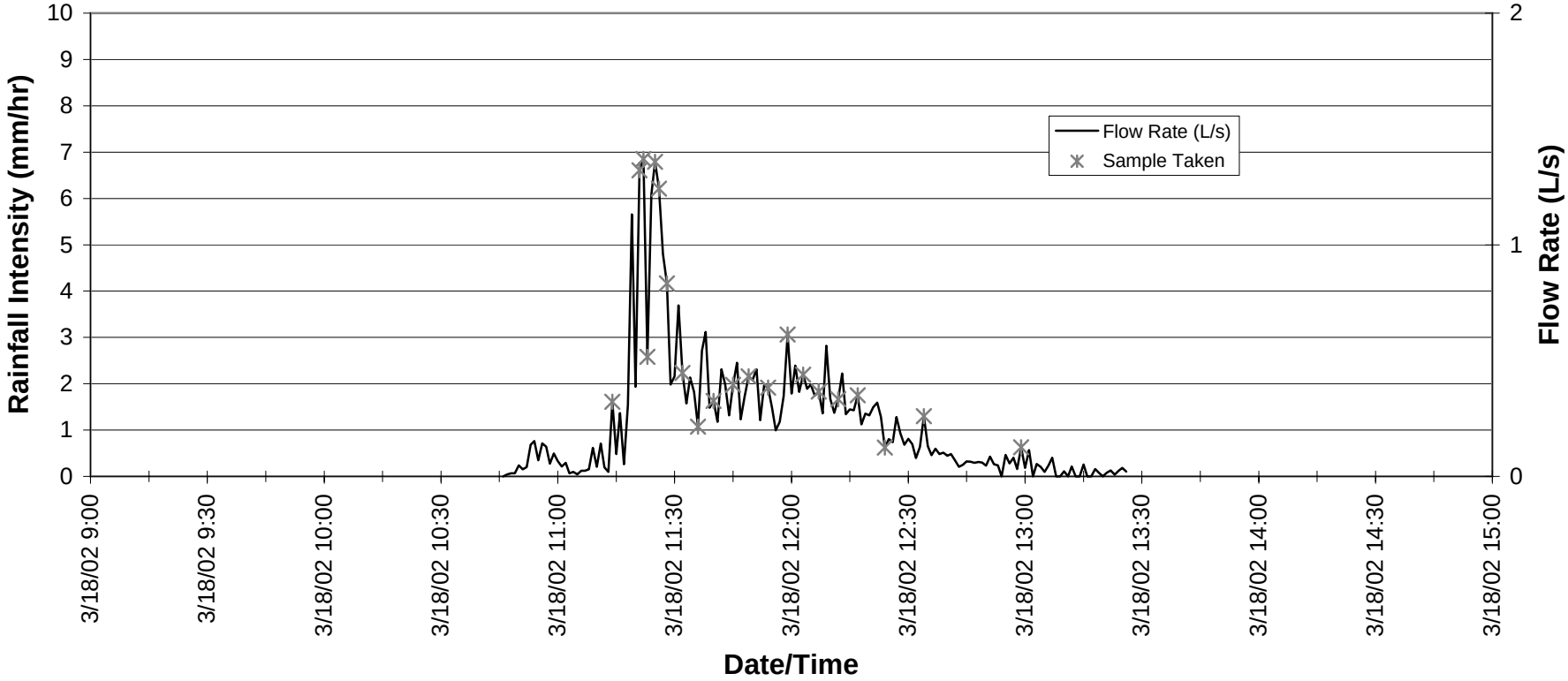
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	03/05/02 22:25	Start Date/Time:	03/05/02 20:04	Start Date/Time:	03/05/02 21:16
Stop Date/Time:	03/06/02 17:20	Stop Date/Time:	03/06/02 17:22	Stop Date/Time:	03/06/02 16:27
Event Rain (mm):	24.70	Total Flow Volume (L):	41990	Estimated Percent Capture:	93%
Max Intensity (mm/hr):	9.60	Peak Flow (L/s):	4.50	Successful Aliquots:	40
		Observed Runoff Coefficient:	0.205		

Notes: Rain/snow mix. Last recorded rainfall time used as end time.

Event Summary

Site: Snow Creek (3-219)
Event: 2001-15

Catchment Area (ha): 0.83
Assumed Runoff Coefficient: 0.7



Runoff Data

Start Date/Time:	03/18/02 10:46
Stop Date/Time:	03/18/02 13:27
Total Flow Volume (L):	2245
Peak Flow (L/s):	1.37

Sample Data

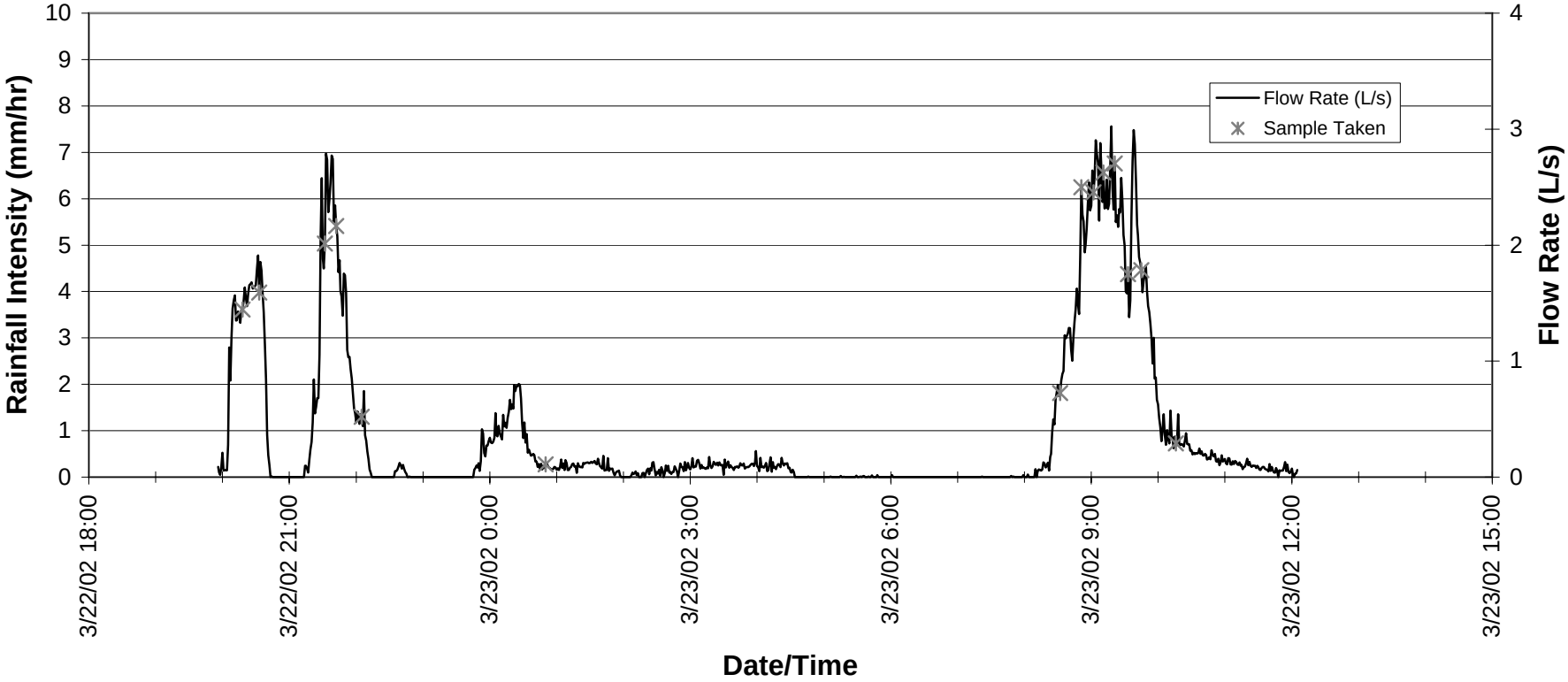
Start Date/Time:	03/18/02 11:14
Stop Date/Time:	03/18/02 12:59
Estimated Percent Capture:	93%
Successful Aliquots:	21

Notes: Snow melt event

Event Summary

Site: Snow Creek (3-219)
Event: 2001-16

Catchment Area (ha): 0.83
Assumed Runoff Coefficient: 0.7



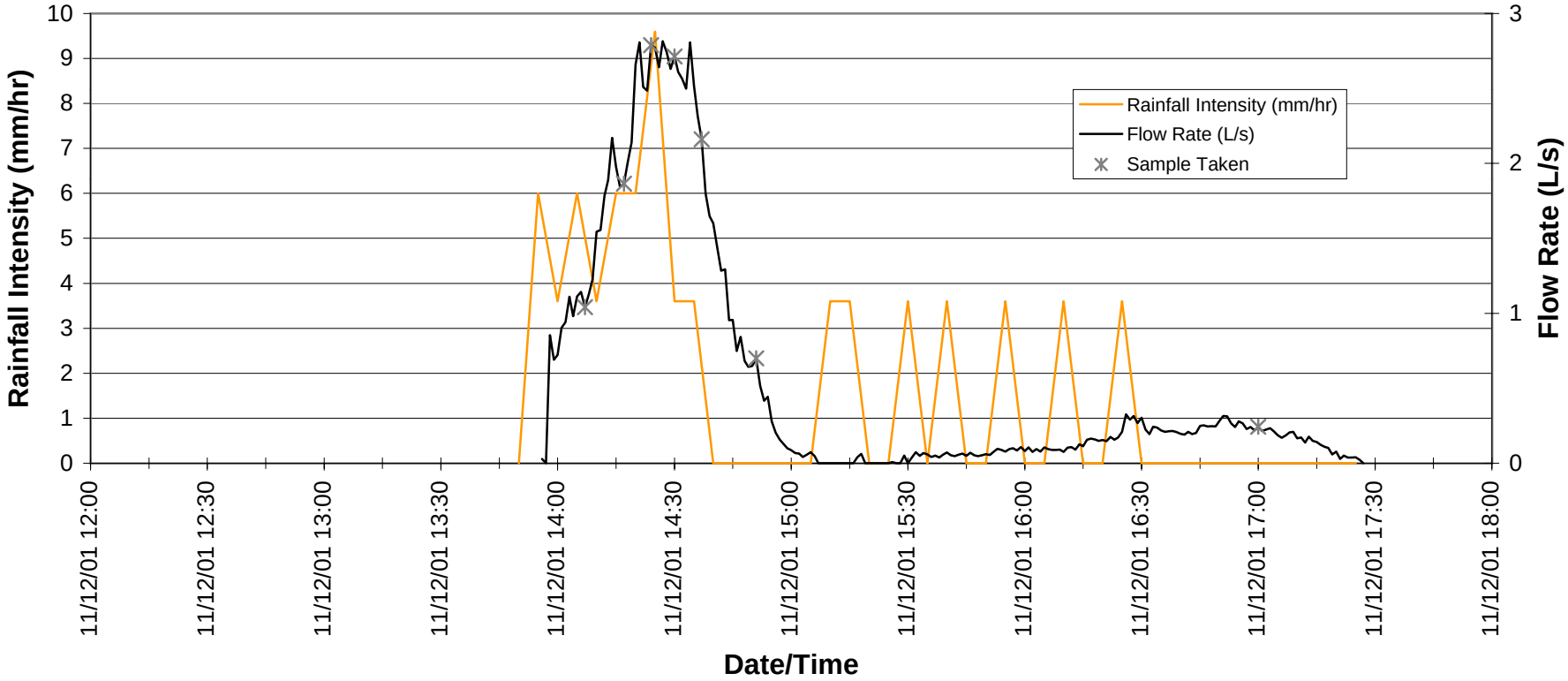
Runoff Data		*Sample Data*	
Start Date/Time:	03/22/02 19:56	Start Date/Time:	03/22/02 20:18
Stop Date/Time:	03/23/02 12:06	Stop Date/Time:	03/23/02 10:16
Total Flow Volume (L):	21545	Estimated Percent Capture:	91%
Peak Flow (L/s):	3.02	Successful Aliquots:	14

Notes: Sporadic snow showers over 2 day period. Snow melted as it hit ground, no rain data obtained.

Event Summary

Site: Brockway (3-220)
Event: 2001-01

Catchment Area (ha): 0.125
Assumed Runoff Coefficient: 0.9



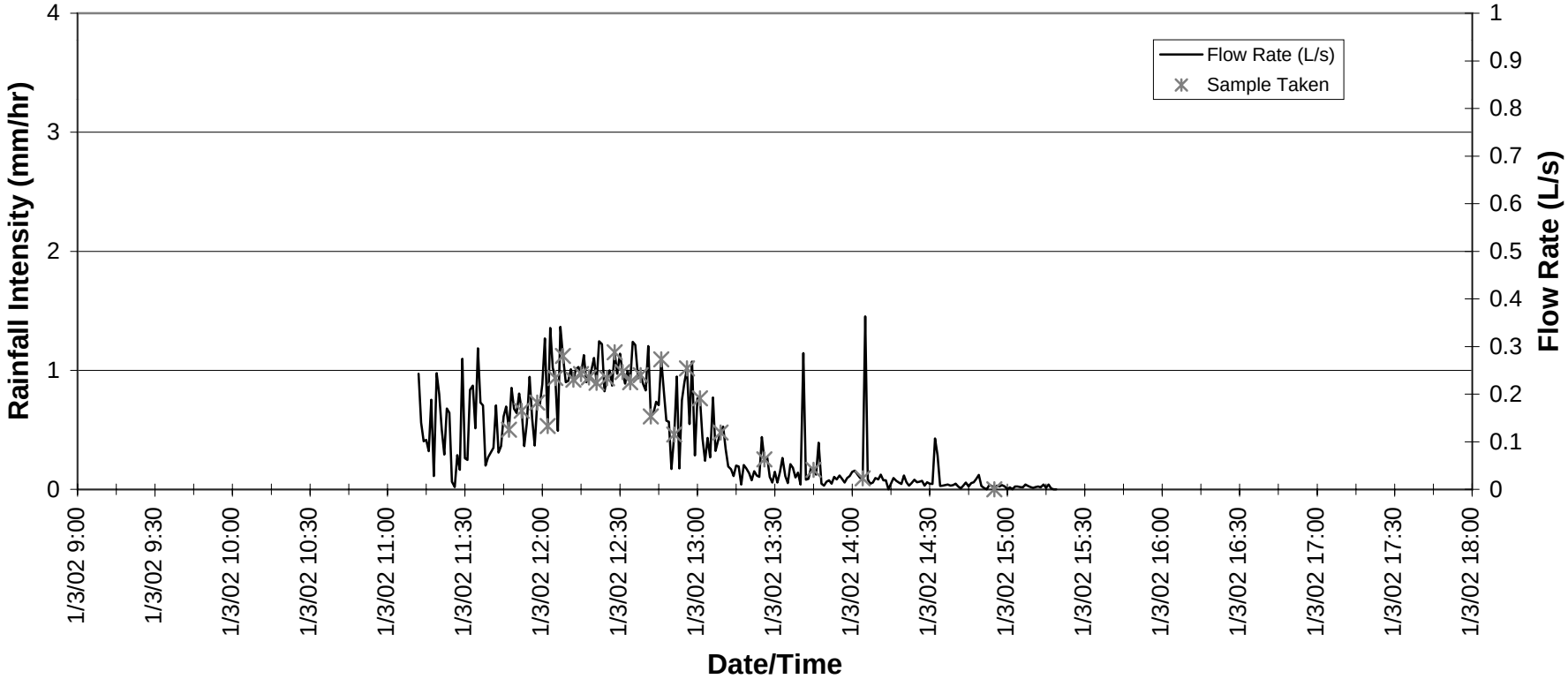
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	11/12/01 13:55	Start Date/Time:	11/12/01 13:56	Start Date/Time:	11/12/01 14:07
Stop Date/Time:	11/12/01 17:25	Stop Date/Time:	11/12/01 17:28	Stop Date/Time:	11/12/01 17:00
Event Rain (mm):	6.10	Total Flow Volume (L):	6773	Estimated Percent Capture:	89%
Max Intensity (mm/hr):	9.60	Peak Flow (L/s):	2.82	Successful Aliquots:	7
		Observed Runoff Coefficient:	0.888		

Notes: Last recorded rainfall time used as end time.

Event Summary

Site: Brockway (3-220)
Event: 2001-02

Catchment Area (ha): 0.125
Assumed Runoff Coefficient: 0.9



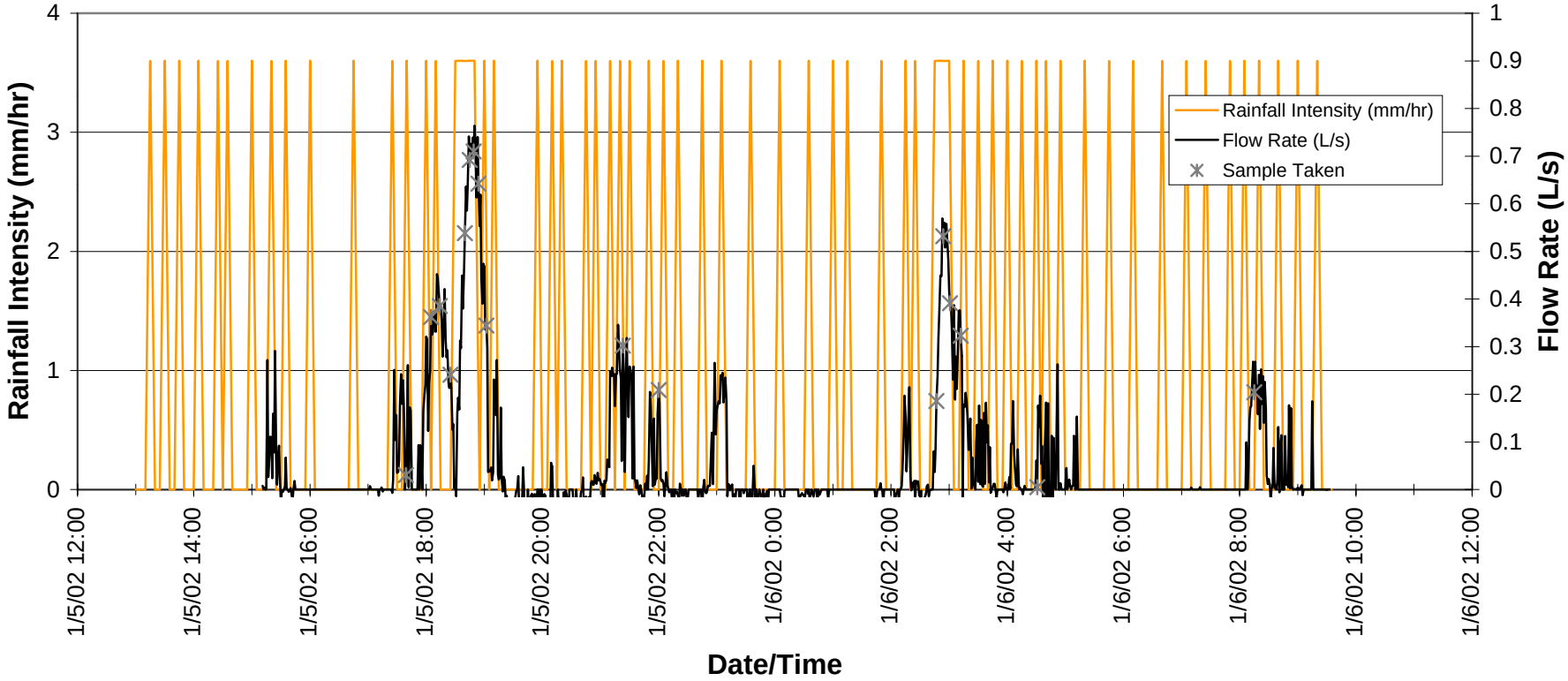
Runoff Data		*Sample Data*	
Start Date/Time:	01/03/02 11:12	Start Date/Time:	01/03/02 11:47
Stop Date/Time:	01/03/02 15:20	Stop Date/Time:	01/03/02 14:55
Total Flow Volume (L):	1490	Estimated Percent Capture:	81%
Peak Flow (L/s):	0.36	Successful Aliquots:	25

Notes: Ice caused false flow readings at beginning of data. Flow began at approximately 11:00 AM. This was a snow melt event, no rain occurred.

Event Summary

Site: Brockway (3-220)
Event: 2001-03

Catchment Area (ha): 0.125
Assumed Runoff Coefficient: 0.9



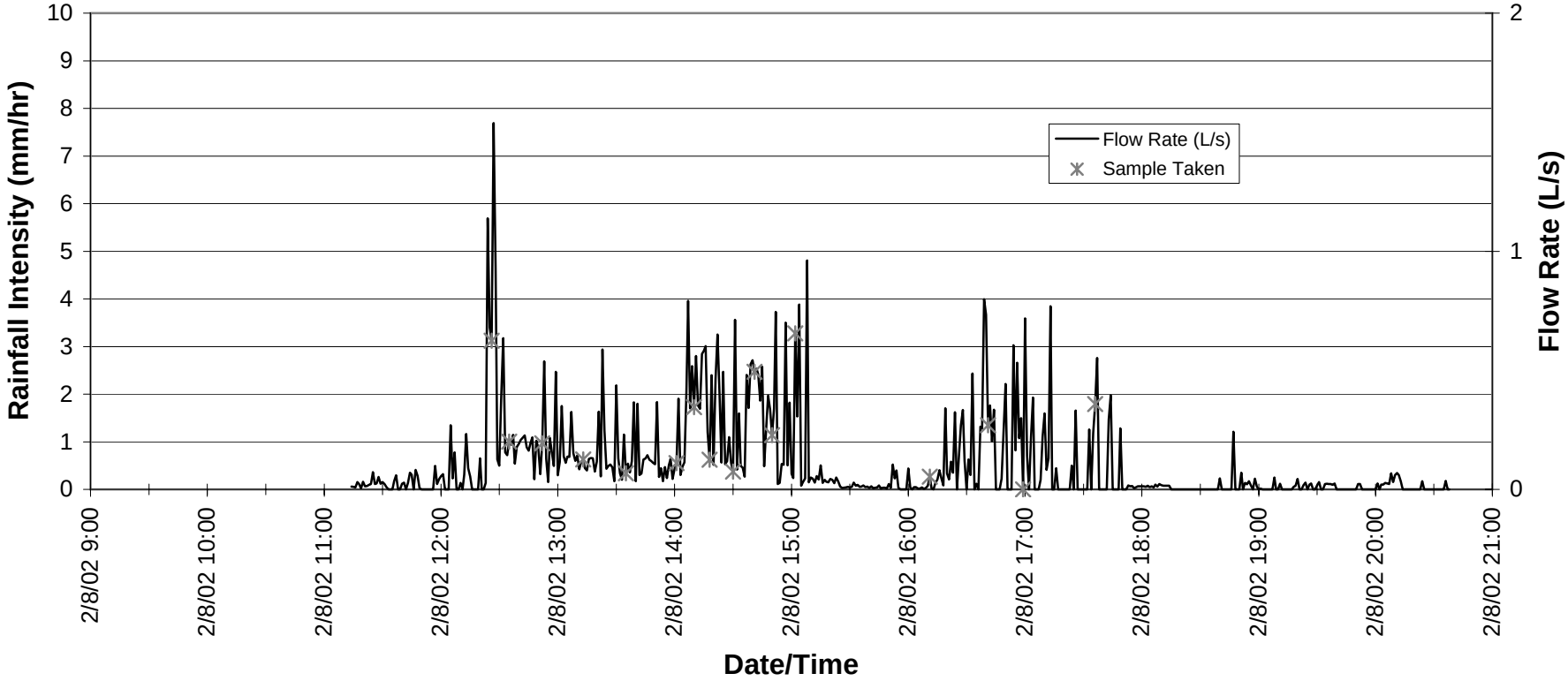
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	01/05/02 13:15	Start Date/Time:	01/05/02 15:11	Start Date/Time:	01/05/02 17:39
Stop Date/Time:	01/06/02 09:35	Stop Date/Time:	01/06/02 09:34	Stop Date/Time:	01/06/02 08:15
Event Rain (mm):	20.10	Total Flow Volume (L):	3599	Estimated Percent Capture:	84%
Max Intensity (mm/hr):	3.60	Peak Flow (L/s):	0.76	Successful Aliquots:	17
		Observed Runoff Coefficient:	0.143		

Notes: Several false flow (negative) readings. Last recorded rainfall time used as end time.

Event Summary

Site: Brockway (3-220)
Event: 2001-06

Catchment Area (ha): 0.125
Assumed Runoff Coefficient: 0.9



Runoff Data

Start Date/Time:	02/08/02 11:14
Stop Date/Time:	02/08/02 20:39
Total Flow Volume (L):	3718
Peak Flow (L/s):	1.54

Sample Data

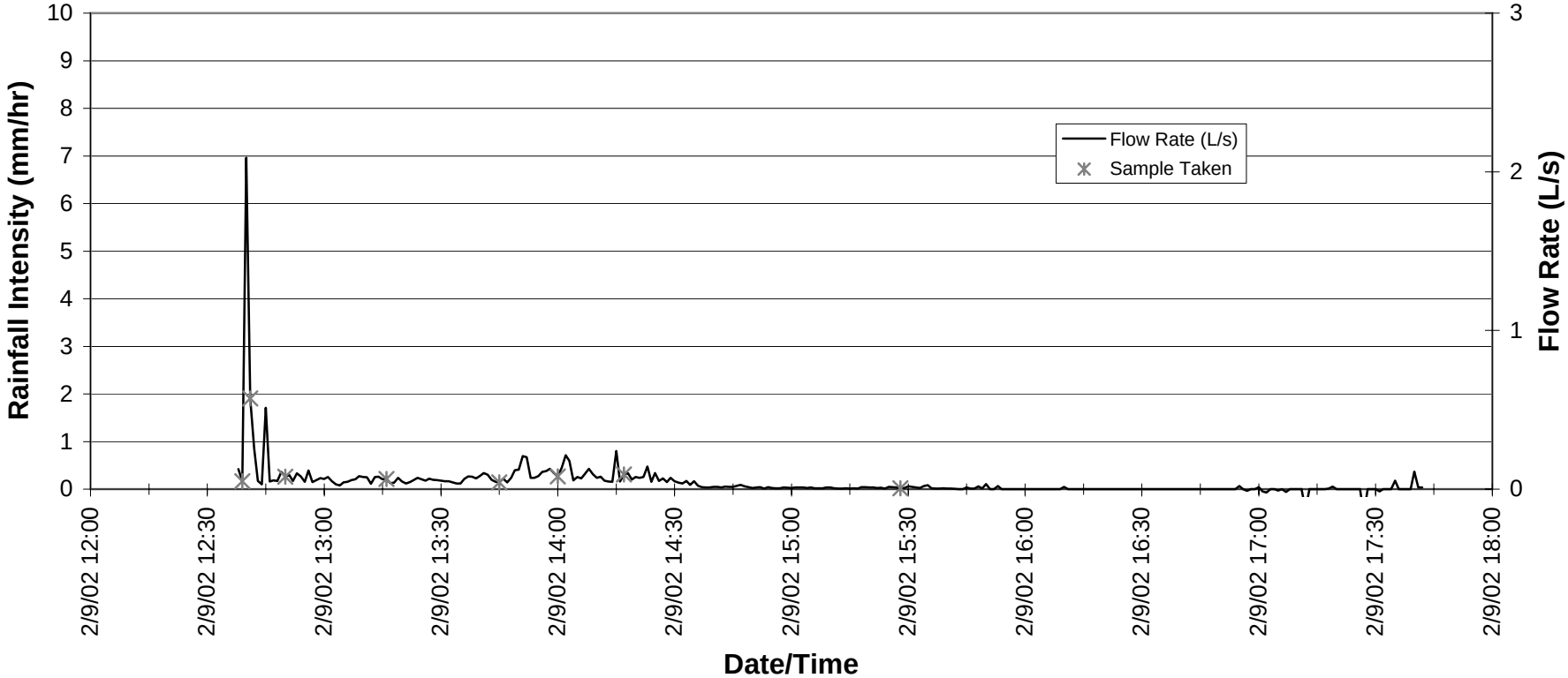
Start Date/Time:	02/08/02 12:26
Stop Date/Time:	02/08/02 17:36
Estimated Percent Capture:	87%
Successful Aliquots:	16

Notes: Snowmelt event.

Event Summary

Site: Brockway (3-220)
Event: 2001-07

Catchment Area (ha): 0.125
Assumed Runoff Coefficient: 0.9



Runoff Data

Start Date/Time:	02/09/02 12:38
Stop Date/Time:	02/09/02 17:43
Total Flow Volume (L):	745
Peak Flow (L/s):	2.09

Sample Data

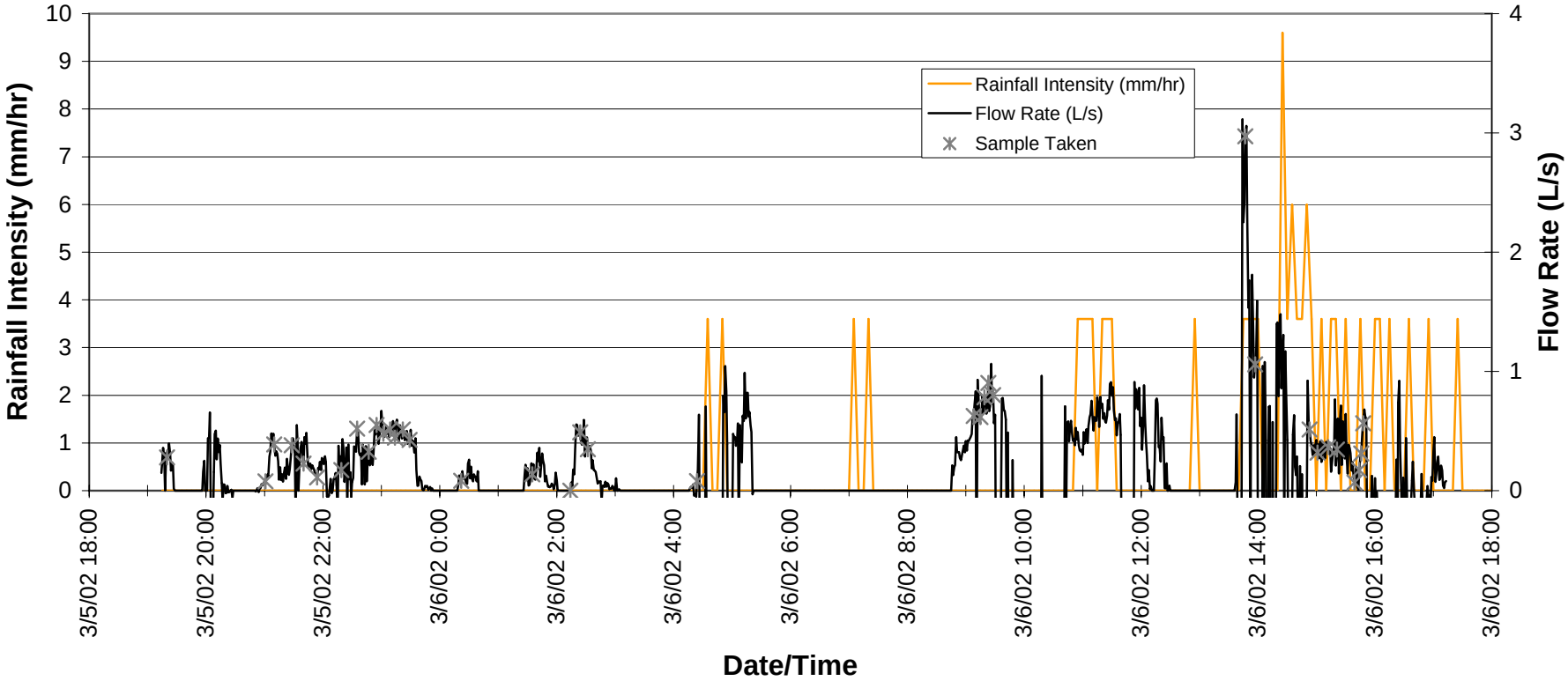
Start Date/Time:	02/09/02 12:39
Stop Date/Time:	02/09/02 15:28
Estimated Percent Capture:	98%
Successful Aliquots:	8

Notes: Snowmelt event.

Event Summary

Site: Brockway (3-220)
Event: 2001-08

Catchment Area (ha): 0.125
Assumed Runoff Coefficient: 0.9



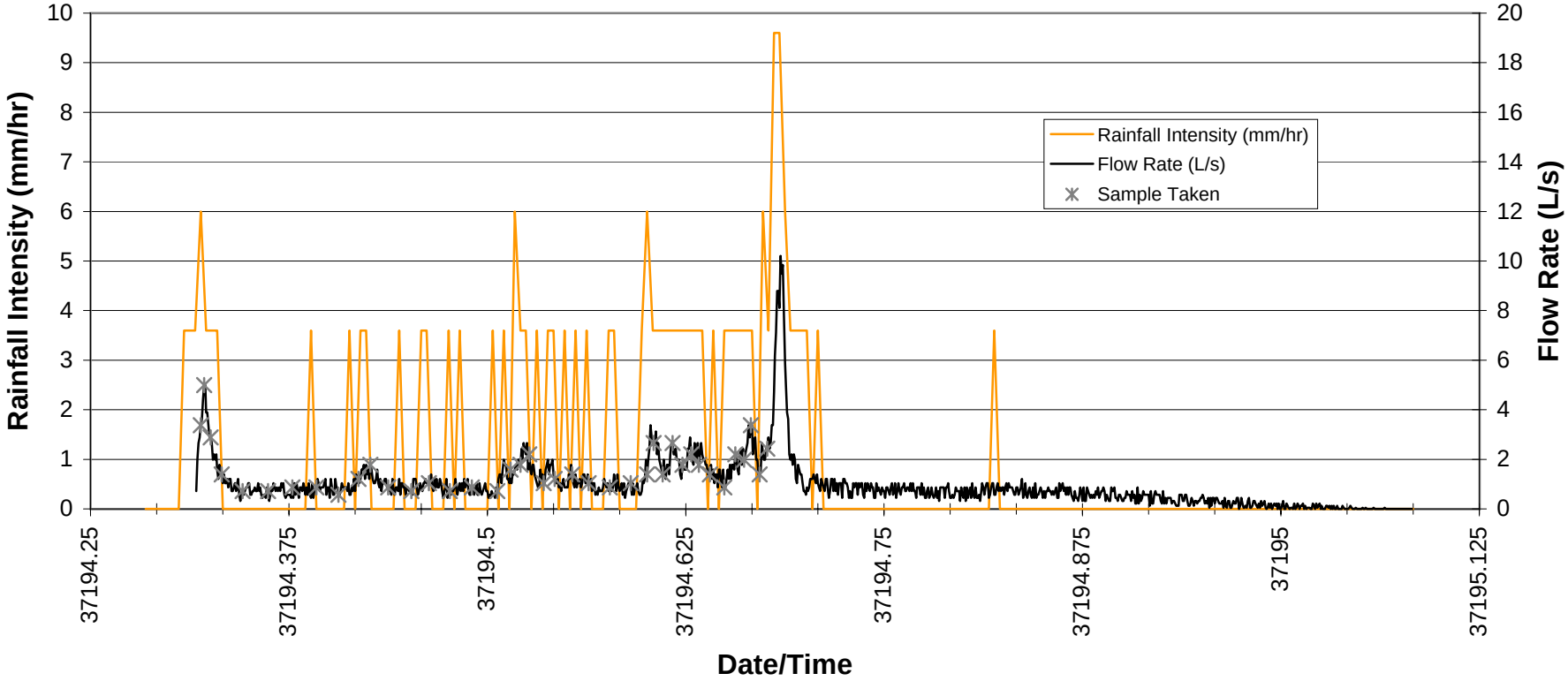
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	03/06/02 07:05	Start Date/Time:	03/05/02 19:14	Start Date/Time:	03/05/02 19:20
Stop Date/Time:	03/06/02 20:10	Stop Date/Time:	03/06/02 17:14	Stop Date/Time:	03/06/02 20:11
Event Rain (mm):	10.50	Total Flow Volume (L):	7439	Estimated Percent Capture:	96%
Max Intensity (mm/hr):	9.60	Peak Flow (L/s):	3.11	Successful Aliquots:	38
		Observed Runoff Coefficient:	0.567		

Notes: Rain/snow mix. Sampling period extends outside of flow period. Last recorded rainfall time used as end time.

Event Summary

Site: Tahoe Airport Effluent (3-222)
Event: 2001-01

Catchment Area (ha): 0.138
Assumed Runoff Coefficient: 0.8



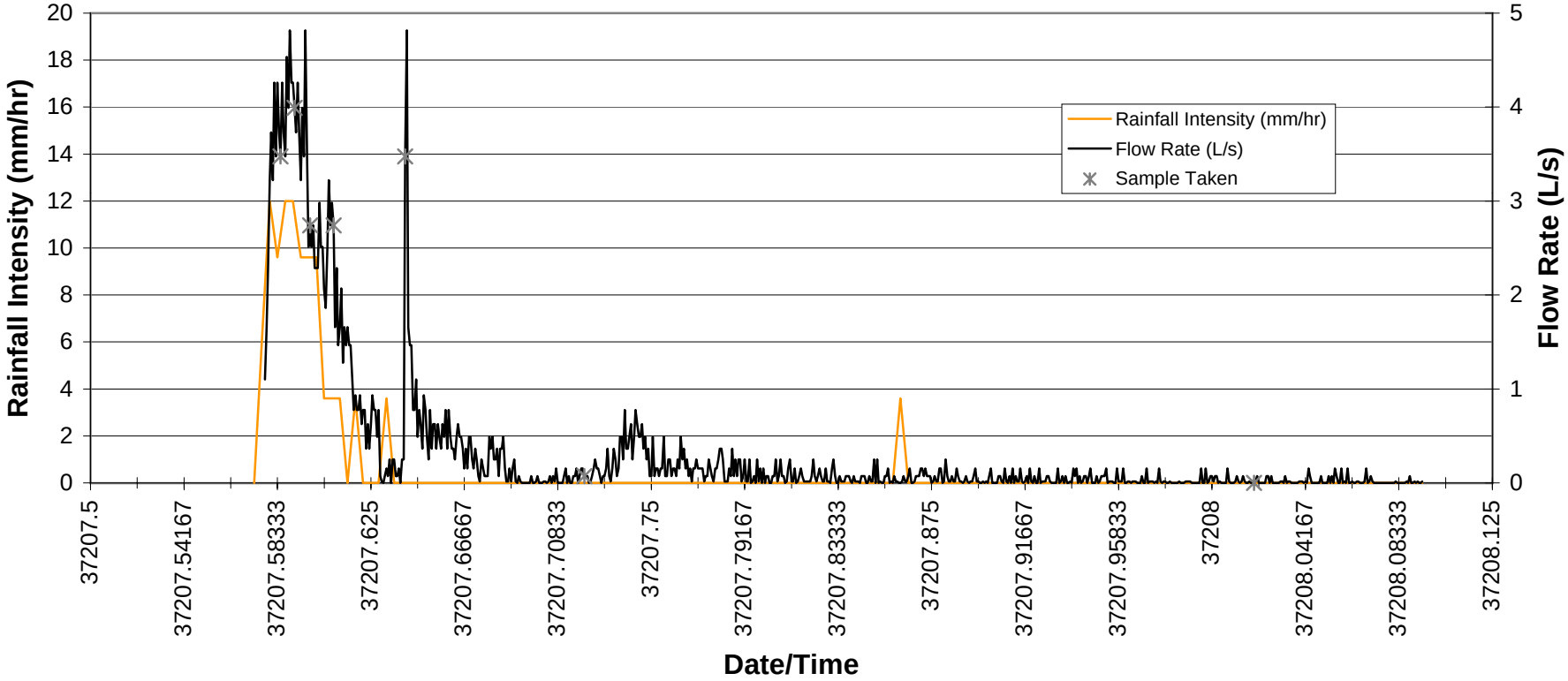
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	10/30/01 06:50	Start Date/Time:	10/30/01 07:36	Start Date/Time:	10/30/01 07:40
Stop Date/Time:	10/30/01 19:40	Stop Date/Time:	10/31/01 02:00	Stop Date/Time:	10/30/01 16:14
Event Rain (mm):	20	Total Flow Volume (L):	63683	Estimated Percent Capture:	61%
Max Intensity (mm/hr):	9.60	Peak Flow (L/s):	10.20	Successful Aliquots:	40
		Observed Runoff Coefficient:	2.307		

Notes:

Event Summary

Site: Tahoe Airport Effluent (3-222)
Event: 2001-02

Catchment Area (ha): 0.138
Assumed Runoff Coefficient: 0.8



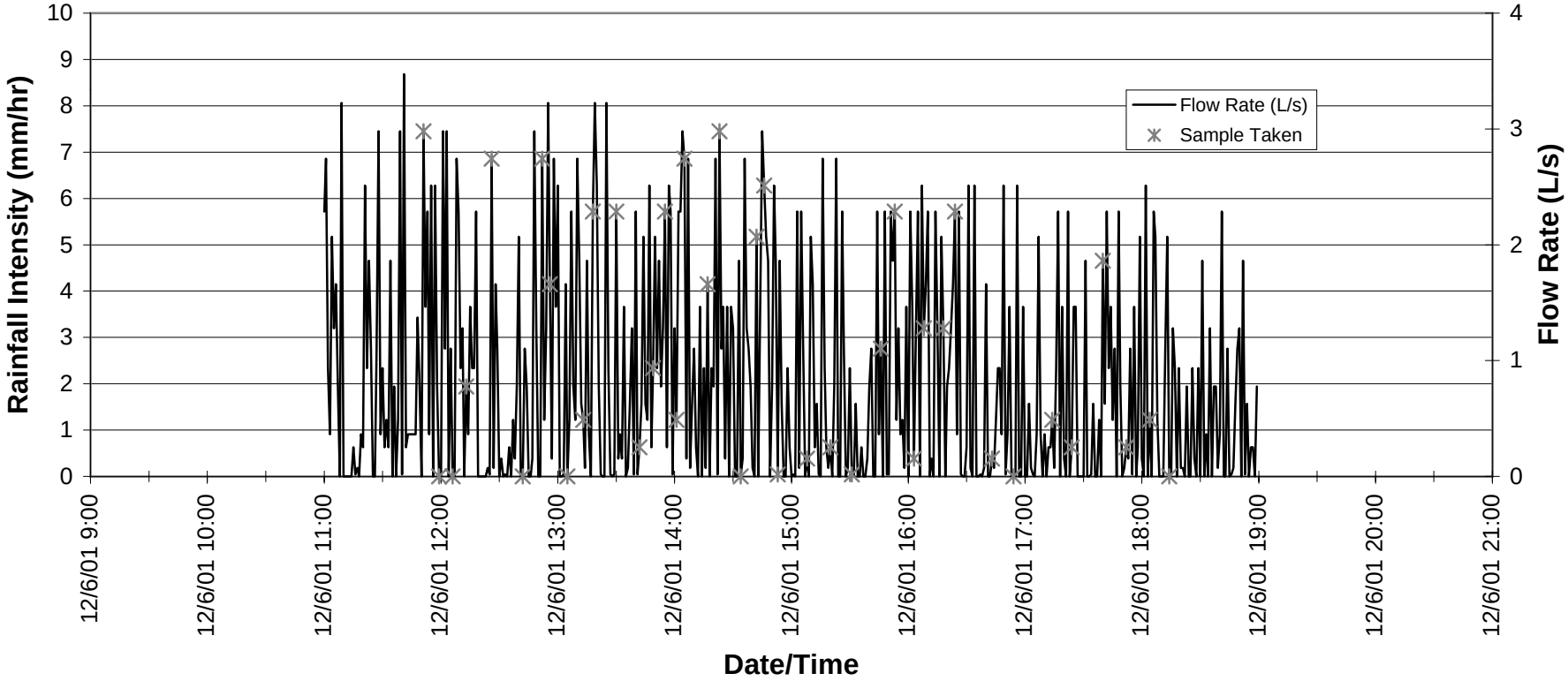
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	11/12/01 13:50	Start Date/Time:	11/12/01 13:52	Start Date/Time:	11/12/01 14:02
Stop Date/Time:	11/13/01 02:15	Stop Date/Time:	11/13/01 02:16	Stop Date/Time:	11/13/01 00:27
Event Rain (mm):	8.50	Total Flow Volume (L):	15486	Estimated Percent Capture:	87%
Max Intensity (mm/hr):	12.00	Peak Flow (L/s):	4.82	Successful Aliquots:	7
		Observed Runoff Coefficient:	1.320		

Notes: Last recorded rainfall time used as end time.

Event Summary

Site: Tahoe Airport Effluent (3-222)
Event: 2001-03

Catchment Area (ha): 0.138
Assumed Runoff Coefficient: 0.8



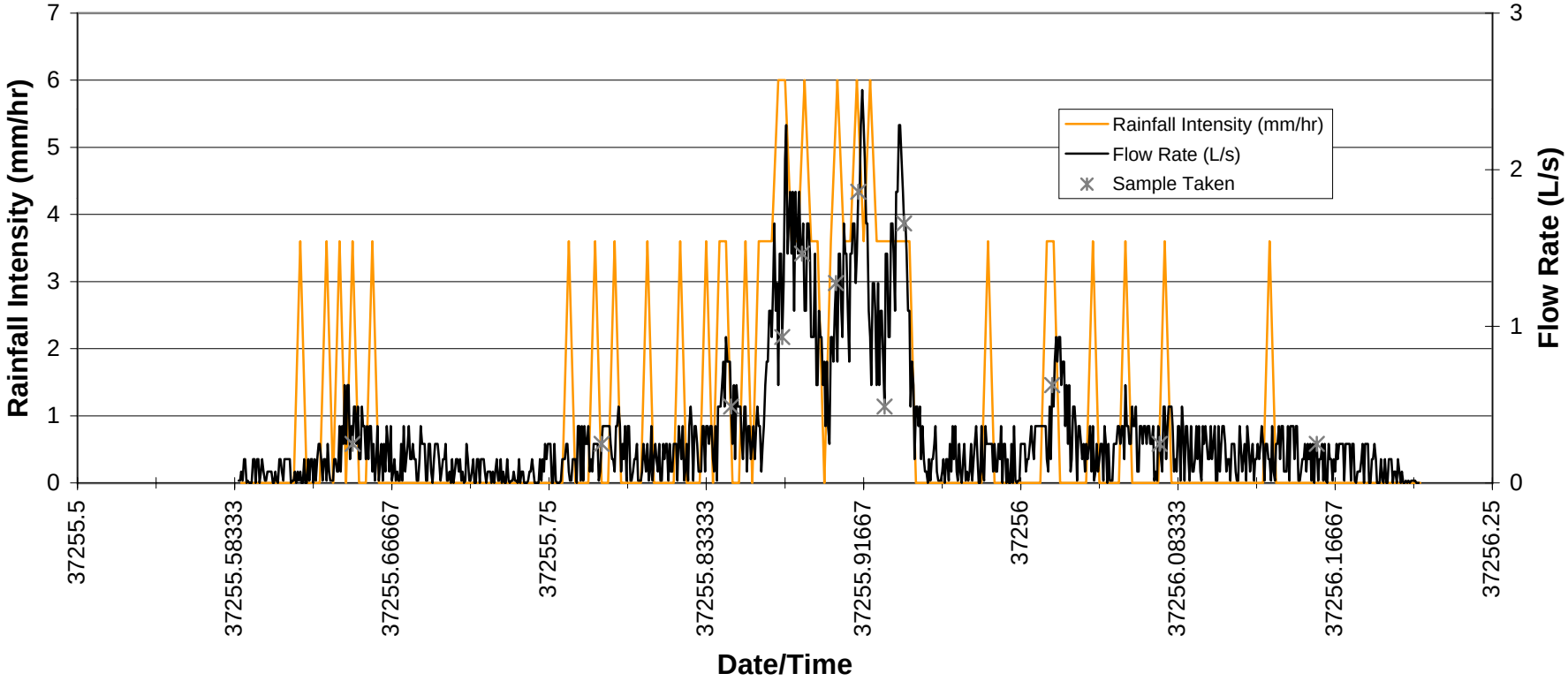
Runoff Data		*Sample Data*	
Start Date/Time:	12/06/01 09:00	Start Date/Time:	12/06/01 11:51
Stop Date/Time:	12/06/01 19:00	Stop Date/Time:	12/06/01 18:14
Total Flow Volume (L):	23577	Estimated Percent Capture:	83%
Peak Flow (L/s):	3.47	Successful Aliquots:	40

Notes: Snowmelt event. Data noise possibly due to ice formation. Flow began at approximately 11:00 AM and lasted until 7:00 PM at latest.

Event Summary

Site: Tahoe Airport Effluent (3-222)
Event: 2001-04

Catchment Area (ha): 0.138
Assumed Runoff Coefficient: 0.8



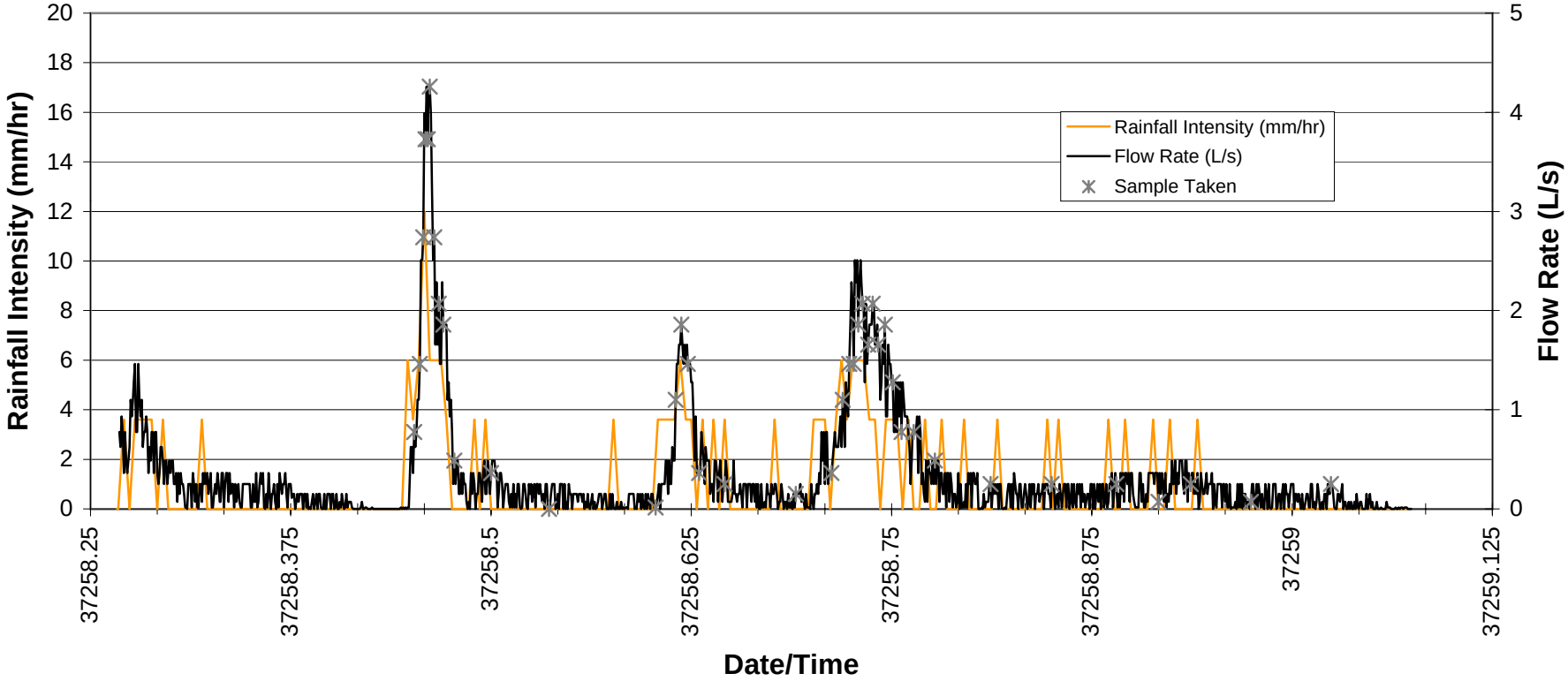
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	12/30/01 14:50	Start Date/Time:	12/30/01 14:03	Start Date/Time:	12/30/01 15:30
Stop Date/Time:	12/31/01 05:05	Stop Date/Time:	12/31/01 05:05	Stop Date/Time:	12/31/01 03:46
Event Rain (mm):	14.40	Total Flow Volume (L):	17602	Estimated Percent Capture:	94%
Max Intensity (mm/hr):	6.00	Peak Flow (L/s):	2.51	Successful Aliquots:	12
		Observed Runoff Coefficient:	0.886		

Notes: Last recorded rainfall time used as end time.

Event Summary

Site: Tahoe Airport Effluent (3-222)
Event: 2001-05

Catchment Area (ha): 0.138
Assumed Runoff Coefficient: 0.8



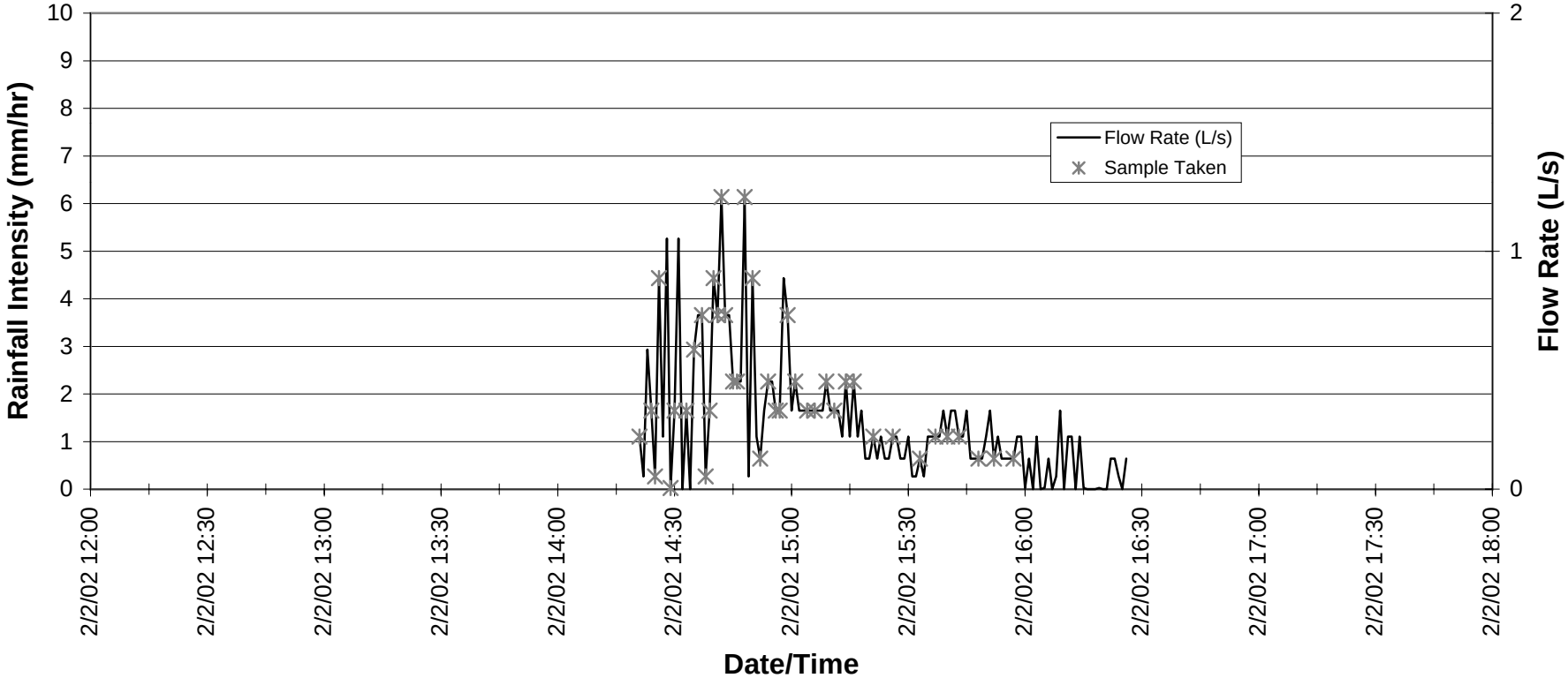
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	01/02/02 06:25	Start Date/Time:	01/02/02 06:26	Start Date/Time:	01/02/02 10:51
Stop Date/Time:	01/03/02 01:45	Stop Date/Time:	01/03/02 01:48	Stop Date/Time:	01/03/02 00:35
Event Rain (mm):	19.50	Total Flow Volume (L):	23325	Estimated Percent Capture:	84%
Max Intensity (mm/hr):	12.00	Peak Flow (L/s):	4.26	Successful Aliquots:	40
		Observed Runoff Coefficient:	0.867		

Notes: Last recorded rainfall time used as end time.

Event Summary

Site: Tahoe Airport Effluent (3-222)
Event: 2001-06

Catchment Area (ha): 0.138
Assumed Runoff Coefficient: 0.8



Runoff Data

Start Date/Time:	02/02/02 14:07
Stop Date/Time:	02/02/02 16:27
Total Flow Volume (L):	2105
Peak Flow (L/s):	1.23

Sample Data

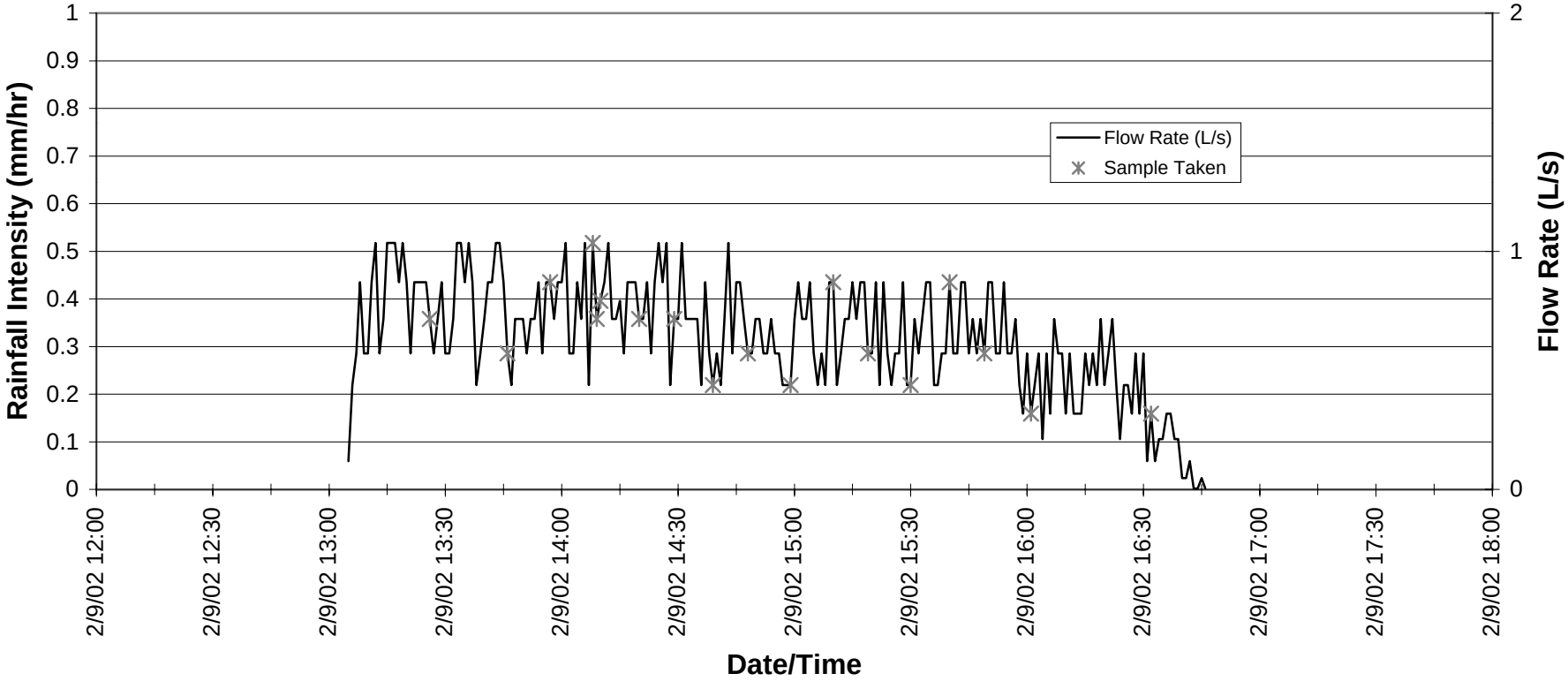
Start Date/Time:	02/02/02 14:21
Stop Date/Time:	02/02/02 15:57
Estimated Percent Capture:	93%
Successful Aliquots:	40

Notes: Snowmelt event. Very cold temperatures during the previous night. False flows at beginning of data likely due to ice in bubbler line.

Event Summary

Site: Tahoe Airport Effluent (3-222)
Event: 2001-07

Catchment Area (ha): 0.138
Assumed Runoff Coefficient: 0.8



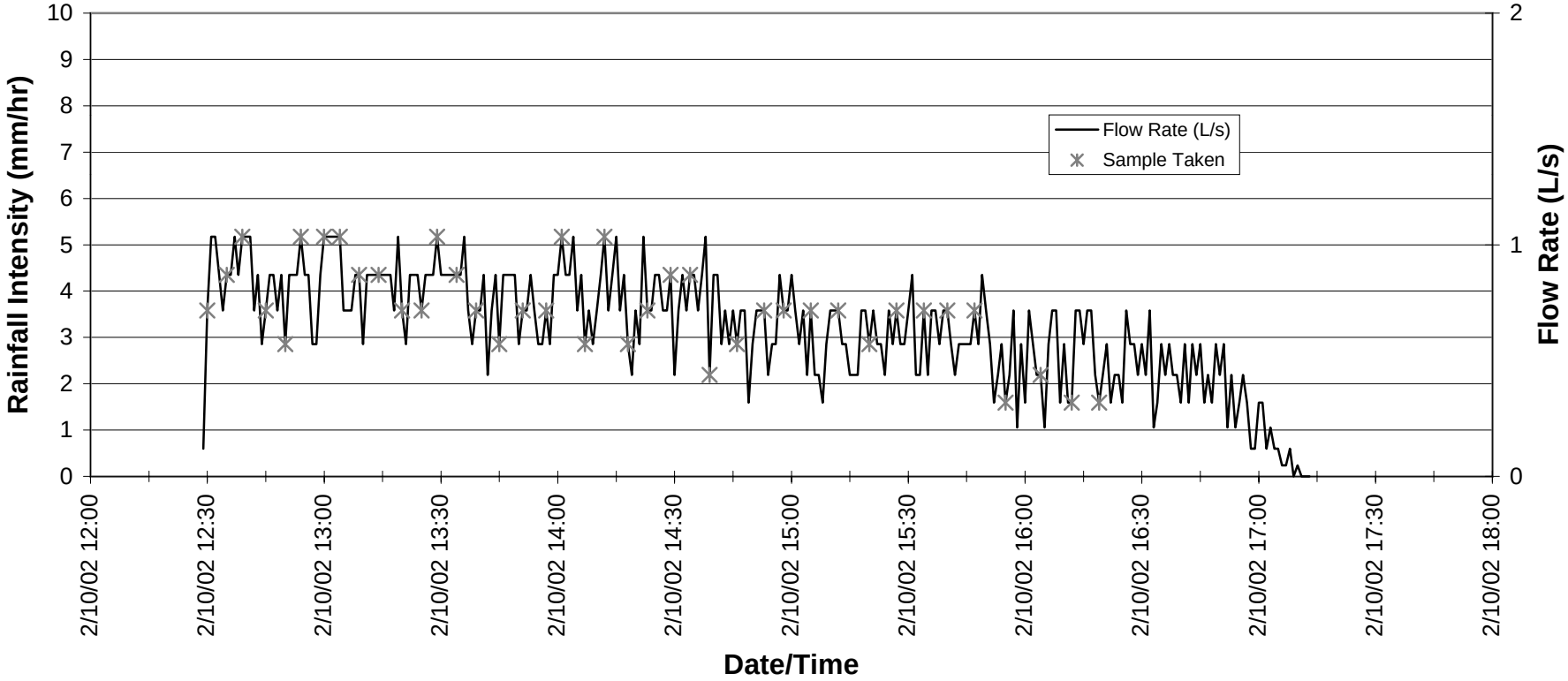
Runoff Data		*Sample Data*	
Start Date/Time:	02/09/02 13:05	Start Date/Time:	02/09/02 13:26
Stop Date/Time:	02/09/02 16:47	Stop Date/Time:	02/09/02 16:32
Total Flow Volume (L):	8516	Estimated Percent Capture:	78%
Peak Flow (L/s):	1.04	Successful Aliquots:	18

Notes: Very low flows caused missed samples at end of data.

Event Summary

Site: Tahoe Airport Effluent (3-222)
Event: 2001-08

Catchment Area (ha): 0.138
Assumed Runoff Coefficient: 0.8



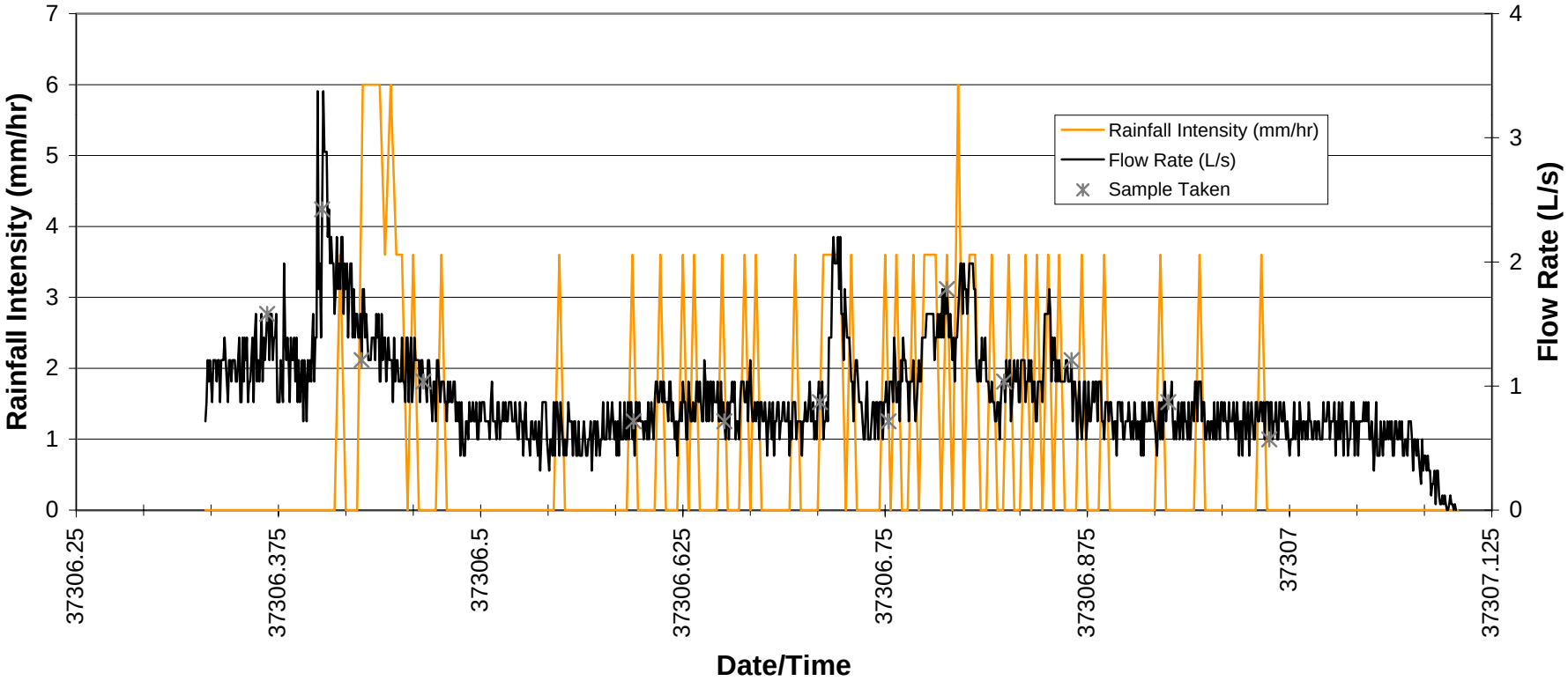
Runoff Data		*Sample Data*	
Start Date/Time:	02/10/02 12:29	Start Date/Time:	02/10/02 12:30
Stop Date/Time:	02/10/02 17:14	Stop Date/Time:	02/10/02 16:19
Total Flow Volume (L):	10959	Estimated Percent Capture:	89%
Peak Flow (L/s):	1.04	Successful Aliquots:	40

Notes: Snowmelt event.

Event Summary

Site: Tahoe Airport Effluent (3-222)
Event: 2001-09

Catchment Area (ha): 0.138
Assumed Runoff Coefficient: 0.8



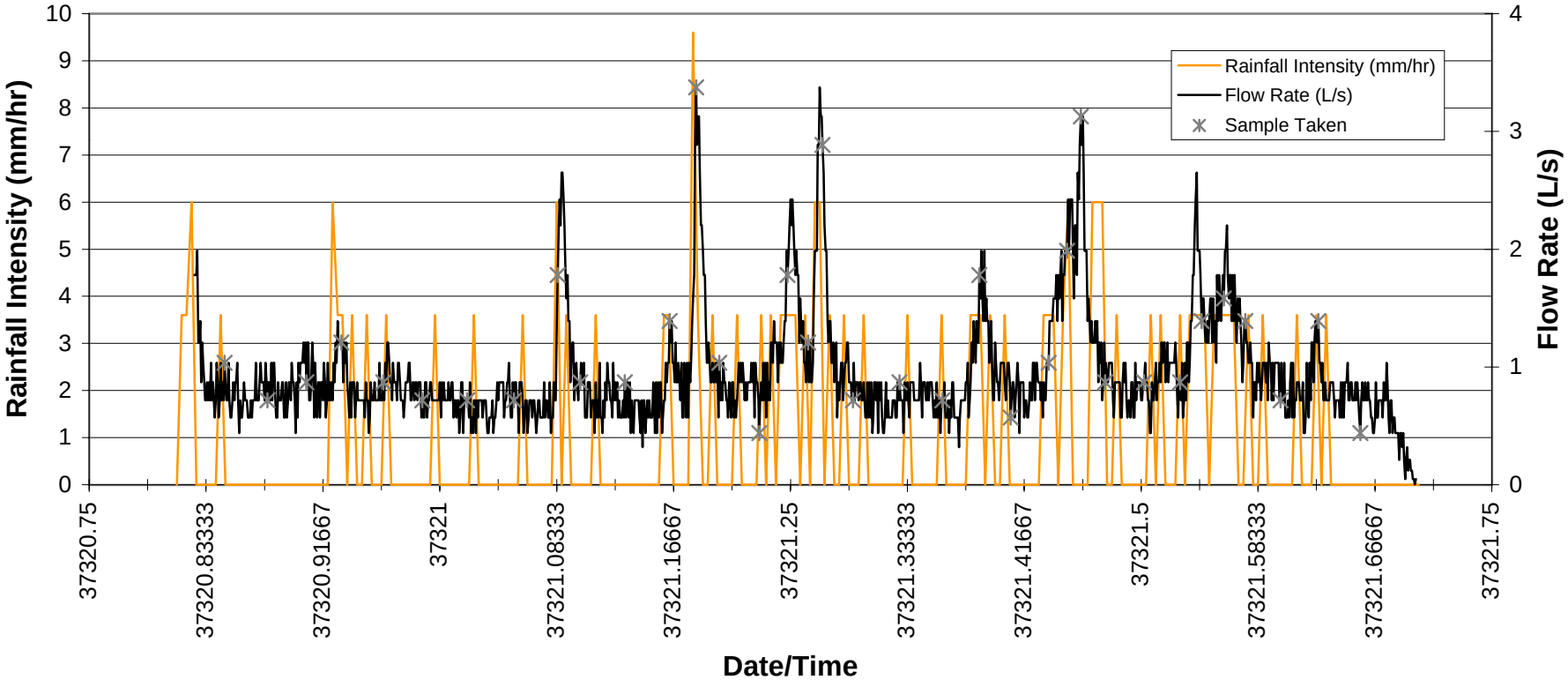
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	02/19/02 09:55	Start Date/Time:	02/19/02 07:55	Start Date/Time:	02/19/02 08:50
Stop Date/Time:	02/20/02 02:30	Stop Date/Time:	02/20/02 02:29	Stop Date/Time:	02/19/02 23:42
Event Rain (mm):	15	Total Flow Volume (L):	61480	Estimated Percent Capture:	73%
Max Intensity (mm/hr):	6.00	Peak Flow (L/s):	3.38	Successful Aliquots:	13
		Observed Runoff Coefficient:	2.970		

Notes: Last recorded rainfall time used as end time.

Event Summary

Site: Tahoe Airport Effluent (3-222)
Event: 2001-10

Catchment Area (ha): 0.138
Assumed Runoff Coefficient: 0.8



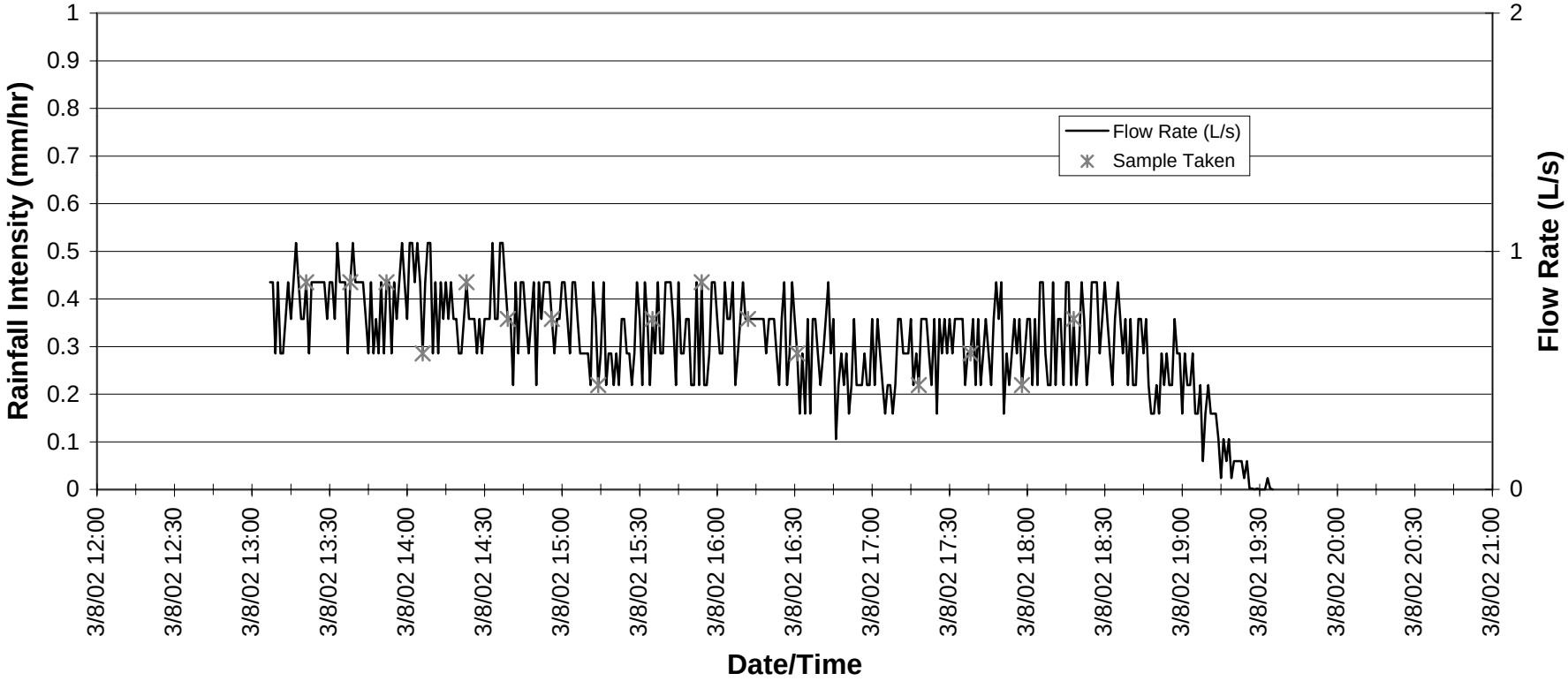
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	03/05/02 19:35	Start Date/Time:	03/05/02 19:48	Start Date/Time:	03/05/02 20:19
Stop Date/Time:	03/06/02 16:45	Stop Date/Time:	03/06/02 16:43	Stop Date/Time:	03/06/02 15:45
Event Rain (mm):	22.40	Total Flow Volume (L):	71607	Estimated Percent Capture:	95%
Max Intensity (mm/hr):	9.60	Peak Flow (L/s):	3.38	Successful Aliquots:	35
		Observed Runoff Coefficient:	2.316		

Notes: Last recorded rainfall time used as end time.

Event Summary

Site: Tahoe Airport Effluent (3-222)
Event: 2001-11

Catchment Area (ha): 0.138
Assumed Runoff Coefficient: 0.8



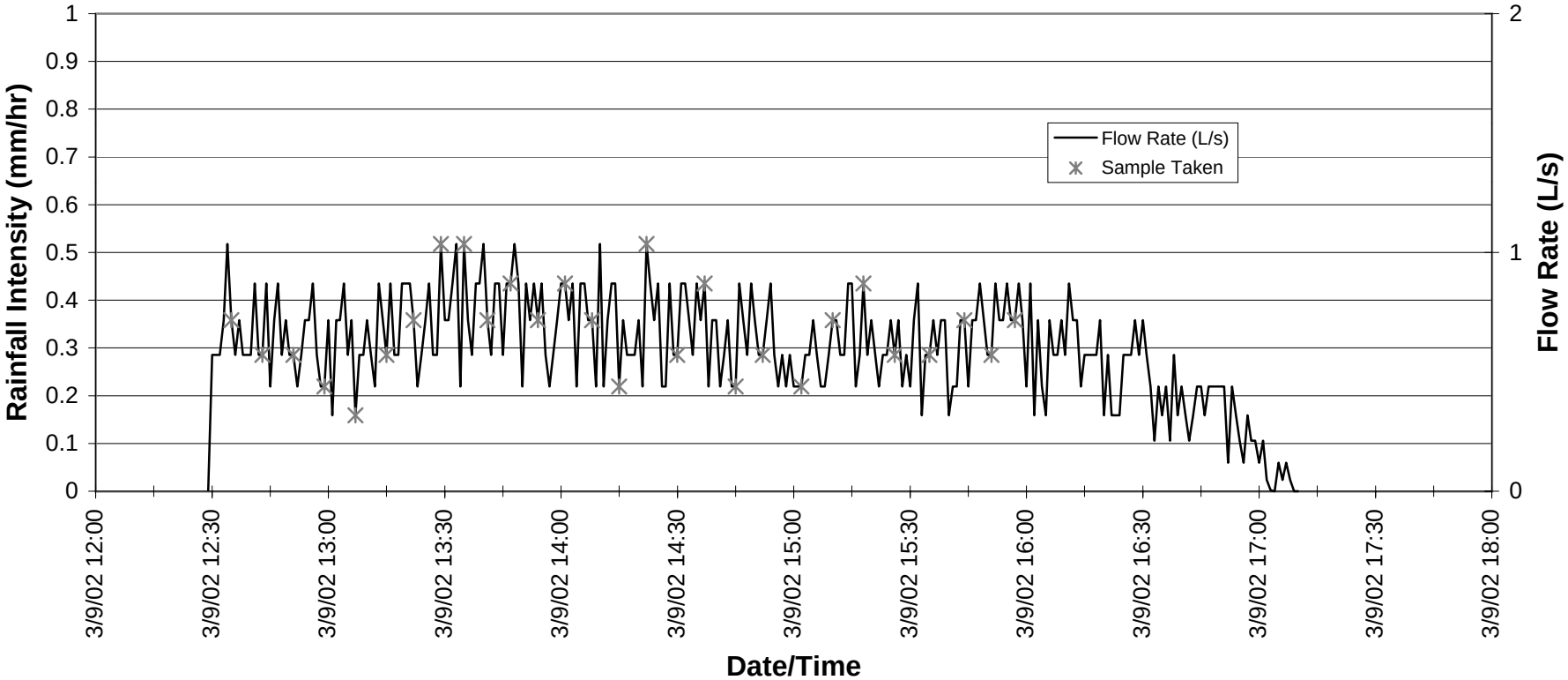
Runoff Data		*Sample Data*	
Start Date/Time:	03/08/02 13:07	Start Date/Time:	03/08/02 13:21
Stop Date/Time:	03/08/02 19:36	Stop Date/Time:	03/08/02 18:18
Total Flow Volume (L):	14554	Estimated Percent Capture:	69%
Peak Flow (L/s):	1.04	Successful Aliquots:	16

Notes: Snowmelt event. Insufficient coverage due to three samples being missed during very low flows at end of event.

Event Summary

Site: Tahoe Airport Effluent (3-222)
Event: 2001-12

Catchment Area (ha): 0.138
Assumed Runoff Coefficient: 0.8



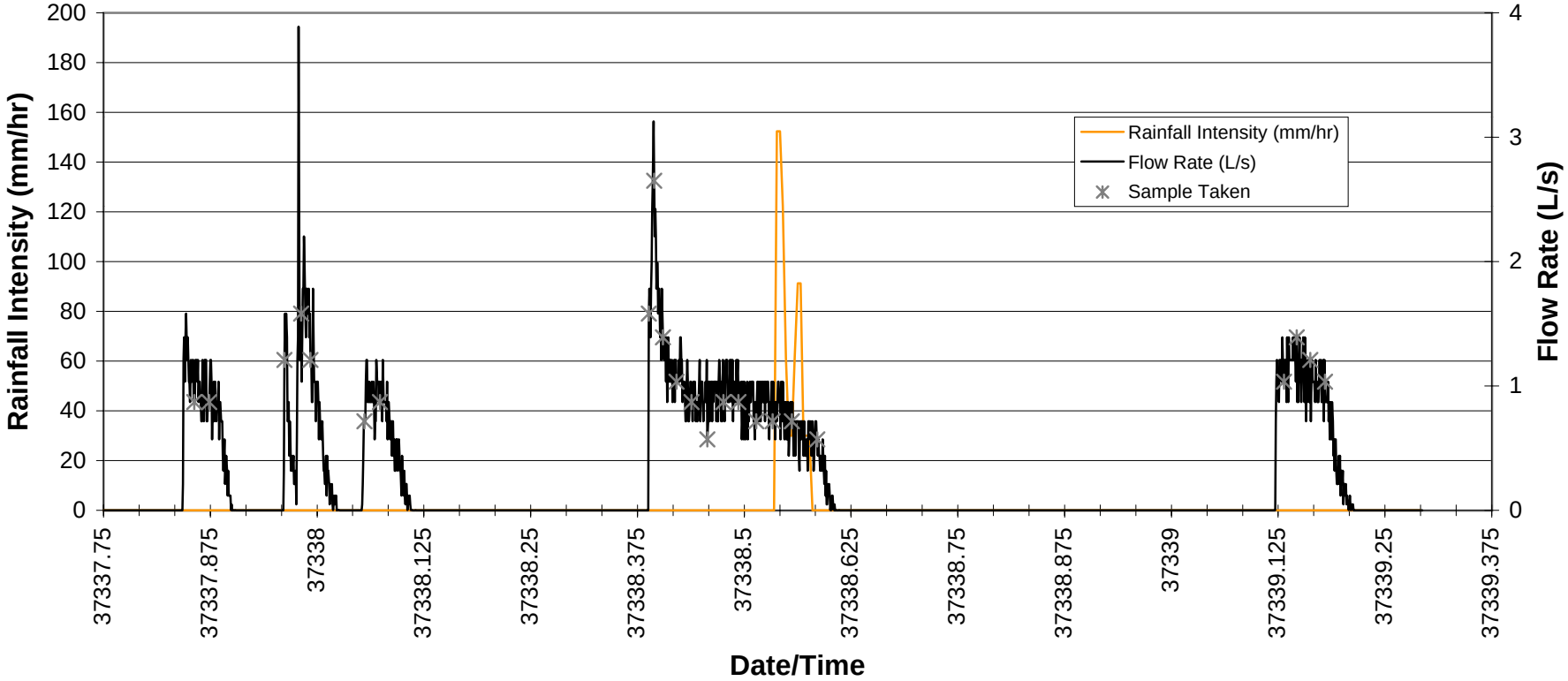
Runoff Data		*Sample Data*	
Start Date/Time:	03/09/02 12:29	Start Date/Time:	03/09/02 12:35
Stop Date/Time:	03/09/02 17:11	Stop Date/Time:	03/09/02 15:57
Total Flow Volume (L):	10127	Estimated Percent Capture:	66%
Peak Flow (L/s):	1.04	Successful Aliquots:	28

Notes: Insufficient coverage due to five missed samples during low flows at end of event.

Event Summary

Site: Tahoe Airport Effluent (3-222)
Event: 2001-13

Catchment Area (ha): 0.138
Assumed Runoff Coefficient: 0.8



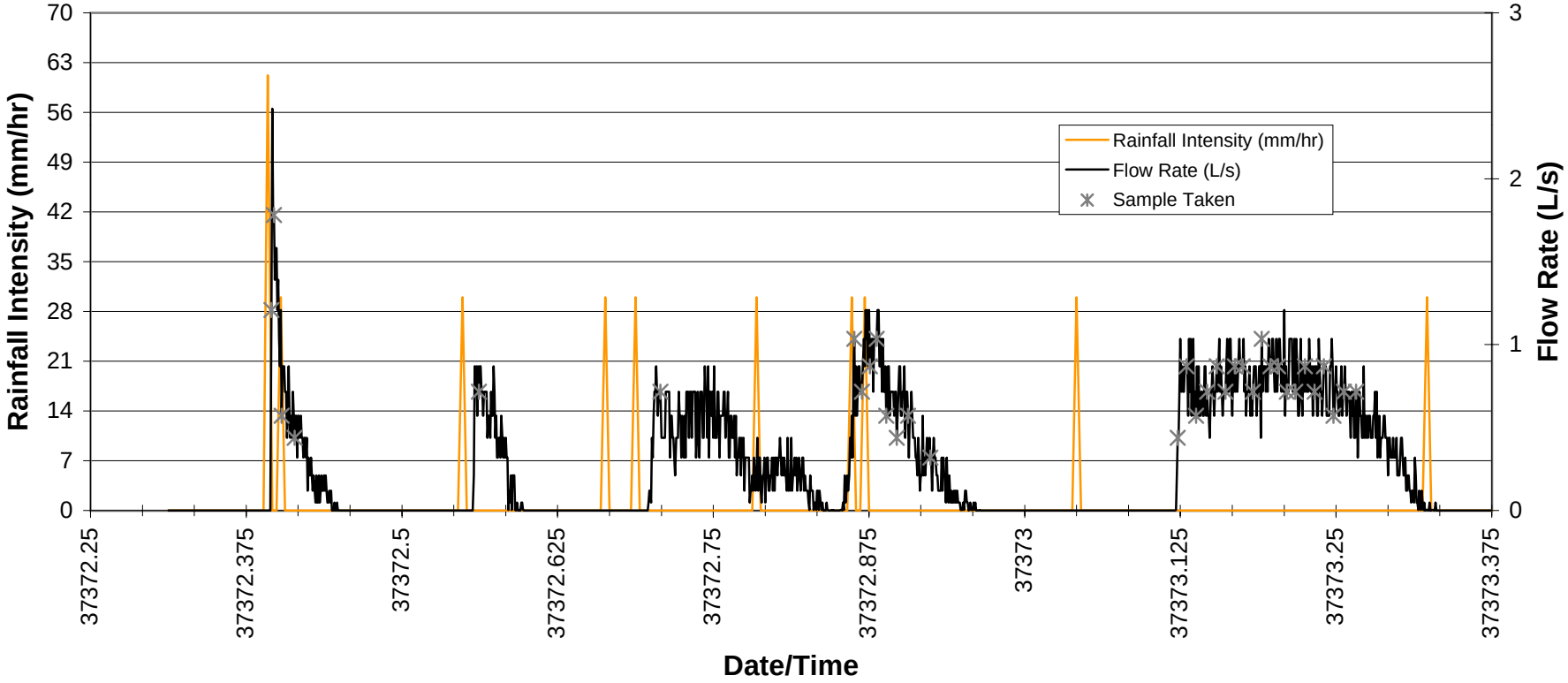
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	03/23/02 12:55	Start Date/Time:	03/22/02 18:00	Start Date/Time:	03/22/02 20:33
Stop Date/Time:	03/23/02 13:50	Stop Date/Time:	03/24/02 07:04	Stop Date/Time:	03/24/02 04:19
Event Rain (mm):	71	Total Flow Volume (L):	35413	Estimated Percent Capture:	93%
Max Intensity (mm/hr):	152.40	Peak Flow (L/s):	3.89	Successful Aliquots:	23
		Observed Runoff Coefficient:	0.361		

Notes: Rain/snow/snowmelt event. Snow collected in rain gage. Rain with melting snow in rain gage occurred mid day on 3/23/02.

Event Summary

Site: Tahoe Airport Effluent (3-222)
Event: 2001-14

Catchment Area (ha): 0.138
Assumed Runoff Coefficient: 0.8



Rain Data

Start Date/Time:	04/26/02 09:25
Stop Date/Time:	04/27/02 01:00
Event Rain (mm):	22.60
Max Intensity (mm/hr):	61.20

Runoff Data

Start Date/Time:	04/26/02 07:30
Stop Date/Time:	04/27/02 09:00
Total Flow Volume (L):	23799
Peak Flow (L/s):	2.42
Observed Runoff Coefficient:	0.763

Sample Data

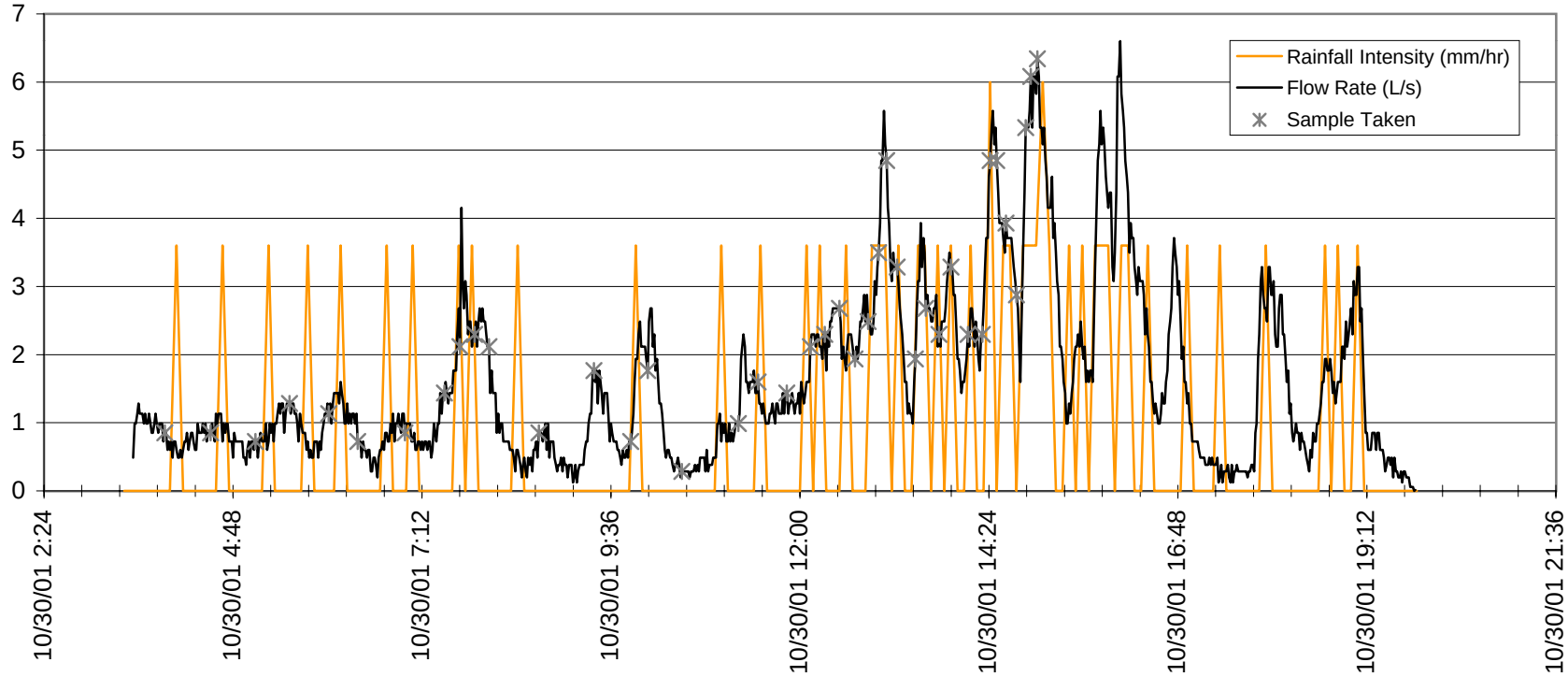
Start Date/Time:	04/26/02 09:25
Stop Date/Time:	04/27/02 06:23
Estimated Percent Capture:	66%
Successful Aliquots:	34

Notes: rain event

Event Summary

Site: Echo Summit Effluent (3-223)
Event: 2001-01

Catchment Area (ha): 0.324
Assumed Runoff Coefficient: 0.95



Rain Data

Start Date/Time:	10/30/01 04:05
Stop Date/Time:	10/30/01 19:50
Event Rain (mm):	14.50
Max Intensity (mm/hr):	6.00

Runoff Data

Start Date/Time:	10/30/01 03:32
Stop Date/Time:	10/30/01 19:50
Total Flow Volume (L):	121040
Peak Flow (L/s):	8.49
Observed Runoff Coefficient:	2.576

Sample Data

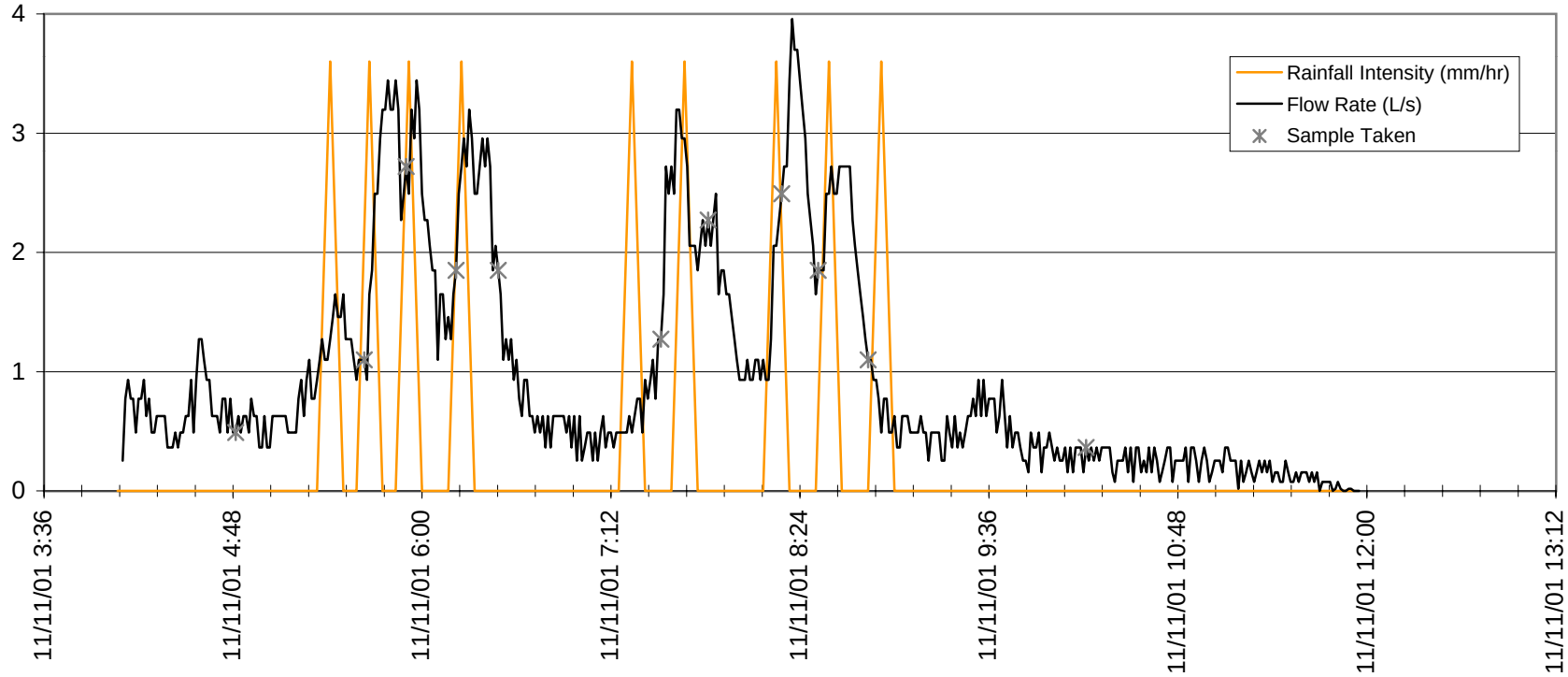
Start Date/Time:	10/30/01 03:56
Stop Date/Time:	10/30/01 15:01
Estimated Percent Capture:	64%
Successful Aliquots:	40

Notes: Last recorded rainfall time used as end time.

Event Summary

Site: Echo Summit Effluent (3-223)
Event: 2001-02

Catchment Area (ha): 0.324
Assumed Runoff Coefficient: 0.95



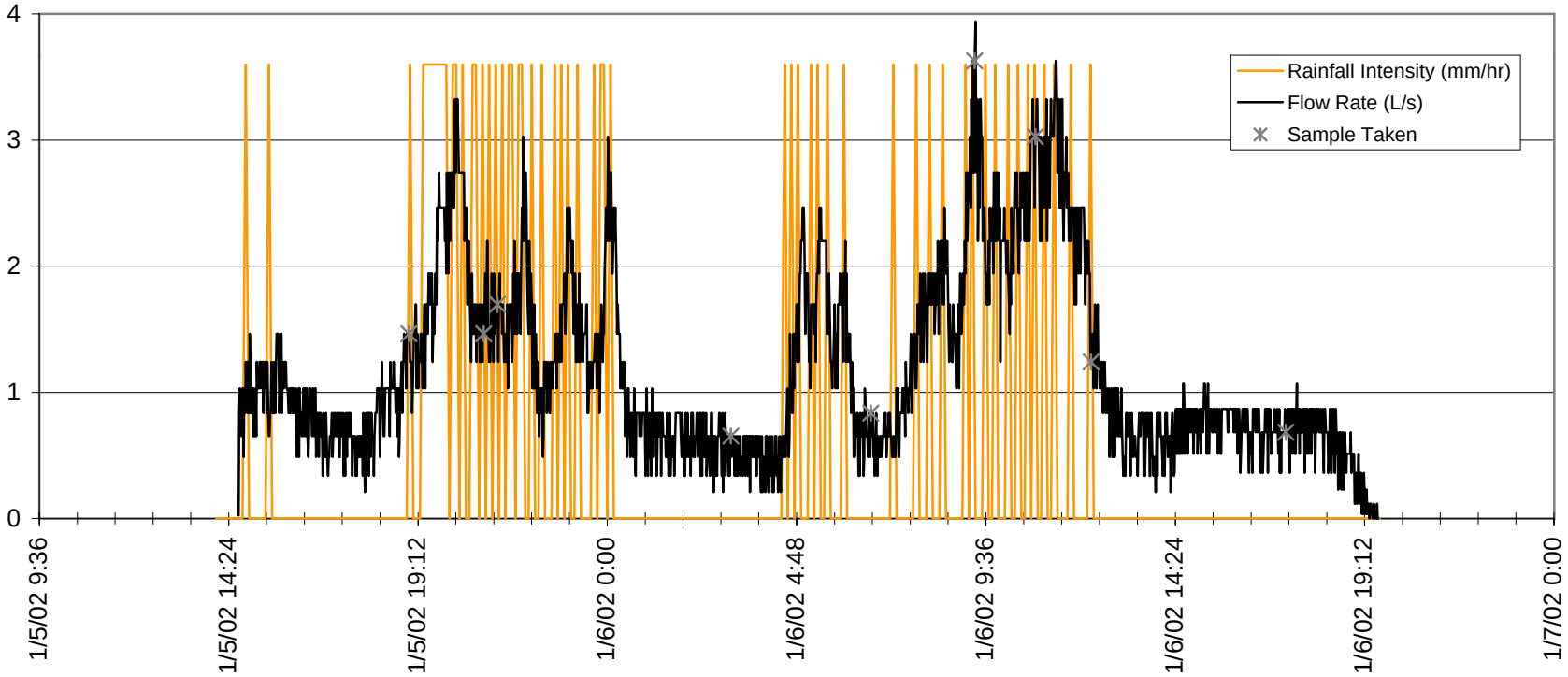
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	11/11/01 04:05	Start Date/Time:	11/11/01 04:06	Start Date/Time:	11/11/01 04:49
Stop Date/Time:	11/11/01 11:55	Stop Date/Time:	11/11/01 11:58	Stop Date/Time:	11/11/01 10:13
Event Rain (mm):	3.	Total Flow Volume (L):	27925	Estimated Percent Capture:	89%
Max Intensity (mm/hr):	3.60	Peak Flow (L/s):	3.96	Successful Aliquots:	11
		Observed Runoff Coefficient:	2.873		

Notes: Last recorded rainfall time used as end time.

Event Summary

Site: Echo Summit Effluent (3-223)
Event: 2001-03

Catchment Area (ha): 0.324
Assumed Runoff Coefficient: 0.95



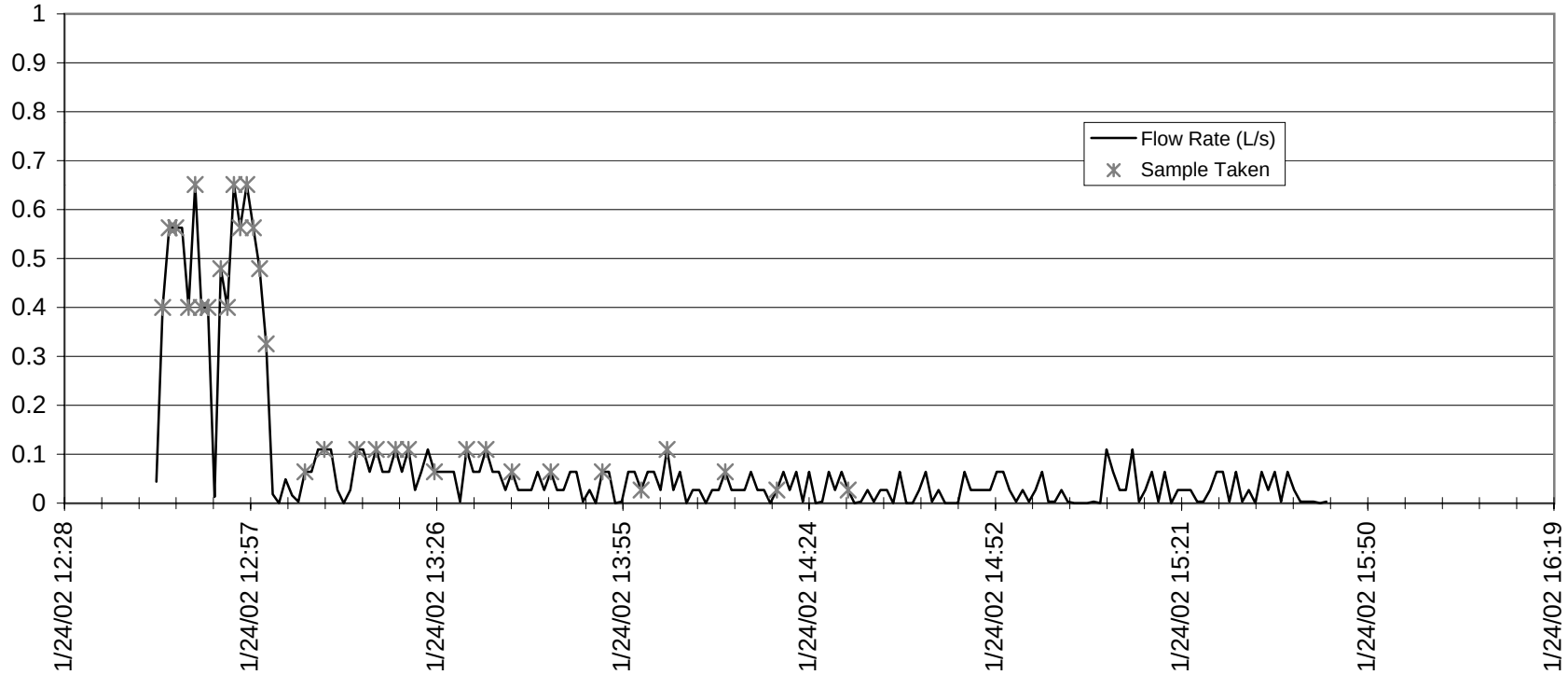
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	01/05/02 14:05	Start Date/Time:	01/05/02 14:39	Start Date/Time:	01/05/02 18:58
Stop Date/Time:	01/06/02 12:15	Stop Date/Time:	01/06/02 19:34	Stop Date/Time:	01/06/02 17:12
Event Rain (mm):	17.40	Total Flow Volume (L):	93306	Estimated Percent Capture:	86%
Max Intensity (mm/hr):	3.60	Peak Flow (L/s):	2.96	Successful Aliquots:	9
		Observed Runoff Coefficient:	1.655		

Notes: An aliquot was attempted on 1/7/02 at 8:30 AM when no flow was recorded. It has not been included in this graph.

Event Summary

Site: Echo Summit Effluent (3-223)
Event: 2001-04

Catchment Area (ha): 0.324
Assumed Runoff Coefficient: 0.95



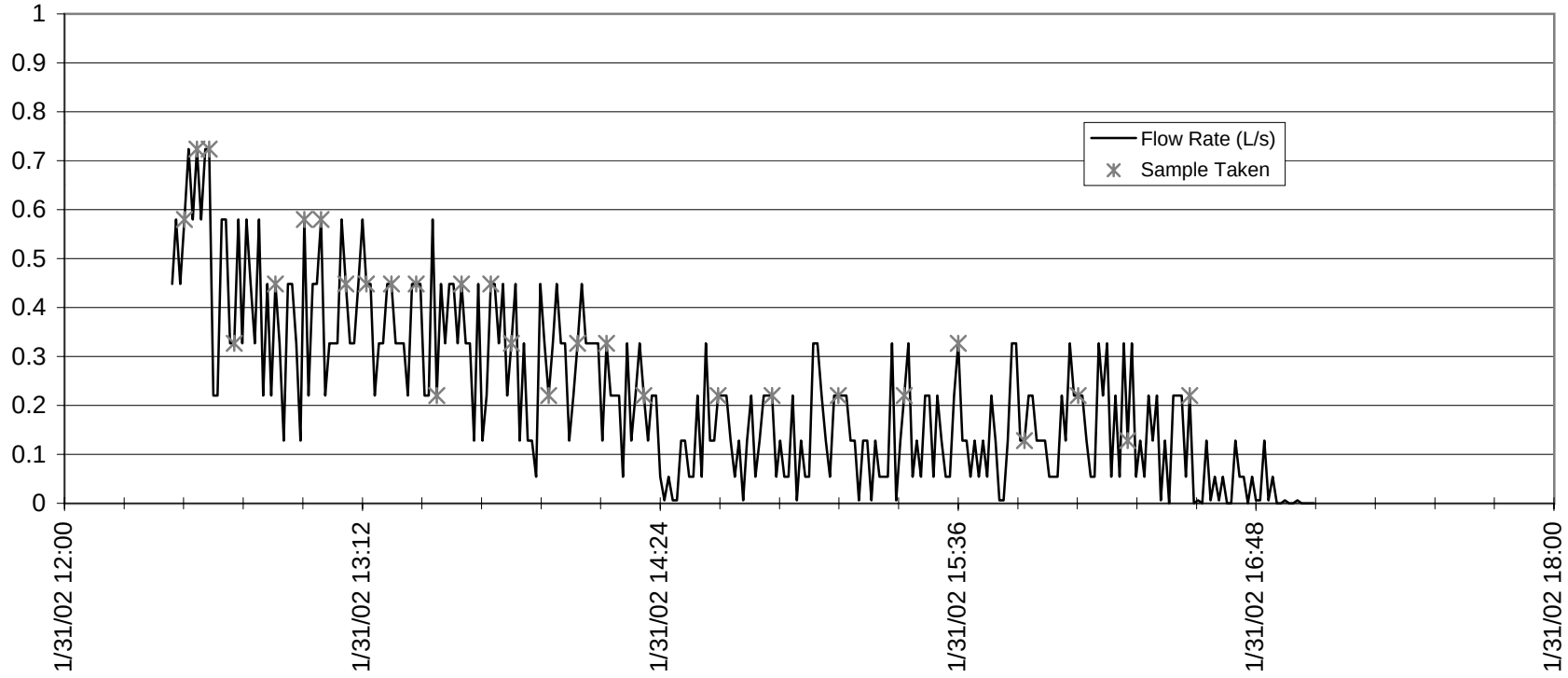
Runoff Data		*Sample Data*	
Start Date/Time:	01/24/02 12:43	Start Date/Time:	01/24/02 12:44
Stop Date/Time:	01/24/02 16:52	Stop Date/Time:	01/24/02 14:30
Total Flow Volume (L):	1713	Estimated Percent Capture:	85%
Peak Flow (L/s):	1.30	Successful Aliquots:	32

Notes: Snow melt event.

Event Summary

Site: Echo Summit Effluent (3-223)
Event: 2001-05

Catchment Area (ha): 0.324
Assumed Runoff Coefficient: 0.95



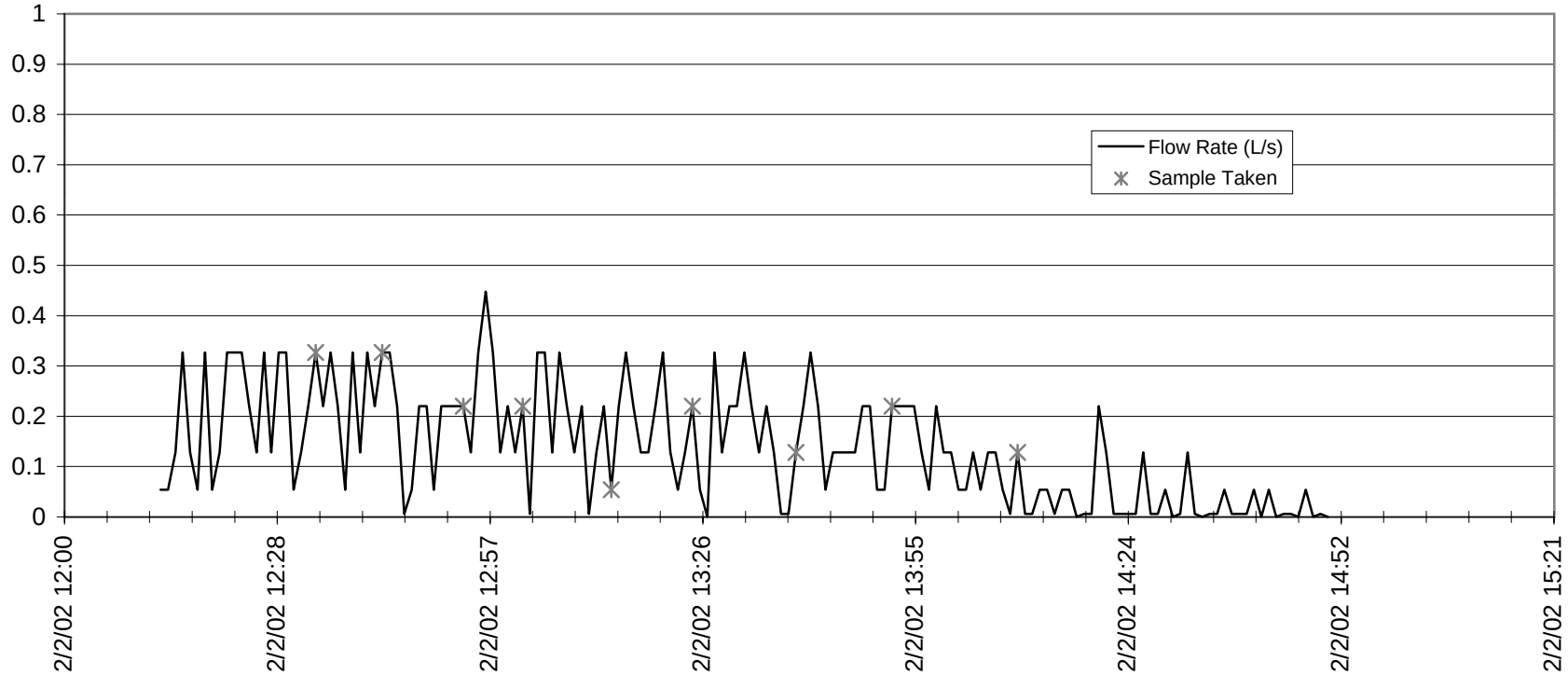
Runoff Data		*Sample Data*	
Start Date/Time:	01/31/02 12:26	Start Date/Time:	01/31/02 12:29
Stop Date/Time:	01/31/02 17:03	Stop Date/Time:	01/31/02 16:32
Total Flow Volume (L):	3662	Estimated Percent Capture:	96%
Peak Flow (L/s):	0.72	Successful Aliquots:	28

Notes: Snow melt event. False flow readings occurring at start of data. Actual flows began during set up procedures.

Event Summary

Site: Echo Summit Effluent (3-223)
Event: 2001-06

Catchment Area (ha): 0.324
Assumed Runoff Coefficient: 0.95



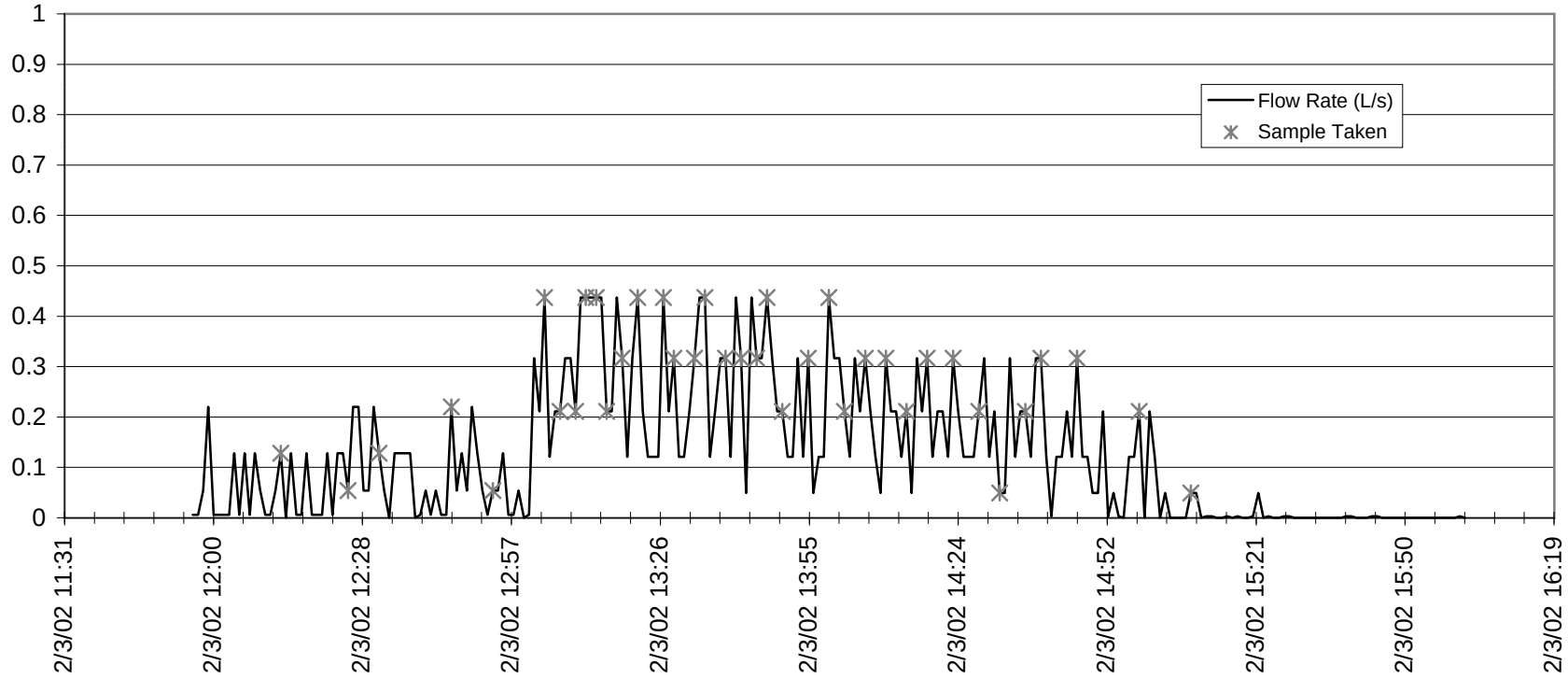
Runoff Data		*Sample Data*	
Start Date/Time:	02/02/02 12:13	Start Date/Time:	02/02/02 12:24
Stop Date/Time:	02/02/02 14:52	Stop Date/Time:	02/02/02 14:09
Total Flow Volume (L):	1328	Estimated Percent Capture:	85%
Peak Flow (L/s):	0.45	Successful Aliquots:	9

Notes: Snow melt runoff event. False flow readings at start of data. Actual flow observed to begin at set up time.

Event Summary

Site: Echo Summit Effluent (3-223)
Event: 2001-07

Catchment Area (ha): 0.324
Assumed Runoff Coefficient: 0.95



Runoff Data

Start Date/Time:	02/03/02 11:56
Stop Date/Time:	02/03/02 16:03
Total Flow Volume (L):	1861
Peak Flow (L/s):	0.44

Sample Data

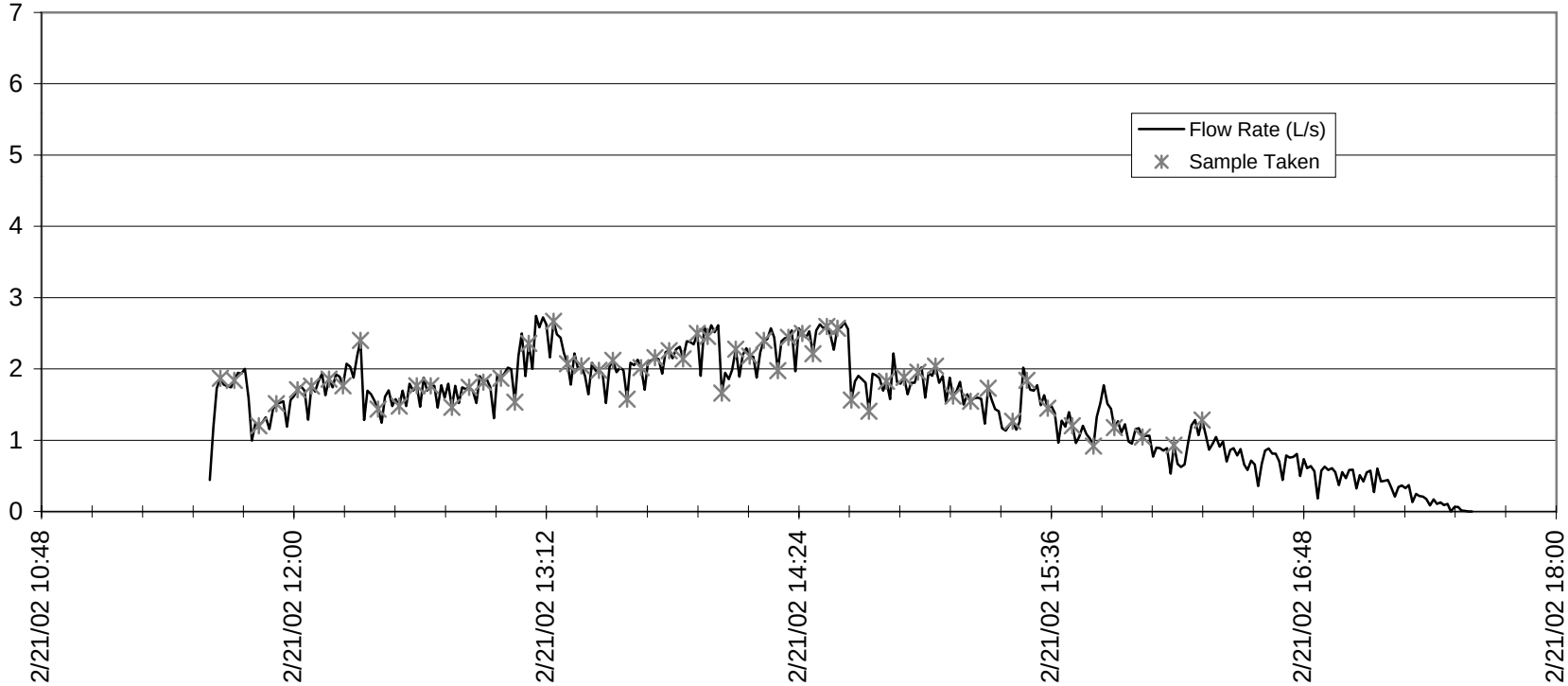
Start Date/Time:	02/03/02 12:13
Stop Date/Time:	02/03/02 15:09
Estimated Percent Capture:	97%
Successful Aliquots:	37

Notes: Snow melt runoff event.

Event Summary

Site: Echo Summit Effluent (3-223)
Event: 2001-08

Catchment Area (ha): 0.324
Assumed Runoff Coefficient: 0.95



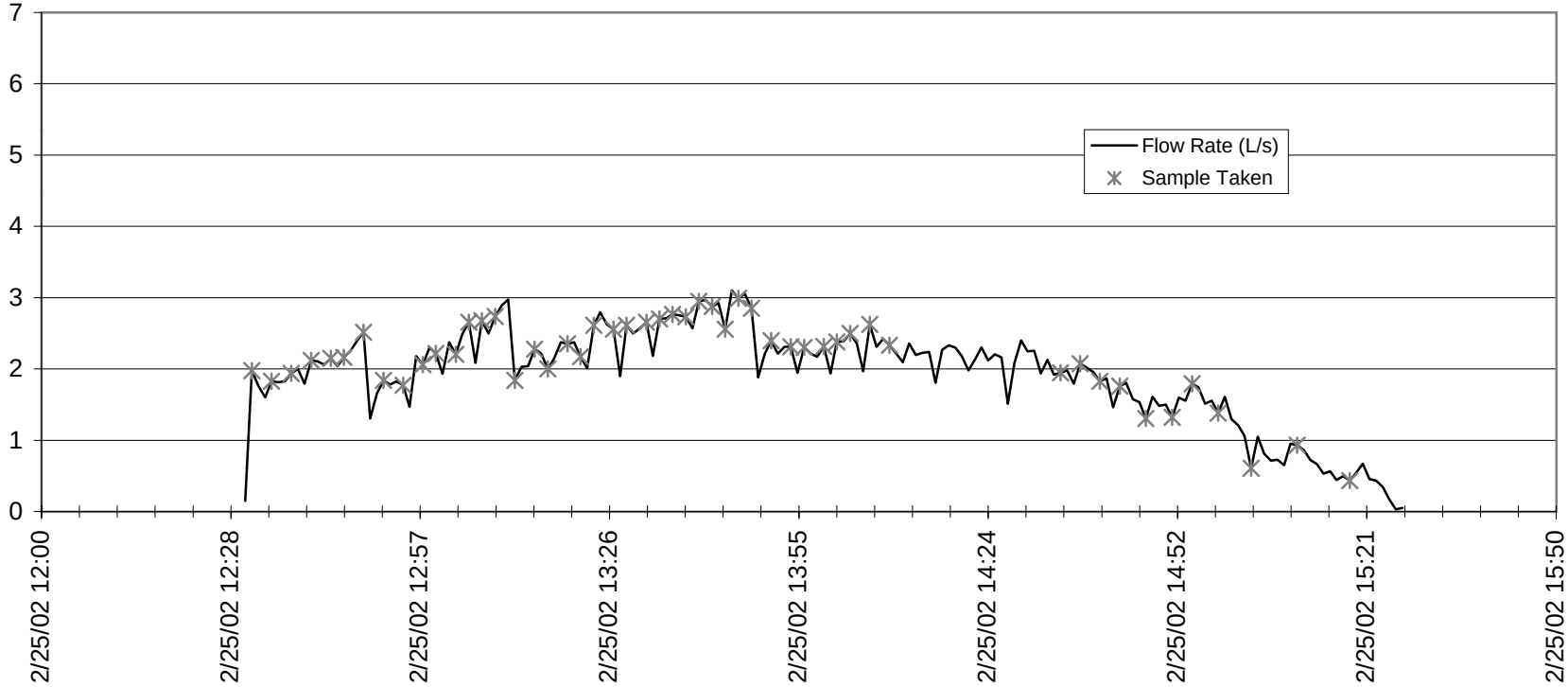
Runoff Data		*Sample Data*	
Start Date/Time:	02/21/02 11:36	Start Date/Time:	02/21/02 11:39
Stop Date/Time:	02/21/02 17:37	Stop Date/Time:	02/21/02 16:19
Total Flow Volume (L):	4628	Estimated Percent Capture:	92%
Peak Flow (L/s):	0.39	Successful Aliquots:	59

Notes: Sampler reset for 40 more samples at 13:03. Snow melt event.

Event Summary

Site: Echo Summit Effluent (3-223)
Event: 2001-09

Catchment Area (ha): 0.324
Assumed Runoff Coefficient: 0.95



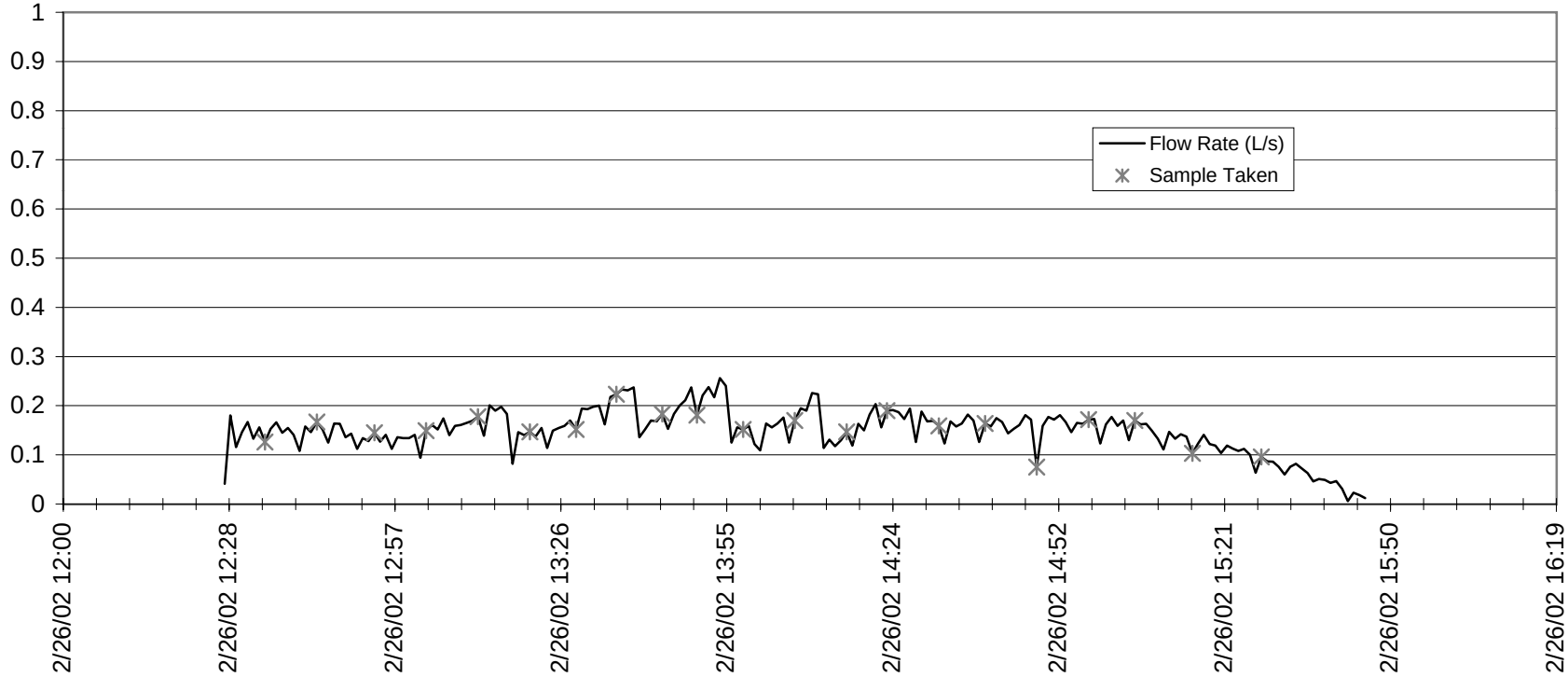
Runoff Data		*Sample Data*	
Start Date/Time:	02/25/02 12:31	Start Date/Time:	02/25/02 12:32
Stop Date/Time:	02/25/02 15:28	Stop Date/Time:	02/25/02 15:19
Total Flow Volume (L):	2912	Estimated Percent Capture:	82%
Peak Flow (L/s):	0.44	Successful Aliquots:	51

Notes: Snow melt event.

Event Summary

Site: Echo Summit Effluent (3-223)
Event: 2001-10

Catchment Area (ha): 0.324
Assumed Runoff Coefficient: 0.95



Runoff Data

Start Date/Time:	02/26/02 12:28
Stop Date/Time:	02/26/02 15:47
Total Flow Volume (L):	1756
Peak Flow (L/s):	0.26

Sample Data

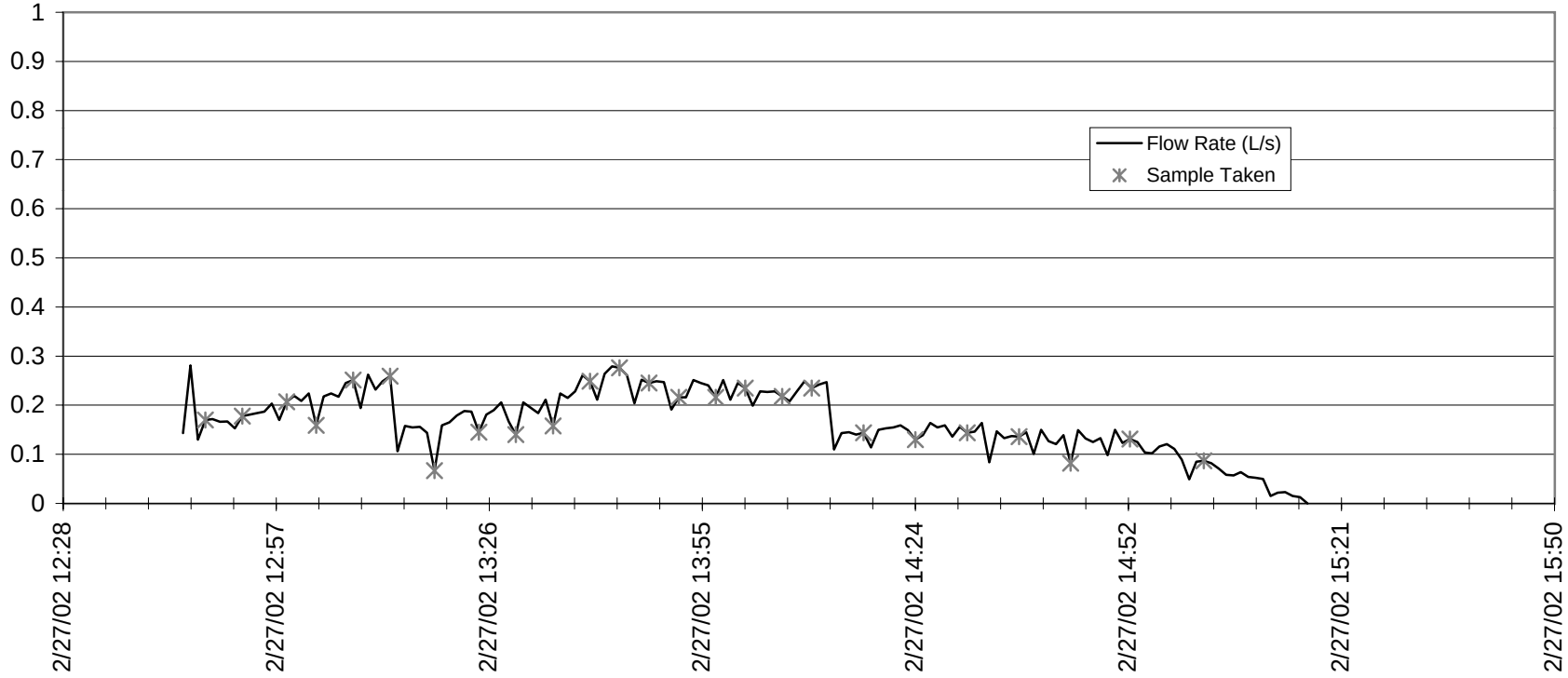
Start Date/Time:	02/26/02 12:35
Stop Date/Time:	02/26/02 15:28
Estimated Percent Capture:	93%
Successful Aliquots:	21

Notes: Snow melt event.

Event Summary

Site: Echo Summit Effluent (3-223)
Event: 2001-11

Catchment Area (ha): 0.324
Assumed Runoff Coefficient: 0.95



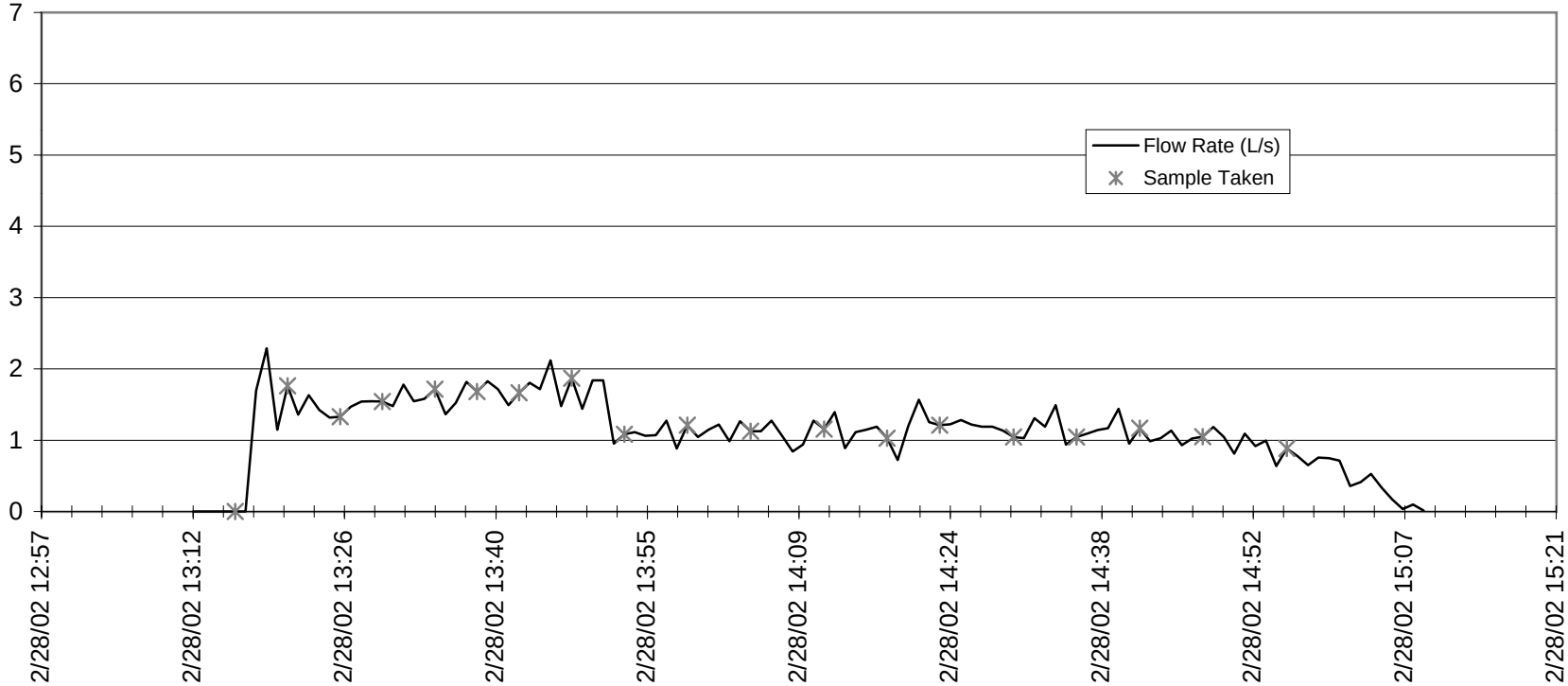
Runoff Data		*Sample Data*	
Start Date/Time:	02/27/02 12:45	Start Date/Time:	02/27/02 12:48
Stop Date/Time:	02/27/02 15:18	Stop Date/Time:	02/27/02 15:03
Total Flow Volume (L):	1517	Estimated Percent Capture:	95%
Peak Flow (L/s):	0.28	Successful Aliquots:	25

Notes: Snow melt event

Event Summary

Site: Echo Summit Effluent (3-223)
Event: 2001-12

Catchment Area (ha): 0.324
Assumed Runoff Coefficient: 0.95



Runoff Data

Start Date/Time:	02/28/02 13:12
Stop Date/Time:	02/28/02 15:10
Total Flow Volume (L):	1138
Peak Flow (L/s):	0.33

Sample Data

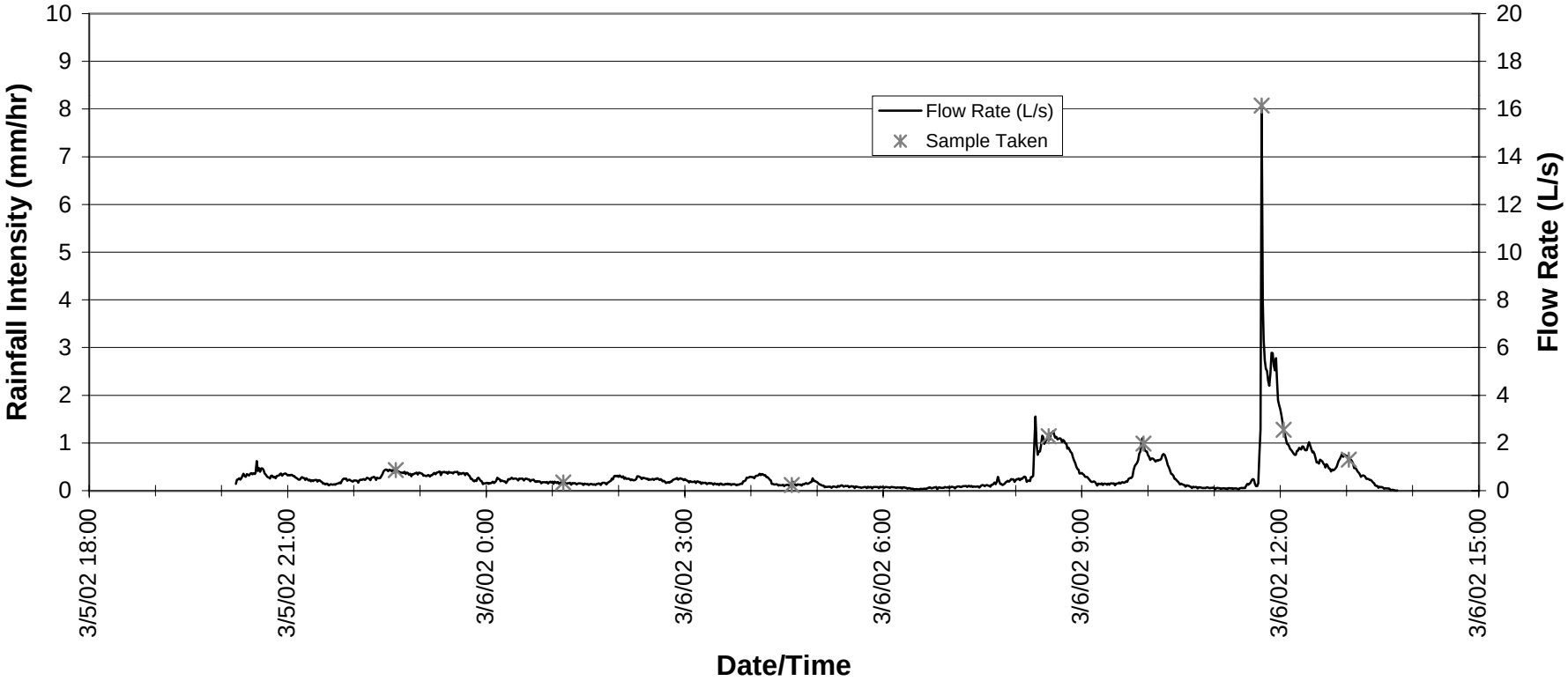
Start Date/Time:	02/28/02 13:17
Stop Date/Time:	02/28/02 14:56
Estimated Percent Capture:	95%
Successful Aliquots:	19

Notes: Snow melt event.

Event Summary

Site: Echo Summit Effluent (3-223)
Event: 2001-13

Catchment Area (ha): 0.324
Assumed Runoff Coefficient: 0.95



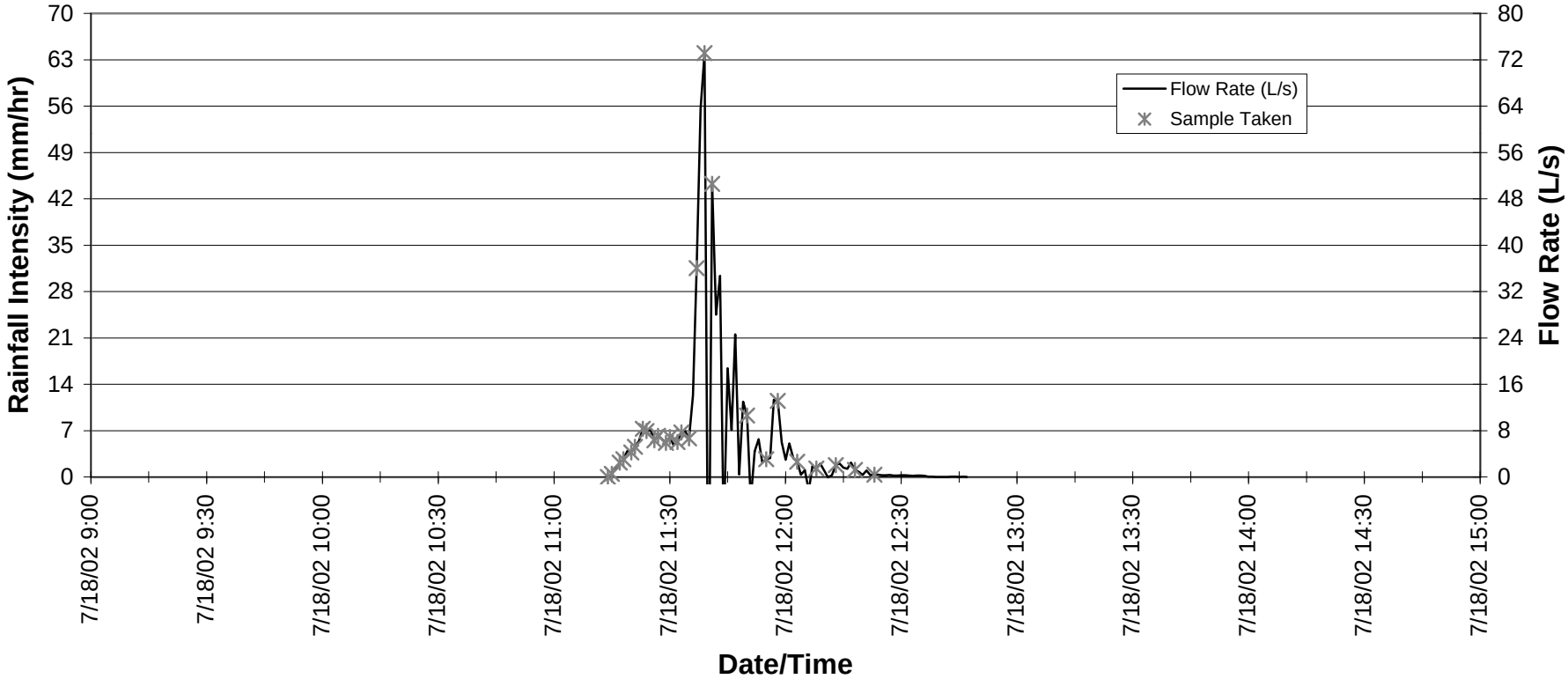
Runoff Data		*Sample Data*	
Start Date/Time:	03/05/02 20:13	Start Date/Time:	03/05/02 22:38
Stop Date/Time:	03/06/02 13:47	Stop Date/Time:	03/06/02 13:02
Total Flow Volume (L):	40382	Estimated Percent Capture:	85%
Peak Flow (L/s):	16.14	Successful Aliquots:	8

Notes:

Event Summary

Site: Tahoe Meadows (3-201)
Event: 2002-01

Catchment Area (ha): 0.312
Assumed Runoff Coefficient: 0.9



Runoff Data

Start Date/Time:	07/18/02 11:14
Stop Date/Time:	07/18/02 12:47
Total Flow Volume (L):	32306
Peak Flow (L/s):	73.12

Sample Data

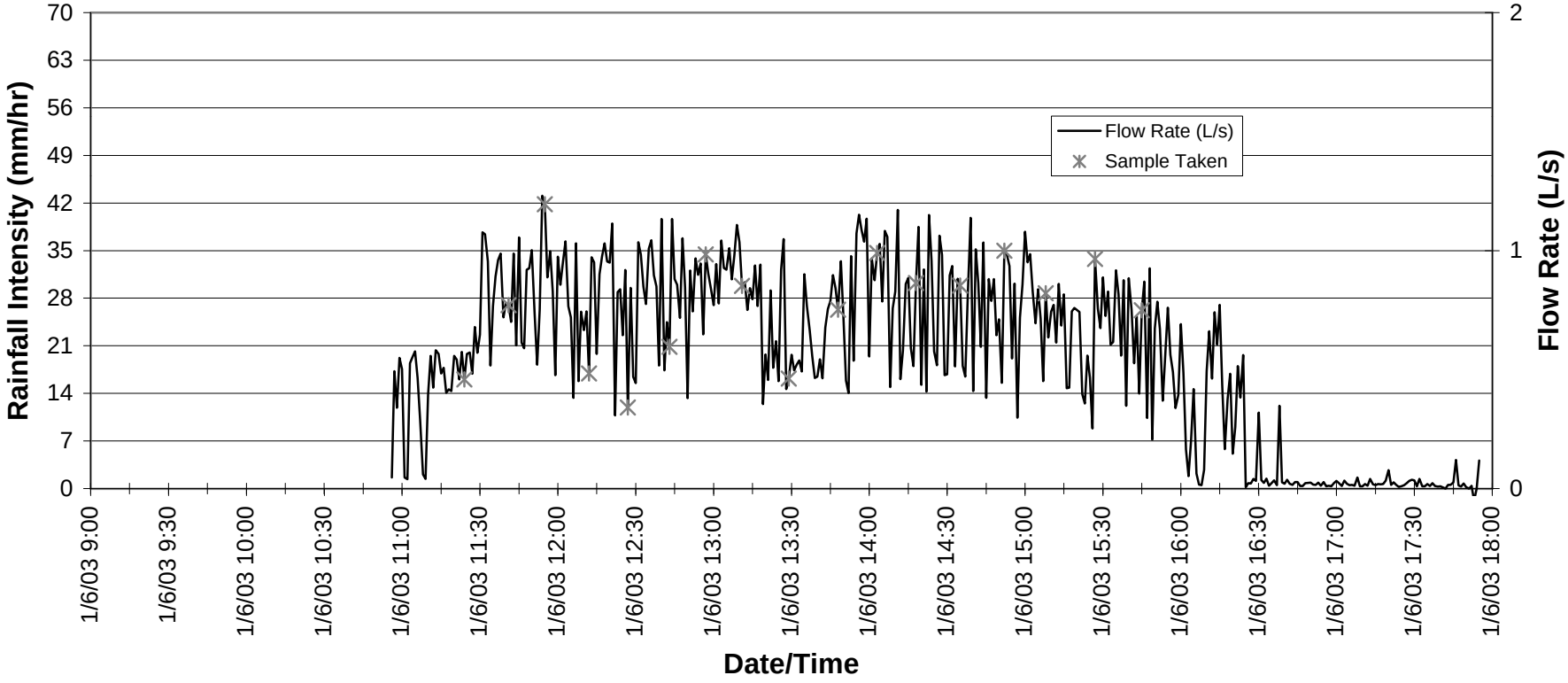
Start Date/Time:	07/18/02 11:14
Stop Date/Time:	07/18/02 12:23
Estimated Percent Capture:	89%
Successful Aliquots:	26

Notes: Some false flow readings after 11:40 am

Event Summary

Site: Tahoe Meadows (3-201)
Event: 2002-02

Catchment Area (ha): 0.321
Assumed Fraction Runoff/Rain Volume: 0.9



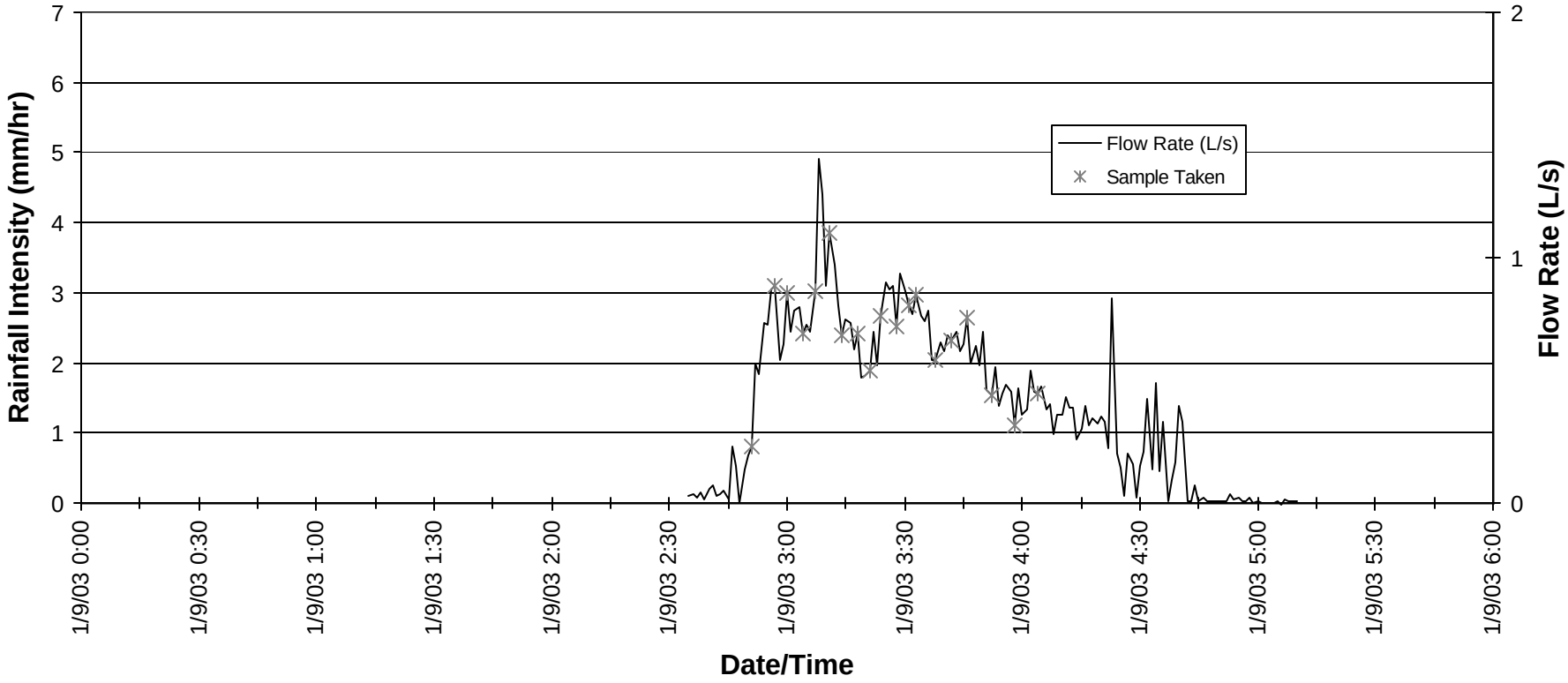
Runoff Data		*Sample Data*	
Start Date/Time:	01/06/03 10:56	Start Date/Time:	01/06/03 11:24
Stop Date/Time:	01/06/03 17:55	Stop Date/Time:	01/06/03 15:45
Total Flow Volume (L):	13893	Estimated Percent Capture:	86%
Peak Flow (L/s):	1.23	Successful Aliquots:	17

Notes: Snowmelt event

Event Summary

Site: Tahoe Meadows (3-201)
Event: 2002-03

Catchment Area (ha): 0.321
Assumed Fraction Runoff/Rain Volume: 0.9



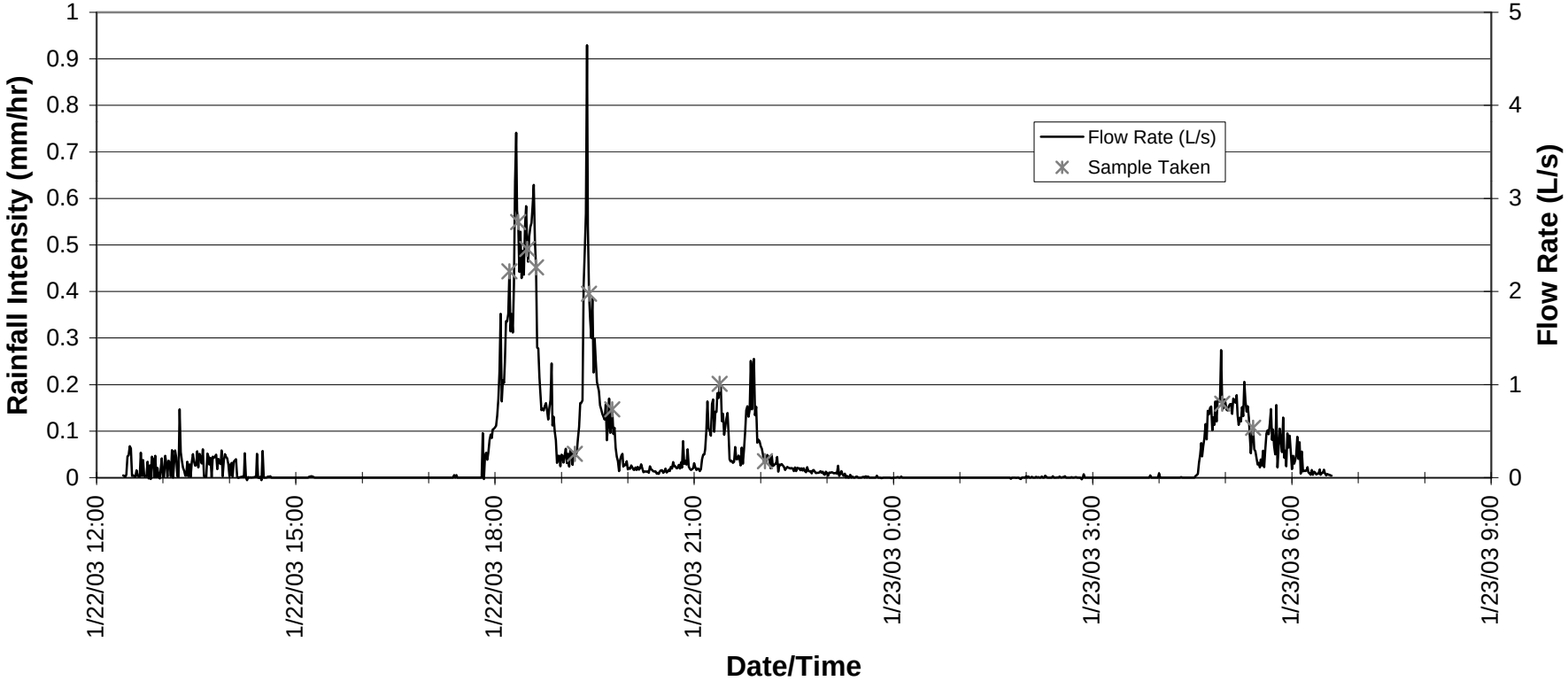
Runoff Data		*Sample Data*	
Start Date/Time:	01/09/03 02:35	Start Date/Time:	01/09/03 02:51
Stop Date/Time:	01/09/03 05:10	Stop Date/Time:	01/09/03 04:04
Total Flow Volume (L):	3754	Estimated Percent Capture:	80%
Peak Flow (L/s):	1.41	Successful Aliquots:	19

Notes:

Event Summary

Site: Tahoe Meadows (3-201)
Event: 2002-04

Catchment Area (ha): 0.321
Assumed Fraction Runoff/Rain Volume: 0.9



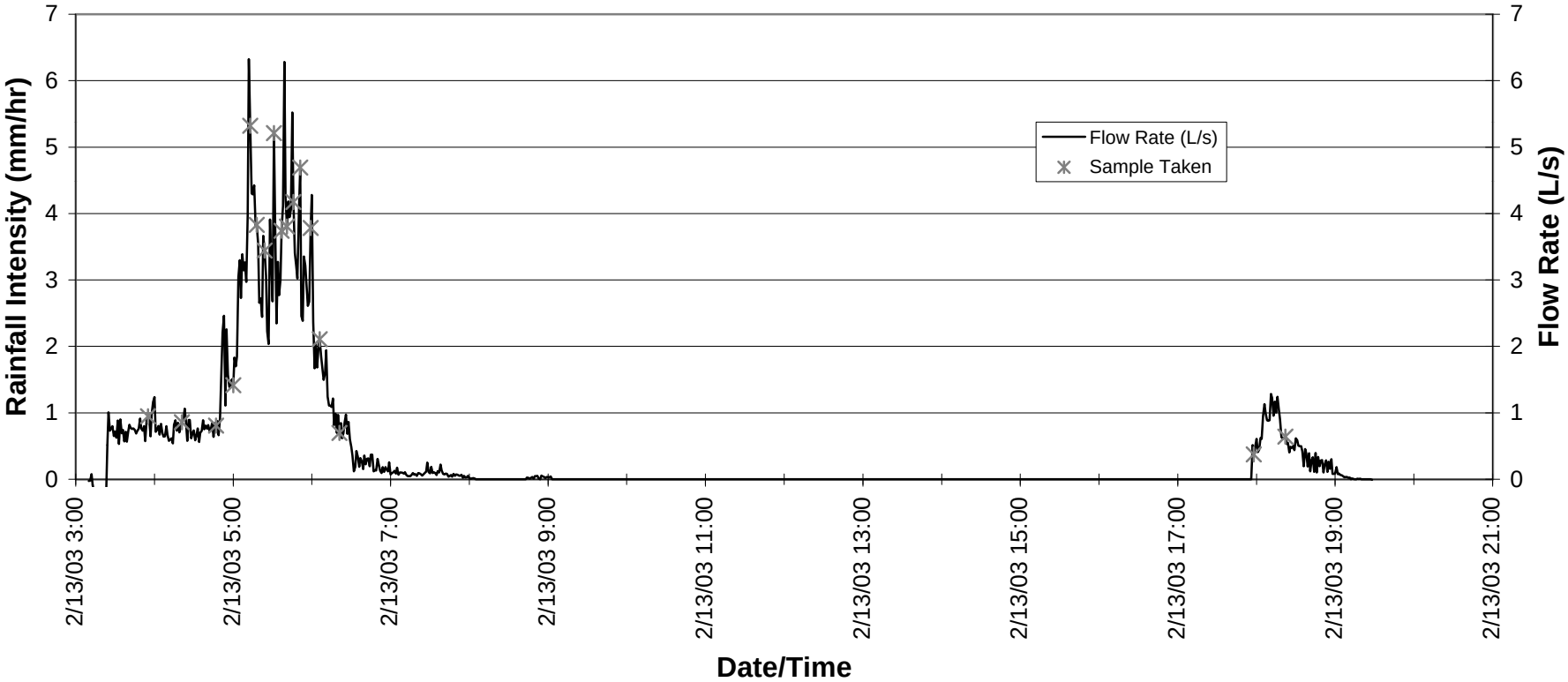
Runoff Data		*Sample Data*	
Start Date/Time:	01/22/03 12:24	Start Date/Time:	01/22/03 18:13
Stop Date/Time:	01/23/03 06:36	Stop Date/Time:	01/23/03 05:25
Total Flow Volume (L):	14979	Estimated Percent Capture:	80%
Peak Flow (L/s):	4.65	Successful Aliquots:	11

Notes:

Event Summary

Site: Tahoe Meadows (3-201)
Event: 2002-05

Catchment Area (ha): 0.321
Assumed Fraction Runoff/Rain Volume: 0.9



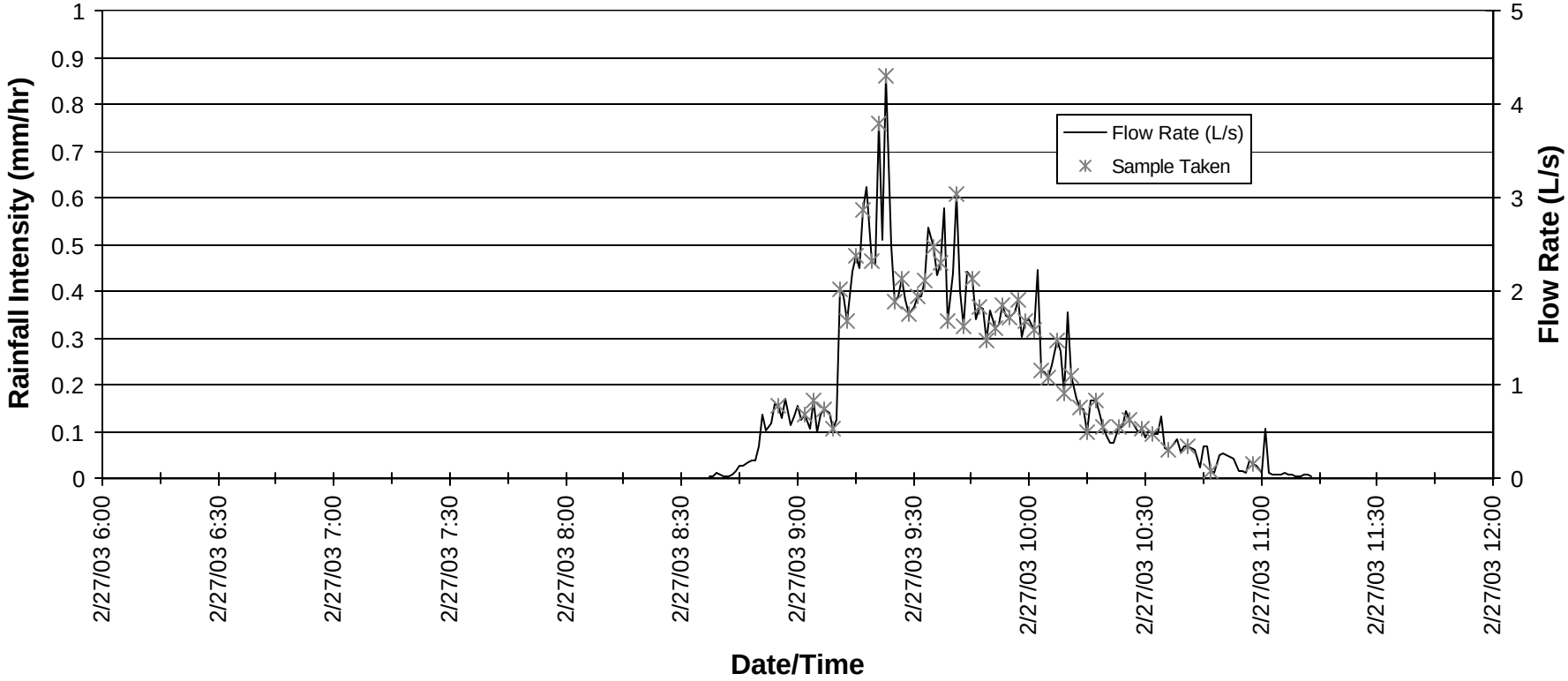
Runoff Data		*Sample Data*	
Start Date/Time:	02/13/03 03:10	Start Date/Time:	02/13/03 03:55
Stop Date/Time:	02/13/03 19:28	Stop Date/Time:	02/13/03 18:22
Total Flow Volume (L):	22414	Estimated Percent Capture:	86%
Peak Flow (L/s):	6.32	Successful Aliquots:	17

Notes: Rain/snow mix event. The last two aliquots are part of the same event. Due to low flow amounts aliquots were not collected between 09:00 and 18:00.

Event Summary

Site: Tahoe Meadows (3-201)
Event: 2002-06

Catchment Area (ha): 0.321
Assumed Fraction Runoff/Rain Volume: 0.9



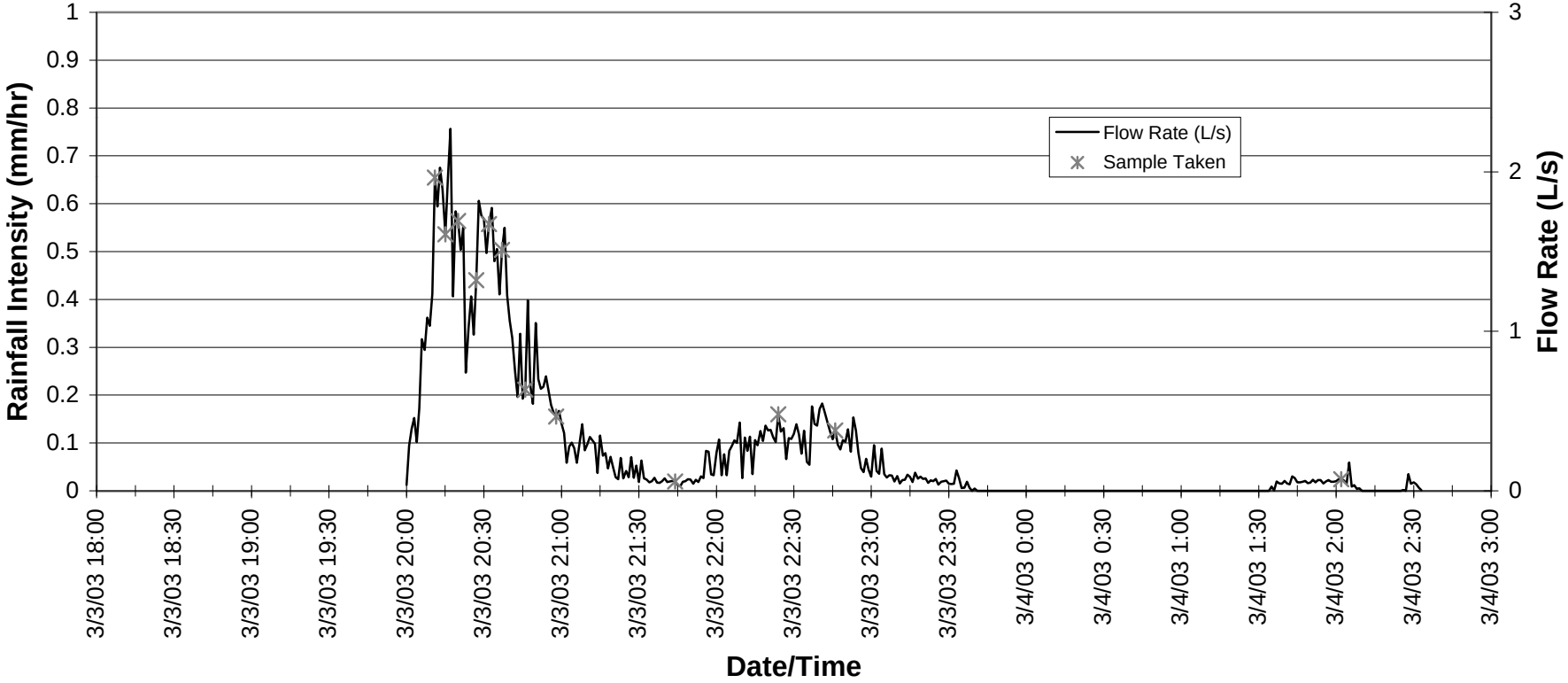
Runoff Data		*Sample Data*	
Start Date/Time:	02/27/03 08:37	Start Date/Time:	02/27/03 08:55
Stop Date/Time:	02/27/03 11:13	Stop Date/Time:	02/27/03 10:58
Total Flow Volume (L):	9405	Estimated Percent Capture:	96%
Peak Flow (L/s):	4.31	Successful Aliquots:	48

Notes: Snowmelt event.

Event Summary

Site: Tahoe Meadows (3-201)
Event: 2002-07

Catchment Area (ha): 0.321
Assumed Fraction Runoff/Rain Volume: 0.9



Runoff Data

Start Date/Time:	03/03/03 20:00
Stop Date/Time:	03/04/03 02:33
Total Flow Volume (L):	6017
Peak Flow (L/s):	2.27

Sample Data

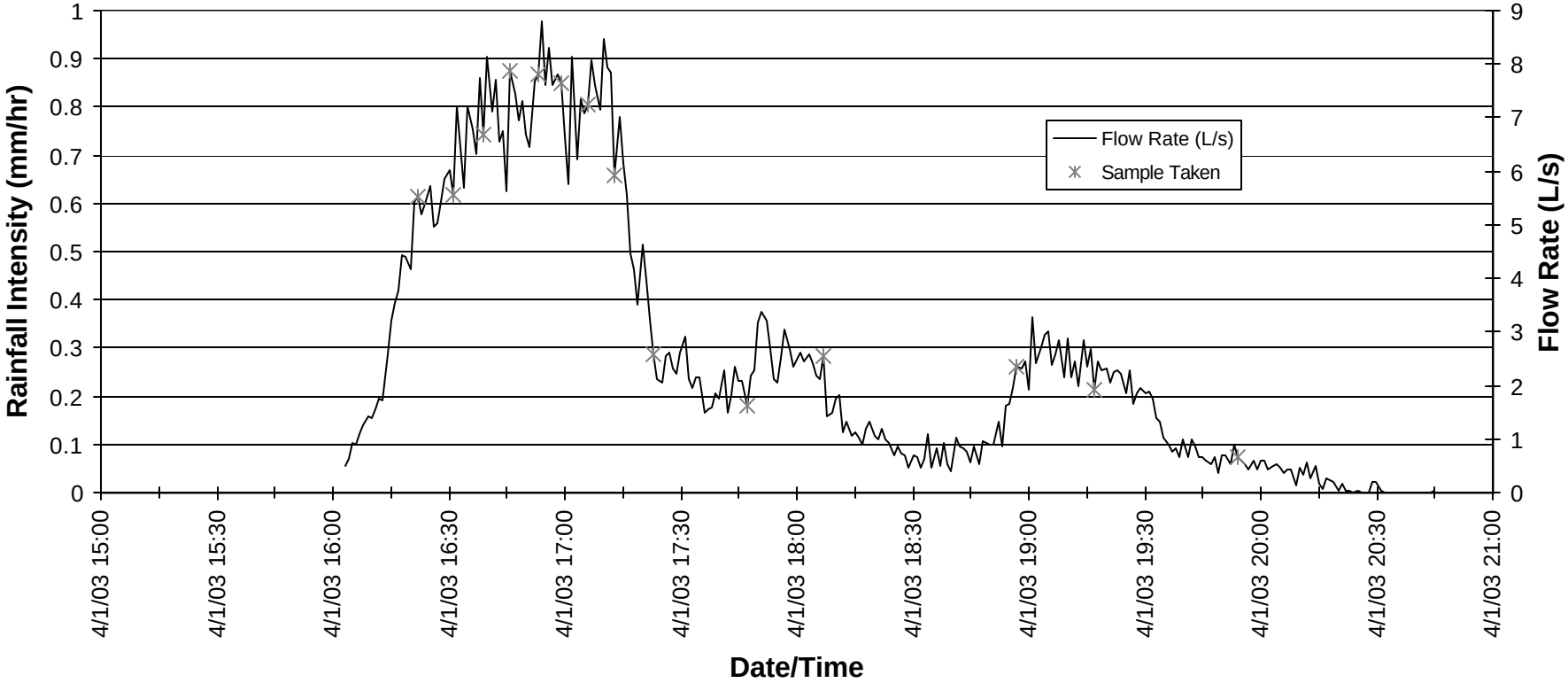
Start Date/Time:	03/03/03 20:11
Stop Date/Time:	03/04/03 02:02
Estimated Percent Capture:	91%
Successful Aliquots:	12

Notes: Snowmelt event. Snow melted as it hit the pavement.

Event Summary

Site: Tahoe Meadows (3-201)
Event: 2002-08

Catchment Area (ha): 0.321
Assumed Fraction Runoff/Rain Volume: 0.9



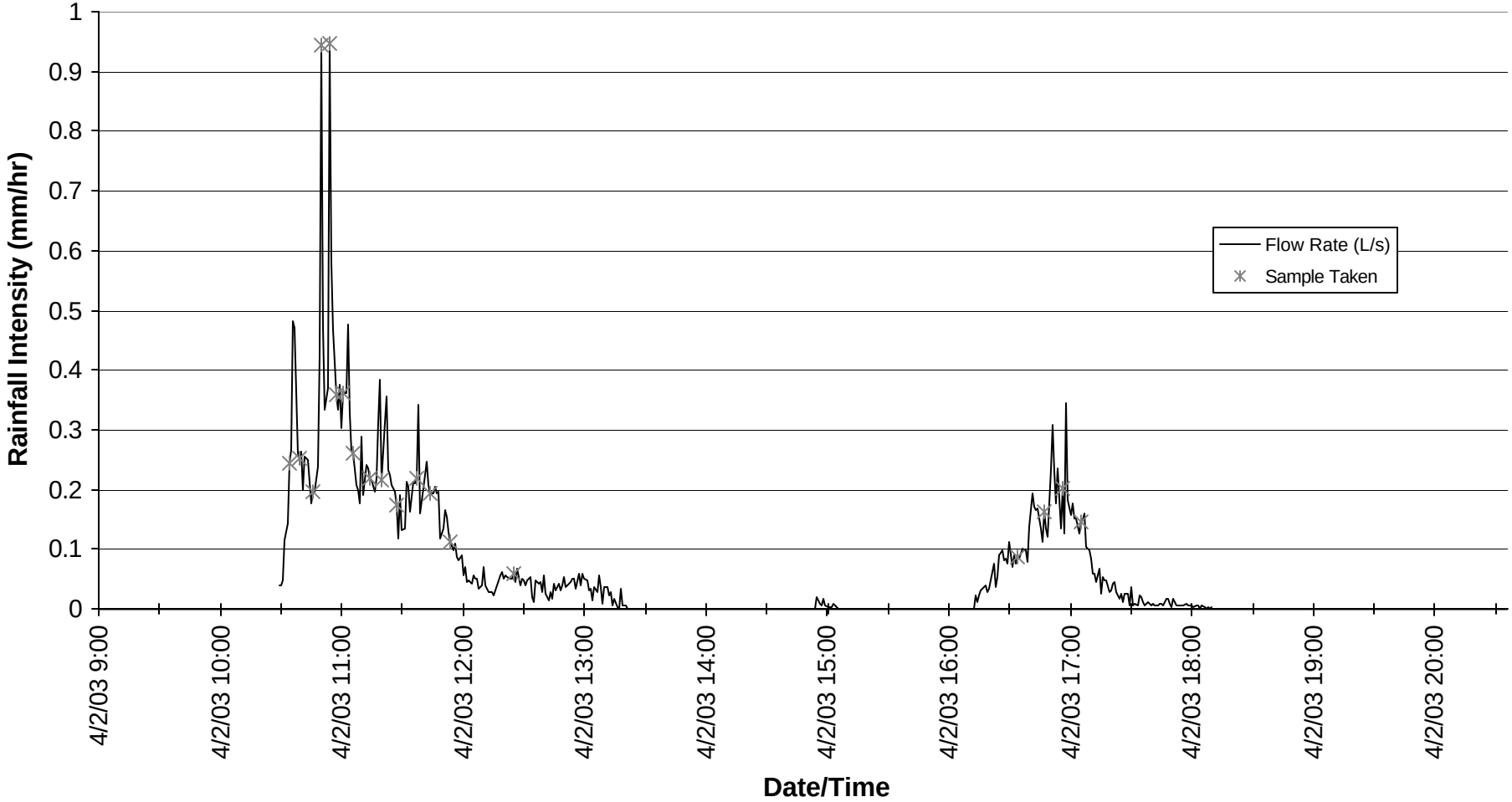
Runoff Data		*Sample Data*	
Start Date/Time:	04/01/03 16:03	Start Date/Time:	04/01/03 16:22
Stop Date/Time:	04/01/03 20:45	Stop Date/Time:	04/01/03 19:54
Total Flow Volume (L):	42495	Estimated Percent Capture:	92%
Peak Flow (L/s):	8.80	Successful Aliquots:	14

Notes: Snow melt event. Snow melted as it hit the pavement.

Event Summary

Site: Tahoe Meadows (3-201)
Event: 2002-09

Catchment Area (ha): 0.32
Assumed Fraction Runoff/Rain Volume: 0.



Runoff Data

Start Date/Time: 04/02/03 10:29

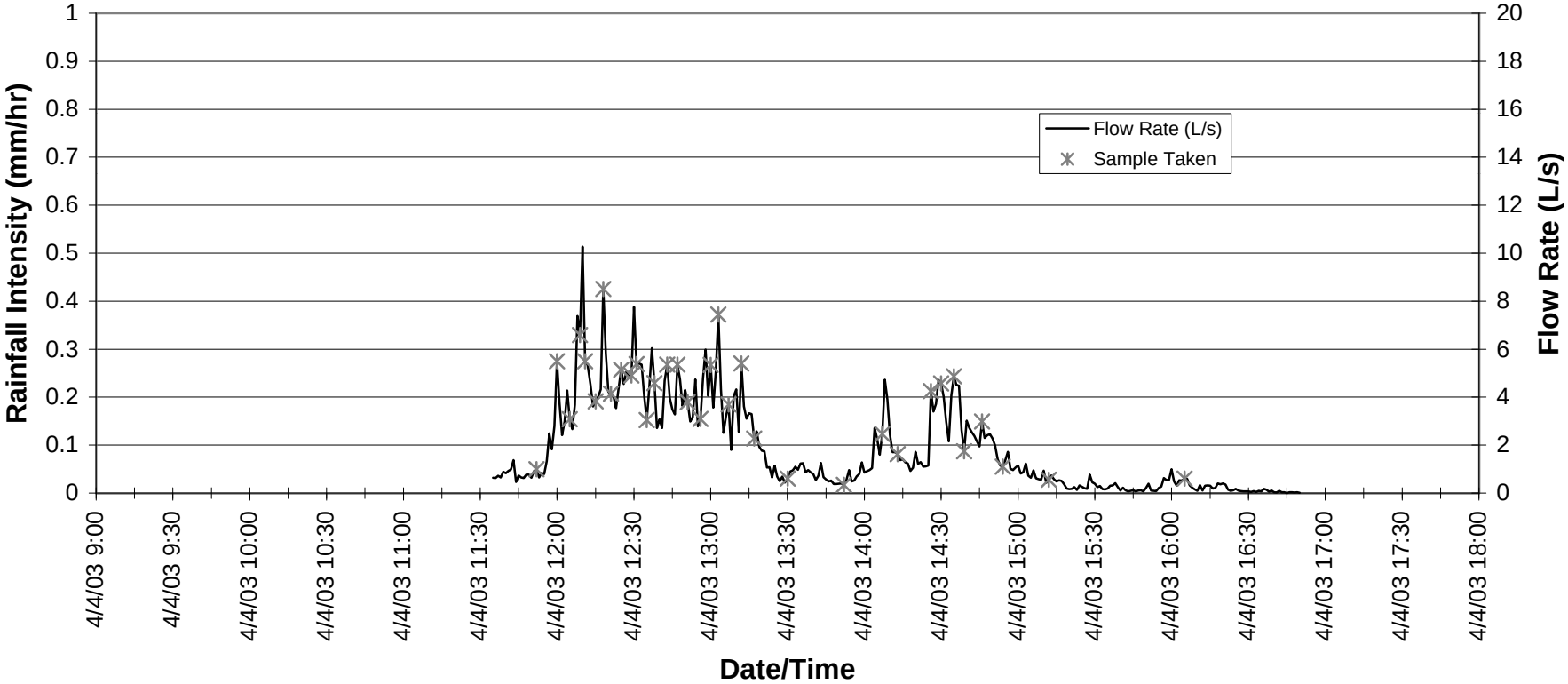
Sample Data

Start Date/Time: 04/02/03 10:3

Event Summary

Site: Tahoe Meadows (3-201)
Event: 2002-10

Catchment Area (ha): 0.321
Assumed Fraction Runoff/Rain Volume: 0.9



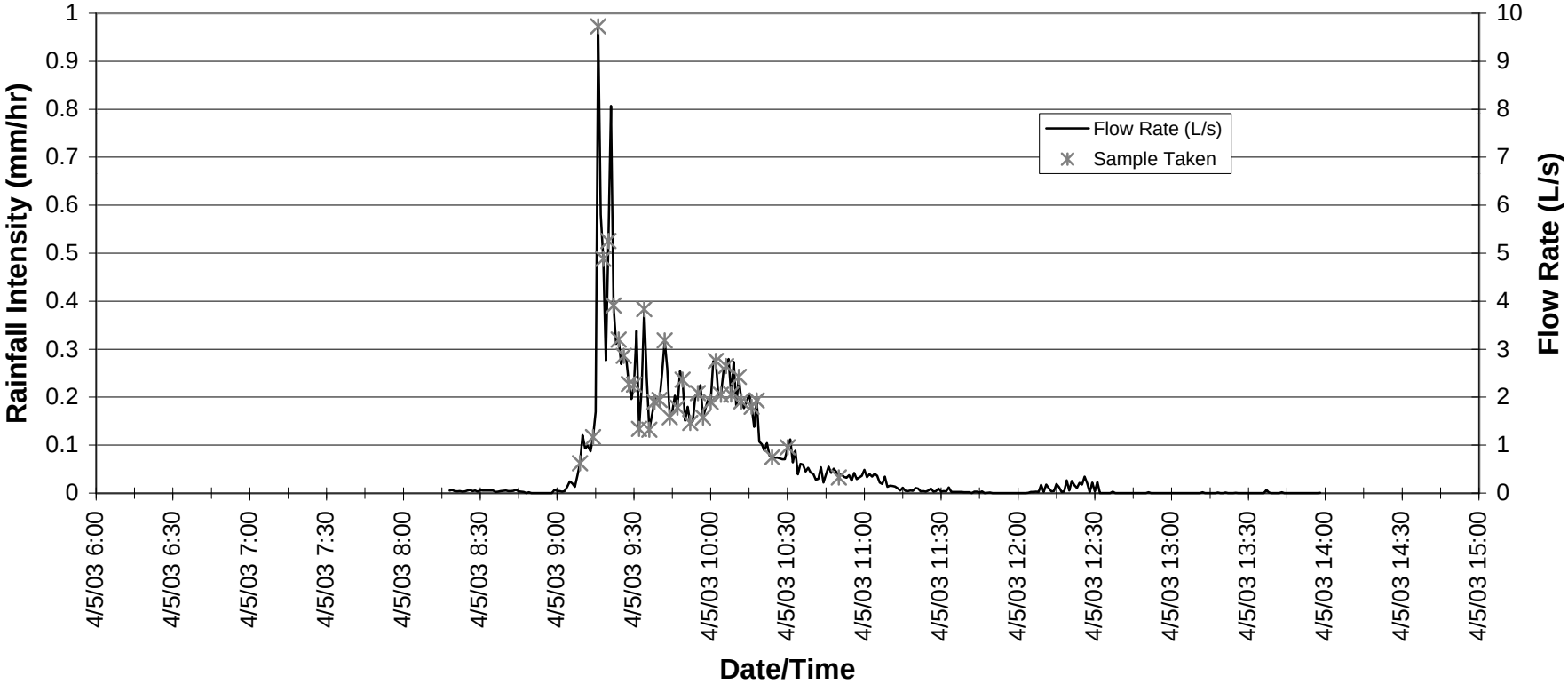
Runoff Data		*Sample Data*	
Start Date/Time:	04/04/03 11:35	Start Date/Time:	04/04/03 11:52
Stop Date/Time:	04/04/03 16:50	Stop Date/Time:	04/04/03 16:05
Total Flow Volume (L):	34210	Estimated Percent Capture:	96%
Peak Flow (L/s):	10.28	Successful Aliquots:	34

Notes: Snowmelt event.

Event Summary

Site: Tahoe Meadows (3-201)
Event: 2002-11

Catchment Area (ha): 0.321
Assumed Fraction Runoff/Rain Volume: 0.9



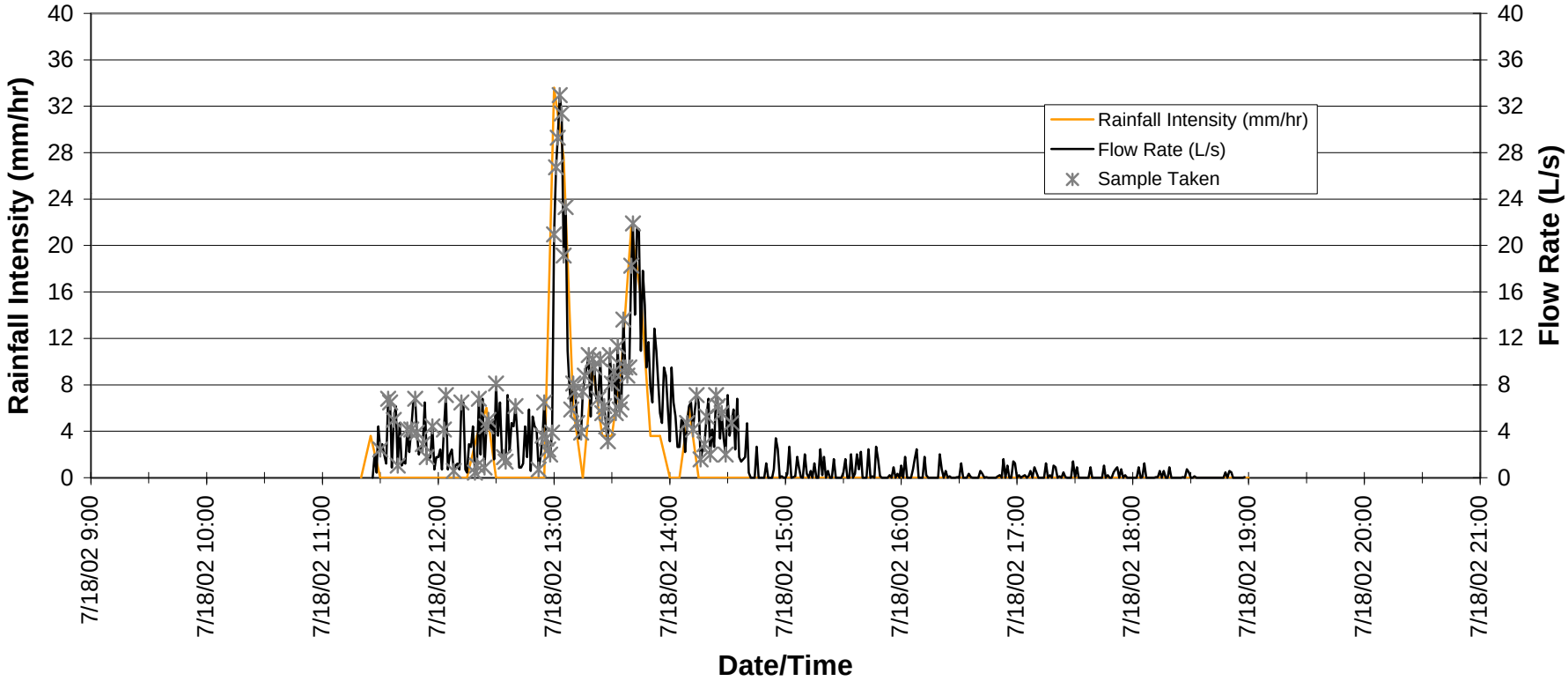
Runoff Data		*Sample Data*	
Start Date/Time:	04/05/03 08:18	Start Date/Time:	04/05/03 09:09
Stop Date/Time:	04/05/03 13:58	Stop Date/Time:	04/05/03 10:50
Total Flow Volume (L):	12304	Estimated Percent Capture:	88%
Peak Flow (L/s):	9.73	Successful Aliquots:	34

Notes: Snowmelt event.

Event Summary

Site: Tahoe Airport Influent (3-202)
Event: 2002-01

Catchment Area (ha): 0.138
Assumed Runoff Coefficient: 0.8



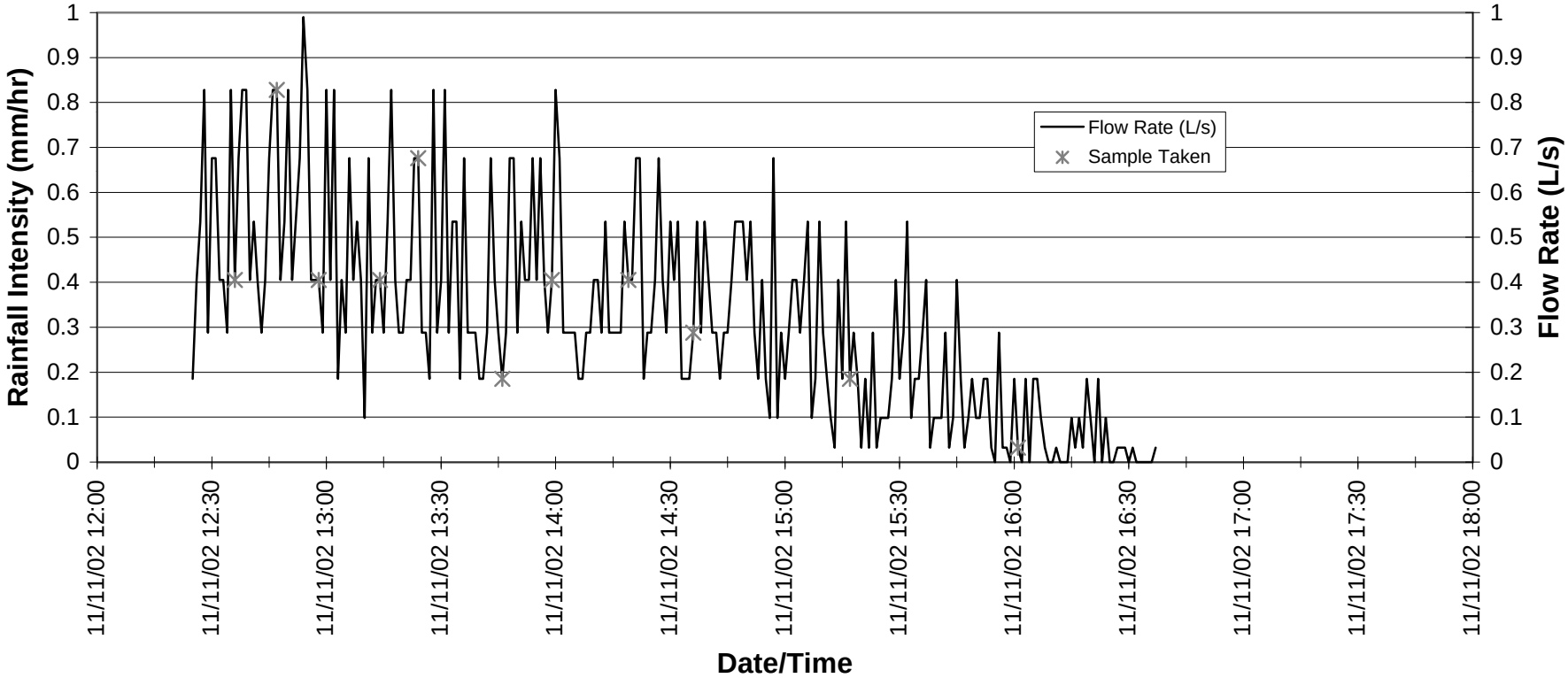
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	07/18/02 11:20	Start Date/Time:	07/18/02 11:26	Start Date/Time:	07/18/02 11:30
Stop Date/Time:	07/18/02 14:10	Stop Date/Time:	07/18/02 18:58	Stop Date/Time:	07/18/02 14:32
Event Rain (mm):	13.40	Total Flow Volume (L):	74768	Estimated Percent Capture:	78%
Max Intensity (mm/hr):	33.60	Peak Flow (L/s):	32.96	Successful Aliquots:	81
		Observed Runoff Coefficient:	4.043		

Notes: Thunderstorm event No Caltrans-defined precipitation event identified. Note Caltrans approval date on output.

Event Summary

Site: Tahoe Airport Influent (3-202)
Event: 2002-02

Catchment Area (ha): 0.138
Assumed Runoff Coefficient: 0.8



Runoff Data

Start Date/Time:	11/11/02 12:25
Stop Date/Time:	11/11/02 16:37
Total Flow Volume (L):	4887
Peak Flow (L/s):	0.99

Sample Data

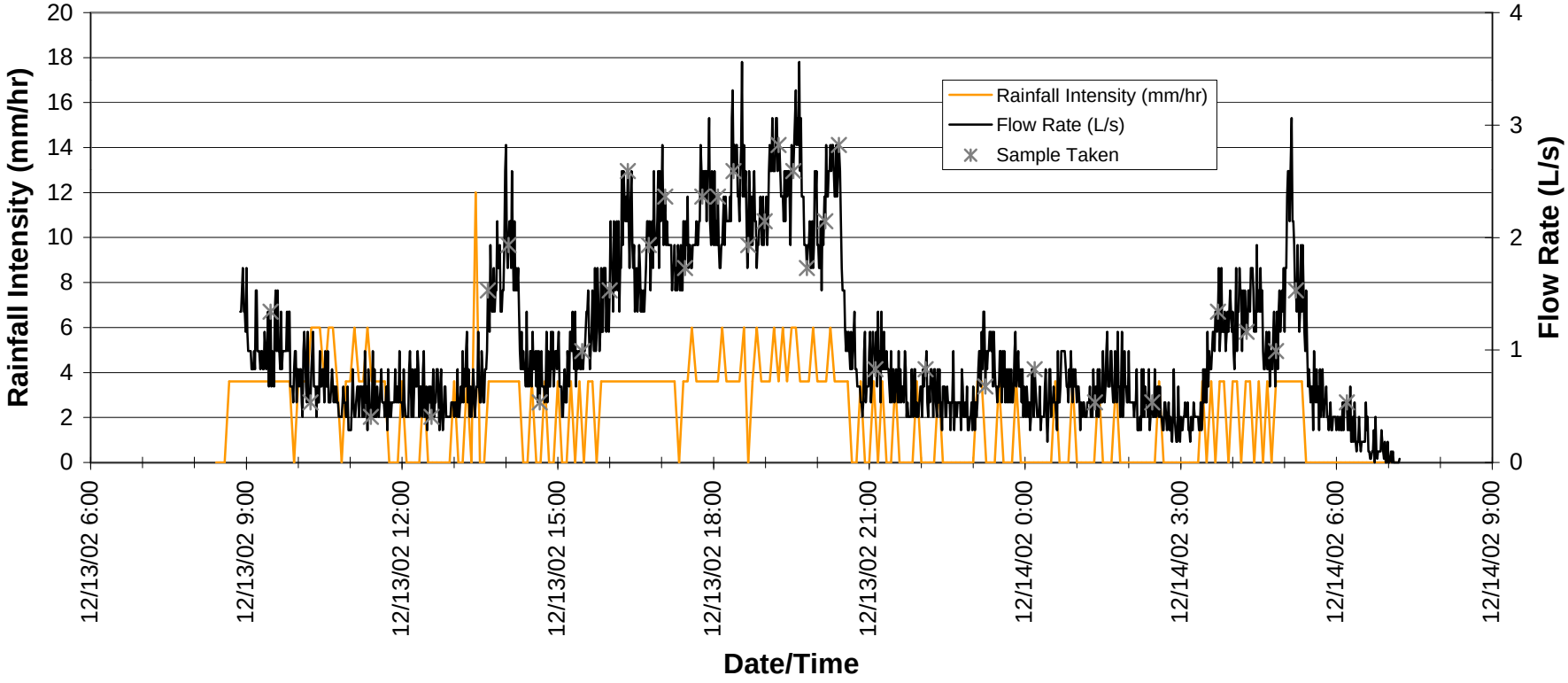
Start Date/Time:	11/11/02 12:36
Stop Date/Time:	11/11/02 16:01
Estimated Percent Capture:	91%
Successful Aliquots:	11

Notes: Snowmelt event. Snowmelt in rain gage.

Event Summary

Site: Tahoe Airport Influent (3-202)
Event: 2003-03

Catchment Area (ha): 0.138
Assumed Fraction Runoff/Rain Volume: 0.8



Rain Data (user-defined event)		*Runoff Data*		*Sample Data*	
Start Date/Time:	12/13/02 08:25	Start Date/Time:	12/13/02 08:53	Start Date/Time:	12/13/02 09:28
Stop Date/Time:	12/14/02 05:20	Stop Date/Time:	12/14/02 07:13	Stop Date/Time:	12/14/02 06:12
Event Rain (mm):	47.30	Total Flow Volume (L):	85426	Estimated Percent Capture:	97%
Max Intensity (mm/hr):	12.00	Peak Flow (L/s):	3.56	Successful Aliquots:	34
		Obs. Fraction Runoff/Rain Volume:	1.309		

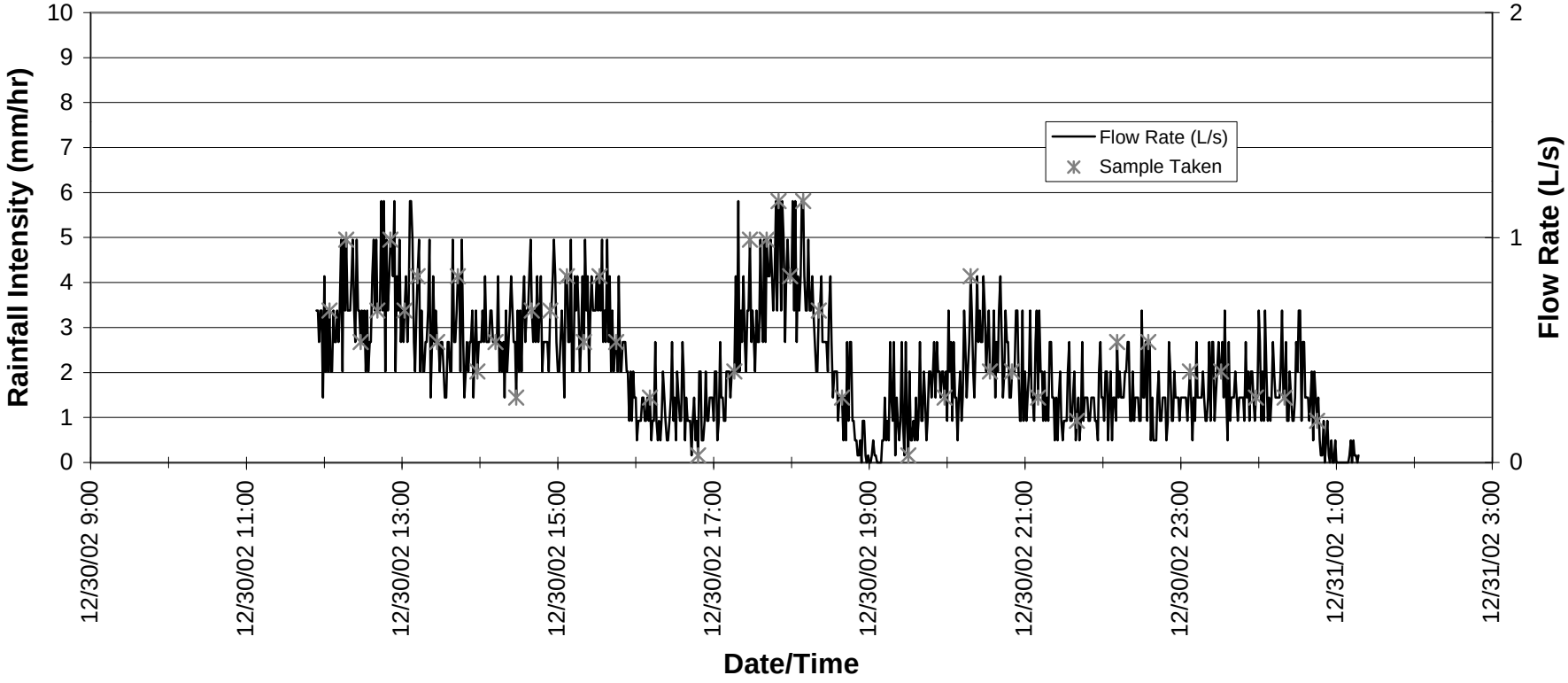
Notes: Rain-Snow mix event. Caltrans-defined rain stop time not identified. Last non-zero rain record used as stop time.

Caltrans-defined Rain Event Override Authorization: No recorded Caltrans authorization.

Event Summary

Site: Tahoe Airport Influent (3-202)
Event: 2002-04

Catchment Area (ha): 0.138
Assumed Fraction Runoff/Rain Volume: 0.8



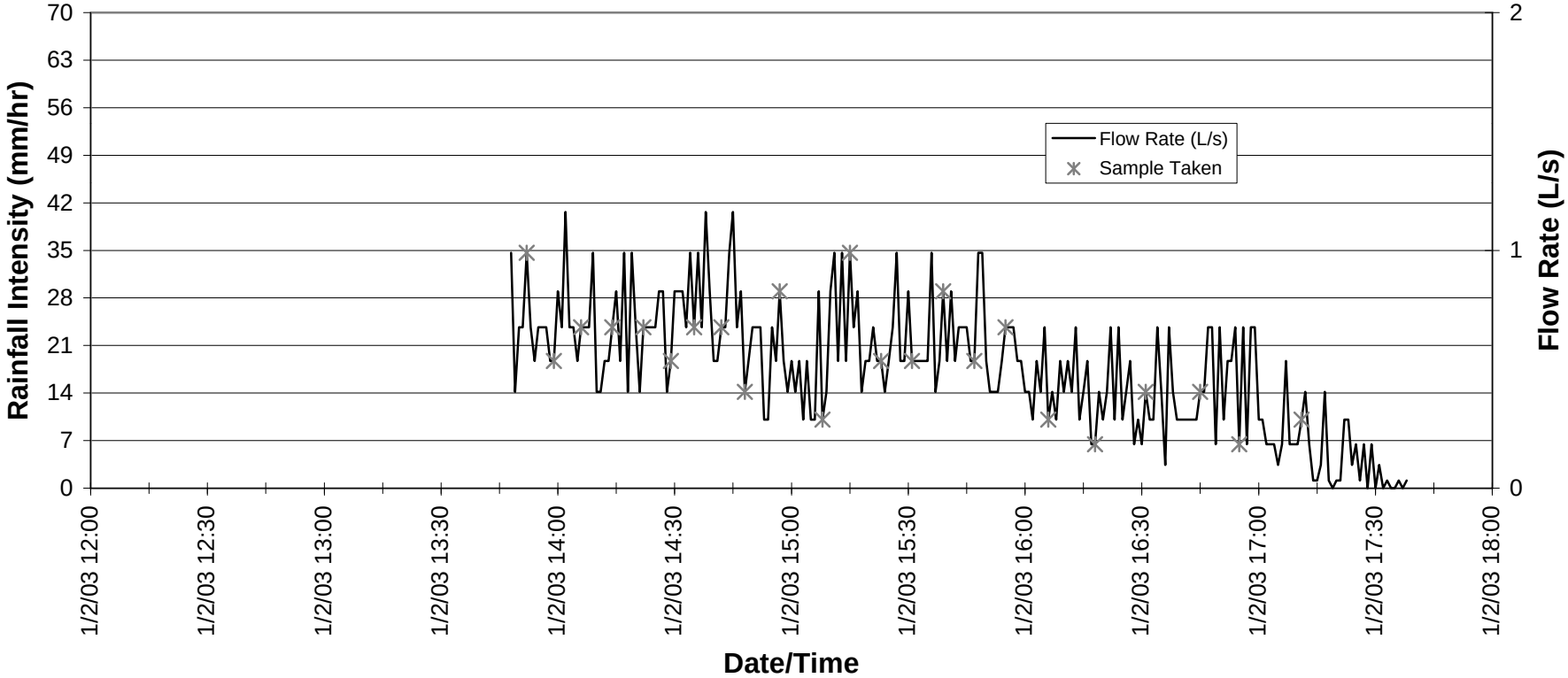
Runoff Data		*Sample Data*	
Start Date/Time:	12/30/02 11:54	Start Date/Time:	12/30/02 12:04
Stop Date/Time:	12/31/02 01:17	Stop Date/Time:	12/31/02 00:45
Total Flow Volume (L):	20956	Estimated Percent Capture:	98%
Peak Flow (L/s):	1.16	Successful Aliquots:	42

Notes: Snowmelt event.

Event Summary

Site: Tahoe Airport Influent (3-202)
Event: 2002-05

Catchment Area (ha): 0.138
Assumed Fraction Runoff/Rain Volume: 0.8



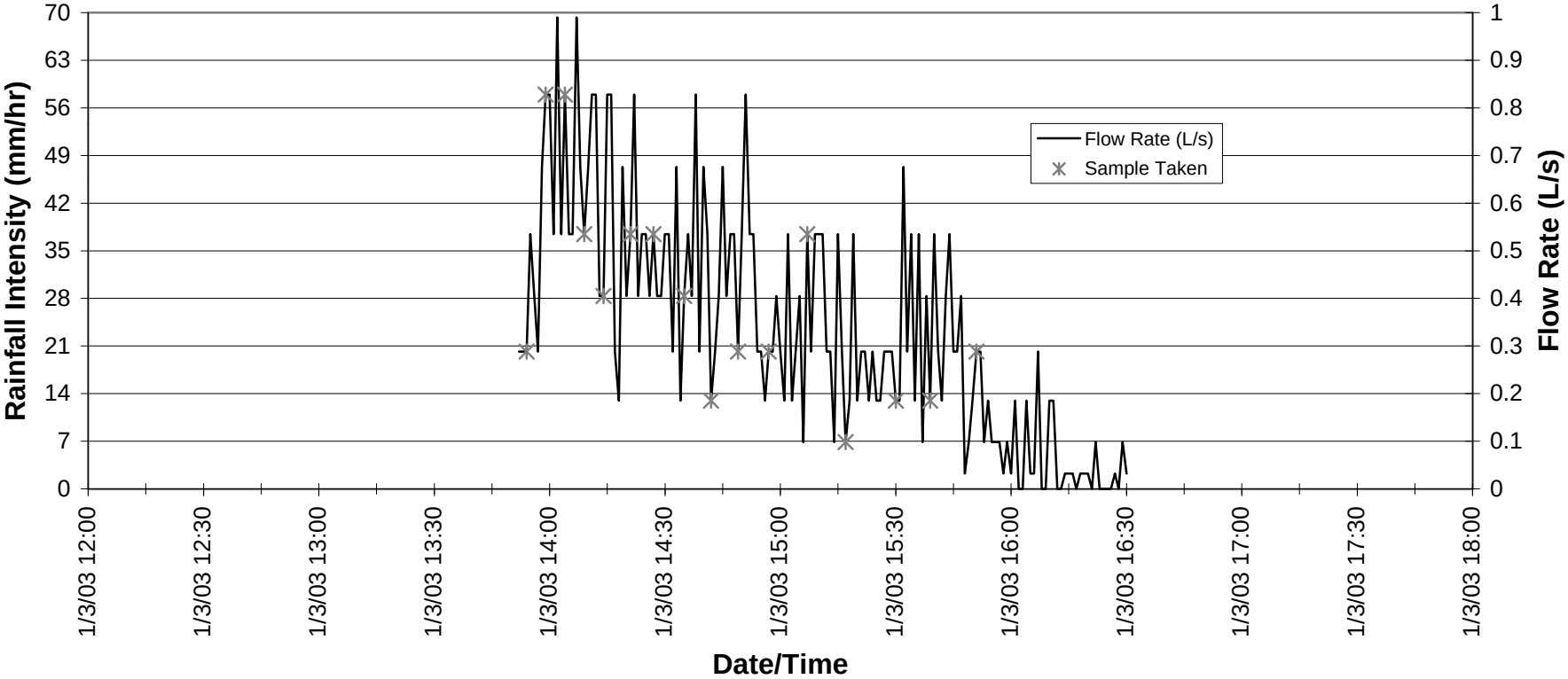
Runoff Data		*Sample Data*	
Start Date/Time:	01/02/03 13:48	Start Date/Time:	01/02/03 13:52
Stop Date/Time:	01/02/03 17:38	Stop Date/Time:	01/02/03 17:11
Total Flow Volume (L):	6933	Estimated Percent Capture:	95%
Peak Flow (L/s):	1.16	Successful Aliquots:	23

Notes: Snowmelt event

Event Summary

Site: Tahoe Airport Influent (3-202)
Event: 2002-06

Catchment Area (ha): 0.138
Assumed Fraction Runoff/Rain Volume: 0.8



Runoff Data

Start Date/Time:	01/03/03 13:52
Stop Date/Time:	01/03/03 16:30
Total Flow Volume (L):	3199
Peak Flow (L/s):	0.99

Sample Data

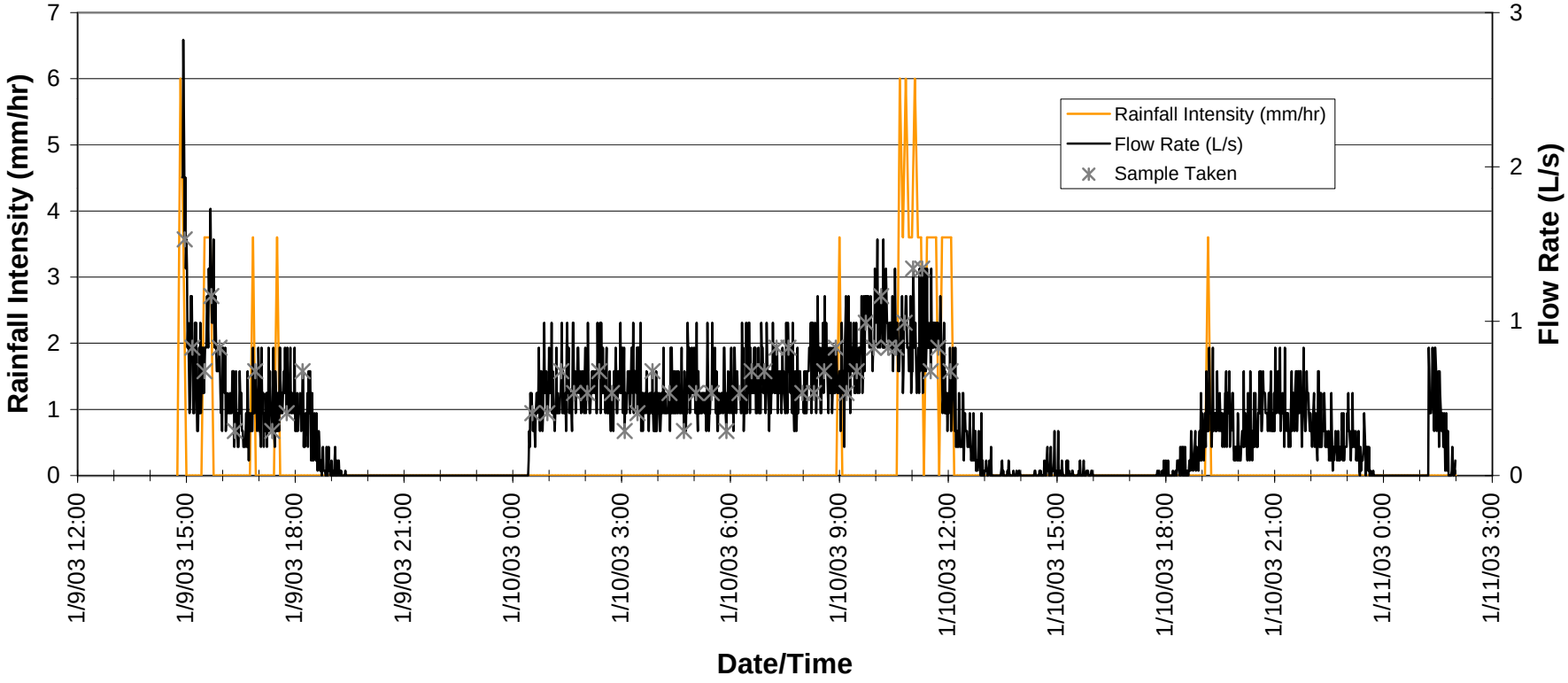
Start Date/Time:	01/03/03 13:54
Stop Date/Time:	01/03/03 15:51
Estimated Percent Capture:	94%
Successful Aliquots:	16

Notes: Snowmelt event

Event Summary

Site: Tahoe Airport Influent (3-202)
Event: 2002-07

Catchment Area (ha): 0.138
Assumed Fraction Runoff/Rain Volume: 0.8



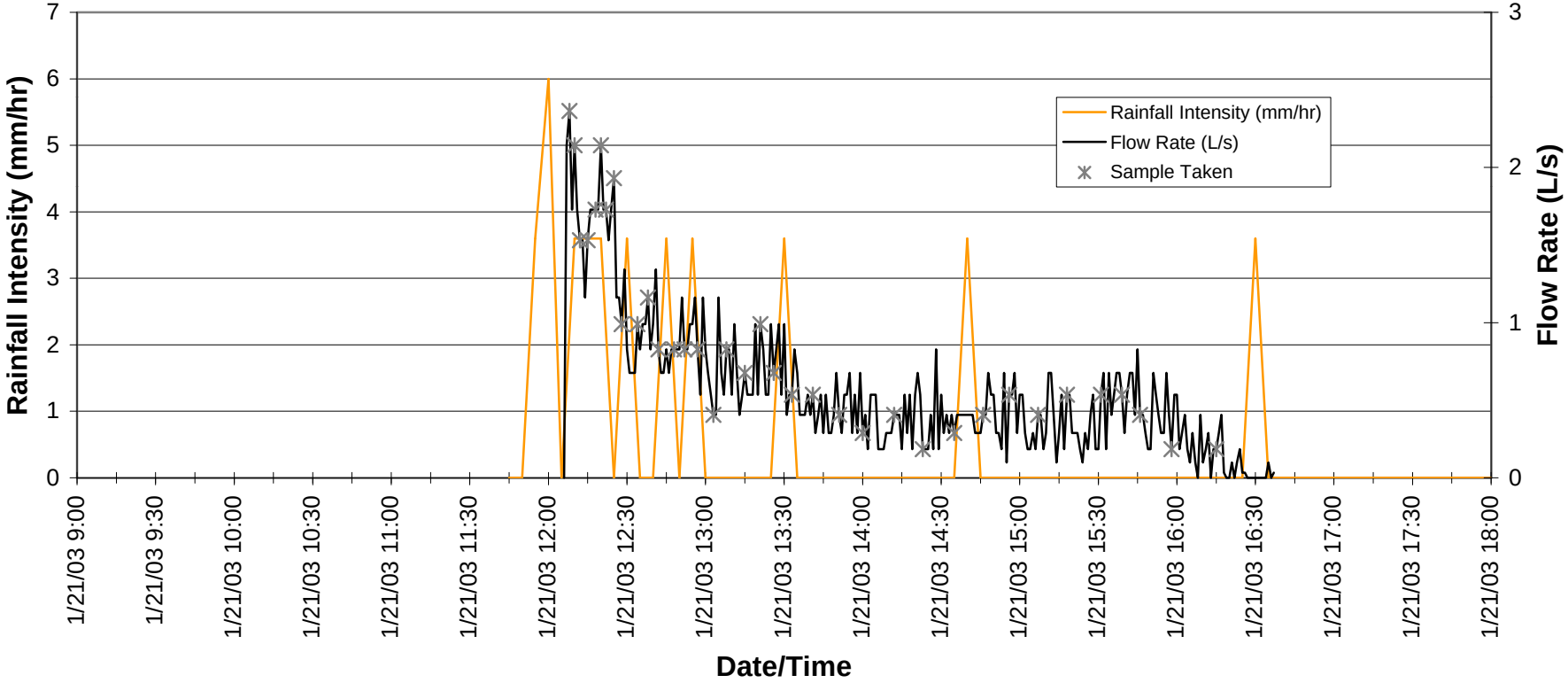
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	01/10/03 09:00	Start Date/Time:	01/09/03 14:53	Start Date/Time:	01/09/03 14:57
Stop Date/Time:	01/10/03 12:05	Stop Date/Time:	01/11/03 01:59	Stop Date/Time:	01/10/03 12:04
Event Rain (mm):	5.70	Total Flow Volume (L):	42990	Estimated Percent Capture:	80%
Max Intensity (mm/hr):	6.00	Peak Flow (L/s):	2.82	Successful Aliquots:	47
		Obs. Fraction Runoff/Rain Volume:	5.465		

Notes:

Event Summary

Site: Tahoe Airport Influent (3-202)
Event: 2002-08

Catchment Area (ha): 0.138
Assumed Fraction Runoff/Rain Volume: 0.8



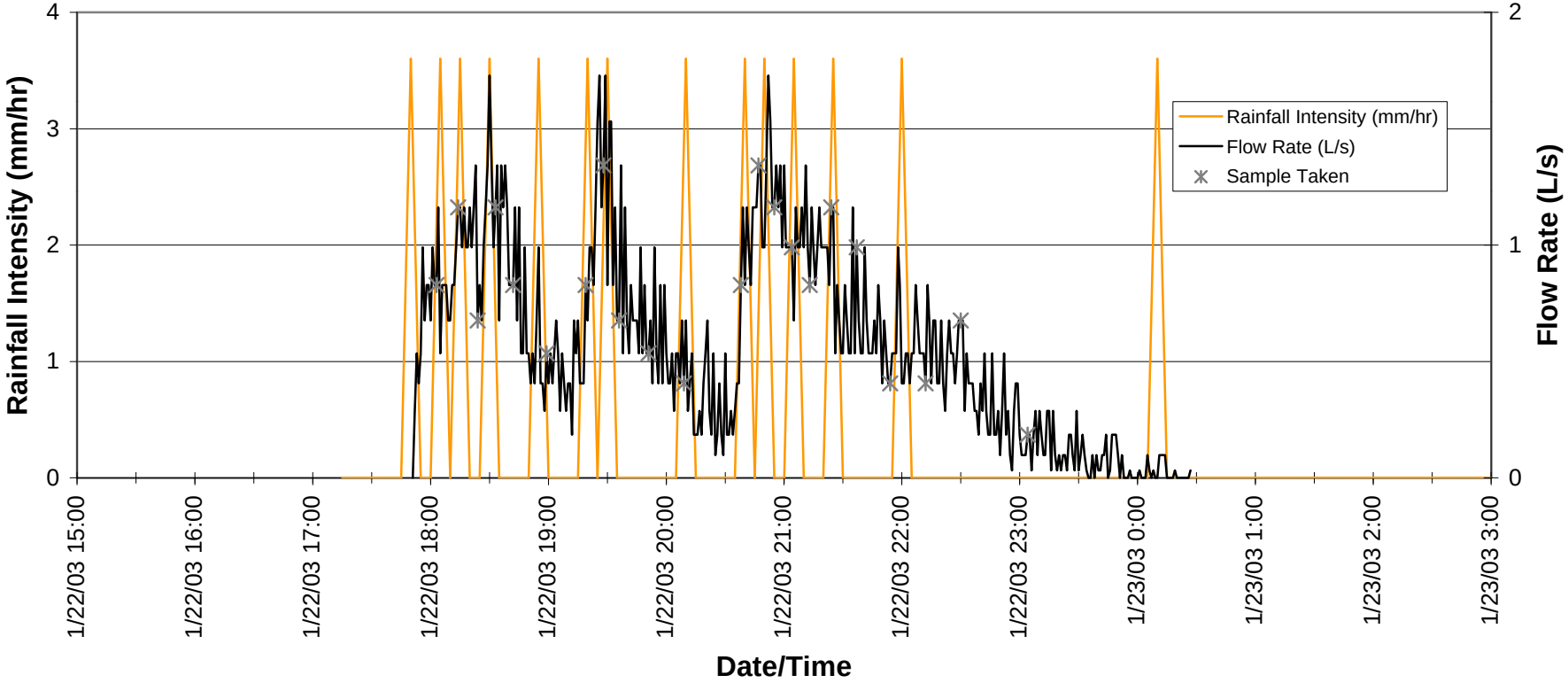
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	01/21/03 11:45	Start Date/Time:	01/21/03 12:06	Start Date/Time:	01/21/03 12:08
Stop Date/Time:	01/21/03 16:30	Stop Date/Time:	01/21/03 16:37	Stop Date/Time:	01/21/03 16:15
Event Rain (mm):	3.80	Total Flow Volume (L):	9097	Estimated Percent Capture:	97%
Max Intensity (mm/hr):	6.00	Peak Flow (L/s):	2.36	Successful Aliquots:	36
		Obs. Fraction Runoff/Rain Volume:	1.735		

Notes:

Event Summary

Site: Tahoe Airport Influent (3-202)
Event: 2002-09

Catchment Area (ha): 0.138
Assumed Fraction Runoff/Rain Volume: 0.8



Rain Data

Start Date/Time:	01/22/03 17:15
Stop Date/Time:	01/23/03 00:10
Event Rain (mm):	4.50
Max Intensity (mm/hr):	3.60

Runoff Data

Start Date/Time:	01/22/03 17:51
Stop Date/Time:	01/23/03 00:27
Total Flow Volume (L):	13492
Peak Flow (L/s):	1.73
Obs. Fraction Runoff/Rain Volume:	2.173

Sample Data

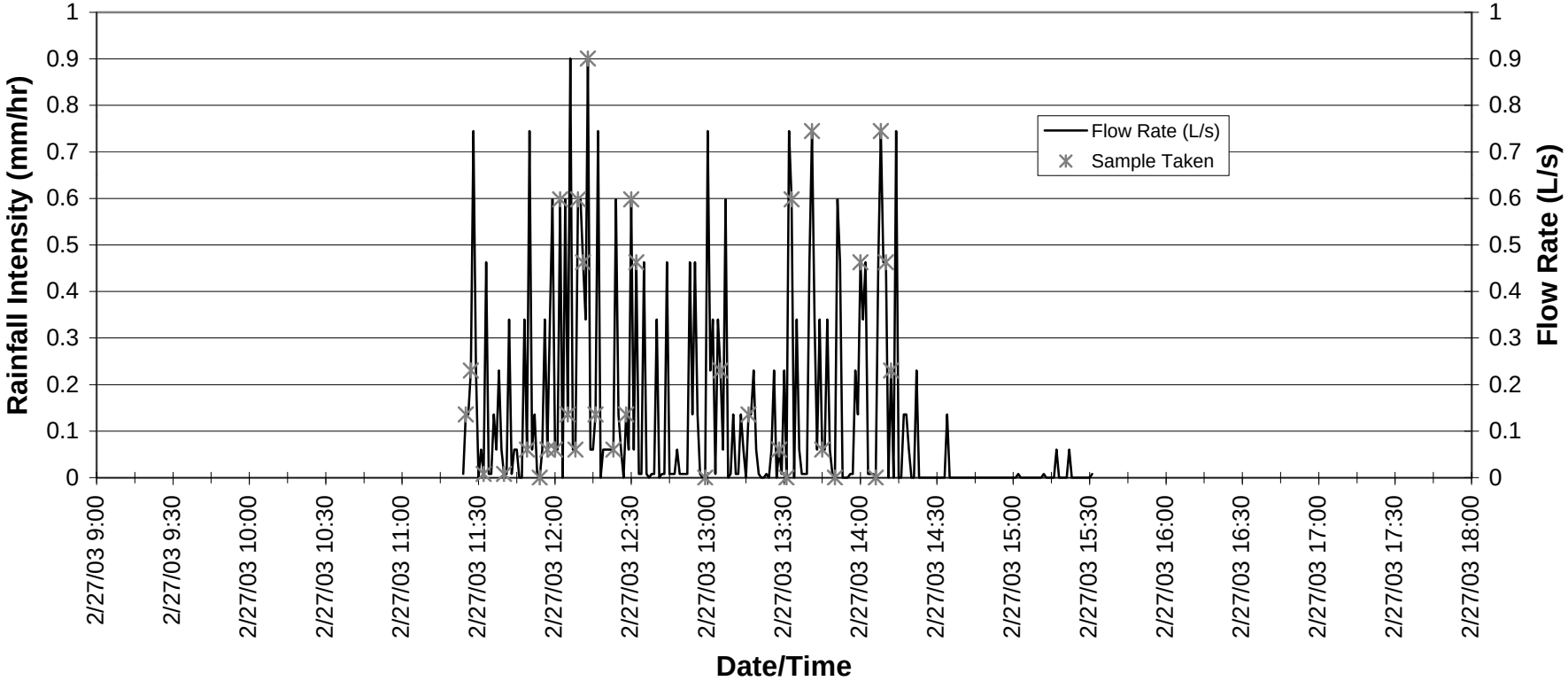
Start Date/Time:	01/22/03 18:03
Stop Date/Time:	01/22/03 23:04
Estimated Percent Capture:	94%
Successful Aliquots:	22

Notes:

Event Summary

Site: Tahoe Airport Influent (3-202)
Event: 2002-10

Catchment Area (ha): 0.138
Assumed Fraction Runoff/Rain Volume: 0.8



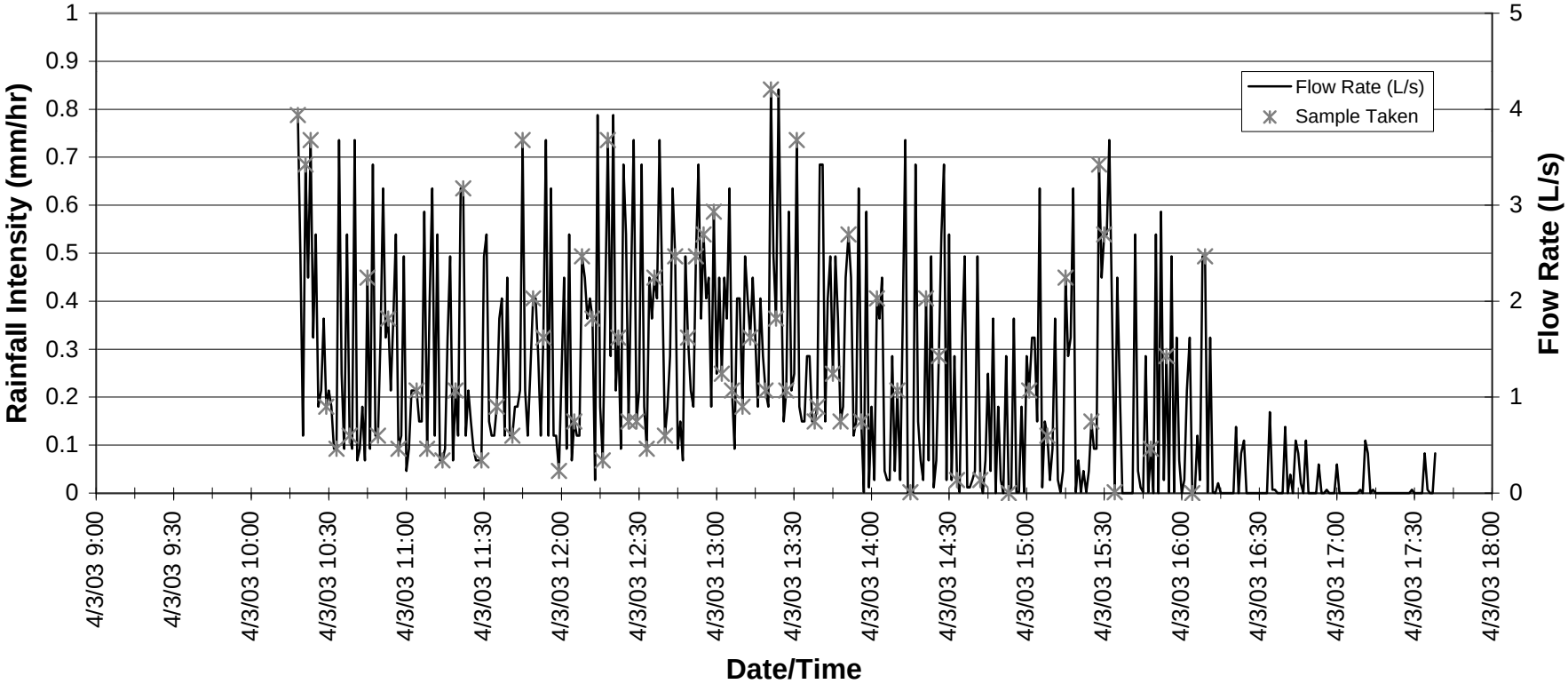
Runoff Data		*Sample Data*	
Start Date/Time:	02/27/03 11:24	Start Date/Time:	02/27/03 11:25
Stop Date/Time:	02/27/03 15:31	Stop Date/Time:	02/27/03 14:12
Total Flow Volume (L):	1930	Estimated Percent Capture:	87%
Peak Flow (L/s):	0.90	Successful Aliquots:	33

Notes: Snowmelt event.

Event Summary

Site: Tahoe Airport Influent (3-202)
Event: 2002-11

Catchment Area (ha): 0.138
Assumed Fraction Runoff/Rain Volume: 0.8



Runoff Data

Start Date/Time:	04/03/03 10:18
Stop Date/Time:	04/03/03 17:38
Total Flow Volume (L):	29124
Peak Flow (L/s):	4.21

Sample Data

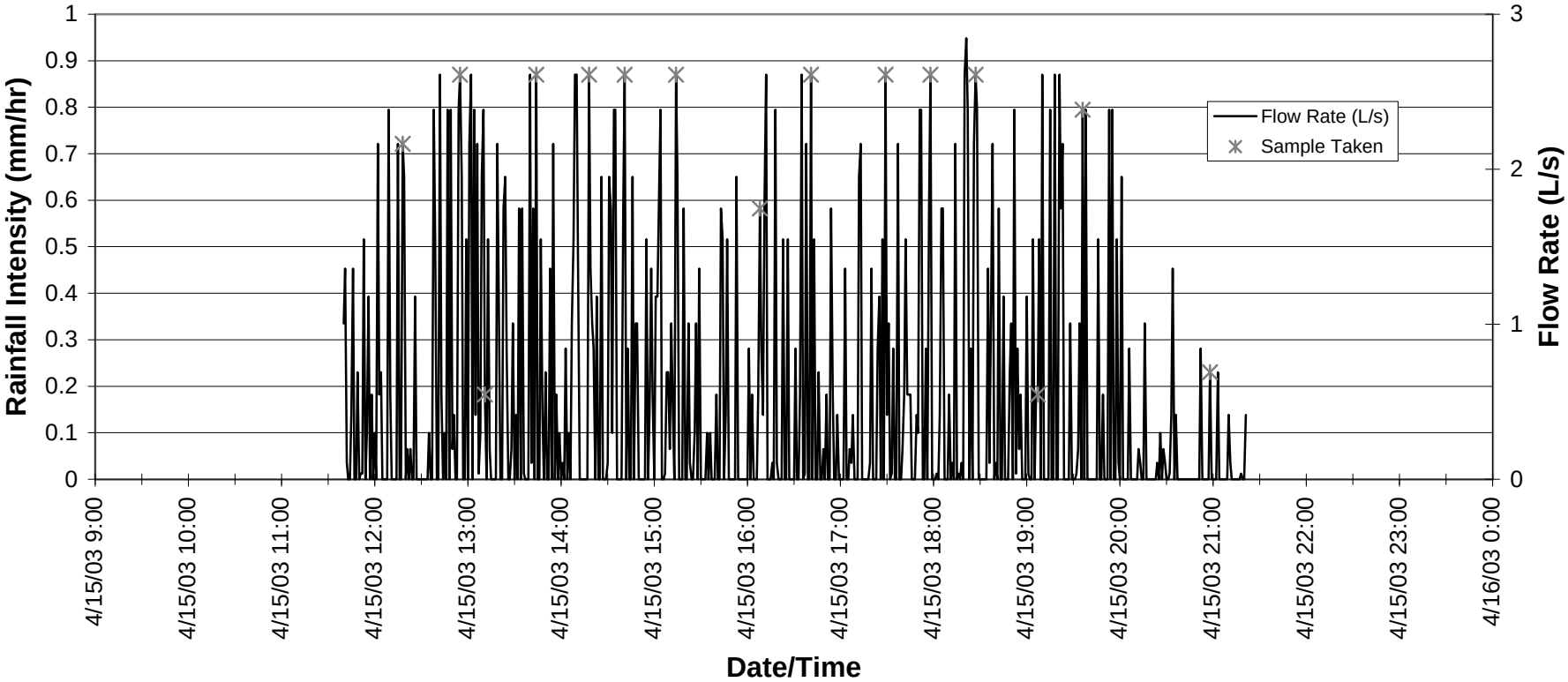
Start Date/Time:	04/03/03 10:18
Stop Date/Time:	04/03/03 16:09
Estimated Percent Capture:	97%
Successful Aliquots:	72

Notes: Snowmelt event. Bottle replaced one time.

Event Summary

Site: Tahoe Airport Influent (3-202)
Event: 2002-12

Catchment Area (ha): 0.138
Assumed Fraction Runoff/Rain Volume: 0.8



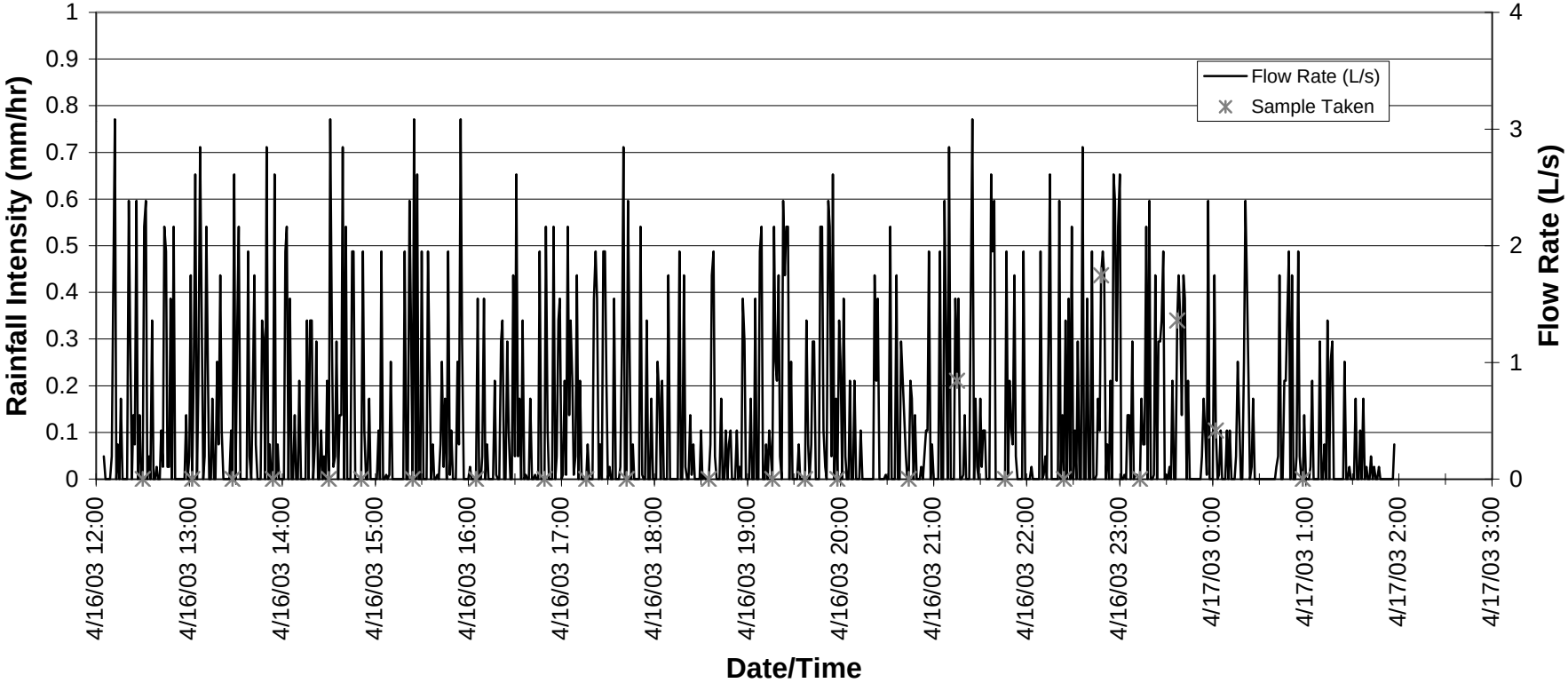
Runoff Data		*Sample Data*	
Start Date/Time:	04/15/03 11:40	Start Date/Time:	04/15/03 12:17
Stop Date/Time:	04/15/03 21:21	Stop Date/Time:	04/15/03 20:58
Total Flow Volume (L):	18042	Estimated Percent Capture:	94%
Peak Flow (L/s):	2.85	Successful Aliquots:	15

Notes: Snowmelt event.

Event Summary

Site: Tahoe Airport Influent (3-202)
Event: 2002-13

Catchment Area (ha): 0.138
Assumed Fraction Runoff/Rain Volume: 0.8



Runoff Data

Start Date/Time:	04/16/03 12:05
Stop Date/Time:	04/17/03 01:57
Total Flow Volume (L):	24460
Peak Flow (L/s):	3.09

Sample Data

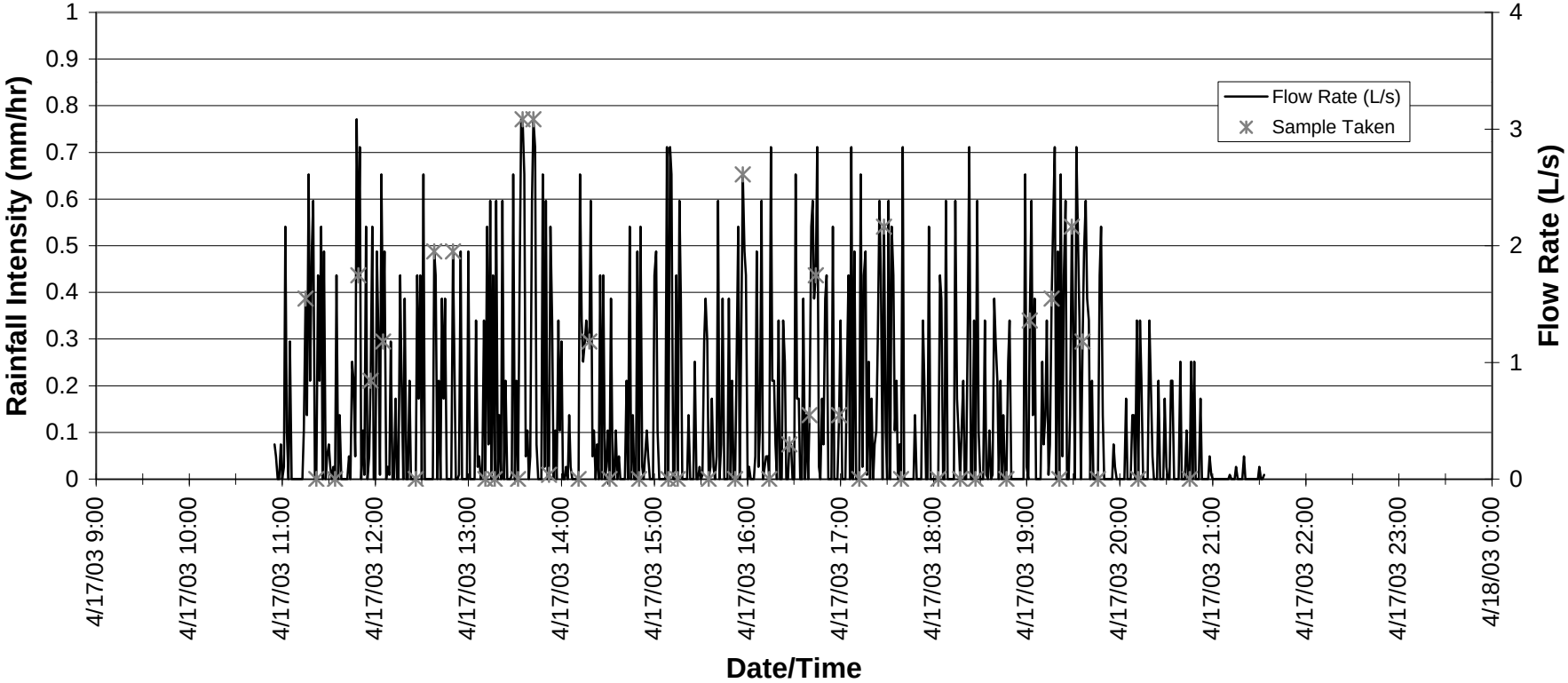
Start Date/Time:	04/16/03 12:30
Stop Date/Time:	04/17/03 00:58
Estimated Percent Capture:	94%
Successful Aliquots:	24

Notes: snowmelt event.

Event Summary

Site: Tahoe Airport Influent (3-202)
Event: 2002-14

Catchment Area (ha): 0.138
Assumed Fraction Runoff/Rain Volume: 0.8



Runoff Data

Start Date/Time:	04/17/03 10:55
Stop Date/Time:	04/17/03 21:33
Total Flow Volume (L):	22596
Peak Flow (L/s):	3.09

Sample Data

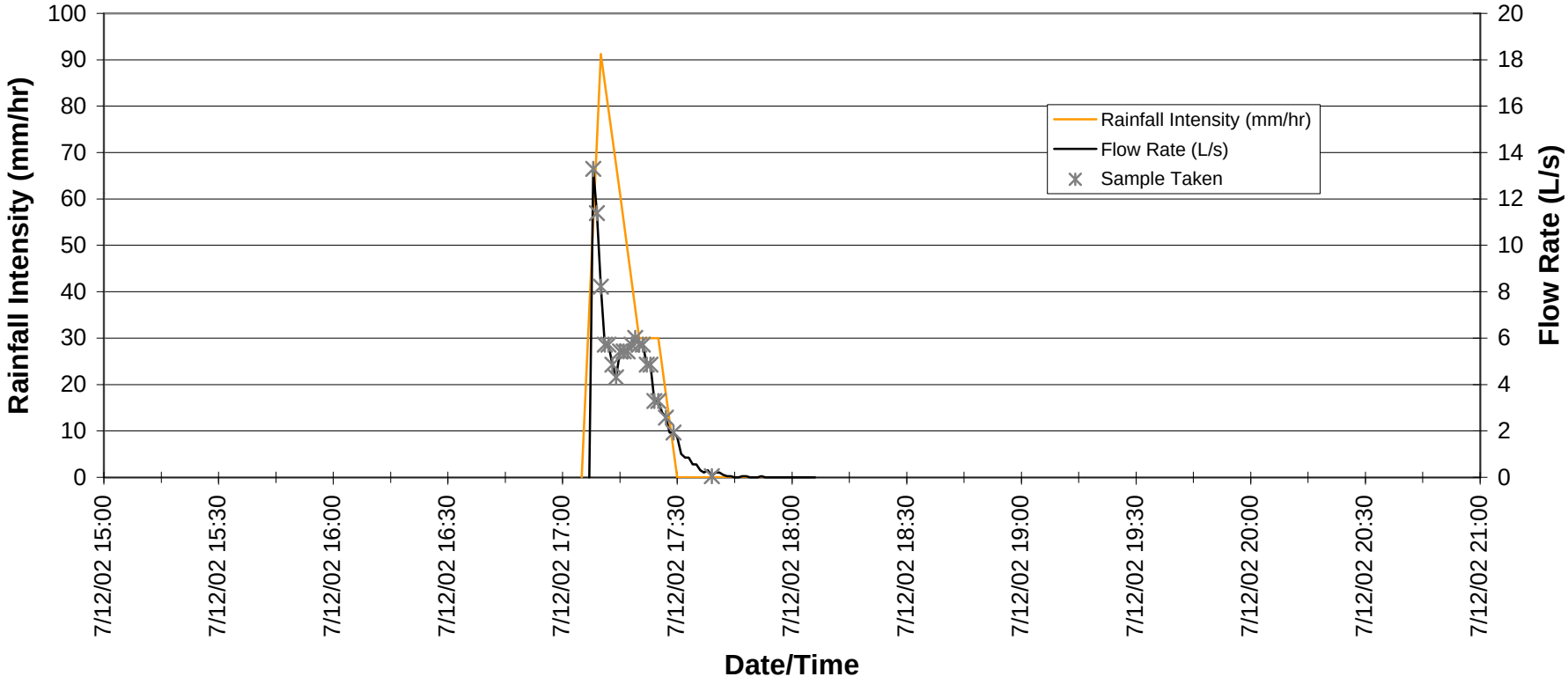
Start Date/Time:	04/17/03 11:15
Stop Date/Time:	04/17/03 20:45
Estimated Percent Capture:	98%
Successful Aliquots:	44

Notes: snowmelt event.

Event Summary

Site: Echo Summit Influent (3-203)
Event: 2002-01

Catchment Area (ha): 0.324
Assumed Runoff Coefficient: 0.95



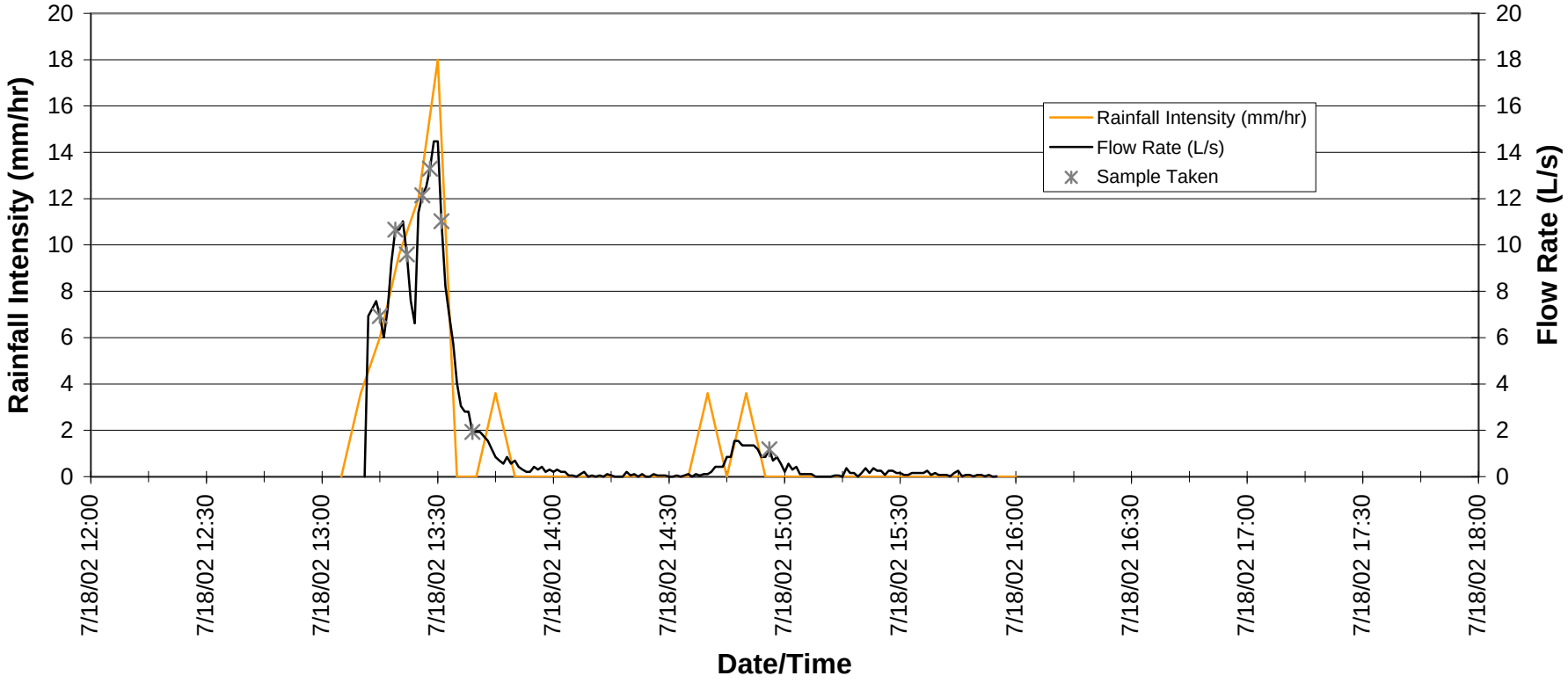
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	07/12/02 17:05	Start Date/Time:	07/12/02 17:07	Start Date/Time:	07/12/02 17:08
Stop Date/Time:	07/12/02 17:25	Stop Date/Time:	07/12/02 18:06	Stop Date/Time:	07/12/02 17:39
Event Rain (mm):	22.80	Total Flow Volume (L):	7540	Estimated Percent Capture:	94%
Max Intensity (mm/hr):	91.20	Peak Flow (L/s):	13.29	Successful Aliquots:	21
		Observed Runoff Coefficient:	0.102		

Notes: First thunderstorm of the season. No Caltrans-defined precipitation event identified. Note Caltrans approval date on output.

Event Summary

Site: Echo Summit Influent (3-203)
Event: 2002-02

Catchment Area (ha): 0.324
Assumed Runoff Coefficient: 0.95



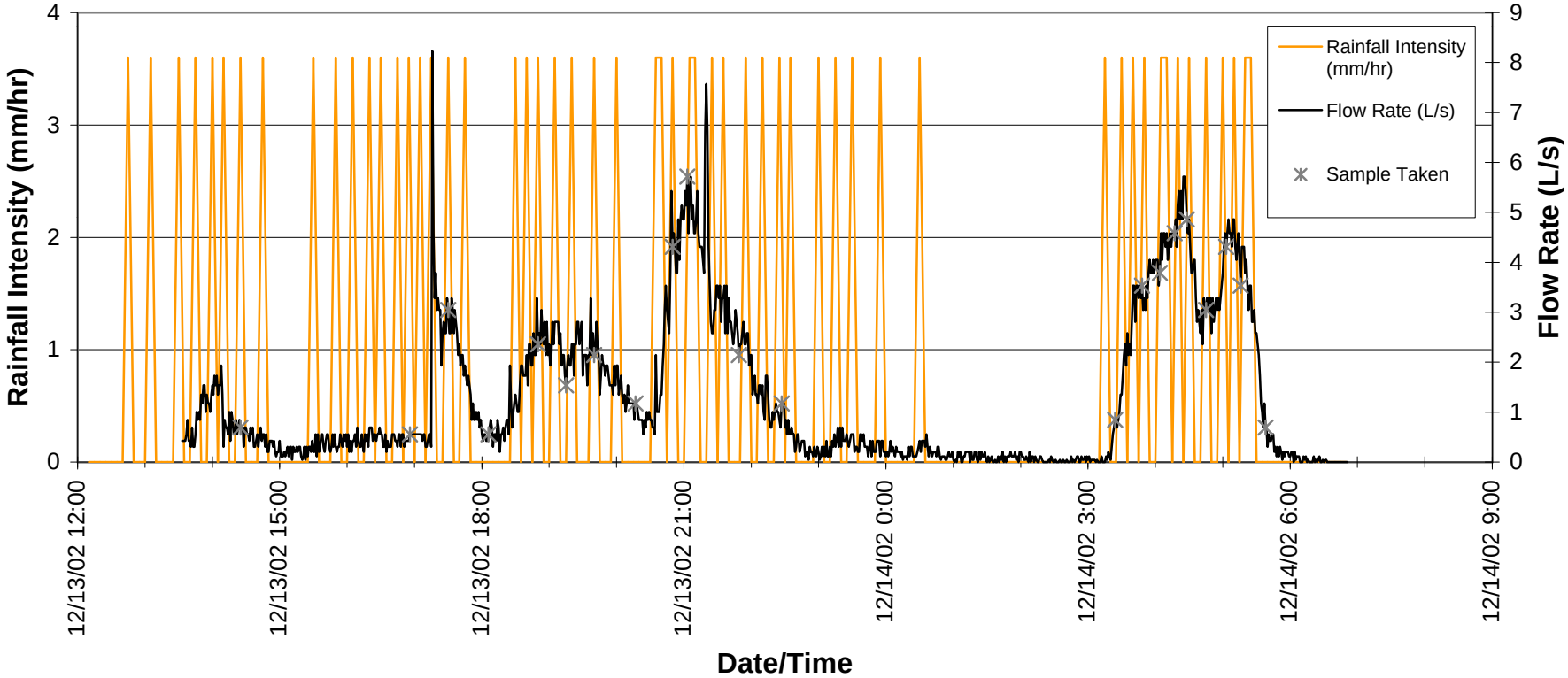
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	07/18/02 13:05	Start Date/Time:	07/18/02 13:11	Start Date/Time:	07/18/02 13:15
Stop Date/Time:	07/18/02 14:50	Stop Date/Time:	07/18/02 15:55	Stop Date/Time:	07/18/02 14:56
Event Rain (mm):	5.30	Total Flow Volume (L):	16536	Estimated Percent Capture:	87%
Max Intensity (mm/hr):	18.00	Peak Flow (L/s):	14.48	Successful Aliquots:	8
		Observed Runoff Coefficient:	0.963		

Notes: Thunderstorm event. No Caltrans-defined precipitation event identified. Note Caltrans approval date on output.

Event Summary

Site: Echo Summit Influent (3-203)
Event: 2003-03

Catchment Area (ha): 0.324
Assumed Fraction Runoff/Rain Volume: 0.95



Rain Data (user-defined event)		*Runoff Data*		*Sample Data*	
Start Date/Time:	12/13/02 12:10	Start Date/Time:	12/13/02 13:33	Start Date/Time:	12/13/02 14:25
Stop Date/Time:	12/14/02 05:25	Stop Date/Time:	12/14/02 06:51	Stop Date/Time:	12/14/02 05:38
Event Rain (mm):	16.80	Total Flow Volume (L):	80451	Estimated Percent Capture:	96%
Max Intensity (mm/hr):	3.60	Peak Flow (L/s):	8.23	Successful Aliquots:	21
		Obs. Fraction Runoff/Rain Volume:	1.478		

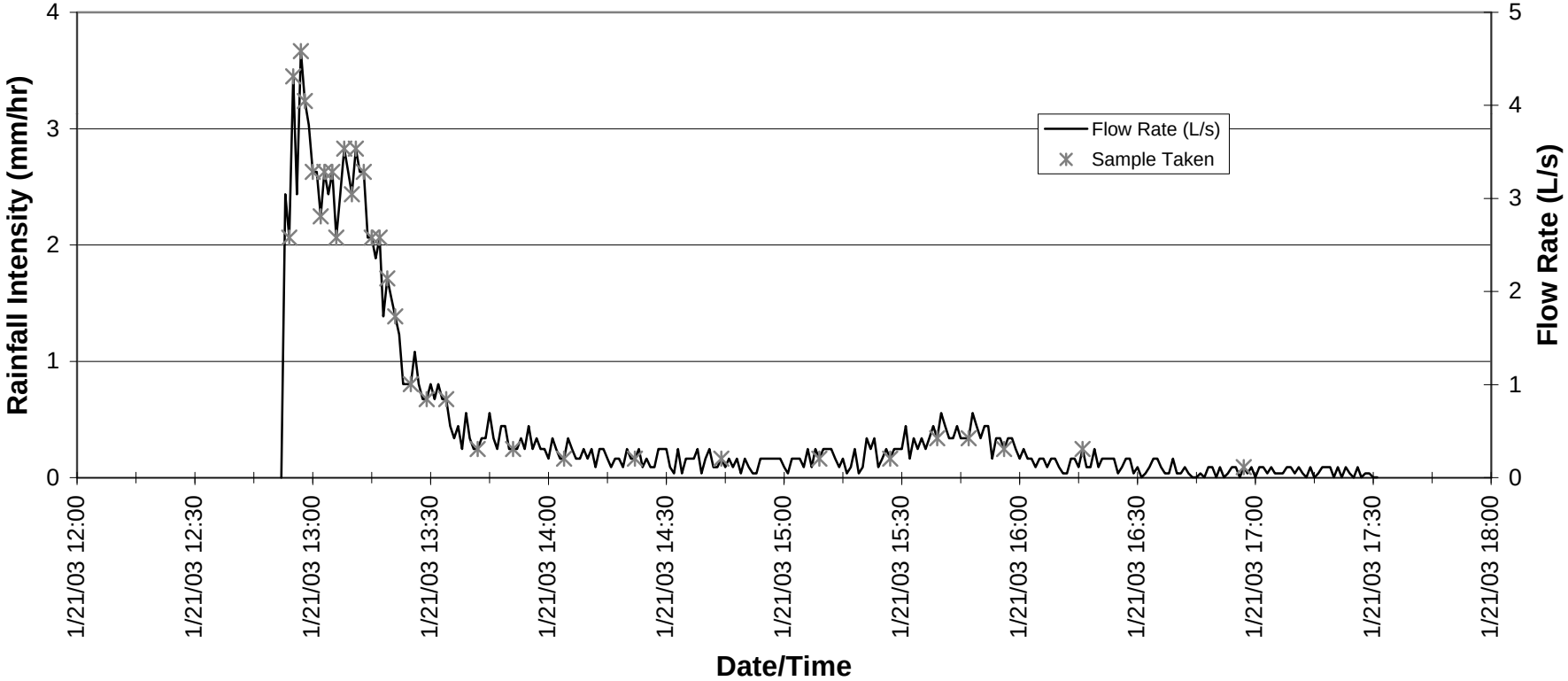
Notes: Caltrans-defined rain stop time not identified. Last non-zero rain record used as stop time.

Caltrans-defined Rain Event Override Authorization: No recorded Caltrans authorization.

Event Summary

Site: Echo Summit Influent (3-203)
Event: 2002-04

Catchment Area (ha): 0.324
Assumed Fraction Runoff/Rain Volume: 0.95



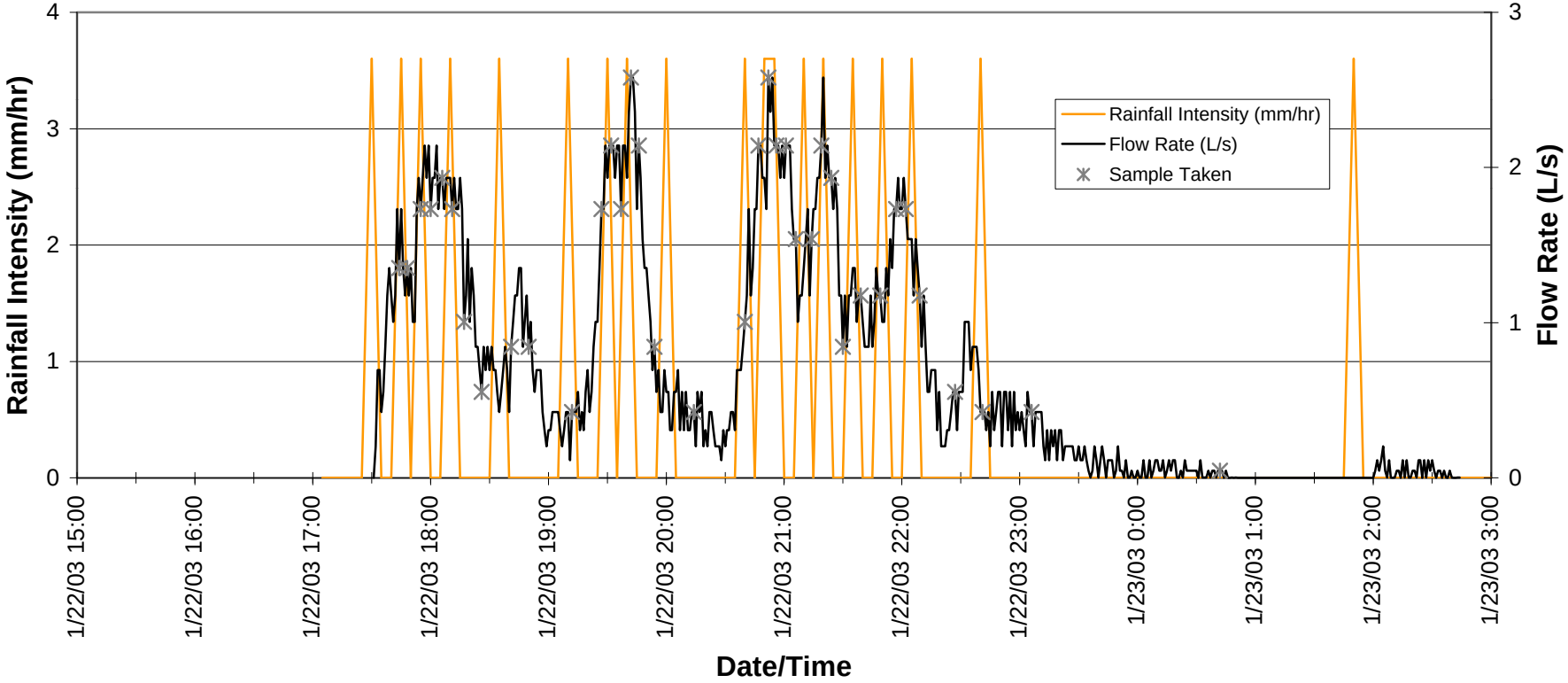
Runoff Data		*Sample Data*	
Start Date/Time:	01/21/03 12:52	Start Date/Time:	01/21/03 12:54
Stop Date/Time:	01/21/03 17:31	Stop Date/Time:	01/21/03 16:57
Total Flow Volume (L):	9134	Estimated Percent Capture:	96%
Peak Flow (L/s):	4.58	Successful Aliquots:	32

Notes: Snowmelt event.

Event Summary

Site: Echo Summit Influent (3-203)
Event: 2002-05

Catchment Area (ha): 0.324
Assumed Fraction Runoff/Rain Volume: 0.95



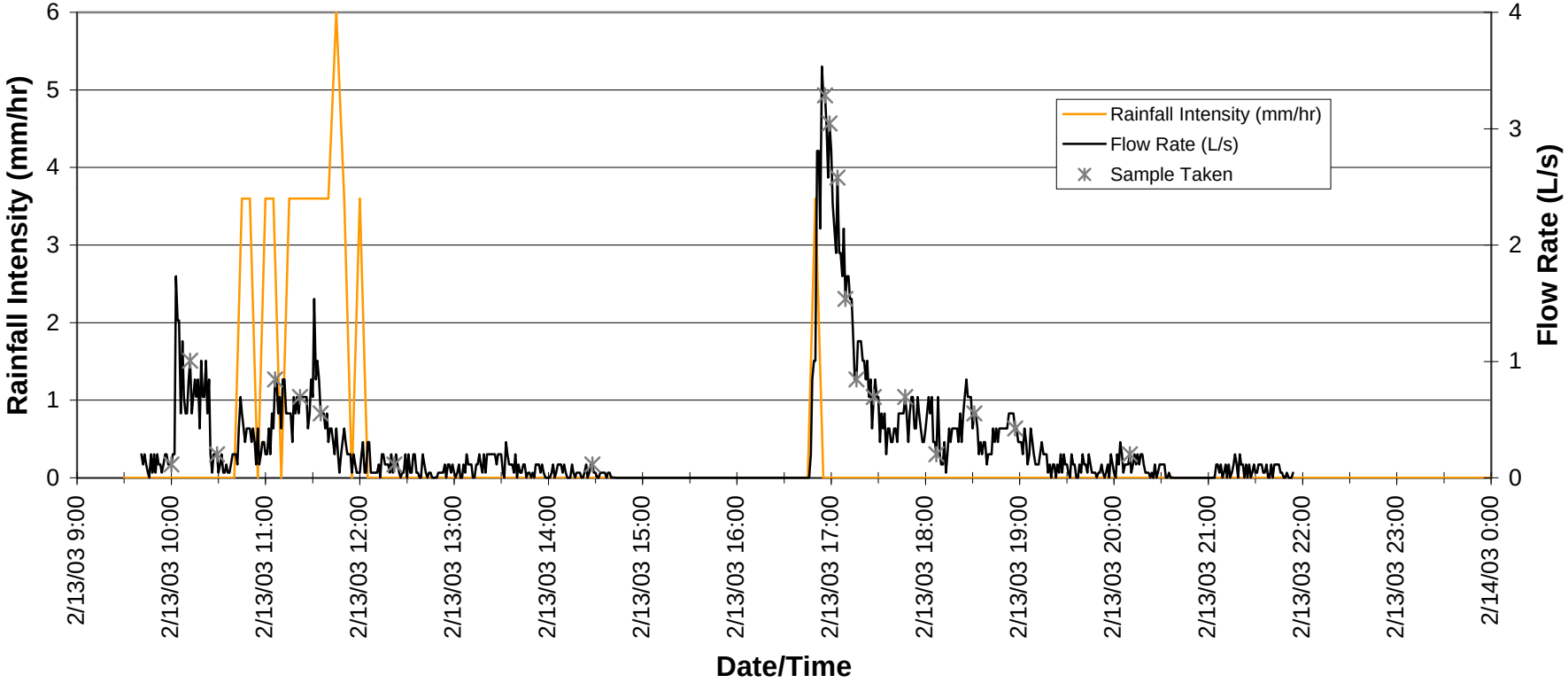
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	01/22/03 17:05	Start Date/Time:	01/22/03 17:31	Start Date/Time:	01/22/03 17:41
Stop Date/Time:	01/23/03 01:50	Stop Date/Time:	01/23/03 02:44	Stop Date/Time:	01/23/03 00:42
Event Rain (mm):	6.	Total Flow Volume (L):	22192	Estimated Percent Capture:	97%
Max Intensity (mm/hr):	3.60	Peak Flow (L/s):	2.58	Successful Aliquots:	37
		Obs. Fraction Runoff/Rain Volume:	1.142		

Notes:

Event Summary

Site: Echo Summit Influent (3-203)
Event: 2002-06

Catchment Area (ha): 0.324
Assumed Fraction Runoff/Rain Volume: 0.95



Rain Data

Start Date/Time:	02/13/03 10:45
Stop Date/Time:	02/13/03 16:50
Event Rain (mm):	4.40
Max Intensity (mm/hr):	6.00

Runoff Data

Start Date/Time:	02/13/03 09:41
Stop Date/Time:	02/13/03 21:54
Total Flow Volume (L):	11879
Peak Flow (L/s):	3.53
Obs. Fraction Runoff/Rain Volume:	0.833

Sample Data

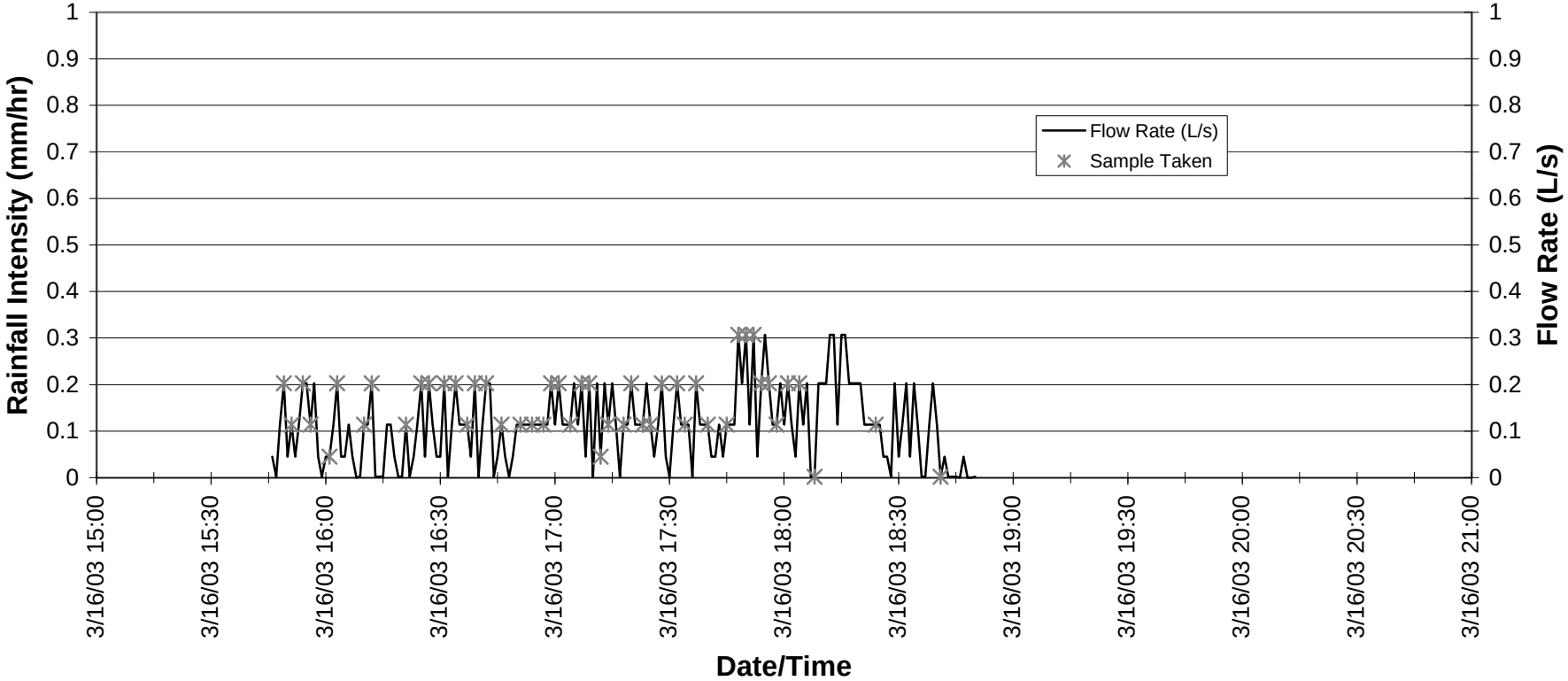
Start Date/Time:	02/13/03 10:00
Stop Date/Time:	02/13/03 20:10
Estimated Percent Capture:	91%
Successful Aliquots:	19

Notes: Rain/snow mix event.

Event Summary

Site: Echo Summit Influent (3-203)
Event: 2002-07

Catchment Area (ha): 0.324
Assumed Fraction Runoff/Rain Volume: 0.95



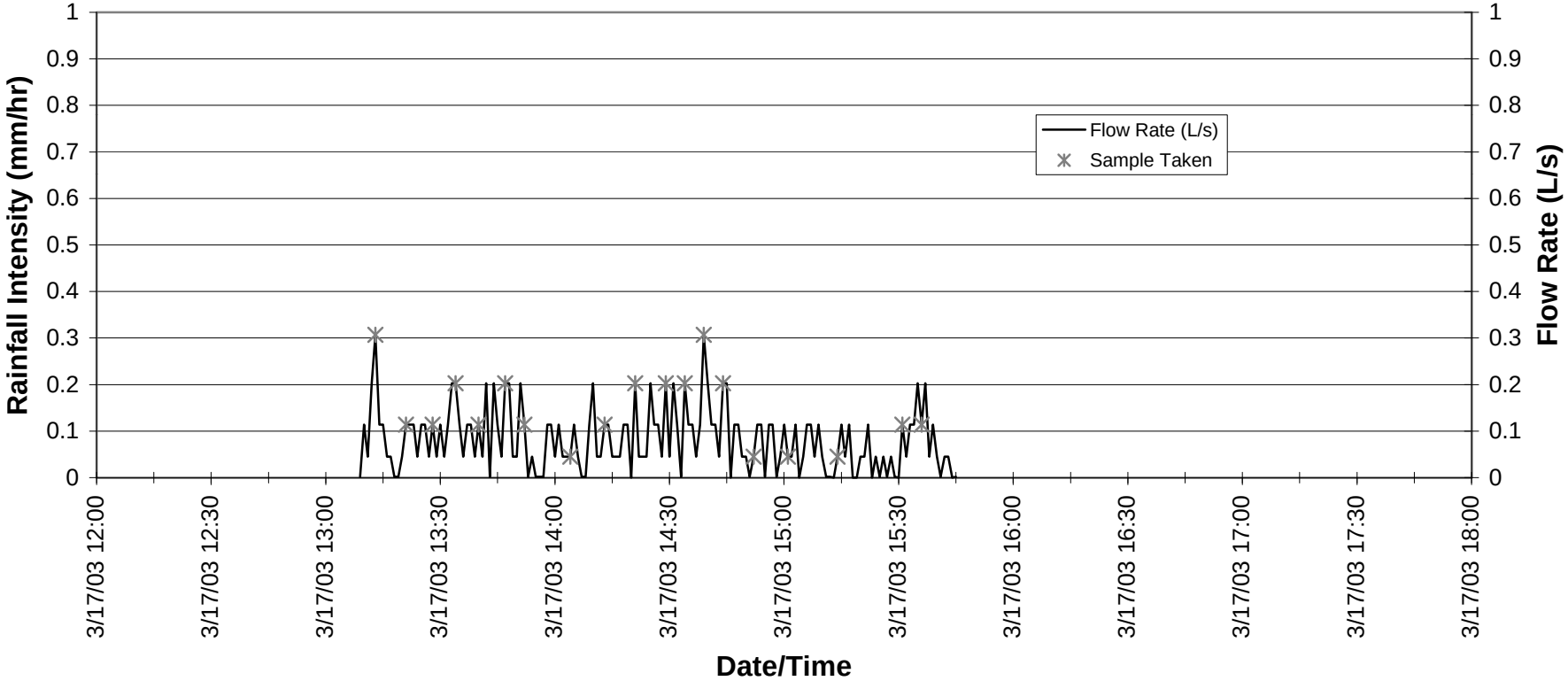
Runoff Data		*Sample Data*	
Start Date/Time:	03/16/03 15:46	Start Date/Time:	03/16/03 15:49
Stop Date/Time:	03/16/03 18:50	Stop Date/Time:	03/16/03 18:41
Total Flow Volume (L):	1246	Estimated Percent Capture:	89%
Peak Flow (L/s):	0.31	Successful Aliquots:	48

Notes: Snowmelt runoff event.

Event Summary

Site: Echo Summit Influent (3-203)
Event: 2002-08

Catchment Area (ha): 0.324
Assumed Fraction Runoff/Rain Volume: 0.95



Runoff Data

Start Date/Time:	03/17/03 13:09
Stop Date/Time:	03/17/03 15:45
Total Flow Volume (L):	776
Peak Flow (L/s):	0.31

Sample Data

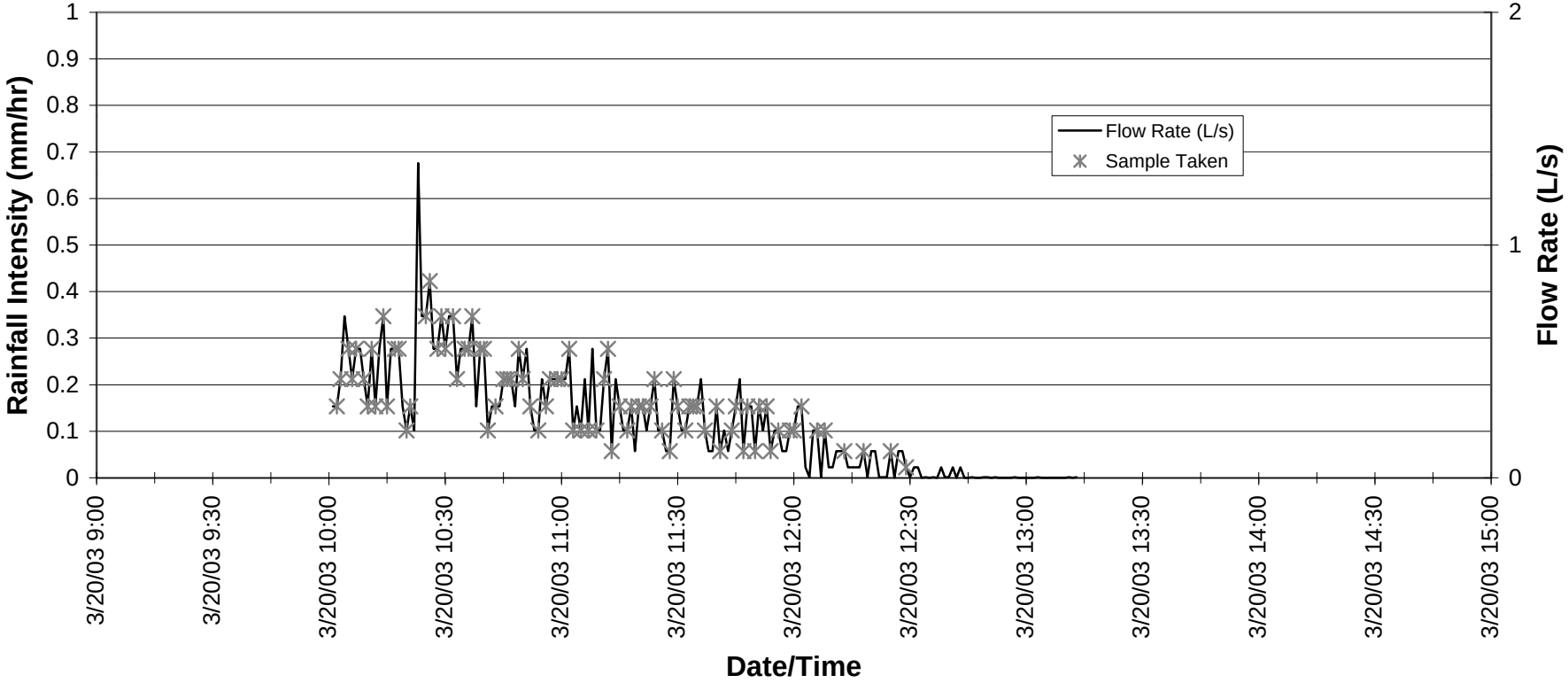
Start Date/Time:	03/17/03 13:13
Stop Date/Time:	03/17/03 15:36
Estimated Percent Capture:	92%
Successful Aliquots:	19

Notes: Snowmelt runoff event.

Event Summary

Site: Echo Summit Influent (3-203)
Event: 2002-09

Catchment Area (ha): 0.324
Assumed Fraction Runoff/Rain Volume: 0.95



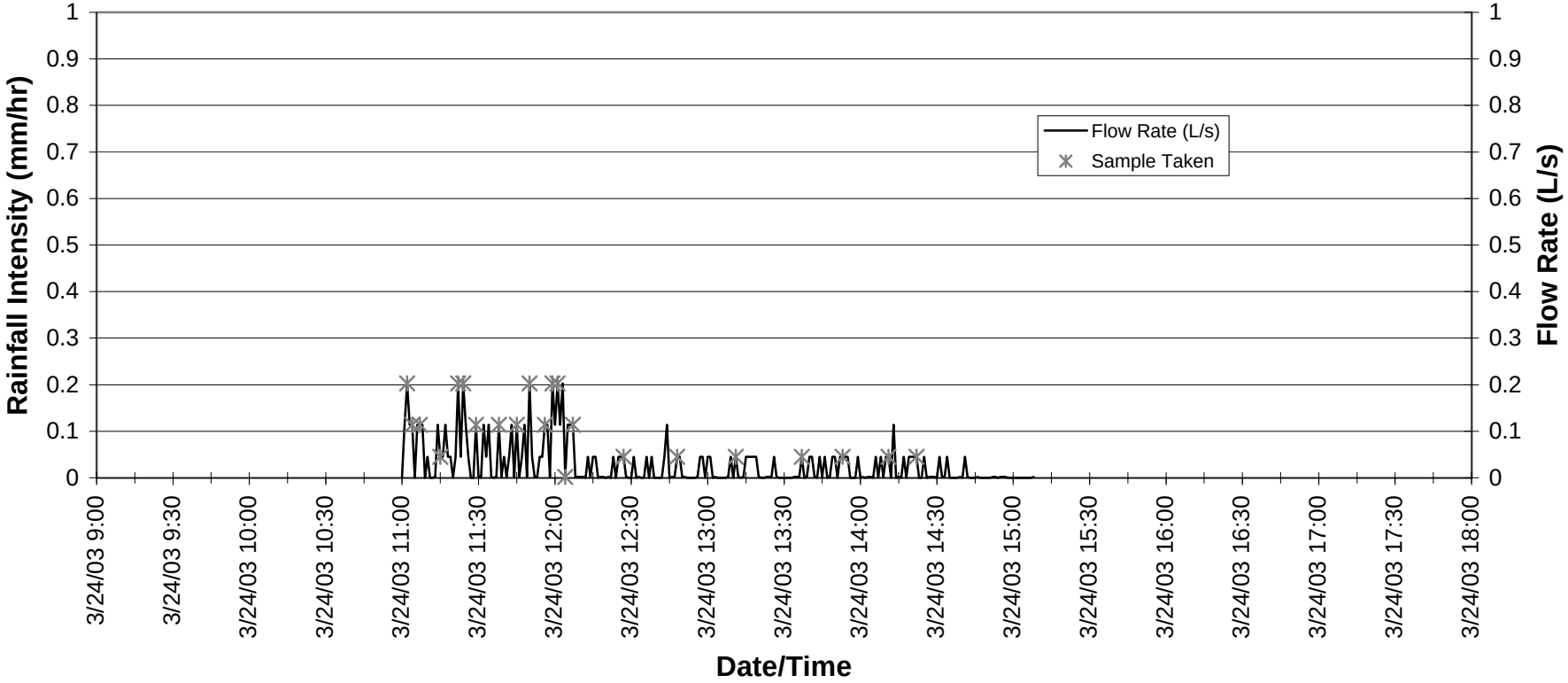
Runoff Data		*Sample Data*	
Start Date/Time:	03/20/03 10:01	Start Date/Time:	03/20/03 10:02
Stop Date/Time:	03/20/03 13:13	Stop Date/Time:	03/20/03 12:29
Total Flow Volume (L):	2806	Estimated Percent Capture:	96%
Peak Flow (L/s):	1.35	Successful Aliquots:	84

Notes: Snowmelt runoff event. Bottle changed two times.

Event Summary

Site: Echo Summit Influent (3-203)
Event: 2002-10

Catchment Area (ha): 0.324
Assumed Fraction Runoff/Rain Volume: 0.95



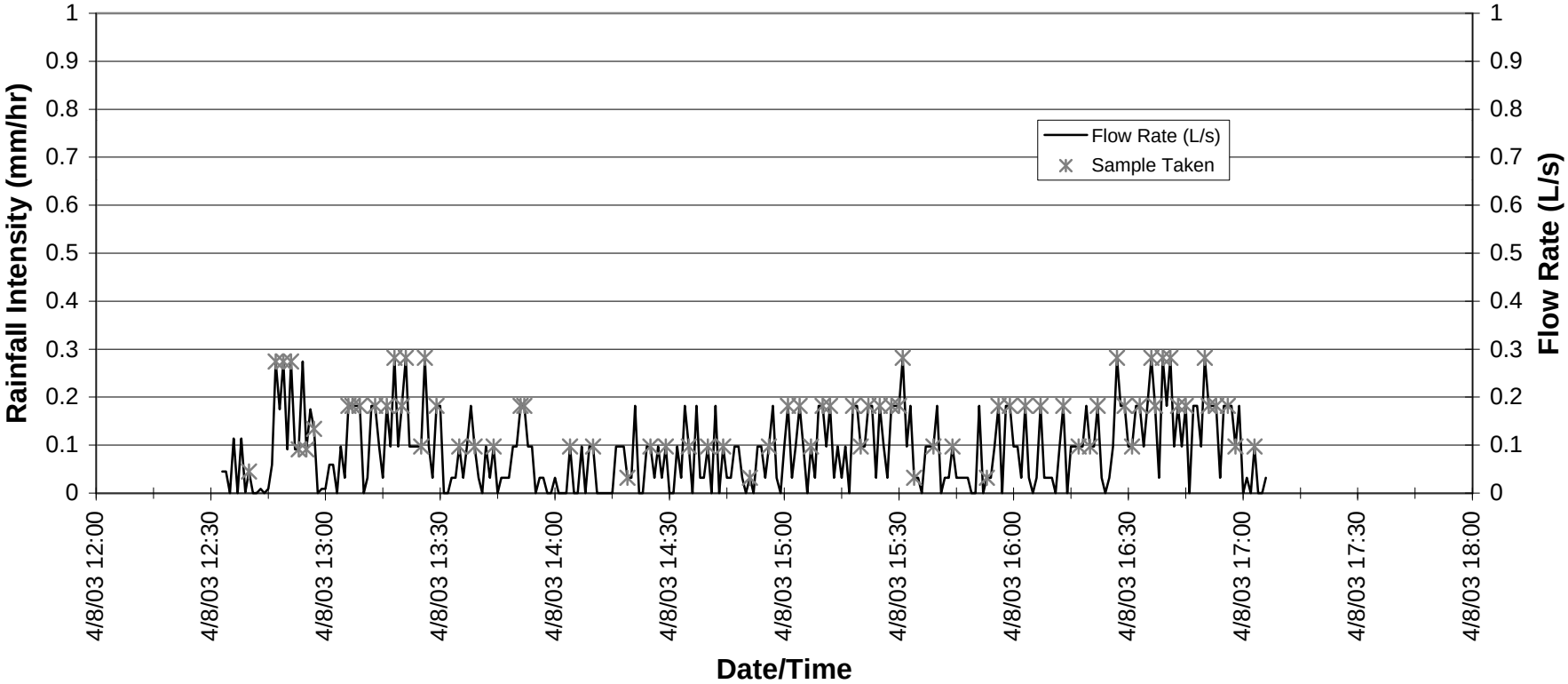
Runoff Data		*Sample Data*	
Start Date/Time:	03/24/03 11:00	Start Date/Time:	03/24/03 11:02
Stop Date/Time:	03/24/03 15:08	Stop Date/Time:	03/24/03 14:22
Total Flow Volume (L):	439	Estimated Percent Capture:	94%
Peak Flow (L/s):	0.20	Successful Aliquots:	22

Notes: Snowmelt runoff event.

Event Summary

Site: Echo Summit Influent (3-203)
Event: 2002-11

Catchment Area (ha): 0.324
Assumed Fraction Runoff/Rain Volume: 0.95



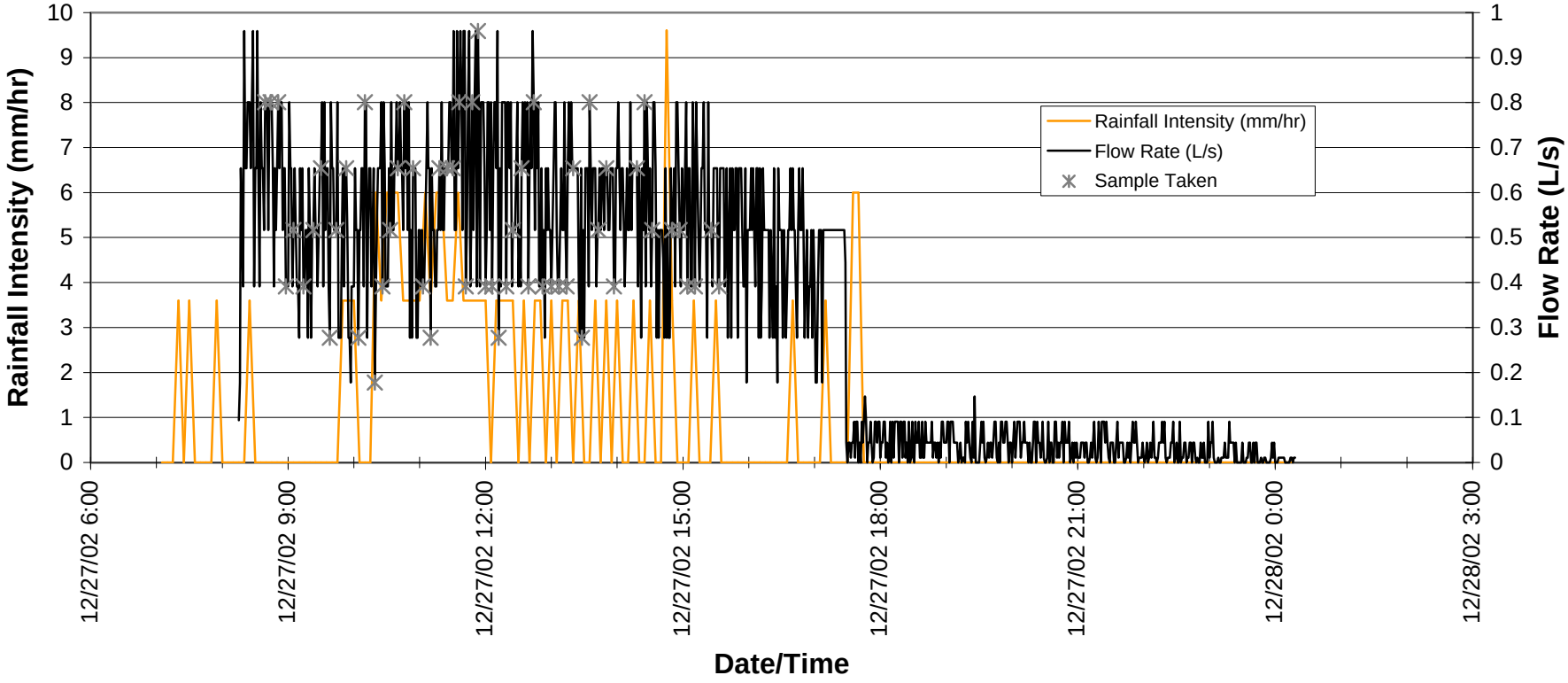
Runoff Data		*Sample Data*	
Start Date/Time:	04/08/03 12:33	Start Date/Time:	04/08/03 12:40
Stop Date/Time:	04/08/03 17:06	Stop Date/Time:	04/08/03 17:03
Total Flow Volume (L):	1483	Estimated Percent Capture:	98%
Peak Flow (L/s):	0.28	Successful Aliquots:	73

Notes: Snowmelt event.

Event Summary

Site: DL Bliss (3-218)
Event: 2002-01

Catchment Area (ha): 0.109
Assumed Fraction Runoff/Rain Volume: 0.7



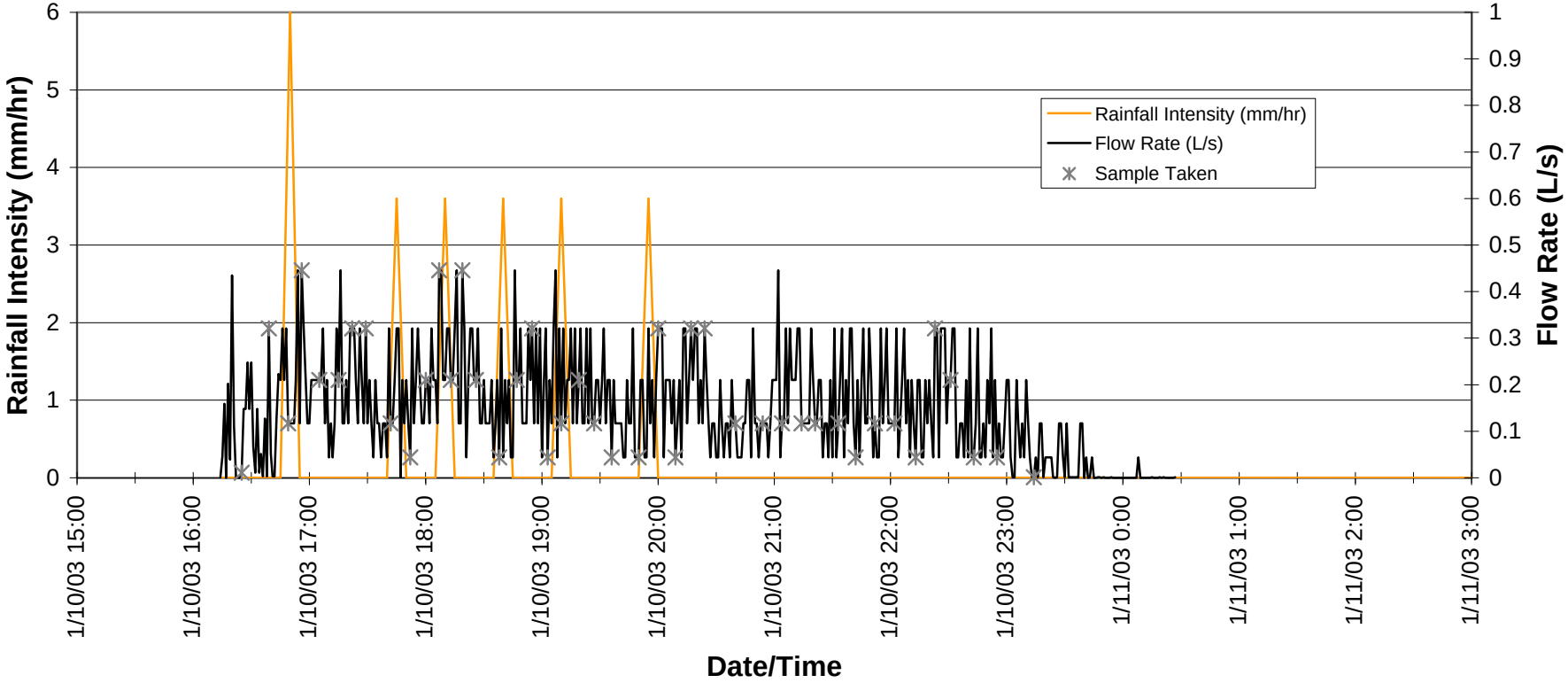
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	12/27/02 07:05	Start Date/Time:	12/27/02 08:15	Start Date/Time:	12/27/02 08:39
Stop Date/Time:	12/27/02 17:40	Stop Date/Time:	12/28/02 00:18	Stop Date/Time:	12/27/02 15:33
Event Rain (mm):	18.40	Total Flow Volume (L):	19659	Estimated Percent Capture:	74%
Max Intensity (mm/hr):	9.60	Peak Flow (L/s):	0.96	Successful Aliquots:	55
		Obs. Fraction Runoff/Rain Volume:	0.980		

Notes:

Event Summary

Site: DL Bliss (3-218)
Event: 2002-02

Catchment Area (ha): 0.109
Assumed Fraction Runoff/Rain Volume: 0.7



Rain Data (user-defined event)		*Runoff Data*		*Sample Data*	
Start Date/Time:	01/10/03 16:15	Start Date/Time:	01/10/03 16:14	Start Date/Time:	01/10/03 16:25
Stop Date/Time:	01/10/03 19:59	Stop Date/Time:	01/11/03 00:27	Stop Date/Time:	01/10/03 23:14
Event Rain (mm):	2.	Total Flow Volume (L):	4340	Estimated Percent Capture:	95%
Max Intensity (mm/hr):	6.00	Peak Flow (L/s):	0.45	Successful Aliquots:	43
		Obs. Fraction Runoff/Rain Volume:	1.991		

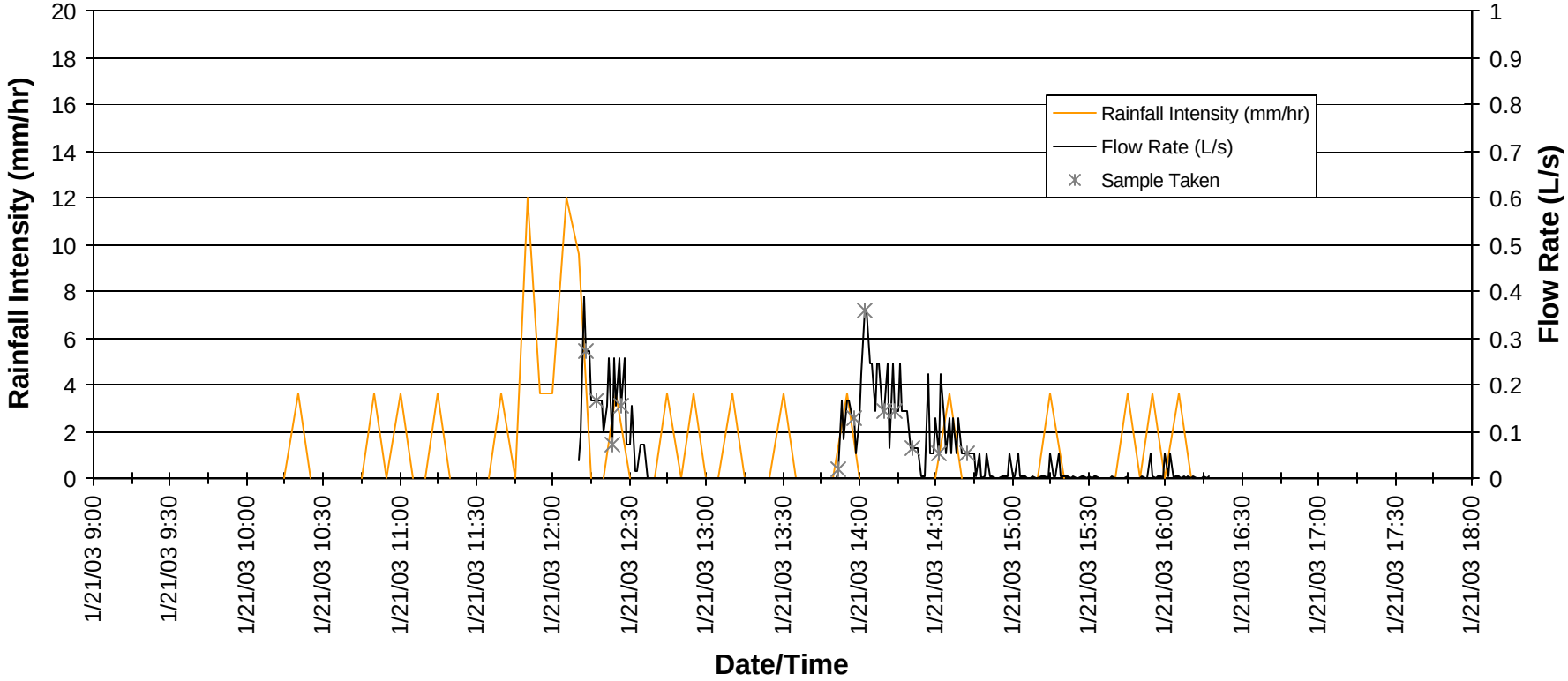
Notes:

Caltrans-defined Rain Event Override Authorization: No recorded Caltrans authorization.

Event Summary

Site: DL Bliss (3-218)
Event: 2002-03

Catchment Area (ha): 0.109
Assumed Fraction Runoff/Rain Volume: 0.7



Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	01/21/03 09:15	Start Date/Time:	01/21/03 12:10	Start Date/Time:	01/21/03 12:13
Stop Date/Time:	01/21/03 16:05	Stop Date/Time:	01/21/03 16:17	Stop Date/Time:	01/21/03 14:42
Event Rain (mm):	8.50	Total Flow Volume (L):	693	Estimated Percent Capture:	88%
Max Intensity (mm/hr):	12.00	Peak Flow (L/s):	0.39	Successful Aliquots:	12
		Obs. Fraction Runoff/Rain Volume:	0.075		

Notes:

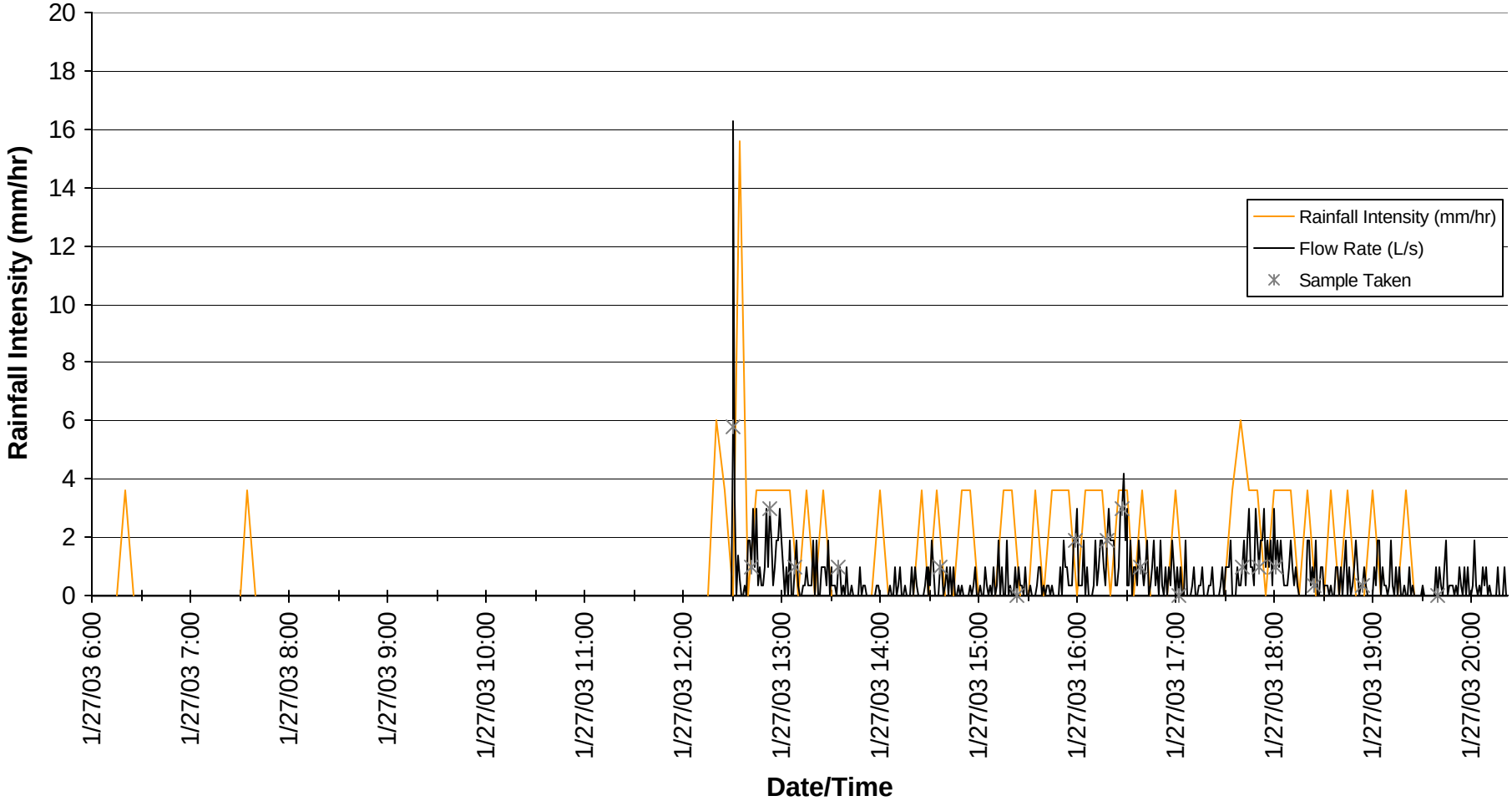
Event Summary

Site: DL Bliss (3-218)

Event: 2002-04

Catchment Area (ha): 0.10

Assumed Fraction Runoff/Rain Volume: 0.

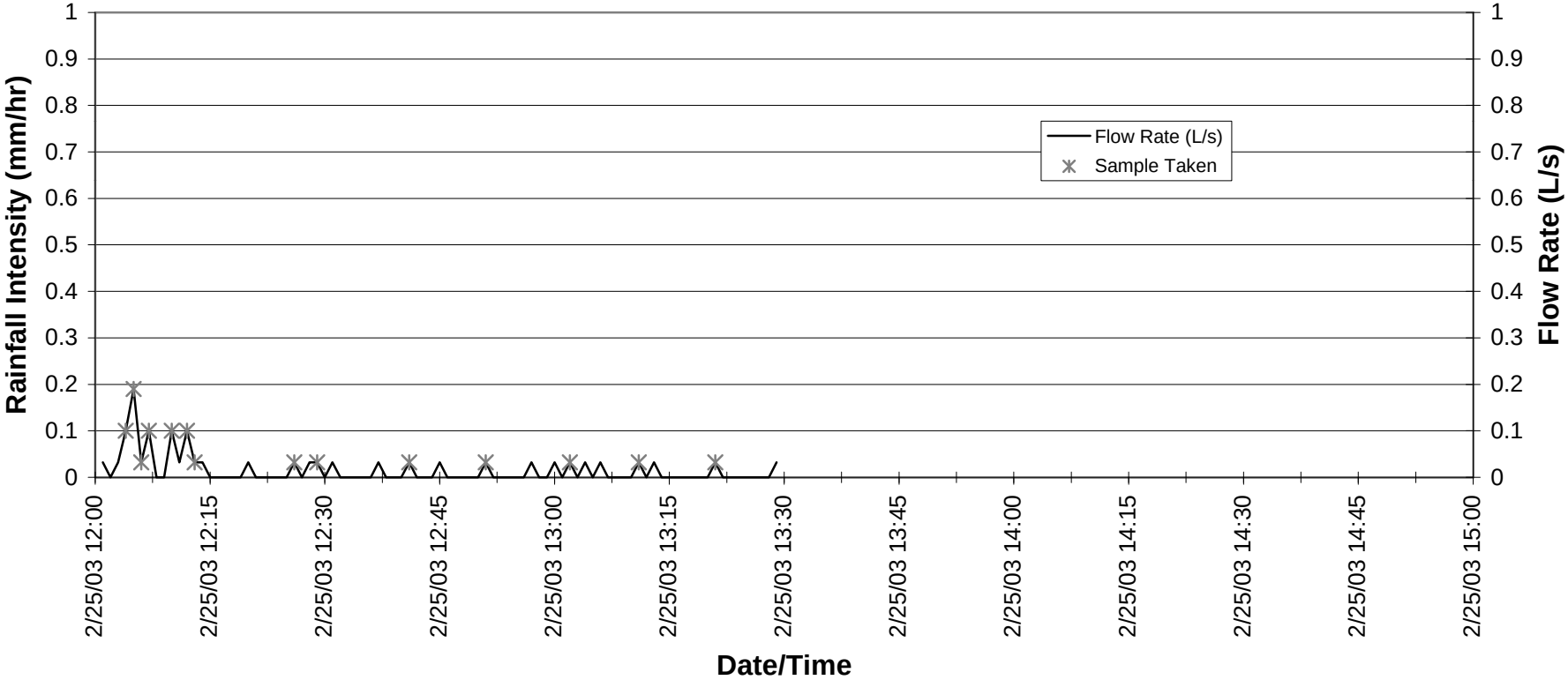


Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	01/27/03 07:35	Start Date/Time:	01/27/03 12:29	Start Date/Time:	01/27/03 12:3

Event Summary

Site: DL Bliss (3-218)
Event: 2002-05

Catchment Area (ha): 0.109
Assumed Fraction Runoff/Rain Volume: 0.7



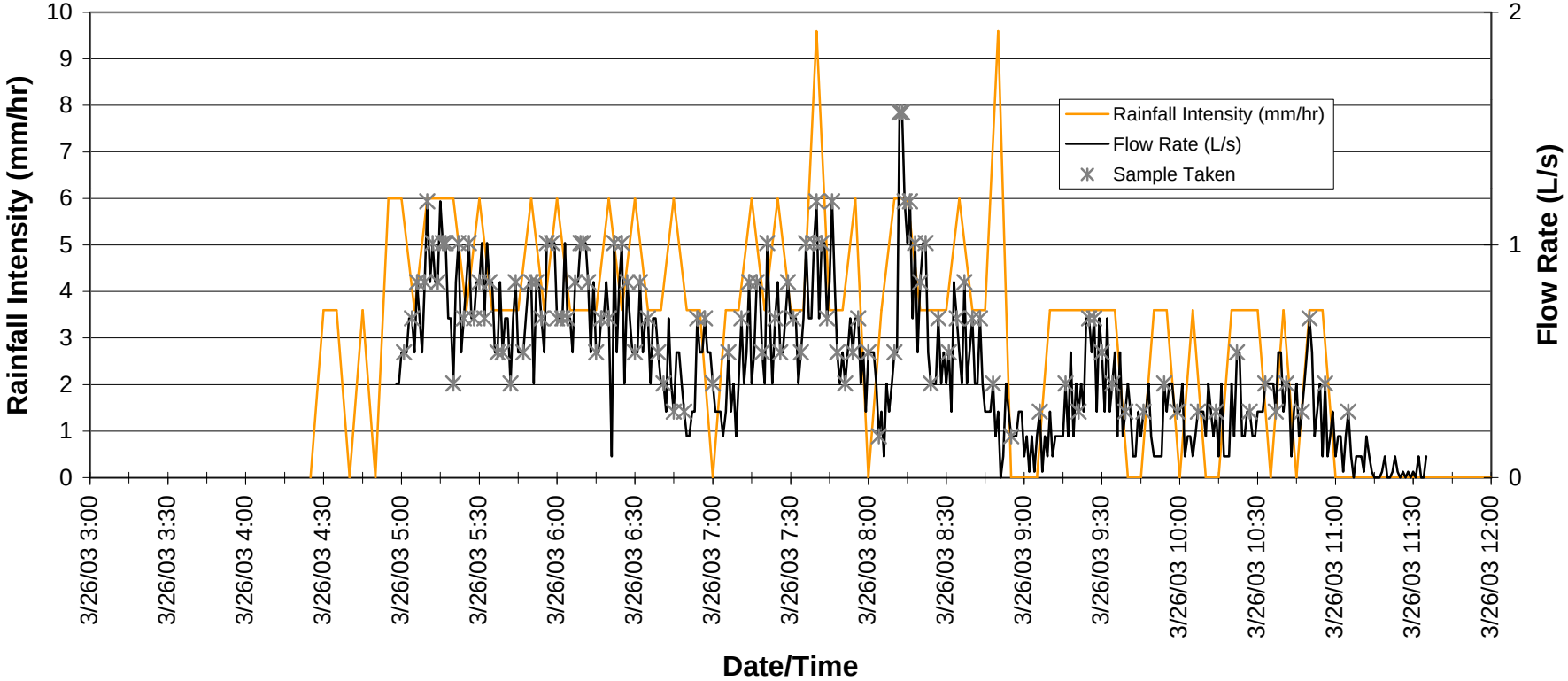
Runoff Data		*Sample Data*	
Start Date/Time:	02/25/03 12:01	Start Date/Time:	02/25/03 12:04
Stop Date/Time:	02/25/03 13:29	Stop Date/Time:	02/25/03 13:21
Total Flow Volume (L):	80	Estimated Percent Capture:	90%
Peak Flow (L/s):	0.19	Successful Aliquots:	14

Notes: Snowmelt event.

Event Summary

Site: DL Bliss (3-218)
Event: 2002-06

Catchment Area (ha): 0.109
Assumed Fraction Runoff/Rain Volume: 0.7



Rain Data

Start Date/Time:	03/26/03 04:30
Stop Date/Time:	03/26/03 10:55
Event Rain (mm):	23.60
Max Intensity (mm/hr):	9.60

Runoff Data

Start Date/Time:	03/26/03 04:58
Stop Date/Time:	03/26/03 11:35
Total Flow Volume (L):	11263
Peak Flow (L/s):	1.57
Obs. Fraction Runoff/Rain Volume:	0.438

Sample Data

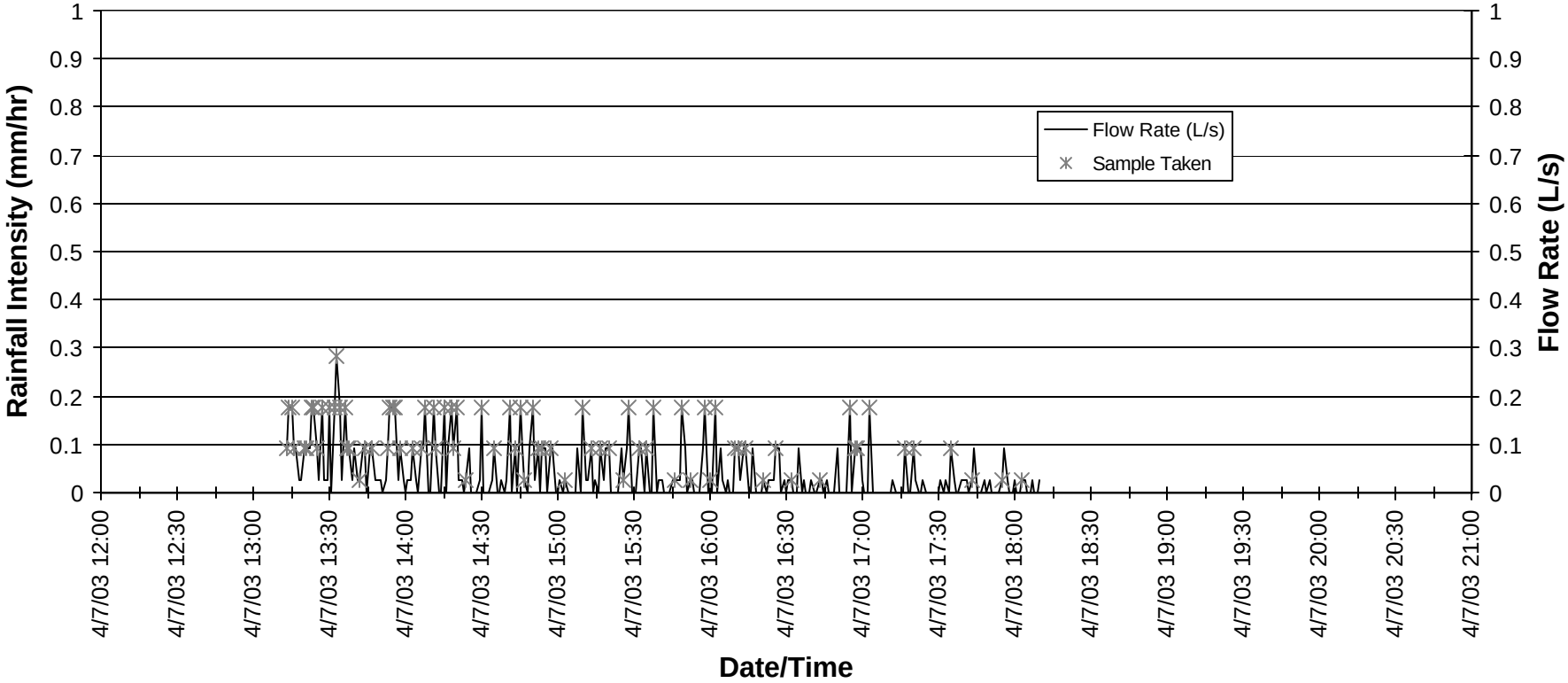
Start Date/Time:	03/26/03 05:01
Stop Date/Time:	03/26/03 11:05
Estimated Percent Capture:	99%
Successful Aliquots:	112

Notes: Bottle replaced two times.

Event Summary

Site: DL Bliss (3-218)
Event: 2002-07

Catchment Area (ha): 0.109
Assumed Fraction Runoff/Rain Volume: 0.7



Runoff Data		*Sample Data*	
Start Date/Time:	04/07/03 13:13	Start Date/Time:	04/07/03 13:13
Stop Date/Time:	04/07/03 18:10	Stop Date/Time:	04/07/03 18:03
Total Flow Volume (L):	783	Estimated Percent Capture:	99%
Peak Flow (L/s):	0.28	Successful Aliquots:	78

Notes: Snowmelt event.

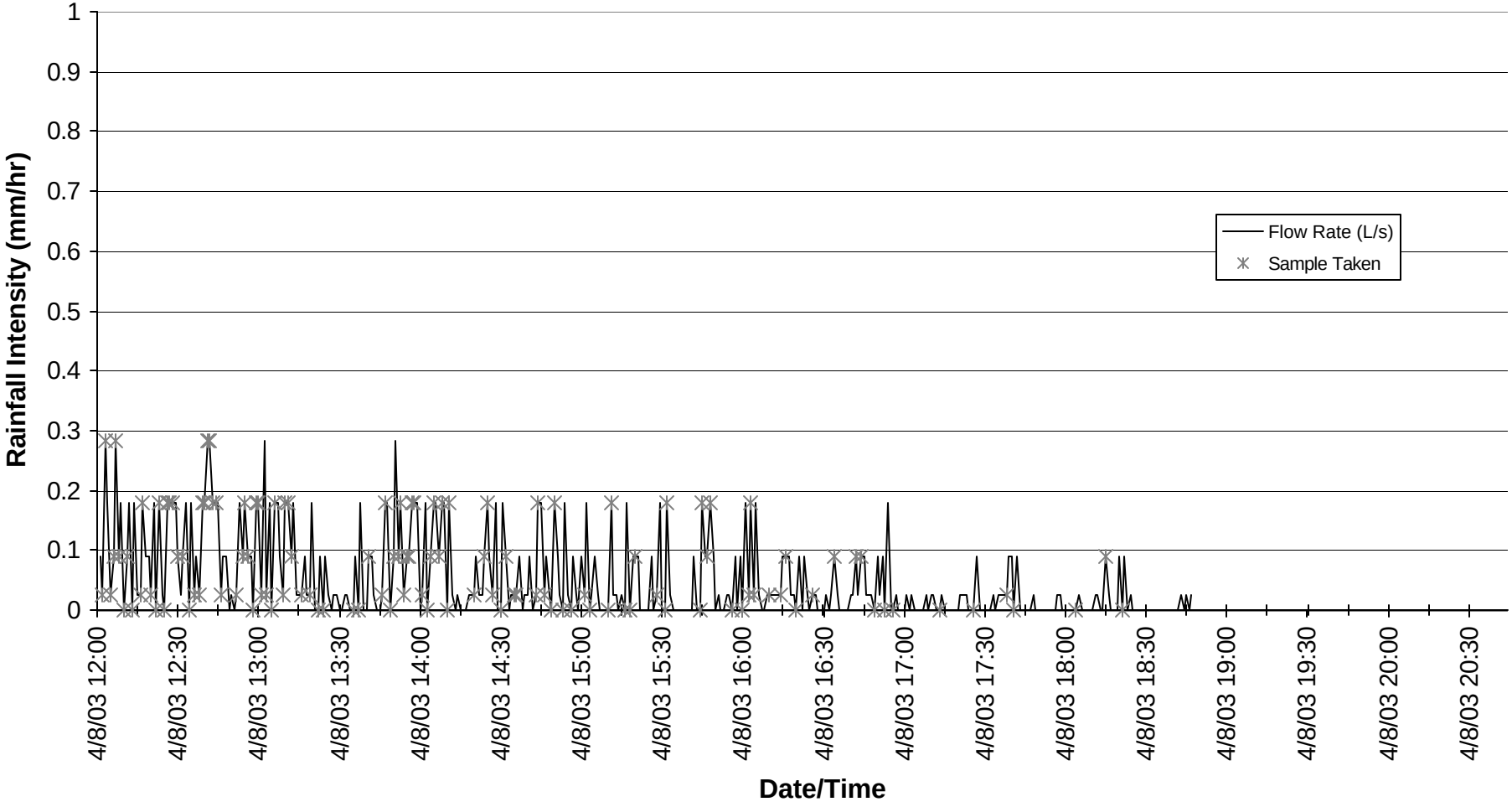
Event Summary

Site: DL Bliss (3-218)

Event: 2002-08

Catchment Area (ha): 0.1(

Assumed Fraction Runoff/Rain Volume: 0



Runoff Data

Start Date/Time: 04/08/03 12:01

Sample Data

Start Date/Time: 04/08/03 12:(

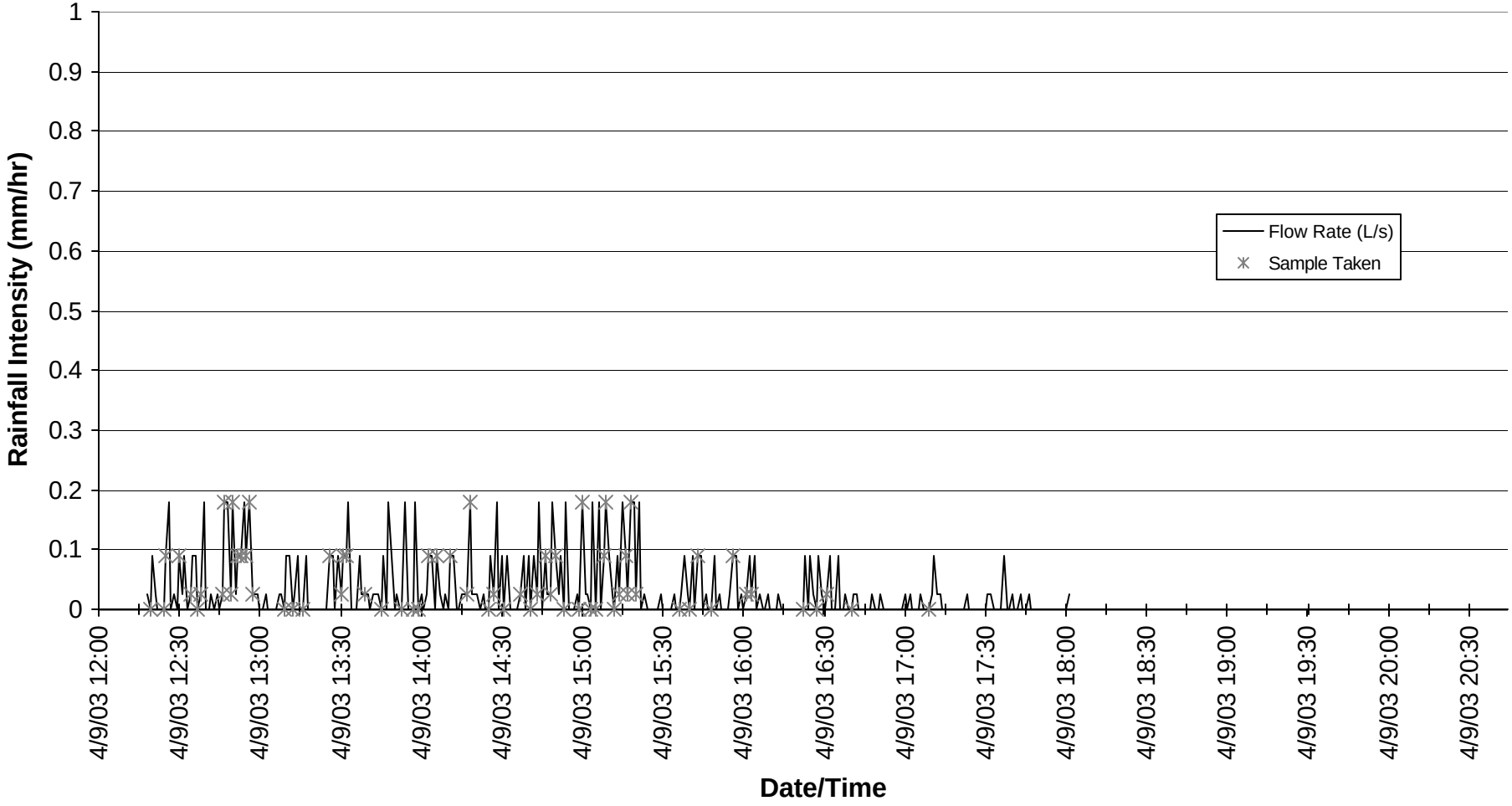
Event Summary

Site: DL Bliss (3-218)

Event: 2002-09

Catchment Area (ha): 0.1(

Assumed Fraction Runoff/Rain Volume: 0



Runoff Data

Start Date/Time: 04/09/03 12:18

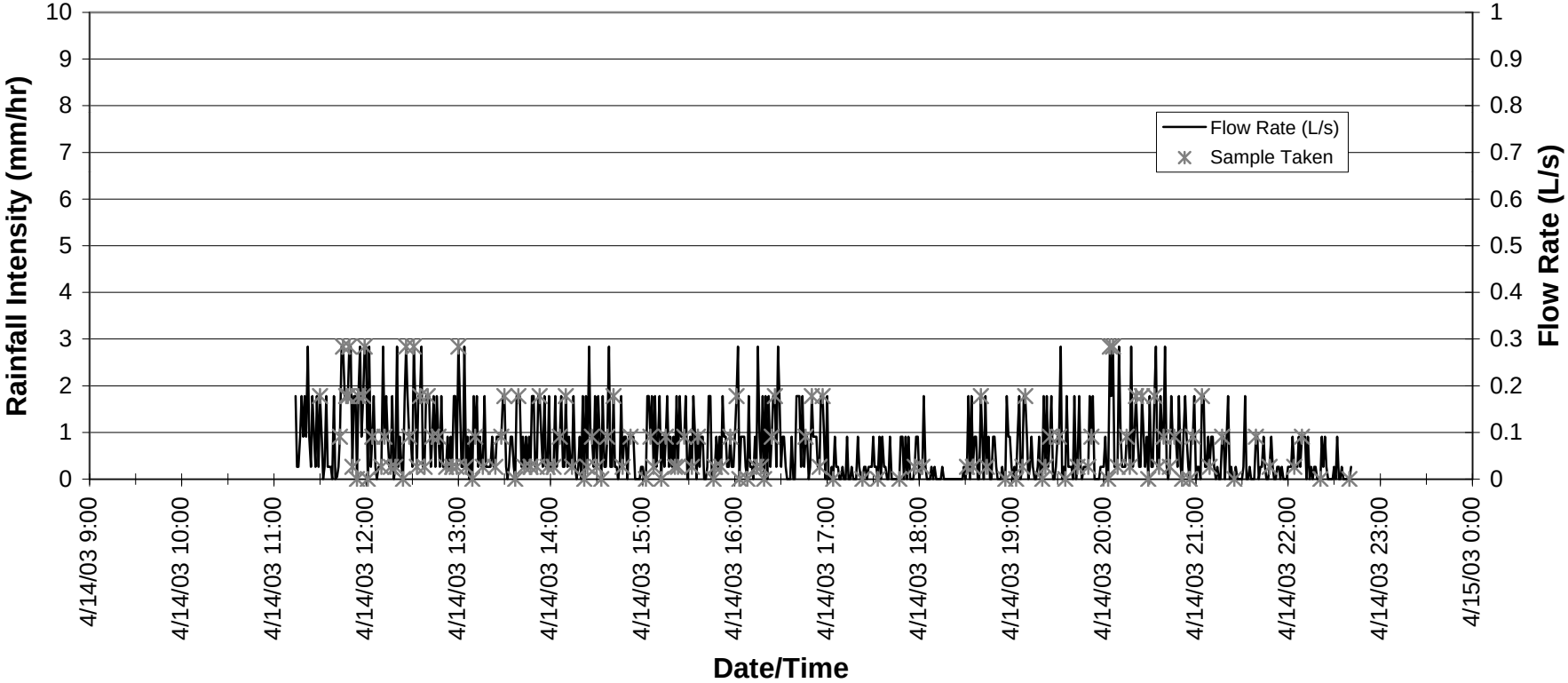
Sample Data

Start Date/Time: 04/09/03 12:

Event Summary

Site: DL Bliss (3-218)
Event: 2002-10

Catchment Area (ha): 0.109
Assumed Fraction Runoff/Rain Volume: 0.7



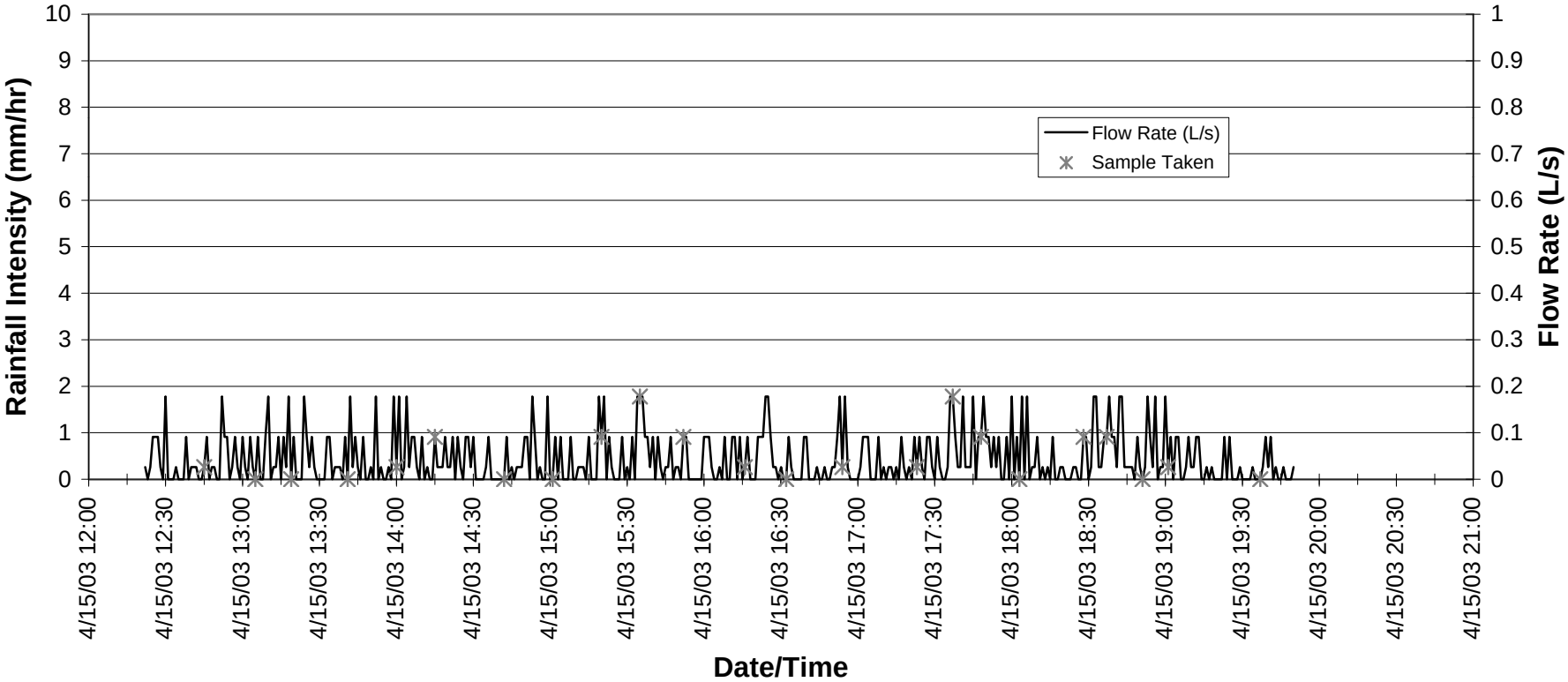
Runoff Data		*Sample Data*	
Start Date/Time:	04/14/03 11:14	Start Date/Time:	04/14/03 11:30
Stop Date/Time:	04/14/03 22:41	Stop Date/Time:	04/14/03 22:40
Total Flow Volume (L):	2864	Estimated Percent Capture:	96%
Peak Flow (L/s):	0.28	Successful Aliquots:	133

Notes: Snowmelt event.

Event Summary

Site: DL Bliss (3-218)
Event: 2002-11

Catchment Area (ha): 0.109
Assumed Fraction Runoff/Rain Volume: 0.7



Runoff Data

Start Date/Time:	04/15/03 12:22
Stop Date/Time:	04/15/03 19:50
Total Flow Volume (L):	1168
Peak Flow (L/s):	0.18

Sample Data

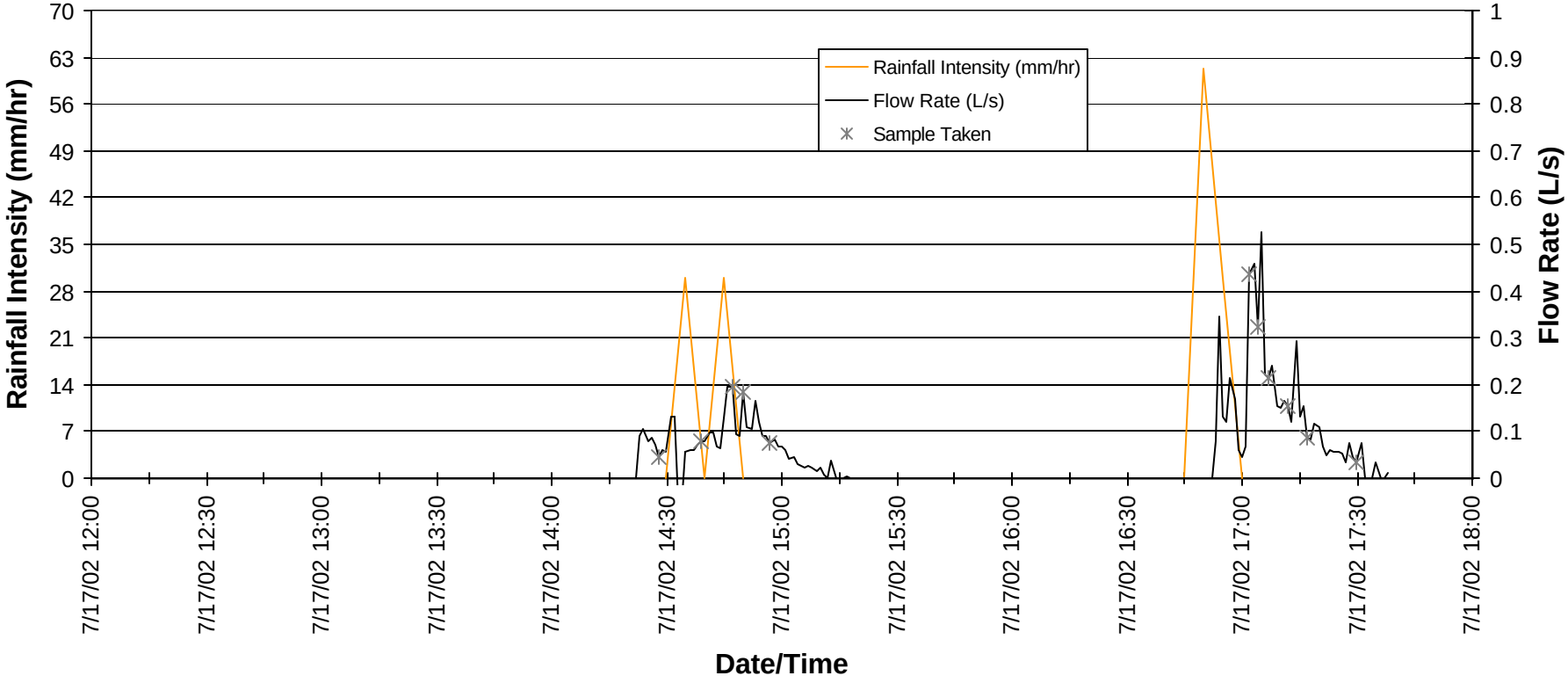
Start Date/Time:	04/15/03 12:45
Stop Date/Time:	04/15/03 19:37
Estimated Percent Capture:	95%
Successful Aliquots:	23

Notes: Snowmelt event.

Event Summary

Site: Snow Creek (3-219)
Event: 2002-01

Catchment Area (ha): 0.83
Assumed Runoff Coefficient: 0.7



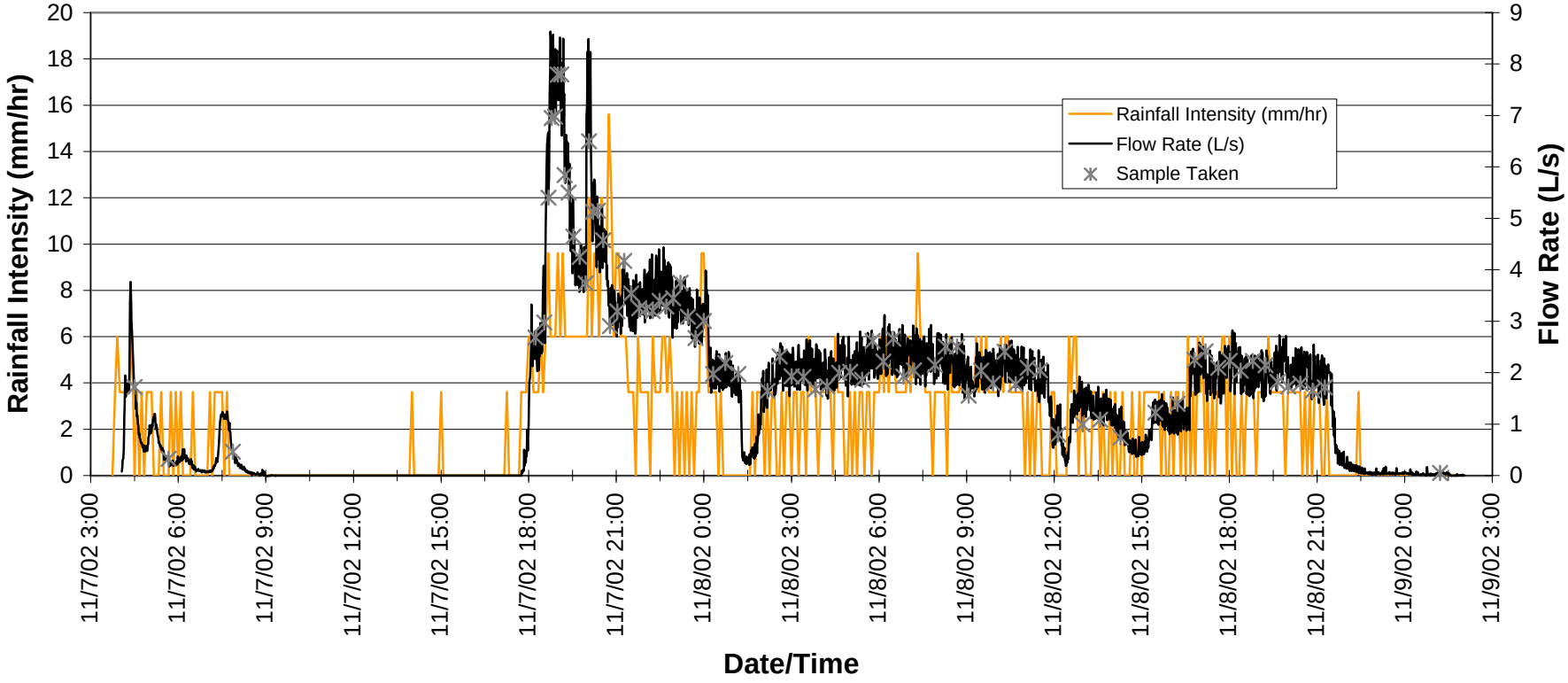
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	07/17/02 14:20	Start Date/Time:	07/17/02 14:22	Start Date/Time:	07/17/02 14:28
Stop Date/Time:	07/17/02 16:55	Stop Date/Time:	07/17/02 17:38	Stop Date/Time:	07/17/02 17:30
Event Rain (mm):	17.70	Total Flow Volume (L):	584	Estimated Percent Capture:	94%
Max Intensity (mm/hr):	61.20	Peak Flow (L/s):	0.53	Successful Aliquots:	11
		Observed Runoff Coefficient:	0.004		

Notes: First thunderstorm of season. No Caltrans-defined precipitation event identified. Note Caltrans approval date on output.

Event Summary

Site: Snow Creek (3-219)
Event: 2002-02

Catchment Area (ha): 0.83
Assumed Fraction Runoff/Rain Volume: 0.7



Rain Data (user-defined event)		*Runoff Data*		*Sample Data*	
Start Date/Time:	11/07/02 03:45	Start Date/Time:	11/07/02 04:04	Start Date/Time:	11/07/02 04:30
Stop Date/Time:	11/08/02 22:25	Stop Date/Time:	11/09/02 02:03	Stop Date/Time:	11/09/02 01:13
Event Rain (mm):	102.60	Total Flow Volume (L):	240037	Estimated Percent Capture:	99%
Max Intensity (mm/hr):	15.60	Peak Flow (L/s):	8.63	Successful Aliquots:	79
		Obs. Fraction Runoff/Rain Volume:	0.282		

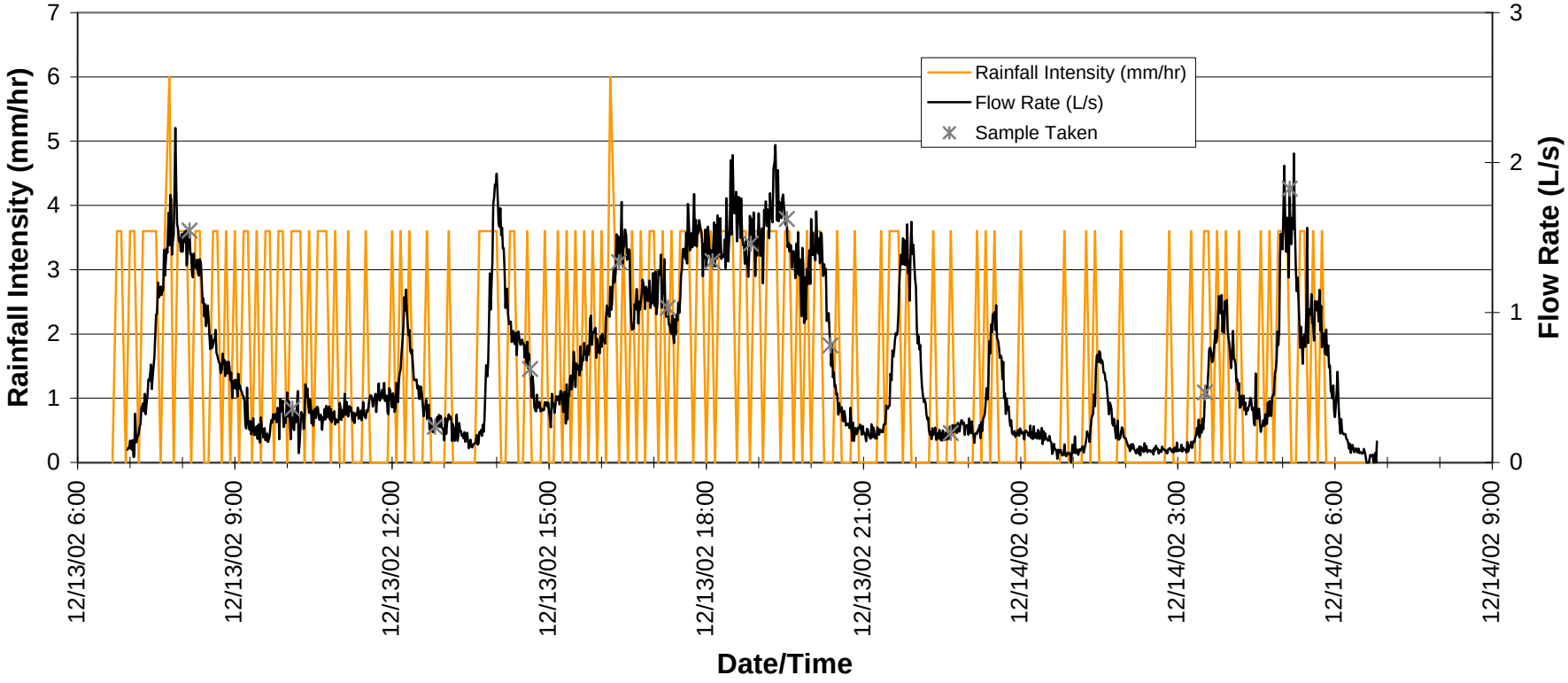
Notes: Bottle replaced 11/8.

Caltrans-defined Rain Event Override Authorization: No recorded Caltrans authorization.

Event Summary

Site: Snow Creek (3-219)
Event: 2003-03

Catchment Area (ha): 0.83
Assumed Fraction Runoff/Rain Volume: 0.7



Rain Data (user-defined event)		*Runoff Data*		*Sample Data*	
Start Date/Time:	12/13/02 06:40	Start Date/Time:	12/13/02 06:57	Start Date/Time:	12/13/02 08:08
Stop Date/Time:	12/14/02 05:45	Stop Date/Time:	12/14/02 06:48	Stop Date/Time:	12/14/02 05:08
Event Rain (mm):	37	Total Flow Volume (L):	55401	Estimated Percent Capture:	87%
Max Intensity (mm/hr):	6.00	Peak Flow (L/s):	2.23	Successful Aliquots:	13
		Obs. Fraction Runoff/Rain Volume:	0.180		

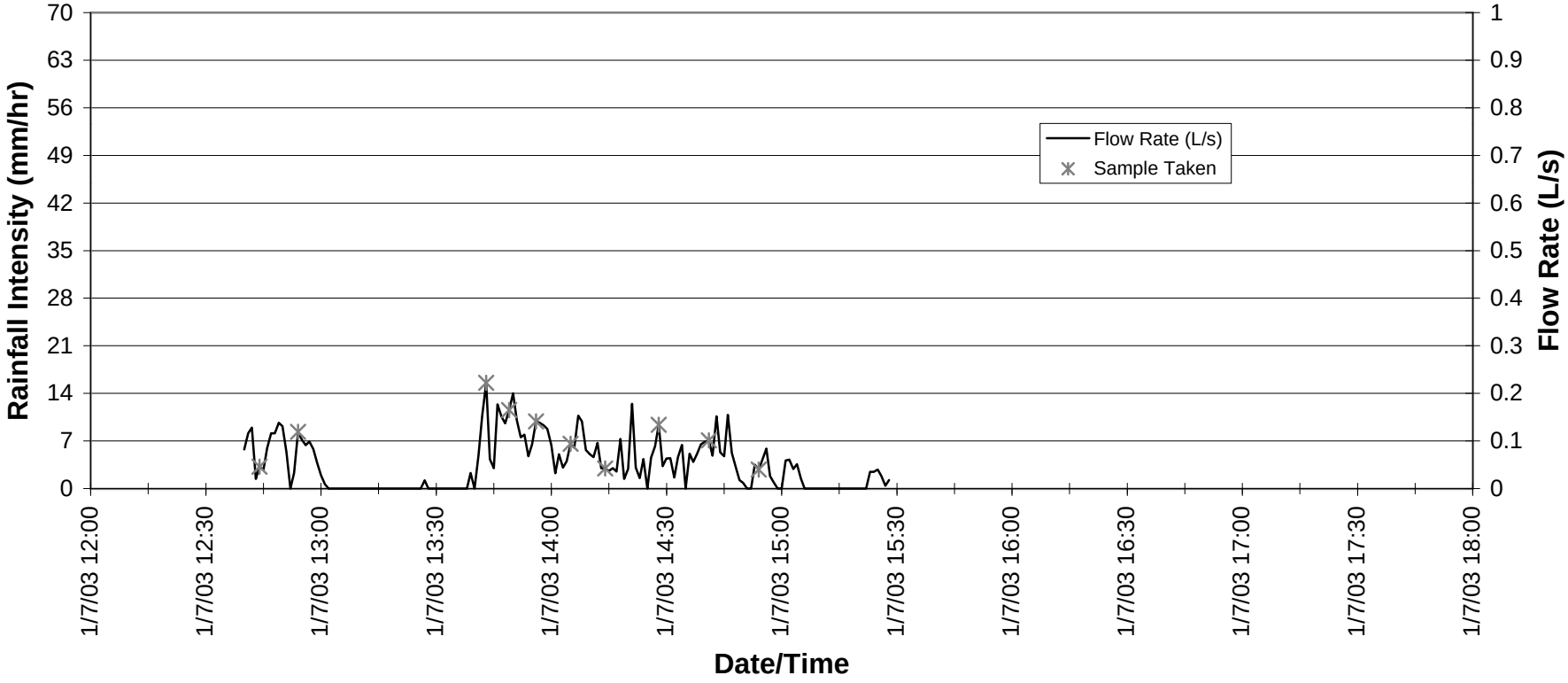
Notes: Caltrans-defined rain stop time not identified. Last non-zero rain record used as stop time.

Caltrans-defined Rain Event Override Authorization: No recorded Caltrans authorization.

Event Summary

Site: Snow Creek (3-219)
Event: 2002-04

Catchment Area (ha): 0.83
Assumed Fraction Runoff/Rain Volume: 0.7



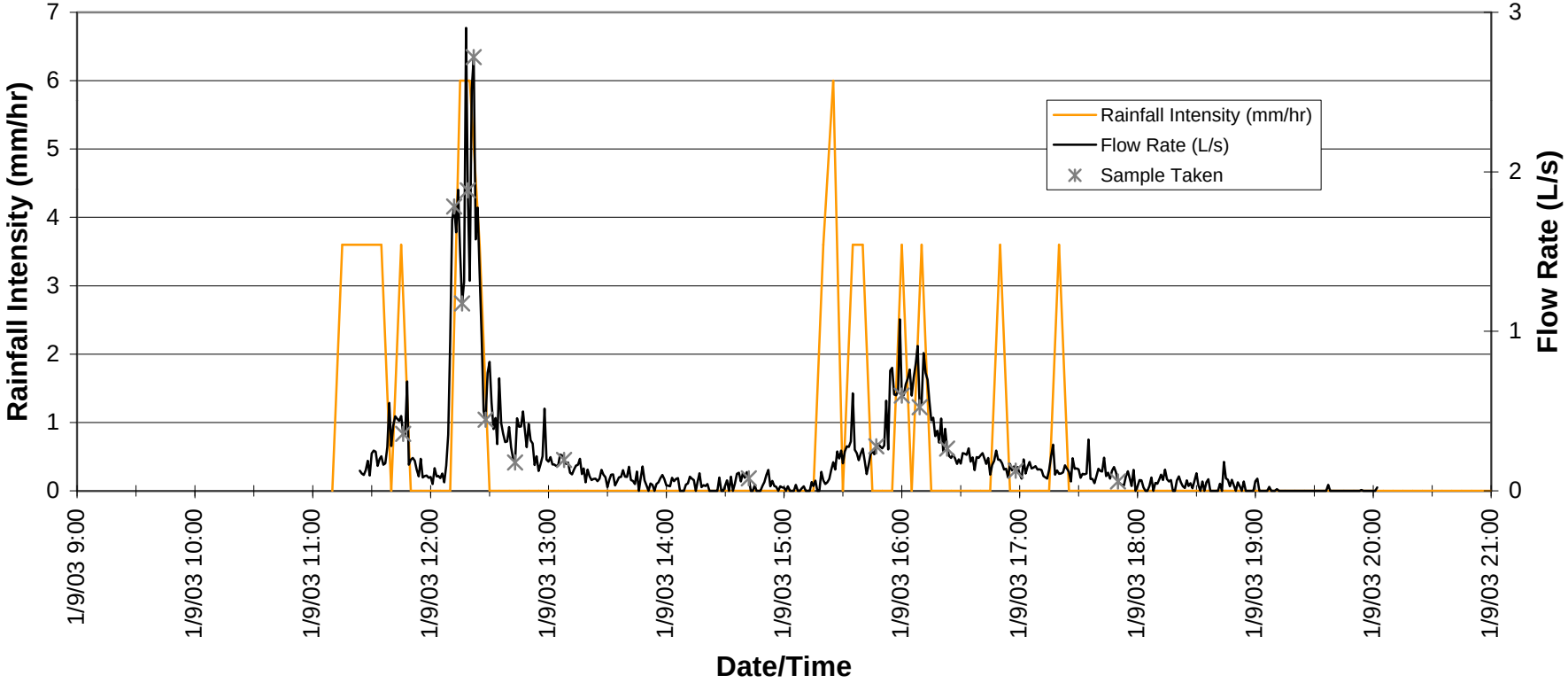
Runoff Data		*Sample Data*	
Start Date/Time:	01/07/03 12:40	Start Date/Time:	01/07/03 12:44
Stop Date/Time:	01/07/03 15:28	Stop Date/Time:	01/07/03 14:54
Total Flow Volume (L):	503	Estimated Percent Capture:	89%
Peak Flow (L/s):	0.22	Successful Aliquots:	10

Notes: Snowmelt event

Event Summary

Site: Snow Creek (3-219)
Event: 2002-05

Catchment Area (ha): 0.83
Assumed Fraction Runoff/Rain Volume: 0.7



Rain Data

Start Date/Time:	01/09/03 11:10
Stop Date/Time:	01/09/03 17:20
Event Rain (mm):	6.
Max Intensity (mm/hr):	6.00

Runoff Data

Start Date/Time:	01/09/03 11:24
Stop Date/Time:	01/09/03 20:02
Total Flow Volume (L):	6151
Peak Flow (L/s):	2.90
Obs. Fraction Runoff/Rain Volume:	0.124

Sample Data

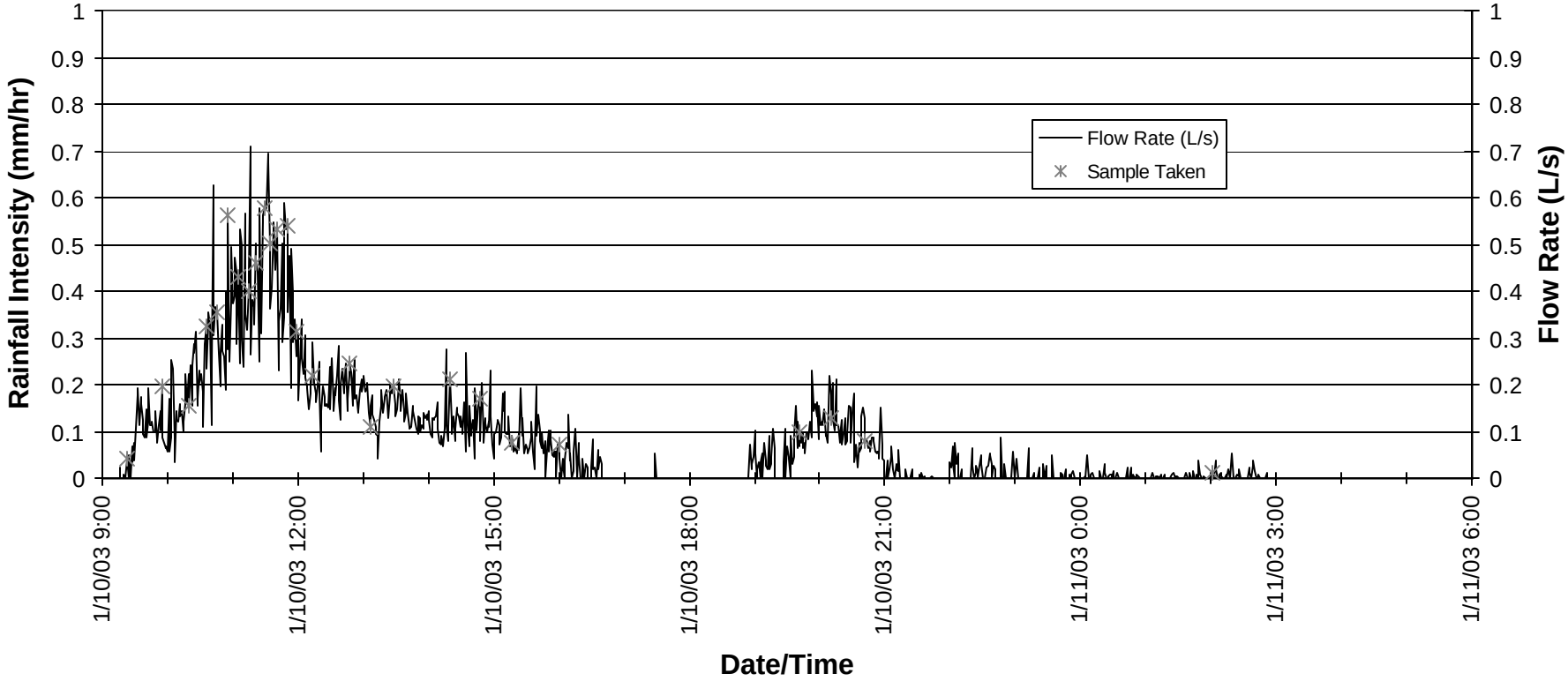
Start Date/Time:	01/09/03 11:46
Stop Date/Time:	01/09/03 17:50
Estimated Percent Capture:	91%
Successful Aliquots:	15

Notes:

Event Summary

Site: Snow Creek (3-219)
Event: 2002-06

Catchment Area (ha): 0.83
Assumed Fraction Runoff/Rain Volume: 0.7



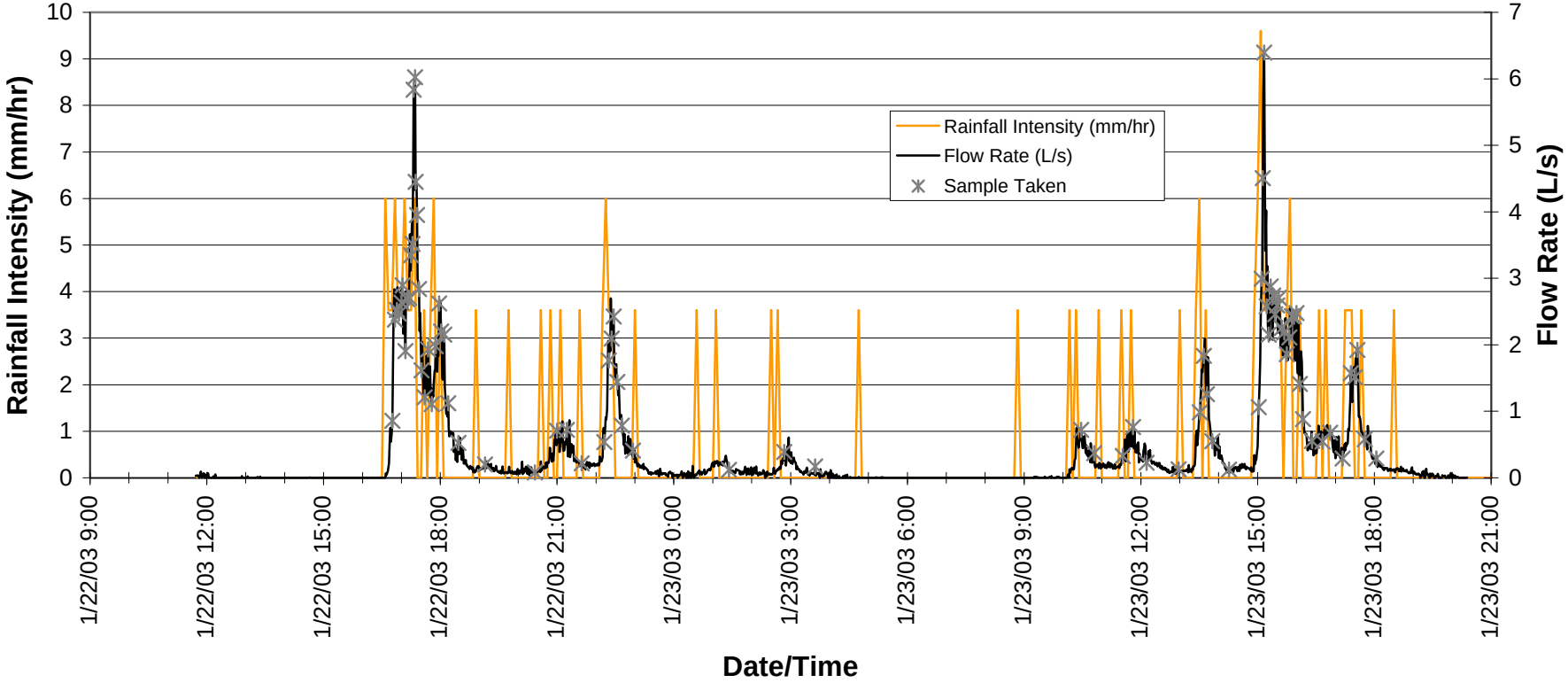
Runoff Data		*Sample Data*	
Start Date/Time:	01/10/03 09:16	Start Date/Time:	01/10/03 09:23
Stop Date/Time:	01/11/03 05:51	Stop Date/Time:	01/11/03 02:02
Total Flow Volume (L):	5426	Estimated Percent Capture:	100%
Peak Flow (L/s):	0.71	Successful Aliquots:	26

Notes: Snow melt in rain gage cause erroneous rainfall data. Rainfall data removed from graph.

Event Summary

Site: Snow Creek (3-219)
Event: 2002-07

Catchment Area (ha): 0.83
Assumed Fraction Runoff/Rain Volume: 0.7



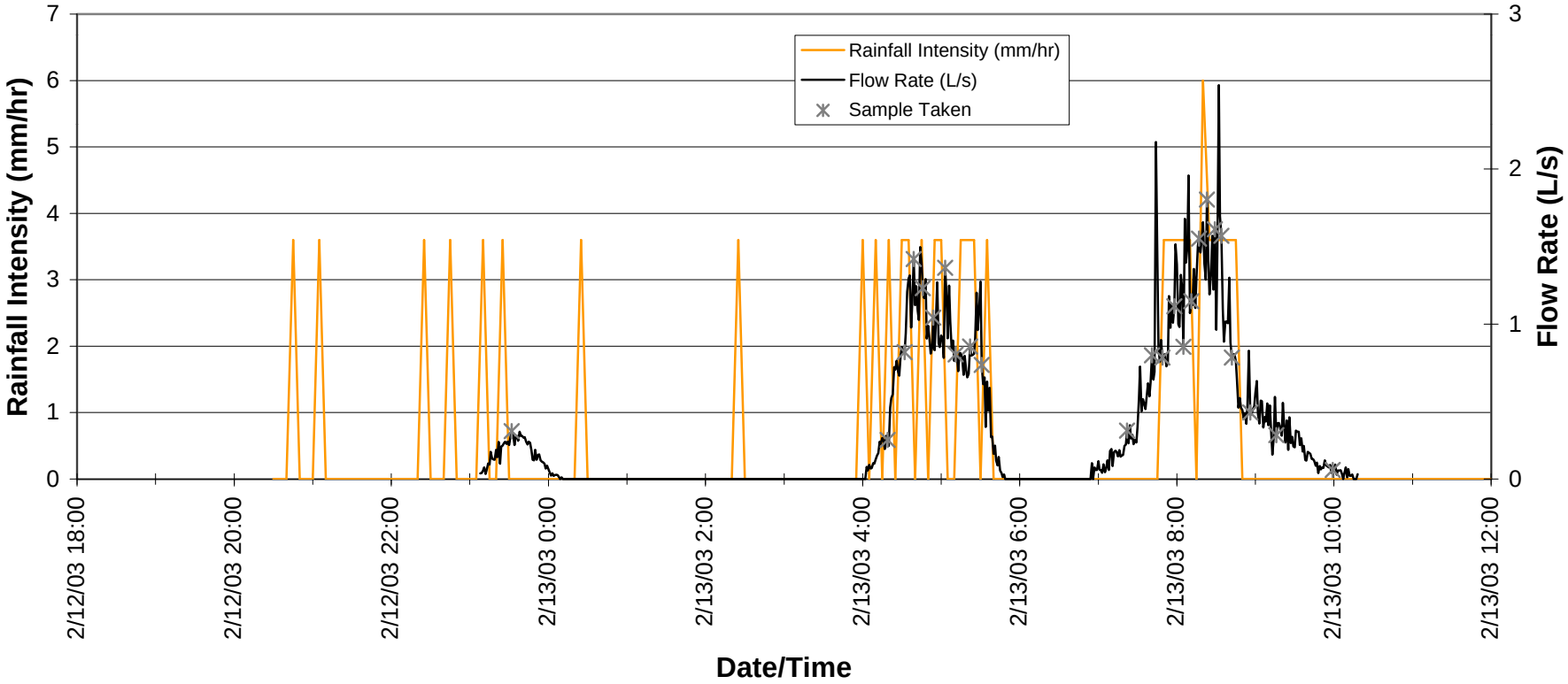
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	01/22/03 16:35	Start Date/Time:	01/22/03 11:43	Start Date/Time:	01/22/03 16:46
Stop Date/Time:	01/23/03 18:30	Stop Date/Time:	01/23/03 20:23	Stop Date/Time:	01/23/03 18:03
Event Rain (mm):	20	Total Flow Volume (L):	41846	Estimated Percent Capture:	97%
Max Intensity (mm/hr):	9.60	Peak Flow (L/s):	6.40	Successful Aliquots:	81
		Obs. Fraction Runoff/Rain Volume:	0.252		

Notes:

Event Summary

Site: Snow Creek (3-219)
Event: 2002-08

Catchment Area (ha): 0.83
Assumed Fraction Runoff/Rain Volume: 0.7



Rain Data (user-defined event)		*Runoff Data*		*Sample Data*	
Start Date/Time:	02/12/03 20:45	Start Date/Time:	02/12/03 23:08	Start Date/Time:	02/12/03 23:32
Stop Date/Time:	02/13/03 08:45	Stop Date/Time:	02/13/03 10:18	Stop Date/Time:	02/13/03 09:59
Event Rain (mm):	9.50	Total Flow Volume (L):	11755	Estimated Percent Capture:	98%
Max Intensity (mm/hr):	6.00	Peak Flow (L/s):	2.54	Successful Aliquots:	24
		Obs. Fraction Runoff/Rain Volume:	0.149		

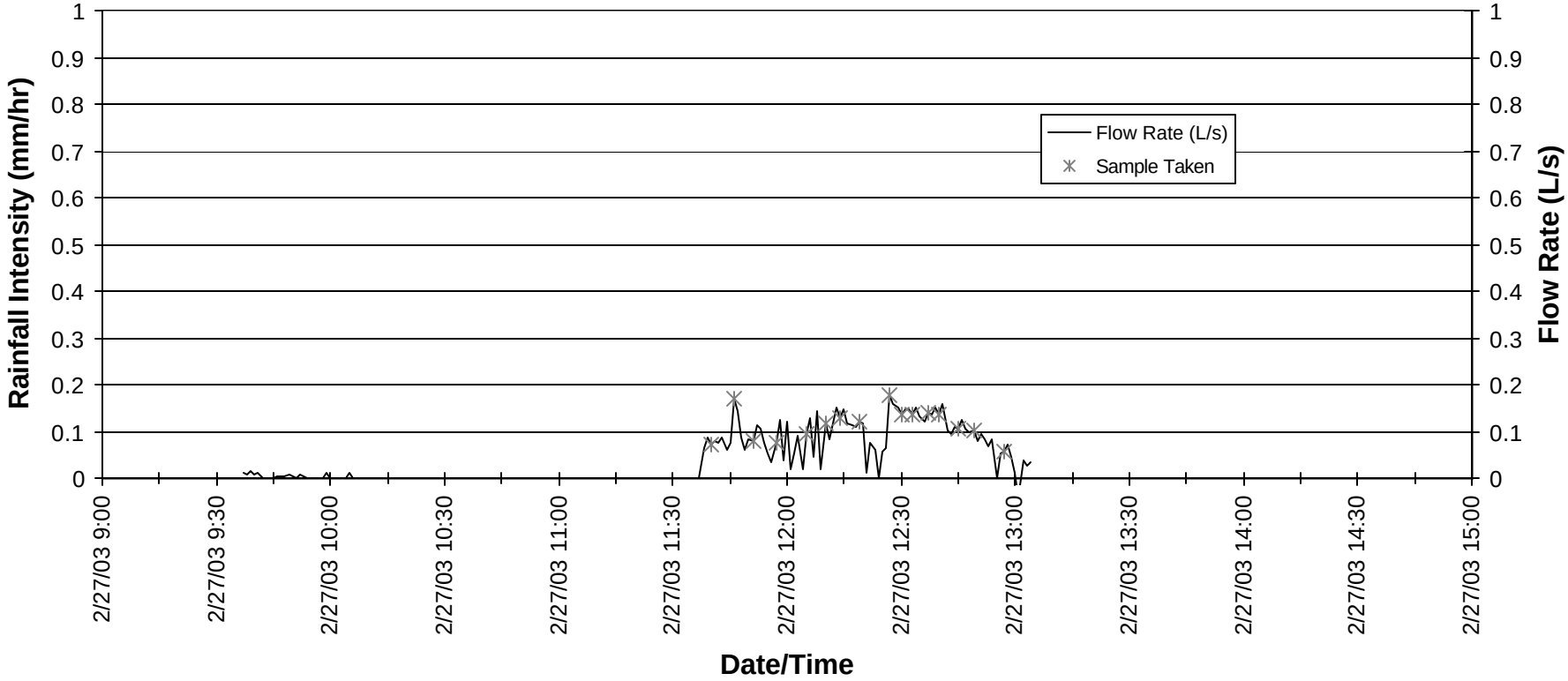
Notes: Rain/snow mix event.

Caltrans-defined Rain Event Override Authorization: No recorded Caltrans authorization.

Event Summary

Site: Snow Creek (3-219)
Event: 2002-09

Catchment Area (ha): 0.83
Assumed Fraction Runoff/Rain Volume: 0.7



Runoff Data		*Sample Data*	
Start Date/Time:	02/27/03 09:37	Start Date/Time:	02/27/03 11:40
Stop Date/Time:	02/27/03 13:04	Stop Date/Time:	02/27/03 12:57
Total Flow Volume (L):	478	Estimated Percent Capture:	94%
Peak Flow (L/s):	0.18	Successful Aliquots:	16

Notes: Snowmelt event.

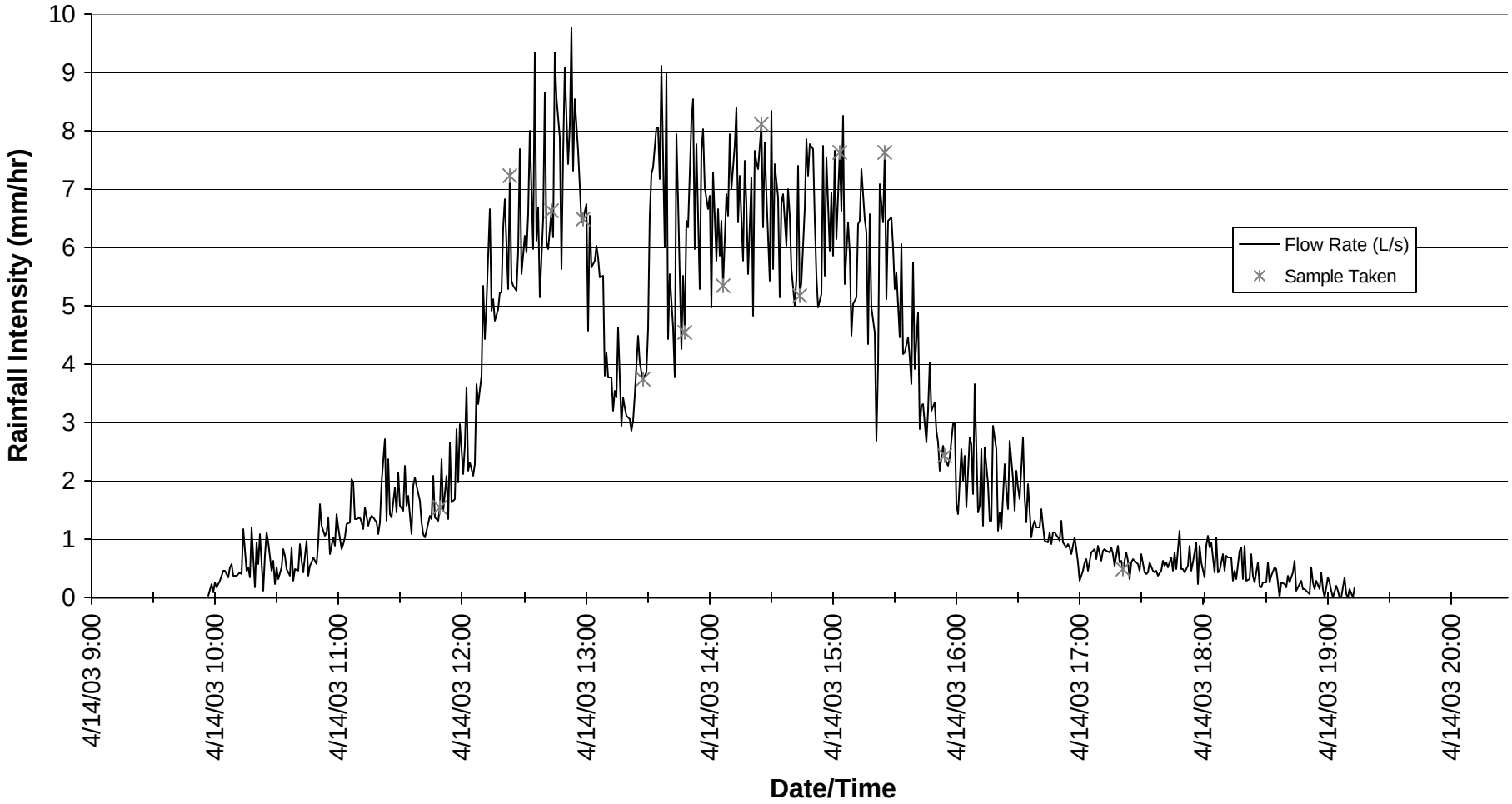
Event Summary

Site: Snow Creek (3-219)

Event: 2002-10

Catchment Area (ha): 0.8

Assumed Fraction Runoff/Rain Volume: 0



Runoff Data

Start Date/Time: 04/14/03 09:57

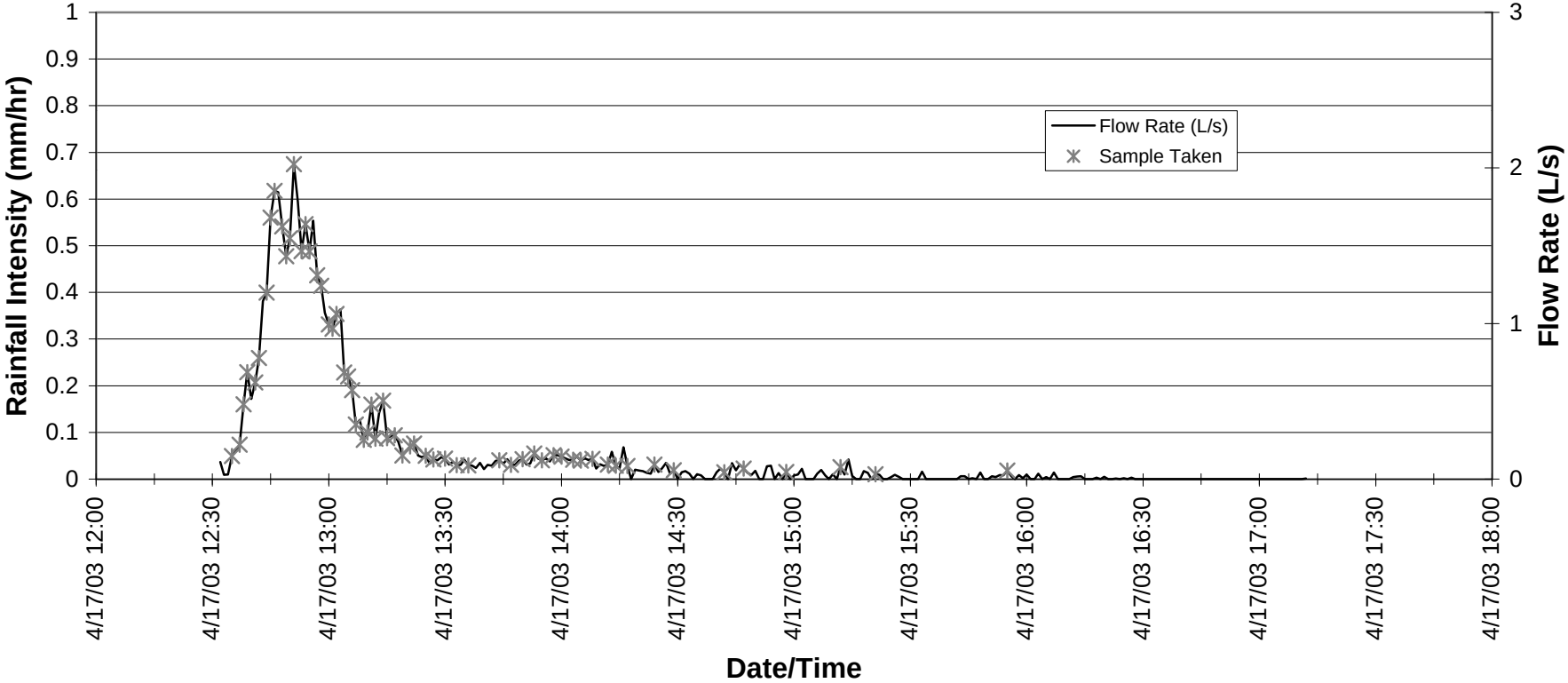
Sample Data

Start Date/Time: 04/14/03 11:

Event Summary

Site: Snow Creek (3-219)
Event: 2002-11

Catchment Area (ha): 0.83
Assumed Fraction Runoff/Rain Volume: 0.7



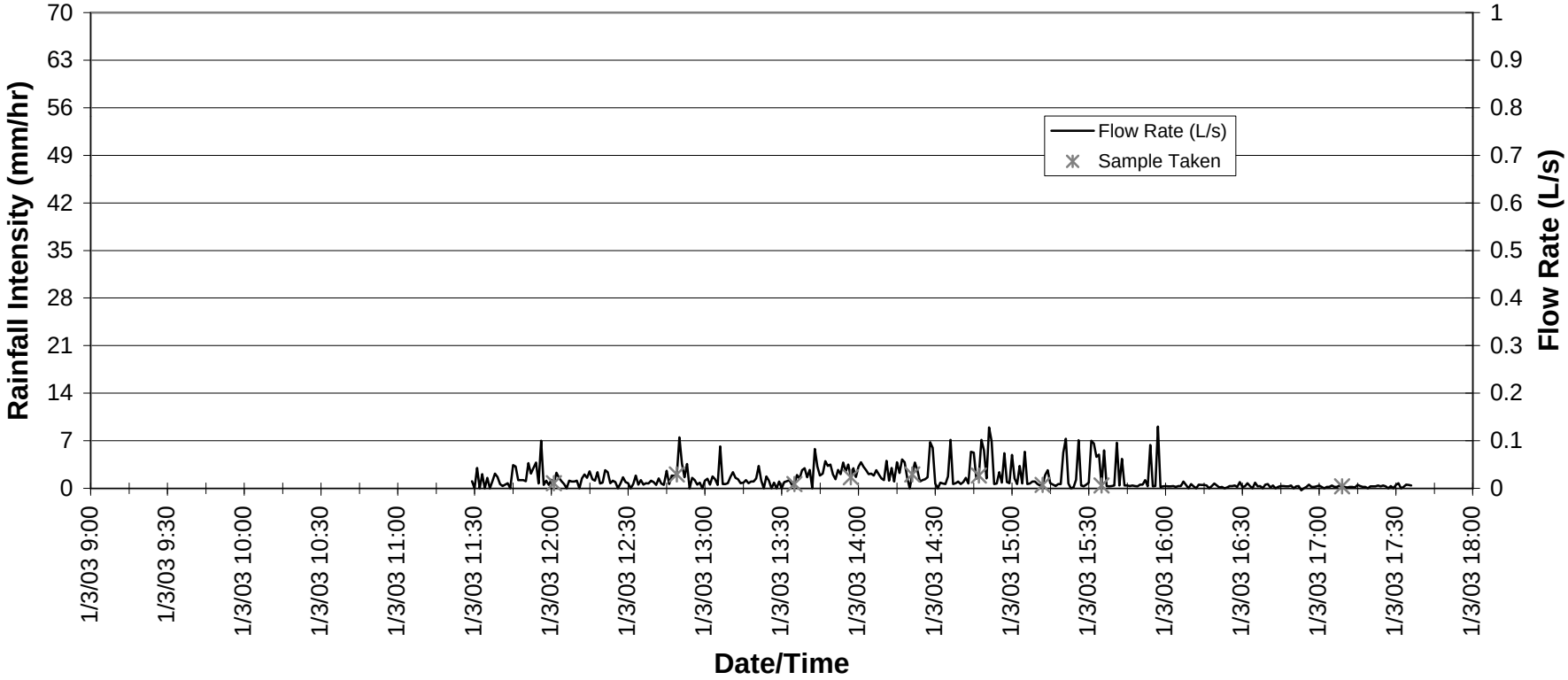
Runoff Data		*Sample Data*	
Start Date/Time:	04/17/03 12:32	Start Date/Time:	04/17/03 12:35
Stop Date/Time:	04/17/03 17:12	Stop Date/Time:	04/17/03 15:55
Total Flow Volume (L):	2988	Estimated Percent Capture:	99%
Peak Flow (L/s):	2.02	Successful Aliquots:	61

Notes: Snowmelt event.

Event Summary

Site: Brockway (3-220)
Event: 2002-01

Catchment Area (ha): 0.125
Assumed Fraction Runoff/Rain Volume: 0.9



Runoff Data

Start Date/Time:	01/03/03 11:29
Stop Date/Time:	01/03/03 17:36
Total Flow Volume (L):	451
Peak Flow (L/s):	0.13

Sample Data

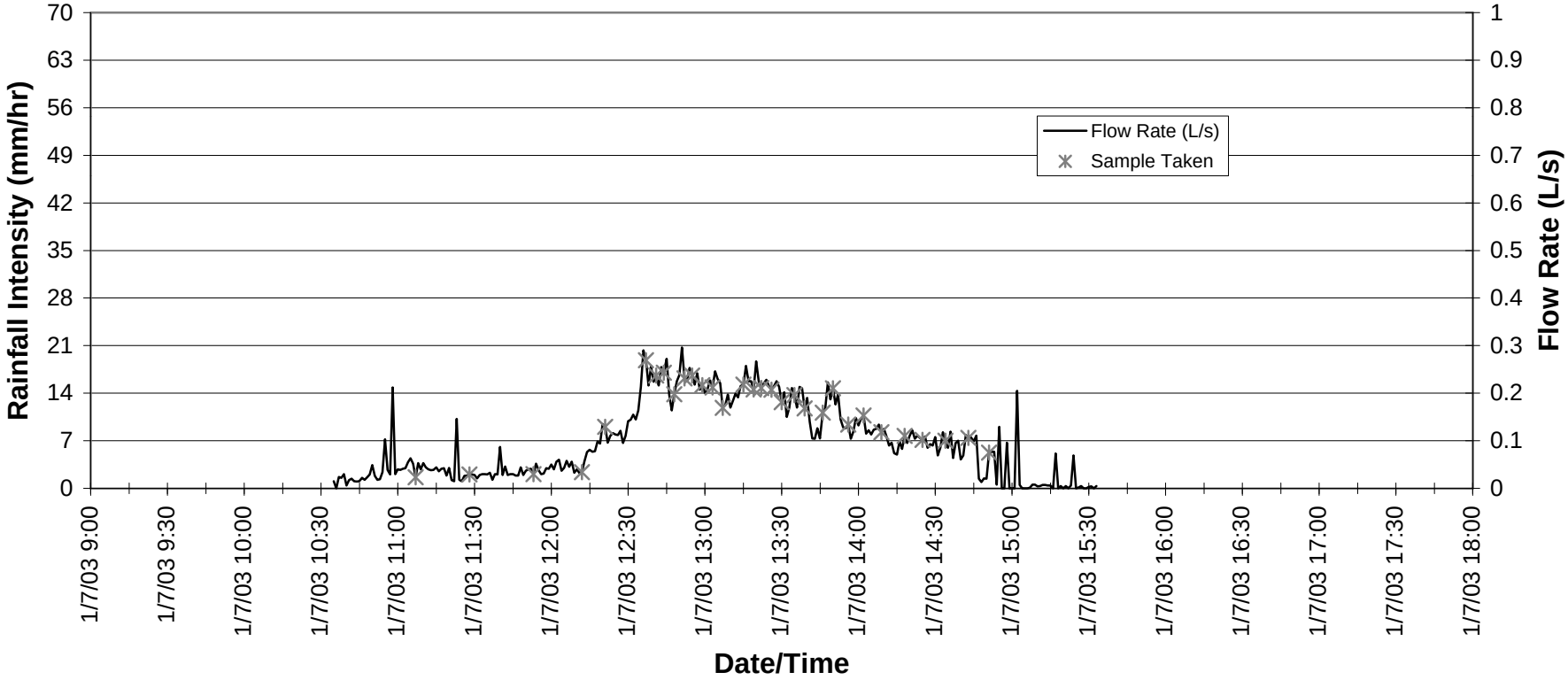
Start Date/Time:	01/03/03 12:01
Stop Date/Time:	01/03/03 17:09
Estimated Percent Capture:	89%
Successful Aliquots:	9

Notes: Snowmelt event.

Event Summary

Site: Brockway (3-220)
Event: 2002-02

Catchment Area (ha): 0.125
Assumed Fraction Runoff/Rain Volume: 0.9



Runoff Data

Start Date/Time:	01/07/03 10:35
Stop Date/Time:	01/07/03 15:33
Total Flow Volume (L):	1744
Peak Flow (L/s):	0.30

Sample Data

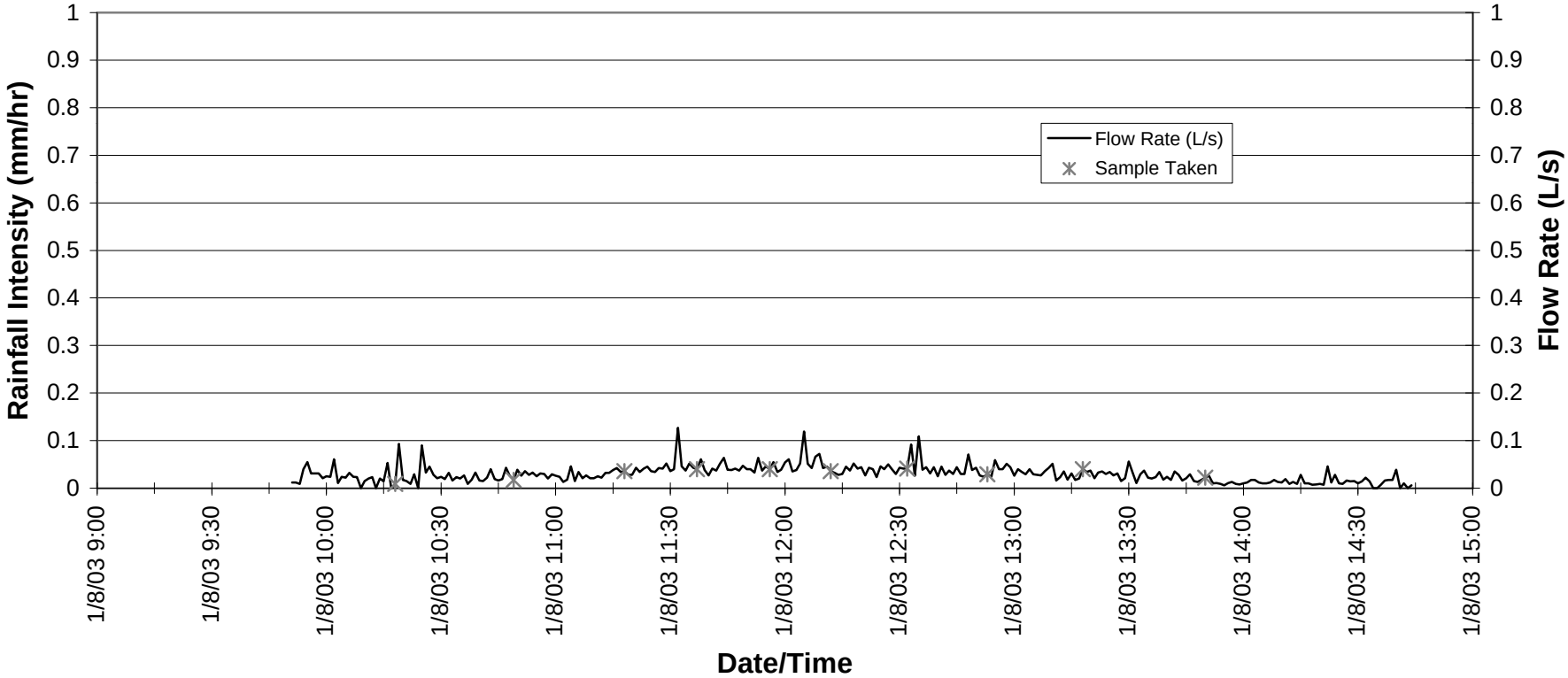
Start Date/Time:	01/07/03 11:07
Stop Date/Time:	01/07/03 14:51
Estimated Percent Capture:	87%
Successful Aliquots:	31

Notes:

Event Summary

Site: Brockway (3-220)
Event: 2002-03

Catchment Area (ha): 0.125
Assumed Fraction Runoff/Rain Volume: 0.9



Runoff Data

Start Date/Time:	01/08/03 09:51
Stop Date/Time:	01/08/03 14:44
Total Flow Volume (L):	530
Peak Flow (L/s):	0.13

Sample Data

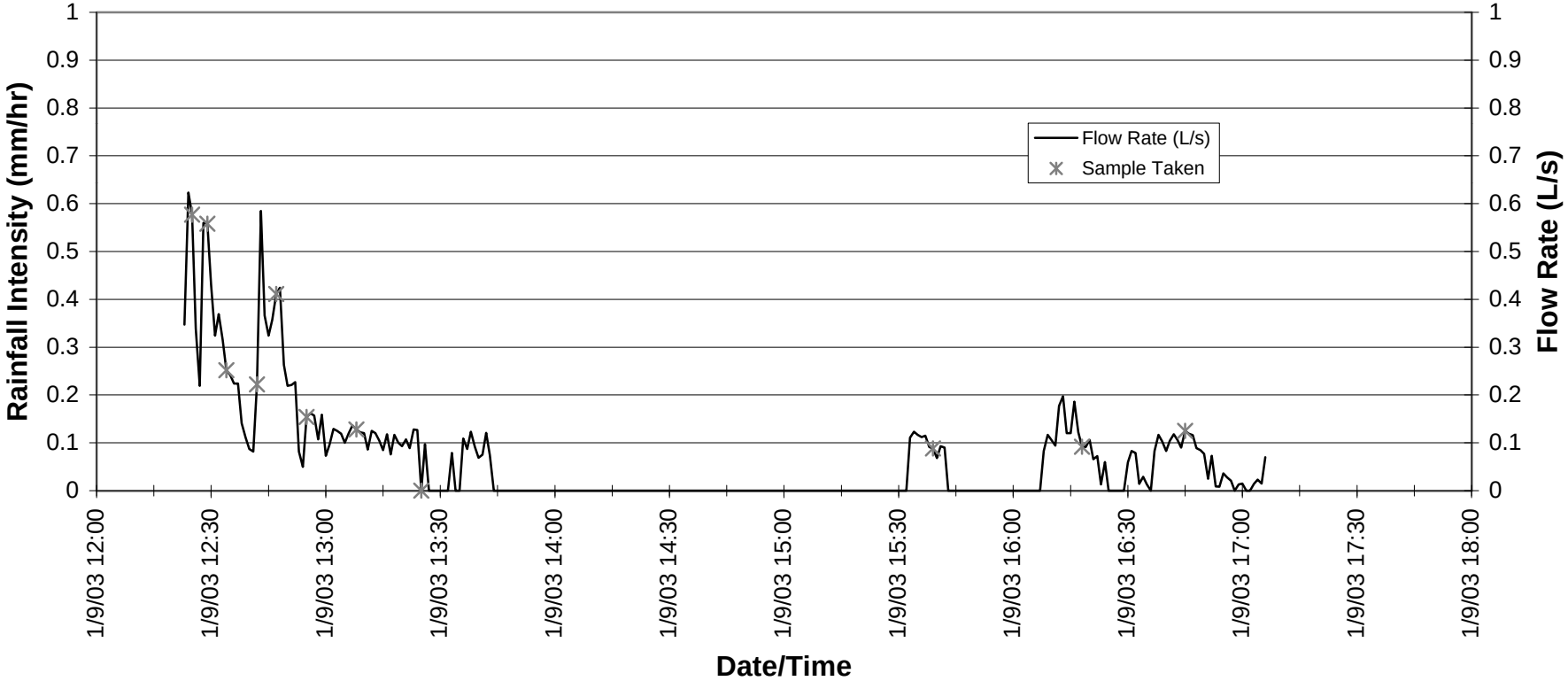
Start Date/Time:	01/08/03 10:18
Stop Date/Time:	01/08/03 13:50
Estimated Percent Capture:	85%
Successful Aliquots:	10

Notes:

Event Summary

Site: Brockway (3-220)
Event: 2002-04

Catchment Area (ha): 0.125
Assumed Fraction Runoff/Rain Volume: 0.9



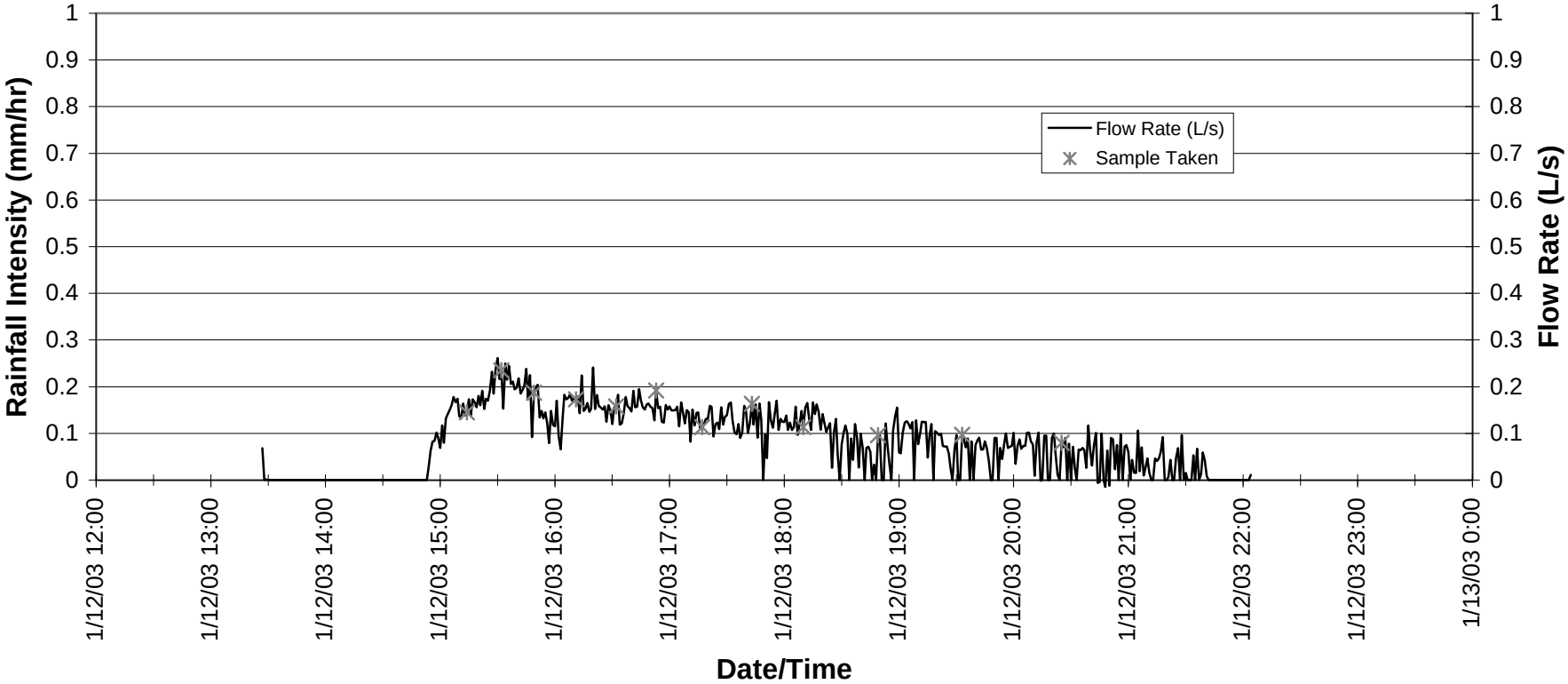
Runoff Data		*Sample Data*	
Start Date/Time:	01/09/03 12:23	Start Date/Time:	01/09/03 12:25
Stop Date/Time:	01/09/03 17:06	Stop Date/Time:	01/09/03 16:45
Total Flow Volume (L):	1131	Estimated Percent Capture:	90%
Peak Flow (L/s):	0.62	Successful Aliquots:	11

Notes: Snow melt in rain gage caused erroneous rainfall data. Rainfall data removed from graph.

Event Summary

Site: Brockway (3-220)
Event:

Catchment Area (ha): 0.125
Assumed Fraction Runoff/Rain Volume: 0.9



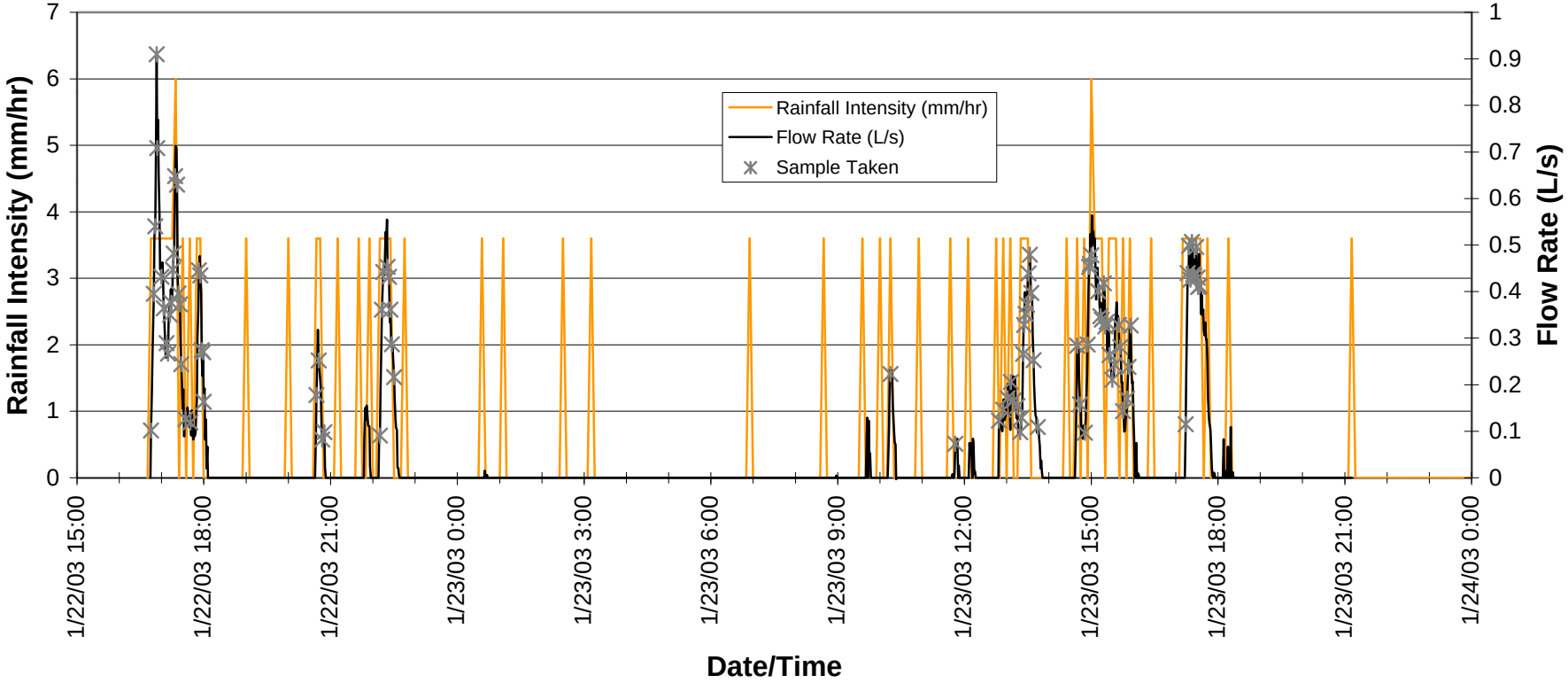
Runoff Data		*Sample Data*	
Start Date/Time:	01/12/03 13:27	Start Date/Time:	01/12/03 15:14
Stop Date/Time:	01/12/03 22:04	Stop Date/Time:	01/12/03 20:25
Total Flow Volume (L):	2533	Estimated Percent Capture:	87%
Peak Flow (L/s):	0.26	Successful Aliquots:	12

Notes: Snowfall event.

Event Summary

Site: Brockway (3-220)
Event: 2002-06

Catchment Area (ha): 0.125
Assumed Fraction Runoff/Rain Volume: 0.9



Rain Data

Start Date/Time:	01/22/03 16:40
Stop Date/Time:	01/23/03 21:10
Event Rain (mm):	19.90
Max Intensity (mm/hr):	6.00

Runoff Data

Start Date/Time:	01/22/03 16:44
Stop Date/Time:	01/23/03 21:10
Total Flow Volume (L):	5367
Peak Flow (L/s):	0.91
Obs. Fraction Runoff/Rain Volume:	0.216

Sample Data

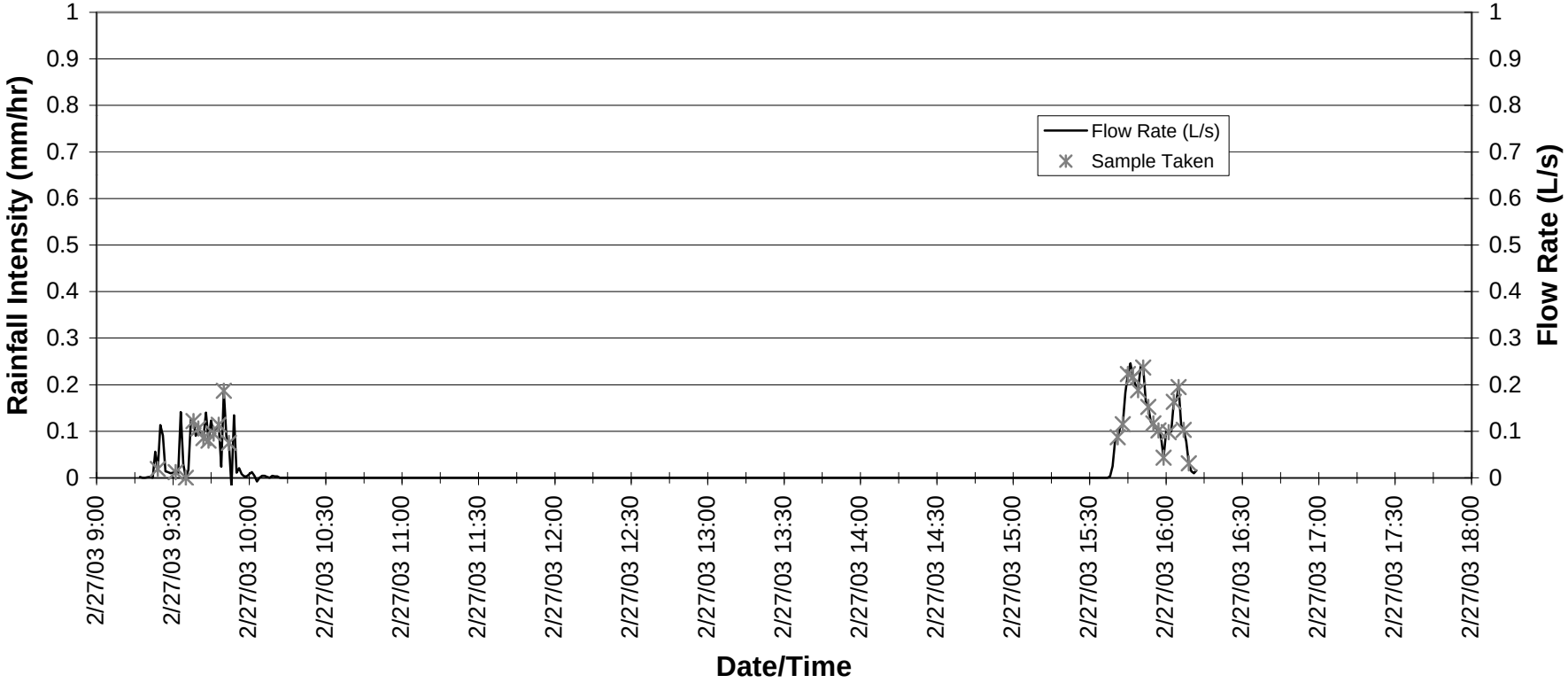
Start Date/Time:	01/22/03 16:45
Stop Date/Time:	01/23/03 17:34
Estimated Percent Capture:	90%
Successful Aliquots:	89

Notes:

Event Summary

Site: Brockway (3-220)
Event: 2002-07

Catchment Area (ha): 0.125
Assumed Fraction Runoff/Rain Volume: 0.9



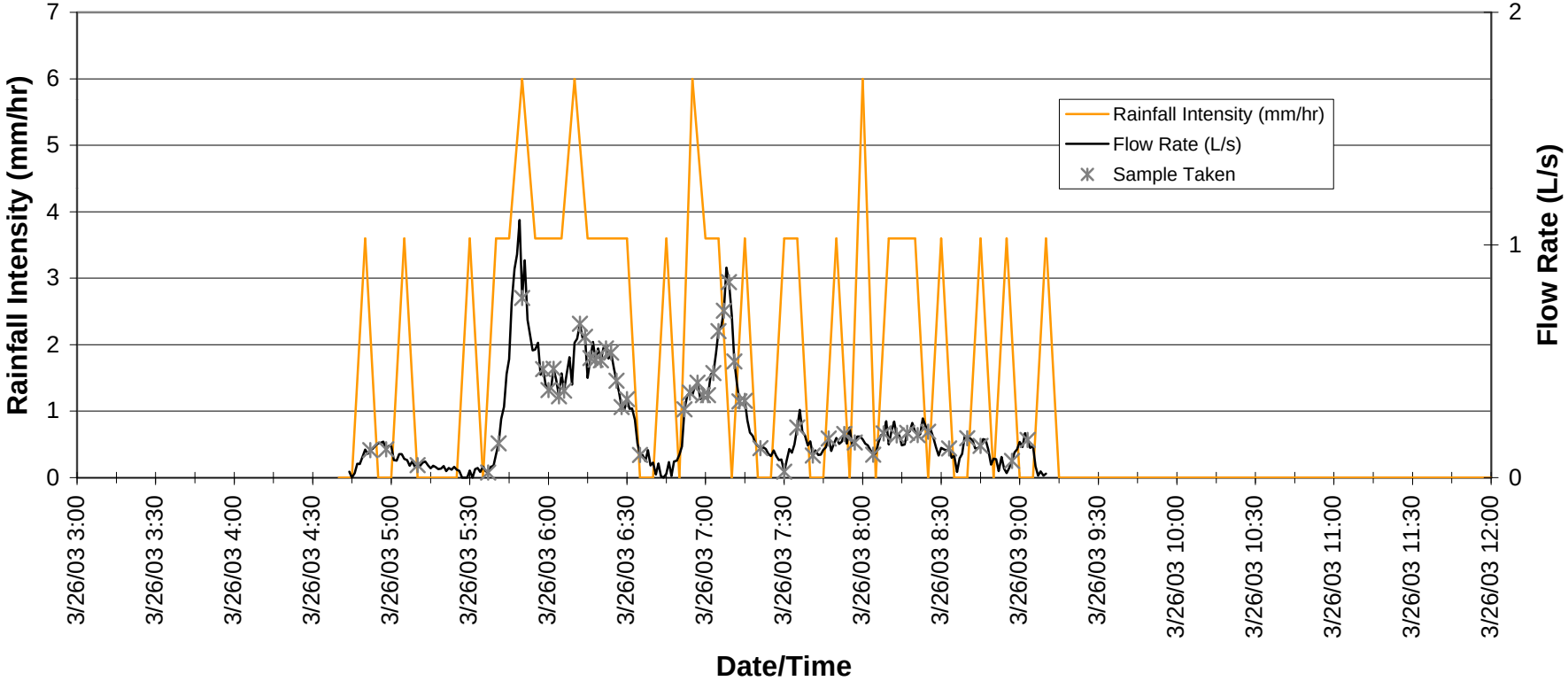
Runoff Data		*Sample Data*	
Start Date/Time:	02/27/03 09:17	Start Date/Time:	02/27/03 09:24
Stop Date/Time:	02/27/03 16:12	Stop Date/Time:	02/27/03 16:09
Total Flow Volume (L):	397	Estimated Percent Capture:	95%
Peak Flow (L/s):	0.25	Successful Aliquots:	26

Notes: Snowmelt event.

Event Summary

Site: Brockway (3-220)
Event: 2002-08

Catchment Area (ha): 0.125
Assumed Fraction Runoff/Rain Volume: 0.9



Rain Data

Start Date/Time:	03/26/03 04:50
Stop Date/Time:	03/26/03 09:10
Event Rain (mm):	9.80
Max Intensity (mm/hr):	6.00

Runoff Data

Start Date/Time:	03/26/03 04:44
Stop Date/Time:	03/26/03 09:10
Total Flow Volume (L):	3511
Peak Flow (L/s):	1.11
Obs. Fraction Runoff/Rain Volume:	0.287

Sample Data

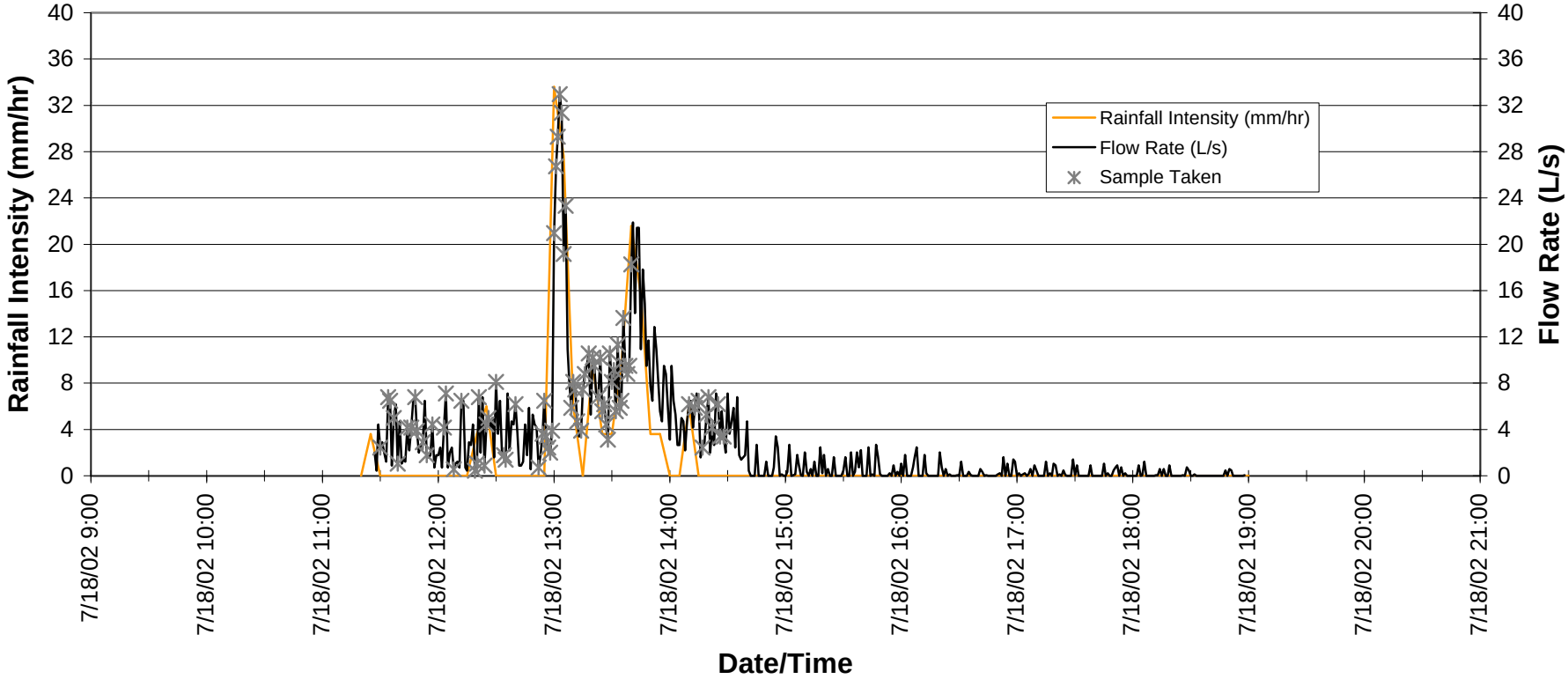
Start Date/Time:	03/26/03 04:52
Stop Date/Time:	03/26/03 09:03
Estimated Percent Capture:	90%
Successful Aliquots:	52

Notes: Bottle replaced one time.

Event Summary

Site: Tahoe Airport Effluent (3-222)
Event: 2002-01

Catchment Area (ha): 0.138
Assumed Runoff Coefficient: 0.8



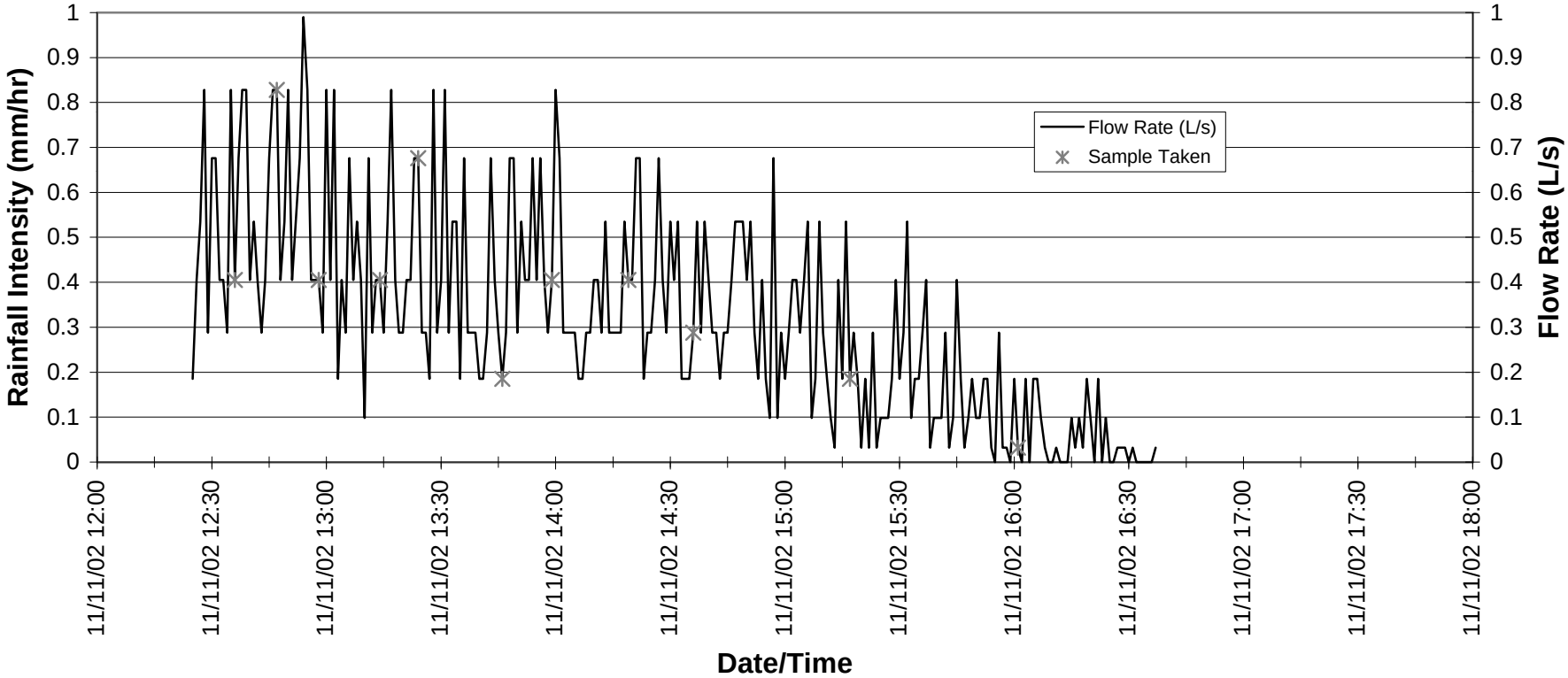
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	07/18/02 11:20	Start Date/Time:	07/18/02 11:27	Start Date/Time:	07/18/02 11:30
Stop Date/Time:	07/18/02 14:10	Stop Date/Time:	07/18/02 18:58	Stop Date/Time:	07/18/02 14:28
Event Rain (mm):	13.40	Total Flow Volume (L):	74709	Estimated Percent Capture:	74%
Max Intensity (mm/hr):	33.60	Peak Flow (L/s):	32.96	Successful Aliquots:	78
		Observed Runoff Coefficient:	4.040		

Notes: Thunderstorm event. Missed triggers at end of runoff cycle due to low flow rates causing intake strainer to pump air. No Caltrans-defined precipitation event identified. Note Caltrans approval date on output.

Event Summary

Site: Tahoe Airport Effluent (3-222)
Event: 2002-02

Catchment Area (ha): 0.138
Assumed Runoff Coefficient: 0.8



Runoff Data

Start Date/Time:	11/11/02 12:25
Stop Date/Time:	11/11/02 16:37
Total Flow Volume (L):	4887
Peak Flow (L/s):	0.99

Sample Data

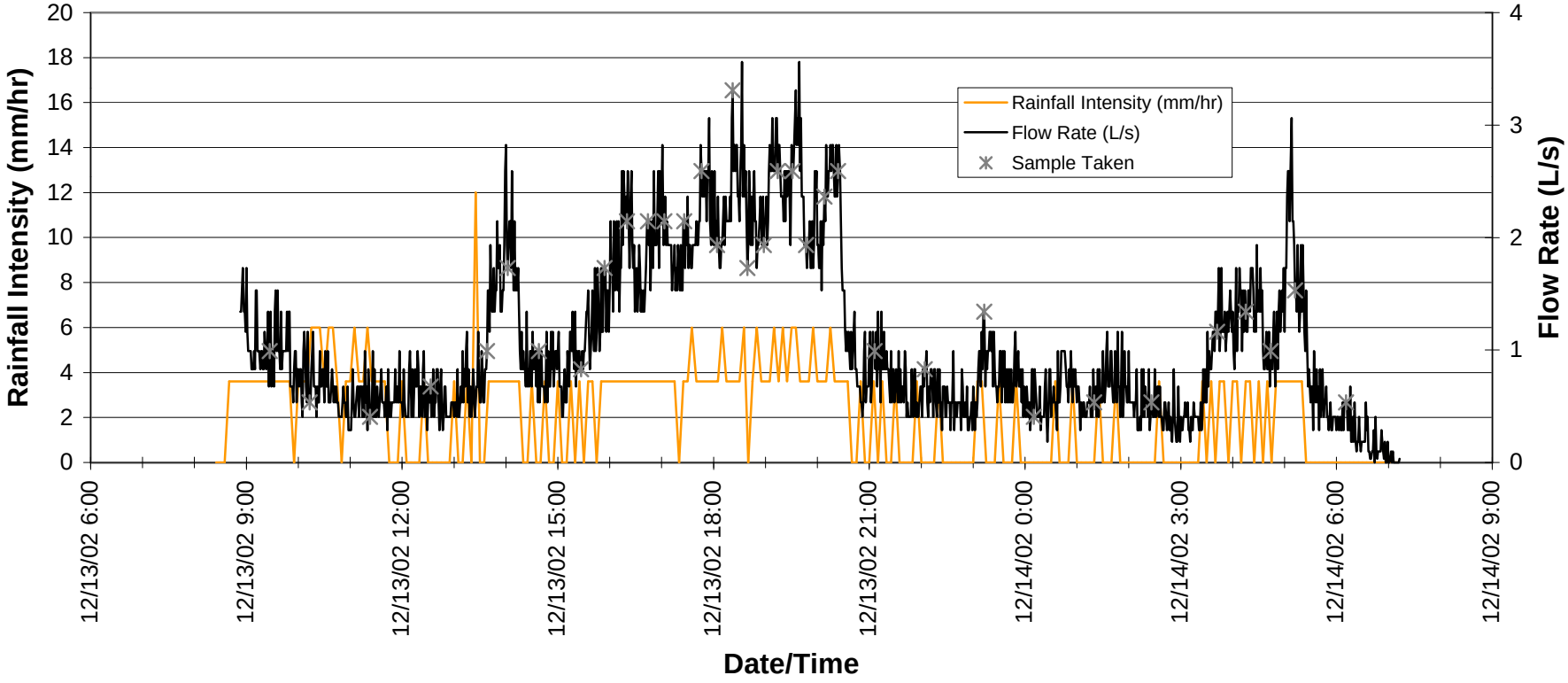
Start Date/Time:	11/11/02 12:36
Stop Date/Time:	11/11/02 16:01
Estimated Percent Capture:	91%
Successful Aliquots:	11

Notes: Snowmelt event. Snowmelt in rain gage.

Event Summary

Site: Tahoe Airport Effluent (3-222)
Event: 2003-03

Catchment Area (ha): 0.138
Assumed Fraction Runoff/Rain Volume: 0.8



Rain Data (user-defined event)		*Runoff Data*		*Sample Data*	
Start Date/Time:	12/13/02 08:25	Start Date/Time:	12/13/02 08:53	Start Date/Time:	12/13/02 09:27
Stop Date/Time:	12/14/02 05:20	Stop Date/Time:	12/14/02 07:13	Stop Date/Time:	12/14/02 06:11
Event Rain (mm):	47.30	Total Flow Volume (L):	85426	Estimated Percent Capture:	97%
Max Intensity (mm/hr):	12.00	Peak Flow (L/s):	3.56	Successful Aliquots:	34
		Obs. Fraction Runoff/Rain Volume:	1.309		

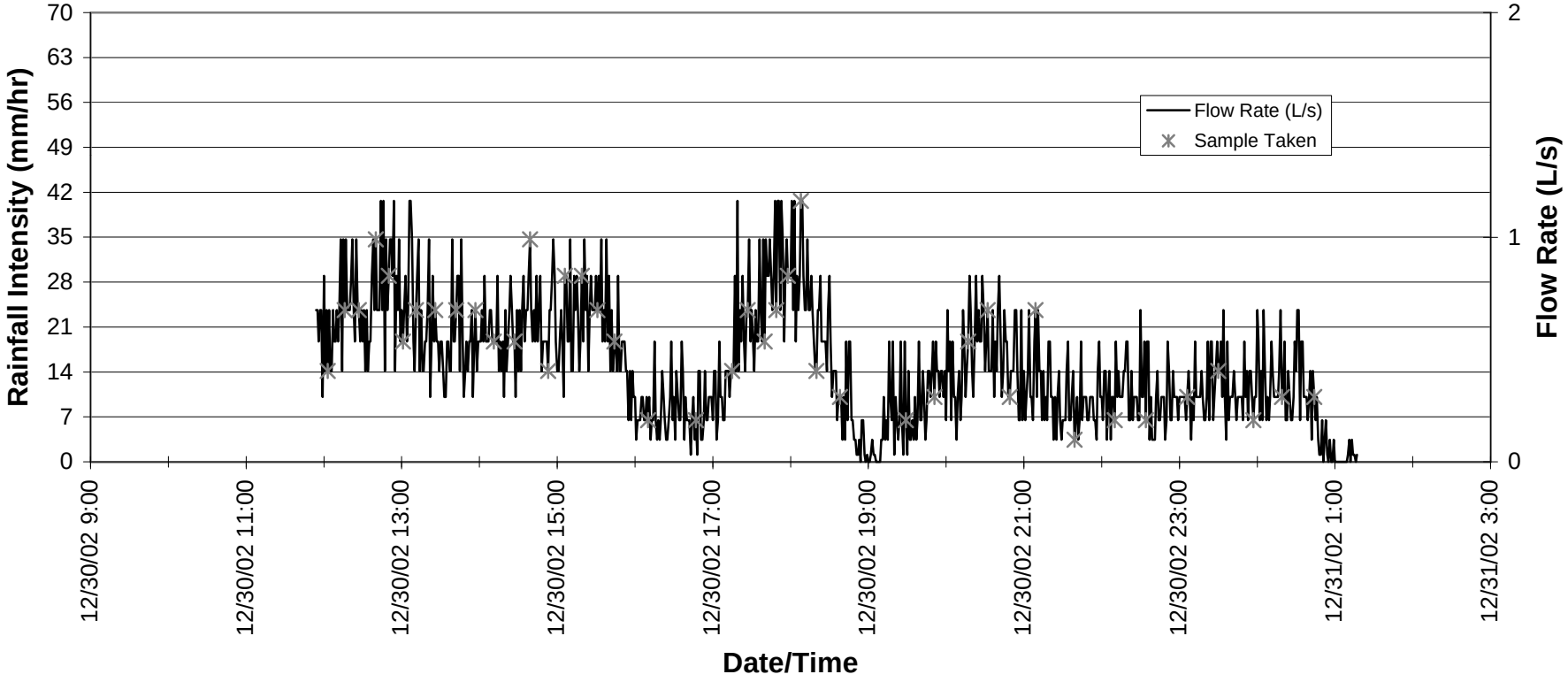
Notes: Rain-Snow mix event. Caltrans-defined rain stop time not identified. Last non-zero rain record used as stop time.

Caltrans-defined Rain Event Override Authorization: No recorded Caltrans authorization.

Event Summary

Site: Tahoe Airport Effluent (3-222)
Event: 2002-04

Catchment Area (ha): 0.138
Assumed Fraction Runoff/Rain Volume: 0.8



Runoff Data

Start Date/Time:	12/30/02 11:54
Stop Date/Time:	12/31/02 01:17
Total Flow Volume (L):	20956
Peak Flow (L/s):	1.16

Sample Data

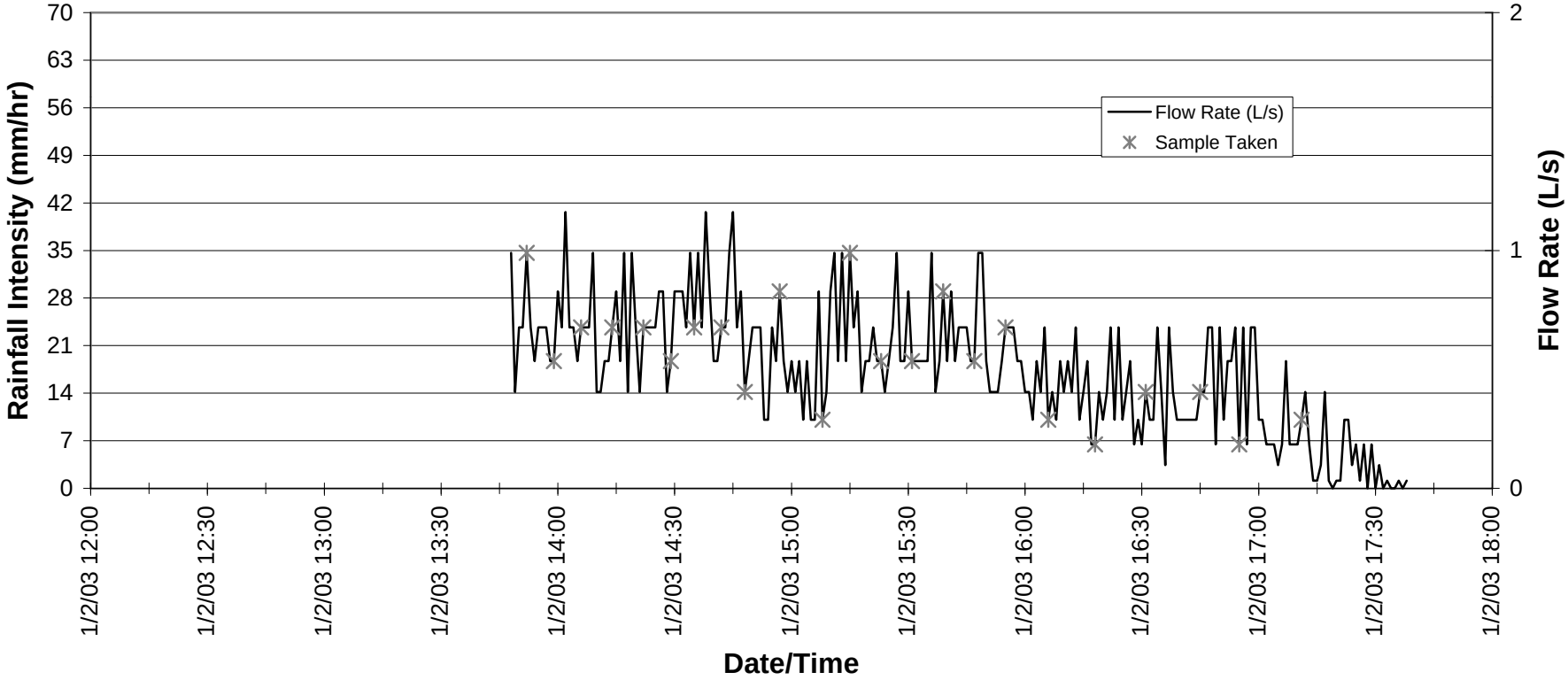
Start Date/Time:	12/30/02 12:03
Stop Date/Time:	12/31/02 00:44
Estimated Percent Capture:	98%
Successful Aliquots:	42

Notes: Snowmelt event

Event Summary

Site: Tahoe Airport Effluent (3-222)
Event: 2002-05

Catchment Area (ha): 0.138
Assumed Fraction Runoff/Rain Volume: 0.8



Runoff Data

Start Date/Time:	01/02/03 13:48
Stop Date/Time:	01/02/03 17:38
Total Flow Volume (L):	6933
Peak Flow (L/s):	1.16

Sample Data

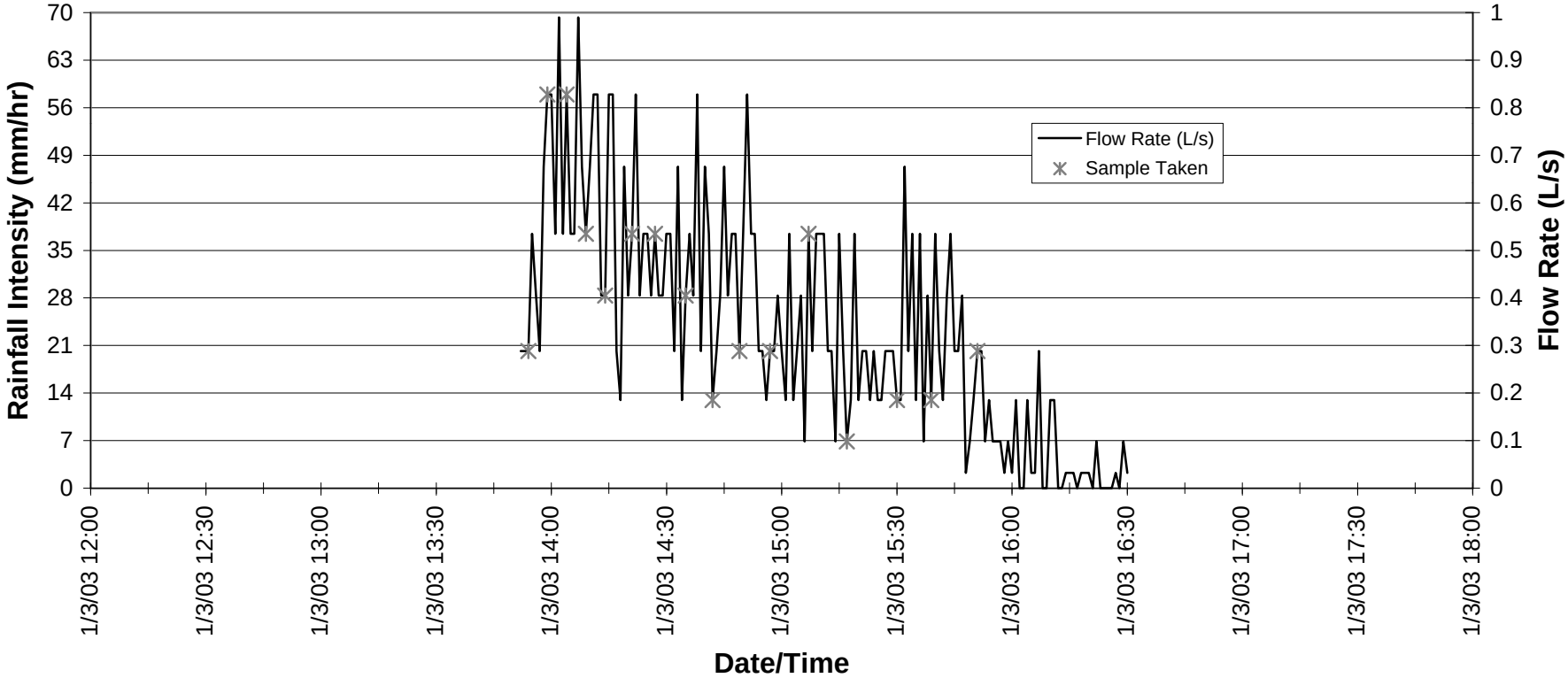
Start Date/Time:	01/02/03 13:52
Stop Date/Time:	01/02/03 17:11
Estimated Percent Capture:	95%
Successful Aliquots:	23

Notes: Snowmelt event

Event Summary

Site: Tahoe Airport Effluent (3-222)
Event: 2002-06

Catchment Area (ha): 3
Assumed Fraction Runoff/Rain Volume: 0.8



Runoff Data

Start Date/Time:	01/03/03 13:52
Stop Date/Time:	01/03/03 16:30
Total Flow Volume (L):	3199
Peak Flow (L/s):	0.99

Sample Data

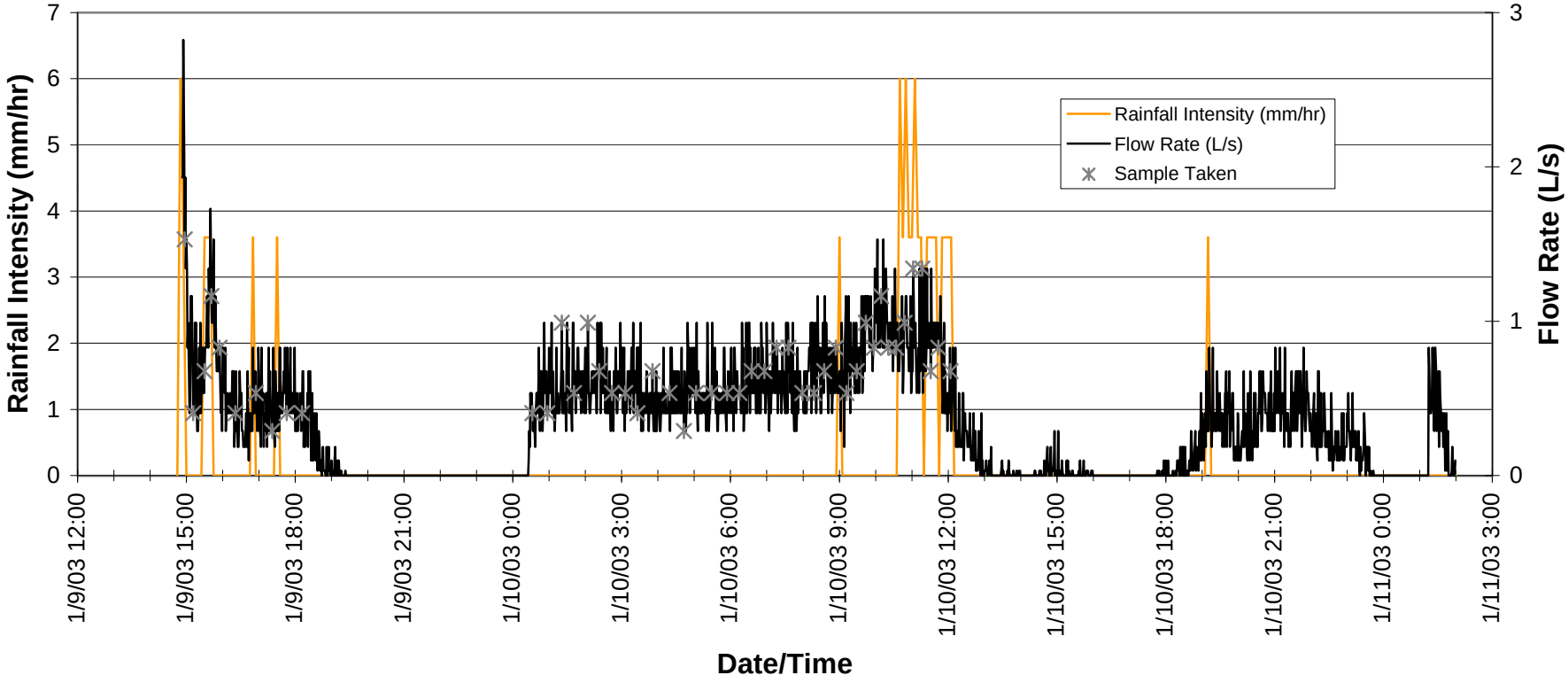
Start Date/Time:	01/03/03 13:54
Stop Date/Time:	01/03/03 15:51
Estimated Percent Capture:	94%
Successful Aliquots:	16

Notes: Snowmelt event.

Event Summary

Site: Tahoe Airport Effluent (3-222)
Event: 2002-07

Catchment Area (ha): 0.138
Assumed Fraction Runoff/Rain Volume: 0.8



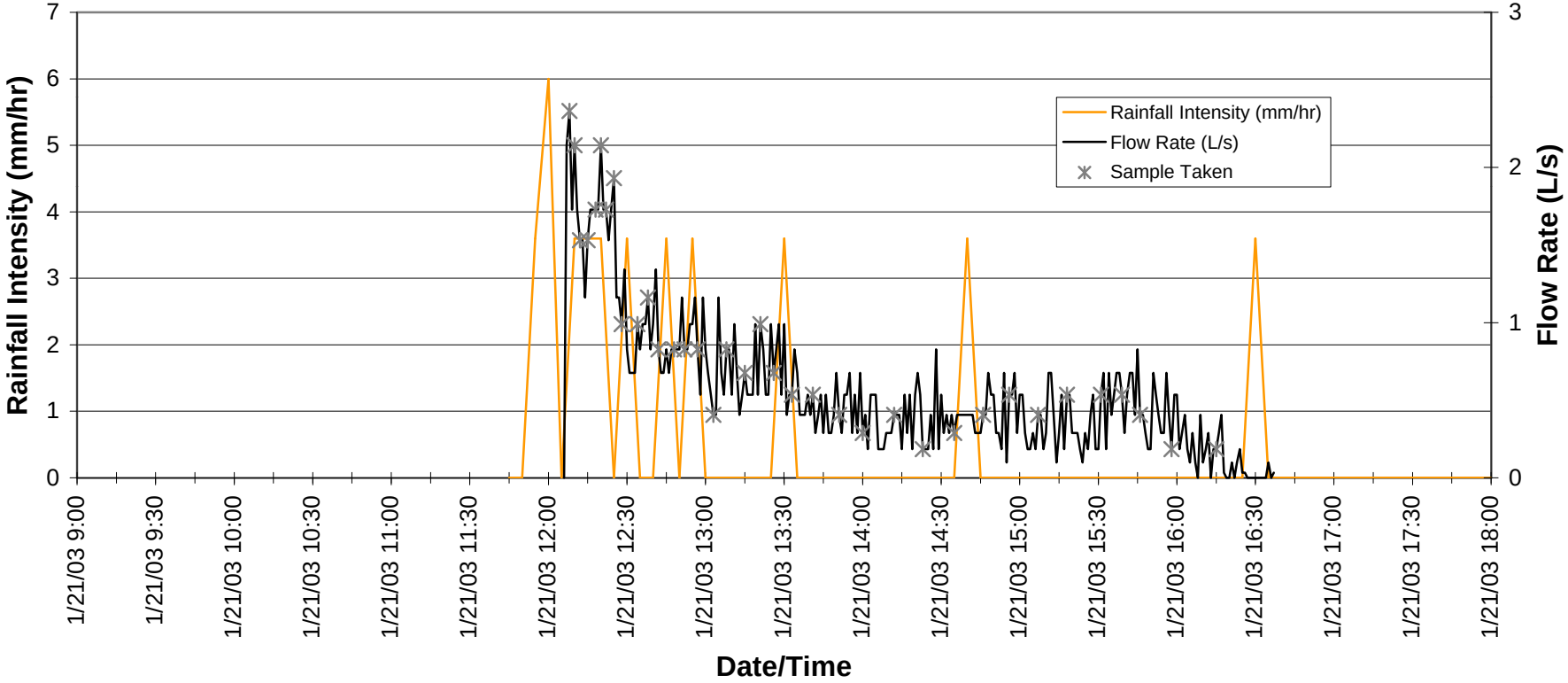
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	01/10/03 09:00	Start Date/Time:	01/09/03 14:53	Start Date/Time:	01/09/03 14:57
Stop Date/Time:	01/10/03 12:05	Stop Date/Time:	01/11/03 01:59	Stop Date/Time:	01/10/03 12:04
Event Rain (mm):	5.70	Total Flow Volume (L):	42990	Estimated Percent Capture:	80%
Max Intensity (mm/hr):	6.00	Peak Flow (L/s):	2.82	Successful Aliquots:	47
		Obs. Fraction Runoff/Rain Volume:	5.465		

Notes:

Event Summary

Site: Tahoe Airport Effluent (3-222)
Event: 2002-08

Catchment Area (ha): 0.138
Assumed Fraction Runoff/Rain Volume: 0.8



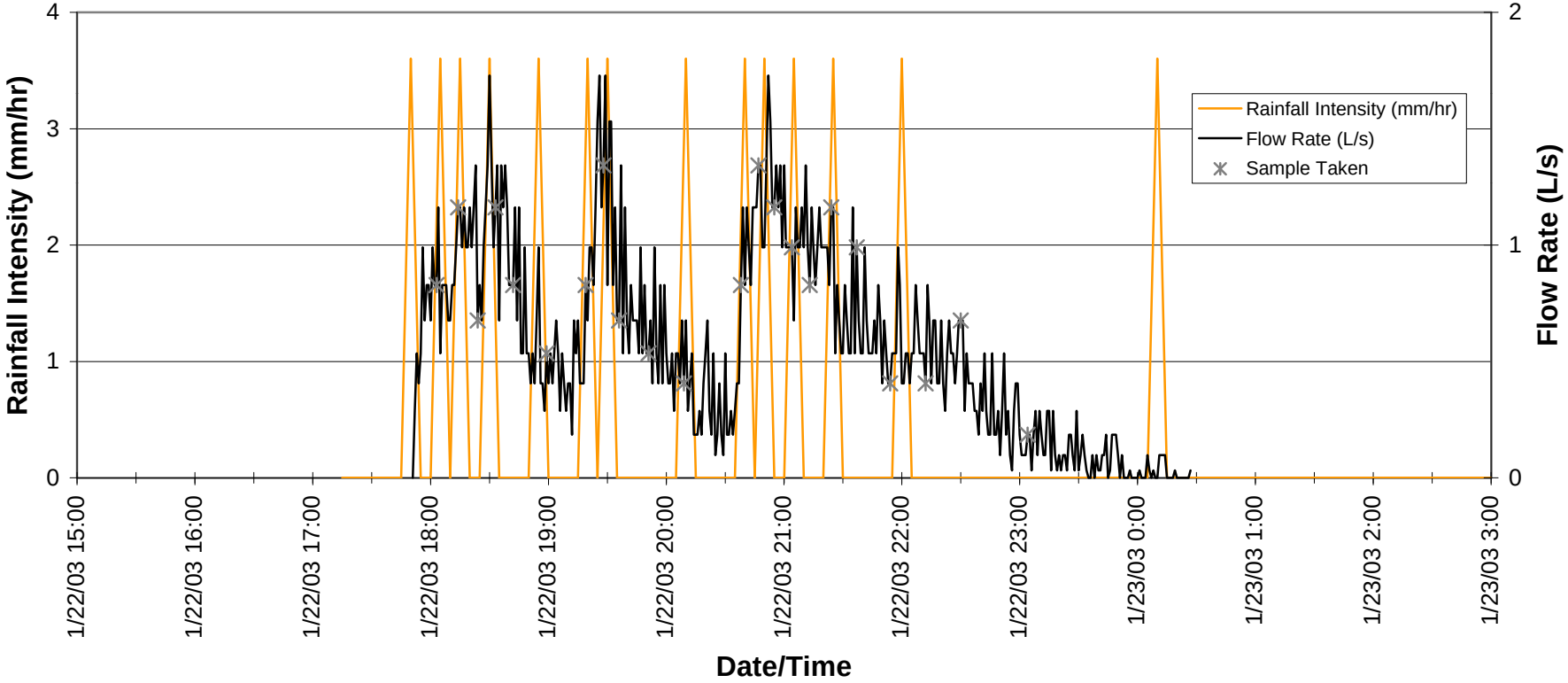
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	01/21/03 11:45	Start Date/Time:	01/21/03 12:06	Start Date/Time:	01/21/03 12:08
Stop Date/Time:	01/21/03 16:30	Stop Date/Time:	01/21/03 16:37	Stop Date/Time:	01/21/03 16:15
Event Rain (mm):	3.80	Total Flow Volume (L):	9097	Estimated Percent Capture:	97%
Max Intensity (mm/hr):	6.00	Peak Flow (L/s):	2.36	Successful Aliquots:	36
		Obs. Fraction Runoff/Rain Volume:	1.735		

Notes:

Event Summary

Site: Tahoe Airport Effluent (3-222)
Event: 2002-09

Catchment Area (ha): 0.138
Assumed Fraction Runoff/Rain Volume: 0.8



Rain Data

Start Date/Time:	01/22/03 17:15
Stop Date/Time:	01/23/03 00:10
Event Rain (mm):	4.50
Max Intensity (mm/hr):	3.60

Runoff Data

Start Date/Time:	01/22/03 17:51
Stop Date/Time:	01/23/03 00:27
Total Flow Volume (L):	13492
Peak Flow (L/s):	1.73
Obs. Fraction Runoff/Rain Volume:	2.173

Sample Data

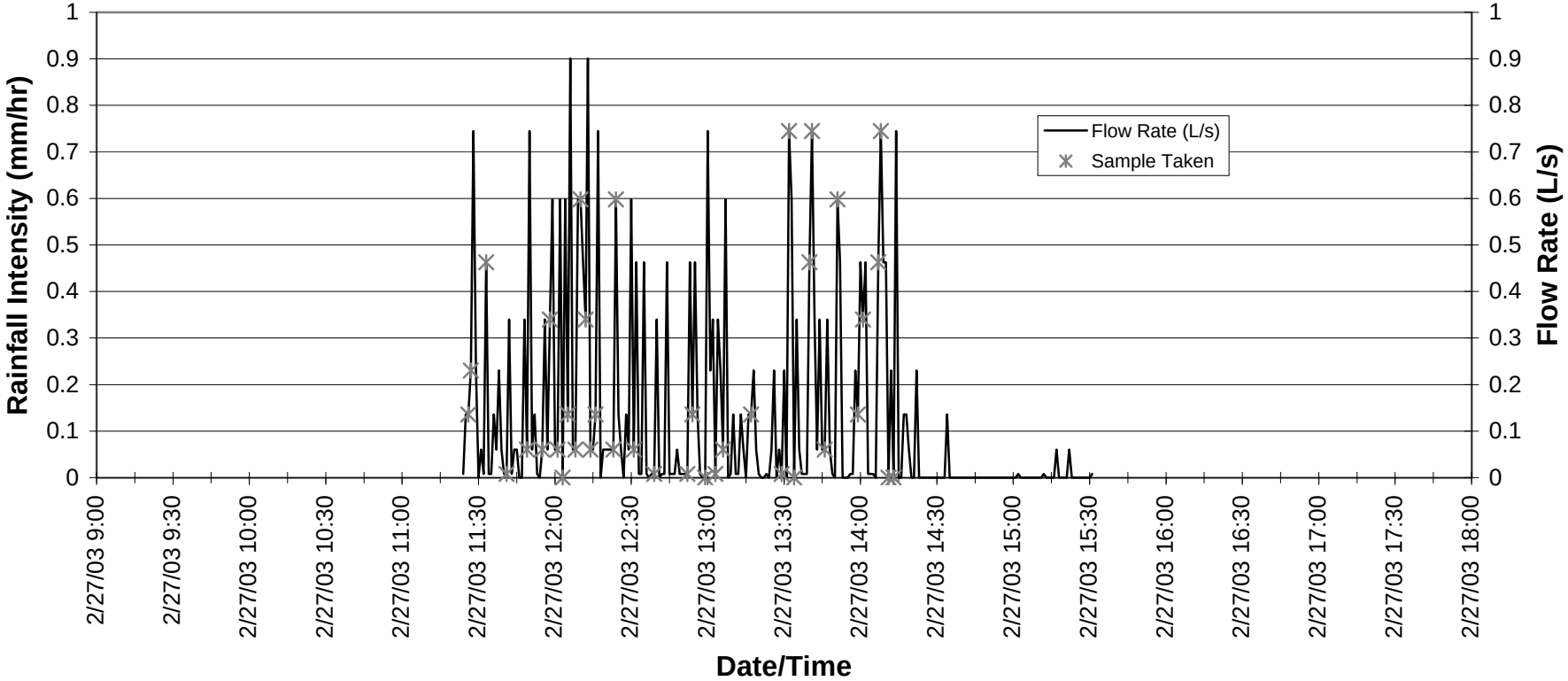
Start Date/Time:	01/22/03 18:03
Stop Date/Time:	01/22/03 23:04
Estimated Percent Capture:	94%
Successful Aliquots:	22

Notes:

Event Summary

Site: Tahoe Airport Effluent (3-222)
Event: 2002-10

Catchment Area (ha): 0.138
Assumed Fraction Runoff/Rain Volume: 0.8



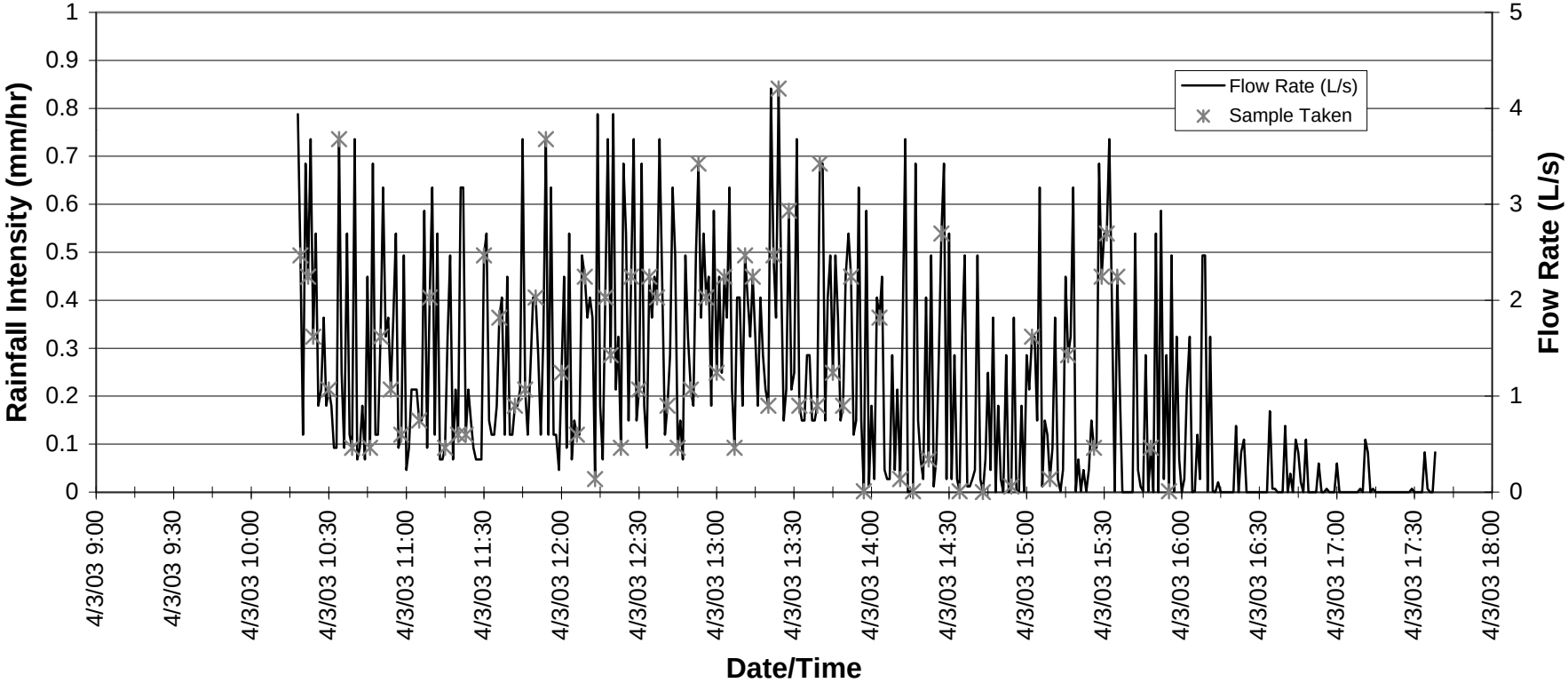
Runoff Data		*Sample Data*	
Start Date/Time:	02/27/03 11:24	Start Date/Time:	02/27/03 11:26
Stop Date/Time:	02/27/03 15:31	Stop Date/Time:	02/27/03 14:13
Total Flow Volume (L):	1930	Estimated Percent Capture:	92%
Peak Flow (L/s):	0.90	Successful Aliquots:	38

Notes: Snowmelt event.

Event Summary

Site: Tahoe Airport Effluent (3-222)
Event: 2002-11

Catchment Area (ha): 0.138
Assumed Fraction Runoff/Rain Volume: 0.8



Runoff Data

Start Date/Time:	04/03/03 10:18
Stop Date/Time:	04/03/03 17:38
Total Flow Volume (L):	29124
Peak Flow (L/s):	4.21

Sample Data

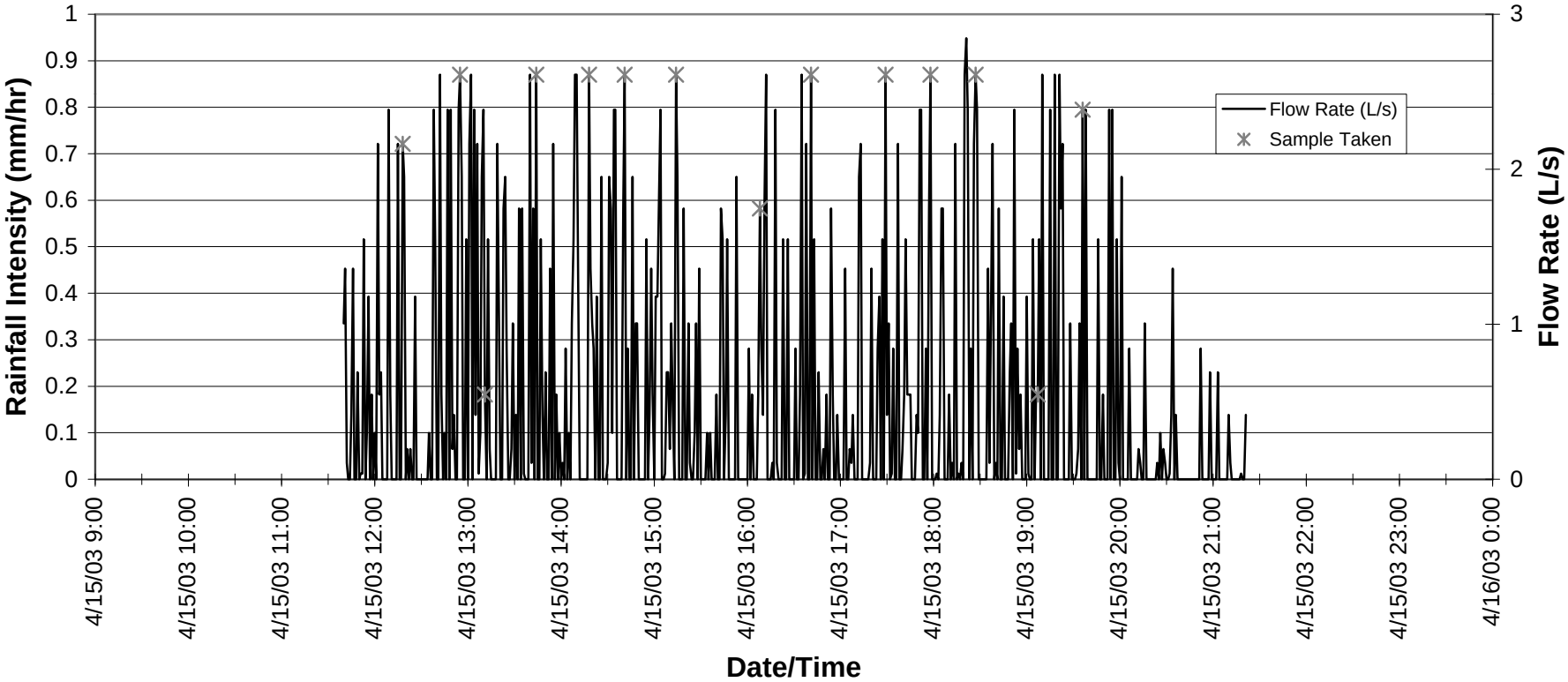
Start Date/Time:	04/03/03 10:19
Stop Date/Time:	04/03/03 15:55
Estimated Percent Capture:	92%
Successful Aliquots:	70

Notes: Snowmelt event. Bottle replaced one time.

Event Summary

Site: Tahoe Airport Effluent (3-222)
Event: 2002-12

Catchment Area (ha): 0.138
Assumed Fraction Runoff/Rain Volume: 0.8



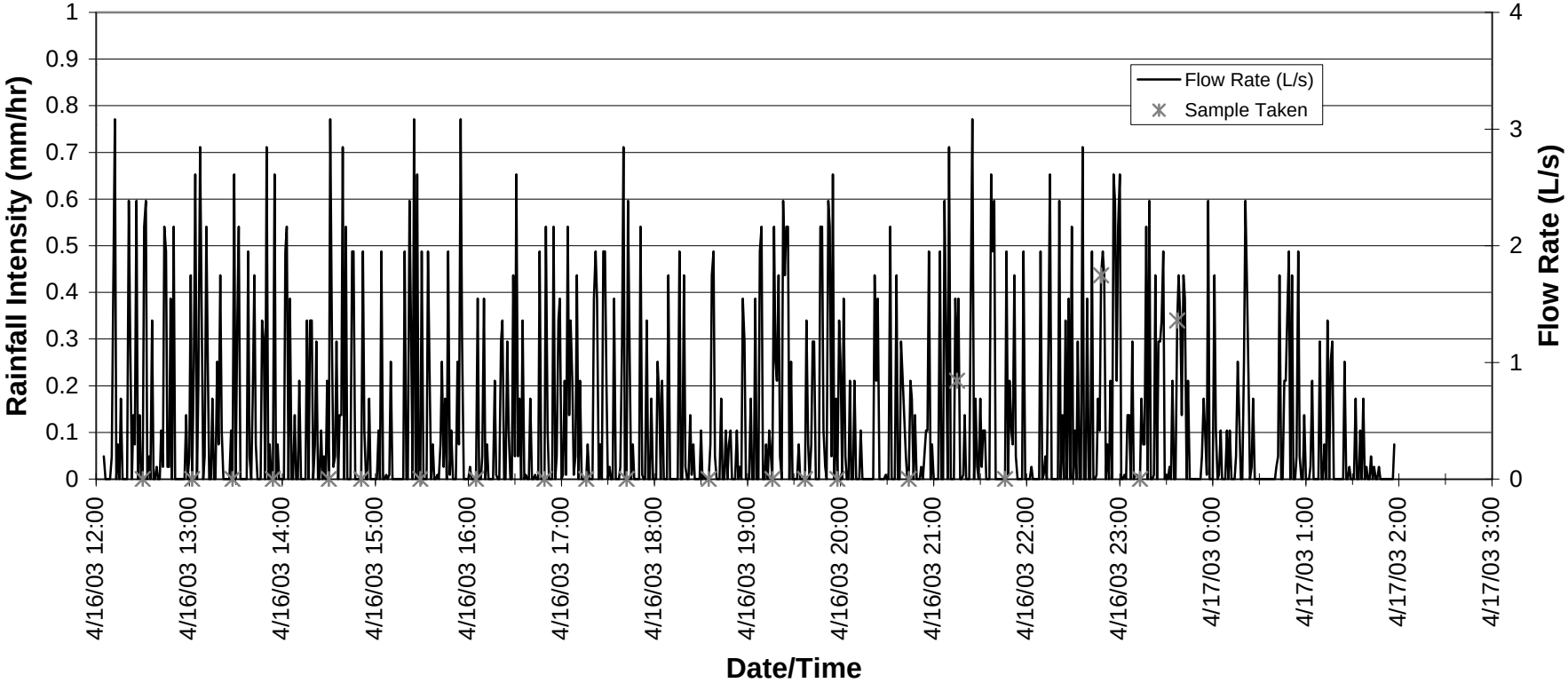
Runoff Data		*Sample Data*	
Start Date/Time:	04/15/03 11:40	Start Date/Time:	04/15/03 12:17
Stop Date/Time:	04/15/03 21:21	Stop Date/Time:	04/15/03 19:36
Total Flow Volume (L):	18042	Estimated Percent Capture:	81%
Peak Flow (L/s):	2.85	Successful Aliquots:	14

Notes: Snowmelt event.

Event Summary

Site: Tahoe Airport Effluent (3-222)
Event: 2002-13

Catchment Area (ha): 0.138
Assumed Fraction Runoff/Rain Volume: 0.8



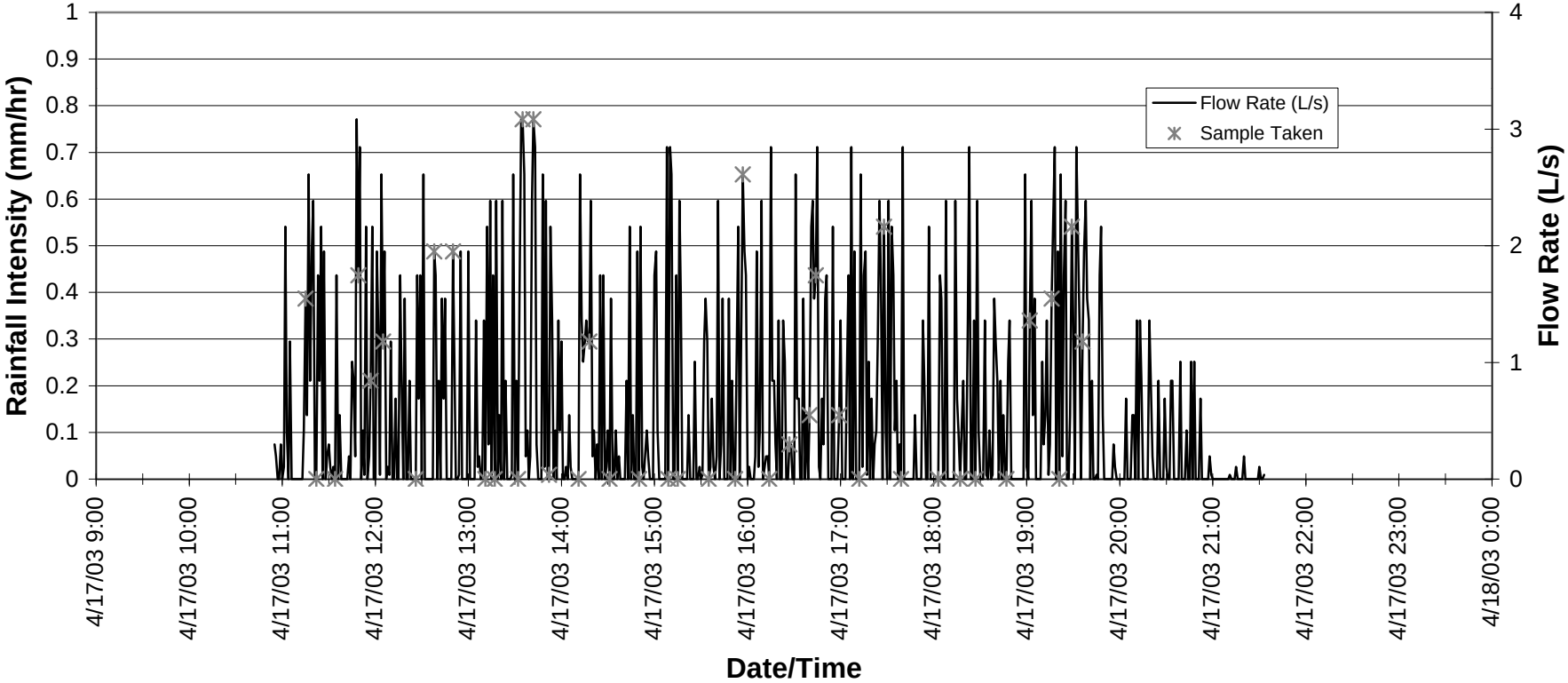
Runoff Data		*Sample Data*	
Start Date/Time:	04/16/03 12:05	Start Date/Time:	04/16/03 12:30
Stop Date/Time:	04/17/03 01:57	Stop Date/Time:	04/16/03 23:37
Total Flow Volume (L):	24460	Estimated Percent Capture:	78%
Peak Flow (L/s):	3.09	Successful Aliquots:	21

Notes: snowmelt runoff event.

Event Summary

Site: Tahoe Airport Effluent (3-222)
Event: 2002-14

Catchment Area (ha): 0.138
Assumed Fraction Runoff/Rain Volume: 0.8



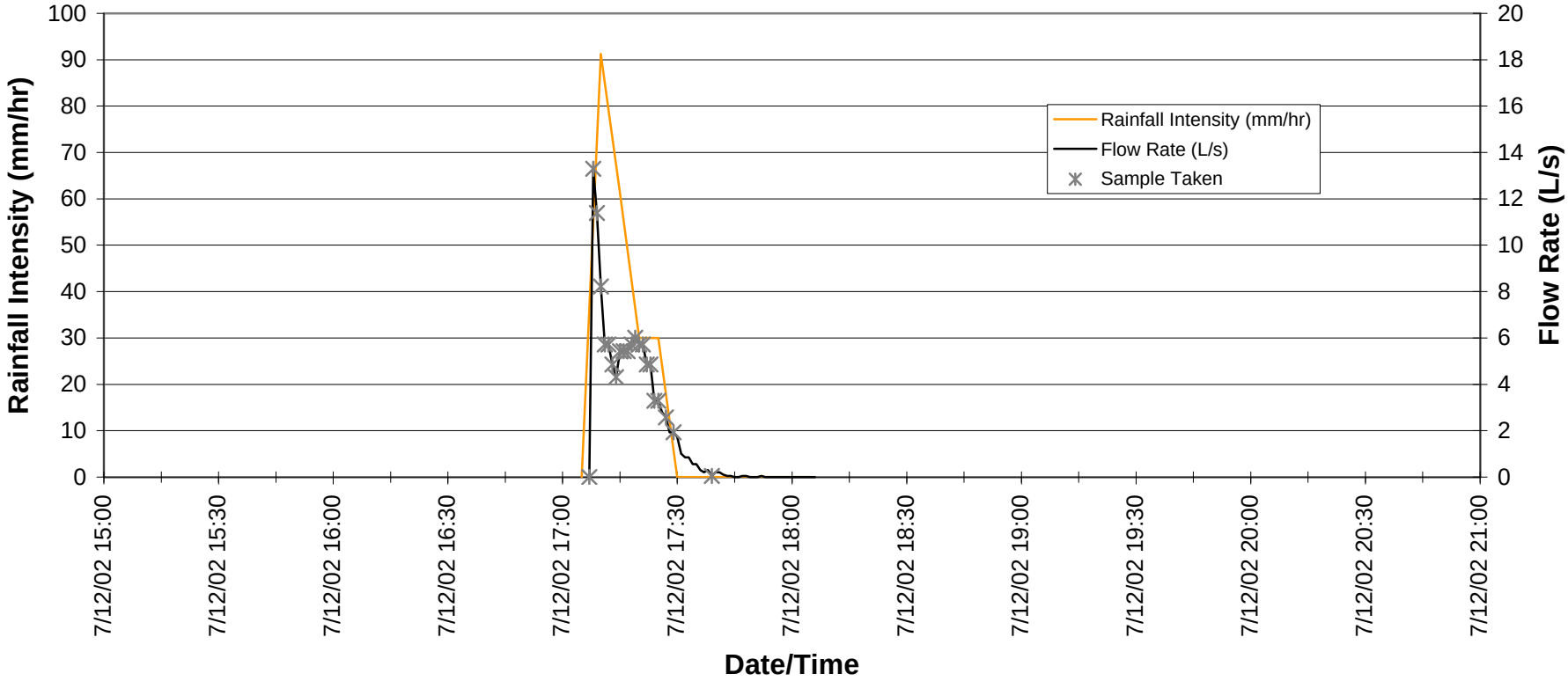
Runoff Data		*Sample Data*	
Start Date/Time:	04/17/03 10:55	Start Date/Time:	04/17/03 11:15
Stop Date/Time:	04/17/03 21:33	Stop Date/Time:	04/17/03 19:36
Total Flow Volume (L):	22596	Estimated Percent Capture:	84%
Peak Flow (L/s):	3.09	Successful Aliquots:	41

Notes: Snowmelt event.

Event Summary

Site: Echo Summit Effluent (3-223)
Event: 2002-01

Catchment Area (ha): 0.324
Assumed Runoff Coefficient: 0.95



Rain Data

Start Date/Time:	07/12/02 17:05
Stop Date/Time:	07/12/02 17:25
Event Rain (mm):	22.80
Max Intensity (mm/hr):	91.20

Runoff Data

Start Date/Time:	07/12/02 17:07
Stop Date/Time:	07/12/02 18:06
Total Flow Volume (L):	7540
Peak Flow (L/s):	13.29
Observed Runoff Coefficient:	0.102

Sample Data

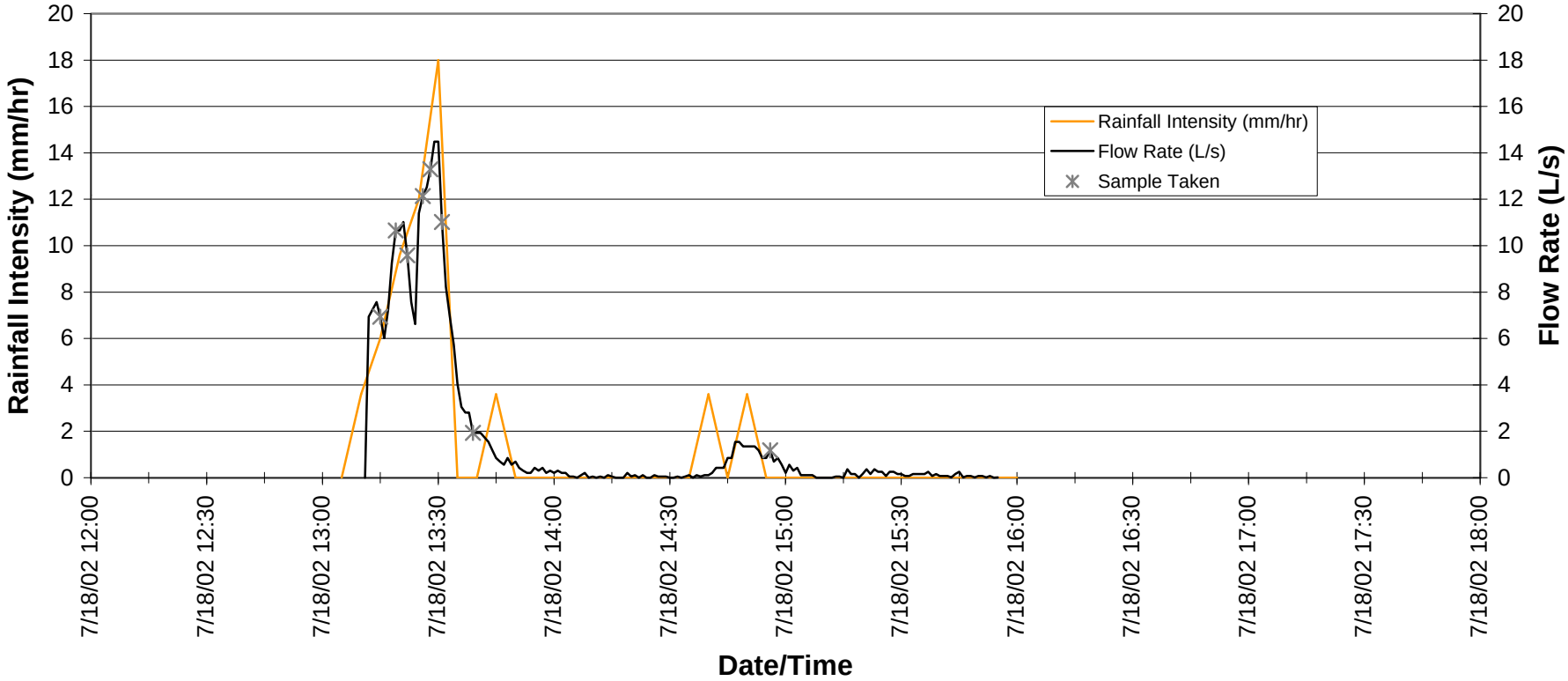
Start Date/Time:	07/12/02 17:07
Stop Date/Time:	07/12/02 17:39
Estimated Percent Capture:	99%
Successful Aliquots:	22

Notes: First thunderstorm of the season. No Caltrans-defined precipitation event identified. Note Caltrans approval date on output.

Event Summary

Site: Echo Summit Effluent (3-223)
Event: 2002-02

Catchment Area (ha): 0.324
Assumed Runoff Coefficient: 0.95



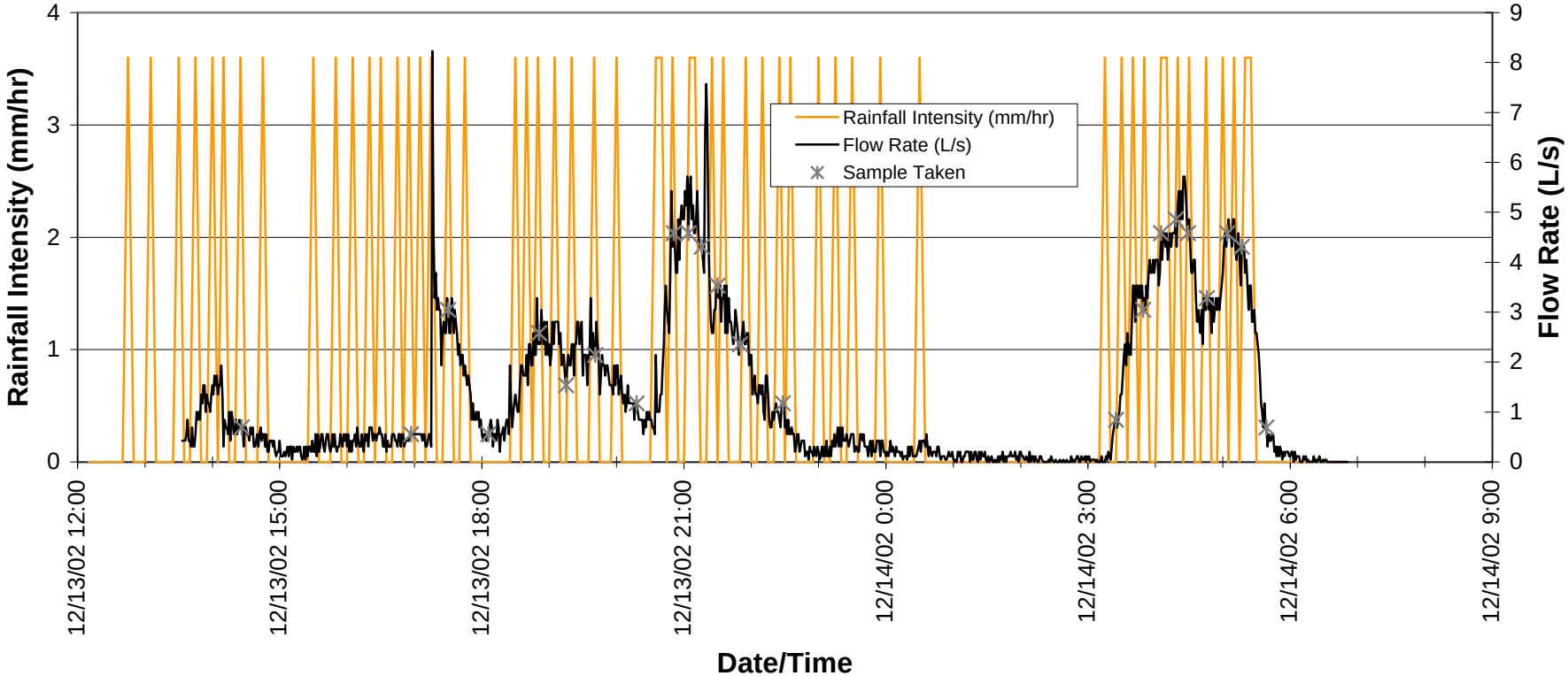
Rain Data		*Runoff Data*		*Sample Data*	
Start Date/Time:	07/18/02 13:05	Start Date/Time:	07/18/02 13:11	Start Date/Time:	07/18/02 13:15
Stop Date/Time:	07/18/02 14:50	Stop Date/Time:	07/18/02 15:55	Stop Date/Time:	07/18/02 14:56
Event Rain (mm):	5.30	Total Flow Volume (L):	16536	Estimated Percent Capture:	87%
Max Intensity (mm/hr):	18.00	Peak Flow (L/s):	14.48	Successful Aliquots:	8
		Observed Runoff Coefficient:	0.963		

Notes: Thunderstorm event No Caltrans-defined precipitation event identified. Note Caltrans approval date on output.

Event Summary

Site: Echo Summit Effluent (3-223)
Event: 2003-03

Catchment Area (ha): 0.324
Assumed Fraction Runoff/Rain Volume: 0.95



Rain Data (user-defined event)		*Runoff Data*		*Sample Data*	
Start Date/Time:	12/13/02 12:10	Start Date/Time:	12/13/02 13:33	Start Date/Time:	12/13/02 14:26
Stop Date/Time:	12/14/02 05:25	Stop Date/Time:	12/14/02 06:51	Stop Date/Time:	12/14/02 05:39
Event Rain (mm):	16.80	Total Flow Volume (L):	80451	Estimated Percent Capture:	96%
Max Intensity (mm/hr):	3.60	Peak Flow (L/s):	8.23	Successful Aliquots:	23
		Obs. Fraction Runoff/Rain Volume:	1.478		

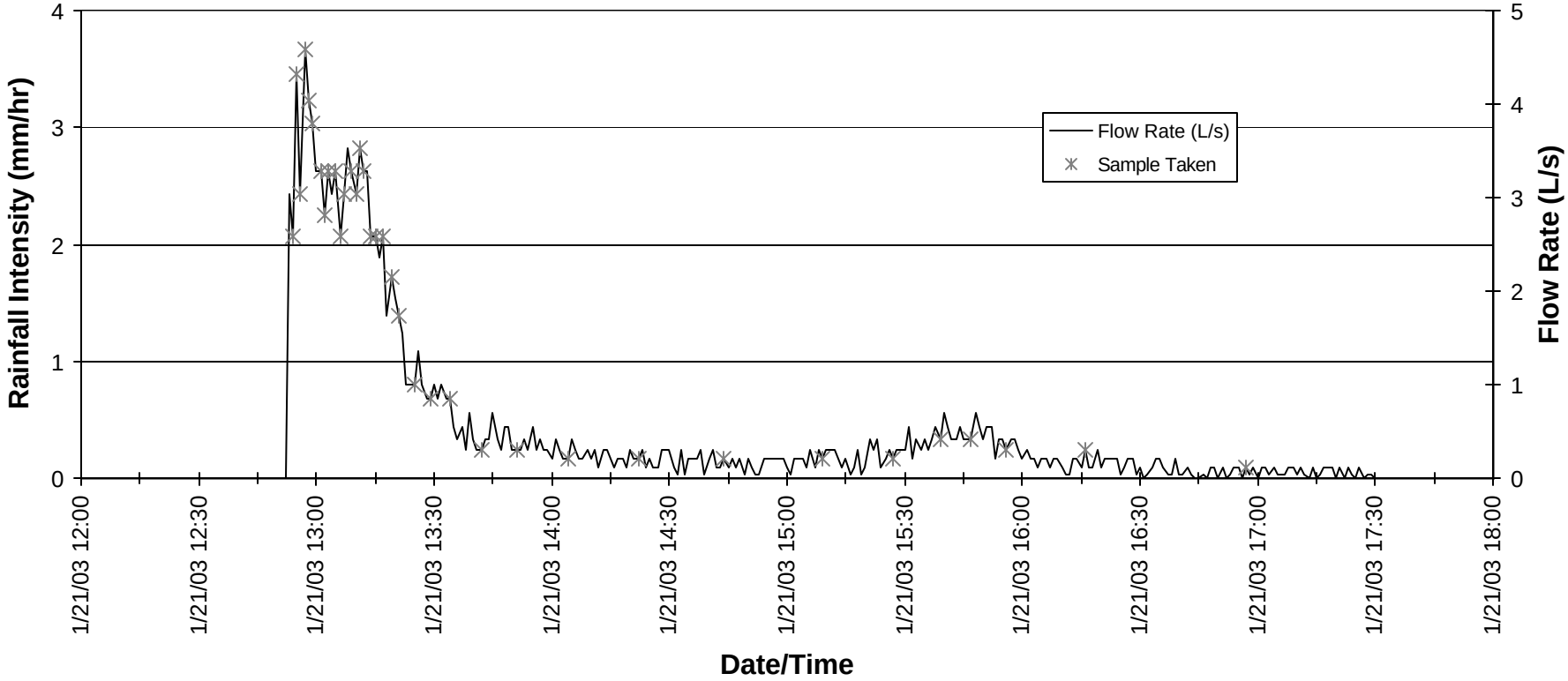
Notes: Caltrans-defined rain stop time not identified. Last non-zero rain record used as stop time.

Caltrans-defined Rain Event Override Authorization: No recorded Caltrans authorization.

Event Summary

Site: Echo Summit Effluent (3-223)
Event: 2002-04

Catchment Area (ha): 0.324
Assumed Fraction Runoff/Rain Volume: 0.95



Runoff Data		*Sample Data*	
Start Date/Time:	01/21/03 12:52	Start Date/Time:	01/21/03 12:54
Stop Date/Time:	01/21/03 17:31	Stop Date/Time:	01/21/03 16:57
Total Flow Volume (L):	9134	Estimated Percent Capture:	96%
Peak Flow (L/s):	4.58	Successful Aliquots:	36

Notes: Snowmelt event.

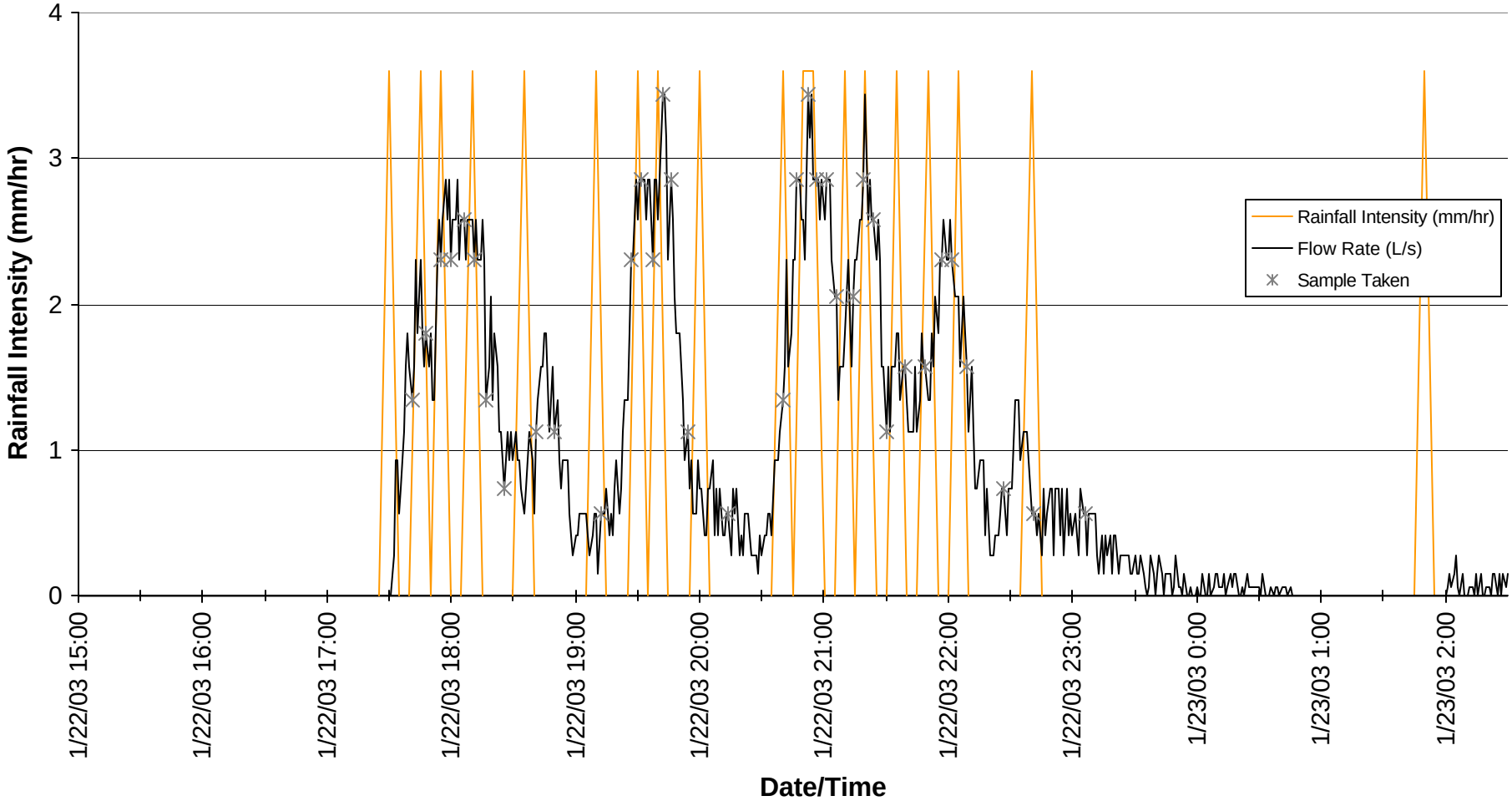
Event Summary

Site: Echo Summit Effluent (3-223)

Event: 2002-05

Catchment Area (ha): 0.32

Assumed Fraction Runoff/Rain Volume: 0.9



Rain Data

Start Date/Time: 01/22/03 17:05

Runoff Data

Start Date/Time: 01/22/03 17:31

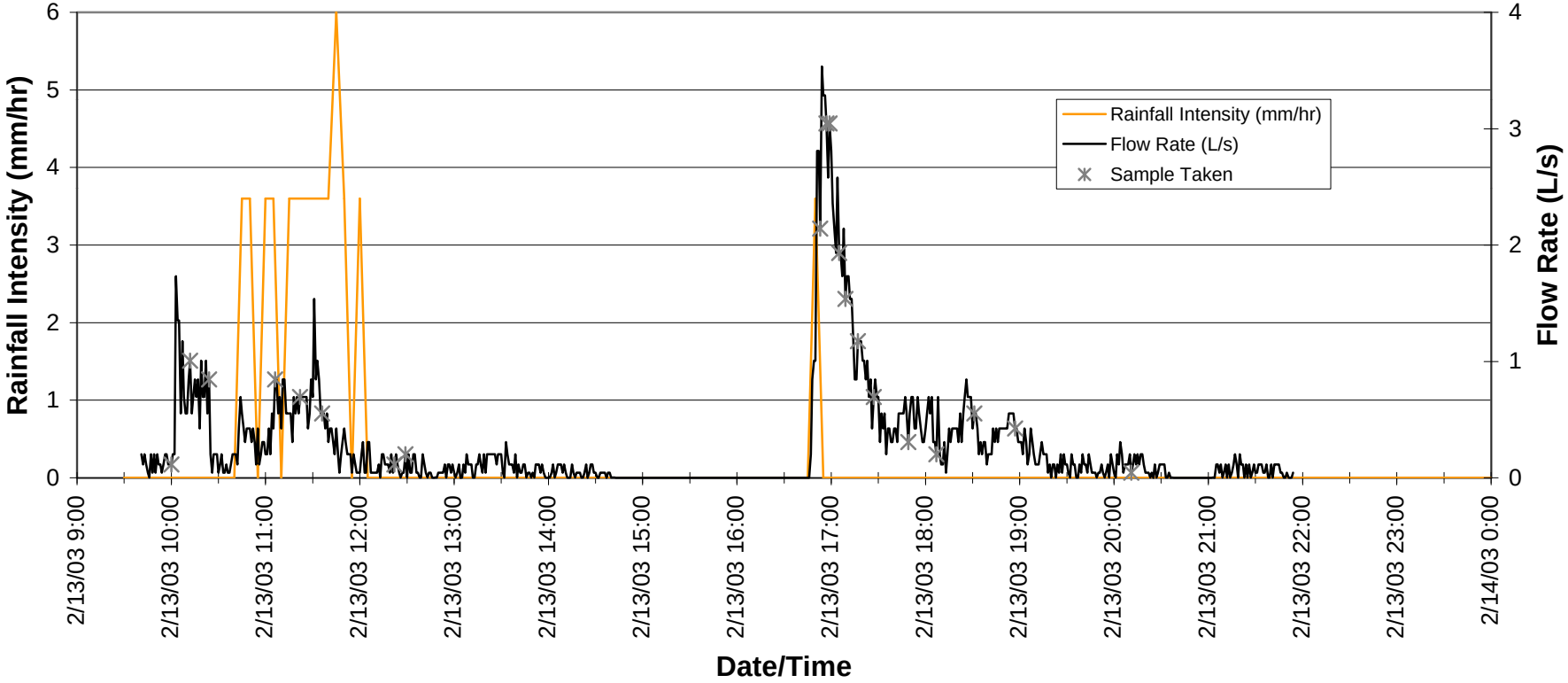
Sample Data

Start Date/Time: 01/22/03 17:4

Event Summary

Site: Echo Summit Effluent (3-223)
Event: 2002-06

Catchment Area (ha): 0.324
Assumed Fraction Runoff/Rain Volume: 0.95



Rain Data

Start Date/Time:	02/13/03 10:45
Stop Date/Time:	02/13/03 16:50
Event Rain (mm):	4.40
Max Intensity (mm/hr):	6.00

Runoff Data

Start Date/Time:	02/13/03 09:41
Stop Date/Time:	02/13/03 21:54
Total Flow Volume (L):	11879
Peak Flow (L/s):	3.53
Obs. Fraction Runoff/Rain Volume:	0.833

Sample Data

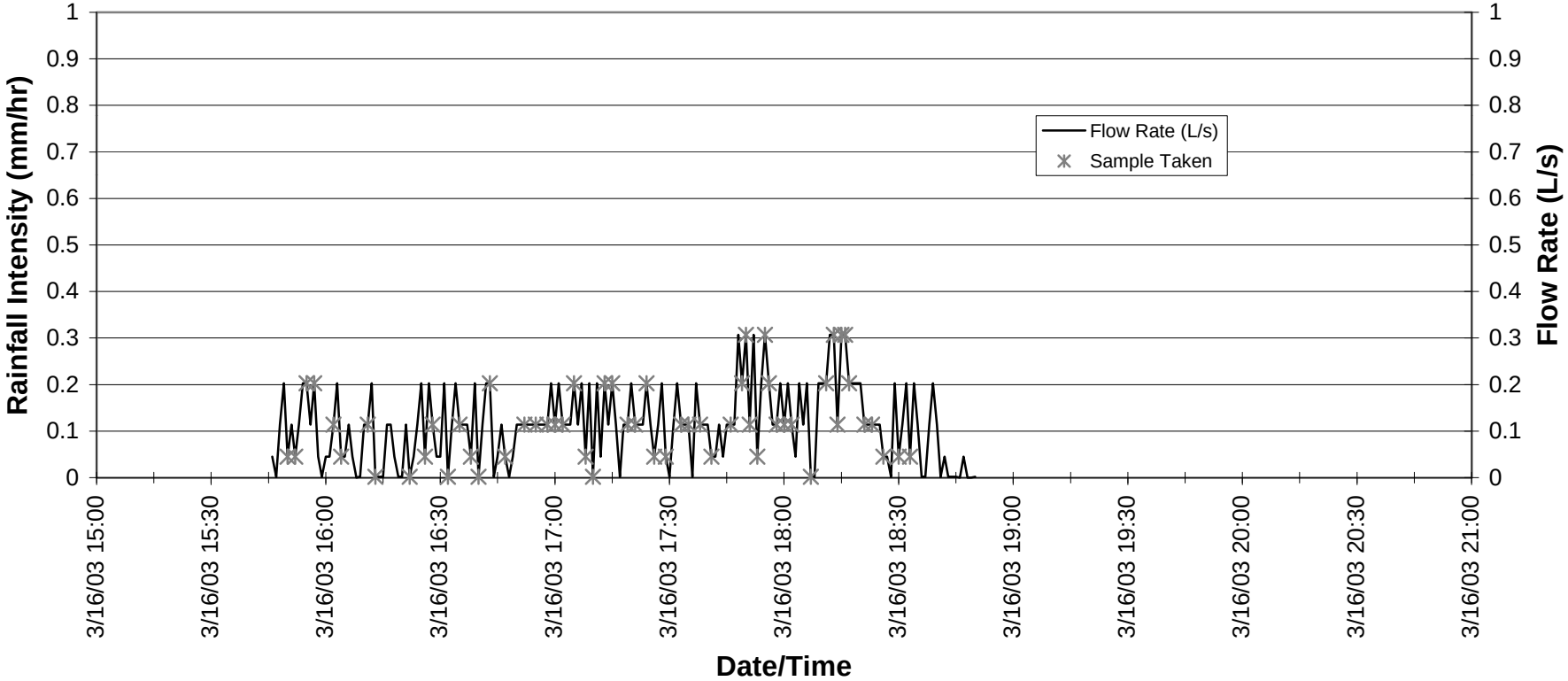
Start Date/Time:	02/13/03 10:00
Stop Date/Time:	02/13/03 20:11
Estimated Percent Capture:	96%
Successful Aliquots:	20

Notes: Rain/snow mix event.

Event Summary

Site: Echo Summit Effluent (3-223)
Event: 2002-07

Catchment Area (ha): 0.324
Assumed Fraction Runoff/Rain Volume: 0.95



Runoff Data

Start Date/Time:	03/16/03 15:46
Stop Date/Time:	03/16/03 18:50
Total Flow Volume (L):	1246
Peak Flow (L/s):	0.31

Sample Data

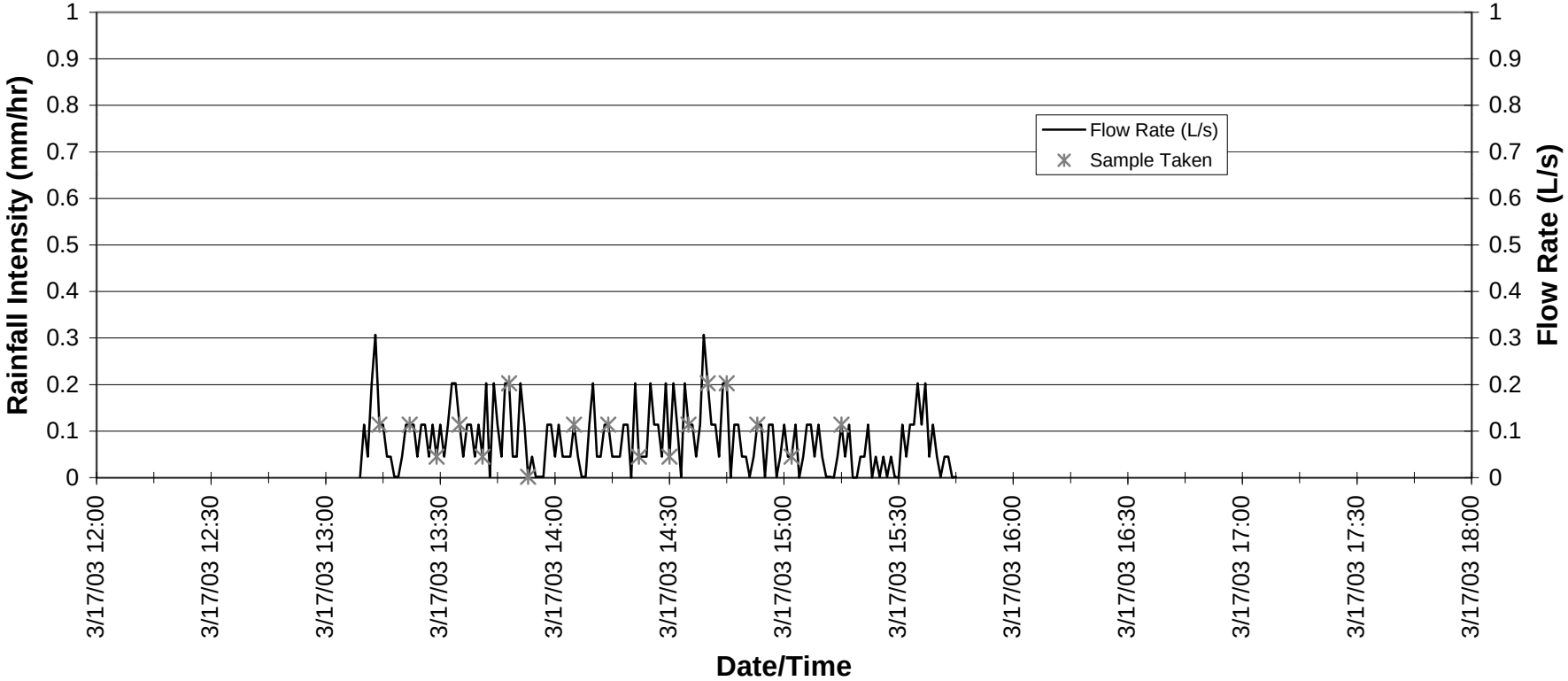
Start Date/Time:	03/16/03 15:50
Stop Date/Time:	03/16/03 18:33
Estimated Percent Capture:	91%
Successful Aliquots:	58

Notes: Snowmelt runoff event.

Event Summary

Site: Echo Summit Effluent (3-223)
Event: 2002-08

Catchment Area (ha): 0.324
Assumed Fraction Runoff/Rain Volume: 0.95



Runoff Data

Start Date/Time:	03/17/03 13:09
Stop Date/Time:	03/17/03 15:45
Total Flow Volume (L):	776
Peak Flow (L/s):	0.31

Sample Data

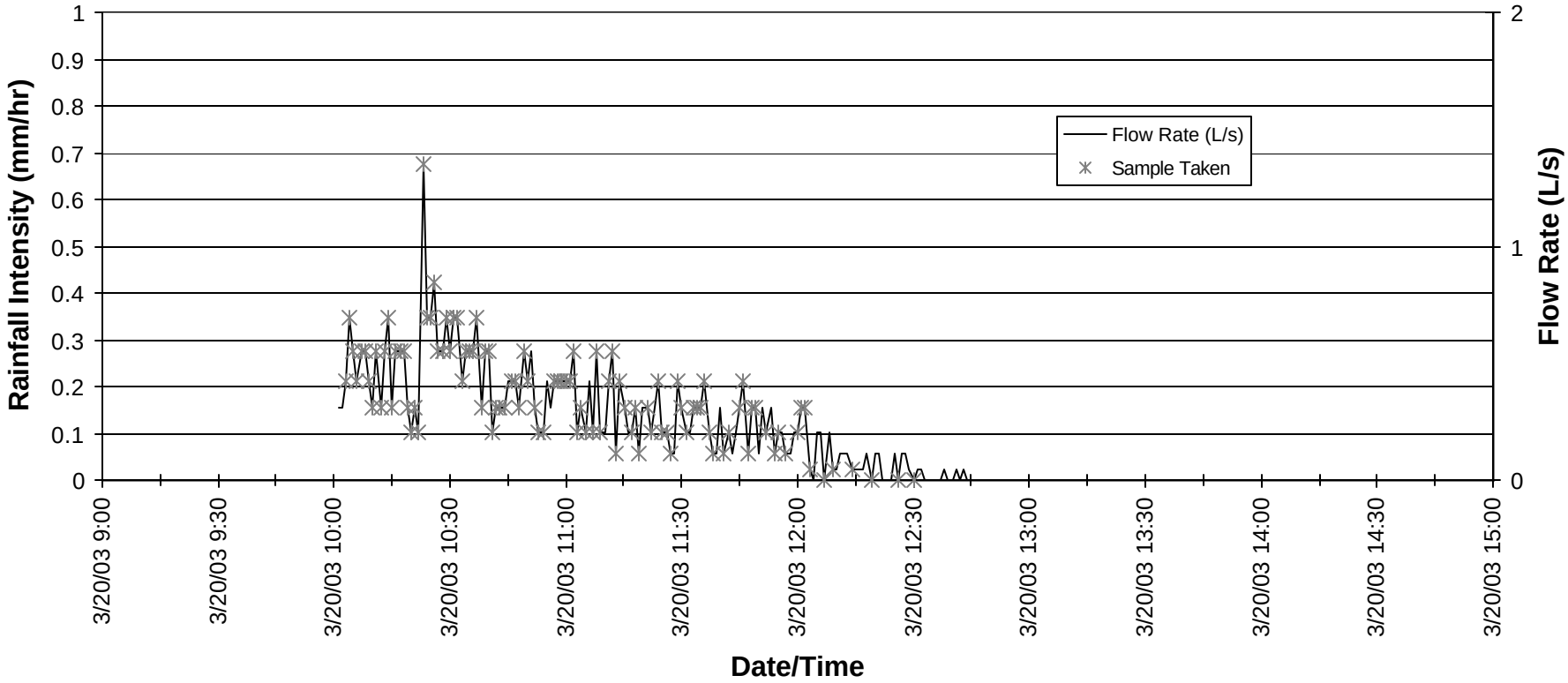
Start Date/Time:	03/17/03 13:14
Stop Date/Time:	03/17/03 15:15
Estimated Percent Capture:	72%
Successful Aliquots:	17

Notes: Snowmelt runoff event.

Event Summary

Site: Echo Summit Effluent (3-223)
Event: 2002-09

Catchment Area (ha): 0.324
Assumed Fraction Runoff/Rain Volume: 0.95



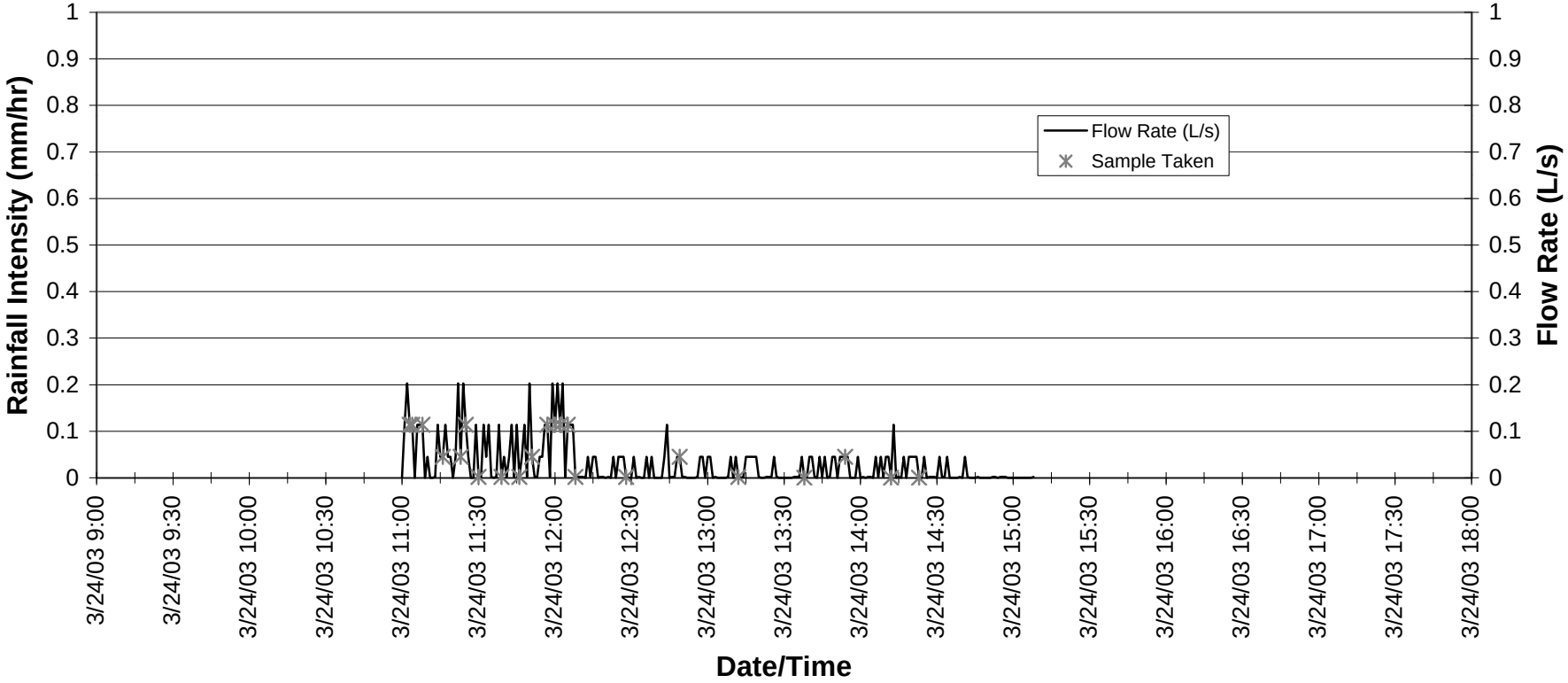
Runoff Data		*Sample Data*	
Start Date/Time:	03/20/03 10:01	Start Date/Time:	03/20/03 10:03
Stop Date/Time:	03/20/03 13:13	Stop Date/Time:	03/20/03 12:30
Total Flow Volume (L):	2806	Estimated Percent Capture:	94%
Peak Flow (L/s):	1.35	Successful Aliquots:	106

Notes: Snowmelt runoff event. Bottle changed two times.

Event Summary

Site: Echo Summit Effluent (3-223)
Event: 2002-10

Catchment Area (ha): 0.324
Assumed Fraction Runoff/Rain Volume: 0.95



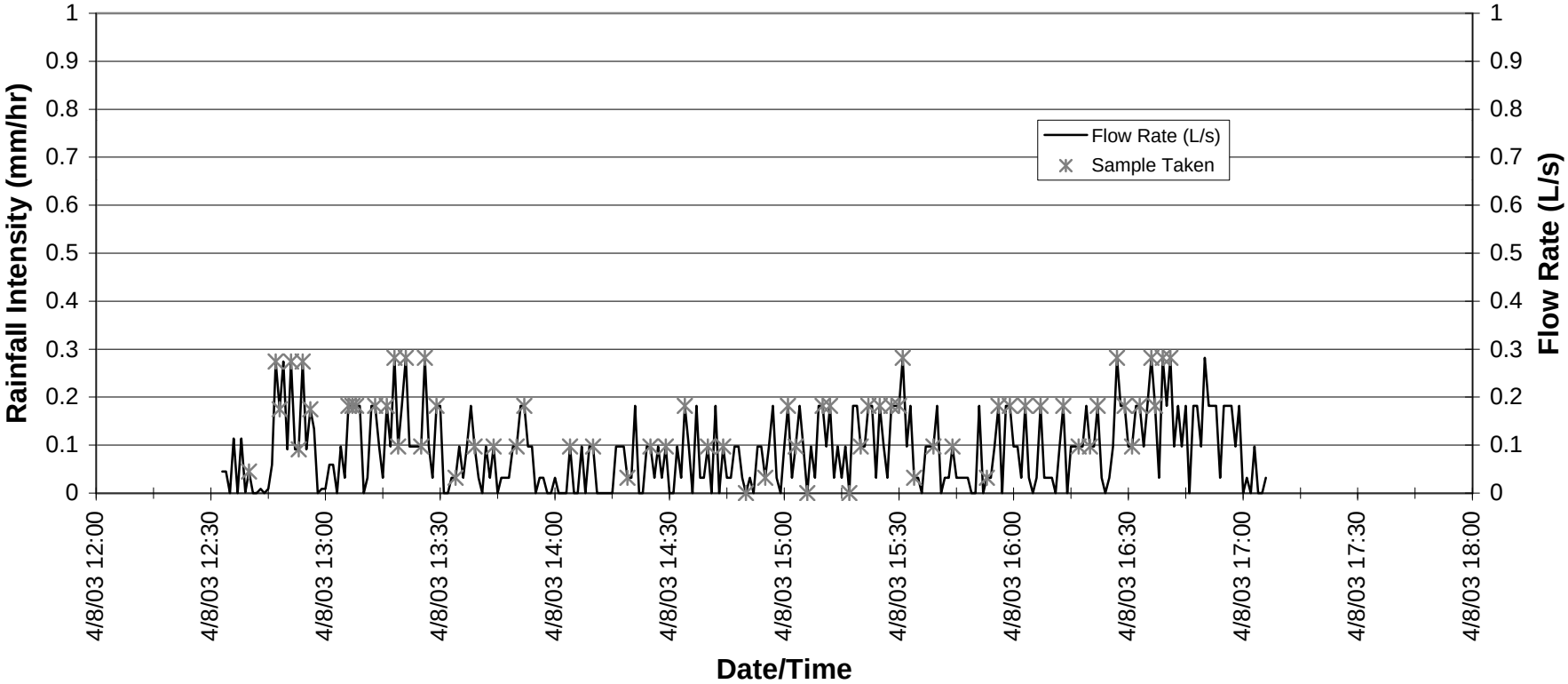
Runoff Data		*Sample Data*	
Start Date/Time:	03/24/03 11:00	Start Date/Time:	03/24/03 11:03
Stop Date/Time:	03/24/03 15:08	Stop Date/Time:	03/24/03 14:23
Total Flow Volume (L):	439	Estimated Percent Capture:	92%
Peak Flow (L/s):	0.20	Successful Aliquots:	22

Notes: Snowmelt runoff event.

Event Summary

Site: Echo Summit Effluent (3-223)
Event: 2002-11

Catchment Area (ha): 0.324
Assumed Fraction Runoff/Rain Volume: 0.95



Runoff Data		*Sample Data*	
Start Date/Time:	04/08/03 12:33	Start Date/Time:	04/08/03 12:40
Stop Date/Time:	04/08/03 17:06	Stop Date/Time:	04/08/03 16:41
Total Flow Volume (L):	1483	Estimated Percent Capture:	77%
Peak Flow (L/s):	0.28	Successful Aliquots:	65

Notes: Snowmelt event.

Stormwater Analytical Results
Summary of Metal Analytical Results
Caltrans Tahoe Highway
Runoff Characterization and Sand Trap Effectiveness Studies

Sample Information				TOTAL METALS								DISSOLVED METALS							
				Arsenic	Cadmium	Chromium	Copper	Iron	Nickel	Lead	Zinc	Arsenic	Cadmium	Chromium	Copper	Iron	Nickel	Lead	Zinc
Site Number	Sample Date	Sample Source	Sample Type	Sample Results (µg/L)															
3-201	10/26/2000	storm	C	0.5UJ	0.561J	16.2	10.1J	5230	7.17	21.2	187J	0.5UJ	0.2UJ	9.5	10.1J	209	2.65	1U	56J
3-201	1/24/2001	snowmelt	C	25.5	3.02	120	170	162000	67	367	1030J	1.05	0.2U	5.64	6.45	67.1	3.3	1U	21.8J
3-201	3/9/2001	snowmelt	C	8.74	2	45.3	77.5	59800	26.2J	152	542J	2.51	0.2U	5.02	8.93	99.4	2.54	1.51	30.1J
3-201	3/25/2001	snowmelt	C	5.6	0.927	31.6	50.4	21400	22.1	54.8	336	2.38	0.2U	5.62	15.2	303	2.54J	1U	18.8
3-201	4/19/2001	storm	C	7.08	0.91	17.4	44.9	9110J	11.6	31.3	297J	5.28	0.2U	7.35	17.2	478J	3.41	1.54	32.9J
3-201	4/20/2001	storm	C	7.4	1.49	26.5	59.8	19900	16.4	64.5	417J	3.03	0.2U	7.78	19.8	303	2.26	3.44	31.6J
3-202	8/3/2000	storm	C	0.5U	0.2U	4.0	30	1540	3.8	4.5	38.7	0.5U	.2U	2.5	5.9	114	2U	1U	9.4
3-202	2/20/2001	snowmelt	C	6.42	2.04	33.1	80.6	93400J	30.8	98.6	588	0.5U	.2U	2.11	9.14	8970J	3.23	1U	25.8
3-202	2/21/2001	snowmelt	C	3.95	1.54	24.8	60.4	50600	19.7	62.9	484	1.1	.2U	3.08	5.23	1050	2.1	1U	19.2
3-202	3/25/2001	snowmelt	C	6.18	0.978	19.3	41.6		16	28	280	2.25	.2U	1.83	8.08		2	1U	12.6
3-202	3/25/2001	precip	C	0.5U	0.214	1U	6.13		2U	3.2	65.1J	0.5U	0.2U	1U	5.7		2U	1U	49J
3-202	4/7/2001	snowmelt	C	4.18	1.52	18.8	43.9	52200J	10.8	34.3	452J	1.74	0.25	11.6	14.6	1510J	3.01	3.64	76J
3-202	4/7/2001	precip	C	0.5U	0.2U	1U	1.07		2U	1U	22.2J	0.5U	0.2U	1U	3.7		2U	1U	46.4J
3-202	4/11/2001	snowmelt	C	12.2	2U	25.3J	79.6J	29500J	25.6J	47.3	684	5U	2U	10UJ	10.8	463J	20UJ	10U	283
3-202	4/12/2001	precip	C	2.39	0.2U	4.21	4.21	617	2U	1.7	50.1J	0.5U	0.2U	1.6	1U	114	2U	1U	44.7J
3-202	4/18/2001	storm	C	6.59	0.819	13.1	31.8	9740J	9.86	17.4	187J	4.84	.2U	4.4	10.7	475J	2.19	1U	21.7J
3-202	4/20/2001	storm	C	8.88	1.54	22.8	68.4	27100	28.9	56	421J	3.51	.2U	3.22	19.4	92.2	3.35	1U	51.3J
3-202	4/21/2001	precip	C	0.5U	0.2U	3.16	6.75	967	3.02	2.49	196	0.5U	0.2U	1U	1U	25U	2U	1U	65.4

Stormwater Analytical Results
Summary of Metal Analytical Results
Caltrans Tahoe Highway
Runoff Characterization and Sand Trap Effectiveness Studies

Sample Information				TOTAL METALS								DISSOLVED METALS							
				Arsenic	Cadmium	Chromium	Copper	Iron	Nickel	Lead	Zinc	Arsenic	Cadmium	Chromium	Copper	Iron	Nickel	Lead	Zinc
Site Number	Sample Date	Sample Source	Sample Type	Sample Results (µg/L)															
3-203	8/3/2000	storm	C	1.8	0.78	13.3	33.5	7290	9.7	35.2	103	0.68	0.2U	2.7	9	179	2U	1U	11.6
3-203	8/30/2000	storm	C	2.15	0.27	15.1	66.1	2070	13.5	43	198	2.15	0.27	5.85	41.7	497	10.2	6.66	165
3-203	10/10/2000	snowmelt	C	0.7	0.34	5.9	15.7		4.8	16.7	131	0.5U	0.27	1.3	7.4		3	11U	82.7
3-203	10/26/2000	snowmelt	C	2.3J	0.569J	10.5	21.3J	6350	8.89	30.8	174J	0.962J	0.266J	1.75	9.76J	389	3.66	1.11	78.6J
3-203	3/10/2001	snowmelt	C	5.39	0.2UJ	26.1J	34.8J	10600J	14.3J	59.5	214J	0.5U	0.2UJ	2.43J	3.43J	263J	2.83J	1.56	32.1J
3-203	3/11/2001	snowmelt	C	5.38	0.391J	24.7J	34.8J	22600J	13.7J	57.9	270J	1.34	0.2UJ	1.93J	2.8J	365J	2UJ	1U	25.4J
3-203	3/25/2001	precip	C	.5U	.2U	20.30	2.88		2U	1.14	147.00	.5U	.2U	1U	1U		2U	1U	54.30
3-203	4/6/2001	snowmelt	C	3.48	0.881	31.3	43.9	41200J	23	61.3	240J	0.635	0.2U	4.31	16.4	766J	6.97	1.55	56.2J
3-203	4/7/2001	precip	C	.5U	.2U	1.04	6.61		2U	2.37	88.9J	.5U	.2U	1U	6.86		2U	1U	47.2J
3-203	4/11/2001	storm	C	9.18	2U	81.8J	87.1J	24400J	35.7J	110	623	20.1	2U	10UJ	35.5J	41.2J	13.7J	10.6	87.8
3-203	4/12/2001	precip	C	.5U	.2U	13.70	10.80	171.00	2U	2.62	87.4J	.5U	.2U	1U	2.55	25U	2U	1U	70.7J
3-203	4/21/2001	precip	C	2.66	.2U	4.88	14.90	2850.00	13.90	4.25	80.8J	.5U	.2U	1U	1U	25U	2U	1U	40.4J

Notes
J = estimated concentration
U = not detected above reporting limit
G - grab sample
C = composite sample

Stormwater Analytical Results
Summary of Nutrient Analytical Results
Caltrans Tahoe Highway
Runoff Characterization and Sand Trap Effectiveness Studies

Sample Information				CONVENTIONALS										NUTRIENTS							OTHER CONSTITUENTS		
				EC	pH	Hardness (as CaCO3)	TOC	DOC	COD	TDS	TSS	Color	Turbidity	Ammonia (as N)	Nitrite (as N)	Nitrate (as N)	TKN	Total Phosphorus	Dissolved Phosphorus	Ortho-Phosphate	Chloride	Oil & Grease	SSC
Sample Date	Sample Source	Sample Type	Lab ID	Sample Results																			
				umhos/cm	su	mg/L						Su	NTUs	mg/L									
10/26/2000	storm	C	CEL	199	6.75J	72	21	18		150	220						2.1	0.49		0.06J	35		
1/24/2001	snowmelt	C	CEL	1210	8.00	412	45.8	46.6		7030	5100		8.2J			0.28J	0.6	3.14		0.10	3700		
3/9/2001	snowmelt	C	CEL	3580	7.54J	200	48.4	43.7		2310	3240		143J			0.83J	5.6	9.9		0.05J	950		
3/25/2001	snowmelt	C	CEL	652	7.71	36	33.7	29.3		357	179		388J			0.43	0.7	1.65		0.26	140		
4/19/2001	storm	C	CEL	757	8.33	32	53.5	46.5		467	511		301			0.46	0.8	0.68J		0.24	170		
4/20/2001	storm	C	CEL	1840	8.53J	76	16.5	15.0		970	1110		467J			0.14J	0.7	2.72		0.08J	510		
8/2/2000	storm	G	CEL																			5U	
8/3/2000	storm	C	CEL	39	6.59	12	12.8	10.6		27	48		39			0.41	2.5	0.17		0.11	1U		
2/20/2001	snowmelt	C	CEL	841	7.79	190	29.3	16.9		4430	3020		2620			0.36J	3.1	0.08		0.08	2600		
2/21/2001	snowmelt	C	CEL	372	8.17	124	9.9	9.1		1810	26		1300			0.34	0.8	0.48		0.08	1200		
3/25/2001	precip.	G	CEL							1U	27					0.17					1U		
3/25/2001	snowmelt	C	CEL	479	7.45	48	18.1	16.7		240	1270		588			0.22		0.15		0.11	120		
3/25/2001	precip.	C	CEL							1U	27					0.17					1U		
4/7/2001	snowmelt	C	CEL	1270	7.07J	70	20	18.5		868	1230		680J			0.24J	1.3	0.52J		0.04J	300		
4/7/2001	precip.	C	CEL	11	5.57					7	14					.1UJ					1.1		
4/11/2001	snowmelt	C	CEL	7860	7.91	156	23.0	20.0		4240	1440		493			0.31	0.7	0.79J		0.14	2300		
4/12/2001	precip.	C	CEL	82	5.65J	4	4.6	5.4		97	20		12J			.35J	0.3	.03U		.03UJ	22		
4/18/2001	storm	C	CEL	824	8.28	20	24.0	19.5		460	704		403			0.25	0.6	0.55J		0.14	200		

Stormwater Analytical Results
Summary of Nutrient Analytical Results
Caltrans Tahoe Highway
Runoff Characterization and Sand Trap Effectiveness Studies

Sample Information				CONVENTIONALS										NUTRIENTS							OTHER CONSTITUENTS		
				EC	pH	Hardness (as CaCO3)	TOC	DOC	COD	TDS	TSS	Color	Turbidity	Ammonia (as N)	Nitrite (as N)	Nitrate (as N)	TKN	Total Phosphorus	Dissolved Phosphorus	Ortho-Phosphate	Chloride	Oil & Grease	SSC
Sample Date	Sample Source	Sample Type	Lab ID	Sample Results																			
				umhos/cm	su	mg/L						Su	NTUs	mg/L									
4/20/2001	storm	C	CEL	3220	7.80J	84	16.5	16.8		1650	1100		700J			0.17J	0.7	3.3		0.07J	970		
4/21/2001	precip.	C	CEL	18	6.55J	2U	1U	1U		7	1U					.1UJ	0.1	0.05			1.1		
8/3/2000	storm	C	CEL																			5U	
8/3/2000	storm	C	CEL	55	6.34	6	21.7	18.5		43	263		138			0.66	4.8	0.39		0.16	2.8		
8/30/2000	storm	G	CEL																			7	
8/30/2000	storm	C	CEL	169	5.61	20	80.5	65		220	25		66			1J	4.8	0.54		0.38	16		
10/10/2000	snowmelt	C	CEL	834	6.25	28	16.7	13.5		453	64					0.3	1.5	0.13		0.12			
10/26/2000	snowmelt	C	CEL	1250	7.02J	96	12	9		670	88						0.9	0.25		0.03UJ	370		
3/10/2001	snowmelt	C	CEL	5920	7.03J	82	4.5	4.7		2770	170		652J			0.29J	0.3	0.62		0.04J	2100		
3/11/2001	snowmelt	C	CEL	1900	6.83	66	4.2	4.0		927	239		673			0.24	0.4	0.68		0.11	510		
3/25/2001	precip.	C	CEL							1U	1U					0.2					1U		
4/6/2001	snowmelt	C	CEL	3320	6.68J	90	28.5	25.5		1920	796		587J			0.47J	0.8	0.53J		0.03UJ	960		
4/7/2001	precip.	C	CEL	5	5.52					1U	7					.1UJ					1U		
4/11/2001	storm	C	CEL	16200	7.22	144	14.5	13.8		8780	920		675			0.15	0.8	0.73J		0.09	5300		
4/12/2001	precip.	C	CEL	11	5.86J	2U	1	1.6		43	3		1.1J			.14J	.1U	.03U		.03UJ	2		
4/21/2001	precip.	C	CEL	174	7.3J	20	1U	1.6		73	2					.1UJ	0.8	0.12			45		

estimated concentration
not detected above reporting limit
grab sample
composite sample
Calscience Environmental Laboratory
PatChem Laboratory
High Sierra Water Lab
Sample analyzed using approximately 100 milliliters filtered
Sample analyzed using approximately 200 - 300 milliliters filtered

Stormwater Analytical Results
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Sample Information				TOTAL METALS								DISSOLVED METALS							
				Arsenic	Cadmium	Chromium	Copper	Iron	Nickel	Lead	Zinc	Arsenic	Cadmium	Chromium	Copper	Iron	Nickel	Lead	Zinc
Site Number	Sample Date	Sample Source	Sample Type	Sample Results (µg/L)															
3-201	09/25/2001	Storm	C	5.3	0.2 U	10.6	49.8	6660	17.2	15	288	4.1	0.2 U	6.24	29.9	447	10.8	2.59	62.6
3-201	10/30/2001	Storm	C	3.3	0.643	14	43.1	6960	17.5	20.7	271 J	0.5 U	0.2 U	6.42	17.5	397	5.24	1.1	69.6 J
3-201	11/11/2001	Storm	C	2.75	0.2 U	10.2	32.7	4320	10.6	9.7	159 J	1.71	0.2 U	5.77	19.8	172	6.84	1 U	59.7 J
3-201	11/12/2001	Storm	C	1.57	0.346	8.31	29.2	4160 J	3.94	14.6	181	0.561	0.2 U	4.28	9.67	25 UJ	2 U	1 U	69.2
3-201	11/30/2001	Snow melt	C	4.72	1.07	18.6	45.6	24500	15.2	51.8	425	0.5 U	0.346	4.41	10.1	164	3.46	2.71	52.9
3-201	12/04/2001	Snow melt	G	6.87	2.6	33	72.6	26700	21.8	87	734 J	8.06	0.2 U	6.69	11.3	299	2.05	1 U	55.2 J
3-201	12/05/2001	Snow melt	C	9.07	3.30	39.80	89.2	36464	27.2	129	804 J	1.34	0.2 U	6.57	9.88	1164	2.96	2.40	109 J
3-201	12/06/2001	Snow melt	C	6.58	2.04	36	92	31800	26.6	106	950 J	1.11	0.2 U	5.62	8.52	2020	2.1	4.25	58.1 J
3-201	12/17/2001	Snow melt	C	8.14	3.81	53.9	84.9	80700	31.9	176	778 J	1.22	0.2 U	9.06	6.44	25 U	2.22	1 U	21.7 J
3-201	01/22/2002	Snow melt	C	11.3	0.643	29.6	82.8	68400 J	26.6 J	83.2	533 J	1.84	0.2 U	5.34	16.8	68.2 J	5.34 J	8.37	126 J
3-201	02/14/2002	Storm	C	8	0.958	25.3	58.6	25200	18.7	72.7	458	3.27	0.2 U	4.85	11.8	93.9	4.21	1 U	37.8
3-201	03/05/2002	Storm	C	4.7	0.717	17.6	45.8	10338 J	10.8	28.0	271 J	2.71	0.2 U	9.61	8.58	364 J	2.69	1.51	31.0 J
3-201	03/08/2002	Snow melt	C	7.71	0.896	19.5	55	28500 J	16.1	50.3	316 J	0.761	0.2 U	3.32	4.29	133 J	2.86	1 U	31.5 J
3-201	03/10/2002	Snow melt	C	6.96	1.51	20.8	65.2	31400	14	74.3	488	1.72	0.2 U	7.62	8.8	601	5.37	2.08	79.3
3-201	04/26/2002	Storm	C	6.06	1.35	23.5	59.2	3170	19.6	54	409 J	1.98	0.2 U	6.12	19	2260	5.33	1.75	51 J
3-202	08/09/2001	Precip.	G	1.24	0.204 J	2.98 J	6.59 J	619	2.05 J	2.59 J	450	0.5 U	0.2 UJ	1.78 J	1.76 J	25 U	2 U	1 U	259
3-202	08/09/2001	Storm	C	18.5	1.33 J	30.5 J	54.6 J	18500	35.2 J	47.9 J	252	8.65	0.212 J	12.5 J	10.6 J	25 U	3.88 J	1 U	17.9
3-202	09/25/2001	Precip.	G	0.5 U	0.2 U	1 U	4.75	238	2 U	1 U	26.3					72			
3-202	09/25/2001	Storm	C	5.29	0.2 U	6.08	16.8	3660	10.6	9.39	112	3.08	0.2 U	2.44	7.78	74	2.76	1 U	8.44
3-202	10/30/2001	Precip.	G	0.5 U	0.2 U	1 U	1 U	25 U	2 U	1 U	57.8 J								
3-202	10/30/2001	Storm	C	8.23	0.698	23.8	29.2	8600	23.8	15.6	176 J	3.16	0.2 U	12.1	8.89	125	3.69	1 U	9.17 J
3-202	11/12/2001	Precip.	G	0.5 U	0.2 U	1 U	2.86	25 UJ	2 U	1 U	28								
3-202	11/12/2001	Storm	C	5.9	0.288	12.8	26.3	7060 J	15.5	11.2	153	2.63	0.2 U	4.94	5.05	25 UJ	2 U	1 U	66.7
3-202	12/06/2001	Snow melt	C	1.79	0.314	4.75	17.4	9900 J	6.71	9.48	116 J	0.5 U	0.2 U	1.37	5.6	289 J	3.59	1 U	38.7 J
3-202	12/21/2001	Precip.	G	0.5 U	0.517	1.4	3.56	127 J	2.02	2.55	32.1 J								
3-202	12/29/2001	Precip.	G	0.5 U	0.2 U	1 U	1.43	309	2 U	1 U	12.7								
3-202	12/30/2001	Storm	C	3.83	1.34	10.3	36.3	13900 J	11.9	30.4	351 J	0.522	0.28	1.19	4.43	139 J	2 U	1 U	23.9 J
3-202	01/02/2002	Precip.	G	0.5 U	0.2 U	1 U	1.11	207	2 U	1 U	10.2 J								
3-202	01/02/2002	Storm	C	4.88	0.2 U	14.9	47.5	20500	14.5	37.3	343 J	0.999	0.2 U	1.88	7.4	828	2.13	1.12	23.1 J
3-202	01/06/2002	Precip.	G	0.5 U	0.2 U	1 U	1.48	48.8	2 U	1 U	31.3								
3-202	01/22/2002	Precip.	G	0.5 U	0.2 U	1 U	2.2	134	2 UJ	1 U	36.4 J								
3-202	02/02/2002	Snow melt	C	3.8	0.927	6.41	31.9	23700 J	10.1	16.6	224 J	0.8	0.2 U	1.87	9.9	140 J	3.46	1 U	69.3 J
3-202	02/09/2002	Storm	C	3.83	0.576	9.82	40.3	12200	11.8	17.8	299	1.33	0.2 U	2.54	7.53	753	2 U	1.13	43.5
3-202	02/10/2002	Snow melt	C	2.83	0.415	16.3	94	9340	24.9	18.5 J	280 J	0.995	0.2 U	1.69	6.21	1460	2 U	1.33 J	56.5 J
3-202	02/19/2002	Storm	C	9.74	1.63	21.3 J	75.6 J	31500	22.6 J	40.9 J	566	1.11	0.2 U	3.57 J	8.05 J	628	2.14 J	1.36 J	45.2
3-202	03/05/2002	Storm	C	3.3	0.639	12.1	29.5	8990 J	7.76	14.7	203	1.66	0.2 U	6.88	6.68	507 J	2.22	1 U	27.9
3-202	03/07/2002	Storm	C	12.6	8.41	26.1	62.8	25200 J	38.8	53.6	401 J	1.73	0.2 U	4.95	4.29	258 J	2 U	1 U	23 J
3-202	03/08/2002	Storm	C	2.95	0.2 U	5.62	18.8	7040 J	5.69	9.10	104 J	0.541	0.2 U	2.26	2.3	97.5 J	2 U	1 U	54.7 J
3-202	03/09/2002	Storm	C	2.56	0.228	4.95	20.3	7690	5.5	10.6	123	0.968	0.2 U	1.47	3.6	443	2 U	1 U	21.4
3-202	03/22/2002	Storm	C	6.65	0.482	25.1	54.3	36400	21.9	64.6	318 J	0.525	0.2 U	4.42	4.71	653	2.43	1 U	20.7 J
3-202	04/27/2002	Storm	C	6.01	0.2 U	12.5	46.9	1340	15.1	17.9	261 J	2.47	0.2 U	4.93	17.1	1090	6.27	2.44	88.7 J

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Sample Information				TOTAL METALS								DISSOLVED METALS							
				Arsenic	Cadmium	Chromium	Copper	Iron	Nickel	Lead	Zinc	Arsenic	Cadmium	Chromium	Copper	Iron	Nickel	Lead	Zinc
Site Number	Sample Date	Sample Source	Sample Type	Sample Results (µg/L)															
3-203	09/25/2001	Precip.	G	0.5 U	0.2 U	1 U	2.24	72	2 U	1.27	21.4								
3-203	10/30/2001	Precip.	G	0.5 U	0.2 U	1 U	1.13	25 U	2 U	1 U	106 J								
3-203	10/30/2001	Storm	C	0.5 U	0.315	7.41	12.1	1180	5.46	12.5	147 J	0.5 U	0.336	2.76	6.76	145	3.62	5.29	120 J
3-203	11/11/2001	Storm	C	0.5 U	0.2 U	5.38	8.93	1490	3.91	9.39	84.4 J	0.5 U	0.2 U	1.84	4.55	25 U	2.04	1 U	18.7 J
3-203	11/13/2001	Precip.	G	0.5 U	0.2 U	1 U	1.9	25 UJ	2 U	1 U	30.4								
3-203	12/21/2001	Precip.	G	0.5 U	0.326	2.01	5.98	859 J	3.4	2.95	44.4 J								
3-203	12/28/2001	Precip.	G	0.5 U	0.2 U	1 U	1 U	25 U	2 U	1 U	6.93								
3-203	01/03/2002	Precip.	G	0.5 U	0.2 U	1 U	1.28	111	2 U	1 U	11.7 J								
3-203	01/05/2002	Precip.	G	0.5 U	0.2 U	1 U	1 U	25 U	2 U	1 U	5 U								
3-203	01/05/2002	Storm	C	2.88	0.2 U	19.2	30.8	11100	12.7	41.3	210	0.5 U	0.2 U	2.03	2.26	128	2 U	1 U	26.9
3-203	01/22/2002	Precip.	G	0.5 U	0.2 U	1 U	2.08	34.1	2 UJ	1 U	11.1 J								
3-203	01/24/2002	Snow melt	C	4.39	1.87	22.8	44.5	15900 J	23.2 J	53.2	305 J	0.806	2.16	1.26	10.4	74 J	11.2 J	1 U	122 J
3-203	01/31/2002	Snow melt	C	1.99	1.64	16.6	29.1	15800 J	17.5	45	229 J	0.844	1.4	2.25	7.67	25 U	9.56	1 U	210 J
3-203	02/02/2002	Snow melt	C	6.12	1.4	38.9	56	34600 J	29.5	105	410 J	0.5 U	0.557	1.31	4.91	37.5 J	5.85	1 U	124 J
3-203	02/03/2002	Snow melt	C	5.39	0.852	33.4	51.8	36800 J	24.4	90.2	417 J	0.5 U	0.269	1.34	5.59	61 J	5.25	1 U	101 J
3-203	02/04/2002	Snow melt	C	6.62	0.471	30.4	44.7	21000	21.2	60.1	263 J	0.5 U	0.2 U	1.39	3.95	52.0	3.17	1 U	71.3 J
3-203	02/21/2002	Snow melt	C	2.43	1.52	15.9	32.2	19500	12.4	39.6	226	0.658	0.2 U	14.4	5.72	526	7.18	1.53	35.5
3-203	02/25/2002	Snow melt	C	2.91	0.2 U	16.1	28.4	12600	11.6	34.3	190	0.5 U	0.2 U	1.75	4.44	765	2 U	2.43	26.9
3-203	02/26/2002	Snow melt	C	2.89	0.311	15.9	26	9600	10.8	36.3	170 J	0.582	0.2 U	1.74	2.66	1130	2 U	1 U	12.7 J
3-203	02/27/2002	Snow melt	C	2.46	0.2 U	13.4	22.1	8410	8.76	31.3	136 J	0.73	0.2 U	1.6	2.68	798	2 U	1 U	5 U
3-203	02/28/2002	Snow melt	C	3.06	0.318	16.7	28	9470	11.1	40	171 J	0.697	0.2 U	1.78	4.28	1060	2 U	1.9	31.1 J
3-203	03/05/2002	Storm	C	3.66	0.515	28.3	131	14800 J	15.6	57.6	251	0.5 U	0.2 U	8.84	4.38	324 J	2.95	1 U	50.7
3-203	03/22/2002	Storm	C	4.25	0.2 U	30.1	51.5	19800	21.3	70.2	248 J	0.5 U	0.2 U	3.96	4.94	388	3.22	1.31	27.3 J
3-218	12/28/2001	Storm	C	11.2	0.366	14.2	45.6	38700	15.6	37.1	201	6.81	0.408	5.44	24.7	4460	5.13	13.5	151
3-218	12/29/2001	Storm	C	5.9	0.39	8.18	25.6	18600 J	9.74	25.1	146 J	1.4	0.2 U	1.45	6.4	352 J	2 U	1 U	13.9 J
3-218	01/02/2002	Storm	C	7.66	0.2 U	12.6	33	21200	14.3	33.5	163 J	1.4	0.2 U	1.97	5.24	464	2 U	1 U	13.4 J
3-218	01/05/2002	Storm	C	2.94	0.2 U	3.9	12.6	5180	3.96	7.75	53.7	0.739	0.2 U	1.07	3.11	62.5	2 U	1 U	16.8
3-218	02/05/2002	Snow melt	C	3.88	0.2 U	6.39	17.7	11200	7.29	10.2	74.1 J	1.54	0.2 U	2.93	8.99	3310	3.61	2.03	33.9 J
3-218	02/09/2002	Snow melt	C	1.62	0.2 U	2.61	12.4	2380	3.41 J	4.13	99.1 J	0.698	0.2 U	1.45	5.78	38.3	2 UJ	1 U	46.3 J
3-218	02/19/2002	Storm	C	5.22	0.268	7.16 J	23.4 J	15458	8.20 J	19.4 J	106	1.25	0.2 U	1.84 J	3.83 J	696	2 UJ	1.16 J	14.7
3-218	03/05/2002	Storm	C	4.88	0.336	6.60	23.3	11722 J	8.71	14.3	106 J	1.18	0.2 U	1.24	3.66	382 J	2 U	1.13	19.5
3-218	03/11/2002	Snow melt	C	1.41	0.2 U	1.92	5.59	3280	2 U	2.54	32.8	0.781	0.2 U	1 U	1.95	89.8	2 U	1 U	8.84
3-218	03/20/2002	Snow melt	C	2.29	0.2 U	2.77	10.1	4490	3.61	4.33	47.8 J	0.629	0.2 U	1 U	1.75	406	2 U	1 U	46.2 J
3-218	03/22/2002	Storm	C	2.02	0.2 U	2.98	9.01	4330	3.62	5.96	39.5 J	0.647	0.2 U	1.16	1.76	102	2 U	1 U	10.9 J
3-218	04/27/2002	Storm	C	3.43	0.2 U	2.39	12.5	4020	3.3	4.03	43.3 J	2.24	0.2 U	1.37	9.11	326	2.18	2.15	26.2 J
3-219	11/12/2001	Precip.	G	0.5 U	0.2 U	1	2.03	25 UJ	2 U	1 U	16.3								
3-219	11/12/2001	Storm	C	1.08	0.2 U	7.87	24.5	6040 J	5.28	15.9	129	0.5 U	0.2 U	2.42	15.9	25 UJ	2 U	1.86	95.7
3-219	12/21/2001	Precip.	G	0.5 U	0.228	1.79	5.12	432 J	3.25	2.54	31.3 J								
3-219	01/02/2002	Precip.	G	0.5 U	0.2 U	1 U	1 U	25 U	2 U	1 U	7.39 J								
3-219	01/03/2002	Snow melt	C	2.49	0.632	14.4	22.5	11400	8.55	16.4 J	143 J	0.5 U	0.2 U	8.53	7.18	91.6	2 U	5.45 J	32.4 J
3-219	01/22/2002	Precip.	G	0.5 U	0.2 U	1 U	2.66	64	2 UJ	1 U	14.4 J								
3-219	02/05/2002	Snow melt	C	5.96	0.418	22.1	44.3	30700	20.3	32.2	208 J	0.533	0.2 U	5.97	4.85	49.9	2 U	1 U	20.7 J
3-219	02/06/2002	Snow melt	C	4.59	0.831	19.6	35.3	9250	14.4	26.1	228 J	0.985	0.221	8.31	5.33	412	2 U	1 U	21.5 J
3-219	02/07/2002	Precip.	G	0.5 U	0.2 U	1.45	6.12	293 J	2 U	1.95	129								
3-219	02/07/2002	Storm	C	4.25	1.63	47.3	49.1	12600 J	16.6	47.2	331	0.851	0.2 U	42.1	7.43	878 J	2.08	1.68	89.8
3-219	02/08/2002	Snow melt	C	6.89	2.31	72.6	62.1	37300	24.7	57.4 J	507 J	1.17	0.2 U	51.8	11.6	837	6.07	3.11 J	119 J
3-219	02/10/2002	Snow melt	C	3.89	0.568	13.1	35.4	15500	11.3	22.2 J	190 J	0.922	0.2 U	3.78	7.05	696	2 U	1.09 J	42.2 J
3-219	02/18/2002	Snow melt	C	4.41	0.452	12.3	33.5	26600	14.6	23.2	185	0.846	0.2 U	2.94	6.11	560	2 U	1.21	26.2
3-219	02/19/2002	Precip.	G	6.45	0.539	1.68 J	8.05 J	98.3	2.64 J	1 UJ	35.4								
3-219	03/05/2002	Precip.	G	0.5 U	0.261	4.83	3.21	157 J	2 U	1.76	109 J								
3-219	03/05/2002	Storm	C	2.37	0.669	9.21	23.3	10124 J	8.95	14.3	142 J	0.622	0.2 U	4.46	4.25	460 J	2 U	1 U	18.5 J
3-219	03/06/2002	Precip.	G	0.5 U	0.302	6.22	4.33	193 J	2 U	2.27	99.0								
3-219	03/18/2002	Snow melt	C	1.96	0.2 U	6.83	21.4	8410	9.79	13.3	90.9 J	1.17	0.2 U	3.18	4.02	402	5.64	1 U	14.3 J
3-219	03/22/2002	Precip.	G	0.5 U	0.2 U	1 U	9.04	1030	2 U	1.58	61.4 J								
3-219	03/22/2002	Storm	C	3.64	0.734	26.9	39	23200	18	31.3	202 J	0.557	0.2 U	14.5	2.86	664	2 U	1 U	22.9 J

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				Arsenic	Cadmium	Chromium	Copper	Iron	Nickel	Lead	Zinc	Arsenic	Cadmium	Chromium	Copper	Iron	Nickel	Lead	Zinc
Site Number	Sample Date	Sample Source	Sample Type	Sample Results (µg/L)															
3-220	11/12/2001	Storm	C	0.655	0.2 U	5.12	19.1	4010 J	3.08	6.53	86.5	0.5 U	0.2 U	1.19	10.4	25 UJ	2 U	1 U	61.4
3-220	01/03/2002	Snow melt	C	2.96	0.2 U	7.57	20.6	11400	11.4	11.4 J	130 J	0.5 U	0.2 U	1.97	3.9	31.6	2 U	1 UJ	21.3 J
3-220	01/05/2002	Storm	C	8.54	0.645	17.5	52.8	28600	27	35.1	321	0.5 U	0.2 U	1.19	5.52	136	2 U	1 U	19.3
3-220	02/08/2002	Snow melt	C	1.26	0.276	5.2	15.9	2740	8.21	4.46 J	221 J	0.5 U	0.2 U	2.98	6.7	25 U	3.37	1 UJ	65.40 J
3-220	02/09/2002	Snow melt	C	4.17	0.29	7.99	26.6	12700	12	11.3 J	138 J	0.5 U	0.2 U	1.29	4.14	150	2 U	1 UJ	18.7 J
3-220	02/19/2002	Storm	C	8.93	1.0 U	18.7 J	67 J	40200	29.5 J	33 J	423 J	0.626	0.2 U	2.68 J	8.93 J	582	2 UJ	1 UJ	30.6 J
3-220	03/05/2002	Storm	C	4.64	0.510	15.4	34.8	17813 J	18.1	17.0	153 J	0.543	0.2 U	6.07	4.78	178 J	2 U	1 U	16.0 J
3-222	10/30/2001	Storm	C	8.54	0.79	27	32.6	8770	24.8	15.5	188 J	2.57	0.2 U	15.8	10.9	114	4.34	1 U	9.13 J
3-222	11/12/2001	Storm	C	3.9	0.2 U	13.5	21.1	5150 J	10	10.3	155	2.62	0.2 U	6.07	7.31	25 UJ	2 U	1 U	97.2
3-222	12/06/2001	Snow melt	C	1.7	0.64	4.46	16.9	8030 J	6.95	8.11	272 J	0.577	0.2 U	1.39	8.64	304 J	3.85	1 U	163 J
3-222	12/30/2001	Storm	C	3.08	0.97	6.38	27.4	9880 J	7.74	20.2	259 J	0.652	0.2 U	1 U	4.02	352 J	2 U	1 U	22.8 J
3-222	01/02/2002	Storm	C	3.09	0.2 U	8.82	34.4	8840	9.62	26.5	295 J	0.587	0.2 U	1.6	7.41	372	2 U	1 U	22.1 J
3-222	02/02/2002	Snow melt	C	3.47	0.575	5.74	26.3	14800 J	9.12	12.8	225 J	0.724	0.2 U	1.64	6.42	25 UJ	4.2	1 U	91.1 J
3-222	02/09/2002	Snow melt	C	2.84	0.302	7.27	26.9	7170	7.56	10.7	224	1.05	0.2 U	3.37	7.63	676	2 U	1.14	47
3-222	02/10/2002	Snow melt	C	3.04	0.303	6.2	23.2	8950	6.64	10.2 J	202 J	0.863	0.2 U	3.22	7.36	963	2 U	1.43 J	82.4 J
3-222	02/19/2002	Storm	C	6.42	1.01	15.7 J	53.3 J	30400	14.9 J	31.8 J	417	0.768	0.2 U	3.19 J	7 J	411	2.09 J	1 UJ	37.1
3-222	03/05/2002	Storm	C	2.74	0.466	9.94	23.6	5870 J	6.52	11.1	192	1.51	0.2 U	6.5	7.29	448 J	2.13	1 U	45.8
3-222	03/08/2002	Snow melt	C	2.78	0.378	7.42	20.4	7070 J	6.07	11.2	183 J	1.2	0.2 U	4.05	4.43	427 J	2.32	1 U	138 J
3-222	03/09/2002	Storm	C	1.9	0.205	3.34	12.3	4320	3.97	8.09	119	0.666	0.2 U	2.11	3.35	224	2.17	1 U	52.9
3-222	03/23/2002	Storm	C	4.38	0.2 U	17	37.9	20800	15.5	40.8	326 J	0.549	0.2 U	4.82	5.33	379	3.05	1 U	57 J
3-222	04/27/2002	Storm	C	3.83	0.689	9.98	33.7	15200	12.3	16.8	344 J	1.91	0.224	4.16	14.6	1050	6.9	1 U	124 J
3-223	10/30/2001	Storm	C	0.506	0.273	5.14	9.31	832	4.79	12.2	128 J	0.5 U	0.2 U	2.69	6.6	69.1	2 U	1 U	39.4 J
3-223	11/11/2001	Storm	C	0.5 U	0.2 U	6.19	12.9	1600	4.42	9.59	126 J	0.5 U	0.2 U	2.09	5.96	25 U	2.73	1 U	62.3 J
3-223	01/05/2002	Storm	C	2.15	0.2 U	14	24.3	7920	9.67	29	188	0.5 U	0.2 U	1.97	4.05	90.6	2 U	1 U	21.5
3-223	01/24/2002	Snow melt	C	2.13	1.46	12.1	26.5	7320 J	18 J	24.1	1460 J	0.5 U	1.72	2.03	12.5	96.2 J	11.3 J	1 U	1390 J
3-223	01/31/2002	Snow melt	C	2.06	2.20	11.1	21.3	6980 J	14.8	27.1	512 J	0.5 U	1.8	2.13	8.96	43.4 J	9.94	1 U	455 J
3-223	02/02/2002	Snow melt	C	5.59	1	23.5	36	24400 J	20.5	51.6	332 J	0.5 U	1.05	1.41	5.53	168 J	6.68	1 U	278 J
3-223	02/03/2002	Snow melt	C	4.1	0.614	19.5	32.8	16500 J	17	49	338 J	0.5 U	0.456	1.25	5.45	25.4 J	5.02	1 U	109 J
3-223	02/21/2002	Snow melt	C	2.55	1.61	14.6	32.2	15400	14.7	33.9	248	0.5 U	0.2 U	2.88	4.38	581	2 U	1.35	30.7
3-223	02/25/2002	Snow melt	C	2.05	0.2 U	11.3	20.9	9460	8.13	23.5	170	0.5 U	0.2 U	1.79	4.19	616	2 U	1.83	29.5
3-223	02/26/2002	Snow melt	C	2.76	0.248	14.8	32.5	8050	13.4	31.7	203 J	0.541	0.2 U	1.49	3.48	937	2 U	1 U	8.77 J
3-223	02/27/2002	Snow melt	C	2.16	0.2 U	12.9	24.6	7910	9.12	32	207 J	0.618	0.2 U	1.92	3.2	953	2 U	1 U	13.6 J
3-223	02/28/2002	Snow melt	C	2.78	0.215	13.1	23.1	7630	9.61	31.4	204 J	0.876	0.2 U	1.56	4.54	827	2 U	1.58	36.3 J
3-223	03/05/2002	Storm	C	4.83	0.506	33.5	46.6	19900 J	18	65.1	293	0.792	0.2 U	8.8	6.13	783 J	3.36	1.76	80

Notes
J = estimated concentration
U = not detected above reporting limit
G - grab sample
C = composite sample

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Sample Information					CONVENTIONALS										NUTRIENTS							OTHER CONSTITUENTS		
					EC	pH	Hardness (as CaCO3)	TOC	DOC	COD	TDS	TSS	Color	Turbidity	Ammonia (as N)	Nitrite (as N)	Nitrate (as N)	TKN	Total Phosphorus	Dissolved Phosphorus	Ortho-Phosphate	Chloride	Oil & Grease	SSC
					Sample Results																			
Site Number	Sample Date	Sample Source	Sample Type	Lab ID	umhos/cm	su	mg/L						Su	NTUs	mg/L									
3-201	09/25/2001	Storm	C	CEL	410	8.04	100	180	160	630	530	330	300	150			1.6	14	0.67		0.58	40		
3-201	10/30/2001	Storm	C	CEL	210	6.42	44	60	54 J	320	190	220	300	160			0.57	0.84	0.48		0.32	21		
3-201	11/11/2001	Storm	C	CEL	37	7.38	60	120	98	460	330	190	100	98	1.0	0.55	0.92	5.2	0.27	0.23	0.22	72		
3-201	11/12/2001	Storm	C	CEL	83	7.11	30	18	15	190	77	190	120	110 J	0.56	0.10 U	0.24	1.7	0.76	0.16	0.14	10		
3-201	11/30/2001	Snow melt	C	CEL	3300	7.05 J	160	46	16		1600	1500	60	1100 J	0.90	0.10 UJ	0.22 J	2.8	0.092	0.063	0.03 UJ	1000		
3-201	12/05/2001	Snow melt	C	CEL	8208	8.71	248	58.6	19.4 J	1392	4720	2372	300	371.6	0.5712	0.50 U	0.61	3.5	0.226 J	0.11	0.09	2852		
3-201	12/06/2001	Snow melt	C	CEL	17000	8.55	130	78	17	1200	870	2000	400	460	0.1 U	0.50 U	0.50 U	1.8	0.24	0.11	0.10	450		
3-201	12/17/2001	Snow melt	C	CEL	2800	8.32	2500	29	25 J	1700	1500	2500	800	150	0.33	0.10 UJ	0.29 J	4.2	0.75	0.13	0.091 U	880		
3-201	01/22/2002	Snow melt	C	CEL	10000	7.72	420	78	69	2800	5500	2400	500	1300	3.0	0.50 U	1.2	7.8	1.5	0.18 J	0.10	6500		
3-201	02/14/2002	Storm	C	CEL	3500	7.28 J	56	76	62	1100	1800	410	300	790 J	0.28	0.20 R	0.33 J	5.9	0.23	0.10	0.064 J	1100		
3-201	03/05/2002	Storm	C	CEL	2125	8.22	84	39 J	32.5	462	1197	492	324	349	1.09	0.1 U	0.378	3.14	0.180 J	0.157	0.138	624		
3-201	03/08/2002	Snow melt	C	CEL	6000	7.54	240	18 J	17	650	3300	1400	500	1200	0.10 U	0.20 U	0.26	3.2	0.41	0.057	0.056	2100		
3-201	03/10/2002	Snow melt	C	CEL	5000	7.83	180	26 J	22 J	970	2700	2000	400	1200	0.95	0.10 U	0.20 J	3.4	0.48	0.11	0.081	1800		
3-201	4/26/2002	Storm	C	CEL	1800	5.99 J	88	130 J	110	1000	950	830	800	350 J	0.28	0.10 UJ	1.1 J	6.3	0.27	0.072	0.068 J	490		
3-202	08/09/2001	Storm	C	CEL	170	9.55	200	32	27		140	770		520			0.62 J	2.7	0.46		0.17	8.0		
3-202	08/09/2001	Precip.	G	CEL	21	6.01					17	47					0.44 J		0.17		0.10	1.0 U		
3-202	09/25/2001	Precip.	G	CEL	13	7.55	6.0										0.24		0.05		0.04			
3-202	09/25/2001	Storm	C	CEL	150	9.24	50	38	32	190	130	230	120	140			0.41	7.3	0.39		0.19	8.6		
3-202	10/30/2001	Precip.	G	CEL	17	7.8	8.0				7.0	15		4.5			0.13	0.1 U	0.03 U		0.03 U	1.0 U		
3-202	10/30/2001	Storm	C	CEL	190	9.4	150	32	28 J	200	180	340	200	310			0.37	1.7	0.69		0.14	10		
3-202	11/12/2001	Precip.	G	CEL	11	6.61	6.0							2.4		0.10 U	0.2	1.1	0.23	0.03 U	0.03 U	1 U		
3-202	11/12/2001	Storm	C	CEL	160	8.51	120	18	16	170	130	460	80	280	0.2 U	0.10 U	0.20	0.98	1.2	0.13	0.12	9.3		
3-202	12/06/2001	Snow melt	C	CEL	11000	7.91 J	200	19	9.1	310	5800	300	100	370 J	0.50	0.50 R	0.52 J	0.1 U	0.23	0.082	0.05 J	3900		
3-202	12/21/2002	Precip.	G	CEL	14	7.25	2 U									0.1 U	0.2	1.1	0.23		0.03 U	2.1		
3-202	12/28/2001	Storm	G	CEL																			33	
3-202	12/29/2001	Precip.	G	CEL	12	7.65 J	2.0 U									0.10 R	0.18 J	0.1 U	0.03 U		0.03 UJ	1.9		
3-202	12/30/2001	Storm	C	CEL	1500	6.95 J	80	8.5	5.7	600	810	970	250	590 J	0.28	0.10 UJ	0.13 J	2.0	0.43	0.10	0.086 J	440		
3-202	01/02/2002	Precip.	G	CEL	20	8.13	2.0 U									0.10 U	0.11	0.1 U	0.03 U		0.03 U	4.0		
3-202	01/02/2002	Storm	C	CEL	860	8.27	44	8.6 J	5.2 J	590	460	1300	350	600	0.10 U	0.10 U	0.13	1.4	0.50	0.071	0.062	220		
3-202	1/6/2002	Precip.	G	CEL	14	6.18	2 U									0.1 U	0.2	0.1 U	0.03 U		0.03 U	1.3		
3-202	1/22/2002				15	6.38	2 U									0.1 U	0.29					2.3		
3-202	02/02/2002	Snow melt	C	CEL	5300	7.17	200	17 J	13 J	340	2800	620	250	480	0.62	0.2 U	0.44	1.8	0.72	0.068	0.048	2000		
3-202	02/09/2002	Storm	C	CEL	780	7.53	40	14	11	310	460	860	60	240	0.11	0.10 U	0.15	0.84	0.43	0.076	0.054	210		
3-202	02/10/2002	Snow melt	C	CEL	510	6.95	26	11	8.4 J	150	330	340 J	200	340	0.10 U	0.10 U	0.13	0.98	0.41	0.088	0.066	140		
3-202	02/19/2002	Storm	C	CEL	1800	7.08	44	13	10	720	950	1300	400	830	0.22	0.10 U	0.13	3.2	0.44	0.071	0.042	520		
3-202	03/05/2002	Storm	C	CEL	810	7.05	36	24	19	330	390	450	150	340	0.34	0.10 UJ	0.19 J	1.1	0.15	0.11	0.11	200		
3-202	03/07/2002	Storm	C	CEL	2600	7.20	110	14 J	12	980	1400	1500	400	1400	0.45	0.10 U	0.15 J	2.7	0.33 J	0.082	0.068	800		
3-202	03/08/2002	Storm	C	CEL	3000	7.29 J	96	6.6 J	6.9	260	1600	300	150	370 J	0.28	0.10 UJ	0.16 J	0.70	0.16	0.040	0.036 J	960		
3-202	03/09/2002	Storm	C	CEL	730	7.44 J	26	7.4 J	7.7 J	210	500	210	60	330 J	0.17	0.10 UJ	0.11 J	0.98	0.16	0.058 J	0.045 J	220		
3-202	03/22/2002	Storm	C	CEL	7000	6.79 J	160	26 J	19	1000	3900	2100	400	1300 J	0.78	0.50 UJ	0.56 J	4.2	0.43	0.14	0.11 J	2600		
3-202	4/27/2002	Storm	C	CEL	3100	5.88	60	100 J	79	580	1800	370	600	360	0.56	0.20 UJ	1.1 J	3.9	0.15	0.071	0.046	980		

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					Sample Results																			
Site Number	Sample Date	Sample Source	Sample Type	Lab ID	umhos/cm	su	mg/L						Su	NTUs	mg/L									
3-203	9/25/2001	Precip.	G	CEL	20	5.09	2										0.48		0.03 U		0.05			
3-203	10/30/2001	Precip.	G	CEL	16	4.68	2.0				17	6.5		2.0			0.26	0.1 U	0.1		0.08	1.0 U		
3-203	10/30/2001	Storm	C	CEL	25	6.18	6.0	21	15 J	95	33	52	30	25			0.14	0.1 U	0.32		0.13	1.8		
3-203	11/11/2001	Storm	C	CEL	27	6.64	4.0	15	13	110	13	64	30	44	0.50 U	0.10 U	0.14	1.5	0.14	0.05	0.05	1.9		
3-203	11/13/2001	Precip.	G	CEL	6.3	5.91	2 U							0.75		0.10 U	0.18	0.1 U	0.08	0.06	0.03	1 U		
3-203	12/21/2001	Precip.	G	CEL	570	7.03	8									0.1 U	0.16	0.1 U	0.07		0.63	140		
3-203	12/28/2001	Precip.	G	CEL	8	7.52	2 U										0.16 J	5.3	0.03 U		0.03 UJ	1		
3-203	12/28/2001	Storm	G	CEL																			20	
3-203	1/3/2002	Precip.	G	CEL	18	8.11	2 U									0.1 U	0.15	0.1 U	0.03 U		0.03 U	3.6		
3-203	01/05/2002	Precip.	G	CEL	4.8	6.73	2.0 U									0.10 U	0.15	0.1 U	0.03 U		0.03 U	1.0 U		
3-203	01/05/2002	Storm	C	CEL	390	6.93	16	2.8 J	3.0	160	230	520	150	420	0.20 U	0.10 U	0.13	1.4	0.21	0.066	0.061	120		
3-203	1/22/2002	Precip.	C	CEL	10	5.5	2 U									0.11	0.34					1.0 U		
3-203	01/24/2002	Snow melt	C	CEL	14000	6.59	260	30 J	26	350	8000	670	150	500	2.0	0.50 U	0.87	5.6	0.43	0.064	0.048	9000		
3-203	01/31/2002	Snow melt	C	CEL	21000	7.19	200	17 J	15	770	12000	880	80	590	1.4	1.0 UJ	1.1 J	4.8	0.24	0.092	0.088	9000		
3-203	02/02/2002	Snow melt	C	CEL	9200	7.12	160	13 J	11 J	490	5000	1700	300	550	0.88	0.5 U	0.59	3.2	0.41	0.052	0.047	840		
3-203	02/03/2002	Snow melt	C	CEL	5700	6.75	90	12 J	10 J	480	3000	1300	300	590	0.84	0.2 U	0.35	4.3	0.45	0.083	0.071	2100		
3-203	02/04/2002	Snow melt	C	CEL	3900	6.50	42	10	8.1 J	330	2000	920	300	970	0.10 U	0.20 U	0.26	2.2	0.62	0.03 U	0.03 U	1500		
3-203	02/21/2002	Snow melt	C	CEL	360	6.97 J	30	5.6	5.0 U	170	260	540	200	380 J	0.10 U	0.10 UJ	0.10 UJ	1.1	0.66	0.091	0.043 J	98		
3-203	02/25/2002	Snow melt	C	CEL	54	6.50	12	5.4	5.0 U	150	110	590	100	450	0.10 U	0.10 U	0.11 J	0.98	0.16	0.099	0.087	11		
3-203	02/26/2002	Snow melt	C	CEL	50	7.72	18	7.1 J	5.0 U	170	100	290	150	380	0.10 U	0.10 U	0.12 J	0.56	0.20	0.12	0.12	7.9		
3-203	02/27/2002	Snow melt	C	CEL	47	7.4	8.0	3.4 J	2.4 J	180	110	250	150	370	0.10 U	0.10 U	0.10 J	0.70	0.26	0.14	0.063	5.7		
3-203	02/28/2002	Snow melt	C	CEL	43	7.39	10	3.4	2.8	220	36	370	150	500	0.10 U	0.10 UJ	0.13 J	0.98	0.27	0.10	0.080	4.3		
3-203	03/05/2002	Storm	C	CEL	2300	6.64	46	10	9.5	310	1300	780	150	610	0.10 U	0.10 UJ	0.15 J	0.10 U	0.19	0.055	0.048	720		
3-203	03/22/2002	Storm	C	CEL	4100	6.87 J	110	15 J	10	510	2300	920	300	950 J	0.28	0.2 UJ	0.31 J	2.1	0.28	0.053	0.037 J	1500		
3-218	12/28/2001	Storm	C	CEL	500	7.52 J	32	9.2	5.2	500	450	940	300	1500 J	0.20 U	0.10 R	0.12 J	1.8	0.33	0.15	0.14 J	110		
3-218	12/29/2001	Storm	C	CEL	850	7.67 J	48	6.8	5 U	430	500	1100	300	790 J	0.10 U	0.10 UJ	0.13 J	0.1 U	0.48	0.11	0.097 J	220		
3-218	01/02/2002	Storm	C	CEL	710	7.67	34	6.8 J	5 U	390	440	1100	300	760	0.10 U	0.10 U	0.13	1.7	0.55	0.073	0.057	180		
3-218	01/02/2002	Storm	G	CEL																			45	
3-218	01/05/2002	Storm	C	CEL	660	6.67	26	2.6 J	2.6	84	360	140	200	250	0.10 U	0.10 UJ	0.12 J	0.70	0.18	0.054	0.051	160		
3-218	02/05/2002	Snow melt	C	CEL	4200	6.78	140	8.6 J	7.6	200	3300	650	80	390	0.11	0.20 U	0.27	1.3	0.79	0.03 UJ	0.03 U	1400		
3-218	02/09/2002	Snow melt	C	CEL	2700	6.69	46	5.9	6.0	74	1500	97	40	75	0.11	0.10 U	0.17	0.70	0.48	0.073	0.061	940		
3-218	02/19/2002	Storm	C	CEL	575	7.81	41.8	5 U	5 UJ	225	400	737	208	567	0.1 U	0.1 U	0.14	0.90	0.40	0.14	0.074	151		
3-218	03/05/2002	Storm	C	CEL	511	7.34	20.6	4.8	4.91	179	293	559	143	227	0.31 U	2 UJ	2.0 UJ	0.92	0.19	0.11	0.080	123		
3-218	03/11/2002	Snow melt	C	CEL	430	7.00	12	5.2 J	4.6 J	49	230	36	150	95	0.10 U	0.10 U	0.16	0.84	0.15	0.063	0.052	130		
3-218	03/20/2002	Snow melt	C	CEL	460	6.55	22	5.4	5.0 U	56	270	50	120	160	0.10 U	0.10 U	0.14	0.10 U	0.21	0.10	0.079	130		
3-218	03/22/2002	Storm	C	CEL	2000	6.79 J	66	11 J	8.2	130	1100	210	100	200 J	0.10 U	0.10 UJ	0.15 J	0.84	0.10	0.086	0.067 J	680		
3-218	4/27/2002	Storm	C	CEL	400	6.41	6.0	35 J	26	170	260	110	150	87	0.10 U	0.10 UJ	0.35 J	0.98	0.19	0.13	0.062	85		
3-219	11/12/2001	Precip.	G	CEL	16	6.14	4.0							5.4 J		0.10 U	0.20	0.1 U	0.36	0.15	0.14	1 U		
3-219	11/12/2001	Storm	C	CEL	71	6.15	100	99	94	470	130	510	120	320 J	0.39	0.10 U	0.35	3.6	0.95	0.14	0.12	4.5		
3-219	12/21/2001	Precip.	G	CEL	17	7.16	12									0.1 U	0.2		0.046		0.03	2.9		
3-219	01/02/2002	Precip.	G	CEL	6.3	8.08	2.0 U									0.10 U	0.13	0.1 U	0.03 U		0.03 U	1 U		
3-219	01/03/2002	Snow melt	C	CEL	1100	6.81 J	100	16 J	11 J	270	630	540	40	460 J	0.10 U	0.10 UJ	0.13 J	0.98	0.13	0.047	0.03 UJ	320		
3-219	1/6/2002	Storm	G	CEL																			11	
3-219	1/22/2002	Precip.	C	CEL	11	5.65	2 U									0.1 U	0.25		0.03 U		0.03 U	1.4		
3-219	02/05/2002	Snow melt	C	CEL	2100	7.3	120	31 J	21	600	2500	670	300	960	0.17	0.10 U	0.20	2.4	0.99	0.065 J	0.058	620		
3-219	02/06/2002	Snow melt	C	CEL	1400	7.49	84	25 J	18	360	790	650	400	610	0.10 U	0.43 J	0.17 J	1.8	0.21	0.068	0.066	380		
3-219	02/07/2002	Precip.	C	CEL	7.9	6.82	2.0 U									0.10 U	0.23	0.1 U	0.031	0.13	0.03 U	3.0		
3-219	02/07/2002	Storm	C	CEL	2200	7.77	120	29	29	910	1300	1900	500	1400	0.39	0.10 U	0.42	3.4	0.88	0.13	0.12	560		
3-219	02/08/2002	Snow melt	C	CEL	2200	7.42 J	150	30	25	1300	1300	470	300	1000 J	0.28	0.10 UJ	0.44 J	2.9	0.77	0.095	0.056 J	700		
3-219	02/10/2002	Snow melt	C	CEL	830	7.22	68	19	17 J	350	460	580	250	600	0.10 U	0.10 U	0.16	1.7	0.48	0.12	0.084	220		
3-219	02/18/2002	Snow melt	C	CEL	1000	7.57	94	18 J	11 J	490	590	770	200	830	0.10 U	0.10 U	0.17	1.8	1.5	1.1	0.12	290		
3-219	2/19/2002	Precip.	C	CEL	5.8 J	7.73								2.6		0.1 U	0.11	0.42	0.26	0.03 U	0.03 U	1.1 J		
3-219	03/05/2002	Precip.	C	CEL	4.34	6.34	2 U									0.1 U	0.25	0.1 U	0.03 UJ		0.03 U	3.52		
3-219	03/05/2002	Storm	C	CEL	188	7.28	27.6	16.4 J	13	246	126	374	240	246	0.1 U	0.1 U	0.198	1.03	0.204 J	0.106	0.09	33.2		
3-219	03/18/2002	Snow melt	C	CEL	3100	7.13	180	22	17	310	1700	440	150	470	0.39	0.20 U	0.28 J	1.8	0.25	0.060	0.042	1600		
3-219	03/22/2002	Precip.	C	CEL	8.8	7.43 J	4.0									0.10 UJ	0.13 J	0.10 U	0.03 U		0.03 UJ	1.0		
3-219	03/22/2002	Storm	C	CEL	920	6.99 J	80	14 J	11	420	540	110	400	780 J	0.10 U	0.10 UJ	0.21 J	0.56	0.64	0.14	0.096 J	250		

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Sample Information					CONVENTIONALS										NUTRIENTS							OTHER CONSTITUENTS		
					EC	pH	Hardness (as CaCO3)	TOC	DOC	COD	TDS	TSS	Color	Turbidity	Ammonia (as N)	Nitrite (as N)	Nitrate (as N)	TKN	Total Phosphorus	Dissolved Phosphorus	Ortho-Phosphate	Chloride	Oil & Grease	SSC
					Sample Results																			
Site Number	Sample Date	Sample Source	Sample Type	Lab ID	umhos/cm	su	mg/L						Su	NTUs	mg/L									
3-220	11/12/2001	Storm	C	CEL	56	6.48	8.0	14	14	160	60	210	80	210 J	0.30 U	0.10 U	0.14	1.1	0.28	0.16	0.14	9.3		
3-220	01/03/2002	Snow melt	C	CEL	1800	6.8 J	46	5.3 J	5.0 U	240	1100	770	30	420 J	0.67	0.10 R	0.17 J	1.4	0.13	0.034	0.03 UJ	570		
3-220	01/05/2002	Storm	C	CEL	1000	6.55	28	7.5 J	5.7	440	580	1600	250	680	0.44	0.10 UJ	0.16 J	1.1	0.51	0.047	0.037	300		
3-220	01/06/2002	Storm	G	CEL																			12	
3-220	02/08/2002	Snow melt	C	CEL	7200	7.06 J	130	9.9	10	150	3800	130	40	69 J	2.7	0.50 UJ	0.60 J	3.9	0.35	0.042	0.03 UJ	2700		
3-220	02/09/2002	Snow melt	C	CEL	1100	6.54 J	24	9.4	7.2 J	190	620	610	200	620 J	0.28	0.10 UJ	0.18 J	2.1	0.35	0.050	0.046 J	350		
3-220	02/19/2002	Storm	C	CEL	770	7.01	30	11	7.8	580	500	1600	400	1000	0.45	0.10 U	0.15	2.9	0.61	0.069	0.03 U	190		
3-220	03/05/2002	Storm	C	CEL	884	6.46	37.7	14.6 J	13.6	383	492	1101	178.5	517	0.93	0.1 U	0.21	2.27	0.22 J	0.085	0.064	233		
3-222	10/30/2001	Storm	C	CEL	240	9.41	140	52	47 J	240	240	270	200	330			0.52	2.0	0.85		0.14	13		
3-222	11/12/2001	Storm	C	CEL	160	7.62	80	12	11	140	120	280	80	180	0.1 U	0.10 U	0.20	1.1	1.3	0.13	0.11	9.1		
3-222	12/06/2001	Snow melt	C	CEL	9600	7.42 J	210	19	8.6	300	5200	230	150	350 J	0.44	0.50 R	0.55 J	0.1 U	0.13	0.084	0.061 J	3700		
3-222	12/30/2001	Storm	C	CEL	1700	7.02 J	72	8.6	5.6	440	810	670	250	560 J	0.22	0.10 UJ	0.14 J	1.7	0.89	0.044	0.036 J	500		
3-222	01/02/2002	Storm	C	CEL	1000	8.32	52	8.4 J	6 J	520	550	1100	350	620	0.10 U	0.10 U	0.13	2.4	0.49	0.06	0.055	280		
3-222	02/02/2002	Snow melt	C	CEL	5600	7.24	180	18 J	15 J	310	3000	380	250	430	0.73	0.2 U	0.55	1.8	0.70	0.069	0.040	2000		
3-222	02/09/2002	Snow melt	C	CEL	1400	7.25	48	16	13	220	750	270	80	280	0.67	0.10 U	0.19	0.98	0.39	0.039	0.03 U	430		
3-222	02/10/2002	Snow melt	C	CEL	900	7.13	34	13	9.4 J	170	520	300 J	200	390	0.11	0.10 U	0.15 J	1.3	0.40	0.059	0.039	280		
3-222	02/19/2002	Storm	C	CEL	2800	7.19	86	14	11	550	1500	940	400	760	0.11	0.10 U	0.15	2.5	0.23	0.055	0.03 U	900		
3-222	03/05/2002	Storm	C	CEL	760	7.02	34	27	23	320	390	330	150	300	0.10 U	0.10 UJ	0.24 J	0.10 U	0.10	0.085	0.085	200		
3-222	03/08/2002	Snow melt	C	CEL	3100	7.06 J	90	8.0 J	8.0	280	1700	280	200	520 J	0.34	0.20 UJ	0.23 J	0.98	0.21	0.035	0.034 J	980		
3-222	03/09/2002	Storm	C	CEL	1900	7.06 J	56	7.3 J	6.9 J	130	840	120	120	200 J	0.22	0.10 UJ	0.14 J	0.70	0.077	0.032 J	0.03 UJ	600		
3-222	03/23/2002	Storm	C	CEL	6600	6.87 J	180	26 J	19	830	3700	1000	400	1100 J	0.45	0.50 UJ	0.54 J	2.9	0.34	0.14	0.13 J	2500		
3-222	4/27/2002	Storm	C	CEL	3700	5.82 J	80	84 J	67	550	1900	450	600	330 J	0.22	0.20 U	1	3.9	0.087	0.06	0.055	1100		
3-223	10/30/2001	Storm	C	CEL	28	5.75	2.0	22	19 J	69	43	29	30	26			0.13	0.1 U	0.35		0.13	1.5		
3-223	11/11/2001	Storm	C	CEL	37	7.18	6.0	20	18	72	33	45	30	52	0.50 U	0.10 U	0.16	1.5	0.13	0.05	0.04	3.1		
3-223	01/05/2002	Storm	C	CEL	550	6.63	14	2.8 J	3.4	120	310	310	200	350	0.20 U	0.10 U	0.13	0.56	0.18	0.048	0.03 U	150		
3-223	01/24/2002	Snow melt	C	CEL	14000	6.61	250	42 J	38	300	7500	300	150	250	1.7	0.50 U	0.90	5.5	0.32	0.051	0.035	7100		
3-223	01/31/2002	Snow melt	C	CEL	22000	7.16	230	17 J	15	320	13000	460	80	390	1.4	1.0 UJ	1.0 UJ	4.6	0.13	0.041	0.03 U	9000		
3-223	02/02/2002	Snow melt	C	CEL	12000	6.54	130	14 J	12 J	340	6500	710	250	330	0.84	0.5 U	0.72	3.8	0.4	0.039	0.036	5600		
3-223	02/03/2002	Snow melt	C	CEL	7000	6.71	110	13 J	13 J	260	3700	560	250	450	0.73	0.2 U	0.37	4.1	0.52	0.093	0.081	2700		
3-223	02/21/2002	Snow melt	C	CEL	500	6.49 J	26	5.8	5.0 U	150	330	360	200	300 J	0.10 U	0.10 UJ	0.10 UJ	0.70	0.17	0.087	0.034 J	150		
3-223	02/25/2002	Snow melt	C	CEL	58	6.40	10	5.2	5.0 J	130	70	210	80	350	0.10 U	0.10 U	0.11 J	0.84	0.15	0.079	0.067	13		
3-223	02/26/2002	Snow melt	C	CEL	63	7.01	16	5.8 J	5.0 U	180	120	190	150	330	0.10 U	0.10 U	0.11 J	0.42	0.21	0.11	0.094	9.6		
3-223	02/27/2002	Snow melt	C	CEL	52	6.81	12	3.2 J	2.5 J	180	150	170	150	340	0.10 U	0.10 U	0.11 J	0.84	0.16	0.11	0.062	7.7		
3-223	02/28/2002	Snow melt	C	CEL	51	7.06	12	3.3	2.8	200	170	240	150	400	0.10 U	0.10 UJ	0.14 J	0.84	0.25	0.086	0.058	5.9		
3-223	03/05/2002	Storm	C	CEL	1900	6.50	46	10	9.5	330	980	860	150	660	0.10 U	0.10 UJ	0.21 J	1.7	0.27	0.14	0.14	570		

Notes

J = estimated concentration
U = not detected above reporting limit
G - grab sample
C = composite sample
CEL = Calscience Environmental Laboratory
PCL = PatChem Laboratory
HS = High Sierra Water Lab
* = Sample analyzed using approximately 100 milliliters filtered
** = Sample analyzed using approximately 200 - 300 milliliters filtered

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Sample Information				TOTAL METALS								DISSOLVED METALS							
				Arsenic	Cadmium	Chromium	Copper	Iron	Nickel	Lead	Zinc	Arsenic	Cadmium	Chromium	Copper	Iron	Nickel	Lead	Zinc
Site Number	Sample Date	Sample Source	Sample Type	Sample Results (µg/L)															
3-201	07/18/2002	Storm	C	4.45	1.05	17.5	87.3 J	14900	19.7	42.5	496 J	2.01	0.202	5.4	25.7 J	449	10.2	-1 U	131 J
3-201	01/06/2003	Snow melt	C	1.48	0.487	7.35	14.7	4480	4.19	14.3	201 J	0.559	-0.2 U	1.67	4.79	369	-2 U	-1 U	48.3 J
3-201	01/09/2003	Storm	C	8.95	1.15	55.7	98.6	43500	29.9	164	602	6.69	-0.2 U	9.89	21.2	82.6	5.04	-1 U	284
3-201	01/23/2003	Storm	C	7.57	1.21	40.2	92.3	41500	29.1	126	726	2.96	-0.2 U	7.2	10.2	99.8	4.01	-1 U	97.1
3-201	02/13/2003	Storm	C	5.7	0.356	14	43.7	14400	11.3	32.7	32.7 J	2.71	-0.2 U	2.58	8.47	243 J	2.38	-1 U	22.3 J
3-201	02/27/2003	Snow melt	C	16.7	5.19	103	287	104000	83.3	265	2130	1.83	-0.2 U	8.45	10.2	112	3.95	-1 U	18.5
3-201	03/04/2003	Snow melt	C	5.67	0.287	29.2	68.7	30700	21	67.3	714 J	1.95	-0.2 U	8.82	11.8	470	4.83	1.08	72.7 J
3-201	04/02/2003	Snow melt	C	1.31	0.584	16.1	36.5	10000	9.46	20.4	227 J	-0.5 U	-0.2 U	10	12.8	679 J	3.09	1.63	47.2 J
3-201	04/03/2003	Snow melt	C	8.48	1.83	31.8	70.2	30600	21	79.6	526 J	1.21	-0.2 U	10.8	6.2	-25 U	3.4	-1 U	16.8 J
3-201	04/05/2003	Snow melt	C	3.17 J	1.75	25.1	52.4	18900	15	56.7	458	2.04 J	-0.2 U	7.8	7.46	649	-2 U	1.23	109
3-201	04/05/2003	Snow melt	C	2.01 J	1.46	20.7	45.6	18000	13	56	369	0.761 J	-0.2 U	4.69	4.78	35.4	2.4	-1 U	108
3-202	07/18/2002	Storm	C	2.37	0.551	10.4	42.9 J	5480	8.72	12.1	179	1.4	0.208	6.02	14.6 J	94.8	3.38	-1 U	39.6 J
3-202	11/11/2002	Snow melt	C	2.63	0.294	5	19.6	3160	6.19	8.82	126	0.841	-0.2 U	-1 U	2.85	137	-2 U	-1 U	9.3
3-202	12/14/2002	Storm	C	1.17	1.35	8.22	21.7	4890	7.33	9.58	188	1.76	0.341	3.92	14	213	4.11	4.9	108 J
3-202	12/20/2002	Snowfall	C	-0.5 U	-0.2 U	-1 U	-1 U	-25 U	-2 U	-1 U	38.7								
3-202	12/31/2002	Snow melt	C	3.99	0.642	15.9	52.7	19000	18	34.4	495	1.3	-0.2 U	1.5	5.57	-25 U	3.4	-1 U	48
3-202	01/02/2003	Snow melt	C	3.8	1.46	21	67.1	28100	22.5	50.3	621	2.55	-2	1.08	2.52	118	-2 U	-1 U	29.9 J
3-202	01/03/2003	Snow melt	C	0.931	0.887	14.8	47.5	19300	15.6	30.7	455	0.702	-0.2 U	1.38	2.77	376	-2 U	-1 U	11.8
3-202	01/10/2003	Storm	C	4.09	0.889	13.2	37.3	13100	11.8	28.8	273	3.35	-0.2 U	1.93	4.94	-25 U	2.38	-1 U	19.4
3-202	01/21/2003	Storm	C	3.55	1.03	18.5	45.9	13400 J	15.4	24.3	308	2.19	-0.2 U	5.96	8.33	930 J	2.88	1.31	122 J
3-202	01/22/2003	Storm	C	2.88	0.495	9.31	26.4	10500	8.65	15.9	203	2.02	-0.2 U	3.13	4.9	798	-2 U	-1 U	26.6
3-202	01/23/2003	Rain	C	-0.5 U	-0.2 U	-1 U	1.47	129	-2 U	-1 U	19.8								
3-202	01/28/2003	Rain	C	2.27	-0.2 U	1.15	-1 U	146	-2 U	-1 U	272								
3-202	02/14/2003	Snowfall	C	-0.5	-0.2 U	-1 U	-1 U	30.1	-2 U	-1 U	231								
3-202	02/27/2003	Snow melt	C	2.76	0.74	6.93	25.7	8910 J	11.6	11.5	157	0.666	-0.2 U	1.36	8.69	-25 U	5.6	-1 U	40.7
3-202	02/27/2003	Rain	C	-0.5 U	-0.2 U	-1 U	1.57	228	-2 U	-1 U	9.83								
3-202	03/26/2003	Rain	C	-0.5 U	-0.2 U	-1 U	-1 U	-25 UJ	-2 U	-1 U	10.9								
3-202	04/03/2003	Snow melt	C	2.46	0.728	9.95	33.8	16300	11	18.8	212	0.68	-0.2 U	1.64	3.3	149	2.2	-1 U	19.0
3-202	04/03/2003	Snowfall	C	-0.5 U	-0.2 U	-1 U	1.33	71.1	-2 U	-1 U	64.8								
3-202	04/05/2003	Snowfall	C	-0.5 U	-0.2 U	-1 U	1.18	59	-2 U	-1 U	74.1								
3-202	04/16/2003	Snow melt	C	1.4	0.307	2.98	11.9	3940	4.87	3.22	69.4	-0.5 U	0.289	-1 U	2.9	72.7	2.28	-1 U	23.2
3-202	04/17/2003	Snow melt	C	2.74	0.416	6.61	28.7	8130	8.38	9.83	194	1.07	-0.2 U	2.97	6.04	246	2	-1 U	29.1
3-202	04/17/2003	Snow melt	C	1.66	0.231	4.16	13.3	4890	4.3	5.35	118	-0.5 U	-0.2 U	-1 U	1.98	96.2	-2 U	-1 U	14.3

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Sample Information				TOTAL METALS								DISSOLVED METALS							
				Arsenic	Cadmium	Chromium	Copper	Iron	Nickel	Lead	Zinc	Arsenic	Cadmium	Chromium	Copper	Iron	Nickel	Lead	Zinc
Site Number	Sample Date	Sample Source	Sample Type	Sample Results (µg/L)															
3-203	07/12/2002	Storm	C	2.69	0.532	15.3	43.3 J	7660	12.3	35.1 J	231 J	0.648	0.218	3.12	25 J	219	4.67	-1 U	82.2 J
3-203	07/18/2002	Storm	C	1.49	-0.2 U	9.84	26.3 J	4860	6.17	26.2	110 J	-0.5 U	-0.2 U	1.9	8.37 J	-25	-2 U	-1 U	20.7 J
3-203	12/14/2002	Storm	C	1.75	0.703	6.63	12.5	3280	4.25	8.59	59.7 J	1.87	-0.2 U	4.7	5.56	206	2.95	2.7	21.6 J
3-203	12/20/2002	Snowfall	C	-0.5 U	-0.2 U	-1 U	-1 U	-25 U	-2 U	-1 U	74.1								
3-203	01/21/2003	Storm	C	1.97	0.279	34.5	53.9	22800 J	24.7	42.7	239 J	-0.5 U	-0.2 U	2.67	2.16	143 J	3	-1 U	198 J
3-203	01/23/2003	Storm	C	0.974	-0.2 U	11.9	19.2	10300	9.07	14	101	-0.5 U	-0.2 U	1.21	-1 U	225	-2 U	-1 U	14.6
3-203	01/23/2003	Rain	C	-0.5 U	-0.2 U	-1 U	1.47	129	-2 U	-1 U	231								
3-203	01/28/2003	Rain	C	2.27	-0.2 U	1.15	-1 U	146	-2 U	-1 U	272								
3-203	02/13/2003	Storm	C	3.19	0.214	17	41.3	14300 J	13.5	15.3	152 J	0.658	-0.2 U	2.03	8.73	286 J	2.43	-1 U	18.3 J
3-203	02/14/2003	Snowfall	C	-0.5 U	-0.2 U	-1 U	-1 U	30.1	-2 U	-1 U	64.8								
3-203	02/27/2003	Rain	C	-0.5 U	-0.2 U	-1 U	1.57	228	-2 U	-1 U	19.8								
3-203	03/17/2003	Snow melt	C	-0.5 U	-0.2 U	9.43	20.1	6100	8.7	6.33	71.4	-0.5 U	-0.2 U	1.95	7.67	190	3.5	-1 U	24.6
3-203	03/18/2003	Snow melt	C	-0.5 U	-0.2 U	9.51	21	7800	9.7	8.68	87.3	-0.5 U	-0.2 U	-1 U	4.52	250	3	2.35	33.2
3-203	03/20/2003	Snow melt	C	2.82 J	0.250	25.2	43.2	22900	18.9	19.9	137 J	0.51 J	-0.2 U	1.98	5.67	460	2.9	-1 U	22.2 J
3-203	03/25/2003	Snow melt	C	1.63	0.225	7.38	15.2	5800	6	5.66	60.9	0.823	-0.2 U	-1 U	3.06	210	-2 U	-1 U	12.3
3-203	03/26/2003	Rain	C	-0.5 U	-0.2 U	-1 U	-1 U	-25 U	-2 U	-1 U	38.7								
3-203	04/03/2003	Snowfall	C	-0.5 U	-0.2 U	-1 U	1.33	71.1	-2 U	-1 U	10.9								
3-203	04/05/2003	Snowfall	C	-0.5 U	-0.2 U	-1 U	1.18	59	-2 U	-1 U	9.83								
3-203	04/09/2003	Snow melt	C	1.28 J	-0.2 U	6.66	16.1	6140	5.4	5.46	132	-0.5 UJ	-0.2 U	-1 U	3.08	348	-2 U	-1 U	8.84
3-218	12/27/2002	Storm	C	2.29	-0.2 U	2.94	13.4	5240	3.47	5.34	63.8	-0.5 U	-0.2 U	-1 U	2.05	76.9	-2 U	-1 U	40.9
3-218	01/10/2003	Storm	C	2.28	0.498	7.98	22.6	1530	3.87	5.76	48.3	1.93	-0.2 U	3.06	5.25	117	-2 U	1.92	27.2
3-218	01/21/2003	Storm	C	7.89	-0.2 U	12.6	42	21900 J	15.5	22.1	198 J	1.43	-0.2 U	1.17	2.36	1260 J	-2 U	-1 U	177 J
3-218	01/27/2003	Storm	C	5.57	5.57	6.78	20.3	10600	7.42	9.35	71.8 J	2.84	-0.2 U	1.74	2.13	880	-2 U	-1 U	19.4 J
3-218	02/26/2003	Snow melt	C	2.13	-0.2 U	2.95	7.79	4000	2.96	3.41	34.6 J	-0.5 U	-0.2 U	1.02	1.67	-25	-2 U	-1 U	10.3 J
3-218	03/26/2003	Storm	C	1.28	-0.2 U	6.80	16.3	9000	5.9	9.01	56.3 J	-0.5 U	-0.2 U	1.83	1.74	208	-2 U	-1 U	8.43 J
3-218	04/08/2003	Snow melt	C	-0.5 UJ	-0.2 U	1.36	3.36	1400	-2 U	1.24	15.8	-0.5 UJ	-0.2 U	-1 U	1.07	41.9	-2 U	-1 U	7.4
3-218	04/08/2003	Snow melt	C	-0.5 UJ	-0.2 U	1.31	4.57	1800	-2 U	1.73	72.4	-0.5 UJ	-0.2 U	-1 U	1.14	82.9	-2 U	-1 U	9.34
3-218	04/10/2003	Snow melt	C	-0.5 U	-0.2 U	4.43	5.58	3250	-2 U	2.94	20.5	-0.5 U	-0.2 U	2.34	1.21	117	-2 U	-1 U	5.75
3-218	04/14/2003	Snow melt	C	1.61	-0.2 U	1.57	8.45	3160	2.57	2.88	29.8	0.51	-0.2 U	-1 U	1.89	193	-2 U	-1 U	8.29
3-218	04/16/2003	Snow melt	C	0.934	-0.2 U	-1 U	7.11	1860	-2 U	1.56	17.7	-0.5 U	-0.2 U	-1 U	2.27	119	-2 U	-1 U	-5
3-219	07/17/2002	Storm	C	4.56	1.22	24.9	97.2 J	11000	36	21.9	343 J	3.89	0.575	18.3	80.9 J	994	27.7	1.94	222 J
3-219	11/09/2002	Storm	C	0.996	0.225	5.83	17.8	4660	4.41	11.0	94.5	0.598	-0.2 U	1.88	6.76	198	-2 U	-1 U	35.3
3-219	11/09/2002	Rain	C	-0.5 U	-0.2 U	2.8	-1 U	27	-2 U	-1 U	12								
3-219	12/14/2002	Storm	C	1.64	0.23	7.82	17.9	5880	6.04	9.04	118 J	1.62	0.227	4.81	12.8	383	3.92	5.76	104 J
3-219	12/20/2002	Rain	C	1.5	-0.2 U	-1 U	-1 U	116	-2 U	-1 U	170								
3-219	12/31/2002	Rain	C	-0.5 U	-0.2 U	1.12	-1 U	25.2	-2 U	-1 U	54.3								
3-219	01/07/2003	Snow melt	C	2.81	1.03	28.1	40.6	16600	17.1	33.7	252	2.43	0.503	11	6.74	254	-2 U	-1 U	23
3-219	01/09/2003	Storm	C	1.79	3.02	54.3	110	27600 J	33.6	74.8	732	2.43	-0.2 U	20.4	5.45	375 J	-2 U	-1 U	213
3-219	01/11/2003	Snow melt	C	3.46	1.1	18.5	51.2	17300	15	33.6	254	2.64	-0.2 U	3.59	4.17	227	-2 U	-1 U	115
3-219	01/23/2003	Storm	C	2.69	0.541	12.1	36.2	17400	14.3	28.9	269 J	0.590	-0.2 U	1.97	1.82	588	-2 U	-1 U	19.7 J
3-219	01/23/2003	Snowfall	C	-0.5 U	-0.2 U	-1 U	3.2	112	-2 U	-1 U	23.5								
3-219	02/14/2003	Storm	C	3.69	0.557	19	44.2	20800 J	15.3	27.9	233 J	1.08	-0.2 U	7.39	6.49	697 J	-2 U	-1 U	18.5 J
3-219	02/27/2003	Snow melt	C	1.48	-0.2 U	8.44	22.2	9560 J	9.3	12	111	-0.5 U	-0.2 U	3.09	5.85	-25 UJ	3.21	-1 U	28.8
3-219	03/26/2003	Snowfall	C	-0.5 U	-0.2 U	21.8	23.9	1640	-2 U	-1 U	17								
3-219	04/03/2003	Snowfall	C	-0.5 U	-0.2 U	-1 U	-1 U	254	-2 U	-1 U	7.41								
3-219	04/05/2003	Snowfall	C	-0.5 U	-0.2 U	-1 U	2.54	195	-2 U	-1 U	50.3								
3-219	04/13/2003	Snowfall	C	-0.5 U	-0.2 U	1.53	2.27	60.7	-2 U	-1 U	24.3								
3-219	04/15/2003	Snow melt	C	1.16	0.582	7.15	28.5	8080	7.14	15.6	103	-0.5 U	-0.2 U	1.95	4.42	314	-2 U	-1 U	10.1
3-219	04/17/2003	Snow melt	C	1.81	0.395	9.89	30.3	15200	12.1	18	302	0.566	-0.2 U	2.4	6.12	856	-2 U	-1 U	28.7
3-220	01/03/2003	Snow melt	C	-0.5 U	-0.2 U	4.58	17.6	5450	9.38	7.1	136	-0.5 U	-0.2 U	-1 U	1.66	81.2	-2 U	-1 U	23.7

Stormwater Analytical Results
Summary of Metal Analytical Results
Caltrans Tahoe Highway
Runoff Characterization and Sand Trap Effectiveness Studies

Sample Information				TOTAL METALS								DISSOLVED METALS							
				Arsenic	Cadmium	Chromium	Copper	Iron	Nickel	Lead	Zinc	Arsenic	Cadmium	Chromium	Copper	Iron	Nickel	Lead	Zinc
Site Number	Sample Date	Sample Source	Sample Type	Sample Results (µg/L)															
3-220	01/07/2003	Snow melt	C	2.41	0.232	6.07	20.3	9250	9.77	9.21	108	1.2	-0.2 U	-1 U	3.86	177	-2 U	-1 U	33.5
3-220	01/08/2003	Snow melt	C	2.55	-0.2 U	4.7	17.4	7010	7.15	7.33	93.2	0.868	-0.2 U	-1 U	2.79	148	-2 U	-1 U	30.2
3-220	01/09/2003	Snow melt	C	4.85	1.04	23.5	70.1	27800 J	33.7	38	492	1.51	-0.2 U	3.22	4.45	45 J	-2 U	-1 U	39.5
3-220	01/12/2003	Storm	C	1.76	-0.2 U	6.16	21.7	9430	12.7	11.1	210	1.21	-0.2 U	1.02	8.31	308	-2 U	-1 U	25.5
3-220	01/23/2003	Storm	C	3.20	0.276	9.41	29.7	14400	13.6	17.1	187 J	-0.5 U	-0.2 U	1.35	1.53	294	-2 U	-1 U	17.0 J
3-220	02/27/2003	Snow melt	C	4.73	0.663	13	42.2	25200 J	22.8	21.2	228	-0.5 U	-0.2 U	1.44	6.09	-25 UJ	4.31	-1 U	72.7
3-220	03/26/2003	Storm	C	1.90	0.256	10.4	27.1	11000	11	9.26	99.0 J	-0.5 U	-0.2 U	3.17	4.55	370	-2 U	-1 U	10.5 J
3-222	07/18/2002	Storm	C	2	0.467	9.07	31.6 J	4000	7.64	12.2	228 J	1.2	-0.2 U	5.6	12.8 J	62.9	2.66	-1 U	64.3 J
3-222	11/11/2002	Snow melt	C	2.86	0.26	6.62	19.4	3290	6.59	9.46	187	1.2	-0.2 U	1.28	2.91	160	-2 U	-1 U	24.9
3-222	12/14/2002	Storm	C	2.08	0.696	8.15	19.9	4620	6.58	9.37	160 J	-0.5 U	-0.2 U	3.62	5.16	210	-2 U	-1 U	34 J
3-222	12/31/2002	Snow melt	C	2.75	0.486	9.04	30.8	10000	11	15.4	330	0.528	-0.2 U	1.7	6	32	3.9	-1 U	102
3-222	01/02/2003	Snow melt	C	3.47	0.73	13.3	41.7	17500	13.9	26.3	389 J	2.49	0.359	-1 U	2.20	126	-2 U	-1 U	20.9 J
3-222	01/03/2003	Snow melt	C	0.697	0.783	11.9	37.5	14600	12.1	23.3	372	-0.5 U	0.665	-1 U	-1 U	202	-2 U	-1 U	-5 U
3-222	01/10/2003	Storm	C	4.52	0.58	11.2	34.7	11400	10.4	24.5	323	2.97	-0.2 U	2.22	6.04	44.4	2.73	-1 U	41.2
3-222	01/21/2003	Storm	C	2.72	0.996	18.7	45.7	14000 J	16.3	25	334 J	1.58	-0.2 U	4.72	6.49	586 J	2.47	-1 U	110 J
3-222	01/22/2003	Storm	C	3.38	0.557	10.1	29.3	11100	9.38	16.7	236	2.07	-0.2 U	6.24	11	655	3.2	1.43	39.8
3-222	02/27/2003	Snow melt	C	1.96	0.371	7.45	22.3	5310 J	8.94	7.58	770	1.44	0.395	3.44	10.5	104 J	5.84	-1 U	598
3-222	04/03/2003	Snow melt	C	1.96	0.556	8.41	25.7	9870	8.62	10.9	246	-0.5 U	0.264	2.91	4.76	30.1	2.65	-1 U	79.7
3-222	04/16/2003	Snow melt	C	1.49	0.286	4.25	15.8	4790	5.58	4.12	149	-0.5 U	-0.2 U	1.6	4.49	120	2.22	-1 U	68.5
3-222	04/17/2003	Snow melt	C	2.37	0.394	6.21	24.4	7590	7.48	8.82	207	0.859	-0.2 U	1.86	5.65	248	2.07	-1 U	162
3-222	04/17/2003	Snow melt	C	1.54	0.224	4.92	14.9	5790	4.66	6.04	270	-0.5 U	-0.2 U	1.26	3.35	232	-2 U	-1 U	126
3-223	07/12/2002	Storm	C	2.1	0.655	13.8	50.2 J	6570	12.1	31.7 J	313 J	1.03	0.314	3.97	33.6 J	281	6.16	-1 U	192 J
3-223	07/18/2002	Storm	C	1.32	0.238	8.27	31.6 J	3480	5.28	19.5	141	-0.5 U	-0.2 U	1.79	10.1 J	-25 U	-2 U	-1 U	25.6
3-223	12/14/2002	Storm	C	0.997	0.282	9.26	16.5	4200	5.78	11.3	101 J	0.555	-0.2 U	3.24	8.44	719	-2 U	6.04	76.4 J
3-223	01/21/2003	Snow melt	C	4.34	-0.2 U	34.2	52.3	23500 J	24.4	42.7	327 J	-0.5 U	-0.2 U	3.59	4.17	138 J	4.45	-1 U	299 J
3-223	01/22/2003	Storm	C	0.83	-0.2 U	11.4	19.5	9560	8.94	13.4	117	-0.5 U	-0.2 U	3.99	3.29	258	2.81	-1 U	31.3
3-223	02/13/2003	Storm	C	2.95	-0.2 U	17.3	42.4	14700 J	13.4	15.4	148 J	0.785	-0.2 U	2.14	8.88	328 J	2.44	-1 U	21.9 J
3-223	03/17/2003	Snow melt	C	0.948	-0.2 U	9.77	21.5	6300	8.3	6.3	184	-0.5 U	-0.2 U	1.83	7.19	250	2.5	-1 U	79.3
3-223	03/18/2003	Snow melt	C	1.32	-0.2 U	7.05	16.2	5100	8.6	5.35	222	1.61	0.271	1.35	5.91	180	4.5	1.54	165
3-223	03/20/2003	Snow melt	C	3.15 J	0.235	28.7	46.7	26400	21.4	21.7	188 J	0.90 J	-0.2 U	1.93	5.23	280	3.06	-1 U	40.3 J
3-223	03/25/2003	Snow melt	C	1.2	-0.2 U	6.19	33.9	4600	5.2	6.67	70.6	1.29	-0.2 U	1.11	10.7	190	-2 U	-1 U	14.1
3-223	04/09/2003	Snow melt	C	1.25 J	-0.2 U	6.81	16.2	6150	5.7	5.48	139	-0.5 U	-0.2 U	-1 U	3.42	436	-2 U	-1 U	17.4

Notes
J = estimated concentration
U = not detected above reporting limit
G - grab sample
C = composite sample

Sample Information					CONV			
					EC	pH	Hardness (as CaCO3)	TOC
Site Number	Sample Date	Sample Source	Sample Type	Lab ID	umhos/cm	su		
3-201	07/18/2002	Storm	C	CEL	290	7.08	70	93
3-201	01/06/2003	Snowmelt	C	CEL	170	6.71	24	17
3-201	01/09/2003	Storm	C	CEL	5900	8.06	290	520
3-201	01/23/2003	Storm	C	CEL	2200	8.12	160	80
3-201	02/13/2003	Storm	C	CEL	1800	7.5	66	49
3-201	02/13/2003	Storm	G	CEL				
3-201	02/27/2003	Snowmelt	C	CEL	7700	8.08	520	170
3-201	03/04/2003	Snowmelt	C	CEL	5400	7.68	170	79
3-201	03/04/2003	Snowmelt	G	CEL				
3-201	04/02/2003	Snowmelt	C	CEL	310	6.61	76	47
3-201	04/03/2003	Snowmelt	C	CEL	6300	7.43	260	42
3-201	04/05/2003	Snowmelt	C	CEL	1200	8.16	66	40
3-201	04/05/2003	Snowmelt	C	CEL	5200	7.61	200	49
3-202	07/18/2002	Storm	C	CEL	140	7.65	16	25
3-202	07/18/2002	Storm	G	CEL				
3-202	11/11/2002	Snow melt	C	CEL	360	7.08	30	9.6
3-202	12/14/2002	Storm	C	CEL	200	6.47	24	10
3-202	12/20/2002	Rain	C	CEL	6.8	5.54	2	
3-202	12/31/2002	Snow melt	C	CEL	5500	7.33	160	25 J
3-202	01/02/2003	Snow melt	C	CEL	1900	7.09 J	74	15 J
3-202	01/03/2003	Snow melt	C	CEL	1200	7.41 J	54	10 J
3-202	01/10/2003	Storm	C	CEL	5000	7.91	150	25
3-202	01/21/2003	Storm	C	CEL	1200	8.37	52	35 J
3-202	01/22/2003	Storm	C	CEL	710	8.3	32	21
3-202	02/13/2003	Storm	G	CEL				
3-202	02/27/2003	Snow melt	C	CEL	10000 J	7.05	430	36
3-202	02/27/2003	Rain	C	CEL	12	5.77	-2 U	
3-202	03/26/2003	Rain	C	CEL	8	5.56	22	
3-202	04/03/2003	Snow melt	C	CEL	3900	-0.2 U	88	17 J
3-202	04/03/2003	Snowfall	C	CEL	15	6.12	-2 U	
3-202	04/05/2003	Snowfall	C	CEL	16	6.46	-2 U	
3-202	04/14/2003	Snowfall	C	CEL	5	7.08	-2 U	
3-202	04/16/2003	Snow melt	C	CEL	3000	6.47	110	6.4 J
3-202	04/17/2003	Snow melt	C	CEL	1600	7.39	47	21 J
3-202	04/17/2003	Snow melt	C	CEL	790	7.01	34	10
3-202	04/28/2003	Snowfall	C	CEL	4.5	5.04	-2 U	
3-203	07/12/2002	Storm	C	CEL	140	6.23 J	20	51 J
3-203	07/18/2002	Snow melt	C	CEL	41	6.99	6.0	7.9
3-203	07/18/2003	Storm	G	CEL				
3-203	12/14/2002	Storm	C	CEL	150	6.25	52	7.4
3-203	12/20/2002	Snowfall	C	CEL	4.8	5.56		
3-203	01/21/2003	Snow melt	C	CEL	4600	6.97	94	22 J
3-203	01/23/2003	Storm	C	CEL	1300	7.04	32	11
3-203	01/23/2003	Rain	C	CEL	5.6	5.51		
3-203	01/28/2003	Rain	C	CEL	7.4	5.05		

3-203	02/13/2003	Storm	C	CEL	1500	6.82	34	12
3-203	02/13/2003	Storm	G	CEL				
3-203	02/14/2003	Snowfall	C	CEL	5.6	5.23		
3-203	02/27/2003	Rain	C	CEL	23	5.78		
3-203	03/17/2003	Snow melt	G	CEL				
3-203	03/17/2003	Snow melt	C	CEL	2800	6.85	82	21
3-203	03/18/2003	Snow melt	C	CEL	4800	6.73	100	10
3-203	03/20/2003	Snow melt	C	CEL	3800	6.69	68	13 J
3-203	03/25/2003	Snow melt	C	CEL	140	7.16	5	7.6
3-203	03/26/2003	Rain	C	CEL	6.3	3.84		
3-203	04/03/2003	Snowfall	C	CEL	5.2	5.32		
3-203	04/05/2003	Snowfall	C	CEL	39	5.36		
3-203	04/09/2003	Snow melt	C	CEL	210	5.89	2.6	4.6 J
3-218	12/27/2002	Storm	C	CEL	1600	6.53 J	58	7.4
3-218	01/10/2003	Storm	C	CEL	2800	7.53	96	8.3
3-218	01/21/2003	Storm	C	CEL	570	7.82	44	9.7 J
3-218	01/27/2003	Storm	C	CEL	200	7.03	28	7.4
3-218	02/26/2003	Snow melt	C	CEL	4200	6.76	110	6.7
3-218	02/28/2003	Snow melt	G	CEL				
3-218	03/14/2003	Snow melt	G	CEL				
3-218	03/26/2003	Storm	C	CEL	71	6.86	15	-5 U
3-218	04/08/2003	Snow melt	C	CEL	1100	6.5	32	3 J
3-218	04/08/2003	Snow melt	C	CEL	400	5.75	8.2	2.5 J
3-218	04/10/2003	Snow melt	C	CEL	150	6.05	8.6	7.1 J
3-218	04/14/2003	Snow melt	C	CEL	1200	7.30	27	3.8
3-218	04/16/2003	Snow melt	C	CEL	530	6.69	13	3.9 J
3-219	07/17/2002	Storm	C	CEL	650	6.29	1800	550
3-219	11/09/2002	Storm	C	CEL	66	5.86 J	41	151
3-219	11/09/2002	Rain	C	CEL	2.9	5.25		
3-219	12/14/2002	Storm	C	CEL	190	6.46	30	41
3-219	12/20/2002	Snowfall	C	CEL	6.2	5.56		
3-219	12/31/2002	Snowfall	C	CEL	71	6.53		
3-219	01/07/2003	Snow melt	C	CEL	620	6.81	72	24
3-219	01/09/2003	Storm	C	CEL	730	7.75 J	150	18
3-219	01/11/2003	Snow melt	C	CEL	1100	8.22	82	16
3-219	01/23/2003	Storm	C	CEL	275	6.72	72	15 J
3-219	01/23/2003	Rain	C	CEL	5.5	5.83		
3-219	02/14/2003	Storm	C	CEL	820	6.98	150	18
3-219	02/27/2003	Snow melt	C	CEL	4800 J	6.79	82	22
3-219	02/27/2003	Snow melt	G	CEL				
3-219	03/15/2003	Snow melt	G	CEL				
3-219	03/26/2003	Rain	C	CEL	7.3	4.78		
3-219	04/03/2003	Snowfall	C	CEL	13	5.93		
3-219	04/05/2003	Snowfall	C	CEL	18	6.25		
3-219	04/13/2003	Snowfall	C	CEL	5.7	6.96		
3-219	04/15/2003	Snow melt	C	CEL	130	6.99	16	7.9
3-219	04/17/2003	Snow melt	C	CEL	460	6.99	36	33
3-220	01/03/2003	Snow melt	C	CEL	1700	7.01 J	28	5.8 J
3-220	01/07/2003	Snow melt	C	CEL	190	6.39	30	-5 U
3-220	01/08/2003	Snow melt	C	CEL	140	7.04	12	-5 U
3-220	01/09/2003	Snow melt	C	CEL	2500	7.03 J	98	19

3-220	01/12/2003	Storm	C	CEL	450	6.31	26	10
3-220	01/23/2003	Storm	C	CEL	754	6.78	34	6.1 J
3-220	02/27/2003	Snow melt	C	CEL	11000 J	6.83	260	35
3-220	02/27/2003	Snow melt	G	CEL				
3-220	03/14/2003	Snow melt	G	CEL				
3-220	03/26/2003	Storm	C	CEL	250	6.69	23	7.1
3-222	07/18/2002	Storm	C	CEL	96	7.06	16	15
3-222	07/18/2002	Storm	G	CEL				
3-222	11/11/2002	Snow melt	C	CEL	730	7.27	48	16
3-222	12/14/2002	Storm	C	CEL	270	7.3	24	13
3-222	12/31/2002	Snow melt	C	CEL	5100	7.23	150	23 J
3-222	01/02/2003	Snow melt	C	CEL	2500	6.96 J	90	15 J
3-222	01/03/2003	Snow melt	C	CEL	1500	7.4 J	62	11 J
3-222	01/10/2003	Storm	C	CEL	3600	7.92	110	30
3-222	01/21/2003	Storm	C	CEL	1400	8.4	64	38 J
3-222	01/22/2003	Storm	C	CEL	950	8.27	48	26
3-222	02/13/2003	Storm	G	CEL				
3-222	02/27/2003	Snow melt	C	CEL	5400 J	7.03	220	46
3-222	04/03/2003	Snow melt	C	CEL	4900	7.38	110	22 J
3-222	04/16/2003	Snow melt	C	CEL	2600	6.77	96	11 J
3-222	04/17/2003	Snow melt	C	CEL	1700	7.31	53	20 J
3-222	04/17/2003	Snow melt	C	CEL	740	7.06	32	12
3-223	07/12/2002	Storm	C	CEL	140	5.96 J	20	63 J
3-223	07/18/2002	Storm	G	CEL				
3-223	07/18/2002	Storm	C	CEL	37	6.63	4.0	7.7
3-223	12/14/2002	Storm	C	CEL	170	6.85	20	8.4
3-223	01/21/2003	Snow melt	C	CEL	4600	6.86	100	22 J
3-223	01/22/2003	Storm	C	CEL	1300	6.82	24	9.6
3-223	02/13/2003	Storm	G	CEL				
3-223	02/13/2003	Storm	C	CEL	1500	6.83	28	11
3-223	03/17/2003	Snow melt	G	CEL				
3-223	03/17/2003	Snow melt	C	CEL	1600	7.08	38	18
3-223	03/18/2003	Snow melt	C	CEL	6500	6.98	160	11
3-223	03/20/2003	Snow melt	C	CEL	4000	6.65	79	13 J
3-223	03/25/2003	Snow melt	C	CEL	220	6.93	7	8.2
3-223	04/09/2003	Snow melt	C	CEL	260	5.65	4.8	5

Notes

J = estimated concentration
U = not detected above reporting limit
G - grab sample
C = composite sample
CEL = Calscience Environmental Laboratory
PCL = PatChem Laboratory
HS = High Sierra Water Lab
* = Sample analyzed using approximately 100 milliliters filtered
** = Sample analyzed using approximately 200 - 300 milliliters filtered

VENTIONALS						NUTRIENTS					
DOC	COD	TDS	TSS	Color	Turbidity	Ammonia (as N)	Nitrite (as N)	Nitrate (as N)	TKN	Total Phosphorus	Dissolved Phosphorus
Sample Results											
mg/L				Su	NTUs	mg/L					
82	690	250	960		340	0.35	0.36	-0.1 U	7.1	0.35	0.079
11	180	80	150		190	-0.1 U	-0.1 U	0.14	0.98	0.3	0.14
440	3000	3200	1800		290	1.6	-0.2 U	2.5	9.2	14	0.27
62	1300	1300	1700		110		0.33	0.64	7.6	17	-0.03 U
42	590	880	500		410	0.62	-0.1 U	0.37	13	13	0.21
73	420	4100	5800		1400	2.1	-0.5 U	0.77	13	8.1	0.19
56	1300	2800	1200		250	2.3	-0.2 U	0.92	5.6	4.9	0.19
34	380	200	330		240	0.46	-0.1 U	0.34	2.1	0.4	0.19
31	540	3300	1700		190	1.9	-0.2 U	0.29	5.3	0.072	0.047
20	1000	2800	1100		490	0.42	-0.1 UJ	0.19 J	2.5	0.31	0.1
26	790	650	700		470	0.98	-0.2 UJ	0.39 J	3.6	0.42	0.042
23	230	90	190		180	0.25	-0.1 U	0.61	2.0	0.37	0.14
7.1	160	210	190		300	-0.1 U	-0.1 U	-0.1 U	0.98	0.22	0.14
7.2	150	120	240		170	-0.1 U	-0.1 U	0.15	0.77	0.27	0.083
							-0.1 U	0.15		-0.03 U	
18	770	3000	930		730	0.81	-0.2 U	0.22	2.7	0.4	0.033
7.6	920	1000	1800		480 J	-0.1 U	-0.1 U	0.11	2.9	19	0.091
5.8	530	660	1100		750 J	-0.1 U	-0.1 U	-0.1 U	1.7	13	0.040
18	550	2500	670		640	0.84	-0.2 U	-0.2 U	2.4	10 J	0.072 J
25	560	660	380		380	0.62	-0.1 U	0.31	2.4	6.2	0.13
14 J	340	440	250		450	0.34	-0.1 U	0.15	2.2	4.9	0.14
31	420	5900	490		510	1.9	-0.5 U	0.77	3.5	0.19	0.042
							-0.1 U	0.2		-0.03 U	
										-0.03 U	
9.5	700	1900	850		700	0.62	-0.2 U	-0.2 U	2.1	0.27	-0.03 U
							-0.1 U	0.11		-0.03 U	
							-0.1 U	0.15		-0.03 U	
							-0.1 U	-0.1 U		-0.03 U	
4.9	95	1600	110		140	0.42	-0.1 U	0.12	0.63	0.068	-0.03 U
11	220	850	220		330	0.35	-0.1 U	0.24	1.3	0.12	0.057
3.7	130	400	140		170	-0.1 U	-0.1 U	-0.1 U	0.7	0.11	-0.03 U
							-0.1 U	-0.1 U		-0.03 U	-0.03 U
48	280	140	460		300 J	1.5	-0.1 U	0.54 J	4.3	1.3	0.23
7.8	110	27	420		160	0.18	-0.1 U	-0.1 U	1.8	0.25	0.068
-5 U	110	130	80		180	-0.1 U	-0.1 U	0.12	0.7	0.056	0.047
							-0.1 U	0.14		-0.03 U	
16	500		810		700	1.1	-0.2 U	0.32	4.1	11	-0.03 U
7.4 J	220	610	240		400	0.25	-0.1 U	-0.1 U	0.98	4.2	-0.03 U
							-0.1 U	-0.1 U		-0.03 U	
							-0.1 U	0.18		-0.03 U	

11	290	770	320		490	0.17	-0.1 U	0.16	2.2	12	0.034
							-0.1 U	0.13		-0.03 U	
							-0.1 U	0.21		-0.03 U	
16	140	1400	180		220	0.28	-0.1 U	0.17	2.5	0.076	0.053
7.4	160	2600	270		290	-0.1 U	-0.2 U	-0.2 U	0.98	0.11	-0.03 U
8.5	400	1900	880		670	0.23	-0.2 U	-0.2 U	1.6	0.20	0.042
5.6 J	85	77	110		160	-0.1 U	-0.1 U	-0.1 U	0.56	0.11	0.049
							-0.1 U	0.1		-0.03 U	
							-0.1 U	-0.1 U		-0.03 U	
							-0.1 U	-0.1 U		-0.03 U	
2.5	85	160	120		230	-0.1 U	-0.1 U	-0.1 U	0.28	0.079	-0.03 U
-5 U	140	810	110		320 J	-0.1 U	-0.1 U	0.14	1.8	0.23	0.061
6.5	54	1400	22		75	-0.1 U	-0.1 U	-0.1 U	0.42	0.046	-0.03 U
6.0	360	410	730		790		-0.1 U	0.14	2.0	16	0.15
6.3	160	170	180		450	-0.1 U	-0.1 U	0.28	0.84	0.44	0.072
-5 U	98	2200	180		180		-0.1 U	-0.1 U	0.98	0.19	0.047
-5 U	133	46	387		237	-0.1 U	-0.1 U	0.11	0.23	0.22	-0.03 U
2.5 J	23	570	23		44	-0.1 U	-0.1 U	0.17	-0.1	0.038	-0.03 U
2	21	250	35		72	-0.1 U	-0.1 U	-0.1 U	-0.1	0.080	-0.03 U
2.8 J	23	87	36		81	-0.1 U	-0.1 U	-0.1 U	-0.1	0.079	-0.03 U
3.1	68	600	100		150	-0.1 U	-0.1 U	-0.1 U	-0.1	0.083	-0.03 U
2.5	33	300	31		61	-0.1 U	-0.1 U	-0.1 U	-0.1	0.066	-0.03 U
530	1900	1100	730		410	2.8	-0.5	2.7	19	0.79	0.16
150	502	160	213		197 J	-0.2	-0.1 U	0.16	3.2	0.35	0.28
							-0.1 U	-0.1 U		0.25	
31	270	140	290		260	30	-0.1 U	0.11	1.7	0.37	0.13
							-0.1 U	0.17		-0.03 U	
							-0.1 U	-0.1 U		-0.03 U	
22	450	400	970		620	-0.1 U	-0.1 U	0.14	2.0	14 J	0.11 J
14	1100	490	2400		320 J	-0.1 U	-0.1 U	-0.1 U	4.3	14	0.039
11	520	660	830		730	-0.1 U	-0.1 U	-0.1 U	1.5	12	0.044
11 J	680	200	1055		625	-0.1 UJ	-0.1 UJ	-0.1 U	3.4	14.5	0.092
							-0.1 U	-0.1 U		-0.03 U	
17	740	440	820		670	-0.1 U	-0.1 U	0.13	2.8	15	0.079
19	570	2500	490		470	0.63	-0.2 U	0.4	1.8	0.31	0.047
							-0.1 U	-0.1 U		-0.03 U	
							-0.1 U	-0.1 U		-0.03 U	
							-0.1 U	-0.1 U		-0.03 U	
							-0.1 U	-0.1 U		-0.03 U	
6.6	430	130	320		310	-0.1 U	-0.1 U	-0.1 U	0.98	0.23	0.074
13	320	350	460		410	-0.1 U	-0.1 U	0.18	1.8	0.28	0.12
-5 U	130	890	200		340 J	0.28	-0.1 U	0.12	0.7	5.4	-0.03 U
-5 U	250	150	830		550	-0.1 U	-0.1 U	0.24	0.98	9.7 J	0.17 J
-5 U	150	97	340		340	-0.1 U	-0.1 U	-0.1 U	0.35	0.42	0.084
15	1100	1200	2200		460 J	1	-0.1 U	0.3	4.3	15	0.038

7.1	620	340	700		540	-0.1 U	-0.1 U	0.54	1.3	9.7 J	0.27 J
5.0 J	418	333	804		642	0.30	-0.1 U	0.12 J	1.7	11	0.044
32	320	5900	1800		700	3.9	-0.5	0.74	6.2	0.28	-0.03 U
5	200	140	490		375	-0.1 U	-0.1 U	0.11	0.70	0.23	0.064
14	150	70	220		150	-0.1 U	-0.1 U	0.48	1.1	0.31	0.087
10	160	400	170		320	0.14	-0.1 U	0.11	1.1	0.16	0.14
8.8	160	160	230		210	-0.1 U	-0.1 U	0.16	0.84	0.17	0.083
17	380	2800	340		620	0.67	-0.2 U	0.21	1.7	0.47	-0.03 U
8.9	530	1300	900		730 J	-0.1 U	-0.1 U	0.13	1.7	18	0.061
5.9	420	850	510		750 J	-0.1 U	-0.1 U	-0.1 U	1.1	13	-0.03 U
20	540	1900	590		620	0.67	-0.2 U	0.23	2.4	12 J	0.11 J
27	580	650	510		530	0.62	-0.1 U	0.36	2.9	6.8	0.12 J
19 J	350	510	310		460	0.50	-0.1 U	0.20	1.8	6.2	0.13
37	300	2800	220		290	0.35	-0.2 U	0.44	2.7	0.1	0.1
14	460	2400	440		600	0.68	-0.2 U	-0.2 U	1.8	0.16	-0.03 U
8.4	130	1300	120		190	0.21	-0.1 U	0.17	1.1	0.064	-0.03 U
9.6	210	880	200		310	0.42	-0.1 U	0.21	1.1	0.12	0.059
4	150	370	140		200	-0.1 U	-0.1 U	-0.1 U	0.7	0.13	-0.03 U
56	360	130	710		310 J	0.95	-0.1 U	0.58 J	4.7	1.4	0.23
7.5	98	17	330		120	0.21	-0.1 U	0.42	1.2	0.22	0.090
-5 U	110	200	110		160	-0.1 U	-0.1 U	0.12	0.42	0.096	0.052
16	560	2300	940		700	1.1	-0.2 U	0.33	3.4	14	-0.03 U
6.2 J	260	800	220		410	0.22	-0.1 U	-0.1 U	2.0	4.2	-0.03 U
10	320	780	300		490	0.11	-0.1 U	0.16	1.8	13	0.041
13	150	780	160		240	-0.1 U	-0.1 U	0.11	1.8	0.19	0.052
9.1	130	3400	130		200	0.28	-0.5	-0.5	0.98	0.15	-0.03 U
9.0	310	2100	720		660	0.20	-0.2 U	-0.2 U	1.4	0.30	-0.03 U
5.4 J	95	100	170		190	-0.1 U	-0.1 U	-0.1 U	0.7	0.1	0.047
2.6 J	85	200	110		230	-0.1 U	-0.1 U	-0.1 U	0.42	0.12	0.054

	OTHER CONSTITUENTS	
Ortho-Phosphate	Chloride	Oil & Grease
0.048	24	
0.14	18	
0.26	1800	
-0.03 U	540	
0.14	490	
		61
0.11	2500	
-0.03 U	1700	
		20
0.14	69	
-0.03	2100	
0.085	320	
0.03	1800	
0.12	13	
		7.6
0.039	73	
0.055	39	
-0.03 U	1.3	
-0.03 U	1300 J	
-0.03 U	590	
-0.03 U	330	
0.050	1100 J	
0.13 J	330	
0.13	140	
		43
0.042	3500	
-0.03 U	2.2	
-0.03 U	1	
-0.03 U	1300	
-0.03 U	3.1	
-0.03 U	3.6	
-0.03 U	-1 U	
-0.03 U	650 J	
0.037	350	
-0.03 U	200	
	-1 U	
0.16 J	14	
0.051	3.0	
		8.3
-0.03 U	27	
-0.03 U	1	
-0.03 U	1600	
-0.03 U	310	
-0.03 U	-1 U	
-0.03 U	-1 U	

-0.03 U	430	
		12
-0.03 U	-1 U	
-0.03 U	5.1	
		5.6
0.05	980	
-0.03 U	1600	
-0.03 U	1200	
0.035	32	
-0.03 U	-1 U	
-0.03 U	-1 U	
-0.03 U	12	
-0.03 U	56	
0.039	340 J	
-0.03 U	870	
0.15 J	160	
0.039	42	
0.039	1300	
		3.5
		4.8
-0.03 U	14	
-0.03 U	250 J	
-0.03 U	116	
-0.03 U	33 J	
-0.03 U	290	
-0.03 U	100 J	
0.13	47	
0.19	4.0	
-0.03 U	-1 U	
0.096	37	
-0.03 U	1.2	
-0.03 U	1.1	
0.082	160	
-0.03 U	150	
0.037	330	
0.081	46	
-0.03 U	1.1	
0.067	210	
0.046	1400	
		17
		4.9
-0.03 U	-1 U	
-0.03 U	2.9	
-0.03 U	4.2	
-0.03 U	-1 U	
0.063	24	
0.066	89	
-0.03 U	510	
0.071	45	
-0.03 U	35	
-0.03 U	810	

0.21	130	
0.036	173	
-0.03 U	3600	
		15
		17
0.043	67	
0.051	8.7	3.6
0.067	140	
0.055	48	
-0.03 U	1200 J	
-0.03 U	750	
-0.03 U	420	
0.059	850 J	
0.12	410	
0.12	170	
		12
0.087	1300	
-0.03 U	1500	
-0.03 U	610 J	
0.036	290	
-0.03 U	180	
0.16 J	17	
		3.5
0.083	3.4	
0.035	34	
-0.03 U	1600	
-0.03 U	320	
		9.7
-0.03 U	430	
		8.3
0.048	490	
-0.03 U	2200	
-0.03 U	1300	
0.034	57	
-0.03 U	73	

Appendix B
Data Quality

Monitoring Season 2002-2003

B.1 Overview

This appendix summarizes the quality assurance/quality control (QA/QC) procedures that were implemented in the laboratory and field to ensure that the data collected during the 2002-2003 monitoring season were of known quality and met the project objectives. A general description of the laboratory and field QA/QC procedures is discussed in Section B.2. Upon receipt from the laboratory, a complete data quality evaluation was performed on all data generated during this program to ensure that the reported data accurately represent the concentrations of constituents present in the storm water, snowmelt runoff, and precipitation samples. The process and results of the data quality evaluation are discussed in Section B.3.

B.2 Laboratory Quality Assurance/Quality Control Procedures

Quality assurance is defined as the integrated program designed for assuring reliability of monitoring and measurement of data. Quality control is defined as the routine application of procedures for obtaining prescribed standards of performance in the monitoring and measuring process. This section presents quality control procedures that were conducted by the laboratory to ensure analytical data quality. A description of the general practices required of the laboratory is summarized below.

B.2.1 Standard Operating Procedures (SOPs)

Calscience Environmental Laboratories, Inc. (Calscience) performed all analyses and QA/QC procedures in accordance with published analytical methods and internal SOPs. The internal SOPs provide step-by-step instructions for performing analytical methods. Utilizing SOPs is a method to ensure uniformity and compliance in the measurement process.

B.2.2 Purity of Standards, Solvents and Reagents

The purity/quality of reagents, solvents and standards used in the analytical process is a critical component in the generation of high quality data. All reagents used were of reagent-grade (equivalent) or higher grade quality whenever obtainable. Organic solvents were pesticide-grade or equivalent. Where applicable, reference standard solutions were traceable to the National Institute of Standards Technology (NIST), the American Association for Laboratory Accreditation (AALA), or to an equivalent source. Each new lot of reagent-grade chemicals was tested for quality of performance, and laboratory records were kept to document the results of lot tests.

B.2.3 Calibration

Instrument calibration is performed to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for target compounds. Calibration procedures vary by analytical method. In general, each instrument is calibrated initially using certified standards, followed by periodic (i.e., daily) calibration verifications to confirm that the initial calibration is valid.

B.2.4 Method Blank

A method blank (MB) is a QC sample that consists of all reagents specific to the method and is carried through every aspect of the procedure, including preparation, cleanup and analysis. The MB is used to identify any interferences or contamination of the analytical system that may lead to the reporting of elevated analyte concentrations or false positive data. Potential sources of contamination include solvent, reagents, glassware, or the laboratory environment. The MB is prepared with each group of samples processed. One batch of samples is generally defined as a group of 20 samples or less of the same sample matrix that are processed using the same procedures, reagents and standards within the same time period.

B.2.5 Equipment Blanks

Equipment blanks were prepared to assess potential contamination from autosampler bottles and autosampler pump tubing. Equipment blanks were analyzed at the beginning of the season and then at various times throughout the season to evaluate potential contamination from sampling equipment and containers. Equipment blanks were prepared by pouring ultrapure water through all the equipment used in the sampling process into the sample containers. The rinsate was then analyzed for total metals, and select nutrient and conventional parameters (i.e., chloride, nitrate, nitrite, COD, DOC/TOC, ammonia, TKN, total and dissolved phosphorus, and dissolved orthophosphate).

B.2.6 Laboratory Control Sample

A laboratory control sample (LCS) is a laboratory-generated clean matrix sample that is fortified with known concentrations of target analytes. The LCS is then carried along with the environmental samples through the entire sample preparation/ analysis sequence. Review of the LCS recovery data is used to monitor the performance of the analytical methods. The results of the LCS, used in conjunction with the matrix spike samples can provide evidence that the laboratory performed the method correctly or the sample matrix affected the results.

B.2.7 Matrix Spike Sample

Matrix spikes (MS) and matrix spike duplicates (MSDs) are analyzed to evaluate the effect of the sample matrix on the accuracy of the analytical procedures. A matrix spike is an environmental sample that has been spiked with known concentrations of

target analytes. The matrix-spiked sample is then carried through the entire analytical sequence like all other samples. The analyte concentrations detected during the analysis are compared to the known spike concentrations to obtain a percent recovery for each spiked analyte. The recoveries are compared to acceptance limits and the results are used to evaluate accuracy and the presence of matrix interferences.

The difference between the MS and the MSD analyses is expressed as the relative percent difference (RPD). RPDs are used to evaluate analytical precision and can also be a measure of relative sample heterogeneity.

B.3 Data Quality Evaluation

Upon receipt from the laboratory, each analytical report was thoroughly reviewed and the data evaluated to determine if the data met the project objectives. Data reviewed included storm water and snowmelt runoff grab and composite samples, and precipitation (snowfall and rain) samples. Initially, the data were screened for the following major items:

- A 100 percent check between electronic data provided by the laboratory and the hard copy reports;
- Conformity check between the chain-of-custody forms, compositing protocol, and laboratory reports;
- A check for laboratory data report completeness; and,
- A check for typographical errors on the laboratory reports.

After performing the aforementioned data screening, the laboratory was notified of any deficiencies by way of a telephone call detailing the problems encountered during the initial screening process.

Following the initial screening, a more complete QA/QC review process was performed which included an evaluation of method holding times, method and equipment blank contamination, and accuracy and precision. Accuracy was evaluated by reviewing MS, MSD and LCS recoveries; precision was evaluated by reviewing spike duplicate and laboratory sample duplicate RPDs. In addition to manually reviewing the data for the QC elements listed above, all electronic data were checked for compliance with Caltrans-specified accuracy, precision, holding time and reporting limit criteria using Caltrans' Electronic Data Deliverable (EDD) Checker and Automated Data Validation program (updated January 2003). Data collected during the 2002-2003 monitoring season were the third set of data where the data checker and validation programs were used.

The following sections describe specific items that were evaluated during the QA/QC review process and data that were qualified as estimated due to laboratory or field QC exceedances.

B.3.1 Holding Times

A sample holding time is defined as the maximum allowable time a sample can be stored after sample collection and preservation until analysis. For composite samples, the time of the last discrete sample is considered the sample collection time for determining the sample holding time. During the data review process, it was determined that holding time exceedances were limited to nitrate, nitrite, orthophosphate, TSS, turbidity and pH. When a technical holding time is exceeded, sample results are flagged with a "J" for positive detections and a "UJ" for non-detected results. In the event that the holding time is significantly exceeded, then the results were rejected and flagged with an "R" qualifier.

The following table summarizes the sample results that were qualified as a result of holding time exceedances:

Summary of Analyte Qualification – Holding Time Exceedances

Constituent	Total Number	Total Qualified	Qualifier	Percent Qualified
Nitrite as N (NO2-N)	114	12	UJ/R (3)	10.5
Nitrate as N (NO3-N)	114	12	J/UJ/R (3)	10.5
Orthophosphate (Ortho-P)	113	2	J	1.8
pH	114	12	J	10.5
TSS	107	2	J	1.9
Turbidity	91	12	J	13.2
TOTAL	**3426**	**52**	**UJ/J/R**	**1.5**

Although the samples were analyzed immediately after laboratory receipt and compositing activities, 12 of the 114 samples submitted for the analysis of nitrite and nitrate, 2 of the 113 samples submitted for dissolved orthophosphate, and 12 of the 91 samples analyzed for turbidity, were analyzed beyond the maximum allowable holding time of 48 hours. Therefore, these samples were qualified with a "J" or a "UJ". It should be noted that nitrite and nitrate results for three samples were qualified with an "R" to indicate rejected data due to holding time exceedances. In these three cases, the data validation program rejected the results because the samples were analyzed more than two times the holding time (i.e., greater than 96 hours after the samples were collected).

With respect to pH, there is no technical holding time defined in the method; however, the method states that samples should be analyzed as soon as possible and preferably in the field. Therefore, the EDD checker qualifies pH results analyzed after 24 hours with a "J" to indicate an estimated result. In total, 12 of the 114 samples analyzed in the laboratory for pH were qualified with "Js" due to holding time exceedances.

In addition, 2 of the 107 samples analyzed for TSS were qualified with "J' due to

holding time exceedances.

B.3.2 Blank Evaluation

As mentioned previously, analytical results from both laboratory method blanks and field equipment blanks were evaluated during the QA/QC review process. Blanks can be used to identify the presence and potential source of sample contamination. If no contamination is present in the blanks, then no further action is required. Laboratory method blanks were analyzed with every batch of samples for most analyses. Additionally, field equipment blanks were collected and analyzed at various times throughout the sampling program.

In the 2002-2003 dataset, only one analyte was detected in any of the laboratory method blanks. DOC was detected in one laboratory method blank analyzed with samples collected from Sites 3-203 and 3-223 on December 13, 2002. However, DOC was not detected in either sample at concentrations above the laboratory reporting limit. Therefore, additional qualification was not required.

Low levels of one or more inorganic constituents (primarily copper, chromium and zinc) were detected in several of the field equipment blanks collected during the sampling program. Although the blanks indicated contamination, the impact this contamination had on concentrations in the project samples was negligible. The inorganic concentrations detected in the blanks were significantly less than the concentrations detected in the project samples. Therefore, qualification of the data was not warranted and the blank contamination was considered insignificant relative to the sample concentrations.

B.3.3 Accuracy and Precision

Accuracy is the degree of agreement between a measurement and the true or expected value or between the average of a number of measurements and the true or expected value. Systematic errors affect accuracy. For chemical properties, accuracy is expressed as percent recovery (%R), which is calculated as follows:

$$\%R = [(Cs - C)/S] * 100$$

where:

%R	=	percent recovery
Cs	=	spiked sample concentration
C	=	background sample concentration
S	=	concentration equivalent of spike added

MS, MSD and LCS results were checked to assess the accuracy of the analytical process. MS and MSD results provided an evaluation of accuracy in environmental sample matrices; whereas, LCS results provided a measure of accuracy throughout the entire recovery process.

Precision is an estimate of variability. In other words, precision is an estimate of

agreement among individual measurements of the same physical or chemical property, under prescribed similar conditions. Precision can be calculated as the relative percent difference (RPD) as follows:

$$RPD = 2 * [(S - D)/(S + D)] * 100$$

where:

RPD = relative percent difference
S = concentration measured in original sample
D = concentration measured in duplicate sample

Duplicate sample results (field splits and laboratory duplicates) were checked to assess the variability and precision between samples. Depending on the analytical method, various types of laboratory duplicate results were compared to assess precision. For example, some methods require the analysis of an MS and an MSD sample pair, whereas other methods are not as specific. When not specified, the laboratory calculated precision using a sample and a duplicate of the same sample.

Control limits for spike recoveries and RPDs are shown on Table B-1 and were defined by the project data quality objectives (DQOs) (LWA, August 1997). These are the acceptance limits that are specified in the EDD Checker and are the limits used to evaluate the usability of the project data.

Table B-1
Accuracy and Precision Control Limits

Analyte	% Recovery (Accuracy)	RPD (Precision)
Metals (total/dissolved)	75 - 125	20
Nitrate/Nitrite (as N)	80 - 120	20
TKN	80 - 120	20
Ammonia	80 - 120	20
Phosphorus (total/dissolved)	80 - 120	20
Orthophosphate (dissolved)	80 - 120	20
pH	--	20
Hardness (as $CaCO_3$)	80 - 120	20
EC	--	20
Chloride	80 - 120	20
Turbidity	--	20

Table B-1
Accuracy and Precision Control Limits

Analyte	% Recovery (Accuracy)	RPD (Precision)
Oil & Grease	80 - 120	20
TOC/DOC	85 - 115	15
COD	80 - 120	20
TSS/TDS	80 - 120	20

The following sections discuss the results of accuracy and precision measurements.

Laboratory Duplicates

In the 2002-2003 dataset, only two analytes were qualified due to out-of-range laboratory duplicate measurements. The RPD for the laboratory duplicate measured during the EC analysis (EPA Method 120.1) on March 1, 2003 was 64 percent, which exceeds the precision control limit of 20 percent. Therefore, the reported concentrations in four samples (collected from Sites 3-202, 3-222, 3-219 and 3-220 on February 27, 2003) were qualified with "Js" as shown on the following table. In addition, the RPD for the laboratory duplicate measured during the turbidity analysis (EPA Method 180.1) on March 11, 2003 was 196 percent, which exceeds the acceptable limit of 20 percent. One sample result (collected from Site 3-201 on March 3, 2003) was included in the analytical batch and was qualified with a "J".

Summary of Analyte Qualification – Laboratory Duplicate Exceedances

Constituent	Total Number	Total Qualified	Qualifier	Percent Qualified
EC	114	4	J	3.5
Turbidity	91	1	J	1.1
TOTAL	**3426**	**5**	**J**	**0.1**

Field Duplicates

There are no specific regulatory criteria available to evaluate field duplicate results. However, because field duplicates are more susceptible than laboratory duplicates to concentration variability, an RPD criteria of 50 percent was used during the data evaluation. A 50 percent limit is also specified in the EDD checker and is used to assess field duplicate variability. None of the detected results between field duplicate pairs exceeded the 50 percent criteria. Therefore, none of the data were qualified as a result of field duplicates.

Laboratory Control Samples

Results from one analyte were qualified due to out-of-range LCS recoveries. The LCS recovery measured on April 15, 2003 during the DOC analysis (EPA Method 415.1) was 117 percent, which is just slightly higher than the upper control limit of 115 percent. The detected DOC concentrations reported in two samples (collected from Site 3-218 on April 7 and 9, 2003) were qualified with "Js" due to one out-of-range LCS recovery. A summary of qualified data due to out-of-range LCS recoveries is shown on the following table.

Summary of Analyte Qualification – LCS Exceedances

Constituent	Total Number	Total Qualified	Qualifier	Percent Qualified
DOC	91	2	J	2.2
TOTAL	**3426**	**2**	**J**	**0.06**

Matrix Spike/Matrix Spike Duplicate Samples (MS/MSDs)

MS, MSD and/or RPD values exceeded Caltrans-specified limits for arsenic, chloride, copper, DOC, iron, nitrate, orthophosphate, phosphorus, lead, TOC and zinc. As a result, MS, MSD and/or RPD outliers were qualified with a "J" for detected results and a "UJ" for non-detected results. A summary of qualified data due to out-of-range MS/MSD and/or RPD recoveries is shown on the following table.

Summary of Analyte Qualification – MS/MSD Recovery and/or RPD Exceedances

Constituent	Total Number	Total Qualified	Qualifier	Percent Qualified
Arsenic (total)	114	11	J/UJ	9.6
Arsenic (dissolved)	91	8	J/UJ	8.8
Chloride	114	15	J/UJ	13.2
Copper (total)	114	8	J	7.0
Copper (dissolved)	91	8	J	8.8
DOC	91	10	J	11.0
Iron (total)	114	17	J	15.0
Iron (dissolved)	92	16	J/UJ	17.4
Nitrate as N (NO3-N)	114	2	J/UJ	1.8
Orthophosphate (Ortho-P)	113	3	J	2.7
Phosphorus (total)	114	8	J/UJ	7.0
Phosphorus (dissolved)	92	5	J	5.4
Lead (total)	114	2	J	1.8
Lead (dissolved)	91	1	UJ	1.1
TOC	91	36	J	40.0
Zinc (total)	114	44	J	38.6
Zinc (dissolved)	91	35	J	38.5

Constituent	Total Number	Total Qualified	Qualifier	Percent Qualified
TOTAL	**3426**	**229**	**UJ/J**	**6.7**

Overall Summary

All results were evaluated against Caltrans-specified quality control criteria. Except for nitrite and nitrate, none of the data were rejected due to laboratory or field-related quality control issues. Three results for nitrite and three results for nitrate were rejected due to holding time exceedances. Other data were qualified with "Js" or "UJs" but are still considered usable for the project purposes. A summary of all data qualified due to laboratory quality control issues is provided on the following table.

Constituent	Total Number	Total Qualified						Qualifier	Percent Qualified
		Hold	MB	Dup	LCS	MS/ MSD	**Total****		
Arsenic (total)	114					11	11	J/UJ	9.6
Arsenic (dissolved)	91					8	8	J/UJ	8.8
Chloride	114					15	15	J/UJ	13.2
Copper (total)	114					8	8	J	7.0
Copper (dissolved)	91					8	8	J	8.8
DOC	91				2	10	12	J	13.2
EC	114			4			4	J	3.5
Iron (total)	114					17	17	J	15.0
Iron (dissolved)	92					16	16	J/UJ	17.4
Nitrate as N (NO3-N)	114	12				2	13	J/UJ/R*	11.4
Nitrite as N (NO2-N)	114	12					12	J/UJ/R*	10.5
Orthophosphate (Ortho-P)	113	2				3	5	J	4.4
pH	114	12					12	J	10.5
Phosphorus (total)	114					8	8	J/UJ	7.0
Phosphorus (dissolved)	92					5	5	J	5.4
Lead (total)	114					2	2	J	1.8
Lead (dissolved)	91					1	1	UJ	1.1
TOC	91					36	36	J	40
TSS	107	2					2	J	1.9
Turbidity	91	12		1			12	J	13.2
Zinc (total)	114					44	44	J	38.6
Zinc (dissolved)	91					35	35	J	38.5
TOTAL	**3426**	**52**	**0**	**5**	**2**	**229**	**286**	**UJ/J/R**	**8.3**

*3 results rejected

** Represents the total number of sample results affected (some samples may have been qualified for multiple reasons).

B.3.4 Evaluation of Hydrologic Coverage and Flow Data

The final data screening procedure included a qualitative evaluation of each station storm event in terms of hydrologic data and sample coverage to ensure the resulting analytical results represented EMCs. As part of this qualitative evaluation, runoff hydrographs (with plotted sample collection times) and rainfall hyetographs were constructed for each station storm using the ***Caltrans Hydrologic Data Analysis Tool*** (refer to Appendix A). The hydrographs were carefully reviewed to (1) assess the temporal sample coverage for each station storm and (2) identify any spurious flow data.

Throughout each evaluation, an attempt was made to preserve and incorporate as much of the analytical data as possible, while ensuring the integrity of the data set. Station storms were rejected or accepted based on the percent capture of the storm event as calculated by the Caltrans Hydrologic Data Analysis Tool and on a visual qualitative data evaluation.

In order to reject a given station storm, one, or a combination, of the following would be required:

- A sufficient number of samples were not collected during peak flow.
- A significant portion of the flow hydrograph was not sampled.
- Percent capture less than 80%

During this monitoring season, data from five station storm events were rejected based on the hydrologic coverage and flow evaluation. Data from these station storm events were not used in subsequent data analyses.

B.3.5 Data Evaluation Summary

The QA/QC review of analytical results found all the data except three nitrite and three nitrate results to be of acceptable quality and usable for the intended purposes, including sample data qualified as estimated due to matrix interferences, holding time exceedances or precision issues. Three nitrite and three nitrate results were rejected for use on the basis of holding time exceedances. The evaluation of the hydrologic coverage and flow data provided an assessment of the representativeness of sampling event. Based on the evaluation of hydrologic coverage, all data used in the final data analysis were considered representative of the sampling event.

Appendix B
Data Quality

Monitoring Season 2001-2002

B.1 Overview

This appendix summarizes the quality assurance/quality control (QA/QC) procedures that were implemented in the laboratory to ensure that the data collected in the 2001-2002 monitoring season were of known quality and met the project objectives. A general description of the laboratory QA/QC procedures is discussed in Section B.2. Upon receipt from the laboratory, a complete data quality evaluation was performed on all data generated during this program to ensure that the reported data accurately represent the concentrations of constituents present in the storm water and precipitation samples. The process and results of the data quality evaluation are discussed in Section B.3.

B.2 Laboratory Quality Assurance/Quality Control Procedures

Quality assurance is defined as the integrated program designed for assuring reliability of monitoring and measurement of data. Quality control is defined as the routine application of procedures for obtaining prescribed standards of performance in the monitoring and measuring process. This section presents quality control procedures that were conducted by the laboratory to ensure analytical data quality. A description of the general practices required of the laboratory is summarized below.

B.2.1 Standard Operating Procedures (SOPs)

Calscience Environmental Laboratories, Inc. (Calscience) performed all analyses and QA/QC procedures in accordance with published analytical methods and internal SOPs. The internal SOPs provide step-by-step instructions for performing analytical methods. Utilizing SOPs is a method to ensure uniformity and compliance in the measurement process.

B.2.2 Purity of Standards, Solvents and Reagents

The purity/quality of reagents, solvents and standards used in the analytical process is a critical component in the generation of high quality data. All reagents used were of reagent-grade (equivalent) or higher grade quality whenever obtainable. Organic solvents were pesticide-grade or equivalent. Where applicable, reference standard solutions were traceable to the National Institute of Standards Technology (NIST), the American Association for Laboratory Accreditation (AALA), or to an equivalent source. Each new lot of reagent-grade chemicals was tested for quality of performance, and laboratory records were kept to document the results of lot tests.

B.2.3 Calibration

Instrument calibration is performed to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for target compounds. Calibration procedures vary by analytical method. In general, each instrument is calibrated initially using certified standards, followed by periodic (i.e., daily) calibration verifications to confirm that the initial calibration is valid.

B.2.4 Method Blank

A method blank (MB) is a QC sample that consists of all reagents specific to the method and is carried through every aspect of the procedure, including preparation, cleanup and analysis. The MB is used to identify any interferences or contamination of the analytical system that may lead to the reporting of elevated analyte concentrations or false positive data. Potential sources of contamination include solvent, reagents, glassware, or the laboratory environment. The MB is prepared with each group of samples processed. One batch of samples is generally defined as a group of 20 samples or less of the same sample matrix that are processed using the same procedures, reagents and standards within the same time period.

B.2.5 Equipment Blanks

Equipment blanks were prepared to assess potential contamination from autosampler bottles and autosampler pump tubing. Equipment blanks were analyzed at the beginning of the season and then at various times throughout the season to evaluate potential contamination from sampling equipment and containers. Equipment blanks were prepared by pouring ultrapure water through all the equipment used in the sampling process into the sample containers. The rinsate was then analyzed for total metals, and select nutrient and conventional parameters (i.e., hardness, TDS, chloride, nitrate, TKN, total phosphorus and dissolved orthophosphate).

B.2.6 Laboratory Control Sample

A laboratory control sample (LCS) is a laboratory-generated clean matrix sample that is fortified with known concentrations of target analytes. The LCS is then carried along with the environmental samples through the entire sample preparation/analysis sequence. Review of the LCS recovery data is used to monitor the performance of the analytical methods. The results of the LCS, used in conjunction with the matrix spike samples can provide evidence that the laboratory performed the method correctly or the sample matrix affected the results.

B.2.7 Matrix Spike Sample

Matrix spikes (MS) and matrix spike duplicates (MSDs) are analyzed to evaluate the effect of the sample matrix on the accuracy of the analytical procedures. An MS/MSD is an environmental sample to which known concentrations of target analytes have been added. The spiked sample is then carried through the entire analytical sequence.

The anlayte concentrations detected during the analysis are compared to the known spike concentrations to obtain a percent recovery for each spiked analyte. The recoveries are compared to acceptance limits and the results are used to evaluate accuracy and the presence of matrix interferences.

The difference between the MS and the MSD analyses is expressed as the relative percent difference (RPD). RPDs are used to evaluate analytical precision and can also be a measure of relative sample heterogeneity.

B.3 Data Quality Evaluation

Upon receipt from the laboratory, each analytical report was thoroughly reviewed and the data evaluated to determine if the data met the project objectives. Data reviewed included storm water and snowmelt runoff grab and composite samples, and precipitation (snowfall and rain) samples. Initially, the data were screened for the following major items:

- A 100 percent check between electronic data provided by the laboratory and the hard copy reports;
- Conformity check between the chain-of-custody forms, compositing protocol, and laboratory reports;
- A check for laboratory data report completeness; and,
- A check for typographical errors on the laboratory reports.

After performing the aforementioned data screening, the laboratory was notified of any deficiencies by way of a telephone call or through a memorandum detailing the problems encountered during the initial screening process.

Following the initial screening, a more complete QA/QC review process was performed which included an evaluation of method holding times, method and equipment blank contamination, and accuracy and precision. Accuracy was evaluated by reviewing MS, MSD and LCS recoveries; precision was evaluated by reviewing spike duplicate and laboratory sample duplicate RPDs. In addition to manually reviewing the data for the QC elements listed above, all electronic data were checked for compliance with Caltrans-specified accuracy, precision, holding time and reporting limit criteria using Caltrans' Electronic Data Deliverable (EDD) Checker and Automated Data Validation program (Version 2.1, November 2001). Data collected during the 2001-2002 monitoring season were the second set of data where the data checker and validation programs were used.

The following sections describe specific items that were evaluated during the QA/QC review process and data that were qualified as estimated due to laboratory or field QC exceedances.

B.3.1 Holding Times

A sample holding time is defined as the maximum allowable time a sample can be stored after sample collection and preservation until analysis. For composite samples, the time of the last discrete sample is considered the sample collection time for determining the sample holding time. During the data review process, it was determined that, with the exception of nitrate, nitrite, ortho-phosphate, turbidity and pH, all other analyses were performed within their technical holding times.

Although the samples were analyzed immediately after laboratory receipt and compositing activities, 32 of the 91 samples submitted for the analysis of nitrite, 39 of the 102 samples analyzed for nitrate, 21 of the 100 samples submitted for dissolved ortho-phosphate, and 24 of the 83 samples analyzed for turbidity, were analyzed beyond the maximum allowable holding time of 48 hours. Therefore, these samples were qualified with a "J" or a "UJ", in accordance with Caltrans protocols, to indicate an estimated or an estimated reporting limit as a result of a holding time exceedance. It should be noted, however, that nitrite results for five samples were qualified with an "R" to indicate rejected data due to holding time exceedances. In these five cases, the data validation program rejected the results because the samples were analyzed more than two times the holding time (i.e., greater than 96 hours after the samples were collected).
With respect to pH, there is no technical holding time defined in the method; however, the method states that samples should be analyzed as soon as possible and preferably in the field. Therefore, the EDD checker qualifies pH results analyzed after 24 hours with a "J" to indicate an estimated result. In total, 21 of the 102 samples analyzed in the laboratory for pH were qualified with "Js" due to holding time exceedances.

B.3.2 Blank Evaluation

As mentioned previously, analytical results from both laboratory method blanks and field equipment blanks were evaluated during the QA/QC review process. Blanks can be used to identify the presence and potential source of sample contamination. If no contamination is present in the blanks, then no further action is required. Laboratory method blanks were analyzed with every batch of samples for most analyses. Additionally, field equipment blanks were collected and analyzed at various times throughout the sampling program.

In the 2001-2002 dataset, only one analyte was detected in any of the laboratory method blanks at a concentration greater than the laboratory reporting limit. Iron was detected in the unfiltered laboratory method blanks analyzed with samples collected from site 3-202 on August 8, 2001 and the sample collected from site 3-201 on December 17, 2001 at concentrations of 39.6 and 81.5 µg/L, respectively. Because the method blank concentrations were insignificant relative to the iron concentrations

detected in the samples (18,500 to 80,700 µg/L), qualification of the data was not warranted. Therefore, no further action was required.

Low levels of one or more inorganic constituents (i.e., copper, zinc, TDS and chloride) were detected in several of the field equipment blanks collected during the sampling program. Although the blanks indicated contamination, the impact this contamination had on concentrations in the project samples was negligible. The inorganic concentrations detected in the blanks were significantly less than the concentrations detected in the project samples. Therefore, qualification of the data was not warranted and the blank contamination was considered insignificant relative to the sample concentrations.

B.3.3 Accuracy and Precision

Accuracy is the degree of agreement between a measurement and the true or expected value or between the average of a number of measurements and the true or expected value. Systematic errors affect accuracy. For chemical properties, accuracy is expressed as percent recovery (%R), which is calculated as follows:

$$\%R = [(Cs - C)/S] * 100$$

where:

%R	=	percent recovery
Cs	=	spiked sample concentration
C	=	background sample concentration
S	=	concentration equivalent of spike added

MS, MSD and LCS results were checked to assess the accuracy of the analytical process. MS and MSD results provided an evaluation of accuracy in environmental sample matrices; whereas, LCS results provided a measure of accuracy throughout the entire recovery process.

Precision is an estimate of variability. In other words, precision is an estimate of agreement among individual measurements of the same physical or chemical property, under prescribed similar conditions. Precision can be calculated as the relative percent difference (RPD) as follows:

$$RPD = 2 * [(S - D)/(S + D)] * 100$$

where:

RPD	=	relative percent difference
S	=	concentration measured in original sample
D	=	concentration measured in duplicate sample

Duplicate sample results (field splits and laboratory duplicates) were checked to

assess the variability and precision between samples. Depending on the analytical method, various types of laboratory duplicate results were compared to assess precision. For example, some methods require the analysis of an MS and an MSD sample pair, whereas other methods are not as specific. When not specified, the laboratory calculated precision using a sample and a duplicate of the same sample.

Control limits for spike recoveries and RPDs are shown on Table B-1 and were defined by the project data quality objectives (DQOs) (LWA, August 1997). These are the acceptance limits that are specified in the EDD Checker and are the limits used to evaluate the usability of the project data.

With respect to the assessment of precision, laboratory and field duplicate results met the control limits defined by the DQOs. Therefore, none of the data were qualified due to laboratory or field duplicate QC exceedances. The only precision deficiencies noted were related to the RPDs between MS and MSD samples for some metals, most notably lead and zinc. The RPD between the MS and the MSD samples analyzed for lead exceeded the 20 percent criteria in four batches of samples, which were associated with five project samples. With respect to zinc, the RPD exceeded the 20 percent criteria in three batches of samples, which were associated with five samples. In accordance with Caltrans' protocol, the corresponding project sample results were qualified with "Js" or "UJs" to indicate estimated results or reporting limits due to precision deficiencies.

Accuracy was assessed from the results of the MS and MSD recoveries. In general, most MS and MSD recoveries were within the acceptance limits for accuracy specified in Table B-1. Exceptions to these criteria included DOC, TOC, phosphorus and metals. With respect to DOC, out-of-range MS and/or MSD recoveries were reported in eight batches of samples, which affected 21 of the 77 samples analyzed for DOC. Similarly, 12 batches of samples analyzed for TOC had MS and/or MSD recoveries that were not within the acceptance limits of 85 to 115 percent, which were associated with 34 of the 77 samples analyzed for TOC. Out-of-range MS and/or MSD recoveries were noted in six batches of samples analyzed for total and dissolved phosphorus, which affected 11 project samples analyzed for total phosphorus and four samples analyzed for dissolved phosphorus. In each of these cases where MS/MSD exceedances were reported, the affected sample results were qualified with either a "J" or a "UJ" to indicate an estimated concentration or an estimated reporting limit due to accuracy deficiencies.

Table B-1 ***Accuracy and Precision Control Limits***		
Analyte	***% Recovery (Accuracy)***	***RPD (Precision)***
Metals (total/dissolved)	75 - 125	20
Nitrate/Nitrite (as N)	80 - 120	20
TKN	80 - 120	20
Ammonia	80 - 120	20
Phosphorus (total/dissolved)	80 - 120	20
Ortho-phosphate (dissolved)	80 - 120	20
pH	--	20
Hardness (as $CaCO_3$)	80 - 120	20
SC	--	20
Chloride	80 - 120	20
Turbidity	--	20
Oil & Grease	80 - 120	20
TOC/DOC	85 - 115	15
COD	80 - 120	20
TSS/TDS	80 - 120	20

MS and/or MSD recoveries were outside of the acceptance limits of 75 to 125 percent in one or more batches of samples analyzed for cadmium, chromium, copper, iron, nickel, lead and zinc. With respect to cadmium, chromium and copper, six or fewer samples were affected by out-of-range MS/MSD recoveries. The most pronounced and frequent accuracy deficiencies were related to the analysis of lead, nickel, iron and zinc. With respect to nickel and lead, five batches of samples had out-of-range MS and/or MSD recoveries, which affected a total of 10 out of the 102 samples analyzed for lead and nine out of 102 samples analyzed for nickel. With respect to zinc, MS and/or MSD recoveries in 16 batches of samples were outside of the acceptance limits, which were associated with 58 of the 102 samples analyzed for zinc. Out-of-range MS and/or MSD recoveries were reported in nine batches of samples analyzed for iron, which were associated with 28 out of 99 samples. In each of these cases, the corresponding LCS recoveries were within acceptable limits, which indicate that matrix interferences were present. As a result and in accordance with Caltrans' protocol, each of the affected metals results were qualified with a "J" or a "UJ" to indicate an estimated result or an estimated reporting limit.

Overall, the QC deficiencies related to accuracy or precision problems reported during the analyses were not considered significant enough to reject the data and were used in subsequent statistical analyses.

B.3.4 Evaluation of Hydrologic Coverage and Flow Data

The final data screening procedure included a qualitative evaluation of each station storm event in terms of hydrologic data and sample coverage to ensure the resulting analytical results represented EMCs. As part of this qualitative evaluation, runoff hydrographs (with plotted sample collection times) and rainfall hyetographs were constructed for each station storm using the ***Caltrans Hydrologic Data Analysis Tool*** (refer to Appendix A). The hydrographs were carefully reviewed to (1) assess the temporal sample coverage for each station storm and (2) identify any spurious flow data.

Throughout each evaluation, an attempt was made to preserve and incorporate as much of the analytical data as possible, while ensuring the integrity of the data set. Station storms were rejected or accepted based on the percent capture of the storm event as calculated by the Caltrans Hydrologic Data Analysis Tool and on a visual qualitative data evaluation.

In order to reject a given station storm, one, or a combination, of the following would be required:

- A sufficient number of samples were not collected during peak flow.
- A significant portion of the flow hydrograph was not sampled.
- Percent capture less than 80%

During this monitoring season, data from eight station storm events were rejected based on the hydrologic coverage and flow evaluation. Data from these station storm events were not used in subsequent data analyses.

B.3.5 Data Evaluation Summary

The QA/QC review of analytical results found all the data except five nitrite results to be of acceptable quality and usable for the intended purposes, including sample data qualified as estimated due to matrix interferences or holding time exceedances. Five nitrite results were rejected for use on the basis of holding time exceedances. The evaluation of the hydrologic coverage and flow data provided an assessment of the representativeness of sampling event. Based on the evaluation of hydrologic coverage, all data used in the final data analysis were considered representative of the sampling event.

Appendix B
Data Quality

Monitoring Season 2000-2001

B.1 Overview

This appendix summarizes the quality assurance/quality control (QA/QC) procedures that were implemented in the laboratory to ensure that the data collected in the 2000-2001 monitoring season were of known quality and met the project objectives. A general description of the laboratory QA/QC procedures is discussed in Section F.2. Upon receipt from the laboratory, a complete data quality evaluation was performed on all data generated during this program to ensure that the reported data accurately represent the concentrations of constituents present in the stormwater and in the precipitation samples. The process and results of the data quality evaluation are discussed in Section F.3. Based on the results of the data evaluation, a summary of water quality data is presented in Section F.4.

B.2 Laboratory Quality Assurance/Quality Control Procedures

Quality assurance is defined as the integrated program designed for assuring reliability of monitoring and measurement of data. Quality control is defined as the routine application of procedures for obtaining prescribed standards of performance in the monitoring and measuring process. This section presents quality control procedures that were conducted by the laboratory to ensure analytical data quality. A description of the general practices required of the laboratory is summarized below.

B.2.1 Standard Operating Procedures (SOPs)

Calscience Environmental Laboratories, Inc. (Calscience) performed all analyses and QA/QC procedures in accordance with internal SOPs. These SOPs provide step-by-step instructions for performing analytical methods. Utilizing SOPs is a method to ensure uniformity and compliance in the measurement process.

B.2.2 Purity of Standards, Solvents and Reagents

The purity/quality of reagents, solvents and standards used in the analytical process is a critical component in the generation of high quality data. All reagents used were of reagent-grade (equivalent) or higher grade quality whenever obtainable. Organic solvents were pesticide-grade or equivalent. Where applicable, reference standard solutions were traceable to the National Institute of Standards Technology (NIST), the American Association for Laboratory Accreditation (AALA), or to an equivalent source. Each new lot of reagent-grade chemicals was tested for quality of performance, and laboratory records were kept to document the results of lot tests.

B.2.3 Calibration

Instrument calibration is performed to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for target compounds. Calibration procedures vary by analytical method. In general, each instrument is calibrated initially using certified standards, followed by periodic (i.e., daily) calibration verifications to confirm that the initial calibration is valid.

B.2.4 Method Blank

A method blank (MB) is a QC sample that consists of all reagents specific to the method and is carried through every aspect of the procedure, including preparation, cleanup and analysis. The MB is used to identify any interferences or contamination of the analytical system that may lead to the reporting of elevated analyte concentrations or false positive data. Potential sources of contamination include solvent, reagents, glassware, or the laboratory environment. The MB is prepared with each group of samples processed. One batch of samples is generally defined as a group of 20 samples or less of the same sample matrix that are processed using the same procedures, reagents and standards within the same time period.

B.2.5 Equipment Blanks

Equipment blanks were prepared to assess potential contamination from autosampler bottles and autosampler pump tubing. To evaluate potential contamination from equipment, equipment blanks were analyzed at the beginning of the season and then several times throughout the season. Equipment blanks were collected by pouring ultrapure water through all the equipment used in the sampling process. The rinsate was then analyzed for metals. Bottle blanks were also collected and analyzed several times throughout the season to assess the impact, if any, of using plastic bottles for the collection of organic analytes. Because sample bottles used in this monitoring program are reused, bottle blank analyses were also performed to determine the effectiveness of the bottle cleaning process performed by the laboratory.

B.2.6 Laboratory Control Sample

A laboratory control sample (LCS) is a laboratory-generated clean matrix sample that is fortified with known concentrations of target analytes. The LCS is then carried along with the environmental samples through the entire sample preparation/analysis sequence. Review of the LCS recovery data is used to monitor the performance of the analytical methods. The results of the LCS, used in conjunction with the matrix spike samples can provide evidence that the laboratory performed the method correctly or the sample matrix affected the results.

B.2.7 Matrix Spike Sample

Matrix spikes (MS) and matrix spike duplicates (MSDs) are analyzed to evaluate the effect of the sample matrix on the accuracy of the analytical procedures. An MS/MSD is an environmental sample to which known concentrations of target analytes have

been added. The spiked sample is then carried through the entire analytical sequence. The anlayte concentrations detected during the analysis are compared to the known spike concentrations to obtain a percent recovery for each spiked analyte. The recoveries are compared to acceptance limits and the results are used to evaluate accuracy and the presence of matrix interferences.

The difference between the MS and the MSD analyses is expressed as the relative percent difference (RPD). RPDs are used to evaluate analytical precision and can also be a measure of relative sample heterogeneity.

B.3 Data Quality Evaluation

Upon receipt from the laboratory, each analytical report was thoroughly reviewed and the data evaluated to determine if the data met the project objectives. Initially, the data were screened for the following major items:

- A 100 percent check between electronic data provided by the laboratory and the hard copy reports;
- Conformity check between the chain-of-custody forms, compositing protocol, and laboratory reports;
- A check for laboratory data report completeness; and,
- A check for typographical errors on the laboratory reports.

After performing the aforementioned data screening, the laboratory was notified of any deficiencies by way of a telephone call or through a memorandum detailing the problems encountered during the initial screening process.

Following the initial screening, a more complete QA/QC review process was performed which included an evaluation of method holding times, method and equipment blank contamination, and accuracy and precision. Accuracy was evaluated by reviewing MS, MSD and LCS recoveries; precision was evaluated by reviewing spike duplicate and laboratory sample duplicate RPDs. In addition to manually reviewing the data for the QC elements listed above, all electronic data were checked for compliance with Caltrans-specified accuracy, precision, holding time and reporting limit criteria using Caltrans' Electronic Data Deliverable (EDD) Checker and Automated Data Validation program (August 2000). Data collected during the 2000-2001 monitoring season were the first set of data where the data checker and validation programs were used.

The following sections describe specific items that were evaluated during the QA/QC review process and data that were qualified as estimated due to laboratory QC exceedances.

B.3.1 Holding Times

A sample holding time is defined as the maximum allowable time a sample can be stored after sample collection and preservation until analysis. For composite samples, the time of the last discrete sample is considered the sample collection time for determining the sample holding time. During the data review process, it was determined that, with the exception of nitrate, ortho-phosphate, turbidity and pH, all other analyses were performed within their technical holding times.

Although the samples were analyzed immediately after laboratory receipt and compositing activities, 15 of the 29 samples submitted for analysis for nitrates, and 10 of the 25 samples submitted for dissolved ortho-phosphate, were analyzed beyond the maximum allowable holding time of 48 hours. Therefore, these samples were qualified with a "J" or a "UJ", in accordance with Caltrans protocols, to indicate an estimated or an estimated reporting limit as a result of a holding time exceedance.

Although a numerical holding time is not specified for pH or turbidity, the methods suggest that samples be analyzed for pH and turbidity as soon as possible after sample collection. In accordance with the Caltrans EDD Checker, all samples measured for pH and turbidity after 48 hours from the end of sample collection were flagged with "Js" to indicate estimated results. Although samples were analyzed at the laboratory for pH and turbidity as soon as possible after sample compositing procedures were complete, 12 of the 28 samples submitted for pH and 10 of the 21 samples submitted for turbidity were analyzed after 48 hours had elapsed. Therefore, these samples were qualified with "Js."

B.3.2 Blank Evaluation

As mentioned previously, analytical results from both laboratory method blanks and field equipment blanks were evaluated during the QA/QC review process. Blanks can be used to identify the presence and potential source of sample contamination. If no contamination is present in the blanks, then no further action is required. Laboratory method blanks were analyzed with every batch of samples for most analyses. Additionally, two types of field blanks were collected and analyzed periodically throughout the sampling program: blanks were collected from the sampling equipment (i.e., the pump tubing) and from the sample bottles, which were analyzed to evaluate the effectiveness of the bottle cleaning procedures performed by the laboratory. Bottle blanks were also analyzed for organic constituents (TOC and DOC) to assess the impact of using plastic rather than glass sample containers.

In the 2000-2001 dataset, low levels of inorganic constituents, particularly copper and zinc, were sometimes detected in both types of equipment blanks (pump tubing and bottle blanks). Although these blanks indicated contamination, the impact this contamination had on concentrations in the storm water samples was negligible. The metals concentrations detected in the blanks were less than five times the concentrations detected in the project samples. Therefore, qualification of the data was not warranted. Furthermore, organic constituents (i.e., TOC and DOC) were not

detected at concentrations above the laboratory reporting limit of 1 mg/L in any of the bottle blanks. Therefore, it was demonstrated that the use of plastic sample collection containers does not interfere with the analysis of TOC and DOC.

B.3.3 Accuracy and Precision

Accuracy is the degree of agreement between a measurement and the true or expected value or between the average of a number of measurements and the true or expected value. Systematic errors affect accuracy. For chemical properties, accuracy is expressed as percent recovery (%R), which is calculated as follows:

$$\%R = [(Cs - C)/S] * 100$$

where:

%R	=	percent recovery
Cs	=	spiked sample concentration
C	=	background sample concentration
S	=	concentration equivalent of spike added

MS, MSD and LCS results were checked to assess the accuracy of the analytical process. MS and MSD results provided an evaluation of accuracy in environmental sample matrices; whereas, LCS results provided a measure of accuracy throughout the entire recovery process.

Precision is an estimate of variability. In other words, precision is an estimate of agreement among individual measurements of the same physical or chemical property, under prescribed similar conditions. Precision can be calculated as the relative percent difference (RPD) as follows:

$$RPD = 2 * [(S - D)/(S + D)] * 100$$

where:

RPD	=	relative percent difference
S	=	concentration measured in original sample
D	=	concentration measured in duplicate sample

Duplicate sample results were checked to assess the variability between samples. Depending on the analytical method, various types of duplicate results were compared to assess precision. For example, some methods require the analysis of an MS and an MSD sample pair, whereas other methods are not as specific. When not specified, the laboratory calculated precision using a sample and a duplicate of the same sample.

Control limits for spike recoveries and RPDs were defined by the project data quality objectives (DQOs) (LWA, August 1997). These are the acceptance limits that are specified in the EDD Checker and are the limits used to evaluate the usability of the project data.

In general, the laboratory performed very well in meeting the control limits defined by the DQOs (see Table C-1 below). The only QC deficiencies noted were related to MS and/or MSD samples analyzed for metals and phosphorus. With respect to phosphorus analyses, three batches of samples had MS and MSD recoveries that were below the acceptance criteria of 80 to 120 percent. A total of six project samples were included in these three batches of samples. Therefore, results from 6 of the 27 samples analyzed for phosphorus were flagged with "Js" to indicate estimated concentrations as a result of MS and MSD QC exceedances. Although the MS and MSD recoveries were slightly outside the acceptable control limits, the corresponding LCS samples were within acceptable limits, which demonstrates slight matrix interferences.

With respect to metals, out-of-range MS and/or MSD recoveries were reported for arsenic, cadmium, chromium, copper, iron, nickel and zinc. Of the 31 samples analyzed for total and dissolved arsenic, two results were qualified with "Js" to indicate estimated concentrations as a result of low MS or MSD recoveries. The low MS and MSD recoveries for arsenic were isolated to just two batches of samples. In both batches, the corresponding LCS sample was within acceptable limits, thereby demonstrating matrix interferences.

Similar to arsenic, low cadmium, chromium and nickel MS and/or MSD recoveries were also noted in two batches of samples, which affected 4 of the 31 samples analyzed for cadmium and chromium, and 5 of the 31 samples analyzed for nickel. Again, the corresponding LCS samples were within acceptable limits in both batches of samples.

During the copper analyses, three batches of samples had MS samples that were recovered at concentrations below the lower acceptance limit of 80 percent. These analytical batches contained six project samples, which were qualified with "Js" to indicate estimated concentrations. In these batches of samples, the LCS recoveries were within acceptable limits.

The most pronounced matrix interferences were reported for the zinc and iron analyses. In seven analytical batches, which affected a total of 18 project samples, zinc recoveries in the MS and/or MSD samples were outside the acceptance criteria of 80 to 120 percent. In five analytical batches, iron recoveries in the MS and/or MSD samples were outside of the acceptance criteria, which affected a total of nine samples. Recoveries for both iron and zinc were above the upper control limit in some batches, while below the lower control limit in other batches. In all cases, however, the corresponding LCS samples were within acceptable limits. Therefore, matrix interferences were demonstrated. Although the zinc and iron results are considered usable for the project purposes, they were qualified with "Js" to indicate estimated concentrations.

Overall, the QC deficiencies reported during the metals and phosphorus analyses were not considered significant enough to reject the data and were used in subsequent statistical analyses.

Table B-1
Accuracy and Precision Control Limits

Analyte	% Recovery (Accuracy)	RPD (Precision)
Metals (total/dissolved)	75 - 125	20
Nitrate (as N)	80 - 120	20
TKN	80 - 120	20
Phosphorus (total/dissolved)	80 - 120	20
Ortho-Phosphate (dissolved)	80 - 120	20
pH	--	20
Hardness (as $CaCO_3$)	80 - 120	20
SC	--	20
Chloride	80 - 120	20
Turbidity	--	20
Oil & Grease	80 - 120	20
TOC/DOC	85 - 115	15
TSS/TDS	80 - 120	20

B.3.4 Evaluation of Hydrologic Coverage and Flow Data

The final data screening procedure included a qualitative evaluation of each station storm event in terms of hydrologic data and sample coverage to ensure the resulting analytical results represented EMCs. As part of this qualitative evaluation, runoff hydrographs (with plotted sample collection times) and rainfall hyetographs were constructed for each station storm (refer to Appendix A). The hydrographs were carefully reviewed to (1) assess the temporal sample coverage for each station storm and (2) identify any spurious flow data.

Throughout each evaluation, an attempt was made to preserve and incorporate as much of the analytical data as possible, while ensuring the integrity of the data set. Station storms were rejected or accepted based solely on this visual qualitative data evaluation. No quantitative evaluation was conducted as part of this data screening procedure.

In order to reject a given station storm, one, or a combination, of the following would be required:

- A sufficient number of samples were not collected during peak flow.
- A significant portion of the flow hydrograph was not sampled.

During this monitoring season, no data were rejected based on this qualitative evaluation.

B.3.5 Data Evaluation Summary

In general, the QA/QC review of analytical results found all the data to be of acceptable quality and usable for the intended purposes, including sample data qualified as estimated due to slight laboratory QC deficiencies or holding time exceedances. None of the data were rejected for use on the basis of laboratory method deficiencies. Results of this evaluation indicated that all the data were considered acceptable and were used in final data analyses. The evaluation of the hydrologic coverage and flow data provided an assessment of the representativeness of sampling event. Based on the evaluation of hydrologic coverage, all data used in the final data analysis were considered representative of the sampling event.

Table 4-2c
Summary of Precipitation Quality Data: Year 3

Constituent / Parameter	Units	Reporting Limit	Sample Size	Percent Detected [1]	Statistical Summary				
					Range		Mean	Median	Standard Deviation
					Min	Max			
Conventionals									
pH	pH units	0.1	23	100%	3.8	7.1	5.7	5.6	0.7
EC	umhos/cm	1	23	100%	3	71	13	7	17
TSS	mg/L	1		NA	NA	NA	NA	NA	NA
TDS	mg/L	1		NA	NA	NA	NA	NA	NA
Hardness as CaCO3	mg/L	2	21	24%	2	28	NA	NA	NA
Turbidity	NTUs	0.1		NA	NA	NA	NA	NA	NA
Chloride	mg/L	1	23	57%	1	12	2	1	3
Nutrients									
Nitrate (as N)	mg/L	0.1	22	50%	0.1	0.2	0.1	0.1	0.0
Nitrite (as N)	mg/L	0.1	22	9%	0.1	0.1	NA	NA	NA
TKN	mg/L	0.1	23	22%	0.1	0.6	0.3	0.2	0.1
Total Phosphorus	mg/L	0.03	22	5%	0.03	0.25	NA	NA	NA
Dissolved Phosphorus	mg/L	0.03		NA	NA	NA	NA	NA	NA
Diss. Orthophosphate	mg/L	0.03	22	0%	NA	NA	NA	NA	NA
Total Metals									
Arsenic	µg/L	0.5	23	9%	1.5	2.3	NA	NA	NA
Cadmium	µg/L	0.2	23	0%	NA	NA	NA	NA	NA
Chromium	µg/L	1	23	26%	1	22	1	0	6
Copper	µg/L	1	23	61%	1	24	2	1	6
Iron	µg/L	25	23	87%	25	1640	177	108	415
Lead	µg/L	1	23	9%	1	2	NA	NA	NA
Nickel	µg/L	2	23	0%	NA	NA	NA	NA	NA
Zinc	µg/L	5	23	96%	5	272	58	24	74
Dissolved Metals									
Chromium	µg/L	1		NA	NA	NA	NA	NA	NA
Copper	µg/L	1		NA	NA	NA	NA	NA	NA
Iron	µg/L	1		NA	NA	NA	NA	NA	NA
Zinc	µg/L	5		NA	NA	NA	NA	NA	NA

NA = Not Available (Summary statistics not available for parameters with less than 40% detection limit).

1 = Percent of detection greater than the reporting limit

Table 4-2b
Summary of Precipitation Quality Data: Year 2

Constituent / Parameter	Units	Reporting Limit	Sample Size	Percent Detected [1]	Statistical Summary				
					Range		Mean	Median	Standard Deviation
					Min	Max			
Conventionals									
pH	pH units	0.1	25	100%	4.7	8.1	6.8	6.8	1.0
EC	umhos/cm	1	25	100%	4	570	35	13	161
TSS	mg/L	1	3	100%	7	47	23	15	26
TDS	mg/L	1	3	100%	7	17	NA	NA	NA
Hardness as CaCO3	mg/L	2	23	39%	2	12	NA	NA	NA
Turbidity	NTUs	0.1	4	100%	0.8	4.5	2.4	2.2	1.7
Chloride	mg/L	1	23	61%	1	140	7	1	42
Nutrients									
Nitrate (as N)	mg/L	0.1	25	100%	0.1	0.5	0.2	0.2	0.1
Nitrite (as N)	mg/L	0.1	18	6%	0.1	0.1	NA	NA	NA
TKN	mg/L	0.1	18	17%	0.1	5.3	NA	NA	NA
Total Phosphorus	mg/L	0.03	23	39%	0.03	0.36	NA	NA	NA
Dissolved Phosphorus	mg/L	0.03	5	60%	0.03	0.15	0.08	0.06	0.08
Diss. Orthophosphate	mg/L	0.03	23	30%	0.03	0.14	NA	NA	NA
Total Metals									
Arsenic	µg/L	0.5	25	8%	0.5	6.5	NA	NA	NA
Cadmium	µg/L	0.2	25	24%	0.2	0.5	NA	NA	NA
Chromium	µg/L	1	25	32%	1	5	NA	NA	NA
Copper	µg/L	1	25	84%	1	9	3	2	3
Iron	µg/L	25	25	68%	25	1030	199	98	279
Lead	µg/L	1	25	32%	1	3	NA	NA	NA
Nickel	µg/L	2	25	20%	2	3	NA	NA	NA
Zinc	µg/L	5	25	96%	5	450	53	30	106
Dissolved Metals									
Chromium	µg/L	1	1	100%	2	NA	NA	NA	NA
Copper	µg/L	1	1	100%	2	NA	NA	NA	NA
Iron	µg/L	1	2	50%	1	72	NA	NA	NA
Zinc	µg/L	5	1	100%	259	NA	NA	NA	NA

NA = Not Available (Summary statistics not available for parameters with less than 40% detection limit).

1 = Percent of detection greater than the reporting limit

Table 4-2a
Summary of Precipitation Quality Data: Year 1

Constituent / Parameter	Units	Reporting Limit	Sample Size	Percent Detected [1]	Statistical Summary				
					Range		Mean	Median	Standard Deviation
					Min	Max			
Conventionals									
pH	pH units	0.1	6	100%	5.5	7.3	6.1	5.8	0.8
EC	umhos/cm	1	6	100%	5	174	50	15	76
TSS	mg/L	1	8	75%	1	27	9	5	10
TDS	mg/L	1	8	63%	1	97	29	7	39
Hardness as CaCO3	mg/L	2	4	50%	2	20	NA	NA	NA
Turbidity	NTUs	0.1	2	100%	1.1	12	NA	NA	NA
Chloride	mg/L	1	8	63%	1	45	9	1	18
Nutrients									
Nitrate (as N)	mg/L	0.1	8	50%	0.1	0.4	0.1	0.1	0.1
Nitrite (as N)	mg/L	0.1		NA	NA	NA	NA	NA	NA
TKN	mg/L	0.1	4	75%	0.1	0.8	0.3	0.2	0.4
Total Phosphorus	mg/L	0.03	4	50%	0.03	0.12	NA	NA	NA
Dissolved Phosphorus	mg/L	0.03		NA	NA	NA	NA	NA	NA
Diss. Orthophosphate	mg/L	0.03	2	0%	NA	NA	NA	NA	NA
Total Metals									
Arsenic	µg/L	0.5	8	25%	0.5	2.7	NA	NA	NA
Cadmium	µg/L	0.2	8	13%	0.2	0.2	NA	NA	NA
Chromium	µg/L	1	8	75%	1	20	6	4	8
Copper	µg/L	1	8	100%	1	15	7	6	5
Iron	µg/L	25	4	100%	171	2850	1151	792	1405
Lead	µg/L	1	8	88%	1	4	2	2	1
Nickel	µg/L	2	8	25%	2	14	NA	NA	NA
Zinc	µg/L	5	8	100%	22	196	92	84	58
Dissolved Metals									
Chromium	µg/L	1	8	13%	1	2	NA	NA	NA
Copper	µg/L	1	8	50%	1	7	3	2	2
Iron	µg/L	25	4	25%	25	114	NA	NA	NA
Zinc	µg/L	5	8	100%	40	71	52	48	11

NA = Not Available (Summary statistics not available for parameters with less than 40% detection limit).

1 = Percent of detection greater than the reporting limit

Table 4-5c
Summary Statistics of Effluent Runoff Water Quality Results: Combined Years 2, 3

Constituent / Parameter	Units	Reporting Limit	Statisitical Summary					
			Sample Size	Range		Mean	Median	Standard Deviation
				Min	Max			
Conventionals								
pH	pH units	0.1	51	5.7	9.4	7.0	7.0	0.7
EC	umhos/cm	1	51	28	22000	2904	1500	4270
TSS	mg/L	1	51	29	1100	384	300	273
TDS	mg/L	1	51	17	13000	1580	780	2422
Hardness as CaCO3	mg/L	2	51	2	250	74	53	66
DOC	mg/L	1	51	3	67	14	10	14
TOC	mg/L	1	51	3	84	18	13	16
Turbidity	NTUs	0.05	51	26	1100	392	340	214
Chloride	mg/L	0.02	51	2	9000	1035	410	1853
COD	mg/L	10	51	69	830	283	260	170
Oil & grease	mg/L	1	5	4	12	7	8	4
Nutrients								
Nitrate (as N)	mg/L	0.1	51	0.1	1.0	0.3	0.2	0.2
TKN	mg/L	0.1	51	0.4	5.5	1.7	1.4	1.3
Ammonia (as N)	mg/L	0.1	49	0.1	1.7	0.3	0.2	0.4
Nitrite (as N)	mg/l	0.1	48	NA	NA	NA	NA	NA
Total Phosphorus	mg/L	0.03	51	0.06	18.00	1.97	0.23	4.36
Diss. Orthophosphate	mg/L	0.03	51	0.03	0.16	0.06	0.04	0.04
Diss. Phosphorus	mg/L	0.03	49	0.03	0.23	0.07	0.06	0.04
Total Metals								
Arsenic	µg/L	0.5	51	0.5	8.5	2.7	2.6	1.6
Cadmium	µg/L	0.2	51	0.2	2.2	0.5	0.4	0.4
Chromium	µg/L	1	51	3	34	12	10	7
Copper	µg/L	1	51	9	53	28	26	11
Iron	µg/L	25	51	832	30400	9857	7920	6697
Lead	µg/L	1	51	4	65	20	16	14
Nickel	µg/L	2	51	4	25	11	9	5
Zinc	µg/L	5	51	71	1460	269	222	226
Dissolved Metals								
Arsenic	µg/L	0.5	51	0.5	3.0	0.9	0.6	0.7
Cadmium	µg/L	0.2	51	0.2	1.8	0.2	0.0	0.4
Chromium	µg/L	1	51	1	16	3	2	3
Copper	µg/L	1	51	2	34	7	6	5
Iron	µg/L	25	51	25	1050	318	232	288
Lead	µg/L	1	51	NA	NA	NA	NA	NA
Nickel	µg/L	2	51	2	11	3	2	2
Zinc	µg/L	5	51	9	1390	116	57	237

NA= Not Available (statistics are not calculated for data sets with a high number of non-detects).

Table 4-5b
Summary Statistics of Effluent Runoff Water Quality Results: Year 3

Constituent / Parameter	Units	Reporting Limit	Statisitical Summary					
			Sample Size	Range		Mean	Median	Standard Deviation
				Min	Max			
Conventionals								
pH	pH units	0.1	25	5.7	8.4	7.1	7.0	0.6
EC	umhos/cm	1	25	37	6500	2073	1500	1985
TSS	mg/L	1	25	110	940	352	230	252
TDS	mg/L	1	25	17	3400	1088	780	1021
Hardness as CaCO3	mg/L	2	25	4	220	64	48	56
DOC	mg/L	1	25	3	56	14	10	12
TOC	mg/L	1	25	5	63	19	15	14
Turbidity	NTUs	0.05	25	120	750	388	310	209
Chloride	mg/L	0.02	25	3	2200	576	410	617
COD	mg/L	10	25	85	580	280	260	164
Oil & grease	mg/L	1	5	4	12	7	8	4
Nutrients								
Nitrate (as N)	mg/L	0.1	25	0.1	0.6	0.2	0.2	0.1
TKN	mg/L	0.1	25	0.4	4.7	1.6	1.4	1.0
Ammonia (as N)	mg/L	0.1	25	0.1	1.1	0.3	0.2	0.3
Nitrite (as N)	mg/l	0.1	25	NA	NA	NA	NA	NA
Total Phosphorus	mg/L	0.03	25	0.06	18.00	3.66	0.22	5.75
Diss. Orthophosphate	mg/L	0.03	25	0.03	0.16	0.05	0.03	0.04
Diss. Phosphorus	mg/L	0.03	25	0.04	0.23	0.07	0.05	0.05
Total Metals								
Arsenic	µg/L	0.5	25	0.7	4.5	2.2	2.0	1.1
Cadmium	µg/L	0.2	25	0.2	1.0	0.4	0.3	0.2
Chromium	µg/L	1	25	4	34	11	9	7
Copper	µg/L	1	25	15	52	30	29	12
Iron	µg/L	25	25	3290	26400	9377	6570	6291
Lead	µg/L	1	25	4	43	15	12	10
Nickel	µg/L	2	25	5	24	10	9	5
Zinc	µg/L	5	25	71	770	246	222	149
Dissolved Metals								
Arsenic	µg/L	0.5	25	0.5	3.0	1.0	0.8	0.8
Cadmium	µg/L	0.2	25	0.3	0.7	0.2	0.1	0.2
Chromium	µg/L	1	25	1	6	3	2	2
Copper	µg/L	1	25	2	34	7	6	7
Iron	µg/L	25	25	30	719	236	202	191
Lead	µg/L	1	25	1	6	NA	NA	NA
Nickel	µg/L	2	25	2	6	3	2	1
Zinc	µg/L	5	25	14	598	98	64	137

NA= Not Available (statistics are not calculated for data sets with a high number of non-detects).

Table 4-5a
Summary Statistics of Effluent Runoff Water Quality Results: Year 2

Constituent / Parameter	Units	Reporting Limit	Statisitical Summary					
			Sample Size	Range		Mean	Median	Standard Deviation
				Min	Max			
Conventionals								
pH	pH units	0.1	26	5.8	9.4	7.0	7.0	0.7
EC	umhos/cm	1	26	28	22000	3704	1350	5599
TSS	mg/L	1	26	363	29	415	305	297
TDS	mg/L	1	26	33	13000	2053	680	3203
Hardness as CaCO3	mg/L	2	26	2	250	83	64	75
DOC	mg/L	1	26	3	67	15	10	16
TOC	mg/L	1	26	3	84	18	13	19
Turbidity	NTUs	0.05	26	26	1100	396	350	226
Chloride	mg/L	0.02	26	2	9000	1476	390	2456
COD	mg/L	10	26	69	830	286	270	181
Oil & grease	mg/L	1		NA	NA	NA	NA	NA
Nutrients								
Nitrate (as N)	mg/L	0.1	26	0.1	1.0	0.3	0.2	0.3
TKN	mg/L	0.1	26	0.4	5.5	1.8	1.4	1.5
Ammonia (as N)	mg/L	0.1	24	0.1	1.7	0.3	0.1	0.5
Nitrite (as N)	mg/l	0.1	23	NA	NA	NA	NA	NA
Total Phosphorus	mg/L	0.03	26	0.08	1.30	0.35	0.24	0.30
Diss. Orthophosphate	mg/L	0.03	26	0.03	0.14	0.06	0.06	0.04
Diss. Phosphorus	mg/L	0.03	24	0.03	0.14	0.07	0.06	0.03
Total Metals								
Arsenic	µg/L	0.5	26	0.5	8.5	3.2	2.8	1.8
Cadmium	µg/L	0.2	26	0.2	2.2	0.6	0.4	0.5
Chromium	µg/L	1	26	3	34	13	12	7
Copper	µg/L	1	26	9	53	27	25	10
Iron	µg/L	25	26	832	30400	10319	8040	7285
Lead	µg/L	1	26	8	65	25	24	15
Nickel	µg/L	2	26	4	25	11	10	5
Zinc	µg/L	5	26	119	1460	292	216	305
Dissolved Metals								
Arsenic	µg/L	0.5	26	0.5	2.6	0.8	0.6	0.7
Cadmium	µg/L	0.2	26	0.2	1.8	NA	NA	NA
Chromium	µg/L	1	26	1	16	3	2	3
Copper	µg/L	1	26	3	15	7	6	3
Iron	µg/L	25	26	25	1050	397	962	343
Lead	µg/L	1	26	NA	NA	NA	NA	NA
Nickel	µg/L	2	26	2	11	3	2	3
Zinc	µg/L	5	26	9	1390	134	55	329

NA= Not Available (statistics are not calculated for data sets with a high number of non-detects).

Table 6-12b
Statistical Analyses of Influent vs Effluent Data, Tahoe Airport and Echo Summit Sites (Year 3).

Constituent / Parameter	Units	Tahoe Airport			Echo Summit		
		Inf / Eff % Difference	Statistically Different		Inf / Eff % Difference	Statistically Different	
			Independent assumption	Dependent assumption		Independent assumption	Dependent assumption
Conventionals							
EC	umhos/cm	NA	NA	NA	-4	No	No
pH	su	-2	No	No	1	No	No
Hardness	mg/L	14	No	No	2	No	No
TOC	mg/L	-12	No	No	-6	No	No
DOC	mg/L	-10	No	No	-3	No	No
COD	mg/L	22	No	No	-4	No	No
TDS	mg/L	15	No	No	-7	No	No
TSS	mg/L	35	No	No	0	No	No
Turbidity	mg/L	-1	No	No	2	No	No
Chloride	mg/L	21	No	No	-4	No	No
Nutrients							
Ammonia	mg/L as N	28	No	No	17	No	No
Nitrite	mg/L as N	NA	NA	NA	NA	NA	NA
Nitrate	mg/L as N	1	No	No	-24	No	No
TKN	mg/L as N	16	No	No	6	No	No
Total Phosphorus	mg/L	-5	No	No	-15	No	No
Dissolved Phosphorus	mg/L	-7	No	No	-9	No	No
Orthophosphate	mg/L	-4	No	No	-18	No	No
Total Metals							
Arsenic	µg/L	7	No	No	-6	No	No
Cadmium	µg/L	26	No	No	29	No	No
Chromium	µg/L	12	No	No	0	No	No
Copper	µg/L	17	No	No	-11	No	No
Iron	µg/L	22	No	No	1	No	No
Nickel	µg/L	16	No	No	-65	Yes	Yes
Lead	µg/L	24	No	No	4	No	No
Zinc	µg/L	-17	No	No	-41	No	No
Dissolved Metals							
Arsenic	µg/L	16	No	No	-40	No	No
Cadmium	µg/L	-41	No	No	NA	NA	NA
Chromium	µg/L	-16	No	No	-16	No	No
Copper	µg/L	1	No	No	-35	No	No
Iron	µg/L	15	No	No	-19	No	No
Nickel	µg/L	0	No	No	-5	No	No
Lead	µg/L	NA	NA	NA	NA	NA	NA
Zinc	µg/L	-174	No	No	-111	No	No

Table 6-12a
Statistical Analyses of Influent vs Effluent Data, Tahoe Airport and Echo Summit Sites (Year 2)

Constituent / Parameter	Units	Tahoe Airport			Echo Summit		
		Inf / Eff % Difference	Statistically Different		Inf / Eff % Difference	Statistically Different	
			Independent assumption	Dependent assumption		Independent assumption	Dependent assumption
Conventionals							
EC	umhos/cm	-6	No	No	-9	No	No
pH	su	2	No	No	4	No	No
Hardness	mg/L	-4	No	No	0	No	No
TOC	mg/L	-2	No	No	-30	No	No
DOC	mg/L	-5	No	No	-23	No	No
COD	mg/L	12	No	No	27	No	No
TDS	mg/L	-4	No	No	-9	No	No
TSS	mg/L	28	No	No	44	Yes	Yes
Turbidity	mg/L	7	No	No	22	No	No
Chloride	mg/L	-7	No	No	-16	No	No
Nutrients							
Ammonia	mg/L as N	26	No	No	7	No	No
Nitrite	mg/L as N	NA	NA	NA	NA	NA	NA
Nitrate	mg/L as N	-9	No	No	17	No	No
TKN	mg/L as N	4	No	No	0	No	No
Total Phosphorus	mg/L	-2	No	No	18	No	No
Dissolved Phosphorus	mg/L	17	No	No	8	No	No
Orthophosphate	mg/L	15	No	No	13	No	No
Total Metals							
Arsenic	µg/L	22	No	No	16	No	No
Cadmium	µg/L	11	No	No	9	No	No
Chromium	µg/L	21	No	No	23	No	No
Copper	µg/L	31	No	Yes	32	No	No
Iron	µg/L	NA	NA	NA	30	No	No
Nickel	µg/L	28	No	No	13	No	No
Lead	µg/L	25	No	No	29	No	No
Zinc	µg/L	1	No	No	-50	No	No
Dissolved Metals							
Arsenic	µg/L	9	No	No	28	Yes	Yes
Cadmium	µg/L	NA	NA	NA	-25	No	No
Chromium	µg/L	-14	No	No	25	No	No
Copper	µg/L	-5	No	No	-13	No	No
Iron	µg/L	19	No	No	-2	No	No
Nickel	µg/L	-12	No	No	13	No	No
Lead	µg/L	NA	NA	NA	-6	No	No
Zinc	µg/L	-73	No	Yes	-188	No	No

Table 4-4d
Statistical Summary of Influent Runoff Water Quality Results: Combined Years 1, 2, 3

Constituent / Parameter	Units	Reporting Limit	Statistical Summary					
			Sample Size	Range		Mean	Median	Standard Deviation
				Min	Max			
Conventionals								
pH	pH units	0.1	161	5.6	9.6	7.2	7.1	0.7
EC	umhos/cm	1	161	25	21000	2382	1000	3421
TSS	mg/L	1	161	22	5800	759	510	841
TDS	mg/L	1	161	13	12000	1354	610	1841
Hardness as CaCO3	mg/L	2	161	3	2500	113	66	267
DOC	mg/L	1	161	1	530	26	13	61
TOC	mg/L	1	161	3	550	32	17	67
COD	mg/L	10	137	21	3000	465	340	468
Turbidity	NTUs	0.05	158	8	2620	477	410	362
Chloride	mg/L	0.02	161	1	9000	833	300	1417
Oil & grease	mg/L	1	27	1	61	18	12	15
Nutrients								
NH3-N	mg/L	0.2	130	0.1	3.9	0.5	0.2	0.7
Nitrate (as N)	mg/L	0.1	159	0.1	2.7	0.3	0.2	0.4
Nitrite (as N)	mg/L	0.1	129	0.1	0.6	NA	NA	NA
TKN	mg/L	0.1	160	0.2	19.0	2.4	1.7	2.6
Total Phosphorus	mg/L	0.03	161	0.04	19.00	2.14	0.40	4.30
Dissolved Phosphorus	mg/L	0.03	133	0.03	1.10	0.10	0.07	0.12
Diss. Orthophosphate	mg/L	0.03	161	0.03	0.58	0.08	0.06	0.07
Total Metals								
Arsenic	µg/L	0.5	161	0.5	25.5	4.2	3.3	3.5
Cadmium	µg/L	0.2	161	0.2	8.4	0.8	0.4	1.0
Chromium	µg/L	1	161	1	120	18	13	17
Copper	µg/L	1	161	3	287	41	34	33
Iron	µg/L	25	159	1180	162000	17723	11400	20239
Lead	µg/L	1	161	1	367	36	22	46
Nickel	µg/L	2	161	2	83	15	12	11
Zinc	µg/L	5	161	16	2130	266	203	247
Dissolved Metals								
Arsenic	µg/L	0.5	161	0.5	20.1	1.4	0.8	2.1
Cadmium	µg/L	0.2	161	0.2	2.2	NA	NA	NA
Chromium	µg/L	1	161	1	52	4	3	6
Copper	µg/L	1	161	1	81	8	6	9
Iron	µg/L	25	159	25	8970	451	227	935
Lead	µg/L	1	161	1	14	NA	NA	NA
Nickel	µg/L	2	161	2	28	3	2	3
Zinc	µg/L	5	161	6	284	50	30	52

NA = Not Available (Statistics are not calculated for data sets with a high number of non-detects)

umhos/cm = micromhos per centimeter

mg/L = miligrams per liter

ug/L = micrograms per liter

Table 4-4c
Statistical Summary of Influent Runoff Water Quality Results: Year 3

Constituent / Parameter	Units	Reporting Limit	Statistical Summary					
			Sample Size	Range		Mean	Median	Standard Deviation
				Min	Max			
Conventionals								
pH	pH units	0.1	66	5.8	8.4	7.0	7.0	0.6
EC	umhos/cm	1	66	41	11000	1986	960	2471
TSS	mg/L	1	66	22	5800	684	384	842
TDS	mg/L	1	66	27	5900	1083	585	1327
Hardness as CaCO3	mg/L	2	66	3	1800	111	53	271
DOC	mg/L	1	66	2	530	32	11	90
TOC	mg/L	1	66	3	550	40	16	99
COD	mg/L	10	66	21	3000	456	330	499
Turbidity	NTUs	0.05	66	44	1400	389	340	242
Chloride	mg/L	0.02	66	3	3600	590	230	818
Oil & grease	mg/L	1	13	4	61	17	12	18
Nutrients								
NH3-N	mg/L	0.2	63	0.2	3.9	0.5	0.2	0.8
Nitrate (as N)	mg/L	0.1	66	0.1	2.7	0.3	0.2	0.5
Nitrite (as N)	mg/L	0.1	66	0.3	0.4	NA	NA	NA
TKN	mg/L	0.1	66	0.2	19.0	2.6	1.8	3.2
Total Phosphorus	mg/L	0.03	66	0.04	19.00	4.31	0.36	5.95
Dissolved Phosphorus	mg/L	0.03	66	0.03	0.28	0.08	0.06	0.07
Diss. Orthophosphate	mg/L	0.03	66	0.03	0.26	0.06	0.04	0.06
Total Metals								
Arsenic	µg/L	0.5	66	0.9	16.7	3.0	2.3	2.7
Cadmium	µg/L	0.2	66	0.2	5.2	0.6	0.4	0.8
Chromium	µg/L	1	66	1	103	15	10	16
Copper	µg/L	1	66	3	287	39	29	42
Iron	µg/L	25	66	1400	104000	14082	10150	15572
Lead	µg/L	1	66	1	265	28	15	43
Nickel	µg/L	2	66	3	83	13	10	13
Zinc	µg/L	5	66	16	2130	253	188	319
Dissolved Metals								
Arsenic	µg/L	0.5	66	0.5	6.7	1.2	0.7	1.2
Cadmium	µg/L	0.2	66	0.2	0.6	NA	NA	NA
Chromium	µg/L	1	66	1	20	4	2	4
Copper	µg/L	1	66	1	81	7	5	12
Iron	µg/L	25	66	35	1260	282	207	274
Lead	µg/L	1	66	1	6	NA	NA	NA
Nickel	µg/L	2	66	2	28	3	2	4
Zinc	µg/L	5	66	6	284	51	26	60

NA = Not Available (Statistics are not calculated for data sets with a high number of non-detects)

umhos/cm = micromhos per centimeter

mg/L = miligrams per liter

ug/L = micrograms per liter

Table 4-4b
Statistical Summary of Influent Runoff Water Quality Results: Year 2

Constituent / Parameter	Units	Reporting Limit	Statistical Summary					
			Sample Size	Range		Mean	Median	Standard Deviation
				Min	Max			
Conventionals								
pH	pH units	0.1	73	5.9	9.6	7.3	7.1	0.8
EC	umhos/cm	1	73	25	21000	2735	1000	4067
TSS	mg/L	1	73	36	2500	756	580	623.5063814
TDS	mg/L	1	73	13	12000	1449	590	2073
Hardness as CaCO3	mg/L	2	73	4	2500	120	60	371
DOC	mg/L	1	73	2.4	160	21	13	29
TOC	mg/L	1	73	2.6	180	27	16	33.4
COD	mg/L	10	71	49	2800	474	340	457
Turbidity	NTUs	0.05	73	25	1500	531	460	364
Chloride	mg/L	0.02	74	2	9000	983	310	1796
Oil & grease	mg/L	1	11	6.1	45	22	20	14
Nutrients								
NH3-N	mg/L	0.2	67	0.1	3	0.42	0.2	0.6
Nitrate (as N)	mg/L	0.1	73	0.1	2	0.3	0.2	0.3
Nitrite (as N)	mg/L	0.1	63	0.4	0.6	NA	NA	NA
TKN	mg/L	0.1	73	0.6	14	2.4	1.8	2.2
Total Phosphorus	mg/L	0.03	73	0.09	1.5	0.4	0.4	0.3
Dissolved Phosphorus	mg/L	0.03	67	0.03	1.1	0.11	0.09	0.16
Diss. Orthophosphate	mg/L	0.03	73	0.03	0.6	0.09	0.07	0.08
Total Metals								
Arsenic	µg/L	0.5	73	0.7	19.0	4.8	4.3	3.1
Cadmium	µg/L	0.2	73	0.2	8	0.8	0.4	1.2
Chromium	µg/L	1	73	2	73	17	14	13
Copper	µg/L	1	73	5.6	131	39	33	24
Iron	µg/L	25	73	1180	80700	16884	12600	14525
Lead	µg/L	1	73	3	176	35	26	32
Nickel	µg/L	2	73	3	39	15	14	8.2
Zinc	µg/L	5	73	32	950	249	203	176
Dissolved Metals								
Arsenic	µg/L	0.5	73	0.5	8.7	1.2	0.8	1.4
Cadmium	µg/L	0.2	73	0.2	2.2	NA	NA	NA
Chromium	µg/L	1	73	1	52	5	3	8
Copper	µg/L	1	73	2	30	8	6	5
Iron	µg/L	25	73	32	4460	499	324	754
Lead	µg/L	1	73	1	14	1	2	2
Nickel	µg/L	2	73	2	11	3	2	2
Zinc	µg/L	5	73	8	210	48	32	40

NA = Not Available (Statistics are not calculated for data sets with a high number of non-detects)

umhos/cm = micromhos per centimeter

mg/L = miligrams per liter

ug/L = micrograms per liter

Table 4-4a
Statistical Summary of Influent Runoff Water Quality Results: Year 1

Constituent / Parameter	Units	Reporting Limit	Statistical Summary					
			Sample Size	Range		Mean	Median	Standard Deviation
				Min	Max			
Conventionals								
pH	pH units	0.1	22	5.6	8.5	7.3	7.3	0.8
EC	umhos/cm	1	22	39	16200	2400	1026	4027
TSS	mg/L	1	22	25	5100	989	608	1334
TDS	mg/L	1	22	27	8780	1854	898	2420
Hardness as CaCO3	mg/L	2	22	6	412	94	74	96
DOC	mg/L	1	22	4	65	22	17	16
TOC	mg/L	1	22	4	81	25	21	19
COD	mg/L	10		NA	NA	NA	NA	NA
Turbidity	NTUs	0.05	19	8	2620	575	493	644
Chloride	mg/L	0.02	21	3	5300	1069	510	1454
Oil & grease	mg/L	1	3	7	7	NA	NA	NA
Nutrients								
NH3-N	mg/L	0.2		NA	NA	NA	NA	NA
Nitrate (as N)	mg/L	0.1	20	0.1	1.0	0.4	0.3	0.2
Nitrite (as N)	mg/L	0.1		NA	NA	NA	NA	NA
TKN	mg/L	0.1	21	0.3	5.6	1.6	0.8	1.6
Total Phosphorus	mg/L	0.03	22	0.08	9.90	1.30	0.55	2.46
Dissolved Phosphorus	mg/L	0.03		NA	NA	NA	NA	NA
Diss. Orthophosphate	mg/L	0.03	22	0.03	0.38	0.11	0.10	0.09
Total Metals								
Arsenic	µg/L	0.5	22	0.7	25.5	6.1	5.5	5.8
Cadmium	µg/L	0.2	22	0.3	3.0	1.0	0.8	0.7
Chromium	µg/L	1	22	4	120	28	24	28
Copper	µg/L	1	22	16	170	55	44	35
Iron	µg/L	25	20	1540	162000	32802	22000	41092
Lead	µg/L	1	22	5	367	66	51	86
Nickel	µg/L	2	22	4	67	19	15	15
Zinc	µg/L	5	22	39	1030	359	289	238
Dissolved Metals								
Arsenic	µg/L	0.5	22	0.5	20.1	2.5	1.2	5.0
Cadmium	µg/L	0.2	22	0.3	0.3	NA	NA	NA
Chromium	µg/L	1	22	1	12	4	-10	3
Copper	µg/L	1	22	3	42	13	10	10
Iron	µg/L	25	20	41	8970	832	334	2569
Lead	µg/L	1	22	1	11	2	1	3
Nickel	µg/L	2	22	2	14	4	3	3
Zinc	µg/L	5	22	9	283	56	32	67

NA = Not Available (Statistics are not calculated for data sets with a high number of non-detects)

umhos/cm = micromhos per centimeter

mg/L = miligrams per liter

Table 6-11b
Statistical Analyses of Influent and Effluent Data, Tahoe Airport and Echo Summit Sites (Year 3)

Constituent/ Parameter	Units	Sample Size		Mean		Standard Deviation		Inf / Eff % Difference	Statistically Different	
		Influent	Effluent	Influent	Effluent	Influent	Effluent		Independent assumption	Dependent assumption
Conventionals										
pH	pH Units	25	25	7.0	7.1	0.7	0.6	-1	No	No
EC	umhos/cm	25	25	2199	2073	2485	1985	6	No	No
TSS	mg/L	25	25	458	352	423	252	23	No	No
TDS	mg/L	25	25	1178	1088	1405	1021	8	No	No
Hardness as CaCO3	mg/L	25	25	72	64	96	56	11	No	No
DOC	mg/L	25	25	13	14	11	12	-7	No	No
TOC	mg/L	25	25	17	19	11	14	-10	No	No
COD	mg/L	25	25	326	280	239	164	14	No	No
Turbidity	mg/L	25	25	389	388	210	209	0	No	No
Chloride	mg/L	25	25	647	576	840	617	11	No	No
Nutrients										
Ammonia	mg/L as N	25	25	0.4	0.3	0.5	0.3	24	No	No
Nitrate	mg/L as N	25	25	0.2	0.2	0.2	0.1	-9	No	No
Nitrite	mg/L as N	25	25	NA	NA	NA	NA	NA	NA	NA
TKN	mg/L as N	25	25	1.9	1.6	1.1	1.0	12	No	No
Total Phosphorus	mg/L	25	25	3.38	3.66	5.48	5.75	-8	No	No
Dissolved Phosphorus	mg/L	25	25	0.06	0.07	0.06	0.05	-4	No	No
Orthophosphate	mg/L	25	25	0.04	0.05	0.04	0.04	-7	No	No
Total Metals										
Arsenic	µg/L	25	25	2.2	2.2	1.0	1.1	3	No	No
Cadmium	µg/L	25	25	0.5	0.4	0.4	0.2	24	No	No
Chromium	µg/L	25	25	12	11	7	7	6	No	No
Copper	µg/L	25	25	31	30	15	12	6	No	No
Iron	µg/L	26	25	10455	9377	7218	6291	10	No	No
Lead	µg/L	25	25	18	15	13	10	16	No	No
Nickel	µg/L	25	25	11	10	6	5	9	No	No
Zinc	µg/L	25	25	199	246	145	149	-24	No	No
Dissolved Metals										
Arsenic	µg/L	25	25	1.0	1.0	0.9	0.8	5	No	No
Cadmium	µg/L	25	25	NA	0.2	NA	0.2	NA	NA	NA
Chromium	µg/L	25	25	2	3	2	2	-17	No	No
Copper	µg/L	25	25	6	7	5	7	-16	No	No
Iron	µg/L	25	25	216	236	203	191	-9	No	No
Lead	µg/L	25	25	NA	NA	NA	NA	NA	NA	NA
Nickel	µg/L	25	25	3	3	1	1	-3	No	No
Zinc	µg/L	25	25	40	98	46	137	-145	No	Yes

Table 6-11a
Statistical Analyses of Influent and Effluent Data, Tahoe Airport and Echo Summit Sites (Year 2)

Constituent/ Parameter	Units	Sample Size		Mean		Standard Deviation		Inf / Eff % Difference	Statistically Different	
		Influent	Effluent	Influent	Effluent	Influent	Effluent		Independent assumption	Dependent assumption
Conventionals										
pH	pH Units	26	26	7.2	7.0	0.8	0.7	3	No	No
EC	umhos/cm	26	26	3429	3704	5404	5599	-8	No	No
TSS	mg/L	26	26	645	415	531	297	36	No	Yes
TDS	mg/L	26	26	1917	2053	3042	3203	-7	No	No
Hardness as CaCO3	mg/L	26	26	81	83	76	75	-3	No	No
DOC	mg/L	26	26	13	15	17	16	-11	No	No
TOC	mg/L	26	26	16	18	22	19	-11	No	No
COD	mg/L	26	26	351	286	239	181	18	No	No
Turbidity	mg/L	26	26	458	396	252	226	14	No	No
Chloride	mg/L	26	26	1312	1476	2576	2456	-12	No	No
Nutrients										
Ammonia	mg/L as N	24	24	0.4	0.3	0.5	0.5	18	No	No
Nitrate	mg/L as N	26	26	0.3	0.3	0.3	0.3	3	No	No
Nitrite	mg/L as N	NA	NA	NA	NA	NA	NA	NA	NA	NA
TKN	mg/L as N	26	26	1.9	1.8	1.5	1.5	3	No	No
Total Phosphorus	mg/L	26	26	0.37	0.35	0.25	0.30	6	No	No
Dissolved Phosphorus	mg/L	24	24	0.09	0.07	0.03	0.03	12	No	No
Orthophosphate	mg/L	26	26	0.07	0.06	0.03	0.04	13	No	No
Total Metals										
Arsenic	µg/L	26	26	4.0	3.2	2.1	1.8	19	No	No
Cadmium	µg/L	26	26	0.6	0.6	0.6	0.5	10	No	No
Chromium	µg/L	26	26	16	13	9	7	22	No	No
Copper	µg/L	26	26	40	27	28	10	31	No	Yes
Iron	µg/L	26	26	14508	10319	10531	7285	29	No	No
Lead	µg/L	26	26	34	25	25	15	28	No	No
Nickel	µg/L	26	26	14	11	7	5	21	No	No
Zinc	µg/L	26	26	237	292	115	305	-23	No	No
Dissolved Metals										
Arsenic	µg/L	26	26	0.9	0.8	0.8	0.7	11	No	No
Cadmium	µg/L	26	26	2.2	NA	0.5	NA	NA	NA	NA
Chromium	µg/L	26	26	4	3	4	3	5	No	No
Copper	µg/L	26	26	6	7	3	3	-8	No	No
Iron	µg/L	26	26	444	397	422	343	11	No	No
Lead	µg/L	26	26	1	NA	1	NA	NA	NA	NA
Nickel	µg/L	26	26	3	3	3	3	3	No	No
Zinc	µg/L	26	26	55	134	49	329	-144	No	No

Particle Counting Data Summary

Passive Filtration System							
Tahoe Airport				**Zinfandel**		**Echo Summit**	
Particle Size (mm)	**Filter Box (2/28 - 4/4)**	**Particle Size (mm)**	**Filter Box (12/29 - 2/28)**	**Particle Size (mm)**	**Filter Box (3/22 - 3/27)**	**Particle Size (mm)**	**Filter Box (2/28 - 3/25)**
5	5	5 - 9	1	10 - 30	18	7 - 10	4
0.009 - 0.0012	0	0.009 - 0.0012	0	0.009 - 0.0012	0	0.009 - 0.0012	0
0.006	1	0.006 - 0.009	1	0.006 - 0.009	1	0.006 - 0.009	0
0.003 - 0.006	7	0.004 - 0.006	0	0.004 - 0.006	2	0.003 - 0.006	3
<0.003	87	0.003	9	0.003	37	0.001 - 0.003	93
--	--	<0.002	91	<0.003	42	--	--
Particle Count/gram	93,600,000	Particle Count/gram	260,000,000	Particle Count/gram	44,200,000	Particle Count/gram	251,000,000

Water Volume System							
Echo Summit							
Particle Size (mm)	**Manual 1 (3/14)**	**Particle Size (mm)**	**Manual 2 (3/14)**	**Particle Size (mm)**	**Autosampler 1 (3/14)**	**Particle Size (mm)**	**Autosampler 2 (3/14)**
1 - 4	2	5	5	2 - 5	7	1 - 3	5
0.009 - 0.0012	0	0.009 - 0.0012	0	0.009 - 0.0012	1	0.009 - 0.0012	0
0.006 - 0.009	1	0.006 - 0.009	0	0.006 - 0.009	1	0.006 - 0.009	0
0.003 - 0.006	2	0.003 - 0.006	0	0.003 - 0.006	1	0.004 - 0.006	1
0.001 - 0.002	10	<0.003	95	<0.002	90	0.003	5
<0.001	85	--	--	--	--	<0.002	89
Particle Count/gram	382,000,000	Particle Count/gram	134,000,000	Particle Count/gram	47,000,000	Particle Count/gram	30,000,000

WATER
MANAGEMENT
LABORATORIES INC.

1515 80th St. E.
Tacoma, WA 98404
(253) 531-3121

June 4, 2001

Camp Dresser & McKee, Inc.
PO Box 1158
Gig Harbor, WA 98335
Attn: Rick Shambro, Denver Office

Dear Sir:

Results of analysis of eight storm-drain sediment samples received 05-18-01 at 9:45 a.m. are as follows:

Project: Calstans/LakeTahoe

Sample Identification: TFF – 040601, 4-6-01

Test	Result
Particle Count (per gram)	93,600,000

5% particles 5 millimeters
0% particles 9 - 12 microns
1% particles 6 - microns
7% particles 3 - 6 microns
87% particles less than 3 microns

Sample Identification: ZFF – 032701, 3-27-01

Test	Result
Particle Count (per gram)	44,200,000

18% particles 10 - 30 millimeters
0% particles 9 - 12 microns
1% particles 6 - 9 microns
2% particles 4 - 6 microns
37% particles 3 microns
42% particles less than 2 microns

Sample Identification: TFF – 032001, 3-20-01

Test	Result
Particle Count (per gram)	260,000,000

1% particles 5 - 9 millimeters
0% particles 9 - 12 microns
1% particles 6 - 9 microns
0% particles 4 - 6 microns
9% particles 3 microns
91% particles less than 2 microns

Sample Identification: EFF – 032701, 3-27-01
5 25

Test	Result
Particle Count (per gram)	251,000,000

4% particles 7 - 10 millimeters
0% particles 9 - 12 microns
0% particles 6 - 9 microns
3% particles 3 - 6 microns
93% particles 1 - 3 microns

Sample Identification: EM1 – 031401, 3-14-01

Test	Result
Particle Count (per gram)	382,000,000

2% particles 1 - 4 millimeters
0% particles 9 - 12 microns
1% particles 6 - 9 microns
2% particles 3 - 6 microns
10% particles 1- 2 microns
85 ~~95~~% particles less than 1 micron
TB

Sample Identification: EM2 – 031401, 3-14-01

Test	Result
Particle Count (per gram)	134,000,000

5% particles 5 millimeters
0% particles 9 - 12 microns
0% particles 6 - 9 microns
0% particles 3 - 6 microns
95% particles less than 3 microns

Sample Identification: EA1 – 031401, 3-14-01

Test	Result
Particle Count (per gram)	47,000,000

7% particles 2 - 5 millimeters
1% particles 9 - 12 microns
1% particles 6 - 9 microns
1% particles 3 - 6 microns
90% particles less than 2 microns

Sample Identification: EA2 – 031401, 3-14-01

Test	Result
Particle Count (per gram)	30,000,000

5% particles 1 - 3 millimeters
0% particles 9 - 12 microns
0% particles 6 - 9 microns
1% particles 4 - 6 microns
5% particles 3 microns
89% particles less than 2 microns

Lab Numbers: 08936716 through 08936723

Samples were analyzed according to Standard Methods for the Examination of Water and Wastewater, 19th Edition.

Chain of Custody record is enclosed.

Sincerely,

Diane DuMond
Microbiologist

DD:jat
enclosure

R:\COMM\CAMPDRESSER&MCKEE5-18

CHAIN OF CUSTODY RECORD

Camp Dresser & McKee Inc. Denver

F6260 **CDM**

PROJECT NAME Caltrans Tahoe

PROJECT NUMBER

Field Log Book Reference No.

SAMPLE NUMBER	DATE	TIME	SAMPLE LOCATION	SAMPLE TYPE	ANALYSES: EXTR. ORG.	VOA	PEST./PCB	TRACE METALS	WET TEST	NUMBER OF CONTAINERS	LOG BOOK PG. NO.	REMARKS
TFF-040601	4/6/01		036716									Questions
ZFF-032701	3/27/01		036717									Call Todd Burgesser
TFF-032001	3/20/01		036718									303258-1317
EFF-032701	3/27/01		036719									
EM1-031401	3/14/01		036720									
EM2-031401	↓		036721									
EA1-031401			036722									
EA2-031401			036723									

SAMPLED BY (SIGN) [signature] / / /

RELINQUISHED BY (SIGN)	RELINQUISHED BY (SIGN)	RELINQUISHED BY (SIGN)	RELINQUISHED BY (SIGN)	RELINQUISHED BY (SIGN)
① [signature] DATE/TIME (5/16/01 1500)	② DATE/TIME (/)	DATE/TIME (/)	④ DATE/TIME (/)	⑤ DATE/TIME (/)
RECEIVED BY (SIGN)	**RECEIVED BY (SIGN)**	**RECEIVED BY (SIGN)**	**RECEIVED BY (SIGN)**	**RECEIVED BY (SIGN)**
① [signature] DATE/TIME (5-18-01 9:45AM)	② DATE/TIME (/)	③ DATE/TIME (/)	④ DATE/TIME (/)	⑤ DATE/TIME (/)

METHOD OF SHIPMENT	SHIPPED BY (SIGN)	RECEIVED FOR LABORATORY BY (SIGN)	DATE/TIME
Fed X	[signature]		(/)

LEGEND: Original: Return to Sample Traffic Control Center Copies: Ship with Samples

March 12, 2002

Todd Burgesser
CDM
1331 17th St., Suite 1200
Denver, CO 80202

Phone: 303-298-1311

Dear Mr. Burgesser:

Micromeritics' Materials Analysis Laboratory has completed analysis of your samples and a comprehensive set of reports is enclosed for each sample submitted. The results consist of particle size distribution data determined with Micromeritics' Elzone analyzer.

If you have any questions concerning the enclosed results or the analysis techniques employed, please contact us.

Sincerely,

Evelyn Davis

Evelyn Davis
Laboratory Coordinator

Enclosures

Sales Engineer:

Mark Talarico
2600 Water Well Lane
Austin, TX 78728
(512) 251-7617
(800) 233-4642 Ext. 5464
mark.talarico@micromeritics.com

Interpretation of a Particle Size Distribution by Electrozone Method

Instrument Description:

Elzone® particle analyzers deliver fast, accurate, reproducible data on a broad spectrum of sample types. Based on a widely recognized particle characterization technique, the electrozone method is ideal for sizing and counting a variety of particulate materials, both organic and inorganic. Elzone analyzers have the ability to measure low-concentration samples and can produce accurate data where analyzers using other techniques are limited.

Analysis Technique:

Elzone analyzers measure a low concentration of particles dispersed in an electrolyte solution in a sample vessel containing an electrode. An orifice tube (a tube that has a tiny, pinhole-shaped orifice through which particles can pass) is placed inside the sample vessel. Inside of the orifice tube is a second electrode. A steady electric current flows from the electrode in the sample vessel to the second electrode inside the orifice tube. The sample solution is pulled through the orifice by a partial vacuum applied to the exit end of the tube. A particle partially occupies the orifice while passing through it, displacing the conductive electrolyte. This creates a change or pulse in the otherwise steady voltage. The number of pulses reflects the number of particles, and the size of the pulse determines the volume, and therefore the particle size. The Elzone analyzer counts and sizes all pulses, then reports comprehensive data. Particles ranging from 1200 to 0.4 μm in diameter can be measured. Particles can be counted at rates of up to 2000 per second.

Dispersion:

The three basic steps of dispersion are wetting, agitation, and stabilization. A powder introduced into a liquid after having been exposed to the atmosphere must be wetted by the liquid. Wetting involves replacing the solid-air interface by a solid-liquid one. Agitation involves breaking down aggregate particles into individual particles by means of mechanical energy. Stabilization involves the use of appropriate surfactants chosen by the instrument operator. The natural attractive forces in an unstabilized dispersion are overcome best by creating electrical charge repulsion. Each material submitted for particle size analysis undergoes a complete dispersion study before any testing is conducted.

One Micromeritics Drive ▪ Norcross, GA 30093-1877 ▪ Fax: (770) 662-3696
Domestic Sales: (770) 662-3633 ▪ International Sales: (770) 662-3660 ▪ Domestic Repair Service: (770) 662-3666 ▪ Customer Service: (770) 662-3636

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 15:20 05 Mar 02

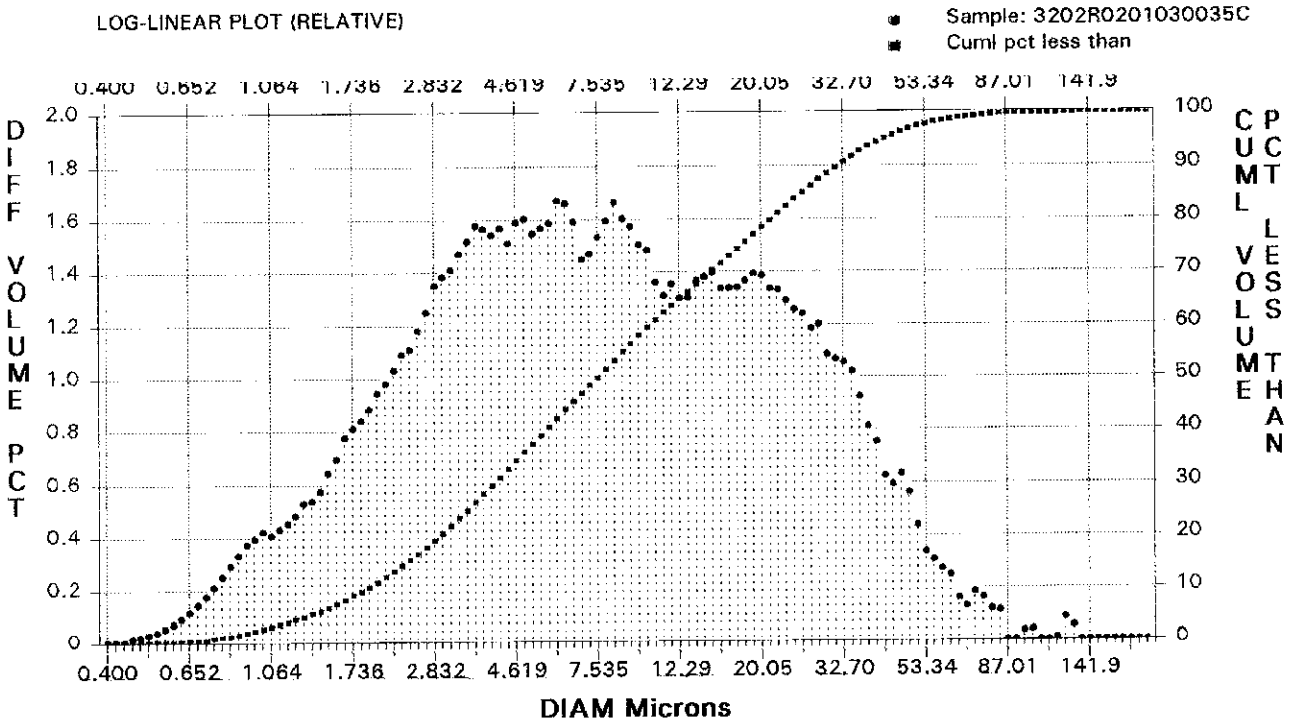
Disk File: MAL0532.HST

Sample #: 3202R0201030035C1

Lot/Job #: MAL0532

Material: storm water

Source: Todd Burgesser



		-- PERCENTILES --
Geometric Mean Size:	7.582 um	0.100% Volume below 0.539 um
Geom. Std Deviation:	2.914 um	1.000% Volume below 0.775 um
Geom. Skewness:	0.534	6.000% Volume below 1.404 um
Geom. Coeff Variation:	38.44	22.00% Volume below 3.104 um
Arithmetic Mean Size:	12.91 um	50.00% Volume below 7.497 um
Median Size:	7.371 um	78.00% Volume below 19.63 um
Mode Size:	6.027 um	94.00% Volume below 38.50 um
Kurtosis:	7.262	99.00% Volume below 65.55 um
Arith Std Deviation	15.23 um	99.90% Volume below 122.6 um

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 15:20 05 Mar 02

Disk File: MAL0532.HST

Sample #: 3202R0201030035C1

Lot/Job #: MAL0532

Material: storm water

Source: Todd Burgesser

-- Volume Distribution Data

Total Volm: 21542956420

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
3	0.441	0	0.00	33	1.915	1.90E8	10.7	63	8.309	3.59E8	53.3	92	34.34	2.20E8	91.9
4	0.463	3711530	0.01	34	2.011	2.04E8	11.6	64	8.726	3.46E8	55.0	93	36.06	2.00E8	92.8
5	0.486	5084668	0.03	35	2.111	2.11E8	12.6	65	9.164	3.39E8	56.6	94	37.87	1.75E8	93.7
6	0.511	6940979	0.06	36	2.217	2.22E8	13.6	66	9.623	3.24E8	58.1	95	39.77	1.63E8	94.5
7	0.536	9281540	0.09	37	2.328	2.35E8	14.6	67	10.11	3.20E8	59.6	96	41.77	1.35E8	95.2
8	0.563	1.21E7	0.14	38	2.445	2.39E8	15.7	68	10.61	2.93E8	61.0	97	43.86	1.28E8	95.8
9	0.592	1.58E7	0.21	39	2.568	2.54E8	16.9	69	11.14	2.82E8	62.4	98	46.06	1.36E8	96.4
10	0.621	2.01E7	0.29	40	2.697	2.69E8	18.1	70	11.70	2.92E8	63.7	99	48.37	1.21E8	97.0
11	0.652	2.55E7	0.40	41	2.832	2.91E8	19.4	71	12.29	2.80E8	65.0	100	50.79	9.46E7	97.5
12	0.685	3.16E7	0.53	42	2.974	2.98E8	20.8	72	12.91	2.81E8	66.3	101	53.34	7.30E7	97.9
13	0.720	3.83E7	0.69	43	3.123	3.04E8	22.2	73	13.55	2.95E8	67.6	102	56.02	6.60E7	98.2
14	0.756	4.60E7	0.89	44	3.280	3.17E8	23.6	74	14.23	2.98E8	69.0	103	58.83	5.89E7	98.5
15	0.794	5.44E7	1.12	45	3.444	3.27E8	25.1	75	14.95	3.01E8	70.4	104	61.78	5.36E7	98.8
16	0.833	6.30E7	1.39	46	3.617	3.40E8	26.6	76	15.70	2.88E8	71.8	105	64.87	3.48E7	99.0
17	0.875	7.14E7	1.71	47	3.798	3.37E8	28.2	77	16.48	2.89E8	73.1	106	68.13	2.83E7	99.1
18	0.919	8.01E7	2.06	48	3.989	3.32E8	29.8	78	17.31	2.89E8	74.5	107	71.54	4.01E7	99.3
19	0.965	8.52E7	2.44	49	4.189	3.38E8	31.3	79	18.18	2.95E8	75.8	108	75.13	3.51E7	99.4
20	1.013	9.07E7	2.85	50	4.399	3.26E8	32.9	80	19.09	3.00E8	77.2	109	78.90	2.60E7	99.6
21	1.064	8.79E7	3.26	51	4.619	3.43E8	34.4	81	20.05	2.99E8	78.6	110	82.85	2.50E7	99.7
22	1.118	9.29E7	3.68	52	4.851	3.46E8	36.0	82	21.05	2.88E8	79.9	111	87.01	690685	99.8
23	1.174	9.74E7	4.13	53	5.094	3.34E8	37.6	83	22.11	2.87E8	81.3	112	91.37	0	99.8
24	1.233	1.04E8	4.59	54	5.349	3.38E8	39.1	84	23.22	2.78E8	82.6	113	95.95	787425?	99.8
25	1.294	1.14E8	5.10	55	5.618	3.42E8	40.7	85	24.38	2.71E8	83.9	114	100.8	9119369	99.8
26	1.359	1.16E8	5.63	56	5.899	3.61E8	42.4	86	25.60	2.67E8	85.1	115	105.8	0	99.8
27	1.427	1.24E8	6.19	57	6.195	3.58E8	44.0	87	26.89	2.55E8	86.3	116	111.1	0	99.8
28	1.499	1.39E8	6.80	58	6.506	3.43E8	45.7	88	28.24	2.59E8	87.5	117	116.7	2499785	99.8
29	1.574	1.50E8	7.47	59	6.832	3.12E8	47.2	89	29.65	2.34E8	88.7	118	122.6	1.93E7	99.9
30	1.653	1.67E8	8.20	60	7.175	3.17E8	48.6	90	31.14	2.30E8	89.7	119	128.7	1.23E7	100.0
31	1.736	1.75E8	9.00	61	7.535	3.30E8	50.1	91	32.70	2.28E8	90.8	120	135.1	0	100.0
32	1.823	1.81E8	9.82	62	7.912	3.44E8	51.7								

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 15:20 05 Mar 02

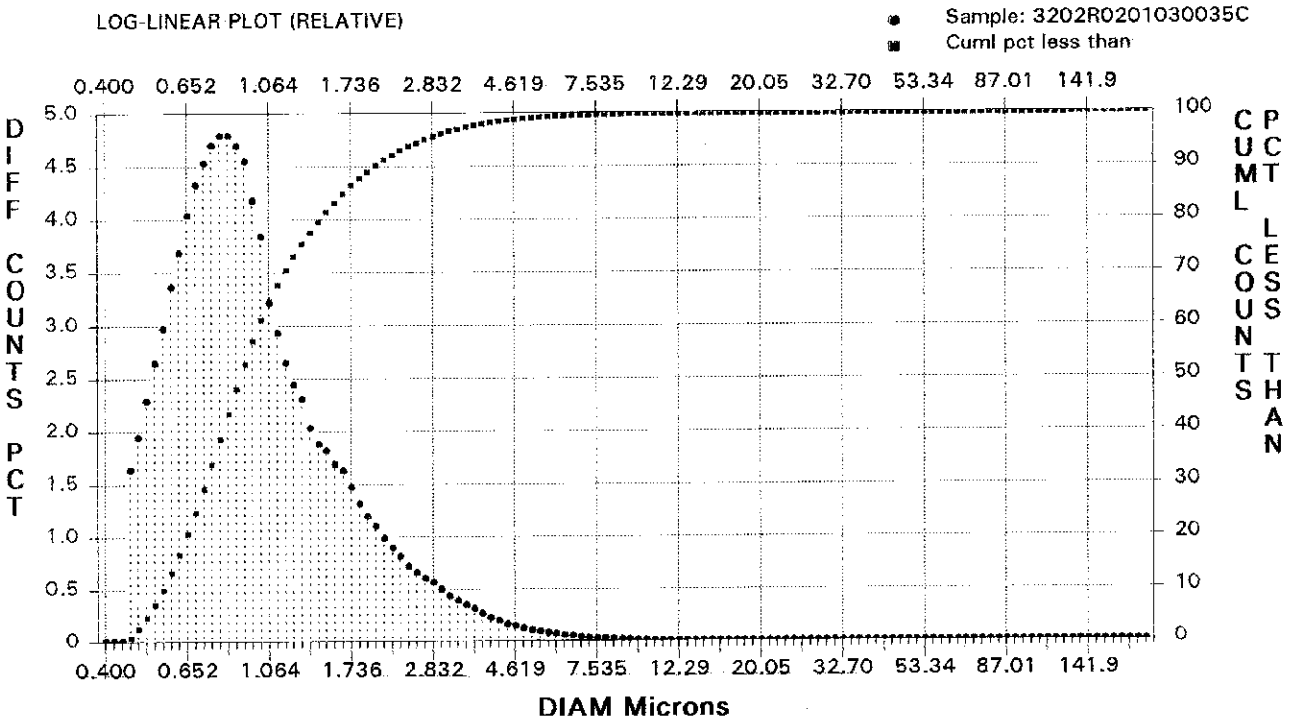
Disk File: MAL0532.HST

Sample #: 3202R0201030035C1

Lot/Job #: MAL0532

Material: storm water

Source: Todd Burgesser



		-- PERCENTILES --
Geometric Mean Size:	0.987 um	
Geom. Std Deviation:	1.660 um	0.100% Counts below 0.453 um
Geom. Skewness:	0.104	1.000% Counts below 0.459 um
Geom. Coeff Variation:	168.3	6.000% Counts below 0.525 um
		22.00% Counts below 0.662 um
Arithmetic Mean Size:	1.155 um	50.00% Counts below 0.891 um
Median Size:	0.859 um	78.00% Counts below 1.370 um
Mode Size:	0.814 um	94.00% Counts below 2.471 um
Kurtosis:	66.918	99.00% Counts below 4.649 um
Arith Std Deviation	0.926 um	99.90% Counts below 9.564 um

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 15:20 05 Mar 02

Disk File: MAL0532.HST

Sample #: 3202R0201030035C1

Lot/Job #: MAL0532

Material: storm water

Source: Todd Burgesser

-- Frequency Distribution Data

Total Popl: 4332368995

Chnl	Size	Counts	Cumi%	Chnl	Size	Counts	Cumi%	Chnl	Size	Counts	Cumi%	Chnl	Size	Counts	Cumi%
3	0.441	0	0.00	33	1.915	5.18E7	89.1	63	8.309	1194498	99.8	92	34.34	10391	100.0
4	0.463	7.13E7	0.82	34	2.011	4.78E7	90.2	64	8.726	994671	99.9	93	36.06	8143	100.0
5	0.486	8.44E7	2.62	35	2.111	4.28E7	91.3	65	9.164	841408	99.9	94	37.87	6151	100.0
6	0.511	9.94E7	4.74	36	2.217	3.89E7	92.2	66	9.623	695213	99.9	95	39.77	4940	100.0
7	0.536	1.15E8	7.21	37	2.328	3.55E7	93.1	67	10.11	591814	99.9	96	41.77	3540	100.0
8	0.563	1.29E8	10.0	38	2.445	3.12E7	93.8	68	10.61	468876	99.9	97	43.86	2900	100.0
9	0.592	1.46E8	13.2	39	2.568	2.87E7	94.5	69	11.14	389694	99.9	98	46.06	2663	100.0
10	0.621	1.60E8	16.7	40	2.697	2.62E7	95.2	70	11.70	347738	99.9	99	48.37	2042	100.0
11	0.652	1.75E8	20.6	41	2.832	2.45E7	95.7	71	12.29	288357	100.0	100	50.79	1379	100.0
12	0.685	1.88E8	24.8	42	2.974	2.17E7	96.3	72	12.91	249469	100.0	101	53.34	919	100.0
13	0.720	1.97E8	29.2	43	3.123	1.91E7	96.7	73	13.55	226035	100.0	102	56.02	717	100.0
14	0.756	2.04E8	33.8	44	3.280	1.72E7	97.2	74	14.23	197148	100.0	103	58.83	553	100.0
15	0.794	2.08E8	38.6	45	3.444	1.53E7	97.5	75	14.95	172279	100.0	104	61.78	435	100.0
16	0.833	2.08E8	43.4	46	3.617	1.37E7	97.9	76	15.70	142249	100.0	105	64.87	243	100.0
17	0.875	2.04E8	48.1	47	3.798	1.18E7	98.2	77	16.48	123178	100.0	106	68.13	171	100.0
18	0.919	1.97E8	52.8	48	3.989	9990914	98.4	78	17.31	106537	100.0	107	71.54	209	100.0
19	0.965	1.81E8	57.1	49	4.189	8782808	98.6	79	18.18	93633	100.0	108	75.13	158	100.0
20	1.013	1.66E8	61.1	50	4.399	7311638	98.8	80	19.09	82393	100.0	109	78.90	101	100.0
21	1.064	1.39E8	64.7	51	4.619	6640144	99.0	81	20.05	70797	100.0	110	82.85	84	100.0
22	1.118	1.27E8	67.7	52	4.851	5785813	99.1	82	21.05	58937	100.0	111	87.01	2	100.0
23	1.174	1.15E8	70.5	53	5.094	4821734	99.2	83	22.11	50759	100.0	112	91.37	0	100.0
24	1.233	1.06E8	73.1	54	5.349	4214925	99.3	84	23.22	42452	100.0	113	95.95	17	100.0
25	1.294	1.00E8	75.5	55	5.618	3685317	99.4	85	24.38	35678	100.0	114	100.8	17	100.0
26	1.359	8.84E7	77.6	56	5.899	3353637	99.5	86	25.60	30402	100.0	115	105.8	0	100.0
27	1.427	8.14E7	79.6	57	6.195	2876791	99.6	87	26.89	25071	100.0	116	111.1	0	100.0
28	1.499	7.87E7	81.4	58	6.506	2380020	99.7	88	28.24	21975	100.0	117	116.7	3	100.0
29	1.574	7.32E7	83.2	59	6.832	1869786	99.7	89	29.65	17177	100.0	118	122.6	20	100.0
30	1.653	7.07E7	84.9	60	7.175	1639406	99.7	90	31.14	14545	100.0	119	128.7	11	100.0
31	1.736	6.38E7	86.4	61	7.535	1475147	99.8	91	32.70	12436	100.0	120	135.1	0	100.0
32	1.823	5.70E7	87.8	62	7.912	1325013	99.8								

ELZONE(TM) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 10:40 06 Mar 02

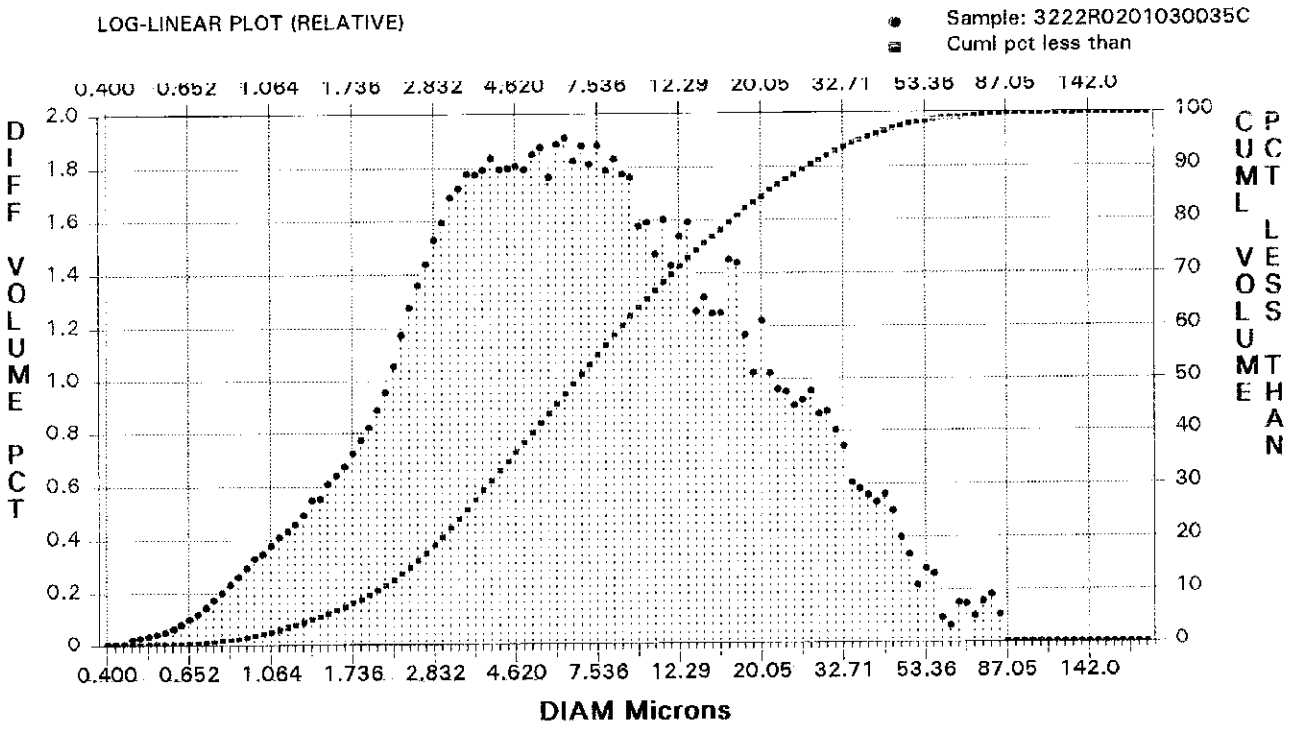
Disk File: MAL0533.HST

Sample #: 3222R0201030035C1

Lot/Job #: MAL0533

Material: storm water

Source: Todd Burgesser



		-- PERCENTILES --
Geometric Mean Size:	6.845 um	0.100% Volume below 0.528 um
Geom. Std Deviation:	2.676 um	1.000% Volume below 0.797 um
Geom. Skewness:	0.283	6.000% Volume below 1.484 um
Geom. Coeff Variation:	39.09	22.00% Volume below 3.106 um
Arithmetic Mean Size:	10.99 um	50.00% Volume below 6.612 um
Median Size:	6.384 um	78.00% Volume below 15.54 um
Mode Size:	6.086 um	94.00% Volume below 33.10 um
Kurtosis:	6.405	99.00% Volume below 57.54 um
Arith Std Deviation	12.67 um	99.90% Volume below 81.08 um

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 10:40 06 Mar 02

Disk File: MAL0533.HST

Sample #: 3222R0201030035C1

Lot/Job #: MAL0533

Material: storm water

Source: Todd Burgesser

-- Volume Distribution Data

Total Volm: 8223916479

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
3	0.441	0	0.00	31	1.736	5.95E7	8.10	58	6.507	1.50E8	49.3	85	24.39	7.39E7	88.6
4	0.463	2036326	0.01	32	1.823	6.36E7	8.85	59	6.834	1.55E8	51.2	86	25.61	7.57E7	89.5
5	0.486	2499188	0.04	33	1.915	6.76E7	9.64	60	7.176	1.49E8	53.0	87	26.90	7.84E7	90.4
6	0.511	3036001	0.07	34	2.011	7.30E7	10.5	61	7.536	1.55E8	54.9	88	28.25	7.13E7	91.3
7	0.537	3698930	0.11	35	2.112	7.87E7	11.4	62	7.914	1.47E8	56.7	89	29.66	7.21E7	92.2
8	0.563	4511083	0.16	36	2.218	8.68E7	12.4	63	8.311	1.51E8	58.5	90	31.15	6.60E7	93.0
9	0.592	5523964	0.23	37	2.329	9.64E7	13.5	64	8.728	1.46E8	60.3	91	32.71	6.10E7	93.8
10	0.621	6723707	0.30	38	2.446	1.05E8	14.8	65	9.166	1.45E8	62.1	92	34.35	4.97E7	94.5
11	0.652	8210674	0.39	39	2.568	1.12E8	16.1	66	9.625	1.30E8	63.8	93	36.08	4.79E7	95.1
12	0.685	9935344	0.50	40	2.697	1.18E8	17.5	67	10.11	1.31E8	65.4	94	37.89	4.59E7	95.6
13	0.720	1.19E7	0.63	41	2.832	1.26E8	19.0	68	10.62	1.21E8	66.9	95	39.79	4.36E7	96.2
14	0.756	1.42E7	0.79	42	2.974	1.31E8	20.5	69	11.15	1.32E8	68.4	96	41.78	4.61E7	96.7
15	0.794	1.65E7	0.98	43	3.123	1.39E8	22.2	70	11.71	1.18E8	70.0	97	43.88	4.11E7	97.3
16	0.833	1.91E7	1.20	44	3.280	1.42E8	23.9	71	12.29	1.27E8	71.4	98	46.08	3.27E7	97.7
17	0.875	2.15E7	1.44	45	3.445	1.46E8	25.6	72	12.91	1.31E8	73.0	99	48.39	2.76E7	98.1
18	0.919	2.41E7	1.72	46	3.617	1.46E8	27.4	73	13.56	1.03E8	74.4	100	50.81	1.80E7	98.3
19	0.965	2.70E7	2.03	47	3.799	1.47E8	29.2	74	14.24	1.08E8	75.7	101	53.36	2.31E7	98.6
20	1.014	2.86E7	2.37	48	3.989	1.51E8	31.0	75	14.95	1.03E8	77.0	102	56.04	2.14E7	98.9
21	1.064	3.11E7	2.73	49	4.189	1.48E8	32.8	76	15.70	1.03E8	78.2	103	58.85	7756396	99.0
22	1.118	3.37E7	3.13	50	4.399	1.48E8	34.6	77	16.49	1.19E8	79.6	104	61.80	5389266	99.1
23	1.174	3.54E7	3.55	51	4.620	1.49E8	36.4	78	17.32	1.18E8	81.0	105	64.90	1.25E7	99.2
24	1.233	3.76E7	3.99	52	4.852	1.48E8	38.2	79	18.18	9.60E7	82.3	106	68.15	1.20E7	99.4
25	1.294	4.05E7	4.47	53	5.095	1.52E8	40.0	80	19.10	8.43E7	83.4	107	71.57	8367162	99.5
26	1.359	4.51E7	4.99	54	5.351	1.54E8	41.9	81	20.05	1.00E8	84.6	108	75.16	1.29E7	99.6
27	1.428	4.55E7	5.54	55	5.619	1.45E8	43.7	82	21.06	8.40E7	85.7	109	78.93	1.50E7	99.8
28	1.499	5.00E7	6.12	56	5.901	1.55E8	45.6	83	22.12	7.90E7	86.7	110	82.89	8657688	99.9
29	1.574	5.27E7	6.74	57	6.197	1.57E8	47.5	84	23.22	7.83E7	87.6	111	87.05	0	100.0
30	1.653	5.54E7	7.40												

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 10:40 06 Mar 02

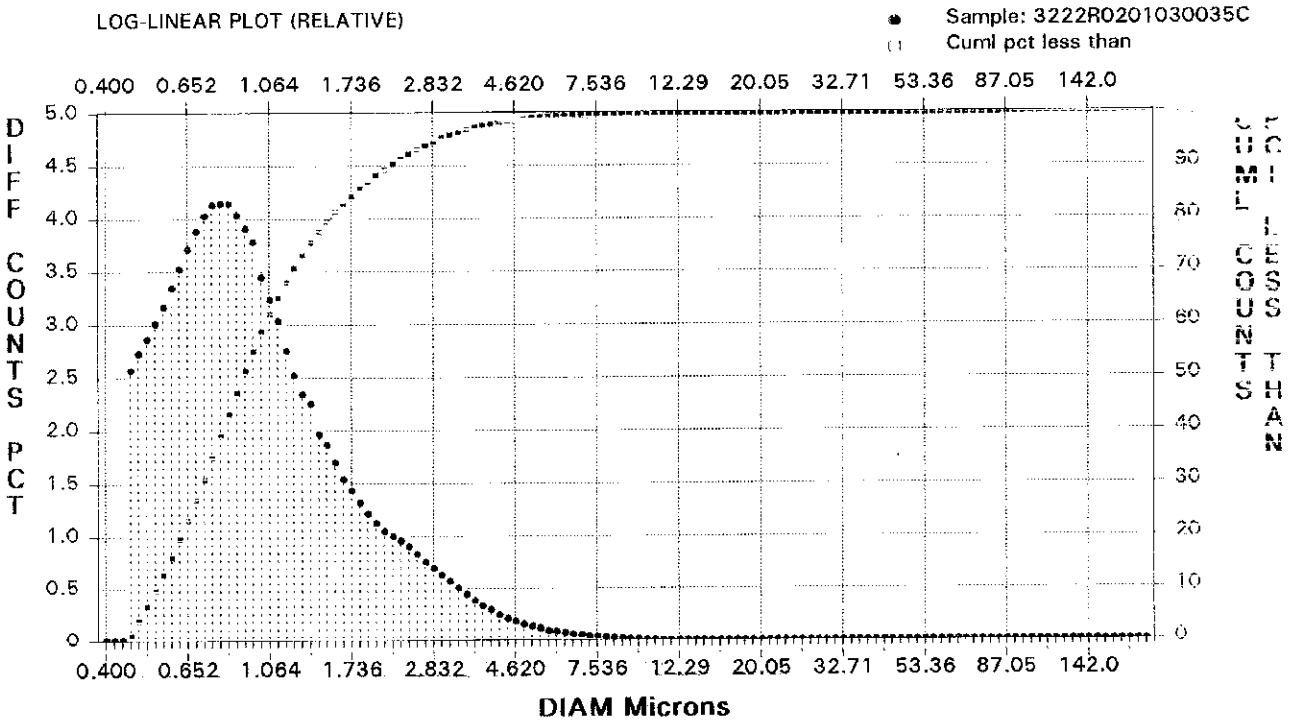
Disk File: MAL0533.HS1

Sample #: 3222R0201030035C1

Lot/Job #: MAL0533

Material: storm water

Source: Todd Burgesser



		-- PERCENTILES --
Geometric Mean Size:	1.002 um	0.100% Counts below 0.452 um
Geom. Std Deviation:	1.725 um	1.000% Counts below 0.456 um
Geom. Skewness:	0.110	6.000% Counts below 0.504 um
Geom. Coeff Variation:	172.0	22.00% Counts below 0.643 um
Arithmetic Mean Size:	1.199 um	50.00% Counts below 0.904 um
Median Size:	0.898 um	78.00% Counts below 1.440 um
Mode Size:	0.813 um	94.00% Counts below 2.711 um
Kurtosis:	43.135	99.00% Counts below 5.004 um
Arith Std Deviation	0.998 um	99.90% Counts below 9.895 um

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 10:40 06 Mar 02

Disk File: MAL0533.HST

Sample #: 3222R0201030035C1

Lot/Job #: MAL0533

Material: storm water

Source: Todd Burgesser

-- Frequency Distribution Data

Total Popl: 1519194737

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
3	0.441	0	0.00	31	1.736	2.17E7	84.4	58	6.507	1041272	99.6	85	24.39	9726	100.0
4	0.463	3.91E7	1.29	32	1.823	2.00E7	85.8	59	6.834	927702	99.6	86	25.61	8608	100.0
5	0.486	4.15E7	3.94	33	1.915	1.84E7	87.0	60	7.176	770556	99.7	87	26.90	7699	100.0
6	0.511	4.35E7	6.74	34	2.011	1.72E7	88.2	61	7.536	691321	99.7	88	28.25	6044	100.0
7	0.537	4.57E7	9.67	35	2.112	1.60E7	89.3	62	7.914	567187	99.8	89	29.66	5274	100.0
8	0.563	4.82E7	12.8	36	2.218	1.52E7	90.3	63	8.311	501818	99.8	90	31.15	4169	100.0
9	0.592	5.09E7	16.0	37	2.329	1.46E7	91.3	64	8.728	419283	99.8	91	32.71	3326	100.0
10	0.621	5.35E7	19.5	38	2.446	1.37E7	92.2	65	9.166	359856	99.9	92	34.35	2339	100.0
11	0.652	5.64E7	23.1	39	2.568	1.28E7	93.1	66	9.625	277981	99.9	93	36.08	1946	100.0
12	0.685	5.90E7	26.9	40	2.697	1.15E7	93.9	67	10.11	242326	99.9	94	37.89	1612	100.0
13	0.720	6.12E7	30.8	41	2.832	1.06E7	94.6	68	10.62	193465	99.9	95	39.79	1322	100.0
14	0.756	6.28E7	34.9	42	2.974	9518689	95.3	69	11.15	181579	99.9	96	41.78	1206	100.0
15	0.794	6.30E7	39.1	43	3.123	8715130	95.9	70	11.71	139981	99.9	97	43.88	930	100.0
16	0.833	6.30E7	43.2	44	3.280	7676509	96.4	71	12.29	130077	100.0	98	46.08	639	100.0
17	0.875	6.14E7	47.3	45	3.445	6829356	96.9	72	12.91	116210	100.0	99	48.39	465	100.0
18	0.919	5.94E7	51.3	46	3.617	5891076	97.3	73	13.56	79234	100.0	100	50.81	262	100.0
19	0.965	5.75E7	55.1	47	3.799	5133737	97.7	74	14.24	71311	100.0	101	53.36	290	100.0
20	1.014	5.24E7	58.7	48	3.989	4548052	98.0	75	14.95	58766	100.0	102	56.04	232	100.0
21	1.064	4.92E7	62.1	49	4.189	3832974	98.3	76	15.70	50842	100.0	103	58.85	73	100.0
22	1.118	4.61E7	65.2	50	4.399	3321250	98.5	77	16.49	50842	100.0	104	61.80	44	100.0
23	1.174	4.19E7	68.1	51	4.620	2878858	98.7	78	17.32	43579	100.0	105	64.90	87	100.0
24	1.233	3.84E7	70.8	52	4.852	2468160	98.9	79	18.18	30496	100.0	106	68.15	73	100.0
25	1.294	3.57E7	73.2	53	5.095	2200073	99.1	80	19.10	23110	100.0	107	71.57	44	100.0
26	1.359	3.43E7	75.5	54	5.351	1925397	99.2	81	20.05	23770	100.0	108	75.16	58	100.0
27	1.428	2.99E7	77.6	55	5.619	1563563	99.3	82	21.06	17167	100.0	109	78.93	58	100.0
28	1.499	2.84E7	79.5	56	5.901	1444710	99.4	83	22.12	13943	100.0	110	82.89	29	100.0
29	1.574	2.58E7	81.3	57	6.197	1262471	99.5	84	23.22	11934	100.0	111	87.05	0	100.0
30	1.653	2.34E7	82.9												

ELZONE(LIN) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 11:44 06 Mar 02

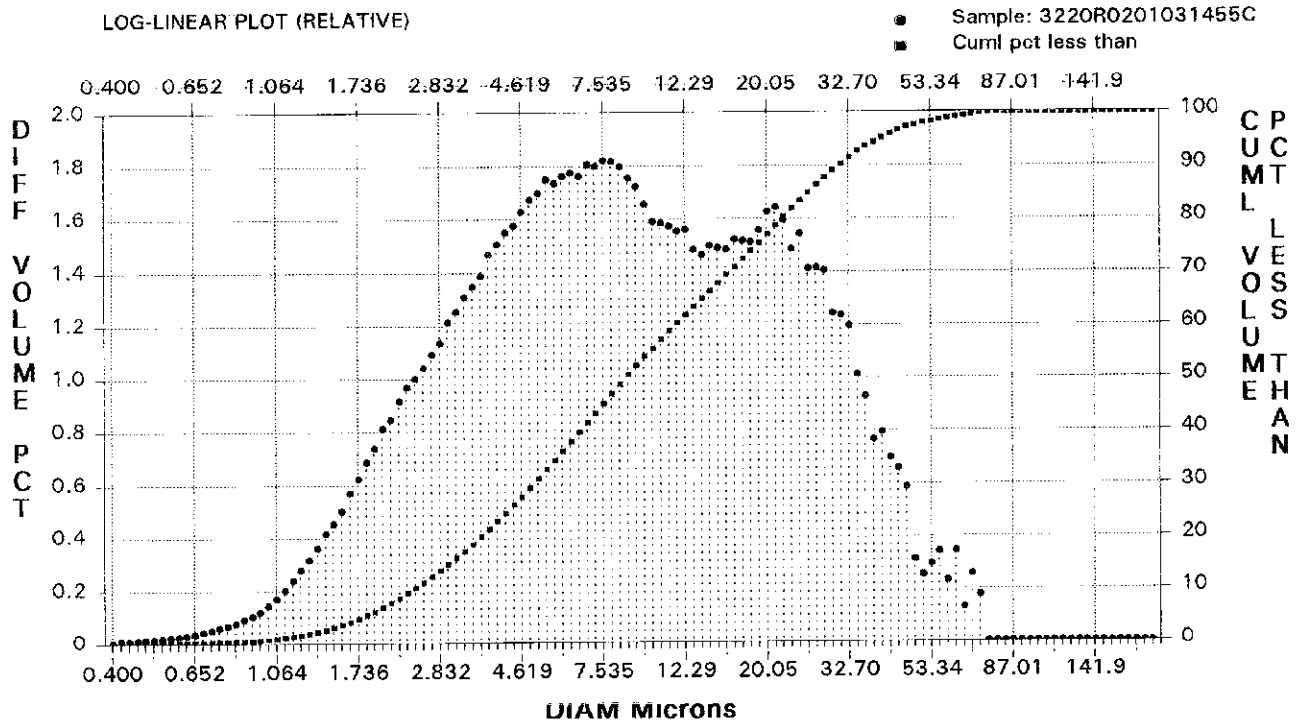
Disk File: MAL0534.HST

Sample #: 3220R0201031455C01

Lot/Job #: MAL0534

Material: storm water

Source: Todd Burgesser



		-- PERCENTILES --
Geometric Mean Size:	8.620 um	0.100% Volume below 0.558 um
Geom. Std Deviation:	2.624 um	1.000% Volume below 1.040 um
Geom. Skewness:	0.349	6.000% Volume below 1.891 um
Geom. Coeff Variation:	30.44	22.00% Volume below 3.840 um
Arithmetic Mean Size:	13.23 um	50.00% Volume below 8.553 um
Median Size:	8.520 um	78.00% Volume below 20.49 um
Mode Size:	7.703 um	94.00% Volume below 36.61 um
Kurtosis:	3.681	99.00% Volume below 59.10 um
Arith Std Deviation	13.33 um	99.90% Volume below 71.28 um

ELZONE(um) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 11:44 06 Mar 02

Disk File: MAL0534.HST

Sample #: 3220R0201031455C01

Lot/Job #: MAL0534

Material: storm water

Source: Todd Burgesser

-- Volume Distribution Data

Total Volm: 8633697951

Chnl	Size	Volume	Cum1%	Chnl	Size	Volume	Cum1%	Chnl	Size	Volume	Cum1%	Chnl	Size	Volume	Cum1%
1	0.400	0	0.00	28	1.499	3.91E7	3.21	55	5.618	1.50E8	34.6	82	21.05	1.42E8	78.8
2	0.420	895444	0.01	29	1.574	4.33E7	3.69	56	5.899	1.52E8	36.4	83	22.11	1.38E8	80.5
3	0.441	1019479	0.02	30	1.653	4.91E7	4.22	57	6.195	1.53E8	38.1	84	23.22	1.29E8	82.0
4	0.463	1205632	0.03	31	1.736	5.37E7	4.82	58	6.506	1.52E8	39.9	85	24.38	1.33E8	83.5
5	0.486	1370876	0.04	32	1.823	5.94E7	5.47	59	6.832	1.56E8	41.7	86	25.60	1.22E8	85.0
6	0.511	1598239	0.06	33	1.915	6.39E7	6.19	60	7.175	1.56E8	43.5	87	26.89	1.22E8	86.4
7	0.536	1874120	0.08	34	2.011	7.02E7	6.96	61	7.535	1.57E8	45.3	88	28.24	1.21E8	87.8
8	0.563	2128888	0.10	35	2.111	7.32E7	7.79	62	7.912	1.57E8	47.1	89	29.65	1.07E8	89.2
9	0.592	2507894	0.13	36	2.217	7.92E7	8.68	63	8.309	1.55E8	48.9	90	31.14	1.07E8	90.4
10	0.621	2852592	0.16	37	2.328	8.36E7	9.62	64	8.726	1.52E8	50.7	91	32.70	1.03E8	91.6
11	0.652	3334723	0.20	38	2.445	8.64E7	10.6	65	9.164	1.49E8	52.5	92	34.34	8.74E7	92.7
12	0.685	3920386	0.24	39	2.568	8.99E7	11.6	66	9.623	1.43E8	54.1	93	36.06	8.02E7	93.7
13	0.720	4620055	0.29	40	2.697	9.43E7	12.7	67	10.11	1.37E8	55.8	94	37.87	6.62E7	94.5
14	0.756	5298367	0.35	41	2.832	9.81E7	13.8	68	10.61	1.37E8	57.4	95	39.77	6.87E7	95.3
15	0.794	6035673	0.41	42	2.974	1.05E8	15.0	69	11.14	1.36E8	58.9	96	41.77	6.02E7	96.1
16	0.833	6862705	0.49	43	3.123	1.08E8	16.2	70	11.70	1.34E8	60.5	97	43.86	5.67E7	96.7
17	0.875	8130456	0.57	44	3.280	1.13E8	17.5	71	12.29	1.35E8	62.1	98	46.06	5.07E7	97.4
18	0.919	9212257	0.67	45	3.444	1.16E8	18.8	72	12.91	1.28E8	63.6	99	48.37	2.69E7	97.8
19	0.965	1.06E7	0.79	46	3.617	1.20E8	20.2	73	13.55	1.27E8	65.1	100	50.79	2.20E7	98.1
20	1.013	1.26E7	0.92	47	3.798	1.27E8	21.6	74	14.23	1.29E8	66.5	101	53.34	2.55E7	98.4
21	1.064	1.48E7	1.08	48	3.989	1.30E8	23.1	75	14.95	1.29E8	68.0	102	56.02	2.96E7	98.7
22	1.118	1.76E7	1.27	49	4.189	1.34E8	24.6	76	15.70	1.29E8	69.5	103	58.83	2.00E7	99.0
23	1.174	2.07E7	1.49	50	4.399	1.36E8	26.2	77	16.48	1.32E8	71.0	104	61.78	2.97E7	99.3
24	1.233	2.40E7	1.75	51	4.619	1.41E8	27.8	78	17.31	1.31E8	72.6	105	64.87	1.15E7	99.5
25	1.294	2.73E7	2.05	52	4.851	1.45E8	29.5	79	18.18	1.31E8	74.1	106	68.13	2.22E7	99.7
26	1.359	3.11E7	2.39	53	5.094	1.47E8	31.1	80	19.09	1.35E8	75.6	107	71.54	1.54E7	99.9
27	1.427	3.59E7	2.77	54	5.349	1.51E8	32.9	81	20.05	1.40E8	77.2	108	75.13	0	100.0

ELZONE(LIB) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 11:44 06 Mar 02

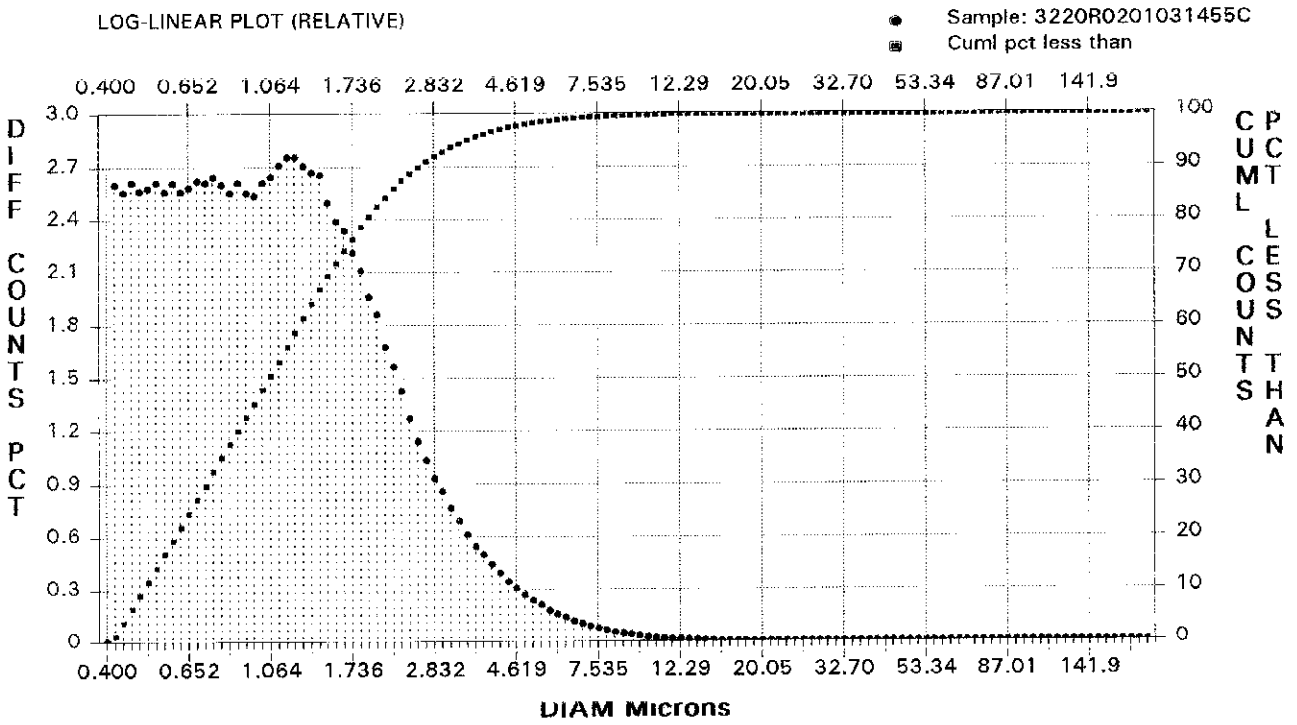
Disk File: MAL0534.HST

Sample #: 3220R0201031455C01

Lot/Job #: MAL0534

Material: storm water

Source: Todd Burgesser



		-- PERCENTILES --
Geometric Mean Size:	1.105 um	0.100% Counts below 0.410 um
Geom. Std Deviation:	1.889 um	1.000% Counts below 0.414 um
Geom. Skewness:	-0.052	6.000% Counts below 0.459 um
Geom. Coeff Variation:	171.0	22.00% Counts below 0.621 um
Arithmetic Mean Size:	1.387 um	50.00% Counts below 1.054 um
Median Size:	1.041 um	78.00% Counts below 1.798 um
Mode Size:	1.204 um	94.00% Counts below 3.171 um
Kurtosis:	38.274	99.00% Counts below 6.005 um
Arith Std Deviation	1.253 um	99.90% Counts below 12.27 um

ELZONE(cum) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 11:44 06 Mar 02

Disk File: MAL0534.HST

Sample #: 3220R0201031455C01

Lot/Job #: MAL0534

Material: storm water

Source: Todd Burgesser

-- Frequency Distribution Data

Total Popl: 887324815

Chnl	Size	Counts	Cumi%	Chnl	Size	Counts	Cumi%	Chnl	Size	Counts	Cumi%	Chnl	Size	Counts	Cumi%
1	0.400	0	0.00	28	1.499	2.22E7	69.3	55	5.618	1615904	98.8	82	21.05	29056	100.0
2	0.420	2.31E7	1.30	29	1.574	2.12E7	71.8	56	5.899	1415228	98.9	83	22.11	24347	100.0
3	0.441	2.27E7	3.88	30	1.653	2.08E7	74.1	57	6.195	1231203	99.1	84	23.22	19612	100.0
4	0.463	2.32E7	6.46	31	1.736	1.96E7	76.4	58	6.506	1055707	99.2	85	24.38	17579	100.0
5	0.486	2.27E7	9.05	32	1.823	1.87E7	78.6	59	6.832	934038	99.3	86	25.60	13886	100.0
6	0.511	2.29E7	11.6	33	1.915	1.74E7	80.6	60	7.175	804647	99.4	87	26.89	12014	100.0
7	0.536	2.32E7	14.2	34	2.011	1.65E7	82.5	61	7.535	702272	99.5	88	28.24	10301	100.0
8	0.563	2.27E7	16.8	35	2.111	1.48E7	84.3	62	7.912	605785	99.6	89	29.65	7867	100.0
9	0.592	2.31E7	19.4	36	2.217	1.39E7	85.9	63	8.309	517219	99.6	90	31.14	6742	100.0
10	0.621	2.27E7	22.0	37	2.328	1.26E7	87.4	64	8.726	435964	99.7	91	32.70	5645	100.0
11	0.652	2.29E7	24.5	38	2.445	1.13E7	88.8	65	9.164	369538	99.7	92	34.34	4121	100.0
12	0.685	2.33E7	27.1	39	2.568	1.01E7	90.0	66	9.623	306360	99.8	93	36.06	3264	100.0
13	0.720	2.32E7	29.8	40	2.697	9180191	91.0	67	10.11	254152	99.8	94	37.87	2328	100.0
14	0.756	2.35E7	32.4	41	2.832	8252029	92.0	68	10.61	218602	99.8	95	39.77	2087	100.0
15	0.794	2.31E7	35.0	42	2.974	7608501	92.9	69	11.14	187520	99.9	96	41.77	1579	100.0
16	0.833	2.26E7	37.6	43	3.123	6778315	93.7	70	11.70	159892	99.9	97	43.86	1285	100.0
17	0.875	2.32E7	40.2	44	3.280	6123041	94.5	71	12.29	138764	99.9	98	46.06	990	100.0
18	0.919	2.27E7	42.8	45	3.444	5442596	95.1	72	12.91	113979	99.9	99	48.37	455	100.0
19	0.965	2.25E7	45.3	46	3.617	4842949	95.7	73	13.55	97117	99.9	100	50.79	321	100.0
20	1.013	2.32E7	47.9	47	3.798	4423775	96.2	74	14.23	85740	99.9	101	53.34	321	100.0
21	1.064	2.35E7	50.5	48	3.989	3921325	96.7	75	14.95	73752	99.9	102	56.02	321	100.0
22	1.118	2.40E7	53.2	49	4.189	3481824	97.1	76	15.70	63458	100.0	103	58.83	187	100.0
23	1.174	2.45E7	55.9	50	4.399	3051862	97.5	77	16.48	56129	100.0	104	61.78	241	100.0
24	1.233	2.45E7	58.7	51	4.619	2727920	97.8	78	17.31	48310	100.0	105	64.87	80	100.0
25	1.294	2.40E7	61.4	52	4.851	2421032	98.1	79	18.18	41607	100.0	106	68.13	134	100.0
26	1.359	2.37E7	64.1	53	5.094	2121653	98.3	80	19.09	36945	100.0	107	71.54	80	100.0
27	1.427	2.36E7	66.8	54	5.349	1885437	98.6	81	20.05	33282	100.0	108	75.13	0	100.0

ELZONE(LIB) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 13:26 06 Mar 02

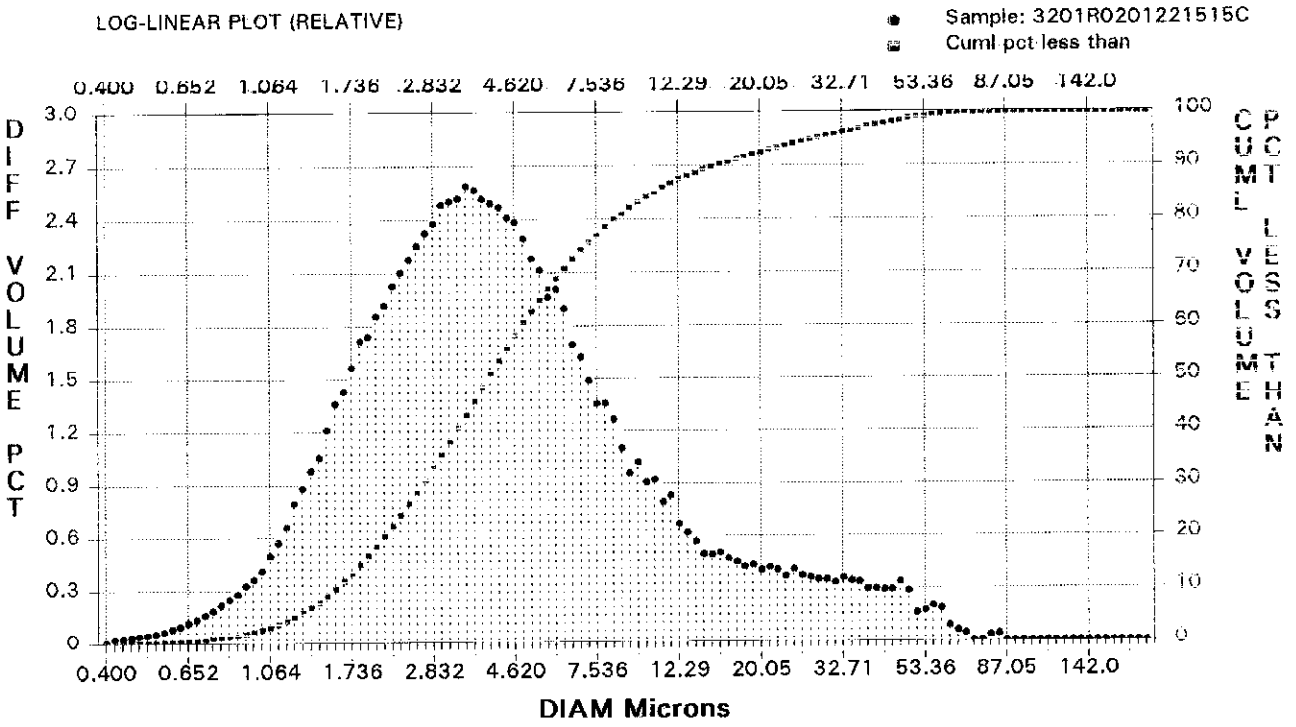
Disk File: MAL0535.HST

Sample #: 3201R0201221515CT

Lot/Job #: MAL0535

Material: storm water

Source: Todd Burgesser



		-- PERCENTILES --
Geometric Mean Size:	4.367 um	0.100% Volume below 0.476 um
Geom. Std Deviation:	2.450 um	1.000% Volume below 0.751 um
Geom. Skewness:	0.354	6.000% Volume below 1.299 um
Geom. Coeff Variation:	56.11	22.00% Volume below 2.205 um
Arithmetic Mean Size:	7.034 um	50.00% Volume below 3.919 um
Median Size:	3.896 um	78.00% Volume below 7.697 um
Mode Size:	3.500 um	94.00% Volume below 23.90 um
Kurtosis:	11.603	99.00% Volume below 49.77 um
Arith Std Deviation	9.781 um	99.90% Volume below 68.48 um

ELZONE(LDI) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 13:26 06 Mar 02

Disk File: MAL0535.HST

Sample #: 3201R0201221515C1

Lot/Job #: MAL0535

Material: storm water

Source: Todd Burgesser

-- Volume Distribution Data

Total Volm: 8272871

Chnl	Size	Volume	Cum%	Chnl	Size	Volume	Cum%	Chnl	Size	Volume	Cum%	Chnl	Size	Volume	Cum%
1	0.400	0	0.00	29	1.574	112774	10.3	57	6.197	156978	70.9	85	24.39	33808	94.2
2	0.420	2304	0.01	30	1.653	118273	11.7	58	6.507	140102	72.7	86	25.61	31023	94.6
3	0.441	2668	0.04	31	1.736	129484	13.2	59	6.834	134350	74.4	87	26.90	30111	94.9
4	0.463	3168	0.08	32	1.823	141936	14.8	60	7.176	123275	75.9	88	28.25	28992	95.3
5	0.486	3669	0.12	33	1.915	143927	16.5	61	7.536	112287	77.4	89	29.66	29089	95.6
6	0.511	4308	0.17	34	2.011	153600	18.3	62	7.914	112651	78.7	90	31.15	27520	96.0
7	0.537	5122	0.23	35	2.112	158697	20.2	63	8.311	105213	80.0	91	32.71	29649	96.3
8	0.563	5924	0.29	36	2.218	167936	22.2	64	8.728	91213	81.2	92	34.35	28396	96.7
9	0.592	6951	0.37	37	2.329	174080	24.3	65	9.166	79429	82.2	93	36.08	27800	97.0
10	0.621	8254	0.46	38	2.446	180224	26.4	66	9.625	84517	83.2	94	37.89	24577	97.3
11	0.652	9694	0.57	39	2.568	186368	28.6	67	10.11	75169	84.2	95	39.79	24456	97.6
12	0.685	11323	0.70	40	2.697	192512	30.9	68	10.62	76408	85.1	96	41.78	24152	97.9
13	0.720	13327	0.85	41	2.832	196753	33.3	69	11.15	66004	86.0	97	43.88	24201	98.2
14	0.756	15519	1.02	42	2.974	205450	35.7	70	11.71	68881	86.8	98	46.08	28031	98.5
15	0.794	18137	1.22	43	3.123	207096	38.2	71	12.29	55452	87.5	99	48.39	23811	98.8
16	0.833	20680	1.46	44	3.280	208634	40.7	72	12.91	51475	88.2	100	50.81	13364	99.1
17	0.875	22972	1.72	45	3.445	214318	43.3	73	13.56	47224	88.8	101	53.36	14508	99.2
18	0.919	27018	2.03	46	3.617	212320	45.8	74	14.24	41178	89.3	102	56.04	16806	99.4
19	0.965	30024	2.37	47	3.799	208350	48.4	75	14.95	40929	89.8	103	58.85	15577	99.6
20	1.014	33833	2.76	48	3.989	206094	50.9	76	15.70	41905	90.3	104	61.80	7515	99.8
21	1.064	40772	3.21	49	4.189	204381	53.4	77	16.49	39070	90.8	105	64.90	5216	99.8
22	1.118	47198	3.74	50	4.399	199515	55.8	78	17.32	37517	91.3	106	68.15	4036	99.9
23	1.174	54288	4.35	51	4.620	197501	58.2	79	18.18	34999	91.7	107	71.57	0	99.9
24	1.233	65663	5.08	52	4.852	189922	60.6	80	19.10	35960	92.1	108	75.16	0	99.9
25	1.294	72903	5.91	53	5.095	180947	62.8	81	20.05	33735	92.6	109	78.93	3124	99.9
26	1.359	80932	6.84	54	5.351	175169	64.9	82	21.06	34793	93.0	110	82.89	3623	100.0
27	1.428	87434	7.86	55	5.619	162368	67.0	83	22.12	33686	93.4	111	87.05	0	100.0
28	1.499	100285	9.00	56	5.901	165989	69.0	84	23.22	30548	93.8				

ELZONE(LIB) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 13:26 06 Mar 02

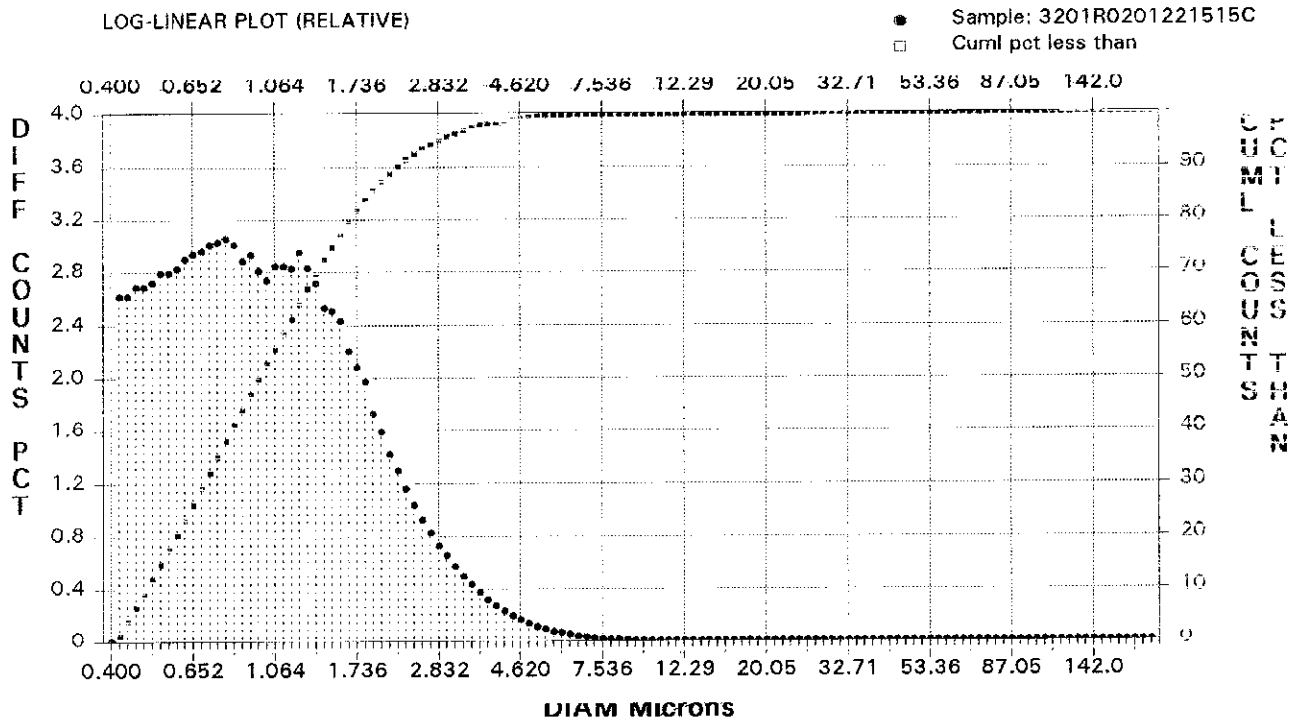
Disk File: MAL0535.HST

Sample #: 3201R0201221515C1

Lot/Job #: MAL0535

Material: storm water

Source: Todd Burgesser



		-- PERCENTILES --
Geometric Mean Size:	1.018 um	0.100% Counts below 0.410 um
Geom. Std Deviation:	1.772 um	1.000% Counts below 0.414 um
Geom. Skewness:	0.131	6.000% Counts below 0.458 um
Geom. Coeff Variation:	174.1	22.00% Counts below 0.609 um
Arithmetic Mean Size:	1.217 um	50.00% Counts below 0.966 um
Median Size:	0.945 um	78.00% Counts below 1.594 um
Mode Size:	0.786 um	94.00% Counts below 2.643 um
Kurtosis:	19.910	99.00% Counts below 4.441 um
Arith Std Deviation	0.893 um	99.90% Counts below 7.639 um

ELZONE(LIB) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 13:26 06 Mar 02

Disk File: MAL0535.HST

Sample #: 3201R0201221515C1

Lot/Job #: MAL0535

Material: storm water

Source: Todd Burgesser

-- Frequency Distribution Data

Total Popl: 2267469

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.400	0	0.00	26	1.359	61526	69.7	51	4.620	3825	99.1	76	15.70	21	100.0
2	0.420	59367	1.31	27	1.428	57394	72.3	52	4.852	3176	99.3	77	16.49	17	100.0
3	0.441	59360	3.93	28	1.499	56842	74.8	53	5.095	2607	99.4	78	17.32	14	100.0
4	0.463	60861	6.58	29	1.574	55193	77.3	54	5.351	2184	99.5	79	18.18	11	100.0
5	0.486	60862	9.26	30	1.653	49981	79.6	55	5.619	1748	99.6	80	19.10	10	100.0
6	0.511	61705	12.0	31	1.736	47248	81.8	56	5.901	1543	99.7	81	20.05	8	100.0
7	0.537	63348	14.7	32	1.823	44720	83.8	57	6.197	1260	99.7	82	21.06	7	100.0
8	0.563	63263	17.5	33	1.915	39156	85.6	58	6.507	971	99.8	83	22.12	6	100.0
9	0.592	64095	20.3	34	2.011	36082	87.3	59	6.834	804	99.8	84	23.22	5	100.0
10	0.621	65719	23.2	35	2.112	32189	88.8	60	7.176	637	99.9	85	24.39	4	100.0
11	0.652	66946	26.1	36	2.218	29413	90.2	61	7.536	501	99.9	86	25.61	4	100.0
12	0.685	67216	29.1	37	2.329	26326	91.4	62	7.914	434	99.9	87	26.90	3	100.0
13	0.720	68311	32.0	38	2.446	23534	92.5	63	8.311	350	99.9	88	28.25	2	100.0
14	0.756	68686	35.1	39	2.568	21013	93.5	64	8.728	262	99.9	89	29.66	2	100.0
15	0.794	69313	38.1	40	2.697	18742	94.3	65	9.166	197	100.0	90	31.15	2	100.0
16	0.833	68241	41.1	41	2.832	16540	95.1	66	9.625	181	100.0	91	32.71	2	100.0
17	0.875	65454	44.1	42	2.974	14913	95.8	67	10.11	139	100.0	92	34.35	1	100.0
18	0.919	66472	47.0	43	3.123	12980	96.4	68	10.62	122	100.0	93	36.08	1	100.0
19	0.965	63782	49.9	44	3.280	11291	97.0	69	11.15	91	100.0	94	37.89	1	100.0
20	1.014	62060	52.6	45	3.445	10015	97.4	70	11.71	82	100.0	95	39.79	1	100.0
21	1.064	64577	55.4	46	3.617	8567	97.8	71	12.29	57	100.0	96	41.78	1	100.0
22	1.118	64548	58.3	47	3.799	7259	98.2	72	12.91	46	100.0	97	43.88	1	100.0
23	1.174	64108	61.1	48	3.989	6200	98.5	73	13.56	36	100.0	98	46.08	1	100.0
24	1.233	66953	64.0	49	4.189	5309	98.7	74	14.24	27	100.0	99	48.39	0	100.0
25	1.294	64186	66.9	50	4.399	4475	99.0	75	14.95	23	100.0				

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 0:00 06 Mar 02

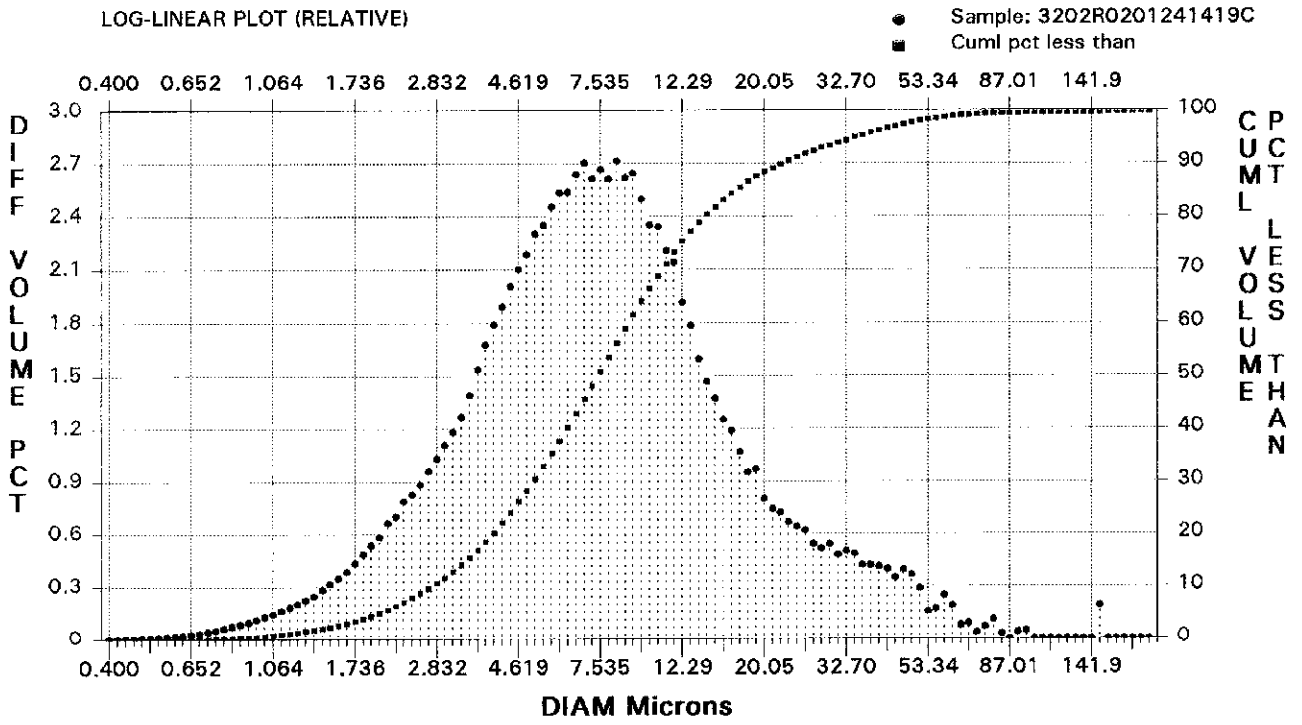
Disk File: MAL0536.HST

Sample #: 3202R0201241419C1

Lot/Job #: MAL0536

Material: storm water

Source: Todd Burgesser



		-- PERCENTILES --
Geometric Mean Size:	7.556 um	0.100% Volume below 0.597 um
Geom. Std Deviation:	2.290 um	1.000% Volume below 1.075 um
Geom. Skewness:	-0.337	6.000% Volume below 2.139 um
Geom. Coeff Variation:	30.31	22.00% Volume below 4.159 um
Arithmetic Mean Size:	10.91 um	50.00% Volume below 7.396 um
Median Size:	7.358 um	78.00% Volume below 13.13 um
Mode Size:	8.327 um	94.00% Volume below 30.64 um
Kurtosis:	22.282	99.00% Volume below 59.41 um
Arith Std Deviation	12.88 um	99.90% Volume below 148.8 um

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 0:00 06 Mar 02

Disk File: MAL0536.HST

Sample #: 3202R0201241419C1

Lot/Job #: MAL0536

Material: storm water

Source: Todd Burgesser

-- Volume Distribution Data

Total Volm: 11578719492

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.400	0	0.00	32	1.823	5.63E7	4.10	63	8.309	3.15E8	56.3	94	37.87	4.91E7	96.0
2	0.420	738064	0.00	33	1.915	6.23E7	4.62	64	8.726	3.04E8	59.0	95	39.77	4.83E7	96.4
3	0.441	888619	0.01	34	2.011	6.77E7	5.18	65	9.164	3.07E8	61.6	96	41.77	4.64E7	96.9
4	0.463	1067294	0.02	35	2.111	7.69E7	5.80	66	9.623	2.90E8	64.2	97	43.86	4.11E7	97.2
5	0.486	1298751	0.03	36	2.217	8.12E7	6.48	67	10.11	2.73E8	66.6	98	46.06	4.62E7	97.6
6	0.511	1537994	0.04	37	2.328	9.12E7	7.23	68	10.61	2.72E8	69.0	99	48.37	4.27E7	98.0
7	0.536	1873714	0.06	38	2.445	9.61E7	8.04	69	11.14	2.56E8	71.2	100	50.79	3.41E7	98.3
8	0.563	2262214	0.07	39	2.568	1.03E8	8.90	70	11.70	2.49E8	73.4	101	53.34	1.87E7	98.6
9	0.592	2695708	0.10	40	2.697	1.11E8	9.82	71	12.29	2.22E8	75.5	102	56.02	2.05E7	98.7
10	0.621	3210968	0.12	41	2.832	1.19E8	10.8	72	12.91	2.07E8	77.3	103	58.83	2.93E7	98.9
11	0.652	3890628	0.15	42	2.974	1.29E8	11.9	73	13.55	1.85E8	79.0	104	61.78	2.26E7	99.2
12	0.685	4630855	0.19	43	3.123	1.37E8	13.0	74	14.23	1.70E8	80.5	105	64.87	9362945	99.3
13	0.720	5548893	0.23	44	3.280	1.47E8	14.3	75	14.95	1.59E8	82.0	106	68.13	1.08E7	99.4
14	0.756	6617485	0.28	45	3.444	1.61E8	15.6	76	15.70	1.45E8	83.3	107	71.54	5021518	99.5
15	0.794	7632864	0.35	46	3.617	1.78E8	17.1	77	16.48	1.38E8	84.5	108	75.13	8722222	99.5
16	0.833	8865855	0.42	47	3.798	1.94E8	18.7	78	17.31	1.24E8	85.6	109	78.90	1.35E7	99.6
17	0.875	1.02E7	0.50	48	3.989	2.07E8	20.4	79	18.18	1.10E8	86.6	110	82.85	3896684	99.7
18	0.919	1.17E7	0.59	49	4.189	2.19E8	22.2	80	19.09	1.13E8	87.6	111	87.01	0	99.7
19	0.965	1.33E7	0.70	50	4.399	2.33E8	24.2	81	20.05	9.29E7	88.5	112	91.37	5230478	99.7
20	1.013	1.52E7	0.83	51	4.619	2.44E8	26.3	82	21.05	8.62E7	89.3	113	95.95	6054635	99.8
21	1.064	1.72E7	0.97	52	4.851	2.54E8	28.4	83	22.11	8.37E7	90.0	114	100.8	0	99.8
22	1.118	1.92E7	1.12	53	5.094	2.67E8	30.7	84	23.22	7.73E7	90.7	115	105.8	0	99.8
23	1.174	2.17E7	1.30	54	5.349	2.72E8	33.0	85	24.38	7.46E7	91.4	116	111.1	0	99.8
24	1.233	2.39E7	1.50	55	5.618	2.85E8	35.4	86	25.60	7.19E7	92.0	117	116.7	0	99.8
25	1.294	2.63E7	1.71	56	5.899	2.94E8	37.9	87	26.89	6.32E7	92.6	118	122.6	0	99.8
26	1.359	2.90E7	1.95	57	6.195	2.94E8	40.4	88	28.24	6.02E7	93.1	119	128.7	0	99.8
27	1.427	3.29E7	2.22	58	6.506	3.06E8	43.0	89	29.65	6.33E7	93.6	120	135.1	0	99.8
28	1.499	3.71E7	2.52	59	6.832	3.14E8	45.7	90	31.14	5.59E7	94.2	121	141.9	0	99.8
29	1.574	4.09E7	2.86	60	7.175	3.03E8	48.4	91	32.70	5.85E7	94.7	122	149.0	2.27E7	99.9
30	1.653	4.49E7	3.23	61	7.535	3.09E8	51.0	92	34.34	5.66E7	95.1	123	156.5	0	100.0
31	1.736	5.06E7	3.64	62	7.912	3.03E8	53.6	93	36.06	4.92E7	95.6				

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 0:00 06 Mar 02

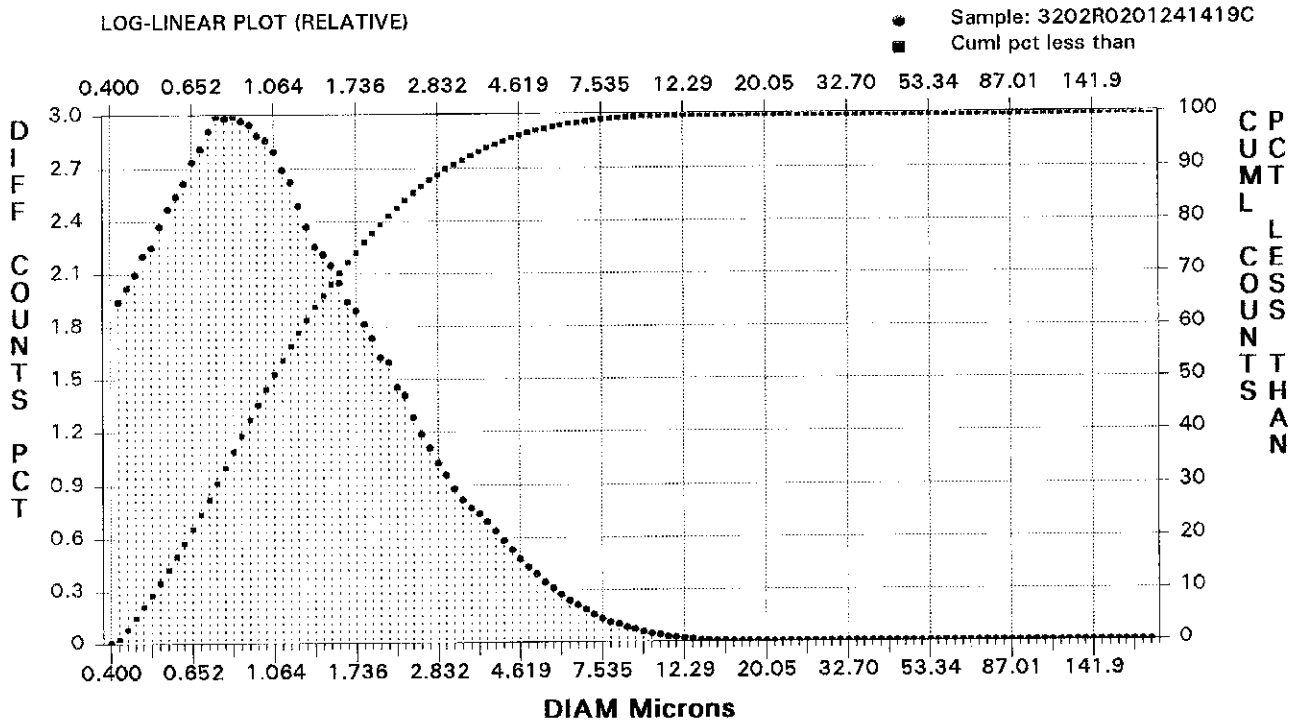
Disk File: MAL0536.HST

Sample #: 3202R0201241419C1

Lot/Job #: MAL0536

Material: storm water

Source: Todd Burgesser



		-- PERCENTILES --
Geometric Mean Size:	1.158 um	0.100% Counts below 0.410 um
Geom. Std Deviation:	1.956 um	1.000% Counts below 0.415 um
Geom. Skewness:	0.198	6.000% Counts below 0.473 um
Geom. Coeff Variation:	168.8	22.00% Counts below 0.653 um
Arithmetic Mean Size:	1.501 um	50.00% Counts below 1.044 um
Median Size:	1.039 um	78.00% Counts below 1.920 um
Mode Size:	0.772 um	94.00% Counts below 3.807 um
Kurtosis:	21.100	99.00% Counts below 7.079 um
Arith Std Deviation	1.431 um	99.90% Counts below 12.36 um

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 0:00 06 Mar 02

Disk File: MAL0536.HST

Sample #: 3202R0201241419C1

Lot/Job #: MAL0536

Material: storm water

Source: Todd Burgesser

-- Frequency Distribution Data

Total Popl: 976439062

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.400	0	0.00	32	1.823	1.77E7	76.1	63	8.309	1047212	99.4	94	37.87	1728	100.0
2	0.420	1.90E7	0.97	33	1.915	1.70E7	77.9	64	8.726	873212	99.5	95	39.77	1466	100.0
3	0.441	1.98E7	2.96	34	2.011	1.59E7	79.5	65	9.164	761056	99.6	96	41.77	1217	100.0
4	0.463	2.05E7	5.02	35	2.111	1.56E7	81.2	66	9.623	620593	99.7	97	43.86	929	100.0
5	0.486	2.15E7	7.18	36	2.217	1.42E7	82.7	67	10.11	504761	99.7	98	46.06	903	100.0
6	0.511	2.20E7	9.41	37	2.328	1.38E7	84.1	68	10.61	434005	99.8	99	48.37	720	100.0
7	0.536	2.32E7	11.7	38	2.445	1.26E7	85.5	69	11.14	353288	99.8	100	50.79	498	100.0
8	0.563	2.42E7	14.1	39	2.568	1.16E7	86.7	70	11.70	296158	99.9	101	53.34	236	100.0
9	0.592	2.49E7	16.7	40	2.697	1.08E7	87.9	71	12.29	228542	99.9	102	56.02	223	100.0
10	0.621	2.56E7	19.2	41	2.832	1.00E7	88.9	72	12.91	183989	99.9	103	58.83	275	100.0
11	0.652	2.68E7	21.9	42	2.974	9347655	89.9	73	13.55	142056	99.9	104	61.78	183	100.0
12	0.685	2.75E7	24.7	43	3.123	8609569	90.8	74	14.23	112670	99.9	105	64.87	65	100.0
13	0.720	2.84E7	27.6	44	3.280	7973934	91.7	75	14.95	91207	100.0	106	68.13	65	100.0
14	0.756	2.93E7	30.5	45	3.444	7540143	92.5	76	15.70	71755	100.0	107	71.54	26	100.0
15	0.794	2.92E7	33.5	46	3.617	7191759	93.2	77	16.48	58936	100.0	108	75.13	39	100.0
16	0.833	2.93E7	36.5	47	3.798	6772594	94.0	78	17.31	45670	100.0	109	78.90	52	100.0
17	0.875	2.90E7	39.5	48	3.989	6240270	94.6	79	18.18	35123	100.0	110	82.85	13	100.0
18	0.919	2.88E7	42.5	49	4.189	5701088	95.2	80	19.09	30930	100.0	111	87.01	0	100.0
19	0.965	2.82E7	45.4	50	4.399	5221129	95.8	81	20.05	22018	100.0	112	91.37	13	100.0
20	1.013	2.80E7	48.2	51	4.619	4723858	96.3	82	21.05	17651	100.0	113	95.95	13	100.0
21	1.064	2.73E7	51.1	52	4.851	4244396	96.8	83	22.11	14785	100.0	114	100.8	0	100.0
22	1.118	2.63E7	53.8	53	5.094	3859772	97.2	84	23.22	11800	100.0	115	105.8	0	100.0
23	1.174	2.56E7	56.5	54	5.349	3398638	97.5	85	24.38	9829	100.0	116	111.1	0	100.0
24	1.233	2.43E7	59.0	55	5.618	3065351	97.9	86	25.60	8182	100.0	117	116.7	0	100.0
25	1.294	2.32E7	61.5	56	5.899	2733645	98.2	87	26.89	6204	100.0	118	122.6	0	100.0
26	1.359	2.21E7	63.8	57	6.195	2365236	98.4	88	28.24	5111	100.0	119	128.7	0	100.0
27	1.427	2.16E7	66.0	58	6.506	2119985	98.7	89	29.65	4634	100.0	120	135.1	0	100.0
28	1.499	2.10E7	68.2	59	6.832	1877872	98.9	90	31.14	3534	100.0	121	141.9	0	100.0
29	1.574	2.00E7	70.3	60	7.175	1568670	99.0	91	32.70	3194	100.0	122	149.0	13	100.0
30	1.653	1.90E7	72.3	61	7.535	1379480	99.2	92	34.34	2670	100.0	123	156.5	0	100.0
31	1.736	1.85E7	74.2	62	7.912	1167227	99.3	93	36.06	2003	100.0				

ELZONE(TM) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 14:46 06 Mar 02

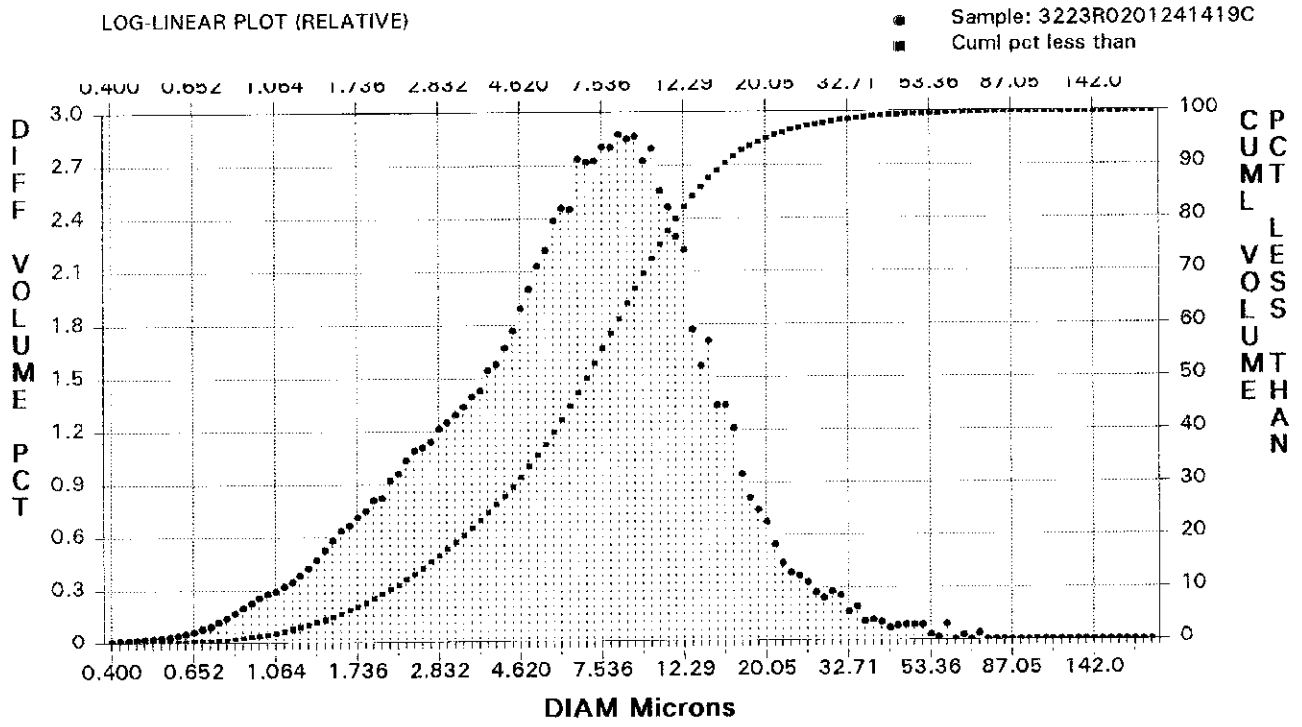
Disk File: MAL0537.HST

Sample #: 3223R0201241419C1

Lot/Job #: MAL0537

Material: storm water

Source: Todd Burgesser



		-- PERCENTILES --
Geometric Mean Size:	6.241 um	0.100% Volume below 0.527 um
Geom. Std Deviation:	2.185 um	1.000% Volume below 0.866 um
Geom. Skewness:	-1.006	6.000% Volume below 1.626 um
Geom. Coeff Variation:	35.01	22.00% Volume below 3.475 um
Arithmetic Mean Size:	8.271 um	50.00% Volume below 6.821 um
Median Size:	6.688 um	78.00% Volume below 11.21 um
Mode Size:	8.440 um	94.00% Volume below 18.45 um
Kurtosis:	7.950	99.00% Volume below 34.72 um
Arith Std Deviation	7.061 um	99.90% Volume below 59.25 um

ELZONE(cum) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 14:46 06 Mar 02

Disk File: MAL0537.HST

Sample #: 3223R0201241419C1

Lot/Job #: MAL0537

Material: storm water

Source: Todd Burgesser

-- Volume Distribution Data

Total Volm: 5462677232

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.400	0	0.00	28	1.499	3.18E7	4.96	55	5.619	1.31E8	39.8	82	21.06	2.99E7	95.8
2	0.420	695600	0.01	29	1.574	3.48E7	5.57	56	5.901	1.35E8	42.3	83	22.12	2.42E7	96.3
3	0.441	841992	0.02	30	1.653	3.64E7	6.22	57	6.197	1.34E8	44.7	84	23.22	2.13E7	96.7
4	0.463	1011640	0.04	31	1.736	3.89E7	6.91	58	6.507	1.50E8	47.3	85	24.39	2.01E7	97.1
5	0.486	1216472	0.06	32	1.823	4.09E7	7.64	59	6.834	1.49E8	50.1	86	25.61	1.83E7	97.5
6	0.511	1461856	0.08	33	1.915	4.44E7	8.42	60	7.176	1.49E8	52.8	87	26.90	1.50E7	97.8
7	0.537	1754352	0.11	34	2.011	4.48E7	9.24	61	7.536	1.53E8	55.6	88	28.25	1.32E7	98.0
8	0.563	2140760	0.15	35	2.112	5.02E7	10.1	62	7.914	1.53E8	58.4	89	29.66	1.52E7	98.3
9	0.592	2514944	0.19	36	2.218	5.24E7	11.0	63	8.311	1.57E8	61.2	90	31.15	1.41E7	98.6
10	0.621	3053416	0.24	37	2.329	5.66E7	12.0	64	8.728	1.56E8	64.1	91	32.71	8808120	98.8
11	0.652	3649728	0.30	38	2.446	5.95E7	13.1	65	9.166	1.57E8	66.9	92	34.35	1.04E7	99.0
12	0.685	4475016	0.38	39	2.568	6.07E7	14.2	66	9.625	1.49E8	69.7	93	36.08	5902592	99.1
13	0.720	5323272	0.47	40	2.697	6.25E7	15.3	67	10.11	1.53E8	72.5	94	37.89	6188520	99.2
14	0.756	6387984	0.57	41	2.832	6.65E7	16.5	68	10.62	1.40E8	75.2	95	39.79	5662272	99.3
15	0.794	7610720	0.70	42	2.974	6.85E7	17.8	69	11.15	1.35E8	77.7	96	41.78	3935056	99.4
16	0.833	9196016	0.86	43	3.123	7.08E7	19.0	70	11.71	1.26E8	80.1	97	43.88	4552544	99.5
17	0.875	1.08E7	1.04	44	3.280	7.32E7	20.3	71	12.29	1.21E8	82.3	98	46.08	4689992	99.6
18	0.919	1.25E7	1.25	45	3.445	7.63E7	21.7	72	12.91	9.67E7	84.3	99	48.39	4747232	99.7
19	0.965	1.39E7	1.49	46	3.617	7.82E7	23.1	73	13.55	8.56E7	86.0	100	50.81	4712944	99.7
20	1.014	1.52E7	1.76	47	3.799	8.44E7	24.6	74	14.24	9.34E7	87.6	101	53.36	1818752	99.8
21	1.064	1.61E7	2.05	48	3.989	8.61E7	26.2	75	14.95	7.34E7	89.1	102	56.04	1052192	99.8
22	1.118	1.77E7	2.36	49	4.189	9.12E7	27.8	76	15.70	7.34E7	90.5	103	58.85	4884384	99.9
23	1.174	1.90E7	2.69	50	4.399	9.65E7	29.5	77	16.49	6.62E7	91.8	104	61.80	0	99.9
24	1.233	2.10E7	3.06	51	4.620	1.03E8	31.3	78	17.32	5.18E7	92.8	105	64.90	1635680	99.9
25	1.294	2.32E7	3.46	52	4.852	1.09E8	33.3	79	18.18	4.45E7	93.7	106	68.15	0	100.0
26	1.359	2.57E7	3.91	53	5.095	1.17E8	35.4	80	19.10	4.07E7	94.5	107	71.57	2196216	100.0
27	1.428	2.87E7	4.41	54	5.351	1.21E8	37.5	81	20.05	3.69E7	95.2	108	75.15	0	100.0

ELZONE™ Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 14:46 06 Mar 02

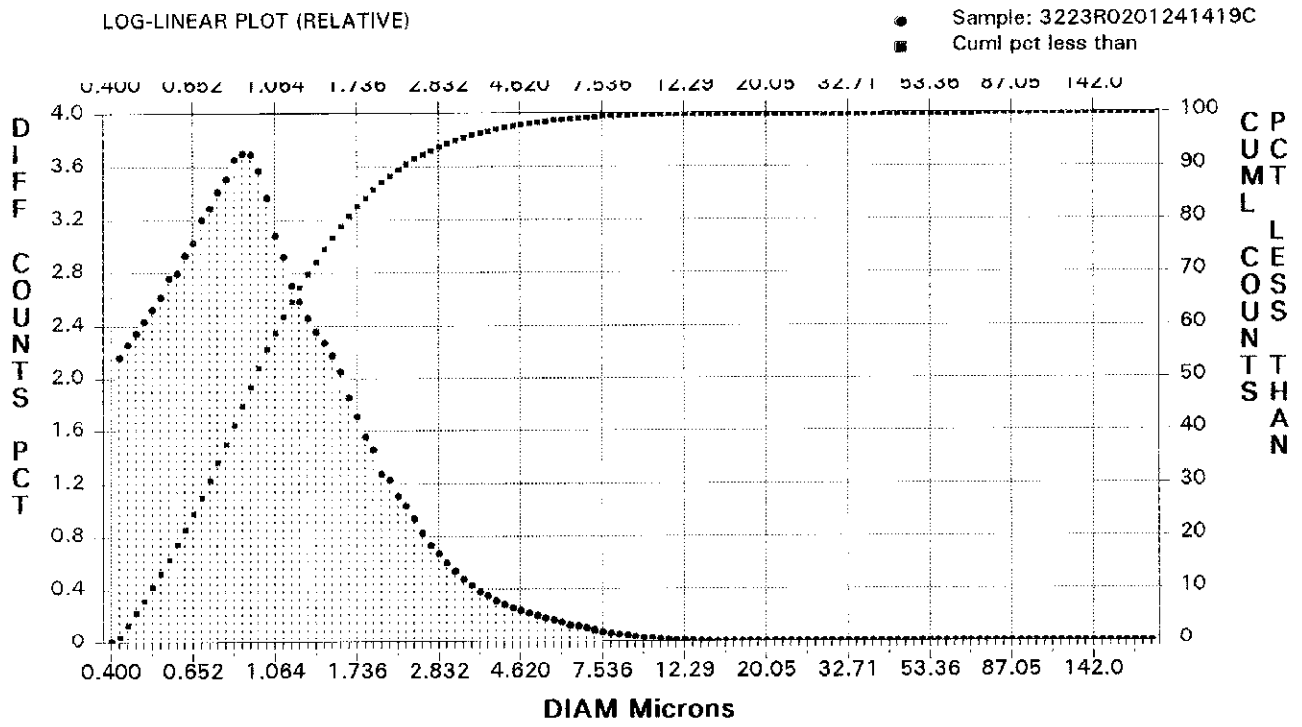
Disk File: MAL0537.HST

Sample #: 3223R0201241419C1

Lot/Job #: MAL0537

Material: storm water

Source: Todd Burgesser



		-- PERCENTILES --
Geometric Mean Size:	1.024 um	0.100% Counts below 0.410 um
Geom. Std Deviation:	1.806 um	1.000% Counts below 0.414 um
Geom. Skewness:	0.071	6.000% Counts below 0.467 um
Geom. Coeff Variation:	176.4	22.00% Counts below 0.627 um
Arithmetic Mean Size:	1.262 um	50.00% Counts below 0.936 um
Median Size:	0.902 um	78.00% Counts below 1.544 um
Mode Size:	0.895 um	94.00% Counts below 2.852 um
Kurtosis:	21.607	99.00% Counts below 5.988 um
Arith Std Deviation	1.128 um	99.90% Counts below 10.96 um

ELZONE(µm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 14:46 06 Mar 02

Disk File: MAL0537.HST

Sample #: 3223R0201241419C1

Lot/Job #: MAL0537

Material: storm water

Source: Todd Burgesser

-- Frequency Distribution Data

Total Popl: 829469677

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.400	0	0.00	28	1.499	1.80E7	76.7	55	5.619	1405315	98.8	82	21.06	6113	100.0
2	0.420	1.79E7	1.08	29	1.574	1.70E7	78.8	56	5.901	1251245	98.9	83	22.12	4277	100.0
3	0.441	1.87E7	3.29	30	1.653	1.54E7	80.8	57	6.197	1076201	99.1	84	23.22	3245	100.0
4	0.463	1.94E7	5.59	31	1.736	1.42E7	82.6	58	6.507	1036921	99.2	85	24.39	2652	100.0
5	0.486	2.02E7	7.98	32	1.823	1.29E7	84.2	59	6.834	889717	99.3	86	25.61	2077	100.0
6	0.511	2.09E7	10.5	33	1.915	1.21E7	85.7	60	7.176	770349	99.4	87	26.90	1475	100.0
7	0.537	2.17E7	13.0	34	2.011	1.05E7	87.1	61	7.536	684543	99.5	88	28.25	1121	100.0
8	0.563	2.29E7	15.7	35	2.112	1.02E7	88.3	62	7.914	589966	99.6	89	29.66	1110	100.0
9	0.592	2.32E7	18.5	36	2.218	9173609	89.5	63	8.311	523227	99.7	90	31.15	892	100.0
10	0.621	2.43E7	21.4	37	2.329	8552843	90.5	64	8.728	447336	99.7	91	32.71	481	100.0
11	0.652	2.51E7	24.3	38	2.446	7775428	91.5	65	9.166	388276	99.8	92	34.35	492	100.0
12	0.685	2.66E7	27.4	39	2.568	6839171	92.4	66	9.625	319200	99.8	93	36.08	240	100.0
13	0.720	2.73E7	30.7	40	2.697	6083093	93.2	67	10.11	282588	99.9	94	37.89	217	100.0
14	0.756	2.83E7	34.0	41	2.832	5590306	93.9	68	10.62	223097	99.9	95	39.79	172	100.0
15	0.794	2.91E7	37.5	42	2.974	4969743	94.5	69	11.15	185723	99.9	96	41.78	103	100.0
16	0.833	3.03E7	41.1	43	3.123	4435391	95.1	70	11.71	149494	99.9	97	43.88	103	100.0
17	0.875	3.07E7	44.8	44	3.280	3961861	95.6	71	12.29	124705	99.9	98	46.08	92	100.0
18	0.919	3.07E7	48.5	45	3.445	3567153	96.0	72	12.91	85806	100.0	99	48.39	80	100.0
19	0.965	2.98E7	52.1	46	3.617	3153473	96.5	73	13.56	65594	100.0	100	50.81	69	100.0
20	1.014	2.79E7	55.6	47	3.799	2938815	96.8	74	14.24	61781	100.0	101	53.36	23	100.0
21	1.064	2.55E7	58.8	48	3.989	2590969	97.2	75	14.95	41950	100.0	102	56.04	11	100.0
22	1.118	2.42E7	61.8	49	4.189	2369401	97.5	76	15.70	36229	100.0	103	58.85	46	100.0
23	1.174	2.24E7	64.6	50	4.399	2165367	97.7	77	16.49	28221	100.0	104	61.80	0	100.0
24	1.233	2.14E7	67.2	51	4.620	2002142	98.0	78	17.32	19068	100.0	105	64.90	11	100.0
25	1.294	2.04E7	69.8	52	4.852	1830918	98.2	79	18.18	14147	100.0	106	68.15	0	100.0
26	1.359	1.95E7	72.2	53	5.095	1682562	98.4	80	19.10	11164	100.0	107	71.57	11	100.0
27	1.428	1.88E7	74.5	54	5.351	1514387	98.6	81	20.05	8749	100.0	108	75.16	0	100.0

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 15:31 06 Mar 02

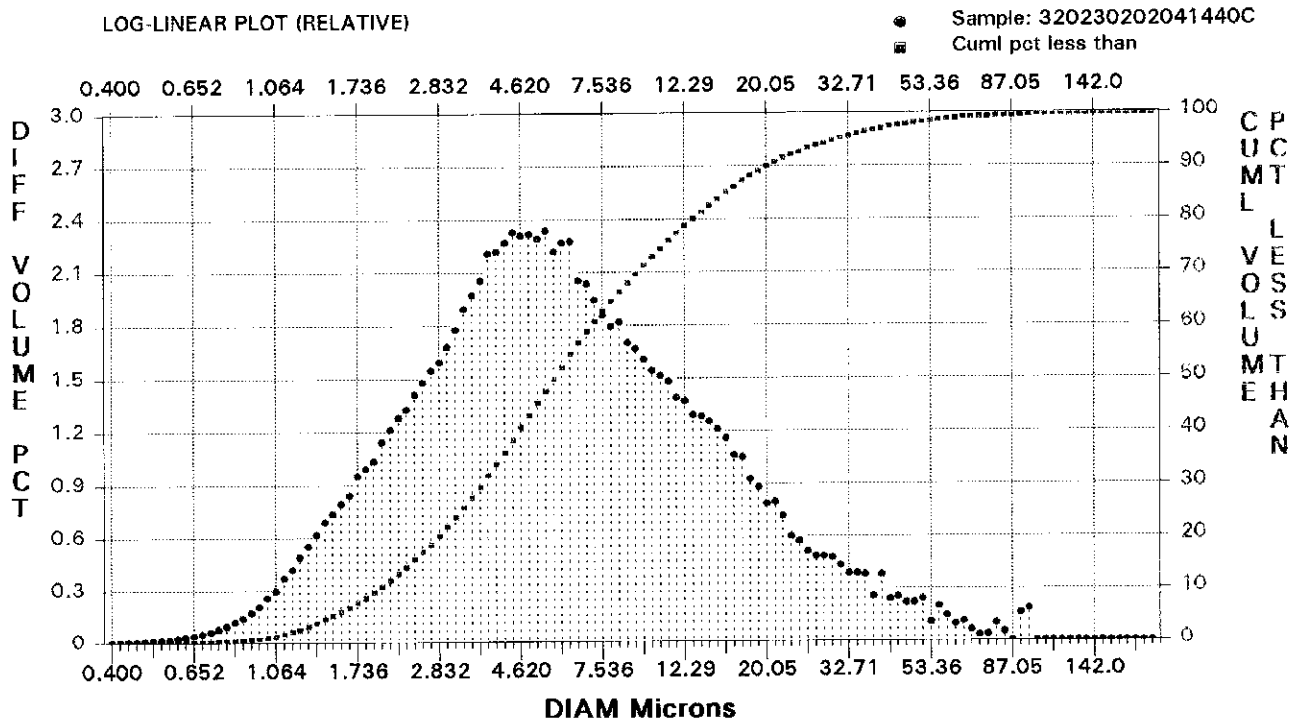
Disk File: MAL0538.HST

Sample #: 320230202041440C1

Lot/Job #: MAL0538

Material: storm water

Source: Todd Burgesser



		-- PERCENTILES --
Geometric Mean Size:	5.992 um	0.100% Volume below 0.577 um
Geom. Std Deviation:	2.460 um	1.000% Volume below 0.951 um
Geom. Skewness:	0.295	6.000% Volume below 1.571 um
Geom. Coeff Variation:	41.06	22.00% Volume below 2.962 um
Arithmetic Mean Size:	9.275 um	50.00% Volume below 5.604 um
Median Size:	5.499 um	78.00% Volume below 11.89 um
Mode Size:	5.267 um	94.00% Volume below 26.89 um
Kurtosis:	13.096	99.00% Volume below 57.74 um
Arith Std Deviation	11.61 um	99.90% Volume below 95.74 um

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 15:31 06 Mar 02

Disk File: MAL0538.HST

Sample #: 320230202041440C1

Lot/Job #: MAL0538

Material: storm water

Source: Todd Burgesser

-- Volume Distribution Data

Total Volm: 6726980024

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.400	0	0.00	30	1.653	5.68E7	6.84	59	6.834	1.37E8	58.8	87	26.90	3.31E7	94.0
2	0.420	454585	0.00	31	1.736	6.42E7	7.74	60	7.176	1.31E8	60.8	88	28.25	3.31E7	94.5
3	0.441	559333	0.01	32	1.823	6.67E7	8.71	61	7.536	1.25E8	62.7	89	29.66	3.26E7	95.0
4	0.463	710861	0.02	33	1.915	6.97E7	9.72	62	7.914	1.21E8	64.6	90	31.15	2.96E7	95.4
5	0.486	868491	0.03	34	2.011	7.72E7	10.8	63	8.311	1.22E8	66.4	91	32.71	2.64E7	95.9
6	0.511	1088156	0.05	35	2.112	8.18E7	12.0	64	8.728	1.15E8	68.1	92	34.35	2.63E7	96.2
7	0.537	1356636	0.06	36	2.218	8.63E7	13.2	65	9.166	1.12E8	69.8	93	36.08	2.58E7	96.6
8	0.563	1679015	0.09	37	2.329	8.97E7	14.6	66	9.625	1.08E8	71.5	94	37.89	1.77E7	97.0
9	0.592	2025801	0.11	38	2.446	9.53E7	15.9	67	10.11	1.04E8	73.0	95	39.79	2.58E7	97.3
10	0.621	2493607	0.15	39	2.568	9.98E7	17.4	68	10.62	1.02E8	74.6	96	41.78	1.65E7	97.6
11	0.652	3062093	0.19	40	2.697	1.04E8	18.9	69	11.15	10.00E7	76.1	97	43.88	1.73E7	97.8
12	0.685	3761767	0.24	41	2.832	1.08E8	20.5	70	11.71	9.37E7	77.5	98	46.08	1.52E7	98.1
13	0.720	4528561	0.30	42	2.974	1.13E8	22.1	71	12.29	9.27E7	78.9	99	48.39	1.52E7	98.3
14	0.756	5460104	0.38	43	3.123	1.19E8	23.8	72	12.91	8.73E7	80.2	100	50.81	1.66E7	98.5
15	0.794	6727247	0.47	44	3.280	1.28E8	25.7	73	13.56	8.66E7	81.5	101	53.36	7478701	98.7
16	0.833	8139817	0.58	45	3.445	1.33E8	27.6	74	14.24	8.48E7	82.8	102	56.04	1.36E7	98.9
17	0.875	9619506	0.71	46	3.617	1.38E8	29.6	75	14.95	8.18E7	84.0	103	58.85	1.00E7	99.1
18	0.919	1.18E7	0.87	47	3.799	1.49E8	31.8	76	15.70	7.83E7	85.2	104	61.80	6673561	99.2
19	0.965	1.41E7	1.06	48	3.989	1.49E8	34.0	77	16.49	7.17E7	86.3	105	64.90	7728814	99.3
20	1.014	1.74E7	1.30	49	4.189	1.53E8	36.2	78	17.32	7.10E7	87.4	106	68.15	4475464	99.4
21	1.064	2.03E7	1.58	50	4.399	1.57E8	38.5	79	18.18	6.28E7	88.4	107	71.57	2495588	99.4
22	1.118	2.51E7	1.91	51	4.620	1.56E8	40.9	80	19.10	5.94E7	89.3	108	75.16	2890201	99.5
23	1.174	2.82E7	2.31	52	4.852	1.56E8	43.2	81	20.05	5.31E7	90.1	109	78.93	6951902	99.5
24	1.233	3.32E7	2.77	53	5.095	1.54E8	45.5	82	21.06	5.38E7	90.9	110	82.89	3876488	99.6
25	1.294	3.73E7	3.29	54	5.351	1.57E8	47.8	83	22.12	4.84E7	91.7	111	87.05	0	99.7
26	1.359	4.17E7	3.88	55	5.619	1.49E8	50.1	84	23.22	4.05E7	92.3	112	91.41	1.08E7	99.7
27	1.428	4.65E7	4.53	56	5.901	1.53E8	52.3	85	24.39	3.89E7	92.9	113	96.00	1.25E7	99.9
28	1.499	4.97E7	5.25	57	6.197	1.53E8	54.6	86	25.61	3.49E7	93.5	114	100.8	0	100.0
29	1.574	5.35E7	6.02	58	6.507	1.38E8	56.8								

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 15:31 06 Mar 02

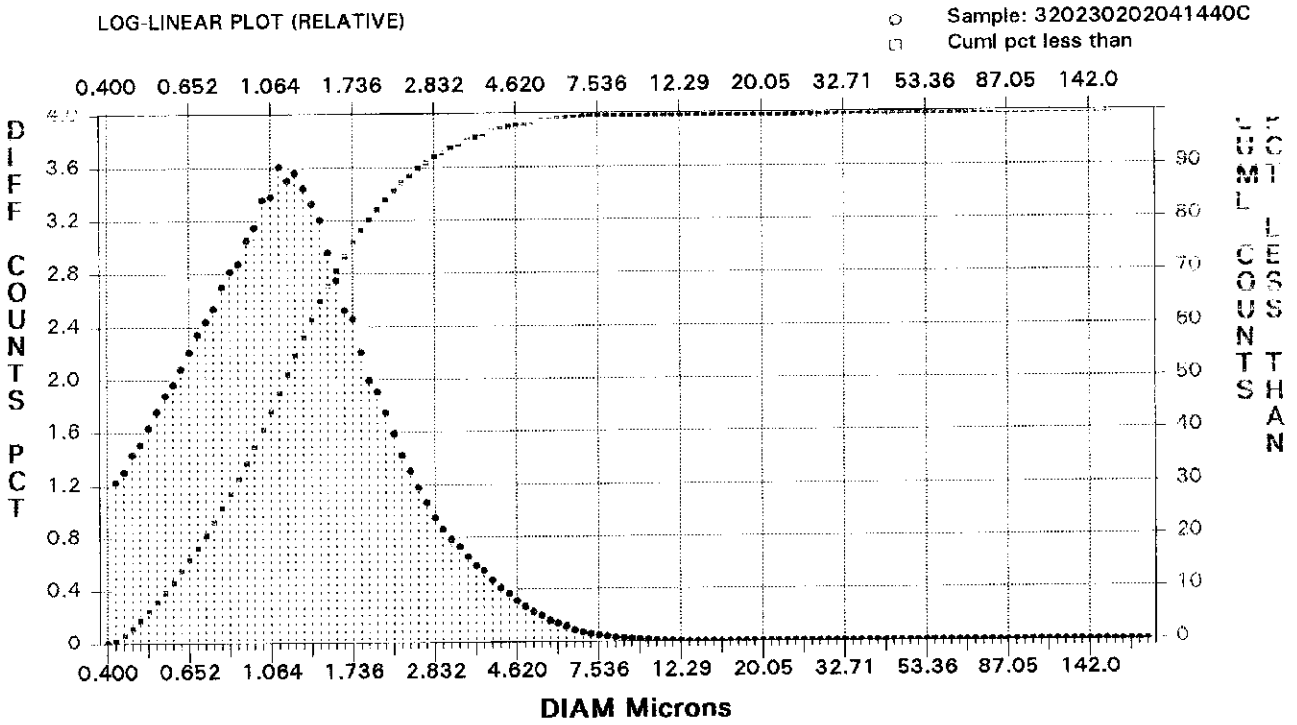
Disk File: MAL0538.HST

Sample #: 320230202041440C1

Lot/Job #: MAL0538

Material: storm water

Source: Todd Burgesser



		-- PERCENTILES --
Geometric Mean Size:	1.195 um	0.100% Counts below 0.411 um
Geom. Std Deviation:	1.787 um	1.000% Counts below 0.418 um
Geom. Skewness:	0.035	6.000% Counts below 0.506 um
Geom. Coeff Variation:	149.5	22.00% Counts below 0.740 um
		50.00% Counts below 1.156 um
Arithmetic Mean Size:	1.439 um	78.00% Counts below 1.814 um
Median Size:	1.147 um	94.00% Counts below 3.169 um
Mode Size:	1.133 um	99.00% Counts below 5.584 um
Kurtosis:	24.667	99.90% Counts below 10.33 um
Arith Std Deviation	1.116 um	

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
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By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 15:31 06 Mar 02

Disk File: MAL0538.HST

Sample #: 320230202041440C1

Lot/Job #: MAL0538

Material: storm water

Source: Todd Burgesser

-- Frequency Distribution Data

Total Popl: 951284889

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.400	0	0.00	30	1.653	2.40E7	73.4	59	6.834	821206	99.5	87	26.90	3246	100.0
2	0.420	1.17E7	0.62	31	1.736	2.34E7	75.9	60	7.176	677768	99.6	88	28.25	2801	100.0
3	0.441	1.24E7	1.89	32	1.823	2.10E7	78.2	61	7.536	558422	99.7	89	29.66	2384	100.0
4	0.463	1.37E7	3.26	33	1.915	1.90E7	80.3	62	7.914	465350	99.7	90	31.15	1872	100.0
5	0.486	1.44E7	4.73	34	2.011	1.81E7	82.3	63	8.311	407318	99.8	91	32.71	1441	100.0
6	0.511	1.56E7	6.31	35	2.112	1.66E7	84.1	64	8.728	329037	99.8	92	34.35	1239	100.0
7	0.537	1.68E7	8.01	36	2.218	1.51E7	85.7	65	9.166	278946	99.8	93	36.08	1051	100.0
8	0.563	1.79E7	9.83	37	2.329	1.36E7	87.3	66	9.625	231939	99.9	94	37.89	620	100.0
9	0.592	1.87E7	11.8	38	2.446	1.24E7	88.6	67	10.11	192569	99.9	95	39.79	781	100.0
10	0.621	1.99E7	13.8	39	2.568	1.13E7	89.9	68	10.62	162951	99.9	96	41.78	431	100.0
11	0.652	2.11E7	15.9	40	2.697	1.02E7	91.0	69	11.15	137831	99.9	97	43.88	391	100.0
12	0.685	2.23E7	18.2	41	2.832	9048467	92.0	70	11.71	111574	99.9	98	46.08	296	100.0
13	0.720	2.32E7	20.6	42	2.974	8219998	92.9	71	12.29	95259	99.9	99	48.39	256	100.0
14	0.756	2.42E7	23.1	43	3.123	7485028	93.7	72	12.91	77456	100.0	100	50.81	242	100.0
15	0.794	2.57E7	25.7	44	3.280	6903633	94.5	73	13.56	66346	100.0	101	53.36	94	100.0
16	0.833	2.69E7	28.5	45	3.445	6221470	95.2	74	14.24	56105	100.0	102	56.04	148	100.0
17	0.875	2.74E7	31.3	46	3.617	5587493	95.8	75	14.95	46747	100.0	103	58.85	94	100.0
18	0.919	2.91E7	34.3	47	3.799	5185652	96.4	76	15.70	38626	100.0	104	61.80	54	100.0
19	0.965	3.00E7	37.4	48	3.989	4496935	96.9	77	16.49	30537	100.0	105	64.90	54	100.0
20	1.014	3.20E7	40.7	49	4.189	3973556	97.3	78	17.32	26128	100.0	106	68.15	27	100.0
21	1.064	3.22E7	44.0	50	4.399	3515880	97.7	79	18.18	19932	100.0	107	71.57	13	100.0
22	1.118	3.43E7	47.5	51	4.620	3012185	98.1	80	19.10	16295	100.0	108	75.16	13	100.0
23	1.174	3.34E7	51.1	52	4.852	2611461	98.4	81	20.05	12565	100.0	109	78.93	27	100.0
24	1.233	3.39E7	54.6	53	5.095	2230412	98.6	82	21.06	11003	100.0	110	82.89	13	100.0
25	1.294	3.28E7	58.1	54	5.351	1961043	98.8	83	22.12	8550	100.0	111	87.05	0	100.0
26	1.359	3.17E7	61.5	55	5.619	1608476	99.0	84	23.22	6182	100.0	112	91.41	27	100.0
27	1.428	3.05E7	64.8	56	5.901	1421231	99.2	85	24.39	5118	100.0	113	96.00	27	100.0
28	1.499	2.82E7	67.9	57	6.197	1231812	99.3	86	25.61	3972	100.0	114	100.8	0	100.0
29	1.574	2.62E7	70.7	58	6.507	959171	99.4								

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 11:16 07 Mar 02

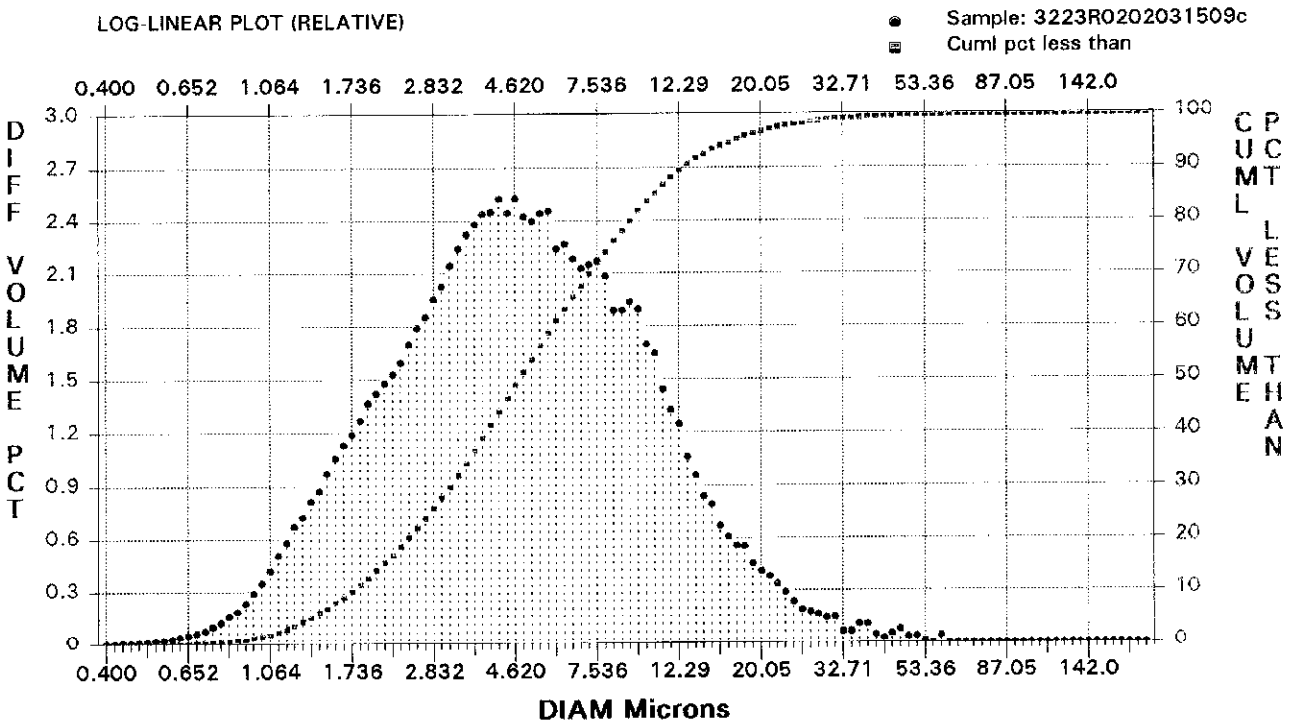
Disk File: MAL0539.HST

Sample #: 3223R0202031509c1

Lot/Job #: MAL0539

Material: storm water

Source: Todd Burgesser



		-- PERCENTILES --
Geometric Mean Size:	4.731 um	0.100% Volume below 0.571 um
Geom. Std Deviation:	2.151 um	1.000% Volume below 0.903 um
Geom. Skewness:	0.063	6.000% Volume below 1.426 um
Geom. Coeff Variation:	45.47	22.00% Volume below 2.562 um
Arithmetic Mean Size:	6.365 um	50.00% Volume below 4.699 um
Median Size:	4.533 um	78.00% Volume below 8.700 um
Mode Size:	4.595 um	94.00% Volume below 15.43 um
Kurtosis:	9.072	99.00% Volume below 29.35 um
Arith Std Deviation	5.935 um	99.90% Volume below 50.24 um

ELZONE(tm) Particle Size Analysis

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By: Micromeritics
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Norcross, GA 30093

Operator: RS

Date done: 11:16 07 Mar 02

Disk File: MAL0539.HST

Sample #: 3223R0202031509c1

Lot/Job #: MAL0539

Material: storm water

Source: Todd Burgesser

-- Volume Distribution Data

Total Volm: 7707041

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.400	0	0.00	27	1.428	67277	6.00	53	5.095	184975	53.9	79	18.18	42897	96.0
2	0.420	481	0.00	28	1.499	74758	6.92	54	5.351	188285	56.3	80	19.10	35232	96.5
3	0.441	625	0.01	29	1.574	81675	7.94	55	5.619	189549	58.8	81	20.05	31835	97.0
4	0.463	807	0.02	30	1.653	87143	9.03	56	5.901	172997	61.1	82	21.06	29531	97.4
5	0.486	1024	0.03	31	1.736	91621	10.2	57	6.197	174755	63.4	83	22.12	26223	97.7
6	0.511	1349	0.05	32	1.823	97909	11.4	58	6.507	168536	65.6	84	23.22	22528	98.0
7	0.537	1712	0.07	33	1.915	105501	12.7	59	6.834	164244	67.8	85	24.39	18271	98.3
8	0.563	2135	0.09	34	2.011	109593	14.1	60	7.176	165915	69.9	86	25.61	14871	98.5
9	0.592	2678	0.12	35	2.112	114116	15.6	61	7.536	167706	72.1	87	26.90	13860	98.7
10	0.621	3391	0.16	36	2.218	118267	17.1	62	7.914	160975	74.2	88	28.25	12761	98.9
11	0.652	4246	0.21	37	2.329	123081	18.7	63	8.311	145636	76.2	89	29.66	11436	99.0
12	0.685	5249	0.27	38	2.446	131033	20.3	64	8.728	145706	78.1	90	31.15	11593	99.2
13	0.720	6359	0.35	39	2.568	137953	22.1	65	9.166	149314	80.0	91	32.71	5439	99.3
14	0.756	7868	0.44	40	2.697	142856	23.9	66	9.625	146275	81.9	92	34.35	5544	99.4
15	0.794	9714	0.56	41	2.832	150648	25.8	67	10.11	130996	83.7	93	36.08	8577	99.5
16	0.833	12430	0.70	42	2.974	156271	27.8	68	10.62	127088	85.4	94	37.89	8438	99.6
17	0.875	14494	0.87	43	3.123	165744	29.9	69	11.15	111307	86.9	95	39.79	4027	99.6
18	0.919	18139	1.09	44	3.280	172948	32.1	70	11.71	102273	88.3	96	41.78	2667	99.7
19	0.965	22497	1.35	45	3.445	178990	34.3	71	12.29	96237	89.6	97	43.88	4620	99.7
20	1.014	27095	1.67	46	3.617	183656	36.7	72	12.91	81920	90.8	98	46.08	6258	99.8
21	1.064	32515	2.06	47	3.799	188016	39.1	73	13.56	73728	91.8	99	48.39	3103	99.9
22	1.118	39214	2.52	48	3.989	188867	41.6	74	14.24	64648	92.7	100	50.81	3591	99.9
23	1.174	44741	3.07	49	4.189	194710	44.0	75	14.95	61128	93.5	101	53.36	1394	99.9
24	1.233	51923	3.69	50	4.399	188745	46.5	76	15.70	51828	94.2	102	56.04	0	100.0
25	1.294	55639	4.39	51	4.620	195212	49.0	77	16.49	47104	94.9	103	58.85	3713	100.0
26	1.359	62713	5.16	52	4.852	186871	51.5	78	17.32	43008	95.5	104	61.80	0	100.0

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 11:16 07 Mar 02

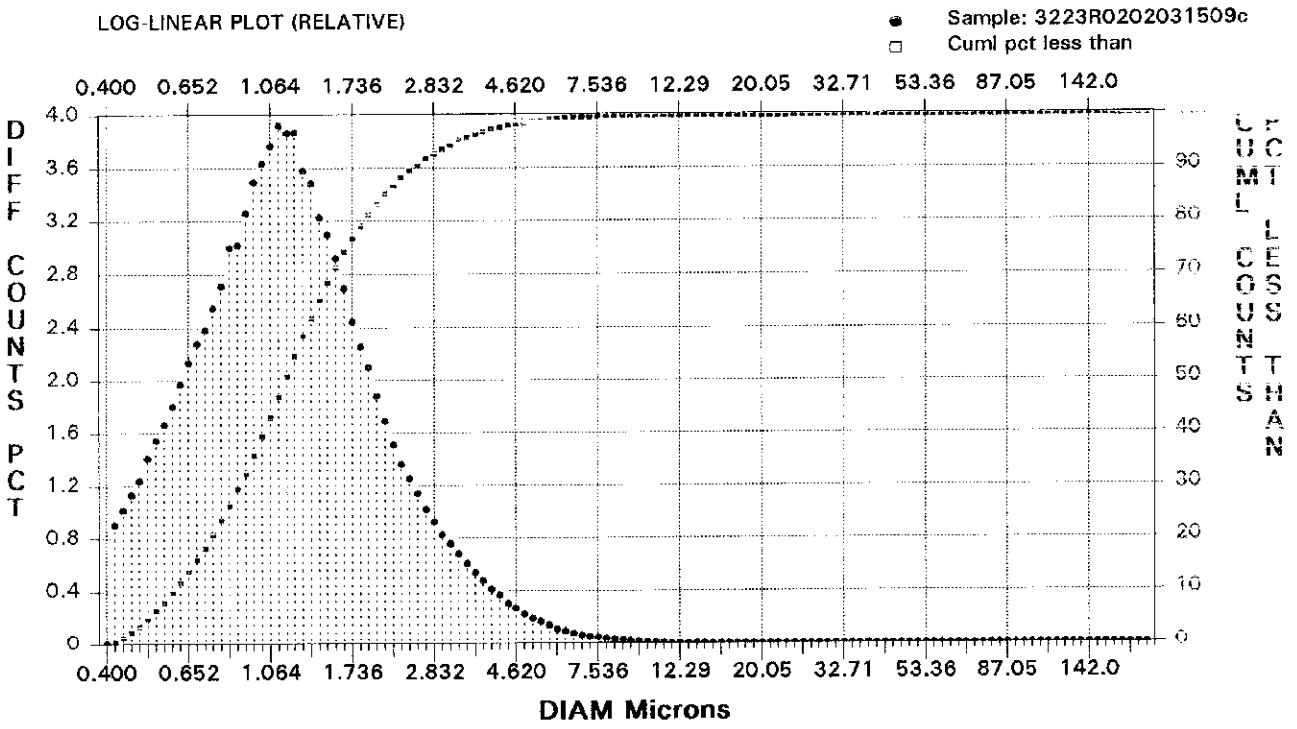
Disk File: MAL0539.HST

Sample #: 3223R0202031509c1

Lot/Job #: MAL0539

Material: storm water

Source: Todd Burgesser



Geometric Mean Size:	1.202 um	-- PERCENTILES --
Geom. Std Deviation:	1.736 um	0.100% Counts below 0.411 um
Geom. Skewness:	0.038	1.000% Counts below 0.432 um
Geom. Coeff Variation:	144.5	6.000% Counts below 0.528 um
		22.00% Counts below 0.772 um
Arithmetic Mean Size:	1.421 um	50.00% Counts below 1.161 um
Median Size:	1.147 um	78.00% Counts below 1.772 um
Mode Size:	1.135 um	94.00% Counts below 3.030 um
Kurtosis:	13.599	99.00% Counts below 5.310 um
Arith Std Deviation	1.027 um	99.90% Counts below 9.521 um

ELZONE(Lm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 11:16 07 Mar 02

Disk File: MAL0539.HST

Sample #: 3223R0202031509c1

Lot/Job #: MAL0539

Material: storm water

Source: Todd Burgesser

-- Frequency Distribution Data

Total Popl: 1366912

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.400	0	0.00	24	1.233	52943	54.7	47	3.799	6551	96.9	70	11.71	122	100.0
2	0.420	12394	0.45	25	1.294	48986	58.4	48	3.989	5682	97.4	71	12.29	99	100.0
3	0.441	13906	1.42	26	1.359	47676	62.0	49	4.189	5058	97.7	72	12.91	73	100.0
4	0.463	15503	2.49	27	1.428	44162	65.3	50	4.399	4233	98.1	73	13.56	57	100.0
5	0.486	16986	3.68	28	1.499	42373	68.5	51	4.620	3781	98.4	74	14.24	43	100.0
6	0.511	19322	5.01	29	1.574	39973	71.5	52	4.852	3125	98.6	75	14.95	35	100.0
7	0.537	21174	6.49	30	1.653	36826	74.3	53	5.095	2671	98.8	76	15.70	26	100.0
8	0.563	22800	8.10	31	1.736	33432	76.9	54	5.351	2348	99.0	77	16.49	20	100.0
9	0.592	24694	9.83	32	1.823	30848	79.2	55	5.619	2041	99.2	78	17.32	16	100.0
10	0.621	26999	11.7	33	1.915	28702	81.4	56	5.901	1608	99.3	79	18.18	14	100.0
11	0.652	29191	13.8	34	2.011	25744	83.4	57	6.197	1403	99.4	80	19.10	10	100.0
12	0.685	31160	16.0	35	2.112	23147	85.2	58	6.507	1168	99.5	81	20.05	8	100.0
13	0.720	32595	18.3	36	2.218	20713	86.8	59	6.834	983	99.6	82	21.06	6	100.0
14	0.756	34823	20.8	37	2.329	18613	88.2	60	7.176	857	99.7	83	22.12	5	100.0
15	0.794	37123	23.4	38	2.446	17110	89.5	61	7.536	748	99.7	84	23.22	3	100.0
16	0.833	41017	26.3	39	2.568	15554	90.7	62	7.914	620	99.8	85	24.39	2	100.0
17	0.875	41298	29.3	40	2.697	13908	91.8	63	8.311	484	99.8	86	25.61	2	100.0
18	0.919	44627	32.4	41	2.832	12664	92.8	64	8.728	419	99.9	87	26.90	1	100.0
19	0.965	47792	35.8	42	2.974	11343	93.6	65	9.166	370	99.9	88	28.25	1	100.0
20	1.014	49701	39.4	43	3.123	10388	94.4	66	9.625	313	99.9	89	29.66	1	100.0
21	1.064	51499	43.1	44	3.280	9360	95.2	67	10.11	242	99.9	90	31.15	1	100.0
22	1.118	53629	46.9	45	3.445	8364	95.8	68	10.62	203	99.9	91	32.71	0	100.0
23	1.174	52834	50.8	46	3.617	7410	96.4	69	11.15	153	100.0				

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 13:44 07 Mar 02

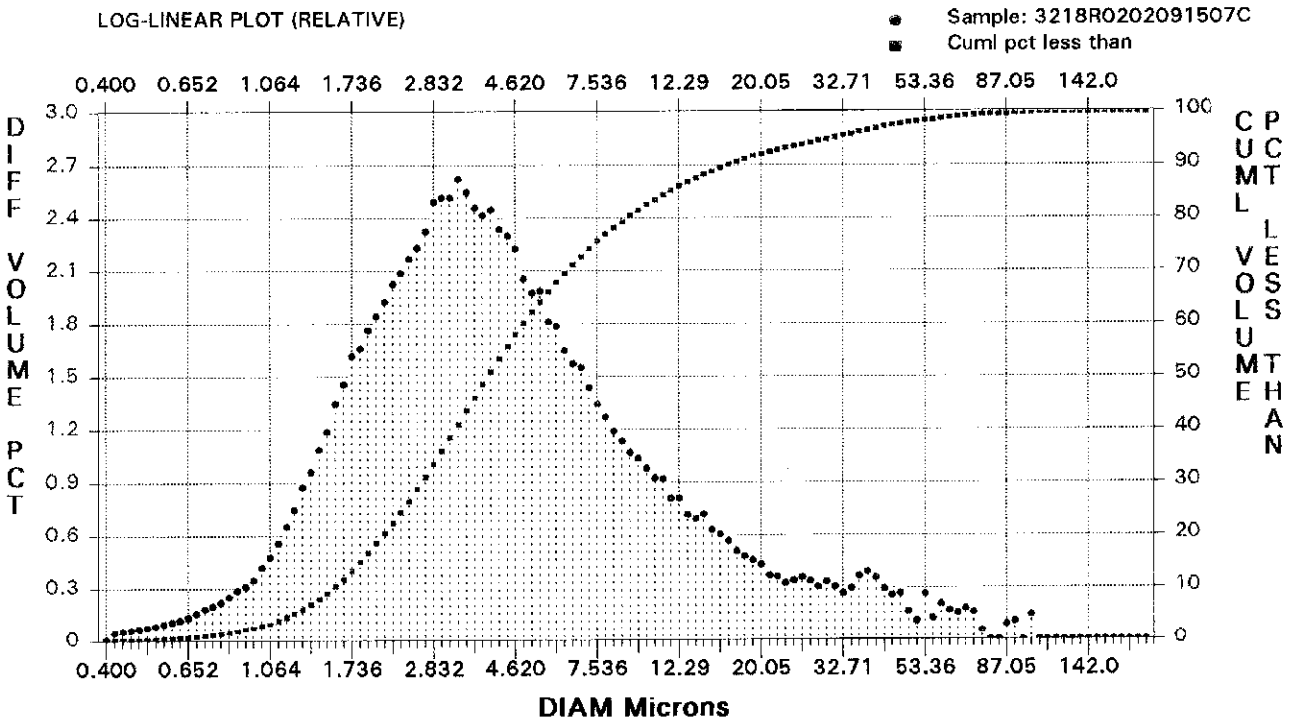
Disk File: MAL0540.HST

Sample #: 3218R0202091507C1

Lot/Job #: MAL0540

Material: storm water

Source: Todd Burgesser



		-- PERCENTILES --
Geometric Mean Size:	4.453 um	0.100% Volume below 0.450 um
Geom. Std Deviation:	2.556 um	1.000% Volume below 0.694 um
Geom. Skewness:	0.449	6.000% Volume below 1.283 um
Geom. Coeff Variation:	57.41	22.00% Volume below 2.191 um
Arithmetic Mean Size:	7.601 um	50.00% Volume below 3.900 um
Median Size:	3.894 um	78.00% Volume below 8.206 um
Mode Size:	3.304 um	94.00% Volume below 25.54 um
Kurtosis:	16.544	99.00% Volume below 61.92 um
Arith Std Deviation	11.76 um	99.90% Volume below 99.93 um

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 13:44 07 Mar 02

Disk File: MAL0540.HST

Sample #: 3218R0202091507C1

Lot/Job #: MAL0540

Material: storm water

Source: Todd Burgesser

-- Volume Distribution Data

Total Volm: 2662988

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.400	0	0.00	30	1.653	38869	11.9	59	6.834	41445	72.9	88	28.25	8233	94.7
2	0.420	1293	0.02	31	1.736	43167	13.4	60	7.176	38400	74.4	89	29.66	9027	95.0
3	0.441	1462	0.08	32	1.823	44311	15.1	61	7.536	35840	75.8	90	31.15	8226	95.3
4	0.463	1654	0.13	33	1.915	47013	16.8	62	7.914	33970	77.1	91	32.71	7208	95.6
5	0.486	1866	0.20	34	2.011	49174	18.6	63	8.311	31744	78.3	92	34.35	8040	95.9
6	0.511	2107	0.28	35	2.112	51336	20.5	64	8.728	30208	79.5	93	36.08	9859	96.3
7	0.537	2373	0.36	36	2.218	54038	22.5	65	9.166	28511	80.6	94	37.89	10572	96.6
8	0.563	2640	0.45	37	2.329	55659	24.5	66	9.625	27648	81.6	95	39.79	9547	97.0
9	0.592	2926	0.56	38	2.446	57820	26.7	67	10.11	26112	82.6	96	41.78	7936	97.3
10	0.621	3291	0.67	39	2.568	59524	28.9	68	10.62	24576	83.6	97	43.88	6897	97.6
11	0.652	3676	0.81	40	2.697	62020	31.2	69	11.15	24496	84.5	98	46.08	7223	97.9
12	0.685	4240	0.95	41	2.832	66428	33.6	70	11.71	21615	85.4	99	48.39	4402	98.1
13	0.720	4854	1.12	42	2.974	67161	36.1	71	12.29	21562	86.2	100	50.81	3058	98.2
14	0.756	5375	1.32	43	3.123	67105	38.6	72	12.91	19066	86.9	101	53.36	7090	98.4
15	0.794	6002	1.53	44	3.280	69934	41.2	73	13.56	18529	87.6	102	56.04	3422	98.6
16	0.833	6722	1.77	45	3.445	67938	43.8	74	14.24	19140	88.4	103	58.85	5545	98.8
17	0.875	7687	2.04	46	3.617	65549	46.3	75	14.95	16880	89.0	104	61.80	4588	99.0
18	0.919	8332	2.34	47	3.799	64434	48.7	76	15.70	16155	89.7	105	64.90	4254	99.2
19	0.965	9245	2.67	48	3.989	65255	51.1	77	16.49	15228	90.2	106	68.15	4922	99.3
20	1.014	11241	3.06	49	4.189	62247	53.5	78	17.32	13647	90.8	107	71.57	4276	99.5
21	1.064	12730	3.51	50	4.399	61266	55.9	79	18.18	12873	91.3	108	75.16	1648	99.6
22	1.118	14869	4.02	51	4.620	59346	58.1	80	19.10	12231	91.8	109	78.93	0	99.6
23	1.174	17468	4.63	52	4.852	54845	60.3	81	20.05	11626	92.2	110	82.89	0	99.6
24	1.233	19961	5.33	53	5.095	52626	62.3	82	21.06	9927	92.6	111	87.05	2561	99.7
25	1.294	23391	6.15	54	5.351	52906	64.3	83	22.12	9755	93.0	112	91.41	2969	99.8
26	1.359	25561	7.07	55	5.619	48332	66.2	84	23.22	8768	93.3	113	96.00	0	99.9
27	1.428	28953	8.09	56	5.901	47616	68.0	85	24.39	9191	93.7	114	100.8	3979	99.9
28	1.499	31737	9.23	57	6.197	44049	69.7	86	25.61	9666	94.0	115	105.9	0	100.0
29	1.574	36010	10.5	58	6.507	41984	71.3	87	26.90	9079	94.4				

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 13:44 07 Mar 02

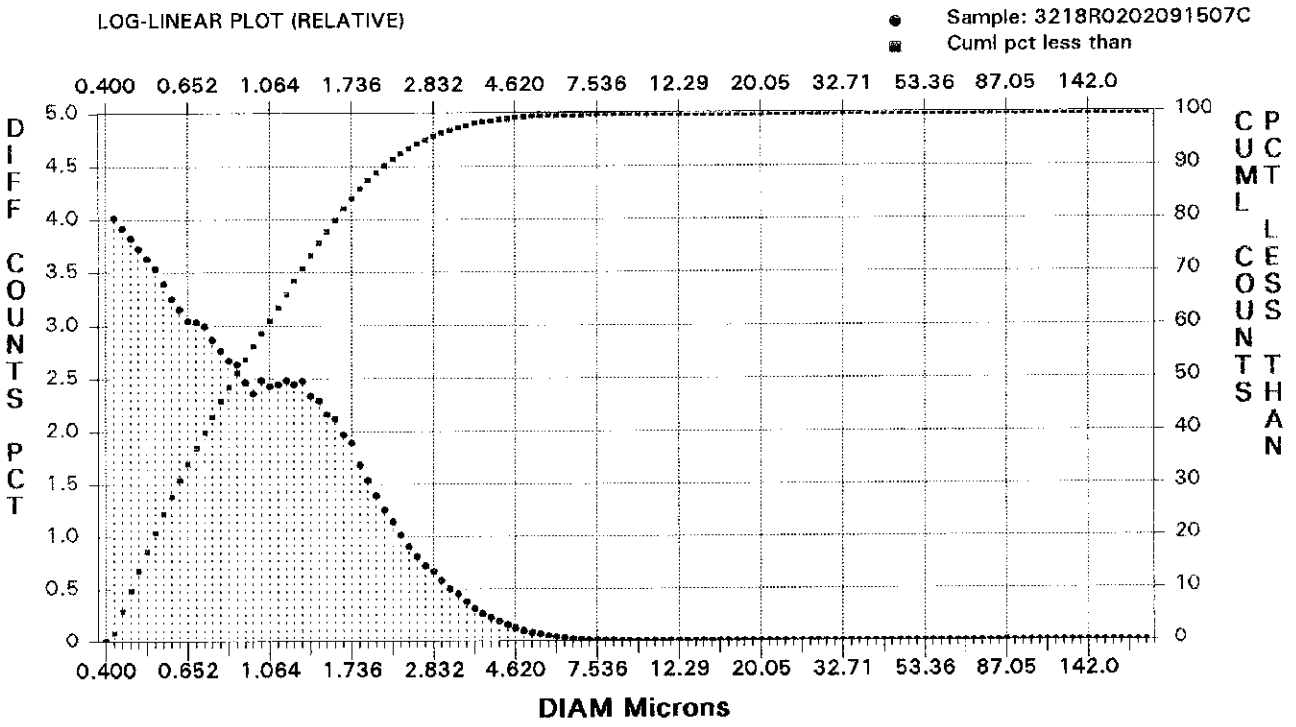
Disk File: MAL0540.HST

Sample #: 3218R0202091507C1

Lot/Job #: MAL0540

Material: storm water

Source: Todd Burgesser



		-- PERCENTILES --
Geometric Mean Size:	0.934 um	0.100% Counts below 0.410 um
Geom. Std Deviation:	1.791 um	1.000% Counts below 0.412 um
Geom. Skewness:	0.281	6.000% Counts below 0.441 um
Geom. Coeff Variation:	191.7	22.00% Counts below 0.544 um
Arithmetic Mean Size:	1.129 um	50.00% Counts below 0.856 um
Median Size:	0.854 um	78.00% Counts below 1.502 um
Mode Size:	0.430 um	94.00% Counts below 2.522 um
Kurtosis:	15.966	99.00% Counts below 4.222 um
Arith Std Deviation	0.863 um	99.90% Counts below 7.459 um

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
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By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 13:44 07 Mar 02

Disk File: MAL0540.HST

Sample #: 3218R0202091507C1

Lot/Job #: MAL0540

Material: storm water

Source: Todd Burgesser

-- Frequency Distribution Data

Total Popl: 829452

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.400	0	0.00	24	1.233	20353	68.4	47	3.799	2245	98.5	70	11.71	26	100.0
2	0.420	33317	2.01	25	1.294	20594	70.9	48	3.989	1963	98.7	71	12.29	22	100.0
3	0.441	32528	5.98	26	1.359	19432	73.3	49	4.189	1617	99.0	72	12.91	17	100.0
4	0.463	31775	9.85	27	1.428	19006	75.6	50	4.399	1374	99.1	73	13.56	14	100.0
5	0.486	30954	13.6	28	1.499	17989	77.9	51	4.620	1149	99.3	74	14.24	13	100.0
6	0.511	30179	17.3	29	1.574	17624	80.0	52	4.852	917	99.4	75	14.95	10	100.0
7	0.537	29349	20.9	30	1.653	16426	82.1	53	5.095	760	99.5	76	15.70	8	100.0
8	0.563	28193	24.4	31	1.736	15751	84.0	54	5.351	660	99.6	77	16.49	6	100.0
9	0.592	26981	27.7	32	1.823	13961	85.8	55	5.619	520	99.7	78	17.32	5	100.0
10	0.621	26203	30.9	33	1.915	12790	87.4	56	5.901	443	99.7	79	18.18	4	100.0
11	0.652	25272	34.0	34	2.011	11551	88.9	57	6.197	354	99.8	80	19.10	3	100.0
12	0.685	25170	37.1	35	2.112	10413	90.2	58	6.507	291	99.8	81	20.05	3	100.0
13	0.720	24880	40.1	36	2.218	9464	91.4	59	6.834	248	99.9	82	21.06	2	100.0
14	0.756	23789	43.0	37	2.329	8417	92.5	60	7.176	198	99.9	83	22.12	2	100.0
15	0.794	22937	45.8	38	2.446	7550	93.4	61	7.536	160	99.9	84	23.22	1	100.0
16	0.833	22182	48.5	39	2.568	6711	94.3	62	7.914	131	99.9	85	24.39	1	100.0
17	0.875	21903	51.2	40	2.697	6038	95.1	63	8.311	106	99.9	86	25.61	1	100.0
18	0.919	20499	53.8	41	2.832	5584	95.8	64	8.728	87	99.9	87	26.90	1	100.0
19	0.965	19640	56.2	42	2.974	4875	96.4	65	9.166	71	100.0	88	28.25	1	100.0
20	1.014	20619	58.6	43	3.123	4206	96.9	66	9.625	59	100.0	89	29.66	1	100.0
21	1.064	20163	61.1	44	3.280	3785	97.4	67	10.11	48	100.0	90	31.15	1	100.0
22	1.118	20335	63.5	45	3.445	3175	97.8	68	10.62	39	100.0	91	32.71	0	100.0
23	1.174	20628	66.0	46	3.617	2645	98.2	69	11.15	34	100.0				

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 14:10 07 Mar 02

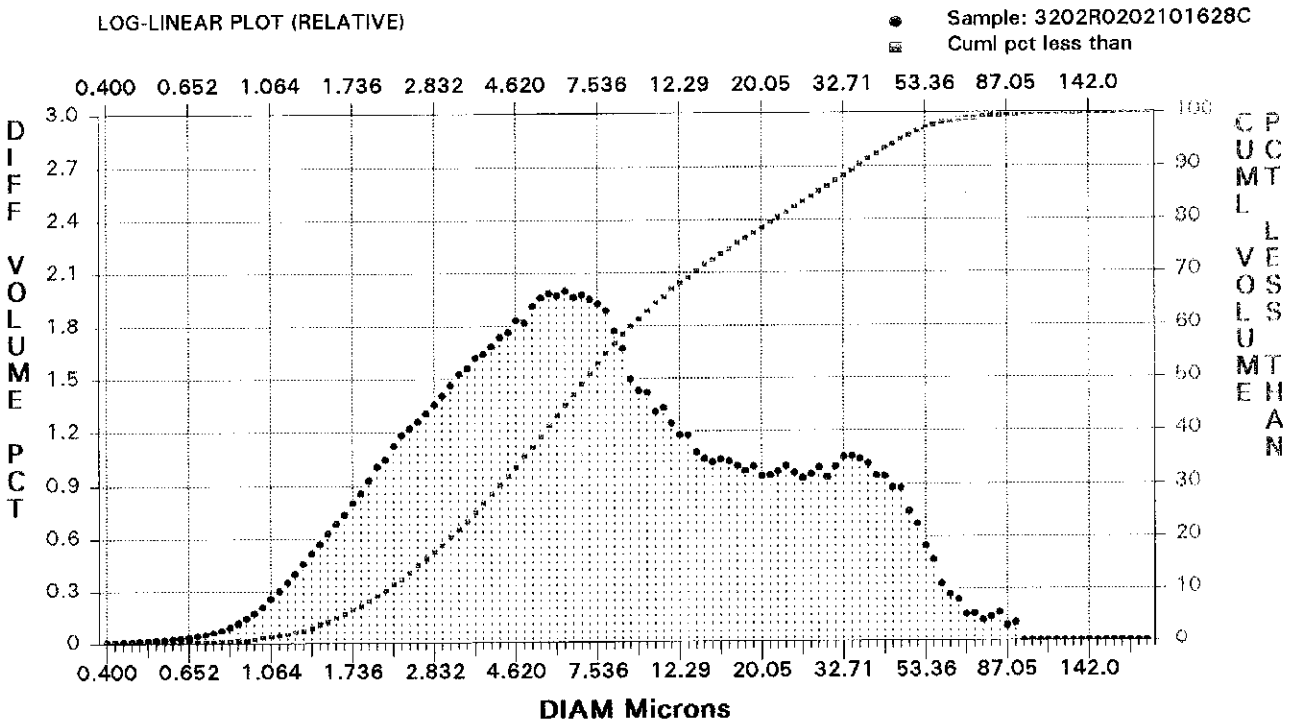
Disk File: MAL0541.HST

Sample #: 3202R0202101628C1

Lot/Job #: MAL0541

Material: storm water

Source: Todd Burgesser



		-- PERCENTILES --
Geometric Mean Size:	7.732 um	0.100% Volume below 0.584 um
Geom. Std Deviation:	2.813 um	1.000% Volume below 0.990 um
Geom. Skewness:	0.561	6.000% Volume below 1.675 um
Geom. Coeff Variation:	36.38	22.00% Volume below 3.288 um
Arithmetic Mean Size:	13.13 um	50.00% Volume below 6.968 um
Median Size:	6.707 um	78.00% Volume below 19.35 um
Mode Size:	6.153 um	94.00% Volume below 42.91 um
Kurtosis:	4.872	99.00% Volume below 65.96 um
Arith Std Deviation	15.68 um	99.90% Volume below 89.68 um

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 14:10 07 Mar 02

Disk File: MAL0541.HST

Sample #: 3202R0202101628C1

Lot/Job #: MAL0541

Material: storm water

Source: Todd Burgesser

-- Volume Distribution Data

Total Volm: 7849508877

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.400	0	0.00	30	1.653	5.79E7	5.78	58	6.507	1.54E8	47.2	86	25.61	7.38E7	83.5
2	0.420	553094	0.00	31	1.736	6.30E7	6.55	59	6.834	1.56E8	49.1	87	26.90	7.55E7	84.5
3	0.441	666433	0.01	32	1.823	6.74E7	7.38	60	7.176	1.54E8	51.1	88	28.25	7.83E7	85.4
4	0.463	797906	0.02	33	1.915	7.31E7	8.27	61	7.536	1.51E8	53.0	89	29.66	7.41E7	86.4
5	0.486	975470	0.03	34	2.011	7.92E7	9.24	62	7.914	1.48E8	55.0	90	31.15	7.84E7	87.4
6	0.511	1180991	0.05	35	2.112	8.23E7	10.3	63	8.311	1.39E8	56.8	91	32.71	8.27E7	88.4
7	0.537	1432603	0.06	36	2.218	8.83E7	11.4	64	8.728	1.32E8	58.5	92	34.35	8.31E7	89.5
8	0.563	1734085	0.08	37	2.329	9.30E7	12.5	65	9.166	1.18E8	60.1	93	36.08	8.20E7	90.5
9	0.592	2116415	0.11	38	2.446	9.61E7	13.7	66	9.625	1.13E8	61.6	94	37.89	8.00E7	91.6
10	0.621	2547858	0.14	39	2.568	9.89E7	15.0	67	10.11	1.12E8	63.0	95	39.79	7.44E7	92.5
11	0.652	3085840	0.17	40	2.697	1.02E8	16.2	68	10.62	1.03E8	64.4	96	41.78	7.44E7	93.5
12	0.685	3728849	0.22	41	2.832	1.07E8	17.6	69	11.15	1.05E8	65.7	97	43.88	6.95E7	94.4
13	0.720	4519199	0.27	42	2.974	1.11E8	19.0	70	11.71	9.81E7	67.0	98	46.08	6.91E7	95.3
14	0.756	5407020	0.33	43	3.123	1.15E8	20.4	71	12.29	9.29E7	68.2	99	48.39	5.88E7	96.1
15	0.794	6474672	0.41	44	3.280	1.20E8	21.9	72	12.91	9.27E7	69.4	100	50.81	5.32E7	96.8
16	0.833	7924654	0.50	45	3.445	1.23E8	23.4	73	13.56	8.51E7	70.5	101	53.36	4.33E7	97.4
17	0.875	9512154	0.61	46	3.617	1.27E8	25.0	74	14.24	8.21E7	71.6	102	56.04	3.71E7	97.9
18	0.919	1.17E7	0.75	47	3.799	1.29E8	26.7	75	14.95	8.07E7	72.6	103	58.85	2.63E7	98.3
19	0.965	1.40E7	0.91	48	3.989	1.32E8	28.3	76	15.70	8.19E7	73.7	104	61.80	2.17E7	98.7
20	1.014	1.68E7	1.10	49	4.189	1.36E8	30.0	77	16.49	8.11E7	74.7	105	64.90	1.90E7	98.9
21	1.064	2.04E7	1.34	50	4.399	1.39E8	31.8	78	17.32	7.92E7	75.7	106	68.15	1.24E7	99.1
22	1.118	2.38E7	1.62	51	4.620	1.44E8	33.6	79	18.18	7.68E7	76.7	107	71.57	1.27E7	99.3
23	1.174	2.78E7	1.95	52	4.852	1.43E8	35.4	80	19.10	7.89E7	77.7	108	75.16	9846126	99.4
24	1.233	3.16E7	2.33	53	5.095	1.50E8	37.3	81	20.05	7.46E7	78.7	109	78.93	1.14E7	99.5
25	1.294	3.63E7	2.76	54	5.351	1.54E8	39.2	82	21.06	7.48E7	79.6	110	82.89	1.32E7	99.7
26	1.359	4.07E7	3.25	55	5.619	1.56E8	41.2	83	22.12	7.64E7	80.6	111	87.05	7632995	99.8
27	1.428	4.51E7	3.80	56	5.901	1.55E8	43.2	84	23.22	7.89E7	81.6	112	91.41	8850255	99.9
28	1.499	4.95E7	4.40	57	6.197	1.57E8	45.2	85	24.39	7.58E7	82.6	113	96.00	0	100.0
29	1.574	5.40E7	5.06												

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 14:10 07 Mar 02

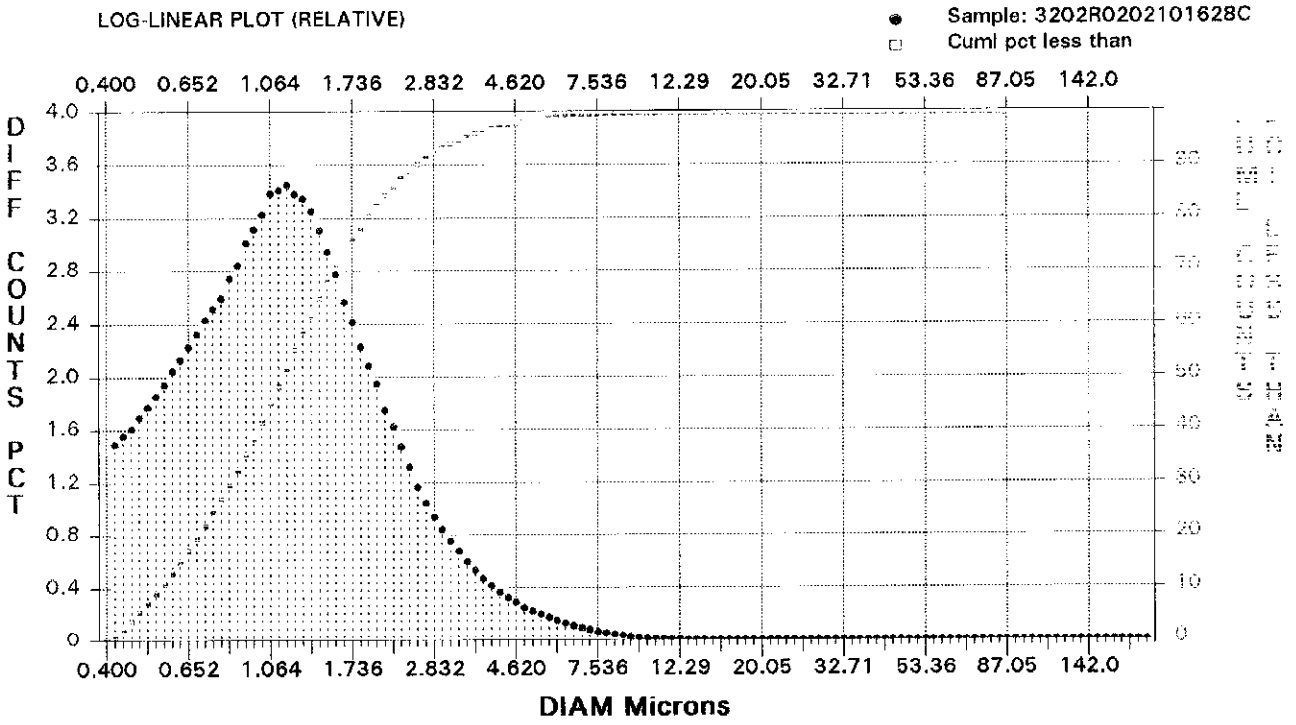
Disk File: MAL0541.HST

Sample #: 3202R0202101628C1

Lot/Job #: MAL0541

Material: storm water

Source: Todd Burgesser



		-- PERCENTILES --
Geometric Mean Size:	1.179 um	0.100% Counts below 0.411 um
Geom. Std Deviation:	1.799 um	1.000% Counts below 0.417 um
Geom. Skewness:	0.010	6.000% Counts below 0.493 um
Geom. Coeff Variation:	152.6	22.00% Counts below 0.720 um
Arithmetic Mean Size:	1.428 um	50.00% Counts below 1.146 um
Median Size:	1.145 um	78.00% Counts below 1.808 um
Mode Size:	1.162 um	94.00% Counts below 3.106 um
Kurtosis:	42.443	99.00% Counts below 5.722 um
Arith Std Deviation	1.149 um	99.90% Counts below 10.64 um

ELZONE(tm) Particle Size Analysis

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Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 14:10 07 Mar 02

Disk File: MAL0541.HST

Sample #: 3202R0202101628C1

Lot/Job #: MAL0541

Material: storm water

Source: Todd Burgesser

-- Frequency Distribution Data

Total Popl: 952203732

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.400	0	0.00	30	1.653	2.45E7	73.6	58	6.507	1069273	99.4	86	25.61	8385	100.0
2	0.420	1.43E7	0.75	31	1.736	2.30E7	76.0	59	6.834	930682	99.5	87	26.90	7412	100.0
3	0.441	1.48E7	2.28	32	1.823	2.12E7	78.4	60	7.176	793765	99.6	88	28.25	6638	100.0
4	0.463	1.53E7	3.86	33	1.915	1.99E7	80.5	61	7.536	675436	99.6	89	29.66	5421	100.0
5	0.486	1.62E7	5.51	34	2.011	1.86E7	82.5	62	7.914	571176	99.7	90	31.15	4956	100.0
6	0.511	1.69E7	7.25	35	2.112	1.67E7	84.4	63	8.311	463528	99.7	91	32.71	4514	100.0
7	0.537	1.77E7	9.07	36	2.218	1.55E7	86.1	64	8.728	377985	99.8	92	34.35	3916	100.0
8	0.563	1.85E7	11.0	37	2.329	1.41E7	87.6	65	9.166	292309	99.8	93	36.08	3336	100.0
9	0.592	1.95E7	13.0	38	2.446	1.25E7	89.0	66	9.625	241070	99.9	94	37.89	2810	100.0
10	0.621	2.03E7	15.1	39	2.568	1.12E7	90.3	67	10.11	206631	99.9	95	39.79	2257	100.0
11	0.652	2.12E7	17.2	40	2.697	9973233	91.4	68	10.62	164803	99.9	96	41.78	1947	100.0
12	0.685	2.21E7	19.5	41	2.832	8956509	92.4	69	11.15	144475	99.9	97	43.88	1571	100.0
13	0.720	2.32E7	21.9	42	2.974	8026621	93.3	70	11.71	116729	99.9	98	46.08	1350	100.0
14	0.756	2.39E7	24.4	43	3.123	7216274	94.1	71	12.29	95487	99.9	99	48.39	991	100.0
15	0.794	2.47E7	26.9	44	3.280	6493444	94.8	72	12.91	82316	99.9	100	50.81	774	100.0
16	0.833	2.62E7	29.6	45	3.445	5729348	95.4	73	13.56	65227	100.0	101	53.36	545	100.0
17	0.875	2.71E7	32.4	46	3.617	5136421	96.0	74	14.24	54350	100.0	102	56.04	403	100.0
18	0.919	2.87E7	35.3	47	3.799	4495063	96.5	75	14.95	46131	100.0	103	58.85	247	100.0
19	0.965	2.97E7	38.4	48	3.989	3984823	97.0	76	15.70	40391	100.0	104	61.80	175	100.0
20	1.014	3.08E7	41.6	49	4.189	3538775	97.4	77	16.49	34559	100.0	105	64.90	133	100.0
21	1.064	3.23E7	44.9	50	4.399	3108722	97.7	78	17.32	29131	100.0	106	68.15	75	100.0
22	1.118	3.25E7	48.3	51	4.620	2788683	98.0	79	18.18	24378	100.0	107	71.57	66	100.0
23	1.174	3.29E7	51.7	52	4.852	2392212	98.3	80	19.10	21645	100.0	108	75.16	44	100.0
24	1.233	3.22E7	55.1	53	5.095	2171313	98.5	81	20.05	17658	100.0	109	78.93	44	100.0
25	1.294	3.19E7	58.5	54	5.351	1919328	98.7	82	21.06	15288	100.0	110	82.89	44	100.0
26	1.359	3.10E7	61.8	55	5.619	1681619	98.9	83	22.12	13498	100.0	111	87.05	22	100.0
27	1.428	2.96E7	65.0	56	5.901	1442228	99.1	84	23.22	12032	100.0	112	91.41	22	100.0
28	1.499	2.81E7	68.0	57	6.197	1262471	99.2	85	24.39	9982	100.0	113	96.00	0	100.0
29	1.574	2.64E7	70.9												

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 15:08 07 Mar 02

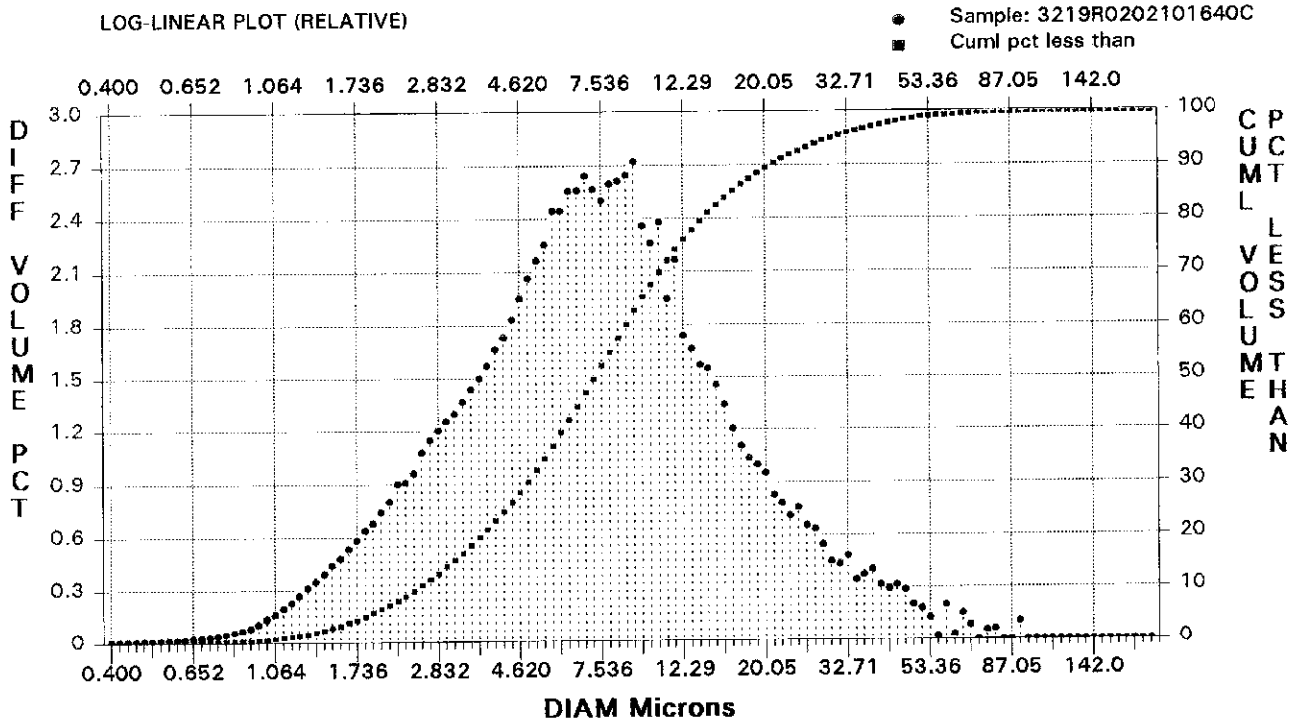
Disk File: MAL0543.HST

Sample #: 3219R0202101640C1

Lot/Job #: MAL0543

Material: storm water

Source: Todd Burgesser



Geometric Mean Size:	7.153 um
Geom. Std Deviation:	2.268 um
Geom. Skewness:	-0.810
Geom. Coeff Variation:	31.70
Arithmetic Mean Size:	10.04 um
Median Size:	7.026 um
Mode Size:	8.990 um
Kurtosis:	9.082
Arith Std Deviation	10.26 um

-- PERCENTILES --

0.100% Volume below 0.632 um
1.000% Volume below 1.107 um
6.000% Volume below 1.948 um
22.00% Volume below 3.854 um
50.00% Volume below 7.183 um
78.00% Volume below 12.90 um
94.00% Volume below 26.60 um
99.00% Volume below 50.23 um
99.90% Volume below 89.50 um

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 15:08 07 Mar 02

Disk File: MAL0543.HST

Sample #: 3219R0202101640C1

Lot/Job #: MAL0543

Material: storm water

Source: Todd Burgesser

-- Volume Distribution Data

Total Volm: 8468743

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.400	0	0.00	30	1.653	45541	3.90	58	6.507	217151	44.7	86	25.61	55842	93.5
2	0.420	420	0.00	31	1.736	49409	4.46	59	6.834	223916	47.3	87	26.90	54000	94.1
3	0.441	503	0.01	32	1.823	54233	5.07	60	7.176	217908	49.9	88	28.25	46424	94.7
4	0.463	604	0.01	33	1.915	57639	5.73	61	7.536	212246	52.4	89	29.66	38554	95.2
5	0.486	722	0.02	34	2.011	63014	6.45	62	7.914	220370	55.0	90	31.15	37076	95.7
6	0.511	859	0.03	35	2.112	67950	7.22	63	8.311	221548	57.6	91	32.71	41284	96.1
7	0.537	1043	0.04	36	2.218	76387	8.07	64	8.728	224203	60.2	92	34.35	29456	96.6
8	0.563	1245	0.06	37	2.329	77169	8.98	65	9.166	230625	62.9	93	36.08	31866	96.9
9	0.592	1500	0.07	38	2.446	81601	9.92	66	9.625	199853	65.5	94	37.89	34323	97.3
10	0.621	1785	0.09	39	2.568	91664	10.9	67	10.11	191977	67.8	95	39.79	27000	97.7
11	0.652	2176	0.12	40	2.697	97258	12.1	68	10.62	201666	70.1	96	41.78	25180	98.0
12	0.685	2556	0.14	41	2.832	101911	13.2	69	11.15	165374	72.3	97	43.88	27159	98.3
13	0.720	3072	0.18	42	2.974	106357	14.5	70	11.71	183963	74.3	98	46.08	24474	98.6
14	0.756	3689	0.22	43	3.123	110101	15.7	71	12.29	147456	76.3	99	48.39	17536	98.8
15	0.794	4436	0.26	44	3.280	115805	17.1	72	12.91	141312	78.0	100	50.81	15626	99.0
16	0.833	5451	0.32	45	3.445	121687	18.5	73	13.56	133101	79.6	101	53.36	10849	99.2
17	0.875	6448	0.39	46	3.617	126976	19.9	74	14.24	131525	81.2	102	56.04	2092	99.3
18	0.919	7677	0.48	47	3.799	133120	21.5	75	14.95	123511	82.7	103	58.85	16990	99.4
19	0.965	9491	0.58	48	3.989	141312	23.1	76	15.70	113975	84.1	104	61.80	2819	99.5
20	1.014	11811	0.70	49	4.189	146635	24.8	77	16.49	102291	85.4	105	64.90	13033	99.6
21	1.064	13959	0.86	50	4.399	155511	26.6	78	17.32	94097	86.5	106	68.15	7551	99.7
22	1.118	16902	1.04	51	4.620	165540	28.5	79	18.18	88233	87.6	107	71.57	0	99.8
23	1.174	19685	1.25	52	4.852	175331	30.5	80	19.10	85094	88.6	108	75.16	5049	99.8
24	1.233	23103	1.51	53	5.095	183663	32.6	81	20.05	80976	89.6	109	78.93	5845	99.9
25	1.294	26704	1.80	54	5.351	191210	34.8	82	21.06	70195	90.5	110	82.89	0	99.9
26	1.359	29807	2.13	55	5.619	207140	37.2	83	22.12	66465	91.3	111	87.05	0	99.9
27	1.428	33585	2.51	56	5.901	207298	39.6	84	23.22	60436	92.0	112	91.41	9097	99.9
28	1.499	37460	2.93	57	6.197	216780	42.1	85	24.39	64280	92.8	113	96.00	0	100.0
29	1.574	40936	3.39												

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 15:08 07 Mar 02

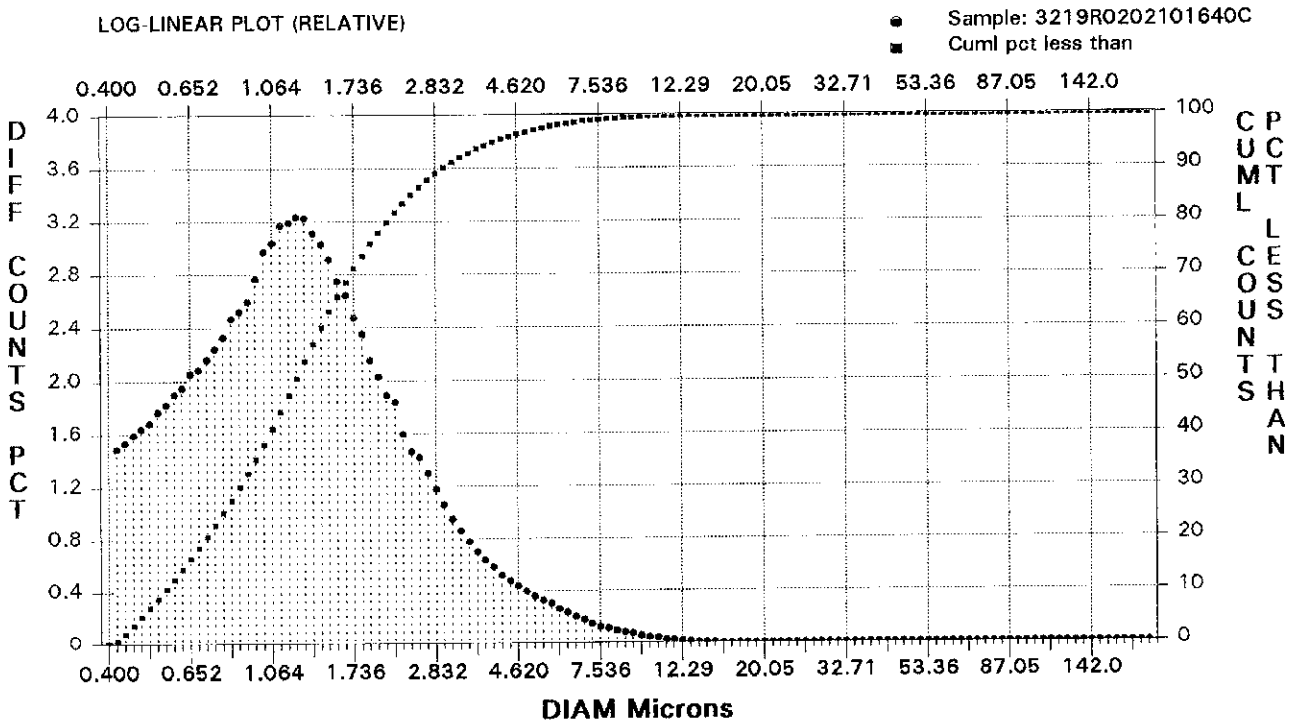
Disk File: MAL0543.HST

Sample #: 3219R0202101640C1

Lot/Job #: MAL0543

Material: storm water

Source: Todd Burgesser



Geometric Mean Size:	1.267 um
Geom. Std Deviation:	1.892 um
Geom. Skewness:	0.004
Geom. Coeff Variation:	149.4
Arithmetic Mean Size:	1.588 um
Median Size:	1.205 um
Mode Size:	1.259 um
Kurtosis:	17.191
Arith Std Deviation	1.379 um

-- PERCENTILES --

0.100% Counts below 0.411 um
1.000% Counts below 0.417 um
6.000% Counts below 0.494 um
22.00% Counts below 0.742 um
50.00% Counts below 1.220 um
78.00% Counts below 2.010 um
94.00% Counts below 3.688 um
99.00% Counts below 6.978 um
99.90% Counts below 12.32 um

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 15:08 07 Mar 02

Disk File: MAL0543.HST

Sample #: 3219R0202101640C1

Lot/Job #: MAL0543

Material: storm water

Source: Todd Burgesser

-- Frequency Distribution Data

Total Popl: 727624

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.400	0	0.00	26	1.359	22660	57.1	51	4.620	3206	96.5	75	14.95	71	100.0
2	0.420	10822	0.74	27	1.428	22046	60.1	52	4.852	2932	96.9	76	15.70	56	100.0
3	0.441	11191	2.26	28	1.499	21232	63.1	53	5.095	2652	97.3	77	16.49	44	100.0
4	0.463	11604	3.82	29	1.574	20035	65.9	54	5.351	2384	97.6	78	17.32	35	100.0
5	0.486	11977	5.44	30	1.653	19245	68.6	55	5.619	2230	98.0	79	18.18	28	100.0
6	0.511	12304	7.11	31	1.736	18029	71.2	56	5.901	1927	98.2	80	19.10	23	100.0
7	0.537	12900	8.84	32	1.823	17087	73.6	57	6.197	1740	98.5	81	20.05	19	100.0
8	0.563	13295	10.6	33	1.915	15681	75.9	58	6.507	1505	98.7	82	21.06	14	100.0
9	0.592	13832	12.5	34	2.011	14803	78.0	59	6.834	1340	98.9	83	22.12	12	100.0
10	0.621	14212	14.4	35	2.112	13783	79.9	60	7.176	1126	99.1	84	23.22	9	100.0
11	0.652	14960	16.4	36	2.218	13379	81.8	61	7.536	947	99.2	85	24.39	8	100.0
12	0.685	15173	18.5	37	2.329	11670	83.5	62	7.914	849	99.3	86	25.61	6	100.0
13	0.720	15746	20.6	38	2.446	10656	85.1	63	8.311	737	99.5	87	26.90	5	100.0
14	0.756	16327	22.8	39	2.568	10335	86.5	64	8.728	644	99.6	88	28.25	4	100.0
15	0.794	16953	25.1	40	2.697	9469	87.9	65	9.166	572	99.6	89	29.66	3	100.0
16	0.833	17987	27.5	41	2.832	8567	89.1	66	9.625	428	99.7	90	31.15	2	100.0
17	0.875	18372	30.0	42	2.974	7720	90.2	67	10.11	355	99.8	91	32.71	2	100.0
18	0.919	18888	32.6	43	3.123	6901	91.2	68	10.62	322	99.8	92	34.35	1	100.0
19	0.965	20162	35.3	44	3.280	6267	92.1	69	11.15	228	99.8	93	36.08	1	100.0
20	1.014	21665	38.1	45	3.445	5686	92.9	70	11.71	219	99.9	94	37.89	1	100.0
21	1.064	22109	41.2	46	3.617	5123	93.7	71	12.29	152	99.9	95	39.79	1	100.0
22	1.118	23115	44.3	47	3.799	4638	94.4	72	12.91	125	99.9	96	41.78	1	100.0
23	1.174	23246	47.4	48	3.989	4251	95.0	73	13.56	102	99.9	97	43.88	1	100.0
24	1.233	23557	50.7	49	4.189	3809	95.5	74	14.24	87	99.9	98	46.08	0	100.0
25	1.294	23511	53.9	50	4.399	3488	96.0								

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 14:42 07 Mar 02

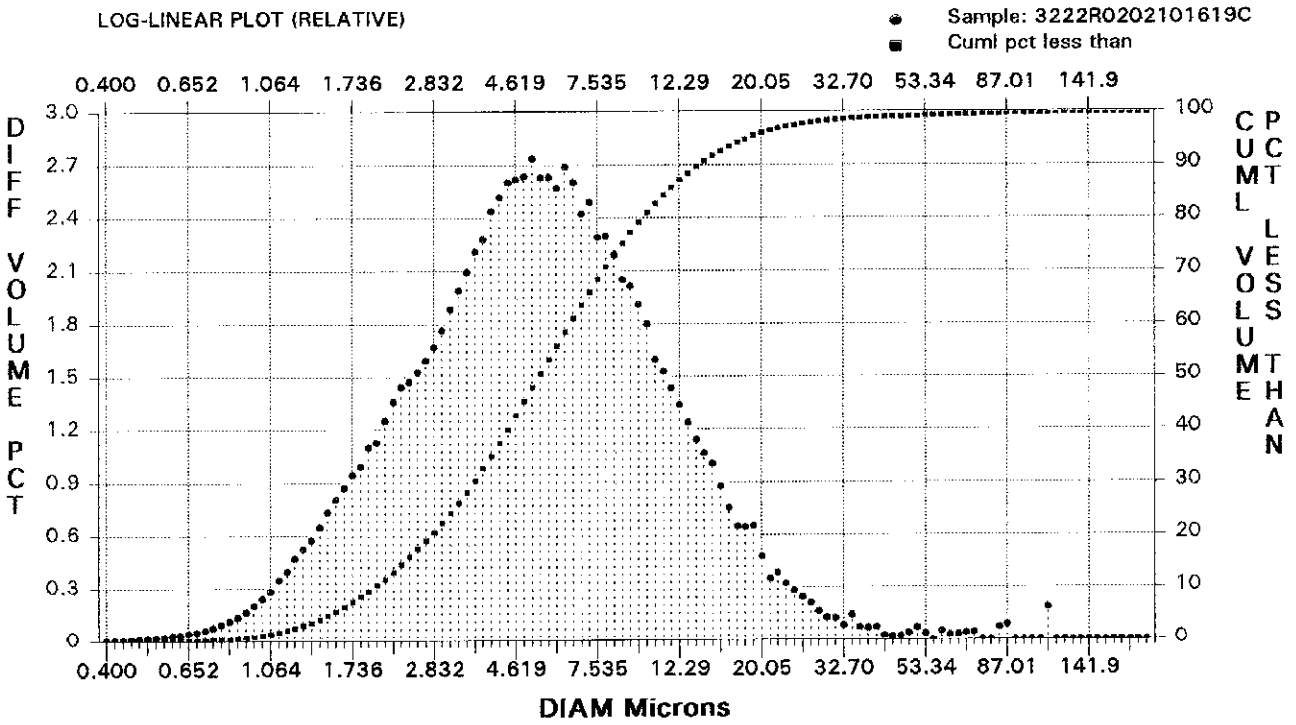
Disk File: MAL0542.HST

Sample #: 3222R0202101619C1

Lot/Job #: MAL0542

Material: storm water

Source: Todd Burgesser



		-- PERCENTILES --
Geometric Mean Size:	5.279 um	0.100% Volume below 0.560 um
Geom. Std Deviation:	2.161 um	1.000% Volume below 0.948 um
Geom. Skewness:	0.090	6.000% Volume below 1.589 um
Geom. Coeff Variation:	40.92	22.00% Volume below 2.933 um
Arithmetic Mean Size:	7.284 um	50.00% Volume below 5.278 um
Median Size:	5.228 um	78.00% Volume below 9.305 um
Mode Size:	5.086 um	94.00% Volume below 16.84 um
Kurtosis:	38.976	99.00% Volume below 36.50 um
Arith Std Deviation	8.642 um	99.90% Volume below 110.9 um

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 14:42 07 Mar 02

Disk File: MAL0542.HST

Sample #: 3222R0202101619C1

Lot/Job #: MAL0542

Material: storm water

Source: Todd Burgesser

-- Volume Distribution Data

Total Volm: 5739670715

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.400	0	0.00	31	1.736	5.43E7	7.57	60	7.175	1.43E8	66.2	89	29.65	7714711	98.5
2	0.420	509678	0.00	32	1.823	5.70E7	8.54	61	7.535	1.31E8	68.6	90	31.14	7485951	98.6
3	0.441	616738	0.01	33	1.915	6.33E7	9.59	62	7.912	1.32E8	70.9	91	32.70	5031811	98.7
4	0.463	751249	0.03	34	2.011	6.47E7	10.7	63	8.309	1.26E8	73.1	92	34.34	8417462	98.9
5	0.486	891250	0.04	35	2.111	7.18E7	11.9	64	8.726	1.18E8	75.3	93	36.06	4497427	99.0
6	0.511	1079748	0.06	36	2.217	7.82E7	13.2	65	9.164	1.16E8	77.3	94	37.87	4345530	99.1
7	0.536	1301188	0.08	37	2.328	8.29E7	14.6	66	9.623	1.10E8	79.3	95	39.77	4527623	99.1
8	0.563	1569295	0.10	38	2.445	8.47E7	16.1	67	10.11	1.03E8	81.1	96	41.77	1752304	99.2
9	0.592	1884984	0.13	39	2.568	8.79E7	17.6	68	10.61	9.18E7	82.8	97	43.86	1340535	99.2
10	0.621	2267472	0.17	40	2.697	9.16E7	19.1	69	11.14	8.81E7	84.4	98	46.06	1553740	99.2
11	0.652	2744208	0.21	41	2.832	9.60E7	20.8	70	11.70	8.25E7	85.9	99	48.37	2713097	99.3
12	0.685	3274932	0.27	42	2.974	1.01E8	22.5	71	12.29	7.68E7	87.3	100	50.79	4191803	99.3
13	0.720	3911800	0.33	43	3.123	1.08E8	24.3	72	12.91	7.12E7	88.5	101	53.34	2423944	99.4
14	0.756	4704226	0.40	44	3.280	1.14E8	26.3	73	13.55	6.56E7	89.7	102	56.02	0	99.4
15	0.794	5676914	0.49	45	3.444	1.20E8	28.3	74	14.23	6.11E7	90.8	103	58.83	3246566	99.4
16	0.833	6771304	0.60	46	3.617	1.27E8	30.4	75	14.95	5.78E7	91.9	104	61.78	1889560	99.5
17	0.875	8141120	0.73	47	3.798	1.31E8	32.7	76	15.70	5.04E7	92.8	105	64.87	2179628	99.5
18	0.919	9778128	0.89	48	3.989	1.40E8	35.1	77	16.48	4.34E7	93.6	106	68.13	2531003	99.6
19	0.965	1.18E7	1.08	49	4.189	1.45E8	37.5	78	17.31	3.73E7	94.3	107	71.54	2926301	99.6
20	1.013	1.41E7	1.30	50	4.399	1.49E8	40.1	79	18.18	3.71E7	95.0	108	75.13	0	99.6
21	1.064	1.64E7	1.57	51	4.619	1.50E8	42.7	80	19.09	3.75E7	95.6	109	78.90	0	99.6
22	1.118	2.03E7	1.89	52	4.851	1.51E8	45.3	81	20.05	2.76E7	96.2	110	82.85	4542264	99.7
23	1.174	2.29E7	2.26	53	5.094	1.57E8	48.0	82	21.05	2.05E7	96.6	111	87.01	5260571	99.8
24	1.233	2.71E7	2.70	54	5.349	1.51E8	50.7	83	22.11	2.22E7	97.0	112	91.37	0	99.8
25	1.294	3.02E7	3.20	55	5.618	1.51E8	53.3	84	23.22	1.88E7	97.4	113	95.95	0	99.8
26	1.359	3.31E7	3.75	56	5.899	1.48E8	55.9	85	24.38	1.63E7	97.7	114	100.8	0	99.8
27	1.427	3.74E7	4.36	57	6.195	1.55E8	58.6	86	25.60	1.43E7	97.9	115	105.8	0	99.8
28	1.499	4.21E7	5.06	58	6.506	1.49E8	61.2	87	26.89	1.24E7	98.2	116	111.1	1.10E7	99.9
29	1.574	4.62E7	5.83	59	6.832	1.39E8	63.7	88	28.24	9713160	98.4	117	116.7	0	100.0
30	1.653	5.01E7	6.66												

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 14:42 07 Mar 02

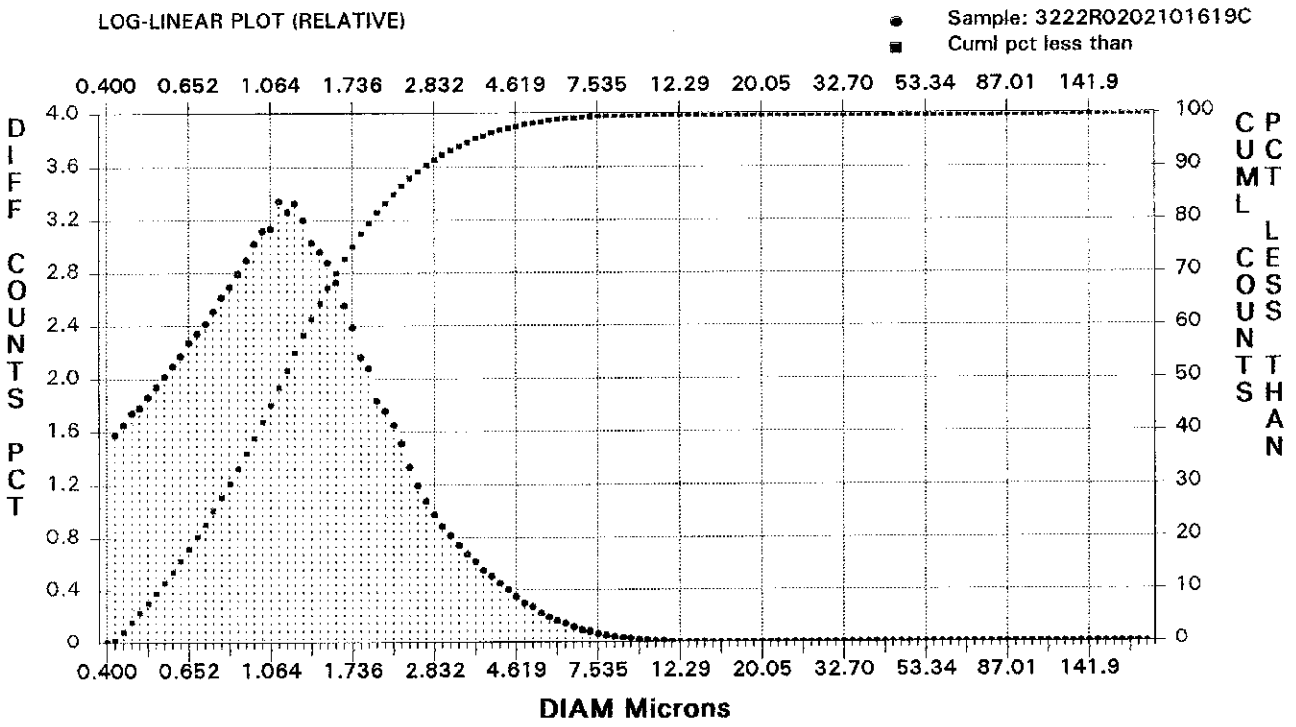
Disk File: MAL0542.HST

Sample #: 3222R0202101619C1

Lot/Job #: MAL0542

Material: storm water

Source: Todd Burgesser



		-- PERCENTILES --
Geometric Mean Size:	1.185 um	0.100% Counts below 0.411 um
Geom. Std Deviation:	1.828 um	1.000% Counts below 0.416 um
Geom. Skewness:	0.028	6.000% Counts below 0.488 um
Geom. Coeff Variation:	154.3	22.00% Counts below 0.709 um
Arithmetic Mean Size:	1.447 um	50.00% Counts below 1.142 um
Median Size:	1.097 um	78.00% Counts below 1.843 um
Mode Size:	1.134 um	94.00% Counts below 3.270 um
Kurtosis:	14.920	99.00% Counts below 5.804 um
Arith Std Deviation	1.145 um	99.90% Counts below 10.11 um

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 14:42 07 Mar 02

Disk File: MAL0542.HST

Sample #: 3222R0202101619C1

Lot/Job #: MAL0542

Material: storm water

Source: Todd Burgesser

-- Frequency Distribution Data

Total Popl: 829382944

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.400	0	0.00	31	1.736	1.98E7	75.2	60	7.175	739865	99.6	89	29.65	565	100.0
2	0.420	1.31E7	0.79	32	1.823	1.80E7	77.5	61	7.535	586952	99.6	90	31.14	473	100.0
3	0.441	1.37E7	2.41	33	1.915	1.72E7	79.6	62	7.912	508208	99.7	91	32.70	275	100.0
4	0.463	1.44E7	4.11	34	2.011	1.52E7	81.5	63	8.309	419394	99.8	92	34.34	397	100.0
5	0.486	1.48E7	5.87	35	2.111	1.46E7	83.3	64	8.726	338813	99.8	93	36.06	183	100.0
6	0.511	1.55E7	7.69	36	2.217	1.37E7	85.0	65	9.164	287537	99.8	94	37.87	153	100.0
7	0.536	1.61E7	9.60	37	2.328	1.25E7	86.6	66	9.623	235344	99.9	95	39.77	137	100.0
8	0.563	1.68E7	11.6	38	2.445	1.11E7	88.0	67	10.11	191390	99.9	96	41.77	46	100.0
9	0.592	1.74E7	13.6	39	2.568	9910744	89.3	68	10.61	146734	99.9	97	43.86	30	100.0
10	0.621	1.81E7	15.8	40	2.697	8919981	90.4	69	11.14	121529	99.9	98	46.06	30	100.0
11	0.652	1.89E7	18.0	41	2.832	8076432	91.5	70	11.70	98239	99.9	99	48.37	46	100.0
12	0.685	1.94E7	20.3	42	2.974	7363871	92.4	71	12.29	79044	100.0	100	50.79	61	100.0
13	0.720	2.01E7	22.7	43	3.123	6794949	93.2	72	12.91	63258	100.0	101	53.34	31	100.0
14	0.756	2.08E7	25.2	44	3.280	6189664	94.0	73	13.55	50310	100.0	102	56.02	0	100.0
15	0.794	2.17E7	27.7	45	3.444	5626723	94.7	74	14.23	40496	100.0	103	58.83	30	100.0
16	0.833	2.23E7	30.4	46	3.617	5119596	95.4	75	14.95	33062	100.0	104	61.78	15	100.0
17	0.875	2.32E7	33.1	47	3.798	4563928	96.0	76	15.70	24909	100.0	105	64.87	15	100.0
18	0.919	2.41E7	36.0	48	3.989	4214255	96.5	77	16.48	18495	100.0	106	68.13	15	100.0
19	0.965	2.51E7	38.9	49	4.189	3757436	97.0	78	17.31	13749	100.0	107	71.54	15	100.0
20	1.013	2.59E7	42.0	50	4.399	3352798	97.4	79	18.18	11798	100.0	108	75.13	0	100.0
21	1.064	2.60E7	45.1	51	4.619	2914279	97.8	80	19.09	10288	100.0	109	78.90	0	100.0
22	1.118	2.77E7	48.4	52	4.851	2534352	98.1	81	20.05	6541	100.0	110	82.85	15	100.0
23	1.174	2.70E7	51.7	53	5.094	2272513	98.4	82	21.05	4193	100.0	111	87.01	15	100.0
24	1.233	2.76E7	55.0	54	5.349	1884323	98.7	83	22.11	3924	100.0	112	91.37	0	100.0
25	1.294	2.66E7	58.2	55	5.618	1628890	98.9	84	23.22	2869	100.0	113	95.95	0	100.0
26	1.359	2.51E7	61.3	56	5.899	1372528	99.1	85	24.38	2152	100.0	114	100.8	0	100.0
27	1.427	2.46E7	64.3	57	6.195	1241610	99.2	86	25.60	1633	100.0	115	105.8	0	100.0
28	1.499	2.39E7	67.3	58	6.506	1036517	99.3	87	26.89	1221	100.0	116	111.1	15	100.0
29	1.574	2.26E7	70.1	59	6.832	834165	99.5	88	28.24	824	100.0	117	116.7	0	100.0
30	1.653	2.12E7	72.7												

micromeritics®

PARTICLE ANALYSIS ▪ SURFACE AREA & POROSIMETRY ▪ PYCNOMETRY

April 22, 2002

Todd Burgesser
Camp Dresser & McKee
1331 17th Street, Suite 1200
Denver, CO 80202

Phone: 303-298-1311

Dear Mr. Burgesser:

Micromeritics' Materials Analysis Laboratory has completed analysis of your samples and a comprehensive set of reports is enclosed for each sample submitted. The results consist of particle size distribution data determined with Micromeritics' Elzone analyzer.

If you have any questions concerning the enclosed results or the analysis techniques employed, please contact us.

Sincerely,

Evelyn Davis
Laboratory Coordinator

Enclosures

Sales Engineer:

Mark Talarico
2600 Water Well Lane
Austin, TX 78728
(512) 251-7617
(800) 233-4642 Ext. 5464
mark.talarico@micromeritics.com

CERTIFIED ISO9001 MANUFACTURER

One Micromeritics Drive ▪ Norcross, GA 30093-1877 ▪ Fax: (770) 662-3696
Domestic Sales: (770) 662-3633 ▪ International Sales: (770) 662-3660 ▪ Domestic Repair Service: (770) 662-3666 ▪ Customer Service: (770) 662-3636

Interpretation of a Particle Size Distribution by Electrozone Method

Instrument Description:

Elzone® particle analyzers deliver fast, accurate, reproducible data on a broad spectrum of sample types. Based on a widely recognized particle characterization technique, the electrozone method is ideal for sizing and counting a variety of particulate materials, both organic and inorganic. Elzone analyzers have the ability to measure low-concentration samples and can produce accurate data where analyzers using other techniques are limited.

Analysis Technique:

Elzone analyzers measure a low concentration of particles dispersed in an electrolyte solution in a sample vessel containing an electrode. An orifice tube (a tube that has a tiny, pinhole-shaped orifice through which particles can pass) is placed inside the sample vessel. Inside of the orifice tube is a second electrode. A steady electric current flows from the electrode in the sample vessel to the second electrode inside the orifice tube. The sample solution is pulled through the orifice by a partial vacuum applied to the exit end of the tube. A particle partially occupies the orifice while passing through it, displacing the conductive electrolyte. This creates a change or pulse in the otherwise steady voltage. The number of pulses reflects the number of particles, and the size of the pulse determines the volume, and therefore the particle size. The Elzone analyzer counts and sizes all pulses, then reports comprehensive data. Particles ranging from 1200 to 0.4 μm in diameter can be measured. Particles can be counted at rates of up to 2000 per second.

Dispersion:

The three basic steps of dispersion are wetting, agitation, and stabilization. A powder introduced into a liquid after having been exposed to the atmosphere must be wetted by the liquid. Wetting involves replacing the solid-air interface by a solid-liquid one. Agitation involves breaking down aggregate particles into individual particles by means of mechanical energy. Stabilization involves the use of appropriate surfactants chosen by the instrument operator. The natural attractive forces in an unstabilized dispersion are overcome best by creating electrical charge repulsion. Each material submitted for particle size analysis undergoes a complete dispersion study before any testing is conducted.

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ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 10:53 18 Apr 02

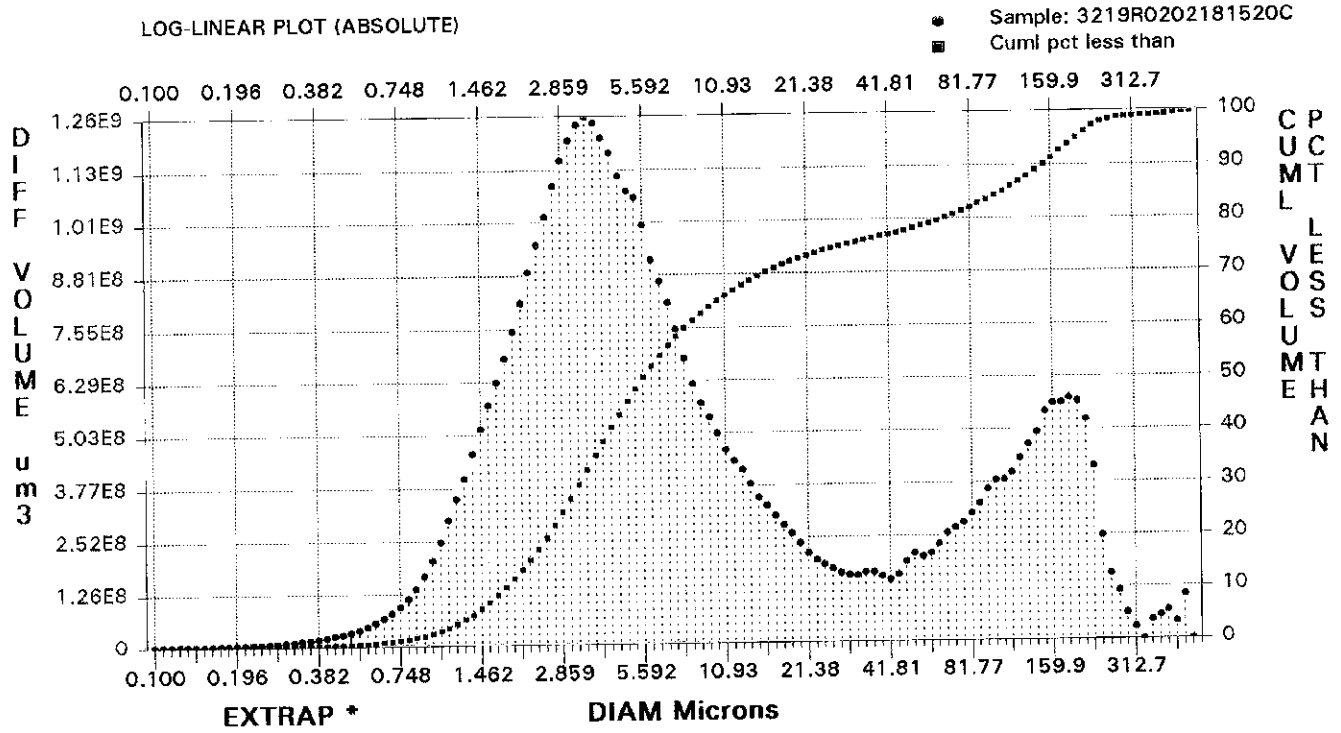
Disk File: MAL1093.HST

Sample #: 3219R0202181520C01

Lot/Job #: MAL1093

Material: storm water

Source: Todd Burgesser



Geometric Mean Size:	9.228 um
Geom. Std Deviation:	5.132 um
Geom. Skewness:	1.112
Geom. Coeff Variation:	55.61
Arithmetic Mean Size:	37.99 um
Median Size:	5.412 um
Mode Size:	3.524 um
Kurtosis:	9.654
Arith Std Deviation	74.99 um

-- PERCENTILES --

0.100% Volume below 0.252 um
1.000% Volume below 0.659 um
6.000% Volume below 1.350 um
22.00% Volume below 2.610 um
50.00% Volume below 5.446 um
78.00% Volume below 47.83 um
94.00% Volume below 182.8 um
99.00% Volume below 277.1 um
99.90% Volume below 469.0 um

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 10:53 18 Apr 02

Disk File: MAL1093.HST

Sample #: 3219R0202181520C01

Lot/Job #: MAL1093

Material: storm water

Source: Todd Burgesser

-- Volume Distribution Data

Total Volm: 45718679309

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.100	0	0.00	33	0.855	1.39E8	1.85	65	7.312	7.52E8	58.5	97	62.53	2.33E8	79.8
2	0.107	956977	0.00	34	0.914	1.69E8	2.18	66	7.819	6.83E8	60.0	98	66.86	2.59E8	80.4
3	0.114	1150224	0.00	35	0.978	2.05E8	2.59	67	8.362	6.21E8	61.5	99	71.50	2.72E8	80.9
4	0.122	1379198	0.01	36	1.046	2.50E8	3.09	68	8.942	5.76E8	62.8	100	76.46	2.83E8	81.5
5	0.131	1649814	0.01	37	1.118	3.02E8	3.70	69	9.562	5.42E8	64.0	101	81.77	3.05E8	82.2
6	0.140	1968825	0.01	38	1.196	3.52E8	4.41	70	10.23	5.04E8	65.1	102	87.44	3.30E8	82.9
7	0.150	2343920	0.02	39	1.279	4.00E8	5.23	71	10.93	4.64E8	66.2	103	93.50	3.63E8	83.6
8	0.160	2783826	0.02	40	1.367	4.60E8	6.18	72	11.69	4.36E8	67.2	104	99.99	3.83E8	84.5
9	0.171	3298415	0.03	41	1.462	5.19E8	7.25	73	12.50	4.16E8	68.1	105	106.9	3.85E8	85.3
10	0.183	3898811	0.04	42	1.564	5.76E8	8.44	74	13.37	3.82E8	69.0	106	114.3	4.02E8	86.2
11	0.196	4597512	0.05	43	1.672	6.30E8	9.76	75	14.30	3.50E8	69.8	107	122.3	4.35E8	87.1
12	0.209	5408505	0.06	44	1.788	6.86E8	11.2	76	15.29	3.29E8	70.5	108	130.8	4.69E8	88.1
13	0.224	6347392	0.07	45	1.912	7.50E8	12.8	77	16.35	3.05E8	71.2	109	139.8	4.98E8	89.1
14	0.239	7431512	0.09	46	2.045	8.18E8	14.5	78	17.49	2.82E8	71.9	110	149.5	5.46E8	90.3
15	0.256	8680060	0.10	47	2.187	8.90E8	16.4	79	18.70	2.62E8	72.5	111	159.9	5.67E8	91.5
16	0.273	1.01E7	0.12	48	2.338	9.55E8	18.4	80	20.00	2.40E8	73.0	112	171.0	5.68E8	92.7
17	0.292	1.18E7	0.15	49	2.501	1.02E9	20.5	81	21.38	2.15E8	73.5	113	182.8	5.79E8	94.0
18	0.313	1.36E7	0.18	50	2.674	1.10E9	22.8	82	22.87	1.98E8	73.9	114	195.5	5.71E8	95.2
19	0.334	1.58E7	0.21	51	2.859	1.16E9	25.3	83	24.45	1.87E8	74.4	115	209.1	5.26E8	96.4
20	0.358	1.82E7	0.25	52	3.058	1.20E9	27.9	84	26.15	1.76E8	74.8	116	223.6	4.16E8	97.5
21	0.382	2.10E7	0.29	53	3.270	1.24E9	30.6	85	27.96	1.66E8	75.1	117	239.1	2.51E8	98.2
22	0.409	2.41E7	0.34	54	3.497	1.26E9	33.3	86	29.90	1.61E8	75.5	118	255.7	1.58E8	98.6
23	0.437	2.76E7	0.39	55	3.739	1.24E9	36.0	87	31.98	1.59E8	75.8	119	273.4	1.18E8	98.9
24	0.468	3.15E7	0.46	56	3.999	1.21E9	38.7	88	34.19	1.67E8	76.2	120	292.4	6.54E7	99.1
25	0.500	3.60E7	0.53	57	4.276	1.17E9	41.3	89	36.57	1.67E8	76.6	121	312.7	3.20E7	99.2
26	0.535	4.23E7	0.62	58	4.573	1.12E9	43.8	90	39.10	1.57E8	76.9	122	334.4	0	99.3
27	0.572	5.01E7	0.72	59	4.890	1.08E9	46.2	91	41.81	1.49E8	77.3	123	357.6	4.79E7	99.3
28	0.611	5.88E7	0.84	60	5.229	1.07E9	48.6	92	44.71	1.61E8	77.6	124	382.4	5.85E7	99.4
29	0.654	6.94E7	0.98	61	5.592	1.00E9	50.9	93	47.82	1.92E8	78.0	125	408.9	7.16E7	99.6
30	0.699	8.22E7	1.14	62	5.980	9.18E8	53.0	94	51.13	2.11E8	78.4	126	437.2	4.38E7	99.7
31	0.748	9.64E7	1.34	63	6.394	8.67E8	54.9	95	54.68	2.04E8	78.9	127	467.6	1.07E8	99.9
32	0.800	1.15E8	1.57	64	6.838	8.16E8	56.7	96	58.47	2.11E8	79.3	128	500.0	0	100.0

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 10:53 18 Apr 02

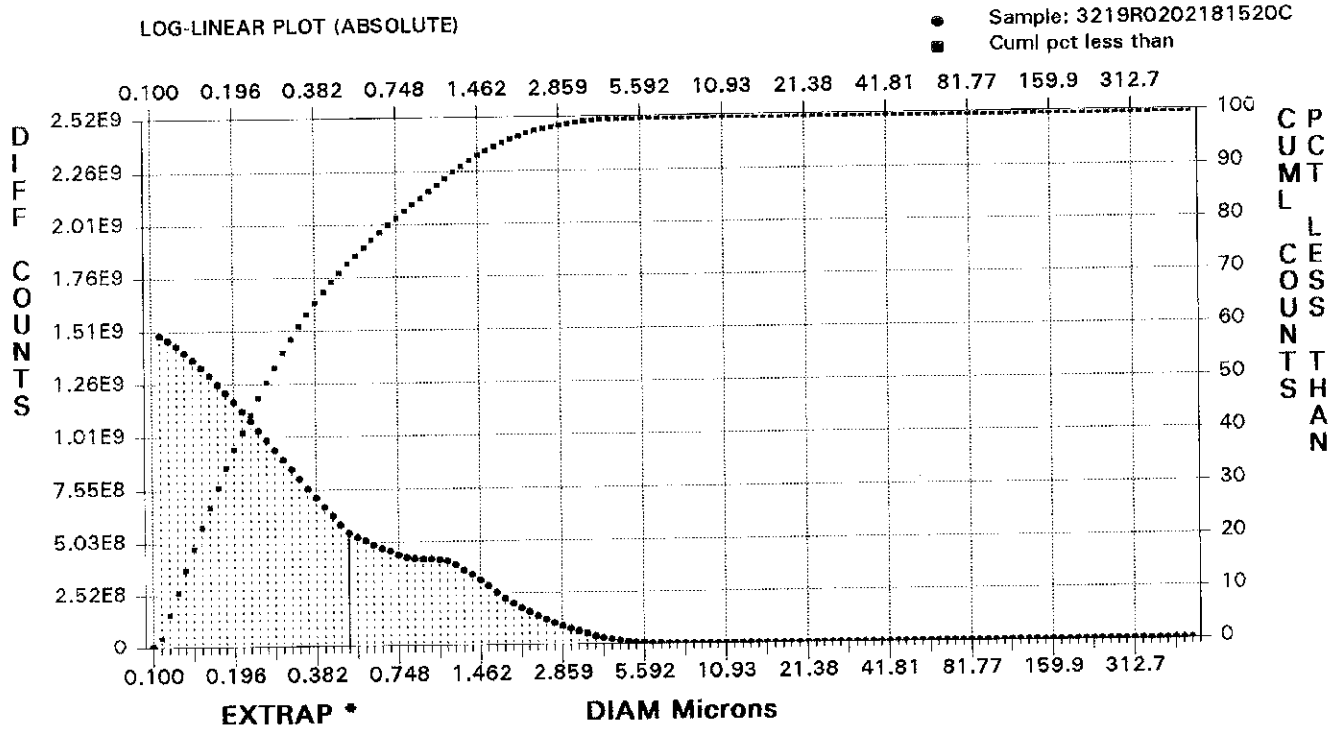
Disk File: MAL1093.HST

Sample #: 3219R0202181520C01

Lot/Job #: MAL1093

Material: storm water

Source: Todd Burgesser



Geometric Mean Size:	0.316 um
Geom. Std Deviation:	2.391 um
Geom. Skewness:	0.086
Geom. Coeff Variation:	757.5
Arithmetic Mean Size:	0.499 um
Median Size:	0.248 um
Mode Size:	0.111 um
Kurtosis:	287.445
Arith Std Deviation	0.676 um

-- PERCENTILES --

0.100% Counts below 0.103 um
1.000% Counts below 0.104 um
6.000% Counts below 0.113 um
22.00% Counts below 0.147 um
50.00% Counts below 0.253 um
78.00% Counts below 0.633 um
94.00% Counts below 1.566 um
99.00% Counts below 3.129 um
99.90% Counts below 5.789 um

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 10:53 18 Apr 02

Disk File: MAL1093.HST

Sample #: 3219R0202181520C01

Lot/Job #: MAL1093

Material: storm water

Source: Todd Burgesser

-- Frequency Distribution Data

Total Popl: 34196960460

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.100	0	0.00	33	0.855	4.24E8	83.9	65	7.312	3675280	100.0	97	62.53	1817	100.0
2	0.107	1.49E9	2.19	34	0.914	4.21E8	85.1	66	7.819	2727898	100.0	98	66.86	1654	100.0
3	0.114	1.47E9	6.52	35	0.978	4.19E8	86.3	67	8.362	2028488	100.0	99	71.50	1419	100.0
4	0.122	1.44E9	10.8	36	1.046	4.18E8	87.6	68	8.942	1538240	100.0	100	76.46	1210	100.0
5	0.131	1.41E9	14.9	37	1.118	4.12E8	88.8	69	9.562	1182979	100.0	101	81.77	1066	100.0
6	0.140	1.38E9	19.0	38	1.196	3.93E8	90.0	70	10.23	900049	100.0	102	87.44	942	100.0
7	0.150	1.34E9	23.0	39	1.279	3.66E8	91.1	71	10.93	678030	100.0	103	93.50	848	100.0
8	0.160	1.30E9	26.8	40	1.367	3.44E8	92.1	72	11.69	520634	100.0	104	99.99	731	100.0
9	0.171	1.26E9	30.6	41	1.462	3.17E8	93.1	73	12.50	406067	100.0	105	106.9	601	100.0
10	0.183	1.22E9	34.2	42	1.564	2.87E8	94.0	74	13.37	305210	100.0	106	114.3	513	100.0
11	0.196	1.17E9	37.7	43	1.672	2.57E8	94.8	75	14.30	228329	100.0	107	122.3	454	100.0
12	0.209	1.13E9	41.1	44	1.788	2.29E8	95.5	76	15.29	175821	100.0	108	130.8	401	100.0
13	0.224	1.08E9	44.3	45	1.912	2.05E8	96.1	77	16.35	133406	100.0	109	139.8	348	100.0
14	0.239	1.04E9	47.4	46	2.045	1.83E8	96.7	78	17.49	100751	100.0	110	149.5	312	100.0
15	0.256	9.91E8	50.4	47	2.187	1.63E8	97.2	79	18.70	76541	100.0	111	159.9	265	100.0
16	0.273	9.45E8	53.2	48	2.338	1.43E8	97.6	80	20.00	57284	100.0	112	171.0	217	100.0
17	0.292	8.98E8	55.9	49	2.501	1.25E8	98.0	81	21.38	42080	100.0	113	182.8	181	100.0
18	0.313	8.52E8	58.5	50	2.674	1.09E8	98.4	82	22.87	31645	100.0	114	195.5	146	100.0
19	0.334	8.06E8	60.9	51	2.859	9.44E7	98.7	83	24.45	24403	100.0	115	209.1	110	100.0
20	0.358	7.60E8	63.2	52	3.058	8.04E7	98.9	84	26.15	18820	100.0	116	223.6	71	100.0
21	0.382	7.16E8	65.3	53	3.270	6.78E7	99.1	85	27.96	14528	100.0	117	239.1	35	100.0
22	0.409	6.73E8	67.4	54	3.497	5.62E7	99.3	86	29.90	11497	100.0	118	255.7	18	100.0
23	0.437	6.30E8	69.3	55	3.739	4.55E7	99.5	87	31.98	9292	100.0	119	273.4	11	100.0
24	0.468	5.89E8	71.0	56	3.999	3.62E7	99.6	88	34.19	7966	100.0	120	292.4	5	100.0
25	0.500	5.49E8	72.7	57	4.276	2.87E7	99.7	89	36.57	6541	100.0	121	312.7	2	100.0
26	0.535	5.28E8	74.3	58	4.573	2.24E7	99.7	90	39.10	5024	100.0	122	334.4	0	100.0
27	0.572	5.12E8	75.8	59	4.890	1.77E7	99.8	91	41.81	3905	100.0	123	357.6	2	100.0
28	0.611	4.91E8	77.3	60	5.229	1.42E7	99.8	92	44.71	3437	100.0	124	382.4	2	100.0
29	0.654	4.74E8	78.7	61	5.592	1.09E7	99.9	93	47.82	3355	100.0	125	408.9	2	100.0
30	0.699	4.59E8	80.0	62	5.980	8196582	99.9	94	51.13	3021	100.0	126	437.2	1	100.0
31	0.748	4.40E8	81.4	63	6.394	6336639	99.9	95	54.68	2385	100.0	127	467.6	2	100.0
32	0.800	4.29E8	82.6	64	6.838	4872279	99.9	96	58.47	2017	100.0	128	500.0	0	100.0

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 19:39 18 Apr 02

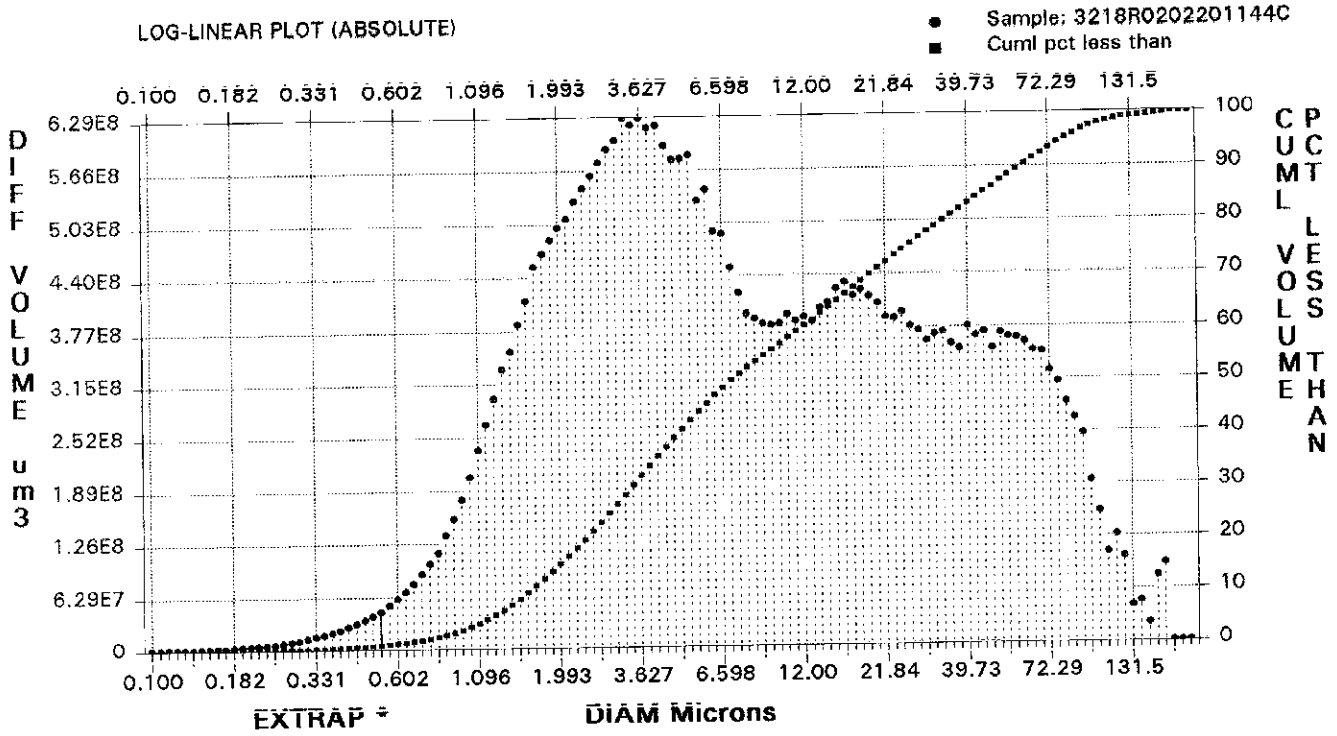
Disk File: MAL1094.HST

Sample #: 3218R0202201144C5

Lot/Job #: MAL1094

Material: storm water

Source: Todd Burgesser



Geometric Mean Size:	8.240 um
Geom. Std Deviation:	3.933 um
Geom. Skewness:	1.181
Geom. Coeff Variation:	47.73
Arithmetic Mean Size:	19.69 um
Median Size:	6.811 um
Mode Size:	3.597 um
Kurtosis:	6.696
Arith Std Deviation	29.65 um

-- PERCENTILES --
0.100% Volume below 0.231 um
1.000% Volume below 0.544 um
6.000% Volume below 1.190 um
22.00% Volume below 2.522 um
50.00% Volume below 6.899 um
78.00% Volume below 29.54 um
94.00% Volume below 74.50 um
99.00% Volume below 122.9 um
99.90% Volume below 168.1 um

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 19:39 18 Apr 02

Disk File: MAL1094.HST

Sample #: 3218R0202201144C5

Lot/Job #: MAL1094

Material: storm water

Source: Todd Burgesser

-- Volume Distribution Data

Total Volm: 34662377927

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.100	0	0.00	33	0.679	7.83E7	1.66	65	4.607	5.79E8	39.5	96	29.46	3.61E8	77.9
2	0.106	648436	0.00	34	0.721	9.00E7	1.90	66	4.892	5.80E8	41.2	97	31.27	3.69E8	79.0
3	0.113	787401	0.00	35	0.765	1.02E8	2.18	67	5.193	5.84E8	42.9	98	33.20	3.71E8	80.0
4	0.120	953492	0.01	36	0.812	1.15E8	2.49	68	5.514	5.30E8	44.5	99	35.25	3.57E8	81.1
5	0.127	1151411	0.01	37	0.862	1.36E8	2.86	69	5.854	5.43E8	46.0	100	37.42	3.51E8	82.1
6	0.135	1386553	0.01	38	0.916	1.55E8	3.28	70	6.215	4.93E8	47.5	101	39.73	3.78E8	83.2
7	0.143	1665079	0.02	39	0.972	1.78E8	3.76	71	6.598	4.90E8	49.0	102	42.18	3.66E8	84.2
8	0.152	1994003	0.02	40	1.032	2.04E8	4.31	72	7.005	4.51E8	50.3	103	44.78	3.71E8	85.3
9	0.161	2381274	0.03	41	1.096	2.37E8	4.94	73	7.437	4.20E8	51.6	104	47.55	3.51E8	86.3
10	0.171	2835863	0.04	42	1.163	2.67E8	5.67	74	7.895	3.96E8	52.8	105	50.48	3.69E8	87.4
11	0.182	3367856	0.04	43	1.235	2.98E8	6.48	75	8.382	3.90E8	53.9	106	53.59	3.65E8	88.4
12	0.193	3988544	0.06	44	1.311	3.32E8	7.39	76	8.899	3.84E8	55.0	107	56.90	3.64E8	89.5
13	0.205	4710507	0.07	45	1.392	3.54E8	8.38	77	9.448	3.82E8	56.1	108	60.41	3.59E8	90.5
14	0.218	5547705	0.08	46	1.478	3.85E8	9.45	78	10.03	3.84E8	57.2	109	64.13	3.48E8	91.6
15	0.231	6515558	0.10	47	1.569	4.13E8	10.6	79	10.65	3.94E8	58.3	110	68.09	3.47E8	92.6
16	0.245	7631015	0.12	48	1.666	4.53E8	11.8	80	11.31	3.87E8	59.5	111	72.29	3.24E8	93.5
17	0.261	8912622	0.14	49	1.768	4.69E8	13.2	81	12.00	3.91E8	60.6	112	76.75	3.10E8	94.4
18	0.277	1.04E7	0.17	50	1.878	4.85E8	14.6	82	12.74	3.86E8	61.7	113	81.48	2.86E8	95.3
19	0.294	1.21E7	0.20	51	1.993	5.00E8	16.0	83	13.53	4.02E8	62.8	114	86.50	2.68E8	96.1
20	0.312	1.40E7	0.24	52	2.116	5.10E8	17.4	84	14.36	4.08E8	64.0	115	91.84	2.49E8	96.8
21	0.331	1.61E7	0.29	53	2.247	5.30E8	18.9	85	15.25	4.24E8	65.2	116	97.50	1.92E8	97.5
22	0.351	1.86E7	0.34	54	2.385	5.46E8	20.5	86	16.19	4.32E8	66.4	117	103.5	1.56E8	98.0
23	0.373	2.13E7	0.39	55	2.532	5.61E8	22.1	87	17.19	4.16E8	67.7	118	109.9	1.06E8	98.4
24	0.396	2.44E7	0.46	56	2.689	5.76E8	23.7	88	18.25	4.22E8	68.9	119	116.7	1.27E8	98.7
25	0.421	2.79E7	0.53	57	2.854	5.92E8	25.4	89	19.38	4.15E8	70.1	120	123.9	1.02E8	99.0
26	0.446	3.18E7	0.62	58	3.031	6.03E8	27.1	90	20.57	4.06E8	71.3	121	131.5	4.29E7	99.2
27	0.474	3.61E7	0.72	59	3.217	6.29E8	28.9	91	21.84	3.90E8	72.4	122	139.6	4.85E7	99.4
28	0.503	4.09E7	0.83	60	3.416	6.21E8	30.7	92	23.19	3.88E8	73.5	123	148.2	2.22E7	99.5
29	0.534	4.62E7	0.96	61	3.627	6.29E8	32.5	93	24.62	3.95E8	74.7	124	157.4	7.76E7	99.6
30	0.567	5.29E7	1.10	62	3.850	6.17E8	34.3	94	26.13	3.79E8	75.8	125	167.1	9.29E7	99.9
31	0.602	6.04E7	1.26	63	4.088	6.20E8	36.1	95	27.75	3.74E8	76.9	126	177.4	0	100.0
32	0.639	6.89E7	1.45	64	4.340	5.96E8	37.8								

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 19:39 18 Apr 02

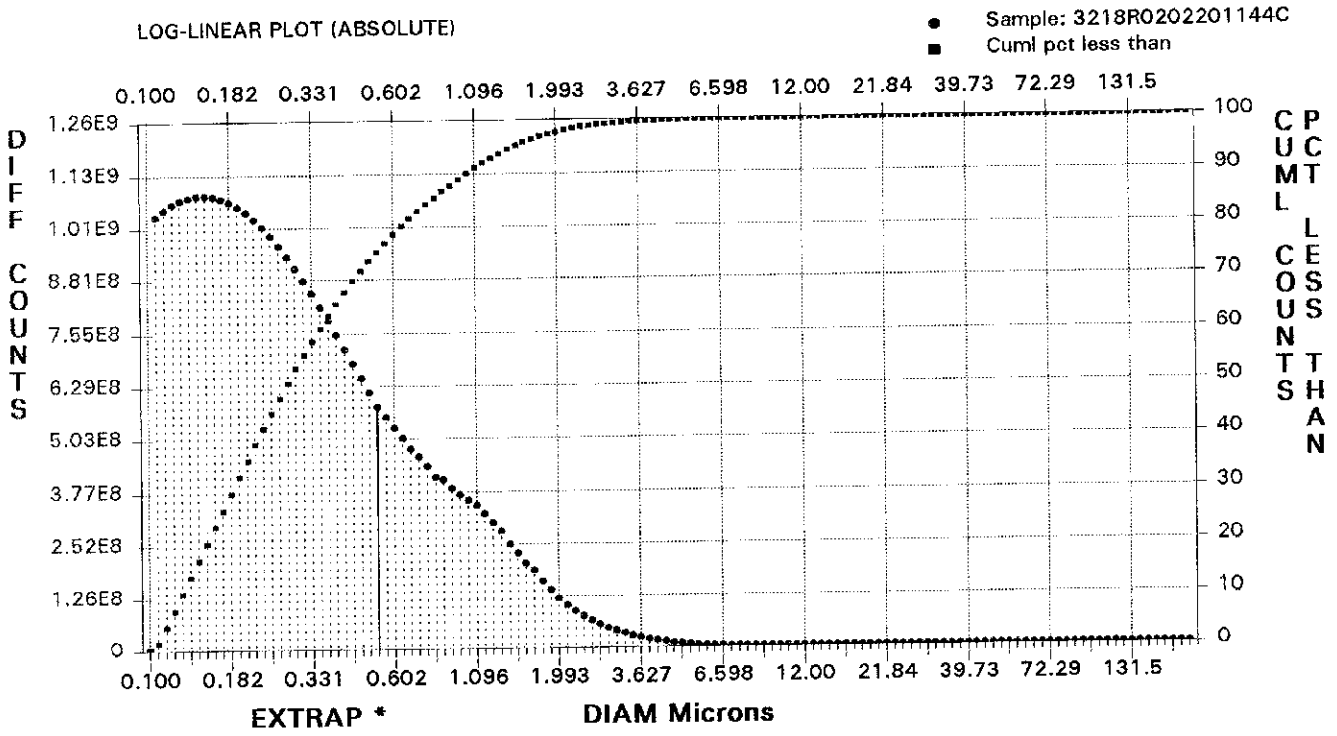
Disk File: MAL1094.HST

Sample #: 3218R0202201144C5

Lot/Job #: MAL1094

Material: storm water

Source: Todd Burgesser



Geometric Mean Size:	0.317 um
Geom. Std Deviation:	2.224 um
Geom. Skewness:	0.076
Geom. Coeff Variation:	701.4
Arithmetic Mean Size:	0.463 um
Median Size:	0.269 um
Mode Size:	0.149 um
Kurtosis:	196.105
Arith Std Deviation	0.580 um

-- PERCENTILES --

0.100% Counts below 0.103 um
1.000% Counts below 0.104 um
6.000% Counts below 0.115 um
22.00% Counts below 0.157 um
50.00% Counts below 0.273 um
78.00% Counts below 0.589 um
94.00% Counts below 1.329 um
99.00% Counts below 2.636 um
99.90% Counts below 5.261 um

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 19:39 18 Apr 02

Disk File: MAL1094.HST

Sample #: 3218R0202201144C5

Lot/Job #: MAL1094

Material: storm water

Source: Todd Burgesser

-- Frequency Distribution Data

Total Popl: 34055718756

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.100	0	0.00	33	0.679	4.78E8	81.5	65	4.607	1.13E7	99.8	96	29.46	26966	100.0
2	0.106	1.03E9	1.52	34	0.721	4.59E8	82.9	66	4.892	9461942	99.9	97	31.27	23041	100.0
3	0.113	1.05E9	4.58	35	0.765	4.36E8	84.2	67	5.193	7965739	99.9	98	33.20	19383	100.0
4	0.120	1.06E9	7.68	36	0.812	4.10E8	85.5	68	5.514	6036990	99.9	99	35.25	15573	100.0
5	0.127	1.07E9	10.8	37	0.862	4.05E8	86.7	69	5.854	5172104	99.9	100	37.42	12787	100.0
6	0.135	1.08E9	14.0	38	0.916	3.85E8	87.8	70	6.215	3926732	99.9	101	39.73	11508	100.0
7	0.143	1.08E9	17.2	39	0.972	3.69E8	88.9	71	6.598	3260722	100.0	102	42.18	9322	100.0
8	0.152	1.08E9	20.3	40	1.032	3.55E8	90.0	72	7.005	2503373	100.0	103	44.78	7889	100.0
9	0.161	1.08E9	23.5	41	1.096	3.44E8	91.0	73	7.437	1950602	100.0	104	47.55	6240	100.0
10	0.171	1.08E9	26.7	42	1.163	3.24E8	92.0	74	7.895	1535531	100.0	105	50.48	5485	100.0
11	0.182	1.07E9	29.8	43	1.235	3.02E8	92.9	75	8.382	1263428	100.0	106	53.59	4532	100.0
12	0.193	1.06E9	32.9	44	1.311	2.81E8	93.8	76	8.899	1039290	100.0	107	56.90	3772	100.0
13	0.205	1.04E9	36.0	45	1.392	2.50E8	94.6	77	9.448	864937	100.0	108	60.41	3112	100.0
14	0.218	1.03E9	39.1	46	1.478	2.28E8	95.3	78	10.03	725751	100.0	109	64.13	2519	100.0
15	0.231	1.01E9	42.1	47	1.569	2.04E8	95.9	79	10.65	622726	100.0	110	68.09	2099	100.0
16	0.245	9.86E8	45.0	48	1.666	1.87E8	96.5	80	11.31	510939	100.0	111	72.29	1637	100.0
17	0.261	9.63E8	47.8	49	1.768	1.62E8	97.0	81	12.00	432020	100.0	112	76.75	1312	100.0
18	0.277	9.37E8	50.6	50	1.878	1.40E8	97.4	82	12.74	355837	100.0	113	81.48	1011	100.0
19	0.294	9.09E8	53.3	51	1.993	1.20E8	97.8	83	13.53	309827	100.0	114	86.50	791	100.0
20	0.312	8.80E8	56.0	52	2.116	1.03E8	98.1	84	14.36	262830	100.0	115	91.84	613	100.0
21	0.331	8.49E8	58.5	53	2.247	8.93E7	98.4	85	15.25	228255	100.0	116	97.50	396	100.0
22	0.351	8.18E8	61.0	54	2.385	7.68E7	98.7	86	16.19	194171	100.0	117	103.5	268	100.0
23	0.373	7.85E8	63.3	55	2.532	6.60E7	98.9	87	17.19	156314	100.0	118	109.9	153	100.0
24	0.396	7.51E8	65.6	56	2.689	5.66E7	99.1	88	18.25	132739	100.0	119	116.7	153	100.0
25	0.421	7.17E8	67.7	57	2.854	4.86E7	99.2	89	19.38	108857	100.0	120	123.9	102	100.0
26	0.446	6.83E8	69.8	58	3.031	4.14E7	99.3	90	20.57	89128	100.0	121	131.5	36	100.0
27	0.474	6.48E8	71.7	59	3.217	3.61E7	99.5	91	21.84	71472	100.0	122	139.6	34	100.0
28	0.503	6.13E8	73.6	60	3.416	2.97E7	99.6	92	23.19	59441	100.0	123	148.2	13	100.0
29	0.534	5.79E8	75.3	61	3.627	2.52E7	99.6	93	24.62	50632	100.0	124	157.4	38	100.0
30	0.567	5.54E8	77.0	62	3.850	2.07E7	99.7	94	26.13	40544	100.0	125	167.1	38	100.0
31	0.602	5.29E8	78.6	63	4.088	1.73E7	99.8	95	27.75	33397	100.0	126	177.4	0	100.0
32	0.639	5.03E8	80.1	64	4.340	1.39E7	99.8								

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 20:26 18 Apr 02

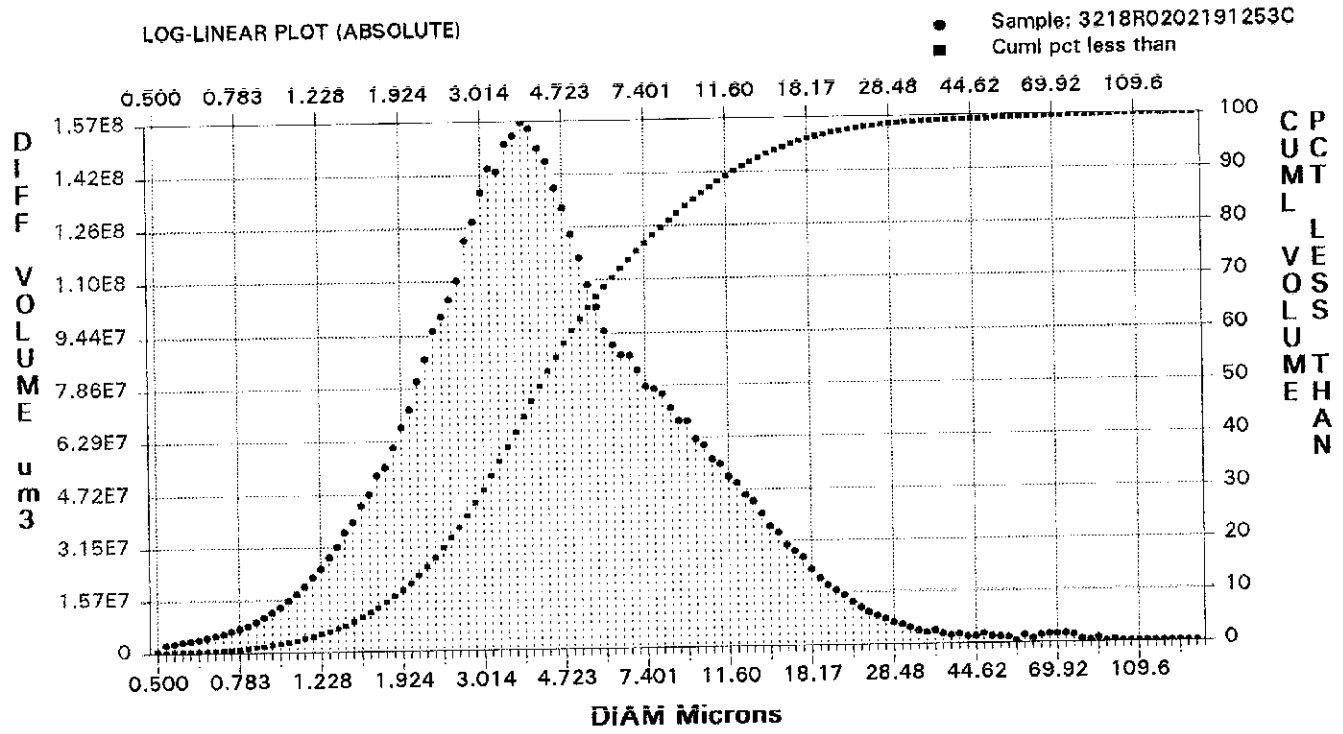
Disk File: MAL1095.HST

Sample #: 3218R0202191253C1

Lot/Job #: MAL1095

Material: storm water

Source: Todd Burgesser



Geometric Mean Size:	4.416 um
Geom. Std Deviation:	2.125 um
Geom. Skewness:	0.283
Geom. Coeff Variation:	48.12
Arithmetic Mean Size:	6.082 um
Median Size:	4.046 um
Mode Size:	3.815 um
Kurtosis:	26.795
Arith Std Deviation	7.006 um

-- PERCENTILES --

0.100% Volume below 0.556 um
1.000% Volume below 0.831 um
6.000% Volume below 1.475 um
22.00% Volume below 2.542 um
50.00% Volume below 4.114 um
78.00% Volume below 7.663 um
94.00% Volume below 15.15 um
99.00% Volume below 32.66 um
99.90% Volume below 76.22 um

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 20:26 18 Apr 02

Disk File: MAL1095.HST

Sample #: 3218R0202191253C1

Lot/Job #: MAL1095

Material: storm water

Source: Todd Burgesser

-- Volume Distribution Data

Total Volm: 5332283969

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.500	0	0.00	31	1.924	6.70E7	11.8	61	7.401	7.83E7	76.9	91	28.48	6670655	98.7
2	0.523	2630680	0.02	32	2.012	7.23E7	13.1	62	7.741	7.74E7	78.3	92	29.78	6028796	98.8
3	0.547	2965185	0.08	33	2.105	8.07E7	14.5	63	8.097	7.61E7	79.8	93	31.15	5142119	98.9
4	0.572	3315754	0.14	34	2.201	8.71E7	16.1	64	8.469	7.18E7	81.1	94	32.58	4145805	99.0
5	0.598	3705764	0.20	35	2.302	9.54E7	17.8	65	8.858	6.80E7	82.5	95	34.08	3604436	99.1
6	0.626	4139301	0.28	36	2.408	9.96E7	19.6	66	9.265	6.78E7	83.7	96	35.65	4029505	99.1
7	0.655	4673825	0.36	37	2.519	1.05E8	21.5	67	9.691	6.23E7	84.9	97	37.28	3146121	99.2
8	0.685	5241866	0.45	38	2.634	1.10E8	23.6	68	10.14	6.04E7	86.1	98	39.00	2637856	99.3
9	0.716	5878580	0.56	39	2.755	1.22E8	25.7	69	10.60	5.63E7	87.2	99	40.79	3018323	99.3
10	0.749	6538842	0.67	40	2.882	1.28E8	28.1	70	11.09	5.48E7	88.2	100	42.66	2234725	99.4
11	0.783	7275627	0.80	41	3.014	1.36E8	30.6	71	11.60	5.10E7	89.2	101	44.62	2185114	99.4
12	0.819	8189004	0.95	42	3.153	1.43E8	33.2	72	12.13	4.91E7	90.2	102	46.67	2925860	99.5
13	0.857	9247161	1.11	43	3.298	1.43E8	35.9	73	12.69	4.53E7	91.1	103	48.82	2252201	99.5
14	0.896	1.07E7	1.30	44	3.449	1.51E8	38.6	74	13.27	4.34E7	91.9	104	51.06	1950196	99.5
15	0.938	1.21E7	1.51	45	3.608	1.53E8	41.5	75	13.88	3.97E7	92.7	105	53.40	1753305	99.6
16	0.981	1.36E7	1.75	46	3.773	1.57E8	44.4	76	14.52	3.59E7	93.4	106	55.86	729524	99.6
17	1.026	1.56E7	2.03	47	3.947	1.55E8	47.3	77	15.18	3.40E7	94.0	107	58.42	2295551	99.6
18	1.073	1.76E7	2.34	48	4.128	1.49E8	50.2	78	15.88	3.02E7	94.6	108	61.11	1432716	99.7
19	1.122	1.99E7	2.69	49	4.318	1.45E8	52.9	79	16.61	2.83E7	95.2	109	63.91	2459043	99.7
20	1.174	2.25E7	3.08	50	4.516	1.38E8	55.6	80	17.38	2.64E7	95.7	110	66.85	2813719	99.7
21	1.228	2.50E7	3.53	51	4.723	1.32E8	58.1	81	18.17	2.28E7	96.2	111	69.92	2861824	99.8
22	1.284	2.84E7	4.03	52	4.940	1.24E8	60.5	82	19.01	2.01E7	96.6	112	73.13	2865271	99.9
23	1.343	3.15E7	4.59	53	5.167	1.17E8	62.8	83	19.88	1.81E7	96.9	113	76.49	2341813	99.9
24	1.405	3.56E7	5.22	54	5.405	1.09E8	64.9	84	20.79	1.66E7	97.2	114	80.01	1071833	99.9
25	1.469	3.87E7	5.92	55	5.653	1.02E8	66.8	85	21.75	1.50E7	97.5	115	83.68	613213	100.0
26	1.537	4.37E7	6.69	56	5.913	9.48E7	68.7	86	22.75	1.29E7	97.8	116	87.53	1403319	100.0
27	1.607	4.71E7	7.54	57	6.184	9.07E7	70.4	87	23.79	1.12E7	98.0	117	91.55	0	100.0
28	1.681	5.26E7	8.48	58	6.468	8.77E7	72.1	88	24.89	9865335	98.2	118	95.75	918662	100.0
29	1.758	5.52E7	9.49	59	6.766	8.75E7	73.7	89	26.03	8722317	98.4	119	100.1	0	100.0
30	1.839	6.11E7	10.6	60	7.076	8.31E7	75.3	90	27.23	7646335	98.5				

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 20:26 18 Apr 02

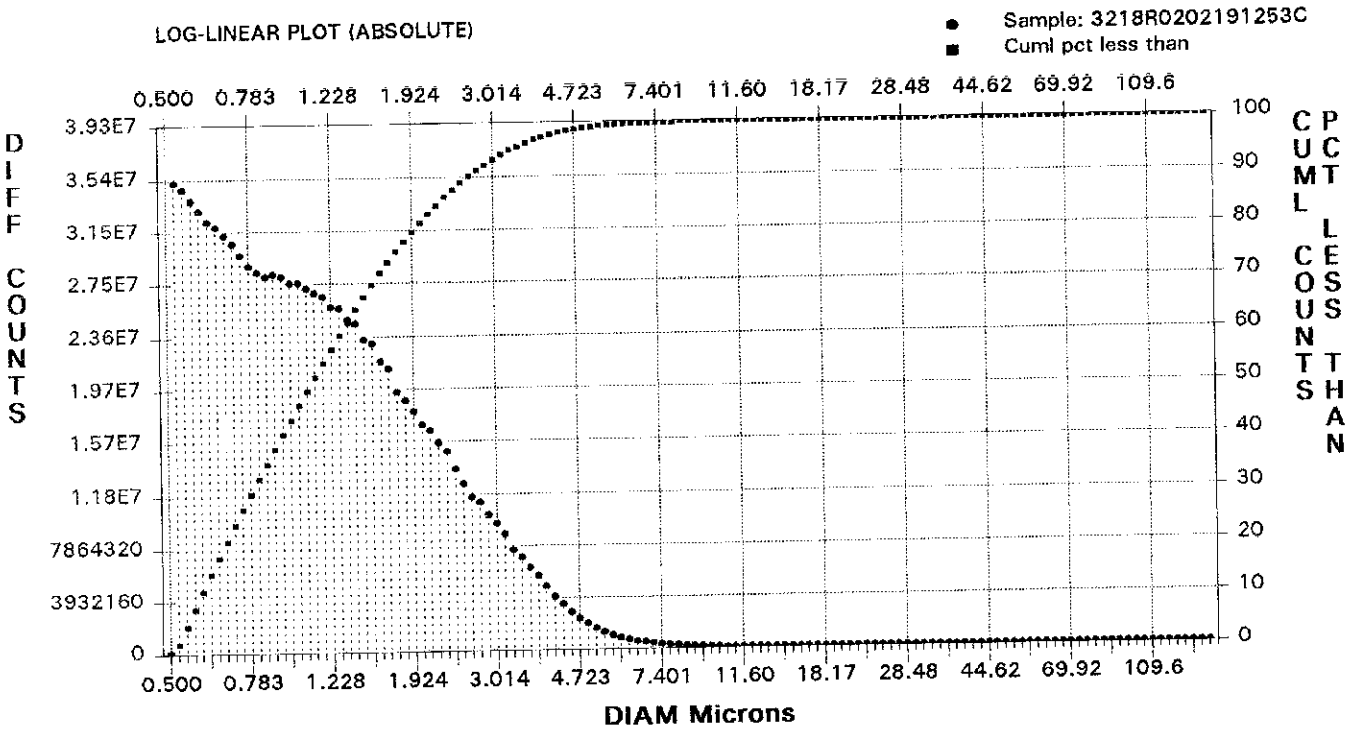
Disk File: MAL1095.HST

Sample #: 3218R0202191253C1

Lot/Job #: MAL1095

Material: storm water

Source: Todd Burgesser



Geometric Mean Size:	1.167 um
Geom. Std Deviation:	1.771 um
Geom. Skewness:	0.357
Geom. Coeff Variation:	151.8
Arithmetic Mean Size:	1.398 um
Median Size:	1.053 um
Mode Size:	0.535 um
Kurtosis:	12.840
Arith Std Deviation	1.030 um

-- PERCENTILES --

0.100% Counts below 0.512 um
1.000% Counts below 0.515 um
6.000% Counts below 0.552 um
22.00% Counts below 0.690 um
50.00% Counts below 1.078 um
78.00% Counts below 1.844 um
94.00% Counts below 3.136 um
99.00% Counts below 4.975 um
99.90% Counts below 8.818 um

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 20:26 18 Apr 02

Disk File: MAL1095.HST

Sample #: 3218R0202191253C1

Lot/Job #: MAL1095

Material: storm water

Source: Todd Burgesser

-- Frequency Distribution Data

Total Popl: 1012180349

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.500	0	0.00	31	1.924	1.80E7	79.7	61	7.401	368748	99.8	91	28.48	552	100.0
2	0.523	3.51E7	1.74	32	2.012	1.69E7	81.4	62	7.741	318806	99.8	92	29.78	436	100.0
3	0.547	3.46E7	5.18	33	2.105	1.65E7	83.1	63	8.097	273617	99.9	93	31.15	325	100.0
4	0.572	3.38E7	8.56	34	2.201	1.56E7	84.6	64	8.469	225679	99.9	94	32.58	229	100.0
5	0.598	3.30E7	11.9	35	2.302	1.49E7	86.2	65	8.858	186849	99.9	95	34.08	174	100.0
6	0.626	3.22E7	15.1	36	2.408	1.36E7	87.6	66	9.265	162794	99.9	96	35.65	170	100.0
7	0.655	3.18E7	18.3	37	2.519	1.25E7	88.9	67	9.691	130819	99.9	97	37.28	116	100.0
8	0.685	3.12E7	21.4	38	2.634	1.15E7	90.0	68	10.14	110864	99.9	98	39.00	85	100.0
9	0.716	3.06E7	24.4	39	2.755	1.12E7	91.2	69	10.60	90221	100.0	99	40.79	85	100.0
10	0.749	2.97E7	27.4	40	2.882	1.02E7	92.2	70	11.09	76737	100.0	100	42.66	55	100.0
11	0.783	2.89E7	30.3	41	3.014	9509165	93.2	71	11.60	62438	100.0	101	44.62	47	100.0
12	0.819	2.84E7	33.1	42	3.153	8737973	94.1	72	12.13	52546	100.0	102	46.67	55	100.0
13	0.857	2.80E7	35.9	43	3.298	7590296	94.9	73	12.69	42389	100.0	103	48.82	37	100.0
14	0.896	2.82E7	38.7	44	3.449	7010368	95.6	74	13.27	35503	100.0	104	51.06	28	100.0
15	0.938	2.80E7	41.5	45	3.608	6234081	96.3	75	13.88	28329	100.0	105	53.40	22	100.0
16	0.981	2.76E7	44.2	46	3.773	5591178	96.9	76	14.52	22400	100.0	106	55.86	8	100.0
17	1.026	2.76E7	46.9	47	3.947	4822453	97.4	77	15.18	18546	100.0	107	58.42	22	100.0
18	1.073	2.72E7	49.6	48	4.128	4054486	97.8	78	15.88	14407	100.0	108	61.11	12	100.0
19	1.122	2.68E7	52.3	49	4.318	3450155	98.2	79	16.61	11804	100.0	109	63.91	18	100.0
20	1.174	2.65E7	55.0	50	4.516	2852257	98.5	80	17.38	9628	100.0	110	66.85	18	100.0
21	1.228	2.58E7	57.5	51	4.723	2385869	98.8	81	18.17	7259	100.0	111	69.92	16	100.0
22	1.284	2.57E7	60.1	52	4.940	1960633	99.0	82	19.01	5596	100.0	112	73.13	14	100.0
23	1.343	2.48E7	62.6	53	5.167	1615026	99.1	83	19.88	4404	100.0	113	76.49	10	100.0
24	1.405	2.45E7	65.0	54	5.405	1313790	99.3	84	20.79	3516	100.0	114	80.01	4	100.0
25	1.469	2.33E7	67.4	55	5.653	1078343	99.4	85	21.75	2788	100.0	115	83.68	2	100.0
26	1.537	2.30E7	69.7	56	5.913	876275	99.5	86	22.75	2087	100.0	116	87.53	4	100.0
27	1.607	2.17E7	71.9	57	6.184	732099	99.6	87	23.79	1592	100.0	117	91.55	0	100.0
28	1.681	2.11E7	74.0	58	6.468	618842	99.6	88	24.89	1222	100.0	118	95.75	2	100.0
29	1.758	1.94E7	76.0	59	6.766	539398	99.7	89	26.03	944	100.0	119	100.1	0	100.0
30	1.839	1.88E7	77.9	60	7.076	447950	99.8	90	27.23	724	100.0				

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 22:14 18 Apr 02

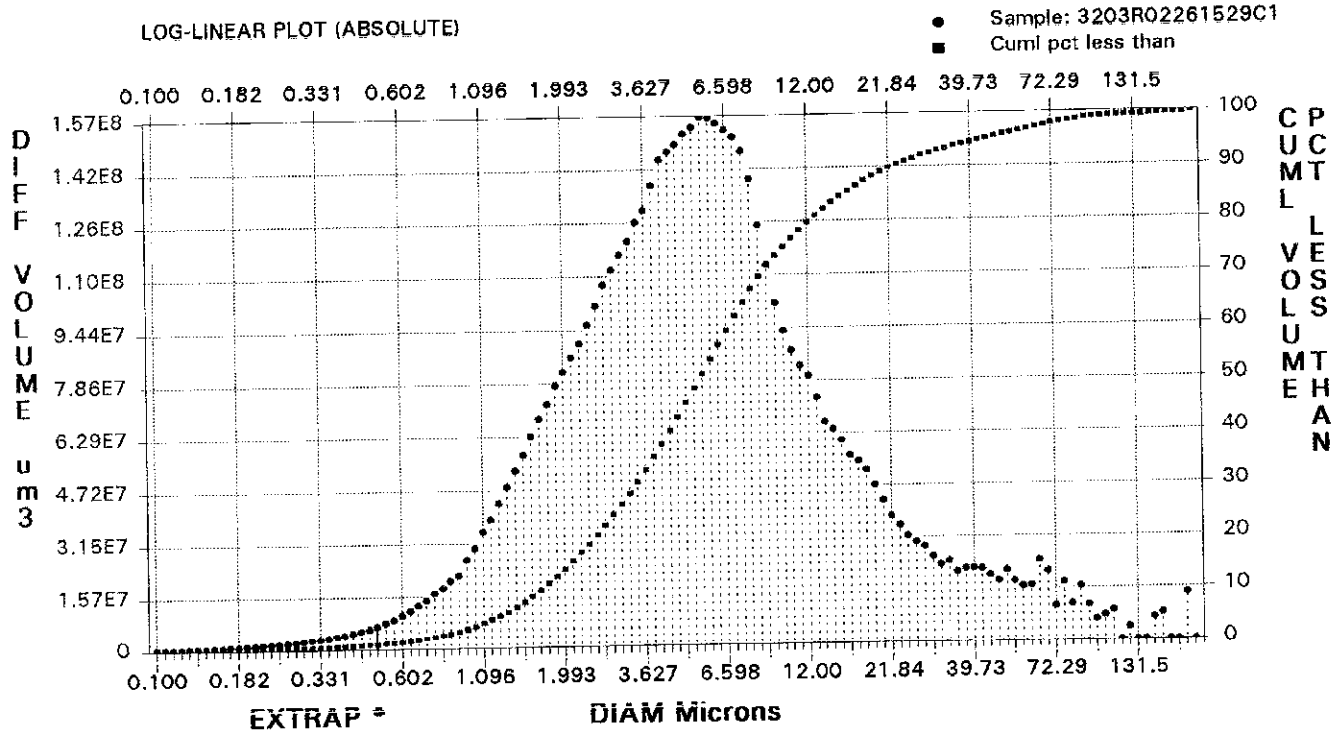
Disk File: MAL1096.HST

Sample #: 3203R02261529C1

Lot/Job #: MAL1096

Material: storm water

Source: Todd Burgesser



Geometric Mean Size:	5.621 um
Geom. Std Deviation:	2.904 um
Geom. Skewness:	-0.011
Geom. Coeff Variation:	51.67
Arithmetic Mean Size:	10.81 um
Median Size:	5.077 um
Mode Size:	5.652 um
Kurtosis:	26.938
Arith Std Deviation	19.45 um

-- PERCENTILES --

0.100% Volume below 0.190 um
1.000% Volume below 0.499 um
6.000% Volume below 1.214 um
22.00% Volume below 2.582 um
50.00% Volume below 5.324 um
78.00% Volume below 11.13 um
94.00% Volume below 36.17 um
99.00% Volume below 93.63 um
99.90% Volume below 189.1 um

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 22:14 18 Apr 02

Disk File: MAL1096.HST

Sample #: 3203R02261529C1

Lot/Job #: MAL1096

Material: storm water

Source: Todd Burgesser

-- Volume Distribution Data

Total Volm: 5729006927

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.100	0	0.00	33	0.679	1.31E7	1.86	65	4.607	1.49E8	43.4	97	31.27	2.32E7	93.0
2	0.106	268043	0.00	34	0.721	1.46E7	2.10	66	4.892	1.52E8	46.1	98	33.20	2.44E7	93.4
3	0.113	310278	0.01	35	0.765	1.67E7	2.37	67	5.193	1.54E8	48.7	99	35.25	2.12E7	93.8
4	0.120	358557	0.01	36	0.812	1.83E7	2.68	68	5.514	1.57E8	51.5	100	37.42	2.20E7	94.2
5	0.127	413646	0.02	37	0.862	2.04E7	3.02	69	5.854	1.57E8	54.2	101	39.73	2.20E7	94.6
6	0.135	476388	0.03	38	0.916	2.19E7	3.39	70	6.215	1.55E8	56.9	102	42.18	2.19E7	95.0
7	0.143	547716	0.04	39	0.972	2.65E7	3.81	71	6.598	1.53E8	59.6	103	44.78	2.00E7	95.3
8	0.152	628655	0.05	40	1.032	3.00E7	4.30	72	7.005	1.51E8	62.3	104	47.55	1.82E7	95.7
9	0.161	720330	0.06	41	1.096	3.47E7	4.87	73	7.437	1.47E8	64.9	105	50.48	2.12E7	96.0
10	0.171	823973	0.07	42	1.163	3.83E7	5.50	74	7.895	1.38E8	67.4	106	53.59	1.80E7	96.3
11	0.182	940928	0.09	43	1.235	4.30E7	6.21	75	8.382	1.25E8	69.7	107	56.90	1.65E7	96.7
12	0.193	1072660	0.11	44	1.311	4.80E7	7.01	76	8.899	1.13E8	71.7	108	60.41	1.66E7	96.9
13	0.205	1220760	0.13	45	1.392	5.29E7	7.89	77	9.448	1.02E8	73.6	109	64.13	2.42E7	97.3
14	0.218	1386948	0.15	46	1.478	5.75E7	8.85	78	10.03	9.33E7	75.3	110	68.09	2.10E7	97.7
15	0.231	1573087	0.17	47	1.569	6.30E7	9.90	79	10.65	8.76E7	76.9	111	72.29	1.05E7	98.0
16	0.245	1781178	0.20	48	1.666	6.82E7	11.0	80	11.31	8.30E7	78.4	112	76.75	1.75E7	98.2
17	0.261	2013372	0.24	49	1.768	7.26E7	12.3	81	12.00	8.00E7	79.8	113	81.48	1.11E7	98.5
18	0.277	2271972	0.27	50	1.878	7.80E7	13.6	82	12.74	7.35E7	81.1	114	86.50	1.63E7	98.7
19	0.294	2559436	0.32	51	1.993	8.21E7	15.0	83	13.53	6.62E7	82.4	115	91.84	1.06E7	98.9
20	0.312	2878377	0.36	52	2.116	8.63E7	16.5	84	14.36	6.41E7	83.5	116	97.50	6314034	99.1
21	0.331	3231568	0.42	53	2.247	9.04E7	18.0	85	15.25	6.07E7	84.6	117	103.5	7555862	99.2
22	0.351	3621940	0.48	54	2.385	9.58E7	19.6	86	16.19	5.60E7	85.6	118	109.9	9041929	99.3
23	0.373	4052578	0.54	55	2.532	1.01E8	21.3	87	17.19	5.44E7	86.6	119	116.7	0	99.4
24	0.396	4526720	0.62	56	2.689	1.08E8	23.2	88	18.25	5.18E7	87.5	120	123.9	3984115	99.5
25	0.421	5047754	0.70	57	2.854	1.12E8	25.1	89	19.38	4.71E7	88.3	121	131.5	0	99.5
26	0.446	5619205	0.79	58	3.031	1.17E8	27.1	90	20.57	4.25E7	89.1	122	139.6	0	99.5
27	0.474	6244733	0.90	59	3.217	1.20E8	29.2	91	21.84	3.78E7	89.8	123	148.2	6827523	99.6
28	0.503	6928115	1.01	60	3.416	1.26E8	31.3	92	23.19	3.50E7	90.5	124	157.4	8170342	99.7
29	0.534	7871995	1.14	61	3.627	1.30E8	33.5	93	24.62	3.19E7	91.1	125	167.1	0	99.8
30	0.567	8919162	1.29	62	3.850	1.37E8	35.9	94	26.13	3.00E7	91.6	126	177.4	0	99.8
31	0.602	1.02E7	1.46	63	4.088	1.45E8	38.3	95	27.75	2.88E7	92.1	127	188.3	1.40E7	99.9
32	0.639	1.15E7	1.65	64	4.340	1.47E8	40.9	96	29.46	2.57E7	92.6	128	199.9	0	100.0

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 22:14 18 Apr 02

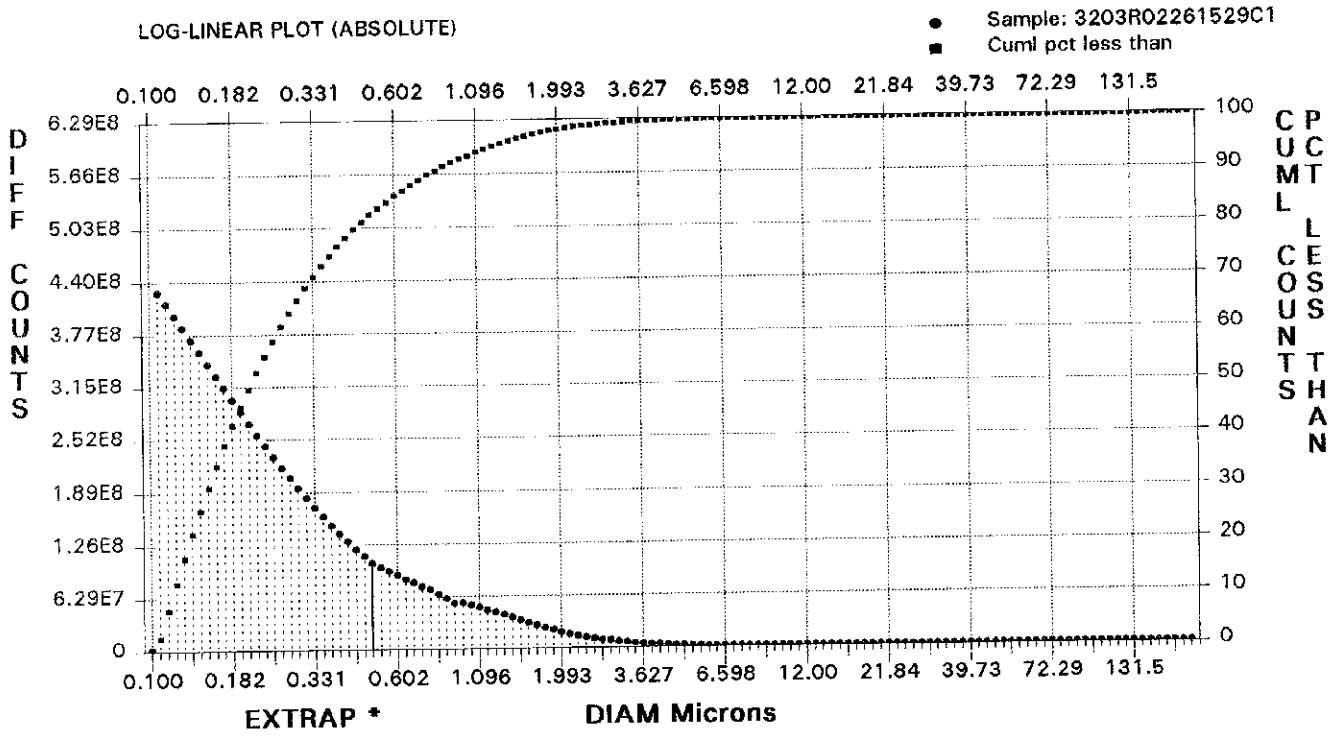
Disk File: MAL1096.HST

Sample #: 3203R02261529C1

Lot/Job #: MAL1096

Material: storm water

Source: Todd Burgesser



Geometric Mean Size:	0.254 um
Geom. Std Deviation:	2.137 um
Geom. Skewness:	0.068
Geom. Coeff Variation:	842.4
Arithmetic Mean Size:	0.372 um
Median Size:	0.200 um
Mode Size:	0.109 um
Kurtosis:	114.128
Arith Std Deviation	0.529 um

-- PERCENTILES --
0.100% Counts below 0.103 um
1.000% Counts below 0.104 um
6.000% Counts below 0.110 um
22.00% Counts below 0.134 um
50.00% Counts below 0.207 um
78.00% Counts below 0.418 um
94.00% Counts below 1.089 um
99.00% Counts below 2.516 um
99.90% Counts below 5.554 um

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
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By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 22:14 18 Apr 02

Disk File: MAL1096.HST

Sample #: 3203R02261529C1

Lot/Job #: MAL1096

Material: storm water

Source: Todd Burgesser

-- Frequency Distribution Data

Total Popl: 8189189412

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.100	0	0.00	33	0.679	7.97E7	88.0	65	4.607	2907541	99.8	97	31.27	1449	100.0
2	0.106	4.28E8	2.61	34	0.721	7.45E7	88.9	66	4.892	2481024	99.8	98	33.20	1274	100.0
3	0.113	4.14E8	7.75	35	0.765	7.12E7	89.8	67	5.193	2101870	99.9	99	35.25	924	100.0
4	0.120	4.00E8	12.7	36	0.812	6.52E7	90.6	68	5.514	1792278	99.9	100	37.42	801	100.0
5	0.127	3.85E8	17.5	37	0.862	6.08E7	91.4	69	5.854	1492680	99.9	101	39.73	669	100.0
6	0.135	3.71E8	22.1	38	0.916	5.45E7	92.1	70	6.215	1235882	99.9	102	42.18	556	100.0
7	0.143	3.56E8	26.6	39	0.972	5.51E7	92.8	71	6.598	1017991	99.9	103	44.78	424	100.0
8	0.152	3.42E8	30.8	40	1.032	5.21E7	93.4	72	7.005	839033	100.0	104	47.55	324	100.0
9	0.161	3.27E8	34.9	41	1.096	5.03E7	94.1	73	7.437	681664	100.0	105	50.48	315	100.0
10	0.171	3.13E8	38.8	42	1.163	4.65E7	94.6	74	7.895	537083	100.0	106	53.59	223	100.0
11	0.182	2.98E8	42.5	43	1.235	4.36E7	95.2	75	8.382	404613	100.0	107	56.90	171	100.0
12	0.193	2.84E8	46.1	44	1.311	4.07E7	95.7	76	8.899	306305	100.0	108	60.41	144	100.0
13	0.205	2.70E8	49.5	45	1.392	3.75E7	96.2	77	9.448	230065	100.0	109	64.13	175	100.0
14	0.218	2.57E8	52.7	46	1.478	3.40E7	96.6	78	10.03	176587	100.0	110	68.09	127	100.0
15	0.231	2.43E8	55.8	47	1.569	3.12E7	97.0	79	10.65	138547	100.0	111	72.29	53	100.0
16	0.245	2.30E8	58.7	48	1.666	2.82E7	97.4	80	11.31	109684	100.0	112	76.75	74	100.0
17	0.261	2.17E8	61.4	49	1.768	2.51E7	97.7	81	12.00	88283	100.0	113	81.48	39	100.0
18	0.277	2.05E8	64.0	50	1.878	2.25E7	98.0	82	12.74	67787	100.0	114	86.50	48	100.0
19	0.294	1.93E8	66.4	51	1.993	1.98E7	98.3	83	13.53	51026	100.0	115	91.84	26	100.0
20	0.312	1.81E8	68.7	52	2.116	1.74E7	98.5	84	14.36	41335	100.0	116	97.50	13	100.0
21	0.331	1.70E8	70.8	53	2.247	1.52E7	98.7	85	15.25	32682	100.0	117	103.5	13	100.0
22	0.351	1.59E8	72.8	54	2.385	1.35E7	98.9	86	16.19	25215	100.0	118	109.9	13	100.0
23	0.373	1.49E8	74.7	55	2.532	1.19E7	99.0	87	17.19	20467	100.0	119	116.7	0	100.0
24	0.396	1.39E8	76.5	56	2.689	1.06E7	99.2	88	18.25	16273	100.0	120	123.9	4	100.0
25	0.421	1.30E8	78.1	57	2.854	9197039	99.3	89	19.38	12360	100.0	121	131.5	0	100.0
26	0.446	1.21E8	79.7	58	3.031	7997915	99.4	90	20.57	9316	100.0	122	139.6	0	100.0
27	0.474	1.12E8	81.1	59	3.217	6908569	99.5	91	21.84	6926	100.0	123	148.2	4	100.0
28	0.503	1.04E8	82.4	60	3.416	6035578	99.5	92	23.19	5363	100.0	124	157.4	4	100.0
29	0.534	9.86E7	83.6	61	3.627	5187981	99.6	93	24.62	4089	100.0	125	167.1	0	100.0
30	0.567	9.33E7	84.8	62	3.850	4580828	99.7	94	26.13	3214	100.0	126	177.4	0	100.0
31	0.602	8.91E7	85.9	63	4.088	4044518	99.7	95	27.75	2574	100.0	127	188.3	4	100.0
32	0.639	8.39E7	87.0	64	4.340	3430362	99.8	96	29.46	1922	100.0	128	199.9	0	100.0

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 21:17 18 Apr 02

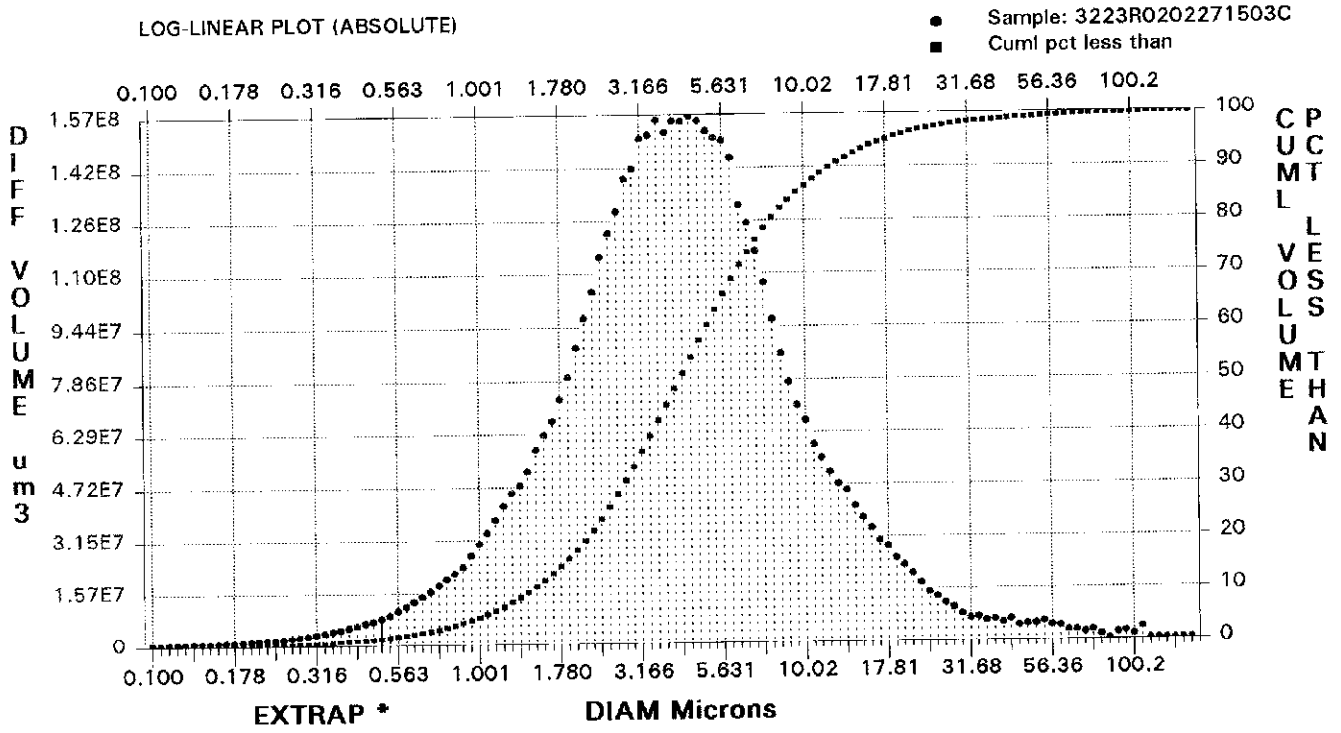
Disk File: MAL1097.HST

Sample #: 3223R0202271503C1

Lot/Job #: MAL1097

Material: storm water

Source: Todd Burgesser



Geometric Mean Size:	4.105 um
Geom. Std Deviation:	2.407 um
Geom. Skewness:	-0.159
Geom. Coeff Variation:	58.64
Arithmetic Mean Size:	6.196 um
Median Size:	4.104 um
Mode Size:	4.487 um
Kurtosis:	32.612
Arith Std Deviation	8.457 um

-- PERCENTILES --

0.100% Volume below 0.170 um
1.000% Volume below 0.425 um
6.000% Volume below 1.065 um
22.00% Volume below 2.258 um
50.00% Volume below 4.113 um
78.00% Volume below 7.388 um
94.00% Volume below 15.79 um
99.00% Volume below 43.60 um
99.90% Volume below 97.90 um

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 21:17 18 Apr 02

Disk File: MAL1097.HST

Sample #: 3223R0202271503C1

Lot/Job #: MAL1097

Material: storm water

Source: Todd Burgesser

-- Volume Distribution Data

Total Volm: 5195203915

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.100	0	0.00	32	0.596	1.17E7	1.96	63	3.552	1.56E8	42.4	94	21.17	2.03E7	96.6
2	0.106	331898	0.00	33	0.631	1.31E7	2.19	64	3.763	1.52E8	45.4	95	22.43	1.75E7	97.0
3	0.112	381534	0.01	34	0.669	1.46E7	2.46	65	3.986	1.56E8	48.4	96	23.76	1.46E7	97.3
4	0.119	437893	0.02	35	0.708	1.62E7	2.76	66	4.222	1.55E8	51.4	97	25.17	1.33E7	97.6
5	0.126	501778	0.03	36	0.750	1.81E7	3.09	67	4.473	1.57E8	54.4	98	26.66	1.13E7	97.8
6	0.133	574066	0.04	37	0.795	1.98E7	3.45	68	4.738	1.56E8	57.4	99	28.24	9962803	98.0
7	0.141	655723	0.05	38	0.842	2.15E7	3.85	69	5.019	1.53E8	60.3	100	29.91	8085864	98.2
8	0.150	747801	0.06	39	0.892	2.34E7	4.28	70	5.316	1.51E8	63.3	101	31.68	6829049	98.3
9	0.159	851449	0.08	40	0.945	2.68E7	4.77	71	5.631	1.50E8	66.1	102	33.56	7225951	98.5
10	0.168	967920	0.10	41	1.001	3.03E7	5.32	72	5.965	1.45E8	69.0	103	35.55	6000233	98.6
11	0.178	1098570	0.12	42	1.060	3.35E7	5.93	73	6.319	1.30E8	71.6	104	37.66	6404559	98.7
12	0.188	1244868	0.14	43	1.123	3.74E7	6.61	74	6.693	1.25E8	74.1	105	39.89	5484834	98.8
13	0.200	1408402	0.16	44	1.190	4.15E7	7.37	75	7.090	1.17E8	76.4	106	42.26	6361084	98.9
14	0.211	1590880	0.19	45	1.260	4.53E7	8.21	76	7.510	1.07E8	78.6	107	44.76	4555151	99.0
15	0.224	1794137	0.23	46	1.335	4.74E7	9.10	77	7.955	9.64E7	80.5	108	47.41	4855971	99.1
16	0.237	2020140	0.26	47	1.414	5.17E7	10.1	78	8.427	8.63E7	82.3	109	50.23	5108264	99.2
17	0.251	2270988	0.30	48	1.498	5.82E7	11.1	79	8.926	7.78E7	83.9	110	53.20	5598436	99.3
18	0.266	2548917	0.35	49	1.586	6.25E7	12.3	80	9.455	7.10E7	85.3	111	56.36	4498580	99.4
19	0.282	2856302	0.40	50	1.680	6.68E7	13.5	81	10.02	6.64E7	86.6	112	59.70	4344348	99.5
20	0.299	3195656	0.46	51	1.780	7.33E7	14.9	82	10.61	5.92E7	87.8	113	63.23	3045184	99.6
21	0.316	3569633	0.52	52	1.886	7.97E7	16.3	83	11.24	5.52E7	88.9	114	66.98	2989958	99.6
22	0.335	3981021	0.60	53	1.997	8.84E7	18.0	84	11.90	5.07E7	90.0	115	70.95	2431536	99.7
23	0.355	4432748	0.68	54	2.116	9.70E7	19.7	85	12.61	4.74E7	90.9	116	75.16	2890057	99.7
24	0.376	4927868	0.77	55	2.241	1.05E8	21.7	86	13.36	4.54E7	91.8	117	79.61	1585405	99.8
25	0.398	5469564	0.87	56	2.374	1.15E8	23.8	87	14.15	4.06E7	92.6	118	84.33	0	99.8
26	0.422	6061133	0.98	57	2.515	1.22E8	26.1	88	14.99	3.72E7	93.4	119	89.33	2239709	99.8
27	0.447	6705983	1.10	58	2.664	1.29E8	28.5	89	15.88	3.39E7	94.1	120	94.63	2662057	99.9
28	0.473	7407618	1.24	59	2.822	1.39E8	31.1	90	16.82	3.03E7	94.7	121	100.2	1582025	99.9
29	0.501	8169629	1.39	60	2.989	1.41E8	33.8	91	17.81	2.85E7	95.2	122	106.2	3760703	100.0
30	0.531	9134170	1.55	61	3.166	1.50E8	36.6	92	18.87	2.49E7	95.7	123	112.5	0	100.0
31	0.563	1.04E7	1.74	62	3.354	1.51E8	39.5	93	19.99	2.29E7	96.2				

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 21:17 18 Apr 02

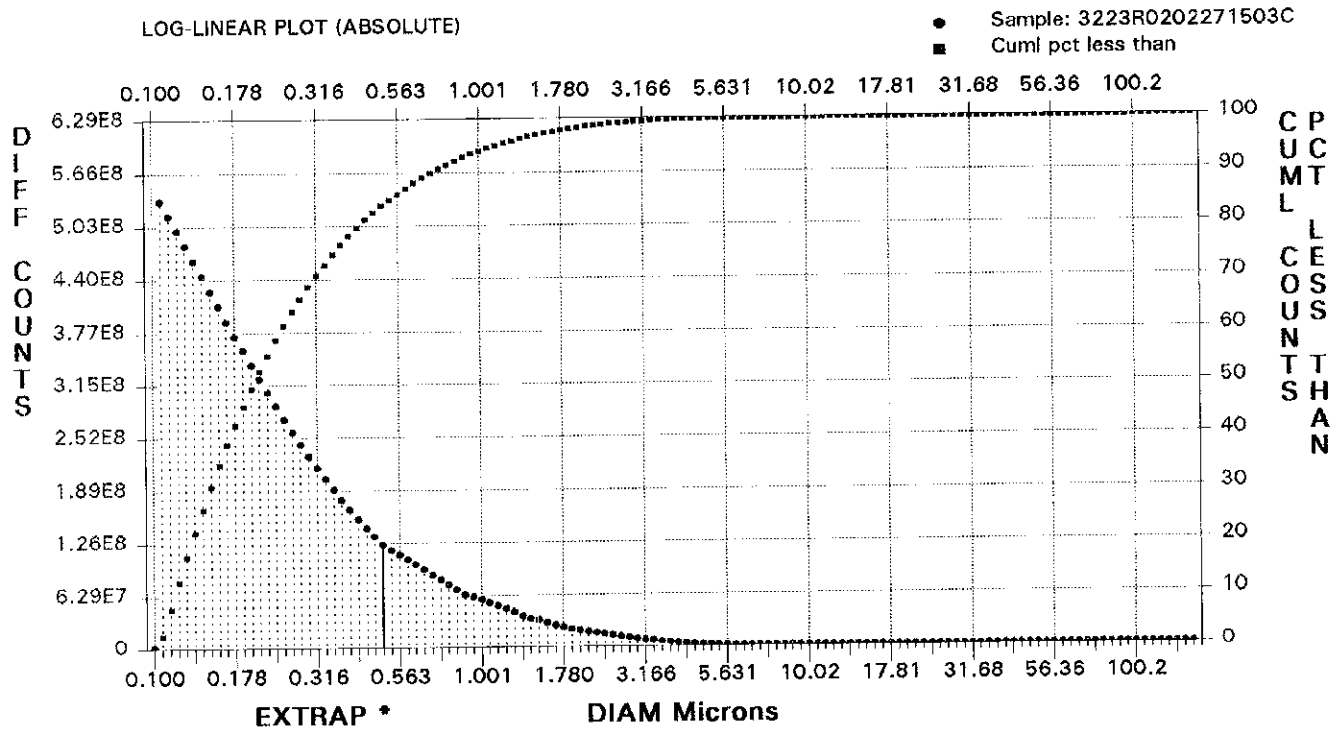
Disk File: MAL1097.HST

Sample #: 3223R0202271503C1

Lot/Job #: MAL1097

Material: storm water

Source: Todd Burgesser



Geometric Mean Size:	0.246 um
Geom. Std Deviation:	2.092 um
Geom. Skewness:	0.065
Geom. Coeff Variation:	850.7
Arithmetic Mean Size:	0.354 um
Median Size:	0.195 um
Mode Size:	0.109 um
Kurtosis:	59.836
Arith Std Deviation	0.490 um

-- PERCENTILES --

0.100% Counts below 0.103 um
1.000% Counts below 0.103 um
6.000% Counts below 0.110 um
22.00% Counts below 0.133 um
50.00% Counts below 0.202 um
78.00% Counts below 0.396 um
94.00% Counts below 0.998 um
99.00% Counts below 2.464 um
99.90% Counts below 5.032 um

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 21:17 18 Apr 02

Disk File: MAL1097.HST

Sample #: 3223R0202271503C1

Lot/Job #: MAL1097

Material: storm water

Source: Todd Burgesser

-- Frequency Distribution Data

Total Popl: 10254512101

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.100	0	0.00	32	0.596	1.06E8	87.1	63	3.552	6638203	99.7	94	21.17	4081	100.0
2	0.106	5.33E8	2.60	33	0.631	9.96E7	88.1	64	3.763	5455352	99.7	95	22.43	2955	100.0
3	0.112	5.16E8	7.72	34	0.669	9.33E7	89.0	65	3.986	4695571	99.8	96	23.76	2074	100.0
4	0.119	4.98E8	12.7	35	0.708	8.70E7	89.9	66	4.222	3942055	99.8	97	25.17	1597	100.0
5	0.126	4.80E8	17.4	36	0.750	8.17E7	90.7	67	4.473	3357396	99.8	98	26.66	1139	100.0
6	0.133	4.62E8	22.0	37	0.795	7.54E7	91.5	68	4.738	2794358	99.9	99	28.24	845	100.0
7	0.141	4.44E8	26.4	38	0.842	6.89E7	92.2	69	5.019	2306727	99.9	100	29.91	577	100.0
8	0.150	4.26E8	30.7	39	0.892	6.29E7	92.8	70	5.316	1913520	99.9	101	31.68	410	100.0
9	0.159	4.08E8	34.8	40	0.945	6.07E7	93.4	71	5.631	1601668	99.9	102	33.56	365	100.0
10	0.168	3.90E8	38.7	41	1.001	5.77E7	94.0	72	5.965	1300701	100.0	103	35.55	255	100.0
11	0.178	3.73E8	42.4	42	1.060	5.37E7	94.6	73	6.319	987101	100.0	104	37.66	229	100.0
12	0.188	3.56E8	45.9	43	1.123	5.04E7	95.1	74	6.693	797210	100.0	105	39.89	165	100.0
13	0.200	3.38E8	49.3	44	1.190	4.71E7	95.5	75	7.090	625409	100.0	106	42.26	161	100.0
14	0.211	3.22E8	52.5	45	1.260	4.32E7	96.0	76	7.510	484085	100.0	107	44.76	97	100.0
15	0.224	3.05E8	55.6	46	1.335	3.81E7	96.4	77	7.955	365711	100.0	108	47.41	87	100.0
16	0.237	2.89E8	58.5	47	1.414	3.50E7	96.7	78	8.427	275302	100.0	109	50.23	77	100.0
17	0.251	2.73E8	61.2	48	1.498	3.31E7	97.1	79	8.926	208916	100.0	110	53.20	71	100.0
18	0.266	2.58E8	63.8	49	1.586	2.99E7	97.4	80	9.455	160486	100.0	111	56.36	48	100.0
19	0.282	2.43E8	66.3	50	1.680	2.69E7	97.7	81	10.02	126280	100.0	112	59.70	39	100.0
20	0.299	2.29E8	68.6	51	1.780	2.48E7	97.9	82	10.61	94710	100.0	113	63.23	23	100.0
21	0.316	2.15E8	70.7	52	1.886	2.27E7	98.1	83	11.24	74211	100.0	114	66.98	19	100.0
22	0.335	2.02E8	72.8	53	1.997	2.12E7	98.4	84	11.90	57439	100.0	115	70.95	13	100.0
23	0.355	1.89E8	74.7	54	2.116	1.96E7	98.5	85	12.61	45105	100.0	116	75.16	13	100.0
24	0.376	1.77E8	76.5	55	2.241	1.78E7	98.7	86	13.36	36354	100.0	117	79.61	6	100.0
25	0.398	1.65E8	78.1	56	2.374	1.64E7	98.9	87	14.15	27367	100.0	118	84.33	0	100.0
26	0.422	1.54E8	79.7	57	2.515	1.47E7	99.1	88	14.99	21106	100.0	119	89.33	6	100.0
27	0.447	1.43E8	81.1	58	2.664	1.30E7	99.2	89	15.88	16202	100.0	120	94.63	6	100.0
28	0.473	1.33E8	82.5	59	2.822	1.18E7	99.3	90	16.82	12174	100.0	121	100.2	3	100.0
29	0.501	1.24E8	83.7	60	2.989	1.01E7	99.4	91	17.81	9632	100.0	122	106.2	6	100.0
30	0.531	1.16E8	84.9	61	3.166	9043812	99.5	92	18.87	7077	100.0	123	112.5	0	100.0
31	0.563	1.11E8	86.0	62	3.354	7667369	99.6	93	19.99	5481	100.0				

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 22:57 18 Apr 02

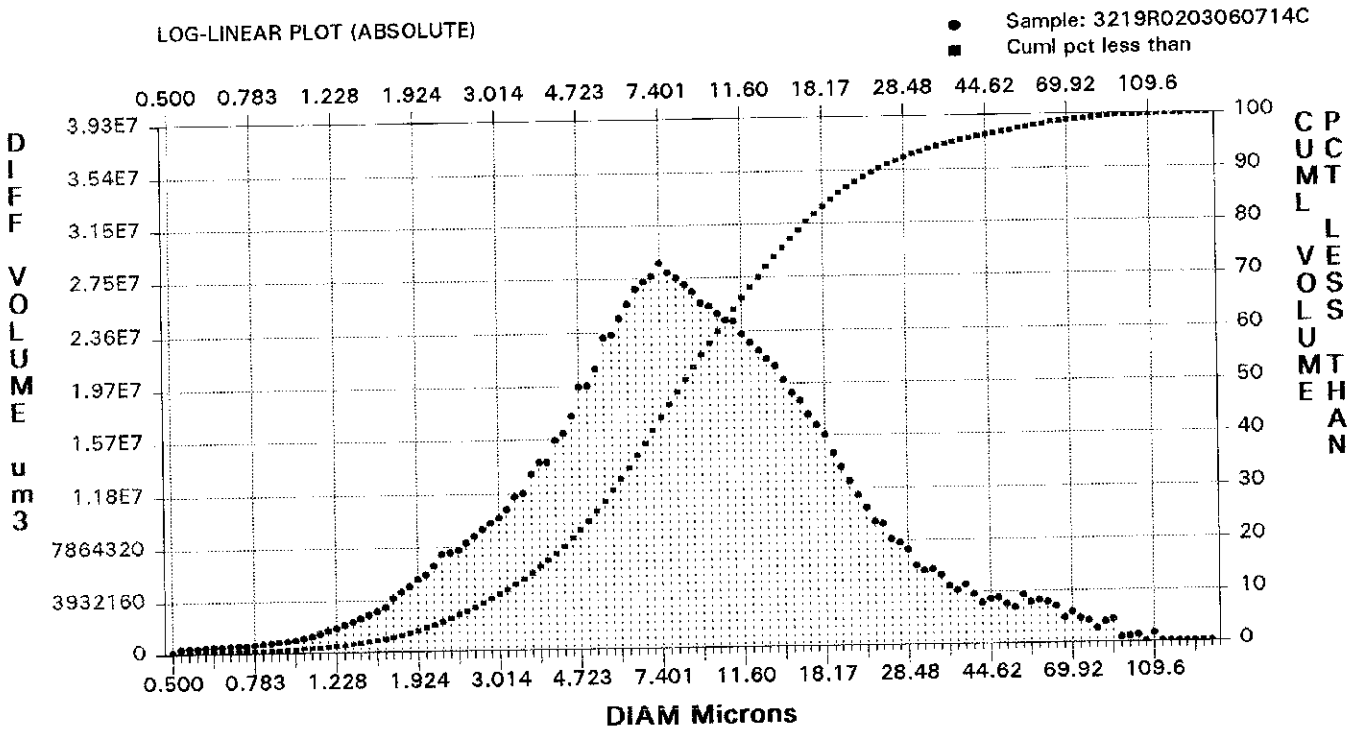
Disk File: MAL1098.HST

Sample #: 3219R0203060714C01

Lot/Job #: MAL1098

Material: storm water

Source: Todd Burgesser



Geometric Mean Size:	8.424 um
Geom. Std Deviation:	2.337 um
Geom. Skewness:	0.421
Geom. Coeff Variation:	27.75
Arithmetic Mean Size:	12.16 um
Median Size:	8.284 um
Mode Size:	7.440 um
Kurtosis:	9.030
Arith Std Deviation	13.23 um

-- PERCENTILES --

0.100% Volume below 0.583 um
1.000% Volume below 1.086 um
6.000% Volume below 2.216 um
22.00% Volume below 4.596 um
50.00% Volume below 8.302 um
78.00% Volume below 15.49 um
94.00% Volume below 32.66 um
99.00% Volume below 69.16 um
99.90% Volume below 98.34 um

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 22:57 18 Apr 02

Disk File: MAL1098.HST

Sample #: 3219R0203060714C01

Lot/Job #: MAL1098

Material: storm water

Source: Todd Burgesser

-- Volume Distribution Data

Total Volm: 1162937528

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.500	0	0.00	32	2.012	5789949	4.77	63	8.097	2.75E7	48.7	93	31.15	5585132	93.5
2	0.523	363191	0.02	33	2.105	6479415	5.30	64	8.469	2.70E7	51.0	94	32.58	5684642	94.0
3	0.547	393112	0.05	34	2.201	7330610	5.89	65	8.858	2.65E7	53.3	95	34.08	5240933	94.4
4	0.572	417682	0.08	35	2.302	7434881	6.53	66	9.265	2.57E7	55.6	96	35.65	4361347	94.8
5	0.598	448515	0.12	36	2.408	7633393	7.17	67	9.691	2.54E7	57.8	97	37.28	4014017	95.2
6	0.626	487966	0.16	37	2.519	8163561	7.85	68	10.14	2.49E7	59.9	98	39.00	4468838	95.6
7	0.655	519841	0.20	38	2.634	8628076	8.58	69	10.60	2.44E7	62.0	99	40.79	3728517	95.9
8	0.685	550759	0.25	39	2.755	9136967	9.34	70	11.09	2.43E7	64.1	100	42.66	3087984	96.2
9	0.716	580636	0.30	40	2.882	9581411	10.1	71	11.60	2.33E7	66.2	101	44.62	3347408	96.5
10	0.749	614684	0.35	41	3.014	9961416	11.0	72	12.13	2.27E7	68.2	102	46.67	3457834	96.8
11	0.783	676395	0.41	42	3.153	1.06E7	11.9	73	12.69	2.21E7	70.1	103	48.82	2982645	97.1
12	0.819	727467	0.47	43	3.298	1.15E7	12.8	74	13.27	2.15E7	72.0	104	51.06	2716344	97.3
13	0.857	772155	0.53	44	3.449	1.18E7	13.8	75	13.88	2.10E7	73.8	105	53.40	3666002	97.6
14	0.896	865786	0.60	45	3.608	1.32E7	14.9	76	14.52	1.99E7	75.6	106	55.86	3100477	97.9
15	0.938	942394	0.68	46	3.773	1.40E7	16.1	77	15.18	1.89E7	77.2	107	58.42	3234640	98.1
16	0.981	1019001	0.76	47	3.947	1.40E7	17.3	78	15.88	1.84E7	78.8	108	61.11	3104218	98.4
17	1.026	1178600	0.86	48	4.128	1.56E7	18.5	79	16.61	1.73E7	80.4	109	63.91	2732270	98.7
18	1.073	1325431	0.96	49	4.318	1.62E7	19.9	80	17.38	1.65E7	81.8	110	66.85	1875813	98.9
19	1.122	1502054	1.09	50	4.516	1.74E7	21.4	81	18.17	1.58E7	83.2	111	69.92	2325232	99.0
20	1.174	1731877	1.23	51	4.723	1.96E7	22.9	82	19.01	1.44E7	84.5	112	73.13	1841960	99.2
21	1.228	1880836	1.38	52	4.940	1.97E7	24.6	83	19.88	1.34E7	85.7	113	76.49	1639269	99.4
22	1.284	2112786	1.55	53	5.167	2.09E7	26.4	84	20.79	1.23E7	86.8	114	80.01	1071833	99.5
23	1.343	2372401	1.75	54	5.405	2.32E7	28.3	85	21.75	1.13E7	87.8	115	83.68	1533033	99.6
24	1.405	2600095	1.96	55	5.653	2.34E7	30.3	86	22.75	1.04E7	88.7	116	87.53	1754148	99.7
25	1.469	2863662	2.19	56	5.913	2.46E7	32.3	87	23.79	9291506	89.6	117	91.55	401431	99.8
26	1.537	3144860	2.45	57	6.184	2.57E7	34.5	88	24.89	9082884	90.4	118	95.75	459331	99.9
27	1.607	3427881	2.73	58	6.468	2.67E7	36.8	89	26.03	7956230	91.1	119	100.1	525582	99.9
28	1.681	4091814	3.06	59	6.766	2.73E7	39.1	90	27.23	7678018	91.8	120	104.8	0	99.9
29	1.758	4562099	3.43	60	7.076	2.77E7	41.4	91	28.48	7129867	92.4	121	109.6	688129	100.0
30	1.839	4945137	3.84	61	7.401	2.86E7	43.9	92	29.78	5959658	93.0	122	114.6	0	100.0
31	1.924	5457981	4.29	62	7.741	2.79E7	46.3								

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 22:57 18 Apr 02

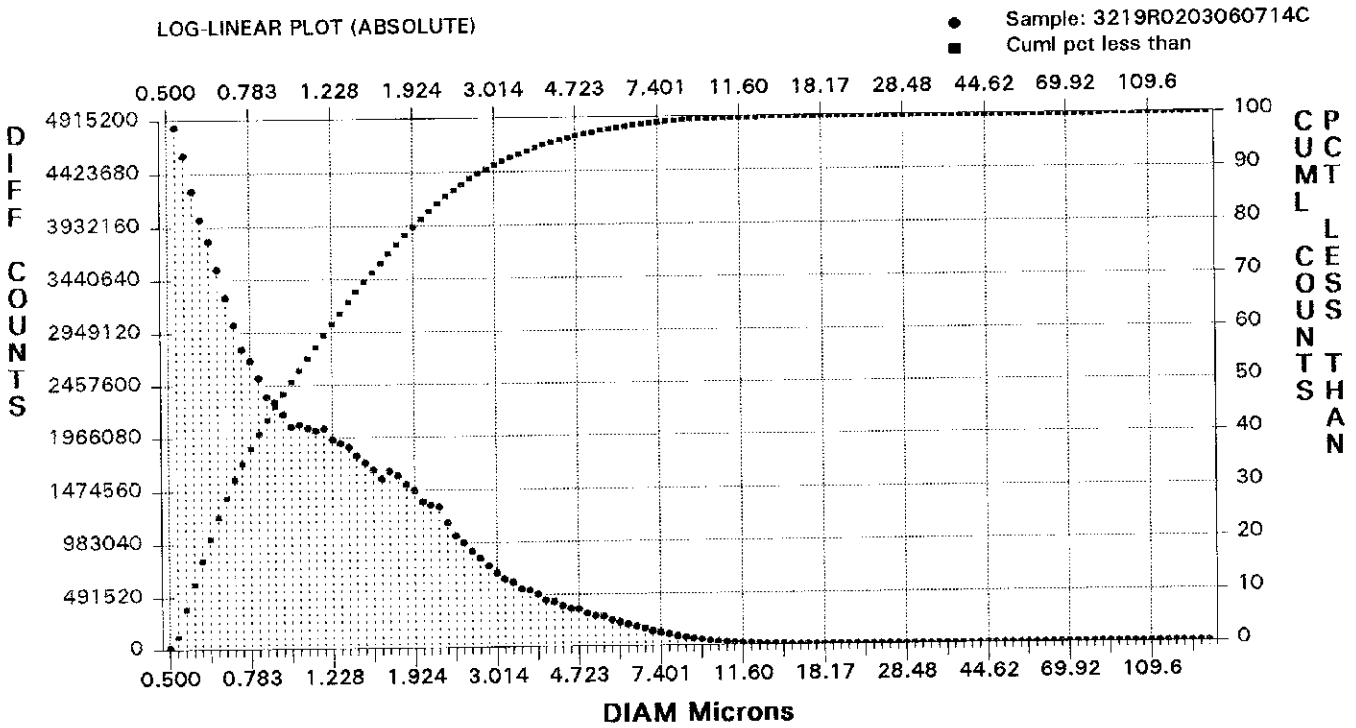
Disk File: MAL1098.HST

Sample #: 3219R0203060714C01

Lot/Job #: MAL1098

Material: storm water

Source: Todd Burgesser



Geometric Mean Size:	1.125 um
Geom. Std Deviation:	1.909 um
Geom. Skewness:	0.310
Geom. Coeff Variation:	169.6
Arithmetic Mean Size:	1.450 um
Median Size:	0.960 um
Mode Size:	0.534 um
Kurtosis:	26.737
Arith Std Deviation	1.436 um

-- PERCENTILES --

0.100% Counts below 0.512 um
1.000% Counts below 0.514 um
6.000% Counts below 0.539 um
22.00% Counts below 0.632 um
50.00% Counts below 0.969 um
78.00% Counts below 1.831 um
94.00% Counts below 3.639 um
99.00% Counts below 7.190 um
99.90% Counts below 13.29 um

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 22:57 18 Apr 02

Disk File: MAL1098.HST

Sample #: 3219R0203060714C01

Lot/Job #: MAL1098

Material: storm water

Source: Todd Burgesser

-- Frequency Distribution Data

Total Popl: 93282924

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.500	0	0.00	32	2.012	1357466	81.3	63	8.097	99026	99.3	93	31.15	353	100.0
2	0.523	4849628	2.60	33	2.105	1327617	82.7	64	8.469	84895	99.4	94	32.58	314	100.0
3	0.547	4587460	7.66	34	2.201	1312683	84.1	65	8.858	72752	99.5	95	34.08	253	100.0
4	0.572	4259754	12.4	35	2.302	1163527	85.4	66	9.265	61693	99.6	96	35.65	184	100.0
5	0.598	3997591	16.8	36	2.408	1044006	86.6	67	9.691	53366	99.7	97	37.28	148	100.0
6	0.626	3800963	21.0	37	2.519	975770	87.7	68	10.14	45581	99.7	98	39.00	144	100.0
7	0.655	3538811	24.9	38	2.634	901290	88.7	69	10.60	39079	99.8	99	40.79	105	100.0
8	0.685	3276658	28.6	39	2.755	834133	89.6	70	11.09	34034	99.8	100	42.66	76	100.0
9	0.716	3018952	32.0	40	2.882	764444	90.5	71	11.60	28564	99.8	101	44.62	72	100.0
10	0.749	2793102	35.1	41	3.014	694576	91.3	72	12.13	24310	99.9	102	46.67	65	100.0
11	0.783	2686074	38.0	42	3.153	644957	92.0	73	12.69	20663	99.9	103	48.82	49	100.0
12	0.819	2524722	40.8	43	3.298	613390	92.7	74	13.27	17566	99.9	104	51.06	39	100.0
13	0.857	2342003	43.4	44	3.449	547358	93.3	75	13.88	14977	99.9	105	53.40	46	100.0
14	0.896	2294966	45.9	45	3.608	534893	93.9	76	14.52	12435	99.9	106	55.86	34	100.0
15	0.938	2183137	48.3	46	3.773	498426	94.4	77	15.18	10331	99.9	107	58.42	31	100.0
16	0.981	2063031	50.6	47	3.947	436115	94.9	78	15.88	8748	100.0	108	61.11	26	100.0
17	1.026	2085356	52.8	48	4.128	424562	95.4	79	16.61	7209	100.0	109	63.91	20	100.0
18	1.073	2049527	55.0	49	4.318	383536	95.8	80	17.38	6013	100.0	110	66.85	12	100.0
19	1.122	2029854	57.2	50	4.516	361652	96.2	81	18.17	5031	100.0	111	69.92	13	100.0
20	1.174	2045403	59.4	51	4.723	355570	96.6	82	19.01	4009	100.0	112	73.13	9	100.0
21	1.228	1941313	61.5	52	4.940	311503	97.0	83	19.88	3249	100.0	113	76.49	7	100.0
22	1.284	1905824	63.6	53	5.167	289009	97.3	84	20.79	2617	100.0	114	80.01	4	100.0
23	1.343	1870243	65.6	54	5.405	280805	97.6	85	21.75	2092	100.0	115	83.68	5	100.0
24	1.405	1791356	67.6	55	5.653	247374	97.9	86	22.75	1680	100.0	116	87.53	5	100.0
25	1.469	1724238	69.5	56	5.913	227671	98.1	87	23.79	1317	100.0	117	91.55	1	100.0
26	1.537	1654853	71.3	57	6.184	207437	98.4	88	24.89	1125	100.0	118	95.75	1	100.0
27	1.607	1576401	73.0	58	6.468	188688	98.6	89	26.03	862	100.0	119	100.1	1	100.0
28	1.681	1644521	74.7	59	6.766	168136	98.8	90	27.23	727	100.0	120	104.8	0	100.0
29	1.758	1602400	76.5	60	7.076	149210	98.9	91	28.48	590	100.0	121	109.6	1	100.0
30	1.839	1517984	78.1	61	7.401	134926	99.1	92	29.78	431	100.0	122	114.6	0	100.0
31	1.924	1464211	79.7	62	7.741	114868	99.2								

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 22:34 19 Apr 02

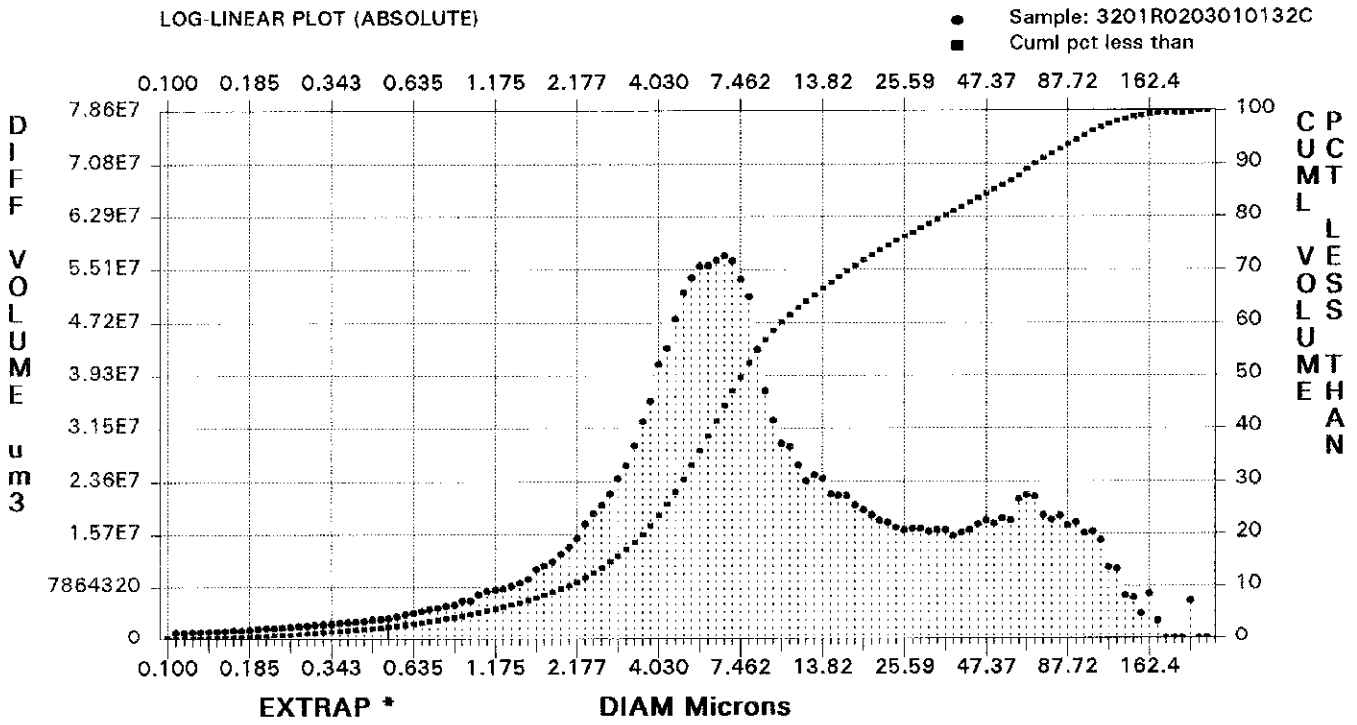
Disk File: MAL1099.HST

Sample #: 3201R0203010132C1

Lot/Job #: MAL1099

Material: storm water

Source: Todd Burgesser



Geometric Mean Size:	9.197 um	-- PERCENTILES --
Geom. Std Deviation:	3.919 um	0.100% Volume below 0.115 um
Geom. Skewness:	0.667	1.000% Volume below 0.243 um
Geom. Coeff Variation:	42.62	6.000% Volume below 1.200 um
		22.00% Volume below 3.818 um
Arithmetic Mean Size:	22.01 um	50.00% Volume below 7.483 um
Median Size:	7.268 um	78.00% Volume below 29.22 um
Mode Size:	6.584 um	94.00% Volume below 89.05 um
Kurtosis:	7.890	99.00% Volume below 145.9 um
Arith Std Deviation	34.98 um	99.90% Volume below 222.6 um

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 22:34 19 Apr 02

Disk File: MAL1099.HST

Sample #: 3201R0203010132C1

Lot/Job #: MAL1099

Material: storm water

Source: Todd Burgesser

-- Volume Distribution Data

Total Volm: 2005878172

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.100	0	0.00	33	0.718	4556155	3.55	65	5.156	5.39E7	33.1	97	37.03	1.55E7	81.1
2	0.106	1056439	0.03	34	0.764	4706607	3.78	66	5.484	5.56E7	35.8	98	39.38	1.59E7	81.8
3	0.113	1106502	0.08	35	0.812	5012020	4.02	67	5.833	5.57E7	38.6	99	41.88	1.63E7	82.7
4	0.120	1158626	0.14	36	0.864	5197415	4.28	68	6.203	5.64E7	41.4	100	44.54	1.72E7	83.5
5	0.128	1212876	0.20	37	0.919	5811402	4.55	69	6.597	5.71E7	44.2	101	47.37	1.78E7	84.4
6	0.136	1269324	0.26	38	0.977	5767168	4.84	70	7.017	5.64E7	47.1	102	50.38	1.73E7	85.2
7	0.145	1328041	0.32	39	1.039	6715185	5.15	71	7.462	5.37E7	49.8	103	53.59	1.80E7	86.1
8	0.154	1389098	0.39	40	1.105	7175047	5.50	72	7.937	5.11E7	52.4	104	56.99	1.77E7	87.0
9	0.164	1452569	0.46	41	1.175	7368523	5.86	73	8.441	4.32E7	54.8	105	60.61	2.09E7	88.0
10	0.174	1518531	0.54	42	1.250	7560625	6.23	74	8.977	3.71E7	56.8	106	64.46	2.15E7	89.0
11	0.185	1587059	0.61	43	1.330	7992179	6.62	75	9.548	3.26E7	58.5	107	68.56	2.13E7	90.1
12	0.197	1658231	0.69	44	1.414	8414304	7.03	76	10.15	2.92E7	60.1	108	72.92	1.85E7	91.1
13	0.209	1732127	0.78	45	1.504	9035373	7.46	77	10.80	2.87E7	61.5	109	77.55	1.78E7	92.0
14	0.223	1808827	0.87	46	1.600	1.05E7	7.95	78	11.49	2.60E7	62.9	110	82.48	1.84E7	92.9
15	0.237	1888413	0.96	47	1.701	1.09E7	8.48	79	12.22	2.37E7	64.1	111	87.72	1.70E7	93.8
16	0.252	1970969	1.05	48	1.809	1.16E7	9.04	80	12.99	2.46E7	65.3	112	93.29	1.74E7	94.6
17	0.268	2056578	1.15	49	1.924	1.28E7	9.65	81	13.82	2.40E7	66.5	113	99.22	1.59E7	95.4
18	0.285	2145325	1.26	50	2.047	1.38E7	10.3	82	14.70	2.17E7	67.6	114	105.5	1.60E7	96.2
19	0.303	2237298	1.37	51	2.177	1.52E7	11.0	83	15.63	2.14E7	68.7	115	112.2	1.48E7	97.0
20	0.322	2332583	1.48	52	2.315	1.73E7	11.8	84	16.62	2.15E7	69.8	116	119.4	1.07E7	97.6
21	0.343	2431270	1.60	53	2.462	1.87E7	12.7	85	17.68	2.00E7	70.8	117	126.9	1.05E7	98.2
22	0.365	2533447	1.73	54	2.618	2.00E7	13.7	86	18.80	1.93E7	71.8	118	135.0	6443557	98.6
23	0.388	2639205	1.85	55	2.785	2.17E7	14.7	87	20.00	1.85E7	72.7	119	143.6	6201289	98.9
24	0.412	2748635	1.99	56	2.962	2.41E7	15.9	88	21.27	1.77E7	73.7	120	152.7	3730081	99.2
25	0.439	2861830	2.13	57	3.150	2.60E7	17.1	89	22.62	1.75E7	74.5	121	162.4	6730941	99.4
26	0.467	2978881	2.27	58	3.350	2.89E7	18.5	90	24.06	1.67E7	75.4	122	172.7	2699112	99.7
27	0.496	3099881	2.43	59	3.563	3.24E7	20.0	91	25.59	1.63E7	76.2	123	183.7	0	99.7
28	0.528	3224925	2.58	60	3.789	3.55E7	21.7	92	27.21	1.64E7	77.0	124	195.4	0	99.7
29	0.561	3529562	2.75	61	4.030	4.09E7	23.6	93	28.94	1.65E7	77.8	125	207.8	0	99.7
30	0.597	3730551	2.93	62	4.286	4.35E7	25.7	94	30.78	1.61E7	78.7	126	221.0	5653092	99.9
31	0.635	3980094	3.12	63	4.559	4.77E7	28.0	95	32.73	1.63E7	79.5	127	235.1	0	100.0
32	0.675	4254034	3.33	64	4.848	5.16E7	30.5	96	34.81	1.63E7	80.3				

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 22:34 19 Apr 02

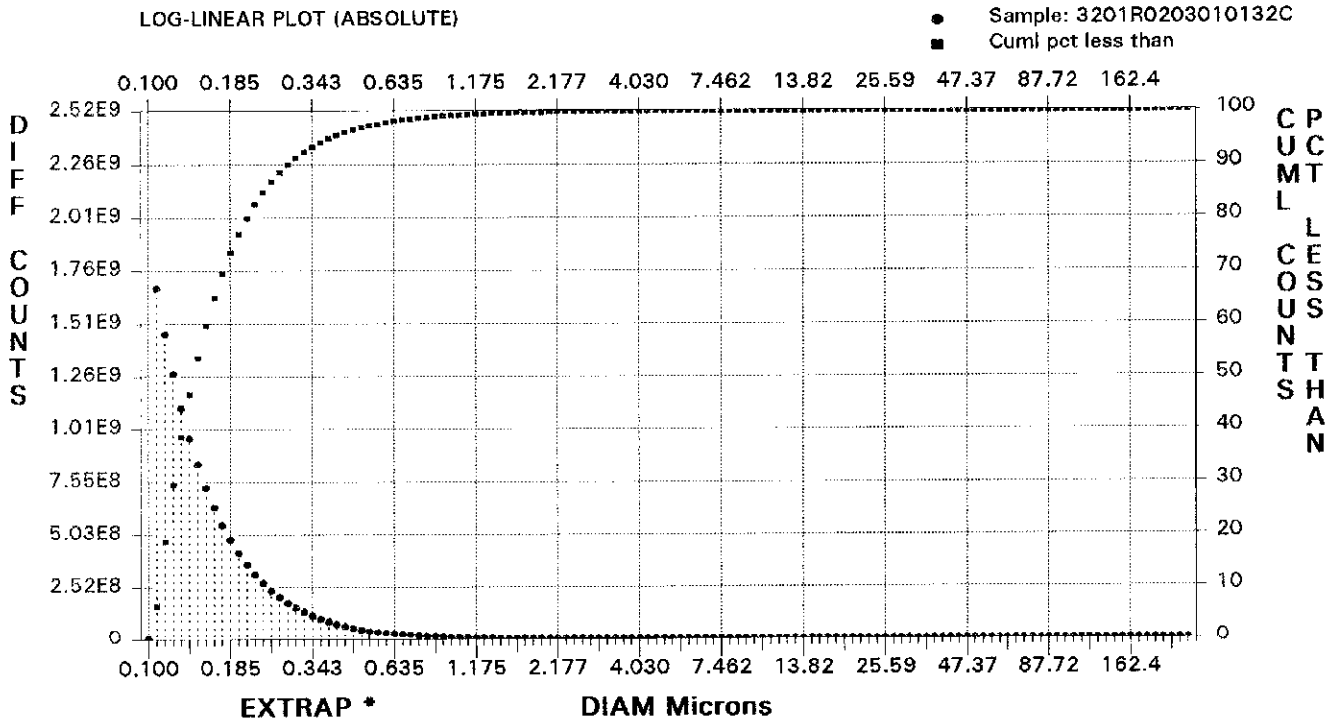
Disk File: MAL1099.HST

Sample #: 3201R0203010132C1

Lot/Job #: MAL1099

Material: storm water

Source: Todd Burgesser



Geometric Mean Size:	0.161 um	-- PERCENTILES --
Geom. Std Deviation:	1.580 um	0.100% Counts below 0.103 um
Geom. Skewness:	0.033	1.000% Counts below 0.103 um
Geom. Coeff Variation:	980.7	6.000% Counts below 0.105 um
		22.00% Counts below 0.115 um
Arithmetic Mean Size:	0.189 um	50.00% Counts below 0.140 um
Median Size:	0.133 um	78.00% Counts below 0.201 um
Mode Size:	0.109 um	94.00% Counts below 0.360 um
Kurtosis:	1679.553	99.00% Counts below 0.885 um
Arith Std Deviation	0.229 um	99.90% Counts below 3.163 um

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 22:34 19 Apr 02

Disk File: MAL1099.HST

Sample #: 3201R0203010132C1

Lot/Job #: MAL1099

Material: storm water

Source: Todd Burgesser

-- Frequency Distribution Data

Total Popl: 12881742639

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.100	0	0.00	33	0.718	2.35E7	98.5	65	5.156	750679	100.0	97	37.03	582	100.0
2	0.106	1.68E9	6.51	34	0.764	2.02E7	98.7	66	5.484	643627	100.0	98	39.38	497	100.0
3	0.113	1.46E9	18.7	35	0.812	1.79E7	98.8	67	5.833	535807	100.0	99	41.88	424	100.0
4	0.120	1.27E9	29.3	36	0.864	1.54E7	98.9	68	6.203	451459	100.0	100	44.54	371	100.0
5	0.128	1.11E9	38.5	37	0.919	1.43E7	99.1	69	6.597	379973	100.0	101	47.37	319	100.0
6	0.136	9.62E8	46.5	38	0.977	1.18E7	99.2	70	7.017	311683	100.0	102	50.38	258	100.0
7	0.145	8.37E8	53.5	39	1.039	1.14E7	99.3	71	7.462	246775	100.0	103	53.59	223	100.0
8	0.154	7.28E8	59.6	40	1.105	1.01E7	99.3	72	7.937	195166	100.0	104	56.99	183	100.0
9	0.164	6.32E8	64.9	41	1.175	8664227	99.4	73	8.441	137284	100.0	105	60.61	179	100.0
10	0.174	5.50E8	69.5	42	1.250	7389938	99.5	74	8.977	97821	100.0	106	64.46	153	100.0
11	0.185	4.77E8	73.4	43	1.330	6493547	99.5	75	9.548	71632	100.0	107	68.56	126	100.0
12	0.197	4.15E8	76.9	44	1.414	5682883	99.6	76	10.15	53262	100.0	108	72.92	91	100.0
13	0.209	3.60E8	79.9	45	1.504	5072596	99.6	77	10.80	43543	100.0	109	77.55	73	100.0
14	0.223	3.13E8	82.5	46	1.600	4878427	99.7	78	11.49	32728	100.0	110	82.48	62	100.0
15	0.237	2.71E8	84.8	47	1.701	4243305	99.7	79	12.22	24801	100.0	111	87.72	48	100.0
16	0.252	2.35E8	86.8	48	1.809	3738471	99.7	80	12.99	21381	100.0	112	93.29	41	100.0
17	0.268	2.04E8	88.5	49	1.924	3419607	99.7	81	13.82	17378	100.0	113	99.22	31	100.0
18	0.285	1.77E8	89.9	50	2.047	3083067	99.8	82	14.70	13032	100.0	114	105.5	26	100.0
19	0.303	1.53E8	91.2	51	2.177	2808255	99.8	83	15.63	10722	100.0	115	112.2	20	100.0
20	0.322	1.33E8	92.3	52	2.315	2659069	99.8	84	16.62	8934	100.0	116	119.4	12	100.0
21	0.343	1.15E8	93.3	53	2.462	2397634	99.8	85	17.68	6927	100.0	117	126.9	10	100.0
22	0.365	9.98E7	94.1	54	2.618	2127897	99.9	86	18.80	5544	100.0	118	135.0	5	100.0
23	0.388	8.64E7	94.9	55	2.785	1921456	99.9	87	20.00	4409	100.0	119	143.6	4	100.0
24	0.412	7.48E7	95.5	56	2.962	1769582	99.9	88	21.27	3522	100.0	120	152.7	2	100.0
25	0.439	6.48E7	96.0	57	3.150	1585980	99.9	89	22.62	2883	100.0	121	162.4	3	100.0
26	0.467	5.60E7	96.5	58	3.350	1469098	99.9	90	24.06	2294	100.0	122	172.7	1	100.0
27	0.496	4.85E7	96.9	59	3.563	1368723	99.9	91	25.59	1857	100.0	123	183.7	0	100.0
28	0.528	4.19E7	97.3	60	3.789	1244331	99.9	92	27.21	1558	100.0	124	195.4	0	100.0
29	0.561	3.81E7	97.6	61	4.030	1193342	99.9	93	28.94	1302	100.0	125	207.8	0	100.0
30	0.597	3.35E7	97.8	62	4.286	1054267	100.0	94	30.78	1057	100.0	126	221.0	1	100.0
31	0.635	2.97E7	98.1	63	4.559	961929	100.0	95	32.73	886	100.0	127	235.1	0	100.0
32	0.675	2.64E7	98.3	64	4.848	865048	100.0	96	34.81	737	100.0				

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 23:34 19 Apr 02

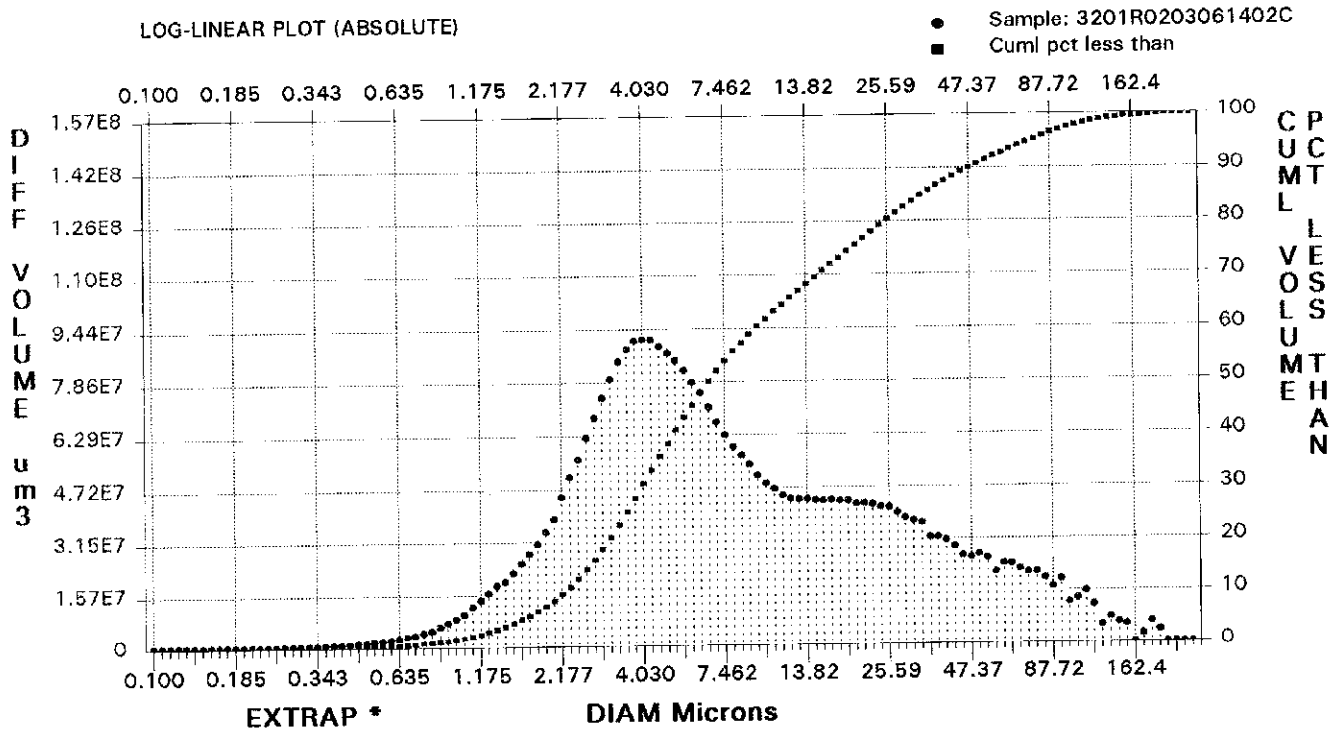
Disk File: MAL1100.HST

Sample #: 3201R0203061402C2

Lot/Job #: MAL1100

Material: storm water

Source: Todd Burgesser



Geometric Mean Size:	8.260 um
Geom. Std Deviation:	3.270 um
Geom. Skewness:	1.256
Geom. Coeff Variation:	39.58
Arithmetic Mean Size:	17.41 um
Median Size:	6.420 um
Mode Size:	4.152 um
Kurtosis:	10.497
Arith Std Deviation	27.62 um

-- PERCENTILES --

0.100% Volume below 0.308 um
1.000% Volume below 0.793 um
6.000% Volume below 1.679 um
22.00% Volume below 3.235 um
50.00% Volume below 6.576 um
78.00% Volume below 22.47 um
94.00% Volume below 66.89 um
99.00% Volume below 127.3 um
99.90% Volume below 190.7 um

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 23:34 19 Apr 02

Disk File: MAL1100.HST

Sample #: 3201R0203061402C2

Lot/Job #: MAL1100

Material: storm water

Source: Todd Burgesser

-- Volume Distribution Data

Total Volm: 3491352333

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.100	0	0.00	33	0.718	4009973	0.79	64	4.848	8.72E7	38.6	95	32.73	3.65E7	84.9
2	0.106	33157	0.00	34	0.764	4588568	0.92	65	5.156	8.49E7	41.1	96	34.81	3.21E7	85.9
3	0.113	39825	0.00	35	0.812	5300303	1.06	66	5.484	8.22E7	43.5	97	37.03	3.19E7	86.8
4	0.120	47732	0.00	36	0.864	6390568	1.23	67	5.833	7.84E7	45.8	98	39.38	3.10E7	87.7
5	0.128	57086	0.00	37	0.919	7501012	1.42	68	6.203	7.53E7	48.0	99	41.88	2.92E7	88.5
6	0.136	68127	0.01	38	0.977	8707641	1.66	69	6.597	7.12E7	50.1	100	44.54	2.65E7	89.3
7	0.145	81128	0.01	39	1.039	1.01E7	1.93	70	7.017	6.69E7	52.0	101	47.37	2.58E7	90.1
8	0.154	96404	0.01	40	1.105	1.22E7	2.25	71	7.462	6.29E7	53.9	102	50.38	2.69E7	90.8
9	0.164	114312	0.01	41	1.175	1.43E7	2.63	72	7.937	5.94E7	55.7	103	53.59	2.56E7	91.6
10	0.174	135255	0.02	42	1.250	1.64E7	3.07	73	8.441	5.68E7	57.3	104	56.99	2.15E7	92.3
11	0.185	159692	0.02	43	1.330	1.87E7	3.57	74	8.977	5.42E7	58.9	105	60.61	2.40E7	92.9
12	0.197	188140	0.03	44	1.414	1.97E7	4.12	75	9.548	5.07E7	60.4	106	64.46	2.37E7	93.6
13	0.209	221181	0.03	45	1.504	2.22E7	4.72	76	10.15	4.85E7	61.8	107	68.56	2.23E7	94.3
14	0.223	259468	0.04	46	1.600	2.52E7	5.40	77	10.80	4.67E7	63.2	108	72.92	2.13E7	94.9
15	0.237	303731	0.05	47	1.701	2.80E7	6.16	78	11.49	4.48E7	64.5	109	77.55	2.15E7	95.5
16	0.252	354783	0.06	48	1.809	3.08E7	7.00	79	12.22	4.39E7	65.8	110	82.48	1.97E7	96.1
17	0.268	413528	0.07	49	1.924	3.46E7	7.94	80	12.99	4.36E7	67.0	111	87.72	1.70E7	96.6
18	0.285	480967	0.08	50	2.047	3.84E7	8.98	81	13.82	4.37E7	68.3	112	93.29	1.91E7	97.1
19	0.303	558206	0.10	51	2.177	4.48E7	10.2	82	14.70	4.33E7	69.5	113	99.22	1.23E7	97.6
20	0.322	646462	0.11	52	2.315	5.08E7	11.5	83	15.63	4.31E7	70.8	114	105.5	1.35E7	97.9
21	0.343	747067	0.13	53	2.462	5.60E7	13.1	84	16.62	4.32E7	72.0	115	112.2	1.55E7	98.4
22	0.365	861480	0.16	54	2.618	6.24E7	14.8	85	17.68	4.31E7	73.2	116	119.4	1.16E7	98.7
23	0.388	991286	0.18	55	2.785	6.83E7	16.6	86	18.80	4.31E7	74.5	117	126.9	5356232	99.0
24	0.412	1138209	0.21	56	2.962	7.41E7	18.7	87	20.00	4.22E7	75.7	118	135.0	7732268	99.2
25	0.439	1304107	0.25	57	3.150	7.97E7	20.9	88	21.27	4.23E7	76.9	119	143.6	6201289	99.4
26	0.467	1490986	0.29	58	3.350	8.48E7	23.2	89	22.62	4.19E7	78.1	120	152.7	5595121	99.5
27	0.496	1700992	0.33	59	3.563	8.84E7	25.7	90	24.06	4.12E7	79.3	121	162.4	0	99.6
28	0.528	1936421	0.39	60	3.789	9.08E7	28.3	91	25.59	4.09E7	80.5	122	172.7	2699112	99.7
29	0.561	2232455	0.45	61	4.030	9.13E7	30.9	92	27.21	3.95E7	81.6	123	183.7	6494073	99.8
30	0.597	2568880	0.51	62	4.286	9.13E7	33.5	93	28.94	3.80E7	82.7	124	195.4	3906191	99.9
31	0.635	2985015	0.59	63	4.559	8.91E7	36.1	94	30.78	3.71E7	83.8	125	207.8	0	100.0
32	0.675	3464238	0.69												

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 23:34 19 Apr 02

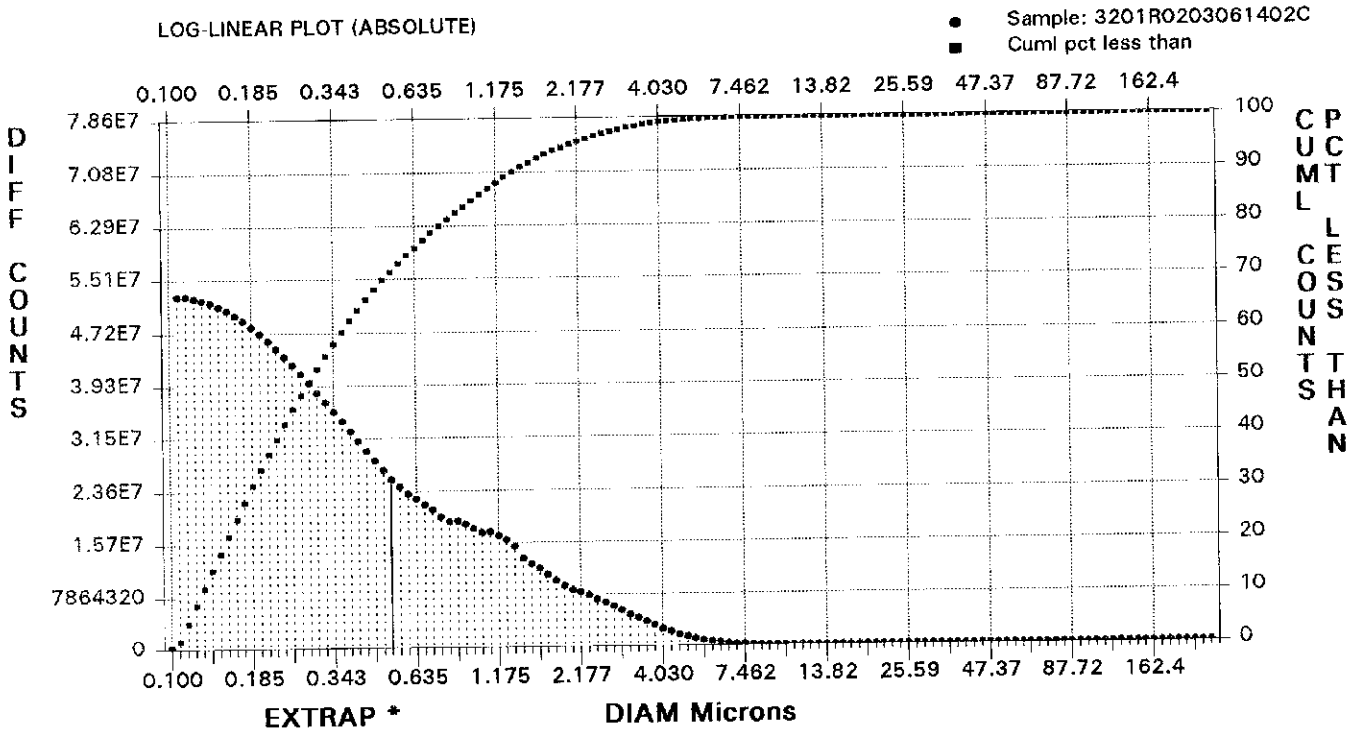
Disk File: MAL1100.HST

Sample #: 3201R0203061402C2

Lot/Job #: MAL1100

Material: storm water

Source: Todd Burgesser



Geometric Mean Size:	0.343 um
Geom. Std Deviation:	2.471 um
Geom. Skewness:	0.095
Geom. Coeff Variation:	719.7
Arithmetic Mean Size:	0.563 um
Median Size:	0.277 um
Mode Size:	0.110 um
Kurtosis:	103.099
Arith Std Deviation	0.816 um

-- PERCENTILES --
0.100% Counts below 0.103 um
1.000% Counts below 0.104 um
6.000% Counts below 0.115 um
22.00% Counts below 0.155 um
50.00% Counts below 0.280 um
78.00% Counts below 0.694 um
94.00% Counts below 1.808 um
99.00% Counts below 3.772 um
99.90% Counts below 7.059 um

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 23:34 19 Apr 02

Disk File: MAL1100.HST

Sample #: 3201R0203061402C2

Lot/Job #: MAL1100

Material: storm water

Source: Todd Burgesser

-- Frequency Distribution Data

Total Popl: 1566983711

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.100	0	0.00	33	0.718	2.07E7	78.7	64	4.848	1461955	99.6	95	32.73	1985	100.0
2	0.106	5.26E7	1.68	34	0.764	1.97E7	80.0	65	5.156	1182787	99.7	96	34.81	1453	100.0
3	0.113	5.26E7	5.04	35	0.812	1.89E7	81.2	66	5.484	951466	99.7	97	37.03	1202	100.0
4	0.120	5.24E7	8.38	36	0.864	1.89E7	82.4	67	5.833	754960	99.8	98	39.38	969	100.0
5	0.128	5.21E7	11.7	37	0.919	1.85E7	83.6	68	6.203	602541	99.8	99	41.88	759	100.0
6	0.136	5.16E7	15.0	38	0.977	1.78E7	84.7	69	6.597	473622	99.9	100	44.54	572	100.0
7	0.145	5.11E7	18.3	39	1.039	1.72E7	85.9	70	7.017	369799	99.9	101	47.37	464	100.0
8	0.154	5.05E7	21.5	40	1.105	1.73E7	87.0	71	7.462	289114	99.9	102	50.38	401	100.0
9	0.164	4.98E7	24.7	41	1.175	1.68E7	88.1	72	7.937	227004	99.9	103	53.59	318	100.0
10	0.174	4.90E7	27.9	42	1.250	1.61E7	89.1	73	8.441	180522	99.9	104	56.99	222	100.0
11	0.185	4.80E7	31.0	43	1.330	1.52E7	90.1	74	8.977	143080	100.0	105	60.61	206	100.0
12	0.197	4.70E7	34.0	44	1.414	1.33E7	91.0	75	9.548	111343	100.0	106	64.46	169	100.0
13	0.209	4.60E7	37.0	45	1.504	1.25E7	91.8	76	10.15	88441	100.0	107	68.56	132	100.0
14	0.223	4.48E7	39.9	46	1.600	1.18E7	92.6	77	10.80	70808	100.0	108	72.92	105	100.0
15	0.237	4.36E7	42.7	47	1.701	1.09E7	93.3	78	11.49	56478	100.0	109	77.55	88	100.0
16	0.252	4.24E7	45.5	48	1.809	9944325	94.0	79	12.22	46006	100.0	110	82.48	67	100.0
17	0.268	4.10E7	48.1	49	1.924	9266504	94.6	80	12.99	37966	100.0	111	87.72	48	100.0
18	0.285	3.97E7	50.7	50	2.047	8547606	95.2	81	13.82	31642	100.0	112	93.29	45	100.0
19	0.303	3.83E7	53.2	51	2.177	8289429	95.7	82	14.70	26084	100.0	113	99.22	24	100.0
20	0.322	3.69E7	55.6	52	2.315	7819413	96.2	83	15.63	21551	100.0	114	105.5	22	100.0
21	0.343	3.54E7	57.9	53	2.462	7165672	96.7	84	16.62	17974	100.0	115	112.2	21	100.0
22	0.365	3.39E7	60.1	54	2.618	6635973	97.1	85	17.68	14884	100.0	116	119.4	13	100.0
23	0.388	3.25E7	62.2	55	2.785	6036250	97.5	86	18.80	12397	100.0	117	126.9	5	100.0
24	0.412	3.10E7	64.2	56	2.962	5448106	97.9	87	20.00	10077	100.0	118	135.0	6	100.0
25	0.439	2.95E7	66.2	57	3.150	4867676	98.2	88	21.27	8397	100.0	119	143.6	4	100.0
26	0.467	2.80E7	68.0	58	3.350	4306909	98.5	89	22.62	6921	100.0	120	152.7	3	100.0
27	0.496	2.66E7	69.7	59	3.563	3731177	98.8	90	24.06	5652	100.0	121	162.4	0	100.0
28	0.528	2.52E7	71.4	60	3.789	3187592	99.0	91	25.59	4668	100.0	122	172.7	1	100.0
29	0.561	2.41E7	73.0	61	4.030	2664066	99.2	92	27.21	3748	100.0	123	183.7	2	100.0
30	0.597	2.31E7	74.5	62	4.286	2214150	99.4	93	28.94	2991	100.0	124	195.4	1	100.0
31	0.635	2.23E7	75.9	63	4.559	1795442	99.5	94	30.78	2428	100.0	125	207.8	0	100.0
32	0.675	2.15E7	77.3												

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 0:11 20 Apr 02

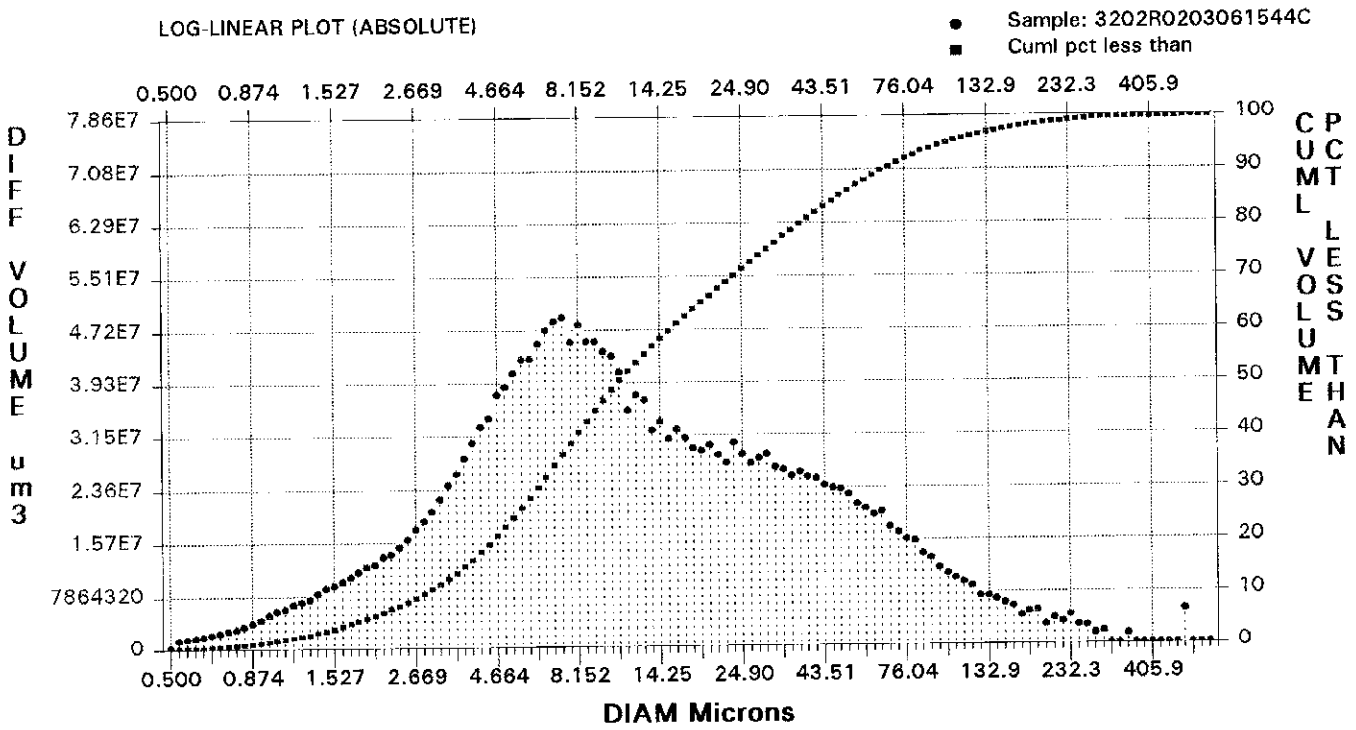
Disk File: MAL1101.HST

Sample #: 3202R0203061544C1

Lot/Job #: MAL1101

Material: storm water

Source: Todd Burgesser



Geometric Mean Size:	12.22 um
Geom. Std Deviation:	3.395 um
Geom. Skewness:	1.502
Geom. Coeff Variation:	27.77
Arithmetic Mean Size:	26.46 um
Median Size:	10.50 um
Mode Size:	7.127 um
Kurtosis:	29.374
Arith Std Deviation	46.60 um

-- PERCENTILES --

0.100% Volume below 0.564 um
1.000% Volume below 0.882 um
6.000% Volume below 1.954 um
22.00% Volume below 4.780 um
50.00% Volume below 10.62 um
78.00% Volume below 33.52 um
94.00% Volume below 89.59 um
99.00% Volume below 218.0 um
99.90% Volume below 508.6 um

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 0:11 20 Apr 02

Disk File: MAL1101.HST

Sample #: 3202R0203061544C1

Lot/Job #: MAL1101

Material: storm water

Source: Todd Burgesser

-- Volume Distribution Data

Total Volm: 2273330210

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.500	0	0.00	33	2.984	2.03E7	11.2	65	17.81	2.95E7	63.9	96	100.5	1.06E7	95.1
2	0.529	1284191	0.03	34	3.156	2.22E7	12.2	66	18.83	2.91E7	65.1	97	106.3	9961472	95.5
3	0.559	1456914	0.09	35	3.337	2.42E7	13.2	67	19.91	3.00E7	66.4	98	112.4	9437184	95.9
4	0.591	1650667	0.16	36	3.528	2.59E7	14.3	68	21.06	2.84E7	67.7	99	118.9	8792087	96.3
5	0.625	1866525	0.23	37	3.731	2.81E7	15.5	69	22.27	2.72E7	69.0	100	125.7	7340032	96.7
6	0.661	2107009	0.32	38	3.945	3.05E7	16.7	70	23.55	3.03E7	70.2	101	132.9	7340032	97.0
7	0.699	2397457	0.42	39	4.172	3.29E7	18.1	71	24.90	2.85E7	71.5	102	140.5	6815744	97.3
8	0.739	2713786	0.53	40	4.411	3.41E7	19.6	72	26.33	2.72E7	72.7	103	148.6	6291456	97.6
9	0.782	3057796	0.66	41	4.664	3.76E7	21.2	73	27.84	2.80E7	74.0	104	157.1	5767168	97.9
10	0.826	3434515	0.80	42	4.932	3.87E7	22.9	74	29.44	2.85E7	75.2	105	166.2	4383641	98.1
11	0.874	3904697	0.96	43	5.215	4.07E7	24.6	75	31.13	2.66E7	76.4	106	175.7	4966884	98.3
12	0.924	4383685	1.15	44	5.515	4.27E7	26.4	76	32.91	2.63E7	77.6	107	185.8	5106517	98.5
13	0.977	5111245	1.36	45	5.831	4.28E7	28.3	77	34.80	2.53E7	78.7	108	196.4	3018811	98.7
14	1.033	5687108	1.59	46	6.166	4.51E7	30.3	78	36.80	2.59E7	79.8	109	207.7	3926113	98.9
15	1.092	5948081	1.85	47	6.520	4.71E7	32.3	79	38.92	2.51E7	81.0	110	219.7	3375951	99.0
16	1.155	6623877	2.13	48	6.895	4.84E7	34.4	80	41.15	2.49E7	82.1	111	232.3	4490418	99.2
17	1.222	7004192	2.43	49	7.290	4.91E7	36.5	81	43.51	2.39E7	83.1	112	245.6	2949527	99.4
18	1.292	7393134	2.74	50	7.709	4.54E7	38.6	82	46.01	2.35E7	84.2	113	259.7	2789817	99.5
19	1.366	8267894	3.09	51	8.152	4.80E7	40.7	83	48.65	2.33E7	85.2	114	274.6	1649265	99.6
20	1.444	9005878	3.47	52	8.620	4.54E7	42.7	84	51.45	2.25E7	86.2	115	290.4	1949898	99.7
21	1.527	9408839	3.87	53	9.115	4.55E7	44.7	85	54.40	2.11E7	87.2	116	307.0	0	99.7
22	1.615	9938512	4.30	54	9.638	4.39E7	46.7	86	57.52	2.04E7	88.1	117	324.7	0	99.7
23	1.708	1.07E7	4.75	55	10.19	4.32E7	48.6	87	60.83	1.94E7	89.0	118	343.3	1611390	99.7
24	1.806	1.14E7	5.24	56	10.78	4.09E7	50.5	88	64.32	1.99E7	89.8	119	363.0	0	99.8
25	1.909	1.21E7	5.75	57	11.40	3.52E7	52.1	89	68.01	1.76E7	90.6	120	383.9	0	99.8
26	2.019	1.25E7	6.30	58	12.05	3.75E7	53.7	90	71.92	1.68E7	91.4	121	405.9	0	99.8
27	2.135	1.36E7	6.87	59	12.74	3.68E7	55.4	91	76.04	1.57E7	92.1	122	429.2	0	99.8
28	2.257	1.40E7	7.48	60	13.47	3.22E7	56.9	92	80.41	1.55E7	92.8	123	453.9	0	99.8
29	2.387	1.51E7	8.12	61	14.25	3.35E7	58.3	93	85.03	1.36E7	93.4	124	479.9	0	99.8
30	2.524	1.62E7	8.81	62	15.06	3.09E7	59.7	94	89.91	1.29E7	94.0	125	507.5	5204167	99.9
31	2.669	1.77E7	9.55	63	15.93	3.23E7	61.1	95	95.07	1.15E7	94.6	126	536.6	0	100.0
32	2.822	1.88E7	10.4	64	16.84	3.10E7	62.5								

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 0:11 20 Apr 02

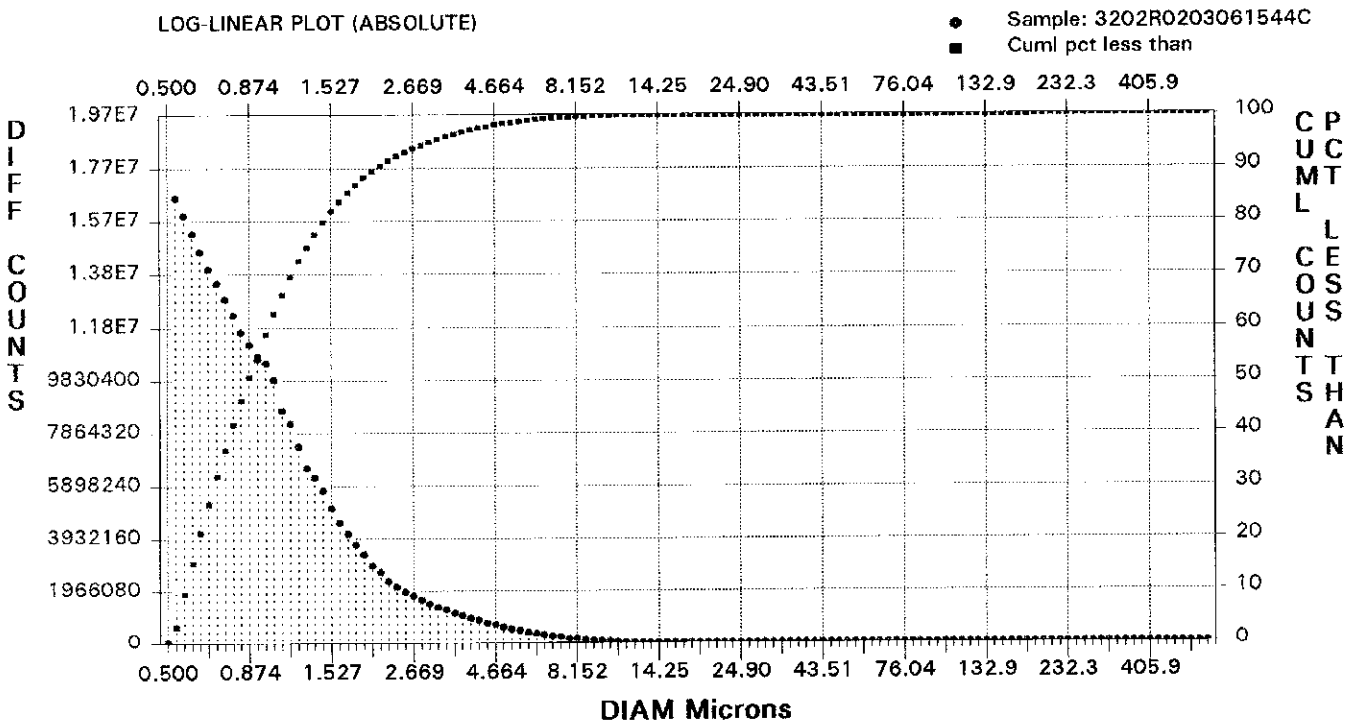
Disk File: MAL1101.HST

Sample #: 3202R0203061544C1

Lot/Job #: MAL1101

Material: storm water

Source: Todd Burgesser



Geometric Mean Size:	0.988 um	-- PERCENTILES --
Geom. Std Deviation:	1.724 um	0.100% Counts below 0.514 um
Geom. Skewness:	0.258	1.000% Counts below 0.516 um
Geom. Coeff Variation:	174.6	6.000% Counts below 0.528 um
		22.00% Counts below 0.630 um
Arithmetic Mean Size:	1.197 um	50.00% Counts below 0.867 um
Median Size:	0.852 um	78.00% Counts below 1.379 um
Mode Size:	0.543 um	94.00% Counts below 2.722 um
Kurtosis:	127.394	99.00% Counts below 5.771 um
Arith Std Deviation	1.126 um	99.90% Counts below 11.25 um

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
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By: Micromeritics
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Norcross, GA 30093

Operator: RS

Date done: 0:11 20 Apr 02

Disk File: MAL1101.HST

Sample #: 3202R0203061544C1

Lot/Job #: MAL1101

Material: storm water

Source: Todd Burgesser

-- Frequency Distribution Data

Total Popl: 261126974

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.500	0	0.00	29	2.387	2119381	92.2	57	11.40	45472	99.9	85	54.40	250	100.0
2	0.529	1.66E7	3.18	30	2.524	1923717	93.0	58	12.05	40979	99.9	86	57.52	205	100.0
3	0.559	1.59E7	9.40	31	2.669	1774979	93.7	59	12.74	33969	99.9	87	60.83	165	100.0
4	0.591	1.53E7	15.4	32	2.822	1600880	94.4	60	13.47	25163	99.9	88	64.32	143	100.0
5	0.625	1.46E7	21.1	33	2.984	1461593	95.0	61	14.25	22107	100.0	89	68.01	107	100.0
6	0.661	1.39E7	26.6	34	3.156	1346915	95.5	62	15.06	17254	100.0	90	71.92	86	100.0
7	0.699	1.34E7	31.8	35	3.337	1245905	96.0	63	15.93	15277	100.0	91	76.04	68	100.0
8	0.739	1.28E7	36.8	36	3.528	1125488	96.5	64	16.84	12402	100.0	92	80.41	57	100.0
9	0.782	1.22E7	41.6	37	3.731	1033642	96.9	65	17.81	9977	100.0	93	85.03	42	100.0
10	0.826	1.16E7	46.2	38	3.945	947372	97.2	66	18.83	8331	100.0	94	89.91	34	100.0
11	0.874	1.12E7	50.6	39	4.172	864335	97.6	67	19.91	7248	100.0	95	95.07	26	100.0
12	0.924	1.06E7	54.7	40	4.411	758115	97.9	68	21.06	5817	100.0	96	100.5	20	100.0
13	0.977	1.05E7	58.8	41	4.664	706888	98.2	69	22.27	4711	100.0	97	106.3	16	100.0
14	1.033	9849348	62.6	42	4.932	616305	98.4	70	23.55	4429	100.0	98	112.4	13	100.0
15	1.092	8712772	66.2	43	5.215	548544	98.7	71	24.90	3527	100.0	99	118.9	10	100.0
16	1.155	8206447	69.4	44	5.515	486537	98.9	72	26.33	2850	100.0	100	125.7	7	100.0
17	1.222	7339464	72.4	45	5.831	412667	99.0	73	27.84	2477	100.0	101	132.9	6	100.0
18	1.292	6552369	75.1	46	6.166	367554	99.2	74	29.44	2137	100.0	102	140.5	5	100.0
19	1.366	6197665	77.5	47	6.520	324777	99.3	75	31.13	1684	100.0	103	148.6	4	100.0
20	1.444	5709824	79.8	48	6.895	282001	99.4	76	32.91	1407	100.0	104	157.1	3	100.0
21	1.527	5045406	81.9	49	7.290	241921	99.5	77	34.80	1144	100.0	105	166.2	2	100.0
22	1.615	4507595	83.7	50	7.709	189079	99.6	78	36.80	992	100.0	106	175.7	2	100.0
23	1.708	4094893	85.3	51	8.152	169128	99.7	79	38.92	814	100.0	107	185.8	2	100.0
24	1.806	3702283	86.8	52	8.620	135518	99.7	80	41.15	683	100.0	108	196.4	1	100.0
25	1.909	3333384	88.2	53	9.115	114670	99.8	81	43.51	553	100.0	109	207.7	1	100.0
26	2.019	2904783	89.4	54	9.638	93641	99.8	82	46.01	460	100.0	110	219.7	1	100.0
27	2.135	2673622	90.4	55	10.19	78004	99.9	83	48.65	386	100.0	111	232.3	1	100.0
28	2.257	2322444	91.4	56	10.78	62367	99.9	84	51.45	316	100.0	112	245.6	0	100.0

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 0:51 20 Apr 02

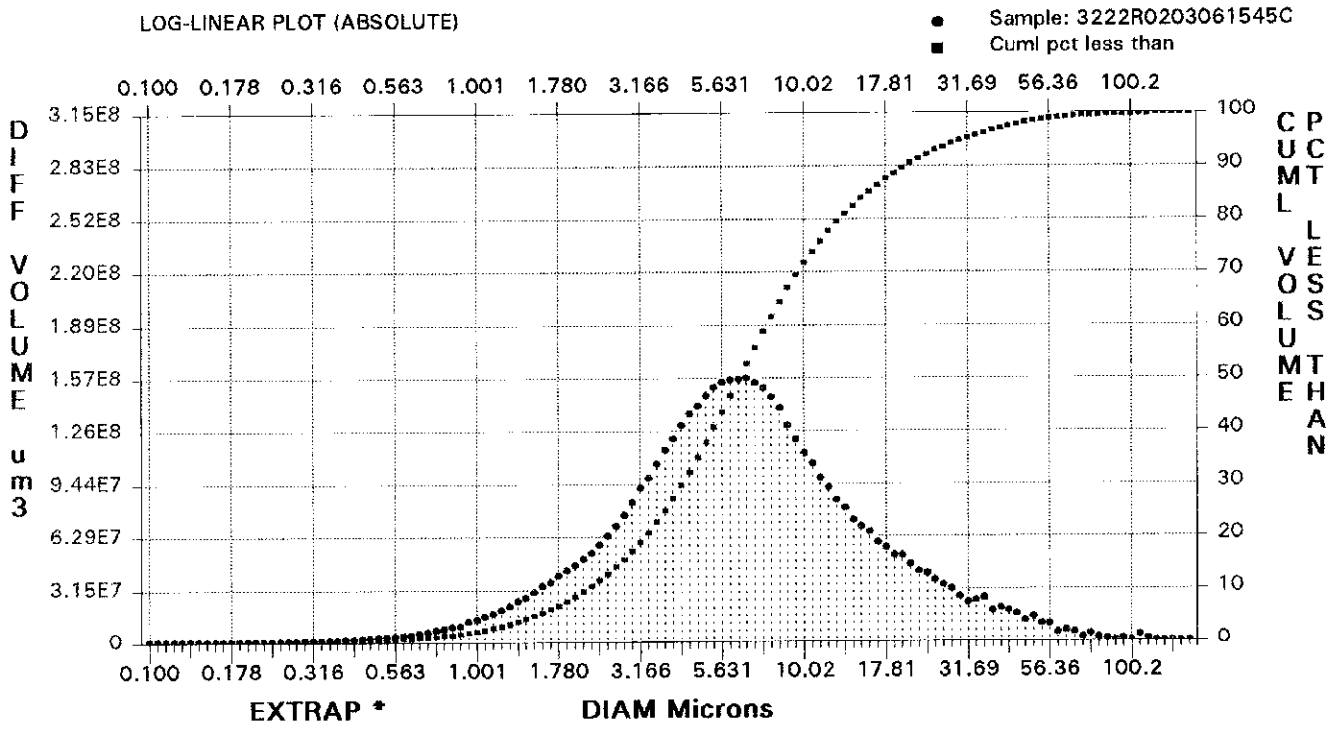
Disk File: MAL1102.HST

Sample #: 3222R0203061545C1

Lot/Job #: MAL1102

Material: storm water

Source: Todd Burgesser



		-- PERCENTILES --
Geometric Mean Size:	6.433 um	0.100% Volume below 0.246 um
Geom. Std Deviation:	2.442 um	1.000% Volume below 0.686 um
Geom. Skewness:	-0.055	6.000% Volume below 1.618 um
Geom. Coeff Variation:	37.96	22.00% Volume below 3.469 um
Arithmetic Mean Size:	9.638 um	50.00% Volume below 6.338 um
Median Size:	6.165 um	78.00% Volume below 11.97 um
Mode Size:	6.566 um	94.00% Volume below 27.12 um
Kurtosis:	13.145	99.00% Volume below 55.46 um
Arith Std Deviation	11.33 um	99.90% Volume below 105.1 um

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 0:51 20 Apr 02

Disk File: MAL1102.HST

Sample #: 3222R0203061545C1

Lot/Job #: MAL1102

Material: storm water

Source: Todd Burgesser

-- Volume Distribution Data

Total Volm: 5143266685

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.100	0	0.00	32	0.596	4591925	0.74	63	3.552	1.07E8	22.9	94	21.17	4.64E7	90.6
2	0.106	110697	0.00	33	0.631	5250577	0.83	64	3.763	1.14E8	25.0	95	22.43	4.22E7	91.5
3	0.112	127630	0.00	34	0.669	5994350	0.94	65	3.986	1.21E8	27.3	96	23.76	4.11E7	92.3
4	0.119	146946	0.01	35	0.708	6831924	1.07	66	4.222	1.29E8	29.7	97	25.17	3.73E7	93.1
5	0.126	168946	0.01	36	0.750	7852087	1.21	67	4.473	1.36E8	32.3	98	26.66	3.42E7	93.8
6	0.133	193967	0.01	37	0.795	8731211	1.37	68	4.738	1.41E8	35.0	99	28.24	3.19E7	94.4
7	0.141	222380	0.02	38	0.842	9832718	1.55	69	5.019	1.47E8	37.8	100	29.91	2.75E7	95.0
8	0.150	254596	0.02	39	0.892	1.01E7	1.75	70	5.316	1.52E8	40.7	101	31.69	2.39E7	95.5
9	0.159	291069	0.03	40	0.945	1.27E7	1.97	71	5.631	1.55E8	43.7	102	33.56	2.50E7	96.0
10	0.168	332297	0.03	41	1.001	1.41E7	2.23	72	5.965	1.56E8	46.7	103	35.55	2.65E7	96.5
11	0.178	378832	0.04	42	1.060	1.59E7	2.52	73	6.319	1.56E8	49.8	104	37.66	1.89E7	96.9
12	0.188	431274	0.05	43	1.123	1.72E7	2.84	74	6.693	1.57E8	52.8	105	39.89	2.03E7	97.3
13	0.200	490285	0.06	44	1.190	1.95E7	3.20	75	7.090	1.54E8	55.8	106	42.26	1.88E7	97.7
14	0.211	556586	0.07	45	1.260	2.19E7	3.60	76	7.510	1.51E8	58.8	107	44.76	1.71E7	98.0
15	0.224	630962	0.08	46	1.335	2.50E7	4.06	77	7.955	1.46E8	61.7	108	47.42	1.27E7	98.3
16	0.237	714270	0.09	47	1.414	2.68E7	4.56	78	8.427	1.40E8	64.5	109	50.23	1.50E7	98.6
17	0.251	807438	0.11	48	1.498	3.03E7	5.12	79	8.926	1.29E8	67.1	110	53.20	1.14E7	98.8
18	0.266	911473	0.12	49	1.586	3.39E7	5.74	80	9.455	1.21E8	69.5	111	56.36	1.08E7	99.1
19	0.282	1027464	0.14	50	1.680	3.63E7	6.42	81	10.02	1.13E8	71.8	112	59.70	6015250	99.2
20	0.299	1156585	0.16	51	1.780	4.00E7	7.17	82	10.61	1.07E8	73.9	113	63.24	6884764	99.3
21	0.316	1300099	0.19	52	1.886	4.29E7	7.97	83	11.24	9.81E7	75.9	114	66.98	5979916	99.5
22	0.335	1459362	0.21	53	1.997	4.60E7	8.83	84	11.90	9.23E7	77.8	115	70.95	2805618	99.6
23	0.355	1635828	0.24	54	2.116	5.00E7	9.77	85	12.61	8.46E7	79.5	116	75.16	5335490	99.6
24	0.376	1831049	0.28	55	2.241	5.35E7	10.8	86	13.36	8.02E7	81.1	117	79.62	2906575	99.7
25	0.398	2046682	0.32	56	2.374	5.85E7	11.9	87	14.15	7.28E7	82.6	118	84.33	2198430	99.8
26	0.422	2284488	0.36	57	2.515	6.36E7	13.0	88	14.99	6.89E7	84.0	119	89.33	1119855	99.8
27	0.447	2546333	0.40	58	2.664	6.93E7	14.3	89	15.88	6.60E7	85.3	120	94.63	2218381	99.8
28	0.473	2834193	0.46	59	2.822	7.59E7	15.8	90	16.82	5.95E7	86.5	121	100.2	1054683	99.9
29	0.501	3150153	0.51	60	2.989	8.35E7	17.3	91	17.81	5.62E7	87.6	122	106.2	4387486	99.9
30	0.531	3579607	0.58	61	3.166	9.23E7	19.0	92	18.87	5.17E7	88.7	123	112.5	2234934	100.0
31	0.563	4059009	0.65	62	3.354	9.82E7	20.9	93	19.99	5.20E7	89.7	124	119.1	0	100.0

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 0:51 20 Apr 02

Disk File: MAL1102.HST

Sample #: 3222R0203061545C1

Lot/Job #: MAL1102

Material: storm water

Source: Todd Burgesser

-- Frequency Distribution Data

Total Popl: 376051/642

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.100	0	0.00	32	0.596	4.14E7	83.2	63	3.552	4536906	99.1	94	21.17	9342	100.0
2	0.106	1.78E8	2.37	33	0.631	3.98E7	84.2	64	3.763	4097567	99.3	95	22.43	7146	100.0
3	0.112	1.73E8	7.02	34	0.669	3.83E7	85.3	65	3.986	3662644	99.4	96	23.76	5849	100.0
4	0.119	1.67E8	11.5	35	0.708	3.67E7	86.3	66	4.222	3280766	99.5	97	25.17	4464	100.0
5	0.126	1.62E8	15.9	36	0.750	3.55E7	87.2	67	4.473	2910894	99.5	98	26.66	3446	100.0
6	0.133	1.56E8	20.1	37	0.795	3.32E7	88.2	68	4.738	2528440	99.6	99	28.24	2707	100.0
7	0.141	1.51E8	24.2	38	0.842	3.15E7	89.0	69	5.019	2220604	99.7	100	29.91	1960	100.0
8	0.150	1.45E8	28.2	39	0.892	2.73E7	89.8	70	5.316	1933199	99.7	101	31.69	1435	100.0
9	0.159	1.40E8	31.9	40	0.945	2.87E7	90.5	71	5.631	1658105	99.8	102	33.56	1265	100.0
10	0.168	1.34E8	35.6	41	1.001	2.69E7	91.3	72	5.965	1405769	99.8	103	35.55	1127	100.0
11	0.178	1.29E8	39.1	42	1.060	2.56E7	92.0	73	6.319	1183706	99.8	104	37.66	676	100.0
12	0.188	1.23E8	42.4	43	1.123	2.33E7	92.6	74	6.693	1001869	99.9	105	39.89	611	100.0
13	0.200	1.18E8	45.6	44	1.190	2.21E7	93.2	75	7.090	827978	99.9	106	42.26	476	100.0
14	0.211	1.13E8	48.7	45	1.260	2.10E7	93.8	76	7.510	682949	99.9	107	44.76	365	100.0
15	0.224	1.07E8	51.6	46	1.335	2.00E7	94.3	77	7.955	555201	99.9	108	47.42	228	100.0
16	0.237	1.02E8	54.4	47	1.414	1.81E7	94.9	78	8.427	446421	100.0	109	50.23	226	100.0
17	0.251	9.72E7	57.0	48	1.498	1.72E7	95.3	79	8.926	347375	100.0	110	53.20	145	100.0
18	0.266	9.23E7	59.6	49	1.586	1.62E7	95.8	80	9.455	273505	100.0	111	56.36	115	100.0
19	0.282	8.76E7	62.0	50	1.680	1.46E7	96.2	81	10.02	214226	100.0	112	59.70	54	100.0
20	0.299	8.29E7	64.2	51	1.780	1.35E7	96.6	82	10.61	170527	100.0	113	63.24	52	100.0
21	0.316	7.84E7	66.4	52	1.886	1.22E7	96.9	83	11.24	131951	100.0	114	66.98	38	100.0
22	0.335	7.41E7	68.4	53	1.997	1.10E7	97.2	84	11.90	104452	100.0	115	70.95	15	100.0
23	0.355	6.99E7	70.3	54	2.116	1.01E7	97.5	85	12.61	80583	100.0	116	75.16	24	100.0
24	0.376	6.58E7	72.1	55	2.241	9074248	97.7	86	13.36	64301	100.0	117	79.62	11	100.0
25	0.398	6.19E7	73.8	56	2.374	8344258	98.0	87	14.15	49086	100.0	118	84.33	7	100.0
26	0.422	5.81E7	75.4	57	2.515	7638209	98.2	88	14.99	39067	100.0	119	89.33	3	100.0
27	0.447	5.45E7	76.9	58	2.664	7006253	98.4	89	15.88	31498	100.0	120	94.63	5	100.0
28	0.473	5.10E7	78.3	59	2.822	6454236	98.6	90	16.82	23907	100.0	121	100.2	2	100.0
29	0.501	4.77E7	79.6	60	2.989	5973424	98.7	91	17.81	18994	100.0	122	106.2	7	100.0
30	0.531	4.56E7	80.9	61	3.166	5554465	98.9	92	18.87	14680	100.0	123	112.5	3	100.0
31	0.563	4.35E7	82.0	62	3.354	4971602	99.0	93	19.99	12430	100.0	124	119.1	0	100.0

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 1:19 20 Apr 02

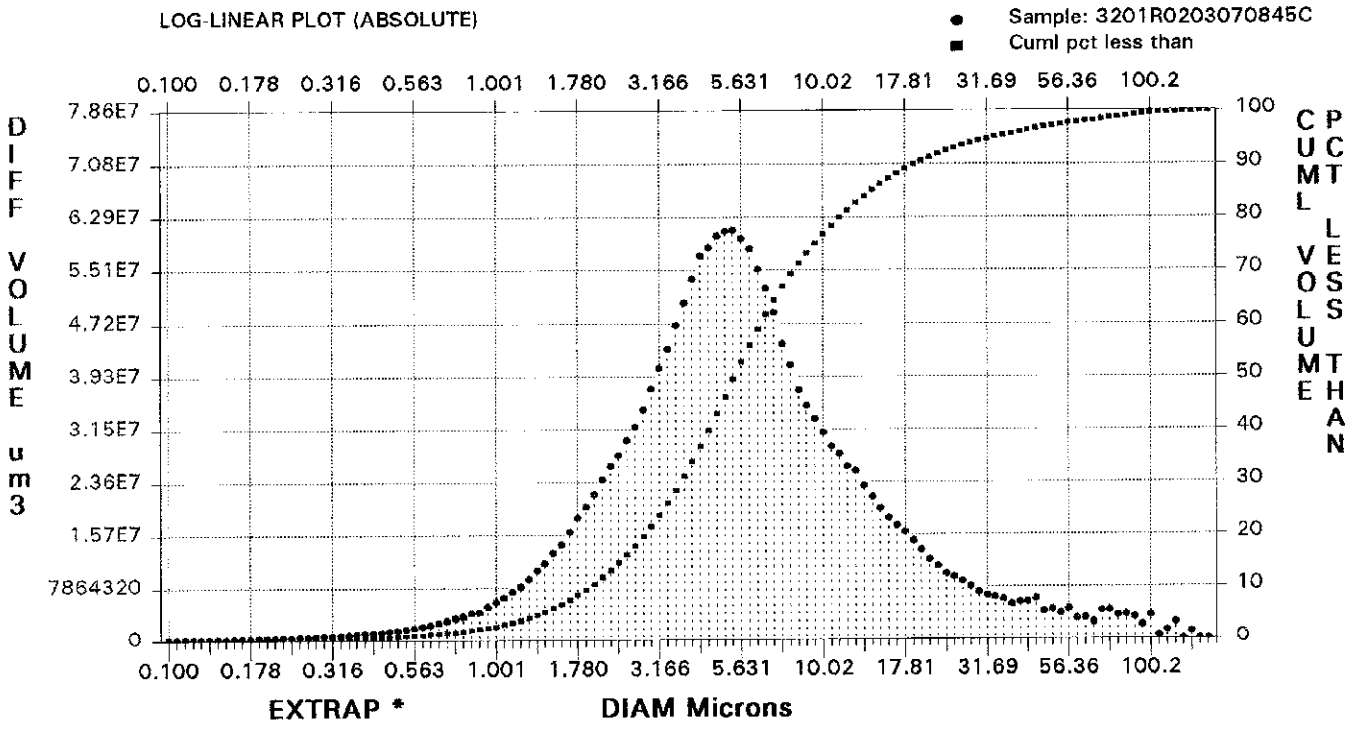
Disk File: MAL1103.HST

Sample #: 3201R0203070845C3

Lot/Job #: MAL1103

Material: storm water

Source: Todd Burgesser



Geometric Mean Size:	5.710 um	-- PERCENTILES --
Geom. Std Deviation:	2.584 um	0.100% Volume below 0.191 um
Geom. Skewness:	0.203	1.000% Volume below 0.564 um
Geom. Coeff Variation:	45.26	6.000% Volume below 1.473 um
		22.00% Volume below 3.012 um
Arithmetic Mean Size:	9.547 um	50.00% Volume below 5.352 um
Median Size:	5.189 um	78.00% Volume below 10.43 um
Mode Size:	5.185 um	94.00% Volume below 28.03 um
Kurtosis:	18.541	99.00% Volume below 82.38 um
Arith Std Deviation	14.65 um	99.90% Volume below 120.7 um

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 1:19 20 Apr 02

Disk File: MAL1103.HST

Sample #: 3201R0203070845C3

Lot/Job #: MAL1103

Material: storm water

Source: Todd Burgesser

-- Volume Distribution Data

Total Volm: 1870053310

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.100	0	0.00	33	0.631	2452572	1.23	65	3.986	5.37E7	33.8	97	25.17	9455907	93.1
2	0.106	92116	0.00	34	0.669	2750832	1.37	66	4.222	5.72E7	36.8	98	26.66	8769025	93.6
3	0.112	103819	0.01	35	0.708	3025566	1.52	67	4.473	5.85E7	39.9	99	28.24	8017404	94.0
4	0.119	116878	0.01	36	0.750	3364099	1.69	68	4.738	6.01E7	43.0	100	29.91	7146951	94.5
5	0.126	131434	0.02	37	0.795	3722719	1.88	69	5.019	6.08E7	46.3	101	31.69	6662487	94.8
6	0.133	147638	0.03	38	0.842	4171368	2.10	70	5.316	6.10E7	49.5	102	33.56	6394472	95.2
7	0.141	165656	0.04	39	0.892	4285197	2.32	71	5.631	5.98E7	52.8	103	35.55	6094355	95.5
8	0.150	185667	0.05	40	0.945	5142514	2.57	72	5.965	5.82E7	55.9	104	37.66	5341794	95.8
9	0.159	207864	0.06	41	1.001	5764148	2.87	73	6.319	5.52E7	58.9	105	39.89	5584558	96.1
10	0.168	232456	0.07	42	1.060	6405650	3.19	74	6.693	5.23E7	61.8	106	42.26	5728927	96.4
11	0.178	259668	0.08	43	1.123	7313641	3.56	75	7.090	4.88E7	64.5	107	44.76	6198763	96.7
12	0.188	289744	0.10	44	1.190	8046397	3.97	76	7.510	4.42E7	67.0	108	47.42	4297814	97.0
13	0.200	322944	0.11	45	1.260	9182173	4.43	77	7.955	4.10E7	69.3	109	50.23	4577535	97.2
14	0.211	359549	0.13	46	1.335	1.04E7	4.95	78	8.427	3.73E7	71.4	110	53.20	3942561	97.5
15	0.224	399859	0.15	47	1.414	1.15E7	5.54	79	8.926	3.50E7	73.3	111	56.36	4592300	97.7
16	0.237	444193	0.17	48	1.498	1.31E7	6.20	80	9.455	3.30E7	75.1	112	59.70	3230412	97.9
17	0.251	492895	0.20	49	1.586	1.43E7	6.93	81	10.02	3.10E7	76.8	113	63.24	3309983	98.1
18	0.266	546329	0.23	50	1.680	1.62E7	7.75	82	10.61	2.89E7	78.4	114	66.98	2675226	98.2
19	0.282	604884	0.26	51	1.780	1.83E7	8.67	83	11.24	2.77E7	80.0	115	70.95	4301948	98.4
20	0.299	668970	0.29	52	1.886	1.99E7	9.69	84	11.90	2.58E7	81.4	116	75.16	4446242	98.7
21	0.316	739025	0.33	53	1.997	2.17E7	10.8	85	12.61	2.52E7	82.8	117	79.62	3699277	98.9
22	0.335	815509	0.37	54	2.116	2.39E7	12.0	86	13.36	2.30E7	84.0	118	84.33	3768737	99.1
23	0.355	898909	0.42	55	2.241	2.59E7	13.4	87	14.15	2.13E7	85.2	119	89.33	3359564	99.3
24	0.376	989737	0.47	56	2.374	2.76E7	14.8	88	14.99	1.96E7	86.3	120	94.63	2218381	99.4
25	0.398	1088533	0.52	57	2.515	2.99E7	16.3	89	15.88	1.82E7	87.3	121	100.2	3691391	99.6
26	0.422	1195860	0.58	58	2.664	3.19E7	18.0	90	16.82	1.71E7	88.3	122	106.2	626784	99.7
27	0.447	1312311	0.65	59	2.822	3.44E7	19.7	91	17.81	1.61E7	89.2	123	112.5	1489956	99.8
28	0.473	1438502	0.72	60	2.989	3.75E7	21.7	92	18.87	1.48E7	90.0	124	119.1	2656382	99.9
29	0.501	1575077	0.80	61	3.166	4.06E7	23.8	93	19.99	1.34E7	90.7	125	126.2	0	99.9
30	0.531	1769231	0.89	62	3.354	4.35E7	26.0	94	21.17	1.20E7	91.4	126	133.7	1250895	100.0
31	0.563	1980601	0.99	63	3.552	4.70E7	28.4	95	22.43	1.11E7	92.0	127	141.6	0	100.0
32	0.596	2208774	1.11	64	3.763	5.03E7	31.0	96	23.76	9907738	92.6				

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 1:19 20 Apr 02

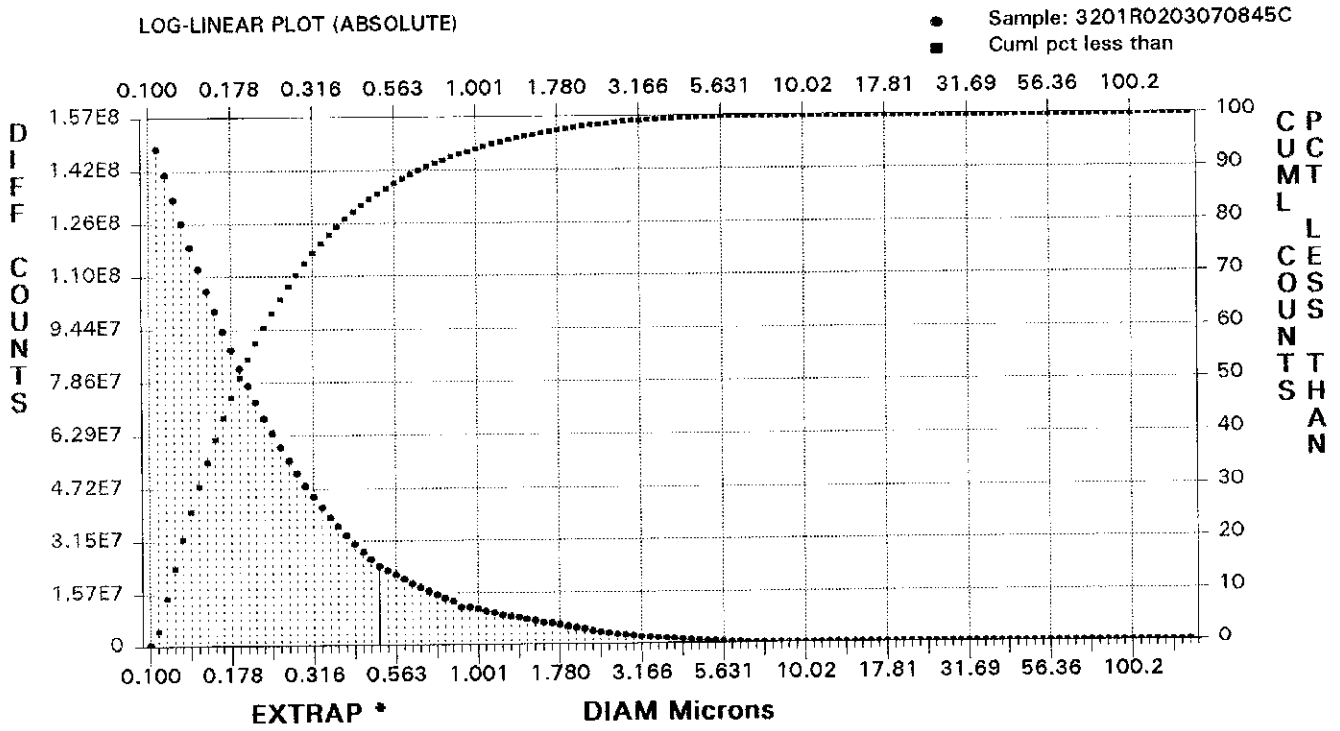
Disk File: MAL1103.HST

Sample #: 3201R0203070845C3

Lot/Job #: MAL1103

Material: storm water

Source: Todd Burgesser



Geometric Mean Size:	0.232 um
Geom. Std Deviation:	2.112 um
Geom. Skewness:	0.058
Geom. Coeff Variation:	910.2
Arithmetic Mean Size:	0.348 um
Median Size:	0.183 um
Mode Size:	0.109 um
Kurtosis:	101.972
Arith Std Deviation	0.552 um

-- PERCENTILES --

0.100% Counts below 0.103 um
1.000% Counts below 0.103 um
6.000% Counts below 0.106 um
22.00% Counts below 0.128 um
50.00% Counts below 0.186 um
78.00% Counts below 0.356 um
94.00% Counts below 0.996 um
99.00% Counts below 2.768 um
99.90% Counts below 5.847 um

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 1:19 20 Apr 02

Disk File: MAL1103.HST

Sample #: 3201R0203070845C3

Lot/Job #: MAL1103

Material: storm water

Source: Todd Burgesser

-- Frequency Distribution Data

Total Popl: 2374689668

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.100	0	0.00	33	0.631	1.86E7	89.2	65	3.986	1620296	99.6	97	25.17	1133	100.0
2	0.106	1.48E8	3.12	34	0.669	1.76E7	90.0	66	4.222	1451782	99.7	98	26.66	884	100.0
3	0.112	1.40E8	9.19	35	0.708	1.63E7	90.7	67	4.473	1247963	99.7	99	28.24	680	100.0
4	0.119	1.33E8	14.9	36	0.750	1.52E7	91.3	68	4.738	1079992	99.8	100	29.91	510	100.0
5	0.126	1.26E8	20.4	37	0.795	1.42E7	92.0	69	5.019	918917	99.8	101	31.69	400	100.0
6	0.133	1.19E8	25.5	38	0.842	1.33E7	92.5	70	5.316	775147	99.9	102	33.56	323	100.0
7	0.141	1.12E8	30.4	39	0.892	1.15E7	93.1	71	5.631	639251	99.9	103	35.55	259	100.0
8	0.150	1.06E8	35.0	40	0.945	1.16E7	93.6	72	5.965	523678	99.9	104	37.66	191	100.0
9	0.159	9.97E7	39.3	41	1.001	1.10E7	94.0	73	6.319	417988	99.9	105	39.89	168	100.0
10	0.168	9.38E7	43.4	42	1.060	1.03E7	94.5	74	6.693	333040	99.9	106	42.26	145	100.0
11	0.178	8.81E7	47.2	43	1.123	9863984	94.9	75	7.090	261587	100.0	107	44.76	132	100.0
12	0.188	8.27E7	50.8	44	1.190	9130496	95.3	76	7.510	199208	100.0	108	47.42	77	100.0
13	0.200	7.76E7	54.2	45	1.260	8766225	95.7	77	7.955	155615	100.0	109	50.23	69	100.0
14	0.211	7.27E7	57.4	46	1.335	8387796	96.0	78	8.427	119148	100.0	110	53.20	50	100.0
15	0.224	6.80E7	60.3	47	1.414	7786819	96.4	79	8.926	94055	100.0	111	56.36	49	100.0
16	0.237	6.36E7	63.1	48	1.498	7421248	96.7	80	9.455	74501	100.0	112	59.70	29	100.0
17	0.251	5.93E7	65.7	49	1.586	6839481	97.0	81	10.02	58856	100.0	113	63.24	25	100.0
18	0.266	5.53E7	68.1	50	1.680	6536704	97.3	82	10.61	46279	100.0	114	66.98	17	100.0
19	0.282	5.15E7	70.4	51	1.780	6181552	97.5	83	11.24	37296	100.0	115	70.95	23	100.0
20	0.299	4.80E7	72.4	52	1.886	5678314	97.8	84	11.90	29242	100.0	116	75.16	20	100.0
21	0.316	4.46E7	74.4	53	1.997	5202480	98.0	85	12.61	24022	100.0	117	79.62	14	100.0
22	0.335	4.14E7	76.2	54	2.116	4826159	98.2	86	13.36	18450	100.0	118	84.33	12	100.0
23	0.355	3.84E7	77.9	55	2.241	4394573	98.4	87	14.15	14368	100.0	119	89.33	9	100.0
24	0.376	3.56E7	79.4	56	2.374	3940685	98.6	88	14.99	11117	100.0	120	94.63	5	100.0
25	0.398	3.29E7	80.9	57	2.515	3590620	98.8	89	15.88	8678	100.0	121	100.2	7	100.0
26	0.422	3.04E7	82.2	58	2.664	3222995	98.9	90	16.82	6847	100.0	122	106.2	1	100.0
27	0.447	2.81E7	83.4	59	2.822	2926873	99.0	91	17.81	5442	100.0	123	112.5	2	100.0
28	0.473	2.59E7	84.6	60	2.989	2680344	99.2	92	18.87	4196	100.0	124	119.1	3	100.0
29	0.501	2.39E7	85.6	61	3.166	2443964	99.3	93	19.99	3204	100.0	125	126.2	0	100.0
30	0.531	2.25E7	86.6	62	3.354	2199995	99.4	94	21.17	2407	100.0	126	133.7	1	100.0
31	0.563	2.12E7	87.5	63	3.552	2001762	99.5	95	22.43	1875	100.0	127	141.6	0	100.0
32	0.596	1.99E7	88.4	64	3.763	1801395	99.5	96	23.76	1411	100.0				

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 1:42 20 Apr 02

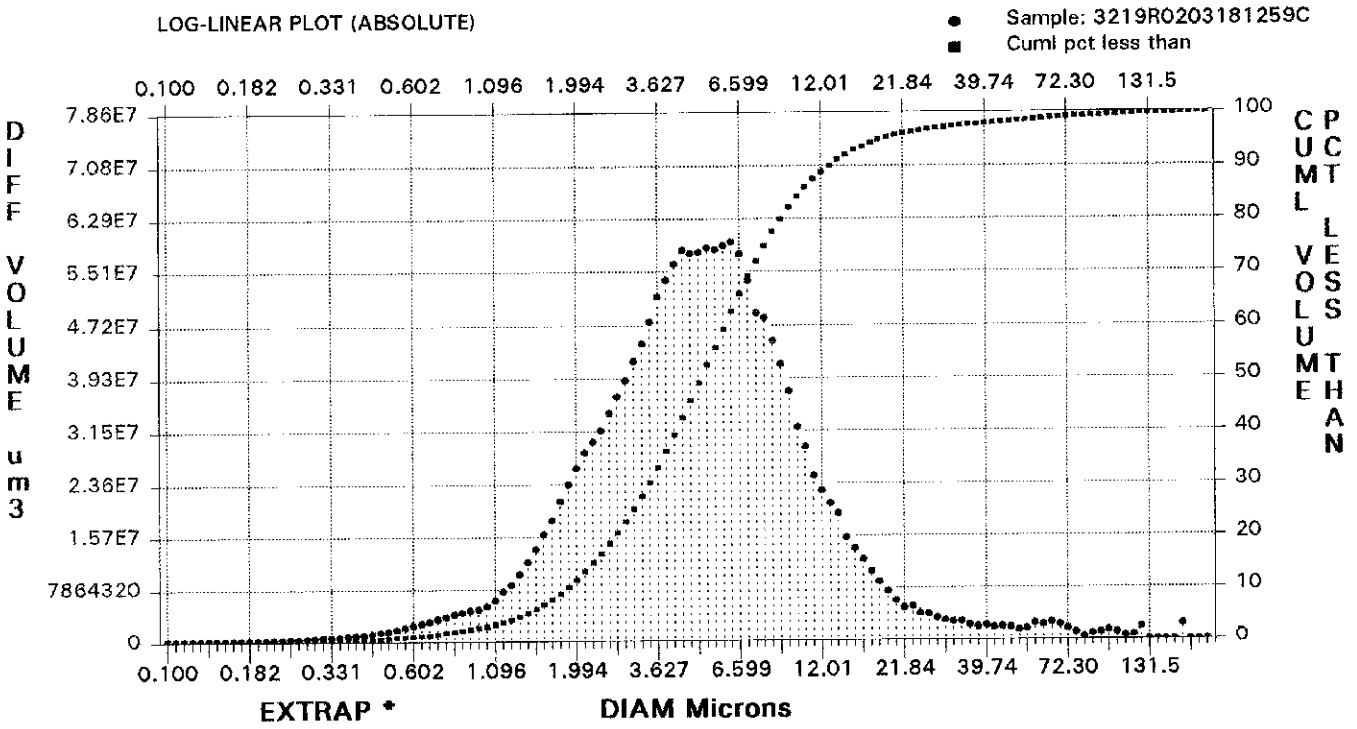
Disk File: MAL1104.HST

Sample #: 3219R0203181259C01

Lot/Job #: MAL1104

Material: storm water

Source: Todd Burgesser



Geometric Mean Size:	4.946 um
Geom. Std Deviation:	2.326 um
Geom. Skewness:	-0.489
Geom. Coeff Variation:	47.03
Arithmetic Mean Size:	7.538 um
Median Size:	4.774 um
Mode Size:	6.084 um
Kurtosis:	53.125
Arith Std Deviation	12.27 um

-- PERCENTILES --

0.100% Volume below 0.215 um
1.000% Volume below 0.567 um
6.000% Volume below 1.449 um
22.00% Volume below 2.784 um
50.00% Volume below 4.952 um
78.00% Volume below 8.461 um
94.00% Volume below 16.45 um
99.00% Volume below 64.72 um
99.90% Volume below 164.9 um

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 1:42 20 Apr 02

Disk File: MAL1104.HST

Sample #: 3219R0203181259C01

Lot/Job #: MAL1104

Material: storm water

Source: Todd Burgesser

-- Volume Distribution Data

Total Volm: 1750182925

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.100	0	0.00	33	0.679	3134211	1.46	65	4.608	5.77E7	45.9	96	29.46	3013036	97.3
2	0.106	54149	0.00	34	0.721	3493746	1.65	66	4.892	5.79E7	49.2	97	31.28	2804381	97.5
3	0.113	63191	0.00	35	0.765	3811985	1.85	67	5.194	5.86E7	52.5	98	33.21	2857342	97.6
4	0.120	73615	0.01	36	0.812	4120260	2.08	68	5.514	5.84E7	55.9	99	35.26	2317792	97.8
5	0.127	85611	0.01	37	0.862	4402341	2.32	69	5.854	5.89E7	59.2	100	37.43	2032179	97.9
6	0.135	99391	0.02	38	0.916	4749960	2.59	70	6.215	5.95E7	62.6	101	39.74	2234684	98.0
7	0.143	115191	0.02	39	0.972	4938327	2.86	71	6.599	5.76E7	66.0	102	42.19	1966321	98.1
8	0.152	133272	0.03	40	1.032	5378920	3.16	72	7.006	5.38E7	69.1	103	44.79	2070685	98.3
9	0.161	153926	0.04	41	1.096	6232855	3.49	73	7.438	4.89E7	72.1	104	47.56	1914774	98.4
10	0.171	177476	0.05	42	1.163	7588672	3.88	74	7.897	4.83E7	74.9	105	50.49	1617435	98.5
11	0.182	204276	0.06	43	1.235	8555991	4.35	75	8.384	4.49E7	77.5	106	53.60	1774252	98.6
12	0.193	234719	0.07	44	1.311	1.02E7	4.88	76	8.901	4.14E7	80.0	107	56.91	2509245	98.7
13	0.205	269235	0.09	45	1.392	1.20E7	5.52	77	9.450	3.74E7	82.2	108	60.42	2309813	98.8
14	0.218	308295	0.10	46	1.478	1.39E7	6.25	78	10.03	3.21E7	84.2	109	64.15	2625896	99.0
15	0.231	352414	0.12	47	1.569	1.61E7	7.11	79	10.65	2.90E7	86.0	110	68.10	2315416	99.1
16	0.245	402155	0.14	48	1.666	1.82E7	8.09	80	11.31	2.47E7	87.5	111	72.30	1781233	99.2
17	0.261	458126	0.17	49	1.769	2.11E7	9.21	81	12.01	2.25E7	88.9	112	76.76	1184200	99.3
18	0.277	520990	0.20	50	1.878	2.35E7	10.5	82	12.75	2.06E7	90.1	113	81.50	566842	99.4
19	0.294	591460	0.23	51	1.994	2.60E7	11.9	83	13.53	1.91E7	91.2	114	86.52	1017491	99.4
20	0.312	670308	0.26	52	2.116	2.83E7	13.4	84	14.37	1.55E7	92.2	115	91.86	1217609	99.5
21	0.331	758360	0.31	53	2.247	2.99E7	15.1	85	15.25	1.38E7	93.0	116	97.53	1457085	99.6
22	0.351	856502	0.35	54	2.386	3.15E7	16.9	86	16.19	1.22E7	93.8	117	103.5	1162440	99.6
23	0.373	965682	0.40	55	2.533	3.41E7	18.7	87	17.19	1.03E7	94.4	118	109.9	695533	99.7
24	0.396	1086906	0.46	56	2.689	3.67E7	20.8	88	18.25	8804411	95.0	119	116.7	832329	99.7
25	0.421	1221242	0.53	57	2.855	3.91E7	22.9	89	19.38	7434290	95.4	120	123.9	1992058	99.8
26	0.446	1369822	0.60	58	3.031	4.19E7	25.2	90	20.57	5927925	95.8	121	131.5	0	99.9
27	0.474	1533836	0.69	59	3.218	4.45E7	27.7	91	21.84	4889274	96.1	122	139.7	0	99.9
28	0.503	1714532	0.78	60	3.416	4.77E7	30.3	92	23.19	5152174	96.4	123	148.3	0	99.9
29	0.534	1926126	0.88	61	3.627	5.13E7	33.2	93	24.62	4079069	96.7	124	157.4	0	99.9
30	0.567	2204737	1.00	62	3.851	5.39E7	36.2	94	26.14	3964912	96.9	125	167.1	2444316	99.9
31	0.602	2488452	1.13	63	4.088	5.62E7	39.3	95	27.75	3379494	97.1	126	177.4	0	100.0
32	0.639	2834362	1.29	64	4.340	5.83E7	42.6								

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 1:42 20 Apr 02

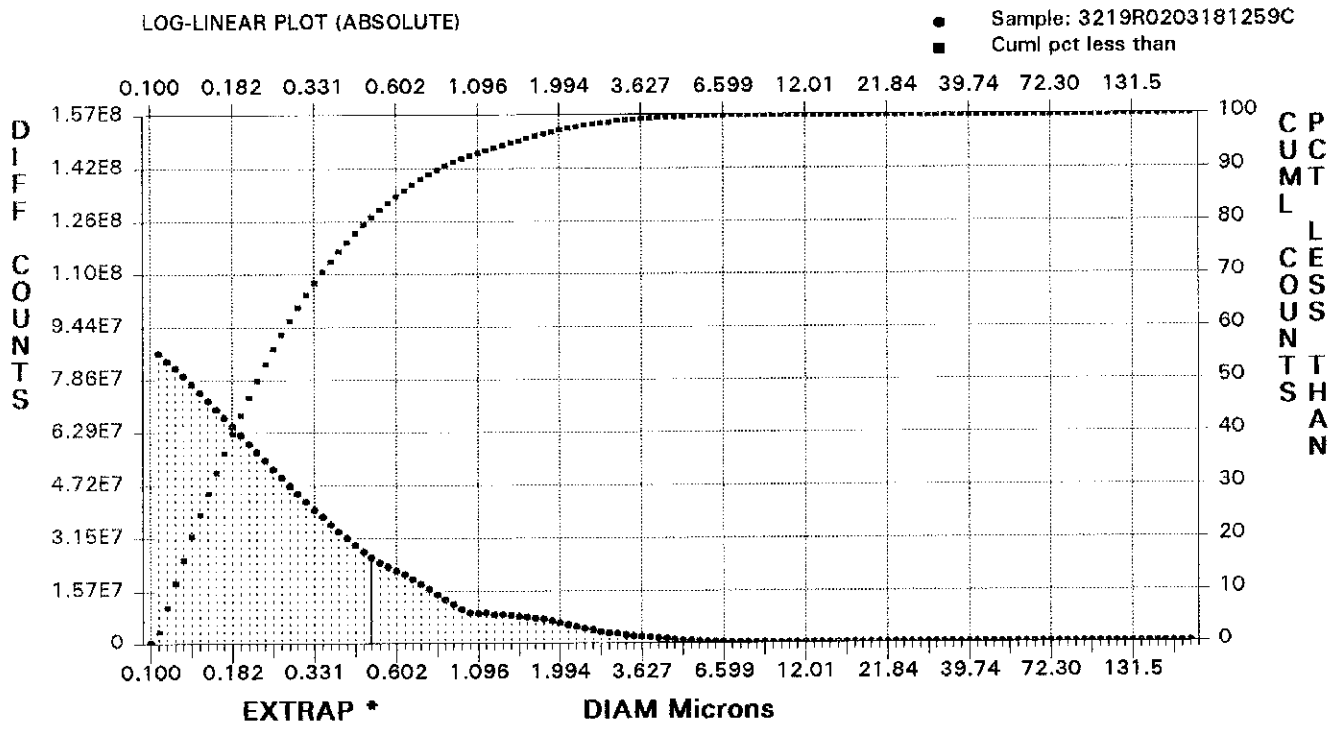
Disk File: MAL1104.HST

Sample #: 3219R0203181259C01

Lot/Job #: MAL1104

Material: storm water

Source: Todd Burgesser



		-- PERCENTILES --
Geometric Mean Size:	0.268 um	0.100% Counts below 0.103 um
Geom. Std Deviation:	2.218 um	1.000% Counts below 0.104 um
Geom. Skewness:	0.072	6.000% Counts below 0.111 um
Geom. Coeff Variation:	827.5	22.00% Counts below 0.138 um
Arithmetic Mean Size:	0.411 um	50.00% Counts below 0.218 um
Median Size:	0.212 um	78.00% Counts below 0.449 um
Mode Size:	0.109 um	94.00% Counts below 1.255 um
Kurtosis:	56.247	99.00% Counts below 3.090 um
Arith Std Deviation	0.621 um	99.90% Counts below 6.270 um

ELZONE(tm) Particle Size Analysis

For: CDM
1331 17th Street, Suite 1200
Denver, CO 80202

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 1:42 20 Apr 02

Disk File: MAL1104.HST

Sample #: 3219R0203181259C01

Lot/Job #: MAL1104

Material: storm water

Source: Todd Burgesser

-- Frequency Distribution Data

Total Popl: 1825192173

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.100	0	0.00	33	0.679	1.91E7	87.0	65	4.608	1126743	99.7	96	29.46	225	100.0
2	0.106	8.64E7	2.37	34	0.721	1.78E7	88.0	66	4.892	945209	99.7	97	31.28	175	100.0
3	0.113	8.43E7	7.04	35	0.765	1.63E7	88.9	67	5.194	799370	99.8	98	33.21	149	100.0
4	0.120	8.20E7	11.6	36	0.812	1.47E7	89.8	68	5.514	664950	99.8	99	35.26	101	100.0
5	0.127	7.97E7	16.0	37	0.862	1.31E7	90.5	69	5.854	561088	99.9	100	37.43	74	100.0
6	0.135	7.74E7	20.3	38	0.916	1.18E7	91.2	70	6.215	473108	99.9	101	39.74	68	100.0
7	0.143	7.49E7	24.5	39	0.972	1.03E7	91.8	71	6.599	382998	99.9	102	42.19	50	100.0
8	0.152	7.24E7	28.5	40	1.032	9345232	92.4	72	7.006	298723	99.9	103	44.79	44	100.0
9	0.161	6.99E7	32.4	41	1.096	9049091	92.9	73	7.438	227121	100.0	104	47.56	34	100.0
10	0.171	6.74E7	36.2	42	1.163	9206756	93.4	74	7.897	187336	100.0	105	50.49	24	100.0
11	0.182	6.48E7	39.8	43	1.235	8674293	93.9	75	8.384	145511	100.0	106	53.60	22	100.0
12	0.193	6.22E7	43.3	44	1.311	8638036	94.3	76	8.901	112074	100.0	107	56.91	26	100.0
13	0.205	5.96E7	46.6	45	1.392	8493883	94.8	77	9.450	84746	100.0	108	60.42	20	100.0
14	0.218	5.71E7	49.8	46	1.478	8200693	95.3	78	10.03	60681	100.0	109	64.15	19	100.0
15	0.231	5.45E7	52.9	47	1.569	7944553	95.7	79	10.65	45852	100.0	110	68.10	14	100.0
16	0.245	5.20E7	55.8	48	1.666	7512318	96.1	80	11.31	32643	100.0	111	72.30	9	100.0
17	0.261	4.95E7	58.6	49	1.769	7275064	96.5	81	12.01	24834	100.0	112	76.76	5	100.0
18	0.277	4.70E7	61.2	50	1.878	6791456	96.9	82	12.75	18983	100.0	113	81.50	2	100.0
19	0.294	4.46E7	63.7	51	1.994	6257791	97.3	83	13.53	14702	100.0	114	86.52	3	100.0
20	0.312	4.22E7	66.1	52	2.116	5697391	97.6	84	14.37	9962	100.0	115	91.86	3	100.0
21	0.331	3.99E7	68.4	53	2.247	5034517	97.9	85	15.25	7448	100.0	116	97.53	3	100.0
22	0.351	3.77E7	70.5	54	2.386	4436666	98.1	86	16.19	5474	100.0	117	103.5	2	100.0
23	0.373	3.55E7	72.5	55	2.533	4013603	98.4	87	17.19	3884	100.0	118	109.9	1	100.0
24	0.396	3.34E7	74.4	56	2.689	3600680	98.6	88	18.25	2765	100.0	119	116.7	1	100.0
25	0.421	3.14E7	76.2	57	2.855	3206587	98.8	89	19.38	1951	100.0	120	123.9	2	100.0
26	0.446	2.94E7	77.8	58	3.031	2873643	98.9	90	20.57	1300	100.0	121	131.5	0	100.0
27	0.474	2.75E7	79.4	59	3.218	2550407	99.1	91	21.84	896	100.0	122	139.7	0	100.0
28	0.503	2.57E7	80.8	60	3.416	2284262	99.2	92	23.19	789	100.0	123	148.3	0	100.0
29	0.534	2.41E7	82.2	61	3.627	2054781	99.3	93	24.62	522	100.0	124	157.4	0	100.0
30	0.567	2.31E7	83.5	62	3.851	1802430	99.4	94	26.14	424	100.0	125	167.1	1	100.0
31	0.602	2.18E7	84.7	63	4.088	1570691	99.5	95	27.75	302	100.0	126	177.4	0	100.0
32	0.639	2.07E7	85.9	64	4.340	1361521	99.6								

Analytical Services, Inc.

P.O. Box 515
130 Allen Brook Lane
Williston, VT 05495

Phone: (802) 878-5138
Toll Free: (800) 723-4432
Fax: (802) 878-6765

March 15, 2002

Todd Burgesser
Camp, Dresser & McKee
1331 17th Street, Suite 1200
Denver, CO 80202

Dear Todd:

Enclosed please find the results of the analyses performed on the 14 samples received in our laboratory on February 26, 2002.

Thank you for using Analytical Services, Inc. for your testing needs. If you have any questions or if we may be of service in the future, please do not hesitate to contact us at 1-800-723-4432.

Sincerely,

ANALYTICAL SERVICES, INC.

Kristen S. Fallon, Ph.D.
Laboratory Director

KSF/lll

Project No.: 2002-0226-048

Analytical Services, Inc.

Summary of SEM Direct Count Results

Date Collected: 2/10/02
Date Received: 2/26/02
Analyst: dhg/ojc
Client: Camp Dresser & McKee, Inc.

Site	Test Filter Pore Size (µm)	Observations	Fields Counted	Volume Filtered (L)	Bacteria per Liter	Particles Per Liter			
						>0.08-0.5µm	>0.5-1.0µm	>1.0µm	Total >0.08µm
3202R0202 101628C1	0.08	1,3	200	0.00020	1.2E+09 ± 4.8E+08	2.1E+10 ± 2.3E+09	1.3E+09 ± 6.0E+08	1.3E+08 ± 1.8E+08	2.2E+10 ± 2.4E+09
3222R0202 101619C1	0.08	1,5	100	0.00020	0.0E+00 ± 0.0E+00	1.5E+11 ± 1.5E+10	2.8E+10 ± 4.2E+09	1.2E+10 ± 2.4E+09	1.9E+11 ± 1.6E+10
Blank	0.08	1	400	0.00090	0.0E+00 ± 0.0E+00	1.7E+07 ± 1.9E+07	0.0E+00 ± 0.0E+00	5.7E+06 ± 1.1E+07	2.3E+07 ± 2.2E+07

Observation Key:

1 Even Particle Distribution
2 Clumping (Particles)
3 Even Bacteria Distribution
4 Clumping (Bacteria)
5 Large Particles (> 50.0 µm)
6 Small Particles (< Lowest Size Category) Evenly Distributed
7 Small Particles (< Lowest Size Category) in Clumps
8 Pore Clogging
9 Pore Distortion
10 Spherical particles (assumed polysulfone)

Note: ±Values Reported at 95% Confidence Interval

Project No.: 2002-0226-048

Analytical Services, Inc.

P.O. Box 515
130 Allen Brook Lane
Williston, VT 05495

Phone: (802) 878-5138
Toll Free: (800) 723-4432
Fax: (802) 878-6765

May 2, 2002

Todd Burgesser
Camp, Dresser & McKee
1331 17th Street, Suite 1200
Denver, CO 80202

Dear Todd:

Enclosed please find the results of the analyses performed on the 14 samples received in our laboratory on April 5, 2002. Laser particle counts were performed on 12 of the samples, and Scanning Electron Microscopy (SEM) analysis was performed on 2 of the samples.

Thank you for using Analytical Services, Inc. for your testing needs. If you have any questions or if we may be of service in the future, please do not hesitate to contact us at 1-800-723-4432.

Sincerely,

ANALYTICAL SERVICES, INC.

Kristen S. Fallon, Ph.D.
Laboratory Director

KSF/lll

Project No.: 2002-0405-010

Analytical Services, Inc.

Scanning Electron Microscopy (SEM) Results

The samples for SEM analysis were diluted as needed and filtered, and particulate enumeration analysis was performed on the filters.

Sample 3218R0202201144C5 was re-filtered through an 0.45-µm filter. One (1) mL of the filtrate was added to 29 mL of laboratory ultrapure water (UPW) to give a 1:30 dilution. One (1) mL of this dilution was filtered through an 0.08-µm polycarbonate membrane filter. This filter was mounted on an aluminum planchett and gold-coated for SEM analysis.

One (1) mL of UPW was filtered through an 0.2-µm filter, which was mounted and gold-coated. The 0.2-µm polycarbonate membrane filter, which was mounted and gold-coated. The 0.2-µm membrane was chosen in error, and the report has been separated to show the different counting bin sizes.

A 1:25 dilution was performed on sample 3222R0203061545C1; however, the resulting filter sample showed fewer particles than the control, and the dilution was rejected. Instead, a 1-mL aliquot of undiluted sample was filtered through an 0.08-µm polycabonate membrane filter, and this was mounted and gold-coated for SEM analysis.

Analytical Services, Inc.

Summary of Analytical Services' SEM Direct Count Results

Date Received: 4/5/02
Analyst: dhg
Client: Camp, Dersser, & McKee

Site	Test Filter Pore Size (µm)	Observations	Fields Counted	Volume Filtered (L)	Bacteria per Liter	Particles Per Liter			
						>0.08-0.5µm	>0.5-1.0µm	>1.0µm	Total >0.08µm
3218R0202 201144C5	0.08	1	400	3.3E-05	3.1E+08 ± 6.1E+08	1.2E+11 ± 3.8E+10	9.3E+09 ± 3.1E+09	6.2E+08 ± 8.6E+08	1.3E+11 ± 3.8E+10
322R02030 61545C1	0.08	1	400	1.0E-03	0.0E+00 ± 0.0E+00	1.5E+11 ± 3.2E+10	3.0E+10 ± 7.2E+09	3.3E+09 ± 1.6E+09	1.9E+11 ± 3.7E+10

Site	Test Filter Pore Size (µm)	Observations	Fields Counted	Volume Filtered (L)	Bacteria per Liter	Particles Per Liter			
						>0.2-0.5µm	>0.5-1.0µm	>1.0µm	Total >0.08µm
Blank	0.08	1,5	400	1.0E-03	0.0E+00 ± 0.0E+00	2.4E+08 ± 7.1E+07	1.8E+08 ± 5.9E+07	1.1E+08 ± 4.6E+07	5.4E+08 ± 1.0E+08

Observation Key:

1 Even Particle Distribution
2 Clumping (Particles)
3 Even Bacteria Distribution
4 Clumping (Bacteria)
5 Large Particles (> 50.0 µm)
6 Small Particles (< Lowest Size Category) Evenly Distributed
7 Small Particles (< Lowest Size Category) In Clumps
8 Pore Clogging
9 Pore Distortion
10 Spherical particles (assumed polysulfone)

Note: ±Values Reported at 95% Confidence Interval

Project No.: 2002-0405-010

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P.O. Box 515
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Phone: (802) 878-5138
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Fax: (802) 878-6765

March 15, 2002

Todd Burgesser
Camp, Dresser & McKee
1331 17th Street, Suite 1200
Denver, CO 80202

Dear Todd:

Enclosed please find the results of the analyses performed on the 14 samples received in our laboratory on February 26, 2002.

Thank you for using Analytical Services, Inc. for your testing needs. If you have any questions or if we may be of service in the future, please do not hesitate to contact us at 1-800-723-4432.

Sincerely,

ANALYTICAL SERVICES, INC.

Kristen S. Fallon, Ph.D.
Laboratory Director

KSF/lll

Project No.: 2002-0226-048

Analytical Services, Inc.

Client: Camp, Dresser & McKee
Address: 1331 17th Street, Suite 1200
Denver, CO 80202
Project: Caltrans Tahoe Study

Date Received: February 26, 2002
Analysis Start Date: March 4, 2002
Analyst: cjf,rm

Laser Particle Count Results

Size Range (µm)	Particles per Liter					
	Camp, Dresser & McKee 3202R0201030035C1 1/3/02 2002-0226-048	Camp, Dresser & McKee 3222R0201030035C1 1/3/02 2002-0226-049	Camp, Dresser & McKee 3220R0201031455C01 1/3/02 2002-0226-050	Camp, Dresser & McKee 3201R0201221515C1 1/23/02 2002-0226-051	Camp, Dresser & McKee 3203R0201241419C1 1/24/02 2002-0226-052	Camp, Dresser & McKee 3223R0201241419C1 1/24/02 2002-0226-053
0.5 – 3.0	6.4×10^{10}	7.5×10^{10}	3.3×10^{10}	7.3×10^{11}	4.1×10^{10}	2.5×10^{10}
>3.0 – 5.0	1.6×10^{9}	1.6×10^{9}	9.0×10^{8}	1.4×10^{10}	1.2×10^{9}	4.2×10^{8}
>5.0 – 8.0	5.8×10^{8}	6.5×10^{8}	3.8×10^{8}	4.1×10^{9}	6.5×10^{8}	2.2×10^{8}
>8.0 – 12.0	2.0×10^{8}	2.6×10^{8}	1.5×10^{8}	9.6×10^{8}	3.1×10^{8}	1.0×10^{8}
>12.0 – 15.0	3.0×10^{7}	4.5×10^{7}	2.4×10^{7}	1.3×10^{8}	6.0×10^{7}	2.4×10^{7}
>15.0 – 25.0	1.8×10^{7}	3.4×10^{7}	1.8×10^{7}	5.1×10^{7}	4.3×10^{7}	1.5×10^{7}
>25.0 – 100.0	1.4×10^{6}	5.3×10^{6}	2.4×10^{6}	9.4×10^{6}	1.2×10^{7}	2.0×10^{6}
>100.0	$<1.0 \times 10^{4}$	$<1.0 \times 10^{4}$	$<1.0 \times 10^{4}$	$<1.0 \times 10^{5}$	$<1.0 \times 10^{4}$	$<1.0 \times 10^{4}$

Samples were diluted as needed and analyzed using a Hiac/Royco 8000A/3000A/MicroCount-05 laser particle counter. The data reported is the result of a three run average.

Please note that these samples were received and analyzed out of the recommended 24-hour hold time. This data should be interpreted cautiously as microbial growth may have affected particle counts.

Project No.: 2002-0226-048

Analytical Services, Inc.

Client: Camp, Dresser & McKee
Address: 1331 17th Street, Suite 1200
Denver, CO 80202
Project: Caltrans Tahoe Study

Date Received: February 26, 2002
Analysis Start Date: March 4, 2002
Analyst: cjf,rm

Laser Particle Count Results - continued

Size Range (µm)	Particles per Liter					
	Camp, Dresser & McKee 3203R0202041440C1 2/04/02 2002-0226-054	Camp, Dresser & McKee 3223R0202031509C1 2/4/02 2002-0226-055	Camp, Dresser & McKee 3218R0202091507C1 2/9/02 2002-0226-056	Camp, Dresser & McKee 3202R0202101628C1 2/10/02 2002-0226-057	Camp, Dresser & McKee 3222R0202101619C1 2/10/02 2002-0226-058	Camp, Dresser & McKee 3219R0202101640C1 2/10/02 2002-0226-059
0.5 – 3.0	7.3×10^{10}	6.1×10^{10}	2.0×10^{10}	3.1×10^{10}	4.2×10^{10}	4.9×10^{10}
>3.0 – 5.0	1.5×10^{9}	1.4×10^{9}	1.9×10^{8}	5.4×10^{8}	7.4×10^{8}	1.5×10^{9}
>5.0 – 8.0	5.5×10^{8}	5.0×10^{8}	6.3×10^{7}	2.2×10^{8}	2.8×10^{8}	7.4×10^{8}
>8.0 – 12.0	2.0×10^{8}	1.6×10^{8}	2.1×10^{7}	8.0×10^{7}	8.9×10^{7}	3.5×10^{8}
>12.0 – 15.0	3.2×10^{7}	2.1×10^{7}	4.6×10^{6}	1.5×10^{7}	1.5×10^{7}	5.8×10^{7}
>15.0 – 25.0	2.0×10^{7}	1.4×10^{7}	6.9×10^{6}	9.8×10^{6}	1.0×10^{7}	3.9×10^{7}
>25.0 – 100.0	3.2×10^{6}	2.0×10^{6}	7.2×10^{5}	9.4×10^{5}	2.3×10^{6}	5.4×10^{6}
>100.0	$<1.0 \times 10^{4}$	$<1.0 \times 10^{4}$	$<1.0 \times 10^{4}$	$<1.0 \times 10^{4}$	$<1.0 \times 10^{4}$	$<1.0 \times 10^{4}$

Samples were diluted as needed and analyzed using a Hiac/Royco 8000A/3000A/MicroCount-05 laser particle counter. The data reported is the result of a three run average.

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Project No.: 2002-0226-048

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130 Allen Brook Lane
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Toll Free: (800) 723-4432
Fax: (802) 878-6765

May 2, 2002

Todd Burgesser
Camp, Dresser & McKee
1331 17th Street, Suite 1200
Denver, CO 80202

Dear Todd:

Enclosed please find the results of the analyses performed on the 14 samples received in our laboratory on April 5, 2002. Laser particle counts were performed on 12 of the samples, and Scanning Electron Microscopy (SEM) analysis was performed on 2 of the samples.

Thank you for using Analytical Services, Inc. for your testing needs. If you have any questions or if we may be of service in the future, please do not hesitate to contact us at 1-800-723-4432.

Sincerely,

ANALYTICAL SERVICES, INC.

Kristen S. Fallon, Ph.D.
Laboratory Director

KSF/lll

Project No.: 2002-0405-010

Analytical Services, Inc.

Client: Camp, Dresser & McKee
Address: 1331 17th Street, Suite 1200
Denver, CO 80202
Project: Caltrans – Tahoe

Date Received: April 5, 2002
Analysis Start Date: April 6, 2002
Analyst: rm

Laser Particle Count Results – Initial Reading

Size Range (µm)	Particles per Liter		
	Camp, Dresser & McKee 3218R0202151520C01 2/18/02 2002-0405-010	Camp, Dresser & McKee 3218R0202201144C5 2/20/02 2002-0405-011	Camp, Dresser & McKee 3218R0202191253C1 2/19/02 2002-0405-012
0.5 – 3.0	4.9×10^{11}	1.5×10^{11}	6.2×10^{11}
>3.0 – 5.0	7.7×10^{9}	8.9×10^{8}	9.9×10^{9}
>5.0 – 8.0	2.3×10^{9}	2.9×10^{8}	2.9×10^{9}
>8.0 – 12.0	7.0×10^{8}	9.8×10^{7}	7.1×10^{8}
>12.0 – 15.0	1.4×10^{8}	3.1×10^{7}	8.9×10^{7}
>15.0 – 25.0	7.9×10^{7}	4.0×10^{7}	5.1×10^{7}
>25.0 – 100.0	1.0×10^{7}	1.5×10^{7}	3.9×10^{6}
>100.0	$<1.0 \times 10^{5}$	$<1.0 \times 10^{5}$	$<1.0 \times 10^{5}$

Samples were diluted as needed and analyzed using a Hiac/Royco 8000A/3000A/MicroCount-05 laser particle counter. The data reported is the result of a three run average. All data reported as "<" represent values below the detection limit in that size range (non-detects). Given that all samples required significant dilution, it is possible that particles in the larger size ranges were not detected because of the large dilution factor needed.

Please note that these samples were received and analyzed out of the recommended 24-hour hold time. This data should be interpreted cautiously as microbial growth may have affected particle counts.

Analytical Services, Inc.

Client: Camp, Dresser & McKee
Address: 1331 17th Street, Suite 1200
Denver, CO 80202
Project: Caltrans – Tahoe

Date Received: April 5, 2002
Analysis Start Date: April 6, 2002
Analyst: rm

Laser Particle Count Results – Initial Reading (continued)

Size Range (µm)	Particles per Liter		
	Camp, Dresser & McKee 3203R0202281529C01 2/26/02 2002-0405-013	Camp, Dresser & McKee 3223R0202271503C1 2/27/02 2002-0405-014	Camp, Dresser & McKee 3219R0203060714C01 3/6/02 2002-0405-015
0.5 – 3.0	1.9×10^{11}	9.3×10^{10}	1.1×10^{11}
>3.0 – 5.0	1.8×10^{9}	7.8×10^{8}	1.2×10^{9}
>5.0 – 8.0	6.1×10^{8}	2.3×10^{8}	5.4×10^{8}
>8.0 – 12.0	1.7×10^{8}	8.1×10^{7}	2.5×10^{8}
>12.0 – 15.0	3.3×10^{7}	2.3×10^{7}	4.2×10^{7}
>15.0 – 25.0	2.8×10^{7}	2.1×10^{7}	4.0×10^{7}
>25.0 – 100.0	3.9×10^{6}	2.2×10^{6}	2.2×10^{6}
>100.0	$<1.0 \times 10^{5}$	$<1.0 \times 10^{5}$	$<1.0 \times 10^{5}$

Samples were diluted as needed and analyzed using a Hiac/Royco 8000A/3000A/MicroCount-05 laser particle counter. The data reported is the result of a three run average. All data reported as "<" represent values below the detection limit in that size range (non-detects). Given that all samples required significant dilution, it is possible that particles in the larger size ranges were not detected because of the large dilution factor needed.

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Analytical Services, Inc.

Client: Camp, Dresser & McKee
Address: 1331 17th Street, Suite 1200
Denver, CO 80202
Project: Caltrans – Tahoe

Date Received: April 5, 2002
Analysis Start Date: April 6, 2002
Analyst: rm

Laser Particle Count Results – Initial Reading (continued)

Size Range (µm)	Particles per Liter		
	Camp, Dresser & McKee 3201R02030606332C1 3/6/02 2002-0405-016	Camp, Dresser & McKee 3201R02030614O2C2 3/6/02 2002-0405-017	Camp, Dresser & McKee 3202R02030615440C1 3/6/02 2002-0405-018
0.5 – 3.0	3.5×10^{11}	1.2×10^{11}	1.6×10^{11}
>3.0 – 5.0	5.7×10^{9}	1.5×10^{9}	9.6×10^{8}
>5.0 – 8.0	2.2×10^{9}	6.0×10^{8}	4.4×10^{8}
>8.0 – 12.0	8.2×10^{8}	2.5×10^{8}	2.4×10^{8}
>12.0 – 15.0	1.3×10^{8}	4.1×10^{7}	8.3×10^{7}
>15.0 – 25.0	8.0×10^{7}	3.2×10^{7}	4.8×10^{7}
>25.0 – 100.0	9.4×10^{6}	1.7×10^{6}	3.9×10^{6}
>100.0	$<1.0 \times 10^{5}$	$<1.0 \times 10^{5}$	5.6×10^{5}

Samples were diluted as needed and analyzed using a Hiac/Royco 8000A/3000A/MicroCount-05 laser particle counter. The data reported is the result of a three run average. All data reported as "<" represent values below the detection limit in that size range (non-detects). Given that all samples required significant dilution, it is possible that particles in the larger size ranges were not detected because of the large dilution factor needed.

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Client: Camp, Dresser & McKee
Address: 1331 17th Street, Suite 1200
Denver, CO 80202
Project: Caltrans – Tahoe

Date Received: April 5, 2002
Analysis Start Date: April 6, 2002
Analyst: rm

Laser Particle Count Results - – Initial Reading (continued)

Size Range (µm)	Particles per Liter		
	Camp, Dresser & McKee 3222R0203061545C1 3/6/02 2002-0405-019	Camp, Dresser & McKee 3201R0203070845C3 3/7/02 2002-0405-020	Camp, Dresser & McKee 3219R0203181259C01 3/18/02 2002-0405-021
0.5 – 3.0	8.7×10^{10}	1.9×10^{11}	1.2×10^{11}
>3.0 – 5.0	7.6×10^{8}	2.2×10^{9}	1.1×10^{9}
>5.0 – 8.0	2.6×10^{8}	8.1×10^{8}	4.8×10^{8}
>8.0 – 12.0	8.6×10^{7}	3.2×10^{8}	2.4×10^{8}
>12.0 – 15.0	1.7×10^{7}	7.9×10^{7}	6.1×10^{7}
>15.0 – 25.0	9.4×10^{6}	6.4×10^{7}	5.6×10^{7}
>25.0 – 100.0	$<1.0 \times 10^{5}$	1.7×10^{6}	7.2×10^{6}
>100.0	$<1.0 \times 10^{5}$	$<1.0 \times 10^{5}$	$<1.0 \times 10^{5}$

Samples were diluted as needed and analyzed using a Hiac/Royco 8000A/3000A/MicroCount-05 laser particle counter. The data reported is the result of a three run average. All data reported as "<" represent values below the detection limit in that size range (non-detects). Given that all samples required significant dilution, it is possible that particles in the larger size ranges were not detected because of the large dilution factor needed.

Please note that these samples were received and analyzed out of the recommended 24-hour hold time. This data should be interpreted cautiously as microbial growth may have affected particle counts.

Analytical Services, Inc.

Client: Camp, Dresser & McKee
Address: 1331 17th Street, Suite 1200
Denver, CO 80202
Project: Caltrans – Tahoe

Date Received: April 5, 2002
Analysis Start Date: April 22, 2002
Analyst: rm

Laser Particle Count Results – Second Reading

Size Range (µm)	Particles per Liter		
	Camp, Dresser & McKee 3218R0202181520C01 2/18/02 2002-0405-010	Camp, Dresser & McKee 3218R0202201144C5 2/20/02 2002-0405-011	Camp, Dresser & McKee 3218R0202191253C1 2/19/02 2002-0405-012
0.5 – 2.0	9.1×10^{10}	4.1×10^{10}	2.0×10^{11}
>2.0 – 8.0	4.7×10^{9}	1.4×10^{9}	8.6×10^{9}
>8.0 – 10.0	1.3×10^{8}	5.3×10^{7}	2.1×10^{8}
>10.0 – 12.0	5.1×10^{7}	2.4×10^{7}	8.7×10^{7}
>12.0 – 13.5	1.7×10^{7}	9.4×10^{6}	3.1×10^{7}
>13.5 – 15.0	7.8×10^{6}	7.2×10^{6}	2.2×10^{7}
>15.0 – 18.0	1.3×10^{7}	1.3×10^{7}	2.7×10^{7}
>18.0 – 20.0	2.8×10^{6}	1.1×10^{6}	5.0×10^{6}
>20.0 – 22.5	1.1×10^{6}	1.1×10^{6}	1.7×10^{6}
>22.5 – 25.0	1.1×10^{6}	1.1×10^{6}	1.1×10^{6}
>25.0 – 30.0	2.2×10^{6}	2.2×10^{6}	1.1×10^{6}
>30.0 – 40.0	1.1×10^{6}	1.1×10^{6}	1.1×10^{6}
>40.0 – 50.0	$<1.0 \times 10^{5}$	$<1.0 \times 10^{5}$	$<1.0 \times 10^{5}$
>50.0 – 100.0	$<1.0 \times 10^{5}$	$<1.0 \times 10^{5}$	$<1.0 \times 10^{5}$
>100.0	$<1.0 \times 10^{5}$	$<1.0 \times 10^{5}$	$<1.0 \times 10^{5}$

Samples were diluted as needed and analyzed using a Hiac/Royco 8000A/3000A/MicroCount-05 laser particle counter. The data reported is the result of a three run average. All data reported as "<" represent values below the detection limit in that size range (non-detects). Given that all samples required significant dilution, it is possible that particles in the larger size ranges were not detected because of the large dilution factor needed.

Please note that these samples were received and analyzed out of the recommended 24-hour hold time. This data should be interpreted cautiously as microbial growth may have affected particle counts.

Project No.: 2002-0405-010

Analytical Services, Inc.

Client: Camp, Dresser & McKee
Address: 1331 17th Street, Suite 1200
Denver, CO 80202
Project: Caltrans – Tahoe

Date Received: April 5, 2002
Analysis Start Date: April 22, 2002
Analyst: rm

Laser Particle Count Results – Second Reading (continued)

Size Range (µm)	Particles per Liter		
	Camp, Dresser & McKee 3203R0202281529C1 2/26/02 2002-0405-013	Camp, Dresser & McKee 3223R0202271503C1 2/27/02 2002-0405-014	Camp, Dresser & McKee 3219R0203080714C01 3/6/02 2002-0405-015
0.5 – 2.0	4.9×10^{10}	4.7×10^{10}	4.9×10^{10}
>2.0 – 8.0	2.8×10^{9}	2.2×10^{9}	5.4×10^{9}
>8.0 – 10.0	8.0×10^{7}	1.3×10^{8}	3.1×10^{8}
>10.0 – 12.0	4.2×10^{7}	7.4×10^{7}	1.2×10^{8}
>12.0 – 13.5	1.3×10^{7}	3.1×10^{7}	4.8×10^{7}
>13.5 – 15.0	1.0×10^{7}	1.1×10^{7}	3.2×10^{7}
>15.0 – 18.0	1.6×10^{7}	2.1×10^{7}	3.4×10^{7}
>18.0 – 20.0	1.1×10^{6}	5.0×10^{6}	9.4×10^{6}
>20.0 – 22.5	3.9×10^{6}	2.2×10^{6}	5.6×10^{6}
>22.5 – 25.0	2.2×10^{6}	6.1×10^{6}	2.8×10^{6}
>25.0 – 30.0	1.1×10^{6}	2.2×10^{6}	3.9×10^{6}
>30.0 – 40.0	$<1.0 \times 10^{6}$	1.7×10^{6}	2.8×10^{6}
>40.0 – 50.0	$<1.0 \times 10^{5}$	5.6×10^{5}	$<1.0 \times 10^{5}$
>50.0 – 100.0	$<1.0 \times 10^{5}$	$<1.0 \times 10^{5}$	5.6×10^{5}
>100.0	$<1.0 \times 10^{5}$	5.6×10^{5}	$<1.0 \times 10^{5}$

Samples were diluted as needed and analyzed using a Hiac/Royco 8000A/3000A/MicroCount-05 laser particle counter. The data reported is the result of a three run average. All data reported as "<" represent values below the detection limit in that size range (non-detects). Given that all samples required significant dilution, it is possible that particles in the larger size ranges were not detected because of the large dilution factor needed.

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Analytical Services, Inc.

Client: Camp, Dresser & McKee
Address: 1331 17th Street, Suite 1200
Denver, CO 80202
Project: Caltrans – Tahoe

Date Received: April 5, 2002
Analysis Start Date: April 22, 2002
Analyst: rm

Laser Particle Count Results - Second Reading (continued)

Size Range (µm)	Particles per Liter		
	Camp, Dresser & McKee 3201R0203060632C1 3/6/02 2002-0405-016	Camp, Dresser & McKee 3201R0203061402C2 3/6/02 2002-0405-017	Camp, Dresser & McKee 3202R0203061544C1 3/6/02 2002-0405-018
0.5 – 2.0	1.6×10^{11}	2.7×10^{11}	1.2×10^{11}
>2.0 – 8.0	5.6×10^{9}	2.7×10^{10}	3.2×10^{9}
>8.0 – 10.0	1.6×10^{8}	6.9×10^{8}	1.9×10^{8}
>10.0 – 12.0	6.8×10^{7}	2.9×10^{8}	1.1×10^{8}
>12.0 – 13.5	2.6×10^{7}	8.6×10^{7}	4.2×10^{7}
>13.5 – 15.0	1.2×10^{7}	5.0×10^{7}	2.2×10^{7}
>15.0 – 18.0	2.6×10^{7}	6.2×10^{7}	3.0×10^{7}
>18.0 – 20.0	4.4×10^{6}	9.4×10^{6}	4.4×10^{6}
>20.0 – 22.5	1.1×10^{6}	5.0×10^{6}	2.8×10^{6}
>22.5 – 25.0	1.1×10^{6}	4.4×10^{6}	2.8×10^{6}
>25.0 – 30.0	1.7×10^{6}	1.1×10^{6}	2.8×10^{6}
>30.0 – 40.0	5.6×10^{5}	1.1×10^{6}	$<1.0 \times 10^{5}$
>40.0 – 50.0	$<1.0 \times 10^{5}$	$<1.0 \times 10^{5}$	$<1.0 \times 10^{5}$
>50.0 – 100.0	$<1.0 \times 10^{5}$	$<1.0 \times 10^{5}$	$<1.0 \times 10^{5}$
>100.0	$<1.0 \times 10^{5}$	$<1.0 \times 10^{5}$	$<1.0 \times 10^{5}$

Samples were diluted as needed and analyzed using a Hiac/Royco 8000A/3000A/MicroCount-05 laser particle counter. The data reported is the result of a three run average. All data reported as "<" represent values below the detection limit in that size range (non-detects). Given that all samples required significant dilution, it is possible that particles in the larger size ranges were not detected because of the large dilution factor needed.

Please note that these samples were received and analyzed out of the recommended 24-hour hold time. This data should be interpreted cautiously as microbial growth may have affected particle counts.

Project No.: 2002-0405-010

Analytical Services, Inc.

Client: Camp, Dresser & McKee
Address: 1331 17th Street, Suite 1200
Denver, CO 80202
Project: Caltrans – Tahoe

Date Received: April 5, 2002
Analysis Start Date: April 22, 2002
Analyst: rm

Laser Particle Count Results - Second Reading (continued)

Size Range (µm)	Particles per Liter		
	Camp, Dresser & McKee 3222R0203061545C1 3/6/02 2002-0405-019	Camp, Dresser & McKee 3201R0203070845C3 3/7/02 2002-0405-020	Camp, Dresser & McKee 3219R0203181259C01 3/18/02 2002-0405-021
0.5 – 2.0	2.3×10^{11}	1.6×10^{11}	8.6×10^{10}
>2.0 – 8.0	3.2×10^{9}	7.7×10^{10}	4.1×10^{9}
>8.0 – 10.0	1.3×10^{8}	2.5×10^{8}	2.2×10^{8}
>10.0 – 12.0	6.7×10^{7}	1.1×10^{8}	8.9×10^{7}
>12.0 – 13.5	2.4×10^{7}	3.5×10^{7}	2.9×10^{7}
>13.5 – 15.0	1.8×10^{7}	2.6×10^{7}	1.9×10^{7}
>15.0 – 18.0	3.0×10^{7}	2.9×10^{7}	2.6×10^{7}
>18.0 – 20.0	2.8×10^{6}	8.3×10^{6}	5.6×10^{6}
>20.0 – 22.5	1.1×10^{6}	6.1×10^{6}	5.6×10^{6}
>22.5 – 25.0	2.2×10^{6}	1.7×10^{6}	5.6×10^{5}
>25.0 – 30.0	1.7×10^{6}	3.3×10^{6}	1.7×10^{6}
>30.0 – 40.0	$<1.0 \times 10^{5}$	5.6×10^{5}	$<1.0 \times 10^{5}$
>40.0 – 50.0	$<1.0 \times 10^{5}$	5.6×10^{5}	$<1.0 \times 10^{5}$
>50.0 – 100.0	$<1.0 \times 10^{5}$	$<1.0 \times 10^{5}$	$<1.0 \times 10^{5}$
>100.0	$<1.0 \times 10^{5}$	$<1.0 \times 10^{5}$	$<1.0 \times 10^{5}$

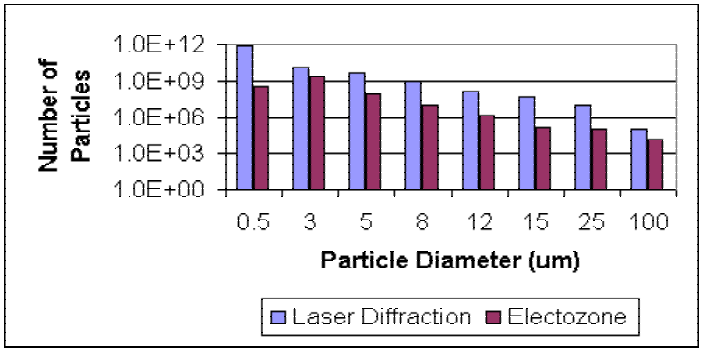
Samples were diluted as needed and analyzed using a Hiac/Royco 8000A/3000A/MicroCount-05 laser particle counter. The data reported is the result of a three run average. All data reported as "<" represent values below the detection limit in that size range (non-detects). Given that all samples required significant dilution, it is possible that particles in the larger size ranges were not detected because of the large dilution factor needed.

Please note that these samples were received and analyzed out of the recommended 24-hour hold time. This data should be interpreted cautiously as microbial growth may have affected particle counts.

Project No.: 2002-0405-010

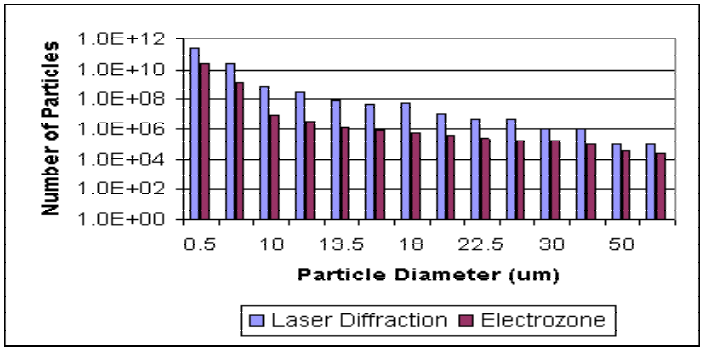
Appendix C
Small Particle Analytical Results

Particle Diameter (um)	Tahoe Meadows 1/23/2002	
	Laser Diffraction	Electozone
0.5	7.3E+11	3.0E+08
3	1.4E+10	1.9E+09
5	4.1E+09	7.6E+07
8	9.6E+08	1.0E+07
12	1.3E+08	1.5E+06
15	5.1E+07	1.3E+05
25	9.4E+06	1.1E+05
100	1.0E+05	1.5E+04



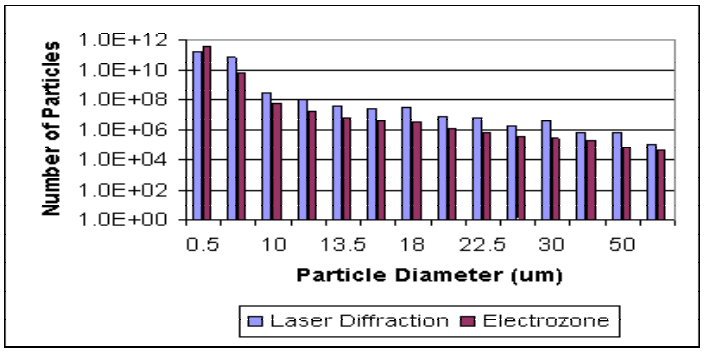
Site 3-201 Tahoe Meadows - Sampled 01/23/02

Particle Diameter (um)	Tahoe Meadows 03/06/2002	
	Laser Diffraction	Electrozone
0.5	2.7E+11	2.6E+10
8	2.7E+10	1.2E+09
10	6.9E+08	9.1E+06
12	2.9E+08	3.0E+06
13.5	8.6E+07	1.2E+06
15	5.0E+07	8.2E+05
18	6.2E+07	5.7E+05
20	9.4E+06	3.9E+05
22.5	5.0E+06	2.6E+05
25	4.4E+06	1.8E+05
30	1.1E+06	1.6E+05
40	1.1E+06	9.7E+04
50	1.0E+05	3.8E+04
100	1.0E+05	2.5E+04



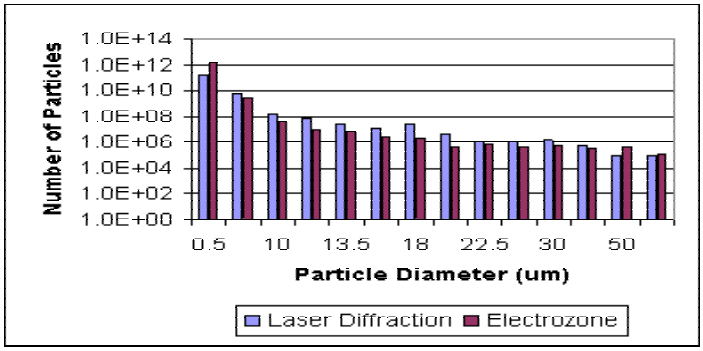
Site 3-201 Tahoe Meadows - Sampled 03/06/02

Particle Diameter (um)	Tahoe Meadows 03/07/2002	
	Laser Diffraction	Electrozone
0.5	1.6E+11	3.4E+11
8	7.7E+10	6.4E+09
10	2.5E+08	5.1E+07
12	1.1E+08	1.6E+07
13.5	3.5E+07	6.2E+06
15	2.6E+07	3.7E+06
18	2.9E+07	3.1E+06
20	8.3E+06	1.1E+06
22.5	6.1E+06	6.3E+05
25	1.7E+06	3.7E+05
30	3.3E+06	3.0E+05
40	5.6E+05	2.0E+05
50	5.6E+05	6.2E+04
100	1.0E+05	3.8E+04



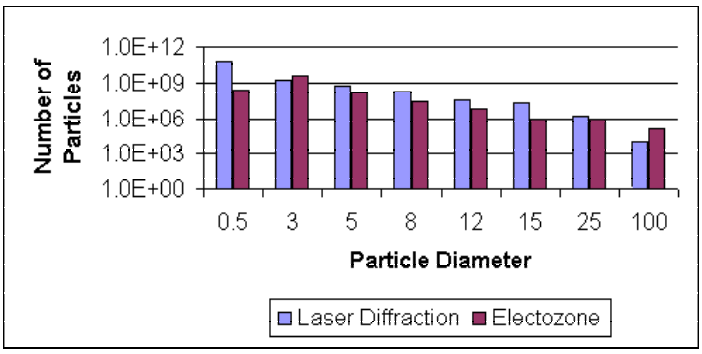
Site 3-201 Tahoe Meadows - Sampled 03/07/02

Particle Diameter (um)	Tahoe Meadows 03/09/2002	
	Laser Diffraction	Electrozone
0.5	1.6E+11	1.5E+12
8	5.6E+09	2.8E+09
10	1.6E+08	3.7E+07
12	6.8E+07	1.0E+07
13.5	2.6E+07	6.5E+06
15	1.2E+07	2.4E+06
18	2.6E+07	2.2E+06
20	4.4E+06	4.5E+05
22.5	1.1E+06	6.6E+05
25	1.1E+06	4.3E+05
30	1.7E+06	5.9E+05
40	5.6E+05	3.2E+05
50	1.0E+05	4.2E+05
100	1.0E+05	1.3E+05



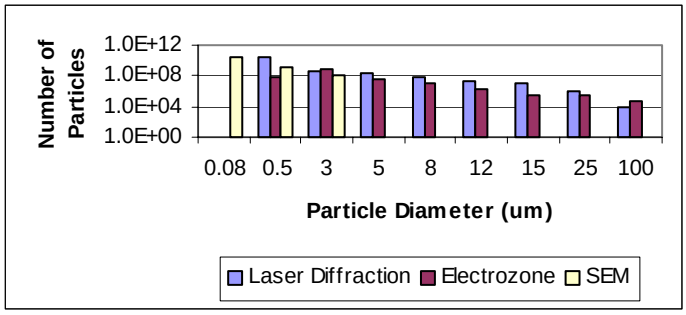
Site 3-201 Tahoe Meadows - Sampled 03/09/02

Particle Diameter (um)	Tahoe Airport Influent 1/3/2002	
	Laser Diffraction	Electozone
0.08		
0.5	6.4E+10	2.6E+08
3	1.6E+09	3.9E+09
5	5.8E+08	1.2E+08
8	2.0E+08	2.3E+07
12	3.0E+07	5.8E+06
15	1.8E+07	8.4E+05
25	1.4E+06	8.4E+05
100	1.0E+04	1.1E+05



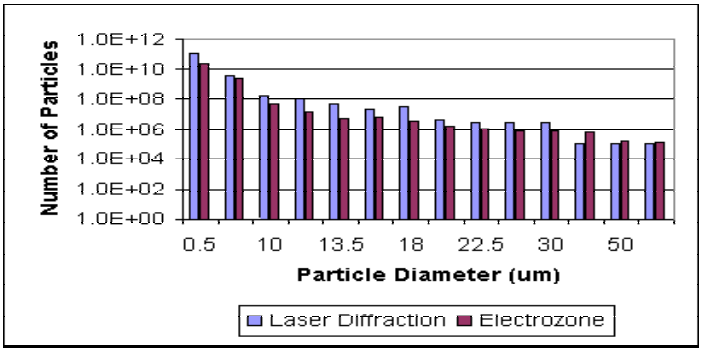
Site 3-202 Tahoe Airport Influent - Sampled 01/03/02

Particle Diameter (um)	Tahoe Airport Influent 2/10/2002		
	Laser Diffraction	Electrozone	SEM
0.08			2.1E+10
0.5	3.1E+10	7.8E+07	1.3E+09
3	5.4E+08	8.1E+08	1.3E+08
5	2.2E+08	4.7E+07	
8	8.0E+07	1.0E+07	
12	1.5E+07	2.1E+06	
15	9.8E+06	2.5E+05	
25	9.4E+05	2.3E+05	
100	1.0E+04	4.2E+04	



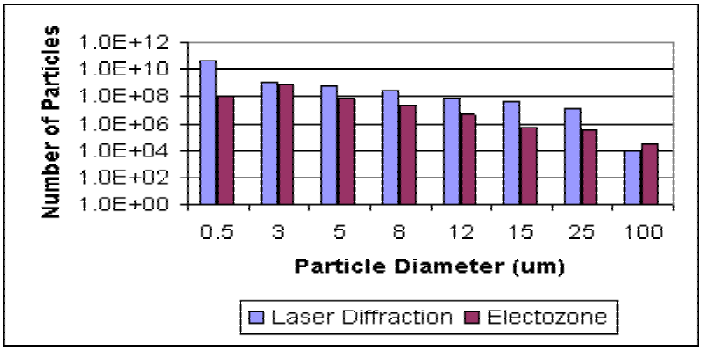
Site 3-202 Tahoe Airport Influent - Sampled 02/10/02

Particle Diameter (um)	Tahoe Airport Influent 03/06/2002	
	Laser Diffraction	Electrozone
0.5	1.2E+11	2.3E+10
8	3.2E+09	2.5E+09
10	1.9E+08	4.1E+07
12	1.1E+08	1.5E+07
13.5	4.2E+07	5.8E+06
15	2.2E+07	6.3E+06
18	3.0E+07	3.7E+06
20	4.4E+06	1.5E+06
22.5	2.8E+06	1.0E+06
25	2.8E+06	7.8E+05
30	2.8E+06	7.3E+05
40	1.0E+05	6.6E+05
50	1.0E+05	1.7E+05
100	1.0E+05	1.2E+05



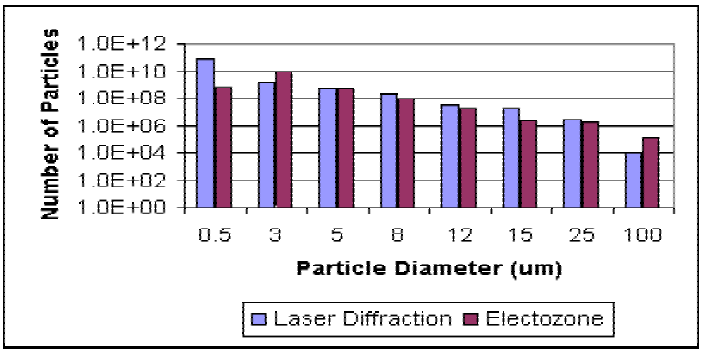
Site 3-202 Tahoe Airport - Sampled 03/06/02

Particle Diameter (um)	Echo Summit Influent 1/24/2002	
	Laser Diffraction	Electrozone
0.5	4.1E+10	1.0E+08
3	1.2E+09	7.8E+08
5	6.5E+08	6.8E+07
8	3.1E+08	2.0E+07
12	6.0E+07	5.1E+06
15	4.3E+07	5.3E+05
25	1.2E+07	3.3E+05
100	1.0E+04	3.0E+04



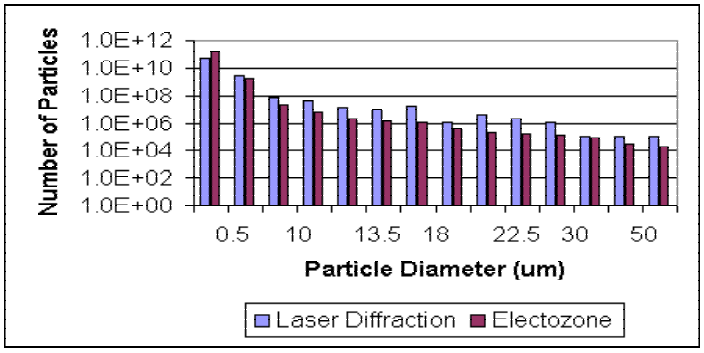
Site 3-203 Echo Summit - Sampled 01/24/02

Particle Diameter (um)	Echo Summit influent 2/4/2002	
	Laser Diffraction	Electrozone
0.5	7.3E+10	6.8E+08
3	1.5E+09	8.2E+09
5	5.5E+08	5.1E+08
8	2.0E+08	9.7E+07
12	3.2E+07	1.9E+07
15	2.0E+07	2.5E+06
25	3.2E+06	1.8E+06
100	1.0E+04	1.4E+05



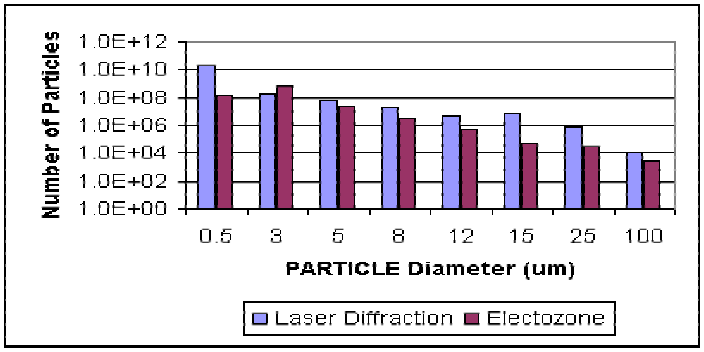
Site 3-203 Echo Summit - Sampled 02/04/02

Particle Diameter (um)	Echo Summit Influent 2/28/02	
	Laser Diffraction	Electrozone
0.5	4.9E+10	1.4E+11
8	2.8E+09	2.0E+09
10	8.0E+07	1.9E+07
12	4.2E+07	5.8E+06
13.5	1.3E+07	2.1E+06
15	1.0E+07	1.3E+06
18	1.6E+07	1.1E+06
20	1.1E+06	3.8E+05
22.5	3.9E+06	2.1E+05
25	2.2E+06	1.6E+05
30	1.1E+06	1.3E+05
40	1.0E+05	8.9E+04
50	1.0E+05	2.8E+04
100	1.0E+05	1.9E+04



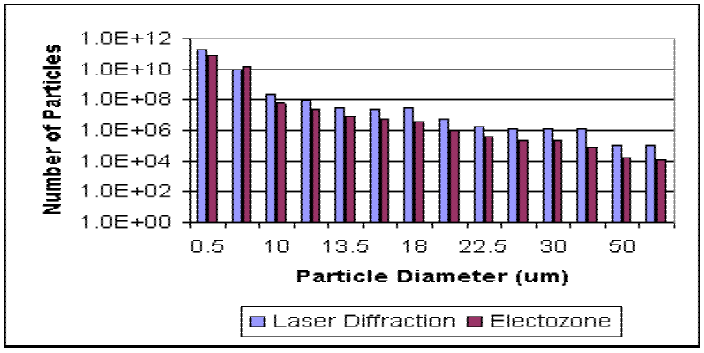
Site 3-203 Echo Summit - Sampled 02/28/02

Particle Diameter (um)	Bliss State Park 2/9/2002	
	Laser Diffraction	Electrozone
0.5	2.0E+10	1.6E+08
3	1.9E+08	6.4E+08
5	6.3E+07	2.4E+07
8	2.1E+07	3.0E+06
12	4.6E+06	4.9E+05
15	6.9E+06	5.4E+04
25	7.2E+05	3.6E+04
100	1.0E+04	3.0E+03



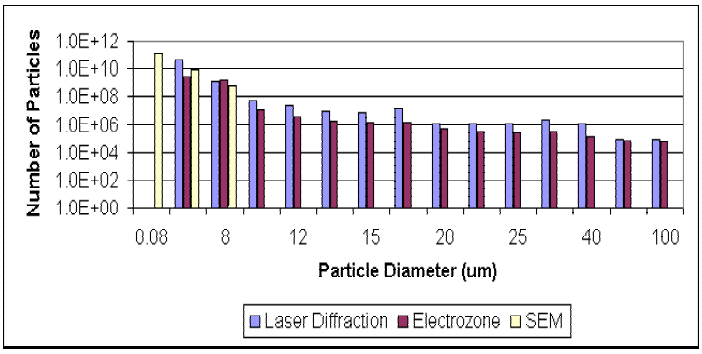
Site 3-218 Bliss Park - Sampled 02/09/02

Particle Diameter (um)	Bliss State Park 2/19/2002	
	Laser Diffraction	Electrozone
0.5	2.0E+11	6.7E+10
8	8.6E+09	1.4E+10
10	2.1E+08	6.6E+07
12	8.7E+07	2.3E+07
13.5	3.1E+07	8.5E+06
15	2.2E+07	5.6E+06
18	2.7E+07	3.5E+06
20	5.0E+06	1.1E+06
22.5	1.7E+06	3.9E+05
25	1.1E+06	2.3E+05
30	1.1E+06	2.4E+05
40	1.1E+06	6.9E+04
50	1.0E+05	1.8E+04
100	1.0E+05	1.2E+04



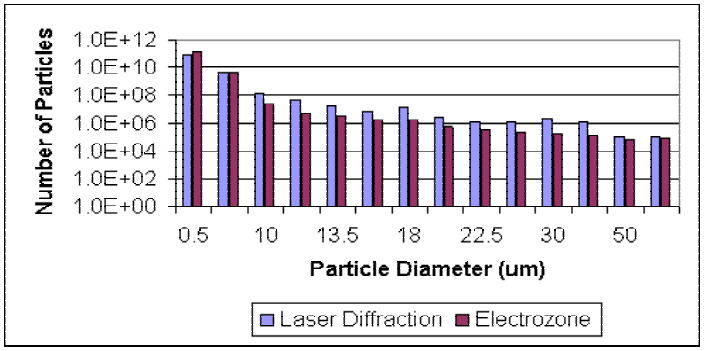
Site 3-218 Bliss Park - Sampled 02/19/02

Particle Diameter (um)	Bliss State Park 2/20/2002		
	Laser Diffraction	Electrozone	SEM
0.08			1.2E+11
0.5	4.1E+10	2.8E+09	9.3E+09
8	1.4E+09	1.8E+09	6.2E+08
10	5.3E+07	1.0E+07	
12	2.4E+07	4.1E+06	
13.5	9.4E+06	1.7E+06	
15	7.2E+06	1.3E+06	
18	1.3E+07	1.3E+06	
20	1.1E+06	5.1E+05	
22.5	1.1E+06	3.4E+05	
25	1.1E+06	2.4E+05	
30	2.2E+06	3.2E+05	
40	1.1E+06	1.5E+05	
50	1.0E+05	7.5E+04	
100	1.0E+05	5.7E+04	



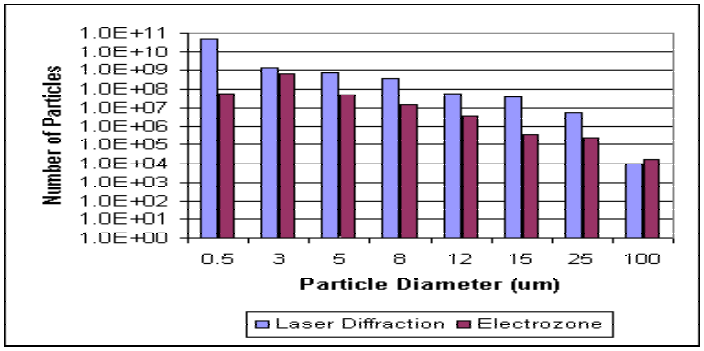
Site 3-218 Bliss Park - Sampled 02/20/02

Particle Diameter (um)	Snow Creek 1/3/2002	
	Laser Diffraction	Electrozone
0.08		
0.5	9.1E+10	1.3E+11
8	4.7E+09	4.2E+09
10	1.3E+08	2.3E+07
12	5.1E+07	4.9E+06
13.5	1.7E+07	2.9E+06
15	7.8E+06	1.6E+06
18	1.3E+07	1.7E+06
20	2.8E+06	5.4E+05
22.5	1.1E+06	3.0E+05
25	1.1E+06	2.3E+05
30	2.2E+06	1.8E+05
40	1.1E+06	1.2E+05
50	1.0E+05	5.6E+04
100	1.0E+05	7.0E+04



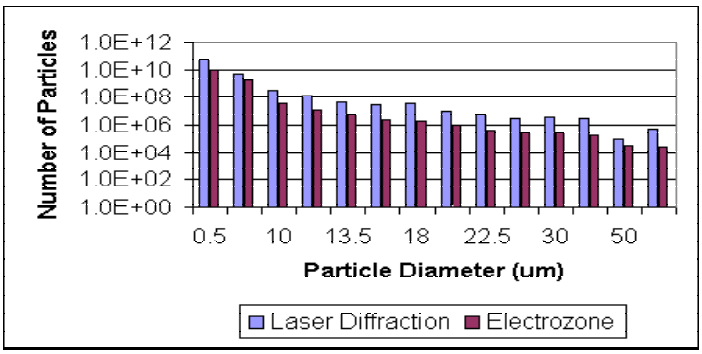
Site 3-219 Snow Creek - Sampled 01/03/02

Particle Diameter (um)	Snow Creek 2/10/2002	
	Laser Diffraction	Electrozone
0.5	4.9E+10	5.8E+07
3	1.5E+09	6.0E+08
5	7.4E+08	4.9E+07
8	3.5E+08	1.4E+07
12	5.8E+07	3.7E+06
15	3.9E+07	3.9E+05
25	5.4E+06	2.5E+05
100	1.0E+04	1.7E+04



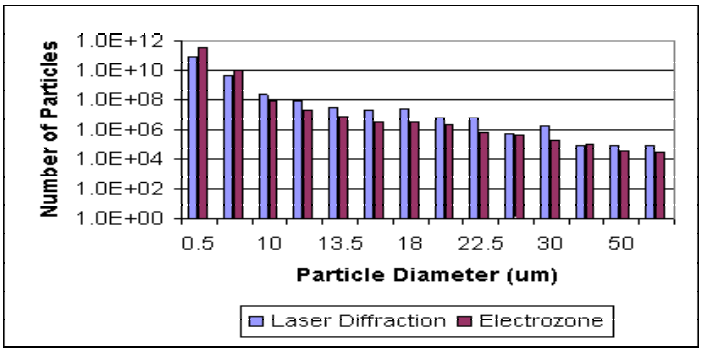
Site 3-219 Snow Creek - Sampled 02/10/02

Particle Diameter (um)	Snow Creek 03/06/2002	
	Laser Diffraction	Electrozone
0.5	4.9E+10	8.4E+09
8	5.4E+09	1.8E+09
10	3.1E+08	3.5E+07
12	1.2E+08	1.4E+07
13.5	4.8E+07	5.9E+06
15	3.2E+07	2.5E+06
18	3.4E+07	2.0E+06
20	9.4E+06	1.1E+06
22.5	5.6E+06	4.1E+05
25	2.8E+06	2.7E+05
30	3.9E+06	2.9E+05
40	2.8E+06	1.7E+05
50	1.0E+05	3.3E+04
100	5.6E+05	2.8E+04



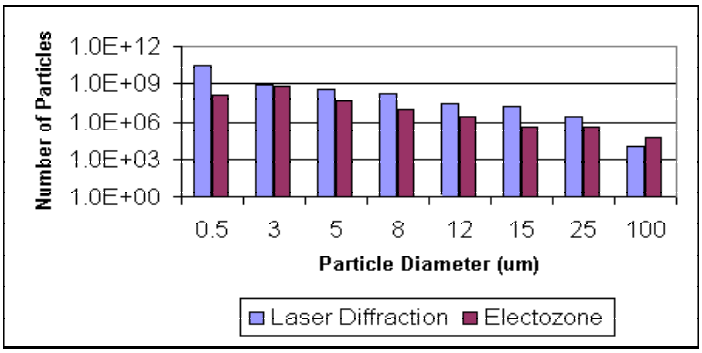
Site 3-219 Snow Creek - Sampled 03/06/02

Particle Diameter (um)	Snow Creek 03/18/2002	
	Laser Diffraction	Electrozone
0.08		
0.5	8.6E+10	3.6E+11
8	4.1E+09	9.2E+09
10	2.2E+08	8.1E+07
12	8.9E+07	2.1E+07
13.5	2.9E+07	6.7E+06
15	1.9E+07	3.5E+06
18	2.6E+07	3.5E+06
20	5.6E+06	2.4E+06
22.5	5.6E+06	6.5E+05
25	5.6E+05	4.4E+05
30	1.7E+06	1.9E+05
40	1.0E+05	1.1E+05
50	1.0E+05	3.0E+04
100	1.0E+05	2.6E+04



Site 3-219 Snow Creek - Sampled 03/18/02

Particle Diameter (um)	Brockway Summit 1/3/2002	
	Laser Diffraction	Electrozone
0.5	3.3E+10	1.1E+08
3	9.0E+08	7.1E+08
5	3.8E+08	4.5E+07
8	1.5E+08	1.0E+07
12	2.4E+07	2.6E+06
15	1.8E+07	3.7E+05
25	2.4E+06	3.8E+05
100	1.0E+04	4.8E+04



Site 3-220 Brockway Summit - Sampled 01/03/02

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

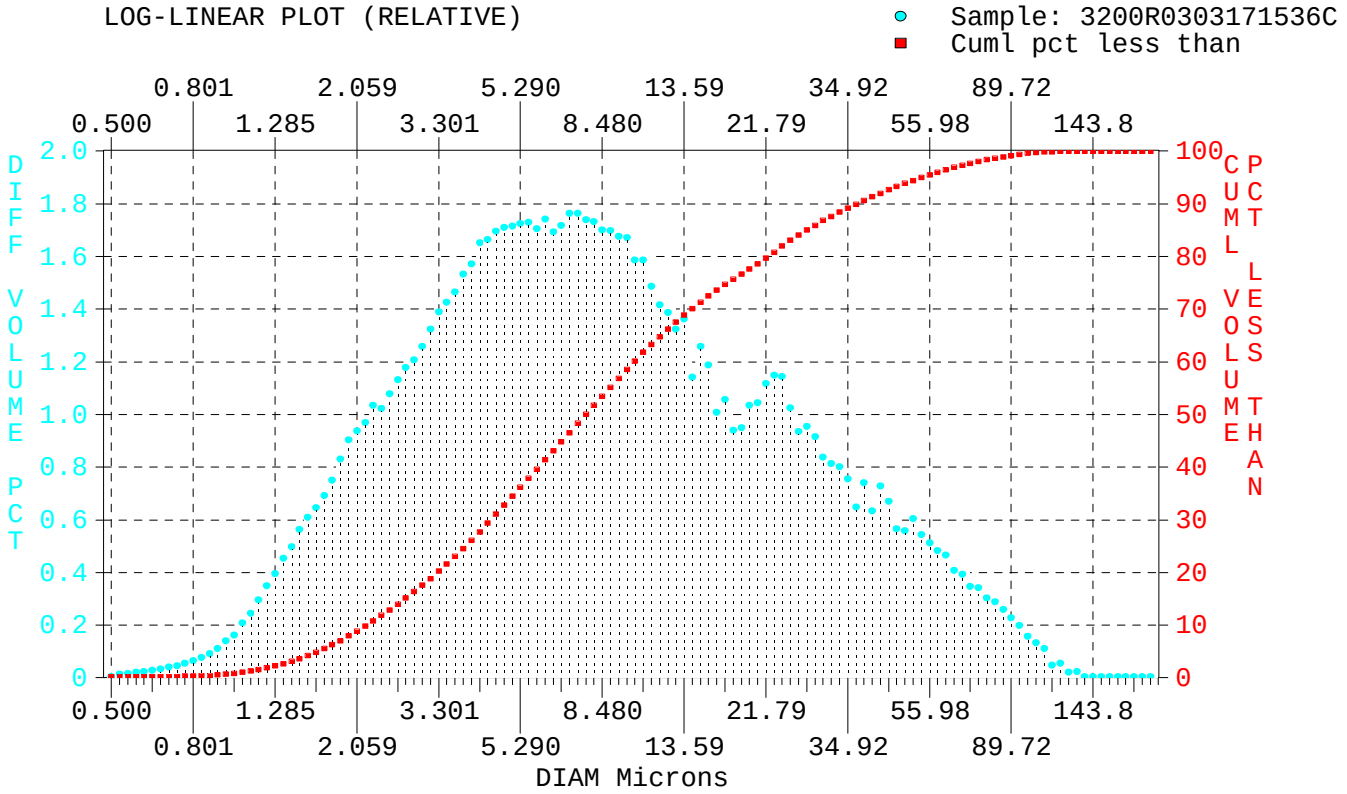
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Comments:
All Data in Report Represents 100ml of Sample

Date done: 7:32 28 Apr 03
Disk File: MAL0964.HST
Sample #: 3200R0303171536C1
Lot/Job #: MAL0964
Material: water
Source: Charlie O'Neill

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	8.340 um	
Geom. Std Deviation:	2.859 um	0.100% Volume below 0.644 um
Geom. Skewness:	0.399	1.000% Volume below 1.057 um
Geom. Coeff Variation:	34.28	6.000% Volume below 1.760 um
		22.00% Volume below 3.503 um
Arithmetic Mean Size:	14.59 um	50.00% Volume below 7.710 um
Median Size:	7.559 um	78.00% Volume below 20.20 um
Mode Size:	7.198 um	94.00% Volume below 49.29 um
Kurtosis:	6.854	99.00% Volume below 87.00 um
Arith Std Deviation	18.85 um	99.90% Volume below 116.3 um

ELZONE(tm) Particle Size Analysis

Date done: 7:32 28 Apr 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL0964.HST

Sample #: 3200R0303171536C1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL0964

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Volume Distribution Data

Total Volm: 4829663143

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.500	0	0.00	41	3.301	6.70E7	20.2	81	21.79	5.39E7	79.7
2	0.524	701686	0.01	42	3.460	6.88E7	21.6	82	22.84	5.55E7	80.8
3	0.549	819753	0.02	43	3.627	7.07E7	23.0	83	23.94	5.52E7	81.9
4	0.576	970618	0.04	44	3.802	7.40E7	24.5	84	25.10	4.95E7	83.0
5	0.604	1133297	0.06	45	3.986	7.59E7	26.1	85	26.31	4.51E7	84.0
6	0.633	1340415	0.09	46	4.179	7.97E7	27.7	86	27.58	4.60E7	85.0
7	0.664	1584574	0.12	47	4.380	8.03E7	29.3	87	28.92	4.42E7	85.9
8	0.696	1885398	0.16	48	4.592	8.19E7	31.0	88	30.31	4.05E7	86.8
9	0.729	2215559	0.20	49	4.814	8.25E7	32.7	89	31.78	3.93E7	87.6
10	0.765	2633726	0.25	50	5.047	8.29E7	34.4	90	33.31	3.86E7	88.4
11	0.801	3103276	0.31	51	5.290	8.33E7	36.2	91	34.92	3.65E7	89.2
12	0.840	3682790	0.38	52	5.546	8.35E7	37.9	92	36.61	3.13E7	89.9
13	0.881	4379825	0.46	53	5.814	8.23E7	39.6	93	38.38	3.57E7	90.6
14	0.923	5362749	0.56	54	6.095	8.41E7	41.3	94	40.23	3.05E7	91.3
15	0.968	6786065	0.69	55	6.389	8.17E7	43.0	95	42.18	3.51E7	91.9
16	1.015	7827928	0.84	56	6.698	8.29E7	44.7	96	44.21	3.24E7	92.6
17	1.064	9992105	1.02	57	7.021	8.51E7	46.5	97	46.35	2.73E7	93.3
18	1.115	1.18E7	1.25	58	7.361	8.52E7	48.2	98	48.59	2.69E7	93.8
19	1.169	1.43E7	1.52	59	7.716	8.40E7	50.0	99	50.94	2.92E7	94.4
20	1.225	1.68E7	1.84	60	8.089	8.37E7	51.7	100	53.40	2.62E7	95.0
21	1.285	1.91E7	2.21	61	8.480	8.22E7	53.5	101	55.98	2.47E7	95.5
22	1.347	2.19E7	2.63	62	8.890	8.20E7	55.2	102	58.68	2.32E7	96.0
23	1.412	2.40E7	3.11	63	9.319	8.10E7	56.8	103	61.51	2.25E7	96.5
24	1.480	2.72E7	3.64	64	9.769	8.07E7	58.5	104	64.49	1.96E7	96.9
25	1.551	2.94E7	4.23	65	10.24	7.65E7	60.1	105	67.60	1.89E7	97.3
26	1.626	3.11E7	4.85	66	10.74	7.66E7	61.7	106	70.87	1.68E7	97.7
27	1.705	3.34E7	5.52	67	11.25	7.18E7	63.3	107	74.29	1.65E7	98.0
28	1.787	3.62E7	6.24	68	11.80	6.84E7	64.7	108	77.88	1.46E7	98.3
29	1.874	4.01E7	7.03	69	12.37	6.70E7	66.1	109	81.64	1.39E7	98.6
30	1.964	4.37E7	7.90	70	12.97	6.39E7	67.5	110	85.59	1.25E7	98.9
31	2.059	4.53E7	8.82	71	13.59	6.58E7	68.8	111	89.72	1.10E7	99.1
32	2.159	4.68E7	9.77	72	14.25	5.51E7	70.1	112	94.06	9573165	99.4
33	2.263	4.99E7	10.8	73	14.94	6.07E7	71.3	113	98.60	7519520	99.5
34	2.372	4.94E7	11.8	74	15.66	5.73E7	72.5	114	103.4	6352688	99.7
35	2.487	5.20E7	12.9	75	16.42	4.87E7	73.6	115	108.4	5322563	99.8
36	2.607	5.46E7	14.0	76	17.21	5.10E7	74.6	116	113.6	2299419	99.9
37	2.733	5.69E7	15.1	77	18.04	4.54E7	75.6	117	119.1	2649013	99.9
38	2.865	5.83E7	16.3	78	18.91	4.58E7	76.6	118	124.8	1017253	100.0
39	3.003	6.07E7	17.5	79	19.82	4.99E7	77.5	119	130.9	1171911	100.0
40	3.148	6.39E7	18.8	80	20.78	5.04E7	78.6	120	137.2	0	100.0

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

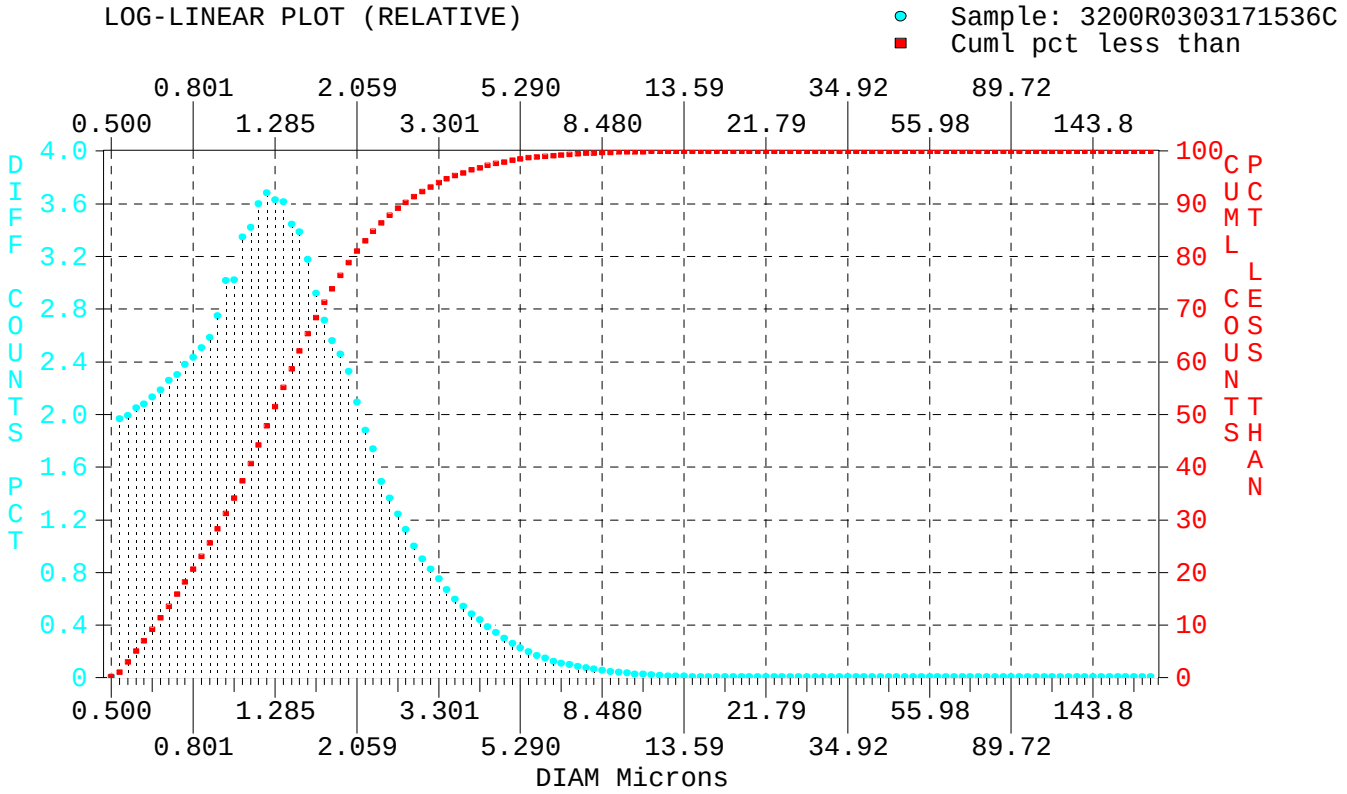
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Comments:
All Data in Report Represents 100ml of Sample

Date done: 7:32 28 Apr 03
Disk File: MAL0964.HST
Sample #: 3200R0303171536C1
Lot/Job #: MAL0964
Material: water
Source: Charlie O'Neill

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	1.309 um	
Geom. Std Deviation:	1.737 um	0.100% Counts below 0.513 um
Geom. Skewness:	0.043	1.000% Counts below 0.518 um
Geom. Coeff Variation:	132.7	6.000% Counts below 0.588 um
		22.00% Counts below 0.824 um
Arithmetic Mean Size:	1.556 um	50.00% Counts below 1.260 um
Median Size:	1.255 um	78.00% Counts below 1.934 um
Mode Size:	1.235 um	94.00% Counts below 3.309 um
Kurtosis:	47.937	99.00% Counts below 6.076 um
Arith Std Deviation	1.209 um	99.90% Counts below 11.74 um

ELZONE(tm) Particle Size Analysis

Date done: 7:32 28 Apr 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL0964.HST

Sample #: 3200R0303171536C1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL0964

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Frequency Distribution Data

Total Popl: 473572313

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.500	0	0.00	41	3.301	3561316	93.9	81	21.79	9952	100.0
2	0.524	9305943	0.98	42	3.460	3171489	94.7	82	22.84	8895	100.0
3	0.549	9436909	2.96	43	3.627	2828863	95.3	83	23.94	7682	100.0
4	0.576	9698940	4.98	44	3.802	2569491	95.9	84	25.10	5981	100.0
5	0.604	9829894	7.04	45	3.986	2289363	96.4	85	26.31	4734	100.0
6	0.633	1.01E7	9.15	46	4.179	2086490	96.8	86	27.58	4190	100.0
7	0.664	1.04E7	11.3	47	4.380	1825483	97.2	87	28.92	3492	100.0
8	0.696	1.07E7	13.5	48	4.592	1615644	97.6	88	30.31	2776	100.0
9	0.729	1.09E7	15.8	49	4.814	1412687	97.9	89	31.78	2339	100.0
10	0.765	1.13E7	18.1	50	5.047	1231171	98.2	90	33.31	1996	100.0
11	0.801	1.15E7	20.6	51	5.290	1074533	98.5	91	34.92	1635	100.0
12	0.840	1.19E7	23.0	52	5.546	934783	98.7	92	36.61	1220	100.0
13	0.881	1.22E7	25.6	53	5.814	799992	98.8	93	38.38	1206	100.0
14	0.923	1.30E7	28.2	54	6.095	709389	99.0	94	40.23	895	100.0
15	0.968	1.43E7	31.1	55	6.389	598363	99.1	95	42.18	894	100.0
16	1.015	1.43E7	34.1	56	6.698	526973	99.3	96	44.21	715	100.0
17	1.064	1.59E7	37.3	57	7.021	469641	99.4	97	46.35	523	100.0
18	1.115	1.62E7	40.7	58	7.361	407961	99.5	98	48.59	448	100.0
19	1.169	1.71E7	44.2	59	7.716	349315	99.5	99	50.94	422	100.0
20	1.225	1.74E7	47.9	60	8.089	301894	99.6	100	53.40	329	100.0
21	1.285	1.72E7	51.5	61	8.480	257305	99.7	101	55.98	269	100.0
22	1.347	1.71E7	55.1	62	8.890	222826	99.7	102	58.68	220	100.0
23	1.412	1.63E7	58.7	63	9.319	191079	99.8	103	61.51	185	100.0
24	1.480	1.60E7	62.1	64	9.769	165398	99.8	104	64.49	140	100.0
25	1.551	1.50E7	65.3	65	10.24	136077	99.8	105	67.60	117	100.0
26	1.626	1.38E7	68.4	66	10.74	118182	99.9	106	70.87	90	100.0
27	1.705	1.29E7	71.2	67	11.25	96142	99.9	107	74.29	77	100.0
28	1.787	1.21E7	73.9	68	11.80	79561	99.9	108	77.88	59	100.0
29	1.874	1.16E7	76.4	69	12.37	67631	99.9	109	81.64	49	100.0
30	1.964	1.10E7	78.8	70	12.97	56005	99.9	110	85.59	38	100.0
31	2.059	9899010	81.0	71	13.59	50040	99.9	111	89.72	29	100.0
32	2.159	8889263	82.9	72	14.25	36392	100.0	112	94.06	22	100.0
33	2.263	8223911	84.7	73	14.94	34775	100.0	113	98.60	15	100.0
34	2.372	7065035	86.4	74	15.66	28507	100.0	114	103.4	11	100.0
35	2.487	6461494	87.8	75	16.42	21026	100.0	115	108.4	8	100.0
36	2.607	5885940	89.1	76	17.21	19105	100.0	116	113.6	3	100.0
37	2.733	5324078	90.3	77	18.04	14758	100.0	117	119.1	3	100.0
38	2.865	4734744	91.3	78	18.91	12939	100.0	118	124.8	1	100.0
39	3.003	4281095	92.3	79	19.82	12231	100.0	119	130.9	1	100.0
40	3.148	3908276	93.2	80	20.78	10714	100.0	120	137.2	0	100.0

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

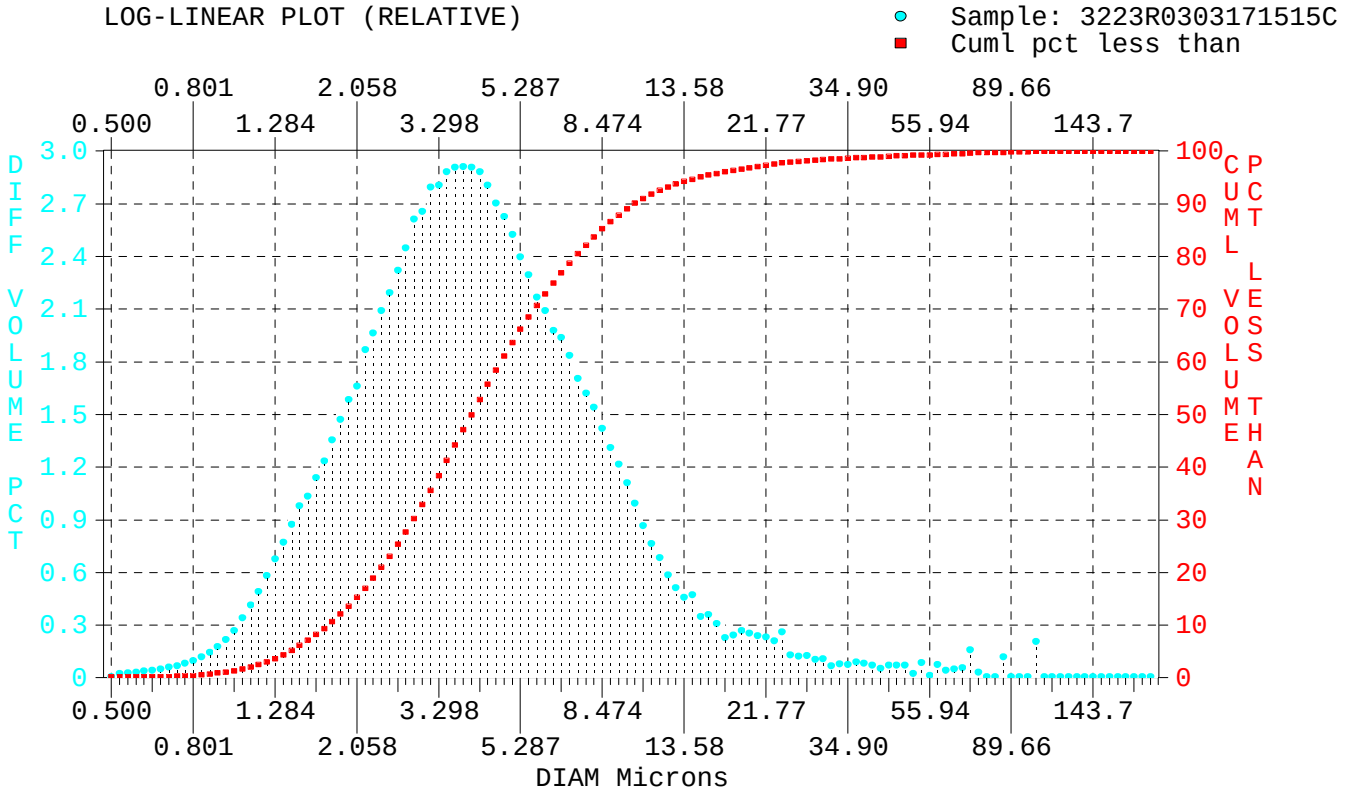
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Comments:
All Data in Report Represents 100ml of Sample

Date done: 8:26 28 Apr 03
Disk File: MAL0965.HST
Sample #: 3223R0303171515C1
Lot/Job #: MAL0965
Material: water
Source: Charlie O'Neill

LOG-LINEAR PLOT (RELATIVE)



Geometric Mean Size:	4.213 um	-- PERCENTILES --	
Geom. Std Deviation:	2.098 um	0.100% Volume below	0.602 um
Geom. Skewness:	0.197	1.000% Volume below	0.953 um
Geom. Coeff Variation:	49.80	6.000% Volume below	1.473 um
		22.00% Volume below	2.429 um
Arithmetic Mean Size:	5.965 um	50.00% Volume below	3.984 um
Median Size:	3.902 um	78.00% Volume below	6.890 um
Mode Size:	3.800 um	94.00% Volume below	13.33 um
Kurtosis:	43.661	99.00% Volume below	45.38 um
Arith Std Deviation	8.567 um	99.90% Volume below	103.3 um

ELZONE(tm) Particle Size Analysis

Date done: 8:26 28 Apr 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL0965.HST

Sample #: 3223R0303171515C1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL0965

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Volume Distribution Data

Total Volm: 1401644647

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.500	0	0.00	40	3.146	3.91E7	35.6	78	18.90	3731735	96.5
2	0.524	328156	0.01	41	3.298	3.93E7	38.4	79	19.81	3545977	96.8
3	0.549	383959	0.04	42	3.458	4.04E7	41.2	80	20.77	3344091	97.0
4	0.576	442339	0.07	43	3.625	4.07E7	44.1	81	21.77	3252789	97.2
5	0.603	525276	0.10	44	3.800	4.08E7	47.0	82	22.82	2963037	97.5
6	0.633	599922	0.14	45	3.983	4.07E7	49.9	83	23.93	3650218	97.7
7	0.663	707560	0.19	46	4.176	4.04E7	52.8	84	25.08	1825846	97.9
8	0.695	827131	0.24	47	4.377	3.93E7	55.7	85	26.29	1694192	98.0
9	0.729	966706	0.31	48	4.589	3.79E7	58.4	86	27.56	1787315	98.1
10	0.764	1141646	0.38	49	4.811	3.68E7	61.1	87	28.90	1440088	98.3
11	0.801	1375805	0.47	50	5.043	3.54E7	63.7	88	30.29	1484415	98.4
12	0.840	1683370	0.58	51	5.287	3.36E7	66.1	89	31.75	938888	98.4
13	0.880	2019888	0.71	52	5.542	3.22E7	68.5	90	33.29	1120275	98.5
14	0.923	2466661	0.87	53	5.810	3.04E7	70.7	91	34.90	1023589	98.6
15	0.967	3037533	1.07	54	6.090	2.93E7	72.8	92	36.58	1256130	98.7
16	1.014	3747419	1.31	55	6.385	2.77E7	74.9	93	38.35	1151791	98.8
17	1.063	4786900	1.62	56	6.693	2.72E7	76.8	94	40.20	986684	98.8
18	1.114	5775203	1.99	57	7.016	2.57E7	78.7	95	42.15	744740	98.9
19	1.168	6881607	2.44	58	7.355	2.39E7	80.5	96	44.18	993446	99.0
20	1.225	8124506	2.98	59	7.711	2.27E7	82.1	97	46.32	988431	99.0
21	1.284	9464423	3.61	60	8.083	2.16E7	83.7	98	48.55	1018855	99.1
22	1.346	1.08E7	4.33	61	8.474	1.99E7	85.2	99	50.90	345227	99.2
23	1.411	1.22E7	5.15	62	8.883	1.84E7	86.6	100	53.36	1193153	99.2
24	1.479	1.37E7	6.08	63	9.312	1.71E7	87.8	101	55.94	183276	99.3
25	1.550	1.45E7	7.08	64	9.762	1.56E7	89.0	102	58.64	1055715	99.3
26	1.625	1.59E7	8.17	65	10.23	1.39E7	90.0	103	61.47	608117	99.4
27	1.704	1.73E7	9.35	66	10.73	1.21E7	91.0	104	64.44	700581	99.4
28	1.786	1.90E7	10.6	67	11.25	1.07E7	91.8	105	67.55	807103	99.5
29	1.872	2.06E7	12.1	68	11.79	9594433	92.5	106	70.82	2231574	99.6
30	1.963	2.22E7	13.6	69	12.36	8218021	93.1	107	74.24	428480	99.7
31	2.058	2.33E7	15.2	70	12.96	7162455	93.7	108	77.83	0	99.7
32	2.157	2.62E7	17.0	71	13.58	6417248	94.2	109	81.59	0	99.7
33	2.261	2.75E7	18.9	72	14.24	6600930	94.6	110	85.53	1637884	99.7
34	2.371	2.93E7	20.9	73	14.93	4867148	95.1	111	89.66	0	99.8
35	2.485	3.07E7	23.1	74	15.65	5021396	95.4	112	93.99	0	99.8
36	2.605	3.25E7	25.3	75	16.40	4303424	95.7	113	98.53	0	99.8
37	2.731	3.43E7	27.7	76	17.20	3173814	96.0	114	103.3	2885138	99.9
38	2.863	3.66E7	30.2	77	18.03	3404858	96.2	115	108.3	0	100.0
39	3.001	3.72E7	32.9								

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

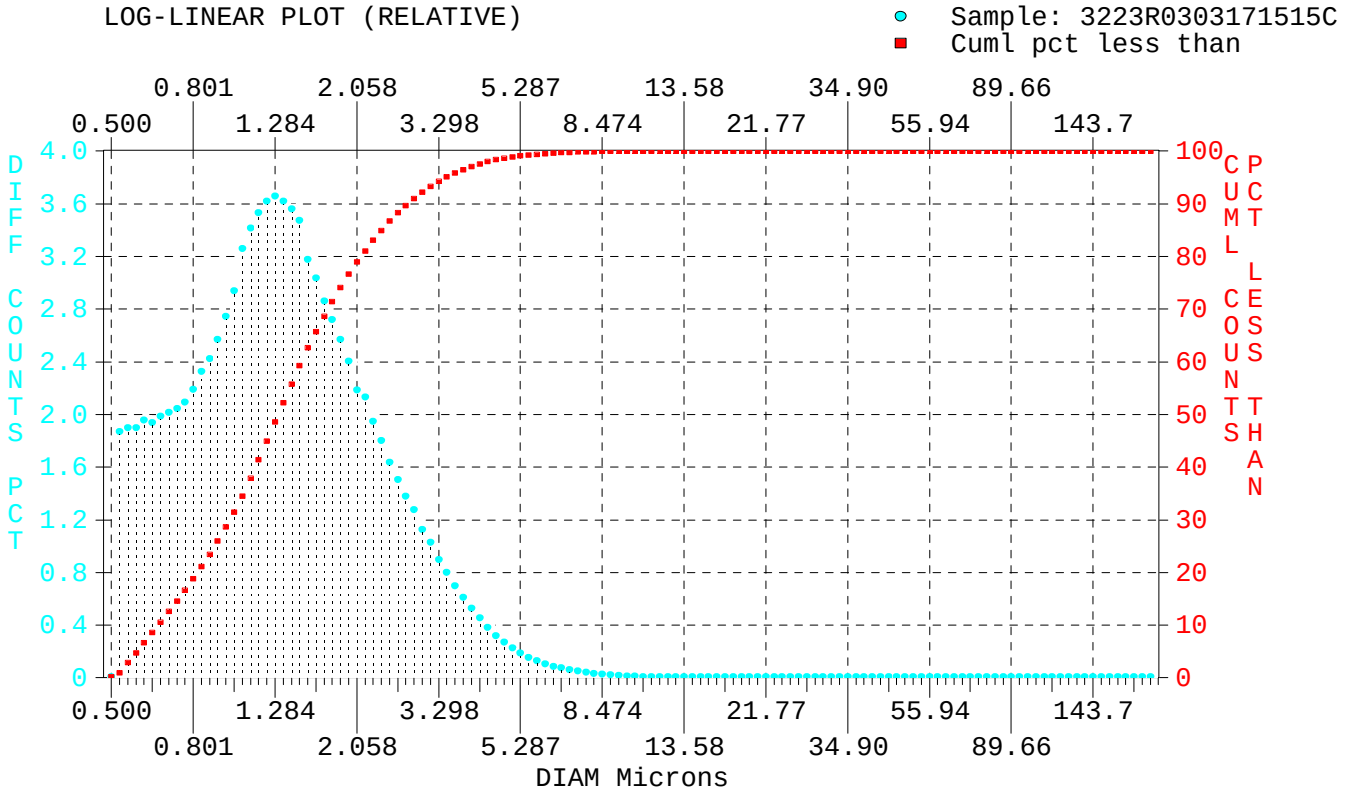
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Comments:
All Data in Report Represents 100ml of Sample

Date done: 8:26 28 Apr 03
Disk File: MAL0965.HST
Sample #: 3223R0303171515C1
Lot/Job #: MAL0965
Material: water
Source: Charlie O'Neill

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	1.343 um	
Geom. Std Deviation:	1.711 um	0.100% Counts below 0.512 um
Geom. Skewness:	0.035	1.000% Counts below 0.518 um
Geom. Coeff Variation:	127.4	6.000% Counts below 0.594 um
		22.00% Counts below 0.855 um
Arithmetic Mean Size:	1.567 um	50.00% Counts below 1.306 um
Median Size:	1.260 um	78.00% Counts below 2.020 um
Mode Size:	1.284 um	94.00% Counts below 3.259 um
Kurtosis:	12.584	99.00% Counts below 5.219 um
Arith Std Deviation	1.027 um	99.90% Counts below 8.637 um

ELZONE(tm) Particle Size Analysis

Date done: 8:26 28 Apr 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL0965.HST

Sample #: 3223R0303171515C1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL0965

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Frequency Distribution Data

Total Popl: 233570313

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.500	0	0.00	40	3.146	2400705	93.3	78	18.90	1056	100.0
2	0.524	4361301	0.93	41	3.298	2092197	94.2	79	19.81	871	100.0
3	0.549	4429449	2.82	42	3.458	1865593	95.1	80	20.77	713	100.0
4	0.576	4429444	4.71	43	3.625	1633703	95.8	81	21.77	602	100.0
5	0.603	4565736	6.64	44	3.800	1420465	96.5	82	22.82	476	100.0
6	0.633	4526340	8.58	45	3.983	1230925	97.0	83	23.93	509	100.0
7	0.663	4633881	10.5	46	4.176	1059092	97.5	84	25.08	221	100.0
8	0.695	4702026	12.5	47	4.377	894906	97.9	85	26.29	178	100.0
9	0.729	4770175	14.6	48	4.589	748548	98.3	86	27.56	163	100.0
10	0.764	4889906	16.6	49	4.811	631364	98.6	87	28.90	114	100.0
11	0.801	5115112	18.8	50	5.043	526753	98.8	88	30.29	102	100.0
12	0.840	5432591	21.0	51	5.287	434196	99.0	89	31.75	56	100.0
13	0.880	5658273	23.4	52	5.542	360805	99.2	90	33.29	58	100.0
14	0.923	5997845	25.9	53	5.810	295786	99.4	91	34.90	46	100.0
15	0.967	6411151	28.6	54	6.090	247687	99.5	92	36.58	49	100.0
16	1.014	6865567	31.4	55	6.385	203358	99.6	93	38.35	39	100.0
17	1.063	7612507	34.5	56	6.693	172966	99.7	94	40.20	29	100.0
18	1.114	7972045	37.8	57	7.016	142214	99.7	95	42.15	19	100.0
19	1.168	8245586	41.3	58	7.355	114663	99.8	96	44.18	22	100.0
20	1.225	8450022	44.9	59	7.711	94696	99.8	97	46.32	19	100.0
21	1.284	8544451	48.5	60	8.083	78083	99.9	98	48.55	17	100.0
22	1.346	8450022	52.2	61	8.474	62410	99.9	99	50.90	5	100.0
23	1.411	8313731	55.8	62	8.883	50037	99.9	100	53.36	15	100.0
24	1.479	8107853	59.3	63	9.312	40323	99.9	101	55.94	2	100.0
25	1.550	7412988	62.6	64	9.762	31930	99.9	102	58.64	10	100.0
26	1.625	7092382	65.7	65	10.23	24830	100.0	103	61.47	5	100.0
27	1.704	6679243	68.6	66	10.73	18790	100.0	104	64.44	5	100.0
28	1.786	6357060	71.4	67	11.25	14391	100.0	105	67.55	5	100.0
29	1.872	6003690	74.1	68	11.79	11181	100.0	106	70.82	12	100.0
30	1.963	5612452	76.6	69	12.36	8313	100.0	107	74.24	2	100.0
31	2.058	5099590	78.9	70	12.96	6289	100.0	108	77.83	0	100.0
32	2.157	4979522	81.0	71	13.58	4891	100.0	109	81.59	0	100.0
33	2.261	4544300	83.1	72	14.24	4367	100.0	110	85.53	5	100.0
34	2.371	4200677	84.9	73	14.93	2795	100.0	111	89.66	0	100.0
35	2.485	3824135	86.6	74	15.65	2503	100.0	112	93.99	0	100.0
36	2.605	3512411	88.2	75	16.40	1862	100.0	113	98.53	0	100.0
37	2.731	3216357	89.7	76	17.20	1192	100.0	114	103.3	5	100.0
38	2.863	2978916	91.0	77	18.03	1110	100.0	115	108.3	0	100.0
39	3.001	2630227	92.2								

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

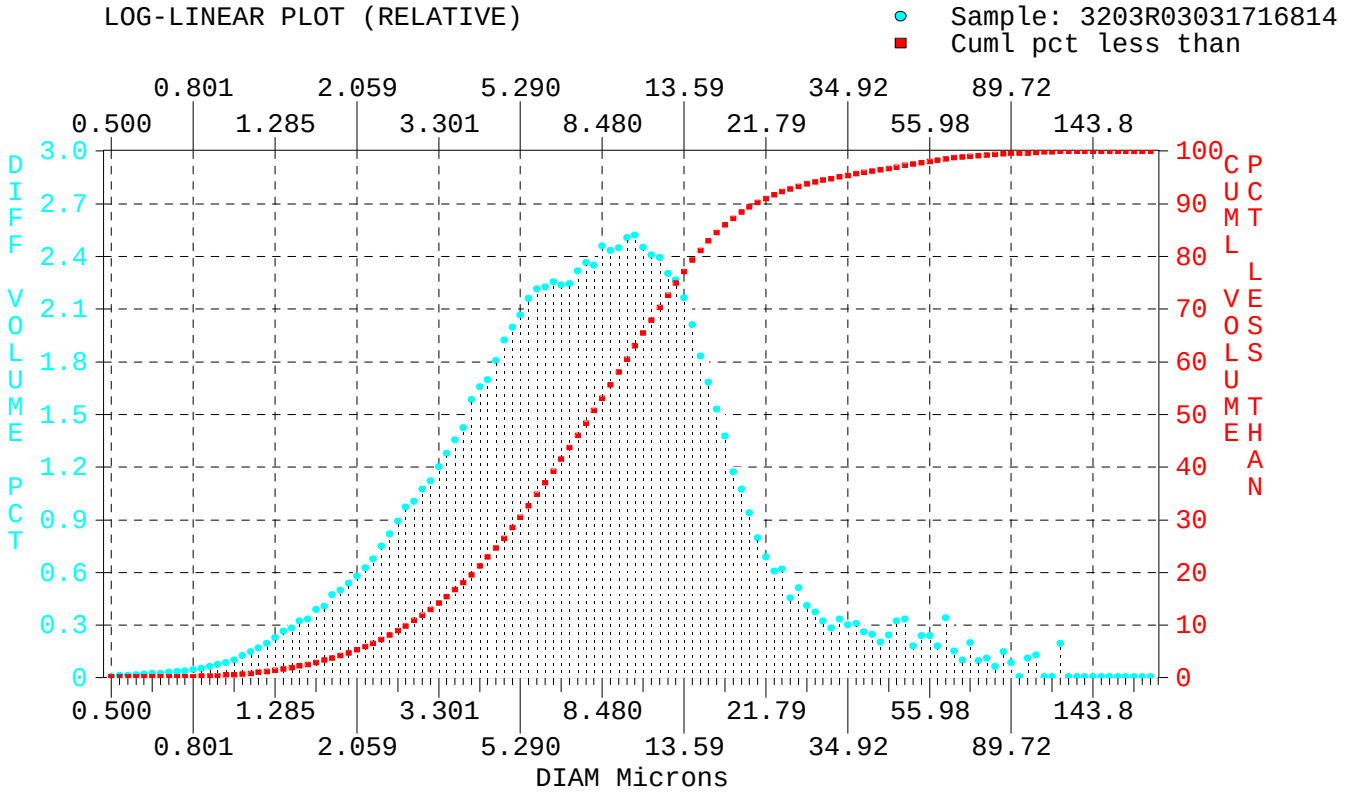
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Comments:
All Data in Report Represents 100ml of Sample

Date done: 9:31 28 Apr 03
Disk File: MAL0966.HST
Sample #: 3203R030317168141C1
Lot/Job #: MAL0966
Material: water
Source: Charlie O'Neill

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	7.877 um	
Geom. Std Deviation:	2.286 um	0.100% Volume below 0.668 um
Geom. Skewness:	-0.954	1.000% Volume below 1.170 um
Geom. Coeff Variation:	29.03	6.000% Volume below 2.173 um
		22.00% Volume below 4.268 um
Arithmetic Mean Size:	11.36 um	50.00% Volume below 7.975 um
Median Size:	7.910 um	78.00% Volume below 13.83 um
Mode Size:	10.06 um	94.00% Volume below 28.54 um
Kurtosis:	14.853	99.00% Volume below 71.39 um
Arith Std Deviation	13.38 um	99.90% Volume below 118.9 um

ELZONE(tm) Particle Size Analysis

Date done: 9:31 28 Apr 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL0966.HST

Sample #: 3203R030317168141C1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL0966

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Volume Distribution Data

Total Volm: 2243840364

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.500	0	0.00	41	3.301	2.69E7	14.1	80	20.78	1.79E7	90.2
2	0.524	274044	0.01	42	3.460	2.87E7	15.4	81	21.79	1.54E7	91.0
3	0.549	308876	0.02	43	3.627	3.04E7	16.7	82	22.84	1.36E7	91.6
4	0.576	363941	0.03	44	3.802	3.19E7	18.1	83	23.94	1.38E7	92.2
5	0.604	418750	0.05	45	3.986	3.55E7	19.6	84	25.10	1.02E7	92.8
6	0.633	493792	0.07	46	4.179	3.72E7	21.2	85	26.31	1.15E7	93.2
7	0.664	568322	0.10	47	4.380	3.81E7	22.9	86	27.58	9177482	93.7
8	0.696	663085	0.12	48	4.592	4.05E7	24.6	87	28.92	8384879	94.1
9	0.729	767836	0.15	49	4.814	4.32E7	26.5	88	30.31	7211979	94.4
10	0.765	887699	0.19	50	5.047	4.48E7	28.4	89	31.78	6378210	94.8
11	0.801	1032404	0.23	51	5.290	4.63E7	30.5	90	33.31	7444610	95.1
12	0.840	1201697	0.28	52	5.546	4.85E7	32.6	91	34.92	6749783	95.4
13	0.881	1431433	0.34	53	5.814	4.97E7	34.8	92	36.61	6903439	95.7
14	0.923	1645803	0.41	54	6.095	5.00E7	37.0	93	38.38	5824322	96.0
15	0.968	1944946	0.49	55	6.389	5.06E7	39.2	94	40.23	5551786	96.2
16	1.015	2254335	0.59	56	6.698	5.02E7	41.5	95	42.18	4512414	96.4
17	1.064	2813180	0.70	57	7.021	5.03E7	43.7	96	44.21	5424483	96.7
18	1.115	3301850	0.83	58	7.361	5.19E7	46.0	97	46.35	7238655	96.9
19	1.169	3795642	0.99	59	7.716	5.31E7	48.3	98	48.59	7499272	97.3
20	1.225	4414162	1.18	60	8.089	5.28E7	50.7	99	50.94	4008695	97.5
21	1.285	5097481	1.39	61	8.480	5.51E7	53.1	100	53.40	5334772	97.7
22	1.347	5900661	1.63	62	8.890	5.46E7	55.5	101	55.98	5320287	98.0
23	1.412	6349376	1.91	63	9.319	5.49E7	58.0	102	58.68	4015657	98.2
24	1.480	7217354	2.21	64	9.769	5.62E7	60.5	103	61.51	7669721	98.4
25	1.551	7466811	2.53	65	10.24	5.66E7	63.0	104	64.49	3366016	98.7
26	1.626	8738684	2.90	66	10.74	5.50E7	65.5	105	67.60	2262033	98.8
27	1.705	9147701	3.29	67	11.25	5.40E7	67.9	106	70.87	4467332	99.0
28	1.787	1.06E7	3.73	68	11.80	5.37E7	70.3	107	74.29	2144386	99.1
29	1.874	1.11E7	4.22	69	12.37	5.17E7	72.6	108	77.88	2470409	99.2
30	1.964	1.21E7	4.73	70	12.97	5.08E7	74.9	109	81.64	1423000	99.3
31	2.059	1.30E7	5.29	71	13.59	4.86E7	77.1	110	85.59	3278694	99.4
32	2.159	1.40E7	5.90	72	14.25	4.51E7	79.2	111	89.72	1888587	99.5
33	2.263	1.52E7	6.55	73	14.94	4.11E7	81.1	112	94.06	0	99.6
34	2.372	1.68E7	7.26	74	15.66	3.77E7	82.9	113	98.60	2506507	99.6
35	2.487	1.84E7	8.04	75	16.42	3.43E7	84.5	114	103.4	2887585	99.7
36	2.607	2.00E7	8.90	76	17.21	3.09E7	86.0	115	108.4	0	99.8
37	2.733	2.18E7	9.83	77	18.04	2.63E7	87.2	116	113.6	0	99.8
38	2.865	2.26E7	10.8	78	18.91	2.41E7	88.4	117	119.1	4415021	99.9
39	3.003	2.40E7	11.9	79	19.82	2.10E7	89.4	118	124.8	0	100.0
40	3.148	2.52E7	13.0								

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

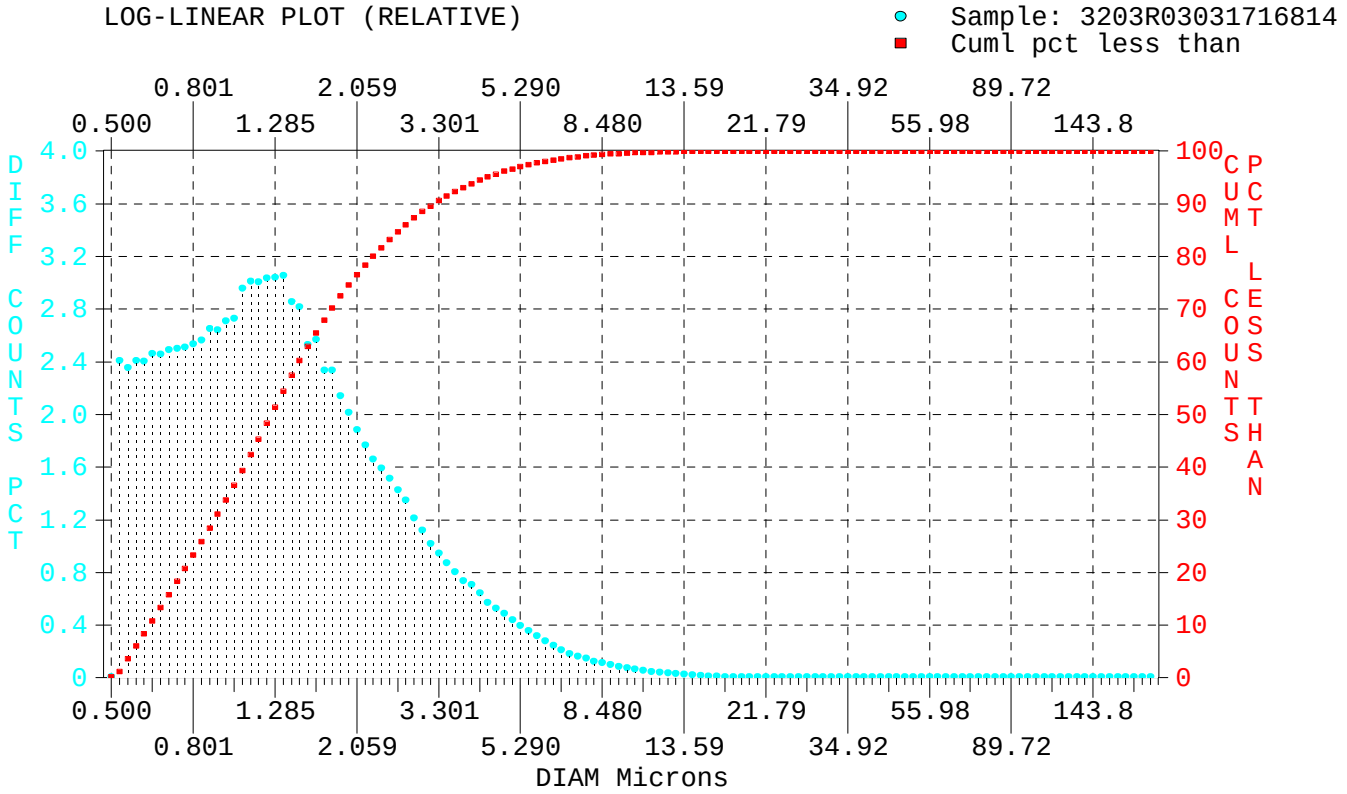
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Comments:
All Data in Report Represents 100ml of Sample

Date done: 9:31 28 Apr 03
Disk File: MAL0966.HST
Sample #: 3203R030317168141C1
Lot/Job #: MAL0966
Material: water
Source: Charlie O'Neill

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	1.352 um	
Geom. Std Deviation:	1.875 um	0.100% Counts below 0.512 um
Geom. Skewness:	0.018	1.000% Counts below 0.517 um
Geom. Coeff Variation:	138.6	6.000% Counts below 0.576 um
		22.00% Counts below 0.783 um
Arithmetic Mean Size:	1.696 um	50.00% Counts below 1.258 um
Median Size:	1.255 um	78.00% Counts below 2.141 um
Mode Size:	1.318 um	94.00% Counts below 4.040 um
Kurtosis:	20.957	99.00% Counts below 7.626 um
Arith Std Deviation	1.505 um	99.90% Counts below 13.65 um

ELZONE(tm) Particle Size Analysis

Date done: 9:31 28 Apr 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL0966.HST

Sample #: 3203R030317168141C1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL0966

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Frequency Distribution Data

Total Popl: 151057732

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.500	0	0.00	41	3.301	1430790	90.5	80	20.78	3805	100.0
2	0.524	3634443	1.20	42	3.460	1321299	91.4	81	21.79	2840	100.0
3	0.549	3555748	3.58	43	3.627	1216586	92.3	82	22.84	2188	100.0
4	0.576	3636695	5.96	44	3.802	1109042	93.1	83	23.94	1925	100.0
5	0.604	3632118	8.37	45	3.986	1071878	93.8	84	25.10	1230	100.0
6	0.633	3717734	10.8	46	4.179	973786	94.4	85	26.31	1206	100.0
7	0.664	3714137	13.3	47	4.380	864893	95.1	86	27.58	835	100.0
8	0.696	3761507	15.7	48	4.592	799736	95.6	87	28.92	662	100.0
9	0.729	3780857	18.2	49	4.814	739097	96.1	88	30.31	495	100.0
10	0.765	3794169	20.7	50	5.047	665245	96.6	89	31.78	380	100.0
11	0.801	3830274	23.3	51	5.290	597581	97.0	90	33.31	385	100.0
12	0.840	3869941	25.8	52	5.546	542911	97.4	91	34.92	303	100.0
13	0.881	4001378	28.4	53	5.814	483090	97.7	92	36.61	269	100.0
14	0.923	3993425	31.1	54	6.095	421494	98.0	93	38.38	197	100.0
15	0.968	4096419	33.7	55	6.389	370478	98.3	94	40.23	163	100.0
16	1.015	4121397	36.5	56	6.698	319179	98.5	95	42.18	115	100.0
17	1.064	4464294	39.3	57	7.021	277568	98.7	96	44.21	120	100.0
18	1.115	4548223	42.3	58	7.361	248781	98.9	97	46.35	139	100.0
19	1.169	4538359	45.3	59	7.716	220568	99.0	98	48.59	125	100.0
20	1.225	4581324	48.3	60	8.089	190359	99.2	99	50.94	58	100.0
21	1.285	4592271	51.4	61	8.480	172688	99.3	100	53.40	67	100.0
22	1.347	4614257	54.4	62	8.890	148465	99.4	101	55.98	58	100.0
23	1.412	4309842	57.4	63	9.319	129657	99.5	102	58.68	38	100.0
24	1.480	4252433	60.2	64	9.769	115121	99.6	103	61.51	63	100.0
25	1.551	3818773	62.9	65	10.24	100576	99.6	104	64.49	24	100.0
26	1.626	3879394	65.4	66	10.74	84915	99.7	105	67.60	14	100.0
27	1.705	3524999	67.9	67	11.25	72376	99.8	106	70.87	24	100.0
28	1.787	3530248	70.2	68	11.80	62456	99.8	107	74.29	10	100.0
29	1.874	3236690	72.4	69	12.37	52144	99.8	108	77.88	10	100.0
30	1.964	3042068	74.5	70	12.97	44554	99.9	109	81.64	5	100.0
31	2.059	2842495	76.5	71	13.59	36936	99.9	110	85.59	10	100.0
32	2.159	2667123	78.3	72	14.25	29798	99.9	111	89.72	5	100.0
33	2.263	2507189	80.0	73	14.94	23574	99.9	112	94.06	0	100.0
34	2.372	2401420	81.6	74	15.66	18757	100.0	113	98.60	5	100.0
35	2.487	2283906	83.2	75	16.42	14802	100.0	114	103.4	5	100.0
36	2.607	2154006	84.6	76	17.21	11563	100.0	115	108.4	0	100.0
37	2.733	2039126	86.0	77	18.04	8548	100.0	116	113.6	0	100.0
38	2.865	1831907	87.3	78	18.91	6810	100.0	117	119.1	5	100.0
39	3.003	1695345	88.5	79	19.82	5156	100.0	118	124.8	0	100.0
40	3.148	1540758	89.5								

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

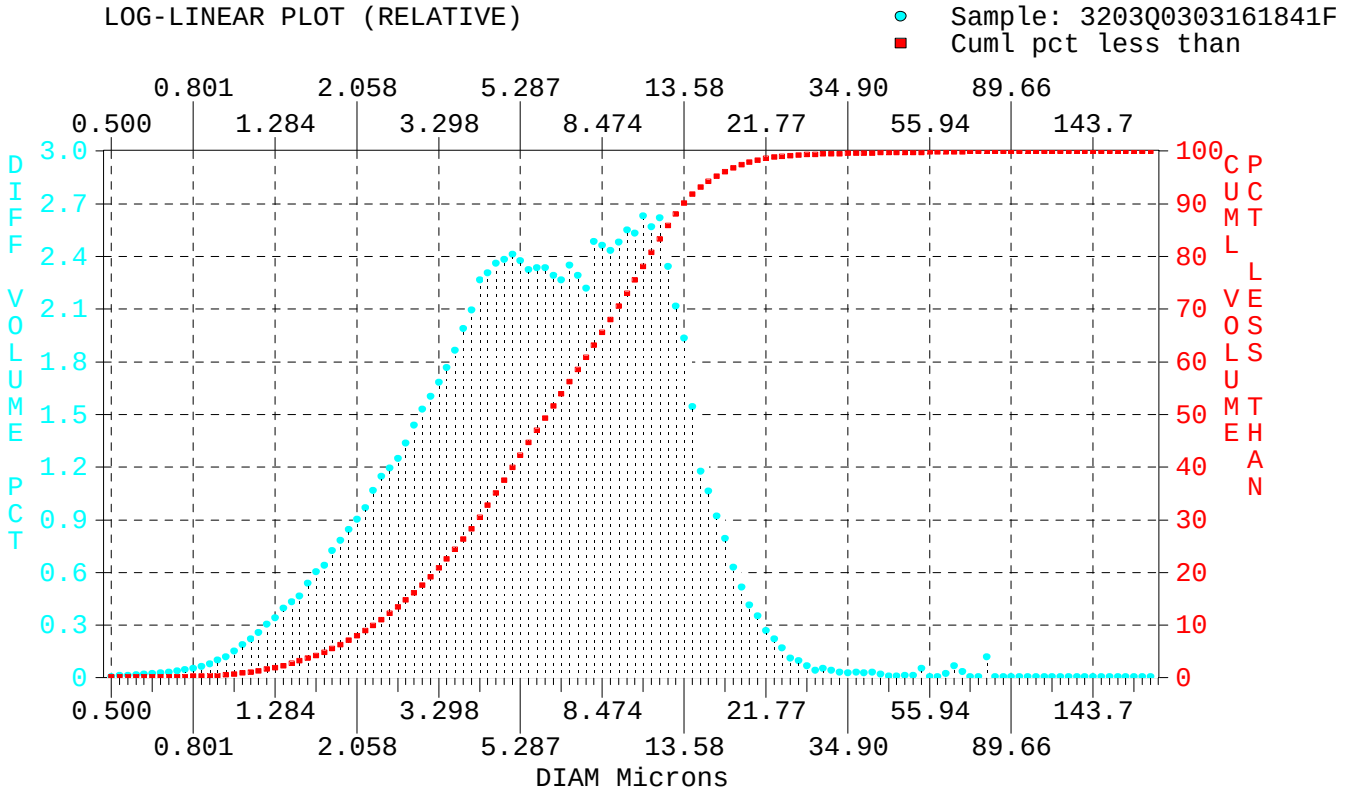
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Comments:
All Data in Report Represents 100ml of Sample

Date done: 10:59 28 Apr 03
Disk File: MAL0967.HST
Sample #: 3203Q0303161841FS1
Lot/Job #: MAL0967
Material: water
Source: Charlie O'Neill

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	5.914 um	
Geom. Std Deviation:	2.022 um	0.100% Volume below 0.671 um
Geom. Skewness:	-2.431	1.000% Volume below 1.095 um
Geom. Coeff Variation:	34.19	6.000% Volume below 1.840 um
		22.00% Volume below 3.409 um
Arithmetic Mean Size:	7.493 um	50.00% Volume below 6.170 um
Median Size:	5.977 um	78.00% Volume below 10.70 um
Mode Size:	10.83 um	94.00% Volume below 15.46 um
Kurtosis:	18.222	99.00% Volume below 23.97 um
Arith Std Deviation	6.090 um	99.90% Volume below 76.55 um

ELZONE(tm) Particle Size Analysis

Date done: 10:59 28 Apr 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL0967.HST

Sample #: 3203Q0303161841FS1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL0967

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Volume Distribution Data

Total Volm: 1464240690

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.500	0	0.00	38	2.863	2.11E7	16.1	74	15.65	1.56E7	94.3
2	0.524	162176	0.01	39	3.001	2.24E7	17.6	75	16.40	1.35E7	95.3
3	0.549	185548	0.02	40	3.146	2.34E7	19.2	76	17.20	1.16E7	96.1
4	0.576	225813	0.03	41	3.298	2.46E7	20.8	77	18.03	9214590	96.8
5	0.603	268050	0.05	42	3.458	2.59E7	22.5	78	18.90	7551816	97.4
6	0.633	324648	0.07	43	3.625	2.73E7	24.3	79	19.81	6066022	97.9
7	0.663	378855	0.09	44	3.800	2.91E7	26.3	80	20.77	5126355	98.2
8	0.695	468259	0.12	45	3.983	3.07E7	28.3	81	21.77	3922798	98.6
9	0.729	555272	0.16	46	4.176	3.32E7	30.5	82	22.82	3218257	98.8
10	0.764	661434	0.20	47	4.377	3.38E7	32.8	83	23.93	2502802	99.0
11	0.801	797869	0.25	48	4.589	3.46E7	35.1	84	25.08	1611040	99.1
12	0.840	960494	0.31	49	4.811	3.49E7	37.5	85	26.29	1399136	99.2
13	0.880	1134810	0.38	50	5.043	3.53E7	39.9	86	27.56	1008791	99.3
14	0.923	1452882	0.47	51	5.287	3.47E7	42.3	87	28.90	606353	99.4
15	0.967	1719148	0.58	52	5.542	3.40E7	44.6	88	30.29	800420	99.4
16	1.014	2197042	0.71	53	5.810	3.42E7	46.9	89	31.75	637103	99.5
17	1.063	2745911	0.88	54	6.090	3.42E7	49.3	90	33.29	463562	99.5
18	1.114	3247482	1.08	55	6.385	3.35E7	51.6	91	34.90	378283	99.5
19	1.168	3782295	1.32	56	6.693	3.32E7	53.9	92	36.58	435800	99.6
20	1.225	4474821	1.61	57	7.016	3.44E7	56.2	93	38.35	413464	99.6
21	1.284	4997690	1.93	58	7.355	3.36E7	58.5	94	40.20	476330	99.6
22	1.346	5810216	2.30	59	7.711	3.25E7	60.8	95	42.15	274378	99.6
23	1.411	6314384	2.71	60	8.083	3.64E7	63.1	96	44.18	135470	99.7
24	1.479	6830532	3.16	61	8.474	3.60E7	65.6	97	46.32	156068	99.7
25	1.550	7855170	3.66	62	8.883	3.56E7	68.0	98	48.55	179798	99.7
26	1.625	8841953	4.23	63	9.312	3.63E7	70.5	99	50.90	207136	99.7
27	1.704	9379271	4.85	64	9.762	3.73E7	73.0	100	53.36	795436	99.7
28	1.786	1.06E7	5.54	65	10.23	3.71E7	75.5	101	55.94	0	99.8
29	1.872	1.15E7	6.29	66	10.73	3.85E7	78.1	102	58.64	0	99.8
30	1.963	1.24E7	7.10	67	11.25	3.76E7	80.7	103	61.47	364870	99.8
31	2.058	1.32E7	7.98	68	11.79	3.84E7	83.3	104	64.44	980813	99.8
32	2.157	1.41E7	8.91	69	12.36	3.43E7	85.8	105	67.55	484262	99.9
33	2.261	1.56E7	9.93	70	12.96	3.10E7	88.0	106	70.82	0	99.9
34	2.371	1.68E7	11.0	71	13.58	2.83E7	90.0	107	74.24	0	99.9
35	2.485	1.75E7	12.2	72	14.24	2.26E7	91.8	108	77.83	1727705	99.9
36	2.605	1.83E7	13.4	73	14.93	1.72E7	93.1	109	81.59	0	100.0
37	2.731	1.95E7	14.7								

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

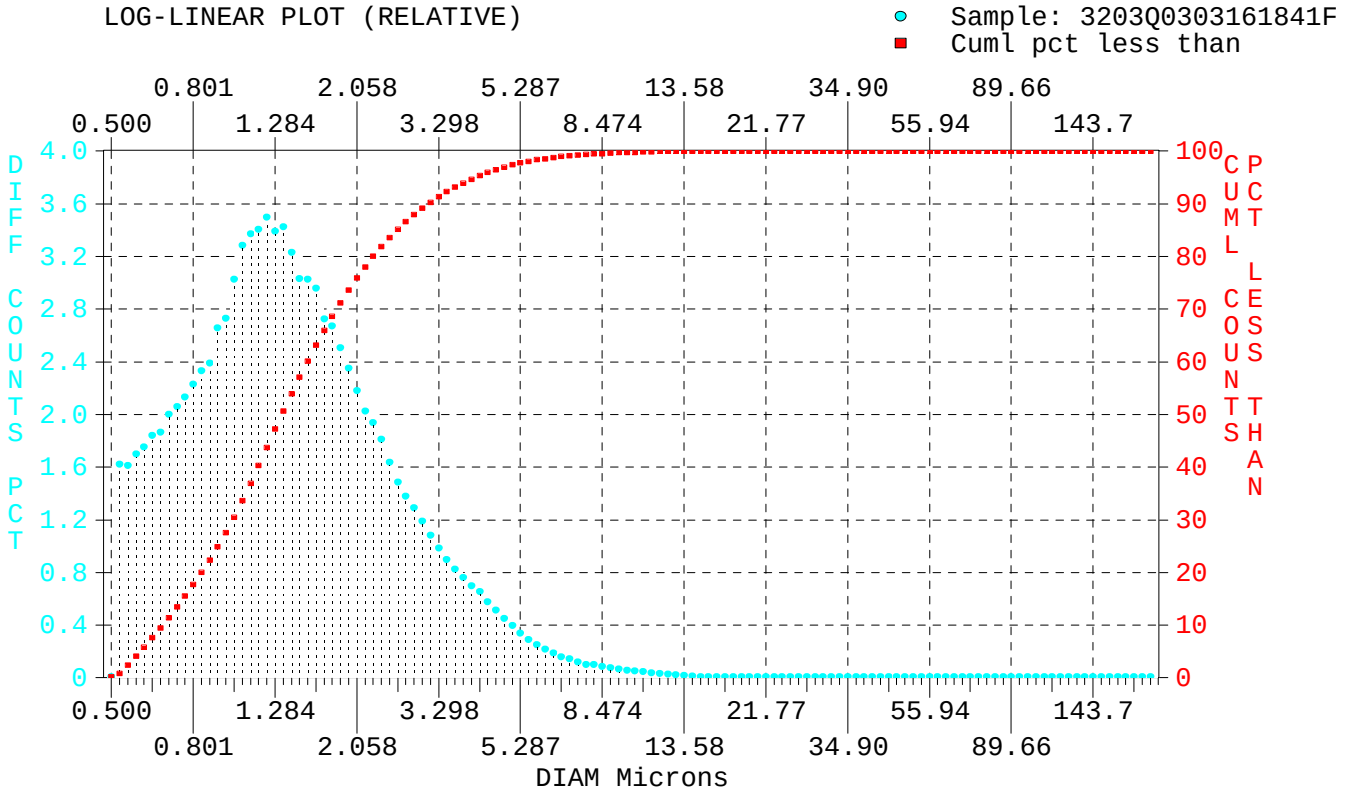
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Comments:
All Data in Report Represents 100ml of Sample

Date done: 10:59 28 Apr 03
Disk File: MAL0967.HST
Sample #: 3203Q0303161841FS1
Lot/Job #: MAL0967
Material: water
Source: Charlie O'Neill

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	1.412 um	0.100% Counts below 0.512 um
Geom. Std Deviation:	1.792 um	1.000% Counts below 0.519 um
Geom. Skewness:	0.107	6.000% Counts below 0.606 um
Geom. Coeff Variation:	127.0	22.00% Counts below 0.874 um
Arithmetic Mean Size:	1.707 um	50.00% Counts below 1.334 um
Median Size:	1.317 um	78.00% Counts below 2.156 um
Mode Size:	1.220 um	94.00% Counts below 3.823 um
Kurtosis:	12.014	99.00% Counts below 6.882 um
Arith Std Deviation	1.333 um	99.90% Counts below 12.12 um

ELZONE(tm) Particle Size Analysis

Date done: 10:59 28 Apr 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL0967.HST

Sample #: 3203Q0303161841FS1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL0967

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Frequency Distribution Data

Total Popl: 133042425

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.500	0	0.00	38	2.863	1715173	87.9	74	15.65	7759	100.0
2	0.524	2155372	0.81	39	3.001	1582161	89.1	75	16.40	5823	100.0
3	0.549	2140529	2.42	40	3.146	1437871	90.3	76	17.20	4360	100.0
4	0.576	2261221	4.08	41	3.298	1310174	91.3	77	18.03	3004	100.0
5	0.603	2329909	5.80	42	3.458	1196053	92.2	78	18.90	2137	100.0
6	0.633	2449430	7.60	43	3.625	1094025	93.1	79	19.81	1490	100.0
7	0.663	2481159	9.45	44	3.800	1014263	93.9	80	20.77	1093	100.0
8	0.695	2661931	11.4	45	3.983	926994	94.6	81	21.77	726	100.0
9	0.729	2739969	13.4	46	4.176	870421	95.3	82	22.82	517	100.0
10	0.764	2833059	15.5	47	4.377	768850	95.9	83	23.93	349	100.0
11	0.801	2966401	17.7	48	4.589	683076	96.4	84	25.08	195	100.0
12	0.840	3099717	20.0	49	4.811	598714	96.9	85	26.29	147	100.0
13	0.880	3178921	22.3	50	5.043	526063	97.4	86	27.56	92	100.0
14	0.923	3532776	24.9	51	5.287	449178	97.7	87	28.90	48	100.0
15	0.967	3628509	27.5	52	5.542	381604	98.0	88	30.29	55	100.0
16	1.014	4025154	30.4	53	5.810	333074	98.3	89	31.75	38	100.0
17	1.063	4366765	33.6	54	6.090	289200	98.5	90	33.29	24	100.0
18	1.114	4482799	36.9	55	6.385	246173	98.7	91	34.90	17	100.0
19	1.168	4531971	40.3	56	6.693	211187	98.9	92	36.58	17	100.0
20	1.225	4654109	43.7	57	7.016	190308	99.1	93	38.35	14	100.0
21	1.284	4511899	47.2	58	7.355	161105	99.2	94	40.20	14	100.0
22	1.346	4553145	50.6	59	7.711	135289	99.3	95	42.15	7	100.0
23	1.411	4295160	53.9	60	8.083	131481	99.4	96	44.18	3	100.0
24	1.479	4033036	57.0	61	8.474	113141	99.5	97	46.32	3	100.0
25	1.550	4025894	60.1	62	8.883	97058	99.6	98	48.55	3	100.0
26	1.625	3933545	63.1	63	9.312	85914	99.6	99	50.90	3	100.0
27	1.704	3621881	65.9	64	9.762	76603	99.7	100	53.36	10	100.0
28	1.786	3551291	68.6	65	10.23	66022	99.8	101	55.94	0	100.0
29	1.872	3334150	71.2	66	10.73	59533	99.8	102	58.64	0	100.0
30	1.963	3124421	73.6	67	11.25	50504	99.8	103	61.47	3	100.0
31	2.058	2897964	75.9	68	11.79	44720	99.9	104	64.44	7	100.0
32	2.157	2692565	78.0	69	12.36	34704	99.9	105	67.55	3	100.0
33	2.261	2574600	80.0	70	12.96	27227	99.9	106	70.82	0	100.0
34	2.371	2409398	81.8	71	13.58	21584	100.0	107	74.24	0	100.0
35	2.485	2175518	83.6	72	14.24	14954	100.0	108	77.83	7	100.0
36	2.605	1973592	85.1	73	14.93	9875	100.0	109	81.59	0	100.0
37	2.731	1832421	86.5								

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

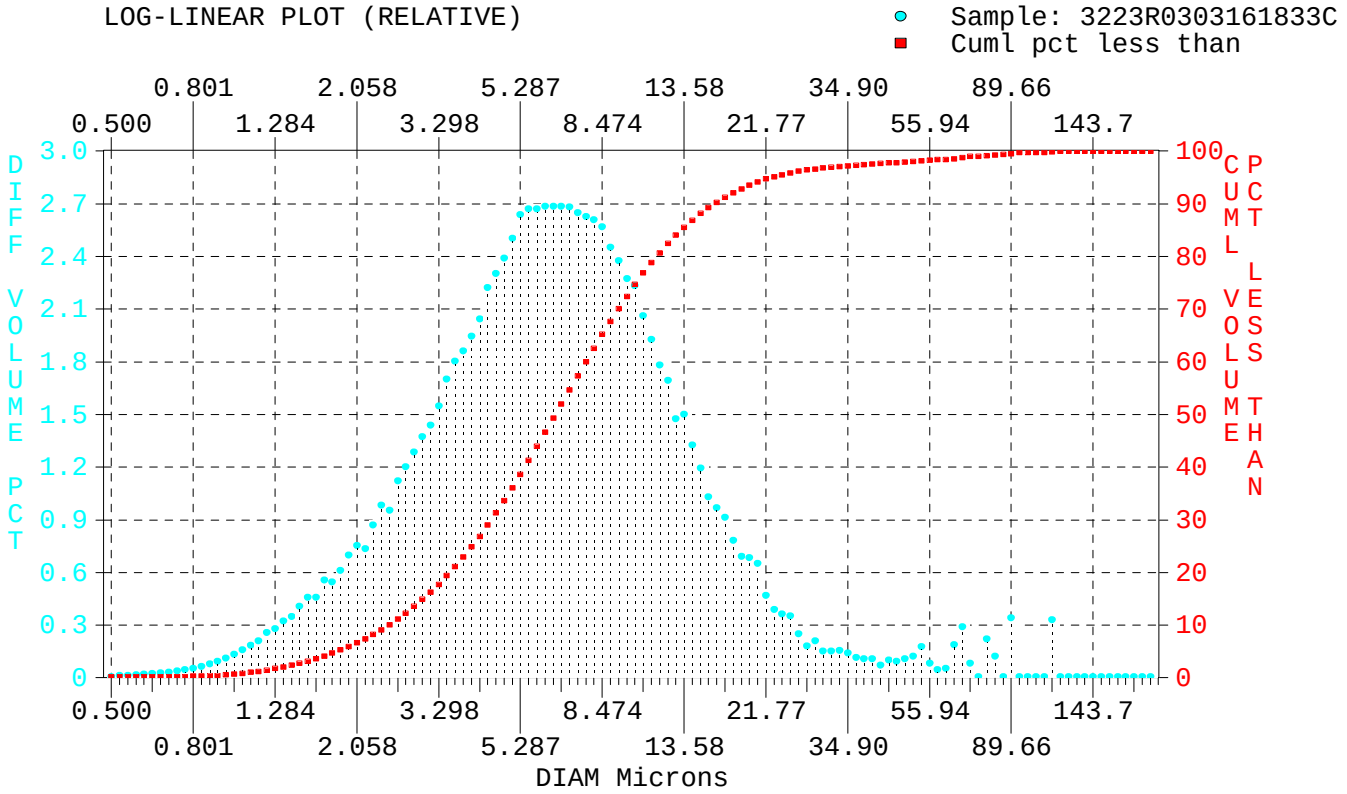
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Comments:
All Data in Report Represents 100ml of Sample

Date done: 11:36 28 Apr 03
Disk File: MAL0968.HST
Sample #: 3223R0303161833C1
Lot/Job #: MAL0966
Material: water
Source: Charlie O'Neill

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	6.534 um	
Geom. Std Deviation:	2.193 um	0.100% Volume below 0.664 um
Geom. Skewness:	-0.002	1.000% Volume below 1.110 um
Geom. Coeff Variation:	33.57	6.000% Volume below 1.974 um
		22.00% Volume below 3.702 um
Arithmetic Mean Size:	9.343 um	50.00% Volume below 6.456 um
Median Size:	6.264 um	78.00% Volume below 11.03 um
Mode Size:	6.538 um	94.00% Volume below 20.58 um
Kurtosis:	23.594	99.00% Volume below 76.23 um
Arith Std Deviation	12.21 um	99.90% Volume below 114.4 um

ELZONE(tm) Particle Size Analysis

Date done: 11:36 28 Apr 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL0968.HST

Sample #: 3223R0303161833C1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL0966

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Volume Distribution Data

Total Volm: 2781678275

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.500	0	0.00	40	3.146	4.00E7	16.2	79	19.81	1.90E7	93.5
2	0.524	327572	0.01	41	3.298	4.30E7	17.7	80	20.77	1.81E7	94.1
3	0.549	404714	0.02	42	3.458	4.73E7	19.4	81	21.77	1.30E7	94.7
4	0.576	457026	0.03	43	3.625	5.02E7	21.1	82	22.82	1.08E7	95.1
5	0.603	543154	0.05	44	3.800	5.17E7	22.9	83	23.93	1.01E7	95.5
6	0.633	629812	0.07	45	3.983	5.41E7	24.8	84	25.08	9765384	95.8
7	0.663	750816	0.10	46	4.176	5.68E7	26.8	85	26.29	6976645	96.1
8	0.695	888731	0.13	47	4.377	6.18E7	29.0	86	27.56	5043956	96.4
9	0.729	1052540	0.16	48	4.589	6.41E7	31.2	87	28.90	5810883	96.6
10	0.764	1286100	0.20	49	4.811	6.65E7	33.6	88	30.29	4162183	96.7
11	0.801	1475807	0.25	50	5.043	6.96E7	36.0	89	31.75	4174700	96.9
12	0.840	1778069	0.31	51	5.287	7.33E7	38.6	90	33.29	4326581	97.0
13	0.880	2149559	0.38	52	5.542	7.43E7	41.2	91	34.90	3871835	97.2
14	0.923	2589751	0.47	53	5.810	7.43E7	43.9	92	36.58	3204413	97.3
15	0.967	3090192	0.57	54	6.090	7.47E7	46.6	93	38.35	2953311	97.4
16	1.014	3695273	0.69	55	6.385	7.47E7	49.3	94	40.20	2960052	97.5
17	1.063	4454669	0.84	56	6.693	7.47E7	52.0	95	42.15	1959841	97.6
18	1.114	5111036	1.01	57	7.016	7.46E7	54.7	96	44.18	2799712	97.7
19	1.168	5870994	1.21	58	7.355	7.36E7	57.3	97	46.32	2549110	97.8
20	1.225	7148846	1.44	59	7.711	7.31E7	60.0	98	48.55	2996632	97.9
21	1.284	7770387	1.71	60	8.083	7.25E7	62.6	99	50.90	3383220	98.0
22	1.346	8953697	2.01	61	8.474	7.15E7	65.2	100	53.36	4931701	98.2
23	1.411	9687835	2.35	62	8.883	6.82E7	67.7	101	55.94	2290951	98.3
24	1.479	1.13E7	2.72	63	9.312	6.60E7	70.1	102	58.64	1266858	98.4
25	1.550	1.27E7	3.15	64	9.762	6.32E7	72.4	103	61.47	1459482	98.4
26	1.625	1.27E7	3.61	65	10.23	6.21E7	74.7	104	64.44	5184299	98.5
27	1.704	1.54E7	4.12	66	10.73	5.74E7	76.8	105	67.55	8071033	98.8
28	1.786	1.51E7	4.67	67	11.25	5.36E7	78.8	106	70.82	2231574	98.9
29	1.872	1.70E7	5.25	68	11.79	4.95E7	80.7	107	74.24	0	99.0
30	1.963	1.94E7	5.90	69	12.36	4.71E7	82.4	108	77.83	6170376	99.1
31	2.058	2.10E7	6.63	70	12.96	4.10E7	84.0	109	81.59	3412115	99.3
32	2.157	2.04E7	7.37	71	13.58	4.17E7	85.5	110	85.53	0	99.3
33	2.261	2.42E7	8.17	72	14.24	3.68E7	86.9	111	89.66	9434613	99.5
34	2.371	2.73E7	9.10	73	14.93	3.32E7	88.1	112	93.99	0	99.7
35	2.485	2.65E7	10.1	74	15.65	2.87E7	89.2	113	98.53	0	99.7
36	2.605	3.12E7	11.1	75	16.40	2.69E7	90.2	114	103.3	0	99.7
37	2.731	3.35E7	12.3	76	17.20	2.54E7	91.2	115	108.3	0	99.7
38	2.863	3.58E7	13.5	77	18.03	2.17E7	92.0	116	113.5	9190083	99.8
39	3.001	3.82E7	14.8	78	18.90	1.92E7	92.8	117	119.0	0	100.0

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

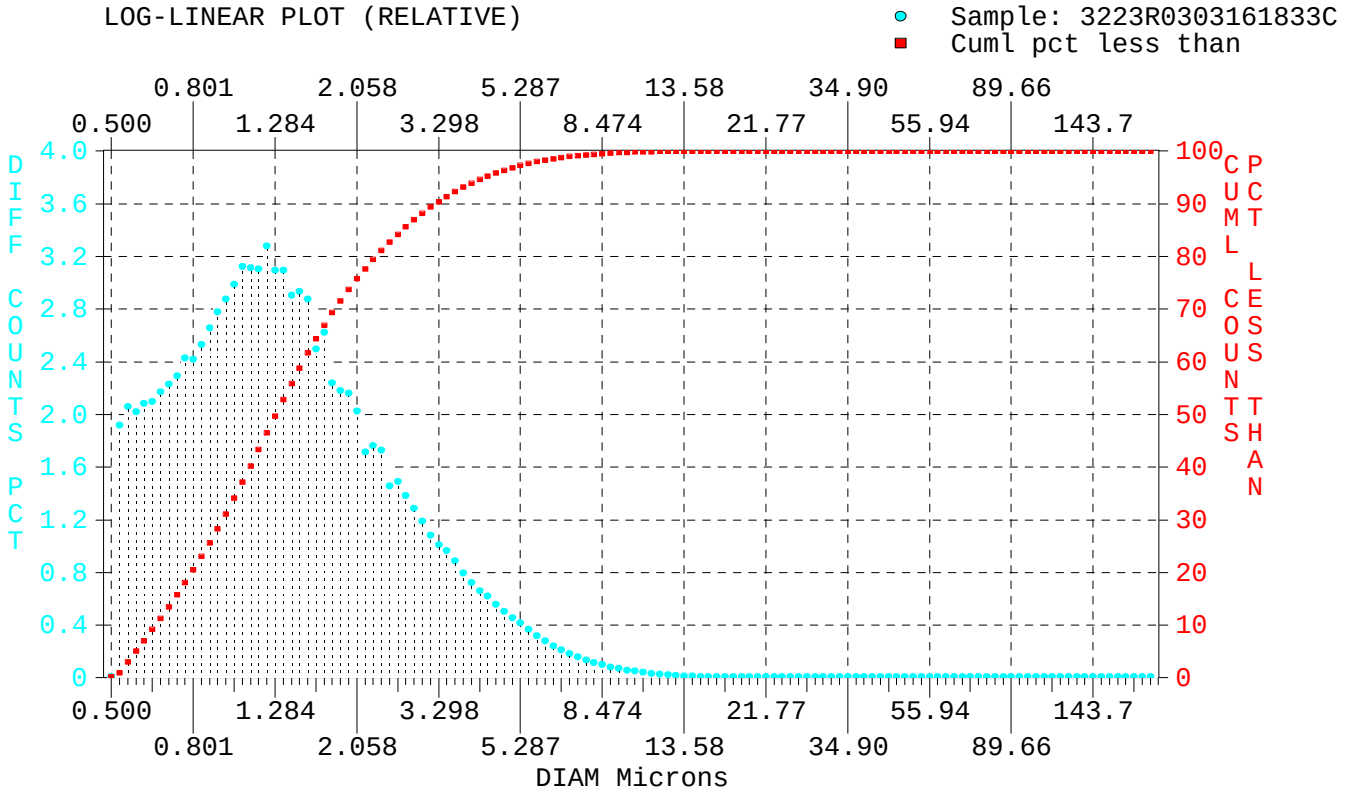
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Comments:
All Data in Report Represents 100ml of Sample

Date done: 11:36 28 Apr 03
Disk File: MAL0968.HST
Sample #: 3223R0303161833C1
Lot/Job #: MAL0966
Material: water
Source: Charlie O'Neill

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	1.384 um	
Geom. Std Deviation:	1.843 um	0.100% Counts below 0.512 um
Geom. Skewness:	0.087	1.000% Counts below 0.518 um
Geom. Coeff Variation:	133.2	6.000% Counts below 0.589 um
		22.00% Counts below 0.824 um
Arithmetic Mean Size:	1.708 um	50.00% Counts below 1.289 um
Median Size:	1.258 um	78.00% Counts below 2.176 um
Mode Size:	1.223 um	94.00% Counts below 4.012 um
Kurtosis:	16.091	99.00% Counts below 7.094 um
Arith Std Deviation	1.408 um	99.90% Counts below 12.03 um

ELZONE(tm) Particle Size Analysis

Date done: 11:36 28 Apr 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL0968.HST

Sample #: 3223R0303161833C1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL0966

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Frequency Distribution Data

Total Popl: 226806229

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.500	0	0.00	40	3.146	2455098	89.3	79	19.81	4675	100.0
2	0.524	4353539	0.96	41	3.298	2289929	90.4	80	20.77	3862	100.0
3	0.549	4668884	2.95	42	3.458	2185140	91.3	81	21.77	2414	100.0
4	0.576	4576515	4.99	43	3.625	2011480	92.3	82	22.82	1742	100.0
5	0.603	4721132	7.04	44	3.800	1801377	93.1	83	23.93	1405	100.0
6	0.633	4751856	9.12	45	3.983	1635737	93.9	84	25.08	1182	100.0
7	0.663	4917168	11.3	46	4.176	1489876	94.6	85	26.29	733	100.0
8	0.695	5052206	13.5	47	4.377	1406224	95.2	86	27.56	460	100.0
9	0.729	5193720	15.7	48	4.589	1266445	95.8	87	28.90	460	100.0
10	0.764	5508633	18.1	49	4.811	1140438	96.3	88	30.29	286	100.0
11	0.801	5486910	20.5	50	5.043	1036133	96.8	89	31.75	249	100.0
12	0.840	5738205	23.0	51	5.287	947717	97.2	90	33.29	224	100.0
13	0.880	6021518	25.6	52	5.542	833357	97.6	91	34.90	174	100.0
14	0.923	6297147	28.3	53	5.810	723229	98.0	92	36.58	125	100.0
15	0.967	6522295	31.1	54	6.090	631537	98.3	93	38.35	100	100.0
16	1.014	6770031	34.0	55	6.385	548192	98.5	94	40.20	87	100.0
17	1.063	7084167	37.1	56	6.693	475846	98.8	95	42.15	50	100.0
18	1.114	7055234	40.2	57	7.016	412443	99.0	96	44.18	62	100.0
19	1.168	7034663	43.3	58	7.355	353342	99.1	97	46.32	49	100.0
20	1.225	7435271	46.5	59	7.711	304455	99.3	98	48.55	50	100.0
21	1.284	7015081	49.7	60	8.083	262318	99.4	99	50.90	49	100.0
22	1.346	7016517	52.8	61	8.474	224301	99.5	100	53.36	62	100.0
23	1.411	6589844	55.8	62	8.883	185850	99.6	101	55.94	25	100.0
24	1.479	6653149	58.7	63	9.312	156188	99.7	102	58.64	12	100.0
25	1.550	6522947	61.6	64	9.762	129716	99.7	103	61.47	12	100.0
26	1.625	5665867	64.3	65	10.23	110656	99.8	104	64.44	37	100.0
27	1.704	5951801	66.9	66	10.73	88763	99.8	105	67.55	50	100.0
28	1.786	5076697	69.3	67	11.25	72005	99.9	106	70.82	12	100.0
29	1.872	4947063	71.5	68	11.79	57710	99.9	107	74.24	0	100.0
30	1.963	4904845	73.7	69	12.36	47651	99.9	108	77.83	25	100.0
31	2.058	4594469	75.8	70	12.96	36003	99.9	109	81.59	12	100.0
32	2.157	3884643	77.6	71	13.58	31767	99.9	110	85.53	0	100.0
33	2.261	3996600	79.4	72	14.24	24358	100.0	111	89.66	25	100.0
34	2.371	3918750	81.1	73	14.93	19060	100.0	112	93.99	0	100.0
35	2.485	3296213	82.7	74	15.65	14295	100.0	113	98.53	0	100.0
36	2.605	3373360	84.2	75	16.40	11648	100.0	114	103.3	0	100.0
37	2.731	3136577	85.6	76	17.20	9530	100.0	115	108.3	0	100.0
38	2.863	2910982	86.9	77	18.03	7080	100.0	116	113.5	12	100.0
39	3.001	2700685	88.2	78	18.90	5429	100.0	117	119.0	0	100.0

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

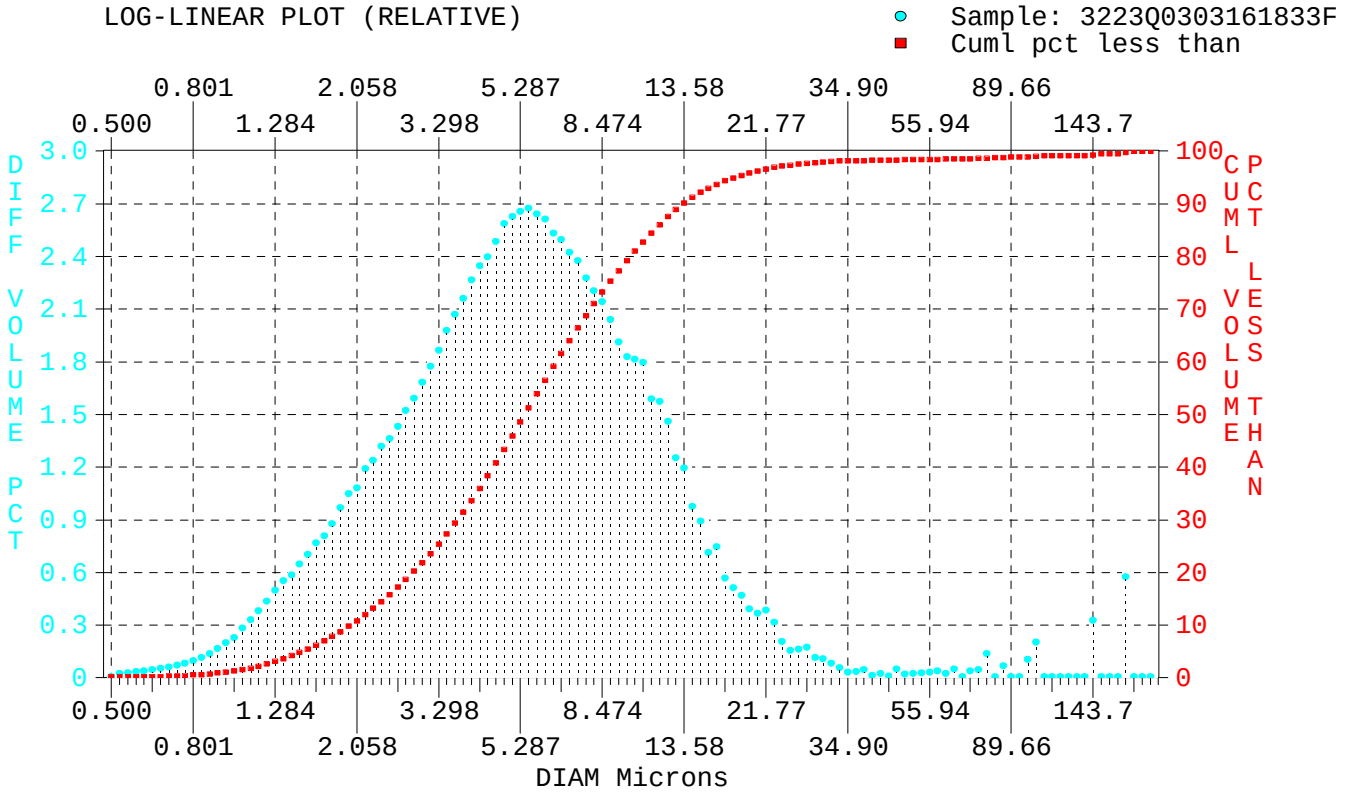
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Comments:
All Data in Report Represents 100ml of Sample

Date done: 12:07 28 Apr 03
Disk File: MAL0969.HST
Sample #: 3223Q0303161833FS1
Lot/Job #: MAL0965
Material: water
Source: Charlie O'Neill

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	5.475 um	
Geom. Std Deviation:	2.269 um	0.100% Volume below 0.599 um
Geom. Skewness:	-0.005	1.000% Volume below 0.956 um
Geom. Coeff Variation:	41.45	6.000% Volume below 1.608 um
		22.00% Volume below 3.012 um
Arithmetic Mean Size:	8.658 um	50.00% Volume below 5.425 um
Median Size:	5.414 um	78.00% Volume below 9.474 um
Mode Size:	5.487 um	94.00% Volume below 16.74 um
Kurtosis:	54.829	99.00% Volume below 103.2 um
Arith Std Deviation	17.31 um	99.90% Volume below 176.0 um

ELZONE(tm) Particle Size Analysis

Date done: 12:07 28 Apr 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL0969.HST

Sample #: 3223Q0303161833FS1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL0965

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Volume Distribution Data

Total Volm: 1432762202

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.500	0	0.00	43	3.625	2.96E7	29.3	85	26.29	2341412	97.5
2	0.524	347769	0.01	44	3.800	3.09E7	31.4	86	27.56	2500048	97.6
3	0.549	410817	0.04	45	3.983	3.24E7	33.6	87	28.90	1629574	97.8
4	0.576	474014	0.07	46	4.176	3.36E7	35.9	88	30.29	1528074	97.9
5	0.603	551580	0.11	47	4.377	3.43E7	38.3	89	31.75	1156845	98.0
6	0.633	650702	0.15	48	4.589	3.56E7	40.8	90	33.29	811234	98.1
7	0.663	749826	0.20	49	4.811	3.70E7	43.3	91	34.90	422787	98.1
8	0.695	874318	0.25	50	5.043	3.77E7	45.9	92	36.58	512706	98.1
9	0.729	1034883	0.32	51	5.287	3.80E7	48.5	93	38.35	649729	98.2
10	0.764	1188266	0.40	52	5.542	3.83E7	51.2	94	40.20	170118	98.2
11	0.801	1391947	0.49	53	5.810	3.78E7	53.9	95	42.15	313575	98.2
12	0.840	1626570	0.59	54	6.090	3.74E7	56.5	96	44.18	135470	98.2
13	0.880	1951232	0.72	55	6.385	3.63E7	59.1	97	46.32	728317	98.3
14	0.923	2353323	0.87	56	6.693	3.57E7	61.6	98	48.55	299663	98.3
15	0.967	2829621	1.05	57	7.016	3.47E7	64.0	99	50.90	345227	98.3
16	1.014	3255046	1.26	58	7.355	3.40E7	66.4	100	53.36	397718	98.3
17	1.063	4032560	1.51	59	7.711	3.26E7	68.8	101	55.94	458190	98.4
18	1.114	4741463	1.82	60	8.083	3.16E7	71.0	102	58.64	527857	98.4
19	1.168	5481177	2.18	61	8.474	3.07E7	73.2	103	61.47	364870	98.4
20	1.225	6240411	2.59	62	8.883	2.92E7	75.3	104	64.44	700581	98.5
21	1.284	7115512	3.05	63	9.312	2.74E7	77.2	105	67.55	0	98.5
22	1.346	7900297	3.58	64	9.762	2.62E7	79.1	106	70.82	557893	98.5
23	1.411	8378166	4.15	65	10.23	2.60E7	80.9	107	74.24	642720	98.6
24	1.479	9263879	4.76	66	10.73	2.57E7	82.7	108	77.83	1974520	98.7
25	1.550	1.01E7	5.44	67	11.25	2.28E7	84.4	109	81.59	0	98.7
26	1.625	1.10E7	6.17	68	11.79	2.25E7	86.0	110	85.53	982731	98.8
27	1.704	1.16E7	6.96	69	12.36	2.09E7	87.5	111	89.66	0	98.8
28	1.786	1.26E7	7.80	70	12.96	1.80E7	88.9	112	93.99	0	98.8
29	1.872	1.39E7	8.72	71	13.58	1.71E7	90.1	113	98.53	1502612	98.8
30	1.963	1.50E7	9.73	72	14.24	1.40E7	91.2	114	103.3	2885138	99.0
31	2.058	1.55E7	10.8	73	14.93	1.28E7	92.1	115	108.3	0	99.1
32	2.157	1.70E7	11.9	74	15.65	1.02E7	92.9	116	113.5	0	99.1
33	2.261	1.77E7	13.1	75	16.40	1.07E7	93.6	117	119.0	0	99.1
34	2.371	1.89E7	14.4	76	17.20	8112930	94.3	118	124.7	0	99.1
35	2.485	1.95E7	15.8	77	18.03	7325047	94.8	119	130.8	0	99.1
36	2.605	2.05E7	17.2	78	18.90	6696627	95.3	120	137.1	0	99.1
37	2.731	2.18E7	18.6	79	19.81	5638551	95.8	121	143.7	4662443	99.3
38	2.863	2.28E7	20.2	80	20.77	5243610	96.1	122	150.7	0	99.4
39	3.001	2.41E7	21.8	81	21.77	5495160	96.5	123	157.9	0	99.4
40	3.146	2.54E7	23.6	82	22.82	4531704	96.9	124	165.6	0	99.4
41	3.298	2.67E7	25.4	83	23.93	2968940	97.1	125	173.6	8212906	99.7
42	3.458	2.83E7	27.3	84	25.08	2230671	97.3	126	181.9	0	100.0

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

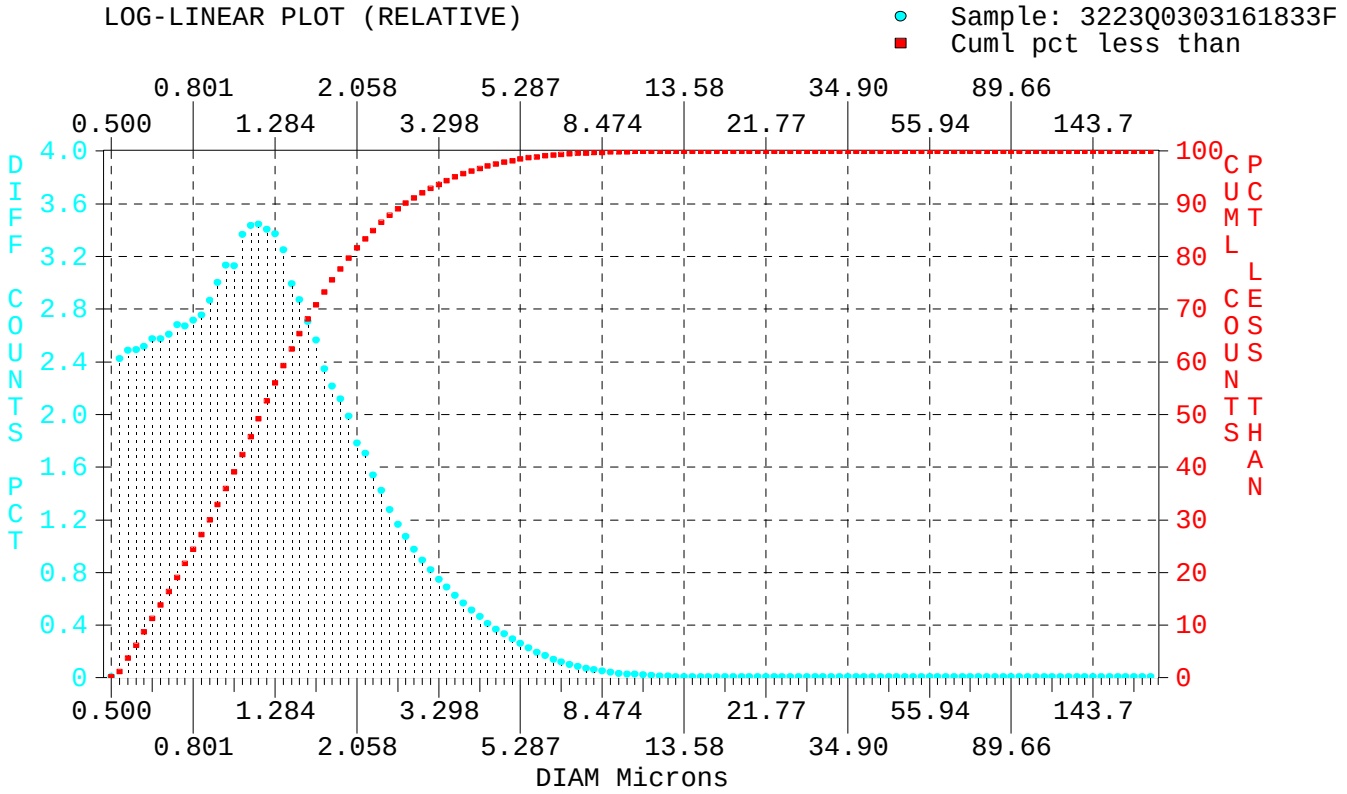
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Comments:
All Data in Report Represents 100ml of Sample

Date done: 12:07 28 Apr 03
Disk File: MAL0969.HST
Sample #: 3223Q0303161833FS1
Lot/Job #: MAL0965
Material: water
Source: Charlie O'Neill

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	1.254 um	
Geom. Std Deviation:	1.764 um	0.100% Counts below 0.512 um
Geom. Skewness:	0.059	1.000% Counts below 0.516 um
Geom. Coeff Variation:	140.7	6.000% Counts below 0.574 um
		22.00% Counts below 0.767 um
Arithmetic Mean Size:	1.505 um	50.00% Counts below 1.180 um
Median Size:	1.146 um	78.00% Counts below 1.886 um
Mode Size:	1.149 um	94.00% Counts below 3.360 um
Kurtosis:	20.131	99.00% Counts below 5.979 um
Arith Std Deviation	1.159 um	99.90% Counts below 10.41 um

ELZONE(tm) Particle Size Analysis

Date done: 12:07 28 Apr 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL0969.HST

Sample #: 3223Q0303161833FS1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL0965

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Frequency Distribution Data

Total Popl: 190647562

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.500	0	0.00	43	3.625	1188126	95.0	85	26.29	246	100.0
2	0.524	4621964	1.21	44	3.800	1076660	95.6	86	27.56	228	100.0
3	0.549	4739290	3.67	45	3.983	980415	96.2	87	28.90	129	100.0
4	0.576	4746628	6.16	46	4.176	881702	96.7	88	30.29	105	100.0
5	0.603	4794372	8.66	47	4.377	781562	97.1	89	31.75	69	100.0
6	0.633	4909469	11.2	48	4.589	703073	97.5	90	33.29	42	100.0
7	0.663	4910685	13.8	49	4.811	635566	97.8	91	34.90	19	100.0
8	0.695	4970272	16.4	50	5.043	560740	98.2	92	36.58	20	100.0
9	0.729	5106592	19.0	51	5.287	491640	98.4	93	38.35	22	100.0
10	0.764	5089590	21.7	52	5.542	430105	98.7	94	40.20	5	100.0
11	0.801	5175126	24.4	53	5.810	368298	98.9	95	42.15	8	100.0
12	0.840	5249286	27.1	54	6.090	316350	99.1	96	44.18	3	100.0
13	0.880	5465948	29.9	55	6.385	266099	99.2	97	46.32	14	100.0
14	0.923	5722257	32.9	56	6.693	227681	99.3	98	48.55	5	100.0
15	0.967	5972322	35.9	57	7.016	191906	99.5	99	50.90	5	100.0
16	1.014	5963501	39.1	58	7.355	163191	99.5	100	53.36	5	100.0
17	1.063	6412896	42.3	59	7.711	135806	99.6	101	55.94	5	100.0
18	1.114	6545079	45.7	60	8.083	114153	99.7	102	58.64	5	100.0
19	1.168	6567582	49.1	61	8.474	96322	99.7	103	61.47	3	100.0
20	1.225	6490439	52.6	62	8.883	79605	99.8	104	64.44	5	100.0
21	1.284	6423862	55.9	63	9.312	64799	99.8	105	67.55	0	100.0
22	1.346	6191026	59.3	64	9.762	53813	99.9	106	70.82	3	100.0
23	1.411	5698983	62.4	65	10.23	46330	99.9	107	74.24	3	100.0
24	1.479	5469787	65.3	66	10.73	39802	99.9	108	77.83	8	100.0
25	1.550	5155681	68.1	67	11.25	30568	99.9	109	81.59	0	100.0
26	1.625	4891783	70.7	68	11.79	26270	99.9	110	85.53	3	100.0
27	1.704	4469054	73.2	69	12.36	21175	100.0	111	89.66	0	100.0
28	1.786	4217868	75.5	70	12.96	15762	100.0	112	93.99	0	100.0
29	1.872	4031825	77.6	71	13.58	13055	100.0	113	98.53	3	100.0
30	1.963	3789424	79.7	72	14.24	9234	100.0	114	103.3	5	100.0
31	2.058	3399286	81.6	73	14.93	7324	100.0	115	108.3	0	100.0
32	2.157	3243825	83.3	74	15.65	5095	100.0	116	113.5	0	100.0
33	2.261	2929300	84.9	75	16.40	4617	100.0	117	119.0	0	100.0
34	2.371	2708733	86.4	76	17.20	3047	100.0	118	124.7	0	100.0
35	2.485	2430512	87.7	77	18.03	2388	100.0	119	130.8	0	100.0
36	2.605	2215244	89.0	78	18.90	1895	100.0	120	137.1	0	100.0
37	2.731	2044981	90.1	79	19.81	1385	100.0	121	143.7	3	100.0
38	2.863	1854586	91.1	80	20.77	1118	100.0	122	150.7	0	100.0
39	3.001	1701833	92.0	81	21.77	1017	100.0	123	157.9	0	100.0
40	3.146	1557089	92.9	82	22.82	728	100.0	124	165.6	0	100.0
41	3.298	1420909	93.7	83	23.93	414	100.0	125	173.6	3	100.0
42	3.458	1308593	94.4	84	25.08	270	100.0	126	181.9	0	100.0

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

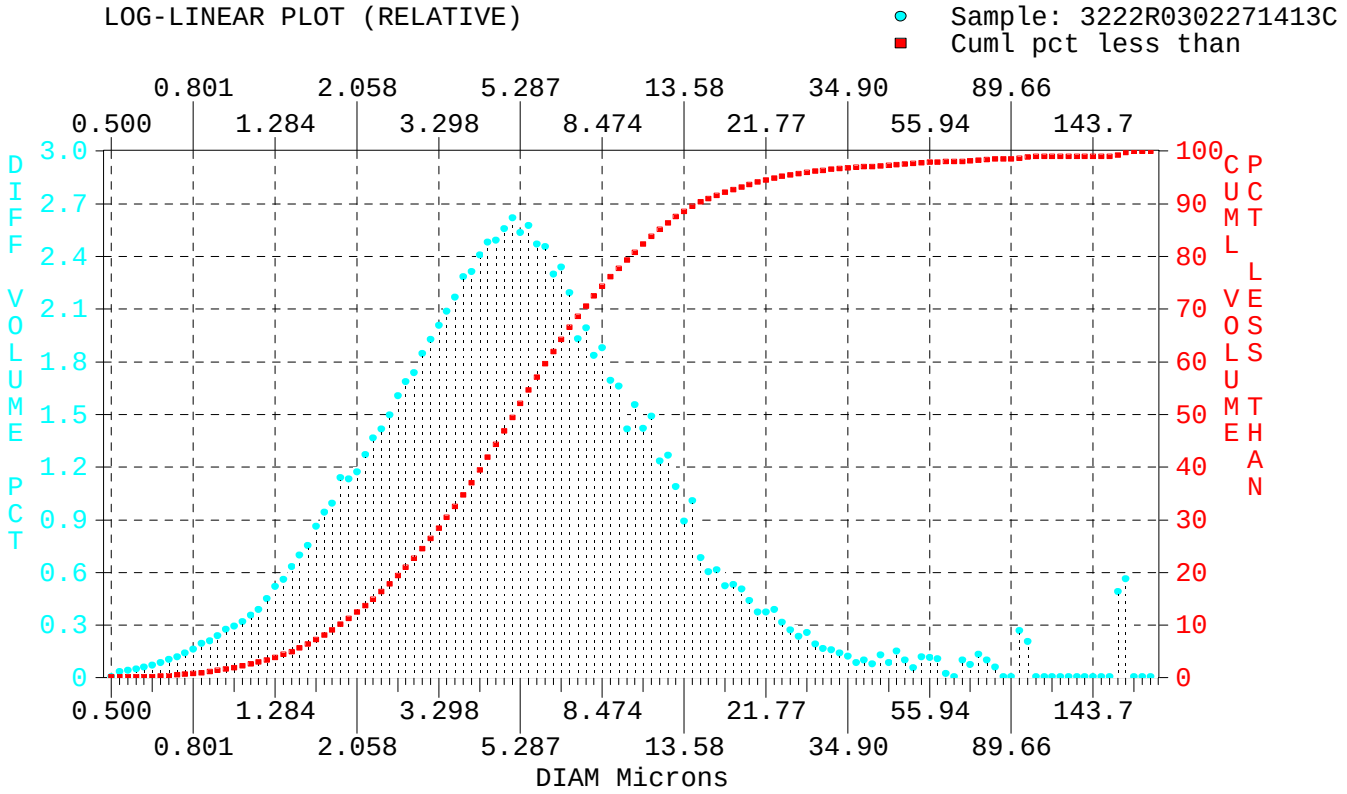
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Comments:
All Data in Report Represents 100ml of Sample

Date done: 12:56 28 Apr 03
Disk File: MAL0970.HST
Sample #: 3222R0302271413C1
Lot/Job #: MAL0970
Material: water
Source: Charlie O'Neill

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	5.366 um	
Geom. Std Deviation:	2.448 um	0.100% Volume below 0.576 um
Geom. Skewness:	0.144	1.000% Volume below 0.847 um
Geom. Coeff Variation:	45.61	6.000% Volume below 1.515 um
		22.00% Volume below 2.809 um
Arithmetic Mean Size:	9.381 um	50.00% Volume below 5.088 um
Median Size:	4.946 um	78.00% Volume below 9.365 um
Mode Size:	5.014 um	94.00% Volume below 20.62 um
Kurtosis:	42.876	99.00% Volume below 162.5 um
Arith Std Deviation	19.86 um	99.90% Volume below 175.9 um

ELZONE(tm) Particle Size Analysis

Date done: 12:56 28 Apr 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL0970.HST

Sample #: 3222R0302271413C1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL0970

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Volume Distribution Data

Total Volm: 1944471042

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.500	0	0.00	43	3.625	4.21E7	32.5	85	26.29	4568608	95.7
2	0.524	658414	0.02	44	3.800	4.44E7	34.7	86	27.56	5000096	95.9
3	0.549	793964	0.05	45	3.983	4.50E7	37.0	87	28.90	3751809	96.2
4	0.576	954138	0.10	46	4.176	4.68E7	39.4	88	30.29	3201679	96.3
5	0.603	1145029	0.15	47	4.377	4.82E7	41.8	89	31.75	3068153	96.5
6	0.633	1360546	0.22	48	4.589	4.84E7	44.3	90	33.29	2762058	96.7
7	0.663	1649935	0.30	49	4.811	4.97E7	46.8	91	34.90	2358704	96.8
8	0.695	2007104	0.39	50	5.043	5.09E7	49.4	92	36.58	1666295	96.9
9	0.729	2308691	0.50	51	5.287	4.93E7	52.0	93	38.35	1919652	97.0
10	0.764	2721214	0.63	52	5.542	5.01E7	54.6	94	40.20	1531061	97.1
11	0.801	3121816	0.78	53	5.810	4.80E7	57.1	95	42.15	2547794	97.2
12	0.840	3786684	0.96	54	6.090	4.77E7	59.5	96	44.18	1670796	97.3
13	0.880	4082212	1.16	55	6.385	4.47E7	61.9	97	46.32	2965292	97.4
14	0.923	4642517	1.38	56	6.693	4.55E7	64.2	98	48.55	1917844	97.5
15	0.967	5350834	1.64	57	7.016	4.26E7	66.5	99	50.90	1104725	97.6
16	1.014	5714424	1.93	58	7.355	3.75E7	68.6	100	53.36	2306763	97.7
17	1.063	6182360	2.23	59	7.711	3.87E7	70.5	101	55.94	2199313	97.8
18	1.114	6903158	2.57	60	8.083	3.57E7	72.4	102	58.64	2111430	97.9
19	1.168	7518616	2.94	61	8.474	3.65E7	74.3	103	61.47	486494	98.0
20	1.225	8738051	3.36	62	8.883	3.30E7	76.1	104	64.44	0	98.0
21	1.284	1.01E7	3.84	63	9.312	3.23E7	77.8	105	67.55	1937048	98.1
22	1.346	1.09E7	4.38	64	9.762	2.75E7	79.3	106	70.82	1487716	98.1
23	1.411	1.23E7	4.98	65	10.23	3.03E7	80.8	107	74.24	2570881	98.2
24	1.479	1.36E7	5.64	66	10.73	2.76E7	82.3	108	77.83	1974520	98.4
25	1.550	1.47E7	6.37	67	11.25	2.90E7	83.7	109	81.59	1137372	98.4
26	1.625	1.67E7	7.17	68	11.79	2.40E7	85.1	110	85.53	0	98.5
27	1.704	1.83E7	8.07	69	12.36	2.46E7	86.3	111	89.66	0	98.5
28	1.786	1.93E7	9.04	70	12.96	2.11E7	87.5	112	93.99	5217184	98.6
29	1.872	2.21E7	10.1	71	13.58	1.74E7	88.5	113	98.53	4006966	98.8
30	1.963	2.20E7	11.2	72	14.24	1.96E7	89.5	114	103.3	0	98.9
31	2.058	2.28E7	12.4	73	14.93	1.33E7	90.3	115	108.3	0	98.9
32	2.157	2.47E7	13.6	74	15.65	1.17E7	91.0	116	113.5	0	98.9
33	2.261	2.65E7	14.9	75	16.40	1.20E7	91.6	117	119.0	0	98.9
34	2.371	2.76E7	16.3	76	17.20	1.02E7	92.1	118	124.7	0	98.9
35	2.485	2.91E7	17.8	77	18.03	1.03E7	92.7	119	130.8	0	98.9
36	2.605	3.12E7	19.3	78	18.90	9831143	93.2	120	137.1	0	98.9
37	2.731	3.28E7	21.0	79	19.81	8541285	93.6	121	143.7	0	98.9
38	2.863	3.38E7	22.7	80	20.77	7255692	94.1	122	150.7	0	98.9
39	3.001	3.59E7	24.5	81	21.77	7251233	94.4	123	157.9	0	98.9
40	3.146	3.74E7	26.4	82	22.82	7519641	94.8	124	165.6	9505277	99.2
41	3.298	3.90E7	28.3	83	23.93	6102820	95.2	125	173.6	1.10E7	99.7
42	3.458	4.06E7	30.4	84	25.08	5246209	95.4	126	181.9	0	100.0

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

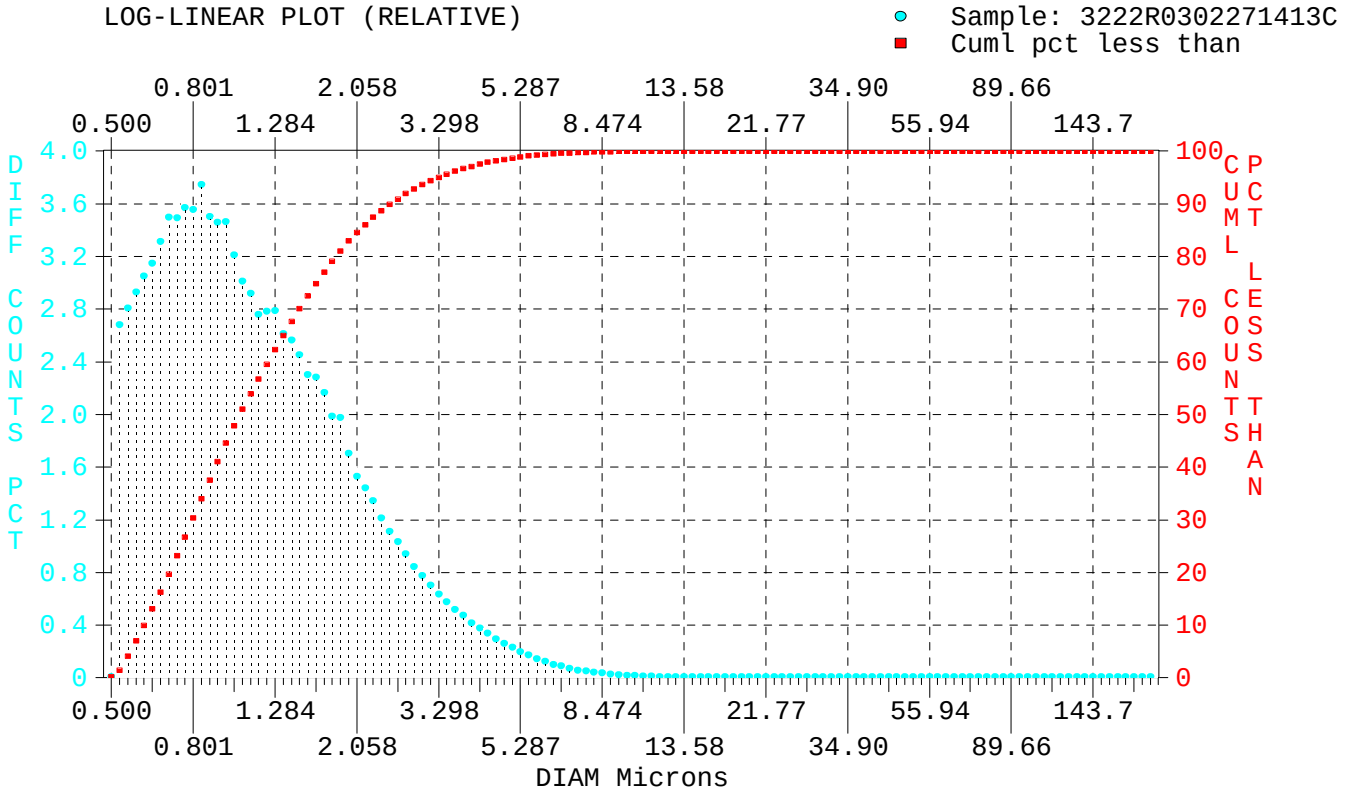
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 12:56 28 Apr 03
Disk File: MAL0970.HST
Sample #: 3222R0302271413C1
Lot/Job #: MAL0970
Material: water
Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	1.155 um	
Geom. Std Deviation:	1.741 um	0.100% Counts below 0.512 um
Geom. Skewness:	0.184	1.000% Counts below 0.516 um
Geom. Coeff Variation:	150.7	6.000% Counts below 0.567 um
		22.00% Counts below 0.717 um
Arithmetic Mean Size:	1.380 um	50.00% Counts below 1.047 um
Median Size:	1.039 um	78.00% Counts below 1.739 um
Mode Size:	0.835 um	94.00% Counts below 3.083 um
Kurtosis:	26.829	99.00% Counts below 5.458 um
Arith Std Deviation	1.062 um	99.90% Counts below 9.551 um

ELZONE(tm) Particle Size Analysis

Date done: 12:56 28 Apr 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL0970.HST

Sample #: 3222R0302271413C1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL0970

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Frequency Distribution Data

Total Popl: 326343729

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.500	0	0.00	43	3.625	1689564	96.1	85	26.29	480	100.0
2	0.524	8750538	1.34	44	3.800	1545715	96.6	86	27.56	456	100.0
3	0.549	9159371	4.08	45	3.983	1358508	97.1	87	28.90	297	100.0
4	0.576	9554440	6.95	46	4.176	1227772	97.5	88	30.29	220	100.0
5	0.603	9952672	9.94	47	4.377	1097792	97.8	89	31.75	183	100.0
6	0.633	1.03E7	13.0	48	4.589	957136	98.1	90	33.29	143	100.0
7	0.663	1.08E7	16.3	49	4.811	852849	98.4	91	34.90	106	100.0
8	0.695	1.14E7	19.7	50	5.043	758484	98.7	92	36.58	65	100.0
9	0.729	1.14E7	23.2	51	5.287	637412	98.9	93	38.35	65	100.0
10	0.764	1.17E7	26.7	52	5.542	561869	99.1	94	40.20	45	100.0
11	0.801	1.16E7	30.3	53	5.810	467758	99.2	95	42.15	65	100.0
12	0.840	1.22E7	33.9	54	6.090	403661	99.3	96	44.18	37	100.0
13	0.880	1.14E7	37.5	55	6.385	327863	99.5	97	46.32	57	100.0
14	0.923	1.13E7	41.0	56	6.693	289710	99.6	98	48.55	32	100.0
15	0.967	1.13E7	44.5	57	7.016	235787	99.6	99	50.90	16	100.0
16	1.014	1.05E7	47.8	58	7.355	180083	99.7	100	53.36	29	100.0
17	1.063	9831677	50.9	59	7.711	161261	99.7	101	55.94	24	100.0
18	1.114	9529066	53.9	60	8.083	128958	99.8	102	58.64	20	100.0
19	1.168	9008855	56.7	61	8.474	114714	99.8	103	61.47	4	100.0
20	1.225	9088149	59.5	62	8.883	89787	99.9	104	64.44	0	100.0
21	1.284	9100773	62.3	63	9.312	76306	99.9	105	67.55	12	100.0
22	1.346	8522446	65.0	64	9.762	56467	99.9	106	70.82	8	100.0
23	1.411	8361191	67.6	65	10.23	53923	99.9	107	74.24	12	100.0
24	1.479	8006673	70.1	66	10.73	42731	99.9	108	77.83	8	100.0
25	1.550	7515136	72.5	67	11.25	38916	100.0	109	81.59	4	100.0
26	1.625	7446596	74.8	68	11.79	27979	100.0	110	85.53	0	100.0
27	1.704	7065644	77.0	69	12.36	24927	100.0	111	89.66	0	100.0
28	1.786	6484064	79.1	70	12.96	18568	100.0	112	93.99	12	100.0
29	1.872	6441911	81.0	71	13.58	13226	100.0	113	98.53	8	100.0
30	1.963	5565344	82.9	72	14.24	12972	100.0	114	103.3	0	100.0
31	2.058	4991516	84.5	73	14.93	7631	100.0	115	108.3	0	100.0
32	2.157	4701956	86.0	74	15.65	5850	100.0	116	113.5	0	100.0
33	2.261	4380500	87.4	75	16.40	5177	100.0	117	119.0	0	100.0
34	2.371	3951475	88.6	76	17.20	3815	100.0	118	124.7	0	100.0
35	2.485	3624144	89.8	77	18.03	3352	100.0	119	130.8	0	100.0
36	2.605	3370565	90.9	78	18.90	2782	100.0	120	137.1	0	100.0
37	2.731	3072033	91.9	79	19.81	2098	100.0	121	143.7	0	100.0
38	2.863	2751267	92.8	80	20.77	1547	100.0	122	150.7	0	100.0
39	3.001	2535144	93.6	81	21.77	1342	100.0	123	157.9	0	100.0
40	3.146	2296254	94.3	82	22.82	1208	100.0	124	165.6	4	100.0
41	3.298	2076265	95.0	83	23.93	851	100.0	125	173.6	4	100.0
42	3.458	1874347	95.6	84	25.08	635	100.0	126	181.9	0	100.0

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

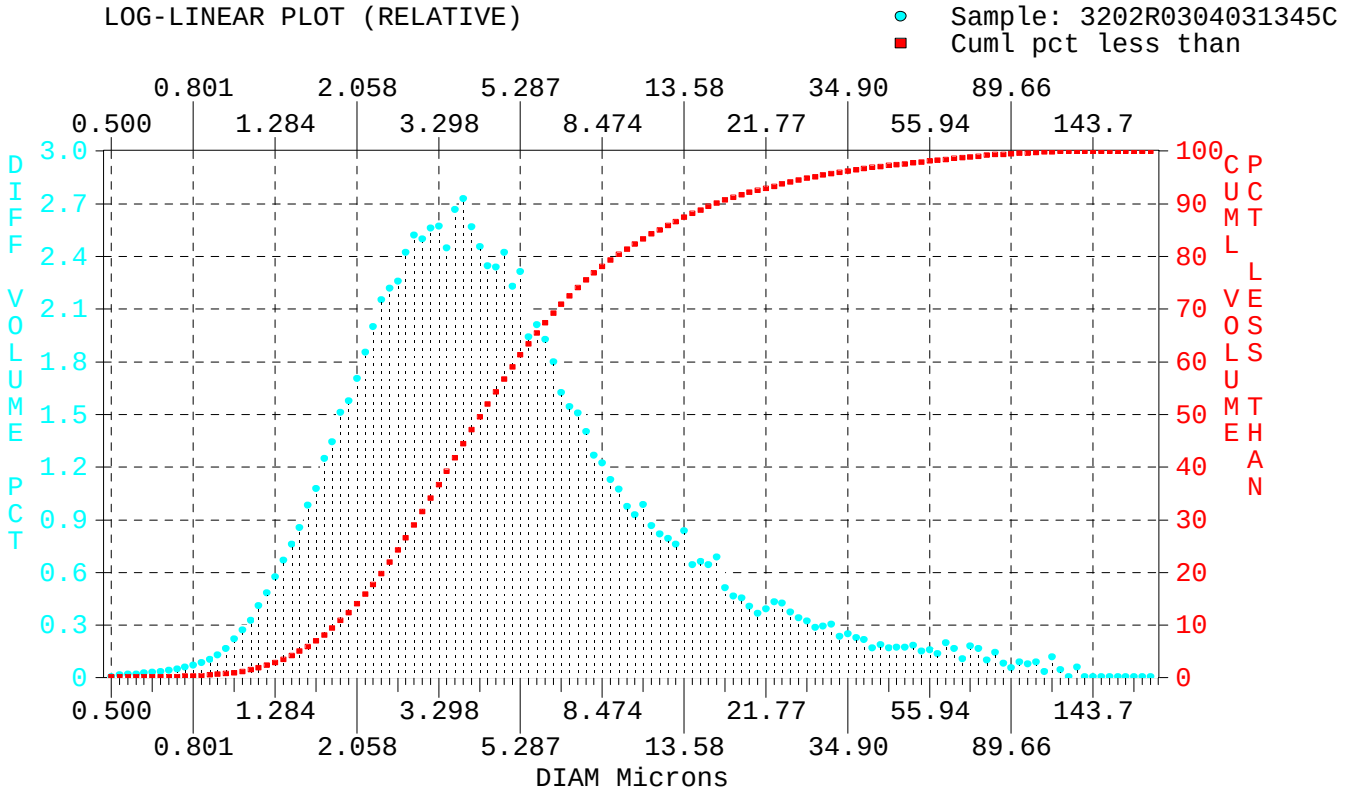
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 0:00 27 Apr 03
Disk File: MAL1036.HST
Sample #: 3202R0304031345C1
Lot/Job #: MAL1036
Material: water
Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	4.873 um	
Geom. Std Deviation:	2.433 um	0.100% Volume below 0.635 um
Geom. Skewness:	0.463	1.000% Volume below 1.021 um
Geom. Coeff Variation:	49.93	6.000% Volume below 1.555 um
		22.00% Volume below 2.484 um
Arithmetic Mean Size:	8.147 um	50.00% Volume below 4.206 um
Median Size:	4.095 um	78.00% Volume below 8.446 um
Mode Size:	3.746 um	94.00% Volume below 24.70 um
Kurtosis:	22.302	99.00% Volume below 73.81 um
Arith Std Deviation	13.34 um	99.90% Volume below 116.8 um

ELZONE(tm) Particle Size Analysis

Date done: 0:00 27 Apr 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL1036.HST

Sample #: 3202R0304031345C1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL1036

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Volume Distribution Data

Total Volm: 9768666940

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.500	0	0.00	41	3.298	2.51E8	36.6	81	21.77	3.83E7	92.9
2	0.524	1543755	0.01	42	3.458	2.39E8	39.1	82	22.82	4.24E7	93.3
3	0.549	1822415	0.03	43	3.625	2.60E8	41.7	83	23.93	4.16E7	93.7
4	0.576	2122730	0.05	44	3.800	2.67E8	44.4	84	25.08	3.66E7	94.1
5	0.603	2530185	0.07	45	3.983	2.51E8	47.0	85	26.29	3.35E7	94.5
6	0.633	2959290	0.10	46	4.176	2.40E8	49.6	86	27.56	3.15E7	94.8
7	0.663	3517180	0.13	47	4.377	2.29E8	52.0	87	28.90	2.79E7	95.1
8	0.695	4117245	0.17	48	4.589	2.28E8	54.3	88	30.29	2.87E7	95.4
9	0.729	4868320	0.22	49	4.811	2.37E8	56.7	89	31.75	2.96E7	95.7
10	0.764	5704880	0.27	50	5.043	2.18E8	59.0	90	33.29	2.29E7	96.0
11	0.801	6841750	0.33	51	5.287	2.26E8	61.3	91	34.90	2.43E7	96.2
12	0.840	8214545	0.41	52	5.542	1.90E8	63.4	92	36.58	2.23E7	96.5
13	0.880	1.01E7	0.50	53	5.810	1.96E8	65.4	93	38.35	2.11E7	96.7
14	0.923	1.27E7	0.62	54	6.090	1.88E8	67.4	94	40.20	1.67E7	96.9
15	0.967	1.62E7	0.77	55	6.385	1.76E8	69.2	95	42.15	1.84E7	97.0
16	1.014	2.17E7	0.96	56	6.693	1.59E8	70.9	96	44.18	1.65E7	97.2
17	1.063	2.66E7	1.21	57	7.016	1.51E8	72.5	97	46.32	1.69E7	97.4
18	1.114	3.19E7	1.51	58	7.355	1.47E8	74.0	98	48.55	1.68E7	97.6
19	1.168	4.00E7	1.88	59	7.711	1.37E8	75.5	99	50.90	1.80E7	97.7
20	1.225	4.72E7	2.32	60	8.083	1.24E8	76.8	100	53.36	1.47E7	97.9
21	1.284	5.60E7	2.85	61	8.474	1.19E8	78.1	101	55.94	1.56E7	98.1
22	1.346	6.54E7	3.47	62	8.883	1.10E8	79.2	102	58.64	1.32E7	98.2
23	1.411	7.43E7	4.19	63	9.312	1.05E8	80.3	103	61.47	1.95E7	98.4
24	1.479	8.37E7	5.00	64	9.762	9.54E7	81.4	104	64.44	1.61E7	98.6
25	1.550	9.58E7	5.92	65	10.23	9.06E7	82.3	105	67.55	1.05E7	98.7
26	1.625	1.05E8	6.95	66	10.73	9.63E7	83.3	106	70.82	1.77E7	98.8
27	1.704	1.22E8	8.11	67	11.25	8.46E7	84.2	107	74.24	1.61E7	99.0
28	1.786	1.31E8	9.41	68	11.79	7.98E7	85.0	108	77.83	9872601	99.2
29	1.872	1.48E8	10.8	69	12.36	7.73E7	85.8	109	81.59	1.42E7	99.3
30	1.963	1.54E8	12.4	70	12.96	7.41E7	86.6	110	85.53	8189422	99.4
31	2.058	1.67E8	14.0	71	13.58	8.16E7	87.4	111	89.66	5660768	99.5
32	2.157	1.81E8	15.8	72	14.24	6.30E7	88.2	112	93.99	8695306	99.5
33	2.261	1.95E8	17.7	73	14.93	6.46E7	88.8	113	98.53	7513062	99.6
34	2.371	2.10E8	19.8	74	15.65	6.30E7	89.5	114	103.3	8655413	99.7
35	2.485	2.17E8	22.0	75	16.40	6.73E7	90.1	115	108.3	3323819	99.8
36	2.605	2.21E8	24.2	76	17.20	5.01E7	90.7	116	113.5	1.15E7	99.8
37	2.731	2.36E8	26.6	77	18.03	4.55E7	91.2	117	119.0	4411426	99.9
38	2.863	2.46E8	29.0	78	18.90	4.44E7	91.7	118	124.7	0	99.9
39	3.001	2.44E8	31.5	79	19.81	3.95E7	92.1	119	130.8	5854916	100.0
40	3.146	2.50E8	34.1	80	20.77	3.58E7	92.5	120	137.1	0	100.0

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

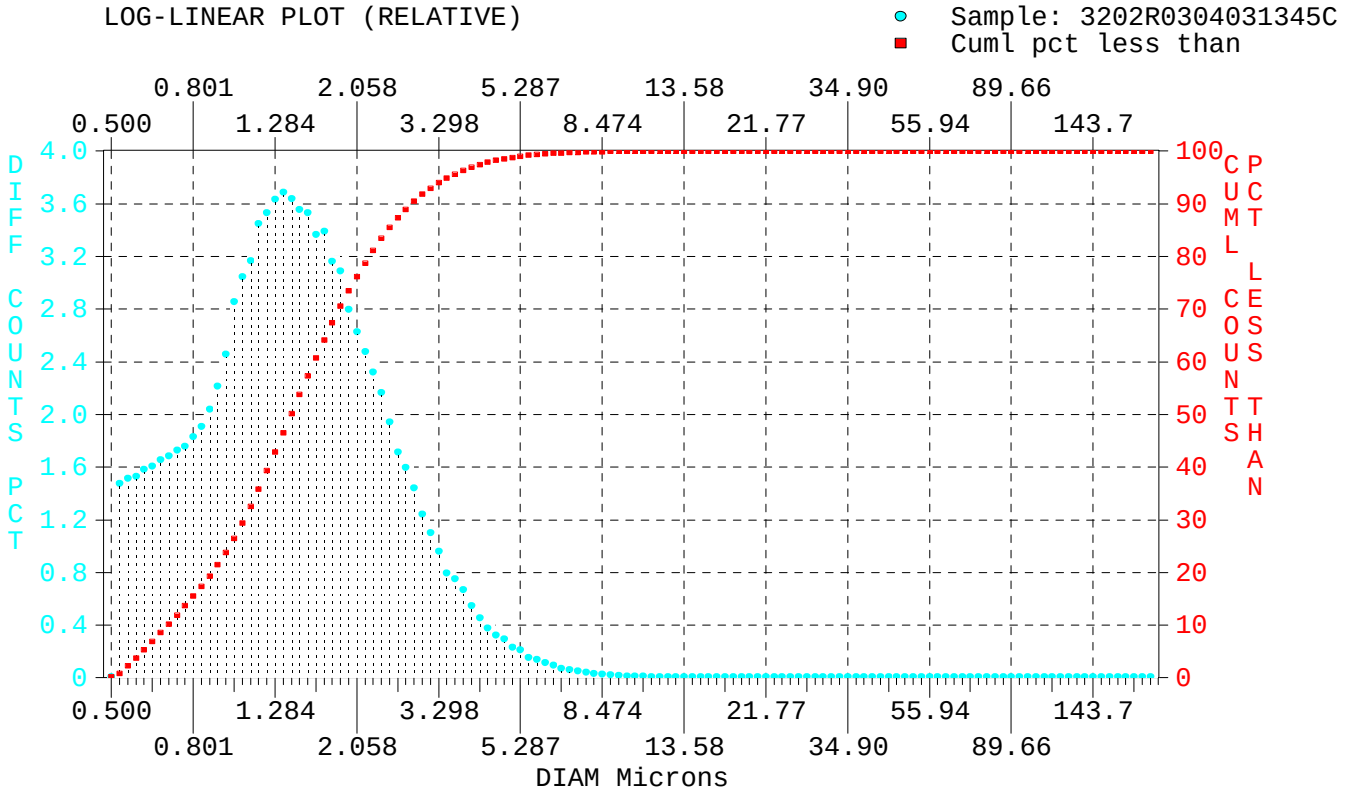
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Comments:
All Data in Report Represents 100ml of Sample

Date done: 0:00 27 Apr 03
Disk File: MAL1036.HST
Sample #: 3202R0304031345C1
Lot/Job #: MAL1036
Material: water
Source: Charlie O'Neill

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	1.425 um	
Geom. Std Deviation:	1.695 um	0.100% Counts below 0.512 um
Geom. Skewness:	0.045	1.000% Counts below 0.520 um
Geom. Coeff Variation:	119.0	6.000% Counts below 0.615 um
		22.00% Counts below 0.933 um
Arithmetic Mean Size:	1.649 um	50.00% Counts below 1.407 um
Median Size:	1.382 um	78.00% Counts below 2.127 um
Mode Size:	1.348 um	94.00% Counts below 3.300 um
Kurtosis:	21.955	99.00% Counts below 5.293 um
Arith Std Deviation	1.049 um	99.90% Counts below 9.133 um

ELZONE(tm) Particle Size Analysis

Date done: 0:00 27 Apr 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL1036.HST

Sample #: 3202R0304031345C1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL1036

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Frequency Distribution Data

Total Popl: 1390544915

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.500	0	0.00	41	3.298	1.34E7	94.0	81	21.77	7080	100.0
2	0.524	2.05E7	0.74	42	3.458	1.10E7	94.8	82	22.82	6805	100.0
3	0.549	2.10E7	2.23	43	3.625	1.04E7	95.6	83	23.93	5795	100.0
4	0.576	2.13E7	3.75	44	3.800	9281400	96.3	84	25.08	4430	100.0
5	0.603	2.20E7	5.31	45	3.983	7583890	96.9	85	26.29	3515	100.0
6	0.633	2.23E7	6.90	46	4.176	6294890	97.4	86	27.56	2870	100.0
7	0.663	2.30E7	8.53	47	4.377	5220385	97.8	87	28.90	2210	100.0
8	0.695	2.34E7	10.2	48	4.589	4511465	98.2	88	30.29	1970	100.0
9	0.729	2.40E7	11.9	49	4.811	4060280	98.5	89	31.75	1765	100.0
10	0.764	2.44E7	13.6	50	5.043	3243950	98.8	90	33.29	1185	100.0
11	0.801	2.54E7	15.4	51	5.287	2921730	99.0	91	34.90	1090	100.0
12	0.840	2.65E7	17.3	52	5.542	2126740	99.2	92	36.58	870	100.0
13	0.880	2.84E7	19.3	53	5.810	1911860	99.3	93	38.35	715	100.0
14	0.923	3.08E7	21.4	54	6.090	1589720	99.4	94	40.20	490	100.0
15	0.967	3.41E7	23.7	55	6.385	1288930	99.5	95	42.15	470	100.0
16	1.014	3.97E7	26.4	56	6.693	1009650	99.6	96	44.18	365	100.0
17	1.063	4.23E7	29.3	57	7.016	833825	99.7	97	46.32	325	100.0
18	1.114	4.41E7	32.5	58	7.355	706630	99.8	98	48.55	280	100.0
19	1.168	4.80E7	35.8	59	7.711	570530	99.8	99	50.90	260	100.0
20	1.225	4.91E7	39.3	60	8.083	447810	99.8	100	53.36	185	100.0
21	1.284	5.05E7	42.8	61	8.474	374495	99.9	101	55.94	170	100.0
22	1.346	5.13E7	46.5	62	8.883	300370	99.9	102	58.64	125	100.0
23	1.411	5.06E7	50.2	63	9.312	248405	99.9	103	61.47	160	100.0
24	1.479	4.94E7	53.8	64	9.762	195735	99.9	104	64.44	115	100.0
25	1.550	4.91E7	57.3	65	10.23	161495	99.9	105	67.55	65	100.0
26	1.625	4.68E7	60.7	66	10.73	148940	99.9	106	70.82	95	100.0
27	1.704	4.71E7	64.1	67	11.25	113560	100.0	107	74.24	75	100.0
28	1.786	4.40E7	67.4	68	11.79	93015	100.0	108	77.83	40	100.0
29	1.872	4.29E7	70.5	69	12.36	78180	100.0	109	81.59	50	100.0
30	1.963	3.89E7	73.5	70	12.96	65055	100.0	110	85.53	25	100.0
31	2.058	3.65E7	76.2	71	13.58	62200	100.0	111	89.66	15	100.0
32	2.157	3.44E7	78.7	72	14.24	41660	100.0	112	93.99	20	100.0
33	2.261	3.23E7	81.1	73	14.93	37090	100.0	113	98.53	15	100.0
34	2.371	3.01E7	83.4	74	15.65	31385	100.0	114	103.3	15	100.0
35	2.485	2.70E7	85.4	75	16.40	29100	100.0	115	108.3	5	100.0
36	2.605	2.38E7	87.3	76	17.20	18830	100.0	116	113.5	15	100.0
37	2.731	2.22E7	88.9	77	18.03	14835	100.0	117	119.0	5	100.0
38	2.863	2.00E7	90.4	78	18.90	12555	100.0	118	124.7	0	100.0
39	3.001	1.73E7	91.8	79	19.81	9710	100.0	119	130.8	5	100.0
40	3.146	1.53E7	92.9	80	20.77	7630	100.0	120	137.1	0	100.0

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

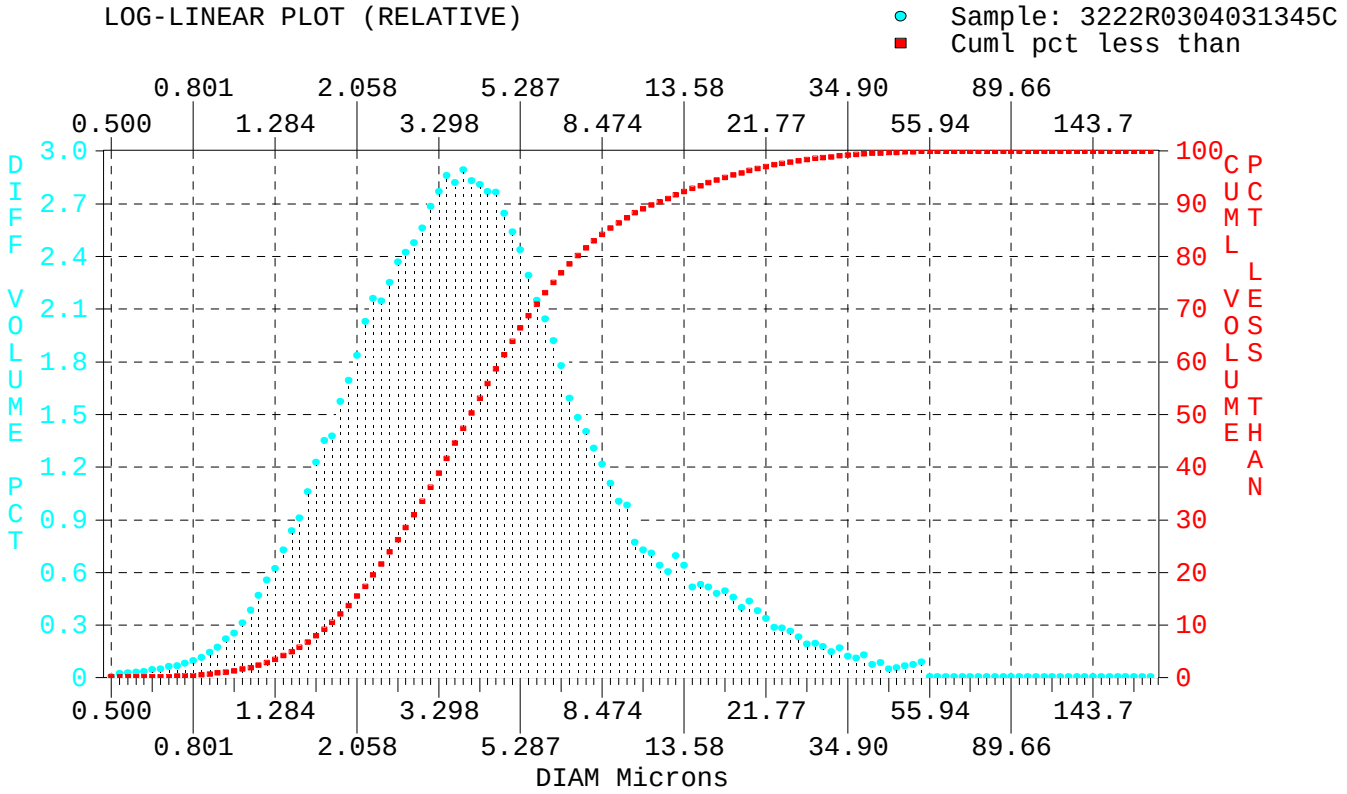
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Comments:
All Data in Report Represents 100ml of Sample

Date done: 1:07 28 Apr 03
Disk File: MAL1038.HST
Sample #: 3222R0304031345C1
Lot/Job #: MAL1038
Material: water
Source: Charlie O'Neill

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	4.230 um	
Geom. Std Deviation:	2.096 um	0.100% Volume below 0.604 um
Geom. Skewness:	0.200	1.000% Volume below 0.954 um
Geom. Coeff Variation:	49.55	6.000% Volume below 1.493 um
		22.00% Volume below 2.388 um
Arithmetic Mean Size:	5.777 um	50.00% Volume below 3.967 um
Median Size:	3.900 um	78.00% Volume below 6.900 um
Mode Size:	3.811 um	94.00% Volume below 15.71 um
Kurtosis:	11.351	99.00% Volume below 32.80 um
Arith Std Deviation	6.174 um	99.90% Volume below 51.63 um

ELZONE(tm) Particle Size Analysis

Date done: 1:07 28 Apr 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL1038.HST

Sample #: 3222R0304031345C1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL1038

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Volume Distribution Data

Total Volm: 4543048356

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.500	0	0.00	35	2.485	1.02E8	23.8	69	12.36	2.74E7	91.0
2	0.524	1010702	0.01	36	2.605	1.08E8	26.1	70	12.96	3.15E7	91.7
3	0.549	1244885	0.04	37	2.731	1.10E8	28.5	71	13.58	2.91E7	92.3
4	0.576	1435172	0.07	38	2.863	1.13E8	31.0	72	14.24	2.34E7	92.9
5	0.603	1611240	0.10	39	3.001	1.16E8	33.5	73	14.93	2.41E7	93.4
6	0.633	2006859	0.14	40	3.146	1.22E8	36.1	74	15.65	2.34E7	93.9
7	0.663	2226430	0.19	41	3.298	1.26E8	38.8	75	16.40	2.17E7	94.4
8	0.695	2827395	0.24	42	3.458	1.30E8	41.7	76	17.20	2.25E7	94.9
9	0.729	3120585	0.31	43	3.625	1.28E8	44.5	77	18.03	2.09E7	95.4
10	0.764	3794332	0.38	44	3.800	1.31E8	47.3	78	18.90	1.82E7	95.8
11	0.801	4395341	0.47	45	3.983	1.29E8	50.2	79	19.81	1.97E7	96.3
12	0.840	5201693	0.58	46	4.176	1.28E8	53.0	80	20.77	1.74E7	96.7
13	0.880	6549670	0.71	47	4.377	1.26E8	55.8	81	21.77	1.54E7	97.0
14	0.923	7912299	0.87	48	4.589	1.26E8	58.6	82	22.82	1.31E7	97.3
15	0.967	1.00E7	1.06	49	4.811	1.20E8	61.3	83	23.93	1.29E7	97.6
16	1.014	1.15E7	1.30	50	5.043	1.15E8	63.9	84	25.08	1.20E7	97.9
17	1.063	1.42E7	1.58	51	5.287	1.11E8	66.4	85	26.29	1.05E7	98.1
18	1.114	1.74E7	1.93	52	5.542	1.04E8	68.7	86	27.56	8772098	98.4
19	1.168	2.13E7	2.36	53	5.810	9.76E7	70.9	87	28.90	8842648	98.5
20	1.225	2.53E7	2.87	54	6.090	9.29E7	73.0	88	30.29	8004198	98.7
21	1.284	2.82E7	3.46	55	6.385	8.73E7	75.0	89	31.75	6706346	98.9
22	1.346	3.30E7	4.13	56	6.693	8.07E7	76.9	90	33.29	7726037	99.1
23	1.411	3.81E7	4.91	57	7.016	7.22E7	78.6	91	34.90	5562981	99.2
24	1.479	4.14E7	5.79	58	7.355	6.73E7	80.1	92	36.58	5127060	99.3
25	1.550	4.81E7	6.77	59	7.711	6.36E7	81.5	93	38.35	5906623	99.4
26	1.625	5.58E7	7.92	60	8.083	5.93E7	82.9	94	40.20	3402359	99.5
27	1.704	6.14E7	9.21	61	8.474	5.52E7	84.2	95	42.15	3919683	99.6
28	1.786	6.25E7	10.6	62	8.883	5.03E7	85.3	96	44.18	2257833	99.7
29	1.872	7.15E7	12.0	63	9.312	4.57E7	86.4	97	46.32	2601133	99.7
30	1.963	7.69E7	13.7	64	9.762	4.47E7	87.4	98	48.55	2996632	99.8
31	2.058	8.35E7	15.4	65	10.23	3.50E7	88.2	99	50.90	3452266	99.9
32	2.157	9.21E7	17.4	66	10.73	3.30E7	89.0	100	53.36	3977178	100.0
33	2.261	9.81E7	19.5	67	11.25	3.21E7	89.7	101	55.94	0	100.0
34	2.371	9.75E7	21.6	68	11.79	2.91E7	90.4				

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

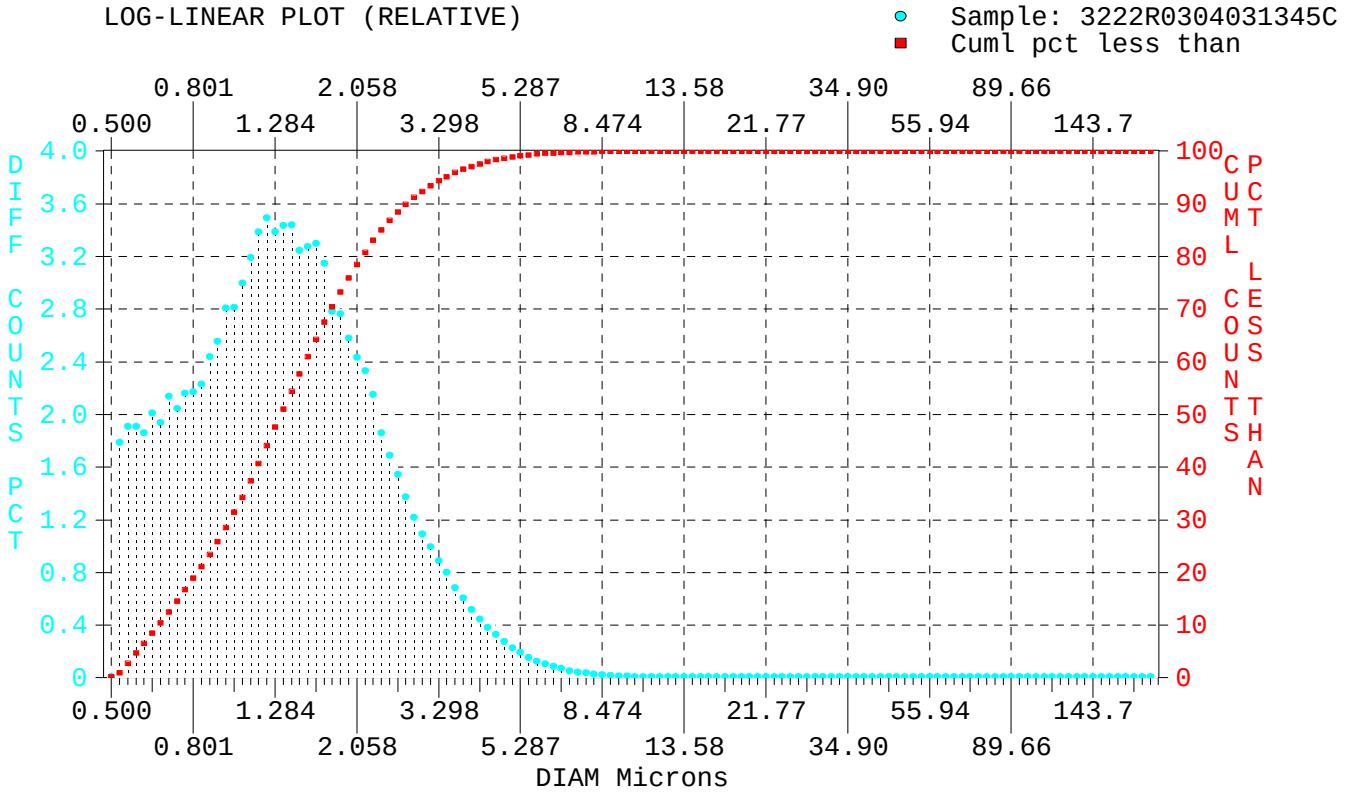
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Comments:
All Data in Report Represents 100ml of Sample

Date done: 1:07 28 Apr 03
Disk File: MAL1038.HST
Sample #: 3222R0304031345C1
Lot/Job #: MAL1038
Material: water
Source: Charlie O'Neill

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	1.352 um	
Geom. Std Deviation:	1.711 um	0.100% Counts below 0.512 um
Geom. Skewness:	0.075	1.000% Counts below 0.518 um
Geom. Coeff Variation:	126.5	6.000% Counts below 0.595 um
		22.00% Counts below 0.855 um
Arithmetic Mean Size:	1.575 um	50.00% Counts below 1.328 um
Median Size:	1.316 um	78.00% Counts below 2.041 um
Mode Size:	1.224 um	94.00% Counts below 3.247 um
Kurtosis:	11.903	99.00% Counts below 5.169 um
Arith Std Deviation	1.023 um	99.90% Counts below 8.536 um

ELZONE(tm) Particle Size Analysis

Date done: 1:07 28 Apr 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL1038.HST

Sample #: 3222R0304031345C1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL1038

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Frequency Distribution Data

Total Popl: 752771718

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.500	0	0.00	35	2.485	1.27E7	86.8	69	12.36	27750	100.0
2	0.524	1.34E7	0.89	36	2.605	1.16E7	88.4	70	12.96	27650	100.0
3	0.549	1.44E7	2.74	37	2.731	1.03E7	89.9	71	13.58	22200	100.0
4	0.576	1.44E7	4.65	38	2.863	9162205	91.2	72	14.24	15500	100.0
5	0.603	1.40E7	6.53	39	3.001	8218105	92.3	73	14.93	13850	100.0
6	0.633	1.51E7	8.47	40	3.146	7478755	93.3	74	15.65	11650	100.0
7	0.663	1.46E7	10.4	41	3.298	6691505	94.3	75	16.40	9400	100.0
8	0.695	1.61E7	12.5	42	3.458	6004855	95.1	76	17.20	8450	100.0
9	0.729	1.54E7	14.6	43	3.625	5138905	95.9	77	18.03	6800	100.0
10	0.764	1.63E7	16.7	44	3.800	4572455	96.5	78	18.90	5150	100.0
11	0.801	1.63E7	18.8	45	3.983	3884005	97.1	79	19.81	4850	100.0
12	0.840	1.68E7	21.0	46	4.176	3347555	97.6	80	20.77	3700	100.0
13	0.880	1.83E7	23.4	47	4.377	2862400	98.0	81	21.77	2850	100.0
14	0.923	1.92E7	25.9	48	4.589	2481150	98.3	82	22.82	2100	100.0
15	0.967	2.11E7	28.5	49	4.811	2060150	98.6	83	23.93	1800	100.0
16	1.014	2.12E7	31.4	50	5.043	1718450	98.9	84	25.08	1450	100.0
17	1.063	2.26E7	34.3	51	5.287	1431000	99.1	85	26.29	1100	100.0
18	1.114	2.40E7	37.4	52	5.542	1168450	99.3	86	27.56	800	100.0
19	1.168	2.55E7	40.6	53	5.810	950300	99.4	87	28.90	700	100.0
20	1.225	2.63E7	44.1	54	6.090	785250	99.5	88	30.29	550	100.0
21	1.284	2.55E7	47.5	55	6.385	640300	99.6	89	31.75	400	100.0
22	1.346	2.58E7	50.9	56	6.693	513950	99.7	90	33.29	400	100.0
23	1.411	2.59E7	54.4	57	7.016	399450	99.8	91	34.90	250	100.0
24	1.479	2.44E7	57.7	58	7.355	323000	99.8	92	36.58	200	100.0
25	1.550	2.46E7	61.0	59	7.711	264950	99.8	93	38.35	200	100.0
26	1.625	2.48E7	64.2	60	8.083	214500	99.9	94	40.20	100	100.0
27	1.704	2.37E7	67.5	61	8.474	173300	99.9	95	42.15	100	100.0
28	1.786	2.09E7	70.4	62	8.883	137100	99.9	96	44.18	50	100.0
29	1.872	2.08E7	73.2	63	9.312	108000	99.9	97	46.32	50	100.0
30	1.963	1.94E7	75.9	64	9.762	91700	99.9	98	48.55	50	100.0
31	2.058	1.83E7	78.4	65	10.23	62450	100.0	99	50.90	50	100.0
32	2.157	1.75E7	80.8	66	10.73	51100	100.0	100	53.36	50	100.0
33	2.261	1.62E7	83.0	67	11.25	43150	100.0	101	55.94	0	100.0
34	2.371	1.40E7	85.0	68	11.79	33950	100.0				

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

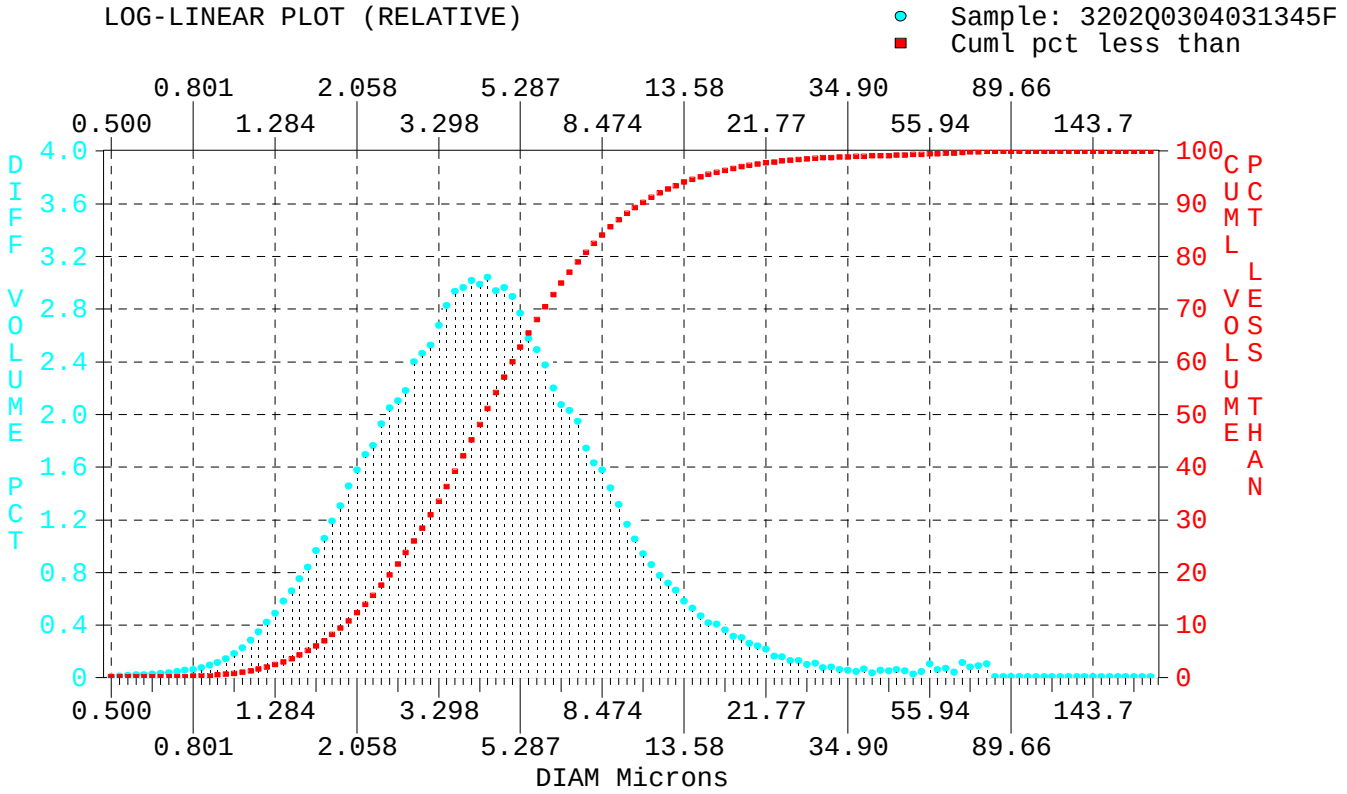
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Comments:
All Data in Report Represents 100ml of Sample

Date done: 23:46 27 Apr 03
Disk File: MAL1037.HST
Sample #: 3202Q0304031345FS1
Lot/Job #: MAL1037
Material: water
Source: Charlie O'Neill

LOG-LINEAR PLOT (RELATIVE)



Geometric Mean Size:	4.472 um	-- PERCENTILES --
Geom. Std Deviation:	2.019 um	0.100% Volume below 0.648 um
Geom. Skewness:	0.071	1.000% Volume below 1.051 um
Geom. Coeff Variation:	45.15	6.000% Volume below 1.623 um
		22.00% Volume below 2.627 um
Arithmetic Mean Size:	6.005 um	50.00% Volume below 4.302 um
Median Size:	4.279 um	78.00% Volume below 7.195 um
Mode Size:	4.328 um	94.00% Volume below 13.52 um
Kurtosis:	29.754	99.00% Volume below 38.79 um
Arith Std Deviation	7.173 um	99.90% Volume below 76.15 um

ELZONE(tm) Particle Size Analysis

Date done: 23:46 27 Apr 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL1037.HST

Sample #: 3202Q0304031345FS1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL1037

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Volume Distribution Data

Total Volm: 7121192788

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.500	0	0.00	38	2.863	1.71E8	26.0	74	15.65	2.96E7	95.5
2	0.524	984120	0.01	39	3.001	1.75E8	28.4	75	16.40	2.89E7	96.0
3	0.549	1164495	0.02	40	3.146	1.80E8	30.9	76	17.20	2.56E7	96.3
4	0.576	1416055	0.04	41	3.298	1.91E8	33.5	77	18.03	2.22E7	96.7
5	0.603	1644530	0.06	42	3.458	2.01E8	36.3	78	18.90	2.15E7	97.0
6	0.633	1884545	0.09	43	3.625	2.09E8	39.2	79	19.81	1.85E7	97.3
7	0.663	2232790	0.12	44	3.800	2.11E8	42.1	80	20.77	1.71E7	97.5
8	0.695	2641155	0.15	45	3.983	2.15E8	45.1	81	21.77	1.54E7	97.7
9	0.729	3121670	0.19	46	4.176	2.13E8	48.1	82	22.82	1.15E7	97.9
10	0.764	3818155	0.24	47	4.377	2.17E8	51.1	83	23.93	1.13E7	98.1
11	0.801	4418440	0.30	48	4.589	2.09E8	54.1	84	25.08	9335773	98.2
12	0.840	5535316	0.37	49	4.811	2.11E8	57.0	85	26.29	9089626	98.4
13	0.880	6663734	0.45	50	5.043	2.06E8	60.0	86	27.56	7182155	98.5
14	0.923	8188975	0.56	51	5.287	1.97E8	62.8	87	28.90	7768898	98.6
15	0.967	1.02E7	0.69	52	5.542	1.83E8	65.5	88	30.29	5239111	98.7
16	1.014	1.28E7	0.85	53	5.810	1.77E8	68.0	89	31.75	5700394	98.7
17	1.063	1.62E7	1.05	54	6.090	1.69E8	70.4	90	33.29	4345896	98.8
18	1.114	2.02E7	1.31	55	6.385	1.57E8	72.7	91	34.90	4116606	98.9
19	1.168	2.47E7	1.62	56	6.693	1.48E8	74.9	92	36.58	3204413	98.9
20	1.225	2.98E7	2.00	57	7.016	1.44E8	76.9	93	38.35	4577633	99.0
21	1.284	3.47E7	2.46	58	7.355	1.38E8	78.9	94	40.20	2721887	99.0
22	1.346	4.14E7	2.99	59	7.711	1.24E8	80.7	95	42.15	4115667	99.1
23	1.411	4.68E7	3.61	60	8.083	1.16E8	82.4	96	44.18	3612532	99.1
24	1.479	5.35E7	4.32	61	8.474	1.12E8	84.0	97	46.32	4161813	99.2
25	1.550	5.97E7	5.11	62	8.883	1.03E8	85.6	98	48.55	3595958	99.2
26	1.625	6.88E7	6.01	63	9.312	9.37E7	86.9	99	50.90	2071359	99.3
27	1.704	7.52E7	7.02	64	9.762	8.27E7	88.2	100	53.36	3181742	99.3
28	1.786	8.47E7	8.15	65	10.23	7.49E7	89.3	101	55.94	7331044	99.4
29	1.872	9.30E7	9.39	66	10.73	6.70E7	90.3	102	58.64	4222860	99.5
30	1.963	1.04E8	10.8	67	11.25	6.11E7	91.2	103	61.47	4864940	99.5
31	2.058	1.12E8	12.3	68	11.79	5.52E7	92.0	104	64.44	2802324	99.6
32	2.157	1.21E8	13.9	69	12.36	5.12E7	92.7	105	67.55	8071033	99.7
33	2.261	1.26E8	15.7	70	12.96	4.73E7	93.4	106	70.82	5578934	99.8
34	2.371	1.37E8	17.5	71	13.58	4.14E7	94.0	107	74.24	6427203	99.9
35	2.485	1.46E8	19.5	72	14.24	3.74E7	94.6	108	77.83	7404451	99.9
36	2.605	1.50E8	21.6	73	14.93	3.35E7	95.1	109	81.59	0	100.0
37	2.731	1.55E8	23.7								

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

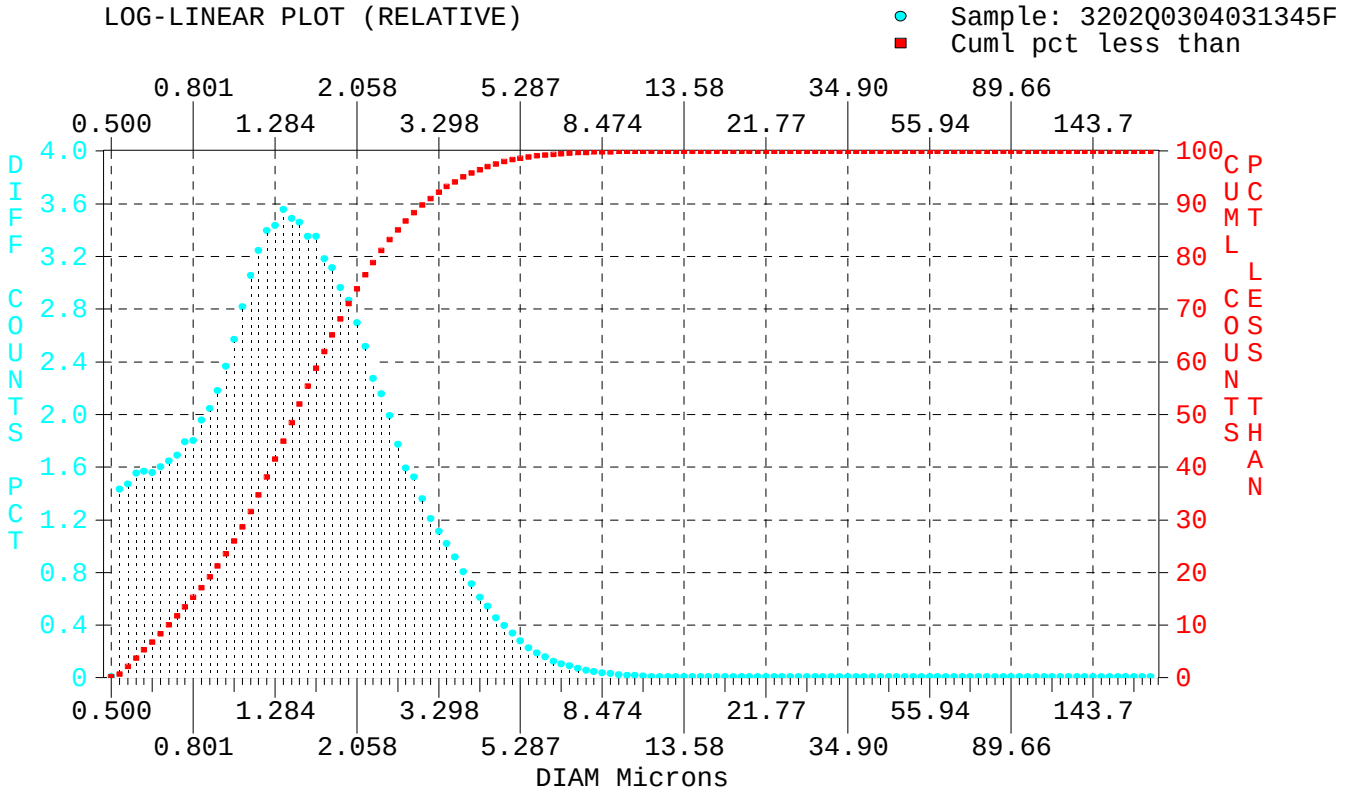
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Comments:
All Data in Report Represents 100ml of Sample

Date done: 23:46 27 Apr 03
Disk File: MAL1037.HST
Sample #: 3202Q0304031345FS1
Lot/Job #: MAL1037
Material: water
Source: Charlie O'Neill

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	1.466 um	
Geom. Std Deviation:	1.733 um	0.100% Counts below 0.512 um
Geom. Skewness:	0.061	1.000% Counts below 0.520 um
Geom. Coeff Variation:	118.2	6.000% Counts below 0.616 um
		22.00% Counts below 0.937 um
Arithmetic Mean Size:	1.718 um	50.00% Counts below 1.438 um
Median Size:	1.386 um	78.00% Counts below 2.222 um
Mode Size:	1.360 um	94.00% Counts below 3.592 um
Kurtosis:	10.351	99.00% Counts below 5.699 um
Arith Std Deviation	1.129 um	99.90% Counts below 9.286 um

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 23:46 27 Apr 03

Disk File: MAL1037.HST

Sample #: 3202Q0304031345FS1

Lot/Job #: MAL1037

Material: water

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Frequency Distribution Data

Total Popl: 912970268

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.500	0	0.00	38	2.863	1.39E7	88.3	74	15.65	14730	100.0
2	0.524	1.31E7	0.72	39	3.001	1.24E7	89.7	75	16.40	12520	100.0
3	0.549	1.34E7	2.17	40	3.146	1.10E7	91.0	76	17.20	9620	100.0
4	0.576	1.42E7	3.68	41	3.298	1.01E7	92.1	77	18.03	7225	100.0
5	0.603	1.43E7	5.24	42	3.458	9297215	93.2	78	18.90	6085	100.0
6	0.633	1.42E7	6.80	43	3.625	8383670	94.2	79	19.81	4555	100.0
7	0.663	1.46E7	8.38	44	3.800	7348670	95.0	80	20.77	3650	100.0
8	0.695	1.50E7	10.0	45	3.983	6489620	95.8	81	21.77	2850	100.0
9	0.729	1.54E7	11.7	46	4.176	5581430	96.4	82	22.82	1845	100.0
10	0.764	1.64E7	13.4	47	4.377	4930805	97.0	83	23.93	1575	100.0
11	0.801	1.64E7	15.2	48	4.589	4137170	97.5	84	25.08	1130	100.0
12	0.840	1.79E7	17.1	49	4.811	3616540	97.9	85	26.29	955	100.0
13	0.880	1.87E7	19.1	50	5.043	3066750	98.3	86	27.56	655	100.0
14	0.923	1.99E7	21.2	51	5.287	2549475	98.6	87	28.90	615	100.0
15	0.967	2.16E7	23.5	52	5.542	2056445	98.9	88	30.29	360	100.0
16	1.014	2.35E7	25.9	53	5.810	1726905	99.1	89	31.75	340	100.0
17	1.063	2.57E7	28.6	54	6.090	1429250	99.2	90	33.29	225	100.0
18	1.114	2.79E7	31.6	55	6.385	1150390	99.4	91	34.90	185	100.0
19	1.168	2.96E7	34.7	56	6.693	941185	99.5	92	36.58	125	100.0
20	1.225	3.10E7	38.0	57	7.016	798785	99.6	93	38.35	155	100.0
21	1.284	3.13E7	41.5	58	7.355	664595	99.7	94	40.20	80	100.0
22	1.346	3.24E7	44.9	59	7.711	517060	99.7	95	42.15	105	100.0
23	1.411	3.18E7	48.5	60	8.083	420320	99.8	96	44.18	80	100.0
24	1.479	3.16E7	51.9	61	8.474	352375	99.8	97	46.32	80	100.0
25	1.550	3.06E7	55.3	62	8.883	279390	99.9	98	48.55	60	100.0
26	1.625	3.06E7	58.7	63	9.312	221680	99.9	99	50.90	30	100.0
27	1.704	2.90E7	62.0	64	9.762	169860	99.9	100	53.36	40	100.0
28	1.786	2.84E7	65.1	65	10.23	133400	99.9	101	55.94	80	100.0
29	1.872	2.71E7	68.1	66	10.73	103605	100.0	102	58.64	40	100.0
30	1.963	2.62E7	71.1	67	11.25	81995	100.0	103	61.47	40	100.0
31	2.058	2.46E7	73.8	68	11.79	64285	100.0	104	64.44	20	100.0
32	2.157	2.30E7	76.4	69	12.36	51815	100.0	105	67.55	50	100.0
33	2.261	2.07E7	78.8	70	12.96	41520	100.0	106	70.82	30	100.0
34	2.371	1.97E7	81.1	71	13.58	31535	100.0	107	74.24	30	100.0
35	2.485	1.82E7	83.1	72	14.24	24765	100.0	108	77.83	30	100.0
36	2.605	1.62E7	85.0	73	14.93	19235	100.0	109	81.59	0	100.0
37	2.731	1.45E7	86.7								

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

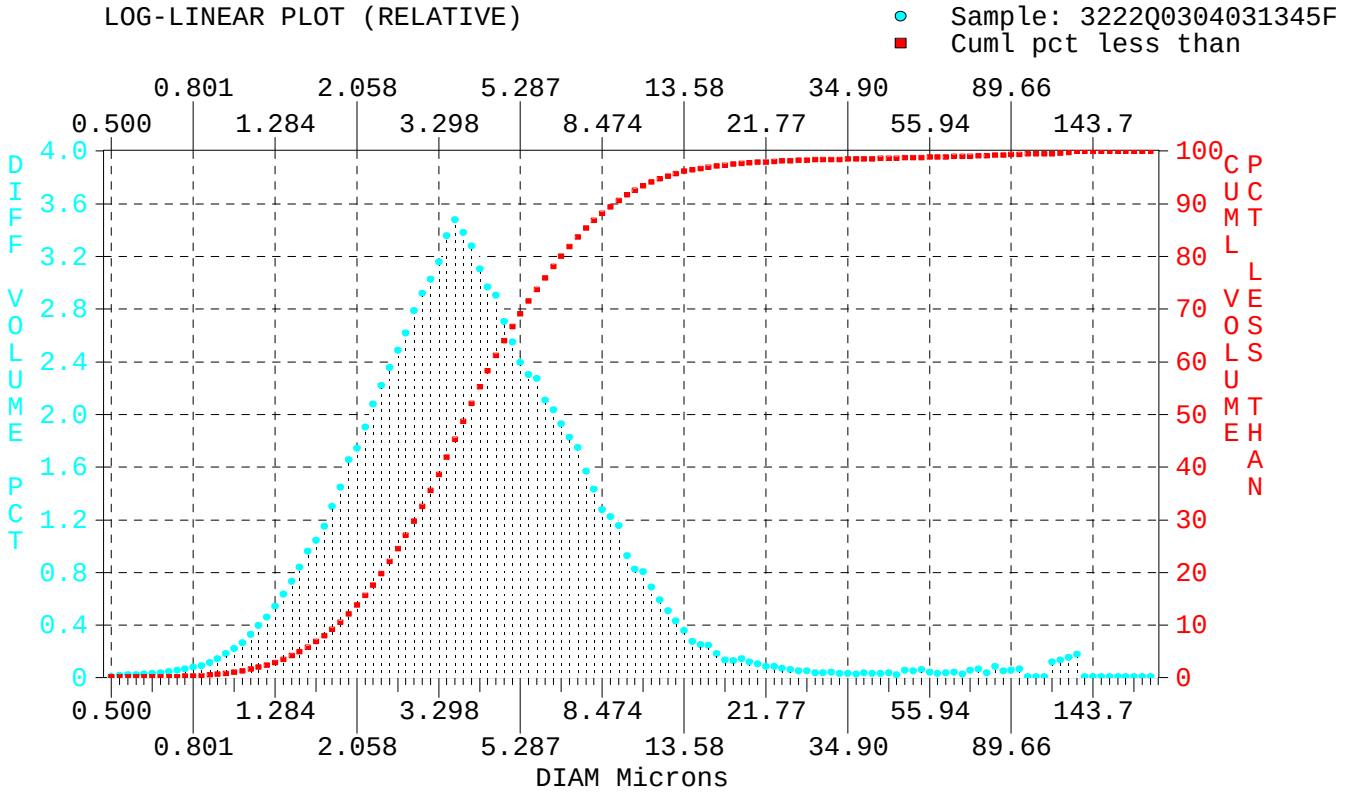
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Comments:
All Data in Report Represents 100ml of Sample

Date done: 0:00 28 Apr 03
Disk File: MAL1039.HST
Sample #: 3222Q0304031345FS1
Lot/Job #: MAL1036
Material: water
Source: Charlie O'Neill

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	4.105 um	
Geom. Std Deviation:	2.034 um	0.100% Volume below 0.630 um
Geom. Skewness:	0.228	1.000% Volume below 1.004 um
Geom. Coeff Variation:	49.56	6.000% Volume below 1.561 um
		22.00% Volume below 2.482 um
Arithmetic Mean Size:	6.010 um	50.00% Volume below 3.861 um
Median Size:	3.730 um	78.00% Volume below 6.378 um
Mode Size:	3.640 um	94.00% Volume below 11.18 um
Kurtosis:	63.056	99.00% Volume below 69.60 um
Arith Std Deviation	11.53 um	99.90% Volume below 130.3 um

ELZONE(tm) Particle Size Analysis

Date done: 0:00 28 Apr 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL1039.HST

Sample #: 3222Q0304031345FS1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL1036

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Volume Distribution Data

Total Volm: 3270144110

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.500	0	0.00	41	3.298	1.03E8	38.6	81	21.77	2809718	97.9
2	0.524	536810	0.01	42	3.458	1.10E8	41.9	82	22.82	2801191	98.0
3	0.549	638880	0.03	43	3.625	1.14E8	45.3	83	23.93	2330689	98.1
4	0.576	753770	0.05	44	3.800	1.10E8	48.7	84	25.08	1941510	98.2
5	0.603	894710	0.07	45	3.983	1.07E8	52.0	85	26.29	1665638	98.2
6	0.633	1060855	0.10	46	4.176	1.01E8	55.2	86	27.56	1589943	98.3
7	0.663	1252620	0.14	47	4.377	9.70E7	58.3	87	28.90	1263235	98.3
8	0.695	1501625	0.18	48	4.589	9.49E7	61.2	88	30.29	1237012	98.3
9	0.729	1783095	0.23	49	4.811	8.84E7	64.0	89	31.75	1341269	98.4
10	0.764	2108985	0.29	50	5.043	8.34E7	66.6	90	33.29	965755	98.4
11	0.801	2581805	0.36	51	5.287	7.83E7	69.1	91	34.90	1001337	98.4
12	0.840	3003814	0.45	52	5.542	7.53E7	71.5	92	36.58	897236	98.5
13	0.880	3732495	0.55	53	5.810	7.43E7	73.7	93	38.35	1181325	98.5
14	0.923	4684996	0.68	54	6.090	6.89E7	75.9	94	40.20	1020708	98.5
15	0.967	5976219	0.84	55	6.385	6.65E7	78.0	95	42.15	979921	98.6
16	1.014	7177781	1.04	56	6.693	6.30E7	80.0	96	44.18	1128916	98.6
17	1.063	8686476	1.29	57	7.016	5.97E7	81.9	97	46.32	780340	98.6
18	1.114	1.07E7	1.58	58	7.355	5.72E7	83.7	98	48.55	1797979	98.7
19	1.168	1.30E7	1.94	59	7.711	5.12E7	85.3	99	50.90	1726133	98.7
20	1.225	1.51E7	2.37	60	8.083	4.68E7	86.8	100	53.36	1988589	98.8
21	1.284	1.77E7	2.88	61	8.474	4.17E7	88.2	101	55.94	1374571	98.8
22	1.346	2.07E7	3.46	62	8.883	4.00E7	89.4	102	58.64	1055715	98.9
23	1.411	2.39E7	4.15	63	9.312	3.77E7	90.6	103	61.47	1216235	98.9
24	1.479	2.75E7	4.93	64	9.762	3.02E7	91.6	104	64.44	1401162	98.9
25	1.550	3.14E7	5.83	65	10.23	2.69E7	92.5	105	67.55	807103	99.0
26	1.625	3.41E7	6.83	66	10.73	2.63E7	93.3	106	70.82	1859645	99.0
27	1.704	3.75E7	7.93	67	11.25	2.25E7	94.1	107	74.24	2142401	99.1
28	1.786	4.26E7	9.15	68	11.79	1.93E7	94.7	108	77.83	1234075	99.1
29	1.872	4.73E7	10.5	69	12.36	1.66E7	95.3	109	81.59	2843429	99.2
30	1.963	5.41E7	12.1	70	12.96	1.40E7	95.7	110	85.53	1637884	99.3
31	2.058	5.70E7	13.8	71	13.58	1.16E7	96.1	111	89.66	1886923	99.3
32	2.157	6.22E7	15.6	72	14.24	9023942	96.4	112	93.99	2173827	99.4
33	2.261	6.79E7	17.6	73	14.93	8175765	96.7	113	98.53	0	99.4
34	2.371	7.26E7	19.7	74	15.65	7984481	96.9	114	103.3	0	99.4
35	2.485	7.70E7	22.0	75	16.40	5974409	97.2	115	108.3	0	99.4
36	2.605	8.14E7	24.4	76	17.20	4340031	97.3	116	113.5	3829201	99.5
37	2.731	8.56E7	27.0	77	18.03	4248404	97.4	117	119.0	4411426	99.6
38	2.863	9.12E7	29.7	78	18.90	4664669	97.6	118	124.7	5082178	99.7
39	3.001	9.54E7	32.6	79	19.81	3867598	97.7	119	130.8	5854916	99.9
40	3.146	9.89E7	35.5	80	20.77	3494176	97.8	120	137.1	0	100.0

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

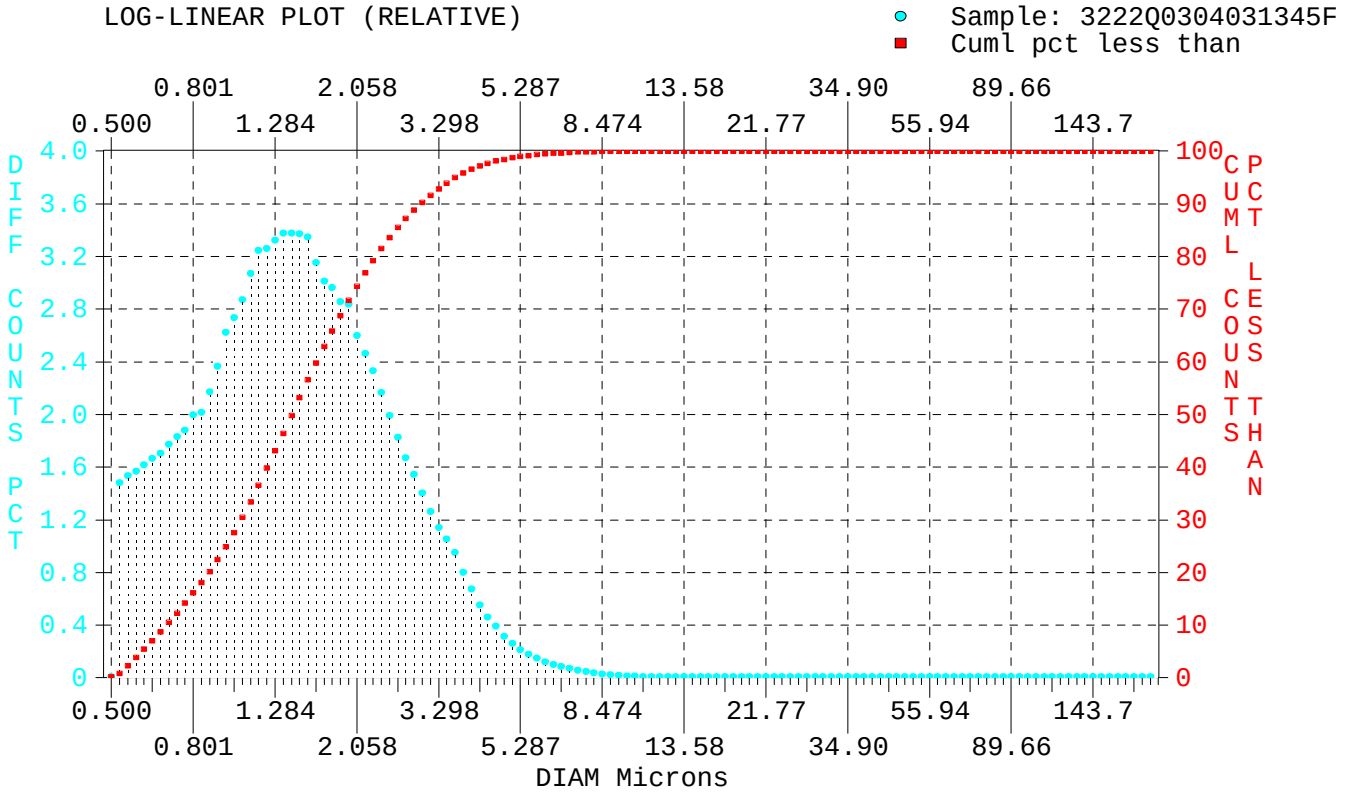
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Comments:
All Data in Report Represents 100ml of Sample

Date done: 0:00 28 Apr 03
Disk File: MAL1039.HST
Sample #: 3222Q0304031345FS1
Lot/Job #: MAL1036
Material: water
Source: Charlie O'Neill

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	1.439 um	
Geom. Std Deviation:	1.725 um	0.100% Counts below 0.512 um
Geom. Skewness:	0.036	1.000% Counts below 0.520 um
Geom. Coeff Variation:	119.9	6.000% Counts below 0.613 um
		22.00% Counts below 0.915 um
Arithmetic Mean Size:	1.679 um	50.00% Counts below 1.414 um
Median Size:	1.382 um	78.00% Counts below 2.202 um
Mode Size:	1.376 um	94.00% Counts below 3.469 um
Kurtosis:	11.577	99.00% Counts below 5.357 um
Arith Std Deviation	1.069 um	99.90% Counts below 8.611 um

ELZONE(tm) Particle Size Analysis

Date done: 0:00 28 Apr 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL1039.HST

Sample #: 3222Q0304031345FS1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL1036

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Frequency Distribution Data

Total Popl: 481305676

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.500	0	0.00	41	3.298	5494825	92.8	81	21.77	520	100.0
2	0.524	7134381	0.74	42	3.458	5072185	93.9	82	22.82	450	100.0
3	0.549	7370283	2.25	43	3.625	4562565	94.9	83	23.93	325	100.0
4	0.576	7548017	3.80	44	3.800	3846465	95.8	84	25.08	235	100.0
5	0.603	7776882	5.39	45	3.983	3240490	96.5	85	26.29	175	100.0
6	0.633	8004025	7.03	46	4.176	2662065	97.1	86	27.56	145	100.0
7	0.663	8203532	8.71	47	4.377	2209415	97.6	87	28.90	100	100.0
8	0.695	8536350	10.5	48	4.589	1876390	98.1	88	30.29	85	100.0
9	0.729	8798617	12.3	49	4.811	1516430	98.4	89	31.75	80	100.0
10	0.764	9033220	14.1	50	5.043	1242415	98.7	90	33.29	50	100.0
11	0.801	9598905	16.0	51	5.287	1011830	98.9	91	34.90	45	100.0
12	0.840	9693943	18.0	52	5.542	844865	99.1	92	36.58	35	100.0
13	0.880	1.05E7	20.1	53	5.810	723650	99.3	93	38.35	40	100.0
14	0.923	1.14E7	22.4	54	6.090	582795	99.4	94	40.20	30	100.0
15	0.967	1.26E7	24.9	55	6.385	488055	99.5	95	42.15	25	100.0
16	1.014	1.32E7	27.6	56	6.693	401345	99.6	96	44.18	25	100.0
17	1.063	1.38E7	30.4	57	7.016	330005	99.7	97	46.32	15	100.0
18	1.114	1.48E7	33.3	58	7.355	274340	99.8	98	48.55	30	100.0
19	1.168	1.56E7	36.5	59	7.711	213295	99.8	99	50.90	25	100.0
20	1.225	1.57E7	39.8	60	8.083	169255	99.9	100	53.36	25	100.0
21	1.284	1.60E7	43.0	61	8.474	130950	99.9	101	55.94	15	100.0
22	1.346	1.63E7	46.4	62	8.883	108895	99.9	102	58.64	10	100.0
23	1.411	1.62E7	49.8	63	9.312	89215	99.9	103	61.47	10	100.0
24	1.479	1.62E7	53.1	64	9.762	62085	100.0	104	64.44	10	100.0
25	1.550	1.61E7	56.5	65	10.23	48000	100.0	105	67.55	5	100.0
26	1.625	1.52E7	59.8	66	10.73	40695	100.0	106	70.82	10	100.0
27	1.704	1.45E7	62.8	67	11.25	30260	100.0	107	74.24	10	100.0
28	1.786	1.43E7	65.8	68	11.79	22440	100.0	108	77.83	5	100.0
29	1.872	1.37E7	68.7	69	12.36	16820	100.0	109	81.59	10	100.0
30	1.963	1.37E7	71.6	70	12.96	12300	100.0	110	85.53	5	100.0
31	2.058	1.25E7	74.3	71	13.58	8870	100.0	111	89.66	5	100.0
32	2.157	1.18E7	76.8	72	14.24	5970	100.0	112	93.99	5	100.0
33	2.261	1.12E7	79.2	73	14.93	4695	100.0	113	98.53	0	100.0
34	2.371	1.04E7	81.5	74	15.65	3980	100.0	114	103.3	0	100.0
35	2.485	9581970	83.5	75	16.40	2585	100.0	115	108.3	0	100.0
36	2.605	8790005	85.5	76	17.20	1630	100.0	116	113.5	5	100.0
37	2.731	8030735	87.2	77	18.03	1385	100.0	117	119.0	5	100.0
38	2.863	7422575	88.8	78	18.90	1320	100.0	118	124.7	5	100.0
39	3.001	6738060	90.3	79	19.81	950	100.0	119	130.8	5	100.0
40	3.146	6063460	91.6	80	20.77	745	100.0	120	137.1	0	100.0

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

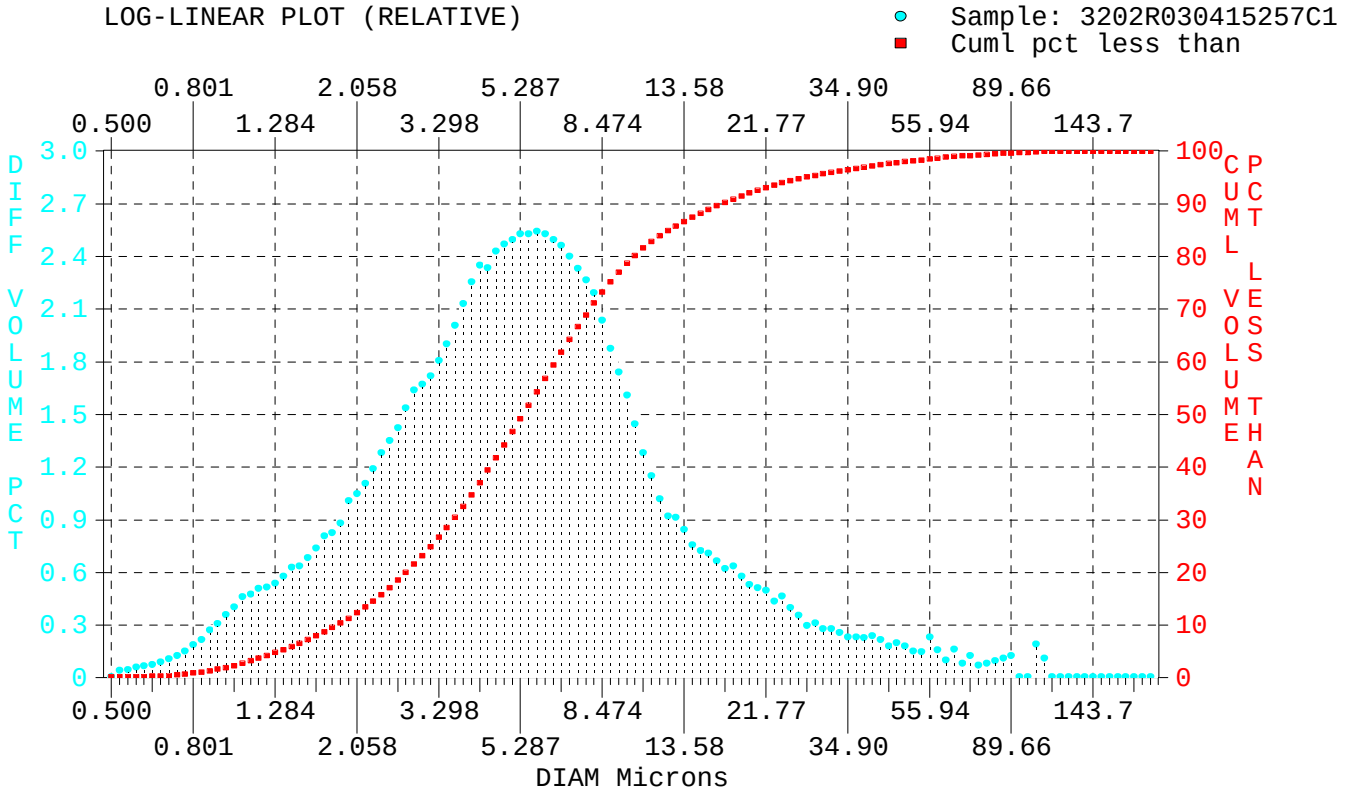
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Comments:
All Data in Report Represents 100ml of Sample

Date done: 13:36 14 May 03
Disk File: MAL1183.HST
Sample #: 3202R030415257C1
Lot/Job #: MAL1183
Material: water
Source: Charlie O'Neill

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	5.510 um	
Geom. Std Deviation:	2.419 um	0.100% Volume below 0.568 um
Geom. Skewness:	-0.124	1.000% Volume below 0.829 um
Geom. Coeff Variation:	43.89	6.000% Volume below 1.420 um
		22.00% Volume below 2.896 um
Arithmetic Mean Size:	8.616 um	50.00% Volume below 5.358 um
Median Size:	5.188 um	78.00% Volume below 9.572 um
Mode Size:	5.810 um	94.00% Volume below 24.05 um
Kurtosis:	19.030	99.00% Volume below 65.74 um
Arith Std Deviation	12.13 um	99.90% Volume below 106.2 um

ELZONE(tm) Particle Size Analysis

Date done: 13:36 14 May 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL1183.HST

Sample #: 3202R030415257C1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL1183

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Volume Distribution Data

Total Volm: 598283823

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.500	0	0.00	40	3.146	1.03E7	24.9	79	19.81	3183644	92.0
2	0.524	241354	0.02	41	3.298	1.08E7	26.7	80	20.77	3053300	92.5
3	0.549	279813	0.06	42	3.458	1.14E7	28.5	81	21.77	2977220	93.0
4	0.576	352587	0.12	43	3.625	1.20E7	30.5	82	22.82	2601995	93.5
5	0.603	396098	0.18	44	3.800	1.28E7	32.5	83	23.93	2775313	93.9
6	0.633	441941	0.25	45	3.983	1.35E7	34.7	84	25.08	2387645	94.4
7	0.663	533624	0.33	46	4.176	1.41E7	37.0	85	26.29	2122499	94.7
8	0.695	639812	0.43	47	4.377	1.40E7	39.4	86	27.56	1787315	95.1
9	0.729	758304	0.55	48	4.589	1.45E7	41.8	87	28.90	1856956	95.4
10	0.764	908266	0.68	49	4.811	1.48E7	44.2	88	30.29	1673605	95.7
11	0.801	1126086	0.85	50	5.043	1.49E7	46.7	89	31.75	1676586	96.0
12	0.840	1300012	1.06	51	5.287	1.51E7	49.2	90	33.29	1545207	96.2
13	0.880	1616519	1.30	52	5.542	1.51E7	51.7	91	34.90	1379619	96.5
14	0.923	1853521	1.59	53	5.810	1.52E7	54.3	92	36.58	1384306	96.7
15	0.967	2150874	1.93	54	6.090	1.51E7	56.8	93	38.35	1358523	96.9
16	1.014	2419226	2.31	55	6.385	1.49E7	59.3	94	40.20	1428991	97.2
17	1.063	2757905	2.74	56	6.693	1.47E7	61.8	95	42.15	1293495	97.4
18	1.114	2852474	3.21	57	7.016	1.44E7	64.2	96	44.18	1083760	97.6
19	1.168	3040808	3.70	58	7.355	1.39E7	66.6	97	46.32	1196521	97.8
20	1.225	3084227	4.21	59	7.711	1.36E7	68.9	98	48.55	1078787	98.0
21	1.284	3210015	4.74	60	8.083	1.31E7	71.1	99	50.90	897589	98.1
22	1.346	3461301	5.30	61	8.474	1.22E7	73.2	100	53.36	874979	98.3
23	1.411	3756498	5.90	62	8.883	1.12E7	75.2	101	55.94	1374571	98.5
24	1.479	3802388	6.53	63	9.312	1.04E7	77.0	102	58.64	950143	98.7
25	1.550	4090082	7.19	64	9.762	9626896	78.7	103	61.47	608117	98.8
26	1.625	4416767	7.90	65	10.23	8644895	80.2	104	64.44	980813	98.9
27	1.704	4830110	8.68	66	10.73	7662174	81.6	105	67.55	484262	99.0
28	1.786	4936370	9.49	67	11.25	6876440	82.8	106	70.82	743858	99.1
29	1.872	5267737	10.3	68	11.79	6090805	83.9	107	74.24	428480	99.2
30	1.963	6031846	11.3	69	12.36	5501418	84.8	108	77.83	493630	99.3
31	2.058	6261691	12.3	70	12.96	5470070	85.7	109	81.59	568686	99.4
32	2.157	6610313	13.4	71	13.58	5042217	86.6	110	85.53	655154	99.5
33	2.261	7119166	14.5	72	14.24	4519529	87.4	111	89.66	754769	99.6
34	2.371	7669352	15.8	73	14.93	4322098	88.2	112	93.99	0	99.7
35	2.485	8070845	17.1	74	15.65	4245015	88.9	113	98.53	0	99.7
36	2.605	8510176	18.5	75	16.40	3982169	89.6	114	103.3	1154055	99.8
37	2.731	9199254	20.0	76	17.20	3716984	90.2	115	108.3	664764	99.9
38	2.863	9803630	21.5	77	18.03	3815895	90.8	116	113.5	0	100.0
39	3.001	9999604	23.2	78	18.90	3449028	91.4				

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

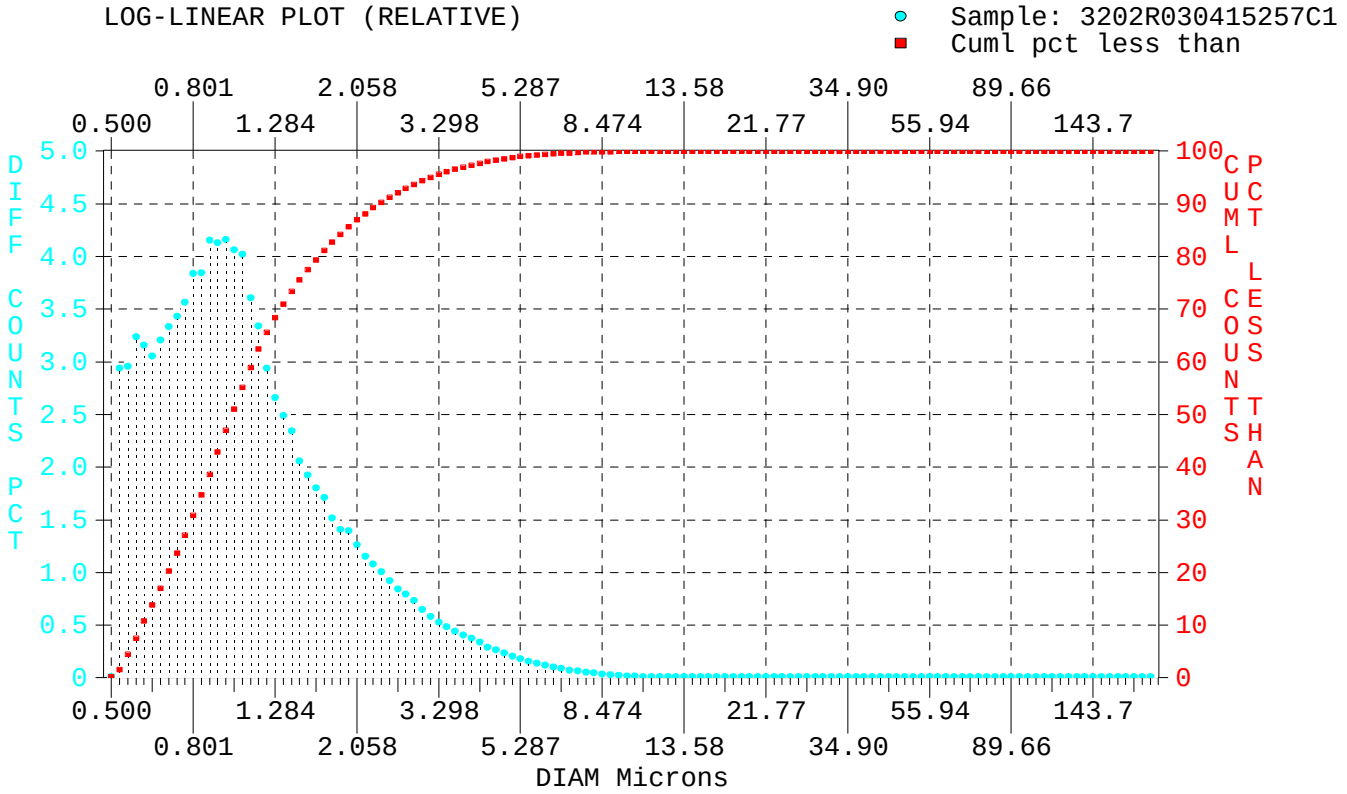
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 13:36 14 May 03
Disk File: MAL1183.HST
Sample #: 3202R030415257C1
Lot/Job #: MAL1183
Material: water
Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	1.103 um	
Geom. Std Deviation:	1.705 um	0.100% Counts below 0.512 um
Geom. Skewness:	0.089	1.000% Counts below 0.516 um
Geom. Coeff Variation:	154.5	6.000% Counts below 0.563 um
		22.00% Counts below 0.713 um
Arithmetic Mean Size:	1.308 um	50.00% Counts below 1.002 um
Median Size:	0.992 um	78.00% Counts below 1.568 um
Mode Size:	0.951 um	94.00% Counts below 2.918 um
Kurtosis:	26.483	99.00% Counts below 5.397 um
Arith Std Deviation	1.023 um	99.90% Counts below 9.270 um

ELZONE(tm) Particle Size Analysis

Date done: 13:36 14 May 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL1183.HST

Sample #: 3202R030415257C1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL1183

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Frequency Distribution Data

Total Popl: 109114446

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.500	0	0.00	40	3.146	630846	95.0	79	19.81	782	100.0
2	0.524	3207674	1.47	41	3.298	575071	95.5	80	20.77	651	100.0
3	0.549	3227994	4.42	42	3.458	525874	96.0	81	21.77	551	100.0
4	0.576	3530696	7.52	43	3.625	481880	96.5	82	22.82	418	100.0
5	0.603	3442911	10.7	44	3.800	444024	96.9	83	23.93	387	100.0
6	0.633	3334392	13.8	45	3.983	407325	97.3	84	25.08	289	100.0
7	0.663	3494756	16.9	46	4.176	368712	97.7	85	26.29	223	100.0
8	0.695	3637166	20.2	47	4.377	318179	98.0	86	27.56	163	100.0
9	0.729	3741823	23.6	48	4.589	287295	98.3	87	28.90	147	100.0
10	0.764	3890292	27.1	49	4.811	253622	98.5	88	30.29	115	100.0
11	0.801	4186681	30.8	50	5.043	222321	98.7	89	31.75	100	100.0
12	0.840	4195414	34.6	51	5.287	195520	98.9	90	33.29	80	100.0
13	0.880	4528323	38.6	52	5.542	169717	99.1	91	34.90	62	100.0
14	0.923	4506956	42.8	53	5.810	148138	99.2	92	36.58	54	100.0
15	0.967	4539729	46.9	54	6.090	127877	99.4	93	38.35	46	100.0
16	1.014	4432213	51.0	55	6.385	109560	99.5	94	40.20	42	100.0
17	1.063	4385838	55.1	56	6.693	93850	99.6	95	42.15	33	100.0
18	1.114	3937533	58.9	57	7.016	79352	99.6	96	44.18	24	100.0
19	1.168	3643516	62.4	58	7.355	66941	99.7	97	46.32	23	100.0
20	1.225	3207799	65.5	59	7.711	56470	99.8	98	48.55	18	100.0
21	1.284	2897991	68.3	60	8.083	47457	99.8	99	50.90	13	100.0
22	1.346	2712430	70.9	61	8.474	38232	99.8	100	53.36	11	100.0
23	1.411	2555239	73.3	62	8.883	30550	99.9	101	55.94	15	100.0
24	1.479	2245091	75.5	63	9.312	24626	99.9	102	58.64	9	100.0
25	1.550	2096229	77.5	64	9.762	19762	99.9	103	61.47	5	100.0
26	1.625	1964900	79.3	65	10.23	15404	99.9	104	64.44	7	100.0
27	1.704	1865186	81.1	66	10.73	11851	100.0	105	67.55	3	100.0
28	1.786	1654634	82.7	67	11.25	9232	100.0	106	70.82	4	100.0
29	1.872	1532666	84.2	68	11.79	7098	100.0	107	74.24	2	100.0
30	1.963	1523361	85.6	69	12.36	5565	100.0	108	77.83	2	100.0
31	2.058	1372693	86.9	70	12.96	4803	100.0	109	81.59	2	100.0
32	2.157	1257862	88.1	71	13.58	3843	100.0	110	85.53	2	100.0
33	2.261	1175897	89.2	72	14.24	2990	100.0	111	89.66	2	100.0
34	2.371	1099583	90.2	73	14.93	2482	100.0	112	93.99	0	100.0
35	2.485	1004425	91.2	74	15.65	2116	100.0	113	98.53	0	100.0
36	2.605	919319	92.1	75	16.40	1723	100.0	114	103.3	2	100.0
37	2.731	862600	92.9	76	17.20	1396	100.0	115	108.3	1	100.0
38	2.863	797945	93.7	77	18.03	1244	100.0	116	113.5	0	100.0
39	3.001	706477	94.4	78	18.90	976	100.0				

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

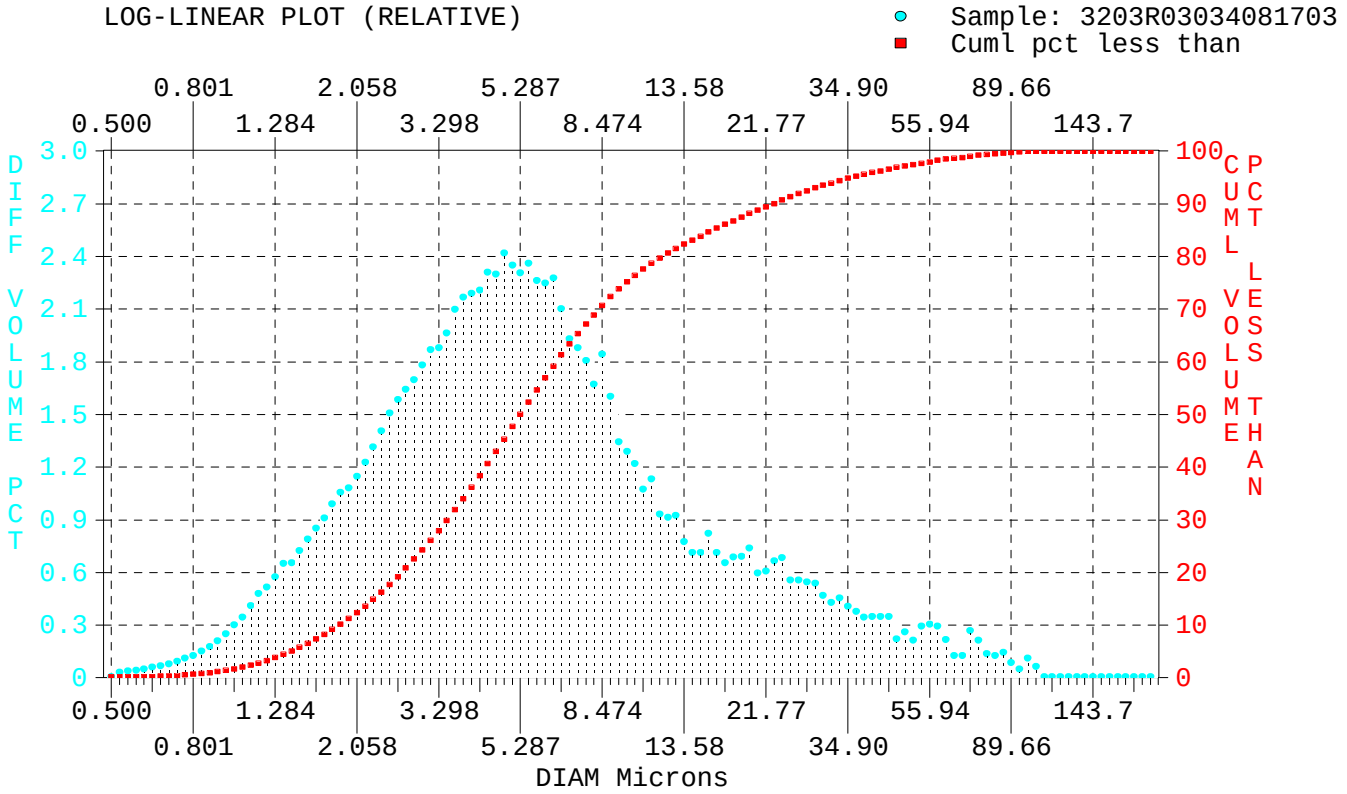
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Comments:
All Data in Report Represents 100ml of Sample

Date done: 22:16 15 May 03
Disk File: MAL1191.HST
Sample #: 3203R03034081703C1
Lot/Job #: MAL1191
Material: water
Source: Charlie O'Neill

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	5.822 um	
Geom. Std Deviation:	2.583 um	0.100% Volume below 0.581 um
Geom. Skewness:	0.373	1.000% Volume below 0.894 um
Geom. Coeff Variation:	44.37	6.000% Volume below 1.499 um
		22.00% Volume below 2.824 um
Arithmetic Mean Size:	9.724 um	50.00% Volume below 5.282 um
Median Size:	5.179 um	78.00% Volume below 10.93 um
Mode Size:	4.858 um	94.00% Volume below 32.04 um
Kurtosis:	11.544	99.00% Volume below 71.55 um
Arith Std Deviation	13.67 um	99.90% Volume below 99.24 um

ELZONE(tm) Particle Size Analysis

Date done: 22:16 15 May 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL1191.HST

Sample #: 3203R03034081703C1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL1191

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Volume Distribution Data

Total Volm: 898950102

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.500	0	0.00	40	3.146	1.68E7	26.0	78	18.90	6223093	87.4
2	0.524	286987	0.02	41	3.298	1.69E7	27.9	79	19.81	6627842	88.1
3	0.549	328935	0.05	42	3.458	1.77E7	29.8	80	20.77	5342103	88.8
4	0.576	384682	0.09	43	3.625	1.88E7	31.9	81	21.77	5441127	89.4
5	0.603	448893	0.14	44	3.800	1.95E7	34.0	82	22.82	5994549	90.0
6	0.633	538125	0.19	45	3.983	1.97E7	36.2	83	23.93	6145848	90.7
7	0.663	613562	0.26	46	4.176	1.98E7	38.4	84	25.08	5006618	91.3
8	0.695	716781	0.33	47	4.377	2.07E7	40.6	85	26.29	4987397	91.9
9	0.729	828281	0.42	48	4.589	2.07E7	42.9	86	27.56	4912375	92.4
10	0.764	984491	0.52	49	4.811	2.17E7	45.3	87	28.90	4825559	93.0
11	0.801	1123963	0.63	50	5.043	2.11E7	47.7	88	30.29	4220395	93.5
12	0.840	1352855	0.77	51	5.287	2.07E7	50.0	89	31.75	3839383	93.9
13	0.880	1598311	0.94	52	5.542	2.12E7	52.3	90	33.29	4094800	94.3
14	0.923	1882779	1.13	53	5.810	2.03E7	54.6	91	34.90	3649316	94.8
15	0.967	2245450	1.36	54	6.090	2.02E7	56.9	92	36.58	3383860	95.2
16	1.014	2691847	1.63	55	6.385	2.05E7	59.2	93	38.35	3100977	95.5
17	1.063	3093727	1.95	56	6.693	1.89E7	61.4	94	40.20	3130170	95.9
18	1.114	3685135	2.33	57	7.016	1.73E7	63.4	95	42.15	3135746	96.2
19	1.168	4293299	2.78	58	7.355	1.69E7	65.3	96	44.18	3115809	96.6
20	1.225	4647737	3.27	59	7.711	1.62E7	67.1	97	46.32	1976861	96.9
21	1.284	5169444	3.82	60	8.083	1.50E7	68.9	98	48.55	2337373	97.1
22	1.346	5839104	4.43	61	8.474	1.66E7	70.6	99	50.90	1933269	97.3
23	1.411	5875419	5.08	62	8.883	1.44E7	72.3	100	53.36	2624937	97.6
24	1.479	6514555	5.77	63	9.312	1.21E7	73.8	101	55.94	2749141	97.9
25	1.550	7089302	6.53	64	9.762	1.16E7	75.1	102	58.64	2639287	98.2
26	1.625	7658541	7.35	65	10.23	1.10E7	76.4	103	61.47	1945976	98.4
27	1.704	8180316	8.23	66	10.73	9654171	77.5	104	64.44	1120929	98.6
28	1.786	8889251	9.18	67	11.25	1.02E7	78.6	105	67.55	1129945	98.7
29	1.872	9491836	10.2	68	11.79	8384510	79.7	106	70.82	2417538	98.9
30	1.963	9706883	11.3	69	12.36	8201216	80.6	107	74.24	1928161	99.2
31	2.058	1.03E7	12.4	70	12.96	8295647	81.5	108	77.83	1234075	99.4
32	2.157	1.10E7	13.6	71	13.58	6974870	82.4	109	81.59	1137372	99.5
33	2.261	1.18E7	14.8	72	14.24	6408964	83.1	110	85.53	1310308	99.6
34	2.371	1.26E7	16.2	73	14.93	6410008	83.8	111	89.66	754769	99.7
35	2.485	1.35E7	17.7	74	15.65	7396679	84.6	112	93.99	434765	99.8
36	2.605	1.42E7	19.2	75	16.40	6411223	85.3	113	98.53	1001742	99.9
37	2.731	1.48E7	20.8	76	17.20	5889662	86.0	114	103.3	577028	100.0
38	2.863	1.53E7	22.5	77	18.03	6174757	86.7	115	108.3	0	100.0
39	3.001	1.60E7	24.2								

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

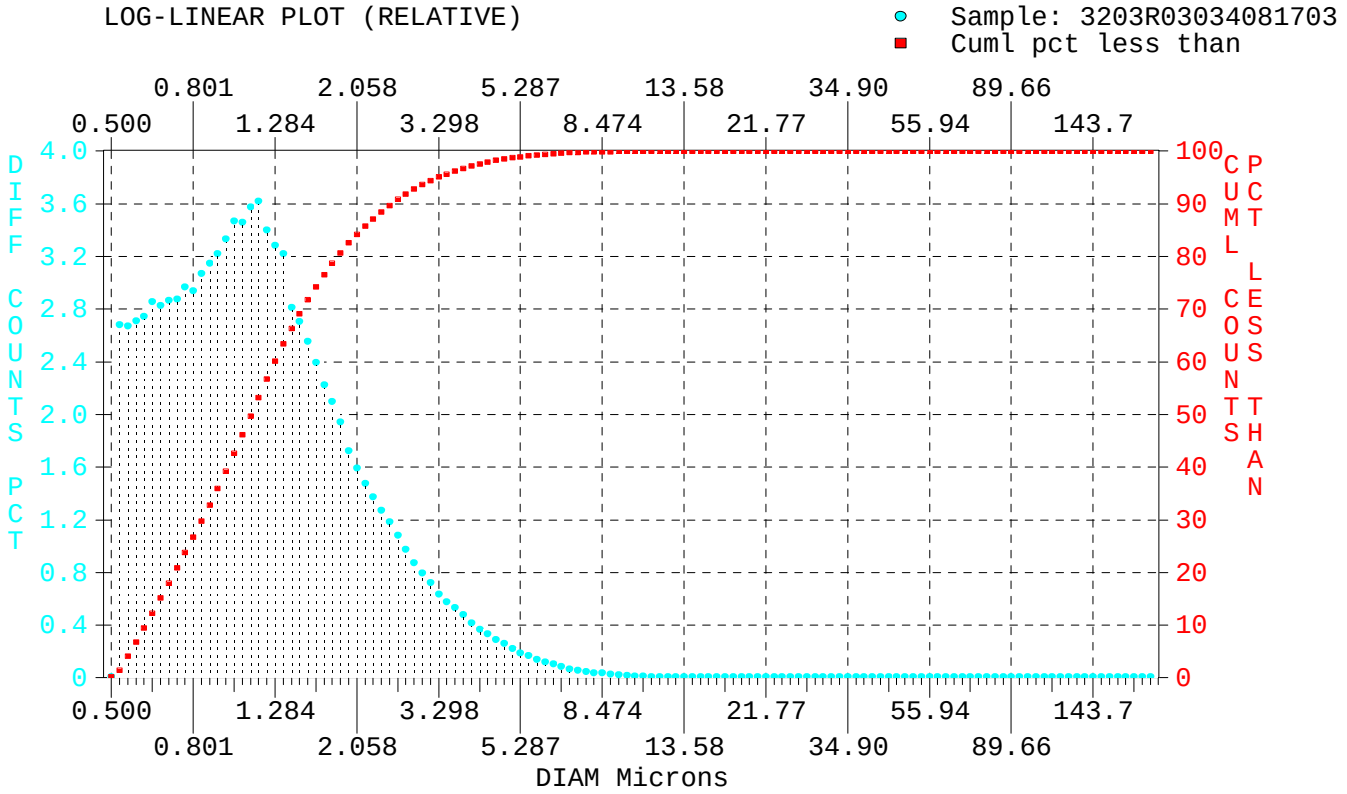
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 22:16 15 May 03
Disk File: MAL1191.HST
Sample #: 3203R03034081703C1
Lot/Job #: MAL1191
Material: water
Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

LOG-LINEAR PLOT (RELATIVE)



Geometric Mean Size:	1.190 um	-- PERCENTILES --
Geom. Std Deviation:	1.725 um	0.100% Counts below 0.512 um
Geom. Skewness:	0.026	1.000% Counts below 0.516 um
Geom. Coeff Variation:	144.9	6.000% Counts below 0.568 um
		22.00% Counts below 0.742 um
Arithmetic Mean Size:	1.410 um	50.00% Counts below 1.119 um
Median Size:	1.092 um	78.00% Counts below 1.760 um
Mode Size:	1.146 um	94.00% Counts below 3.076 um
Kurtosis:	29.739	99.00% Counts below 5.420 um
Arith Std Deviation	1.056 um	99.90% Counts below 9.367 um

ELZONE(tm) Particle Size Analysis

Date done: 22:16 15 May 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL1191.HST

Sample #: 3203R03034081703C1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL1191

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Frequency Distribution Data

Total Popl: 142209185

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.500	0	0.00	40	3.146	1029053	94.3	78	18.90	1761	100.0
2	0.524	3814151	1.34	41	3.298	898900	95.0	79	19.81	1628	100.0
3	0.549	3794678	4.02	42	3.458	815759	95.6	80	20.77	1139	100.0
4	0.576	3852085	6.70	43	3.625	755841	96.2	81	21.77	1007	100.0
5	0.603	3901809	9.43	44	3.800	678230	96.7	82	22.82	963	100.0
6	0.633	4060089	12.2	45	3.983	594352	97.1	83	23.93	857	100.0
7	0.663	4018278	15.1	46	4.176	520240	97.5	84	25.08	606	100.0
8	0.695	4074715	17.9	47	4.377	472312	97.9	85	26.29	524	100.0
9	0.729	4087122	20.8	48	4.589	408525	98.2	86	27.56	448	100.0
10	0.764	4216779	23.7	49	4.811	372762	98.5	87	28.90	382	100.0
11	0.801	4178787	26.7	50	5.043	314320	98.7	88	30.29	290	100.0
12	0.840	4365949	29.7	51	5.287	268049	98.9	89	31.75	229	100.0
13	0.880	4477318	32.8	52	5.542	238182	99.1	90	33.29	212	100.0
14	0.923	4578099	36.0	53	5.810	197993	99.2	91	34.90	164	100.0
15	0.967	4739345	39.2	54	6.090	170895	99.4	92	36.58	132	100.0
16	1.014	4931676	42.6	55	6.385	150247	99.5	93	38.35	105	100.0
17	1.063	4919889	46.1	56	6.693	120382	99.6	94	40.20	92	100.0
18	1.114	5086932	49.6	57	7.016	95863	99.6	95	42.15	80	100.0
19	1.168	5144259	53.2	58	7.355	81115	99.7	96	44.18	69	100.0
20	1.225	4833953	56.7	59	7.711	67657	99.8	97	46.32	38	100.0
21	1.284	4666958	60.1	60	8.083	54384	99.8	98	48.55	39	100.0
22	1.346	4575783	63.3	61	8.474	51987	99.8	99	50.90	28	100.0
23	1.411	3996568	66.3	62	8.883	39267	99.9	100	53.36	33	100.0
24	1.479	3846470	69.1	63	9.312	28574	99.9	101	55.94	30	100.0
25	1.550	3633375	71.7	64	9.762	23782	99.9	102	58.64	25	100.0
26	1.625	3407077	74.2	65	10.23	19541	99.9	103	61.47	16	100.0
27	1.704	3158895	76.5	66	10.73	14932	99.9	104	64.44	8	100.0
28	1.786	2979610	78.7	67	11.25	13642	100.0	105	67.55	7	100.0
29	1.872	2761682	80.7	68	11.79	9771	100.0	106	70.82	13	100.0
30	1.963	2451503	82.5	69	12.36	8296	100.0	107	74.24	9	100.0
31	2.058	2261306	84.2	70	12.96	7284	100.0	108	77.83	5	100.0
32	2.157	2095142	85.7	71	13.58	5316	100.0	109	81.59	4	100.0
33	2.261	1949471	87.1	72	14.24	4240	100.0	110	85.53	4	100.0
34	2.371	1809479	88.4	73	14.93	3681	100.0	111	89.66	2	100.0
35	2.485	1686158	89.7	74	15.65	3687	100.0	112	93.99	1	100.0
36	2.605	1538225	90.8	75	16.40	2774	100.0	113	98.53	2	100.0
37	2.731	1384820	91.8	76	17.20	2212	100.0	114	103.3	1	100.0
38	2.863	1241984	92.8	77	18.03	2013	100.0	115	108.3	0	100.0
39	3.001	1131753	93.6								

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

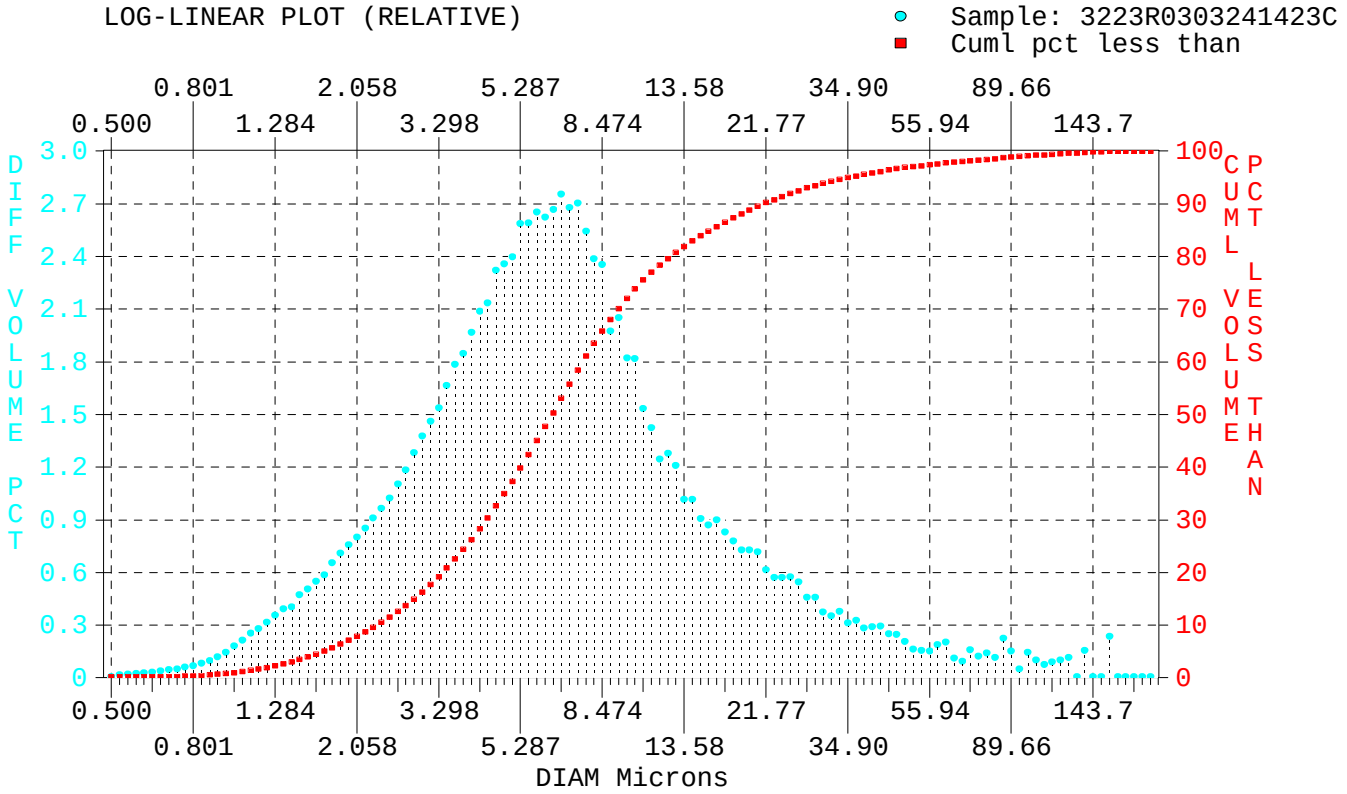
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 21:30 15 May 03
Disk File: MAL1190.HST
Sample #: 3223R0303241423C1
Lot/Job #: MAL1190
Material: water
Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	6.755 um	
Geom. Std Deviation:	2.448 um	0.100% Volume below 0.626 um
Geom. Skewness:	0.017	1.000% Volume below 1.034 um
Geom. Coeff Variation:	36.24	6.000% Volume below 1.830 um
		22.00% Volume below 3.576 um
Arithmetic Mean Size:	10.97 um	50.00% Volume below 6.349 um
Median Size:	6.250 um	78.00% Volume below 11.67 um
Mode Size:	6.713 um	94.00% Volume below 30.88 um
Kurtosis:	23.551	99.00% Volume below 96.74 um
Arith Std Deviation	17.13 um	99.90% Volume below 158.4 um

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Comments:
All Data in Report Represents 100ml of Sample

Date done: 21:30 15 May 03
Disk File: MAL1190.HST
Sample #: 3223R0303241423C1
Lot/Job #: MAL1190
Material: water
Source: Charlie O'Neill

-- Volume Distribution Data

Total Volm: 1743082471

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.500	0	0.00	43	3.625	3.11E7	22.5	84	25.08	1.00E7	91.9
2	0.524	311901	0.01	44	3.800	3.22E7	24.3	85	26.29	9479862	92.5
3	0.549	359629	0.03	45	3.983	3.43E7	26.2	86	27.56	7960679	93.0
4	0.576	425217	0.05	46	4.176	3.64E7	28.2	87	28.90	7971016	93.4
5	0.603	487419	0.08	47	4.377	3.72E7	30.4	88	30.29	6490677	93.8
6	0.633	567481	0.11	48	4.589	4.04E7	32.6	89	31.75	6153072	94.2
7	0.663	675258	0.14	49	4.811	4.11E7	34.9	90	33.29	6605761	94.6
8	0.695	774723	0.18	50	5.043	4.17E7	37.3	91	34.90	5429470	94.9
9	0.729	883120	0.23	51	5.287	4.51E7	39.8	92	36.58	5665402	95.2
10	0.764	1038940	0.29	52	5.542	4.51E7	42.4	93	38.35	4902497	95.5
11	0.801	1200306	0.35	53	5.810	4.63E7	45.0	94	40.20	5069514	95.8
12	0.840	1411561	0.43	54	6.090	4.57E7	47.6	95	42.15	5095587	96.1
13	0.880	1714894	0.52	55	6.385	4.65E7	50.3	96	44.18	4335038	96.4
14	0.923	2044716	0.62	56	6.693	4.80E7	53.0	97	46.32	4265858	96.6
15	0.967	2529132	0.75	57	7.016	4.67E7	55.7	98	48.55	3595958	96.8
16	1.014	3176771	0.92	58	7.355	4.71E7	58.4	99	50.90	2830858	97.0
17	1.063	3746204	1.12	59	7.711	4.43E7	61.0	100	53.36	2704481	97.2
18	1.114	4402494	1.35	60	8.083	4.16E7	63.5	101	55.94	2657503	97.3
19	1.168	4883263	1.62	61	8.474	4.10E7	65.9	102	58.64	3272716	97.5
20	1.225	5481067	1.91	62	8.883	3.44E7	68.0	103	61.47	3527081	97.7
21	1.284	6194062	2.25	63	9.312	3.57E7	70.0	104	64.44	1961627	97.9
22	1.346	6855951	2.62	64	9.762	3.17E7	72.0	105	67.55	1614207	98.0
23	1.411	7030032	3.02	65	10.23	3.17E7	73.8	106	70.82	2789467	98.1
24	1.479	8225662	3.46	66	10.73	2.67E7	75.5	107	74.24	2142401	98.2
25	1.550	8828464	3.95	67	11.25	2.48E7	76.9	108	77.83	2468150	98.4
26	1.625	9547388	4.48	68	11.79	2.17E7	78.3	109	81.59	1990400	98.5
27	1.704	1.02E7	5.04	69	12.36	2.23E7	79.5	110	85.53	3930923	98.7
28	1.786	1.14E7	5.66	70	12.96	2.11E7	80.8	111	89.66	2641692	98.9
29	1.872	1.24E7	6.35	71	13.58	1.77E7	81.9	112	93.99	869531	99.0
30	1.963	1.32E7	7.08	72	14.24	1.77E7	82.9	113	98.53	2504354	99.1
31	2.058	1.40E7	7.86	73	14.93	1.58E7	83.9	114	103.3	1731083	99.2
32	2.157	1.48E7	8.68	74	15.65	1.51E7	84.7	115	108.3	1329528	99.3
33	2.261	1.59E7	9.56	75	16.40	1.57E7	85.6	116	113.5	1531681	99.3
34	2.371	1.68E7	10.5	76	17.20	1.44E7	86.5	117	119.0	1764570	99.4
35	2.485	1.78E7	11.5	77	18.03	1.36E7	87.3	118	124.7	2032871	99.6
36	2.605	1.92E7	12.6	78	18.90	1.27E7	88.1	119	130.8	0	99.6
37	2.731	2.06E7	13.7	79	19.81	1.27E7	88.8	120	137.1	2698059	99.7
38	2.863	2.24E7	14.9	80	20.77	1.25E7	89.5	121	143.7	0	99.8
39	3.001	2.40E7	16.3	81	21.77	1.07E7	90.2	122	150.7	0	99.8
40	3.146	2.55E7	17.7	82	22.82	9953565	90.8	123	157.9	4125380	99.9
41	3.298	2.68E7	19.2	83	23.93	9917979	91.3	124	165.6	0	100.0
42	3.458	2.90E7	20.8								

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

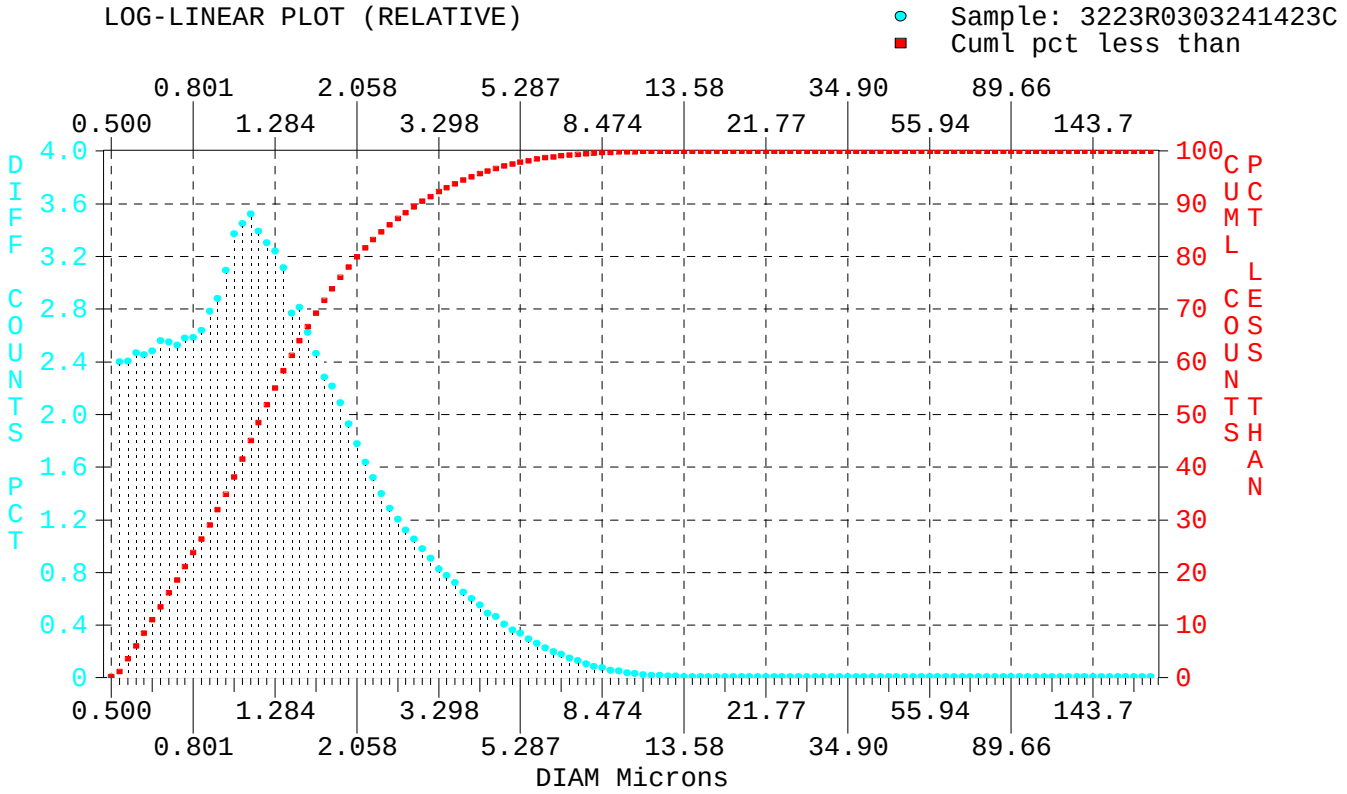
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Comments:
All Data in Report Represents 100ml of Sample

Date done: 21:30 15 May 03
Disk File: MAL1190.HST
Sample #: 3223R0303241423C1
Lot/Job #: MAL1190
Material: water
Source: Charlie O'Neill

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	1.288 um	
Geom. Std Deviation:	1.808 um	0.100% Counts below 0.512 um
Geom. Skewness:	0.103	1.000% Counts below 0.517 um
Geom. Coeff Variation:	140.4	6.000% Counts below 0.575 um
		22.00% Counts below 0.775 um
Arithmetic Mean Size:	1.574 um	50.00% Counts below 1.192 um
Median Size:	1.147 um	78.00% Counts below 1.962 um
Mode Size:	1.102 um	94.00% Counts below 3.672 um
Kurtosis:	24.939	99.00% Counts below 6.583 um
Arith Std Deviation	1.292 um	99.90% Counts below 11.07 um

ELZONE(tm) Particle Size Analysis

Date done: 21:30 15 May 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL1190.HST

Sample #: 3223R0303241423C1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL1190

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Frequency Distribution Data

Total Popl: 172669512

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.500	0	0.00	43	3.625	1247283	93.8	84	25.08	1215	100.0
2	0.524	4145266	1.20	44	3.800	1120137	94.5	85	26.29	996	100.0
3	0.549	4148772	3.60	45	3.983	1035166	95.1	86	27.56	726	100.0
4	0.576	4257990	6.04	46	4.176	954947	95.7	87	28.90	631	100.0
5	0.603	4236680	8.50	47	4.377	847264	96.2	88	30.29	446	100.0
6	0.633	4281577	11.0	48	4.589	799128	96.7	89	31.75	367	100.0
7	0.663	4422332	13.5	49	4.811	704717	97.1	90	33.29	342	100.0
8	0.695	4404100	16.0	50	5.043	621715	97.5	91	34.90	244	100.0
9	0.729	4357723	18.6	51	5.287	582530	97.8	92	36.58	221	100.0
10	0.764	4449995	21.1	52	5.542	506319	98.1	93	38.35	166	100.0
11	0.801	4462623	23.7	53	5.810	450475	98.4	94	40.20	149	100.0
12	0.840	4555406	26.3	54	6.090	386606	98.7	95	42.15	130	100.0
13	0.880	4803899	29.0	55	6.385	340940	98.9	96	44.18	96	100.0
14	0.923	4971859	31.9	56	6.693	305768	99.1	97	46.32	82	100.0
15	0.967	5338097	34.8	57	7.016	257942	99.2	98	48.55	60	100.0
16	1.014	5820095	38.1	58	7.355	226163	99.4	99	50.90	41	100.0
17	1.063	5957510	41.5	59	7.711	184510	99.5	100	53.36	34	100.0
18	1.114	6077168	45.0	60	8.083	150261	99.6	101	55.94	29	100.0
19	1.168	5851158	48.4	61	8.474	128663	99.7	102	58.64	31	100.0
20	1.225	5700671	51.8	62	8.883	93798	99.7	103	61.47	29	100.0
21	1.284	5591980	55.0	63	9.312	84541	99.8	104	64.44	14	100.0
22	1.346	5372630	58.2	64	9.762	65103	99.8	105	67.55	10	100.0
23	1.411	4781957	61.2	65	10.23	56464	99.9	106	70.82	15	100.0
24	1.479	4856780	63.9	66	10.73	41345	99.9	107	74.24	10	100.0
25	1.550	4524722	66.7	67	11.25	33323	99.9	108	77.83	10	100.0
26	1.625	4247374	69.2	68	11.79	25301	99.9	109	81.59	7	100.0
27	1.704	3943732	71.6	69	12.36	22524	99.9	110	85.53	12	100.0
28	1.786	3824546	73.8	70	12.96	18513	99.9	111	89.66	7	100.0
29	1.872	3602269	76.0	71	13.58	13467	100.0	112	93.99	2	100.0
30	1.963	3328879	78.0	72	14.24	11690	100.0	113	98.53	5	100.0
31	2.058	3063830	79.8	73	14.93	9060	100.0	114	103.3	3	100.0
32	2.157	2819963	81.5	74	15.65	7550	100.0	115	108.3	2	100.0
33	2.261	2619407	83.1	75	16.40	6788	100.0	116	113.5	2	100.0
34	2.371	2410572	84.6	76	17.20	5421	100.0	117	119.0	2	100.0
35	2.485	2221051	85.9	77	18.03	4419	100.0	118	124.7	2	100.0
36	2.605	2072908	87.2	78	18.90	3588	100.0	119	130.8	0	100.0
37	2.731	1932665	88.3	79	19.81	3118	100.0	120	137.1	2	100.0
38	2.863	1819458	89.4	80	20.77	2658	100.0	121	143.7	0	100.0
39	3.001	1694637	90.4	81	21.77	1985	100.0	122	150.7	0	100.0
40	3.146	1561629	91.4	82	22.82	1599	100.0	123	157.9	2	100.0
41	3.298	1425800	92.2	83	23.93	1383	100.0	124	165.6	0	100.0
42	3.458	1339488	93.0								

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

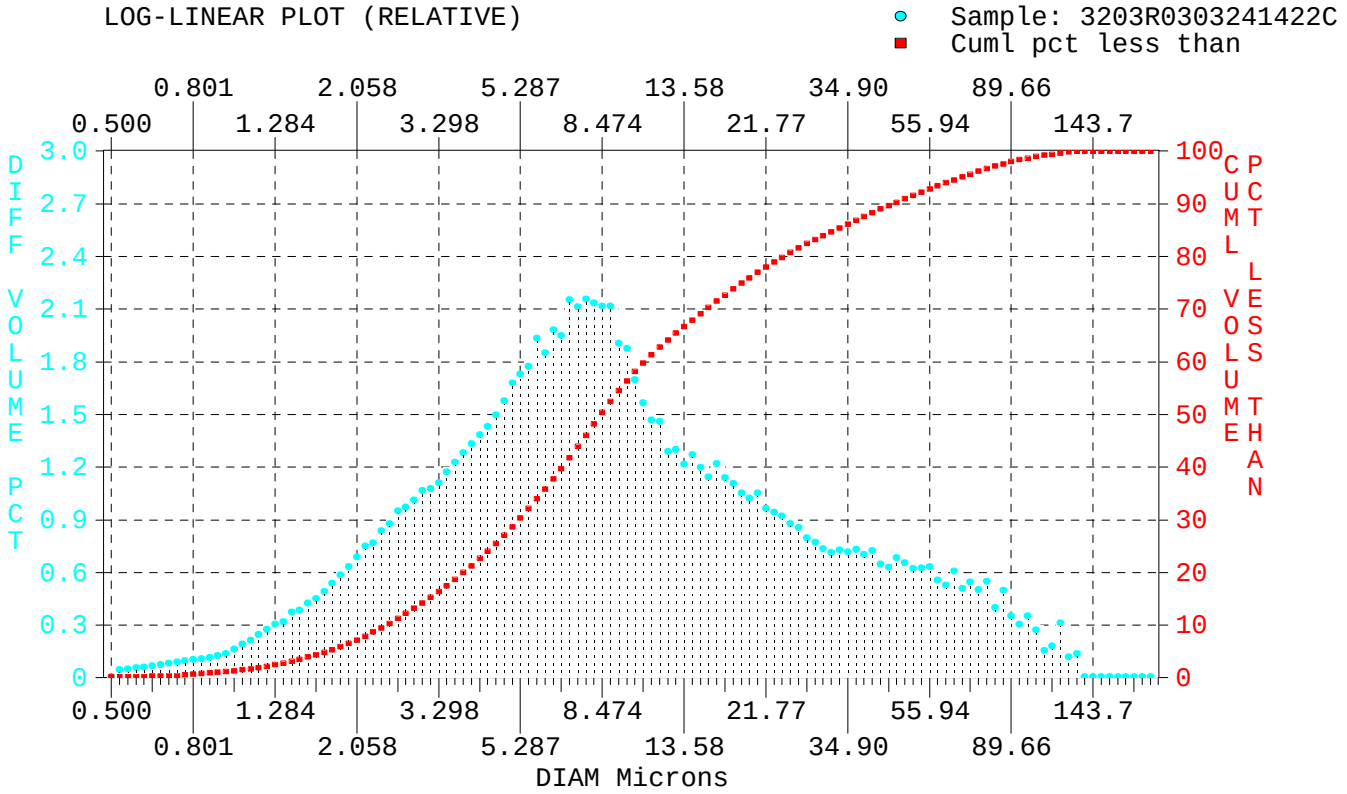
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Comments:
All Data in Report Represents 100ml of Sample

Date done: 19:57 15 May 03
Disk File: MAL1189.HST
Sample #: 3203R0303241422C1
Lot/Job #: MAL1189
Material: water
Source: Charlie O'Neill

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	9.364 um	
Geom. Std Deviation:	2.945 um	0.100% Volume below 0.564 um
Geom. Skewness:	0.533	1.000% Volume below 0.917 um
Geom. Coeff Variation:	31.45	6.000% Volume below 1.888 um
		22.00% Volume below 4.090 um
Arithmetic Mean Size:	16.98 um	50.00% Volume below 8.411 um
Median Size:	8.294 um	78.00% Volume below 21.82 um
Mode Size:	7.794 um	94.00% Volume below 61.71 um
Kurtosis:	6.652	99.00% Volume below 103.8 um
Arith Std Deviation	22.93 um	99.90% Volume below 129.3 um

ELZONE(tm) Particle Size Analysis

Date done: 19:57 15 May 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL1189.HST

Sample #: 3203R0303241422C1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL1189

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Volume Distribution Data

Total Volm: 854111947

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.500	0	0.00	41	3.298	9479244	16.4	81	21.77	8240038	77.9
2	0.524	390663	0.02	42	3.458	1.00E7	17.5	82	22.82	8054980	78.9
3	0.549	429953	0.07	43	3.625	1.05E7	18.7	83	23.93	7866973	79.8
4	0.576	480391	0.12	44	3.800	1.09E7	19.9	84	25.08	7493404	80.7
5	0.603	521145	0.18	45	3.983	1.14E7	21.3	85	26.29	7300255	81.6
6	0.633	580082	0.25	46	4.176	1.18E7	22.6	86	27.56	6809341	82.4
7	0.663	637923	0.32	47	4.377	1.22E7	24.0	87	28.90	6594089	83.2
8	0.695	700517	0.40	48	4.589	1.28E7	25.5	88	30.29	6286934	84.0
9	0.729	758362	0.48	49	4.811	1.35E7	27.0	89	31.75	6086009	84.7
10	0.764	834573	0.58	50	5.043	1.43E7	28.6	90	33.29	6200145	85.4
11	0.801	876430	0.68	51	5.287	1.48E7	30.3	91	34.90	6119280	86.1
12	0.840	926786	0.78	52	5.542	1.52E7	32.1	92	36.58	6229378	86.8
13	0.880	989478	0.89	53	5.810	1.65E7	34.0	93	38.35	5995222	87.6
14	0.923	1088995	1.02	54	6.090	1.58E7	35.8	94	40.20	6192293	88.3
15	0.967	1172707	1.15	55	6.385	1.69E7	37.8	95	42.15	5526752	89.0
16	1.014	1394033	1.30	56	6.693	1.66E7	39.7	96	44.18	5373641	89.6
17	1.063	1622674	1.47	57	7.016	1.84E7	41.8	97	46.32	5826538	90.3
18	1.114	1818240	1.68	58	7.355	1.81E7	43.9	98	48.55	5573735	90.9
19	1.168	2104643	1.91	59	7.711	1.84E7	46.0	99	50.90	5316489	91.6
20	1.225	2347006	2.17	60	8.083	1.82E7	48.2	100	53.36	5329418	92.2
21	1.284	2613865	2.46	61	8.474	1.81E7	50.3	101	55.94	5406645	92.8
22	1.346	2728031	2.77	62	8.883	1.81E7	52.4	102	58.64	4750717	93.4
23	1.411	3202796	3.12	63	9.312	1.63E7	54.4	103	61.47	4500069	93.9
24	1.479	3296135	3.50	64	9.762	1.60E7	56.3	104	64.44	5184299	94.5
25	1.550	3634480	3.90	65	10.23	1.45E7	58.1	105	67.55	4358358	95.1
26	1.625	3832463	4.34	66	10.73	1.34E7	59.7	106	70.82	4649112	95.6
27	1.704	4175573	4.81	67	11.25	1.25E7	61.3	107	74.24	4284802	96.1
28	1.786	4586228	5.32	68	11.79	1.25E7	62.7	108	77.83	4689486	96.6
29	1.872	5004385	5.88	69	12.36	1.10E7	64.1	109	81.59	3412115	97.1
30	1.963	5399155	6.49	70	12.96	1.11E7	65.4	110	85.53	4258500	97.6
31	2.058	5871436	7.15	71	13.58	1.04E7	66.6	111	89.66	3019076	98.0
32	2.157	6408797	7.87	72	14.24	1.09E7	67.9	112	93.99	2608592	98.3
33	2.261	6555189	8.63	73	14.93	1.02E7	69.1	113	98.53	3005225	98.7
34	2.371	7130864	9.43	74	15.65	9769955	70.3	114	103.3	2308110	99.0
35	2.485	7492497	10.3	75	16.40	1.04E7	71.5	115	108.3	1329528	99.2
36	2.605	8107319	11.2	76	17.20	9737113	72.7	116	113.5	1531681	99.3
37	2.731	8286730	12.2	77	18.03	9441580	73.8	117	119.0	2646856	99.6
38	2.863	8624263	13.1	78	18.90	8990089	74.9	118	124.7	1016436	99.8
39	3.001	9103107	14.2	79	19.81	8724487	75.9	119	130.8	1170983	99.9
40	3.146	9208139	15.3	80	20.77	8991055	76.9	120	137.1	0	100.0

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

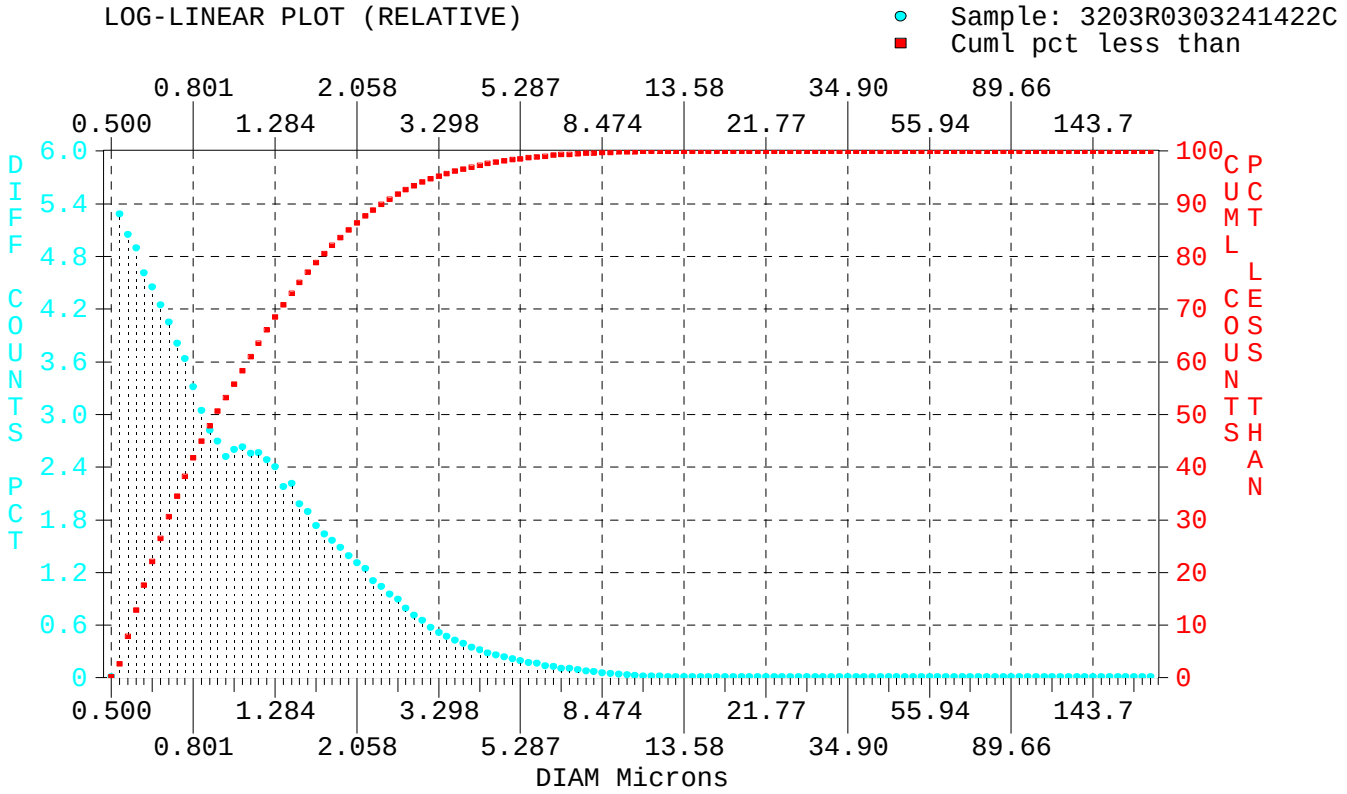
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Date done: 19:57 15 May 03
Disk File: MAL1189.HST
Sample #: 3203R0303241422C1
Lot/Job #: MAL1189
Material: water
Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	1.049 um	
Geom. Std Deviation:	1.791 um	0.100% Counts below 0.512 um
Geom. Skewness:	0.286	1.000% Counts below 0.514 um
Geom. Coeff Variation:	170.8	6.000% Counts below 0.540 um
		22.00% Counts below 0.632 um
Arithmetic Mean Size:	1.292 um	50.00% Counts below 0.913 um
Median Size:	0.903 um	78.00% Counts below 1.591 um
Mode Size:	0.536 um	94.00% Counts below 2.984 um
Kurtosis:	62.552	99.00% Counts below 6.032 um
Arith Std Deviation	1.184 um	99.90% Counts below 11.20 um

ELZONE(tm) Particle Size Analysis

Date done: 19:57 15 May 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL1189.HST

Sample #: 3203R0303241422C1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL1189

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Frequency Distribution Data

Total Popl: 98305320

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.500	0	0.00	41	3.298	504600	95.2	81	21.77	1525	100.0
2	0.524	5192039	2.64	42	3.458	462140	95.7	82	22.82	1294	100.0
3	0.549	4960048	7.80	43	3.625	419690	96.2	83	23.93	1097	100.0
4	0.576	4810485	12.8	44	3.800	380634	96.6	84	25.08	907	100.0
5	0.603	4529829	17.5	45	3.983	343693	96.9	85	26.29	767	100.0
6	0.633	4376650	22.1	46	4.176	309943	97.3	86	27.56	621	100.0
7	0.663	4177821	26.4	47	4.377	278061	97.6	87	28.90	522	100.0
8	0.695	3982258	30.6	48	4.589	252505	97.8	88	30.29	432	100.0
9	0.729	3742109	34.5	49	4.811	231181	98.1	89	31.75	363	100.0
10	0.764	3574649	38.2	50	5.043	213354	98.3	90	33.29	321	100.0
11	0.801	3258483	41.7	51	5.287	190936	98.5	91	34.90	275	100.0
12	0.840	2990935	44.9	52	5.542	170078	98.7	92	36.58	243	100.0
13	0.880	2771806	47.8	53	5.810	160890	98.9	93	38.35	203	100.0
14	0.923	2647962	50.5	54	6.090	133508	99.0	94	40.20	182	100.0
15	0.967	2475167	53.2	55	6.385	124136	99.2	95	42.15	141	100.0
16	1.014	2553978	55.7	56	6.693	106034	99.3	96	44.18	119	100.0
17	1.063	2580504	58.3	57	7.016	101624	99.4	97	46.32	112	100.0
18	1.114	2509884	60.9	58	7.355	86647	99.5	98	48.55	93	100.0
19	1.168	2521797	63.5	59	7.711	76723	99.6	99	50.90	77	100.0
20	1.225	2441041	66.0	60	8.083	65881	99.6	100	53.36	67	100.0
21	1.284	2359789	68.4	61	8.474	56693	99.7	101	55.94	59	100.0
22	1.346	2137807	70.7	62	8.883	49250	99.7	102	58.64	45	100.0
23	1.411	2178601	72.9	63	9.312	38500	99.8	103	61.47	37	100.0
24	1.479	1946178	75.0	64	9.762	32895	99.8	104	64.44	37	100.0
25	1.550	1862726	77.0	65	10.23	25820	99.9	105	67.55	27	100.0
26	1.625	1704959	78.8	66	10.73	20674	99.9	106	70.82	25	100.0
27	1.704	1612431	80.5	67	11.25	16815	99.9	107	74.24	20	100.0
28	1.786	1537269	82.1	68	11.79	14518	99.9	108	77.83	19	100.0
29	1.872	1456043	83.6	69	12.36	11118	99.9	109	81.59	12	100.0
30	1.963	1363573	85.0	70	12.96	9740	99.9	110	85.53	13	100.0
31	2.058	1287141	86.4	71	13.58	7902	99.9	111	89.66	8	100.0
32	2.157	1219516	87.6	72	14.24	7185	100.0	112	93.99	6	100.0
33	2.261	1082743	88.8	73	14.93	5881	100.0	113	98.53	6	100.0
34	2.371	1022378	89.9	74	15.65	4870	100.0	114	103.3	4	100.0
35	2.485	932449	90.9	75	16.40	4502	100.0	115	108.3	2	100.0
36	2.605	875800	91.8	76	17.20	3657	100.0	116	113.5	2	100.0
37	2.731	777034	92.6	77	18.03	3078	100.0	117	119.0	3	100.0
38	2.863	701953	93.4	78	18.90	2544	100.0	118	124.7	1	100.0
39	3.001	643139	94.1	79	19.81	2143	100.0	119	130.8	1	100.0
40	3.146	564698	94.7	80	20.77	1917	100.0	120	137.1	0	100.0

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

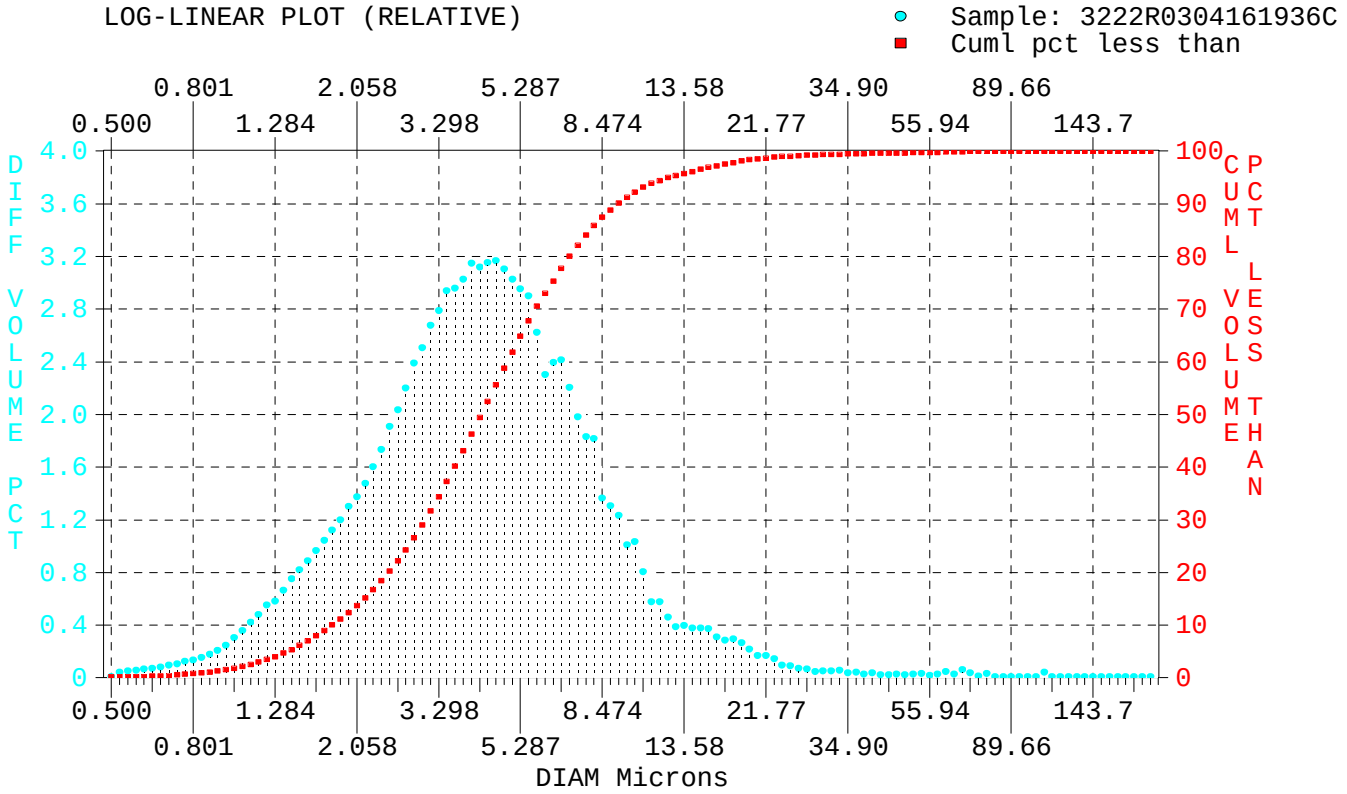
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Comments:
All Data in Report Represents 100ml of Sample

Date done: 11:42 15 May 03
Disk File: MAL1188.HST
Sample #: 3222R0304161936C1
Lot/Job #: MAL1188
Material: water
Source: Charlie O'Neill

LOG-LINEAR PLOT (RELATIVE)



Geometric Mean Size:	4.206 um	-- PERCENTILES --	
Geom. Std Deviation:	1.964 um	0.100% Volume below	0.566 um
Geom. Skewness:	-0.154	1.000% Volume below	0.867 um
Geom. Coeff Variation:	46.69	6.000% Volume below	1.468 um
		22.00% Volume below	2.594 um
Arithmetic Mean Size:	5.421 um	50.00% Volume below	4.211 um
Median Size:	4.095 um	78.00% Volume below	6.721 um
Mode Size:	4.509 um	94.00% Volume below	11.41 um
Kurtosis:	52.620	99.00% Volume below	24.72 um
Arith Std Deviation	5.837 um	99.90% Volume below	71.33 um

ELZONE(tm) Particle Size Analysis

Date done: 11:42 15 May 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL1188.HST

Sample #: 3222R0304161936C1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL1188

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Volume Distribution Data

Total Volm: 1551625468

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.500	0	0.00	40	3.146	4.15E7	31.6	79	19.81	3330205	98.3
2	0.524	672427	0.02	41	3.298	4.33E7	34.3	80	20.77	2588974	98.5
3	0.549	760455	0.07	42	3.458	4.56E7	37.2	81	21.77	2588182	98.7
4	0.576	859705	0.12	43	3.625	4.59E7	40.1	82	22.82	2222278	98.8
5	0.603	980990	0.18	44	3.800	4.69E7	43.1	83	23.93	1505984	98.9
6	0.633	1119281	0.25	45	3.983	4.88E7	46.2	84	25.08	1371450	99.0
7	0.663	1276947	0.32	46	4.176	4.84E7	49.4	85	26.29	1094562	99.1
8	0.695	1433266	0.41	47	4.377	4.89E7	52.5	86	27.56	997826	99.2
9	0.729	1591251	0.51	48	4.589	4.91E7	55.6	87	28.90	745309	99.2
10	0.764	1895116	0.62	49	4.811	4.82E7	58.8	88	30.29	771314	99.3
11	0.801	2058887	0.75	50	5.043	4.70E7	61.8	89	31.75	787996	99.3
12	0.840	2380818	0.89	51	5.287	4.58E7	64.8	90	33.29	849864	99.4
13	0.880	2787973	1.06	52	5.542	4.50E7	67.8	91	34.90	556298	99.4
14	0.923	3201276	1.25	53	5.810	4.07E7	70.5	92	36.58	615247	99.5
15	0.967	3845149	1.48	54	6.090	3.57E7	73.0	93	38.35	413464	99.5
16	1.014	4720322	1.75	55	6.385	3.71E7	75.3	94	40.20	544377	99.5
17	1.063	5516252	2.08	56	6.693	3.75E7	77.7	95	42.15	313575	99.6
18	1.114	6488240	2.47	57	7.016	3.42E7	80.0	96	44.18	316097	99.6
19	1.168	7411681	2.92	58	7.355	3.07E7	82.1	97	46.32	416181	99.6
20	1.225	8578715	3.43	59	7.711	2.84E7	84.0	98	48.55	359596	99.6
21	1.284	9046644	4.00	60	8.083	2.82E7	85.9	99	50.90	414272	99.6
22	1.346	1.03E7	4.63	61	8.474	2.12E7	87.5	100	53.36	477261	99.7
23	1.411	1.16E7	5.33	62	8.883	2.03E7	88.8	101	55.94	274914	99.7
24	1.479	1.27E7	6.12	63	9.312	1.91E7	90.1	102	58.64	422286	99.7
25	1.550	1.38E7	6.97	64	9.762	1.56E7	91.2	103	61.47	729741	99.8
26	1.625	1.50E7	7.90	65	10.23	1.60E7	92.2	104	64.44	420349	99.8
27	1.704	1.62E7	8.91	66	10.73	1.25E7	93.1	105	67.55	968524	99.8
28	1.786	1.74E7	9.99	67	11.25	8919559	93.8	106	70.82	557893	99.9
29	1.872	1.86E7	11.1	68	11.79	8949141	94.4	107	74.24	214240	99.9
30	1.963	2.01E7	12.4	69	12.36	7109829	94.9	108	77.83	493630	99.9
31	2.058	2.13E7	13.7	70	12.96	6020152	95.3	109	81.59	0	100.0
32	2.157	2.29E7	15.2	71	13.58	6144341	95.7	110	85.53	0	100.0
33	2.261	2.49E7	16.7	72	14.24	5875387	96.1	111	89.66	0	100.0
34	2.371	2.69E7	18.4	73	14.93	5831871	96.5	112	93.99	0	100.0
35	2.485	2.96E7	20.2	74	15.65	5763672	96.9	113	98.53	0	100.0
36	2.605	3.16E7	22.2	75	16.40	4770283	97.2	114	103.3	0	100.0
37	2.731	3.42E7	24.3	76	17.20	4427897	97.5	115	108.3	664764	100.0
38	2.863	3.71E7	26.6	77	18.03	4598093	97.8	116	113.5	0	100.0
39	3.001	3.89E7	29.0	78	18.90	4141661	98.1				

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

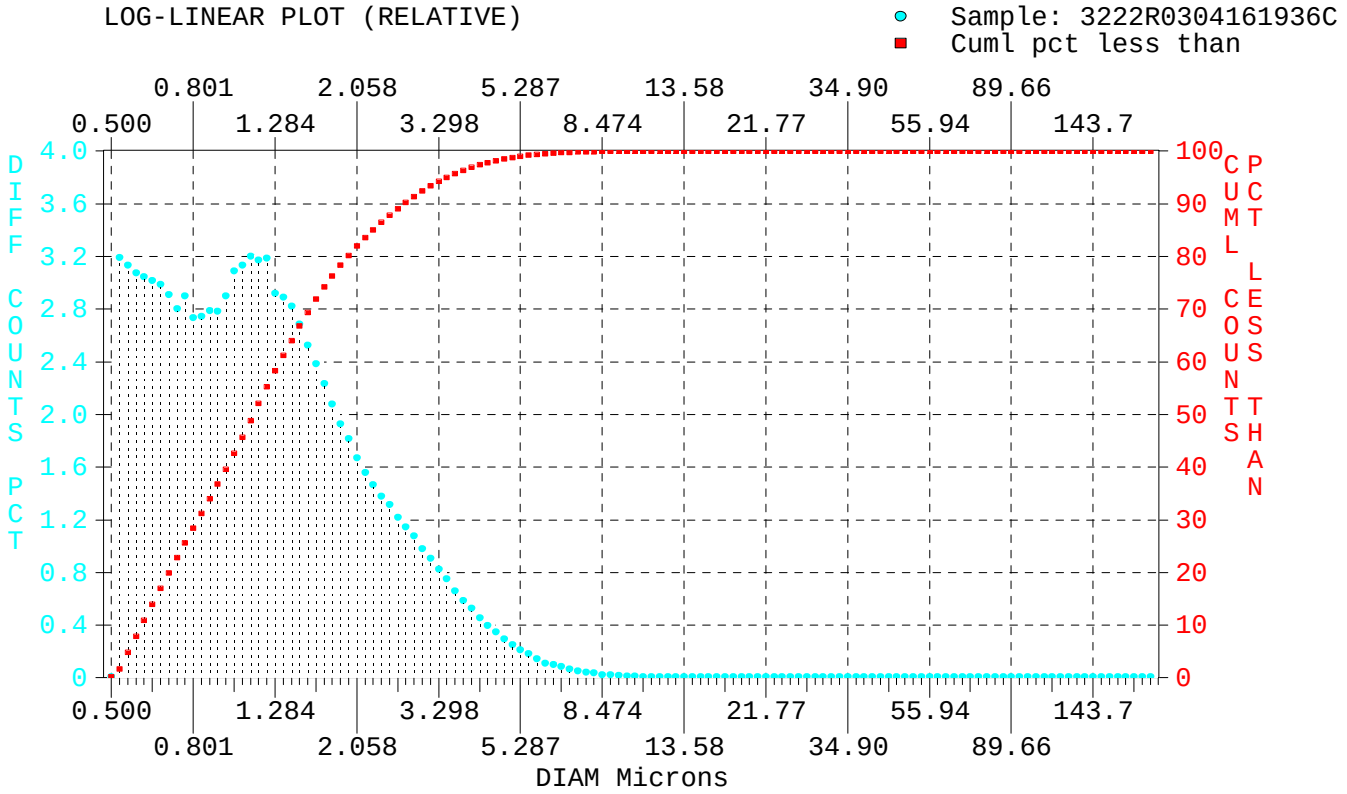
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Comments:
All Data in Report Represents 100ml of Sample

Date done: 11:42 15 May 03
Disk File: MAL1188.HST
Sample #: 3222R0304161936C1
Lot/Job #: MAL1188
Material: water
Source: Charlie O'Neill

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	1.206 um	
Geom. Std Deviation:	1.768 um	0.100% Counts below 0.512 um
Geom. Skewness:	0.043	1.000% Counts below 0.515 um
Geom. Coeff Variation:	146.7	6.000% Counts below 0.558 um
		22.00% Counts below 0.719 um
Arithmetic Mean Size:	1.443 um	50.00% Counts below 1.132 um
Median Size:	1.094 um	78.00% Counts below 1.858 um
Mode Size:	1.130 um	94.00% Counts below 3.260 um
Kurtosis:	9.629	99.00% Counts below 5.312 um
Arith Std Deviation	1.055 um	99.90% Counts below 8.426 um

ELZONE(tm) Particle Size Analysis

Date done: 11:42 15 May 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL1188.HST

Sample #: 3222R0304161936C1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL1188

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Frequency Distribution Data

Total Popl: 279990370

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.500	0	0.00	40	3.146	2544046	93.3	79	19.81	818	100.0
2	0.524	8936775	1.60	41	3.298	2303000	94.2	80	20.77	552	100.0
3	0.549	8772803	4.76	42	3.458	2105611	95.0	81	21.77	479	100.0
4	0.576	8608817	7.86	43	3.625	1839081	95.7	82	22.82	357	100.0
5	0.603	8526834	10.9	44	3.800	1633970	96.3	83	23.93	210	100.0
6	0.633	8444842	14.0	45	3.983	1474822	96.9	84	25.08	166	100.0
7	0.663	8362852	17.0	46	4.176	1269324	97.4	85	26.29	115	100.0
8	0.695	8147747	19.9	47	4.377	1112872	97.8	86	27.56	91	100.0
9	0.729	7851969	22.8	48	4.589	970724	98.1	87	28.90	59	100.0
10	0.764	8117175	25.6	49	4.811	826252	98.5	88	30.29	53	100.0
11	0.801	7654746	28.4	50	5.043	699556	98.7	89	31.75	47	100.0
12	0.840	7683403	31.2	51	5.287	591781	99.0	90	33.29	44	100.0
13	0.880	7809895	33.9	52	5.542	504867	99.2	91	34.90	25	100.0
14	0.923	7784109	36.7	53	5.810	396322	99.3	92	36.58	24	100.0
15	0.967	8115740	39.6	54	6.090	302072	99.5	93	38.35	14	100.0
16	1.014	8648002	42.6	55	6.385	272327	99.6	94	40.20	16	100.0
17	1.063	8772380	45.7	56	6.693	238722	99.6	95	42.15	8	100.0
18	1.114	8956316	48.8	57	7.016	188891	99.7	96	44.18	7	100.0
19	1.168	8880725	52.0	58	7.355	147560	99.8	97	46.32	8	100.0
20	1.225	8922429	55.2	59	7.711	118203	99.8	98	48.55	6	100.0
21	1.284	8167282	58.2	60	8.083	101978	99.9	99	50.90	6	100.0
22	1.346	8093640	61.1	61	8.474	66440	99.9	100	53.36	6	100.0
23	1.411	7906033	64.0	62	8.883	55238	99.9	101	55.94	3	100.0
24	1.479	7515569	66.8	63	9.312	45194	99.9	102	58.64	4	100.0
25	1.550	7068722	69.4	64	9.762	32061	100.0	103	61.47	6	100.0
26	1.625	6674633	71.8	65	10.23	28585	100.0	104	64.44	3	100.0
27	1.704	6251199	74.1	66	10.73	19314	100.0	105	67.55	6	100.0
28	1.786	5823219	76.3	67	11.25	11975	100.0	106	70.82	3	100.0
29	1.872	5399379	78.3	68	11.79	10429	100.0	107	74.24	1	100.0
30	1.963	5085684	80.2	69	12.36	7192	100.0	108	77.83	2	100.0
31	2.058	4674210	81.9	70	12.96	5286	100.0	109	81.59	0	100.0
32	2.157	4357885	83.5	71	13.58	4683	100.0	110	85.53	0	100.0
33	2.261	4108876	85.0	72	14.24	3887	100.0	111	89.66	0	100.0
34	2.371	3854328	86.4	73	14.93	3349	100.0	112	93.99	0	100.0
35	2.485	3685638	87.8	74	15.65	2873	100.0	113	98.53	0	100.0
36	2.605	3412526	89.1	75	16.40	2064	100.0	114	103.3	0	100.0
37	2.731	3202666	90.2	76	17.20	1663	100.0	115	108.3	1	100.0
38	2.863	3017220	91.4	77	18.03	1499	100.0	116	113.5	0	100.0
39	3.001	2746077	92.4	78	18.90	1172	100.0				

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

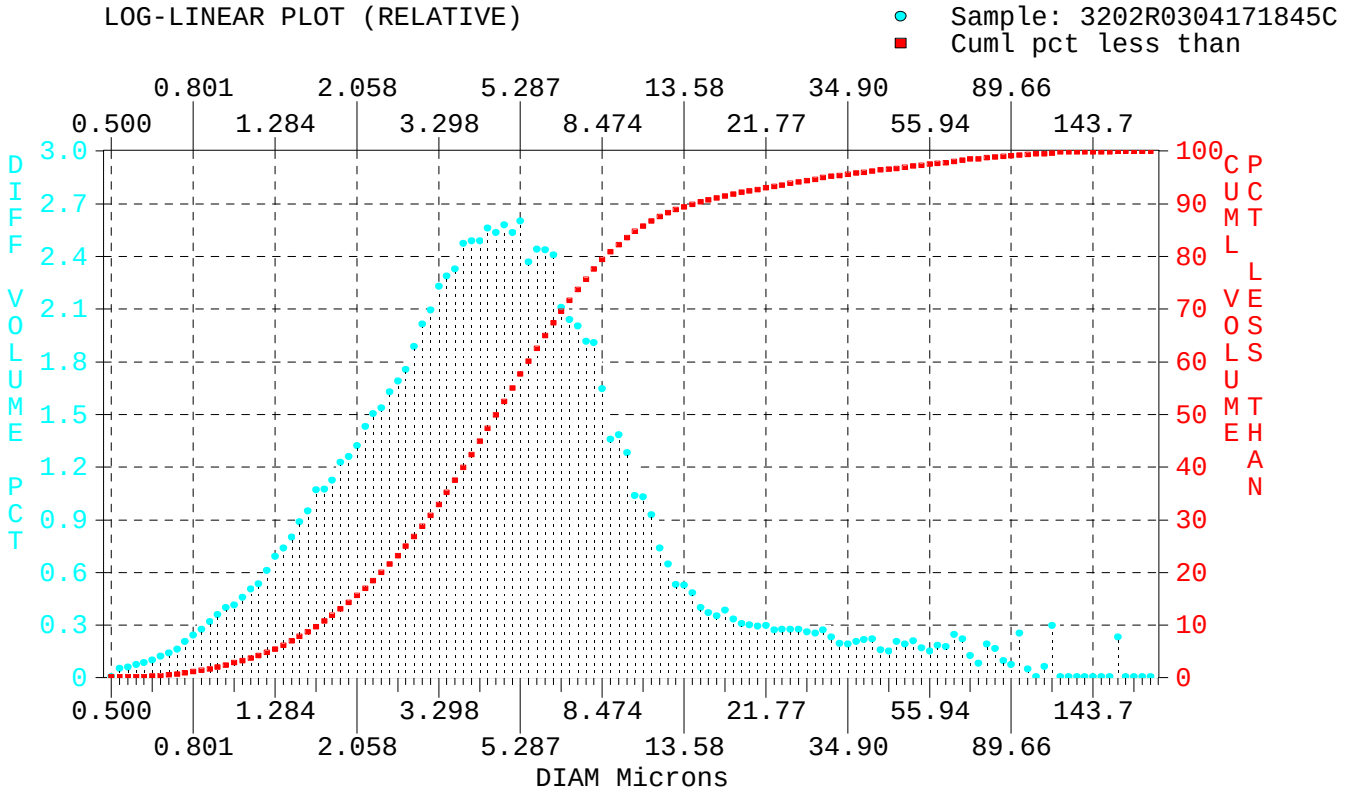
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Comments:
All Data in Report Represents 100ml of Sample

Date done: 10:40 15 May 03
Disk File: MAL1187.HST
Sample #: 3202R0304171845C1
Lot/Job #: MAL1187
Material: water
Source: Charlie O'Neill

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	4.893 um	
Geom. Std Deviation:	2.521 um	0.100% Volume below 0.556 um
Geom. Skewness:	-0.121	1.000% Volume below 0.780 um
Geom. Coeff Variation:	51.52	6.000% Volume below 1.330 um
		22.00% Volume below 2.515 um
Arithmetic Mean Size:	8.610 um	50.00% Volume below 4.592 um
Median Size:	4.496 um	78.00% Volume below 8.157 um
Mode Size:	5.197 um	94.00% Volume below 25.79 um
Kurtosis:	31.237	99.00% Volume below 86.22 um
Arith Std Deviation	15.93 um	99.90% Volume below 165.9 um

ELZONE(tm) Particle Size Analysis

Date done: 10:40 15 May 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL1187.HST

Sample #: 3202R0304171845C1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL1187

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Volume Distribution Data

Total Volm: 1026553867

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.500	0	0.00	43	3.625	2.39E7	37.5	85	26.29	2826826	94.1
2	0.524	543660	0.03	44	3.800	2.54E7	39.9	86	27.56	2664525	94.4
3	0.549	617683	0.08	45	3.983	2.55E7	42.4	87	28.90	2614897	94.6
4	0.576	749568	0.15	46	4.176	2.55E7	44.8	88	30.29	2794193	94.9
5	0.603	873147	0.23	47	4.377	2.63E7	47.4	89	31.75	2363987	95.2
6	0.633	1033815	0.32	48	4.589	2.60E7	49.9	90	33.29	2008770	95.4
7	0.663	1239884	0.43	49	4.811	2.65E7	52.5	91	34.90	1980421	95.6
8	0.695	1441802	0.56	50	5.043	2.60E7	55.0	92	36.58	2102095	95.8
9	0.729	1660038	0.71	51	5.287	2.67E7	57.6	93	38.35	2214984	96.0
10	0.764	2125740	0.90	52	5.542	2.43E7	60.1	94	40.20	2245557	96.2
11	0.801	2496652	1.12	53	5.810	2.51E7	62.5	95	42.15	1646267	96.4
12	0.840	2842642	1.38	54	6.090	2.50E7	64.9	96	44.18	1535326	96.5
13	0.880	3258817	1.68	55	6.385	2.47E7	67.4	97	46.32	2132929	96.7
14	0.923	3699780	2.02	56	6.693	2.16E7	69.6	98	48.55	1977777	96.9
15	0.967	4087040	2.40	57	7.016	2.09E7	71.7	99	50.90	2140405	97.1
16	1.014	4264384	2.81	58	7.355	2.06E7	73.7	100	53.36	1749958	97.3
17	1.063	4701217	3.24	59	7.711	1.97E7	75.7	101	55.94	1557847	97.5
18	1.114	5191466	3.72	60	8.083	1.96E7	77.6	102	58.64	1900287	97.6
19	1.168	5463482	4.24	61	8.474	1.69E7	79.4	103	61.47	1824352	97.8
20	1.225	6250645	4.81	62	8.883	1.39E7	80.9	104	64.44	2522091	98.0
21	1.284	7091387	5.46	63	9.312	1.42E7	82.2	105	67.55	2259889	98.3
22	1.346	7585841	6.18	64	9.762	1.31E7	83.6	106	70.82	1301751	98.4
23	1.411	8204053	6.95	65	10.23	1.06E7	84.7	107	74.24	856960	98.5
24	1.479	9123037	7.79	66	10.73	1.06E7	85.8	108	77.83	1974520	98.7
25	1.550	9737124	8.71	67	11.25	9533314	86.7	109	81.59	1706058	98.9
26	1.625	1.10E7	9.72	68	11.79	7569313	87.6	110	85.53	982731	99.0
27	1.704	1.10E7	10.8	69	12.36	6623450	88.3	111	89.66	754769	99.1
28	1.786	1.15E7	11.9	70	12.96	5443876	88.8	112	93.99	2608592	99.2
29	1.872	1.26E7	13.1	71	13.58	5405655	89.4	113	98.53	500871	99.4
30	1.963	1.29E7	14.3	72	14.24	4954855	89.9	114	103.3	0	99.4
31	2.058	1.36E7	15.6	73	14.93	4095719	90.3	115	108.3	664764	99.4
32	2.157	1.47E7	17.0	74	15.65	3785607	90.7	116	113.5	3063361	99.6
33	2.261	1.54E7	18.4	75	16.40	3598513	91.1	117	119.0	0	99.8
34	2.371	1.58E7	20.0	76	17.20	3940642	91.4	118	124.7	0	99.8
35	2.485	1.67E7	21.5	77	18.03	3420196	91.8	119	130.8	0	99.8
36	2.605	1.73E7	23.2	78	18.90	3169855	92.1	120	137.1	0	99.8
37	2.731	1.80E7	24.9	79	19.81	3081865	92.4	121	143.7	0	99.8
38	2.863	1.94E7	26.7	80	20.77	3001709	92.7	122	150.7	0	99.8
39	3.001	2.07E7	28.7	81	21.77	3031253	93.0	123	157.9	0	99.8
40	3.146	2.15E7	30.7	82	22.82	2794966	93.3	124	165.6	2376319	99.9
41	3.298	2.29E7	32.9	83	23.93	2839855	93.6	125	173.6	0	100.0
42	3.458	2.35E7	35.2	84	25.08	2842041	93.8				

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

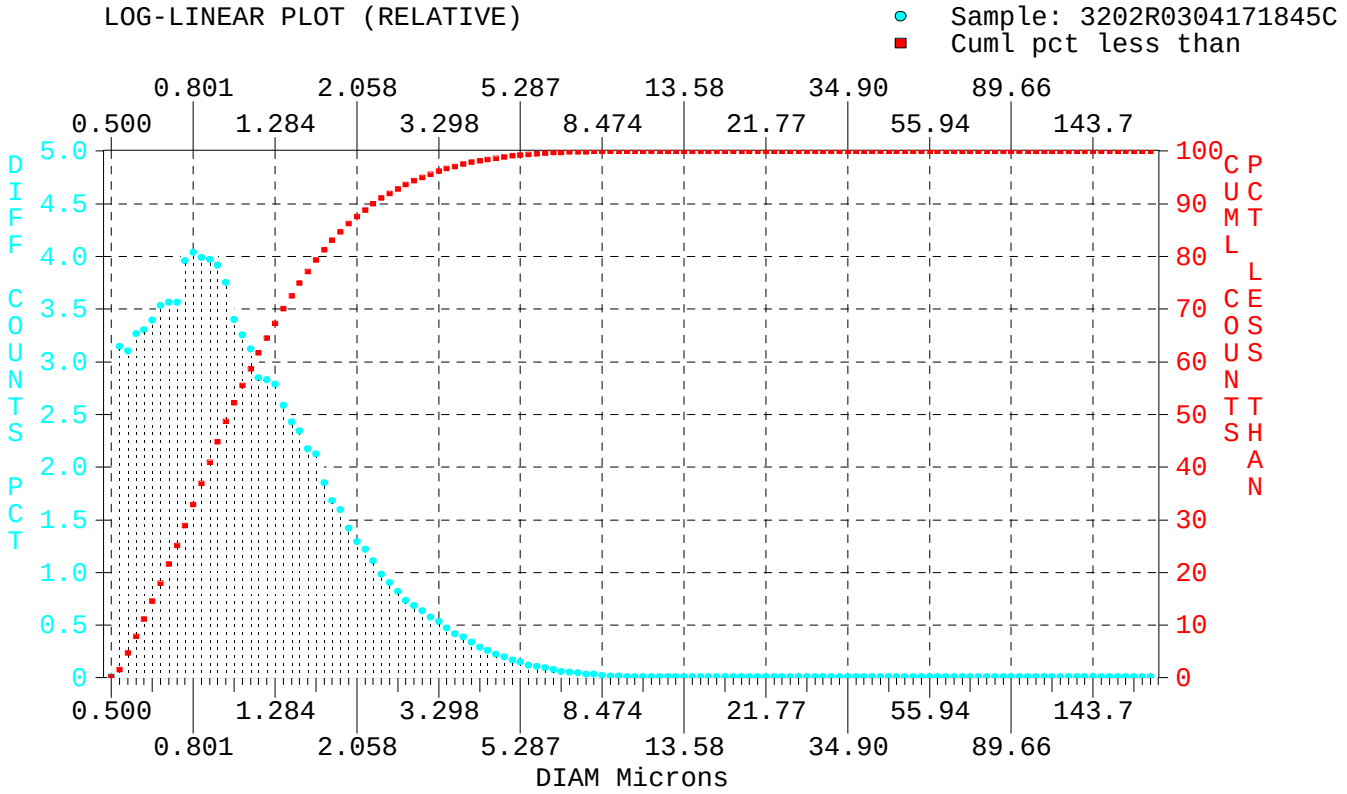
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Comments:
All Data in Report Represents 100ml of Sample

Date done: 10:40 15 May 03
Disk File: MAL1187.HST
Sample #: 3202R0304171845C1
Lot/Job #: MAL1187
Material: water
Source: Charlie O'Neill

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	1.088 um	
Geom. Std Deviation:	1.690 um	0.100% Counts below 0.512 um
Geom. Skewness:	0.166	1.000% Counts below 0.515 um
Geom. Coeff Variation:	155.3	6.000% Counts below 0.559 um
		22.00% Counts below 0.699 um
Arithmetic Mean Size:	1.278 um	50.00% Counts below 0.983 um
Median Size:	0.950 um	78.00% Counts below 1.577 um
Mode Size:	0.808 um	94.00% Counts below 2.805 um
Kurtosis:	29.278	99.00% Counts below 4.978 um
Arith Std Deviation	0.943 um	99.90% Counts below 8.361 um

ELZONE(tm) Particle Size Analysis

Date done: 10:40 15 May 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL1187.HST

Sample #: 3202R0304171845C1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL1187

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Frequency Distribution Data

Total Popl: 229927403

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.500	0	0.00	43	3.625	958068	97.1	85	26.29	297	100.0
2	0.524	7225419	1.57	44	3.800	884354	97.5	86	27.56	243	100.0
3	0.549	7125749	4.69	45	3.983	771632	97.8	87	28.90	207	100.0
4	0.576	7505940	7.87	46	4.176	669552	98.1	88	30.29	192	100.0
5	0.603	7589455	11.2	47	4.377	598925	98.4	89	31.75	141	100.0
6	0.633	7800011	14.5	48	4.589	514422	98.7	90	33.29	104	100.0
7	0.663	8120123	18.0	49	4.811	454283	98.9	91	34.90	89	100.0
8	0.695	8196272	21.5	50	5.043	387668	99.0	92	36.58	82	100.0
9	0.729	8191396	25.1	51	5.287	345108	99.2	93	38.35	75	100.0
10	0.764	9104985	28.8	52	5.542	272632	99.3	94	40.20	66	100.0
11	0.801	9282314	32.8	53	5.810	244103	99.5	95	42.15	42	100.0
12	0.840	9173807	36.9	54	6.090	211567	99.6	96	44.18	34	100.0
13	0.880	9128861	40.8	55	6.385	181497	99.6	97	46.32	41	100.0
14	0.923	8996254	44.8	56	6.693	137857	99.7	98	48.55	33	100.0
15	0.967	8626286	48.6	57	7.016	115807	99.8	99	50.90	31	100.0
16	1.014	7812688	52.2	58	7.355	98690	99.8	100	53.36	22	100.0
17	1.063	7476247	55.5	59	7.711	81882	99.8	101	55.94	17	100.0
18	1.114	7166259	58.7	60	8.083	70779	99.9	102	58.64	18	100.0
19	1.168	6546380	61.7	61	8.474	53046	99.9	103	61.47	15	100.0
20	1.225	6501083	64.5	62	8.883	37934	99.9	104	64.44	18	100.0
21	1.284	6402082	67.3	63	9.312	33617	99.9	105	67.55	14	100.0
22	1.346	5944604	70.0	64	9.762	26986	100.0	106	70.82	7	100.0
23	1.411	5580548	72.5	65	10.23	18967	100.0	107	74.24	4	100.0
24	1.479	5386628	74.9	66	10.73	16346	100.0	108	77.83	8	100.0
25	1.550	4990424	77.1	67	11.25	12799	100.0	109	81.59	6	100.0
26	1.625	4879909	79.3	68	11.79	8821	100.0	110	85.53	3	100.0
27	1.704	4259795	81.3	69	12.36	6700	100.0	111	89.66	2	100.0
28	1.786	3867524	83.0	70	12.96	4780	100.0	112	93.99	6	100.0
29	1.872	3661663	84.7	71	13.58	4120	100.0	113	98.53	1	100.0
30	1.963	3264264	86.2	72	14.24	3278	100.0	114	103.3	0	100.0
31	2.058	2971693	87.5	73	14.93	2352	100.0	115	108.3	1	100.0
32	2.157	2795128	88.8	74	15.65	1887	100.0	116	113.5	4	100.0
33	2.261	2551523	90.0	75	16.40	1557	100.0	117	119.0	0	100.0
34	2.371	2259995	91.0	76	17.20	1480	100.0	118	124.7	0	100.0
35	2.485	2079445	92.0	77	18.03	1115	100.0	119	130.8	0	100.0
36	2.605	1873131	92.8	78	18.90	897	100.0	120	137.1	0	100.0
37	2.731	1689300	93.6	79	19.81	757	100.0	121	143.7	0	100.0
38	2.863	1576272	94.3	80	20.77	640	100.0	122	150.7	0	100.0
39	3.001	1461078	95.0	81	21.77	561	100.0	123	157.9	0	100.0
40	3.146	1319360	95.6	82	22.82	449	100.0	124	165.6	1	100.0
41	3.298	1218514	96.1	83	23.93	396	100.0	125	173.6	0	100.0
42	3.458	1084515	96.6	84	25.08	344	100.0				

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

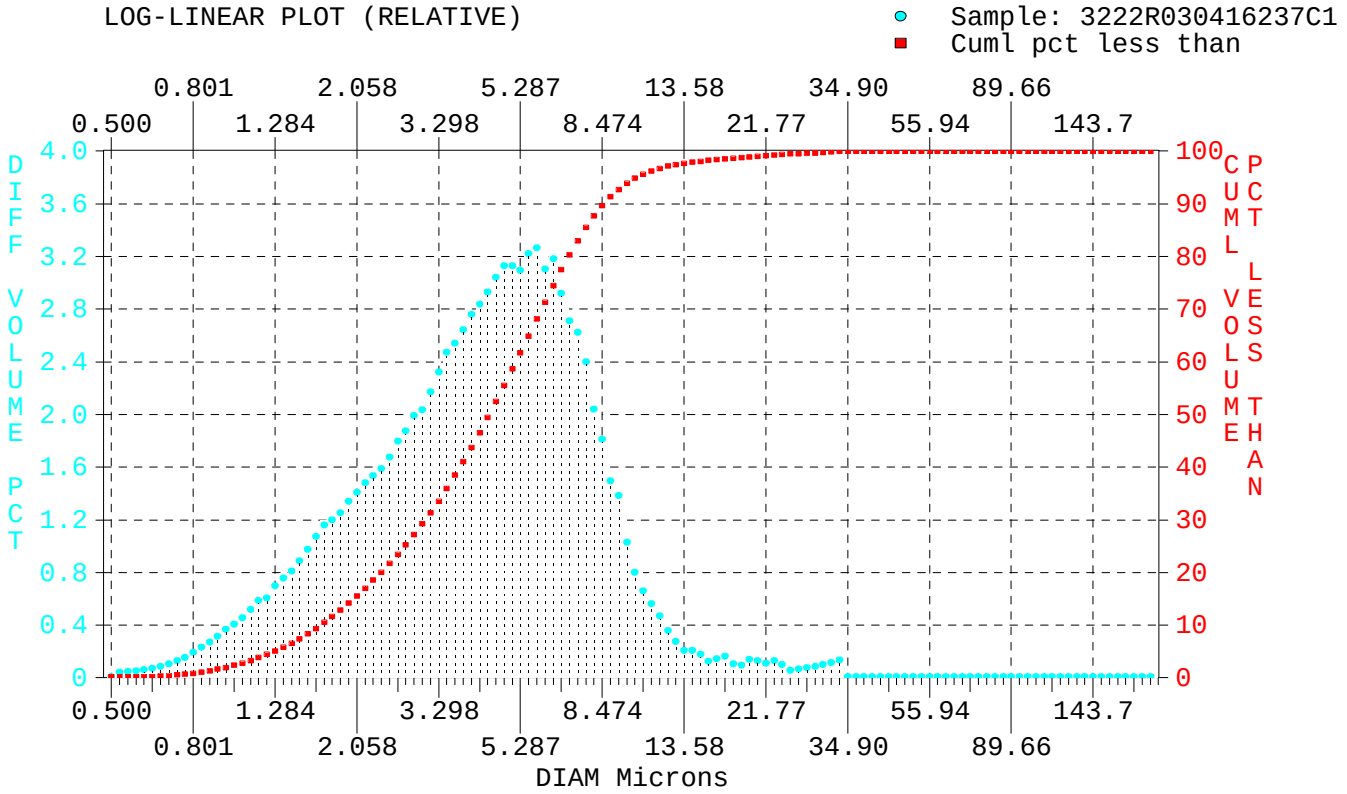
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Comments:
All Data in Report Represents 100ml of Sample

Date done: 8:59 15 May 03
Disk File: MAL1186.HST
Sample #: 3222R030416237C1
Lot/Job #: MAL1186
Material: water
Source: Charlie O'Neill

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	4.118 um	
Geom. Std Deviation:	1.921 um	0.100% Volume below 0.569 um
Geom. Skewness:	-0.830	1.000% Volume below 0.831 um
Geom. Coeff Variation:	46.64	6.000% Volume below 1.364 um
		22.00% Volume below 2.505 um
Arithmetic Mean Size:	5.059 um	50.00% Volume below 4.414 um
Median Size:	4.293 um	78.00% Volume below 6.742 um
Mode Size:	5.712 um	94.00% Volume below 9.795 um
Kurtosis:	8.710	99.00% Volume below 20.98 um
Arith Std Deviation	3.761 um	99.90% Volume below 32.88 um

ELZONE(tm) Particle Size Analysis

Date done: 8:59 15 May 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL1186.HST

Sample #: 3222R030416237C1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL1186

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Volume Distribution Data

Total Volm: 14605628

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.500	0	0.00	32	2.157	216041	17.0	62	8.883	218022	91.3
2	0.524	5880	0.02	33	2.261	223753	18.5	63	9.312	202121	92.7
3	0.549	6778	0.06	34	2.371	231521	20.0	64	9.762	150040	93.9
4	0.576	7509	0.11	35	2.485	244208	21.7	65	10.23	116732	94.8
5	0.603	9002	0.17	36	2.605	262400	23.4	66	10.73	96335	95.5
6	0.633	10432	0.24	37	2.731	273493	25.2	67	11.25	81933	96.2
7	0.663	12528	0.31	38	2.863	290800	27.2	68	11.79	68648	96.7
8	0.695	14986	0.41	39	3.001	296997	29.2	69	12.36	52394	97.1
9	0.729	18509	0.52	40	3.146	316832	31.3	70	12.96	39861	97.4
10	0.764	22597	0.66	41	3.298	338837	33.5	71	13.58	30177	97.6
11	0.801	28281	0.84	42	3.458	360729	35.9	72	14.24	30231	97.9
12	0.840	33664	1.05	43	3.625	371022	38.4	73	14.93	26121	98.0
13	0.880	39645	1.30	44	3.800	385586	41.0	74	15.65	18055	98.2
14	0.923	45697	1.59	45	3.983	403015	43.7	75	16.40	20801	98.3
15	0.967	53541	1.93	46	4.176	413857	46.5	76	17.20	23963	98.5
16	1.014	59525	2.32	47	4.377	427990	49.4	77	18.03	15337	98.6
17	1.063	66236	2.75	48	4.589	444340	52.4	78	18.90	14135	98.7
18	1.114	75676	3.24	49	4.811	456584	55.5	79	19.81	20356	98.8
19	1.168	85815	3.79	50	5.043	456773	58.6	80	20.77	18761	99.0
20	1.225	88042	4.38	51	5.287	451801	61.7	81	21.77	16210	99.1
21	1.284	102135	5.04	52	5.542	469963	64.9	82	22.82	18675	99.2
22	1.346	110217	5.76	53	5.810	476630	68.1	83	23.93	14343	99.3
23	1.411	118028	6.54	54	6.090	453050	71.3	84	25.08	8262	99.4
24	1.479	129598	7.39	55	6.385	464836	74.4	85	26.29	9518	99.5
25	1.550	142591	8.32	56	6.693	426244	77.5	86	27.56	10965	99.5
26	1.625	156456	9.35	57	7.016	396099	80.3	87	28.90	12632	99.6
27	1.704	169021	10.5	58	7.355	383188	83.0	88	30.29	14553	99.7
28	1.786	175338	11.6	59	7.711	349993	85.5	89	31.75	16766	99.8
29	1.872	182521	12.9	60	8.083	298120	87.7	90	33.29	19315	99.9
30	1.963	195820	14.2	61	8.474	264118	89.6	91	34.90	0	100.0
31	2.058	205478	15.5								

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

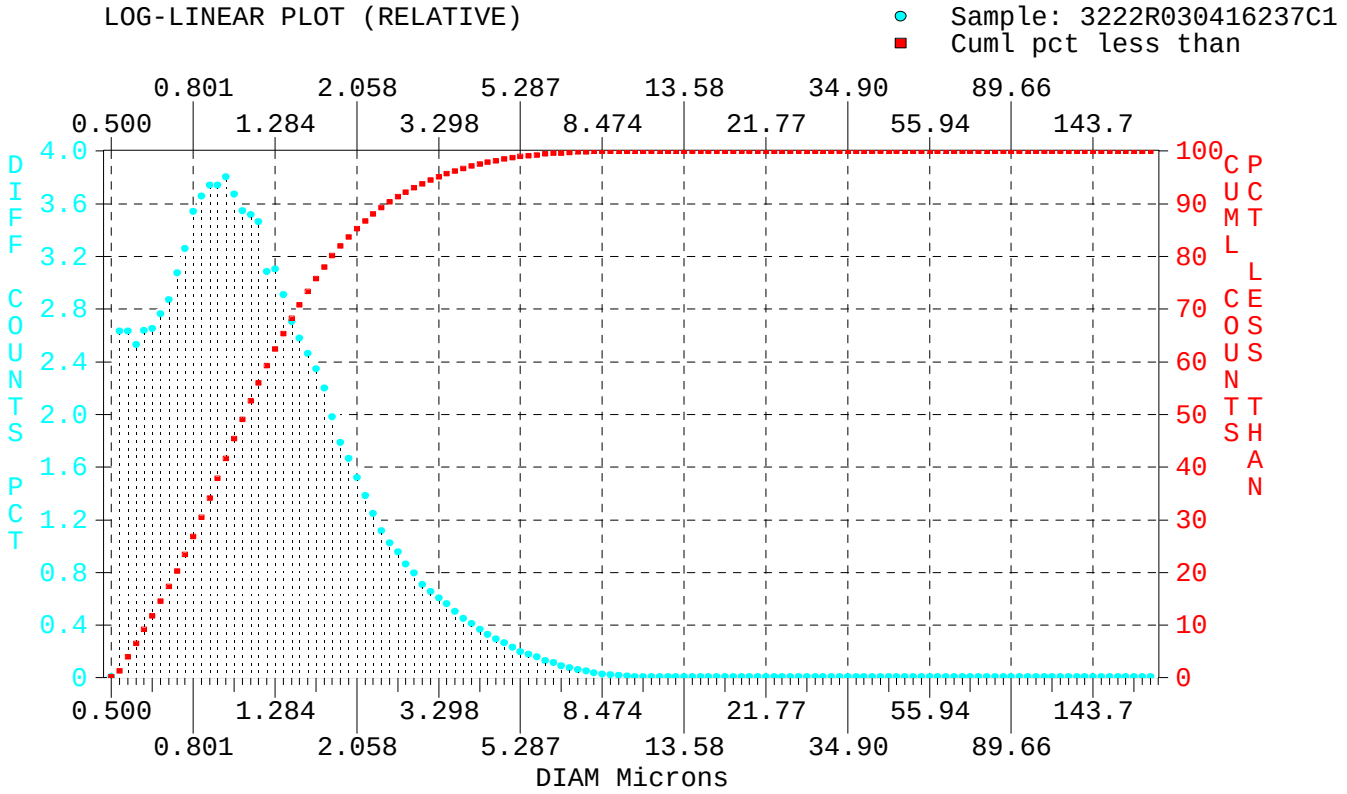
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Comments:
All Data in Report Represents 100ml of Sample

Date done: 8:59 15 May 03
Disk File: MAL1186.HST
Sample #: 3222R030416237C1
Lot/Job #: MAL1186
Material: water
Source: Charlie O'Neill

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	1.167 um	
Geom. Std Deviation:	1.709 um	0.100% Counts below 0.512 um
Geom. Skewness:	0.124	1.000% Counts below 0.516 um
Geom. Coeff Variation:	146.4	6.000% Counts below 0.570 um
		22.00% Counts below 0.748 um
Arithmetic Mean Size:	1.377 um	50.00% Counts below 1.076 um
Median Size:	1.043 um	78.00% Counts below 1.702 um
Mode Size:	0.955 um	94.00% Counts below 3.038 um
Kurtosis:	9.665	99.00% Counts below 5.389 um
Arith Std Deviation	1.000 um	99.90% Counts below 8.256 um

ELZONE(tm) Particle Size Analysis

Date done: 8:59 15 May 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL1186.HST

Sample #: 3222R030416237C1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL1186

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Frequency Distribution Data

Total Popl: 2969939

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.500	0	0.00	32	2.157	41110	86.7	62	8.883	594	99.9
2	0.524	78147	1.32	33	2.261	36958	88.1	63	9.312	478	100.0
3	0.549	78193	3.95	34	2.371	33194	89.2	64	9.762	308	100.0
4	0.576	75193	6.53	35	2.485	30392	90.3	65	10.23	208	100.0
5	0.603	78246	9.11	36	2.605	28346	91.3	66	10.73	149	100.0
6	0.633	78708	11.8	37	2.731	25645	92.2	67	11.25	110	100.0
7	0.663	82047	14.5	38	2.863	23669	93.0	68	11.79	80	100.0
8	0.695	85192	17.3	39	3.001	20983	93.8	69	12.36	53	100.0
9	0.729	91332	20.2	40	3.146	19430	94.5	70	12.96	35	100.0
10	0.764	96788	23.4	41	3.298	18037	95.1	71	13.58	23	100.0
11	0.801	105146	26.8	42	3.458	16668	95.7	72	14.24	20	100.0
12	0.840	108641	30.4	43	3.625	14881	96.2	73	14.93	15	100.0
13	0.880	111057	34.1	44	3.800	13424	96.7	74	15.65	9	100.0
14	0.923	111115	37.9	45	3.983	12179	97.1	75	16.40	9	100.0
15	0.967	113006	41.6	46	4.176	10856	97.5	76	17.20	9	100.0
16	1.014	109054	45.4	47	4.377	9745	97.9	77	18.03	5	100.0
17	1.063	105334	49.0	48	4.589	8782	98.2	78	18.90	4	100.0
18	1.114	104463	52.5	49	4.811	7833	98.5	79	19.81	5	100.0
19	1.168	102824	56.0	50	5.043	6802	98.7	80	20.77	4	100.0
20	1.225	91569	59.3	51	5.287	5840	98.9	81	21.77	3	100.0
21	1.284	92207	62.4	52	5.542	5273	99.1	82	22.82	3	100.0
22	1.346	86371	65.4	53	5.810	4642	99.3	83	23.93	2	100.0
23	1.411	80285	68.2	54	6.090	3830	99.4	84	25.08	1	100.0
24	1.479	76520	70.8	55	6.385	3411	99.5	85	26.29	1	100.0
25	1.550	73080	73.3	56	6.693	2715	99.6	86	27.56	1	100.0
26	1.625	69603	75.7	57	7.016	2190	99.7	87	28.90	1	100.0
27	1.704	65269	78.0	58	7.355	1839	99.8	88	30.29	1	100.0
28	1.786	58772	80.1	59	7.711	1458	99.8	89	31.75	1	100.0
29	1.872	53105	82.0	60	8.083	1078	99.9	90	33.29	1	100.0
30	1.963	49455	83.7	61	8.474	829	99.9	91	34.90	0	100.0
31	2.058	45045	85.3								

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

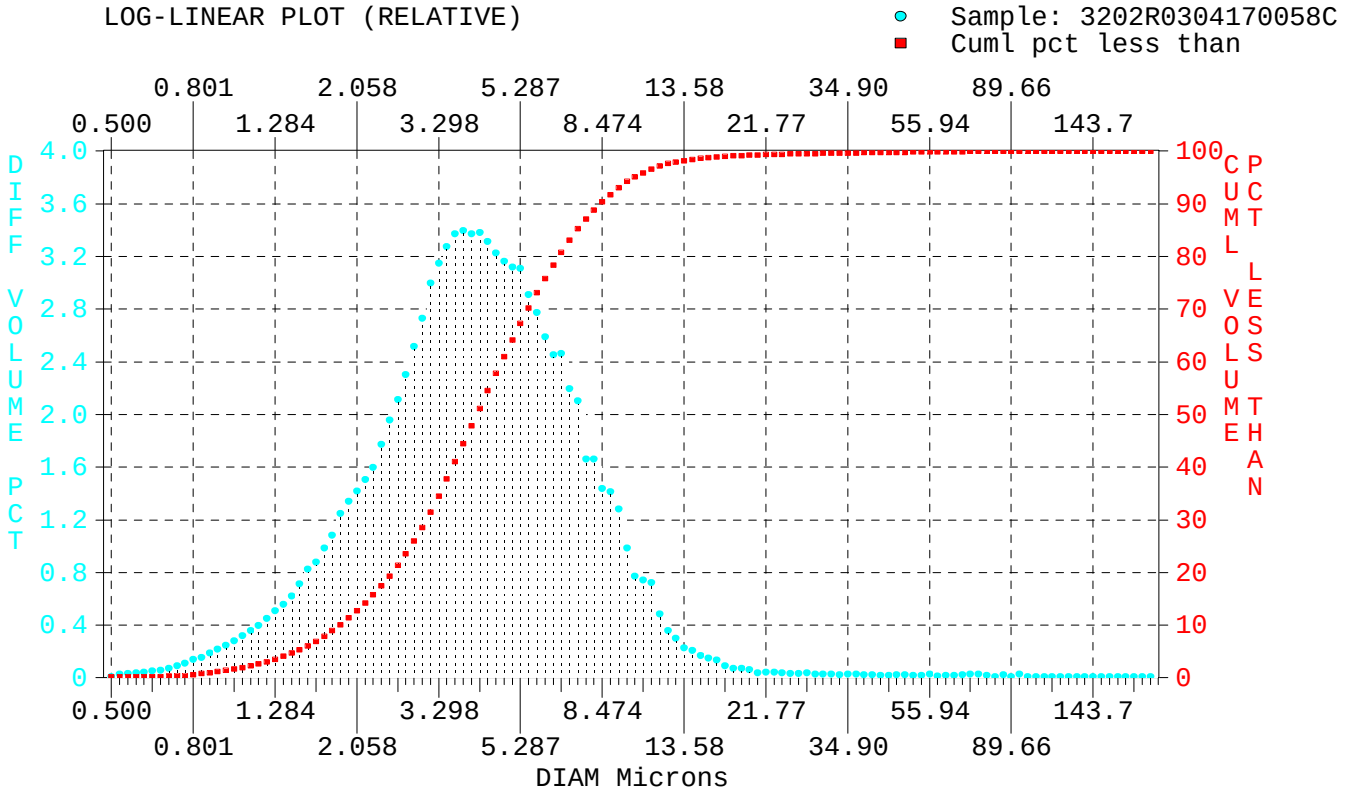
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Comments:
All Data in Report Represents 100ml of Sample

Date done: 8:14 15 May 03
Disk File: MAL1185.HST
Sample #: 3202R0304170058C1
Lot/Job #: MAL1185
Material: water
Source: Charlie O'Neill

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	4.065 um	
Geom. Std Deviation:	1.841 um	0.100% Volume below 0.591 um
Geom. Skewness:	0.146	1.000% Volume below 0.899 um
Geom. Coeff Variation:	45.29	6.000% Volume below 1.544 um
		22.00% Volume below 2.642 um
Arithmetic Mean Size:	4.977 um	50.00% Volume below 4.108 um
Median Size:	4.082 um	78.00% Volume below 6.348 um
Mode Size:	3.796 um	94.00% Volume below 9.671 um
Kurtosis:	69.089	99.00% Volume below 17.39 um
Arith Std Deviation	4.781 um	99.90% Volume below 71.89 um

ELZONE(tm) Particle Size Analysis

Date done: 8:14 15 May 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL1185.HST

Sample #: 3202R0304170058C1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL1185

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Volume Distribution Data

Total Volm: 1491262631

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.500	0	0.00	39	3.001	4.07E7	28.5	77	18.03	1015323	99.1
2	0.524	427629	0.01	40	3.146	4.47E7	31.4	78	18.90	1046017	99.1
3	0.549	477113	0.04	41	3.298	4.69E7	34.5	79	19.81	895654	99.2
4	0.576	557920	0.08	42	3.458	4.88E7	37.7	80	20.77	567511	99.2
5	0.603	646659	0.12	43	3.625	5.03E7	41.0	81	21.77	588960	99.3
6	0.633	792969	0.17	44	3.800	5.07E7	44.4	82	22.82	647386	99.3
7	0.663	863711	0.22	45	3.983	5.02E7	47.8	83	23.93	559365	99.4
8	0.695	1082744	0.29	46	4.176	5.04E7	51.2	84	25.08	503967	99.4
9	0.729	1335880	0.37	47	4.377	4.94E7	54.5	85	26.29	485415	99.4
10	0.764	1612574	0.47	48	4.589	4.81E7	57.8	86	27.56	515361	99.5
11	0.801	2037884	0.59	49	4.811	4.71E7	61.0	87	28.90	404235	99.5
12	0.840	2302063	0.74	50	5.043	4.65E7	64.1	88	30.29	363827	99.5
13	0.880	2787344	0.91	51	5.287	4.63E7	67.2	89	31.75	368849	99.5
14	0.923	3215378	1.11	52	5.542	4.34E7	70.2	90	33.29	347672	99.6
15	0.967	3653811	1.34	53	5.810	4.14E7	73.1	91	34.90	378283	99.6
16	1.014	4170846	1.60	54	6.090	3.86E7	75.7	92	36.58	384530	99.6
17	1.063	4729528	1.90	55	6.385	3.66E7	78.3	93	38.35	324864	99.6
18	1.114	5316694	2.24	56	6.693	3.67E7	80.7	94	40.20	306212	99.7
19	1.168	5903873	2.61	57	7.016	3.27E7	83.1	95	42.15	274378	99.7
20	1.225	6674349	3.03	58	7.355	3.13E7	85.2	96	44.18	270940	99.7
21	1.284	7608697	3.51	59	7.711	2.47E7	87.1	97	46.32	312136	99.7
22	1.346	8305687	4.05	60	8.083	2.47E7	88.7	98	48.55	299663	99.7
23	1.411	9230081	4.63	61	8.474	2.14E7	90.3	99	50.90	276181	99.8
24	1.479	1.06E7	5.30	62	8.883	2.11E7	91.7	100	53.36	238631	99.8
25	1.550	1.23E7	6.07	63	9.312	1.91E7	93.1	101	55.94	366552	99.8
26	1.625	1.31E7	6.92	64	9.762	1.47E7	94.2	102	58.64	211143	99.8
27	1.704	1.47E7	7.85	65	10.23	1.15E7	95.1	103	61.47	243247	99.8
28	1.786	1.61E7	8.88	66	10.73	1.10E7	95.8	104	64.44	280232	99.8
29	1.872	1.86E7	10.0	67	11.25	1.07E7	96.5	105	67.55	322841	99.9
30	1.963	2.00E7	11.3	68	11.79	7202046	97.2	106	70.82	371929	99.9
31	2.058	2.11E7	12.7	69	12.36	5363018	97.6	107	74.24	428480	99.9
32	2.157	2.24E7	14.2	70	12.96	4458739	97.9	108	77.83	246815	99.9
33	2.261	2.38E7	15.7	71	13.58	3386407	98.2	109	81.59	0	99.9
34	2.371	2.64E7	17.4	72	14.24	3083558	98.4	110	85.53	327577	100.0
35	2.485	2.91E7	19.3	73	14.93	2505841	98.6	111	89.66	0	100.0
36	2.605	3.15E7	21.3	74	15.65	2182692	98.7	112	93.99	434765	100.0
37	2.731	3.43E7	23.5	75	16.40	1987618	98.9	113	98.53	0	100.0
38	2.863	3.75E7	25.9	76	17.20	1304672	99.0				

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

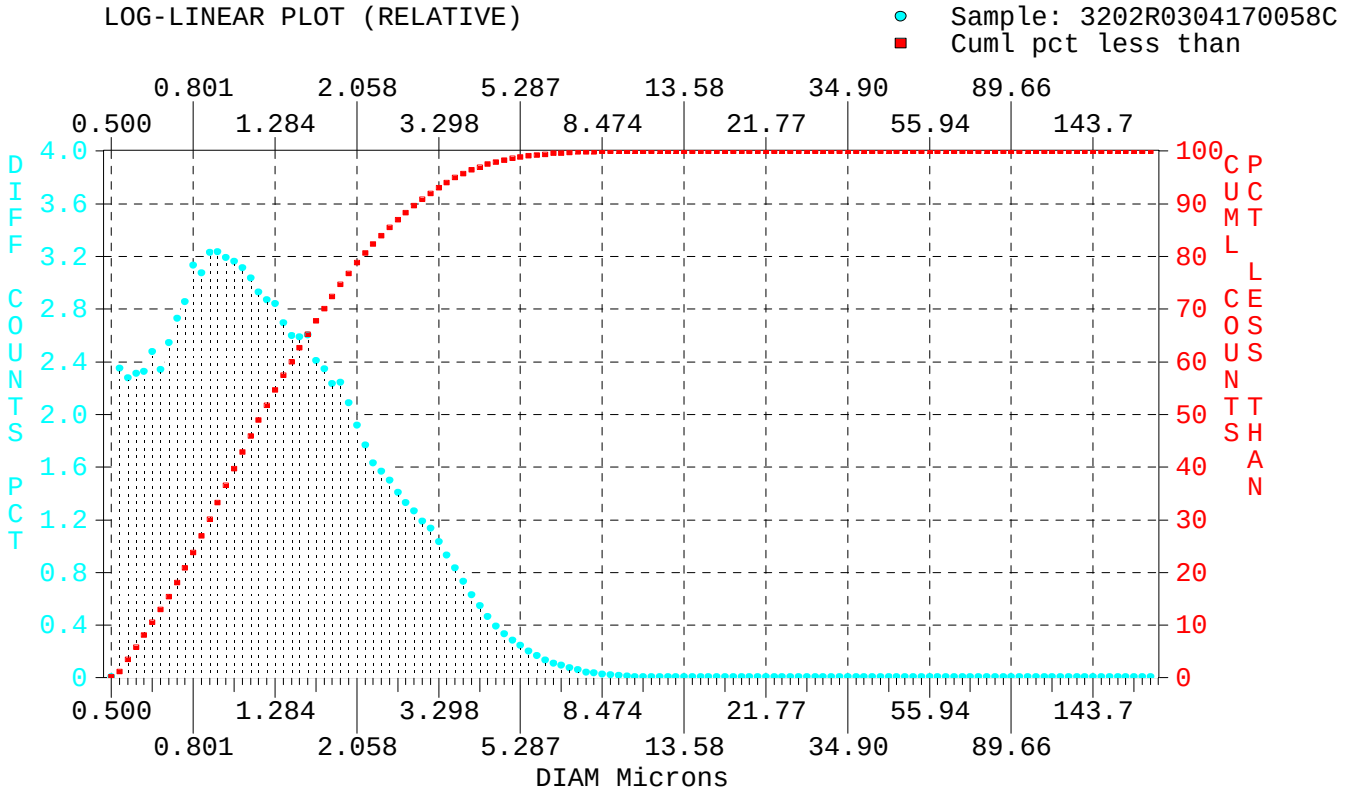
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Comments:
All Data in Report Represents 100ml of Sample

Date done: 8:14 15 May 03
Disk File: MAL1185.HST
Sample #: 3202R0304170058C1
Lot/Job #: MAL1185
Material: water
Source: Charlie O'Neill

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	1.282 um	0.100% Counts below 0.512 um
Geom. Std Deviation:	1.776 um	1.000% Counts below 0.517 um
Geom. Skewness:	0.213	6.000% Counts below 0.578 um
Geom. Coeff Variation:	138.6	22.00% Counts below 0.778 um
Arithmetic Mean Size:	1.535 um	50.00% Counts below 1.188 um
Median Size:	1.147 um	78.00% Counts below 2.018 um
Mode Size:	0.903 um	94.00% Counts below 3.451 um
Kurtosis:	7.168	99.00% Counts below 5.467 um
Arith Std Deviation	1.097 um	99.90% Counts below 8.492 um

ELZONE(tm) Particle Size Analysis

Date done: 8:14 15 May 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL1185.HST

Sample #: 3202R0304170058C1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL1185

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Frequency Distribution Data

Total Popl: 241701668

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.500	0	0.00	39	3.001	2876829	90.8	77	18.03	331	100.0
2	0.524	5683329	1.18	40	3.146	2740177	92.0	78	18.90	296	100.0
3	0.549	5504097	3.49	41	3.298	2496536	93.0	79	19.81	220	100.0
4	0.576	5586836	5.78	42	3.458	2254465	94.0	80	20.77	121	100.0
5	0.603	5620805	8.10	43	3.625	2016066	94.9	81	21.77	109	100.0
6	0.633	5982857	10.5	44	3.800	1763495	95.7	82	22.82	104	100.0
7	0.663	5656529	12.9	45	3.983	1518537	96.4	83	23.93	78	100.0
8	0.695	6155120	15.4	46	4.176	1322358	97.0	84	25.08	61	100.0
9	0.729	6591851	18.0	47	4.377	1124873	97.5	85	26.29	51	100.0
10	0.764	6906989	20.8	48	4.589	950461	97.9	86	27.56	47	100.0
11	0.801	7576659	23.8	49	4.811	808838	98.3	87	28.90	32	100.0
12	0.840	7429244	26.9	50	5.043	692127	98.6	88	30.29	25	100.0
13	0.880	7808133	30.0	51	5.287	599023	98.8	89	31.75	22	100.0
14	0.923	7818399	33.3	52	5.542	486771	99.1	90	33.29	18	100.0
15	0.967	7711894	36.5	53	5.810	402844	99.2	91	34.90	17	100.0
16	1.014	7641319	39.7	54	6.090	326524	99.4	92	36.58	15	100.0
17	1.063	7521269	42.8	55	6.385	268563	99.5	93	38.35	11	100.0
18	1.114	7339123	45.9	56	6.693	233944	99.6	94	40.20	9	100.0
19	1.168	7074059	48.9	57	7.016	180966	99.7	95	42.15	7	100.0
20	1.225	6941763	51.7	58	7.355	150280	99.8	96	44.18	6	100.0
21	1.284	6869108	54.6	59	7.711	103071	99.8	97	46.32	6	100.0
22	1.346	6508708	57.4	60	8.083	89433	99.9	98	48.55	5	100.0
23	1.411	6278471	60.0	61	8.474	67140	99.9	99	50.90	4	100.0
24	1.479	6253020	62.6	62	8.883	57437	99.9	100	53.36	3	100.0
25	1.550	6287984	65.2	63	9.312	45110	99.9	101	55.94	4	100.0
26	1.625	5826277	67.7	64	9.762	30161	100.0	102	58.64	2	100.0
27	1.704	5662222	70.1	65	10.23	20457	100.0	103	61.47	2	100.0
28	1.786	5396208	72.4	66	10.73	17047	100.0	104	64.44	2	100.0
29	1.872	5415600	74.6	67	11.25	14425	100.0	105	67.55	2	100.0
30	1.963	5041019	76.8	68	11.79	8393	100.0	106	70.82	2	100.0
31	2.058	4628628	78.8	69	12.36	5425	100.0	107	74.24	2	100.0
32	2.157	4267610	80.6	70	12.96	3915	100.0	108	77.83	1	100.0
33	2.261	3938626	82.3	71	13.58	2581	100.0	109	81.59	0	100.0
34	2.371	3788314	83.9	72	14.24	2040	100.0	110	85.53	1	100.0
35	2.485	3626937	85.4	73	14.93	1439	100.0	111	89.66	0	100.0
36	2.605	3403263	86.9	74	15.65	1088	100.0	112	93.99	1	100.0
37	2.731	3217900	88.3	75	16.40	860	100.0	113	98.53	0	100.0
38	2.863	3055692	89.6	76	17.20	490	100.0				

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

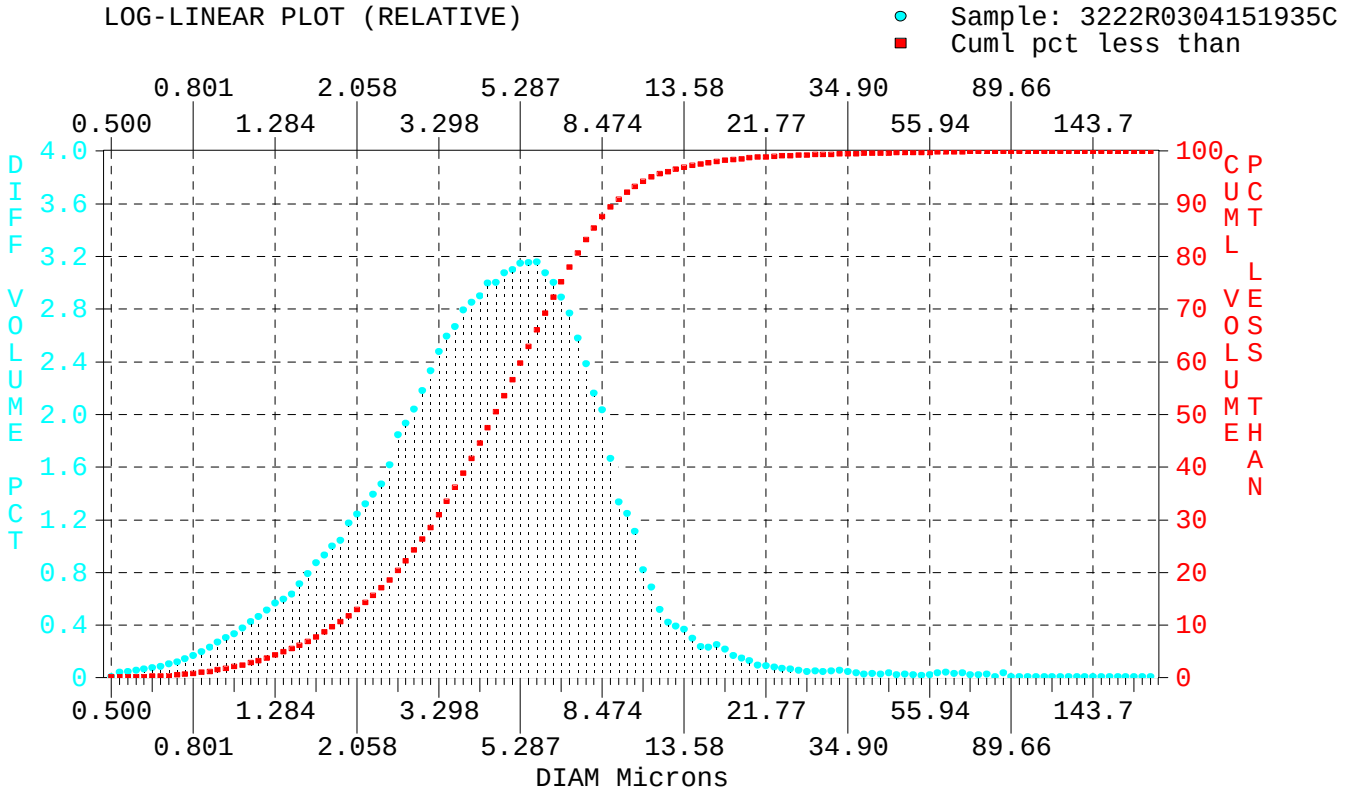
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Comments:
All Data in Report Represents 100ml of Sample

Date done: 7:20 15 May 03
Disk File: MAL1184.HST
Sample #: 3222R0304151935C1
Lot/Job #: MAL1184
Material: water
Source: Charlie O'Neill

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	4.352 um	
Geom. Std Deviation:	1.938 um	0.100% Volume below 0.567 um
Geom. Skewness:	-0.686	1.000% Volume below 0.839 um
Geom. Coeff Variation:	44.52	6.000% Volume below 1.462 um
		22.00% Volume below 2.716 um
Arithmetic Mean Size:	5.474 um	50.00% Volume below 4.552 um
Median Size:	4.491 um	78.00% Volume below 7.015 um
Mode Size:	5.680 um	94.00% Volume below 10.56 um
Kurtosis:	42.272	99.00% Volume below 23.25 um
Arith Std Deviation	5.285 um	99.90% Volume below 69.98 um

ELZONE(tm) Particle Size Analysis

Date done: 7:20 15 May 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL1184.HST

Sample #: 3222R0304151935C1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL1184

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Volume Distribution Data

Total Volm: 927357791

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.500	0	0.00	38	2.863	1.89E7	24.2	75	16.40	2327362	98.0
2	0.524	388855	0.02	39	3.001	2.02E7	26.3	76	17.20	1986297	98.2
3	0.549	437990	0.07	40	3.146	2.16E7	28.5	77	18.03	1558260	98.4
4	0.576	514795	0.12	41	3.298	2.30E7	31.0	78	18.90	1371130	98.5
5	0.603	604346	0.18	42	3.458	2.41E7	33.5	79	19.81	1213204	98.7
6	0.633	690210	0.25	43	3.625	2.47E7	36.1	80	20.77	862991	98.8
7	0.663	792509	0.33	44	3.800	2.59E7	38.8	81	21.77	848319	98.9
8	0.695	947802	0.42	45	3.983	2.64E7	41.7	82	22.82	740759	99.0
9	0.729	1106788	0.53	46	4.176	2.69E7	44.5	83	23.93	659764	99.0
10	0.764	1322458	0.66	47	4.377	2.78E7	47.5	84	25.08	611369	99.1
11	0.801	1547022	0.82	48	4.589	2.78E7	50.5	85	26.29	533004	99.2
12	0.840	1810161	1.00	49	4.811	2.85E7	53.5	86	27.56	438605	99.2
13	0.880	2161016	1.21	50	5.043	2.87E7	56.6	87	28.90	492662	99.3
14	0.923	2498964	1.46	51	5.287	2.92E7	59.7	88	30.29	407486	99.3
15	0.967	2824006	1.75	52	5.542	2.92E7	62.9	89	31.75	469444	99.4
16	1.014	3101930	2.07	53	5.810	2.93E7	66.0	90	33.29	502192	99.4
17	1.063	3496419	2.43	54	6.090	2.85E7	69.2	91	34.90	422787	99.5
18	1.114	3944249	2.83	55	6.385	2.78E7	72.2	92	36.58	333259	99.5
19	1.168	4293306	3.27	56	6.693	2.68E7	75.1	93	38.35	236265	99.5
20	1.225	4770169	3.76	57	7.016	2.57E7	78.0	94	40.20	306212	99.6
21	1.284	5239831	4.30	58	7.355	2.39E7	80.6	95	42.15	235181	99.6
22	1.346	5543127	4.88	59	7.711	2.21E7	83.1	96	44.18	316097	99.6
23	1.411	5903117	5.50	60	8.083	2.00E7	85.4	97	46.32	208091	99.7
24	1.479	6584810	6.17	61	8.474	1.89E7	87.5	98	48.55	239731	99.7
25	1.550	7335956	6.92	62	8.883	1.54E7	89.3	99	50.90	207136	99.7
26	1.625	8101209	7.75	63	9.312	1.24E7	90.8	100	53.36	159087	99.7
27	1.704	8616728	8.66	64	9.762	1.16E7	92.1	101	55.94	183276	99.7
28	1.786	9278355	9.62	65	10.23	1.03E7	93.3	102	58.64	316714	99.8
29	1.872	9687726	10.6	66	10.73	7608511	94.3	103	61.47	364870	99.8
30	1.963	1.09E7	11.8	67	11.25	6375157	95.0	104	64.44	280232	99.8
31	2.058	1.15E7	13.0	68	11.79	4811375	95.6	105	67.55	322841	99.9
32	2.157	1.23E7	14.2	69	12.36	3878179	96.1	106	70.82	185964	99.9
33	2.261	1.29E7	15.6	70	12.96	3625075	96.5	107	74.24	214240	99.9
34	2.371	1.37E7	17.0	71	13.58	3404776	96.9	108	77.83	246815	100.0
35	2.485	1.50E7	18.6	72	14.24	2791829	97.2	109	81.59	0	100.0
36	2.605	1.71E7	20.3	73	14.93	2187169	97.5	110	85.53	327577	100.0
37	2.731	1.79E7	22.2	74	15.65	2124514	97.7	111	89.66	0	100.0

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

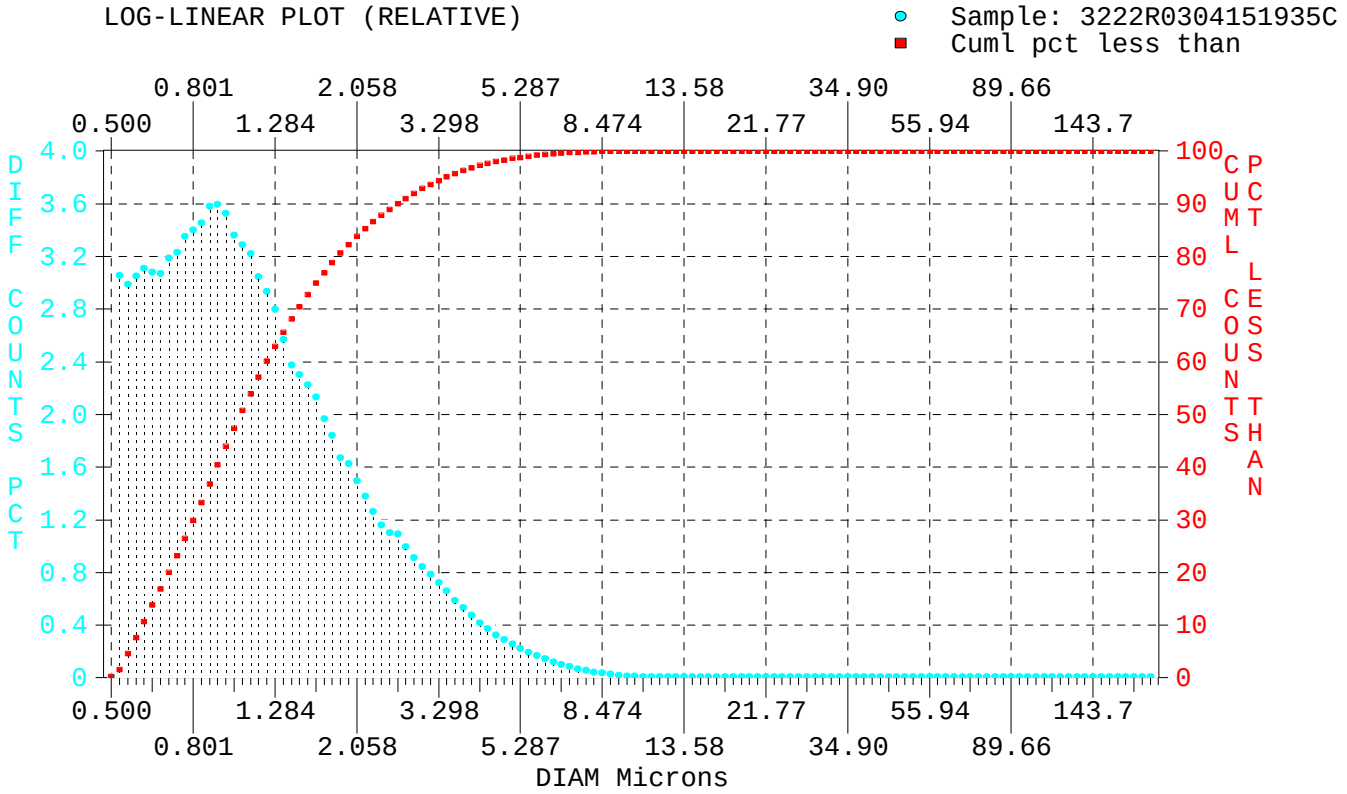
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Comments:
All Data in Report Represents 100ml of Sample

Date done: 7:20 15 May 03
Disk File: MAL1184.HST
Sample #: 3222R0304151935C1
Lot/Job #: MAL1184
Material: water
Source: Charlie O'Neill

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	1.160 um	
Geom. Std Deviation:	1.756 um	0.100% Counts below 0.512 um
Geom. Skewness:	0.145	1.000% Counts below 0.515 um
Geom. Coeff Variation:	151.3	6.000% Counts below 0.561 um
		22.00% Counts below 0.716 um
Arithmetic Mean Size:	1.392 um	50.00% Counts below 1.052 um
Median Size:	1.040 um	78.00% Counts below 1.749 um
Mode Size:	0.905 um	94.00% Counts below 3.207 um
Kurtosis:	9.948	99.00% Counts below 5.547 um
Arith Std Deviation	1.062 um	99.90% Counts below 8.580 um

ELZONE(tm) Particle Size Analysis

Date done: 7:20 15 May 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL1184.HST

Sample #: 3222R0304151935C1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL1184

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Frequency Distribution Data

Total Popl: 169074674

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.500	0	0.00	38	2.863	1538759	92.0	75	16.40	1007	100.0
2	0.524	5168010	1.53	39	3.001	1428557	92.8	76	17.20	746	100.0
3	0.549	5052764	4.55	40	3.146	1325333	93.6	77	18.03	508	100.0
4	0.576	5154996	7.57	41	3.298	1222447	94.4	78	18.90	388	100.0
5	0.603	5253018	10.6	42	3.458	1111720	95.1	79	19.81	298	100.0
6	0.633	5207552	13.7	43	3.625	992080	95.7	80	20.77	184	100.0
7	0.663	5190220	16.8	44	3.800	900788	96.3	81	21.77	157	100.0
8	0.695	5388010	19.9	45	3.983	798265	96.8	82	22.82	119	100.0
9	0.729	5461405	23.2	46	4.176	704833	97.2	83	23.93	92	100.0
10	0.764	5664362	26.4	47	4.377	632443	97.6	84	25.08	74	100.0
11	0.801	5751681	29.8	48	4.589	550050	98.0	85	26.29	56	100.0
12	0.840	5841773	33.2	49	4.811	489248	98.3	86	27.56	40	100.0
13	0.880	6053612	36.8	50	5.043	427926	98.5	87	28.90	39	100.0
14	0.923	6076392	40.4	51	5.287	377518	98.8	88	30.29	28	100.0
15	0.967	5960471	43.9	52	5.542	328079	99.0	89	31.75	28	100.0
16	1.014	5682980	47.4	53	5.810	285107	99.2	90	33.29	26	100.0
17	1.063	5560282	50.7	54	6.090	241101	99.3	91	34.90	19	100.0
18	1.114	5444611	53.9	55	6.385	204240	99.5	92	36.58	13	100.0
19	1.168	5144267	57.1	56	6.693	170720	99.6	93	38.35	8	100.0
20	1.225	4961290	60.1	57	7.016	141930	99.7	94	40.20	9	100.0
21	1.284	4730503	62.9	58	7.355	114827	99.7	95	42.15	6	100.0
22	1.346	4343842	65.6	59	7.711	92005	99.8	96	44.18	7	100.0
23	1.411	4015409	68.1	60	8.083	72391	99.9	97	46.32	4	100.0
24	1.479	3887951	70.4	61	8.474	59196	99.9	98	48.55	4	100.0
25	1.550	3759789	72.7	62	8.883	42079	99.9	99	50.90	3	100.0
26	1.625	3604008	74.9	63	9.312	29241	99.9	100	53.36	2	100.0
27	1.704	3327419	76.9	64	9.762	23714	100.0	101	55.94	2	100.0
28	1.786	3110035	78.8	65	10.23	18365	100.0	102	58.64	3	100.0
29	1.872	2818677	80.6	66	10.73	11768	100.0	103	61.47	3	100.0
30	1.963	2751231	82.2	67	11.25	8559	100.0	104	64.44	2	100.0
31	2.058	2523061	83.8	68	11.79	5607	100.0	105	67.55	2	100.0
32	2.157	2332541	85.2	69	12.36	3923	100.0	106	70.82	1	100.0
33	2.261	2133902	86.5	70	12.96	3183	100.0	107	74.24	1	100.0
34	2.371	1957819	87.7	71	13.58	2595	100.0	108	77.83	1	100.0
35	2.485	1865197	88.9	72	14.24	1847	100.0	109	81.59	0	100.0
36	2.605	1848454	90.0	73	14.93	1256	100.0	110	85.53	1	100.0
37	2.731	1680500	91.0	74	15.65	1059	100.0	111	89.66	0	100.0

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

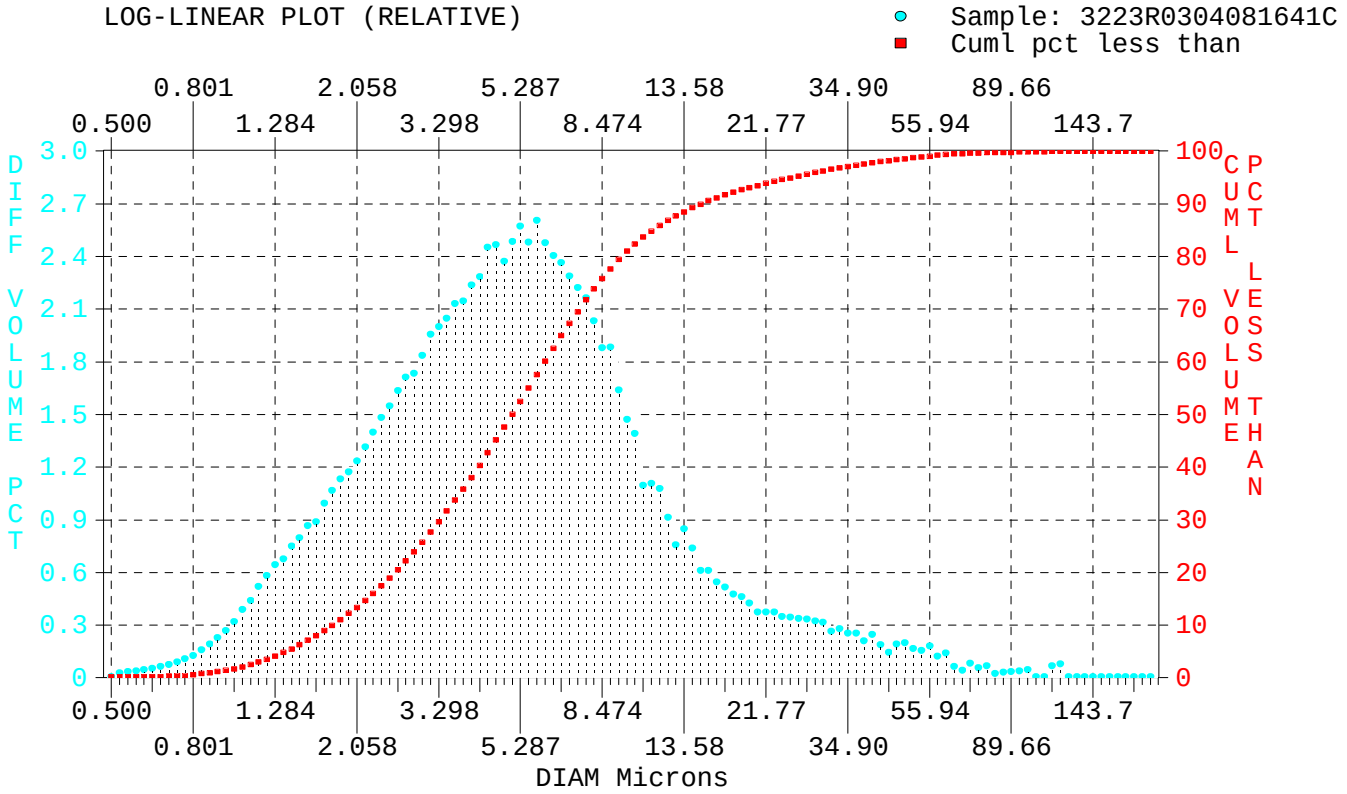
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Comments:
All Data in Report Represents 100ml of Sample

Date done: 22:50 15 May 03
Disk File: MAL1192.HST
Sample #: 3223R0304081641C1
Lot/Job #: MAL1192
Material: water
Source: Charlie O'Neill

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	5.188 um	
Geom. Std Deviation:	2.345 um	0.100% Volume below 0.588 um
Geom. Skewness:	-0.262	1.000% Volume below 0.896 um
Geom. Coeff Variation:	45.19	6.000% Volume below 1.459 um
		22.00% Volume below 2.714 um
Arithmetic Mean Size:	7.898 um	50.00% Volume below 5.043 um
Median Size:	4.940 um	78.00% Volume below 8.955 um
Mode Size:	5.804 um	94.00% Volume below 22.30 um
Kurtosis:	22.744	99.00% Volume below 55.71 um
Arith Std Deviation	10.81 um	99.90% Volume below 114.4 um

ELZONE(tm) Particle Size Analysis

Date done: 22:50 15 May 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL1192.HST

Sample #: 3223R0304081641C1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL1192

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Volume Distribution Data

Total Volm: 1117824657

Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%	Chnl	Size	Volume	Cuml%
1	0.500	0	0.00	41	3.298	2.23E7	29.6	80	20.77	4164871	93.4
2	0.524	315093	0.01	42	3.458	2.29E7	31.6	81	21.77	4165947	93.8
3	0.549	371921	0.04	43	3.625	2.38E7	33.7	82	22.82	4158212	94.2
4	0.576	437914	0.08	44	3.800	2.40E7	35.8	83	23.93	3879701	94.5
5	0.603	522057	0.12	45	3.983	2.50E7	38.0	84	25.08	3833450	94.9
6	0.633	597036	0.17	46	4.176	2.55E7	40.3	85	26.29	3769102	95.2
7	0.663	729026	0.23	47	4.377	2.74E7	42.7	86	27.56	3728142	95.6
8	0.695	828206	0.30	48	4.589	2.76E7	45.1	87	28.90	3587589	95.9
9	0.729	1005481	0.39	49	4.811	2.65E7	47.5	88	30.29	3521847	96.2
10	0.764	1182392	0.48	50	5.043	2.78E7	50.0	89	31.75	2950792	96.5
11	0.801	1422737	0.60	51	5.287	2.88E7	52.5	90	33.29	3109730	96.8
12	0.840	1780044	0.74	52	5.542	2.77E7	55.0	91	34.90	2848247	97.0
13	0.880	2134061	0.92	53	5.810	2.91E7	57.6	92	36.58	2845518	97.3
14	0.923	2566365	1.13	54	6.090	2.77E7	60.1	93	38.35	2362649	97.5
15	0.967	3007661	1.38	55	6.385	2.69E7	62.5	94	40.20	2755910	97.8
16	1.014	3569231	1.67	56	6.693	2.64E7	64.9	95	42.15	2116629	98.0
17	1.063	4319645	2.02	57	7.016	2.56E7	67.2	96	44.18	1625639	98.1
18	1.114	4920108	2.44	58	7.355	2.48E7	69.5	97	46.32	2132929	98.3
19	1.168	5802921	2.92	59	7.711	2.42E7	71.7	98	48.55	2217507	98.5
20	1.225	6496550	3.47	60	8.083	2.27E7	73.8	99	50.90	1864223	98.7
21	1.284	7199178	4.08	61	8.474	2.10E7	75.7	100	53.36	1749958	98.8
22	1.346	7538439	4.74	62	8.883	2.11E7	77.6	101	55.94	2016037	99.0
23	1.411	8367052	5.45	63	9.312	1.83E7	79.4	102	58.64	1372429	99.2
24	1.479	8904529	6.22	64	9.762	1.64E7	80.9	103	61.47	1581105	99.3
25	1.550	9694489	7.06	65	10.23	1.56E7	82.4	104	64.44	700581	99.4
26	1.625	9925618	7.93	66	10.73	1.22E7	83.6	105	67.55	484262	99.5
27	1.704	1.11E7	8.87	67	11.25	1.24E7	84.7	106	70.82	929822	99.5
28	1.786	1.19E7	9.90	68	11.79	1.21E7	85.8	107	74.24	642720	99.6
29	1.872	1.26E7	11.0	69	12.36	1.02E7	86.8	108	77.83	740445	99.6
30	1.963	1.31E7	12.2	70	12.96	8444841	87.6	109	81.59	284343	99.7
31	2.058	1.38E7	13.4	71	13.58	9473017	88.4	110	85.53	327577	99.7
32	2.157	1.47E7	14.6	72	14.24	8259099	89.2	111	89.66	377385	99.8
33	2.261	1.56E7	16.0	73	14.93	6838387	89.9	112	93.99	434765	99.8
34	2.371	1.66E7	17.4	74	15.65	6838969	90.5	113	98.53	500871	99.8
35	2.485	1.73E7	18.9	75	16.40	6078413	91.1	114	103.3	0	99.9
36	2.605	1.83E7	20.5	76	17.20	5780496	91.6	115	108.3	0	99.9
37	2.731	1.91E7	22.2	77	18.03	5328143	92.1	116	113.5	765840	99.9
38	2.863	1.94E7	23.9	78	18.90	5148805	92.6	117	119.0	882285	100.0
39	3.001	2.05E7	25.7	79	19.81	4730683	93.0	118	124.7	0	100.0
40	3.146	2.19E7	27.6								

ELZONE(tm) Particle Size Analysis

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

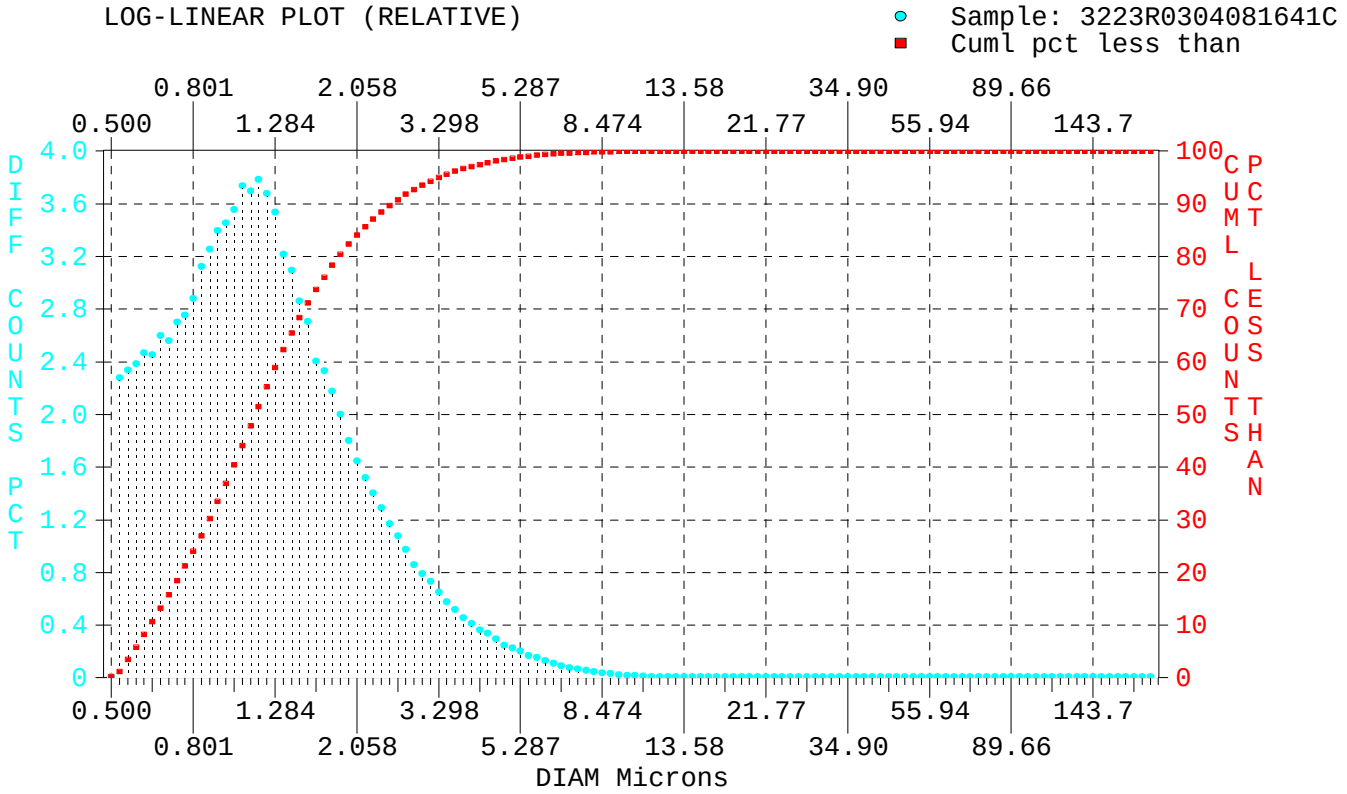
By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Operator: RS

Comments:
All Data in Report Represents 100ml of Sample

Date done: 22:50 15 May 03
Disk File: MAL1192.HST
Sample #: 3223R0304081641C1
Lot/Job #: MAL1192
Material: water
Source: Charlie O'Neill

LOG-LINEAR PLOT (RELATIVE)



		-- PERCENTILES --
Geometric Mean Size:	1.215 um	
Geom. Std Deviation:	1.711 um	0.100% Counts below 0.512 um
Geom. Skewness:	0.030	1.000% Counts below 0.517 um
Geom. Coeff Variation:	140.8	6.000% Counts below 0.577 um
		22.00% Counts below 0.774 um
Arithmetic Mean Size:	1.431 um	50.00% Counts below 1.146 um
Median Size:	1.142 um	78.00% Counts below 1.773 um
Mode Size:	1.163 um	94.00% Counts below 3.089 um
Kurtosis:	21.293	99.00% Counts below 5.517 um
Arith Std Deviation	1.048 um	99.90% Counts below 9.319 um

ELZONE(tm) Particle Size Analysis

Date done: 22:50 15 May 03

For: CDM
2151 River Plaza Drive #200
Scaramento, CA 95833

Disk File: MAL1192.HST

Sample #: 3223R0304081641C1

By: Micromeritics
One Micromeritics Drive
Norcross, GA 30093

Lot/Job #: MAL1192

Material: water

Operator: RS

Source: Charlie O'Neill

Comments:
All Data in Report Represents 100ml of Sample

-- Frequency Distribution Data

Total Popl: 183833627

Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%	Chnl	Size	Counts	Cuml%
1	0.500	0	0.00	41	3.298	1189600	95.0	80	20.77	888	100.0
2	0.524	4187689	1.14	42	3.458	1057281	95.6	81	21.77	771	100.0
3	0.549	4290576	3.44	43	3.625	955409	96.1	82	22.82	668	100.0
4	0.576	4385134	5.80	44	3.800	835011	96.6	83	23.93	541	100.0
5	0.603	4537756	8.23	45	3.983	755388	97.0	84	25.08	464	100.0
6	0.633	4504565	10.7	46	4.176	669332	97.4	85	26.29	396	100.0
7	0.663	4774463	13.2	47	4.377	624063	97.8	86	27.56	340	100.0
8	0.695	4708137	15.8	48	4.589	544836	98.1	87	28.90	284	100.0
9	0.729	4961509	18.4	49	4.811	454484	98.4	88	30.29	242	100.0
10	0.764	5064430	21.2	50	5.043	413311	98.6	89	31.75	176	100.0
11	0.801	5289601	24.0	51	5.287	371745	98.8	90	33.29	161	100.0
12	0.840	5744579	27.0	52	5.542	311250	99.0	91	34.90	128	100.0
13	0.880	5978104	30.2	53	5.810	283737	99.2	92	36.58	111	100.0
14	0.923	6240282	33.5	54	6.090	233975	99.3	93	38.35	80	100.0
15	0.967	6348101	36.9	55	6.385	197288	99.4	94	40.20	81	100.0
16	1.014	6539112	40.4	56	6.693	168212	99.5	95	42.15	54	100.0
17	1.063	6869441	44.1	57	7.016	141477	99.6	96	44.18	36	100.0
18	1.114	6791679	47.8	58	7.355	119231	99.7	97	46.32	41	100.0
19	1.168	6953098	51.5	59	7.711	100693	99.7	98	48.55	37	100.0
20	1.225	6756840	55.2	60	8.083	82154	99.8	99	50.90	27	100.0
21	1.284	6499395	58.8	61	8.474	65958	99.8	100	53.36	22	100.0
22	1.346	5907458	62.2	62	8.883	57371	99.9	101	55.94	22	100.0
23	1.411	5691423	65.4	63	9.312	43321	99.9	102	58.64	13	100.0
24	1.479	5257612	68.4	64	9.762	33759	99.9	103	61.47	13	100.0
25	1.550	4968573	71.1	65	10.23	27710	99.9	104	64.44	5	100.0
26	1.625	4415638	73.7	66	10.73	18928	99.9	105	67.55	3	100.0
27	1.704	4286178	76.1	67	11.25	16587	100.0	106	70.82	5	100.0
28	1.786	3995430	78.3	68	11.79	14050	100.0	107	74.24	3	100.0
29	1.872	3677004	80.4	69	12.36	10342	100.0	108	77.83	3	100.0
30	1.963	3306958	82.3	70	12.96	7415	100.0	109	81.59	1	100.0
31	2.058	3025651	84.0	71	13.58	7220	100.0	110	85.53	1	100.0
32	2.157	2796308	85.6	72	14.24	5464	100.0	111	89.66	1	100.0
33	2.261	2581920	87.1	73	14.93	3927	100.0	112	93.99	1	100.0
34	2.371	2374732	88.4	74	15.65	3409	100.0	113	98.53	1	100.0
35	2.485	2150380	89.6	75	16.40	2630	100.0	114	103.3	0	100.0
36	2.605	1974866	90.8	76	17.20	2171	100.0	115	108.3	0	100.0
37	2.731	1792062	91.8	77	18.03	1737	100.0	116	113.5	1	100.0
38	2.863	1578442	92.7	78	18.90	1457	100.0	117	119.0	1	100.0
39	3.001	1448876	93.5	79	19.81	1162	100.0	118	124.7	0	100.0
40	3.146	1340908	94.3								

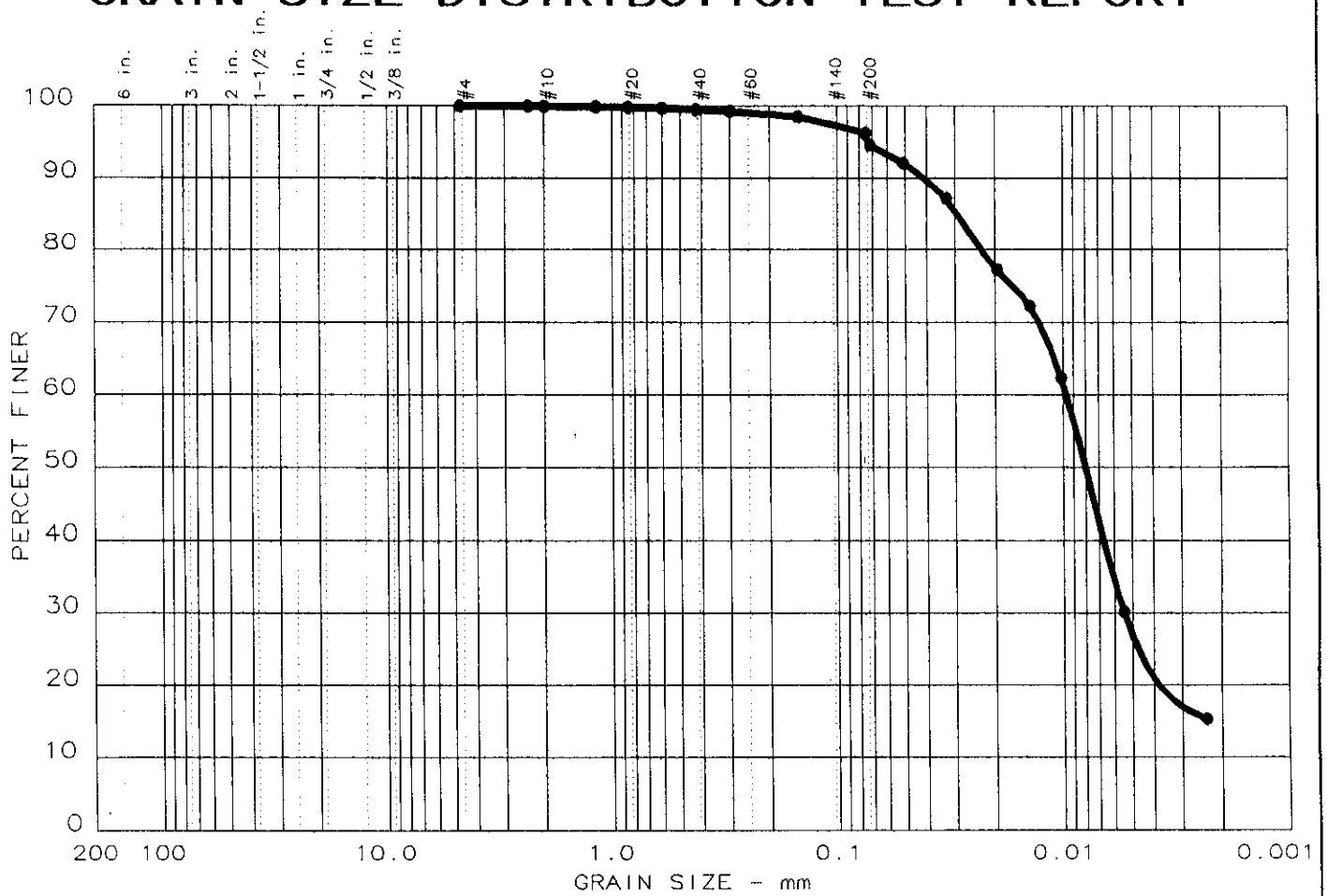
SEDIMENT CHARACTERIZATION STUDY

Location	Type	Position	Collection Period	Date Installed	Date Removed/ Sampled	Sample ID	Mass (g)	Notes
Echo Summit	Filter Box	#200	Period 1	1/29/2001	2/28/2001	200-1 (3/20/01)	384.8	
Echo Summit	Filter Box	#400	Period 1	1/29/2001	2/28/2001	400-1 (3/20/01)	392.3	
Echo Summit	Filter Box	#635	Period 1	1/29/2001	2/28/2001	635-1 (3/20/01)	435.1	
Echo Summit	Filter Box	#200	Period 1	2/28/2001	3/25/2001	200-5 (3/25/01)	5961.5	
Echo Summit	Filter Box	#400	Period 1	2/28/2001	3/25/2001	400-5 (3/25/01)	1663.6	
Echo Summit	Filter Box	#635	Period 1	2/28/2001	3/25/2001	635-5 (3/25/01)	917.5	
Echo Summit	Filter Box	#200	Period 2	3/25/2001	5/2/2001	200-5 (5/2/01)	2398	
Echo Summit	Filter Box	#400	Period 2	3/25/2001	5/2/2001	400-5 (5/2/01)	1694	
Echo Summit	Filter Box	#635	Period 2	3/25/2001	5/2/2001	635-5 (5/2/01)	982	
Echo Summit	Sediment Trap	Upgradient	Period 1	1/29/2001	3/25/2001	--		Depth of sediment measured 3/25. Cleaned out by Caltrans 3/26 - 3/29.
Echo Summit	Sediment Trap	Downgradient	Period 1	1/29/2001	3/25/2001	--		Depth of sediment measured 3/25. Cleaned out by Caltrans 3/26 - 3/29.
Echo Summit	Sediment Trap	Upgradient	Period 2	4/2/2001	5/2/2001	Upgradient Bag (5/2/01)	52467	
Echo Summit	Sediment Trap	Downgradient	Period 2	4/2/2001	5/2/2001	Downgradient Bag (5/2/01)	10254	
Tahoe Airport	Filter Box	#200	Period 1	12/29/2000	2/28/2001	200-2 (3/20/01)	175.8	
Tahoe Airport	Filter Box	#400	Period 1	12/29/2000	2/28/2001	400-2 (3/20/01)	364.6	
Tahoe Airport	Filter Box	#635	Period 1	12/29/2000	2/28/2001	635-2 (3/20/01)	376.92	
Tahoe Airport	Filter Box	#200	Period 1	2/28/2001	4/4/2001	200-5 (4/4/01)	1937	
Tahoe Airport	Filter Box	#400	Period 1	2/28/2001	4/4/2001	400-5 (4/4/01)	1038	
Tahoe Airport	Filter Box	#635	Period 1	2/28/2001	4/4/2001	635-5 (4/4/01)	546.3	
Tahoe Airport	Filter Box	#200	Period 2	4/4/2001	5/2/2001	200-5 (5/2/01)	1392	
Tahoe Airport	Filter Box	#400	Period 2	4/4/2001	5/2/2001	400-5 (5/2/01)	728.6	
Tahoe Airport	Filter Box	#635	Period 2	4/4/2001	5/2/2001	635-5 (5/2/01)	572.3	
Tahoe Airport	Sediment Trap	Upgradient	Period 1	12/29/2001	4/2/2001	Upgradient Bag (4/4/01)	72072	
Tahoe Airport	Sediment Trap	Downgradient	Period 1	12/29/2001	4/2/2001	Downgradient Bag (4/4/01)	16088	
Tahoe Airport	Sediment Trap	Upgradient	Period 2	4/2/2001	5/2/2001	Upgradient Bag (5/2/01)	7526	
Tahoe Airport	Sediment Trap	Downgradient	Period 2	4/2/2001	5/2/2001	Downgradient Bag (5/2/01)	8923	
Zinfandel	Filter Box	#200	Period 1	12/29/2000	1/10/2001	200-3 (3/02/01)	5281	
Zinfandel	Filter Box	#400	Period 1	12/29/2000	1/10/2001	400-3(3/02/01)	923.4	
Zinfandel	Filter Box	#635	Period 1	12/29/2000	1/10/2001	635-3(3/02/01)	352.6	
Zinfandel	Filter Box	#200	Period 2	3/22/2001	3/27/2001	200-7 (3/27/01)	2144	
Zinfandel	Filter Box	#400	Period 2	3/22/2001	3/27/2001	400-7 (3/27/01)	279.3	
Zinfandel	Filter Box	#400	Period 3	4/4/2001	4/9/2001	400-1 (4/9/01)	3109	
Zinfandel	Filter Box	#635	Period 3	4/4/2001	4/9/2001	635-tray (4/9/01)	148	
Zinfandel	Filter Box	Pipe	Period 3	4/4/2001	4/9/2001	635-cleanout	3206	Sediment removed from pipe leading to filter box.
Highway 89	Sediment Trap	Upgradient	--	--	--	Hwy. 89 Upgradient	42616	For particle size only to replace Echo summit cleanout.
Highway 89	Sediment Trap	Downgradient	--	--	--	Hwy. 89 Downgradient	4206.1	For particle size only to replace Echo summit cleanout.
Highway 89	Filter Disk	Trap	--	--	--	Hwy. 89 #8	8.49	For particle size only to replace Echo summit cleanout.
Highway 89	Filter Disk	Trap	--	--	--	Hwy. 89 #7	0.79	For particle size only to replace Echo summit cleanout.

Location	Type	Position	Collection Period	Date Installed	Date Removed/ Sampled	Sample ID	Mass (g)	Notes
Echo Summit	Filter Box	#200	Period 1		11/8/2001	3203S2000111080945C1	210.3	
Echo Summit	Filter Box	#400	Period 1		11/8/2001	3203S4000111080955C1	41.9	
Echo Summit	Filter Box	#635	Period 1		11/8/2001	3203S6350111081005C1	22.3	
Echo Summit	Filter Box	#200	Period 2		12/12/2001	3203S2000112120945C1	847	
Echo Summit	Filter Box	#400	Period 2		12/12/2001	3203S4000112120945C1	62.3	
Echo Summit	Filter Box	#635	Period 2		12/12/2001	3203S6350112120945C1	172.2	
Echo Summit	Filter Box	#635	Period 3		4/18/2002	3203S6350204181145C1	10410	
Echo Summit	Sediment Trap	Upgradient	Period 1		10/5/2001	030110050800G12	78256	
Echo Summit	Sediment Trap	Downgradient	Period 1		10/5/2001	03011050800G21	10964	
Echo Summit	Sediment Trap	Upgradient	Period 2		1/10/2002	3203S10112121300C1	112280	
Echo Summit	Sediment Trap	Downgradient	Period 2		1/10/2002	3203S20112121200C1	14940	
Echo Summit	Sediment Trap	Upgradient	Period 3		4/12/2002	3203SS10204121600G4	136000	
Echo Summit	Sediment Trap	Downgradient	Period 3		4/12/2002	3203S20204121645C1	21350	
Tahoe Airport	Filter Box	#200	Period 1		11/8/2001	3202S2000111081145C1	580.5	
Tahoe Airport	Filter Box	#400	Period 1		11/8/2001	3202S4000111081155C1	319.7	
Tahoe Airport	Filter Box	#635	Period 1		11/8/2001	3202S6350111081205C1	151.6	
Tahoe Airport	Filter Box	#200	Period 2		12/13/2001	3202S2000112131330	973	
Tahoe Airport	Filter Box	#400	Period 2		12/13/2001	3202S4000112131330	300.4	
Tahoe Airport	Filter Box	#635	Period 2		12/13/2001	3202S6350112131330	168.9	
Tahoe Airport	Filter Box	#635	Period 3		4/18/2002	3202S6350204181415C1	6300	
Tahoe Airport	Sediment Trap	Upgradient	Period 1		10/5/2001	020110051430G15	43294	
Tahoe Airport	Sediment Trap	Downgradient	Period 1		10/5/2001	020110051430G21	9137	
Tahoe Airport	Sediment Trap	Upgradient	Period 2		1/10/2002	3202S10201101200C1	61743	
Tahoe Airport	Sediment Trap	Downgradient	Period 2		1/10/2002	3202S20201101100C1	13025	
Tahoe Airport	Sediment Trap	Downgradient	Period 3		4/12/2002	3202S1020204121450C1	31268	
Tahoe Airport	Sediment Trap	Downgradient	Period 3		4/12/2002	3202S2020204121430G2	70264	

Location	Type	Position	Collection Period	Date Installed	Date Removed/ Sampled	Sample ID	Mass (g)	Notes
Echo Summit	Filter Box	#635	Period 1		11/20/2002	3203S30211200900C1	3,625	
Echo Summit	Filter Box	#635	Period 2		2/28/2003	3203S30302281000C1	4,215	
Echo Summit	Filter Box	#635	Period 3		5/1/2003	3203S30305011000G1	6,357	
Echo Summit	Sediment Trap	Upgradient	Period 1		11/28/2002	3203S10211270900C1	40,511	
Echo Summit	Sediment Trap	Downgradient	Period 1		11/28/2002	3203S20211270900C1	17,236	
Echo Summit	Sediment Trap	Upgradient	Period 2		2/28/2003	3203S10302281000C1	46,137	
Echo Summit	Sediment Trap	Downgradient	Period 2		2/28/2003	3203S20302281000C1	18,054	
Echo Summit	Sediment Trap	Upgradient	Period 3		5/1/2003	3203S10305010930G1	42,010	
Echo Summit	Sediment Trap	Downgradient	Period 3		5/1/2003	3203S20305010945G1	21,002	
Tahoe Airport	Filter Box	#635	Period 1		11/20/2002	3202S30211201000C1	3,216	
Tahoe Airport	Filter Box	#635	Period 2		2/28/2003	3202S30302281315C1	2,738	
Tahoe Airport	Filter Box	#635	Period 3		5/1/2003	3202S30305011100G1	5,746	
Tahoe Airport	Sediment Trap	Upgradient	Period 1		11/28/2002	3202S10211271000C1	47,265	
Tahoe Airport	Sediment Trap	Downgradient	Period 1		11/28/2002	3202S20211271000C1	11,468	
Tahoe Airport	Sediment Trap	Upgradient	Period 2		2/28/2003	3202S10302281315C1	26,767	
Tahoe Airport	Sediment Trap	Downgradient	Period 2		2/28/2003	3202S20302281315C1	12,767	
Tahoe Airport	Sediment Trap	Upgradient	Period 3		5/1/2003	3202S10305011115G1	27,138	
Tahoe Airport	Sediment Trap	Downgradient	Period 3		5/1/2003	3202S20305011130G1	17,133	

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	0.0	3.7	69.5	26.8

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●					0.0080	0.0054				

MATERIAL DESCRIPTION	USCS	AASHTO
● Filter Cloth		

Project No.: 65880.01
Project: CDM
● Location: Echo Summit 3/20/01

Date: 04-12-01

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT
GOODSON & ASSOCIATES, INC.
Consulting Engineers

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST DATA Test No.: 20

Date: 04-12-01
Project No.: 65880.01
Project: CDM

Sample Data

Location of Sample: Echo Summit
Sample Description: Filter Cloth
USCS Class: Liquid limit:
AASHTO Class: Plasticity index:

Notes

Remarks:

Fig. No.:

Mechanical Analysis Data

	Initial
Dry sample and tare=	171.69
Tare =	0.00
Dry sample weight =	171.69

Sample split on number 10 sieve
Split sample data:
Sample and tare = 68.26 Tare = 0 Sample weight = 68.26
Cumulative weight retained tare= 0
Tare for cumulative weight retained= 0

Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 8	0.05	100.0
# 10	0.09	99.9
# 16	0.05	99.9
# 20	0.10	99.8
# 30	0.18	99.7
# 40	0.30	99.5
# 50	0.46	99.3
# 100	0.95	98.6
# 200	2.49	96.3

Hydrometer Analysis Data

Separation sieve is number 200
Percent -#200 based on complete sample= 96.3
Weight of hydrometer sample: 68.26
Calculated biased weight= 70.88
Automatic temperature correction
Composite correction at 20 deg C =-5

GRAIN SIZE DISTRIBUTION TEST DATA Test No.: 20

Date: 04-12-01
Project No.: 65880.01
Project: CDM

Sample Data

Location of Sample: Echo Summit
Sample Description: Filter Cloth
USCS Class: Liquid limit:
AASHTO Class: Plasticity index:

Meniscus correction only=-1
Specific gravity of solids= 1.549
Specific gravity correction factor= 1.757
Hydrometer type: 152H Effective depth L= 16.294964 - 0.164 x Rm

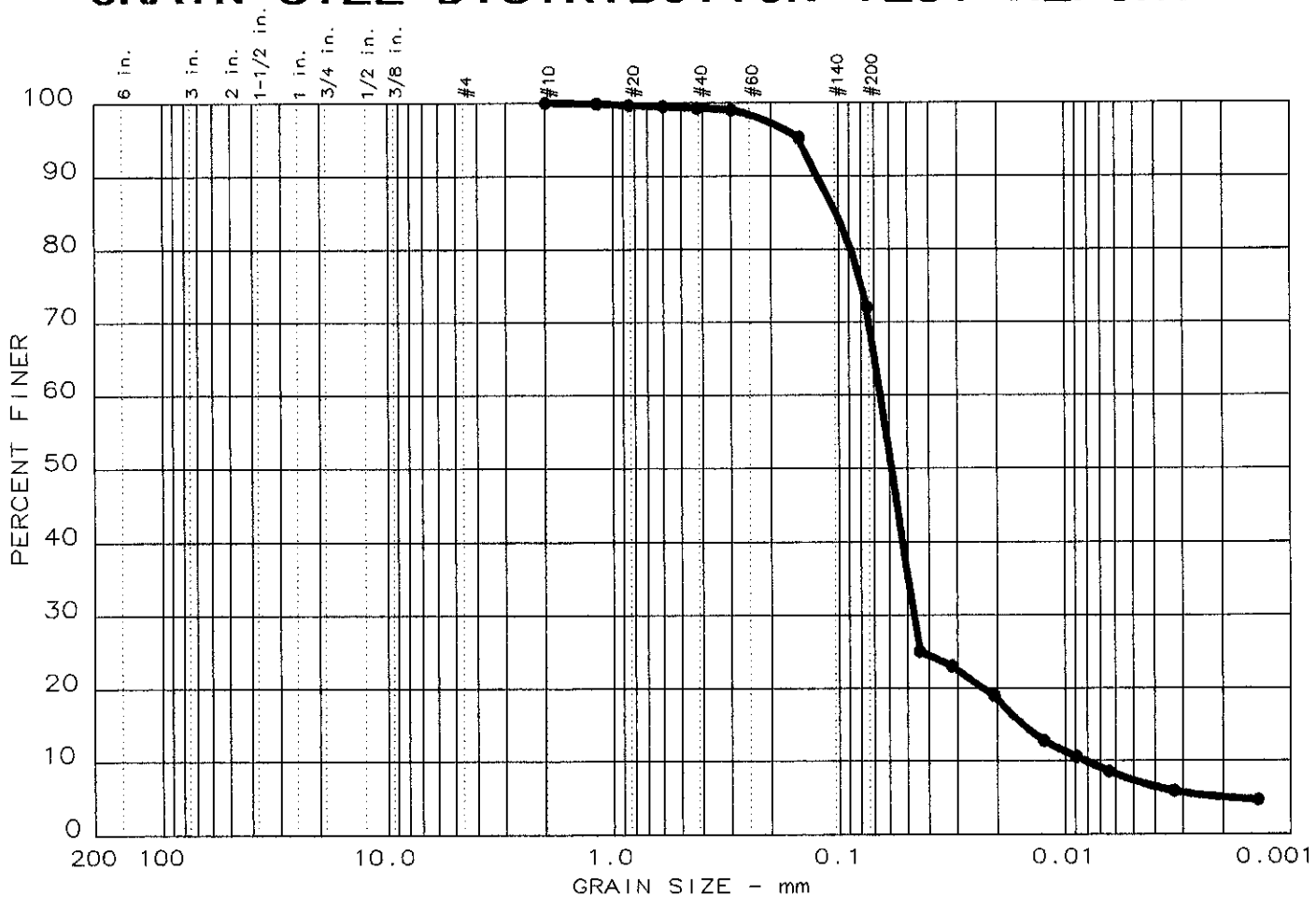
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
1.0	21.0	43.0	38.2	0.0233	42.0	9.4	0.0716	94.6
2.0	21.0	42.0	37.2	0.0233	41.0	9.6	0.0510	92.1
5.0	21.0	40.0	35.2	0.0233	39.0	9.9	0.0328	87.2
15.0	21.0	36.0	31.2	0.0233	35.0	10.6	0.0196	77.3
30.0	21.0	34.0	29.2	0.0233	33.0	10.9	0.0141	72.3
60.0	21.0	30.0	25.2	0.0233	29.0	11.5	0.0102	62.4
250.0	21.0	17.0	12.2	0.0233	16.0	13.7	0.0055	30.2
1440.0	21.1	11.0	6.2	0.0233	10.0	14.7	0.0024	15.4

Fractional Components

Gravel/Sand based on #4 sieve
Sand/Fines based on #200 sieve
% + 3 in. = 0.0 % GRAVEL = 0.0 % SAND = 3.7
% SILT = 69.5 % CLAY = 26.8

D85= 0.03 D60= 0.010 D50= 0.008
D30= 0.0054

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	0.0	27.9	64.8	7.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.102		0.0585	0.0468	0.0153	0.0080	4.21	8.2

MATERIAL DESCRIPTION	USCS	AASHTO
● Echo Summit 3.~~27~~ 25.01		

Project No.: 65880.01
Project: CDM Tahoe Basin
● Location: Echo Summit 3.~~27~~ 25.01

Date: 04-30-01

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT
GOODSON & ASSOCIATES, INC.
Consulting Engineers

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST DATA Test No.: 13

Date: 04-30-01
Project No.: 65880.01
Project: CDM Tahoe Basin

Sample Data

Location of Sample: Echo Summit 3.27.01
Sample Description: Echo Summit 3.27.01
USCS Class: Liquid limit:
AASHTO Class: Plasticity index:

Notes

Remarks:

Fig. No.:

Mechanical Analysis Data

	Initial
Dry sample and tare=	70.10
Tare =	0.00
Dry sample weight =	70.10

Tare for cumulative weight retained= 0

Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 16	0.10	99.9
# 20	0.25	99.6
# 30	0.37	99.5
# 40	0.53	99.2
# 50	0.72	99.0
# 100	3.36	95.2
# 200	19.58	72.1

Hydrometer Analysis Data

Separation sieve is number 200
Percent -#200 based on complete sample= 72.1
Weight of hydrometer sample: 70.1
Calculated biased weight= 97.27
Automatic temperature correction
Composite correction at 20 deg C =-5

Meniscus correction only=-1
Specific gravity of solids= 2.697
Specific gravity correction factor= 0.990
Hydrometer type: 152H Effective depth L= 16.294964 - 0.164 x Rm

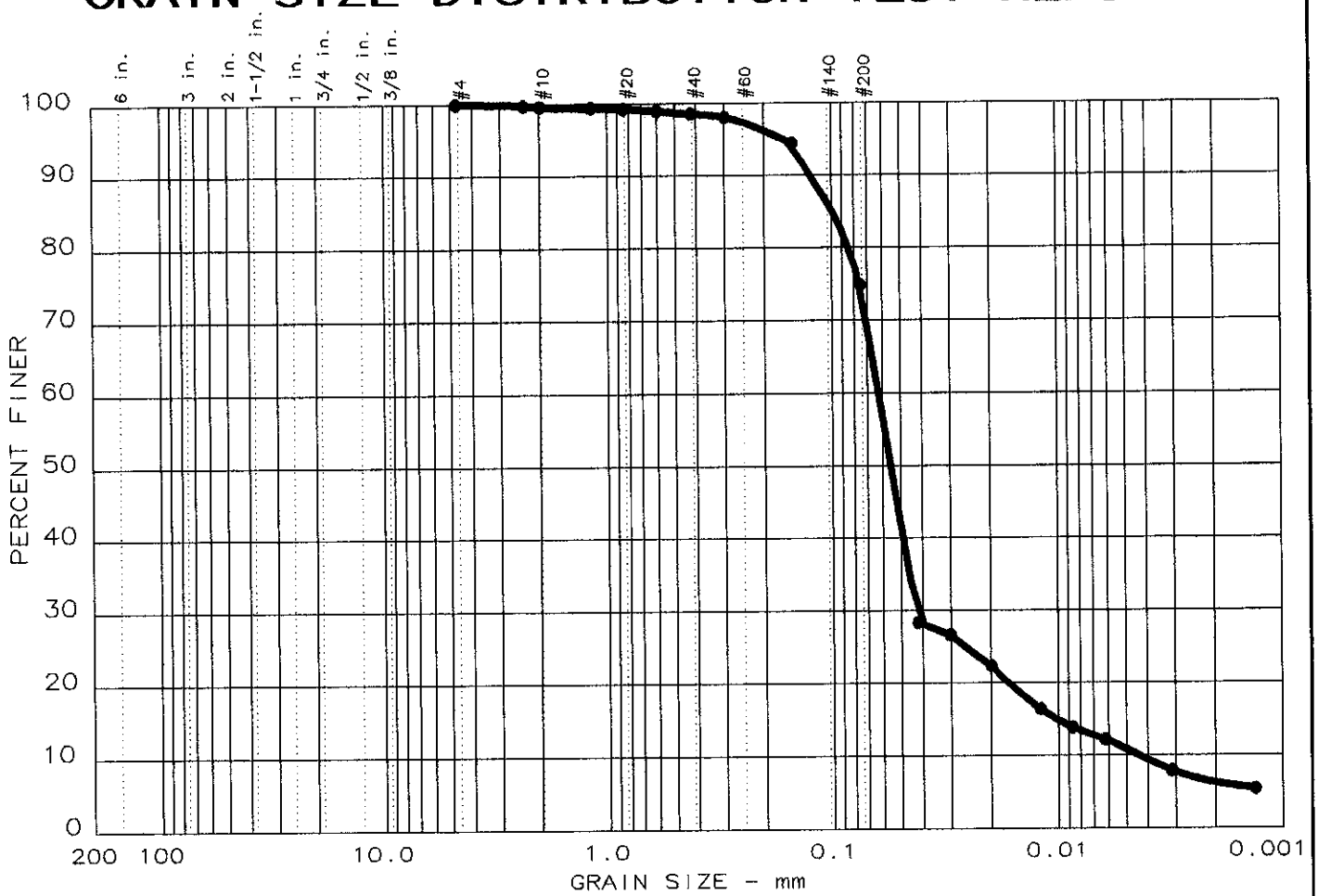
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
1.0	23.0	29.0	24.7	0.0130	28.0	11.7	0.0444	25.1
2.0	23.0	27.0	22.7	0.0130	26.0	12.0	0.0318	23.1
5.0	23.0	23.0	18.7	0.0130	22.0	12.7	0.0207	19.0
15.0	22.5	17.0	12.5	0.0130	16.0	13.7	0.0125	12.8
30.0	22.0	15.0	10.4	0.0131	14.0	14.0	0.0090	10.6
60.0	22.0	13.0	8.4	0.0131	12.0	14.3	0.0064	8.6
250.0	19.0	11.0	5.8	0.0136	10.0	14.7	0.0033	5.9
1440.0	18.0	10.0	4.5	0.0138	9.0	14.8	0.0014	4.6

Fractional Components

Gravel/Sand based on #4 sieve
Sand/Fines based on #200 sieve
% + 3 in. = 0.0 % GRAVEL = 0.0 % SAND = 27.9
% SILT = 64.8 % CLAY = 7.3

D85= 0.10 D60= 0.065 D50= 0.059
D30= 0.0468 D15= 0.01533 D10= 0.00795
Cc = 4.2121 Cu = 8.2319

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	0.0	25.1	64.0	10.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.0989		0.0551	0.0431	0.0102	0.0044	6.82	14.3

MATERIAL DESCRIPTION	USCS	AASHTO
● Echo Summit 050201		

Project No.: 65880.01
Project: CDM
● Location: Tahoe Basin

Date: 06.11.2001

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT
GOODSON & ASSOCIATES, INC.
Consulting Engineers

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST DATA Test No.: 20

Date: 06.11.2001
Project No.: 65880.01
Project: CDM

Sample Data

Location of Sample: Tahoe Basin
Sample Description: Echo Summit 050201
USCS Class: Liquid limit:
AASHTO Class: Plasticity index:

Notes

Remarks:

Fig. No.:

Mechanical Analysis Data

	Initial
Dry sample and tare=	87.52
Tare =	0.00
Dry sample weight =	87.52

Tare for cumulative weight retained= 0

Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 8	0.22	99.7
# 10	0.35	99.6
# 16	0.51	99.4
# 20	0.65	99.3
# 30	0.92	98.9
# 40	1.26	98.6
# 50	1.70	98.1
# 100	4.83	94.5
# 200	22.00	74.9

Hydrometer Analysis Data

Separation sieve is number 200
Percent -#200 based on complete sample= 74.9
Weight of hydrometer sample: 87.17
Calculated biased weight= 116.44
Automatic temperature correction
Composite correction at 20 deg C =-5

Meniscus correction only=-1
Specific gravity of solids= 2.697

Specific gravity correction factor= 0.990
Hydrometer type: 152H Effective depth L= 16.294964 - 0.164 x Rm

Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
1.0	21.6	38.0	33.3	0.0132	37.0	10.2	0.0422	28.3
2.0	21.6	36.0	31.3	0.0132	35.0	10.6	0.0303	26.6
5.0	21.6	31.0	26.3	0.0132	30.0	11.4	0.0199	22.4
15.0	21.6	24.0	19.3	0.0132	23.0	12.5	0.0121	16.4
30.0	21.6	21.0	16.3	0.0132	20.0	13.0	0.0087	13.9
60.0	21.6	19.0	14.3	0.0132	18.0	13.3	0.0062	12.2
250.0	21.6	14.0	9.3	0.0132	13.0	14.2	0.0031	7.9
1440.0	21.6	11.0	6.3	0.0132	10.0	14.7	0.0013	5.4

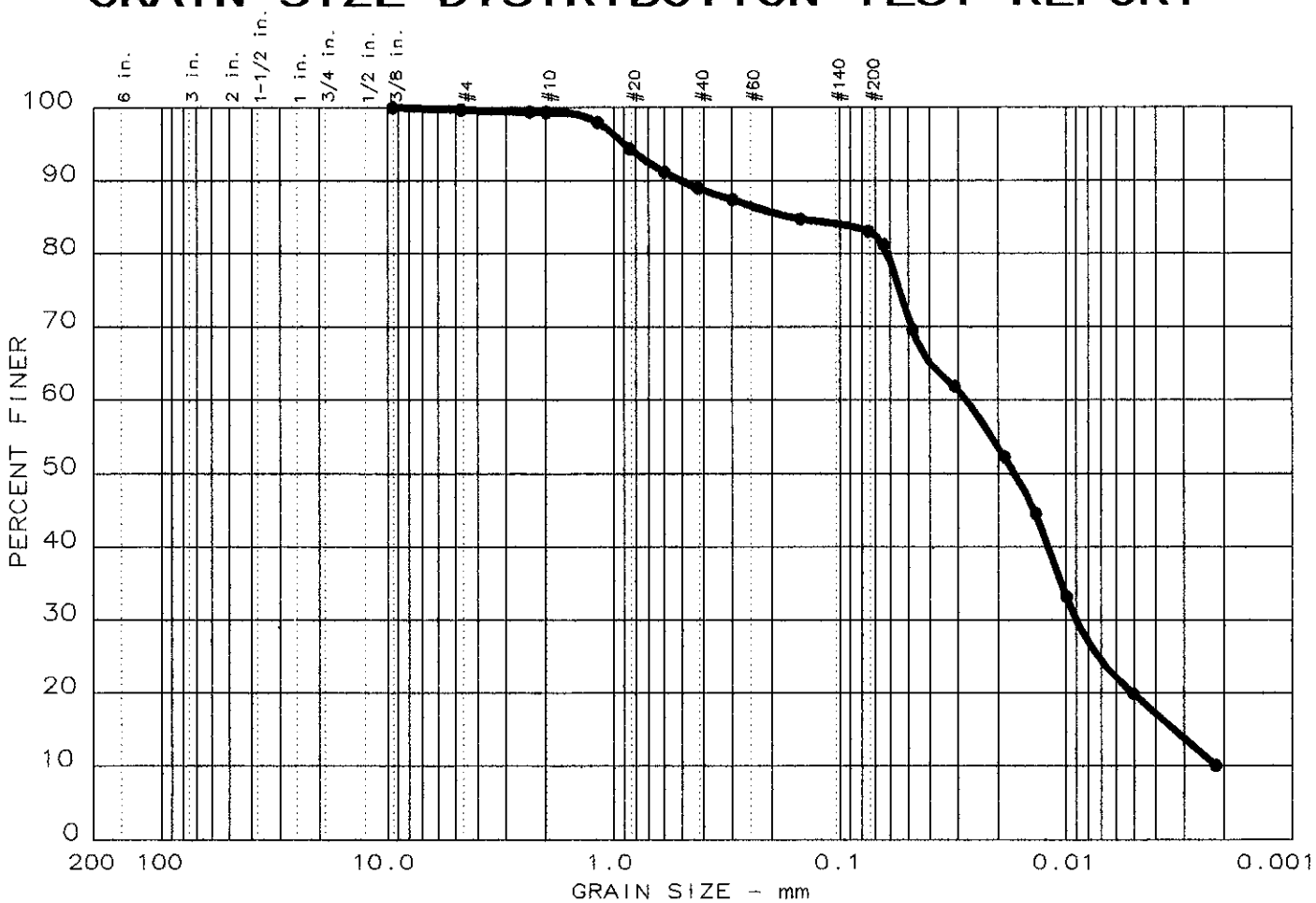
Fractional Components

Gravel/Sand based on #4 sieve
Sand/Fines based on #200 sieve
% + 3 in. = 0.0 % GRAVEL = 0.0 % SAND = 25.1
% SILT = 64.0 % CLAY = 10.9

D85= 0.10 D60= 0.062 D50= 0.055
D30= 0.0431 D15= 0.01021 D10= 0.00436
Cc = 6.8234 Cu = 14.3219

Echo summit 050201

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	0.3	16.6	63.3	19.8

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.164		0.0168	0.0090	0.0033			

MATERIAL DESCRIPTION	USCS	AASHTO
● Filter Cloth		

Project No.: 65880.01
Project: CDM
● Location: Tahoe Airport 3/20/01

Date: 04-12-01

Remarks:
#4 Material is mostly foreign material

GRAIN SIZE DISTRIBUTION TEST REPORT
GOODSON & ASSOCIATES, INC.
Consulting Engineers

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST DATA Test No.: 19

Date: 04-12-01
Project No.: 65880.01
Project: CDM

Sample Data

Location of Sample: Tahoe Airport
Sample Description: Filter Cloth
USCS Class: Liquid limit:
AASHTO Class: Plasticity index:

Notes

Remarks: #4 Material is mostly foreign material

Fig. No.:

Mechanical Analysis Data

	Initial
Dry sample and tare=	133.03
Tare =	0.00
Dry sample weight =	133.03

Sample split on number 10 sieve
Split sample data:
Sample and tare = 68.28 Tare = 0 Sample weight = 68.28
Cumulative weight retained tare= 0
Tare for cumulative weight retained= 0

Sieve	Cumul. Wt. retained	Percent finer
0.375 inches	0.00	100.0
# 4	0.40	99.7
# 8	0.79	99.4
# 10	0.84	99.4
# 16	0.97	98.0
# 20	3.43	94.4
# 30	5.61	91.2
# 40	7.11	89.0
# 50	8.22	87.4
# 100	10.04	84.8
# 200	11.21	83.1

Hydrometer Analysis Data

Separation sieve is number 200
Percent -#200 based on complete sample= 83.1
Weight of hydrometer sample: 68.28
Calculated biased weight= 82.21
Automatic temperature correction

GRAIN SIZE DISTRIBUTION TEST DATA Test No.: 19

Date: 04-12-01
Project No.: 65880.01
Project: CDM

Sample Data

Location of Sample: Tahoe Airport
Sample Description: Filter Cloth
USCS Class: Liquid limit:
AASHTO Class: Plasticity index:

Composite correction at 20 deg C =-5

Meniscus correction only=-1
Specific gravity of solids= 1.645
Specific gravity correction factor= 1.588
Hydrometer type: 152H Effective depth L= 16.294964 - 0.164 x Rm

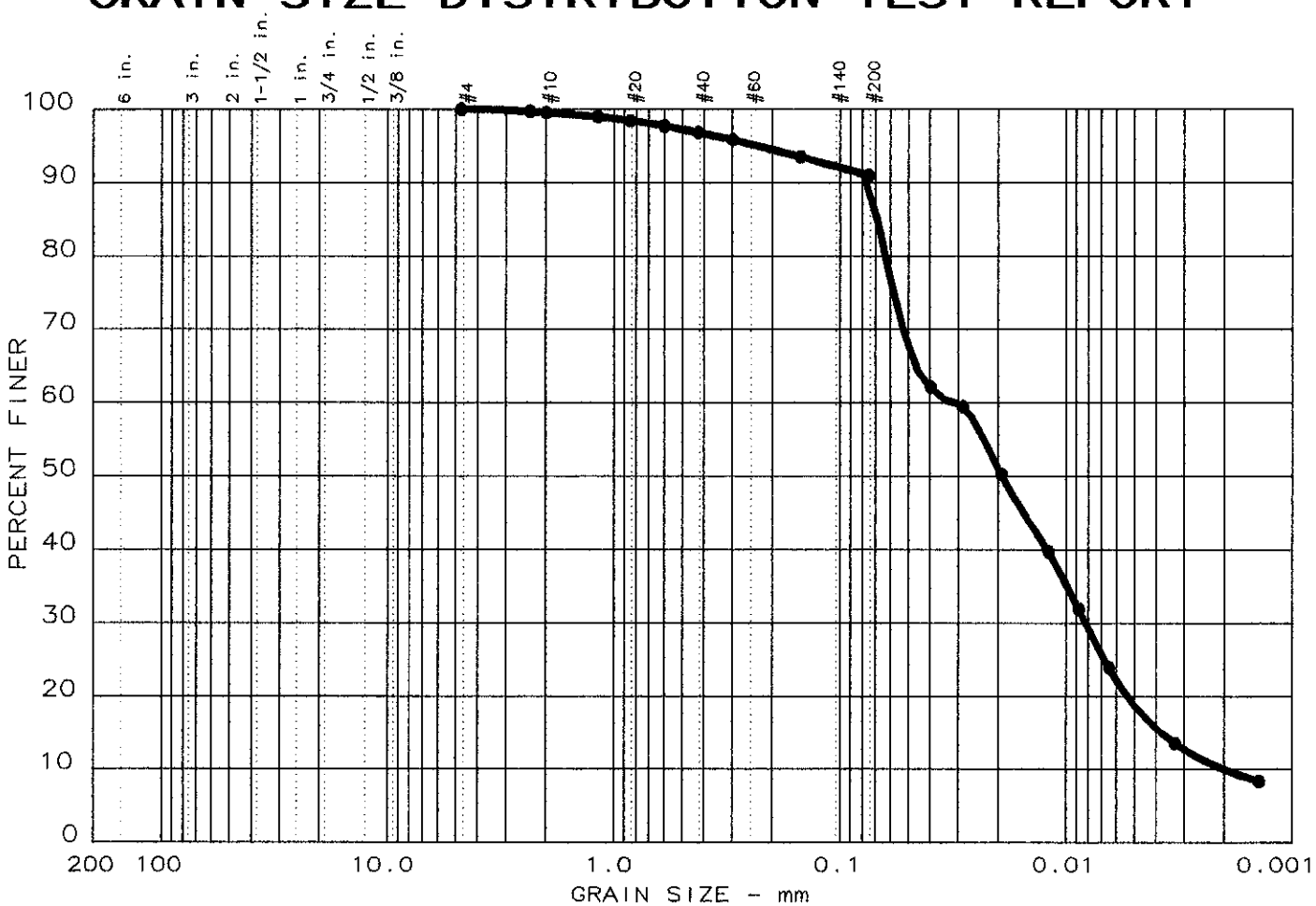
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
1.0	20.4	47.0	42.0	0.0217	46.0	8.8	0.0642	81.2
2.0	20.4	41.0	36.0	0.0217	40.0	9.7	0.0479	69.6
5.0	20.4	37.0	32.0	0.0217	36.0	10.4	0.0313	61.9
15.0	20.4	32.0	27.0	0.0217	31.0	11.2	0.0188	52.2
30.0	20.4	28.0	23.0	0.0217	27.0	11.9	0.0136	44.5
60.0	21.0	22.0	17.2	0.0215	21.0	12.9	0.0100	33.2
250.0	21.6	15.0	10.3	0.0214	14.0	14.0	0.0051	19.9
1440.0	21.2	10.0	5.2	0.0215	9.0	14.8	0.0022	10.1

Fractional Components

Gravel/Sand based on #4 sieve
Sand/Fines based on #200 sieve
% + 3 in. = 0.0 % GRAVEL = 0.3 % SAND = 16.6
% SILT = 63.3 % CLAY = 19.8

D85= 0.16 D60= 0.028 D50= 0.017
D30= 0.0090 D15= 0.00333

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	0.0	9.1	72.1	18.8

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●					0.0191	0.0082	0.0037	0.0020	1.12	15.2

MATERIAL DESCRIPTION	USCS	AASHTO
● Tahoe Airport 4.0~~6~~4.2001		

Project No.: 65880.01
Project: CDM
● Location: Tahoe Basin

Date: 05-09-01

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT
GOODSON & ASSOCIATES, INC.
Consulting Engineers

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST DATA Test No.: 2

Date: 05-09-01
Project No.: 65880.01
Project: CDM

Sample Data

Location of Sample: Tahoe Basin
Sample Description: Tahoe Airport 4.06.2001
USCS Class: Liquid limit:
AASHTO Class: Plasticity index:

Notes

Remarks:

Fig. No.:

Mechanical Analysis Data

	Initial
Dry sample and tare=	71.48
Tare =	0.00
Dry sample weight =	71.48

Tare for cumulative weight retained= 0

Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 8	0.21	99.7
# 10	0.33	99.5
# 16	0.75	99.0
# 20	1.15	98.4
# 30	1.69	97.6
# 40	2.31	96.8
# 50	2.99	95.8
# 100	4.66	93.5
# 200	6.48	90.9

Hydrometer Analysis Data

Separation sieve is number 200
Percent -#200 based on complete sample= 90.9
Weight of hydrometer sample: 71.15
Calculated biased weight= 78.24
Automatic temperature correction
Composite correction at 20 deg C =-5

Meniscus correction only=-1
Specific gravity of solids= 2.515

Specific gravity correction factor= 1.034
Hydrometer type: 152H Effective depth L= 16.294964 - 0.164 x Rm

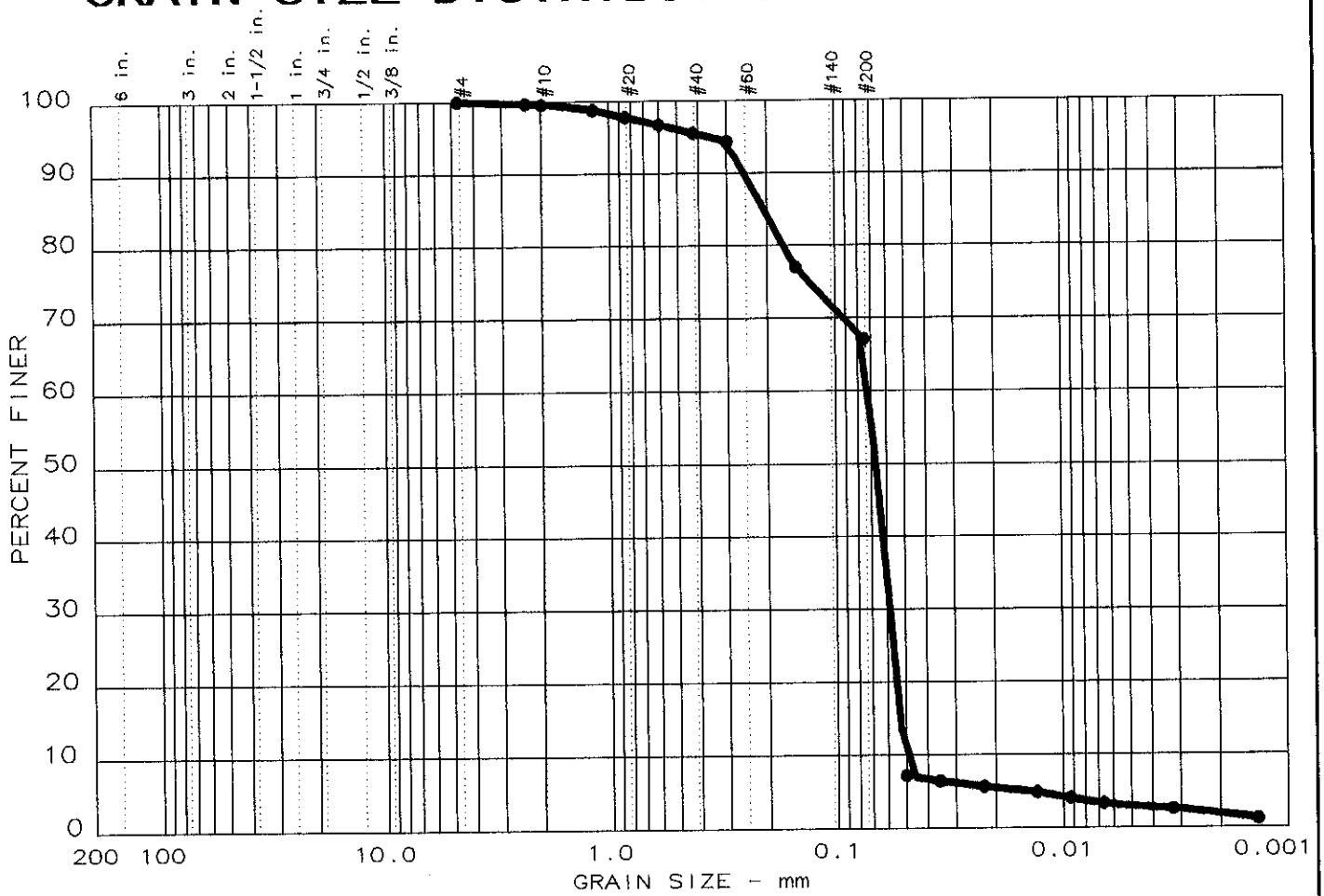
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
1.0	20.5	52.0	47.1	0.0142	51.0	7.9	0.0399	62.2
2.0	20.5	50.0	45.1	0.0142	49.0	8.3	0.0288	59.5
5.0	20.5	43.0	38.1	0.0142	42.0	9.4	0.0194	50.3
15.0	20.5	35.0	30.1	0.0142	34.0	10.7	0.0120	39.7
30.0	20.9	29.0	24.2	0.0141	28.0	11.7	0.0088	31.9
60.0	20.9	23.0	18.2	0.0141	22.0	12.7	0.0065	24.0
250.0	21.5	15.0	10.3	0.0140	14.0	14.0	0.0033	13.6
1440.0	21.6	11.0	6.3	0.0140	10.0	14.7	0.0014	8.3

Fractional Components

Gravel/Sand based on #4 sieve
Sand/Fines based on #200 sieve
% + 3 in. = 0.0 % GRAVEL = 0.0 % SAND = 9.1
% SILT = 72.1 % CLAY = 18.8

D85= 0.07 D60= 0.030 D50= 0.019
D30= 0.0082 D15= 0.00375 D10= 0.00199
Cc = 1.1181 Cu = 15.1880

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	0.0	32.9	64.2	2.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.206		0.0668	0.0583	0.0527	0.0509	0.93	1.4

MATERIAL DESCRIPTION	USCS	AASHTO
● Tahoe 050201		

Project No.: 65880.01
Project: CDM
● Location: Tahoe Basin

Date: 06.11.2001

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT
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Figure No. _____

GRAIN SIZE DISTRIBUTION TEST DATA Test No.: 20

Date: 06.11.2001
Project No.: 65880.01
Project: CDM

Sample Data

Location of Sample: Tahoe Basin
Sample Description: Tahoe 050201
USCS Class: Liquid limit:
AASHTO Class: Plasticity index:

Notes

Remarks:

Fig. No.:

Mechanical Analysis Data

	Initial
Dry sample and tare=	85.32
Tare =	0.00
Dry sample weight =	85.32

Tare for cumulative weight retained= 0

Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 8	0.28	99.7
# 10	0.35	99.6
# 16	1.06	98.8
# 20	1.89	97.8
# 30	2.83	96.7
# 40	3.79	95.6
# 50	4.76	94.4
# 100	19.60	77.0
# 200	28.04	67.1

Hydrometer Analysis Data

Separation sieve is number 200
Percent -#200 based on complete sample= 67.1
Weight of hydrometer sample: 84.97
Calculated biased weight= 126.56
Automatic temperature correction
Composite correction at 20 deg C =-5

Meniscus correction only=-1
Specific gravity of solids= 2.687

Specific gravity correction factor= 0.992
Hydrometer type: 152H Effective depth L= 16.294964 - 0.164 x Rm

Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
1.0	21.3	14.0	9.2	0.0133	13.0	14.2	0.0500	7.2
2.0	21.3	13.0	8.2	0.0133	12.0	14.3	0.0355	6.5
5.0	21.3	12.0	7.2	0.0133	11.0	14.5	0.0226	5.7
15.0	21.3	11.0	6.2	0.0133	10.0	14.7	0.0131	4.9
30.0	21.3	10.0	5.2	0.0133	9.0	14.8	0.0093	4.1
60.0	21.3	9.0	4.2	0.0133	8.0	15.0	0.0066	3.3
250.0	21.3	8.0	3.2	0.0133	7.0	15.1	0.0033	2.5
1440.0	22.2	6.0	1.5	0.0131	5.0	15.5	0.0014	1.1

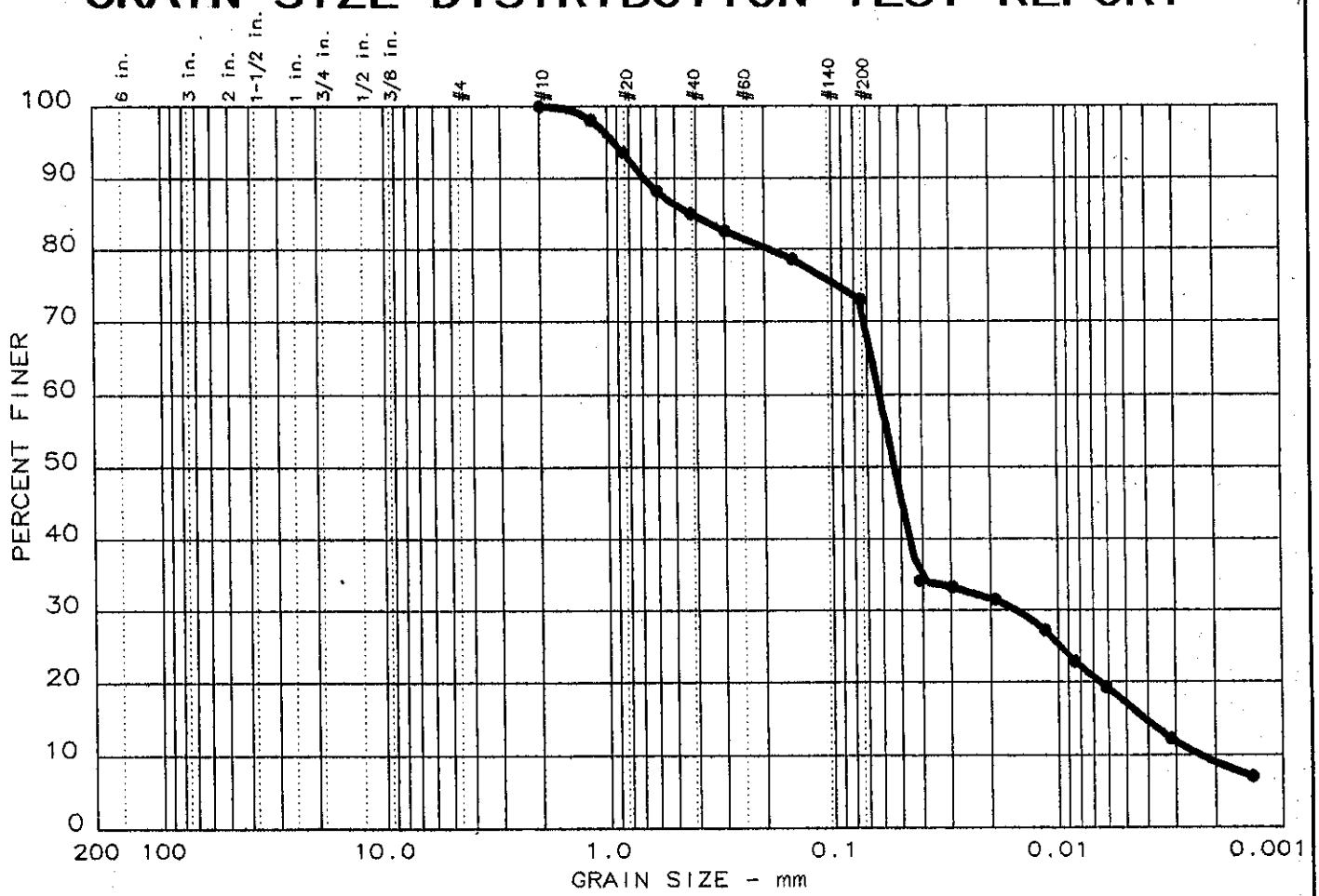
Fractional Components

Gravel/Sand based on #4 sieve
Sand/Fines based on #200 sieve
% + 3 in. = 0.0 % GRAVEL = 0.0 % SAND = 32.9
% SILT = 64.2 % CLAY = 2.9

D85= 0.21 D60= 0.071 D50= 0.067
D30= 0.0583 D15= 0.05266 D10= 0.05087
Cc = 0.9343 Cu = 1.4044

Tahoe 050201

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	0.0	27.0	55.9	17.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.422		0.0530	0.0151	0.0041	0.0023	1.60	26.6

MATERIAL DESCRIPTION	USCS	AASHTO
● Tahoe Airport Down Gradient Can 04.~~12~~.2001 4		

Project No.: 65880.01
Project: CDM
● Location: Tahoe Basin

Date: 05.21.2001

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT
GOODSON & ASSOCIATES, INC.
Consulting Engineers

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST DATA Test No.: 20

Date: 05.21.2001
Project No.: 65880.01
Project: CDM

Sample Data

Location of Sample: Tahoe Basin
Sample Description: Tahoe Airport Down Gradient Can 04.12.2001
USCS Class: Liquid limit:
AASHTO Class: Plasticity index:

Notes

Remarks:

Fig. No.:

Mechanical Analysis Data

	Initial
Dry sample and tare=	84.84
Tare =	0.00
Dry sample weight =	84.84

Tare for cumulative weight retained= 0

Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 16	1.61	98.1
# 20	5.37	93.7
# 30	10.02	88.2
# 40	12.72	85.0
# 50	14.78	82.6
# 100	18.13	78.6
# 200	22.90	73.0

Hydrometer Analysis Data

Separation sieve is number 200
Percent -#200 based on complete sample= 73.0
Weight of hydrometer sample: 84.84
Calculated biased weight= 116.21
Automatic temperature correction
Composite correction at 20 deg C =-5

Meniscus correction only=-1
Specific gravity of solids= 2.592
Specific gravity correction factor= 1.014
Hydrometer type: 152H Effective depth L= 16.294964 - 0.164 x Rm

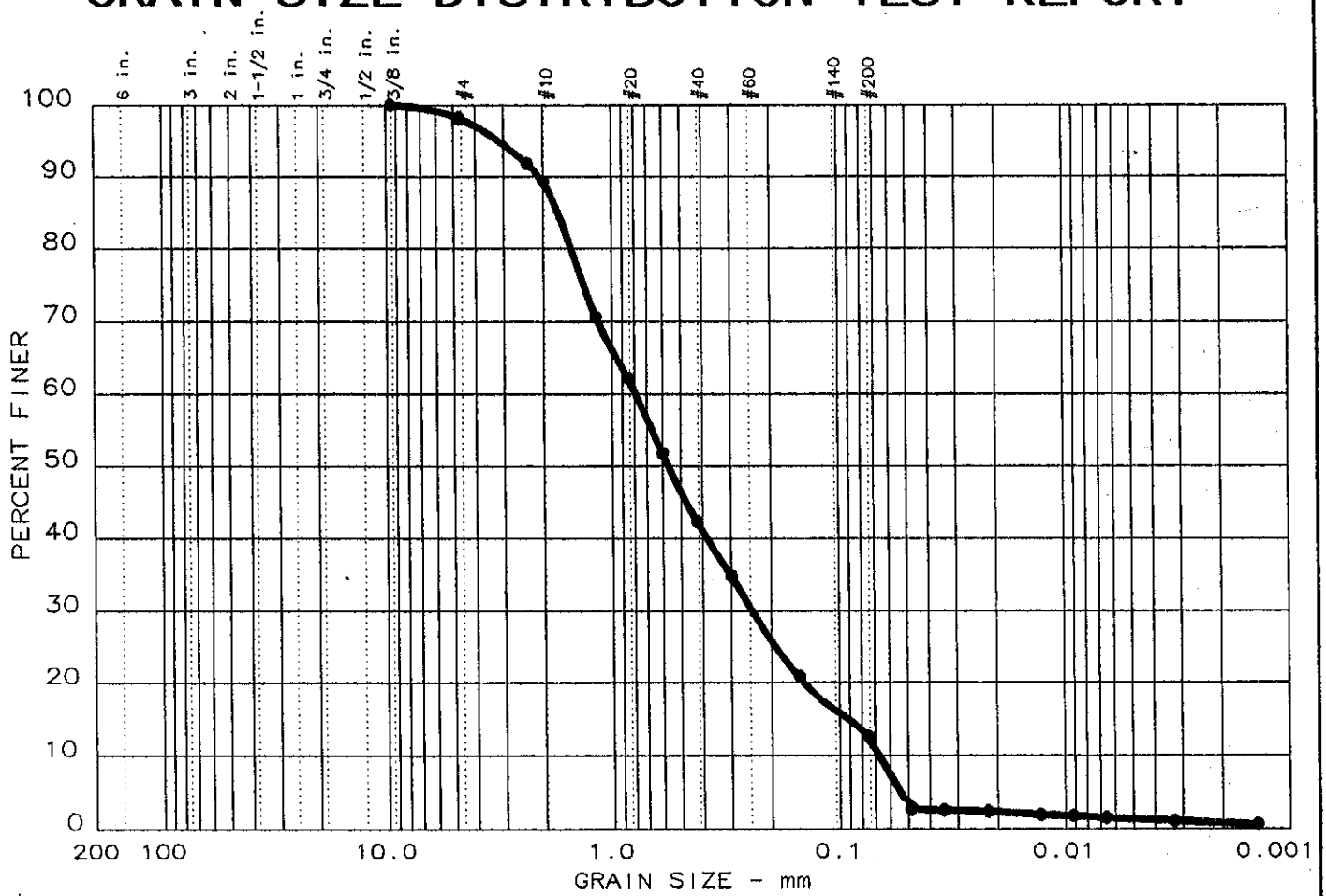
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
1.0	21.0	44.0	39.2	0.0137	43.0	9.2	0.0417	34.2
2.0	21.0	43.0	38.2	0.0137	42.0	9.4	0.0298	33.3
5.0	21.0	41.0	36.2	0.0137	40.0	9.7	0.0191	31.6
15.0	21.0	36.0	31.2	0.0137	35.0	10.6	0.0115	27.2
30.0	21.0	31.0	26.2	0.0137	30.0	11.4	0.0084	22.8
60.0	21.0	27.0	22.2	0.0137	26.0	12.0	0.0061	19.3
250.0	21.0	19.0	14.2	0.0137	18.0	13.3	0.0032	12.4
1440.0	20.8	13.0	8.1	0.0138	12.0	14.3	0.0014	7.1

Fractional Components

Gravel/Sand based on #4 sieve
Sand/Fines based on #200 sieve
% + 3 in. = 0.0 % GRAVEL = 0.0 % SAND = 27.0
% SILT = 55.9 % CLAY = 17.1

D85= 0.42 D60= 0.062 D50= 0.053
D30= 0.0151 D15= 0.00411 D10= 0.00231
Cc = 1.6014 Cu = 26.6379

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	1.8	85.5	11.3	1.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.72	0.783	0.564	0.241	0.0915	0.0668	1.11	11.7

MATERIAL DESCRIPTION	USCS	AASHTO
● Tahoe Airport Up Gradient Can 04 ~~12~~ 4.2001		

Project No.: 65880.01
Project: CDM
● Location: Tahoe Basin

Date: 05.21.2001

GRAIN SIZE DISTRIBUTION TEST REPORT
GOODSON & ASSOCIATES, INC.
Consulting Engineers

Remarks:

Figure No. _____

Composite correction at 20 deg C =-5

Meniscus correction only=-1
Specific gravity of solids= 2.594
Specific gravity correction factor= 1.013
Hydrometer type: 152H Effective depth L= 16.294964 - 0.164 x Rm

Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
1.0	21.0	23.0	18.2	0.0137	22.0	12.7	0.0488	2.7
2.0	21.0	22.0	17.2	0.0137	21.0	12.9	0.0348	2.6
5.0	21.0	21.0	16.2	0.0137	20.0	13.0	0.0221	2.4
15.0	21.0	18.0	13.2	0.0137	17.0	13.5	0.0130	2.0
30.0	21.0	17.0	12.2	0.0137	16.0	13.7	0.0093	1.8
60.0	21.0	15.0	10.2	0.0137	14.0	14.0	0.0066	1.5
250.0	21.0	12.0	7.2	0.0137	11.0	14.5	0.0033	1.1
1440.0	20.8	9.0	4.1	0.0137	8.0	15.0	0.0014	0.6

Fractional Components

Gravel/Sand based on #4 sieve
Sand/Fines based on #200 sieve
% + 3 in. = 0.0 % GRAVEL = 1.8 % SAND = 85.5
% SILT = 11.3 % CLAY = 1.4

D85= 1.72 D60= 0.783 D50= 0.564
D30= 0.2407 D15= 0.09152 D10= 0.06683
Cc = 1.1079 Cu = 11.7085

GRAIN SIZE DISTRIBUTION TEST DATA

Test No.: 19

Date: 05.21.2001
Project No.: 65880.01
Project: CDM

Sample Data

Location of Sample: Tahoe Basin
Sample Description: Tahoe Airport Up Gradient Can 04.12.2001
USCS Class: Liquid limit:
AASHTO Class: Plasticity index:

Notes

Remarks:

Fig. No.:

Mechanical Analysis Data

	Initial
Dry sample and tare=	95.37
Tare =	0.00
Dry sample weight =	95.37

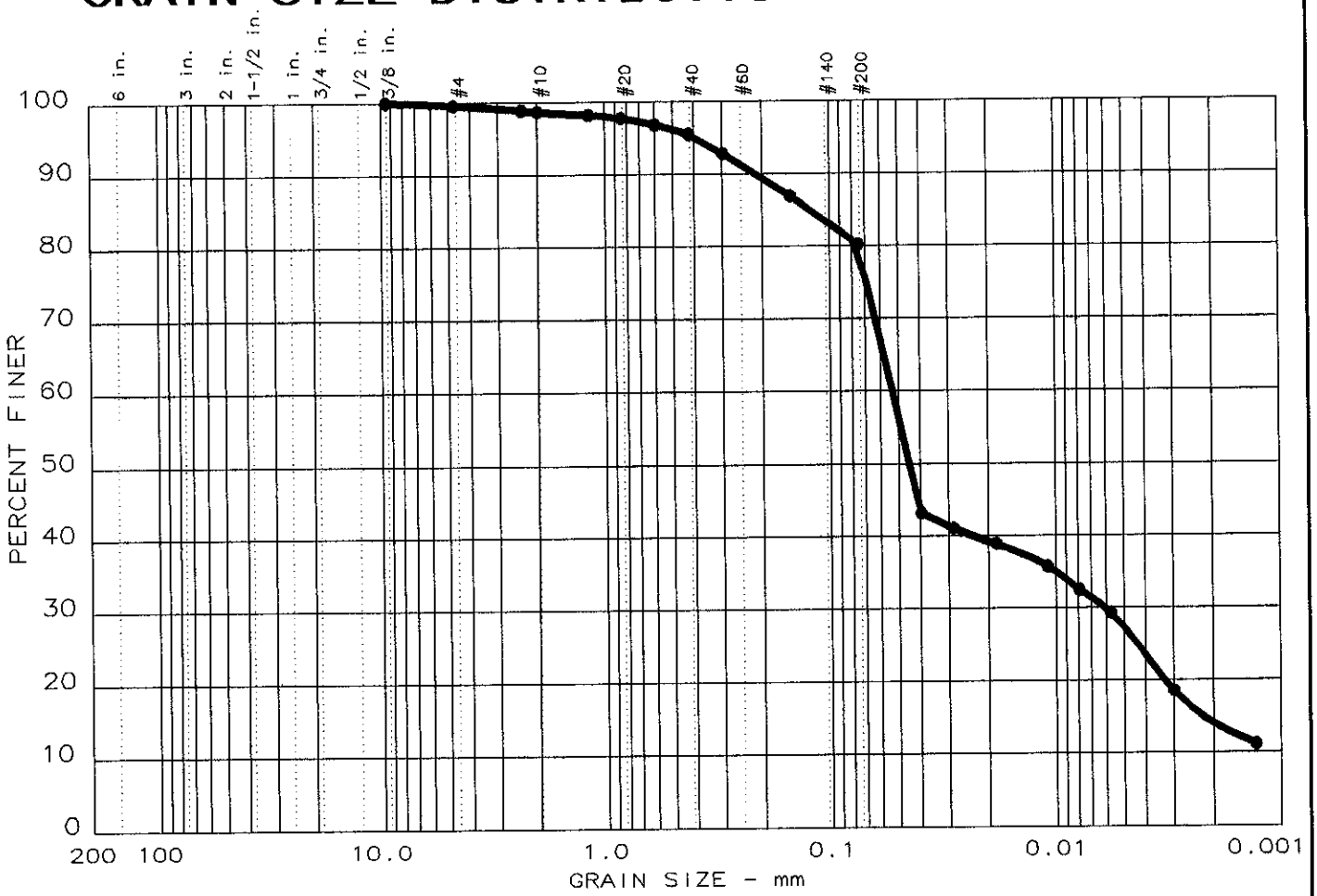
Sample split on number 10 sieve
Split sample data:
Sample and tare = 85.19 Tare = 0 Sample weight = 85.19
Cumulative weight retained tare= 0
Tare for cumulative weight retained= 0

Sieve	Cumul. Wt. retained	Percent finer
0.375 inches	0.00	100.0
# 4	1.73	98.2
# 8	7.79	91.8
# 10	10.18	89.3
# 16	17.78	70.7
# 20	25.79	62.3
# 30	35.78	51.8
# 40	44.74	42.4
# 50	51.95	34.9
# 100	65.26	20.9
# 200	73.13	12.6

Hydrometer Analysis Data

Separation sieve is number 200
Percent -#200 based on complete sample= 12.6
Weight of hydrometer sample: 85.19
Calculated biased weight= 673.68
Automatic temperature correction

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	0.4	19.4	52.9	27.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.122		0.0447	0.0060	0.0022			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tahoe Downgradient 050201		

Project No.: 65880.01
Project: CDM
● Location: Tahoe Basin

Date: 06.11.2001

GRAIN SIZE DISTRIBUTION TEST REPORT
GOODSON & ASSOCIATES, INC.
Consulting Engineers

Remarks:

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST DATA Test No.: 20

Date: 06.11.2001
Project No.: 65880.01
Project: CDM

Sample Data

Location of Sample: Tahoe Basin
Sample Description: Tahoe Downgradient 050201
USCS Class: Liquid limit:
AASHTO Class: Plasticity index:

Notes

Remarks:

Fig. No.:

Mechanical Analysis Data

	Initial
Dry sample and tare=	75.10
Tare =	0.00
Dry sample weight =	75.10

Tare for cumulative weight retained= 0

Sieve	Cumul. Wt. retained	Percent finer
0.375 inches	0.00	100.0
# 4	0.32	99.6
# 8	0.84	98.9
# 10	1.00	98.7
# 16	1.34	98.2
# 20	1.69	97.7
# 30	2.39	96.8
# 40	3.34	95.6
# 50	5.37	92.8
# 100	9.80	87.0
# 200	14.87	80.2

Hydrometer Analysis Data

Separation sieve is number 200
Percent -#200 based on complete sample= 80.2
Weight of hydrometer sample: 74.1
Calculated biased weight= 92.39
Automatic temperature correction
Composite correction at 20 deg C =-5

Meniscus correction only=-1

Specific gravity of solids= 2.691
Specific gravity correction factor= 0.991
Hydrometer type: 152H Effective depth L= 16.294964 - 0.164 x Rm

Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
1.0	21.5	45.0	40.3	0.0132	44.0	9.1	0.0399	43.2
2.0	21.5	43.0	38.3	0.0132	42.0	9.4	0.0287	41.1
5.0	21.5	41.0	36.3	0.0132	40.0	9.7	0.0185	38.9
15.0	21.5	38.0	33.3	0.0132	37.0	10.2	0.0109	35.7
30.0	21.5	35.0	30.3	0.0132	34.0	10.7	0.0079	32.5
60.0	21.5	32.0	27.3	0.0132	31.0	11.2	0.0057	29.3
250.0	21.5	22.0	17.3	0.0132	21.0	12.9	0.0030	18.5
1440.0	22.0	15.0	10.4	0.0132	14.0	14.0	0.0013	11.2

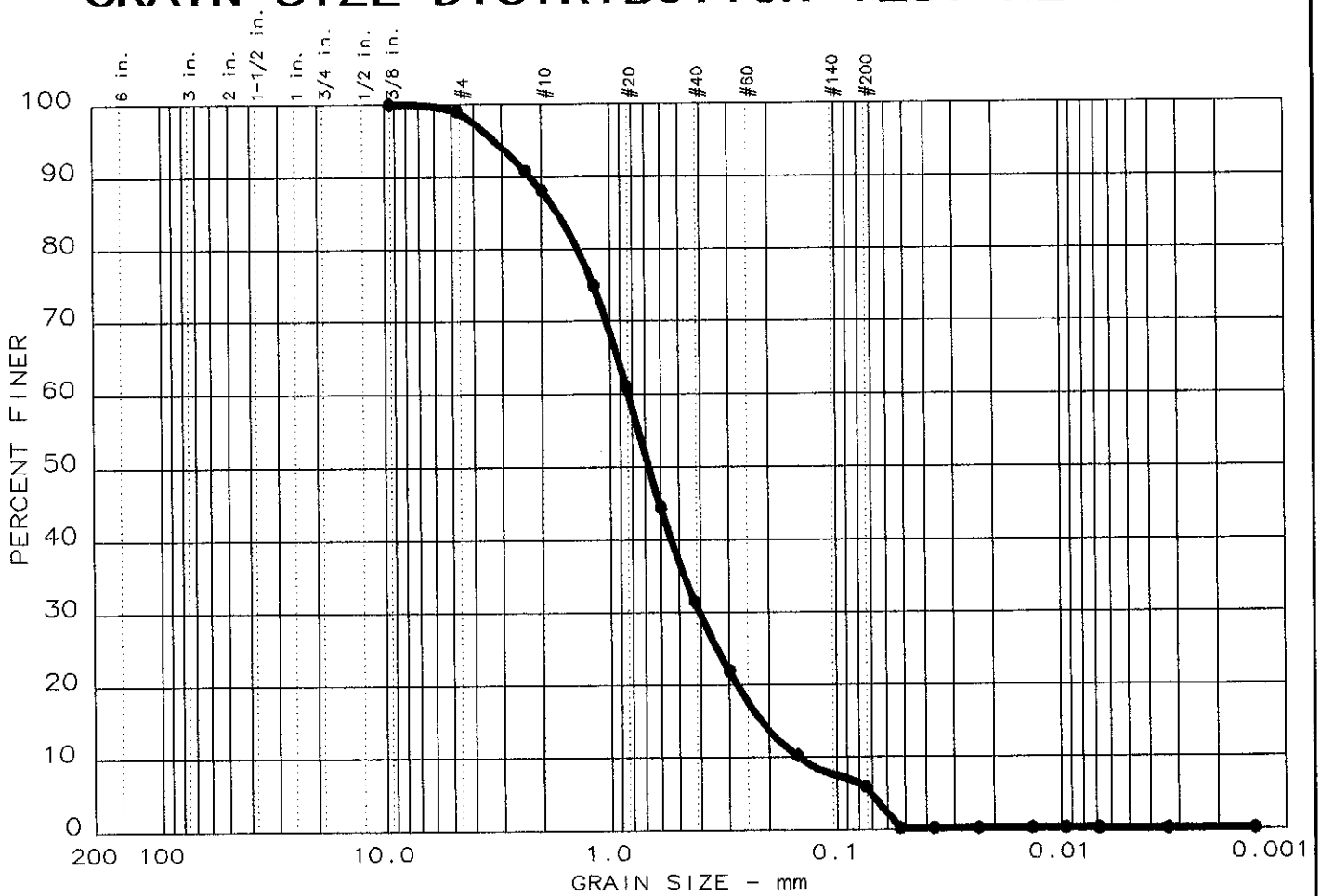
Fractional Components

Gravel/Sand based on #4 sieve
Sand/Fines based on #200 sieve
% + 3 in. = 0.0 % GRAVEL = 0.4 % SAND = 19.4
% SILT = 52.9 % CLAY = 27.3

D85= 0.12 D60= 0.053 D50= 0.045
D30= 0.0060 D15= 0.00224

Downgradient 050201

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	1.0	93.2	5.8	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.68	0.831	0.675	0.406	0.215	0.146	1.36	5.7

MATERIAL DESCRIPTION	USCS	AASHTO
● Tahoe Upgradient 050201		

Project No.: 65880.01
Project: CDM
● Location: Tahoe Basin

Date: 06.11.2001

GRAIN SIZE DISTRIBUTION TEST REPORT
GOODSON & ASSOCIATES, INC.
Consulting Engineers

Remarks:

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST DATA Test No.: 20

Date: 06.11.2001
Project No.: 65880.01
Project: CDM

Sample Data

Location of Sample: Tahoe Basin
Sample Description: Tahoe Upgradient 050201
USCS Class: Liquid limit:
AASHTO Class: Plasticity index:

Notes

Remarks:

Fig. No.:

Mechanical Analysis Data

	Initial
Dry sample and tare=	136.13
Tare =	0.00
Dry sample weight =	136.13

Tare for cumulative weight retained= 0

Sieve	Cumul. Wt. retained	Percent finer
0.375 inches	0.00	100.0
# 4	1.30	99.0
# 8	12.56	90.8
# 10	16.14	88.1
# 16	34.08	75.0
# 20	53.00	61.1
# 30	75.60	44.5
# 40	93.31	31.5
# 50	106.28	21.9
# 100	122.14	10.3
# 200	128.12	5.9

Hydrometer Analysis Data

Separation sieve is number 200
Percent -#200 based on complete sample= 5.9
Weight of hydrometer sample: 119.99
Calculated biased weight= % 2039.230799
Automatic temperature correction
Composite correction at 20 deg C =-5

Meniscus correction only=-1

Specific gravity of solids= 2.623
Specific gravity correction factor= 1.006
Hydrometer type: 152H Effective depth L= 16.294964 - 0.164 x Rm

Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
1.0	21.0	9.0	4.2	0.0136	8.0	15.0	0.0526	0.2
2.0	21.0	9.0	4.2	0.0136	8.0	15.0	0.0372	0.2
5.0	21.0	9.0	4.2	0.0136	8.0	15.0	0.0235	0.2
15.0	21.0	9.0	4.2	0.0136	8.0	15.0	0.0136	0.2
30.0	21.0	9.0	4.2	0.0136	8.0	15.0	0.0096	0.2
60.0	21.0	8.0	3.2	0.0136	7.0	15.1	0.0068	0.2
250.0	21.0	7.0	2.2	0.0136	6.0	15.3	0.0034	0.1
1440.0	22.0	7.0	2.4	0.0134	6.0	15.3	0.0014	0.1

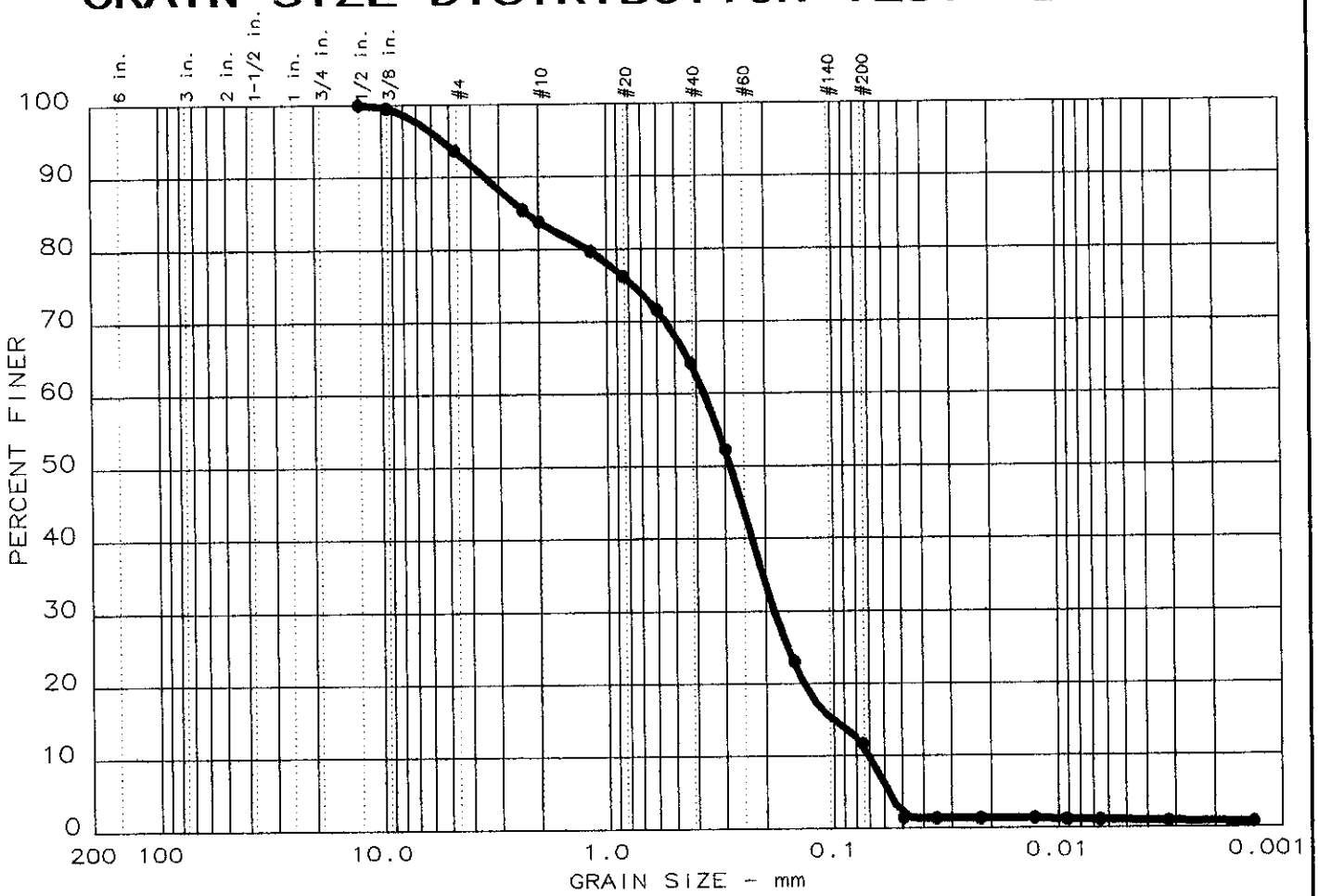
Fractional Components

Gravel/Sand based on #4 sieve
Sand/Fines based on #200 sieve
% + 3 in. = 0.0 % GRAVEL = 1.0 % SAND = 93.2
% FINES = 5.8

D85= 1.68 D60= 0.831 D50= 0.675
D30= 0.4055 D15= 0.21528 D10= 0.14555
Cc = 1.3599 Cu = 5.7082

upgradient 050201

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	6.3	82.0	10.7	1.0

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			2.24	0.367	0.284	0.183	0.100	0.0701	1.30	5.2

MATERIAL DESCRIPTION	USCS	AASHTO
● Sample#1 Traction Sand 3/02/01		

Project No.: 65880.01
Project: CDM Inc.
● Location: Tahoe Basin Rinfalel

Date: 03-15-01

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT
GOODSON & ASSOCIATES, INC.
Consulting Engineers

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST DATA Test No.: 6

Date: 03-15-01
Project No.: 65880.01
Project: CDM Inc.

Sample Data

Location of Sample: Tahoe Basin
Sample Description: Sample#1 Traction Sand
USCS Class: Liquid limit:
AASHTO Class: Plasticity index:

Notes

Remarks:

Fig. No.:

Mechanical Analysis Data

	Initial
Dry sample and tare=	509.83
Tare =	0.00
Dry sample weight =	509.83

Sample split on number 10 sieve
Split sample data:
Sample and tare = 121.16 Tare = 0 Sample weight = 121.16
Cumulative weight retained tare= 0
Tare for cumulative weight retained= 0

Sieve	Cumul. Wt. retained	Percent finer
0.5 inches	0.00	100.0
0.375 inches	2.42	99.5
# 4	32.28	93.7
# 8	74.10	85.5
# 10	82.58	83.8
# 16	5.84	79.8
# 20	10.87	76.3
# 30	17.60	71.6
# 40	28.31	64.2
# 50	45.61	52.3
# 100	87.77	23.1
# 200	104.31	11.7

Hydrometer Analysis Data

Separation sieve is number 200
Percent -#200 based on complete sample= 11.7
Weight of hydrometer sample: 121.16
Calculated biased weight= % 1039.58963272
Automatic temperature correction
  Composite correction at 20 deg C =-5

Meniscus correction only=-1
Specific gravity of solids= 2.65
Specific gravity correction factor= 1.000
Hydrometer type: 152H Effective depth L= 16.294964 - 0.164 x Rm

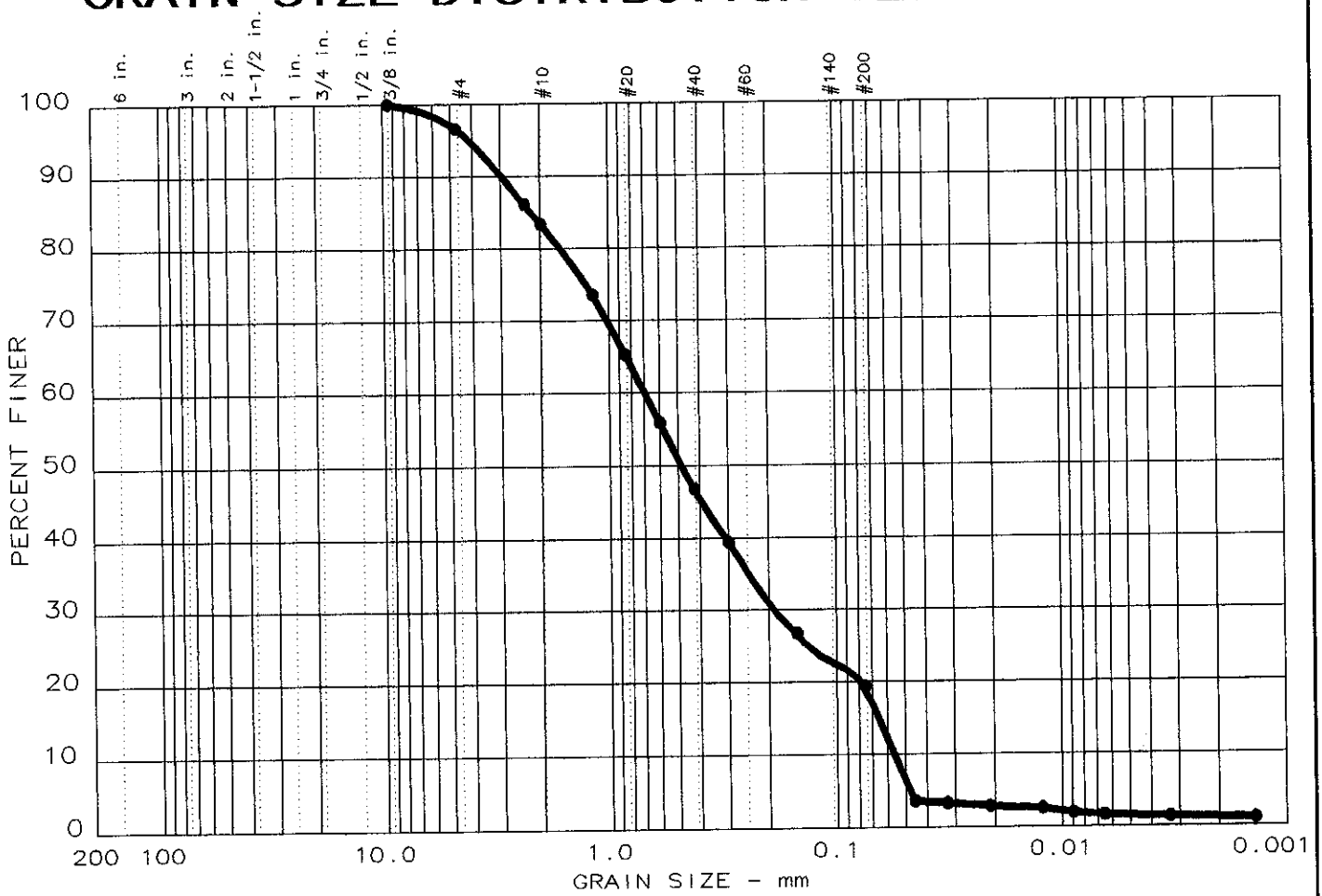
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
1.0	20.0	20.0	15.0	0.0136	19.0	13.2	0.0495	1.4
2.0	20.0	19.0	14.0	0.0136	18.0	13.3	0.0352	1.3
5.0	20.0	19.0	14.0	0.0136	18.0	13.3	0.0223	1.3
15.0	20.0	19.0	14.0	0.0136	18.0	13.3	0.0129	1.3
30.0	20.0	17.0	12.0	0.0136	16.0	13.7	0.0092	1.2
60.0	20.0	16.0	11.0	0.0136	15.0	13.8	0.0066	1.1
250.0	20.0	14.0	9.0	0.0136	13.0	14.2	0.0032	0.9
1440.0	21.1	12.0	7.2	0.0135	11.0	14.5	0.0014	0.7

Fractional Components

Gravel/Sand based on #4 sieve
Sand/Fines based on #200 sieve
% + 3 in. = 0.0 % GRAVEL = 6.3 % SAND = 82.0
% SILT = 10.7 % CLAY = 1.0

D85= 2.24 D60= 0.367 D50= 0.284
D30= 0.1828 D15= 0.10046 D10= 0.07006
Cc = 1.2987 Cu = 5.2420

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	3.4	77.2	17.9	1.5

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			2.19	0.692	0.479	0.188	0.0653	0.0556	0.92	12.4

MATERIAL DESCRIPTION	USCS	AASHTO
● Zinfandel 3.27.01		

Project No.: 65880.01
Project: CDM Tahoe Basin
● Location: Zinfandel 3.~~27~~.01
25

Date: 04-30-01

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT
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Consulting Engineers

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST DATA Test No.: 12

Date: 04-30-01
Project No.: 65880.01
Project: CDM Tahoe Basin

Sample Data

Location of Sample: Zinfandel
Sample Description: Zinfandel 3.27.01
USCS Class: Liquid limit:
AASHTO Class: Plasticity index:

Notes

Remarks:

Fig. No.:

Mechanical Analysis Data

	Initial
Dry sample and tare=	157.17
Tare =	0.00
Dry sample weight =	157.17

Tare for cumulative weight retained= 0

Sieve	Cumul. Wt. retained	Percent finer
0.375 inches	0.00	100.0
# 4	5.37	96.6
# 8	21.72	86.2
# 10	26.07	83.4
# 16	41.59	73.5
# 20	54.52	65.3
# 30	69.21	56.0
# 40	83.57	46.8
# 50	95.22	39.4
# 100	115.10	26.8
# 200	126.72	19.4

Hydrometer Analysis Data

Separation sieve is number 200
Percent -#200 based on complete sample= 19.4
Weight of hydrometer sample: 131.1
Calculated biased weight= 676.68
Automatic temperature correction
Composite correction at 20 deg C =-5

Meniscus correction only=-1

Specific gravity of solids= 2.615
Specific gravity correction factor= 1.008
Hydrometer type: 152H Effective depth L= 16.294964 - 0.164 x Rm

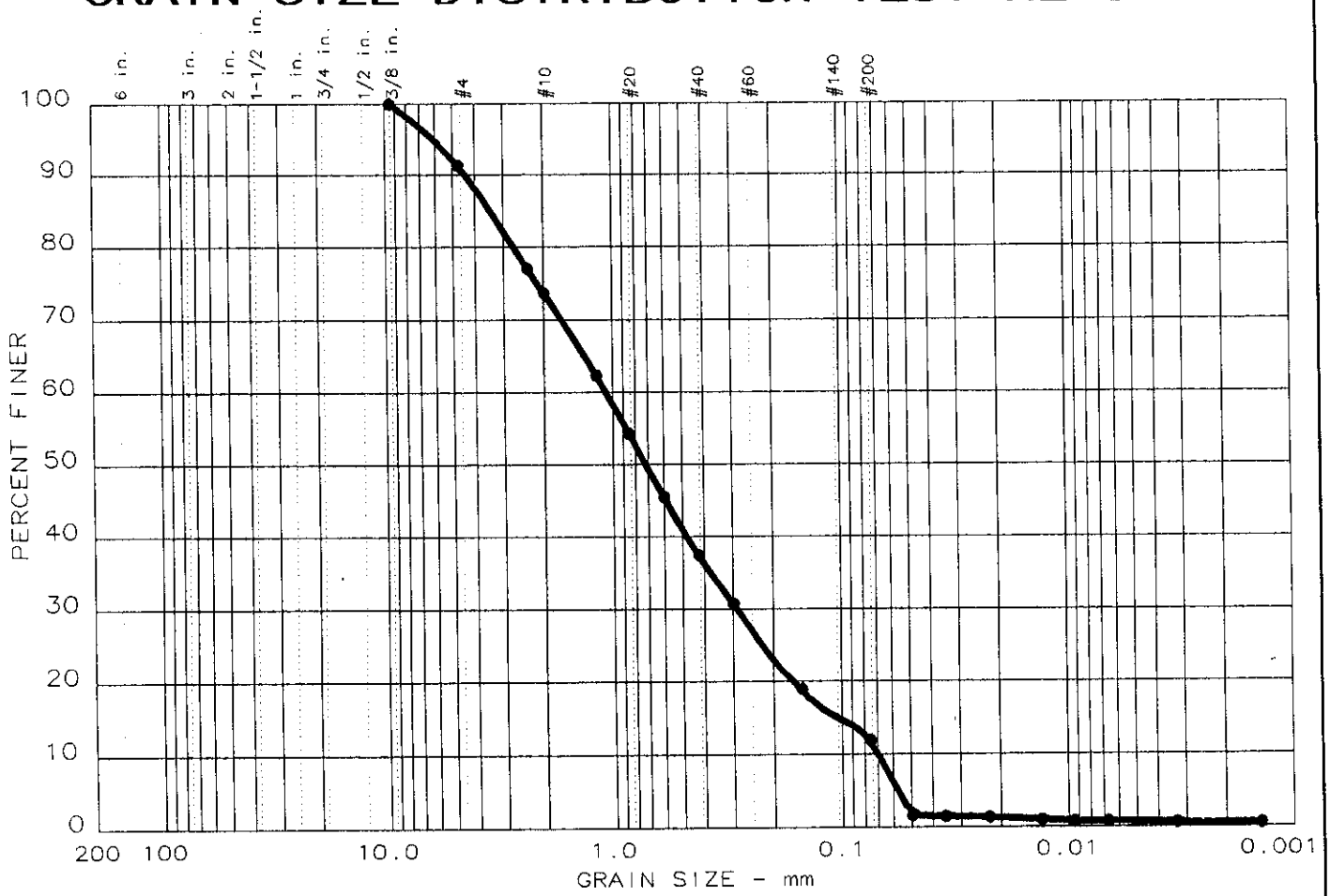
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
1.0	23.5	28.0	23.8	0.0132	27.0	11.9	0.0455	3.5
2.0	23.5	26.0	21.8	0.0132	25.0	12.2	0.0326	3.2
5.0	23.5	23.0	18.8	0.0132	22.0	12.7	0.0211	2.8
15.0	23.5	21.0	16.8	0.0132	20.0	13.0	0.0123	2.5
30.0	23.0	17.0	12.7	0.0133	16.0	13.7	0.0090	1.9
60.0	22.0	15.0	10.4	0.0135	14.0	14.0	0.0065	1.6
250.0	19.0	14.0	8.8	0.0140	13.0	14.2	0.0033	1.3
1440.0	20.0	12.0	7.0	0.0138	11.0	14.5	0.0014	1.0

Fractional Components

Gravel/Sand based on #4 sieve
Sand/Fines based on #200 sieve
% + 3 in. = 0.0 % GRAVEL = 3.4 % SAND = 77.2
% SILT = 17.9 % CLAY = 1.5

D85= 2.19 D60= 0.692 D50= 0.479
D30= 0.1884 D15= 0.06531 D10= 0.05559
Cc = 0.9226 Cu = 12.4451

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	8.7	79.4	11.2	0.7

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			3.42	1.07	0.718	0.286	0.104	0.0693	1.11	15.4

MATERIAL DESCRIPTION	USCS	AASHTO
● Zinfandel Fabric 04.~~12~~ 9.01		

Project No.: 65880.01
Project: CDM
● Location: Tahoe Airport

Date: 05.23.2001

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT
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Figure No. _____

GRAIN SIZE DISTRIBUTION TEST DATA

Test No.: 11

Date: 05.23.2001
Project No.: 65880.01
Project: CDM

Sample Data

Location of Sample: Tahoe Airport
Sample Description: Zinfandel Fabric 04.12.01
USCS Class: Liquid limit:
AASHTO Class: Plasticity index:

Notes

Remarks:

Fig. No.:

Mechanical Analysis Data

	Initial
Dry sample and tare=	150.81
Tare =	0.00
Dry sample weight =	150.81

Tare for cumulative weight retained= 0

Sieve	Cumul. Wt. retained	Percent finer
0.375 inches	0.00	100.0
# 4	13.06	91.3
# 8	34.60	77.1
# 10	39.68	73.7
# 16	56.62	62.5
# 20	69.00	54.2
# 30	82.15	45.5
# 40	94.37	37.4
# 50	104.33	30.8
# 100	122.23	19.0
# 200	132.79	11.9

Hydrometer Analysis Data

Separation sieve is number 200
Percent -#200 based on complete sample= 11.9
Weight of hydrometer sample: 111.13
Calculated biased weight= 930.05
Automatic temperature correction
Composite correction at 20 deg C =-5

Meniscus correction only=-1

Specific gravity of solids= 2.562
Specific gravity correction factor= 1.021
Hydrometer type: 152H Effective depth L= 16.294964 - 0.164 x Rm

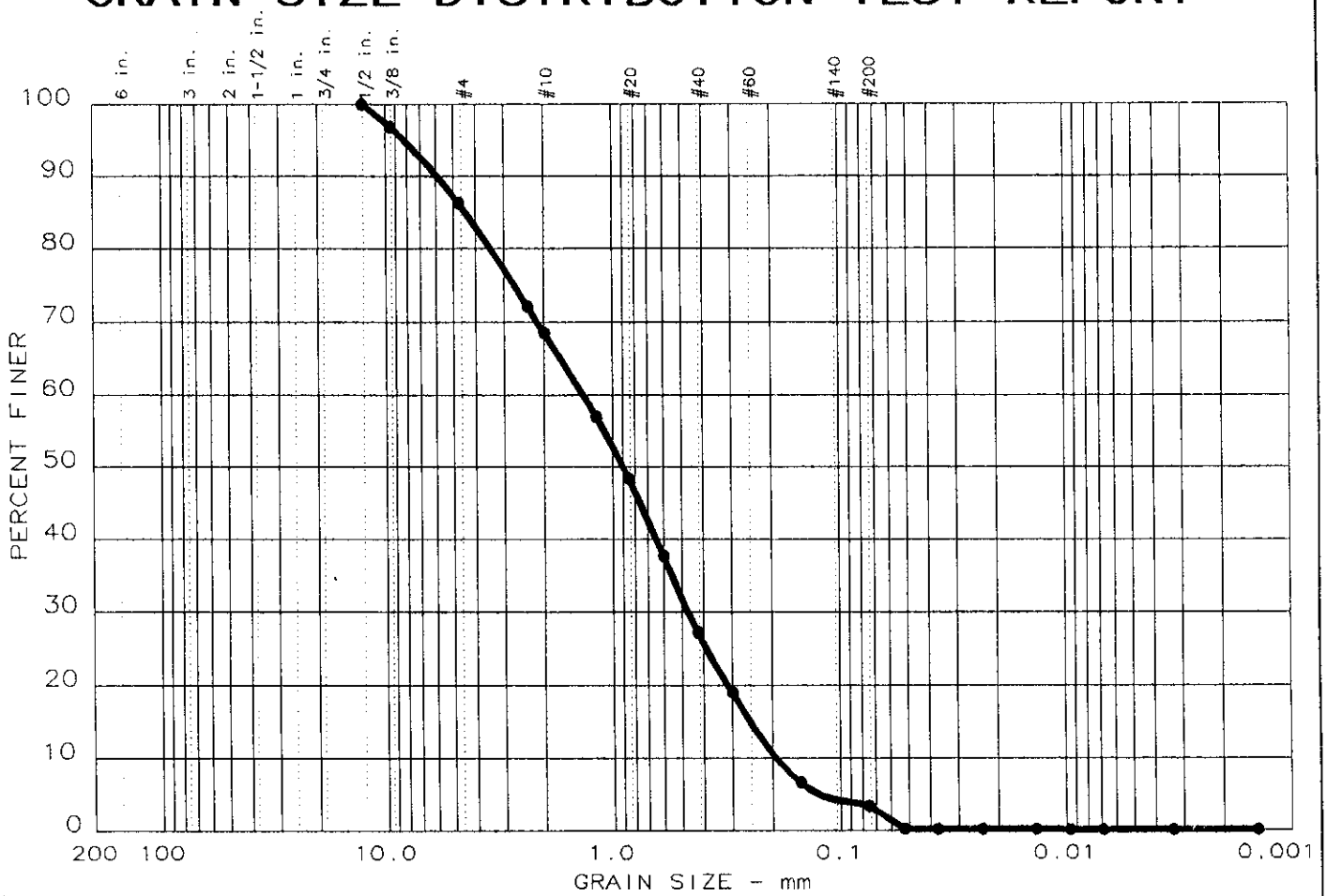
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
1.0	22.5	19.0	14.5	0.0136	18.0	13.3	0.0497	1.6
2.0	22.5	18.0	13.5	0.0136	17.0	13.5	0.0353	1.5
5.0	22.5	17.0	12.5	0.0136	16.0	13.7	0.0225	1.4
15.0	22.5	13.5	9.0	0.0136	12.5	14.2	0.0133	1.0
30.0	22.3	12.0	7.5	0.0136	11.0	14.5	0.0095	0.8
60.0	22.3	11.5	7.0	0.0136	10.5	14.6	0.0067	0.8
250.0	22.0	10.0	5.4	0.0137	9.0	14.8	0.0033	0.6
1440.0	21.0	9.5	4.7	0.0139	8.5	14.9	0.0014	0.5

Fractional Components

Gravel/Sand based on #4 sieve
Sand/Fines based on #200 sieve
% + 3 in. = 0.0 % GRAVEL = 8.7 % SAND = 79.4
% SILT = 11.2 % CLAY = 0.7

D85= 3.42 D60= 1.065 D50= 0.718
D30= 0.2858 D15= 0.10375 D10= 0.06934
Cc = 1.1054 Cu = 15.3638

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	13.7	82.8	3.3	0.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			4.42	1.33	0.902	0.468	0.248	0.191	0.86	7.0

MATERIAL DESCRIPTION	USCS	AASHTO
● Zinfandel 635 Cleanout Fabric 04.09.01		

Project No.: 65880.01
Project: CDM
● Location: Tahoe Airport

Date: 05.23.2001

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT
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Figure No. _____

GRAIN SIZE DISTRIBUTION TEST DATA

Test No.: 10

Date: 05.23.2001
Project No.: 65880.01
Project: CDM

Sample Data

Location of Sample: Tahoe Airport
Sample Description: Zinfandel 635 Cleanout Fabric 04.09.01
USCS Class: Liquid limit:
AASHTO Class: Plasticity index:

Notes

Remarks:

Fig. No.:

Mechanical Analysis Data

	Initial
Dry sample and tare=	138.66
Tare =	0.00
Dry sample weight =	138.66

Sample split on number 10 sieve
Split sample data:
Sample and tare = 95.07 Tare = 0 Sample weight = 95.07
Cumulative weight retained tare= 0
Tare for cumulative weight retained= 0

Sieve	Cumul. Wt. retained	Percent finer
0.5 inches	0.00	100.0
0.375 inches	4.36	96.9
# 4	19.06	86.3
# 8	38.67	72.1
# 10	43.59	68.6
# 16	16.07	57.0
# 20	28.06	48.3
# 30	42.82	37.7
# 40	57.29	27.2
# 50	68.66	19.0
# 100	85.77	6.7
# 200	90.26	3.5

Hydrometer Analysis Data

Separation sieve is number 200
Percent -#200 based on complete sample= 3.5
Weight of hydrometer sample: 95.07
Calculated biased weight= % 2740.62498961
Automatic temperature correction
Composite correction at 20 deg C =-5

Meniscus correction only=-1
Specific gravity of solids= 2.56
Specific gravity correction factor= 1.022
Hydrometer type: 152H Effective depth L= 16.294964 - 0.164 x Rm

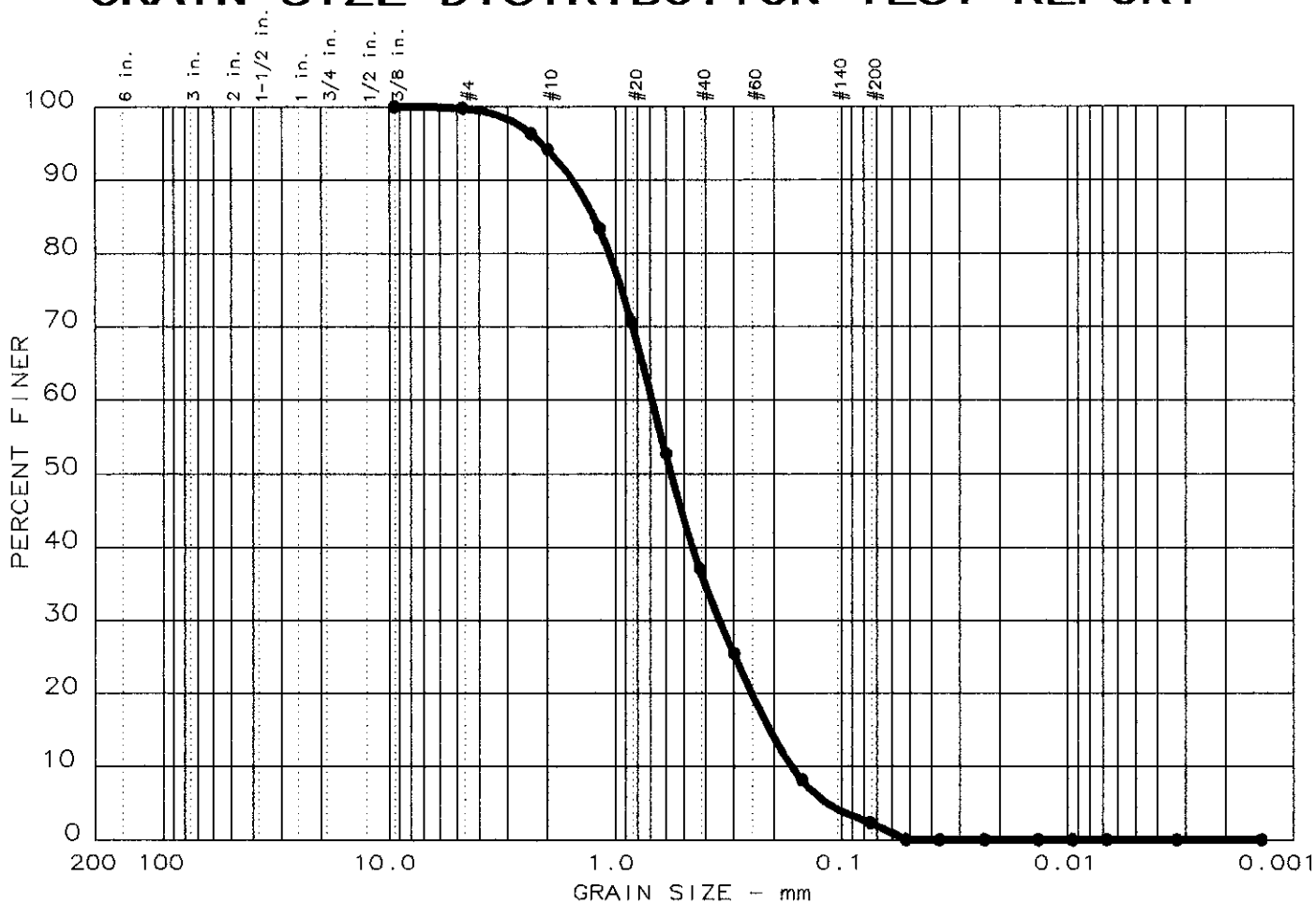
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
1.0	22.0	11.0	6.4	0.0137	10.0	14.7	0.0524	0.2
2.0	22.0	10.0	5.4	0.0137	9.0	14.8	0.0373	0.2
5.0	22.0	10.0	5.4	0.0137	9.0	14.8	0.0236	0.2
15.0	22.0	9.5	4.9	0.0137	8.5	14.9	0.0136	0.2
30.0	22.0	9.0	4.4	0.0137	8.0	15.0	0.0097	0.2
60.0	22.0	8.0	3.4	0.0137	7.0	15.1	0.0069	0.1
250.0	22.0	8.0	3.4	0.0137	7.0	15.1	0.0034	0.1
1440.0	21.1	8.0	3.2	0.0138	7.0	15.1	0.0014	0.1

Fractional Components

Gravel/Sand based on #4 sieve
Sand/Fines based on #200 sieve
% + 3 in. = 0.0 % GRAVEL = 13.7 % SAND = 82.8
% SILT = 3.3 % CLAY = 0.2

D85= 4.42 D60= 1.334 D50= 0.902
D30= 0.4677 D15= 0.24831 D10= 0.19055
Cc = 0.8610 Cu = 6.9984

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	0.2	97.5	2.3	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.24	0.689	0.566	0.345	0.207	0.165	1.05	4.2

MATERIAL DESCRIPTION	USCS	AASHTO
● HWY 89 Upgradient Can 4.~~12~~.2001 04		

Project No.: 65880.01
Project: CDM
● Location: Tahoe Basin

Date: 06.07.2001

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT
GOODSON & ASSOCIATES, INC.
Consulting Engineers

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST DATA Test No.: 20

Date: 06.07.2001
Project No.: 65880.01
Project: CDM

Sample Data

Location of Sample: Tahoe Basin
Sample Description: HWY 89 Upgradient Can 4.12.2001
USCS Class: Liquid limit:
AASHTO Class: Plasticity index:

Notes

Remarks:

Fig. No.:

Mechanical Analysis Data

	Initial
Dry sample and tare=	125.74
Tare =	0.00
Dry sample weight =	125.74

Tare for cumulative weight retained= 0

Sieve	Cumul. Wt. retained	Percent finer
0.375 inches	0.00	100.0
# 4	0.24	99.8
# 8	4.64	96.3
# 10	7.28	94.2
# 16	20.83	83.4
# 20	36.91	70.6
# 30	59.41	52.8
# 40	79.05	37.1
# 50	93.68	25.5
# 100	115.43	8.2
# 200	122.78	2.4

Hydrometer Analysis Data

Separation sieve is number 200
Percent -#200 based on complete sample= 2.4
Weight of hydrometer sample: 118.46
Calculated biased weight= % 5032.14878378
Automatic temperature correction
Composite correction at 20 deg C =-5

Meniscus correction only=-1

Specific gravity of solids= 2.642
Specific gravity correction factor= 1.002
Hydrometer type: 152H Effective depth L= 16.294964 - 0.164 x Rm

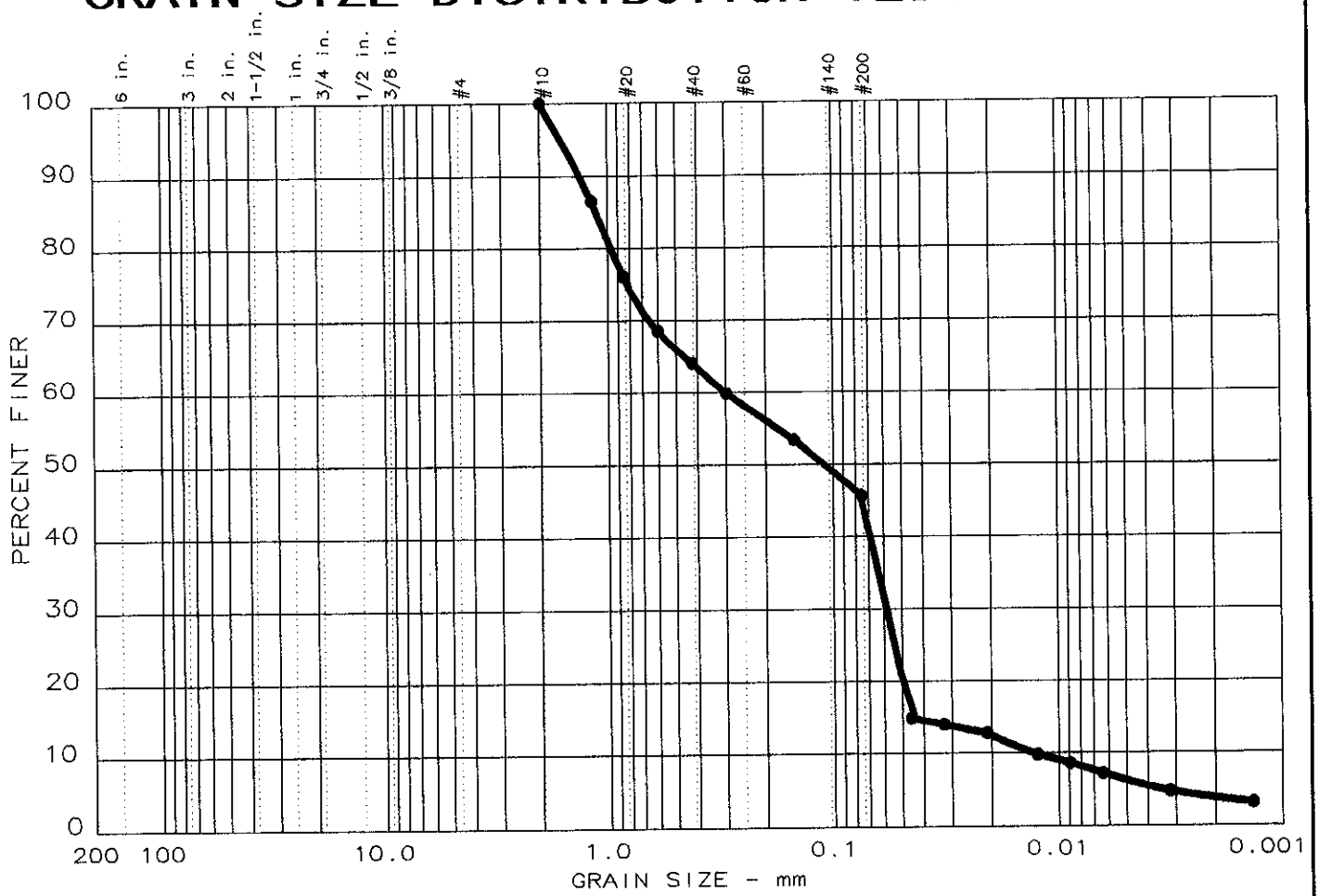
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
1.0	21.8	7.5	2.9	0.0134	6.5	15.2	0.0522	0.1
2.0	21.8	7.0	2.4	0.0134	6.0	15.3	0.0370	0.0
5.0	21.8	7.0	2.4	0.0134	6.0	15.3	0.0234	0.0
15.0	21.8	7.0	2.4	0.0134	6.0	15.3	0.0135	0.0
30.0	21.8	7.0	2.4	0.0134	6.0	15.3	0.0096	0.0
60.0	21.8	7.0	2.4	0.0134	6.0	15.3	0.0068	0.0
250.0	22.1	6.5	1.9	0.0133	5.5	15.4	0.0033	0.0
1440.0	21.2	6.5	1.7	0.0135	5.5	15.4	0.0014	0.0

Fractional Components

Gravel/Sand based on #4 sieve
Sand/Fines based on #200 sieve
% + 3 in. = 0.0 % GRAVEL = 0.2 % SAND = 97.5
% FINES = 2.3

D85= 1.24 D60= 0.689 D50= 0.566
D30= 0.3451 D15= 0.20725 D10= 0.16463
Cc = 1.0508 Cu = 4.1831

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	0.0	54.4	39.4	6.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.12	0.299	0.110	0.0582	0.0457	0.0129	0.88	23.2

MATERIAL DESCRIPTION	USCS	AASHTO
● HWY 89 Downgradient Can 4.~~12~~.2001 04		

Project No.: 65880.01
Project: CDM
● Location: Tahoe Basin

Date: 06.07.2001

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT
GOODSON & ASSOCIATES, INC.
Consulting Engineers

Figure No. _____

Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
1.0	21.4	29.5	24.8	0.0134	28.5	11.6	0.0457	15.0
2.0	21.4	28.0	23.3	0.0134	27.0	11.9	0.0327	14.1
5.0	21.4	26.0	21.3	0.0134	25.0	12.2	0.0210	12.9
15.0	21.4	21.0	16.3	0.0134	20.0	13.0	0.0125	9.8
30.0	21.4	19.0	14.3	0.0134	18.0	13.3	0.0089	8.6
60.0	21.9	16.5	11.9	0.0133	15.5	13.8	0.0064	7.2
250.0	22.0	12.5	7.9	0.0133	11.5	14.4	0.0032	4.8
1440.0	21.3	10.0	5.2	0.0134	9.0	14.8	0.0014	3.2

Fractional Components

Gravel/Sand based on #4 sieve
Sand/Fines based on #200 sieve
% + 3 in. = 0.0 % GRAVEL = 0.0 % SAND = 54.4
% SILT = 39.4 % CLAY = 6.2

D85= 1.12 D60= 0.299 D50= 0.110
D30= 0.0582 D15= 0.04571 D10= 0.01288
Cc = 0.8810 Cu = 23.1739

GRAIN SIZE DISTRIBUTION TEST DATA Test No.: 19

Date: 06.07.2001
Project No.: 65880.01
Project: CDM

Sample Data

Location of Sample: Tahoe Basin
Sample Description: HWY 89 Downgradient Can 4.12.2001
USCS Class: Liquid limit:
AASHTO Class: Plasticity index:

Notes

Remarks:

Fig. No.:

Mechanical Analysis Data

	Initial
Dry sample and tare=	75.50
Tare =	0.00
Dry sample weight =	75.50

Tare for cumulative weight retained= 0

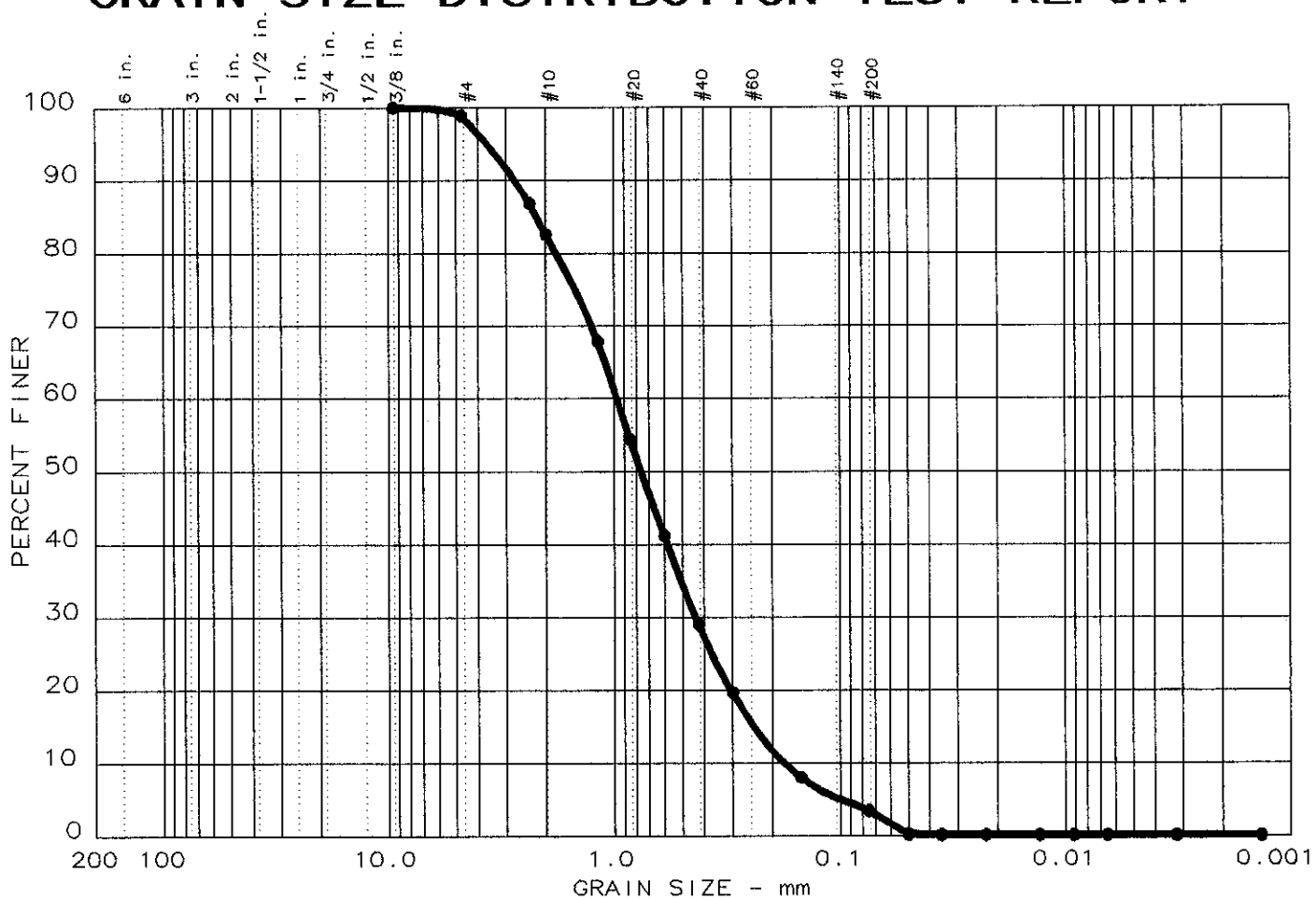
Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 16	10.17	86.5
# 20	18.08	76.1
# 30	23.72	68.6
# 40	27.06	64.2
# 50	30.26	59.9
# 100	35.16	53.4
# 200	41.04	45.6

Hydrometer Analysis Data

Separation sieve is number 200
Percent -#200 based on complete sample= 45.6
Weight of hydrometer sample: 75.5
Calculated biased weight= 165.42
Automatic temperature correction
Composite correction at 20 deg C =-5

Meniscus correction only=-1
Specific gravity of solids= 2.649
Specific gravity correction factor= 1.000
Hydrometer type: 152H Effective depth L= 16.294964 - 0.164 x Rm

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	1.1	95.4	3.4	0.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			2.19	0.972	0.761	0.437	0.240	0.176	1.12	5.5

MATERIAL DESCRIPTION	USCS	AASHTO
● Echo Upgradient Can 050201		

Project No.: 65880.01
Project: CDM
● Location: Tahoe Basin

Date: 06.21.2001

GRAIN SIZE DISTRIBUTION TEST REPORT
GOODSON & ASSOCIATES, INC.
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Remarks:

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST DATA Test No.: 15

Date: 06.21.2001
Project No.: 65880.01
Project: CDM

Sample Data

Location of Sample: Tahoe Basin
Sample Description: Echo Upgradient Can 050201
USCS Class: Liquid limit:
AASHTO Class: Plasticity index:

Notes

Remarks:

Fig. No.:

Mechanical Analysis Data

	Initial
Dry sample and tare=	112.48
Tare =	0.00
Dry sample weight =	112.48

Tare for cumulative weight retained= 0

Sieve	Cumul. Wt. retained	Percent finer
0.375 inches	0.00	100.0
# 4	1.23	98.9
# 8	14.83	86.8
# 10	19.58	82.6
# 16	36.18	67.8
# 20	51.36	54.3
# 30	66.11	41.2
# 40	79.77	29.1
# 50	90.35	19.7
# 100	103.37	8.1
# 200	108.55	3.5

Hydrometer Analysis Data

Separation sieve is number 200
Percent -#200 based on complete sample= 3.5
Weight of hydrometer sample: 92.9
Calculated biased weight= % 2658.8783715
Automatic temperature correction
Composite correction at 20 deg C =-5

Meniscus correction only=-1

Specific gravity of solids= 2.658
Specific gravity correction factor= 0.998
Hydrometer type: 152H Effective depth L= 16.294964 - 0.164 x Rm

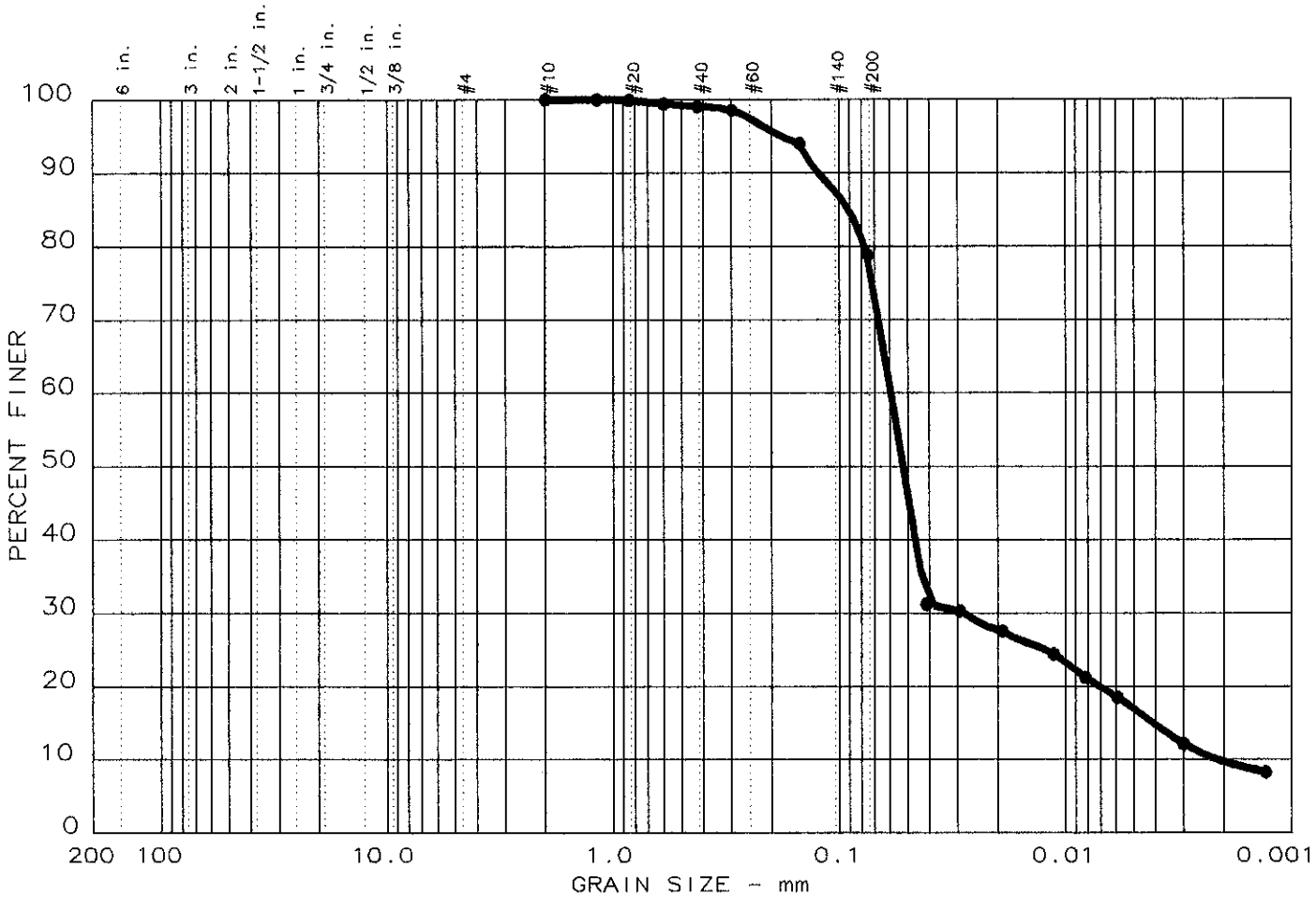
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
1.0	24.0	10.0	6.0	0.0130	9.0	14.8	0.0499	0.2
2.0	24.0	8.0	4.0	0.0130	7.0	15.1	0.0357	0.1
5.0	24.0	7.5	3.5	0.0130	6.5	15.2	0.0226	0.1
15.0	24.0	7.5	3.5	0.0130	6.5	15.2	0.0131	0.1
30.0	24.0	7.5	3.5	0.0130	6.5	15.2	0.0092	0.1
60.0	24.0	7.0	3.0	0.0130	6.0	15.3	0.0065	0.1
250.0	24.0	6.5	2.5	0.0130	5.5	15.4	0.0032	0.1
1440.0	23.0	6.5	2.2	0.0131	5.5	15.4	0.0014	0.1

Fractional Components

Gravel/Sand based on #4 sieve
Sand/Fines based on #200 sieve
% + 3 in. = 0.0 % GRAVEL = 1.1 % SAND = 95.4
% SILT = 3.4 % CLAY = 0.1

D85= 2.19 D60= 0.972 D50= 0.761
D30= 0.4370 D15= 0.24016 D10= 0.17599
Cc = 1.1169 Cu = 5.5208

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	0.0	21.2	61.8	17.0

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.0902		0.0522	0.0280	0.0041	0.0021	6.31	28.2

MATERIAL DESCRIPTION	USCS	AASHTO
● Echo Downgradient Can 050201		

Project No.: 65880.01
Project: CDM
● Location: Tahoe Basin

Date: 06.21.2001

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT
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Figure No. _____

GRAIN SIZE DISTRIBUTION TEST DATA Test No.: 15

Date: 06.21.2001
Project No.: 65880.01
Project: CDM

Sample Data

Location of Sample: Tahoe Basin
Sample Description: Echo Downgradient Can 050201
USCS Class: Liquid limit:
AASHTO Class: Plasticity index:

Notes

Remarks:

Fig. No.:

Mechanical Analysis Data

	Initial
Dry sample and tare=	86.78
Tare =	0.00
Dry sample weight =	86.78

Tare for cumulative weight retained= 0

Sieve	Cumul. Wt. retained	Percent finer
# 10	0.00	100.0
# 16	0.03	100.0
# 20	0.13	99.9
# 30	0.54	99.4
# 40	0.86	99.0
# 50	1.30	98.5
# 100	5.22	94.0
# 200	18.40	78.8

Hydrometer Analysis Data

Separation sieve is number 200
Percent -#200 based on complete sample= 78.8
Weight of hydrometer sample: 86.78
Calculated biased weight= 110.13
Automatic temperature correction
Composite correction at 20 deg C =-5

Meniscus correction only=-1
Specific gravity of solids= 2.654
Specific gravity correction factor= 0.999
Hydrometer type: 152H Effective depth L= 16.294964 - 0.164 x Rm

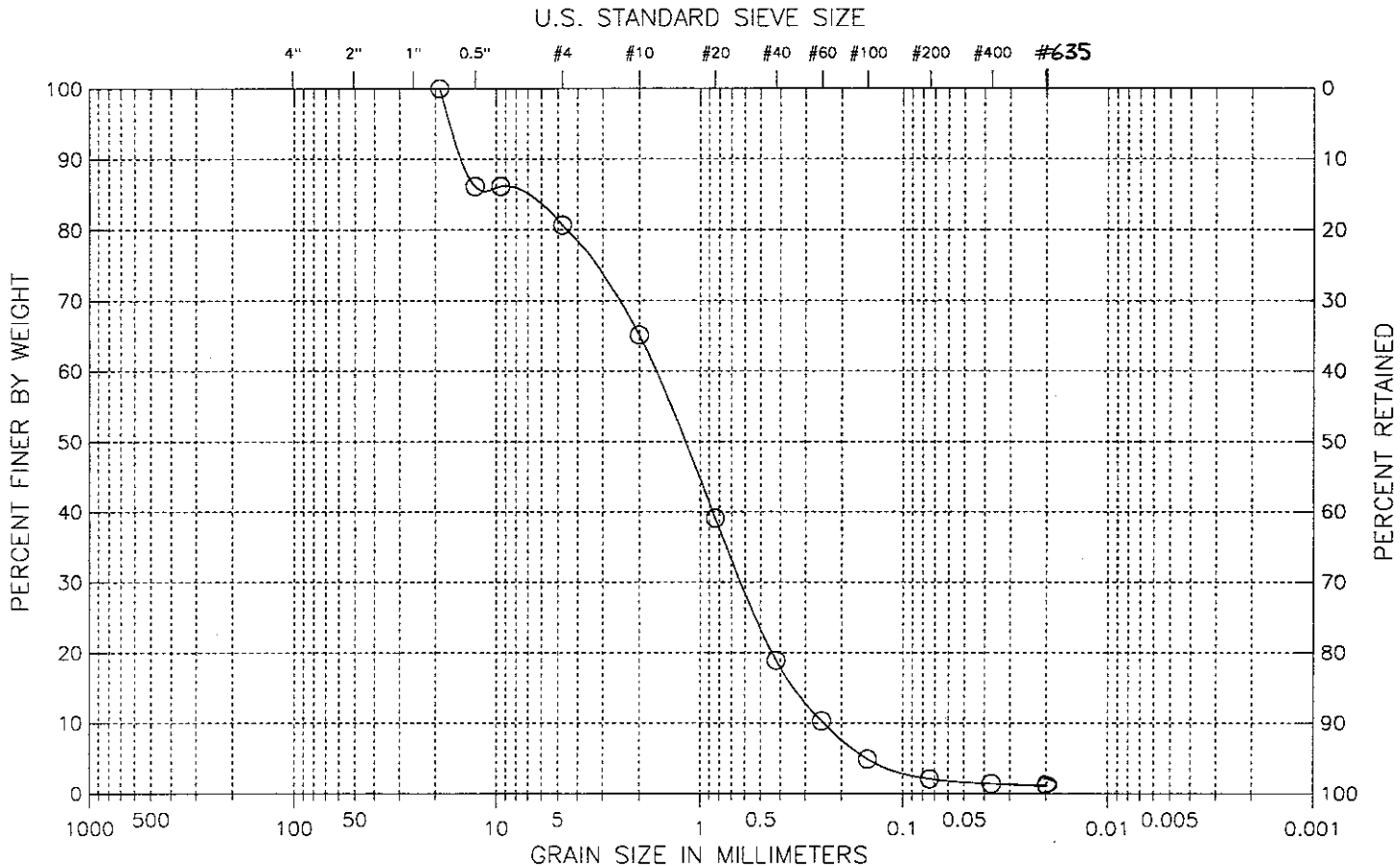
Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
1.0	24.0	38.5	34.5	0.0130	37.5	10.1	0.0413	31.3
2.0	24.0	37.5	33.5	0.0130	36.5	10.3	0.0295	30.3
5.0	24.0	34.5	30.5	0.0130	33.5	10.8	0.0191	27.6
15.0	24.0	31.0	27.0	0.0130	30.0	11.4	0.0113	24.4
30.0	24.0	27.5	23.5	0.0130	26.5	11.9	0.0082	21.3
60.0	24.0	24.5	20.5	0.0130	23.5	12.4	0.0059	18.6
250.0	24.0	17.5	13.5	0.0130	16.5	13.6	0.0030	12.2
1440.0	23.0	13.5	9.2	0.0131	12.5	14.2	0.0013	8.3

Fractional Components

Gravel/Sand based on #4 sieve
Sand/Fines based on #200 sieve
% + 3 in. = 0.0 % GRAVEL = 0.0 % SAND = 21.2
% SILT = 61.8 % CLAY = 17.0

D85= 0.09 D60= 0.059 D50= 0.052
D30= 0.0280 D15= 0.00405 D10= 0.00210
Cc = 6.3096 Cu = 28.1838

Boring No. : ---	Project : Tahoe
Sample No: 30110050800612	Project No.: GTX-3791
Test Method ASTM D 422	Location: ---
Filename : 50800612	Date : Thu Dec 13 2001



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :
(SP) Poorly graded sand with gravel
Visual Description :
Dry, grayish brown sand with gravel

Remarks :
Washed on #635 seive

Figure 1

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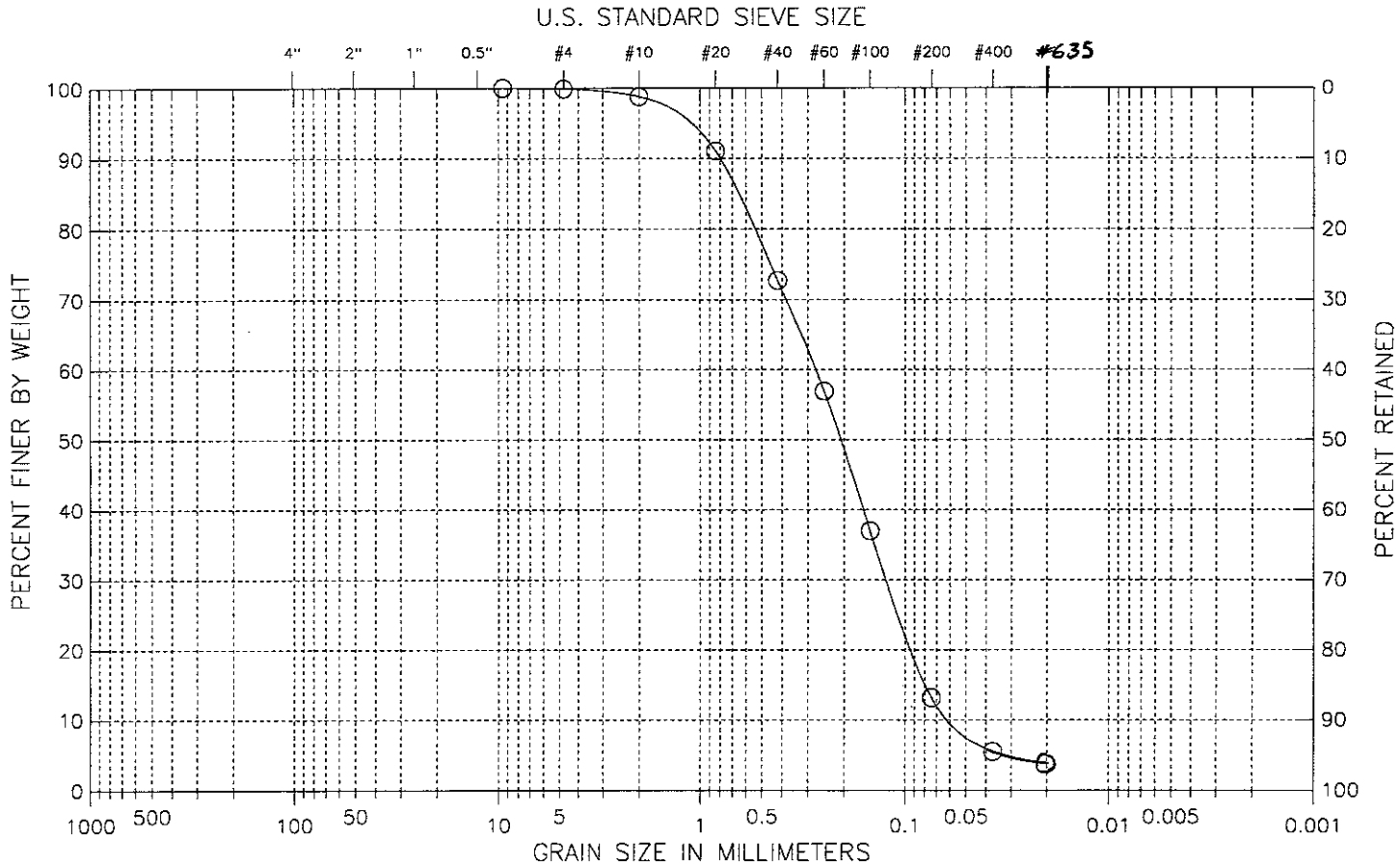
Grain Size Analysis by ASTM D 422

Client:	CDM Federal Programs Corp.	GTX #:	3791
Project Name:	Tahoe	Test Date:	12/12/01
Project Location:	---	Tested By:	njh
		Checked By:	jdt
Sample ID:	30110050800612		
Description:	Dry, grayish brown sand with gravel		

Sieve Size	Sieve Openings, in	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer, %
0.75"	0.7500	0.00	0.00	100.00
0.5"	0.5000	16.39	16.39	86.17
0.375"	0.3750	0.00	16.39	86.17
No. 4	0.1870	6.52	22.91	80.67
No. 10	0.0790	18.46	41.37	65.09
No. 20	0.0330	30.82	72.19	39.08
No. 40	0.0170	23.93	96.12	18.89
No. 60	0.0100	10.21	106.33	10.27
No. 100	0.0060	6.41	112.74	4.86
No. 200	0.0030	3.30	116.04	2.08
No. 400	0.0010	0.80	116.84	1.40
No. 635	0.0008	0.18	117.02	1.25
Total			118.5	

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

Boring No. : --- Sample No.: 30110050800621 Test Method ASTM D 422 Filename : 50800621	Project : Tahoe Project No.: GTX-3791 Location: --- Date : Thu Dec 13 2001



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Remarks :
Washed on #635 seive.

Visual Description :
Dry, dark gray silty sand with organics.

Figure 2

Grain Size Analysis by ASTM D 422

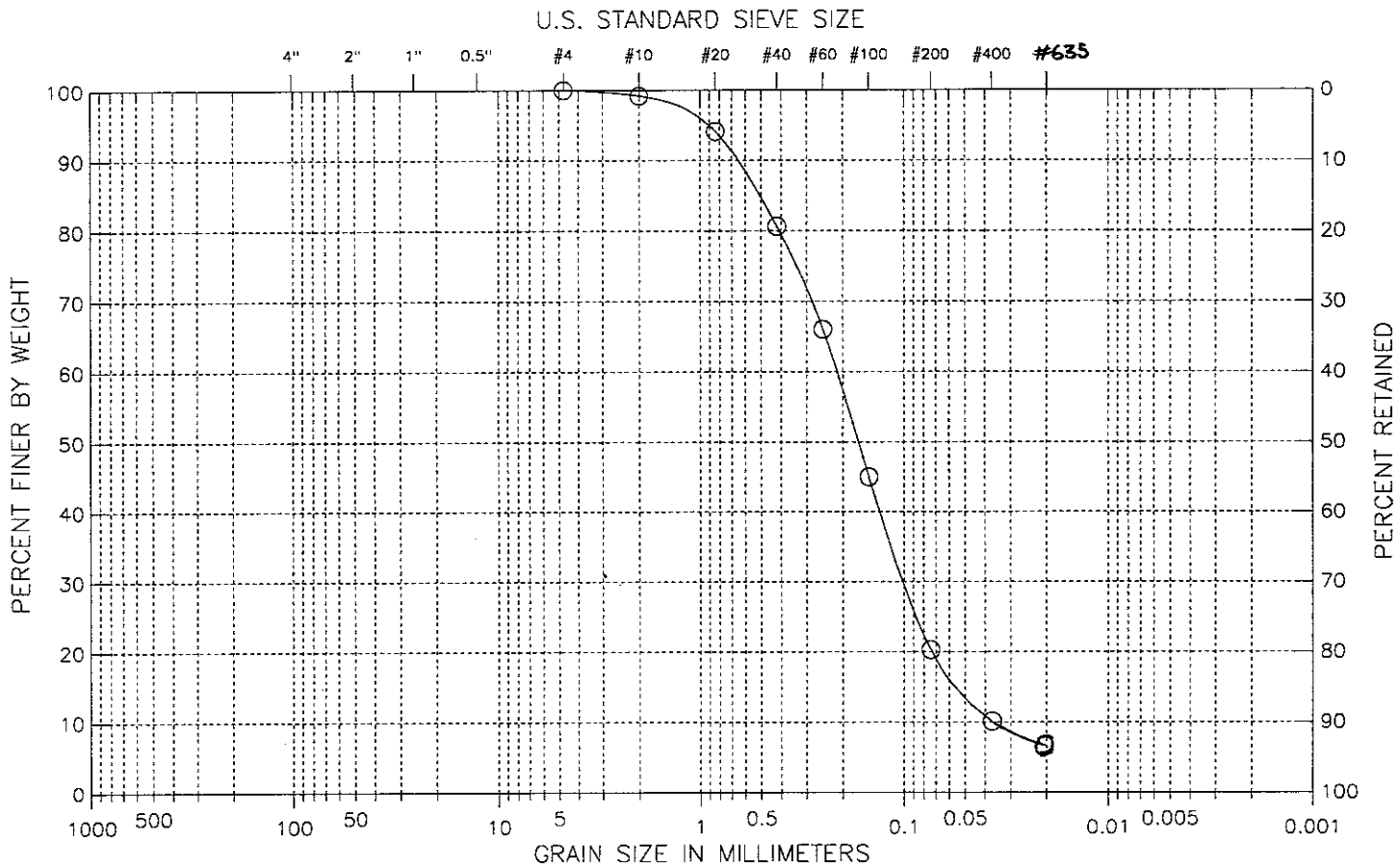
Client:	CDM Federal Programs Corp.	GTX #:	3791
Project Name:	Tahoe	Test Date:	12/12/01
Project Location:	---	Tested By:	njh
		Checked By:	jdt

Sample ID: 30110050800621
Description: Dry, dark gray silty sand with organics

Sieve Size	Sieve Openings, in	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer, %
0.375"	0.3750	0.00	0.00	100.00
No. 4	0.1870	0.06	0.06	99.89
No. 10	0.0790	0.60	0.66	98.78
No. 20	0.0330	4.16	4.82	91.07
No. 40	0.0170	9.92	14.74	72.69
No. 60	0.0100	8.51	23.25	56.93
No. 100	0.0060	10.77	34.02	36.98
No. 200	0.0030	12.88	46.90	13.12
No. 400	0.0010	4.11	51.01	5.50
No. 635	0.0008	0.61	51.62	4.37
Total			53.98	

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

Boring No. : --- Sample No.: 30110050800631 Test Method ASTM D 422 Filename : 50800631	Project : Tahoe Project No.: GTX-3791 Location: --- Date : Thu Dec 13 2001



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Remarks :
Washed on #635 seive.

Visual Description :
Dry grayish brown silty sand with organics.

Figure 3

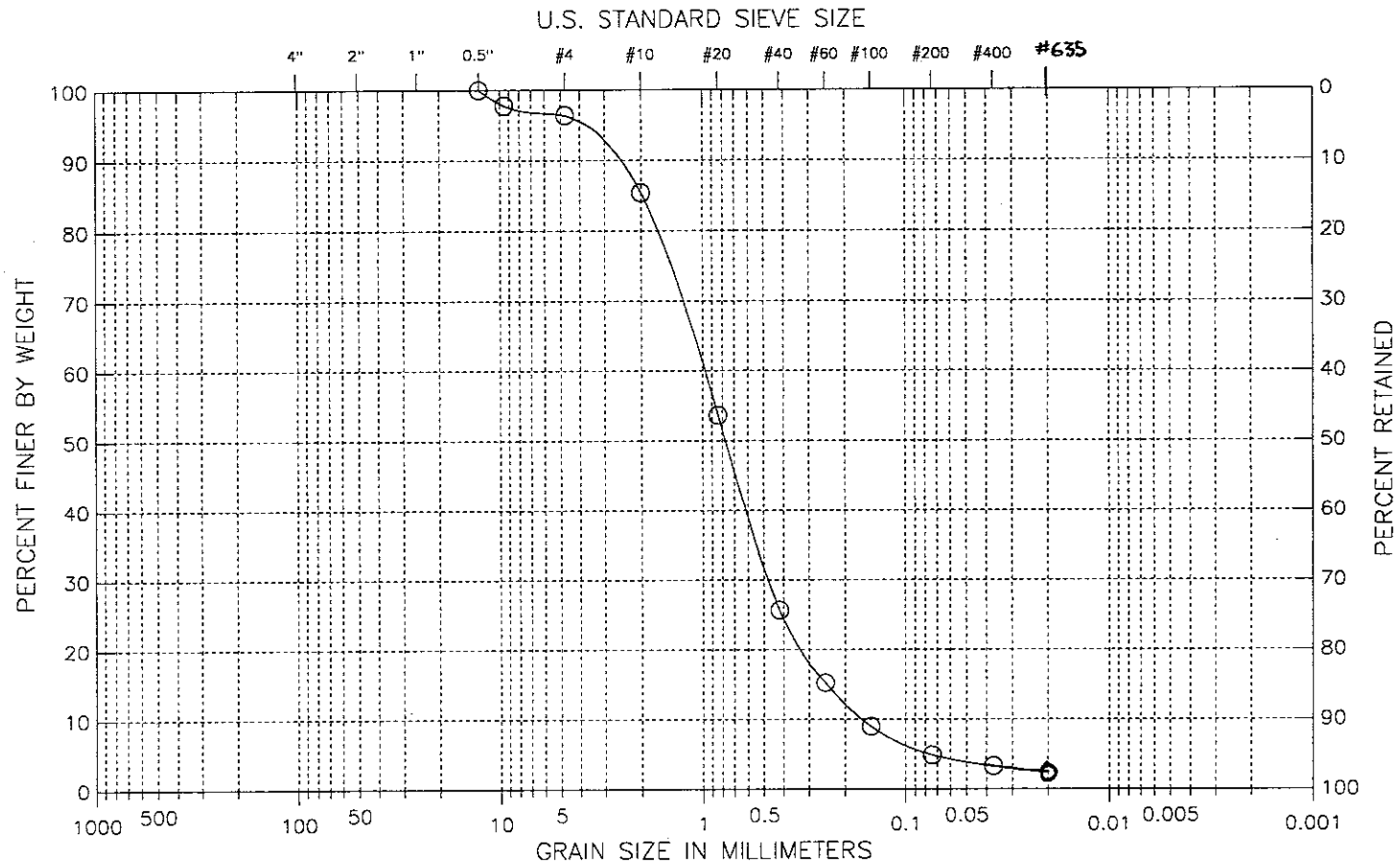
Grain Size Analysis by ASTM D 422

Client:	CDM Federal Programs Corp.	GTX #:	3791
Project Name:	Tahoe	Test Date:	12/12/01
Project Location:	---	Tested By:	njh
		Checked By:	jdt
Sample ID:	30110050800631		
Description:	Dry, grayish brown silty sand with organics		

Sieve Size	Sieve Openings, in	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer, %
No. 4	0.1870	0.00	0.00	100.00
No. 10	0.0790	0.48	0.48	99.18
No. 20	0.0330	2.97	3.45	94.11
No. 40	0.0170	7.90	11.35	80.63
No. 60	0.0100	8.55	19.90	66.05
No. 100	0.0060	12.35	32.25	44.98
No. 200	0.0030	14.46	46.71	20.30
No. 400	0.0010	5.99	52.70	10.08
No. 635	0.0008	1.27	53.97	7.92
Total			58.61	

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

Boring No. : ---	Project : Tahoe
Sample No.: 20110051430615	Project No.: GTX-3791
Test Method ASTM D 422	Location: ---
Filename : 51430615	Date : Thu Dec 13 2001



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :
(SW) Well-graded sand
Visual Description :
Dry, light brownish gray sand.

Remarks :
Washed on #635 seive.

Figure 4

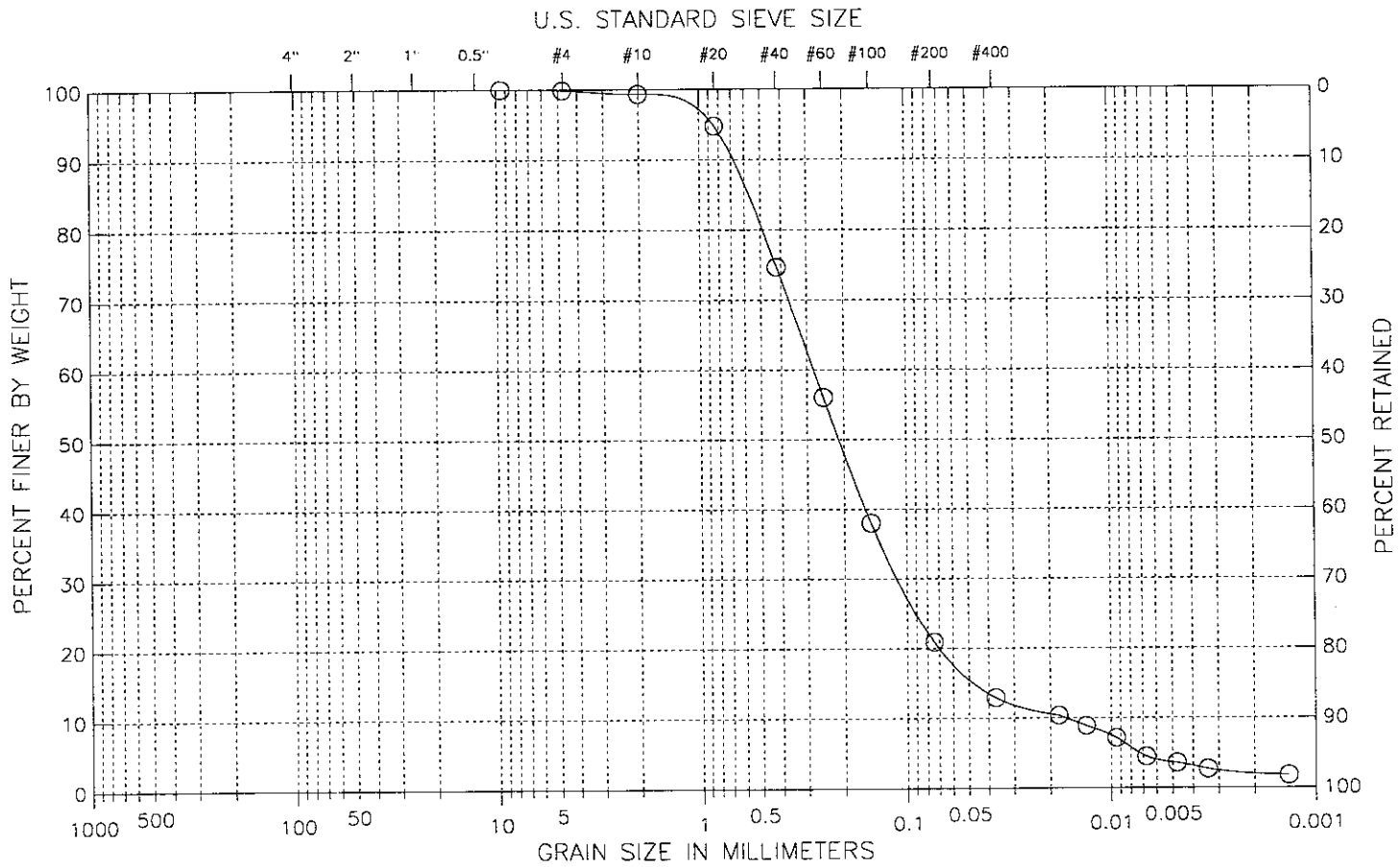
Grain Size Analysis by ASTM D 422

Client:	CDM Federal Programs Corp.	GTX #:	3791
Project Name:	Tahoe	Test Date:	12/12/01
Project Location:	---	Tested By:	njh
		Checked By:	jdt
Sample ID:	20110051430615		
Description:	Dry, light brownish gray sand		

Sieve Size	Sieve Openings, in	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer, %
0.5"	0.5000	0.00	0.00	100.00
0.375"	0.3750	2.49	2.49	97.78
No. 4	0.1870	1.55	4.04	96.39
No. 10	0.0790	12.28	16.32	85.43
No. 20	0.0330	35.60	51.92	53.63
No. 40	0.0170	31.30	83.22	25.68
No. 60	0.0100	11.75	94.97	15.19
No. 100	0.0060	6.99	101.96	8.95
No. 200	0.0030	4.60	106.56	4.84
No. 400	0.0010	1.77	108.33	3.26
No. 635	0.0008	0.54	108.87	2.78
Total			111.98	

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

Boring No. : ---	Project : Tahoe
Sample No: 20110051430621	Project No.: GTX-3791
Test Method ASTM D 422	Location: ---
Filename : 51430621	Date : Thu Dec 13 2001



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Remarks :
Washed on #635 seive.

Visual Description :
Dry, grayish brown silty sand.

Figure 5

Grain Size Analysis by ASTM D 422

Client: CDM Federal Programs Corp.
Project Name: Tahoe
Project Location: ---

GTX #: 3791
Test Date: 12/12/01
Tested By: njh
Checked By: jdt

Sample ID: 20110051430621
Description: Dry, grayish brown silty sand

Sieve Size	Sieve Openings, in	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer, %
0.375"	0.3750	0.00	0.00	100.00
No. 4	0.1870	0.08	0.08	99.88
No. 10	0.0790	0.35	0.43	99.34
No. 20	0.0330	2.95	3.38	94.79
No. 40	0.0170	13.04	16.42	74.68
No. 60	0.0100	12.08	28.50	56.06
No. 100	0.0060	11.70	40.20	38.02
No. 200	0.0030	11.10	51.30	20.91
No. 400	0.0010	5.19	56.49	12.90
No. 635	0.0008	1.35	57.84	10.82
Total			64.86	

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GEOTECHNICAL LABORATORY TEST DATA

Project : Tahoe
Project No. : GTX-3791
Boring No. : ---
Sample No. : 20110051430621
Location : ---
Soil Description : Dry, grayish brown silty sand.
Remarks : Washed on #635 seive.

Depth : ---
Test Date : 12/05/01
Test Method : ASTM D 422

Filename : 51430621
Elevation : ---
Tested by : njh
Checked by : jdt

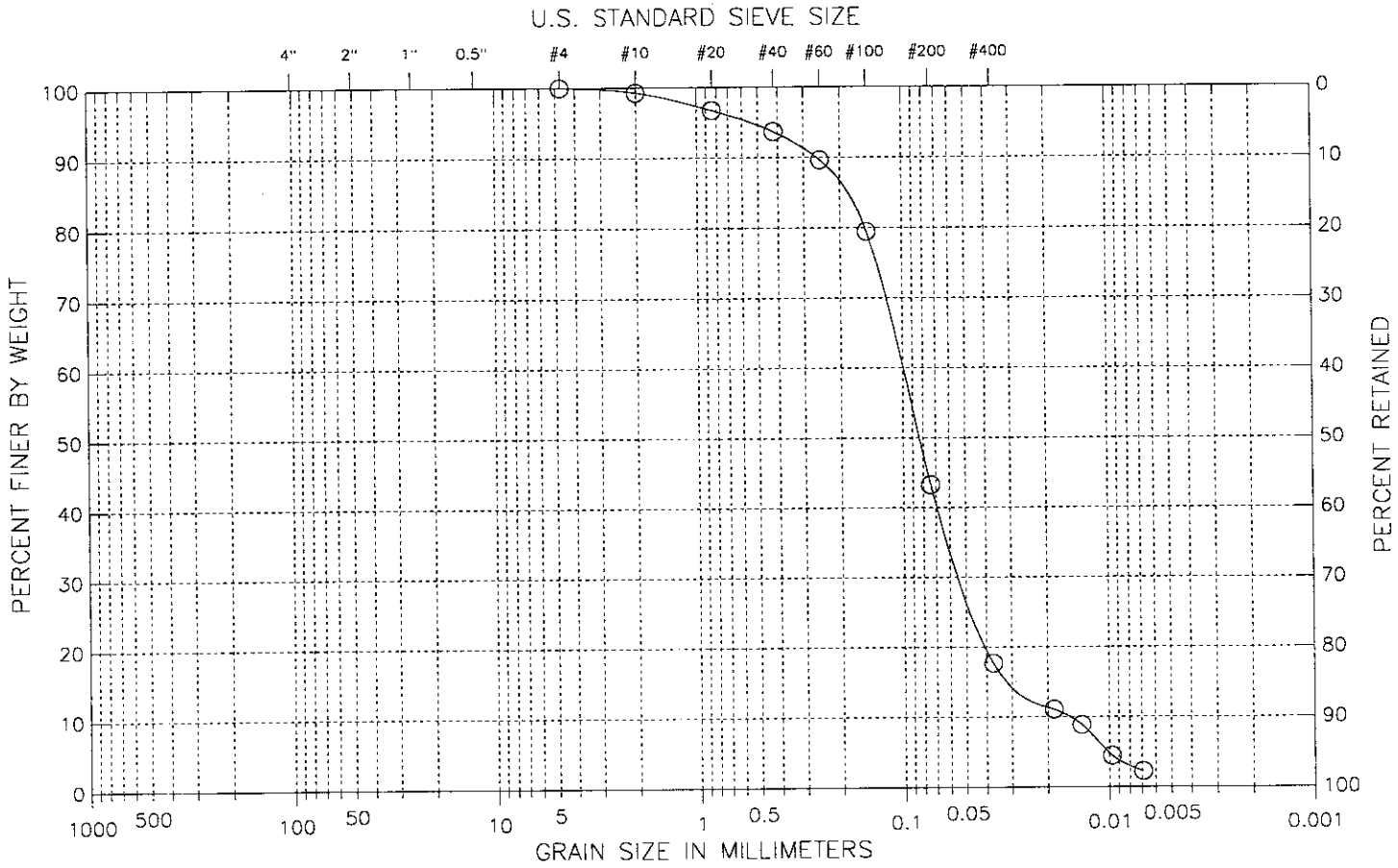
HYDROMETER

Hydrometer ID : 127630
Weight of air-dried soil = 55.42 gm
Specific Gravity = 2.7

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
8.00	11.50	19.50	5.83	0.018	10	0.018
8.00	11.50	19.50	5.83	0.018	10	0.018
8.00	11.50	19.50	5.83	0.018	10	0.018
8.00	11.50	19.50	5.83	0.018	10	0.018
15.00	10.50	20.00	5.00	0.013	9	0.013
30.00	9.50	20.00	4.00	0.009	7	0.009
60.00	8.00	20.00	2.50	0.007	4	0.007
120.00	7.50	20.00	2.00	0.005	4	0.005
240.00	7.00	20.00	1.50	0.003	3	0.003
1482.00	6.50	20.00	1.00	0.001	2	0.001

Boring No. : --- Sample No.: Echo 100301 Test Method ASTM D 422 Filename : ECHO1003	Project : Tahoe Project No.: GTX-3791 Location: --- Date : Thu Dec 13 2001



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Remarks :
Washed on #635 seive.

Visual Description :
Dry grayish brown silty sand with organics.

Figure 6

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Grain Size Analysis by ASTM D 422

Client:	CDM Federal Programs Corp.	GTX #:	3791
Project Name:	Tahoe	Test Date:	12/12/01
Project Location:	---	Tested By:	njh
		Checked By:	jdt

Sample ID: Echo 100301
Description: Dry, grayish brown silty sand with organics

Sieve Size	Sieve Openings, in	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer, %
No. 4	0.1870	0.00	0.00	100.00
No. 10	0.0790	0.36	0.36	99.29
No. 20	0.0330	1.30	1.66	96.73
No. 40	0.0170	1.54	3.20	93.70
No. 60	0.0100	2.07	5.27	89.63
No. 100	0.0060	5.17	10.44	79.46
No. 200	0.0030	18.40	28.84	43.26
No. 400	0.0010	13.00	41.84	17.69
No. 635	0.0008	2.75	44.59	12.28
Total			50.83	

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GEOTECHNICAL LABORATORY TEST DATA

Project : Tahoe
Project No. : GTX-3791
Boring No. : ---
Sample No. : Echo 100301
Location : ---

Depth : ---
Test Date : 12/06/01
Test Method : ASTM D 422

Filename : ECHO1003
Elevation : ---
Tested by : njh
Checked by : jdt

Soil Description : Dry grayish brown silty sand with organics.
Remarks : Washed on #635 seive.

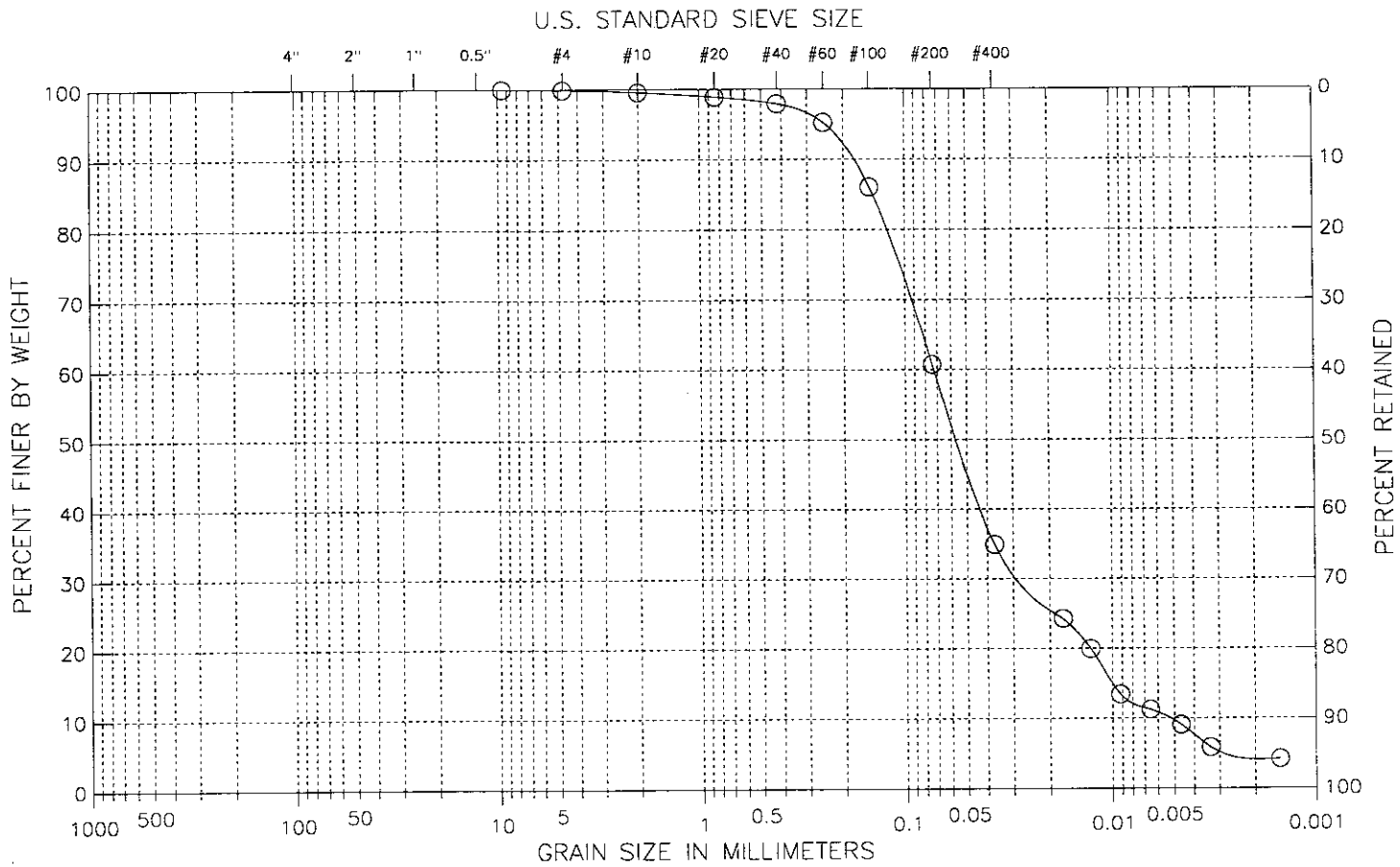
HYDROMETER

Hydrometer ID : 127630
Weight of air-dried soil = 22.47 gm
Specific Gravity = 2.65

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
8.00	8.00	20.00	2.50	0.019	11	0.019
8.00	8.00	20.00	2.50	0.019	11	0.019
8.00	8.00	20.00	2.50	0.019	11	0.019
8.00	8.00	20.00	2.50	0.019	11	0.019
15.00	7.50	20.00	2.00	0.014	9	0.014
30.00	6.50	20.00	1.00	0.010	4	0.010
60.00	6.00	20.00	0.50	0.007	2	0.007

Boring No. : ---	Project : Tahoe
Sample No.: Airport 082701	Project No.: GTX-3791
Test Method ASTM D 422	Location: ---
Filename : RT082701	Date : Thu Dec 13 2001



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Remarks :
Washed on #635 seive.

Visual Description :
Dry grayish brown sandy silt.

Figure 7

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Grain Size Analysis by ASTM D 422

Client: CDM Federal Programs Corp.
Project Name: Tahoe
Project Location: ---

GTX #: 3791
Test Date: 12/12/01
Tested By: njh
Checked By: jdt

Sample ID: Airport 082701
Description: Dry, grayish brown sandy silt

Sieve Size	Sieve Openings, in	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer, %
0.375"	0.3750	0.00	0.00	100.00
No. 4	0.1870	0.05	0.05	99.92
No. 10	0.0790	0.20	0.25	99.58
No. 20	0.0330	0.41	0.66	98.89
No. 40	0.0170	0.59	1.25	97.90
No. 60	0.0100	1.67	2.92	95.10
No. 100	0.0060	5.38	8.30	86.06
No. 200	0.0030	15.07	23.37	60.75
No. 400	0.0010	15.38	38.75	34.92
No. 635	0.0008	6.05	44.80	24.76
Total			59.54	

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GEOTECHNICAL LABORATORY TEST DATA

Project : Tahoe
Project No. : GTX-3791
Boring No. : ---
Sample No. : Airport 082701
Location : ---
Soil Description : Dry grayish brown sandy silt.
Remarks : Washed on #635 seive.

Depth : ---
Test Date : 12/05/01
Test Method : ASTM D 422

Filename : RT082701
Elevation : ---
Tested by : njh
Checked by : jdt

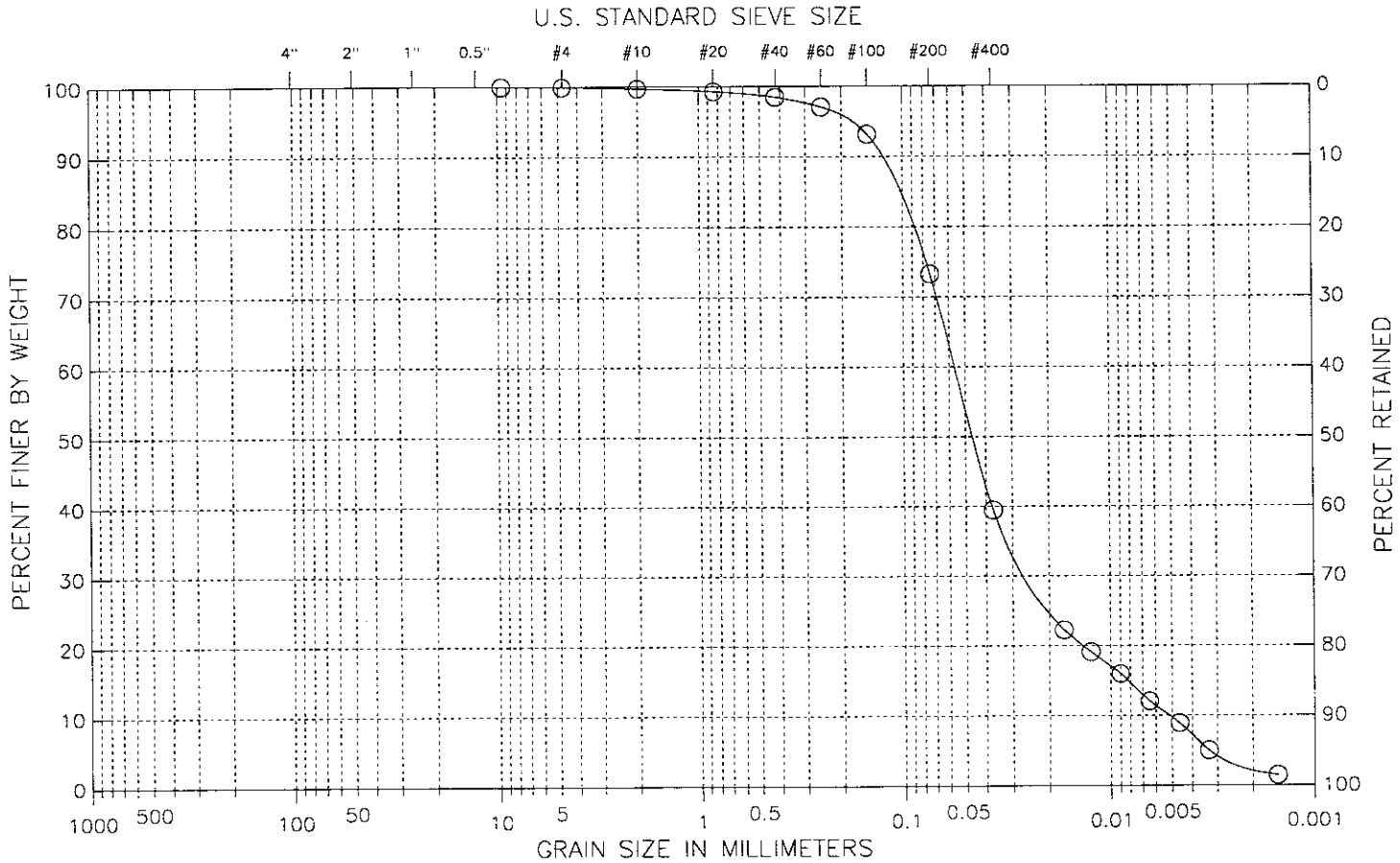
HYDROMETER

Hydrometer ID : 88-18231
Weight of air-dried soil = 27.69 gm
Specific Gravity = 2.7

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
8.00	17.00	21.00	11.17	0.017	24	0.017
8.00	17.00	21.00	11.17	0.017	24	0.017
8.00	17.00	21.00	11.17	0.017	24	0.017
8.00	17.00	21.00	11.17	0.017	24	0.017
15.00	15.00	21.00	9.17	0.013	20	0.013
30.00	12.00	21.00	6.17	0.009	13	0.009
60.00	11.00	21.00	5.17	0.007	11	0.007
120.00	10.00	21.00	4.17	0.005	9	0.005
240.00	8.50	21.00	2.67	0.003	6	0.003
1224.00	8.00	19.00	1.92	0.002	4	0.002

Boring No. : --- Sample No.: Airport 103001 Test Method ASTM D 422 Filename : RT103001	Project : Tahoe Project No.: GTX-3791 Location: --- Date : Thu Dec 13 2001



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Remarks :
Washed on #635 seive.

Visual Description :
Dry, grayish brown sandy silt with organics

Figure 8

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Grain Size Analysis by ASTM D 422

Client:	CDM Federal Programs Corp.	GTX #:	3791
Project Name:	Tahoe	Test Date:	12/12/01
Project Location:	---	Tested By:	njh
		Checked By:	jdt

Sample ID: Airport 103001
Description: Dry, grayish brown sandy silt with organics

Sieve Size	Sieve Openings, in	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer, %
0.375"	0.3750	0.00	0.00	100.00
No. 4	0.1870	0.04	0.04	99.93
No. 10	0.0790	0.13	0.17	99.71
No. 20	0.0330	0.25	0.42	99.28
No. 40	0.0170	0.47	0.89	98.48
No. 60	0.0100	0.82	1.71	97.08
No. 100	0.0060	2.27	3.98	93.20
No. 200	0.0030	11.67	15.65	73.26
No. 400	0.0010	19.79	35.44	39.44
No. 635	0.0008	7.55	42.99	26.54
Total			58.52	

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GEOTECHNICAL LABORATORY TEST DATA

Project : Tahoe
Project No. : GTX-3791
Boring No. : ---
Sample No. : Airport 103001
Location : ---
Depth : ---
Test Date : 12/05/01
Test Method : ASTM D 422
Filename : RT103001
Elevation : ---
Tested by : njh
Checked by : jdt
Soil Description : Dry, grayish brown sandy silt with organics
Remarks : Washed on #635 seive.

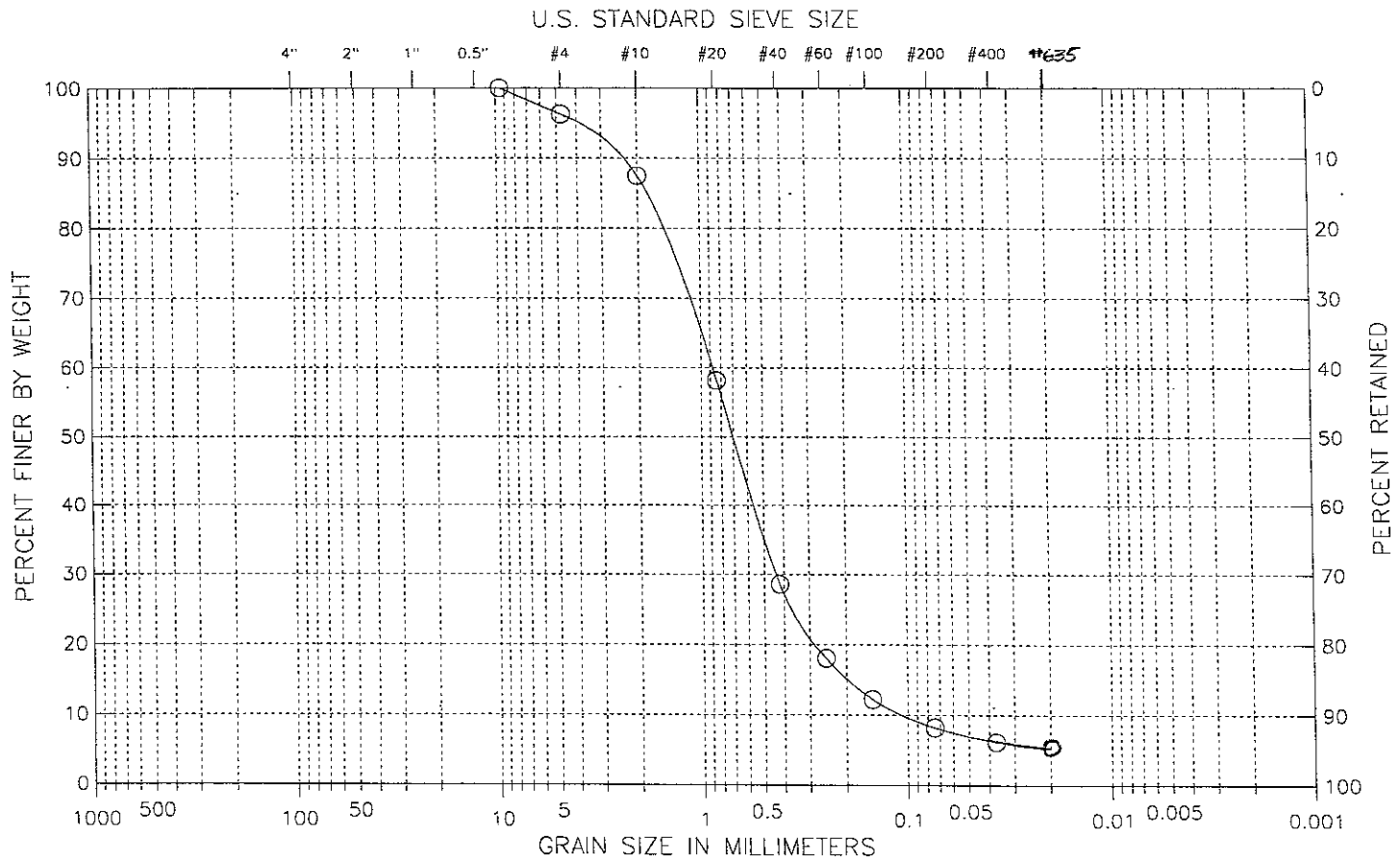
HYDROMETER

Hydrometer ID : 88-18231
Weight of air-dried soil = 62.97 gm
Specific Gravity = 2.7

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
8.00	20.00	21.00	14.17	0.017	22	0.017
8.00	20.00	21.00	14.17	0.017	22	0.017
8.00	20.00	21.00	14.17	0.017	22	0.017
8.00	20.00	21.00	14.17	0.017	22	0.017
15.00	18.00	21.00	12.17	0.013	19	0.013
30.00	16.00	21.00	10.17	0.009	16	0.009
60.00	13.50	21.00	7.67	0.006	12	0.006
120.00	11.50	21.00	5.67	0.005	9	0.005
240.00	9.00	21.00	3.17	0.003	5	0.003
1215.00	7.00	19.00	0.92	0.002	1	0.002

Boring No. : ---	Project : Tahoe
Sample No.: 3202S102011001	Project No.: GTX-3791
Test Method ASTM D 422	Location: ---
Filename : 32021020	Date : Wed May 01 2002



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Remarks :
Sample ID: 3202S110201100112 00C1

Visual Description :
Dry, grayish brown sand with silt

Figure 1

Grain Size Analysis by ASTM D 422

Client: CDM Federal Programs Corp.
Project Name: Tahoe
Project Location: ---

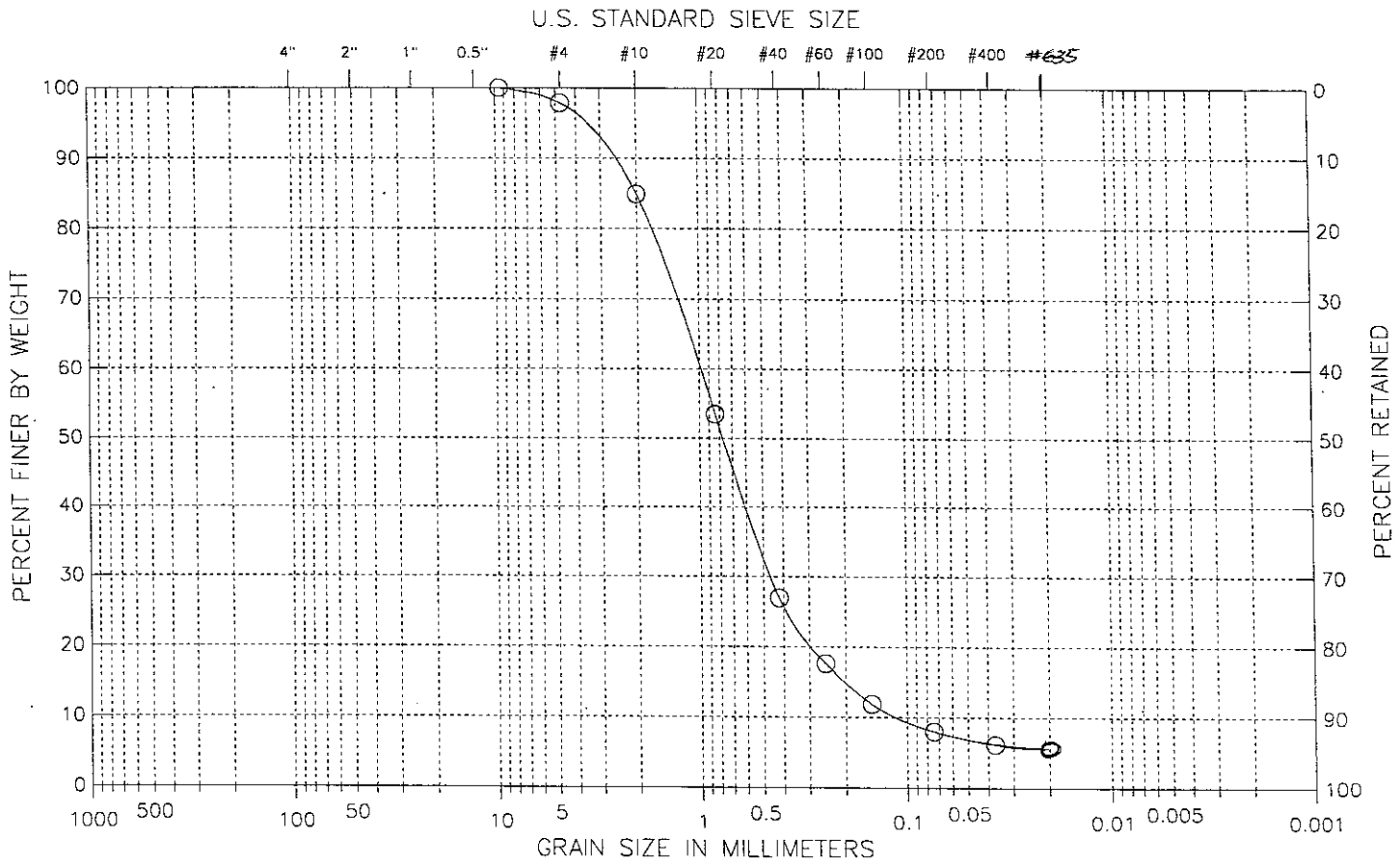
GTX #: 3791
Test Date: 04/26/02
Tested By: njh
Checked By: jdt

Sample ID: 3202S1020110011200C1
Description: Dry, grayish brown sand with silt

Sieve Size	Sieve Openings, in	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer, %
0.375"	0.3750	0.00	0.00	100.00
No. 4	0.1870	3.08	3.08	96.27
No. 10	0.0790	7.25	10.33	87.50
No. 20	0.0330	24.22	34.55	58.18
No. 40	0.0170	24.42	58.97	28.62
No. 60	0.0100	8.70	67.67	18.08
No. 100	0.0060	4.84	72.51	12.23
No. 200	0.0030	3.29	75.80	8.24
No. 400	0.0010	1.70	77.50	6.19
No. 635	0.0008	0.73	78.23	5.30
Total			82.61	

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

Boring No. : ---	Project : Tahoe
Sample No.: 3202S202011011	Project No.: GTX-3791
Test Method ASTM D 422	Location: ---
Filename : 32022020	Date : Wed May 01 2002



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Visual Description :
Moist, very dark grayish brown sand with silt

Remarks :
Sample ID: 3202S20201101100C1

Figure 2

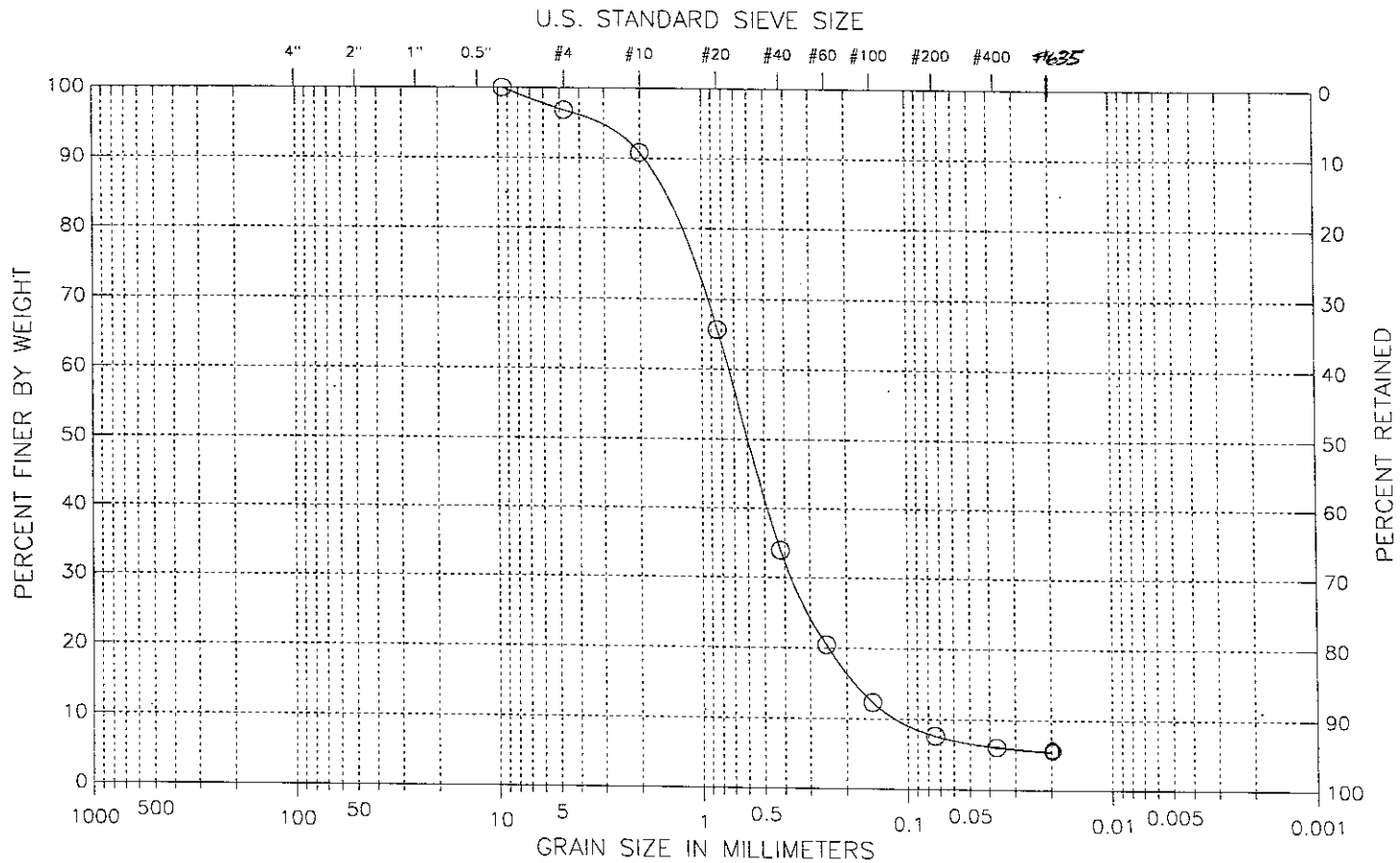
Grain Size Analysis by ASTM D 422

Client:	CDM Federal Programs Corp.	GTX #:	3791
Project Name:	Tahoe	Test Date:	04/26/02
Project Location:	---	Tested By:	njh
		Checked By:	jdt
Sample ID:	3202S20201101100C1		
Description:	Moist, very dark grayish brown sand with silt		

Sieve Size	Sieve Openings, in	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer, %
0.375"	0.3750	0.00	0.00	100.00
No. 4	0.1870	1.80	1.80	97.85
No. 10	0.0790	10.80	12.60	84.94
No. 20	0.0330	26.31	38.91	53.51
No. 40	0.0170	22.19	61.10	26.99
No. 60	0.0100	7.81	68.91	17.66
No. 100	0.0060	4.84	73.75	11.88
No. 200	0.0030	3.20	76.95	8.05
No. 400	0.0010	1.56	78.51	6.19
No. 635	0.0008	0.46	78.97	5.64
Total			83.69	

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

Boring No. : --- Sample No.: 3203S101212130 Test Method ASTM D 422 Filename : 32031012	Project : Tahoe Project No.: GTX-3791 Location: --- Date : Wed May 01 2002



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Visual Description :
Moist, olive gray sand with silt

Remarks :
Sample ID: 3203S1012121300C1

Figure 3

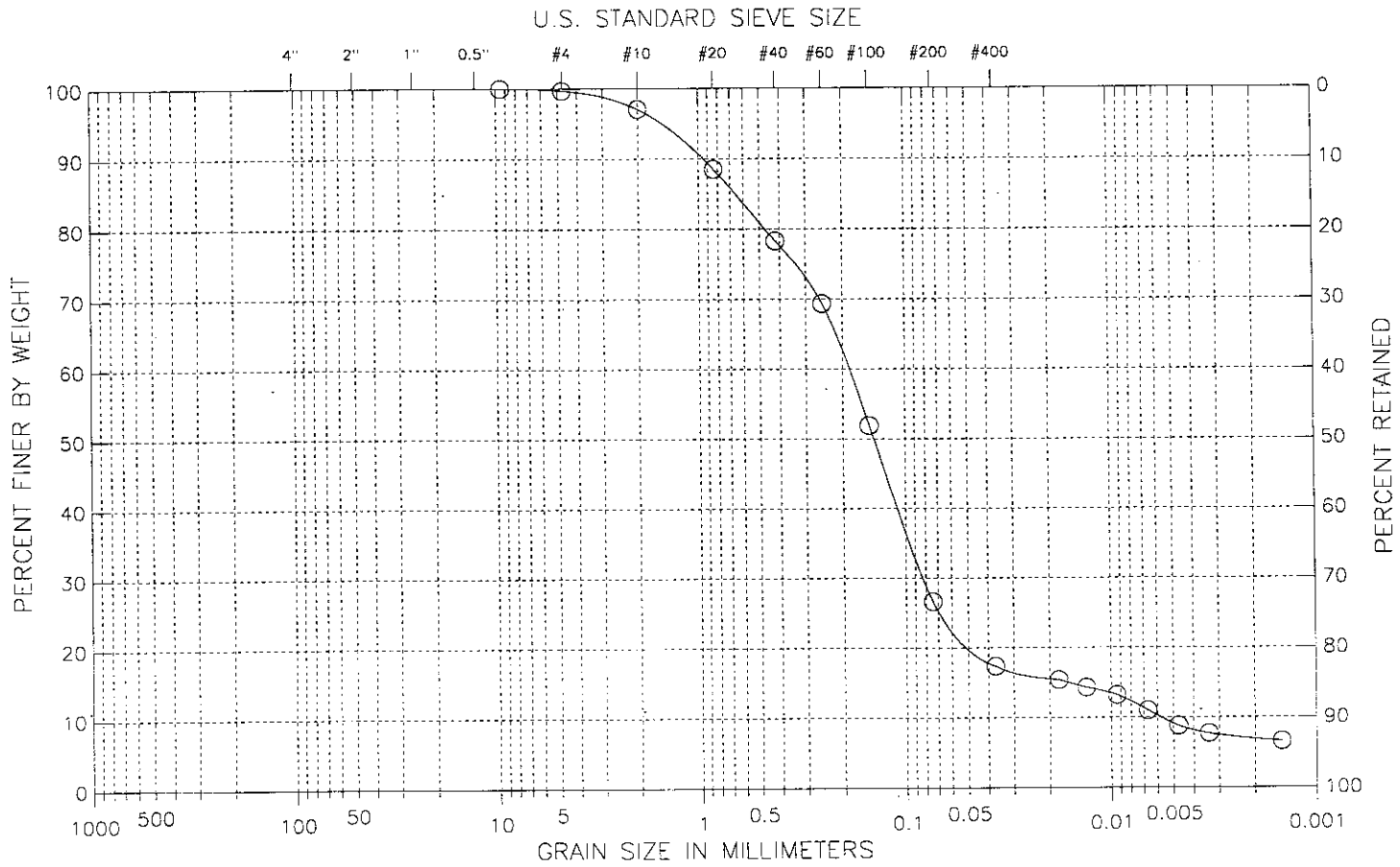
Grain Size Analysis by ASTM D 422

Client:	CDM Federal Programs Corp.	GTX #:	3791
Project Name:	Tahoe	Test Date:	04/26/02
Project Location:	---	Tested By:	njh
		Checked By:	jdt
Sample ID:	3203S1012121300C1		
Description:	Moist, olive gray sand with silt		

Sieve Size	Sieve Openings, in	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer, %
0.375"	0.3750	0.00	0.00	100.00
No. 4	0.1870	1.71	1.71	96.78
No. 10	0.0790	3.17	4.88	90.80
No. 20	0.0330	13.30	18.18	65.72
No. 40	0.0170	16.83	35.01	33.98
No. 60	0.0100	7.16	42.17	20.48
No. 100	0.0060	4.30	46.47	12.37
No. 200	0.0030	2.48	48.95	7.69
No. 400	0.0010	0.83	49.78	6.13
No. 635	0.0008	0.09	49.87	5.96
Total			53.03	

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

Boring No. : ---	Project : Tahoe
Sample No.: 3203S201121213	Project No.: GTX-3791
Test Method ASTM D 422	Location: ---
Filename : 32032011	Date : Wed May 01 2002



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Remarks :
Sample ID: 3203S20112121300C1

Visual Description :
Dry, very dark grayish brown silty sand

Figure 4

Grain Size Analysis by ASTM D 422

Client:	CDM Federal Programs Corp.	GTX #:	3791
Project Name:	Tahoe	Test Date:	04/26/02
Project Location:	---	Tested By:	njh
		Checked By:	jdt
Sample ID:	3203S20112121300C1		
Description:	Dry, very dark grayish brown silty sand		

Sieve Size	Sieve Openings, in	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer, %
0.375"	0.3750	0.00	0.00	100.00
No. 4	0.1870	0.14	0.14	99.69
No. 10	0.0790	1.19	1.33	97.07
No. 20	0.0330	3.88	5.21	88.54
No. 40	0.0170	4.63	9.84	78.35
No. 60	0.0100	4.07	13.91	69.40
No. 100	0.0060	4.91	18.82	58.60
No. 200	0.0030	11.48	30.30	33.35
No. 400	0.0010	4.20	34.50	24.11
No. 635	0.0008	0.42	34.92	23.19
Total			45.46	

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GEOTECHNICAL LABORATORY TEST DATA

Project : Tahoe
Project No. : GTX-3791
Boring No. : ---
Sample No. : 3203S201121213
Location : ---

Depth : ---
Test Date : 04/23/02
Test Method : ASTM D 422

Filename : 32032011
Elevation : ---
Tested by : njh
Checked by : jdt

Soil Description : Dry, very dark grayish brown silty sand
Remarks : Sample ID: 3203S20112121300C1

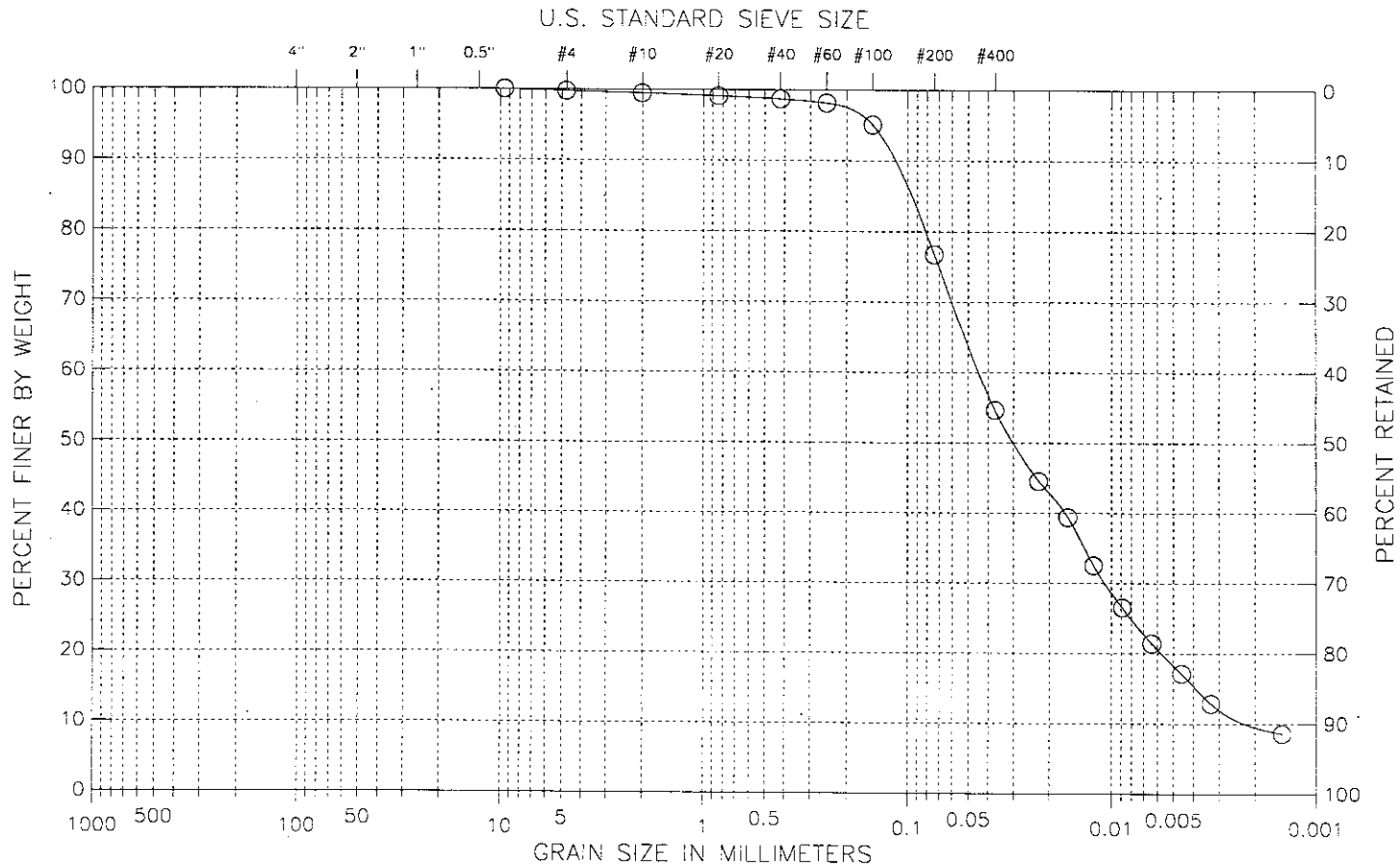
HYDROMETER

Hydrometer ID : 457473
Weight of air-dried soil = 44.04 gm
Specific Gravity = 2.67

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
8.00	13.00	20.00	7.00	0.018	15	0.018
8.00	13.00	20.00	7.00	0.018	15	0.018
8.00	13.00	20.00	7.00	0.018	15	0.018
8.00	13.00	20.00	7.00	0.018	15	0.018
15.00	12.50	20.00	6.50	0.013	14	0.013
30.00	12.00	20.00	6.00	0.009	13	0.009
60.00	11.00	20.00	5.00	0.007	11	0.007
120.00	10.00	20.00	4.00	0.005	9	0.005
240.00	9.50	20.00	3.50	0.003	8	0.003
1251.00	9.00	20.00	3.00	0.001	7	0.001

Boring No. : ---	Project : Tahoe
Sample No.: AIRPORT 11/08	Project No.: GTX-3791
Test Method ASTM D 422	Location: ---
Filename : AIRP1108	Date : Wed May 01 2002



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Visual Description :
Dry, light brownish gray sandy silt

Remarks :
Sample ID: AIRPORT 11/08/01

Figure 5

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Grain Size Analysis by ASTM D 422

Client:	CDM Federal Programs Corp.	GTX #:	3791
Project Name:	Tahoe	Test Date:	04/26/02
Project Location:	---	Tested By:	njh
		Checked By:	jdt
Sample ID:	AIRPORT 11/08/01		
Description:	Dry, light brownish gray sandy silt		

Sieve Size	Sieve Openings, in	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer, %
0.375"	0.3750	0.00	0.00	100.00
No. 4	0.1870	0.14	0.14	99.76
No. 10	0.0790	0.17	0.31	99.47
No. 20	0.0330	0.22	0.53	99.09
No. 40	0.0170	0.25	0.78	98.66
No. 60	0.0100	0.31	1.09	98.13
No. 100	0.0060	1.76	2.85	95.11
No. 200	0.0030	10.68	13.53	76.79
No. 400	0.0010	12.89	26.42	54.67
No. 635	0.0008	6.82	33.24	42.97
Total			58.29	

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GEOTECHNICAL LABORATORY TEST DATA

Project : Tahoe
Project No. : GTX-3791
Boring No. : ---
Sample No. : AIRPORT 11/08
Location : ---
Depth : ---
Test Date : 04/23/02
Test Method : ASTM D 422
Filename : AIRP1108
Elevation : ---
Tested by : njh
Checked by : jdt
Soil Description : Dry, light brownish gray sandy silt
Remarks : Sample ID: AIRPORT 11/08/01

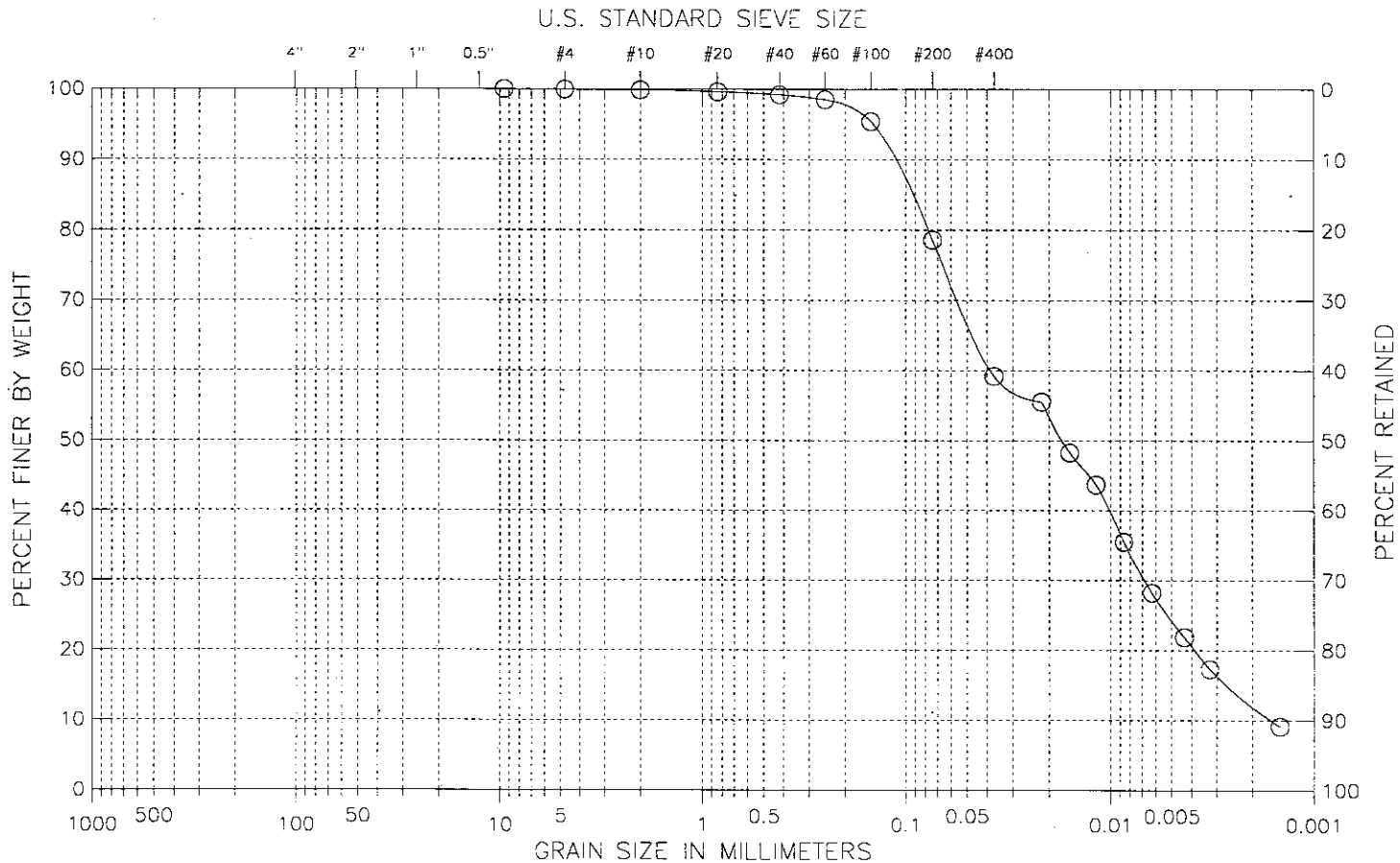
HYDROMETER

Hydrometer ID : 457473
Weight of air-dried soil = 57.94 gm
Specific Gravity = 2.67

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
4.00	32.00	20.00	26.00	0.023	45	0.023
4.00	32.00	20.00	26.00	0.023	45	0.023
4.00	32.00	20.00	26.00	0.023	45	0.023
8.00	29.00	20.00	23.00	0.016	39	0.016
15.00	25.00	20.00	19.00	0.012	33	0.012
30.00	21.50	20.00	15.50	0.009	27	0.009
60.00	18.50	20.00	12.50	0.006	21	0.006
120.00	16.00	20.00	10.00	0.005	17	0.005
240.00	13.50	20.00	7.50	0.003	13	0.003
1233.00	11.00	20.00	5.00	0.001	9	0.001

Boring No. : ---	Project : Tahoe
Sample No.: AIRPORT 12/13/	Project No.: GTX-3791
Test Method ASTM D 422	Location: ---
Filename : AIRP1213	Date : Wed May 01 2002



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Visual Description :
Dry, dark grayish brown sandy silt

Remarks :
Sample ID: AIRPORT 12/13/01

Figure 6

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Grain Size Analysis by ASTM D 422

Client:	CDM Federal Programs Corp.	GTX #:	3791
Project Name:	Tahoe	Test Date:	04/26/02
Project Location:	---	Tested By:	njh
		Checked By:	jdt
Sample ID:	AIRPORT 12/13/01		
Description:	Dry, dark grayish brown sandy silt		

Sieve Size	Sieve Openings, in	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer, %
0.375"	0.3750	0.00	0.00	100.00
No. 4	0.1870	0.03	0.03	99.95
No. 10	0.0790	0.05	0.08	99.85
No. 20	0.0330	0.14	0.22	99.60
No. 40	0.0170	0.22	0.44	99.20
No. 60	0.0100	0.37	0.81	98.52
No. 100	0.0060	1.69	2.50	95.44
No. 200	0.0030	9.21	11.71	78.64
No. 400	0.0010	10.65	22.36	59.22
No. 635	0.0008	4.15	26.51	51.65
Total			54.83	

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GEOTECHNICAL LABORATORY TEST DATA

Project : Tahoe
Project No. : GTX-3791
Boring No. : ---
Sample No. : AIRPORT 12/13/
Location : ---
Soil Description : Dry, dark grayish brown sandy silt
Remarks : Sample ID: AIRPORT 12/13/01

Depth : ---
Test Date : 04/23/02
Test Method : ASTM D 422

Filename : AIRP1213
Elevation : ---
Tested by : njh
Checked by : jdt

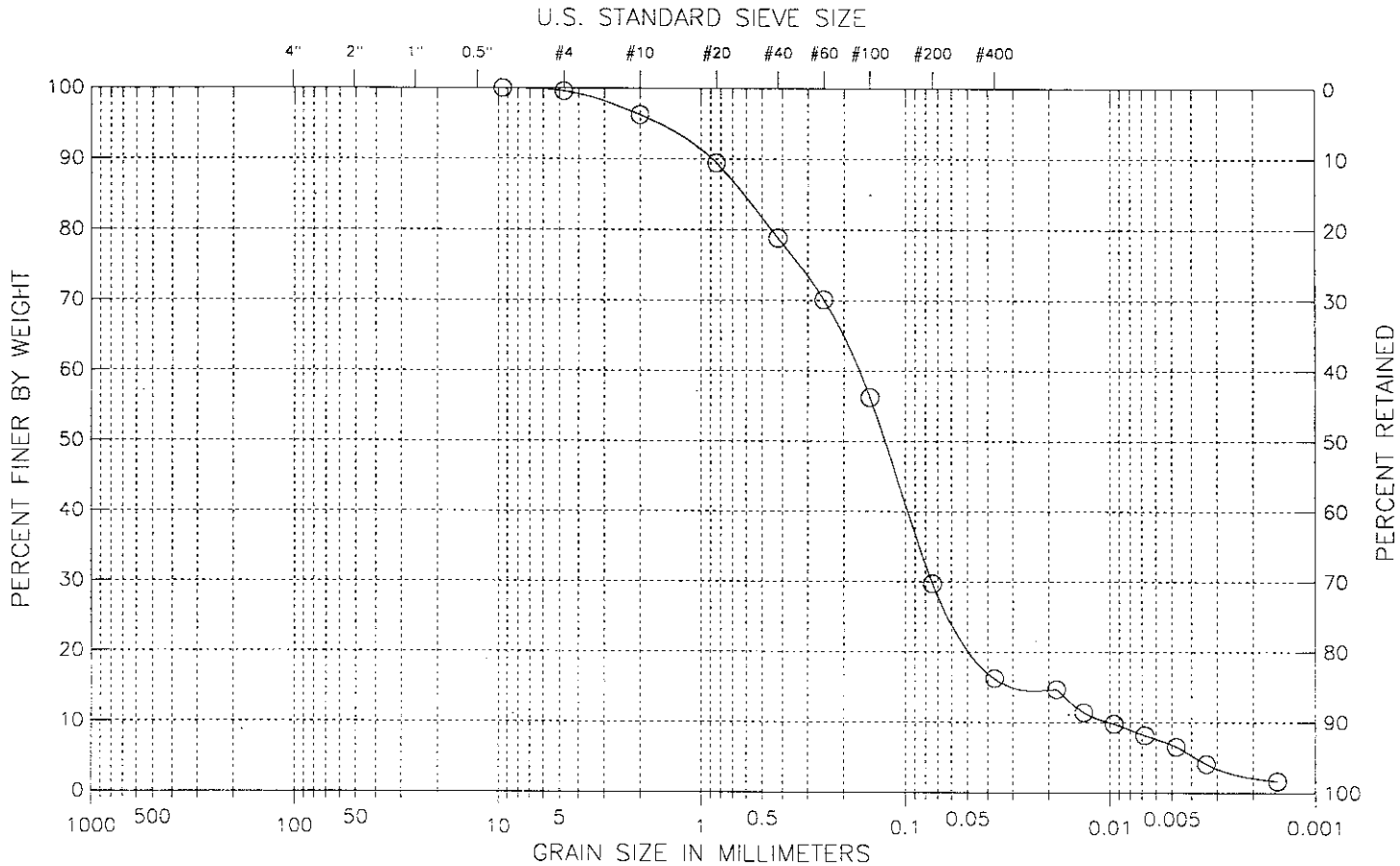
HYDROMETER

Hydrometer ID : 457473
Weight of air-dried soil = 54.71 gm
Specific Gravity = 2.67

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
4.00	36.50	20.00	30.50	0.022	56	0.022
4.00	36.50	20.00	30.50	0.022	56	0.022
4.00	36.50	20.00	30.50	0.022	56	0.022
8.00	32.50	20.00	26.50	0.016	48	0.016
15.00	30.00	20.00	24.00	0.012	44	0.012
30.00	25.50	20.00	19.50	0.009	35	0.009
60.00	21.50	20.00	15.50	0.006	28	0.006
130.00	18.00	20.00	12.00	0.004	22	0.004
240.00	15.50	20.00	9.50	0.003	17	0.003
1242.00	11.00	20.00	5.00	0.001	9	0.001

Boring No. : ---	Project : Tahoe
Sample No.: ECHO 11/08/01	Project No.: CTX-3791
Test Method ASTM D 422	Location: ---
Filename : ECHO1108	Date : Wed May 01 2002



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Visual Description :
Dry, very dark greyish brown silty sand

Remarks :
Sample ID: ECHO 11/08/01

Figure 7

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Grain Size Analysis by ASTM D 422

Client:	CDM Federal Programs Corp.	GTX #:	3791
Project Name:	Tahoe	Test Date:	04/26/02
Project Location:	---	Tested By:	njh
		Checked By:	jdt
Sample ID:	ECHO 11/08/01		
Description:	Dry, very dark grayish brown silty sand		

Sieve Size	Sieve Openings, in	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer, %
0.375"	0.3750	0.00	0.00	100.00
No. 4	0.1870	0.13	0.13	99.58
No. 10	0.0790	1.02	1.15	96.25
No. 20	0.0330	2.08	3.23	89.46
No. 40	0.0170	3.24	6.47	78.88
No. 60	0.0100	2.67	9.14	70.17
No. 100	0.0060	4.24	13.38	56.33
No. 200	0.0030	8.11	21.49	29.86
No. 400	0.0010	4.12	25.61	16.42
No. 635	0.0008	0.45	26.06	14.95
Total			30.64	

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material

GEOTECHNICAL LABORATORY TEST DATA

Project : Tahoe
Project No. : GTX-3791
Boring No. : ---
Sample No. : ECHO 11/08/01
Location : ---
Depth : ---
Test Date : 04/23/02
Test Method : ASTM D 422
Filename : ECHO1108
Elevation : ---
Tested by : njh
Checked by : jdt
Soil Description : Dry, very dark grayish brown silty sand
Remarks : Sample ID: ECHO 11/08/01

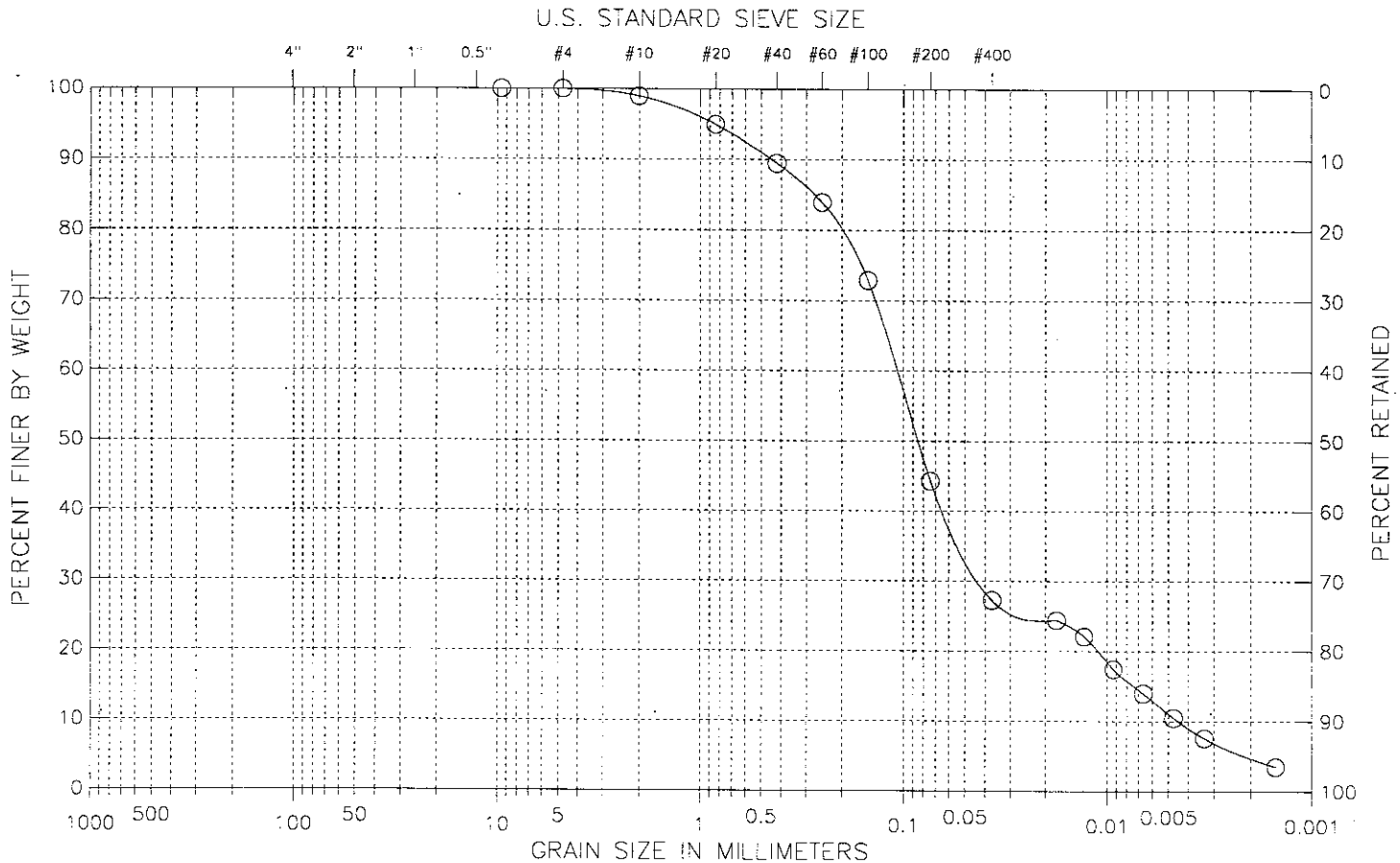
HYDROMETER

Hydrometer ID : 127630
Weight of air-dried soil = 29.42 gm
Specific Gravity = 2.67

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
8.00	10.00	20.00	4.50	0.018	15	0.018
8.00	10.00	20.00	4.50	0.018	15	0.018
8.00	10.00	20.00	4.50	0.018	15	0.018
8.00	10.00	20.00	4.50	0.018	15	0.018
15.00	9.00	20.00	3.50	0.013	11	0.013
30.00	8.50	20.00	3.00	0.010	10	0.010
60.00	8.00	20.00	2.50	0.007	8	0.007
120.00	7.00	21.00	2.00	0.005	7	0.005
240.00	6.50	20.50	1.25	0.003	4	0.003
1205.00	6.00	20.00	0.50	0.002	2	0.002

Boring No. : ---	Project : Tahoe
Sample No.: ECHO 12/12/01	Project No.: GTX-3791
Test Method ASTM D 422	Location: ---
Filename : ECHO1212	Date : Wed May 01 2002



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Visual Description :
Dry, very dark grayish brown silty sand

Remarks :
Sample ID: ECHO 12/12/01

Figure 8

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Grain Size Analysis by ASTM D 422

Client:	CDM Federal Programs Corp.	GTX #:	3791
Project Name:	Tahoe	Test Date:	04/26/02
Project Location:	---	Tested By:	njh
		Checked By:	jdt
Sample ID:	ECHO 12/12/01		
Description:	Dry, very dark grayish brown silty sand		

Sieve Size	Sieve Openings, in	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer, %
No. 4	0.1870	0.00	0.00	100.00
No. 10	0.0790	0.45	0.45	98.95
No. 20	0.0330	1.71	2.16	94.97
No. 40	0.0170	2.36	4.52	89.48
No. 60	0.0100	2.37	6.89	83.97
No. 100	0.0060	4.76	11.65	72.89
No. 200	0.0030	12.28	23.93	44.32
No. 400	0.0010	7.30	31.23	27.34
No. 635	0.0008	1.62	32.85	23.57
Total			42.98	

Notes. These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GEOTECHNICAL LABORATORY TEST DATA

Project : Tahoe
Project No. : GTX-3791
Boring No. : ---
Sample No. : ECHO 12/12/01
Location : ---
Depth : ---
Test Date : 04/23/02
Test Method : ASTM D 422
Filename : ECHO1212
Elevation : ---
Tested by : njh
Checked by : jdt
Soil Description : Dry, very dark grayish brown silty sand
Remarks : Sample ID: ECHO 12/12/01

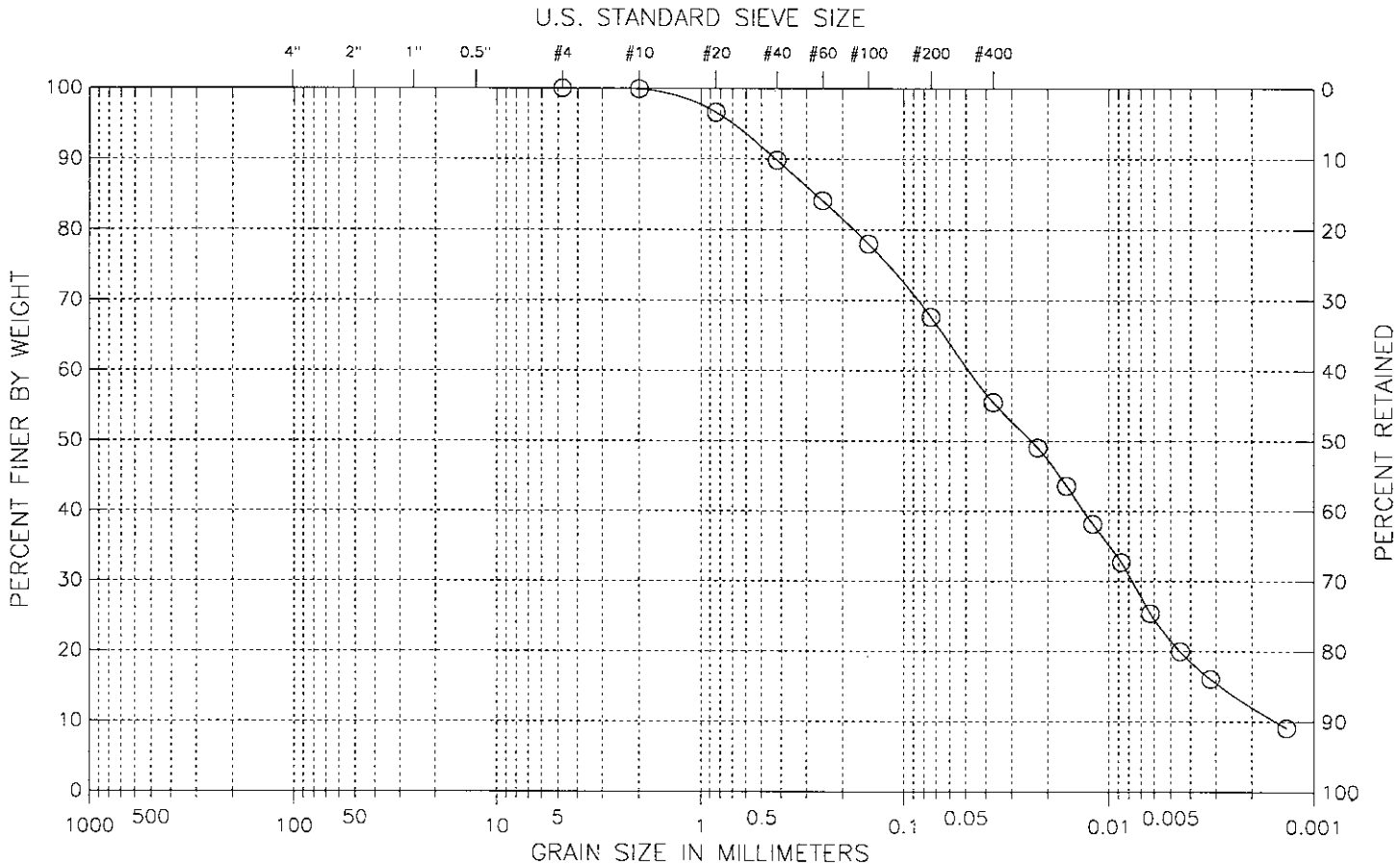
HYDROMETER

Hydrometer ID : 127630
Weight of air-dried soil = 42.49 gm
Specific Gravity = 2.67

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
8.00	16.00	20.00	10.50	0.018	24	0.018
8.00	16.00	20.00	10.50	0.018	24	0.018
8.00	16.00	20.00	10.50	0.018	24	0.018
8.00	16.00	20.00	10.50	0.018	24	0.018
15.00	15.00	20.00	9.50	0.013	22	0.013
30.00	13.00	20.00	7.50	0.009	17	0.009
60.00	11.50	20.00	6.00	0.007	14	0.007
120.00	10.00	20.00	4.50	0.005	10	0.005
240.00	8.50	20.50	3.25	0.003	8	0.003
1214.00	7.00	20.00	1.50	0.002	3	0.002

Boring No. : --- Sample No.: 3202S202041214 Test Method ASTM D 422 Filename : 04121430	Project : Tahoe Project No.: GTX-3791 Location: --- Date : Fri May 24 2002



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Visual Description :
Dry, grayish brown sandy silt

Remarks :
Sample ID: 3202S20204121430

Figure 1

GeoTesting Express, Inc. • Boxborough, MA • (978) 635-0424 • Fax (978) 635-0266

Grain Size Analysis by ASTM D 422

Client:	CDM Federal Programs Corp.	GTX #:	3791
Project Name:	Tahoe	Test Date:	05/23/02
Project Location:	---	Tested By:	njh
		Checked By:	jdt
Sample ID:	3202S20204121430		
Description:	Moist, very dark grayish brown sand with silt		

Sieve Size	Sieve Openings, in	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer, %
0.375"	0.3750	0.00	0.00	100.00
No. 4	0.1870	0.00	0.00	100.00
No. 10	0.0790	0.06	0.06	99.90
No. 20	0.0330	2.08	2.14	96.60
No. 40	0.0170	4.26	6.40	89.83
No. 60	0.0100	3.59	9.99	84.13
No. 100	0.0060	3.85	13.84	78.01
No. 200	0.0030	6.52	20.36	67.65
No. 400	0.0010	7.63	27.99	55.52
No. 635	0.0008	4.03	32.02	49.12
Total			62.93	

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GEOTECHNICAL LABORATORY TEST DATA

Project : Tahoe
Project No. : GTX-3791
Boring No. : ---
Sample No. : 3202S202041214
Location : ---
Soil Description : Dry, grayish brown sandy silt
Remarks : Sample ID: 3202S20204121430

Depth : ---
Test Date : 05/16/02
Test Method : ASTM D 422

Filename : 04121430
Elevation : ---
Tested by : njh
Checked by : jdt

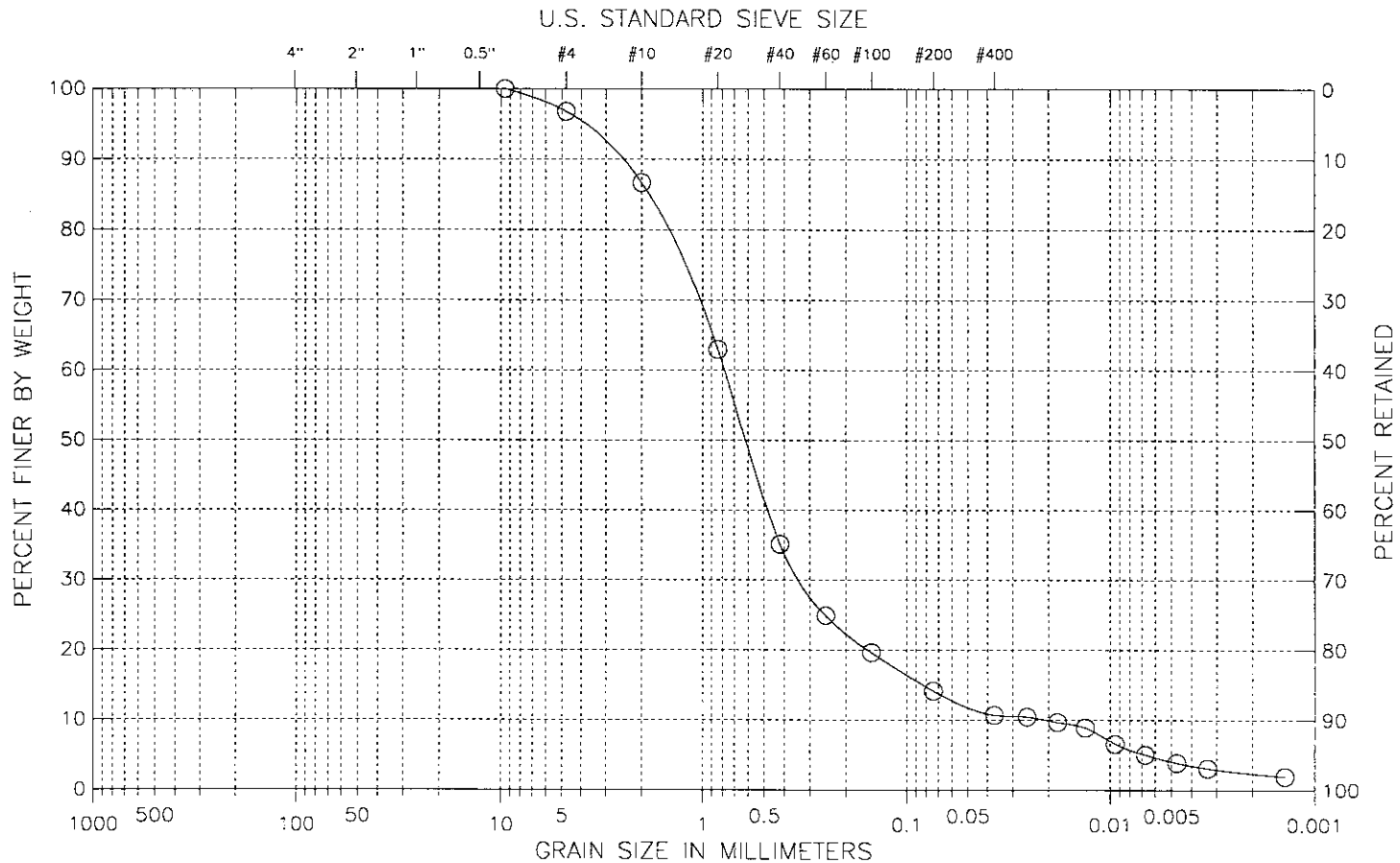
HYDROMETER

Hydrometer ID : 457473
Weight of air-dried soil = 54.85 gm
Specific Gravity = 2.67

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
4.00	33.00	20.00	27.00	0.022	49	0.022
8.00	30.00	20.00	24.00	0.016	44	0.016
15.00	27.00	20.00	21.00	0.012	38	0.012
30.00	24.00	20.00	18.00	0.009	33	0.009
60.00	20.00	20.50	14.00	0.006	25	0.006
120.00	17.00	21.00	11.00	0.004	20	0.004
240.00	14.50	22.00	8.83	0.003	16	0.003
1430.00	11.00	20.50	5.00	0.001	9	0.001

Boring No. : ---	Project : Tahoe
Sample No.: 3202S102041214	Project No.: GTX-3791
Test Method ASTM D 422	Location: ---
Filename : 04121450	Date : Fri May 24 2002



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Visual Description :
Dry, grayish brown sand with silt

Remarks :
Sample iD: 3202S10204121450C1

Figure 2

GeoTesting Express, Inc. • Boxborough, MA • (978) 635-0424 • Fax (978) 635-0266

Grain Size Analysis by ASTM D 422

Client:	CDM Federal Programs Corp.	GTX #:	3791
Project Name:	Tahoe	Test Date:	05/23/02
Project Location:	---	Tested By:	njh
		Checked By:	jdt
Sample ID:	3202S10204121450C1		
Description:	Dry, grayish brown sand with silt		

Sieve Size	Sieve Openings, in	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer, %
0.375"	0.3750	0.00	0.00	100.00
No. 4	0.1870	2.07	2.07	96.79
No. 10	0.0790	6.51	8.58	86.70
No. 20	0.0330	15.31	23.89	62.97
No. 40	0.0170	17.96	41.85	35.14
No. 60	0.0100	6.58	48.43	24.94
No. 100	0.0060	3.42	51.85	19.64
No. 200	0.0030	3.54	55.39	14.15
No. 400	0.0010	2.22	57.61	10.71
No. 635	0.0008	0.73	58.34	9.58
Total			64.52	

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GEOTECHNICAL LABORATORY TEST DATA

Project : Tahoe
Project No. : GTX-3791
Boring No. : ---
Sample No. : 3202S102041214
Location : ---
Depth : ---
Test Date : 05/16/02
Test Method : ASTM D 422
Filename : 04121450
Elevation : ---
Tested by : njh
Checked by : jdt
Soil Description : Dry, grayish brown sand with silt
Remarks : Sample ID: 3202S10204121450C1

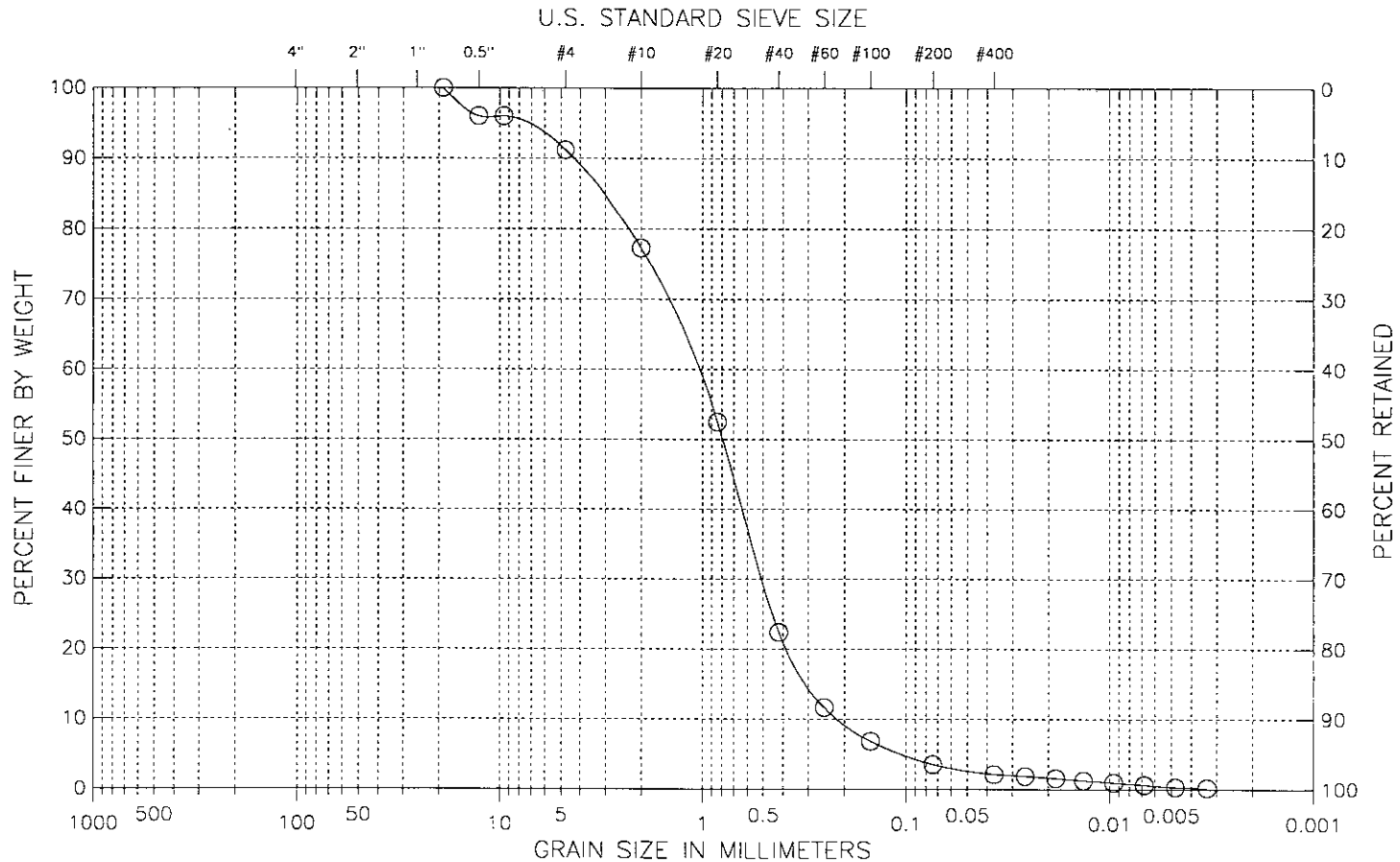
HYDROMETER

Hydrometer ID : 127630
Weight of air-dried soil = 55.92 gm
Specific Gravity = 2.67

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
4.00	12.00	20.50	6.75	0.026	10	0.026
8.00	11.50	20.50	6.25	0.018	10	0.018
15.00	11.00	20.50	5.75	0.013	9	0.013
30.00	9.50	20.50	4.25	0.009	7	0.009
60.00	8.50	20.50	3.25	0.007	5	0.007
120.00	7.50	21.50	2.50	0.005	4	0.005
240.00	7.00	22.00	2.00	0.003	3	0.003
1416.00	6.50	20.50	1.25	0.001	2	0.001

Boring No. : --- Sample No.: 3203S102041216 Test Method ASTM D 422 Filename : 04121600	Project : Tahoe Project No.: GTX-3791 Location: --- Date : Fri May 24 2002



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :
(SP) Poorly graded sand
Visual Description :
Dry, light olive brown sand

Remarks :
Sample ID: 3203S10204121600

Figure 3

GeoTesting Express, Inc. • Boxborough, MA • (978) 635-0424 • Fax (978) 635-0266

Grain Size Analysis by ASTM D 422

Client:	CDM Federal Programs Corp.	GTX #:	3791
Project Name:	Tahoe	Test Date:	05/23/02
Project Location:	---	Tested By:	njh
		Checked By:	jdt
Sample ID:	3203S10204121600		
Description:	Dry, light olive brown sand		

Sieve Size	Sieve Openings, in	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer, %
0.75"	0.7500	0	0.00	100.00
0.50"	0.5000	3.94	3.94	96.01
0.375"	0.3750	0.00	3.94	96.01
No. 4	0.1870	4.73	8.67	91.22
No. 10	0.0790	13.71	22.38	77.33
No. 20	0.0330	24.51	46.89	52.50
No. 40	0.0170	29.73	76.62	22.39
No. 60	0.0100	10.59	87.21	11.66
No. 100	0.0060	4.76	91.97	6.84
No. 200	0.0030	3.25	95.22	3.55
No. 400	0.0010	1.36	96.58	2.17
No. 635	0.0008	0.31	96.89	1.85
Total			98.72	

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GEOTECHNICAL LABORATORY TEST DATA

Project : Tahoe
Project No. : GTX-3791
Boring No. : ---
Sample No. : 3203S102041216
Location : ---
Soil Description : Dry, light olive brown sand
Remarks : Sample ID: 3203S10204121600

Depth : ---
Test Date : 05/16/02
Test Method : ASTM D 422

Filename : 04121600
Elevation : ---
Tested by : njh
Checked by : jdt

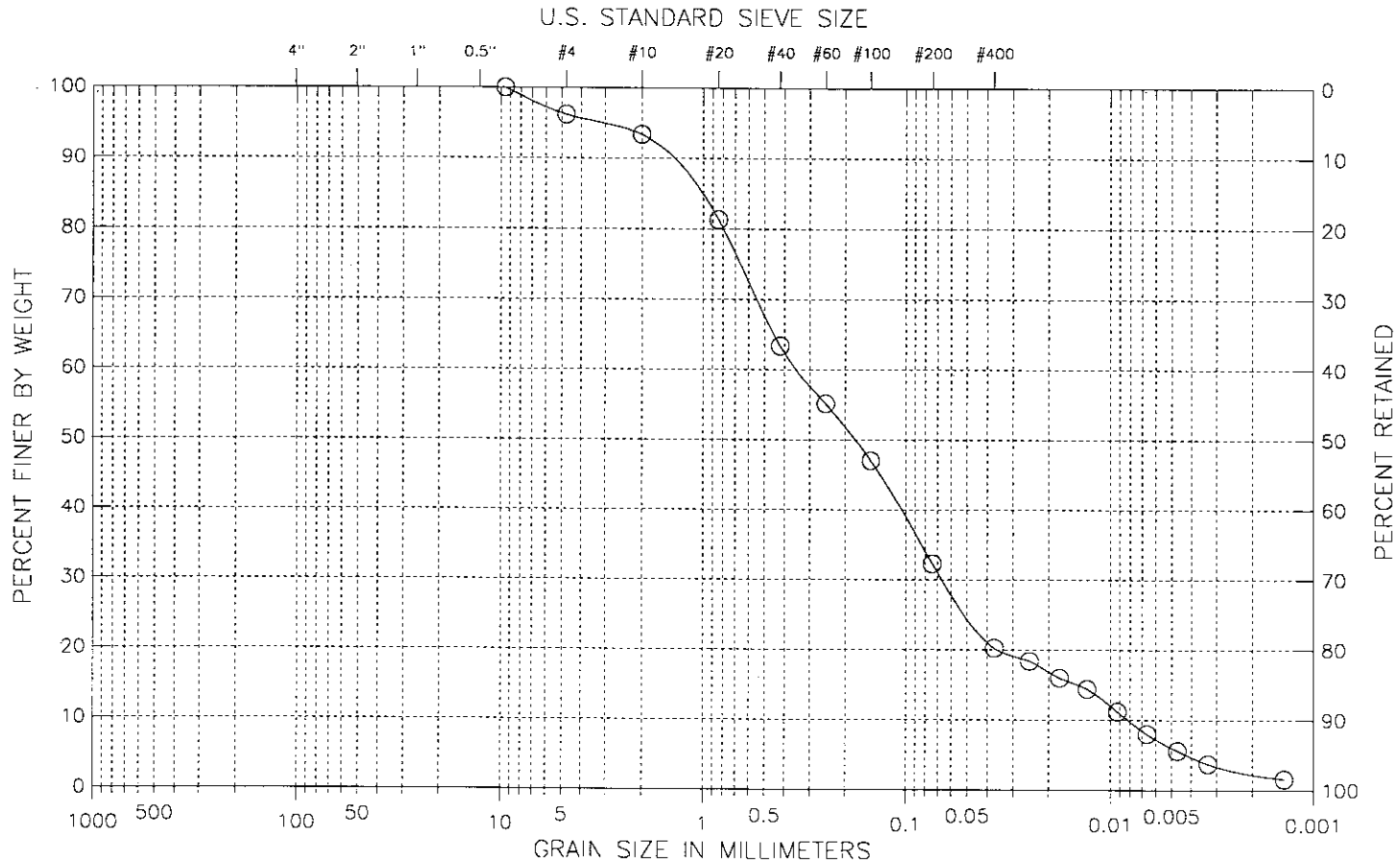
HYDROMETER

Hydrometer ID : 457473
Weight of air-dried soil = 146.31 gm
Specific Gravity = 2.67

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
4.00	9.00	20.50	3.00	0.026	2	0.026
8.00	8.50	20.50	2.50	0.018	2	0.018
15.00	8.00	20.50	2.00	0.013	1	0.013
30.00	7.50	20.50	1.50	0.010	1	0.010
60.00	7.00	20.50	1.00	0.007	1	0.007
120.00	6.50	21.00	0.50	0.005	0	0.005
240.00	6.00	22.00	0.33	0.003	0	0.003

Boring No. : --- Sample No.: 3203S202041216 Test Method ASTM D 422 Filename : 04121645	Project : Tahoe Project No.: GTX-3791 Location: --- Date : Fri May 24 2002



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Visual Description :
Dry, light olive brown silty sand

Remarks :
Sample ID: 3203S20204121645C1

Figure 4

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Grain Size Analysis by ASTM D 422

Client:	CDM Federal Programs Corp.	GTX #:	3791
Project Name:	Tahoe	Test Date:	05/23/02
Project Location:	---	Tested By:	njh
		Checked By:	jdt
Sample ID:	3203S20204121645C1		
Description:	Dry, light olive brown silty sand		

Sieve Size	Sieve Openings, in	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer, %
0.375"	0.3750	0.00	0.00	100.00
No. 4	0.1870	2.45	2.45	96.19
No. 10	0.0790	1.79	4.24	93.41
No. 20	0.0330	7.77	12.01	81.33
No. 40	0.0170	11.54	23.55	63.39
No. 60	0.0100	5.28	28.83	55.18
No. 100	0.0060	5.23	34.06	47.05
No. 200	0.0030	9.47	43.53	32.32
No. 400	0.0010	7.75	51.28	20.27
No. 635	0.0008	2.07	53.35	17.06
Total			64.32	

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GEOTECHNICAL LABORATORY TEST DATA

Project : Tahoe
Project No. : GTX-3791
Boring No. : ---
Sample No. : 3203S202041216
Location : ---
Soil Description : Dry, light olive brown silty sand
Remarks : Sample ID: 3203S20204121645C1

Depth : ---
Test Date : 05/16/02
Test Method : ASTM D 422

Filename : 04121645
Elevation : ---
Tested by : njh
Checked by : jdt

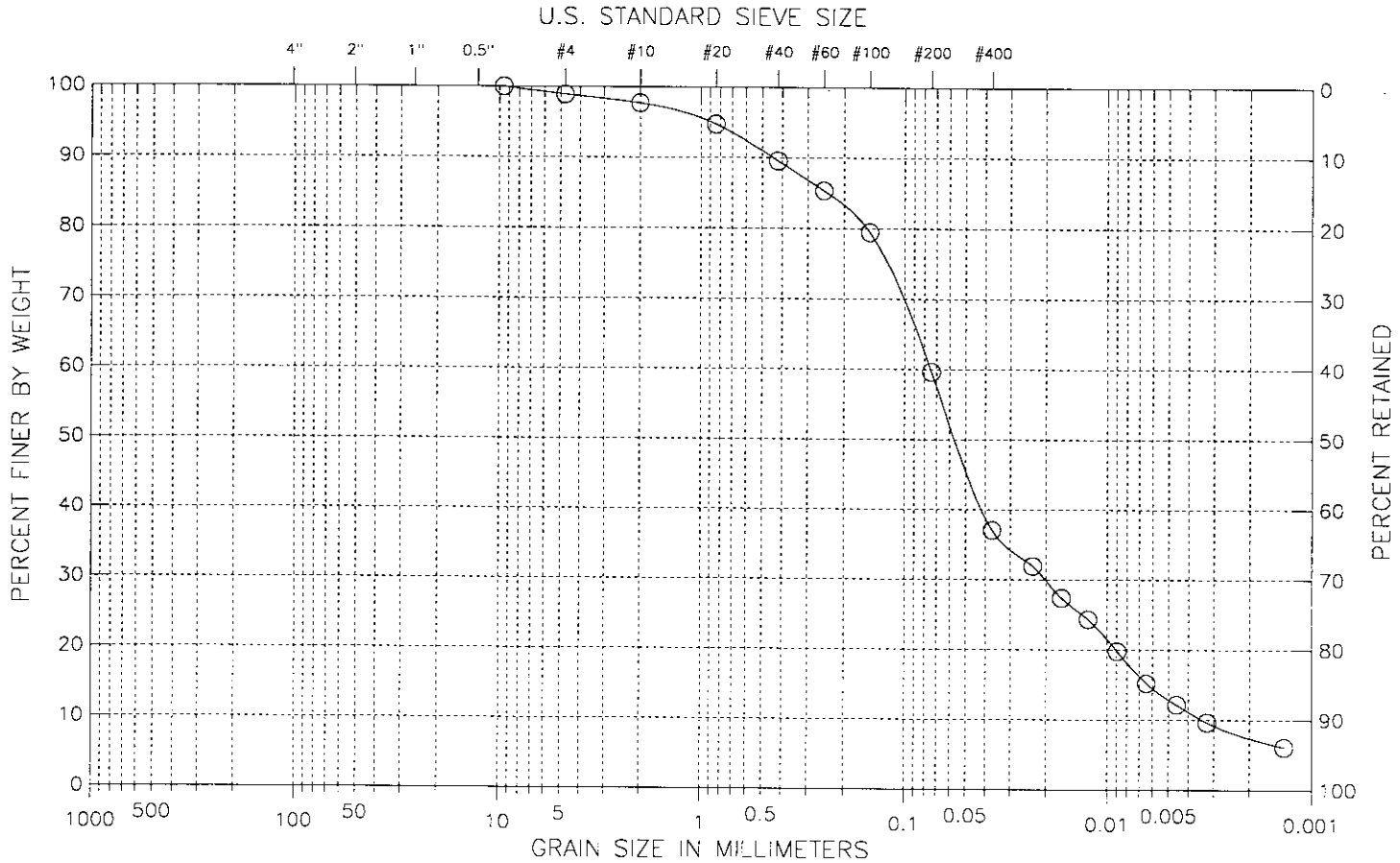
HYDROMETER

Hydrometer ID : 457473
Weight of air-dried soil = 60.04 gm
Specific Gravity = 2.67

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
4.00	17.50	20.00	11.50	0.025	18	0.025
8.00	16.00	20.00	10.00	0.018	16	0.018
15.00	15.00	20.00	9.00	0.013	14	0.013
30.00	13.00	20.50	7.00	0.009	11	0.009
60.00	11.00	20.50	5.00	0.007	8	0.007
120.00	9.50	21.00	3.50	0.005	6	0.005
240.00	8.00	22.00	2.33	0.003	4	0.003
1421.00	7.00	20.50	1.00	0.001	2	0.001

Boring No. : --- Sample No.: 3203S635020418 Test Method ASTM D 422 Filename : 04181145	Project : Tahoe Project No.: GTX-3791 Location: --- Date : Fri May 24 2002



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Remarks :
Sample ID: 3203S6350204181145

Visual Description :
Damp, dark olive brown silty sand

Figure 5

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Grain Size Analysis by ASTM D 422

Client:	CDM Federal Programs Corp.	GTX #:	3791
Project Name:	Tahoe	Test Date:	05/23/02
Project Location:	---	Tested By:	njh
		Checked By:	jdt
Sample ID:	3203S6350204181145		
Description:	Damp, dark olive brown silty sand		

Sieve Size	Sieve Openings, in	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer, %
0.375"	0.3750	0.00	0.00	100.00
No. 4	0.1870	0.68	0.68	98.92
No. 10	0.0790	0.77	1.45	97.69
No. 20	0.0330	1.86	3.31	94.74
No. 40	0.0170	3.25	6.56	89.57
No. 60	0.0100	2.64	9.20	85.37
No. 100	0.0060	3.70	12.90	79.48
No. 200	0.0030	12.47	25.37	59.65
No. 400	0.0010	14.20	39.57	37.06
No. 635	0.0008	3.96	43.53	30.76
Total			62.87	

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GEOTECHNICAL LABORATORY TEST DATA

Project : Tahoe
Project No. : GTX-3791
Boring No. : ---
Sample No. : 3203S635020418
Location : ---
Depth : ---
Test Date : 05/16/02
Test Method : ASTM D 422
Filename : 04181145
Elevation : ---
Tested by : njh
Checked by : jdt
Soil Description : Damp, dark olive brown silty sand
Remarks : Sample ID: 3203S6350204181145

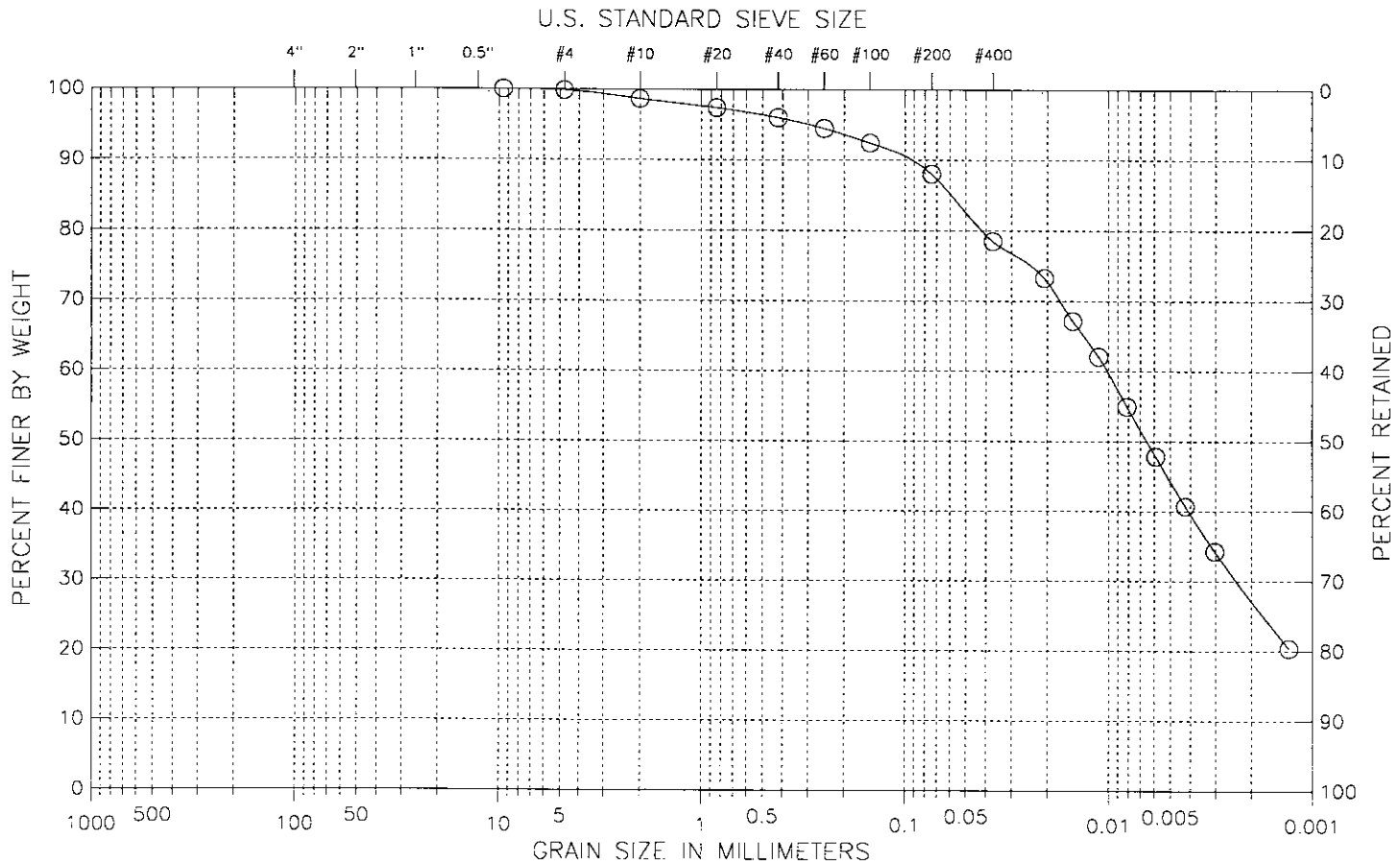
HYDROMETER

Hydrometer ID : 457473
Weight of air-dried soil = 64.08 gm
Specific Gravity = 2.67

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
4.00	27.00	20.50	21.00	0.023	32	0.023
8.00	24.00	20.50	18.00	0.017	27	0.017
15.00	22.00	20.50	16.00	0.012	24	0.012
30.00	19.00	20.50	13.00	0.009	20	0.009
60.00	16.00	20.50	10.00	0.006	15	0.006
120.00	14.00	21.00	8.00	0.005	12	0.005
240.00	12.00	22.00	6.33	0.003	10	0.003
1438.00	10.00	20.50	4.00	0.001	6	0.001

Boring No. : --- Sample No.: 3202S635020418 Test Method ASTM D 422 Filename : 04181415	Project : Tahoe Project No.: GTX-3791 Location: --- Date : Fri May 24 2002



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Remarks :
Sample ID: 3202S6350204181415C1

Visual Description :
Damp, very dark grayish brown sandy silt

Figure 6

Grain Size Analysis by ASTM D 422

Client:	CDM Federal Programs Corp.	GTX #:	3791
Project Name:	Tahoe	Test Date:	05/23/02
Project Location:	---	Tested By:	njh
		Checked By:	jdt
Sample ID:	3202S6350204181415C1		
Description:	Damp, very dark grayish brown sandy silt		

Sieve Size	Sieve Openings, in	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer, %
0.375"	0.3750	0.00	0.00	100.00
No. 4	0.1870	0.08	0.08	99.86
No. 10	0.0790	0.70	0.78	98.66
No. 20	0.0330	0.74	1.52	97.39
No. 40	0.0170	0.80	2.32	96.01
No. 60	0.0100	0.88	3.20	94.50
No. 100	0.0060	1.19	4.39	92.45
No. 200	0.0030	2.57	6.96	88.03
No. 400	0.0010	5.54	12.50	78.50
No. 635	0.0008	1.70	14.20	75.58
Total			58.14	

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GEOTECHNICAL LABORATORY TEST DATA

Project : Tahoe
Project No. : GTX-3791
Boring No. : ---
Sample No. : 3202S635020418
Location : ---
Depth : ---
Test Date : 05/16/02
Test Method : ASTM D 422
Filename : 04181415
Elevation : ---
Tested by : njh
Checked by : jdt
Soil Description : Damp, very dark grayish brown sandy silt
Remarks : Sample ID: 3202S6350204181415C1

HYDROMETER

Hydrometer ID : 457473
Weight of air-dried soil = 48.35 gm
Specific Gravity = 2.67

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
4.00	42.00	20.50	36.00	0.021	73	0.021
8.00	39.00	20.50	33.00	0.015	67	0.015
15.00	36.50	20.50	30.50	0.011	62	0.011
30.00	33.00	20.50	27.00	0.008	55	0.008
60.00	29.50	20.50	23.50	0.006	48	0.006
120.00	26.00	21.00	20.00	0.004	41	0.004
240.00	22.50	22.00	16.83	0.003	34	0.003
1453.00	16.00	20.50	10.00	0.001	20	0.001

GeoTesting Express
1145 Mass Avenue - Boxborough, MA 01719
(978) 635-0424 - Fax (978) 635-0266

LETTER OF TRANSMITTAL

TO:

Mr. Todd Burgesser
CDM Federal Programs Corp
1331 17th Street
Suite 1200
Denver, CO 80202

DATE: 05/22/03	GTX NO: 4556
RE: Tahoe Project	
Pages (excluding transmittal):	

We are sending you ☑ Attached ☐ Under separate cover via _____ the following items:
☑ Test results ☐ Proposal ☑ Report ☐ Samples ☐ Specifications ☐ Invoice
☐ Copy of letter ☐ Change order
☐ Other

COPIES	DATE	DESCRIPTION
1	05/22/03	May 2003 Laboratory Test Samples
		12 Grain Size Analyses (ASTM D 422) – Including No. 400 and No. 635 sieves

THESE ITEMS ARE TRANSMITTED as checked below:
☐ For approval ☐ Approved as submitted ☐ Resubmit _____ Copies for approval
☑ For your use ☐ Approved as noted ☐ Submit _____ Copies for distribution
☑ As requested ☐ Returned for corrections ☐ Return
☐ For review and comment
☐ For bids due _____, 20
☐ _____

REMARKS

_____

_____

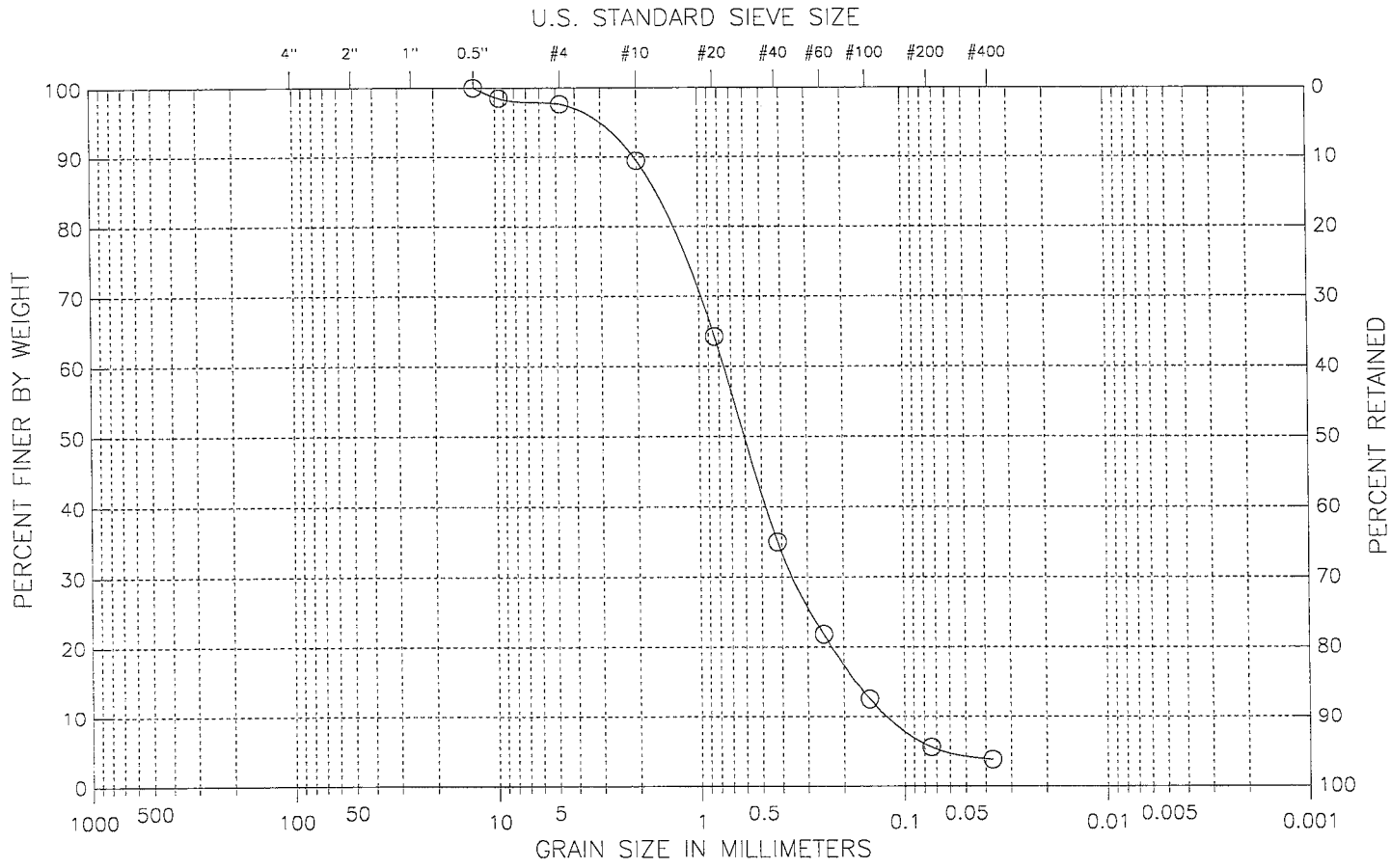
_____

COPY TO

SIGNED _____

Joseph D. Tomei - Laboratory Manager

Boring No. : --- Sample No.: 3202-S1-021127 Test Method ASTM D 422 Filename : 21021127	Project : Tahoe Sediment Study Project No.: GTX-4556 Location: Lake Tahoe, CA Date : Thu May 22 2003



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Remarks :
Less than 10 % fines, Hydrometer not performed

Visual Description :
Dry, light brownish gray sand

Figure 1

Grain Size Analysis by ASTM D 422

Client: CDM Federal Programs
Project Name: Tahoe Sediment Study
Project Location: ---

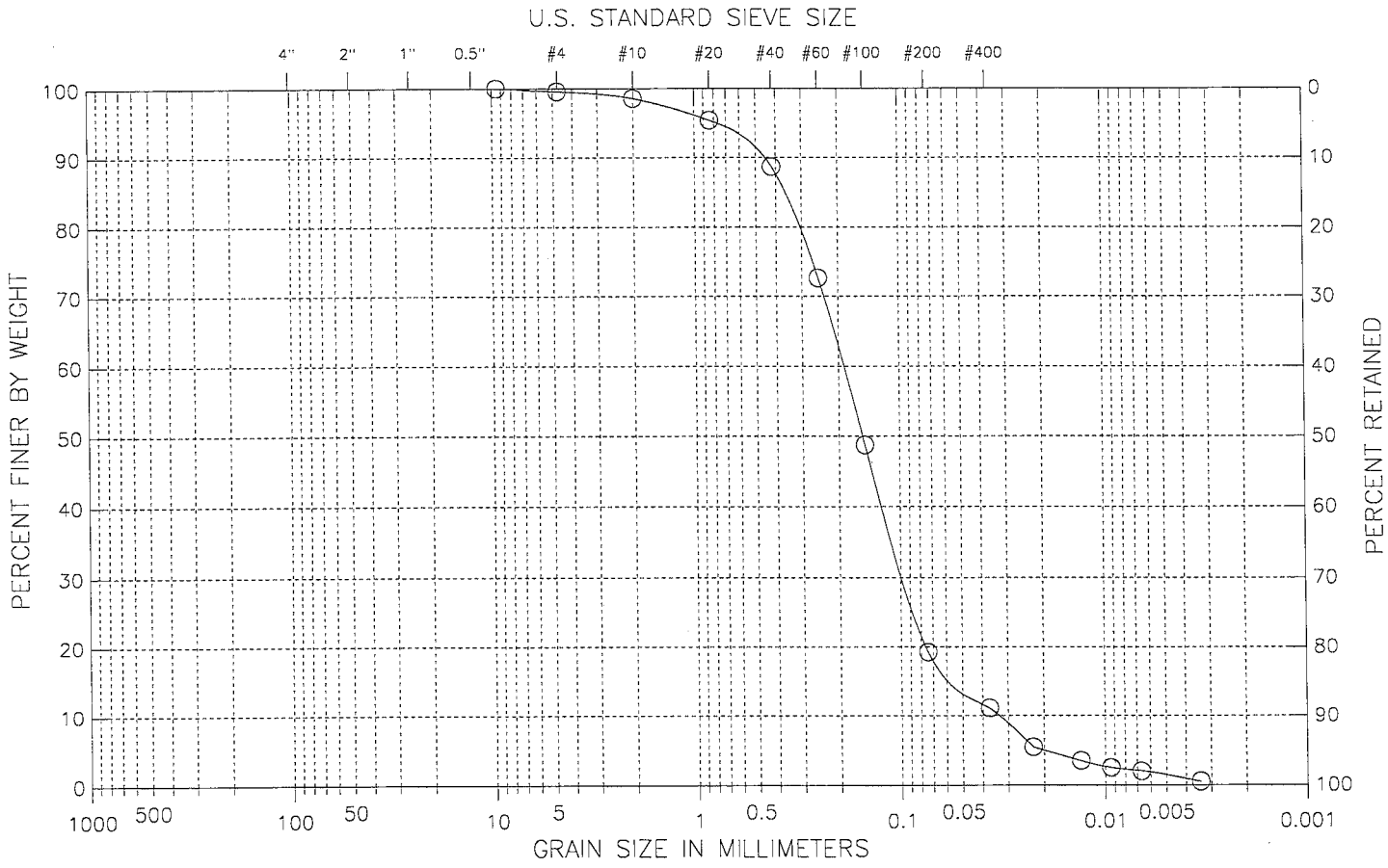
GTX #: 4556
Report Date: 0522/03
Tested By: njh
Checked By: jdt

Sample ID: 3202-S1-021127
Description: Dry, light brownish gray sand with silt

Sieve Size	Sieve Openings, in	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer, %
0.75"	0.7500	0.00	0.00	100.00
0.5"	0.5000	0.00	0.00	100.00
0.375"	0.3750	1.43	1.43	98.49
No. 4	0.1870	0.79	2.22	97.65
No. 10	0.0790	7.78	10.00	89.42
No. 20	0.0330	23.84	33.84	64.21
No. 40	0.0170	27.68	61.52	34.94
No. 60	0.0100	12.52	74.04	21.70
No. 100	0.0060	8.76	82.80	12.44
No. 200	0.0030	6.55	89.35	5.51
No. 400	0.0010	1.69	91.04	3.72
No. 635	0.0008	0.43	91.47	3.27
Total			94.56	

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

Boring No. : --- Sample No.: 3202-S2-021127 Test Method ASTM D 422 Filename : 22021127	Project : Tahoe Sediment Study Project No.: GTX-4556 Location: Lake Tahoe, CA Date : Thu May 22 2003



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Remarks :

Visual Description :
Dry, light brownish gray silty sand

Figure 3

Grain Size Analysis by ASTM D 422

Client: CDM Federal Programs
Project Name: Tahoe Sediment Study
Project Location: ---

GTX #: 4556
Report Date: 0522/03
Tested By: njh
Checked By: jdt

Sample ID: 3202-S2-021127
Description: Dry, light brownish gray silty sand

Sieve Size	Sieve Openings, in	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer, %
0.75"	0.7500	0.00	0.00	100.00
0.5"	0.5000	0.00	0.00	100.00
0.375"	0.3750	0.00	0.00	100.00
No. 4	0.1870	0.43	0.43	99.57
No. 10	0.0790	1.00	1.43	98.58
No. 20	0.0330	3.21	4.64	95.40
No. 40	0.0170	6.78	11.42	88.68
No. 60	0.0100	16.19	27.61	72.64
No. 100	0.0060	24.11	51.72	48.75
No. 200	0.0030	29.78	81.50	19.24
No. 400	0.0010	8.22	89.72	11.10
No. 635	0.0008	1.36	91.08	9.75
Total			100.92	

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GEOTECHNICAL LABORATORY TEST DATA

Project : Tahoe Sediment Study
Project No. : GTX-4556
Boring No. : ---
Sample No. : 3202-S2-021127
Location : Lake Tahoe, CA
Soil Description : Dry, light brownish gray silty sand
Remarks : ---

Depth : ---
Test Date : 05/13/03
Test Method : ASTM D 422

Filename : 22021127
Elevation : ---
Tested by : den/ccp/njh
Checked by : jdt

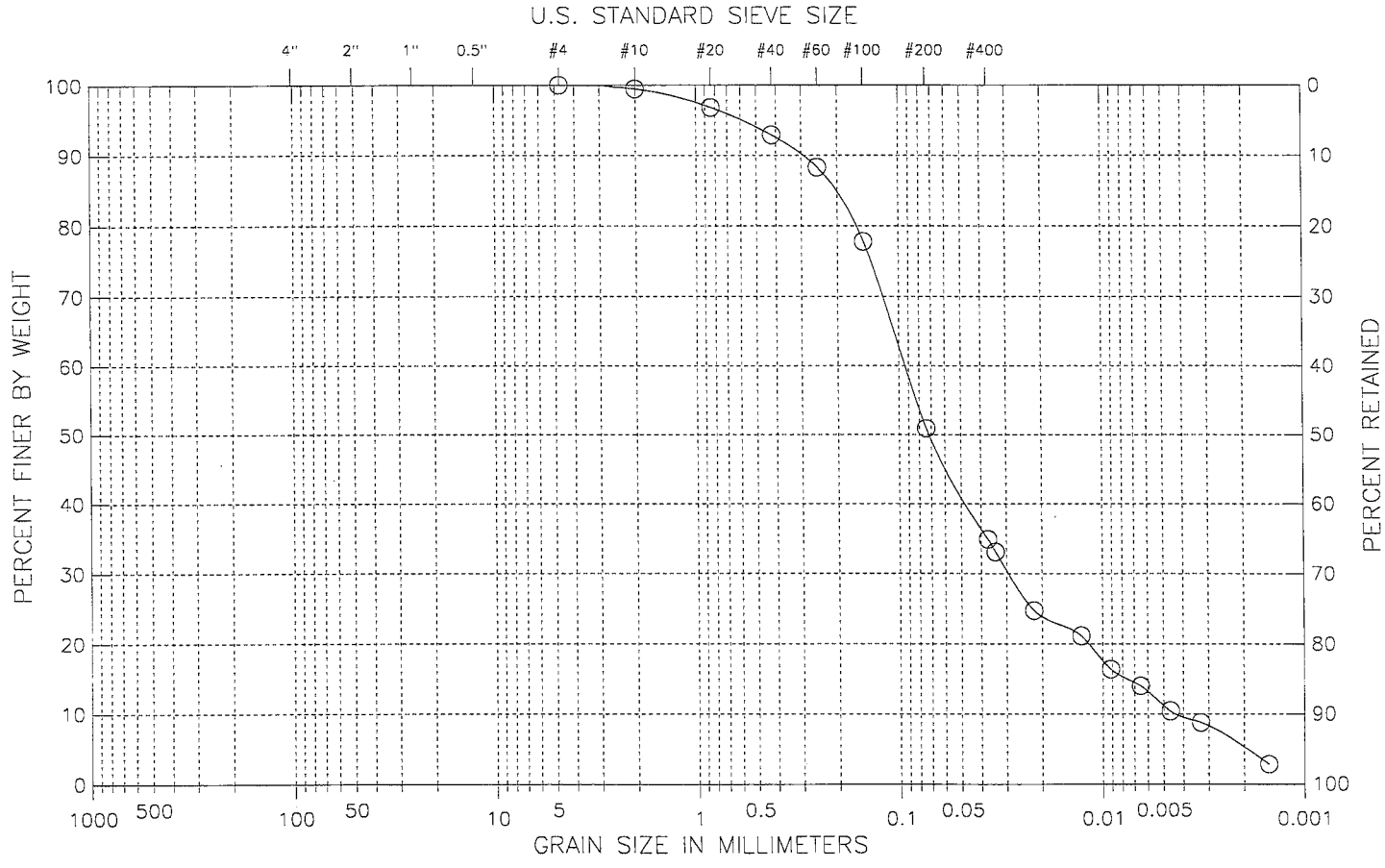
HYDROMETER

Hydrometer ID : 343664
Weight of air-dried soil = 99.48 gm
Specific Gravity = 2.66

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
5.00	12.00	21.50	5.50	0.023	5	0.023
5.00	12.00	21.50	5.50	0.023	5	0.023
15.00	10.00	21.50	3.50	0.013	3	0.013
30.00	9.00	21.50	2.50	0.009	2	0.009
60.00	8.50	21.50	2.00	0.007	2	0.007
240.00	7.50	20.50	0.50	0.003	0	0.003

Boring No. : ---	Project : Tahoe Sediment Study
Sample No.: 3202-S3-021120	Project No.: GTX-4556
Test Method ASTM D 422	Location: Lake Tahoe, CA
Filename : 23021120	Date : Thu May 22 2003



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Remarks :

Visual Description :
Dry, light brownish gray sandy silt

Figure 5

Grain Size Analysis by ASTM D 422

Client: CDM Federal Programs
Project Name: Tahoe Sediment Study
Project Location: ---

GTX #: 4556
Report Date: 0522/03
Tested By: njh
Checked By: jdt

Sample ID: 3202-S3-021120
Description: Dry, light brownish gray sandy silt

Sieve Size	Sieve Openings, in	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer, %
0.75"	0.7500	0.00	0.00	100.00
0.5"	0.5000	0.00	0.00	100.00
0.375"	0.3750	0.00	0.00	100.00
No. 4	0.1870	0.00	0.00	100.00
No. 10	0.0790	0.22	0.22	99.47
No. 20	0.0330	1.10	1.32	96.84
No. 40	0.0170	1.63	2.95	92.94
No. 60	0.0100	1.94	4.89	88.29
No. 100	0.0060	4.38	9.27	77.81
No. 200	0.0030	11.24	20.51	50.90
No. 400	0.0010	6.68	27.19	34.91
No. 635	0.0008	1.77	28.96	30.67
Total			41.77	

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GEOTECHNICAL LABORATORY TEST DATA

Project : Tahoe Sediment Study
Project No. : GTX-4556
Boring No. : ---
Sample No. : 3202-S3-021120
Location : Lake Tahoe, CA
Soil Description : Dry, light brownish gray sandy silt
Remarks : ---

Depth : ---
Test Date : 05/13/03
Test Method : ASTM D 422

Filename : 23021120
Elevation : ---
Tested by : den/ccp/njh
Checked by : jdt

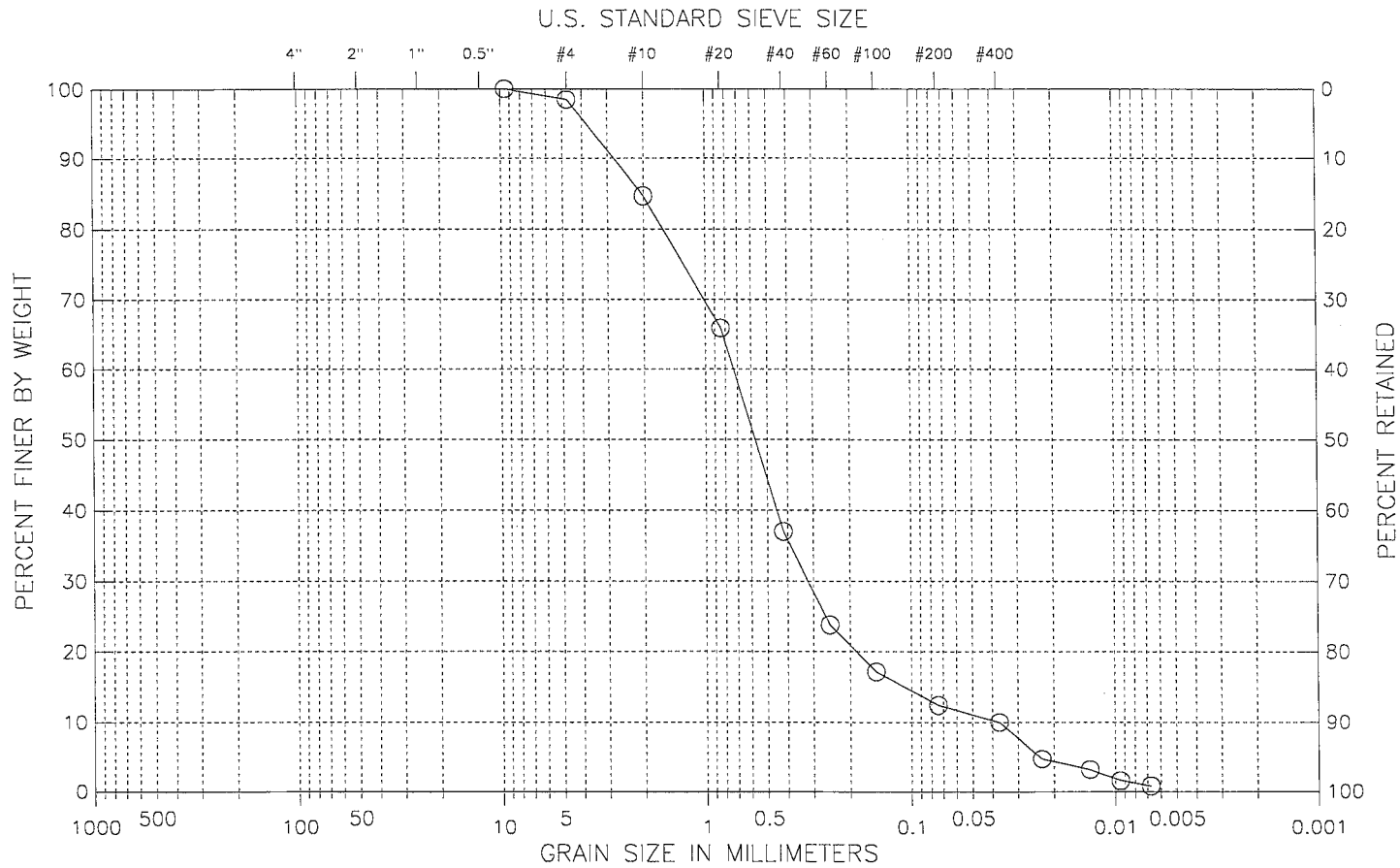
HYDROMETER

Hydrometer ID : 457488
Weight of air-dried soil = 41.55 gm
Specific Gravity = 2.66

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
2.00	20.50	21.50	13.83	0.034	33	0.034
5.00	17.00	21.50	10.33	0.022	25	0.022
15.00	15.50	21.50	8.83	0.013	21	0.013
30.00	13.50	21.50	6.83	0.009	16	0.009
60.00	12.50	21.50	5.83	0.007	14	0.007
120.00	11.00	21.50	4.33	0.005	10	0.005
240.00	10.00	22.00	3.67	0.003	9	0.003
1236.00	9.00	19.00	1.17	0.002	3	0.002

Boring No. : --- Sample No.: 3202-S1-030228 Test Method ASTM D 422 Filename : 21030228	Project : Tahoe Sediment Study Project No.: GTX-4556 Location: Lake Tahoe, CA Date : Thu May 22 2003



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Remarks :

Visual Description :
Dry, light brownish gray sand with silt

Figure 2

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Grain Size Analysis by ASTM D 422

Client: CDM Federal Programs
Project Name: Tahoe Sediment Study
Project Location: ---

GTX #: 4556
Report Date: 0522/03
Tested By: njh
Checked By: jdt

Sample ID: 3202-S1-030288
Description: Dry, light brownish gray sand with silt

Sieve Size	Sieve Openings, in	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer, %
0.75"	0.7500	0.00	0.00	100.00
0.5"	0.5000	0.00	0.00	100.00
0.375"	0.3750	0.00	0.00	100.00
No. 4	0.1870	0.98	0.98	98.47
No. 10	0.0790	8.84	9.82	84.68
No. 20	0.0330	12.04	21.86	65.89
No. 40	0.0170	18.53	40.39	36.98
No. 60	0.0100	8.46	48.85	23.78
No. 100	0.0060	4.25	53.10	17.15
No. 200	0.0030	3.02	56.12	12.44
No. 400	0.0010	1.56	57.68	10.00
No. 635	0.0008	0.35	58.03	9.46
Total			64.09	

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GEOTECHNICAL LABORATORY TEST DATA

Project : Tahoe Sediment Study
Project No. : GTX-4556
Boring No. : ---
Sample No. : 3202-S1-030228
Location : Lake Tahoe, CA
Soil Description : Dry, light brownish gray sand with silt
Remarks : ---

Depth : ---
Test Date : 05/13/03
Test Method : ASTM D 422

Filename : 21030228
Elevation : ---
Tested by : den/ccp/njh
Checked by : jdt

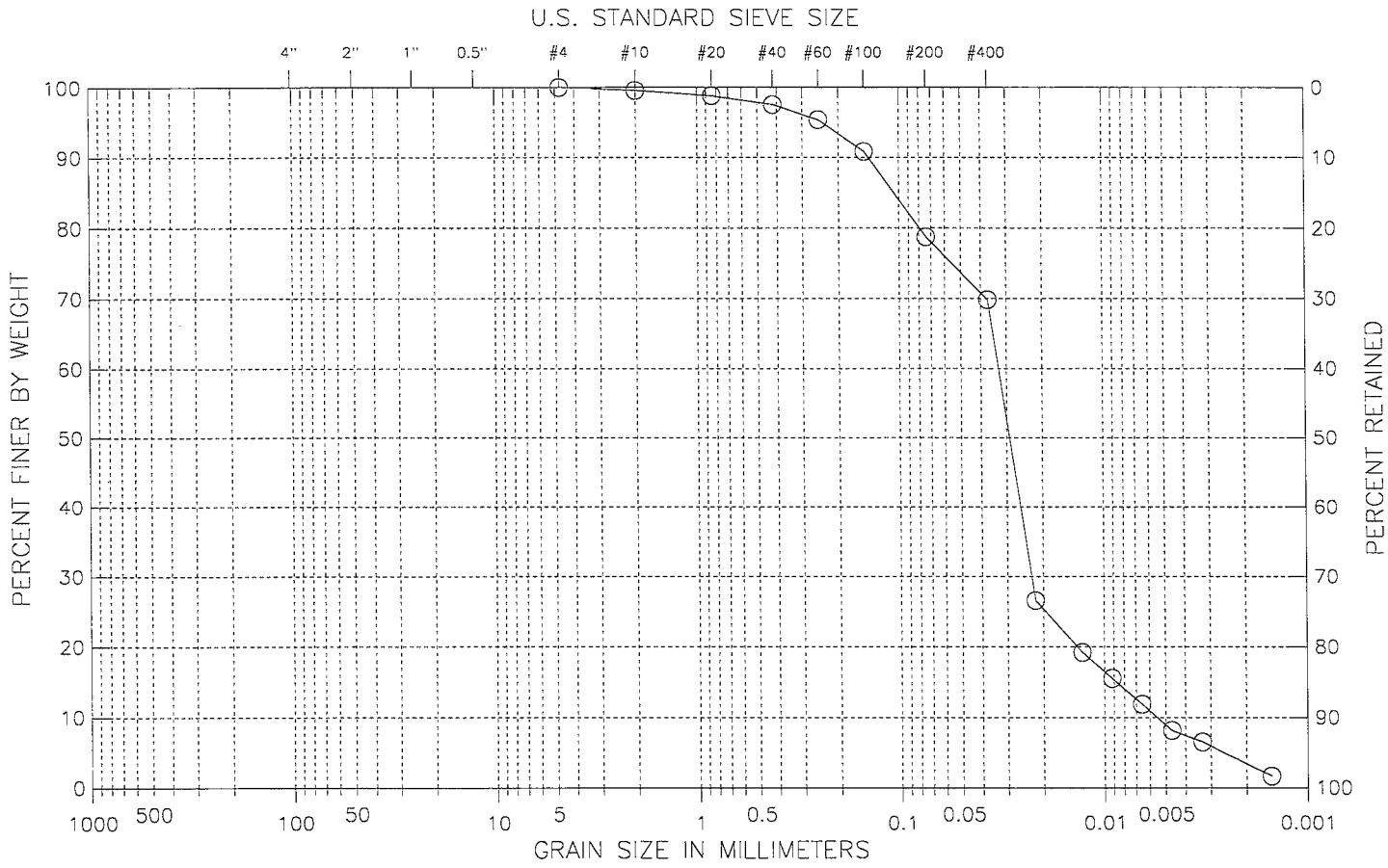
HYDROMETER

Hydrometer ID : 343664
Weight of air-dried soil = 7.95 gm
Specific Gravity = 2.66

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
5.00	9.50	21.50	3.00	0.023	5	0.023
5.00	9.50	21.50	3.00	0.023	5	0.023
15.00	8.50	21.50	2.00	0.013	3	0.013
30.00	7.50	21.50	1.00	0.009	2	0.009
60.00	7.00	21.50	0.50	0.007	1	0.007

Boring No. : --- Sample No.: 3202-S2-030228 Test Method ASTM D 422 Filename : 22030228	Project : Tahoe Sediment Study Project No.: GTX-4556 Location: Lake Tahoe, CA Date : Thu May 22 2003



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Remarks :

Visual Description :
Dry, light brownish gray sandy silt

Figure 4

Grain Size Analysis by ASTM D 422

Client: CDM Federal Programs
Project Name: Tahoe Sediment Study
Project Location: ---

GTX #: 4556
Report Date: 0522/03
Tested By: njh
Checked By: jdt

Sample ID: 3202-S2-030228
Description: Dry, light brownish gray sandy silt

Sieve Size	Sieve Openings, in	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer, %
0.75"	0.7500	0.00	0.00	100.00
0.5"	0.5000	0.00	0.00	100.00
0.375"	0.3750	0.00	0.00	100.00
No. 4	0.1870	0.00	0.00	100.00
No. 10	0.0790	0.18	0.18	99.56
No. 20	0.0330	0.30	0.48	98.82
No. 40	0.0170	0.52	1.00	97.55
No. 60	0.0100	0.88	1.88	95.39
No. 100	0.0060	-1.15	0.73	98.21
No. 200	0.0030	7.94	8.67	78.74
No. 400	0.0010	3.64	12.31	69.81
No. 635	0.0008	1.21	13.52	66.85
Total			40.78	

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GEOTECHNICAL LABORATORY TEST DATA

Project : Tahoe Sediment Study
Project No. : GTX-4556
Boring No. : ---
Sample No. : 3202-S2-030228
Location : Lake Tahoe, CA
Soil Description : Dry, light brownish gray sandy silt
Remarks : ---

Depth : ---
Test Date : 05/13/03
Test Method : ASTM D 422

Filename : 22030228
Elevation : ---
Tested by : den/ccp/njh
Checked by : jdt

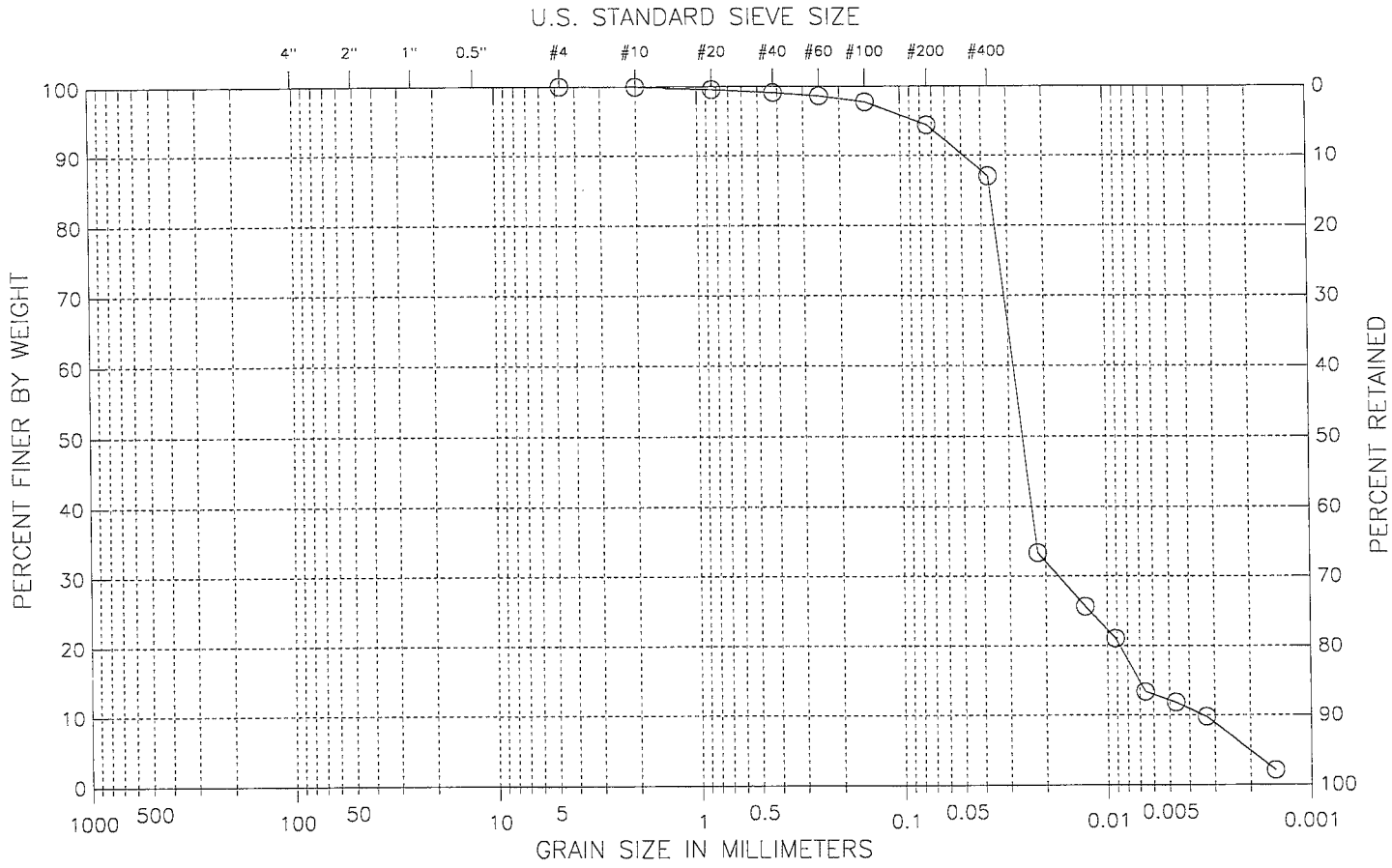
HYDROMETER

Hydrometer ID : 457488
Weight of air-dried soil = 40.58 gm
Specific Gravity = 2.66

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
5.00	17.50	21.50	10.83	0.022	27	0.022
5.00	17.50	21.50	10.83	0.022	27	0.022
15.00	14.50	21.50	7.83	0.013	19	0.013
30.00	13.00	21.50	6.33	0.009	16	0.009
60.00	11.50	21.50	4.83	0.007	12	0.007
120.00	10.00	21.50	3.33	0.005	8	0.005
240.00	9.00	22.00	2.67	0.003	7	0.003
1240.00	8.50	19.00	0.67	0.002	2	0.002

Boring No. : ---	Project : Tahoe Sediment Study
Sample No.: 3202-S3-030228	Project No.: GTX-4556
Test Method ASTM D 422	Location: Lake Tahoe, CA
Filename : 23030228	Date : Thu May 22 2003



Classification :

Remarks :

Visual Description :
Dry, light brownish gray silt

Figure 6

Grain Size Analysis by ASTM D 422

Client: CDM Federal Programs
Project Name: Tahoe Sediment Study
Project Location: ---

GTX #: 4556
Report Date: 0522/03
Tested By: njh
Checked By: jdt

Sample ID: 3202-S3-030228
Description: Dry, light brownish gray silt

Sieve Size	Sieve Openings, in	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer, %
0.75"	0.7500	0.00	0.00	100.00
0.5"	0.5000	0.00	0.00	100.00
0.375"	0.3750	0.00	0.00	100.00
No. 4	0.1870	0.00	0.00	100.00
No. 10	0.0790	0.02	0.02	99.95
No. 20	0.0330	0.17	0.19	99.55
No. 40	0.0170	0.19	0.38	99.11
No. 60	0.0100	0.21	0.59	98.61
No. 100	0.0060	0.37	0.96	97.74
No. 200	0.0030	1.41	2.37	94.42
No. 400	0.0010	3.16	5.53	86.98
No. 635	0.0008	0.77	6.30	85.17
Total			42.48	

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GEOTECHNICAL LABORATORY TEST DATA

Project : Tahoe Sediment Study
Project No. : GTX-4556
Boring No. : ---
Sample No. : 3202-S3-030228
Location : Lake Tahoe, CA
Soil Description : Dry, light brownish gray silt
Remarks : ---

Depth : ---
Test Date : 05/13/03
Test Method : ASTM D 422

Filename : 23030228
Elevation : ---
Tested by : den/ccp/njh
Checked by : jdt

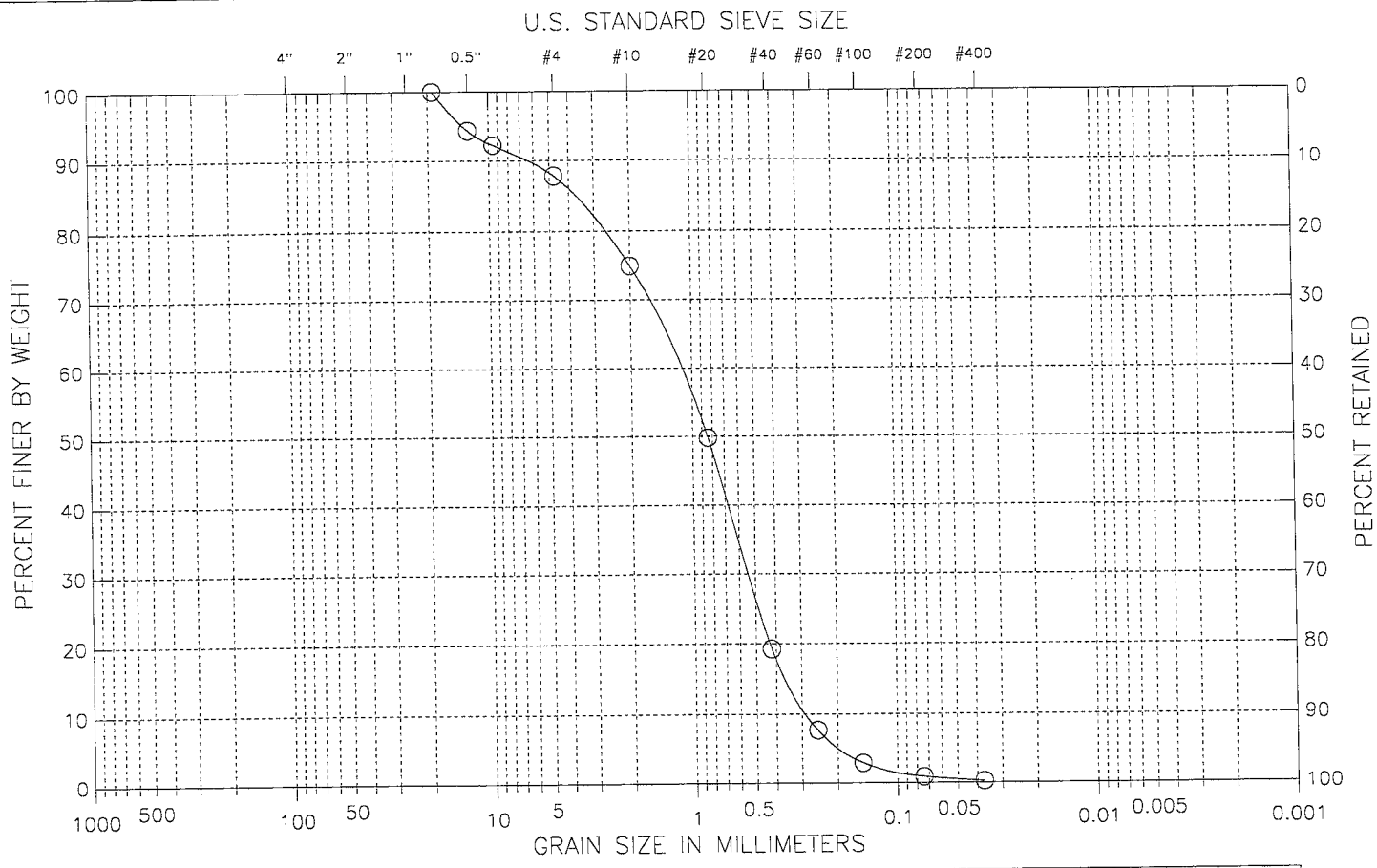
HYDROMETER

Hydrometer ID : 457488
Weight of air-dried soil = 32.45 gm
Specific Gravity = 2.66

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
5.00	17.50	21.50	10.83	0.022	33	0.022
5.00	17.50	21.50	10.83	0.022	33	0.022
15.00	15.00	21.50	8.33	0.013	26	0.013
30.00	13.50	21.50	6.83	0.009	21	0.009
60.00	11.00	21.50	4.33	0.007	13	0.007
120.00	10.50	21.50	3.83	0.005	12	0.005
240.00	9.50	22.00	3.17	0.003	10	0.003
1246.00	8.50	19.00	0.67	0.002	2	0.002

Boring No. : ---	Project : Tahoe Sediment Study
Sample No.: 3203-S1-021127	Project No.: GTX-4556
Test Method ASTM D 422	Location: Lake Tahoe, CA
Filename : 31021127	Date : Thu May 22 2003



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :
(SP) Poorly graded sand
Visual Description :
Dry, light brownish gray sand

Remarks :
Less than 10 % fines, Hydrometer not performed

Figure 7

Grain Size Analysis by ASTM D 422

Client: CDM Federal Programs
Project Name: Tahoe Sediment Study
Project Location: ---

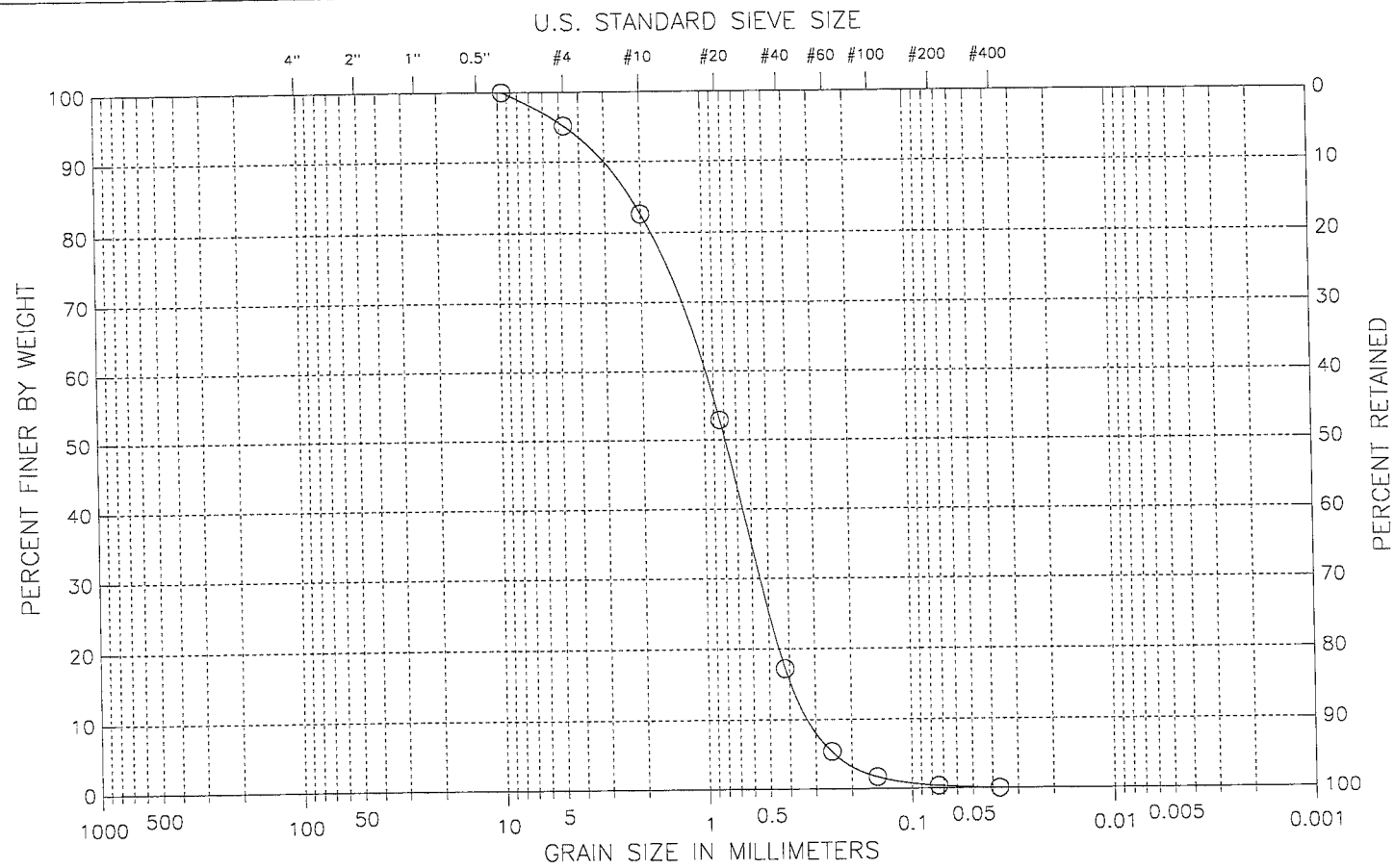
GTX #: 4556
Report Date: 0522/03
Tested By: njh
Checked By: jdt

Sample ID: 3203-S1-021127
Description: Dry, light brownish gray sand

Sieve Size	Sieve Openings, in	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer, %
0.75"	0.7500	0.00	0.00	100.00
0.5"	0.5000	4.49	4.49	94.42
0.375"	0.3750	1.70	6.19	92.31
No. 4	0.1870	3.63	9.82	87.80
No. 10	0.0790	10.36	20.18	74.93
No. 20	0.0330	20.27	40.45	49.76
No. 40	0.0170	24.56	65.01	19.25
No. 60	0.0100	9.33	74.34	7.66
No. 100	0.0060	3.85	78.19	2.88
No. 200	0.0030	1.63	79.82	0.86
No. 400	0.0010	0.52	80.34	0.21
No. 635	0.0008	0.17	80.51	0.00
Total			80.51	

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

Boring No. : --- Sample No.: 3203-S1-030228 Test Method ASTM D 422 Filename : 31030228	Project : Tahoe Sediment Study Project No.: GTX-4556 Location: Lake Tahoe, CA Date : Thu May 22 2003



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :
(SP) Poorly graded sand
Visual Description :
Dry, light brownish gray sand

Remarks :
Less 10% fines, Hydrometer not performed

Figure 8

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Grain Size Analysis by ASTM D 422

Client: CDM Federal Programs
Project Name: Tahoe Sediment Study
Project Location: ---

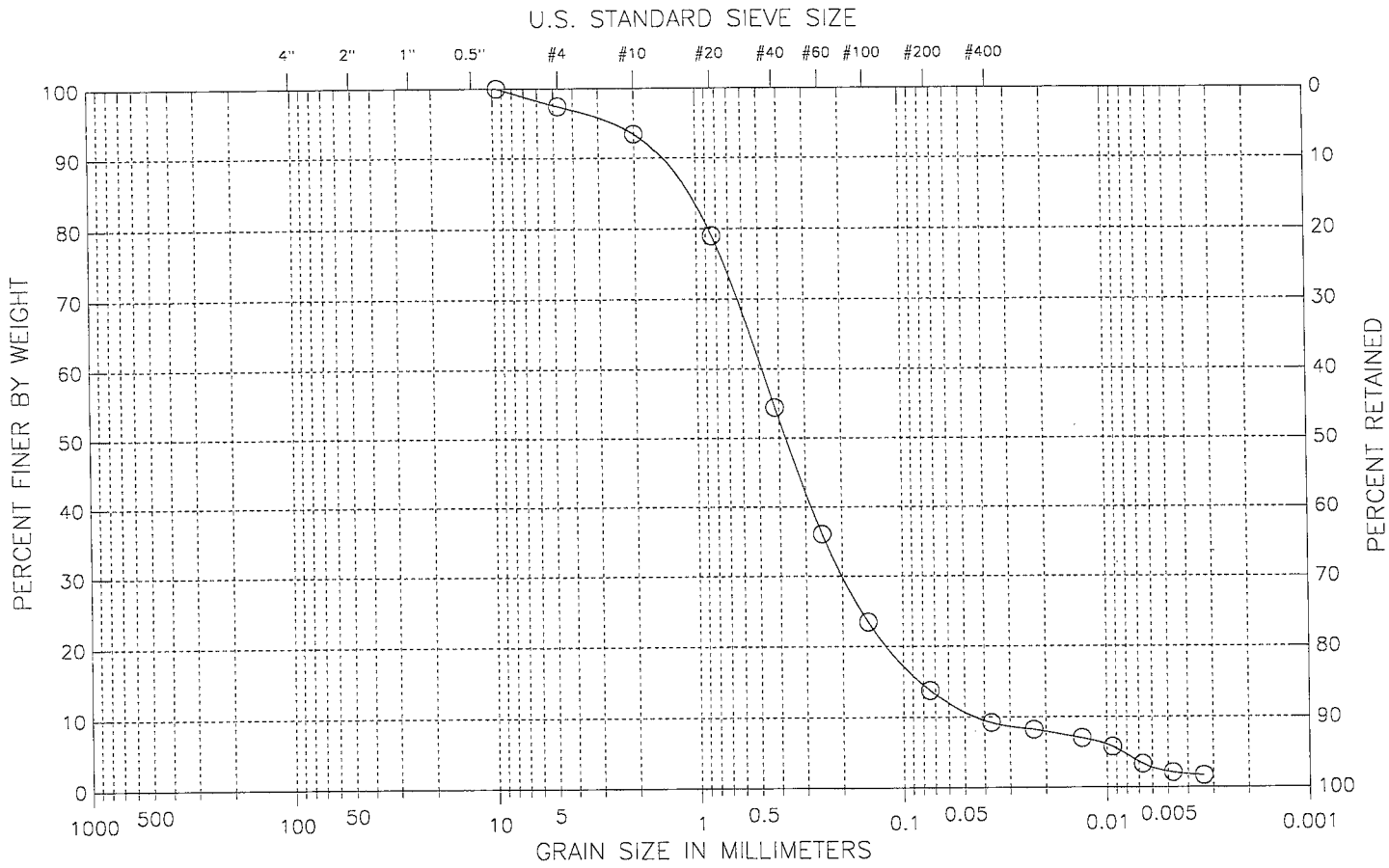
GTX #: 4556
Report Date: 0522/03
Tested By: njh
Checked By: jdt

Sample ID: 3203-S1-030228
Description: Dry, light brownish gray sand

Sieve Size	Sieve Openings, in	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer, %
0.75"	0.7500	0.00	0.00	100.00
0.5"	0.5000	0.00	0.00	100.00
0.375"	0.3750	0.00	0.00	100.00
No. 4	0.1870	3.51	3.51	95.19
No. 10	0.0790	9.17	12.68	82.63
No. 20	0.0330	21.75	34.43	52.84
No. 40	0.0170	26.06	60.49	17.15
No. 60	0.0100	8.62	69.11	5.34
No. 100	0.0060	2.70	71.81	1.64
No. 200	0.0030	0.98	72.79	0.30
No. 400	0.0010	0.21	73.00	0.01
No. 635	0.0008	0.01	73.01	0.00
Total			73.01	

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

Boring No. : --- Sample No.: 3203-S2-021127 Test Method ASTM D 422 Filename : 32021127	Project : Tahoe Sediment Study Project No.: GTX-4556 Location: Lake Tahoe, CA Date : Thu May 22 2003



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Remarks :

Visual Description :
Dry, light brownish gray silty sand

Figure 9

Grain Size Analysis by ASTM D 422

Client: CDM Federal Programs
Project Name: Tahoe Sediment Study
Project Location: ---

GTX #: 4556
Report Date: 05/22/03
Tested By: njh
Checked By: jdt

Sample ID: 3203-S2-021127
Description: Dry, light brownish gray silty sand

Sieve Size	Sieve Openings, in	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer, %
0.75"	0.7500	0.00	0.00	100.00
0.5"	0.5000	0.00	0.00	100.00
0.375"	0.3750	0.00	0.00	100.00
No. 4	0.1870	1.04	1.04	97.44
No. 10	0.0790	1.61	2.65	93.48
No. 20	0.0330	5.88	8.53	79.01
No. 40	0.0170	9.95	18.48	54.52
No. 60	0.0100	7.48	25.96	36.11
No. 100	0.0060	5.11	31.07	23.53
No. 200	0.0030	3.95	35.02	13.81
No. 400	0.0010	1.84	36.86	9.28
No. 635	0.0008	3.73	40.59	0.10
Total			40.63	

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

Thu May 22 12:45:34 2003

GEOTECHNICAL LABORATORY TEST DATA

Project : Tahoe Sediment Study
Project No. : GTX-4556
Boring No. : ---
Sample No. : 3203-S2-021127
Location : Lake Tahoe, CA
Soil Description : Dry, light brownish gray silty sand
Remarks : ---

Depth : ---
Test Date : 05/13/03
Test Method : ASTM D 422

Filename : 32021127
Elevation : ---
Tested by : den/ccp/njh
Checked by : jdt

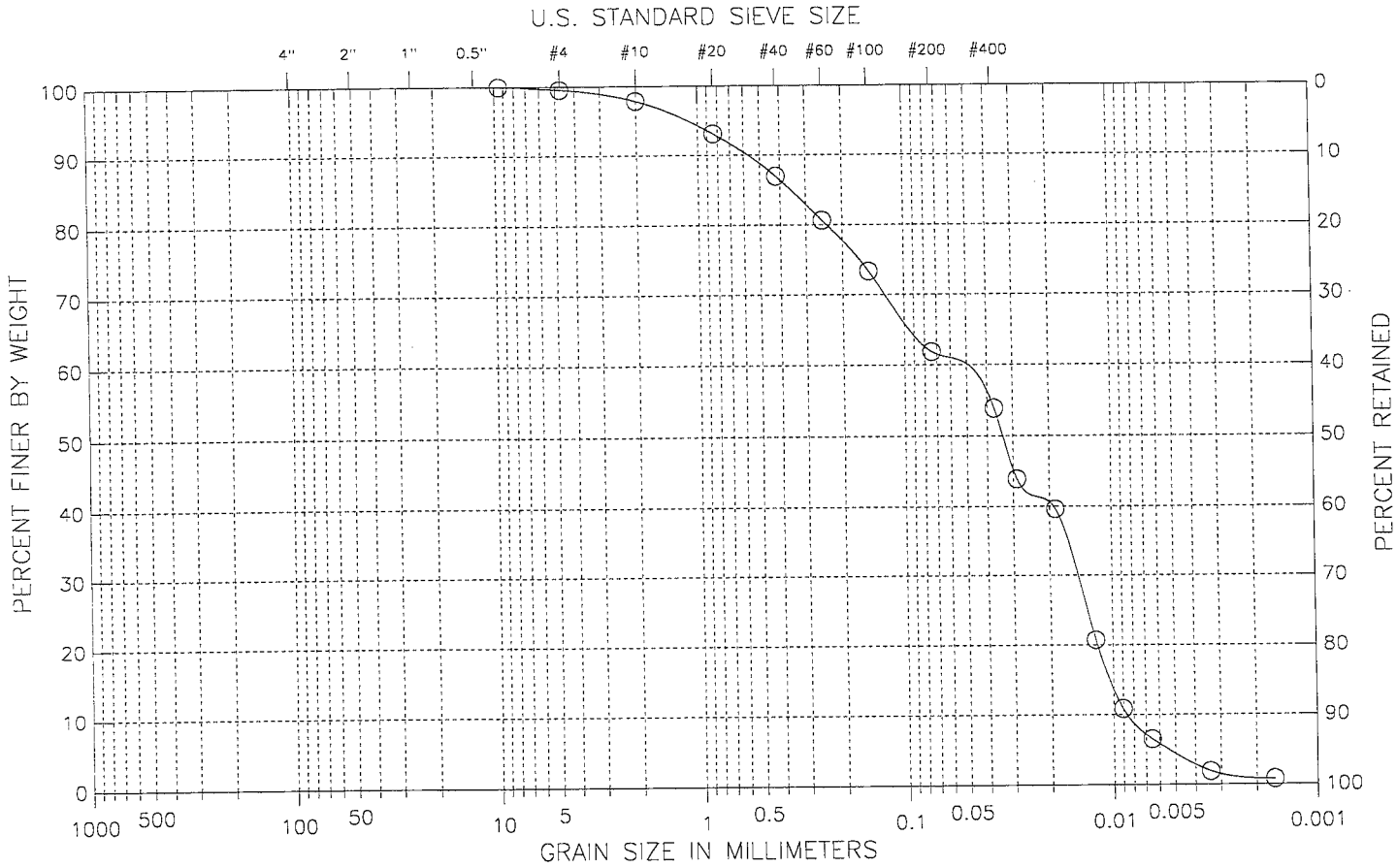
HYDROMETER

Hydrometer ID : 457488
Weight of air-dried soil = 37.94 gm
Specific Gravity = 2.66

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
5.00	10.00	21.50	3.33	0.023	8	0.023
5.00	10.00	21.50	3.33	0.023	8	0.023
15.00	9.50	21.50	2.83	0.013	7	0.013
30.00	9.00	21.50	2.33	0.009	6	0.009
60.00	8.00	21.50	1.33	0.007	3	0.007
120.00	7.50	21.50	0.83	0.005	2	0.005
240.00	7.00	22.00	0.67	0.003	2	0.003

Boring No. : --- Sample No.: 3203-S2-030228 Test Method ASTM D 422 Filename : 32030228	Project : Tahoe Sediment Study Project No.: GTX-4556 Location: Lake Tahoe, CA Date : Thu May 22 2003



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Remarks :

Visual Description :
Dry, light brownish gray sandy silt

Figure 10

Grain Size Analysis by ASTM D 422

Client: CDM Federal Programs
Project Name: Tahoe Sediment Study
Project Location: ---

GTX #: 4556
Report Date: 05/22/03
Tested By: njh
Checked By: jdt

Sample ID: 3203-S2-030228
Description: Dry, light brownish gray sandy silt

Sieve Size	Sieve Openings, in	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer, %
0.75"	0.7500	0.00	0.00	100.00
0.5"	0.5000	0.00	0.00	100.00
0.375"	0.3750	0.00	0.00	100.00
No. 4	0.1870	0.36	0.36	99.55
No. 10	0.0790	1.36	1.72	97.87
No. 20	0.0330	3.83	5.55	93.13
No. 40	0.0170	5.01	10.56	86.93
No. 60	0.0100	5.08	15.64	80.64
No. 100	0.0060	5.90	21.54	73.34
No. 200	0.0030	9.27	30.81	61.87
No. 400	0.0010	6.43	37.24	53.91
No. 635	0.0008	2.24	39.48	51.14
Total			80.8	

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

Thu May 22 12:45:34 2003

GEOTECHNICAL LABORATORY TEST DATA

Project : Tahoe Sediment Study
Project No. : GTX-4556
Boring No. : ---
Sample No. : 3203-S2-030228
Location : Lake Tahoe, CA
Soil Description : Dry, light brownish gray sandy silt
Remarks : ---

Depth : ---
Test Date : 05/13/03
Test Method : ASTM D 422

Filename : 32030228
Elevation : ---
Tested by : den/ccp/njh
Checked by : jdt

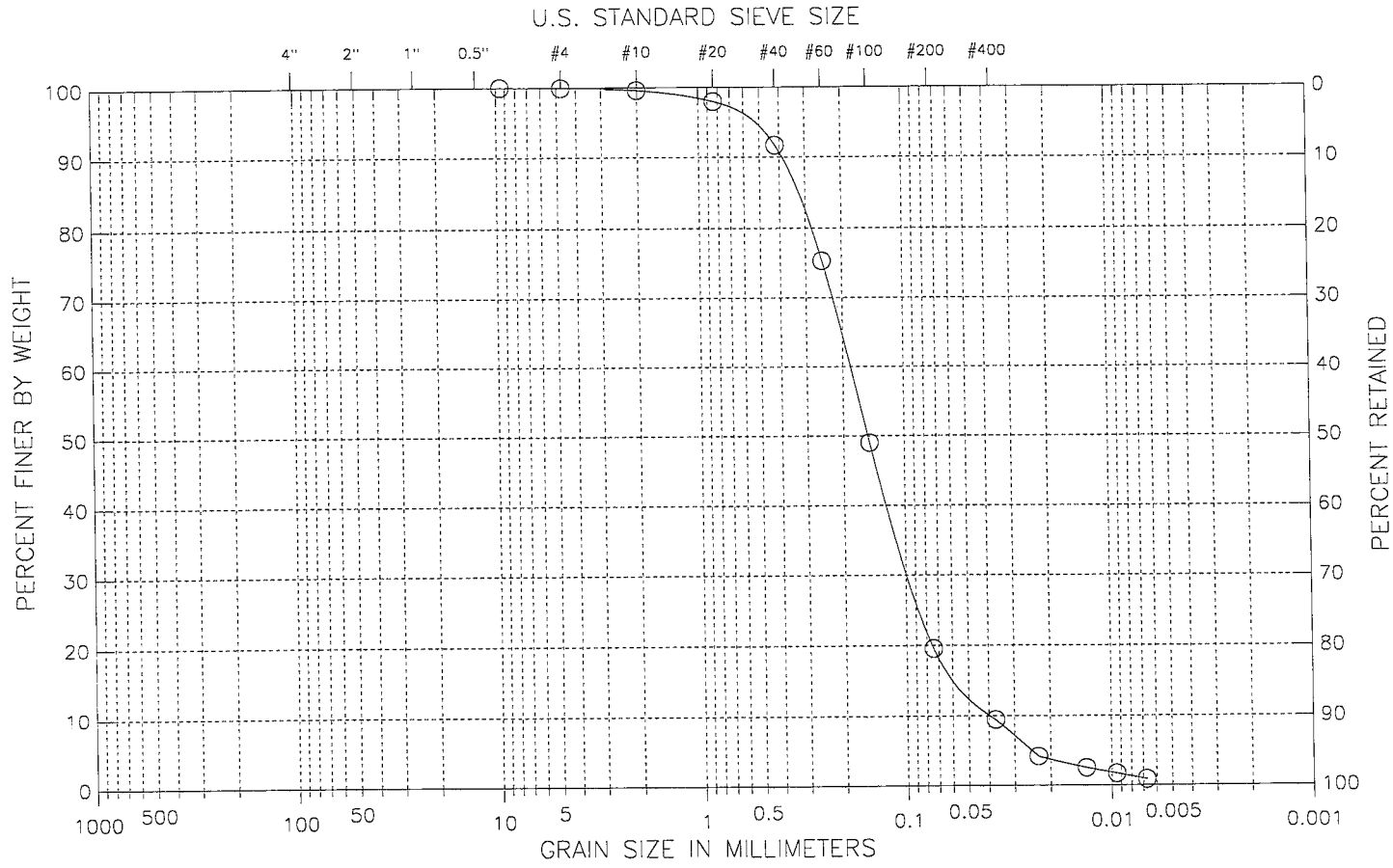
HYDROMETER

Hydrometer ID : 343664
Weight of air-dried soil = 79.06 gm
Specific Gravity = 2.66

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
2.00	41.50	22.50	35.50	0.029	44	0.029
5.00	38.00	22.50	32.00	0.019	40	0.019
15.00	23.00	22.00	16.75	0.012	21	0.012
30.00	15.00	22.00	8.75	0.009	11	0.009
60.00	11.50	22.00	5.25	0.007	6	0.007
240.00	8.50	20.50	1.50	0.003	2	0.003
1084.00	8.00	18.50	0.60	0.002	1	0.002

Boring No. : --- Sample No.: 3203-S3-021120 Test Method ASTM D 422 Filename : 33021120	Project : Tahoe Sediment Study Project No.: GTX-4556 Location: Lake Tahoe, CA Date : Thu May 22 2003



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Remarks :

Visual Description :
Dry, light brownish gray silty sand

Figure 11

Grain Size Analysis by ASTM D 422

Client: CDM Federal Programs
Project Name: Tahoe Sediment Study
Project Location: ---

GTX #: 4556
Report Date: 05/22/03
Tested By: njh
Checked By: jdt

Sample ID: 3203-S3-021120
Description: Dry, light brownish gray silty sand

Sieve Size	Sieve Openings, in	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer, %
0.75"	0.7500	0.00	0.00	100.00
0.5"	0.5000	0.00	0.00	100.00
0.375"	0.3750	0.00	0.00	100.00
No. 4	0.1870	0.04	0.04	99.93
No. 10	0.0790	0.21	0.25	99.59
No. 20	0.0330	0.97	1.22	97.98
No. 40	0.0170	3.77	4.99	91.72
No. 60	0.0100	9.88	14.87	75.33
No. 100	0.0060	15.87	30.74	49.00
No. 200	0.0030	17.77	48.51	19.53
No. 400	0.0010	6.09	54.60	9.42
No. 635	0.0008	1.16	55.76	7.50
Total			60.28	

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GEOTECHNICAL LABORATORY TEST DATA

Project : Tahoe Sediment Study
Project No. : GTX-4556
Boring No. : ---
Sample No. : 3203-S3-021120
Location : Lake Tahoe, CA
Soil Description : Dry, light brownish gray silty sand
Remarks : ---

Depth : ---
Test Date : 05/13/03
Test Method : ASTM D 422

Filename : 33021120
Elevation : ---
Tested by : den/ccp/njh
Checked by : jdt

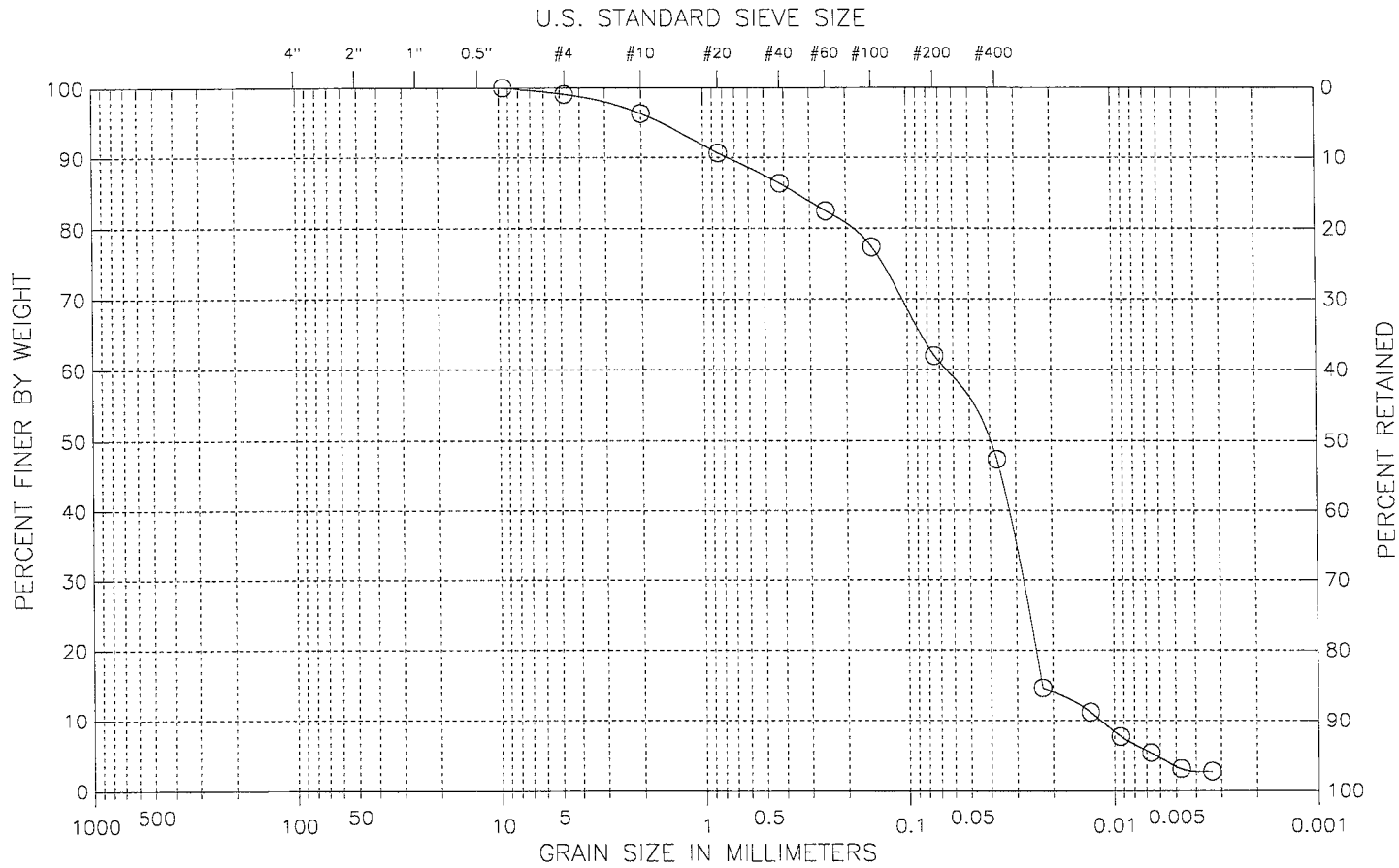
HYDROMETER

Hydrometer ID : 343664
Weight of air-dried soil = 11.76 gm
Specific Gravity = 2.66

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
5.00	9.00	21.50	2.50	0.023	4	0.023
5.00	9.00	21.50	2.50	0.023	4	0.023
15.00	8.00	21.50	1.50	0.013	2	0.013
30.00	7.50	21.50	1.00	0.009	2	0.009
60.00	7.00	21.50	0.50	0.007	1	0.007

Boring No. : ---	Project : Tahoe Sediment Study
Sample No.: 3203-S3-030228	Project No.: GTX-4556
Test Method ASTM D 422	Location: Lake Tahoe, CA
Filename : 33030228	Date : Thu May 22 2003



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Remarks :

Visual Description :
Dry, light brownish gray sandy silt

Figure 12

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Grain Size Analysis by ASTM D 422

Client: CDM Federal Programs
Project Name: Tahoe Sediment Study
Project Location: ---

GTX #: 4556
Report Date: 05/22/03
Tested By: njh
Checked By: jdt

Sample ID: 3203-S3-030228
Description: Dry, light brownish gray sandy silt

Sieve Size	Sieve Openings, in	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer, %
0.75"	0.7500	0.00	0.00	100.00
0.5"	0.5000	0.00	0.00	100.00
0.375"	0.3750	0.00	0.00	100.00
No. 4	0.1870	0.40	0.40	99.08
No. 10	0.0790	1.20	1.60	96.31
No. 20	0.0330	2.46	4.06	90.64
No. 40	0.0170	0.87	4.93	88.64
No. 60	0.0100	2.68	7.61	82.46
No. 100	0.0060	2.21	9.82	77.37
No. 200	0.0030	6.69	16.51	61.95
No. 400	0.0010	6.33	22.84	47.36
No. 635	0.0008	1.25	24.09	44.48
Total			43.39	

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GEOTECHNICAL LABORATORY TEST DATA

Project : Tahoe Sediment Study
Project No. : GTX-4556
Boring No. : ---
Sample No. : 3203-S3-030228
Location : Lake Tahoe, CA
Soil Description : Dry, light brownish gray sandy silt
Remarks : ---

Depth : ---
Test Date : 05/13/03
Test Method : ASTM D 422

Filename : 33030228
Elevation : ---
Tested by : den/ccp/njh
Checked by : jdt

HYDROMETER

Hydrometer ID : 457488
Weight of air-dried soil = 41.76 gm
Specific Gravity = 2.66

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
5.00	13.00	21.50	6.33	0.022	15	0.022
5.00	13.00	21.50	6.33	0.022	15	0.022
15.00	11.50	21.50	4.83	0.013	11	0.013
30.00	10.00	21.50	3.33	0.009	8	0.009
60.00	9.00	21.50	2.33	0.007	5	0.007
120.00	8.00	21.50	1.33	0.005	3	0.005
240.00	7.50	22.00	1.17	0.003	3	0.003

Grain Size Analysis by ASTM D 422

Client:	CDM Federal Programs	GTX #:	4556
Project Name:	Tahoe Sediment Study	Report Date:	6/16/2003
Project Location:		Tested By:	njh
		Checked By:	jdt
Sample ID:	3202-S1-030501		
Description:	Dry, light brownish gray sand with silt		

Sieve Size	Sieve Opening	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer %
0.75"	0.7500	0.00	0.00	100
0.5"	0.5000	0.00	0.00	100
0.375"	0.3750	0.00	0.00	100
No. 4	0.1870	13.50	13.50	97.6
No. 10	0.0790	11.00	24.50	83.2
No. 20	0.0330	34.00	58.50	71.6
No. 40	0.0170	13.00	71.50	35.4
No. 60	0.0100	5.00	76.50	21.8
No. 100	0.0060	4.80	81.30	16.3
No. 200	0.0030	2.05	83.35	11.2
No. 400	0.0010	6.20	89.55	9
No. 635	0.0008	2.30	91.85	8.7
Total			94.10	

Notes:These results apply only to the sample tested for the specified test conditions. The test procedures employed follow accepted industry practice and the indicated test method. Geo Testing Express has no specific knowlede as to conditions, origin sampling procedure or intended use of the material.

Fri June 13 13:31:27 2003

Project : Tahoe Sediment Study
Project No : GTX-4556
Boring No: ---
Sample No. : 3202-S1-030501
Location : Lake Tahoe, CA
Soil Description : Dry light brownish gray silty sand
Remarks :

Depth : ---
Test Date : 06/13/03
Test Method : ASTM D 422

File Name : 22021139
Elevation : ---
Tested by : ccp
Checked by : jdt

Hydrometer

Hydrometer ID : 343664
Weight of air-dried soil = 99.56
Specific Gravity = 2.66

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time	Reading	Temperature	Corrected	Particle Size	Percent	Adjusted
5.00	12.00	21.50	5.50	0.013	2	0.013
5.00	12.00	21.50	5.50	0.013	1	0.013
15.00	10.00	21.50	3.50	0.009	1	0.009

Grain Size Analysis by ASTM D 422

Client:	CDM Federal Programs	GTX #:	4556
Project Name:	Tahoe Sediment Study	Report Date:	6/16/2003
Project Location:		Tested By:	njh
		Checked By:	jdt

Sample ID: 3202-S2-030501
Description: Dry, light brownish gray sand with silt

Sieve Size	Sieve Opening	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer %
0.75"	0.7500	0.00	0.00	100
0.5"	0.5000	0.00	0.00	100
0.375"	0.3750	0.00	0.00	100
No. 4	0.1870	0.00	0.00	100
No. 10	0.0790	0.80	0.80	98.5
No. 20	0.0330	1.91	2.71	97.6
No. 40	0.0170	1.39	4.10	95.7
No. 60	0.0100	5.32	9.42	94.2
No. 100	0.0060	10.12	19.54	88.7
No. 200	0.0030	11.98	31.52	78.2
No. 400	0.0010	4.31	35.83	65.7
No. 635	0.0008	59.00	94.83	61.3
Total			96.30	

Notes:These results apply only to the sample tested for the specified test conditions. The test procedures employed follow accepted industry practice and the indicated test method. Geo Testing Express has no specific knowlede as to conditions, origin sampling procedure or intended use of the material.

Geo Testing Express, Inc. Boxborough, MA (978) 635-0424 Fax (978) 635-0266

Fri June 13 13:31:27 2003

Project : Tahoe Sediment Study
Project No : GTX-4556
Boring No: ---
Sample No. : 3202-S2-030501
Location : Lake Tahoe, CA
Depth : ---
Test Date : 06/13/03
Test Method : ASTM D 422
File Name : 22021139
Elevation : ---
Tested by : ccp
Checked by : jdt
Soil Description : Dry light brownish gray silty sand
Remarks :

Hydrometer

Hydrometer ID : 343664
Weight of air-dried soil = 102.3
Specific Gravity = 2.66

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time	Reading	Temperature	Corrected	Particle Size	Percent	Adjusted
5.00	12.00	21.50	5.50	0.013	20.2	0.013
5.00	12.00	21.50	5.50	0.009	17	0.009
15.00	10.00	21.50	3.50	0.007	13	0.007
30	9	21.50	2.00	0.005	6	0.005
60	7	21.50	2.00	0.003	4	0.003
240	6.5	21.50	0.50	0.002	1	0.002

Grain Size Analysis by ASTM D 422

Client:	CDM Federal Programs	GTX #:	4556
Project Name:	Tahoe Sediment Study	Report Date:	6/16/2003
Project Location:		Tested By:	njh
		Checked By:	jdt
Sample ID:	3202-S3-030501		
Description:	Dry, light brownish gray silt		

Sieve Size	Sieve Opening	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer %
0.75"	0.7500	0.00	0.00	100
0.5"	0.5000	0.00	0.00	100
0.375"	0.3750	0.00	0.00	100
No. 4	0.1870	0.00	0.00	100
No. 10	0.0790	0.98	0.98	99.8
No. 20	0.0330	1.12	2.10	98.4
No. 40	0.0170	0.71	2.81	96.8
No. 60	0.0100	1.01	3.82	95.8
No. 100	0.0060	1.35	5.17	94.3
No. 200	0.0030	3.18	8.35	92.4
No. 400	0.0010	2.95	11.30	87.9
No. 635	0.0008	58.84	70.14	83.7
Total			70.30	

Notes:These results apply only to the sample tested for the specified test conditions. The test procedures employed follow accepted industry practice and the indicated test method. Geo Testing Express has no specific knowlede as to conditions, origin sampling procedure or intended use of the material.

Geo Testing Express, Inc. Boxborough, MA (978) 635-0424 Fax (978) 635-0266

Fri June 13 13:31:27 2003

Project : Tahoe Sediment Study
Project No : GTX-4556
Boring No: ---
Sample No. : 3202-S3-030501
Location : Lake Tahoe, CA
Soil Description : Dry light brownish gray silt
Remarks :

Depth : ---
Test Date : 06/13/03
Test Method : ASTM D 422

File Name : 22021139
Elevation : ---
Tested by : ccp
Checked by : jdt

Hydrometer

Hydrometer ID : 343664
Weight of air-dried soil = 100.3
Specific Gravity = 2.66

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time	Reading	Temperature	Corrected	Particle Size	Percent	Adjusted
5.00	12.00	21.50	5.50	0.013	31.2	0.013
5.00	12.00	21.50	5.50	0.009	23	0.009
15.00	10.00	21.50	3.50	0.007	14	0.007
30	9	21.50	2.00	0.005	13	0.005
60	7.5	21.50	2.00	0.003	11	0.003
240	5	21.50	0.50	0.002	3	0.002

Grain Size Analysis by ASTM D 422

Client:	CDM Federal Programs	GTX #:	4556
Project Name:	Tahoe Sediment Study	Report Date:	6/16/2003
Project Location:		Tested By:	njh
		Checked By:	jdt
Sample ID:	3203-S1-030501		
Description:	Dry, light brownish gray sand with silt		

Sieve Size	Sieve Opening	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer %
0.75"	0.7500	0.00	0.00	100
0.5"	0.5000	0.00	0.00	100
0.375"	0.3750	0.00	0.00	100
No. 4	0.1870	2.74	2.74	98.6
No. 10	0.0790	4.53	7.27	95.4
No. 20	0.0330	3.22	10.49	90.1
No. 40	0.0170	3.85	14.34	86.3
No. 60	0.0100	4.48	18.82	81.8
No. 100	0.0060	14.51	33.33	76.5
No. 200	0.0030	9.42	42.75	59.4
No. 400	0.0010	4.12	46.87	48.3
No. 635	0.0008	36.98	83.85	43.5
Total			85.00	

Notes:These results apply only to the sample tested for the specified test conditions. The test procedures employed follow accepted industry practice and the indicated test method. Geo Testing Express has no specific knowlede as to conditions, origin sampling procedure or intended use of the material.

Geo Testing Express, Inc. Boxborough, MA (978) 635-0424 Fax (978) 635-0266

Grain Size Analysis by ASTM D 422

Client:	CDM Federal Programs	GTX #:	4556
Project Name:	Tahoe Sediment Study	Report Date:	6/16/2003
Project Location:		Tested By:	njh
		Checked By:	jdt
Sample ID:	3203-S2-030501		
Description:	Dry, light brownish gray sand with silt		

Sieve Size	Sieve Opening	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer %
0.75"	0.7500	0.00	0.00	100
0.5"	0.5000	0.00	0.00	100
0.375"	0.3750	0.00	0.00	100
No. 4	0.1870	1.02	1.02	97.8
No. 10	0.0790	2.82	3.84	96.3
No. 20	0.0330	4.52	8.36	92.1
No. 40	0.0170	2.86	11.22	85.4
No. 60	0.0100	4.48	15.70	81.2
No. 100	0.0060	9.58	25.28	74.5
No. 200	0.0030	5.37	30.65	60.3
No. 400	0.0010	1.31	31.96	52.3
No. 635	0.0008	33.89	65.85	50.4
Total			67.30	

Notes:These results apply only to the sample tested for the specified test conditions. The test procedures employed follow accepted industry practice and the indicated test method. Geo Testing Express has no specific knowlede as to conditions, origin sampling procedure or intended use of the material.

Geo Testing Express, Inc. Boxborough, MA (978) 635-0424 Fax (978) 635-0266

Fri June 13 13:31:27 2003

Project : Tahoe Sediment Study
Project No : GTX-4556
Boring No: ---
Sample No. : 3203-S2-030501
Location : Lake Tahoe, CA

Depth : ---
Test Date : 06/13/03
Test Method : ASTM D 422

File Name : 22021139
Elevation : ---
Tested by : ccp
Checked by : jdt

Soil Description : Dry light brownish gray sandy silt
Remarks :

Hydrometer

Hydrometer ID : 343664
Weight of air-dried soil = 103.6
Specific Gravity = 2.66

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time	Reading	Temperature	Corrected	Particle Size	Percent	Adjusted
5.00	12.00	21.50	5.50	0.013	20.2	0.013
5.00	11.00	21.50	5.50	0.009	10	0.009
15.00	9.00	21.50	2.90	0.007	5	0.007
30	8	21.50	2.40	0.005	2	0.005
60	7.5	21.50	2.00	0.003	1	0.003
240	5	21.50	0.50	0.002	0	0.002

Grain Size Analysis by ASTM D 422

Client:	CDM Federal Programs	GTX #:	4556
Project Name:	Tahoe Sediment Study	Report Date:	6/16/2003
Project Location:		Tested By:	njh
		Checked By:	jdt
Sample ID:	3203-S3-030501		
Description:	Dry, light brownish gray silt		

Sieve Size	Sieve Opening	Weight Retained, g	Cumulative Weight Retained, g	Percent Finer %
0.75"	0.7500	0.00	0.00	100
0.5"	0.5000	0.00	0.00	100
0.375"	0.3750	0.00	0.00	100
No. 4	0.1870	1.58	1.58	98.6
No. 10	0.0790	2.67	4.25	95.4
No. 20	0.0330	1.89	6.14	90.1
No. 40	0.0170	2.26	8.40	86.3
No. 60	0.0100	2.67	11.07	81.8
No. 100	0.0060	8.56	19.63	76.5
No. 200	0.0030	5.55	25.18	59.4
No. 400	0.0010	2.91	28.09	48.3
No. 635	0.0008	21.31	49.40	43.5
Total			50.10	

Notes:These results apply only to the sample tested for the specified test conditions. The test procedures employed follow accepted industry practice and the indicated test method. Geo Testing Express has no specific knowlede as to conditions, origin sampling procedure or intended use of the material.

Geo Testing Express, Inc. Boxborough, MA (978) 635-0424 Fax (978) 635-0266

Fri June 13 13:31:27 2003

Project : Tahoe Sediment Study
Project No : GTX-4556
Boring No: ---
Sample No. : 3203-S3-030501
Location : Lake Tahoe, CA
Soil Description : Dry light brownish gray silt
Remarks :

Depth : ---
Test Date : 06/13/03
Test Method : ASTM D 422

File Name : 22021139
Elevation : ---
Tested by : ccp
Checked by : jdt

Hydrometer

Hydrometer ID : 343664
Weight of air-dried soil = 102.6
Specific Gravity = 2.66

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time	Reading	Temperature	Corrected	Particle Size	Percent	Adjusted
5.00	12.00	21.50	5.50	0.013	12.0	0.013
5.00	11.00	21.50	5.00	0.009	8	0.009
15.00	9.00	21.50	3.00	0.007	4	0.007
30	9.00	21.50	2.60	0.005	2	0.005
60	7.50	21.50	2.00	0.003	1	0.003
240	5.00	21.50	0.50	0.002	0	0.002

Site	Location	Installation	Collection	Period	Size Fraction	Parameter	Value	Qualifier	Units
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>10	Total Organic Carbon	11000		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>20-10	Total Organic Carbon	14000		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>50-20	Total Organic Carbon	13000		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>635-50	Total Organic Carbon	11000		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	<635	Total Organic Carbon	8500		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>10	Total Kjeldahl Nitrogen	770		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>20-10	Total Kjeldahl Nitrogen	760		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>50-20	Total Kjeldahl Nitrogen	820		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>635-50	Total Kjeldahl Nitrogen	830		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	<635	Total Kjeldahl Nitrogen	710		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>10	Nitrate+Nitrite	0.5	U	mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>20-10	Nitrate+Nitrite	1	U	mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>50-20	Nitrate+Nitrite	1	U	mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>635-50	Nitrate+Nitrite	1	U	mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	<635	Nitrate+Nitrite	2.5	U	mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>10	Nitrite	0.36		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>20-10	Nitrite	0.5		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>50-20	Nitrite	0.9		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>635-50	Nitrite	0.49		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	<635	Nitrite	0.41		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>10	Phosphorus	3.5		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>20-10	Phosphorus	2.4		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>50-20	Phosphorus	2.3		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>635-50	Phosphorus	0.5	U	mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	<635	Phosphorus	0.5	U	mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>10	Cadmium	2.13		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>20-10	Cadmium	2.69		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>50-20	Cadmium	2.57		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>635-50	Cadmium	2.15		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	<635	Cadmium	2.66		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>10	Chromium	33.3		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>20-10	Chromium	40.5		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>50-20	Chromium	39		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>635-50	Chromium	33.3		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	<635	Chromium	41.9		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>10	Copper	46.1		mg/kg

Site	Location	Installation	Collection	Period	Size Fraction	Parameter	Value	Qualifier	Units
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>20-10	Copper	55.3		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>50-20	Copper	53.2		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>635-50	Copper	48.6		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	<635	Copper	287		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>10	Lead	48.6		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>20-10	Lead	54.1		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>50-20	Lead	55		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>635-50	Lead	51.7		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	<635	Lead	82		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>10	Nickel	21.4		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>20-10	Nickel	25.6		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>50-20	Nickel	24		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>635-50	Nickel	20.4		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	<635	Nickel	24.4		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>10	Zinc	385		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>20-10	Zinc	422		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>50-20	Zinc	418		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>635-50	Zinc	373		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	<635	Zinc	378		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>10	Iron	17300		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>20-10	Iron	22000		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>50-20	Iron	21200		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	>635-50	Iron	18600		mg/kg
Echo Summit	Filter Box (Effluent)	1/29/2001	2/28/2001	1	<635	Iron	21400		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>10	Total Organic Carbon	1900		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>20-10	Total Organic Carbon	2700		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>50-20	Total Organic Carbon	1900		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>635-50	Total Organic Carbon	770		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	<635	Total Organic Carbon	4500		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>10	Total Kjeldahl Nitrogen	550		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>20-10	Total Kjeldahl Nitrogen	570		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>50-20	Total Kjeldahl Nitrogen	420		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>635-50	Total Kjeldahl Nitrogen	390		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	<635	Total Kjeldahl Nitrogen	310		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>10	Nitrate+Nitrite	0.5	U	mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>20-10	Nitrate+Nitrite	0.5	U	mg/kg

Site	Location	Installation	Collection	Period	Size Fraction	Parameter	Value	Qualifier	Units
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>50-20	Nitrate+Nitrite	0.5	U	mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>635-50	Nitrate+Nitrite	0.5	U	mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	<635	Nitrate+Nitrite	1	U	mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>10	Nitrite	0.08		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>20-10	Nitrite	0.14		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>50-20	Nitrite	0.09		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>635-50	Nitrite	0.09		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	<635	Nitrite	1.9		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>10	Phosphorus	4.7		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>20-10	Phosphorus	3.1		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>50-20	Phosphorus	3.2		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>635-50	Phosphorus	4		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	<635	Phosphorus	0.5	U	mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>10	Cadmium	1.64		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>20-10	Cadmium	1.28		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>50-20	Cadmium	1.69		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>635-50	Cadmium	1.13		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	<635	Cadmium	2.06		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>10	Chromium	26.5		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>20-10	Chromium	21		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>50-20	Chromium	26.4		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>635-50	Chromium	18.9		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	<635	Chromium	29.4		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>10	Copper	33.4		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>20-10	Copper	29.3		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>50-20	Copper	32		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>635-50	Copper	23		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	<635	Copper	97.8		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>10	Lead	33		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>20-10	Lead	30.7		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>50-20	Lead	34.9		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>635-50	Lead	23.5		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	<635	Lead	54.2		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>10	Nickel	16.2		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>20-10	Nickel	13.1		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>50-20	Nickel	16.1		mg/kg

Site	Location	Installation	Collection	Period	Size Fraction	Parameter	Value	Qualifier	Units
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>635-50	Nickel	11.6		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	<635	Nickel	18.7		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>10	Zinc	199		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>20-10	Zinc	197		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>50-20	Zinc	204		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>635-50	Zinc	128		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	<635	Zinc	287		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>10	Iron	15000		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>20-10	Iron	12300		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>50-20	Iron	14800		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	>635-50	Iron	11600		mg/kg
Echo Summit	Filter Box (Effluent)	2/28/2001	3/25/2001	1	<635	Iron	15800		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>10	Total Organic Carbon	2100		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>20-10	Total Organic Carbon	1400		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>50-20	Total Organic Carbon	970		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>635-50	Total Organic Carbon	1000		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	<635	Total Organic Carbon	1600		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>10	Total Kjeldahl Nitrogen	130		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>20-10	Total Kjeldahl Nitrogen	350		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>50-20	Total Kjeldahl Nitrogen	360		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>635-50	Total Kjeldahl Nitrogen	360		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	<635	Total Kjeldahl Nitrogen	170		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>10	Nitrate+Nitrite	0.5	U	mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>20-10	Nitrate+Nitrite	0.5	U	mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>50-20	Nitrate+Nitrite	0.5	U	mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>635-50	Nitrate+Nitrite	0.5	U	mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	<635	Nitrate+Nitrite	0.5	U	mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>10	Nitrite	0.079		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>20-10	Nitrite	0.05	U	mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>50-20	Nitrite	0.062		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>635-50	Nitrite	0.068		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	<635	Nitrite	0.073		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>10	Phosphorus	0.92		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>20-10	Phosphorus	0.71		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>50-20	Phosphorus	0.6		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>635-50	Phosphorus	1.2		mg/kg

Site	Location	Installation	Collection	Period	Size Fraction	Parameter	Value	Qualifier	Units
Highway 89	Down-gradient Barrel		4/12/2001	1	<635	Phosphorus	1.5		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>10	Cadmium	0.5	U	mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>20-10	Cadmium	0.5	U	mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>50-20	Cadmium	0.5	U	mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>635-50	Cadmium	0.5	U	mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	<635	Cadmium	0.5	U	mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>10	Chromium	5.29		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>20-10	Chromium	4.06		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>50-20	Chromium	5.35		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>635-50	Chromium	11.1		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	<635	Chromium	12.9		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>10	Copper	6.13		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>20-10	Copper	7.78		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>50-20	Copper	8.54		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>635-50	Copper	13.5		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	<635	Copper	16.7		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>10	Lead	2.7		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>20-10	Lead	6		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>50-20	Lead	9.94		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>635-50	Lead	16		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	<635	Lead	19.4		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>10	Nickel	8.03		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>20-10	Nickel	4.75		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>50-20	Nickel	5.16		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>635-50	Nickel	8.91		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	<635	Nickel	9.29		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>10	Zinc	22.2		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>20-10	Zinc	32.8		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>50-20	Zinc	40.9		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>635-50	Zinc	63		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	<635	Zinc	77.5		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>10	Iron	4860		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>20-10	Iron	5410		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>50-20	Iron	5400		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	>635-50	Iron	9240		mg/kg
Highway 89	Down-gradient Barrel		4/12/2001	1	<635	Iron	10000		mg/kg

Site	Location	Installation	Collection	Period	Size Fraction	Parameter	Value	Qualifier	Units
Highway 89	Up-gradient Barrel		4/12/2001	1	>10	Total Organic Carbon	6900		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>20-10	Total Organic Carbon	9400		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>50-20	Total Organic Carbon	8500		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>635-50	Total Organic Carbon	7400		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	<635	Total Organic Carbon	5500		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>10	Total Kjeldahl Nitrogen	1400		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>20-10	Total Kjeldahl Nitrogen	1400		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>50-20	Total Kjeldahl Nitrogen	880		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>635-50	Total Kjeldahl Nitrogen	860		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	<635	Total Kjeldahl Nitrogen	940		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>10	Nitrate+Nitrite	0.5	U	mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>20-10	Nitrate+Nitrite	0.5	U	mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>50-20	Nitrate+Nitrite	6.5		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>635-50	Nitrate+Nitrite	0.5	U	mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	<635	Nitrate+Nitrite	0.5	U	mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>10	Nitrite	0.081		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>20-10	Nitrite	0.05	U	mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>50-20	Nitrite	4.2		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>635-50	Nitrite	0.15		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	<635	Nitrite	0.081		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>10	Phosphorus	0.5	U	mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>20-10	Phosphorus	2		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>50-20	Phosphorus	1.5		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>635-50	Phosphorus	2		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	<635	Phosphorus	2.9		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>10	Cadmium	0.5	U	mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>20-10	Cadmium	0.5	U	mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>50-20	Cadmium	0.5	U	mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>635-50	Cadmium	0.5	U	mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	<635	Cadmium	0.5	U	mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>10	Chromium	10.2		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>20-10	Chromium	9.98		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>50-20	Chromium	9.46		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>635-50	Chromium	11.8		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	<635	Chromium	12.1		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>10	Copper	26.7		mg/kg

Site	Location	Installation	Collection	Period	Size Fraction	Parameter	Value	Qualifier	Units
Highway 89	Up-gradient Barrel		4/12/2001	1	>20-10	Copper	25.9		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>50-20	Copper	23.8		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>635-50	Copper	27		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	<635	Copper	29.7		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>10	Lead	12.3		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>20-10	Lead	10.3		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>50-20	Lead	12.4		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>635-50	Lead	12		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	<635	Lead	13.8		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>10	Nickel	17.3		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>20-10	Nickel	15.3		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>50-20	Nickel	14.4		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>635-50	Nickel	15.9		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	<635	Nickel	16.9		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>10	Zinc	133		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>20-10	Zinc	124		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>50-20	Zinc	195		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>635-50	Zinc	150		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	<635	Zinc	146		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>10	Iron	16300		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>20-10	Iron	16300		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>50-20	Iron	15500		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	>635-50	Iron	17200		mg/kg
Highway 89	Up-gradient Barrel		4/12/2001	1	<635	Iron	18000		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>10	Total Organic Carbon	17000		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>20-10	Total Organic Carbon	17000		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>50-20	Total Organic Carbon	16000		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>635-50	Total Organic Carbon	6600		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	<635	Total Organic Carbon	15000		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>10	Total Kjeldahl Nitrogen	800		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>20-10	Total Kjeldahl Nitrogen	1200		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>50-20	Total Kjeldahl Nitrogen	1100		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>635-50	Total Kjeldahl Nitrogen	950		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	<635	Total Kjeldahl Nitrogen	970		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>10	Nitrate+Nitrite	0.5	U	mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>20-10	Nitrate+Nitrite	0.5	U	mg/kg

Site	Location	Installation	Collection	Period	Size Fraction	Parameter	Value	Qualifier	Units
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>50-20	Nitrate+Nitrite	0.5	U	mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>635-50	Nitrate+Nitrite	0.5	U	mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	<635	Nitrate+Nitrite	0.5	U	mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>10	Nitrite	0.016		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>20-10	Nitrite	0.17		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>50-20	Nitrite	0.18		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>635-50	Nitrite	0.26		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	<635	Nitrite	0.57		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>10	Phosphorus	2.1		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>20-10	Phosphorus	2.3		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>50-20	Phosphorus	3		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>635-50	Phosphorus	7.9		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	<635	Phosphorus	20		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>10	Cadmium	0.844		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>20-10	Cadmium	0.965		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>50-20	Cadmium	1.02		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>635-50	Cadmium	0.787		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	<635	Cadmium	0.877		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>10	Chromium	13.5		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>20-10	Chromium	17		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>50-20	Chromium	18.7		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>635-50	Chromium	15.9		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	<635	Chromium	17.1		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>10	Copper	38.4		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>20-10	Copper	46		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>50-20	Copper	49.3		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>635-50	Copper	39.1		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	<635	Copper	45		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>10	Lead	21.6		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>20-10	Lead	24.1		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>50-20	Lead	24		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>635-50	Lead	20.4		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	<635	Lead	26		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>10	Nickel	15.7		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>20-10	Nickel	17.2		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>50-20	Nickel	17.8		mg/kg

Site	Location	Installation	Collection	Period	Size Fraction	Parameter	Value	Qualifier	Units
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>635-50	Nickel	15.2		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	<635	Nickel	15.5		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>10	Zinc	588		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>20-10	Zinc	646		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>50-20	Zinc	633		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>635-50	Zinc	518		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	<635	Zinc	536		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>10	Iron	14900		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>20-10	Iron	19000		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>50-20	Iron	20900		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	>635-50	Iron	17800		mg/kg
Tahoe Airport	Down-gradient Barrel	12/29/2000	4/2/2001	1	<635	Iron	19100		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>10	Total Organic Carbon	4100		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>20-10	Total Organic Carbon	3900		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>50-20	Total Organic Carbon	3400		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>635-50	Total Organic Carbon	2700		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	<635	Total Organic Carbon	5700		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>10	Total Kjeldahl Nitrogen	3200		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>20-10	Total Kjeldahl Nitrogen	1000		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>50-20	Total Kjeldahl Nitrogen	1000		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>635-50	Total Kjeldahl Nitrogen	1100		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	<635	Total Kjeldahl Nitrogen	790		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>10	Nitrate+Nitrite	0.5		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>20-10	Nitrate+Nitrite	0.8		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>50-20	Nitrate+Nitrite	0.5	U	mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>635-50	Nitrate+Nitrite	0.6		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	<635	Nitrate+Nitrite	10	U	mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>10	Nitrite	0.29		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>20-10	Nitrite	0.27		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>50-20	Nitrite	0.26		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>635-50	Nitrite	0.44		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	<635	Nitrite	0.06		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>10	Phosphorus	4.7		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>20-10	Phosphorus	2.9		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>50-20	Phosphorus	6.4		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>635-50	Phosphorus	15		mg/kg

Site	Location	Installation	Collection	Period	Size Fraction	Parameter	Value	Qualifier	Units
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	<635	Phosphorus	2.1		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>10	Cadmium	2.39		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>20-10	Cadmium	2.34		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>50-20	Cadmium	2.19		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>635-50	Cadmium	2.34		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	<635	Cadmium	1.07		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>10	Chromium	16.6		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>20-10	Chromium	15.9		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>50-20	Chromium	16.7		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>635-50	Chromium	16		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	<635	Chromium	8.01		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>10	Copper	43.6		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>20-10	Copper	46.6		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>50-20	Copper	41.4		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>635-50	Copper	50.1		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	<635	Copper	32.8		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>10	Lead	21.3		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>20-10	Lead	21.9		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>50-20	Lead	22.2		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>635-50	Lead	28.2		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	<635	Lead	19.2		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>10	Nickel	16.1		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>20-10	Nickel	15.7		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>50-20	Nickel	15.7		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>635-50	Nickel	16.2		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	<635	Nickel	7.67		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>10	Zinc	482		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>20-10	Zinc	422		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>50-20	Zinc	408		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>635-50	Zinc	490		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	<635	Zinc	187		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>10	Iron	17000		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>20-10	Iron	16400		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>50-20	Iron	15100		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	>635-50	Iron	16100		mg/kg
Tahoe Airport	Filter Box (Effluent)	12/29/2000	2/28/2001	1	<635	Iron	8730		mg/kg

Site	Location	Installation	Collection	Period	Size Fraction	Parameter	Value	Qualifier	Units
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>10	Total Organic Carbon	3700		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>20-10	Total Organic Carbon	4600		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>50-20	Total Organic Carbon	4400		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>635-50	Total Organic Carbon	3500		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	<635	Total Organic Carbon	2300		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>10	Total Kjeldahl Nitrogen	510		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>20-10	Total Kjeldahl Nitrogen	250		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>50-20	Total Kjeldahl Nitrogen	310		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>635-50	Total Kjeldahl Nitrogen	340		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	<635	Total Kjeldahl Nitrogen	460		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>10	Nitrate+Nitrite	0.5	U	mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>20-10	Nitrate+Nitrite	0.5	U	mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>50-20	Nitrate+Nitrite	0.5	U	mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>635-50	Nitrate+Nitrite	0.5	U	mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	<635	Nitrate+Nitrite	0.5	U	mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>10	Nitrite	0.088		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>20-10	Nitrite	0.05	U	mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>50-20	Nitrite	0.05	U	mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>635-50	Nitrite	0.05	U	mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	<635	Nitrite	0.099		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>10	Phosphorus	2		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>20-10	Phosphorus	0.94		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>50-20	Phosphorus	2.5		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>635-50	Phosphorus	1.2		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	<635	Phosphorus	4.3		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>10	Cadmium	0.5	U	mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>20-10	Cadmium	0.5	U	mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>50-20	Cadmium	0.5	U	mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>635-50	Cadmium	0.5	U	mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	<635	Cadmium	0.503		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>10	Chromium	7.28		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>20-10	Chromium	5.43		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>50-20	Chromium	7.69		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>635-50	Chromium	12.8		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	<635	Chromium	13.5		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>10	Copper	16.4		mg/kg

Site	Location	Installation	Collection	Period	Size Fraction	Parameter	Value	Qualifier	Units
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>20-10	Copper	13.7		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>50-20	Copper	14.8		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>635-50	Copper	25.5		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	<635	Copper	32.6		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>10	Lead	7.96		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>20-10	Lead	6.06		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>50-20	Lead	7.56		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>635-50	Lead	13.7		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	<635	Lead	19		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>10	Nickel	7.23		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>20-10	Nickel	6.79		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>50-20	Nickel	7.25		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>635-50	Nickel	10.7		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	<635	Nickel	11.5		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>10	Zinc	162		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>20-10	Zinc	90.5		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>50-20	Zinc	104		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>635-50	Zinc	175		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	<635	Zinc	210		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>10	Iron	8480		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>20-10	Iron	7770		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>50-20	Iron	8580		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	>635-50	Iron	14300		mg/kg
Tahoe Airport	Up-gradient Barrel	12/29/2000	4/2/2001	1	<635	Iron	15600		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>10	Total Organic Carbon	3500		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>20-10	Total Organic Carbon	1700		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>50-20	Total Organic Carbon	2000		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>635-50	Total Organic Carbon	1900		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	<635	Total Organic Carbon	15000		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>10	Total Kjeldahl Nitrogen	810		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>20-10	Total Kjeldahl Nitrogen	1700		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>50-20	Total Kjeldahl Nitrogen	3000		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>635-50	Total Kjeldahl Nitrogen	2300		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	<635	Total Kjeldahl Nitrogen	2400		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>10	Nitrate+Nitrite	0.5	U	mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>20-10	Nitrate+Nitrite	0.5	U	mg/kg

Site	Location	Installation	Collection	Period	Size Fraction	Parameter	Value	Qualifier	Units
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>50-20	Nitrate+Nitrite	0.5	U	mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>635-50	Nitrate+Nitrite	0.5	U	mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	<635	Nitrate+Nitrite	0.5	U	mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>10	Nitrite	0.05	U	mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>20-10	Nitrite	0.06		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>50-20	Nitrite	0.05	U	mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>635-50	Nitrite	0.05	U	mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	<635	Nitrite	0.27		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>10	Phosphorus	6.7		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>20-10	Phosphorus	16		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>50-20	Phosphorus	7.6		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>635-50	Phosphorus	0.5	U	mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	<635	Phosphorus	5	U	mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>10	Cadmium	1.25		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>20-10	Cadmium	2.16		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>50-20	Cadmium	2.1		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>635-50	Cadmium	3.63		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	<635	Cadmium	4.72		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>10	Chromium	20.8		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>20-10	Chromium	26.3		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>50-20	Chromium	28.4		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>635-50	Chromium	40.3		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	<635	Chromium	56.2		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>10	Copper	22.8		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>20-10	Copper	45.3		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>50-20	Copper	72.8		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>635-50	Copper	93.1		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	<635	Copper	169		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>10	Lead	7.99		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>20-10	Lead	26.4		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>50-20	Lead	46.8		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>635-50	Lead	83.9		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	<635	Lead	87.8		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>10	Nickel	34.9		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>20-10	Nickel	23.9		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>50-20	Nickel	24		mg/kg

Site	Location	Installation	Collection	Period	Size Fraction	Parameter	Value	Qualifier	Units
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>635-50	Nickel	33.5		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	<635	Nickel	46.5		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>10	Zinc	70.1		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>20-10	Zinc	434		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>50-20	Zinc	315		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>635-50	Zinc	506		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	<635	Zinc	658		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>10	Iron	6750		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>20-10	Iron	15500		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>50-20	Iron	10700		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	>635-50	Iron	16200		mg/kg
Zinfandel	Filter Box (Direct Runoff)	3/22/2001	3/27/2001	2	<635	Iron	22100		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>10	Total Organic Carbon	6600		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>20-10	Total Organic Carbon	6800		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>50-20	Total Organic Carbon	7300		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>635-50	Total Organic Carbon	8000		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	<635	Total Organic Carbon	14000		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>10	Total Kjeldahl Nitrogen	960		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>20-10	Total Kjeldahl Nitrogen	2200		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>50-20	Total Kjeldahl Nitrogen	2000		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>635-50	Total Kjeldahl Nitrogen	1900		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	<635	Total Kjeldahl Nitrogen	280		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>10	Nitrate+Nitrite	0.5	U	mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>20-10	Nitrate+Nitrite	0.5	U	mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>50-20	Nitrate+Nitrite	0.5	U	mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>635-50	Nitrate+Nitrite	0.5	U	mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	<635	Nitrate+Nitrite	0.5	U	mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>10	Nitrite	0.05	U	mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>20-10	Nitrite	1.3		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>50-20	Nitrite	1.5		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>635-50	Nitrite	1.7		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	<635	Nitrite	0.05	U	mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>10	Phosphorus	1		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>20-10	Phosphorus	7.4		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>50-20	Phosphorus	1.2		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>635-50	Phosphorus	1.7		mg/kg

Site	Location	Installation	Collection	Period	Size Fraction	Parameter	Value	Qualifier	Units
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	<635	Phosphorus	12		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>10	Cadmium	0.513		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>20-10	Cadmium	0.574		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>50-20	Cadmium	0.786		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>635-50	Cadmium	1.78		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	<635	Cadmium	1.66		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>10	Chromium	10.1		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>20-10	Chromium	39.2		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>50-20	Chromium	35.4		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>635-50	Chromium	40.3		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	<635	Chromium	43.1		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>10	Copper	24		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>20-10	Copper	53.4		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>50-20	Copper	53.7		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>635-50	Copper	88.2		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	<635	Copper	92.8		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>10	Lead	9.96		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>20-10	Lead	16.5		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>50-20	Lead	23.8		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>635-50	Lead	51.8		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	<635	Lead	63.2		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>10	Nickel	11.1		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>20-10	Nickel	24.1		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>50-20	Nickel	29.8		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>635-50	Nickel	33.7		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	<635	Nickel	36.5		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>10	Zinc	53.6		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>20-10	Zinc	368		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>50-20	Zinc	184		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>635-50	Zinc	324		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	<635	Zinc	357		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>10	Iron	9140		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>20-10	Iron	12900		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>50-20	Iron	12700		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	>635-50	Iron	15700		mg/kg
Zinfandel	Filter Box (Direct Runoff)	4/4/2001	4/9/2001	3	<635	Iron	17400		mg/kg

Site	Location	Installation	Collection	Period	Size Fraction	Parameter	Value	Qualifier	Units
Zinfandel	Pipe Deposits		4/9/2001	3	>10	Total Organic Carbon	820		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>20-10	Total Organic Carbon	2100		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>50-20	Total Organic Carbon	1800		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>635-50	Total Organic Carbon	2100		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	<635	Total Organic Carbon	1700		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>10	Total Kjeldahl Nitrogen	160		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>20-10	Total Kjeldahl Nitrogen	250		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>50-20	Total Kjeldahl Nitrogen	20	U	mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>635-50	Total Kjeldahl Nitrogen	80		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	<635	Total Kjeldahl Nitrogen	180		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>10	Nitrate+Nitrite	0.5	U	mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>20-10	Nitrate+Nitrite	0.5	U	mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>50-20	Nitrate+Nitrite	0.5	U	mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>635-50	Nitrate+Nitrite	0.5	U	mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	<635	Nitrate+Nitrite	0.5	U	mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>10	Nitrite	0.05	U	mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>20-10	Nitrite	0.05	U	mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>50-20	Nitrite	0.061		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>635-50	Nitrite	0.05	U	mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	<635	Nitrite	0.05	U	mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>10	Phosphorus	1		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>20-10	Phosphorus	2.2		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>50-20	Phosphorus	2		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>635-50	Phosphorus	1.6		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	<635	Phosphorus	2.9		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>10	Cadmium	0.5	U	mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>20-10	Cadmium	2.15		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>50-20	Cadmium	0.644		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>635-50	Cadmium	0.0666		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	<635	Cadmium	3.93		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>10	Chromium	11.7		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>20-10	Chromium	16.4		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>50-20	Chromium	32.8		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>635-50	Chromium	29.5		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	<635	Chromium	27.2		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>10	Copper	11.2		mg/kg

Site	Location	Installation	Collection	Period	Size Fraction	Parameter	Value	Qualifier	Units
Zinfandel	Pipe Deposits		4/9/2001	3	>20-10	Copper	624		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>50-20	Copper	63.7		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>635-50	Copper	230		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	<635	Copper	81.5		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>10	Lead	4.11		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>20-10	Lead	41.8		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>50-20	Lead	42.8		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>635-50	Lead	16.9		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	<635	Lead	45.6		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>10	Nickel	23.3		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>20-10	Nickel	15.8		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>50-20	Nickel	35.7		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>635-50	Nickel	21.9		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	<635	Nickel	25.2		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>10	Zinc	25.9		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>20-10	Zinc	4490		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>50-20	Zinc	185		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>635-50	Zinc	178		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	<635	Zinc	181		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>10	Iron	4710		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>20-10	Iron	13800		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>50-20	Iron	15000		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	>635-50	Iron	14900		mg/kg
Zinfandel	Pipe Deposits		4/9/2001	3	<635	Iron	12200		mg/kg

Site	Location	Installation	Collection	Period	Size Fraction	Parameter	Value	Qualifier	Units
Echo Summit	Connector Pipe		10/5/2001	3	<635	Arsenic	4.01		mg/kg
Echo Summit	Connector Pipe		10/5/2001	3	>10	Arsenic	2.64		mg/kg
Echo Summit	Connector Pipe		10/5/2001	3	>20-10	Arsenic	3.18		mg/kg
Echo Summit	Connector Pipe		10/5/2001	3	>50-20	Arsenic	4.17		mg/kg
Echo Summit	Connector Pipe		10/5/2001	3	>635-50	Arsenic	4.58		mg/kg
Echo Summit	Connector Pipe		10/5/2001	3	<635	Cadmium	0.5	U	mg/kg
Echo Summit	Connector Pipe		10/5/2001	3	>10	Cadmium	0.5	U	mg/kg
Echo Summit	Connector Pipe		10/5/2001	3	>20-10	Cadmium	0.5	U	mg/kg
Echo Summit	Connector Pipe		10/5/2001	3	>50-20	Cadmium	0.5	U	mg/kg
Echo Summit	Connector Pipe		10/5/2001	3	>635-50	Cadmium	0.685		mg/kg
Echo Summit	Connector Pipe		10/5/2001	3	<635	Chromium	18.8		mg/kg
Echo Summit	Connector Pipe		10/5/2001	3	>10	Chromium	11		mg/kg
Echo Summit	Connector Pipe		10/5/2001	3	>20-10	Chromium	6.77		mg/kg
Echo Summit	Connector Pipe		10/5/2001	3	>50-20	Chromium	18.1		mg/kg
Echo Summit	Connector Pipe		10/5/2001	3	>635-50	Chromium	19.5		mg/kg
Echo Summit	Connector Pipe		10/5/2001	3	<635	Copper	22.9		mg/kg
Echo Summit	Connector Pipe		10/5/2001	3	>10	Copper	20.4		mg/kg
Echo Summit	Connector Pipe		10/5/2001	3	>20-10	Copper	15.2		mg/kg
Echo Summit	Connector Pipe		10/5/2001	3	>50-20	Copper	25.2		mg/kg
Echo Summit	Connector Pipe		10/5/2001	3	>635-50	Copper	21.9		mg/kg
Echo Summit	Connector Pipe		10/5/2001	3	<635	Iron	11900		mg/kg
Echo Summit	Connector Pipe		10/5/2001	3	>10	Iron	9840		mg/kg
Echo Summit	Connector Pipe		10/5/2001	3	>20-10	Iron	7310		mg/kg
Echo Summit	Connector Pipe		10/5/2001	3	>50-20	Iron	11900		mg/kg
Echo Summit	Connector Pipe		10/5/2001	3	>635-50	Iron	10800		mg/kg
Echo Summit	Connector Pipe		10/5/2001	3	<635	Lead	27.1		mg/kg
Echo Summit	Connector Pipe		10/5/2001	3	>10	Lead	18.7		mg/kg
Echo Summit	Connector Pipe		10/5/2001	3	>20-10	Lead	8.13		mg/kg
Echo Summit	Connector Pipe		10/5/2001	3	>50-20	Lead	25.4		mg/kg
Echo Summit	Connector Pipe		10/5/2001	3	>635-50	Lead	25.4		mg/kg
Echo Summit	Connector Pipe		10/5/2001	3	<635	Nickel	14.4		mg/kg
Echo Summit	Connector Pipe		10/5/2001	3	>10	Nickel	11.1		mg/kg
Echo Summit	Connector Pipe		10/5/2001	3	>20-10	Nickel	6.47		mg/kg
Echo Summit	Connector Pipe		10/5/2001	3	>50-20	Nickel	16.6		mg/kg
Echo Summit	Connector Pipe		10/5/2001	3	>635-50	Nickel	16.6		mg/kg
Echo Summit	Connector Pipe		10/5/2001	3	<635	Phosphorus	420		mg/kg

Echo Summit	Connector Pipe	10/5/2001	3	>10	Phosphorus	350		mg/kg
Echo Summit	Connector Pipe	10/5/2001	3	>20-10	Phosphorus	350		mg/kg
Echo Summit	Connector Pipe	10/5/2001	3	>50-20	Phosphorus	90		mg/kg
Echo Summit	Connector Pipe	10/5/2001	3	>635-50	Phosphorus	220		mg/kg
Echo Summit	Connector Pipe	10/5/2001	3	<635	Total Kjeldahl Nitrogen	980		mg/kg
Echo Summit	Connector Pipe	10/5/2001	3	>10	Total Kjeldahl Nitrogen	1500		mg/kg
Echo Summit	Connector Pipe	10/5/2001	3	>20-10	Total Kjeldahl Nitrogen	390		mg/kg
Echo Summit	Connector Pipe	10/5/2001	3	>50-20	Total Kjeldahl Nitrogen	930		mg/kg
Echo Summit	Connector Pipe	10/5/2001	3	>635-50	Total Kjeldahl Nitrogen	1000		mg/kg
Echo Summit	Connector Pipe	10/5/2001	3	<635	Total Organic Carbon	1500		mg/kg
Echo Summit	Connector Pipe	10/5/2001	3	>10	Total Organic Carbon	3600		mg/kg
Echo Summit	Connector Pipe	10/5/2001	3	>20-10	Total Organic Carbon	1600		mg/kg
Echo Summit	Connector Pipe	10/5/2001	3	>50-20	Total Organic Carbon	1800		mg/kg
Echo Summit	Connector Pipe	10/5/2001	3	>635-50	Total Organic Carbon	2500		mg/kg
Echo Summit	Connector Pipe	10/5/2001	3	<635	Zinc	234		mg/kg
Echo Summit	Connector Pipe	10/5/2001	3	>10	Zinc	163		mg/kg
Echo Summit	Connector Pipe	10/5/2001	3	>20-10	Zinc	83.4		mg/kg
Echo Summit	Connector Pipe	10/5/2001	3	>50-20	Zinc	231		mg/kg
Echo Summit	Connector Pipe	10/5/2001	3	>635-50	Zinc	231		mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	<635	Arsenic	4.64		mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>10	Arsenic	2.08		mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>20-10	Arsenic	1.77		mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>50-20	Arsenic	4.33		mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>635-50	Arsenic	4.32		mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	<635	Cadmium	0.5	U	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>10	Cadmium	0.5	U	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>20-10	Cadmium	0.5	U	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>50-20	Cadmium	0.545		mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>635-50	Cadmium	0.5	U	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	<635	Chromium	16.5		mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>10	Chromium	10.8		mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>20-10	Chromium	6.86		mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>50-20	Chromium	15.5		mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>635-50	Chromium	19.4		mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	<635	Copper	25.4		mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>10	Copper	19.9		mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>20-10	Copper	12.2		mg/kg

Echo Summit	Downgradient Trap	10/5/2001	3	>50-20	Copper	22.8	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>635-50	Copper	21.6	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	<635	Iron	11000	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>10	Iron	8780	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>20-10	Iron	7930	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>50-20	Iron	10600	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>635-50	Iron	9720	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	<635	Lead	21.7	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>10	Lead	17.6	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>20-10	Lead	10.4	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>50-20	Lead	20.8	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>635-50	Lead	23.9	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	<635	Nickel	15.8	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>10	Nickel	9.55	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>20-10	Nickel	6.2	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>50-20	Nickel	18.9	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>635-50	Nickel	16.7	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	<635	Phosphorus	51	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>10	Phosphorus	210	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>20-10	Phosphorus	260	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>50-20	Phosphorus	4.8	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>635-50	Phosphorus	28	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	<635	Total Kjeldahl Nitrogen	950	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>10	Total Kjeldahl Nitrogen	1300	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>20-10	Total Kjeldahl Nitrogen	710	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>50-20	Total Kjeldahl Nitrogen	920	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>635-50	Total Kjeldahl Nitrogen	920	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	<635	Total Organic Carbon	5100	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>10	Total Organic Carbon	3900	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>20-10	Total Organic Carbon	2600	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>50-20	Total Organic Carbon	4700	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>635-50	Total Organic Carbon	4300	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	<635	Zinc	196	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>10	Zinc	200	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>20-10	Zinc	86.8	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>50-20	Zinc	196	mg/kg
Echo Summit	Downgradient Trap	10/5/2001	3	>635-50	Zinc	199	mg/kg

Echo Summit	Downgradient Trap	12/12/2001	5	<635	Arsenic	4.99		mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>10	Arsenic	1.91		mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>20-10	Arsenic	2.01		mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>50-20	Arsenic	3.81		mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>635-50	Arsenic	2.73		mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	<635	Cadmium	0.5	U	mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>10	Cadmium	0.5	U	mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>20-10	Cadmium	0.52		mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>50-20	Cadmium	0.5	U	mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>635-50	Cadmium	0.598		mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	<635	Chromium	29.2		mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>10	Chromium	17.1		mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>20-10	Chromium	22.4		mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>50-20	Chromium	26.5		mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>635-50	Chromium	46.9		mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	<635	Copper	42.2		mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>10	Copper	28.1		mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>20-10	Copper	36.4		mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>50-20	Copper	31.7		mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>635-50	Copper	39.5		mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	<635	Iron	19200		mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>10	Iron	9440		mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>20-10	Iron	12000		mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>50-20	Iron	16400		mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>635-50	Iron	15100		mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	<635	Lead	46.9		mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>10	Lead	34.7		mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>20-10	Lead	49.6		mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>50-20	Lead	35.5		mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>635-50	Lead	63.5		mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	<635	Nickel	17.3		mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>10	Nickel	11.2		mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>20-10	Nickel	13.7		mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>50-20	Nickel	14.7		mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>635-50	Nickel	22.9		mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	<635	Phosphorus	600		mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>10	Phosphorus	300		mg/kg

Echo Summit	Downgradient Trap	12/12/2001	5	>20-10	Phosphorus	350	mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>50-20	Phosphorus	500	mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>635-50	Phosphorus	420	mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	<635	Total Kjeldahl Nitrogen	1200	mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>10	Total Kjeldahl Nitrogen	1600	mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>20-10	Total Kjeldahl Nitrogen	2500	mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>50-20	Total Kjeldahl Nitrogen	1100	mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>635-50	Total Kjeldahl Nitrogen	2500	mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	<635	Total Organic Carbon	2400	mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>10	Total Organic Carbon	10000	mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>20-10	Total Organic Carbon	9100	mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>50-20	Total Organic Carbon	4200	mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>635-50	Total Organic Carbon	6500	mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	<635	Zinc	337	mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>10	Zinc	566	mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>20-10	Zinc	566	mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>50-20	Zinc	275	mg/kg
Echo Summit	Downgradient Trap	12/12/2001	5	>635-50	Zinc	511	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>10	Total Organic Carbon	1200	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>20-10	Total Organic Carbon	1300	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>50-20	Total Organic Carbon	1300	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>635-50	Total Organic Carbon	6400	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	<635	Total Organic Carbon	2500	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>10	Total Kjeldahl Nitrogen	440	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>20-10	Total Kjeldahl Nitrogen	470	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>50-20	Total Kjeldahl Nitrogen	480	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>635-50	Total Kjeldahl Nitrogen	270	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	<635	Total Kjeldahl Nitrogen	680	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>10	Phosphorus	210	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>20-10	Phosphorus	190	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>50-20	Phosphorus	250	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>635-50	Phosphorus	220	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	<635	Phosphorus	250	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>10	Arsenic	1.53	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>10	Cadmium	<0.5	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>10	Chromium	21.3	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>10	Copper	26.3	mg/kg

Echo Summit	Downgradient Trap	4/12/2002	6	>10	Lead	35.5	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>10	Nickel	15.3	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>10	Zinc	240	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>10	Iron	11700	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>20-10	Arsenic	1.74	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>20-10	Cadmium	<0.5	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>20-10	Chromium	12.7	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>20-10	Copper	18.2	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>20-10	Lead	17.2	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>20-10	Nickel	9.63	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>20-10	Zinc	121	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>20-10	Iron	9980	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>50-20	Arsenic	2.32	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>50-20	Cadmium	<0.5	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>50-20	Chromium	26.1	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>50-20	Copper	31.5	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>50-20	Lead	33.6	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>50-20	Nickel	17.4	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>50-20	Zinc	216	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>50-20	Iron	15900	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>635-50	Arsenic	1.68	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>635-50	Cadmium	<0.5	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>635-50	Chromium	10.9	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>635-50	Copper	15.7	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>635-50	Lead	19.1	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>635-50	Nickel	8.6	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>635-50	Zinc	204	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	>635-50	Iron	9100	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	<635	Arsenic	1.29	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	<635	Cadmium	<0.5	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	<635	Chromium	14.2	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	<635	Copper	19.5	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	<635	Lead	19.6	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	<635	Nickel	10.1	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	<635	Zinc	128	mg/kg
Echo Summit	Downgradient Trap	4/12/2002	6	<635	Iron	10300	mg/kg
Echo Summit	Filter Box	11/8/2001	4	<635	Arsenic	12	mg/kg

Echo Summit	Filter Box	11/8/2001	4	>20-10	Arsenic	9.09	mg/kg
Echo Summit	Filter Box	11/8/2001	4	>50-20	Arsenic	13.1	mg/kg
Echo Summit	Filter Box	11/8/2001	4	>635-50	Arsenic	10.7	mg/kg
Echo Summit	Filter Box	11/8/2001	4	<635	Cadmium	1.34	mg/kg
Echo Summit	Filter Box	11/8/2001	4	>20-10	Cadmium	1.24	mg/kg
Echo Summit	Filter Box	11/8/2001	4	>50-20	Cadmium	1.4	mg/kg
Echo Summit	Filter Box	11/8/2001	4	>635-50	Cadmium	1.02	mg/kg
Echo Summit	Filter Box	11/8/2001	4	<635	Chromium	25.6	mg/kg
Echo Summit	Filter Box	11/8/2001	4	>20-10	Chromium	27.4	mg/kg
Echo Summit	Filter Box	11/8/2001	4	>50-20	Chromium	25	mg/kg
Echo Summit	Filter Box	11/8/2001	4	>635-50	Chromium	21	mg/kg
Echo Summit	Filter Box	11/8/2001	4	<635	Copper	38.9	mg/kg
Echo Summit	Filter Box	11/8/2001	4	>20-10	Copper	38.7	mg/kg
Echo Summit	Filter Box	11/8/2001	4	>50-20	Copper	46.9	mg/kg
Echo Summit	Filter Box	11/8/2001	4	>635-50	Copper	33.7	mg/kg
Echo Summit	Filter Box	11/8/2001	4	<635	Iron	18800	mg/kg
Echo Summit	Filter Box	11/8/2001	4	>20-10	Iron	14300	mg/kg
Echo Summit	Filter Box	11/8/2001	4	>50-20	Iron	17300	mg/kg
Echo Summit	Filter Box	11/8/2001	4	>635-50	Iron	15500	mg/kg
Echo Summit	Filter Box	11/8/2001	4	<635	Lead	16.3	mg/kg
Echo Summit	Filter Box	11/8/2001	4	>20-10	Lead	16.6	mg/kg
Echo Summit	Filter Box	11/8/2001	4	>50-20	Lead	20.2	mg/kg
Echo Summit	Filter Box	11/8/2001	4	>635-50	Lead	15.3	mg/kg
Echo Summit	Filter Box	11/8/2001	4	<635	Nickel	38.3	mg/kg
Echo Summit	Filter Box	11/8/2001	4	>20-10	Nickel	37.5	mg/kg
Echo Summit	Filter Box	11/8/2001	4	>50-20	Nickel	40.6	mg/kg
Echo Summit	Filter Box	11/8/2001	4	>635-50	Nickel	33.9	mg/kg
Echo Summit	Filter Box	11/8/2001	4	<635	Phosphorus	360	mg/kg
Echo Summit	Filter Box	11/8/2001	4	>10	Phosphorus	200	mg/kg
Echo Summit	Filter Box	11/8/2001	4	>20-10	Phosphorus	420	mg/kg
Echo Summit	Filter Box	11/8/2001	4	>50-20	Phosphorus	340	mg/kg
Echo Summit	Filter Box	11/8/2001	4	>635-50	Phosphorus	690	mg/kg
Echo Summit	Filter Box	11/8/2001	4	<635	Total Kjeldahl Nitrogen	1100	mg/kg
Echo Summit	Filter Box	11/8/2001	4	>10	Total Kjeldahl Nitrogen	1300	mg/kg
Echo Summit	Filter Box	11/8/2001	4	>20-10	Total Kjeldahl Nitrogen	6000	mg/kg
Echo Summit	Filter Box	11/8/2001	4	>50-20	Total Kjeldahl Nitrogen	5100	mg/kg
Echo Summit	Filter Box	11/8/2001	4	>635-50	Total Kjeldahl Nitrogen	2800	mg/kg

Echo Summit	Filter Box	11/8/2001	4	>10	Total Organic Carbon	11000	mg/kg
Echo Summit	Filter Box	11/8/2001	4	>20-10	Total Organic Carbon	7600	mg/kg
Echo Summit	Filter Box	11/8/2001	4	>50-20	Total Organic Carbon	5500	mg/kg
Echo Summit	Filter Box	11/8/2001	4	>635-50	Total Organic Carbon	9500	mg/kg
Echo Summit	Filter Box	11/8/2001	4	<635	Zinc	192	mg/kg
Echo Summit	Filter Box	11/8/2001	4	>20-10	Zinc	656	mg/kg
Echo Summit	Filter Box	11/8/2001	4	>50-20	Zinc	335	mg/kg
Echo Summit	Filter Box	11/8/2001	4	>635-50	Zinc	185	mg/kg
Echo Summit	Filter Box	12/12/2001	5	<635	Arsenic	5.41	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>10	Arsenic	4.43	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>20-10	Arsenic	3.85	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>50-20	Arsenic	3.79	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>635-50	Arsenic	4.11	mg/kg
Echo Summit	Filter Box	12/12/2001	5	<635	Cadmium	0.644	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>10	Cadmium	0.745	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>20-10	Cadmium	0.731	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>50-20	Cadmium	0.682	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>635-50	Cadmium	0.603	mg/kg
Echo Summit	Filter Box	12/12/2001	5	<635	Chromium	30.8	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>10	Chromium	30.8	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>20-10	Chromium	33.7	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>50-20	Chromium	30.3	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>635-50	Chromium	27.7	mg/kg
Echo Summit	Filter Box	12/12/2001	5	<635	Copper	52.9	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>10	Copper	44.8	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>20-10	Copper	47.9	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>50-20	Copper	42.2	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>635-50	Copper	38.3	mg/kg
Echo Summit	Filter Box	12/12/2001	5	<635	Iron	18200	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>10	Iron	15900	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>20-10	Iron	18700	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>50-20	Iron	17400	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>635-50	Iron	15900	mg/kg
Echo Summit	Filter Box	12/12/2001	5	<635	Lead	53.7	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>10	Lead	62.5	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>20-10	Lead	62.5	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>50-20	Lead	61.9	mg/kg

Echo Summit	Filter Box	12/12/2001	5	>635-50	Lead	49.8	mg/kg
Echo Summit	Filter Box	12/12/2001	5	<635	Nickel	19.9	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>10	Nickel	20.3	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>20-10	Nickel	20.3	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>50-20	Nickel	18.5	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>635-50	Nickel	16.7	mg/kg
Echo Summit	Filter Box	12/12/2001	5	<635	Phosphorus	390	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>10	Phosphorus	320	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>20-10	Phosphorus	350	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>50-20	Phosphorus	480	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>635-50	Phosphorus	400	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>10	Total Kjeldahl Nitrogen	2700	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>20-10	Total Kjeldahl Nitrogen	2300	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>50-20	Total Kjeldahl Nitrogen	2700	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>635-50	Total Kjeldahl Nitrogen	1000	mg/kg
Echo Summit	Filter Box	12/12/2001	5	<635	Total Organic Carbon	2800	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>10	Total Organic Carbon	3600	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>20-10	Total Organic Carbon	3800	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>50-20	Total Organic Carbon	3100	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>635-50	Total Organic Carbon	2200	mg/kg
Echo Summit	Filter Box	12/12/2001	5	<635	Zinc	360	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>10	Zinc	572	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>20-10	Zinc	572	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>50-20	Zinc	471	mg/kg
Echo Summit	Filter Box	12/12/2001	5	>635-50	Zinc	330	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>10	Total Organic Carbon	2300	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>20-10	Total Organic Carbon	5300	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>50-20	Total Organic Carbon	1900	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>635-50	Total Organic Carbon	4000	mg/kg
Echo Summit	Filter Box	4/18/2002	6	<635	Total Organic Carbon	2500	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>10	Total Kjeldahl Nitrogen	370	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>20-10	Total Kjeldahl Nitrogen	490	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>50-20	Total Kjeldahl Nitrogen	510	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>635-50	Total Kjeldahl Nitrogen	380	mg/kg
Echo Summit	Filter Box	4/18/2002	6	<635	Total Kjeldahl Nitrogen	500	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>10	Phosphorus	260	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>20-10	Phosphorus	300	mg/kg

Echo Summit	Filter Box	4/18/2002	6	>50-20	Phosphorus	280	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>635-50	Phosphorus	320	mg/kg
Echo Summit	Filter Box	4/18/2002	6	<635	Phosphorus	310	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>10	Arsenic	2.49	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>10	Cadmium	<0.5	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>10	Chromium	26.9	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>10	Copper	36.1	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>10	Lead	35	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>10	Nickel	20	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>10	Zinc	205	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>10	Iron	16300	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>20-10	Arsenic	2.48	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>20-10	Cadmium	<0.5	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>20-10	Chromium	26.7	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>20-10	Copper	37.9	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>20-10	Lead	32.7	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>20-10	Nickel	19.5	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>20-10	Zinc	193	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>20-10	Iron	17000	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>50-20	Arsenic	2.3	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>50-20	Cadmium	<0.5	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>50-20	Chromium	20.4	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>50-20	Copper	29.7	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>50-20	Lead	27.1	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>50-20	Nickel	15	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>50-20	Zinc	165	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>50-20	Iron	13800	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>635-50	Arsenic	1.89	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>635-50	Cadmium	<0.5	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>635-50	Chromium	24.7	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>635-50	Copper	30.9	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>635-50	Lead	25	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>635-50	Nickel	17.3	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>635-50	Zinc	155	mg/kg
Echo Summit	Filter Box	4/18/2002	6	>635-50	Iron	15700	mg/kg
Echo Summit	Filter Box	4/18/2002	6	<635	Arsenic	2.73	mg/kg
Echo Summit	Filter Box	4/18/2002	6	<635	Cadmium	<0.5	mg/kg

Echo Summit	Filter Box	4/18/2002	6	<635	Chromium	26.2		mg/kg
Echo Summit	Filter Box	4/18/2002	6	<635	Copper	37		mg/kg
Echo Summit	Filter Box	4/18/2002	6	<635	Lead	27.3		mg/kg
Echo Summit	Filter Box	4/18/2002	6	<635	Nickel	18.6		mg/kg
Echo Summit	Filter Box	4/18/2002	6	<635	Zinc	177		mg/kg
Echo Summit	Filter Box	4/18/2002	6	<635	Iron	16400		mg/kg
Echo Summit	Filter Box	10/3/2001	3	<635	Arsenic	10		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>10	Arsenic	2.14		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>50-20	Arsenic	2.2		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>635-50	Arsenic	4.58		mg/kg
Echo Summit	Filter Box	10/3/2001	3	<635	Cadmium	1.24		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>10	Cadmium	0.5	U	mg/kg
Echo Summit	Filter Box	10/3/2001	3	>20-10	Cadmium	0.5	U	mg/kg
Echo Summit	Filter Box	10/3/2001	3	>50-20	Cadmium	0.5	U	mg/kg
Echo Summit	Filter Box	10/3/2001	3	>635-50	Cadmium	0.96		mg/kg
Echo Summit	Filter Box	10/3/2001	3	<635	Chromium	23.2		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>10	Chromium	8.55		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>20-10	Chromium	1.94		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>20-10	Chromium	5.73		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>50-20	Chromium	7.52		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>635-50	Chromium	19.1		mg/kg
Echo Summit	Filter Box	10/3/2001	3	<635	Copper	43.1		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>10	Copper	17.6		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>20-10	Copper	13.9		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>50-20	Copper	15.7		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>635-50	Copper	39.4		mg/kg
Echo Summit	Filter Box	10/3/2001	3	<635	Iron	18000		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>10	Iron	8450		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>20-10	Iron	7570		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>50-20	Iron	7920		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>635-50	Iron	14100		mg/kg
Echo Summit	Filter Box	10/3/2001	3	<635	Lead	18.4		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>10	Lead	10.9		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>20-10	Lead	6.45		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>50-20	Lead	5.62		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>635-50	Lead	27.9		mg/kg
Echo Summit	Filter Box	10/3/2001	3	<635	Nickel	33.4		mg/kg

Echo Summit	Filter Box	10/3/2001	3	>10	Nickel	8.89		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>20-10	Nickel	6.72		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>50-20	Nickel	6.77		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>635-50	Nickel	18.6		mg/kg
Echo Summit	Filter Box	10/3/2001	3	<635	Phosphorus	550		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>10	Phosphorus	190		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>20-10	Phosphorus	270		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>50-20	Phosphorus	420		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>635-50	Phosphorus	270		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>10	Total Kjeldahl Nitrogen	990		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>20-10	Total Kjeldahl Nitrogen	290		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>50-20	Total Kjeldahl Nitrogen	260		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>635-50	Total Kjeldahl Nitrogen	1000		mg/kg
Echo Summit	Filter Box	10/3/2001	3	<635	Total Kjeldahl Nitrogen	730		mg/kg
Echo Summit	Filter Box	10/3/2001	3	<635	Total Organic Carbon	3100		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>10	Total Organic Carbon	4300		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>20-10	Total Organic Carbon	2100		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>50-20	Total Organic Carbon	1500		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>635-50	Total Organic Carbon	6000		mg/kg
Echo Summit	Filter Box	10/3/2001	3	<635	Zinc	263		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>10	Zinc	172		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>20-10	Zinc	85.3		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>50-20	Zinc	72.5		mg/kg
Echo Summit	Filter Box	10/3/2001	3	>635-50	Zinc	359		mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	<635	Arsenic	2.59		mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>10	Arsenic	6.25		mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>20-10	Arsenic	1.45		mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>50-20	Arsenic	2.57		mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>635-50	Arsenic	7.2		mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	<635	Cadmium	0.5	U	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>10	Cadmium	0.581		mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>20-10	Cadmium	0.5	U	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>50-20	Cadmium	0.5	U	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>635-50	Cadmium	0.665		mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	<635	Chromium	12.8		mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>10	Chromium	11.9		mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>20-10	Chromium	4.68		mg/kg

Echo Summit	Upgradient Trap	10/5/2001	3	>50-20	Chromium	14.2	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>635-50	Chromium	18	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	<635	Copper	19.3	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>10	Copper	27.6	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>20-10	Copper	10.9	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>50-20	Copper	20.2	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>635-50	Copper	26.4	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	<635	Iron	9380	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>10	Iron	11500	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>20-10	Iron	5480	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>50-20	Iron	9710	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>635-50	Iron	12600	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	<635	Lead	20.2	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>10	Lead	18.2	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>20-10	Lead	7.78	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>50-20	Lead	22.5	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>635-50	Lead	19.2	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	<635	Nickel	11.8	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>10	Nickel	12.2	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>20-10	Nickel	5.06	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>50-20	Nickel	12.5	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>635-50	Nickel	21.8	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	<635	Phosphorus	200	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>10	Phosphorus	290	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>20-10	Phosphorus	300	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>50-20	Phosphorus	160	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>635-50	Phosphorus	5.3	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	<635	Total Kjeldahl Nitrogen	960	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>10	Total Kjeldahl Nitrogen	1500	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>20-10	Total Kjeldahl Nitrogen	390	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>50-20	Total Kjeldahl Nitrogen	900	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>635-50	Total Kjeldahl Nitrogen	930	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	<635	Total Organic Carbon	4300	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>10	Total Organic Carbon	7200	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>20-10	Total Organic Carbon	3900	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>50-20	Total Organic Carbon	3600	mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>635-50	Total Organic Carbon	4500	mg/kg

Echo Summit	Upgradient Trap	10/5/2001	3	<635	Zinc	186		mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>10	Zinc	258		mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>20-10	Zinc	72.7		mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>50-20	Zinc	202		mg/kg
Echo Summit	Upgradient Trap	10/5/2001	3	>635-50	Zinc	206		mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>10	Arsenic	1.07		mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>20-10	Arsenic	1.46		mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>50-20	Arsenic	1.49		mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>635-50	Arsenic	6.93		mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	<635	Cadmium	0.5	U	mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>10	Cadmium	0.5	U	mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>20-10	Cadmium	0.5	U	mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>50-20	Cadmium	0.5	U	mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>635-50	Cadmium	0.5	U	mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	<635	Chromium	2.7		mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	<635	Chromium	19.4		mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>10	Chromium	9		mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>20-10	Chromium	14.8		mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>50-20	Chromium	10.4		mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>635-50	Chromium	17.2		mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	<635	Copper	22.2		mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>10	Copper	11		mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>20-10	Copper	13.1		mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>50-20	Copper	12		mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>635-50	Copper	21.1		mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	<635	Iron	16900		mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>10	Iron	3510		mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>20-10	Iron	3510		mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>50-20	Iron	6960		mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>635-50	Iron	13400		mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	<635	Lead	15.9		mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>10	Lead	26.7		mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>20-10	Lead	26.7		mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>50-20	Lead	18.4		mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>635-50	Lead	16.1		mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	<635	Nickel	10.6		mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>10	Nickel	4.52		mg/kg

Echo Summit	Upgradient Trap	12/12/2001	5	>20-10	Nickel	4.52	mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>50-20	Nickel	5.95	mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>635-50	Nickel	10.6	mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	<635	Phosphorus	680	mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>10	Phosphorus	230	mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>20-10	Phosphorus	310	mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>50-20	Phosphorus	400	mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>635-50	Phosphorus	520	mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	<635	Total Kjeldahl Nitrogen	760	mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>10	Total Kjeldahl Nitrogen	3800	mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>20-10	Total Kjeldahl Nitrogen	740	mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>50-20	Total Kjeldahl Nitrogen	570	mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>635-50	Total Kjeldahl Nitrogen	660	mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	<635	Total Organic Carbon	3600	mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>10	Total Organic Carbon	11000	mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>20-10	Total Organic Carbon	5700	mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>50-20	Total Organic Carbon	2200	mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>635-50	Total Organic Carbon	3600	mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	<635	Zinc	132	mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>10	Zinc	170	mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>20-10	Zinc	170	mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>50-20	Zinc	107	mg/kg
Echo Summit	Upgradient Trap	12/12/2001	5	>635-50	Zinc	134	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>10	Total Organic Carbon	4900	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>20-10	Total Organic Carbon	440	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>50-20	Total Organic Carbon	200	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>635-50	Total Organic Carbon	900	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	<635	Total Organic Carbon	1600	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>10	Total Kjeldahl Nitrogen	170	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>20-10	Total Kjeldahl Nitrogen	69	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>50-20	Total Kjeldahl Nitrogen	76	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>635-50	Total Kjeldahl Nitrogen	210	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	<635	Total Kjeldahl Nitrogen	330	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>10	Phosphorus	110	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>20-10	Phosphorus	140	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>50-20	Phosphorus	190	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>635-50	Phosphorus	280	mg/kg

Echo Summit	Upgradient Trap	4/12/2002	6	<635	Phosphorus	560	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>10	Arsenic	0.813	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>10	Cadmium	<0.5	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>10	Chromium	5.79	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>10	Copper	9.08	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>10	Lead	4.97	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>10	Nickel	6.5	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>10	Zinc	60.5	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>10	Iron	5760	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>20-10	Arsenic	<0.75	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>20-10	Cadmium	<0.5	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>20-10	Chromium	7.46	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>20-10	Copper	9.31	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>20-10	Lead	4.59	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>20-10	Nickel	5.79	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>20-10	Zinc	51.4	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>20-10	Iron	6010	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>50-20	Arsenic	1.37	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>50-20	Cadmium	<0.5	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>50-20	Chromium	5.06	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>50-20	Copper	10.6	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>50-20	Lead	5.72	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>50-20	Nickel	4.76	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>50-20	Zinc	66	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>50-20	Iron	5290	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>635-50	Arsenic	2.14	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>635-50	Cadmium	<0.5	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>635-50	Chromium	17.7	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>635-50	Copper	21.4	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>635-50	Lead	13.3	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>635-50	Nickel	12.1	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>635-50	Zinc	156	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	>635-50	Iron	16200	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	<635	Arsenic	2.63	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	<635	Cadmium	<0.5	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	<635	Chromium	21.9	mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	<635	Copper	32	mg/kg

Echo Summit	Upgradient Trap	4/12/2002	6	<635	Lead	20.5		mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	<635	Nickel	15.6		mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	<635	Zinc	209		mg/kg
Echo Summit	Upgradient Trap	4/12/2002	6	<635	Iron	13300		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	<635	Arsenic	5.43		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>10	Arsenic	3.02		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>20-10	Arsenic	2.73		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>50-20	Arsenic	6.5		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>635-50	Arsenic	3.65		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	<635	Cadmium	0.988		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>10	Cadmium	0.66		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>20-10	Cadmium	0.5	U	mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>50-20	Cadmium	0.5	U	mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>635-50	Cadmium	1.02		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	<635	Chromium	20.4		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>10	Chromium	18.6		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>20-10	Chromium	7.76		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>50-20	Chromium	20.7		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>635-50	Chromium	22.6		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	<635	Copper	41.3		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>10	Copper	27.5		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>20-10	Copper	12.6		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>50-20	Copper	32.2		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>635-50	Copper	42		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	<635	Iron	15600		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>10	Iron	12100		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>20-10	Iron	8640		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>50-20	Iron	12600		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>635-50	Iron	16700		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	<635	Lead	29.6		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>10	Lead	26.2		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>20-10	Lead	11.7		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>50-20	Lead	31.1		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>635-50	Lead	28.9		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	<635	Nickel	19.4		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>10	Nickel	14.7		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>20-10	Nickel	6.61		mg/kg

Tahoe Airport	Downgradient Trap	10/5/2001	3	>50-20	Nickel	20.2		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>635-50	Nickel	19.5		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	<635	Phosphorus	620		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>10	Phosphorus	310		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>20-10	Phosphorus	180		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>50-20	Phosphorus	2.8		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>635-50	Phosphorus	400		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	<635	Total Kjeldahl Nitrogen	1100		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>10	Total Kjeldahl Nitrogen	1200		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>20-10	Total Kjeldahl Nitrogen	420		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>50-20	Total Kjeldahl Nitrogen	1300		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>635-50	Total Kjeldahl Nitrogen	1100		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	<635	Total Organic Carbon	3500		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>10	Total Organic Carbon	9200		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>20-10	Total Organic Carbon	2500		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>50-20	Total Organic Carbon	2500		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>635-50	Total Organic Carbon	4500		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	<635	Zinc	401		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>10	Zinc	322		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>20-10	Zinc	83.4		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>50-20	Zinc	295		mg/kg
Tahoe Airport	Downgradient Trap	10/5/2001	3	>635-50	Zinc	379		mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	<635	Arsenic	3.55		mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>10	Arsenic	135		mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>20-10	Arsenic	2.98		mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>50-20	Arsenic	2.36		mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>635-50	Arsenic	3.28		mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	<635	Cadmium	0.505		mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>10	Cadmium	0.5	U	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>20-10	Cadmium	0.5	U	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>50-20	Cadmium	0.71		mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>635-50	Cadmium	0.5	U	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	<635	Chromium	12.8		mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>10	Chromium	4.66		mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>20-10	Chromium	4.78		mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>50-20	Chromium	6.04		mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>635-50	Chromium	10.2		mg/kg

Tahoe Airport	Downgradient Trap	1/10/2002	5	<635	Copper	35.7	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>10	Copper	10.5	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>20-10	Copper	9.98	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>50-20	Copper	20.3	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>635-50	Copper	32.2	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	<635	Iron	13600	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>10	Iron	7150	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>20-10	Iron	7470	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>50-20	Iron	8050	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>635-50	Iron	11300	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	<635	Lead	10.7	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>10	Lead	3.39	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>20-10	Lead	4	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>50-20	Lead	5.38	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>635-50	Lead	9.73	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	<635	Nickel	12.4	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>10	Nickel	6.88	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>20-10	Nickel	5.4	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>50-20	Nickel	6.75	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>635-50	Nickel	11.3	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	<635	Phosphorus	63	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>10	Phosphorus	170	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>20-10	Phosphorus	220	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>50-20	Phosphorus	94	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>635-50	Phosphorus	13	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	<635	Total Kjeldahl Nitrogen	700	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>10	Total Kjeldahl Nitrogen	820	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>20-10	Total Kjeldahl Nitrogen	860	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>50-20	Total Kjeldahl Nitrogen	810	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>635-50	Total Kjeldahl Nitrogen	870	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	<635	Total Organic Carbon	2500	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>10	Total Organic Carbon	570	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>20-10	Total Organic Carbon	2200	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>50-20	Total Organic Carbon	1100	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>635-50	Total Organic Carbon	1400	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	<635	Zinc	152	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>10	Zinc	44.9	mg/kg

Tahoe Airport	Downgradient Trap	1/10/2002	5	>20-10	Zinc	56	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>50-20	Zinc	67.2	mg/kg
Tahoe Airport	Downgradient Trap	1/10/2002	5	>635-50	Zinc	137	mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>10	Total Organic Carbon	3500	mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>20-10	Total Organic Carbon	3800	mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>50-20	Total Organic Carbon	5400	mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>635-50	Total Organic Carbon	3400	mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	<635	Total Organic Carbon	4000	mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>10	Total Kjeldahl Nitrogen	1200	mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>20-10	Total Kjeldahl Nitrogen	1200	mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>50-20	Total Kjeldahl Nitrogen	950	mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>635-50	Total Kjeldahl Nitrogen	730	mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	<635	Total Kjeldahl Nitrogen	940	mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>10	Phosphorus	260	mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>20-10	Phosphorus	220	mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>50-20	Phosphorus	210	mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>635-50	Phosphorus	170	mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	<635	Phosphorus	15	mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>10	Arsenic	2.8	mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>10	Cadmium	0.558	mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>10	Chromium	17	mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>10	Copper	46.9	mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>10	Lead	21.5	mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>10	Nickel	18.6	mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>10	Zinc	695	mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>10	Iron	17700	mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>20-10	Arsenic	2.71	mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>20-10	Cadmium	0.636	mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>20-10	Chromium	19.4	mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>20-10	Copper	53.8	mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>20-10	Lead	23.6	mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>20-10	Nickel	20.7	mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>20-10	Zinc	764	mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>20-10	Iron	21400	mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>50-20	Arsenic	2.98	mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>50-20	Cadmium	<0.5	mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>50-20	Chromium	16.6	mg/kg

Tahoe Airport	Downgradient Trap	4/12/2002	6	>50-20	Copper	40.2		mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>50-20	Lead	17.8		mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>50-20	Nickel	16.8		mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>50-20	Zinc	619		mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>50-20	Iron	18300		mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>635-50	Arsenic	3.18		mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>635-50	Cadmium	<0.5		mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>635-50	Chromium	14.3		mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>635-50	Copper	37		mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>635-50	Lead	15.7		mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>635-50	Nickel	15.4		mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>635-50	Zinc	561		mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	>635-50	Iron	14600		mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	<635	Arsenic	4.48		mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	<635	Cadmium	0.611		mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	<635	Chromium	19.9		mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	<635	Copper	48.7		mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	<635	Lead	23		mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	<635	Nickel	20.9		mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	<635	Zinc	777		mg/kg
Tahoe Airport	Downgradient Trap	4/12/2002	6	<635	Iron	18700		mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	<635	Arsenic	4.48		mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>10	Arsenic	2.81		mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>20-10	Arsenic	2.27		mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>50-20	Arsenic	6.25		mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>635-50	Arsenic	4.23		mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	<635	Cadmium	0.773		mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>10	Cadmium	0.513		mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>20-10	Cadmium	0.05	U	mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>50-20	Cadmium	0.699		mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>635-50	Cadmium	0.862		mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	<635	Chromium	20.3		mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>10	Chromium	10.4		mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>20-10	Chromium	5.83		mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>50-20	Chromium	27.5		mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>635-50	Chromium	19.7		mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	<635	Copper	37.4		mg/kg

Tahoe Airport	Filter Box	10/3/2001	3	>10	Copper	25.1	mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>20-10	Copper	10.8	mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>50-20	Copper	30.1	mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>635-50	Copper	35.1	mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	<635	Iron	14600	mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>10	Iron	9350	mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>20-10	Iron	7030	mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>50-20	Iron	12800	mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>635-50	Iron	13600	mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	<635	Lead	29.6	mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>10	Lead	16	mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>20-10	Lead	6.72	mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>50-20	Lead	30.5	mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>635-50	Lead	29.7	mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	<635	Nickel	17.4	mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>10	Nickel	11.5	mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>20-10	Nickel	8.74	mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>50-20	Nickel	20	mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>635-50	Nickel	16.3	mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	<635	Phosphorus	360	mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>10	Phosphorus	420	mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>20-10	Phosphorus	460	mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>50-20	Phosphorus	150	mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>635-50	Phosphorus	370	mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	<635	Total Kjeldahl Nitrogen	1000	mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>10	Total Kjeldahl Nitrogen	1200	mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>20-10	Total Kjeldahl Nitrogen	280	mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>50-20	Total Kjeldahl Nitrogen	1300	mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>635-50	Total Kjeldahl Nitrogen	1000	mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	<635	Total Organic Carbon	4200	mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>10	Total Organic Carbon	5800	mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>20-10	Total Organic Carbon	1900	mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>50-20	Total Organic Carbon	6100	mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>635-50	Total Organic Carbon	5600	mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	<635	Zinc	351	mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>10	Zinc	266	mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>20-10	Zinc	68.4	mg/kg

Tahoe Airport	Filter Box	10/3/2001	3	>50-20	Zinc	275		mg/kg
Tahoe Airport	Filter Box	10/3/2001	3	>635-50	Zinc	526		mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	<635	Arsenic	2.76		mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>10	Arsenic	0.75	U	mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>20-10	Arsenic	1.7		mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>50-20	Arsenic	1.86		mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>635-50	Arsenic	2.55		mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	<635	Cadmium	0.5	U	mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>10	Cadmium	0.5	U	mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>20-10	Cadmium	0.533		mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>50-20	Cadmium	2.36		mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>635-50	Cadmium	0.677		mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	<635	Chromium	35.3		mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>10	Chromium	8.69		mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>20-10	Chromium	25.7		mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>50-20	Chromium	38.5		mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>635-50	Chromium	36.9		mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	<635	Copper	52.5		mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>10	Copper	13.1		mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>20-10	Copper	38.4		mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>50-20	Copper	60.1		mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>635-50	Copper	46.6		mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	<635	Iron	15100		mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>10	Iron	2760		mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>20-10	Iron	9520		mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>50-20	Iron	14100		mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>635-50	Iron	15600		mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	<635	Lead	75.1		mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>10	Lead	19.2		mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>20-10	Lead	64.7		mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>50-20	Lead	94.3		mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>635-50	Lead	74.8		mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	<635	Nickel	19.6		mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>10	Nickel	5.19		mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>20-10	Nickel	12.8		mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>50-20	Nickel	19.3		mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>635-50	Nickel	17.8		mg/kg

Tahoe Airport	Filter Box	11/8/2001	4	<635	Phosphorus	2.6	mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>20-10	Phosphorus	1200	mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>50-20	Phosphorus	2.9	mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>635-50	Phosphorus	2.8	mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	<635	Total Kjeldahl Nitrogen	660	mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>50-20	Total Kjeldahl Nitrogen	1100	mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>635-50	Total Kjeldahl Nitrogen	600	mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	<635	Total Organic Carbon	3800	mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>50-20	Total Organic Carbon	5600	mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>635-50	Total Organic Carbon	4400	mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	<635	Zinc	1050	mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>10	Zinc	291	mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>20-10	Zinc	752	mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>50-20	Zinc	1490	mg/kg
Tahoe Airport	Filter Box	11/8/2001	4	>635-50	Zinc	964	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	<635	Arsenic	5.33	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>10	Arsenic	6.34	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>20-10	Arsenic	5.8	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>50-20	Arsenic	6.21	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>635-50	Arsenic	5.95	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	<635	Cadmium	1.37	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>10	Cadmium	1.45	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>20-10	Cadmium	1.52	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>50-20	Cadmium	1.5	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>635-50	Cadmium	1.38	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	<635	Chromium	20.2	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>10	Chromium	21	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>20-10	Chromium	20.9	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>50-20	Chromium	20.8	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>635-50	Chromium	19.6	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	<635	Copper	44.3	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>10	Copper	52	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>20-10	Copper	51.6	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>50-20	Copper	50.7	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>635-50	Copper	44	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	<635	Iron	17300	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>10	Iron	19300	mg/kg

Tahoe Airport	Filter Box	12/13/2001	5	>20-10	Iron	19700	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>50-20	Iron	19100	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>635-50	Iron	17100	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	<635	Lead	21.2	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>10	Lead	24.4	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>20-10	Lead	25.5	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>50-20	Lead	25.4	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>635-50	Lead	20.8	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	<635	Nickel	24.7	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>10	Nickel	25.4	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>20-10	Nickel	25.8	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>50-20	Nickel	25.6	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>635-50	Nickel	24.4	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	<635	Phosphorus	2.7	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>10	Phosphorus	57	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>20-10	Phosphorus	11	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>50-20	Phosphorus	13	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>635-50	Phosphorus	6.1	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	<635	Total Kjeldahl Nitrogen	940	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>10	Total Kjeldahl Nitrogen	1100	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>20-10	Total Kjeldahl Nitrogen	4800	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>50-20	Total Kjeldahl Nitrogen	1400	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>635-50	Total Kjeldahl Nitrogen	970	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	<635	Total Organic Carbon	3100	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>10	Total Organic Carbon	2600	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>20-10	Total Organic Carbon	3000	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>50-20	Total Organic Carbon	2500	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>635-50	Total Organic Carbon	5000	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	<635	Zinc	414	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>10	Zinc	505	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>20-10	Zinc	527	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>50-20	Zinc	559	mg/kg
Tahoe Airport	Filter Box	12/13/2001	5	>635-50	Zinc	421	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>10	Total Organic Carbon	12000	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>20-10	Total Organic Carbon	10000	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>50-20	Total Organic Carbon	13000	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>635-50	Total Organic Carbon	7400	mg/kg

Tahoe Airport	Filter Box	4/18/2002	6	<635	Total Organic Carbon	4700	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>10	Total Kjeldahl Nitrogen	1100	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>20-10	Total Kjeldahl Nitrogen	1100	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>50-20	Total Kjeldahl Nitrogen	1200	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>635-50	Total Kjeldahl Nitrogen	970	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	<635	Total Kjeldahl Nitrogen	990	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>10	Phosphorus	300	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>20-10	Phosphorus	310	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>50-20	Phosphorus	310	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>635-50	Phosphorus	310	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	<635	Phosphorus	550	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>10	Arsenic	3.44	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>10	Cadmium	0.669	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>10	Chromium	19.2	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>10	Copper	52.5	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>10	Lead	24.3	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>10	Nickel	19.6	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>10	Zinc	441	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>10	Iron	21800	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>20-10	Arsenic	3.58	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>20-10	Cadmium	0.704	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>20-10	Chromium	18.4	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>20-10	Copper	53	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>20-10	Lead	23	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>20-10	Nickel	19.7	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>20-10	Zinc	451	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>20-10	Iron	21100	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>50-20	Arsenic	3.71	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>50-20	Cadmium	0.744	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>50-20	Chromium	20.9	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>50-20	Copper	57.7	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>50-20	Lead	25.9	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>50-20	Nickel	22	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>50-20	Zinc	497	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>50-20	Iron	23500	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>635-50	Arsenic	4.43	mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>635-50	Cadmium	0.529	mg/kg

Tahoe Airport	Filter Box	4/18/2002	6	>635-50	Chromium	18.1		mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>635-50	Copper	50.3		mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>635-50	Lead	21.3		mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>635-50	Nickel	18.4		mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>635-50	Zinc	392		mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	>635-50	Iron	20700		mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	<635	Arsenic	2.91		mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	<635	Cadmium	0.559		mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	<635	Chromium	15.5		mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	<635	Copper	45.3		mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	<635	Lead	20.1		mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	<635	Nickel	16.8		mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	<635	Zinc	374		mg/kg
Tahoe Airport	Filter Box	4/18/2002	6	<635	Iron	17900		mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	<635	Arsenic	3.43		mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>10	Arsenic	2.75		mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>20-10	Arsenic	1.24		mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>50-20	Arsenic	5.04		mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>635-50	Arsenic	5.01		mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	<635	Cadmium	0.52		mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>10	Cadmium	0.563		mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>20-10	Cadmium	0.5	U	mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>50-20	Cadmium	0.547		mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>635-50	Cadmium	0.506		mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	<635	Chromium	17.7		mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>10	Chromium	12.4		mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>20-10	Chromium	4.45		mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>50-20	Chromium	16.4		mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>635-50	Chromium	15.2		mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	<635	Copper	69.6		mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>10	Copper	24		mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>20-10	Copper	9.14		mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>50-20	Copper	23.6		mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>635-50	Copper	24.3		mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	<635	Iron	11500		mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>10	Iron	10100		mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>20-10	Iron	4390		mg/kg

Tahoe Airport	Upgradient Trap	10/5/2001	3	>50-20	Iron	10900	mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>635-50	Iron	10300	mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	<635	Lead	23.3	mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>10	Lead	18.1	mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>20-10	Lead	8.87	mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>50-20	Lead	20.2	mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>635-50	Lead	21.4	mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	<635	Nickel	16.7	mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>10	Nickel	12.1	mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>20-10	Nickel	6.65	mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>50-20	Nickel	18.9	mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>635-50	Nickel	17.8	mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	<635	Phosphorus	390	mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>10	Phosphorus	320	mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>20-10	Phosphorus	300	mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>50-20	Phosphorus	110	mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>635-50	Phosphorus	51	mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	<635	Total Kjeldahl Nitrogen	810	mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>10	Total Kjeldahl Nitrogen	1100	mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>20-10	Total Kjeldahl Nitrogen	530	mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>50-20	Total Kjeldahl Nitrogen	870	mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>635-50	Total Kjeldahl Nitrogen	840	mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	<635	Total Organic Carbon	4200	mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>10	Total Organic Carbon	12000	mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>20-10	Total Organic Carbon	4800	mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>50-20	Total Organic Carbon	3900	mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>635-50	Total Organic Carbon	4400	mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	<635	Zinc	220	mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>10	Zinc	274	mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>20-10	Zinc	70.7	mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>50-20	Zinc	197	mg/kg
Tahoe Airport	Upgradient Trap	10/5/2001	3	>635-50	Zinc	206	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	<635	Arsenic	5.5	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>10	Arsenic	4.72	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>20-10	Arsenic	3.93	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>50-20	Arsenic	4.64	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>635-50	Arsenic	8.72	mg/kg

Tahoe Airport	Upgradient Trap	1/10/2002	5	<635	Cadmium	0.823	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>10	Cadmium	0.781	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>20-10	Cadmium	0.781	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>50-20	Cadmium	0.694	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>635-50	Cadmium	1.22	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	<635	Chromium	17.5	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>10	Chromium	15.9	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>20-10	Chromium	14.2	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>50-20	Chromium	14.4	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>635-50	Chromium	22.7	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	<635	Copper	32.2	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>10	Copper	34.7	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>20-10	Copper	32.9	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>50-20	Copper	31.9	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>635-50	Copper	46.5	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	<635	Iron	16200	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>10	Iron	15700	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>20-10	Iron	15500	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>50-20	Iron	13800	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>635-50	Iron	19400	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	<635	Lead	17.2	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>10	Lead	18.5	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>20-10	Lead	16.8	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>50-20	Lead	16.3	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>635-50	Lead	22.4	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	<635	Nickel	20	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>10	Nickel	18.8	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>20-10	Nickel	17.5	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>50-20	Nickel	17.5	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>635-50	Nickel	29	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	<635	Phosphorus	0.77	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>10	Phosphorus	1.2	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>20-10	Phosphorus	0.67	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>50-20	Phosphorus	0.98	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>635-50	Phosphorus	1.1	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	<635	Total Kjeldahl Nitrogen	1300	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>10	Total Kjeldahl Nitrogen	980	mg/kg

Tahoe Airport	Upgradient Trap	1/10/2002	5	>20-10	Total Kjeldahl Nitrogen	1100	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>50-20	Total Kjeldahl Nitrogen	1000	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>635-50	Total Kjeldahl Nitrogen	920	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	<635	Total Organic Carbon	2500	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>10	Total Organic Carbon	2200	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>20-10	Total Organic Carbon	1800	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>50-20	Total Organic Carbon	2600	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>635-50	Total Organic Carbon	3600	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	<635	Zinc	285	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>10	Zinc	354	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>20-10	Zinc	316	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>50-20	Zinc	346	mg/kg
Tahoe Airport	Upgradient Trap	1/10/2002	5	>635-50	Zinc	398	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>10	Total Organic Carbon	6800	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>20-10	Total Organic Carbon	6500	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>50-20	Total Organic Carbon	3800	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>635-50	Total Organic Carbon	4200	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	<635	Total Organic Carbon	3600	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>10	Total Kjeldahl Nitrogen	700	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>20-10	Total Kjeldahl Nitrogen	680	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>50-20	Total Kjeldahl Nitrogen	290	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>635-50	Total Kjeldahl Nitrogen	610	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	<635	Total Kjeldahl Nitrogen	690	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>10	Phosphorus	150	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>20-10	Phosphorus	170	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>50-20	Phosphorus	210	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>635-50	Phosphorus	180	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	<635	Phosphorus	420	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>10	Arsenic	3.05	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>10	Cadmium	<0.5	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>10	Chromium	13	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>10	Copper	22.1	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>10	Lead	6.09	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>10	Nickel	9.3	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>10	Zinc	147	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>10	Iron	9840	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>20-10	Arsenic	1.13	mg/kg

Tahoe Airport	Upgradient Trap	4/12/2002	6	>20-10	Cadmium	<0.5	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>20-10	Chromium	5.43	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>20-10	Copper	11.8	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>20-10	Lead	3.77	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>20-10	Nickel	6.97	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>20-10	Zinc	106	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>20-10	Iron	7720	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>50-20	Arsenic	1.76	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>50-20	Cadmium	<0.5	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>50-20	Chromium	6.23	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>50-20	Copper	14.9	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>50-20	Lead	5.72	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>50-20	Nickel	7.38	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>50-20	Zinc	125	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>50-20	Iron	8090	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>635-50	Arsenic	3.55	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>635-50	Cadmium	<0.5	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>635-50	Chromium	15.9	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>635-50	Copper	32.4	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>635-50	Lead	14.1	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>635-50	Nickel	15.2	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>635-50	Zinc	311	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	>635-50	Iron	15100	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	<635	Arsenic	3.26	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	<635	Cadmium	<0.5	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	<635	Chromium	13.4	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	<635	Copper	35.9	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	<635	Lead	14.5	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	<635	Nickel	14.4	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	<635	Zinc	331	mg/kg
Tahoe Airport	Upgradient Trap	4/12/2002	6	<635	Iron	13000	mg/kg

Site	Location	Collection	Period	Size Fraction	Parameter	Value	Qualifier*	Units
Echo Summit	Downgradiant Trap	11/27/2002	1	>10	Cadmium	0.555		mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>20-10	Cadmium	0.5	U	mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>50-20	Cadmium	0.5	U	mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>635-50	Cadmium	0.5	U	mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>50-20	Chromium (Total)	12.4		mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>20-10	Chromium (Total)	13.7		mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>10	Chromium (Total)	18.1		mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>635-50	Chromium (Total)	20.9		mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>50-20	Copper	17.6		mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>20-10	Copper	24.0		mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>635-50	Copper	26.2		mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>10	Copper	31.4		mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>50-20	Iron	11300		mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>20-10	Iron	11500		mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>10	Iron	11800		mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>635-50	Iron	17400		mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>50-20	Lead	18.7		mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>20-10	Lead	24.2		mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>635-50	Lead	27.1		mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>10	Lead	30.9		mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>20-10	Nickel	11.9		mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>10	Nickel	13.2		mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>635-50	Nickel	13.3		mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>50-20	Nickel	9.65		mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>10	Nitrate-N	2	U	mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>20-10	Nitrate-N	1	U	mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>50-20	Nitrate-N	1	U	mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>635-50	Nitrate-N	1	U	mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>10	Nitrite-N	0.2	U	mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>20-10	Nitrite-N	0.1	U	mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>50-20	Nitrite-N	0.1	U	mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>635-50	Nitrite-N	0.1	U	mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>10	Phosphorus, Total	290	D	mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>20-10	Phosphorus, Total	310	D	mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>50-20	Phosphorus, Total	320	D	mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>635-50	Phosphorus, Total	430	D	mg/kg

Site	Location	Collection	Period	Size Fraction	Parameter	Value	Qualifier*	Units
Echo Summit	Downgradiant Trap	11/27/2002	1	>20-10	Total Kjeldahl Nitrogen	1800		mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>10	Total Kjeldahl Nitrogen	2200		mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>635-50	Total Kjeldahl Nitrogen	570		mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>50-20	Total Kjeldahl Nitrogen	640		mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>20-10	Total Organic Carbon	3800	D	mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>10	Total Organic Carbon	4200	D	mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>50-20	Total Organic Carbon	640		mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>635-50	Total Organic Carbon	860		mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>50-20	Zinc	297		mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>635-50	Zinc	375		mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>20-10	Zinc	563		mg/kg
Echo Summit	Downgradiant Trap	11/27/2002	1	>10	Zinc	819		mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>635-50	Cadmium	0.558		mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	<635	Cadmium	0.695		mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>10	Cadmium	0.5	U	mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>20-10	Cadmium	0.5	U	mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>50-20	Cadmium	0.5	U	mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>10	Chromium (Total)	23.1		mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>50-20	Chromium (Total)	25.4		mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>20-10	Chromium (Total)	30.2		mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>635-50	Chromium (Total)	32.8		mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	<635	Chromium (Total)	48.3		mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	<635	Copper	123		mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>10	Copper	30.8		mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>50-20	Copper	37.7		mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>20-10	Copper	46.9		mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>635-50	Copper	53.6		mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>10	Iron	14700		mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>50-20	Iron	18000		mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>20-10	Iron	21600		mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>635-50	Iron	23200		mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	<635	Iron	30600		mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	<635	Lead	215		mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>50-20	Lead	31.3		mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>20-10	Lead	31.9		mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>10	Lead	36.2		mg/kg

Site	Location	Collection	Period	Size Fraction	Parameter	Value	Qualifier*	Units
Echo Summit	Downgradiant Trap	2/28/2003	2	>635-50	Lead	49.4		mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>10	Nickel	15.8		mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>50-20	Nickel	19.8		mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>20-10	Nickel	23.7		mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>635-50	Nickel	25.1		mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	<635	Nickel	35.9		mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	<635	Nitrate-N	10	U	mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>10	Nitrate-N	5	U	mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>20-10	Nitrate-N	0.5	U	mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>50-20	Nitrate-N	1	U	mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>635-50	Nitrate-N	0.5	U	mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	<635	Nitrite-N	0.5	U	mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>10	Nitrite-N	1	U	mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>20-10	Nitrite-N	0.05	U	mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>50-20	Nitrite-N	0.1	U	mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>635-50	Nitrite-N	0.05	U	mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>10	Phosphorus, Total	150	D	mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>635-50	Phosphorus, Total	260	D	mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	<635	Phosphorus, Total	270	D	mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>20-10	Phosphorus, Total	280	D	mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>50-20	Phosphorus, Total	340	D	mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>50-20	Total Kjeldahl Nitrogen	1200		mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>20-10	Total Kjeldahl Nitrogen	1400		mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>635-50	Total Kjeldahl Nitrogen	1400		mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>10	Total Kjeldahl Nitrogen	870		mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>10	Total Kjeldahl Nitrogen	870		mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>10	Total Kjeldahl Nitrogen	870		mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>20-10	Total Organic Carbon	11000	D	mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>50-20	Total Organic Carbon	7100	D	mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>635-50	Total Organic Carbon	8600	D	mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>10	Zinc	321		mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>50-20	Zinc	378		mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>20-10	Zinc	463		mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	>635-50	Zinc	485		mg/kg
Echo Summit	Downgradiant Trap	2/28/2003	2	<635	Zinc	709		mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	<635	Cadmium	0.712		mg/kg

Site	Location	Collection	Period	Size Fraction	Parameter	Value	Qualifier*	Units
Echo Summit	Downgradiant Trap	5/1/2003	3	>10	Cadmium	0.5	U	mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>20-10	Cadmium	0.5	U	mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>50-20	Cadmium	0.5	U	mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>635-50	Cadmium	0.5	U	mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>20-10	Chromium (Total)	14.6		mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>50-20	Chromium (Total)	15.6		mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>10	Chromium (Total)	17.6		mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>635-50	Chromium (Total)	22.9		mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	<635	Chromium (Total)	48.9		mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>50-20	Copper	18.9		mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>20-10	Copper	21.6		mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>635-50	Copper	24.6		mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>10	Copper	28.4		mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	<635	Copper	164		mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>10	Iron	10700		mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>20-10	Iron	11200		mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>50-20	Iron	12010		mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>635-50	Iron	18500		mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	<635	Iron	29500		mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>50-20	Lead	15.4		mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>20-10	Lead	19.9		mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>635-50	Lead	31.2		mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>10	Lead	32.6		mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	<635	Lead	201		mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>50-20	Nickel	10.6		mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>20-10	Nickel	13.5		mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>10	Nickel	14.5		mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>635-50	Nickel	15.9		mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	<635	Nickel	31.5		mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	<635	Nitrate-N	0.5	U	mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>10	Nitrate-N	0.5	U	mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>20-10	Nitrate-N	0.5	U	mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>50-20	Nitrate-N	0.5	U	mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>635-50	Nitrate-N	0.5	U	mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	<635	Nitrite-N	0.5	U	mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>10	Nitrite-N	0.5	U	mg/kg

Site	Location	Collection	Period	Size Fraction	Parameter	Value	Qualifier*	Units
Echo Summit	Downgradiant Trap	5/1/2003	3	>20-10	Nitrite-N	0.5	U	mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>50-20	Nitrite-N	0.5	U	mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>635-50	Nitrite-N	0.5	U	mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>10	Phosphorus, Total	280	D	mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>20-10	Phosphorus, Total	280	D	mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>50-20	Phosphorus, Total	300	D	mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	<635	Phosphorus, Total	310	D	mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>635-50	Phosphorus, Total	390	D	mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>635-50	Total Kjeldahl Nitrogen	540		mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>50-20	Total Kjeldahl Nitrogen	630		mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>20-10	Total Kjeldahl Nitrogen	1750		mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>10	Total Kjeldahl Nitrogen	2400		mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>50-20	Total Organic Carbon	590		mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>635-50	Total Organic Carbon	810		mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>20-10	Total Organic Carbon	3400	D	mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>10	Total Organic Carbon	3900	D	mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>50-20	Zinc	284		mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>635-50	Zinc	364		mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>20-10	Zinc	542		mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	<635	Zinc	652		mg/kg
Echo Summit	Downgradiant Trap	5/1/2003	3	>10	Zinc	834		mg/kg
Echo Summit	Filter Box	11/20/2002	1	<635	Cadmium	1.41	U	mg/kg
Echo Summit	Filter Box	11/20/2002	1	>10	Cadmium	0.5	U	mg/kg
Echo Summit	Filter Box	11/20/2002	1	>20-10	Cadmium	0.5	U	mg/kg
Echo Summit	Filter Box	11/20/2002	1	>50-20	Cadmium	0.5	U	mg/kg
Echo Summit	Filter Box	11/20/2002	1	>635-50	Cadmium	0.5	U	mg/kg
Echo Summit	Filter Box	11/20/2002	1	>10	Chromium (Total)	19.9		mg/kg
Echo Summit	Filter Box	11/20/2002	1	>50-20	Chromium (Total)	22.1		mg/kg
Echo Summit	Filter Box	11/20/2002	1	>635-50	Chromium (Total)	23.8		mg/kg
Echo Summit	Filter Box	11/20/2002	1	>20-10	Chromium (Total)	24.8		mg/kg
Echo Summit	Filter Box	11/20/2002	1	<635	Chromium (Total)	44.7		mg/kg
Echo Summit	Filter Box	11/20/2002	1	>50-20	Copper	22.2		mg/kg
Echo Summit	Filter Box	11/20/2002	1	>635-50	Copper	24.8		mg/kg
Echo Summit	Filter Box	11/20/2002	1	>10	Copper	27.0		mg/kg
Echo Summit	Filter Box	11/20/2002	1	>20-10	Copper	30.8		mg/kg
Echo Summit	Filter Box	11/20/2002	1	<635	Copper	59.7		mg/kg

Site	Location	Collection	Period	Size Fraction	Parameter	Value	Qualifier*	Units
Echo Summit	Filter Box	11/20/2002	1	>10	Iron	15200		mg/kg
Echo Summit	Filter Box	11/20/2002	1	>20-10	Iron	15700		mg/kg
Echo Summit	Filter Box	11/20/2002	1	>50-20	Iron	15800		mg/kg
Echo Summit	Filter Box	11/20/2002	1	>635-50	Iron	18500		mg/kg
Echo Summit	Filter Box	11/20/2002	1	<635	Iron	27900		mg/kg
Echo Summit	Filter Box	11/20/2002	1	>10	Lead	31.0		mg/kg
Echo Summit	Filter Box	11/20/2002	1	>635-50	Lead	32.7		mg/kg
Echo Summit	Filter Box	11/20/2002	1	>50-20	Lead	38.5		mg/kg
Echo Summit	Filter Box	11/20/2002	1	>20-10	Lead	50.6		mg/kg
Echo Summit	Filter Box	11/20/2002	1	<635	Lead	65.5		mg/kg
Echo Summit	Filter Box	11/20/2002	1	>50-20	Nickel	12.9		mg/kg
Echo Summit	Filter Box	11/20/2002	1	>10	Nickel	14.6		mg/kg
Echo Summit	Filter Box	11/20/2002	1	>635-50	Nickel	14.7		mg/kg
Echo Summit	Filter Box	11/20/2002	1	>20-10	Nickel	15.7		mg/kg
Echo Summit	Filter Box	11/20/2002	1	<635	Nickel	27.9		mg/kg
Echo Summit	Filter Box	11/20/2002	1	<635	Nitrate-N	20	U	mg/kg
Echo Summit	Filter Box	11/20/2002	1	>10	Nitrate-N	10	U	mg/kg
Echo Summit	Filter Box	11/20/2002	1	>20-10	Nitrate-N	2	U	mg/kg
Echo Summit	Filter Box	11/20/2002	1	>50-20	Nitrate-N	1	U	mg/kg
Echo Summit	Filter Box	11/20/2002	1	>635-50	Nitrate-N	1	U	mg/kg
Echo Summit	Filter Box	11/20/2002	1	<635	Nitrite-N	2	U	mg/kg
Echo Summit	Filter Box	11/20/2002	1	>10	Nitrite-N	1	U	mg/kg
Echo Summit	Filter Box	11/20/2002	1	>20-10	Nitrite-N	0.2	U	mg/kg
Echo Summit	Filter Box	11/20/2002	1	>50-20	Nitrite-N	0.1	U	mg/kg
Echo Summit	Filter Box	11/20/2002	1	>635-50	Nitrite-N	0.1	U	mg/kg
Echo Summit	Filter Box	11/20/2002	1	<635	Phosphorus, Total	240	D	mg/kg
Echo Summit	Filter Box	11/20/2002	1	>20-10	Phosphorus, Total	320	D	mg/kg
Echo Summit	Filter Box	11/20/2002	1	>50-20	Phosphorus, Total	410	D	mg/kg
Echo Summit	Filter Box	11/20/2002	1	>635-50	Phosphorus, Total	480	D	mg/kg
Echo Summit	Filter Box	11/20/2002	1	>10	Phosphorus, Total	88	D	mg/kg
Echo Summit	Filter Box	11/20/2002	1	>20-10	Total Kjeldahl Nitrogen	1500		mg/kg
Echo Summit	Filter Box	11/20/2002	1	>10	Total Kjeldahl Nitrogen	2600		mg/kg
Echo Summit	Filter Box	11/20/2002	1	>10	Total Kjeldahl Nitrogen	2600		mg/kg
Echo Summit	Filter Box	11/20/2002	1	>10	Total Kjeldahl Nitrogen	2600		mg/kg
Echo Summit	Filter Box	11/20/2002	1	>635-50	Total Kjeldahl Nitrogen	280		mg/kg
Echo Summit	Filter Box	11/20/2002	1	>50-20	Total Kjeldahl Nitrogen	490		mg/kg

Site	Location	Collection	Period	Size Fraction	Parameter	Value	Qualifier*	Units
Echo Summit	Filter Box	11/20/2002	1	>635-50	Total Organic Carbon	1000	D	mg/kg
Echo Summit	Filter Box	11/20/2002	1	>20-10	Total Organic Carbon	1900	D	mg/kg
Echo Summit	Filter Box	11/20/2002	1	>50-20	Total Organic Carbon	520		mg/kg
Echo Summit	Filter Box	11/20/2002	1	>635-50	Zinc	142		mg/kg
Echo Summit	Filter Box	11/20/2002	1	>50-20	Zinc	151		mg/kg
Echo Summit	Filter Box	11/20/2002	1	>20-10	Zinc	188		mg/kg
Echo Summit	Filter Box	11/20/2002	1	>10	Zinc	197		mg/kg
Echo Summit	Filter Box	11/20/2002	1	<635	Zinc	320		mg/kg
Echo Summit	Filter Box	2/28/2003	2	>50-20	Cadmium	0.550		mg/kg
Echo Summit	Filter Box	2/28/2003	2	>635-50	Cadmium	0.552		mg/kg
Echo Summit	Filter Box	2/28/2003	2	>10	Cadmium	0.565		mg/kg
Echo Summit	Filter Box	2/28/2003	2	>20-10	Cadmium	0.617		mg/kg
Echo Summit	Filter Box	2/28/2003	2	<635	Cadmium	1	U	mg/kg
Echo Summit	Filter Box	2/28/2003	2	>10	Chromium (Total)	35.8		mg/kg
Echo Summit	Filter Box	2/28/2003	2	>635-50	Chromium (Total)	36.0		mg/kg
Echo Summit	Filter Box	2/28/2003	2	>50-20	Chromium (Total)	37.7		mg/kg
Echo Summit	Filter Box	2/28/2003	2	>20-10	Chromium (Total)	40.1		mg/kg
Echo Summit	Filter Box	2/28/2003	2	<635	Chromium (Total)	49.6		mg/kg
Echo Summit	Filter Box	2/28/2003	2	>635-50	Copper	55.6		mg/kg
Echo Summit	Filter Box	2/28/2003	2	>10	Copper	57.1		mg/kg
Echo Summit	Filter Box	2/28/2003	2	>50-20	Copper	58.7		mg/kg
Echo Summit	Filter Box	2/28/2003	2	>20-10	Copper	61.7		mg/kg
Echo Summit	Filter Box	2/28/2003	2	<635	Copper	80.4		mg/kg
Echo Summit	Filter Box	2/28/2003	2	>10	Iron	23500		mg/kg
Echo Summit	Filter Box	2/28/2003	2	>635-50	Iron	26100		mg/kg
Echo Summit	Filter Box	2/28/2003	2	>50-20	Iron	26200		mg/kg
Echo Summit	Filter Box	2/28/2003	2	>20-10	Iron	27400		mg/kg
Echo Summit	Filter Box	2/28/2003	2	<635	Iron	32300		mg/kg
Echo Summit	Filter Box	2/28/2003	2	>635-50	Lead	32.1		mg/kg
Echo Summit	Filter Box	2/28/2003	2	>10	Lead	32.6		mg/kg
Echo Summit	Filter Box	2/28/2003	2	>50-20	Lead	33.6		mg/kg
Echo Summit	Filter Box	2/28/2003	2	>20-10	Lead	35.3		mg/kg
Echo Summit	Filter Box	2/28/2003	2	<635	Lead	51.1		mg/kg
Echo Summit	Filter Box	2/28/2003	2	>10	Nickel	29.6		mg/kg
Echo Summit	Filter Box	2/28/2003	2	>635-50	Nickel	30.3		mg/kg
Echo Summit	Filter Box	2/28/2003	2	>50-20	Nickel	31.7		mg/kg

Site	Location	Collection	Period	Size Fraction	Parameter	Value	Qualifier*	Units
Echo Summit	Filter Box	2/28/2003	2	>20-10	Nickel	33.4		mg/kg
Echo Summit	Filter Box	2/28/2003	2	<635	Nickel	39.0		mg/kg
Echo Summit	Filter Box	2/28/2003	2	<635	Nitrate-N	20	U	mg/kg
Echo Summit	Filter Box	2/28/2003	2	>10	Nitrate-N	10	U	mg/kg
Echo Summit	Filter Box	2/28/2003	2	>20-10	Nitrate-N	1	U	mg/kg
Echo Summit	Filter Box	2/28/2003	2	>50-20	Nitrate-N	1	U	mg/kg
Echo Summit	Filter Box	2/28/2003	2	>635-50	Nitrate-N	1	U	mg/kg
Echo Summit	Filter Box	2/28/2003	2	<635	Nitrite-N	2	U	mg/kg
Echo Summit	Filter Box	2/28/2003	2	>10	Nitrite-N	1	U	mg/kg
Echo Summit	Filter Box	2/28/2003	2	>20-10	Nitrite-N	0.1	U	mg/kg
Echo Summit	Filter Box	2/28/2003	2	>50-20	Nitrite-N	0.1	U	mg/kg
Echo Summit	Filter Box	2/28/2003	2	>635-50	Nitrite-N	0.1	U	mg/kg
Echo Summit	Filter Box	2/28/2003	2	>20-10	Phosphorus, Total	190	D	mg/kg
Echo Summit	Filter Box	2/28/2003	2	>50-20	Phosphorus, Total	200	D	mg/kg
Echo Summit	Filter Box	2/28/2003	2	<635	Phosphorus, Total	270	D	mg/kg
Echo Summit	Filter Box	2/28/2003	2	>635-50	Phosphorus, Total	300	D	mg/kg
Echo Summit	Filter Box	2/28/2003	2	>10	Phosphorus, Total	500	D	mg/kg
Echo Summit	Filter Box	2/28/2003	2	>10	Total Kjeldahl Nitrogen	1200		mg/kg
Echo Summit	Filter Box	2/28/2003	2	>635-50	Total Kjeldahl Nitrogen	1400		mg/kg
Echo Summit	Filter Box	2/28/2003	2	>20-10	Total Kjeldahl Nitrogen	1600		mg/kg
Echo Summit	Filter Box	2/28/2003	2	>50-20	Total Kjeldahl Nitrogen	1700		mg/kg
Echo Summit	Filter Box	2/28/2003	2	>20-10	Total Organic Carbon	14000	D	mg/kg
Echo Summit	Filter Box	2/28/2003	2	>635-50	Total Organic Carbon	5900	D	mg/kg
Echo Summit	Filter Box	2/28/2003	2	>10	Total Organic Carbon	8200	D	mg/kg
Echo Summit	Filter Box	2/28/2003	2	>50-20	Total Organic Carbon	9600	D	mg/kg
Echo Summit	Filter Box	2/28/2003	2	>635-50	Zinc	267		mg/kg
Echo Summit	Filter Box	2/28/2003	2	>10	Zinc	284		mg/kg
Echo Summit	Filter Box	2/28/2003	2	>50-20	Zinc	284		mg/kg
Echo Summit	Filter Box	2/28/2003	2	>20-10	Zinc	298		mg/kg
Echo Summit	Filter Box	2/28/2003	2	<635	Zinc	342		mg/kg
Echo Summit	Filter Box	5/1/2003	3	<635	Cadmium	0.5	U	mg/kg
Echo Summit	Filter Box	5/1/2003	3	<635	Cadmium	0.5	U	mg/kg
Echo Summit	Filter Box	5/1/2003	3	>10	Cadmium	0.5	U	mg/kg
Echo Summit	Filter Box	5/1/2003	3	>20-10	Cadmium	0.5	U	mg/kg
Echo Summit	Filter Box	5/1/2003	3	>50-20	Cadmium	0.5	U	mg/kg
Echo Summit	Filter Box	5/1/2003	3	>635-50	Cadmium	0.5	U	mg/kg

Site	Location	Collection	Period	Size Fraction	Parameter	Value	Qualifier*	Units
Echo Summit	Filter Box	5/1/2003	3	>10	Chromium (Total)	14.2		mg/kg
Echo Summit	Filter Box	5/1/2003	3	>20-10	Chromium (Total)	25.9		mg/kg
Echo Summit	Filter Box	5/1/2003	3	>50-20	Chromium (Total)	26		mg/kg
Echo Summit	Filter Box	5/1/2003	3	>635-50	Chromium (Total)	28.6		mg/kg
Echo Summit	Filter Box	5/1/2003	3	<635	Chromium (Total)	48.9		mg/kg
Echo Summit	Filter Box	5/1/2003	3	<635	Chromium (Total)	54.6		mg/kg
Echo Summit	Filter Box	5/1/2003	3	>50-20	Copper	19.8		mg/kg
Echo Summit	Filter Box	5/1/2003	3	>635-50	Copper	21.5		mg/kg
Echo Summit	Filter Box	5/1/2003	3	>20-10	Copper	24.6		mg/kg
Echo Summit	Filter Box	5/1/2003	3	>10	Copper	26.5		mg/kg
Echo Summit	Filter Box	5/1/2003	3	<635	Copper	63.2		mg/kg
Echo Summit	Filter Box	5/1/2003	3	<635	Copper	76.2		mg/kg
Echo Summit	Filter Box	5/1/2003	3	>50-20	Iron	14200		mg/kg
Echo Summit	Filter Box	5/1/2003	3	>10	Iron	16300		mg/kg
Echo Summit	Filter Box	5/1/2003	3	>635-50	Iron	16500		mg/kg
Echo Summit	Filter Box	5/1/2003	3	>20-10	Iron	17010		mg/kg
Echo Summit	Filter Box	5/1/2003	3	<635	Iron	31000		mg/kg
Echo Summit	Filter Box	5/1/2003	3	<635	Iron	33600		mg/kg
Echo Summit	Filter Box	5/1/2003	3	>10	Lead	29.5		mg/kg
Echo Summit	Filter Box	5/1/2003	3	>635-50	Lead	34.3		mg/kg
Echo Summit	Filter Box	5/1/2003	3	>50-20	Lead	35.1		mg/kg
Echo Summit	Filter Box	5/1/2003	3	>20-10	Lead	39.8		mg/kg
Echo Summit	Filter Box	5/1/2003	3	<635	Lead	45.3		mg/kg
Echo Summit	Filter Box	5/1/2003	3	<635	Lead	46.8		mg/kg
Echo Summit	Filter Box	5/1/2003	3	>10	Nickel	13.2		mg/kg
Echo Summit	Filter Box	5/1/2003	3	>50-20	Nickel	13.9		mg/kg
Echo Summit	Filter Box	5/1/2003	3	>20-10	Nickel	17.2		mg/kg
Echo Summit	Filter Box	5/1/2003	3	>635-50	Nickel	17.6		mg/kg
Echo Summit	Filter Box	5/1/2003	3	<635	Nickel	28.9		mg/kg
Echo Summit	Filter Box	5/1/2003	3	<635	Nickel	42.8		mg/kg
Echo Summit	Filter Box	5/1/2003	3	<635	Nitrate-N	20	U	mg/kg
Echo Summit	Filter Box	5/1/2003	3	>10	Nitrate-N	10	U	mg/kg
Echo Summit	Filter Box	5/1/2003	3	>20-10	Nitrate-N	2	U	mg/kg
Echo Summit	Filter Box	5/1/2003	3	>50-20	Nitrate-N	1	U	mg/kg
Echo Summit	Filter Box	5/1/2003	3	>635-50	Nitrate-N	1	U	mg/kg
Echo Summit	Filter Box	5/1/2003	3	<635	Nitrite-N	2	U	mg/kg

Site	Location	Collection	Period	Size Fraction	Parameter	Value	Qualifier*	Units
Echo Summit	Filter Box	5/1/2003	3	>10	Nitrite-N	1	U	mg/kg
Echo Summit	Filter Box	5/1/2003	3	>20-10	Nitrite-N	0.1	U	mg/kg
Echo Summit	Filter Box	5/1/2003	3	>50-20	Nitrite-N	0.1	U	mg/kg
Echo Summit	Filter Box	5/1/2003	3	>635-50	Nitrite-N	0.1	U	mg/kg
Echo Summit	Filter Box	5/1/2003	3	>10	Phosphorus, Total	62	D	mg/kg
Echo Summit	Filter Box	5/1/2003	3	<635	Phosphorus, Total	210	D	mg/kg
Echo Summit	Filter Box	5/1/2003	3	>20-10	Phosphorus, Total	270	D	mg/kg
Echo Summit	Filter Box	5/1/2003	3	>50-20	Phosphorus, Total	450	D	mg/kg
Echo Summit	Filter Box	5/1/2003	3	>635-50	Phosphorus, Total	510	D	mg/kg
Echo Summit	Filter Box	5/1/2003	3	<635	Phosphorus, Total	270	D	mg/kg
Echo Summit	Filter Box	5/1/2003	3	>635-50	Total Kjeldahl Nitrogen	230		mg/kg
Echo Summit	Filter Box	5/1/2003	3	>50-20	Total Kjeldahl Nitrogen	510		mg/kg
Echo Summit	Filter Box	5/1/2003	3	>20-10	Total Kjeldahl Nitrogen	1450		mg/kg
Echo Summit	Filter Box	5/1/2003	3	>10	Total Kjeldahl Nitrogen	2400		mg/kg
Echo Summit	Filter Box	5/1/2003	3	>10	Total Kjeldahl Nitrogen	2450		mg/kg
Echo Summit	Filter Box	5/1/2003	3	>50-20	Total Organic Carbon	410		mg/kg
Echo Summit	Filter Box	5/1/2003	3	>635-50	Total Organic Carbon	900	D	mg/kg
Echo Summit	Filter Box	5/1/2003	3	>20-10	Total Organic Carbon	1200	D	mg/kg
Echo Summit	Filter Box	5/1/2003	3	>635-50	Zinc	156		mg/kg
Echo Summit	Filter Box	5/1/2003	3	>50-20	Zinc	164		mg/kg
Echo Summit	Filter Box	5/1/2003	3	>20-10	Zinc	212		mg/kg
Echo Summit	Filter Box	5/1/2003	3	>10	Zinc	221		mg/kg
Echo Summit	Filter Box	5/1/2003	3	<635	Zinc	310		mg/kg
Echo Summit	Filter Box	5/1/2003	3	<635	Zinc	356		mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>10	Cadmium	0.5	U	mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>20-10	Cadmium	0.5	U	mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>50-20	Cadmium	0.5	U	mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>635-50	Cadmium	0.5	U	mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>635-50	Chromium (Total)	11.9		mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>10	Chromium (Total)	4.46		mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>20-10	Chromium (Total)	6.53		mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>50-20	Chromium (Total)	7.11		mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>50-20	Copper	11.0		mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>635-50	Copper	15.3		mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>10	Copper	6.96		mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>20-10	Copper	9.71		mg/kg

Site	Location	Collection	Period	Size Fraction	Parameter	Value	Qualifier*	Units
Echo Summit	Upgradiant Trap	11/27/2002	1	>10	Iron	5770		mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>20-10	Iron	7270		mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>50-20	Iron	8110		mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>635-50	Iron	9910		mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>635-50	Lead	18.7		mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>10	Lead	2.90		mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>20-10	Lead	9.49		mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>50-20	Lead	9.81		mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>10	Nickel	4.38		mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>20-10	Nickel	5.41		mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>50-20	Nickel	6.25		mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>635-50	Nickel	9.81		mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>10	Nitrate-N	0.5	U	mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>20-10	Nitrate-N	0.5	U	mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>50-20	Nitrate-N	0.5	U	mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>635-50	Nitrate-N	1	U	mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>10	Nitrite-N	0.05	U	mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>20-10	Nitrite-N	0.05	U	mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>50-20	Nitrite-N	0.5	U	mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>635-50	Nitrite-N	0.1	U	mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>20-10	Phosphorus, Total	330	D	mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>10	Phosphorus, Total	340	D	mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>50-20	Phosphorus, Total	380	D	mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>635-50	Phosphorus, Total	380	D	mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>50-20	Total Kjeldahl Nitrogen	150		mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>10	Total Kjeldahl Nitrogen	200		mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>635-50	Total Kjeldahl Nitrogen	270		mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>20-10	Total Kjeldahl Nitrogen	280		mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>50-20	Total Organic Carbon	210		mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>10	Total Organic Carbon	250		mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>20-10	Total Organic Carbon	260		mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>635-50	Total Organic Carbon	410		mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>635-50	Zinc	174		mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>10	Zinc	38.1		mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>50-20	Zinc	86.1		mg/kg
Echo Summit	Upgradiant Trap	11/27/2002	1	>20-10	Zinc	90.5		mg/kg

Site	Location	Collection	Period	Size Fraction	Parameter	Value	Qualifier*	Units
Echo Summit	Upgradiant Trap	2/28/2003	2	>10	Cadmium	0.5	U	mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>20-10	Cadmium	0.5	U	mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>50-20	Cadmium	0.5	U	mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>635-50	Cadmium	0.5	U	mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>635-50	Chromium (Total)	10.8		mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>10	Chromium (Total)	5.06		mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>20-10	Chromium (Total)	6.48		mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>50-20	Chromium (Total)	8.65		mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>10	Copper	11.5		mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>20-10	Copper	12.5		mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>50-20	Copper	15.0		mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>635-50	Copper	45.4		mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>635-50	Iron	10600		mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>50-20	Iron	7140		mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>20-10	Iron	7240		mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>10	Iron	7260		mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>20-10	Lead	10.1		mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>10	Lead	2.43		mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>50-20	Lead	29.2		mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>635-50	Lead	69.6		mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>635-50	Nickel	10.2		mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>50-20	Nickel	6.12		mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>20-10	Nickel	6.71		mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>10	Nickel	6.74		mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>10	Nitrate-N	0.5	U	mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>20-10	Nitrate-N	0.5	U	mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>50-20	Nitrate-N	0.5	U	mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>635-50	Nitrate-N	1	U	mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>10	Nitrite-N	0.05	U	mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>20-10	Nitrite-N	0.05	U	mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>50-20	Nitrite-N	0.05	U	mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>635-50	Nitrite-N	0.1	U	mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>50-20	Phosphorus, Total	180	D	mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>10	Phosphorus, Total	250	D	mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>635-50	Phosphorus, Total	290	D	mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>20-10	Phosphorus, Total	300	D	mg/kg

Site	Location	Collection	Period	Size Fraction	Parameter	Value	Qualifier*	Units
Echo Summit	Upgradiant Trap	2/28/2003	2	>50-20	Total Kjeldahl Nitrogen	150		mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>20-10	Total Kjeldahl Nitrogen	170		mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>635-50	Total Kjeldahl Nitrogen	310		mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>10	Total Kjeldahl Nitrogen	360		mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>20-10	Total Organic Carbon	150	D	mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>635-50	Total Organic Carbon	1800	D	mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>10	Total Organic Carbon	75	D	mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>50-20	Total Organic Carbon	910	D	mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>10	Zinc	26.3		mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>20-10	Zinc	27.8		mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>50-20	Zinc	32.9		mg/kg
Echo Summit	Upgradiant Trap	2/28/2003	2	>635-50	Zinc	64.8		mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>10	Cadmium	0.5	U	mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>20-10	Cadmium	0.5	U	mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>50-20	Cadmium	0.5	U	mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>635-50	Cadmium	0.5	U	mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>20-10	Chromium (Total)	4.91		mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>10	Chromium (Total)	5.91		mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>50-20	Chromium (Total)	7.61		mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>635-50	Chromium (Total)	16.5		mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>10	Copper	7.02		mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>20-10	Copper	7.96		mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>50-20	Copper	12.3		mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>635-50	Copper	14.5		mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>10	Iron	6100		mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>20-10	Iron	7740		mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>50-20	Iron	8400		mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>635-50	Iron	8450		mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>10	Lead	3.65		mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>50-20	Lead	8.2		mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>20-10	Lead	8.22		mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>635-50	Lead	16.4		mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>50-20	Nickel	3.56		mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>20-10	Nickel	6.53		mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>10	Nickel	6.91		mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>635-50	Nickel	8.6		mg/kg

Site	Location	Collection	Period	Size Fraction	Parameter	Value	Qualifier*	Units
Echo Summit	Upgradiant Trap	5/1/2003	3	>10	Nitrate-N	0.5	U	mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>20-10	Nitrate-N	0.5	U	mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>50-20	Nitrate-N	0.5	U	mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>635-50	Nitrate-N	0.5	U	mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>10	Nitrite-N	0.5	U	mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>20-10	Nitrite-N	0.5	U	mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>50-20	Nitrite-N	0.5	U	mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>635-50	Nitrite-N	0.5	U	mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>20-10	Phosphorus, Total	310	D	mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>50-20	Phosphorus, Total	310	D	mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>10	Phosphorus, Total	320	D	mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>635-50	Phosphorus, Total	390	D	mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>50-20	Total Kjeldahl Nitrogen	145		mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>10	Total Kjeldahl Nitrogen	190		mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>20-10	Total Kjeldahl Nitrogen	210		mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>635-50	Total Kjeldahl Nitrogen	250		mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>10	Total Organic Carbon	220		mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>50-20	Total Organic Carbon	220		mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>20-10	Total Organic Carbon	240		mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>635-50	Total Organic Carbon	380		mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>10	Zinc	26.3		mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>50-20	Zinc	96.8		mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>20-10	Zinc	97.6		mg/kg
Echo Summit	Upgradiant Trap	5/1/2003	3	>635-50	Zinc	154		mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>20-10	Cadmium	0.532		mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>50-20	Cadmium	0.548		mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>10	Cadmium	0.666		mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	<635	Cadmium	0.935	U	mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>635-50	Cadmium	0.5	U	mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>635-50	Chromium (Total)	18.1		mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>50-20	Chromium (Total)	21.8		mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>20-10	Chromium (Total)	27.5		mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	<635	Chromium (Total)	37.8		mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>10	Chromium (Total)	38.5		mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>635-50	Copper	25.6		mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>50-20	Copper	27.6		mg/kg

Site	Location	Collection	Period	Size Fraction	Parameter	Value	Qualifier*	Units
Tahoe Airport	Downgradiant	11/27/2002	1	>20-10	Copper	38.4		mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>10	Copper	57.0		mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	<635	Copper	63.9		mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>635-50	Iron	11200		mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>50-20	Iron	12300		mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>20-10	Iron	15700		mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	<635	Iron	21400		mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>10	Iron	23000		mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>635-50	Lead	31.4		mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>50-20	Lead	49.5		mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>20-10	Lead	54.8		mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	<635	Lead	65.3		mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>10	Lead	69.9		mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>635-50	Nickel	12.8		mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>50-20	Nickel	13.0		mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>20-10	Nickel	18.6		mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	<635	Nickel	26.2		mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>10	Nickel	27.1		mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	<635	Nitrate-N	20	U	mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>10	Nitrate-N	5	U	mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>20-10	Nitrate-N	1	U	mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>50-20	Nitrate-N	1	U	mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>635-50	Nitrate-N	1	U	mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	<635	Nitrite-N	2	U	mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>10	Nitrite-N	0.1	U	mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>20-10	Nitrite-N	0.1	U	mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>50-20	Nitrite-N	0.1	U	mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>635-50	Nitrite-N	1	U	mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>20-10	Phosphorus, Total	320	D	mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>10	Phosphorus, Total	350	D	mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>50-20	Phosphorus, Total	370	D	mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>635-50	Phosphorus, Total	500	D	mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	<635	Phosphorus, Total	590	D	mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>10	Total Kjeldahl Nitrogen	2000		mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>20-10	Total Kjeldahl Nitrogen	2100		mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>20-10	Total Kjeldahl Nitrogen	2100		mg/kg

Site	Location	Collection	Period	Size Fraction	Parameter	Value	Qualifier*	Units
Tahoe Airport	Downgradiant	11/27/2002	1	>20-10	Total Kjeldahl Nitrogen	2200		mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>635-50	Total Kjeldahl Nitrogen	310		mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>50-20	Total Kjeldahl Nitrogen	630		mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>10	Total Organic Carbon	1500	D	mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>20-10	Total Organic Carbon	1700	D	mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>635-50	Total Organic Carbon	720	D	mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>50-20	Total Organic Carbon	940	D	mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>10	Zinc	122		mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>635-50	Zinc	204		mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>50-20	Zinc	307		mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	<635	Zinc	440		mg/kg
Tahoe Airport	Downgradiant	11/27/2002	1	>20-10	Zinc	625		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>635-50	Cadmium	1.02		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>20-10	Cadmium	1.16		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	<635	Cadmium	1.17		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>50-20	Cadmium	1.17		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>10	Cadmium	1.20		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>635-50	Chromium (Total)	20.5		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>20-10	Chromium (Total)	21.9		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>50-20	Chromium (Total)	22.2		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>10	Chromium (Total)	22.7		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	<635	Chromium (Total)	25.4		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>635-50	Copper	59.3		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>50-20	Copper	65.8		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>20-10	Copper	67.3		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>10	Copper	69.9		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	<635	Copper	82.2		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>635-50	Iron	22800		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>50-20	Iron	24800		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>20-10	Iron	24900		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>10	Iron	25200		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	<635	Iron	26800		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>635-50	Lead	23.2		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>20-10	Lead	25.0		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>50-20	Lead	25.2		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>10	Lead	25.5		mg/kg

Site	Location	Collection	Period	Size Fraction	Parameter	Value	Qualifier*	Units
Tahoe Airport	Downgradiant	2/28/2003	2	<635	Lead	38.2		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>635-50	Nickel	23.1		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>50-20	Nickel	24.7		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>20-10	Nickel	24.9		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>10	Nickel	25.9		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	<635	Nickel	28.5		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	<635	Nitrate-N	20	U	mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>10	Nitrate-N	10	U	mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>20-10	Nitrate-N	1	U	mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>50-20	Nitrate-N	2	U	mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>635-50	Nitrate-N	1	U	mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	<635	Nitrite-N	13		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>10	Nitrite-N	1	U	mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>20-10	Nitrite-N	0.1	U	mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>50-20	Nitrite-N	0.2	U	mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>635-50	Nitrite-N	0.1	U	mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	<635	Phosphorus, Total	160	D	mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>50-20	Phosphorus, Total	170	D	mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>635-50	Phosphorus, Total	200	D	mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>20-10	Phosphorus, Total	270	D	mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>10	Phosphorus, Total	470	D	mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>50-20	Total Kjeldahl Nitrogen	1200		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>635-50	Total Kjeldahl Nitrogen	1200		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>10	Total Kjeldahl Nitrogen	1400		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>20-10	Total Kjeldahl Nitrogen	1500		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>635-50	Total Organic Carbon	15000	D	mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>10	Total Organic Carbon	2300	D	mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>20-10	Total Organic Carbon	4000	D	mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>50-20	Total Organic Carbon	7400	D	mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>635-50	Zinc	621		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>20-10	Zinc	709		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	<635	Zinc	744		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>10	Zinc	746		mg/kg
Tahoe Airport	Downgradiant	2/28/2003	2	>50-20	Zinc	747		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>20-10	Cadmium	0.51		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>50-20	Cadmium	0.521		mg/kg

Site	Location	Collection	Period	Size Fraction	Parameter	Value	Qualifier*	Units
Tahoe Airport	Downgradiant	5/1/2003	3	>635-50	Cadmium	0.591		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>10	Cadmium	0.602		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>50-20	Cadmium	0.632		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>20-10	Cadmium	0.635		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	<635	Cadmium	0.785		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	<635	Cadmium	0.5	U	mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>10	Cadmium	0.5	U	mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>635-50	Cadmium	0.5	U	mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>10	Chromium (Total)	11.6		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>50-20	Chromium (Total)	12		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>20-10	Chromium (Total)	12.9		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>635-50	Chromium (Total)	19		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>635-50	Chromium (Total)	19.6		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	<635	Chromium (Total)	21.6		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>20-10	Chromium (Total)	22.3		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>50-20	Chromium (Total)	22.6		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	<635	Chromium (Total)	36.3		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>10	Chromium (Total)	37.6		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>10	Copper	22.6		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>635-50	Copper	24.3		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>50-20	Copper	28.4		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>635-50	Copper	28.6		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>20-10	Copper	34.8		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>50-20	Copper	37.9		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>20-10	Copper	39.8		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	<635	Copper	45.6		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>10	Copper	54		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	<635	Copper	65.3		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	<635	Iron	2260		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>10	Iron	11600		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>635-50	Iron	12050		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>635-50	Iron	12600		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>50-20	Iron	13500		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>50-20	Iron	14500		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>20-10	Iron	14800		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>20-10	Iron	16700		mg/kg

Site	Location	Collection	Period	Size Fraction	Parameter	Value	Qualifier*	Units
Tahoe Airport	Downgradiant	5/1/2003	3	<635	Iron	17900		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>10	Iron	21000		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	<635	Lead	15.4		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>50-20	Lead	17.2		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>635-50	Lead	17.2		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>20-10	Lead	17.5		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>10	Lead	20.1		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>635-50	Lead	25.6		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>50-20	Lead	49.3		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>20-10	Lead	51.6		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	<635	Lead	63.1		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>10	Lead	65.3		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>50-20	Nickel	12.2		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>635-50	Nickel	13.9		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>10	Nickel	16.9		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>20-10	Nickel	19.2		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>635-50	Nickel	19.8		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	<635	Nickel	22.4		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>50-20	Nickel	22.6		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>20-10	Nickel	23.5		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	<635	Nickel	24.9		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>10	Nickel	25.4		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	<635	Nitrate-N	20	U	mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	<635	Nitrate-N	10	U	mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>10	Nitrate-N	1	U	mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>10	Nitrate-N	1	U	mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>20-10	Nitrate-N	1	U	mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>50-20	Nitrate-N	1	U	mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>635-50	Nitrate-N	1	U	mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	<635	Nitrite-N	0.5	U	mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>10	Nitrite-N	0.5	U	mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>20-10	Nitrite-N	0.5	U	mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>50-20	Nitrite-N	0.5	U	mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>635-50	Nitrite-N	0.5	U	mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>50-20	Phosphorus, Total	110	D	mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>635-50	Phosphorus, Total	120	D	mg/kg

Site	Location	Collection	Period	Size Fraction	Parameter	Value	Qualifier*	Units
Tahoe Airport	Downgradiant	5/1/2003	3	>20-10	Phosphorus, Total	135	D	mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>10	Phosphorus, Total	310	D	mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>20-10	Phosphorus, Total	310	D	mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>50-20	Phosphorus, Total	400	D	mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>10	Phosphorus, Total	410	D	mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	<635	Phosphorus, Total	480	D	mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>635-50	Phosphorus, Total	480	D	mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	<635	Phosphorus, Total	540	D	mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>635-50	Total Kjeldahl Nitrogen	400		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>635-50	Total Kjeldahl Nitrogen	450		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>20-10	Total Kjeldahl Nitrogen	610		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>50-20	Total Kjeldahl Nitrogen	650		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>10	Total Kjeldahl Nitrogen	960		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>50-20	Total Kjeldahl Nitrogen	1000		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>10	Total Kjeldahl Nitrogen	1900		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>20-10	Total Kjeldahl Nitrogen	2000		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>635-50	Total Organic Carbon	680	D	mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>50-20	Total Organic Carbon	910	D	mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>635-50	Total Organic Carbon	1300	D	mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>10	Total Organic Carbon	1400	D	mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>10	Total Organic Carbon	1400	D	mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>20-10	Total Organic Carbon	1400	D	mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>50-20	Total Organic Carbon	2300	D	mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>20-10	Total Organic Carbon	3900	D	mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>10	Zinc	126		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>635-50	Zinc	167		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>10	Zinc	182		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>50-20	Zinc	198		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>635-50	Zinc	245		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>20-10	Zinc	256.3		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	<635	Zinc	284		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>50-20	Zinc	291		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	<635	Zinc	410		mg/kg
Tahoe Airport	Downgradiant	5/1/2003	3	>20-10	Zinc	624		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>10	Cadmium	0.519		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>635-50	Cadmium	0.652		mg/kg

Site	Location	Collection	Period	Size Fraction	Parameter	Value	Qualifier*	Units
Tahoe Airport	Filter Box	11/20/2002	1	>50-20	Cadmium	0.693		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>20-10	Cadmium	0.734		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	<635	Cadmium	0.952		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>10	Chromium (Total)	12.0		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>20-10	Chromium (Total)	15.0		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>50-20	Chromium (Total)	15.0		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>635-50	Chromium (Total)	15.0		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	<635	Chromium (Total)	22.1		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>10	Copper	26.7		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>635-50	Copper	31.8		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>50-20	Copper	36.1		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>20-10	Copper	36.5		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	<635	Copper	48.5		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>10	Iron	11500		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>50-20	Iron	13200		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>635-50	Iron	13400		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>20-10	Iron	14100		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	<635	Iron	18400		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>50-20	Lead	15.4		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>635-50	Lead	15.6		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>20-10	Lead	16.7		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>10	Lead	19.5		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	<635	Lead	21.4		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>10	Nickel	15.2		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>635-50	Nickel	19.6		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>20-10	Nickel	20.4		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>50-20	Nickel	20.4		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	<635	Nickel	30.1		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	<635	Nitrate-N	20	U	mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>10	Nitrate-N	5	U	mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>20-10	Nitrate-N	1	U	mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>50-20	Nitrate-N	1	U	mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>635-50	Nitrate-N	1	U	mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	<635	Nitrite-N	2	U	mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>10	Nitrite-N	0.5	U	mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>20-10	Nitrite-N	0.1	U	mg/kg

Site	Location	Collection	Period	Size Fraction	Parameter	Value	Qualifier*	Units
Tahoe Airport	Filter Box	11/20/2002	1	>50-20	Nitrite-N	0.1	U	mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>635-50	Nitrite-N	0.1	U	mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>635-50	Phosphorus, Total	110	D	mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>50-20	Phosphorus, Total	120	D	mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>20-10	Phosphorus, Total	150	D	mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>10	Phosphorus, Total	370	D	mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	<635	Phosphorus, Total	580	D	mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>635-50	Total Kjeldahl Nitrogen	460		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>50-20	Total Kjeldahl Nitrogen	550		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>20-10	Total Kjeldahl Nitrogen	690		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>10	Total Kjeldahl Nitrogen	850		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>635-50	Total Organic Carbon	1500	D	mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>10	Total Organic Carbon	1600	D	mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>50-20	Total Organic Carbon	2100	D	mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>20-10	Total Organic Carbon	4200	D	mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>635-50	Zinc	179		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>10	Zinc	191		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>50-20	Zinc	202		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	>20-10	Zinc	249		mg/kg
Tahoe Airport	Filter Box	11/20/2002	1	<635	Zinc	271		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>635-50	Cadmium	1.34		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>20-10	Cadmium	1.44		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>50-20	Cadmium	1.44		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>10	Cadmium	1.49		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	<635	Cadmium	11.1	U	mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>635-50	Chromium (Total)	22.5		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>20-10	Chromium (Total)	23.5		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>10	Chromium (Total)	23.7		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>50-20	Chromium (Total)	23.8		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	<635	Chromium (Total)	28.2		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	<635	Copper	150		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>635-50	Copper	71.4		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>20-10	Copper	74.3		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>50-20	Copper	74.3		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>10	Copper	77.3		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>635-50	Iron	25300		mg/kg

Site	Location	Collection	Period	Size Fraction	Parameter	Value	Qualifier*	Units
Tahoe Airport	Filter Box	2/28/2003	2	>10	Iron	26900		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>20-10	Iron	26900		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>50-20	Iron	26900		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	<635	Iron	30600		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>635-50	Lead	25.8		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>50-20	Lead	26.5		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>20-10	Lead	27.0		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>10	Lead	28.4		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	<635	Lead	34.1		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>635-50	Nickel	25.7		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>50-20	Nickel	27.0		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>20-10	Nickel	27.1		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>10	Nickel	28.8		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	<635	Nickel	29.3		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	<635	Nitrate-N	1	U	mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>10	Nitrate-N	1	U	mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>20-10	Nitrate-N	1	U	mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>50-20	Nitrate-N	0.1	U	mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>635-50	Nitrate-N	1	U	mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	<635	Nitrite-N	6.8		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>10	Nitrite-N	0.1	U	mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>20-10	Nitrite-N	0.1	U	mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>50-20	Nitrite-N	0.1	U	mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>635-50	Nitrite-N	0.1	U	mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>50-20	Phosphorus, Total	310	D	mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>20-10	Phosphorus, Total	320	D	mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>635-50	Phosphorus, Total	350	D	mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>10	Phosphorus, Total	360	D	mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	<635	Phosphorus, Total	530	D	mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>10	Total Kjeldahl Nitrogen	1500		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>20-10	Total Kjeldahl Nitrogen	1500		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>635-50	Total Kjeldahl Nitrogen	1500		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>635-50	Total Kjeldahl Nitrogen	1500		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>635-50	Total Kjeldahl Nitrogen	1500		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>50-20	Total Kjeldahl Nitrogen	1600		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>10	Total Organic Carbon	1900		mg/kg

Site	Location	Collection	Period	Size Fraction	Parameter	Value	Qualifier*	Units
Tahoe Airport	Filter Box	2/28/2003	2	>20-10	Total Organic Carbon	2400		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>50-20	Total Organic Carbon	4600	D	mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>635-50	Total Organic Carbon	6400	D	mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>635-50	Zinc	503		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>50-20	Zinc	524		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>20-10	Zinc	532		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	>10	Zinc	564		mg/kg
Tahoe Airport	Filter Box	2/28/2003	2	<635	Zinc	576		mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	<635	Cadmium	5.88	U	mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>10	Cadmium	0.5	U	mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>20-10	Cadmium	0.5	U	mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>50-20	Cadmium	0.5	U	mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>635-50	Cadmium	0.5	U	mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	<635	Chromium (Total)	26.2		mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>10	Chromium (Total)	3.21		mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>20-10	Chromium (Total)	4.00		mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>50-20	Chromium (Total)	5.94		mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>635-50	Chromium (Total)	9.97		mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>10	Copper	11.0		mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>50-20	Copper	12.1		mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>20-10	Copper	15.5		mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>635-50	Copper	17.9		mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	<635	Copper	60.0		mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	<635	Iron	23700		mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>10	Iron	5650		mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>20-10	Iron	6040		mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>50-20	Iron	7130		mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>635-50	Iron	9240		mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>20-10	Lead	2.25		mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>10	Lead	2.70		mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	<635	Lead	26.7		mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>50-20	Lead	5.39		mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>635-50	Lead	8.70		mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>635-50	Nickel	11.6		mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	<635	Nickel	32.7		mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>20-10	Nickel	5.82		mg/kg

Site	Location	Collection	Period	Size Fraction	Parameter	Value	Qualifier*	Units
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>10	Nickel	6.65		mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>50-20	Nickel	7.14		mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	<635	Nitrate-N	20	U	mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>10	Nitrate-N	1	U	mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>20-10	Nitrate-N	0.5	U	mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>50-20	Nitrate-N	1	U	mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>635-50	Nitrate-N	1	U	mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	<635	Nitrite-N	0.2	U	mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>10	Nitrite-N	0.1	U	mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>20-10	Nitrite-N	0.05	U	mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>50-20	Nitrite-N	0.5	U	mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>635-50	Nitrite-N	0.1	U	mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>20-10	Phosphorus, Total	290	D	mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>10	Phosphorus, Total	360	D	mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>50-20	Phosphorus, Total	360	D	mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>635-50	Phosphorus, Total	390	D	mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	<635	Phosphorus, Total	720	D	mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>20-10	Total Kjeldahl Nitrogen	110		mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>635-50	Total Kjeldahl Nitrogen	280		mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>50-20	Total Kjeldahl Nitrogen	70		mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>10	Total Kjeldahl Nitrogen	98		mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>10	Total Organic Carbon	220		mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>20-10	Total Organic Carbon	270		mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>50-20	Total Organic Carbon	360		mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>635-50	Total Organic Carbon	830	D	mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	<635	Zinc	316		mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>20-10	Zinc	33.5		mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>10	Zinc	37.8		mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>50-20	Zinc	62.5		mg/kg
Tahoe Airport	Upgradiant Trap	11/27/2002	1	>635-50	Zinc	97.3		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>635-50	Cadmium	0.623		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>10	Cadmium	0.754		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	<635	Cadmium	1.03		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>20-10	Cadmium	0.5	U	mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>50-20	Cadmium	0.5	U	mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>20-10	Chromium (Total)	12.8		mg/kg

Site	Location	Collection	Period	Size Fraction	Parameter	Value	Qualifier*	Units
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>635-50	Chromium (Total)	15.4		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>10	Chromium (Total)	15.7		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	<635	Chromium (Total)	23.7		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>50-20	Chromium (Total)	8.24		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	<635	Copper	106		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>50-20	Copper	23.1		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>20-10	Copper	33.3		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>635-50	Copper	40.5		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>10	Copper	45.1		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>50-20	Iron	11000		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>20-10	Iron	15500		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>635-50	Iron	16700		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>10	Iron	18500		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	<635	Iron	24500		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>20-10	Lead	11.7		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	<635	Lead	120		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>635-50	Lead	14.6		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>10	Lead	16.0		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>50-20	Lead	7.12		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>20-10	Nickel	13.2		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>635-50	Nickel	16.5		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>10	Nickel	17.8		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	<635	Nickel	25.9		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>50-20	Nickel	9.07		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	<635	Nitrate-N	29	D	mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>10	Nitrate-N	5	U	mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>20-10	Nitrate-N	1	U	mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>50-20	Nitrate-N	1	U	mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>635-50	Nitrate-N	1	U	mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	<635	Nitrite-N	6.9	D	mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>10	Nitrite-N	0.5	U	mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>20-10	Nitrite-N	0.1	U	mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>50-20	Nitrite-N	0.1	U	mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>635-50	Nitrite-N	0.1	U	mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>10	Phosphorus, Total	300	D	mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>20-10	Phosphorus, Total	400	D	mg/kg

Site	Location	Collection	Period	Size Fraction	Parameter	Value	Qualifier*	Units
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>50-20	Phosphorus, Total	430	D	mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>635-50	Phosphorus, Total	430	D	mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	<635	Phosphorus, Total	470	D	mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>50-20	Total Kjeldahl Nitrogen	290		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>20-10	Total Kjeldahl Nitrogen	600		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>635-50	Total Kjeldahl Nitrogen	730		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>10	Total Kjeldahl Nitrogen	870		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>20-10	Total Organic Carbon	1500		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>635-50	Total Organic Carbon	5400	D	mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>50-20	Total Organic Carbon	890		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>10	Total Organic Carbon	950		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>50-20	Zinc	120		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>20-10	Zinc	203		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>635-50	Zinc	233		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	>10	Zinc	318		mg/kg
Tahoe Airport	Upgradiant Trap	2/28/2003	2	<635	Zinc	418		mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	<635	Cadmium	0.5	U	mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>10	Cadmium	0.5	U	mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>20-10	Cadmium	0.5	U	mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>50-20	Cadmium	0.5	U	mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>635-50	Cadmium	0.5	U	mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>10	Chromium (Total)	3.3		mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>20-10	Chromium (Total)	5		mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>50-20	Chromium (Total)	5.64		mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>635-50	Chromium (Total)	10.1		mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	<635	Chromium (Total)	27.3		mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>10	Copper	9.6		mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>50-20	Copper	14.2		mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>20-10	Copper	14.9		mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>635-50	Copper	16.8		mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	<635	Copper	58.2		mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>10	Iron	5720		mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>20-10	Iron	5910		mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>50-20	Iron	7240		mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>635-50	Iron	9310		mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	<635	Iron	22800		mg/kg

Site	Location	Collection	Period	Size Fraction	Parameter	Value	Qualifier*	Units
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>10	Lead	2.9		mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>20-10	Lead	3.01		mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>50-20	Lead	6.4		mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>635-50	Lead	9.7		mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	<635	Lead	23.4		mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>20-10	Nickel	6.05		mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>50-20	Nickel	7.8		mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>635-50	Nickel	10.4		mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	<635	Nickel	31.9		mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>10	Nickel	6.65		mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	<635	Nitrate-N	20	U	mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>10	Nitrate-N	10	U	mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>20-10	Nitrate-N	1	U	mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>50-20	Nitrate-N	1	U	mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>635-50	Nitrate-N	1	U	mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	<635	Nitrite-N	0.5	U	mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>10	Nitrite-N	0.5	U	mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>20-10	Nitrite-N	0.5	U	mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>50-20	Nitrite-N	0.5	U	mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>635-50	Nitrite-N	0.5	U	mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>20-10	Phosphorus, Total	240	D	mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>10	Phosphorus, Total	340	D	mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>50-20	Phosphorus, Total	350	D	mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>635-50	Phosphorus, Total	350	D	mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	<635	Phosphorus, Total	710	D	mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>50-20	Total Kjeldahl Nitrogen	71		mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>10	Total Kjeldahl Nitrogen	91		mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>20-10	Total Kjeldahl Nitrogen	100		mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>635-50	Total Kjeldahl Nitrogen	260		mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>10	Total Organic Carbon	210		mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>20-10	Total Organic Carbon	211		mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>50-20	Total Organic Carbon	320		mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>635-50	Total Organic Carbon	820	D	mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>20-10	Zinc	34.9		mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>10	Zinc	40.1		mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>50-20	Zinc	64.9		mg/kg

Site	Location	Collection	Period	Size Fraction	Parameter	Value	Qualifier*	Units
Tahoe Airport	Upgradiant Trap	5/1/2003	3	>635-50	Zinc	96.2		mg/kg
Tahoe Airport	Upgradiant Trap	5/1/2003	3	<635	Zinc	287		mg/kg

STATISTICAL ANALYSIS METHODOLOGY

COMPARISON TESTS

G.1 Introduction

To assess the statistical differences of one set of data to another set of data (e.g., highway runoff from the Tahoe Basin to highway runoff from across the State of California) one or both of the following two comparisons were performed:

- Percent Difference (PD) between the means of the two datasets
- Statistical significance of any difference between the two datasets

G.2 Analysis of Data

G.2.1 Overview of Analysis

In most cases a statistical comparison test was applied to calculate the PD and to determine whether one dataset was statistically different than the other dataset based on the distribution of the data. The unpaired or two sample Student's t-test was typically conducted unless the two datasets were considered paired, in which case a paired Student's t-test was conducted.

G.2.2 Analysis Methodology

Null Hypothesis

The first step in conducting the statistical comparisons was to establish the hypothesis to be tested. For this study, the hypothesis tested (the Null hypothesis) was that, in the case of unpaired datasets, the means of the two groups were the same, or:

$$\mu_{group1} = \mu_{group2}$$

In the case of paired datasets, the hypothesis tested was that the mean of the differences between the two paired groups was zero, or:

$$\mu_{(group1 - group2)} = 0$$

The above mean values (μ) are considered "true" means because they theoretically represent the actual means of the entire populations. In reality, the true means of the populations can never be determined exactly because the entire population cannot be sampled; they can only be estimated based on a limited number of samples. Because they are estimates, there is uncertainty associated with the accuracy of the estimates representing the true means. Therefore, it is possible that the mean estimates (the estimates based on samples) will be different between the groups (or in the case of paired data, the difference will not be equal to zero), while at the same time the true means of the two populations are the same (or the difference is zero). The statistical comparison tests conducted in this study provide a way of evaluating whether the differences observed between the mean estimates represents an actual difference between the true means. The evaluation is based on calculation of the probability that the two true means are different given the amount of difference in the estimated (sample) means.

Statistical Significance

The second step was to establish a threshold probability for the test. This threshold is known as the level of statistical significance (α). The level of statistical significance provides the false positive probability, which is the probability of concluding, based on the test results that a significant difference exists when in reality it does not exist. For purposes of the tests conducted in this study, $\alpha = 0.1$ has been established or 10% probability of generating a false positive result.

When the t-test is conducted, a probability is calculated that can be compared with α. This probability (known as a p-value) represents the probability that the estimated mean values could be as different as they are while at the same time the true means are the same. Therefore, in order to discern a statistically significant difference, resulting p-values must be less than 0.1 (i.e., less than 10 percent probability that the mean estimates could be as different as they are and still have the same true means).

Assumptions

An important assumption in applying the comparison tests in this study was that any uncontrolled external factors that could influence results were either insignificant or were operating equally at all sites.

Another important assumption concerned the independence of the indicator parameters being tested. The comparison tests were generally conducted on several indicators simultaneously (e.g., turbidity, total nitrogen, total phosphorous, oil and grease, total iron, etc.). Testing several parameters simultaneously results in a higher false positive probability as shown below. For example, using an $\alpha = 0.1$ for any one individual parameter, the probability of at least one of, say, 35 comparison tests or parameters resulting in rejection of the Null hypothesis is equal to:

$$\alpha^* = 1 - (1 - \alpha)^{35} = 0.97$$

This result indicates a 97% probability of rejecting the Null hypothesis based on chance alone.

This false positive probability for this example assumed that the 35 comparisons were independent (i.e., that rejection of the Null hypothesis for one parameter was unrelated to the results for any other parameter). For example, the probability that the mean values for total nitrogen being the same between the Tahoe Basin and Statewide runoff were independent of the mean values observed for total phosphorous. Under the independence assumption, the results of conducting several individual comparisons would have been a higher probability (e.g., 97%) of rejecting the Null hypothesis by chance alone and, therefore, perhaps falsely concluding that there was a statistically significant difference between Tahoe Basin and Statewide mean values.

To protect against inflated false positive probabilities, p-values were adjusted such that they were compared with an overall $\alpha^*=0.1$ using two similar adjustment methods,

Bonferroni and Dunn-Sidak. In the Bonferroni method, the usual p-value (p) is multiplied by the number of tests (n=35) or:

$$p_{adj} = (p)\ n$$

In the Dunn-Sidak method, the adjustment was:

$$p_{adj} = 1 - (1 - p)\ n$$

Both adjustment methods protected against concluding that a significant difference existed when in reality it did not.

As described above, the unadjusted p-values are representative under the assumption that all variables are dependent; while the Bonferroni and Dunn-Sidak adjusted p-values are representative under the assumption that all variables are independent. Which variables are dependent and which are independent was not assessed in this study. Therefore, all three p-values (unadjusted, Bonferroni adjusted, and Dunn-Sidak adjusted) are provided in this report as the means to cover the entire range of options, all dependent to all independent.

The final assumption made was that the two sample distributions were derived from normally distributed populations. The desired method to use for the comparisons in this study was Student's t-test, which is generally insensitive to the normality assumption.

Equal Variance
Equal variances between two datasets are a requirement for using pooled variance t-tests. However, equal variances were not determined for the indicator parameters tested in this study. Therefore, it was necessary to conduct the t-tests using two methods. The first method assumed equal variance and applied the pooled variance t-test method. The second method assumed unequal variances and applied the separate variance method, which adjusts the degrees of freedom to account for unequal variances. Where applicable, separate results of the hypothesis testing presented in this report are presented for both the pooled variances and separate variances techniques.

Hypothesis Testing
Student's t-test was performed on original data to compare two datasets on an individual parameter basis. The Student's t-test was used to compare the pooled mean values for each parameter from the two groups. If the probability values (p-values) resulting from the t-tests were less than 0.10, then a statistically significant difference between the two datasets (groups) was assumed to exist.

Three sets of p-values were sometimes calculated for each individual test. Usual p-values for t-tests conducted individually for each parameter are indicated as "p-value" and have not been adjusted for the effect of multiple parameters on the tests. These p-values may not represent a true indication of significant differences between the two groups due to the potential for inflated false positive error rates. Therefore, adjusted p-

values using two different adjustment methods (Dunn-Sidak and Bonferroni) were sometimes also calculated. The adjusted p-values take into consideration the effect of multiple parameters on the false positive error rate and are, therefore, considered better indicators of significant differences. For purposes of evaluating the test results, a significant difference between two groups was considered to exist for a parameter when all three p-values were less than 0.1.

Table 6-10
Comparison of Influent Runoff Results, Snow Creek vs. Caltrans-Only

Snow Creek Site 3-219- Two Years Data					
Parameter	**Turbidity NTU**	**Total Nitrogen mg/L**	**Total Phosphorus mg/L**	**Oil and Grease mg/L**	**Total Iron µg/L**
Number of Cases	22	22	22	4	22
Mean	577	3.2	3.58	19	15691
Standard Deviation	299	5.4	5.83	20	8918
Remaining Sites (3-201, 3-202, 3-203, 3-218, 3-220) Combined- Two Years data					
Parameter	**Turbidity NTU**	**Total Nitrogen mg/L**	**Total Phosphorus mg/L**	**Oil and Grease mg/L**	**Total Iron µg/L**
Number of Cases	117	124	117	20	117
Mean	442	2.6	2.02	19	15528
Standard Deviation	319	2.7	4.26	16	15601
PD (neg = 3-201 greater)	**45**	**11**	**27**	**-1**	**2**
Statistically Different	**Yes**	**No**	**No**	**No**	**No**

Comparison -- Assuming Equal Variance

PD (neg = Statewide greater)	45.05	11.32	26.79	-0.59	1.83

Snow Creek Site 3-219- Two Years Data					
Parameter	**Turbidity NTU**	**Total Nitrogen mg/L**	**Total Phosphorus mg/L**	**Oil and Grease mg/L**	**Total Iron µg/L**
Number of Cases	22	22	22	4	22
Mean	577	3.2	3.58	19	15691
Standard Deviation	299	5.4	5.83	20	8918
Tahoe Meadows Site 3-201- Two Years Data					
Parameter	**Turbidity NTU**	**Total Nitrogen mg/L**	**Total Phosphorus mg/L**	**Oil and Grease mg/L**	**Total Iron µg/L**
Number of Cases	25	25	25	4	25
Mean	487	6.0	2.62	32	27742
Standard Deviation	421	4.2	5.05	25	25784
PD (neg = 3-201 greater)	**30**	**-50**	**17**	**-62**	**-135**
Statistically Different	**No**	**Yes**	**No**	**No**	**Yes**

Comparison -- Assuming Equal Variance					
PD (neg = Statewide greater)	30.23	-50.45	16.59	-62.48	-135.13
Pooled Variance (S_p^2)	136214.154	23.0391994	29.45680162	515.801975	391678371.8
Standard Error of Mean (S_e)	107.889381	1.403140874	1.586574169	16.059296	5785.386523
Degrees of Freedom	45.00	45.00	45.00	6.00	45.00
Alpha	**0.1**	0.1	0.1	0.1	0.1
Observed t-value	0.8382	1.9478	0.6095	0.7955	2.0830
Critical t-value (alpha =)	1.6794	1.6794	1.6794	1.9432	1.6794
p-value (H_0: Highway mean = Site mean) [1]	0.4063	0.0577	0.5453	0.4566	0.0430
p-value (Bonferroni adjusted) [2]	1.0000	0.2885	1.0000	1.0000	0.2148
p-value (Dunn-Sidak adjusted) [3]	0.9263	0.2571	0.9806	0.9526	0.1971
Comparison -- Assuming Unequal Variance					
Degrees of Freedom	43.2009	39.3594	41.9079	5.7921	30.3280
Observed t-value	0.8564	1.9160	0.6038	0.7955	2.1926
Critical t-value (alpha =)	1.6811	1.6849	1.6829	2.0150	1.6973
p-value (H_0: Highway mean = Site mean) [1]	0.3965	0.0627	0.5493	0.4624	0.0362
p-value (Bonferroni adjusted) [2]	1.0000	0.3136	1.0000	1.0000	0.1811
p-value (Dunn-Sidak adjusted) [3]	0.9200	0.2767	0.9814	0.9551	0.1685

[1] If p-value less than alpha then H_0 should be rejected (i.e., there is evidence of a significant difference).

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (33).

[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^n where n is the number of comparison tests (33).

219 Stats

Run ID	**Turb**	**T_N**	**T_P**	**O&G**	**T_Fe**
n	**11**	**11**	**11**	**2**	**11**
Mean	**697.818182**	**2.58618182**	**0.63672727**		**17374.9091**
Standard Deviation	**349.809026**	**1.19326315**	**0.44056389**		**10619.7196**

201 Stats

Run ID	**Turb**	**T_N**	**T_P**	**O&G**	**T_Fe**
n	**14**	**14**	**14**	**2**	**14**
Mean	**556.328571**	**5.97208571**	**0.46842857**		**27935.8571**
Standard Deviation	**464.141788**	**4.09094031**	**0.39381944**		**23744.9138**

Comparison -- Assuming Equal Variance					
PD (neg = 201 greater)	20.28	-130.92	26.43	#DIV/0!	-60.78
Pooled Variance (S_p^2)	174966.189	10.078438	0.17205149	0	367715501
Standard Error of Mean (S_e)	168.533682	1.27910518	0.16712401	0	7726.19407
Degrees of Freedom	23	23	23	2	23
Alpha	**0.1**	0.1	0.1	0.1	0.1
Observed t-value	0.8395	2.6471	1.0070	#DIV/0!	1.3669
Critical t-value (alpha = 0.1)	1.7139	1.7139	1.7139	2.9200	1.7139
p-value (H_0: 219 mean = 201 mean) [1]	0.4098	0.0144	0.3244	#DIV/0!	0.1849
p-value (Bonferroni adjusted) [2]	1.0000	0.0720	1.0000	#DIV/0!	0.9243
p-value (Dunn-Sidak adjusted) [3]	0.9284	0.0700	0.8592	#DIV/0!	0.6401
Comparison -- Assuming Unequal Variance					
Degrees of Freedom	22.9784	15.7281	20.3331	#DIV/0!	18.8716
Observed t-value	0.8690	2.9416	0.9930	#DIV/0!	1.4858
Critical t-value (alpha = 0.1)	1.7171	1.7531	1.7247	#DIV/0!	1.7341
p-value (H_0: 219 mean = 201 mean) [1]	0.3942	0.0101	0.3326	#DIV/0!	0.1546
p-value (Bonferroni adjusted) [2]	1.0000	0.0505	1.0000	#DIV/0!	0.7732
p-value (Dunn-Sidak adjusted) [3]	0.9184	0.0495	0.8675	#DIV/0!	0.5683

[1] If p-value less than alpha then H_0 should be rejected (i.e., there is evidence of a significant difference).

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (5).

[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^n where n is the number of comparison tests (5).

219 Stats

Run ID	Turb	T_N	T_P	O&G	T_Fe
n	**11**	**11**	**11**	**2**	**11**
Mean	**697.818182**	**2.58618182**	**0.63672727**		**17374.9091**
Standard Deviation	**349.809026**	**1.19326315**	**0.44056389**		**10619.7196**

Remaining Site Stats

Run ID	Turb	T_N	T_P	O&G	T_Fe
n	**62**	**62**	**62**	**9**	**62**
Mean	**501.525806**	**3.45336129**	**0.38770968**	**21.0111111**	**16797.3387**
Standard Deviation	**362.510755**	**3.02543538**	**0.25849373**	**12.7169502**	**15229.12**

Comparison -- Assuming Equal Variance					
PD (neg = Remaining Sites greater)	28.13	-33.53	39.11	#DIV/0!	3.32
Pooled Variance (S_p^2)	130139.724	8.06461384	0.08474542	143.751841	215144738
Standard Error of Mean (S_e)	118.025048	0.92909694	0.09524175	9.37274493	4798.82162
Degrees of Freedom	71	71	71	9	71
Alpha	**0.1**	0.1	0.1	0.1	0.1
Observed t-value	1.6631	0.9334	2.6146	2.2417	0.1204
Critical t-value (alpha = 0.1)	1.6666	1.6666	1.6666	1.8331	1.6666
p-value (H_0: 219 mean = Remaining Sites mean) [1]	0.1007	0.3538	0.0109	0.0517	0.9045
p-value (Bonferroni adjusted) [2]	0.5035	1.0000	0.0545	0.2585	1.0000
p-value (Dunn-Sidak adjusted) [3]	0.4118	0.8873	0.0533	0.2331	1.0000
Comparison -- Assuming Unequal Variance					
Degrees of Freedom	14.0899	37.7652	11.2520	8.0000	18.2305
Observed t-value	1.7057	1.6474	1.8199	4.9566	0.1544
Critical t-value (alpha = 0.1)	1.7613	1.6871	1.7959	1.8595	1.7341
p-value (H_0: 219 mean = Remaining Sites mean) [1]	0.1101	0.1079	0.0961	0.0011	0.8790
p-value (Bonferroni adjusted) [2]	0.5507	0.5397	0.4803	0.0056	1.0000
p-value (Dunn-Sidak adjusted) [3]	0.4420	0.4351	0.3965	0.0055	1.0000

[1] If p-value less than alpha then H_0 should be rejected (i.e., there is evidence of a significant difference).

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (5).

[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^n where n is the number of comparison tests (5).

Statistical Summary-- Early Rain vs Snowmelt

	pH	EC	TSS	TDS	Hardness as CaCO3	DOC	TOC	COD	Turbidity
Early Rain									
Observations	17	17	17	17	17	17	17	10	14
Standard Deviation	1.23497873	346.504887	280.849218	300.282007	580.403247	153.748779	157.690234	637.819813	148.334922
Mean	7.2	292	318	257	159	67	73	465	210
Snowmelt									
Observations	75	75	75	75	75	75	75	70	75
Standard Deviation	0.58313259	4385.86398	885.859106	2282.23844	356.089696	13.8077037	25.4854229	473.101132	299.096627
Mean	7.1	3770	778	1987	140	14	21	437	471
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	17.6484084	78.9069842	81.3138883	84.5810093	18.8174622	16.0585422	16.1898972	10.4620616	36.5690388
Observed t-value	0.17258119	6.77523371	3.74358427	6.32534958	0.12575166	1.41417434	1.34013715	0.13114549	4.97148863
Critical t-value (alpha = NH3-N)	1.73960643	1.66462542	1.66388418	1.66319751	1.73406306	1.74588422	1.74588422	1.81246151	1.68829729
p-value	0.86501864	2.1024E-09	0.00033794	1.1713E-08	0.90132242	0.17647452	0.19892279	0.89826112	1.6391E-05
p-value (Bonferroni adjusted) 2	1	7.1482E-08	0.01148987	3.9823E-07	1	1	1	1	0.0005573
p-value (Dunn-Sidak adjusted) 3	1	7.1482E-08	0.01142603	3.9823E-07	1	0.99864163	0.9994692	1	0.00055715

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (33).

[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^{n} where n is the number of comparison tests (33).

Statistical Summary-- Early Rain vs Snowmelt

	Chloride	Oil & grease	NH3-N	Nitrate (as N)	Nitrite (as N)	TKN	Total Phosphorus	Dissolved Phosphorus	Diss. Orthophosphate
Early Rain									
Observations	16	6	5	16	5	17	17	6	17
Standard Deviation	119.678964	1.91520217	1.23992762	0.72023814	0	5.28339295	0.29495078	0.07162517	0.14673293
Mean	38	7	1.0	0.7	NA	4.6	0.47	0.12	0.17
Snowmelt									
Observations	75	10	69	75	70	75	75	70	75
Standard Deviation	1824.73036	7.00852257	0.81045573	0.25214963	0	2.09455945	3.61012511	0.1586997	0.03195443
Mean	1263	11	0.5	0.3	NA	2.1	1.49	0.09	0.05
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	77.8967531	12.2641307	4.25126957	15.792508	#DIV/0!	17.1556407	79.160557	9.96727539	16.345435
Observed t-value	5.75471736	1.94498388	0.84822665	2.07671754	#VALUE!	1.88952096	2.40739378	0.95997176	3.22996421
Critical t-value (alpha = NH3-N)	1.66488462	1.78228674	2.13184649	1.75305104	#DIV/0!	1.73960643	1.66437076	1.83311386	1.74588422
p-value	1.6778E-07	0.07558538	0.4440884	0.05542677	#VALUE!	0.07600053	0.01839914	0.36214781	0.00523717
p-value (Bonferroni adjusted) 2	5.7046E-06	1	1	1	#VALUE!	1	0.6255708	1	0.17806387
p-value (Dunn-Sidak adjusted) 3	5.7046E-06	0.93090107	1	0.8561163	#VALUE!	0.93194837	0.4681519	0.99999977	0.16350252

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (33).

[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^n where n is the number of comparison tests (33).

Statistical Summary-- Early Rain vs Snowmelt

	Total Arsenic	Total Cadmium	Total Chromium	Total Copper	Total Iron	Total Lead	Total Nickel	Total Zinc	Dissolved Arsenic
Early Rain									
Observations	17	17	17	17	16	17	17	17	17
Standard Deviation	4.87503609	0.36688058	7.35778616	24.7424751	4788.46759	13.0374186	10.0457209	111.732172	2.35048362
Mean	3.8	0.6	14	41	6996	24	14	202	1.9
Snowmelt									
Observations	75	75	75	75	75	75	75	75	75
Standard Deviation	3.05353414	0.92089131	18.3970438	39.8157893	18230.0211	44.2879462	12.0360678	313.809103	2.92841515
Mean	3.7	0.8	18	40	18468	36	15	282	1.1
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	18.9402664	65.7313945	65.4410046	37.5364169	86.2496601	85.0426172	27.4854376	73.9389444	28.487021
Observed t-value	0.06092888	1.34050925	1.4317593	0.15966293	4.73736924	2.01160737	0.13067291	1.77280789	1.27047387
Critical t-value (alpha = NH3-N)	1.73406306	1.66863629	1.66863629	1.68709448	1.6627655	1.66297923	1.70328804	1.66599648	1.70113026
p-value	0.95208727	0.18474641	0.15700387	0.87401503	8.474E-06	0.04742914	0.89700282	0.08043224	0.21437143
p-value (Bonferroni adjusted) 2	1	1	1	1	0.00028812	1	1	1	1
p-value (Dunn-Sidak adjusted) 3	1	0.99903628	0.99699344	1	0.00028807	0.80835041	1	0.94221075	0.99972623

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (33).

[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^n where n is the number of comparison tests (33).

Statistical Summary-- Early Rain vs Snowmelt

	Dissolved Cadmium	Dissolved Chromium	Dissolved Copper	Dissolved Iron	Dissolved Lead	Dissolved Nickel	Dissolved Zinc
Early Rain							
Observations	17	17	17	16	17	17	17
Standard Deviation	0.13571233	4.85830823	20.7736336	262.425804	2.02220276	7.24629531	62.5800936
Mean	0.2	6	19	276	1	6	70
Snowmelt							
Observations	75	75	75	75	75	75	75
Standard Deviation	0	7.26887248	5.28416734	543.273224	1.79242787	2.4650235	50.7902724
Mean	NA	4	6	378	1	3	49
Comparison -- Assuming Unequal Variance							
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	16	34.4632814	16.4720022	47.0940219	22.0568338	16.8478942	21.034424
Observed t-value	#VALUE!	1.40045134	2.45813984	1.13013417	0.3877482	1.65301184	1.26871513
Critical t-value (alpha = NH3-N)	1.74588422	1.69092345	1.74588422	1.67792678	1.71714419	1.74588422	1.72074351
p-value	#VALUE!	0.17043857	0.02574966	0.26415425	0.7019286	0.11781251	0.21842628
p-value (Bonferroni adjusted) 2	#VALUE!	1	0.87548838	1	1	1	1
p-value (Dunn-Sidak adjusted) 3	#VALUE!	0.99825879	0.58809291	0.99997044	1	0.98590483	0.9997704

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (33).

[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^n where n is the number of comparison tests (33).

Summary Statistics-- Influent vs Effluent Sites (Year 3)	pH	EC	TSS	TDS	Hardness as CaCO3	DOC	TOC	COD	Turbidity
Influent Stats 202/203									
Observations	25	25	25	25	25	25	25	25	25
Mean	7.0	2199	458	1178	72	13	17	326	389
Standard Deviation	0.7	2485	423	1405	96	11	11	239	210
Effluent Stats 222/223									
Observations	25	25	25	25	25	25	25	25	25
Mean	7.1	2073	352	1088	64	14	19	280	388
Standard Deviation	0.6	1985	252	1021	56	12	14	164	209
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	48.18945	46.29638	39.32332	44.19931	38.63378	48.27691	47.55285	42.81288	48.96809
Observed t-value	0.392546	0.199216	1.076647	0.258765	0.339741	0.271428	0.461543	0.798334	0.026964
Critical t-value (alpha = Ammonia)	1.677224	1.678659	1.684875	1.68023	1.685953	1.677224	1.677927	1.681951	1.677224
p-value	0.696393	0.842972	0.288253	0.797024	0.735922	0.787226	0.646538	0.429168	0.9786
p-value (Bonferroni adjusted) 2	1	1	1	1	1	1	1	1	1
p-value (Dunn-Sidak adjusted) 3	1	1	0.999987	1	1	1	1	1	1

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (33).

[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^n where n is the number of comparison tests (33).

Summary Statistics-- Influent vs Effluent Sites (Year 3)	Chloride	Ammonia	Nitrate	Nitrite	TKN	Total Phosphorus	Dissolved Phosphorus	Orthophosphate	Total Arsenic
Influent Stats 202/203									
Observations	25	25	25	25	25	25	25	25	25
Mean	647	0.4	0.2	NA	1.9	3.38	0.06	0.04	2.2
Standard Deviation	840	0.5	0.2	NA	1.1	5.48	0.06	0.04	1.0
Effluent Stats 222/223									
Observations	25	25	25	25	25	25	25	25	25
Mean	576	0.3	0.2	NA	1.6	3.66	0.07	0.05	2.2
Standard Deviation	617	0.3	0.1	NA	1.0	5.75	0.05	0.04	1.1
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	44.44889	40.32845	44.82583	#VALUE!	48.42574	48.96426	48.71477	48.44306	48.98374
Observed t-value	0.338775	0.883405	0.34174	#VALUE!	0.719793	0.175218	0.171758	0.238247	0.207122
Critical t-value (alpha = Ammonia)	1.68023	1.683852	1.68023	#VALUE!	1.677224	1.677224	1.677224	1.677224	1.677224
p-value	0.736391	0.382296	0.734173	#VALUE!	0.475143	0.861645	0.86435	0.812704	0.83679
p-value (Bonferroni adjusted) 2	1	1	1	#VALUE!	1	1	1	1	1
p-value (Dunn-Sidak adjusted) 3	1	1	1	#VALUE!	1	1	1	1	1

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (33).

[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^n where n is the number of comparison tests (33).

Summary Statistics-- Influent vs Effluent Sites (Year 3)	Total Cadmium	Total Chromium	Total Copper	Total Iron	Total Lead	Total Nickel	Total Zinc	Dissolved Arsenic	Dissolved Cadmium
Influent Stats 202/203									
Observations	25	25	25	26	25	25	25	25	25
Mean	0.5	12	31	10455	18	11	199	1.0	NA
Standard Deviation	0.4	7	15	7218	13	6	145	0.9	NA
Effluent Stats 222/223									
Observations	25	25	25	25	25	25	25	25	25
Mean	0.4	11	30	9377	15	10	246	1.0	0.2
Standard Deviation	0.2	7	12	6291	10	5	149	0.8	0.2
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	40.93928	48.99065	45.61012	49.31995	45.15213	48.16432	48.99409	48.0111	#VALUE!
Observed t-value	1.316451	0.353193	0.47485	0.569456	0.890459	0.650586	1.126223	0.242212	#VALUE!
Critical t-value (alpha = Ammonia)	1.683852	1.677224	1.679427	1.676551	1.679427	1.677224	1.677224	1.677224	#VALUE!
p-value	0.195517	0.72549	0.63719	0.571648	0.377956	0.518416	0.265671	0.809648	#VALUE!
p-value (Bonferroni adjusted) 2	1	1	1	1	1	1	1	1	#VALUE!
p-value (Dunn-Sidak adjusted) 3	0.999238	1	1	1	1	1	0.999962	1	#VALUE!

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (33).

[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^n where n is the number of comparison tests (33).

Summary Statistics-- Influent vs Effluent Sites (Year 3)	Dissolved Chromium	Dissolved Copper	Dissolved Iron	Dissolved Lead	Dissolved Nickel	Dissolved Zinc
Influent Stats 202/203						
Observations	25	25	25	25	25	25
Mean	2	6	216	NA	3	40
Standard Deviation	2	5	203	NA	1	46
Effluent Stats 222/223						
Observations	25	25	25	25	25	25
Mean	3	7	236	NA	3	98
Standard Deviation	2	7	191	NA	1	137
Comparison -- Assuming Unequal Variance						
alpha	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	48.86372	46.65994	48.70274	#VALUE!	47.21297	30.63979
Observed t-value	0.819048	0.570796	0.356455	#VALUE!	0.194235	1.994738
Critical t-value (alpha = Ammonia)	1.677224	1.678659	1.677224	#VALUE!	1.677927	1.69726
p-value	0.416807	0.570916	0.723062	#VALUE!	0.846829	0.055226
p-value (Bonferroni adjusted) 2	1	1	1	#VALUE!	1	1
p-value (Dunn-Sidak adjusted) 3	1	1	1	#VALUE!	1	0.846602

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (33).

[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^n where n is the number of comparison tests (33).

Summary Statistics-- Influent vs Effluent Sites (year 2)

	pH	EC	TSS	TDS	Hardness as CaCO3	DOC	TOC	COD	Turbidity
Influent Stats 202/203									
Observations	26	26	26	26	26	26	26	26	26
Mean	7.2	3429	645	1917	81	13	16	351	458
Standard Deviation	0.8	5404	531	3042	76	17	22	239	252
Effluent Stats 222/223									
Observations	26	26	26	26	26	26	26	26	26
Mean	7.0	3704	415	2053	83	15	18	286	396
Standard Deviation	0.7	5599	297	3203	75	16	19	181	226
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	50.93619	50.98734	39.37025	50.94801	50.9383	50.35331	49.60273	47.00147	50.16072
Observed t-value	0.872789	0.180018	1.925791	0.15689	0.102396	0.318799	0.298486	1.103783	0.933515
Critical t-value (alpha = Ammonia)	1.675905	1.675905	1.684875	1.675905	1.675905	1.675905	1.676551	1.677927	1.675905
p-value	0.38695	0.857866	0.061443	0.875964	0.918852	0.751207	0.766594	0.275307	0.355041
p-value (Bonferroni adjusted) 2	1	1	1	1	1	1	1	1	1
p-value (Dunn-Sidak adjusted) 3	1	1	0.876633	1	1	1	1	0.999976	0.999999

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (33).

[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^n where n is the number of comparison tests (33).

Summary Statistics-- Influent vs Effluent Sites (year 2)

	Chloride	Ammonia	Nitrate	Nitrite	TKN	Total Phosphorus	Dissolved Phosphorus	Orthophosphate	Total Arsenic
Influent Stats 202/203									
Observations	26	24	26	NA	26	26	24	26	26
Mean	1312	0.4	0.3	NA	1.9	0.37	0.09	0.07	4.0
Standard Deviation	2576	0.5	0.3	NA	1.5	0.25	0.03	0.03	2.1
Effluent Stats 222/223									
Observations	26	24	26	NA	26	26	24	26	26
Mean	1476	0.3	0.3	NA	1.8	0.35	0.07	0.06	3.2
Standard Deviation	2456	0.5	0.3	NA	1.5	0.30	0.03	0.04	1.8
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	50.76942	46.45072	49.39548	#VALUE!	50.83025	49.57258	46.0762	48.92278	48.99435
Observed t-value	0.23491	0.519379	0.118423	#VALUE!	0.139307	0.284551	1.245172	1.01326	1.405358
Critical t-value (alpha = Ammonia)	1.675905	1.678659	1.676551	#VALUE!	1.675905	1.676551	1.678659	1.677224	1.677224
p-value	0.815238	0.605987	0.906216	#VALUE!	0.889767	0.777187	0.219374	0.316016	0.166354
p-value (Bonferroni adjusted) 2	1	1	1	#VALUE!	1	1	1	1	1
p-value (Dunn-Sidak adjusted) 3	1	1	1	#VALUE!	1	1	0.999718	0.999996	0.997532

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (33).

[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^n where n is the number of comparison tests (33).

Summary Statistics-- Influent vs Effluent Sites (year 2)

	Total Cadmium	Total Chromium	Total Copper	Total Iron	Total Lead	Total Nickel	Total Zinc	Dissolved Arsenic	Dissolved Cadmium
Influent Stats 202/203									
Observations	26	26	26	26	26	26	26	26	26
Mean	0.6	16	40	14508	34	14	237	0.9	2.2
Standard Deviation	0.6	9	28	10531	25	7	115	0.8	0.5
Effluent Stats 222/223									
Observations	26	26	26	26	26	26	26	26	26
Mean	0.6	13	27	10319	25	11	292	0.8	NA
Standard Deviation	0.5	7	10	7285	15	5	305	0.7	NA
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	50.78693	48.83838	31.65036	44.79139	41.09385	46.93848	33.22472	49.61357	#VALUE!
Observed t-value	0.404198	1.59485	2.139301	1.667925	1.661298	1.669171	0.854349	0.449641	#VALUE!
Critical t-value (alpha = Ammonia)	1.675905	1.677224	1.695519	1.68023	1.682879	1.678659	1.69236	1.676551	#VALUE!
p-value	0.687791	0.11731	0.040394	0.102433	0.104283	0.101877	0.399072	0.654952	#VALUE!
p-value (Bonferroni adjusted) 2	1	1	1	1	1	1	1	1	#VALUE!
p-value (Dunn-Sidak adjusted) 3	1	0.983719	0.743516	0.971738	0.973598	0.971154	1	1	#VALUE!

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (33).

[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^n where n is the number of comparison tests (33).

Summary Statistics-- Influent vs Effluent Sites (year 2)

	Dissolved Chromium	Dissolved Copper	Dissolved Iron	Dissolved Lead	Dissolved Nickel	Dissolved Zinc
Influent Stats 202/203						
Observations	26	26	26	26	26	26
Mean	4	6	444	1	3	55
Standard Deviation	4	3	422	1	3	49
Effluent Stats 222/223						
Observations	26	26	26	26	26	26
Mean	3	7	397	NA	3	134
Standard Deviation	3	3	343	NA	3	329
Comparison -- Assuming Unequal Variance						
alpha	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	50.81848	49.83708	48.57635	#VALUE!	50.99993	27.15729
Observed t-value	0.172702	0.575472	0.437406	#VALUE!	0.132375	1.218596
Critical t-value (alpha = Ammonia)	1.675905	1.676551	1.677224	#VALUE!	1.675905	1.703288
p-value	0.863583	0.567605	0.663779	#VALUE!	0.895219	0.233538
p-value (Bonferroni adjusted) 2	1	1	1	#VALUE!	1	1
p-value (Dunn-Sidak adjusted) 3	1	1	1	#VALUE!	1	0.999846

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (33).

[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^n where n is the number of comparison tests (33).

Statistical Summary-- Influent vs Effluent Sites (Two years)	pH	EC	TSS	TDS	Hardness as CaCO3	DOC	TOC	COD	Turbidity
Influent Stats 202/203									
Observations	51	51	51	51	51	51	51	51	51
Mean	7.1	2826	553	1555	76.4	13.0	16.7	339	424
Effluent Stats 222/223									
Observations	51	51	51	51	51	51	51	51	51
Mean	7.0	2904	384	1580	73.8	14.2	18.4	283	392
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	100.2438	100.9973	79.52375	100.9823	96.132008	101	100.8491	91.34254	100.3023
Observed t-value	0.405514	0.09286	2.187367	0.053211	0.1764329	0.436073	0.517374	1.373077	0.736429
Critical t-value (alpha = Ammonia)	1.660235	1.660235	1.664371	1.660235	1.6608828	1.660235	1.660235	1.661772	1.660235
p-value	0.685966	0.926201	0.031673	0.95767	0.8603256	0.663724	0.606037	0.173102	0.463194
p-value (Bonferroni adjusted) 2	1	1	1	1	1	1	1	1	1
p-value (Dunn-Sidak adjusted) 3	1	1	0.654275	1	1	1	1	0.998112	1

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (33).

[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^n where n is the number of comparison tests (33).

Statistical Summary-- Influent vs Effluent Sites (Two years)	Chloride	Ammonia	Nitrate	Nitrite	TKN	Total Phosphorus	Dissolved Phosphorus	Orthophosphate	Total Arsenic
Influent Stats 202/203									
Observations	51	49	51	51	51	51	49	51	51
Mean	986	0.4	0.3	NA	1.9	1.85	0.08	0.061	3.1
Effluent Stats 222/223									
Observations	51	49	51	51	51	51	49	51	51
Mean	1035	0.3	0.3	NA	1.7	1.97	0.07	0.056	2.7
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	100.7065	91.63858	97.49345	#VALUE!	100.5397	100.8018	96.98448	100.9739	96.55119
Observed t-value	0.13047	0.927209	0.015641	#VALUE!	0.518696	0.149121	0.173328	0.681987	1.195343
Critical t-value (alpha = Ammonia)	1.660235	1.661772	1.660715	#VALUE!	1.660235	1.660235	1.660883	1.660235	1.660883
p-value	0.896456	0.356271	0.987553	#VALUE!	0.605119	0.881759	0.862759	0.496824	0.234898
p-value (Bonferroni adjusted) 2	1	1	1	#VALUE!	1	1	1	1	1
p-value (Dunn-Sidak adjusted) 3	1	1	1	#VALUE!	1	1	1	1	0.999855

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (33).

[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^n where n is the number of comparison tests (33).

Statistical Summary-- Influent vs Effluent Sites (Two years)	Total Cadmium	Total Chromium	Total Copper	Total Iron	Total Lead	Total Nickel	Total Zinc	Dissolved Arsenic	Dissolved Cadmium
Influent Stats 202/203									
Observations	51	51	51	52	51	51	51	51	51
Mean	0.6	14	36	12482	26	13	219	0.9	NA
Effluent Stats 222/223									
Observations	51	51	51	51	51	51	51	51	51
Mean	0.5	12	28	9857	20	11	269	0.9	0.2
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	99.39439	98.62191	72.36387	93.96001	84.20689	95.17772	80.92596	99.20528	#VALUE!
Observed t-value	1.017397	1.431117	2.061211	1.664378	1.768687	1.682062	1.397164	0.537296	#VALUE!
Critical t-value (alpha = Ammonia)	1.660392	1.660551	1.666294	1.661404	1.663198	1.661051	1.664125	1.660392	#VALUE!
p-value	0.311445	0.155578	0.042895	0.099403	0.080576	0.095841	0.166228	0.592269	#VALUE!
p-value (Bonferroni adjusted) 2	1	1	1	1	1	1	1	1	#VALUE!
p-value (Dunn-Sidak adjusted) 3	0.999996	0.996229	0.764676	0.968413	0.93748	0.964019	0.997519	1	#VALUE!

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (33).

[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^{n} where n is the number of comparison tests (33).

Statistical Summary-- Influent vs Effluent Sites (Two years)	Dissolved Chromium	Dissolved Copper	Dissolved Iron	Dissolved Lead	Dissolved Nickel	Dissolved Zinc
Influent Stats 202/203						
Observations	51	51	51	51	51	51
Mean	3	6	333	1	3	48
Effluent Stats 222/223						
Observations	51	51	51	51	51	51
Mean	3	7	318	NA	3	116
Comparison -- Assuming Unequal Variance						
alpha	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	100.357	98.64609	97.09855	#VALUE!	100.9417	54.96194
Observed t-value	0.187864	0.796361	0.243975	#VALUE!	0.009498	2.032698
Critical t-value (alpha = Ammonia)	1.660235	1.660551	1.660715	#VALUE!	1.660235	1.673566
p-value	0.851364	0.427747	0.807765	#VALUE!	0.99244	0.047012
p-value (Bonferroni adjusted) 2	1	1	1	#VALUE!	1	1
p-value (Dunn-Sidak adjusted) 3	1	1	1	#VALUE!	1	0.795883

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (33).

[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^n where n is the number of comparison tests (33).

Yearly Precipitation Comparisons

Year 1 vs Year 2 Comparison	pH	EC	TSS	TDS	Hardness as CaCO3	Turbidity	Chloride	Nitrate (as N)	Nitrite (as N)
Year 1 Stats									
Observations	6	6	8	8	4	2	8	8	NA
Mean	6.08	50.17	9.28	28.81	NA	NA	8.92	0.14	NA
Standard Deviation	0.76	75.51	10.37	39.42	NA	NA	18.37	0.12	NA
Year 2 Stats									
Observations	25	25	3	3	21	4	23	25	18
Mean	6.8	35	22.8	NA	NA	2.4	7.4	0.21	NA
Standard Deviation	1.0	161	25.8	NA	NA	1.7	42	0.10	NA
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	9.43168821	17.6502379	3.36932774	#VALUE!	#VALUE!	#VALUE!	27.7152623	10.1756609	#VALUE!
Observed t-value	13.8283111	2.48554077	1.07704884	#VALUE!	#VALUE!	#VALUE!	3.03393637	0.91640233	#VALUE!
Critical t-value (alpha = TKN)	1.83311386	1.73960643	2.35336302	#VALUE!	#VALUE!	#VALUE!	1.70328804	1.81246151	#VALUE!
p-value	2.2814E-07	0.02363649	0.36035353	#VALUE!	#VALUE!	#VALUE!	0.00528617	0.38102477	#VALUE!
p-value (Bonferroni adjusted) 2	5.7036E-06	0.59091233	1	#VALUE!	#VALUE!	#VALUE!	0.13215414	1	#VALUE!
p-value (Dunn-Sidak adjusted) 3	5.7036E-06	0.450094	0.99998592	#VALUE!	#VALUE!	#VALUE!	0.12410116	0.99999381	#VALUE!

Year 1 vs Year 3 Comparison	pH	EC	TSS	TDS	Hardness as CaCO3	Turbidity	Chloride	Nitrate (as N)	Nitrite (as N)
Year 1 Stats									
Observations	6	6	8	8	4	2	8	8	NA
Mean	6.08	50.17	9.28	28.81	NA	NA	8.92	0.14	NA
Standard Deviation	0.76	75.51	10.37	39.42	NA	NA	18.37	0.12	NA
Year 3 Stats									
Observations	23	23	NA	NA	21	NA	23	22	22
Mean	5.67	12.77	NA	NA	2.85	NA	1.87	0.11	NA
Standard Deviation	0.73	16.58	NA	NA	8.04	NA	2.89	0.05	NA
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	7.55869779	5.12641012	#VALUE!	#VALUE!	#VALUE!	#VALUE!	7.12106127	7.90501801	#VALUE!
Observed t-value	15.4080792	1.08260761	#VALUE!	#VALUE!	#VALUE!	#VALUE!	0.9246892	2.07355608	#VALUE!
Critical t-value (alpha = TKN)	1.89457751	2.01504918	#VALUE!	#VALUE!	#VALUE!	#VALUE!	1.89457751	1.89457751	#VALUE!
p-value	1.1702E-06	0.32840691	#VALUE!	#VALUE!	#VALUE!	#VALUE!	0.38589501	0.07681244	#VALUE!
p-value (Bonferroni adjusted) 2	2.9255E-05	1	#VALUE!	#VALUE!	#VALUE!	#VALUE!	1	1	#VALUE!
p-value (Dunn-Sidak adjusted) 3	2.9255E-05	0.99995239	#VALUE!	#VALUE!	#VALUE!	#VALUE!	0.99999492	0.86440345	#VALUE!

Year 2 vs Year 3 Comparison	pH	EC	TSS	TDS	Hardness as CaCO3	Turbidity	Chloride	Nitrate (as N)	Nitrite (as N)
Year 2 Stats									
Observations	25	25	3	3	21	4	23	25	18
Mean	6.8	35	22.8	NA	NA	2.4	7.4	0.21	NA
Standard Deviation	1.0	161	25.8	NA	NA	1.7	42	0.10	NA
Year 3 Stats									
Observations	23	23	NA	NA	21	NA	23	22	22
Mean	5.67	12.77	NA	NA	2.85	NA	1.87	0.11	NA
Standard Deviation	0.73	16.58	NA	NA	8.04	NA	2.89	0.05	NA
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	44.6705701	24.5535992	#VALUE!	#VALUE!	#VALUE!	#VALUE!	22.2085966	36.8284727	#VALUE!
Observed t-value	24.405019	0.55930609	#VALUE!	#VALUE!	#VALUE!	#VALUE!	0.51356671	7.38962222	#VALUE!
Critical t-value (alpha = TKN)	1.68023007	1.71088232	#VALUE!	#VALUE!	#VALUE!	#VALUE!	1.71714419	1.68829729	#VALUE!
p-value	3.2993E-27	0.58113529	#VALUE!	#VALUE!	#VALUE!	#VALUE!	0.61267448	1.0187E-08	#VALUE!
p-value (Bonferroni adjusted) 2	8.2484E-26	1	#VALUE!	#VALUE!	#VALUE!	#VALUE!	1	2.5468E-07	#VALUE!
p-value (Dunn-Sidak adjusted) 3	0	1	#VALUE!	#VALUE!	#VALUE!	#VALUE!	1	2.5468E-07	#VALUE!

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (33).
[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^n where n is the number of comparison tests (33).

Yearly Precipitation Comparisons

Year 1 vs Year 2 Comparison	TKN	Total Phosphorus	Dissolved Phosphorus	Diss. Orthophosphate	Total Arsenic	Total Cadmium	Total Chromium	Total Copper	Total Iron
Year 1 Stats									
Observations	4	4	NA	NA	8	8	8	8	4
Mean	0.30	NA	NA	NA	NA	NA	6.00	6.67	1151.25
Standard Deviation	0.42	NA	NA	NA	NA	NA	7.72	4.64	1405.33
Year 2 Stats									
Observations	18	23	5	23	25	25	25	25	25
Mean	NA	NA	0.08	NA	NA	NA	NA	3.09	199.07
Standard Deviation	NA	NA	0.08	NA	NA	NA	NA	2.5	279
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	8.3437312	3.03794257
Observed t-value	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	2.43314212	1.23745316
Critical t-value (alpha = TKN)	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	1.85954832	2.35336302
p-value	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	0.04100078	0.30394466
p-value (Bonferroni adjusted) 2	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	1	1
p-value (Dunn-Sidak adjusted) 3	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	0.64887934	0.99988356

Year 1 vs Year 3 Comparison	TKN	Total Phosphorus	Dissolved Phosphorus	Diss. Orthophosphate	Total Arsenic	Total Cadmium	Total Chromium	Total Copper	Total Iron
Year 1 Stats									
Observations	4	4	NA	NA	8	8	8	8	4
Mean	0.30	NA	NA	NA	NA	NA	6.00	6.67	1151.25
Standard Deviation	0.42	NA	NA	NA	NA	NA	7.72	4.64	1405.33
Year 3 Stats									
Observations	23	22	NA	NA	23	NA	23	23	23
Mean	0.26	NA	NA	NA	NA	NA	1.38	2.35	177.22
Standard Deviation	0.13	NA	NA	NA	NA	NA	6.10	6.31	415.22
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	3.10413334	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	10.2234582	16.7941881	3.09169209
Observed t-value	0.82651937	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	0.03124652	0.17295459	1.03962296
Critical t-value (alpha = TKN)	2.35336302	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	1.81246151	1.74588422	2.35336302
p-value	0.46911123	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	0.97568778	0.86485614	0.37494064
p-value (Bonferroni adjusted) 2	1	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	1	1	1
p-value (Dunn-Sidak adjusted) 3	0.99999987	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	1	1	0.99999209

Year 2 vs Year 3 Comparison	TKN	Total Phosphorus	Dissolved Phosphorus	Diss. Orthophosphate	Total Arsenic	Total Cadmium	Total Chromium	Total Copper	Total Iron
Year 2 Stats									
Observations	18	23	5	23	25	25	25	25	25
Mean	NA	NA	0.08	NA	NA	NA	NA	3.09	199.07
Standard Deviation	NA	NA	0.08	NA	NA	NA	NA	2.5	279
Year 3 Stats									
Observations	23	22	NA	NA	23	NA	23	23	23
Mean	0.26	NA	NA	NA	NA	NA	1.38	2.35	177.22
Standard Deviation	0.13	NA	NA	NA	NA	NA	6.10	6.31	415.22
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	29.5417	39.5380011
Observed t-value	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	2.28587816	2.09848741
Critical t-value (alpha = TKN)	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	1.6991271	1.68487531
p-value	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	0.02975498	0.04238844
p-value (Bonferroni adjusted) 2	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	0.74387444	1
p-value (Dunn-Sidak adjusted) 3	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	0.53006739	0.66136295

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (33).
[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^n where n is the number of comparison tests (33).

Yearly Precipitation Comparisons

Year 1 vs Year 2 Comparison	Total Lead	Total Nickel	Total Zinc	Dissolved Chromium	Dissolved Copper	Dissolved Iron	Dissolved Zinc
Year 1 Stats							
Observations	8	8	8	8	8	4	8
Mean	2.33	NA	92.19	NA	2.92	NA	52.26
Standard Deviation	1.18	NA	58.04	NA	2.41	NA	10.95
Year 2 Stats							
Observations	25	25	25	1	1	2	1
Mean	NA	NA	53	NA	NA	NA	NA
Standard Deviation	NA	NA	106	NA	NA	NA	NA
Comparison -- Assuming Unequal Variance							
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	#VALUE!	#VALUE!	22.6822375	#VALUE!	#VALUE!	#VALUE!	#VALUE!
Observed t-value	#VALUE!	#VALUE!	0.46814768	#VALUE!	#VALUE!	#VALUE!	#VALUE!
Critical t-value (alpha = TKN)	#VALUE!	#VALUE!	1.71714419	#VALUE!	#VALUE!	#VALUE!	#VALUE!
p-value	#VALUE!	#VALUE!	0.64428385	#VALUE!	#VALUE!	#VALUE!	#VALUE!
p-value (Bonferroni adjusted) 2	#VALUE!	#VALUE!	1	#VALUE!	#VALUE!	#VALUE!	#VALUE!
p-value (Dunn-Sidak adjusted) 3	#VALUE!	#VALUE!	1	#VALUE!	#VALUE!	#VALUE!	#VALUE!

Year 1 vs Year 3 Comparison	Total Lead	Total Nickel	Total Zinc	Dissolved Chromium	Dissolved Copper	Dissolved Iron	Dissolved Zinc
Year 1 Stats							
Observations	8	8	8	8	8	4	8
Mean	2.33	NA	92.19	NA	2.92	NA	52.26
Standard Deviation	1.18	NA	58.04	NA	2.41	NA	10.95
Year 3 Stats							
Observations	23	NA	23	NA	NA	NA	NA
Mean	NA	NA	58.46	NA	NA	NA	NA
Standard Deviation	NA	NA	74.14	NA	NA	NA	NA
Comparison -- Assuming Unequal Variance							
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	#VALUE!	#VALUE!	15.6660078	#VALUE!	#VALUE!	#VALUE!	#VALUE!
Observed t-value	#VALUE!	#VALUE!	0.70227024	#VALUE!	#VALUE!	#VALUE!	#VALUE!
Critical t-value (alpha = TKN)	#VALUE!	#VALUE!	1.75305104	#VALUE!	#VALUE!	#VALUE!	#VALUE!
p-value	#VALUE!	#VALUE!	0.4932652	#VALUE!	#VALUE!	#VALUE!	#VALUE!
p-value (Bonferroni adjusted) 2	#VALUE!	#VALUE!	1	#VALUE!	#VALUE!	#VALUE!	#VALUE!
p-value (Dunn-Sidak adjusted) 3	#VALUE!	#VALUE!	0.99999996	#VALUE!	#VALUE!	#VALUE!	#VALUE!

Year 2 vs Year 3 Comparison	Total Lead	Total Nickel	Total Zinc	Dissolved Chromium	Dissolved Copper	Dissolved Iron	Dissolved Zinc
Year 2 Stats							
Observations	25	25	25	1	1	2	1
Mean	NA	NA	53	NA	NA	NA	NA
Standard Deviation	NA	NA	106	NA	NA	NA	NA
Year 3 Stats							
Observations	23	NA	23	NA	NA	NA	NA
Mean	NA	NA	58.46	NA	NA	NA	NA
Standard Deviation	NA	NA	74.14	NA	NA	NA	NA
Comparison -- Assuming Unequal Variance							
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	#VALUE!	#VALUE!	43.4822504	#VALUE!	#VALUE!	#VALUE!	#VALUE!
Observed t-value	#VALUE!	#VALUE!	0.80814565	#VALUE!	#VALUE!	#VALUE!	#VALUE!
Critical t-value (alpha = TKN)	#VALUE!	#VALUE!	1.68107135	#VALUE!	#VALUE!	#VALUE!	#VALUE!
p-value	#VALUE!	#VALUE!	0.42345526	#VALUE!	#VALUE!	#VALUE!	#VALUE!
p-value (Bonferroni adjusted) 2	#VALUE!	#VALUE!	1	#VALUE!	#VALUE!	#VALUE!	#VALUE!
p-value (Dunn-Sidak adjusted) 3	#VALUE!	#VALUE!	0.99999895	#VALUE!	#VALUE!	#VALUE!	#VALUE!

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (33).
[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^n where n is the number of comparison tests (33).

Statistical Summary Influent vs Effluent (2002-2003)

Results for 202 vs 222	EC	pH	Hardness	TOC	DOC	COD	TDS	TSS	Turbidity
Influent Stats 202									
Oberservations	14	14	14	14	14	14	14	14	14
Mean	2535.714	7.25356	92.92857	19	13.27143	412.5	1380.714	540	423.5714
Standard Deviation	33.092455	0.694135	123.2761	9.617098	8.632847	268.0133	1711.591	508.4497	221.6593
Effluent Stats 222									
Oberservations	14	14	14	14	14	14	14	14	14
Mean	2249	7.382857	80.21429	21.28571	14.54286	322.8571	1170.714	350	427.1429
Standard Deviation	1850.611	0.496284	57.55906	10.94399	9.353949	165.5021	962.5678	227.4691	213.9103
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	#VALUE!	23.89076	18.47086	26.77554	26.95006	21.85397	20.60922	18.05306	26.85822
Observed t-value	#VALUE!	0.566957	0.349665	0.587019	0.373739	1.064818	0.400138	1.276299	0.043381
Critical t-value (alpha = Chloride)	#VALUE!	1.71387	1.734063	1.705616	1.705616	1.720744	1.724718	1.734063	1.705616
p-value	#VALUE!	0.576235	0.730648	0.562254	0.711629	0.299049	0.693296	0.218072	0.96573
p-value (Bonferroni adjusted) 2	#VALUE!	1	1	1	1	1	1	1	1
p-value (Dunn-Sidak adjusted) 3	#VALUE!	1	1	1	1	0.999992	1	0.999702	1

Results for 203 vs 223	EC	pH	Hardness	TOC	DOC	COD	TDS	TSS	Turbidity
Influent Stats 203									
Oberservations	11	11	11	11	11	11	11	11	11
Mean	1771	6.692727	45.05455	15.22727	12.0644	216.3636	919.4545	353.6364	345.4545
Standard Deviation	1920.196	0.410798	36.69291	15.01663	15.15681	141.8943	981.2084	280.2337	200.6185
Effluent Stats 223									
Oberservations	11	11	11	11	11	11	11	11	11
Mean	1847.909	6.658182	44.07273	16.08182	12.47489	225.2727	982.4545	354.5455	337.2727
Standard Deviation	2275.852	0.470006	52.06775	19.93551	18.65719	157.2615	1163.575	301.7891	205.4594
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	20.69782	20.8447	19.38073	19.95675	20.49229	20.93687	20.69523	20.9854	20.9881
Observed t-value	0.085663	0.183545	0.051121	0.113557	0.056638	0.1395	0.137279	0.007321	0.094498
Critical t-value (alpha = Chloride)	1.724718	1.724718	1.729131	1.729131	1.724718	1.724718	1.724718	1.724718	1.724718
p-value	0.932586	0.856218	0.959762	0.91078	0.955396	0.89045	0.892183	0.994231	0.925654
p-value (Bonferroni adjusted) 2	1	1	1	1	1	1	1	1	1
p-value (Dunn-Sidak adjusted) 3	1	1	1	1	1	1	1	1	1

[1] If p-value less than alpha then H_0 should be rejected (i.e., there is evidence of a significant difference).

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (33).

[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^n where n is the number of comparison tests (33).

Statistical Summary Influent vs Effluent (2002-2003)

Results for 202 vs 222	Chloride	Ammonia	Nitrite	Nitrate	TKN	Total Phosphorus	Dissolved Phosphorus	Orthophosphate	Total Arsenic
Influent Stats 202									
Oberservations	14	14	14	14	14	14	14	14	14
Mean	708.2143	0.482645	NA	0.214162	1.877143	3.937	0.073864	0.049862	2.602214
Standard Deviation	1028.503	0.534212	NA	0.230409	0.905144	6.295298	0.047373	0.044359	1.043003
Effluent Stats 222									
Oberservations	14	14	14	14	14	14	14	14	14
Mean	562.6214	0.346342	NA	0.211591	1.574286	4.120286	0.079119	0.05208	2.414071
Standard Deviation	496.5224	0.247412	NA	0.131748	0.704904	6.264683	0.035971	0.036067	0.992246
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	18.81661	18.38932	#VALUE!	20.82348	25.00867	26.95259	24.69044	25.51518	26.79744
Observed t-value	0.476987	0.866281	#VALUE!	0.036249	0.987745	0.077218	0.330539	0.145185	0.489006
Critical t-value (alpha = Chloride)	1.734063	1.734063	#VALUE!	1.724718	1.70814	1.705616	1.710882	1.70814	1.705616
p-value	0.639111	0.397736	#VALUE!	0.971443	0.332742	0.939041	0.743861	0.885729	0.628937
p-value (Bonferroni adjusted) 2	1	1	#VALUE!	1	1	1	1	1	1
p-value (Dunn-Sidak adjusted) 3	1	1	#VALUE!	1	0.999998	1	1	1	1

Results for 203 vs 223	Chloride	Ammonia	Nitrite	Nitrate	TKN	Total Phosphorus	Dissolved Phosphorus	Orthophosphate	Total Arsenic
Influent Stats 203									
Oberservations	11	11	11	11	11	11	11	11	11
Mean	568.3636	0.352456	NA	0.152023	1.818182	2.671	0.052407	0.031695	1.747667
Standard Deviation	660.3373	0.516445	NA	0.171145	1.397697	4.729885	0.078305	0.057996	0.859675
Effluent Stats 223									
Oberservations	11	11	11	11	11	11	11	11	11
Mean	593.1273	0.29284	NA	0.188288	1.710909	3.070545	0.057228	0.037296	1.855
Standard Deviation	784.7867	0.39154	NA	0.18405	1.376861	5.537831	0.074865	0.0526	1.186854
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	20.68458	19.07147	#VALUE!	20.98691	20.91774	20.75382	20.82138	20.5668	19.62736
Observed t-value	0.080079	0.305089	#VALUE!	0.47857	0.18134	0.181955	0.147595	0.23725	0.242911
Critical t-value (alpha = Chloride)	1.724718	1.729131	#VALUE!	1.724718	1.724718	1.724718	1.724718	1.724718	1.729131
p-value	0.936971	0.763615	#VALUE!	0.637435	0.857926	0.85745	0.88414	0.814876	0.810677
p-value (Bonferroni adjusted) 2	1	1	#VALUE!	1	1	1	1	1	1
p-value (Dunn-Sidak adjusted) 3	1	1	#VALUE!	1	1	1	1	1	1

[1] If p-value less than alpha then H_0 should be rejected (i.e., there is evidence of a significant difference).

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (33).

[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^n where n is the number of comparison tests (33).

Statistical Summary Influent vs Effluent (2002-2003)

Results for 202 vs 222	Total Cadmium	Total Chromium	Total Copper	Total Iron	Total Nickel	Total Lead	Total Zinc	Dissolved Arsenic	Dissolved Cadmium
Influent Stats 202									
Oberservations	14	14	14	14	14	14	14	14	14
Mean	0.715714	10.49714	33.89286	11364.29	11.02429	18.82857	257.0286	1.374739	0.132127
Standard Deviation	0.385568	5.561906	16.19886	7479.457	5.373954	13.70798	164.4026	0.913556	0.105218
Effluent Stats 222									
Oberservations	14	14	14	14	14	14	14	14	14
Mean	0.527571	9.237143	28.12143	8847.143	9.226429	14.26357	300.0714	1.157761	0.18604
Standard Deviation	0.224299	3.908802	8.608011	4533.9	3.341298	7.715784	173.3866	0.888907	0.201659
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	21.04917	23.65454	19.90472	21.60084	21.94817	20.62029	26.99298	26.88839	20.98521
Observed t-value	1.578174	0.693506	1.177211	1.076826	1.063047	1.085846	0.674032	0.636925	0.886858
Critical t-value (alpha = Chloride)	1.720744	1.71387	1.729131	1.720744	1.720744	1.724718	1.705616	1.705616	1.724718
p-value	0.129471	0.494937	0.253648	0.293774	0.299833	0.290462	0.50624	0.529742	0.385696
p-value (Bonferroni adjusted) 2	1	1	1	1	1	1	1	1	1
p-value (Dunn-Sidak adjusted) 3	0.9897	1	0.999936	0.99999	0.999992	0.999988	1	1	1

Results for 203 vs 223	Total Cadmium	Total Chromium	Total Copper	Total Iron	Total Nickel	Total Lead	Total Zinc	Dissolved Arsenic	Dissolved Cadmium
Influent Stats 203									
Oberservations	11	11	11	11	11	11	11	11	11
Mean	0.238589	13.94091	28.37273	10176.36	6.549525	17.08364	125.5727	0.510306	NA
Standard Deviation	0.215782	9.292277	14.5065	7119.69	0.607	13.04308	63.72245	0.613074	NA
Effluent Stats 223									
Oberservations	11	11	11	11	11	11	11	11	11
Mean	0.170541	13.88636	31.54545	10050.91	10.82727	16.31818	177.3273	0.713881	NA
Standard Deviation	0.235455	9.766344	14.50593	8299.915	6.814606	12.49241	84.20285	0.467083	NA
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	20.96736	20.99991	20.9523	20.77234	11.17447	20.82816	19.99384	19.12143	#VALUE!
Observed t-value	0.706662	0.01342	0.512932	0.03805	2.073742	0.140568	1.625528	0.876028	#VALUE!
Critical t-value (alpha = Chloride)	1.724718	1.724718	1.724718	1.724718	1.795884	1.724718	1.729131	1.729131	#VALUE!
p-value	0.487929	0.989426	0.613618	0.970025	0.062369	0.889618	0.120523	0.391956	#VALUE!
p-value (Bonferroni adjusted) 2	1	1	1	1	1	1	1	1	#VALUE!
p-value (Dunn-Sidak adjusted) 3	1	1	1	1	0.880585	1	0.985565	1	#VALUE!

[1] If p-value less than alpha then H_0 should be rejected (i.e., there is evidence of a significant difference).

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (33).

[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^n where n is the number of comparison tests (33).

Statistical Summary Influent vs Effluent (2002-2003)

Results for 202 vs 222	Dissolved Chromium	Dissolved Copper	Dissolved Iron	Dissolved Nickel	Dissolved Lead	Dissolved Zinc
Influent Stats 202						
Oberservations	14	14	14	14	14	14
Mean	2.325384	5.956429	236.5041	2.459943	NA	38.63571
Standard Deviation	1.888486	4.212118	296.6595	1.358536	NA	35.94714
Effluent Stats 222						
Oberservations	14	14	14	14	14	14
Mean	2.701517	5.922593	200.8857	2.448912	NA	105.6789
Standard Deviation	1.819321	3.449304	200.5801	1.374701	NA	182.5751
Comparison -- Assuming Unequal Variance						
alpha	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	26.85144	25.59408	23.11673	26.98283	#VALUE!	15.08206
Observed t-value	0.536696	0.023254	0.372158	0.021355	#VALUE!	1.348088
Critical t-value (alpha = Chloride)	1.705616	1.70814	1.71387	1.705616	#VALUE!	1.753051
p-value	0.596041	0.981632	0.713182	0.983126	#VALUE!	0.197637
p-value (Bonferroni adjusted) 2	1	1	1	1	#VALUE!	1
p-value (Dunn-Sidak adjusted) 3	1	1	1	1	#VALUE!	0.999301

Results for 203 vs 223	Dissolved Chromium	Dissolved Copper	Dissolved Iron	Dissolved Nickel	Dissolved Lead	Dissolved Zinc
Influent Stats 203						
Oberservations	11	11	11	11	11	11
Mean	2.009755	6.808161	240.5159	2.723645	NA	41.50364
Standard Deviation	1.245003	7.684995	103.2492	0.948227	NA	65.85038
Effluent Stats 223						
Oberservations	11	11	11	11	11	11
Mean	2.335707	9.175455	286.1879	2.860071	NA	87.48182
Standard Deviation	1.182683	10.36521	188.8681	1.630433	NA	97.12872
Comparison -- Assuming Unequal Variance						
alpha	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	20.79602	19.82708	16.89715	17.49764	#VALUE!	19.01669
Observed t-value	0.629548	0.608479	0.703732	0.239897	#VALUE!	1.299502
Critical t-value (alpha = Chloride)	1.724718	1.729131	1.745884	1.739606	#VALUE!	1.729131
p-value	0.536116	0.550076	0.491715	0.813279	#VALUE!	0.209319
p-value (Bonferroni adjusted) 2	1	1	1	1	#VALUE!	1
p-value (Dunn-Sidak adjusted) 3	1	1	1	1	#VALUE!	0.999569

[1] If p-value less than alpha then H_0 should be rejected (i.e., there is evidence of a significant difference).

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (33).

[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^n where n is the number of comparison tests (33).

Statistical Summary Influent vs Effluent 2001-2002

Results for 202 vs 222	EC	pH	Hardness	TOC	DOC	COD	TDS	TSS	Turbidity
Influent Stats 202									
Oberservations	13	13	13	13	13	13	13	13	13
Mean	2766.154	7.437692	95.53846	22.3923	17.46154	420	1511.538	674.3538	500
Standard Deviation	3406.078	0.923754	64.94391	29.39231	23.58925	264.4131	1798.039	610.9566	312.7976
Effluent Stats 222									
Oberservations	13	13	13	13	13	13	13	13	13
Mean	2927.69	7.321538	99.53846	22.86923	18.26923	367.6923	1574.615	488.4615	466.9231
Standard Deviation	2930.208	0.881616	59.58657	24.0007	19.69955	208.4373	1595.809	332.4331	264.8485
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	24.13324	24.81338	24.60941	23.63722	23.86138	23.25765	24.38447	18.64854	23.99133
Observed t-value	0.129628	0.327971	0.163632	0.045316	0.094757	0.560153	0.094601	0.963628	0.290977
Critical t-value (alpha = Chloride)	1.710882	1.710882	1.710882	1.71387	1.71387	1.71387	1.710882	1.734063	1.71387
p-value	0.897941	0.745778	0.871391	0.964246	0.925329	0.580791	0.925417	0.348001	0.773677
p-value (Bonferroni adjusted) 2	1	1	1	1	1	1	1	1	1
p-value (Dunn-Sidak adjusted) 3	1	1	1	1	1	1	1	0.999999	1

Results for 203 vs 223

Influent Stats 203	EC	pH	Hardness	TOC	DOC	COD	TDS	TSS	Turbidity
Oberservations	13	13	13	13	13	13	13	13	13
Mean	4092	6.924615	66.15385	9.693275	9.04793	281.1538	2322.462	615.8462	416.0769
Standard Deviation	7074.355	0.438097	88.55966	8.372115	7.341335	205.6367	4017.996	489.1777	194.8786
Effluent Stats 223									
Oberservations	13	13	13	13	13	13	13	13	13
Mean	4479.923	6.680769	66.46154	12.62308	11.11387	203.9231	2531.231	341.8461	325.2308
Standard Deviation	7482.591	0.402639	86.51812	11.77467	10.78332	97.57661	4305.585	253.4108	166.397
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	24.99356	24.61962	24.90001	23.07735	22.58697	17.20696	24.97893	18.10149	24.06733
Observed t-value	0.135829	1.477601	0.008961	0.731159	0.571005	1.223391	0.127816	1.793224	1.278231
Critical t-value (alpha = Chloride)	1.710882	1.710882	1.710882	1.71387	1.717144	1.739606	1.710882	1.734063	1.710882
p-value	0.89309	0.152518	0.992925	0.472066	0.573783	0.23787	0.89936	0.089757	0.213393
p-value (Bonferroni adjusted) 2	1	1	1	1	1	1	1	1	1
p-value (Dunn-Sidak adjusted) 3	1	0.995751	1	1	1	0.999872	1	0.955106	0.999637

Statistical Summary Influent vs Effluent 2001-

Results for 202 vs 222	Chloride	Ammonia	Nitrite	Nitrate	TKN	Total Phosphorus	Dissolved Phosphorus	Orthophosphate	Total Arsenic
Influent Stats 202									
Oberservations	13	13	13	13	13	13	12	13	13
Mean	938.4077	0.340699	NA	0.320769	1.794133	0.436154	0.08575	0.073923	4.80538
Standard Deviation	1249.422	0.22854	NA	0.307188	1.255819	0.31756	0.030062	0.035512	2.42858
Effluent Stats 222									
Oberservations	13	12	13	13	13	13	12	13	13
Mean	1004.777	0.250857	NA	0.349231	1.715181	0.446462	0.071083	0.06318	3.759231
Standard Deviation	1152.407	0.215689	NA	0.275158	1.043757	0.392983	0.035115	0.041309	1.972407
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	24.64072	23.99236	#VALUE!	24.45136	23.81507	24.29726	22.72129	24.70039	23.5811
Observed t-value	0.140785	1.011148	#VALUE!	0.248835	0.174326	0.073557	1.099106	0.711081	1.205618
Critical t-value (alpha = Chloride)	1.710882	1.71387	#VALUE!	1.710882	1.71387	1.710882	1.717144	1.710882	1.71387
p-value	0.889215	0.322465	#VALUE!	0.805606	0.863135	0.941972	0.283605	0.483888	0.240222
p-value (Bonferroni adjusted) 2	1	1	#VALUE!	1	1	1	1	1	1
p-value (Dunn-Sidak adjusted) 3	1	0.999997	#VALUE!	1	1	1	0.999983	1	0.999884

Results for 203 vs 223

Influent Stats 203	Chloride	Ammonia	Nitrite	Nitrate	TKN	Total Phosphorus	Dissolved Phosphorus	Orthophosphate	Total Arsenic
Oberservations	13	12	13	13	13	13	12	13	13
Mean	1685.431	0.606936	NA	0.304663	1.970615	0.303077	0.084333	0.072	3.157349
Standard Deviation	3470.015	0.612747	NA	0.35109	1.877843	0.153963	0.028813	0.028835	1.44853
Effluent Stats 223									
Oberservations	13	12	13	13	13	13	12	13	13
Mean	1946.985	0.561859	NA	0.254147	1.966541	0.249231	0.077833	0.062591	2.64006
Standard Deviation	3274.661	0.529002	NA	0.27607	1.86927	0.122785	0.032964	0.040105	1.524297
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	24.76238	22.20213	#VALUE!	23.22941	24.95034	23.38599	22.81356	23.19876	24.997
Observed t-value	0.197654	0.192898	#VALUE!	0.407809	0.005543	0.985866	0.514294	0.686793	0.886972
Critical t-value (alpha = Chloride)	1.710882	1.717144	#VALUE!	1.71387	1.710882	1.71387	1.717144	1.71387	1.710882
p-value	0.844981	0.848808	#VALUE!	0.687185	0.995623	0.334457	0.612175	0.49908	0.383896
p-value (Bonferroni adjusted) 2	1	1	#VALUE!	1	1	1	1	1	1
p-value (Dunn-Sidak adjusted) 3	1	1	#VALUE!	1	1	0.999999	1	1	1

Statistical Summary Influent vs Effluent 2001-

Results for 202 vs 222	Total Cadmium	Total Chromium	Total Copper	Total Iron	Total Nickel	Total Lead	Total Zinc	Dissolved Arsenic	Dissolved Cadmium
Influent Stats 202									
Oberservations	13	13	13	13	13	13	13	13	13
Mean	0.561956	13.14077	40.61538	14304.62	14.30462	22.83692	247.5385	1.278576	NA
Standard Deviation	0.495518	7.074094	23.80381	10798.1	7.165402	17.20991	134.3453	0.943436	NA
Effluent Stats 222									
Oberservations	13	13	13	13	13	13	13	13	13
Mean	0.500812	10.42154	27.93077	10338.46	10.31769	17.18462	244.3846	1.168923	NA
Standard Deviation	0.309759	6.8657	11.05505	8205.7803	5.884712	10.46451	86.13781	0.76846	NA
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	20.3435	24.87828	17.00457	#VALUE!	23.69597	19.99126	20.6698	23.61146	#VALUE!
Observed t-value	0.377257	0.994553	1.742573	#VALUE!	1.550348	1.011817	0.071254	0.324916	#VALUE!
Critical t-value (alpha = Chloride)	1.724718	1.710882	1.739606	#VALUE!	1.71387	1.729131	1.724718	1.71387	#VALUE!
p-value	0.709956	0.329876	0.099467	#VALUE!	0.13471	0.324338	0.943903	0.748182	#VALUE!
p-value (Bonferroni adjusted) 2	1	1	1	#VALUE!	1	1	1	1	#VALUE!
p-value (Dunn-Sidak adjusted) 3	1	0.999998	0.968488	#VALUE!	0.99156	0.999998	1	1	#VALUE!

Results for 203 vs 223

Influent Stats 203	Total Cadmium	Total Chromium	Total Copper	Total Iron	Total Nickel	Total Lead	Total Zinc	Dissolved Arsenic	Dissolved Cadmium
Oberservations	13	13	13	13	13	13	13	13	13
Mean	0.71094	19.23	38.53308	14711.54	14.37923	45.82231	226.6462	0.58527	0.390706
Standard Deviation	0.666846	9.780166	35.31355	11039.13	7.665415	27.72726	102.1036	0.147269	0.7061
Effluent Stats 223									
Oberservations	13	13	13	13	13	13	13	13	13
Mean	0.649327	14.74846	26.38538	10300.15	12.47231	32.32231	339.1538	0.424134	0.487722
Standard Deviation	0.721207	7.803379	10.09595	7015.802	5.275904	15.78585	432.895	0.224994	0.717324
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	24.9635	23.39128	13.95576	20.55596	21.58991	19.17985	14.43823	22.12569	24.98531
Observed t-value	0.226162	1.291457	1.192514	1.216024	0.738859	1.525572	0.912043	2.160544	0.347522
Critical t-value (alpha = Chloride)	1.710882	1.71387	1.770932	1.724718	1.720744	1.729131	1.761309	1.717144	1.710882
p-value	0.82299	0.209374	0.254373	0.238134	0.468171	0.143591	0.377184	0.041889	0.731228
p-value (Bonferroni adjusted) 2	1	1	1	1	1	1	1	1	1
p-value (Dunn-Sidak adjusted) 3	1	0.99957	0.999938	0.999874	1	0.993995	1	0.756374	1

Statistical Summary Influent vs Effluent 2001-

Results for 202 vs 222	Dissolved Chromium	Dissolved Copper	Dissolved Iron	Dissolved Nickel	Dissolved Lead	Dissolved Zinc
Influent Stats 202						
Oberservations	13	13	13	13	13	13
Mean	3.736154	6.916923	495.3583	2.434166	0.784295	41.99769
Standard Deviation	3.316883	4.033333	445.1806	1.614064	0.782247	24.1278
Effluent Stats 222						
Oberservations	13	13	13	13	13	13
Mean	4.24545	7.235385	403.0578	2.735536	NA	72.50231
Standard Deviation	4.438846	3.1347	308.6364	1.786742	NA	48.83551
Comparison -- Assuming Unequal Variance						
alpha	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	23.5997	23.09646	21.68365	24.90629	#VALUE!	18.90109
Observed t-value	0.331388	0.22478	0.614348	0.45128	#VALUE!	2.019176
Critical t-value (alpha = Chloride)	1.71387	1.71387	1.720744	1.710882	#VALUE!	1.734063
p-value	0.743352	0.824136	0.545584	0.655839	#VALUE!	0.058616
p-value (Bonferroni adjusted) 2	1	1	1	1	#VALUE!	1
p-value (Dunn-Sidak adjusted) 3	1	1	1	1	#VALUE!	0.863758

Results for 203 vs 223

Influent Stats 203	Dissolved Chromium	Dissolved Copper	Dissolved Iron	Dissolved Nickel	Dissolved Lead	Dissolved Zinc
Oberservations	13	13	13	13	13	13
Mean	3.3	5.1	390.6402	4.108031	1.105691	68.10275
Standard Deviation	4.303727	2.322651	420.745	3.546063	1.69369	63.55207
Effluent Stats 223						
Oberservations	13	13	13	13	13	13
Mean	2.462308	5.766923	399.9706	3.585009	1.176863	196.4669
Standard Deviation	2.486848	2.712973	386.6158	3.719341	0.369276	457.4136
Comparison -- Assuming Unequal Variance						
alpha	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	19.35906	24.67821	24.61844	24.99853	13.1406	13.50129
Observed t-value	0.607646	0.6733	0.058875	0.366964	0.148034	1.002201
Critical t-value (alpha = Chloride)	1.729131	1.710882	1.710882	1.710882	1.770932	1.770932
p-value	0.550617	0.507189	0.953539	0.716862	0.884587	0.334537
p-value (Bonferroni adjusted) 2	1	1	1	1	1	1
p-value (Dunn-Sidak adjusted) 3	1	1	1	1	1	0.999999

Statistical Summary Influent vs Effluent (2 years Combined)

Results for 202 vs 222

Results for 202 vs 222	EC	pH	Hardness	TOC	DOC	COD	TDS	TSS	Turbidity
Influent Stats 202									
Oberservations	27	27	27	27	27	27	27	27	27
Mean	2646.666	7.3328	94.185	20.6333	15.288	416.111	1443.704	604.6888	460.3704
Standard Deviation	3004.908	0.81697	92.683	20.40711	16.4769	258.0737	1651.501	539.4971	259.8058
Effluent Stats 222									
Oberservations	27	27	27	27	27	27	27	27	27
Mean	2575.777	7.3533	89.5185	22.04815	16.337	344.44	1365.185	416.666	446.296
Standard Deviation	2384.94	0.6795	57.2263	17.61543	14.7929	183.404	1285.906	283.264	232.133
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	49.97665	50.94009	43.51305	51.59609	52.16801	47.28088	49.54577	39.42595	52.10526
Observed t-value	0.096016	0.100244	0.222607	0.272708	0.246161	1.17627	0.194925	1.603365	0.209908
Critical t-value (alpha = Chloride)	1.676551	1.675905	1.681071	1.675285	1.674689	1.677927	1.676551	1.684875	1.674689
p-value	0.923899	0.920552	0.824895	0.786179	0.806527	0.245411	0.846258	0.116923	0.83456
p-value (Bonferroni adjusted) 2	1	1	1	1	1	1	1	1	1
p-value (Dunn-Sidak adjusted) 3	1	1	1	1	1	0.999908	1	0.983482	1

Results for 203 vs 223	EC	pH	Hardness	TOC	DOC	COD	TDS	TSS	Turbidity
Influent Stats 203									
Oberservations	24	24	24	24	24	24	24	24	24
Mean	3028.208	6.8183	56.4833	12.2434	10.424	251.4583	1679.417	495.666	383.708
Standard Deviation	5432.26	0.4296	69.301	11.3784	10.724	175.9642	3083.688	418.32	192.67
Effluent Stats 223									
Oberservations	24	24	24	24	24	24	24	24	24
Mean	3273.583	6.6704	56.2	14.20833	11.741	213.708	1821.375	347.66	330.75
Standard Deviation	5796.143	0.4132	73.219	14.3547	13.08	124.429	3319.119	266.6358	178.4376
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	46.91131	46.83032	46.94677	45.06818	45.60661	41.74856	46.8724	39.27276	46.55391
Observed t-value	0.151323	1.215576	0.013767	0.525521	0.381452	0.858129	0.153503	1.461643	0.987946
Critical t-value (alpha = Chloride)	1.678659	1.678659	1.678659	1.679427	1.679427	1.682879	1.678659	1.684875	1.678659
p-value	0.880382	0.230348	0.989076	0.601801	0.704663	0.39581	0.878673	0.15185	0.328347
p-value (Bonferroni adjusted) 2	1	1	1	1	1	1	1	1	1
p-value (Dunn-Sidak adjusted) 3	1	0.999823	1	1	1	1	1	0.995639	0.999998

[1] If p-value less than alpha then H_0 should be rejected (i.e., there is evidence of a significant difference).

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (33).

[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^n where n is the number of comparison tests (33).

Statistical Summary Influent vs Effluent (2 years

Results for 202 vs 222

Results for 202 vs 222	Chloride	Ammonia	Nitrite	Nitrate	TKN	Total Phosphorus	Dissolved Phosphorus	Orthophosphate	Total Arsenic
Influent Stats 202									
Oberservations	27	26		27	27	27	26	27	27
Mean	819.048	0.41623		0.26802	1.837648	2.2514	0.080157	0.062826	3.663
Standard Deviation	1071.451	0.413977		0.25937	1.057971	4.87011	0.03866	0.039587	2.139
Effluent Stats 222									
Oberservations	27	26		27	27	27	26	27	27
Mean	775.511	0.29777		0.277	1.642611	2.3514	0.0724	0.057453	3.0617
Standard Deviation	886.49	0.23101		0.2202	0.860054	4.88161	0.03789	0.037949	1.6526
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	50.83908	39.32709	#DIV/0!	51.31565	50.48687	26.00327	#REF!	52.80286	49.36571
Observed t-value	0.162677	1.274136	#DIV/0!	0.137144	0.743292	2.324806	#REF!	0.509176	1.155902
Critical t-value (alpha = Chloride)	1.675905	1.684875	#DIV/0!	1.675285	1.675905	1.705616	#REF!	1.674689	1.676551
p-value	0.871428	0.210156	#DIV/0!	0.891457	0.460783	0.028158	#REF!	0.612783	0.253326
p-value (Bonferroni adjusted) 2	1	1	#DIV/0!	1	1	0.929205	#REF!	1	1
p-value (Dunn-Sidak adjusted) 3	1	0.999584	#DIV/0!	1	1	0.610363	#REF!	1	0.999935

Results for 203 vs 223	Chloride	Ammonia	Nitrite	Nitrate	TKN	Total Phosphorus	Dissolved Phosphorus	Orthophosphate	Total Arsenic
Influent Stats 203									
Oberservations	24	23		24	24	24	23	24	24
Mean	1173.441	0.41455		0.2355	1.89857	1.3883	0.070934	0.058252	2.47889
Standard Deviation	2636.418	0.586866		0.284837	1.6303	3.4212	0.04944	0.037672	1.42522
Effluent Stats 223									
Oberservations	24	23		24	24	24	23	24	24
Mean	1326.466	0.3633		0.2239	1.849939	1.54233	0.06922	0.052948	2.2714
Standard Deviation	2541.261	0.50755		0.23098	1.607985	4.01626	0.04984	0.042826	1.39
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	46.84224	43.78682	#DIV/0!	44.67945	46.94228	29.06511	44.99097	46.47515	46.89944
Observed t-value	0.204727	0.316776	#DIV/0!	0.154963	0.104042	0.540046	0.117091	0.45549	0.510589
Critical t-value (alpha = Chloride)	1.678659	1.681071	#DIV/0!	1.68023	1.678659	1.699127	1.68023	1.678659	1.678659
p-value	0.838689	0.752946	#DIV/0!	0.877559	0.917588	0.593289	0.907321	0.650899	0.612081
p-value (Bonferroni adjusted) 2	1	1	#DIV/0!	1	1	1	1	1	1
p-value (Dunn-Sidak adjusted) 3	1	1	#DIV/0!	1	1	1	1	1	1

[1] If p-value less than alpha then H_0 should be rejected (i.e., there is evidence of a significant difference).

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (33).

[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^n where n is the number of comparison tests (33).

Statistical Summary Influent vs Effluent (2 years

Results for 202 vs 222

Results for 202 vs 222	Total Cadmium	Total Chromium	Total Copper	Total Iron	Total Nickel	Total Lead	Total Zinc	Dissolved Arsenic	Dissolved Cadmium
Influent Stats 202									
Oberservations	27	27	27	27	27	27	27	27	27
Mean	0.64577	11.77	37.129	12780	12.6037	20.7585	252.459	1.327	NA
Standard Deviation	0.4288	6.3195	19.896	9074.985	6.358	14.9729	144.9006	0.8993	NA
Effluent Stats 222									
Oberservations	27	27	27	27	27	27	27	27	27
Mean	0.5162	9.807	28.0296	9565.185	9.75185	16.67	273.259	1.1509	NA
Standard Deviation	0.25879	5.3489	9.962	6378.355	4.5936	8.9995	135.469	0.8148	NA
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	42.90804	39.27653	38.34968	46.99028	47.70974	#REF!	29.59624	52.28134	#VALUE!
Observed t-value	1.34427	6.066828	2.124964	1.505972	1.889216	#REF!	8.729235	0.754038	#VALUE!
Critical t-value (alpha = Chloride)	1.681951	1.684875	1.685953	1.678659	1.677927	#REF!	1.699127	1.674689	#VALUE!
p-value	0.186077	4.18E-07	0.040152	0.138911	0.065041	#REF!	1.31E-09	0.454228	#VALUE!
p-value (Bonferroni adjusted) 2	1	1.38E-05	1	1	1	#REF!	4.32E-08	1	#VALUE!
p-value (Dunn-Sidak adjusted) 3	0.99888	1.38E-05	0.741364	0.992812	0.891319	#REF!	4.32E-08	1	#VALUE!

Results for 203 vs 223	Total Cadmium	Total Chromium	Total Copper	Total Iron	Total Nickel	Total Lead	Total Zinc	Dissolved Arsenic	Dissolved Cadmium
Influent Stats 203									
Oberservations	24	24	24	24	24	24	24	24	24
Mean	0.487453	16.8058	33.876	12632.92	127341	32.6504	180.3208	0.53628	0.2259
Standard Deviation	0.56444	9.5118	27.1269	9459.694	7.1436	26.27057	99.14517	0.4067	0.55269
Effluent Stats 223									
Oberservations	24	24	24	24	24	24	24	24	24
Mean	0.42751	14.3533	28.7504	10185.92	11.71833	24.98708	264.9833	0.547129	0.2684
Standard Deviation	0.5946	8.3157	12.23	7332.11	5.856	16.0847	326.0358	0.3864	0.53285
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	46.87472	45.89876	26.18491	43.79014	44.87704	38.31622	28.39058	46.75458	#REF!
Observed t-value	1.216662	0.950964	4.635956	1.001611	67530.34	1.218769	1.2171	0.094741	#REF!
Critical t-value (alpha = Chloride)	1.678659	1.679427	1.705616	1.681071	1.68023	1.685953	1.70113	1.678659	#REF!
p-value	0.229939	0.346703	8.79E-05	0.322135	5.4E-178	0.230444	0.233725	0.924932	#REF!
p-value (Bonferroni adjusted) 2	1	1	0.0029	1	1.8E-176	1	1	1	#REF!
p-value (Dunn-Sidak adjusted) 3	0.99982	0.999999	0.002896	0.999997	0	0.999824	0.999847	1	#REF!

[1] If p-value less than alpha then H_0 should be rejected (i.e., there is evidence of a significant difference).

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (33).

[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^n where n is the number of comparison tests (33).

Statistical Summary Influent vs Effluent (2 years

Results for 202 vs 222

Results for 202 vs 222	Dissolved Chromium	Dissolved Copper	Dissolved Iron	Dissolved Nickel	Dissolved Lead	Dissolved Zinc
Influent Stats 202						
Oberservations	27	27	27	27	27	27
Mean	3.0067	6.4188	361.7428	2.477	0.6445	40.2544
Standard Deviation	2.67144	3.9499	385.097	1.3829	1.1535	29.7537
Effluent Stats 222						
Oberservations	27	27	27	27	27	27
Mean	3.4479	6.56	292.644	2.59736	NA	89.6796
Standard Deviation	3.2968	3.2288	274.617	1.5	NA	130.001
Comparison -- Assuming Unequal Variance						
alpha	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	#REF!	50.59972	47.37068	52.79543	#REF!	#REF!
Observed t-value	#REF!	0.143815	0.759112	0.306543	#REF!	#REF!
Critical t-value (alpha = Chloride)	#REF!	1.675905	1.677927	1.674689	#REF!	#REF!
p-value	#REF!	0.886224	0.451576	0.760415	#REF!	#REF!
p-value (Bonferroni adjusted) 2	#REF!	1	1	1	#REF!	#REF!
p-value (Dunn-Sidak adjusted) 3	#REF!	1	1	1	#REF!	#REF!

Results for 203 vs 223	Dissolved Chromium	Dissolved Copper	Dissolved Iron	Dissolved Nickel	Dissolved Lead	Dissolved Zinc
Influent Stats 203						
Oberservations	24	24	24	24	24	24
Mean	2.67878	5.89287	320.0548	3.36169	1.0765	55.823
Standard Deviation	3.29728	5.259	323.515	2.8091	1.31396	60.45598
Effluent Stats 223						
Oberservations	24	24	24	24	24	24
Mean	2.40255	7.329	345.72	3.2299	0.837788	146.5154
Standard Deviation	1.783	7.1492	310.056	2.9219	1.60106	338.6238
Comparison -- Assuming Unequal Variance						
alpha	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	35.50786	#REF!	46.80971	46.98465	#REF!	25.5273
Observed t-value	0.361011	#REF!	0.28059	0.15929	#REF!	1.291652
Critical t-value (alpha = Chloride)	1.689573	#REF!	1.678659	1.678659	#REF!	1.70814
p-value	0.720261	#REF!	0.780283	0.874138	#REF!	0.208292
p-value (Bonferroni adjusted) 2	1	#REF!	1	1	#REF!	1
p-value (Dunn-Sidak adjusted) 3	1	#REF!	1	1	#REF!	0.999551

[1] If p-value less than alpha then H_0 should be rejected (i.e., there is evidence of a significant difference).

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (33).

[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^n where n is the number of comparison tests (33).

Tahoe vs Statewide

	pH	EC	TSS	TDS	Hardness as CaCO3	DOC	TOC	Nitrate (as N)	TKN
Tahoe Stats									
Observations	161	161	161	161	161	161	161	159	160
Mean	7.17	2382.50	758.53	1354.39	113.01	25.79	32.29	0.46	2.39
Standard Deviation	0.71	3421.05	840.78	1840.94	266.69	60.66	67.14	0.68	2.58
Statewide Stats									
Observations	584	584	584	585	585	585	586	585	577
Mean	6.99	87.19	103.31	82.67	33.79	16.80	19.88	0.95	1.92
Standard Deviation	0.66	87.19	195.70	114.05	35.59	16.92	19.44	2.54	1.88
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	241.975792	160.057307	164.805126	160.338117	161.570857	166.905958	167.432568	742.9069831	208.043045
Observed t-value	2.9268513	8.51245508	9.81515743	8.76059674	3.7601498	1.85920859	2.31864609	4.193003872	2.11673606
Critical t-value (alpha = Total Phosphorus)	1.65120127	1.65443225	1.65419806	1.65443225	1.65437314	1.65408437	1.6540298	1.646908458	1.65221309
p-value	0.00375153	1.1696E-14	3.5366E-18	2.6612E-15	0.00023726	0.06476759	0.02162607	3.08528E-05	0.03547072
p-value (Bonferroni adjusted) 2	0.1275521	3.9767E-13	1.2025E-16	9.048E-14	0.0080668	1	0.73528628	0.001048996	1
p-value (Dunn-Sidak adjusted) 3	0.11996356	3.9635E-13	0	9.0594E-14	0.0080353	0.89737229	0.52448339	0.001048463	0.70709679

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (33).

[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^n where n is the number of comparison tests (33).

Tahoe vs Statewide

	Total Phosphorus	Diss. Orthophosphate	Total Arsenic	Total Cadmium	Total Chromium	Total Copper	Total Lead	Total Nickel	Total Zinc
Tahoe Stats									
Observations	161	146	161	161	161	161	161	161	161
Mean	2.14	0.08	4.22	0.76	17.78	41.34	36.45	14.66	266.28
Standard Deviation	4.30	0.07	3.49	0.99	17.00	33.07	45.90	10.94	246.61
Statewide Stats									
Observations	582	580	586	586	586	586	586	586	586
Mean	0.27	0.10	2.49	0.61	8.28	26.62	36.93	11.53	143.60
Standard Deviation	0.41	0.19	8.04	1.66	9.99	28.97	153.44	16.06	166.03
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	160.794967	627.338213	611.771206	431.291722	191.323074	231.733726	741.719385	370.178151	201.47665
Observed t-value	5.48438334	2.40553884	4.0207956	1.38162444	6.77638566	5.13089287	0.06534818	2.87834572	5.95203361
Critical t-value (alpha = Total Phosphorus)	1.65443225	1.64728817	1.64735184	1.64839548	1.6528702	1.6514764	1.64691301	1.64898211	1.65247002
p-value	1.5895E-07	0.01643721	6.5258E-05	0.1678028	1.4879E-10	6.109E-07	0.94791441	0.00422979	1.1622E-08
p-value (Bonferroni adjusted) 2	5.4042E-06	0.5588652	0.00221879	1	5.0589E-09	2.077E-05	1	0.14381292	3.9516E-07
p-value (Dunn-Sidak adjusted) 3	5.4042E-06	0.43079194	0.0022164	0.99806049	5.0589E-09	2.077E-05	1	0.13421436	3.9516E-07

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (33).

[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^n where n is the number of comparison tests (33).

Tahoe vs Statewide

	Dissolved Arsenic	Dissolved Cadmium	Dissolved Chromium	Dissolved Copper	Dissolved Lead	Dissolved Nickel	Dissolved Zinc
Tahoe Stats							
Observations	161	161	161	161	161	161	161
Mean	1.39	NA	4.43	8.21	1.11	2.86	50.33
Standard Deviation	2.09	NA	6.15	8.87	1.83	3.08	51.61
Statewide Stats							
Observations	586	586	586	586	586	586	586
Mean	0.92	0.22	2.79	13.00	6.83	4.84	60.39
Standard Deviation	1.43	0.54	3.10	13.93	35.12	5.43	87.82
Comparison -- Assuming Unequal Variance							
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	202.54963	#VALUE!	182.862248	399.915583	597.4002	458.196	439.8243
Observed t-value	2.6686189	#VALUE!	3.27469762	5.28641556	3.924669	6.00094	1.846732
Critical t-value (alpha = Total Phosphorus)	1.65243137	#VALUE!	1.65327037	1.64868197	1.647409	1.648186	1.648332
p-value	0.00823513	#VALUE!	0.0012662	2.0586E-07	9.7E-05	3.99E-09	0.065459
p-value (Bonferroni adjusted) 2	0.27999443	#VALUE!	0.04305089	6.9992E-06	0.003297	1.36E-07	1
p-value (Dunn-Sidak adjusted) 3	0.2450877	#VALUE!	0.04216349	6.9992E-06	0.003291	1.36E-07	0.89992

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (33).

[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^n where n is the number of comparison tests (33).

Tahoe 2001-02												
Run ID	Dissolved Arsenic	Total Arsenic	Dissolved Cadmium	Total Cadmium	Chloride	COD	Dissolved Chromium	Total Chromium	Dissolved Copper	Total Copper	DOC	EC
n	73	73	73	73	74	71	73	73	73	73	73	73
Mean	1.211881898	4.795199676	0	0.785274193	982.8986486	473.8732394	5.263619386	17.14268493	7.60819726	39.27525125	21.09730157	2735.534247
Standard Deviation	1.437310317	3.109572207	0	1.241302477	1795.954264	456.7487616	8.229251745	12.90905625	5.311384108	23.66753913	28.5089267	4066.861053
Statewide												
Run ID	Dissolved Arsenic	Total Arsenic	Dissolved Cadmium	Total Cadmium	Chloride	COD	Dissolved Chromium	Total Chromium	Dissolved Copper	Total Copper	DOC	EC
n	192	192	192	192	0	0	192	192	192	192	192	191
Mean	0.94	1.48	0.21	0.70	0	0	2.93	8.51	14.89	28.82	21.43	91.67
Standard Deviation	1.36	1.47	0.22	2.79	0	0	3.53	9.42	17.01	33.48	19.95	111.68
Comparison -- Assuming Equal Variance												
PD (neg = Statewide greater)	22.26	69.10	#DIV/0!	11.27	100.00	100.00	44.42	50.34	-95.70	26.63	-1.58	96.65
Pooled Variance (S_p^2)	1.908136925	4.217048304	0.034400197	6.05845605	3270249.659	211642.9013	27.59287006	110.112283	217.8534553	967.2017876	511.4962103	4554212.993
Standard Error of Mean (S_e)	0.189939662	0.282367807	0.025503005	0.338447939	#DIV/0!	#DIV/0!	0.722286222	1.442875224	2.029518988	4.276312532	3.109797447	293.6503473
Degrees of Freedom	263	263	263	263	72	69	263	263	263	263	263	262
Alpha	**0.1**	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Observed t-value	1.4206	11.7341	8.3827	0.2615	#DIV/0!	#DIV/0!	3.2369	5.9804	3.5877	2.4459	0.1070	9.0034
Critical t-value (alpha = 0.1)	1.6507	1.6507	1.6507	1.6507	1.6663	1.6672	1.6507	1.6507	1.6507	1.6507	1.6507	1.6507
p-value (H_0: Highway mean = Site mean) [1]	0.1566	0.0000	0.0000	0.7939	#DIV/0!	#DIV/0!	0.0014	0.0000	0.0004	0.0151	0.9149	0.0000
p-value (Bonferroni adjusted) [2]	1.0000	0.0000	0.0000	1.0000	#DIV/0!	#DIV/0!	0.0450	0.0000	0.0131	0.4985	1.0000	0.0000
p-value (Dunn-Sidak adjusted) [3]	0.9964	0.0000	0.0000	1.0000	#DIV/0!	#DIV/0!	0.0440	0.0000	0.0130	0.3949	1.0000	0.0000
Comparison -- Assuming Unequal Variance												
Degrees of Freedom	123.9214	84.5299	191.0000	256.8025	#DIV/0!	#DIV/0!	82.2793	102.5443	256.7331	183.2283	99.9947	72.0415
Observed t-value	1.3855	8.7400	13.6109	0.3568	#DIV/0!	#DIV/0!	2.3466	5.2079	5.2916	2.8456	0.0916	5.5537
Critical t-value (alpha = 0.1)	1.6573	1.6632	1.6529	1.6508	#DIV/0!	#DIV/0!	1.6636	1.6599	1.6508	1.6532	1.6604	1.6663
p-value (H_0: Highway mean = Site mean) [1]	0.1684	0.0000	0.0000	0.7215	#DIV/0!	#DIV/0!	0.0214	0.0000	0.0000	0.0049	0.9272	0.0000
p-value (Bonferroni adjusted) [2]	1.0000	0.0000	0.0000	1.0000	#DIV/0!	#DIV/0!	0.7048	0.0000	0.0000	0.1630	1.0000	0.0000
p-value (Dunn-Sidak adjusted) [3]	0.9977	0.0000	0.0000	1.0000	#DIV/0!	#DIV/0!	0.5095	0.0000	0.0000	0.1507	1.0000	0.0000

[1] If p-value less than alpha then H_0 should be rejected (i.e., there is evidence of a significant difference).

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (33).

[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^n where n is the number of comparison tests (33).

Tahoe 2001-02											
Run ID	Dissolved Iron	Total Iron	Hardness as CaCO3	NH3-N	Dissolved Nickel	Total Nickel	NO2-N	NO3-N	Oil & Grease	Dissolved Ortho-Phosphate	Dissolved Phosphorus
n	73	73	73	67	73	73	63	73	11	73	67
Mean	499.367282	16884.36986	120.2643836	0.415988768	2.930166405	14.6403377	0	0.331325624	22.19090909	0.088353986	0.107469735
Standard Deviation	754.8237133	14524.97866	371.3024463	0.585140777	2.349806586	8.233568449	0	0.308314086	13.67809914	0.081240604	0.159948344
Statewide											
Run ID	Dissolved Iron	Total Iron	Hardness as CaCO3	NH3-N	Dissolved Nickel	Total Nickel	NO2-N	NO3-N	Oil & Grease	Dissolved Ortho-Phosphate	Dissolved Phosphorus
n	0	0	192	0	192	192	0	191	0	191	0
Mean	0	0	31.02	0	5.70	12.65	0	1.00	0	0.11	0
Standard Deviation	0	0	39.31	0	6.41	14.56	0	1.22	0	0.25	0
Comparison -- Assuming Equal Variance											
PD (neg = Statewide greater)	100.00	100.00	74.21	100.00	-94.58	13.62	#DIV/0!	-203.04	100.00	-29.63	100.00
Pooled Variance (S_p^2)	577783.6105	213946484	38864.64807	0.347657263	31.32788451	172.5041303	0	1.110311693	207.878218	0.046133048	0.025977065
Standard Error of Mean (S_e)	#DIV/0!	#DIV/0!	27.10742484	#DIV/0!	0.769620145	1.805970457	#DIV/0!	0.144992757	#DIV/0!	0.029554929	#DIV/0!
Degrees of Freedom	71	71	263	65	263	263	61	262	9	262	65
Alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Observed t-value	#DIV/0!	#DIV/0!	3.2924	#DIV/0!	3.6009	1.1042	#DIV/0!	4.6398	#DIV/0!	0.8856	#DIV/0!
Critical t-value (alpha = 0.1)	1.6666	1.6666	1.6507	1.6686	1.6507	1.6507	1.6702	1.6507	1.8331	1.6507	1.6686
p-value (H_0: Highway mean = Site mean) [1]	#DIV/0!	#DIV/0!	0.0011	#DIV/0!	0.0004	0.2705	#DIV/0!	0.0000	#DIV/0!	0.3766	#DIV/0!
p-value (Bonferroni adjusted) [2]	#DIV/0!	#DIV/0!	0.0373	#DIV/0!	0.0125	1.0000	#DIV/0!	0.0002	#DIV/0!	1.0000	#DIV/0!
p-value (Dunn-Sidak adjusted) [3]	#DIV/0!	#DIV/0!	0.0366	#DIV/0!	0.0124	1.0000	#DIV/0!	0.0002	#DIV/0!	1.0000	#DIV/0!
Comparison -- Assuming Unequal Variance											
Degrees of Freedom	#DIV/0!	#DIV/0!	72.6144	#DIV/0!	262.7946	225.0534	#DIV/0!	240.8824	#DIV/0!	258.1528	#DIV/0!
Observed t-value	#DIV/0!	#DIV/0!	2.0493	#DIV/0!	5.1509	1.3987	#DIV/0!	7.0408	#DIV/0!	1.2921	#DIV/0!
Critical t-value (alpha = 0.1)	#DIV/0!	#DIV/0!	1.6663	#DIV/0!	1.6507	1.6517	#DIV/0!	1.6512	#DIV/0!	1.6508	#DIV/0!
p-value (H_0: Highway mean = Site mean) [1]	#DIV/0!	#DIV/0!	0.0441	#DIV/0!	0.0000	0.1633	#DIV/0!	0.0000	#DIV/0!	0.1975	#DIV/0!
p-value (Bonferroni adjusted) [2]	#DIV/0!	#DIV/0!	1.0000	#DIV/0!	0.0000	1.0000	#DIV/0!	0.0000	#DIV/0!	1.0000	#DIV/0!
p-value (Dunn-Sidak adjusted) [3]	#DIV/0!	#DIV/0!	0.7741	#DIV/0!	0.0000	0.9972	#DIV/0!	0.0000	#DIV/0!	0.9993	#DIV/0!
[1] If p-value less than alpha then H_0 should be rejected (											
[2] p-value (Bonferroni adjusted) = p-value x n where n is											
[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^n wh											

Tahoe 2001-02												
Run ID	Total Phosphorus	Dissolved Lead	Total Lead	pH	SSC	TDS	TKN	TOC	TSS	Turbidity	Dissolved Zinc	Total Zinc
n	73	73	73	73	19	73	73	73	76	73	73	73
Mean	0.425232877	1.332022663	35.15465753	7.251572603	1368.473684	1449.273973	2.38901207	27.06340841	761.3684211	531.1041096	48.41170241	249.9890411
Standard Deviation	0.300076346	2.117969116	32.00245776	0.753822346	1944.876758	2073.78735	2.236723552	33.4010718	621.7996796	363.5354692	39.75160288	176.771411
Statewide												
Run ID	Total Phosphorus	Dissolved Lead	Total Lead	pH	SSC	TDS	TKN	TOC	TSS	Turbidity	Dissolved Zinc	Total Zinc
n	192	192	192	191	0	192	191	192	192	0	192	192
Mean	0.28	9.76	40.00	6.89	0	222.44	2.32	25.43	104.70	0	71.16	155.27
Standard Deviation	0.32	47.39	155.52	0.54	0	2439.75	2.09	24.10	271.73	0	97.78	187.32
Comparison -- Assuming Equal Variance												
PD (neg = Statewide greater)	33.51	-632.43	-13.77	5.01	100.00	84.65	3.06	6.04	86.25	100.00	-46.99	37.89
Pooled Variance (S_p^2)	0.097590728	1631.910839	17846.02662	0.365418439	4005048.287	5500185.094	4.553623018	727.2585447	162032.9389	134019.4182	7375.553177	34038.21759
Standard Error of Mean (S_e)	0.042955143	5.554680784	18.36883702	0.083180031	#DIV/0!	322.477594	0.293631326	3.708133053	54.55212105	#DIV/0!	11.80886593	25.36847131
Degrees of Freedom	263	263	263	262	17	263	262	263	266	71	263	263
Alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Observed t-value	3.3170	1.5166	0.2635	4.3645	#DIV/0!	3.8044	0.2494	0.4407	12.0374	#DIV/0!	1.9263	3.7337
Critical t-value (alpha = 0.1)	1.6507	1.6507	1.6507	1.6507	1.7396	1.6507	1.6507	1.6507	1.6506	1.6666	1.6507	1.6507
p-value (H_0: Highway mean = Site mean) [1]	0.0010	0.1306	0.7924	0.0000	#DIV/0!	0.0002	0.8033	0.6598	0.0000	#DIV/0!	0.0551	0.0002
p-value (Bonferroni adjusted) [2]	0.0343	1.0000	1.0000	0.0006	#DIV/0!	0.0058	1.0000	1.0000	0.0000	#DIV/0!	1.0000	0.0076
p-value (Dunn-Sidak adjusted) [3]	0.0337	0.9901	1.0000	0.0006	#DIV/0!	0.0058	1.0000	1.0000	0.0000	#DIV/0!	0.8461	0.0076
Comparison -- Assuming Unequal Variance												
Degrees of Freedom	136.7449	192.9983	228.3967	101.2149	#DIV/0!	151.8641	123.0651	101.8230	86.5736	#DIV/0!	261.8738	137.1797
Observed t-value	3.3995	2.4569	0.4091	3.7655	#DIV/0!	4.0914	0.2421	0.3819	8.8772	#DIV/0!	2.6914	3.8324
Critical t-value (alpha = 0.1)	1.6561	1.6528	1.6516	1.6601	#DIV/0!	1.6550	1.6573	1.6601	1.6628	#DIV/0!	1.6507	1.6561
p-value (H_0: Highway mean = Site mean) [1]	0.0009	0.0149	0.6828	0.0003	#DIV/0!	0.0001	0.8091	0.7033	0.0000	#DIV/0!	0.0076	0.0002
p-value (Bonferroni adjusted) [2]	0.0292	0.4918	1.0000	0.0092	#DIV/0!	0.0023	1.0000	1.0000	0.0000	#DIV/0!	0.2500	0.0064
p-value (Dunn-Sidak adjusted) [3]	0.0288	0.3907	1.0000	0.0092	#DIV/0!	0.0023	1.0000	1.0000	0.0000	#DIV/0!	0.2219	0.0063
[1] If p-value less than alpha then H_0 should be rejected (												
[2] p-value (Bonferroni adjusted) = p-value x n where n is												
[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^n wh												

Statistical Summary-- Comparison of Yearly Influent Runoff Water Quality Data

Year 1 vs Year 2

	pH	EC	TSS	TDS	Hardness as CaCO3	DOC	TOC	COD	Turbidity
Year 1 Stats									
Observations	22	22	22	22	22	22	22		19
Mean	7.31363636	2399.59091	989.227273	1854.18182	93.8181818	21.8727273	25.2318182	NA	574.8
Standard Deviation	0.77537598	4027.26236	1334.45525	2420.34664	96.2469778	15.8034954	18.6300294	NA	644.489418
Year 2 Stats									
Observations	73	73	73	73	73	73	73	71	73
Mean	7.3	2735	756.082192	1449	120	21	27	474	531
Standard Deviation	0.8	4067	623.506381	2073	371	29	33.4	457	364
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	35.5821065	34.9427217	23.6985402	30.8774678	93.104398	65.7657262	64.0885303	#VALUE!	21.0771016
Observed t-value	0.07177555	0.34164958	0.77809155	0.71057876	0.54515171	0.18248135	0.31727859	#VALUE!	0.28465325
Critical t-value (alpha = Oil & grease)	1.68957285	1.69092345	1.71387001	1.69726036	1.66140353	1.66863629	1.66901373	#VALUE!	1.72074351
p-value	0.94318912	0.73471731	0.4444462	0.4828333	0.58695422	0.85577294	0.75206499	#VALUE!	0.77869797
p-value (Bonferroni adjusted) 2	1	1	1	1	1	1	1	#VALUE!	1
p-value (Dunn-Sidak adjusted) 3	1	1	1	1	1	1	1	#VALUE!	1

Y1 vs Year 3

	pH	EC	TSS	TDS	Hardness as CaCO3	DOC	TOC	COD	Turbidity
Year 1 Stats									
Observations	22	22	22	22	22	22	22		19
Mean	7.31363636	2399.59091	989.227273	1854.18182	93.8181818	21.8727273	25.2318182	NA	574.8
Standard Deviation	0.77537598	4027.26236	1334.45525	2420.34664	96.2469778	15.8034954	18.6300294	NA	644.489418
Year 3 Stats									
Observations	66	66	66	66	66	66	66	66	66
Mean	7.03757576	1986.31818	684.333333	1082.83333	111.384848	32.2406558	40.3959806	456.484848	389.227273
Standard Deviation	0.61646995	2471.28007	842.370349	1327.07311	271.053036	90.4025234	99.0711419	498.765443	242.305743
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	30.353232	26.4698743	25.8975523	25.3387637	86.4835987	76.6319904	77.9875811	#VALUE!	19.4859051
Observed t-value	1.51769324	0.45369304	1.01607942	1.42510383	0.44847884	0.89173553	1.18235795	#VALUE!	1.23030877
Critical t-value (alpha = Oil & grease)	1.69726036	1.70561634	1.70814019	1.70814019	1.6627655	1.66515065	1.66488462	#VALUE!	1.72913133
p-value	0.13956034	0.65381411	0.31932478	0.1664931	0.65493559	0.37534933	0.24070198	#VALUE!	0.23359711
p-value (Bonferroni adjusted) 2	1	1	1	1	1	1	1	#VALUE!	1
p-value (Dunn-Sidak adjusted) 3	0.99396754	1	0.99999791	0.99795397	1	0.99999989	0.9999141	#VALUE!	0.99988209

Statistical Summary-- Comparison of Yearly Influent Runoff Water Quality Data

Year 3 vs Year 2

	pH	EC	TSS	TDS	Hardness as CaCO3	DOC	TOC	COD	Turbidity
Year 2 Stats									
Observations	73	73	73	73	73	73	73	71	73
Mean	7.3	2735	756.082192	1449	120	21	27	474	531
Standard Deviation	0.8	4067	623.506381	2073	371	29	33.4	457	364
Year 3 Stats									
Observations	66	66	66	66	66	66	66	66	66
Mean	7.03757576	1986.31818	684.333333	1082.83333	111.384848	32.2406558	40.3959806	456.484848	389.227273
Standard Deviation	0.61646995	2471.28007	842.370349	1327.07311	271.053036	90.4025234	99.0711419	498.765443	242.305743
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	72.0000037	73.2663641	93.9029188	75.3120804	67.3665548	82.1485318	77.04795	119.472522	75.9749872
Observed t-value	5.73093702	3.92165988	2.93312207	5.6964234	2.69511665	0.44433218	7.80003555	0.99715739	2.81541763
Critical t-value (alpha = Oil & grease)	1.66629434	1.66599648	1.66140353	1.66542577	1.66791551	1.66364771	1.66488462	1.65775873	1.66542577
p-value	2.1688E-07	0.0001967	0.00422513	2.2669E-07	0.0088869	0.65797292	2.4663E-11	0.32071144	0.00622007
p-value (Bonferroni adjusted) 2	7.3739E-06	0.0066877	0.14365434	7.7075E-06	0.30215472	1	8.3855E-10	1	0.21148232
p-value (Dunn-Sidak adjusted) 3	7.3738E-06	0.00666604	0.13407647	7.7075E-06	0.26177405	1	8.3855E-10	0.99999805	0.1911508

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (33).

[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^{n} where n is the number of comparison tests (33).

Statistical Summary-- Compariso

Year 1 vs Year 2

	Chloride	Oil & grease	NH3-N	Nitrate (as N)	Nitrite (as N)	TKN	Total Phosphorus	Dissolved Phosphorus	Orthophosphate
Year 1 Stats									
Observations	21	3		20		21	22		22
Mean	1069.42586	NA	NA	0.3775	NA	1.6	1.295	NA	0.11409073
Standard Deviation	1454	NA	NA	0.23080617	NA	1.6	2.45678768	NA	0.08847537
Year 2 Stats									
Observations	74	11	67	73	63	73	73	67	73
Mean	983	22	0.42	0.3	NA	2.4	0.4	0.11	0.09
Standard Deviation	1796	14	0.6	0.3	NA	2.2	0.3	0.16	0.08
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	33.0624279	#VALUE!	#VALUE!	38.5120167	#VALUE!	11.1328055	21.1890377	#VALUE!	32.0636148
Observed t-value	0.44139551	#VALUE!	#VALUE!	1.2415582	#VALUE!	0.79545318	1.70487733	#VALUE!	1.61881474
Critical t-value (alpha = Oil & grease)	1.69236046	#VALUE!	#VALUE!	1.68595307	#VALUE!	1.79588369	1.72074351	#VALUE!	1.69388841
p-value	0.66180542	#VALUE!	#VALUE!	0.22200881	#VALUE!	0.4431764	0.10296849	#VALUE!	0.11530272
p-value (Bonferroni adjusted) 2	1	#VALUE!	#VALUE!	1	#VALUE!	1	1	#VALUE!	1
p-value (Dunn-Sidak adjusted) 3	1	#VALUE!	#VALUE!	0.9998036	#VALUE!	1	0.98143251	#VALUE!	0.98447543

Y1 vs Year 3

	Chloride	Oil & grease	NH3-N	Nitrate (as N)	Nitrite (as N)	TKN	Total Phosphorus	Dissolved Phosphorus	Orthophosphate
Year 1 Stats									
Observations	21	3		20		21	22		22
Mean	1069.42586	NA	NA	0.3775	NA	1.6	1.295	NA	0.11409073
Standard Deviation	1454	NA	NA	0.23080617	NA	1.6	2.45678768	NA	0.08847537
Year 3 Stats									
Observations	66	13	63	66	66	66	66	66	66
Mean	589.545455	16.9	0.50739698	0.28912812	NA	2.62607631	4.30883333	0.08354111	0.05791115
Standard Deviation	817.995689	17.9982313	0.77921036	0.48366191	NA	3.19511799	5.95094024	0.06936516	0.05565693
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	15.3656193	#VALUE!	#VALUE!	68.3619757	#VALUE!	15.8787736	82.7528593	#VALUE!	26.7574111
Observed t-value	0.81619351	#VALUE!	#VALUE!	1.12160499	#VALUE!	1.0383213	3.3467915	#VALUE!	2.7993798
Critical t-value (alpha = Oil & grease)	1.75305104	#VALUE!	#VALUE!	1.66757218	#VALUE!	1.75305104	1.66364771	#VALUE!	1.70561634
p-value	0.42716161	#VALUE!	#VALUE!	0.26597556	#VALUE!	0.31556939	0.00123577	#VALUE!	0.00952303
p-value (Bonferroni adjusted) 2	1	#VALUE!	#VALUE!	1	#VALUE!	1	1	#VALUE!	0.32378316
p-value (Dunn-Sidak adjusted) 3	0.99999999	#VALUE!	#VALUE!	0.99997283	#VALUE!	0.99999748	0.86534119	#VALUE!	0.27771445

Statistical Summary-- Compariso

Year 3 vs Year 2

	Chloride	Oil & grease	NH3-N	Nitrate (as N)	Nitrite (as N)	TKN	Total Phosphorus	Dissolved Phosphorus	Diss. Orthophosphate
Year 2 Stats									
Observations	74	11	67	73	63	73	73	67	73
Mean	983	22	0.42	0.3	NA	2.4	0.4	0.11	0.09
Standard Deviation	1796	14	0.6	0.3	NA	2.2	0.3	0.16	0.08
Year 3 Stats									
Observations	66	13	63	66	66	66	66	66	66
Mean	589.545455	16.9	0.50739698	0.28912812	NA	2.62607631	4.30883333	0.08354111	0.05791115
Standard Deviation	817.995689	17.9982313	0.77921036	0.48366191	NA	3.19511799	5.95094024	0.06936516	0.05565693
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	675.678534	#DIV/0!	79.0178885	#VALUE!	#VALUE!	67.0524043	66.0939965	137.675532	#DIV/0!
Observed t-value	17.7488147	#DIV/0!	1.9891986	#VALUE!	#VALUE!	5.63768995	5.73007677	0.27944888	#DIV/0!
Critical t-value (alpha = Oil & grease)	1.64711309	#DIV/0!	1.66437076	#VALUE!	#VALUE!	1.66791551	1.66827022	1.65605343	#DIV/0!
p-value	3.9313E-58	#DIV/0!	0.05014076	#VALUE!	#VALUE!	3.7384E-07	2.6969E-07	0.78032181	#DIV/0!
p-value (Bonferroni adjusted) 2	1.3366E-56	#DIV/0!	1	#VALUE!	#VALUE!	1.2711E-05	0.6143547	1	#DIV/0!
p-value (Dunn-Sidak adjusted) 3	0	#DIV/0!	0.82605396	#VALUE!	#VALUE!	1.2711E-05	0.46204101	1	#DIV/0!

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (33).

[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^n where n is the number of comparison tests (33).

Statistical Summary-- Compariso

Year 1 vs Year 2

	Total Arsenic	Total Cadmium	Total Chromium	Total Copper	Total Iron	Total Lead	Total Nickel	Total Zinc	Dissolved Arsenic
Year 1 Stats									
Observations	22	22	22	22	20	22	22	22	22
Mean	6.13262416	1.02066194	28.4954545	54.7181818	32801.5	66.1	19.0690909	358.940909	2.52273924
Standard Deviation	5.7543759	0.73069409	27.8382225	35.0845621	41092.1962	85.9757918	1.47E+01	238.498221	5.04652124
Year 2 Stats									
Observations	73	73	73	73	7.30E+01	73	73	73	73
Mean	4.795	0.8	17	39	1.69E+04	35	14.64	249	1.2
Standard Deviation	3.1	1.2	13	24	1.45E+04	32	8.2	176	1.4
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.00E-01	0.1
Degrees of Freedom	24.7795822	57.9907604	23.8213834	27.1850793	20.3168487	22.7786448	25.0768384	2.82E+01	21.9820343
Observed t-value	0.8853023	1.05202622	1.87617889	1.96720842	1.70341987	1.66231748	1.24374842	2.00E+00	1.21538683
Critical t-value (alpha = Oil & grease)	1.71088232	1.6720287	1.71387001	1.70328804	1.724718	1.71714419	1.70814019	1.70E+00	1.72074351
p-value	0.38477791	0.29722711	0.07337826	0.0595124	0.10397969	0.11063307	0.22512876	5.48E-02	0.23770645
p-value (Bonferroni adjusted) 2	1	1	1	1	1	1	1	1.00E+00	1
p-value (Dunn-Sidak adjusted) 3	0.99999993	0.99999381	0.92506505	0.87583348	0.97607747	0.98143251	0.99982868	8.53E-01	0.99990179

Y1 vs Year 3

	Total Arsenic	Total Cadmium	Total Chromium	Total Copper	Total Iron	Total Lead	Total Nickel	Total Zinc	Dissolved Arsenic
Year 1 Stats									
Observations	22	22	22	22	20	22	22	22	22
Mean	6.13262416	1.02066194	28.4954545	54.7181818	32801.5	66.1	19.0690909	358.940909	2.52273924
Standard Deviation	5.7543759	0.73069409	27.8382225	35.0845621	41092.1962	85.9757918	1.47E+01	238.498221	5.04652124
Year 3 Stats									
Observations	66	66	66	66	66	66	66	66	66
Mean	2.95311195	0.64325982	14.9187202	39.0493939	14081.5152	28.0012121	13.1953697	253.4	1.21385949
Standard Deviation	2.65770505	0.82387686	16.4130584	42.2257524	15571.6438	42.9232659	12.5627476	318.979798	1.16332148
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.00E-01	0.1
Degrees of Freedom	24.053858	40.2687044	26.0373003	42.986316	20.6782649	24.5804551	31.9145855	4.81E+01	21.7483669
Observed t-value	2.50413494	2.0302984	2.16549987	1.72021936	1.99439808	1.99717194	1.68345342	1.64E+00	1.20588615
Critical t-value (alpha = Oil & grease)	1.71088232	1.68385213	1.70561634	1.68195129	1.724718	1.71088232	1.69551868	1.68E+00	1.72074351
p-value	0.01947404	0.04901223	0.0397066	0.09275392	0.05991953	0.05726581	0.10233311	1.07E-01	0.24127287
p-value (Bonferroni adjusted) 2	0.66211725	1	1	1	1	1	1	1.00E+00	1
p-value (Dunn-Sidak adjusted) 3	0.48759976	0.81888783	0.74780641	0.96346968	0.87764802	0.86534119	0.97453656	9.79E-01	0.99991626

Statistical Summary-- Compariso

Year 3 vs Year 2

	Total Arsenic	Total Cadmium	Total Chromium	Total Copper	Total Iron	Total Lead	Total Nickel	Total Zinc	Dissolved Arsenic
Year 2 Stats									
Observations	73	73	73	73	7.30E+01	73	73	73	73
Mean	4.795	0.8	17	39	1.69E+04	35	14.64	249	1.2
Standard Deviation	3.1	1.2	13	24	1.45E+04	32	8.2	176	1.4
Year 3 Stats									
Observations	66	66	66	66	66	66	66	66	66
Mean	2.95311195	0.64325982	14.9187202	39.0493939	14081.5152	28.0012121	13.1953697	253.4	1.21385949
Standard Deviation	2.65770505	0.82387686	16.4130584	42.2257524	15571.6438	42.9232659	12.5627476	318.979798	1.16332148
Comparison -- Assuming Unequal Variance									
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	89.7765003	72.6395614	128.302759	72.0013461	66.000504	70.3571313	72.8112581	#DIV/0!	#VALUE!
Observed t-value	6.0478005	10.7263587	6.95977528	9.90861607	7.32833428	2.42110543	11.4151289	#DIV/0!	#VALUE!
Critical t-value (alpha = Oil & grease)	1.66215614	1.66629434	1.65684469	1.66629434	1.66827022	1.66691507	1.66629434	#DIV/0!	#VALUE!
p-value	3.3843E-08	1.4021E-16	1.5821E-10	4.3471E-15	4.2106E-10	0.01806926	8.1625E-18	#DIV/0!	#VALUE!
p-value (Bonferroni adjusted) 2	1.1507E-06	4.7673E-15	5.3791E-09	1.478E-13	1.4316E-08	0.6143547	2.7752E-16	#DIV/0!	#VALUE!
p-value (Dunn-Sidak adjusted) 3	1.1507E-06	3.7748E-15	5.3791E-09	1.4722E-13	1.4316E-08	0.46204101	0	#DIV/0!	#VALUE!

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (33).

[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^n where n is the number of comparison tests (33).

Statistical Summary-- Compariso

Year 1 vs Year 2

	Dissolved Cadmium	Dissolved Chromium	Dissolved Copper	Dissolved Iron	Dissolved Lead	Dissolved Nickel	Dissolved Zinc
Year 1 Stats							
Observations	22	22	22	20	22	22	22
Mean	NA	4.42233903	13.0690909	831.695	1.67269941	3.59570525	55.8909091
Standard Deviation	NA	2.77926087	9.95625502	2568.65906	2.6818255	3.19168758	67.4689353
Year 2 Stats							
Observations	73	73	73	73	73	73	73
Mean	NA	5.3	7.61	499	1.3	2.9	48
Standard Deviation	NA	8.2	5	754	2.1	2.3	40
Comparison -- Assuming Unequal Variance							
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	#VALUE!	92.5257276	24.2732281	19.9047592	29.1914985	27.890833	25.6019857
Observed t-value	#VALUE!	0.77812449	2.30217357	0.57251679	0.5988512	0.95069979	0.52164018
Critical t-value (alpha = Oil & grease)	#VALUE!	1.66158543	1.71088232	1.72913133	1.6991271	1.70328804	1.70814019
p-value	#VALUE!	0.43849223	0.03030758	0.57368491	0.55392164	0.35019007	0.60651193
p-value (Bonferroni adjusted) 2	#VALUE!	1	1	1	1	1	1
p-value (Dunn-Sidak adjusted) 3	#VALUE!	1	0.64879872	1	1	0.99999957	1

Y1 vs Year 3

	Dissolved Cadmium	Dissolved Chromium	Dissolved Copper	Dissolved Iron	Dissolved Lead	Dissolved Nickel	Dissolved Zinc
Year 1 Stats							
Observations	22	22	22	20	22	22	22
Mean	NA	4.42233903	13.0690909	831.695	1.67269941	3.59570525	55.8909091
Standard Deviation	NA	2.77926087	9.95625502	2568.65906	2.6818255	3.19168758	67.4689353
Year 3 Stats							
Observations	66	66	66	66	66	66	66
Mean	NA	3.54056881	7.25615824	282.451334	NA	2.52142717	50.6002184
Standard Deviation	NA	4.04543711	11.9057292	273.982455	NA	4.11760179	59.8489027
Comparison -- Assuming Unequal Variance							
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	#VALUE!	52.7627467	42.7033533	19.1311697	#VALUE!	46.2365668	32.7441864
Observed t-value	#VALUE!	1.13924638	2.2535748	0.95461057	#VALUE!	1.26611209	0.32737093
Critical t-value (alpha = Oil & grease)	#VALUE!	1.67468897	1.68195129	1.72913133	#VALUE!	1.67865892	1.69388841
p-value	#VALUE!	0.25982137	0.02950221	0.3517633	#VALUE!	0.2118475	0.74551943
p-value (Bonferroni adjusted) 2	#VALUE!	1	1	1	#VALUE!	1	1
p-value (Dunn-Sidak adjusted) 3	#VALUE!	0.99996391	0.63874433	0.9999996	#VALUE!	0.99969468	1

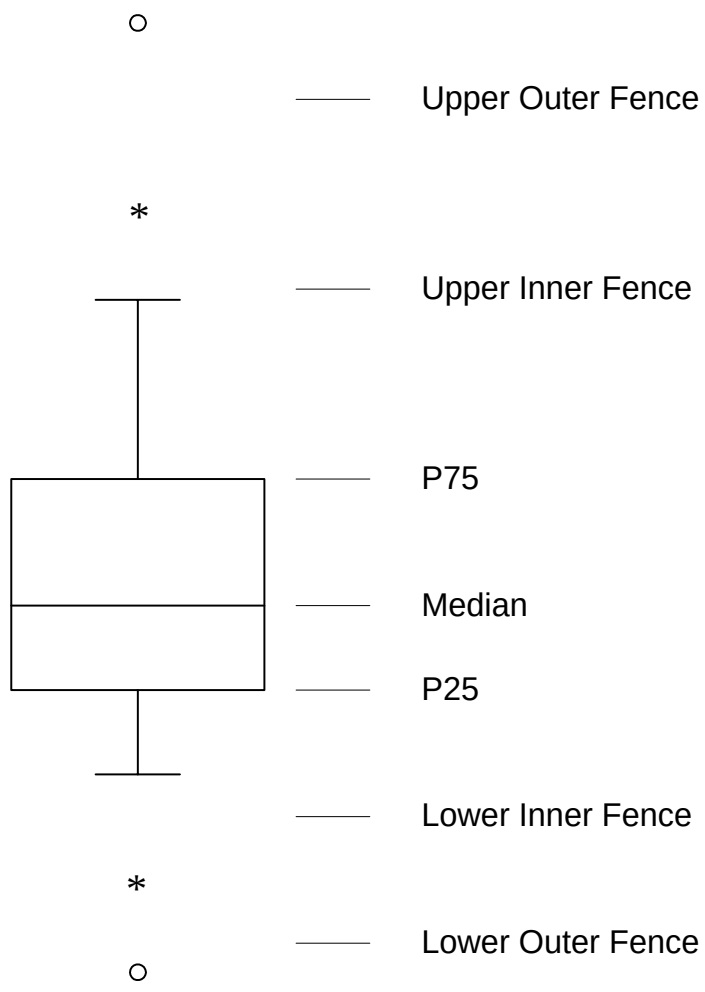
Statistical Summary-- Compariso

Year 3 vs Year 2

	Dissolved Cadmium	Dissolved Chromium	Dissolved Copper	Dissolved Iron	Dissolved Lead	Dissolved Nickel	Dissolved Zinc
Year 2 Stats							
Observations	73	73	73	73	73	73	73
Mean	NA	5.3	7.61	499	1.3	2.9	48
Standard Deviation	NA	8.2	5	754	2.1	2.3	40
Year 3 Stats							
Observations	66	66	66	66	66	66	66
Mean	NA	3.54056881	7.25615824	282.451334	NA	2.52142717	50.6002184
Standard Deviation	NA	4.04543711	11.9057292	273.982455	NA	4.11760179	59.8489027
Comparison -- Assuming Unequal Variance							
alpha	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Degrees of Freedom	#VALUE!	136.146164	72.0397105	66.0070111	#VALUE!	73.6866059	#DIV/0!
Observed t-value	#VALUE!	5.8035763	5.57146157	8.33638628	#VALUE!	9.657795	#DIV/0!
Critical t-value (alpha = Oil & grease)	#VALUE!	1.65613528	1.66629434	1.66827022	#VALUE!	1.66599648	#DIV/0!
p-value	#VALUE!	4.3561E-08	4.1226E-07	6.6234E-12	#VALUE!	1.0995E-14	#DIV/0!
p-value (Bonferroni adjusted) 2	#VALUE!	1.4811E-06	1.4017E-05	2.252E-10	#VALUE!	3.7383E-13	#DIV/0!
p-value (Dunn-Sidak adjusted) 3	#VALUE!	1.4811E-06	1.4017E-05	2.2519E-10	#VALUE!	3.737E-13	#DIV/0!

[2] p-value (Bonferroni adjusted) = p-value x n where n is the number of comparison tests (33).

[3] p-value (Dunn-Sidak adjusted) = 1 - (1 - p-value)^n where n is the number of comparison tests (33).



Key

P25	= 25th Percentile	Lower Outer Fence	= P25 - 3.0 (Median - P25)
P75	= 75th Percentile	Lower Inner Fence	= P25 - 1.5 (Median - P25)
*	= Outlier	Upper Outer Fence	= P75 + 3.0 (P75 - Median)
○	= Far Outlier	Upper Inner Fence	= P75 + 1.5 (P75 - Median)

Figure 4-2. Schematic of Box Plot Components.