CALTRANS
BMP RETROFIT PILOT PROGRAM

DISTRICT 7, LOS ANGELES

THIRD YEAR 2000/01 REPORT

BEST MANAGEMENT PRACTICES

OPERATIONS, MAINTENANCE & MONITORING

May 2001

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1.0 STORMWATER DATA

This summary report encapsulates the 2000/01 water quality monitoring data through April, 2001 at the District 7 sites involved in the Caltrans Best Management Practices (BMP) Retrofit Pilot Program (refer to Table 1-1 and Figure 1-1).

1.1 Objective

A primary objective of the Caltrans BMP Pilot Program is to evaluate the performance of BMPs. A comprehensive water quality monitoring study has been designed to meet these objectives by evaluating the BMPs' performance in the removal of contaminants from stormwater runoff and by understanding the level of effort required to maintain the BMPs at optimal effectiveness. Data collected from the 2000/01 wet season through April, 2001 is contained in this report and is used to evaluate the BMP's performance. Data includes:

- Rainfall data from storm events during the study period;
- Water quality and quantity of runoff into and discharged from the BMPs;
- Empirical observations of water quality, traffic, rainfall, and antecedent conditions; and
- Documentation records of inspection and maintenance activities performed.

In addition to the data collected above, this report contains characterization results of the following:

- Flow-weighted composite samples from the transfer pumps of the Via Verde Park & Ride and Lakewood Park & Ride MCTTs (74206 and 74208, respectively);
- Sump water from the I-210 Orcas Avenue and Filmore Street CDS Units (73102 and 73103, respectively);
- Sediment removed from the trench drain, which conveys flow into the Alameda Maintenance Station Oil/Water Separator (74201);
- Packing material removed from grit chambers of the Via Verde Park & Ride and Lakewood Park & Ride MCTTs (74206 and 74208, respectively);
- Sand blast media and sludge removed from the Via Verde Park & Ride MCTT (74206) sedimentation chamber;
- Core sand and sediment samples from the Eastern Maintenance Station, Foothill Maintenance Station, and Termination Park & Ride Sand Filters (74202, 74203, and 74204, respectively);
- Core soil and surface sediment samples from the I-605/SR-91 Infiltration Basin (73101);
- Sediment and media samples from the Foothill, Las Flores, and Rosemead Maintenance Station Drain Inlet Inserts (73216, 73217, and 73218, respectively); and

- Gross pollutants captured and bypassed by the Orcas and Filmore CDS Units (73102 and 73103, respectively).

1.2 Hydrology

The sections that follow describe BMP and site hydrological characteristics as observed during monitored storm events and maintenance inspections during 20001/01.

1.2.1 Precipitation During the Wet Season

Over the entire Los Angeles Basin, excluding mountain locations, the average annual precipitation ranges from less than 12 inches at the immediate coast to more than 20 inches at the foothills. The normal seasonal rainfall measured at downtown Los Angeles is 14.77 inches. On average, 92% of the seasonal precipitation falls between November 1st and April 30th. This percentage is roughly the same for all stations, regardless of elevation or distance from the ocean (National Weather Service, *The Climate of Los Angeles California*). Between October 2000 and April 2001, approximately 17.9 inches of precipitation fell on downtown Los Angeles. On average, October was wetter than usual, November and December were drier than usual, January and February were wetter than usual, March was drier than usual, and April was nearly average.

Figures 1-2a through 1-2m illustrate daily precipitation totals for the 2000/01 wet season at the BMP sites.

1.2.2 Precipitation During Monitored Events

Precipitation during each storm event was characterized by total rainfall, duration of rainfall, maximum intensity, days since last rainfall, and the magnitude of the event immediately preceding the monitored storm event (antecedent rainfall). Precipitation characteristics for each monitored event are summarized in Table 1-2. Maximum rainfall intensity (maximum hourly intensity calculated as twelve times the maximum rainfall recorded in any five minute period) for monitored events is summarized in Table 1-2. Rainfall variability from BMP sites during monitored events is graphically represented in Figures 1-3a through 1-3e. Cumulative rainfall is summarized graphically for each monitored event at each BMP site in Figures 1-4 through 1-27.

Each sampled storm event was preceded by at least 48 hours without rainfall, meeting the minimum antecedent dry period.

1.2.3 Stormwater Runoff During Monitored Events

Monitoring during 2000/01 marked the third wet season for both extended detention basins, Eastern Regional and Foothill Maintenance Station Sand Filters – Austin Type, and the drain inlet inserts. Monitoring during 2000/01 also marked the second wet season for the biofiltration swales and strips, Termination Park & Ride Sand Filter – Austin Type, the MCTTs, the infiltration basin and infiltration trench, and the oil/water

separator. Although there were monitoring equipment failures during this wet season (data from those failures was not used in calculating pollutant removal efficiencies of the BMPs), the minimum number of target storm events at each site were successfully sampled.

Monitoring was designed to isolate rainfall events and the runoff created by those events. Table 1-3 provides a summary of the runoff measured at each station in conjunction with each storm event. Figures 1-4 through 1-25 graphically summarize the influent and effluent flow during each monitored event at each BMP in response to rainfall. These figures also show when individual aliquots were collected as part of each composite sample.

In general, the drainage areas at each of the BMP sites are relatively small and impervious. This resulted in quick response times of inlet flow in relation to the advent of rain and fluctuations in rainfall intensity. It is important to note that because detention is an integral function of extended detention basins, sand filters, and the MCTTs, stormwater drained from these BMPs for many hours and often days. Fortunately, runoff from back-to-back storms did not commingle compromising the representativeness of a target storm event samples. Variation in stormwater detention (Table 1-3) was a factor of storm volume, duration, and BMP design. For extended detention basins, the outlet structure orifices regulated effluent flow. Sand filter detention times relied on sedimentation chamber throughput and sand bed percolation rate, while stormwater detention in the MCTTs was controlled by retaining stormwater in the settling chamber and later pumping it to the media bed where filtration characteristics regulated flow.

Detention times were calculated as the period between the start of inlet flow and the end of discharge flow. Some of the longer detention times were attributed to sediment and debris buildup that restricted flow through the BMP. This was noted at all the sand filters because of sediment buildup on the sand filter beds. Detention times also became prolonged at the sand filters because sediment impeded flow through the sedimentation chamber standpipe weep holes. Another factor that increased detention time at the sand filters was pump failure, which prevented the BMPs from discharging altogether.

Following is a summary of stormwater conditions entering and exiting the BMPs and monitoring strategies used to measure the flow rates and volumes:

Biofiltration Swales and Strips

Influent and effluent flow monitoring were conducted during each monitored storm event at the biofiltration strip and swale sites. Flow was measured using bubbler flow meters in conjunction with H-flumes. During several occasions, flow did not discharge through the biofilters because it infiltrated. During storms where the biofilters became saturated, and when there was continuous rainfall of moderate intensity, runoff was observed discharging through the biofilters.

During all sampled events, the volume of runoff entering the I-605/SR-91 Swale (73222b), the Cerritos Maintenance Station Swale (73223), and the I-5/I-605 Swale (73224) was greater than the volume of runoff discharging from the swales. However, because the freeway embankment may have been contributing runoff into the I-605 at Carson Swale (73225) through its side slope, there was one event where the volume of runoff entering the swale was less than the volume of runoff discharging the swales. Also, during two events, the volume of runoff entering the Altadena Maintenance Station Strip (73211a) was less than the volume of runoff discharging from the strip. This is attributed to some runoff bypassing the influent flume and sheet flowing directly into the strip during intense periods of rainfall. The size of the tributary area at the I-605/SR-91 Strip (73222a) control location is comparable to the size of the tributary area entering the strip, hence the volume of runoff entering the strip is similar to that passing through the control location.

Extended Detention Basins

Influent and effluent flow monitoring were conducted during each monitored storm event at the extended detention basin sites. Influent flow was measured using area/velocity flow meters and effluent flow was measured using bubbler flow meters in conjunction with primary flow measurement devices [H-flume at the I-5/I-605 EDB (074101) and V-notch weir at the I-605/SR-91 EDB (074102)].

As designed, the extended detention basins discharged runoff at regulated rates. During some cases the influent and effluent flow volumes were different. Most of the differences can be attributed to the inability to accurately measure low flow and surcharged pipe conditions. This inaccuracy affected the influent volumes more so than the effluent volumes, due in part to the steady regulated manner in which effluent discharged, whereas the influent fluctuated rapidly in direct response to rainfall intensity. Also, effluent flow measurement was more accurate because of the use of primary flow measurement devices; primary flow measurement devices could not be used to measure influent flows because of surcharged conditions. Other differences, specifically at the I-605/SR-91 Extended Detention Basin (074102), can be attributed to the infiltration of runoff within the BMP. Despite differences in influent and effluent volumes, flow proportioning of each sample aliquot was more than adequate.

Sand Filters – Austin Type

Influent and effluent flow monitoring were conducted during each monitored storm event at the sand filter sites. Influent flow was measured using area/velocity flow meters. Effluent flow rate was measured using bubbler flow meters, which were installed in the sumps of the sand filters. Relationships between flow curves provided by the pump manufacturer and depth of water in the sumps were developed. These relationships were field tested prior to the wet season and the flow meters were programmed with these algorithms accordingly.

As with the extended detention basins, differences between influent and effluent flow volumes can be attributed to the inability to accurately measure low flow and surcharged pipe conditions, and reaction to rapidly fluctuating flows in direct response to rainfall intensity. Effluent flow volumes at each site were calculated by the multiplying the number of times the sump was drained by the sump volume. Despite differences in influent and effluent volumes, flow proportioning of each sample aliquot was more than adequate.

Multi-chambered Treatment Trains

Influent and effluent flow monitoring were conducted during each monitored storm event at the MCTT sites. Influent flow was measured using area/velocity flow meters. Effluent flow rate was measured using bubbler flow meters, which were installed in the sumps of the media filter chamber of the MCTTs. Relationships between flow curves provided by the pump manufacturer and depth of water in the sumps were developed. These relationships were field tested prior to the wet season and the flow meters were programmed with these algorithms accordingly.

As with the extended detention basins, differences between influent and effluent flow volumes can be attributed to the inability to accurately measure low flow and surcharged pipe conditions, and reaction to rapidly fluctuating flows in direct response to rainfall intensity. Effluent flow volumes at each site were calculated by multiplying the depth of water transferred from the sedimentation chamber by the sedimentation chamber's area. Note that all water contained in the sedimentation chamber was not transferred to the media filter chamber; the water level was maintained approximately one foot above the settling tubes to allow the Vector Control Districts access. Also, because the Via Verde Park & Ride MCTT (74206) leaked, there are differences between influent and effluent flow volumes. Despite differences in influent and effluent volumes, flow proportioning of each sample aliquot was more than adequate. In addition to influent and effluent sampling, flow-weighted composite samples were manually collected from the transfer pumps beginning January 2001.

CDS Units

Flow monitoring was conducted during each monitored storm event at the CDS Units. Due to site constraints, influent and effluent flow was measured using bubbler flow meters in conjunction with H-flumes downstream of the CDS units. Monitoring equipment was installed in locations recommended by CDS. However, the influent strainer was relocated twice, based on CDS' subsequent recommendations, because of 1) gross pollutants being caught by the sampler strainer and Teflon tubing and 2) the strainer being located in an area of the weir box where total suspended solids concentrations appeared to be less than other areas of the weir box. Because of the short hydraulic residence time, influent and effluent flow rate differentials were negligible, thus allowing the influent sampler to be triggered by the flow monitoring equipment downstream of the CDS Units. Bypass flows were also monitored using bubbler flow meters attached the

CDS bypass weirs. Flow bypass occurred on several occasions primarily because of mosquito proofing bags installed downstream of the units (see Section 2.1.6).

Drain Inlet Inserts

Flow through the DIIs was continuously monitored throughout the wet season using bubbler flow meters in conjunction with Palmer-Bowlus flumes. The total flow volume passing through the DIIs was used to calculate pollutant removal efficiencies. DII pollutant removal efficiency results are presented in Section 1.4.3 of this report.

Oil/Water Separator

Flow through the Alameda Maintenance Station Oil/Water Separator (74201) was continuously monitored throughout the wet season using a bubbler flow meter in conjunction with a Palmer-Bowlus flume downstream of the unit. Because of the short hydraulic residence time, influent and effluent flow rate differentials were negligible and are considered to be the same.

Infiltration Basin and Infiltration Trench

At the I-605/SR-91 Infiltration Basin (73101), rainfall and water level within the BMP were measured during each monitored storm event. Water level was measured using a bubbler flow meter. Figure 1-26 graphically summarizes the infiltration rate during each monitored event at the BMP in response to rainfall. For each monitored event, ponded water within the infiltration basin infiltrated within 72 hours.

At the Altadena Maintenance Station Infiltration Trench (73211b), rainfall, influent flow, and water level within the BMP was measured during each monitored storm event. Flow was monitored using a bubbler flow meter in conjunction with an H-flume and water level within the infiltration trench was measured using a Troll 4000 pressure transducer. Figure 1-27 graphically summarizes the infiltration rate during each monitored event within the BMP in response to rainfall. For each monitored event, ponded water within the infiltration trench infiltrated within 72 hours.

1.2.4 Hydraulic Residence Time Evaluation

In accordance with the OMM Plan and supplemental guidance included in the October 13, 2000 Biweekly Status Report, hydraulic residence time (HRT) measurements were conducted at each biofiltration swale during 2000/01 wet season storm events. The intent of the HRT evaluation was to confirm that the HRT for the 1-year, 24-hour storm event was achieved by each biofiltration swale.

HRT evaluations were conducted when there was sufficient flow through the swale. Flow monitoring equipment was calibrated and initiated. A solution of Formulabs red dye was then poured into the inlet flume. Observations were noted as the dye flowed through the swale. Samples were collected in two-minute intervals once the dye was visually observed discharging from the swale. A total of 15 discrete samples were

collected in individual glass amber bottles and analyzed using a Turner Designs Aquafluor™ Handheld Fluorometer. Measurements made with the fluorometer were less impacted than measurements made with colorimeter last year. The test was repeated two times for a total of three runs at each swale.

HRT for each test was measured as the point in time in which 50% of the dye's mass passed through the swale. This was accomplished by integrating the area beneath the graph defined by discrete points. Where fluorescence concentrations did not approach the asymptote, the time at which this would have occurred was estimated. Plug flow was assumed. HRTs at the design flow rates were then estimated using the following procedure:

Subscript notation:

$_m$ - Measured during HRT test;
$_c$ - Calculated using measured quantities;
$_d$ - Under swale design conditions or calculated using design conditions;
$_a$ - Assumed value.

1. Calculate flow velocity (ft/s) during test: $V_c = Q_m/A_c$

   Q_m = Measured flow rate (cfs) [Averaged over each test run because of fluctuating flow rates.]

   A_c = Flow cross-sectional area (ft^2) [$A_c = b*d_m + Z*d_m^2$ for trapezoid.]

   d_m = Measured flow depth (ft) [Averaged over each test run because of fluctuating flow rates; depth of flow in swale estimated using depth of flow measured by the flow meter/H-flume, which was comparable to visual observations.]

   w_m = Measured water surface width (ft)

   b = Swale bed width (ft)

   Z = Side slope as horizontal:vertical ratio

2. Calculate Manning's n under test conditions: $n_c = (1.49/V_c)*R_c^{0.67}*s^{0.5}$

   R_c = Flow hydraulic radius (ft) [$R_c = (b*d_m + Z*d_m^2)/(b + 2*d_m*(Z^2 + 1)^{0.5})$ for trapezoid.]

   s = Longitudinal slope (ft/ft)

3. Calculate a value of HRT (HRT_c, min.) under test conditions to compare with value measured by timed dye travel (HRT_m, min.): $HRT_c = L/(V_c*60)$

   L = Swale length (ft)

4. For all swales tested, plot HRT_m versus HRT_c to check agreement based on how close points fall to a 1:1 line or a linear regression calculation. If agreement is relatively good, the scaling calculation below gives a reasonable estimate of HRT under design flow conditions. [Correlation analysis was conducted and agreement was good. Regression line slopes were calculated and agreement was good except for the I-5/I-605 Biofiltration Swale. Poor agreement may have been attributed to the first test when flow was nearly zero and all of the dye had yet to pass through the swale.]

5. Determine design flow rate (Q_d) [Obtained from the BMP Retrofit Pilot Program Basis of Design Report Drainage Design, District 7 Procurement]

6. Set up Manning's Equation to solve for the flow depth estimated to exist at design flow conditions (d_d, ft). In shallow flow, assuming a rectangular cross section, the equation would be: $Q_d = (1.49/n_c)*(w_m*d_d)[(w_m*d_d)/(w_m + 2*d_d)]^{0.67}*s^{0.5}$

   Use values of Q_d, n_c, w_m, and s from previous steps and solve iteratively for d_d. This equation assumes that water surface width does not vary much with small changes in flow depth. In deeper flows substitute the expressions for A and R appropriate to the swale shape.

7. Calculate flow cross-sectional area expected at design flow rate: In shallow flow, $A_d = d_d*w_m$ (In deeper flow use equation appropriate for swale shape.)

8. Calculate flow velocity expected at design flow rate: $V_d = Q_d/A_d$

9. Calculate ratio of calculated to design velocity: V_c/ V_d

10. Use the ratio from Step 9 as a scaling factor to estimate HRT at design flow: $HRT_d = HRT_m*(V_c/ V_d)$

The following paragraphs describe results of the 2000/01 HRT evaluations.

On February 25, 2001, HRT tests were performed at the I-605/SR-91 Swale. The vegetation height in the swale was measured to be approximately 6 to 9 inches.

> Test 1: Dye was poured into the inlet flume and reached the beginning of the swale at 16:13. Visual observations suggested that the dye reached the end of the swale approximately 19 minutes later at 16:32. A peak fluorescence of 1,520 ppm was recorded at 16:38 at the effluent (25 minutes after the dye had reached the beginning of the swale). Based on the procedure described above, the measured HRT is 9.6 minutes.
>
> Test 2: Dye was poured into the inlet flume and reached the beginning of the swale at 17:04. Visual observations suggested that the dye reached the end of the

swale approximately 15 minutes later at 17:19. A peak fluorescence of 3,380 ppm was recorded at 17:25 at the effluent (21 minutes after the dye had reached the beginning of the swale). Based on the procedure described above, the measured HRT is 9.2 minutes.

Test 3: Dye was poured into the inlet flume and reached the beginning of the swale at 17:50. Visual observations suggested that the dye reached the end of the swale approximately 14 minutes later at 18:04. A peak fluorescence of 2,613 ppm was recorded at 18:14 at the effluent (24 minutes after the dye had reached the beginning of the swale). Based on the procedure described above, the measured HRT is 19.6 minutes.

The estimated 1-year, 24-hour HRT for the I-605/SR-91 Swale is 9.8 minutes, less than the designed HRT of 12.4 but greater than the ideal HRT of 9 minutes. Data and calculations are shown in Worksheet 1a and Figure 1-28a graphically shows the events of the HRT evaluation.

On February 12, 2001 and February 19, 2001, HRT tests were performed at the Cerritos Maintenance Station. The vegetation height in the swale was measured to be approximately 6 to 10 inches.

Test 1: Dye was poured into the inlet flume and reached the beginning of the swale on February 12, 2001 at 11:32. Visual observations suggested that the dye reached the end of the swale approximately 2 minutes later at 11:34. A peak fluorescence of 3,096 ppm was recorded at 11:34 at the effluent (2 minutes after the dye had reached the beginning of the swale). Based on the procedure described above, the measured HRT is 2.2 minutes.

Test 2: Dye was poured into the inlet flume and reached the beginning of the swale on February 19, 2001 at 17:30. Visual observations suggested that the dye reached the end of the swale approximately 5 minutes later at 17:35. A peak fluorescence of 4,393 ppm was recorded at 17:39 at the effluent (9 minutes after the dye had reached the beginning of the swale). Based on the procedure described above, the measured HRT is 5.7 minutes.

Test 3: Dye was poured into the inlet flume and reached the beginning of the swale on February 19, 2001 at 18:16. Visual observations suggested that the dye reached the end of the swale approximately 4 minutes later at 18:20. A peak fluorescence of 4,965 ppm was recorded at 18:24 at the effluent (8 minutes after the dye had reached the beginning of the swale). Based on the procedure described above, the measured HRT is 10.2 minutes.

The estimated 1-year, 24-hour HRT for the Cerritos Maintenance Station Swale is 3.3 minutes, less than the designed HRT of 4.5 minutes. Data and calculations are shown in Worksheet 1b and Figure 1-28b graphically shows the events of the HRT evaluation.

On February 12, 2001 and February 19, 2001, HRT tests were performed at the I-5/I-605 Swale. The vegetation height in the swale was measured to be approximately 5 to 14 inches.

Test 1: Dye was poured into the inlet flume and reached the beginning of the swale on February 12, 2001 at 11:33. Visual observations suggested that the dye reached the end of the swale approximately 8 minutes later at 11:41. A peak fluorescence of 4,227 ppm was recorded at 11:45 at the effluent (12 minutes after the dye had reached the beginning of the swale). Based on the procedure described above, the measured HRT is 10.0 minutes.

Test 2: Dye was poured into the inlet flume and reached the beginning of the swale on February 19, 2001 at 16:20. Visual observations suggested that the dye reached the end of the swale approximately 16 minutes later at 16:36. A peak fluorescence of 2,987 ppm was recorded at 16:38 at the effluent (18 minutes after the dye had reached the beginning of the swale). Based on the procedure described above, the measured HRT is 6.2 minutes.

Test 3: Dye was poured into the inlet flume and reached the beginning of the swale on February 19, 2001at 17:05. Visual observations suggested that the dye reached the end of the swale approximately 12 minutes later at 17:17. A peak fluorescence of 3,098 ppm was recorded at 17:19 at the effluent (14 minutes after the dye had reached the beginning of the swale). Based on the procedure described above, the measured HRT is 6.0 minutes.

The estimated 1-year, 24-hour HRT for the I-5/I-605 Swale is 4.2 minutes, less than the designed HRT of 7.3 minutes. Data and calculations are shown in Worksheet 1c and Figure 1-28c graphically shows the events of the HRT evaluation.

On February 12, 2001 and February 24, 2001, HRT tests were performed at the I-605 at Carson Swale. The vegetation height in the swale was measured to be approximately 6 to 10 inches.

Test 1: Dye was poured into the inlet flume and reached the beginning of the swale on February 12, 2001 at 11:19. Visual observations suggested that the dye reached the end of the swale approximately 25 minutes later at 11:44. A peak fluorescence of 694 ppm was recorded at 11:46 at the effluent (27 minutes after the dye had reached the beginning of the swale). Based on the procedure described above, the measured HRT is 10.5 minutes.

Test 2: Dye was poured into the inlet flume and reached the beginning of the swale on February 24, 2001 at 13:20. Visual observations suggested that the dye reached the end of the swale approximately 12 minutes later at 13:32. A peak fluorescence of 4,654 ppm was recorded at 13:36 at the effluent (16 minutes after the dye had reached the beginning of the swale). Based on the procedure described above, the measured HRT is 7.9 minutes.

Test 3: Dye was poured into the inlet flume and reached the beginning of the swale on February 24, 2001 at 14:04. Visual observations suggested that the dye reached the end of the swale approximately 33 minutes later at 14:37. A peak fluorescence of 2,328 ppm was recorded at 14:49 at the effluent (45 minutes after the dye had reached the beginning of the swale). Based on the procedure described above, the measured HRT is 22.6 minutes.

The estimated 1-year, 24-hour HRT for the I-605 at Carson Swale is 6.6 minutes, less than the designed HRT of 9.0 minutes. Data and calculations are shown in Worksheet 1d and Figure 1-28d graphically shows the events of the HRT evaluation.

1.3 Analytical Results

The following sections provide an assessment of the overall quality of the data set, a summary of water quality data for each monitored event and solid sampling results.

1.3.1 Assessment of Quality Assurance/Quality Control Results

1.3.1.1 INTRODUCTION

Prior to determining BMP performance, laboratory reports were assessed and the data validated for overall precision, accuracy, representativeness, and completeness to establish data quality and usability. As part of this process, field and laboratory quality control (QC) data were assessed for compliance with the procedures and methods outlined in the Quality Assurance Project Plan (QAPP) presented in Appendix III of the Operation, Maintenance, and Monitoring (OMM) Plan. QC samples were collected during the 2000/01 wet season. Prior to each event a QC schedule was developed to determine the type of QC samples to be collected at each site in a manner to satisfy the requirements outlined in the OMM Plan - Quality Assurance Project Plan. Given the constraints associated with the collection of stormwater samples, the QC schedule was designed to be flexible in case sufficient sample was not obtained from the designated QC station. Table 1-4a summarizes the QC samples collected during each monitored storm event.

The data quality indicators used to evaluate the overall usability of the data for meeting the project Data Quality Objectives (DQOs) are described in the following paragraphs.

Precision

Precision measures the reproducibility of individual measurements under a given set of conditions. Precision was evaluated for each analyte based on field and laboratory duplicates. Field duplicate analyses were used to measure both field and laboratory precision, and to make an overall judgement as to whether the contaminants detected in the environmental samples are representative of conditions at the BMP location in which the field duplicate was collected. Laboratory duplicates were used to demonstrate method precision at the time of the analyses. Overall, precision was evaluated in terms

related to the mean concentration (relative percent difference). The relative percent difference (RPD) between the pair of samples was calculated using the following formula:

$$\%\text{RPD} = \frac{S - D}{S + \frac{D}{2}} \; x100$$

Where:

S = first sample value, and
D = duplicate sample value

Analytical results and the associated RPD results for both field duplicates and laboratory splits are presented in Appendices A and B, respectively.

Accuracy

Accuracy measures the bias in a measurement system by the degree of agreement between a measured value and an accepted reference or true value. The accuracy of the analytical determinations was evaluated using laboratory QC analyses such as laboratory control samples (LCS), matrix spikes (MS/MSD), and surrogate spikes (where applicable). Accuracy results for the LCS analyses were used to monitor the overall performance of all steps in the analysis, including sample preparation. Matrix spike accuracy data was used to provide information about the effect of each sample matrix on the preparation and analyses methodology. Surrogate spike recovery results (where applicable) were used to establish if the analytical method was performed properly. Accuracy is expressed as the percent recovery of a known concentration added and the measured concentration as shown in the following formula:

$$\%\text{Recovery} = \frac{S - U}{C_s} \; x100$$

Where:

S = Measured concentration of spiked aliquot, and
U = Measured concentration of unspiked aliquot, and
Cs = Concentration of spike added

Accuracy results are reported by the laboratory and are presented along with the associated analytical results in Appendix A.

Representativeness

Representativeness expresses the degree to which data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition. Sample representativeness was assessed in terms of percent storm captured, number of aliquots, and ultimately the evaluation of all associated blanks. Sample integrity was also evaluated with respect to adherence to the required preservation, storage, and holding times. A discussion of samples not meeting percent storm capture and/or minimum number of aliquots goals are discussed below. Blank results and adherence to holding times are discussed in the Data Validation Results section.

The OMM Plan defines a representative composite sample as being composed of a minimum of 12 aliquots, and representing at least 75 percent storm capture. All samples during the 2000/01 wet season met the 75 percent minimum storm capture goal, except four, which are indicated in Table 1-4b . The percent storm capture for samples was generally greater than 90 percent. Overall, excluding samples not considered representative (refer to Table 1-4b), the average percent storm capture was 98 percent. All but seven samples were composed of at least twelve aliquots (refer to Table 1-4b).

Completeness

Completeness is a measurement of the amount of valid data obtained from a measurement system compared to the amount that was expected to be obtained under normal conditions. Completeness was determined based on validation results and the number of valid data points (not rejected) relative to the total number of validated data. The overall completeness objective of 95 percent was met for all parameters. Percent completeness was calculated using the following formula:

$$\%\text{Completeness} = \frac{V}{T} \; x100$$

Where:

V = number of valid data points, and
T = total number of planned measurements

1.3.1.2 FIELD QA/QC

Blanks

Composite bottles and tubing were decontaminated in accordance with the procedures specified in the OMM Plan. All blanks were prepared in accordance with the project specifications as outlined in the OMM Plan - Quality Assurance Project Plan. Blank

sample results were evaluated to determine whether contamination was introduced as a result of sample equipment contribution (tubing blanks and composite bottle blanks) and analytical procedures (filter blanks and method blanks). Composite bottles (batches of 20) were not released for use unless blanks showed no contamination (i.e., blank results less than Reporting Limits). A review of this data showed that there were no contamination issues (i.e., all blank results were less than the Reporting Limits).

Field Duplicates

As shown in Table 1-4a, field duplicate samples were collected during storm events for a total of six field duplicates composite samples and four field duplicates grab samples. These samples were submitted "blind" to the laboratory and analyzed for the full list of analytes associated with grab and composite samples. Precision data, as measured by the RPD, was calculated for all parameters reported above the reporting limit and are presented in Appendix B.

There are no review criteria for field duplicate analyses comparability. It is expected that the results may have more variability than laboratory replicates, which measures only laboratory performance. It is likely that the variance in the RPD observed in samples is due to the heterogeneity of the samples.

1.3.1.3 LABORATORY QA/QC

To achieve the data quality needed to support project DQOs, all analyses for this investigation were performed using laboratory procedures in accordance with specified analytical protocols. To ensure comparability of the results and to maintain a high level of QC, a laboratory certified in the State of California under the Environmental Laboratory Accreditation Program (ELAP) performed the analyses.

The subsections below describe how each laboratory QC parameter was assessed for compliance with method-specific requirements. The results of this evaluation with respect to the data validation criteria are discussed in Section 1.3.1.5.

Method Blanks

A method blank was included in every analytical batch of twenty samples or less to demonstrate that the laboratory materials and environment were not introducing contamination to the analysis. Sample concentrations associated with method blanks containing target analytes were evaluated with respect to blank concentrations during the data validation to determine the need for qualification.

Laboratory Control Samples (LCS)

One LCS was prepared with each analytical batch of 20 samples or less. The LCS consists of laboratory prepared blanks to which is added a known concentration of all of the target analytes. The LCS was carried through the entire sample preparation and analysis procedure with the sample unknowns. LCS recoveries were used to demonstrate that the method is operating within acceptable limits. LCS accuracy results were evaluated with respect to the acceptance criteria specified in the QAPP.

Laboratory Replicates

As shown in Table 1-4a, nine composite samples and six grab samples were collected during storm events and were assigned for laboratory replicate analyses for the full list of analytes by the laboratory. These samples were split by the laboratory. Each aliquot of the sample was then analyzed and reported by the laboratory. Precision data as measured by the RPD was calculated for all parameters reported above the reporting limit and are presented in Appendix B. Precision data generated from laboratory splits were evaluated during the data validation with respect to the control limits specified in the QAPP. Laboratory duplicates with RPD limits outside the validation criteria and with both sample concentrations greater than 5x the RDL were flagged as estimated J for all samples analyzed within that batch.

Matrix Spike/Matrix Spike Duplicates (MS/MSD)

One set of matrix spike/matrix spike duplicate (MS/MSD) was prepared and analyzed for every analytical batch of 20 samples or less. As shown in Table 1-4a, MS/MSD analyses were performed on project samples collected during nine storm events. In this process, three sample aliquots were measured out, and a known amount of the target analyte(s) was spiked into two of the aliquots at the same concentration. The three portions were then prepared and analyzed in the same manner. The analysis of the two spiked aliquots generated recovery data, which was used to measure the effects of interferences in the sample matrix and reflect the overall accuracy of the determination. Additionally, the calculated RPD between the two measurements were used to assess matrix-specific precision. The selection of spiking analytes was consistent with the published method. Matrix spike accuracy and precision results were evaluated during the data validation with respect to the control limits specified in the QAPP.

Surrogates

Surrogate standards were added to all samples and QC samples tested by gas chromatography (GC). Surrogates are non-target compounds that are analytically similar to the analytes of interest. The surrogate compounds are spiked into the sample prior to the extraction or analysis. Surrogate recoveries were evaluated with respect to the acceptance criteria specified in the QAPP.

Holding Times

The holding time is the maximum amount of time that samples may be held before analysis and still be considered valid. Any holding time exceeded is listed in Appendix B.

Reporting Limits

Analytical methods and associated reporting limits (refer to Table 1-4c), specified in the OMM Plan, were adhered to.

1.3.1.4 DATA VALIDATION PROCESS

The following sections present the data validation effort performed to evaluate the usability of the sample data for meeting the project objectives.

Verification and Review

The verification and review process is based on overall accuracy, precision, and representativeness to establish data quality and usability. The approach used in the validation process involved the review of chain-of-custody forms; preparation, and use of checklists, which detail the required QC for each respective analytical method; verification and documentation of compliance with the applicable criteria; and, assignment of qualifiers to sample results associated with QC samples that do not meet the validation criteria. Data validation was done using the Caltrans Automated Data Validation (ADV) software. The evaluation of whether or not qualification of the data is deemed necessary followed basic guidelines from the United States Environmental Protection Agency (EPA) for evaluating inorganic and organic analysis (EPA February 1994a; EPA, 1994b). Each Electronic Data Deliverable (EDD) received from the laboratory was imported into the ADV software. Samples reported in the EDD as field QC samples such as field duplicates were assigned a field QC type and associated to "true" field samples. After making field QC assignments, the EDD was ready for automated validation. A project library meeting the project specifications as outlined in the OMM Plan - Quality Assurance Project Plan was selected, and then the automated validation routine was executed. During validation, all laboratory quality control results reported in the EDD were compared against the library criteria. When a quality control result exceeded limits established in the library, a validation flag was appended to the result records in all samples associated to that quality control sample. Holding times were also evaluated from sampling to analysis, sampling to extraction, and extraction to analysis dates, whichever applied. Method blanks, were evaluated and if target analytes were reported in blanks, appropriate qualifiers were appended to analyte result records for samples associated to those blanks.

Data Qualifiers

U Indicates the compound or element was an analyte, but was not detected at or above the contract required detection limit (CRDL).

J Indicates an estimated value.

R Indicates that QC determined the data are not usable.

UJ Indicates the compound or element was analyzed, but was not detected; the sample detection limit is an estimated value.

1.3.1.5 DATA VALIDATION RESULTS

Analytical results and associated data qualifiers are summarized in Tables 1-5a through 1-5d. The ADV software provided a number of validation summary reports, which are included in Appendix B. These included validation reports on a sample basis and Quality Control Outlier reports for each quality control element. Quality Control Outlier reports list results for quality control samples that have outliers (values exceeding library criteria). Quality Control outlier reports include a list of all samples and constituents reported in those samples associated to the affected quality control sample. Library validation criteria for the affected constituent are also included in the Quality Control Outlier reports.

1.3.2 Water Quality Results

Analyses were conducted on stormwater samples by a certified laboratory under the California Environmental Laboratory Accreditation Program (ELAP). The analyses were performed in accordance with methods and procedures outlined in the OMM Plan - Quality Assurance Project Plan and as specified by applicable EPA methods. The laboratory analyses performed on stormwater samples are listed in Table 1-4c. Analytical results are summarized in Table 1-5a.

1.3.3 Sediment and Waste Sampling Results

As part of the maintenance program, sediment is removed from the BMPs, tested, and properly disposed of. At the Alameda Maintenance Station Oil/Water Separator (74201), material that had collected in the trench drain during the 1999/2000 wet season, and had been removed and drummed, was sampled on November 7, 2000 for disposal purposes, and subsequently disposed.

On October 24, 2000 the plastic packing ball material was removed from the grit chambers of Via Verde MCTT (74206) and Lakewood MCTT (74208), and stored onsite in drums. This was to allow the grit chamber to be modified to allow easier sampling access for Vector Control District personnel, as described in Section 3.1.5. The material was tested for disposal purposes and subsequently disposed.

On January 16, 2001 sludge was removed from the Via Verde MCTT sedimentation chamber to allow work to begin to fix the leak, and stored onsite in drums. The material was tested for disposal purposes and subsequently disposed.

On March 1, 2001, sandblast residue from the leak fix at Via Verde MCTT was removed and drummed. The material was tested for disposal purposes and subsequently disposed.

On April 2-3, 2001, maintenance was done at all three Sand Filters in District 7, as described in Section 3.1.4. The first step was to sample the surface sediment and filter bed materials from within the sand filters. Nine cores were collected from locations on an equilateral grid, superimposed over the sand filter, to quantify sediment accumulation and quality data. The cores were driven 15 inches below the sediment surface and recovered. Each core was then subdivided into four sections as follows:

Section 1: 0-2 inches (i.e., mostly sediment crust)
Section 2: 2 to 5 inches
Section 3: 5 to 10 inches
Section 4: 10 to 15 inches

Each Section of the nine cores was homogenized to create four samples to represent the four different depths. Each sample will be analyzed

Analytical results and particle size distribution test results are summarized in Table 1-5b. Results of the particle size distribution tests are also presented in Figures 1-29a through 1-31d.

1.3.4 Soil Sampling Results

Core soil samples of the I-605/SR-91 Infiltration Basin (73101) were collected on May 1, 2001 following the end of the 2000/2001 wet season. Nine cores were collected from locations on an equilateral basin grid (superimposed over the basin). Each of the nine cores was collected using a hand-held, stainless steel soil probe. The probe was driven 1 meter [3.28 ft] below the ground surface and the core was recovered. Each core was then subdivided into three sections as follows:

Section 1 from the ground surface to 0.66 ft below the ground surface.
Section 2 was from 0.98 ft to 1.64 ft below the ground surface.
Section 3 was from 1.97 ft to 2.62 ft below the ground surface.

Similar depth intervals of each core were combined to prepare three samples: one from the surface to 0.66 ft below ground surface interval, one from 0.98 ft to 1.64 ft below ground surface interval and one from the 1.97 ft to 2.62 ft below the ground surface. Samples were sent to laboratories for total metals and TRPH analyses particle size distribution testing.

Analytical results and particle size distribution test results are summarized in Table 1-5c. Results of the particle size distribution tests are also presented in Figures 1-32a through 1-32c.

1.3.5 Drain Inlet Insert Sampling Results

As part of the pollutant removal efficiency evaluation, DII media and the material within the DIIs was collected on May 1, 2001 and sent to the laboratory for analysis. The samples were analyzed for total metals and TRPH. Unused DII media had previously been analyzed to assess background concentrations of the DIIs. The following DII components and materials were tested:

StreamGuard™ DII	Fossil Filter™ DII
Geotextile fabric	Adsorbent material
Absorbent material	Debris/litter/sediment
Debris/litter/sediment	

Results of the analyses are summarized in Table 1-5d. Results for the StreamGuard DII at Las Flores, which had to be replaced on January 23, 2001 due to a rip, are also summarized in Table 1-5d.

1.3.6 Vadose Zone Sampling

One pressure-vacuum lysimeter is installed in the I-605/SR-91 Infiltration Basin (73101) and one is installed in the Altadena Maintenance Station Infiltration Trench (73211b). Per plaintiff request and Caltrans agreement, an attempt to collect vadose zone samples following a storm event by applying a vacuum for a period of at least 24-hours were made.

Prior to collecting samples from each lysimeter, the vacuum equipment was set-up at each site to test for vacuum leaks. In each case no vacuum leaks were observed. A vacuum was applied to the lysimeter at the I-605/SR-91 Infiltration Basin for a period of greater than 24-hours following the October 27, 2000 storm event. A vacuum was applied to the lysimeter at the Altadena Maintenance Station Infiltration Trench for a period greater than 24-hours following the January 10, 2001, storm event. On both occasions, no fluids were observed.

1.4 Preliminary BMP Performance Evaluations

An evaluation of BMP performance was conducted to provide estimates of BMP efficiency (Tables 1-6a through 1-6h).

1.4.1 Biofiltration Strips and Swales, Extended Detention Basins, Sand Filters - Austin Type, and Multi-chambered Treatment Trains

BMP efficiencies presented in Tables 1-6a through 1-6e were calculated based upon Event Mean Concentrations (EMCs) and load estimates measured at the influent and effluent monitoring sites for each BMP. Average wet season efficiencies based on loads were also calculated and followed the Scoping Study methodology. For purposes of these calculations, the value of the reporting limit was used in cases where an analyte was reported as undetected. For the biofiltration strips and swales, and the I-605/SR-91 Extended Detention Basin (74102), load estimates were calculated using influent and effluent flow volumes measured by the monitoring equipment. For the I-5/I-605 Extended Detention Basin (74101), sand filters, and MCTTs, load estimates were calculated effluent flow volumes measured by the monitoring equipment. The following equations were used:

$$\text{Efficiency}(\%) = \frac{\text{EMC in} - \text{EMC out}}{\text{EMC in}} \text{ x}100$$

$$\text{Efficiency}(\%) = \frac{\text{Load in} - \text{Load out}}{\text{Load in}} \text{ x}100$$

and

Negative values indicate increases in concentration. Figures 1-33 through 1-37 are scatter plots graphically showing BMP pollutant removal efficiencies.

1.4.2 CDS Units

BMP efficiencies presented in Table 1-6f were calculated based upon EMCs and load estimates measured at the influent and effluent monitoring sites for each BMP. Average wet season efficiencies based on loads were calculated using 1) Scoping Study Methodology and 2) modified CDS Technologies, Inc. Mass Balance Approach. CDS Technologies, Inc. recommended in a letter dated August 31, 2000 that a mass balance approach be used to estimate pollutant removal efficiency because of auto sampler limitations in capturing solids in stormwater including particles larger than 100-125 microns. This approach requires collecting effluent data using flow monitoring equipment and auto samplers, and measurement of the mass and concentration of material collected by the CDS. This approach differs from the Scoping Study by precluding the use of an influent sampler. The point is argued that the performance of an effluent sampler would be no better than that of an influent sampler. Also, collecting and analyzing a representative sample of gross pollutants captured by the CDS would be questionable, considering its matrix. Furthermore, CDS' mass balance approach does not consider load of gross pollutants bypassing the CDS. Accordingly, the average wet season efficiency of the CDS units was assessed by evaluating the water quality pollutant removal efficiency using a mass balance approach considering only the water matrix. For

purposes of these calculations, the value of the reporting limit was used in cases where an analyte was reported as undetected. Efficiency of the CDS unit as a gross pollutant trap was also calculated. Results of gross pollutant removal efficiencies (% mass and volume captured vs. % mass and volume bypassed) are summarized in Figures 1-40a and 1-40b. Additionally, characterization of trapped and bypassed material are summarized in Figures 1-41a and 1-41b. These results are based on three clean-outs of the I-210 East of Orcas Avenue CDS unit and two clean-outs at the I-210 East of Filmore Street CDS unit. Clean-outs were conducted in accordance with the MID.

The following equations were used to calculate the water quality pollutant removal efficiencies:

Scoping Study Methodology:

$$\text{Efficiency (\%)} = \frac{\text{EMC in} - \text{EMC out}}{\text{EMC in}} \times 100$$

and

$$\text{Efficiency (\%)} = \frac{\text{Load in} - \text{Load out}}{\text{Load in}} \times 100$$

Modified CDS Technologies, Inc, Mass Balance Approach:

$$\text{Efficiency (\%)} = \frac{\text{Separation Chamber Load}}{\text{Outlet Loads} + \text{Separation Chamber Load} + \text{Bypass Loads}}$$

$$\text{Sepration Chamber Load} = \text{Chamber Voume} \times \text{Pollutant Concentration}$$

$$\text{Outlet Loads} = \sum \text{Individual Storm Event Loads (Mass x EMC)}$$

$$\text{Bypass Loads} = \sum \text{Individual Storm Event Bypass Loads (Mass x EMC)}$$

Note that Outlet Loads include any Bypassed Loads.

1.4.3 Drain Inlet Inserts

BMP efficiencies were estimated for four StreamGuard™ DIIs and three Fossil Filter™ DIIs, which were installed at the Foothill, Las Flores, and Rosemead Maintenance Stations. Two StreamGuard™ DIIs were installed at the Las Flores Maintenance Station because the first insert tore in January, which consequently required installation of a second StreamGuard™ DII. All DIIs were installed on 14 September 2000 and removed on 1 May 2001, except for the second Las Flores Maintenance Station StreamGuard™

DII, which was installed on 23 January 2001. Table 1-6g summarizes efficiency results and Worksheets 2a through 2n present the efficiency calculations.

To estimate the removal of contaminants by a DII, the procedure below was used. This procedure was taken from the Criteria for Determination of Additional Drain Inlet Insert Monitoring Requirements and Use of 1998-1999 Monitoring Results. For purposes of these calculations, the value of the reporting limit was used in cases where an analyte was reported as undetected.

1. For each of the five pollutants measured in the inlet media (total solids, total copper, total lead, total zinc, and TRPH), calculate percent efficiency representing the time interval since the last time the insert medium was changed, using the equation:

$$\text{Efficiency (\%)} = \frac{\text{Estimated Influent Pollutant Mass} - \text{Effluent Pollutant Mass}}{\text{Estimated Influent Pollutant Mass}} \times 100$$

2. Estimate the influent pollutant mass for the time interval according to:

$$\text{Estimated Influent Pollutant Mass} = \text{Insert Medium Pollutant Mass} + \text{Total Effluent Pollutant Mass for the time interval}$$

3. Calculate total effluent pollutant mass in two ways, and compute efficiency with each method for comparison:

   I. Storm-by-storm method:

      A. Estimate the effluent mass for each storm event in the time interval according to:

$$\text{Estimated Event Effluent Pollutant Mass} = \text{Effluent EMC} \times \text{Event Runoff Volume}$$

      B. For storm events that were successfully monitored, use the measured data.

      C. For any storm event during the time interval that met the deployment criteria but was not successfully monitored, estimate the EMC for that event as the mean of all EMCs measured for that case in all storm events during the time interval. How the mean EMC is determined depends on whether the data tend more to be normally or log-normally distributed. If the concentrations tend more to be normally distributed, use the arithmetic mean of the effluent EMCs. If they tend more to be log-normally distributed, calculate the mean effluent EMC by log-transforming individual storm EMCs, averaging, and then transforming back.

      D. Add the effluent pollutant masses from all storm events in the time interval.

Aggregated storm method:

A. Estimate the total effluent mass for all storm events in the time interval according to:

Estimated Total Effluent Pollutant Mass = Mean EMC x Total Runoff Volume

B. How the mean EMC is determined depends on whether the data tend more to be normally or log-normally distributed. If the concentrations tend more to be normally distributed, use the arithmetic mean of the effluent EMCs measured for that case in all storm events during the time interval. If they tend more to be log-normally distributed, calculate the mean effluent EMC by log-transforming individual storm EMCs, averaging, and then transforming back.

4. Compute mean efficiencies <u>for each pollutant and each wet season</u> by averaging results computed according to Steps 1-3 for all time intervals in that wet season.

Normality Test

Data sets were first tested for normality using the Shapiro-Wilk test. The Shapiro-Wilk (W) test is an effective method for evaluating whether the underlying distribution being tested is normally distributed. This test, which is a complex analysis of variance, was used to test a variable for departures from normality of the data. It requires a random sample of between 3 and 5,000 data points. Most authors agree that this is the most reliable quantification of non-normality for small to medium sized sample data set. In the Shapiro-Wilk test, the following hypotheses are tested:

H_0 : The population has a normal distribution.
H_1 : The population does not have a normal distribution.

The null hypothesis (H_o) of the test is that the sample data set is taken from a normal distribution, thus a significance level of < 0.05 rejects this supposition of normality. Parametric methods with variables for which W is significant should not be used. Results of this test are not clear evidence of normality or non-normality, but just one piece of evidence that can be helpful. The Shapiro-Wilk test statistic, W, is calculated using the formula below.

$$W = \frac{1}{d}\left[\sum_{i=1}^{k} a_i\left(x_{[n-i+1]} - x_{[i]}\right)\right]^2 \qquad d = \sum_{i=1}^{n}(x-\bar{x})^2$$

if n is even $k = \frac{n}{2}$ if n is odd $k = \frac{n-1}{2}$

where:

$\bar{x}$ = arithmetic mean
x_i = a number of the sample data
n = the number of sample data
a_i = the coefficient for the Shapiro-Wilk Test for normality (Gilbert, Table A6). Where the value of a_i is obtained knowing n.

The P value or critical level is the probability of rejecting the H_o when it is true. The null hypothesis is most often the hypothesis of "no difference". The term "significance level" (alpha) is used to refer to a pre-chosen probability and the term "P value" is used to indicate a probability that is calculated using the given data.

If the P value is less than the chosen significance level then you reject the null hypothesis (i.e., accept that your sample data gives reasonable evidence of a population difference for the observed parameters). It does NOT imply a "meaningful" or "important" difference.

The choice of significance level at which you reject the H_o is arbitrary. Traditionally the 5%, 1%, and 0.1% ($P < 0.05$, 0.01, and 0.001) regions are used. These numbers tend to give a false sense of security when in reality there are many factors that can contribute to the arbitrary nature of these levels. Ideally, random samples could be defined and the most appropriate test and one definitive conclusion could be made. However, because this cannot be done, optimization of research is done to minimize sources of uncertainty. A significance level or P-value of 0.05 (95% confidence interval) was used when performing the Shapiro-Wilk test.

Table 1-7 summarizes normality test results.

1.4.4 Oil/Water Separator

BMP efficiencies presented in Table 1-6h were calculated based upon first-flush grab sample concentrations collected at the influent and effluent locations. Load estimates were calculated using effluent flow volumes measured by the monitoring equipment. For purposes of these calculations, the value of the reporting limit was used in cases where an analyte was reported as undetected. The following equations were used:

$$\text{Efficiency (\%)} = \frac{\text{Grab Concentraion in} - \text{Grab Concentration out}}{\text{Grab Concentration in}} \times 100$$

and

$$\text{Efficiency (\%)} = \frac{\text{Load in} - \text{Load out}}{\text{Load in}} \times 100$$

Negative values indicate increases in concentration. Figure 1-36 is a scatter plot graphically showing BMP pollutant removal efficiencies.

Table 1-1: District 7 Sites

Site ID.	BMP Location	BMP Type
73101	I-605/SR-91	Infiltration Basin
73102	I-210 East of Orcas Avenue	Continuous Deflective Separator
73103	I-210 East of Filmore Street	Continuous Deflective Separator
73211a	Altadena Maintenance Station	Biofiltration Strip
73211b	Altadena Maintenance Station	Infiltration Trench
73216	Foothill Maintenance Station - North	StreamGuard™ Drain Inlet Insert
73216	Foothill Maintenance Station - South	Fossil Filter™ Drain Inlet Insert
73217	Las Flores Maintenance Station - North	StreamGuard™ Drain Inlet Insert
73217	Las Flores Maintenance Station - South	Fossil Filter™ Drain Inlet Insert
73218	Rosemead Maintenance Station - North	Fossil Filter™ Drain Inlet Insert
73218	Rosemead Maintenance Station - South	StreamGuard™ Drain Inlet Insert
73222a	I-605/SR-91	Biofiltration Strip
73222b	I-605/SR-91	Biofiltration Swale
73223	Cerritos Maintenance Station	Biofiltration Swale
73224	I-5/I-605	Biofiltration Swale
73225	I-605 at Carson	Biofiltration Swale
74101	I-5/I-605 Intersection	Extended Detention Basin
74102	I-605/SR-91 Intersection	Extended Detention Basin
74201	Alameda Maintenance Station	Oil/Water Separator
74202	Eastern Regional Maintenance Station	Sand Filter – Austin Type
74203	Foothill Maintenance Station	Sand Filter – Austin Type
74204	Termination Park & Ride	Sand Filter – Austin Type
74206	Via Verde Park & Ride	Multi-chambered Treatment Train
74208	Lakewood Park & Ride	Multi-chambered Treatment Train

Table 1-2: Rainfall Statistics for Each Monitored Event

Site/Event	Start Rain Date	Start Rain Time	End Rain Date	End Rain Time	Duration Rain (hrs: min)	Total Rain (inches)	Max Intensity (inches/ hour)	Antecedent Rain (days)	Antecedent Rain (inches)	Cumulative Precipitation
Event 1										
I-605/SR-91 Strip Swale, EDB, Cerritos Swale, Carson Swale	10/10/00	19:10	10/11/00	12:34	17:24:00	0.25	0.60	17.8	0.15	0.25
Lakewood MCTT	10/10/00	18:26	10/11/00	7:39	13:13:00	0.24	0.60	17.8	0.15	0.24
Rosemead DII	10/11/00	7:09	10/11/00	8:19	1:10:00	0.13	0.36	17.2	0.19	0.13
Event 2										
Altadena Strip	10/26/00	19:09	10/27/00	4:42	9:33:00	0.32	0.36	33.8	0.15	0.59
I-605/SR-91 Strip Swale, EDB, Cerritos Swale, Carson Swale	10/26/00	23:36	10/27/00	7:17	7:41:00	1.98	1.56	15.5	0.25	2.26
I-5/I-605 Swale, EDB	10/26/00	19:36	10/27/00	7:34	11:58:00	1.43	1.20	33.8	0.15	1.59
Eastern SF	10/26/00	6:16	10/27/00	5:47	23:31:00	1.25	0.96	33.3	0.15	1.25
Termination SF	10/26/00	3:02	10/27/00	7:42	28:40:00	1.65	0.84	14.6	0.19	1.92
Via Verde MCTT	10/26/00	7:06	10/27/00	6:59	23:53:00	0.91	1.32	33.3	0.15	1.00
Lakewood MCTT	10/26/00	19:29	10/27/00	7:46	12:17:00	1.17	0.84	15.5	0.24	1.41
Filmore CDS	10/26/00	5:26	10/27/00	4:31	23:05:00	1.19	0.48	33.2	0.15	1.23
Foothill DIIs, SF	10/26/00	6:02	10/27/00	5:52	23:50:00	0.78	1.44	33.3	0.29	0.82
Las Flores DIIs	10/26/00	17:21	10/27/00	2:23	9:02:00	2.11	3.12	33.8	0.13	2.15
Rosemead DIIs	10/26/00	5:43	10/27/00	5:28	23:45:00	0.88	0.96	14.9	0.13	1.01
Alameda OWS	10/26/00	19:02	10/27/00	4:51	9:49:00	0.28	0.24	15.5	0.13	0.44
Event 3										
I-605/SR-91 Swale, EDB, Cerritos Swale, Carson Swale	01/08/01	10:53	01/08/01	15:45	4:52:00	0.55	0.84	58.5	0.14	3.60
I-5/I-605 Swale, EDB	01/08/01	10:39	01/08/01	15:47	5:08:00	0.44	0.48	73.1	1.43	2.77
Lakewood MCTT	01/08/01	10:42	01/08/01	15:36	4:54:00	0.47	0.36	58.7	0.12	2.79
Las Flores DII	01/08/01	9:16	01/08/01	13:36	4:20:00	0.24	0.24	70.6	0.74	3.14
Alameda OWS	01/08/01	11:19	01/08/01	14:49	3:30:00	0.23	0.24	73.3	0.28	1.59
Event 4										
Altadena Strip	01/10/01	14:46	01/12/01	4:51	38:05:00	4.19	0.96	72.7	0.65	5.55
I-605/SR-91 Strip, Swale, EDB, Cerritos Swale, Carson Swale	01/10/01	15:35	01/12/01	14:16	46:41:00	3.47	2.16	2.0	0.55	7.07
I-5/I-605 Swale, EDB	01/10/01	15:01	01/12/01	13:42	46:41:00	4.10	4.44	2.0	0.44	6.87
Eastern SF	01/10/01	15:01	01/12/01	5:33	38:32:00	3.72	1.80	2.0	0.11	5.88
Via Verde MCTT	01/10/01	15:38	01/11/01	12:54	21:16:00	3.38	1.20	2.0	0.13	4.90
Lakewood MCTT	01/10/01	15:02	01/12/01	13:49	46:47:00	3.82	3.48	2.0	0.47	6.62
Filmore CDS	01/10/01	14:27	01/12/01	8:50	42:23:00	4.33	1.92	72.8	0.69	6.31
Foothill DIIs, SF	01/10/01	15:09	01/12/01	5:38	38:29:00	4.07	1.20	72.7	0.56	5.51
Las Flores DIIs	01/10/01	13:46	01/12/01	11:42	45:56:00	5.92	3.12	2.0	0.24	9.06
Rosemead DIIs	01/10/01	15:01	01/12/01	5:46	38:45:00	3.92	1.92	72.8	0.69	5.69
Alameda OWS	01/10/01	14:35	01/11/01	8:54	18:19:00	3.57	1.32	2.0	0.23	5.17
Event 5										
Altadena Strip	01/24/01	6:19	01/24/01	14:36	8:17:00	0.47	0.48	12.1	4.19	6.07
I-605/SR-91 Swale, EDB, Cerritos Swale, Carson Swale	01/24/01	6:29	01/24/01	7:52	1:23:00	0.30	1.20	11.7	3.47	7.38
I-5/I-605 Swale EDB	01/24/01	6:26	01/24/01	10:37	4:11:00	0.54	1.92	11.7	4.10	7.41
Eastern SF	01/24/01	6:35	01/24/01	12:59	6:24:00	0.64	0.60	12.0	3.72	6.52
Termination SF	01/24/01	6:45	01/24/01	10:53	4:08:00	0.36	0.96	11.7	0.46	7.97
Lakewood MCTT	01/24/01	6:09	01/24/01	10:45	4:36:00	0.43	1.08	11.7	3.82	7.05
Filmore CDS	01/24/01	5:50	01/24/01	12:57	7:07:00	0.60	0.72	11.9	4.33	6.99
Foothill DIIs, SF	01/24/01	6:40	01/24/01	15:29	8:49:00	0.48	0.60	12.0	4.07	6.02
Las Flores DIIs	01/24/01	4:23	01/24/01	12:29	8:06:00	0.52	0.72	11.7	5.92	9.58
Rosemead DIIs	01/24/01	6:32	01/24/01	11:56	5:24:00	0.49	0.48	12.0	3.92	6.18
Alameda OWS	01/24/01	6:01	01/24/01	9:59	3:58:00	0.31	0.60	12.1	0.26	5.82

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Site/Event	Start Rain Date	Start Rain Time	End Rain Date	End Rain Time	Duration Rain (hrs: min)	Total Rain (inches)	Max Intensity (inches/ hour)	Antecedent Rain (days)	Antecedent Rain (inches)	Cumulative Precipitation
Event 6										
Altadena Strip	02/10/01	4:06	02/10/01	16:40	12:34:00	0.46	0.60	14.4	0.38	6.99
I-605/SR-91 Strip and EDB	02/10/01	4:53	02/13/01	8:15	75:22:00	3.02	0.60	14.4	0.67	11.09
I-5/I-605 EDB	02/10/01	4:37	02/13/01	21:23	88:46:00	3.41	0.48	14.6	0.61	11.45
Eastern SF	02/10/01	7:22	02/13/01	21:55	86:33:00	4.16	0.84	14.7	0.36	11.05
Termination SF	02/10/01	5:27	02/11/01	14:46	33:19:00	0.48	0.24	14.4	0.73	9.19
Lakewood MCTT	02/10/01	4:34	02/13/01	21:47	89:13:00	3.28	0.60	14.4	0.68	11.02
Orcas CDS	02/10/01	0:32	02/10/01	12:56	12:24:00	0.42	0.24	14.3	0.41	7.39
Filmore CDS	02/10/01	2:14	02/10/01	12:56	10:42:00	0.55	0.36	16.6	0.50	8.05
Foothill DIIs, SF	02/10/01	4:38	02/10/01	13:50	9:12:00	0.26	0.48	14.6	0.22	6.52
Las Flores DIIs	02/10/01	1:15	02/11/01	10:16	33:01:00	0.96	1.32	14.3	0.91	11.46
Rosemead DIIs	02/10/01	5:03	02/10/01	13:42	8:39:00	0.30	0.84	14.6	0.34	6.91
Alameda OWS	02/10/01	5:14	02/10/01	13:19	8:05:00	0.31	0.36	14.5	0.65	6.80
Event 7										
Orcas CDS	02/24/01	8:32	02/28/01	12:51	100:19:00	2.13	0.24	10.2	4.49	14.18
Filmore CDS	02/24/01	10:30	02/28/01	13:34	99:04:00	2.22	0.48	10.4	3.95	14.37
Event 8										
I-5/I-605 EDB	03/06/01	0:11	03/07/01	0:16	24:05:00	0.67	0.48	5.5	3.83	16.78
I-605/SR-91 EDB	03/06/01	0:11	03/06/01	4:40	4:29:00	0.57	0.48	7.4	2.94	15.47
Eastern SF	03/06/01	0:35	03/06/01	6:17	5:42:00	0.42	0.48	5.5	3.80	15.70
Foothill SF	03/06/01	0:44	03/06/01	12:54	12:10:00	0.71	0.60	5.9	0.64	14.88
Termination SF	03/06/01	0:50	03/07/01	0:26	23:36:00	0.57	0.24	5.5	0.74	17.62
Orcas CDS	03/04/01	17:11	03/06/01	5:37	36:26:00	2.08	0.60	4.2	2.13	16.28
Filmore CDS	03/04/01	17:32	03/06/01	18:45	49:13:00	1.49	0.24	4.2	2.22	15.86
Event 9										
Altadena Strip	4/7/2001	0:17	4/7/2001	14:58	14:41:00	1.40	0.48	5.00	0.12	18.65
I-605/SR-91 Strip, Swale, EDB, Cerritos Swale, Carson Swale	4/7/2001	2:07	4/7/2001	8:48	6:41:00	0.58	0.48	31.9	0.57	16.09
I-5/I-605 Swale, EDB	4/7/2001	0:29	4/7/2001	9:30	9:01:00	0.79	1.20	31.6	0.58	17.57
Eastern SF	4/7/2001	0:35	4/7/2001	9:42	9:07:00	0.84	0.84	31.8	0.42	16.59
Foothill SF	4/7/2001	0:36	4/7/2001	10:34	9:58:00	1.12	0.48	28.1	0.28	16.42
Termination SF	4/7/2001	3:05	4/7/2001	9:51	6:46:00	0.75	0.24	31.8	0.52	18.39
Via Verde MCTT	4/7/2001	2:10	4/7/2001	10:54	8:44:00	0.85	1.08	28.1	0.19	14.15
Orcas CDS	4/7/2001	1:12	4/7/2001	9:52	8:40:00	1.11	0.72	31.8	1.64	17.69
Filmore CDS					0:00:00					
Event 10										
Altadena Strip	4/20/2001	18:08	4/20/2001	2.356	38:24:38	0.8	1.08	13.1	1.40	19.45
Foothill SF	4/20/2001	19:03	4/21/2001	0.18	9:16:12	0.77	0.48	13.4	1.12	17.21
Via Verde MCTT	4/20/2001	16:00	4/21/2001	2.32	63:40:48	0.84	1.2	13.2	0.85	15.07
Filmore CDS	4/20/2001	19:05	4/21/2001	10:36	15:31:00	0.6	0.24	12.7	0.62	17.49

Table 1-3: Flow Data for Each Monitored Event[1]

Site/Event	Start Flow Date	Start Flow Time	End Flow Date	End Flow Time	Duration Flow (hours: minutes)	Total Flow (cubic feet)	Volume to Sample (cf)	No. of Sample Alliqouts collected	Peak Flow (cfs)	% Storm Capture	Peak Capture	Detention Time (hrs:min)
Event 1												
I-605/SR-91 Strip Inf	10/10/00	19:06	10/11/00	14:18	19:12:00	154	5	23	0.059	79	Y	---
I-605/SR-91 Swale Inf	10/10/00	7:10	10/11/00	1:20	18:10:00	85	5	13	0.030	87	Y	---
Cerritos Swale Inf	10/10/00	19:16	10/11/00	8:27	13:11:00	242	7	27	0.121	90	Y	---
Carson Swale Inf	10/10/00	19:31	10/11/00	8:54	13:23:00	85	2	24	0.036	100	Y	---
Lakewood MCTT Inf	10/10/00	18:34	10/11/00	10:31	15:57:00	1508	21	55	0.831	100	Y	---
Lakewood MCTT Eff	10/11/00	11:48	10/12/00	13:16	25:28:00	989	20	98	0.228	100	Y	42:42:00
Rosemead DII SG	10/11/00	7:16	10/11/00	10:11	2:55:00	434	21	20	0.168	100	Y	---
Rosemead DII FF	10/11/00	7:20	10/11/00	8:47	1:27:00	79	5	8	0.040	100	Y	---
Event 2												
Altadena Strip Inf	10/26/00	19:10	10/27/00	6:10	11:00:00	1298	60	22	0.242	100	Y	---
Altadena Strip Eff	10/26/00	19:05	10/27/00	6:15	11:10:00	1199	60	18	0.236	100	Y	---
I-605/SR-91 Strip Inf	10/26/00	23:36	10/27/00	7:17	7:41:00	959	23	41	0.240	100	Y	---
I-605/SR-91 Strip Eff	10/27/00	1:45	10/27/00	5:24	3:39:00	1233	6	27	0.349	100	Y	---
I-605/SR-91 Swale Inf	10/27/00	1:00	10/27/00	8:26	7:26:00	1052	8	118	0.284	100	Y	---
I-605/SR-91 Swale Eff	10/27/00	2:24	10/27/00	4:54	2:30:00	479	6	67	0.239	96	Y	---
Cerritos Swale Inf	10/27/00	0:56	10/27/00	8:10	7:14:00	3559	23	140	0.627	90	Y	---
Cerritos Swale Eff	10/27/00	0:09	10/27/00	4:57	4:48:00	1862	23	46	0.540	100	Y	---
I-5/I-605 Swale Inf	10/26/00	19:54	10/27/00	7:48	11:54:00	1943	23	84	0.443	99	Y	---
I-5/I-605 Swale Eff	10/27/00	1:57	10/27/00	5:51	3:54:00	1165	13	65	0.375	100	Y	---
Carson Swale Inf	10/27/00	0:56	10/27/00	8:26	7:30:00	2306	9	82	0.314	95	Y	---
Carson Swale Eff	10/27/00	1:32	10/27/00	6:20	4:48:00	1562	9	98	0.322	98	Y	---
I-5/I-605 EDB Inf	10/26/00	20:01	10/29/00	0:58	52:57:00	55709	35	841	2.591	100	Y	---
I-5/I-605 EDB Eff	10/26/00	19:35	10/31/00	11:30	111:55:00	12227	35	349	0.119	100	Y	111:29:00
I-605/SR-91 EDB Inf	10/27/00	1:00	10/28/00	4:40	51:40:00	19121	38	499	1.865	100	Y	---
I-605/SR-91 EDB Eff	10/27/00	2:15	10/28/00	13:45	59:30:00	1413	21	67	0.024	100	Y	111:55:00
Eastern SF Inf	10/26/00	6:18	10/27/00	7:38	25:20:00	2855	10	221	0.233	100	Y	---
Foothill SF Inf	10/26/00	6:13	10/27/00	6:45	24:32:00	1770	12	118	0.282	100	Y	---
Foothill SF Eff	10/26/00	18:32	10/29/00	17:32	71:00:00	2112	12	886	0.151	100	Y	83:19:00
Termination SF Inf	10/26/00	2:50	10/27/00	4:47	25:57:00	14754	46	142	2.816	100	Y	---
Termination SF Eff	10/26/00	4:05	10/29/00	20:35	88:30:00	708	46	216	0.140	5	Y	89:45:00
Via Verde MCTT Inf	10/26/00	7:40	10/27/00	8:27	24:47:00	1912	10	151	0.651	100	Y	---
Via Verde MCTT Eff	10/29/00	14:03	10/29/00	18:00	3:57:00	477	15	99	0.146	100	Y	82:20:00
Lakewood MCTT Inf	10/26/00	19:37	10/27/00	4:59	9:22:00	5739	21	211	0.843	100	Y	---
Lakewood MCTT Eff	10/29/00	16:25	11/01/00	16:30	72:05:00	6425	174	56	0.230	100	Y	140:53:00
Filmore CDS Eff	10/26/00	5:39	10/27/00	6:42	25:03:00	5581	64	85	0.619	100	Y	---
Foothill SG Eff	10/26/00	6:06	10/27/00	15:21	33:15:00	1995	6	306	0.119	100	Y	---
Las Flores SG Eff	10/26/00	17:40	10/27/00	2:30	8:50:00	217	4	55	0.025	100	Y	---
Rosemead SG Eff	10/26/00	5:48	10/27/00	11:06	29:18:00	3185	21	148	0.464	100	Y	---
Foothill FF Eff	10/26/00	6:05	10/27/00	16:15	34:10:00	1607	15	61	0.426	97	Y	---
Las Flores FF Eff	10/26/00	17:21	10/27/00	4:00	10:39:00	2533	15	125	1.381	77	Y	---
Rosemead FF Eff	10/26/00	5:45	10/27/00	5:55	24:10:00	737	5	47	0.175	90	Y	---
Alameda OWS	10/26/00	5:05	10/27/00	22:05	41:00:00	297	N/A	N/A	0.111	N/A	N/A	---
Event 3												
I-605/SR-91 Swale Inf	01/08/01	11:00	01/08/01	16:59	5:59:00	950	8	59	0.172	98	Y	---
Cerritos Swale Inf	01/08/01	11:13	01/08/01	16:32	5:19:00	1120	23	48	0.458	100	Y	---
Cerritos Swale Eff	01/08/01	11:00	01/08/01	16:16	5:16:00	297	23	12	0.215	100	Y	---
I-5/I-605 Swale Inf	01/08/01	11:00	01/08/01	16:56	5:56:00	411	23	17	0.139	100	Y	---
Carson Swale Inf	01/08/01	11:55	01/08/01	17:47	5:52:00	327	9	34	0.051	97	Y	---
Carson Swale Eff	01/08/01	15:03	01/08/01	17:05	2:02:00	79	9	8	0.028	100	Y	---
I-5/I-605 EDB Inf	01/08/01	11:17	01/09/01	7:10	19:53:00	2095	35	50	0.243	100	Y	---
I-5/I-605 EDB Eff	01/08/01	11:45	01/09/01	5:22	17:37:00	1386	35	39	0.032	100	Y	18:05:00

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Site/Event	Start Flow Date	Start Flow Time	End Flow Date	End Flow Time	Duration Flow (hours: minutes)	Total Flow (cubic feet)	Volume to Sample (cf)	No. of Sample Alliqouts collected	Peak Flow (cfs)	% Storm Capture	Peak Capture	Detention Time (hrs:min)
I-605/SR-91 EDB Inf	01/08/01	10:56	01/08/01	21:22	10:26:00	1673	21	79	1.035	100	Y	---
Lakewood MCTT Inf	01/08/01	10:55	01/09/01	1:37	14:42:00	2862	21	130	0.434	100	Y	---
Lakewood MCTT Eff	01/10/01	11:10	01/10/01	15:45	4:35:00	3031	90	29	0.222	100	Y	52:50:00
Las Flores FF Eff	01/08/01	9:18	01/08/01	15:00	5:42:00	619	15	39	0.129	100	Y	---
Alameda OWS	01/08/01	11:25	01/08/01	15:50	4:25:00	361	N/A	N/A	0.099	N/A	N/A	---
Event 4												
Altadena Strip Inf	01/10/01	14:50	01/12/01	9:20	42:30:00	20242	133	151	0.525	99	Y	---
Altadena Strip Eff	01/10/01	14:40	01/12/01	6:20	39:40:00	15487	139	112	0.928	100	Y	---
I-605/SR-91 Strip Inf	01/10/01	18:48	01/13/01	11:06	64:18:00	923	23	110	0.129	87	Y	---
I-605/SR-91 Strip Eff	01/10/01	15:39	01/12/01	5:21	37:42:00	1575	6	69	0.379	85	Y	---
I-605/SR-91 Swale Inf	01/10/01	15:08	01/12/01	15:22	48:14:00	1726	13	130	0.251	98	Y	---
I-605/SR-91 Swale Eff	01/10/01	18:42	01/11/01	18:42	24:00:00	530	8	35	0.319	97	Y	---
Cerritos Swale Inf	01/10/01	15:10	01/12/01	15:02	47:52:00	10658	68	154	1.611	100	Y	---
Cerritos Swale Eff	01/10/01	17:15	01/11/01	1:10	7:55:00	908	40	17	0.619	100	Y	---
I-5/I-605 Swale Inf	01/10/01	15:23	01/12/01	12:47	45:24:00	6199	52	118	1.211	98	Y	---
I-5/I-605 Swale Eff	01/10/01	17:22	01/12/01	5:10	35:48:00	2389	36	65	1.209	97	Y	---
Carson Swale Inf	01/10/01	15:38	01/12/01	15:36	47:58:00	5783	23	235	0.992	99	Y	---
Carson Swale Eff	01/10/01	16:14	01/12/01	15:52	47:38:00	6344	17	305	0.839	92	Y	---
I-5/I-605 EDB Inf	01/10/01	15:50	01/12/01	16:53	49:03:00	145448	342	294	11.215	100	Y	---
I-5/I-605 EDB Eff	01/10/01	15:52	01/14/01	4:53	85:01:00	58830	342	171	5.436	100	Y	85:03:00
I-605/SR-91 EDB Inf	01/10/01	15:05	01/12/01	16:55	49:50:00	52676	228	230	1.885	100	Y	---
Eastern SF Inf	01/10/01	15:13	01/12/01	8:45	41:32:00	9507	112	85	1.138	100	Y	---
Eastern SF Eff	01/10/01	17:03	01/14/01	7:36	86:33:00	4932	112	392	0.139	100	Y	88:23:00
Foothill SF Inf	01/10/01	15:20	01/12/01	5:25	38:05:00	15974	202	65	0.928	100	Y	---
Via Verde Inf	01/10/01	15:44	01/12/01	13:09	45:25:00	22380	31	374	0.904	100	Y	---
Via Verde Eff	01/14/01	10:30	01/14/01	14:00	3:30:00	734	36	45	0.149	100	Y	94:16:00
Lakewood MCTT Inf	01/10/01	15:14	01/10/01	21:45	6:31:00	6151	52	107	0.592	100	Y	---
Lakewood MCTT Eff	01/13/01	10:15	01/13/01	20:45	10:30:00	6425	174	43	0.228	100	Y	77:31:00
Filmore CDS Eff	01/10/01	14:30	01/12/01	14:01	47:31:00	9671	150	64	0.463	100	Y	---
Foothill SG Eff	10-Jan-01	17:06	12-Jan-01	16:00	46:54:00	10548	11	452	0.156	100	Y	---
Las Flores SG Eff	01/10/01	13:55	01/12/01	9:55	44:00:00	933	36	26	0.033	100	Y	---
Rosemead SG Eff	01/10/01	15:08	01/12/01	12:24	45:16:00	13440	73	182	1.157	100	Y	---
Foothill FF Eff	01/10/01	15:18	01/12/01	12:45	45:27:00	12336	64	176	0.774	92	Y	---
Las Flores FF Eff	01/10/01	13:48	01/12/01	13:27	47:39:00	8222	54	152	1.611	100	Y	---
Rosemead FF Eff	01/10/01	15:06	01/12/01	6:45	39:39:00	3974	32	125	0.409	100	Y	---
Alameda OWS	01/10/01	14:40	01/11/01	11:55	21:15:00	4203	N/A	N/A	0.518	N/A	N/A	---
Event 5												
Altadena Strip Inf	01/24/01	6:30	01/24/01	11:15	4:45:00	1759	60	29	0.406	100	Y	---
Altadena StripEff	01/24/01	6:12	01/24/01	11:24	5:12:00	1294	60	21	0.344	100	Y	---
I-605/SR-91 Swale Inf	01/24/01	6:33	01/24/01	8:30	1:57:00	125	8	15	0.146	100	Y	---
Cerritos Swale Inf	01/24/01	6:29	01/24/01	7:52	1:23:00	532	23	22	0.569	100	Y	---
I-5/I-605 Swale Inf	01/24/01	6:30	01/24/01	14:54	8:24:00	724	23	31	0.504	100	Y	---
Carson Swale Inf	01/24/01	6:36	01/24/01	12:27	5:51:00	348	9	32	0.186	100	Y	---
Carson Swale Eff	01/24/01	7:35	01/24/01	13:35	6:00:00	216	9	19	0.109	95	Y	---
I-5/I-605 EDB Inf	01/24/01	6:44	01/25/01	8:31	25:47:00	9843	60	164	2.141	100	Y	---
I-5/I-605 EDB Eff	01/24/01	6:55	01/25/01	22:05	39:10:00	4764	60	78	0.055	100	Y	39:21:00
I-605/SR-91 EDB Inf	01/24/01	6:31	01/24/01	12:34	6:03:00	1327	27	49	1.064	100	Y	---
I-605/SR-91 EDB Eff	01/24/01	7:45	01/24/01	16:10	8:25:00	176	20	9	0.008	100	Y	9:39:00
Eastern SF Inf	01/24/01	6:38	01/24/01	14:30	7:52:00	1457	16	89	0.178	100	Y	---
Eastern SF Eff	01/24/01	8:27	01/29/01	9:33	121:06:00	1742	16	399	0.111	100	Y	122:55:00
Foothill SF Inf	01/24/01	6:51	01/24/01	16:27	9:36:00	1291	12	97	0.315	100	Y	---
Foothill SF Eff	01/24/01	9:30	01/29/01	7:50	118:20:00	1395	1000	66	0.149	100	Y	120:59:00
Termination SF Inf	01/24/01	6:35	01/24/01	15:39	9:04:00	7049	51	122	1.637	100	Y	---
Termination SF Eff	01/24/01	9:25	01/29/01	16:10	126:45:00	621	102	96	0.130	100	Y	129:35:00
Lakewood MCTT Inf	01/24/01	6:26	01/24/01	12:44	6:18:00	2664	24	84	1.132	100	Y	---

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Lakewood MCTT Eff	01/25/01	13:40	01/25/01	21:00	7:20:00	2109	91	55	0.222	100	Y	38:34:00
Filmore CDS Eff	01/24/01	5:57	01/24/01	14:48	8:51:00	3157	89	33	2.011	94	Y	---
Foothill SG Eff	01/24/01	7:12	01/24/01	14:42	7:30:00	797	6	62	0.115	100	Y	---
Las Flores SG Eff	01/24/01	4:39	01/24/01	11:33	6:54:00	517	5	84	0.056	100	Y	---
Rosemead SG Eff	01/24/01	6:36	01/24/01	12:38	6:02:00	1754	30	57	0.347	98	Y	---
Foothill FF Eff	01/24/01	6:52	01/24/01	14:40	7:48:00	869	15	58	0.145	97	Y	---
Las Flores FF Eff	01/24/01	4:27	01/24/01	9:48	5:21:00	3384	15	112	0.499	98	Y	---
Rosemead FF Eff	01/24/01	6:36	01/24/01	12:12	5:36:00	383	5	28	0.087	93	Y	---
Alameda OWS	01/24/01	6:05	01/24/01	11:05	5:00:00	343	N/A	N/A	0.242	N/A	N/A	---
Event 6												
Altadena Strip Inf	02/10/01	4:10	02/10/01	18:50	14:40:00	1250	60	17	0.079	85	Y	---
Altadena Strip Eff	02/10/01	4:00	02/10/01	19:00	15:00:00	1417	60	22	0.411	96	Y	---
I-605/SR-91 Strip Inf	02/10/01	5:00	02/13/01	10:00	77:00:00	2150	6	88	0.090	96	Y	---
I-605/SR-91 Strip Eff	02/10/01	7:14	02/13/01	6:08	70:54:00	1631	6	267	0.135	100	Y	---
I-5/I-605 EDB Inf	02/10/01	7:14	02/10/01	11:13	3:59:00	104802	64	868	1.869	100	Y	---
I-5/I-605 EDB Eff	02/12/01	0:10	02/15/01	14:20	86:10:00	40358	64	590	1.825	100	Y	127:06:00
I-605/SR-91 EDB Inf	02/10/01	14:26	02/15/01	11:31	117:05:00	19932	45	782	0.404	100	Y	---
I-605/SR-91 EDB Eff	02/10/01	7:35	02/15/01	4:00	116:25:00	3695	30	123	0.091	100	Y	109:34:00
Eastern SF Inf	02/10/01	7:27	02/13/01	23:53	88:26:00	15544	24	833	1.141	100	Y	---
Eastern SF Eff	02/10/01	14:25	02/14/01	13:55	95:30:00	3185	48	735	0.120	100	Y	102:28:00
Foothill SF Inf	02/10/01	13:03	02/10/01	14:39	1:36:00	502	21	23	0.256	100	Y	---
Foothill SF Eff	02/10/01	8:42	02/11/01	15:39	30:57:00	558	100	146	0.149	100	Y	26:36:00
Termination SF Inf	02/10/01	5:14	02/11/01	15:46	34:32:00	5946	66	57	0.893	100	Y	---
Termination SF Eff	02/10/01	6:05	02/11/01	12:40	30:35:00	1464	132	104	0.129	100	Y	31:26:00
Lakewood MCTT Inf	02/10/01	5:04	02/12/01	11:42	54:38:00	7706	31	229	0.806	100	Y	---
Lakewood MCTT Eff	02/15/01	8:30	02/15/01	19:25	10:55:00	6425	165	52	0.228	100	Y	134:21:00
Orcas CDS Eff	02/10/01	5:48	02/10/01	15:21	9:33:00	991	37	27	0.590	100	Y	---
Filmore CDS Eff	02/10/01	2:12	02/10/01	13:29	11:17:00	2884	89	32	1.000	100	Y	---
Foothill SG Eff	02/10/01	13:05	02/10/01	23:50	10:45:00	818	30	26	0.098	96	Y	---
Las Flores SG Eff	02/10/01	1:20	02/11/01	10:35	33:15:00	190	5	38	0.022	100	Y	---
Rosemead SG Eff	02/10/01	5:06	02/10/01	20:21	15:15:00	1387	30	39	0.617	100	Y	---
Foothill FF Eff	02/10/01	13:05	02/10/01	23:50	10:45:00	7273	15	33	0.332	94	N	---
Las Flores FF Eff	02/10/01	1:18	02/11/01	10:51	33:33:00	984	15	65	0.346	100	Y	---
Rosemead FF Eff	02/10/01	5:00	02/10/01	14:15	9:15:00	236	5	7	0.209	64	Y	---
Alameda OWS	02/10/01	5:35	02/10/01	14:05	8:30:00	516	N/A	N/A	0.424	N/A	N/A	---
Event 7												
Orcas CDS Eff	02/24/01	11:50	02/28/01	13:59	98:09:00	3425	74	45	0.236	100	Y	---
Filmore CDS Eff	02/24/01	8:32	02/28/01	15:01	102:29:00	10746	175	59	0.498	100	Y	---
Event 8												
I-5/I-605 EDB Inf	03/06/01	0:25	03/07/01	9:00	32:35:00	7276	250	29	0.824	100	Y	---
I-5/I-605 EDB Eff	03/06/01	0:10	03/07/01	9:40	33:30:00	5225	250	20	0.071	100	Y	33:15:00
I-605/SR-91 EDB Inf	03/06/01	0:18	03/06/01	14:36	14:18:00	5878	115	50	0.771	100	Y	---
I-605/SR-91 EDB Eff	03/06/01	2:30	03/07/01	3:00	24:30:00	1053	85	12	0.017	100	Y	26:42:00
Eastern SF Inf	03/06/01	0:38	03/06/01	7:35	6:57:00	1263	55	22	0.198	100	Y	---
Eastern SF Eff	03/06/01	5:55	03/08/01	2:16	44:21:00	1192	112	137	0.105	100	Y	49:38:00
Foothill SF Inf	03/06/01	0:50	03/06/01	14:40	13:50:00	2511	133	18	0.240	100	Y	---
Foothill SF Eff	03/06/01	5:05	03/09/01	23:25	90:20:00	2294	600	70	0.149	100	Y	94:35:00
Termination SF Inf	03/06/01	0:30	03/07/01	2:33	26:03:00	10084	125	86	1.174	100	Y	---
Termination SF Eff	03/05/01	17:25	03/09/01	13:55	92:30:00	2760	500	74	0.129	100	Y	85:25:00
Orcas CDS Eff	03/04/01	17:54	03/06/01	7:02	37:08:00	5035	140	35	0.362	100	Y	---
Filmore CDS Eff	03/04/01	16:14	03/06/01	8:01	39:47:00	11475	250	45	0.828	100	Y	---
Event 9												
Altadena Strip Inf	4/7/2001	0:21	4/7/2001	16:36	16:15:00	6368	60	107	0.432	100	Y	---

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Altadena Strip Eff	4/7/2001	1:33	4/7/2001	15:18	13:45:00	5937	60	97	0.430	99	Y	---
I-605/SR-91 Strip Inf	4/7/2001	2:45	04/07/01	9:45	7:00:00	267	23	11	0.085	100	Y	---
I-605/SR-91 Strip Eff	4/7/2001	3:15	4/7/2001	9:00	5:45:00	31	6	5	0.024	97	Y	---
I-605/SR-91 Swale Inf	4/7/2001	2:15	04/07/01	10:51	8:36:00	272	8	28	0.072	93	Y	---
Cerritos Swale Inf	4/7/2001	2:30	4/7/2001	5:26	2:56:00	1156	23	48	0.306	100	Y	---
Cerritos Swale Eff	4/7/2001	2:30	4/7/2001	9:10	6:40:00	357	23	15	0.167	100	Y	---
I-5/I-605 Swale Inf	4/7/2001	0:45	4/7/2001	16:33	15:48:00	937	23	39	0.423	100	Y	---
I-5/I-605 Swale Eff	4/7/2001	4:30	4/7/2001	5:09	0:39:00	220	13	11	0.241	100	Y	---
Carson Swale Inf	4/7/2001	2:36	4/7/2001	10:36	8:00:00	918	9	53	0.253	83	Y	---
I-5/I-605 EDB Inf	4/7/2001	1:20	4/8/2001	6:45	29:25:00	11004	35	286	2.428	100	Y	---
I-5/I-605 EDB Eff	4/7/2001	0:35	4/8/2001	12:00	35:25:00	6119	35	174	0.078	100	Y	34:40:00
I-605/SR-91 EDB Inf	4/7/2001	2:15	4/7/2001	13:57	11:42:00	2755	21	131	0.619	100	Y	---
I-605/SR-91 EDB Eff	4/7/2001	6:55	4/7/2001	23:00	16:05:00	625	7	89	0.015	100	Y	20:45:00
Eastern SF Inf	4/7/2001	0:47	4/7/2001	12:40	11:53:00	2235	13	168	0.221	100	Y	---
Eastern SF Eff	4/7/2001	4:23	4/8/2001	12:09	31:46:00	1872	13	573	0.105	100	Y	35:22:00
Foothill SF Inf	4/7/2001	0:46	4/7/2001	11:27	10:41:00	3120	21	144	0.312	100	Y	---
Foothill SF Eff	4/7/2001	4:50	4/10/2001	14:40	81:50:00	2790	63	629	0.148	100	Y	85:54:00
Termination SF Inf	4/7/2001	1:26	4/7/2001	21:28	20:02:00	13254	46	169	5.949	100	Y	---
Termination SF Eff	4/7/2001	2:10	4/9/2001	13:35	59:25:00	2708	100	251	0.137	100	Y	60:09:00
Via Verde MCTT Inf	4/7/2001	2:00	4/7/2001	13:08	11:08:00	1263	9	121	0.538	100	Y	---
Via Verde MCTT Eff	4/9/2001	14:15	4/9/2001	15:47	1:32:00	551	14	42	0.145	100	Y	61:47:00
Orcas CDS Eff	4/7/2001	3:51	4/7/2001	10:36	6:45:00	1864	27	68	0.473	100	Y	---
Event 10												
Altadena Strip Inf	04/20/01	18:09	04/21/01	0:42	6:33:00	3180	60	52	0.526	100	Y	---
Altadena Strip Eff	04/20/01	19:24	04/21/01	0:45	5:21:00	2483	60	41	0.936	100	Y	---
Foothill SF Inf	04/20/01	19:07	04/20/01	20:42	1:35:00	2112	21	96	0.324	100	Y	---
Foothill SF Eff	04/20/01	21:40	04/23/01	12:00	62:20:00	1891	210	153	0.148	100	Y	64:53:00
Via Verde MCTT Inf	04/20/01	16:21	04/21/01	16:05	23:44:00	1262	18	67	0.583	100	Y	---
Via Verde MCTT Eff	04/23/01	14:12	04/23/01	15:23	1:11:00	440	10	54	0.142	100	Y	71:02:00
Filmore CDS	04/20/01	17:43	04/21/01	2:18	8:35:00	4946	60	68	1.536	96	Y	---

Table 1-4a: Summary of QA/QC Samples

Storm Event	MS/MSD (Composite)	Laboratory Replicate (Composite)	Field Duplicate (Composite)	MS/MSD (Grab)	Laboratory Replicate (Grab)	Field Duplicate (Grab)
10/10/00 - 10/13/00	Cerritos MS Swale - Influent					
10/26/00 - 10/31/00	Lakewood P&R MCTT - Influent Foothill MS Sand Filter - Effluent	Lakewood P&R MCTT -Influent Foothill MS Sand Filter - Effluent	I-605 @ Carson Swale - Influent Foothill MS Sand Filter - Effluent	I-210 Filmore CDS - Effluent	I-210 Filmore CDS - Effluent	I-210 Filmore CDS - Effluent
1/8/01 - 1/10/01	I-605 @ Carson Swale - Influent	I-605 @ Carson Swale - Influent I-5/I-605 EDB - Influent	Lakewood P&R MCTT -Influent	Cerritos MS Swale - Influent Alameda MS Oil/Water Separator - Effluent (O&G)	Cerritos MS Swale - Influent	I-210 Filmore CDS - Influent
1/10/01 - 1/14/01	Via Verde P&R MCTT - Influent	I-605/SR-91 EDB - Influent	Las Flores Fossil Filter - Effluent	I-605/SR-91 Swale - Influent Alameda MS Oil/Water Separator - Influent (O&G) Via Verde P&R MCTT - Effluent I-5/I-605 EDB - Effluent	I-605/SR-91 Swale - Influent Alameda MS Oil/Water Separator - Influent (O&G) I-5/I-605 EDB - Effluent	I-605/SR-91 Swale - Influent
1/24/01 - 1/29/01	Rosemead MS StreamGuard – Effluent Termination P&R Sand Filter - Effluent	Rosemead MS StreamGuard - Effluent		Foothill MS Sand Filter – Influent Alameda MS Oil/Water Separator - Influent (O&G)	Foothill MS Sand Filter – Influent	I-5/I-605 Swale - Influent
2/10/01 - 2/15/01	Lakewood P&R MCTT -Influent	Lakewood P&R MCTT -Influent	I-210 Orcas CDS - Influent			
3/6/01 - 3/9/01	Termination P&R Sand Filter - Effluent	Termination P&R Sand Filter - Effluent				
4/6/01 - 4/10/01	I-5/I-605 EDB - Influent	I-5/I-605 EDB - Influent	Altadena MS Strip - Influent			
4/20/01 - 4/23/01	Via Verde P&R MCTT - Influent Foothill MS Sand Filter - Effluent					

Table 1-4b: Samples Comprised of Less Than Twelve Aliquots

Location	Date	No. of Aliquots	% Storm Capture	Comments	Figure Reference
Rosemead Maintenance Station – Fossil Filter™ DII	10/11/00	8	100	Sample is from first monitored event of the season. Sample results will be used as part of a mass-balance approach in calculating pollutant removal efficiency. Sample aliquots are well distributed across the hydrograph. Recommend accepting sample without qualification.	1-24a
Termination Park & Ride Sand Filter - Effluent	10/29/00	216	5	Pump failed during storm. Effluent sample was sent to laboratory for analysis prior to second storm event commingling with first storm event. Consequently, sample is not considered representative. Laboratory data not used in calculating efficiencies.	1-14a
I-605 @ Carson Biofiltration Swale – Effluent	1/8/01	9	100	Sample aliquots are well distributed across the hydrograph. Paired sample met minimum % storm capture and minimum number of aliquots. Recommend accepting sample without qualification.	1-9c
Rosemead Maintenance Station – Fossil Filter™ DII	211/00	7	64	Sample results will be used as part of a mass-balance approach in calculating pollutant removal efficiency. Sample aliquots are well distributed across the hydrograph. Recommend accepting sample without qualification.	1-24e
I-210 East of Orcas Avenue CDS Unit – Influent and Effluent	1/12/01	72, 100	0,0	Samples were sent to the laboratory for analysis. Upon review off flow data, flow meter failed during the storm event. Consequently, sample is not considered representative. Laboratory data not used in calculating efficiencies.	Not prepared
I-605/SR-91 Extended Detention Basin – Effluent	1/25/01	8	100	Sample aliquots are well distributed across the hydrograph. Paired sample met minimum % storm capture and minimum number of aliquots. Recommend accepting sample without qualification.	1-11d
I-605/SR-91 Biofiltration Strip – Influent, Effluent	4/7/01	11, 5	100, 97	Sample aliquots are well distributed across the hydrograph. Number of sample aliquots near minimum required. Paired sample met minimum % storm capture. Recommend accepting sample without qualification.	1-5e
I-5/I-605 Biofiltration Swale – Effluent	4/7/01	11	100	Sample aliquots are well distributed across the hydrograph. Number of sample aliquots near minimum required. Paired sample met minimum % storm capture and minimum number of aliquots. Recommend accepting sample without qualification.	1-8e

Table 1-4c: Analytical Methods and Reporting Limits

Stormwater Matrix			
Analyte	**Sample Type**	**Analytical Method**	**Reporting Limit**
Conventionals			
pH	Grab[1,2]/Composite	EPA 150.1	0.1 pH units
Specific Conductance	Grab[1,2]/Composite	EPA 120.1	1.0 umhos/cm
Hardness	Grab[1,2]/Composite	EPA 130.2	2 mg/L
Total Suspended Solids (TSS)	Grab[1,2]/Composite	EPA 160.2	1 mg/L
Total Dissolved Solids (TDS)	Grab[1]/Composite	EPA 160.1	1 mg/L
Turbidity	Composite	EPA 180.1	0.05 NTU
Total Organic Carbon (TOC)	Grab[1]/Composite	EPA 415.1	1 mg/L
Dissolved Organic Carbon (DOC)	Grab[1]/Composite	EPA 415.1	1 mg/L
Particle Size	Composite	Liquid Particle Counter	2 um
Nutrients			
Nitrate-N	Grab[1]/Composite	EPA 300	0.01 mg/L
Total Kjeldahl Nitrogen (TKN)	Grab[1]/Composite	EPA 351.3	0.1 mg/L
Total Phosphorus	Grab[1]/Composite	EPA 365.2	0.002 mg/L
Ammonia	Composite	EPA 350.2	0.1 mg/L
Dissolved Orhto-Phosphate	Grab[1]/Composite	EPA 365.2	0.03 mg/L
Total/Dissolved Metal			
Arsenic	Grab[1]/Composite	EPA 200.8	0.5 ug/L
Cadmium	Grab[1]/Composite	EPA 200.8	0.2 ug/L
Chromium	Grab[1]/Composite	EPA 200.8	1 ug/L
Copper	Grab[1]/Composite	EPA 200.8	1 ug/L
Lead	Grab[1]/Composite	EPA 200.8	1 ug/L
Nickel	Grab[1]/Composite	EPA 200.8	2 ug/L
Zinc	Grab[1]/Composite	EPA 200.8	1 ug/L
Organics			
TPH-diesel	Grab[1,2]/Composite[3]	EPA 8015M	250 ug/L
TPH-oil	Grab[1,2]/Composite[3]	EPA 8015M	200 ug/L
TPH-gasoline	Grab[1,2]/Composite[3]	EPA 8015M	50 ug/L
Oil & Grease	Grab[2]	EPA 1664	1 mg/L
Volatile Organic Compounds	Grab[1]	EPA 8260	1 ug/L
Bacteria			
Fecal Coliform	Grab	SM 9221	2 MPN/100 mL

Table 1-4c: Analytical Methods and Reporting Limits (concluded)

Sediment, Soil and Solid[4] Matrices			
Analyte	**Sample Type**	**Analytical Method**	**Reporting Limit**
Organics			
Total Recoverable Hydrocarbons (TRPH)	Composite	EPA 418.1(IR)/ 1664HEM	10 mg/kg
Organic Matter Content	Composite	ASTM D 2974 (Methods A & C)	0.1 %
Total Metals			
Copper	Composite	EPA 6020	2.5 mg/kg
Lead	Composite	EPA 6020	0.3 mg/kg
Zinc	Composite	EPA 6020	2.0 mg/kg
Particle Size Distribution[5]			
Sieve Analysis	Composite	Caltrans Test 202	---
Hydrometer Test	Composite	Caltrans Test 203	---
Sediment and Waste Matrix (Disposal)			
Organics			
Total Recoverable Petroleum Hydrocarbons (TRPH)	Composite	EPA 418.1	10 mg/kg
Volatile Organic Compounds	Composite	EPA 8260B	SW-846[9] Requirements
Total Metals			
California Code of Regulations (CCR), Title 22 Metals[6]	Composite	EPA 6020/ 7471	SW-846[9] Requirements
California Code of Regulations (CCR), Title 22 Waste Extraction Test (WET) Metals[7]	Composite	STLC Extraction	SW-846[9] Requirements
Toxicity Characteristic Leaching Procedure (TCLP) Metals[8]	Composite	TCLP 1311	SW-846[9] Requirements

1 Grab samples of CDS sumps were analyzed for this analyte.

2 Grab samples from influent and effluent of Alameda Maintenance Station Oil/Water Separator.

3 Composite samples of effluent from DIIs were analyzed for TPH (diesel, oil, and gasoline).

4 Solid matrices for DIIs include StreamGuard™ fabric and absorbent, and Fossil Filter™ adsorbent. Sediment.

5 Particle size distribution test is for Sand Filter sand and sediment and Infiltration Basin soil and sediment.

6 California Code of Regulations (CCR), Title 22 Metals (Sb, As, Ba, Be, Cd, Cr (total), Co, Cu, Hg, Pb, Mo, Ni, Se, Ag, Tl, V, and Zn). Initial waste characterization results may lead to a shorter list of metals for subsequent sediment disposal.

7 Any sample for total metals that are below the Total Threshold Limit Concentration [TTLC] but exceed the the ten times Soluble Threshold Limit Concentration (STLC) will be further analyzed using the WET procedure. WET extracts will be analyzed only for metals which exceed the ten times STLC criteria. Sediments associated with total metal results that exceed TTLC values are automatically considered hazardous and therefore do not need to undergo the WET procedure.

8 If any of the WET-soluble concentrations are equal to or greater than the TCLP regulatory thresholds, then analysis of the waste by TCLP may be required.

9 “Test Methods for Evaluating Solid Waste, Physical /Chemical Methods”. SW-846, Update III. (SW-846).

Table 1-5a: BMP Retrofit Pilot Study, Stormwater Laboratory Data - District 7

													Total (ug/L)							Dissolved (ug/L)						
Sample Date	BMP Location	Site ID	BMP Type	Sampling Location	% Storm Capture	pH	Specific Conductance (umhos/cm)	Hardness (mg/L)	TDS (mg/L)	TSS (mg/L)	DOC (mg/L)	TOC (mg/L)	As	Cd	Cr	Cu	Pb	Ni	Zn	As	Cd	Cr	Cu	Pb	Ni	Zn
Event 1																										
October 11, 2000	I-605/SR-91	073222a	Biofiltration Strip	Influent	79	7.1	218	76	216	132	51	60	4.9	3.0	15.5	107	220	31.6	687	3.0	3.0	7.0	94	203	26.5	658
October 11, 2000	I-605/SR-91	073222a	Biofiltration Strip	Effluent	NA; No effluent flow; no sample																					
October 10, 2000	I-605/SR-91	073222b	Biofiltration Swale	Influent	87	6.9	276	90	262	112	71	75	16.6	2.5	13.8	101	103	32	1093	15.9	1.5	7.3	66	22	29	755
October 10, 2000	I-605/SR-91	073222b	Biofiltration Swale	Effluent	NA; No effluent flow; no sample																					
October 11, 2000	Cerritos Maintenance Station	073223	Biofiltration Swale	Influent	90	7.6	300	90	310	142	72	90	13.3	2.5	14.6	154	294	35	959	9.1	1.0	8.7	71	43	25	415
October 11, 2000	Cerritos Maintenance Station	073223	Biofiltration Swale	Effluent	NA; No effluent flow; no sample																					
October 11, 2000	I-605 @ Carson	073225	Biofiltration Swale	Influent	100	7.8	257	80	244	474	48	58	9.2	8.3	39	232	2086	69	1542	6.0	4.6	4.4	80	414	21	498
October 11, 2000	I-605 @ Carson	073225	Biofiltration Swale	Effluent	NA; No effluent flow; no sample																					
October 11, 2000	I-105/Lakewood Boulevard Park & Ride	074208	Multi-Chambered Treatment Train	Influent	100	4.6	134	49	144	56	51	52	4.8	0.7	1.7	38	15.3	20.1	627	3.9	0.7	1U	33	7.2	18.1	601
October 13, 2000	I-105/Lakewood Boulevard Park & Ride	074208	Multi-Chambered Treatment Train	Effluent	100	7.4	264	80	282	21	79	81	3.2	1.5	3.0	31	4.8	22	356	2.3	1.0	2.5	23	2.3	19	294
October 11, 2000	Rosemead Maintenance Station	073218	Drain Inlet Insert - StreamGuard	Effluent	100	6.8	200	91	85	248	79	84	6.7	4.1	8.6	90	50	35	1250	5.7	2.8	2.5	66	10.2	33	919
October 11, 2000	Rosemead Maintenance Station	073218	Drain Inlet Insert - Fossil Filter	Effluent	100	7.4	142	56	83	150	44	45	14.1	0.8	13.6	88	55	14.8	1070	12.1	0.4	7.7	60	10.5	13.6	665
Event 2																										
October 27, 2000	Altadena Maintenance Station	073211	Biofiltration Strip	Influent	100	7.0	74	32	57	121	21	23	6.8	0.9	8.6	27	41	10	268	0.7	0.2	1.6	12	2.9	4.3	131
October 27, 2000	Altadena Maintenance Station	073211	Biofiltration Strip	Effluent	100	6.9	116	34	98	24	32	32	5.4	0.4	3.0	15	11	4.3	91	0.7	0.4	2.9	12	2.2	4.0	71
October 27, 2000	I-605/SR-91	073222a	Biofiltration Strip	Influent	100	7.2	51	23	24	88	9.5	10.0	0.9	0.4	1.9	15	30	3.8	101	0.6	0.3	1.5	12	12	3.1	79
October 27, 2000	I-605/SR-91	073222a	Biofiltration Strip	Effluent	100	7.0	190	34	124	62	30	30	2.5	0.4	1.7	15	4.1	2.8	137	0.5	0.4	1.5	14	1.4	2.5	126
October 27, 2000	I-605/SR-91	073222b	Biofiltration Swale	Influent	100	7.4	71	30	78	67	12.4	13.8	9.4	1.0	7.6	33	75	8.6	371	0.9	0.4	4.0	16	12	5.7	173
October 27, 2000	I-605/SR-91	073222b	Biofiltration Swale	Effluent	96	7.4	185	22	146	33	23	23	5.0	0.7	3.7	23	12	7.3	123	0.8	0.6	1.3	18	3.0	5.3	82
October 27, 2000	Cerritos Maintenance Station	073223	Biofiltration Swale	Influent	90	7.6	108	49	73	135	18.1	22	10.1	1.8	13.2	80	203	15	542	8.5	0.5	2.6	26	38	5.9	136
October 27, 2000	Cerritos Maintenance Station	073223	Biofiltration Swale	Effluent	100	7.6	72	22	77	54	12.9	19.9	4.5	0.2	1.8	16	20	3.0	75	0.6	0.2U	1.1	12	7.5	2.4	53
October 27, 2000	I-5/I-605 Intersection	073224	Biofiltration Swale	Influent	99	7.0	59	22	102	83	10.4	12.4	1.5	1.3	6.3	40	113	9.3	288	0.5U	0.4	1.2	15	18	4.3	113
October 27, 2000	I-5/I-605 Intersection	073224	Biofiltration Swale	Effluent	100	7.1	45	12	58	22	9.7	10.5	0.5	0.2	1.5	12	17	23	56	0.5U	0.2U	1U	9.9	6.7	1.9J	42
October 27, 2000	I-605 @ Carson	073225	Biofiltration Swale	Influent	95	8.0	78	35	62	84	10.4	12.7	2.8	1.5	9.6	46	371	13	249	0.5U	0.4	6.5	16.0	64	6.5	50
October 27, 2000	I-605 @ Carson	073225	Biofiltration Swale	Effluent	98	7.5	102	40	120	24	12.9	16.9	3.0	0.4	9.2	21	102	4.7	76	0.5U	0.3	4.2	15	43	3.4	42
October 27, 2000	I-5/I-605 Intersection	074101	Extended Detention Basin	Influent	100	7.0	75	30	55	132	10.0	13.2	3.4	1.3	9.5	54	269	12	489	0.5U	0.3	2.0	16	23	4.2	128
October 28, 2000	I-5/I-605 Intersection	074101	Extended Detention Basin	Effluent	100	7.0	49	19	23	13	8.5	8.8	2.1	0.7	3.9	11	32J	3.6	78	1.6	0.4	3.0	9.5	26J	3.1	62
October 27, 2000	I-605/SR-91 Interchange	074102	Extended Detention Basin	Influent	100	6.8	83	27	98	61	9.2	10.0	1.7	0.6	4.2	22	51	5.7	161	0.5U	0.2U	1.4	9.1	4.0	2.6	56
October 29, 2000	I-605/SR-91 Interchange	074102	Extended Detention Basin	Effluent	100	7.8	85	30	44	24	7.6	8.9	1.9	0.4	3.4	18	34J	4.9	96	0.5U	0.2	1.9	12	5.8J	3.2	59
October 27, 2000	Eastern Regional Maintenance Station	074202	Sand Filter	Influent	100	6.8	22	9	44	44	9.5	10.0	1.7	0.5	7.9	13	30	4.4	137	0.5U	0.2U	1U	5.1	2.1	1.7J	66
October 27, 2000	Eastern Regional Maintenance Station	074202	Sand Filter	Effluent	NA; Pump failure; no sample																					
October 27, 2000	Foothill Maintenance Station	074203	Sand Filter	Influent	100	6.7	62	27	40	57	16.9	17.1	17	0.9	3.8	23	28	5.4	448	14	0.5	1.6	14	5.2	2.8	362
October 29, 2000	Foothill Maintenance Station	074203	Sand Filter	Effluent	100	7.0	150	53	105	11	20	20	18	0.4	2.5	31	5.7J	4.7	93	18	0.3	2.4	30	5.7J	4.6	92
October 27, 2000	Termination P&R	074204	Sand Filter	Influent	100	6.4	32	8	20	78	10.0	11.1	1.3	0.4	4.9	23	19	7.5	190	0.5U	0.2U	3.3	7.4	1.3	2.9	72
October 29, 2000	Termination P&R	074204	Sand Filter	Effluent	5	7.1	98	31	99	6	17.5	18.6	2.5	0.2	1.6	23	2.1J	9.0	103	0.5U	0.2U	1U	22	1.7J	9.0	98
October 27, 2000	Via Verde P&R	074206	Multi-Chambered Treatment Train	Influent	100	6.7	37	9	40	22	14.7	15.2	0.5U	0.2U	1U	7.7	2.9	4.4	129	0.5U	0.2U	1U	6.9	1.7	4.0	118
October 29, 2000	Via Verde P&R	074206	Multi-Chambered Treatment Train	Effluent	100	8.0	122	36	108	12	14.0	14.9	1.8	0.2	1.9	14	2.7J	5.0	30	0.5U	0.2U	1U	13	2J	2.9	28
October 27, 2000	I-105/Lakewood Boulevard Park & Ride	074208	Multi-Chambered Treatment Train	Influent	100	6.5	24	5	52	34	7.9	17.0	1.0	0.2	2.1	12	8.1	4.9	151	1.0	0.2	2.0	12	8.0	4.8	148
October 31, 2000	I-105/Lakewood Boulevard Park & Ride	074208	Multi-Chambered Treatment Train	Effluent	100	7.3	95	35	76	8	14.7	15.4	2.0	0.3	1U	8	1J	6.5	57	0.5U	0.2U	1U	8	1UJ	5.7	47
October 27, 2000	I-210/East of Filmore Street	073103	Continuous Deflective Separation	Influent	100	7.5	68	28	67	58	16.9	17.2	0.9	0.6	4.0	20	19	6.1	201	0.5U	0.3	1.6	8.9	4.3	3.4	84
October 27, 2000	I-210/East of Filmore Street	073103	Continuous Deflective Separation	Effluent	100	8.0	55	23	58	57	8.9	12.3	0.6	0.6	4.6	20.2	21	5.4	176	0.5U	0.2U	1.0	6.4	3.2	2.1	44
October 27, 2000	Foothill Maintenance Station	073216	Drain Inlet Insert - StreamGuard	Effluent	100	7.0	75	21	52	8	23	23	2.9	0.5	2.1	30	6.0	10.4	406	2.9	0.4	1U	29	2.1	9.8	391
October 27, 2000	Las Flores Maintenance Station	073217	Drain Inlet Insert - StreamGuard	Effluent	100	6.4	98	32	76	22	16.7	18.2	2.2	0.9	3.5	15.7	5.9	6.0	123	0.5U	0.6	2.1	14	1.7	4.4	108
October 27, 2000	Rosemead Maintenance Station	073218	Drain Inlet Insert - StreamGuard	Effluent	100	7.1	59	23	48	51	14.9	17.1	7.4	1.5	4.4	35	25	9.9	342	1.0	1.1	2.2	27	7.1	7.3	300
October 27, 2000	Foothill Maintenance Station	073216	Drain Inlet Insert - Fossil Filter	Effluent	97	7.1	118	44	72	24	22	23	5.8	0.6	6.7	27	5.1	9.0	494	0.9	0.5	4.9	27	2.0	9.0	470
October 27, 2000 (A)	Las Flores Maintenance Station	073217	Drain Inlet Insert - Fossil Filter	Effluent	100	6.8	73	20	60	154	14.2	15.2	2.8	1.4	8.7	25	16	12	369	0.5U	0.6	3.0	13	1.4	5.7	190
October 27, 2000 (B)	Las Flores Maintenance Station	073217	Drain Inlet Insert - Fossil Filter	Effluent	100	6.8	70	21	36	207	13.9	15.4	3.3	2.2	5.7	24	7.2	8.2	191	0.5U	0.5	2.8	16	1.6	5.2	159
October 27, 2000	Rosemead Maintenance Station	073218	Drain Inlet Insert - Fossil Filter	Effluent	90	7.0	68	25	36	42	10.8	12.0	12	0.4	8.9	45	25	4.9	522	12	0.2	2.7	29	6.2	2.9	397
October 26, 2000	Alameda Maintenance Station	074201	Oil/Water Separator	Influent	NA	7.7	257	83		73																
October 26, 2000	Alameda Maintenance Station	074201	Oil/Water Separator	Effluent	NA	7.4	304	94		25																

Table 1-5a: BMP Retrofit Pilot Study, Stormwater Laboratory Data - District 7

Sample Date	BMP Location	Site ID	BMP Type	Sampling Location	% Storm Capture	Zn	Nitrate-Nitrogen (mg/L)	TKN (mg/L)	Total P (mg/L)	Diss Orthophosphate (mg/L)	Ammonia (mg/L)	Turbidity NTU	Fecal Coliform (MPN/ 100 ml)	TPH - Diesel (ug/L)	TPH - Oil (ug/L)	TPH - Gasoline (ug/L)	Oil and Grease (mg/L)
Event 3																	
January 8, 2001	I-605/SR-91	073222b	Biofiltration Swale	Influent	98	375	2.14J	5.43	0.23	0.12J							
January 8, 2001	I-605/SR-91	073222b	Biofiltration Swale	Effluent	NA; No effluent f												
January 8, 2001	Cerritos Maintenance Station	073223	Biofiltration Swale	Influent	100	389	4.38J	6.94	0.54	0.44J			17000	250U	960	50U	
January 8, 2001	Cerritos Maintenance Station	073223	Biofiltration Swale	Effluent	100	259	16.9J	6.10	0.20	0.47J			5000	762	3941	50U	
January 8, 2001	I-5/I-605 Intersection	073224	Biofiltration Swale	Influent	100	285	3.14J	9.95	0.17	0.14J							
January 8, 2001	I-5/I-605 Intersection	073224	Biofiltration Swale	Effluent	NA; No effluent f												
January 8, 2001	I-605 @ Carson	073225	Biofiltration Swale	Influent	97	192	1.93J	5.95	0.18	0.1J			13000	250U	1269	50U	
January 8, 2001	I-605 @ Carson	073225	Biofiltration Swale	Effluent	100	186	3.17J	6.15	2.24	0.96J			160000	250U	1423	50U	
January 9, 2001	I-5/I-605 Intersection	074101	Extended Detention Basin	Influent	100	319	3.58	8.78	2.62	0.46			11000	250U	1518	50U	
January 9, 2001	I-5/I-605 Intersection	074101	Extended Detention Basin	Effluent	100	222	4.06	7.81	0.58	0.07			50000	250U	1308	50U	
January 8, 2001	I-605/SR-91 Interchange	074102	Extended Detention Basin	Influent	100	539	1.40	7.76	0.30	0.22			50000	250U	1545	50U	
January 8, 2001	I-605/SR-91 Interchange	074102	Extended Detention Basin	Effluent	NA; Grab sample								3400	277	4366	50U	
January 8, 2001	Termination P&R	074204	Sand Filter	Influent	NA; Pump failure								3000	250U	1529	50U	
January 8, 2001	Termination P&R	074204	Sand Filter	Effluent	NA; Pump failure								2300	250U	1367	50U	
January 8, 2001	Via Verde P&R	074206	Multi-Chambered Treatment Train	Influent	NA; BMP leaked								1300	250U	1810	50U	
January 8, 2001	Via Verde P&R	074206	Multi-Chambered Treatment Train	Effluent	NA; BMP leaked												
January 8, 2001	I-105/Lakewood Boulevard Park & Ride	074208	Multi-Chambered Treatment Train	Influent	100	190	1.49	5.76	0.30	0.24	3.52	3.94	240	250U	1059	50U	
January 10, 2001	I-105/Lakewood Boulevard Park & Ride	074208	Multi-Chambered Treatment Train	Transfer Pump	100	125						0.66J					
January 10, 2001	I-105/Lakewood Boulevard Park & Ride	074208	Multi-Chambered Treatment Train	Effluent	100	38	1.43J	2.46	0.27	0.14J	1.1	1.1J	2300	250U	1012	50U	
January 8, 2001	I-210/East of Filmore Street	073103	Continuous Deflective Separation	Influent	NA; Grab sample								14000	250U	2658	50U	
January 8, 2001	I-210/East of Filmore Street	073103	Continuous Deflective Separation	Effluent	NA; Grab sample								30000	250U	2611	50U	
January 8, 2001	Las Flores Maintenance Station	073217	Drain Inlet Insert - Fossil Filter	Effluent	100	451	2.32J	6.42	0.36	0.23J				250U	1597	50U	
January 8, 2001	Alameda Maintenance Station	074201	Oil/Water Separator	Influent	NA									250U	1406	50U	7
January 8, 2001	Alameda Maintenance Station	074201	Oil/Water Separator	Effluent	NA									250U	1184	50U	1U
Event 4																	
January 12, 2001	Altadena Maintenance Station	073211a	Biofiltration Strip	Influent	99	44	0.21	0.21	0.15	0.06			900	526	3603	50U	
January 12, 2001	Altadena Maintenance Station	073211a	Biofiltration Strip	Effluent	100	23	0.21	0.75	0.26	0.14			2300	250U	1350	50U	
January 12, 2001	I-605/SR-91	073222a	Biofiltration Strip	Influent	87	60	0.39	1.27	0.17	0.03U			5000	250U	1207	50U	
January 12, 2001	I-605/SR-91	073222a	Biofiltration Strip	Effluent	85	35	0.96	1.58	2.00	0.84			2300	250U	1107	50U	
January 12, 2001	I-605/SR-91	073222b	Biofiltration Swale	Influent	98	75	0.28	0.80	0.18	0.03U			500	250U	1159	50U	
January 11, 2001	I-605/SR-91	073222b	Biofiltration Swale	Effluent	97	44	0.93J	2.82	2.17	1.2J			8000	250U	1117	50U	
January 12, 2001	Cerritos Maintenance Station	073223	Biofiltration Swale	Influent	100	94	0.40	1.25	0.19	0.05							
January 12, 2001	Cerritos Maintenance Station	073223	Biofiltration Swale	Effluent	100	21	0.67J	0.88	0.49	0.07J							
January 12, 2001	I-5/I-605 Intersection	073224	Biofiltration Swale	Influent	98	76	0.43	0.93	0.23	0.08			3400	250U	1575	50U	
January 12, 2001	I-5/I-605 Intersection	073224	Biofiltration Swale	Effluent	97	84	0.34	1.24	0.18	0.06			2300	250U	1336	50U	
January 12, 2001	I-605 @ Carson	073225	Biofiltration Swale	Influent	99	48	0.49	1.15	0.16	0.03U							
January 12, 2001	I-605 @ Carson	073225	Biofiltration Swale	Effluent	92	39	0.73	1.06	0.40	0.23							
January 12, 2001	I-5/I-605 Intersection	074101	Extended Detention Basin	Influent	100	54	0.34	0.81	0.16	0.03U			5000	250U	1240	50U	
January 14, 2001	I-5/I-605 Intersection	074101	Extended Detention Basin	Effluent	100	23	0.53	0.45	0.35	0.18			1600	250U	1675	50U	
January 12, 2001	I-605/SR-91 Interchange	074102	Extended Detention Basin	Influent	100	117	0.84	0.68	0.18	0.03U							
January 12, 2001	I-605/SR-91 Interchange	074102	Extended Detention Basin	Effluent	NA; Flow meter f												
January 12, 2001	Eastern Regional Maintenance Station	074202	Sand Filter	Influent	100	29	0.45	1.52	0.32	0.03U	0.4		800	250U	1434	50U	
January 14, 2001	Eastern Regional Maintenance Station	074202	Sand Filter	Effluent	100	21	0.38	0.59	0.13	0.03U	0.1U		2300	250U	200U	50U	
January 11, 2001	Foothill Maintenance Station	074203	Sand Filter	Influent	100	130	0.26J	1.61	0.18	0.07J	0.3		8000	250U	2551	50U	
January 10, 2001	Foothill Maintenance Station	074203	Sand Filter	Effluent	NA; Pump failure								11000	250U	1131	50U	
January 11, 2001	Via Verde P&R	074206	Multi-Chambered Treatment Train	Influent	100	47	0.15J	1.28	0.22	0.09J	0.7	1.65J	300	250U	200U	50U	
January 14, 2001	Via Verde P&R	074206	Multi-Chambered Treatment Train	Transfer Pump	100	95						1.17					
January 14, 2001	Via Verde P&R	074206	Multi-Chambered Treatment Train	Effluent	100	15	0.53	0.62	0.29	0.14	0.6	6.29	1100	250U	200U	50U	
January 10, 2001	I-105/Lakewood Boulevard Park & Ride	074208	Multi-Chambered Treatment Train	Influent	100	53	0.20	1.20	0.20	0.04	0.7	3.31					
January 13, 2001	I-105/Lakewood Boulevard Park & Ride	074208	Multi-Chambered Treatment Train	Transfer Pump	100	96						2.71					
January 13, 2001	I-105/Lakewood Boulevard Park & Ride	074208	Multi-Chambered Treatment Train	Effluent	100	26	0.66J	1.23	0.22	0.08J	0.5	1.93					
January 12, 2001	I-210/East of Orcas Avenue	073102	Continuous Deflective Separation	Influent	0, Flow meter fai	94	0.61	1.60	0.17	0.03U			13000	250U	1618	50U	
January 12, 2001	I-210/East of Orcas Avenue	073102	Continuous Deflective Separation	Effluent	0, Flow meter fai	114	0.43	2.01	0.14	0.07			11000	250U	1363	50U	
January 17, 2001	I-210/East of Orcas Avenue	073102	Continuous Deflective Separation	Sump	NA	1146	0.01U	11.8	0.19	0.07			>=160000	250U	200U	50U	
January 12, 2001	I-210/East of Filmore Street	073103	Continuous Deflective Separation	Influent	100	89	0.58	1.42	0.19	0.07			2300	250U	1,152	50U	
January 12, 2001	I-210/East of Filmore Street	073103	Continuous Deflective Separation	Effluent	100	70	0.57	0.22	0.18	0.09			300	250U	200U	50U	
January 17, 2001	I-210/East of Filmore Street	073103	Continuous Deflective Separation	Sump	NA	82	0.01U	13.0	0.10	0.03U			900	250U	200U	50U	
January 12, 2001	Foothill Maintenance Station	073216	Drain Inlet Insert - StreamGuard	Effluent	100	128	0.44	1.32	0.15	0.03U				250U	200U	50U	
January 12, 2001	Las Flores Maintenance Station	073217	Drain Inlet Insert - StreamGuard	Effluent	100	50	0.28	0.24	0.14	0.04				250U	200U	50U	
January 12, 2001	Rosemead Maintenance Station	073218	Drain Inlet Insert - StreamGuard	Effluent	100	126	0.52	1.48	0.56	0.06				250U	200U	50U	
January 12, 2001	Foothill Maintenance Station	073216	Drain Inlet Insert - Fossil Filter	Effluent	92	110	0.44	1.07	0.17	0.03U				250U	200U	50U	
January 12, 2001	Las Flores Maintenance Station	073217	Drain Inlet Insert - Fossil Filter	Effluent	100	39	0.69	0.80	0.20	0.04				250U	200U	50U	
January 12, 2001	Rosemead Maintenance Station	073218	Drain Inlet Insert - Fossil Filter	Effluent	100	194	0.67	1.60	0.20	0.07				250U	200U	50U	
January 10, 2001	Alameda Maintenance Station	074201	Oil/Water Separator	Influent	NA												14
January 10, 2001	Alameda Maintenance Station	074201	Oil/Water Separator	Effluent	NA												1U

Table 1-5a: BMP Retrofit Pilot Study, Stormwater Laboratory Data - District 7

Sample Date	BMP Location	Site ID	BMP Type	Sampling Location	% Storm Capture	pH	Specific Conductance (umhos/cm)	Hardness (mg/L)	TDS (mg/L)	TSS (mg/L)	DOC (mg/L)	TOC (mg/L)	As	Cd	Cr	Cu	Pb	Ni	Zn	As	Cd	Cr	Cu	Pb	Ni
Event 5																									
January 24, 2001	Altadena Maintenance Station	073211a	Biofiltration Strip	Influent	100	7.4	8	12	36	47	11	17	2.1	0.3	2.9	11	17	2.9	108	2.0	0.2U	1U	6.1	2.6	2U
January 24, 2001	Altadena Maintenance Station	073211a	Biofiltration Strip	Effluent	100	7.1	9.7	18	36	20	13	23	1.5	0.2U	2.2	6.9	8.0	2U	52	1.2	0.2U	1U	5.3	1.8	2U
January 24, 2001	I-605/SR-91	073222b	Biofiltration Swale	Influent	100	7.5	17	40	90	61	17	25	5.0	0.8	6.6	36	36	7.4	261	4.1	0.4	2.5	19	5.1	4.5
January 24, 2001	I-605/SR-91	073222b	Biofiltration Swale	Effluent	NA; No effluent flow; no sample																				
January 24, 2001	Cerritos Maintenance Station	073223	Biofiltration Swale	Influent	100	7.4	34	60	136	162	48	53	6.9	1.9	12	113	111	16	604	5.0	0.4	5.0	72	14	9.0
January 24, 2001	Cerritos Maintenance Station	073223	Biofiltration Swale	Effluent	NA; No effluent flow; no sample																				
January 24, 2001	I-5/I-605 Intersection	073224	Biofiltration Swale	Influent	100	7.4	20	35	66	63	14	30	1.6	1.3	7.0	54	122	9.4	313	1.1	0.5	1.9	26	23	4.8
January 24, 2001	I-5/I-605 Intersection	073324	Biofiltration Swale	Effluent	NA; Grab sample only; not enough flow for composite sample																				
January 24, 2001	I-605 @ Carson	073225	Biofiltration Swale	Influent	100	7.6	25	46	120	119	7.3	25	2.6	1.3	11	57	217	14	273	2.6	0.6	4.5	29	57	7.7
January 24, 2001	I-605 @ Carson	073225	Biofiltration Swale	Effluent	95	7.5	29	53	92	26	23	25	2.3	0.4	4.3	21	43	4.3	76	2.2	0.3	3.2	18	19	3.7
January 25, 2001	I-5/I-605 Intersection	074101	Extended Detention Basin	Influent	100	6.6	20	51	42	164	11	15	2.0	0.4	3.8	18	31	116	4.6	2.0	0.2	1.0	9.4	4.0	2.3
January 25, 2001	I-5/I-605 Intersection	074101	Extended Detention Basin	Effluent	100	6.8	20	33	48	39	14	19	1.9	0.4	2.7	16	26	4.0	108	1.5	0.2U	1U	2.6	1.1	1.2
January 25, 2001	I-605/SR-91 Interchange	074102	Extended Detention Basin	Influent	100	7.0	42	78	102	165	11	26	3.9	1.2	8.8	59	128	12	550	3.7	0.7	2.5	28	9.2	6.7
January 25, 2001	I-605/SR-91 Interchange	074102	Extended Detention Basin	Effluent	100	7.2	27	48	44	36	30	32	1.7	0.8	3.9	29	39	5.7	166	0.9	0.6	2.6	24	11	5.2
January 25, 2001	Eastern Regional Maintenance Station	074202	Sand Filter	Influent	100	6.8	11	28	14	65	10	20	3.0	1.0	7.5	23	24	4.2	274	2.8	0.6	1.8	17	4.9	2.6
January 29, 2001	Eastern Regional Maintenance Station	074202	Sand Filter	Effluent	100	8J	62	30	46	13	15	19	2.5	0.5	2.9	21	7.1	3.2	89	2.3	0.5	1.2	19	2.7	2.6
January 25, 2001	Foothill Maintenance Station	074203	Sand Filter	Influent	100	6.9	9	29	32	128	14	14	5.4	0.7	4.3	20	46	4.6	274	5.0	0.3	1.0	9.2	5.4	1.8
January 29, 2001	Foothill Maintenance Station	074203	Sand Filter	Effluent	100	7.8J	79	40	44	9	16	20	5.4	0.2U	1U	12	3.1	2.1	60	5.1	0.2U	1U	11	1.4	2U
January 24, 2001	Termination P&R	074204	Sand Filter	Influent	100	6.7	20	19	36	20	8.5	14	0.8	0.3	1.5	16	1.9	4.2	88	0.7	0.3	1.5	14	1.0	4.1
January 27, 2001	Termination P&R	074204	Sand Filter	Effluent	100	7.6J	54	34	36	6	9	14	0.6	0.2	1.0	11	1.0	3.8	162	0.6	0.2	1U	10	1U	3.5
January 24, 2001	I-105/Lakewood Boulevard Park & Ride	074208	Multi-Chambered Treatment Train	Influent	100	7.0	7	25	12	56	12	15	0.7	0.2	1.2	11	3.0	4.6	107	0.7	0.2	1.2	9.4	1.5	4.3
January 25, 2001	I-105/Lakewood Boulevard Park & Ride	074208	Multi-Chambered Treatment Train	Transfer Pump	100				10	8			0.7	0.2	1U	8.3	1U	4.7	94	0.5	0.2	1U	6.9	1U	4.7
January 25, 2001	I-105/Lakewood Boulevard Park & Ride	074208	Multi-Chambered Treatment Train	Effluent	100	6.8	13	24	30	8	11	14	0.8	0.2U	1U	6.5	1U	2.7	43	0.7	0.2U	1U	6.2	1U	2.6
January 24, 2001	I-210/East of Filmore Street	073103	Continuous Deflective Separation	Influent	100	7.5	15	35	118	41	8.6	12	3.2	0.6	4.5	26	18	5.4	178	3.1	0.3	2.3	16	4.2	3.9
January 24, 2001	I-210/East of Filmore Street	073103	Continuous Deflective Separation	Effluent	94	7.5	13	25	24	5.5	8.7	13	1.0	0.8	5.5	27	18	5.5	187	1.0	0.3	1.8	11	3.0	2.9
January 24, 2001	Foothill Maintenance Station	073216	Drain Inlet Insert - StreamGuard	Effluent	100	7.2	61	15	38	4	8.3	8.8	1.2	0.2	1.1	14	3.9	2.8	137	1.0	0.2U	1U	11	1.8	2.4
January 24, 2001	Las Flores Maintenance Station	073217	Drain Inlet Insert - StreamGuard	Effluent	100	7.2	31	53	88	41	26	31	2.9	0.8	4.5	16	2.4	5.3	59	2.9	0.8	3.6	15	1.1	4.5
January 24, 2001	Rosemead Maintenance Station	073218	Drain Inlet Insert - StreamGuard	Effluent	98	7.2	14	26	62	52	9.9	21	9.8	0.8	5.3	31	39	6.9	239	8.3	0.4	1.4	20	7.1	3.9
January 24, 2001	Foothill Maintenance Station	073216	Drain Inlet Insert - Fossil Filter	Effluent	97	7.0	92	18	40	27	13	19	2.6	0.5	2.8	19	18	4.6	193	2.5	0.2	1.1	12	3.8	2.9
January 24, 2001	Rosemead Maintenance Station	073218	Drain Inlet Insert - Fossil Filter	Effluent	93	7.1	13	26	46	18	12	16	4.2	0.2	2.9	24	12	2.8	329	4.0	0.2	2.3	22	9.5	2.4
January 24, 2001	Las Flores Maintenance Station	073217	Drain Inlet Insert - Fossil Filter	Effluent	98	7.2	30	50	100	76	26	31	7.4	0.8	5.2	26	5.0	9.8	59	7.0	0.8	2.8	24	2.5	7.1
January 24, 2001	Alameda Maintenance Station	074201	Oil/Water Separator	Influent	NA	7.0	45	81		629															
January 24, 2001	Alameda Maintenance Station	074201	Oil/Water Separator	Effluent	NA	6.7	13	27		7															
Event 6																									
February 10, 2001	Altadena Maintenance Station	073211	Biofiltration Strip	Influent	85	6.8J	58	23	32	27	16	18	5.8	0.2	1.5	9.5	5.6	3.3	80	5.2	0.2	1.0	8.4	1.0	2.3
February 10, 2001	Altadena Maintenance Station	073211	Biofiltration Strip	Effluent	96	6.6J	85	30	60	41	19	20	4.3	0.2	1.4	8.8	5.1	2.2	66	3.5	0.2U	1.0	7.9	1.2	2U
February 13, 2001	I-605/SR-91	073222a	Biofiltration Strip	Influent	96	6.6J	46	22	32	17	9.2	12.6	1.2	0.7	4.1	18	40	3.2	100	1.1	0.4	1.3	9.2	8.1	2U
February 13, 2001	I-605/SR-91	073222a	Biofiltration Strip	Effluent	100	6.8J	62	28	48	30	17	20	2.1	0.3	92	7.6	18	2U	40	2.1	0.2U	2.3	6.9	2.1	2U
February 14, 2001	I-5/I-605 Intersection	074101	Extended Detention Basin	Influent	100	6.5	71	22	50	19	11.3	14.3	1.0	0.2	3.1	9.5	10.7	2U	56	0.5U	0.2	2.1	8.2	6.1	2U
February 15, 2001	I-5/I-605 Intersection	074101	Extended Detention Basin	Effluent	100	6.8	48	20	29	45	8.7	9.8	1.4	0.3	2.8	9.5	18	2.7	69	0.9	0.2U	1.0	5.2	3.8	2U
February 14, 2001	I-605/SR-91 Interchange	074102	Extended Detention Basin	Influent	100	6.1	284	87	168	24	22	24	1.8	0.6	86	15	53	3.1	182	1.2	0.4	1.4	9.8	17	2.1
February 15, 2001	I-605/SR-91 Interchange	074102	Extended Detention Basin	Effluent	100	6.8	61	25	47	9	11	14	1.2	0.3	1.2	8.1	8.7	2U	64	0.8	0.2	1.0	7.4	4.7	2U
February 14, 2001	Eastern Regional Maintenance Station	074202	Sand Filter	Influent	100	6.7	37	13	5	37	5.4	7.8	1.4	0.3	27	6.0	6.6	2.4	63	1.2	0.2	11.3	5.4	3.8	2U
February 14, 2001	Eastern Regional Maintenance Station	074202	Sand Filter	Effluent	100	6.7	33	12	8	12	5.5	6.9	1.3	0.2U	1.7	4.0	2.8	2U	25	1.1	0.2U	1U	3.6	1.3	2U
February 10, 2001	Foothill Maintenance Station	074203	Sand Filter	Influent	100	6.7J	44	18	24	168	16.5	13.7	10.4	1.2	8.8	33	65	8.7	449	9.2	0.3	1.5	8.8	9.2	2.1
February 11, 2001	Foothill Maintenance Station	074203	Sand Filter	Effluent	100	6.8	85	32	52	11	18	20	7.8	0.2	1.0	13.7	4.3	2.5	59	7.2	0.2U	1.0	12.0	2.8	2U
February 11, 2001	Termination P&R	074204	Sand Filter	Influent	100	6.8	52	15	42	28	14.4	15.2	0.5	0.2	1U	9.7	1.4	3.5	79	0.5U	0.2	1U	9.2	1U	3.2
February 11, 2001	Termination P&R	074204	Sand Filter	Effluent	100	6.7	60	18	46	4	12.2	13.0	0.8	0.2	1U	9.5	1U	3.4	55	0.7	0.2	1U	9.1	1U	3.1
February 12, 2001	I-105/Lakewood Boulevard Park & Ride	074208	Multi-Chambered Treatment Train	Influent	100	6.9	29	7	18	14	6.8	9.1	0.9	0.4	1.1	6.4	2.2	3.1	70	0.5	0.2U	1U	4.8	1U	2.3
February 15, 2001	I-105/Lakewood Boulevard Park & Ride	074208	Multi-Chambered Treatment Train	Transfer Pump	100				1U	10			0.6	0.2U	1U	6.0	1U	2.9	66	0.5	0.2U	1U	5.0	1U	2.5
February 15, 2001	I-105/Lakewood Boulevard Park & Ride	074208	Multi-Chambered Treatment Train	Effluent	100	6.9	42	20	20	10	10	11	0.7	0.2U	1U	4.7	1U	2U	31	0.6	0.2U	1U	4.1	1U	2U
February 10, 2001	I-210/East of Orcas Avenue	073102	Continuous Deflective Separation	Influent	100	7J	87	30	32	139	14.7	15.4	1.6	0.9	5.9	36	38	7.1	320	1.5	0.2	1.5	9.4	1.6	2U
February 10, 2001	I-210/East of Orcas Avenue	073102	Continuous Deflective Separation	Effluent	100	6.9J	73	34	40	80	11	14	0.6	0.8	3.6	18	8.1	4.1	133	0.5	0.4	2.1	10.9	1.2	2.6
February 10, 2001	I-210/East of Filmore Street	073103	Continuous Deflective Separation	Influent	100	6.8J	55	24	28	34	11.1	11.3	0.5	0.4	2.2	10.5	5.3	2.7	100	0.5	0.3	1.2	6.8	1.4	2U
February 10, 2001	I-210/East of Filmore Street	073103	Continuous Deflective Separation	Effluent	100	6.9J	56	21	22	38	8.7	11	0.5	0.4	2.1	9.9	4.5	3.1	108	0.5U	0.2	1.3	7.1	1.3	2
February 10, 2001	Foothill Maintenance Station	073216	Drain Inlet Insert - StreamGuard	Effluent	96	7.5J	175	56	134	33	36	40	2.4	0.6	4.2	15	6.8	4.7	260	2.2	0.4	1.5	8.2	1.3	3.6
February 11, 2001	Las Flores Maintenance Station	073217	Drain Inlet Insert - StreamGuard	Effluent	100	7.1	108	37	76	52	16	21	2.5	0.4	2.5	7.2	1.7	4.3	57	2.0	0.3	2.3	7.0	1U	2.7
February 11, 2001	Rosemead Maintenance Station	073218	Drain Inlet Insert - StreamGuard	Effluent	100	7.0	88	28	64	45	15	25	4.6	1.5	2.4	22	12	6.0	190	3.7	1.1	1.2	18	1.3	4.3
February 11, 2001	Foothill Maintenance Station	073216	Drain Inlet Insert - Fossil Filter	Effluent	96	7.6	100	34	72	24	22	32	1.4	0.8	3.5	9.3	3.0	4.5	53	1.1	0.4	1.7	8.2	1.3	3.6
February 11, 2001	Las Flores Maintenance Station	073217	Drain Inlet Insert - Fossil Filter	Effluent	100	7.4	54	18	30	48	12	19	2.6	0.4	2.4	7.6	1.7	4.1	57	2.3	0.3	1.4	7.0	1U	2.5
February 11, 2001	Rosemead Maintenance Station	073218	Drain Inlet Insert - Fossil Filter	Effluent	64	7.2	91	32	58	44	8.8	17	5.0	0.3	1.9	16	9.0	2.8	255	4.8	0.2	1.5	13	3.1	2.1
February 10, 2001	Alameda Maintenance Station	074201	Oil/Water Separator	Influent	NA	7J	105	37		125															
February 10, 2001	Alameda Maintenance Station	074201	Oil/Water Separator	Effluent	NA	7J	52	25		7															

Table 1-5a: BMP Retrofit Pilot Study, Stormwater Laboratory Data - District 7

Sample Date	BMP Location	Site ID	BMP Type	Sampling Location	% Storm Capture	pH	Specific Conductance (umhos/cm)	Hardness (mg/L)	TDS (mg/L)	TSS (mg/L)	DOC (mg/L)	TOC (mg/L)	As	Cd	Cr	Cu	Pb	Ni	Zn	As	Cd	Cr	Cu	Pb	Ni
Event 7																									
February 28, 2001	I-210/East of Orcas Avenue	073102	Continuous Deflective Separation	Influent	100	6.2	60	33	36	27	7.9	10	4.1	0.5	3.2	20	7.8	3.3	82	0.5	0.2	1.3	9.4	1.6	2U
February 28, 2001	I-210/East of Orcas Avenue	073102	Continuous Deflective Separation	Effluent	100	6.4	61	34	36	23	8.1	9.4	3.6	0.4	2.6	17	6.8	3.2	77	0.5U	0.2	1.5	9.6	1.6	2.1
February 28, 2001	I-210/East of Filmore Street	073103	Continuous Deflective Separation	Influent	100	6.2	51	37	32	42	4.4	6.2	0.5	0.4	3.1	12	5.8	2.5	75	0.5U	0.2	1.7	7.0	1.7	2U
February 28, 2001	I-210/East of Filmore Street	073103	Continuous Deflective Separation	Effluent	100	6.3	47	27	24	8	6.7	7.8	3.7	0.3	2.7	12	5.9	2.4	76	0.5	0.2	1.5	6.7	1.4	2U
Event 8																									
March 7, 2001	I-5/I-605 Intersection	074101	Extended Detention Basin	Influent	100	7.2	65	39	22	69	9.6	11	1.4	0.3	1.5	11	17	2.5	64	1.4	0.3	1U	7.6	1.5	2.1
March 7, 2001	I-5/I-605 Intersection	074101	Extended Detention Basin	Effluent	100	7.3	66	30	42	23	9.0	10	1.6	0.2	1.8	12	18	2.8	59	1.4	0.2	1U	8.0	1.7	2.0
March 6, 2001	I-605/SR-91 Interchange	074102	Extended Detention Basin	Influent	100	7.2	83	41	48	74	9.1	9.5	1.7	0.5	6.2	20	43	6.3	282	1.4	0.3	1.7	10	2.8	3.8
March 6, 2001	I-605/SR-91 Interchange	074102	Extended Detention Basin	Effluent	100	8.1	381	202	286	17	33	39	3.5	0.6	1.6	25	13	6.4	159	3.2	0.4	1.0	21	1.3	6.1
March 6, 2001	Eastern Regional Maintenance Station	074202	Sand Filter	Influent	100	7.7	30	16	23	40	5.6	6.9	1.9	0.2	3.9	9.1	11	2.1	76	1.6	0.2U	1U	6.2	1U	2U
March 7, 2001	Eastern Regional Maintenance Station	074202	Sand Filter	Effluent	100	6.1	56	27	58	6J	4.0	4.3	2.0	0.2	1.0	7.0	1.0	2U	46	1.9	0.2	1U	6.6	1U	2U
March 6, 2001	Foothill Maintenance Station	074203	Sand Filter	Influent	100	7.2	19	8	1U	100	4.0	4.3	4.8	0.2	1.4	6.5	8.2	2U	127	4.6	0.2	1U	4.0	1U	2U
March 9, 2001	Foothill Maintenance Station	074203	Sand Filter	Effluent	100	6.8	68	28	64	7J	3.4	4.1	5.0	0.2	1U	6.9	3.2	2.2	98	4.7	0.2	1U	5.8	1U	2.1
March 7, 2001	Termination P&R	074204	Sand Filter	Influent	100	7.3	36	14	48	25	6.8	7.9	0.5U	0.2U	3.5	6.4	2.2	2.2	45	0.5U	0.2U	1.6	4.5	1U	2U
March 9, 2001	Termination P&R	074204	Sand Filter	Effluent	100	6.2	62	23	47	4J	3.5	3.9	1.1	0.2	1U	7.4	1U	2.3	47	1.1	0.2	1U	6.6	1U	2.2
March 6, 2001	I-210/East of Orcas Avenue	073102	Continuous Deflective Separation	Influent	100	7.7	49	32	32	25	6.7	7.2	0.5U	0.4	2.8	13	4.4	2.2	52	0.5U	0.2	1.4	6.3	1U	2U
March 6, 2001	I-210/East of Orcas Avenue	073102	Continuous Deflective Separation	Effluent	100	7.6	50	36	20	29	6.1	7.1	0.5U	0.3	2.3	10	2.8	2U	42	0.5U	0.2	1.3	6.5	1U	2U
March 30, 2001	I-210/East of Orcas Avenue	073102	Continuous Deflective Separation	Sump	NA	6.2	523	260	526	66	16	18	1.0	0.3	2.3	4.4	2.9	19	745	0.5U	0.2U	1U	1U	1U	17
March 6, 2001	I-210/East of Filmore Street	073103	Continuous Deflective Separation	Influent	100	7.6	44	26	34	36	6.6	6.6	0.5U	0.3	2.5	8.8	3.7	2U	50	0.5U	0.3	1.9	5.7	1U	2U
March 6, 2001	I-210/East of Filmore Street	073103	Continuous Deflective Separation	Effluent	100	7.7	48	22	54	45	6.0	6.8	0.5U	0.3	3.1	12	5.9	2.3	70	0.5U	0.2	1.6	5.4	1U	2U
Event 9																									
April 7, 2001	Altadena Maintenance Station	073211	Biofiltration Strip	Influent	100	7.3	22	23	20	92	6.3	7.9	1.1	0.3	2.9	9.2	17	2.8	103	0.5U	0.2U	1U	2.5	1U	2U
April 7, 2001	Altadena Maintenance Station	073211	Biofiltration Strip	Effluent	99	7.1	28	21	36	24	7.4	8.7	0.5U	0.2U	1U	3.1	3.0	2U	31	0.5U	0.2U	1U	2.4	1U	2U
April 7, 2001	I-605/SR-91	073222a	Biofiltration Strip	Influent	100	7.4	70	44	64	41	15	20	1.0	0.4	1.7	22	17	3.9	111	0.5U	0.3	1U	18	3.5	3.2
April 7, 2001	I-605/SR-91	073222a	Biofiltration Strip	Effluent	97	7.0	179	46	156	73	44	48	2.9	1.4	2.4	30	8.3	4.2	501	2.7	1.0	1.2	24	2.5	3.4
April 7, 2001	I-605/SR-91	073222b	Biofiltration Swale	Influent	93	7.2	76	34	126	46	19	32	9.8	1.0	3.7	50	25	6.6	395	8.3	0.6	1.2	37	2.0	4.9
April 7, 2001	I-605/SR-91	073222b	Biofiltration Swale	Effluent	NA; No effluent flow; no sample																				
April 7, 2001	Cerritos Maintenance Station	073223	Biofiltration Swale	Influent	100	7.4	99	49	77	148	22	32	6.9	1.4	8.8	69	92	11	443	4.8	0.3	1.4	23	2.6	4.6
April 7, 2001	Cerritos Maintenance Station	073223	Biofiltration Swale	Effluent	100	7.5	79	38	59	153	17	22	5.8	0.5	8.3	33	36	7.6	123	4.5	0.2U	1.2	13	2.4	2.2
April 7, 2001	I-5/I-605 Intersection	073224	Biofiltration Swale	Influent	100	7.1	145	48	138	73	36	37	1.7	1.4	5.5	70	88	12	389	0.5U	0.7	1.3	41	6.7	7.4
April 7, 2001	I-5/I-605 Intersection	073224	Biofiltration Swale	Effluent	100	7.3	39	23	32	14	8.4	13	0.5	0.3	1.7	15.5	23	2.3	63	0.5U	0.2U	1U	8.9	2.9	2U
April 7, 2001	I-605 @ Carson	073225	Biofiltration Swale	Influent	83	7.0	101	45	81	9	20	27	2.2	0.8	4.1	33	75	8.0	145	1.9	0.4	1.5	21	6.2	5.6
April 7, 2001	I-605 @ Carson	073225	Biofiltration Swale	Effluent	NA; Sampler failed; no sample																				
April 8, 2001	I-5/I-605 Intersection	074101	Extended Detention Basin	Influent	100	6.6	100	51	73	59	20	26	1.9	0.4	2.8	22	24	5.9	119	1.2	0.2	2.0	13	1.8	5.4
April 8, 2001	I-5/I-605 Intersection	074101	Extended Detention Basin	Effluent	100	6.3	85	30	85	44	18	23	2.0	0.4	3.1	21	29	5.2	105	1.3	0.2	1U	12	2.2	3.3
April 7, 2001	I-605/SR-91 Intersection	074102	Extended Detention Basin	Influent	100	7.3	106	55	83	93	21	28	2.3	0.7	6.7	39	78	7.8	347	1.5	0.3	1.5	23	7.0	4.0
April 7, 2001	I-605/SR-91 Intersection	074102	Extended Detention Basin	Effluent	100	6.2	91	41	68	22	15	20	1.8	0.4	1.3	24	23	3.3	122	1.5	0.3	1U	18	4.1	2.6
April 7, 2001	Eastern Regional Maintenance Station	074202	Sand Filter	Influent	100	7.3	37	25	40	25	7.6	8.7	1.5	0.2	2.5	6.7	6.3	2.3	90	1.3	0.2	1U	5.0	1U	2U
April 8, 2001	Eastern Regional Maintenance Station	074202	Sand Filter	Effluent	100	6.5	40	40	44	16	8.1	8.6	1.7	0.2U	1.7	7.0	3.1	2U	45	1.7	0.2U	1U	6.3	1U	2U
April 7, 2001	Foothill Maintenance Station	074203	Sand Filter	Influent	100	6.8	35	21	33	51	8.4	11	4.7	0.4	2.0	10	9.8	2.9	179	4.2	0.2	1U	6.6	1.4	2U
April 10, 2001	Foothill Maintenance Station	074203	Sand Filter	Effluent	100	7.0	79	19	65	7	14	17	8.0	0.2U	1.1	10	1.5	2U	46	7.1	0.2U	1U	8.8	1U	2U
April 7, 2001	Termination P&R	074204	Sand Filter	Influent	100	6.8	56	27	54	14	18	22	0.5U	0.2	1U	17	2.6	5.4	157	0.5U	0.2	1U	14	1.1	4.7
April 9, 2001	Termination P&R	074204	Sand Filter	Effluent	100	6.2	46	24	55	1U	13	15	1.1	0.2	1U	14	1.1	3.9	81	1.0	0.2	1U	12	1U	3.2
April 7, 2001	Via Verde P&R	074206	Multi-Chambered Treatment Train	Influent	100	6.7	27	19	10	118	6.2	6.7	0.5U	0.4	4.7	17	15	8.3	267	0.5U	0.2U	1U	3.0	1U	2U
April 6, 2001	Via Verde P&R	074206	Multi-Chambered Treatment Train	Transfer Pump	100				24	1U			0.5U	0.2U	1U	4.7	1.1	2.1	77	0.5U	0.2U	1U	3.7	1U	2U
April 9, 2001	Via Verde P&R	074206	Multi-Chambered Treatment Train	Effluent	100	6.7	56	31	44	5	11	14	0.5U	0.2U	1U	4.1	1U	2U	13	0.5U	0.2U	1U	3.1	1U	2U
April 7, 2001	I-210/East of Orcas Avenue	073102	Continuous Deflective Separation	Influent	100	7.2	58	28	36	41	9.9	12	0.5U	0.3	2.0	15	5.1	2.7	74	0.5U	0.2	1U	9.6	1U	2U
April 7, 2001	I-210/East of Orcas Avenue	073102	Continuous Deflective Separation	Effluent	100	7.1	53	28	48	35	7.9	10	0.5U	0.2	1.7	12	3.8	2.2	57	0.5U	0.2U	1U	8.2	1U	2U
April 7, 2001	I-210/East of Filmore Street	073103	Continuous Deflective Separation	Influent	NA; Effluent sampler failed; grab sample only																				
April 7, 2001	I-210/East of Filmore Street	073103	Continuous Deflective Separation	Effluent	NA; Effluent sampler failed; grab sample only																				
Event 10																									
April 21, 2001	Altadena Maintenance Station	073211	Biofiltration Strip	Influent	100	7.6	18	10	21	49	2.9	3.8	2.8	0.4	3.5	11	22	3.4	126	2.0	0.2U	1U	2.2	1U	2U
April 21, 2001	Altadena Maintenance Station	073211	Biofiltration Strip	Effluent	100	7.5	27	20	25	21	4.6	5.4	2.1	0.2U	1.0	3.6	3.7	2U	36	1.7	0.2U	1U	2.3	1U	2U
April 21, 2001	Foothill Maintenance Station	074203	Sand Filter	Influent	100	7.2	29	9	43	85	5.3	6.0	9.9	0.6	3.2	15	22	3.6	222	8.2	0.2U	1U	5.6	1.5	2U
April 23, 2001	Foothill Maintenance Station	074203	Sand Filter	Effluent	100	8.2	52	28	22	13	5.0	7.9	7.9	0.2U	1U	8.4	1.8	2U	56	7.7	0.2U	1U	7.8	1U	1U
April 21, 2001	Via Verde P&R	074206	Multi-Chambered Treatment Train	Influent	100	7.3	36	19	43	72	6.7	7.7	1.0	0.4	3.2	13	11	4.9	182	0.5U	0.2U	1U	6.0	1U	3.0
April 23, 2001	Via Verde P&R	074206	Multi-Chambered Treatment Train	Transfer Pump	100				38	3			0.5U	0.7	1U	3.7	1U	2.3	68	0.5U	0.2U	1U	2.8	1U	2U
April 23, 2001	Via Verde P&R	074206	Multi-Chambered Treatment Train	Effluent	90	6.7	53	2.1	27	6	6.3	6.6	0.5U	0.4	1U	3.2	1U	6.2	20	0.5U	0.3	1U	1.7	1U	2U
April 20, 2001	I-210/East of Orcas Avenue	073102	Continuous Deflective Separation	Influent	NA; Grab sample only; not enough flow for composite sample																				
April 20, 2001	I-210/East of Orcas Avenue	073102	Continuous Deflective Separation	Effluent	NA; Grab sample only; not enough flow for composite sample																				
May 2, 2001	I-210/East of Orcas Avenue	073102	Continuous Deflective Separation	Sump	NA	5.4	363	184	312	40	116	136	1.0	0.6	4.7	9.6	6.6	9.8	394	0.6	0.2U	2.4	1.7	1U	8.4
April 21, 2001	I-210/East of Filmore Avenue	073103	Continuous Deflective Separation	Influent	100	7.7	54	26	64	32	5.3	7.2	0.5U	0.5	3.3	17	12	4.1	141	0.5U	0.2U	1U	5.7	1U	2.0
April 21, 2001	I-210/East of Filmore Avenue	073103	Continuous Deflective Separation	Effluent	82	7.6	54	28	36	44	9.4	10	0.5U	0.4	2.5	14	8.8	3.5	107	0.5U	0.2U	1U	6.0	1U	2.2
May 2, 2001	I-210/East of Filmore Avenue	073103	Continuous Deflective Separation	Sump	NA	6.6	182	94	143	17	32	38	0.6	0.2	1.4	4.5	2.5	3.2	192	0.5U	0.2U	1.0	1.4	1U	2.9

Table 1-5d: BMP Retrofit Pilot Study, Drain Inlet Insert Solid Matrix Laboratory Data District 7

Sample Date	Location	Site ID	BMP Type	Sampling Location	Total (mg/kg) Cu	Pb	Zn	TRPH (mg/kg)
Solids Matrix (StreamGuard Fabric)								
May 1, 2001	Foothill Maintenance Station	073216	Drain Inlet Insert - StreamGuard	Used - StreamGuard Fabric	66.5	132	1160	333U
May 1, 2001	Las Flores Maintenance Station	073217	Drain Inlet Insert - StreamGuard	Used - StreamGuard Fabric	21.4	23.8	143	333U
May 1, 2001	Rosemead Maintenance Station	073218	Drain Inlet Insert - StreamGuard	Used - StreamGuard Fabric	96.7	259	1670	457
Solids Matrix (StreamGuard Absorbent)								
May 1, 2001	Foothill Maintenance Station	073216	Drain Inlet Insert - StreamGuard	Used - StreamGuard Absorbent	14.8	26.1	86.5	8950
May 1, 2001	Las Flores Maintenance Station	073217	Drain Inlet Insert - StreamGuard	Used - StreamGuard Absorbent	7.7	13.0	46.4	50600
May 1, 2001	Rosemead Maintenance Station	073218	Drain Inlet Insert - StreamGuard	Used - StreamGuard Absorbent	24.8	46.1	229	46400
Solids Matrix (StreamGuard Sediment)								
May 1, 2001	Foothill Maintenance Station	073216	Drain Inlet Insert - StreamGuard	Used - StreamGuard Sediment	89.9	126	1140	10900
May 1, 2001	Las Flores Maintenance Station	073217	Drain Inlet Insert - StreamGuard	Used - StreamGuard Sediment	12.1	12.1	86.3	333U
May 1, 2001	Rosemead Maintenance Station	073218	Drain Inlet Insert - StreamGuard	Used - StreamGuard Sediment	16.1	21.6	118	333U
Solids Matrix (Fossil Filter Adsorbent)								
May 1, 2001	Foothill Maintenance Station	073216	Drain Inlet Insert - Fossil Filter	Used - Fossil Filter Adsorbent	49.9	95.8	413	333U
May 1, 2001	Las Flores Maintenance Station	073217	Drain Inlet Insert - Fossil Filter	Used - Fossil Filter Adsorbent	22.2	16.2	147	333U
May 1, 2001	Rosemead Maintenance Station	073218	Drain Inlet Insert - Fossil Filter	Used - Fossil Filter Adsorbent	41.3	74.6	543	333U
Solids Matrix (Fossil Filter Sediment)								
May 1, 2001	Foothill Maintenance Station	073216	Drain Inlet Insert - Fossil Filter	Used - Fossil Filter Sediment	33.0	55.6	352	333U
May 1, 2001	Las Flores Maintenance Station	073217	Drain Inlet Insert - Fossil Filter	Used - Fossil Filter Sediment	22.3	24.1	274	360
May 1, 2001	Rosemead Maintenance Station	073218	Drain Inlet Insert - Fossil Filter	Used - Fossil Filter Sediment	53.7	60.4	755	333U

Table 1-5b: BMP Retrofit Pilot Study, Sediment Sampling Laboratory Data - District 7

Sample Date	BMP Location	Site ID	BMP Type	Total (mg/L) Ag	As	Ba	Be	Cd	Cu	Co	Cr	Pb	Zn	Mo	Ni	Sb	Se	Tl	V	Hg	Organic Matter Content %	STLC Pb (mg/L)	TRPH (mg/L)	VOCs (ug/L)[b] Toluene
Rinsate Matrix (Plastic Packing Balls)																								
March 6, 2001	Lakewood P& R MCTT	074208	MCTT	0.0012	0.015	0.56	0.0013	0.0058	0.19	0.026	0.12	0.33	1.9	0.014	0.080	0.0089	0.0025	.0010	0.12	.0020	—	—	10.0U	—
March 6, 2001	Via Verde P & R MCTT	074206	MCTT	0.0023	0.013	0.43	.0010	0.0058	0.23	0.019	0.062	0.35	1.7	0.010	0.077	0.020	.0020	.0010	0.075	.0020	—	—	32.1	1.0
Solids Matrix (Sandblast Material)				Total (mg/kg)																			mg/kg	ug/kg
March 6, 2001	Via Verde P & R MCTT	074206	MCTT	1.3[c]	22.2[c]	401[c]	0.84[c]	1.8[c]	1330[c]	37.7[c]	47.6[c]	5.1[c]	140[c]	4.5[c]	29.2[c]	1.0U[c]	1.0U[c]	0.50U[c]	101[c]	0.040	—	—	320	—
Solids Matrix (Sludge)																								
March 6, 2001	Via Verde P & R MCTT	074206	MCTT	0.18	3.1	118	0.29	1.5	41.2	6.4	29.3	53.9	535	2.4	22.0	3.6	0.66	0.16	31.3	0.050	—	—	1240	4200
Solids Matrix (Sediment)																								
November 7, 2000	Alameda M S	74201	OWS	0.36	5.0	213	0.18	1.7	106	6.4	43.5	189[a]	702	5.3	26.6	2.1	0.27	0.10U	26.5	0.073	—	12.6	4640	—
April 2, 2001	Termination P & R Section 1	074204	SF	0.10U	0.76	30.2	0.10U	0.26	11.3	1.2	3.4	11.3	69.5	0.48	3.4	0.22	0.62	0.10U	5.6	0.040	1.8	—	783	—
April 2, 2001	Termination P & R Section 2	074204	SF	0.10U	0.73	6.2	0.10U	0.10U	1.1	0.32	0.46	1.4	12.5	0.10U	0.48	0.20U	0.20U	0.10U	1.5	0.040	0.4	—	333U	—
April 2, 2001	Termination P & R Section 3	074204	SF	0.10U	0.20U	4.3	0.10U	0.10U	0.58	0.27	0.31	1.4	7.6	0.10U	0.43	0.20U	0.20U	0.10U	1.3	0.040	0.3	—	333U	—
April 2, 2001	Termination P & R Section 4	074204	SF	0.10U	0.20U	4.8	0.10U	0.10U	0.54	0.68	0.26	1.6	7.4	0.10U	0.31	0.20U	0.20U	0.10U	1.3	0.040	0.3	—	333U	—
April 3, 2001	Eastern Regional M S Section	074202	SF	0.10U	1.2	19.9	0.10U	0.26	7.5	1.1	9.8	24.6	61.3	0.35	3.1	0.20U	0.20U	0.10U	5.6	0.040	1.9	—	550	—
April 3, 2001	Eastern Regional M S Section	074202	SF	0.10U	0.52	9.1	0.10U	0.11	2.8	0.53	3.9	9.3	25.1	0.14	1.3	0.20U	0.20U	0.10U	2.9	0.040	0.8	—	333U	—
April 3, 2001	Eastern Regional M S Section	074202	SF	0.10U	0.23	5.1	0.10U	0.10U	0.85	0.31	1.0	2.7	10.5	0.10U	0.42	0.20U	0.20U	0.10U	1.6	0.040	0.4	—	333U	—
April 3, 2001	Eastern Regional M S Section	074202	SF	0.10U	0.27	4.0	0.10U	0.10U	0.63	0.28	0.51	1.6	9.5	0.10U	0.44	0.20U	0.20U	0.10U	1.4	0.040	0.4	—	333U	—
April 3, 2001	Foothill M S Section 1	074203	SF	0.10U	1.7	17.2	0.10U	0.23	6.7	1.4	2.9	15.7	76.8	0.27	2.4	0.20U	0.20U	0.10U	5.1	0.040	1.4	—	390	—
April 3, 2001	Foothill M S Section 2	074203	SF	0.10U	0.89	7.6	0.10U	0.10U	2.0	0.63	0.95	4.5	29.6	0.10U	0.81	0.20U	0.20U	0.10U	2.6	0.040	0.6	—	333U	—
April 3, 2001	Foothill M S Section 3	074203	SF	0.10U	0.44	5.0	0.10U	0.10U	0.89	0.37	0.53	2.3	18.0	0.10U	0.55	0.20U	0.20U	0.10U	1.8	0.040	0.4	—	333U	—
April 3, 2001	Foothill M S Section 4	074203	SF	0.10U	0.52	4.1	0.10U	0.10U	0.60	0.50	0.36	2.0	13.0	0.10U	0.31	0.20U	0.20U	0.10U	1.9	0.040	0.4	—	333U	—

"—" - Not Analyzed

Due to the nature of the plastic packing ball samples, analyzing the samples directly was not possible. The balls were rinsed with DI water and the rinsate was analyzed.

U Results noted as "result"U were not detected at or above the stated limit.

Metals results for the Sand Filters are being evaluated for the need for WET analysis.

[a] 10X STLC < Concentration < TTLC, thus requiring WET procedure.

[b] Parameters with results > Reporting Limit

c Elevated reporting limit. The reporting limit is elevated due to matrix interference.

Table 1-5c: BMP Retrofit Pilot Study, Soil Sampling Laboratory Data - District 7

Sample Date	BMP Location	Site ID	BMP Type	Sampling Location	Total (mg/kg)			
Solids Matrix (Soil)					Cu	Pb	Zn	TRPH (mg/kg)
May 1, 2001	I-605/SR-91 Interchange	073101	Infiltration Basin	I-605/SR-91 Baseline Soil; 0.0-0.2 meter depth	20.1	6.7	46.9	333U
May 1, 2001	I-605/SR-91 Interchange	073101	Infiltration Basin	I-605/SR-91 Baseline Soil; 0.3-0.5 meter depth	16.4	6.4	42.2	333U
May 1, 2001	I-605/SR-91 Interchange	073101	Infiltration Basin	I-605/SR-91 Baseline Soil; 0.6-0.8 meter depth	12.7	3.5	31.0	333U

Table 1-6a: BMP Pollutant Removal Efficiencies (Biofiltration Strips)

	Altadena MS Strip 27 October, 2000				Altadena MS Strip 12 January, 2001				Altadena MS Strip 24 January, 2001				Altadena MS Strip 10 February, 2001				Altadena MS Strip 7 April, 2001				Altadena MS Strip 21 April, 2001			
	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in
	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load
TDS (mg/L)	57	98	-72	-59	1U	1U	na	na	36	36	0	26	32	60	-88	-113	20	36	-80	-68	21	25	-19	7
TSS (mg/L)	121	24	80	82	55	5	91	93	47	20	57	69	27	41	-52	-72	92	24	74	76	49	21	57	67
DOC (mg/L)	21	32	-52	-41	3.3	3.5	-6	19	11	13	-18	13	16	19	-19	-35	6.3	7.4	-17	-10	2.9	4.6	-59	-24
TOC (mg/L)	23	32	-39	-29	3.7	3.5	5	28	17	23	-35	0	18	20	-11	-26	7.9	8.7	-10	-3	3.8	5.4	-42	-11
Total As (ug/L)	6.8	5.4	21	27	1.7	1.0	41	55	2.1	1.5	29	47	5.8	4.3	26	16	1.1	0.5U	>55	>58	2.8	2.1	25	41
Total Cd (ug/L)	0.9	0.4	56	59	0.2U	0.2U	na	na	0.3	0.2U	>33	>51	0.2	0.2	0	-13	0.3	0.2U	>33	>38	0.4	0.2U	>50	>61
Total Cr (ug/L)	8.6	3.0	65	68	1U	1.0	<0	<23	2.9	2.2	24	44	1.5	1.4	7	-6	2.9	1U	>66	>68	3.5	1.0	71	78
Total Cu (ug/L)	27	15	44	49	3.3	2.9	12	33	11	6.9	37	54	9.5	8.8	7	-5	9.2	3.1	66	69	11	3.6	67	74
Total Pb (ug/L)	41	11	73	75	2.2	1.3	41	55	17	8.0	53	65	5.6	5.1	9	-3	17	3.0	82	84	22	3.7	83	87
Total Ni (ug/L)	10	4.3	57	60	2U	2U	na	na	2.9	2U	>31	>49	3.3	2.2	33	24	2.8	2U	>29	>33	3.4	2U	>41	>54
Total Zn (ug/L)	268	91	66	69	47	24	49	61	108	52	52	65	80	66	18	6	103	31	70	72	126	36	71	78
Dissolved As (ug/L)	0.7	0.7	0	8	0.6	0.6	0	23	2.0	1.2	40	56	5.2	3.5	33	24	0.5U	0.5U	na	na	2.0	1.7	15	34
Dissolved Cd (ug/L)	0.2	0.4	-100	-85	0.2U	0.2U	na	na	0.2U	0.2U	na	na	0.2	0.2U	>0	>-13	0.2U	0.2U	na	na	0.2U	0.2U	na	na
Dissolved Cr (ug/L)	1.6	2.9	-81	-67	1U	1.0	<0	<23	1U	1U	na	na	1.0	1.0	0	-13	1U	1U	na	na	1U	1U	na	na
Dissolved Cu (ug/L)	12	12	0	8	3.3	2.9	12	33	6.1	5.3	13	36	8.4	7.9	6	-7	2.5	2.4	4	10	2.2	2.3	-5	18
Dissolved Pb (ug/L)	2.9	2.2	24	30	1.7	1U	>41	>55	2.6	1.8	31	49	1.0	1.2	-20	-36	1U	1U	na	na	1U	1U	na	na
Dissolved Ni (ug/L)	4.3	4.0	7	14	2U	2U	na	na	2U	2U	na	na	2.3	2U	>13	>1	2U	2U	na	na	2U	2U	na	na
Dissolved Zn (ug/L)	131	71	46	50	44	23	48	60	58	43	26	45	66	63	5	-8	40	23	43	46	35	20	43	55
Nitrate-Nitrogen (mg/L)	0.84	2.06	-145	-127	0.21	0.21	0	23	0.39	0.49	-26	8	0.51	0.8	-57	-78	0.23	0.29	-26	-18	0.28	0.01U	>96	>97
TKN (mg/L)	4.14	4.65	-12	-4	0.21	0.75	-257	-173	1.42	1.38	3	29	1.20	1.20	0	-13	2.06	2.17	-5	2	1.07	1.67	-56	-22
Total P (mg/L)	1.83	2.97	-62	-50	0.15	0.26	-73	-33	0.08	0.28	-250	-157	0.11	0.44	-300	-353	0.23	0.37	-61	-50	0.10	0.22	-120	-72
Diss. Orthophosphate (mg/L)	1.39	2.58	-86	-71	0.06	0.14	-133	-79	0.08	0.23	-188	-111	0.03U	0.38	<-1167	<-1336	0.03	0.23	-667	-615	0.06	0.22	-267	-186
Storm Volume (cubic feet)	1298	1199			20242	15487			1759	1294			1250	1417			6368	5937			3180	2483		

	I-605/SR-91 Strip 11 October, 2000				I-605/SR-91 Strip 27 October, 2000				I-605/SR-91 Strip 12 January, 2001				I-605/SR-91 Strip 13 February, 2001				I-605/SR-91 Strip 7April, 2001			
	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in
	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load
TDS (mg/L)	216	99	54	99	24	124	-417	-564	10	48	-380	-719	32	48	-50	-14	64	156	-144	72
TSS (mg/L)	132	92	30	99	88	62	30	9	51	2	96	93	17	30	-76	-34	41	73	-78	79
DOC (mg/L)	51	27	47	99	9.5	30	-216	-306	4.4	10	-127	-288	9.2	17	-85	-40	15	44	-193	66
TOC (mg/L)	60	29	52	99	10.0	30	-200	-286	6.0	11	-83	-213	12.6	20	-59	-20	20	48	-140	72
Total As (ug/L)	4.9	2	55	99	0.9	2.5	-178	-257	0.9	1.0	-11	-90	1.2	2.1	-75	-33	1.0	2.9	-190	66
Total Cd (ug/L)	3.0	1	79	100	0.4	0.4	0	-29	0.4	0.3	25	-28	0.7	0.3	57	67	0.4	1.4	-250	59
Total Cr (ug/L)	15.5	35	-127	97	1.9	1.7	11	-15	1.5	1.2	20	-37	4.1	92	-2144	-1602	1.7	2.4	-41	84
Total Cu (ug/L)	107	16	85	100	15	15	0	-29	13	10	23	-31	18	7.6	58	68	22	30	-36	84
Total Pb (ug/L)	220	10	96	100	30	4.1	86	82	24	1.6	93	89	40	18	55	66	17	8.3	51	94
Total Ni (ug/L)	31.6	3	91	100	3.8	2.8	26	5	2.7	2.2	19	-39	3.2	2U	>38	>53	3.9	4.2	-8	87
Total Zn (ug/L)	687	211	69	100	101	137	-36	-74	71	54	24	-30	100	40	60	70	111	501	-351	48
Dissolved As (ug/L)	3.0	2	45	99	0.6	0.5	17	-7	0.8	0.7	13	-49	1.1	2.1	-91	-45	0.5U	2.7	<-440	<37
Dissolved Cd (ug/L)	3.0	0	84	100	0.3	0.4	-33	-71	0.3	0.2	33	-14	0.4	0.2U	>50	>62	0.3	1.0	-233	61
Dissolved Cr (ug/L)	7.0	2	78	100	1.5	1.5	0	-29	1.3	1.0	23	-31	1.3	2.3	-77	-34	1U	1.2	<-20	<86
Dissolved Cu (ug/L)	94	14	85	100	12	14	-17	-50	11	10	9	-55	9.2	6.9	25	43	18	24	-33	85
Dissolved Pb (ug/L)	203	2	99	100	12	1.4	88	85	14	1.6	89	80	8.1	2.1	74	80	3.5	2.5	29	92
Dissolved Ni (ug/L)	26.5	2	91	100	3.1	2.5	19	-4	2.6	1.2	54	21	2U	2U	na	na	3.2	3.4	-6	88
Dissolved Zn (ug/L)	658	187	72	100	79	126	-59	-105	60	35	42	0	48	22	54	65	96	402	-319	51
Nitrate-Nitrogen (mg/L)	3.95	2	49	99	0.46	4.14	-800	-1057	0.39	0.96	-146	-320	0.32	0.14	56	67	0.01U	0.60	<-5900	<-597
TKN (mg/L)	8.40	5	36	99	1.43	4.20	-194	-278	1.27	1.58	-24	-112	0.29	0.50	-72	-31	2.75	9.58	-248	60
Total P (mg/L)	0.55	2	-174	96	0.12	1.88	-1467	-1914	0.17	2.00	-1076	-1908	0.11	0.78	-609	-438	0.42	0.23	45	94
Diss. Orthophosphate (mg/L)	0.08	1	-1038	85	0.05	1.59	-3080	-3989	0.03U	0.84	<-2700	<-4678	0.03U	0.53	<-1667	<-1240	0.34	0.18	47	94
Storm Volume (cubic feet)	154	2			959	1233			923	1575			2150	1631			267	31		

Notes:

Hilighted values were estimated by calculating the mean of the EMCs using the Scoping Study methodology.

Average wet season removal efficiencies calculated using the Scoping Study methodology.

Where EMC was non-detect then Reporting Limit was used.

"U" = Analyte not detected above Reporting limit.

Table 1-6b: BMP Pollutant Removal Efficiencies (Biofiltration Swales)

	I-605/SR-91 Swale 10 October, 2000				I-605/SR-91 Swale 27 October, 2000				I-605/SR-91 Swale 8 January, 2001				I-605/SR-91 Swale 12 January, 2001				I-605/SR-91 Swale 24 January, 2001				I-605/SR-91 Swale 7 April, 2001			
	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in
	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load
TDS (mg/L)	262	175	33	65	78	146	-87	15	122	175	-44	96	10	200	-1900	-514	90	175	-95	75	126	175	-39	87
TSS (mg/L)	112	57	49	73	67	33	51	78	96	57	40	98	30	73	-143	25	61	57	6	88	46	57	-25	89
DOC (mg/L)	71	24	66	82	12.4	23	-85	16	27	24	11	97	2.8	25	-793	-174	17	24	-41	82	19	24	-26	88
TOC (mg/L)	75	26	66	82	13.8	23	-67	24	33	26	22	98	3.8	28	-637	-126	25	26	-2	87	32	26	20	93
Total As (ug/L)	16.6	5	70	84	9.4	5.0	47	76	4.8	5	-4	97	4.9	5.0	-2	69	5.0	5	0	87	9.8	5	49	95
Total Cd (ug/L)	2.5	1	78	88	1.0	0.7	30	68	0.3	1	-83	95	0.3	0.3	0	69	0.8	1	31	91	1.0	1	45	95
Total Cr (ug/L)	13.8	3	78	89	7.6	3.7	51	78	2	3	-50	96	2.0	2.0	0	69	6.6	3	55	94	3.7	3	19	93
Total Cu (ug/L)	101	21	79	89	33	23	30	68	59	21	64	99	10	19	-90	42	36	21	41	92	50	21	58	96
Total Pb (ug/L)	103	10	90	95	75	12	84	93	79	10	87	100	7.5	8.0	-7	67	36	10	72	96	25	10	59	96
Total Ni (ug/L)	32	6	80	89	8.6	7.3	15	61	16	6	60	99	2.8	5.3	-89	42	7.4	6	14	89	6.6	6	3	91
Total Zn (ug/L)	1093	96	91	95	371	123	67	85	446	96	78	99	138	53	62	88	261	96	63	95	395	96	76	98
Dissolved As (ug/L)	15.9	4	72	85	0.9	0.8	11	60	4.4	4	1	97	4.6	4.8	-4	68	4.1	4	-7	86	8.3	4	47	95
Dissolved Cd (ug/L)	1.5	0	68	83	0.4	0.6	-50	32	0.3	0	-59	95	0.3	0.3	0	69	0.4	0	-20	85	0.6	0	20	93
Dissolved Cr (ug/L)	7.3	1	80	89	4.0	1.3	68	85	1.9	1	23	98	1.8	1.6	11	73	2.5	1	42	93	1.2	1	-21	89
Dissolved Cu (ug/L)	66	18	73	86	16	18	-13	49	36	18	51	99	7.4	17	-130	29	19	18	8	88	37	18	53	96
Dissolved Pb (ug/L)	22	3	85	92	12	3.0	75	89	11	3	71	99	1.2	3.4	-183	13	5.1	3	37	92	2.0	3	-60	85
Dissolved Ni (ug/L)	29	5	83	91	5.7	5.3	7	58	13	5	61	99	2.5	4.8	-92	41	4.5	5	-12	86	4.9	5	-3	91
Dissolved Zn (ug/L)	755	66	91	95	173	82	53	78	375	66	82	99	75	44	41	82	135	66	51	94	281	66	76	98
Nitrate-Nitrogen (mg/L)	5.49	1	75	87	0.88	1.70	-93	12	2.14	1	36	98	0.28	0.93	-232	-2	0.82	1	-68	79	1.0	1	-38	87
TKN (mg/L)	6.50	3	54	75	1.16	3.21	-177	-26	5.43	3	44	98	0.80	2.82	-253	-8	1.99	3	-52	81	3.48	3	13	92
Total P (mg/L)	0.54	2	-258	-89	0.33	1.66	-403	-129	0.23	2	-740	76	0.18	2.17	-1106	-270	0.11	2	-1657	-125	0.29	2	-566	39
Diss. Orthophosphate (mg/L)	0.06	1	-2011	-1018	0.11	1.33	-1109	-451	0.12	1	-956	70	0.03U	1.20	<-3900	<-1128	0.09	1	-1307	-80	0.27	1	-369	57
Storm Volume (cubic feet)	85	45			1052	479			950	27			1726	530			125	16			272	25		

	Cerritos MS Swale 11 October, 2000				Cerritos MS Swale 27 October, 2000				Cerritos MS Swale 8 January, 2001				Cerritos MS Swale 12 January, 2001				Cerritos MS Swale 24 January, 2001				Cerritos MS Swale 7 April, 2001			
	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in
	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load
TDS (mg/L)	310		100	100	73	77	-5	45	192	166	14	77	154	78	49	96	136	97	29	99	77	59	23	76
TSS (mg/L)	142		100	100	135	54	60	79	315	191	39	84	144	135	6	92	162	141	13	99	148	153	-3	68
DOC (mg/L)	72		100	100	18.1	12.9	29	63	39	32	18	78	4.5	3.9	13	93	48	19	60	99	22	17	23	76
TOC (mg/L)	90		100	100	22	19.9	10	53	51	44	14	77	6.2	4.6	26	94	53	27	49	99	32	22	31	79
Total As (ug/L)	13.3		100	100	10.1	4.5	55	77	8.5	7.3	14	77	4.1	3.2	22	93	6.9	5	23	99	6.9	5.8	16	74
Total Cd (ug/L)	2.5		100	100	1.8	0.2	89	94	2.3	1.4	39	84	0.4	0.2U	>50	>96	1.9	1	67	100	1.4	0.5	64	89
Total Cr (ug/L)	14.6		100	100	13.2	1.8	86	93	11	11	0	73	2.7	1.5	44	95	12	7	44	99	8.8	8.3	6	71
Total Cu (ug/L)	154		100	100	80	16	80	90	96	73	24	80	18	11	39	95	113	36	68	100	69	33	52	85
Total Pb (ug/L)	294		100	100	203	20	90	95	128	95	26	80	26	9.0	65	97	111	46	59	99	92	36	61	88
Total Ni (ug/L)	35		100	100	15	3.0	80	90	19	15	21	79	5.2	1.8	65	97	16	8	51	99	11	7.6	31	79
Total Zn (ug/L)	959		100	100	542	75	86	93	502	284	43	85	95	33	65	97	604	145	76	100	443	123	72	91
Dissolved As (ug/L)	9.1		100	100	8.5	0.6	93	96	1.7	5.6	-229	13	3.5	3.0	14	93	5.0	4	14	99	4.8	4.5	6	71
Dissolved Cd (ug/L)	1.0		100	100	0.5	0.2U	>60	>79	1.7	1.1	35	83	0.3	0.2U	>33	>94	0.4	0	-10	98	0.3	0.2U	>33	>79
Dissolved Cr (ug/L)	8.7		100	100	2.6	1.1	58	78	2.8	3.3	-18	69	1.2	1U	>17	>93	5.0	2	66	99	1.4	1.2	14	74
Dissolved Cu (ug/L)	71		100	100	26	12	54	76	57	42	26	80	11	8.0	27	94	72	20	73	100	23	13	43	83
Dissolved Pb (ug/L)	43		100	100	38	7.5	80	90	21	10	52	87	3.7	1.6	57	96	14	6	57	99	2.6	2.4	8	71
Dissolved Ni (ug/L)	25		100	100	5.9	2.4	59	79	15	12	20	79	4.9	1.3	73	98	9.0	5	47	99	4.6	2.2	52	85
Dissolved Zn (ug/L)	415		100	100	136	53	61	80	389	259	33	82	94	21	78	98	283	100	65	99	118	29	75	92
Nitrate-Nitrogen (mg/L)	5.49		100	100	1.00	0.82	18	57	4.38	16.9	-286	-2	0.40	0.67	-68	86	1.23	7	-433	92	0.80	2.51	-214	3
TKN (mg/L)	8.40		100	100	2.24	1.43	36	67	6.94	6.10	12	77	1.25	0.88	30	94	4.5	3	39	99	3.09	1.92	38	81
Total P (mg/L)	0.66		100	100	0.40	0.37	8	52	0.54	0.20	63	90	0.19	0.49	-158	78	0.72	1	29	99	0.25	0.87	-248	-7
Diss. Orthophosphate (mg/L)	0.11		100	100	0.08	0.30	-275	-96	0.44	0.47	-7	72	0.05	0.07	-40	88	0.68	1	22	99	0.14	0.85	-507	-88
Storm Volume (cubic feet)	242	0			3559	1862			1120	297			10658	908			532	8			1156	357		

Notes:

Hilighted values were estimated by calculating the mean of the EMCs using the Scoping Study methodology.

Average wet season removal efficiencies calculated using the Scoping Study methodology.

Where EMC was non-detect then Reporting Limit was used.

"U" = Analyte not detected above Reporting limit.

Table 1-6b: BMP Pollutant Removal Efficiencies (Biofiltration Swales)

	I-5/I-605 Swale 27 October, 2000				I-5/I-605 Swale 8 January, 2001				I-5/I-605 Swale 12 January, 2001				I-5/I-605 Swale 24 January, 2001				I-5/I-605 Swale 7 April, 2001			
	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in
	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load
TDS (mg/L)	102	58	43	66	174		100	100	40	38	5	63	66	43	34	88	138	32	77	95
TSS (mg/L)	83	22	73	84	138		100	100	2	36	-1700	-594	63	25	60	93	73	14	81	95
DOC (mg/L)	10.4	9.7	7	44	54		100	100	2.5	4.1	-64	37	14	8	45	90	36	8.4	77	95
TOC (mg/L)	12.4	10.5	15	49	58		100	100	3.0	5.4	-80	31	30	10	67	94	37	13	65	92
Total As (ug/L)	1.5	0.5	67	80	1.6		100	100	0.5U	0.6	<-20	<54	1.6	1	67	94	1.7	0.5	71	93
Total Cd (ug/L)	1.3	0.2	85	91	2.6		100	100	0.4	0.5	-25	52	1.3	0	73	95	1.4	0.3	79	95
Total Cr (ug/L)	6.3	1.5	76	86	8.8		100	100	1U	1.4	<-40	<46	7.0	2	78	96	5.5	1.7	69	93
Total Cu (ug/L)	40	12	70	82	89		100	100	8.4	17	-102	22	54	15	72	95	70	15.5	78	95
Total Pb (ug/L)	113	17	85	91	148		100	100	8.1	22	-172	-5	122	21	83	97	88	23	74	94
Total Ni (ug/L)	9.3	23	-147	-48	21		100	100	2.5	3.1	-24	52	9.4	12	-28	77	12	2.3	81	95
Total Zn (ug/L)	288	56	81	88	547		100	100	94	106	-13	57	313	76	76	96	389	63	84	96
Dissolved As (ug/L)	0.5U	0.5U	na	na	1.0		100	100	0.5U	0.5	<0	<61	1.1	1	55	92	0.5U	0.5U	na	na
Dissolved Cd (ug/L)	0.4	0.2U	>50	>70	0.4		100	100	0.4	0.4	0	61	0.5	0	45	90	0.7	0.2U	>71	>93
Dissolved Cr (ug/L)	1.2	1U	>17	>50	1U		100	100	1U	1U	na	na	1.9	1	47	90	1.3	1U	>23	>82
Dissolved Cu (ug/L)	15	9.9	34	60	18		100	100	6.5	12	-85	29	26	10	60	93	41	8.9	78	95
Dissolved Pb (ug/L)	18	6.7	63	78	1.3		100	100	2.4	4.4	-83	29	23	5	79	96	6.7	2.9	57	90
Dissolved Ni (ug/L)	4.3	1.9	56	74	10		100	100	2.5	2.5	0	61	4.8	2	55	92	7.4	2U	>73	>94
Dissolved Zn (ug/L)	113	42	63	78	285		100	100	76	84	-11	57	128	54	58	92	171	29	83	96
Nitrate-Nitrogen (mg/L)	0.60	0.52	13	48	3.14		100	100	0.43	0.34	21	70	0.82	1	-73	68	1.75	2.69	-54	64
TKN (mg/L)	1.69	1.40	17	50	9.95		100	100	0.93	1.24	-33	49	2.02	2	23	86	4.59	1.98	57	90
Total P (mg/L)	0.22	0.36	-64	2	0.17		100	100	0.23	0.18	22	70	0.24	0	-39	75	0.25	0.42	-68	61
Diss. Orthophosphate (mg/L)	0.22	0.19	14	48	0.14		100	100	0.08	0.06	25	71	0.03U	2	-7982	-1385	0.12	2.98	-2383	-483
Storm Volume (cubic feet)	1943	1165			411	0			6199	2389			724	133			937	220		

	I-605 at Carson 11 October, 2000				I-605 at Carson 27 October, 2000				I-605 at Carson 8 January, 2001				I-605 at Carson 12 January, 2001				I-605 at Carson 24 January, 2001				I-605 at Carson 7 April, 2001			
	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in
	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load
TDS (mg/L)	244		100	100	62	120	-94	-31	118	152	-29	69	8	110	-1275	-1408	120	92	23	52	81	119	-47	3
TSS (mg/L)	474		100	100	84	24	71	81	170	110	35	84	57	13	77	75	119	26	78	86	9	46	-414	-238
DOC (mg/L)	48		100	100	10.4	12.9	-24	16	30	21	30	83	4.0	5.9	-48	-62	7.3	23	-215	-96	20	17	16	45
TOC (mg/L)	58		100	100	12.7	16.9	-33	10	32	24	25	82	5.0	6.7	-34	-47	25	25	0	38	27	19	28	53
Total As (ug/L)	9.2		100	100	2.8	3.0	-7	27	4.0	4.7	-18	72	2.0	2.5	-25	-37	2.6	2.3	12	45	2.2	3	-44	6
Total Cd (ug/L)	8.3		100	100	1.5	0.4	73	82	2.1	0.8	62	91	0.4	0.2	50	45	1.3	0.4	69	81	0.8	0	41	61
Total Cr (ug/L)	39		100	100	9.6	9.2	4	35	11	7.6	31	83	2.9	3.1	-7	-17	11	4.3	61	76	4.1	6	-53	-1
Total Cu (ug/L)	232		100	100	46	21	54	69	83	46	45	87	13	13	0	-10	57	21	63	77	33	26	21	48
Total Pb (ug/L)	2086		100	100	371	102	73	81	412	189	54	89	41	31	24	17	217	43	80	88	75	100	-33	12
Total Ni (ug/L)	69		100	100	13	4.7	64	76	20	9.2	54	89	3.5	2.4	31	25	14	4.3	69	81	8.0	5	33	56
Total Zn (ug/L)	1542		100	100	249	76	69	79	412	244	41	86	66	42	36	30	273	76	72	83	145	115	21	48
Dissolved As (ug/L)	6.0		100	100	0.5U	0.5U	na	na	2.8	4.0	-43	65	1.9	2.1	-11	-21	2.6	2.2	15	47	1.9	3	-35	11
Dissolved Cd (ug/L)	4.6		100	100	0.4	0.3	25	49	0.7	0.5	29	83	0.3	0.2U	>33	>27	0.6	0.3	50	69	0.4	0	17	46
Dissolved Cr (ug/L)	4.4		100	100	6.5	4.2	35	56	3.2	4.1	-28	69	2.7	2.7	0	-10	4.5	3.2	29	56	1.5	4	-138	-57
Dissolved Cu (ug/L)	80		100	100	16.0	15	6	36	33	32	3	77	8.9	9.0	-1	-11	29	18	38	61	21	19	9	40
Dissolved Pb (ug/L)	414		100	100	64	43	33	54	36	32	11	79	6.8	7.9	-16	-27	57	19	67	79	6.2	28	-353	-198
Dissolved Ni (ug/L)	21		100	100	6.5	3.4	48	65	10	6.1	39	85	3.1	1.7	45	40	7.7	3.7	52	70	5.6	4	31	54
Dissolved Zn (ug/L)	498		100	100	50	42	16	43	192	186	3	77	48	39	19	11	116	53	54	72	78	83	-6	30
Nitrate-Nitrogen (mg/L)	5.62		100	100	0.74	0.90	-22	18	1.93	3.17	-64	60	0.49	0.73	-49	-63	1.10	1.19	-8	33	1.14	2	-36	11
TKN (mg/L)	7.50		100	100	1.45	1.56	-8	27	5.95	6.15	-3	75	1.15	1.06	8	-1	3.11	2.39	23	52	1.99	3	-48	2
Total P (mg/L)	0.93		100	100	0.22	0.39	-77	-20	0.18	2.24	-1144	-201	0.16	0.40	-150	-174	0.09	0.41	-356	-183	0.15	1	-495	-291
Diss. Orthophosphate (mg/L)	0.08		100	100	0.07	0.27	-286	-161	0.1	0.96	-860	-132	0.03U	0.23	<-667	<-741	0.09	0.34	-278	-134	0.32	0	-45	5
Storm Volume (cubic feet)	85	0			2306	1562			327	79			5783	6344			348	216			918	604		

Notes:

Hilighted values were estimated by calculating the mean of the EMCs using the Scoping Study methodology.

Average wet season removal efficiencies calculated using the Scoping Study methodology.

Where EMC was non-detect then Reporting Limit was used.

"U" = Analyte not detected above Reporting limit.

Table 1-6c: BMP Pollutant Removal Efficiencies (Extended Detention Basins)

	I-5/I-605 EDB 27 October, 2000				I-5/I-605 EDB 9 January, 2001				I-5/I-605 EDB 12 January, 2001				I-5/I-605 EDB 25 January, 2001				I-5/I-605 EDB 14 February, 2001				I-5/I-605 EDB 7 March, 2001				I-5/I-605 EDB 8 April, 2001			
	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in
	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load
TDS (mg/L)	55	23	58	58	208	178	14	14	64	69	-8	-8	42	48	-14	-14	50	29	42	42	22	42	-91	-91	73	85	-16	-16
TSS (mg/L)	132	13	90	90	208	50	76	76	39	148	-279	-279	164	39	76	76	19	45	-137	-137	69	23	67	67	59	44	25	25
DOC (mg/L)	10.0	8.5	15	15	37	35	5	5	3.8	8.7	-129	-129	11	14	-27	-27	11.3	8.7	23	23	9.6	9.0	6	6	20	18	10	10
TOC (mg/L)	13.2	8.8	33	33	38	38	0	0	4.1	11	-168	-168	15	19	-27	-27	14.3	9.8	31	31	11	10	9	9	26	23	12	12
Total As (ug/L)	3.4	2.1	38	38	3.3	3.2	3	3	1.5	1.5	0	0	2.0	1.9	5	5	1.0	1.4	-40	-40	1.4	1.6	-14	-14	1.9	2.0	-5	-5
Total Cd (ug/L)	1.3	0.7	46	46	1.1	1.3	-18	-18	0.2	0.2U	>0	>0	0.4	0.4	0	0	0.2	0.3	-50	-50	0.3	0.2	33	33	0.4	0.4	0	0
Total Cr (ug/L)	9.5	3.9	59	59	4.7	4.2	11	11	1.8	1.2	33	33	3.8	2.7	29	29	3.1	2.8	10	10	1.5	1.8	-20	-20	2.8	3.1	-11	-11
Total Cu (ug/L)	54	11	80	80	52	52	0	0	6.3	6.7	-6	-6	18	16	11	11	9.5	9.5	0	0	11	12	-9	-9	22	21	5	5
Total Pb (ug/L)	269	32	88	88	49	32	35	35	5.1	11	-116	-116	31	26	16	16	10.7	18	-68	-68	17	18	-6	-6	24	29	-21	-21
Total Ni (ug/L)	12	3.6	70	70	13	12	8	8	2U	3.5	<-75	<-75	116	4.0	97	97	2U	2.7	<-35	<-35	2.5	2.8	-12	-12	5.9	5.2	12	12
Total Zn (ug/L)	489	78	84	84	412	247	40	40	68	99	-46	-46	4.6	108	-2248	-2248	56	69	-23	-23	64	59	8	8	119	105	12	12
Dissolved As (ug/L)	0.5U	1.6	<-220	<-220	2.7	2.7	0	0	1.3	0.5U	>62	>62	2.0	1.5	25	25	0.5U	0.9	<-80	<-80	1.4	1.4	0	0	1.2	1.3	-8	-8
Dissolved Cd (ug/L)	0.3	0.4	-33	-33	0.8	1.0	-25	-25	0.2	0.2U	>0	>0	0.2	0.2U	>0	>0	0.2	0.2U	>0	>0	0.3	0.2	33	33	0.2	0.2	0	0
Dissolved Cr (ug/L)	2.0	3.0	-50	-50	2.1	2	5	5	1U	1U	na	na	1.0	1U	>0	>0	2.1	1.0	52	52	1U	1U	na	na	2.0	1U	>50	>50
Dissolved Cu (ug/L)	16	9.5	41	41	39	44	-13	-13	4.9	5.1	-4	-4	9.4	2.6	72	72	8.2	5.2	37	37	7.6	8.0	-5	-5	13	12	8	8
Dissolved Pb (ug/L)	23	26	-13	-13	32	7.6	76	76	1U	4.8	<-380	<-380	4.0	1.1	73	73	6.1	3.8	38	38	1.5	1.7	-13	-13	1.8	2.2	-22	-22
Dissolved Ni (ug/L)	4.2	3.1	26	26	7.1	11	-55	-55	2U	3.2	<-60	<-60	2.3	1.2	48	48	2U	2U	na	na	2.1	2.0	5	5	5.4	3.3	39	39
Dissolved Zn (ug/L)	128	62	52	52	319	222	30	30	54	23	57	57	3.2	21	-556	-556	47	46	2	2	40	32	20	20	77	58	25	25
Nitrate-Nitrogen (mg/L)	0.84	0.40	52	52	3.58	4.06	-13	-13	0.34	0.53	-56	-56	0.79	0.76	4	4	0.31	0.22	29	29	0.5	0.5	0	0	1.29	1.18	9	9
TKN (mg/L)	1.79	0.67	63	63	8.78	7.81	11	11	0.81	0.45	44	44	2.06	2.19	-6	-6	0.56	0.60	-7	-7	0.9	0.6	33	33	1.96	1.72	12	12
Total P (mg/L)	0.49	0.29	41	41	2.62	0.58	78	78	0.16	0.35	-119	-119	0.22	0.24	-9	-9	0.24	0.20	17	17	0.25	0.18	28	28	0.51	0.34	33	33
Diss. Orthophosphate (mg/L)	0.10	0.2	-100	-100	0.46	0.07	85	85	0.03U	0.18	<-500	<-500	0.14	0.13	7	7	0.08	0.08	0	0	0.08	0.07	13	13	0.30	0.40	-33	-33
Storm Volume (cubic feet)	12227	12227			1386	1386			58830	58830			4764	4764			40358	40358			5225	5225			6119	6119		

	I-605/SR-91 EDB 27 October, 2000				I-605/SR-91 EDB 8 January, 2001				I-605/SR-91 EDB 12 January, 2001				I-605/SR-91 EDB 25 January, 2001				I-605/SR-91 EDB 14 February, 2001				I-605/SR-91 EDB 6 March, 2001				I-605/SR-91 EDB 7 April, 2001			
	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in
	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load
TDS (mg/L)	98	44	55	97	166	98	41	99	208	98	53	100	102	44	57	94	168	47	72	95	48	286	-496	-7	83	68	18	81
TSS (mg/L)	61	24	61	97	150	22	85	100	58	22	61	100	165	36	78	97	24	9	63	93	74	17	77	96	93	22	76	95
DOC (mg/L)	9.2	7.6	17	94	23	20	12	99	5.2	20	-289	97	11	30	-173	64	22	11	50	91	9.1	33	-263	35	21	15	29	84
TOC (mg/L)	10.0	8.9	11	93	31	24	23	99	6.6	24	-261	97	26	32	-23	84	24	14	42	89	9.5	39	-311	26	28	20	29	84
Total As (ug/L)	1.7	1.9	-12	92	3.7	2	45	99	1.7	2	-20	99	3.9	1.7	56	94	1.8	1.2	33	88	1.7	3.5	-106	63	2.3	1.8	22	82
Total Cd (ug/L)	0.6	0.4	33	95	2.1	1	76	100	0.6	1	16	99	1.2	0.8	33	91	0.6	0.3	50	91	0.5	0.6	-20	79	0.7	0.4	43	87
Total Cr (ug/L)	4.2	3.4	19	94	10	2	77	100	2.3	2	-2	99	8.8	3.9	56	94	86	1.2	99	100	6.2	1.6	74	95	6.7	1.3	81	96
Total Cu (ug/L)	22	18	18	94	73	22	70	100	20	22	-9	99	59	29	51	93	15	8.1	46	90	20	25	-25	78	39	24	38	86
Total Pb (ug/L)	51	34	33	95	159	25	84	100	103	25	76	100	128	39	70	96	53	8.7	84	97	43	13	70	95	78	23	71	93
Total Ni (ug/L)	5.7	4.9	14	94	17	5	73	100	4.5	5	-2	99	12	5.7	53	94	3.1	2U	>35	>88	6.3	6.4	-2	82	7.8	3.3	58	90
Total Zn (ug/L)	161	96	40	96	636	124	81	100	170	124	27	99	550	166	70	96	182	64	65	93	282	159	44	90	347	122	65	92
Dissolved As (ug/L)	0.5U	0.5U	na	na	2.7	1	47	99	1.3	1	-10	99	3.7	0.9	76	97	1.2	0.8	33	88	1.4	3.2	-129	59	1.5	1.5	0	77
Dissolved Cd (ug/L)	0.2U	0.2	<0	<93	1.0	0	65	100	0.4	0	13	99	0.7	0.6	14	89	0.4	0.2	50	91	0.3	0.4	-33	76	0.3	0.3	0	77
Dissolved Cr (ug/L)	1.4	1.9	-36	90	3.5	2	56	100	1.2	2	-27	99	2.5	2.6	-4	86	1.4	1.0	29	87	1.7	1.0	41	89	1.5	1U	>33	>85
Dissolved Cu (ug/L)	9.1	12	-32	90	37	17	54	100	12	17	-42	99	28	24	14	89	9.8	7.4	24	86	10	21	-110	62	23	18	22	82
Dissolved Pb (ug/L)	4.0	5.8	-45	89	16	6	63	100	17	6	65	100	9.2	11	-20	84	17	4.7	72	95	2.8	1.3	54	92	7.0	4.1	41	87
Dissolved Ni (ug/L)	2.6	3.2	-23	91	12	4	67	100	3.6	4	-9	99	6.7	5.2	22	90	2.1	2U	>5	>82	3.8	6.1	-61	71	4.0	2.6	35	85
Dissolved Zn (ug/L)	56	59	-5	92	539	96	82	100	117	96	18	99	244	141	42	92	135	62	54	91	176	116	34	88	193	95	51	89
Nitrate-Nitrogen (mg/L)	0.80	0.83	-4	92	1.40	1	23	99	0.84	1	-28	99	1.34	1.47	-10	85	0.86	0.38	56	92	0.7	1.8	-157	54	1.05	0.62	41	87
TKN (mg/L)	1.73	1.62	6	93	7.76	1	82	100	0.68	1	-111	98	4.5	1.78	60	95	0.76	0.94	-24	77	1.3	1.4	-8	81	2.06	1.38	33	85
Total P (mg/L)	0.54	0.41	24	94	0.30	0	-14	99	0.18	0	-89	98	0.18	0.36	-100	73	0.20	0.17	15	84	0.21	0.32	-52	73	0.26	0.41	-58	64
Diss. Orthophosphate (mg/L)	0.32	0.3	6	93	0.22	0	1	99	0.03U	0	-625	94	0.09	0.14	-56	79	0.05	0.08	-60	70	0.03U	0.17	<-467	<-2	0.12	0.35	-192	34
Storm Volume (cubic feet)	19121	1413			1673	17			52676	451			1327	176			19932	3695			5878	1053			2755	625		

Notes:

Hilighted values were estimated by calculating the mean of the EMCs using the Scoping Study methodology.

Average wet season removal efficiencies calculated using the Scoping Study methodology.

Where EMC was non-detect then Reporting Limit was used.

"U" = Analyte not detected above Reporting limit.

Table 1-6d: BMP Pollutant Removal Efficiencies (Sand Filters - Austin Type)

	Eastern SF 27 October, 2000				Eastern SF 12 January, 2001				Eastern SF 25 January, 2001				Eastern SF 14 February, 2001				Eastern SF 6 March, 2001				Eastern SF 7 April, 2001			
	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in
	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load
TDS (mg/L)	44	53.5	-22	-22	56	70	-25	-25	14	46	-229	-229	5	8	-60	-60	23	58	-152	-152	40	44	-10	-10
TSS (mg/L)	44	12	74	74	103	10	90	90	65	13	80	80	37	12	68	68	40	6	85	85	25	16	36	36
DOC (mg/L)	9.5	25	-168	-168	3.6	90	-2400	-2400	10	15	-50	-50	5.4	5.5	-2	-2	5.6	4.0	29	29	7.6	8.1	-7	-7
TOC (mg/L)	10.0	28	-181	-181	4.0	94	-2250	-2250	20	19	5	5	7.8	6.9	12	12	6.9	4.3	38	38	8.7	8.6	1	1
Total As (ug/L)	1.7	2	-5	-5	1.1	1.4	-27	-27	3.0	2.5	17	17	1.4	1.3	7	7	1.9	2.0	-5	-5	1.5	1.7	-13	-13
Total Cd (ug/L)	0.5	0	48	48	0.2U	0.2U	na	na	1.0	0.5	50	50	0.3	0.2U	>33	>33	0.2	0.2	0	0	0.2	0.2U	>0	>0
Total Cr (ug/L)	7.9	3	67	67	1.6	5.3	-231	-231	7.5	2.9	61	61	27	1.7	94	94	3.9	1.0	74	74	2.5	1.7	32	32
Total Cu (ug/L)	13	9	31	31	6.0	5.1	15	15	23	21	9	9	6.0	4.0	33	33	9.1	7.0	23	23	6.7	7.0	-4	-4
Total Pb (ug/L)	30	3	88	88	9.1	2.4	74	74	24	7.1	70	70	6.6	2.8	58	58	11	1.0	91	91	6.3	3.1	51	51
Total Ni (ug/L)	4.4	3	33	33	2U	5.3	<-165	<-165	4.2	3.2	24	24	2.4	2U	>17	>17	2.1	2U	>5	>5	2.3	2U	>13	>13
Total Zn (ug/L)	137	48	65	65	36	31	14	14	274	89	68	68	63	25	60	60	76	46	39	39	90	45	50	50
Dissolved As (ug/L)	0.5U	2	-218	-218	1.1	0.7	36	36	2.8	2.3	18	18	1.2	1.1	8	8	1.6	1.9	-19	-19	1.3	1.7	-31	-31
Dissolved Cd (ug/L)	0.2U	0	-31	-31	0.2U	0.2U	na	na	0.6	0.5	17	17	0.2	0.2U	>0	>0	0.2U	0.2	<0	<0	0.2	0.2U	>0	>0
Dissolved Cr (ug/L)	1U	1	-16	-16	1.0	1.6	-60	-60	1.8	1.2	33	33	11.3	1U	>91	>91	1U	1U	na	na	1U	1U	na	na
Dissolved Cu (ug/L)	5.1	8	-60	-60	4.8	4.7	2	2	17	19	-12	-12	5.4	3.6	33	33	6.2	6.6	-6	-6	5.0	6.3	-26	-26
Dissolved Pb (ug/L)	2.1	1	32	32	2.5	1.1	56	56	4.9	2.7	45	45	3.8	1.3	66	66	1U	1U	na	na	1U	1U	na	na
Dissolved Ni (ug/L)	1.7	2	-25	-25	2U	2U	na	na	2.6	2.6	0	0	2U	2U	na	na	2U	2U	na	na	2U	2U	na	na
Dissolved Zn (ug/L)	66	42	36	36	29	21	28	28	102	77	25	25	54	23	57	57	47	43	9	9	76	41	46	46
Nitrate-Nitrogen (mg/L)	0.29	1	-128	-128	0.45	0.38	16	16	0.50	0.76	-52	-52	0.27	0.31	-15	-15	0.3	1.0	-233	-233	0.41	0.75	-83	-83
TKN (mg/L)	0.61	2	-243	-243	1.52	0.59	61	61	0.74	8.8	-1089	-1089	0.58	0.56	3	3	0.01U	0.5	<-4900	<-4900	0.64	0.63	2	2
Total P (mg/L)	0.11	0	-61	-61	0.32	0.13	59	59	0.18	0.17	6	6	0.13	0.24	-85	-85	0.11	0.04	64	64	0.12	0.22	-83	-83
Diss. Orthophosphate (mg/L)	0.05	0	-33	-33	0.03U	0.03U	na	na	0.03U	0.03U	na	na	0.03U	0.03U	na	na	0.03U	0.03U	na	na	0.03	0.22	-633	-633
Ammonia (mg/L)	na	na	na	na	0.4	0.1U	>75	>75	0.5	0.41	18	18	0.41	0.37	10	10	0.1U	0.1U	na	na	0.5	0.3	40	40
Storm Volume (cubic feet)	117	117			4932	4932			1742	1742			3185	3185			1192	1192			1865	1865		

	Foothill SF 27 October, 2000				Foothill SF 11 January, 2001				Foothill SF 25 January, 2001				Foothill SF 10 February, 2001				Foothill SF 6 March, 2001				Foothill SF 7 April, 2001				Foothill SF 20 April, 2001			
	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in
	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load
TDS (mg/L)	40	105	-163	-163	98	61	38	38	32	44	-38	-38	24	52	-117	-117	1U	64	<-6300	<-6300	33	65	-97	-97	43	22	49	49
TSS (mg/L)	57	11	81	81	57	10	83	83	128	9	93	93	168	11	93	93	100	7	93	93	51	7	86	86	85	13	85	85
DOC (mg/L)	16.9	20	-18	-18	3.4	14	-310	-310	14	16	-14	-14	16.5	18	-9	-9	4.0	3.4	15	15	8.4	14	-67	-67	5.3	5.0	6	6
TOC (mg/L)	17.1	20	-17	-17	4.0	16	-299	-299	14	20	-43	-43	13.7	20	-46	-46	4.3	4.1	5	5	11	17	-55	-55	6.0	7.9	-32	-32
Total As (ug/L)	17	18	-6	-6	7.9	9	-11	-11	5.4	5.4	0	0	10.4	7.8	25	25	4.8	5.0	-4	-4	4.7	8.0	-70	-70	9.9	7.9	20	20
Total Cd (ug/L)	0.9	0.4	56	56	0.4	0	42	42	0.7	0.2U	>71	>71	1.2	0.2	83	83	0.2	0.2	0	0	0.4	0.2U	>50	>50	0.6	0.2U	>67	>67
Total Cr (ug/L)	3.8	2.5	34	34	1U	1	-27	-27	4.3	1U	>77	>77	8.8	1.0	89	89	1.4	1U	>29	>29	2.0	1.1	45	45	3.2	1U	>69	>69
Total Cu (ug/L)	23	31	-35	-35	6.7	14	-105	-105	20	12	40	40	33	13.7	58	58	6.5	6.9	-6	-6	10	10	0	0	15	8.4	44	44
Total Pb (ug/L)	28	5.7	80	80	3.4	3	1	1	46	3.1	93	93	65	4.3	93	93	8.2	3.2	61	61	9.8	1.5	85	85	22	1.8	92	92
Total Ni (ug/L)	5.4	4.7	13	13	2U	3	-29	-29	4.6	2.1	54	54	8.7	2.5	71	71	2U	2.2	<-10	<-10	2.9	2U	>31	>31	3.6	2U	>44	>44
Total Zn (ug/L)	448	93	79	79	144	69	52	52	274	60	78	78	449	59	87	87	127	98	23	23	179	46	74	74	222	56	75	75
Dissolved As (ug/L)	14	18	-29	-29	7.6	8	-10	-10	5.0	5.1	-2	-2	9.2	7.2	22	22	4.6	4.7	-2	-2	4.2	7.1	-69	-69	8.2	7.7	6	6
Dissolved Cd (ug/L)	0.5	0.3	40	40	0.4	0	46	46	0.3	0.2U	>33	>33	0.3	0.2U	>33	>33	0.2	0.2	0	0	0.2	0.2U	>0	>0	0.2U	0.2U	na	na
Dissolved Cr (ug/L)	1.6	2.4	-50	-50	1U	1	-23	-23	1.0	1U	>0	>0	1.5	1.0	33	33	1U	1U	na	na	1U	1U	na	na	1U	1U	na	na
Dissolved Cu (ug/L)	14	30	-114	-114	5.9	13	-114	-114	9.2	11	-20	-20	8.8	12.0	-36	-36	4.0	5.8	-45	-45	6.6	8.8	-33	-33	5.6	7.8	-39	-39
Dissolved Pb (ug/L)	5.2	5.7	-10	-10	1.7	2	-28	-28	5.4	1.4	74	74	9.2	2.8	70	70	1U	1U	na	na	1.4	1U	>29	>29	1.5	1U	>33	>33
Dissolved Ni (ug/L)	2.8	4.6	-64	-64	2U	2	-16	-16	1.8	2U	>-11	>-11	2.1	2U	>5	>5	2U	2.1	<-5	<-5	2U	2U	na	na	2U	2U	na	na
Dissolved Zn (ug/L)	362	92	75	75	130	63	52	52	160	48	70	70	159	55	65	65	96	87	9	9	134	42	69	69	113	50	56	56
Nitrate-Nitrogen (mg/L)	0.83	3.08	-271	-271	0.26	1	-361	-361	0.6	0.93	-55	-55	0.68	1.10	-62	-62	0.3	0.7	-133	-133	0.33	0.84	-155	-155	0.32	0.52	-63	-63
TKN (mg/L)	2.37	2.48	-5	-5	1.61	2	-50	-50	1.25	8.4	-572	-572	2.40	1.00	58	58	1.2	0.8	33	33	1.06	1.16	-9	-9	1.89	0.79	58	58
Total P (mg/L)	0.34	0.26	24	24	0.18	0	-137	-137	0.10	0.16	-60	-60	0.32	0.11	66	66	0.20	0.002U	>99	>99	0.21	0.16	24	24	0.17	0.18	-6	-6
Diss. Orthophosphate (mg/L)	0.16	0.15	6	6	0.07	0	-30	-30	0.09	0.03U	>67	>67	0.05	0.05	0	0	0.03U	0.03U	na	na	0.05	0.14	-180	-180	0.07	0.11	-57	-57
Ammonia (mg/L)	na	na	na	na	0.3	0	-2	-2	0.9	0.30	67	67	1.00	0.22	78	78	0.5	0.6	-20	-20	0.43	0.24	44	44	0.7	0.1	86	86
Storm Volume (cubic feet)	2112	2112			2821	2821			1333	1333			558	558			2309	2309			2808	2808			1891	1891		

Notes:

Hilighted values were estimated by calculating the mean of the EMCs using the Scoping Study methodology.

Average wet season removal efficiencies calculated using the Scoping Study methodology.

Where EMC was non-detect then Reporting Limit was used.

"U" = Analyte not detected above Reporting limit.

Table 1-6d: BMP Pollutant Removal Efficiencies (Sand Filters - Austin Type)

	Termination SF 27 October, 2000				Termination SF 24 January, 2001				Termination SF 11 February, 2001				Termination SF 7 March, 2001				Termination SF 7 April, 2001			
	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in
	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load
TDS (mg/L)	20	46	-131	-131	36	36	0	0	42	46	-10	-10	48	47	2	2	54	55	-2	-2
TSS (mg/L)	78	4	95	95	20	6	70	70	28	4	86	86	25	4	84	84	14	1U	>93	>93
DOC (mg/L)	10.0	10	-1	-1	8.5	9	-6	-6	14.4	12.2	15	15	6.8	3.5	49	49	18	13	28	28
TOC (mg/L)	11.1	12	-12	-12	14	14	0	0	15.2	13.0	14	14	7.9	3.9	51	51	22	15	32	32
Total As (ug/L)	1.3	1	30	30	0.8	0.6	25	25	0.5	0.8	-60	-60	0.5U	1.1	<-120	<-120	0.5U	1.1	<-120	<-120
Total Cd (ug/L)	0.4	0	50	50	0.3	0.2	33	33	0.2	0.2	0	0	0.2U	0.2	<0	<0	0.2	0.2	0	0
Total Cr (ug/L)	4.9	1	80	80	1.5	1.0	33	33	1U	1U	na	na	3.5	1U	>71	>71	1U	1U	na	na
Total Cu (ug/L)	23	11	54	54	16	11	31	31	9.7	9.5	2	2	6.4	7.4	-16	-16	17	14	18	18
Total Pb (ug/L)	19	1	95	95	1.9	1.0	47	47	1.4	1U	>29	>29	2.2	1U	>55	>55	2.6	1.1	58	58
Total Ni (ug/L)	7.5	3	55	55	4.2	3.8	10	10	3.5	3.4	3	3	2.2	2.3	-5	-5	5.4	3.9	28	28
Total Zn (ug/L)	190	89	53	53	88	162	-84	-84	79	55	30	30	45	47	-4	-4	157	81	48	48
Dissolved As (ug/L)	0.5U	1	-72	-72	0.7	0.6	14	14	0.5U	0.7	<-40	<-40	0.5U	1.1	<-120	<-120	0.5U	1.0	<-100	<-100
Dissolved Cd (ug/L)	0.2U	0	0	0	0.3	0.2	33	33	0.2	0.2	0	0	0.2U	0.2	<0	<0	0.2	0.2	0	0
Dissolved Cr (ug/L)	3.3	1	70	70	1.5	1U	>33	>33	1U	1U	na	na	1.6	1U	>38	>38	1U	1U	na	na
Dissolved Cu (ug/L)	7.4	10	-28	-28	14	10	29	29	9.2	9.1	1	1	4.5	6.6	-47	-47	14	12	14	14
Dissolved Pb (ug/L)	1.3	1	23	23	1.0	1U	>0	>0	1U	1U	na	na	1U	1U	na	na	1.1	1U	>9	>9
Dissolved Ni (ug/L)	2.9	3	-4	-4	4.1	3.5	15	15	3.2	3.1	3	3	2U	2.2	<-10	<-10	4.7	3.2	32	32
Dissolved Zn (ug/L)	72	68	6	6	81	115	-42	-42	60	54	10	10	27	45	-67	-67	135	53	61	61
Nitrate-Nitrogen (mg/L)	1.04	4	-302	-302	0.51	0.93	-82	-82	0.59	1.18	-100	-100	0.2	0.8	-300	-300	0.36	0.01U	>97	>97
TKN (mg/L)	1.76	4	-118	-118	2.26	7.9	-250	-250	2.00	1.20	40	40	1.2	0.6	50	50	1.60	0.14	91	91
Total P (mg/L)	0.22	0	50	50	0.09	0.16	-78	-78	0.14	0.09	36	36	0.08	0.09	-13	-13	0.15	0.10	33	33
Diss. Orthophosphate (mg/L)	0.10	0	57	57	0.03U	0.03U	na	na	0.03U	0.03U	na	na	0.03U	0.03U	na	na	0.08	0.08	0	0
Ammonia (mg/L)	na	na	na	na	1.6	0.49	69	69	1.10	0.49	55	55	0.4	0.2	50	50	0.8	0.16	80	80
Storm Volume (cubic feet)	720	720			621	621			1464	1464			2844	2844			2708	2708		

Notes:

Hilighted values were estimated by calculating the mean of the EMCs using the Scoping Study methodology.

Average wet season removal efficiencies calculated using the Scoping Study methodology.

Where EMC was non-detect then Reporting Limit was used.

"U" = Analyte not detected above Reporting limit.

Table 1-6e: BMP Pollutant Removal Efficiencies (MCTTs)

	Via Verde MCTT 27 October, 2000				Via Verde MCTT 11 January, 2001				Via Verde MCTT 7 April, 2001				Via Verde MCTT 20 April, 2001			
	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in
	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load
TDS (mg/L)	40	108	-170	-170	16	98	-513	-513	10	44	-340	-340	43	27	37	37
TSS (mg/L)	22	12	45	45	34	22	35	35	118	5	96	96	72	6	92	92
DOC (mg/L)	14.7	14.0	5	5	2.2	25	-1036	-1036	6.2	11	-77	-77	6.7	6.3	6	6
TOC (mg/L)	15.2	14.9	2	2	4.3	49	-1040	-1040	6.7	14	-109	-109	7.7	6.6	14	14
Total As (ug/L)	0.5U	1.8	<-260	<-260	0.5U	0.7	<-40	<-40	0.5U	0.5U	na	na	1.0	0.5U	>50	>50
Total Cd (ug/L)	0.2U	0.2	<0	<0	0.2U	0.2U	na	na	0.4	0.2U	>50	>50	0.4	0.4	0	0
Total Cr (ug/L)	1U	1.9	<-90	<-90	1U	1U	na	na	4.7	1U	>79	>79	3.2	1U	>69	>69
Total Cu (ug/L)	7.7	14	-82	-82	2.7	4.1	-52	-52	17	4.1	76	76	13	3.2	75	75
Total Pb (ug/L)	2.9	2.7	7	7	1U	1.4	<-40	<-40	15	1U	>93	>93	11	1U	>91	>91
Total Ni (ug/L)	4.4	5.0	-14	-14	2U	2U	na	na	8.3	2U	>76	>76	4.9	6.2	-27	-27
Total Zn (ug/L)	129	30	77	77	48	129	-169	-169	267	13	95	95	182	20	89	89
Dissolved As (ug/L)	0.5U	0.5U	na	na	0.5U	0.6	<-20	<-20	0.5U	0.5U	na	na	0.5U	0.5U	na	na
Dissolved Cd (ug/L)	0.2U	0.2U	na	na	0.2U	0.2U	na	na	0.2U	0.2U	na	na	0.2U	0.3	<-50	<-50
Dissolved Cr (ug/L)	1U	1U	na	na	1U	1U	na	na	1U	1U	na	na	1U	1U	na	na
Dissolved Cu (ug/L)	6.9	13	-88	-88	2.6	4.0	-54	-54	3.0	3.1	-3	-3	6.0	1.7	72	72
Dissolved Pb (ug/L)	1.7	2	-18	-18	1U	1.3	<-30	<-30	1U	1U	na	na	1U	1U	na	na
Dissolved Ni (ug/L)	4.0	2.9	28	28	2U	2U	na	na	2U	2U	na	na	3.0	2U	>33	>33
Dissolved Zn (ug/L)	118	28	76	76	47	15	68	68	57	9.5	83	83	87	13	85	85
Nitrate-Nitrogen (mg/L)	0.59	1.11	-88	-88	0.15	0.53	-253	-253	0.02	0.73	-3550	-3550	0.42	0.74	-76	-76
TKN (mg/L)	2.63	2.93	-11	-11	1.28	0.62	52	52	1.76	1.80	-2	-2	2.02	1.24	39	39
Total P (mg/L)	0.26	0.38	-46	-46	0.22	0.29	-32	-32	0.37	0.12	68	68	0.19	0.08	58	58
Diss. Orthophosphate (mg/L)	0.21	0.23	-10	-10	0.09	0.14	-56	-56	0.10	0.12	-20	-20	0.10	0.04	60	60
Ammonia (mg/L)	na	na	na	na	0.7	0.6	14	14	0.9	0.6	33	33	1.2	0.3	75	75
Storm Volume (cubic feet)	477	477			734	734			551	551			440	440		

	Lakewood MCTT 11 October, 2000				Lakewood MCTT 27 October, 2000				Lakewood MCTT 8 January, 2001				Lakewood MCTT 10 January, 2001			
	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in
	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load
TDS (mg/L)	144	282	-96	-96	52	76	-46	-46	66	92	-39	-39	88	48	45	45
TSS (mg/L)	56	21	63	63	34	8	76	76	59	20	66	66	28	8	71	71
DOC (mg/L)	51	79	-55	-55	7.9	14.7	-86	-86	25	11	56	56	3.8	6.2	-63	-63
TOC (mg/L)	52	81	-56	-56	17.0	15.4	9	9	35	12	66	66	4.8	7.7	-60	-60
Total As (ug/L)	4.8	3.2	33	33	1.0	2.0	-100	-100	1.2	1.4	-17	-17	0.6	0.9	-50	-50
Total Cd (ug/L)	0.7	1.5	-114	-114	0.2	0.3	-50	-50	0.5	0.2U	>60	>60	0.2U	0.2U	na	na
Total Cr (ug/L)	1.7	3.0	-76	-76	2.1	1U	>52	>52	1.6	1U	>38	>38	1U	1U	na	na
Total Cu (ug/L)	38	31	18	18	12	8	33	33	21	11	48	48	6.3	7.8	-24	-24
Total Pb (ug/L)	15.3	4.8	69	69	8.1	1	88	88	5.7	1U	>82	>82	1.3	1U	>23	>23
Total Ni (ug/L)	20.1	22	-9	-9	4.9	6.5	-33	-33	11	6.0	45	45	3.2	7.1	-122	-122
Total Zn (ug/L)	627	356	43	43	151	57	62	62	285	41	86	86	56	37	34	34
Dissolved As (ug/L)	3.9	2.3	41	41	1.0	0.5U	>50	>50	1.0	1.3	-30	-30	0.5U	0.6	<-20	<-20
Dissolved Cd (ug/L)	0.7	1.0	-43	-43	0.2	0.2U	>0	>0	0.4	0.2U	>50	>50	0.2U	0.2U	na	na
Dissolved Cr (ug/L)	1U	2.5	<-150	<-150	2.0	1U	>50	>50	1U	1U	na	na	1U	1U	na	na
Dissolved Cu (ug/L)	33	23	30	30	12	8	33	33	18	10	44	44	5.5	7.0	-27	-27
Dissolved Pb (ug/L)	7.2	2.3	68	68	8.0	1U	>88	>88	1.3	1U	>23	>23	1U	1U	na	na
Dissolved Ni (ug/L)	18.1	19	-5	-5	4.8	5.7	-19	-19	10	5.6	44	44	2.9	3.0	-3	-3
Dissolved Zn (ug/L)	601	294	51	51	148	47	68	68	190	38	80	80	53	26	51	51
Nitrate-Nitrogen (mg/L)	4.40	0.31	93	93	0.28	0.45	-61	-61	1.49	1.43	4	4	0.20	0.66	-230	-230
TKN (mg/L)	6.10	6.50	-7	-7	1.66	2.70	-63	-63	5.76	2.46	57	57	1.20	1.23	-3	-3
Total P (mg/L)	0.48	0.28	42	42	0.21	0.41	-95	-95	0.30	0.27	10	10	0.20	0.22	-10	-10
Diss. Orthophosphate (mg/L)	0.31	0.58	-87	-87	0.11	0.12	-9	-9	0.24	0.14	42	42	0.04	0.08	-100	-100
Ammonia (mg/L)	na	na	na	na	na	na	na	na	3.52	1.1	69	69	0.7	0.5	29	29
Storm Volume (cubic feet)	989	989			6425	6425			3031	3031			6425	6425		

	Lakewood MCTT 24 January, 2001				Lakewood MCTT 12 February, 2001			
	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in
	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load
TDS (mg/L)	12	30	-150	-150	18	20	-11	-11
TSS (mg/L)	56	8	86	86	14	10	29	29
DOC (mg/L)	12	11	8	8	6.8	10	-47	-47
TOC (mg/L)	15	14	7	7	9.1	11	-21	-21
Total As (ug/L)	0.7	0.8	-14	-14	0.9	0.7	22	22
Total Cd (ug/L)	0.2	0.2U	>0	>0	0.4	0.2U	>50	>50
Total Cr (ug/L)	1.2	1U	>17	>17	1.1	1U	>9	>9
Total Cu (ug/L)	11	6.5	41	41	6.4	4.7	27	27
Total Pb (ug/L)	3.0	1U	>67	>67	2.2	1U	>55	>55
Total Ni (ug/L)	4.6	2.7	41	41	3.1	2U	>35	>35
Total Zn (ug/L)	107	43	60	60	70	31	56	56
Dissolved As (ug/L)	0.7	0.7	0	0	0.5	0.6	-20	-20
Dissolved Cd (ug/L)	0.2	0.2U	>0	>0	0.2U	0.2U	na	na
Dissolved Cr (ug/L)	1.2	1U	>17	>17	1U	1U	na	na
Dissolved Cu (ug/L)	9.4	6.2	34	34	4.8	4.1	15	15
Dissolved Pb (ug/L)	1.5	1U	>33	>33	1U	1U	na	na
Dissolved Ni (ug/L)	4.3	2.6	40	40	2.3	2U	>13	>13
Dissolved Zn (ug/L)	90	25	72	72	59	28	53	53
Nitrate-Nitrogen (mg/L)	0.40	0.88	-120	-120	0.20	0.50	-150	-150
TKN (mg/L)	1.9	1.2	37	37	1.10	0.78	29	29
Total P (mg/L)	0.10	0.10	0	0	0.11	0.10	9	9
Diss. Orthophosphate (mg/L)	0.08	0.05	38	38	0.03U	0.03U	na	na
Ammonia (mg/L)	1.1	0.6	45	45	0.84	0.53	37	37
Storm Volume (cubic feet)	2109	2109			6425	6425		

Notes:

Hilighted values were estimated by calculating the mean of the EMCs using the Scoping Study methodology.

Average wet season removal efficiencies calculated using the Scoping Study methodology.

Where EMC was non-detect then Reporting Limit was used.

"U" = Analyte not detected above Reporting limit.

Table 1-6f: BMP Pollutant Removal Efficiencies (CDS Units)

	Orcas CDS 10 February, 2001				Orcas CDS 28 February, 2001				Orcas CDS 6 March, 2001				Orcas CDS 7 April, 2001			
	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in
	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load
TDS (mg/L)	32	40	-25	-25	36	36	0	0	32	20	38	38	36	48	-33	-33
TSS (mg/L)	139	80	42	42	27	23	15	15	25	29	-16	-16	41	35	15	15
DOC (mg/L)	14.7	11	25	25	7.9	8.1	-3	-3	6.7	6.1	9	9	9.9	7.9	20	20
TOC (mg/L)	15.4	14	9	9	10	9.4	6	6	7.2	7.1	1	1	12	10	17	17
Total As (ug/L)	1.6	0.6	63	63	4.1	3.6	12	12	0.5U	0.5U	na	na	0.5U	0.5U	na	na
Total Cd (ug/L)	0.9	0.8	11	11	0.5	0.4	20	20	0.4	0.3	25	25	0.3	0.2	33	33
Total Cr (ug/L)	5.9	3.6	39	39	3.2	2.6	19	19	2.8	2.3	18	18	2.0	1.7	15	15
Total Cu (ug/L)	36	18	50	50	20	17	15	15	13	10	23	23	15	12	20	20
Total Pb (ug/L)	38	8.1	79	79	7.8	6.8	13	13	4.4	2.8	36	36	5.1	3.8	25	25
Total Ni (ug/L)	7.1	4.1	42	42	3.3	3.2	3	3	2.2	2U	>9	>9	2.7	2.2	19	19
Total Zn (ug/L)	320	133	58	58	82	77	6	6	52	42	19	19	74	57	23	23
Dissolved As (ug/L)	1.5	0.5	67	67	0.5	0.5U	>0	>0	0.5U	0.5U	na	na	0.5U	0.5U	na	na
Dissolved Cd (ug/L)	0.2	0.4	-100	-100	0.2	0.2	0	0	0.2	0.2	0	0	0.2	0.2U	>0	>0
Dissolved Cr (ug/L)	1.5	2.1	-40	-40	1.3	1.5	-15	-15	1.4	1.3	7	7	1U	1U	na	na
Dissolved Cu (ug/L)	9.4	10.9	-16	-16	9.4	9.6	-2	-2	6.3	6.5	-3	-3	9.6	8.2	15	15
Dissolved Pb (ug/L)	1.6	1.2	25	25	1.6	1.6	0	0	1U	1U	na	na	1U	1U	na	na
Dissolved Ni (ug/L)	2U	2.6	<-30	<-30	2U	2.1	<-5	<-5	2U	2U	na	na	2U	2U	na	na
Dissolved Zn (ug/L)	85	84	1	1	38	42	-11	-11	20	27	-35	-35	42	39	7	7
Nitrate-Nitrogen (mg/L)	0.71	0.91	-28	-28	0.7	0.7	0	0	0.6	0.6	0	0	0.56	0.58	-4	-4
TKN (mg/L)	1.20	1.30	-8	-8	0.8	0.7	13	13	0.01U	0.01U	na	na	1.68	2.67	-59	-59
Total P (mg/L)	0.24	0.20	17	17	0.18	0.18	0	0	0.09	0.10	-11	-11	0.21	0.17	19	19
Diss. Orthophosphate (mg/L)	0.07	0.03U	>57	>57	0.03U	0.03U	na	na	0.03U	0.03U	na	na	0.11	0.14	-27	-27
Storm Volume (cubic feet)	991	991			3425	3425			5035	5035			1864	1864		

	Filmore CDS 27 October, 2000				Filmore CDS 12 January, 2001				Filmore CDS 24 January, 2001				Filmore CDS 10 February, 2001			
	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in
	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load
TDS (mg/L)	67	58	13	13	62	50	19	19	118	24	80	80	28	22	21	21
TSS (mg/L)	58	57	2	2	67	54	19	19	41	5.5	87	87	34	38	-12	-12
DOC (mg/L)	16.9	8.9	47	47	5.1	4.2	18	18	8.6	8.7	-1	-1	11.1	8.7	22	22
TOC (mg/L)	17.2	12.3	28	28	5.8	6.2	-7	-7	12	13	-8	-8	11.3	11	3	3
Total As (ug/L)	0.9	0.6	33	33	0.6	0.6	0	0	3.2	1.0	69	69	0.5	0.5	0	0
Total Cd (ug/L)	0.6	0.6	0	0	0.5	0.4	20	20	0.6	0.8	-33	-33	0.4	0.4	0	0
Total Cr (ug/L)	4.0	4.6	-15	-15	2.1	2.5	-19	-19	4.5	5.5	-22	-22	2.2	2.1	5	5
Total Cu (ug/L)	20	20.2	-1	-1	13	13	0	0	26	27	-4	-4	10.5	9.9	6	6
Total Pb (ug/L)	19	21	-11	-11	6.5	6.7	-3	-3	18	18	0	0	5.3	4.5	15	15
Total Ni (ug/L)	6.1	5.4	11	11	2.9	3.0	-3	-3	5.4	5.5	-2	-2	2.7	3.1	-15	-15
Total Zn (ug/L)	201	176	12	12	102	85	17	17	178	187	-5	-5	100	108	-8	-8
Dissolved As (ug/L)	0.5U	0.5U	na	na	0.6	0.6	0	0	3.1	1.0	68	68	0.5	0.5U	>0	>0
Dissolved Cd (ug/L)	0.3	0.2U	>33	>33	0.4	0.3	25	25	0.3	0.3	0	0	0.3	0.2	33	33
Dissolved Cr (ug/L)	1.6	1.0	38	38	1.8	1.7	6	6	2.3	1.8	22	22	1.2	1.3	-8	-8
Dissolved Cu (ug/L)	8.9	6.4	28	28	12	11	8	8	16	11	31	31	6.8	7.1	-4	-4
Dissolved Pb (ug/L)	4.3	3.2	26	26	4.7	4.0	15	15	4.2	3.0	29	29	1.4	1.3	7	7
Dissolved Ni (ug/L)	3.4	2.1	38	38	2.9	2.5	14	14	3.9	2.9	26	26	2U	2	<0	<0
Dissolved Zn (ug/L)	84	44	48	48	89	70	21	21	113	93	18	18	75	79	-5	-5
Nitrate-Nitrogen (mg/L)	0.74	0.62	16	16	0.58	0.57	2	2	0.73	0.59	19	19	0.49	0.53	-8	-8
TKN (mg/L)	1.72	1.31	24	24	1.42	0.22	85	85	1.33	1.15	14	14	0.68	0.73	-7	-7
Total P (mg/L)	0.20	0.17	15	15	0.19	0.18	5	5	0.10	0.12	-20	-20	0.10	0.12	-20	-20
Diss. Orthophosphate (mg/L)	0.06	0.05	17	17	0.07	0.09	-29	-29	0.07	0.03U	>57	>57	0.03U	0.03U	na	na
Storm Volume (cubic feet)	5581	5581			9671	9671			3157	3157			2884	2884		

	Filmore CDS 28 February, 2001				Filmore CDS 6 March, 2001				Filmore CDS 20 April, 2001			
	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in
	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load
TDS (mg/L)	32	24	25	25	34	54	-59	-59	64	36	44	44
TSS (mg/L)	42	8	81	81	36	45	-25	-25	32	44	-38	-38
DOC (mg/L)	4.4	6.7	-52	-52	6.6	6.0	9	9	5.3	9.4	-77	-77
TOC (mg/L)	6.2	7.8	-26	-26	6.6	6.8	-3	-3	7.2	10	-39	-39
Total As (ug/L)	0.5	3.7	-640	-640	0.5U	0.5U	na	na	0.5U	0.5U	na	na
Total Cd (ug/L)	0.4	0.3	25	25	0.3	0.3	0	0	0.5	0.4	20	20
Total Cr (ug/L)	3.1	2.7	13	13	2.5	3.1	-24	-24	3.3	2.5	24	24
Total Cu (ug/L)	12	12	0	0	8.8	12	-36	-36	17	14	18	18
Total Pb (ug/L)	5.8	5.9	-2	-2	3.7	5.9	-59	-59	12	8.8	27	27
Total Ni (ug/L)	2.5	2.4	4	4	2U	2.3	<-15	<-15	4.1	3.5	15	15
Total Zn (ug/L)	75	76	-1	-1	50	70	-40	-40	141	107	24	24
Dissolved As (ug/L)	0.5U	0.5	<0	<0	0.5U	0.5U	na	na	0.5U	0.5U	na	na
Dissolved Cd (ug/L)	0.2	0.2	0	0	0.3	0.2	33	33	0.2U	0.2U	na	na
Dissolved Cr (ug/L)	1.7	1.5	12	12	1.9	1.6	16	16	1U	1U	na	na
Dissolved Cu (ug/L)	7.0	6.7	4	4	5.7	5.4	5	5	5.7	6.0	-5	-5
Dissolved Pb (ug/L)	1.7	1.4	18	18	1U	1U	na	na	1U	1U	na	na
Dissolved Ni (ug/L)	2U	2U	na	na	2U	2U	na	na	2.0	2.2	-10	-10
Dissolved Zn (ug/L)	44	44	0	0	31	31	0	0	43	49	-14	-14
Nitrate-Nitrogen (mg/L)	0.5	0.4	20	20	0.4	0.4	0	0	0.01U	0.01U	na	na
TKN (mg/L)	0.7	0.8	-14	-14	0.01U	0.01U	na	na	1.47	1.04	29	29
Total P (mg/L)	0.07	0.16	-129	-129	0.11	0.11	0	0	0.10	0.09	10	10
Diss. Orthophosphate (mg/L)	0.03U	0.03U	na	na	0.03U	0.03U	na	na	0.06	0.05	17	17
Storm Volume (cubic feet)	10746	10746			11475	11475			4946	4946		

Notes:

Hilighted values were estimated by calculating the mean of the EMCs using the Scoping Study methodology.

Average wet season removal efficiencies calculated using the Scoping Study methodology.

Where EMC was non-detect then Reporting Limit was used.

"U" = Analyte not detected above Reporting limit.

Table 1-6g BMP Pollutant Removal Efficiencies (Drain Inlet Inserts)

Foothill MS StreamGuard DII
2000 - 2001 Wet Season Statistics

Parameter	% Diff. In Load Storm-by-Storm Method	% Diff. in Load Aggregate Method
Sediment	12	12
T-Cu	1	1
T-Pb	7	6
T-Zn	1	1
Hydrocarbons	3	3

Effluent (cf) 56172

Las Flores MS StreamGuard DII - First Removal
2000 - 2001 Wet Season Statistics

Parameter	% Diff. In Load Storm-by-Storm Method	% Diff. in Load Aggregate Method
Sediment	66	73
T-Cu	27	22
T-Pb	57	46
T-Zn	22	19
Hydrocarbons	66	60

Effluent (cf) 1282

Las Flores MS StreamGuard DII - Second Removal
2000 - 2001 Wet Season Statistics

Parameter	% Diff. In Load Storm-by-Storm Method	% Diff. in Load Aggregate Method
Sediment	64	63
T-Cu	9	9
T-Pb	37	38
T-Zn	12	12
Hydrocarbons	35	35

Effluent (cf) 5417

Rosemead MS StreamGuard DII
2000 - 2001 Wet Season Statistics

Parameter	% Diff. In Load Storm-by-Storm Method	% Diff. in Load Aggregate Method
Sediment	5	5
T-Cu	0	0
T-Pb	1	1
T-Zn	1	1
Hydrocarbons	1	1

Effluent (cf) 74374

Foothill MS Fossil Filter DII
2000 - 2001 Wet Season Statistics

Parameter	% Diff. In Load Storm-by-Storm Method	% Diff. in Load Aggregate Method
Sediment	24	23
T-Cu	3	2
T-Pb	13	9
T-Zn	2	2
Hydrocarbons	1	0

Effluent (cf) 32355

Las Flores MS Fossil Filter DII
2000 - 2001 Wet Season Statistics

Parameter	% Diff. In Load Storm-by-Storm Method	% Diff. in Load Aggregate Method
Sediment	17	17
T-Cu	2	2
T-Pb	6	6
T-Zn	2	2
Hydrocarbons	1	1

Effluent (cf) 42428

Rosemead MS Fossil Filter DII
2000 - 2001 Wet Season Statistics

Parameter	% Diff. In Load Storm-by-Storm Method	% Diff. in Load Aggregate Method
Sediment	27	28
T-Cu	4	4
T-Pb	9	8
T-Zn	5	5
Hydrocarbons	2	2

Effluent (cf) 23652

Notes:

Dissolved solids fraction and gross solids fraction of effluent not accounted for in mass balance.

Efficiencies include sediment/debris entrapped by the DII. Extensive maintenance was conducted before, during, and after storm events to clear sediment and debris from the DII. Sediment and debis removed from the DII was temporarily stored onsite and then analyzed at the same time as DII. Efficiencies would significantly decrease if litter removal was discounted from the efficiency calculations.

Flow measured continuously while DII was installed.

Where EMC was non-detect then Reporting Limit was used.

Table 1-6h: BMP Pollutant Removal Efficiencies (Oil/Water Separator)

	Alameda OWS 26 October, 2000				Alameda OWS 8 January, 2001				Alameda OWS 10 January, 2001				Alameda OWS 24 January, 2001				Alameda OWS 10 February, 2001			
	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in	EMCs		Efficiency	% Diff. in
	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load	Influent	Effluent	(%)	Load
TSS (mg/L)	73	25	66	66	113	1U	>99	>99					629	7	99	99	125	7	94	94
TPH - Diesel (ug/L)	250U	250U	na	na	250U	250U	na	na									250U	250U	na	na
TPH - Oil (ug/L)	3080	2690	13	13	1406	1184	16	16									200U	200U	na	na
TPH - Gasoline (ug/L)	50U	86	<-72	<-72	50U	50U	na	na									50U	50U	na	na
Oil and Grease (mg/L)	213	6.0	97	97	7	1U	>85	>85	14	1U	>93	>93	15	1U	>93	>93	1U	1U	na	na
Storm Volume (cubic feet)	297	297			361	361			4203	4203			343	343			516	516		

Notes:

Hilighted values were estimated by calculating the mean of the EMCs using the Scoping Study methodology.

Average wet season removal efficiencies calculated using the Scoping Study methodology.

Where EMC was non-detect then Reporting Limit was used.

Table 1-6i: Annual Wet Season BMP Pollutant Removal Efficiencies

Altadena MS Strip
2000 - 2001 Wet Season Statistics

Parameter	Minimum Load Removal (%)	Maximum Load Removal (%)	Average Season Removal (%)
TDS	-113	26	-64
TSS	-72	93	67
DOC	-41	19	-18
TOC	-29	28	-16
T-As	16	58	31
T-Cd	-13	61	45
T-Cr	-6	78	59
T-Cu	-5	74	50
T-Pb	-3	87	75
T-Ni	23	60	46
T-Zn	6	78	63
D-As	7	56	35
D-Cd	-85	26	-6
D-Cr	-67	26	-8
D-Cu	-7	36	15
D-Pb	-36	55	28
D-Ni	1	26	13
D-Zn	-8	60	40
N-N	-127	97	-220
TKN	-173	29	9
T-P	-353	-33	-68
D-OP	-1336	-71	-126

Influent (cf) 64838
Effluent (cf) 58558

I-605/SR-91 Strip
2000 - 2001 Wet Season Statistics

Parameter	Minimum Load Removal (%)	Maximum Load Removal (%)	Average Season Removal (%)
TDS	-719	99	1
TSS	-34	99	0
DOC	-306	99	-13
TOC	-286	99	1
T-As	-257	99	3
T-Cd	-29	100	50
T-Cr	-1602	97	-444
T-Cu	-31	100	64
T-Pb	66	100	89
T-Ni	-39	100	75
T-Zn	-74	100	22
D-As	-49	99	-6
D-Cd	-71	100	55
D-Cr	-34	100	51
D-Cu	-55	100	61
D-Pb	80	100	97
D-Ni	-4	100	75
D-Zn	-105	100	21
N-N	-1057	99	47
TKN	-278	99	-19
T-P	-1914	96	-309
D-OP	-4678	94	-554

Influent (cf) 7688
Effluent (cf) 6014

I-605/SR-91 Swale
2000 - 2001 Wet Season Statistics

Parameter	Minimum Load Removal (%)	Maximum Load Removal (%)	Average Season Removal (%)
TDS	-514	96	72
TSS	25	98	81
DOC	-174	97	81
TOC	-126	98	83
T-As	69	97	86
T-Cd	68	95	88
T-Cr	69	96	89
T-Cu	42	99	91
T-Pb	67	100	96
T-Ni	42	99	88
T-Zn	85	99	95
D-As	60	97	86
D-Cd	32	95	81
D-Cr	73	98	89
D-Cu	29	99	87
D-Pb	13	99	93
D-Ni	41	99	88
D-Zn	78	99	95
N-N	-2	98	83
TKN	-26	98	80
T-P	-270	76	-59
D-OP	-1128	70	-150

Influent (cf) 7907
Effluent (cf) 1869

Cerritos MS Swale
2000 - 2001 Wet Season Statistics

Parameter	Minimum Load Removal (%)	Maximum Load Removal (%)	Average Season Removal (%)
TDS	45	100	88
TSS	68	100	85
DOC	63	100	91
TOC	53	100	90
T-As	74	100	88
T-Cd	84	100	94
T-Cr	71	100	89
T-Cu	80	100	93
T-Pb	80	100	94
T-Ni	79	100	92
T-Zn	85	100	95
D-As	13	100	86
D-Cd	79	100	88
D-Cr	69	100	91
D-Cu	76	100	92
D-Pb	71	100	96
D-Ni	79	100	92
D-Zn	80	100	92
N-N	-2	100	48
TKN	67	100	89
T-P	-7	100	80
D-OP	-96	100	62

Influent (cf) 36283
Effluent (cf) 6955

I-5/I-605 Swale
2000 - 2001 Wet Season Statistics

Parameter	Minimum Load Removal (%)	Maximum Load Removal (%)	Average Season Removal (%)
TDS	63	100	85
TSS	-594	100	95
DOC	37	100	90
TOC	31	100	90
T-As	54	100	86
T-Cd	52	100	91
T-Cr	46	100	91
T-Cu	22	100	91
T-Pb	-5	100	94
T-Ni	-48	100	62
T-Zn	57	100	92
D-As	40	100	74
D-Cd	61	100	79
D-Cr	50	100	71
D-Cu	29	100	83
D-Pb	29	100	86
D-Ni	61	100	87
D-Zn	57	100	87
N-N	48	100	63
TKN	49	100	86
T-P	2	100	44
D-OP	-1385	100	-606

Influent (cf) 25979
Effluent (cf) 9797

I-605 at Carson
1999 - 2000 Wet Season Statistics

Parameter	Minimum Load Removal (%)	Maximum Load Removal (%)	Average Season Removal (%)
TDS	-1408	100	10
TSS	-238	100	76
DOC	-96	100	18
TOC	-47	100	29
T-As	-37	100	11
T-Cd	45	100	80
T-Cr	-17	100	50
T-Cu	-10	100	67
T-Pb	12	100	83
T-Ni	25	100	75
T-Zn	30	100	74
D-As	-21	100	4
D-Cd	27	100	68
D-Cr	-57	100	2
D-Cu	-11	100	37
D-Pb	-198	100	76
D-Ni	40	100	55
D-Zn	11	100	47
N-N	-63	100	11
TKN	-1	100	14
T-P	-291	100	-239
D-OP	-741	100	-322

Influent (cf) 24411
Effluent (cf) 26318

Notes:
Average wet season removal efficiencies calculated using the Scoping Study methodology.

Table 1-6i: Annual Wet Season BMP Pollutant Removal Efficiencies

I-5/I-605 EDB
2000 - 2001 Wet Season Statistics

Parameter	Minimum Load Removal (%)	Maximum Load Removal (%)	Average Season Removal (%)
TDS	-91	58	7
TSS	-279	90	51
DOC	-129	23	4
TOC	-168	33	6
T-As	-40	38	7
T-Cd	-50	46	11
T-Cr	-20	59	27
T-Cu	-9	80	30
T-Pb	-116	88	59
T-Ni	-75	97	77
T-Zn	-2248	84	60
D-As	-220	62	-2
D-Cd	-33	33	-8
D-Cr	-50	52	12
D-Cu	-13	72	12
D-Pb	-380	76	41
D-Ni	-60	48	-1
D-Zn	-556	57	54
N-N	-56	52	2
TKN	-7	63	17
T-P	-119	78	48
D-OP	-500	85	10

Influent (cf) 193284
Effluent (cf) 193284

I-605/SR-91 EDB
2000 - 2001 Wet Season Statistics

Parameter	Minimum Load Removal (%)	Maximum Load Removal (%)	Average Season Removal (%)
TDS	-7	100	92
TSS	93	100	97
DOC	35	99	85
TOC	26	99	87
T-As	63	99	91
T-Cd	79	100	94
T-Cr	94	100	98
T-Cu	78	100	94
T-Pb	93	100	97
T-Ni	82	100	94
T-Zn	90	100	96
D-As	59	99	92
D-Cd	76	100	92
D-Cr	85	100	91
D-Cu	62	100	90
D-Pb	84	100	94
D-Ni	71	100	92
D-Zn	88	100	95
N-N	54	99	89
TKN	77	100	95
T-P	64	99	86
D-OP	-2	99	82

Influent (cf) 158792
Effluent (cf) 16983

Eastern SF
2000 - 2001 Wet Season Statistics

Parameter	Minimum Load Removal (%)	Maximum Load Removal (%)	Average Season Removal (%)
TDS	-229	-10	-53
TSS	36	90	78
DOC	-2400	29	-261
TOC	-2250	38	-189
T-As	-27	17	-1
T-Cd	0	50	35
T-Cr	-231	94	71
T-Cu	-4	33	17
T-Pb	51	91	77
T-Ni	-165	33	0
T-Zn	14	68	59
D-As	-218	36	-9
D-Cd	-31	17	2
D-Cr	-60	91	56
D-Cu	-60	33	-13
D-Pb	0	66	47
D-Ni	-25	0	-3
D-Zn	9	57	34
N-N	-233	16	-78
TKN	-4900	61	-11
T-P	-85	64	-9
D-OP	-633	0	-99
NH3	0	75	34

Influent (cf) 26023
Effluent (cf) 26023

Foothill SF
2000 - 2001 Wet Season Statistics

Parameter	Minimum Load Removal (%)	Maximum Load Removal (%)	Average Season Removal (%)
TDS	-6300	49	13
TSS	81	93	90
DOC	-310	15	-36
TOC	-299	5	-53
T-As	-70	25	-1
T-Cd	0	83	64
T-Cr	-27	89	65
T-Cu	-105	58	19
T-Pb	1	93	89
T-Ni	-29	71	39
T-Zn	23	87	74
D-As	-69	22	-9
D-Cd	0	46	28
D-Cr	-50	33	-6
D-Cu	-114	-20	-62
D-Pb	-28	74	43
D-Ni	-64	5	-17
D-Zn	9	75	62
N-N	-361	-55	-149
TKN	-572	58	-42
T-P	-137	99	-93
D-OP	-180	67	-20
NH3	-20	86	53

Influent (cf) 29084
Effluent (cf) 29084

Termination SF
2000 - 2001 Wet Season Statistics

Parameter	Minimum Load Removal (%)	Maximum Load Removal (%)	Average Season Removal (%)
TDS	-131	2	62
TSS	70	95	95
DOC	-6	49	45
TOC	-12	51	49
T-As	-120	30	-26
T-Cd	0	50	34
T-Cr	0	80	59
T-Cu	-16	54	58
T-Pb	29	95	81
T-Ni	-5	55	38
T-Zn	-84	53	86
D-As	-120	14	-54
D-Cd	0	33	25
D-Cr	0	70	41
D-Cu	-47	29	36
D-Pb	0	23	7
D-Ni	-10	32	21
D-Zn	-67	61	79
N-N	-302	97	-633
TKN	-250	91	-112
T-P	-78	50	43
D-OP	0	57	63
NH3	50	80	64

Influent 19997
Effluent 19997

Notes:
Average wet season removal efficiencies calculated using the Scoping Study methodology.

Table 1-6i: Annual Wet Season BMP Pollutant Removal Efficiencies

Via Verde MCTT
2000 - 2001 Wet Season Statistics

Parameter	Minimum Load Removal (%)	Maximum Load Removal (%)	Average Season Removal (%)
TDS	-513	37	-151
TSS	35	96	82
DOC	-1036	6	-79
TOC	-1040	14	-160
T-As	-260	50	-43
T-Cd	0	50	18
T-Cr	-90	79	54
T-Cu	-82	76	43
T-Pb	-40	93	85
T-Ni	-27	76	23
T-Zn	-169	95	70
D-As	-20	0	-5
D-Cd	-50	0	-13
D-Cr	0	0	0
D-Cu	-88	72	-23
D-Pb	-30	0	-13
D-Ni	0	33	20
D-Zn	68	85	79
N-N	-3550	-76	-49
TKN	-11	52	10
T-P	-46	68	10
D-OP	-56	60	-16
NH3	14	75	34

Influent (cf) 3670
Effluent (cf) 3670

Lakewood MCTT
2000 - 2001 Wet Season Statistics

Parameter	Minimum Load Removal (%)	Maximum Load Removal (%)	Average Season Removal (%)
TDS	-150	45	-32
TSS	29	86	71
DOC	-86	56	-12
TOC	-60	66	6
T-As	-100	33	-2
T-Cd	-114	60	-10
T-Cr	-76	52	9
T-Cu	-24	48	29
T-Pb	23	88	75
T-Ni	-122	45	-1
T-Zn	34	86	61
D-As	-30	50	20
D-Cd	-43	50	-2
D-Cr	-150	50	-4
D-Cu	-27	44	31
D-Pb	0	88	65
D-Ni	-19	44	13
D-Zn	51	80	63
N-N	-230	93	41
TKN	-63	57	17
T-P	-95	42	0
D-OP	-100	42	-16
NH3	29	69	57

Influent (cf) 40923
Effluent (cf) 40923

Orcas CDS
2000 - 2001 Wet Season Statistics

Parameter	Minimum Load Removal (%)	Maximum Load Removal (%)	Average Season Removal (%)
TDS	-33	38	-8
TSS	-16	42	29
DOC	-3	25	16
TOC	1	17	10
T-As	0	63	28
T-Cd	11	33	18
T-Cr	15	39	27
T-Cu	15	50	33
T-Pb	13	79	62
T-Ni	3	42	26
T-Zn	6	58	42
D-As	0	67	35
D-Cd	-100	0	-26
D-Cr	-40	7	-14
D-Cu	-16	15	-1
D-Pb	0	25	8
D-Ni	-30	0	-9
D-Zn	-35	7	-2
N-N	-28	0	-9
TKN	-59	13	-45
T-P	-11	19	11
D-OP	-27	57	6

Influent (cf) 35678
Effluent (cf) 35678

Filmore CDS
2000 - 2001 Wet Season Statistics

Parameter	Minimum Load Removal (%)	Maximum Load Removal (%)	Average Season Removal (%)
TDS	-59	80	34
TSS	-25	87	3
DOC	-52	47	9
TOC	-26	28	-1
T-As	-640	69	-10
T-Cd	-33	25	3
T-Cr	-24	24	-6
T-Cu	-36	18	0
T-Pb	-59	27	1
T-Ni	-15	15	2
T-Zn	-40	24	6
D-As	0	68	30
D-Cd	0	33	20
D-Cr	-8	38	14
D-Cu	-4	31	14
D-Pb	0	29	20
D-Ni	0	38	14
D-Zn	-5	48	15
N-N	-8	20	13
TKN	-14	85	39
T-P	-129	15	-9
D-OP	-29	57	12

Influent 98282
Effluent 98282

Alameda OWS
2000 - 2001 Wet Season Statistics

Parameter	Minimum Load Removal (%)	Maximum Load Removal (%)	Average Season Removal (%)
TSS	66	99	94
TPH - Diesel	0	0	0
TPH - Oil	0	16	19
TPH - Gasoline	-72	0	-26
Oil and Grease	0	97	98

Influent (cf) 18083
Effluent (cf) 18083

Notes:
Average wet season removal efficiencies calculated using the Scoping Study methodology.

Table 1-6i: Annual Wet Season BMP Pollutant Removal Efficiencies

	Orcas CDS 10 February,2001		Orcas CDS 28 February, 2001		Orcas CDS 6 March, 2001		Orcas CDS 7 April, 2001		Orcas CDS Non-Monitored Events		Orcas CDS	Orcas CDS 2 May, 2001		Orcas CDS
	Effluent EMC	Effluent Load (lbs)	Effluent EMC	Effluent Load (lbs)	Effluent EMC	Effluent Load (lbs)	Effluent EMC	Effluent Load (lbs)	Estimated Effluent EMC	Effluent Load (lbs)	Sum of Effluent Loads (lbs)	Sump EMC	Separation Chamber Load (lbs)	% Efficiency
TDS (mg/L)	40	2.46947	36	7.68127	20	6.27335	48	5.57387	36	54.63976	76.63772	312	0.52	0.67821
TSS (mg/L)	80	4.93894	23	4.90748	29	9.09635	35	4.06428	41.75	63.36695	86.37400	40	0.07	0.07761
DOC (mg/L)	11	0.67910	8.1	1.72829	6.1	1.91337	7.9	0.91737	8.275	12.55956	17.79768	116	0.19	1.08138
TOC (mg/L)	14	0.86431	9.4	2.00566	7.1	2.22704	10	1.16122	10.125	15.36743	21.62567	136	0.23	1.04380
Total As (ug/L)	0.6	0.00004	3.6	0.00077	0.5U	0.00016	0.5U	0.00006	0.5	0.00076	0.00178	1.0	0.00	0.09420
Total Cd (ug/L)	0.8	0.00005	0.4	0.00009	0.3	0.00009	0.2	0.00002	0.403	0.00061	0.00086	0.6	0.00	0.11638
Total Cr (ug/L)	3.6	0.00022	2.6	0.00055	2.3	0.00072	1.7	0.00020	2.55	0.00387	0.00557	4.7	0.00	0.14143
Total Cu (ug/L)	18	0.00111	17	0.00363	10	0.00314	12	0.00139	14.25	0.02163	0.03090	9.6	0.00	0.05209
Total Pb (ug/L)	8.1	0.00050	6.8	0.00145	2.8	0.00088	3.8	0.00044	5.375	0.00816	0.01143	6.6	0.00	0.09677
Total Ni (ug/L)	4.1	0.00025	3.2	0.00068	2U	0.00063	2.2	0.00026	2.69	0.00408	0.00590	9.8	0.00	0.27775
Total Zn (ug/L)	133	0.00821	77	0.01643	42	0.01317	57	0.00662	77.25	0.11725	0.16168	394	0.00	0.40707
Dissolved As (ug/L)	0.5	0.00003	0.5U	0.00011	0.5U	0.00016	0.5U	0.00006	0.5	0.00076	0.00111	0.6	0.00	0.09047
Dissolved Cd (ug/L)	0.4	0.00002	0.2	0.00004	0.2	0.00006	0.2U	0.00002	0.2	0.00030	0.00046	0.2	0.00	0.07337
Dissolved Cr (ug/L)	2.1	0.00013	1.5	0.00032	1.3	0.00041	1U	0.00012	1	0.00216	0.00313	2.4	0.00	0.12849
Dissolved Cu (ug/L)	10.9	0.00067	9.6	0.00205	6.5	0.00204	8.2	0.00095	8.8	0.01336	0.01907	1.7	0.00	0.01495
Dissolved Pb (ug/L)	1.2	0.00007	1.6	0.00034	1U	0.00031	1U	0.00012	1	0.00152	0.00236	1	0.00	0.07093
Dissolved Ni (ug/L)	2.6	0.00016	2.1	0.00045	2U	0.00063	2U	0.00023	2	0.00304	0.00450	8.4	0.00	0.31186
Dissolved Zn (ug/L)	84	0.00519	42	0.00896	27	0.00847	39	0.00453	48	0.07285	0.10000	106	0.00	0.17748
Nitrate-Nitrogen (mg/L)	0.91	0.05618	0.7	0.14936	0.6	0.18820	0.58	0.06735	0.6975	1.05865	1.51974	0.01	0.00	0.00110
TKN (mg/L)	1.30	0.08026	0.7	0.14936	0.01U	0.00314	2.67	0.31005	1.22	1.84713	2.38993	19.6	0.03	1.35689
Total P (mg/L)	0.20	0.01235	0.18	0.03841	0.10	0.03137	0.17	0.01974	0.1625	0.24664	0.34850	2.52	0.00	1.19831
Diss. Orthophosphate (mg/L)	0.03U	0.00185	0.03U	0.00640	0.03U	0.00941	0.14	0.01626	0.03	0.04553	0.07945	0.2	0.00	0.42043
Eff Storm Volume (L)	28062		96986		142576		52783		689896			Chamber Vol (L)	762.4	

	Filmore CDS 27 October,2000		Filmore CDS 12 January,2001		Filmore CDS 24 January, 2001		Filmore CDS 10 February, 2001		Filmore CDS 28 February, 2001		Filmore CDS 6 March, 2001		Filmore CDS 20 April, 2001		Filmore CDS Non-Monitored Events		Filmore CDS	Filmore CDS 2 May, 2001		Filmore CDS
	Effluent EMC	Effluent Load (lbs)	Effluent EMC	Effluent Load (lbs)	Effluent EMC	Effluent Load (lbs)	Effluent EMC	Effluent Load (lbs)	Effluent EMC	Effluent Load (lbs)	Effluent EMC	Effluent Load (lbs)	Effluent EMC	Effluent Load (lbs)	Estimated Effluent EMC	Effluent Load (lbs)	Sum of Effluent Loads (lbs)	Sump EMC	Separation Chamber Load (lbs)	% Efficiency
TDS (mg/L)	58	20.16554	50	30.12391	24	4.72015	22	3.95265	24	16.06675	54	38.60258	36	11.09243	35.67	110.71190	235.43591	143	0.24	0.10177
TSS (mg/L)	57	19.81786	54	32.53382	5.5	1.08170	38	6.82730	8	5.35558	45	32.16882	44	13.55741	34.42	106.83218	218.17467	17	0.03	0.01307
DOC (mg/L)	8.9	3.09437	4.2	2.53041	8.7	1.71105	8.7	1.56309	6.7	4.48530	6.0	4.28918	9.4	2.89636	7.77	24.10707	44.67683	32	0.05	0.11999
TOC (mg/L)	12.3	4.27649	6.2	3.73536	13	2.55675	11	1.97632	7.8	5.22169	6.8	4.86107	10	3.08123	10.05	31.19301	56.90192	38	0.06	0.11189
Total As (ug/L)	0.6	0.00021	0.6	0.00036	1.0	0.00020	0.5	0.00009	3.7	0.00248	0.5U	0.00036	0.5U	0.00015	1.09	0.00338	0.00722	0.6	0.00	0.01393
Total Cd (ug/L)	0.6	0.00021	0.4	0.00024	0.8	0.00016	0.4	0.00007	0.3	0.00020	0.3	0.00021	0.4	0.00012	0.48	0.00150	0.00272	0.2	0.00	0.01234
Total Cr (ug/L)	4.6	0.00160	2.5	0.00151	5.5	0.00108	2.1	0.00038	2.7	0.00181	3.1	0.00222	2.5	0.00077	3.32	0.01029	0.01965	1.4	0.00	0.01195
Total Cu (ug/L)	20.2	0.00702	13	0.00783	27	0.00531	9.9	0.00178	12	0.00803	12	0.00858	14	0.00431	16.02	0.04971	0.09258	4.5	0.00	0.00815
Total Pb (ug/L)	21	0.00730	6.7	0.00404	18	0.00354	4.5	0.00081	5.9	0.00395	5.9	0.00422	8.8	0.00271	10.82	0.03357	0.06014	2.5	0.00	0.00697
Total Ni (ug/L)	5.4	0.00188	3.0	0.00181	5.5	0.00108	3.1	0.00056	2.4	0.00161	2.3	0.00164	3.5	0.00108	3.82	0.01185	0.02150	3.2	0.00	0.02496
Total Zn (ug/L)	176	0.06119	85	0.05121	187	0.03678	108	0.01940	76	0.05088	70	0.05004	107	0.03297	123.17	0.38228	0.68475	192	0.00	0.04701
Dissolved As (ug/L)	0.5U	0.00017	0.6	0.00036	1.0	0.00020	0.5U	0.00009	0.5	0.00033	0.5U	0.00036	0.5U	0.00015	0.50	0.00155	0.00322	0.5	0.00	0.02604
Dissolved Cd (ug/L)	0.2U	0.00007	0.3	0.00018	0.3	0.00006	0.2	0.00004	0.2	0.00013	0.2	0.00014	0.2U	0.00006	0.20	0.00062	0.00130	0.2	0.00	0.02571
Dissolved Cr (ug/L)	1.0	0.00035	1.7	0.00102	1.8	0.00035	1.3	0.00023	1.5	0.00100	1.6	0.00114	1U	0.00031	1.40	0.00435	0.00876	1.0	0.00	0.01914
Dissolved Cu (ug/L)	6.4	0.00223	11	0.00663	11	0.00216	7.1	0.00128	6.7	0.00449	5.4	0.00386	6.0	0.00185	8.03	0.02493	0.04742	1.4	0.00	0.00495
Dissolved Pb (ug/L)	3.2	0.00111	4.0	0.00241	3.0	0.00059	1.3	0.00023	1.4	0.00094	1U	0.00071	1U	0.00031	2.26	0.00701	0.01332	1	0.00	0.01259
Dissolved Ni (ug/L)	2.1	0.00073	2.5	0.00151	2.9	0.00057	2	0.00036	2U	0.00134	2U	0.00143	2.2	0.00068	2.15	0.00667	0.01328	2.9	0.00	0.03661
Dissolved Zn (ug/L)	44	0.01530	70	0.04217	93	0.01829	79	0.01419	44	0.02946	31	0.02216	49	0.01510	63.16	0.19603	0.35270	53	0.00	0.02520
Nitrate-Nitrogen (mg/L)	0.62	0.21556	0.57	0.34341	0.59	0.11604	0.53	0.09522	0.4	0.26778	0.4	0.28595	0.01U	0.00308	0.51	1.58758	2.91463	0.01	0.00	0.00058
TKN (mg/L)	1.31	0.45546	0.22	0.13255	1.15	0.22617	0.73	0.13116	0.8	0.53556	0.01U	0.00715	1.04	0.32045	0.88	2.71581	4.52430	4.67	0.01	0.17283
Total P (mg/L)	0.17	0.05911	0.18	0.10845	0.12	0.02360	0.12	0.02156	0.16	0.10711	0.11	0.07863	0.09	0.02773	0.14	0.43453	0.86072	2.48	0.00	0.48095
Diss. Orthophosphate (mg/L)	0.05	0.01738	0.09	0.05422	0.03U	0.00590	0.03U	0.00539	0.03U	0.02008	0.03U	0.02145	0.05	0.01541	0.03	0.09311	0.21150	1.65	0.00	1.29161
Eff Storm Volume (L)	158037		273854		89397		81666		304294		324938		140056		1410810			Chamber Vol (L)	762.4	

Notes:

Average wet season removal efficiencies calculated using the modified CDS methodology.

Where EMC was non-detect then Reporting Limit was used.

"U" = Analyte not detected above Reporting limit.

Table 1-7: Normality Test Summary

Data		Shapiro-Wilk			
		W Statistic	P value	Evidence of Normality	Transform Data (Y/N)
StreamGuard™ DII – TSS	Foothill MS	0.8674	0.29	No evidence of non-normality	N
	Las Flores MS	0.9607	0.78	No evidence of non-normality	N
	Rosemead MS	0.7678	0.05	No evidence of non-normality	N
StreamGuard™ DII - Total Cu	Foothill MS	0.8059	0.11	No evidence of non-normality	N
	Las Flores MS	0.7918	0.09	No evidence of non-normality	N
	Rosemead MS	0.8098	0.10	No evidence of non-normality	N
StreamGuard™ DII - Total Pb	Foothill MS	0.9473	0.70	No evidence of non-normality	N
	Las Flores MS	0.7965	0.10	No evidence of non-normality	N
	Rosemead MS	0.9535	0.76	No evidence of non-normality	N
StreamGuard™ DII - Total Zn	Foothill MS	0.8612	0.26	No evidence of non-normality	Y; other StreamGuard™ DII data tend to be non-normal
	Las Flores MS	0.7114	0.02	Unlikely	Y
	Rosemead MS	0.7066	0.01	Unlikely	Y
StreamGuard™ DII - TPH	Foothill MS	0.6298	0.00	Most data are ND	N
	Las Flores MS	0.6298	0.00	Most data are ND	N
	Rosemead MS	0.6785	0.00	Most data are ND	N
Fossil Filter™ DII - TSS	Foothill MS	0.8397	0.19	No evidence of non-normality	N
	Las Flores MS	0.9049	0.44	No evidence of non-normality	N
	Rosemead MS	0.9028	0.42	No evidence of non-normality	N
Fossil Filter™ DII - Total Cu	Foothill MS	0.8707	0.30	No evidence of non-normality	N
	Las Flores MS	0.9096	0.46	No evidence of non-normality	N
	Rosemead MS	0.8300	0.14	No evidence of non-normality	N
Fossil Filter™ DII - Total Pb	Foothill MS	0.7347	0.03	Unlikely	N; other Fossil Filter™ DII data tend to be normal
	Las Flores MS	0.8878	0.35	No evidence of non-normality	N
	Rosemead MS	0.8054	0.09	No evidence of non-normality	N
Fossil Filter™ DII - Total Zn	Foothill MS	0.8783	0.33	No evidence of non-normality	N
	Las Flores MS	0.7729	0.05	No evidence of non-normality	N
	Rosemead MS	0.8137	0.10	No evidence of non-normality	N
Fossil Filter™ DII - TPH	Foothill MS	0.6298	0.00	Most data are ND	N
	Las Flores MS	0.7736	0.05	Most data are ND	N
	Rosemead MS	0.7695	0.04	Most data are ND	N

Figure 1-1: Map of Study Area, Caltrans District 7 Los Angeles

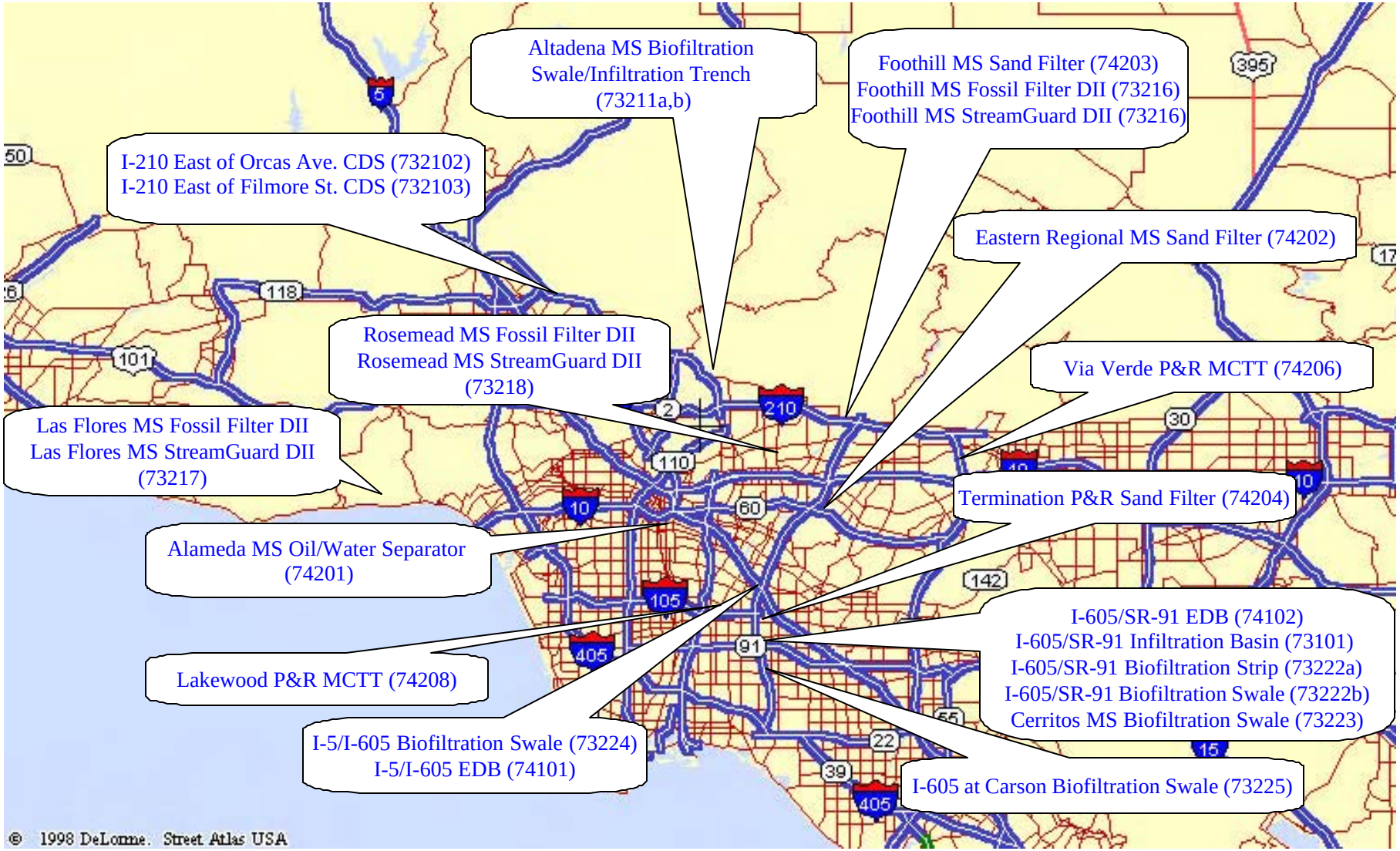


Figure 1-2a: Daily Precipitation Totals for Altadena Maintenance Station

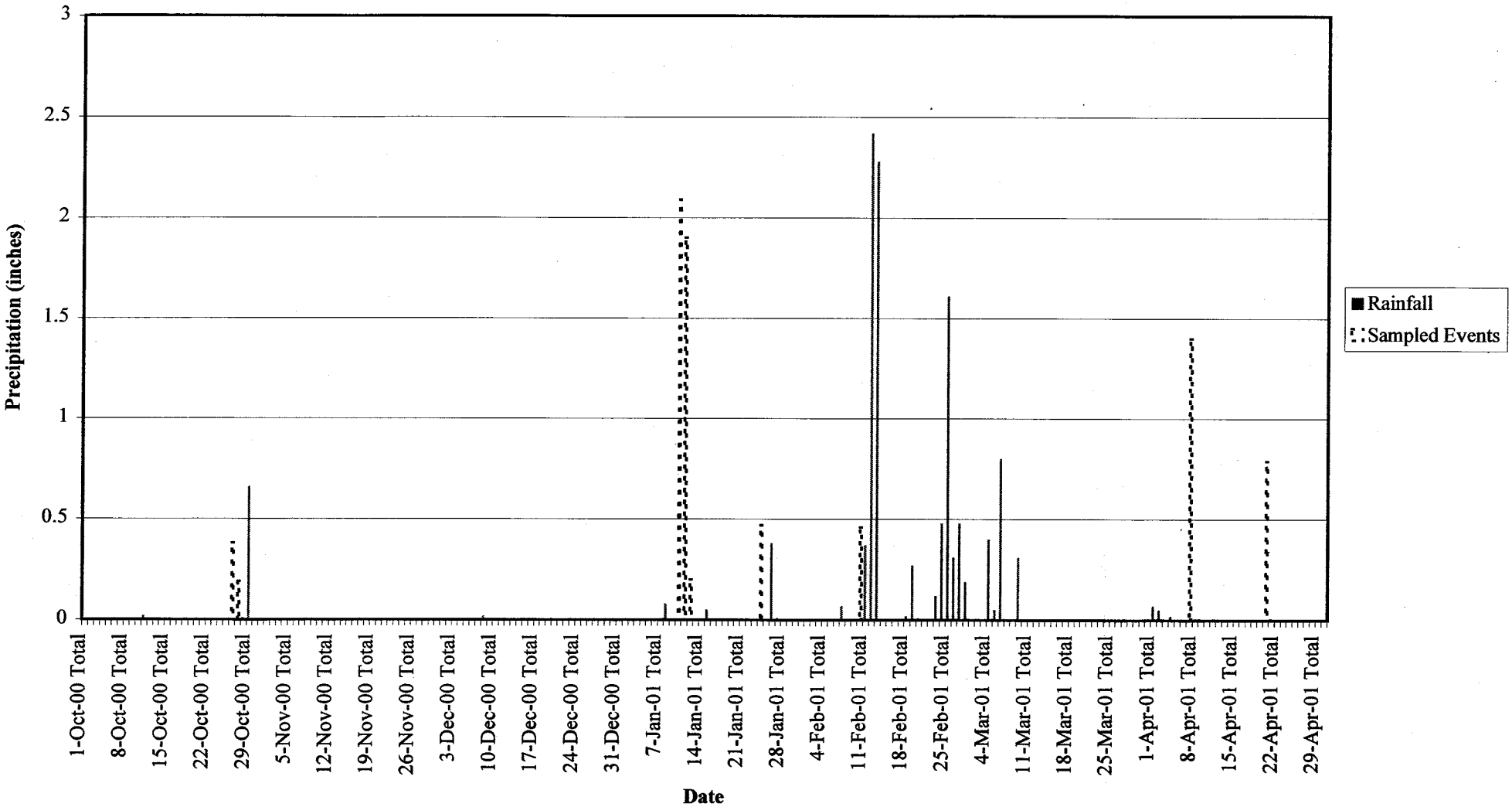


Figure 1-2b: Daily Precipitation Totals for Cerritos Maintenance Station I-605/SR-91 Strip, Swale, Extended Detention Basin, Infiltration Basin, and I-605 at Carson Swale

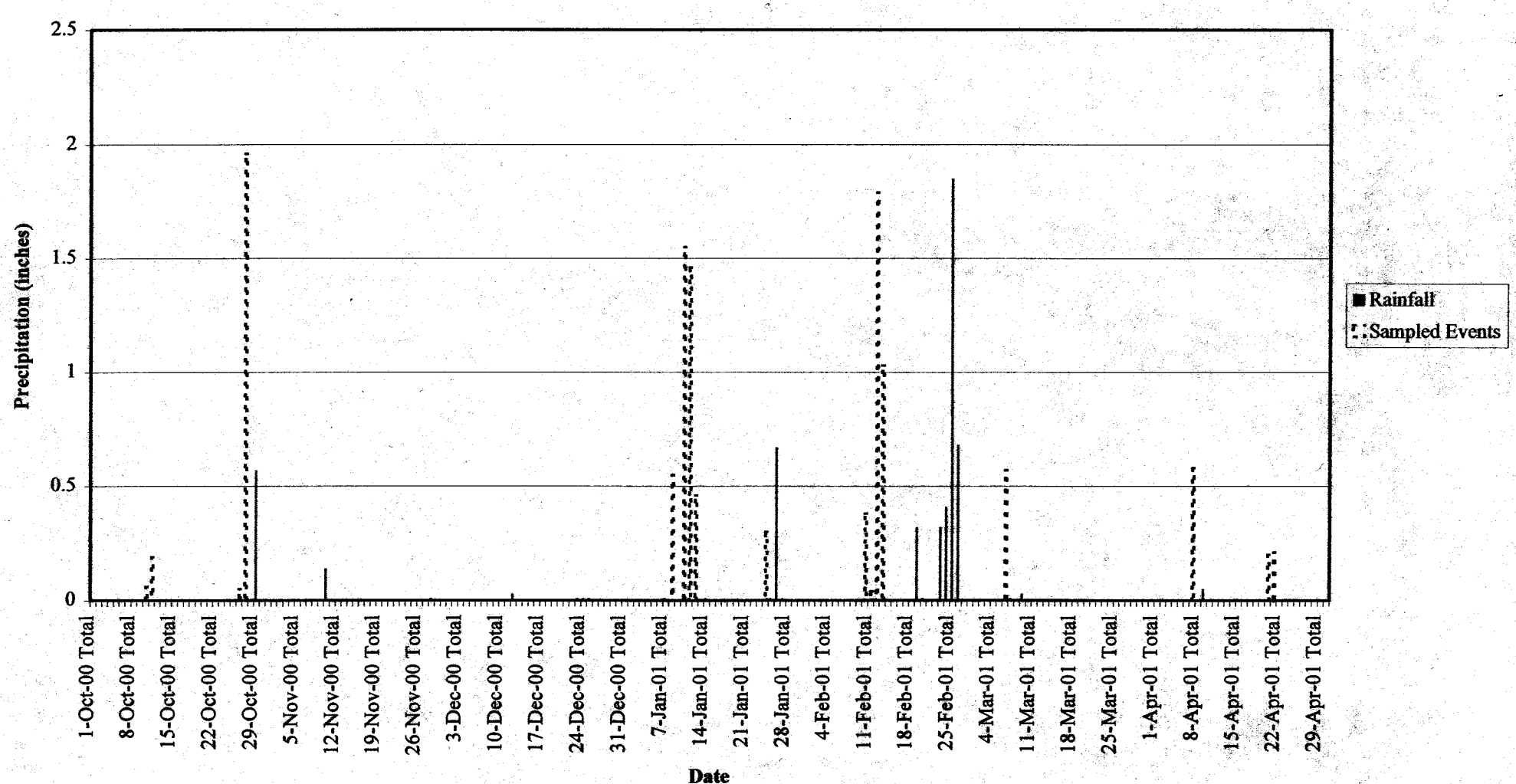


Figure 1-2c: Daily Precipitation Totals for I-5/I-605 Swale and Extended Detention Basin

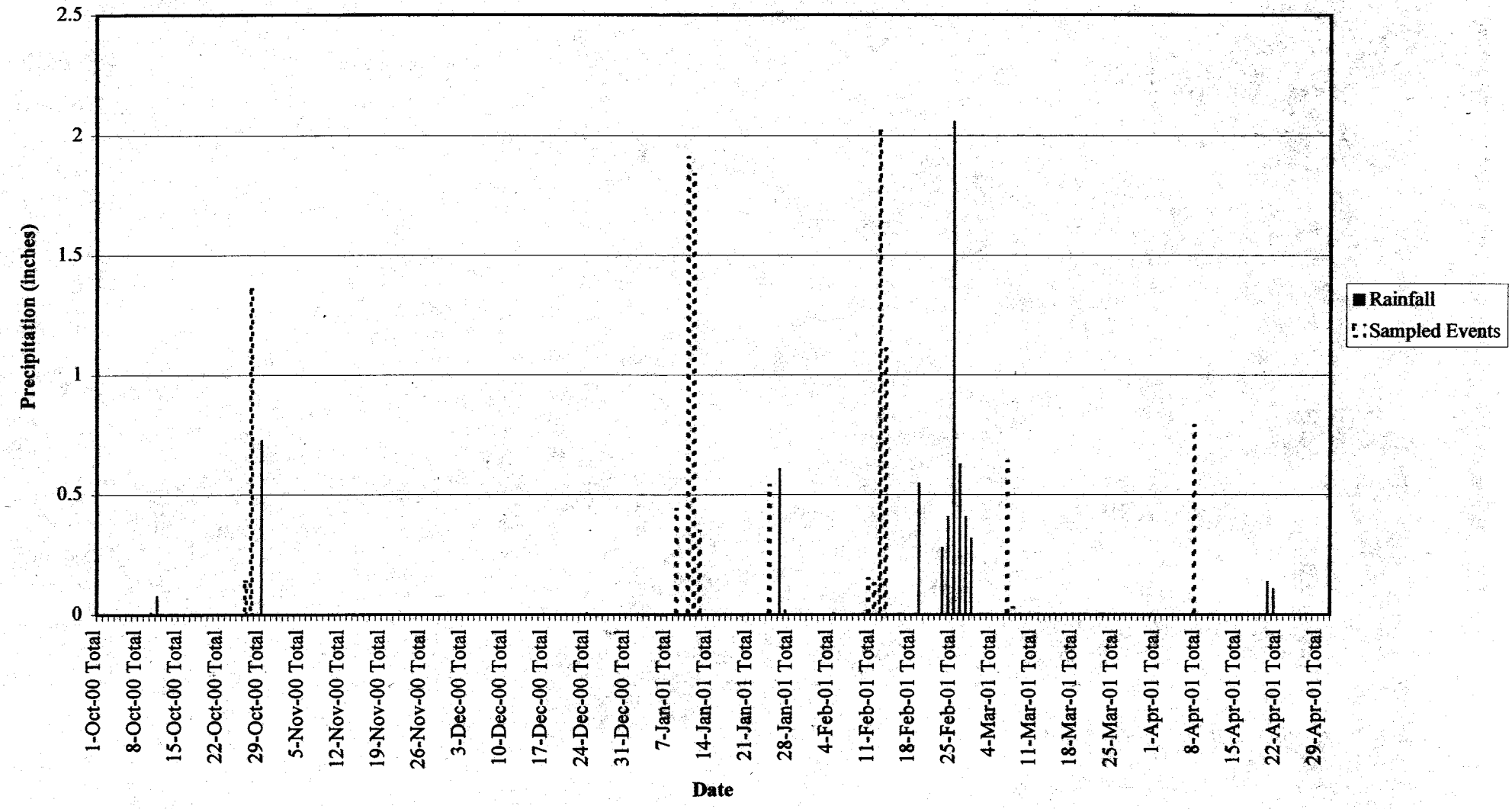


Figure 1-2d: Daily Precipitation Totals for Eastern Maintenance Station Sand Filter - Austin Type

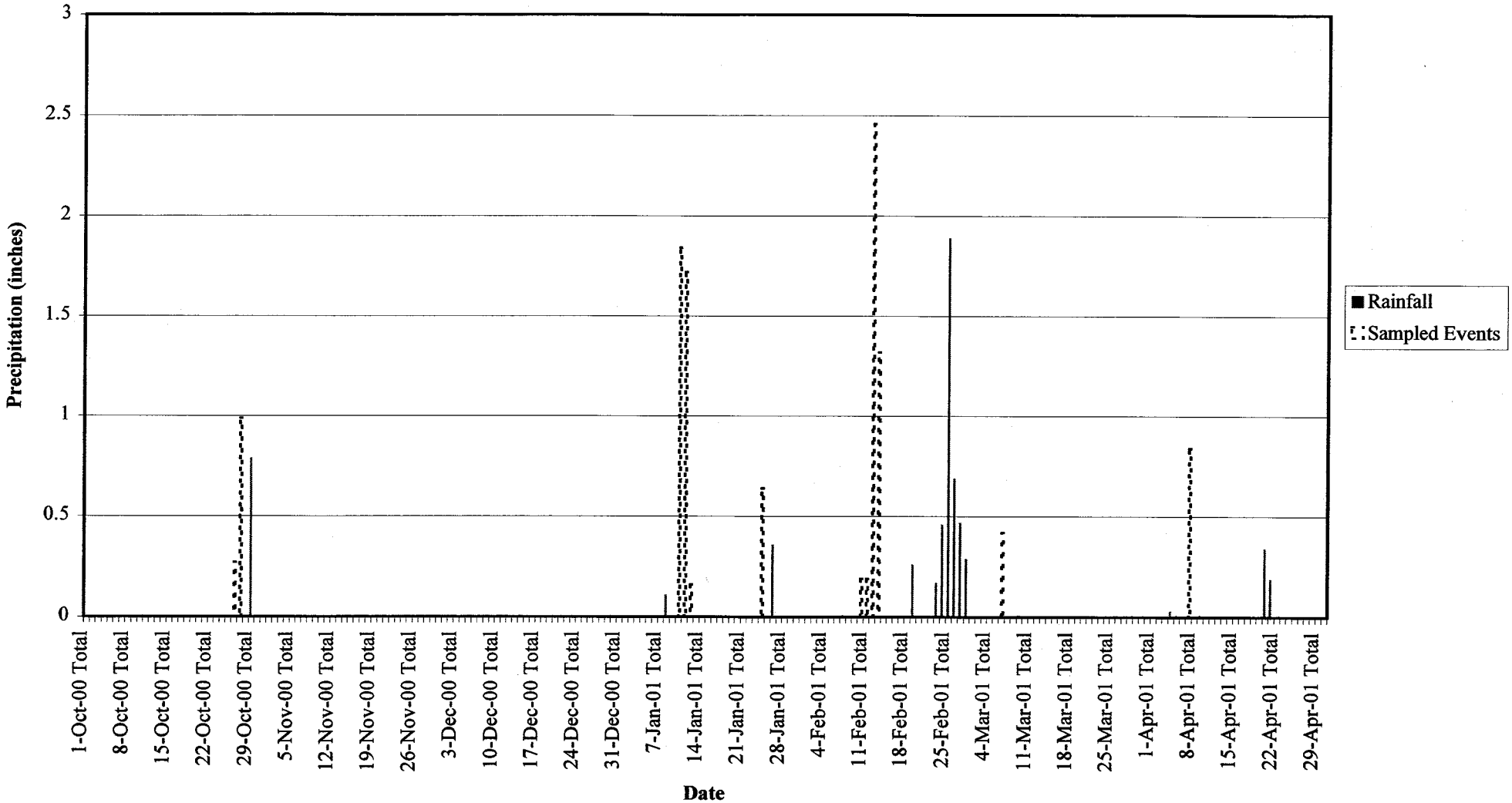


Figure 1-2e: Daily Precipitation Totals for Termination Park & Ride Sand Filter - Austin Type

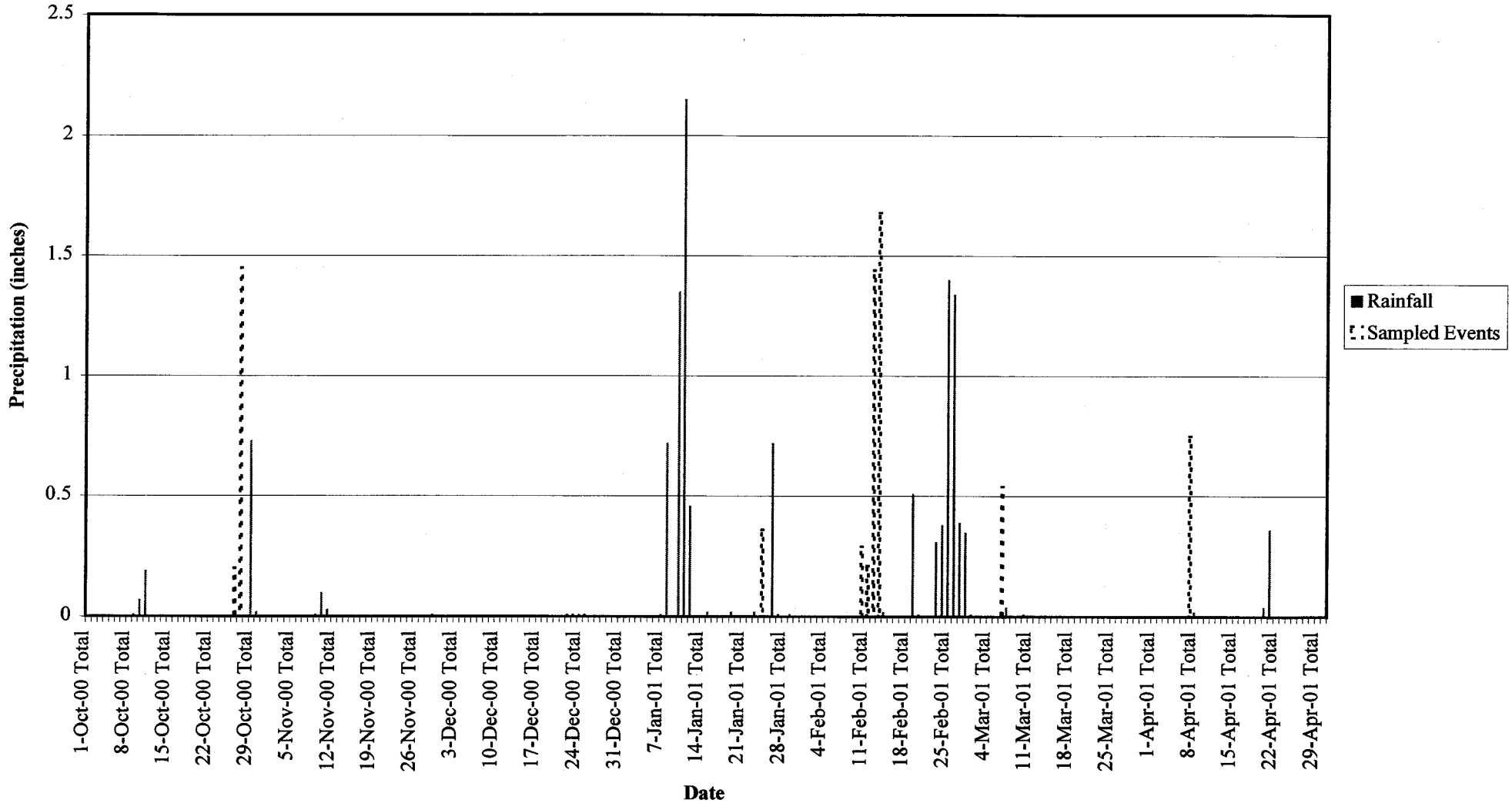


Figure 1-2f: Daily Precipitation Totals for Via Verde Park & Ride MCTT

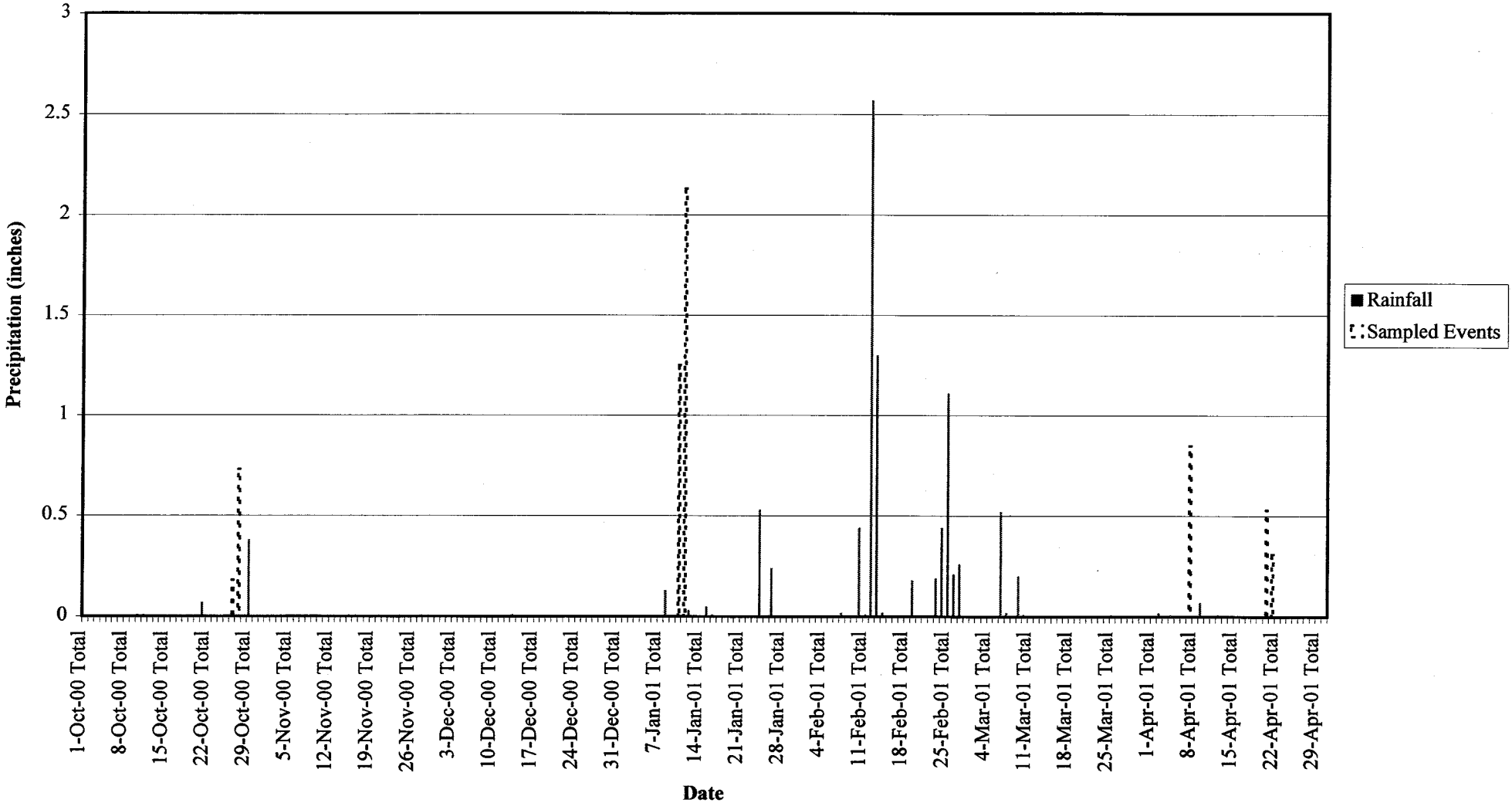


Figure 1-2g: Daily Precipitation Totals for Lakewood Park & Ride MCTT

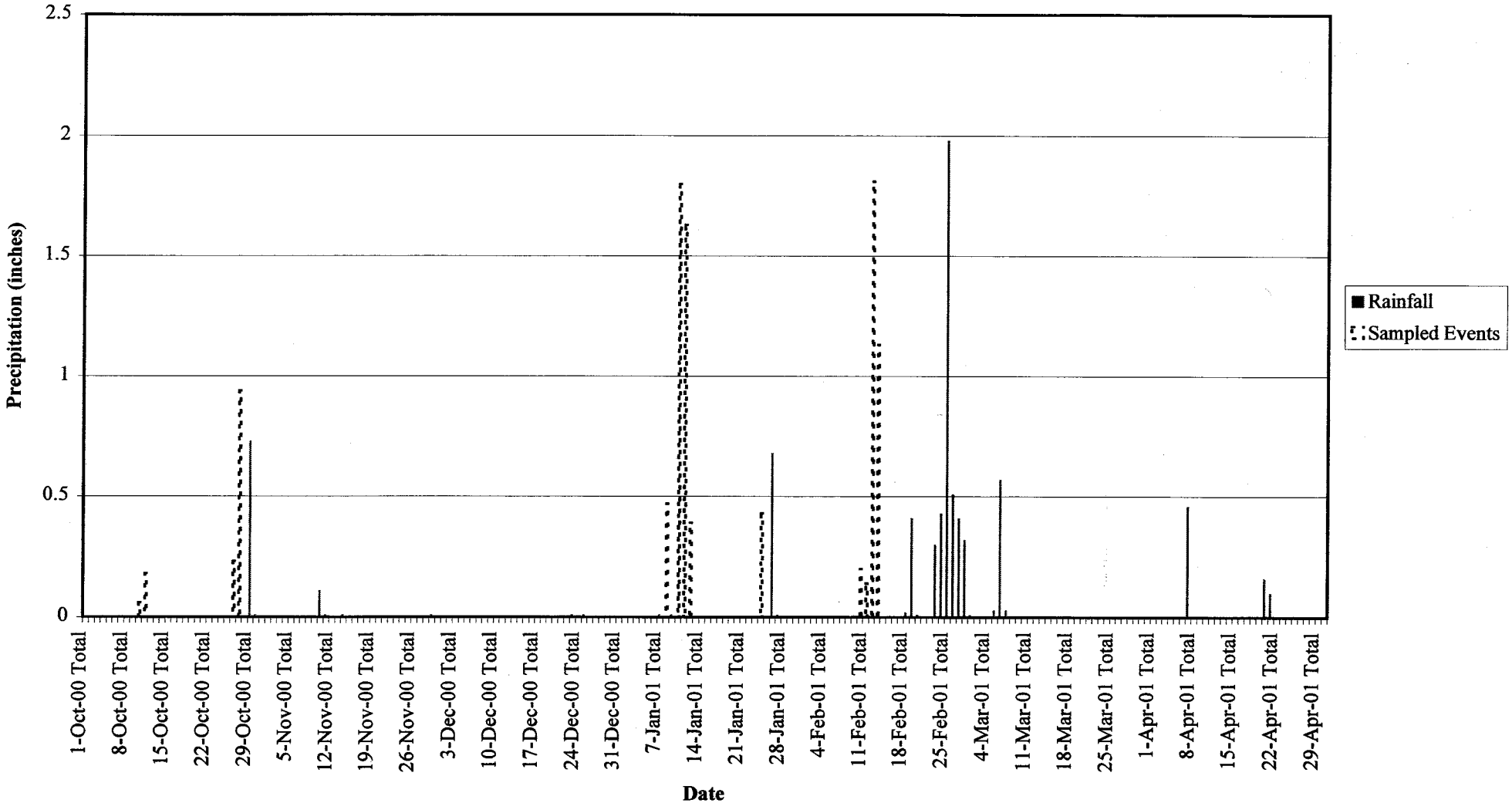


Figure 1-2h: Daily Precipitation Totals for I-210 East of Orcas Avenue CDS

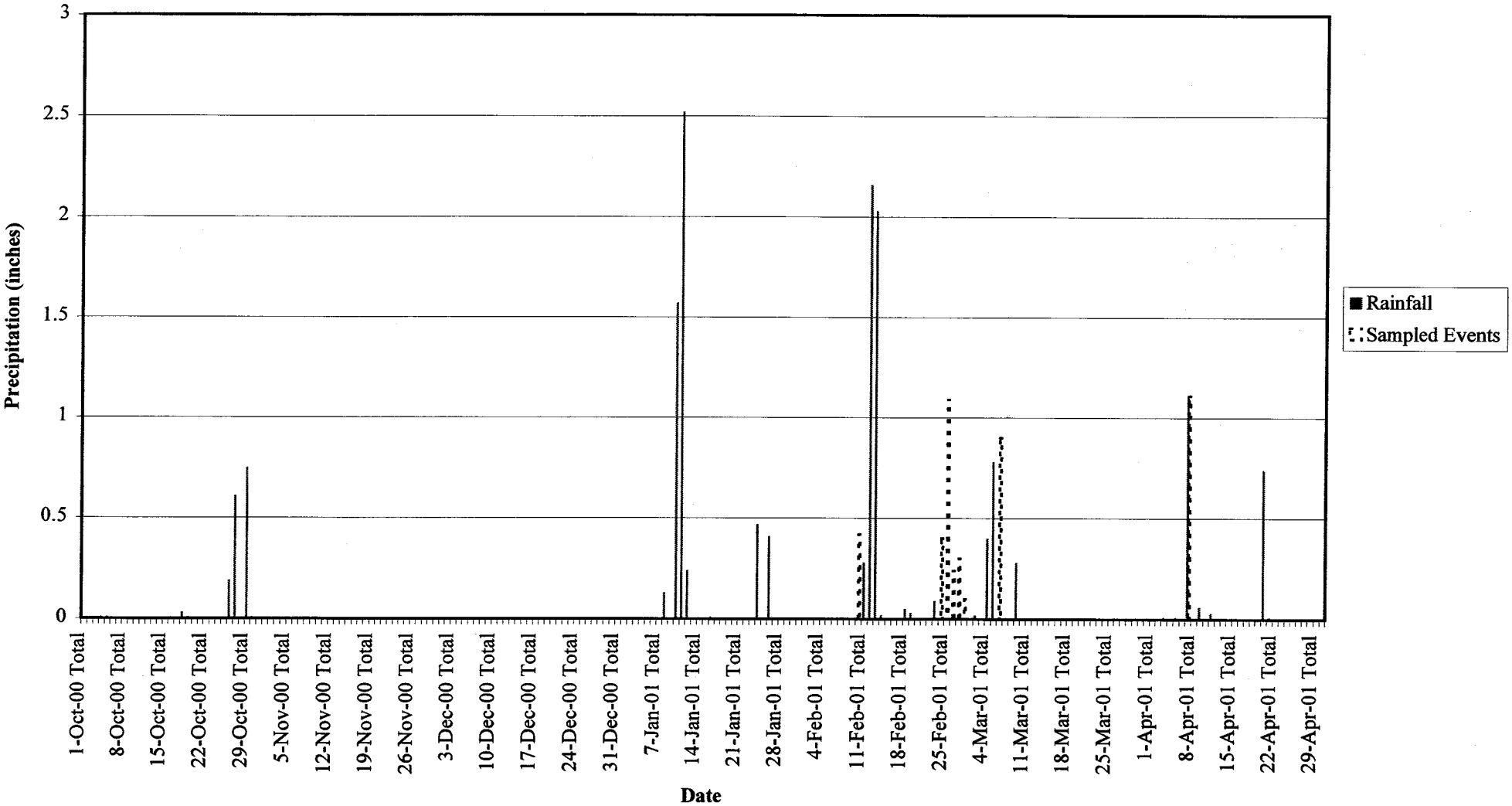


Figure 1-2i: Daily Precipitation Totals for I-210 East of Filmore Street CDS

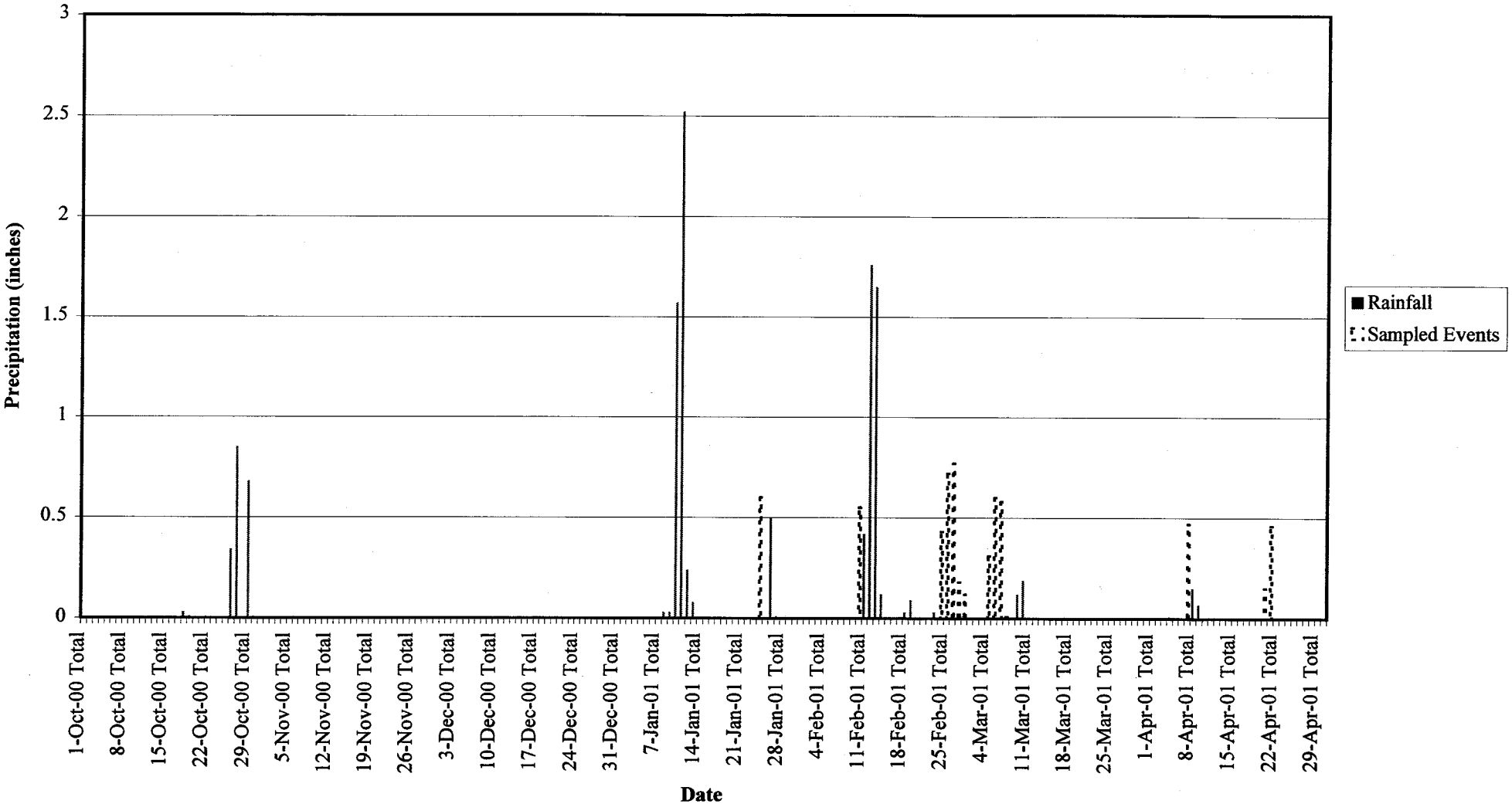


Figure 1-2j: Daily Precipitation Totals for Foothill Maintenance Station Drain Inlet Inserts and Sand Filter - Austin Type

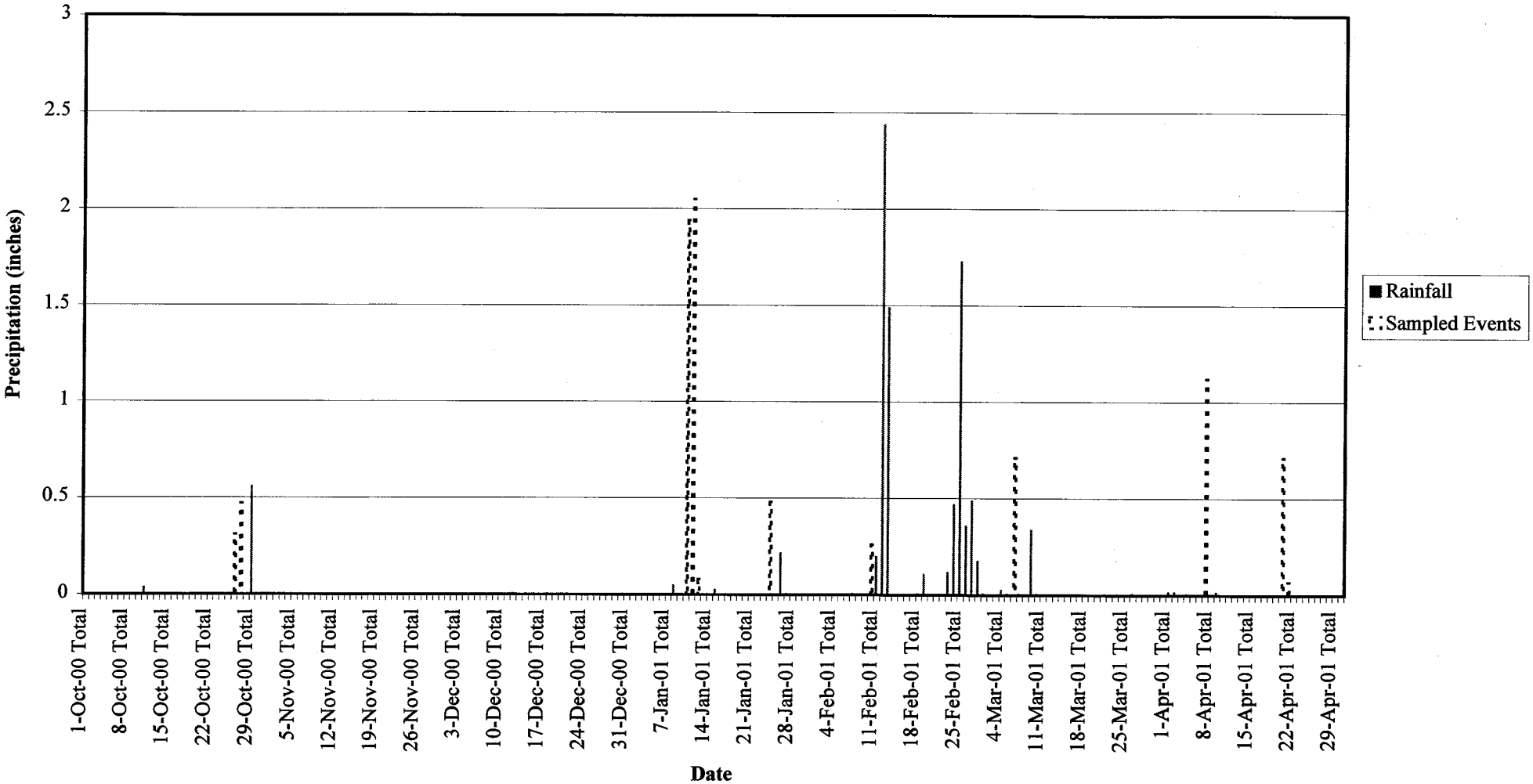


Figure 1-2k: Daily Precipitation Totals for Las Flores Maintenance Station Drain Inlet Inserts

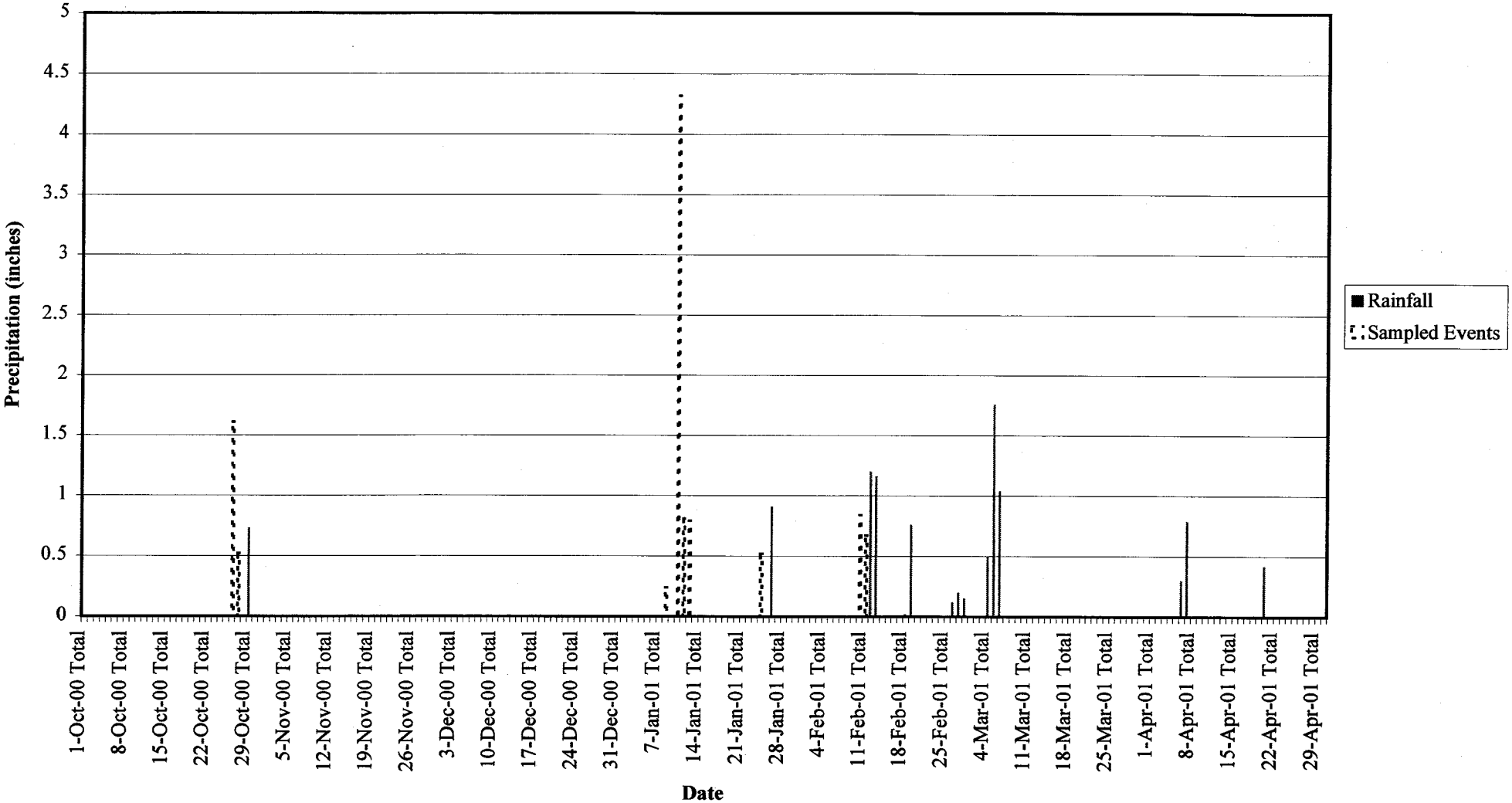


Figure 1-2l: Daily Precipitation Totals for Rosemead Maintenance Station Drain Inlet Inserts

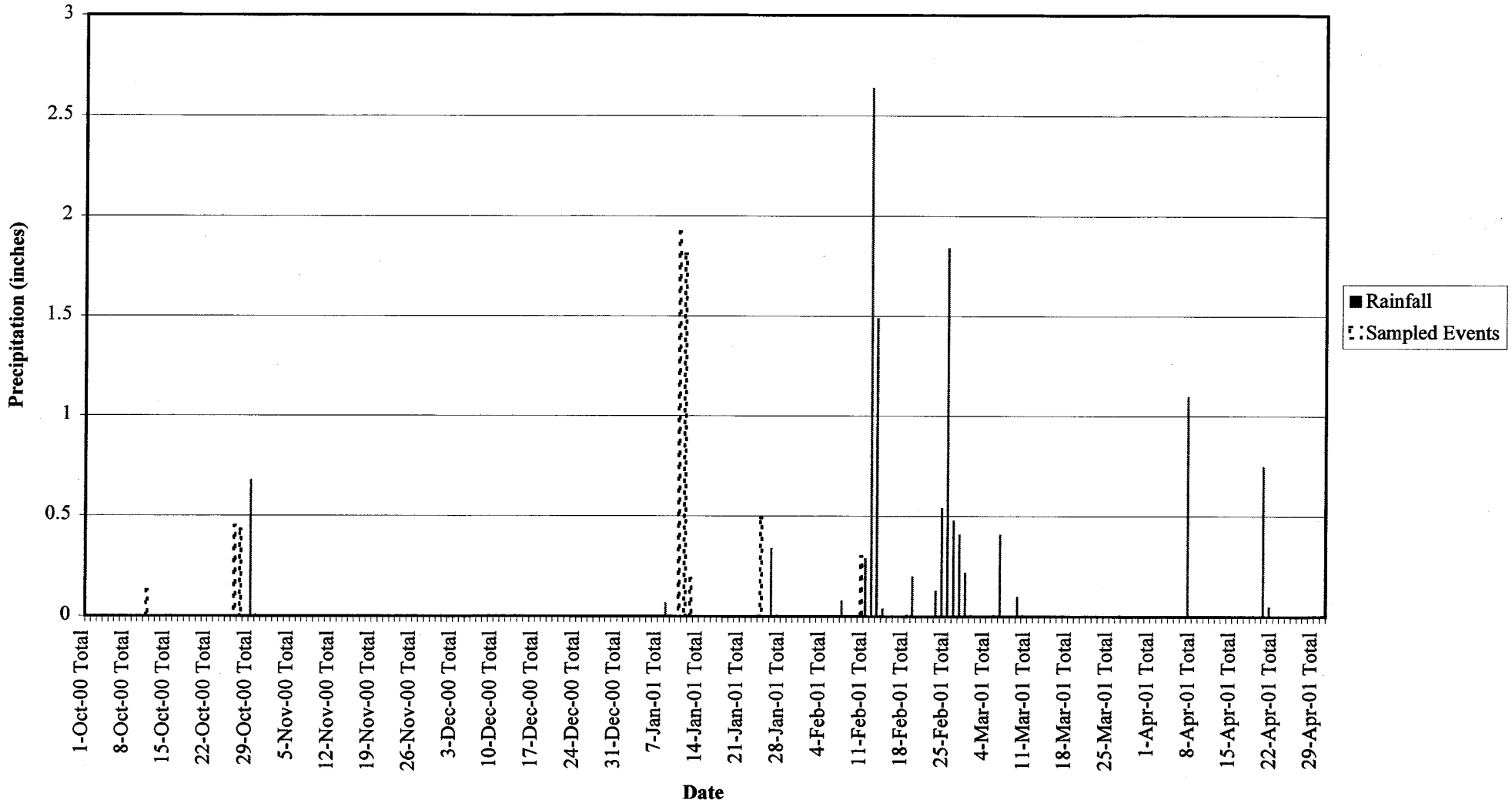


Figure 1-2m: Daily Precipitation Totals for Alameda Maintenance Station Oil/Water Separator

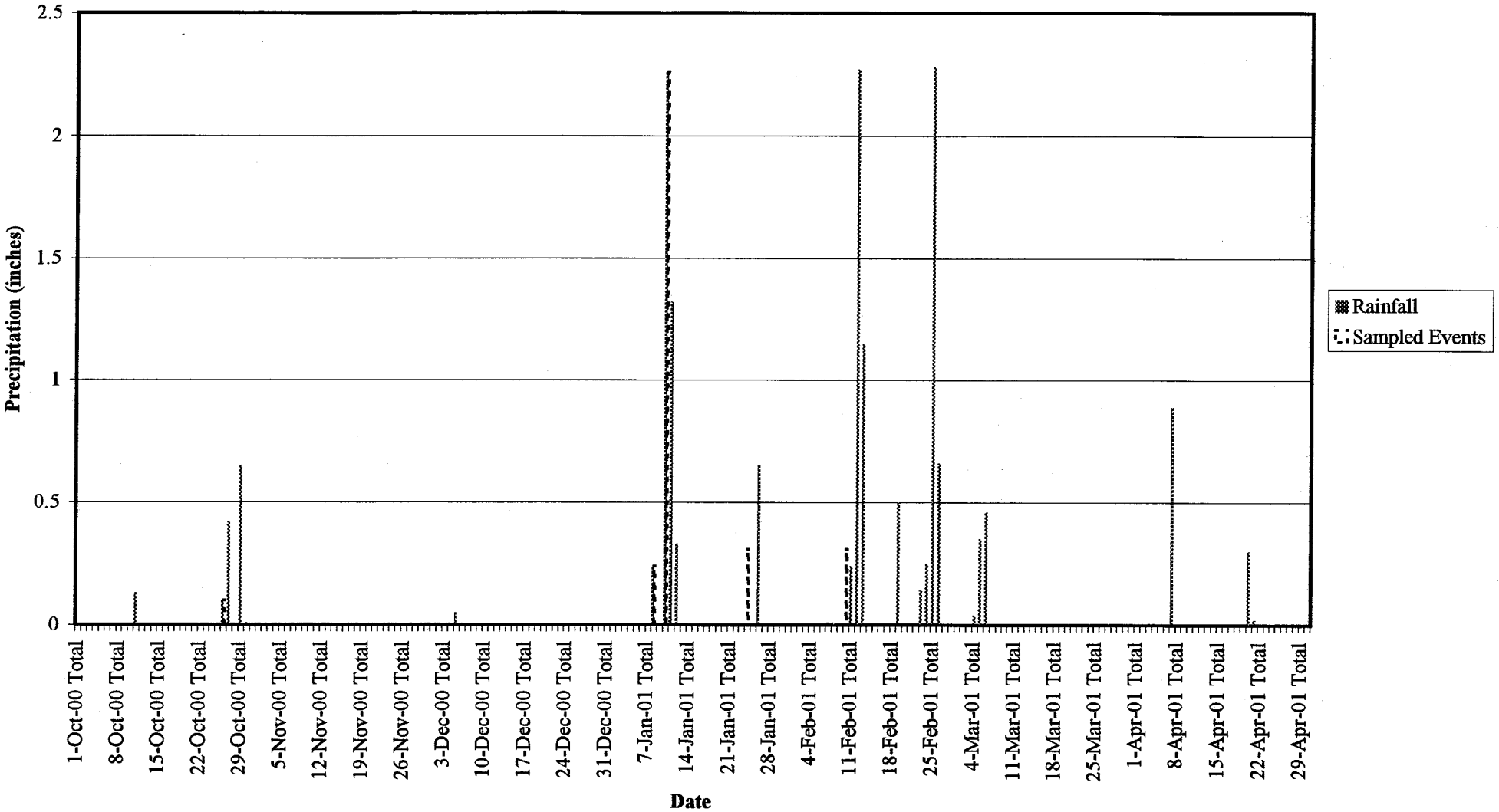
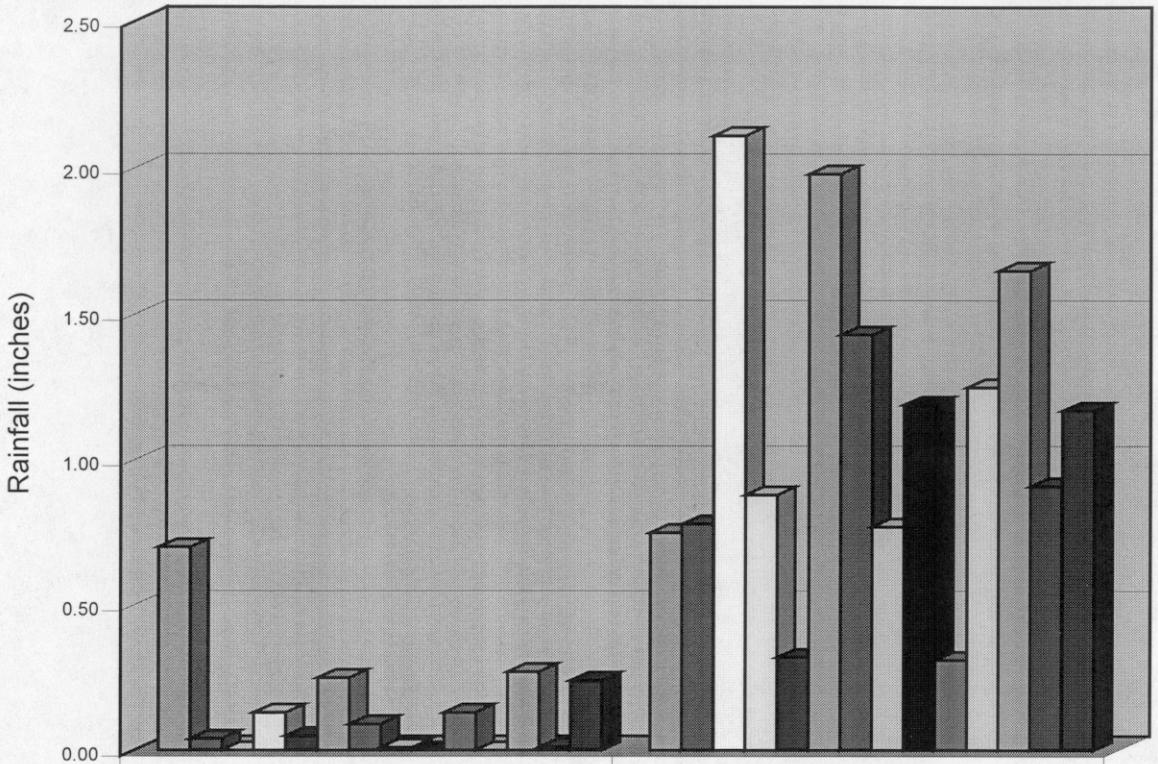
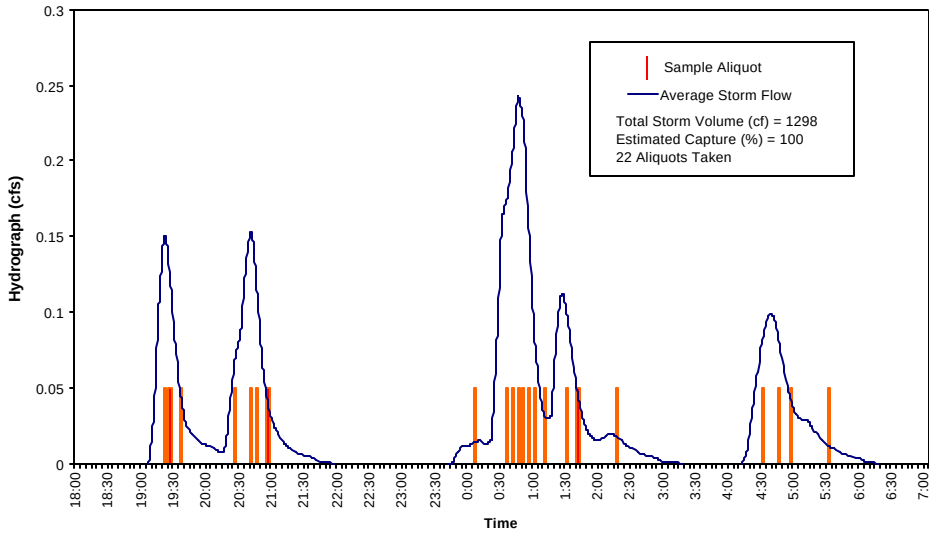


Figure 1-3a: Monitored Event Rainfall Totals - October 2000

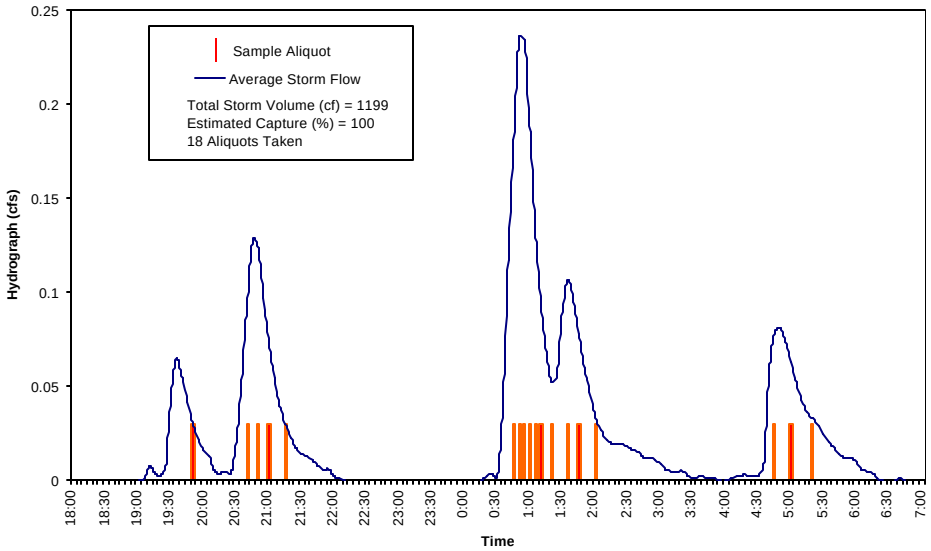


	10/11/00	10/26-27/00
Predicted Rainfall	0.70	0.75
Foothill Maintenance Station (DIIs and SF)	0.04	0.78
Las Flores Maintenance Station (DIIs)	0.00	2.11
Rosemead Maintenance Station (DIIs)	0.13	0.88
Altadena Maintenance Station (Strip/IT)	0.05	0.32
Cerritos MS (Swale), I-605/SR-91 (Swale, Strip, EDB and IB), I-605 @ Carson (Swale)	0.25	1.98
I-5/I-605 (Swale and EDB)	0.09	1.43
I-210/East of Orcas Ave.	0.01	0.77
I-210/East of Filmore St.	0.00	1.19
Alameda Maintenance Station	0.13	0.31
Eastern Regional Maintenance Station	0.00	1.25
Termination Park & Ride	0.27	1.65
Via Verde Park & Ride	0.01	0.91
Lakewood Park & Ride	0.24	1.17

Influent



Effluent



Cumulative Rainfall

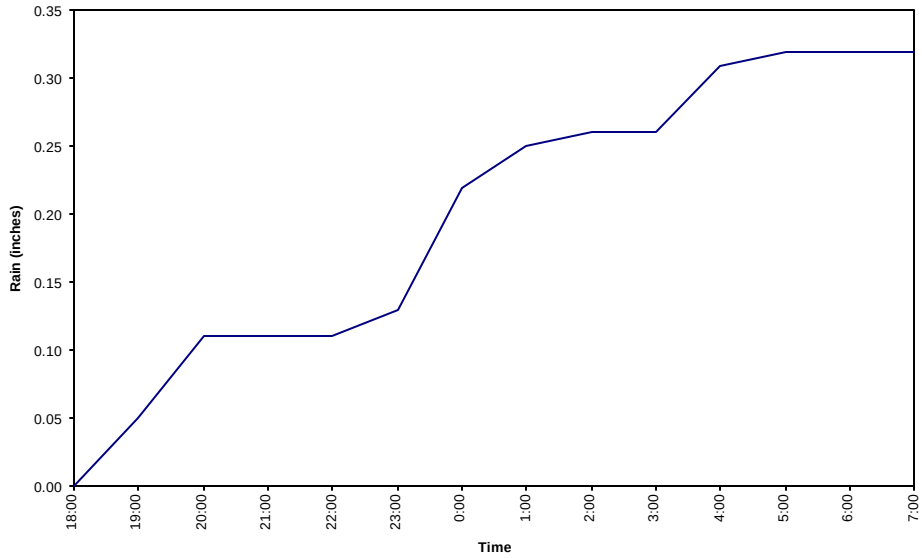
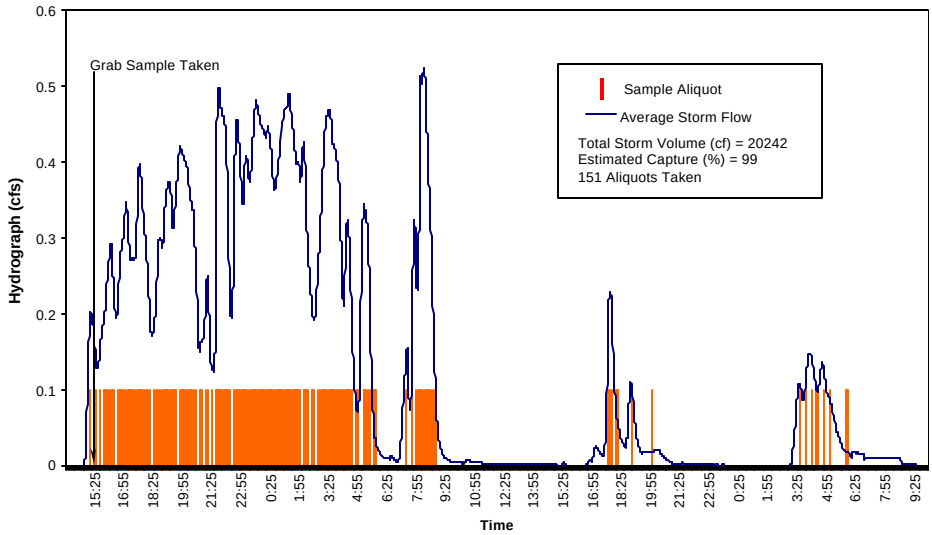
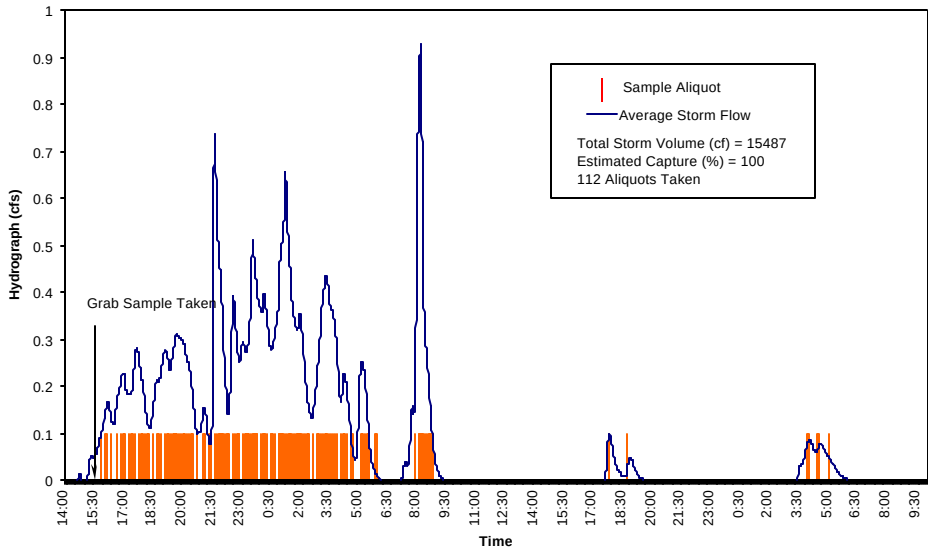


Figure 1-4a: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Altadena MS Biofiltration Strip for Event 2 on October 26-27, 2000

Influent



Effluent



Cumulative Rainfall

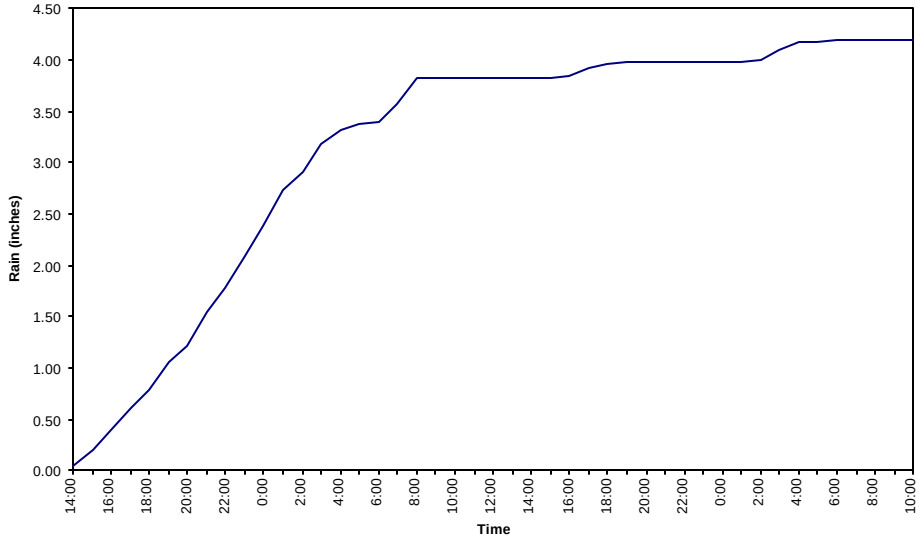
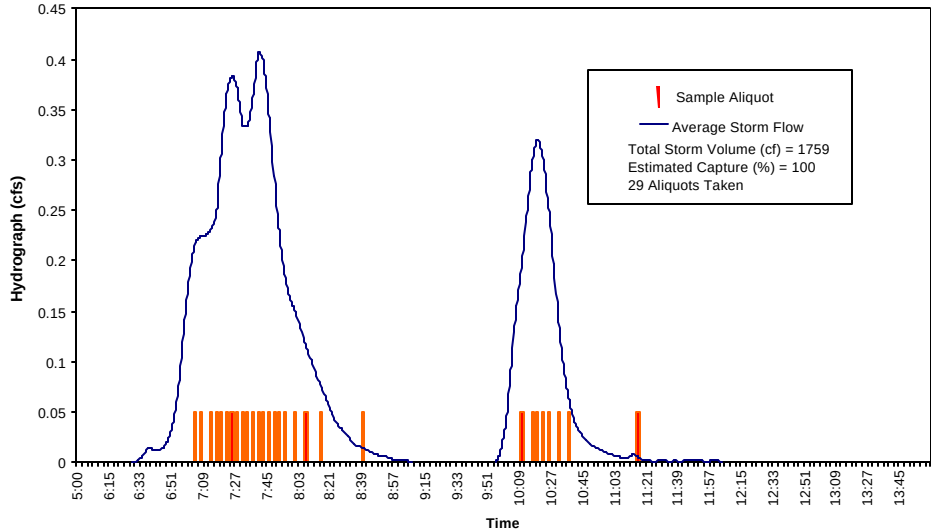
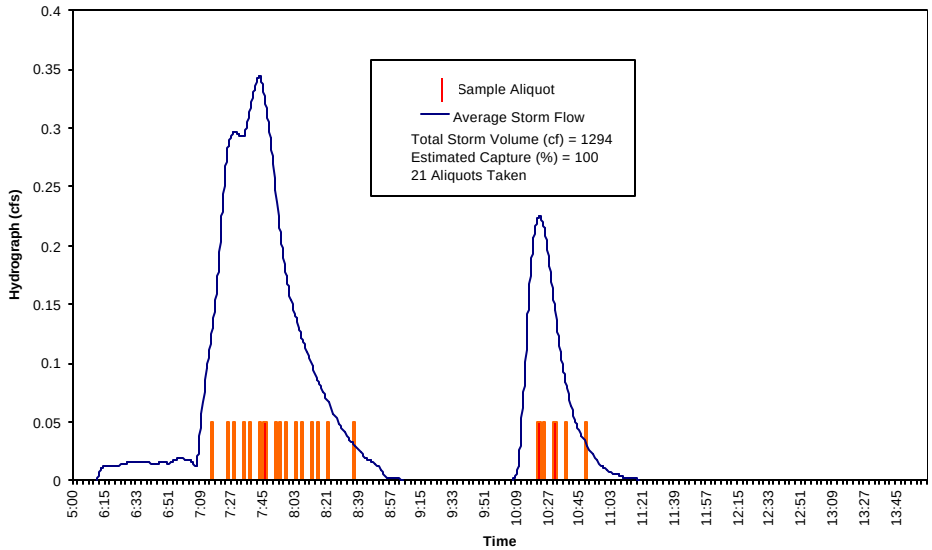


Figure 1-4b: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Altadena MS Biofiltration Strip for Event 4 on January 10-12, 2001

Influent



Effluent



Cumulative Rainfall

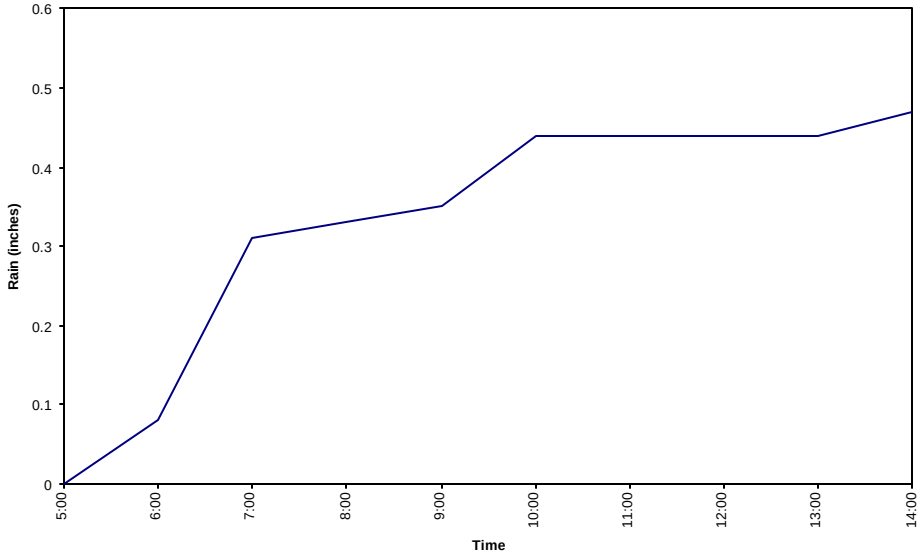
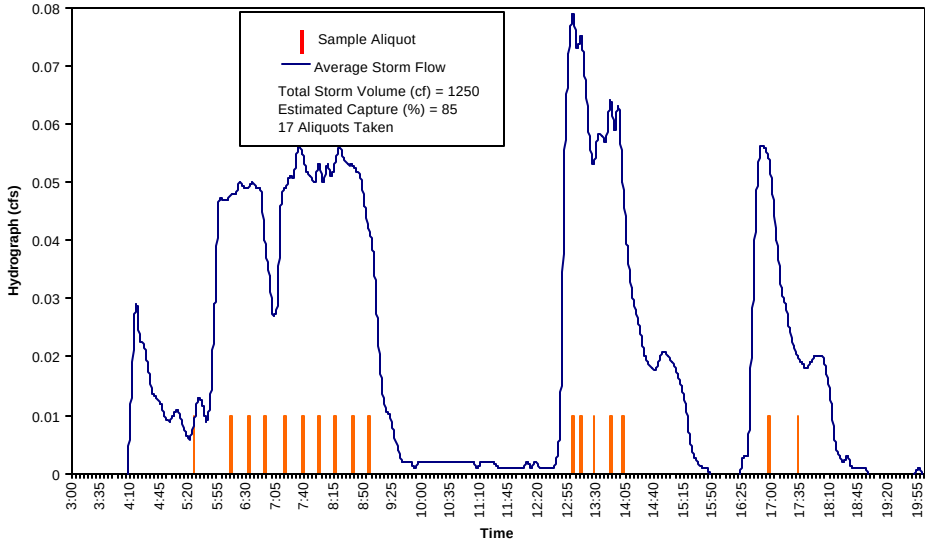
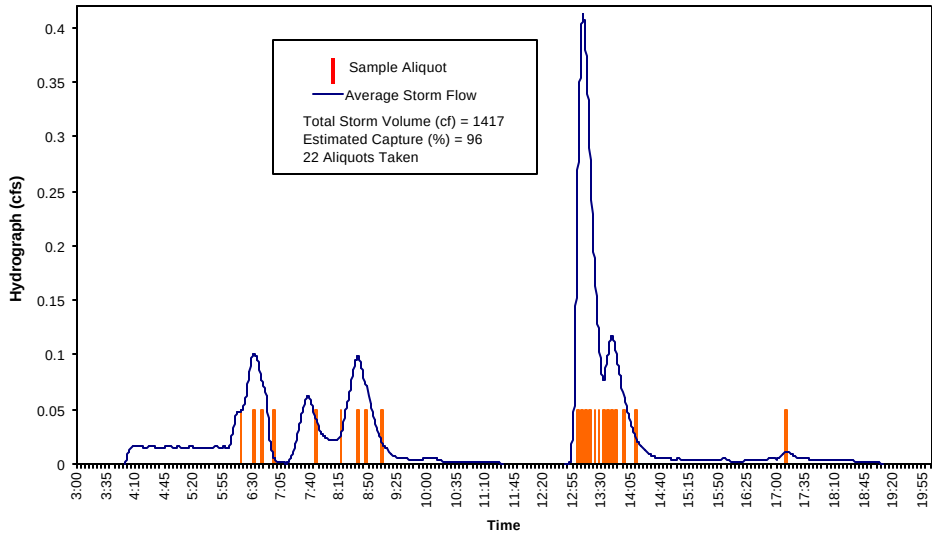


Figure 1-4c: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Altadena MS Biofiltration Strip for Event 5 on January 24, 2001

Influent



Effluent



Cumulative Rainfall

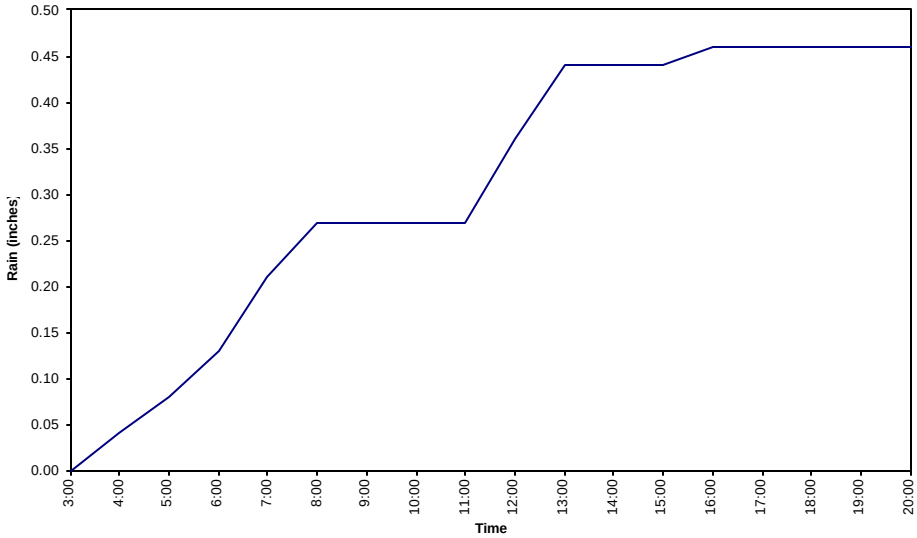
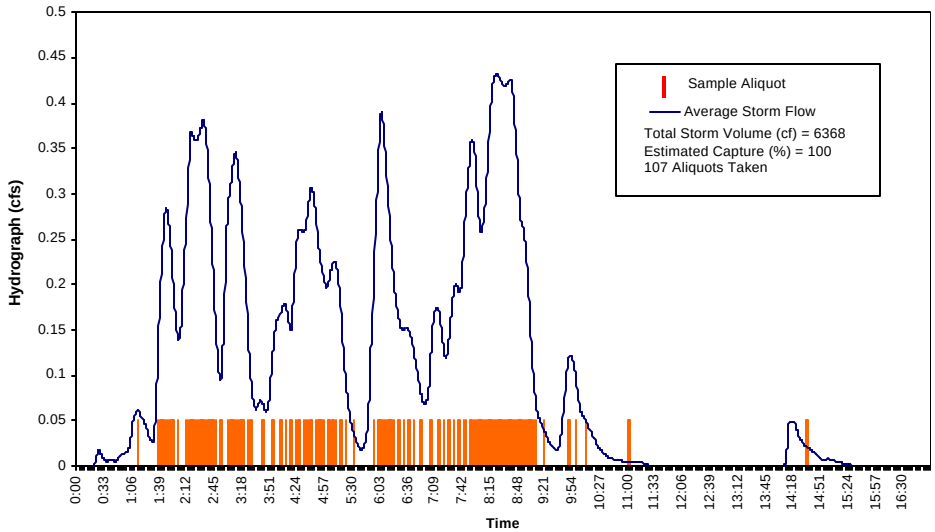
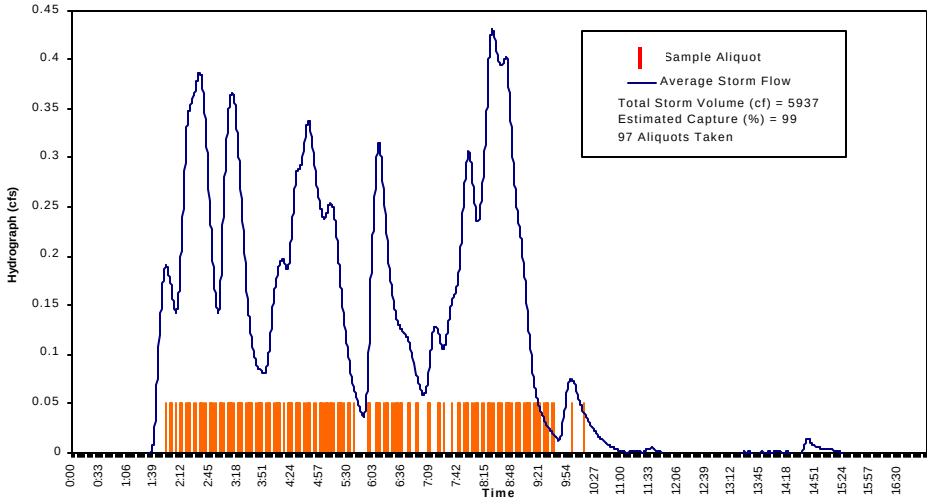


Figure 1-4d: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Altadena MS Biofiltration Strip for Event 6 on February 10, 2001

Influent



Effluent



Cumulative Rainfall

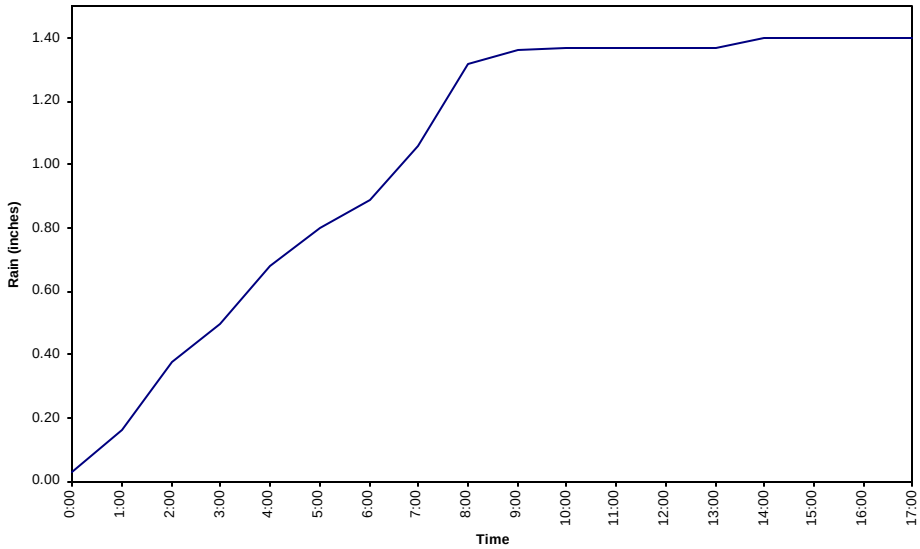
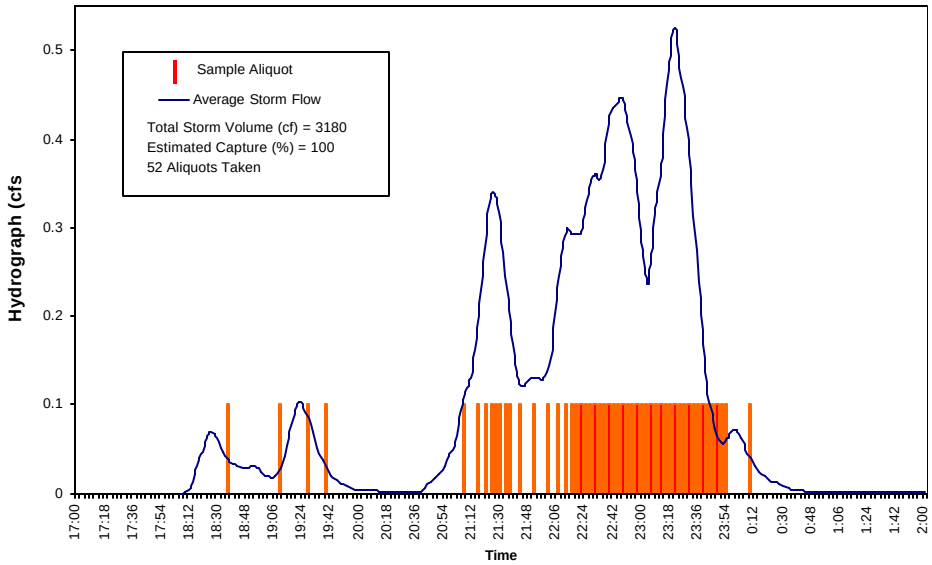
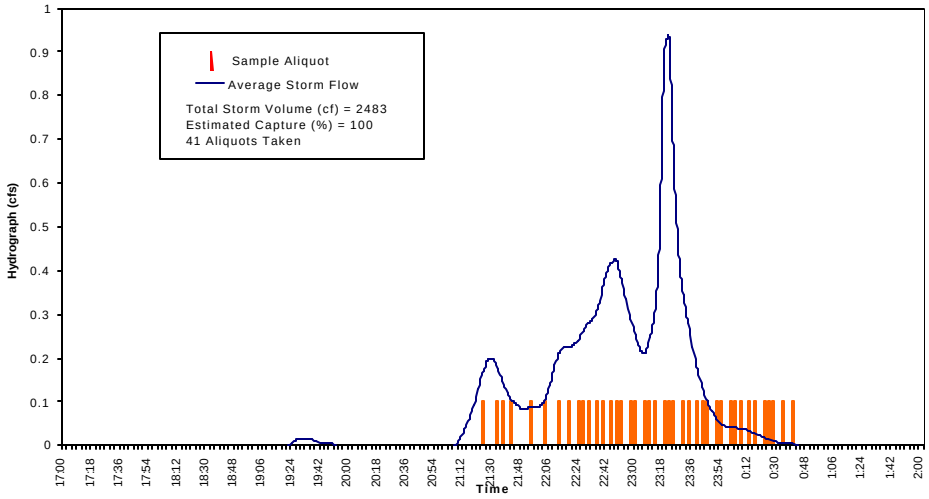


Figure 1-4e: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Altadena MS Biofiltration Strip for Event 9 on April 7, 2001

Influent



Effluent



Cumulative Rainfall

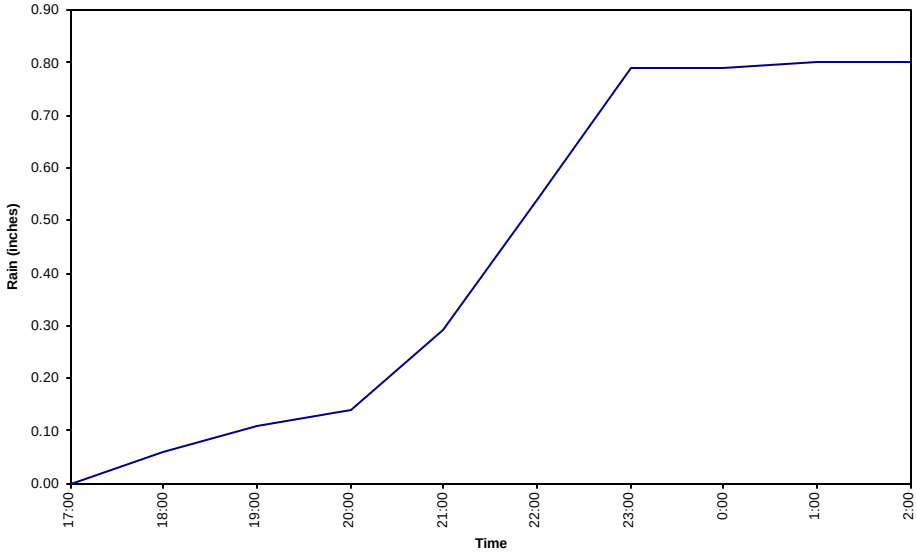
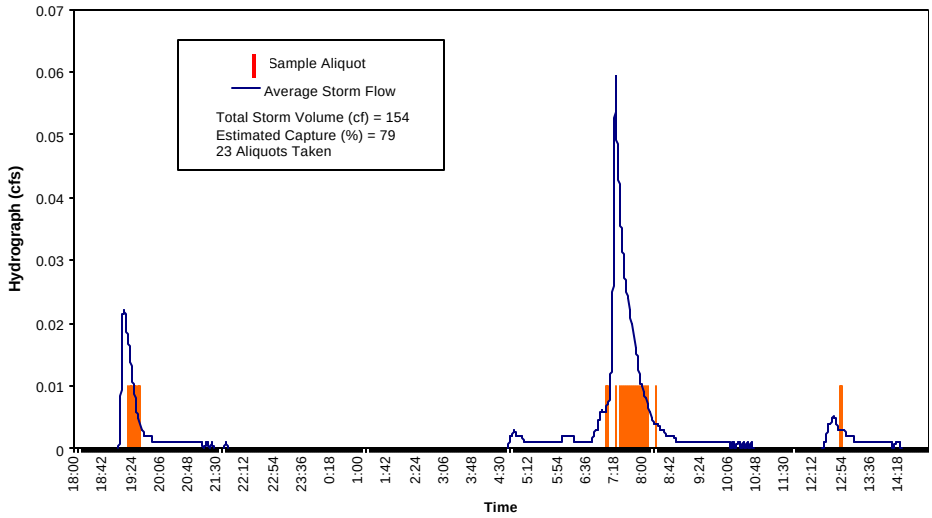
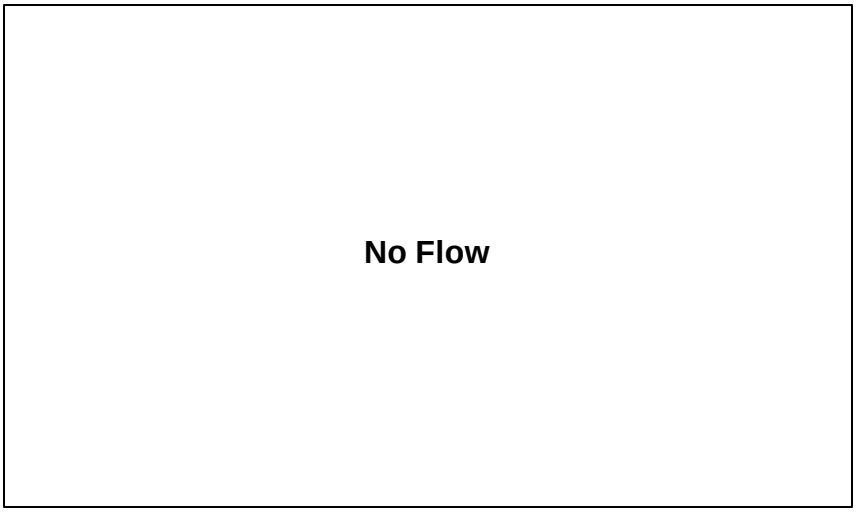


Figure 1-4f: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Altadena MS Biofiltration Strip for Event 10 on April 20-21, 2001

Influent



Effluent



Cumulative Rainfall

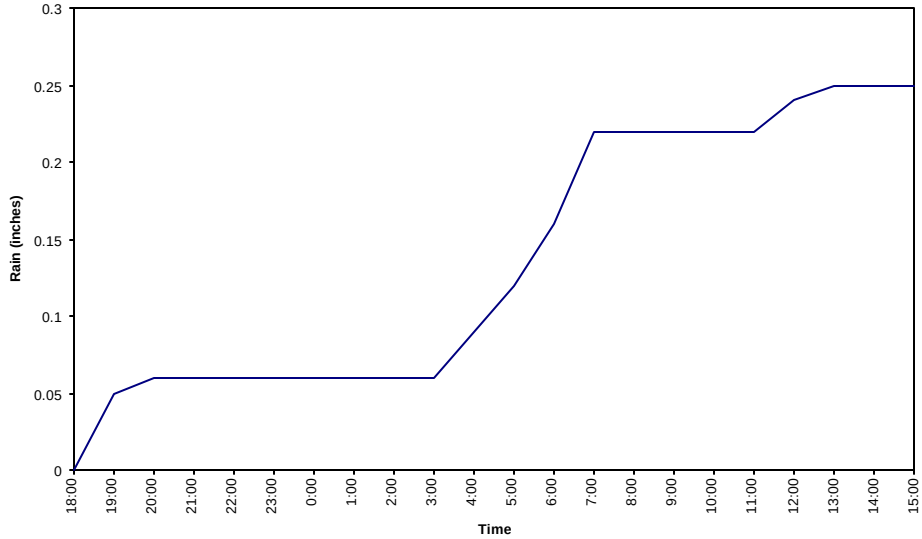
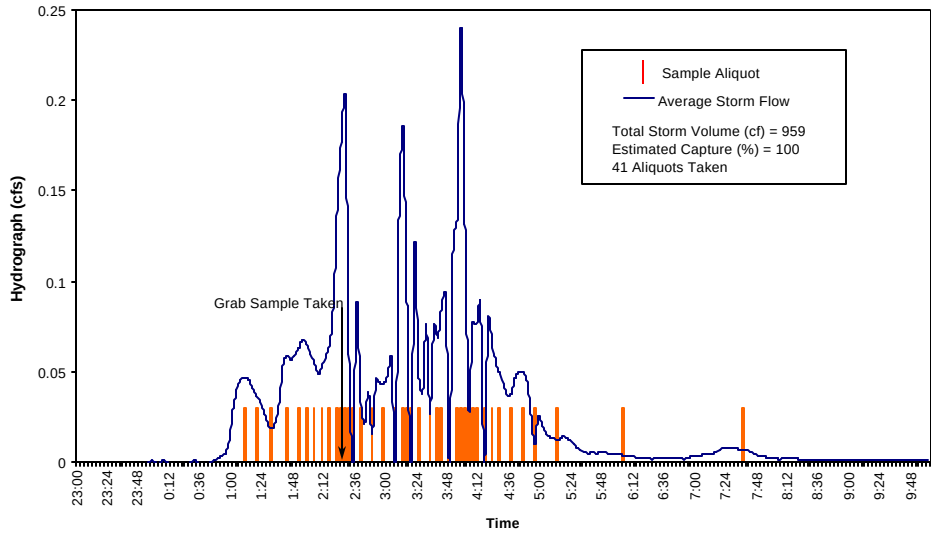
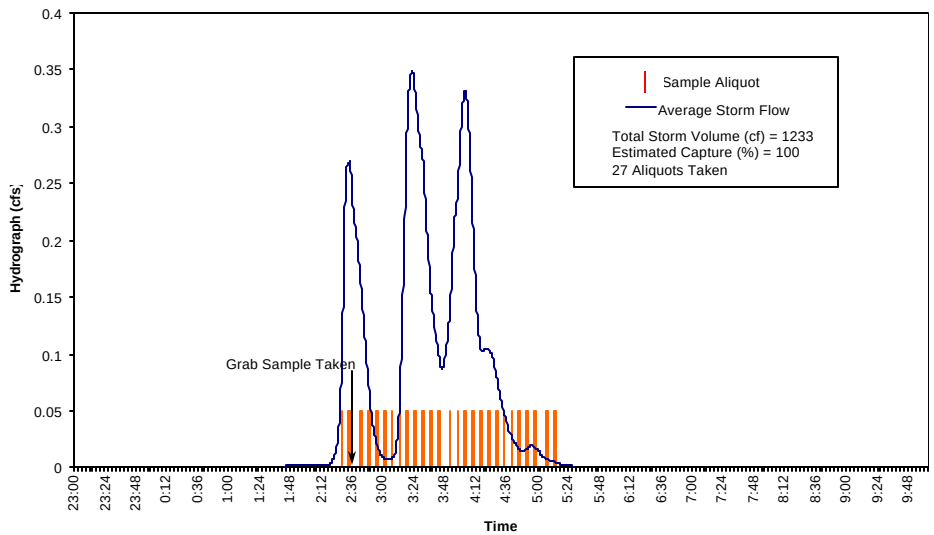


Figure 1-5a: Influent and Effluent Hydrograph, and Cumulative Rainfall at the I-605/SR-91 Biofiltration Strip for Event 1 on October 10-11, 2000

Influent



Effluent



Cumulative Rainfall

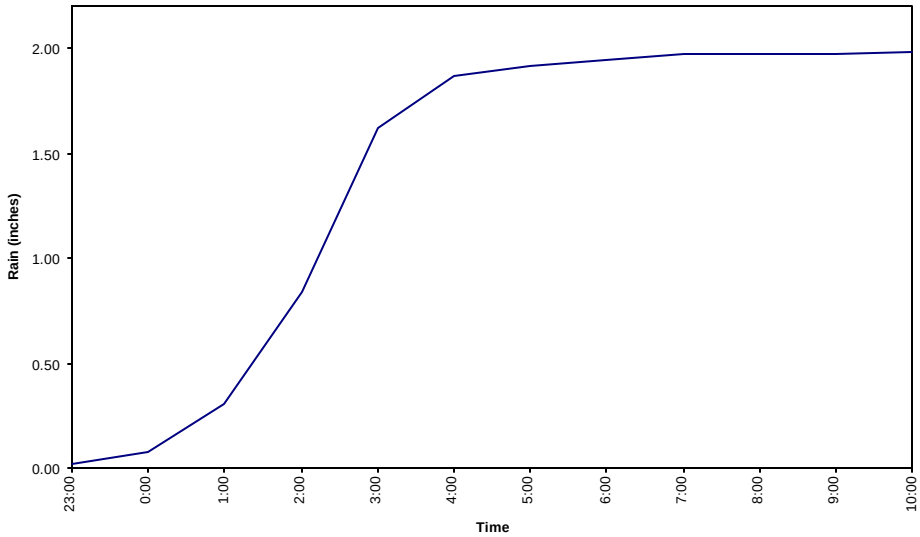
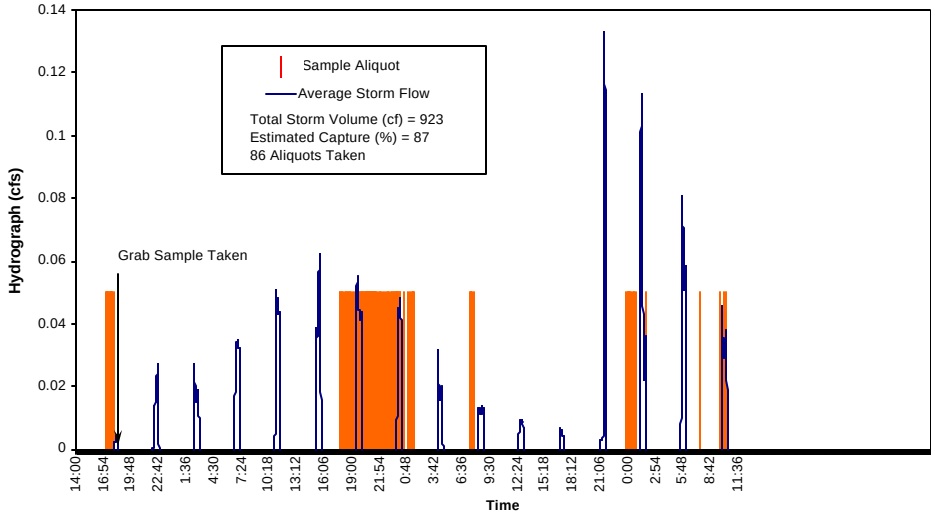
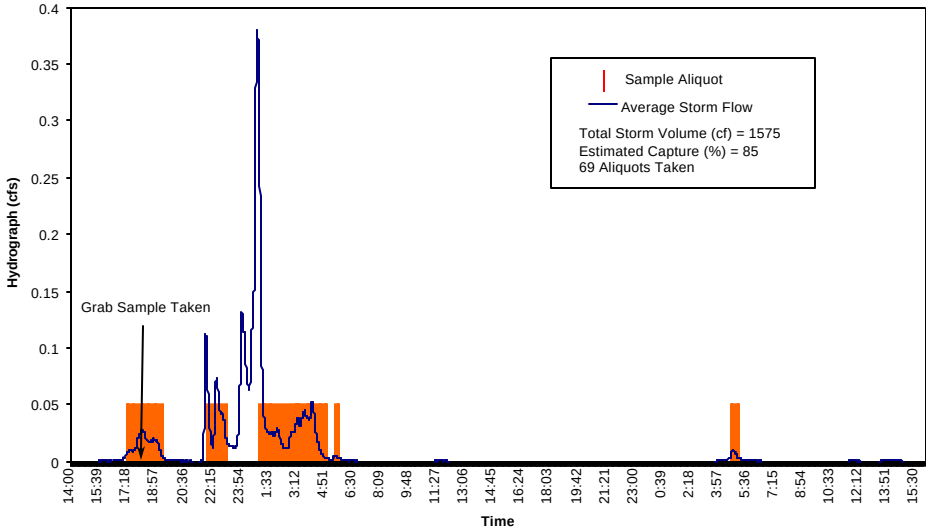


Figure 1-5b: Influent and Effluent Hydrograph, and Cumulative Rainfall at the I-605/SR-91 Biofiltration Strip for Event 2 on October 26-27, 2000

Influent



Effluent



Cumulative Rainfall

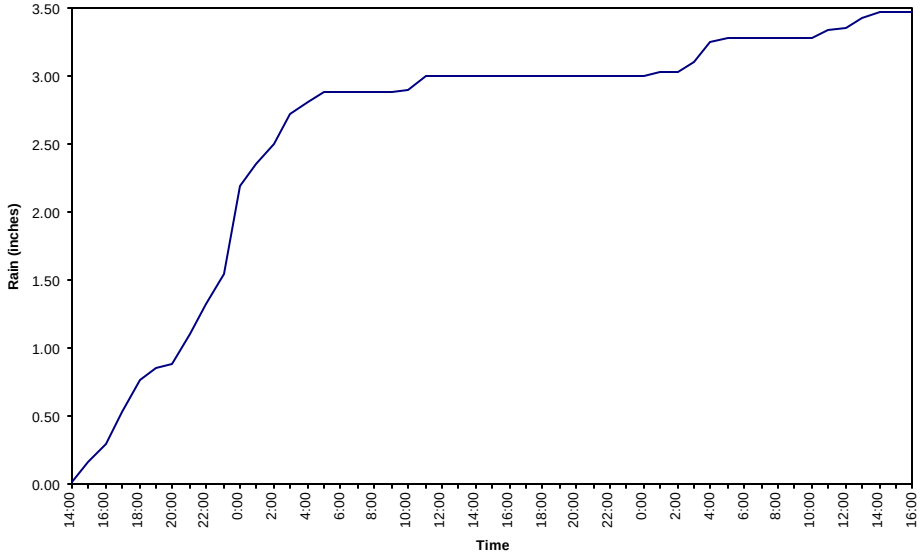
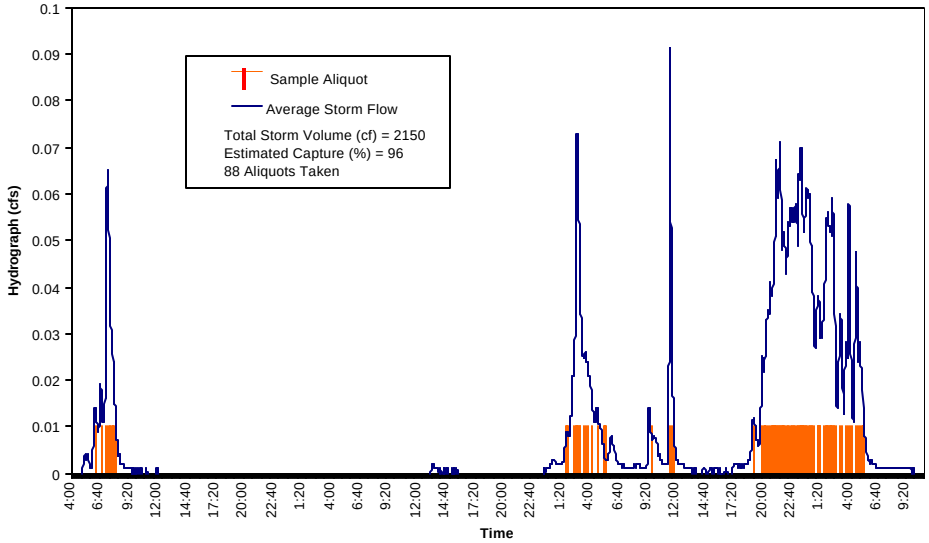
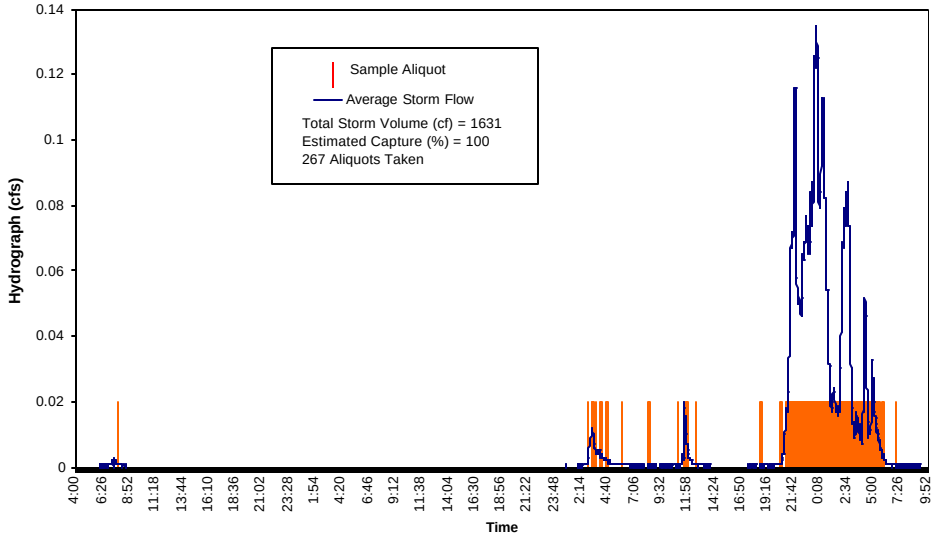


Figure 1-5c: Influent and Effluent Hydrograph, and Cumulative Rainfall at the I-605/SR-91 Biofiltration Strip for Event 4 on January 10-12, 2001

Influent



Effluent



Cumulative Rainfall

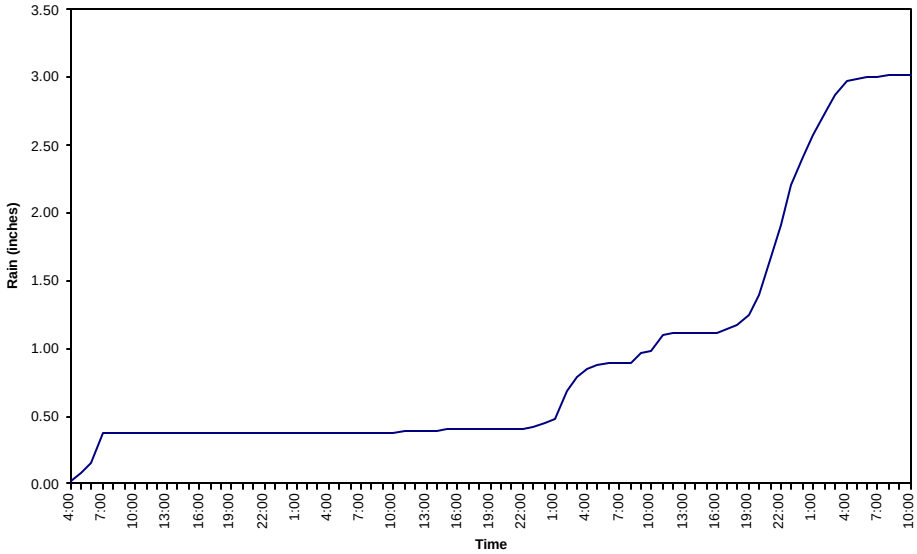
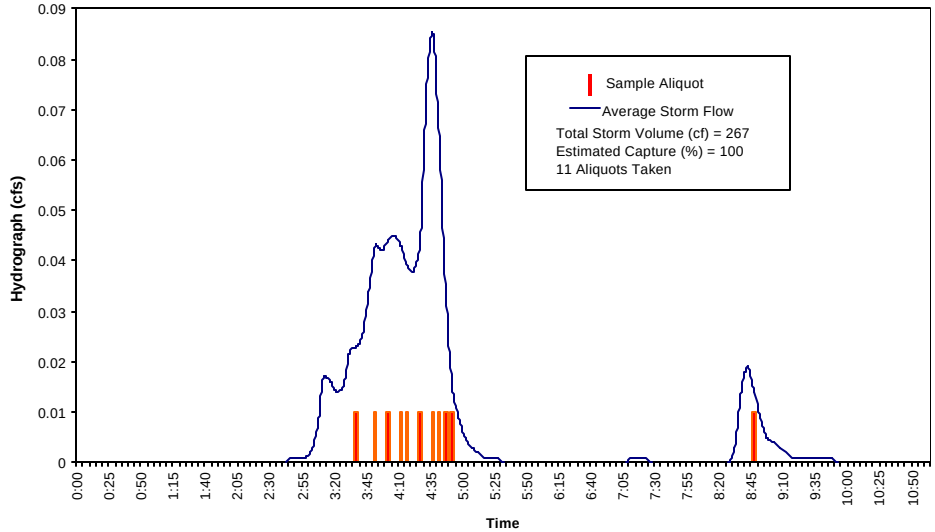
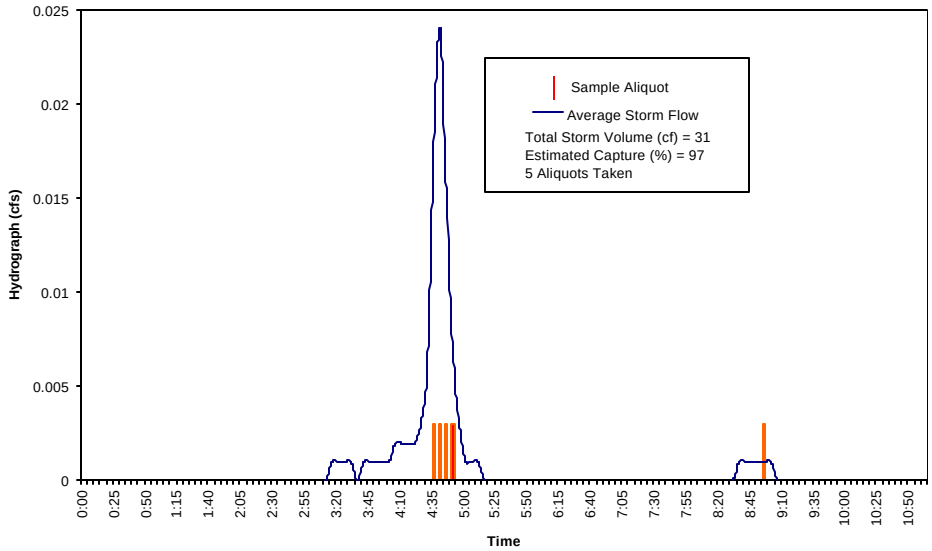


Figure 1-5d: Influent and Effluent Hydrograph, and Cumulative Rainfall at the I-605/SR-91 Biofiltration Strip for Event 6 on February 10-13, 2001

Influent



Effluent



Cumulative Rainfall

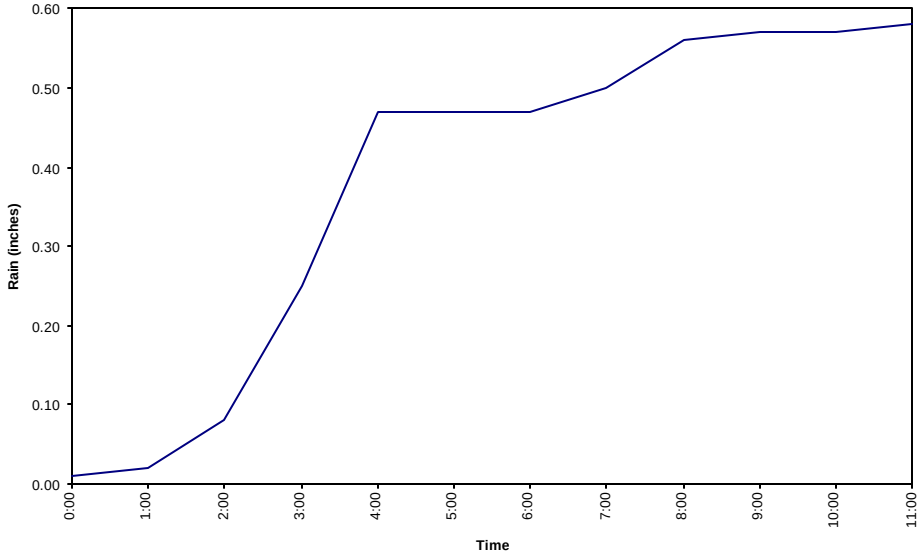
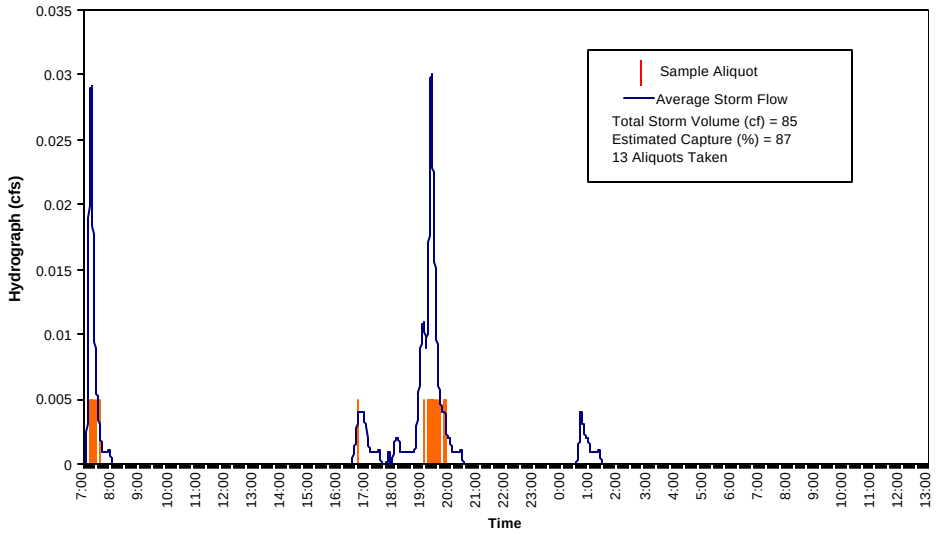
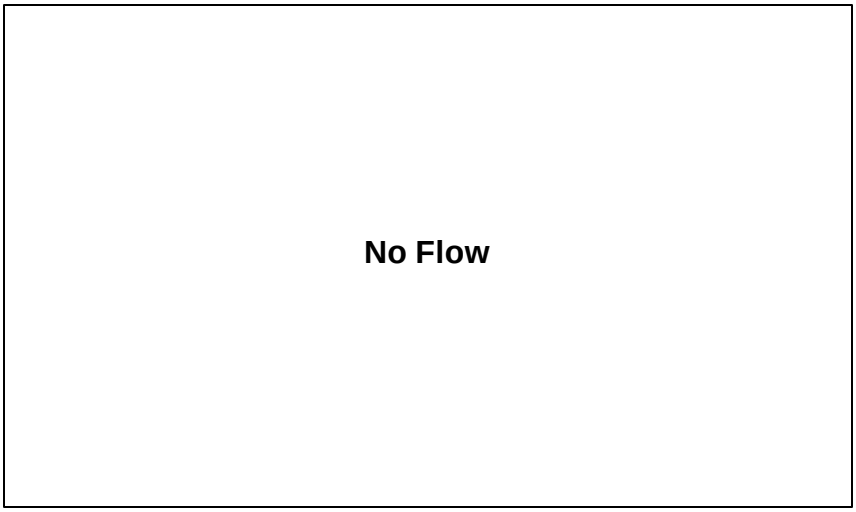


Figure 1-5e: Influent and Effluent Hydrograph, and Cumulative Rainfall at the I-605/SR-91 Biofiltration Strip for Event 9 on April 7, 2001

Influent



Effluent



Cumulative Rainfall

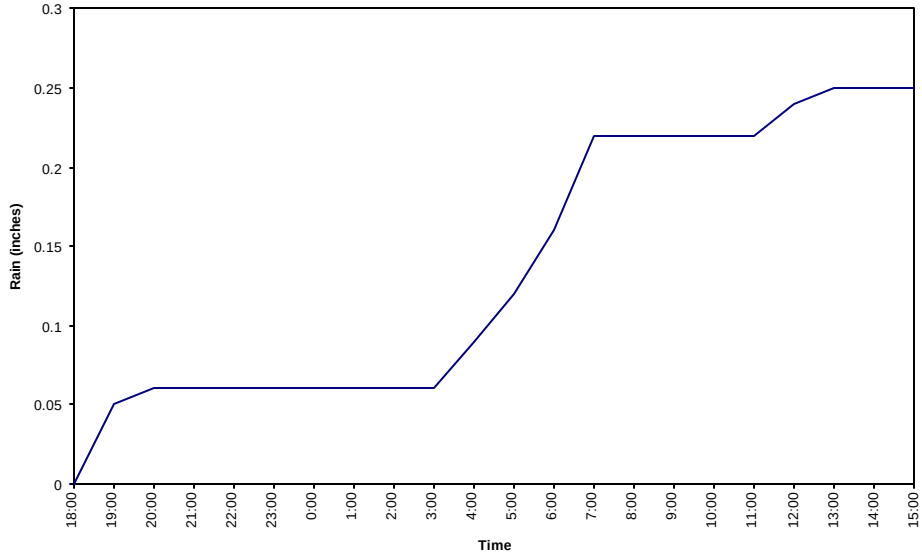
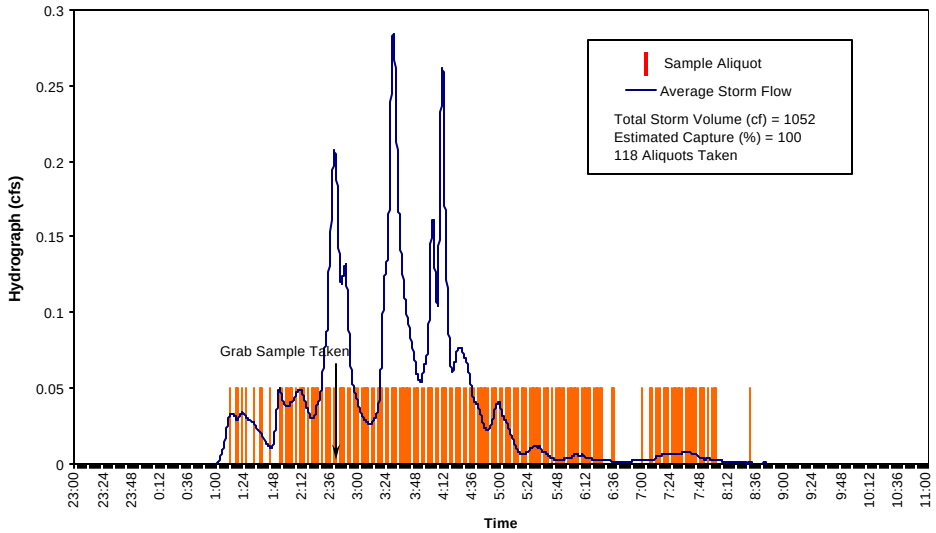
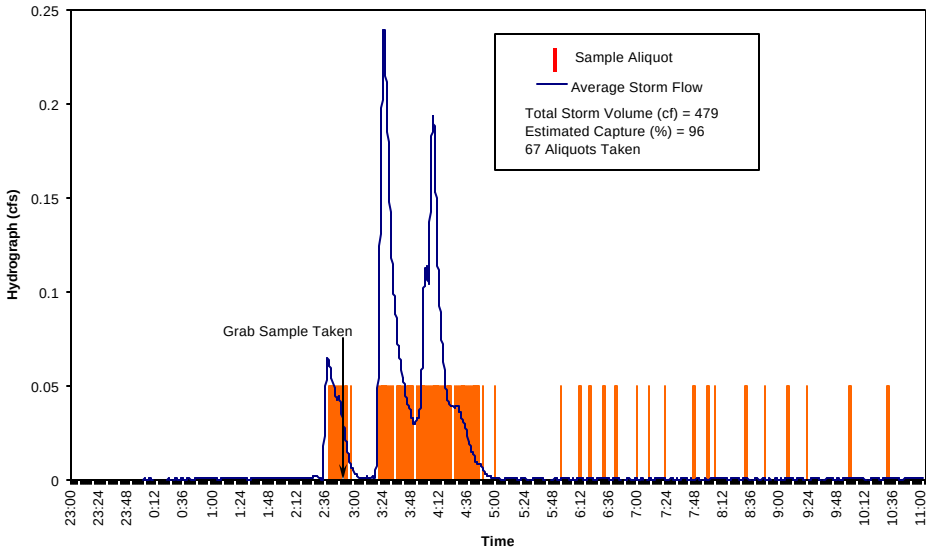


Figure 1-6a: Influent and Effluent Hydrograph, and Cumulative Rainfall at the I-605/SR-91 Biofiltration Swale for Event 1 on October 10-11, 2000

Influent



Effluent



Cumulative Rainfall

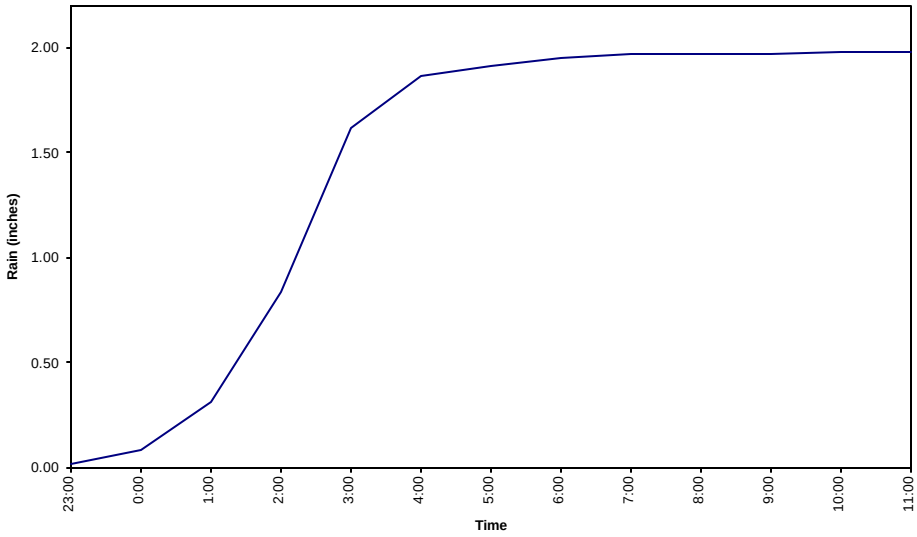
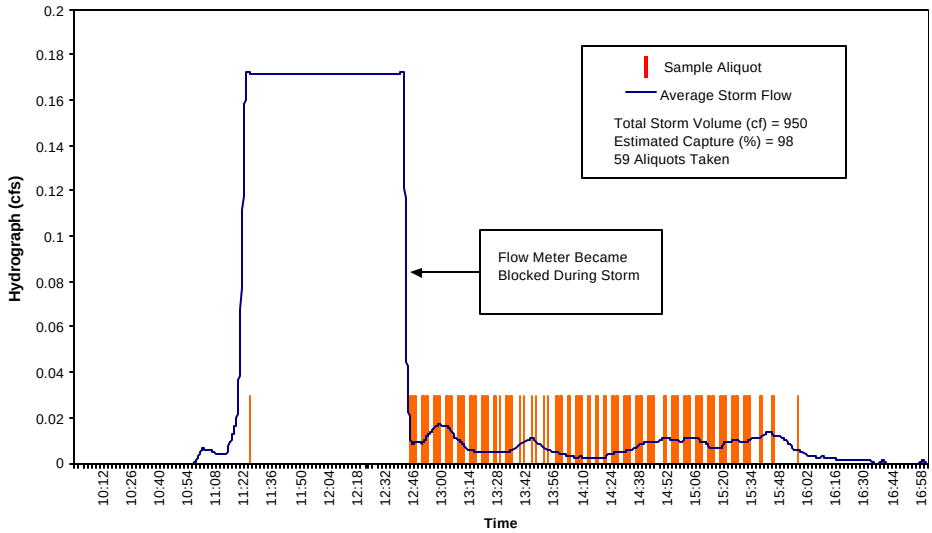
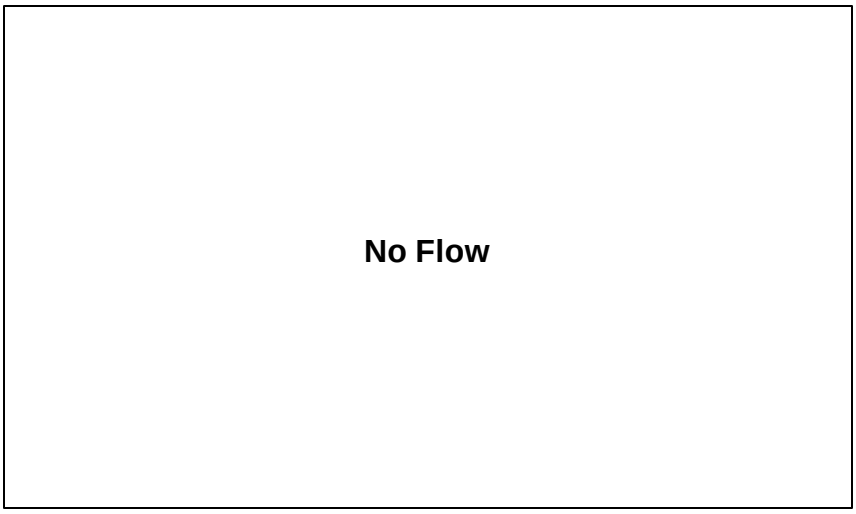


Figure 1-6b: Influent and Effluent Hydrograph, and Cumulative Rainfall at the I-605/SR-91 Biofiltration Swale for Event 2 on October 26-27, 2000

Influent



Effluent



Cumulative Rainfall

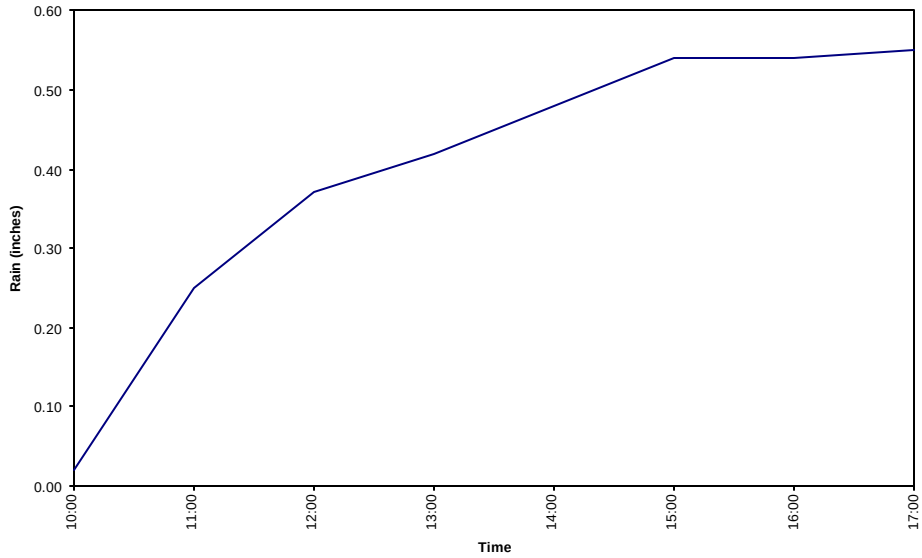
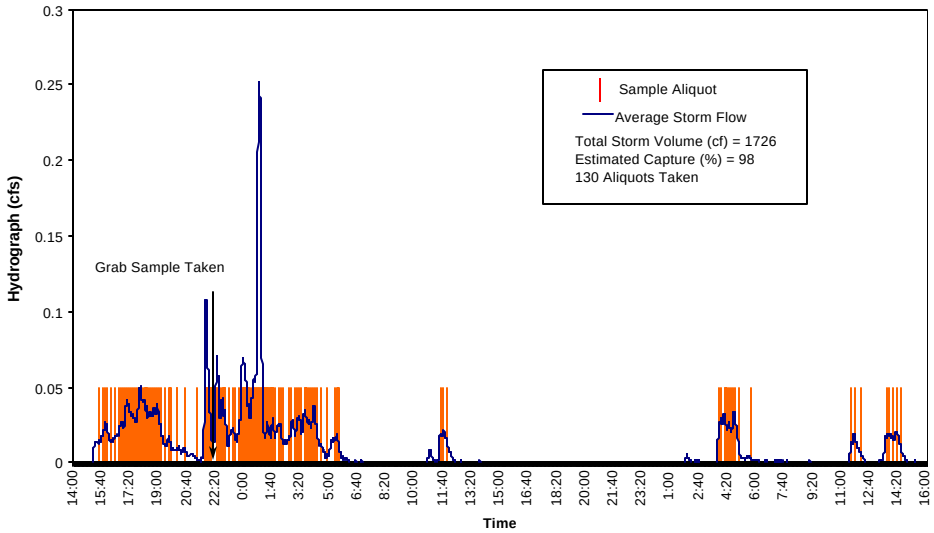
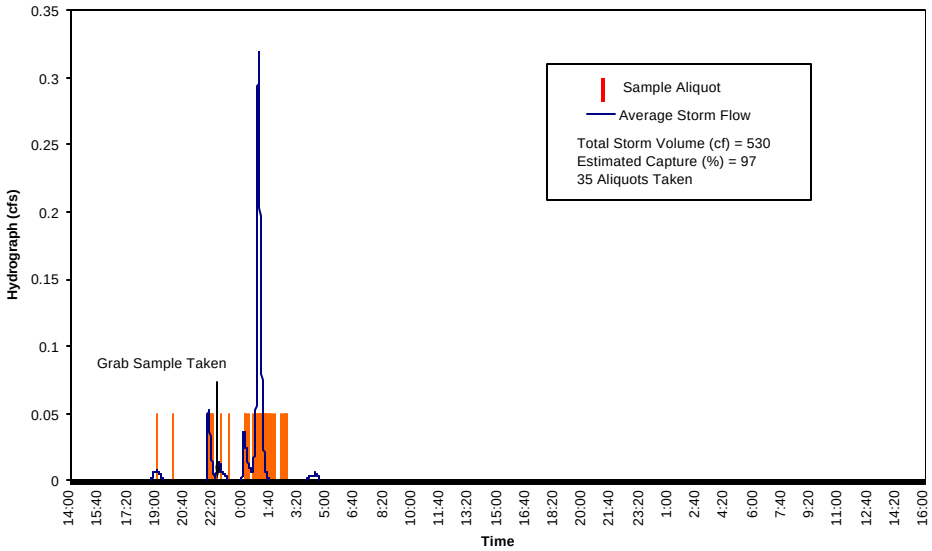


Figure 1-6c: Influent and Effluent Hydrograph, and Cumulative Rainfall at the I-605/SR-91 Biofiltration Swale for Event 3 on January 8, 2001

Influent



Effluent



Cumulative Rainfall

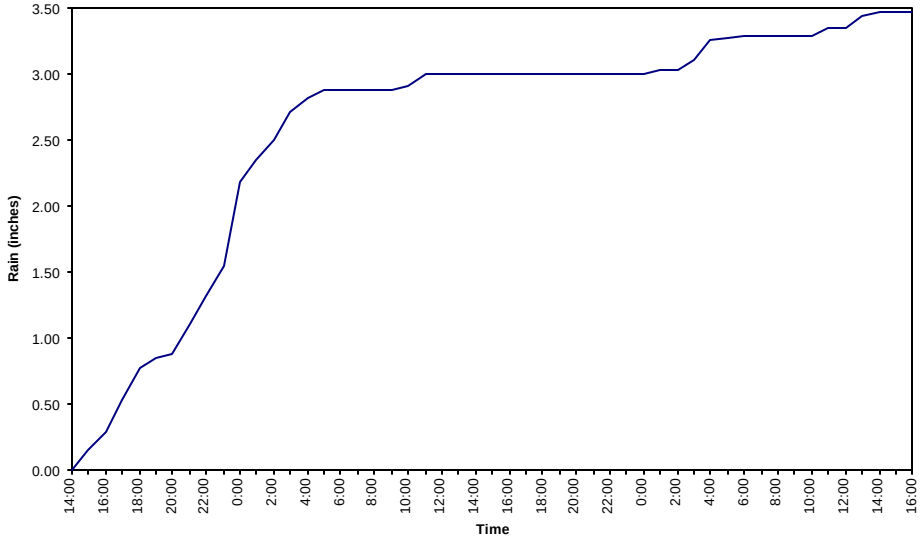
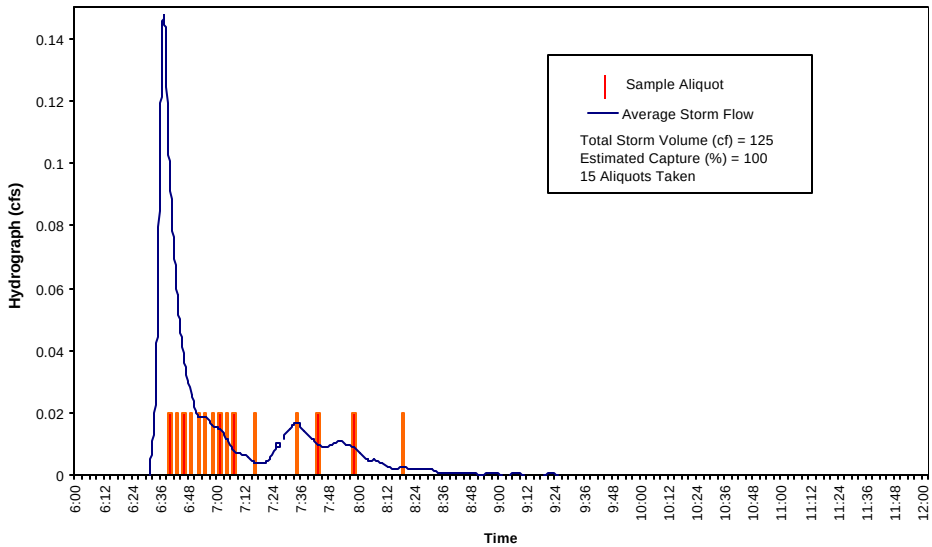
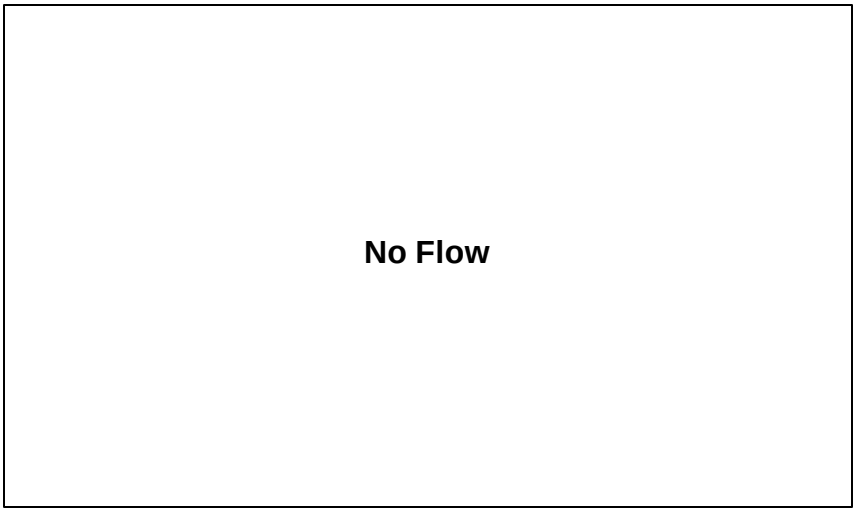


Figure 1-6d: Influent and Effluent Hydrograph, and Cumulative Rainfall at the I-605/SR-91 Biofiltration Swale for Event 4 on January 10-12, 2001

Influent



Effluent



Cumulative Rainfall

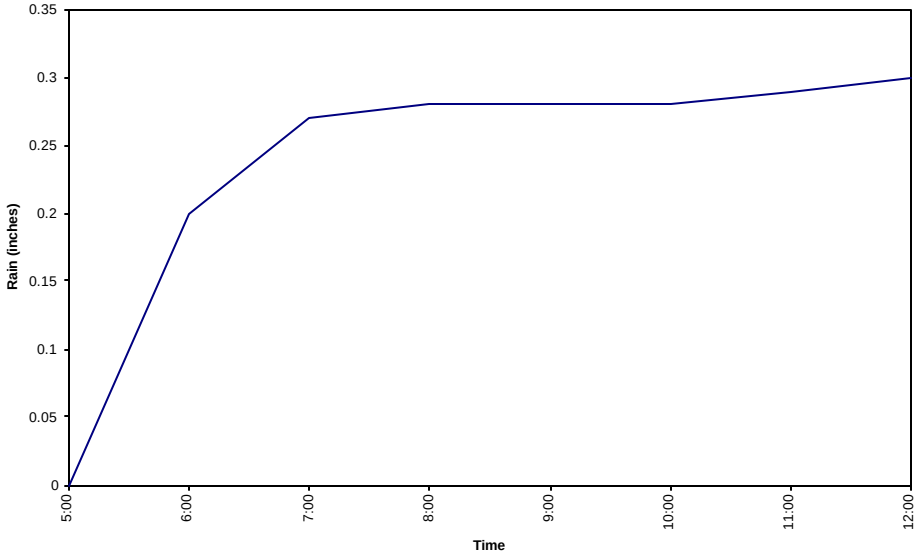
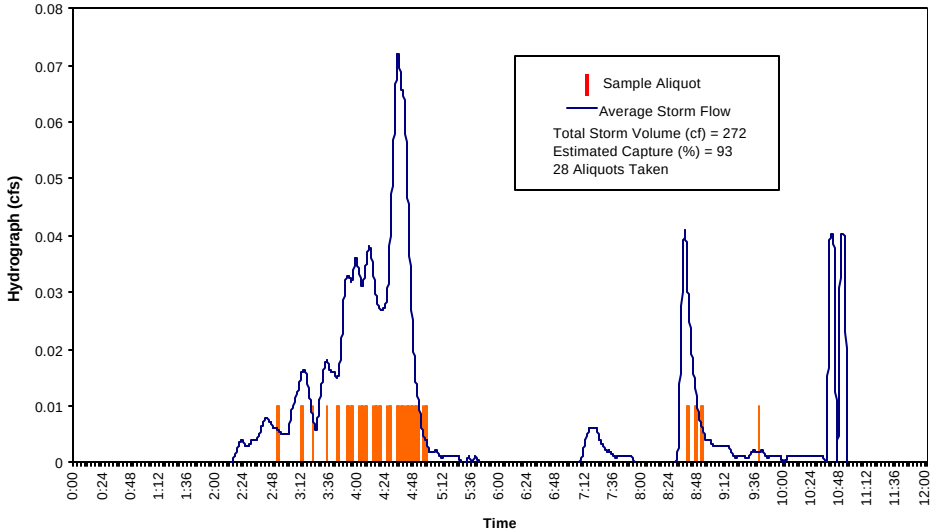
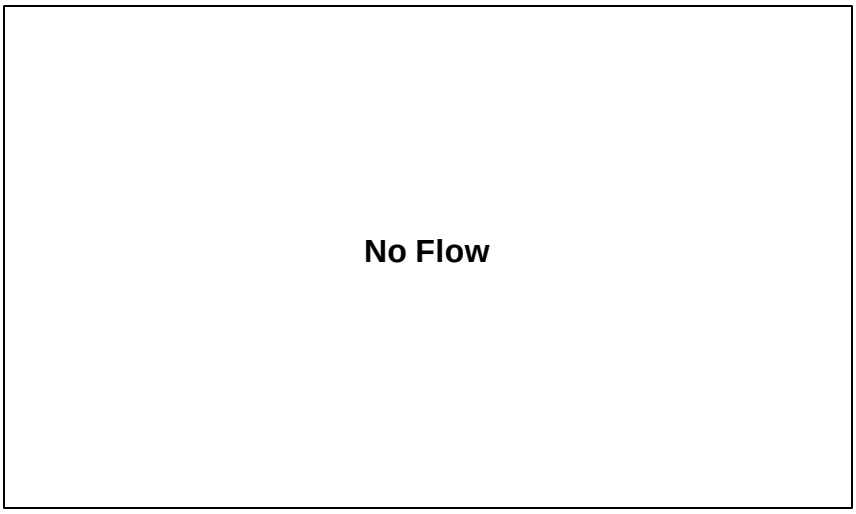


Figure 1-6e: Influent and Effluent Hydrograph, and Cumulative Rainfall at the I-605/SR-91 Biofiltration Swale for Event 5 on January 24, 2001

Influent



Effluent



Cumulative Rainfall

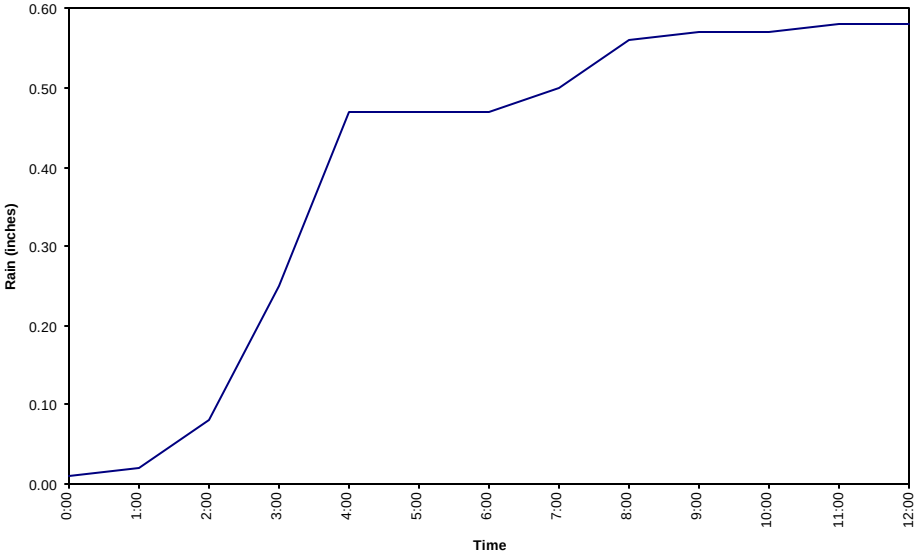
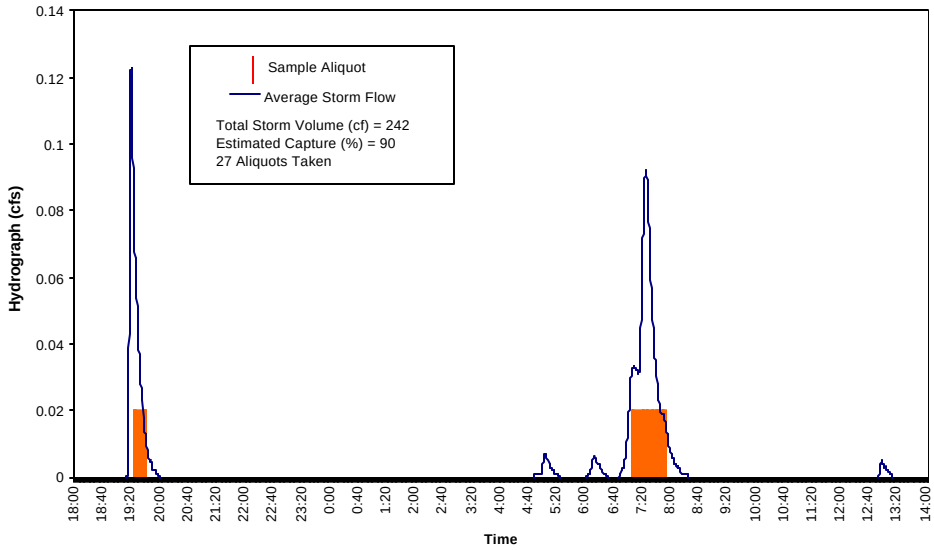
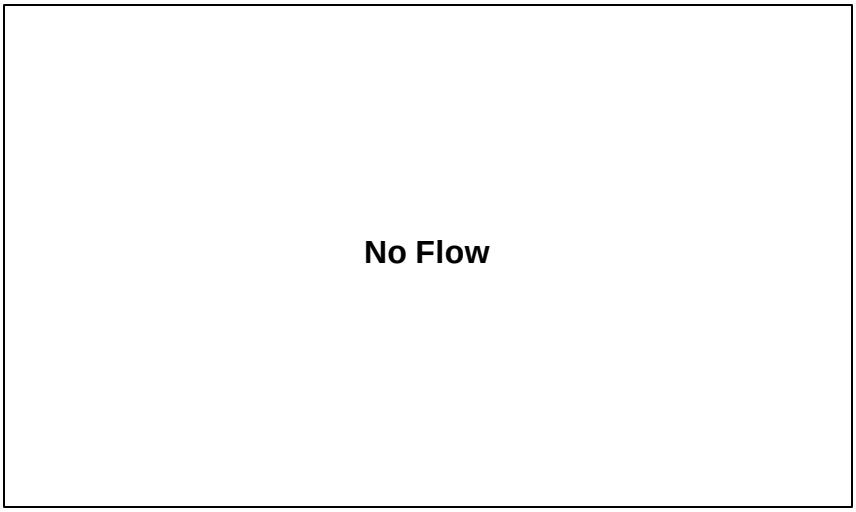


Figure 1-6f: Influent and Effluent Hydrograph, and Cumulative Rainfall at the I-605/SR-91 Biofiltration Swale for Event 9 on April 7, 2001

Influent



Effluent



Cumulative Rainfall

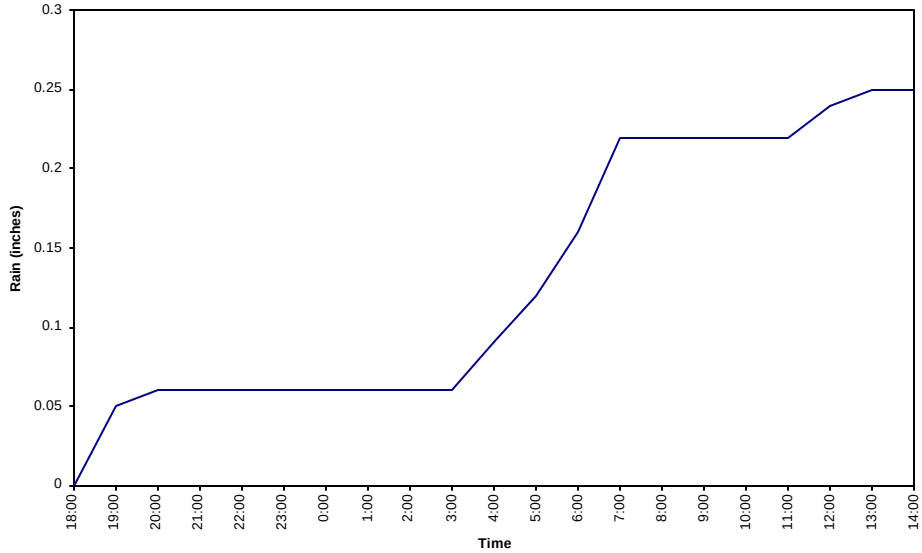
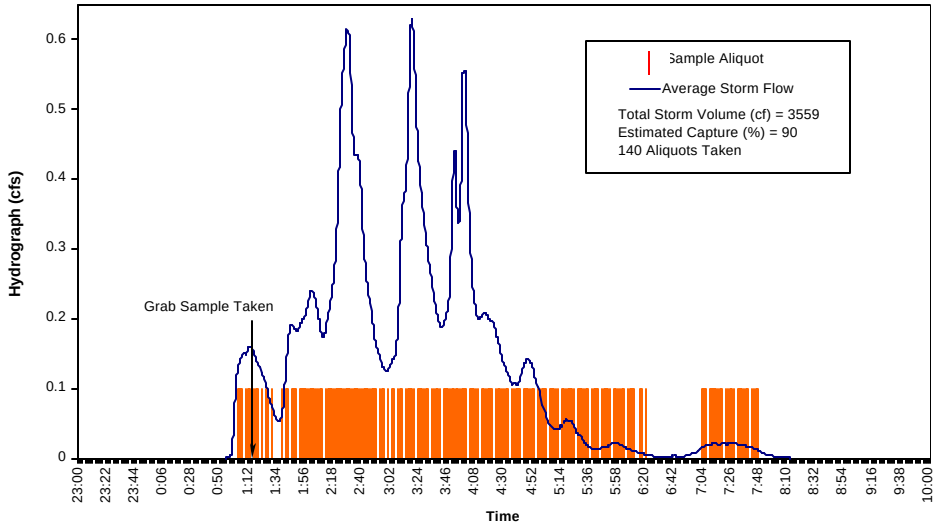
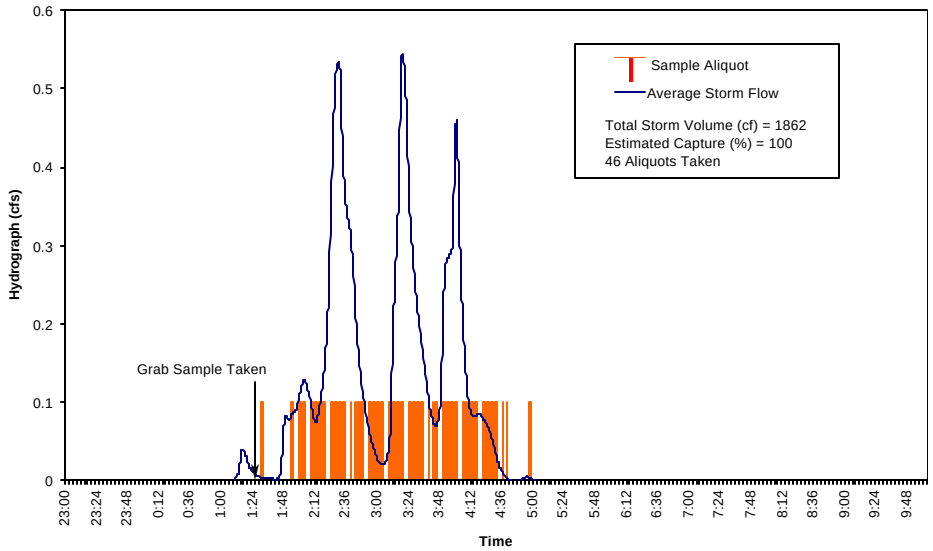


Figure 1-7a: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Cerritos MS Biofiltration Swale for Event 1 on October 10-11, 2000

Influent



Effluent



Cumulative Rainfall

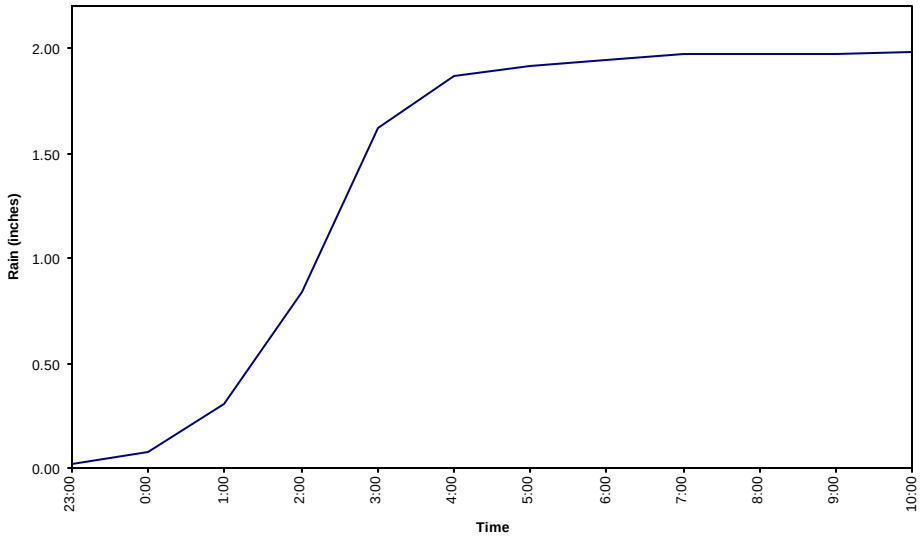
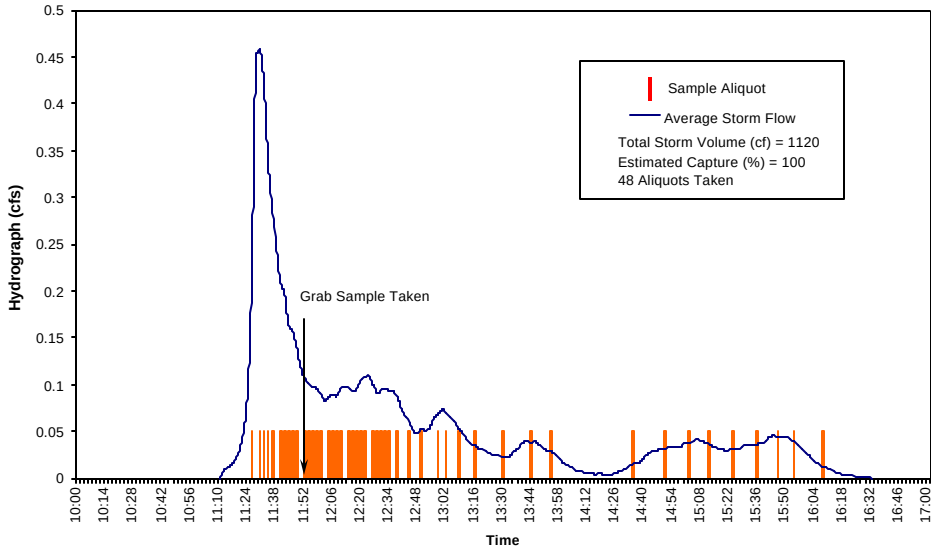
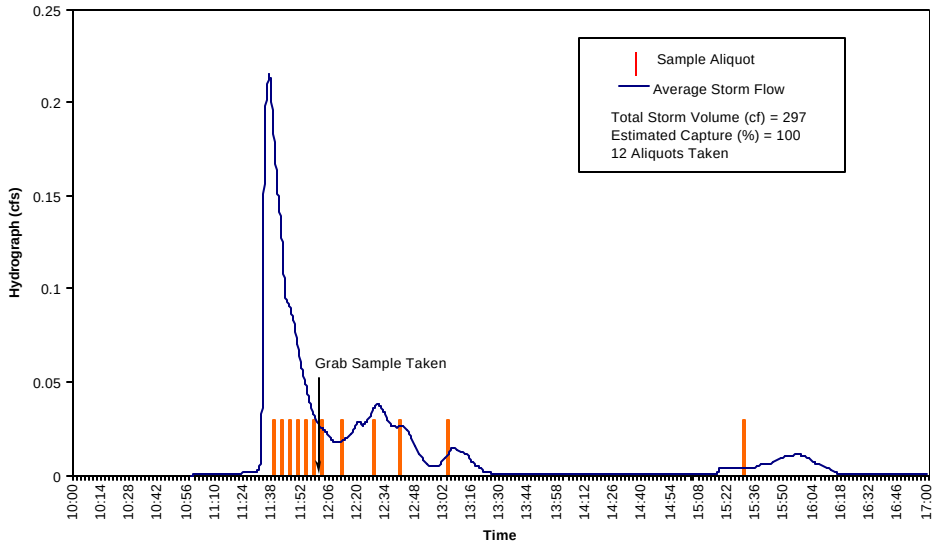


Figure 1-7b: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Cerritos MS Biofiltration Swale for Event 2 on October 26-27, 2000

Influent



Effluent



Cumulative Rainfall

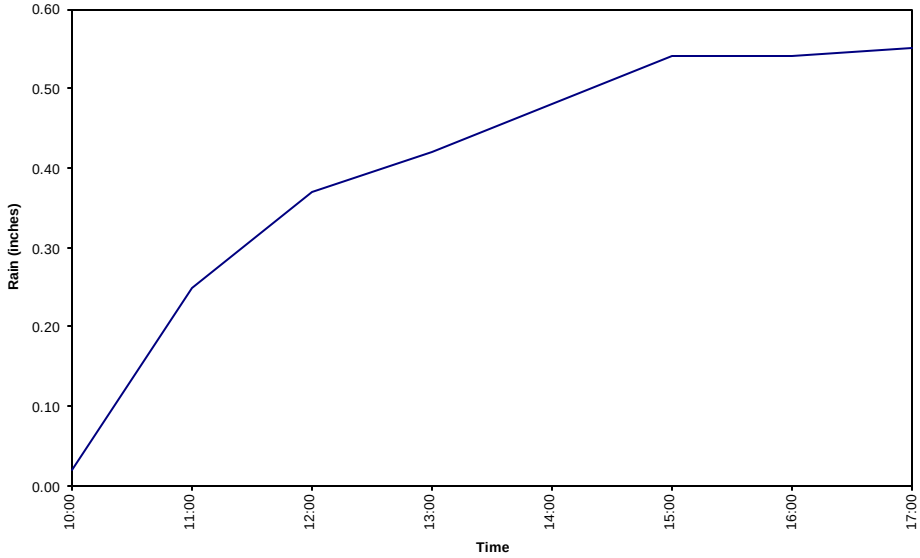
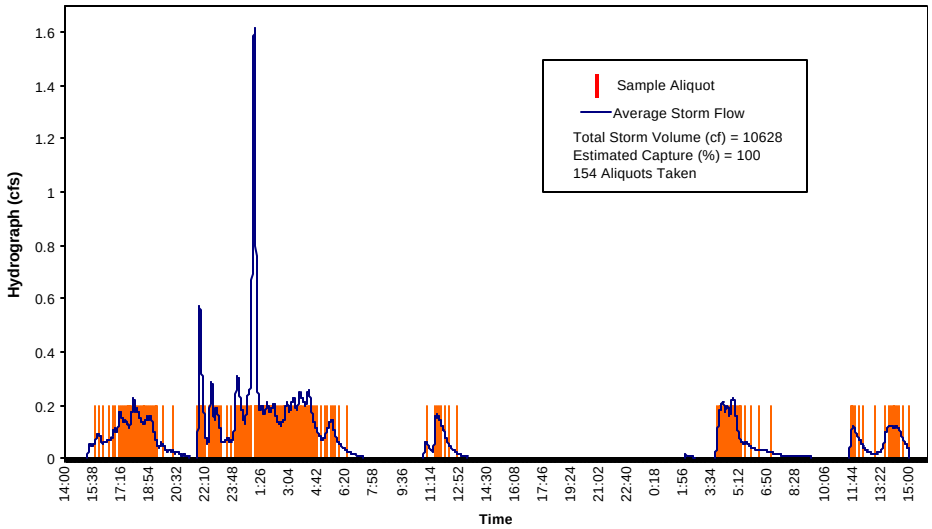
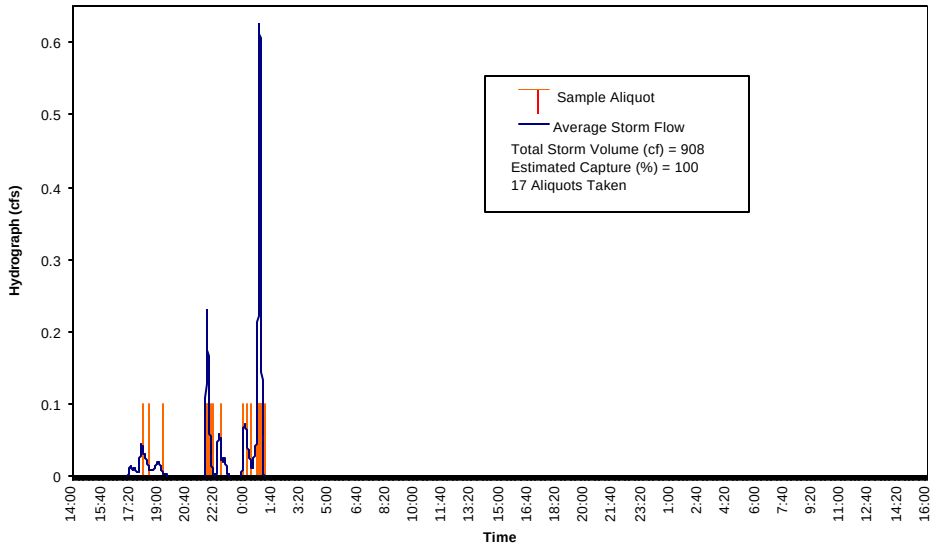


Figure 1-7c: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Cerritos MS Biofiltration Swale for Event 3 on January 8, 2001

Influent



Effluent



Cumulative Rainfall

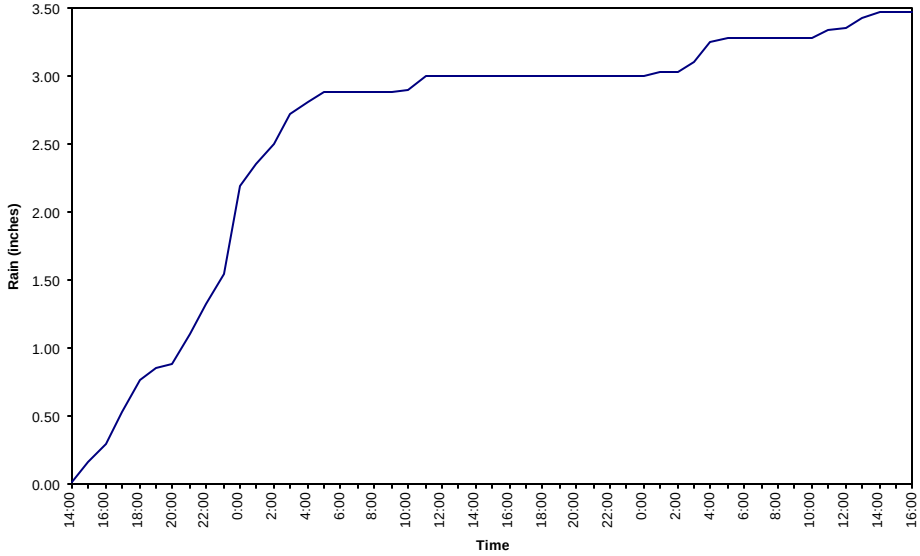
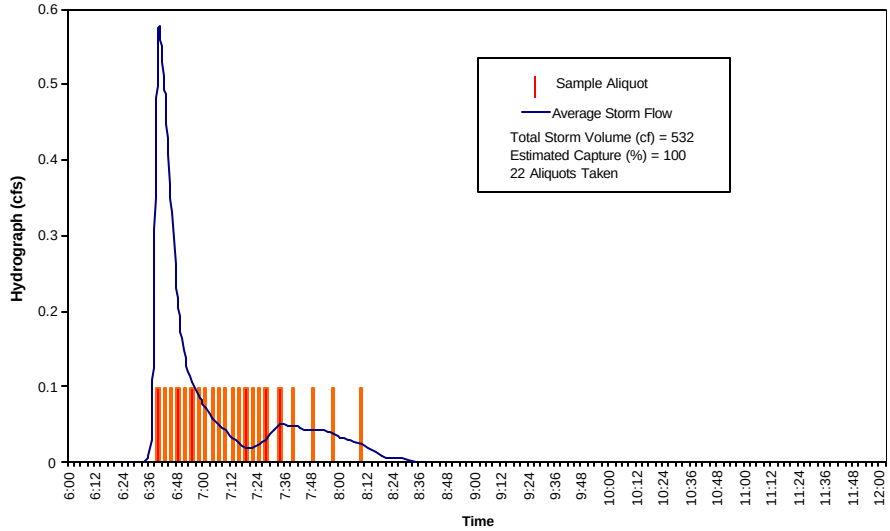
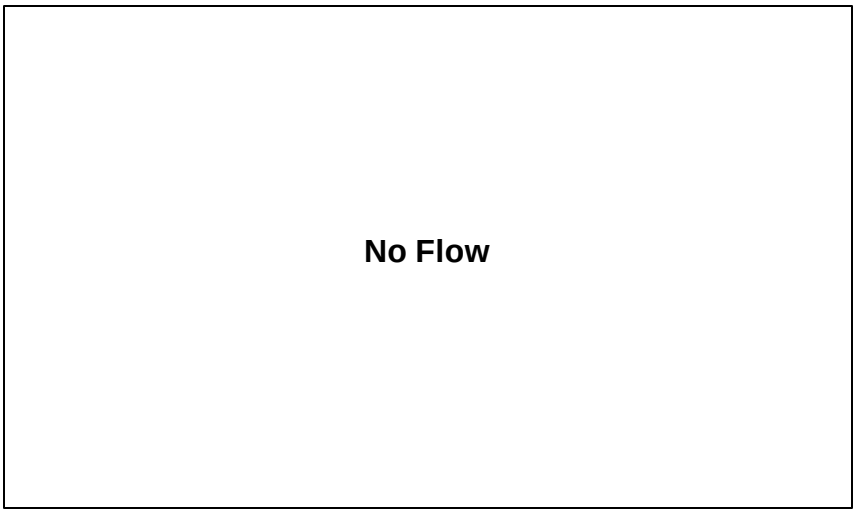


Figure 1-7d: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Cerritos MS Biofiltration Swale for Event 4 on January 10-12, 2001

Influent



Effluent



Cumulative Rainfall

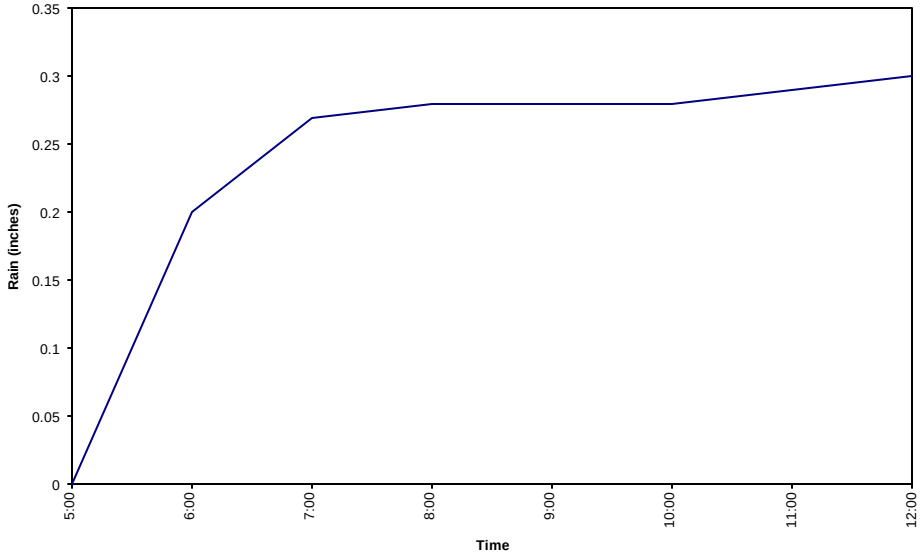
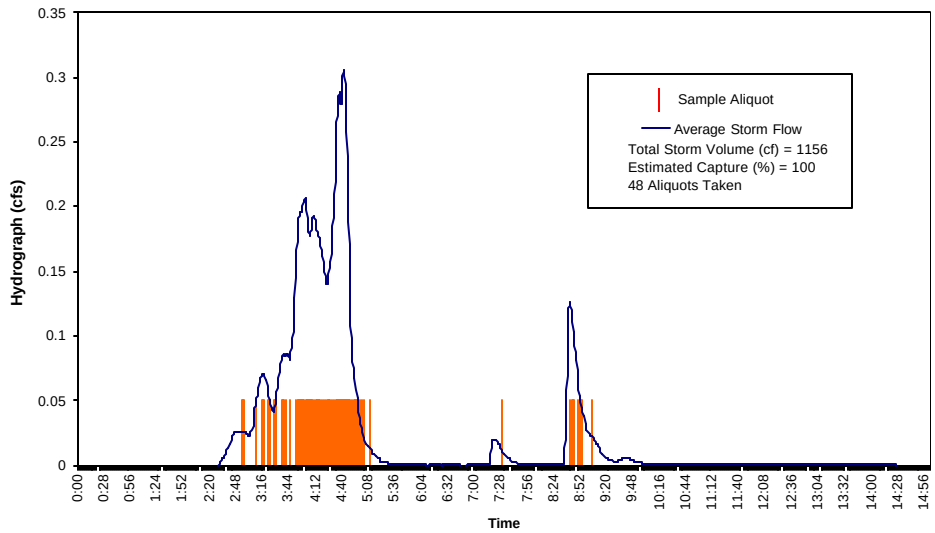
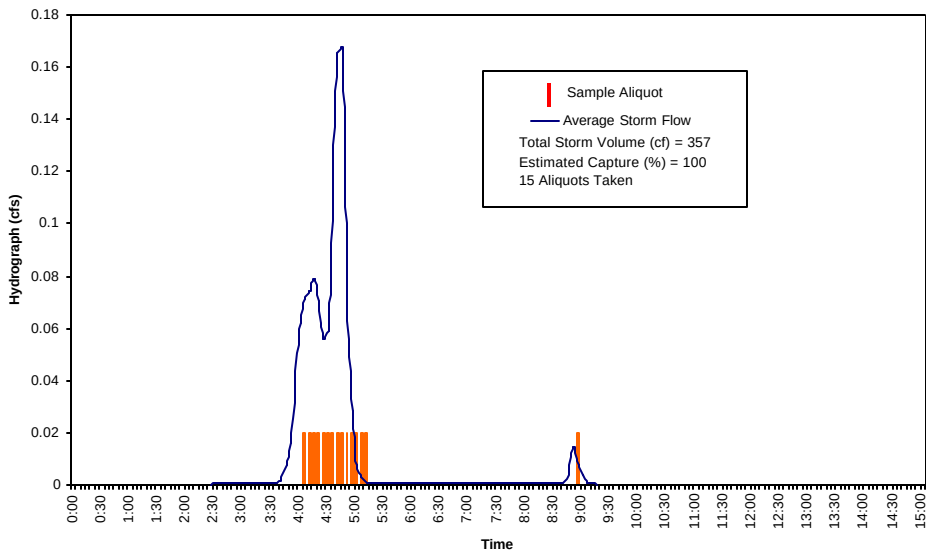


Figure 1-7e: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Cerritos MS Biofiltration Swale for Event 5 on January 24, 2001

Influent



Effluent



Cumulative Rainfall

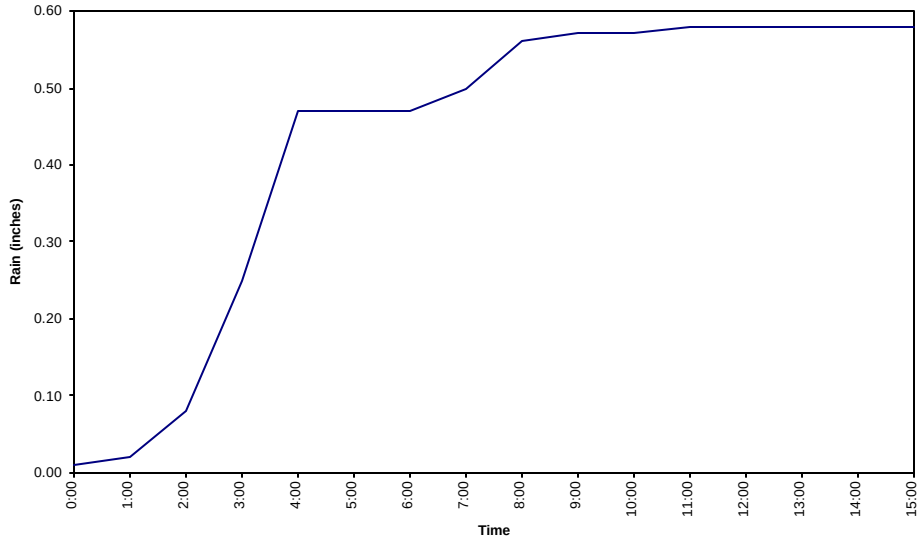
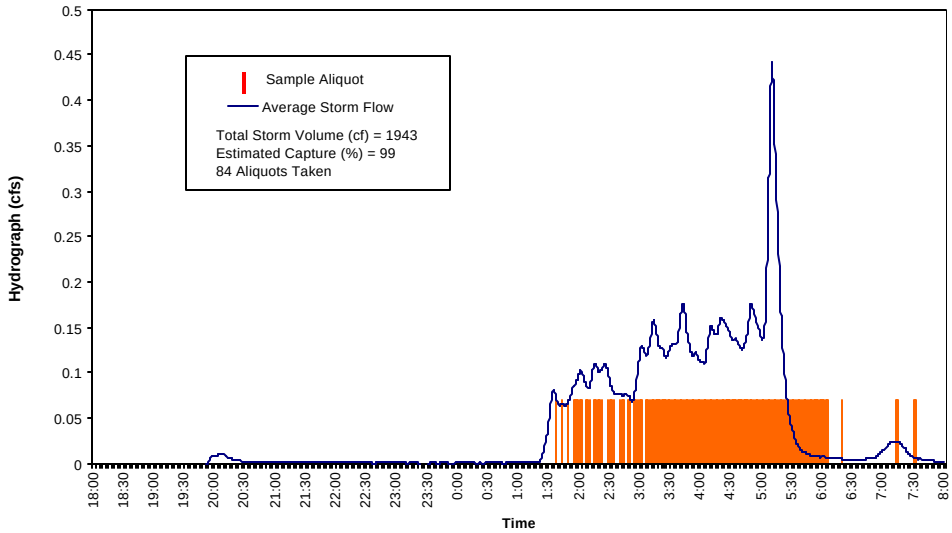
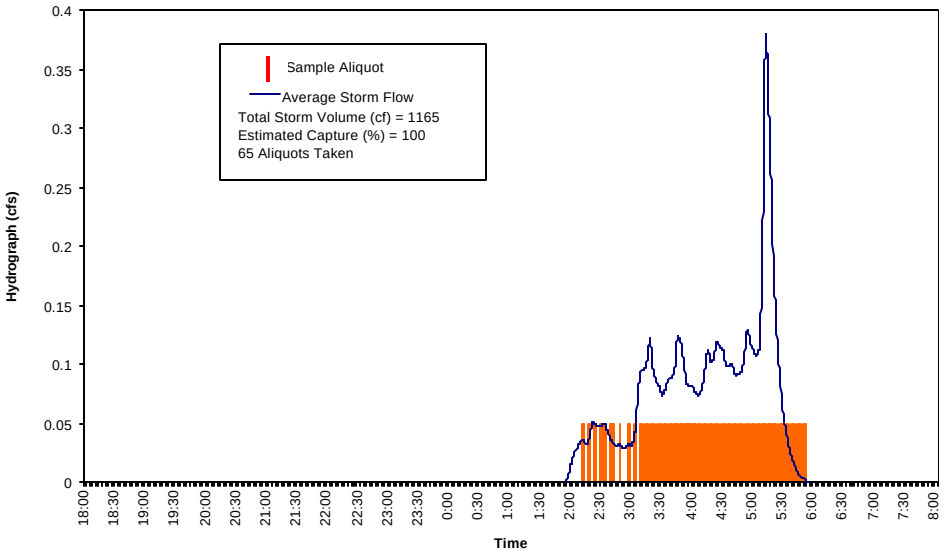


Figure 1-7f: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Cerritos MS Biofiltration Swale for Event 9 on April 7, 2001

Influent



Effluent



Cumulative Rainfall

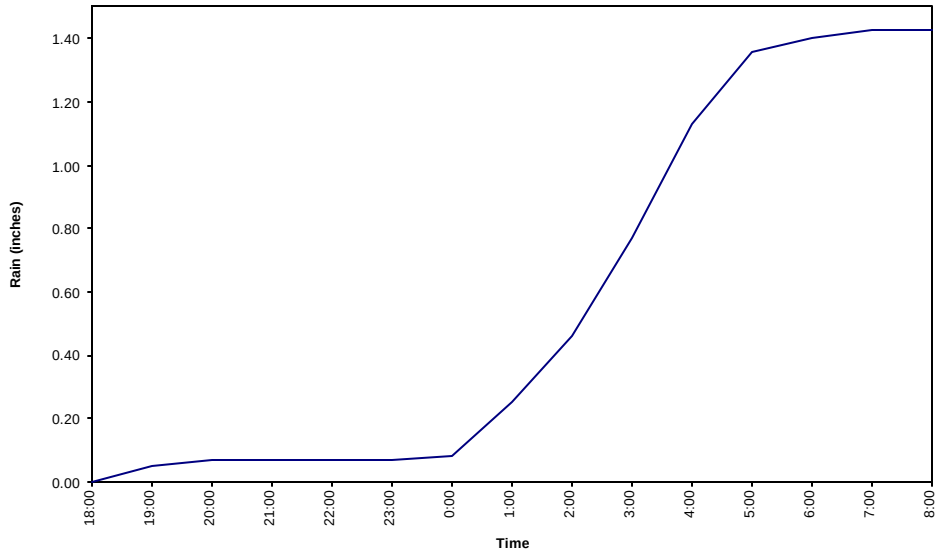
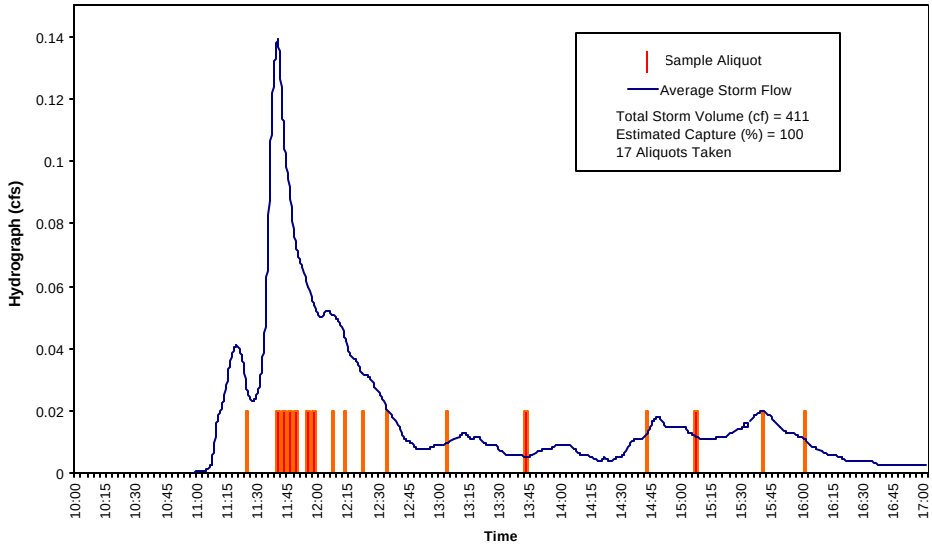
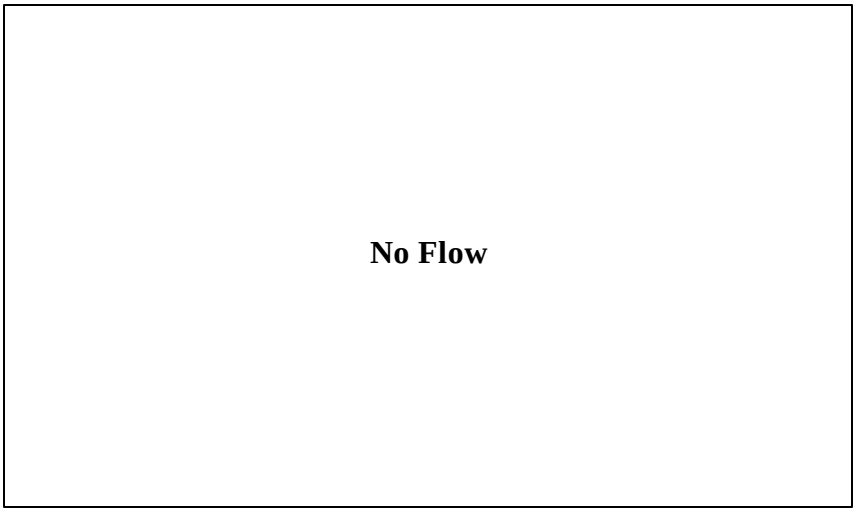


Figure 1-8a: Influent and Effluent Hydrograph, and Cumulative Rainfall at the I-5/I-605 Biofiltration Swale for Event 2 on October 26-27, 2000

Influent



Effluent



Cumulative Rainfall

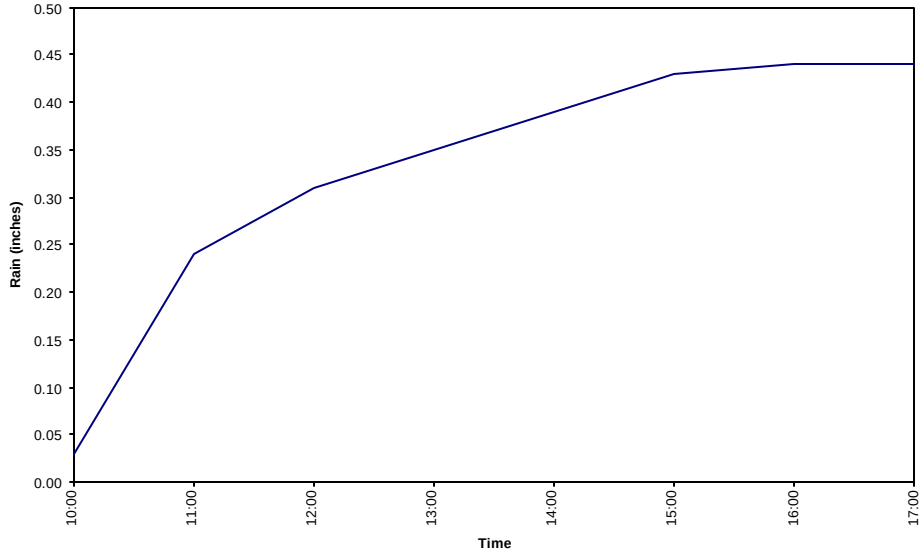
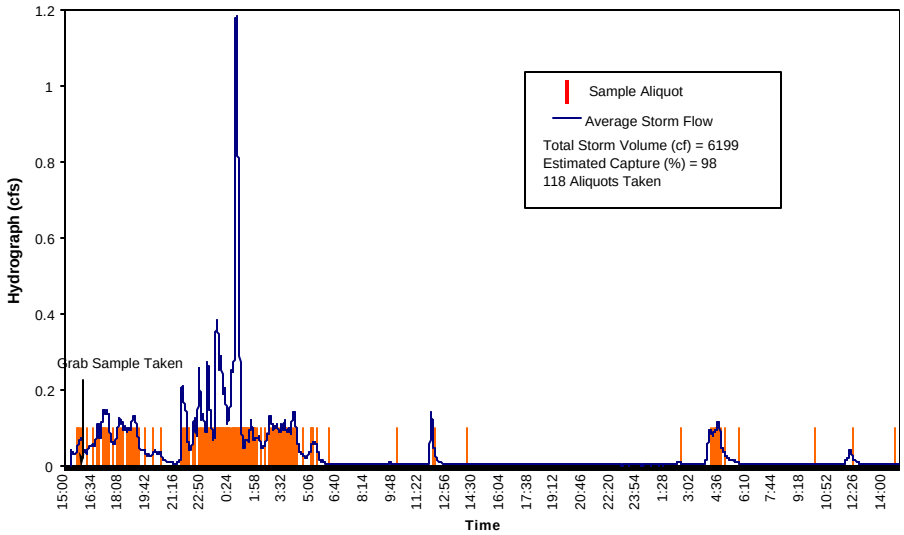
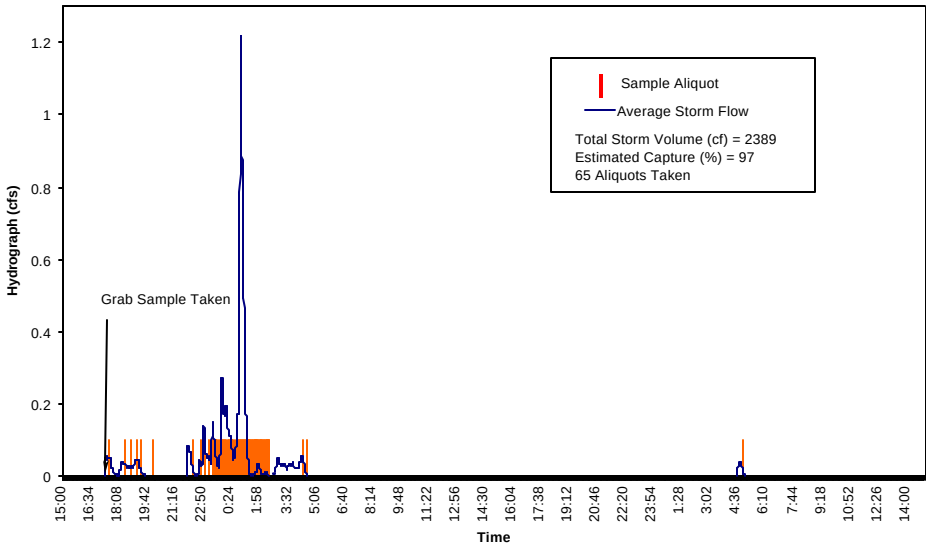


Figure 1-8b: Influent and Effluent Hydrograph, and Cumulative Rainfall at the I-5/I-605 Biofiltration Swale for Event 3 on January 8, 2001

Influent



Effluent



Cumulative Rainfall

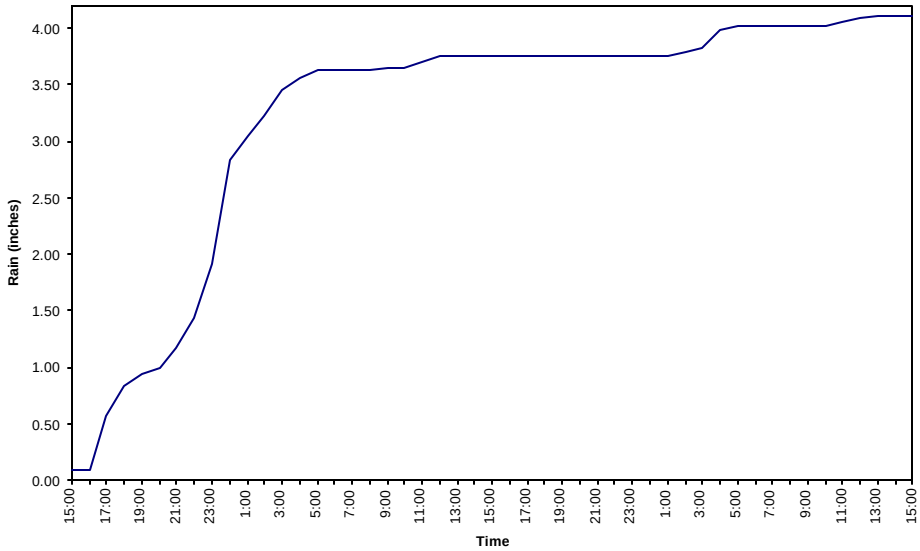
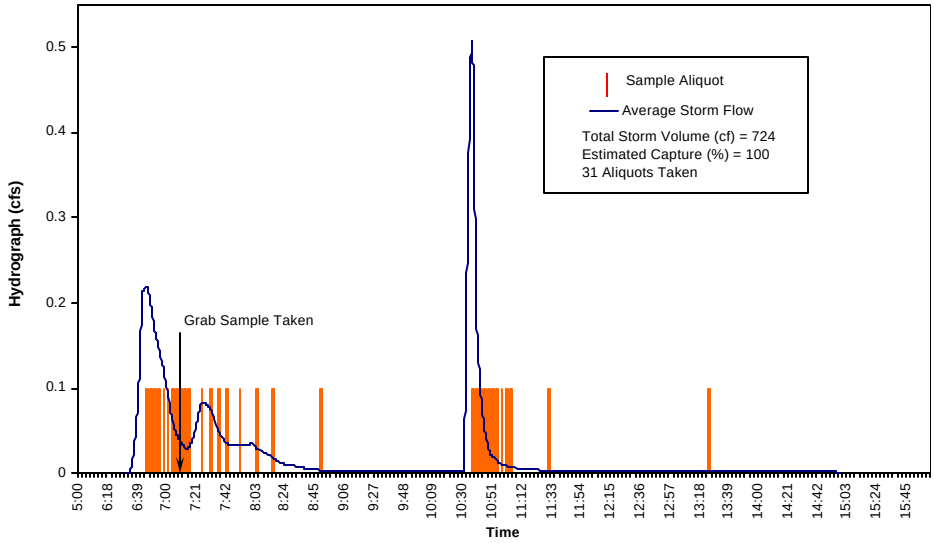
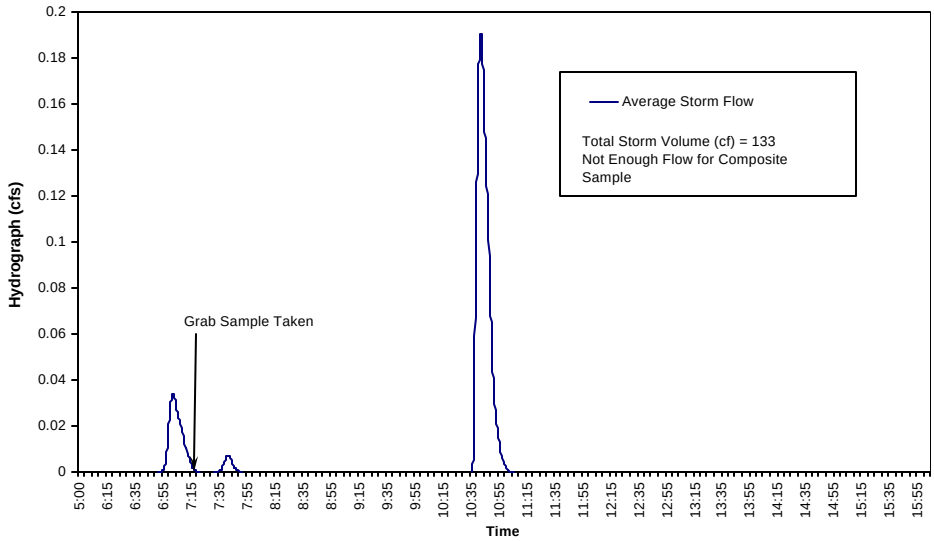


Figure 1-8c: Influent and Effluent Hydrograph, and Cumulative Rainfall at the I-5/I-605 Biofiltration Swale for Event 4 on January 10-12, 2001

Influent



Effluent



Cumulative Rainfall

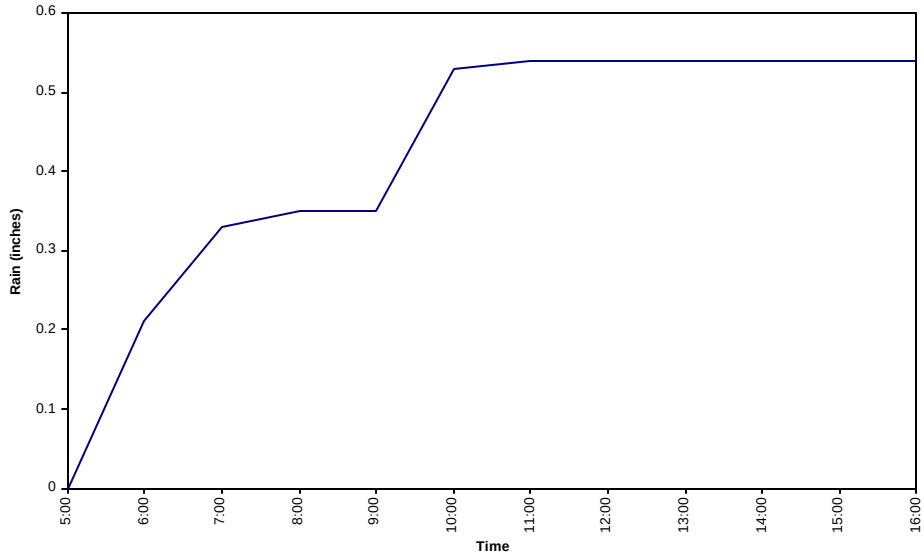
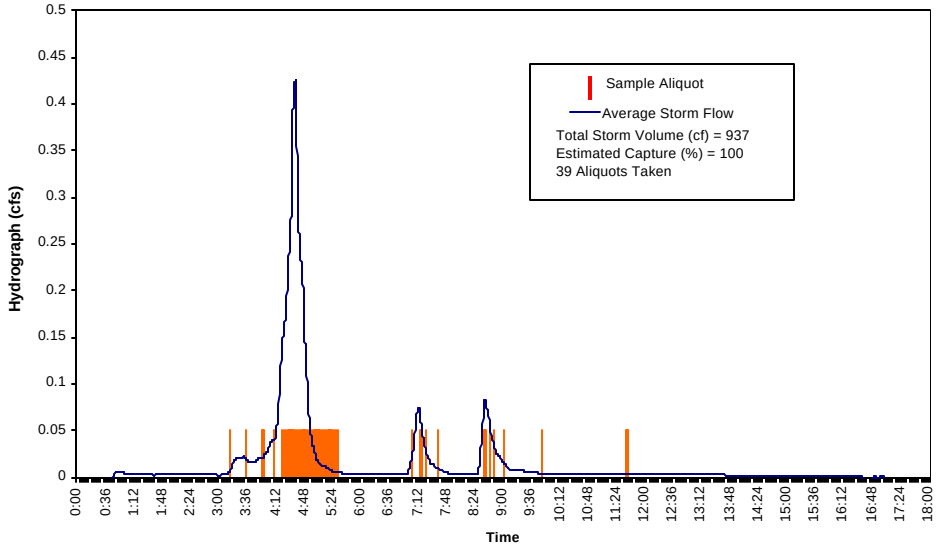
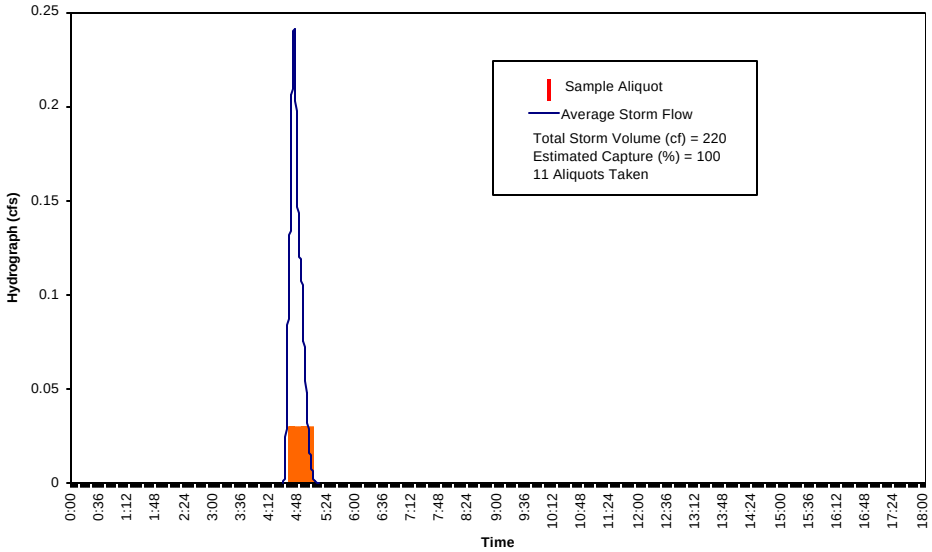


Figure 1-8d: Influent and Effluent Hydrograph, and Cumulative Rainfall at the I-5/I-605 Biofiltration Swale for Event 5 on January 24, 2001

Influent



Effluent



Cumulative Rainfall

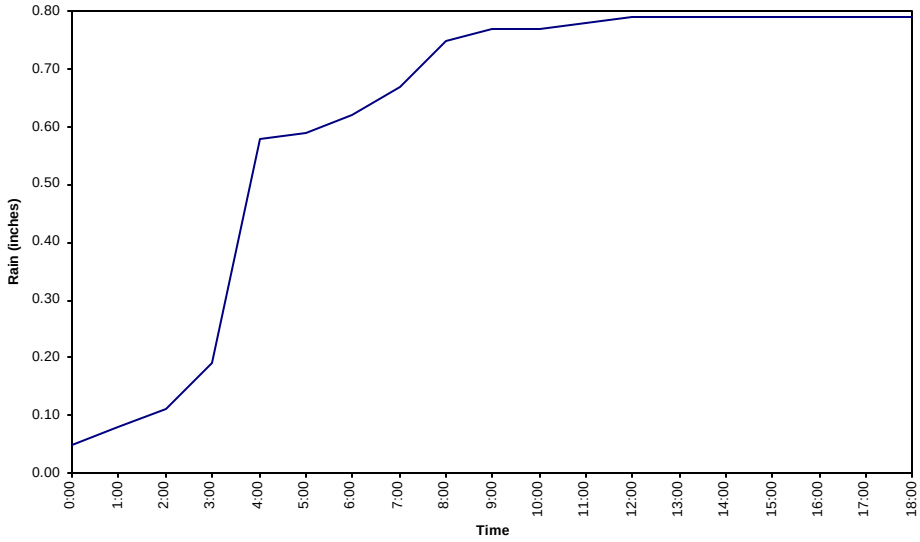
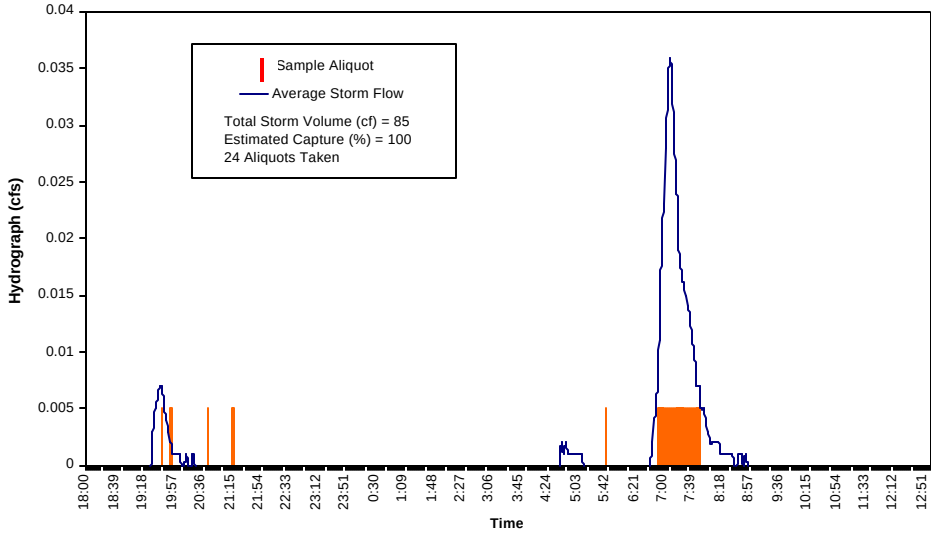
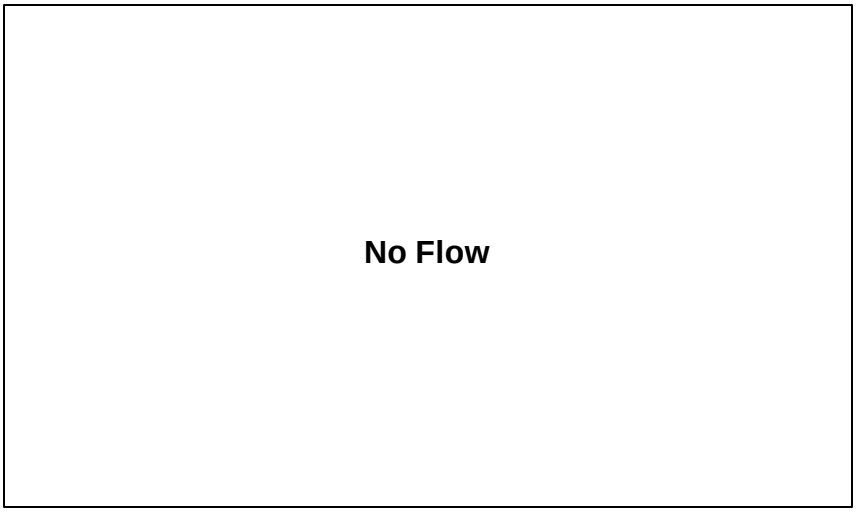


Figure 1-8e: Influent and Effluent Hydrograph, and Cumulative Rainfall at the I-5/I-605 Biofiltration Swale for Event 9 on April 7, 2001

Influent



Effluent



Cumulative Rainfall

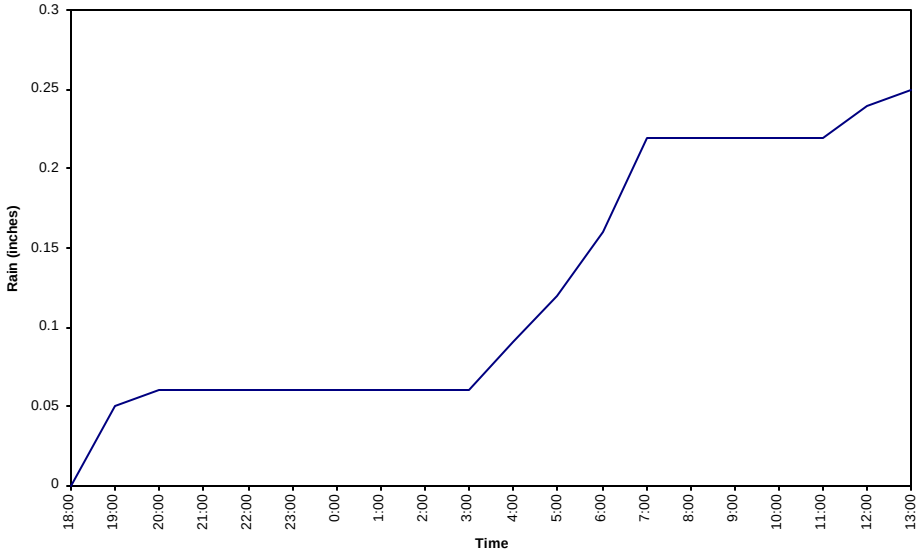
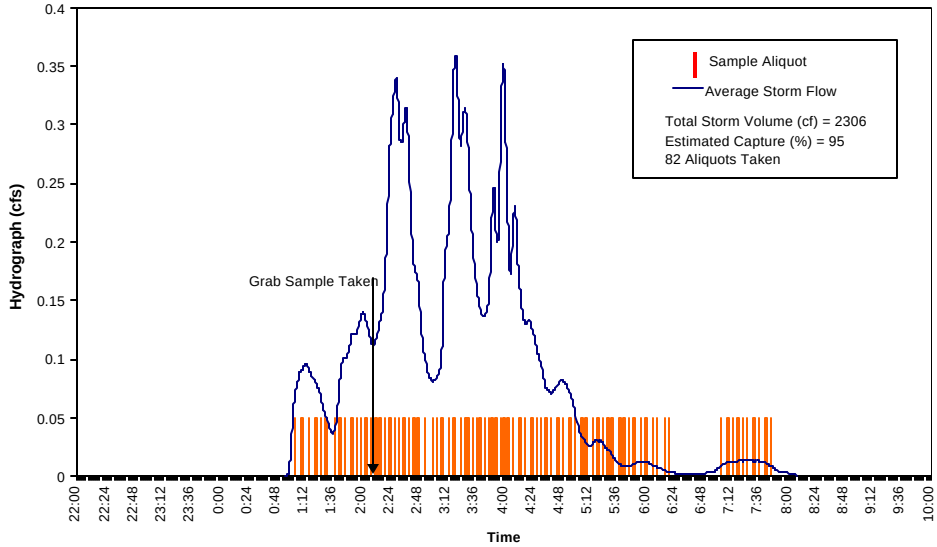
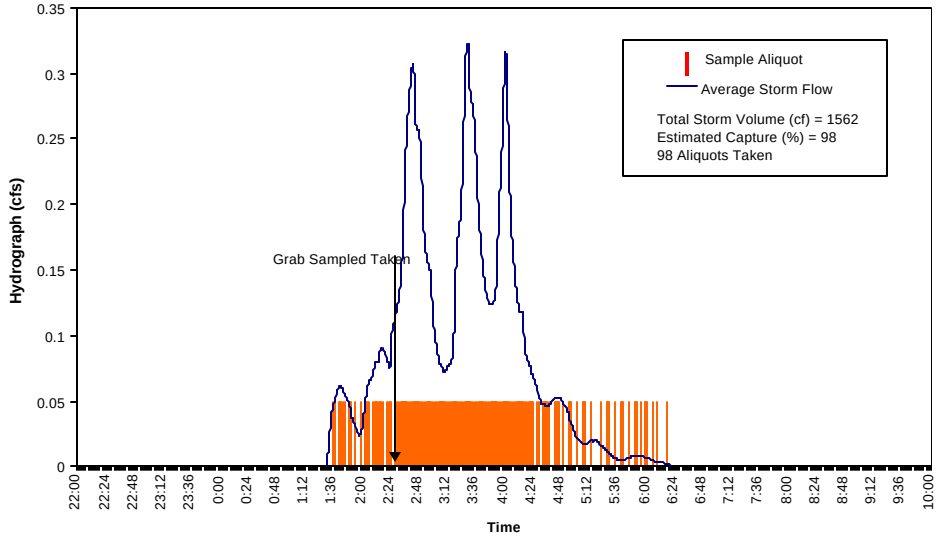


Figure 1-9a: Influent and Effluent Hydrograph, and Cumulative Rainfall at the I-605 at Carson Biofiltration Swale for Event 1 on October 10-11, 2000

Influent



Effluent



Cumulative Rainfall

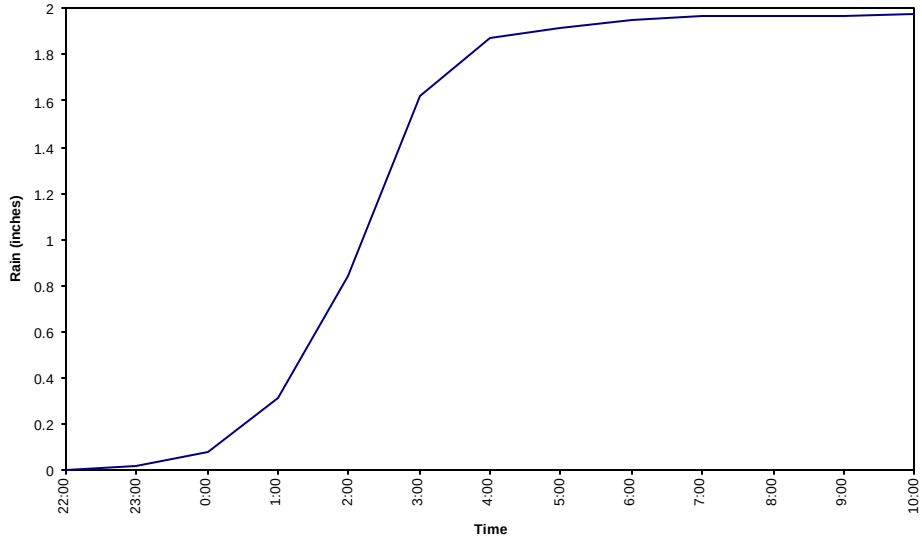
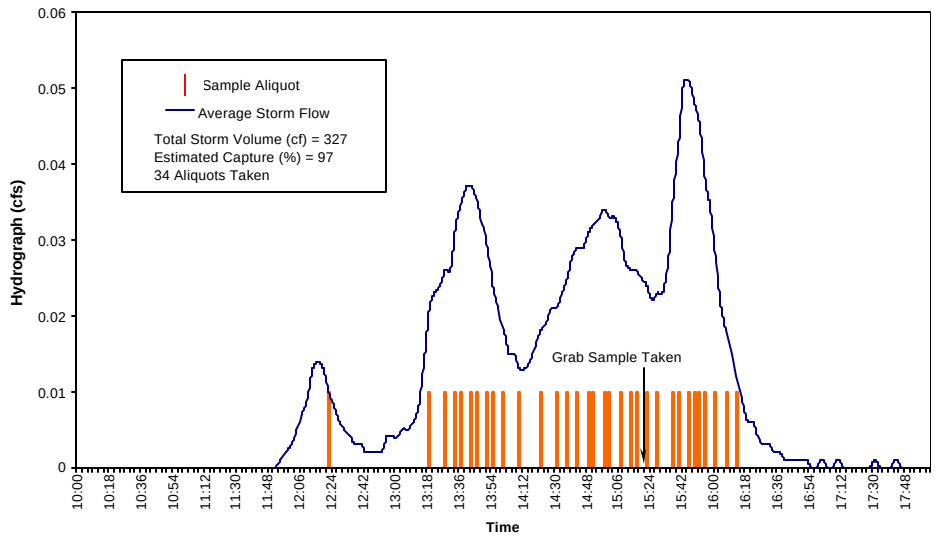
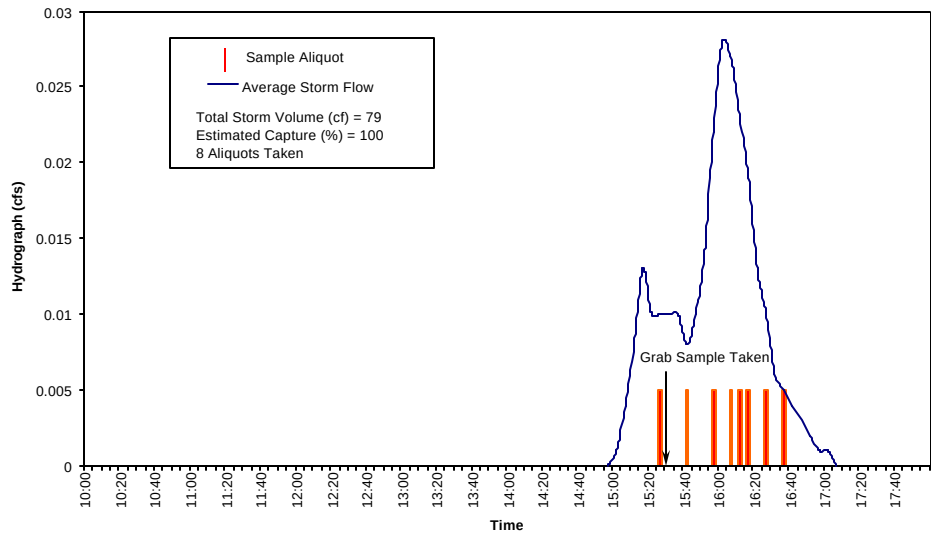


Figure 1-9b: Influent and Effluent Hydrograph, and Cumulative Rainfall at the I-605 at Carson Biofiltration Swale for Event 2 on October 26-27, 2000

Influent



Effluent



Cumulative Rainfall

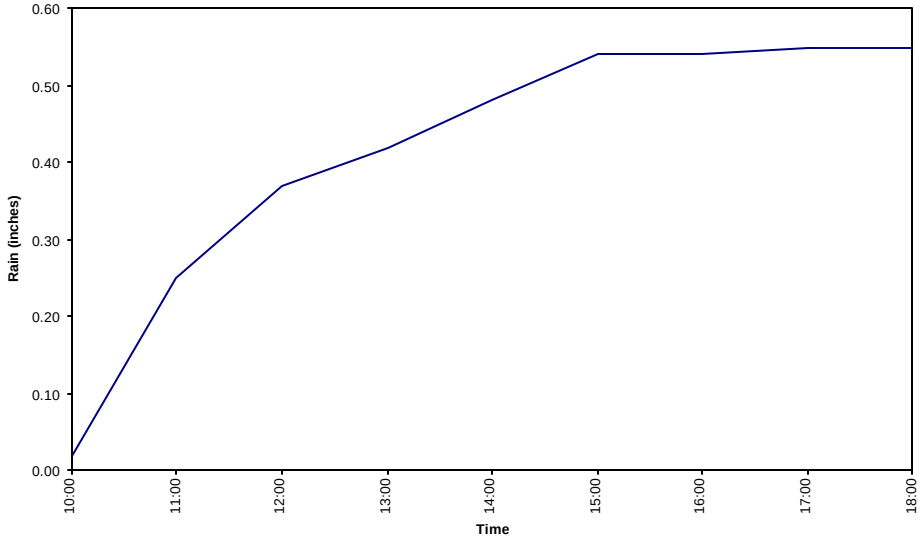
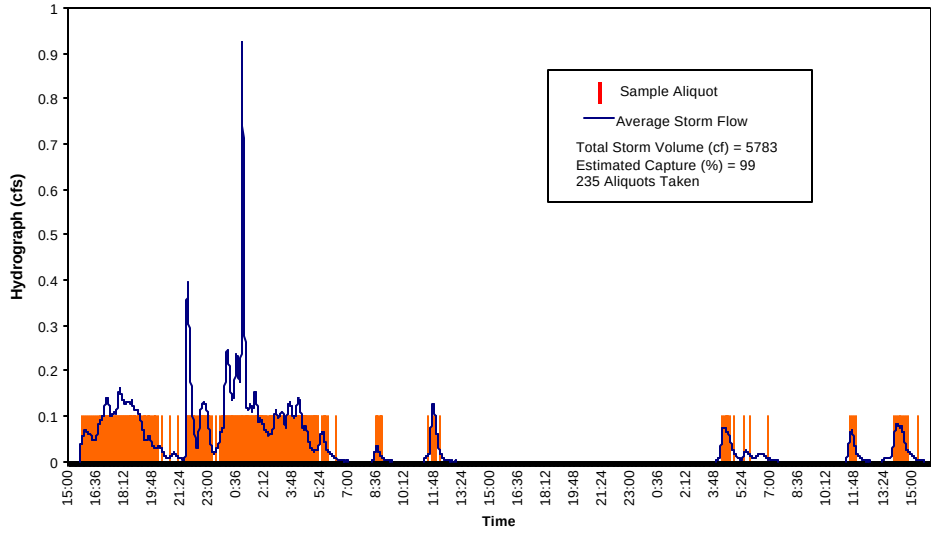
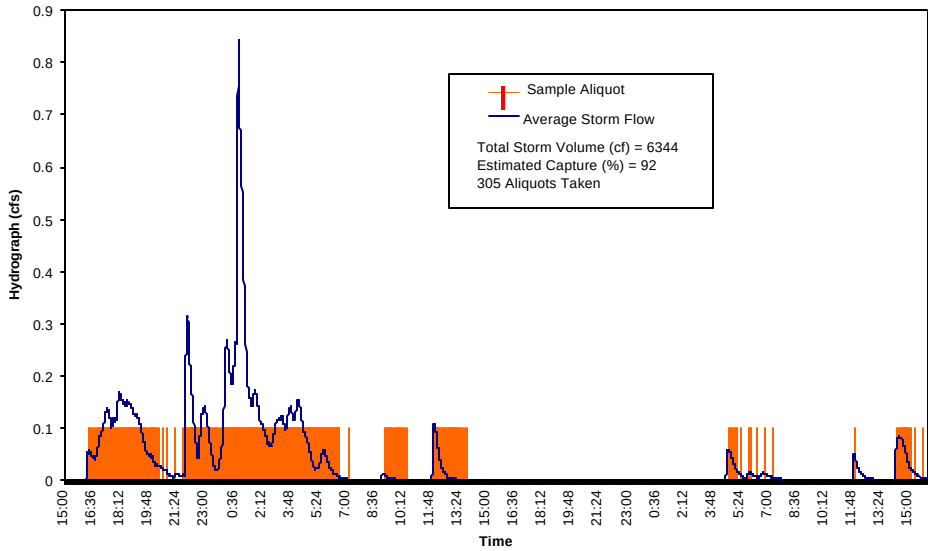


Figure 1-9c: Influent and Effluent Hydrograph, and Cumulative Rainfall at the I-605 at Carson Biofiltration Swale for Event 3 on January 8, 2001

Influent



Effluent



Cumulative Rainfall

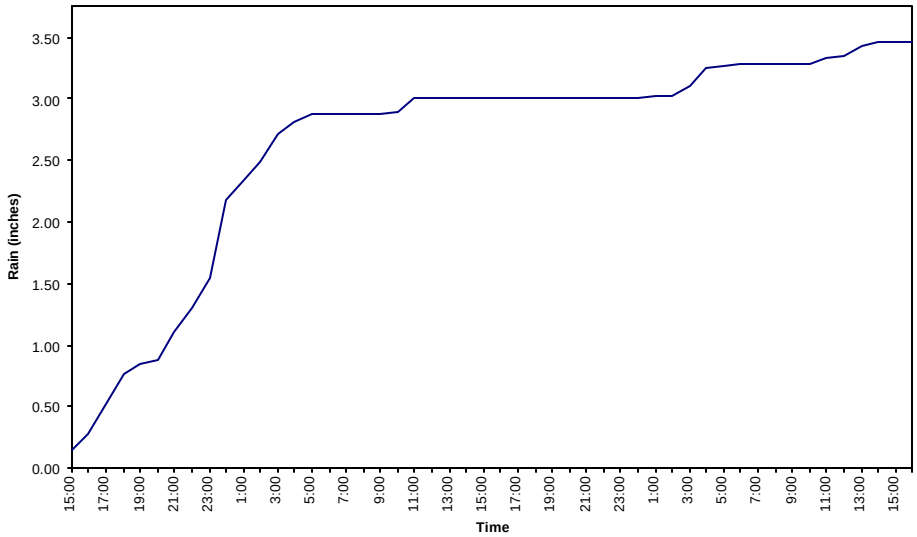
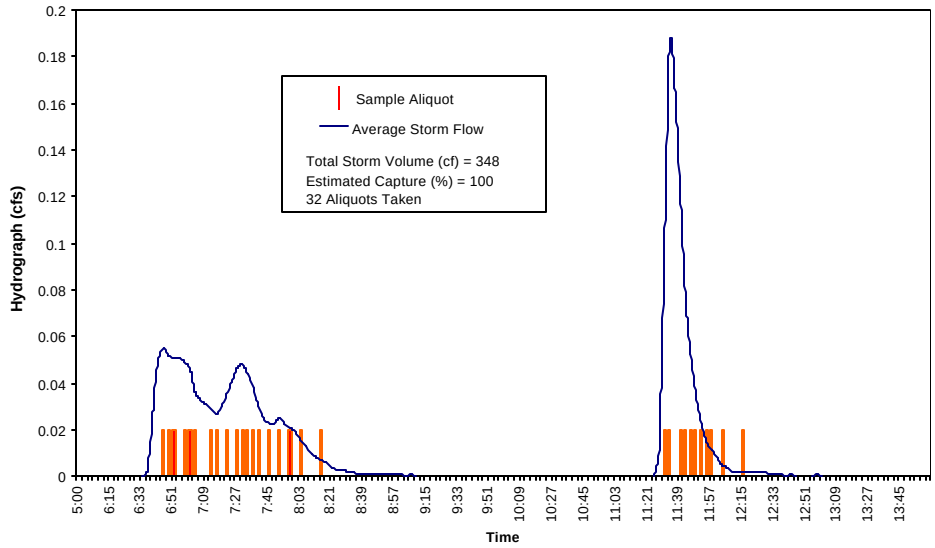
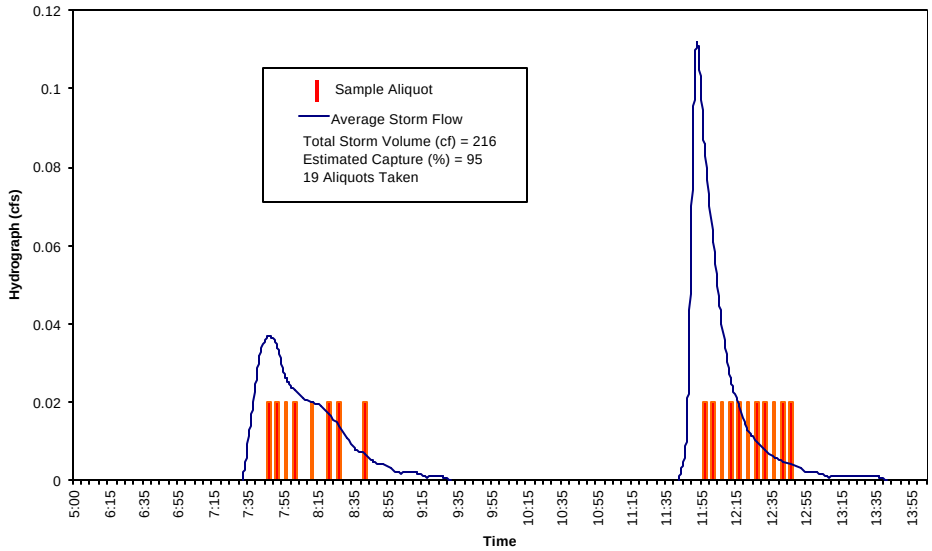


Figure 1-9d: Influent and Effluent Hydrograph, and Cumulative Rainfall at the I-605 at Carson Biofiltration Swale for Event 4 on January 10-12, 2001

Influent



Effluent



Cumulative Rainfall

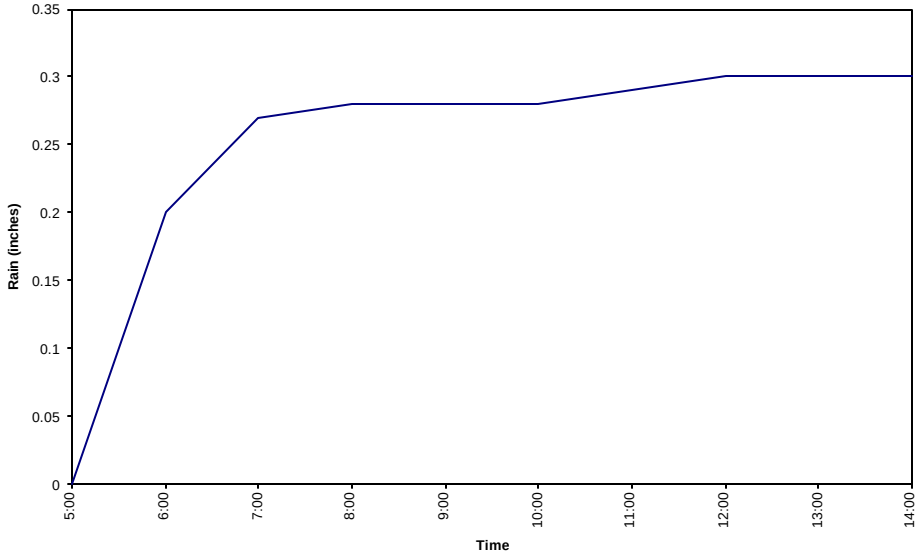
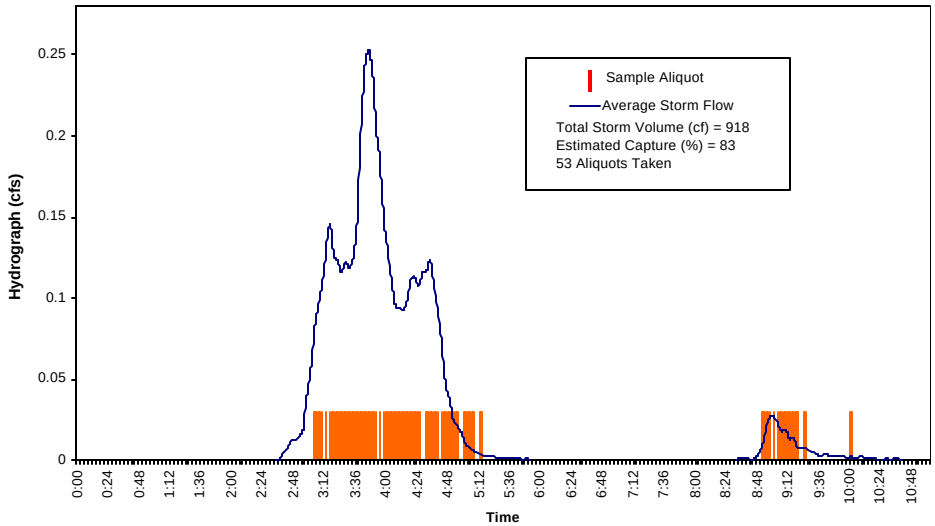
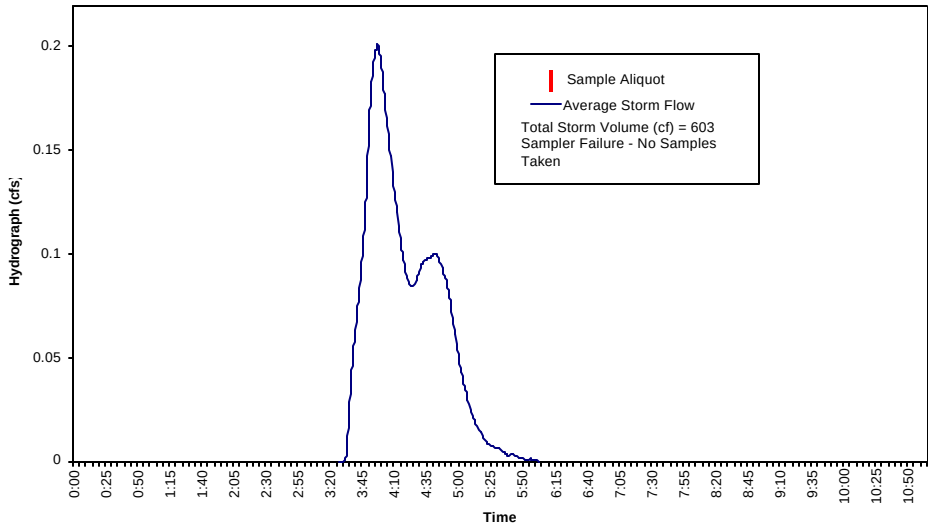


Figure 1-9e: Influent and Effluent Hydrograph, and Cumulative Rainfall at the I-605 at Carson Biofiltration Swale for Event 5 on January 24, 2001

Influent



Effluent



Cumulative Rainfall

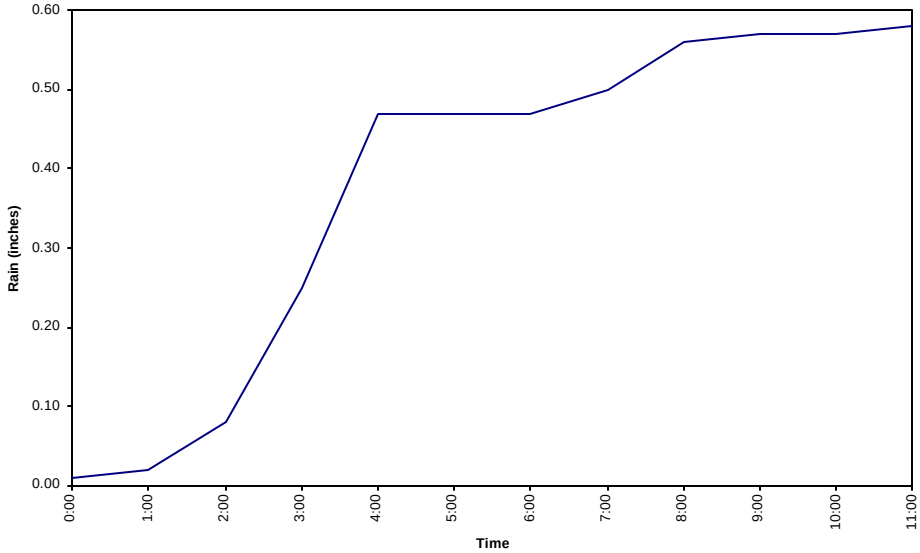
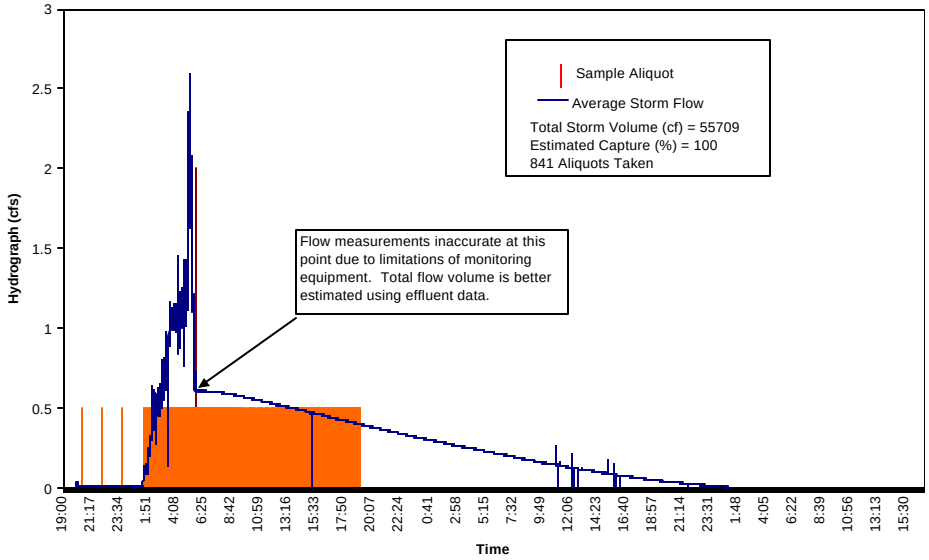
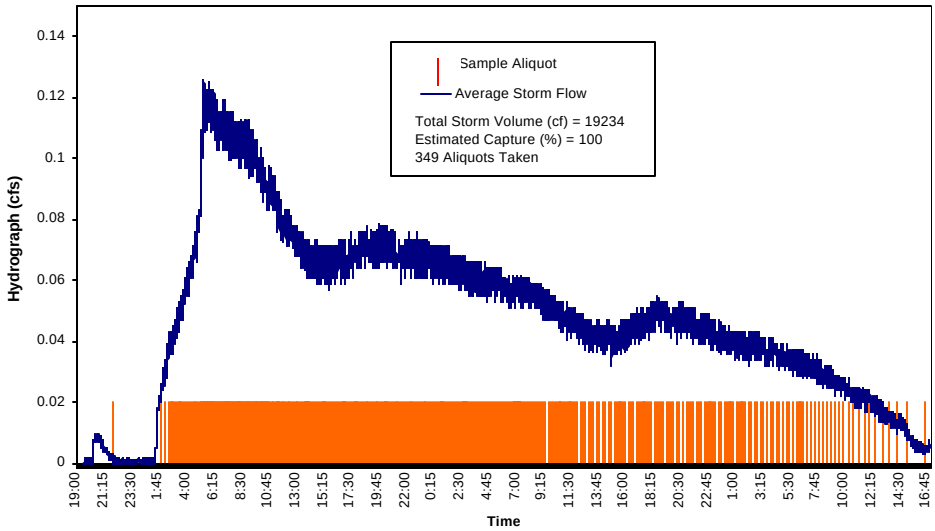


Figure 1-9f: Influent and Effluent Hydrograph, and Cumulative Rainfall at the I-605 at Carson Biofiltration Swale for Event 9 on April 7, 2001

Influent



Effluent



Cumulative Rainfall

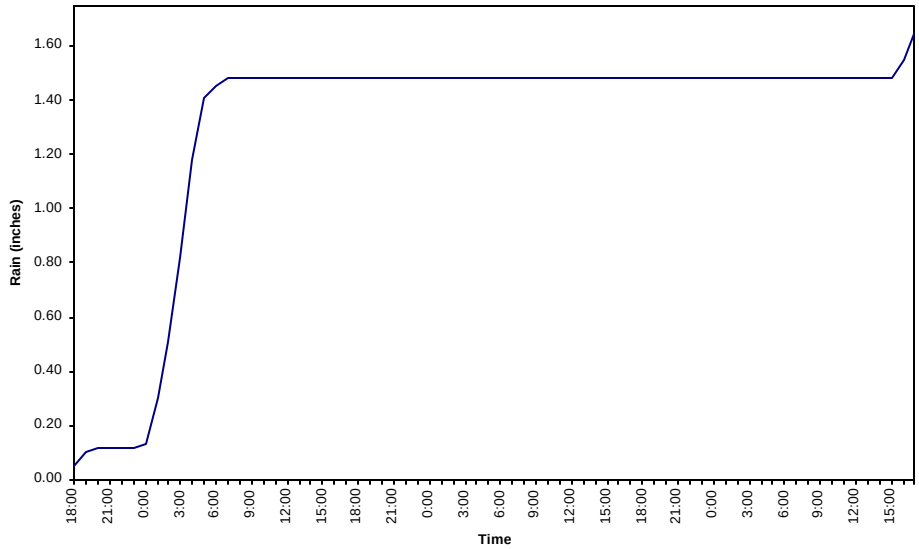
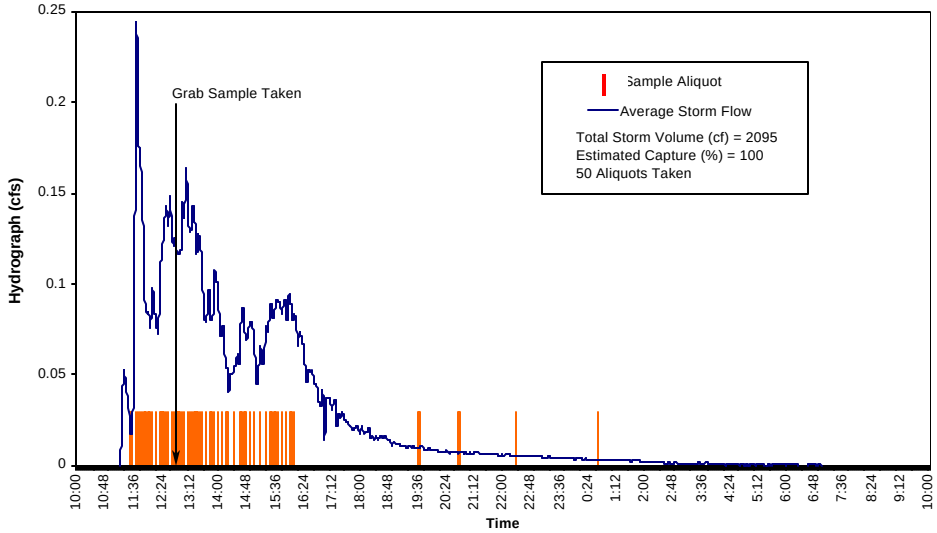
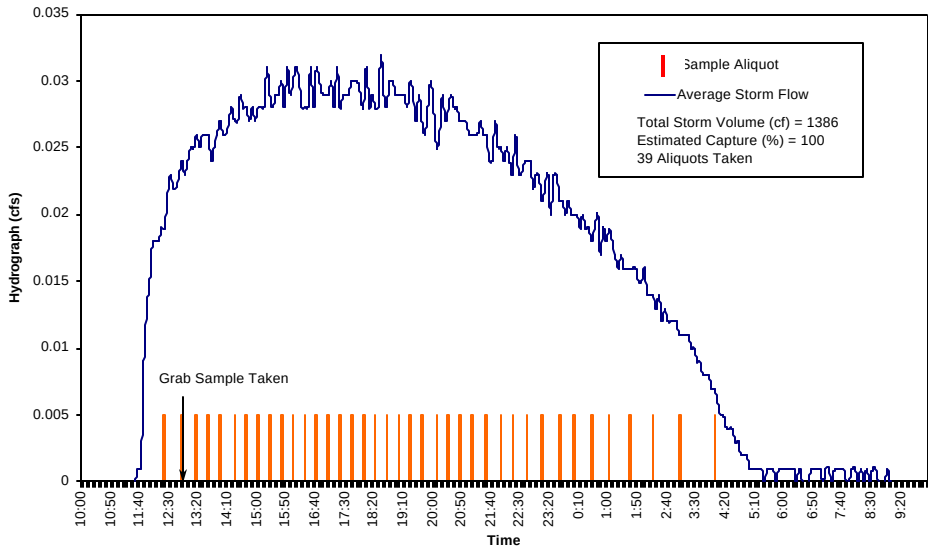


Figure 1-10a: Influent and Effluent Hydrograph, and Cumulative Rainfall at the I-5/I-605 Extended Detention Basin for Event 2 on October 26-29, 2000

Influent



Effluent



Cumulative Rainfall

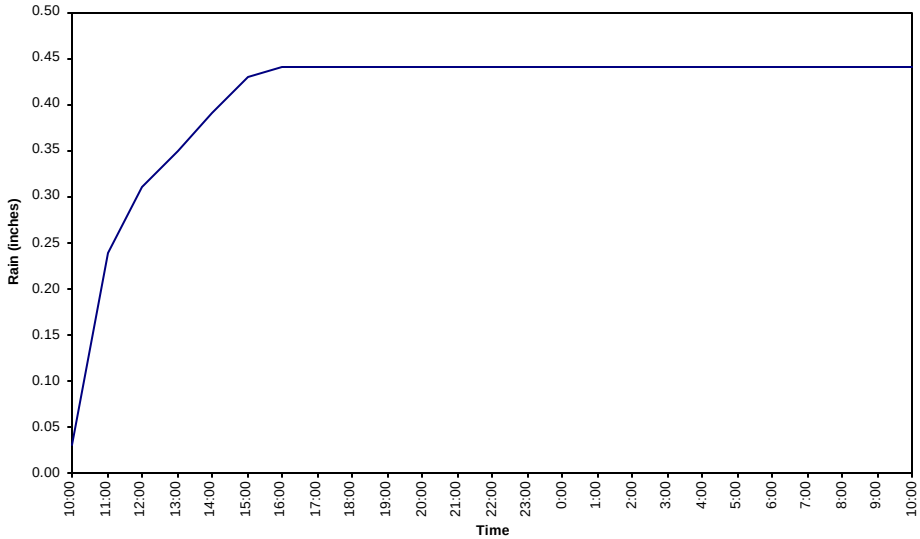
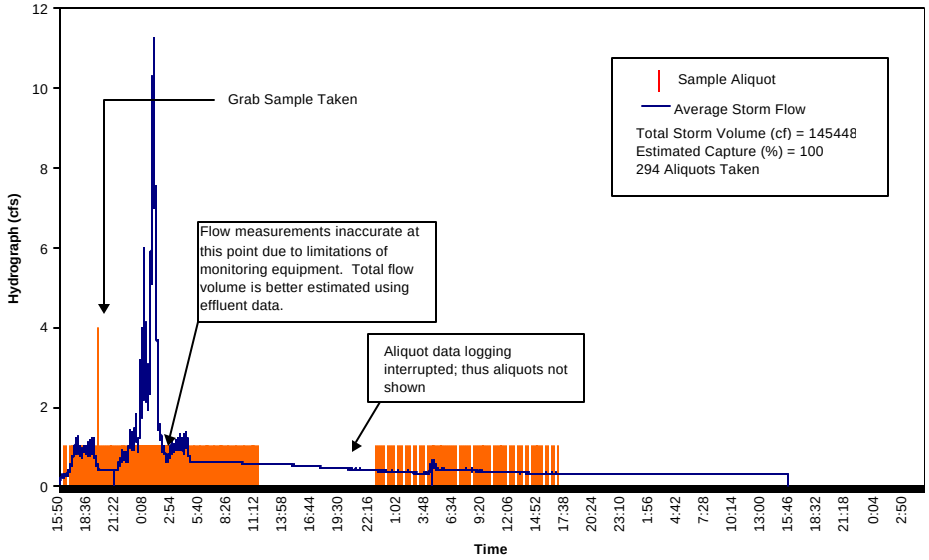
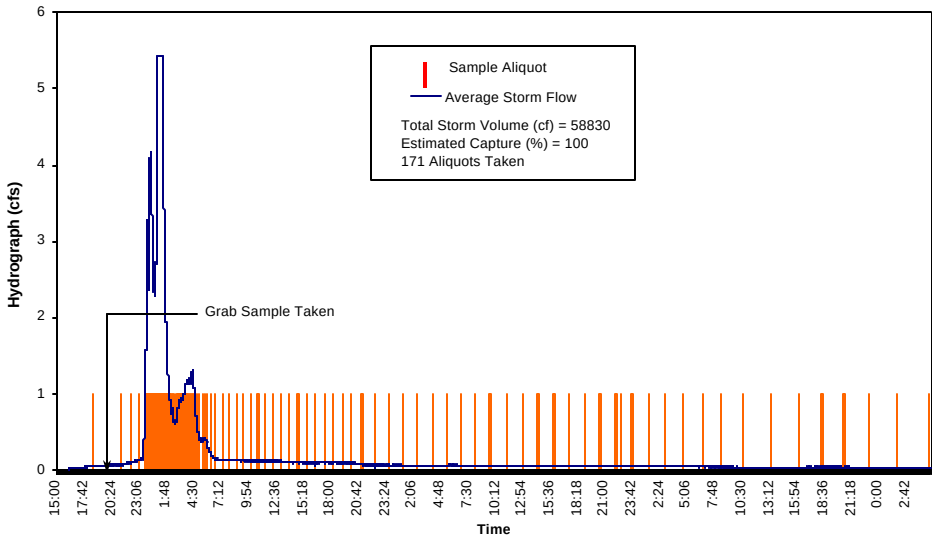


Figure 1-10b: Influent and Effluent Hydrograph, and Cumulative Rainfall at the I-5/I-605 Extended Detention Basin for Event 3 on January 8-9, 2001

Influent



Effluent



Cumulative Rainfall

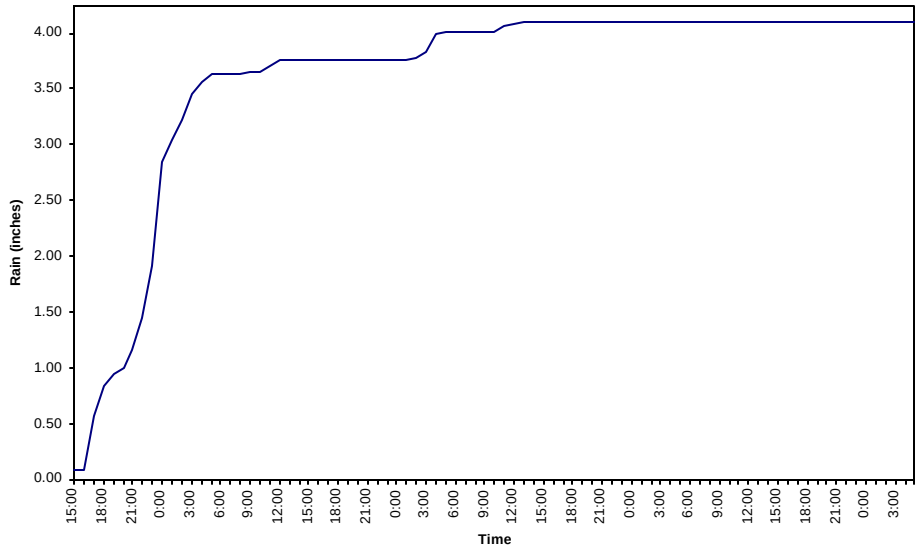
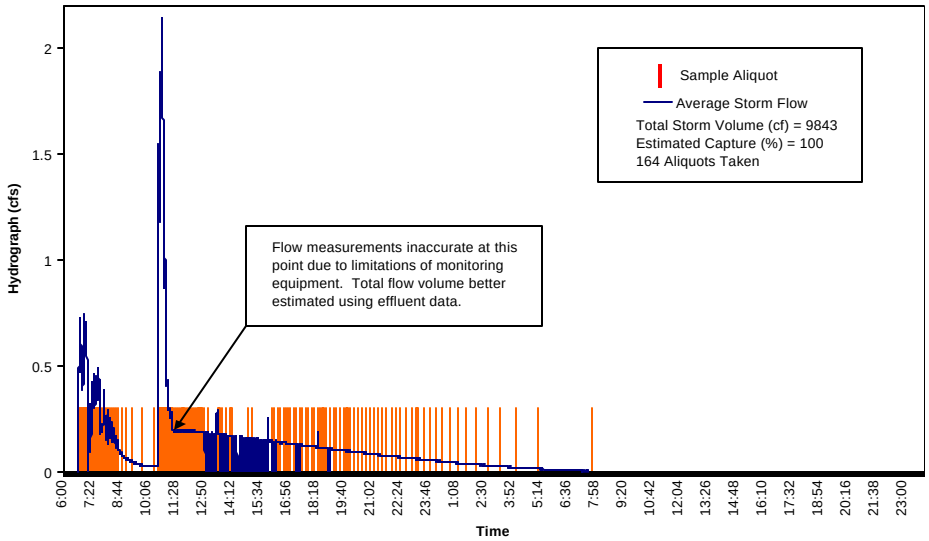
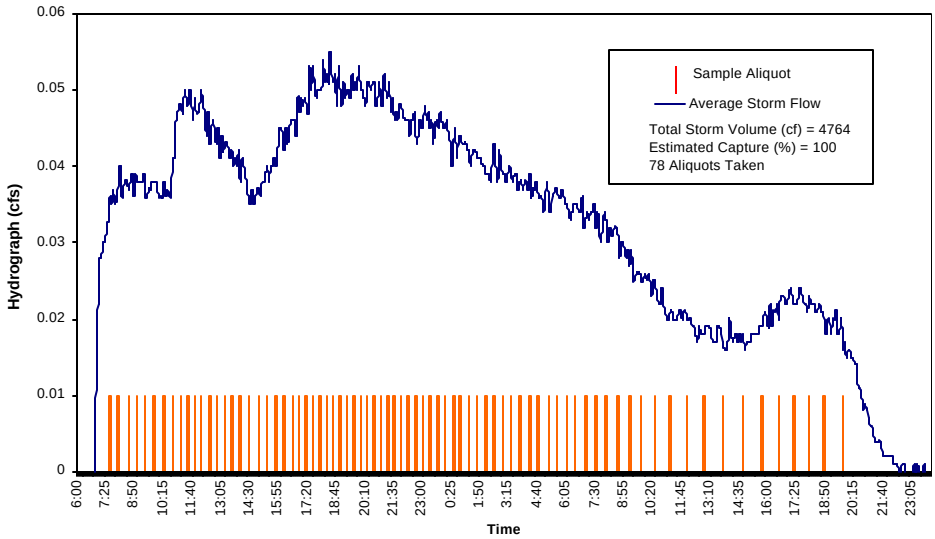


Figure 1-10c: Influent and Effluent Hydrograph, and Cumulative Rainfall at the I-5/I-605 Extended Detention Basin for Event 4 on January 10-14, 2001

Influent



Effluent



Cumulative Rainfall

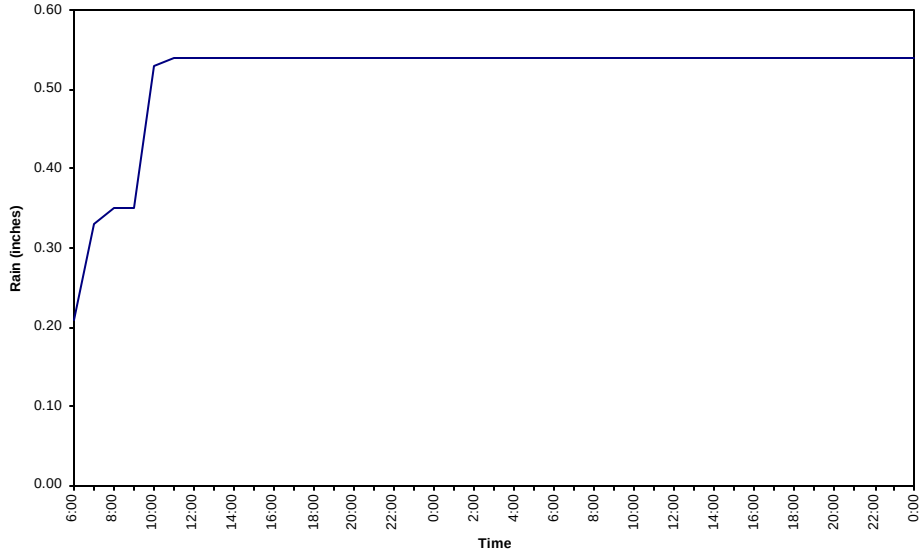
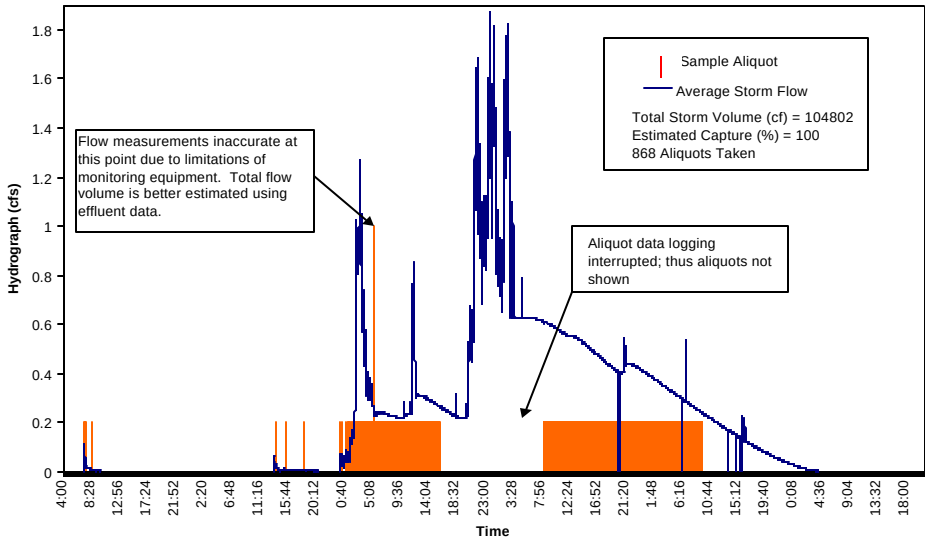
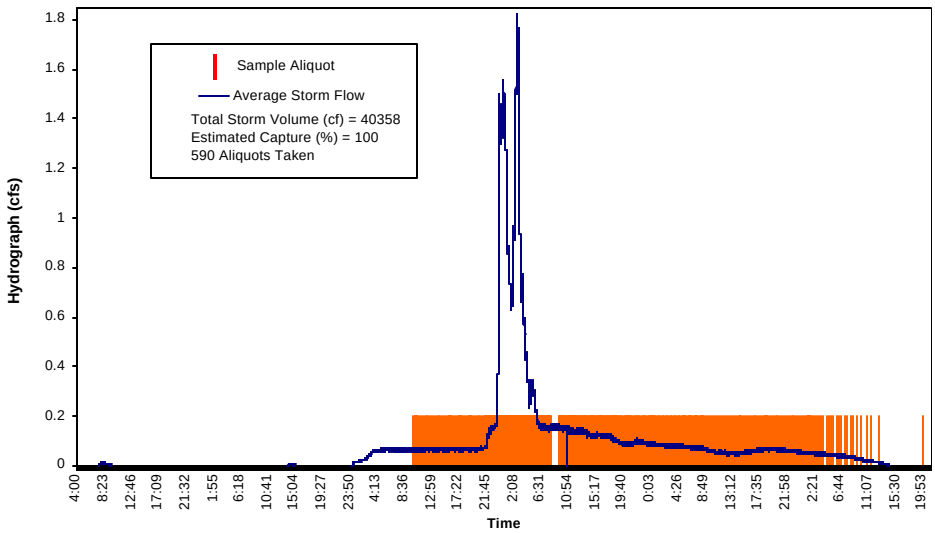


Figure 1-10d: Influent and Effluent Hydrograph, and Cumulative Rainfall at the I-5/I-605 Extended Detention Basin for Event 5 on January 24-25, 2001

Influent



Effluent



Cumulative Rainfall

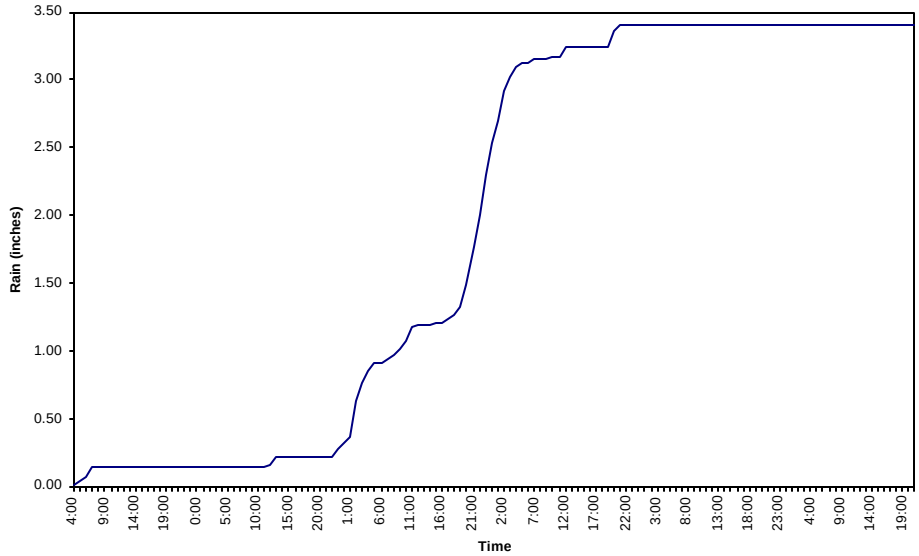
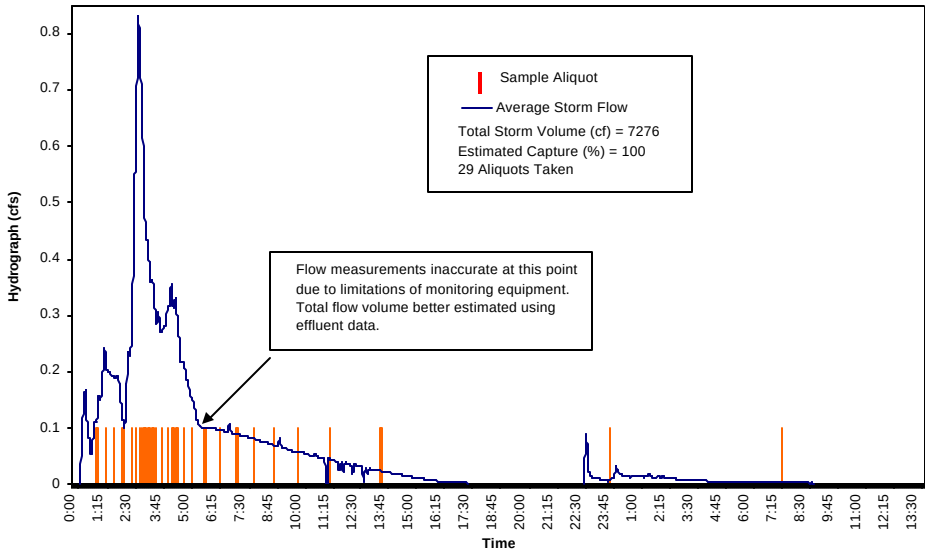
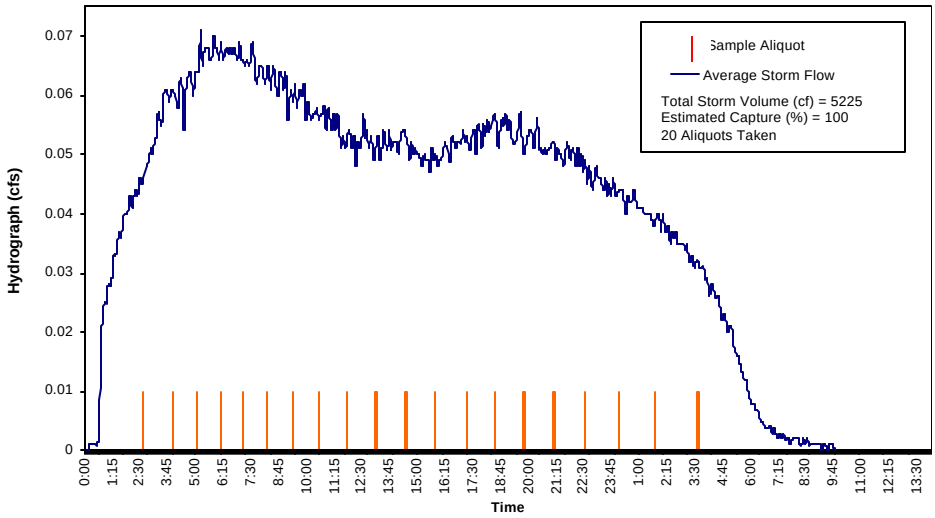


Figure 1-10e: Influent and Effluent Hydrograph, and Cumulative Rainfall at the I-5/I-605 Extended Detention Basin for Event 6 on February 10-15, 2001

Influent



Effluent



Cumulative Rainfall

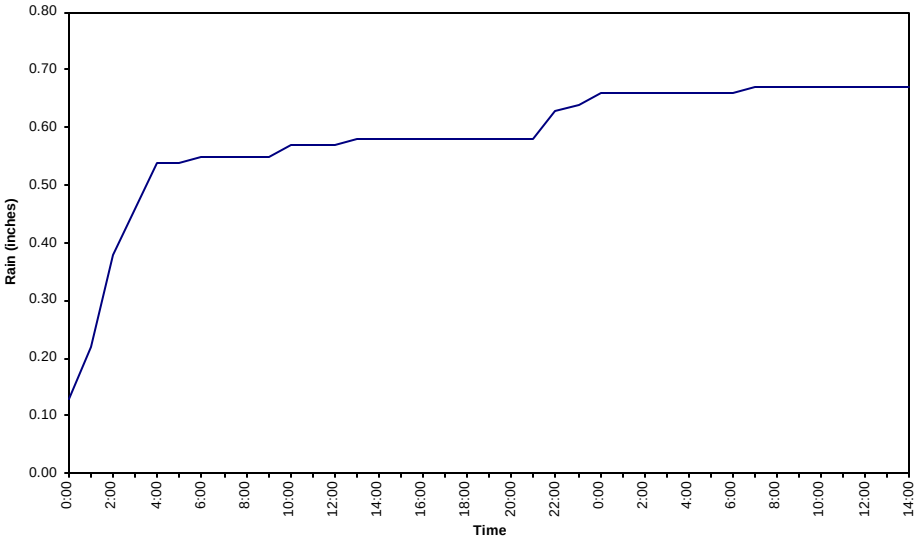
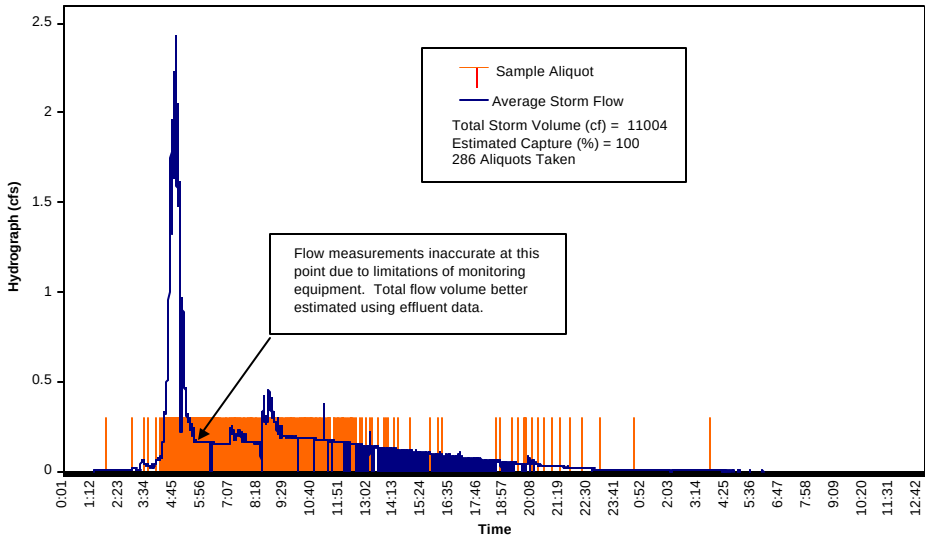
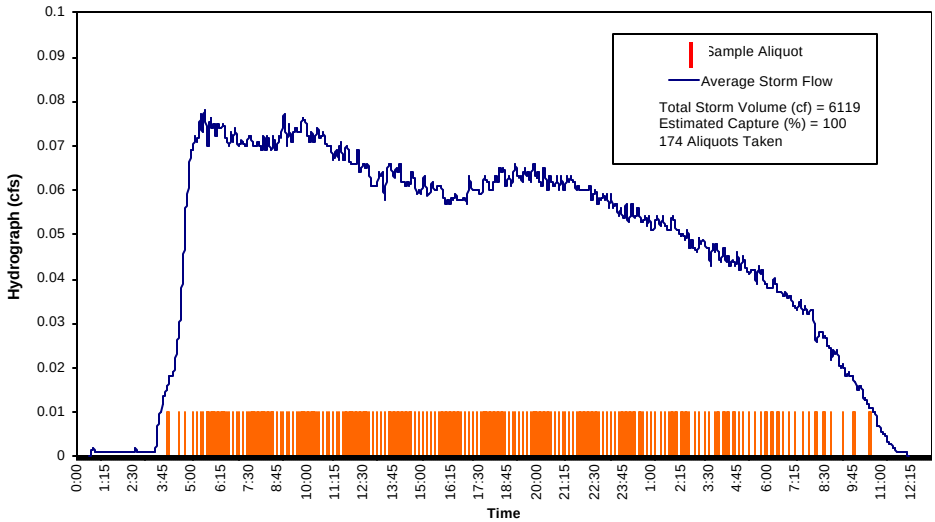


Figure 1-10f: Influent and Effluent Hydrograph, and Cumulative Rainfall at the I-5/I-605 Extended Detention Basin for Event 8 on March 6-7, 2001

Influent



Effluent



Cumulative Rainfall

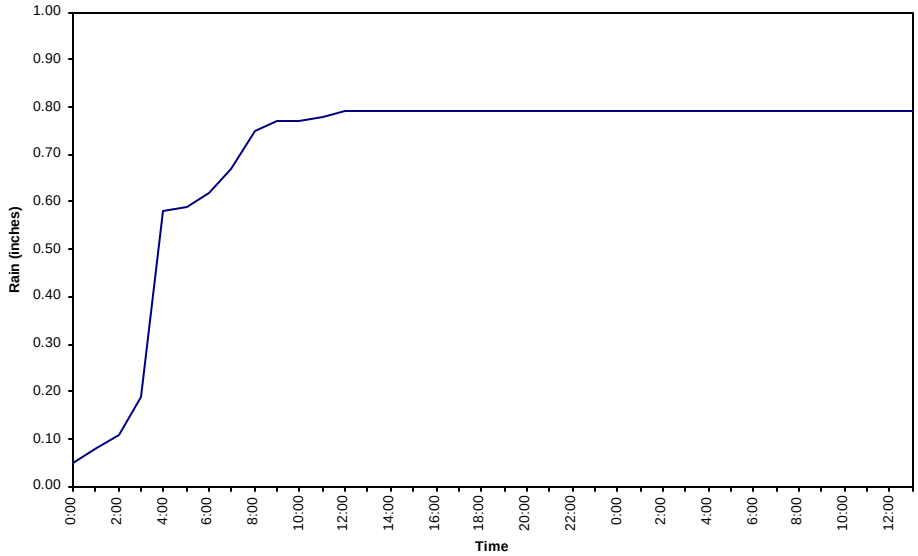
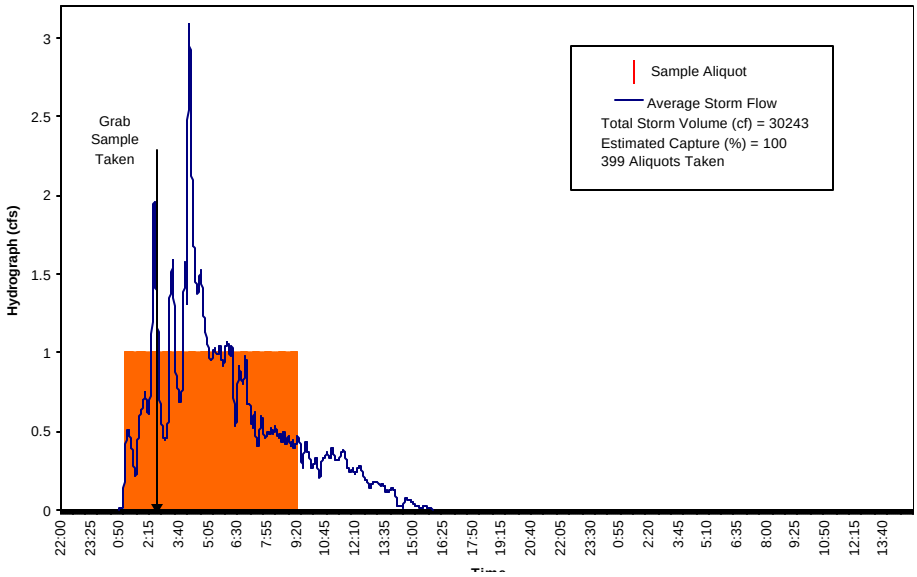
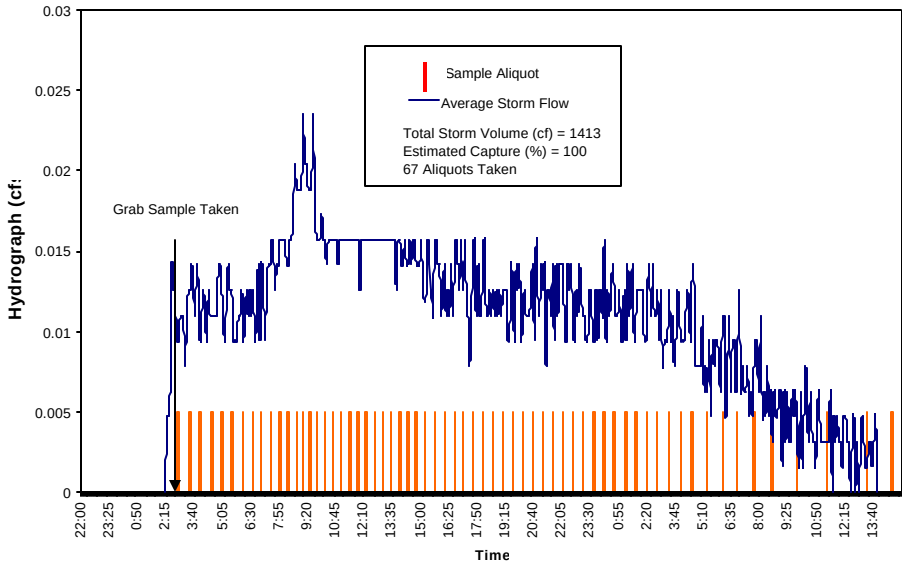


Figure 1-10g: Influent and Effluent Hydrograph, and Cumulative Rainfall at the I-5/I-605 Extended Detention Basin for Event 9 on April 7-8, 2001

Influent



Effluent



Cumulative Rainfall

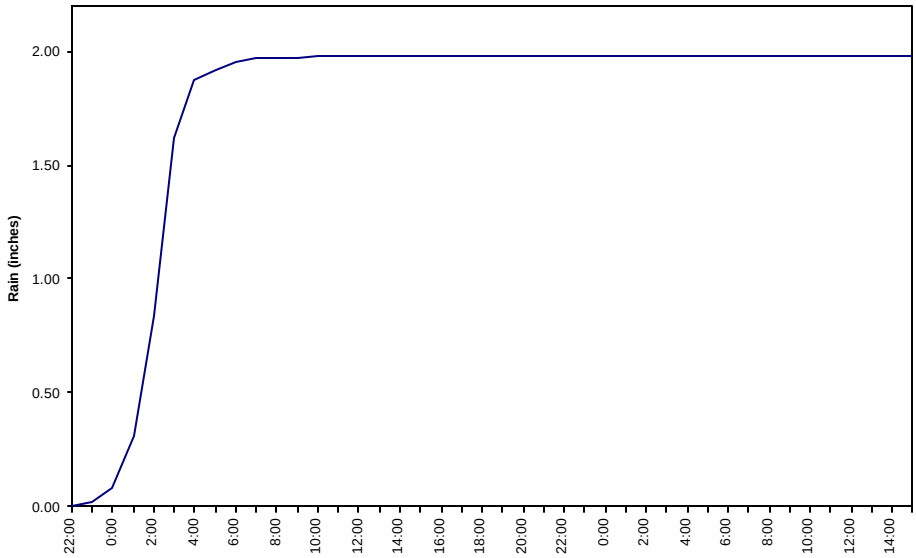
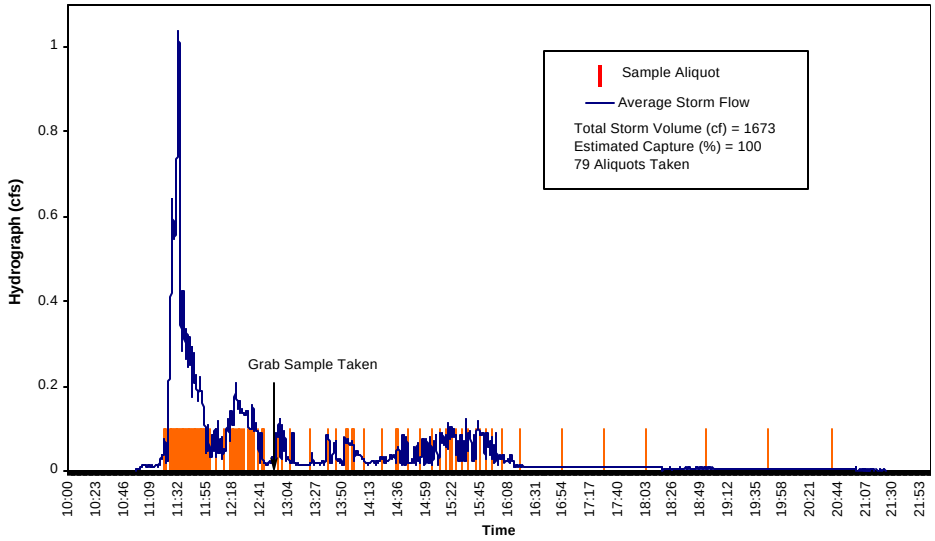
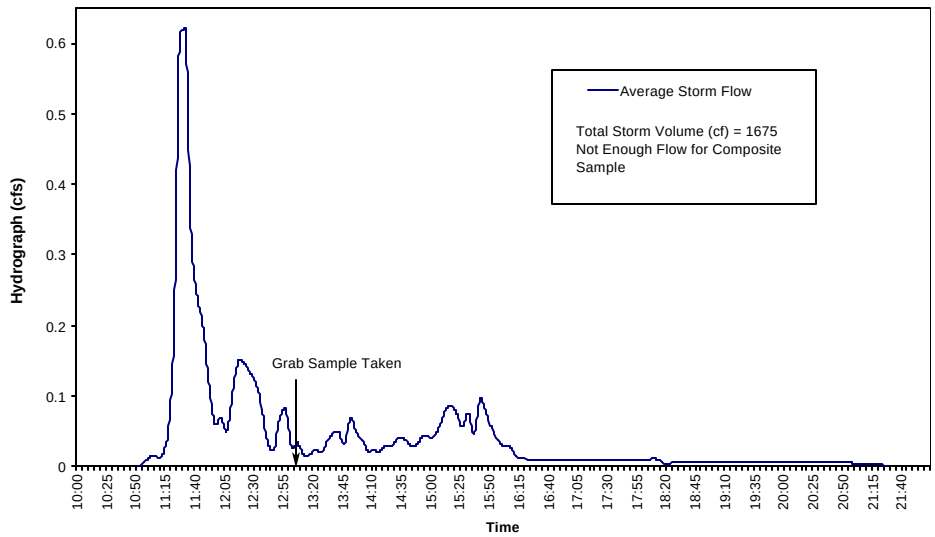


Figure 1-11a: Influent and Effluent Hydrograph, and Cumulative Rainfall at the I-605/SR-91 Extended Detention Basin for Event 2 on October 26-27, 2000

Influent



Effluent



Cumulative Rainfall

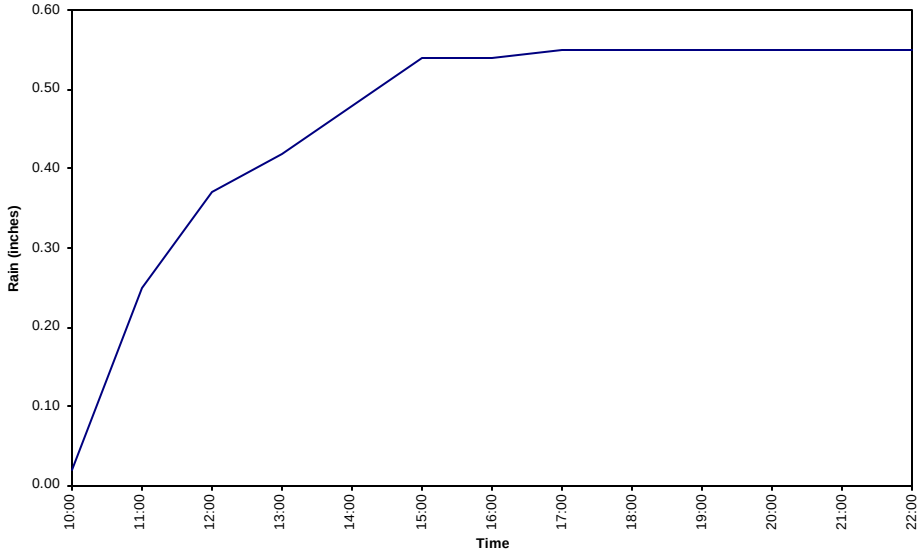
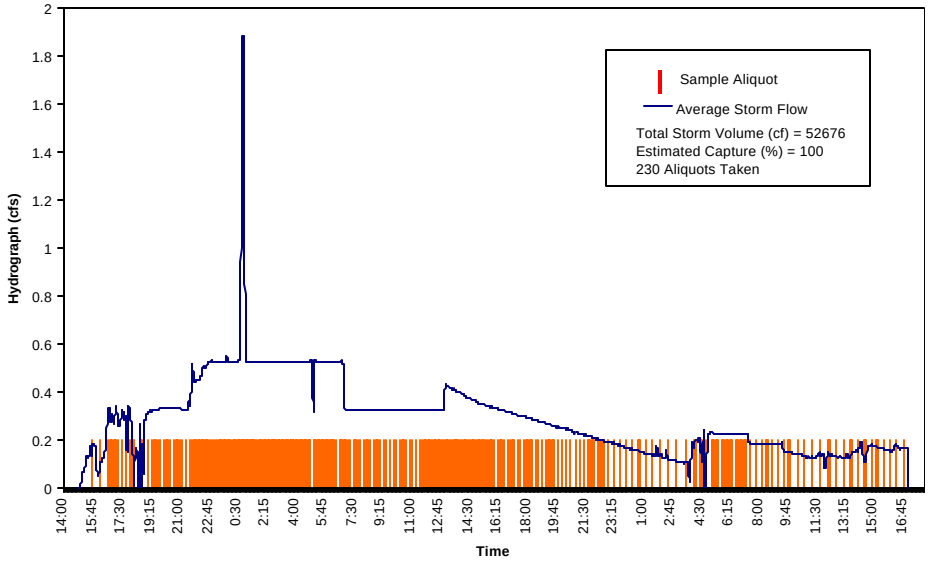
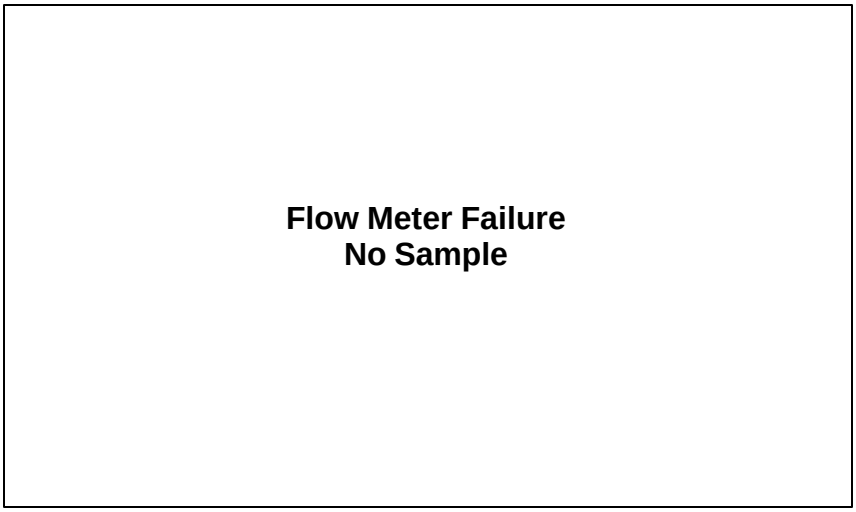


Figure 1-11b: Influent and Effluent Hydrograph, and Cumulative Rainfall at the I-605/SR-91 Extended Detention Basin for Event 3 on January 8, 2001

Influent



Effluent



Cumulative Rainfall

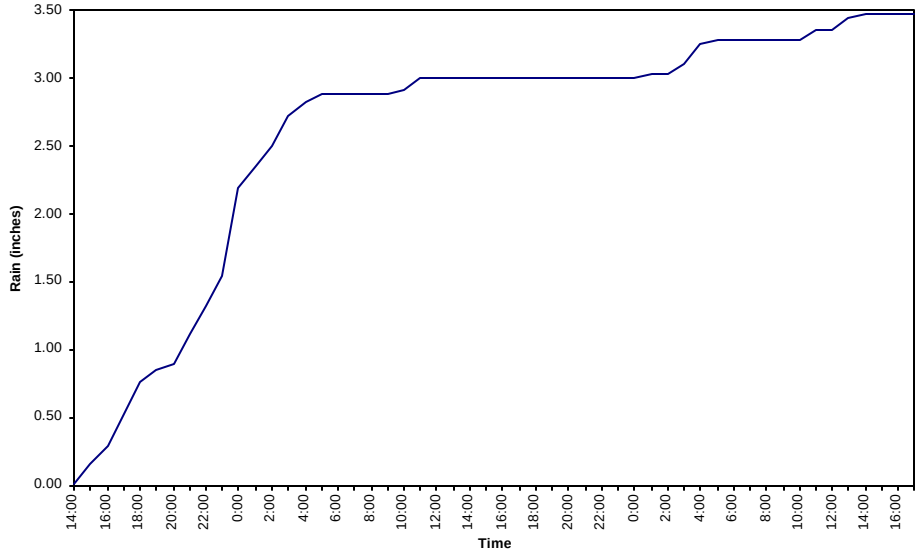
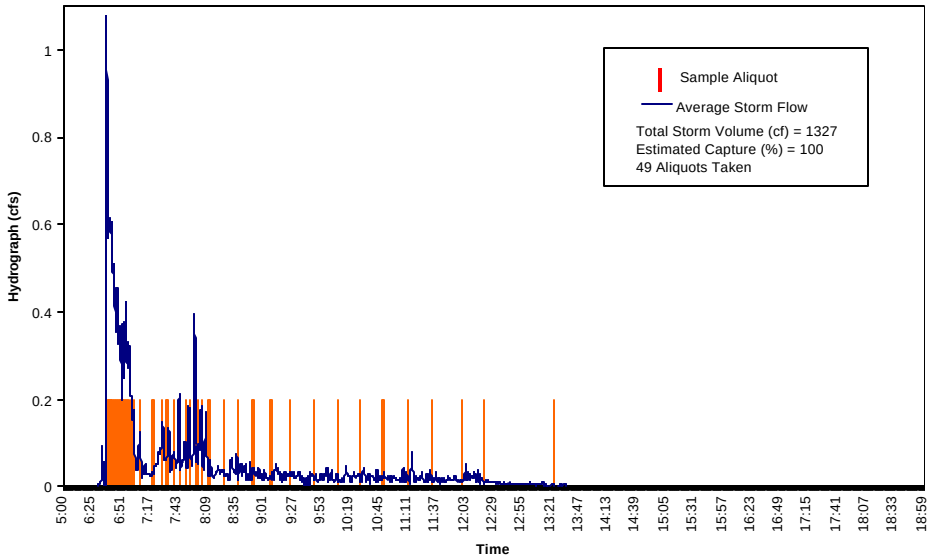
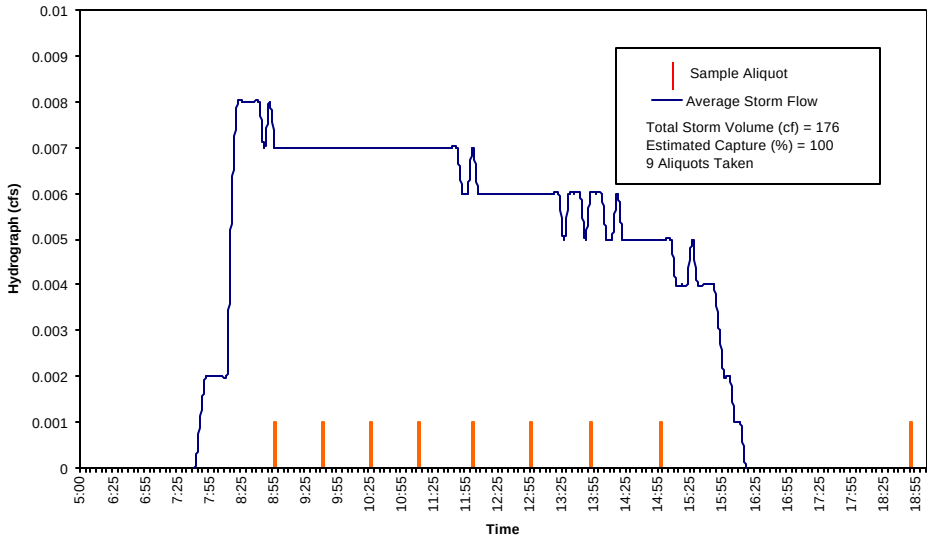


Figure 1-11c: Influent and Effluent Hydrograph, and Cumulative Rainfall at the I-605/SR-91 Extended Detention Basin for Event 4 on January 10-12, 2001

Influent



Effluent



Cumulative Rainfall

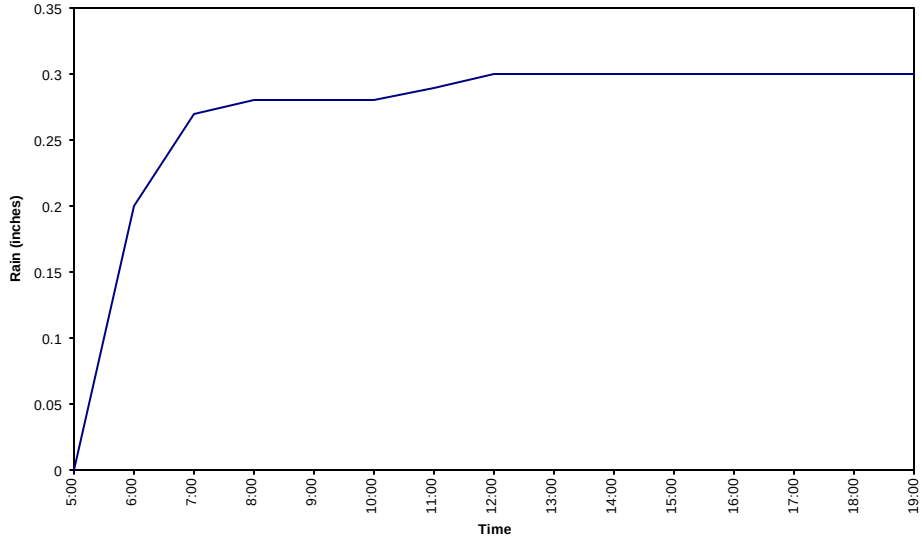
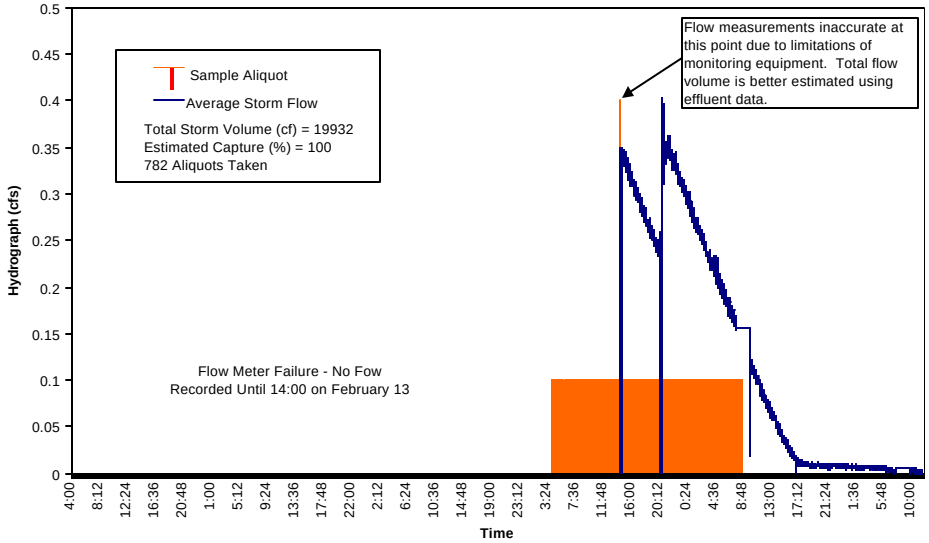
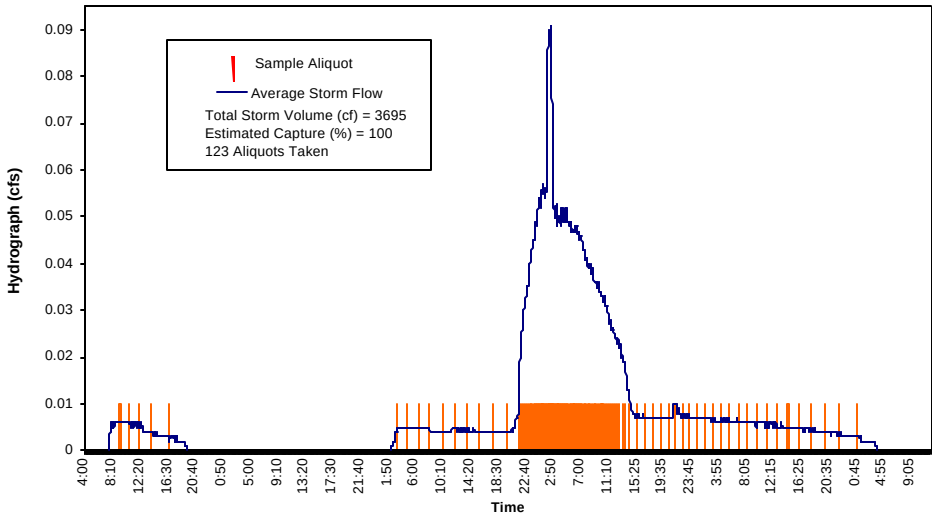


Figure 1-11d: Influent and Effluent Hydrograph, and Cumulative Rainfall at the I-605/SR-91 Extended Detention Basin for Event 5 on January 25, 2001

Influent



Effluent



Cumulative Rainfall

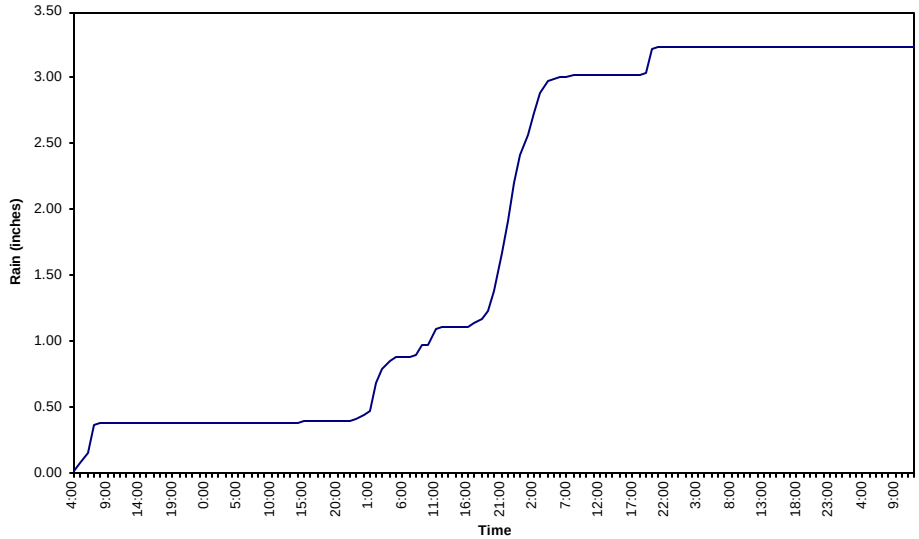
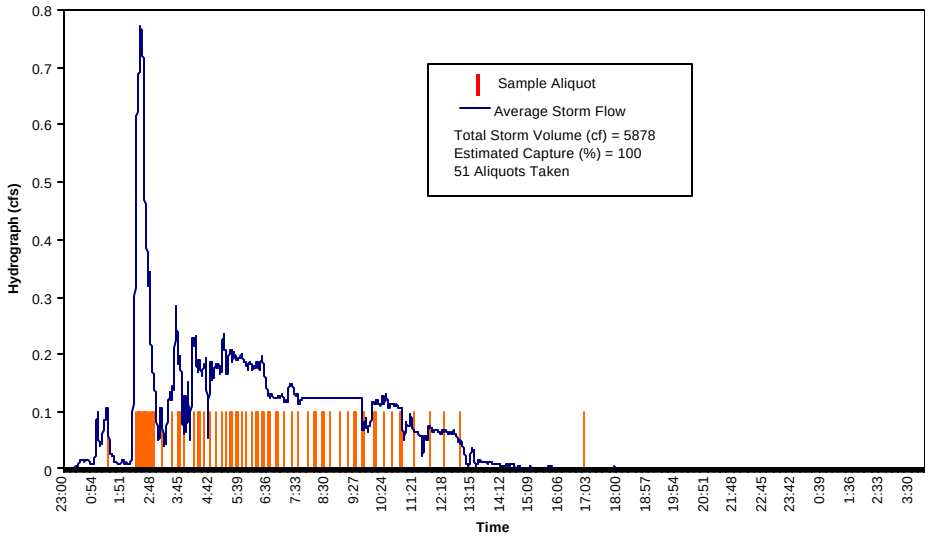
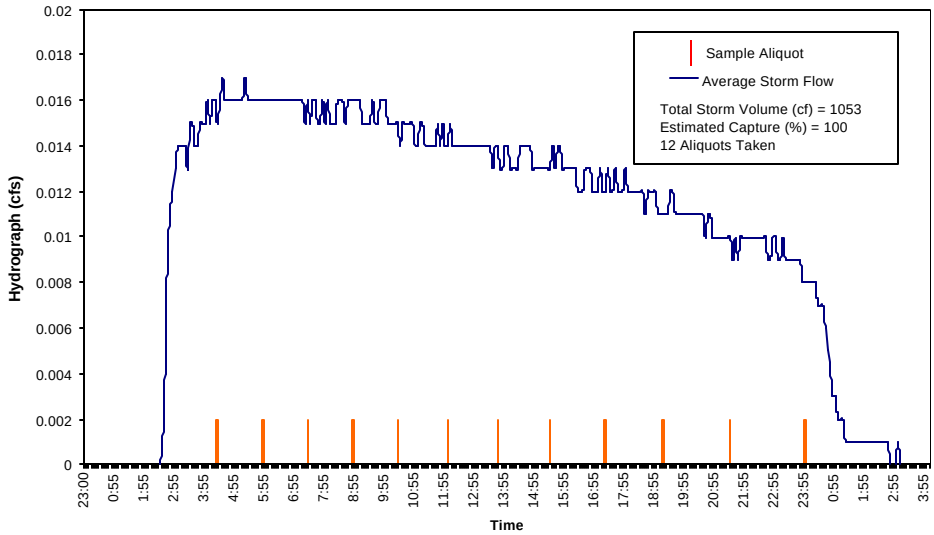


Figure 1-11e: Influent and Effluent Hydrograph, and Cumulative Rainfall at the I-605/SR-91 Extended Detention Basin for Event 6 on February 10-15, 2001

Influent



Effluent



Cumulative Rainfall

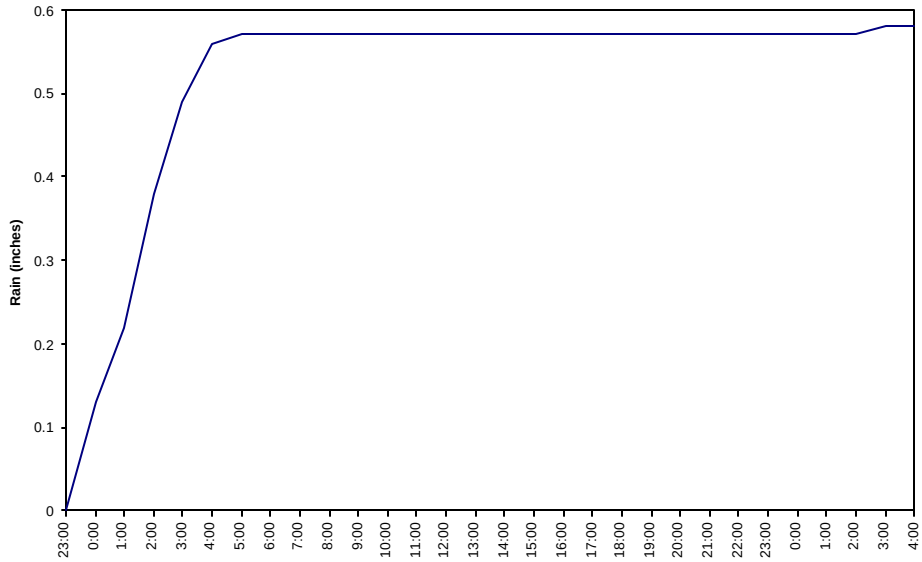
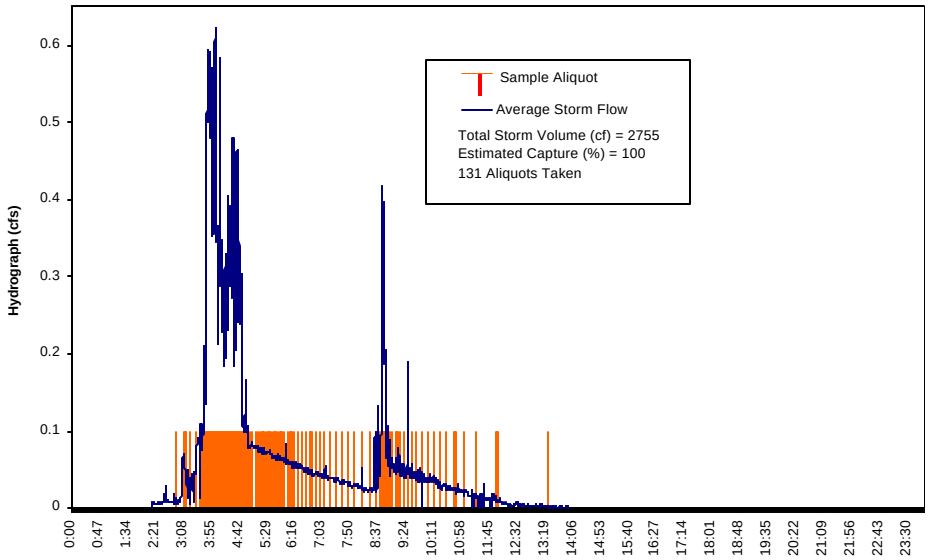
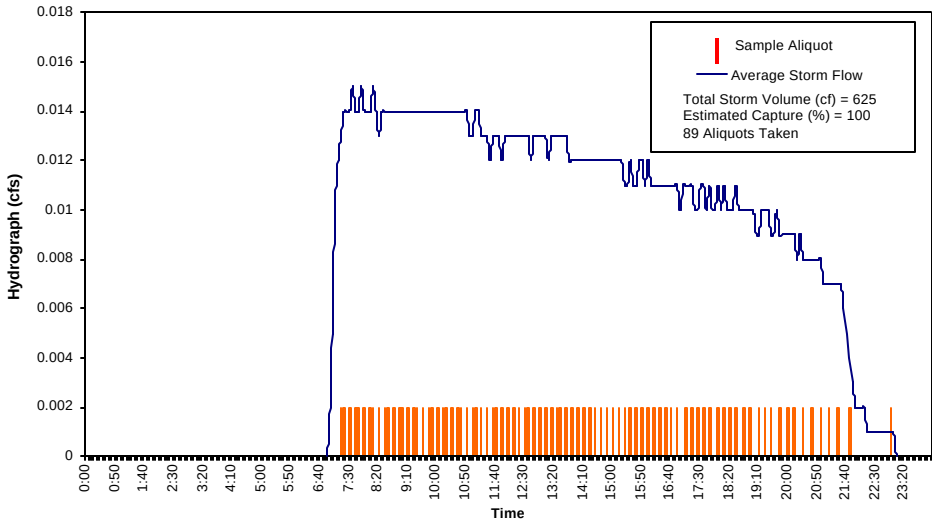


Figure 1-11f: Influent and Effluent Hydrograph, and Cumulative Rainfall at the I-605/SR-91 Extended Detention Basin for Event 8 on March 6, 2001

Influent



Effluent



Cumulative Rainfall

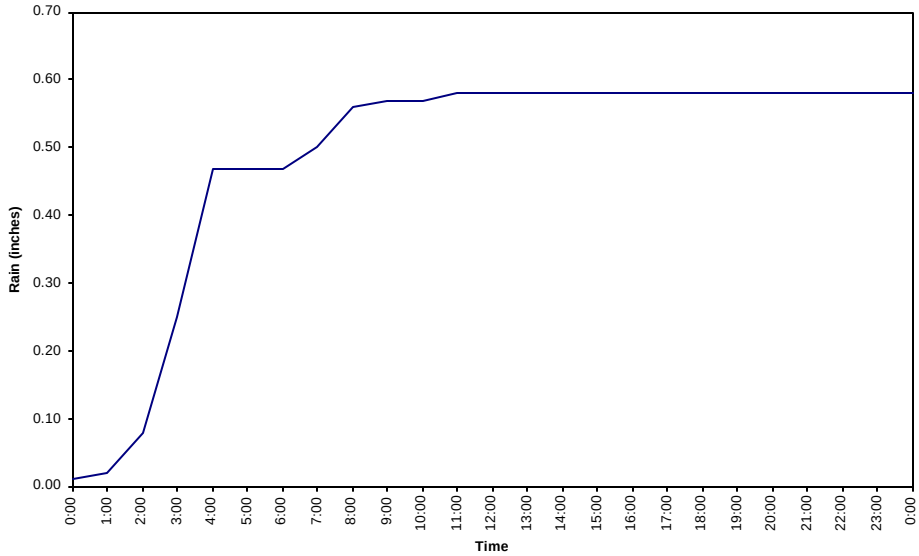
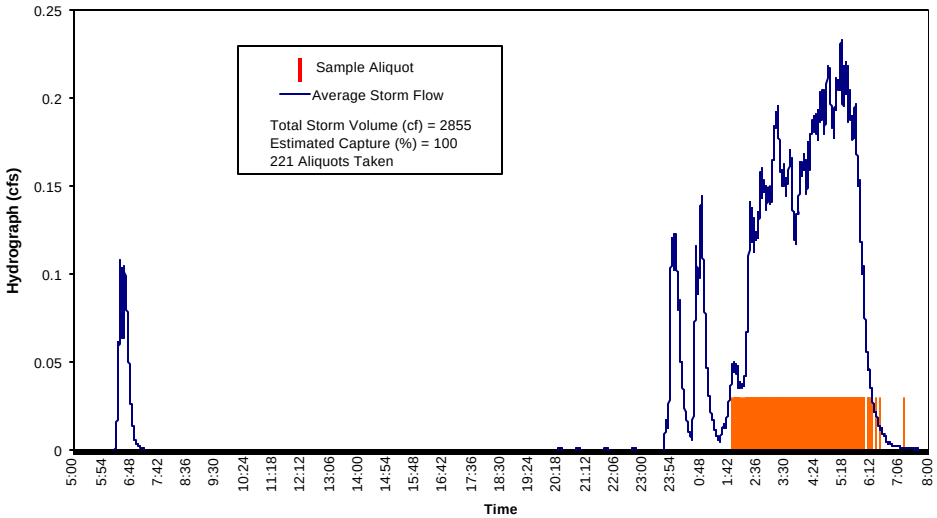
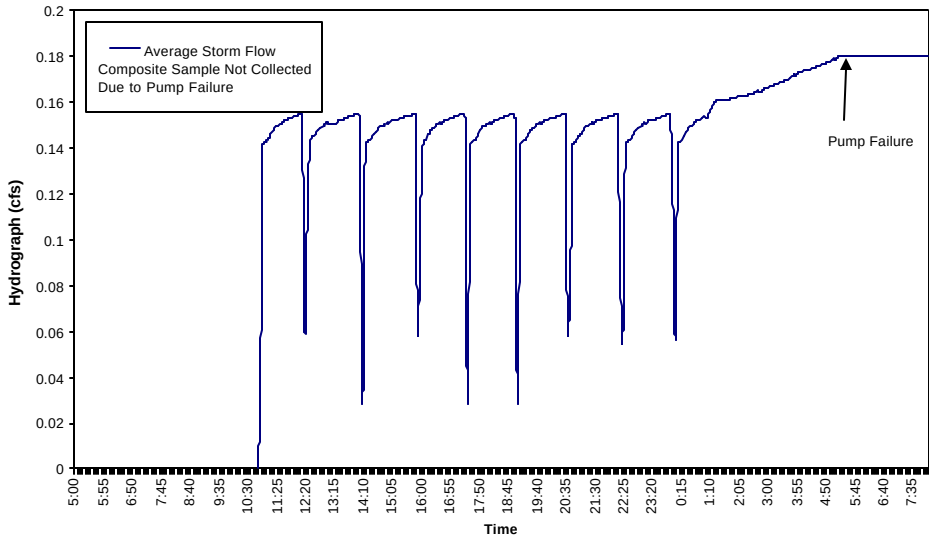


Figure 1-11g: Influent and Effluent Hydrograph, and Cumulative Rainfall at the I-605/SR-91 Extended Detention Basin for Event 9 on April 7, 2001

Influent



Effluent



Cumulative Rainfall

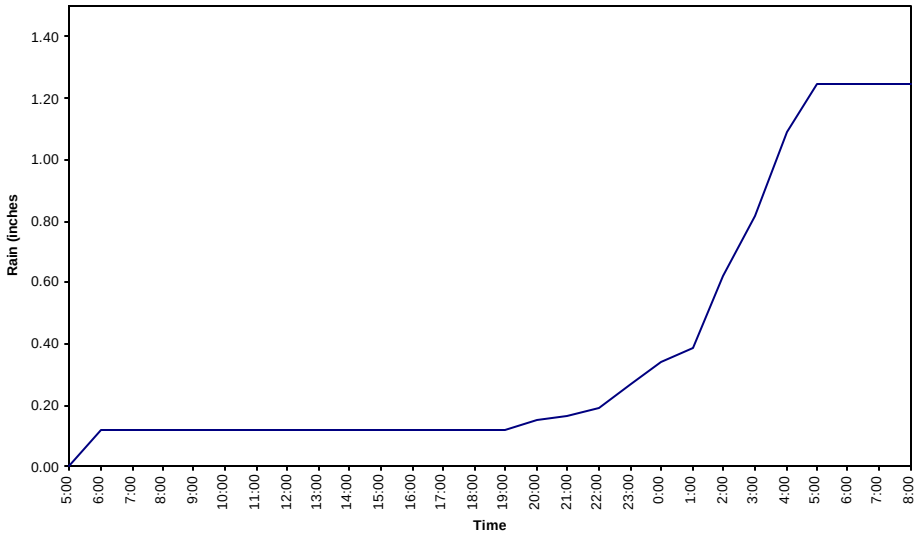
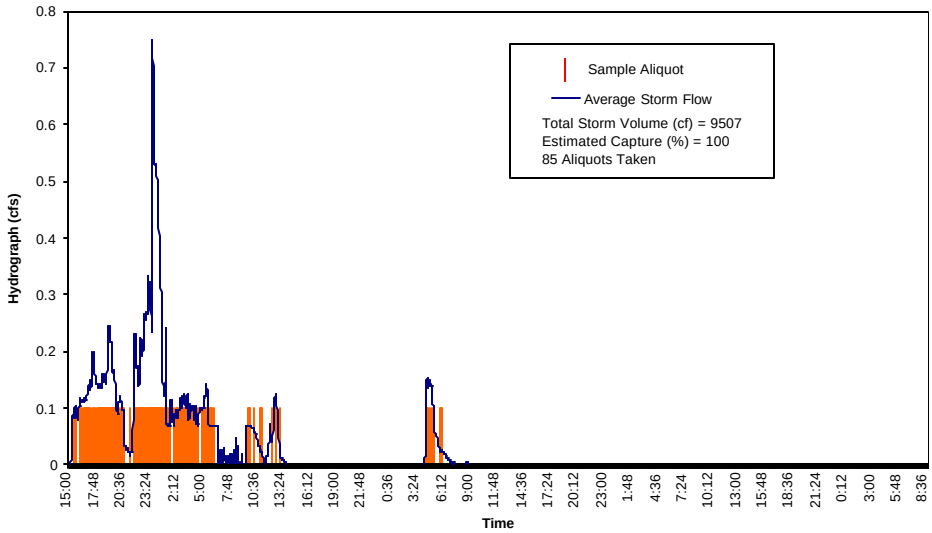
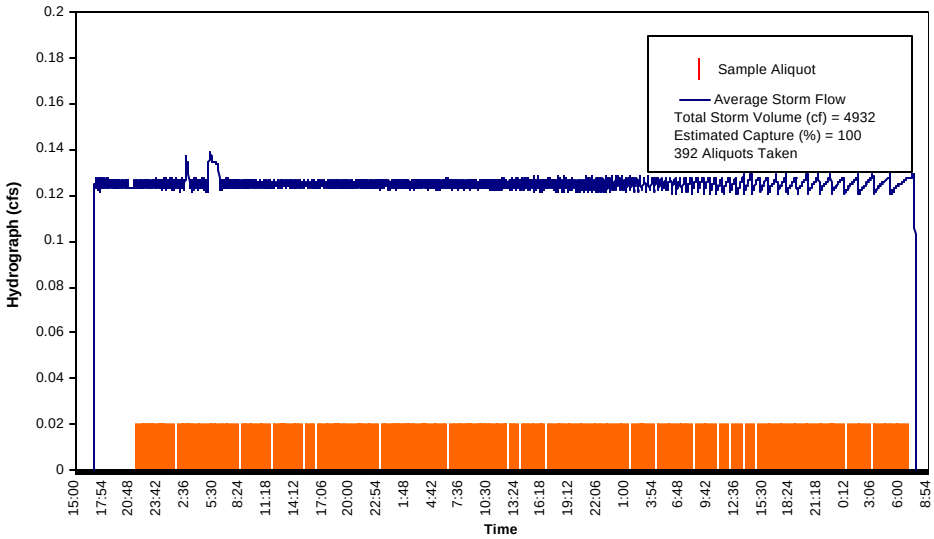


Figure 1-12a: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Eastern Regional Maintenance Station Sand Filter – Austin Type for Event 2 on October 26-27, 2000

Influent



Effluent



Cumulative Rainfall

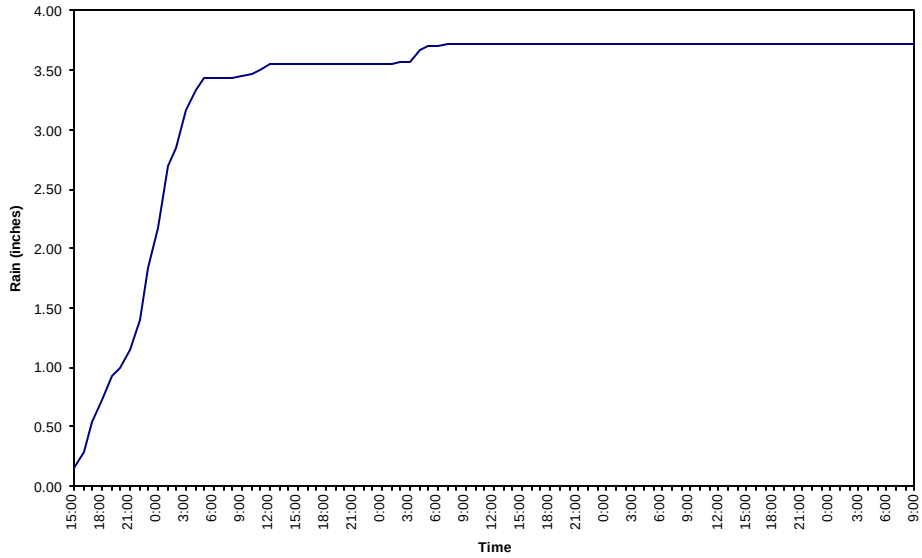
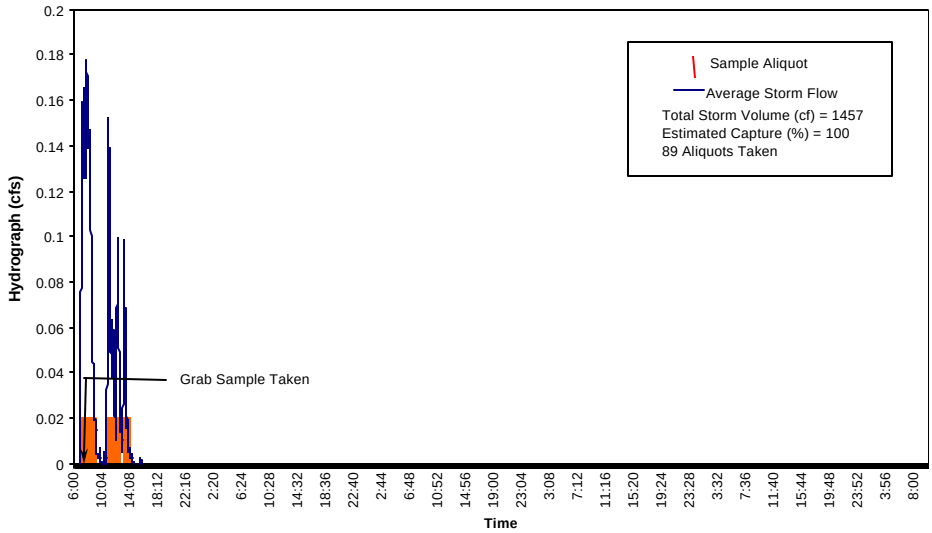
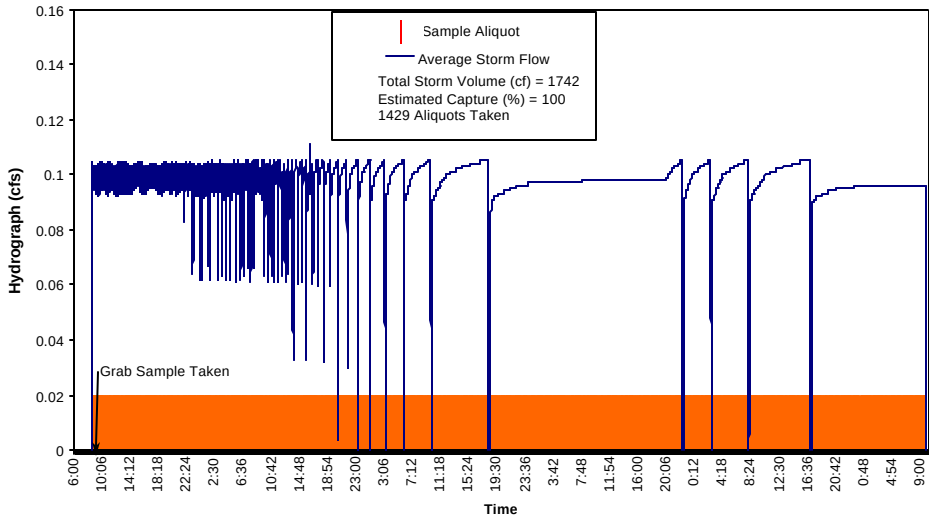


Figure 1-12b: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Eastern Regional Maintenance Station Sand Filter – Austin Type for Event 4 on January 10-12, 2001

Influent



Effluent



Cumulative Rainfall

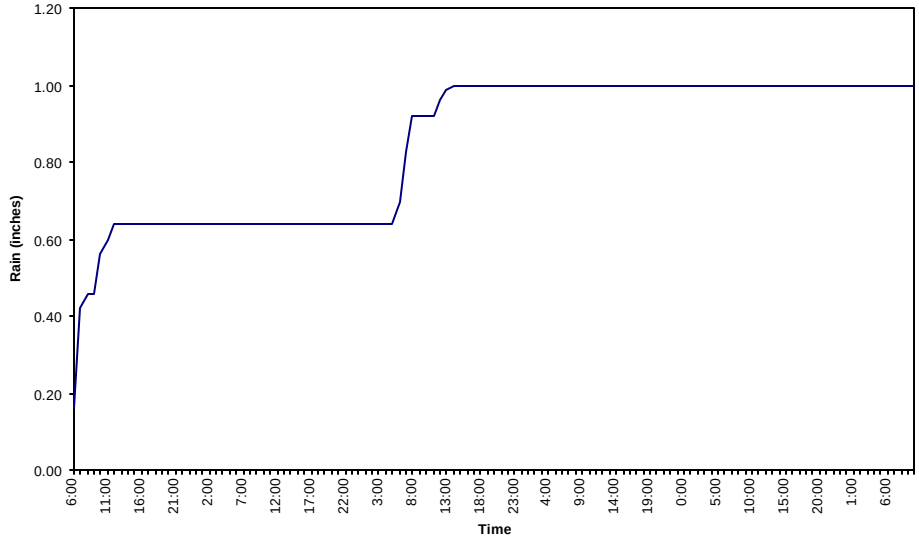
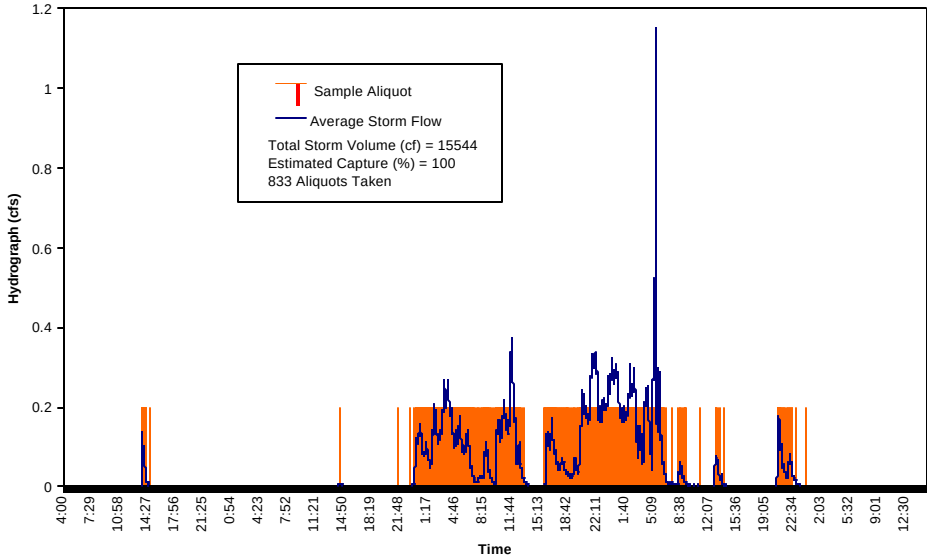
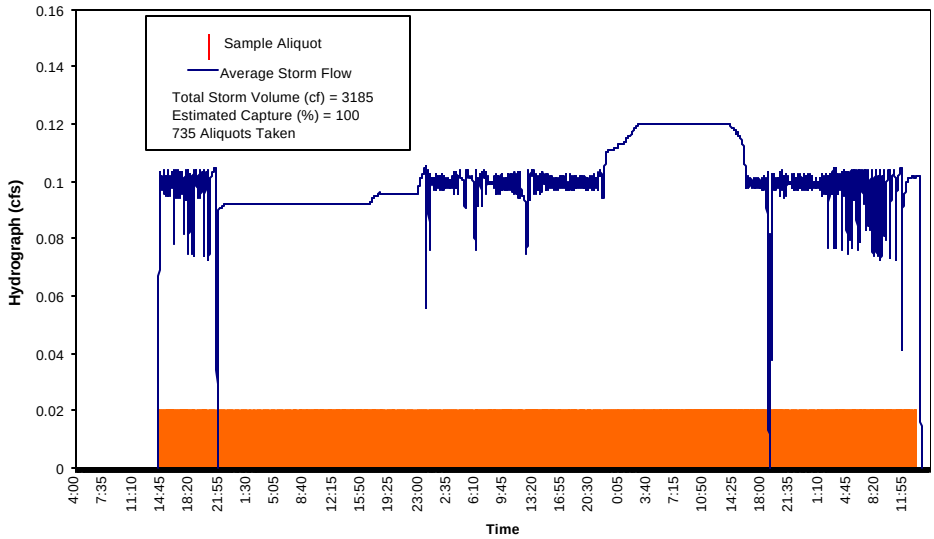


Figure 1-12c: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Eastern Regional Maintenance Station Sand Filter – Austin Type for Event 5 on January 24-29, 2001

Influent



Effluent



Cumulative Rainfall

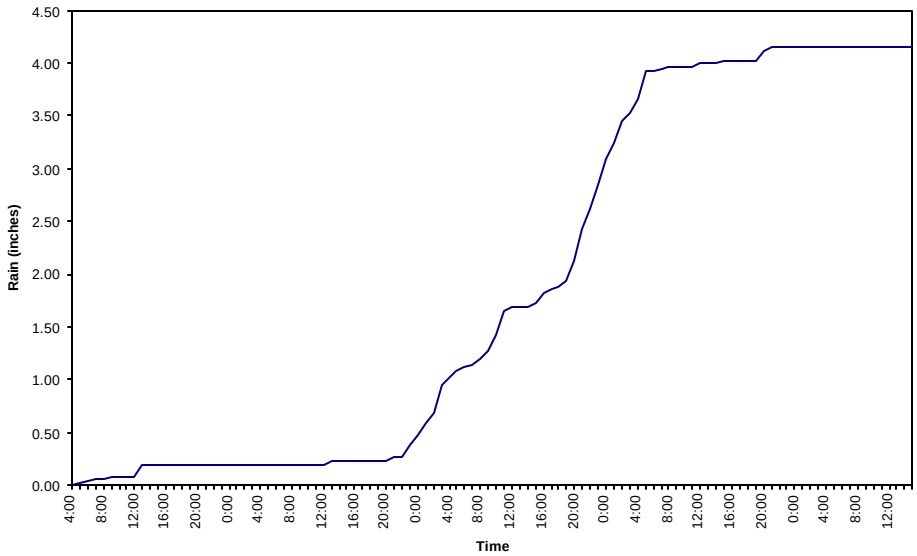
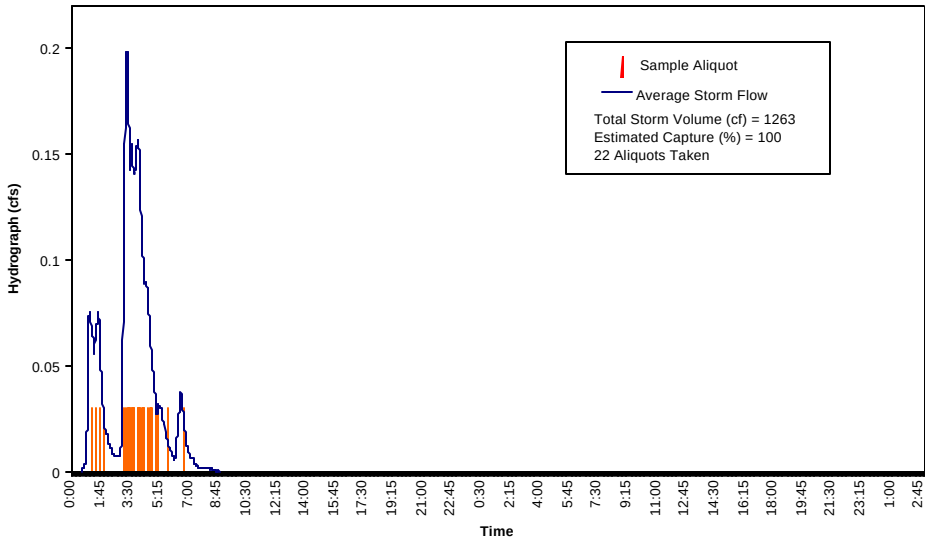
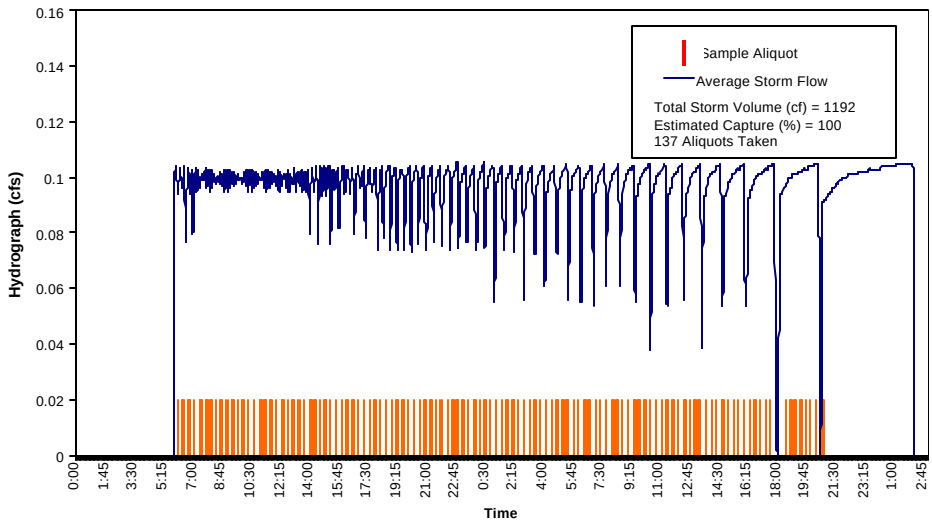


Figure 1-12d: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Eastern Regional Maintenance Station Sand Filter – Austin Type for Event 6 on February 10-14, 2001

Influent



Effluent



Cumulative Rainfall

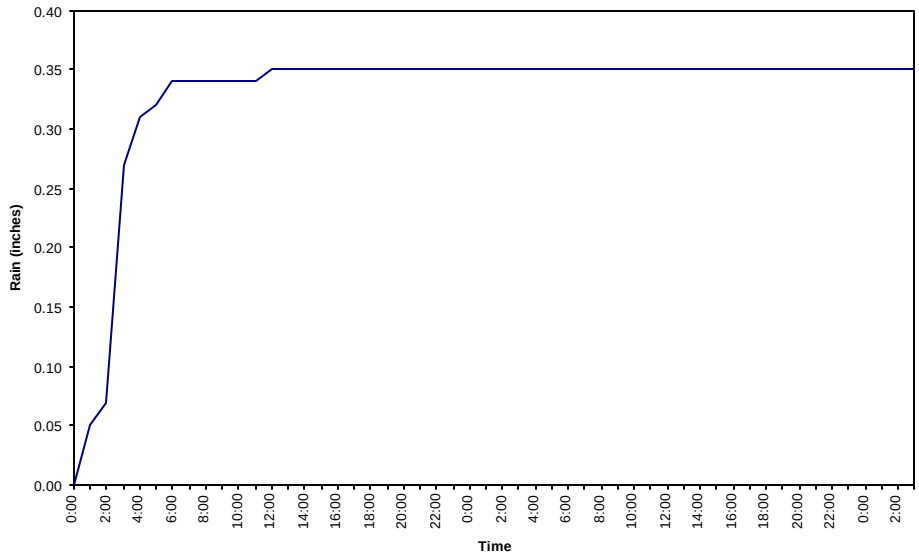
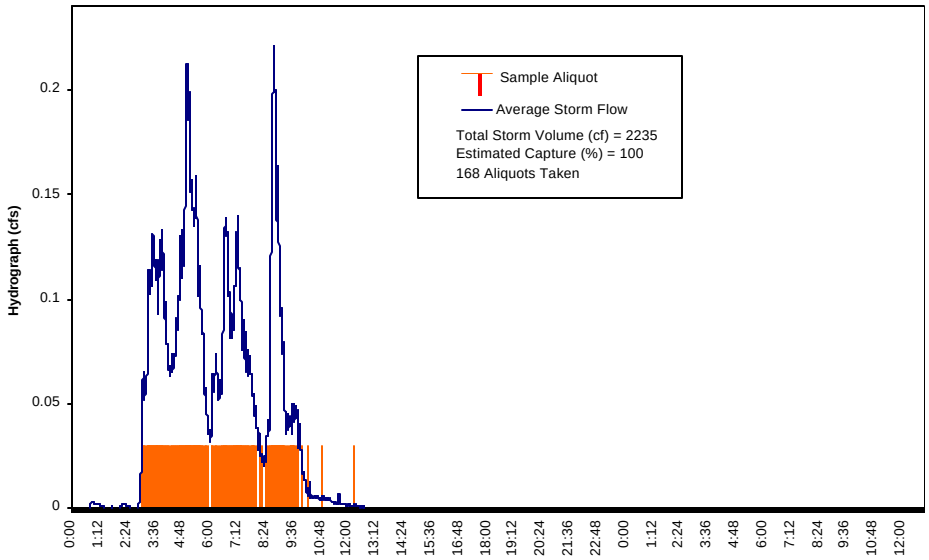
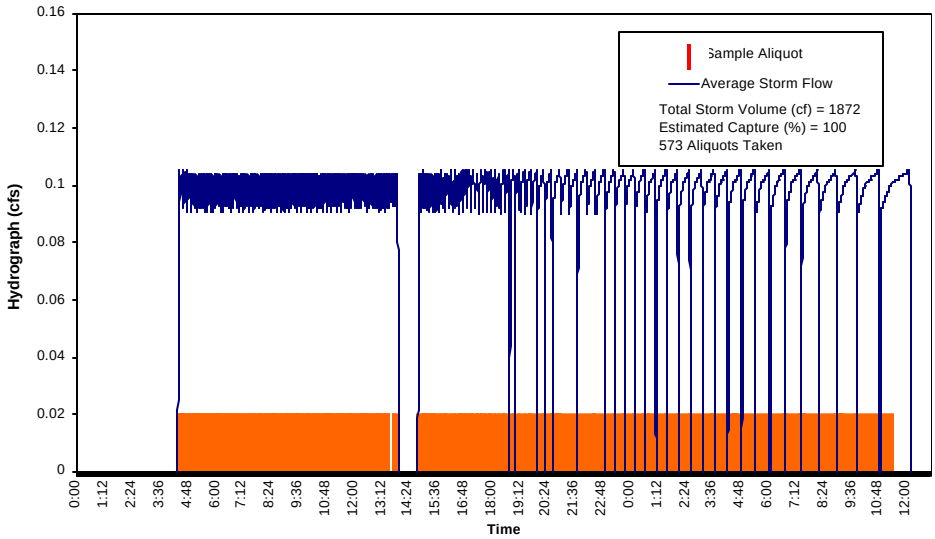


Figure 1-12e: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Eastern Regional Maintenance Station Sand Filter – Austin Type for Event 8 on March 6-8, 2001

Influent



Effluent



Cumulative Rainfall

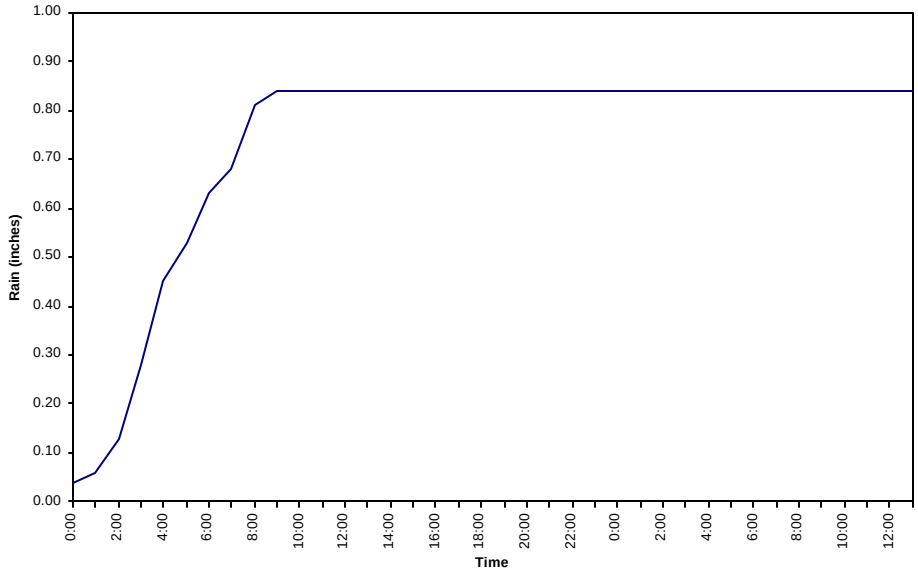
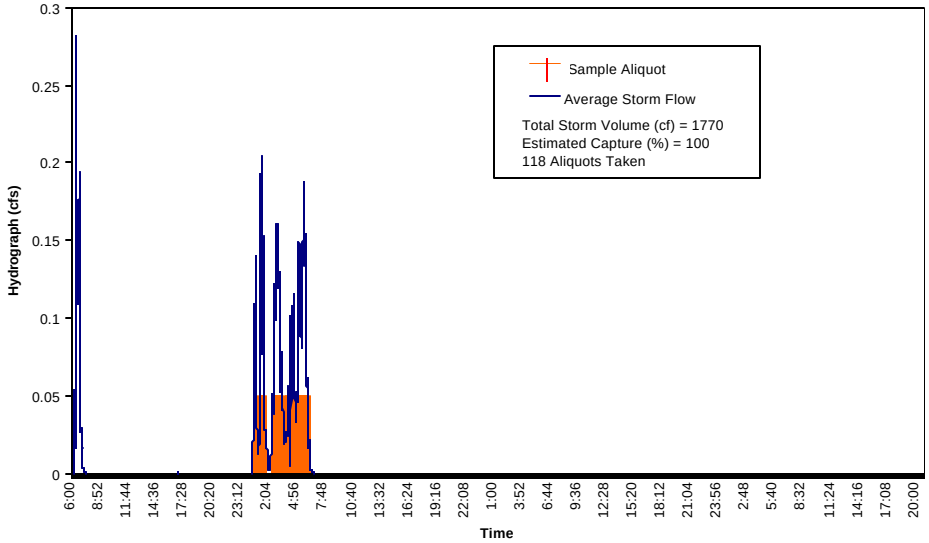
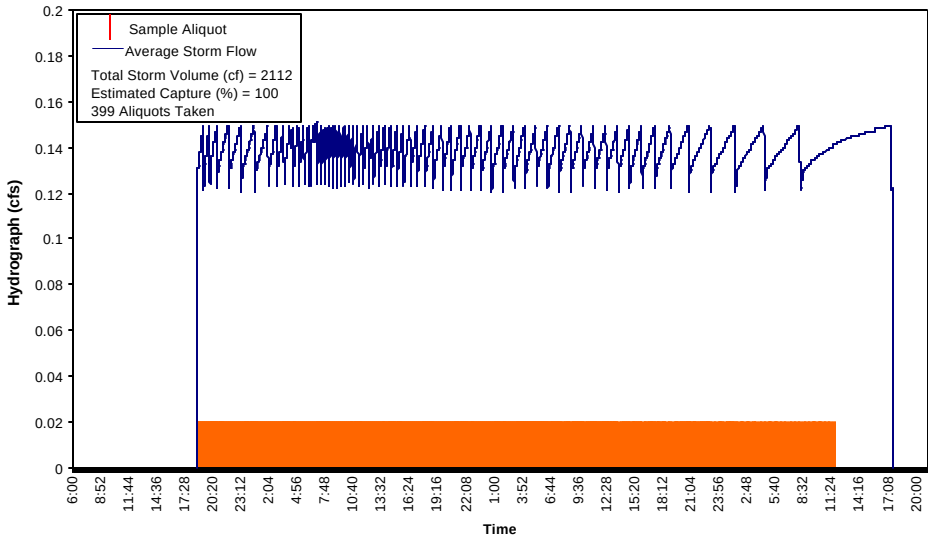


Figure 1-12f: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Eastern Regional Maintenance Station Sand Filter – Austin Type for Event 9 on April 7-8, 2001

Influent



Effluent



Cumulative Rainfall

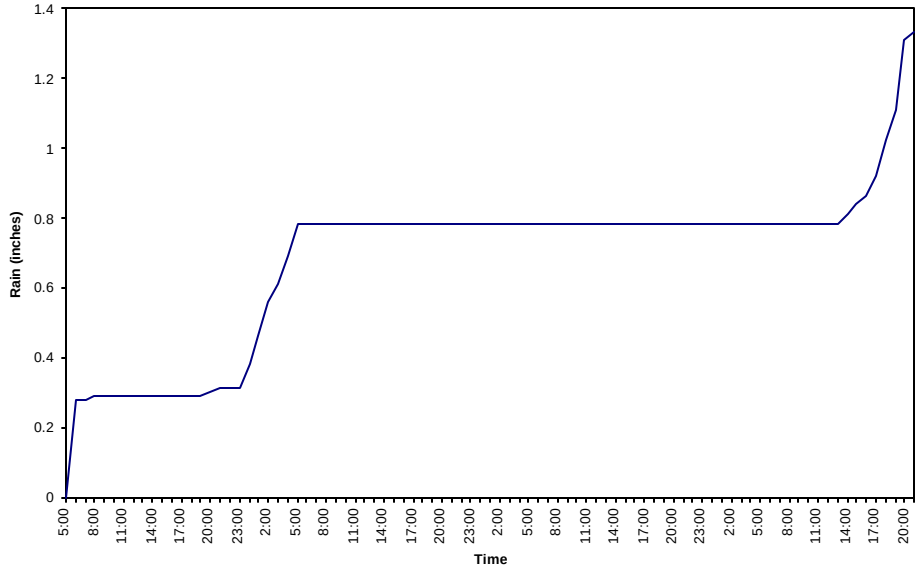
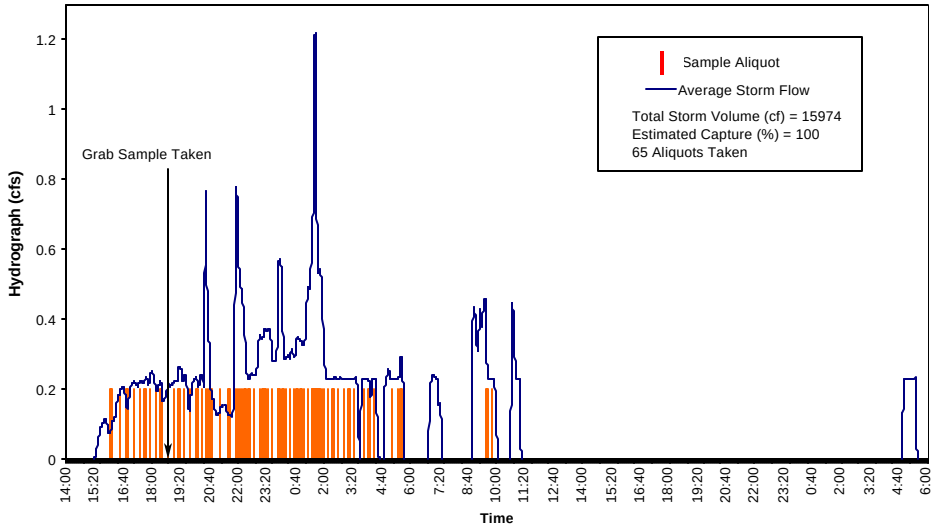
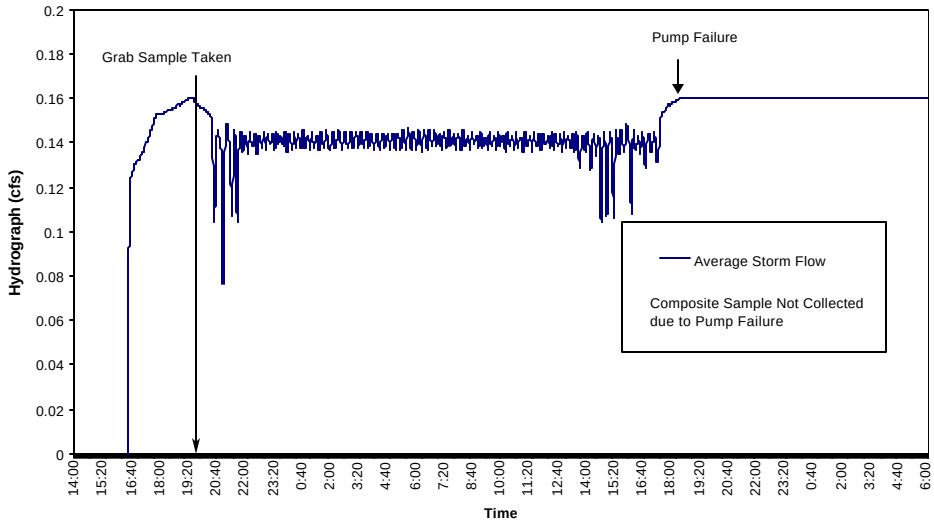


Figure 1-13a: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Foothill Maintenance Station Sand Filter – Austin Type for Event 2 on October 26-29, 2000

Influent



Effluent



Cumulative Rainfall

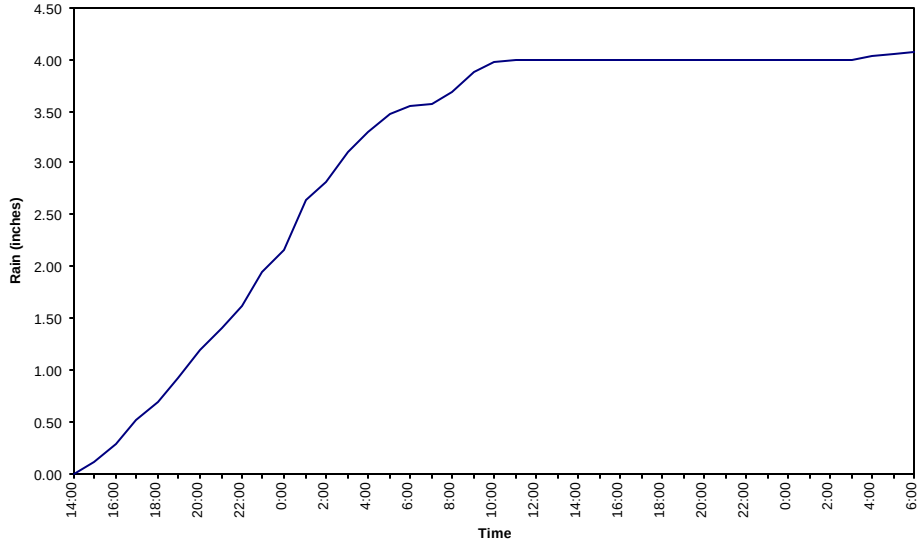
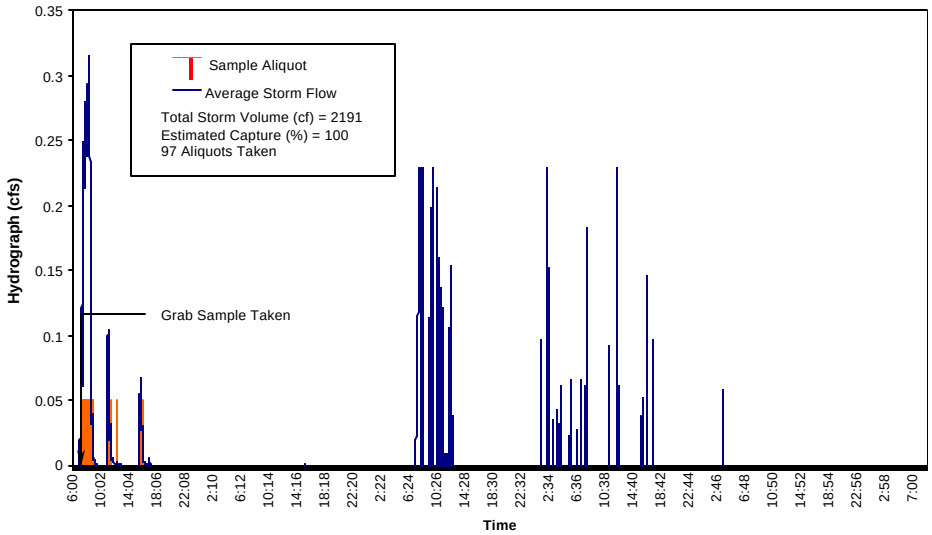
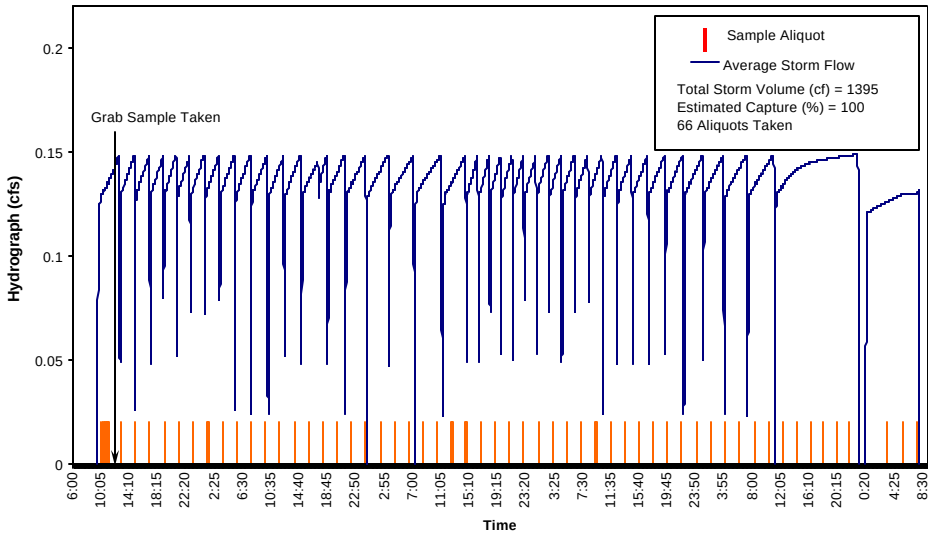


Figure 1-13b: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Foothill Maintenance Station Sand Filter – Austin Type for Event 4 on January 10-12, 2001

Influent



Effluent



Cumulative Rainfall

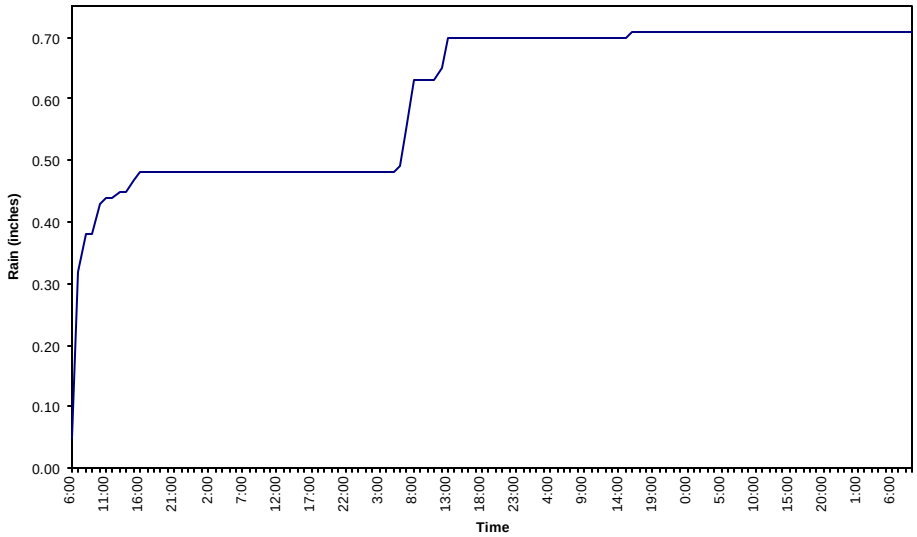
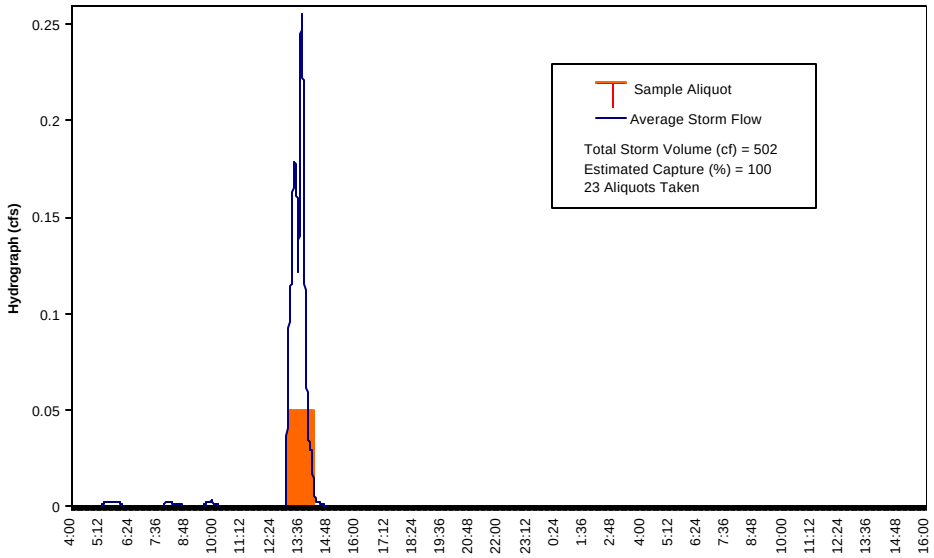
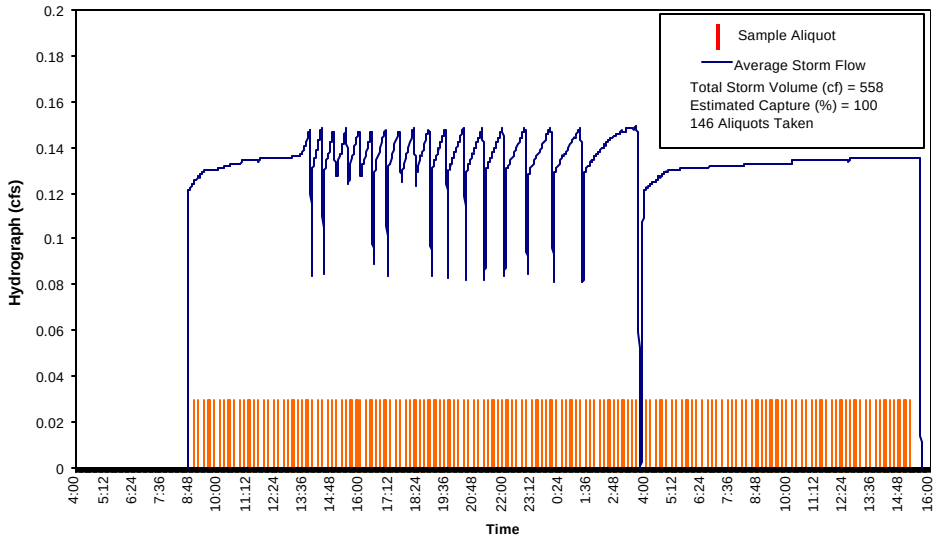


Figure 1-13c: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Foothill Maintenance Station Sand Filter – Austin Type for Event 5 on January 24-29, 2001

Influent



Effluent



Cumulative Rainfall

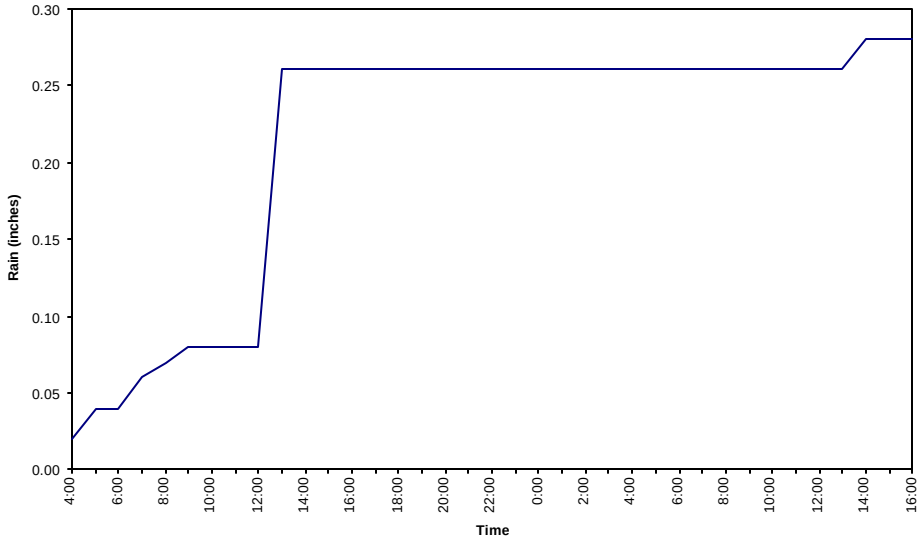
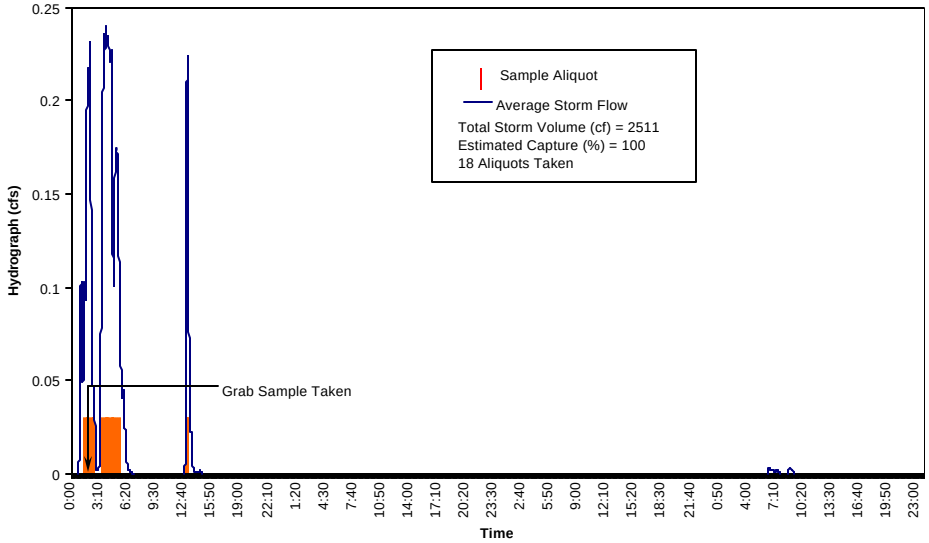
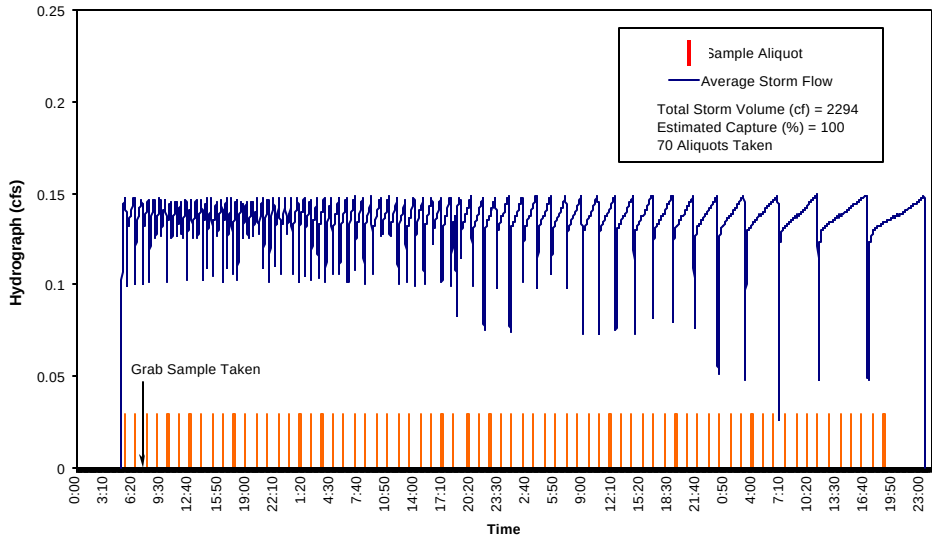


Figure 1-13d: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Foothill Maintenance Station Sand Filter – Austin Type for Event 6 on February 10-11, 2001

Influent



Effluent



Cumulative Rainfall

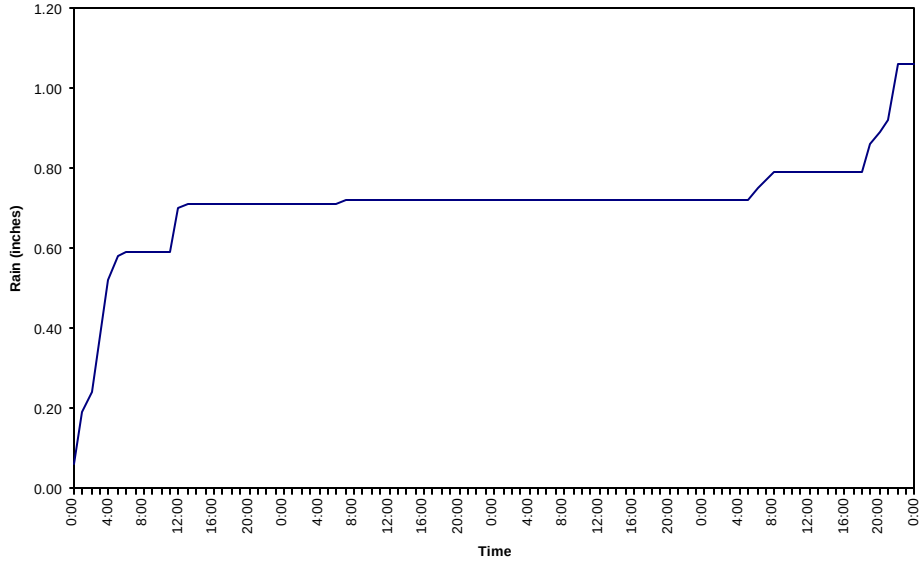
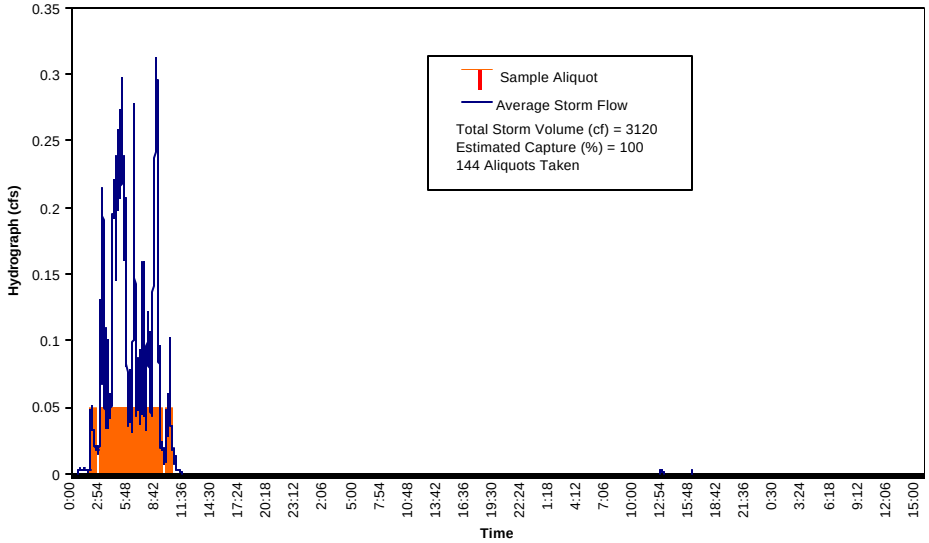
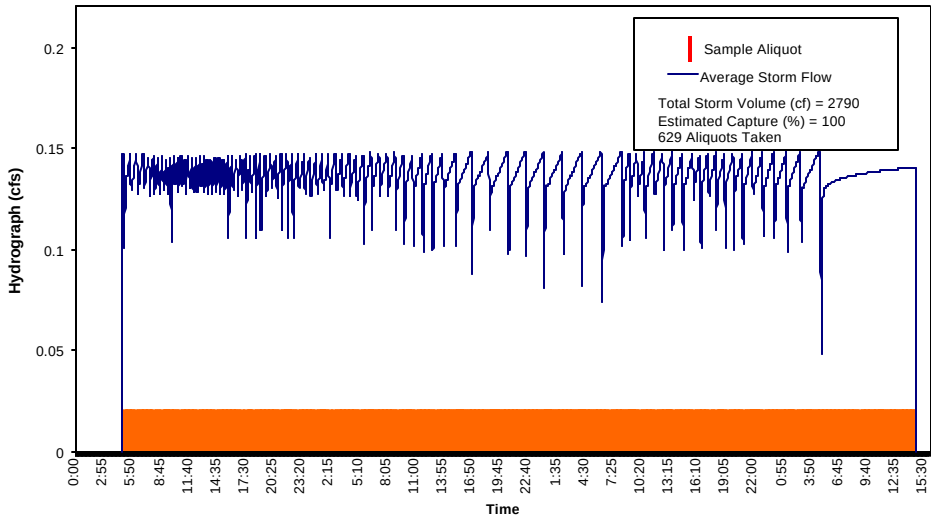


Figure 1-13e: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Foothill Maintenance Station Sand Filter – Austin Type for Event 8 on March 6-9, 2001

Influent



Effluent



Cumulative Rainfall

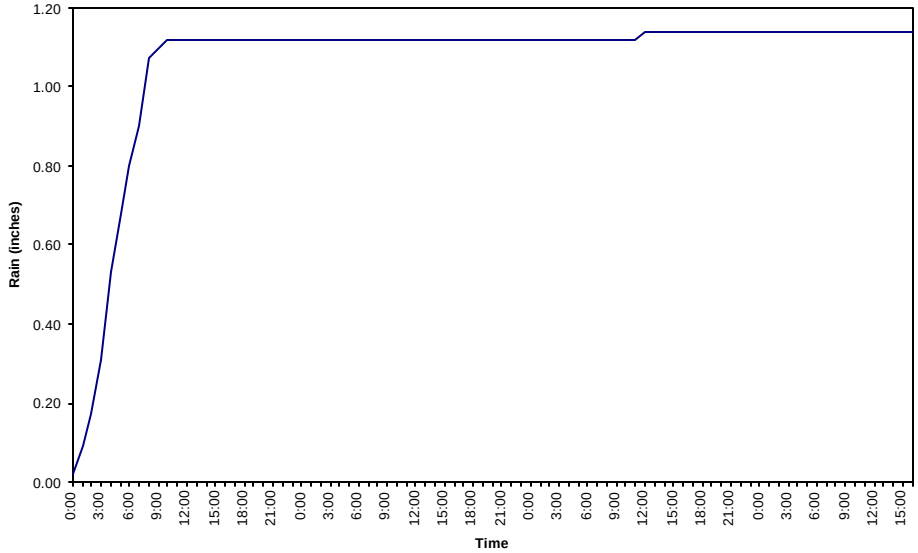
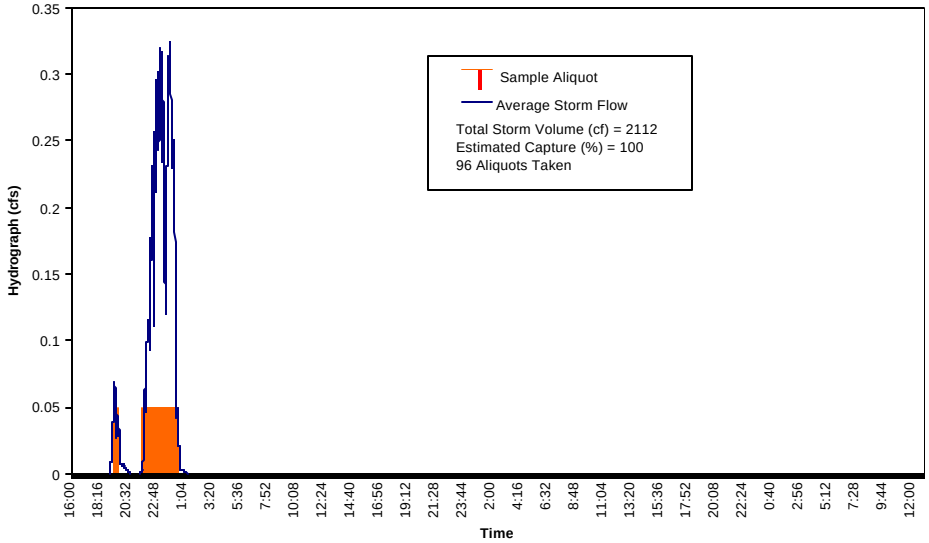
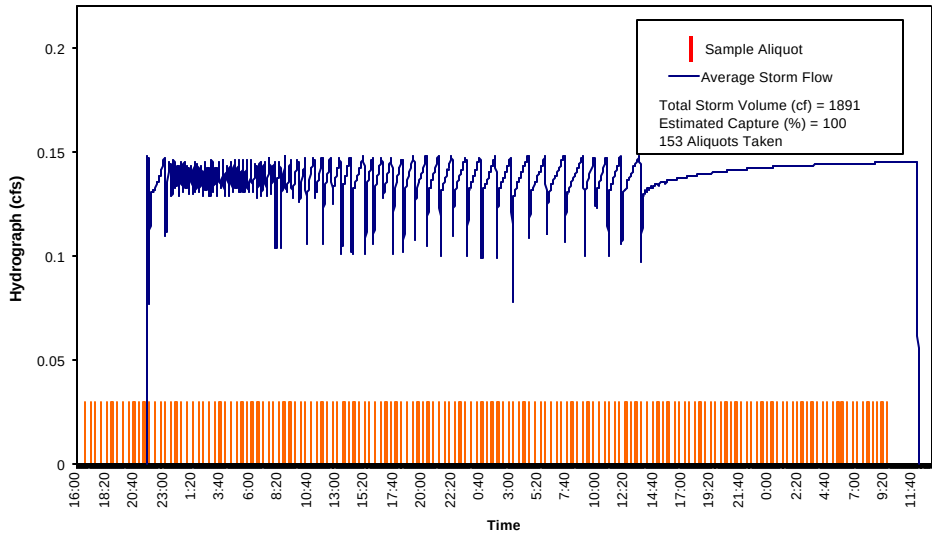


Figure 1-13f: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Foothill Maintenance Station Sand Filter – Austin Type for Event 9 on April 7-10, 2001

Influent



Effluent



Cumulative Rainfall

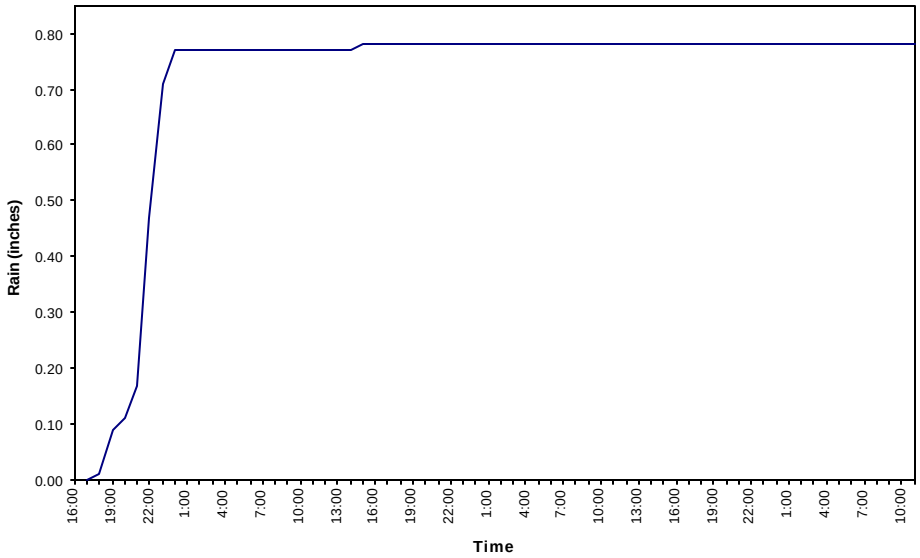
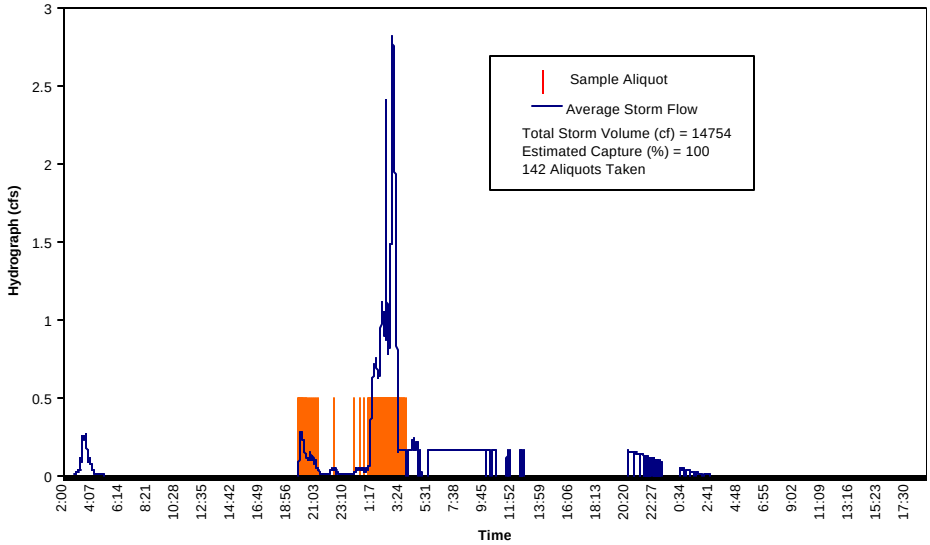
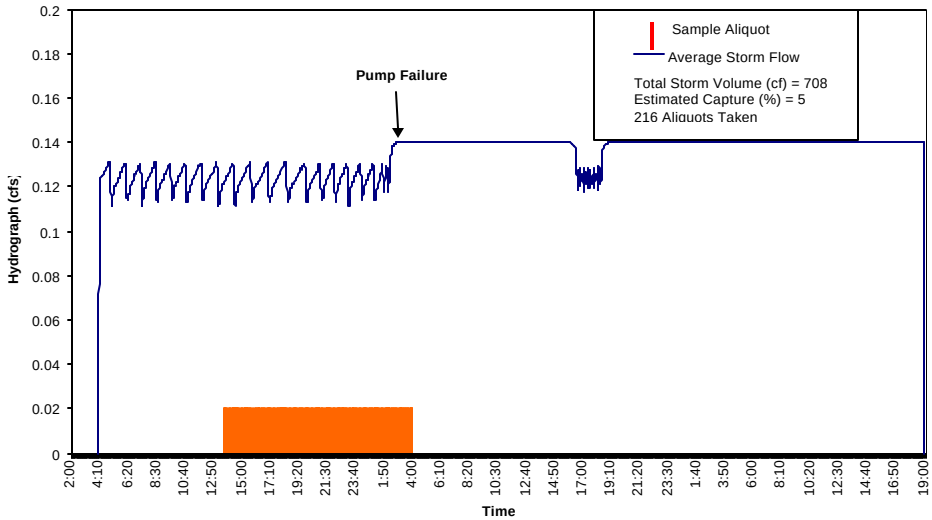


Figure 1-13g: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Foothill Maintenance Station Sand Filter – Austin Type for Event 10 on April 20-23, 2001

Influent



Effluent



Cumulative Rainfall

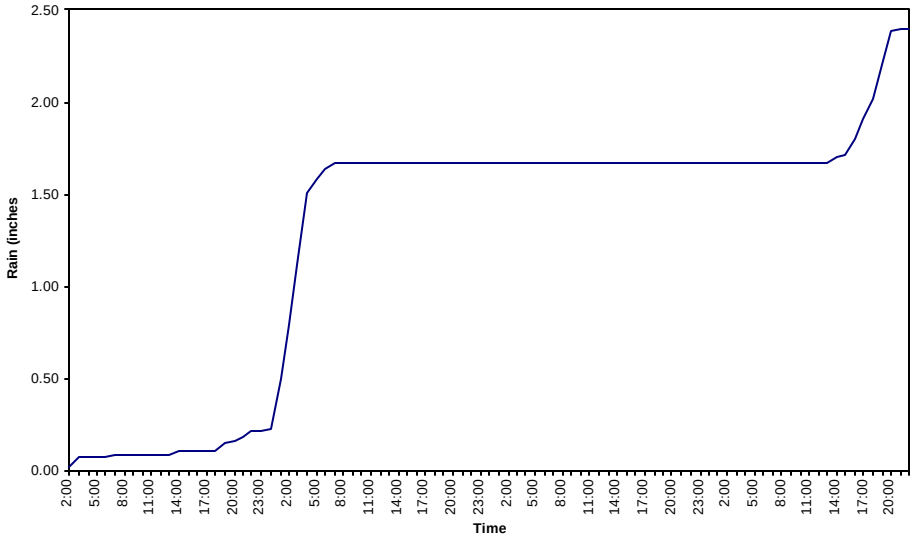
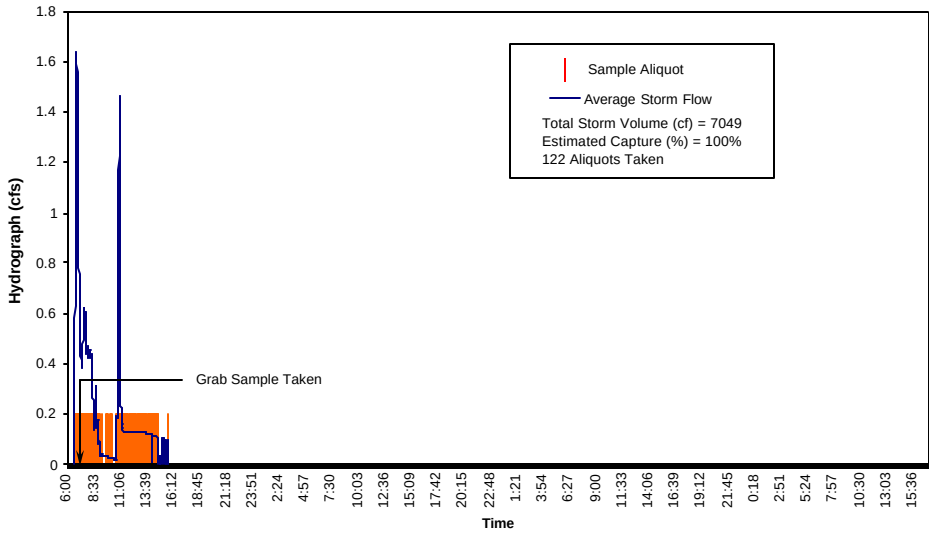
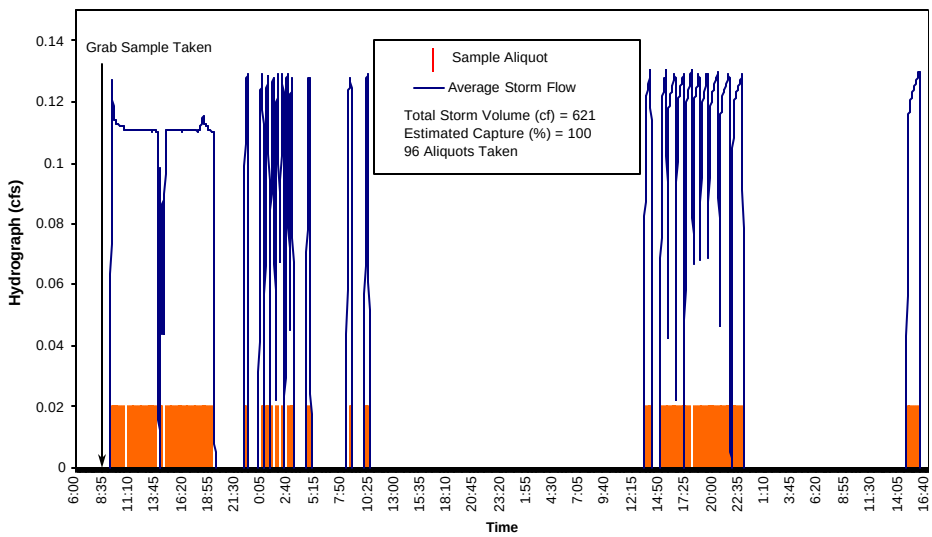


Figure 1-14a: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Termination Park & Ride Sand Filter – Austin Type for Event 2 on October 26-29, 2000

Influent



Effluent



Cumulative Rainfall

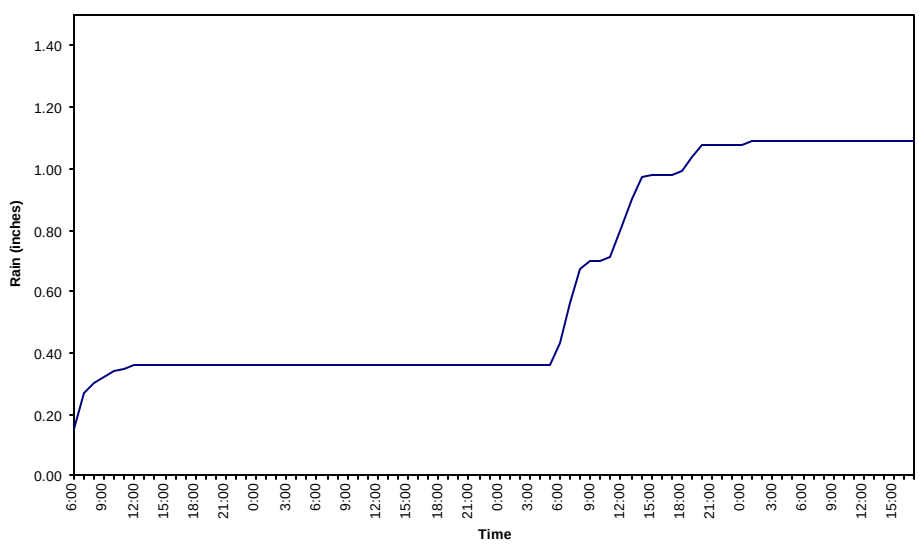
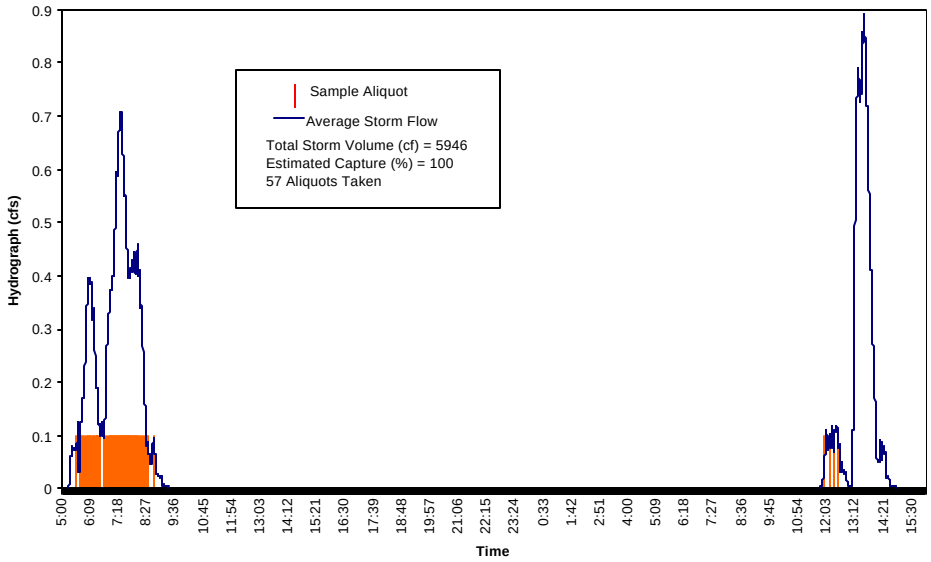
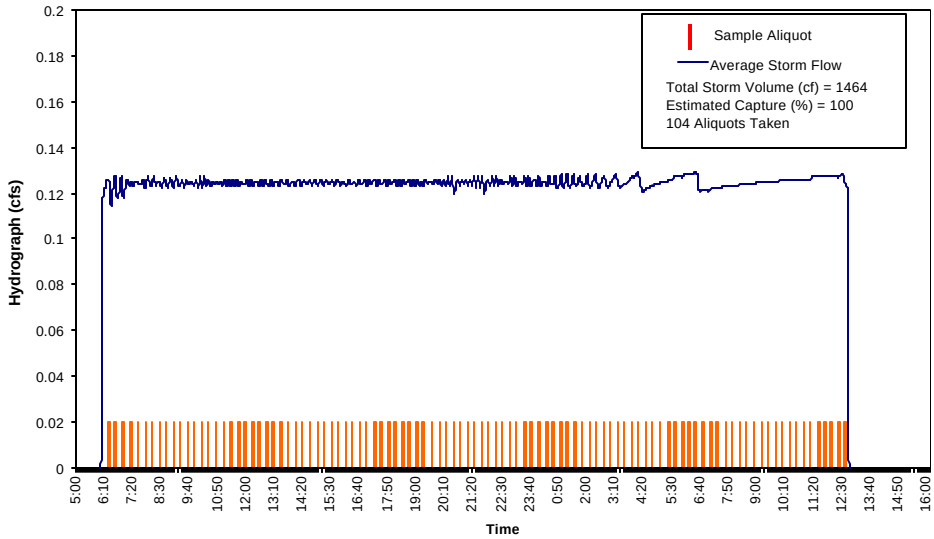


Figure 1-14b: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Termination Park & Ride Sand Filter – Austin Type for Event 5 on January 24-27, 2001

Influent



Effluent



Cumulative Rainfall

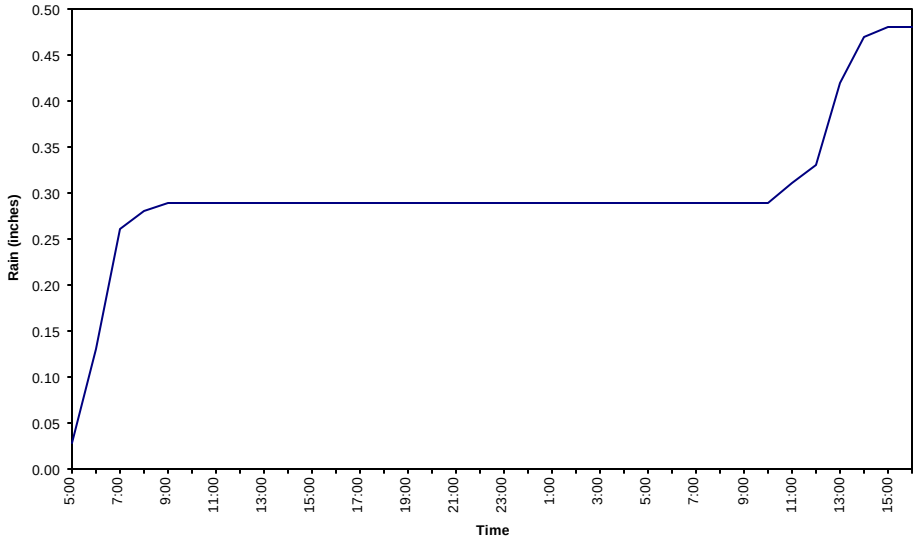
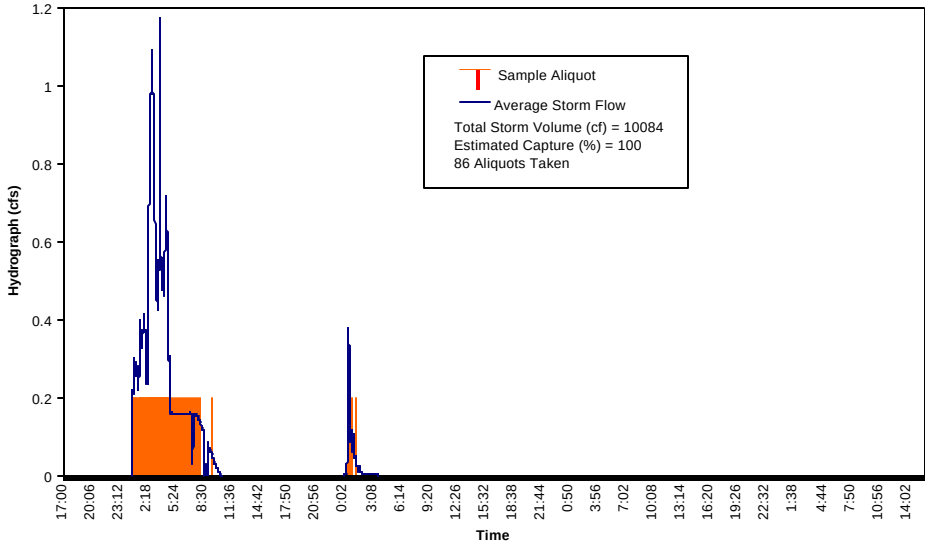
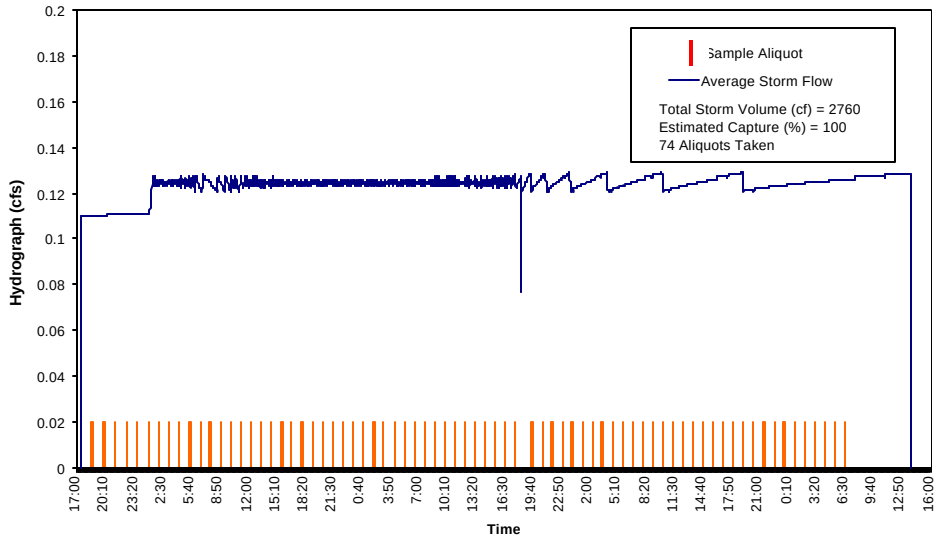


Figure 1-14c: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Termination Park & Ride Sand Filter – Austin Type for Event 6 on February 10-11, 2001

Influent



Effluent



Cumulative Rainfall

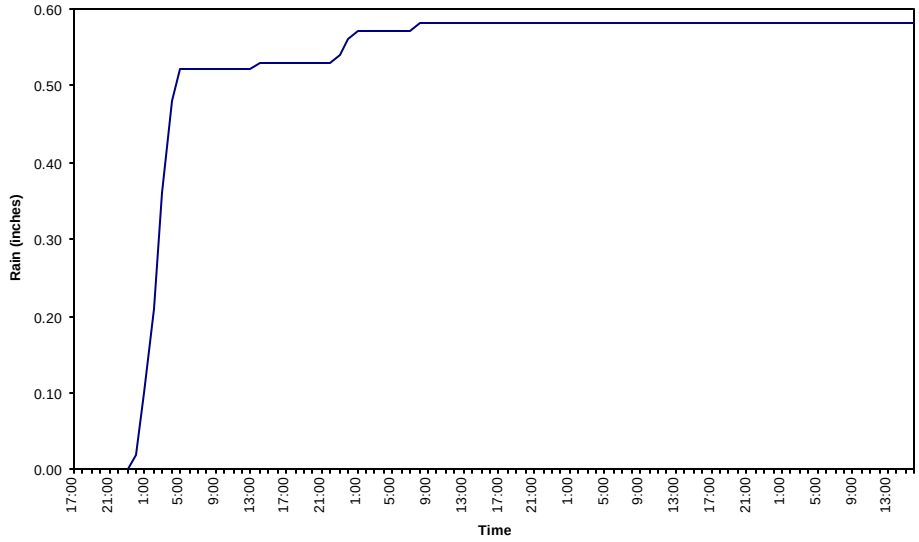
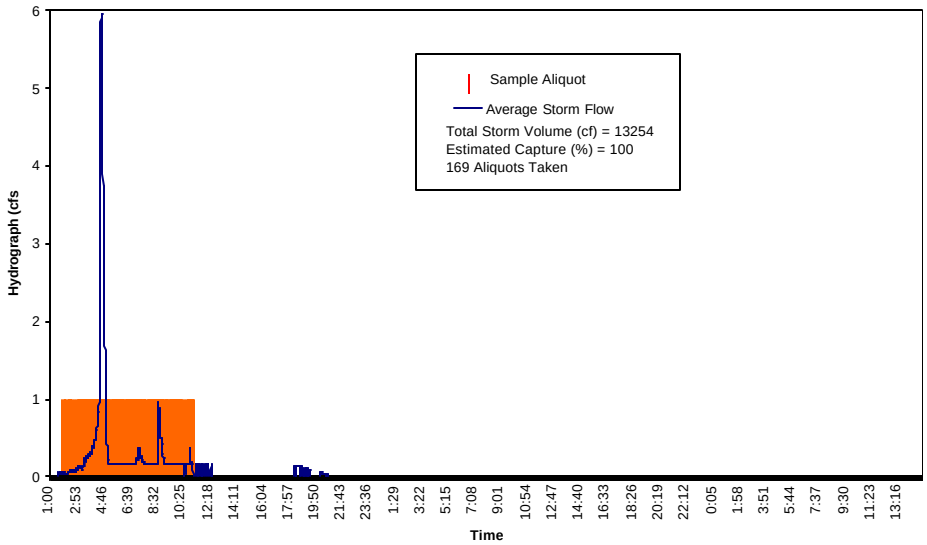
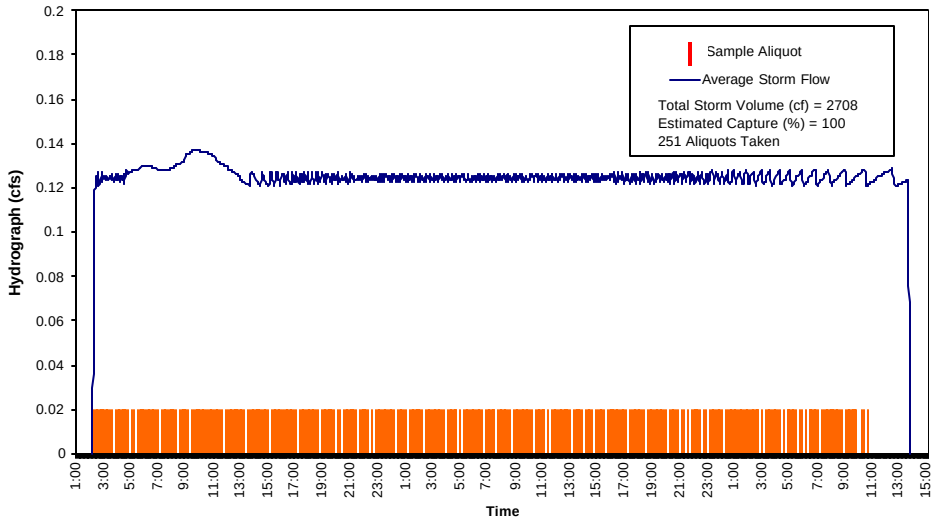


Figure 1-14d: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Termination Park & Ride Sand Filter – Austin Type for Event 8 on March 5-9, 2001

Influent



Effluent



Cumulative Rainfall

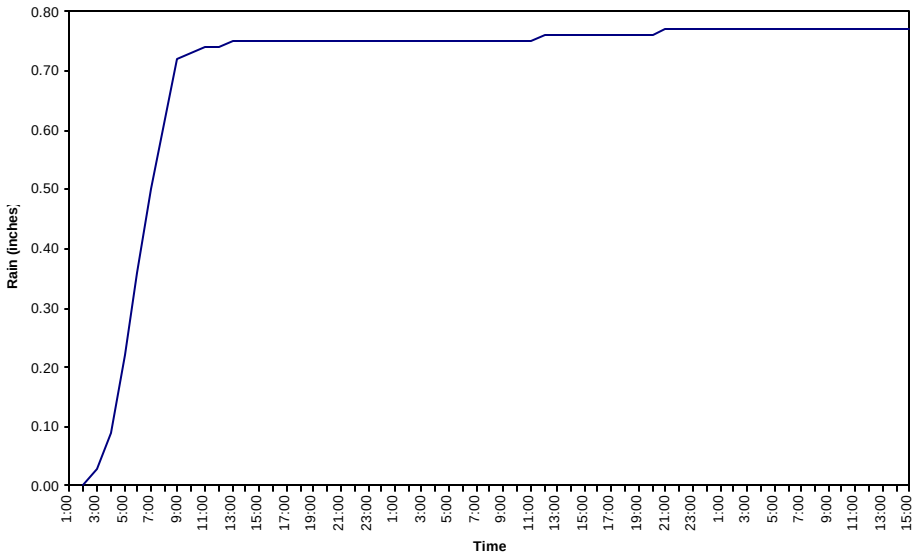
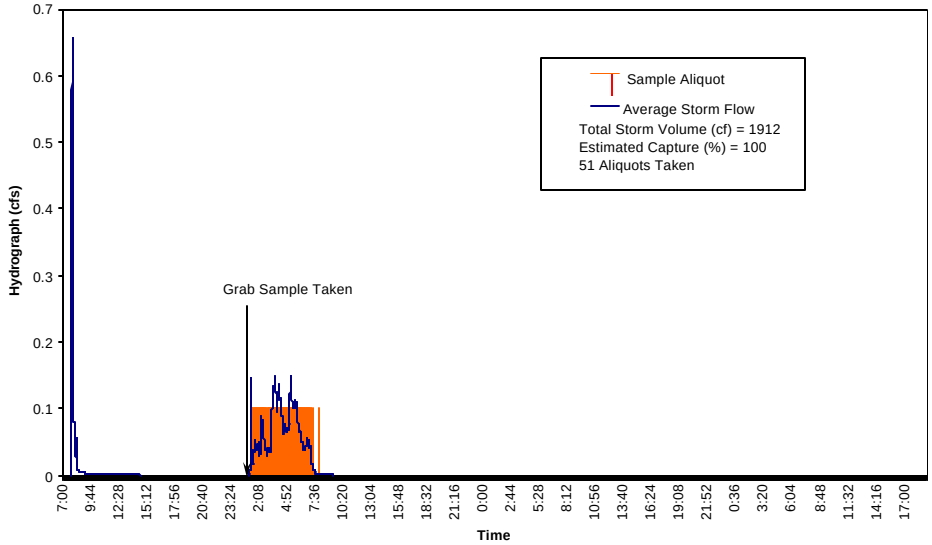
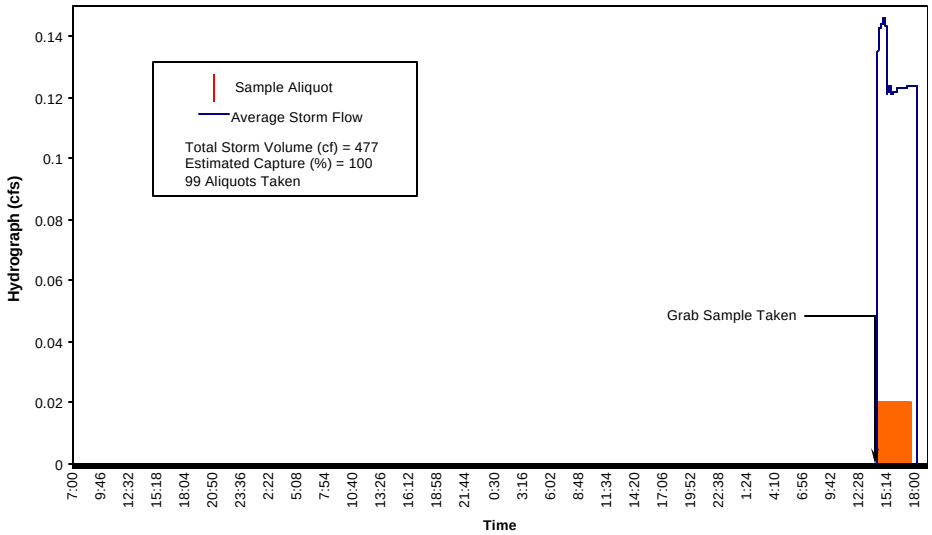


Figure 1-14e: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Termination Park & Ride Sand Filter – Austin Type for Event 9 on April 7-9, 2001

Influent



Effluent



Cumulative Rainfall

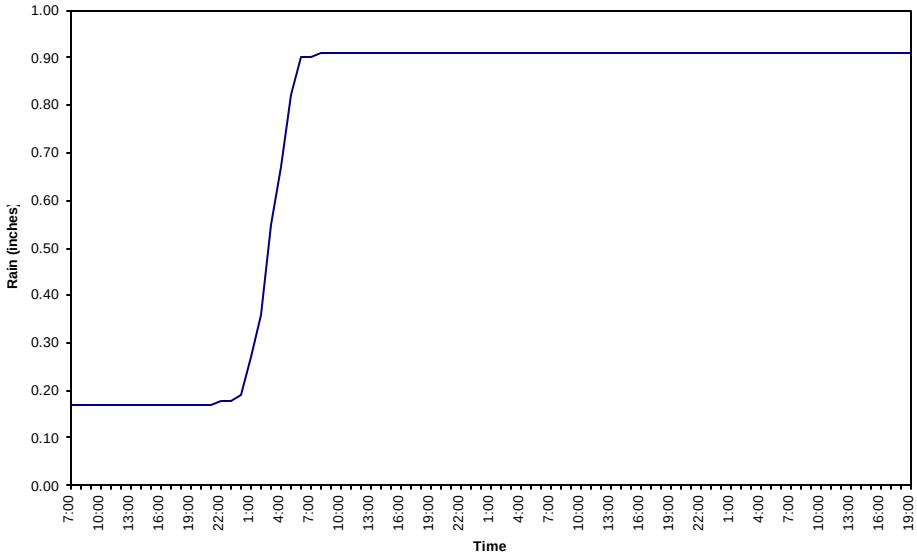
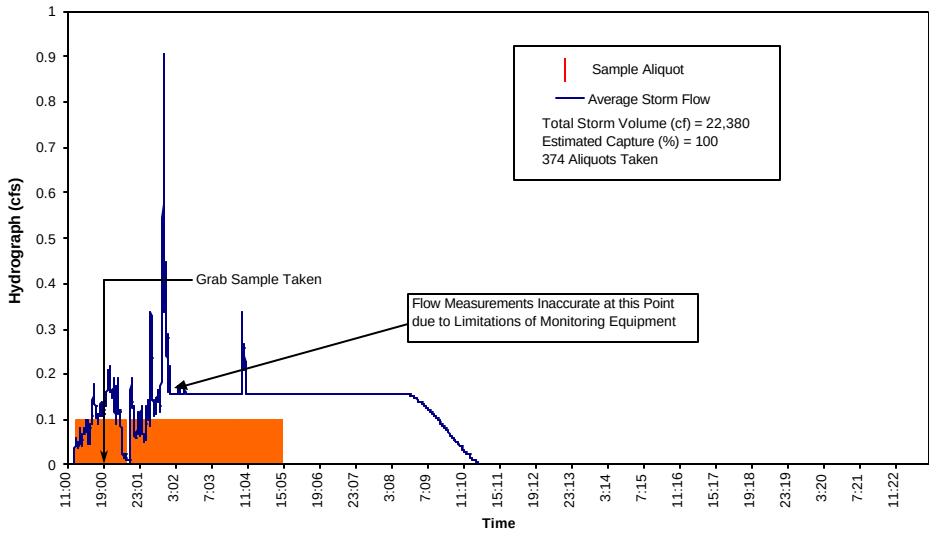
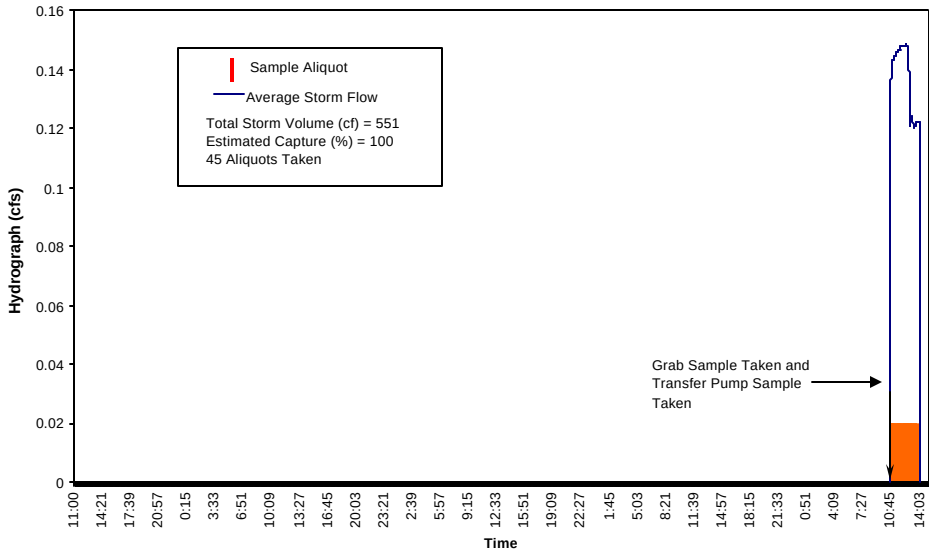


Figure 1-15a: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Via Verde Park & Ride Multi-chambered Treatment Train for Event 2 on October 26-29, 2000

Influent



Effluent



Cumulative Rainfall

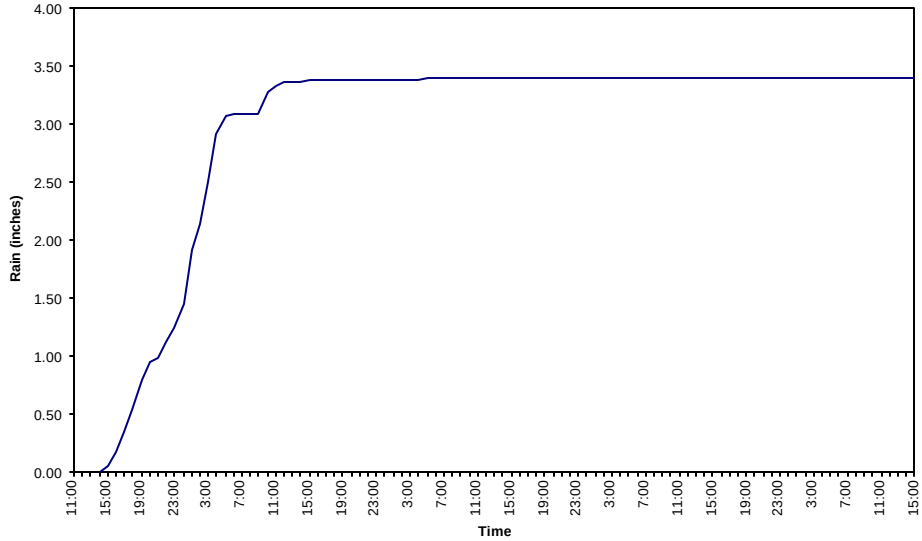
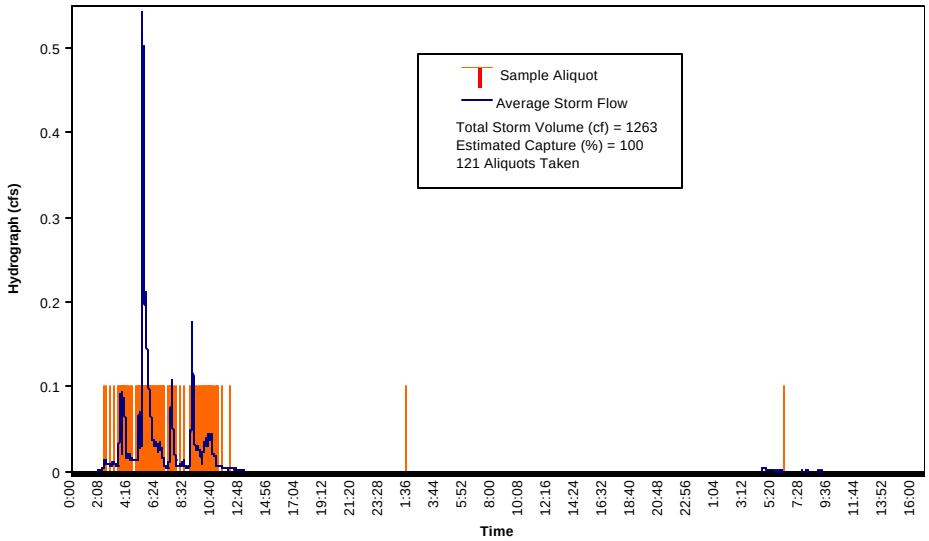
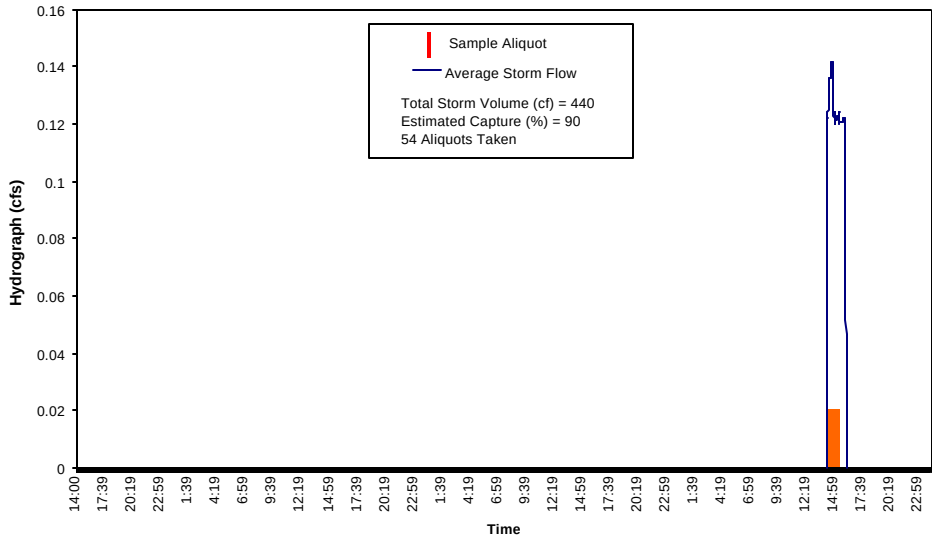


Figure 1-15b: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Via Verde Park & Ride Multi-chambered Treatment Train for Event 4 on January 10-14, 2001

Influent



Effluent



Cumulative Rainfall

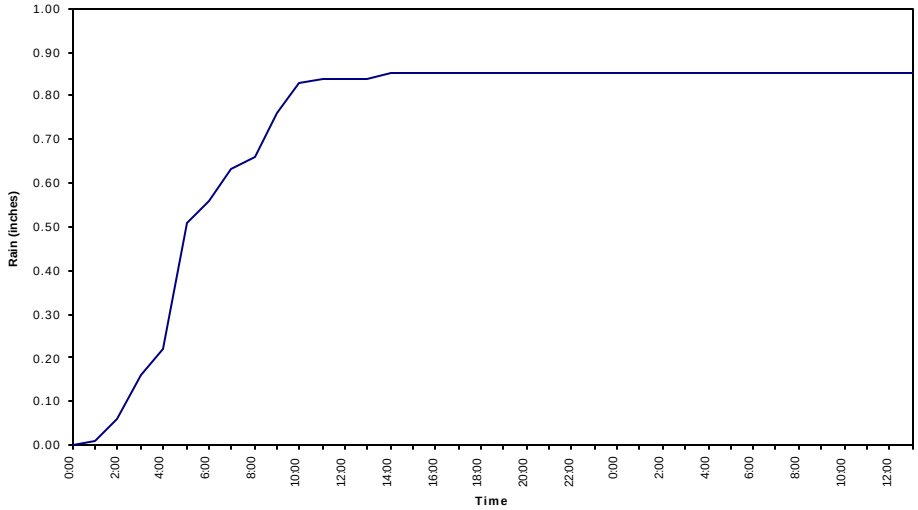
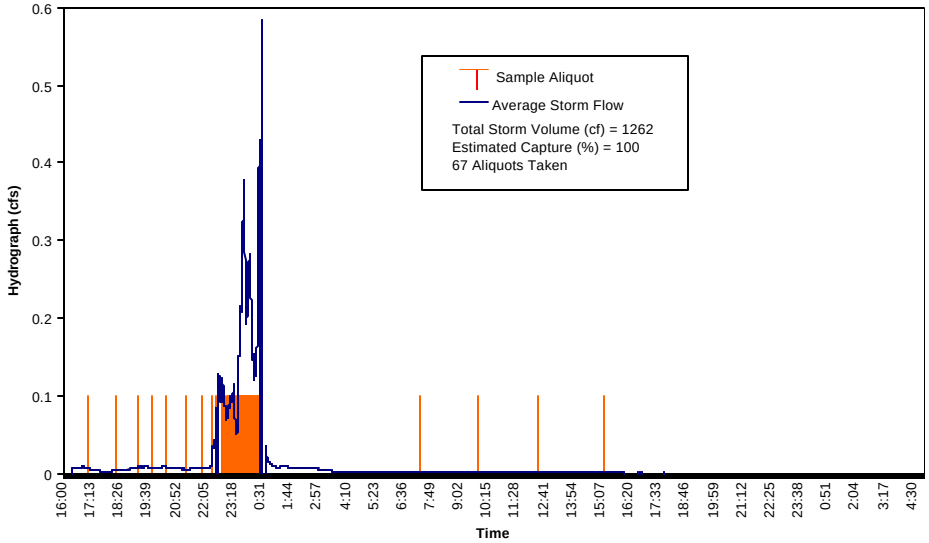
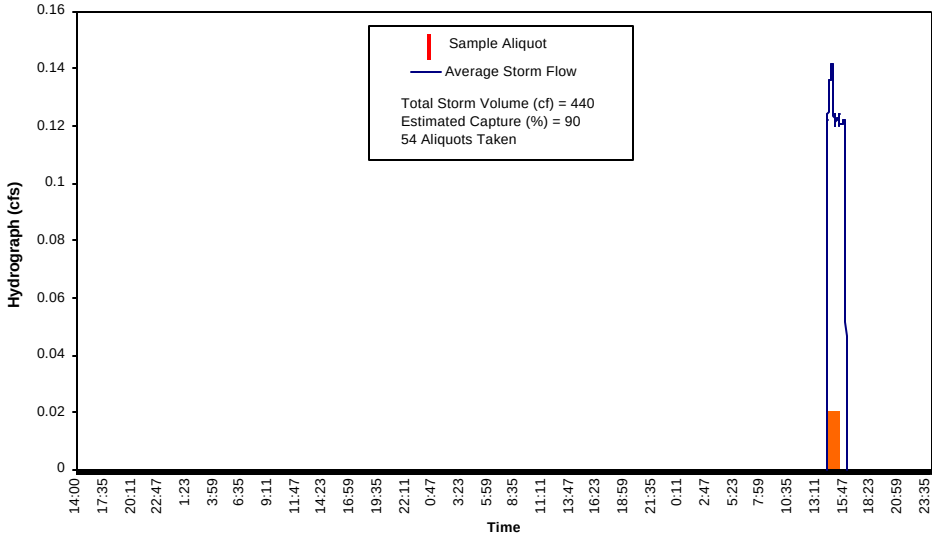


Figure 1-15c: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Via Verde Park & Ride Multi-chambered Treatment Train for Event 9 on April 7-9, 2001

Influent



Effluent



Cumulative Rainfall

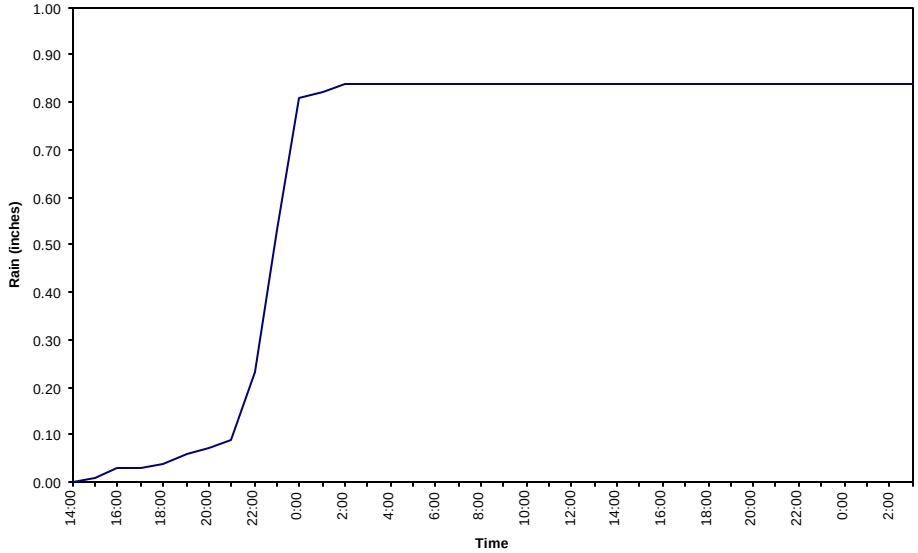
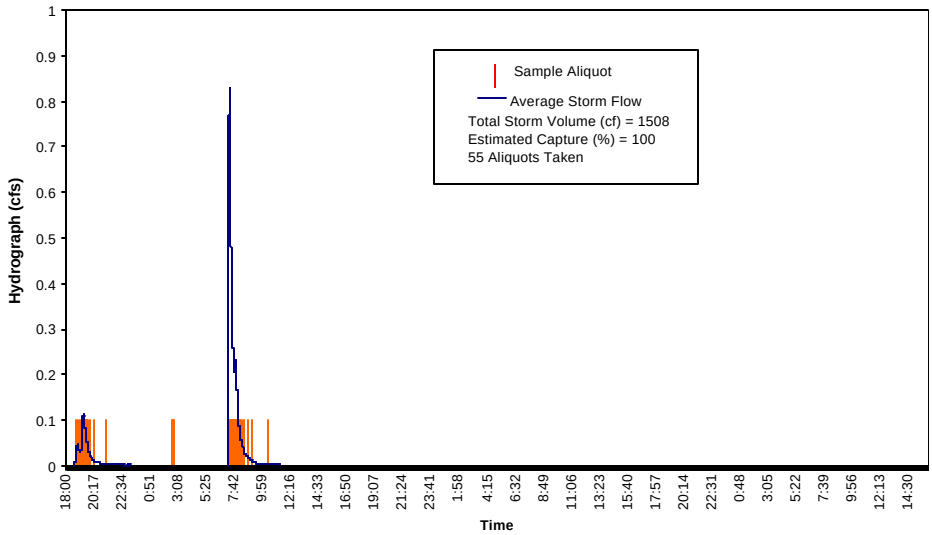
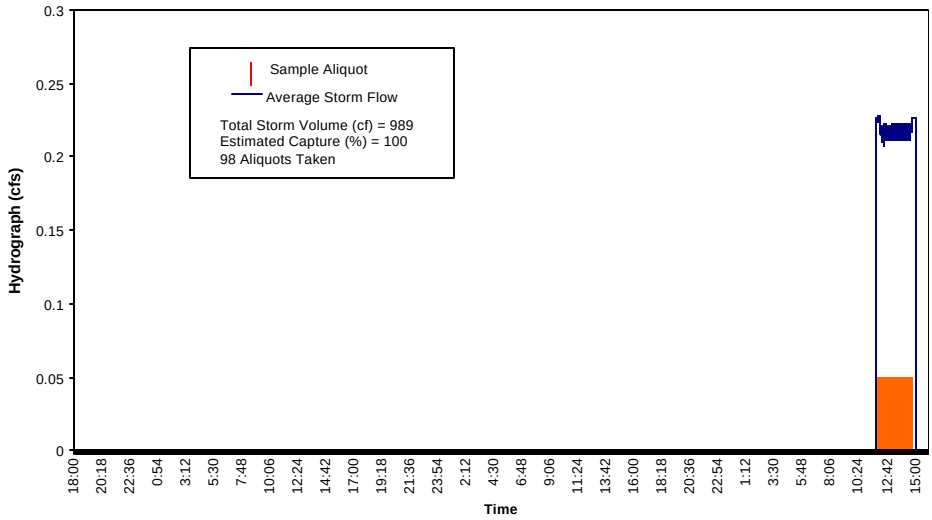


Figure 1-15d: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Via Verde Park & Ride Multi-chambered Treatment Train for Event 10 on April 20-23, 2001

Influent



Effluent



Cumulative Rainfall

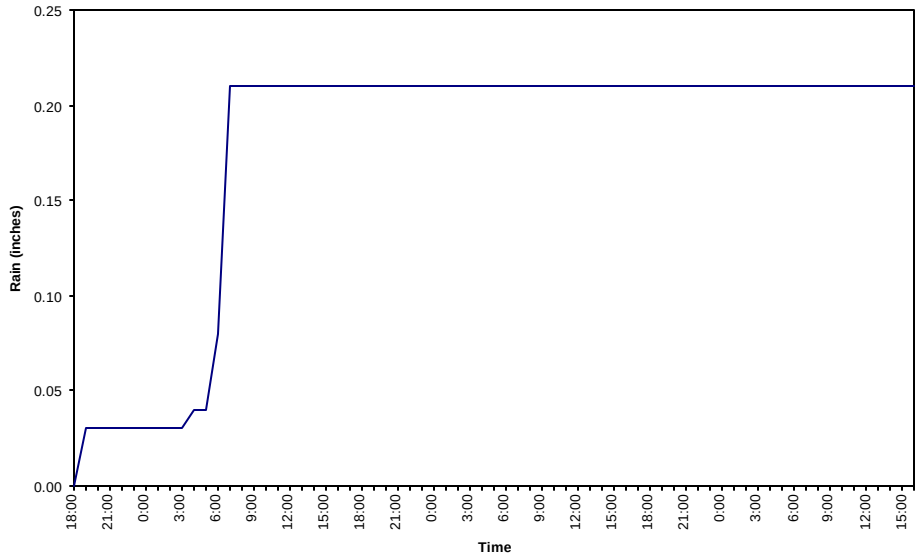
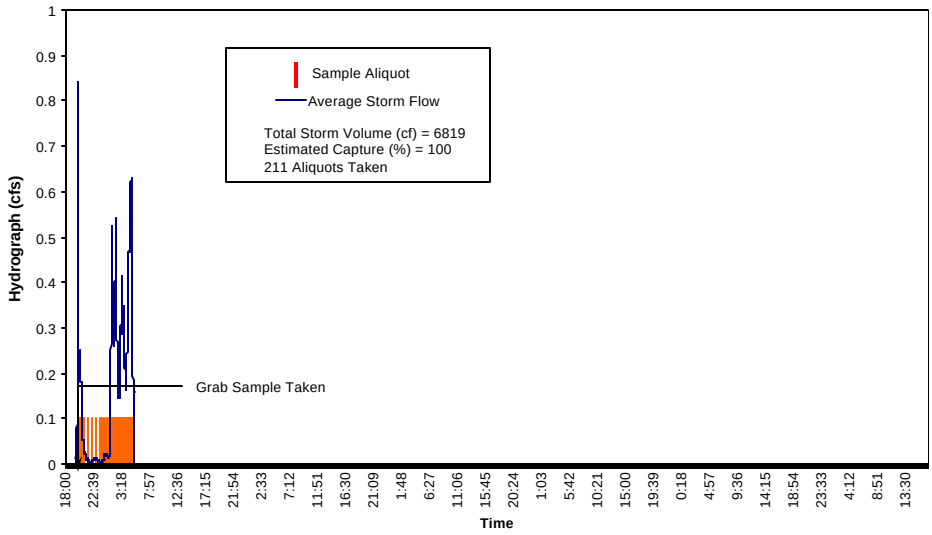
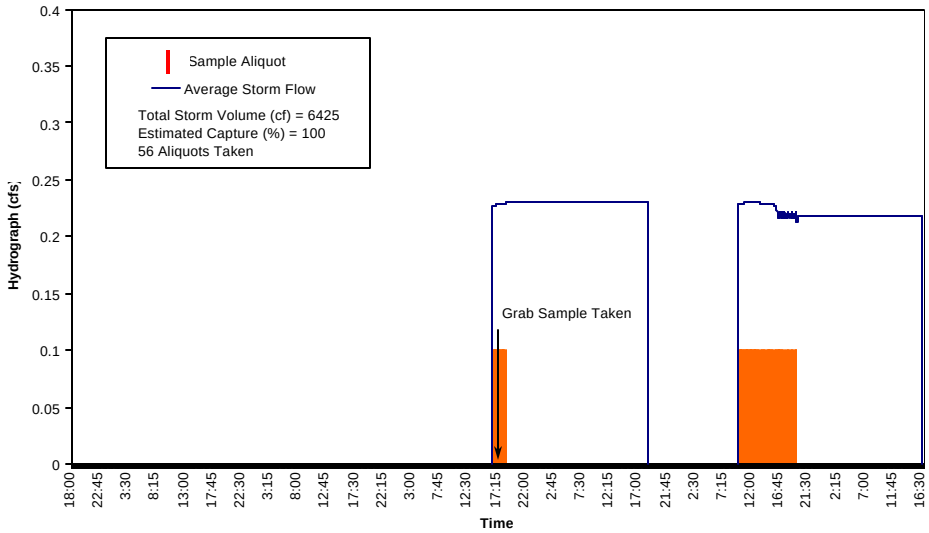


Figure 1-16a: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Lakewood Park & Ride Multi-chambered Treatment Train for Event 1 on October 10-13, 2000

Influent



Effluent



Cumulative Rainfall

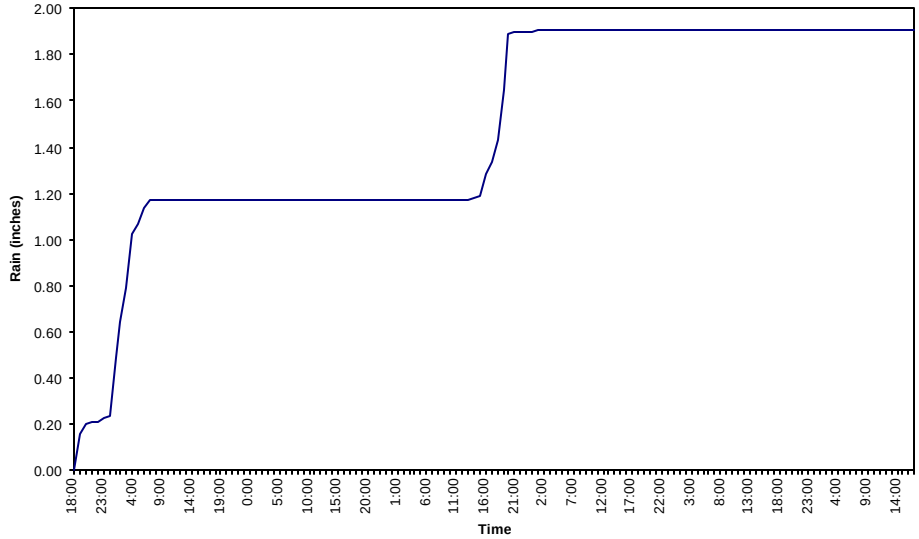
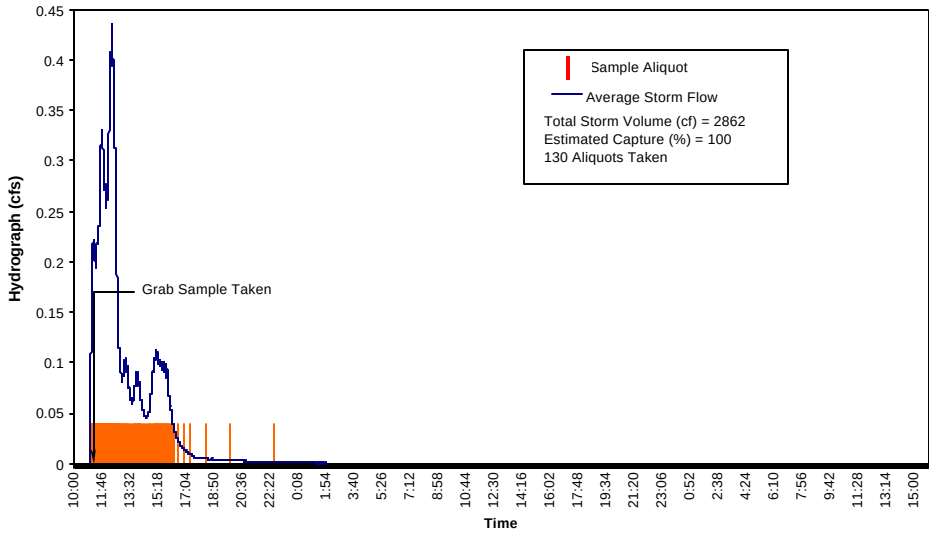
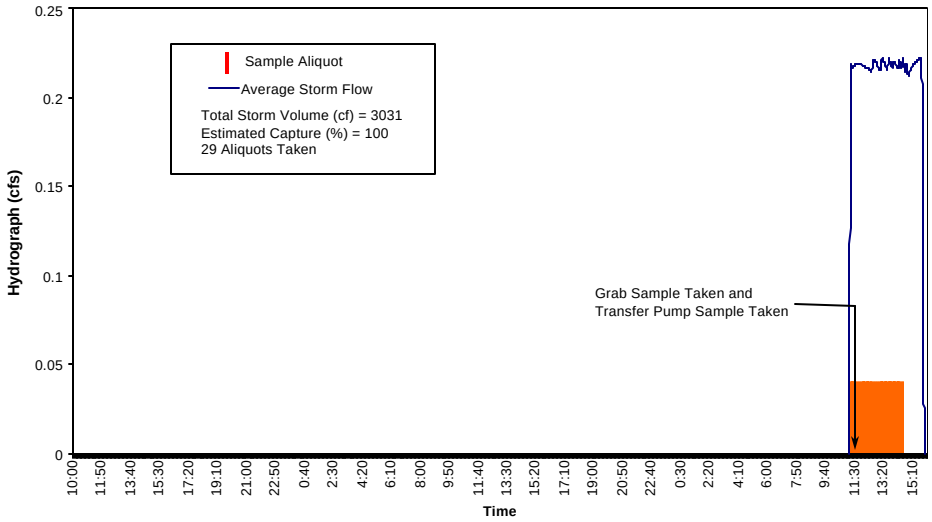


Figure 1-16b: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Lakewood Park & Ride Multi-chambered Treatment Train for Event 2 on October 26-October 31, 2000

Influent



Effluent



Cumulative Rainfall

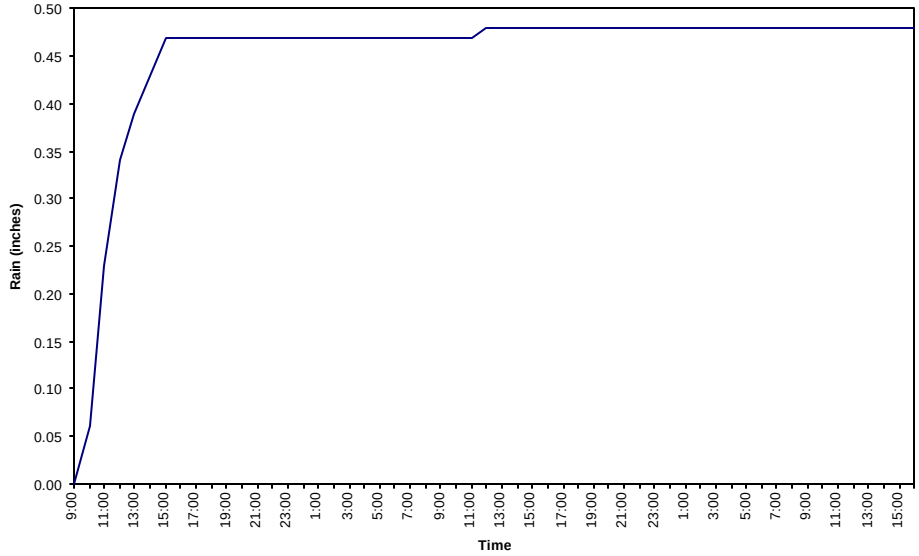
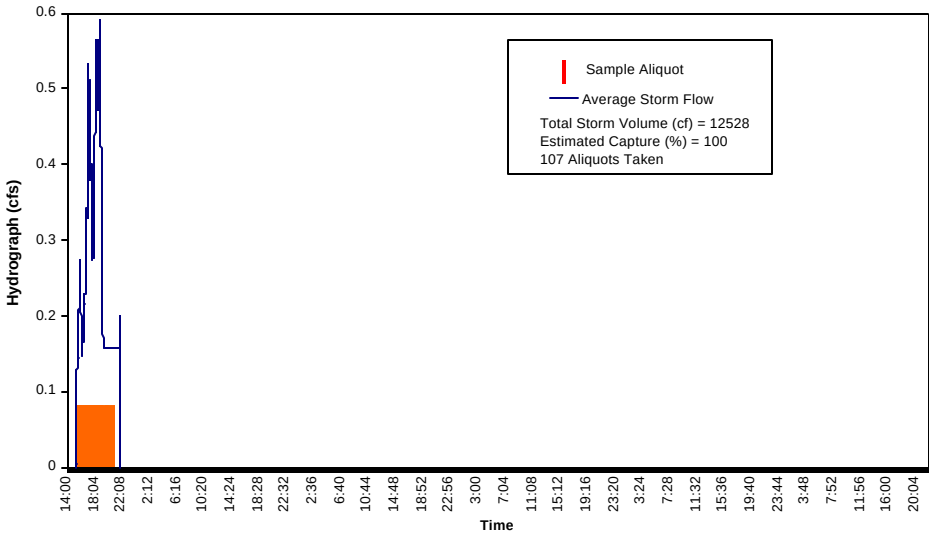
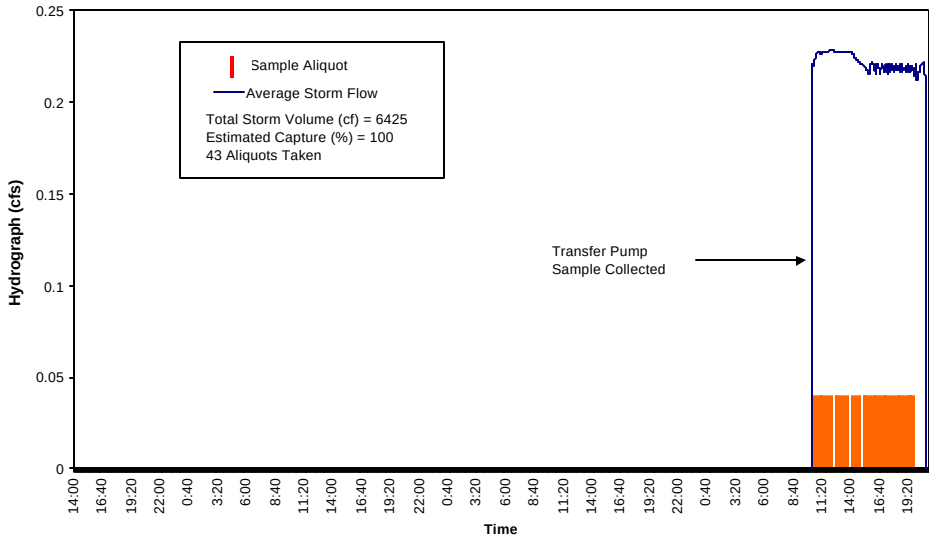


Figure 1-16c: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Lakewood Park & Ride Multi-chambered Treatment Train for Event 3 on January 8-10, 2001

Influent



Effluent



Cumulative Rainfall

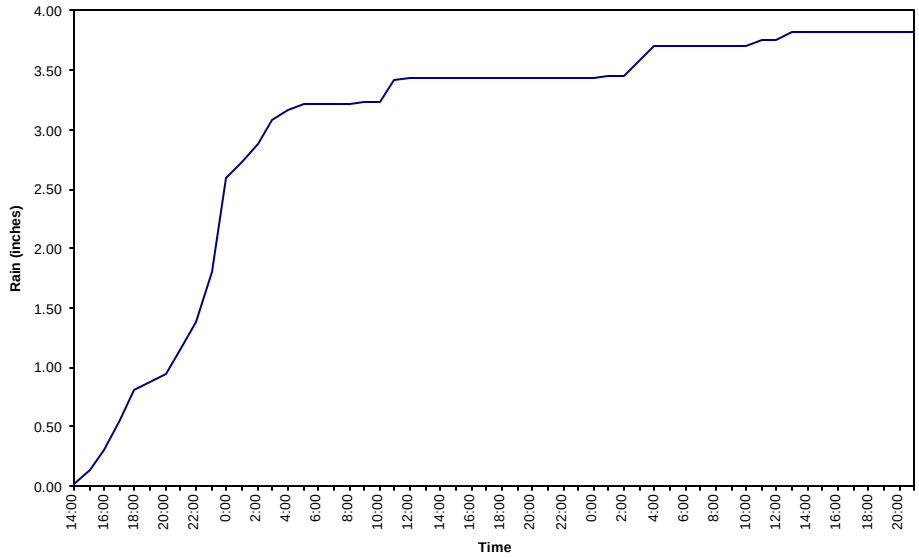
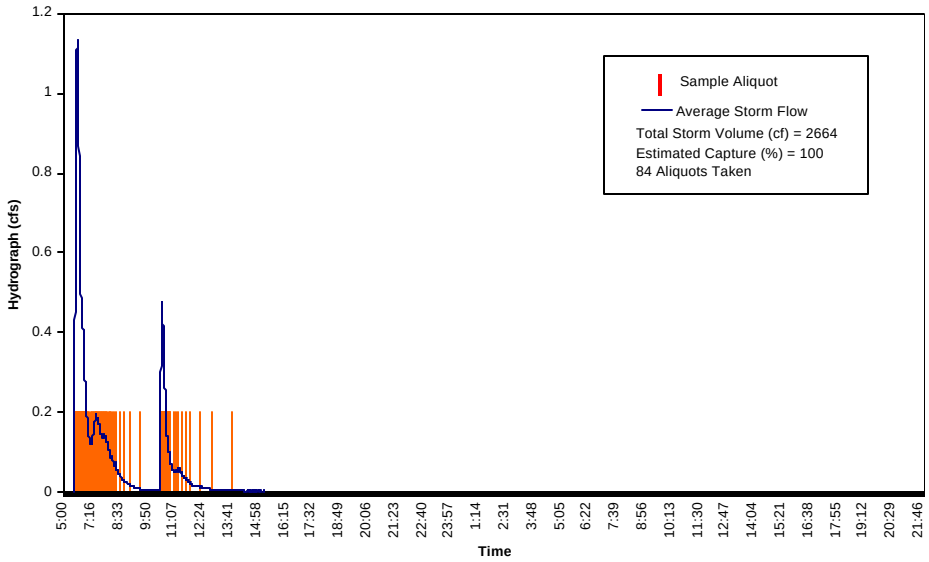
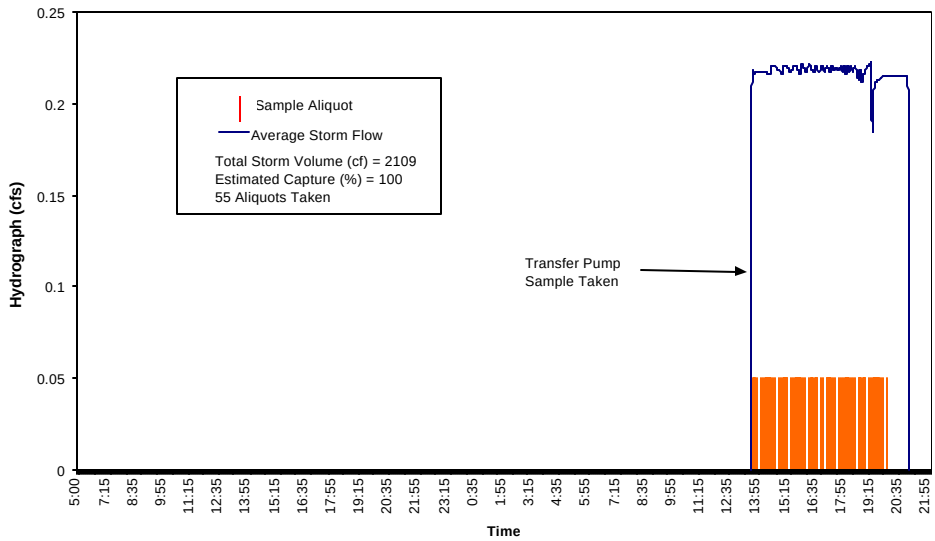


Figure 1-16d: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Lakewood Park & Ride Multi-chambered Treatment Train for Event 4 on January 10-13, 2001

Influent



Effluent



Cumulative Rainfall

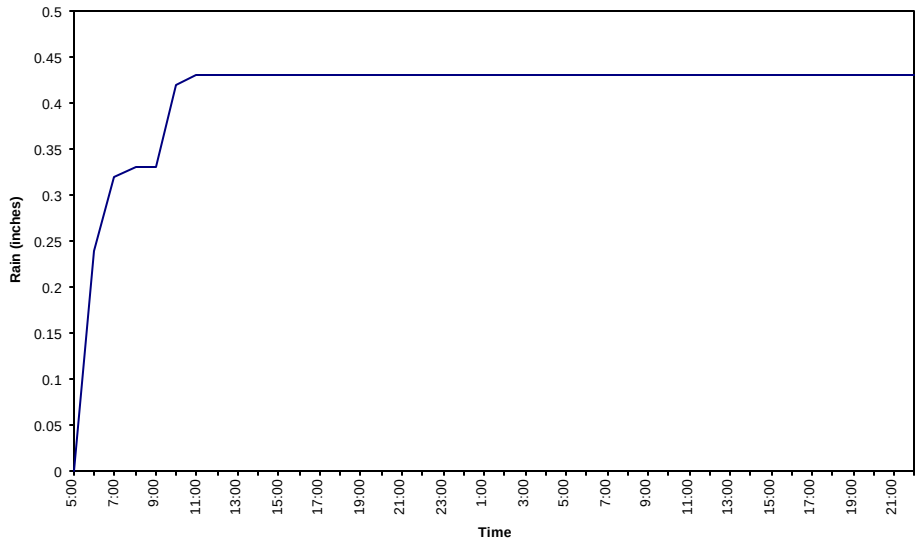
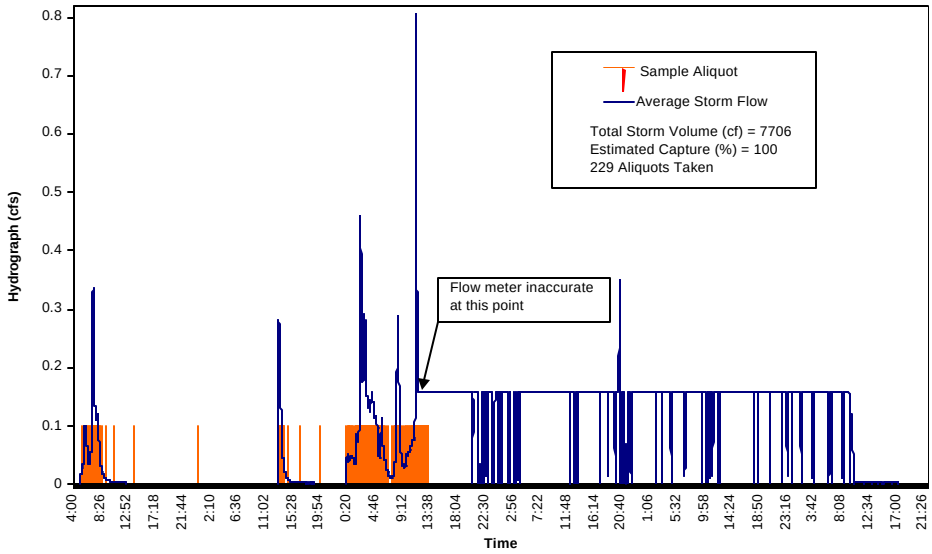
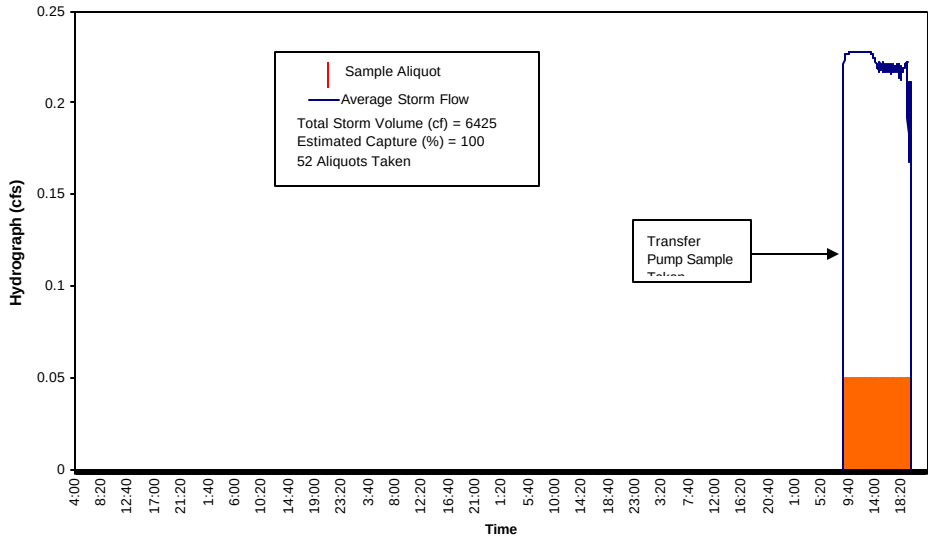


Figure 1-16e: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Lakewood Park & Ride Multi-chambered Treatment Train for Event 5 on January 24-25, 2001

Influent



Effluent



Cumulative Rainfall

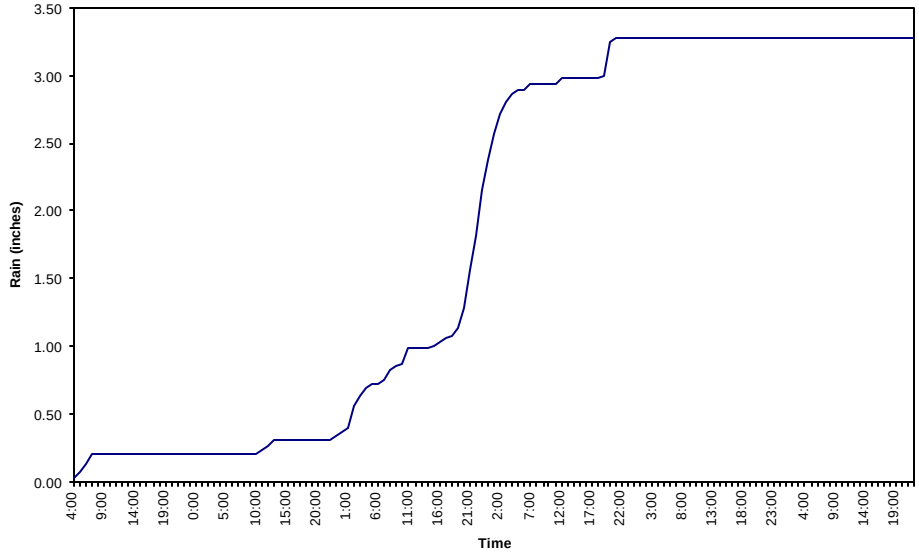
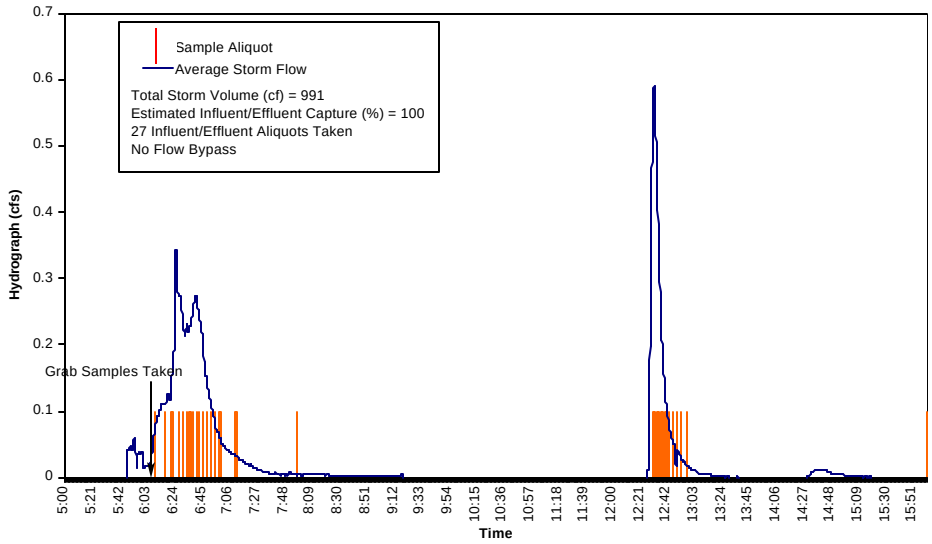
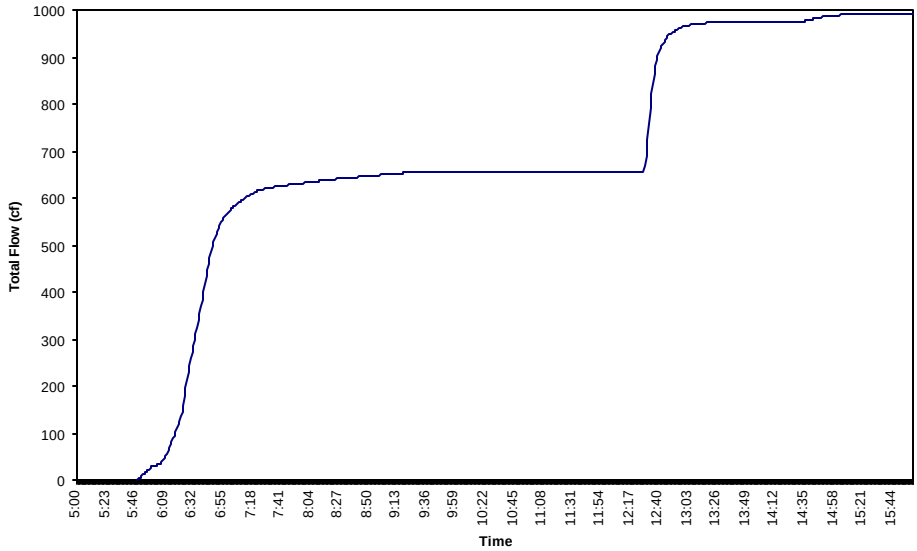


Figure 1-16f: Influent and Effluent Hydrograph, and Cumulative Rainfall at the Lakewood Park & Ride Multi-chambered Treatment Train for Event 6 on February 10-15, 2001

Effluent



Cumulative Flow



Cumulative Rainfall

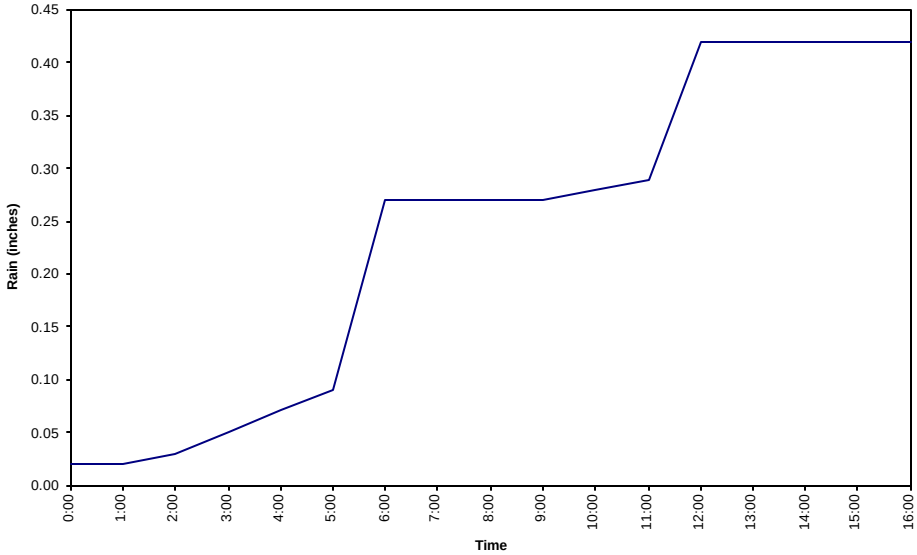
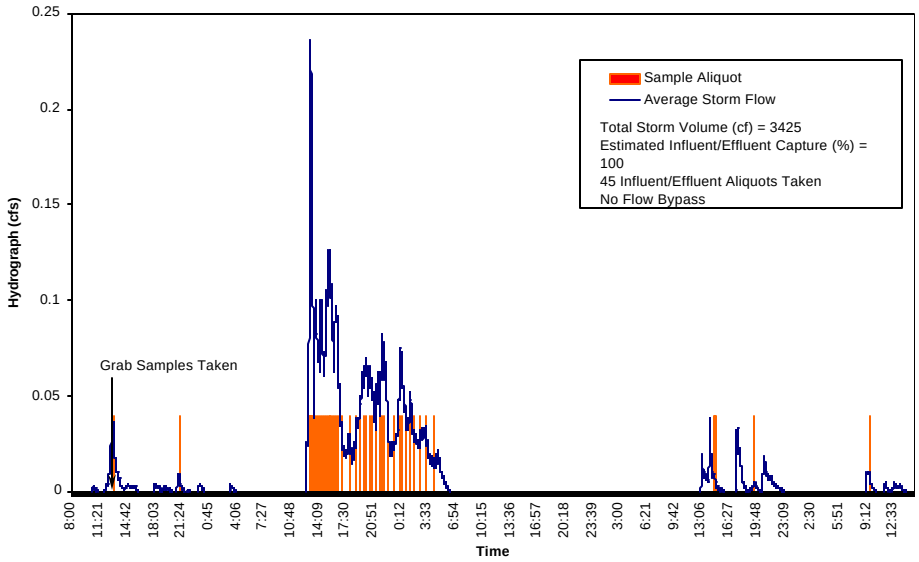
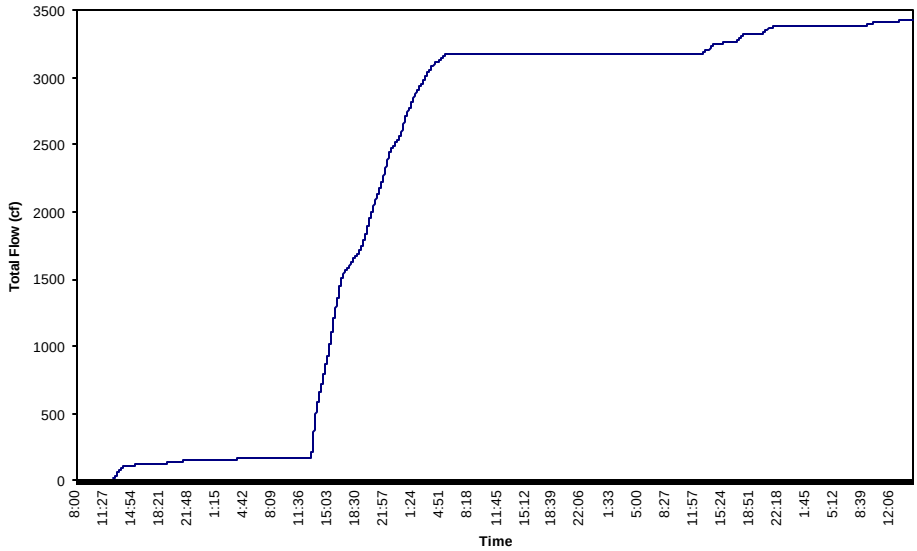


Figure 1-17a: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the Orcas Avenue CDS Unit for Event 6 on February 10, 2001

Effluent



Cumulative Flow



Cumulative Rainfall

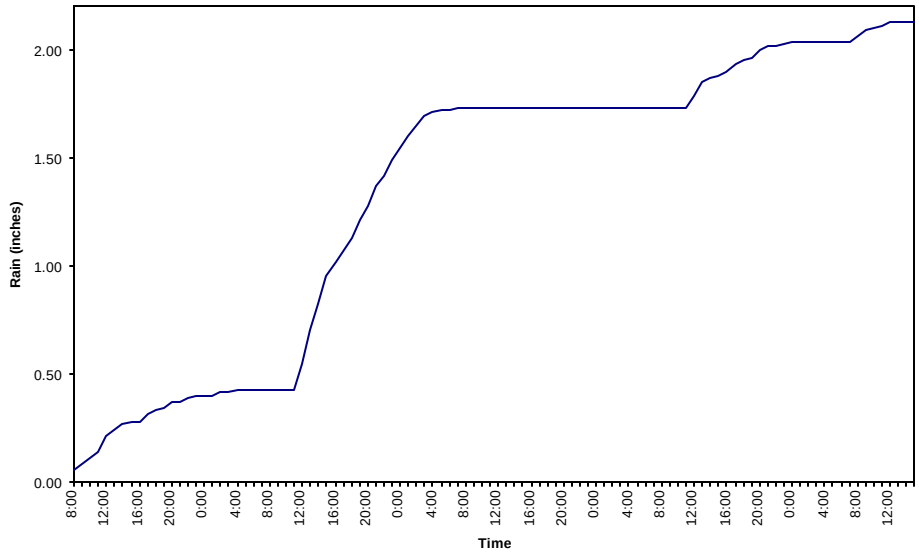
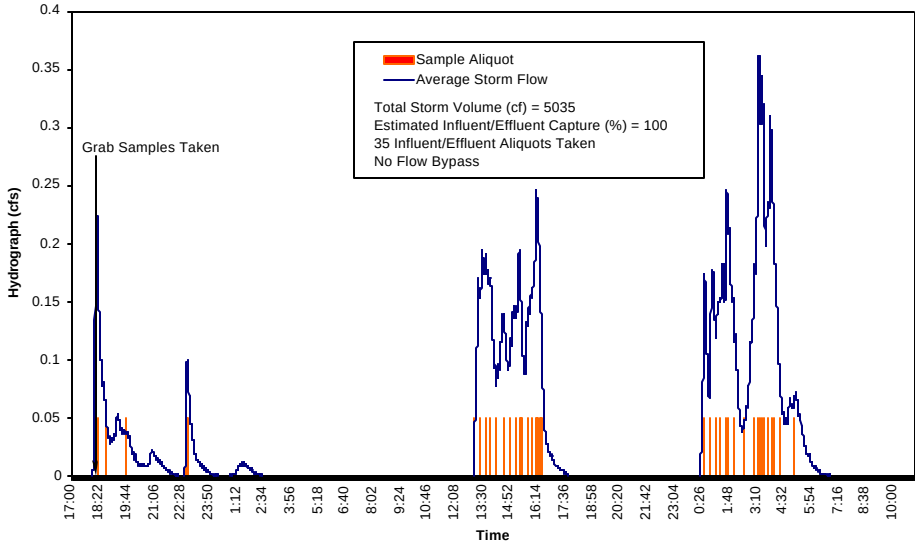
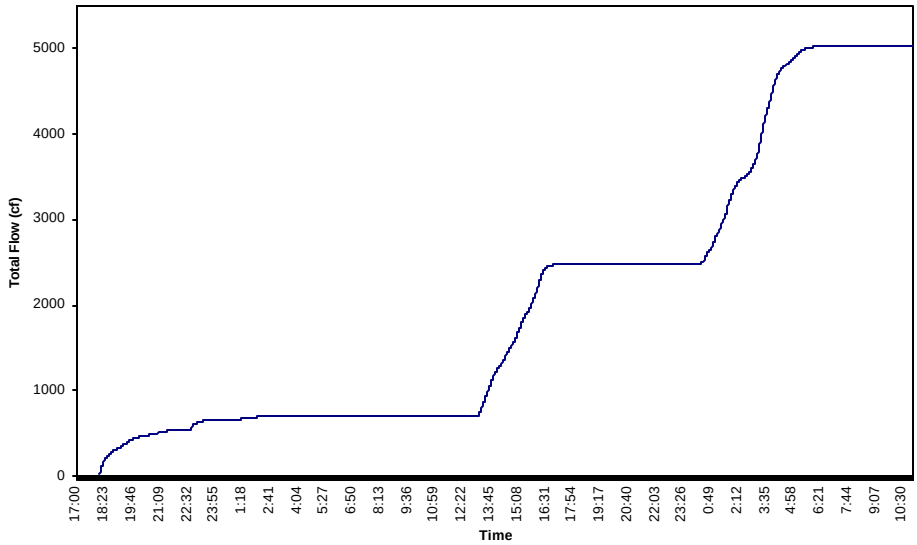


Figure 1-17b: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the Orcas Avenue CDS Unit for Event 7 on February 24-28, 2001

Effluent



Cumulative Flow



Cumulative Rainfall

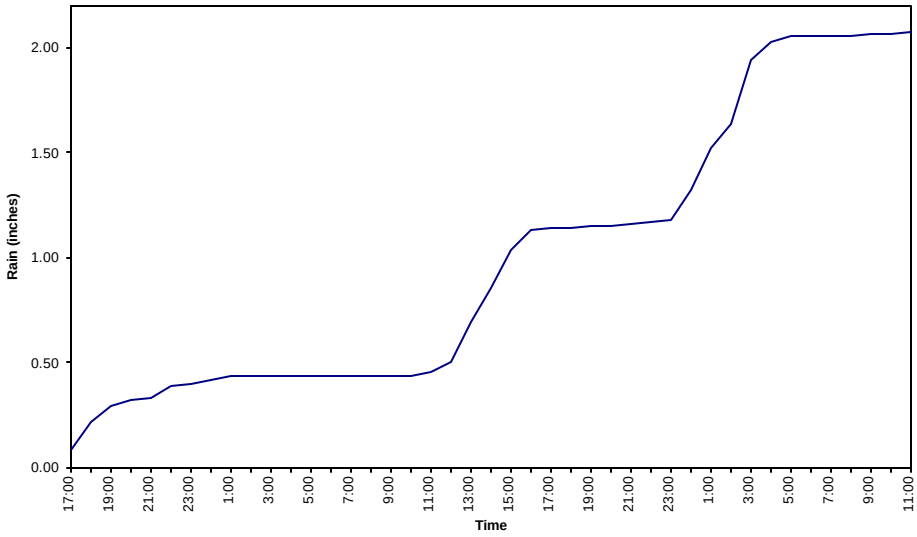
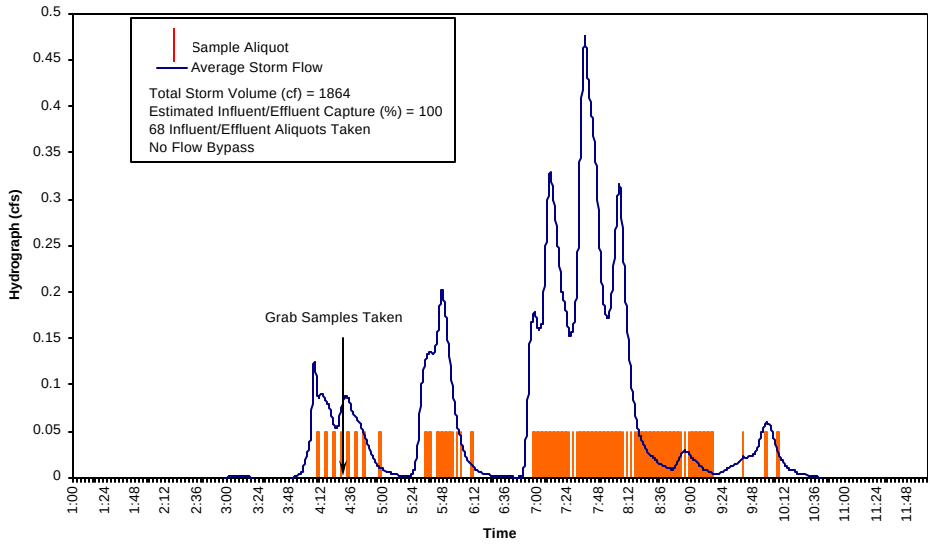
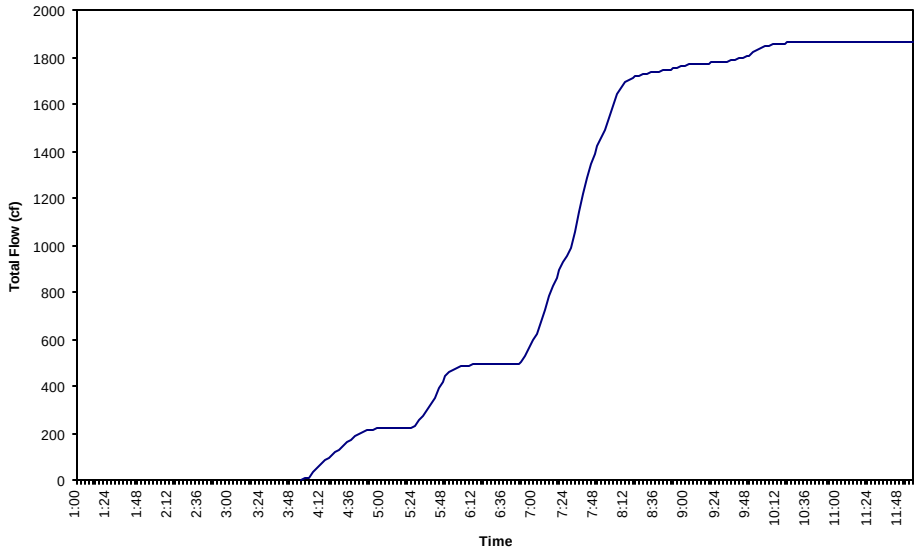


Figure 1-17c: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the Orcas Avenue CDS Unit for Event 8 on March 4-6, 2001

Effluent



Cumulative Flow



Cumulative Rainfall

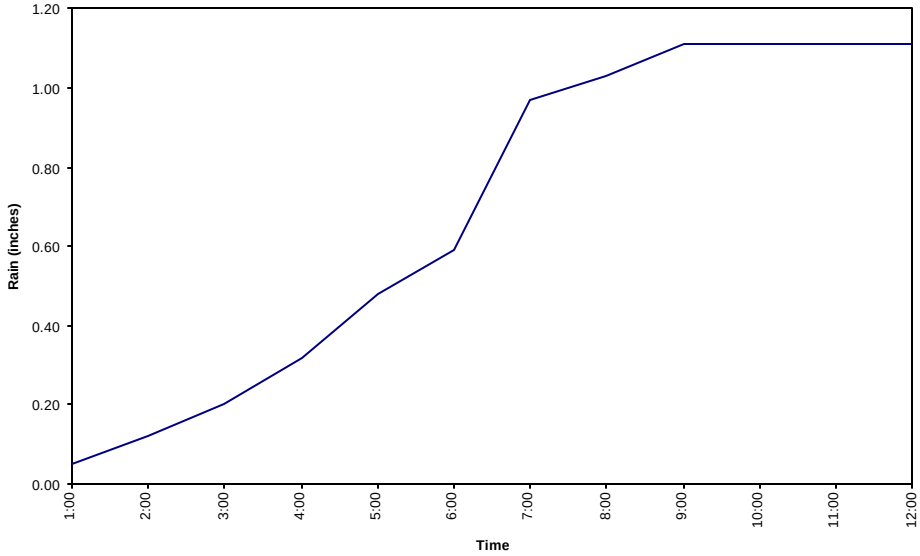
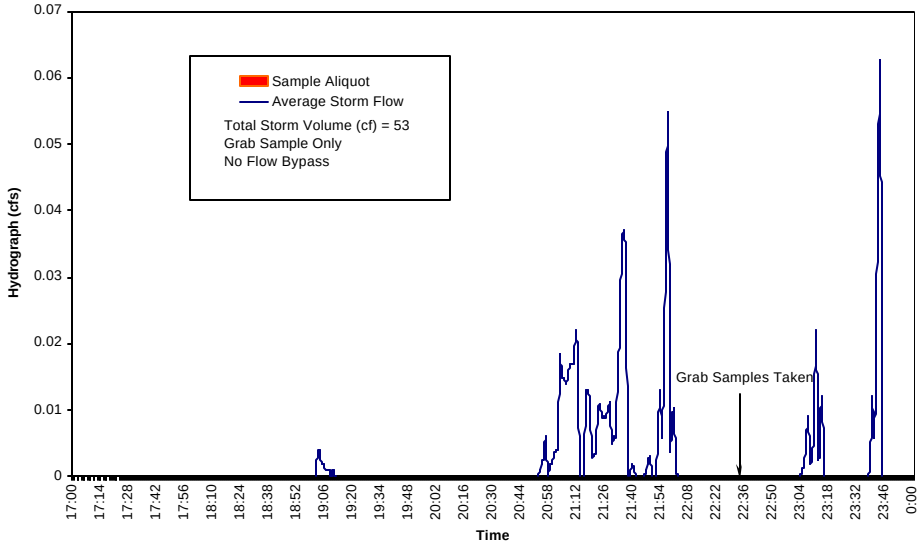
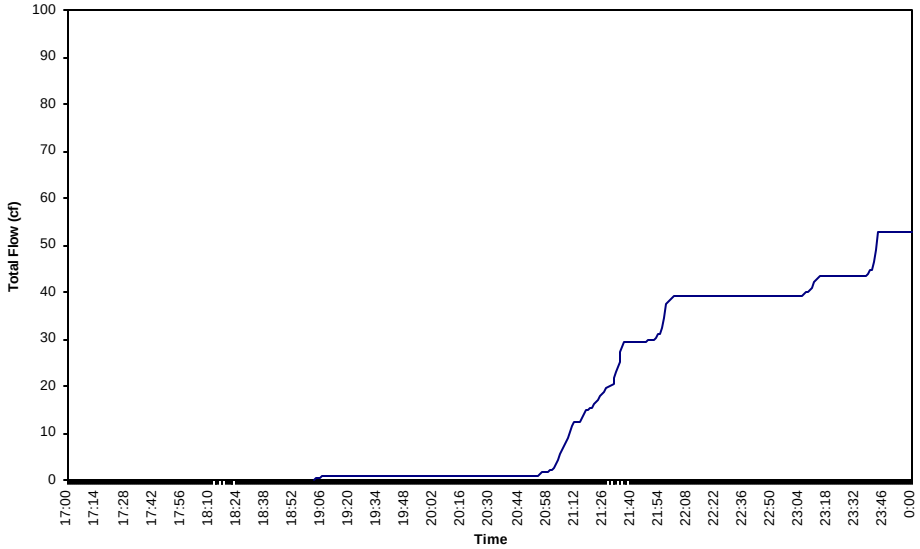


Figure 1-17d: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the Orcas Avenue CDS Unit for Event 9 on April 7, 2001

Effluent



Cumulative Flow



Cumulative Rainfall

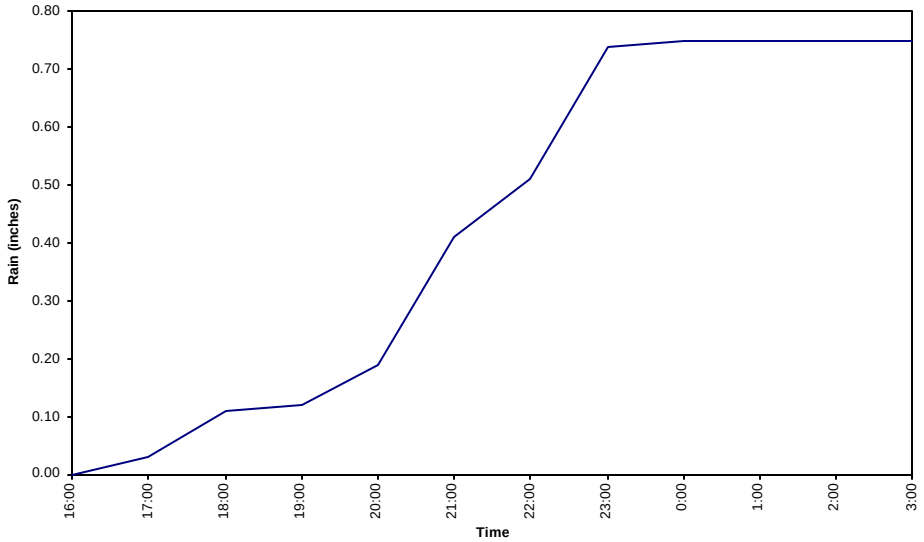
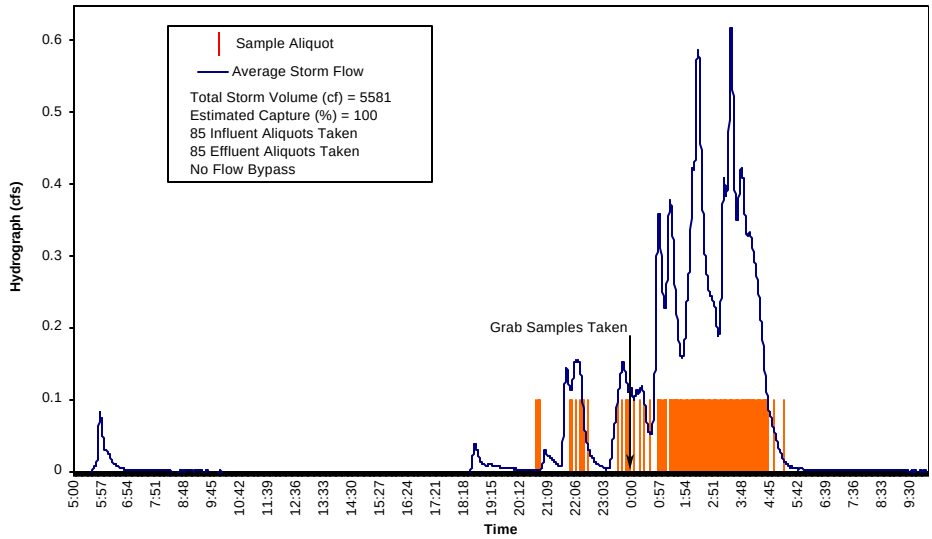
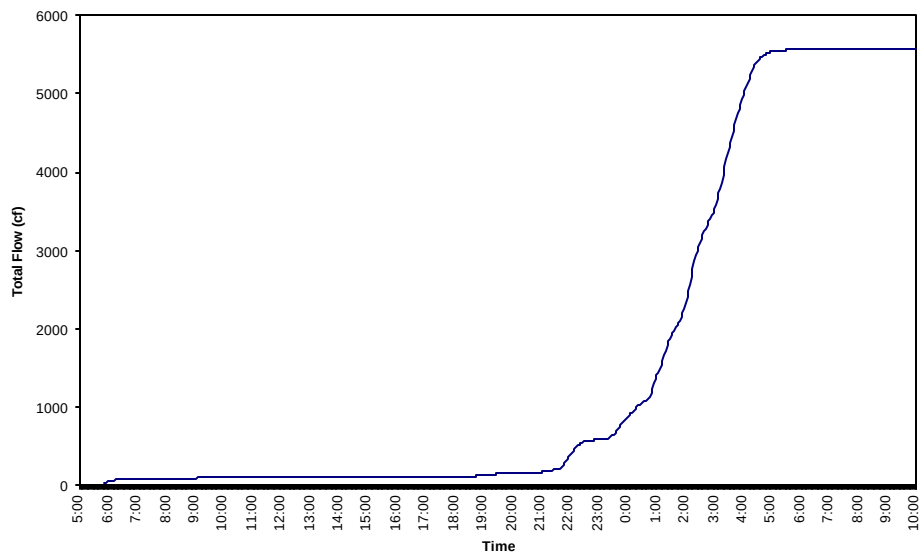


Figure 1-17e: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the Orcas Avenue CDS Unit for Event 10 on April 20-21, 2001

Effluent



Cumulative Flow



Cumulative Rainfall

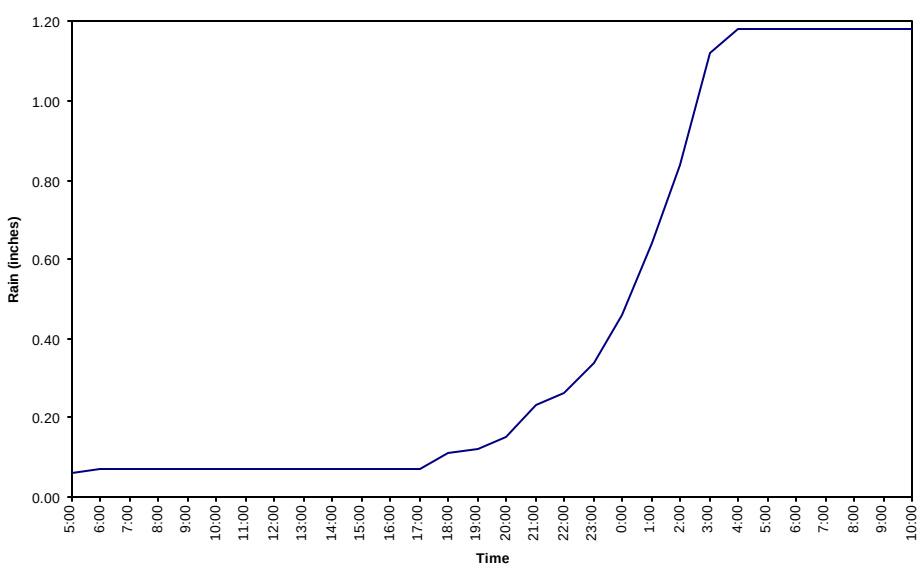
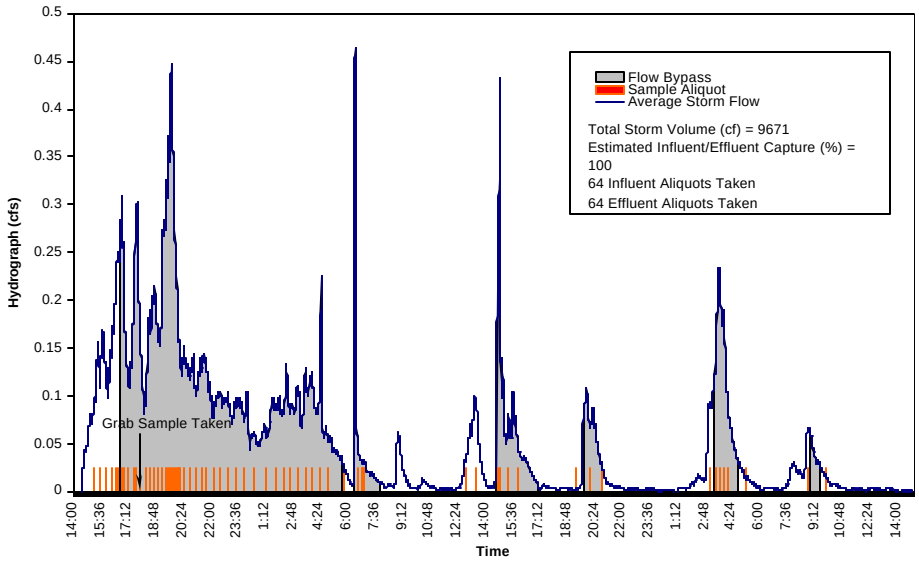
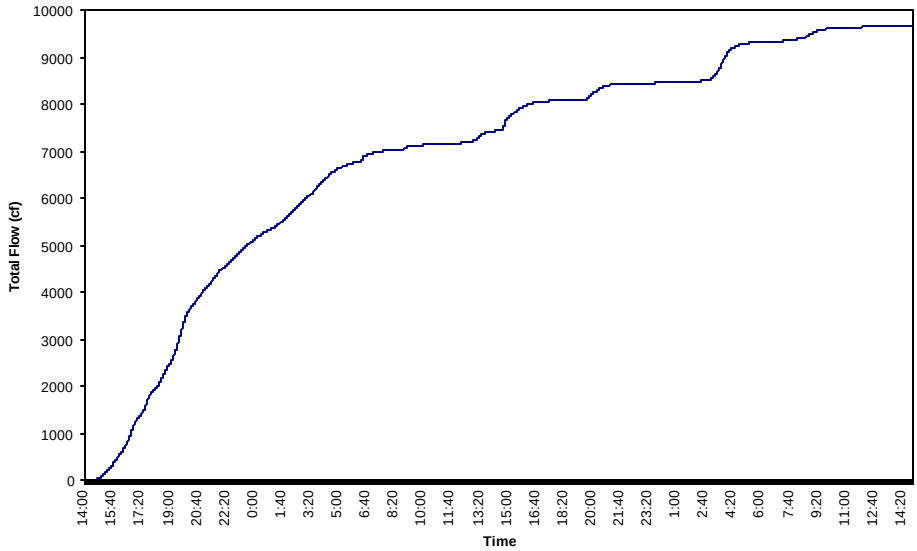


Figure 1-18a: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the I-210 East of Filmore Street CDS Unit for Event 2 on October 26-27, 2000

Effluent



Cumulative Flow



Cumulative Rainfall

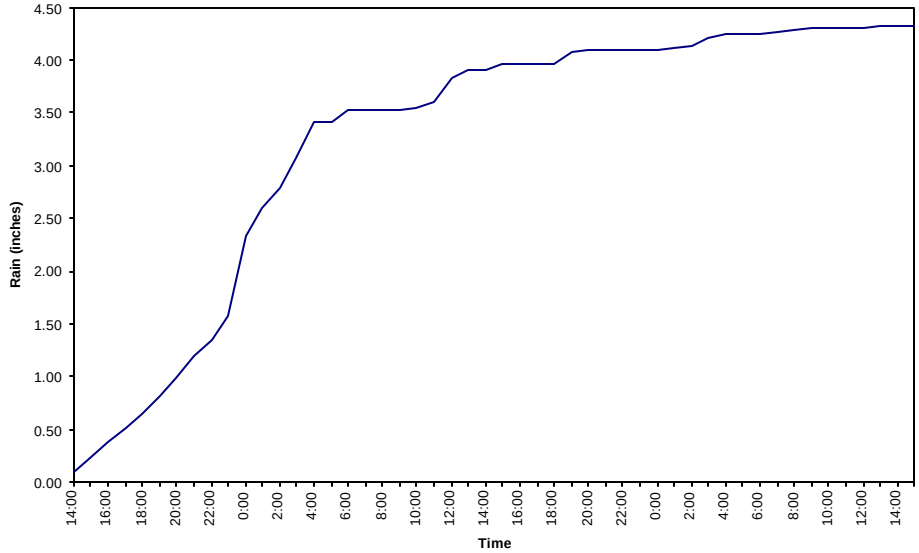
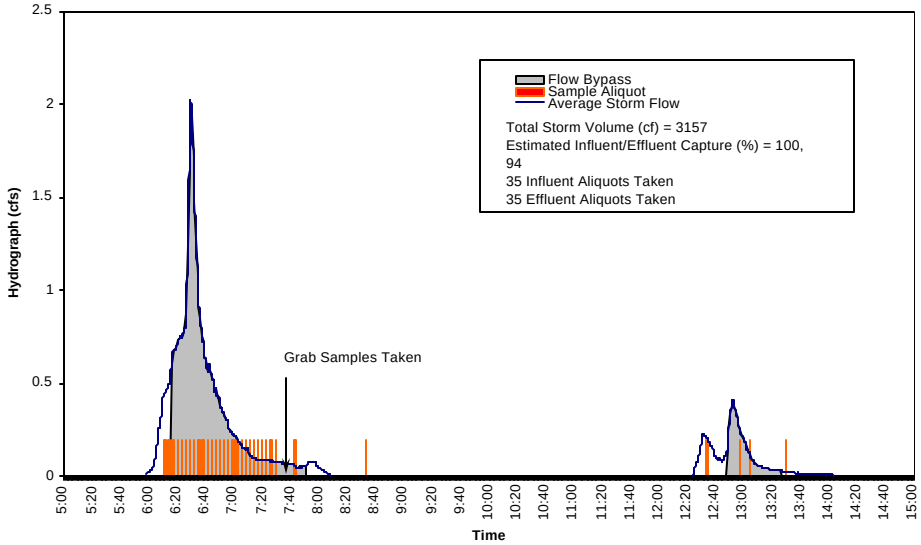
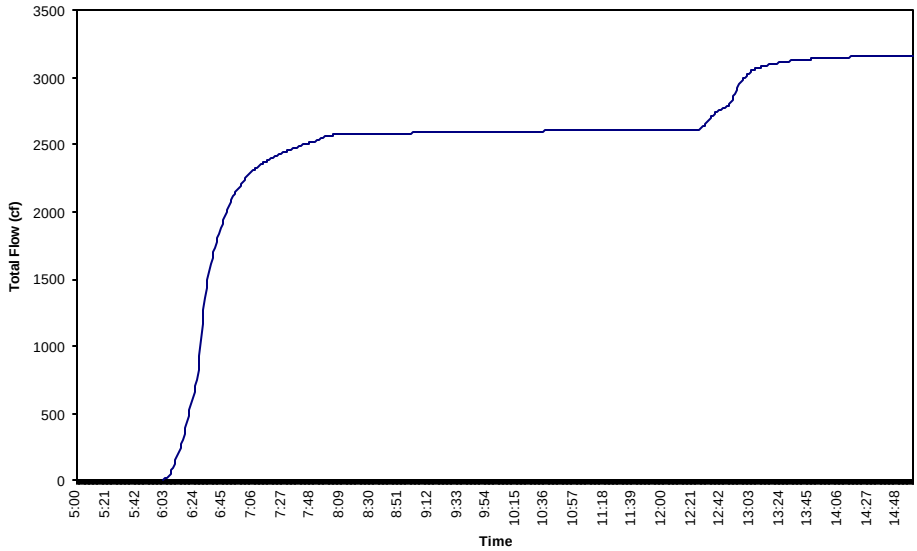


Figure 1-18b: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the I-210 East of Filmore Street CDS Unit for Event 4 on January 10-12, 2001

Effluent



Cumulative Flow



Cumulative Rainfall

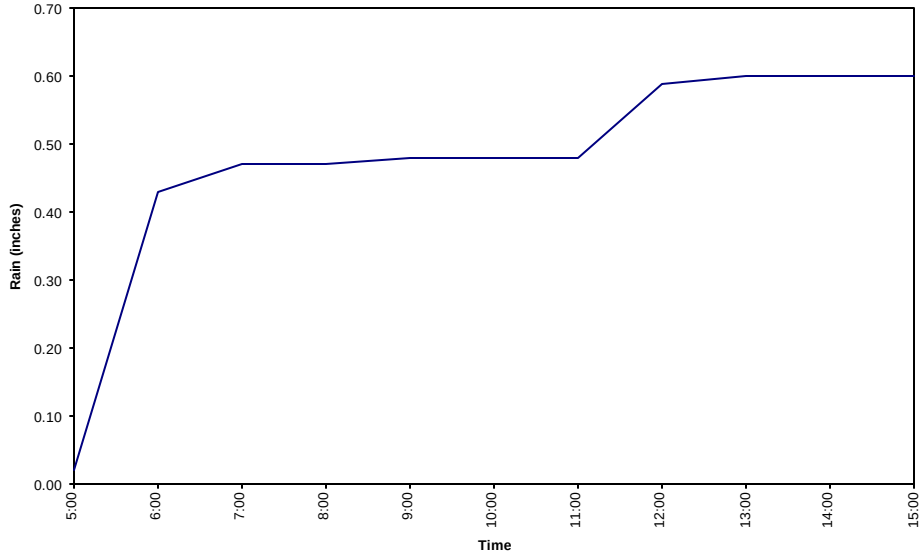
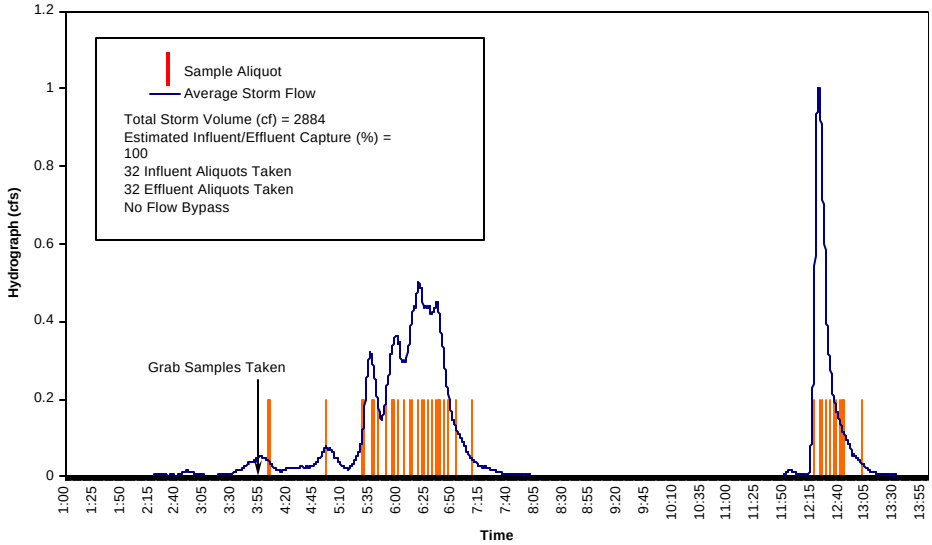
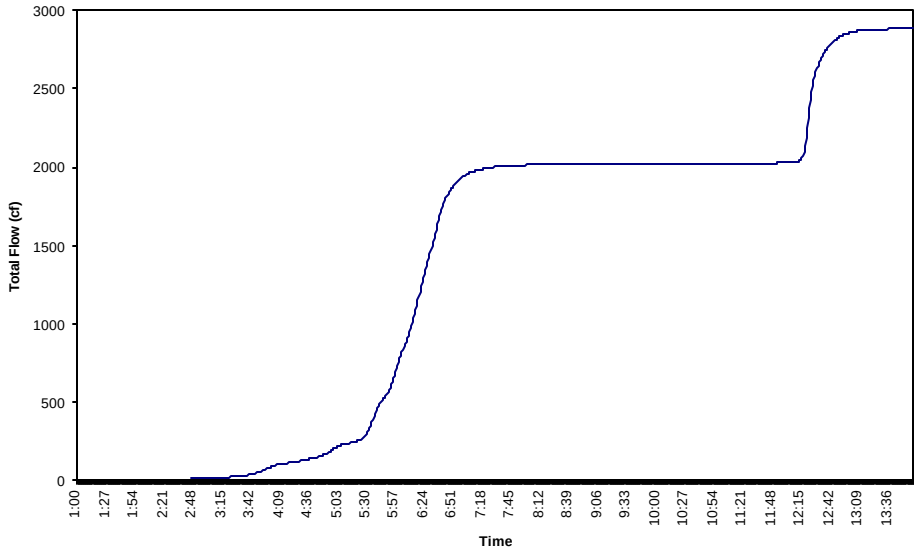


Figure 1-18c: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the I-210 East of Filmore Street CDS Unit for Event 5 on January 24, 2001

Effluent



Cumulative Flow



Cumulative Rainfall

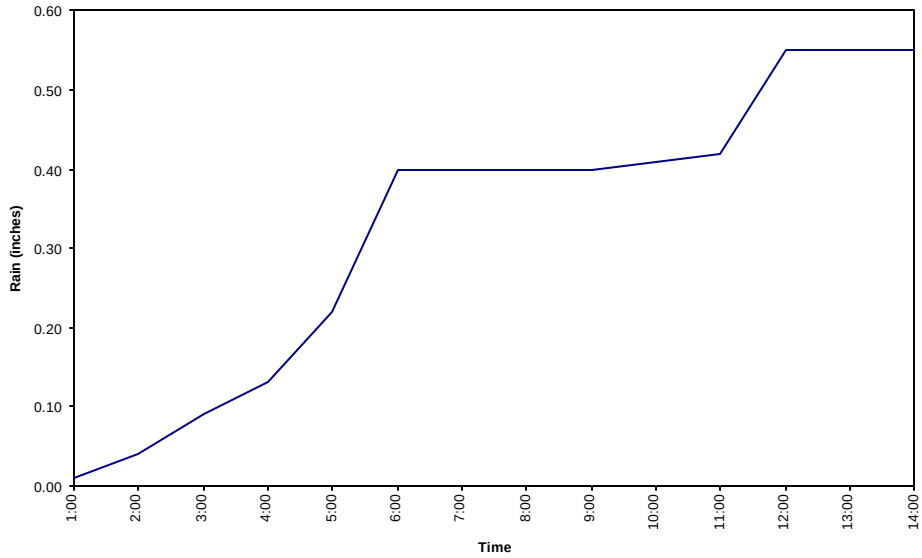
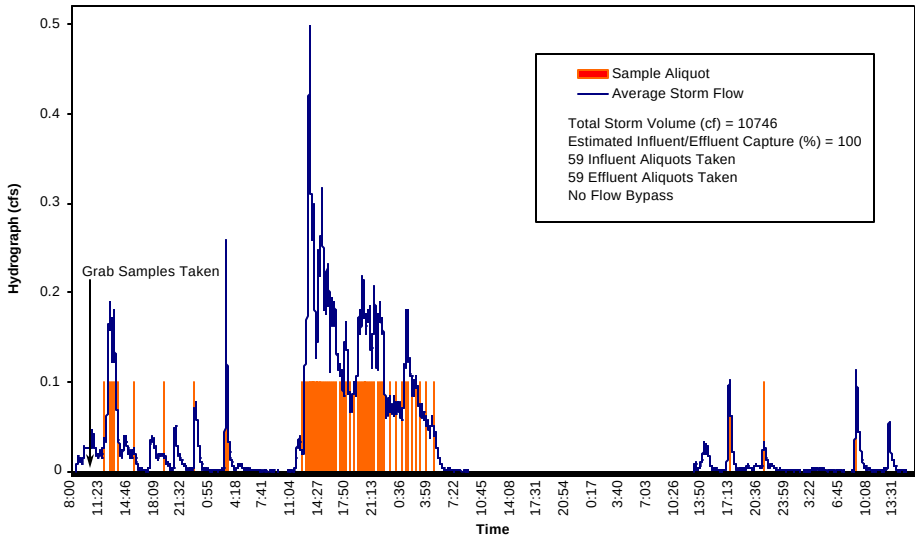
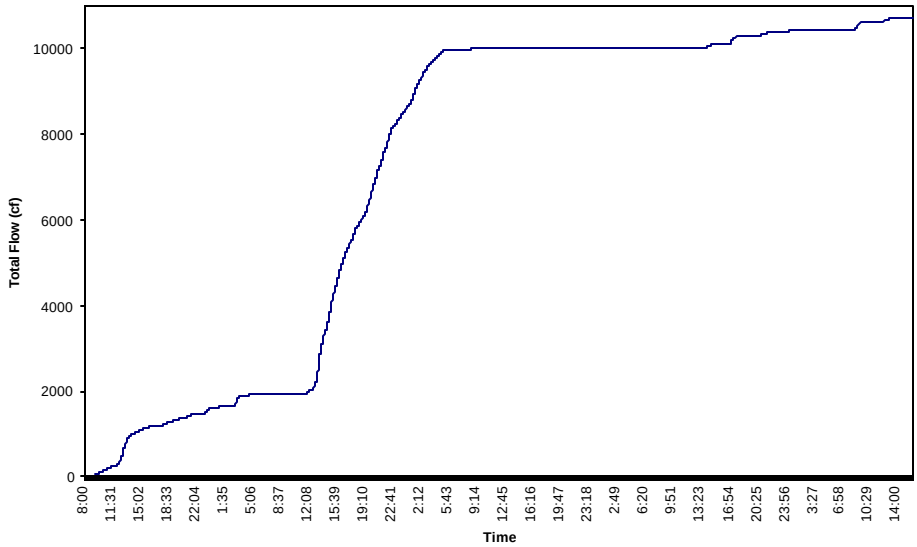


Figure 1-18d: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the I-210 East of Filmore Street CDS Unit for Event 6 on February 10, 2001

Effluent



Cumulative Flow



Cumulative Rainfall

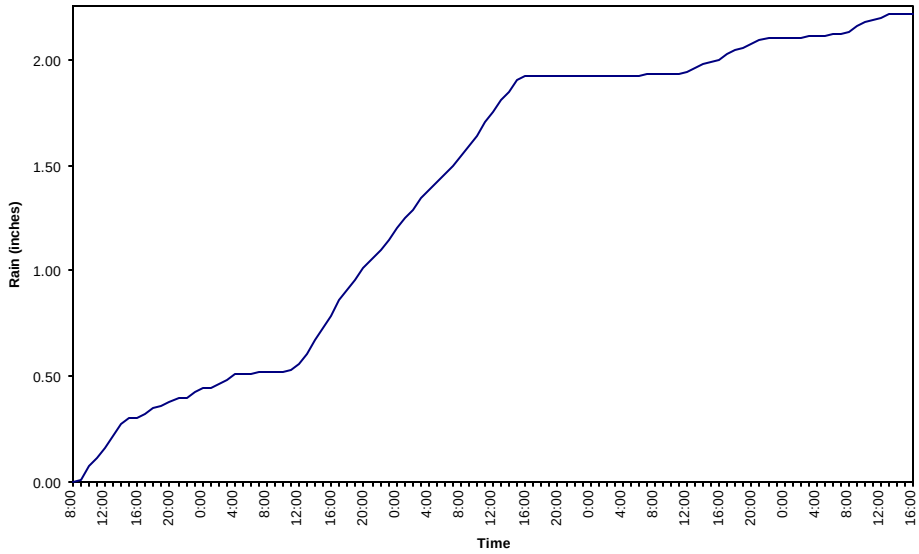
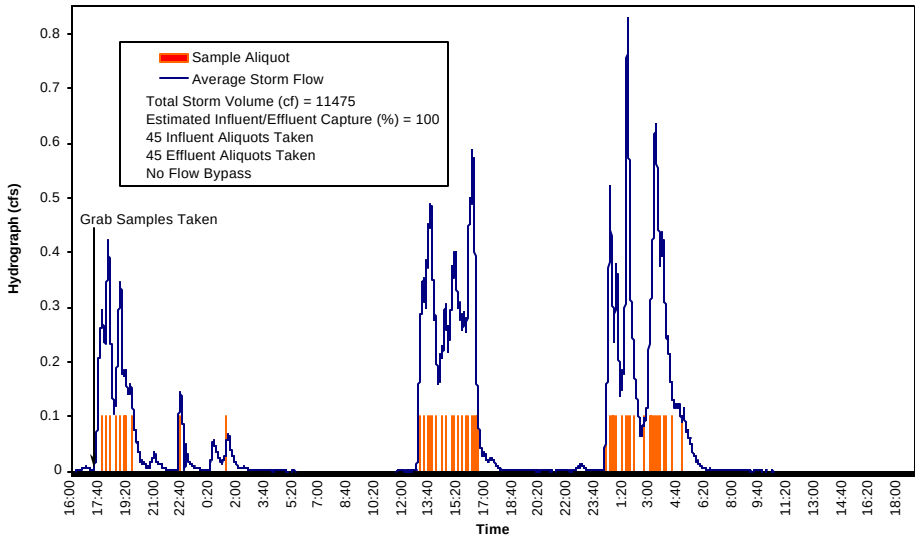
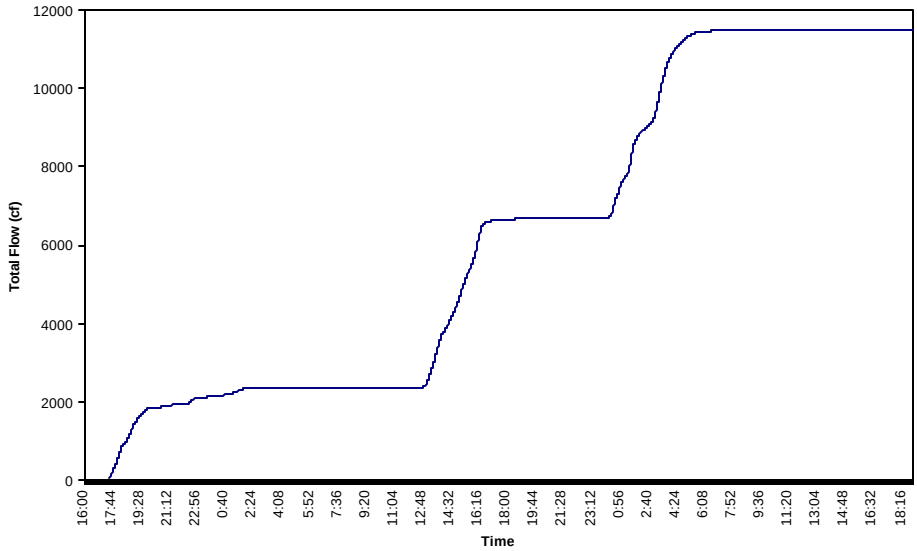


Figure 1-18e: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the I-210 East of Filmore Street CDS Unit for Event 7 on February 24-28, 2001

Effluent



Cumulative Flow



Cumulative Rainfall

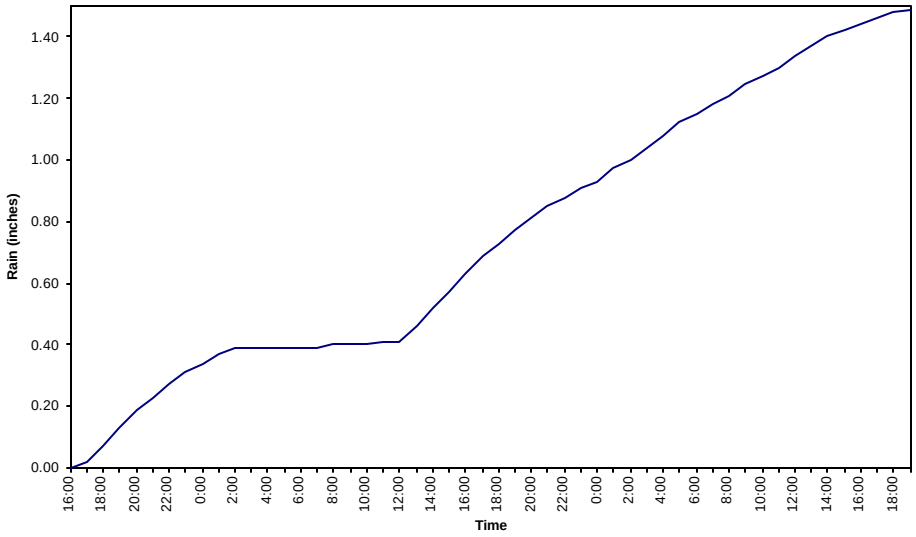
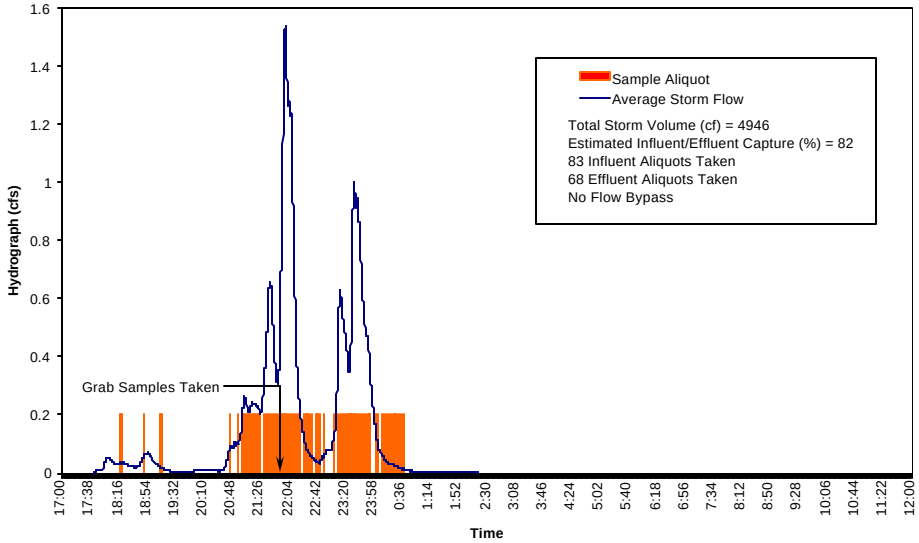
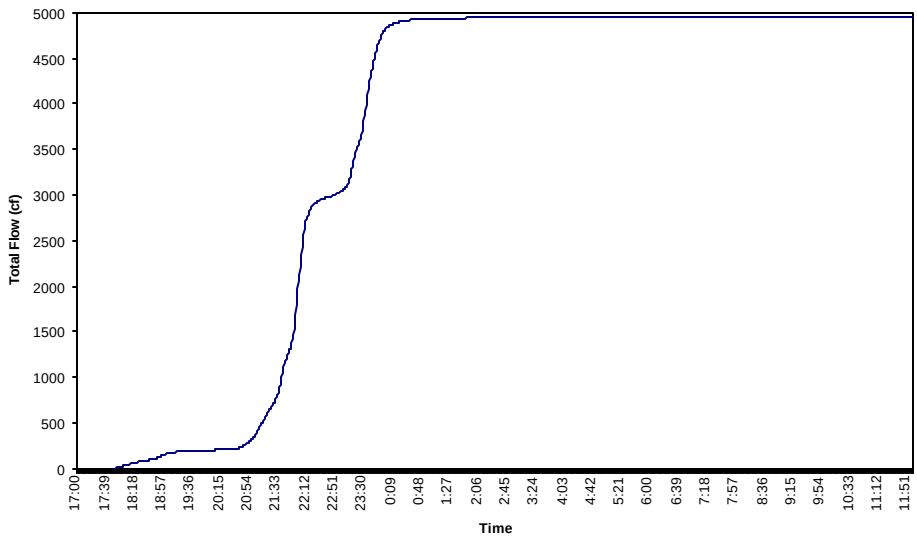


Figure 1-18f: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall l at the I-210 East of Filmore Street CDS Unit for Event 8 on March 4-6, 2001

Effluent



Cumulative Flow



Cumulative Rainfall

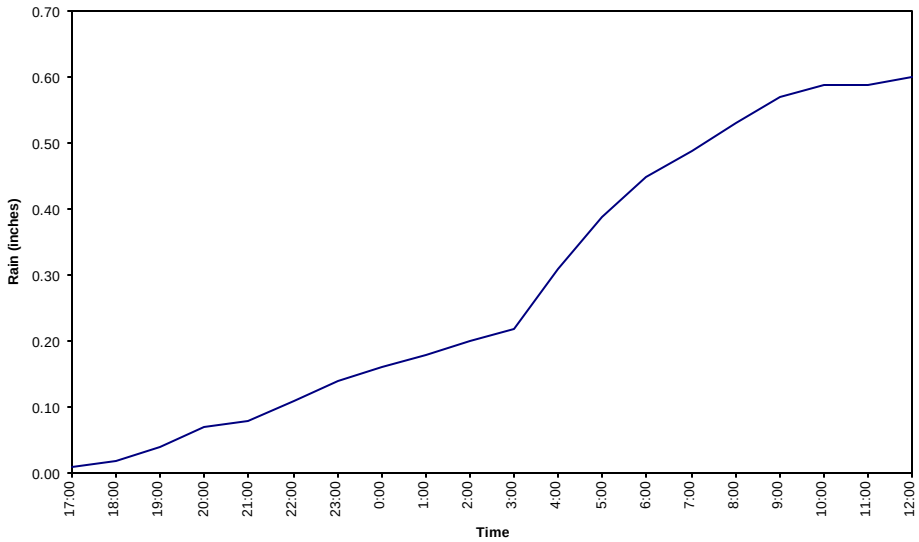
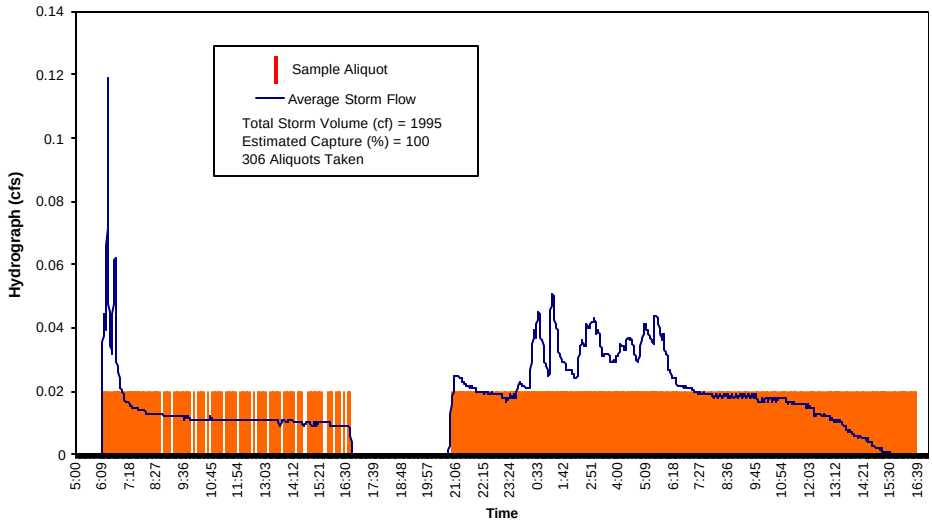
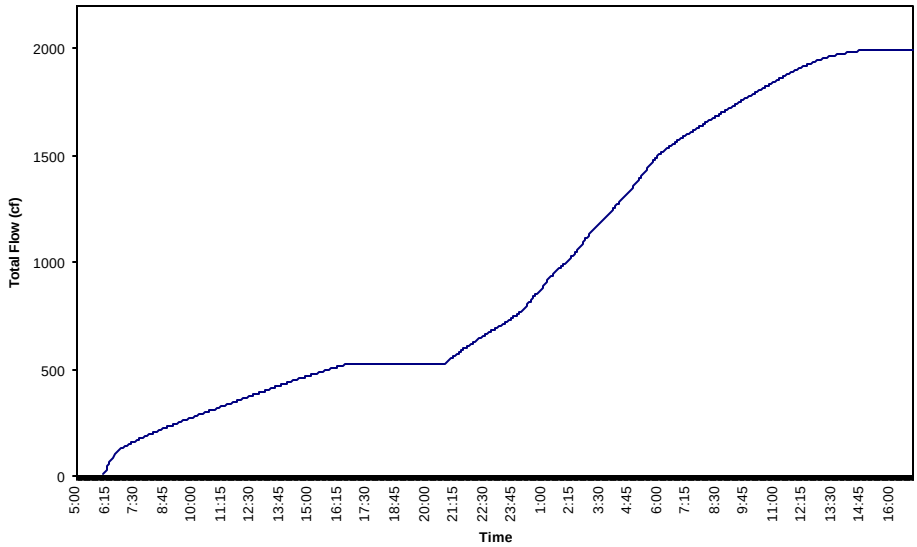


Figure 1-18g: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the I-210 East of Filmore Street CDS Unit for Event 10 on April 20-21, 2001

Effluent



Cumulative Flow



Cumulative Rainfall

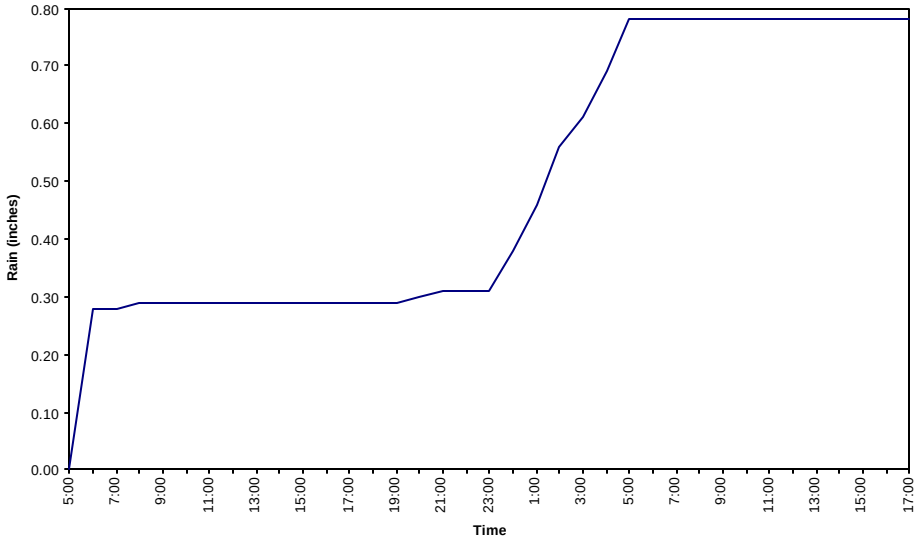
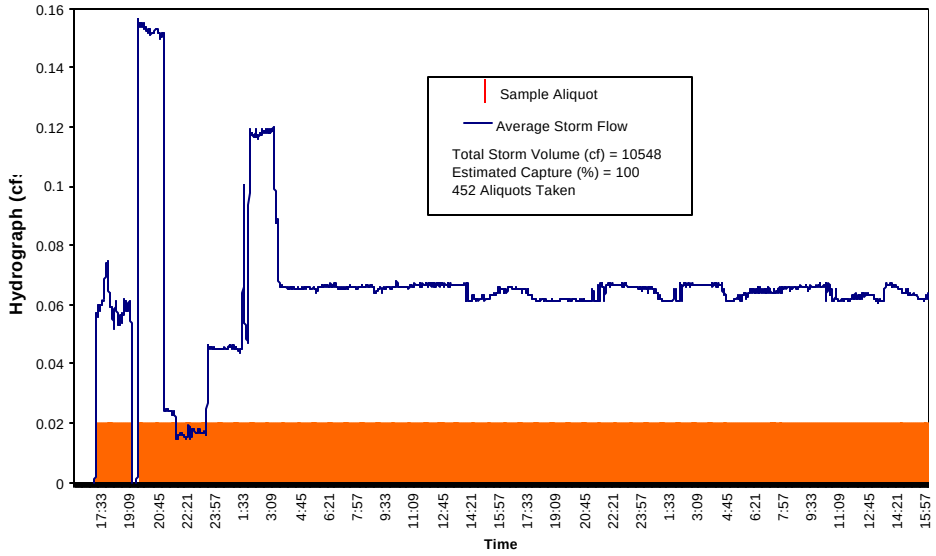
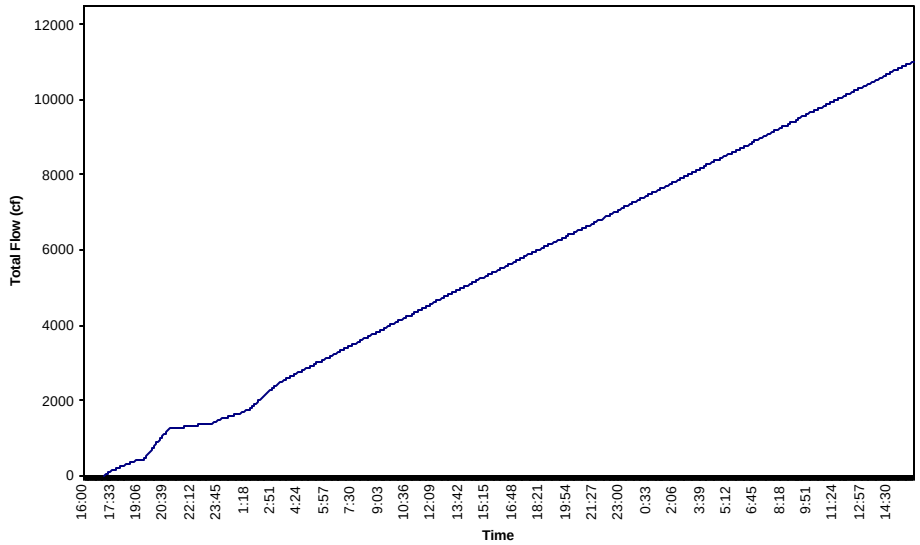


Figure 1-19a: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the Foothill MS StreamGuard™ DII for Event 2 on October 26-27, 2000

Effluent



Cumulative Flow



Cumulative Rainfall

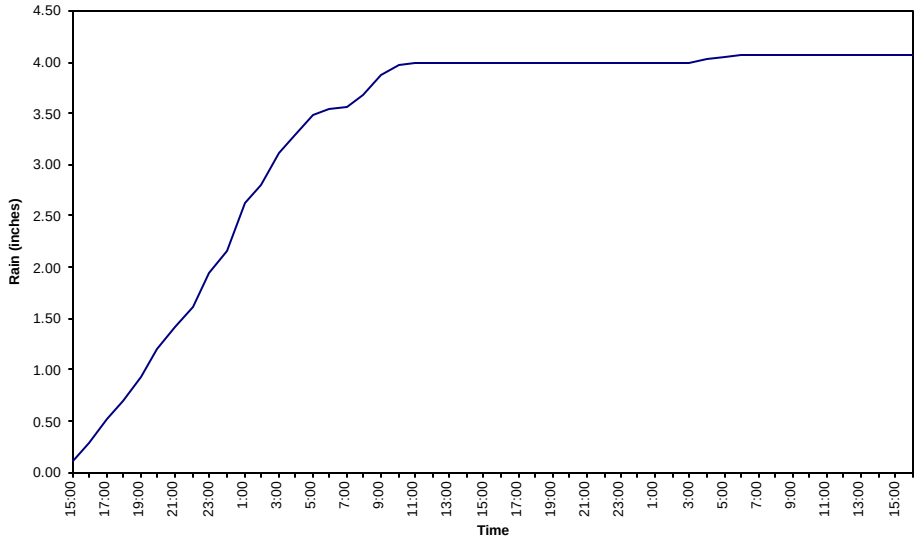
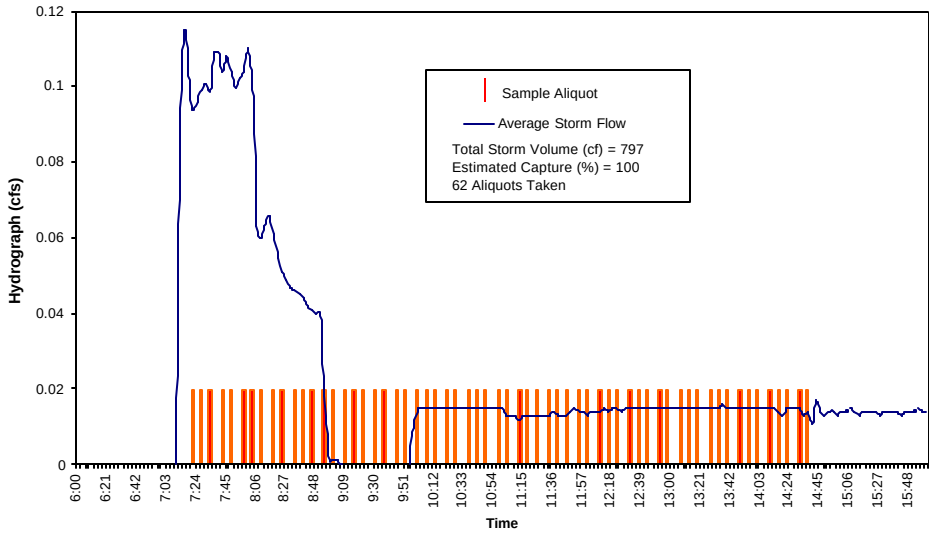
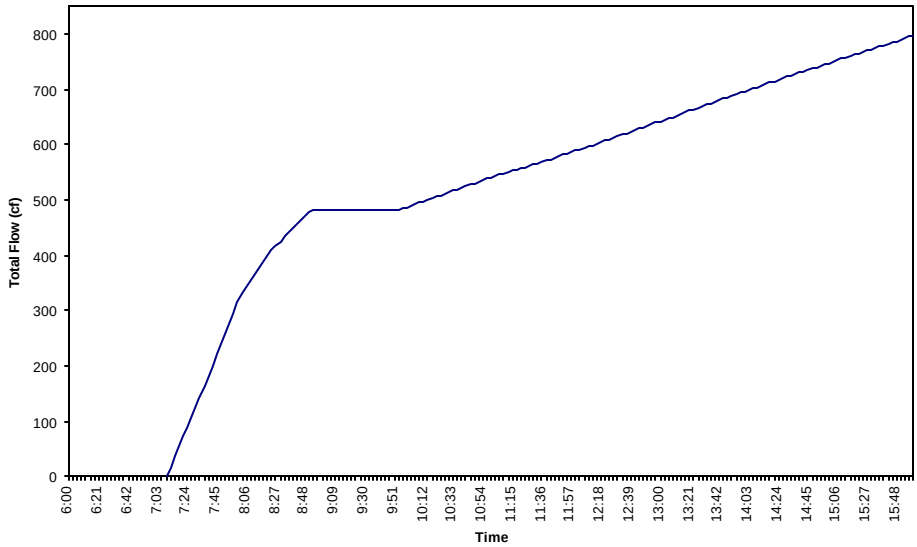


Figure 1-19b: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the Foothill MS StreamGuard™ DII for Event 4 on January 10-12, 2001

Effluent



Cumulative Flow



Cumulative Rainfall

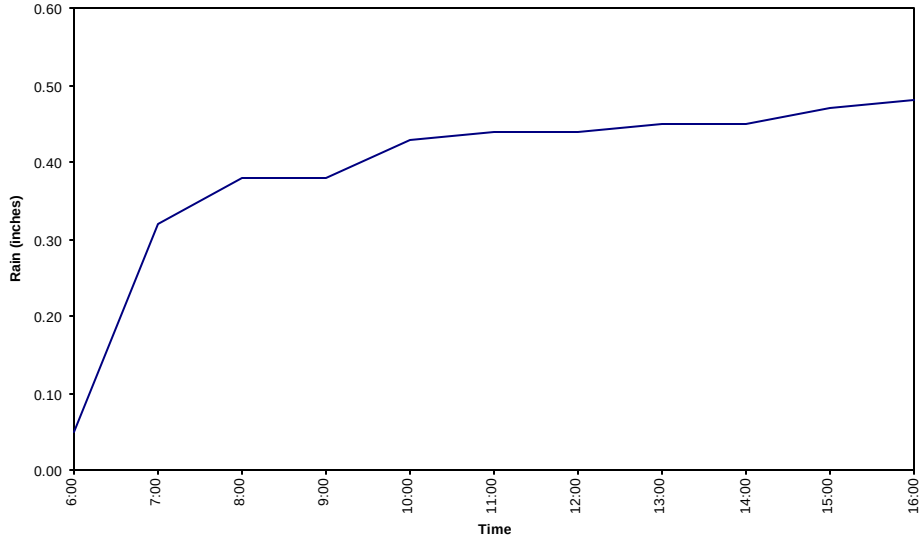
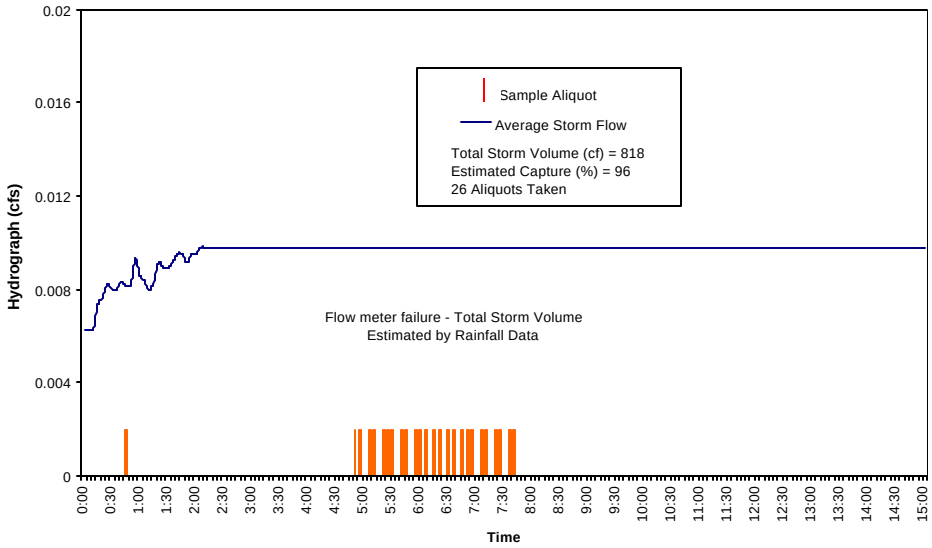
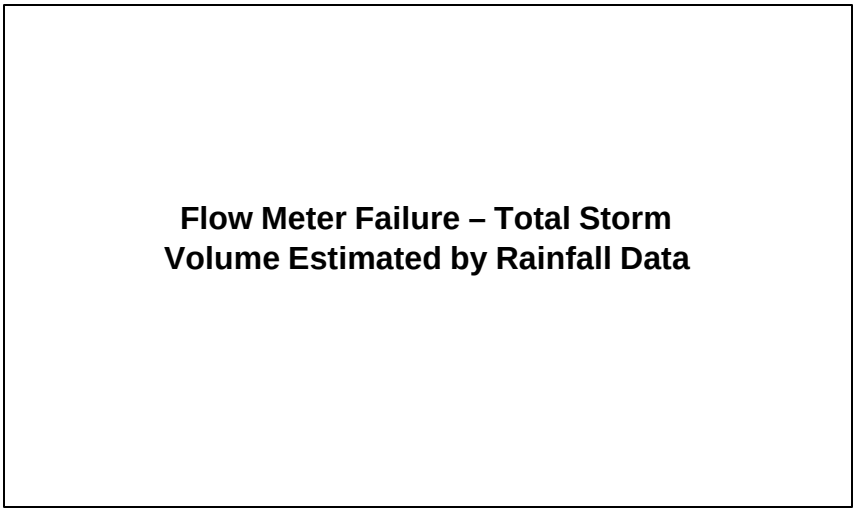


Figure 1-19c: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the Foothill MS StreamGuard™ DII for Event 5 on January 24, 2001

Effluent



Cumulative Flow



Cumulative Rainfall

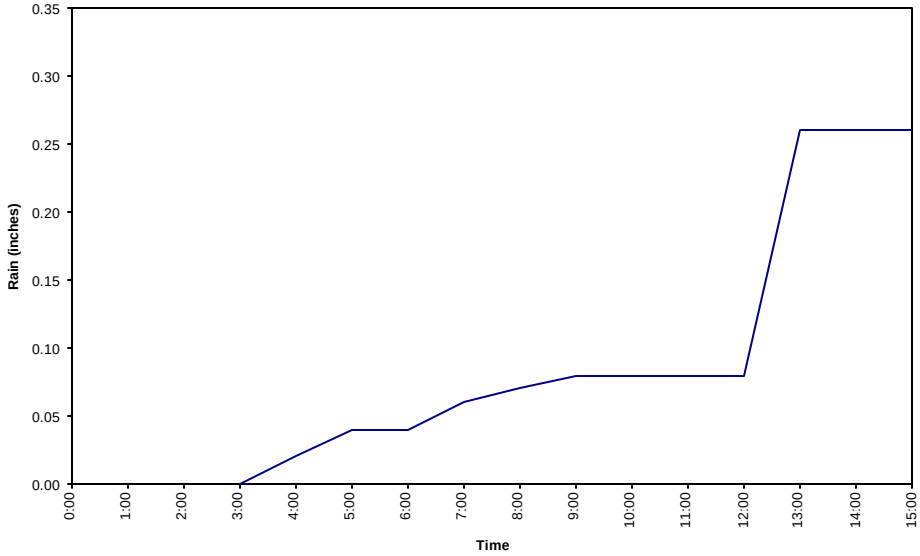
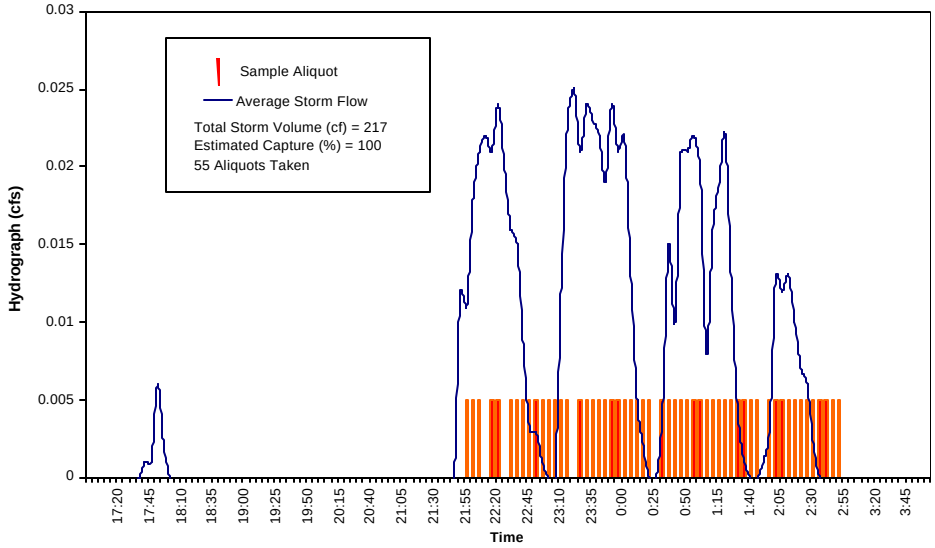
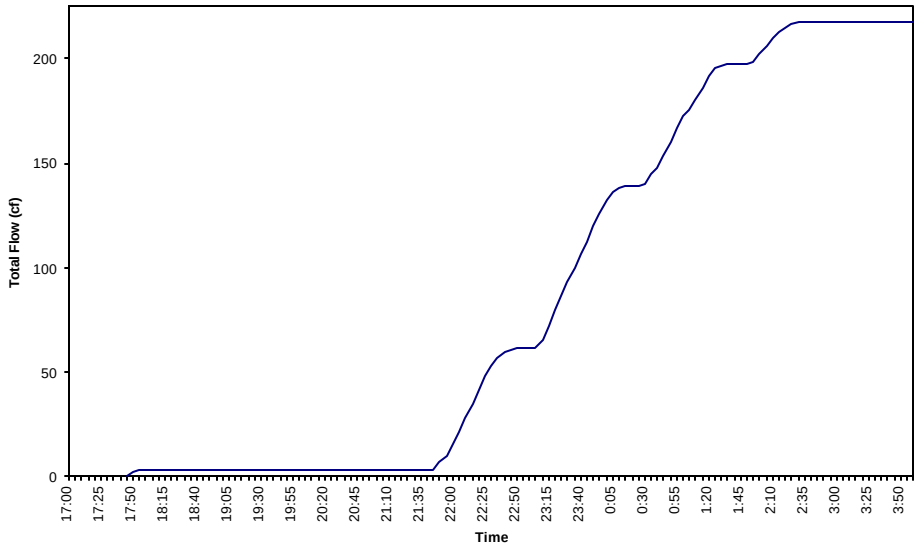


Figure 1-19d: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the Foothill MS StreamGuard™ DII for Event 6 on February 10, 2001

Effluent



Cumulative Flow



Cumulative Rainfall

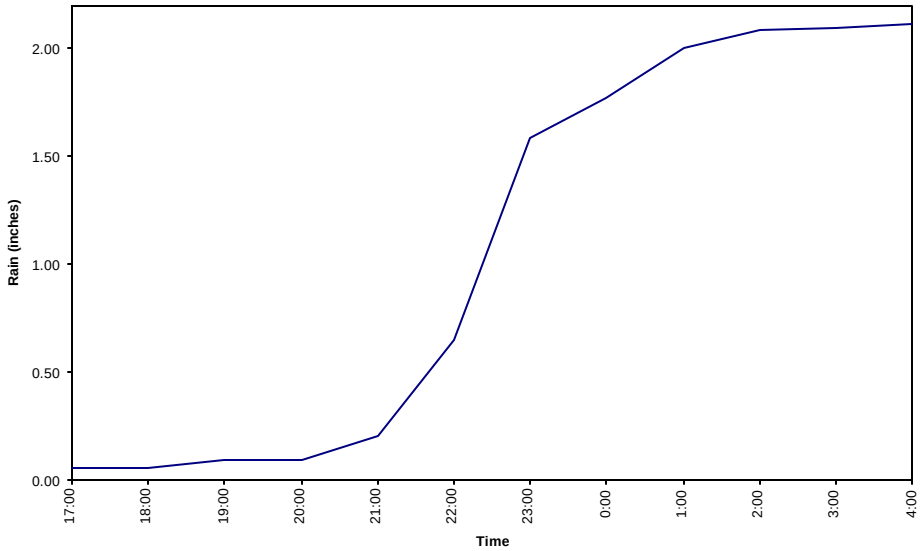
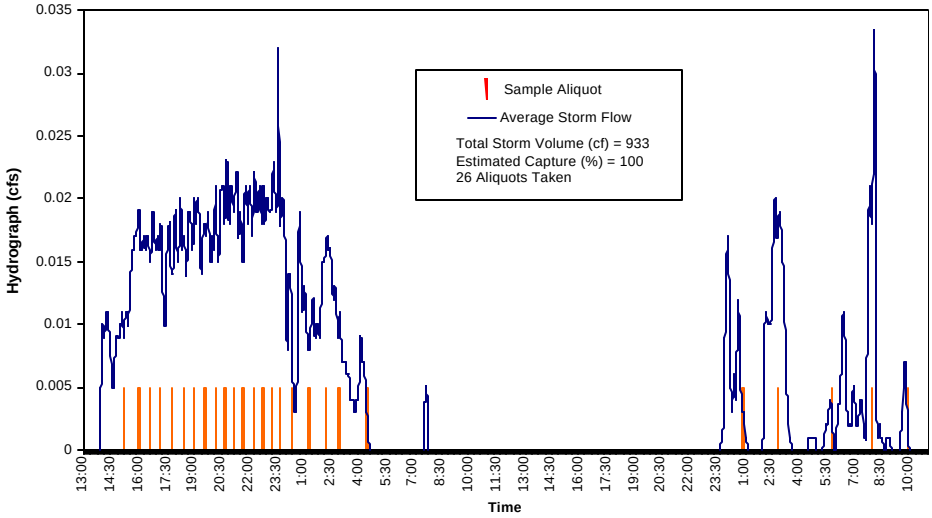
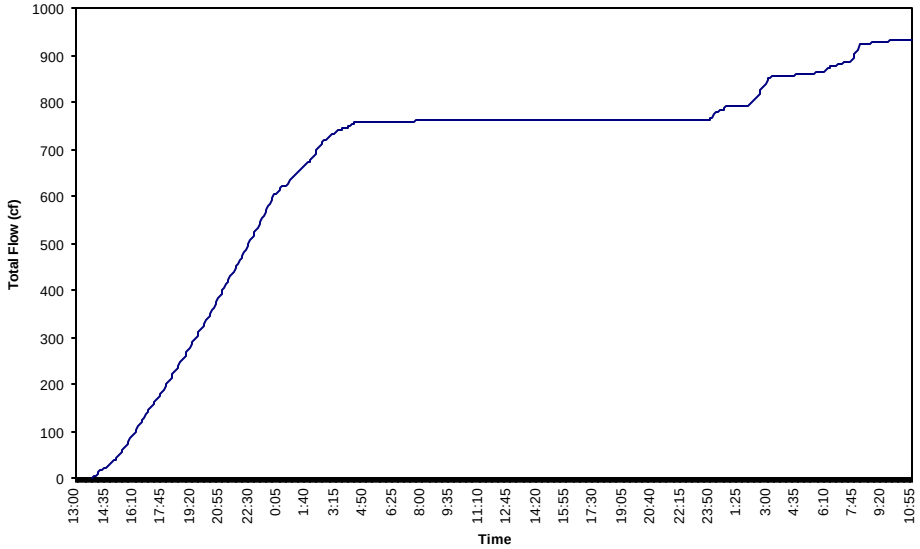


Figure 1-20a: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the Las Flores MS StreamGuard™ DII for Event 2 on October 26-27, 2000

Effluent



Cumulative Flow



Cumulative Rainfall

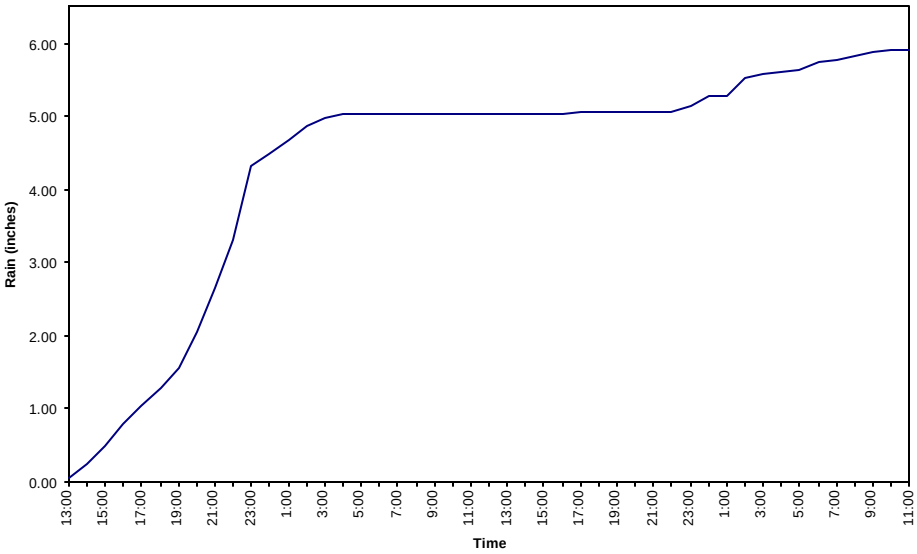
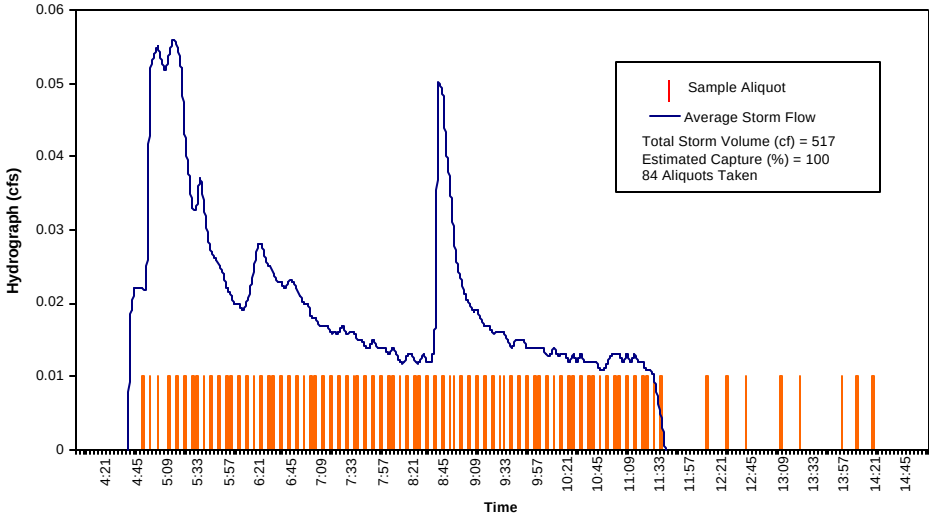
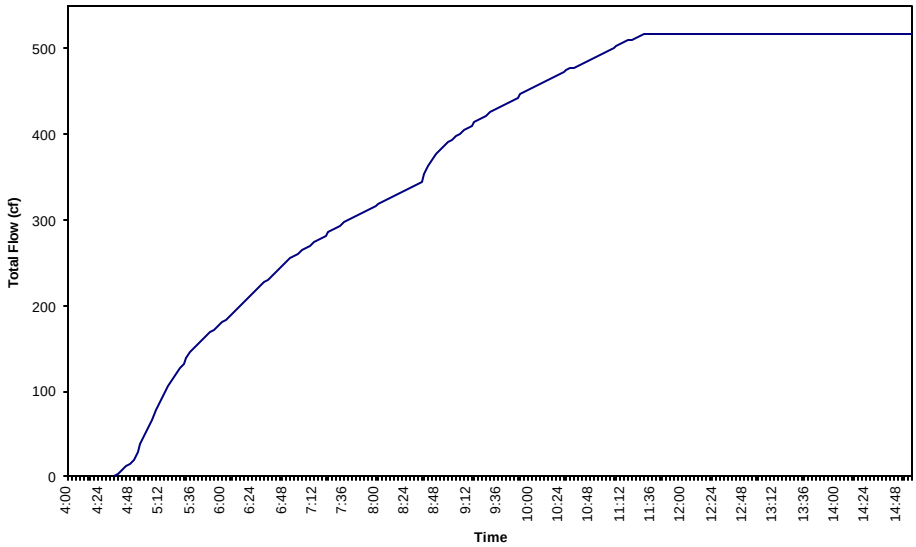


Figure 1-20b: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the Las Flores MS StreamGuard™ DII for Event 4 on January 10-12, 2001

Effluent



Cumulative Flow



Cumulative Rainfall

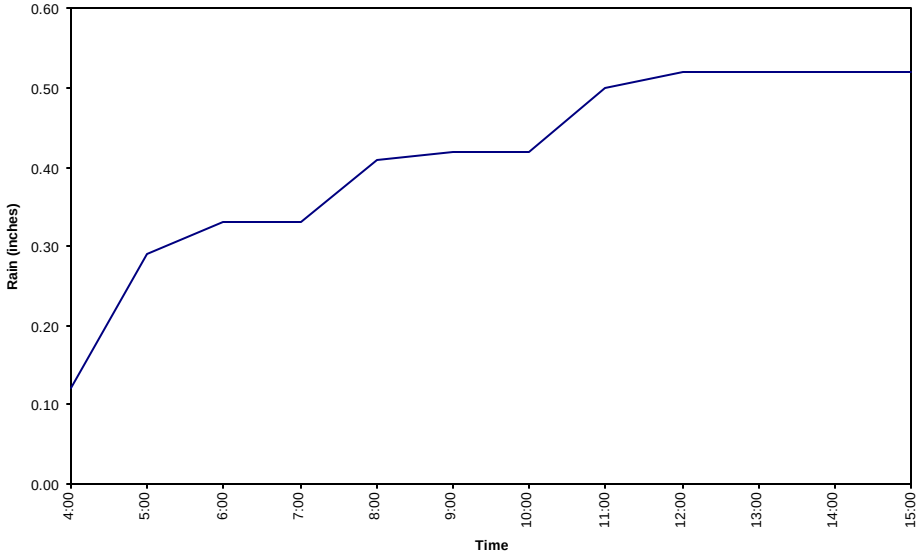
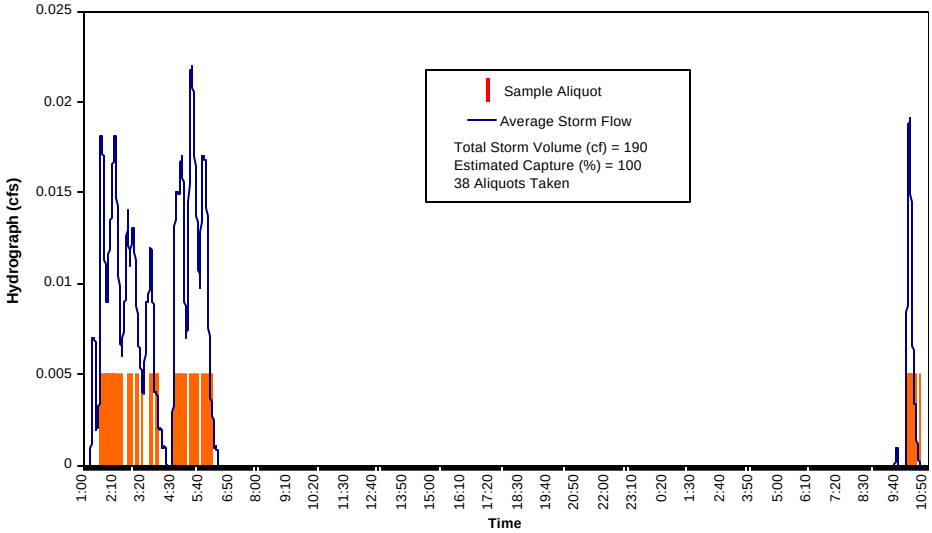
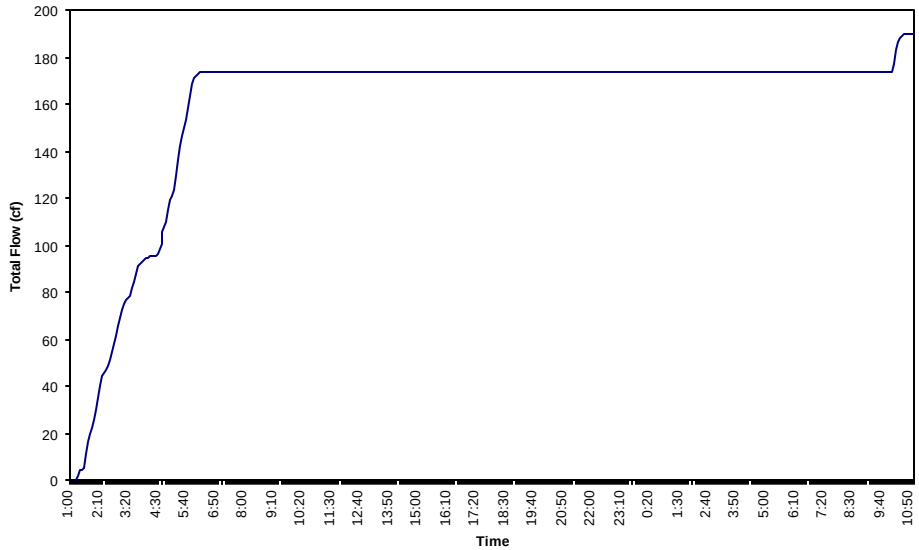


Figure 1-20c: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the Las Flores MS StreamGuard™ DII for Event 5 on January 24, 2001

Effluent



Cumulative Flow



Cumulative Rainfall

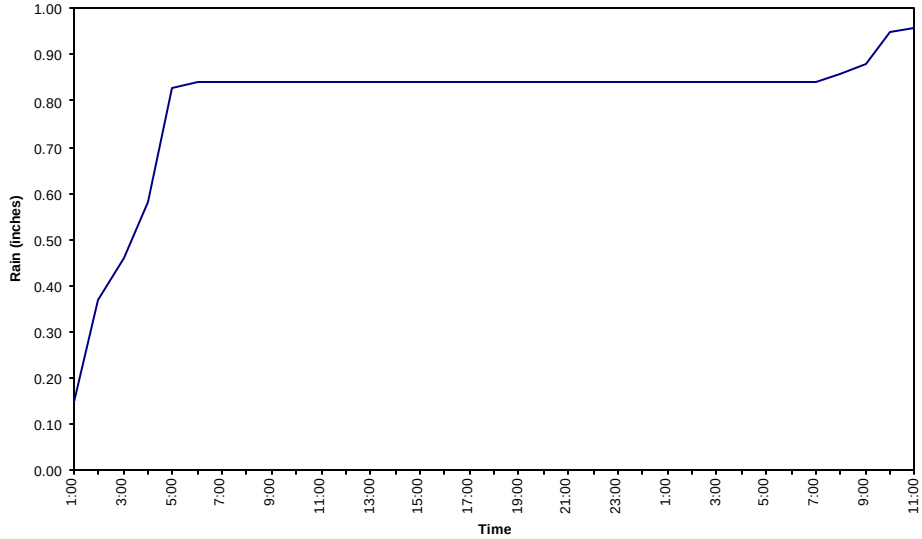
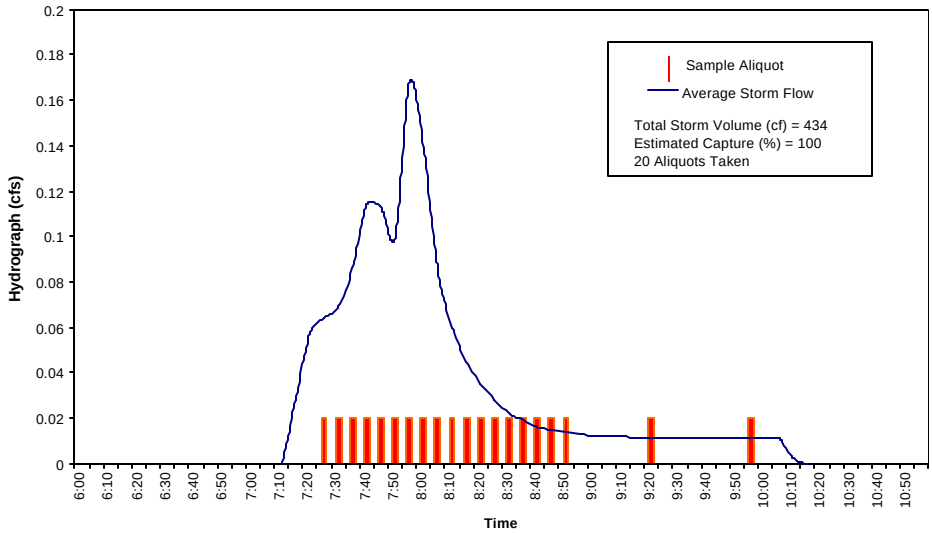
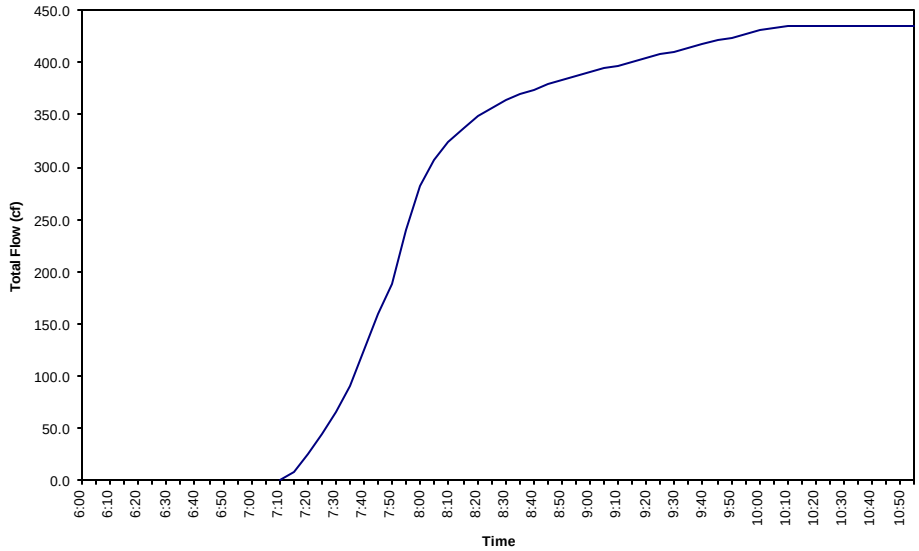


Figure 1-20d: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the Las Flores MS StreamGuard™ DII for Event 6 on February 10-11, 2001

Effluent



Cumulative Flow



Cumulative Rainfall

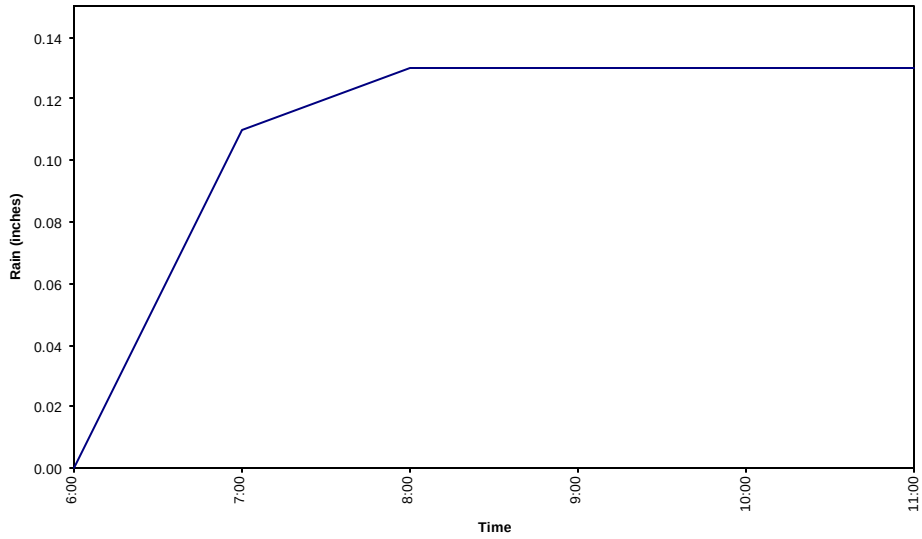
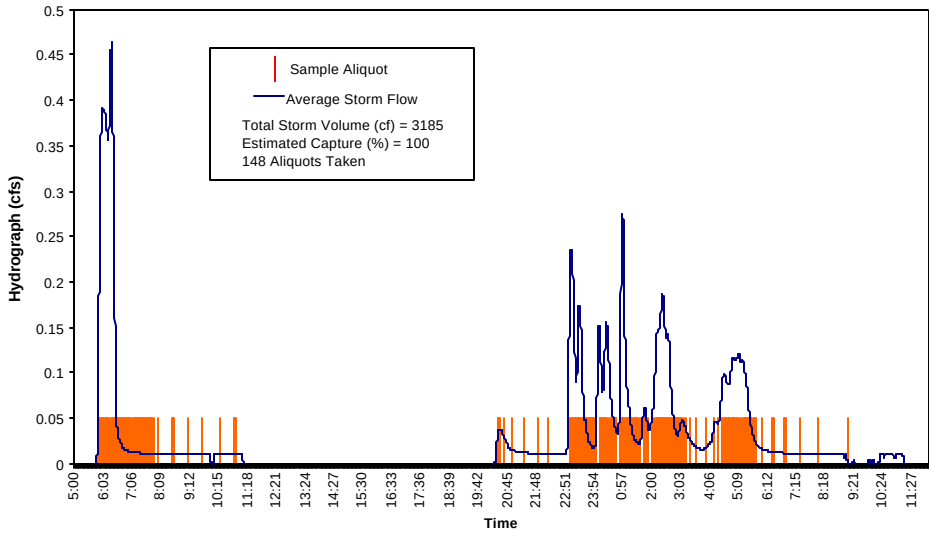
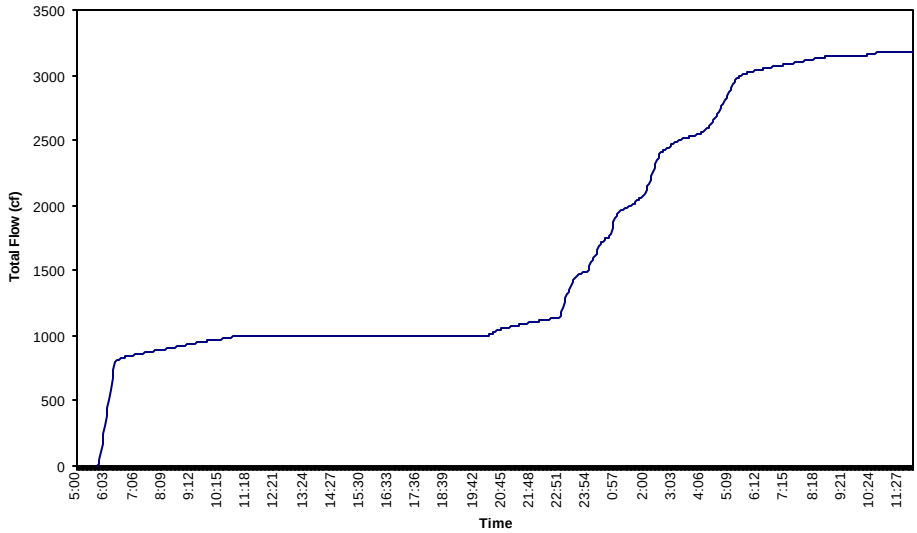


Figure 1-21a: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the Rosemead MS StreamGuard™ DII for Event 1 on October 11, 2000

Effluent



Cumulative Flow



Cumulative Rainfall

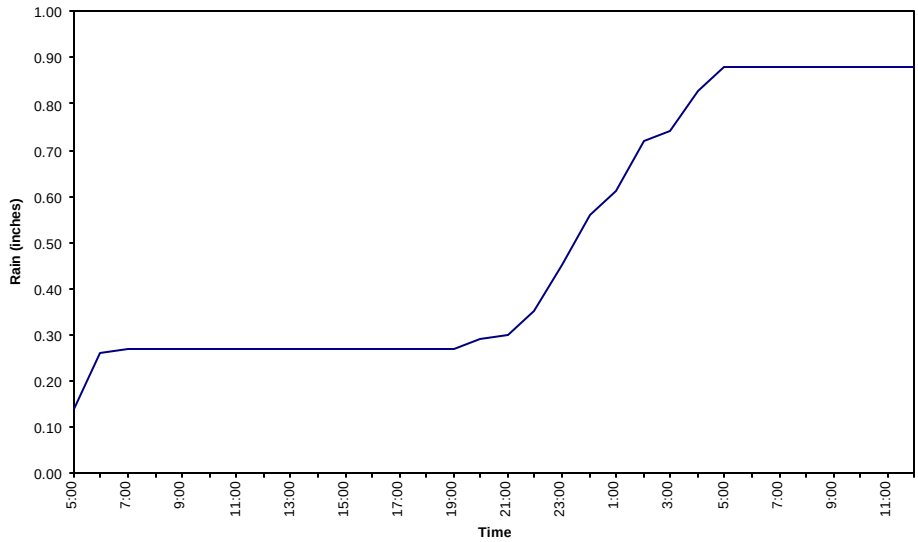
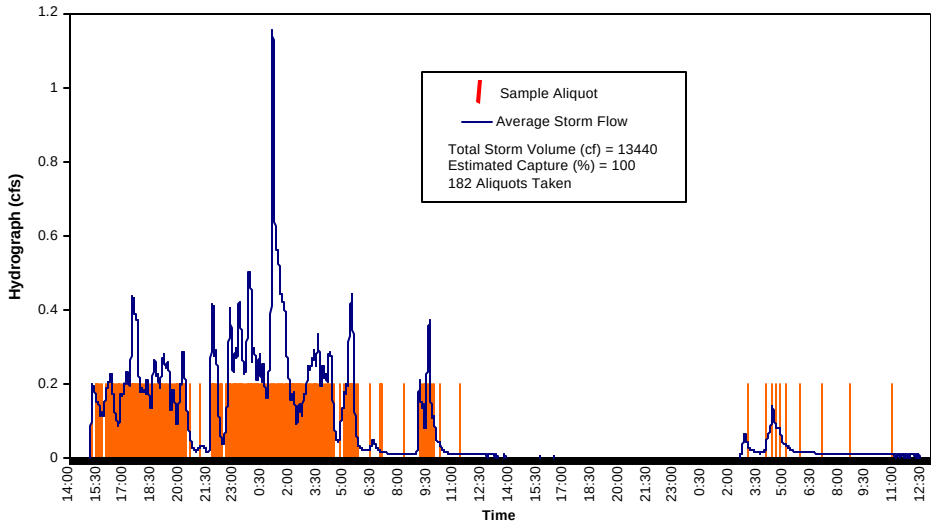
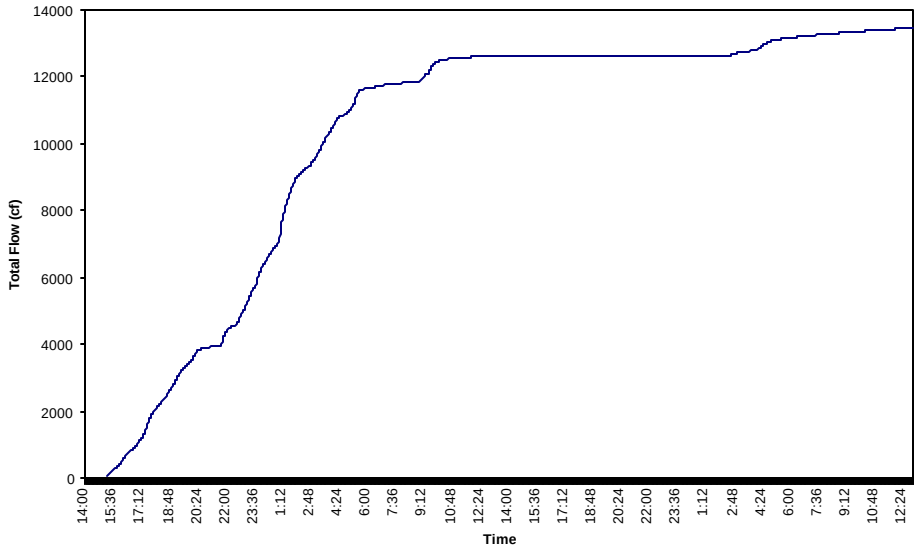


Figure 1-21b: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the Rosemead MS StreamGuard™ DII for Event 2 on October 26-27, 2000

Effluent



Cumulative Flow



Cumulative Rainfall

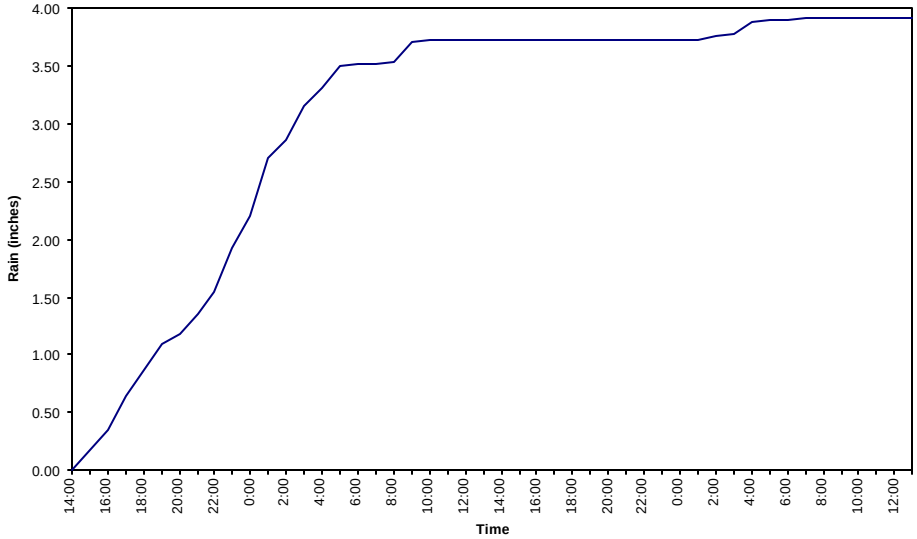
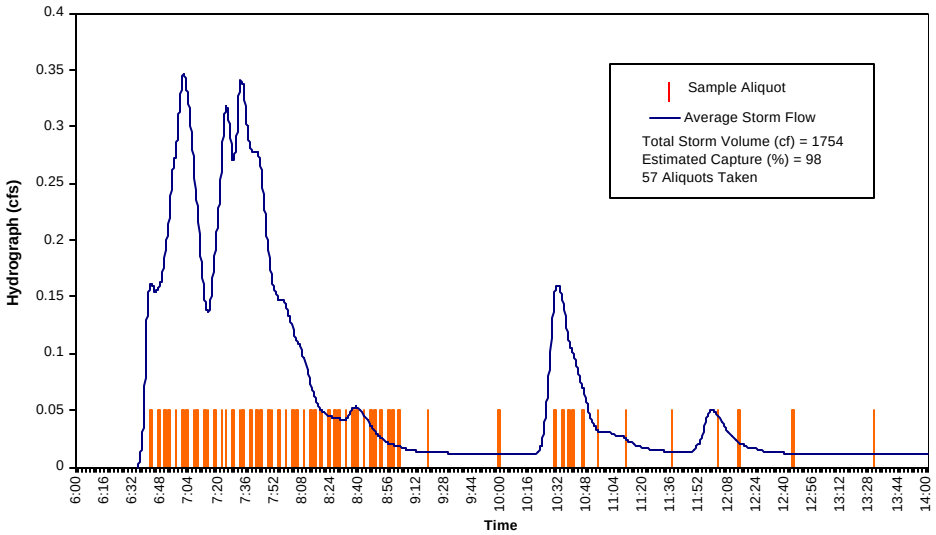
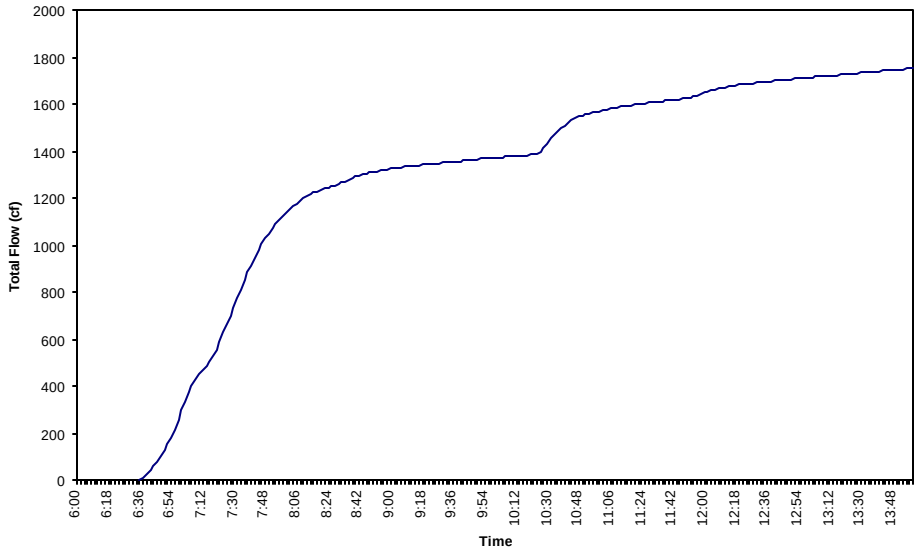


Figure 1-21c: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the Rosemead MS StreamGuard™ DII for Event 4 on January 10-11, 2001

Effluent



Cumulative Flow



Cumulative Rainfall

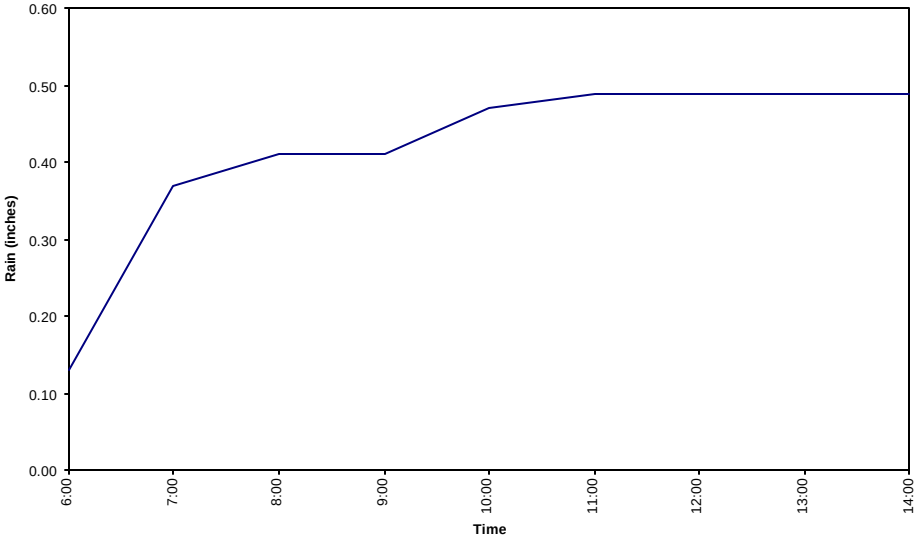
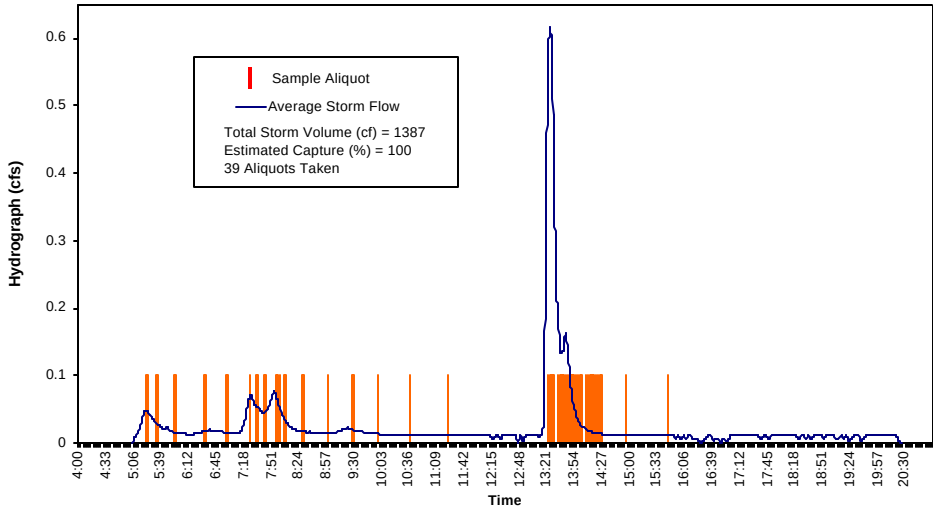
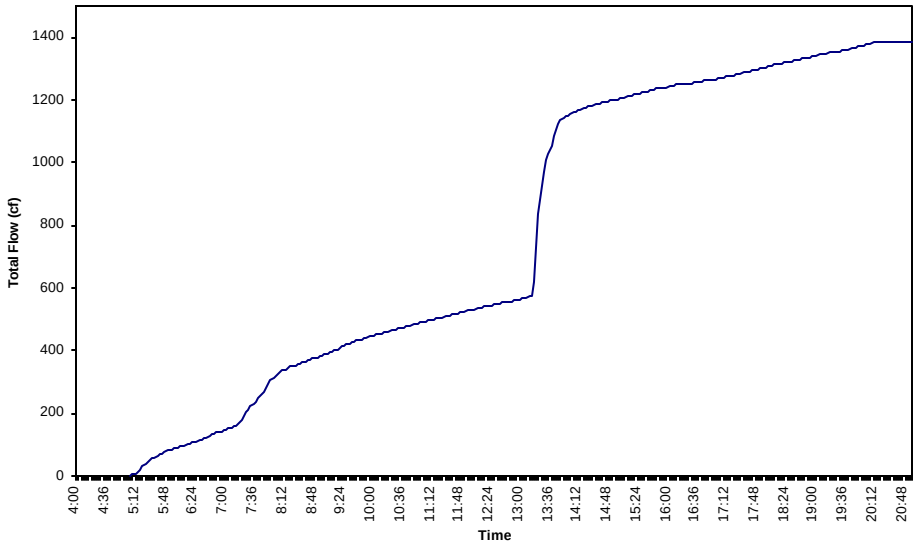


Figure 1-21d: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the Rosemead MS StreamGuard™ DII for Event 5 on January 24, 2001

Effluent



Cumulative Flow



Cumulative Rainfall

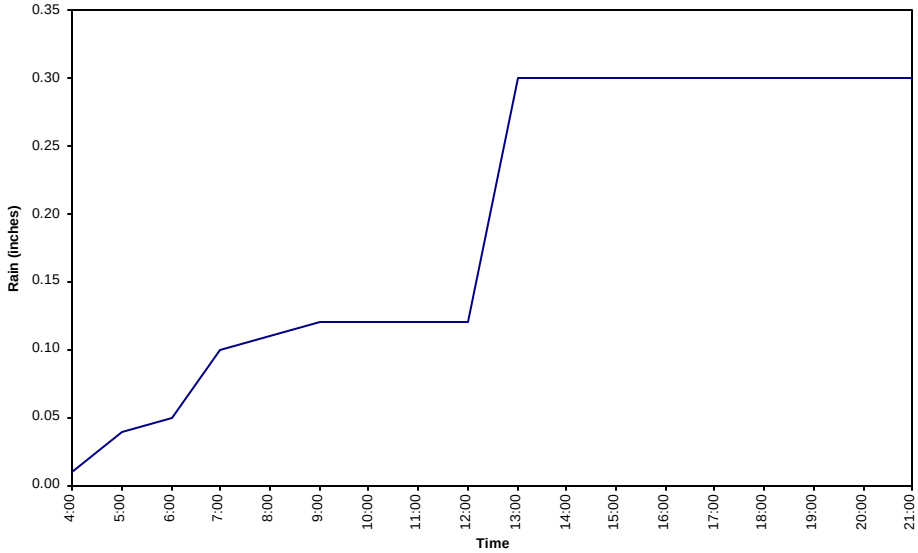
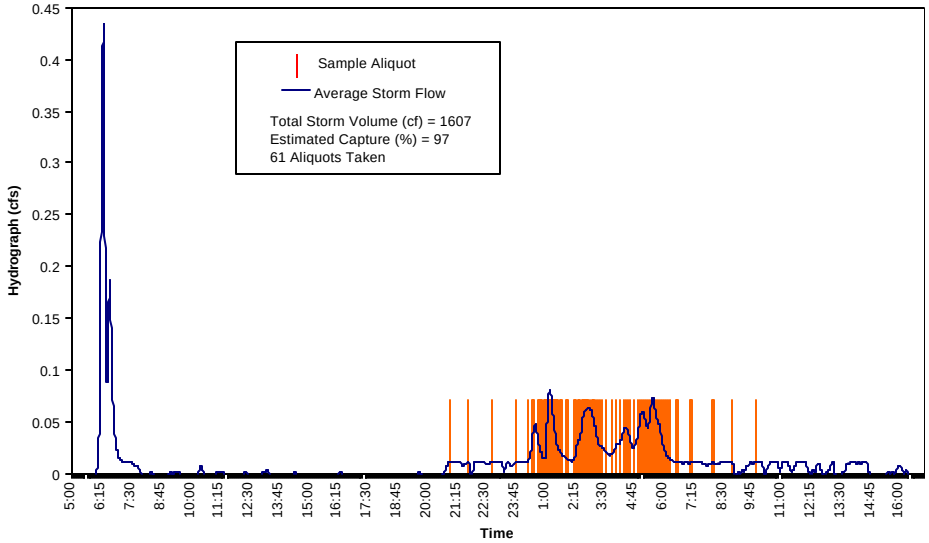
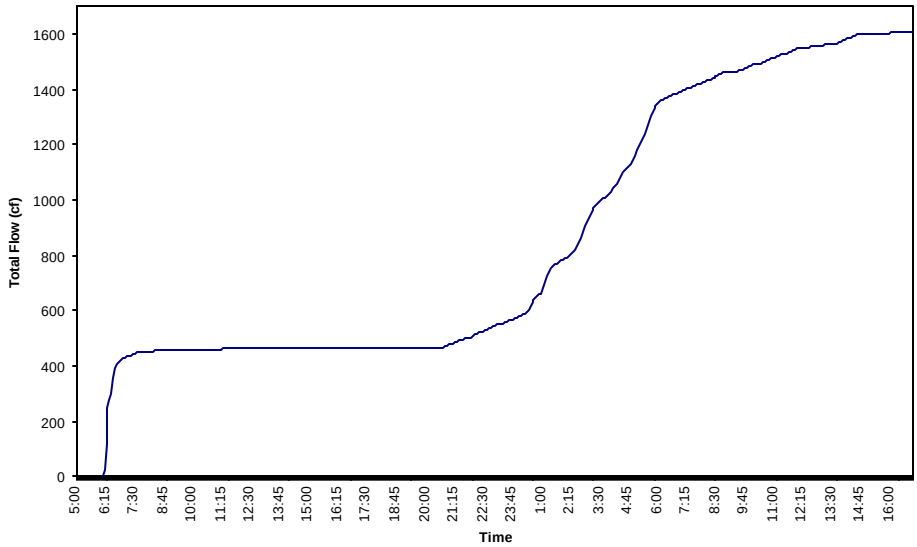


Figure 1-21e: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the Rosemead MS StreamGuard™ DII for Event 6 on February 10, 2001

Effluent



Cumulative Flow



Cumulative Rainfall

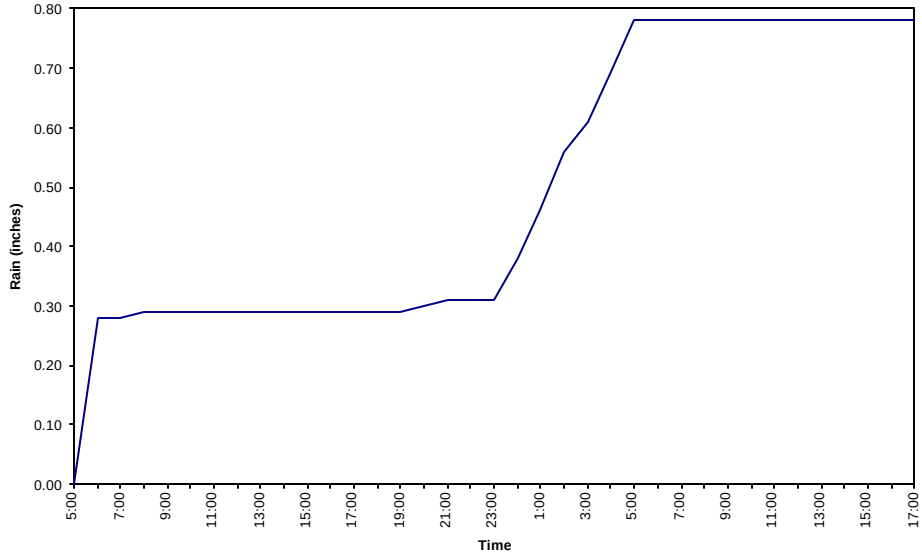
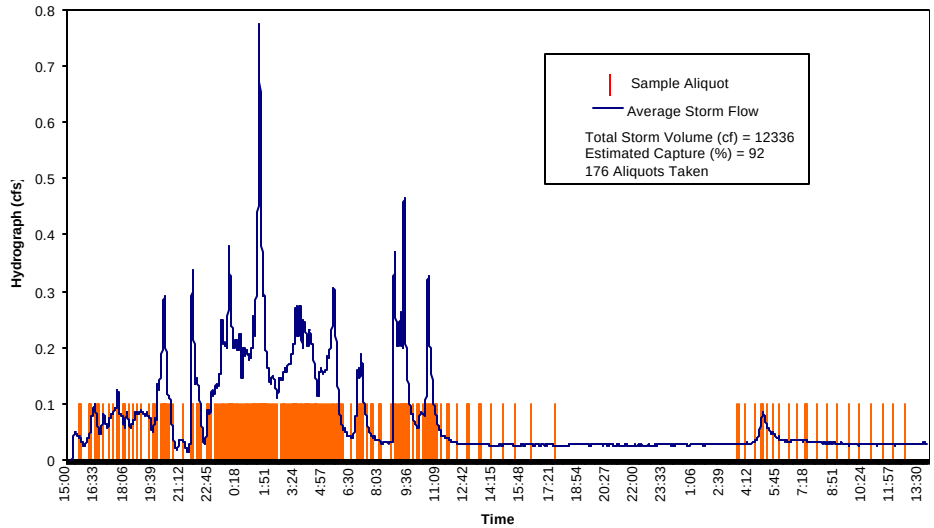
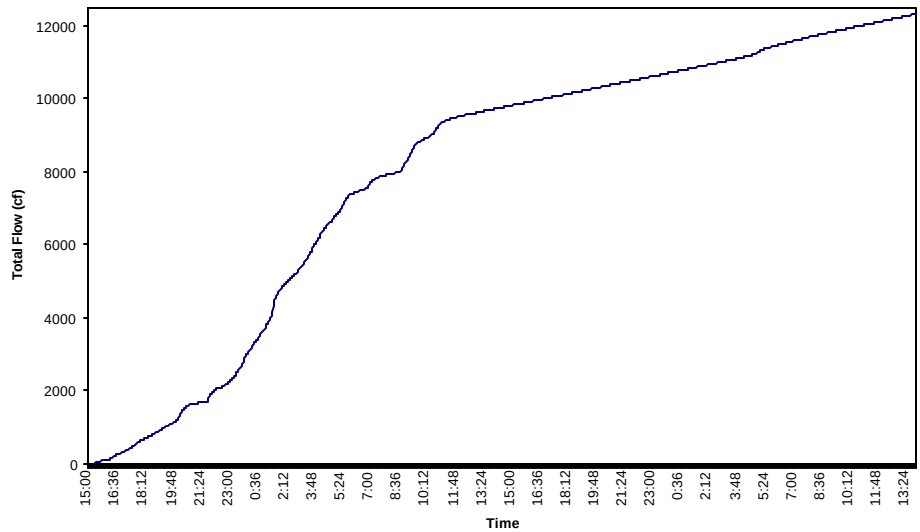


Figure 1-22a: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the Foothill MS Fossil Filter™ DII for Event 2 on October 26-27, 2000

Effluent



Cumulative Flow



Cumulative Rainfall

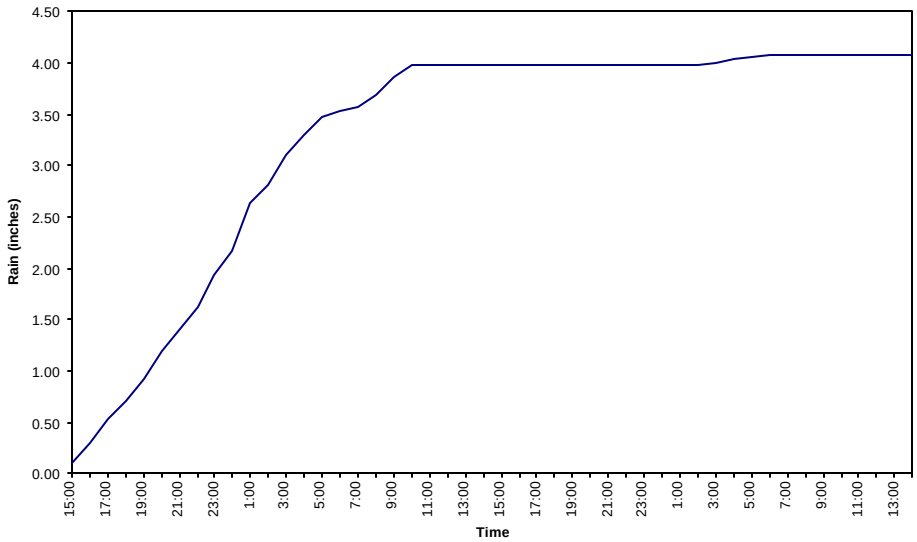
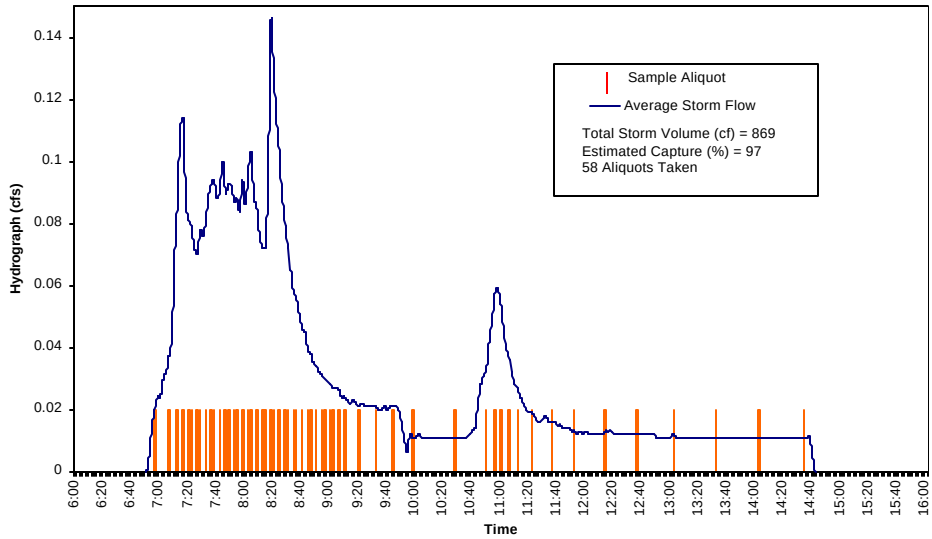
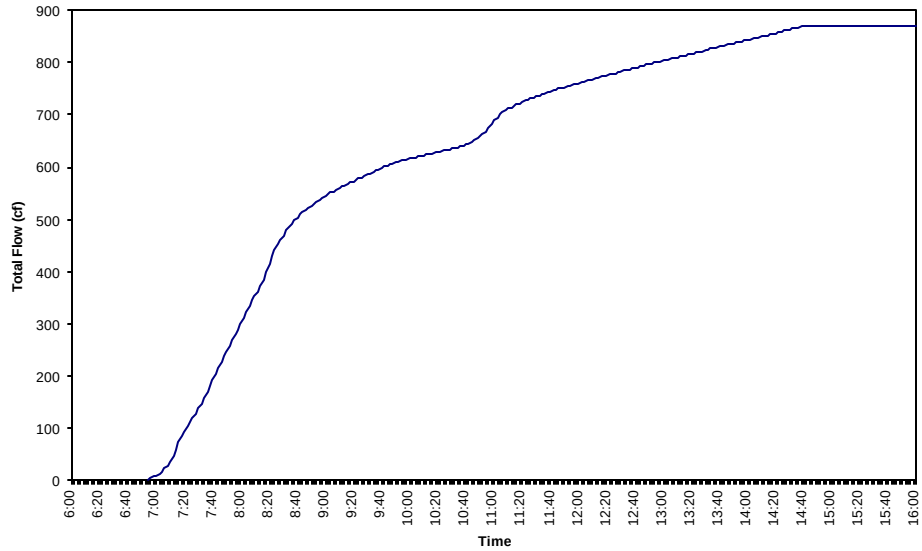


Figure 1-22b: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the Foothill MS Fossil Filter™ DII for Event 4 on January 10-12, 2001

Effluent



Cumulative Flow



Cumulative Rainfall

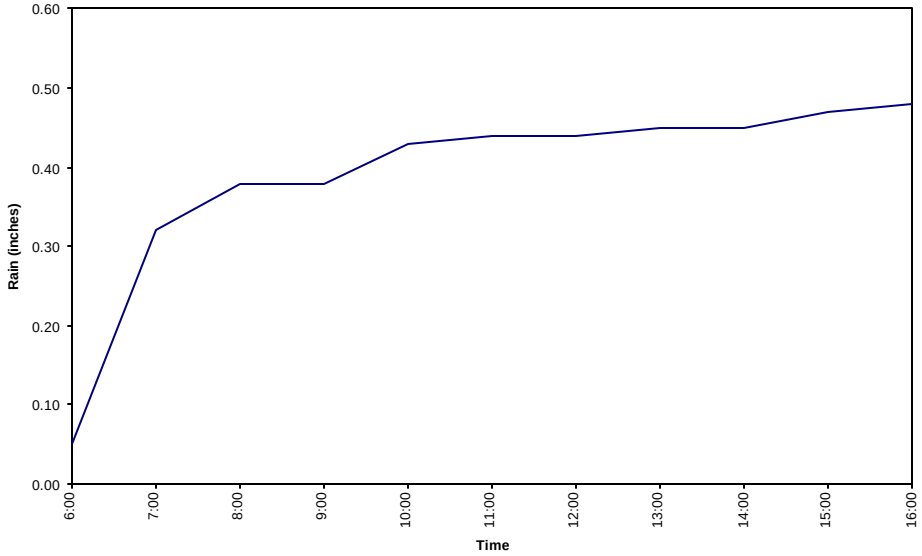
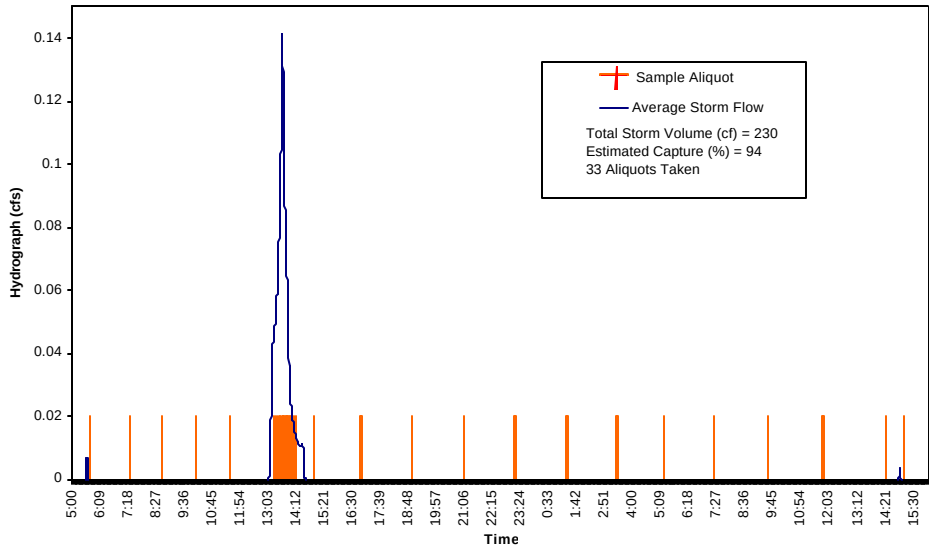
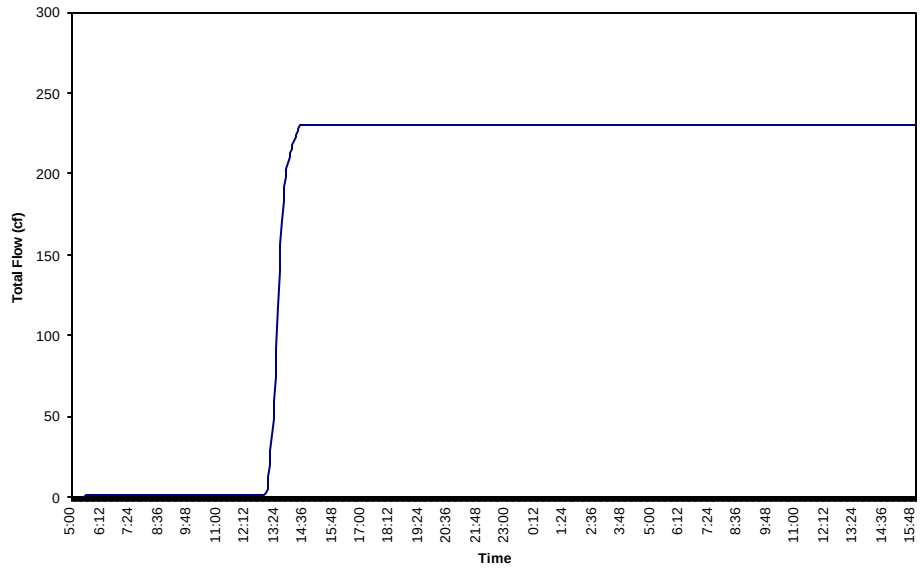


Figure 1-22c: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the Foothill MS Fossil Filter™ DII for Event 5 on January 24, 2001

Effluent



Cumulative Flow



Cumulative Rainfall

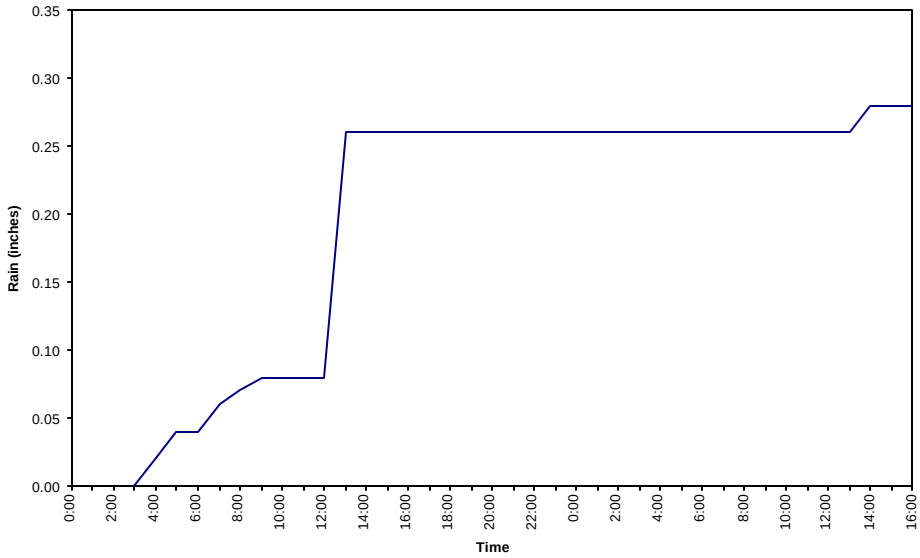
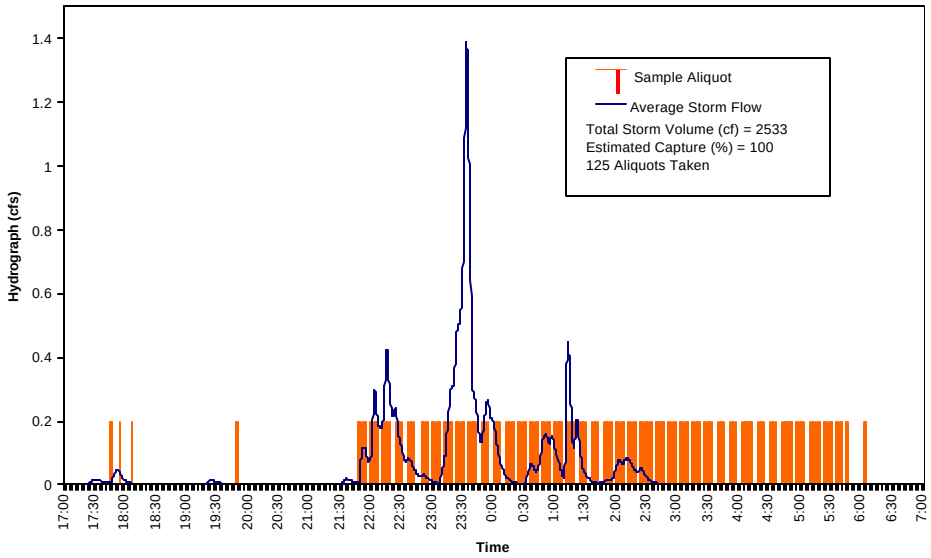
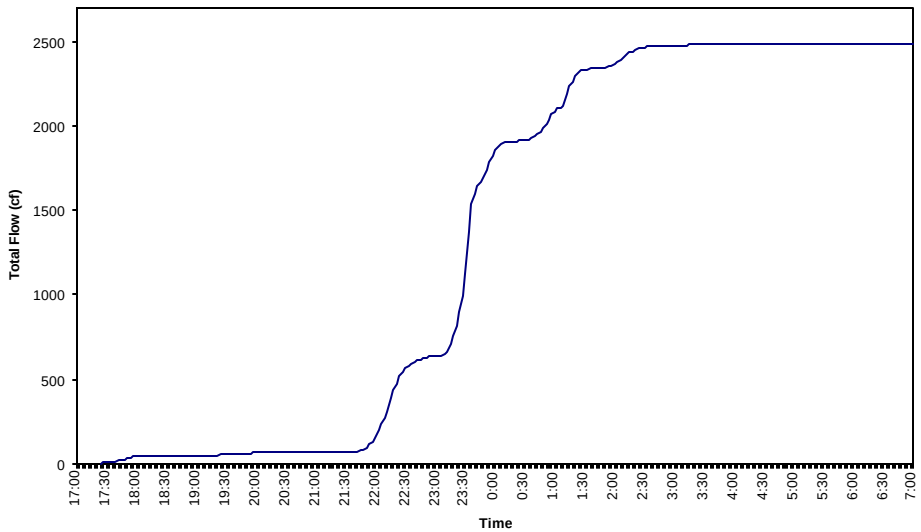


Figure 1-22d: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the Foothill MS Fossil Filter™ DII for Event 6 on February 10, 2001

Effluent



Cumulative Flow



Cumulative Rainfall

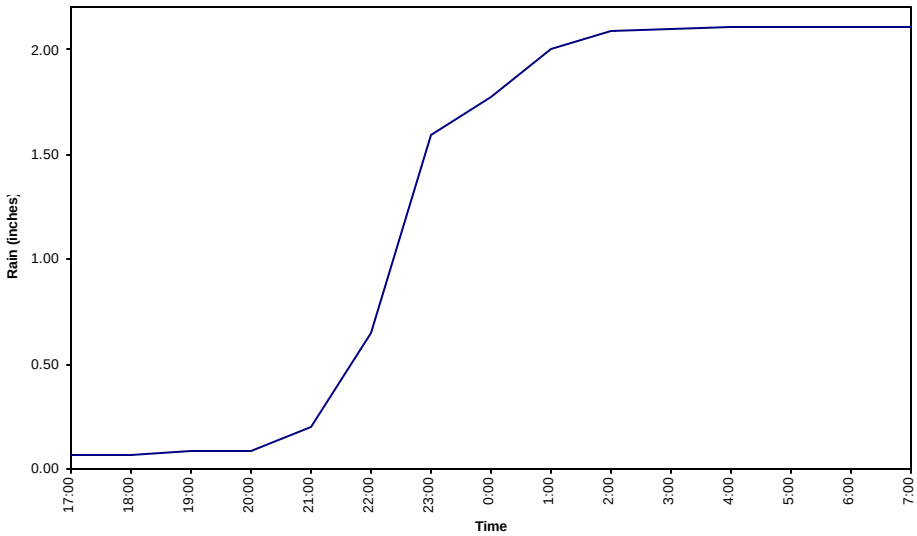
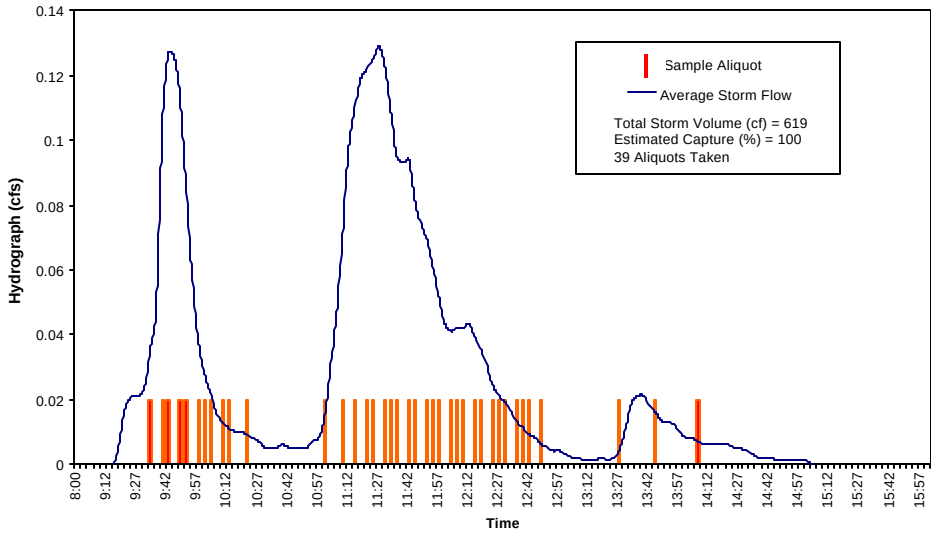
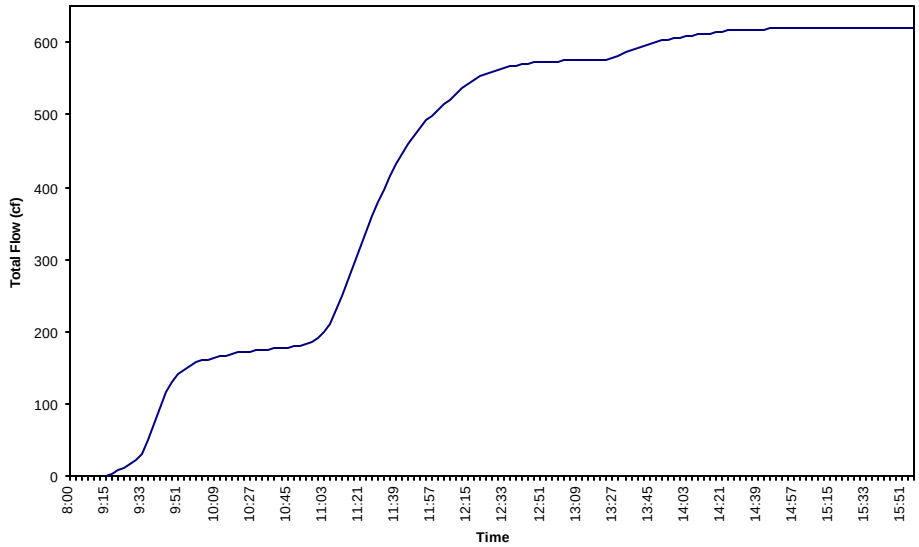


Figure 1-23a: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the Las Flores MS Fossil Filter™ DII for Event 2 on October 26-27, 2000

Effluent



Cumulative Flow



Cumulative Rainfall

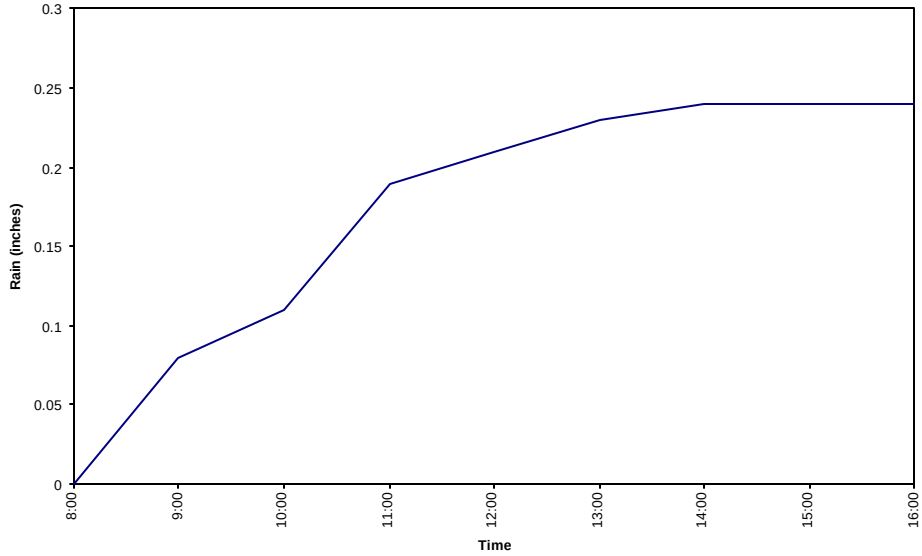
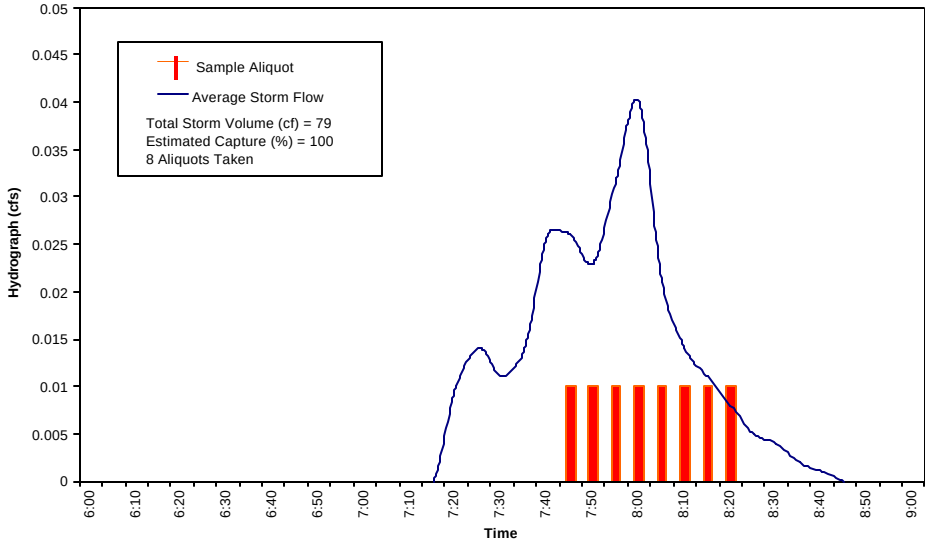
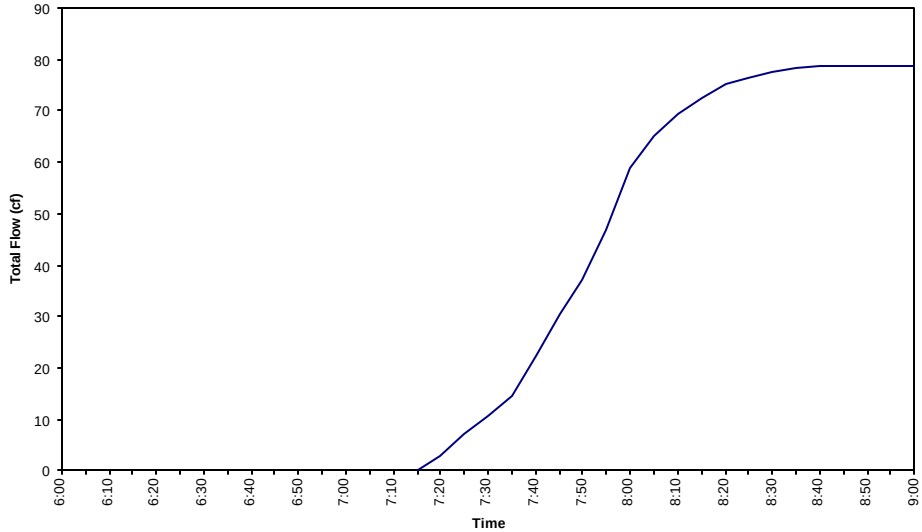


Figure 1-23b: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the Las Flores MS Fossil Filter™ DII for Event 3 on January 8, 2001

Effluent



Cumulative Flow



Cumulative Rainfall

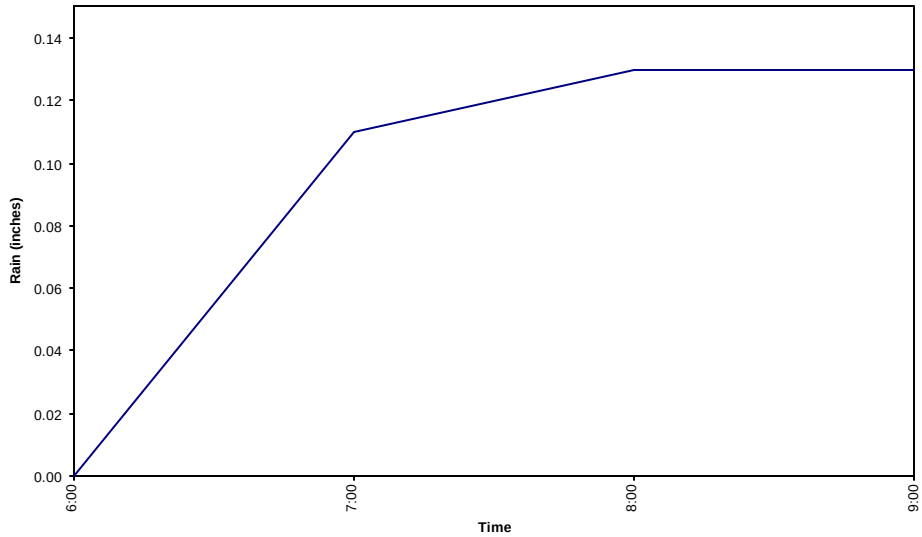
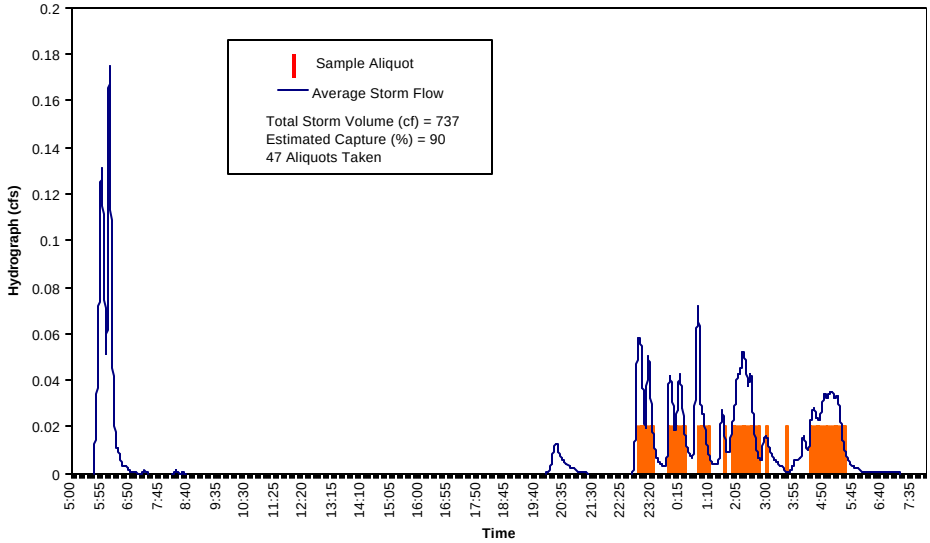
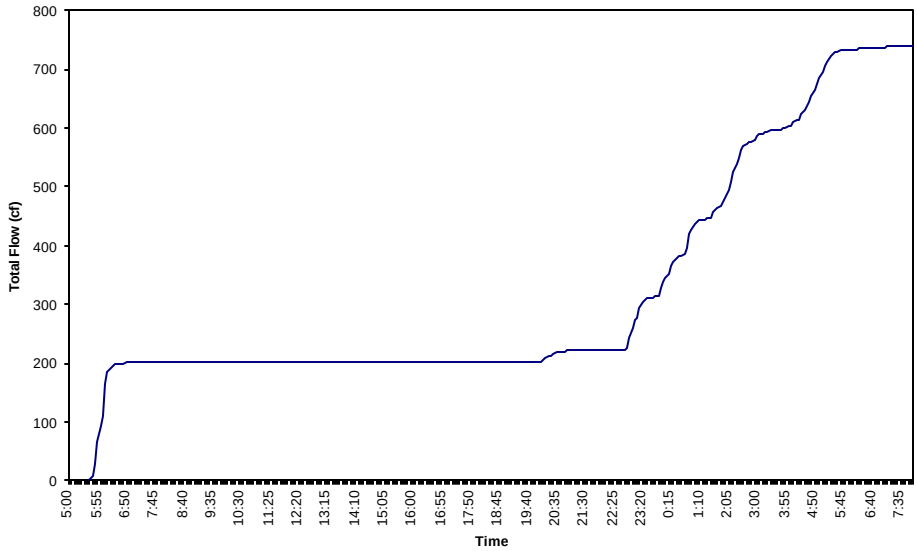


Figure 1-24a: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the Rosemead MS Fossil Filter™ DII for Event 1 on October 11, 2000

Effluent



Cumulative Flow



Cumulative Rainfall

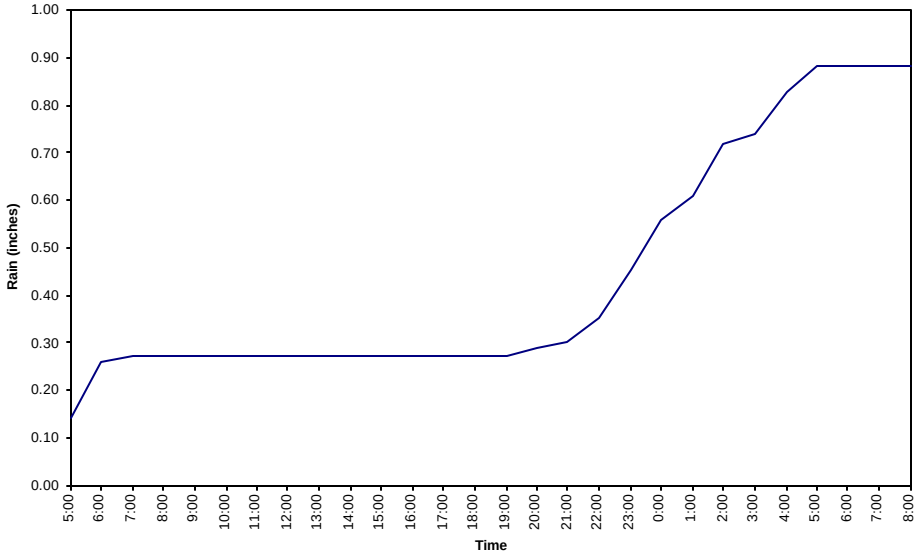
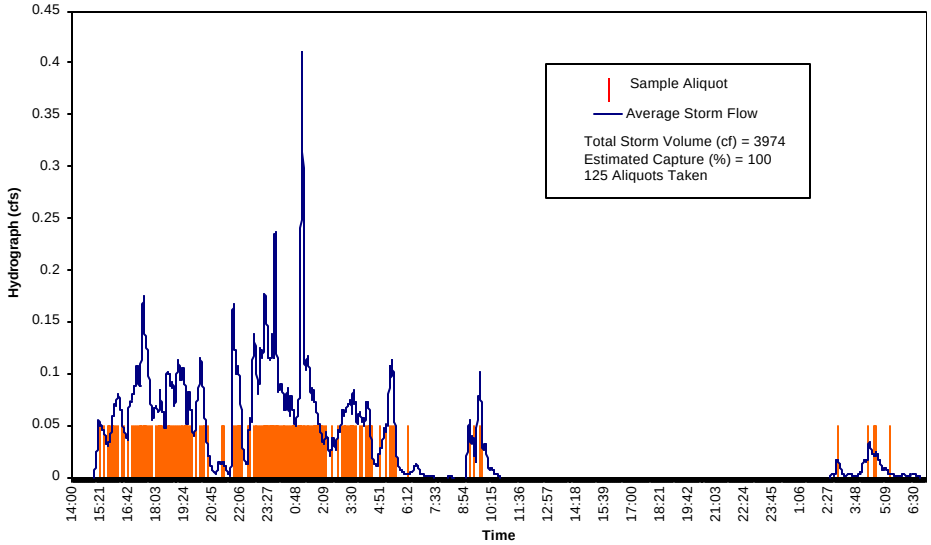
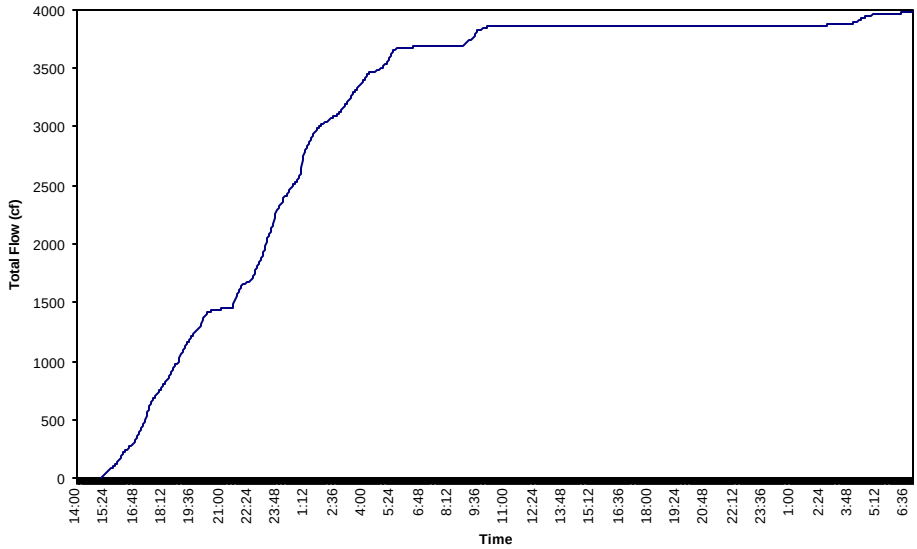


Figure 1-24b: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the Rosemead MS Fossil Filter™ DII for Event 2 on October 26-27, 2000

Effluent



Cumulative Flow



Cumulative Rainfall

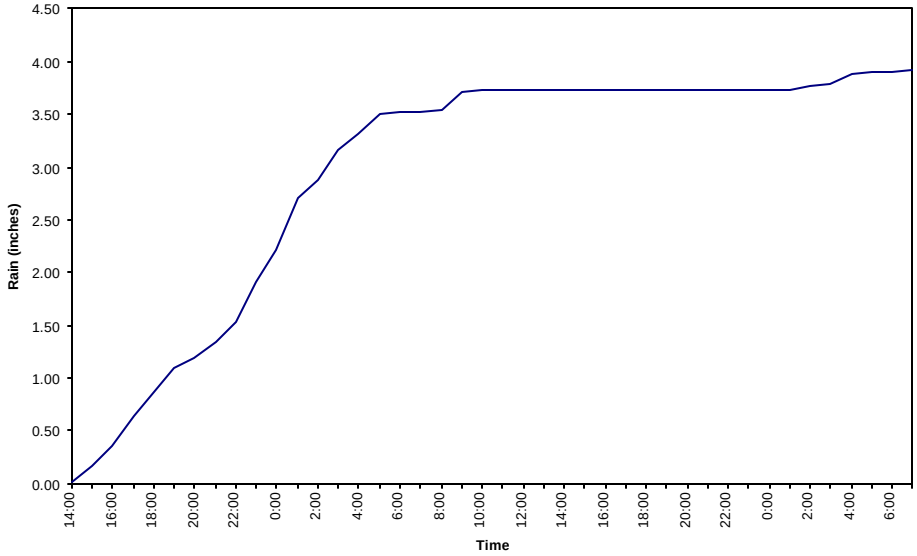
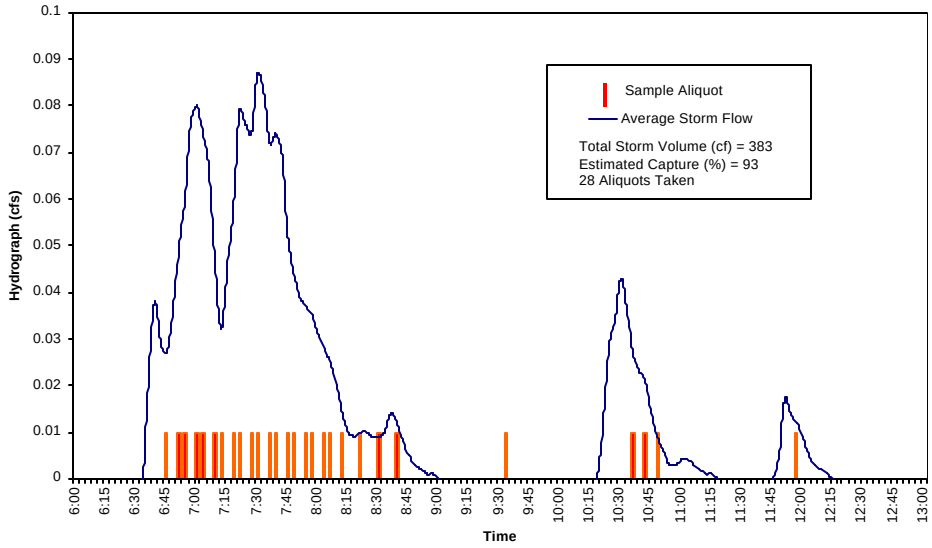
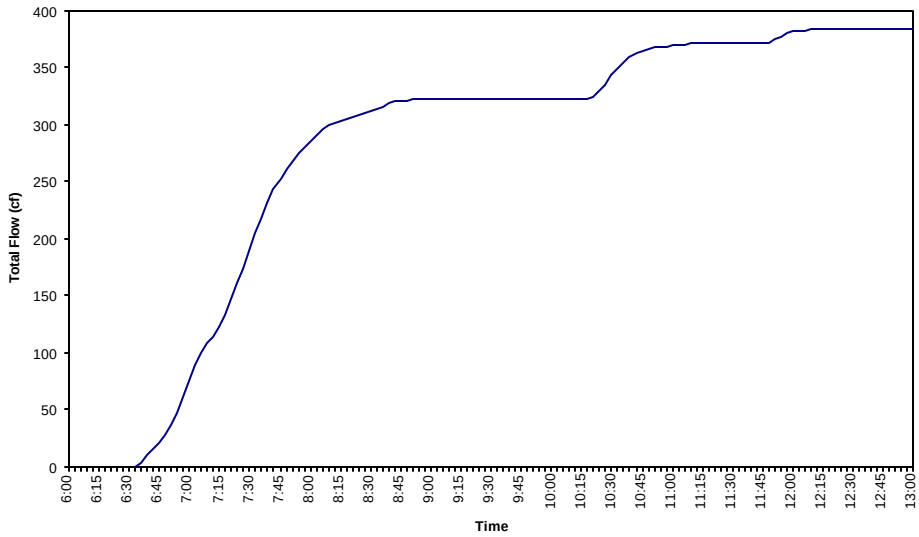


Figure 1-24c: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the Rosemead MS Fossil Filter™ DII for Event 4 on January 10-12, 2001

Effluent



Cumulative Flow



Cumulative Rainfall

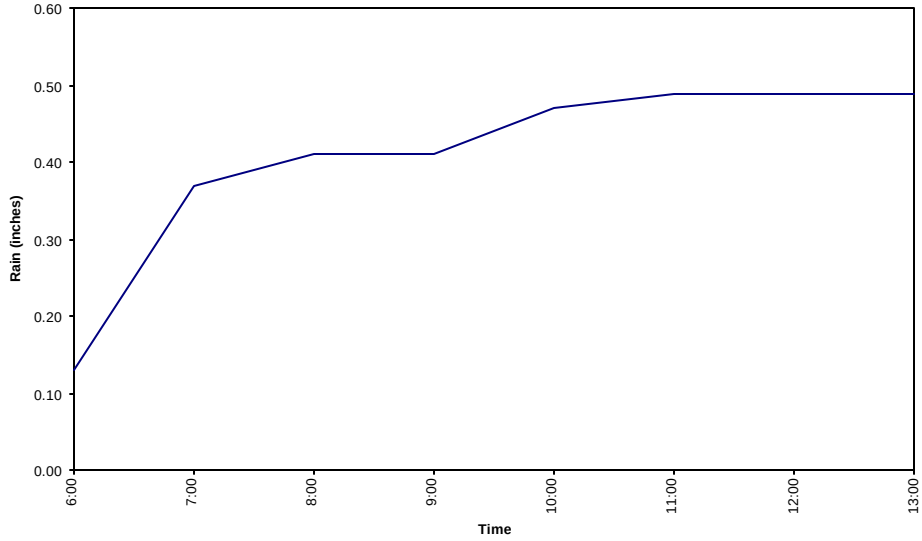
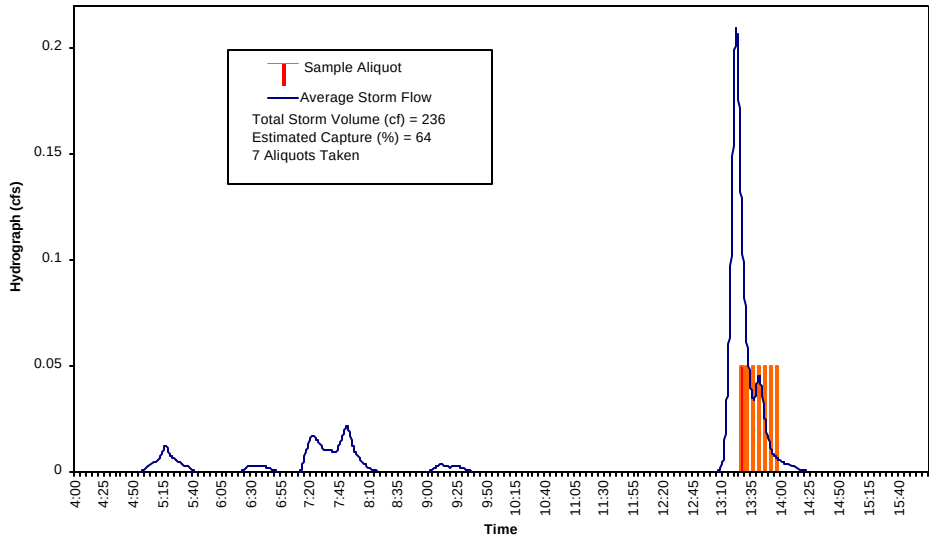
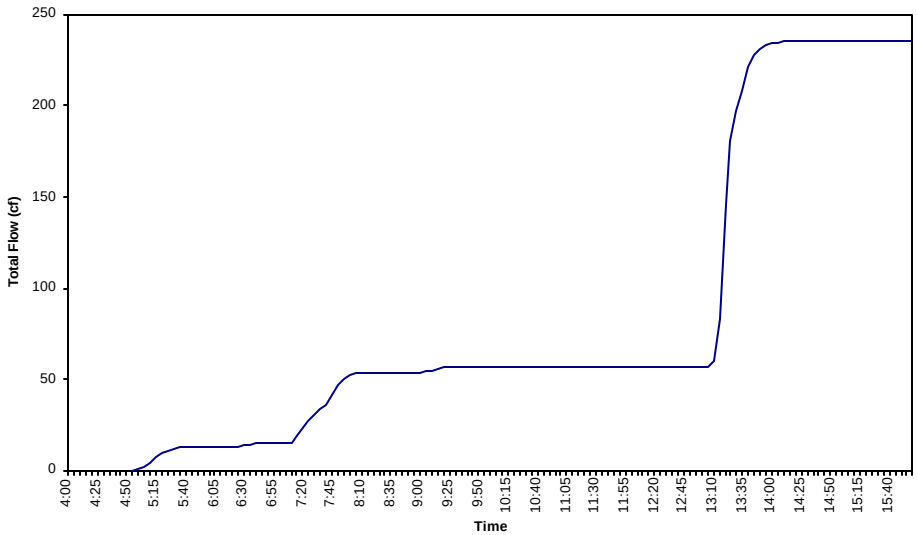


Figure 1-24d: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the Rosemead MS Fossil Filter™ DII for Event 5 on January 24, 2001

Effluent



Cumulative Flow



Cumulative Rainfall

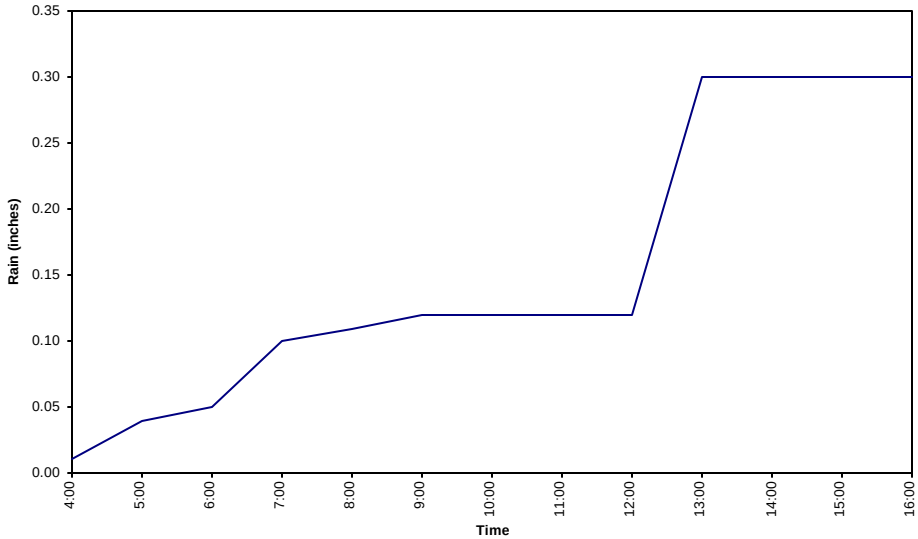
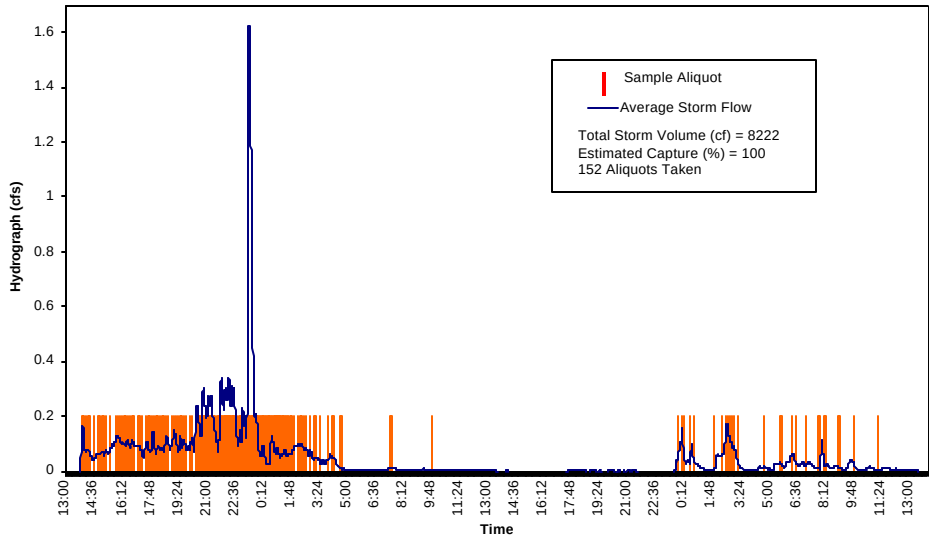
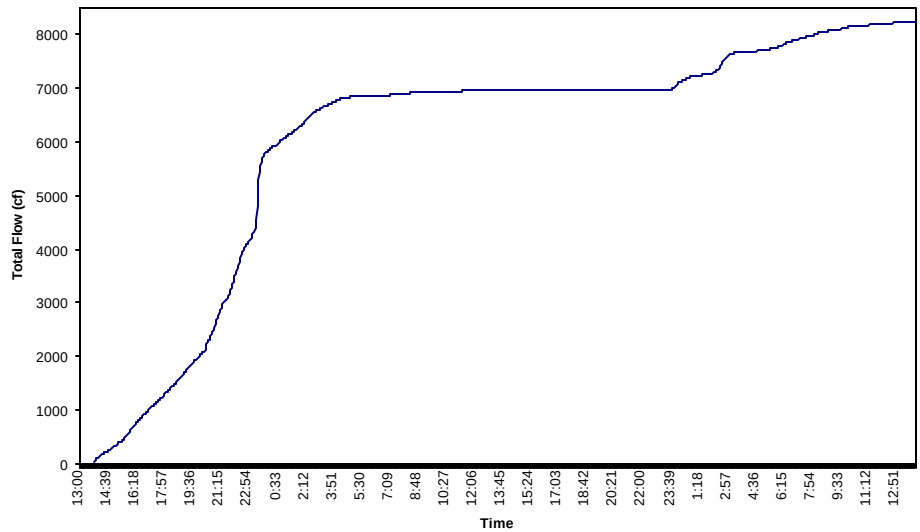


Figure 1-24e: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the Rosemead MS Fossil Filter™ DII for Event 6 on February 10, 2001

Effluent



Cumulative Flow



Cumulative Rainfall

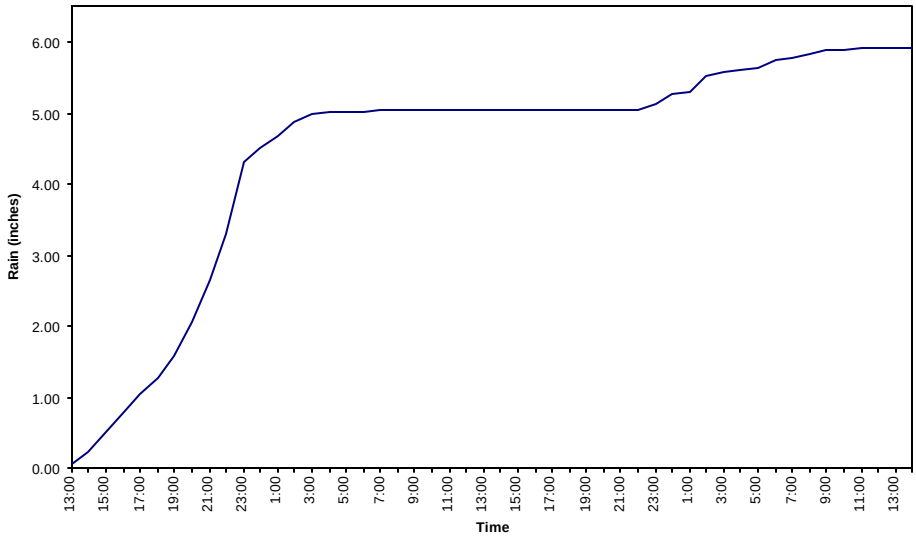
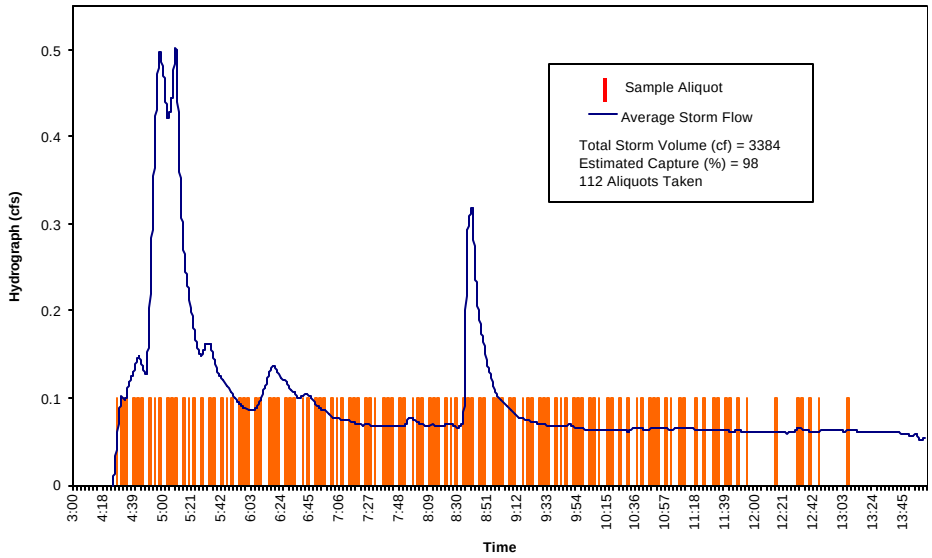
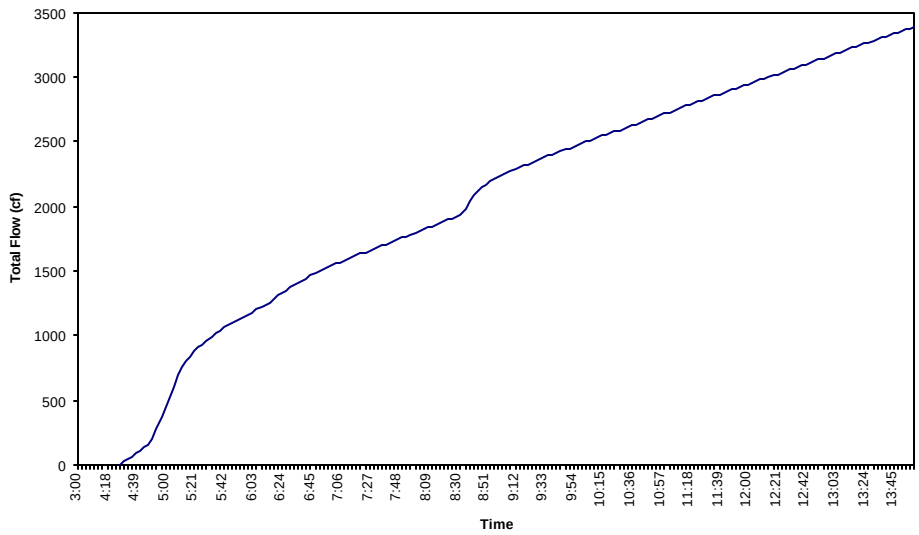


Figure 1-23c: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the Las Flores MS Fossil Filter™ DII for Event 4 on January 10-12, 2001

Effluent



Cumulative Flow



Cumulative Rainfall

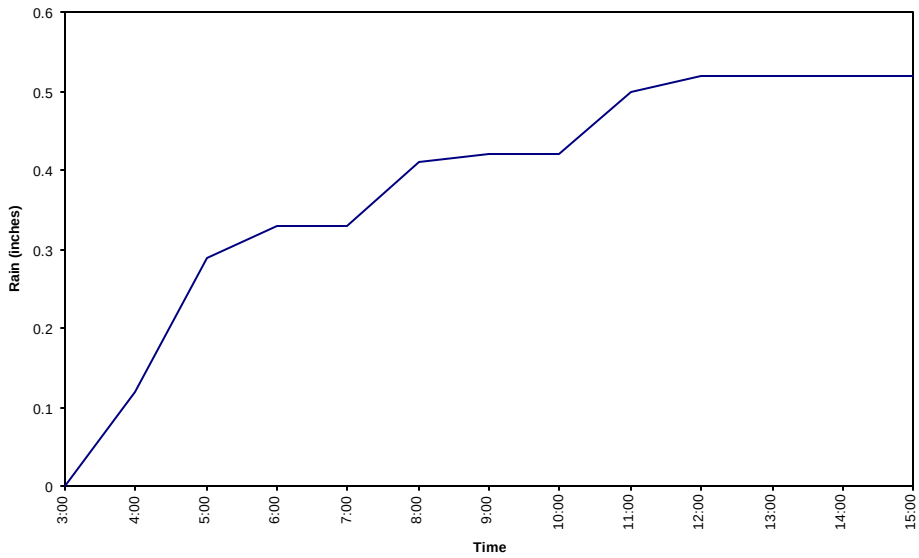
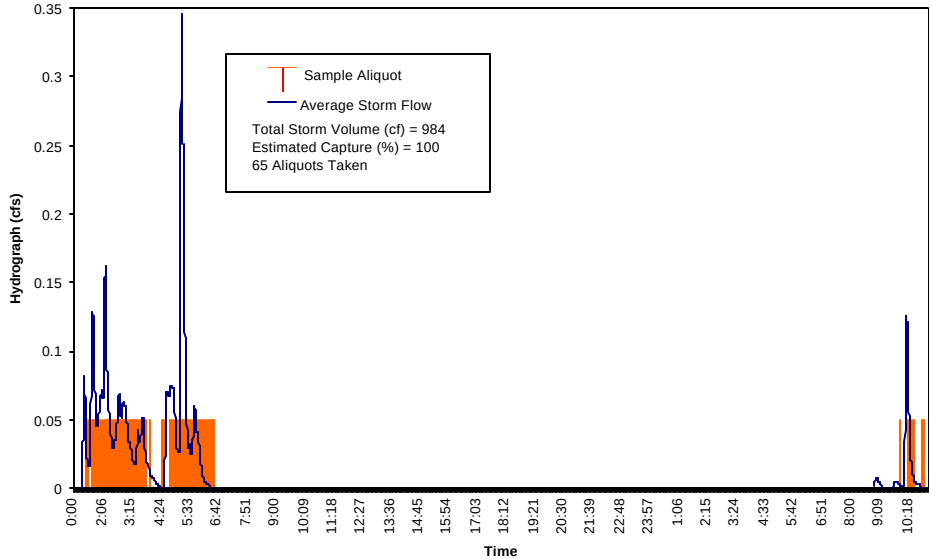
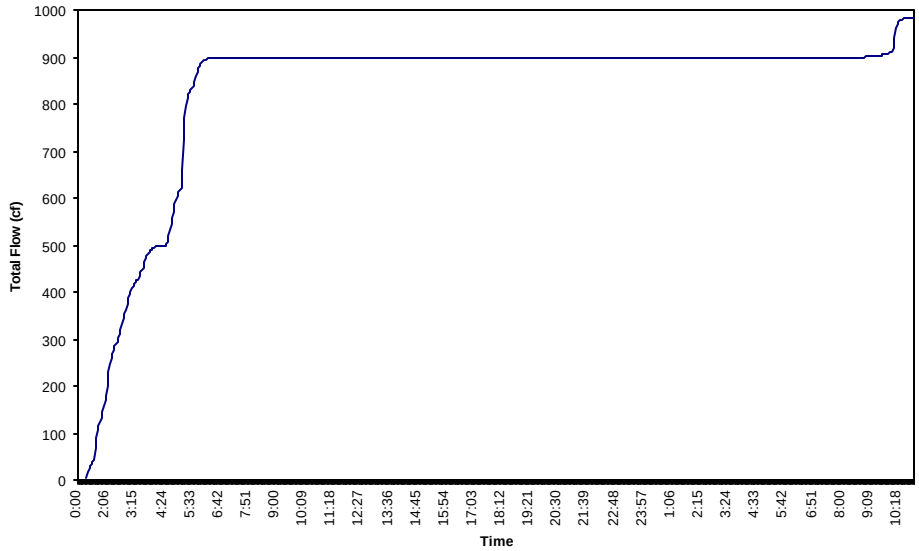


Figure 1-23d: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the Las Flores MS Fossil Filter™ DII for Event 5 on January 24, 2001

Effluent



Cumulative Flow



Cumulative Rainfall

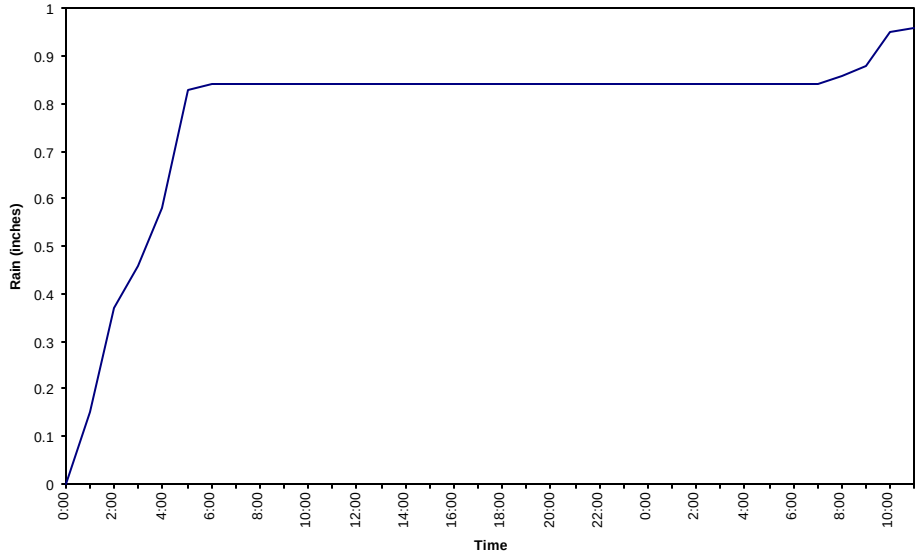
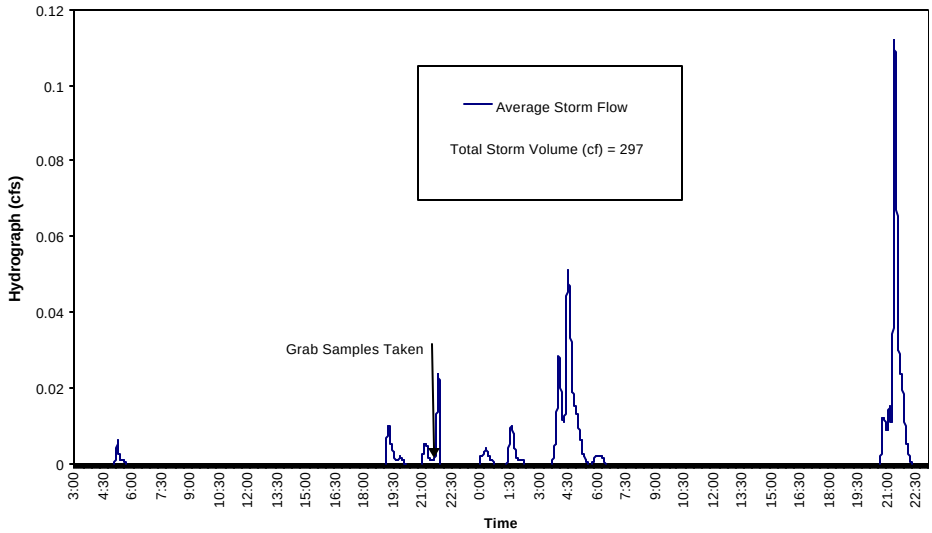
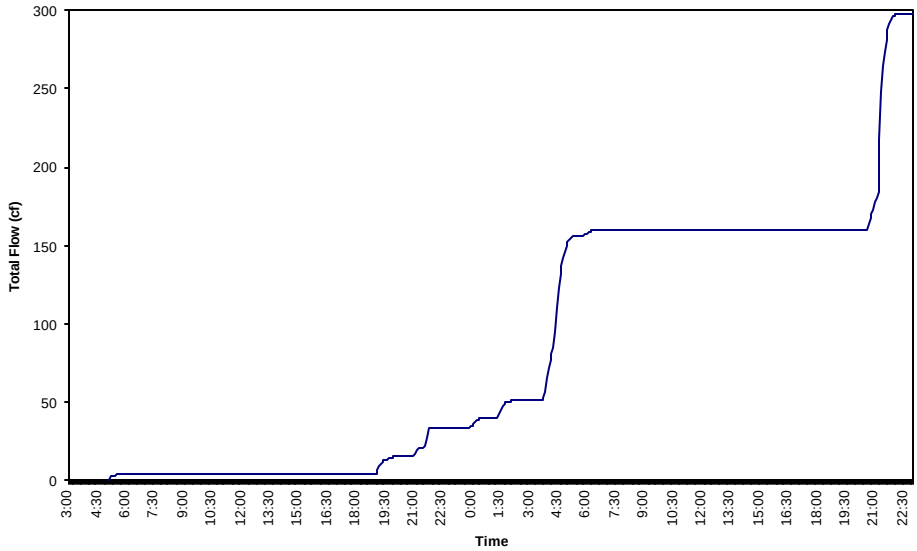


Figure 1-23e: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the Las Flores MS Fossil Filter™ DII for Event 6 on February 10-11, 2001

Effluent



Cumulative Flow



Cumulative Rainfall

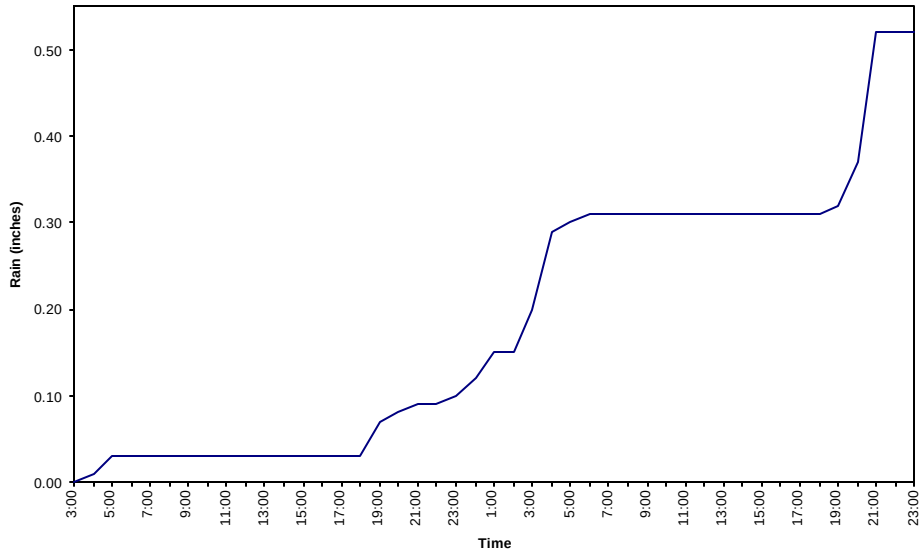
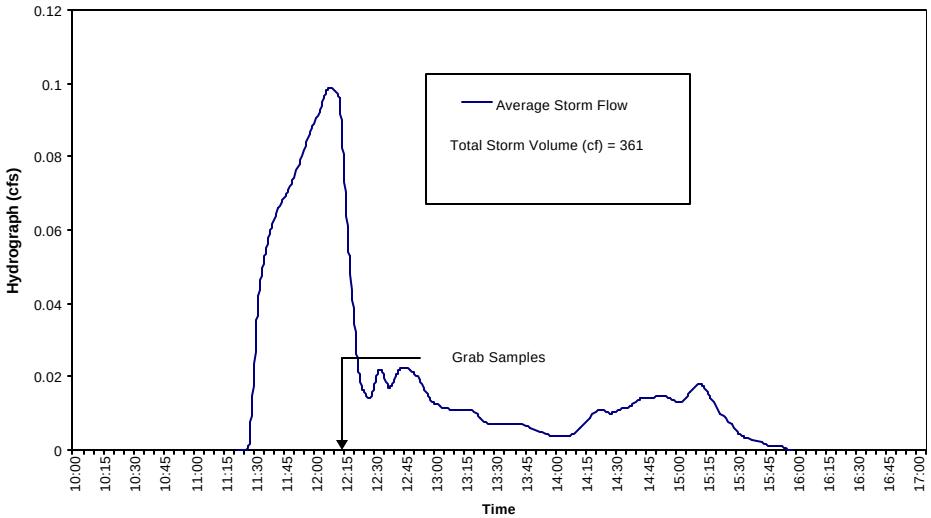
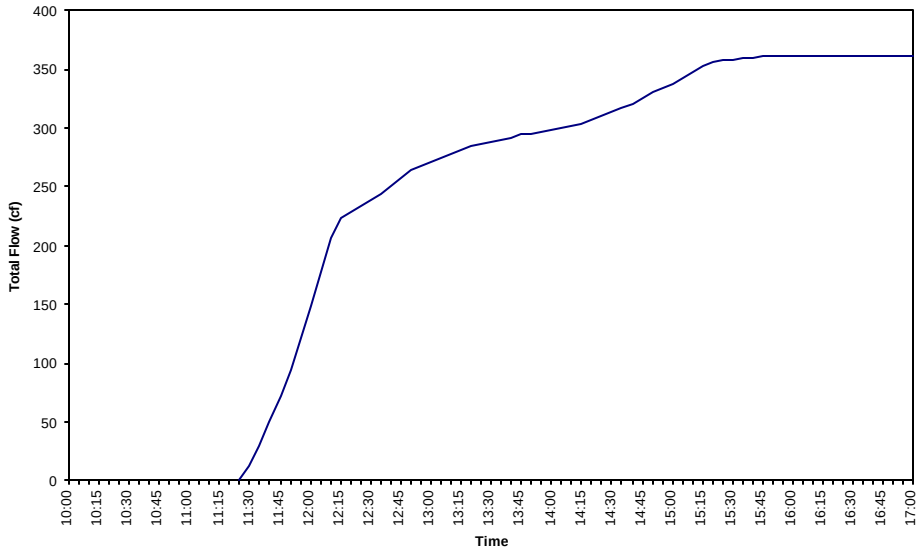


Figure 1-25a: Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the Alameda Maintenance Station Oil/Water Separator for Event 2 on October 26-27, 2000

Effluent



Cumulative Flow



Cumulative Rainfall

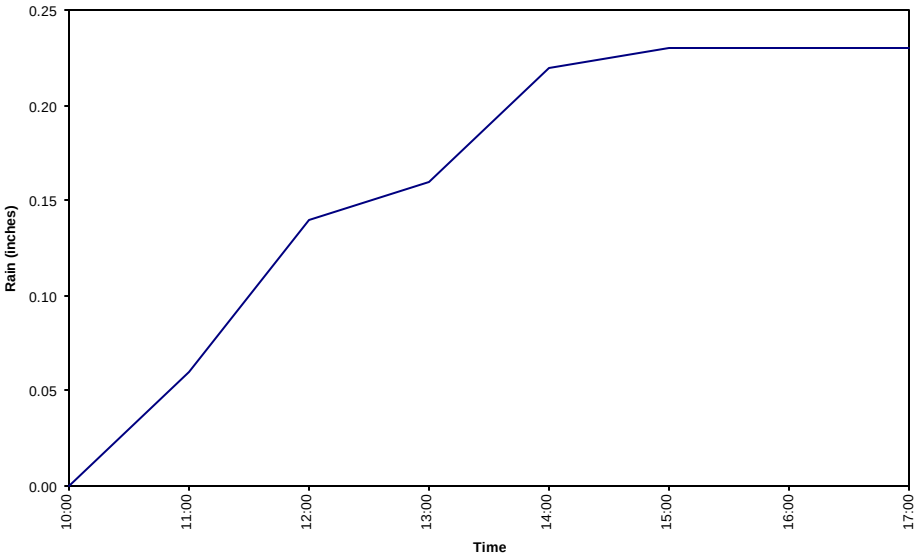
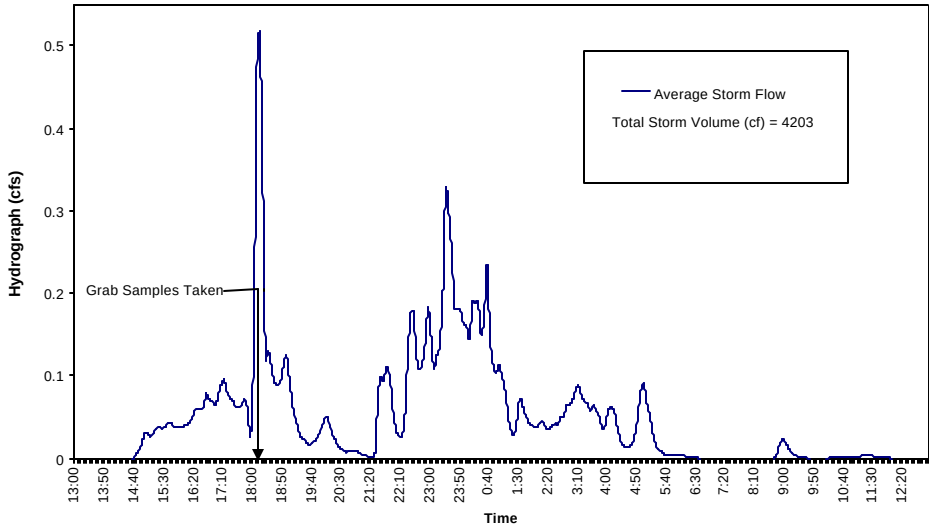
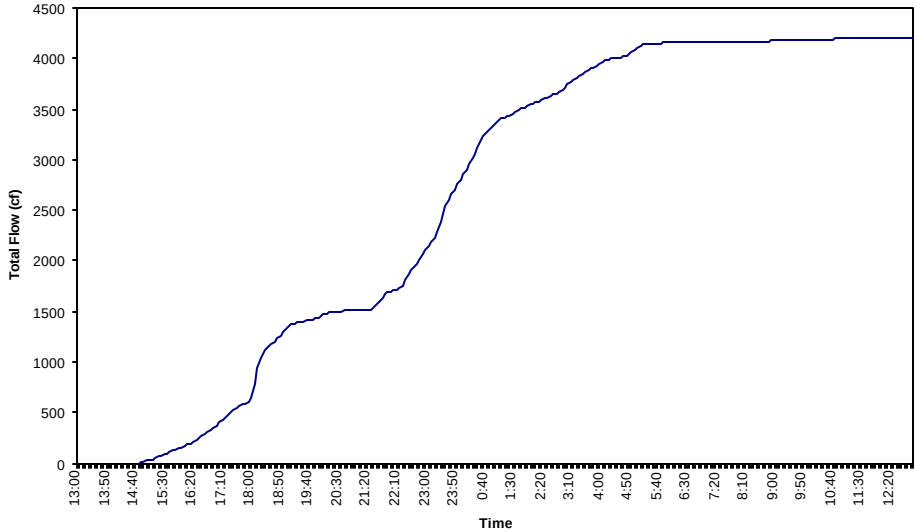


Figure 1-25b Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the Alameda Maintenance Station Oil/Water Separator for Event 3 on January 8, 2001

Effluent



Cumulative Flow



Cumulative Rainfall

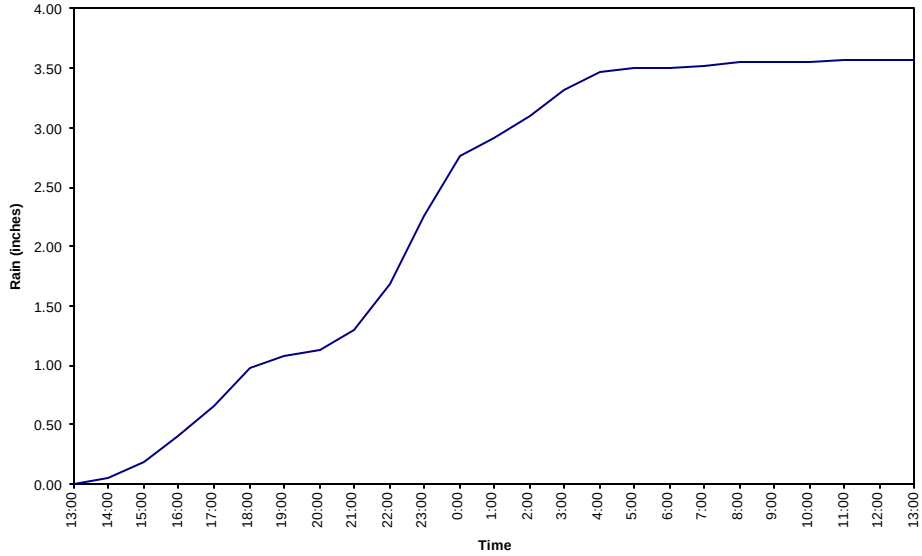
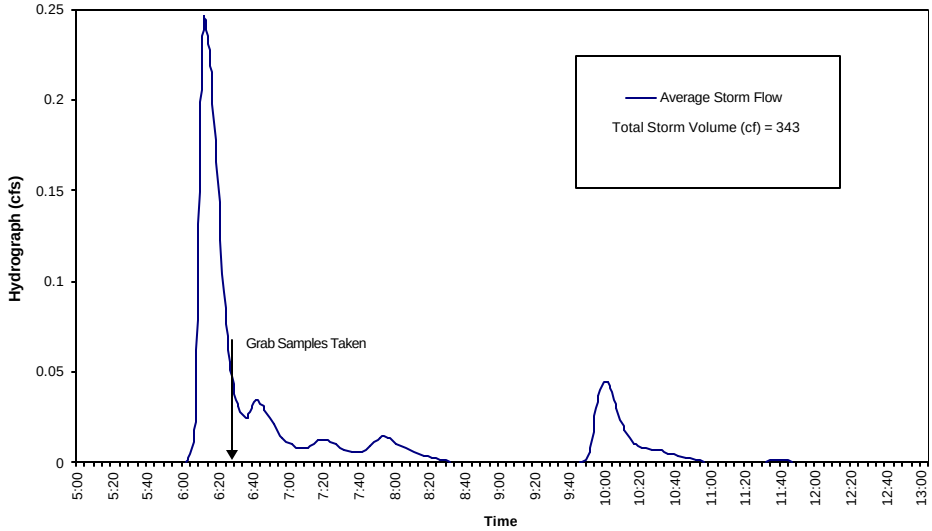
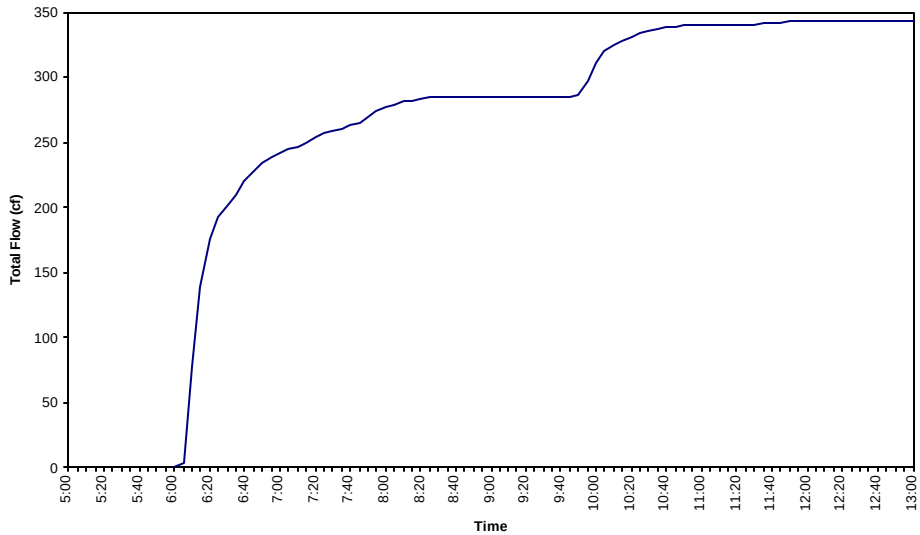


Figure 1-25c Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the Alameda Maintenance Station Oil/Water Separator for Event 4 on January 10-11, 2001

Effluent



Cumulative Flow



Cumulative Rainfall

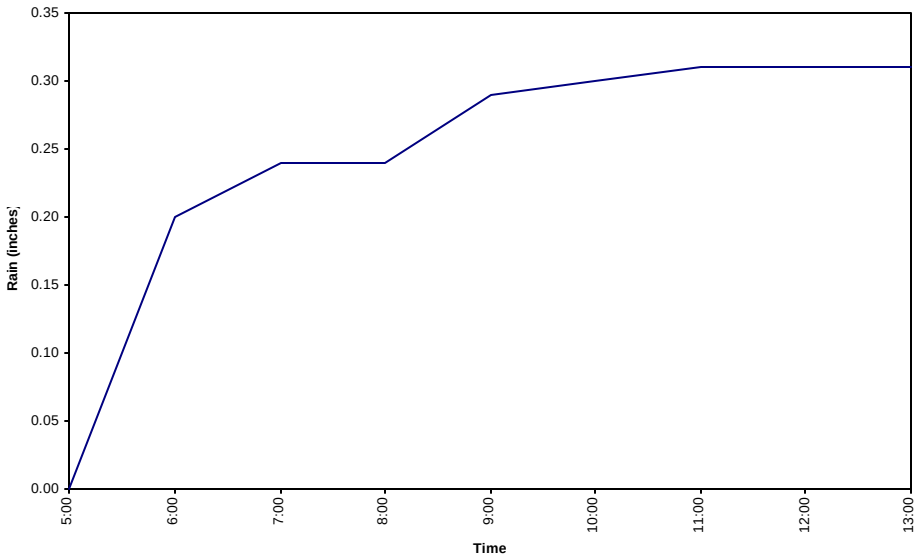
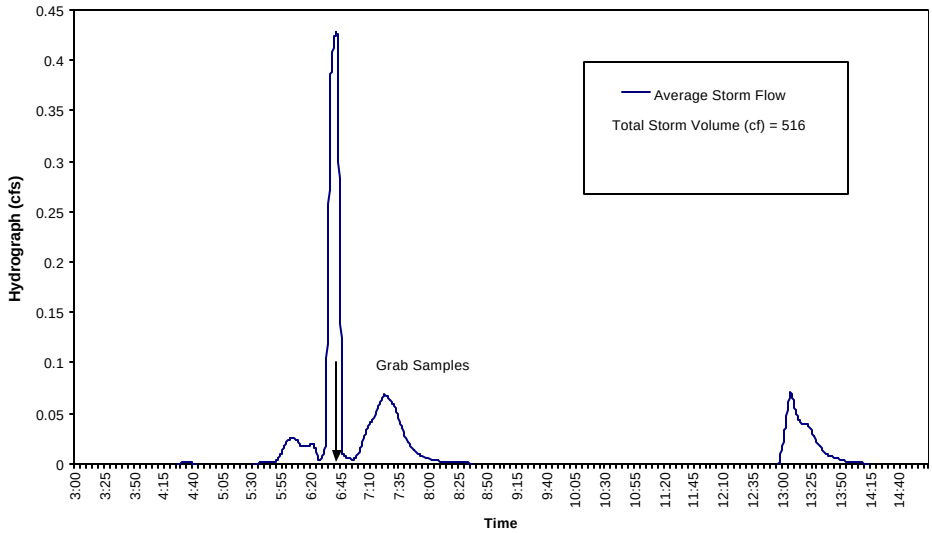
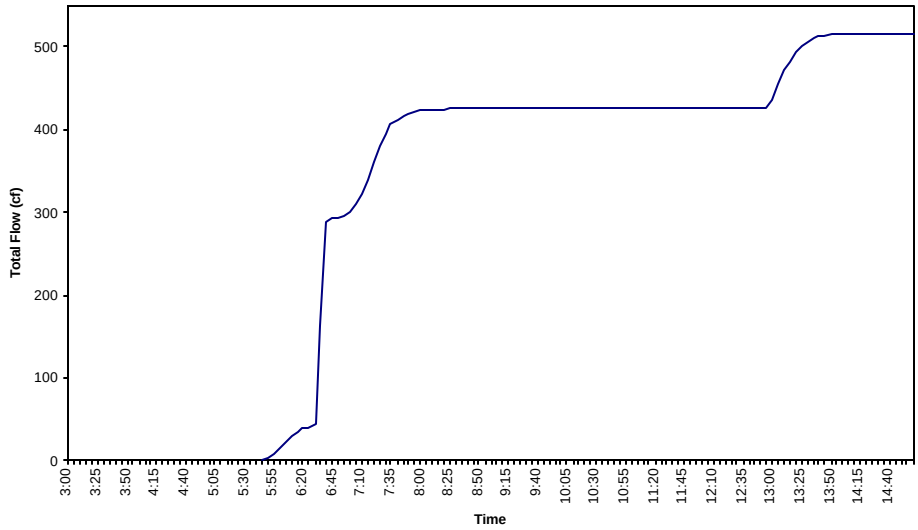


Figure 1-25d Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the Alameda Maintenance Station Oil/Water Separator for Event 5 on January 24, 2001

Effluent



Cumulative Flow



Cumulative Rainfall

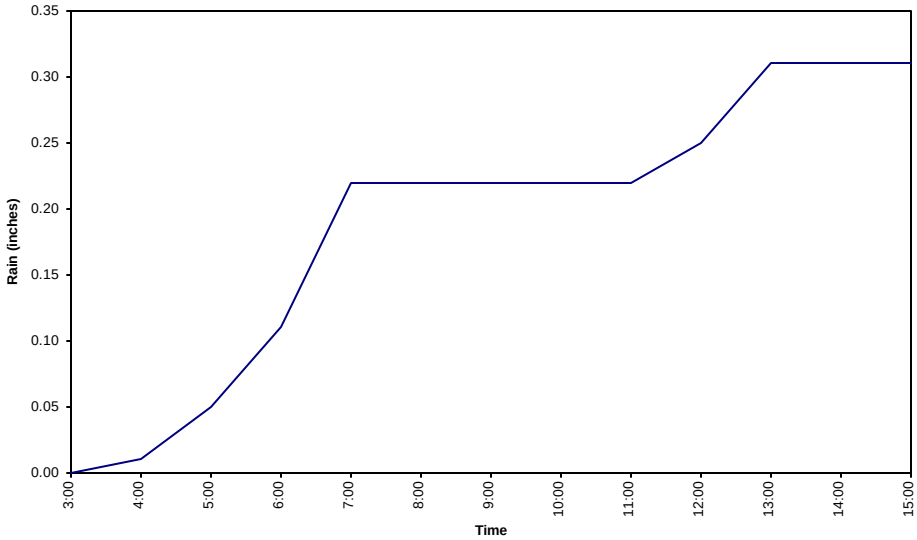
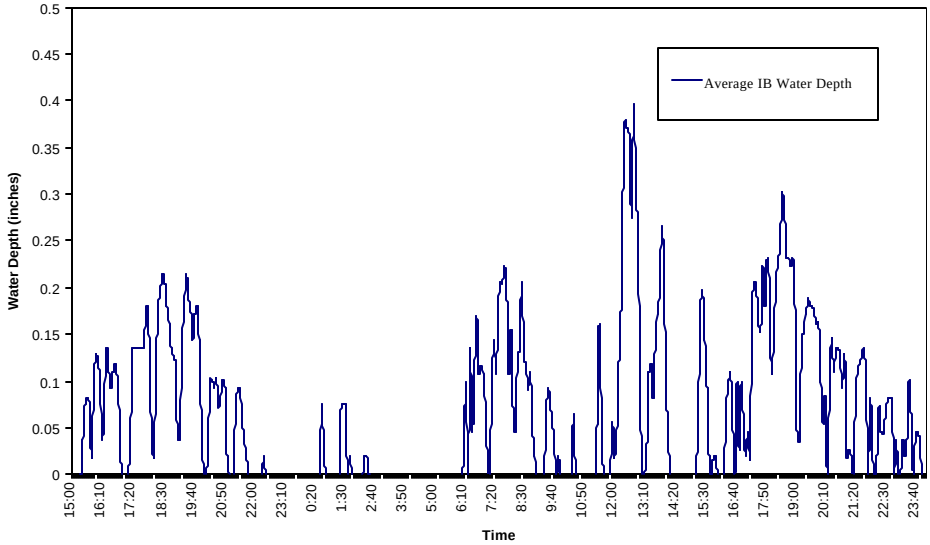


Figure 1-25e Effluent Hydrograph, Cumulative Flow, and Cumulative Rainfall at the Alameda Maintenance Station Oil/Water Separator for Event 6 on February 10, 2001

IB Water Depth



Cumulative Rainfall

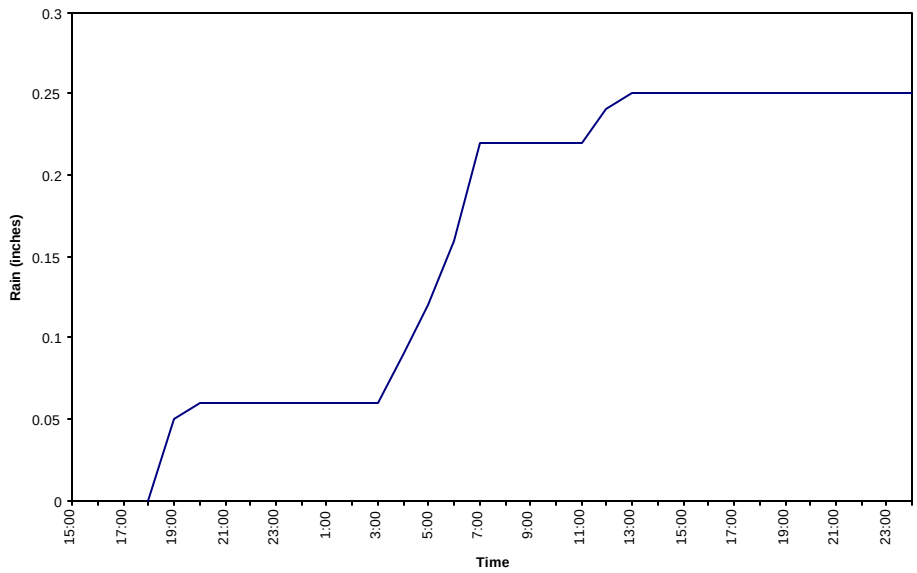
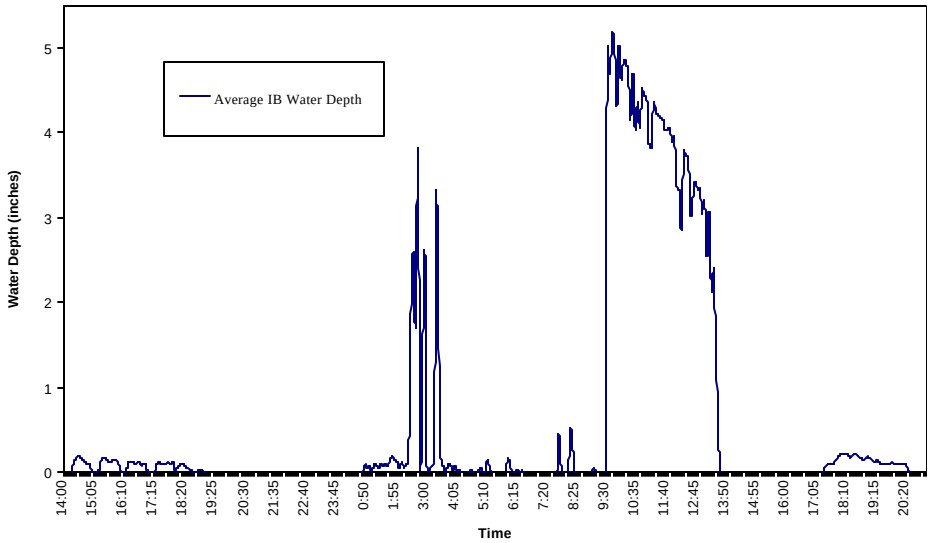


Figure 1-26a: IB Water Depth and Cumulative Rainfall at the I-605/SR-91 Infiltration Basin for Event 1 on October 10, 2000

IB Water Depth



Cumulative Rainfall

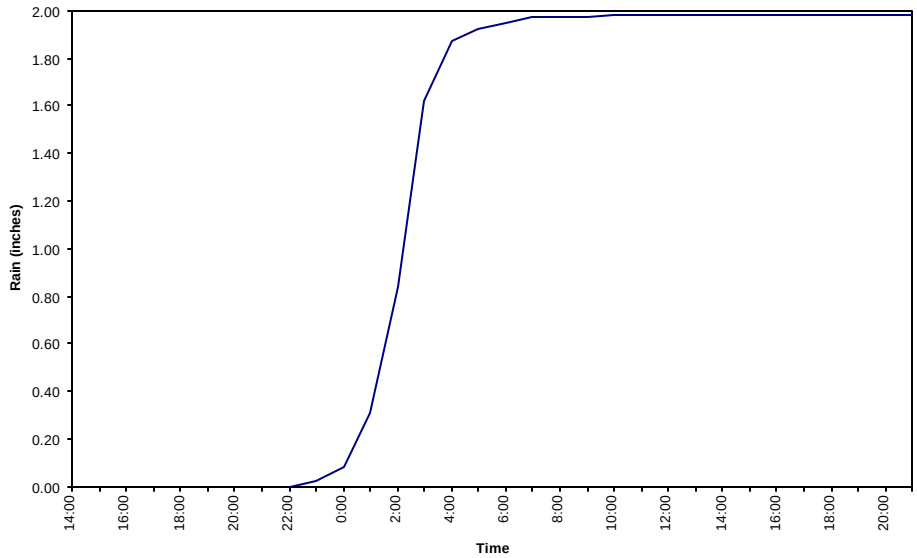
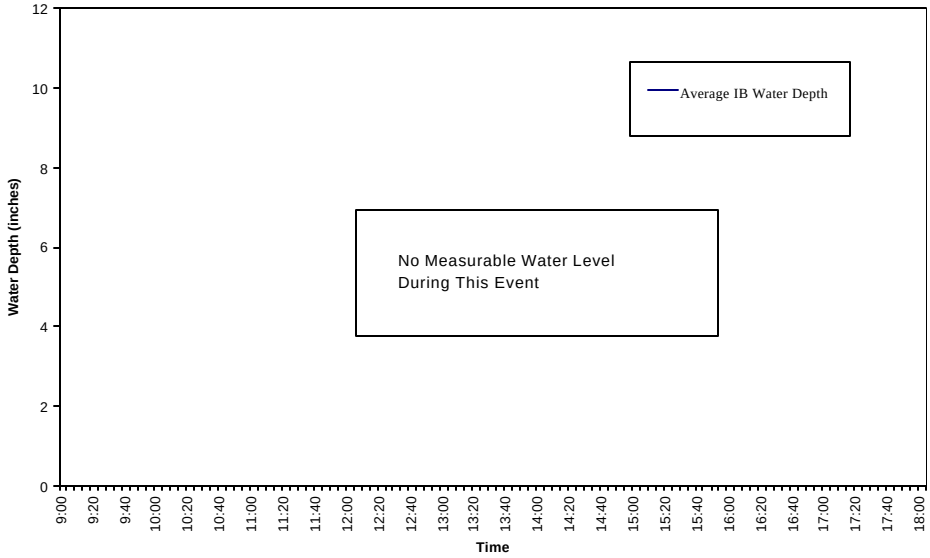


Figure 1-26b: IB Water Depth and Cumulative Rainfall at the I-605/SR-91 Infiltration Basin for Event 2 on October 26, 2000

IB Water Depth



Cumulative Rainfall

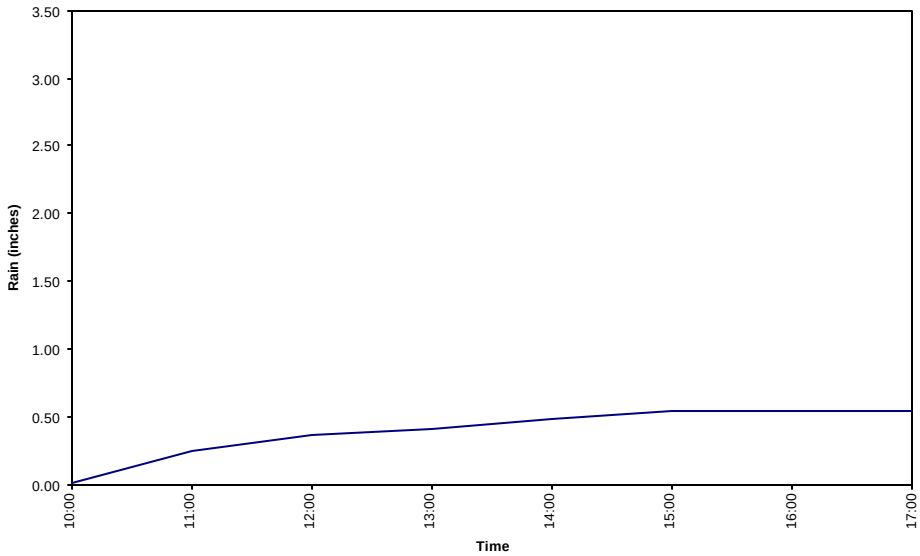
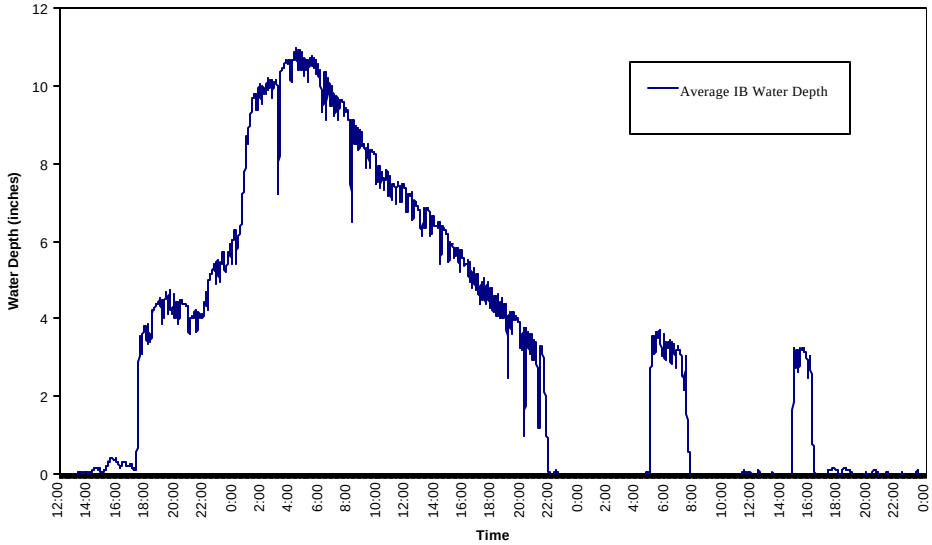


Figure 1-26c: IB Water Depth and Cumulative Rainfall at the I-605/SR-91 Infiltration Basin for Event 3 on January 8, 2001

IB Water Depth



Cumulative Rainfall

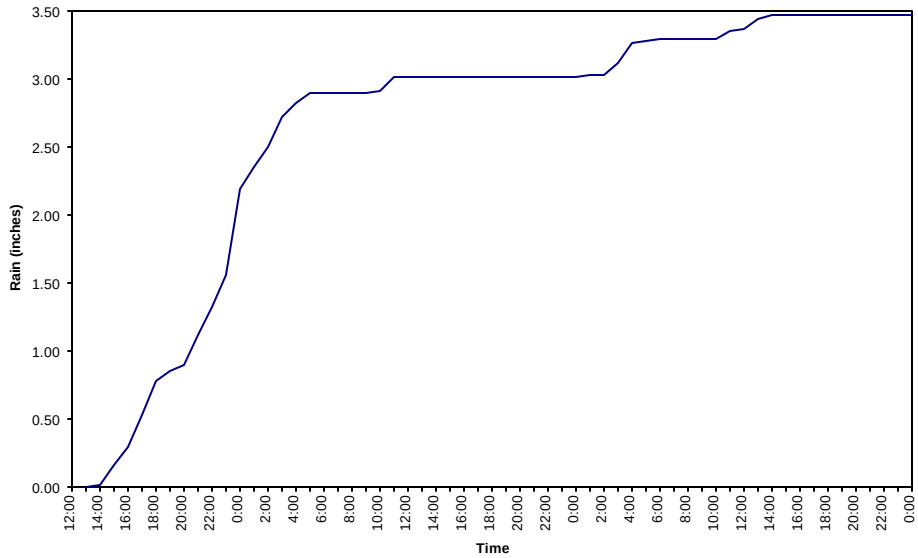
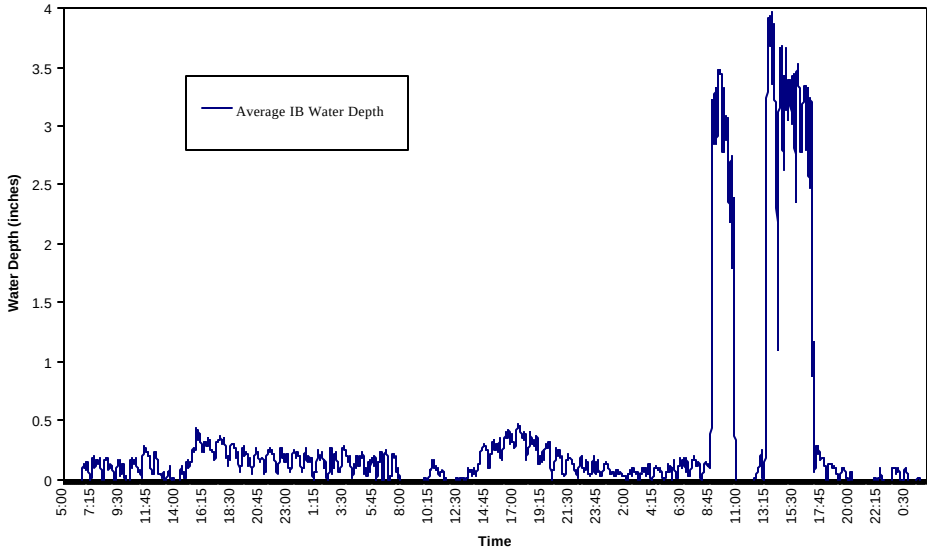


Figure 1-26d: IB Water Depth and Cumulative Rainfall at the I-605/SR-91 Infiltration Basin for Event 4 on January 10, 2001

IB Water Depth



Cumulative Rainfall

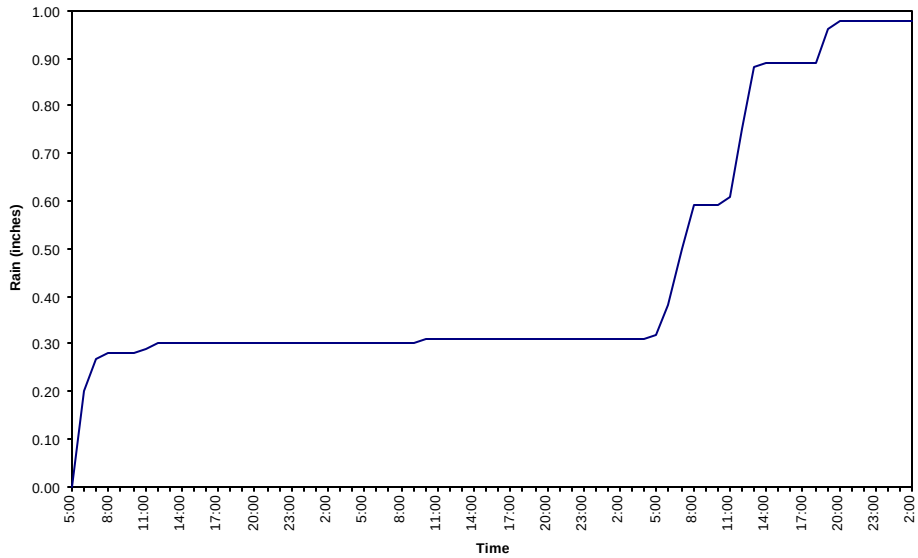
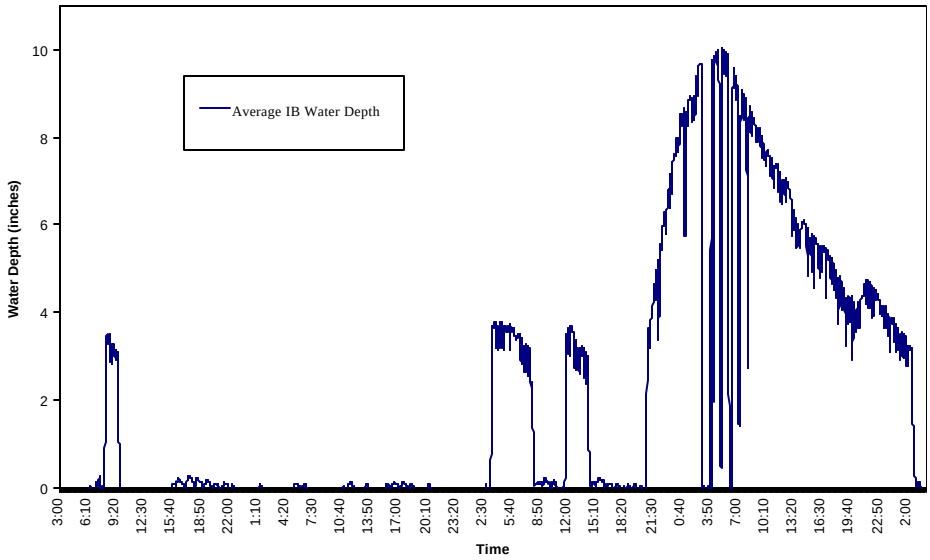


Figure 1-26e: IB Water Depth and Cumulative Rainfall at the I-605/SR-91 Infiltration Basin for Event 5 on January 24, 2001

IB Water Depth



Cumulative Rainfall

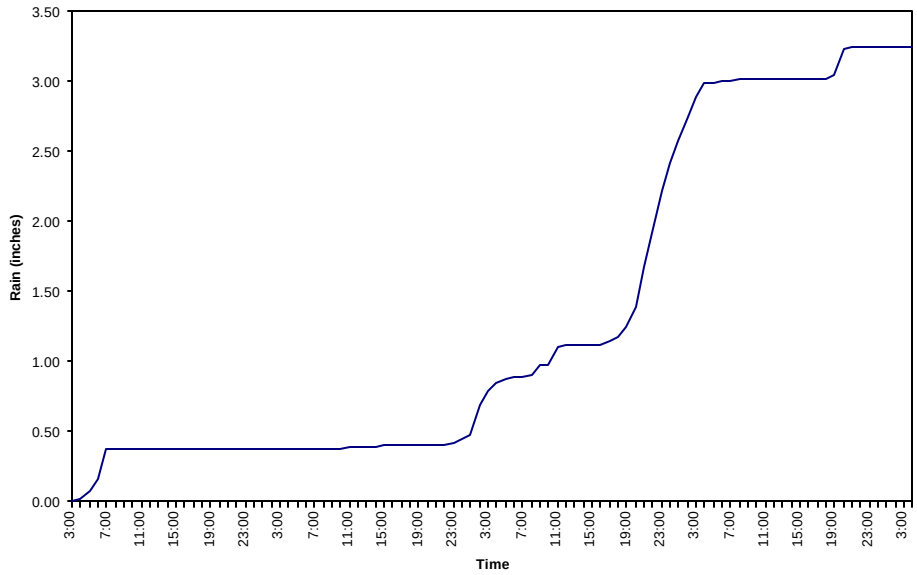
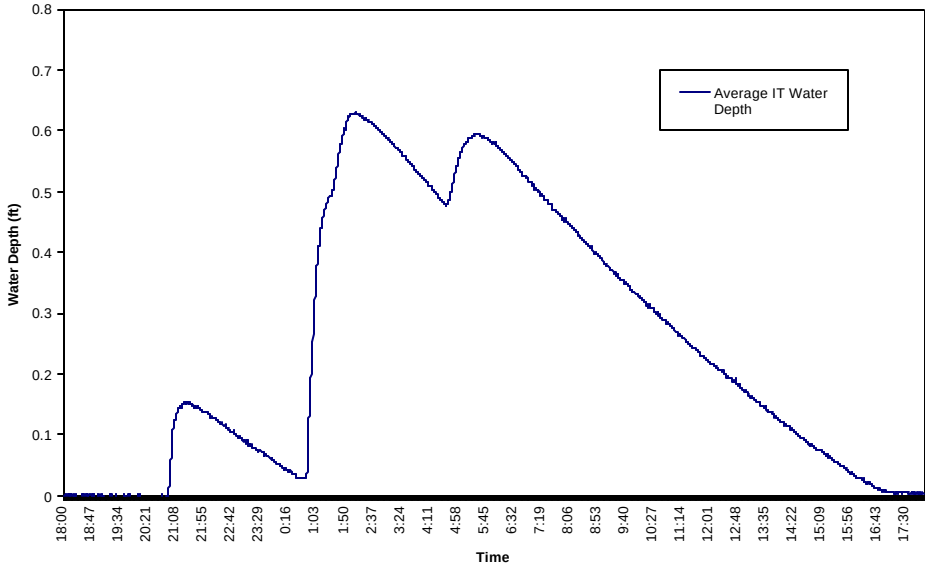
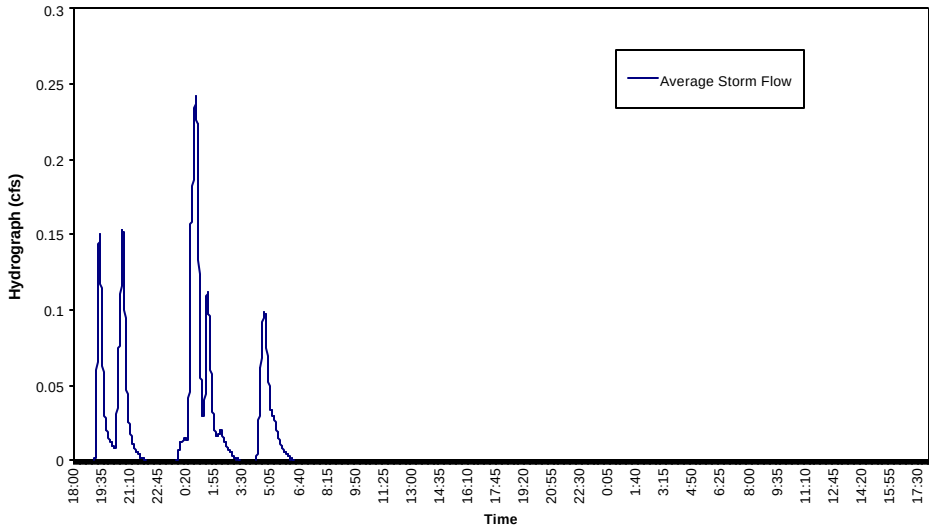


Figure 1-26f: IB Water Depth and Cumulative Rainfall at the I-605/SR-91 Infiltration Basin for Event 6 on February 10, 2001

IT Water Depth



Influent



Cumulative Rainfall

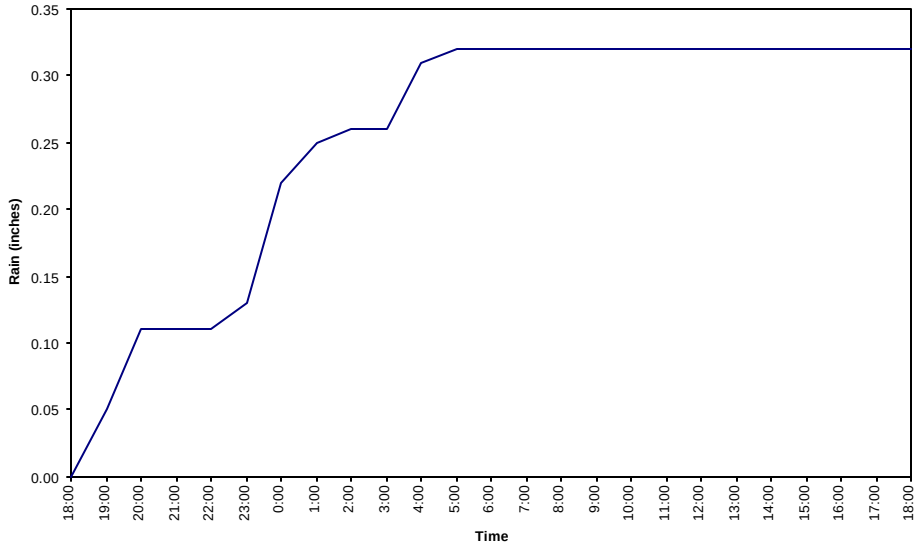
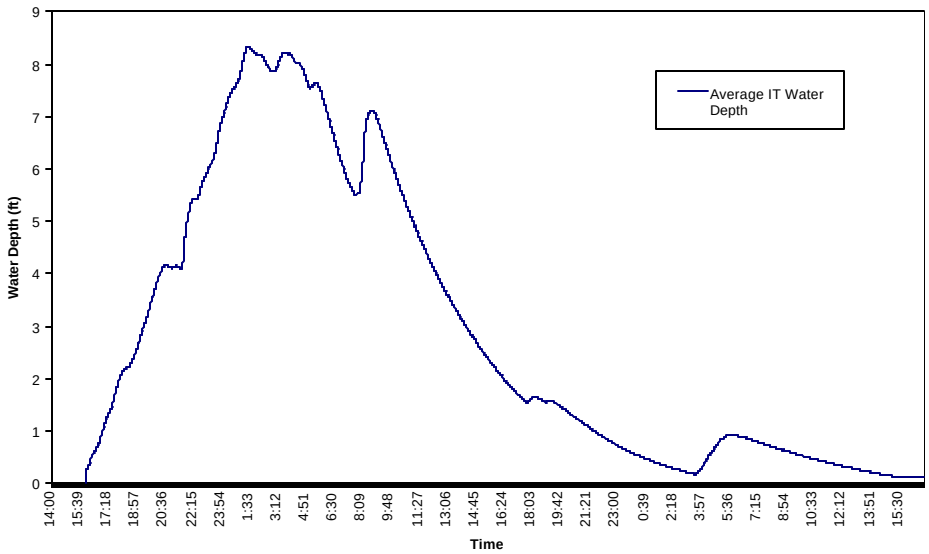
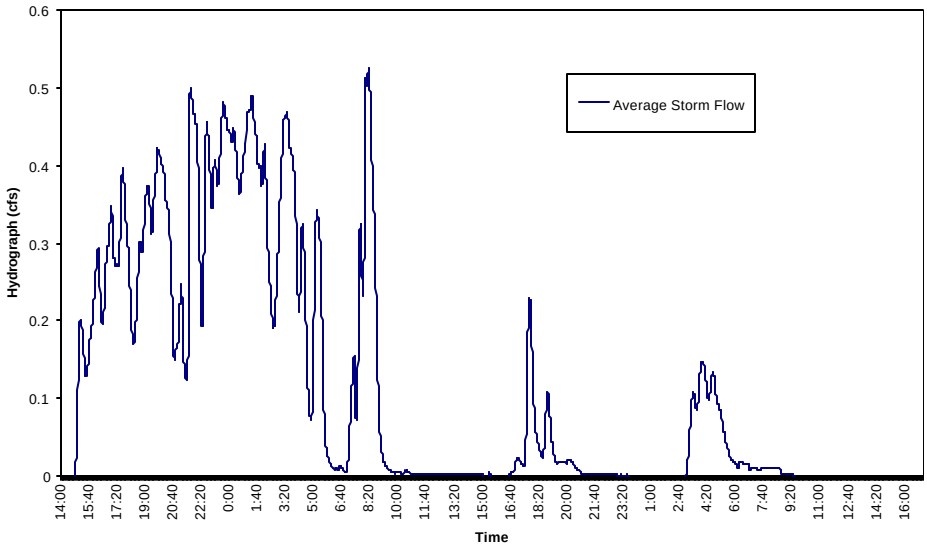


Figure 1-27a: IT Water Depth and Cumulative Rainfall at the Altadena Maintenance Station Infiltration Trench for Event 2 on October 27, 2000

IT Water Depth



Influent



Cumulative Rainfall

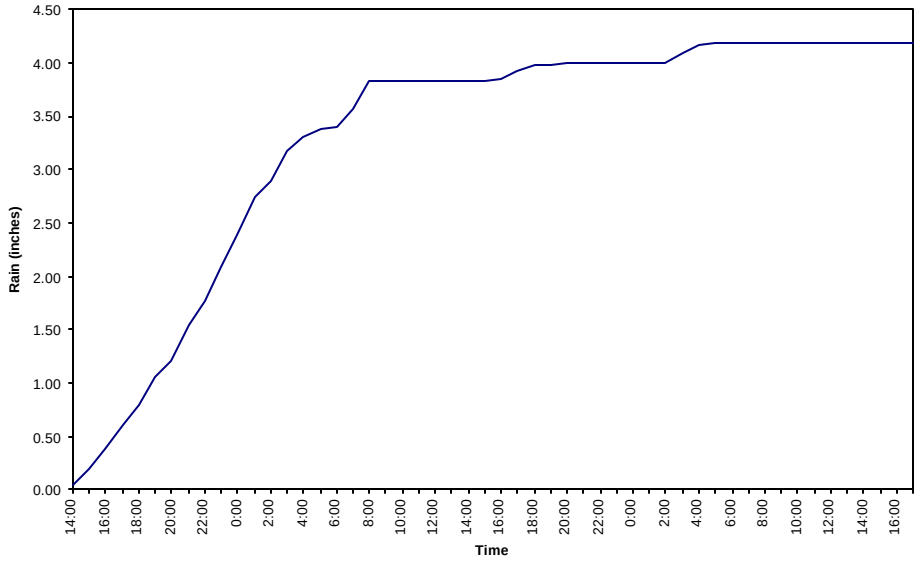
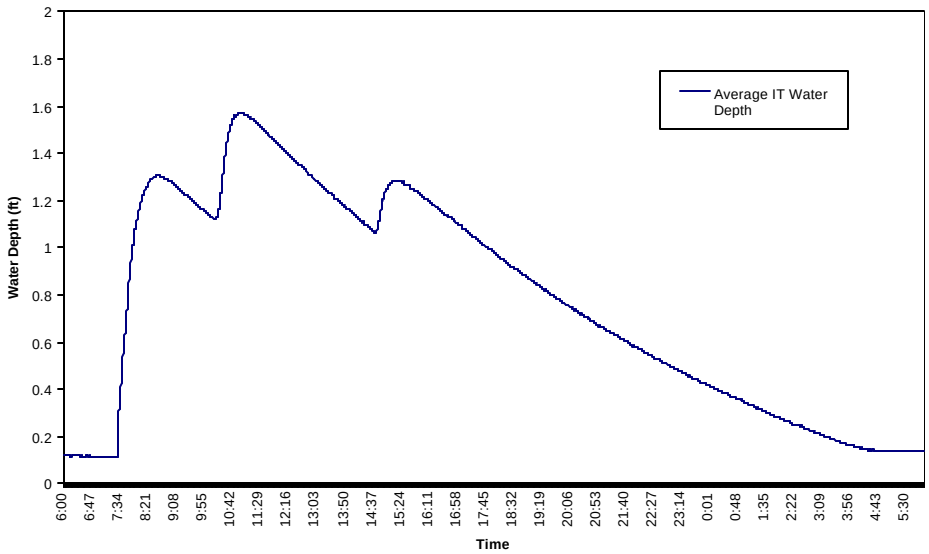
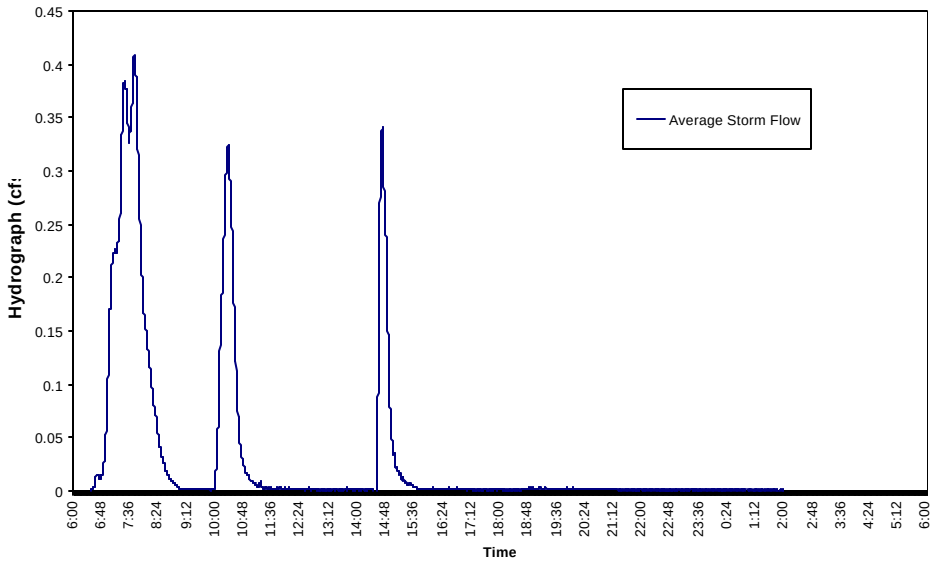


Figure 1-27b: IT Water Depth and Cumulative Rainfall at the Altadena Maintenance Station Infiltration Trench for Event 4 on January 11, 2001

IT Water Depth



Influent



Cumulative Rainfall

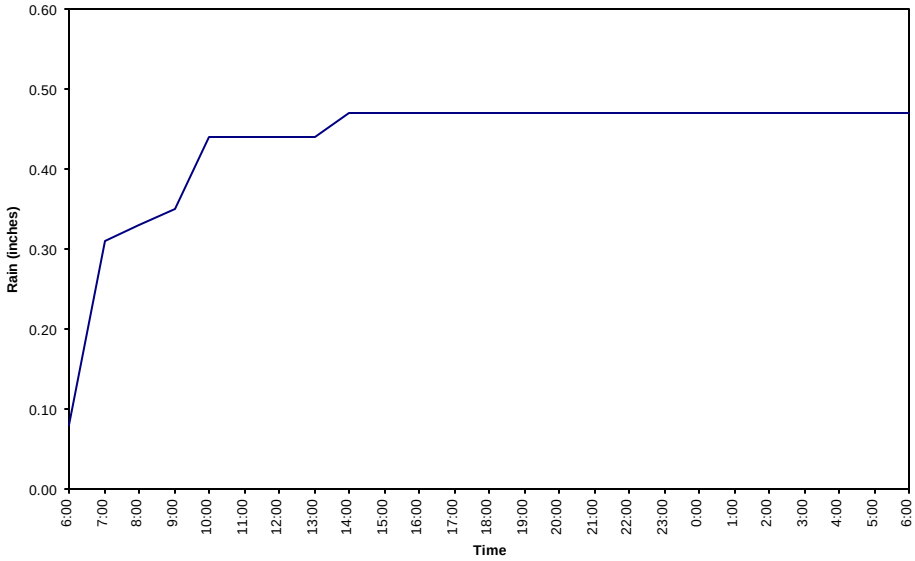
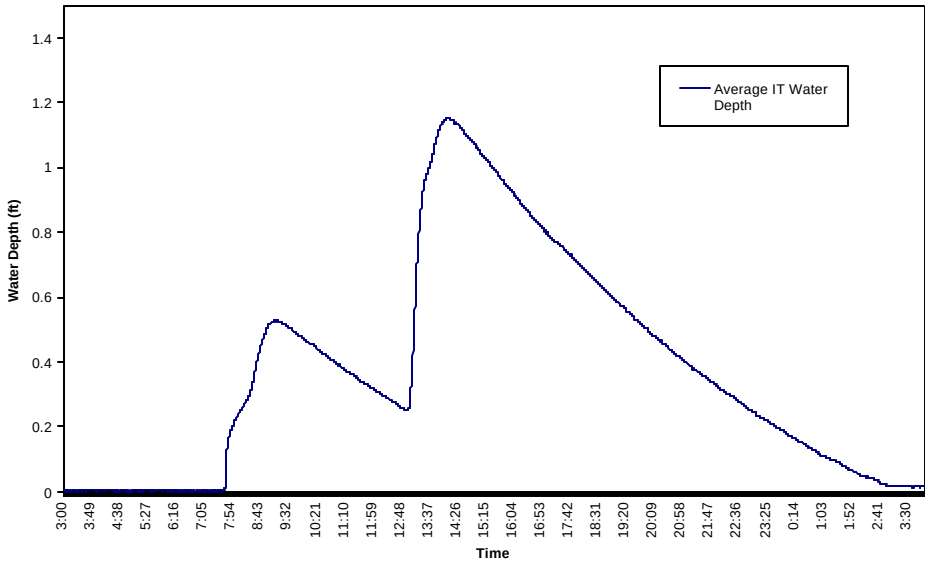


Figure 1-27c: IT Water Depth and Cumulative Rainfall at the Altadena Maintenance Station Infiltration Trench for Event 5 on January 24, 2001

IT Water Depth



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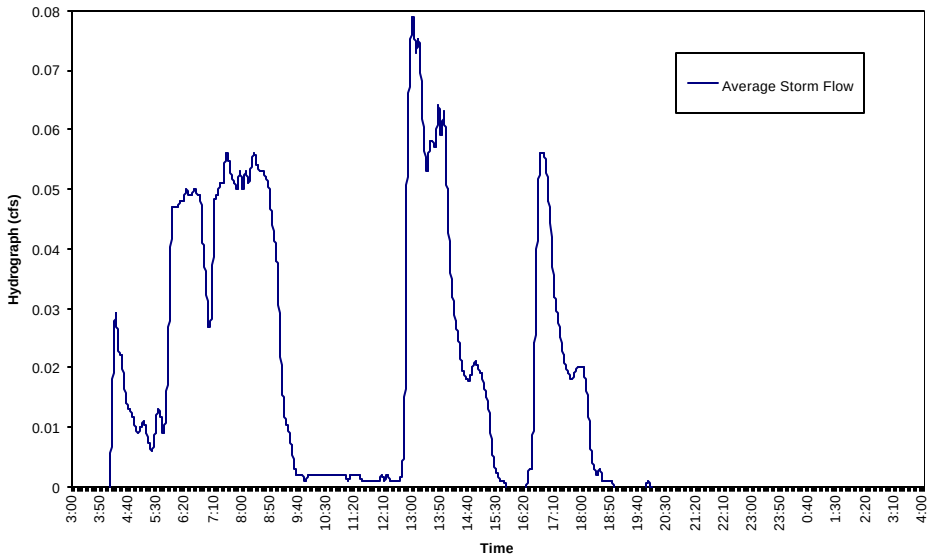


Cumulative Rainfall

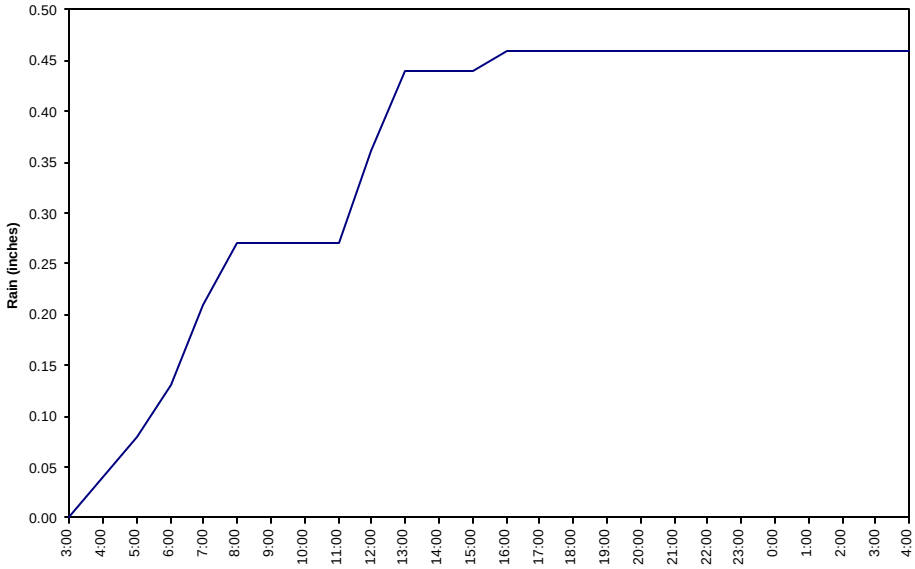
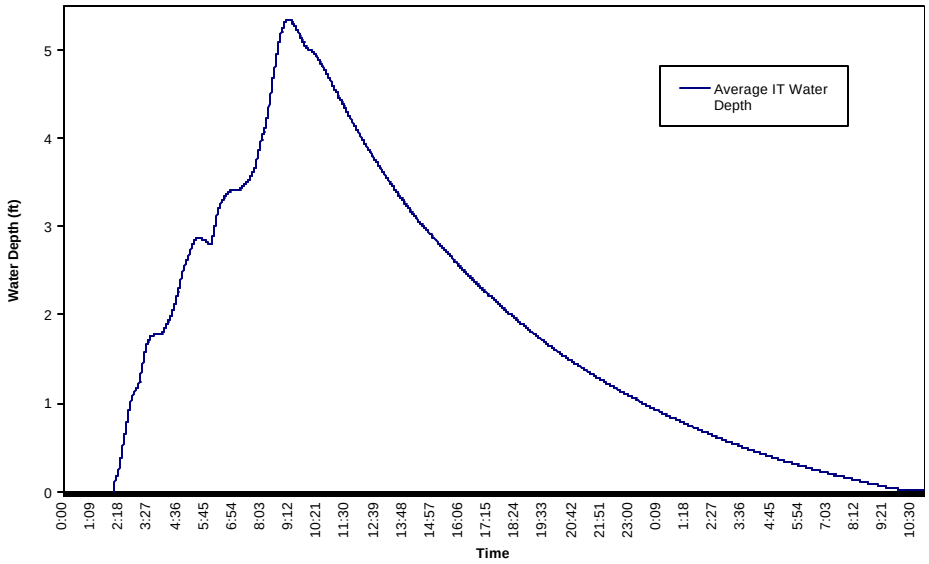
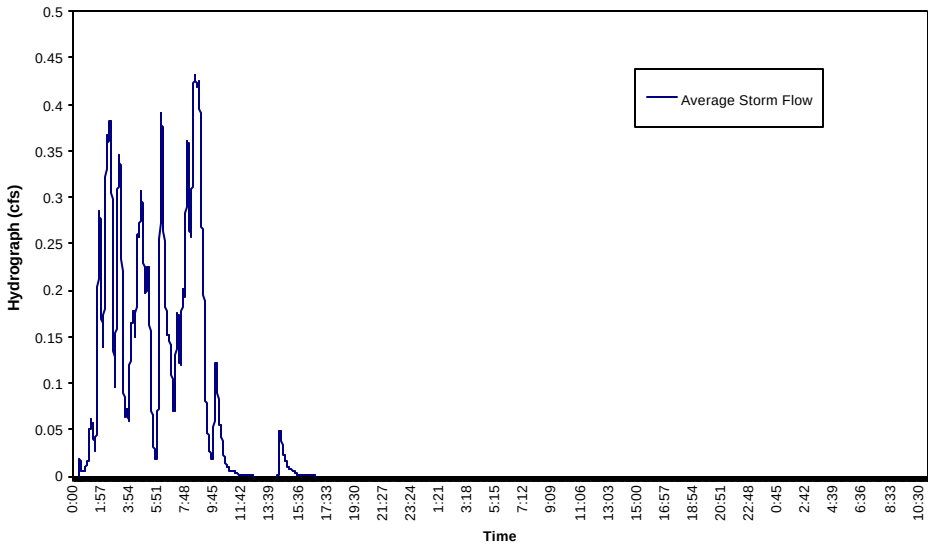


Figure 1-27d: IT Water Depth and Cumulative Rainfall at the Altadena Maintenance Station Infiltration Trench for Event 6 on February 10, 2001

IT Water Depth



Influent



Cumulative Rainfall

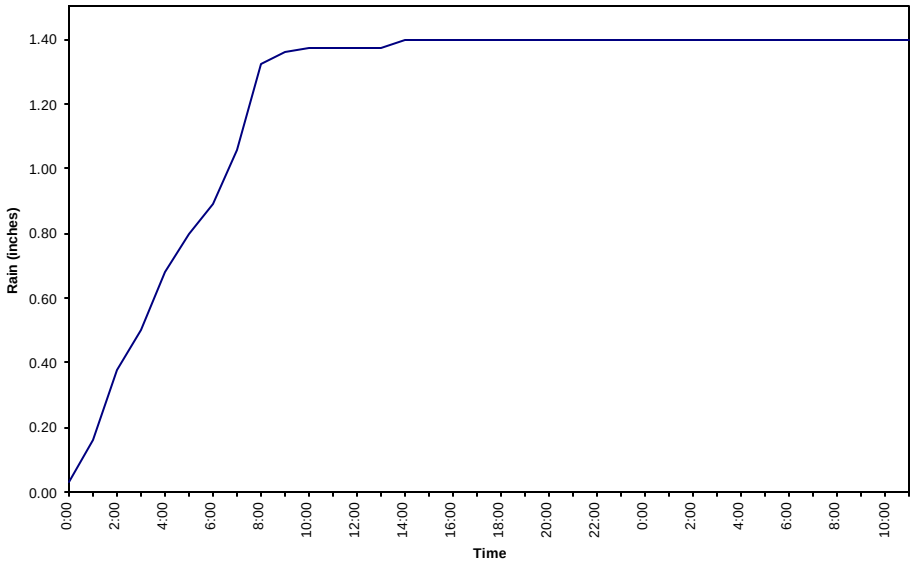
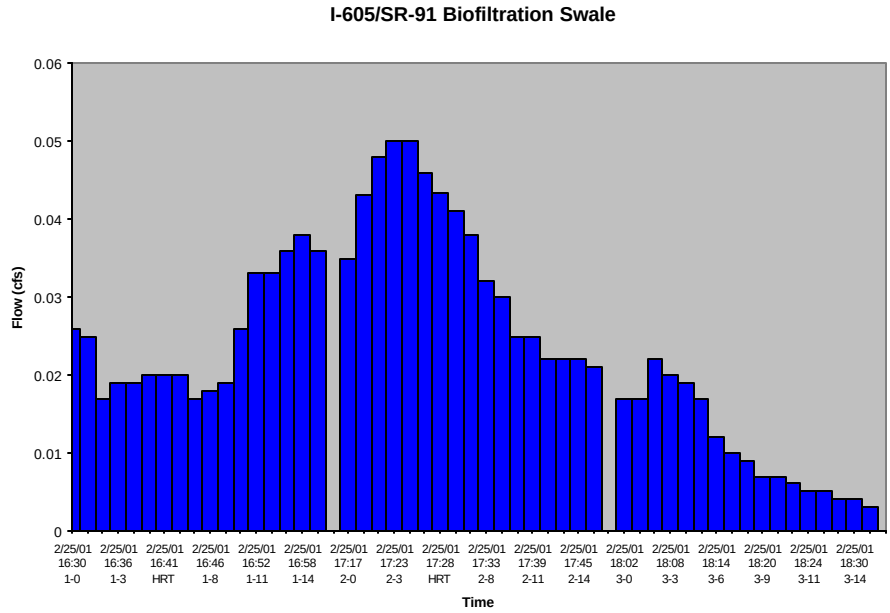
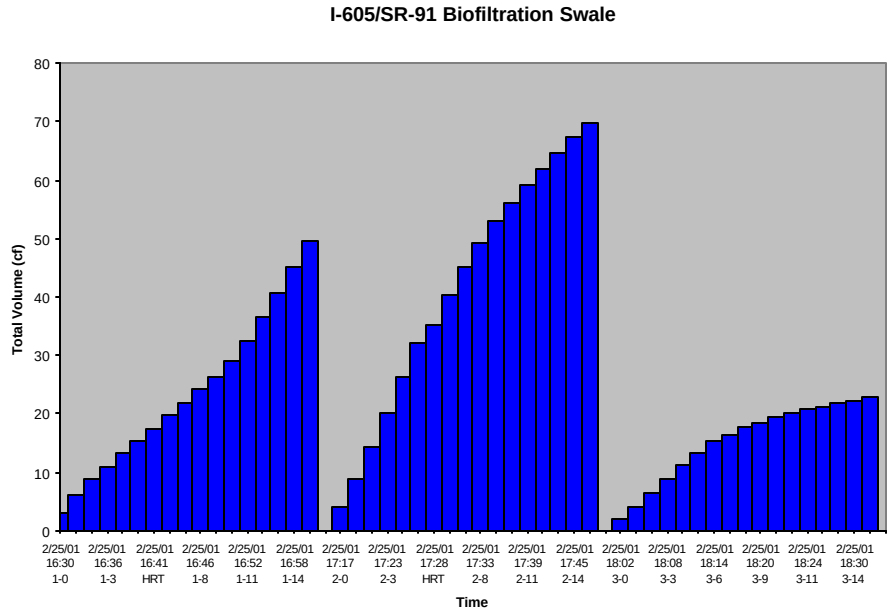


Figure 1-27e: IT Water Depth and Cumulative Rainfall at the Altadena Maintenance Station Infiltration Trench for Event 6 on April 7, 2001

Effluent Flow



Cumulative Flow



Fluorescence

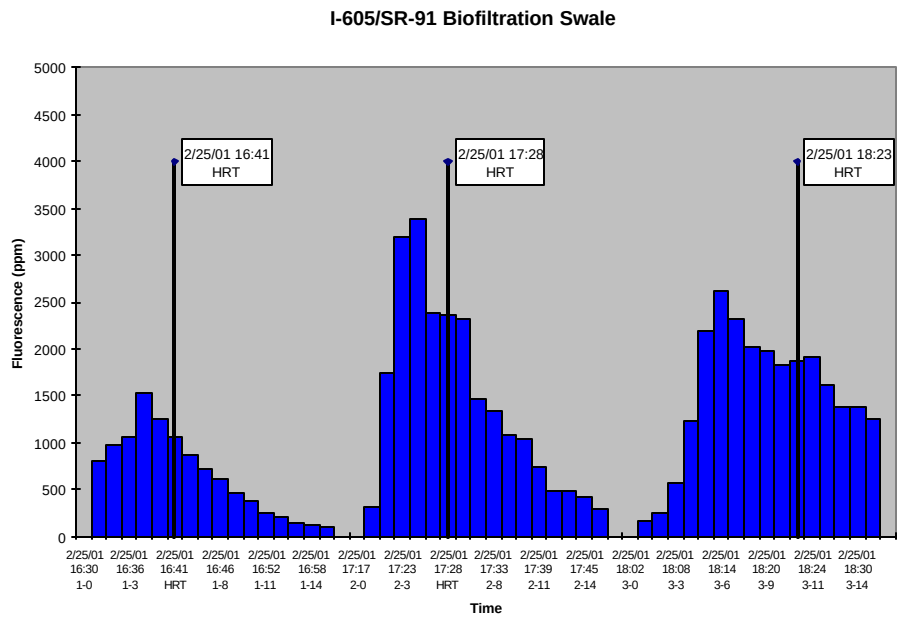
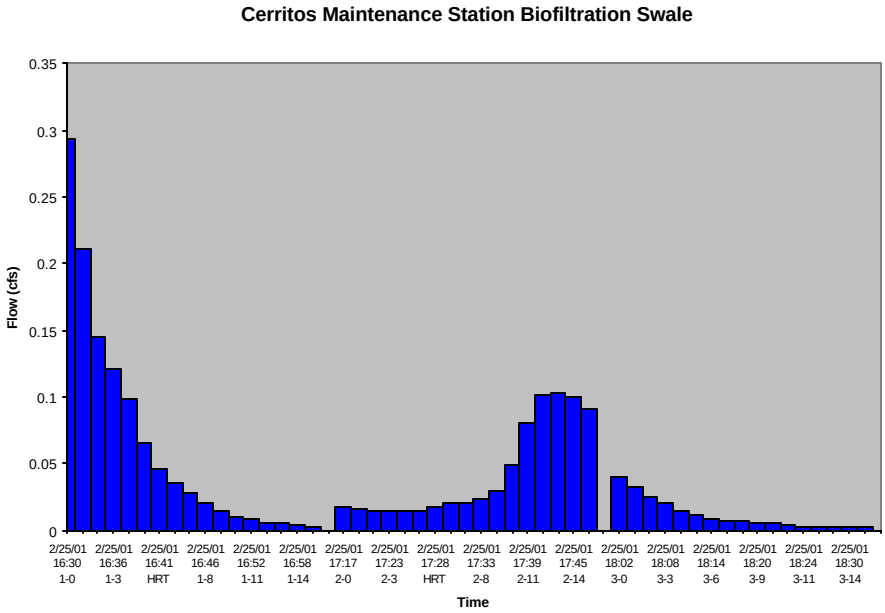
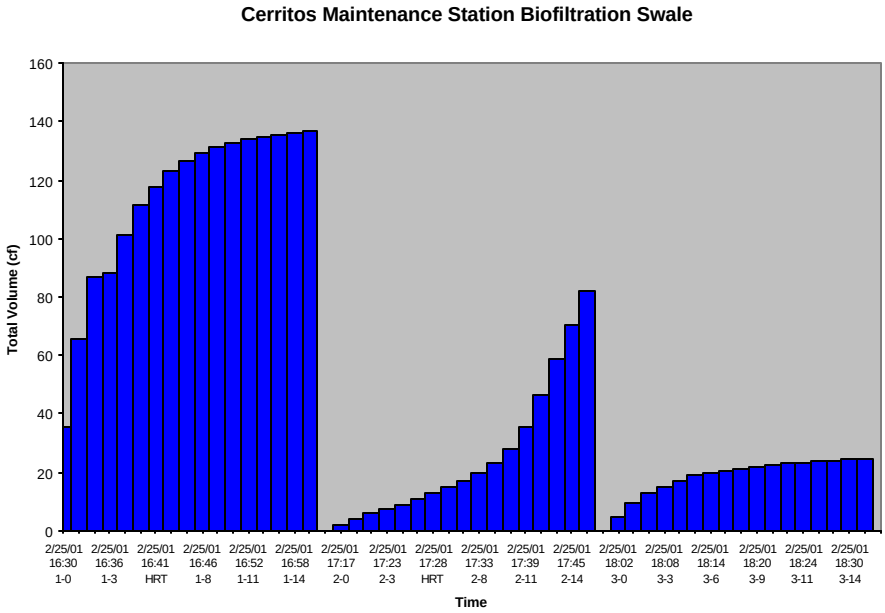


Figure 1-28a Hydraulic Residence Time Characteristics (Effluent Flow, Cumulative Flow, and Fluorescence) at the I-605/SR-91 Biofiltration Swale

Effluent Flow



Cumulative Flow



Fluorescence

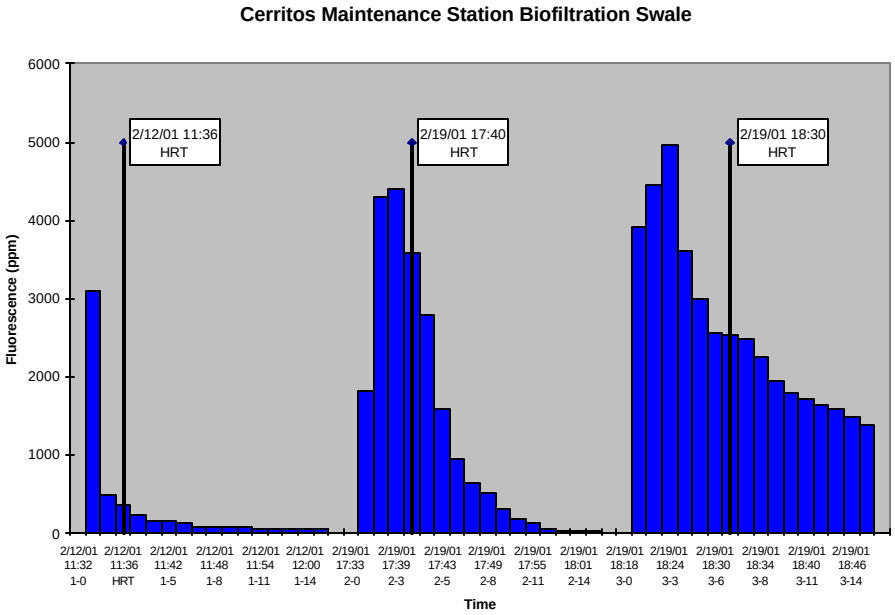
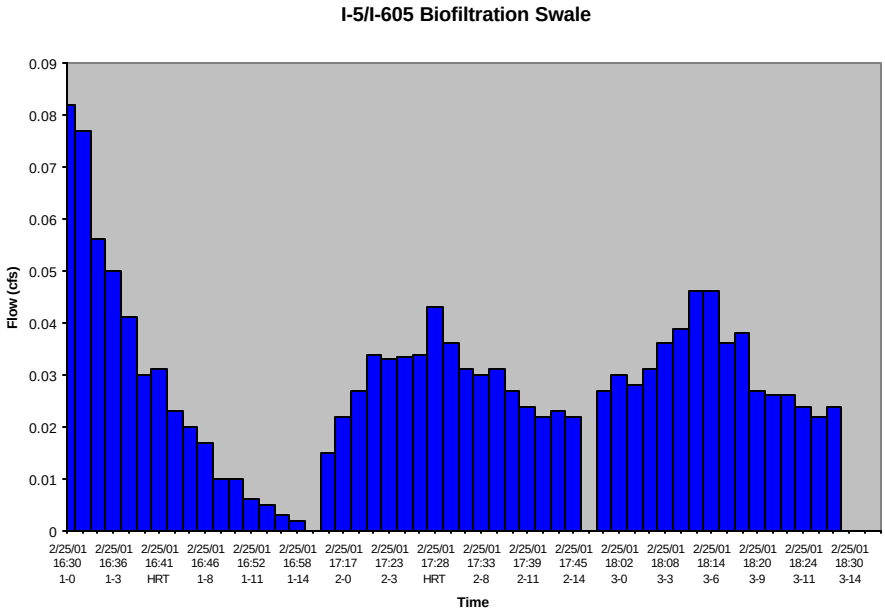
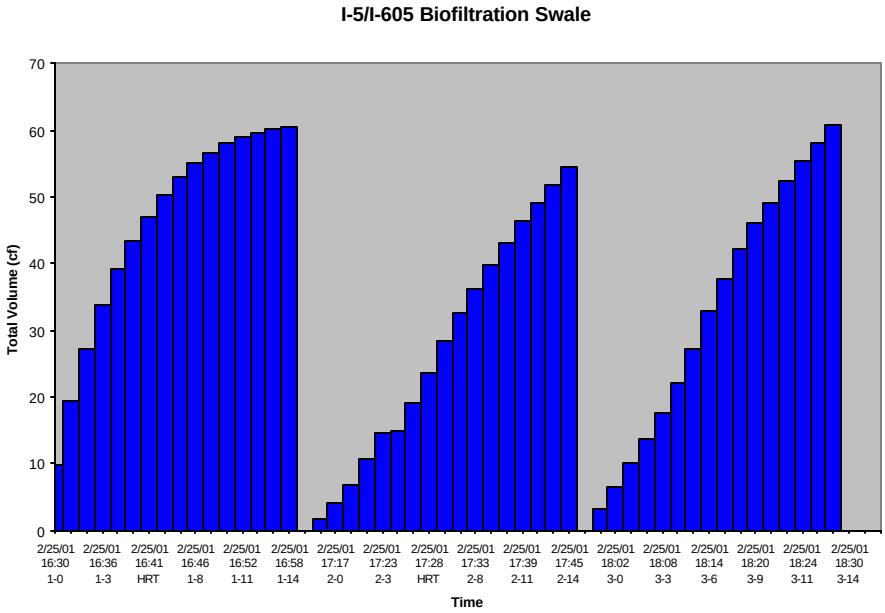


Figure 1-28b Hydraulic Residence Time Characteristics (Effluent Flow, Cumulative Flow, and Fluorescence) at the Cerritos Maintenance Station Biofiltration Swale

Effluent Flow



Cumulative Flow



Fluorescence

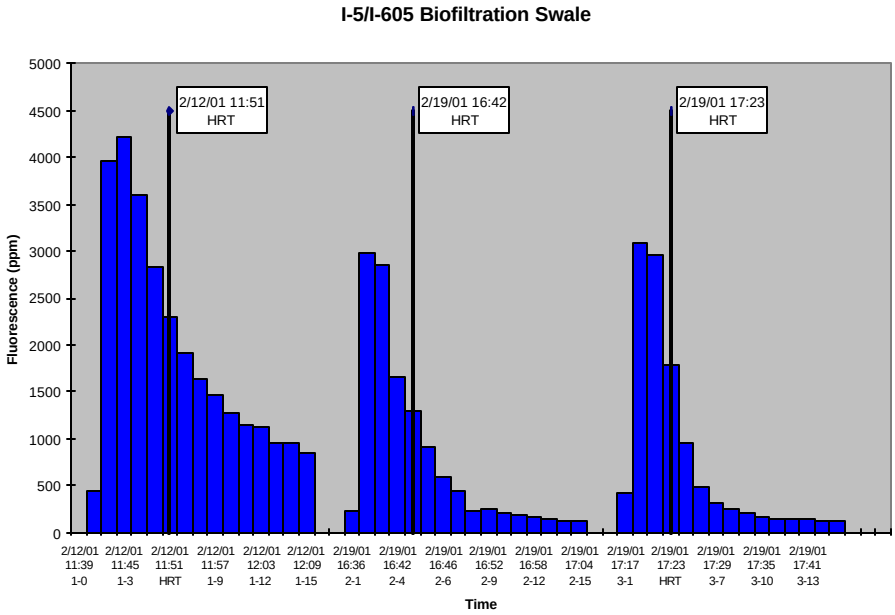
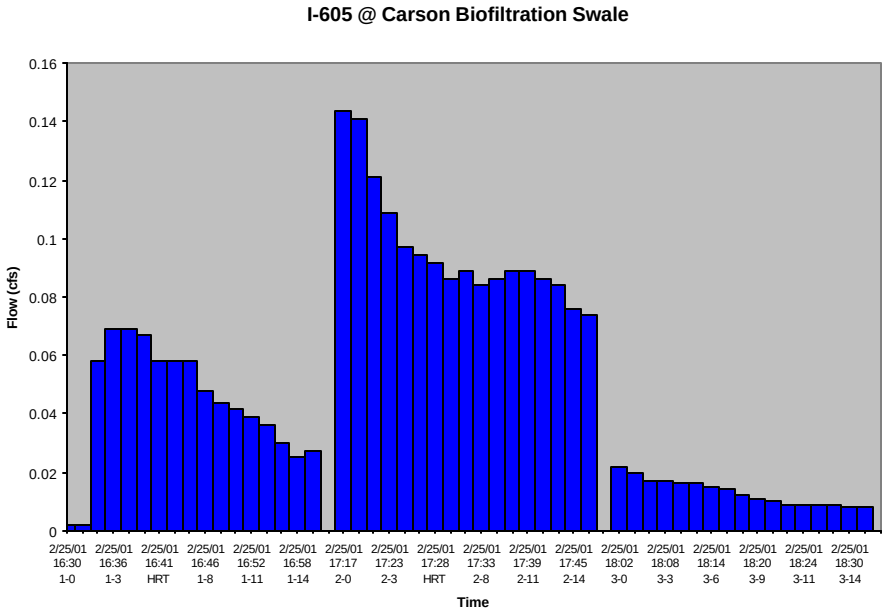
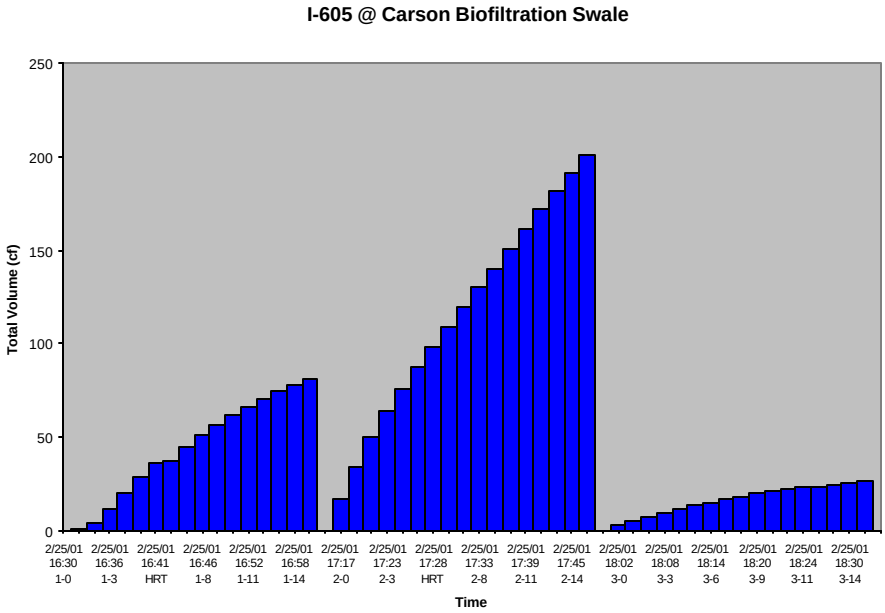


Figure 1-28c Hydraulic Residence Time Characteristics (Effluent Flow, Cumulative Flow, and Fluorescence) at the I-5/I-605 Biofiltration Swale

Effluent Flow



Cumulative Flow



Fluorescence

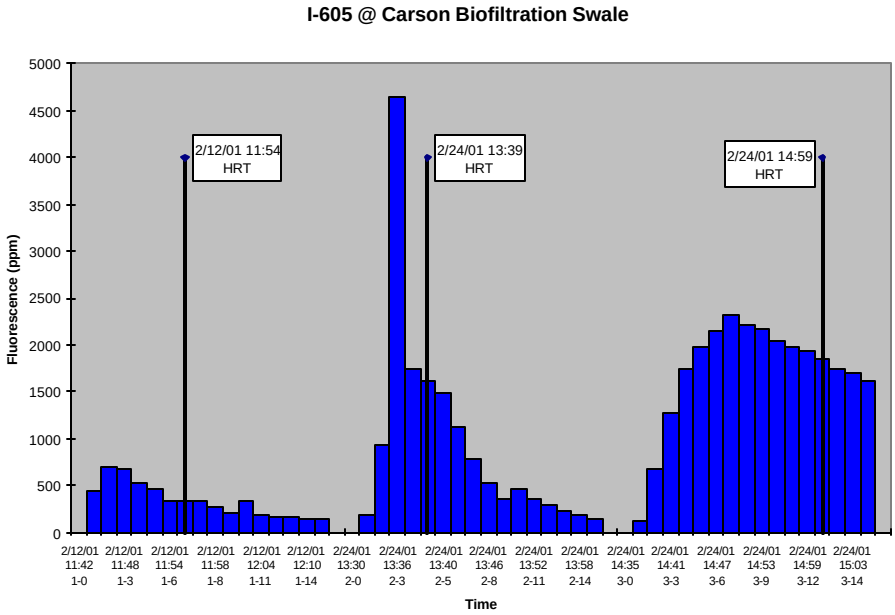
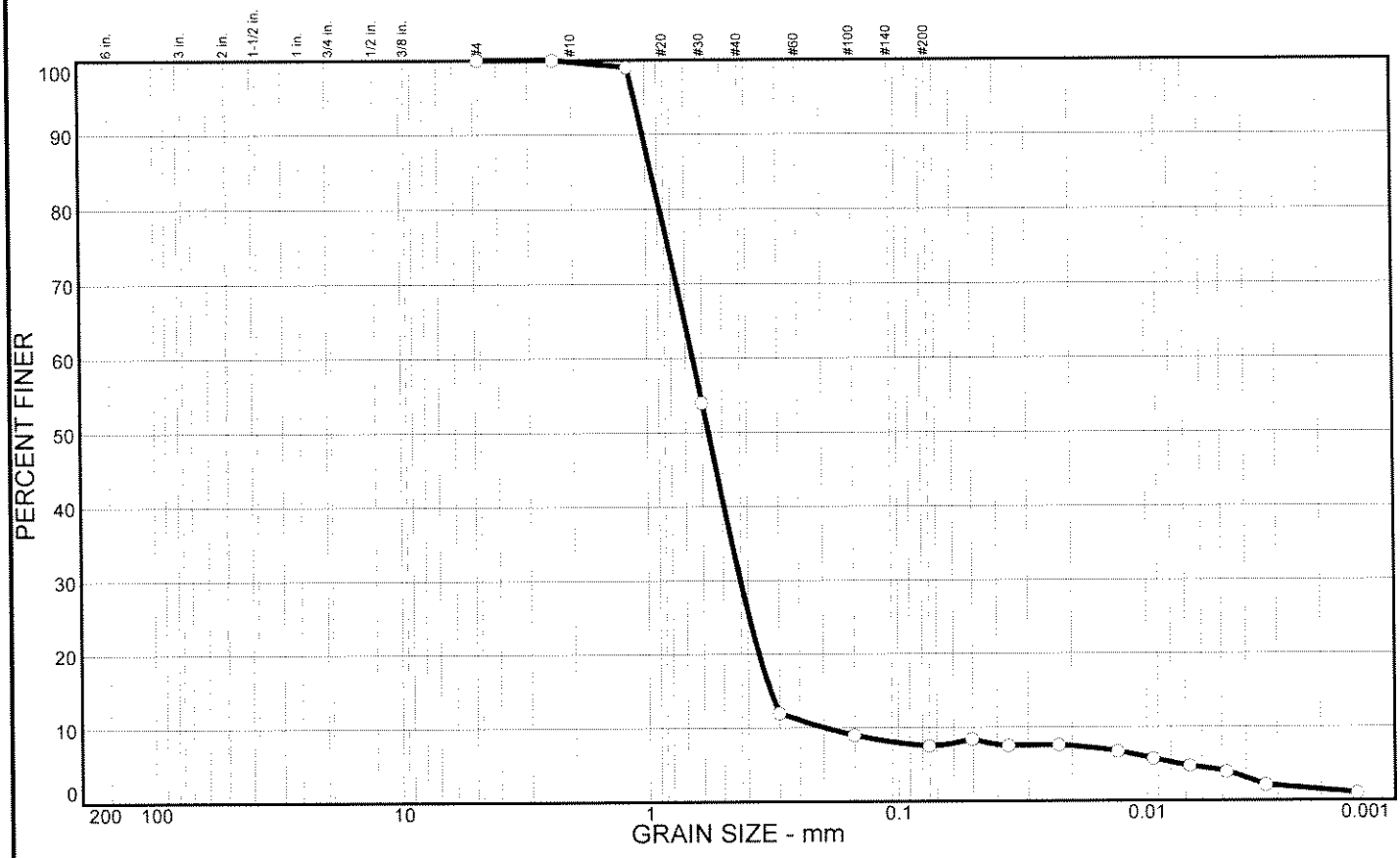


Figure 1-28d Hydraulic Residence Time Characteristics (Effluent Flow, Cumulative Flow, and Fluorescence) at the I-605 @ Carson Biofiltration Swale

PARTICLE SIZE DISTRIBUTION TEST REPORT



% + 3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
		92.5	3.4	4.1	SP-SM			

SIEVE inches size	PERCENT FINER		

	GRAIN SIZE		
D_{60}	0.653		
D_{30}	0.427		
D_{10}	0.197		
	COEFFICIENTS		
C_c	1.42		
C_u	3.32		

SIEVE number size	PERCENT FINER		
#4	100.0		
#8	100.0		
#16	99.0		
#30	54.0		
#50	12.0		
#100	9.0		
#200	7.5		

SOIL DESCRIPTION

fine to medium SAND to silty SAND (SP-SM)

REMARKS:

Eastern Maintenance Station Sand Filter Field Sample No.:074202-SED-09301-SECTION1

Source:

Sample No.: 11584

Elev./Depth: 0 TO 2"

LAW/CRANDALL
A DIVISION OF LAW ENGINEERING AND ENVIRONMENTAL SERVICES, INC.

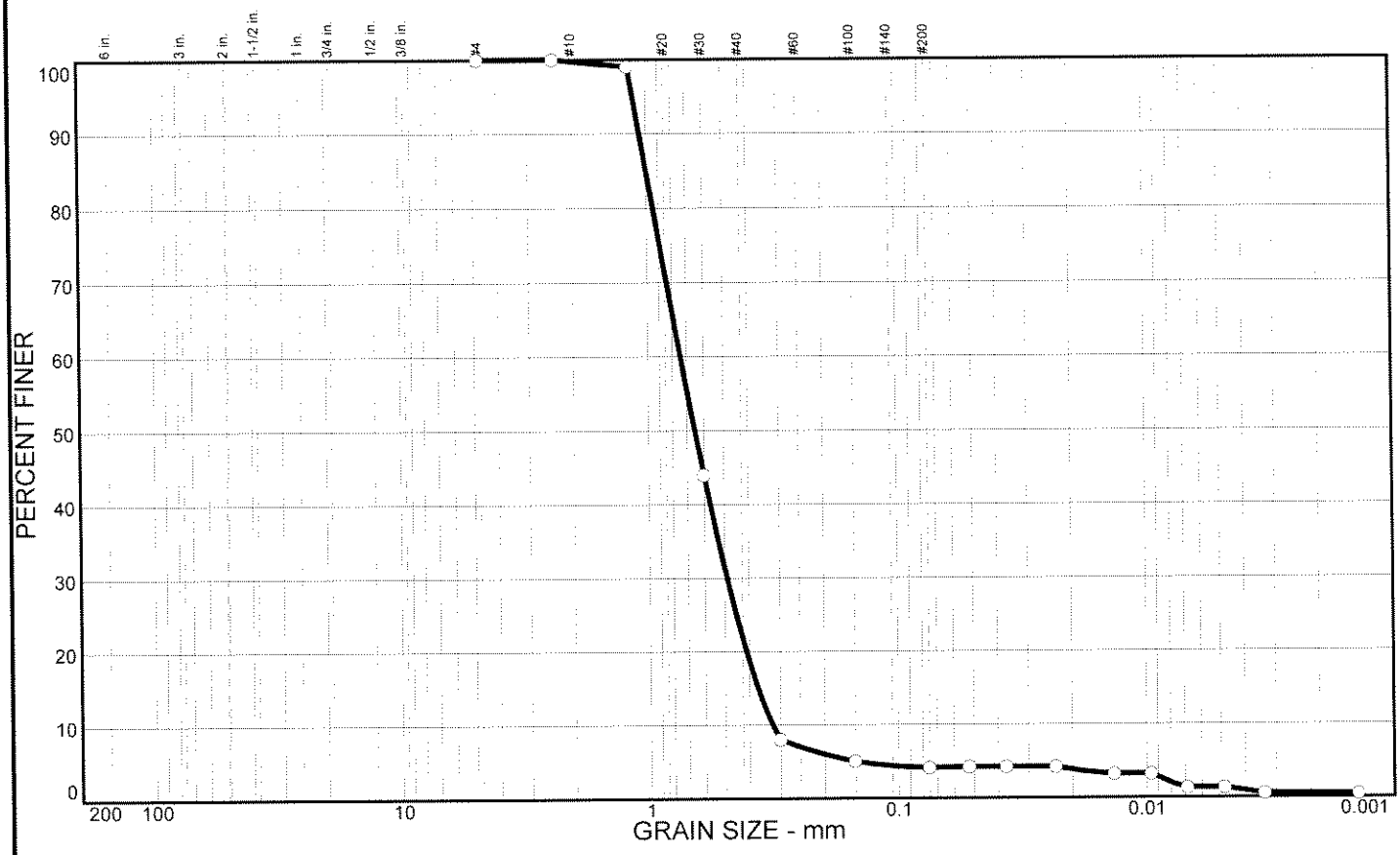
Client: CALTRANS

Project: CALTRANS BMP Pilot Study

Project No.: 70311-0-0099

Figure 1-29a

PARTICLE SIZE DISTRIBUTION TEST REPORT



	% + 3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○			95.9	2.8	1.3	SP			

SIEVE inches size	PERCENT FINER ○		
	GRAIN SIZE		
D_{60}	0.740		
D_{30}	0.488		
D_{10}	0.322		
	COEFFICIENTS		
C_c	1.00		
C_u	2.30		

SIEVE number size	PERCENT FINER ○		
#4	100.0		
#8	100.0		
#16	99.0		
#30	44.0		
#50	8.0		
#100	5.0		
#200	4.1		

SOIL DESCRIPTION

○ fine to medium SAND (SP)

REMARKS:

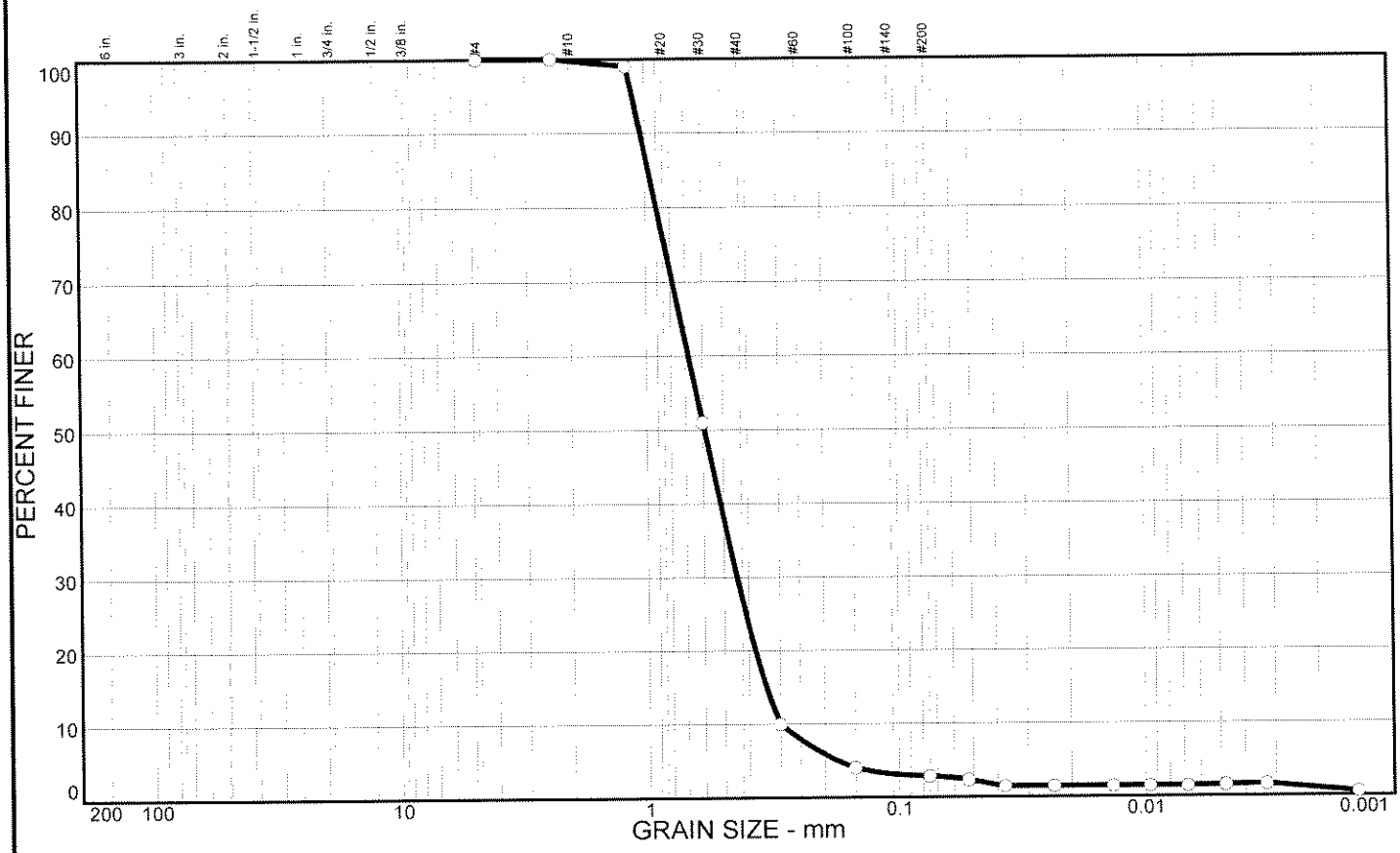
○ Eastern Maintenance Station Sand Filter Field Sample No.:074202-SED-09301-SECTION2

○ Source: Sample No.: 11585 Elev./Depth: 2" TO 5"

LAW/CRANDALL
A DIVISION OF LAW ENGINEERING AND ENVIRONMENTAL SERVICES, INC.

Client: CALTRANS
Project: CALTRANS BMP Pilot Study
Project No.: 70311-0-0099 Figure 1-29b

PARTICLE SIZE DISTRIBUTION TEST REPORT



	% + 3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○			97.2	1.3	1.5	SP			

SIEVE inches size	PERCENT FINER ○		
	GRAIN SIZE		
D_{60}	0.681		
D_{30}	0.444		
D_{10}	0.300		
	COEFFICIENTS		
C_c	0.96		
C_u	2.27		

SIEVE number size	PERCENT FINER ○		
#4	100.0		
#8	100.0		
#16	99.0		
#30	51.0		
#50	10.0		
#100	4.0		
#200	2.8		

SOIL DESCRIPTION

○ fine to medium SAND (SP)

REMARKS:

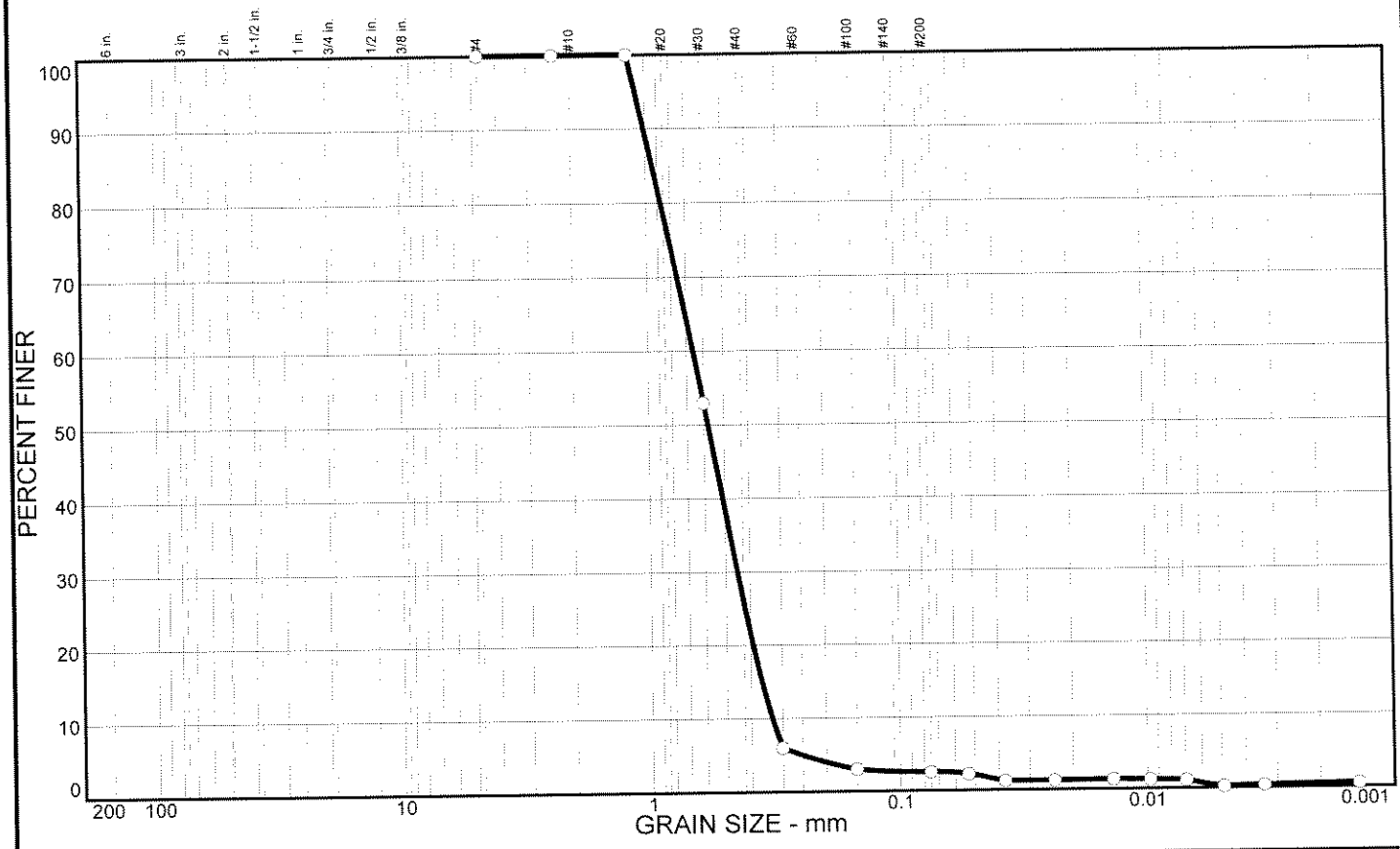
○ Eastern Maintenance Station Sand Filter Field Sample No.:074202-SED-09301-SECTION3

○ Source: Sample No.: 11586 Elev./Depth: 5" TO 10"

LAW/CRANDALL
A DIVISION OF LAW ENGINEERING AND ENVIRONMENTAL SERVICES, INC.

Client: CALTRANS
Project: CALTRANS BMP Pilot Study
Project No.: 70311-0-0099 Figure 1-29c

PARTICLE SIZE DISTRIBUTION TEST REPORT



% + 3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
		97.5	2.3	0.2	SP			

SIEVE inches size	PERCENT FINER		

	GRAIN SIZE		
D_{60}	0.658		
D_{30}	0.448		
D_{10}	0.329		
	COEFFICIENTS		
C_c	0.93		
C_u	2.00		

SIEVE number size	PERCENT FINER		
#4	100.0		
#8	100.0		
#16	100.0		
#30	53.0		
#50	6.0		
#100	3.0		
#200	2.5		

SOIL DESCRIPTION

fine to medium SAND (SP)

REMARKS:

Eastern Maintenance Station Sand Filter Field Sample No.:074202-SED-09301-SECTION4

Source:

Sample No.: 11587

Elev./Depth: 10" TO 15"

LAW/CRANDALL
A DIVISION OF LAW ENGINEERING AND ENVIRONMENTAL SERVICES, INC.

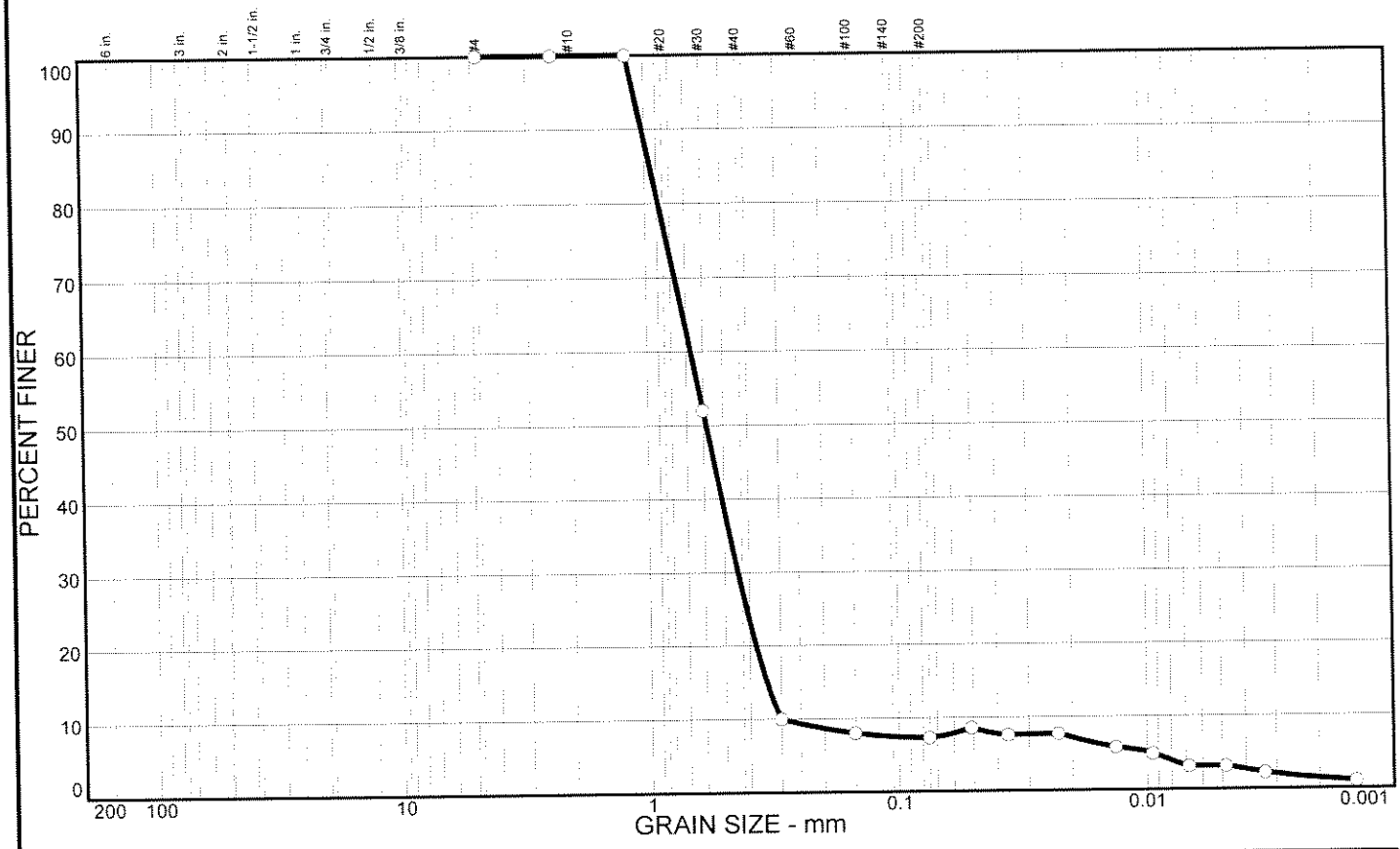
Client: CALTRANS

Project: CALTRANS BMP Pilot Study

Project No.: 70311-0-0099

Figure 1-29d

PARTICLE SIZE DISTRIBUTION TEST REPORT



	% + 3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○			92.7	4.2	3.1	SP-SM			

SIEVE inches size	PERCENT FINER ○		
	GRAIN SIZE		
D_{60}	0.669		
D_{30}	0.442		
D_{10}	0.300		
	COEFFICIENTS		
C_c	0.97		
C_u	2.23		

SIEVE number size	PERCENT FINER ○		
#4	100.0		
#8	100.0		
#16	100.0		
#30	52.0		
#50	10.0		
#100	8.0		
#200	7.3		

SOIL DESCRIPTION

○ fine to medium SAND to silty SAND (SP-SM)

REMARKS:

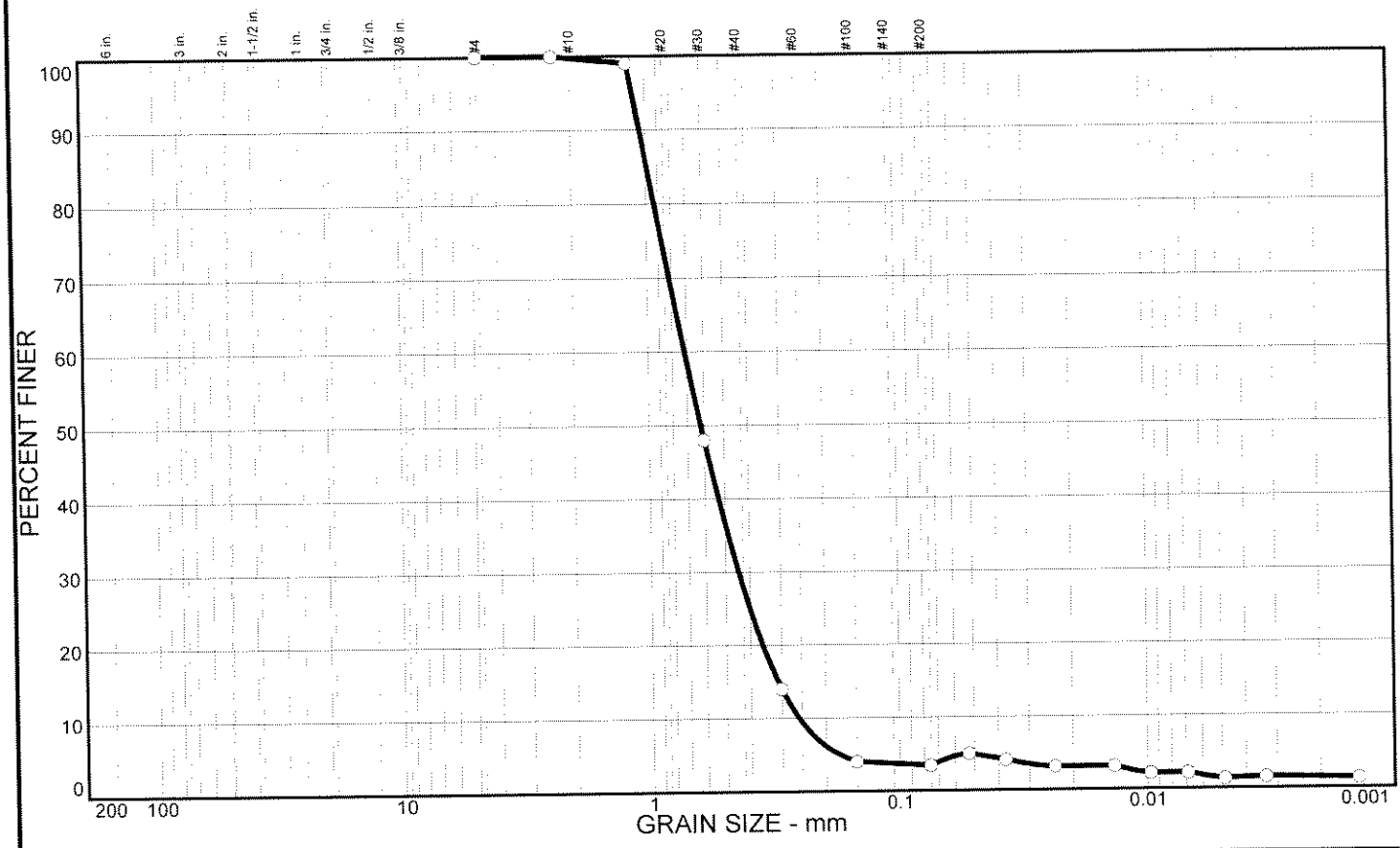
○ Foothill Maintenance Station Sand Filter Field Sample No.:074203-SED-09301-SECTION1

○ Source: Sample No.: 11588 Elev./Depth: 0" TO 2"

LAW/CRANDALL
A DIVISION OF LAW ENGINEERING AND ENVIRONMENTAL SERVICES, INC.

Client: CALTRANS
Project: CALTRANS BMP Pilot Study
Project No.: 70311-0-0099 Figure 1-30a

PARTICLE SIZE DISTRIBUTION TEST REPORT



% + 3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
		96.6	2.1	1.3	SP			

SIEVE inches size	PERCENT FINER		

	GRAIN SIZE		
D_{60}	0.713		
D_{30}	0.442		
D_{10}	0.256		
	COEFFICIENTS		
C_c	1.07		
C_u	2.79		

SIEVE number size	PERCENT FINER		
#4	100.0		
#8	100.0		
#16	99.0		
#30	48.0		
#50	14.0		
#100	4.0		
#200	3.4		

SOIL DESCRIPTION

fine to medium SAND (SP)

REMARKS:

Foothill Maintenance Station Sand Filter Field Sample No.:074203-SED-09301-SECTION2

Source:

Sample No.: 11589

Elev./Depth: 2" TO 5"

LAW/CRANDALL
A DIVISION OF LAW ENGINEERING AND ENVIRONMENTAL SERVICES, INC.

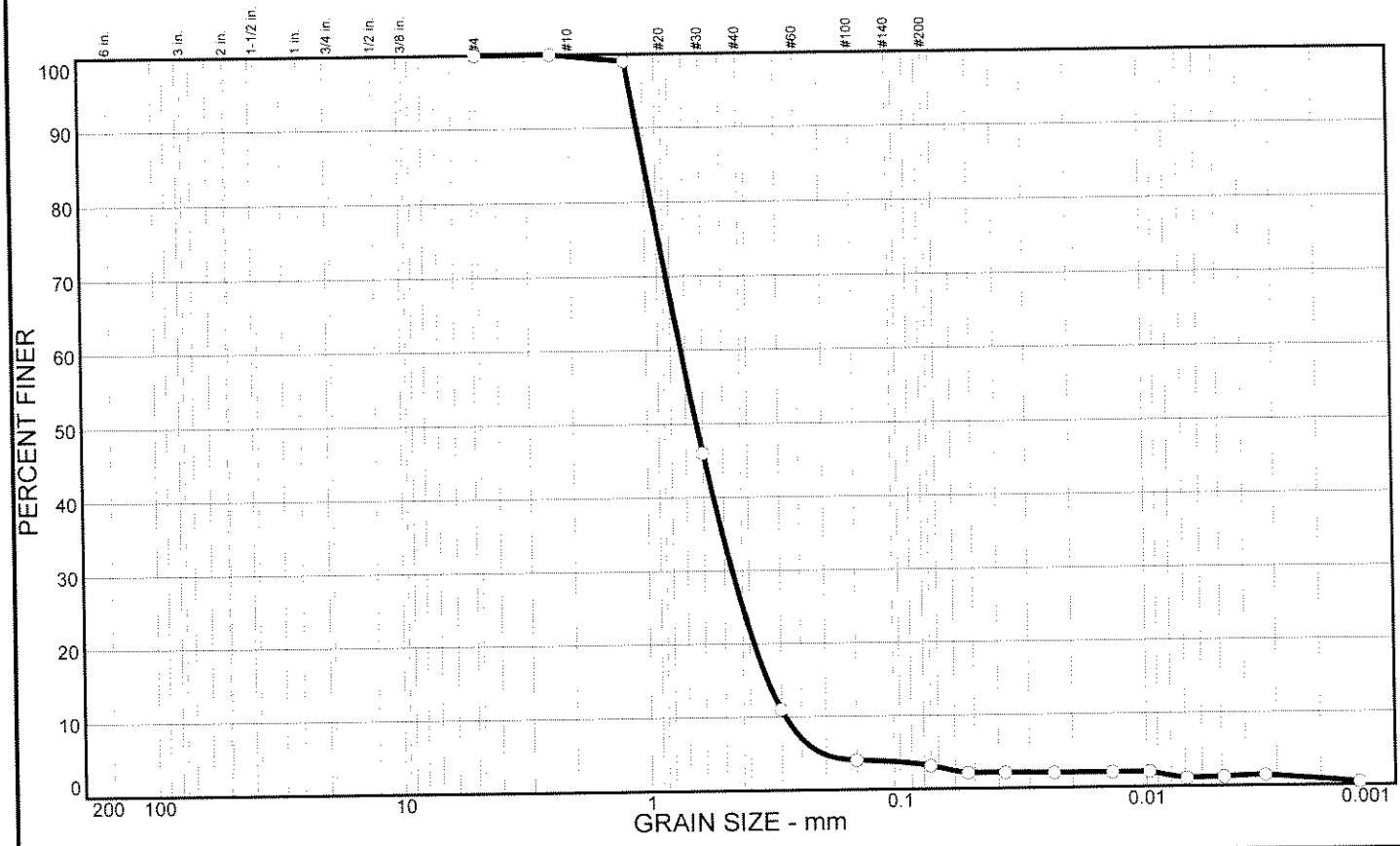
Client: CALTRANS

Project: CALTRANS BMP Pilot Study

Project No.: 70311-0-0099

Figure 1-30b

PARTICLE SIZE DISTRIBUTION TEST REPORT



% + 3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
		96.9	1.9	1.2	SP			

SIEVE inches size	PERCENT FINER		

	GRAIN SIZE		
D_{60}	0.728		
D_{30}	0.466		
D_{10}	0.289		
	COEFFICIENTS		
C_c	1.03		
C_u	2.52		

SIEVE number size	PERCENT FINER		
#4	100.0		
#8	100.0		
#16	99.0		
#30	46.0		
#50	11.0		
#100	4.0		
#200	3.1		

SOIL DESCRIPTION

fine to medium SAND (SP)

REMARKS:

Foothill Maintenance Station Sand Filter Field Sample No.:074203-SED-09301-SECTION3

Source:

Sample No.: 11590

Elev./Depth: 5" TO 10"

LAW/CRANDALL
A DIVISION OF LAW ENGINEERING AND ENVIRONMENTAL SERVICES, INC.

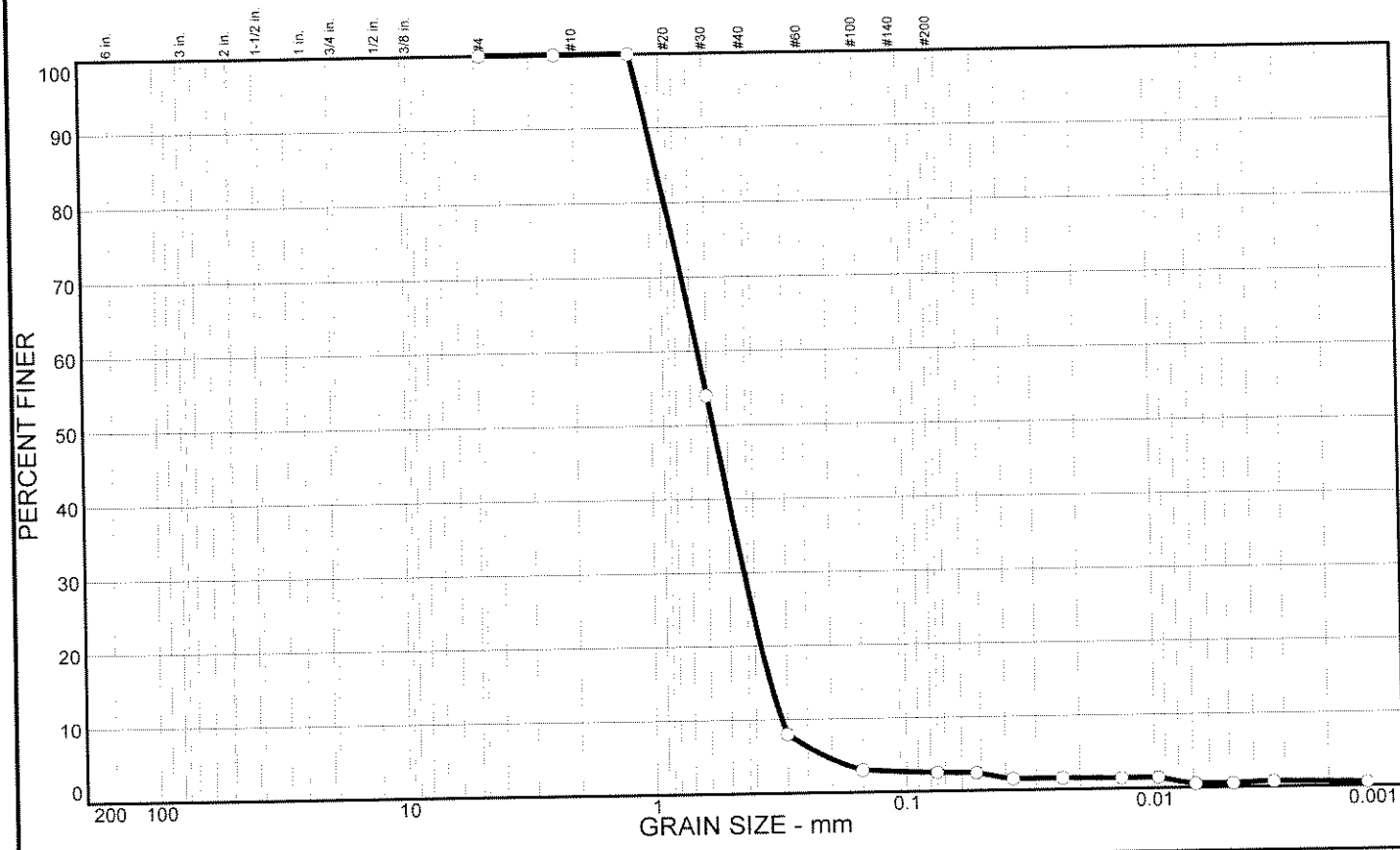
Client: CALTRANS

Project: CALTRANS BMP Pilot Study

Project No.: 70311-0-0099

Figure 1-30c

PARTICLE SIZE DISTRIBUTION TEST REPORT



	% + 3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○			97.5	2.0	0.5	SP			

SIEVE inches size	PERCENT FINER ○		

	GRAIN SIZE		
D_{60}	0.651		
D_{30}	0.438		
D_{10}	0.315		
	COEFFICIENTS		
C_c	0.94		
C_u	2.06		

SIEVE number size	PERCENT FINER ○		
#4	100.0		
#8	100.0		
#16	100.0		
#30	54.0		
#50	8.0		
#100	3.0		
#200	2.5		

SOIL DESCRIPTION

○ fine to medium SAND (SP)

REMARKS:

○ Foothill Maintenance Station Sand Filter Field Sample No.:074203-SED-09301-SECTION4

○ Source:

Sample No.: 11591

Elev./Depth: 10" TO 15"

LAW/CRANDALL
A DIVISION OF LAW ENGINEERING AND ENVIRONMENTAL SERVICES, INC.

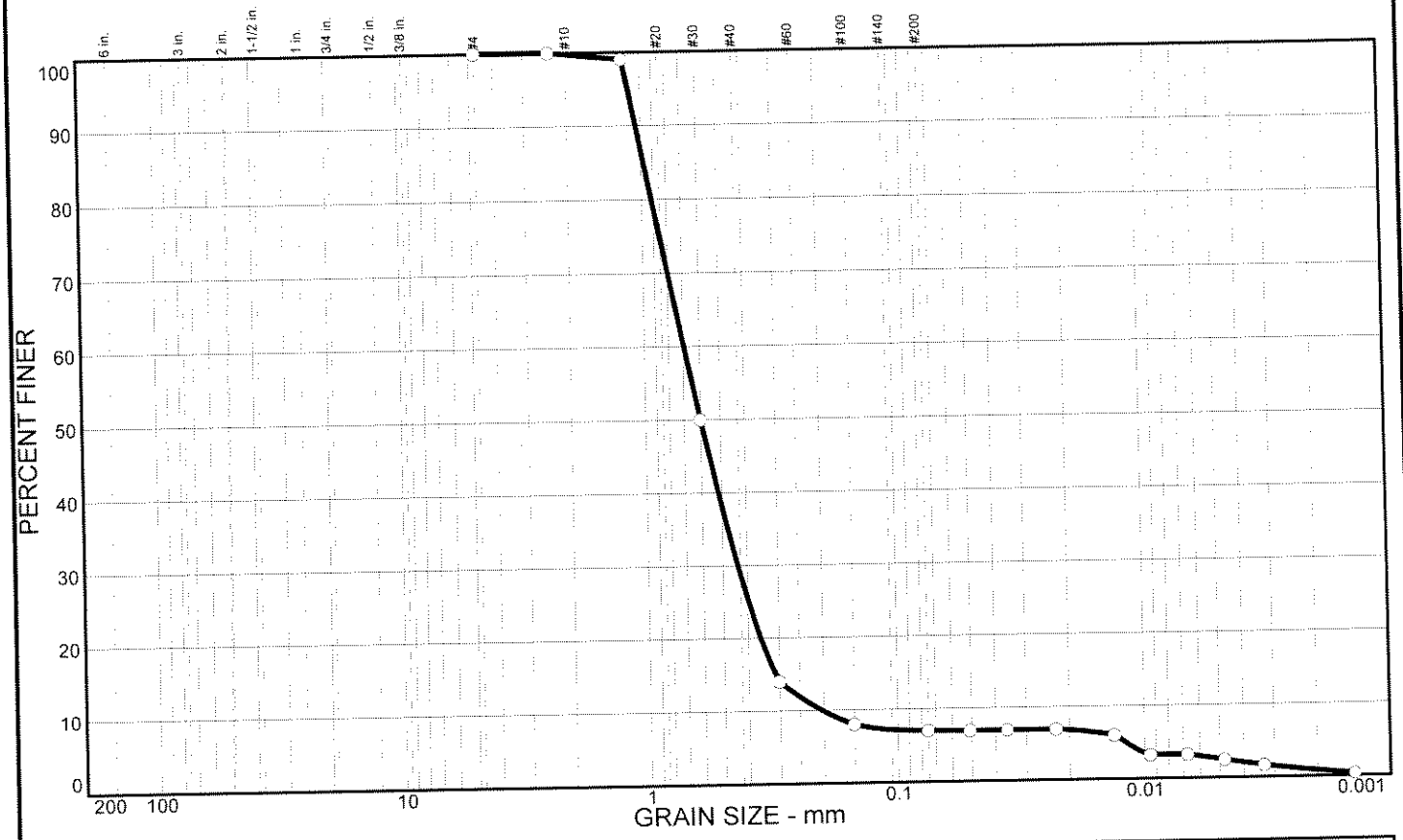
Client: CALTRANS

Project: CALTRANS BMP Pilot Study

Project No.: 70311-0-0099

Figure 1-30d

PARTICLE SIZE DISTRIBUTION TEST REPORT



	% + 3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○			93.0	4.5	2.5	SP-SM			

SIEVE inches size	PERCENT FINER ○		

	GRAIN SIZE		
D_{60}	0.694		
D_{30}	0.435		
D_{10}	0.203		
	COEFFICIENTS		
C_c	1.34		
C_u	3.42		

SIEVE number size	PERCENT FINER ○		
#4	100.0		
#8	100.0		
#16	99.0		
#30	50.0		
#50	14.0		
#100	8.0		
#200	7.0		

SOIL DESCRIPTION

○ fine to medium SAND to silty SAND (SP-SM)

REMARKS:

○ Termination Park and Ride Sand Filter Field Sample No.:074204-SED-09201-SECTION1

○ Source:

Sample No.: 11580

Elev./Depth: 0" TO 2"

LAW/CRANDALL
A DIVISION OF LAW ENGINEERING AND ENVIRONMENTAL SERVICES, INC.

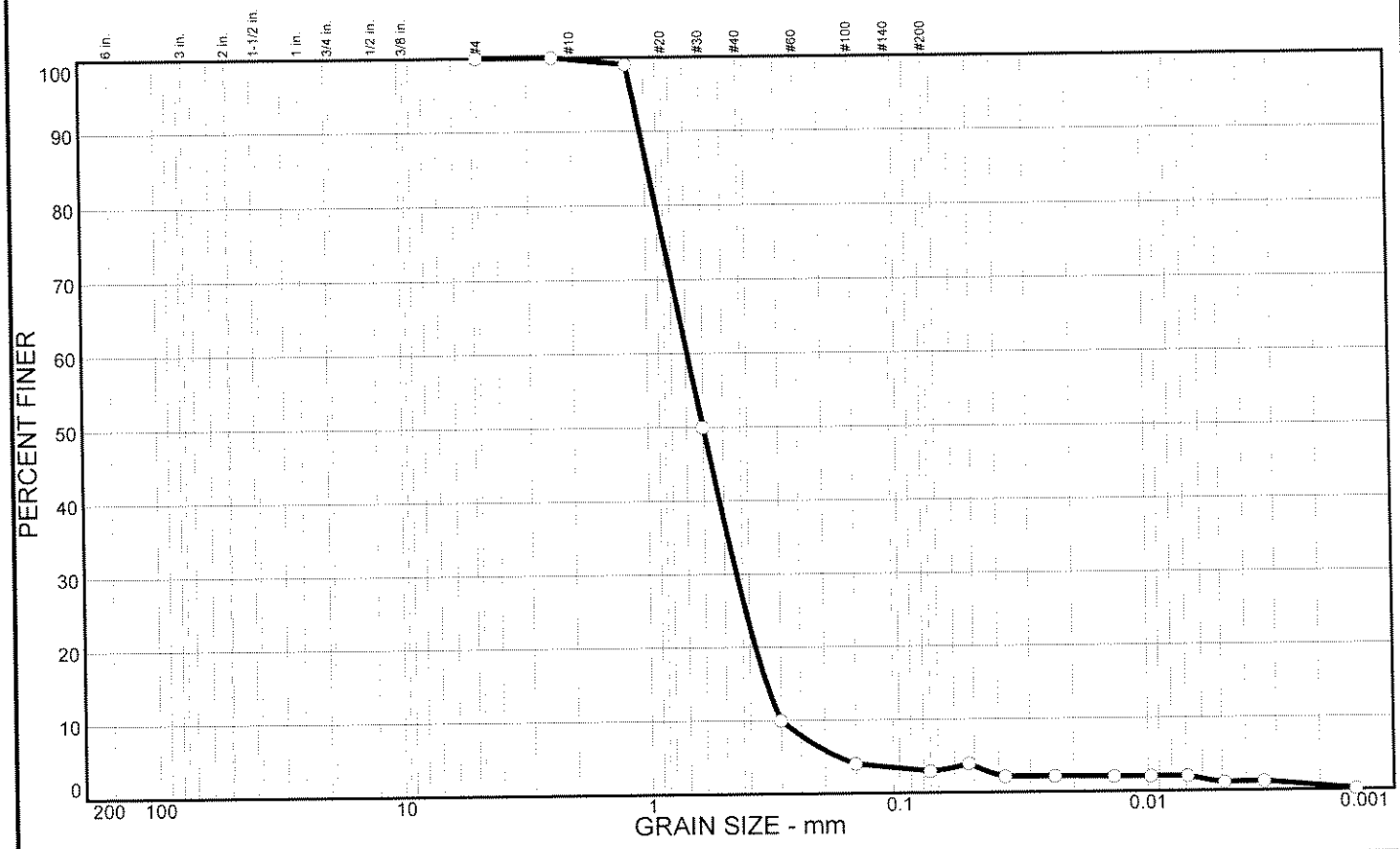
Client: CALTRANS

Project: CALTRANS BMP Pilot Study

Project No.: 70311-0-0099

Figure 1-31a

PARTICLE SIZE DISTRIBUTION TEST REPORT



	% + 3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○			97.1	1.8	1.1	SP			

SIEVE inches size	PERCENT FINER ○		
	GRAIN SIZE		
D_{60}	0.690		
D_{30}	0.448		
D_{10}	0.300		
	COEFFICIENTS		
C_c	0.97		
C_u	2.30		

SIEVE number size	PERCENT FINER ○		
#4	100.0		
#8	100.0		
#16	99.0		
#30	50.0		
#50	10.0		
#100	4.0		
#200	2.9		

SOIL DESCRIPTION

○ fine to medium SAND (SP)

REMARKS:

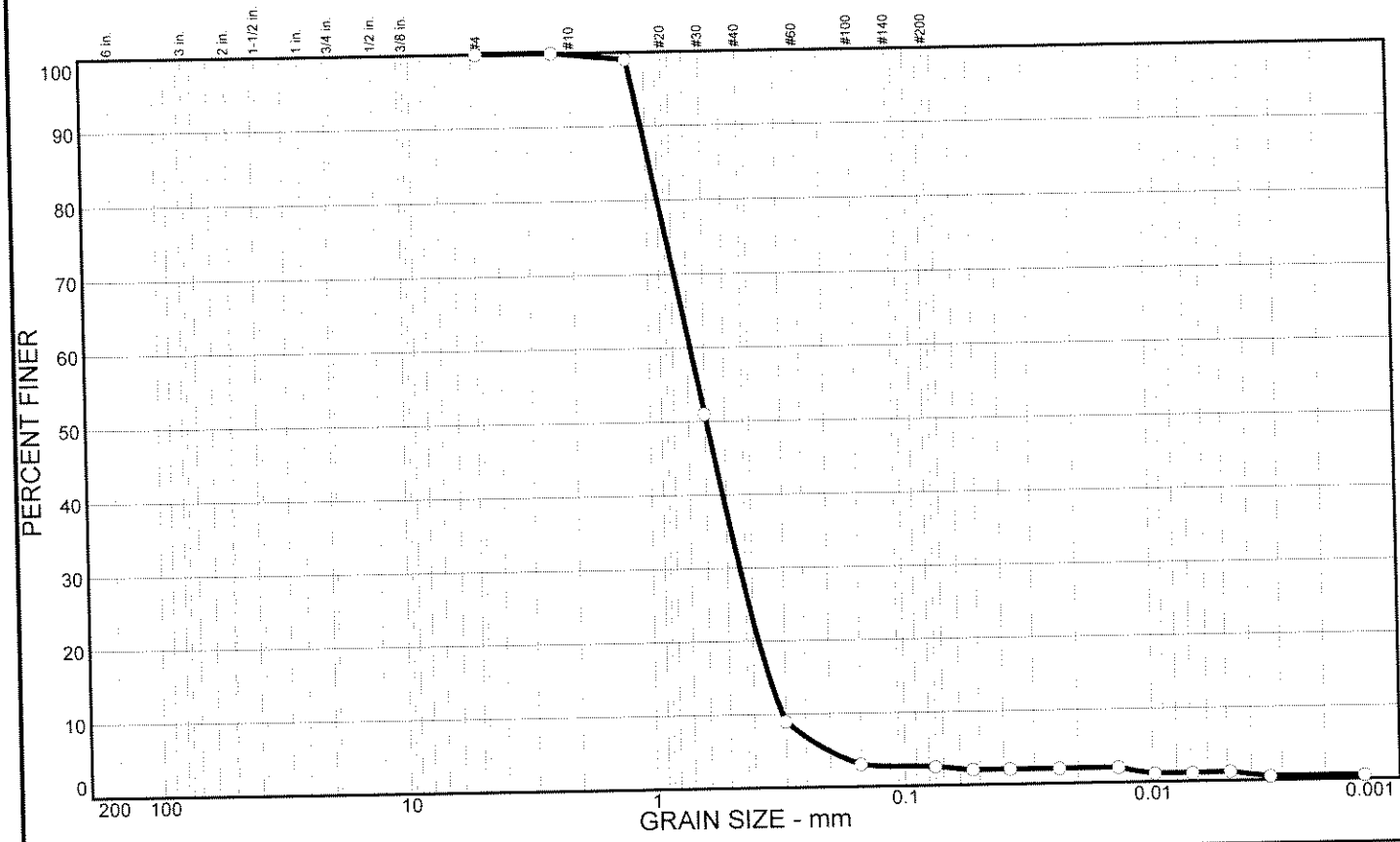
○ Termination Park and Ride Sand Filter Field Sample No.:074204-SED-09201-SECTION2

○ Source: Sample No.: 11581 Elev./Depth: 2" TO 5"

LAW/CRANDALL
A DIVISION OF LAW ENGINEERING AND ENVIRONMENTAL SERVICES, INC.

Client: CALTRANS
Project: CALTRANS BMP Pilot Study
Project No.: 70311-0-0099 Figure 1-31b

PARTICLE SIZE DISTRIBUTION TEST REPORT



% + 3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
		97.5	1.3	1.2	SP			

SIEVE inches size	PERCENT FINER		

	GRAIN SIZE		
D_{60}	0.680		
D_{30}	0.446		
D_{10}	0.308		
	COEFFICIENTS		
C_c	0.95		
C_u	2.20		

SIEVE number size	PERCENT FINER		
#4	100.0		
#8	100.0		
#16	99.0		
#30	51.0		
#50	9.0		
#100	3.0		
#200	2.5		

SOIL DESCRIPTION

fine to medium SAND (SP)

REMARKS:

Termination Park and Ride Sand Filter Field Sample No.:074204-SED-09201-SECTION3

Source:

Sample No.: 11582

Elev./Depth: 5" TO 10"

LAW/CRANDALL
A DIVISION OF LAW ENGINEERING AND ENVIRONMENTAL SERVICES, INC.

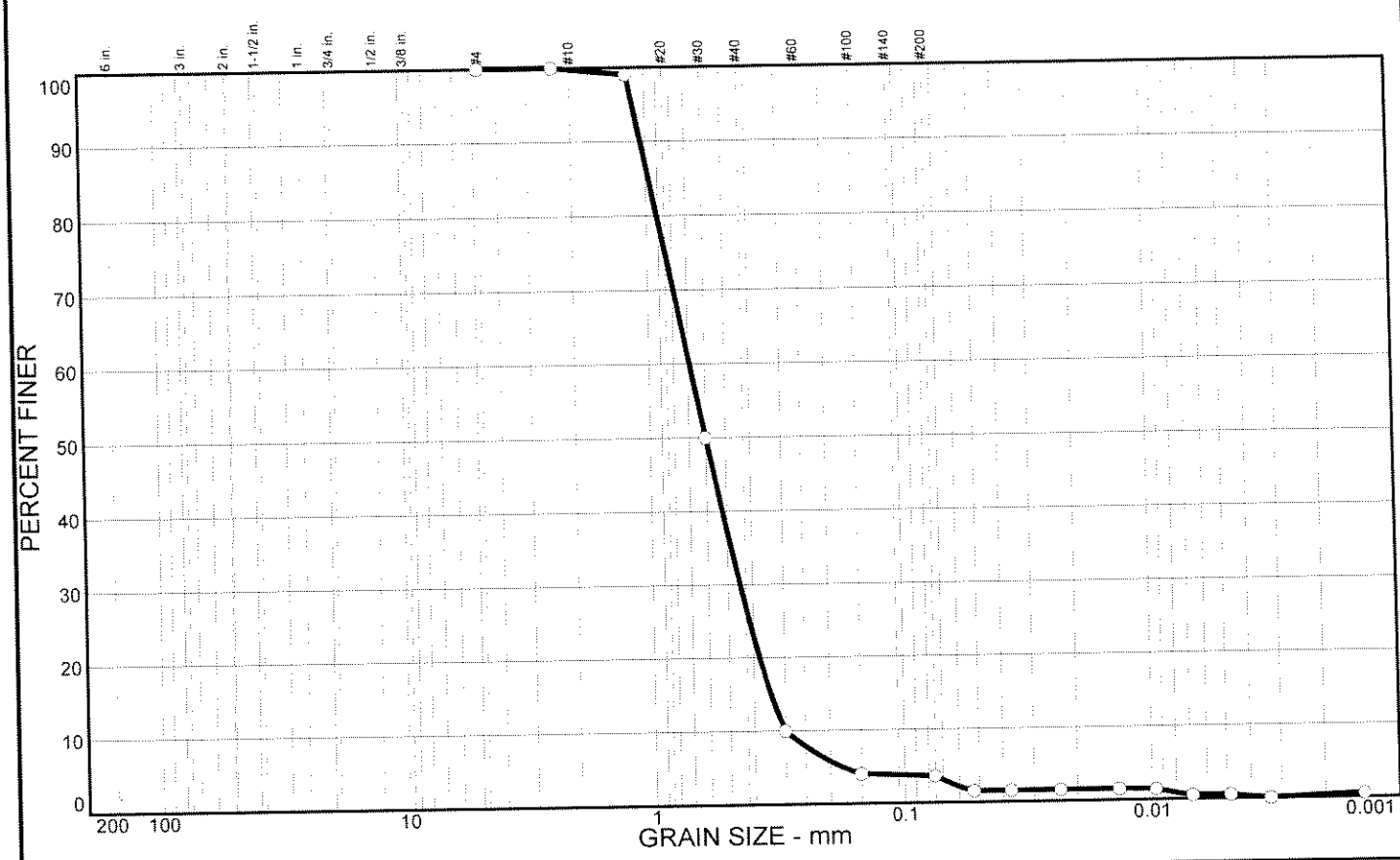
Client: CALTRANS

Project: CALTRANS BMP Pilot Study

Project No.: 70311-0-0099

Figure 1-31c

PARTICLE SIZE DISTRIBUTION TEST REPORT



	% + 3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○			96.4	3.1	0.5	SP			

SIEVE inches size	PERCENT FINER ○		
	GRAIN SIZE		
D_{60}	0.690		
D_{30}	0.448		
D_{10}	0.300		
	COEFFICIENTS		
C_c	0.97		
C_u	2.30		

SIEVE number size	PERCENT FINER ○		
#4	100.0		
#8	100.0		
#16	99.0		
#30	50.0		
#50	10.0		
#100	4.0		
#200	3.6		

SOIL DESCRIPTION

○ fine to medium SAND (SP)

REMARKS:

○ Termination Park and Ride Sand Filter Field Sample No.:07204-SED-09201-SECTION4

○ Source:

Sample No.: 11583

Elev./Depth: 10" TO 15"

LAW/CRANDALL
A DIVISION OF LAW ENGINEERING AND ENVIRONMENTAL SERVICES, INC.

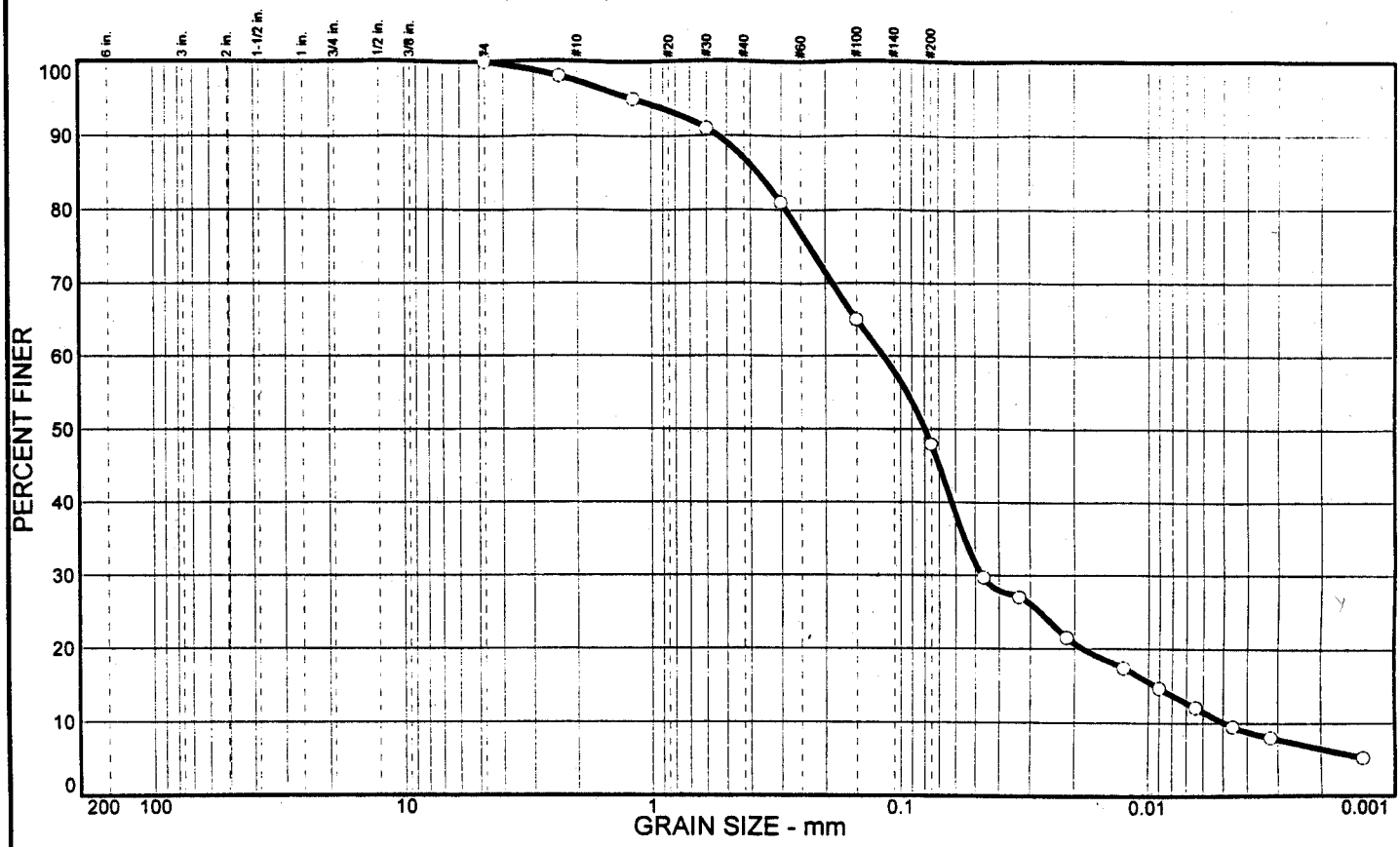
Client: CALTRANS

Project: CALTRANS BMP Pilot Study

Project No.: 70311-0-0099

Figure 1-31d

PARTICLE SIZE DISTRIBUTION TEST REPORT



	% + 3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○			52.1	37.8	10.1	SP-SM			

SIEVE inches size	PERCENT FINER ○		

	GRAIN SIZE		
D_{60}	0.117		
D_{30}	0.0468		
D_{10}	0.0049		
	COEFFICIENTS		
C_c	3.80		
C_u	23.82		

SIEVE number size	PERCENT FINER ○		
#4	100.0		
#8	98.0		
#16	95.0		
#30	91.0		
#50	81.0		
#100	65.0		
#200	47.9		

SOIL DESCRIPTION

○ fine to medium Sand to Silty Sand (SP-SM)

REMARKS:

○ I605/SR-91 Infiltration Basin
Layer 1

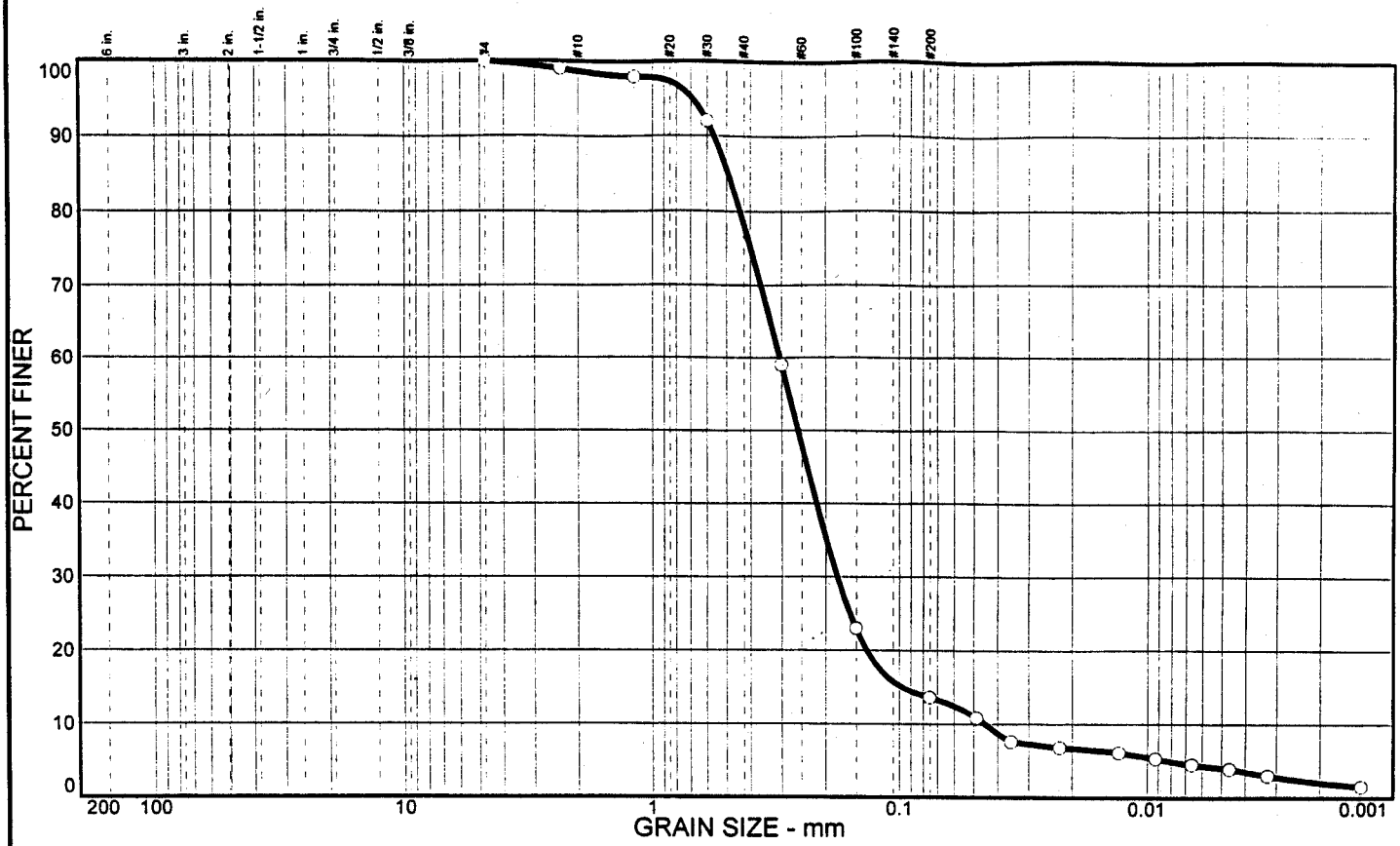
○ Location: Layer 1 Elevation: Surface to 0.2m Sample No.:11728

LAW/CRANDALL
A DIVISION OF LAW ENGINEERING AND ENVIRONMENTAL SERVICES, INC.

Client: Caltrans
Project: Caltrans BMP
Project No.: 70311-0-0099.01.004

FIGURE:1-32a

PARTICLE SIZE DISTRIBUTION TEST REPORT



	% + 3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○			86.4	9.6	4.0	SP-SM			

SIEVE inches size	PERCENT FINER ○		
	GRAIN SIZE		
D_{60}	0.305		
D_{30}	0.179		
D_{10}	0.0450		
	COEFFICIENTS		
C_c	2.33		
C_u	6.78		

SIEVE number size	PERCENT FINER ○		
#4	100.0		
#8	99.0		
#16	98.0		
#30	92.0		
#50	59.0		
#100	23.0		
#200	13.6		

SOIL DESCRIPTION

○ fine to medium Sand to Silty Sand (SP-SM)

REMARKS:

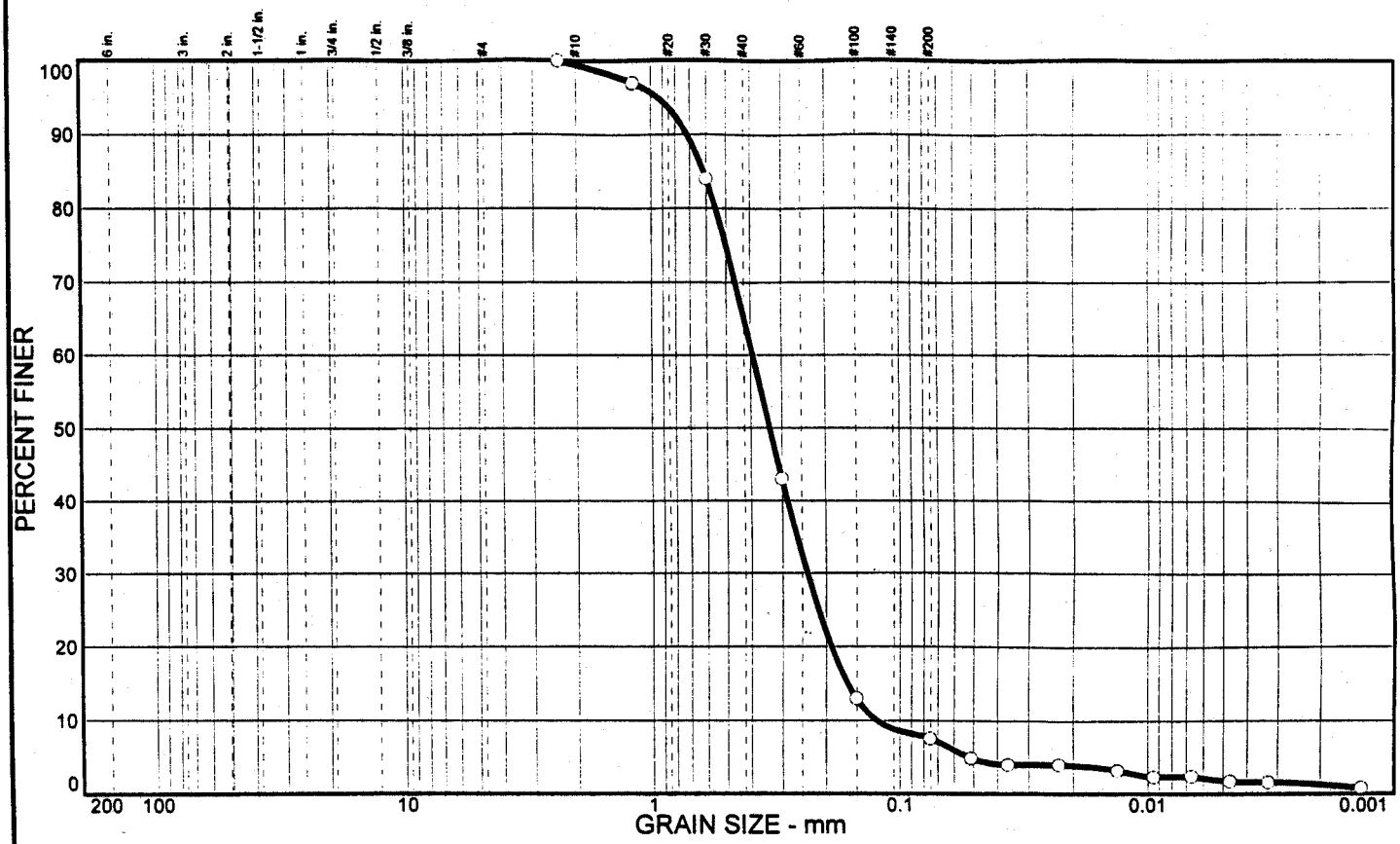
○ I-605/SR-91 Infiltration Basin
Layer 2

○ Location: Layer 2 Elevation: 0.3m to 0.5m Sample No.:11727

LAW/CRANDALL
A DIVISION OF LAW ENGINEERING AND ENVIRONMENTAL SERVICES, INC.

Client: Caltrans
Project: Caltrans BMP
Project No.: 70311-0-0099.01.004 FIGURE:1-32b

PARTICLE SIZE DISTRIBUTION TEST REPORT



	% + 3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○			92.4	5.8	1.8	SP-SM			

SIEVE inches size	PERCENT FINER ○		
	GRAIN SIZE		
D_{60}	0.391		
D_{30}	0.238		
D_{10}	0.124		
	COEFFICIENTS		
C_c	1.17		
C_u	3.16		

SIEVE number size	PERCENT FINER ○		
#8	100.0		
#16	97.0		
#30	84.0		
#50	43.0		
#100	13.0		
#200	7.6		

SOIL DESCRIPTION

○ fine to medium Sand to Silty Sand (SP-SM)

REMARKS:

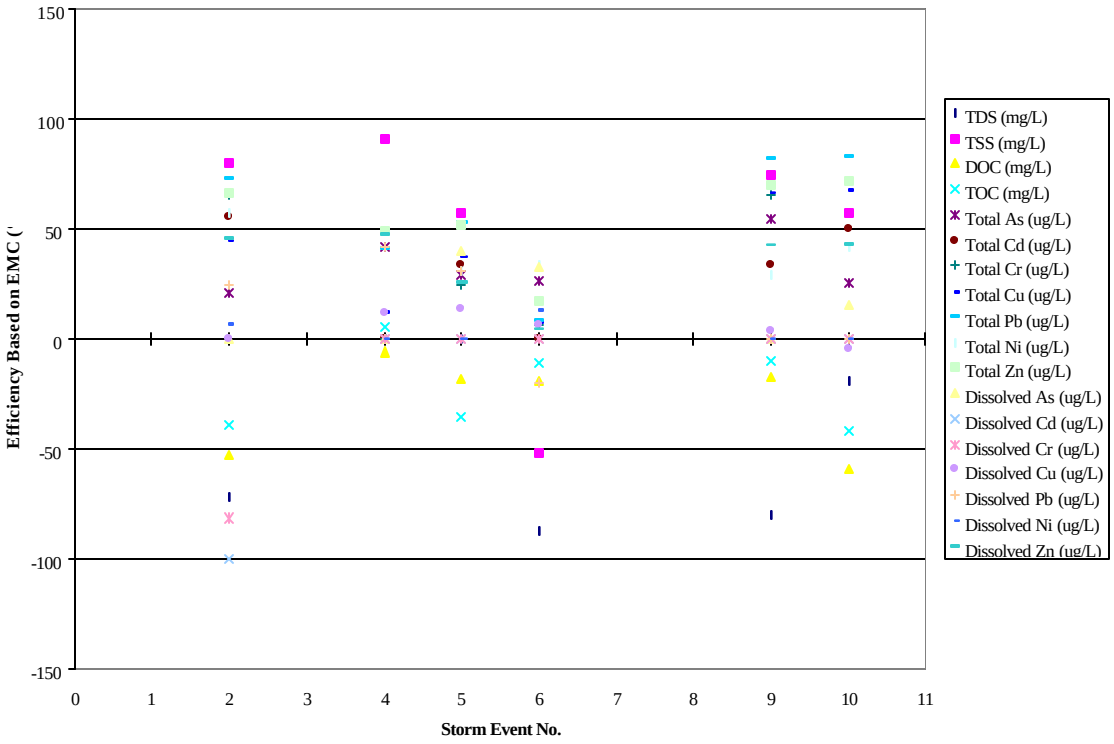
○ I-605/SR-91 Infiltration Basin
Layer 3

○ Location: Layer 3 Elevation:0.6m to 0.8m Sample No.:11726

LAW/CRANDALL
A DIVISION OF LAW ENGINEERING AND ENVIRONMENTAL SERVICES, INC.

Client: Caltrans
Project: Caltrans BMP
Project No.: 70311-0-0099.01.004 FIGURE:1-32c

Figure 1-33a: BMP Pollutant Removal Efficiency at the Altadena Maintenance Station Biofiltration Strip



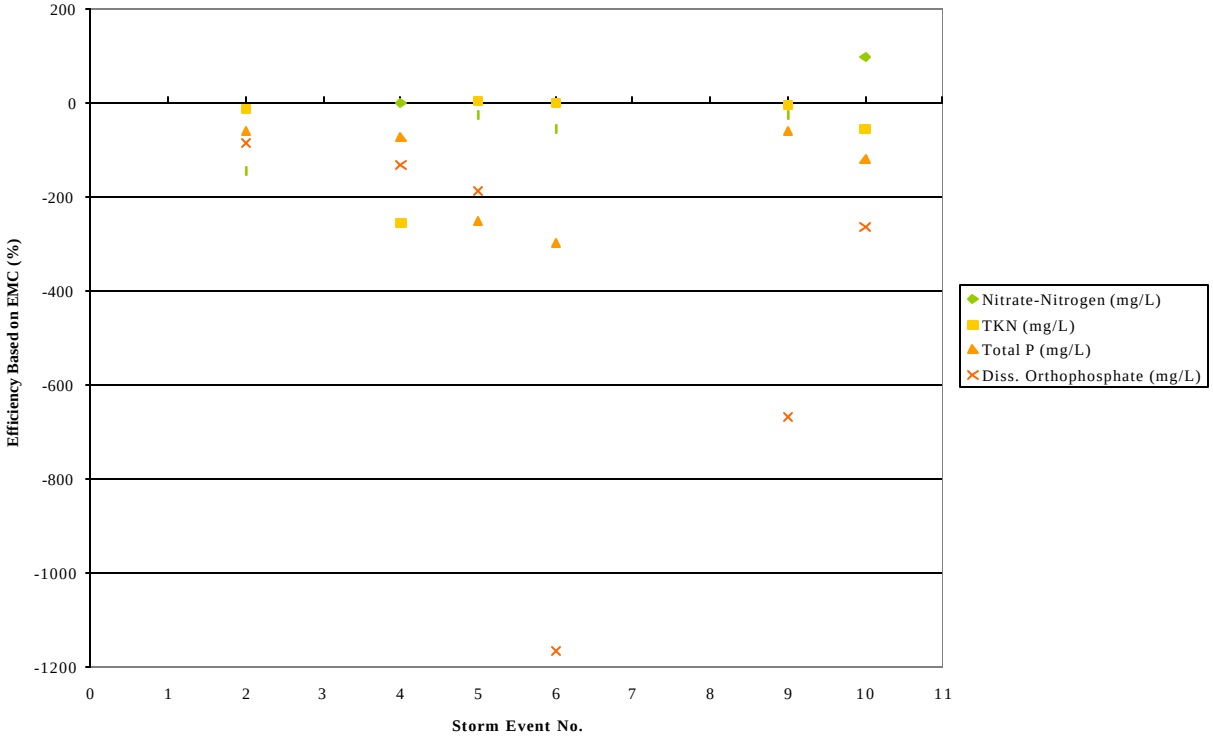
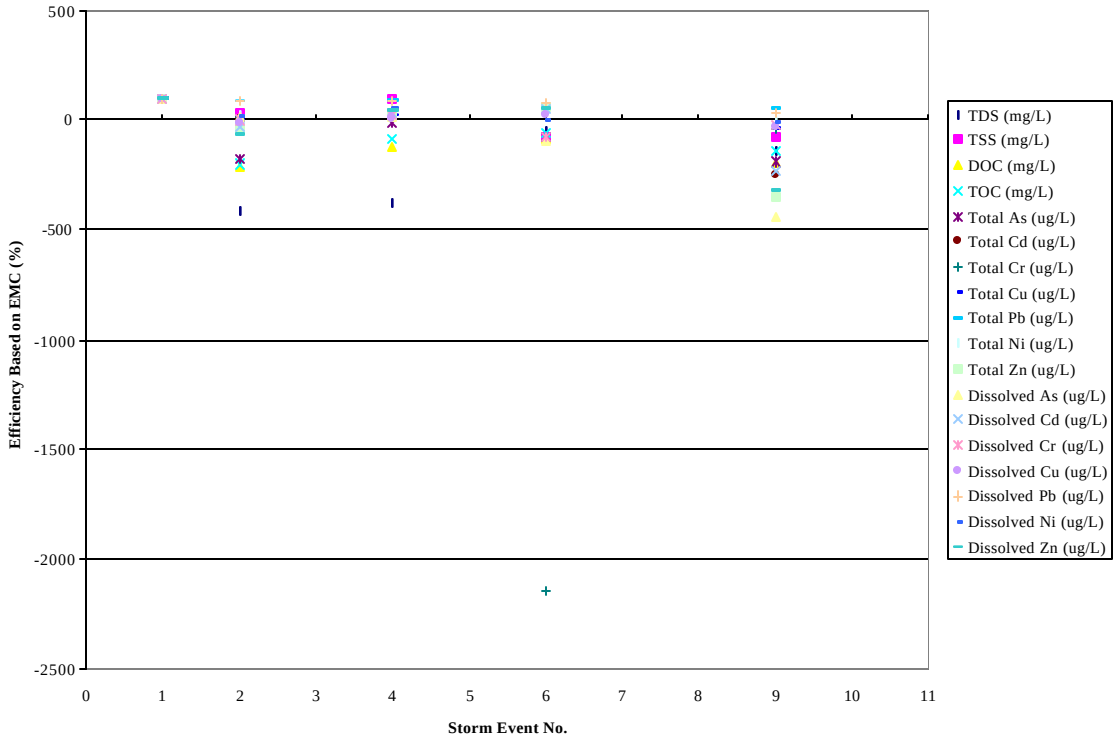


Figure 1-33b: BMP Pollutant Removal Efficiency at the I-605/SR-91 Biofiltration Strip



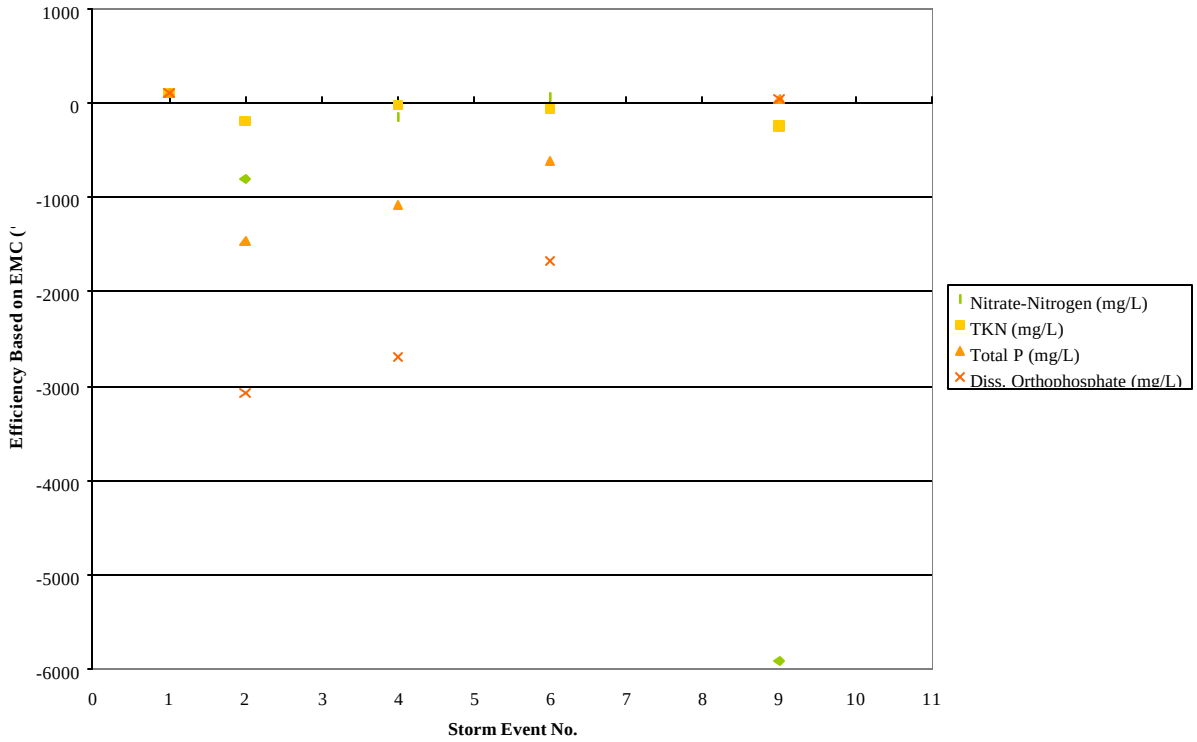
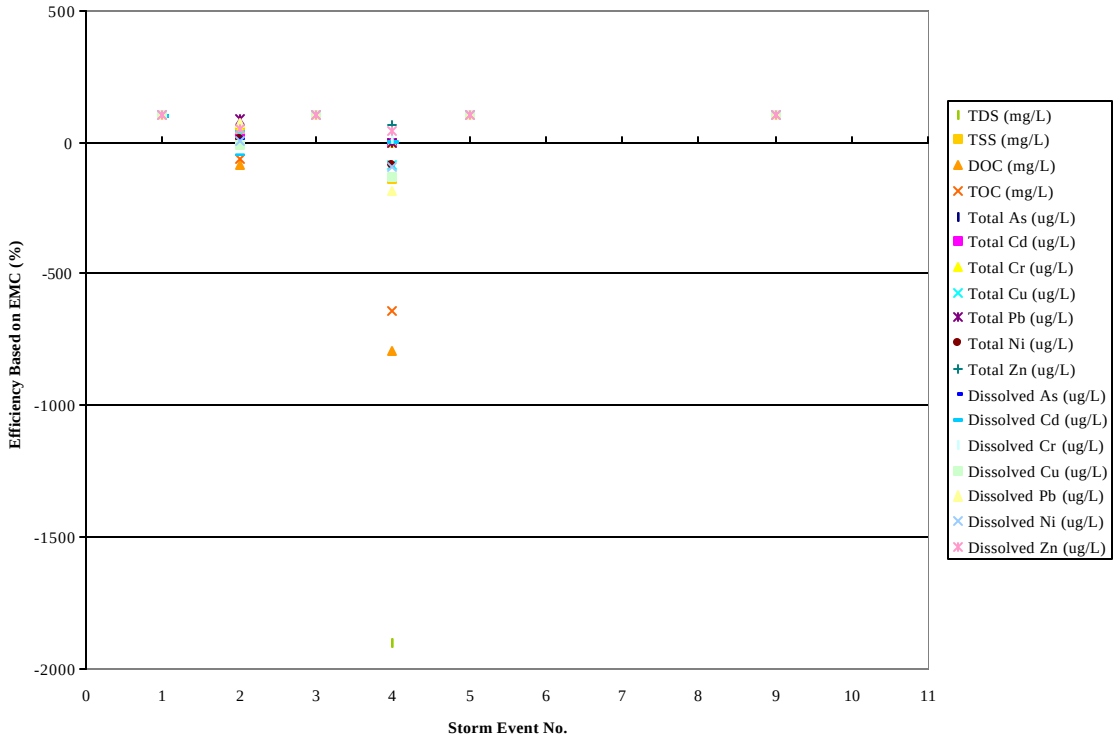


Figure 1-34a: BMP Pollutant Removal Efficiency at the I-605/SR-91 Biofiltration Swale



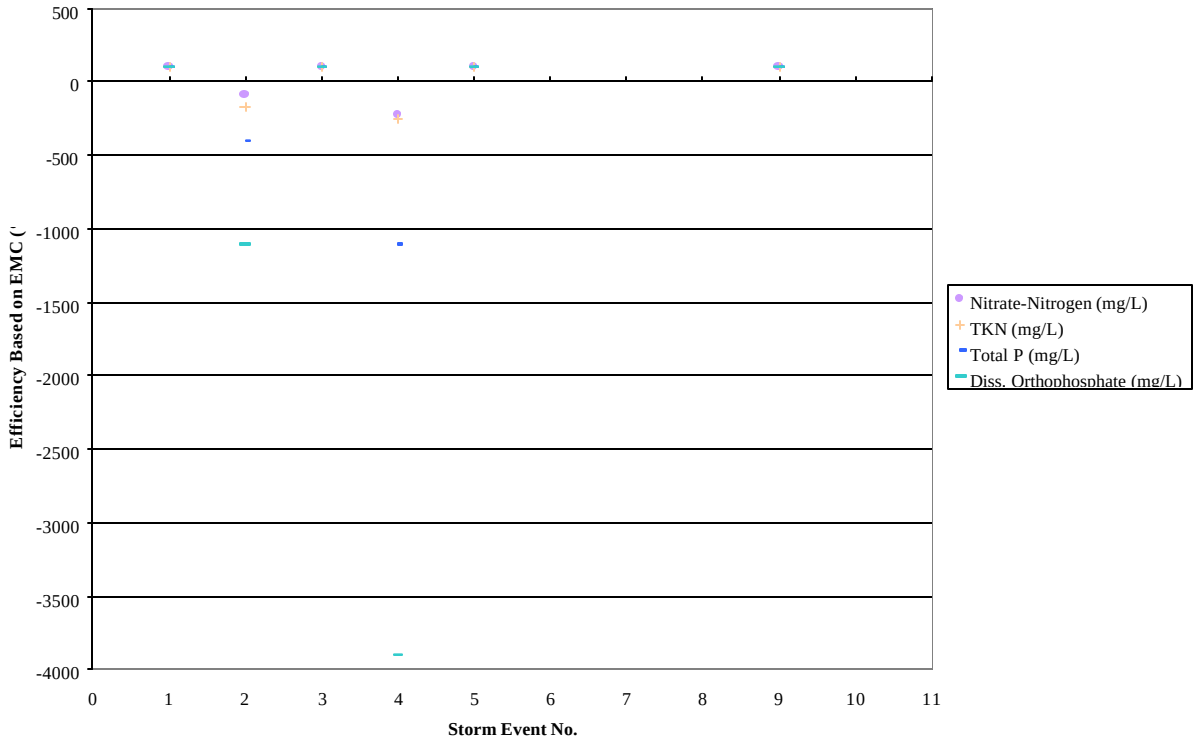
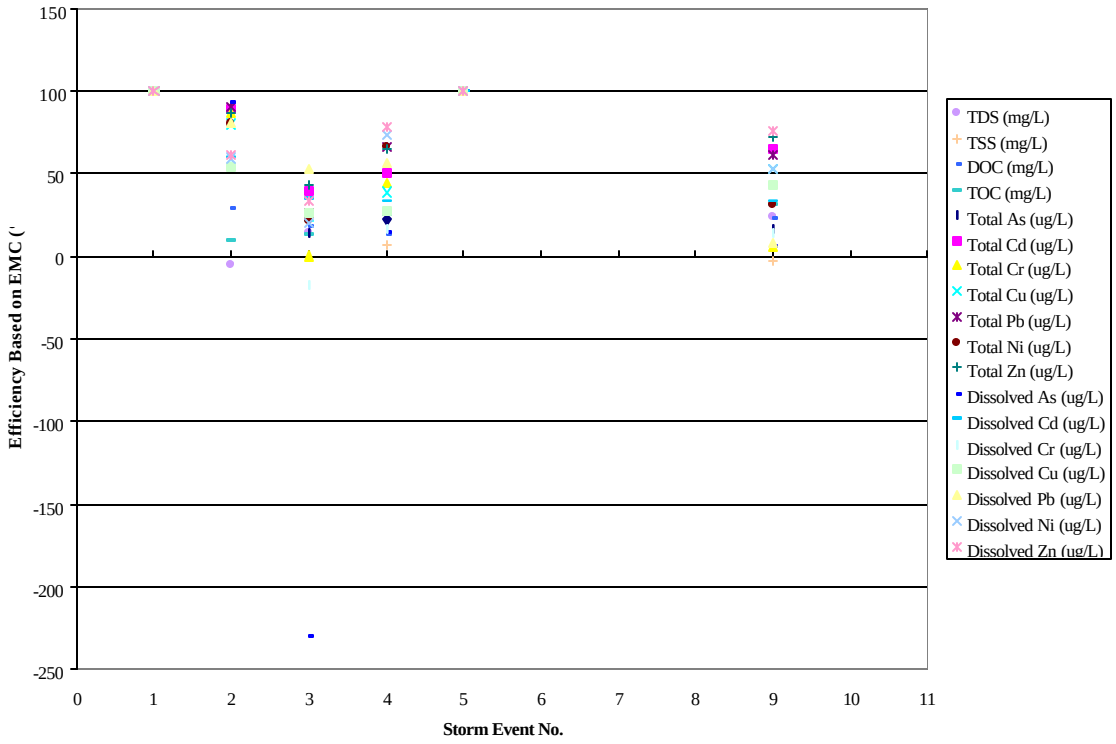


Figure 1-34b: BMP Pollutant Removal Efficiency at the Cerritos Maintenance Station Biofiltration Swale



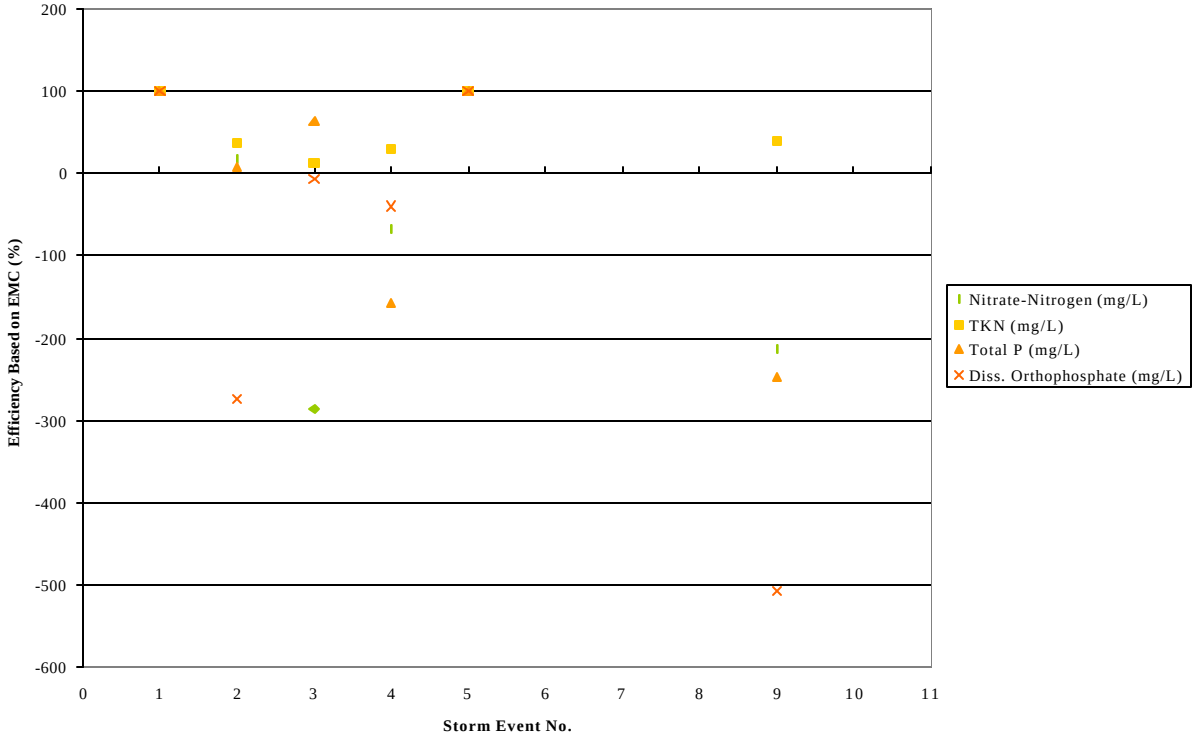
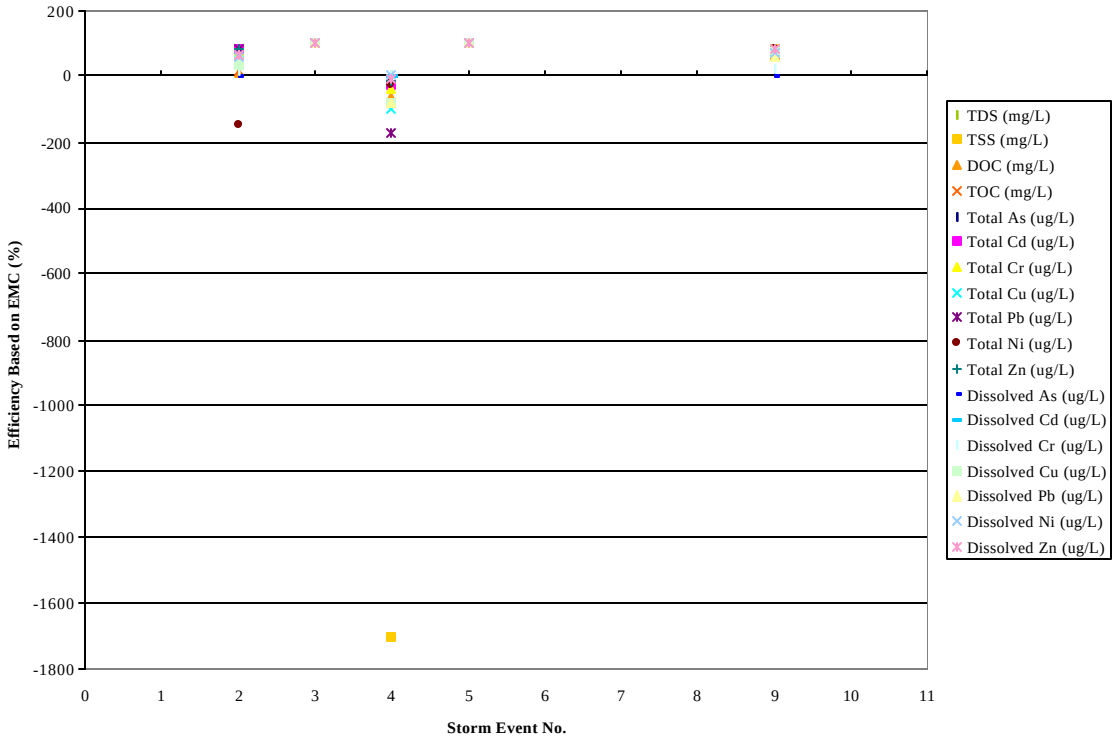


Figure 1-34c: BMP Pollutant Removal Efficiency at the I-5/I-605 Biofiltration Swale



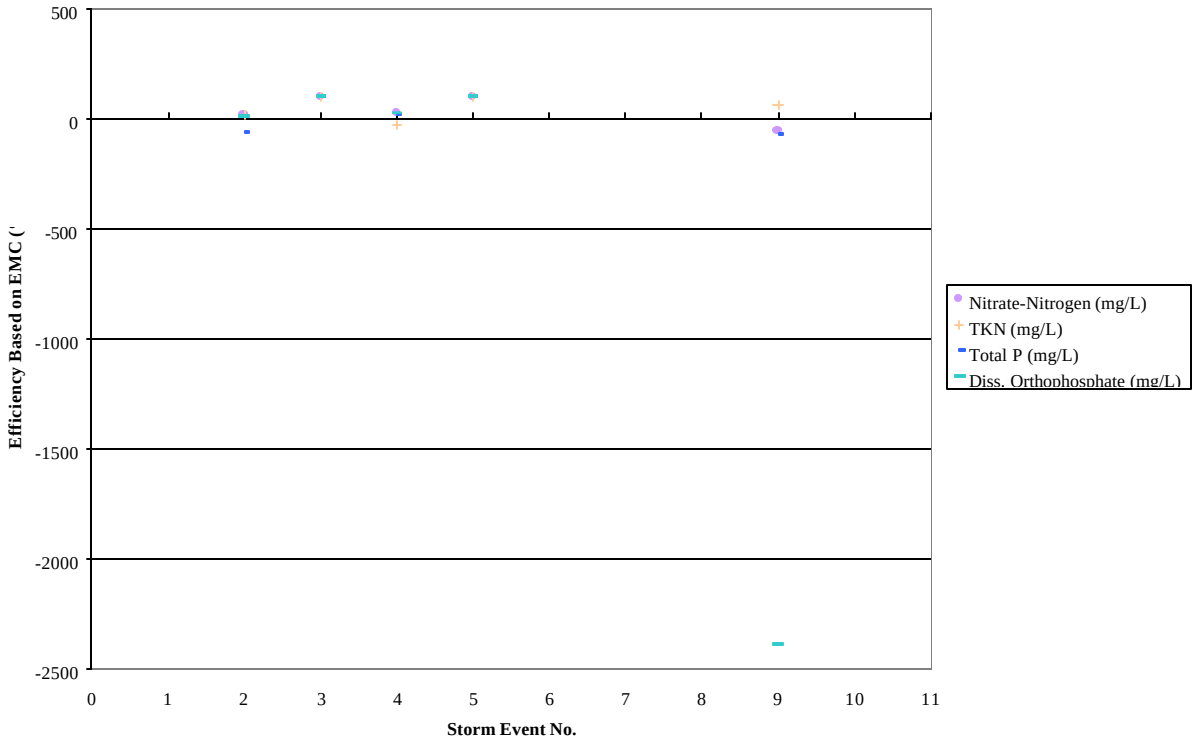
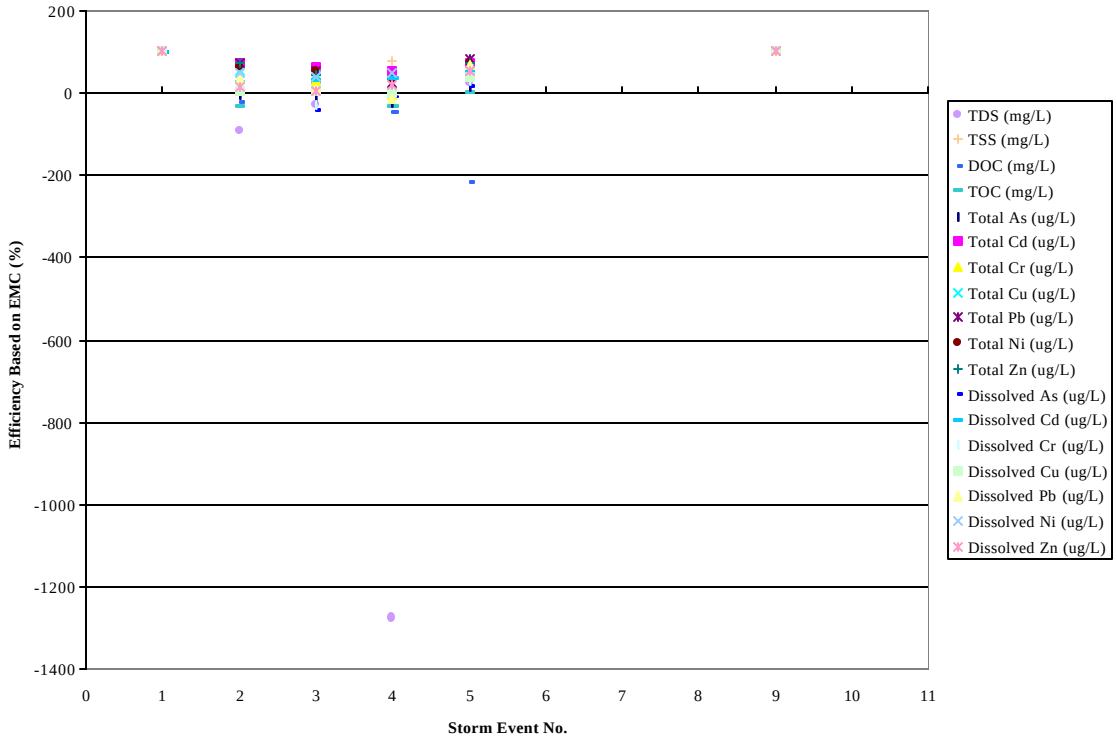


Figure 1-34d: BMP Pollutant Removal Efficiency at the I-605/Carson Biofiltration Swale



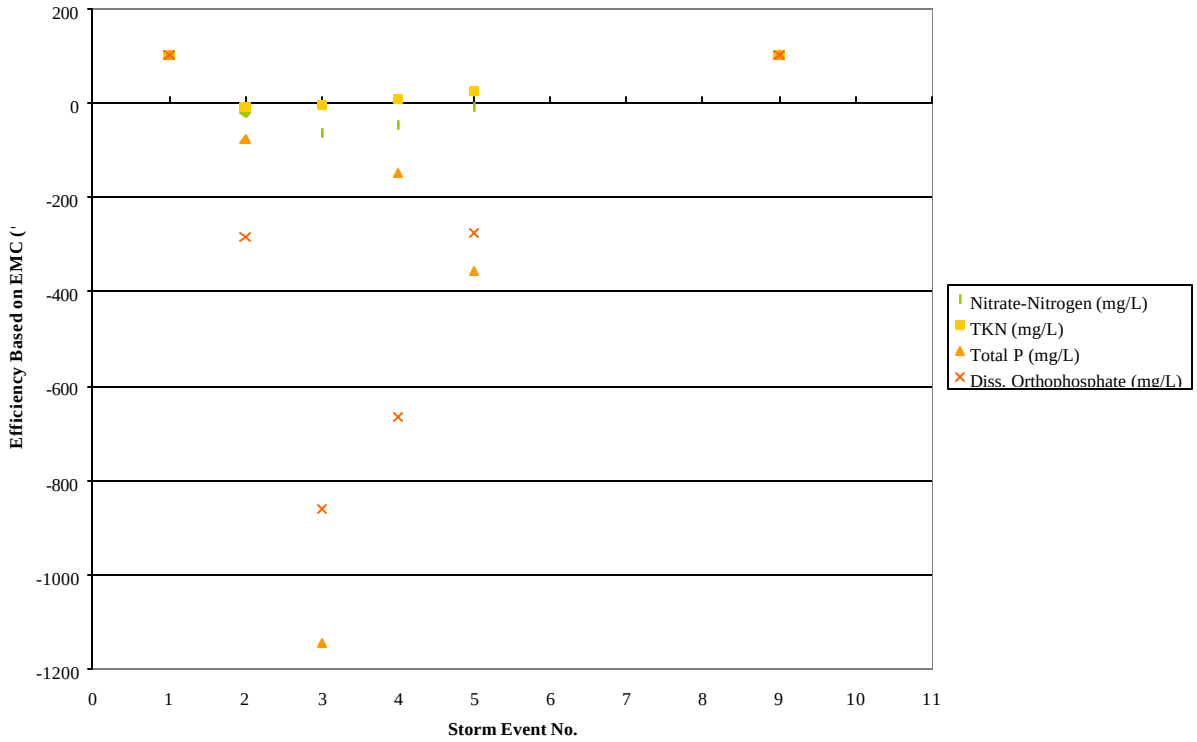
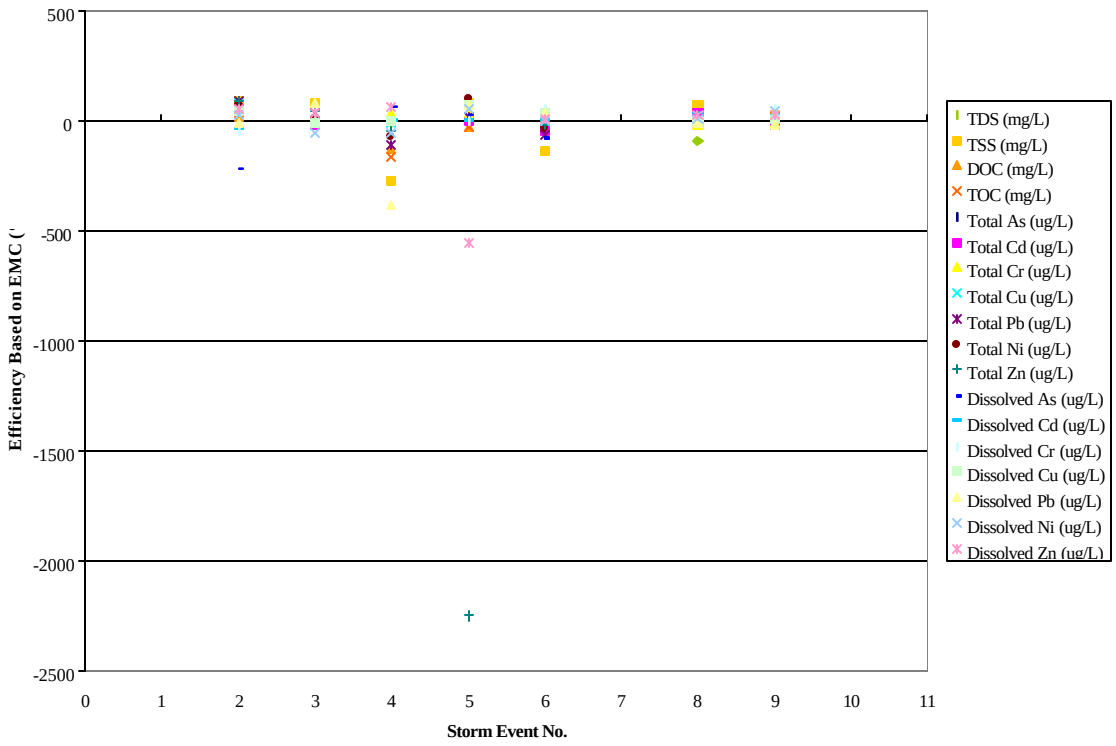


Figure 1-35a: BMP Pollutant Removal Efficiency at the I-5/I-605 Extended Detention Basin



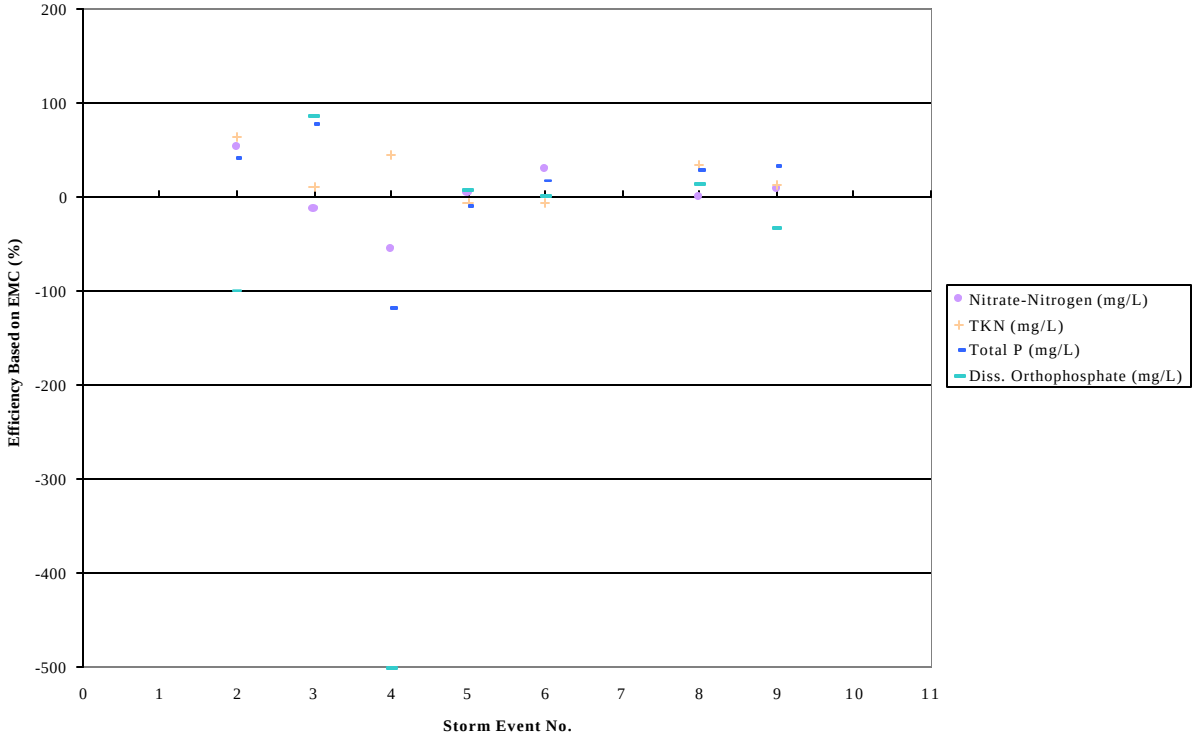
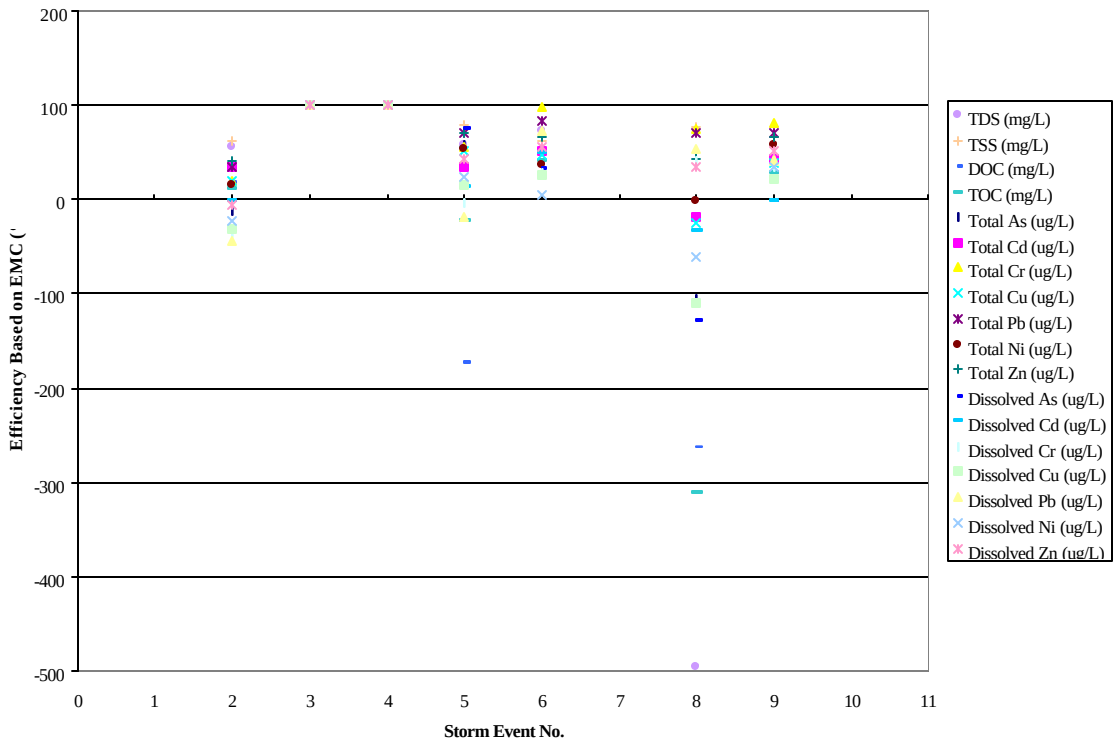


Figure 1-35b: BMP Pollutant Removal Efficiency at the I-605/SR-91 Extended Detention Basin



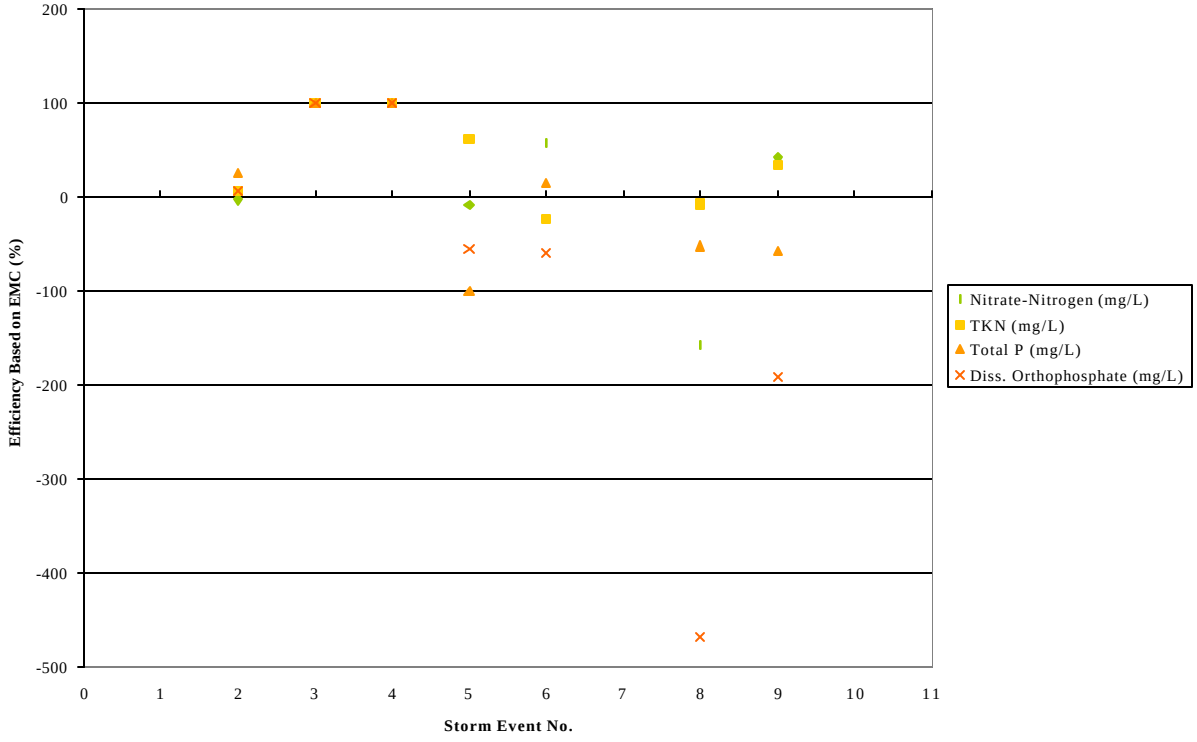
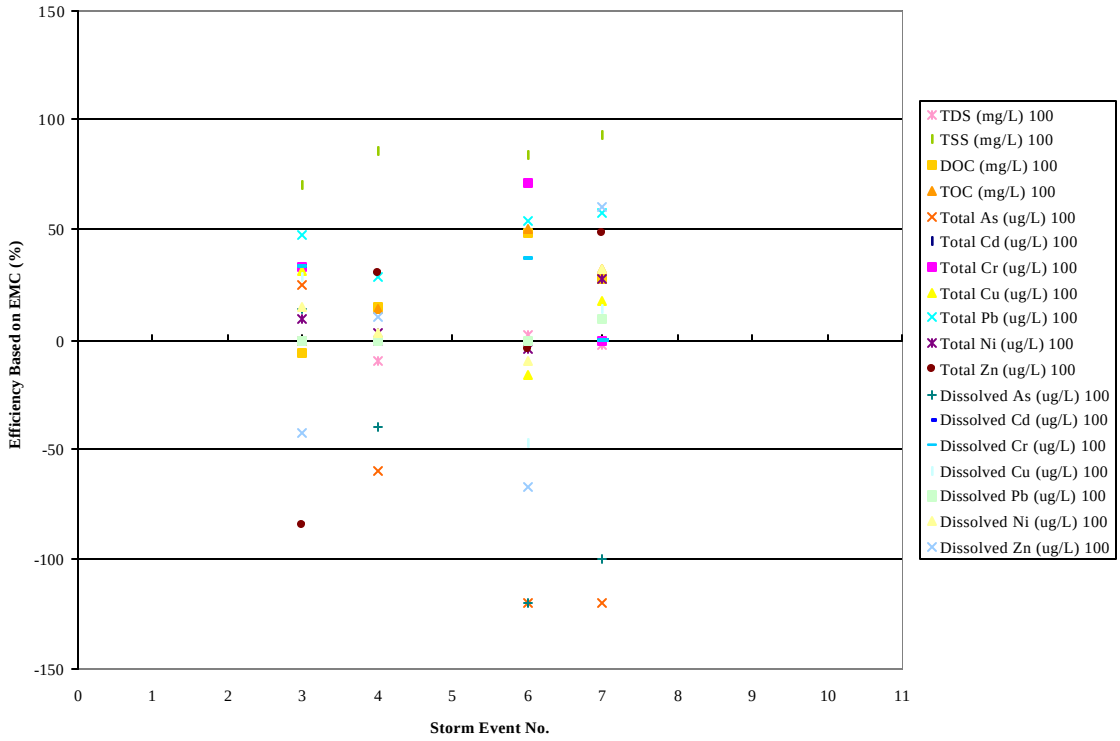


Figure 1-36c: BMP Pollutant Removal Efficiency at the Termination Park & Ride Sand Filter – Austin Type



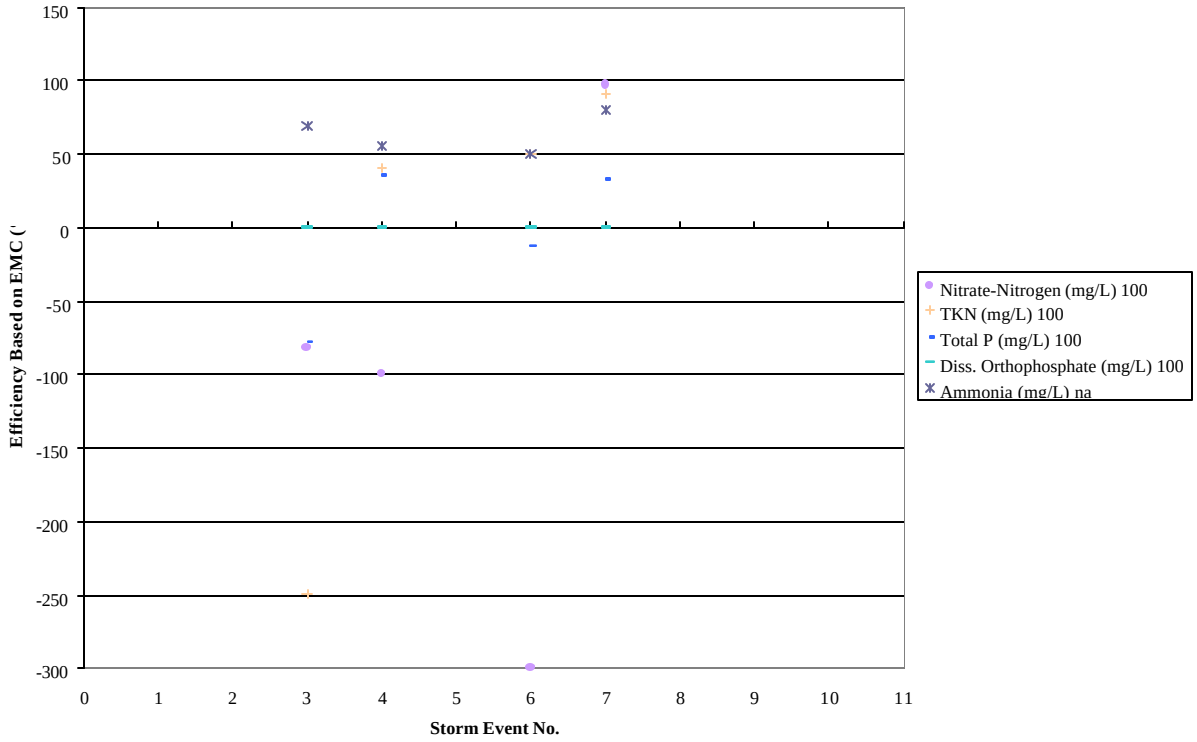
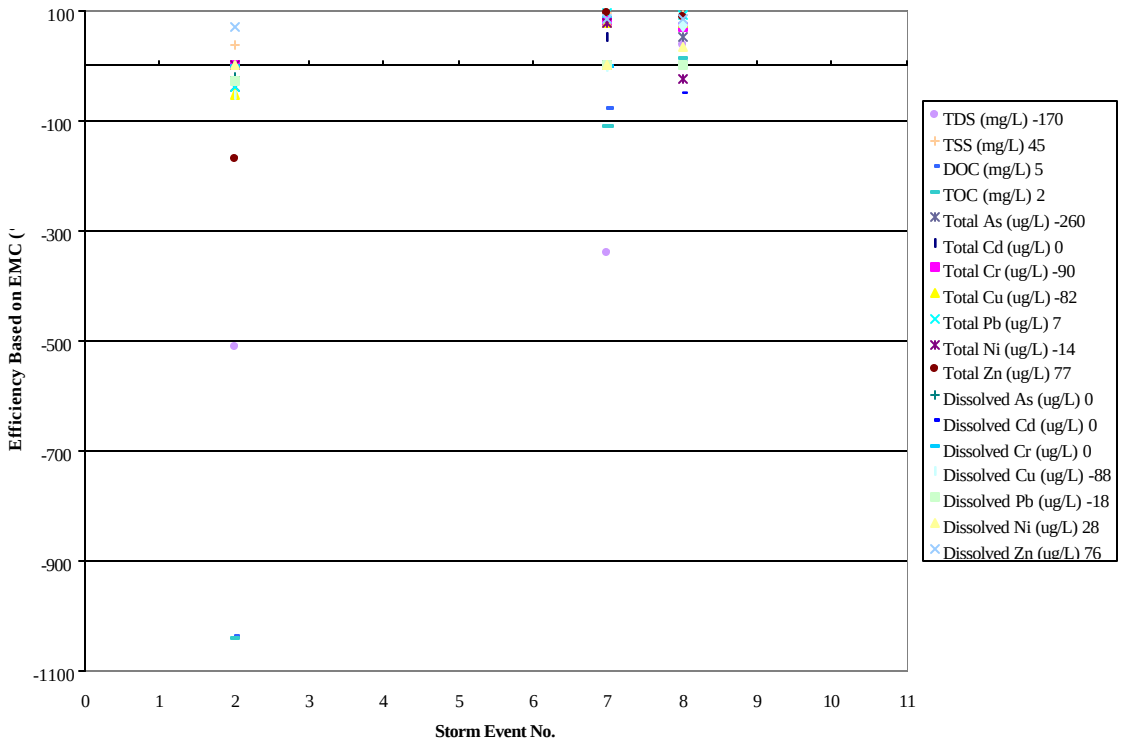


Figure 1-37a: BMP Pollutant Removal Efficiency at the Via Verde Park & Ride Multi-chambered Treatment Train



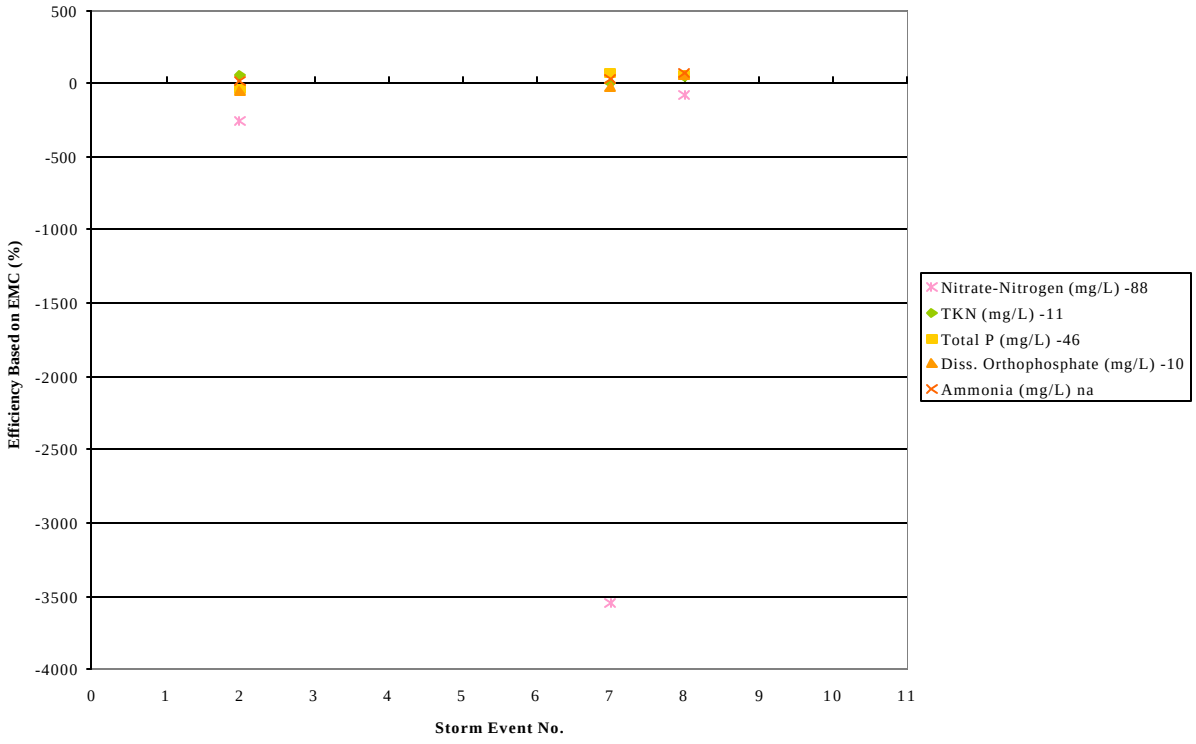
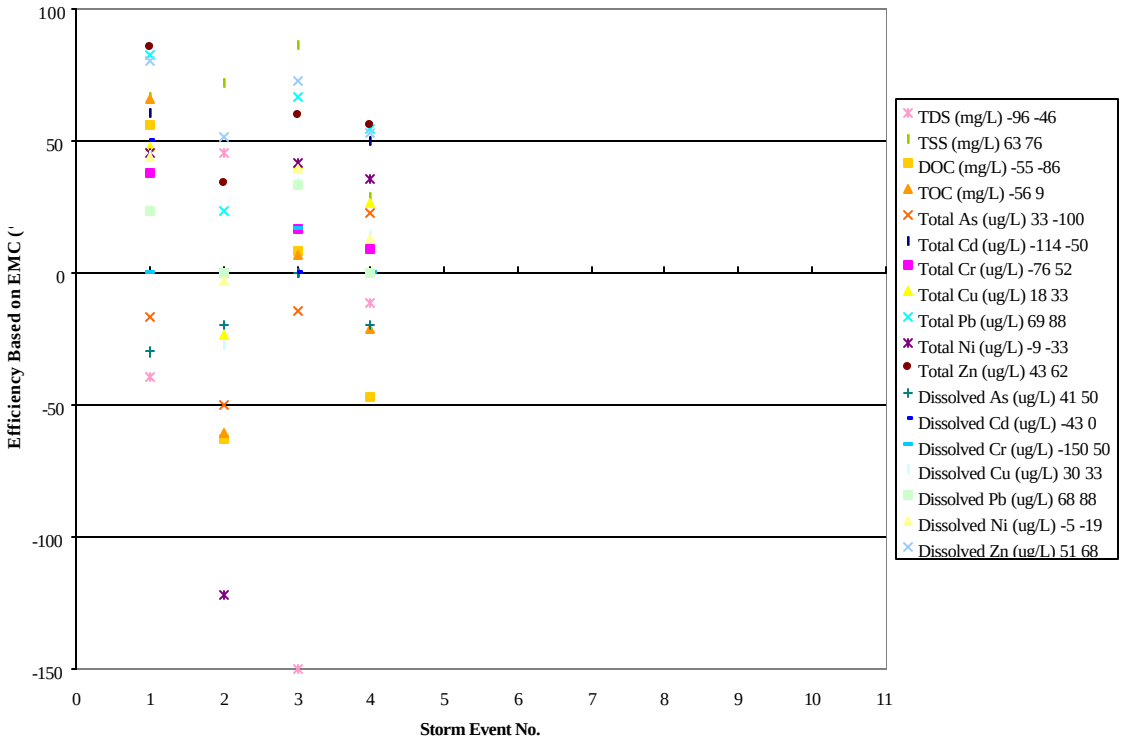


Figure 1-37b: BMP Pollutant Removal Efficiency at the Lakewood Park & Ride Multi-chambered Treatment Train



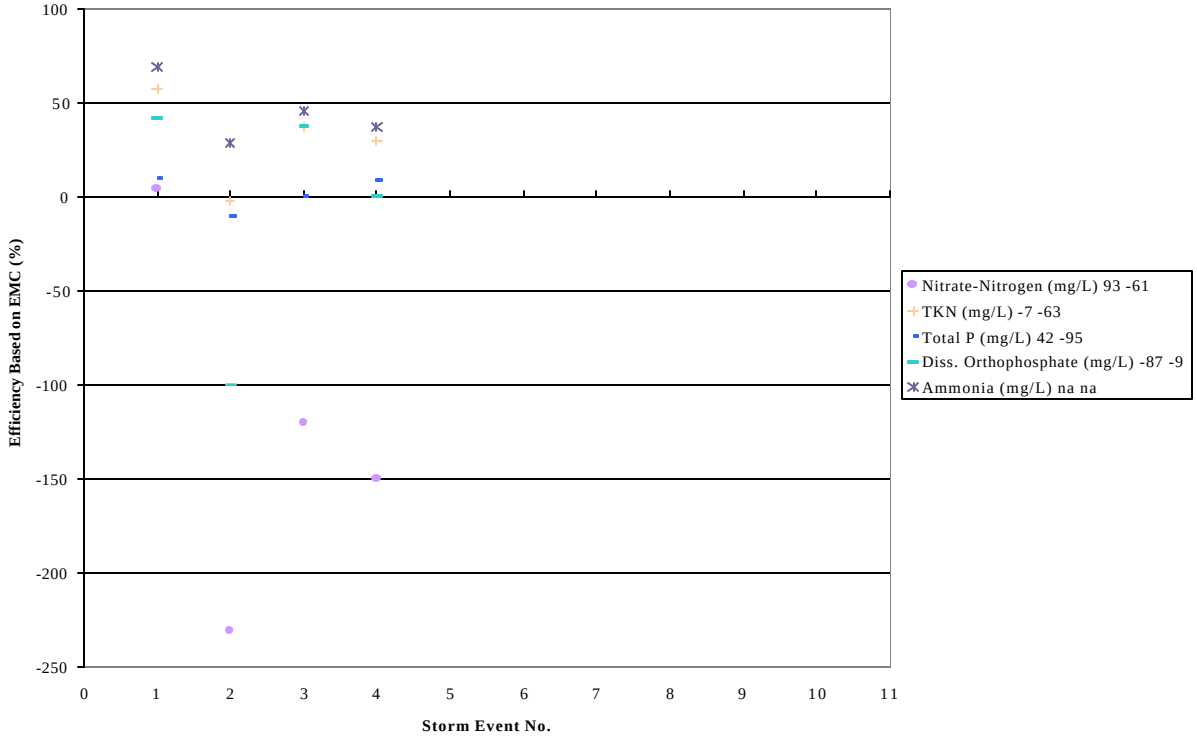
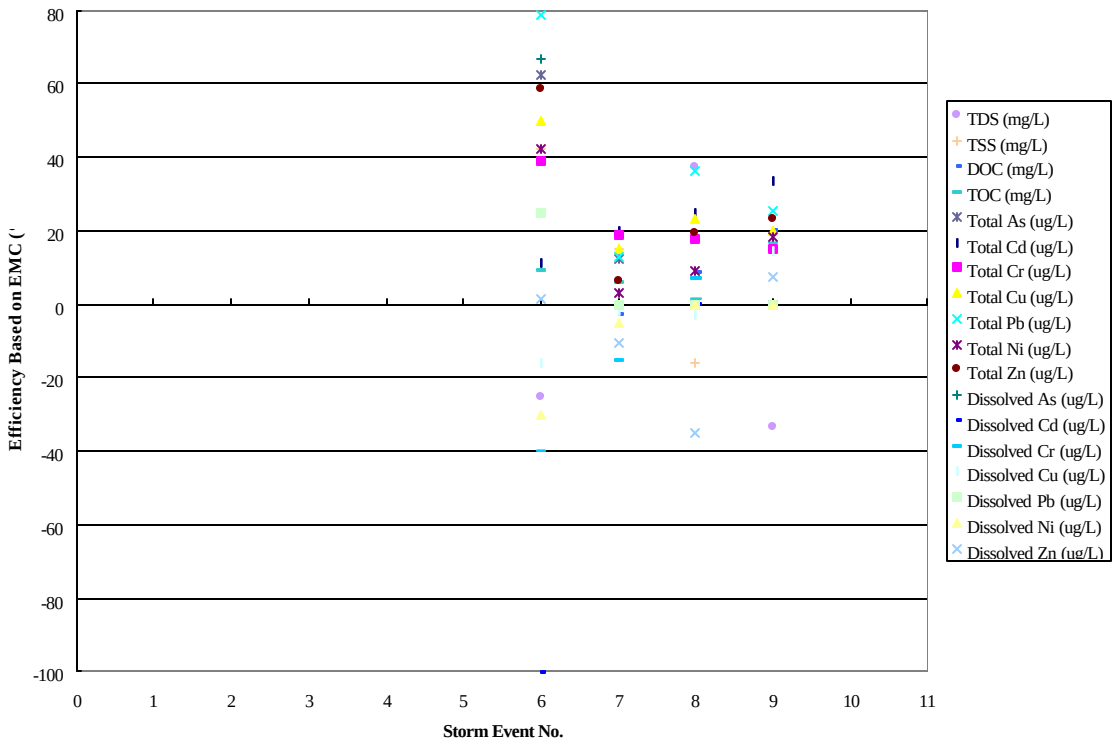


Figure 1-38a: BMP Pollutant Removal Efficiency at the Orcas Continuous Deflective Separation Unit



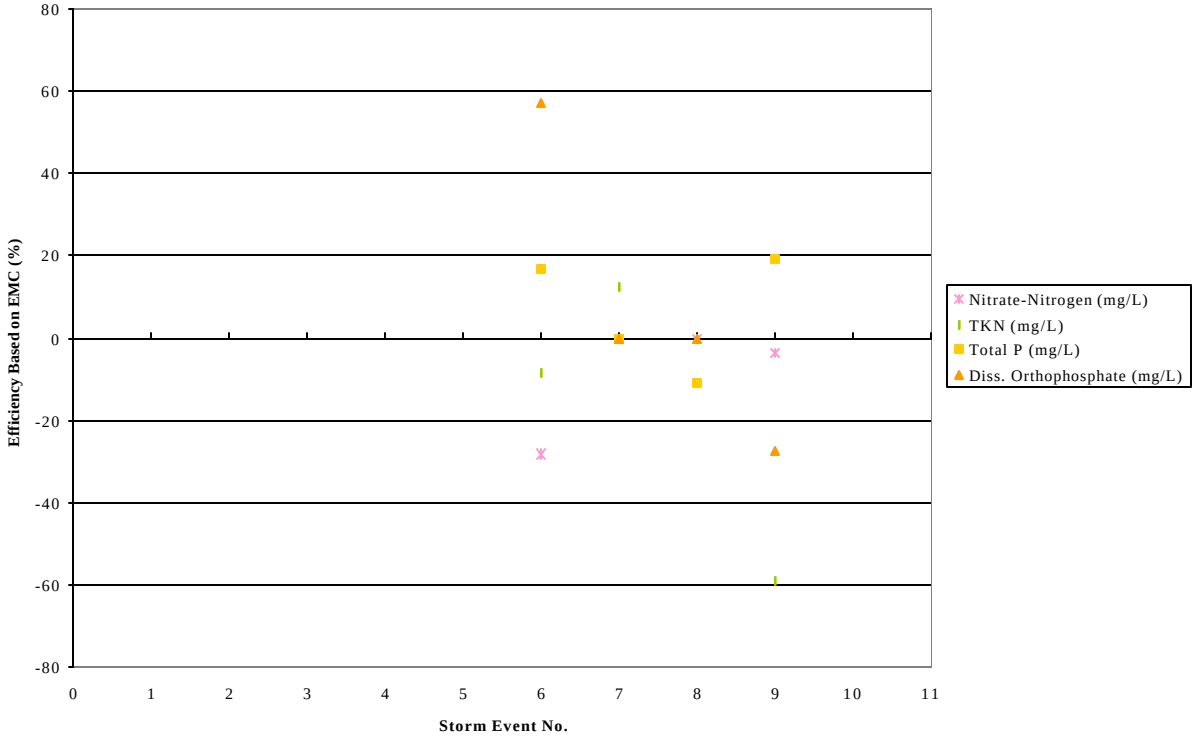
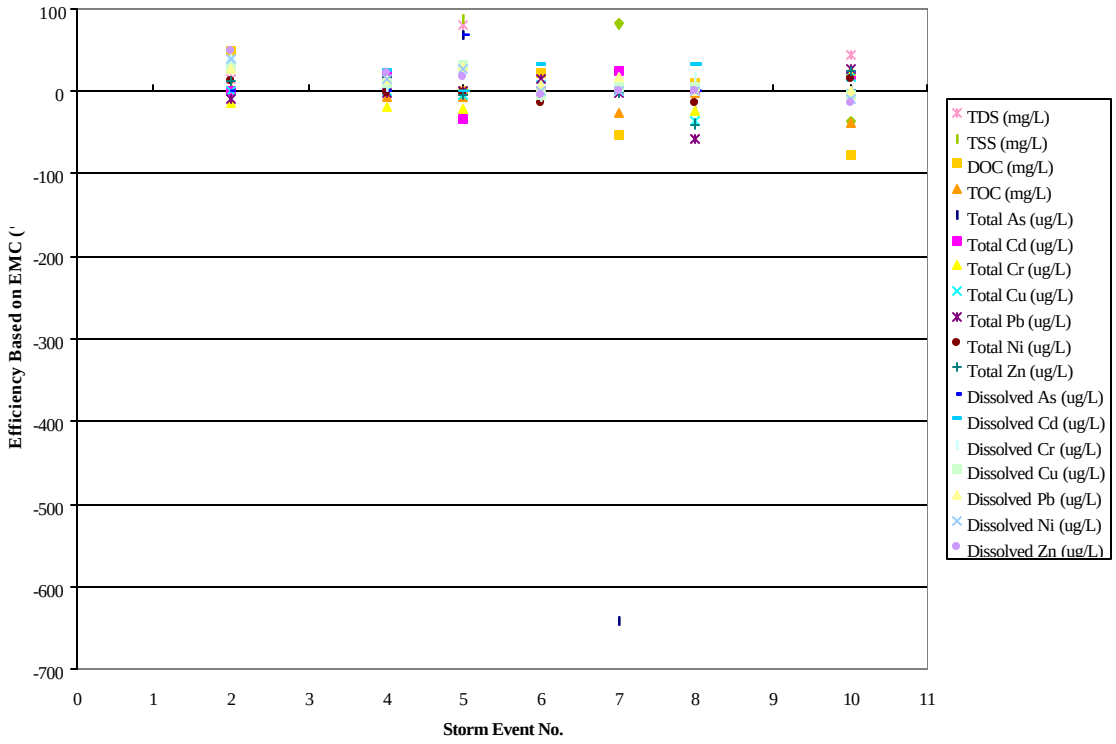


Figure 1-38b: BMP Pollutant Removal Efficiency at the Filmore Continuous Deflective Separation Unit



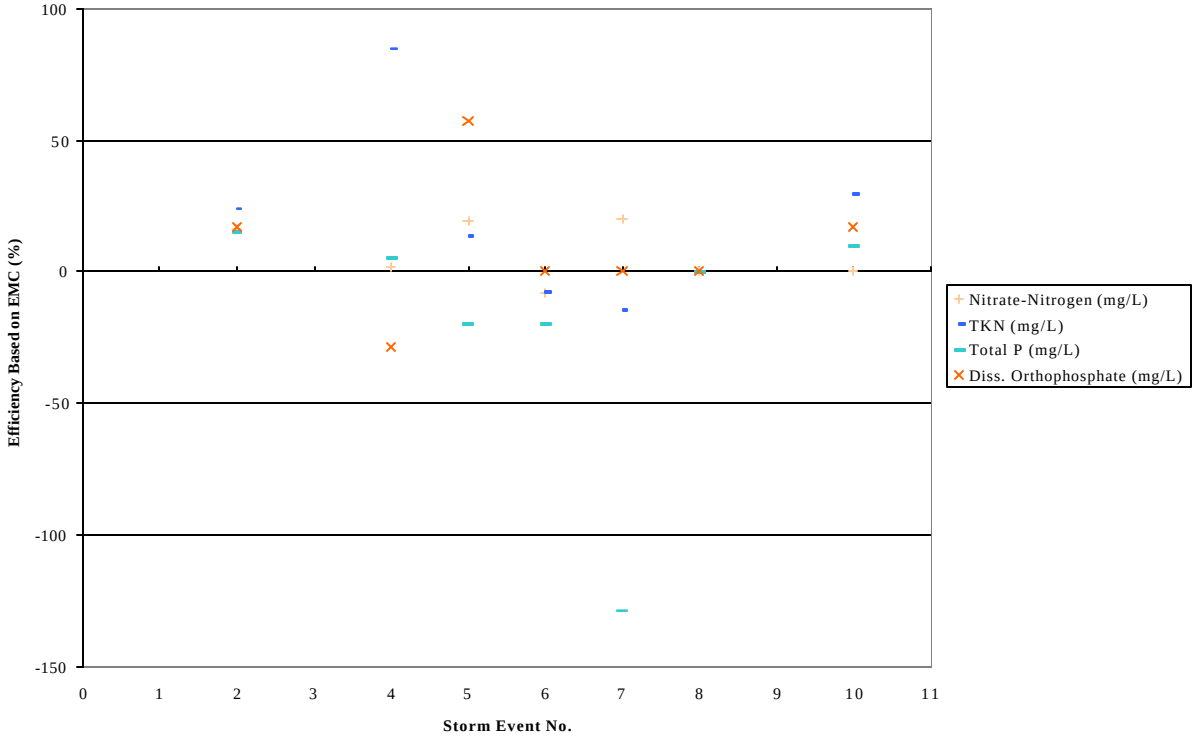


Figure 1-39a: BMP Pollutant Removal Efficiency at the Alameda Maintenance Station Oil/Water Separator

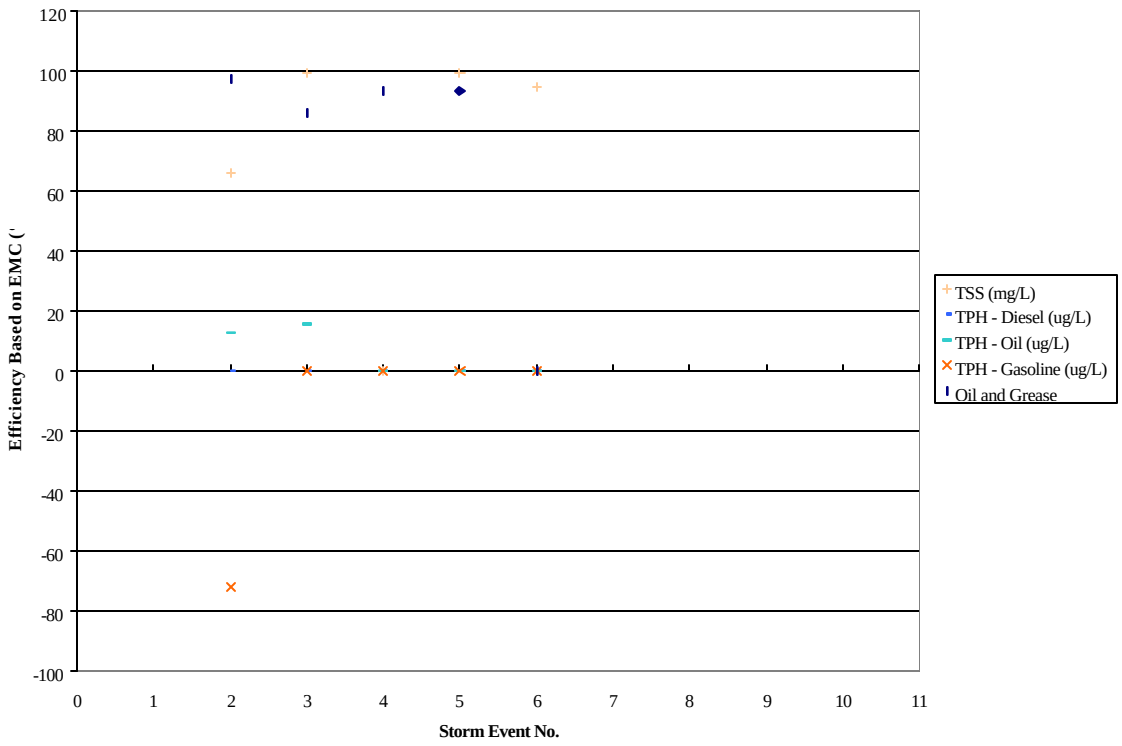
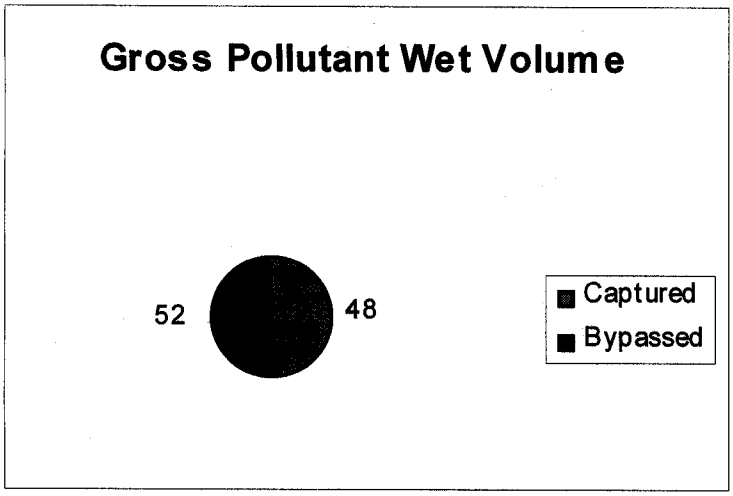
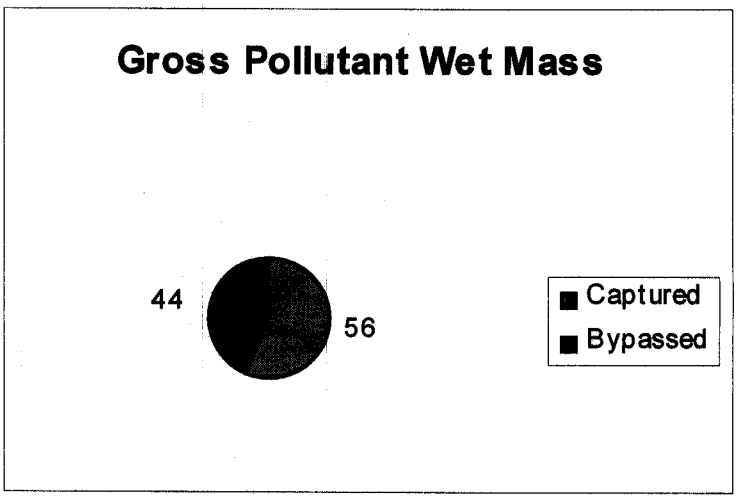


Figure 1-40a: I-210 East of Orcas Avenue CDS Gross Pollutant Removal Efficiency

October 1, 2000 through January 16, 2001

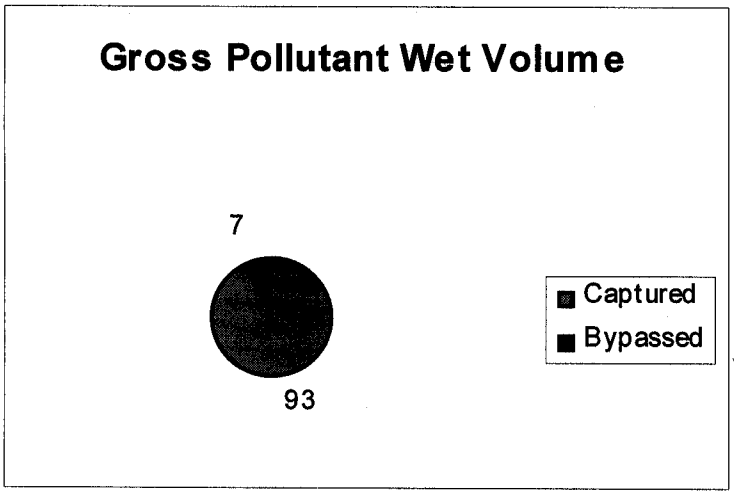


Captured: 140 L Bypassed: 150 L

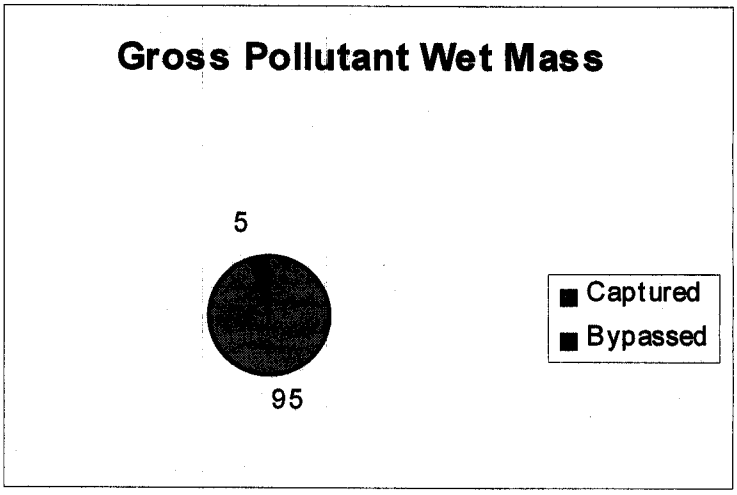


Captured: 79,830 g Bypassed: 63,053 g

January 16, 2001 through March 12, 2001

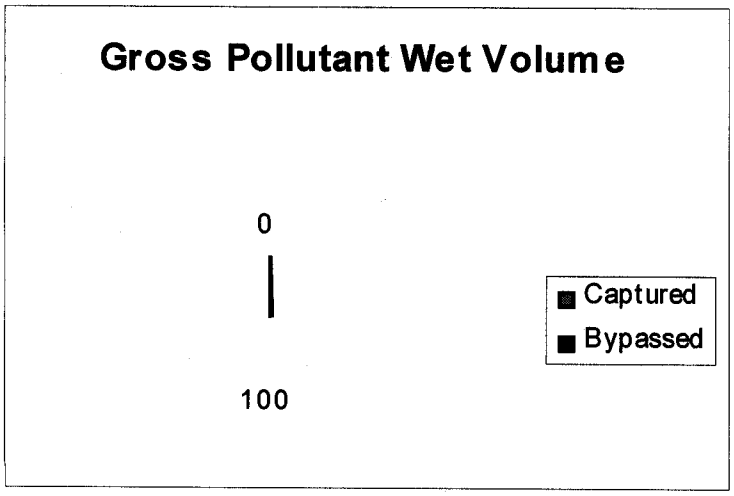


Captured: 135 L Bypassed: 10 L

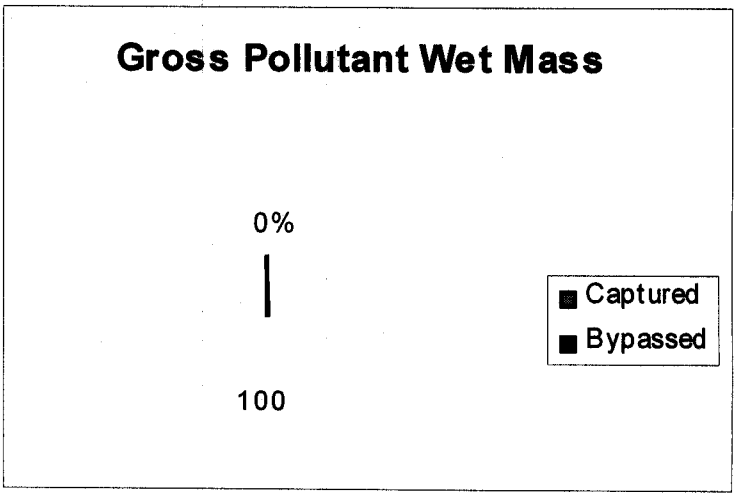


Captured: 101,618 g Bypassed: 5,000 g

March 12, 2001 through May 2, 2001



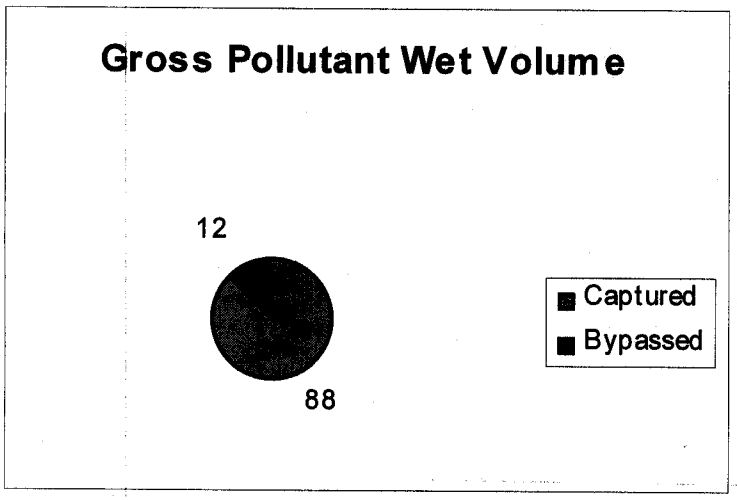
Captured: 76.5 L Bypassed: 0 L

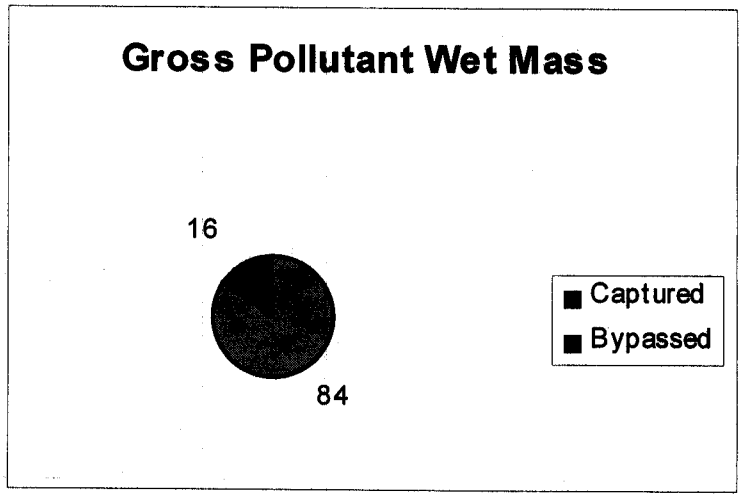


Captured: 28,496 g Bypassed: 0 g

Figure 1-40b: I-210 East of Filmore Street CDS Gross Pollutant Removal Efficiency

October 1, 2000 through January 16, 2001

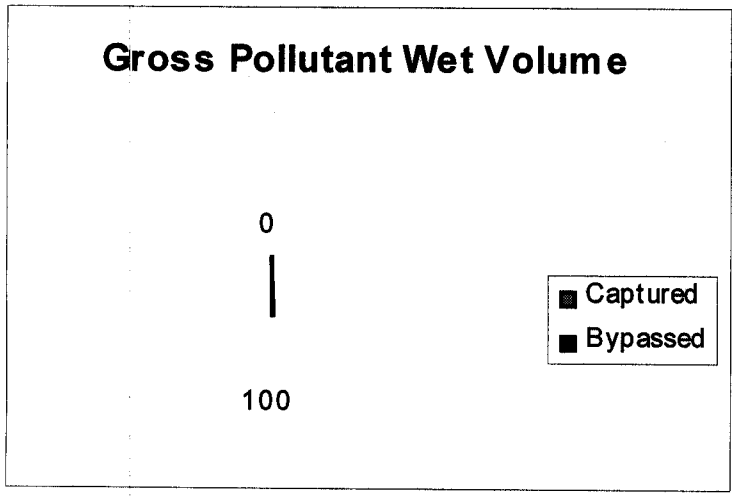


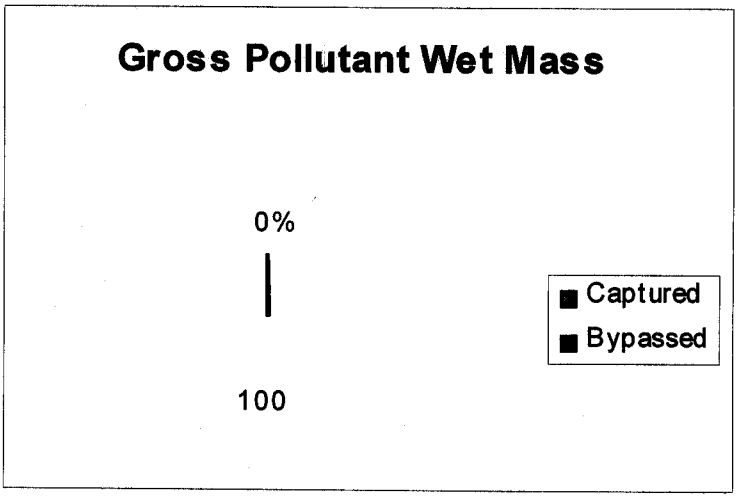


Captured: 107 L Bypassed: 15 L

Captured: 50,360 g Bypassed: 9,750 g

January 16, 2001 through May 2, 2001



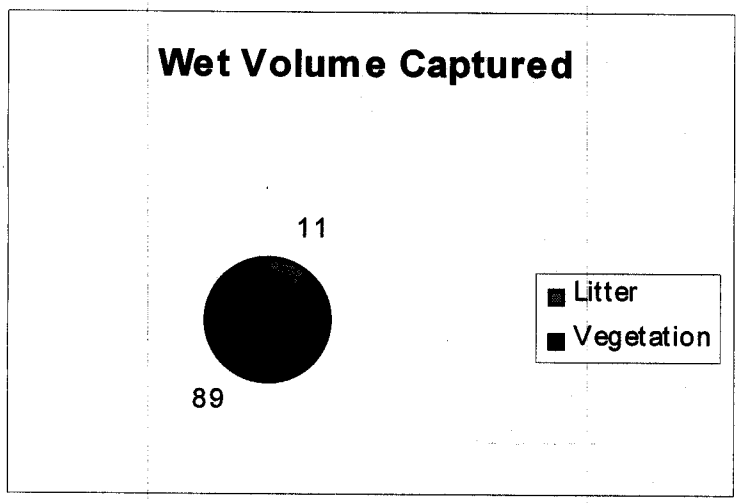


Captured: 86.5 L Bypassed: 0 L

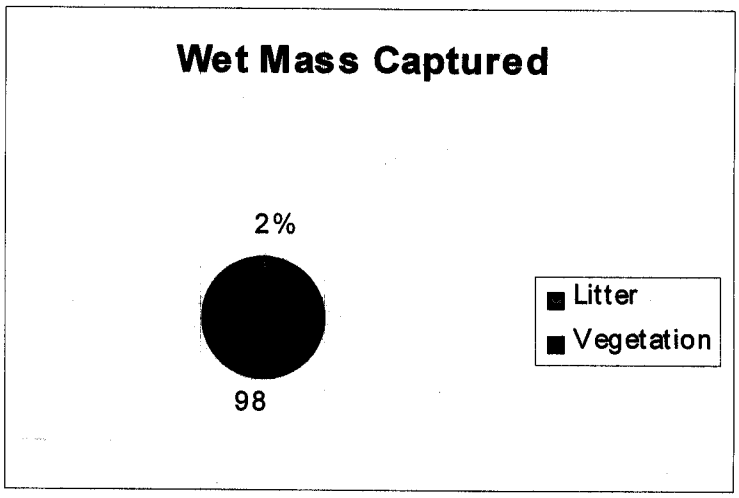
Captured: 40,537 g Bypassed: 0 g

Figure 1-41a: I-210 East of Orcas Avenue CDS Gross Pollutant Characterization

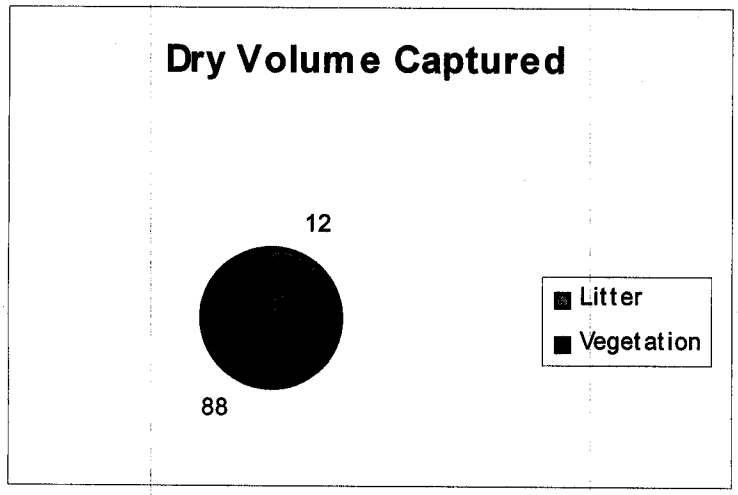
October 1, 2000 through January 16, 2001



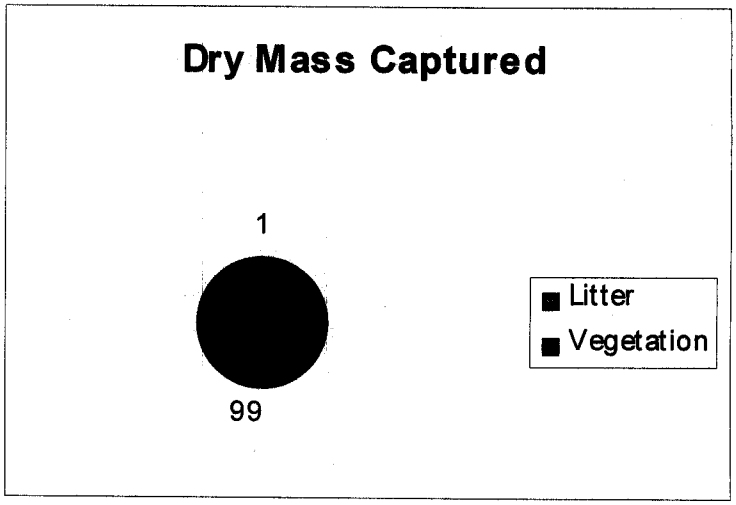
Litter: 14.5 L Vegetation: 122 L



Litter: 1,683 g Vegetation: 77,978 g



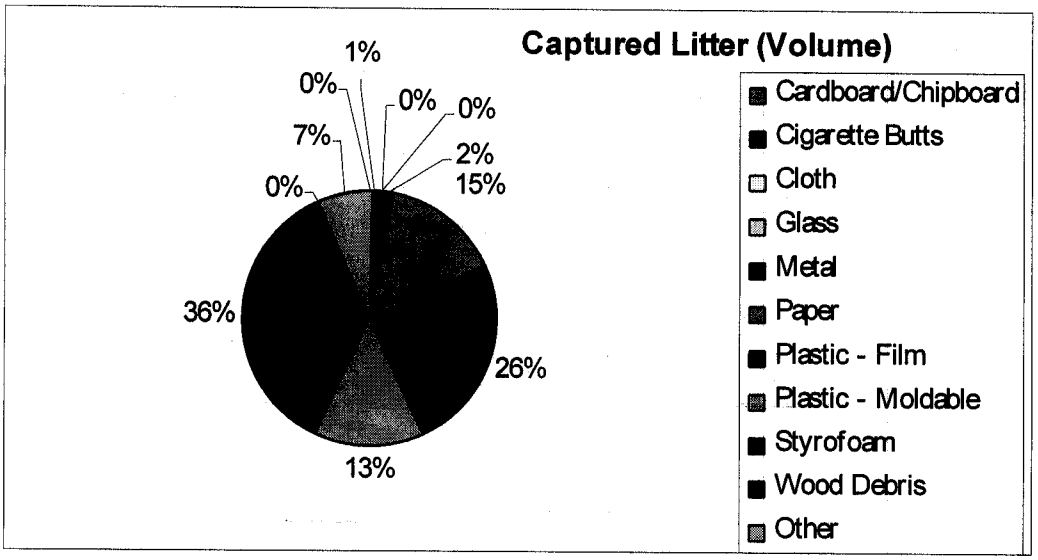
Litter: 16 L Vegetation: 114 L

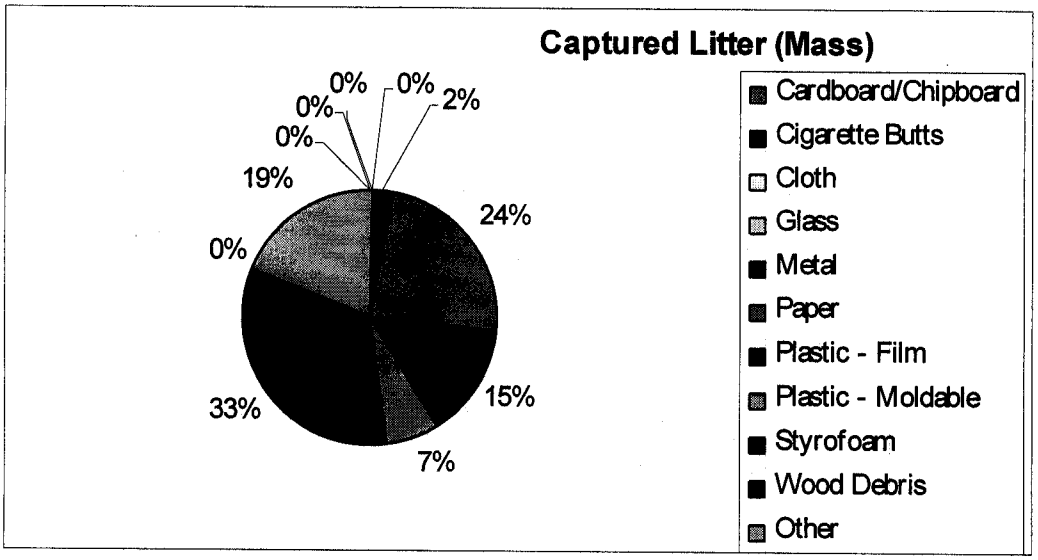


Litter: 774 g Vegetation: 67,724 g

Figure 1-41a: I-210 East of Orcas Avenue CDS Gross Pollutant Characterization

October 1, 2000 through January 16, 2001





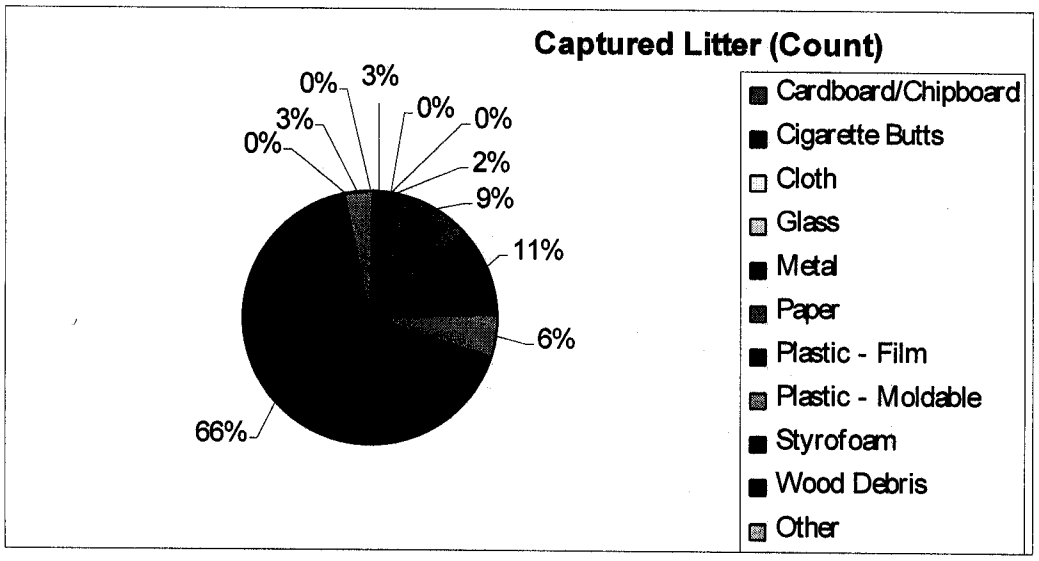
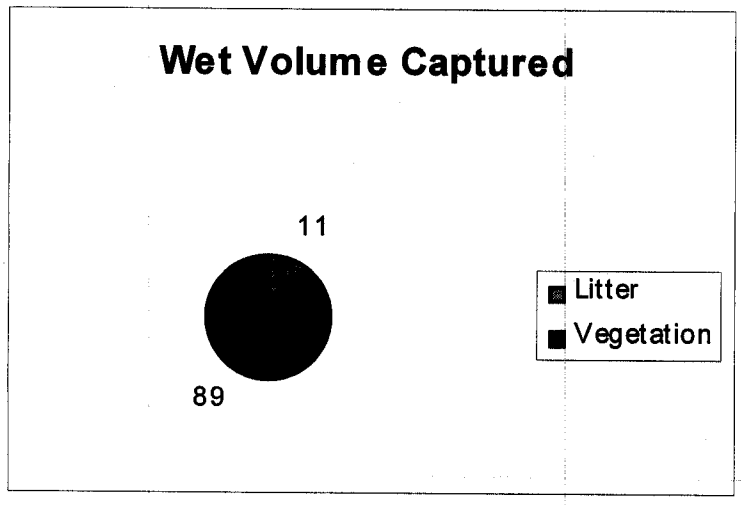
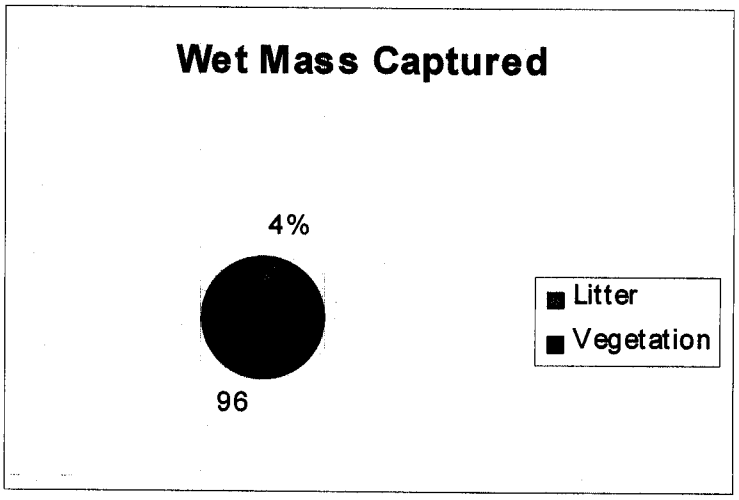


Figure 1-41a: I-210 East of Orcas Avenue CDS Gross Pollutant Characterization

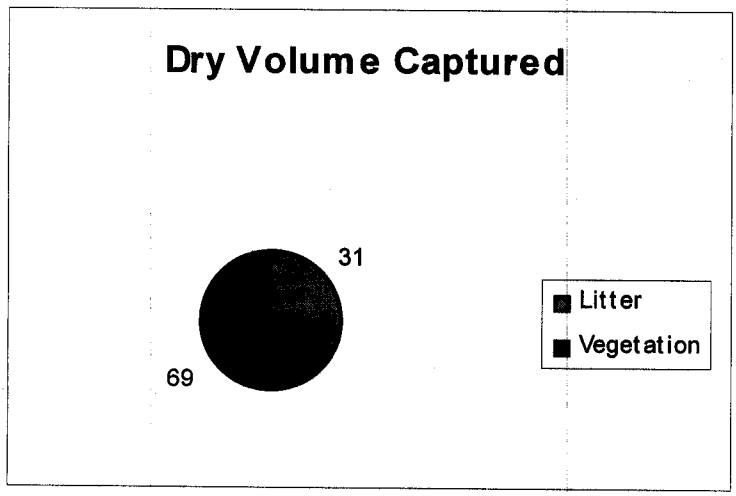
January 16, 2001 through March 12, 2001



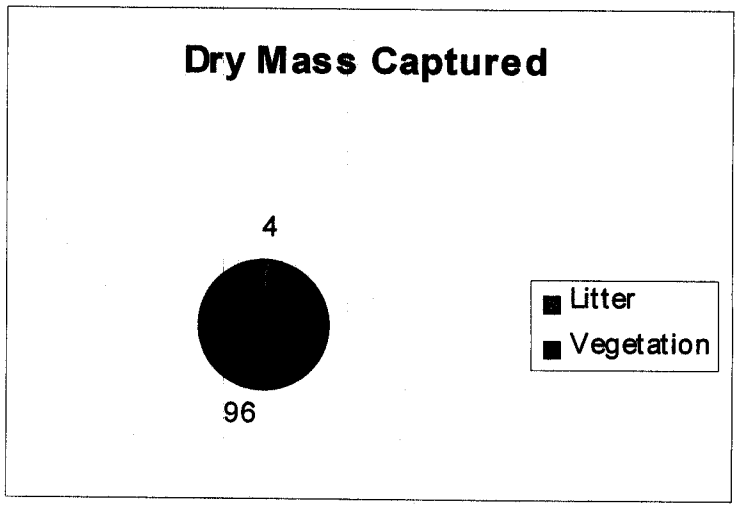
Litter: 23 L Vegetation: 192 L



Litter: 4,664 g Vegetation: 100,305 g



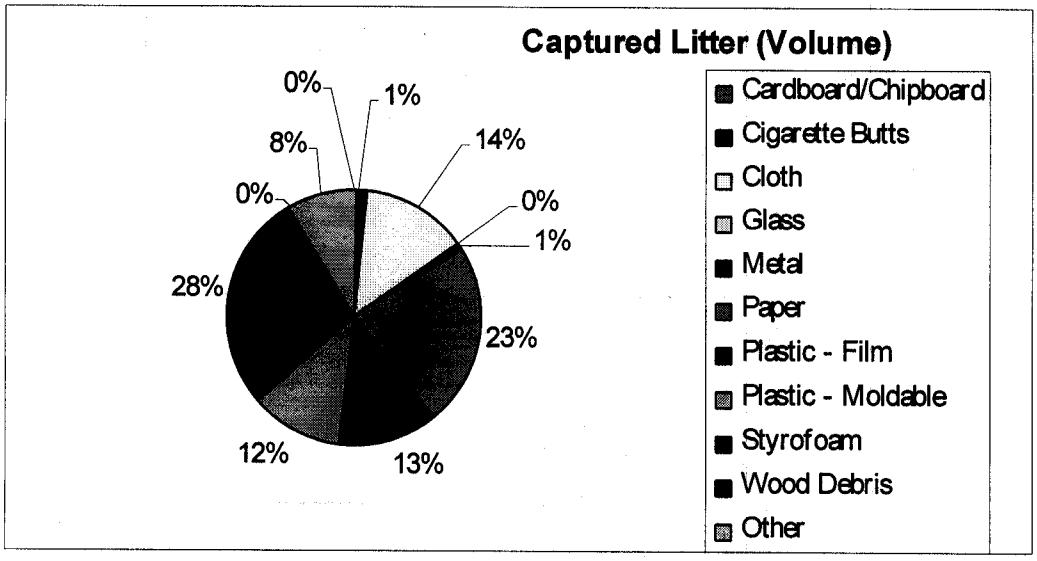
Litter: 25 L Vegetation: 55 L

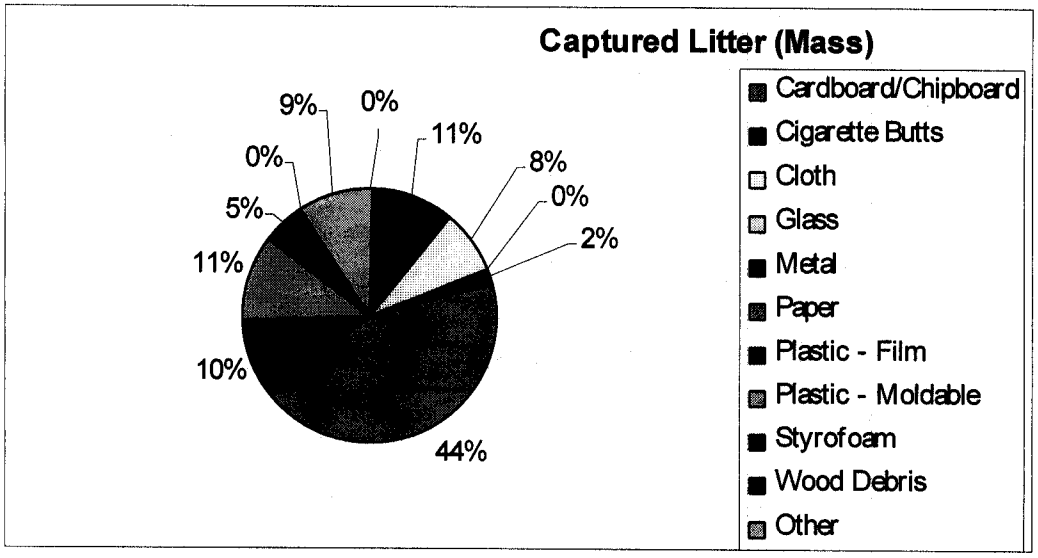


Litter: 1,557 g Vegetation: 36,455 g

Figure 1-41a: I-210 East of Orcas Avenue CDS Gross Pollutant Characterization

January 16, 2001 through March 12, 2001





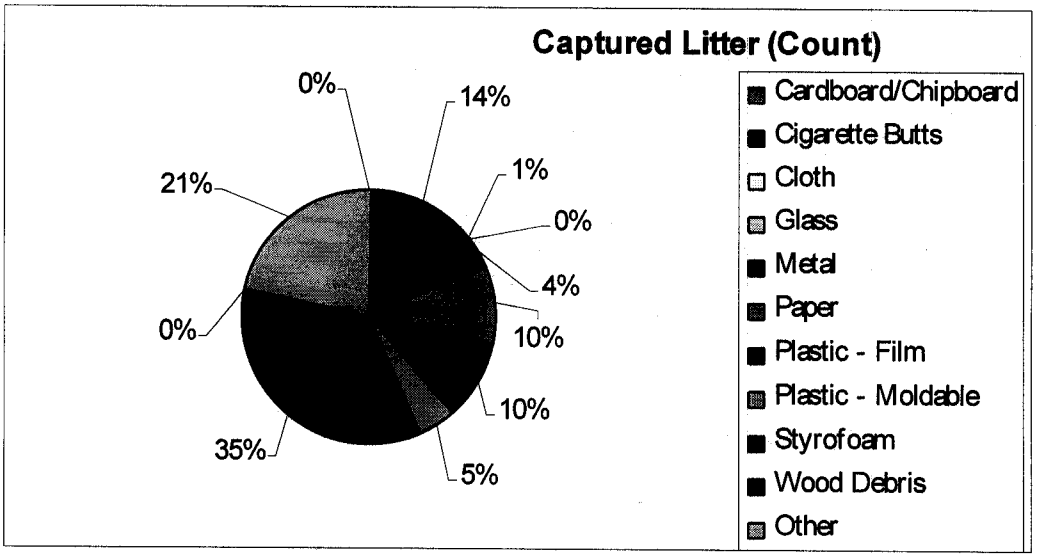
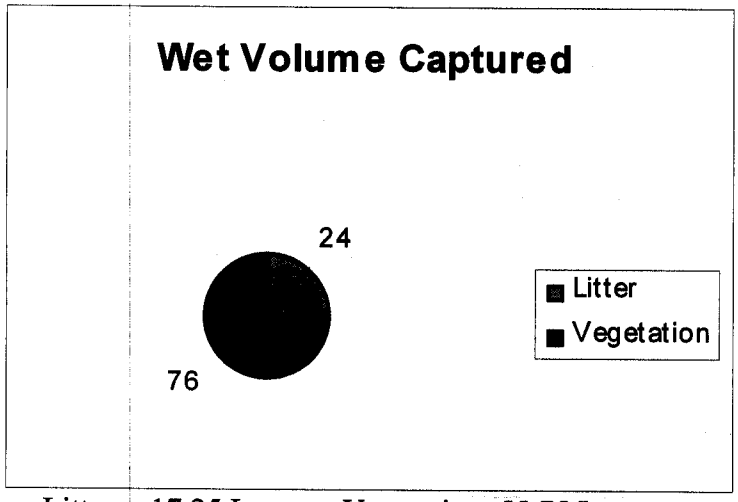
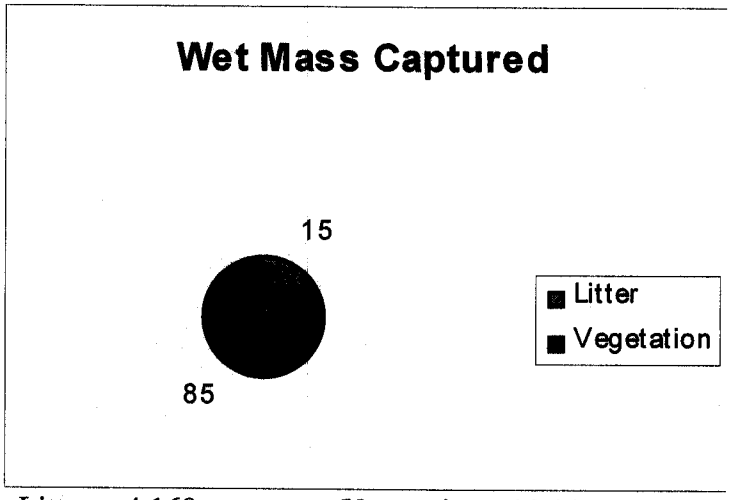


Figure 1-41a: I-210 East of Orcas Avenue CDS Gross Pollutant Characterization

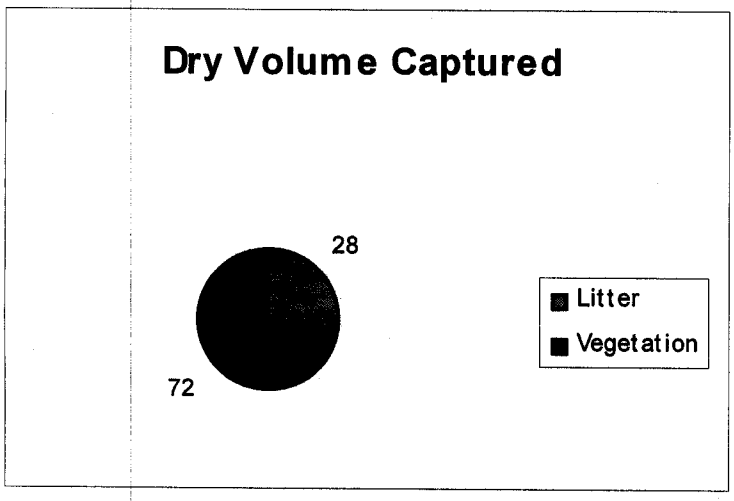
March 12, 2001 through May 2, 2001



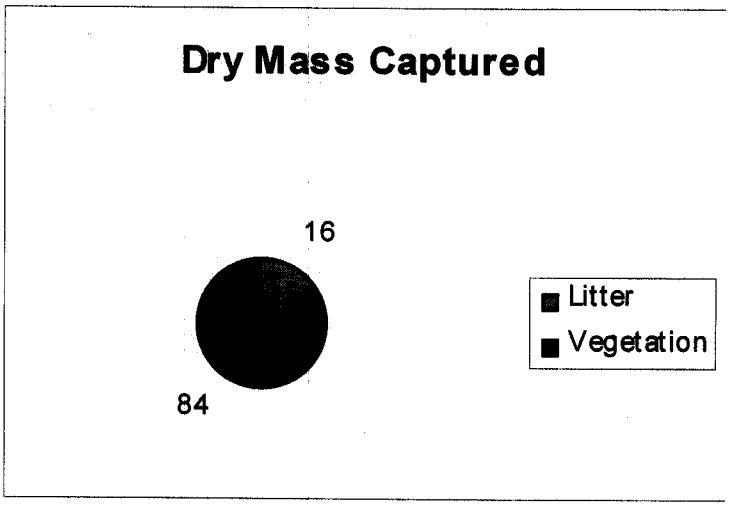
Litter: 17.25 L Vegetation: 55.75 L



Litter: 4,168 g Vegetation: 23,280 g



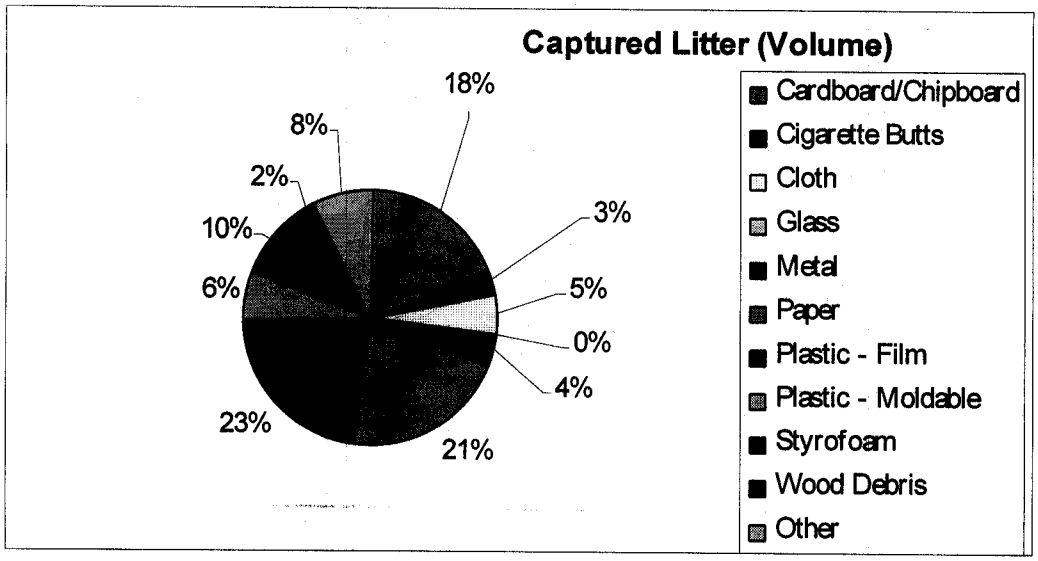
Litter: 22 L Vegetation: 57.75 L

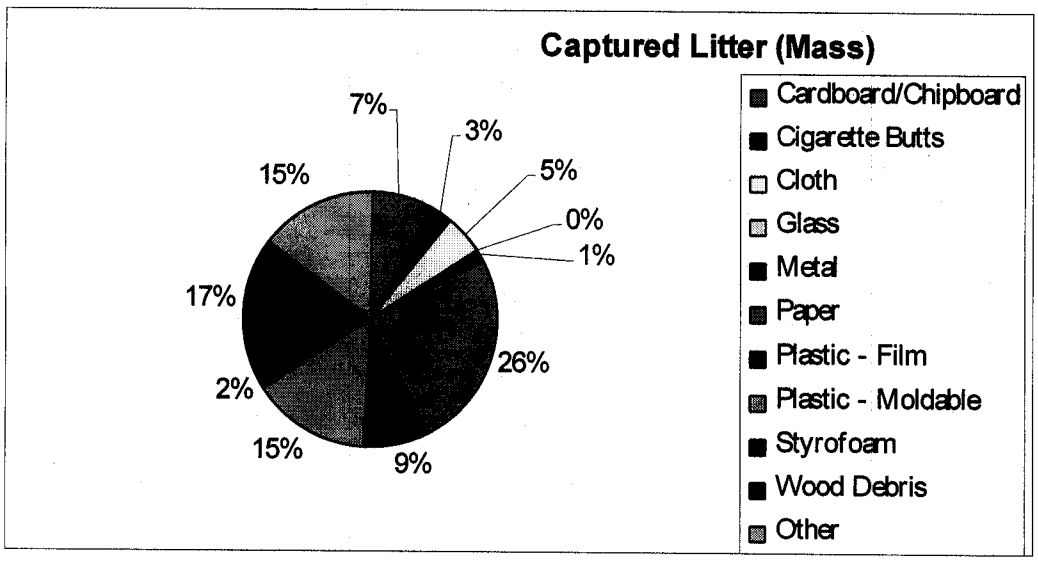


Litter: 2,783 g Vegetation: 15,061 g

Figure 1-41a: I-210 East of Orcas Avenue CDS Gross Pollutant Characterization

March 12, 2001 through May 2, 2001





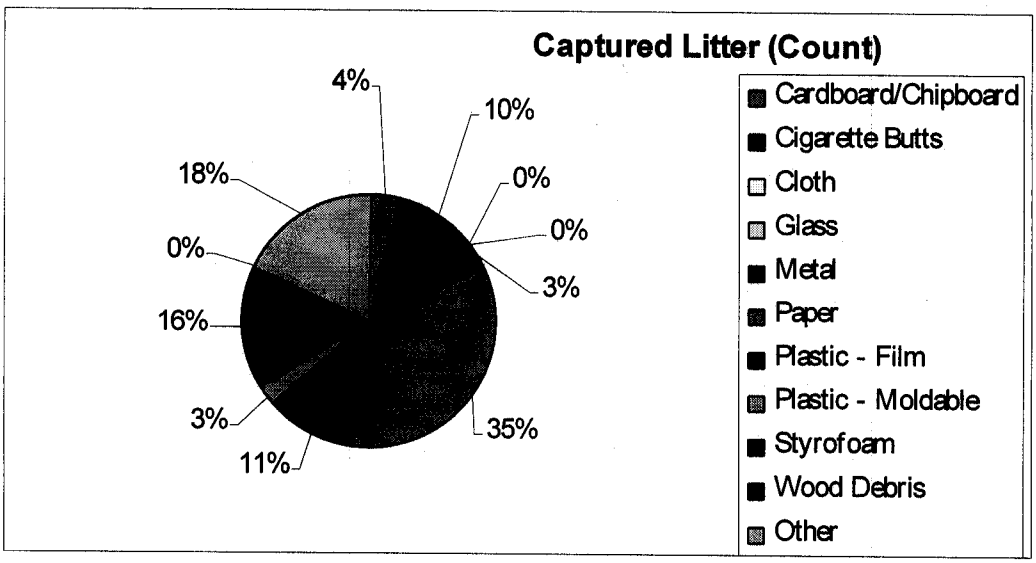
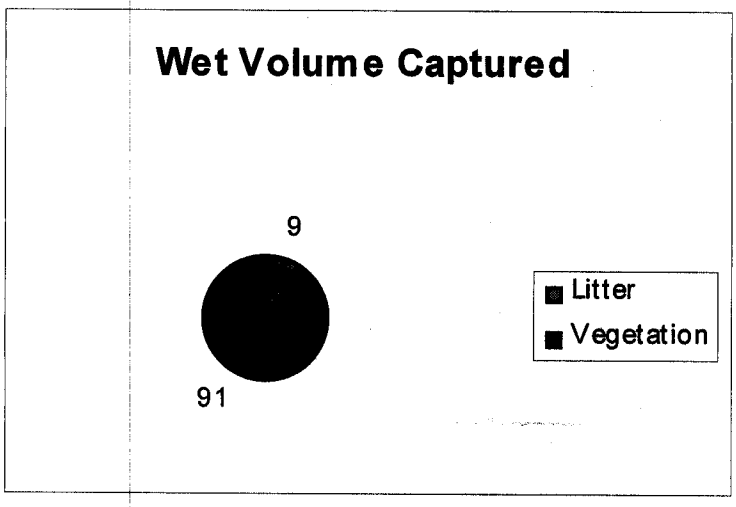
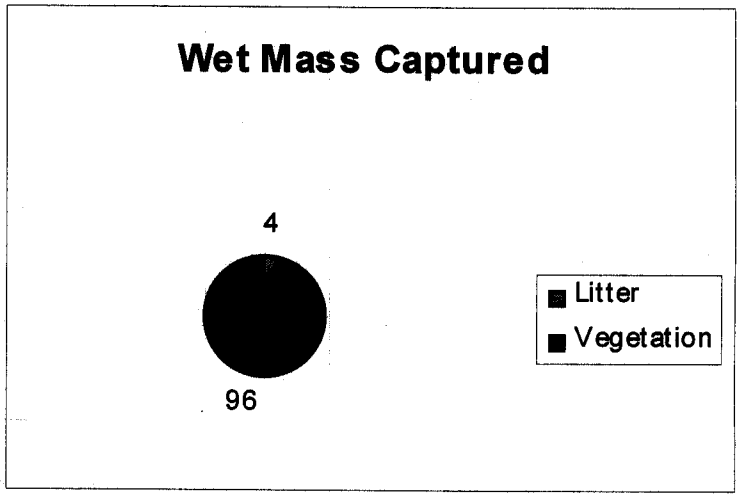


Figure 1-41b: I-210 East of Filmore Street CDS Gross Pollutant Characterization

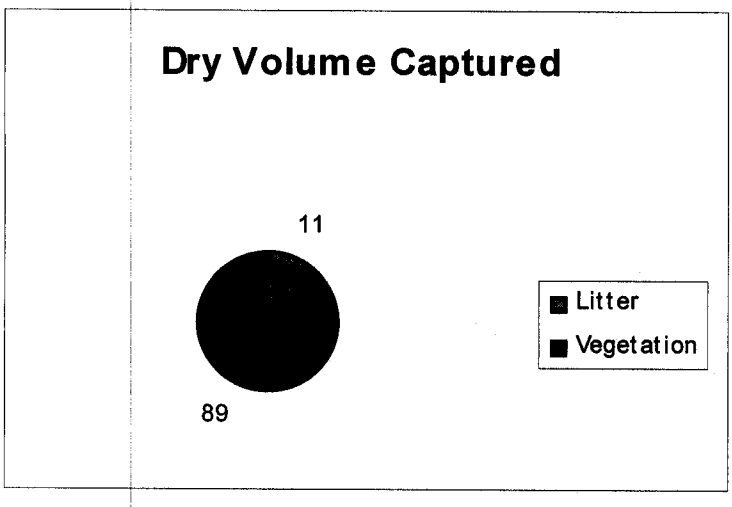
October 1, 2000 through January 16, 2001



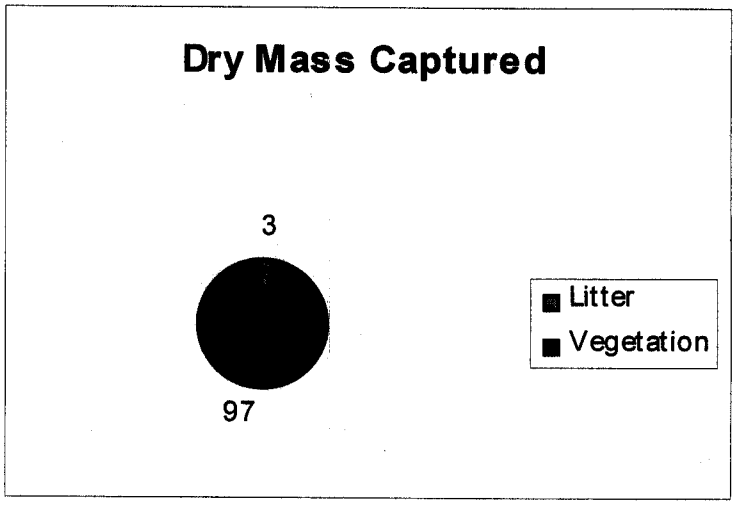
Litter: 10 L Vegetation: 98 L



Litter: 1,949 g Vegetation: 48,359 g



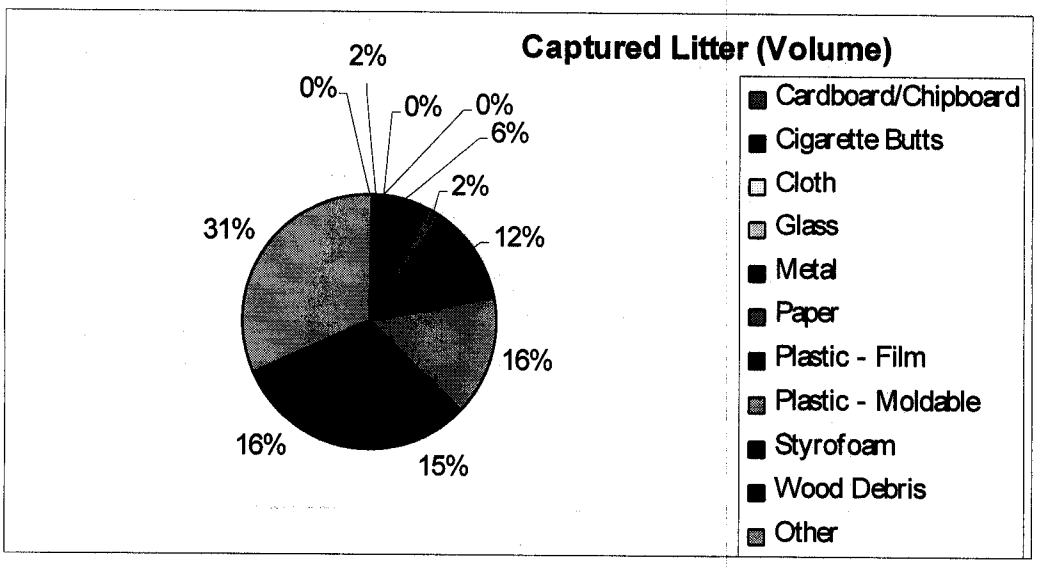
Litter: 12 L Vegetation: 97 L

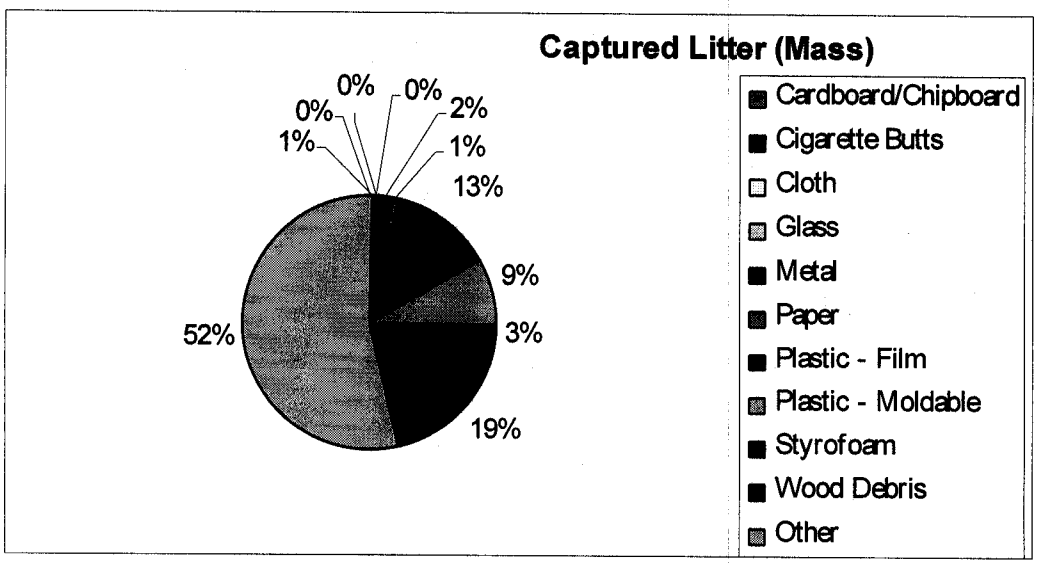


Litter: 1,440 g Vegetation: 45,990 g

Figure 1-41b: I-210 East of Filmore Street CDS Gross Pollutant Characterization

October 1, 2000 through January 16, 2001





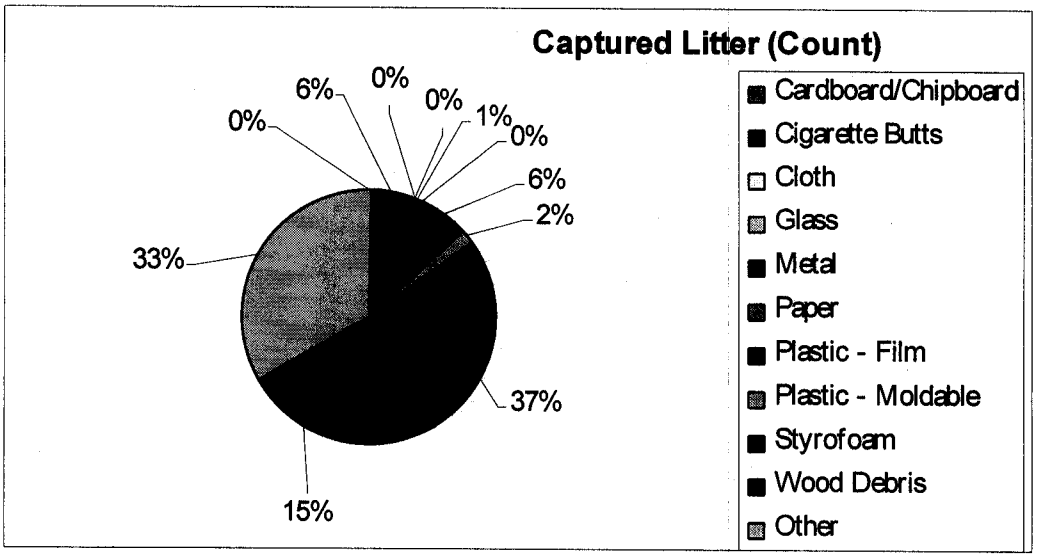
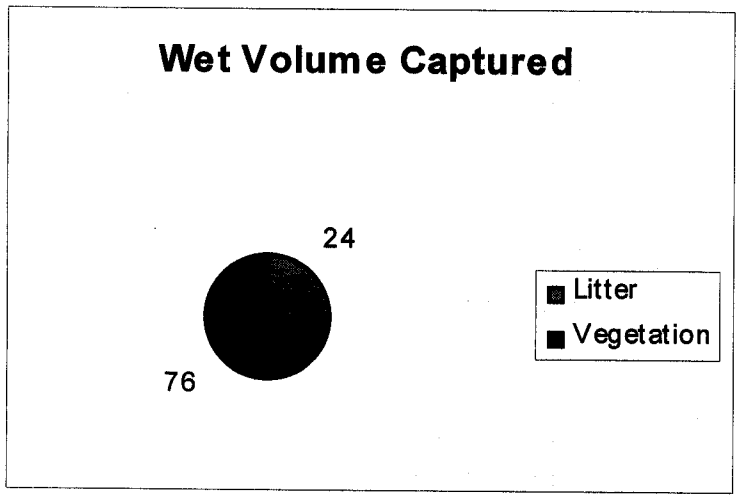
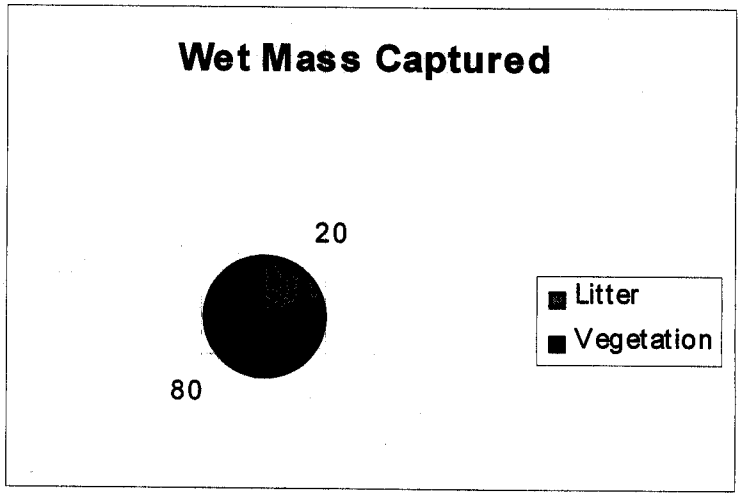


Figure 1-41b: I-210 East of Filmore Street CDS Gross Pollutant Characterization

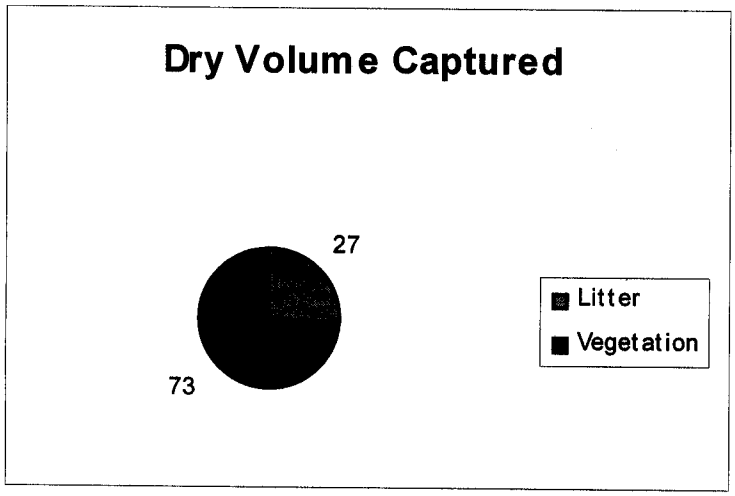
January 16, 2001 through May 2, 2001



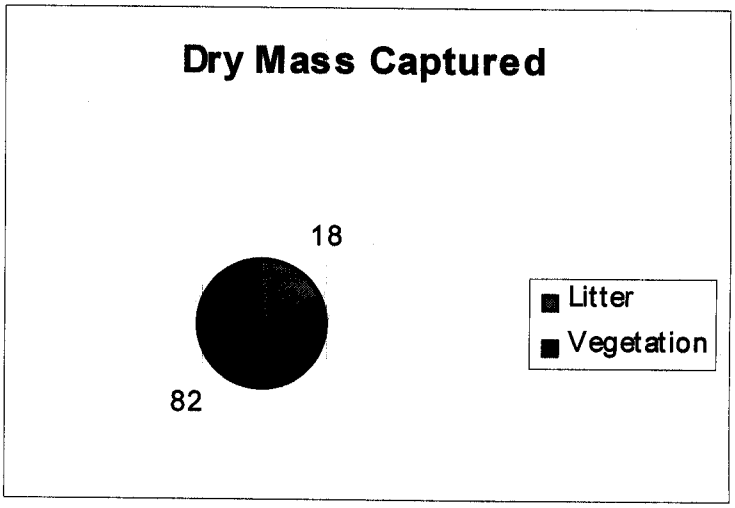
Litter: 23 L Vegetation: 71.5 L



Litter: 8,205 g Vegetation: 32,331 g



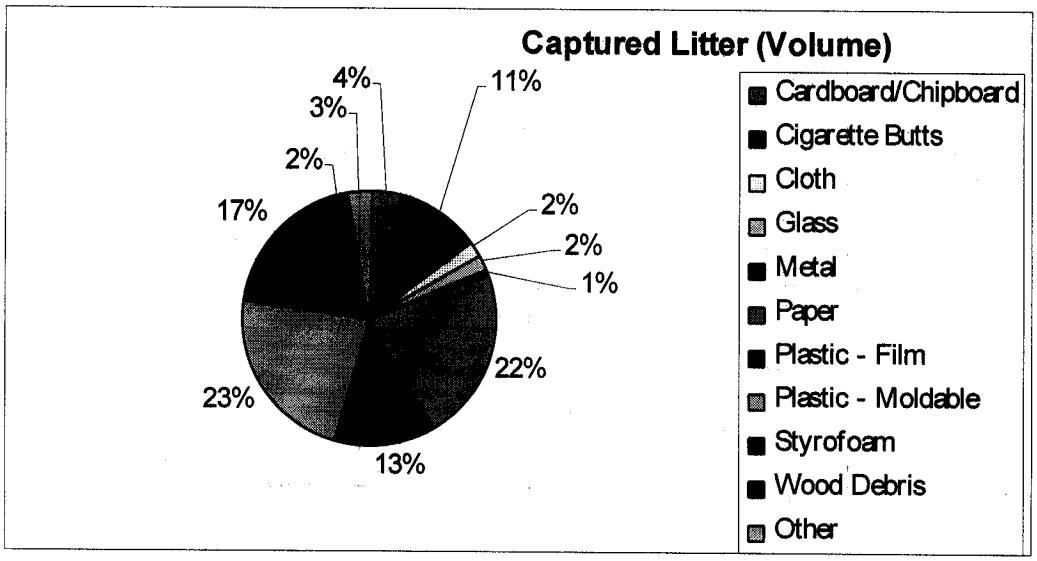
Litter: 26.5 L Vegetation: 73.25 L

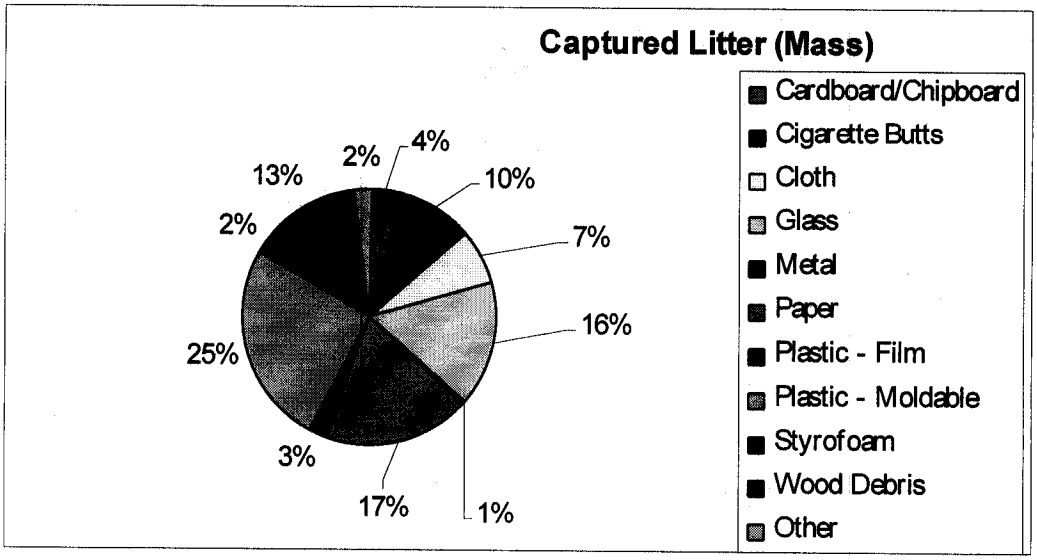


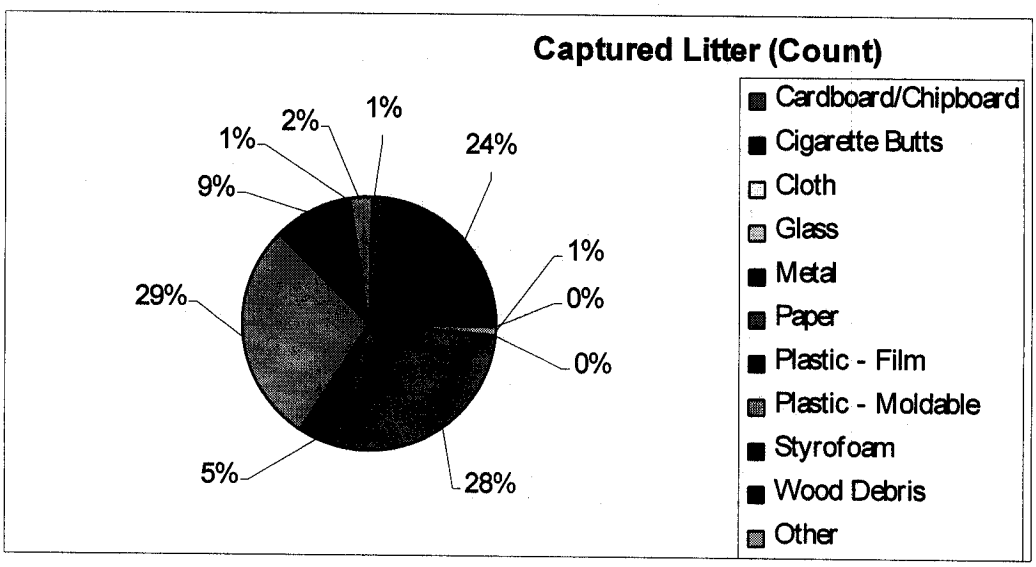
Litter: 5,079 g Vegetation: 22,792 g

Figure 1-41b: I-210 East of Filmore Street CDS Gross Pollutant Characterization

January 16, 2001 through May 2, 2001







Worksheet 1a: I-605/SR-91 Biofiltration Swale

b (ft) =	5.00
Z =	4
s (ft/ft) =	0.020
L (ft) =	131
Q_d (ft^3/s) =	0.064
d_d (ft) =	0.07
A_d (ft^2) =	0.36
V_d (ft/s) =	0.18

	Test 1	Test 2	Test 3	Average
Q_{avg-m} (ft^3/s) =	0.03	0.03	0.01	**0.02**
d_{avg-m} (ft) =	0.03	0.04	0.02	**0.03**
A_c (ft^2) =	0.17	0.19	0.10	**0.15**
V_c (ft/s) =	0.15	0.18	0.11	**0.15**
R_c (ft) =	0.03	0.04	0.02	**0.03**
n_c =	0.14	0.13	0.15	**0.14**
HRT_c (min) =	**14.4**	**12.3**	**20.6**	**15.74**
HRT_m (min) =	**9.6**	**9.2**	**19.6**	**12.80**
r^2 {HRT_c,HRT_m} =	0.96	**Regression line slope =** 1.06		
V_c/V_d =	0.86	1.00	0.60	**0.8**
HRT_d (min) =	8.26	9.24	11.79	**9.8**

Test	Date/Time	Fluorescence (ppm)	Flow Depth (ft)	Flow Rate (cfs)
1-0	2/25/01 16:30	0	0.03	0.026
1-1	2/25/01 16:32	800.2	0.03	0.025
1-2	2/25/01 16:34	963.3	0.03	0.017
1-3	2/25/01 16:36	1062	0.03	0.019
1-4	2/25/01 16:38	1520	0.03	0.019
1-5	2/25/01 16:40	1243	0.03	0.02
1-6	2/25/01 16:42	860	0.03	0.02
1-7	2/25/01 16:44	715.6	0.03	0.017
1-8	2/25/01 16:46	611.9	0.03	0.018
1-9	2/25/01 16:48	466.6	0.03	0.019
1-10	2/25/01 16:50	378.2	0.03	0.026
1-11	2/25/01 16:52	250.8	0.04	0.033
1-12	2/25/01 16:54	206.9	0.04	0.033
1-13	2/25/01 16:56	142.7	0.04	0.036
1-14	2/25/01 16:58	127.5	0.04	0.038
1-15	2/25/01 17:00	107.4	0.04	0.036
		Average	**0.03**	**0.03**
2-0	2/25/01 17:17	0	0.04	0.035
2-1	2/25/01 17:19	317.9	0.04	0.043
2-2	2/25/01 17:21	1748	0.04	0.048
2-3	2/25/01 17:23	3191	0.05	0.05
2-4	2/25/01 17:25	3380	0.05	0.05
2-5	2/25/01 17:27	2389	0.04	0.046
2-6	2/25/01 17:29	2328	0.04	0.041
2-7	2/25/01 17:31	1473	0.04	0.038
2-8	2/25/01 17:33	1344	0.04	0.032
2-9	2/25/01 17:35	1079	0.04	0.03
2-10	2/25/01 17:37	1031	0.03	0.025
2-11	2/25/01 17:39	745.4	0.03	0.025
2-12	2/25/01 17:41	484.9	0.03	0.022
2-13	2/25/01 17:43	477.9	0.03	0.022
2-14	2/25/01 17:45	410.3	0.03	0.022
2-15	2/25/01 17:47	294.7	0.03	0.021
		Average	**0.04**	**0.03**
3-0	2/25/01 18:02	0	0.03	0.017
3-1	2/25/01 18:04	164.8	0.03	0.017
3-2	2/25/01 18:06	253.4	0.03	0.022
3-3	2/25/01 18:08	559.8	0.03	0.02
3-4	2/25/01 18:10	1230	0.03	0.019
3-5	2/25/01 18:12	2190	0.03	0.017
3-6	2/25/01 18:14	2613	0.02	0.012
3-7	2/25/01 18:16	2329	0.02	0.01
3-8	2/25/01 18:18	2030	0.02	0.009
3-9	2/25/01 18:20	1987	0.02	0.007
3-10	2/25/01 18:22	1823	0.02	0.007
3-11	2/25/01 18:24	1906	0.01	0.005
3-12	2/25/01 18:26	1624	0.01	0.005
3-13	2/25/01 18:28	1377	0.01	0.004
3-14	2/25/01 18:30	1380	0.01	0.004
3-15	2/25/01 18:32	1242	0.01	0.003
		Average	**0.02**	**0.01**

Worksheet 1b: Cerritos Maintenance Station

b (ft) =	6.00
Z =	2
s (ft/ft) =	0.021
L (ft) =	65.5
Q_d (ft^3/s) =	0.134
d_d (ft) =	0.11
A_d (ft^2) =	0.63
V_d (ft/s) =	0.21

	Test 1	Test 2	Test 3	Average
Q_{avg-m} (ft^3/s) =	0.06	0.04	0.01	**0.04**
d_{avg-m} (ft) =	0.05	0.05	0.02	**0.04**
A_c (ft^2) =	0.31	0.30	0.14	**0.25**
V_c (ft/s) =	0.20	0.15	0.08	**0.14**
R_c (ft) =	0.05	0.05	0.02	**0.04**
n_c =	0.14	0.19	0.21	**0.18**
HRT_c (min) =	**5.4**	**7.4**	**13.5**	**8.75**
HRT_m (min) =	**2.2**	**5.7**	**10.2**	**6.03**
r^2 {HRT_c,HRT_m} =	0.96	**Regression line slope =** 0.74		
V_c/V_d =	0.95	0.69	0.38	**0.7**
HRT_d (min) =	2.08	3.95	3.89	**3.3**

Test	Date/Time	Fluorescence (ppm)	Flow Depth (ft)	Flow Rate (cfs)
1-0	2/12/01 11:32	0	0.13	0.293
1-1	2/12/01 11:34	3096	0.11	0.211
1-2	2/12/01 11:36	487.9	0.10	0.145
1-3	2/12/01 11:38	212.1	0.08	0.098
1-4	2/12/01 11:40	151.7	0.07	0.066
1-5	2/12/01 11:42	131.9	0.05	0.046
1-6	2/12/01 11:44	105.5	0.05	0.035
1-7	2/12/01 11:46	79.58	0.04	0.028
1-8	2/12/01 11:48	66.17	0.04	0.02
1-9	2/12/01 11:50	59.75	0.03	0.014
1-10	2/12/01 11:52	55.88	0.03	0.01
1-11	2/12/01 11:54	53.26	0.02	0.008
1-12	2/12/01 11:56	52.05	0.02	0.006
1-13	2/12/01 11:58	50.85	0.02	0.005
1-14	2/12/01 12:00	49.59	0.01	0.004
1-15	2/12/01 12:02	49.47	0.01	0.003
		Average	**0.05**	**0.06**
2-0	2/19/01 17:33	0	0.03	0.017
2-1	2/19/01 17:35	1812	0.03	0.016
2-2	2/19/01 17:37	4305	0.03	0.014
2-3	2/19/01 17:39	4393	0.03	0.014
2-4	2/19/01 17:41	2780	0.03	0.015
2-5	2/19/01 17:43	1582	0.03	0.017
2-6	2/19/01 17:45	926	0.04	0.02
2-7	2/19/01 17:47	630.6	0.04	0.021
2-8	2/19/01 17:49	497.6	0.04	0.023
2-9	2/19/01 17:51	303.5	0.04	0.029
2-10	2/19/01 17:53	177.8	0.06	0.049
2-11	2/19/01 17:55	105.4	0.07	0.08
2-12	2/19/01 17:57	40.46	0.08	0.101
2-13	2/19/01 17:59	27.1	0.08	0.103
2-14	2/19/01 18:01	27.35	0.08	0.1
2-15	2/19/01 18:03	25.35	0.08	0.091
		Average	**0.05**	**0.04**
3-0	2/19/01 18:18	0	0.05	0.04
3-1	2/19/01 18:20	3917	0.05	0.032
3-2	2/19/01 18:22	4439	0.04	0.025
3-3	2/19/01 18:24	4965	0.04	0.02
3-4	2/19/01 18:26	3608	0.03	0.015
3-5	2/19/01 18:28	2991	0.03	0.011
3-6	2/19/01 18:30	2564	0.02	0.008
3-7	2/19/01 18:32	2467	0.02	0.007
3-8	2/19/01 18:34	2246	0.02	0.006
3-9	2/19/01 18:36	1944	0.02	0.005
3-10	2/19/01 18:38	1784	0.01	0.004
3-11	2/19/01 18:40	1707	0.01	0.003
3-12	2/19/01 18:42	1635	0.01	0.003
3-13	2/19/01 18:44	1588	0.01	0.002
3-14	2/19/01 18:46	1483	0.01	0.002
3-15	2/19/01 18:48	1383	0.01	0.002
		Average	**0.02**	**0.01**

Worksheet 1c: I-5/I-605 Biofiltration Swale

b (ft) =	6.00
Z =	2
s (ft/ft) =	0.025
L (ft) =	125.5
Q_d (ft^3/s) =	0.265
d_d (ft) =	0.16
A_d (ft^2) =	0.95
V_d (ft/s) =	0.28

	Test 1	Test 2	Test 3	Average
Q_{avg-m} (ft^3/s) =	0.03	0.03	0.03	**0.03**
d_{avg-m} (ft) =	0.03	0.03	0.03	**0.03**
A_c (ft^2) =	0.18	0.19	0.20	**0.19**
V_c (ft/s) =	0.17	0.15	0.15	**0.16**
R_c (ft) =	0.03	0.03	0.03	**0.03**
n_c =	0.13	0.16	0.16	**0.15**
HRT_c (min) =	**12.7**	**14.3**	**13.6**	**13.50**
HRT_m (min) =	**10.0**	**6.2**	**6.0**	**7.40**
r^2 {HRT_c,HRT_m} =	0.76	Regression line slope = -1.96		
V_c/V_d =	0.59	0.53	0.56	**0.6**
HRT_d (min) =	5.95	3.27	3.34	**4.2**

Test	Date/Time	Fluorescence (ppm)	Flow Depth (ft)	Flow Rate (cfs)
1-0	2/12/01 11:39	0	0.05	0.082
1-1	2/12/01 11:41	447.8	0.05	0.077
1-2	2/12/01 11:43	3962	0.05	0.056
1-3	2/12/01 11:45	4227	0.04	0.05
1-4	2/12/01 11:47	3604	0.04	0.041
1-5	2/12/01 11:49	2837	0.03	0.03
1-6	2/12/01 11:51	2309	0.03	0.031
1-7	2/12/01 11:53	1917	0.03	0.023
1-8	2/12/01 11:55	1636	0.03	0.02
1-9	2/12/01 11:57	1467	0.02	0.017
1-10	2/12/01 11:59	1277	0.02	0.01
1-11	2/12/01 12:01	1142	0.02	0.01
1-12	2/12/01 12:03	1133	0.01	0.006
1-13	2/12/01 12:05	948.9	0.01	0.005
1-14	2/12/01 12:07	946.1	0.01	0.003
1-15	2/12/01 12:09	852.5	0.01	0.002
		Average	**0.03**	**0.03**
2-0	2/19/01 16:34	0	0.02	0.015
2-1	2/19/01 16:36	219.3	0.03	0.022
2-2	2/19/01 16:38	2987	0.03	0.027
2-3	2/19/01 16:40	2850	0.04	0.034
2-4	2/19/01 16:42	1660	0.03	0.033
2-5	2/19/01 16:44	914.5	0.04	0.034
2-6	2/19/01 16:46	587.9	0.04	0.043
2-7	2/19/01 16:48	440.8	0.04	0.036
2-8	2/19/01 16:50	234.1	0.03	0.031
2-9	2/19/01 16:52	248.8	0.03	0.03
2-10	2/19/01 16:54	205.3	0.03	0.031
2-11	2/19/01 16:56	176.3	0.03	0.027
2-12	2/19/01 16:58	154.3	0.03	0.024
2-13	2/19/01 17:00	140.6	0.03	0.022
2-14	2/19/01 17:02	125.1	0.03	0.023
2-15	2/19/01 17:04	114.8	0.03	0.022
		Average	**0.03**	**0.03**
3-0	2/19/01 17:15	0	0.03	0.027
3-1	2/19/01 17:17	420.8	0.03	0.03
3-2	2/19/01 17:19	3098	0.03	0.028
3-3	2/19/01 17:21	2966	0.03	0.031
3-4	2/19/01 17:23	1780	0.04	0.036
3-5	2/19/01 17:25	945.4	0.04	0.039
3-6	2/19/01 17:27	485.1	0.04	0.046
3-7	2/19/01 17:29	303.1	0.04	0.046
3-8	2/19/01 17:31	245.2	0.04	0.036
3-9	2/19/01 17:33	200.5	0.04	0.038
3-10	2/19/01 17:35	159.7	0.03	0.027
3-11	2/19/01 17:37	151.3	0.03	0.026
3-12	2/19/01 17:39	150.2	0.03	0.026
3-13	2/19/01 17:41	133.4	0.03	0.024
3-14	2/19/01 17:43	125.3	0.03	0.022
3-15	2/19/01 17:45	111.3	0.03	0.024
		Average	**0.03**	**0.03**

Worksheet 1d: I-605 @ Carson Biofiltration Swale

b (ft) =	4.50
Z =	2
s (ft/ft) =	0.020
L (ft) =	131
Q_d (ft^3/s) =	0.212
d_d (ft) =	0.22
A_d (ft^2) =	1.00
V_d (ft/s) =	0.21

	Test 1	Test 2	Test 3	Average
Q_{avg-m} (ft^3/s) =	0.04	0.10	0.01	**0.05**
d_{avg-m} (ft) =	0.07	0.12	0.04	**0.08**
A_c (ft^2) =	0.34	0.55	0.20	**0.37**
V_c (ft/s) =	0.12	0.17	0.07	**0.12**
R_c (ft) =	0.07	0.11	0.04	**0.07**
n_c =	0.29	0.28	0.37	**0.31**
HRT_c (min) =	**17.9**	**12.5**	**32.2**	**20.86**
HRT_m (min) =	**10.5**	**7.9**	**22.6**	**13.67**
r^2 {HRT_c,HRT_m} =	0.99	Regression line slope = 0.61		
V_c/V_d =	0.58	0.82	0.32	**0.6**
HRT_d (min) =	6.05	6.49	7.23	**6.6**

Test	Date/Time	Fluorescence (ppm)	Flow Depth (ft)	Flow Rate (cfs)
1-0	2/12/01 11:42	0	0.02	0.002
1-1	2/12/01 11:44	443.4	0.02	0.002
1-2	2/12/01 11:46	693.8	0.09	0.058
1-3	2/12/01 11:48	665.7	0.10	0.069
1-4	2/12/01 11:50	520.2	0.10	0.069
1-5	2/12/01 11:52	454	0.10	0.067
1-6	2/12/01 11:54	335.8	0.09	0.058
1-7	2/12/01 11:56	327.7	0.09	0.058
1-8	2/12/01 11:58	280.1	0.08	0.048
1-9	2/12/01 12:00	208	0.08	0.044
1-10	2/12/01 12:02	327.5	0.08	0.042
1-11	2/12/01 12:04	179.1	0.08	0.039
1-12	2/12/01 12:06	173.3	0.07	0.036
1-13	2/12/01 12:08	156	0.07	0.03
1-14	2/12/01 12:10	144.8	0.06	0.025
1-15	2/12/01 12:12	131.2	0.06	0.027
		Average	**0.07**	**0.04**
2-0	2/24/01 13:30	0	0.14	0.144
2-1	2/24/01 13:32	190.9	0.14	0.141
2-2	2/24/01 13:34	941.6	0.13	0.121
2-3	2/24/01 13:36	4654	0.12	0.109
2-4	2/24/01 13:38	1747	0.12	0.097
2-5	2/24/01 13:40	1492	0.11	0.092
2-6	2/24/01 13:42	1127	0.11	0.086
2-7	2/24/01 13:44	789.9	0.11	0.089
2-8	2/24/01 13:46	530.6	0.11	0.084
2-9	2/24/01 13:48	358.3	0.11	0.086
2-10	2/24/01 13:50	468.5	0.11	0.089
2-11	2/24/01 13:52	353.4	0.11	0.089
2-12	2/24/01 13:54	288.7	0.11	0.086
2-13	2/24/01 13:56	224.3	0.11	0.084
2-14	2/24/01 13:58	191.6	0.11	0.076
2-15	2/24/01 14:00	131.3	0.10	0.074
		Average	**0.12**	**0.10**
3-0	2/24/01 14:35	0	0.06	0.022
3-1	2/24/01 14:37	125.3	0.05	0.02
3-2	2/24/01 14:39	677.3	0.05	0.017
3-3	2/24/01 14:41	1275	0.05	0.017
3-4	2/24/01 14:43	1732	0.05	0.016
3-5	2/24/01 14:45	1976	0.05	0.016
3-6	2/24/01 14:47	2155	0.05	0.015
3-7	2/24/01 14:49	2328	0.04	0.014
3-8	2/24/01 14:51	2214	0.04	0.012
3-9	2/24/01 14:53	2170	0.04	0.011
3-10	2/24/01 14:55	2050	0.04	0.01
3-11	2/24/01 14:57	1980	0.03	0.009
3-12	2/24/01 14:59	1946	0.04	0.009
3-13	2/24/01 15:01	1740	0.03	0.009
3-14	2/24/01 15:03	1698	0.03	0.008
3-15	2/24/01 15:05	1625	0.03	0.008
		Average	**0.04**	**0.01**

Worksheet 2a
Foothill Maintenance Station StreamGuard DII % Removal Efficiency Calculations (Storm-by-Storm Method)

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Copper	Used StreamGuard Geotextile Fabric	66.5	1338.12	—	—	0.000196
Copper	Used StreamGuard Absorbent Material	14.8	583.4	—	—	0.000019
Copper	Used StreamGuard Debris/litter/sediment	89.9	2517.48	—	—	0.000496
Copper	*Used Media Subtotal*					*0.000713*
Copper	Unused StreamGuard Geotextile Fabric	0.22	943.9	—	—	0.000000
Copper	Unused StreamGuard Absorbent Material	0.24	443.15	—	—	0.000000
Copper	*Unused Media Subtotal*					*0.000001*
Copper	Effluent Water from 27 October 2000 storm event	—	—	30	1995	0.003728
Copper	Effluent Water from 12 January 2001 storm event	—	—	11	10548	0.007228
Copper	Effluent Water from 24 January 2001 storm event	—	—	14	797	0.000695
Copper	Effluent Water from 10 February 2001 storm event	—	—	15	818	0.000764
Copper	Estimated effluent from unsampled storm events	—	—	17.5	42014	0.045804
Copper	*Effluent Subtotal*					*0.058220*
Copper	Estimated Influent Load					0.058932
Copper	Efficiency (%)					1%
Copper	Efficiency w/o Litter Removal (%)					0%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Lead	Used StreamGuard Geotextile Fabric	132	1338.12	—	—	0.000389
Lead	Used StreamGuard Absorbent Material	26.1	583.4	—	—	0.000033
Lead	Used StreamGuard Debris/litter/sediment	126	2517.48	—	—	0.000698
Lead	*Used Media Subtotal*					*0.001120*
Lead	Unused StreamGuard Geotextile Fabric	0.1	943.9	—	—	0.000000
Lead	Unused StreamGuard Absorbent Material	0.1	443.15	—	—	0.000000
Lead	*Unused Media Subtotal*					*0.000000*
Lead	Effluent Water from 27 October 2000 storm event	—	—	6.0	1995	0.000746
Lead	Effluent Water from 12 January 2001 storm event	—	—	1.8	10548	0.001183
Lead	Effluent Water from 24 January 2001 storm event	—	—	3.9	797	0.000194
Lead	Effluent Water from 10 February 2001 storm event	—	—	6.8	818	0.000347
Lead	Estimated effluent from unsampled storm events	—	—	4.6	42014	0.012105
Lead	*Effluent Subtotal*					*0.014574*
Lead	Estimated Influent Load					0.015693
Lead	Efficiency (%)					7%
Lead	Efficiency w/o Litter Removal (%)					3%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Zinc	Used StreamGuard Geotextile Fabric	1160	1338.12	—	—	0.003415
Zinc	Used StreamGuard Absorbent Material	86.5	583.4	—	—	0.000111
Zinc	Used StreamGuard Debris/litter/sediment	1140	2517.48	—	—	0.006314
Zinc	*Used Media Subtotal*					*0.009840*
Zinc	Unused StreamGuard Geotextile Fabric	3.8	943.9	—	—	0.000008
Zinc	Unused StreamGuard Absorbent Material	0.6	443.15	—	—	0.000001
Zinc	*Unused Media Subtotal*					*0.000008*
Zinc	Effluent Water from 27 October 2000 storm event	—	—	406	1995	0.050459
Zinc	Effluent Water from 12 January 2001 storm event	—	—	138	10548	0.090661
Zinc	Effluent Water from 24 January 2001 storm event	—	—	137	797	0.006802
Zinc	Effluent Water from 10 February 2001 storm event	—	—	260	818	0.013249
Zinc	Estimated effluent from unsampled storm events	—	—	*211.4*	42014	0.553204
Zinc	*Effluent Subtotal*					*0.714396*
Zinc	Estimated Influent Load					0.724227
Zinc	Efficiency (%)					1%
Zinc	Efficiency w/o Litter Removal (%)					0%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Petroleum Hydrocarbons	Used StreamGuard Geotextile Fabric	333	1338.12	—	—	0.000980
Petroleum Hydrocarbons	Used StreamGuard Absorbent Material	6950	583.4	—	—	0.011487
Petroleum Hydrocarbons	Used StreamGuard Debris/litter/sediment	10800	2517.48	—	—	0.060369
Petroleum Hydrocarbons	*Used Media Subtotal*					*0.072837*
Petroleum Hydrocarbons	Unused StreamGuard Geotextile Fabric	684	943.9	—	—	0.001420
Petroleum Hydrocarbons	Unused StreamGuard Absorbent Material	1970	443.15	—	—	0.001921
Petroleum Hydrocarbons	*Unused Media Subtotal*					*0.003341*
Petroleum Hydrocarbons	Effluent Water from 27 October 2000 storm event	—	—	916	1995	0.113843
Petroleum Hydrocarbons	Effluent Water from 12 January 2001 storm event	—	—	500	10548	0.328554
Petroleum Hydrocarbons	Effluent Water from 24 January 2001 storm event	—	—	500	797	0.024825
Petroleum Hydrocarbons	Effluent Water from 10 February 2001 storm event	—	—	500	818	0.025479
Petroleum Hydrocarbons	Estimated effluent from unsampled storm events	—	—	604	42014	1.580876
Petroleum Hydrocarbons	*Effluent Subtotal*					*2.073578*
Petroleum Hydrocarbons	Estimated Influent Load					2.143073
Petroleum Hydrocarbons	Efficiency (%)					3%
Petroleum Hydrocarbons	Efficiency w/o Litter Removal (%)					0%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (mg/L)	Runoff Volume (ft^3)	Load (lbs)
Sediment[1]	Used StreamGuard Geotextile Fabric	—	1338.12	—	—	2.950019
Sediment[1]	Used StreamGuard Absorbent Material	—	583.4	—	—	1.286164
Sediment	Used StreamGuard Debris/litter/sediment	—	2517.48	—	—	5.550036
Sediment	*Used Media Subtotal*					*9.786219*
Sediment	Unused StreamGuard Geotextile Fabric	—	943.9	—	—	2.080922
Sediment	Unused StreamGuard Absorbent Material	—	443.15	—	—	0.976968
Sediment	*Unused Media Subtotal*					*3.057890*
Sediment	Effluent Water from 27 October 2000 storm event	—	—	8	1995	0.994259
Sediment	Effluent Water from 12 January 2001 storm event	—	—	13	10548	8.542408
Sediment	Effluent Water from 24 January 2001 storm event	—	—	4	797	0.198603
Sediment	Effluent Water from 10 February 2001 storm event	—	—	33	818	1.681644
Sediment	Estimated effluent from unsampled storm events	—	—	15	42014	37.951495
Sediment	*Effluent Subtotal*					*49.368410*
Sediment	Estimated Influent Load					56.096739
Sediment	Efficiency (%)					12%
Sediment	Efficiency w/o Litter Removal (%)					2%

[1] Mass of unused DII element subtracted from mass of used DII element.

Note 1: Dissolved solids fraction and gross solids fraction of effluent not accounted for in mass balance.

Note 2: Efficiencies include sediment/debris entrapped by the DII. Extensive maintenance was conducted before, during, and after storm events to clear sediment and debris from the DII. Sediment and debis removed from the DII was temporarily stored onsite and then analyzed at the same time as DII.

Note 3: Where the individual storm EMCs showed evidence of normality, the unsampled effluent concentration was estimated by averaging individual storm EMCs.

Note 4: Where the individual storm EMCs showed evidence of non-normality, the unsampled effluent concentration was estimated by log-transforming individual storm EMCs, averaging, and then transforming back. These EMCs are italicized.

Note 5: Flow measured continuously while DII was installed.

Note 6: Reporting Limit was used where results were "<" Reporting Limit.

Calculated by: Ed Othmer

Checked by: Chris Knoche

Worksheet 2b
Las Flores Maintenance Station First StreamGuard DII % Removal Efficiency Calculations (Storm-by-Storm Method)

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Copper	Used StreamGuard Geotextile Fabric	31	1315.44	---	---	0.000090
Copper	Used StreamGuard Absorbent Material	8.8	544.32	---	---	0.000011
Copper	Used StreamGuard Debris/litter/sediment	13.2	4853.52	---	---	0.000141
Copper	*Used Media Subtotal*					*0.000241*
Copper	Unused StreamGuard Geotextile Fabric	0.22	943.9	---	---	0.000000
Copper	Unused StreamGuard Absorbent Material	0.24	443.15	---	---	0.000000
Copper	*Unused Media Subtotal*					*0.000001*
Copper	Effluent Water from 27 October 2000 storm event	---	---	15.7	217	0.000212
Copper	Effluent Water from 12 January 2001 storm event	---	---	6.1	933	0.000355
Copper	Estimated effluent from unsampled storm events	---	---	10.9	132	0.000090
Copper	*Effluent Subtotal*					*0.000656*
Copper	Estimated Influent Load					0.000897
Copper	Efficiency (%)					27%
Copper	Efficiency w/o Litter Removal (%)					13%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Lead	Used StreamGuard Geotextile Fabric	33.6	1315.44	---	---	0.000097
Lead	Used StreamGuard Absorbent Material	6.7	544.32	---	---	0.000008
Lead	Used StreamGuard Debris/litter/sediment	13.5	4853.52	---	---	0.000144
Lead	*Used Media Subtotal*					*0.000249*
Lead	Unused StreamGuard Geotextile Fabric	0.1	943.9	---	---	0.000000
Lead	Unused StreamGuard Absorbent Material	0.1	443.15	---	---	0.000000
Lead	*Unused Media Subtotal*					*0.000000*
Lead	Effluent Water from 27 October 2000 storm event	---	---	5.9	217	0.000080
Lead	Effluent Water from 12 January 2001 storm event	---	---	1.4	933	0.000061
Lead	Estimated effluent from unsampled storm events	---	---	3.7	132	0.000030
Lead	*Effluent Subtotal*					*0.000191*
Lead	Estimated Influent Load					0.000440
Lead	Efficiency (%)					57%
Lead	Efficiency w/o Litter Removal (%)					35%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Zinc	Used StreamGuard Geotextile Fabric	175	1315.44	---	---	0.000506
Zinc	Used StreamGuard Absorbent Material	47.2	544.32	---	---	0.000057
Zinc	Used StreamGuard Debris/litter/sediment	88.3	4853.52	---	---	0.000943
Zinc	*Used Media Subtotal*					*0.001506*
Zinc	Unused StreamGuard Geotextile Fabric	3.8	943.9	---	---	0.000008
Zinc	Unused StreamGuard Absorbent Material	0.8	443.15	---	---	0.000001
Zinc	*Unused Media Subtotal*					*0.000008*
Zinc	Effluent Water from 27 October 2000 storm event	---	---	123	217	0.001663
Zinc	Effluent Water from 12 January 2001 storm event	---	---	52	933	0.003022
Zinc	Estimated effluent from unsampled storm events	---	---	80.0	132	0.000658
Zinc	*Effluent Subtotal*					*0.005343*
Zinc	Estimated Influent Load					0.006840
Zinc	Efficiency (%)					22%
Zinc	Efficiency w/o Litter Removal (%)					9%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Petroleum Hydrocarbons	Used StreamGuard Geotextile Fabric	4700	1315.44	---	---	0.013802
Petroleum Hydrocarbons	Used StreamGuard Absorbent Material	36600	544.32	---	---	0.043829
Petroleum Hydrocarbons	Used StreamGuard Debris/litter/sediment	4270	4853.52	---	---	0.045594
Petroleum Hydrocarbons	*Used Media Subtotal*					*0.103024*
Petroleum Hydrocarbons	Unused StreamGuard Geotextile Fabric	684	943.9	---	---	0.001420
Petroleum Hydrocarbons	Unused StreamGuard Absorbent Material	1970	443.15	---	---	0.001921
Petroleum Hydrocarbons	*Unused Media Subtotal*					*0.003341*
Petroleum Hydrocarbons	Effluent Water from 27 October 2000 storm event	---	---	1174	217	0.015871
Petroleum Hydrocarbons	Effluent Water from 12 January 2001 storm event	---	---	500	933	0.029082
Petroleum Hydrocarbons	Estimated effluent from unsampled storm events	---	---	837	132	0.006863
Petroleum Hydrocarbons	*Effluent Subtotal*					*0.051815*
Petroleum Hydrocarbons	Estimated Influent Load					0.151496
Petroleum Hydrocarbons	Efficiency (%)					66%
Petroleum Hydrocarbons	Efficiency w/o Litter Removal (%)					51%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (mg/L)	Runoff Volume (ft^3)	Load (lbs)
Sediment[1]	Used StreamGuard Geotextile Fabric	---	1315.44	---	---	2.900019
Sediment[1]	Used StreamGuard Absorbent Material	---	544.32	---	---	1.200008
Sediment	Used StreamGuard Debris/litter/sediment	---	4853.52	---	---	10.700070
Sediment	*Used Media Subtotal*					*14.800097*
Sediment	Unused StreamGuard Geotextile Fabric	---	943.9	---	---	2.080922
Sediment	Unused StreamGuard Absorbent Material	---	443.15	---	---	0.976968
Sediment	*Unused Media Subtotal*					*3.057890*
Sediment	Effluent Water from 27 October 2000 storm event	---	---	22	217	0.297406
Sediment	Effluent Water from 12 January 2001 storm event	---	---	89	933	5.172953
Sediment	Estimated effluent from unsampled storm events	---	---	56	132	0.456388
Sediment	*Effluent Subtotal*					*5.926746*
Sediment	Estimated Influent Load					17.868953
Sediment	Efficiency (%)					84%
Sediment	Efficiency w/o Litter Removal (%)					18%

[1] Mass of unused DII element subtracted from mass of used DII element.

Note 1: Dissolved solids fraction and gross solids fraction of effluent not accounted for in mass balance.

Note 2: Efficiencies include sediment/debris entrapped by the DII. Extensive maintenance was conducted before, during, and after storm events to clear sediment and debris from the DII. Sediment and debis removed from the DII was temporarily stored onsite and then analyzed at the same time as DII.

Note 3: Where the individual storm EMCs showed evidence of normality, the unsampled effluent concentration was estimated by averaging individual storm EMCs.

Note 4: Where the individual storm EMCs showed evidence of non-normality, the unsampled effluent concentration was estimated by log-transforming individual storm EMCs, averaging, and then transforming back. These EMCs are italicized.

Note 5: Flow measured continuously while DII was installed.

Note 6: Reporting Limit was used where results were "<" Reporting Limit.

Calculated by: Ed Ohmer

Checked by: Chris Knoche

Worksheet 2c
Las Flores Maintenance Station Second StreamGuard DII % Removal Efficiency Calculations (Storm-by-Storm Method)

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Copper	Used StreamGuard Geotextile Fabric	21.4	1905.12	—	—	0.000090
Copper	Used StreamGuard Absorbent Material	7.7	751	—	—	0.000013
Copper	Used StreamGuard Debris/litter/sediment	12.1	11067.84	—	—	0.000295
Copper	*Used Media Subtotal*					*0.000397*
Copper	Unused StreamGuard Geotextile Fabric	0.22	943.9	—	—	0.000000
Copper	Unused StreamGuard Absorbent Material	0.24	443.15	—	—	0.000000
Copper	*Unused Media Subtotal*					*0.000001*
Copper	Effluent Water from 24 January 2001 storm event	—	—	18	517	0.000515
Copper	Effluent Water from 11 February 2001 storm event	—	—	7.2	190	0.000085
Copper	Estimated effluent from unsampled storm events	—	—	11.6	4710	0.003404
Copper	*Effluent Subtotal*					*0.004004*
Copper	Estimated Influent Load					0.004401
Copper	Efficiency (%)					9%
Copper	Efficiency w/o Litter Removal (%)					2%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Lead	Used StreamGuard Geotextile Fabric	23.8	1905.12	—	—	0.000100
Lead	Used StreamGuard Absorbent Material	13	751	—	—	0.000021
Lead	Used StreamGuard Debris/litter/sediment	12.1	11067.84	—	—	0.000295
Lead	*Used Media Subtotal*					*0.000416*
Lead	Unused StreamGuard Geotextile Fabric	0.1	943.9	—	—	0.000000
Lead	Unused StreamGuard Absorbent Material	0.1	443.15	—	—	0.000000
Lead	*Unused Media Subtotal*					*0.000000*
Lead	Effluent Water from 24 January 2001 storm event	—	—	2.4	517	0.000077
Lead	Effluent Water from 11 February 2001 storm event	—	—	1.7	190	0.000020
Lead	Estimated effluent from unsampled storm events	—	—	2.1	4710	0.000602
Lead	*Effluent Subtotal*					*0.000699*
Lead	Estimated Influent Load					0.001114
Lead	Efficiency (%)					37%
Lead	Efficiency w/o Litter Removal (%)					18%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Zinc	Used StreamGuard Geotextile Fabric	143	1905.12	—	—	0.090599
Zinc	Used StreamGuard Absorbent Material	46.4	751	—	—	0.000077
Zinc	Used StreamGuard Debris/litter/sediment	86.3	11067.84	—	—	0.002101
Zinc	*Used Media Subtotal*					*0.002777*
Zinc	Unused StreamGuard Geotextile Fabric	3.8	943.9	—	—	0.000008
Zinc	Unused StreamGuard Absorbent Material	0.6	443.15	—	—	0.000001
Zinc	*Unused Media Subtotal*					*0.000008*
Zinc	Effluent Water from 24 January 2001 storm event	—	—	59	517	0.001900
Zinc	Effluent Water from 11 February 2001 storm event	—	—	57	190	0.000675
Zinc	Estimated effluent from unsampled storm events	—	—	*58.0*	4710	0.017016
Zinc	*Effluent Subtotal*					*0.019591*
Zinc	Estimated Influent Load					0.022380
Zinc	Efficiency (%)					12%
Zinc	Efficiency w/o Litter Removal (%)					3%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Petroleum Hydrocarbons	Used StreamGuard Geotextile Fabric	333	1905.12	—	—	0.001396
Petroleum Hydrocarbons	Used StreamGuard Absorbent Material	50600	751	—	—	0.083601
Petroleum Hydrocarbons	Used StreamGuard Debris/litter/sediment	333	11067.84	—	—	0.008108
Petroleum Hydrocarbons	*Used Media Subtotal*					*0.093105*
Petroleum Hydrocarbons	Unused StreamGuard Geotextile Fabric	684	943.9	—	—	0.001420
Petroleum Hydrocarbons	Unused StreamGuard Absorbent Material	1970	443.15	—	—	0.001921
Petroleum Hydrocarbons	*Unused Media Subtotal*					*0.003341*
Petroleum Hydrocarbons	Effluent Water from 24 January 2001 storm event	—	—	500	517	0.016104
Petroleum Hydrocarbons	Effluent Water from 11 February 2001 storm event	—	—	500	190	0.005918
Petroleum Hydrocarbons	Estimated effluent from unsampled storm events	—	—	500	4710	0.146709
Petroleum Hydrocarbons	*Effluent Subtotal*					*0.168731*
Petroleum Hydrocarbons	Estimated Influent Load					0.258496
Petroleum Hydrocarbons	Efficiency (%)					35%
Petroleum Hydrocarbons	Efficiency w/o Litter Removal (%)					33%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (mg/L)	Runoff Volume (ft^3)	Load (lbs)
Sediment[1]	Used StreamGuard Geotextile Fabric	—	1905.12	—	—	4.200028
Sediment[1]	Used StreamGuard Absorbent Material	—	751	—	—	1.655655
Sediment	Used StreamGuard Debris/litter/sediment	—	11067.84	—	—	24.400180
Sediment	*Used Media Subtotal*					*30.255842*
Sediment	Unused StreamGuard Geotextile Fabric	—	943.9	—	—	2.080922
Sediment	Unused StreamGuard Absorbent Material	—	443.15	—	—	0.976968
Sediment	*Unused Media Subtotal*					*3.057890*
Sediment	Effluent Water from 24 January 2001 storm event	—	—	41	517	1.320509
Sediment	Effluent Water from 11 February 2001 storm event	—	—	52	190	0.615494
Sediment	Estimated effluent from unsampled storm events	—	—	47	4710	13.843969
Sediment	*Effluent Subtotal*					*15.579971*
Sediment	Estimated Influent Load					42.777923
Sediment	Efficiency (%)					64%
Sediment	Efficiency w/o Litter Removal (%)					18%

[1] Mass of unused DII element subtracted from mass of used DII element.

Note 1: Dissolved solids fraction and gross solids fraction of effluent not accounted for in mass balance.

Note 2: Efficiencies include sediment/debris entrapped by the DII. Extensive maintenance was conducted before, during, and after storm events to clear sediment and debris from the DII. Sediment and debis removed from the DII was temporarily stored onsite and then analyzed at the same time as DII.

Note 3: Where the individual storm EMCs showed evidence of normality, the unsampled effluent concentration was estimated by averaging individual storm EMCs.

Note 4: Where the individual storm EMCs showed evidence of non-normality, the unsampled effluent concentration was estimated by log-transforming individual storm EMCs, averaging, and then transforming back. These EMCs are italicized.

Note 5: Flow measured continuously while DII was installed.

Note 6: Reporting Limit was used where results were "<" Reporting Limit.

Calculated by: Ed Othmer

Checked by: Chris Knoche

Worksheet 2d
Rosemead Maintenance Station StreamGuard DII % Removal Efficiency Calculations (Storm-by-Storm Method)

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Copper	Used StreamGuard Geotextile Fabric	96.7	1610.28	—	—	0.000343
Copper	Used StreamGuard Absorbent Material	24.8	536	—	—	0.000029
Copper	Used StreamGuard Debris/litter/sediment	16.1	10387.44	—	—	0.000368
Copper	*Used Media Subtotal*					*0.000740*
Copper	Unused StreamGuard Geotextile Fabric	0.22	943.9	—	—	0.000000
Copper	Unused StreamGuard Absorbent Material	0.24	443.15	—	—	0.000000
Copper	*Unused Media Subtotal*					*0.000001*
Copper	Effluent Water from 11 October 2000 storm event	—	—	90	434	0.002433
Copper	Effluent Water from 27 October 2000 storm event	—	—	35	3185	0.006945
Copper	Effluent Water from 12 January 2001 storm event	—	—	13	13440	0.010885
Copper	Effluent Water from 24 January 2001 storm event	—	—	31	1754	0.003387
Copper	Effluent Water from 11 February 2001 storm event	—	—	22	1387	0.001901
Copper	Estimated effluent from unsampled storm events	—	—	38.2	54174	0.128920
Copper	*Effluent Subtotal*					*0.154471*
Copper	Estimated Influent Load					0.155210
Copper	Efficiency (%)					0%
Copper	Efficiency w/o Litter Removal (%)					0%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Lead	Used StreamGuard Geotextile Fabric	259	1610.28	—	—	0.000918
Lead	Used StreamGuard Absorbent Material	46.1	536	—	—	0.000054
Lead	Used StreamGuard Debris/litter/sediment	21.6	10387.44	—	—	0.000494
Lead	*Used Media Subtotal*					*0.001466*
Lead	Unused StreamGuard Geotextile Fabric	0.1	943.9	—	—	0.000000
Lead	Unused StreamGuard Absorbent Material	0.1	443.15	—	—	0.000000
Lead	*Unused Media Subtotal*					*0.000000*
Lead	Effluent Water from 11 October 2000 storm event	—	—	50	434	0.001352
Lead	Effluent Water from 27 October 2000 storm event	—	—	25	3185	0.004960
Lead	Effluent Water from 12 January 2001 storm event	—	—	6.0	13440	0.005024
Lead	Effluent Water from 24 January 2001 storm event	—	—	39	1754	0.004261
Lead	Effluent Water from 11 February 2001 storm event	—	—	12	1387	0.001037
Lead	Estimated effluent from unsampled storm events	—	—	26.4	54174	0.089097
Lead	*Effluent Subtotal*					*0.105731*
Lead	Estimated Influent Load					0.107196
Lead	Efficiency (%)					1%
Lead	Efficiency w/o Litter Removal (%)					1%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Zinc	Used StreamGuard Geotextile Fabric	1670	1610.28	—	—	0.005916
Zinc	Used StreamGuard Absorbent Material	229	536	—	—	0.000270
Zinc	Used StreamGuard Debris/litter/sediment	118	10387.44	—	—	0.002697
Zinc	*Used Media Subtotal*					*0.008883*
Zinc	Unused StreamGuard Geotextile Fabric	3.8	943.9	—	—	0.000008
Zinc	Unused StreamGuard Absorbent Material	0.6	443.15	—	—	0.000001
Zinc	*Unused Media Subtotal*					*0.000009*
Zinc	Effluent Water from 11 October 2000 storm event	—	—	1250	434	0.033796
Zinc	Effluent Water from 27 October 2000 storm event	—	—	342	3185	0.067958
Zinc	Effluent Water from 12 January 2001 storm event	—	—	129	13440	0.108006
Zinc	Effluent Water from 24 January 2001 storm event	—	—	239	1754	0.026115
Zinc	Effluent Water from 11 February 2001 storm event	—	—	190	1387	0.016417
Zinc	Estimated effluent from unsampled storm events	—	—	159.8	54174	0.539277
Zinc	*Effluent Subtotal*					*0.791472*
Zinc	Estimated Influent Load					0.800346
Zinc	Efficiency (%)					1%
Zinc	Efficiency w/o Litter Removal (%)					1%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Petroleum Hydrocarbons	Used StreamGuard Geotextile Fabric	457	1610.28	—	—	0.001619
Petroleum Hydrocarbons	Used StreamGuard Absorbent Material	46400	536	—	—	0.054715
Petroleum Hydrocarbons	Used StreamGuard Debris/litter/sediment	333	10387.44	—	—	0.007610
Petroleum Hydrocarbons	*Used Media Subtotal*					*0.063944*
Petroleum Hydrocarbons	Unused StreamGuard Geotextile Fabric	684	943.9	—	—	0.001420
Petroleum Hydrocarbons	Unused StreamGuard Absorbent Material	1970	443.15	—	—	0.001921
Petroleum Hydrocarbons	*Unused Media Subtotal*					*0.003341*
Petroleum Hydrocarbons	Effluent Water from 11 October 2000 storm event	—	—	4290	434	0.115968
Petroleum Hydrocarbons	Effluent Water from 27 October 2000 storm event	—	—	1277	3185	0.253377
Petroleum Hydrocarbons	Effluent Water from 12 January 2001 storm event	—	—	500	13440	0.418636
Petroleum Hydrocarbons	Effluent Water from 24 January 2001 storm event	—	—	500	1754	0.054834
Petroleum Hydrocarbons	Effluent Water from 11 February 2001 storm event	—	—	500	1387	0.043203
Petroleum Hydrocarbons	Estimated effluent from unsampled storm events	—	—	1413	54174	4.770049
Petroleum Hydrocarbons	*Effluent Subtotal*					*5.655887*
Petroleum Hydrocarbons	Estimated Influent Load					5.716490
Petroleum Hydrocarbons	Efficiency (%)					1%
Petroleum Hydrocarbons	Efficiency w/o Litter Removal (%)					1%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (mg/L)	Runoff Volume (ft^3)	Load (lbs)
Sediment[1]	Used StreamGuard Geotextile Fabric	—	1610.28	—	—	3.550023
Sediment[1]	Used StreamGuard Absorbent Material	—	536	—	—	1.181666
Sediment	Used StreamGuard Debris/litter/sediment	—	10387.44	—	—	22.900150
Sediment	*Used Media Subtotal*					*27.631839*
Sediment	Unused StreamGuard Geotextile Fabric	—	943.9	—	—	2.080922
Sediment	Unused StreamGuard Absorbent Material	—	443.15	—	—	0.976968
Sediment	*Unused Media Subtotal*					*3.057890*
Sediment	Effluent Water from 11 October 2000 storm event	—	—	248	434	6.705146
Sediment	Effluent Water from 27 October 2000 storm event	—	—	51	3185	10.119207
Sediment	Effluent Water from 12 January 2001 storm event	—	—	121	13440	101.309808
Sediment	Effluent Water from 24 January 2001 storm event	—	—	52	1754	5.681981
Sediment	Effluent Water from 11 February 2001 storm event	—	—	46	1387	3.888265
Sediment	Estimated effluent from unsampled storm events	—	—	103	54174	348.982128
Sediment	*Effluent Subtotal*					*476.686535*
Sediment	Estimated Influent Load					501.240484
Sediment	Efficiency (%)					5%
Sediment	Efficiency w/o Litter Removal (%)					0%

[1] Mass of unused DII element subtracted from mass of used DII element.

Note 1: Dissolved solids fraction and gross solids fraction of effluent not accounted for in mass balance.

Note 2: Efficiencies include sediment/debris entrapped by the DII. Extensive maintenance was conducted before, during, and after storm events to clear sediment and debris from the DII. Sediment and debis removed from the DII was temporarily stored onsite and then analyzed at the same time as DII.

Note 3: Where the individual storm EMCs showed evidence of normality, the unsampled effluent concentration was estimated by averaging individual storm EMCs.

Note 4: Where the individual storm EMCs showed evidence of non-normality, the unsampled effluent concentration was estimated by log-transforming individual storm EMCs, averaging, and then transforming back. These EMCs are italicized.

Note 5: Flow measured continuously while DII was installed.

Note 6: Reporting Limit was used where results were "<" Reporting Limit.

Calculated by: Ed Ohmer

Checked by: Chris Knoche

Worksheet 2e
Foothill Maintenance Station StreamGuard DII % Removal Efficiency Calculations (Aggregate Method)

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Copper	Used StreamGuard Geotextile Fabric	66.5	1338.12	—	—	0.000196
Copper	Used StreamGuard Absorbent Material	14.8	583.4	—	—	0.000019
Copper	Used StreamGuard Debris/litter/sediment	89.9	2517.48	—	—	0.000498
Copper	*Used Media Subtotal*					*0.000713*
Copper	Unused StreamGuard Geotextile Fabric	0.22	943.9	—	—	0.000000
Copper	Unused StreamGuard Absorbent Material	0.24	443.15	—	—	0.000000
Copper	*Unused Media Subtotal*					*0.000001*
Copper	Effluent Water from 27 October 2000 storm event	—	—	30	1995	
Copper	Effluent Water from 12 January 2001 storm event	—	—	11	10548	
Copper	Effluent Water from 24 January 2001 storm event	—	—	14	797	
Copper	Effluent Water from 10 February 2001 storm event	—	—	15	818	
Copper	Estimated flow volume from unsampled storm events	—	—	—	42014	
Copper	*Effluent Subtotal (Mean EMC x Total Runoff Volume)*			17.5	56172	0.061239
Copper	Estimated Influent Load					0.061951
Copper	Efficiency (%)					1%
Copper	Efficiency w/o Litter Removal (%)					0%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Lead	Used StreamGuard Geotextile Fabric	132	1338.12	—	—	0.000389
Lead	Used StreamGuard Absorbent Material	26.1	583.4	—	—	0.000033
Lead	Used StreamGuard Debris/litter/sediment	126	2517.48	—	—	0.000698
Lead	*Used Media Subtotal*					*0.001120*
Lead	Unused StreamGuard Geotextile Fabric	0.1	943.9	—	—	0.000000
Lead	Unused StreamGuard Absorbent Material	0.1	443.15	—	—	0.000000
Lead	*Unused Media Subtotal*					*0.000000*
Lead	Effluent Water from 27 October 2000 storm event	—	—	6.0	1995	
Lead	Effluent Water from 12 January 2001 storm event	—	—	1.8	10548	
Lead	Effluent Water from 24 January 2001 storm event	—	—	3.9	797	
Lead	Effluent Water from 10 February 2001 storm event	—	—	6.8	818	
Lead	Estimated effluent from unsampled storm events	—	—	—	42014	
Lead	*Effluent Subtotal (Mean EMC x Total Runoff Volume)*			4.6	56172	0.016184
Lead	Estimated Influent Load					0.017304
Lead	Efficiency (%)					6%
Lead	Efficiency w/o Litter Removal (%)					3%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Zinc	Used StreamGuard Geotextile Fabric	1160	1338.12	—	—	0.003415
Zinc	Used StreamGuard Absorbent Material	86.5	583.4	—	—	0.000111
Zinc	Used StreamGuard Debris/litter/sediment	1140	2517.48	—	—	0.006314
Zinc	*Used Media Subtotal*					*0.009840*
Zinc	Unused StreamGuard Geotextile Fabric	3.8	943.9	—	—	0.000008
Zinc	Unused StreamGuard Absorbent Material	0.6	443.15	—	—	0.000001
Zinc	*Unused Media Subtotal*					*0.000008*
Zinc	Effluent Water from 27 October 2000 storm event	—	—	406	1995	
Zinc	Effluent Water from 12 January 2001 storm event	—	—	138	10548	
Zinc	Effluent Water from 24 January 2001 storm event	—	—	137	797	
Zinc	Effluent Water from 10 February 2001 storm event	—	—	260	818	
Zinc	Estimated effluent from unsampled storm events	—	—	—	42014	
Zinc	*Effluent Subtotal (Mean EMC x Total Runoff Volume)*			*211.4*	56172	0.739625
Zinc	Estimated Influent Load					0.749456
Zinc	Efficiency (%)					1%
Zinc	Efficiency w/o Litter Removal (%)					0%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Petroleum Hydrocarbons	Used StreamGuard Geotextile Fabric	333	1338.12	—	—	0.000980
Petroleum Hydrocarbons	Used StreamGuard Absorbent Material	8950	583.4	—	—	0.011487
Petroleum Hydrocarbons	Used StreamGuard Debris/litter/sediment	10900	2517.48	—	—	0.060369
Petroleum Hydrocarbons	*Used Media Subtotal*					*0.072837*
Petroleum Hydrocarbons	Unused StreamGuard Geotextile Fabric	664	943.9	—	—	0.001420
Petroleum Hydrocarbons	Unused StreamGuard Absorbent Material	1970	443.15	—	—	0.001921
Petroleum Hydrocarbons	*Unused Media Subtotal*					*0.003341*
Petroleum Hydrocarbons	Effluent Water from 27 October 2000 storm event	—	—	916	1995	
Petroleum Hydrocarbons	Effluent Water from 12 January 2001 storm event	—	—	500	10548	
Petroleum Hydrocarbons	Effluent Water from 24 January 2001 storm event	—	—	500	797	
Petroleum Hydrocarbons	Effluent Water from 10 February 2001 storm event	—	—	500	818	
Petroleum Hydrocarbons	Estimated effluent from unsampled storm events	—	—	—	42014	
Petroleum Hydrocarbons	*Effluent Subtotal (Mean EMC x Total Runoff Volume)*			604.0	56172	2.113604
Petroleum Hydrocarbons	Estimated Influent Load					2.183100
Petroleum Hydrocarbons	Efficiency (%)					3%
Petroleum Hydrocarbons	Efficiency w/o Litter Removal (%)					0%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (mg/L)	Runoff Volume (ft^3)	Load (lbs)
Sediment[1]	Used StreamGuard Geotextile Fabric	—	1338.12	—	—	2.950019
Sediment[1]	Used StreamGuard Absorbent Material	—	583.4	—	—	1.286164
Sediment	Used StreamGuard Debris/litter/sediment	—	2517.48	—	—	5.550036
Sediment	*Used Media Subtotal*					*9.786219*
Sediment	Unused StreamGuard Geotextile Fabric	—	943.9	—	—	2.080922
Sediment	Unused StreamGuard Absorbent Material	—	443.15	—	—	0.976968
Sediment	*Unused Media Subtotal*					*3.057890*
Sediment	Effluent Water from 27 October 2000 storm event	—	—	6	1995	
Sediment	Effluent Water from 12 January 2001 storm event	—	—	13	10548	
Sediment	Effluent Water from 24 January 2001 storm event	—	—	4	797	
Sediment	Effluent Water from 10 February 2001 storm event	—	—	33	818	
Sediment	Estimated effluent from unsampled storm events	—	—	—	42014	
Sediment	*Effluent Subtotal (Mean EMC x Total Runoff Volume)*			14.5	56172	50.740500
Sediment	Estimated Influent Load					57.468829
Sediment	Efficiency (%)					12%
Sediment	Efficiency w/o Litter Removal (%)					2%

[1] Mass of unused DII element subtracted from mass of used DII element.

Note 1: Dissolved solids fraction and gross solids fraction of effluent not accounted for in mass balance.

Note 2: Efficiencies include sediment/debris entrapped by the DII. Extensive maintenance was conducted before, during, and after storm events to clear sediment and debris from the DII. Sediment and debis removed from the DII was temporarily stored onsite and then analyzed at the same time as DII.

Note 3: Where the individual storm EMCs showed evidence of normality, the mean EMC effluent concentration was estimated by averaging individual storm EMCs.

Note 4: Where the individual storm EMCs showed evidence of non-normality, the mean EMC effluent concentration was estimated by log-transforming individual storm EMCs, averaging, and then transforming back. These EMCs are italicized.

Note 5: Flow measured continuously while DII was installed.

Note 6: Reporting Limit was used where results were "<" Reporting Limit.

Calculated by: Ed Ohmer

Checked by: Chris Knoche

Worksheet 2f
Las Flores Maintenance Station First StreamGuard DII % Removal Efficiency Calculations (Aggregate Method)

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Copper	Used StreamGuard Geotextile Fabric	31	1315.44	—	—	0.000090
Copper	Used StreamGuard Absorbent Material	8.8	544.32	—	—	0.000011
Copper	Used StreamGuard Debris/litter/sediment	13.2	4853.52	—	—	0.000141
Copper	*Used Media Subtotal*					*0.000241*
Copper	Unused StreamGuard Geotextile Fabric	0.22	943.9	—	—	0.000000
Copper	Unused StreamGuard Absorbent Material	0.24	443.15	—	—	0.000000
Copper	*Unused Media Subtotal*					*0.000001*
Copper	Effluent Water from 27 October 2000 storm event	—	—	15.7	217	
Copper	Effluent Water from 12 January 2001 storm event	—	—	6.1	933	
Copper	Estimated flow volume from unsampled storm events	—	—	—	132	
Copper	*Effluent Subtotal (Mean EMC x Total Runoff Volume)*			10.9	1282	0.000871
Copper	Estimated Influent Load					0.001111
Copper	Efficiency (%)					22%
Copper	Efficiency w/o Litter Removal (%)					10%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Lead	Used StreamGuard Geotextile Fabric	33.6	1315.44	—	—	0.000097
Lead	Used StreamGuard Absorbent Material	6.7	544.32	—	—	0.000008
Lead	Used StreamGuard Debris/litter/sediment	13.5	4853.52	—	—	0.000144
Lead	*Used Media Subtotal*					*0.000249*
Lead	Unused StreamGuard Geotextile Fabric	0.1	943.9	—	—	0.000000
Lead	Unused StreamGuard Absorbent Material	0.1	443.15	—	—	0.000000
Lead	*Unused Media Subtotal*					*0.000000*
Lead	Effluent Water from 27 October 2000 storm event	—	—	5.9	217	
Lead	Effluent Water from 12 January 2001 storm event	—	—	1.4	933	
Lead	Estimated effluent from unsampled storm events	—	—	—	132	
Lead	*Effluent Subtotal (Mean EMC x Total Runoff Volume)*			3.7	1282	0.000292
Lead	Estimated Influent Load					0.000541
Lead	Efficiency (%)					46%
Lead	Efficiency w/o Litter Removal (%)					26%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Zinc	Used StreamGuard Geotextile Fabric	175	1315.44	—	—	0.000506
Zinc	Used StreamGuard Absorbent Material	47.2	544.32	—	—	0.000057
Zinc	Used StreamGuard Debris/litter/sediment	88.3	4853.52	—	—	0.000943
Zinc	*Used Media Subtotal*					*0.001506*
Zinc	Unused StreamGuard Geotextile Fabric	3.8	943.9	—	—	0.000008
Zinc	Unused StreamGuard Absorbent Material	0.6	443.15	—	—	0.000001
Zinc	*Unused Media Subtotal*					*0.000008*
Zinc	Effluent Water from 27 October 2000 storm event	—	—	123	217	
Zinc	Effluent Water from 12 January 2001 storm event	—	—	52	933	
Zinc	Estimated effluent from unsampled storm events	—	—	—	132	
Zinc	*Effluent Subtotal (Mean EMC x Total Runoff Volume)*			*80.0*	1282	0.006387
Zinc	Estimated Influent Load					0.007885
Zinc	Efficiency (%)					19%
Zinc	Efficiency w/o Litter Removal (%)					8%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Petroleum Hydrocarbons	Used StreamGuard Geotextile Fabric	4700	1315.44	—	—	0.013802
Petroleum Hydrocarbons	Used StreamGuard Absorbent Material	36600	544.32	—	—	0.043829
Petroleum Hydrocarbons	Used StreamGuard Debris/litter/sediment	4270	4853.52	—	—	0.045594
Petroleum Hydrocarbons	*Used Media Subtotal*					*0.103024*
Petroleum Hydrocarbons	Unused StreamGuard Geotextile Fabric	684	943.9	—	—	0.001420
Petroleum Hydrocarbons	Unused StreamGuard Absorbent Material	1870	443.15	—	—	0.001921
Petroleum Hydrocarbons	*Unused Media Subtotal*					*0.003341*
Petroleum Hydrocarbons	Effluent Water from 27 October 2000 storm event	—	—	1174	217	
Petroleum Hydrocarbons	Effluent Water from 12 January 2001 storm event	—	—	500	933	
Petroleum Hydrocarbons	Estimated effluent from unsampled storm events	—	—	—	132	
Petroleum Hydrocarbons	*Effluent Subtotal (Mean EMC x Total Runoff Volume)*			837.0	1282	0.066847
Petroleum Hydrocarbons	Estimated Influent Load					0.166530
Petroleum Hydrocarbons	Efficiency (%)					60%
Petroleum Hydrocarbons	Efficiency w/o Litter Removal (%)					45%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (mg/L)	Runoff Volume (ft^3)	Load (lbs)
Sediment[1]	Used StreamGuard Geotextile Fabric	—	1315.44	—	—	2.900019
Sediment[1]	Used StreamGuard Absorbent Material	—	544.32	—	—	1.200008
Sediment	Used StreamGuard Debris/litter/sediment	—	4853.52	—	—	10.700070
Sediment	*Used Media Subtotal*					*14.800097*
Sediment	Unused StreamGuard Geotextile Fabric	—	943.9	—	—	2.080922
Sediment	Unused StreamGuard Absorbent Material	—	443.15	—	—	0.976968
Sediment	*Unused Media Subtotal*					*3.057890*
Sediment	Effluent Water from 27 October 2000 storm event	—	—	22	217	
Sediment	Effluent Water from 12 January 2001 storm event	—	—	89	933	
Sediment	Estimated effluent from unsampled storm events	—	—	—	132	
Sediment	*Effluent Subtotal (Mean EMC x Total Runoff Volume)*			55.5	1282	4.432491
Sediment	Estimated Influent Load					16.174696
Sediment	Efficiency (%)					73%
Sediment	Efficiency w/o Litter Removal (%)					19%

[1] Mass of unused DII element subtracted from mass of used DII element.

Note 1: Dissolved solids fraction and gross solids fraction of effluent not accounted for in mass balance.

Note 2: Efficiencies include sediment/debris entrapped by the DII. Extensive maintenance was conducted before, during, and after storm events to clear sediment and debris from the DII. Sediment and debis removed from the DII was temporarily stored onsite and then analyzed at the same time as DII.

Note 3: Where the individual storm EMCs showed evidence of normality, the mean EMC effluent concentration was estimated by averaging individual storm EMCs.

Note 4: Where the individual storm EMCs showed evidence of non-normality, the mean EMC effluent concentration was estimated by log-transforming individual storm EMCs, averaging, and then transforming back. These EMCs are italicized.

Note 5: Flow measured continuously while DII was installed.

Note 6: Reporting Limit was used where results were "<" Reporting Limit.

Calculated by: Ed Ohmer

Checked by: Chris Knoche

Worksheet 2g

Las Flores Maintenance Station Second StreamGuard DII % Removal Efficiency Calculations (Aggregate Method)

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Copper	Used StreamGuard Geotextile Fabric	21.4	1905.12	—	—	0.000090
Copper	Used StreamGuard Absorbent Material	7.7	751	—	—	0.000013
Copper	Used StreamGuard Debris/litter/sediment	12.1	11067.84	—	—	0.000295
Copper	*Used Media Subtotal*					*0.000397*
Copper	Unused StreamGuard Geotextile Fabric	0.22	943.9	—	—	0.000000
Copper	Unused StreamGuard Absorbent Material	0.24	443.15	—	—	0.000000
Copper	*Unused Media Subtotal*					*0.000001*
Copper	Effluent Water from 24 January 2001 storm event	—	—	16	517	
Copper	Effluent Water from 11 February 2001 storm event	—	—	7.2	190	
Copper	Estimated flow volume from unsampled storm event	—	—	—	4710	
Copper	*Effluent Subtotal (Mean EMC x Total Runoff Volume)*			11.6	5417	0.003915
Copper	Estimated Influent Load					0.004311
Copper	**Efficiency (%)**					**9%**
Copper	**Efficiency w/o Litter Removal (%)**					**3%**

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Lead	Used StreamGuard Geotextile Fabric	23.8	1905.12	—	—	0.000100
Lead	Used StreamGuard Absorbent Material	13	751	—	—	0.000021
Lead	Used StreamGuard Debris/litter/sediment	12.1	11067.84	—	—	0.000295
Lead	*Used Media Subtotal*					*0.000416*
Lead	Unused StreamGuard Geotextile Fabric	0.1	943.9	—	—	0.000000
Lead	Unused StreamGuard Absorbent Material	0.1	443.15	—	—	0.000000
Lead	*Unused Media Subtotal*					*0.000000*
Lead	Effluent Water from 24 January 2001 storm event	—	—	2.4	517	
Lead	Effluent Water from 11 February 2001 storm event	—	—	1.7	190	
Lead	Estimated effluent from unsampled storm events	—	—	—	4710	
Lead	*Effluent Subtotal (Mean EMC x Total Runoff Volume)*			2.1	5417	0.000692
Lead	Estimated Influent Load					0.001107
Lead	**Efficiency (%)**					**38%**
Lead	**Efficiency w/o Litter Removal (%)**					**18%**

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Zinc	Used StreamGuard Geotextile Fabric	143	1905.12	—	—	0.000599
Zinc	Used StreamGuard Absorbent Material	46.4	751	—	—	0.000077
Zinc	Used StreamGuard Debris/litter/sediment	86.3	11067.84	—	—	0.002101
Zinc	*Used Media Subtotal*					*0.002777*
Zinc	Unused StreamGuard Geotextile Fabric	3.8	943.9	—	—	0.000008
Zinc	Unused StreamGuard Absorbent Material	0.6	443.15	—	—	0.000001
Zinc	*Unused Media Subtotal*					*0.000008*
Zinc	Effluent Water from 24 January 2001 storm event	—	—	59	517	
Zinc	Effluent Water from 11 February 2001 storm event	—	—	57	190	
Zinc	Estimated effluent from unsampled storm events	—	—	—	4710	
Zinc	*Effluent Subtotal (Mean EMC x Total Runoff Volume)*			*58.0*	5417	0.019570
Zinc	Estimated Influent Load					0.022339
Zinc	**Efficiency (%)**					**12%**
Zinc	**Efficiency w/o Litter Removal (%)**					**3%**

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Petroleum Hydrocarbons	Used StreamGuard Geotextile Fabric	333	1905.12	—	—	0.001396
Petroleum Hydrocarbons	Used StreamGuard Absorbent Material	50600	751	—	—	0.083601
Petroleum Hydrocarbons	Used StreamGuard Debris/litter/sediment	333	11067.84	—	—	0.008108
Petroleum Hydrocarbons	*Used Media Subtotal*					*0.093105*
Petroleum Hydrocarbons	Unused StreamGuard Geotextile Fabric	684	943.9	—	—	0.001420
Petroleum Hydrocarbons	Unused StreamGuard Absorbent Material	1970	443.15	—	—	0.001921
Petroleum Hydrocarbons	*Unused Media Subtotal*					*0.003341*
Petroleum Hydrocarbons	Effluent Water from 24 January 2001 storm event	—	—	500	517	
Petroleum Hydrocarbons	Effluent Water from 11 February 2001 storm event	—	—	500	190	
Petroleum Hydrocarbons	Estimated effluent from unsampled storm events	—	—	—	4710	
Petroleum Hydrocarbons	*Effluent Subtotal (Mean EMC x Total Runoff Volume)*			500.0	5417	0.168731
Petroleum Hydrocarbons	Estimated Influent Load					0.258496
Petroleum Hydrocarbons	**Efficiency (%)**					**35%**
Petroleum Hydrocarbons	**Efficiency w/o Litter Removal (%)**					**33%**

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (mg/L)	Runoff Volume (ft^3)	Load (lbs)
Sediment[1]	Used StreamGuard Geotextile Fabric	—	1905.12	—	—	4.200028
Sediment[1]	Used StreamGuard Absorbent Material	—	751	—	—	1.655655
Sediment	Used StreamGuard Debris/litter/sediment	—	11067.84	—	—	24.400160
Sediment	*Used Media Subtotal*					*30.255842*
Sediment	Unused StreamGuard Geotextile Fabric	—	943.9	—	—	2.080922
Sediment	Unused StreamGuard Absorbent Material	—	443.15	—	—	0.976968
Sediment	*Unused Media Subtotal*					*3.057890*
Sediment	Effluent Water from 24 January 2001 storm event	—	—	41	517	
Sediment	Effluent Water from 11 February 2001 storm event	—	—	52	190	
Sediment	Estimated effluent from unsampled storm events	—	—	—	4710	
Sediment	*Effluent Subtotal (Mean EMC x Total Runoff Volume)*			46.5	5417	15.692012
Sediment	Estimated Influent Load					42.889984
Sediment	**Efficiency (%)**					**63%**
Sediment	**Efficiency w/o Litter Removal (%)**					**15%**

[1] Mass of unused DII element subtracted from mass of used DII element.

Note 1: Dissolved solids fraction and gross solids fraction of effluent not accounted for in mass balance.

Note 2: Efficiencies include sediment/debris entrapped by the DII. Extensive maintenance was conducted before, during, and after storm events to clear sediment and debris from the DII. Sediment and debis removed from the DII was temporarily stored onsite and then analyzed at the same time as DII.

Note 3: Where the individual storm EMCs showed evidence of normality, the mean EMC effluent concentration was estimated by averaging individual storm EMCs.

Note 4: Where the individual storm EMCs showed evidence of non-normality, the mean EMC effluent concentration was estimated by log-transforming individual storm EMCs, averaging, and then transforming back. These EMCs are italicized.

Note 5: Flow measured continuously while DII was installed.

Note 6: Reporting Limit was used where results were "<" Reporting Limit.

Calculated by: Ed Othmer

Checked by: Chris Knoche

Worksheet 2h
Rosemead Maintenance Station StreamGuard DII % Removal Efficiency Calculations (Aggregate Method)

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Copper	Used StreamGuard Geotextile Fabric	96.7	1610.28	—	—	0.000343
Copper	Used StreamGuard Absorbent Material	24.8	536	—	—	0.000029
Copper	Used StreamGuard Debris/litter/sediment	16.1	10387.44	—	—	0.000368
Copper	*Used Media Subtotal*					*0.000740*
Copper	Unused StreamGuard Geotextile Fabric	0.22	943.9	—	—	0.000000
Copper	Unused StreamGuard Absorbent Material	0.24	443.15	—	—	0.000000
Copper	*Unused Media Subtotal*					*0.000001*
Copper	Effluent Water from 11 October 2000 storm event	—	—	90	434	
Copper	Effluent Water from 27 October 2000 storm event	—	—	35	3185	
Copper	Effluent Water from 12 January 2001 storm event	—	—	13	13440	
Copper	Effluent Water from 24 January 2001 storm event	—	—	31	1754	
Copper	Effluent Water from 11 February 2001 storm event	—	—	22	1387	
Copper	Estimated flow volume from unsampled storm events	—	—	—	54174	
Copper	*Effluent Subtotal (Mean EMC x Total Runoff Volume)*			36.2	74374	0.176991
Copper	Estimated Influent Load					0.177730
Copper	Efficiency (%)					0%
Copper	Efficiency w/o Litter Removal (%)					0%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Lead	Used StreamGuard Geotextile Fabric	259	1610.28	—	—	0.000918
Lead	Used StreamGuard Absorbent Material	46.1	536	—	—	0.000054
Lead	Used StreamGuard Debris/litter/sediment	21.6	10387.44	—	—	0.000494
Lead	*Used Media Subtotal*					*0.001466*
Lead	Unused StreamGuard Geotextile Fabric	0.1	943.9	—	—	0.000000
Lead	Unused StreamGuard Absorbent Material	0.1	443.15	—	—	0.000000
Lead	*Unused Media Subtotal*					*0.000000*
Lead	Effluent Water from 11 October 2000 storm event	—	—	50	434	0
Lead	Effluent Water from 27 October 2000 storm event	—	—	25	3185	
Lead	Effluent Water from 12 January 2001 storm event	—	—	6.0	13440	
Lead	Effluent Water from 24 January 2001 storm event	—	—	39	1754	
Lead	Effluent Water from 11 February 2001 storm event	—	—	12	1387	
Lead	Estimated effluent from unsampled storm events	—	—	—	54174	
Lead	*Effluent Subtotal (Mean EMC x Total Runoff Volume)*			26.4	74374	0.122318
Lead	Estimated Influent Load					0.123784
Lead	Efficiency (%)					1%
Lead	Efficiency w/o Litter Removal (%)					1%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Zinc	Used StreamGuard Geotextile Fabric	1670	1610.28	—	—	0.005916
Zinc	Used StreamGuard Absorbent Material	229	536	—	—	0.000270
Zinc	Used StreamGuard Debris/litter/sediment	118	10387.44	—	—	0.002697
Zinc	*Used Media Subtotal*					*0.008883*
Zinc	Unused StreamGuard Geotextile Fabric	3.8	943.9	—	—	0.000008
Zinc	Unused StreamGuard Absorbent Material	0.6	443.15	—	—	0.000001
Zinc	*Unused Media Subtotal*					*0.000008*
Zinc	Effluent Water from 11 October 2000 storm event	—	—	1250	434	
Zinc	Effluent Water from 27 October 2000 storm event	—	—	342	3185	
Zinc	Effluent Water from 12 January 2001 storm event	—	—	129	13440	
Zinc	Effluent Water from 24 January 2001 storm event	—	—	239	1754	
Zinc	Effluent Water from 11 February 2001 storm event	—	—	190	1387	
Zinc	Estimated effluent from unsampled storm events	—	—	—	54174	
Zinc	*Effluent Subtotal (Mean EMC x Total Runoff Volume)*			301.8	74374	1.398374
Zinc	Estimated Influent Load					1.407249
Zinc	Efficiency (%)					1%
Zinc	Efficiency w/o Litter Removal (%)					0%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Petroleum Hydrocarbons	Used StreamGuard Geotextile Fabric	457	1610.28	—	—	0.001619
Petroleum Hydrocarbons	Used StreamGuard Absorbent Material	46400	536	—	—	0.054715
Petroleum Hydrocarbons	Used StreamGuard Debris/litter/sediment	333	10387.44	—	—	0.007610
Petroleum Hydrocarbons	*Used Media Subtotal*					*0.063944*
Petroleum Hydrocarbons	Unused StreamGuard Geotextile Fabric	684	943.9	—	—	0.001420
Petroleum Hydrocarbons	Unused StreamGuard Absorbent Material	1970	443.15	—	—	0.001921
Petroleum Hydrocarbons	*Unused Media Subtotal*					*0.003341*
Petroleum Hydrocarbons	Effluent Water from 11 October 2000 storm event	—	—	4290	434	
Petroleum Hydrocarbons	Effluent Water from 27 October 2000 storm event	—	—	1277	3185	
Petroleum Hydrocarbons	Effluent Water from 12 January 2001 storm event	—	—	500	13440	
Petroleum Hydrocarbons	Effluent Water from 24 January 2001 storm event	—	—	500	1754	
Petroleum Hydrocarbons	Effluent Water from 11 February 2001 storm event	—	—	500	1387	
Petroleum Hydrocarbons	Estimated effluent from unsampled storm events	—	—	—	54174	
Petroleum Hydrocarbons	*Effluent Subtotal (Mean EMC x Total Runoff Volume)*			1413.4	74374	6.548670
Petroleum Hydrocarbons	Estimated Influent Load					6.609272
Petroleum Hydrocarbons	Efficiency (%)					1%
Petroleum Hydrocarbons	Efficiency w/o Litter Removal (%)					1%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (mg/L)	Runoff Volume (ft^3)	Load (lbs)
Sediment[1]	Used StreamGuard Geotextile Fabric	—	1610.28	—	—	3.550023
Sediment[1]	Used StreamGuard Absorbent Material	—	536	—	—	1.181666
Sediment	Used StreamGuard Debris/litter/sediment	—	10387.44	—	—	22.900150
Sediment	*Used Media Subtotal*					27.631839
Sediment	Unused StreamGuard Geotextile Fabric	—	943.9	—	—	2.080922
Sediment	Unused StreamGuard Absorbent Material	—	443.15	—	—	0.976968
Sediment	*Unused Media Subtotal*					3.057890
Sediment	Effluent Water from 11 October 2000 storm event	—	—	248	434	
Sediment	Effluent Water from 27 October 2000 storm event	—	—	51	3185	
Sediment	Effluent Water from 12 January 2001 storm event	—	—	121	13440	
Sediment	Effluent Water from 24 January 2001 storm event	—	—	52	1754	
Sediment	Effluent Water from 11 February 2001 storm event	—	—	45	1387	
Sediment	Estimated effluent from unsampled storm events	—	—	—	54174	
Sediment	*Effluent Subtotal (Mean EMC x Total Runoff Volume)*			103.4	74374	479.080542
Sediment	Estimated Influent Load					503.654491
Sediment	Efficiency (%)					5%
Sediment	Efficiency w/o Litter Removal (%)					0%

[1] Mass of unused DII element subtracted from mass of used DII element.

Note 1: Dissolved solids fraction and gross solids fraction of effluent not accounted for in mass balance.

Note 2: Efficiencies include sediment/debris entrapped by the DII. Extensive maintenance was conducted before, during, and after storm events to clear sediment and debris from the DII. Sediment and debis removed from the DII was temporarily stored onsite and then analyzed at the same time as DII.

Note 3: Where the individual storm EMCs showed evidence of normality, the mean EMC effluent concentration was estimated by averaging individual storm EMCs.

Note 4: Where the individual storm EMCs showed evidence of non-normality, the mean EMC effluent concentration was estimated by log-transforming individual storm EMCs, averaging, and then transforming back. These EMCs are italicized.

Note 5: Flow measured continuously while DII was installed.

Note 6: Reporting Limit was used where results were "<" Reporting Limit.

Calculated by: Ed Othmer

Checked by: Chris Knoche

Worksheet 2i
Foothill Maintenance Station Fossil Filter DII % Removal Efficiency Calculations
(Storm-by-Storm Method)

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Copper	Used Fossil Filter Adsorbent	49.9	4898.88	—	—	0.000538
Copper	Used Fossil Filter Debris/litter/sediment	33	3719.52	—	—	0.000270
Copper	Used Media Subtotal					0.000808
Copper	Unused Fossil Filter Adsorbent	0.2	1900	—	—	0.000001
Copper	Effluent Water from 27 October 2000 storm event	—	—	27	1607	0.002703
Copper	Effluent Water from 12 January 2001 storm event	—	—	9.5	12336	0.007301
Copper	Effluent Water from 24 January 2001 storm event	—	—	19	869	0.001029
Copper	Effluent Water from 11 February 2001 storm event	—	—	9.3	7273	0.004214
Copper	Estimated effluent from unsampled storm events	—	—	16.2	10270	0.010365
Copper	Effluent Subtotal					0.025611
Copper	Estimated Influent Load					0.026418
Copper	Efficiency (%)					3%
Copper	Efficiency w/o Litter Removal (%)					2%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Lead	Used Fossil Filter Adsorbent	95.8	4898.88	—	—	0.001032
Lead	Used Fossil Filter Debris/litter/sediment	55.6	3719.52	—	—	0.000455
Lead	Used Media Subtotal					0.001487
Lead	Unused Fossil Filter Adsorbent	1.2	1900	—	—	0.000005
Lead	Effluent Water from 27 October 2000 storm event	—	—	5.1	1607	0.000511
Lead	Effluent Water from 12 January 2001 storm event	—	—	3.5	12336	0.002690
Lead	Effluent Water from 24 January 2001 storm event	—	—	18	869	0.000974
Lead	Effluent Water from 11 February 2001 storm event	—	—	3.0	7273	0.001359
Lead	Estimated effluent from unsampled storm events	—	—	7.4	10270	0.004734
Lead	Effluent Subtotal					0.010268
Lead	Estimated Influent Load					0.011751
Lead	Efficiency (%)					13%
Lead	Efficiency w/o Litter Removal (%)					9%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Zinc	Used Fossil Filter Adsorbent	413	4898.88	—	—	0.004451
Zinc	Used Fossil Filter Debris/litter/sediment	352	3719.52	—	—	0.002880
Zinc	Used Media Subtotal					0.007332
Zinc	Unused Fossil Filter Adsorbent	1.2	1900	—	—	0.000005
Zinc	Effluent Water from 27 October 2000 storm event	—	—	494	1607	0.049455
Zinc	Effluent Water from 12 January 2001 storm event	—	—	127	12336	0.097599
Zinc	Effluent Water from 24 January 2001 storm event	—	—	193	869	0.010448
Zinc	Effluent Water from 11 February 2001 storm event	—	—	53	7273	0.024014
Zinc	Estimated effluent from unsampled storm events	—	—	216.8	10270	0.138674
Zinc	Effluent Subtotal					0.320190
Zinc	Estimated Influent Load					0.327517
Zinc	Efficiency (%)					2%
Zinc	Efficiency w/o Litter Removal (%)					1%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Petroleum Hydrocarbons	Used Fossil Filter Adsorbent	333	4898.88	—	—	0.003589
Petroleum Hydrocarbons	Used Fossil Filter Debris/litter/sediment	333	3719.52	—	—	0.002725
Petroleum Hydrocarbons	Used Media Subtotal					0.006314
Petroleum Hydrocarbons	Unused Fossil Filter Adsorbent	26.6	1900	—	—	0.000111
Petroleum Hydrocarbons	Effluent Water from 27 October 2000 storm event	—	—	955	1607	0.095606
Petroleum Hydrocarbons	Effluent Water from 12 January 2001 storm event	—	—	500	12336	0.384248
Petroleum Hydrocarbons	Effluent Water from 24 January 2001 storm event	—	—	500	869	0.027068
Petroleum Hydrocarbons	Effluent Water from 11 February 2001 storm event	—	—	500	7273	0.226543
Petroleum Hydrocarbons	Estimated effluent from unsampled storm events	—	—	613.8	10270	0.392671
Petroleum Hydrocarbons	Effluent Subtotal					1.126136
Petroleum Hydrocarbons	Estimated Influent Load					1.132338
Petroleum Hydrocarbons	Efficiency (%)					1%
Petroleum Hydrocarbons	Efficiency w/o Litter Removal (%)					0%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (mg/L)	Runoff Volume (ft^3)	Load (lbs)
Sediment[1]	Used Fossil Filter Adsorbent	—	4898.88	—	—	10.800071
Sediment	Used Fossil Filter Debris/litter/sediment	—	3719.52	—	—	8.200054
Sediment	Used Media Subtotal					19.000125
Sediment	Unused Fossil Filter Adsorbent	—	1900	—	—	4.188740
Sediment	Effluent Water from 27 October 2000 storm event	—	—	24	1607	2.402669
Sediment	Effluent Water from 12 January 2001 storm event	—	—	23	12336	17.675392
Sediment	Effluent Water from 24 January 2001 storm event	—	—	27	869	1.461674
Sediment	Effluent Water from 11 February 2001 storm event	—	—	24	7273	10.874059
Sediment	Estimated effluent from unsampled storm events	—	—	24.5	10270	15.674850
Sediment	Effluent Subtotal					48.088643
Sediment	Estimated Influent Load					62.900028
Sediment	Efficiency (%)					24%
Sediment	Efficiency w/o Litter Removal (%)					12%

[1] Mass of unused DII element subtracted from mass of used DII element.

Note 1: Dissolved solids fraction and gross solids fraction of effluent not accounted for in mass balance.

Note 2: Each Fossil Filter DII used approximately 1900 grams of adsorbent material.

Note 3: Efficiencies include sediment/debris entrapped by the DII. Extensive maintenance was conducted before, during, and after storm events to clear sediment and debris from the DII. Sediment and debis removed from the DII was temporarily stored onsite and then analyzed at the same time as DII.

Note 4: Where the individual storm EMCs showed evidence of normality, the unsampled effluent concentration was estimated by averaging individual storm EMCs.

Note 5: Where the individual storm EMCs showed evidence of non-normality, the unsampled effluent concentration was estimated by log-transforming individual storm EMCs, averaging, and then transforming back. These EMCs are italicized.

Note 6: Flow measured continuously while DII was installed.

Note 7: Reporting Limit was used where results were "<" Reporting Limit.

Calculated by: Ed Othmer

Checked by: Chris Knoche

Worksheet 2j
Las Flores Maintenance Station Fossil Filter DII % Removal Efficiency Calculations (Storm-by-Storm Method)

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Copper	Used Fossil Filter Adsorbent	22.2	11816.28	—	—	0.000577
Copper	Used Fossil Filter Debris/litter/sediment	22.3	11589.48	—	—	0.000569
Copper	Used Media Subtotal					0.001146
Copper	Unused Fossil Filter Adsorbent	0.2	1900	—	—	0.000001
Copper	Effluent Water from 27 October 2000 storm event	—	—	25	2533	0.003935
Copper	Effluent Water from 8 January 2001 storm event	—	—	43	619	0.001658
Copper	Effluent Water from 12 January 2001 storm event	—	—	5.9	8222	0.003022
Copper	Effluent Water from 24 January 2001 storm event	—	—	26	3384	0.005481
Copper	Effluent Water from 11 February 2001 storm event	—	—	7.6	984	0.000466
Copper	Estimated effluent from unsampled storm events	—	—	21.5	26686	0.035722
Copper	Effluent Subtotal					0.050284
Copper	Estimated Influent Load					0.051429
Copper	Efficiency (%)					2%
Copper	Efficiency w/o Litter Removal (%)					1%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Lead	Used Fossil Filter Adsorbent	16.2	11816.28	—	—	0.000421
Lead	Used Fossil Filter Debris/litter/sediment	24.1	11589.48	—	—	0.000614
Lead	Used Media Subtotal					0.001036
Lead	Unused Fossil Filter Adsorbent	1.2	1900	—	—	0.000005
Lead	Effluent Water from 27 October 2000 storm event	—	—	15	2533	0.002438
Lead	Effluent Water from 8 January 2001 storm event	—	—	8.6	619	0.000332
Lead	Effluent Water from 12 January 2001 storm event	—	—	2.1	8222	0.001076
Lead	Effluent Water from 24 January 2001 storm event	—	—	5.0	3384	0.001054
Lead	Effluent Water from 11 February 2001 storm event	—	—	1.7	984	0.000104
Lead	Estimated effluent from unsampled storm events	—	—	6.6	26686	0.010923
Lead	Effluent Subtotal					0.015927
Lead	Estimated Influent Load					0.016957
Lead	Efficiency (%)					6%
Lead	Efficiency w/o Litter Removal (%)					3%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Zinc	Used Fossil Filter Adsorbent	147	11816.28	—	—	0.003821
Zinc	Used Fossil Filter Debris/litter/sediment	274	11589.48	—	—	0.006986
Zinc	Used Media Subtotal					0.010808
Zinc	Unused Fossil Filter Adsorbent	1.2	1900	—	—	0.000005
Zinc	Effluent Water from 27 October 2000 storm event	—	—	358	2533	0.056478
Zinc	Effluent Water from 8 January 2001 storm event	—	—	460	619	0.017738
Zinc	Effluent Water from 12 January 2001 storm event	—	—	46	8222	0.023561
Zinc	Effluent Water from 24 January 2001 storm event	—	—	59	3384	0.012438
Zinc	Effluent Water from 11 February 2001 storm event	—	—	57	984	0.003494
Zinc	Estimated effluent from unsampled storm events	—	—	196.0	26686	0.325812
Zinc	Effluent Subtotal					0.439521
Zinc	Estimated Influent Load					0.450324
Zinc	Efficiency (%)					2%
Zinc	Efficiency w/o Litter Removal (%)					1%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Petroleum Hydrocarbons	Used Fossil Filter Adsorbent	333	11816.28	—	—	0.008857
Petroleum Hydrocarbons	Used Fossil Filter Debris/litter/sediment	360	11589.48	—	—	0.009179
Petroleum Hydrocarbons	Used Media Subtotal					0.017835
Petroleum Hydrocarbons	Unused Fossil Filter Adsorbent	26.6	1900	—	—	0.000111
Petroleum Hydrocarbons	Effluent Water from 27 October 2000 storm event	—	—	1283	2533	0.202379
Petroleum Hydrocarbons	Effluent Water from 8 January 2001 storm event	—	—	1897	619	0.073152
Petroleum Hydrocarbons	Effluent Water from 12 January 2001 storm event	—	—	500	8222	0.256103
Petroleum Hydrocarbons	Effluent Water from 24 January 2001 storm event	—	—	500	3384	0.105406
Petroleum Hydrocarbons	Effluent Water from 11 February 2001 storm event	—	—	500	984	0.030650
Petroleum Hydrocarbons	Estimated effluent from unsampled storm events	—	—	935.9	26686	1.555900
Petroleum Hydrocarbons	Effluent Subtotal					2.223590
Petroleum Hydrocarbons	Estimated Influent Load					2.241314
Petroleum Hydrocarbons	Efficiency (%)					1%
Petroleum Hydrocarbons	Efficiency w/o Litter Removal (%)					0%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (mg/L)	Runoff Volume (ft^3)	Load (lbs)
Sediment[1]	Used Fossil Filter Adsorbent	—	11816.28	—	—	26.050171
Sediment	Used Fossil Filter Debris/litter/sediment	—	11589.48	—	—	25.550168
Sediment	Used Media Subtotal					51.600338
Sediment	Unused Fossil Filter Adsorbent	—	1900	—	—	4.188740
Sediment	Effluent Water from 27 October 2000 storm event	—	—	157	2533	24.821949
Sediment	Effluent Water from 8 January 2001 storm event	—	—	98	619	3.779058
Sediment	Effluent Water from 12 January 2001 storm event	—	—	73	8222	37.391009
Sediment	Effluent Water from 24 January 2001 storm event	—	—	76	3384	16.021761
Sediment	Effluent Water from 11 February 2001 storm event	—	—	48	984	2.942410
Sediment	Estimated effluent from unsampled storm events	—	—	90.5	26686	150.386446
Sediment	Effluent Subtotal					235.342653
Sediment	Estimated Influent Load					282.754251
Sediment	Efficiency (%)					17%
Sediment	Efficiency w/o Litter Removal (%)					8%

[1] Mass of unused DII element subtracted from mass of used DII element.

Note 1: Dissolved solids fraction and gross solids fraction of effluent not accounted for in mass balance.

Note 2: Each Fossil Filter DII used approximately 1900 grams of adsorbent material.

Note 3: Efficiencies include sediment/debris entrapped by the DII. Extensive maintenance was conducted before, during, and after storm events to clear sediment and debris from the DII. Sediment and debis removed from the DII was temporarily stored onsite and then analyzed at the same time as DII.

Note 4: Where the individual storm EMCs showed evidence of normality, the unsampled effluent concentration was estimated by averaging individual storm EMCs.

Note 5: Where the individual storm EMCs showed evidence of non-normality, the unsampled effluent concentration was estimated by log-transforming individual storm EMCs, averaging, and then transforming back. These EMCs are italicized.

Note 6: Flow measured continuously while DII was installed.

Note 7: Reporting Limit was used where results were "<" Reporting Limit.

Calculated by: Ed Othmer

Checked by: Chris Knoche

Worksheet 2k
Rosemead Maintenance Station Fossil Filter DII % Removal Efficiency Calculations (Storm-by-Storm Method)

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Copper	Used Fossil Filter Adsorbent	41.3	5601.96	—	—	0.000509
Copper	Used Fossil Filter Debris/litter/sediment	53.7	14356.44	—	—	0.001696
Copper	Used Media Subtotal					0.002205
Copper	Unused Fossil Filter Adsorbent	0.2	1900	—	—	0.000001
Copper	Effluent Water from 11 October 2000 storm event	—	—	68	79	0.000433
Copper	Effluent Water from 27 October 2000 storm event	—	—	45	737	0.002066
Copper	Effluent Water from 12 January 2001 storm event	—	—	14	3974	0.003466
Copper	Effluent Water from 24 January 2001 storm event	—	—	24	383	0.000573
Copper	Effluent Water from 11 February 2001 storm event	—	—	16	236	0.000235
Copper	Estimated effluent from unsampled storm events	—	—	37.4	18243	0.042504
Copper	Effluent Subtotal					0.049277
Copper	Estimated Influent Load					0.051482
Copper	Efficiency (%)					4%
Copper	Efficiency w/o Litter Removal (%)					1%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Lead	Used Fossil Filter Adsorbent	74.6	5601.96	—	—	0.000919
Lead	Used Fossil Filter Debris/litter/sediment	60.4	14356.44	—	—	0.001908
Lead	Used Media Subtotal					0.002827
Lead	Unused Fossil Filter Adsorbent	1.2	1900	—	—	0.000005
Lead	Effluent Water from 11 October 2000 storm event	—	—	55	79	0.000271
Lead	Effluent Water from 27 October 2000 storm event	—	—	25	737	0.001148
Lead	Effluent Water from 12 January 2001 storm event	—	—	6.9	3974	0.001708
Lead	Effluent Water from 24 January 2001 storm event	—	—	12	383	0.000286
Lead	Effluent Water from 11 February 2001 storm event	—	—	9.0	236	0.000132
Lead	Estimated effluent from unsampled storm events	—	—	21.6	18243	0.024525
Lead	Effluent Subtotal					0.028071
Lead	Estimated Influent Load					0.030893
Lead	Efficiency (%)					9%
Lead	Efficiency w/o Litter Removal (%)					3%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Zinc	Used Fossil Filter Adsorbent	543	5601.96	—	—	0.006692
Zinc	Used Fossil Filter Debris/litter/sediment	755	14356.44	—	—	0.023846
Zinc	Used Media Subtotal					0.030538
Zinc	Unused Fossil Filter Adsorbent	1.2	1900	—	—	0.000005
Zinc	Effluent Water from 11 October 2000 storm event	—	—	1070	79	0.005266
Zinc	Effluent Water from 27 October 2000 storm event	—	—	522	737	0.023967
Zinc	Effluent Water from 12 January 2001 storm event	—	—	212	3974	0.052484
Zinc	Effluent Water from 24 January 2001 storm event	—	—	329	383	0.007850
Zinc	Effluent Water from 11 February 2001 storm event	—	—	255	236	0.003749
Zinc	Estimated effluent from unsampled storm events	—	—	477.6	18243	0.542784
Zinc	Effluent Subtotal					0.636100
Zinc	Estimated Influent Load					0.666633
Zinc	Efficiency (%)					5%
Zinc	Efficiency w/o Litter Removal (%)					1%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Petroleum Hydrocarbons	Used Fossil Filter Adsorbent	333	5601.96	—	—	0.004104
Petroleum Hydrocarbons	Used Fossil Filter Debris/litter/sediment	333	14356.44	—	—	0.010518
Petroleum Hydrocarbons	Used Media Subtotal					0.014622
Petroleum Hydrocarbons	Unused Fossil Filter Adsorbent	26.6	1900	—	—	0.000111
Petroleum Hydrocarbons	Effluent Water from 11 October 2000 storm event	—	—	895	79	0.004405
Petroleum Hydrocarbons	Effluent Water from 27 October 2000 storm event	—	—	692	737	0.031772
Petroleum Hydrocarbons	Effluent Water from 12 January 2001 storm event	—	—	500	3974	0.123784
Petroleum Hydrocarbons	Effluent Water from 24 January 2001 storm event	—	—	500	383	0.011930
Petroleum Hydrocarbons	Effluent Water from 11 February 2001 storm event	—	—	500	236	0.007351
Petroleum Hydrocarbons	Estimated effluent from unsampled storm events	—	—	617.4	18243	0.701665
Petroleum Hydrocarbons	Effluent Subtotal					0.880906
Petroleum Hydrocarbons	Estimated Influent Load					0.895417
Petroleum Hydrocarbons	Efficiency (%)					2%
Petroleum Hydrocarbons	Efficiency w/o Litter Removal (%)					0%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (mg/L)	Runoff Volume (ft^3)	Load (lbs)
Sediment[1]	Used Fossil Filter Adsorbent	—	5601.96	—	—	12.350081
Sediment	Used Fossil Filter Debris/litter/sediment	—	14356.44	—	—	31.650208
Sediment	Used Media Subtotal					44.000289
Sediment	Unused Fossil Filter Adsorbent	—	1900	—	—	4.188740
Sediment	Effluent Water from 11 October 2000 storm event	—	—	150	79	0.738219
Sediment	Effluent Water from 27 October 2000 storm event	—	—	42	737	1.928340
Sediment	Effluent Water from 12 January 2001 storm event	—	—	94	3974	23.271403
Sediment	Effluent Water from 24 January 2001 storm event	—	—	18	383	0.429475
Sediment	Effluent Water from 11 February 2001 storm event	—	—	44	236	0.646892
Sediment	Estimated effluent from unsampled storm events	—	—	69.6	18243	79.099248
Sediment	Effluent Subtotal					106.113577
Sediment	Estimated Influent Load					145.925125
Sediment	Efficiency (%)					27%
Sediment	Efficiency w/o Litter Removal (%)					7%

[1] Mass of unused DII element subtracted from mass of used DII element.

Note 1: Dissolved solids fraction and gross solids fraction of effluent not accounted for in mass balance.

Note 2: Each Fossil Filter DII used approximately 1900 grams of adsorbent material.

Note 3: Efficiencies include sediment/debris entrapped by the DII. Extensive maintenance was conducted before, during, and after storm events to clear sediment and debris from the DII. Sediment and debis removed from the DII was temporarily stored onsite and then analyzed at the same time as DII.

Note 4: Where the individual storm EMCs showed evidence of normality, the unsampled effluent concentration was estimated by averaging individual storm EMCs.

Note 5: Where the individual storm EMCs showed evidence of non-normality, the unsampled effluent concentration was estimated by log-transforming individual storm EMCs, averaging, and then transforming back. These EMCs are italicized.

Note 6: Flow measured continuously while DII was installed.

Note 7: Reporting Limit was used where results were "<" Reporting Limit.

Calculated by: Ed Ohmer

Checked by: Chris Knoche

Worksheet 2I
Foothill Maintenance Station Fossil Filter DII % Removal Efficiency Calculations
(Aggregate Method)

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Copper	Used Fossil Filter Adsorbent	49.9	4898.88	—	—	0.000538
Copper	Used Fossil Filter Debris/litter/sediment	33	3719.52	—	—	0.000270
Copper	Used Media Subtotal					0.000808
Copper	Unused Fossil Filter Adsorbent	0.2	1900	—	—	0.000001
Copper	Effluent Water from 27 October 2000 storm event	—	—	27	1607	
Copper	Effluent Water from 12 January 2001 storm event	—	—	9.5	12336	
Copper	Effluent Water from 24 January 2001 storm event	—	—	19	869	
Copper	Effluent Water from 11 February 2001 storm event	—	—	9.3	7273	
Copper	Estimated effluent from unsampled storm events	—	—	—	10270	
Copper	Effluent Subtotal (Mean EMC x Total Runoff Volume)			16.2	32355	0.032653
Copper	Estimated Influent Load					0.033460
Copper	Efficiency (%)					2%
Copper	Efficiency w/o Litter Removal (%)					2%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Lead	Used Fossil Filter Adsorbent	95.8	4898.88	—	—	0.001032
Lead	Used Fossil Filter Debris/litter/sediment	55.6	3719.52	—	—	0.000455
Lead	Used Media Subtotal					0.001487
Lead	Unused Fossil Filter Adsorbent	1.2	1900	—	—	0.000005
Lead	Effluent Water from 27 October 2000 storm event	—	—	5.1	1607	
Lead	Effluent Water from 12 January 2001 storm event	—	—	3.5	12336	
Lead	Effluent Water from 24 January 2001 storm event	—	—	18	869	
Lead	Effluent Water from 11 February 2001 storm event	—	—	3.0	7273	
Lead	Estimated effluent from unsampled storm events	—	—	—	10270	
Lead	Effluent Subtotal (Mean EMC x Total Runoff Volume)			7.4	32355	0.014916
Lead	Estimated Influent Load					0.016398
Lead	Efficiency (%)					9%
Lead	Efficiency w/o Litter Removal (%)					6%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Zinc	Used Fossil Filter Adsorbent	413	4898.88	—	—	0.004451
Zinc	Used Fossil Filter Debris/litter/sediment	352	3719.52	—	—	0.002880
Zinc	Used Media Subtotal					0.007332
Zinc	Unused Fossil Filter Adsorbent	1.2	1900	—	—	0.000005
Zinc	Effluent Water from 27 October 2000 storm event	—	—	494	1607	
Zinc	Effluent Water from 12 January 2001 storm event	—	—	127	12336	
Zinc	Effluent Water from 24 January 2001 storm event	—	—	193	869	
Zinc	Effluent Water from 11 February 2001 storm event	—	—	53	7273	
Zinc	Estimated effluent from unsampled storm events	—	—	—	10270	
Zinc	Effluent Subtotal (Mean EMC x Total Runoff Volume)			216.8	32355	0.436885
Zinc	Estimated Influent Load					0.444212
Zinc	Efficiency (%)					2%
Zinc	Efficiency w/o Litter Removal (%)					1%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Petroleum Hydrocarbons	Used Fossil Filter Adsorbent	333	4898.88	—	—	0.003589
Petroleum Hydrocarbons	Used Fossil Filter Debris/litter/sediment	333	3719.52	—	—	0.002725
Petroleum Hydrocarbons	Used Media Subtotal					0.006314
Petroleum Hydrocarbons	Unused Fossil Filter Adsorbent	26.6	1900	—	—	0.000111
Petroleum Hydrocarbons	Effluent Water from 27 October 2000 storm event	—	—	955	1607	
Petroleum Hydrocarbons	Effluent Water from 12 January 2001 storm event	—	—	500	12336	
Petroleum Hydrocarbons	Effluent Water from 24 January 2001 storm event	—	—	500	869	
Petroleum Hydrocarbons	Effluent Water from 11 February 2001 storm event	—	—	500	7273	
Petroleum Hydrocarbons	Estimated effluent from unsampled storm events	—	—	—	10270	
Petroleum Hydrocarbons	Effluent Subtotal (Mean EMC x Total Runoff Volume)			613.8	32355	1.237086
Petroleum Hydrocarbons	Estimated Influent Load					1.243288
Petroleum Hydrocarbons	Efficiency (%)					0%
Petroleum Hydrocarbons	Efficiency w/o Litter Removal (%)					0%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (mg/L)	Runoff Volume (ft^3)	Load (lbs)
Sediment[1]	Used Fossil Filter Adsorbent	—	4898.88	—	—	10.800071
Sediment	Used Fossil Filter Debris/litter/sediment	—	3719.52	—	—	8.200054
Sediment	Used Media Subtotal					19.000125
Sediment	Unused Fossil Filter Adsorbent	—	1900	—	—	4.188740
Sediment	Effluent Water from 27 October 2000 storm event	—	—	24	1607	
Sediment	Effluent Water from 12 January 2001 storm event	—	—	23	12336	
Sediment	Effluent Water from 24 January 2001 storm event	—	—	27	869	
Sediment	Effluent Water from 11 February 2001 storm event	—	—	24	7273	
Sediment	Estimated effluent from unsampled storm events	—	—	—	10270	
Sediment	Effluent Subtotal (Mean EMC x Total Runoff Volume)			24.5	32355	49.382644
Sediment	Estimated Influent Load					64.194029
Sediment	Efficiency (%)					23%
Sediment	Efficiency w/o Litter Removal (%)					12%

[1] Mass of unused DII element subtracted from mass of used DII element.

Note 1: Dissolved solids fraction and gross solids fraction of effluent not accounted for in mass balance.

Note 2: Each Fossil Filter DII used approximately 1900 grams of adsorbent material.

Note 3: Efficiencies include sediment/debris entrapped by the DII. Extensive maintenance was conducted before, during, and after storm events to clear sediment and debris from the DII. Sediment and debis removed from the DII was temporarily stored onsite and then analyzed at the same time as DII.

Note 4: Where the individual storm EMCs showed evidence of normality, the mean EMC effluent concentration was estimated by averaging individual storm EMCs.

Note 5: Where the individual storm EMCs showed evidence of non-normality, the mean EMC effluent concentration was estimated by log-transforming individual storm EMCs, averaging, and then transforming back. These EMCs are italicized.

Note 6: Flow measured continuously while DII was installed.

Note 7: Reporting Limit was used where results were "<" Reporting Limit.

Calculated by: Ed Othmer

Checked by: Chris Knoche

Worksheet 2m
Las Flores Maintenance Station Fossil Filter DII % Removal Efficiency Calculations (Aggregate Method)

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Copper	Used Fossil Filter Adsorbent	22.2	11816.28	—	—	0.000577
Copper	Used Fossil Filter Debris/litter/sediment	22.3	11589.48	—	—	0.000569
Copper	Used Media Subtotal					0.001146
Copper	Unused Fossil Filter Adsorbent	0.2	1900	—	—	0.000001
Copper	Effluent Water from 27 October 2000 storm event	—	—	25	2533	
Copper	Effluent Water from 8 January 2001 storm event	—	—	43	619	
Copper	Effluent Water from 12 January 2001 storm event	—	—	5.9	8222	
Copper	Effluent Water from 24 January 2001 storm event	—	—	26	3384	
Copper	Effluent Water from 11 February 2001 storm event	—	—	7.6	984	
Copper	Estimated effluent from unsampled storm events	—	—	—	26686	
Copper	Effluent Subtotal (Mean EMC x Total Runoff Volume)			21.5	42428	0.056794
Copper	Estimated Influent Load					0.057939
Copper	Efficiency (%)					2%
Copper	Efficiency w/o Litter Removal (%)					1%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Lead	Used Fossil Filter Adsorbent	16.2	11816.28	—	—	0.000421
Lead	Used Fossil Filter Debris/litter/sediment	24.1	11589.48	—	—	0.000614
Lead	Used Media Subtotal					0.001036
Lead	Unused Fossil Filter Adsorbent	1.2	1900	—	—	0.000005
Lead	Effluent Water from 27 October 2000 storm event	—	—	15	2533	
Lead	Effluent Water from 8 January 2001 storm event	—	—	8.6	619	
Lead	Effluent Water from 12 January 2001 storm event	—	—	2.1	8222	
Lead	Effluent Water from 24 January 2001 storm event	—	—	5.0	3384	
Lead	Effluent Water from 11 February 2001 storm event	—	—	1.7	984	
Lead	Estimated effluent from unsampled storm events	—	—	—	26686	
Lead	Effluent Subtotal (Mean EMC x Total Runoff Volume)			6.6	42428	0.017366
Lead	Estimated Influent Load					0.018397
Lead	Efficiency (%)					6%
Lead	Efficiency w/o Litter Removal (%)					2%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Zinc	Used Fossil Filter Adsorbent	147	11816.28	—	—	0.003821
Zinc	Used Fossil Filter Debris/litter/sediment	274	11589.48	—	—	0.006986
Zinc	Used Media Subtotal					0.010808
Zinc	Unused Fossil Filter Adsorbent	1.2	1900	—	—	0.000005
Zinc	Effluent Water from 27 October 2000 storm event	—	—	358	2533	
Zinc	Effluent Water from 8 January 2001 storm event	—	—	460	619	
Zinc	Effluent Water from 12 January 2001 storm event	—	—	46	8222	
Zinc	Effluent Water from 24 January 2001 storm event	—	—	59	3384	
Zinc	Effluent Water from 11 February 2001 storm event	—	—	57	984	
Zinc	Estimated effluent from unsampled storm events	—	—	—	26686	
Zinc	Effluent Subtotal (Mean EMC x Total Runoff Volume)			196.0	42428	0.518007
Zinc	Estimated Influent Load					0.528810
Zinc	Efficiency (%)					2%
Zinc	Efficiency w/o Litter Removal (%)					1%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Petroleum Hydrocarbons	Used Fossil Filter Adsorbent	333	11816.28	—	—	0.008657
Petroleum Hydrocarbons	Used Fossil Filter Debris/litter/sediment	360	11589.48	—	—	0.009179
Petroleum Hydrocarbons	Used Media Subtotal					0.017835
Petroleum Hydrocarbons	Unused Fossil Filter Adsorbent	26.6	1900	—	—	0.000111
Petroleum Hydrocarbons	Effluent Water from 27 October 2000 storm event	—	—	1283	2533	
Petroleum Hydrocarbons	Effluent Water from 8 January 2001 storm event	—	—	1897	619	
Petroleum Hydrocarbons	Effluent Water from 12 January 2001 storm event	—	—	500	8222	
Petroleum Hydrocarbons	Effluent Water from 24 January 2001 storm event	—	—	500	3384	
Petroleum Hydrocarbons	Effluent Water from 11 February 2001 storm event	—	—	500	984	
Petroleum Hydrocarbons	Estimated effluent from unsampled storm events	—	—	—	26686	
Petroleum Hydrocarbons	Effluent Subtotal (Mean EMC x Total Runoff Volume)			935.9	42428	2.473721
Petroleum Hydrocarbons	Estimated Influent Load					2.491445
Petroleum Hydrocarbons	Efficiency (%)					1%
Petroleum Hydrocarbons	Efficiency w/o Litter Removal (%)					0%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (mg/L)	Runoff Volume (ft^3)	Load (lbs)
Sediment[1]	Used Fossil Filter Adsorbent	—	11816.28	—	—	26.050171
Sediment	Used Fossil Filter Debris/litter/sediment	—	11589.48	—	—	25.550168
Sediment	Used Media Subtotal					51.600338
Sediment	Unused Fossil Filter Adsorbent	—	1900	—	—	4.188740
Sediment	Effluent Water from 27 October 2000 storm event	—	—	157	2533	
Sediment	Effluent Water from 8 January 2001 storm event	—	—	98	619	
Sediment	Effluent Water from 12 January 2001 storm event	—	—	73	8222	
Sediment	Effluent Water from 24 January 2001 storm event	—	—	76	3384	
Sediment	Effluent Water from 11 February 2001 storm event	—	—	48	984	
Sediment	Estimated effluent from unsampled storm events	—	—	—	26686	
Sediment	Effluent Subtotal (Mean EMC x Total Runoff Volume)			90.5	42428	239.099007
Sediment	Estimated Influent Load					286.510606
Sediment	Efficiency (%)					17%
Sediment	Efficiency w/o Litter Removal (%)					8%

[1] Mass of unused DII element subtracted from mass of used DII element.

Note 1: Dissolved solids fraction and gross solids fraction of effluent not accounted for in mass balance.

Note 2: Each Fossil Filter DII used approximately 1900 grams of adsorbent material.

Note 3: Efficiencies include sediment/debris entrapped by the DII. Extensive maintenance was conducted before, during, and after storm events to clear sediment and debris from the DII. Sediment and debis removed from the DII was temporarily stored onsite and then analyzed at the same time as DII.

Note 4: Where the individual storm EMCs showed evidence of normality, the mean EMC effluent concentration was estimated by averaging individual storm EMCs.

Note 5: Where the individual storm EMCs showed evidence of non-normality, the mean EMC effluent concentration was estimated by log-transforming individual storm EMCs, averaging, and then transforming back. These EMCs are italicized.

Note 6: Flow measured continuously while DII was installed.

Note 7: Reporting Limit was used where results were "<" Reporting Limit.

Calculated by: Ed Othmer

Checked by: Chris Knoche

Worksheet 2n
Rosemead Maintenance Station Fossil Filter DII % Removal Efficiency Calculations (Aggregate Method)

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Copper	Used Fossil Filter Adsorbent	41.3	5601.96	—	—	0.000509
Copper	Used Fossil Filter Debris/litter/sediment	53.7	14356.44	—	—	0.001696
Copper	Used Media Subtotal					0.002205
Copper	Unused Fossil Filter Adsorbent	0.2	1900	—	—	0.000001
Copper	Effluent Water from 11 October 2000 storm event	—	—	88	79	
Copper	Effluent Water from 27 October 2000 storm event	—	—	45	737	
Copper	Effluent Water from 12 January 2001 storm event	—	—	14	3974	
Copper	Effluent Water from 24 January 2001 storm event	—	—	24	383	
Copper	Effluent Water from 11 February 2001 storm event	—	—	16	236	
Copper	Estimated effluent from unsampled storm events	—	—	—	18243	
Copper	Effluent Subtotal (Mean EMC x Total Runoff Volume)			37.4	23652	0.055107
Copper	Estimated Influent Load					0.057311
Copper	Efficiency (%)					4%
Copper	Efficiency w/o Litter Removal (%)					1%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Lead	Used Fossil Filter Adsorbent	74.6	5601.96	—	—	0.000919
Lead	Used Fossil Filter Debris/litter/sediment	60.4	14356.44	—	—	0.001908
Lead	Used Media Subtotal					0.002827
Lead	Unused Fossil Filter Adsorbent	1.2	1900	—	—	0.000005
Lead	Effluent Water from 11 October 2000 storm event	—	—	55	79	
Lead	Effluent Water from 27 October 2000 storm event	—	—	25	737	
Lead	Effluent Water from 12 January 2001 storm event	—	—	6.9	3974	
Lead	Effluent Water from 24 January 2001 storm event	—	—	12	383	
Lead	Effluent Water from 11 February 2001 storm event	—	—	9.0	236	
Lead	Estimated effluent from unsampled storm events	—	—	—	18243	
Lead	Effluent Subtotal (Mean EMC x Total Runoff Volume)			21.6	23652	0.031797
Lead	Estimated Influent Load					0.034619
Lead	Efficiency (%)					8%
Lead	Efficiency w/o Litter Removal (%)					3%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Zinc	Used Fossil Filter Adsorbent	543	5601.96	—	—	0.006692
Zinc	Used Fossil Filter Debris/litter/sediment	755	14356.44	—	—	0.023846
Zinc	Used Media Subtotal					0.030538
Zinc	Unused Fossil Filter Adsorbent	1.2	1900	—	—	0.000005
Zinc	Effluent Water from 11 October 2000 storm event	—	—	1070	79	
Zinc	Effluent Water from 27 October 2000 storm event	—	—	522	737	
Zinc	Effluent Water from 12 January 2001 storm event	—	—	212	3974	
Zinc	Effluent Water from 24 January 2001 storm event	—	—	329	383	
Zinc	Effluent Water from 11 February 2001 storm event	—	—	255	236	
Zinc	Estimated effluent from unsampled storm events	—	—	—	18243	
Zinc	Effluent Subtotal (Mean EMC x Total Runoff Volume)			477.6	23652	0.703719
Zinc	Estimated Influent Load					0.734252
Zinc	Efficiency (%)					4%
Zinc	Efficiency w/o Litter Removal (%)					1%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (ug/L)	Runoff Volume (ft^3)	Load (lbs)
Petroleum Hydrocarbons	Used Fossil Filter Adsorbent	333	5601.96	—	—	0.004104
Petroleum Hydrocarbons	Used Fossil Filter Debris/litter/sediment	333	14356.44	—	—	0.010518
Petroleum Hydrocarbons	Used Media Subtotal					0.014622
Petroleum Hydrocarbons	Unused Fossil Filter Adsorbent	26.6	1900	—	—	0.000111
Petroleum Hydrocarbons	Effluent Water from 11 October 2000 storm event	—	—	895	79	
Petroleum Hydrocarbons	Effluent Water from 27 October 2000 storm event	—	—	692	737	
Petroleum Hydrocarbons	Effluent Water from 12 January 2001 storm event	—	—	500	3974	
Petroleum Hydrocarbons	Effluent Water from 24 January 2001 storm event	—	—	500	383	
Petroleum Hydrocarbons	Effluent Water from 11 February 2001 storm event	—	—	500	236	
Petroleum Hydrocarbons	Estimated effluent from unsampled storm events	—	—	—	18243	
Petroleum Hydrocarbons	Effluent Subtotal (Mean EMC x Total Runoff Volume)			617.4	23652	0.909707
Petroleum Hydrocarbons	Estimated Influent Load					0.924217
Petroleum Hydrocarbons	Efficiency (%)					2%
Petroleum Hydrocarbons	Efficiency w/o Litter Removal (%)					0%

Analyte	Media	Concentration (mg/kg)	Mass (grams)	Event Mean Concentration (mg/L)	Runoff Volume (ft^3)	Load (lbs)
Sediment[1]	Used Fossil Filter Adsorbent	—	5601.96	—	—	12.350081
Sediment	Used Fossil Filter Debris/litter/sediment	—	14356.44	—	—	31.650208
Sediment	Used Media Subtotal					44.000289
Sediment	Unused Fossil Filter Adsorbent	—	1900	—	—	4.188740
Sediment	Effluent Water from 11 October 2000 storm event	—	—	150	79	
Sediment	Effluent Water from 27 October 2000 storm event	—	—	42	737	
Sediment	Effluent Water from 12 January 2001 storm event	—	—	94	3974	
Sediment	Effluent Water from 24 January 2001 storm event	—	—	18	383	
Sediment	Effluent Water from 11 February 2001 storm event	—	—	44	236	
Sediment	Estimated effluent from unsampled storm events	—	—	—	18243	
Sediment	Effluent Subtotal (Mean EMC x Total Runoff Volume)			69.6	23652	102.551960
Sediment	Estimated Influent Load					142.363308
Sediment	Efficiency (%)					28%
Sediment	Efficiency w/o Litter Removal (%)					7%

[1] Mass of unused DII element subtracted from mass of used DII element.

Note 1: Dissolved solids fraction and gross solids fraction of effluent not accounted for in mass balance.

Note 2: Each Fossil Filter DII used approximately 1900 grams of adsorbent material.

Note 3: Efficiencies include sediment/debris entrapped by the DII. Extensive maintenance was conducted before, during, and after storm events to clear sediment and debris from the DII. Sediment and debis removed from the DII was temporarily stored onsite and then analyzed at the same time as DII.

Note 4: Where the individual storm EMCs showed evidence of normality, the mean EMC effluent concentration was estimated by averaging individual storm EMCs.

Note 5: Where the individual storm EMCs showed evidence of non-normality, the mean EMC effluent concentration was estimated by log-transforming individual storm EMCs, averaging, and then transforming back. These EMCs are italicized.

Note 6: Flow measured continuously while DII was installed.

Note 7: Reporting Limit was used where results were "<" Reporting Limit.

Calculated by: Ed Ohmer

Checked by: Chris Knoche

2.0 BMP OPERATIONS

Performance assessments of BMP operations were determined using empirical observations (Form H of the OMM Volume II *Field Guidance Notebooks*). Empirical observations were taken at variable times during monitored events. Field crews assessed BMP operations at the beginning, middle and end of a storm event. Traffic, weather and sufficient light sometimes limited these observations.

Observations generally provided information on the following:

- Present meteorological characteristics;
- Rainfall (start times and intensity indication);
- Hydrologic and hydraulic characteristics (flowing and/or standing water, channelization);
- Water level;
- Inlet conditions (problems affecting performance);
- Evidence of debris (organic or trash), scouring, resuspension or erosion ;
- Description of amount and location of sediment accumulation;
- Water quality appearance (visual, olfactory);
- Vegetation condition;
- Outlet conditions (problems affecting performance); and
- Structural condition of facility.

Other site-specific observations were taken according to the checklists present in Form H.

2.1 BMPs Evaluated

Tables 2-1a through 2-1e summarize empirical observations of BMP performance. An overall review of each BMP is provided following each table. More detail on BMP operations is available at the following web site: http://www.rbf.com/caltrans/.

2.1.1 Biofiltration Strips

Table 2-1a: Comparison of Biofiltration Strip Operational Performance

Site	No. of Observed Events	Hydrologic/ Hydraulic Characteristics	Inlet Conditions	Water Quality	Solids Deposition/ Resuspension	Erosion	Vegetation	Outlet	Comments
Altadena Maintenance Station Strip (73211a)	7	Functioned as designed.	During peak flow rates, runoff flowed from facility directly into spreader ditch bypassing the flume.	Less suspended solids were observed in the effluent compared to influent.	Sediment was deposited in the spreader ditch.	No notable observations.	Vegetation met the 90% coverage requirement.	Functioned as designed.	Spreader ditch required dewatering after each rain event.
I-605/SR-91 Strip (73222a)	6	Functioned as designed. No outlet flow occurred during 1 of 6 observed events due to infiltration.	Functioned as designed.	Less suspended solids were observed in the effluent compared to influent.	Trash and debris accumulated at the asphalt/vegetation interface.	No notable observations.	Vegetation met the 90% coverage requirement. Gophers caused a few small bare patches. Two transplanted areas had good coverage of vegetation.	Functioned as designed.	Majority of runoff entering the strip infiltrated.

Overall Review of Biofiltration Strips

During various periods, vegetation color changed from green to yellow and then to brown in some cases but density was always maintained. As of May 2000, all the strips had over 90 percent cover of vegetation. However, both strips, specifically the one at Altadena Maintenance Stations were overrun with either weedy species and/or species form the erosion control mix. This year the above average rainfall favored weedy species over the saltgrass at sites with any adjacent fast-growing vegetation such as weeds or the designated erosion control species. Disturbance within the strips also allowed weedy species to invade. The exception to this pattern was the I-605/SR-91 strip, where the saltgrass remained dense with only minimal weeds.

While saltgrass is an excellent competitor in moist saline soils, saltgrass does not appear to be a good competitor against winter weeds in soils that are not saline and that are not naturally moist or irrigated. Therefore, it is likely that winter weeds such as annual grasses would eventually out-compete saltgrass without intensive maintenance in the non saline soils generally found in the strips.

Saltgrass needs irrigation to establish at a minimum during initial planting. Once established, saltgrass continues to grow without irrigation mainly in the more coastal areas where temperatures are cooler and foggy conditions allow the grass to persist through the summer months.

The erosion control mix contained many of the species that were originally considered for the strips before the issue of timing and achieving the 90 percent cover requirement forced the saltgrass sod specification. The erosion control mix was designed to germinate quickly and is composed of both annual and perennial species. With modification, this mix may prove to be more effective over a broader range of conditions than saltgrass.

Altadena Maintenance Station Biofiltration Strip

During September 2000 the salt grass was brown. This was probably due to inland sites being drier and hotter. The vegetation consultant visited the site on May 2, 2001. The consultant noted that this strip had been over run by weedy species. The site was mowed per the maintenance schedule in January before the majority of rain fell this season. Thus, the timing of the rains and maintenance favored the annual grasses and weedy broadleaf species more than the saltgrass. Approximately half of the site was vegetated by weedy annual grasses (Bromus diandrus, Hordeum leporinum, Bromus mollis, Lolium sp, Avena sp.) as well as broadleaf weeds (Sonchus oleraceus and Cornopus didymus). The remainder of the strip was covered in bermuda grass (Cyndon dactylon). There were two small areas of saltgrass left in the middle of the strip. With the weedy species included, the strip met the vegetation cover requirements.

One of the necessary design features of the Altadena Maintenance Station Strip is a spreader ditch, which collects and uniformly distributes water across the strip. To prevent mosquito breeding, stormwater that remained in the collector ditch was drained following each storm event.

During each monitored event, flow was uniformly distributed across the strip. No channelization or ponding was observed. At the beginning of the wet season, there was more infiltration than at the end; this is attributed to soil moisture and rainfall/runoff intensity.

I-605/SR-91 Biofiltration Strip

During the September 11, 2000 site visit the vegetation consultant noted that the strip met the required vegetative cover with virtually all the strip being vegetated. Approximately 80 percent of the vegetation was in an active green growing condition. The other 20 percent of the salt grass had some green blades and but was likely dormant. Following the May 2, 2001 site visit, the consultant noted that the strip had the required vegetative cover with virtually all of the strip vegetated with saltgrass. There were some annual grasses in the strip that appeared to develop around disturbed soil from gopher activity. No other species were immediately upwind of the strip, which may have been the main difference in relation to saltgrass cover between this strip and the two swales in the nearby vicinity. It should be noted that this site had fewer weeds that could be wind blown into the strip since it was immediately adjacent to the roadway. The prevailing wind from weather and traffic came from the direction of the roadway, thus few weed seeds were either wind blown or washed into the strip.

Errant drivers running off the I-605/SR-91 connector continued to be a problem. On at least one occasion, a vehicle ran off the road (accidentally) and drove across the strip before the beginning of the storm season. Following the accident, the site was inspected. Other than the salt grass being compacted by the tires, no other damage to the strip was observed.

During each monitored event, flow was uniformly distributed across the strip. Throughout the wet season, most of the runoff infiltrated before reaching the strip's outlet. When flow was perceptible across the strip, no channelization or ponding was observed. During intense rainfall, flow would bypass down the side channel and flow was not uniform into the strip. During intense rainfall period's flow favored the middle and southern areas of the strip. During period's of low rainfall intensity the thick vegetation along the asphalt/biofilter interface prevented flow from passing into the strip; instead flow would be channeled along the asphalt/biofilter interface. Also of note is that trash and debris tended to collect at the asphalt/biofilter interface.

2.1.2 Biofiltration Swales

Table 2-1b: Comparison of Biofiltration Swale Operational Performance

Site	No. of Observed Events	Hydrologic/ Hydraulic Characteristics	Inlet Conditions	Water Quality	Solids Deposition/ Resuspension	Erosion	Vegetation	Outlet	Comments
I-605/SR-91 Swale (73222b)	7	Functioned as designed; flow would only reach the effluent end of the swale during intense rainfall. No outlet flow occurred during 4 of 7 events observed due to infiltration. Flow bypassed the effluent end of the swale due to numerous gopher burrows. Flow would exit after the monitoring flume.	Functioned as designed.	Less suspended solids were observed in the effluent compared to influent.	Trash and debris accumulated in the energy dissipater and at the concrete spreader/biofilter interface inlet. Generally trash and debris accumulated in the upper quarter of the swale.	Soil above the headwall of the inlet pipe eroded and accumulated into the energy dissipater.	Vegetation met the 90% coverage requirement. Side slope coverage was >70%. Gophers caused a few small bare patches.	Growth of vegetation in channel downstream of swale constricted flow causing backflow towards swale outlet.	Runoff infiltrated through gopher holes near the effluent area.

Table 2-1b: Comparison of Biofiltration Swale Operational Performance (continued)

Site	No. of Observed Events	Hydrologic/ Hydraulic Characteristics	Inlet Conditions	Water Quality	Solids Deposition/ Resuspension	Erosion	Vegetation	Outlet	Comments
Cerritos Maintenance Station Swale (73223)	7	Flow bypassed through gopher holes in the side slope and invert during 5 of 7 events. There was preferential flow through portions of the swale because of lacking vegetation. No outlet flow occurred during 2 of 7 events due to infiltration and bypass through gopher holes.	Operated normally.	More suspended solids observed in effluent during some events because of bare areas caused by gophers.	Trash and debris accumulated in the energy dissipater and in the first quarter of the swale. Most sediment was deposited in the energy dissipater.	Erosion within the swale and along the north side slope caused by gophers. Eroded areas were further aggravated during storm events when runoff bypassed through gopher holes.	Vegetation met the 90% coverage requirement through December. Coverage has been less than 90% from January to end of season due to erosion caused by gopher activity but has grown back to over 90% coverage. Additionally, side slope coverage had less than 70% due to gopher activity.	Gopher holes at biofilter/ concrete collector channel caused flow bypass.	In general the structural integrity of the swale was compromised because of gopher problem. To mitigate gopher problems, a steel screen was installed in the middle of the berm to a depth of two feet to serve as a gopher barrier. The steel screen did not mitigate the gopher problem. Installed erosion control blanket on the berm side slopes and top and seeded to control erosion.

Table 2-1b: Comparison of Biofiltration Swale Operational Performance (concluded)

I-5/I-605 Swale (73224)	7	Flow bypassed through gopher hole near middle of the swale. No outlet flow occurred during 1 of 7 observed events.	Functioned as designed.	Less suspended solids were observed in the effluent compared to influent.	Trash and debris accumulated in the energy dissipater and at the concrete spreader/biofilter interface. Sediment accumulated in the energy dissipater.	Erosion occurred down the middle of the swale during the large storm event of January, 10, 2001 which was enhanced because of gopher activity.	Vegetation met the 90% coverage requirement through December 2000 but fell below 90% from January through the end of the season but has since grown back to over 90% coverage. Side slope coverage > 70%. A few small bare spots in swale caused by gophers.	Gopher hole near effluent end caused flow bypass during last event.	Runoff infiltrated through gopher holes. Gopher holes were repaired routinely. Erosion of the side slope was repaired.
I-605 at Carson Swale (73225)	8	Functioned as designed. Runoff from freeway embankment discharged into swale over the sideslopes of the swale. No outlet flow occurred during 1 of 8 observed events.	Functioned as designed.	Less suspended solids were observed in the effluent compared to influent.	Trash and debris accumulated in the energy dissipater and at the concrete spreader/biofilter interface. Trash usually accumulated in the first quarter of the swale.	None.	Vegetation met the 90% coverage requirement for the bottom and the side slope met the 70% requirement.	Functioned as designed.	None.

Overall Review of Biofiltration Swales

During various periods, vegetation color changed from green to yellow and then to brown in some cases but density was always maintained. As of May 2000, all the swales had over 90 percent cover of vegetation. However, all swales were overrun with either weedy species and/or species form the erosion control mix. This year the above average rainfall favored weedy species over the saltgrass at sites with any adjacent fast-growing vegetation such as weeds or the designated erosion control species. Disturbance within the swales also allowed weedy species to invade.

While saltgrass is an excellent competitor in moist saline soils, saltgrass does not appear to be a good competitor against winter weeds in soils that are not saline and that are not naturally moist or irrigated. Therefore, it is likely that winter weeds such as annual grasses would eventually out-compete saltgrass without intensive maintenance in the non saline soils generally found in the swales.

Saltgrass needs irrigation to establish at a minimum during initial planting. Once established, saltgrass continues to grow without irrigation mainly in the more coastal areas where temperatures are cooler and foggy conditions allow the grass to persist through the summer months.

The erosion control mix contained many of the species that were originally considered for the swales before the issue of timing and achieving the 90 percent cover requirement forced the saltgrass sod specification. The erosion control mix was designed to germinate quickly and is composed of both annual and perennial species. With modification, this mix may prove to be more effective over a broader range of conditions than saltgrass.

I-605/SR-91 Biofiltration Swale

In September of 2000 the vegetation consultant noted the swale had the required vegetative cover and less than one percent of the swale was not vegetated. Approximately 60 percent of the vegetation was in an active green growing condition. The area of the swale at the downstream end had the most green vegetation, but the rhizomes in other areas appeared to be alive and were likely dormant. In May of 2001 the vegetation consultant noted that the swale had the required vegetative cover including saltgrass, erosion control species and weedy species. Saltgrass persisted throughout the swale; however, there were dense areas of annual weeds in the center of the swale. Erosion control species (Hordeum californicum, Hordeum vulgare, and Bromus arizonicus) occurred mainly at either end of the swale. Weedy species, mainly annual grasses (Bromus diandrus, Hordeum leporinum, Bromus mollis, Lolium sp, Avena sp.) and some broadleaf weeds (Sonchus oleraceus, Latuca serriola and Chenopodium album) were found throughout the swale.

At the I-605/SR-91 Swale, gophers persistently burrowed through the swale. To minimize channelization and/or ponding, the gopher burrows were filled and compacted.

During each monitored event, flow was uniformly distributed across the swale. Throughout the wet season, most of the runoff infiltrated before reaching the swale's outlet. When flow was perceptible across the swale, no channelization or ponding was

observed. The vegetation in the downstream channel had grown enough to restrict flow, causing flow to backflow towards the swale. A team of technicians promptly enlarged the downstream channel and cut-back the vegetation so the flow was not restricted. Also of note is that trash and debris tended to collect in the energy dissipater and at the concrete spreader/biofilter interface.

Cerritos Maintenance Station Biofiltration Swale

In September of 2000, the vegetation consultant noted that the swale had the required vegetative coverage and approximately 70 percent of the vegetation was in an active green growing condition. The majority of the vegetation was bermuda grass (Cyndon dactylon) with some saltgrass. The bermuda grass had been weeded from the swale but continued to invade the site and had out-competed the saltgrass. In May of 2001, the vegetation consultant noted species from the erosion mix and weedy species. As noted during the last inspection, the majority of the vegetation was bermuda grass (Cyndon dactylon) with only a small amount of saltgrass. Additionally, species from the erosion control mix (Hordeum californicum, Hordeum vulgare, and Bromus arizonicus) as well as weedy species were found in the site (Bromus diandrus, Hordeum leporinum, Bromus mollis, Lolium sp, Avena sp., Malva parviflora). Saltgrass was out-competed at this site mainly by the bermuda grass.

At the Cerritos Maintenance Station Swale, gophers persistently burrowed through the swale. Damaged caused by the gophers was so extensive that the swale's structural integrity was compromised. During storm events, the gopher problem became worse because runoff infiltrated through previously filled in gopher holes causing extensive erosion. In addition to the swale's structural problems, vegetation cover fell below the 90 percent criteria during portions of the wet season because of the gopher problem. Unlike other swales in the BMP Pilot Study, the Cerritos Maintenance Station Swale was constructed in fill material to establish an appropriate flow line. Instead of the swale's side slopes being at lower elevation than the surrounding topography (as at the other swales), one of the swale's side slopes was constructed completely of fill material.

During each monitored event, flow was uniformly distributed across the swale in vegetated areas. Where there was lacking vegetation preferential flow was observed. Also of note is that trash and debris tended to collect in the energy dissipater and in the first quarter of the swale, with most of the sediment settling out in the energy dissipater.

I-5/I-605 Biofiltration Swale

In September of 2000, the vegetation consultant noted that the site was mainly vegetated by bermuda grass. Approximately 10 percent of the site was in an active growing state and approximately 5 percent of the area was bare. All the actively growing grass was bermuda grass. Approximately 50 percent of the saltgrass rhizomes sampled were dead. In May of 2001, the vegetation consultant noted that the site was still mainly vegetated by bermuda grass and other weedy species including annual grasses (Bromus diandrus, Hordeum leporinum, Bromus mollis, Lolium sp, Avena sp.) and broadleaf weeds (Sonchus oleraceus, Chenopodium album and Erodium cicutarium). Additionally, species from the erosion mix (Nassella pulchra, Hordeum californicum, and Bromus arizonicus) appeared throughout the swale.

At the I-5/I-605 Swale, gophers persistently burrowed through the swale. Consequently, flow would bypass through these holes and enhance erosion of the central area of the swale. To minimize channelization and/or ponding, the gopher burrows were backfilled and compacted.

During each monitored event, flow was uniformly distributed across the swale. Throughout the first portion of the wet season, most of the runoff infiltrated before reaching the swale's outlet. When flow was perceptible across the swale, no channelization or ponding was observed. Also of note is that trash and debris tended to collect in the energy dissipater and at the concrete spreader/biofilter interface.

I-605 at Carson Biofiltration Swale

In September of 2000, the vegetation consultant noted that the swale met the required vegetative cover and less than one percent of the swale was not covered. Approximately 80 percent of the vegetation was in an active green growing condition. The lower half of the swale had the most green vegetation, but rhizomes in other areas appeared to be alive and are likely dormant. There was some bermuda grass in the swale toward the middle and at the outlet end. There were several species of weeds along the edges of the swale, but none were a problem at that time. In May of 2001, the vegetation consultant noted that the swale met the required vegetative cover including weedy species. The bermuda grass noted in the last site review had increased in cover, while the saltgrass had decreased. Additionally, some of the species from the erosion control mix (Nassella pulchra, Hordeum californicum, and Bromus arizonicus) developed in the swale. Other weedy species included annual grasses and broadleaf weeds (Sonchus oleraceus and Malva parviflora).

During each monitored event, flow was uniformly distributed across the swale. Throughout the first portion of the wet season, most of the runoff infiltrated before reaching the swale's outlet. When flow was perceptible across the swale, no channelization or ponding was observed. Also of note is that trash and debris tended to collect in the energy dissipater and at the concrete spreader/biofilter.

2.1.3 Extended Detention Basins

Table 2-1c: Comparison of Extended Detention Basin Operational Performance

Site	No. of Observed Events	Hydrologic/ Hydraulic Characteristics	Inlet Conditions	Water Quality	Solids Deposition/ Resuspension	Erosion	Vegetation	Outlet	Comments
I-5/I-605 EDB (074101)	7	Functioned as designed; Overflow occurred during 1 of 7 observed events.	Functioned as designed.	Less suspended solids were observed in the effluent compared to influent.	Trash and debris accumulated in the southern area of the EDB basin. Resuspension of sediment during storms because of lack of inlet energy dissipation. Localized deposits of sediment accumulated near the northwest corner and southern end of the basin. During overflow conditions floatables had the opportunity to discharge through the effluent structure.	Soil at the eastern slope near the I-5 had eroded and accumulated into the EDB basin due to lack of vegetative cover..	Grasses covered approximately 95 to 100% of the top of the berm and slopes. Gophers caused a few small bare patches.	Functioned as designed.	The outlet structure was modified to prevent standing water conditions.

Table 2-1c: Comparison of Extended Detention Basin Operational Performance (concluded)

Site	No. of Observed Events	Hydrologic/ Hydraulic Characteristics	Inlet Conditions	Water Quality	Solids Deposition/ Resuspension	Erosion	Vegetation	Outlet	Comments
I-605/SR-91 EDB (074102)	8	Functioned as designed; Overflow occurred during 1 of 8 observed events. Some of the flow infiltrated.	Functioned as designed.	Less suspended solids were observed in the effluent compared to influent.	Trash and debris accumulated in the rock energy dissipater.	None.	A few small bare spots in the EDB and slopes were caused by gophers.	Functioned as designed.	None.

Overall Review of EDBs

I-5/I-605 EDB

During each monitored event, flow was uniformly distributed across the basin. When flow was perceptible across the basin ponding was not observed. Also of note is that trash and debris tended to collect in the southern end of the basin near the outlet structure and its rock energy dissipater. During periods of heavy rainfall trash and debris discharged out of the EDB through the effluent overflow.

The quantity of trash and debris, left in the southern end of the EDB basin near the effluent outlet structure, had increased dramatically following the January 10, 2001 storm event.

On January 31, 2001, the outlet structure was modified to prevent ponding water.

I-605/SR-91 EDB

During each monitored event, flow was uniformly distributed across the EDB basin. During smaller storms, most of the runoff infiltrated before reaching the EDB outlet. When flow was perceptible across the EDB, no channelization or ponding was observed. Also of note is that trash and debris tended to collect in the rock energy dissipater.

2.1.4 Sand Filters – Austin Type

Table 2-1d: Comparison of Sand Filter – Austin Type Operational Performance

Site	No. of Observed Events	Hydrologic/ Hydraulic Characteristics	Inlet Conditions	Water Quality	Solids Deposition/ Resuspension	Erosion	Vegetation	Outlet	Comments
Eastern Sand Filter (074202)	7	Generally functioned as designed. Bypass was observed during 1 of 7 events because of BMP capacity being exceeded during large storm events. As sediment accumulated on the filer media, the loading rate decreased and the drain times increased. A noticeable increase in loading rate was observed during events after the sediment had been removed from the sand bed.	Functioned as designed.	Inlet water conditions commonly had a scummy film and oily sheen and was brown. Less suspended solids were observed in the effluent compared to influent.	Due to turbulence, resuspension of solids was common below the inlet discharge pipe of the sedimentation basin. Very little trash and debris accumulated in the sedimentation basin.	None.	A few small weeds grew in the filter media. They were removed during regularly scheduled maintenance activities.	Functioned as designed; however, the pump failed during one storm event and was replaced.	The effluent sump pump was replace once. Replaced gunnysacks and added new gravel. To avoid vapor lock, a 1/8 inch hole was drilled in the effluent discharge pipe. The orifices located in the standpipe that allowed stormwater to flow from the sedimentation basin to the filter media were enlarged from 1/2 inch to 5/8 inch to increase the flow rate and minimize blocking.

Table 2-1d: Comparison of Sand Filter – Austin Type Operational Performance (continued)

Site	No. of Observed Events	Hydrologic/ Hydraulic Characteristics	Inlet Conditions	Water Quality	Solids Deposition/ Resuspension	Erosion	Vegetation	Outlet	Comments
Foothill Sand Filer (074203)	8	Generally functioned as designed. Bypass was observed during 1 of 8 events because of BMP capacity being exceeded during large storm events. As sediment accumulated on the filer media, the loading rate decreased and the drain times increased. A noticeable increase in loading rate was observed during events after the sediment had been removed from the sand bed.	Functioned as designed.	Inlet water conditions commonly had a scummy film and oily sheen. Less suspended solids were observed in the effluent compared to influent.	Due to turbulence, resuspension of solids was common below the inlet discharge pipe of the sedimentation basin. Sediment, small twigs and leaves blocked the orifices of the standpipe on numerous occasions. The orifices were cleared of debris several times during the last two storm events.	None.	A few small weeds grew in the filter media. They were removed during regularly scheduled maintenance activities.	Functioned as designed.	Replaced gunnysacks and new gravel. Vapor lock of the sump pump occurred during the January 11, 2001 storm event. This was later corrected by drilling a 1/8 inch hole in the discharge pipe. The orifices located in the standpipe that allowed stormwater to flow from the sedimentation basin to the filter media were enlarged from 1/2 inch to 5/8 inch to increase the flow rate and minimize blocking.

Table 2-1d: Comparison of Sand Filter – Austin Type Operational Performance (concluded)

Site	No. of Observed Events	Hydrologic/ Hydraulic Characteristics	Inlet Conditions	Water Quality	Solids Deposition/ Resuspension	Erosion	Vegetation	Outlet	Comments
Termination Sand Filter (074204)	7	Generally functioned as designed. Bypass was observed during 4 of 7 events because of BMP capacity being exceeded during large storm events. As sediment accumulated on the filer media, the loading rate decreased and the drain times increased. A noticeable increase in loading rate was observed during events after the sediment had been removed from the sand bed.	Functioned as designed. Initially flow was not always uniformly distributed due to the build up of sediment and debris in the sedimentation basin.	Inlet water conditions commonly had a scummy film. Less suspended solids were observed in the effluent compared to influent. Small pockets of oil floated to the surface and spread out in the sedimentation basin.	Due to turbulence, resuspension of solids was common below the inlet discharge pipe of the sedimentation basin. Compared to the other two sand filter sites, Termination had the most accumulated sediment and leaves, however blockages of the orifices was not as common as Foothill. Fruit was thrown into the basin by pedestrians walking by the facility.	None.	A few small weeds grew in the filter media. They were removed during regularly scheduled maintenance activities.	Functioned as designed; however, the pump failed during the January 8, 2001 storm event and was replaced but the replacement pump also failed. The pump was eventually replaced on January 15, 2001.	A new power source for the sump pump was established to eliminate power fluctuations. Replaced gunnysacks and added new gravel. To avoid vapor lock, a 1/8 inch hole was drilled in the effluent discharge pipe. The orifices located in the standpipe that allows stormwater to flow from the sedimentation basin to the filter media were enlarged from 1/2 inch to 5/8 inch to increase the flow rate and minimize blocking.

Overall Review of Sand Filters – Austin Type

Initial operational problems with the sand filters included several occasions of sump pump failures during storm events and one site had a power supply problem due to fluctuating current and below normal power levels. Where pumps had failed standing water conditions occurred and the stormwater would equalize between the basins. On one occasion at the Foothill Sand Filter, the pump failed, however it was determined that the pump had experienced a condition known as vapor lock. To avoid this from occurring in the future a small hole was drilled in the effluent pipe at each sand filter site to allow the treated stormwater to drop back into the sump when the sump pump was not operational. Vapor lock problems were not observed during the remainder of the season at all the sand filter sites.

Gunnysacks were replaced and new gravel added and replaced around the standpipes to prevent debris from blocking the drain holes on November 2, 2001. A modification that enhanced the performance of the sand filter included enlarging the drain holes in the standpipe from 1/2 inch to 5/8 inch on February 9, 2001.

Additionally, as the wet season progressed and sediment accumulated on the filter media, the loading rate decreased and the drain times increased. When the loading rate decreased standing water was usually present on the sand filter and the v-notched weir plate would typically become partially or fully submerged. Due to the drainage time exceeding 48 hours and/or the loading rate dropping below 9 feet per day, the upper 2 inches of sand and the crust were removed from the top of the filter media at all three filter media sites from April 2 through April 3, 2001. Follow these maintenance activities the loading rate increased and the drainage time decreased to fall below the MID thresholds.

During large storm events the capacity of the sand filters were exceeded and bypass would occur. Some residual stormwater was present in each filter media between storm events. The residual stormwater would collect in the sump and was pumped out prior to each storm event.

The treated water quality appearance was generally good. The solids, high turbidity, scummy films and oil and grease sheen observed in the influent stormwater was not observed in the effluent stream.

Eastern Regional Maintenance Station Sand Filter

This sand filter received the least amount of trash and debris and sediment in the sedimentation basin. Also of note is that sediment tended to collect near the standpipe. The sump pump failed once during the season and was replaced with a rebuilt pump.

Foothill Maintenance Station Sand Filter

Small twigs and leaves blocked the drain holes in the standpipe at this site. Subsequently, the drain holes were cleaned several times during the last two storm events. Other than the vapor lock, the pump was operational during the remainder of the wet season.

Termination Park & Ride Sand Filter

A new sump pump was installed at the beginning of the wet season. The sump pump failed during the January 8, 2001 storm event and was replaced with a rebuilt pump but it also failed. Eventually the pump was replaced with another rebuilt pump on January 15, 2001; this pump did not fail during the remainder of the stormwater season.

To provide adequate power to the sump pump, a new power source was established on November 10, 2000. Since this change, the sump pump has been operational with the exception that on a few occasions the circuit breaker had "tripped" during operation of the BMP.

2.1.5 Multi-chambered Treatment Trains

Table 2-1e: Comparison of Multi-chambered Treatment Train Operational Performance

Site	No. of Observed Events	Hydrologic/ Hydraulic Characteristics	Inlet Conditions	Water Quality	Solids Deposition/ Resuspension	Erosion	Vegetation	Outlet	Comments
Via Verde MCTT (074206)	5	Generally functioned as designed. Bypass did not occur during the season. By pass may not have occurred possibly due to the leak in the sedimentation chamber and pipe from the grit chamber to the sedimentation chamber.	Functioned as designed. Grit chamber was modified by removing the plastic packing and replacing it with a 1/4 inch mesh screen to prevent trash and debris from entering the sedimentation chamber.	Inlet water conditions commonly had a scummy film and oily sheen and was brown. Less suspended solids were observed in the effluent compared to influent.	Very little trash and debris accumulated in the sedimentation chamber.	No erosion occurred; however the slope adjacent to the BMP was inspected for instability potential due to stormwater leaking from the BMP.	None.	Functioned as designed. Due to over hanging branches, tree trimmings and leaves were often found on the filter media. Material was removed during regularly scheduled maintenance activities.	New absorbent booms were installed at the beginning of the storm season. The BMP had a leak at the beginning of the season. The outlet of the inlet pipe to the sedimentation chamber was sealed in an attempt to repair the leak. The BMP still leaked so the sedimentation chamber was waterproofed. After waterproofing the sedimentation chamber, the pipe connecting the grit chamber and the sedimentation chamber was tested. This pipe leaked. The pipe was slip-lined on 3/17/00 and was back online on 3/19/01. To prevent mosquito breeding, an aluminum cover was installed over the sedimentation chamber.

Table 2-1e: Comparison of Multi-chambered Treatment Train Operational Performance (Concluded)

Site	No. of Observed Events	Hydrologic/ Hydraulic Characteristics	Inlet Conditions	Water Quality	Solids Deposition/ Resuspension	Erosion	Vegetation	Outlet	Comments
Lakewood MCTT (074208)	6	Generally functioned as designed. Bypass was observed during 1 of 6 events because of BMP capacity being exceeded during large storm events.	Functioned as designed. Grit chamber was modified by removing the plastic packing and replacing it with a 1/4 inch mesh screen to prevent trash and debris from entering the sedimentation chamber.	Inlet water conditions commonly had a scummy film and oily sheen and was brown. Less suspended solids were observed in the effluent compared to influent.	Trash and debris would commonly accumulate in the sedimentation chamber. The trash and debris did not enter the sedimentation chamber through the grit chamber, but would instead enter the sedimentation chamber by the wind or from people throwing trash into it. During one large storm event, the force of the influent stormwater coming from the grit chamber dislodged one settling tube located adjacent to the inlet pipe.	None.	Wetland weeds grew on the absorbent booms in the settling basin. They were removed during regularly scheduled maintenance activities.	Functioned as designed; however, the pump would fail during the evening while the Park & Ride lights were on.	New absorbent booms were installed at the beginning of the storm season. Transfer of stormwater from the sedimentation chamber to the filter media basin could only be performed during day light hours. No upgrades were performed on the electrical system. To prevent mosquito breeding, an aluminum cover was installed over the sedimentation chamber..

Overall Review of MCTTs

Because these devices are designed to retain water in the sedimentation chamber for proper operation, residual stormwater from previous storm events was always present in each BMP. The level of the residual water was maintained approximately one foot above the settling tubes to facilitate mosquito monitoring by the vector control agencies. To prevent mosquito breeding in the sedimentation chamber, aluminum covers were installed at each site during February. During large rainfall events overflow weirs in the diversion structures routed bypass flow to the storm drain as designed.

Water quality improved following treatment. The effluent water was generally free of solids and visible oil and grease sheen.

Via Verde MCTT

During each monitored event, the Via Verde MCTT generally operated according to design. However the BMP had a leak. The outlet of the inlet pipe to the sedimentation chamber was sealed in an attempt to stop the leak. Following that repair the BMP still leaked. The sedimentation chamber was subsequently lined with a waterproof coating. The inlet pipe was also tested and was found to leak. The inlet pipe was slip-lined. Since the pipe was slip-lined, the basin has not leaked.

Lakewood MCTT

During each monitored event, the Lakewood MCTT generally operated according to design. However, due to power and current fluctuations the BMP pumps could only be operated during day light hours. The settling basin always had trash, due mostly to being wind-blown or thrown in by people.

2.1.6 CDS Units

Table 2-f: Comparison of CDS Unit Operational Performance

Site	No. of Observed Events	Hydrologic/ Hydraulic Characteristics	Inlet Conditions	Water Quality	Solids Deposition/ Resuspension	Erosion	Vegetation	Outlet	Comments
Orcas CDS (073102)	9	Generally functioned as designed. Bypass was observed during 1 of 9 events because the downstream mosquito-proofing bag impeded flow through the CDS unit.	Functioned as designed during designed flows. Due to the small inlet from the weir box to the CDS unit, relatively large pieces of debris, such as a foam plate, would create a blockage. This generally occurred during long dry periods between storm events.	Inlet water conditions commonly had a scummy film and oily sheen and was brown. On a few occasions an oily sheen was observed to a lesser extent in the effluent. Less suspended solids were observed in the effluent compared to influent.	Due to site-specific conditions of the drainage area, trash and debris would generally consist of organic materials. During one large storm event, the quantity of debris and trash in the downstream mosquito-proofing bag had blocked flow out of the CDS unit causing stormwater to bypass the CDS unit through the top of the weir box. Sediment would accumulate in the weir box. Very fine sediment would accumulate in the H-flume.	None.	None.	Function as designed. Large quantities of debris, which had collected in the downstream mosquito-proofing bag impeded flow through the CDS unit. Modification to the mosquito-proofing bag prevented this from re-occurring.	Several modifications were made to prevent mosquitoes from breeding. See below for details.

Table 2-1f: Comparison of CDS Unit Operational Performance (Concluded)

Site	No. of Observed Events	Hydrologic/ Hydraulic Characteristics	Inlet Conditions	Water Quality	Solids Deposition/ Resuspension	Erosion	Vegetation	Outlet	Comments
Filmore CDS (073103)	9	Generally functioned as designed. Bypass was observed during 1 of 9 events because the downstream mosquito-proofing bag impeded flow through the CDS unit.	Functioned as designed. Due to the small inlet from the weir box to the CDS unit, relatively large pieces of debris, such as a foam plate, would create a blockage. This generally occurred during long dry periods between storm events. Smaller quantities of trash and debris were observed in the latter part of the wet season.	Inlet water conditions commonly had a scummy film and oily sheen and was brown. On a few occasions an oily sheen was observed to a lesser extent in the effluent. Less suspended solids were observed in the effluent compared to influent.	During one large storm event, the quantity of debris and trash in the downstream mosquito-proofing bag had blocked flow out of the CDS unit causing stormwater to bypass the CDS unit through the top of the weir box. Sediment would accumulate in the weir box. Very fine sediment would accumulate in the H-flume.	Erosion around the outside of the CDS unit occurred from water overtopping the CDS unit during the large storm event on January 10, 2001.	None.	Functioned as designed.	Several modifications were made to prevent mosquitoes from breeding. See below for details.

Overall Review of the CDS Units

During the early part of the wet season several significant modifications were completed. These included removing the CDS screens and installing CDS separation screens with larger openings. In early October 2000, CDS Technologies replaced the existing screen at Orcas with a 2.4-mm opening screen and replaced the existing screen at Filmore with a 4.7-mm opening screen.

Because these devices are designed to retain water in the sump for proper operation, residual stormwater was always present in each BMP prior to each stormwater event. The residual water also facilitated the vector control agencies to monitor mosquito populations. During the early part of the storm monitoring season both CDS units breeded mosquitoes. To prevent mosquitoes from entering the CDS units to breed, the bypass litterbags were changed to a finer mesh, the lids of each CDS unit were sealed with foam and bolts and any other openings were sealed with silicon on November 8, 2000. During one large storm event on January 10, 2001, debris had filled the mosquito-proofing bags, which caused each CDS unit to overflow through the top of the weir box. The ends of the mosquito-proofing bags were subsequently cut off to prevent flow impedance and litter bypass baskets were installed at the discharge ends of the H-flumes on February 9, 2001. This improved the hydraulic characteristics but due to the stiffness of the netting, mosquitoes could enter the CDS unit. Weights were added to the ends of the mosquito-proofing but openings still existed, which would have allowed mosquitoes to enter the units. On March 15, 2001, new, more pliable mosquito bags with chain weighted ends were installed at each CDS unit. During subsequent storms, these bags did not impede the flow of stormwater and they allowed trash and debris that bypassed the CDS unit to be captured in the downstream litter bypass baskets. Following these changes, mosquitoes have not been observed at the CDS units.

Orcas CDS Unit

During each monitored event, the CDS unit generally operated according to design. However, due to site-specific characteristics of the area there was more organic debris that entered this Orcas site than the Filmore site, resulting in additional maintenance. The weir opening to the CDS unit was small allowing debris such as foam plates to block the entrance to the CDS unit.

Sediment would settle in the corners of the weir box. Sediment in suspension would pass into the CDS unit and settle in the sump litter basket. Very fine sediment would bypass through the CDS unit and deposit in the H-flume.

In general the water quality appearance was improved. The effluent stormwater was generally clearer than the influent water. When oil and grease sheen was observed in the influent runoff, it was observed to a lesser extent in the effluent.

Filmore CDS Unit

The weir opening to the CDS unit was small allowing debris such as foam plates to block the entrance to the CDS unit.

Sediment would settle in the corners of the weir box. Sediment would pass into the CDS unit and settle in the sump litter basket. Very fine sediment would bypass through the CDS unit and deposit in the H-flume.

In general the water quality appearance was improved. The effluent stormwater was generally clearer than the influent water. When oil and grease sheen was observed in the influent runoff, it was observed to a lesser extent in the effluent.

2.1.7 Drain Inlet Inserts

Table 2-1g: Comparison of StreamGuard ä DII Operational Performance

Site	No. of Observed Events	Hydrologic/Hydraulic Characteristics	Inlet Conditions	Water Quality	Solids Deposition/ Resuspension	Outlet	Comments
Foothill Maintenance Station (73216N)	8	Bypass through the DII's bypass cut-outs was observed during 3 of 8 events.	No gaps observed between inlet and insert.	Oil sheen in effluent observed during 2 of 8 events.	Organic materials and sediment collected in DII during 4 of 8 events.	Functioned as designed.	Bypass occurred when water filled the cone and exited through the overflow cut-outs because the capacity of the DII was exceeded.
Las Flores Maintenance Station (73217N)	8	Bypass through the DII's bypass cut-outs was observed during 2 of 8 events.	No gaps observed between inlet and insert.	Oil sheen in effluent observed during 3 of 8 events.	Organic materials, trash and debris, and/or sediment collected in DII during each event.	Functioned as designed.	Bypass occurred when water filled the cone and exited through the overflow cut-outs because the capacity of the DII was exceeded. A tear was observed in the fabric during one inspection. The insert was replaced. During the 10/26/00 storm the DII had slipped into the drain inlet and had to be re-installed.
Rosemead Maintenance Station (73218S)	9	Bypass through the DII's bypass cut-outs was observed during 5 of 9 events. Flooding was observed during three events because of the DII's hydraulic capacity being exceeded.	No gaps observed between inlet and insert.	Oil sheen in effluent observed during 6 of 9 events.	Organic materials, trash and debris, and/or sediment collected in DII during 7 of 9 events.	Functioned as designed.	Bypass occurred when water filled the cone and exited through the overflow cut-outs because the capacity of the DII was exceeded. During the 10/26/00 storm the DII had slipped into the drain inlet and had to be re-installed. During three storms, the overflow cut-outs were not large enough to accommodate incoming runoff; onsite flooding resulted.

Overall Review of StreamGuardä Inserts

Pieces of wood were inserted into the area between the insert and inlet edge at all three inserts when they were installed at the beginning of the season to prevent the insert from slipping down into the drain inlet. To address the concern of runoff directly entering the monitoring vaults, the rubber berm installed around each vault was maintained throughout the 2000/01 storm season.

During the 2000/01 season, flow bypass was observed at each StreamGuard™ DII site. The reason for this is the hydraulic capacity of each DII was exceeded. Runoff filled the cone and flowed through the overflow cutouts. The cone of the StreamGuard™ DIIs is 24 inches in depth. When standing water in the cone reaches a depth of approximately 22 inches, bypass can occur through the two overflow cut-outs on the sides.

The reason for bypass could also occur due to variations of the fabric during the manufacturing process. Research into the manufacturing process of the filter fabric indicated that fabric pore size can vary from roll to roll. Even though the manufacturing process is the same for each roll of fabric, variation in pore size is normal and is not subject to control. It is possible that the inserts used this year were constructed with a fabric having a smaller pore size, thereby potentially reducing flow rate through the filter fabric and consequently increasing the potential for standing water in the insert or increasing the potential for bypass.

Generally, standing water in the cones resulted in flow bypass only. However, during the January 10, 2001 storm at the Rosemead Maintenance Station, flooding was observed.

Table 2-1h: Comparison of Fossil Filterä DII Operational Performance

Site	No. of Observed Events	Hydrologic/Hydraulic Characteristics	Inlet Conditions	Water Quality	Solids Deposition/ Resuspension	Outlet	Comments
Foothill Maintenance Station (73216S)	8	Bypass was observed during 4 of 8 events.	No gaps observed between inlet and insert.	Oil sheen in effluent observed during 3 of 8 events.	Organic material, trash and debris, and or sediment collected in DII during 6 of 8 events.	Functioned as designed.	Bypass generally due to flow rates exceeding hydraulic capacity of the insert. During the 1/10/01 storm, the stainless steel flange holding the FF cartridges bent upward due to the weight of water and bypass occurred.
Las Flores Maintenance Station (73217S)	8	Bypass was observed during 4 of 8 events.	No gaps observed between inlet and insert.	Oil sheen in effluent observed during 3 of 8 events.	Organic materials, trash and debris, and/or sediment collected in DII during each event.	Functioned as designed.	Bypass due to (a) sediment deposition on filter cartridges, which impeded flow through the filter cartridges or (b) exceedance of hydraulic capacity.
Rosemead Maintenance Station (73218N)	9	Bypass was observed during 4 of 9 events.	No gaps observed between inlet and insert.	Oil sheen in effluent observed during 4 of 9 events.	Organic materials, trash and debris, and/or sediment collected in DII during 8 of 9 events.	Functioned as designed.	Bypass due to (a) deposition of organic material, trash and debris, or sediment on top of the filter cartridges, which impeded flow through the filter cartridges or (b) exceedance of hydraulic capacity.

Overall Review of Fossil Filterä Inserts

During the 2000/01 wet season, three reasons for flow bypass in Fossil Filter™ DIIs were observed:

1. Fit of the DII in the drain inlet;
2. Hydraulic capacity; and
3. Blockage and clogging of cartridges.

To eliminate or minimize flow bypass around the peripheral of the Fossil Filter™ DII the interface between the DII and the inlet was sealed at the beginning of the wet season, immediately after installation of the new units. Additionally, to promote flow into the DII at Rosemead Maintenance Station, a section of rubber was attached along interface of the curb inlet and the insert. To address the concern of runoff directly entering the monitoring vaults, the rubber berms installed around each vault were maintained.

Hydraulic capacity of the units is an inherent limiting factor in the performance of the DIIs. The Fossil Filter™ DIIs are designed to not impede flows (due to flood control considerations). During higher discharge rates, runoff has sufficient velocity and/or volume to pass over the lip of the cartridges and go directly into the storm drain system. No alterations in the design of the units were undertaken to eliminate this factor.

The third factor that caused flow bypass was blockage and clogging of the DII. Blockage occurred from the accumulation of trash, debris, and/or sediment on top of the filter cartridge screens. This accumulation blocked the filter cartridge screens so that stormwater runoff could not pass through the screens. The resultant standing water pooled and eventually achieved a depth where it spilled over the cartridge lip into the storm drain. Clogging occurred when sediment passed through the cartridge screens and settled in the pore spaces between the adsorbent granules. This appeared to cause a slowing in the infiltration of water through the adsorbent. Water pooled and reached a depth where it spilled over the cartridge lip into the storm drain.

During the 2000/01 wet season, the maintenance of the units to lessen the impact of blockage and clogging was continued. Trash/debris and/or sediment were removed from the units once prior to a storm event, once during a storm event and once after each storm event. The removed trash/debris and sediment removed from the DII was placed in an on-site storage container designed to emulate ambient conditions at the top of the cartridges. To improve the flow rate through the cartridges, the cartridges were removed and agitated to loosen and remove the sediment that were deposed between the absorbent granules.

The result of the additional structural work and increased maintenance during the 2000/01 wet season was that no flow bypass due to interface gaps was observed. Hence, flow bypass was observed due to the following reasons:

1. Hydraulic capacity. This was observed at all three maintenance station insert sites. Based on several observations of hydraulic capacity exceedance at the Foothill Maintenance Station,

bypass at the Foothill Maintenance Station Fossil Filter™ DII generally was observed to occur when a flow rate of 0.07 cfs (31 gpm) was reached.

2. Blockage and clogging of cartridges. Despite removing trash/debris/sediment prior to a storm event and once during a storm event, bypass continued to be observed. Typically, after the trash/debris/sediment removal occurred, more trash/debris/sediment would be deposited during the course of the storm, again leading to more bypass. This was most prevalent at the Rosemead Maintenance Station.

3. During the January 10, 2001 storm at Foothill Maintenance Station, the stainless steel flange holding the cartridges bent upward due to the weight of water, and bypass occurred underneath the cartridges.

Despite the flow bypass and flooding that occurred, the thresholds required for replacement of the unit (adsorbent granules dark gray or darker, or structural integrity problems) were not reached. The units were removed at the end of the storm season for analysis.

On October 5, 2000, a diesel spill occurred up-slope of the Foothill Fossil DII. Some fuel, approximately six gallons, had entered the drain inlet but was prevented to continue downstream by the Palmer-Bowlus flume. The area was cleaned using absorbent material on the asphalt and within the BMP and cleaned with a high-pressure steam cleaner. The drain inlet was washed and the BMP material was disposed of with the absorbent material. New adsorbent material was installed in the DII.

2.1.8 Oil/Water Separator

Table 2-1I: Comparison of Oil/Water Separator Operational Performance

Site	No. of Observed Events	Hydrologic/ Hydraulic Characteristics	Inlet Conditions	Water Quality	Solids Deposition/ Resuspension	Erosion	Vegetation	Outlet	Comments
Alameda OWS (074201)	5	Functioned as designed. In-situ water present for each monitoring event (normal operating conditions).	Functioned as designed.	Surface film and oily sheen were commonly observed in the influent water. Influent water ranged from colorless to brown with a musty odor. Effluent water ranged from colorless to black. There was generally an oily sheen with a surface film. On one occasion the effluent water had an emulsion. The effluent generally had a hydrogen sulfide odor. Initial flows generally had heavy cloudiness and suspended solids.	Less suspended solids were observed in the effluent compared to influent.	None.	None.	Functioned as designed.	The coalescing screens were inspected and were found to be clean throughout the 2000/2001 season.

Overall Review of the Alameda Oil/Water Separator

Because these devices are designed to retain water in the oil/water separator for proper operation, residual stormwater was always present in the BMP prior to each stormwater event. The influent water generally exhibited a surface film and/or scum and oil and grease sheen with a musty odor. In general the effluent water quality was somewhat variable. During initial flows the effluent water had some resuspended solids with visible oil and grease sheen and on one occasion an emulsion was observed. In addition the effluent had a hydrogen sulfide odor. During the 2000/2001 season, the oil/water separator coalescing screens were inspected and found to be clean.

2.1.9 Infiltration Basin

Table 2-1j: Comparison of Infiltration Basin Operational Performance

Site	No. of Observed Events	Hydrologic/ Hydraulic Characteristics	Inlet Conditions	Water Quality	Solids Deposition/ Resuspension	Erosion	Vegetation	Outlet	Comments
I-605/SR-91 Infiltration Basin (73101)	7	Influent bypass was observed 2 times due to the flow depth overtopping the overflow weir. The IB drained within 72 hours during all storm events.	Functioned as designed.	No notable observations.	Some sediment deposition near inlets. No noticeable deposition in other areas.	Minor erosion noted on north side slope beneath asphalt swales on access road.	Vegetation coverage met threshold requirement after being established in February 2000.	Functioned as designed.	Overflow weir plate height increased to maximum height to minimize flow bypass during the previous season.

Overall Review of the I-605/SR-91Infiltration Basin

During small rain events of the 2000/2001 wet season, runoff immediately infiltrated into the areas surrounding the inlets and prior to any runoff ponding within the infiltration basin. During larger storms, water would accumulate in the infiltration basin for during the storm and then infiltrate. The maximum depth of water observed in the infiltration basin was approximately 11 inches. During each event, the infiltration basin infiltrated runoff within 72 hours. During larger storms, as designed, some flow bypassed the infiltration basin by flowing over the overflow weir in the junction.

2.1.10 Infiltration Trench

Table 2-1k: Comparison of Infiltration Trench Operational Performance

Site	No. of Observed Events	Hydrologic/Hydraulic Characteristics	Inlet Conditions	Water Quality	Solids Deposition/ Resuspension	Overflow	Comments
Altadena Maintenance Station (73211b)	7	Functioned as designed; bypass of IT was observed during 1 of 7 events because of the IT's capacity being exceeded.	Functioned as designed.	No notable observations.	No notable observations.	No notable observations.	None.

Overall Review of the Altadena Maintenance Station Infiltration Trench

Stormwater runoff effectively infiltrated into the infiltration trench, never taking more than approximately 36 hours for complete infiltration. During larger storms, as designed, the infiltration trench filled and discharged through the overflow pipe.

3.0 BMP AND SITE MAINTENANCE

The primary objective of BMP maintenance is to ensure that each site is properly maintained to achieve optimum performance. Preventive and corrective maintenance measures were undertaken in accordance with the OMM Plan and the Maintenance Indicator Document (MID). These measures included:

- Removal of standing water;
- Sediment erosion control and removal;
- Structural integrity;
- Landscape management;
- Graffiti removal;
- Vector control;
- Trash and debris removal; and
- General facility maintenance.

Regularly scheduled maintenance inspections were conducted monthly, with weekly surveys being performed during extended periods of wet weather. Maintenance visits were also conducted after each large storm event (greater that 0.5 inches). During the visits, maintenance observations and needs were documented on the "BMP Site Inspection Checklist" (Form C of the OMM Plan Volume II Field Guidance Notebooks). Based on this documentation, any immediate maintenance needs were arranged and documented on the "BMP Site Maintenance Form" (Form E of the OMM Plan Volume II Field Guidance Notebooks).

3.1 Summary of Inspection and Maintenance Activities

The following sections describe maintenance activities performed at each BMP site between July 2000 and May 2001. A comparison of maintenance requirements (frequencies and average times to perform) is graphically shown in Figures 3-1a through 3-9b. More detail on BMP maintenance is available at the following web site: http://www.rbf.com/caltrans/. Please note, however, that the maintenance times provided in the database are times required for each maintenance activity to be conducted, and do not distinguish whether one or more persons had performed the task (i.e., sometimes one person does a task while other times more than one person is involved). The average maintenance times illustrated in the figures have been adjusted to account for this.

3.1.1 Biofiltration Strips

Overall Review of Maintenance Activities at the Biofiltration Strips

Maintenance activities at the Biofiltration Strips consisted of unscheduled and routine maintenance.

Routine inspections were conducted on a monthly basis and weekly during extended periods of wet weather. In accordance with the MID and OMM Plan, routine maintenance activities at both the Altadena Maintenance Station and I-605/SR-91 Biofiltration Strips consisted of the following:

1. Cutting the salt grass once to a nominal height of 6 inches and removing the cuttings. When cutting the salt grass, it first needs to be "fluffed up" so that it could be cut to the appropriate height. After the salt grass was cut, the cuttings were removed with a soft rake and disposed.

2. Manually removing weeds from the strips.

3. Removing trash and debris from the strips.

Overall Review of Maintenance Activities at the Altadena Maintenance Station Biofiltration Strip (73211a)

Site-specific maintenance activities at the Altadena Maintenance Station Biofiltration Strip consisted of routine maintenance, as follows:

1. Installing the spreader ditch plug in preparation for the start of the wet season.

2. Dewatering the strip's spreader ditch following each storm event to eliminate ponding water conditions, which could promote mosquito breeding. At the end of the wet season, the bypass plug from the spreader ditch to the Infiltration Trench was opened to allow runoff from summer storm events to drain directly into the Infiltration Trench.

3. Realigning the gate with the fence.

Figure 3-1a summarizes the frequency of maintenance activities (i.e., number of times maintenance was conducted at the BMP) and Figure 3-1b summarizes the average amount of time spent performing each activity.

Overall Review of Maintenance Activities at the I-605/SR-91 Biofiltration Strip (73222a)

Site-specific maintenance activities at the I-605/SR-91 Biofiltration Strip consisted of the following:

Unscheduled maintenance included:

1. Replacing traffic channelizers which had been destroyed by passing traffic.

Routine maintenance activities at the strip included:

1. Cutting surrounding erosion control vegetation, which was located within the BMP's maintenance boundary. After the erosion control vegetation was cut, the cuttings were removed and disposed.

2. Gopher inspection and abatement.

Figure 3-1a summarizes the frequency of maintenance activities (i.e., number of times maintenance was conducted at the BMP) and Figure 3-1b summarizes the average amount of time spent performing each activity.

Figure 3-1a: Frequency of Maintenance Activities at the Biofiltration Strips

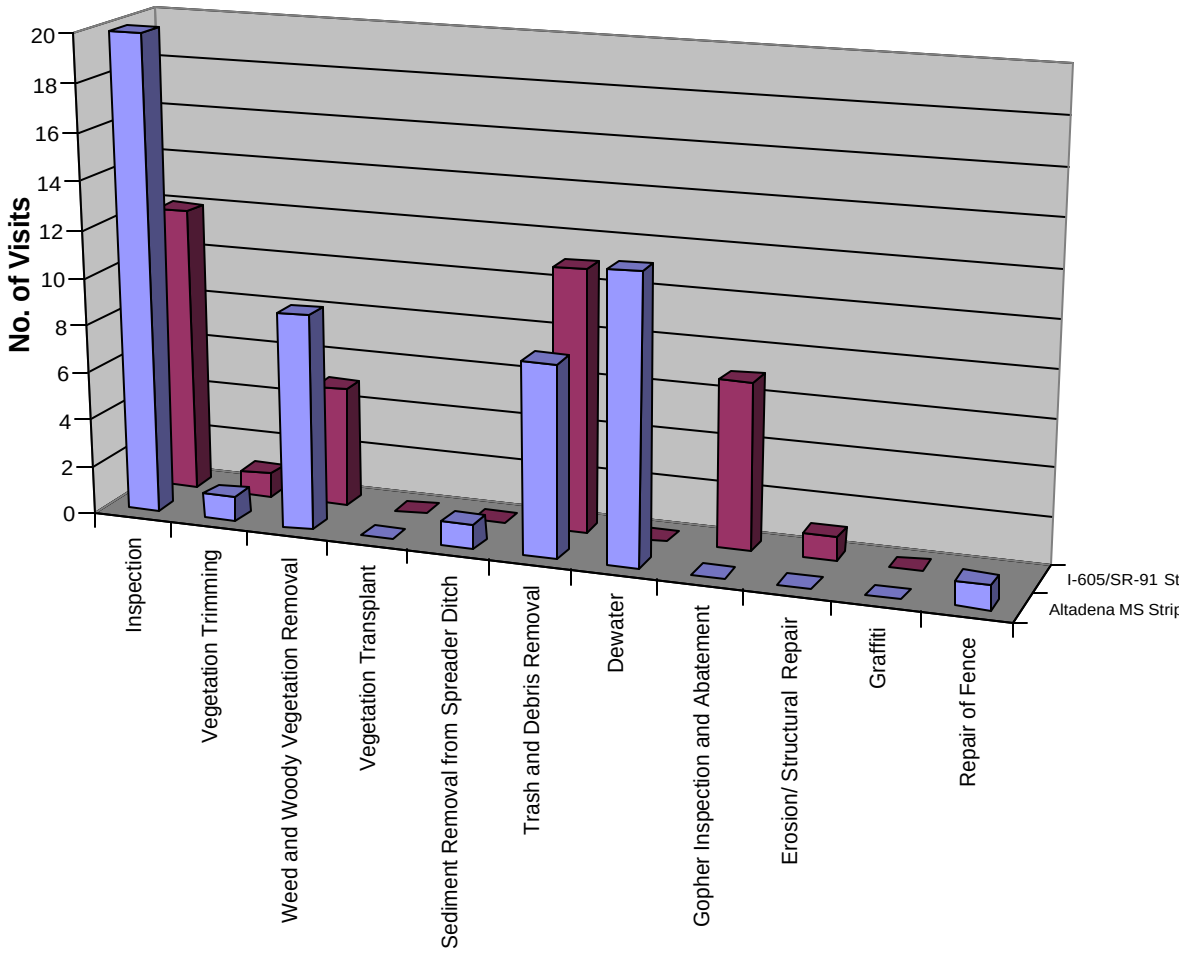
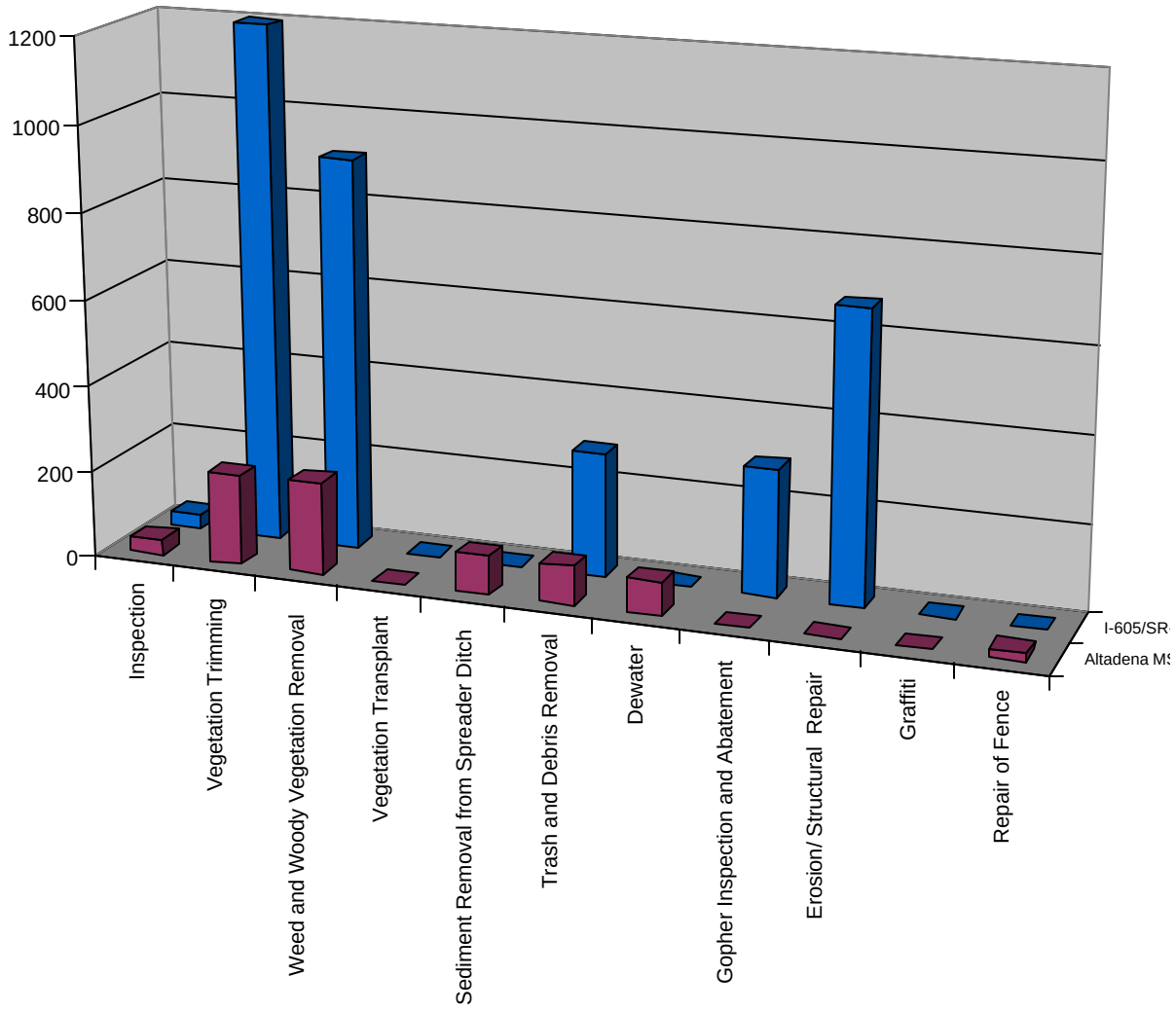


Figure 3-1b: Average Maintenance Times at the Biofiltration Strips



3.1.2 Biofiltration Swales

Overall Review of Maintenance Activities at the Biofiltration Swales

Maintenance activities at the Biofiltration Swales consisted of unscheduled and routine maintenance.

Routine inspections were conducted on a monthly basis and weekly during extended periods of wet weather. In accordance with the MID and OMM Plan, routine maintenance activities at each Biofiltration Swale consisted of the following:

1. Cutting the salt grass once to a nominal height of 6 inches and removing the cuttings. When cutting the salt grass, it first needed to be "fluffed up" so that it could be cut to the appropriate height. After the salt grass was cut, the cuttings were removed with a soft rake and disposed.

2. Cutting surrounding erosion control vegetation, which was located within the BMP's maintenance boundary. After the erosion control vegetation was cut, the cuttings were removed and disposed.

3. Manually removing weeds from the swale.

4. Removing trash and debris from the swale.

Overall Review of Maintenance Activities at the I-605/SR-91 Biofiltration Swale (73222b)

Site-specific maintenance activities at the I-605/SR-91 Biofiltration Swale consisted of unscheduled and routine maintenance.

Unscheduled maintenance at the swale consisted of the following:

1. Removing eroded soil from the energy dissipater. On one occasion, minor erosion occurred at the headwall of the inlet pipe. Soil had eroded from the freeway embankment and deposited in the energy dissipater. Subsequently, the soil was removed from the energy dissipater.

2. Clearing the natural channel downstream of the swale to prevent backwater conditions in the swale. During the January 8, 2001 event, a team of technicians dug a deeper trench in the downstream channel to allow free flowing conditions from the swale.

Routine maintenance activities at the swale included:

1. Backfilling and compacting gopher burrows and ground squirrel holes with onsite soil.

Figure 3-2a summarizes the frequency of maintenance activities (i.e., number of times maintenance was conducted at the BMP) and Figure 3-2b summarizes the average amount of time spent performing each activity.

Overall Review of Maintenance Activities at the Cerritos Maintenance Station Biofiltration Swale (73223)

Site-specific maintenance activities at the Cerritos Maintenance Station Biofiltration Swale consisted of unscheduled and routine maintenance.

Unscheduled maintenance at the swale consisted of the following:

1. Repaired structural damage caused by gophers. Despite three previous strategies for gopher abatement, gophers continued to burrow through the swale, causing structural damage. In July 2000, a fourth strategy of installing wire fabric as a gopher barrier along the north side slope was attempted. However, this proved to be ineffective, as gopher burrows continued to appear, causing flow bypass during storms and subsequent erosion. The burrows were backfilled and compacted with onsite soil, and erosion areas were repaired using additional fill, which was compacted.

2. Another problem caused by gophers and the subsequent repairs was the reduction in vegetation cover on the slopes below the MID requirement of 70 percent. In accordance with the MID, the bare areas were reseeded with erosion control mix in November 2000, and an erosion control blanket was installed.

3. During March 2001, Caltrans maintenance crew members inadvertently cut the vegetation within the BMP maintenance boundary to a height of less than six inches.

Routine maintenance activities at the swale included:

1. Backfilling and compacting gopher burrows and ground squirrel holes with onsite soil.

Figure 3-2a summarizes the frequency of maintenance activities (i.e., number of times maintenance was conducted at the BMP) and Figure 3-2b summarizes the average amount of time spent performing each activity.

Overall Review of Maintenance Activities at the I-5/I-605 Biofiltration Swale (73224)

Site-specific maintenance activities at the I-5/I-605 Biofiltration Swale consisted of routine maintenance.

Routine maintenance at the swale consisted of the following:

1. Backfilling and compacting gopher burrows and ground squirrel holes with onsite soil.

2. Removing woody vegetation.

3. Removing graffiti from the influent enclosure's concrete pad.

4. Repairing minor erosion on the southern slope of the swale.

5. Repairing scouring down the middle of the swale, which occurred during the January 10-12, 2001 storm event. The scouring was enhanced by gopher burrowing activities.

Figure 3-2a summarizes the frequency of maintenance activities (i.e., number of times maintenance was conducted at the BMP) and Figure 3-2b summarizes the average amount of time spent performing each activity.

Overall Review of Maintenance Activities at the I-605 at Carson Biofiltration Swale (73225)

Site-specific maintenance activities at the I-605 at Carson Biofiltration Swale consisted of routine maintenance.

Routine maintenance activities at the swale included:

1. Removing woody vegetation.
2. Backfilling and compacting ground squirrel holes with onsite soil.

Figure 3-2a summarizes the frequency of maintenance activities (i.e., number of times maintenance was conducted at the BMP) and Figure 3-2b summarizes the average amount of time spent performing each activity.

Figure 3-2a: Frequency of Maintenance Activities at the Biofiltration Swales

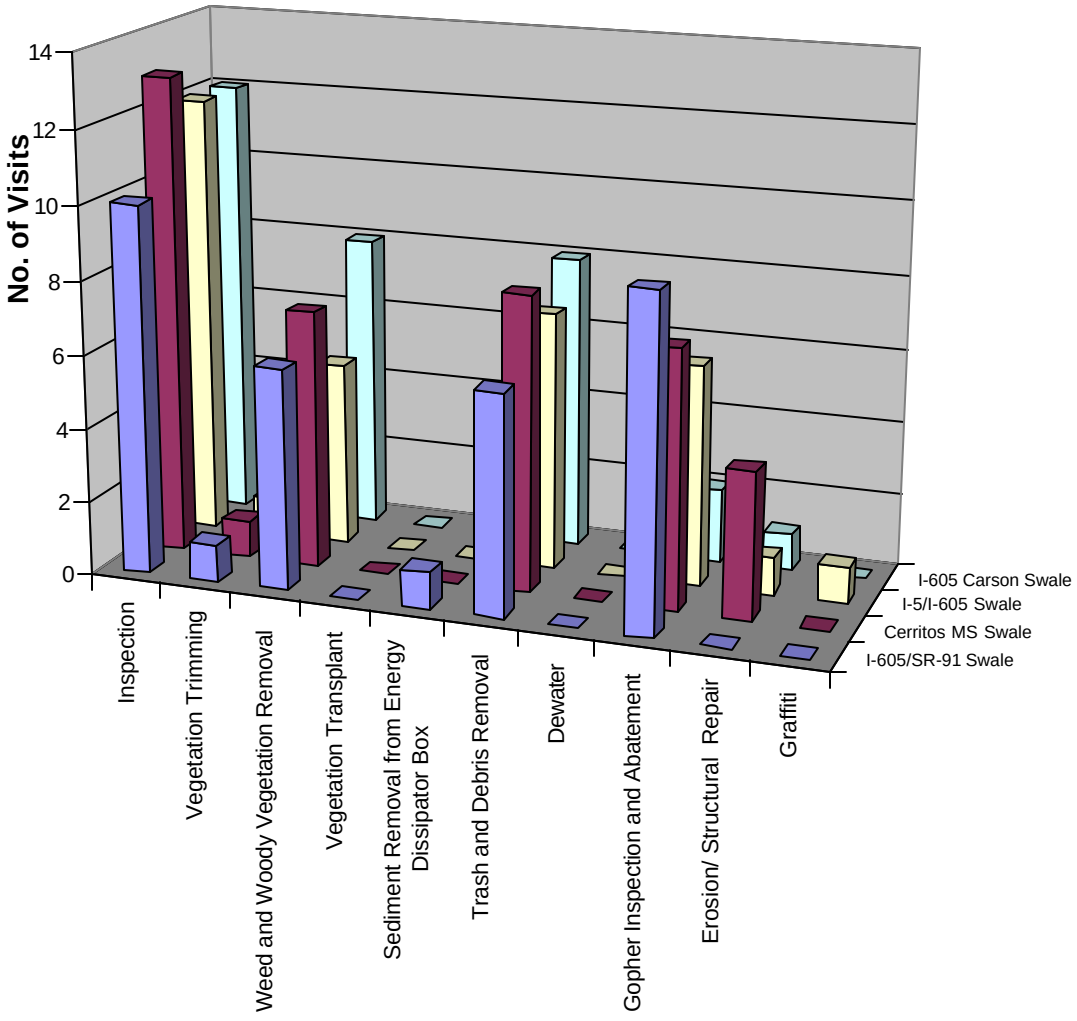
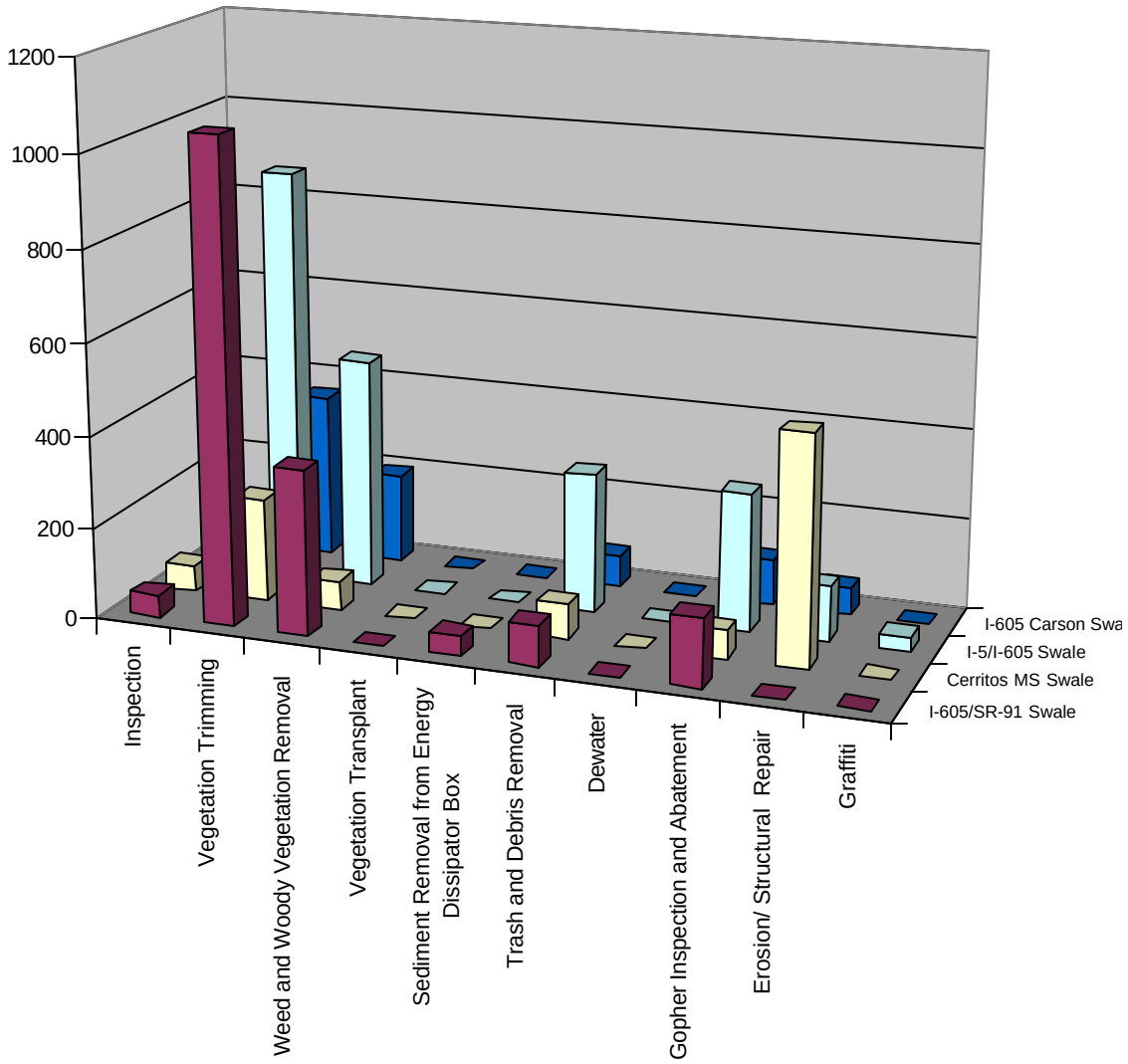


Figure 3-2b: Average Maintenance Times at the Biofiltration Swales



3.1.3 Extended Detention Basins

Overall Review of Maintenance Activities at the Extended Detention Basins

Maintenance activities at the Extended Detention Basins consisted of unscheduled and routine maintenance.

Routine inspections were conducted on a monthly basis and weekly during extended periods of wet weather. In accordance with the MID and OMM Plan, routine maintenance activities at each Extended Detention Basin consisted of the following:

1. Backfilling and compacting gopher burrows and ground squirrel holes with onsite soil.
2. Removing woody vegetation.
3. Removing trash and debris.
4. Cutting the vegetation three times at the I-5/I-605 EDB and twice at the I-605/SR-91 EDB to a nominal height of 8 or 12 inches, according to the MID, and removing the cuttings. After the vegetation was cut, the cuttings were removed with a soft rake and disposed.

Overall Review of Maintenance Activities at the I-5/I-605 Extended Detention Basin (74101)

Site-specific maintenance activities at the I-5/I-605 Extended Detention Basin consisted of unscheduled maintenance.

Unscheduled maintenance at the Extended Detention Basin consisted of the following:

1. Modifying the outlet structure to prevent ponding water. Mosquitoes were breeding in ponded water, which collected in the outlet structure following storms. The outlet structure was modified by core hole drilling the outlet structure, installing stainless steel orifice plates, and grouting the sump.

Overall Review of Maintenance Activities at the I-605/SR-91 Extended Detention Basin (74102)

There were no site-specific maintenance activities at the I-605/SR-91 Extended Detention Basin.

Figure 3-3a summarizes the frequency of maintenance activities (i.e., number of times maintenance was conducted at the BMP) and Figure 3-3b summarizes the average amount of time spent performing each activity.

Figure 3-3a: Frequency of Maintenance Activities at the Extended Detention Basins

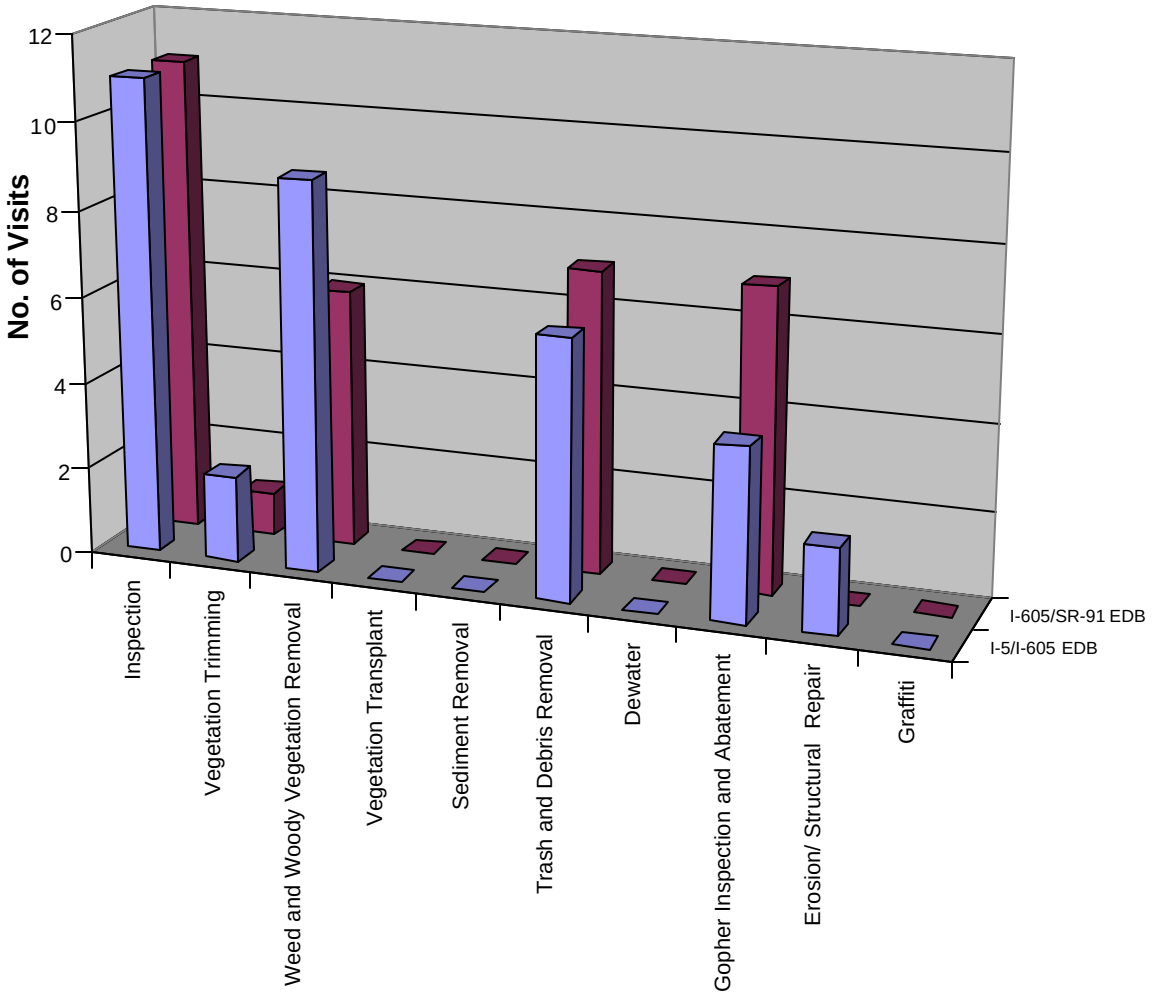
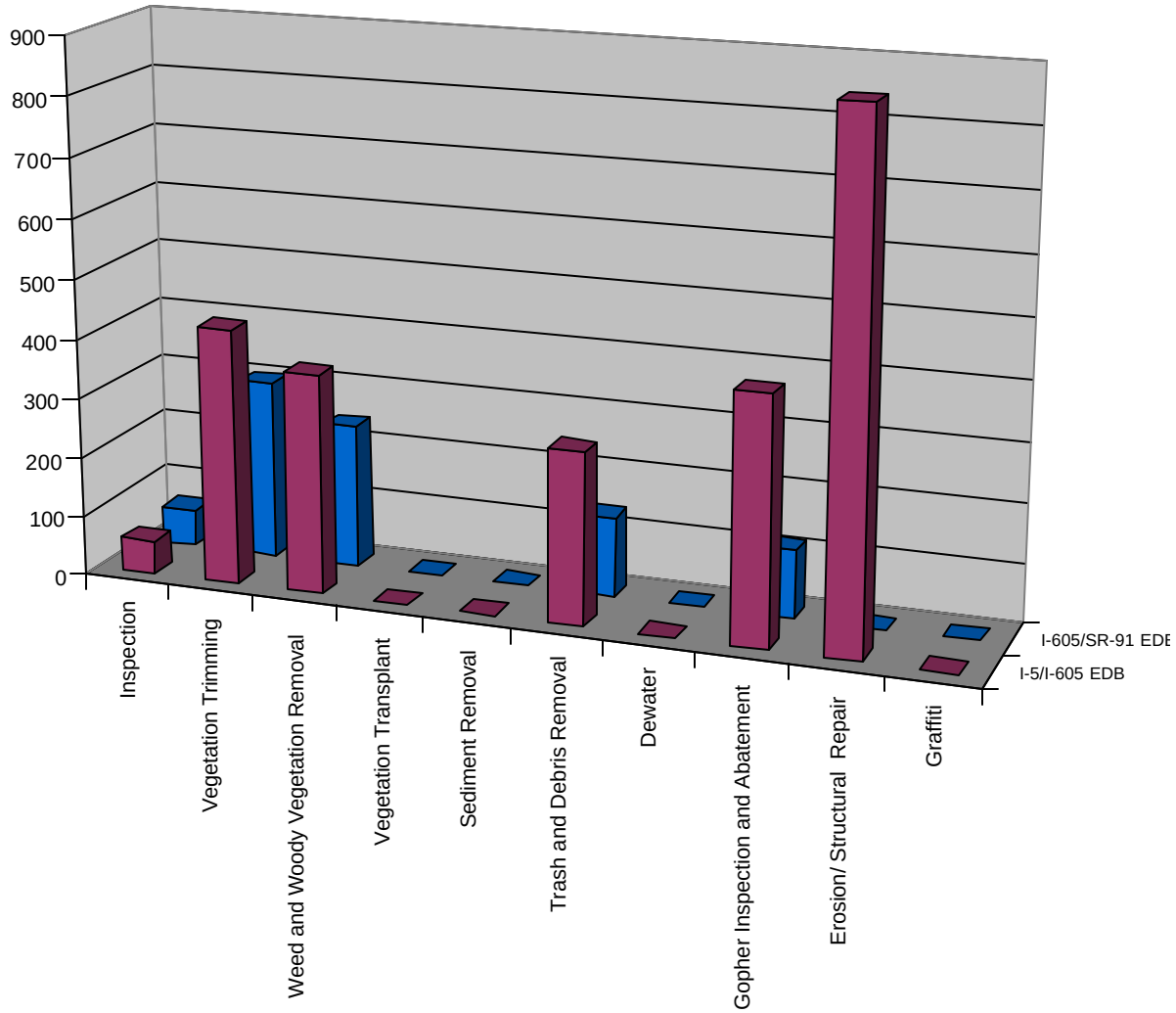


Figure 3-3b: Average Maintenance Times at the Extended Detention Basins



3.1.4 Sand Filters – Austin Type

Overall Review of Maintenance Activities at the Sand Filters – Austin Type

Maintenance activities at the Sand Filters consisted of unscheduled and routine maintenance. Unscheduled maintenance at each Sand Filter consisted of the following:

1. Drilling an 1/8 inch hole in the discharge pipe to avoid vapor lock in the pump. Vapor lock occurred at Foothill Maintenance Station Sand Filter during the January 10-12, 2001 storm event. Consequently, all sand filter site discharge pipes were drilled to avoid this problem.

2. Enlarged existing standpipe orifices from ½ inch to 5/8 inch, since drain time of the sand filters was found to be up to five days, following the January 2001 storms, exceeding the 48 hour threshold defined in the OMM Plan. In addition to increasing the orifice size, the three gravel bags covering the upper orifices were removed. The aim was to increase flow from the sedimentation chamber to the sand filter, and to minimize the chance of blockage. A hard, crusty layer of silt was observed on top of the sand up to a depth of 1¼ inches, depending on the site.

Routine inspections were conducted on a monthly basis and weekly during extended periods of wet weather. In accordance with the MID and OMM Plan, routine maintenance activities at each Sand Filter consisted of the following:

1. Removing trash and debris.

2. Inspecting pumps per manufacturers guidelines, at the beginning of the wet season.

3. Replacing used, rotting gravel bags, covering the two lower standpipe orifices, with new gravel bags.

4. Characterizing sediment deposits and sand in the sand filter basin. Following the orifice size increase, drain times of the sand filters did reduce initially. However, following the March 5-7, 2001 storm event, loading rates were calculated for the Sand Filter sites and all were found to be below the 9ft per day threshold specified in the MID. In terms of drainage time, only the Foothill Sand Filter took over 48 hours to drain, but the MID thresholds are for 1 inch storms, hence with higher rainfall, the sand filters were likely to take more than 48 hours to drain. Actual rainfall at the sand filters ranged from 0.42 to 0.71 inches. Thus, sampling and maintenance was required at the sand filter sites, as follows:

   On April 2-3, 2001, nine cores were collected from each location on an equilateral grid, superimposed over the sand filter, to quantify sediment accumulation and quality data. The cores were driven 15 inches below the sediment surface and recovered. A log was used to document depth of penetration and recovery, location, and lithological characteristics. Each core was then subdivided into four sections as follows:

   - Section 1: 0-2 inches (i.e., mostly sediment crust)
   - Section 2: 2 to 5 inches
   - Section 3: 5 to 10 inches

- Section 4: 10 to 15 inches

Each Section of the nine cores was homogenized to create four samples at each site to represent the four different depths. The four samples were separated according to the analyses required, deposited into wide-mouth glass amber jars, and sent to the appropriate laboratory for analyses, accompanied by the chain-of-custody forms. The analyses run on these samples are listed in Table 1-4c. After the sampling was completed, the sediment layer from each sand filter was removed, drummed, and ultimately disposed. The analytical results are presented in Table 1-5b.

5. Replacing mosquito netting over the sump.

Overall Review of Maintenance Activities at the Eastern Regional Maintenance Station Sand Filter (74202)

Site-specific maintenance activities at the Eastern Regional Maintenance Station Sand Filter consisted of unscheduled and routine maintenance.

Unscheduled maintenance at the Sand Filter consisted of the following:

1. Upgrading the electrical ground and panel to meet the appropriate code. During pump inspection, a subcontracted electrician also discovered that there were electrical wiring problems at the site. The electrical wiring problems to the pump were subsequently fixed.

2. Removing a section of the fence adjacent to the sump, and adding safety chains, to allow easier access to the sump.

Routine maintenance activities at the sand filter included:

1. Replacing a faulty pump. Pump failure occurred during the October 26, 2000 storm event. Subsequently, a subcontracted electrician confirmed that the pump was faulty and needed to be replaced. Water was pumped from the BMP using a temporary pump. A replacement pump was then installed.

2. Repairing a leak in the discharge pipe.

3. Repairing the wooden cover over the sampling vault.

Overall Review of Maintenance Activities at the Foothill MS Sand Filter (74203)

Site-specific maintenance activities at the Foothill Maintenance Station Sand Filter consisted of unscheduled and routine maintenance.

Unscheduled maintenance at the sand filter consisted of the following:

1. Upgrading the electrical ground and panel to meet the appropriate code. During pump inspection, a subcontracted electrician discovered that there were electrical wiring problems at the site. The electrical wiring problems to the pump were fixed.

Routine maintenance activities at the sand filter included:

Removing woody vegetation, weeds and grass from the sand filter.

Overall Review of Maintenance Activities at the Termination Park & Ride Sand Filter (74204)

Site-specific maintenance activities at the Termination Park & Ride Sand Filter consisted of unscheduled and routine maintenance.

Unscheduled maintenance at the sand filter consisted of the following:

1. Providing an adequate power source to the site. Power was found to be inadequate on October 6, 2000, when the pump was tested under load i.e., while the Park and Ride lights were on. The pump failed during the October 26, 2000 storm event due to the lack of power, and subsequently, the pump was operated during daylight hours to drain the BMP. In November 2000, a 100 amp 120/240/single phase/3w temporary 25 foot pole with overhead feed was installed and connections were made to an existing meter pedestal, in order to provide adequate power.
2. Removing a section of the fence adjacent to the sump, and adding safety chains, to allow easier access to the sump.

Routine maintenance activities at the sand filter included:

1. Replacing a faulty pump. Pump failure occurred during the January 8, 2001 storm event, due to bearings, which had gone bad. A refurbished replacement pump was checked before installation on January 11, 2001, but it too was found to be faulty, and both were sent for repair. A tested rebuilt pump was then installed on January 15, 2001.
2. Securing the bottom float in the sump.
3. Repairing the BMP perimeter fence, which was damaged by a vehicle.

Figure 3-4a summarizes the frequency of maintenance activities (i.e., number of times maintenance was conducted at the BMP) and Figure 3-4b summarizes the average amount of time spent performing each activity.

Figure 3-4a: Frequency of Maintenance Activities at the Sand Filters

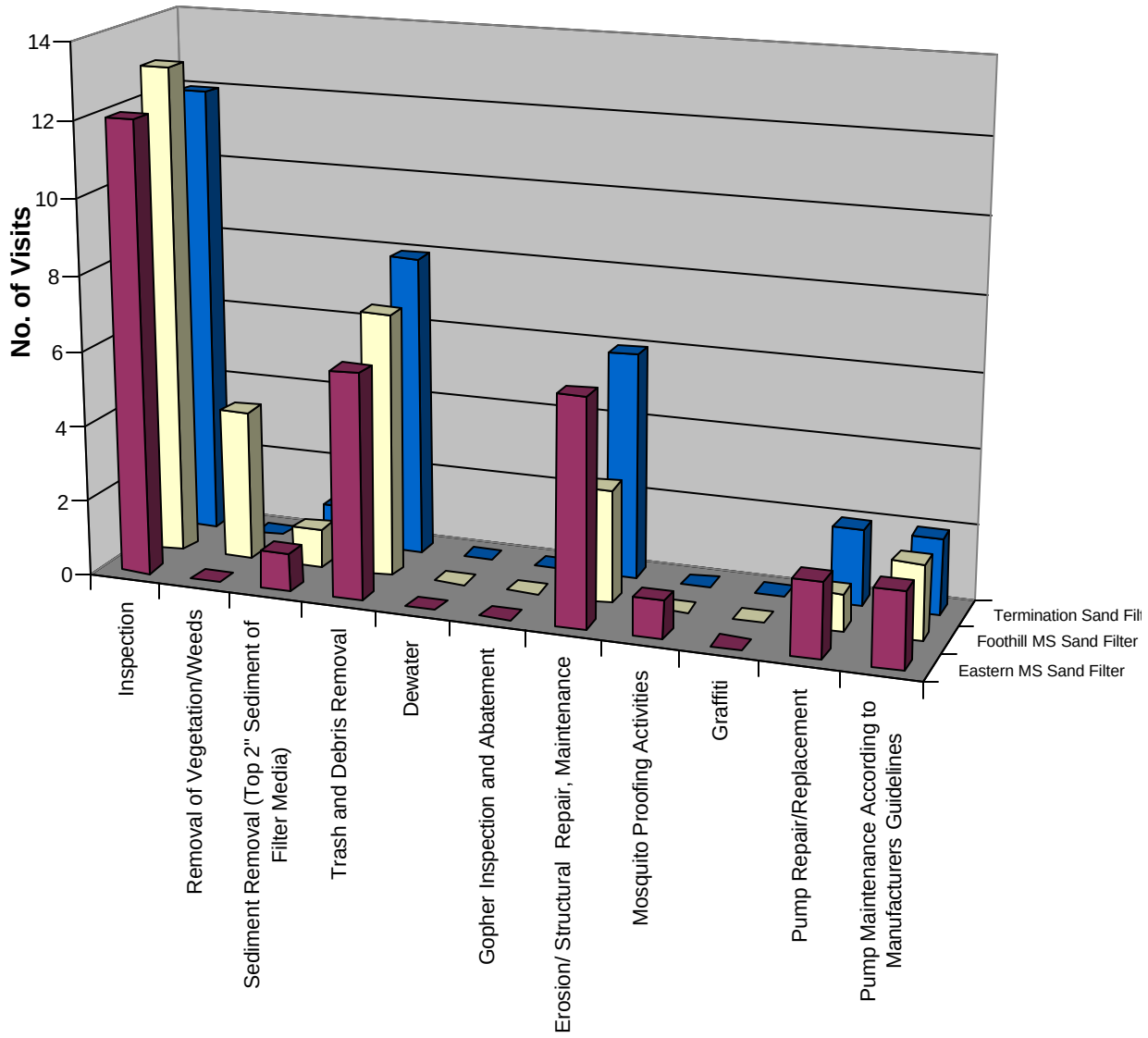
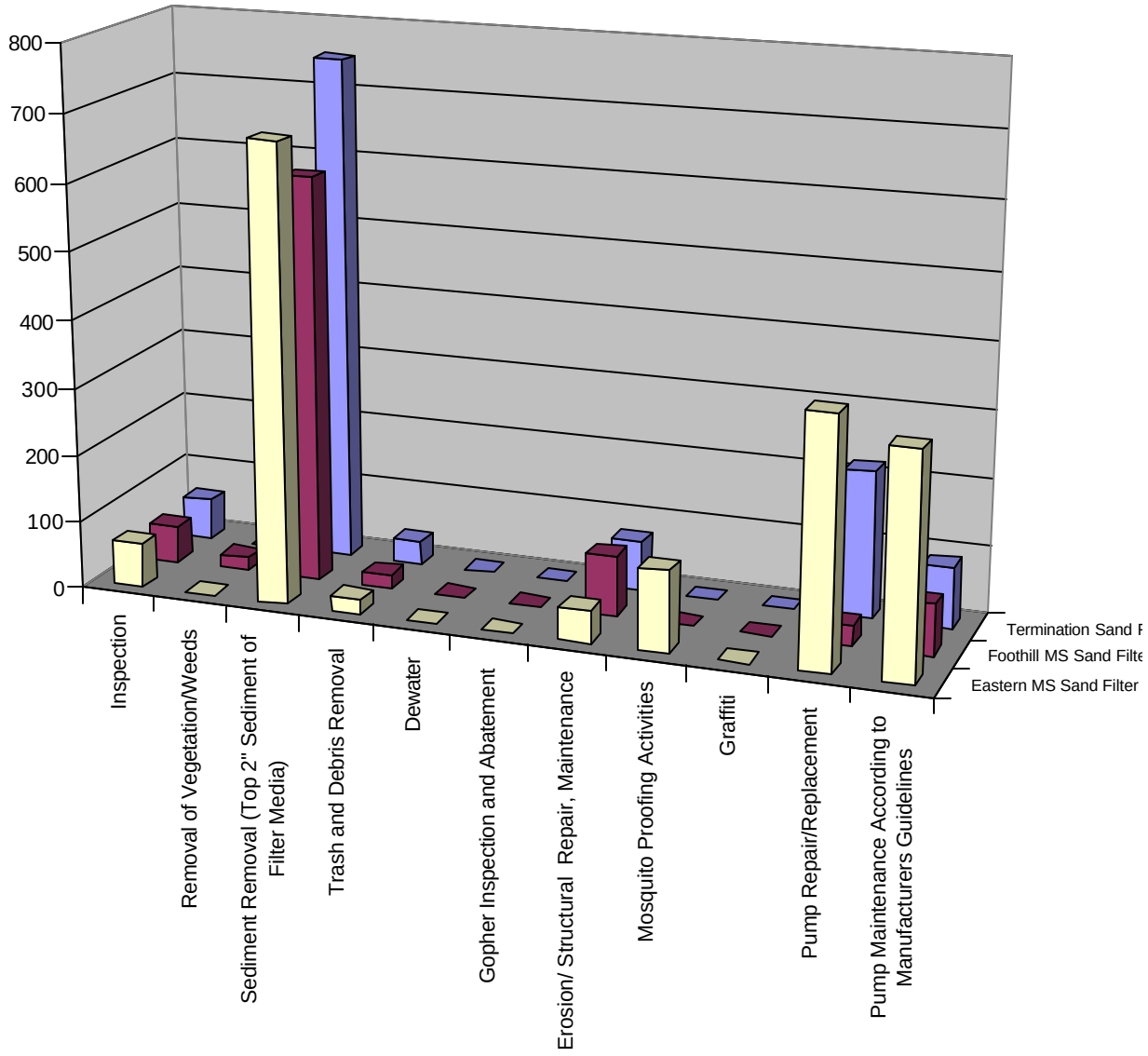


Figure 3-4b: Average Maintenance Times at the Sand Filters



3.1.5 Multi-chambered Treatment Trains

Overall Review of Maintenance Activities at the Multi-chambered Treatment Trains

Maintenance activities at the Multi-chambered Treatment Trains consisted of unscheduled and routine maintenance. Unscheduled maintenance at each Multi-chambered Treatment Train consisted of the following:

1. Modifying the grit chamber to allow easier sampling access for Vector Control District (VCD) personnel. The plastic packing balls were removed and containerized in 55-gallon drums. A 0.22-inch polyethylene mesh screen was attached to the grit chamber grate using nylon zip ties. The grated floor was hinged with stainless steel hinges and fasteners for VCD access. The plastic packing balls were sampled for purposes of disposal, drummed, and subsequently disposed. The analytical results are presented in Table 1-5b.

2. Installing aluminum covers to reduce the potential for mosquitoes entering and breeding in the BMP. A bid package was sent out to prospective manufacturers in November 2000, and the final bid was awarded in December 2000. The cover manufacturer surveyed the site for preparation of shop drawings for the MCTT cover in January 2001. Shop drawings for the MCTT covers were prepared, revised and approved. From mid-January to mid-February, 2001, the MCTT covers were fabricated, including non-destructive testing of structural welds. Finally, the covers were installed and smoke tested by the end of February 2001.

Routine inspections were conducted on a monthly basis and weekly during extended periods of wet weather. In accordance with the MID and OMM Plan, routine maintenance activities at each Multi-chambered Treatment Train consisted of the following:

1. Removing trash and debris.

2. Replacing the transfer pump following the previous (i.e., 1999-2000) wet season.

3. Inspecting pumps per manufacturers guidelines, at the beginning of the 2000/01 wet season.

4. Replacing sump mosquito netting.

5. Installing new skimmer booms in the sedimentation basin during the summer.

6. Pumping water from the sedimentation chamber to the filter chamber. Following a storm event, water in the sedimentation chamber was left for a period of 24 to 36 hours to allow suspended particles to settle. The water was then transferred manually, using the transfer pump, to the filter chamber where the effluent pump functioned automatically. Water was pumped from the sedimentation chamber to a water level of one foot above the settling tubes. This water level was maintained to allow the Vector Control District personnel easy access for sampling. At the Lakewood Park and Ride Multi-chambered Treatment Train, a power source problem was discovered in October 2000 while testing the pumps under load i.e., while the Park and Ride lights were on. The solution was to run the pumps during daylight hours only.

Overall Review of Maintenance Activities at the Via Verde Park & Ride Multi-chambered Treatment Train (74206)

Site-specific maintenance activities at the Via Verde Park & Ride Multi-chambered Treatment Train consisted of unscheduled and routine maintenance.

Unscheduled maintenance at the Multi-chambered Treatment Train consisted of the following:

1. Repairing leaks in the sedimentation basin and inlet pipe into the sedimentation basin, from the grit chamber. During the 1999-2000 wet season, the BMP was observed to be leaking. In August 2000, sealant was injected around the inlet pipe to the sedimentation chamber. Additionally, gravel and cobbles left over from the installation of the concrete walls were removed from the same pipe. However, the BMP continued to leak following the January 11, 2001 storm event. The BMP was taken offline while the leak was investigated. Geotechnical reconnaissance was performed at the site to evaluate areas of potential leakage from the sedimentation chamber and to visually assess slope stability. There were no indications that the slope adjacent to the BMP had experienced any visible downslope movement, but it did have an increased moisture content compared to similar adjacent slopes, and hence an increased potential for instability. The sedimentation chamber exhibited indications of seepage, and it appeared that one possible source for leakage was from the contact between the walls and floor. Additionally, one-half inch diameter, three inch deep holes had been bored at the bottom of the concrete walls, possibly exposing steel reinforcements to water. Waterproofing the chamber would prevent further seepage and exposure of reinforcement members. Waterproofing work was done from January 18 to 30, 2001, after evacuating water out of the sedimentation chamber, removing the sludge at the bottom of the chamber, and removing all hardware. The sludge was sampled for purposes of disposal, drummed, and subsequently disposed. The analytical results are presented in Table 1-5b.

   Materials used for waterproofing are commonly used for water storage tanks. The scope of work for the waterproofing was as follows:

   - Sandblast walls and floors
   - Remove sand and debris, and stage in barrels for proper disposal by others
   - Clean walls and floor slab per material manufacturers recommendations
   - Rout all joints and cracks ¼" x ¼" and seal with Sikaflex 15LM Elastomeric Sealant
   - Fill all large rock pockets and holes with waterplug (hydraulic cement)
   - Prime walls and floors with Elasto-Poxy Primer
   - Apply first coat of Elasto-Deck B.T. 1000
   - Within 24 hours, apply second coat of Elasto-Deck B.T. 1000.

   The sandblast residue was sampled for purposes of disposal, drummed, and subsequently disposed. The analytical results are presented in Table 1-5b.

   Following this work, the pipe from the grit chamber to the sedimentation chamber was tested for leaks. The pipe was found to leak. Consequently, the water in the grit chamber was pumped out and a closed circuit television survey of the pipe was conducted. Some evidence

of infiltration near the lower joints was observed. On March 17, 2001, the pipe between the grit chamber and the sedimentation chamber was slip-lined to repair the leak. The settling tubes were reinstalled and the site was put back online on March 19, 2001.

Routine maintenance activities at the Multi-chambered Treatment Train included:

1. Securing the bottom float in the sump.

Overall Review of Maintenance Activities at the Lakewood Park & Ride Multi-chambered Treatment Train (74208)

Site-specific maintenance activities at the Lakewood Park & Ride Multi-chambered Treatment Train consisted of unscheduled and routine maintenance.

Unscheduled maintenance at the Multi-chambered Treatment Train consisted of the following:

1. Installing a 2 inch pipe extension on the transfer pump discharge pipe.

Routine maintenance activities at the Multi-chambered Treatment Train included:

1. Repairing the grit chamber cover.
2. Removing weeds from the filter chamber and the sedimentation chamber.
3. Removing vegetation from the skimmer booms.
4. Reconnecting or tightening grommets for float valves.

Figure 3-5a summarizes the frequency of maintenance activities (i.e., number of times maintenance was conducted at the BMP) and Figure 3-5b summarizes the average amount of time spent performing each activity.

Figure 3-5a: Frequency of Maintenance Activities at the Multi-chambered Treatment Trains

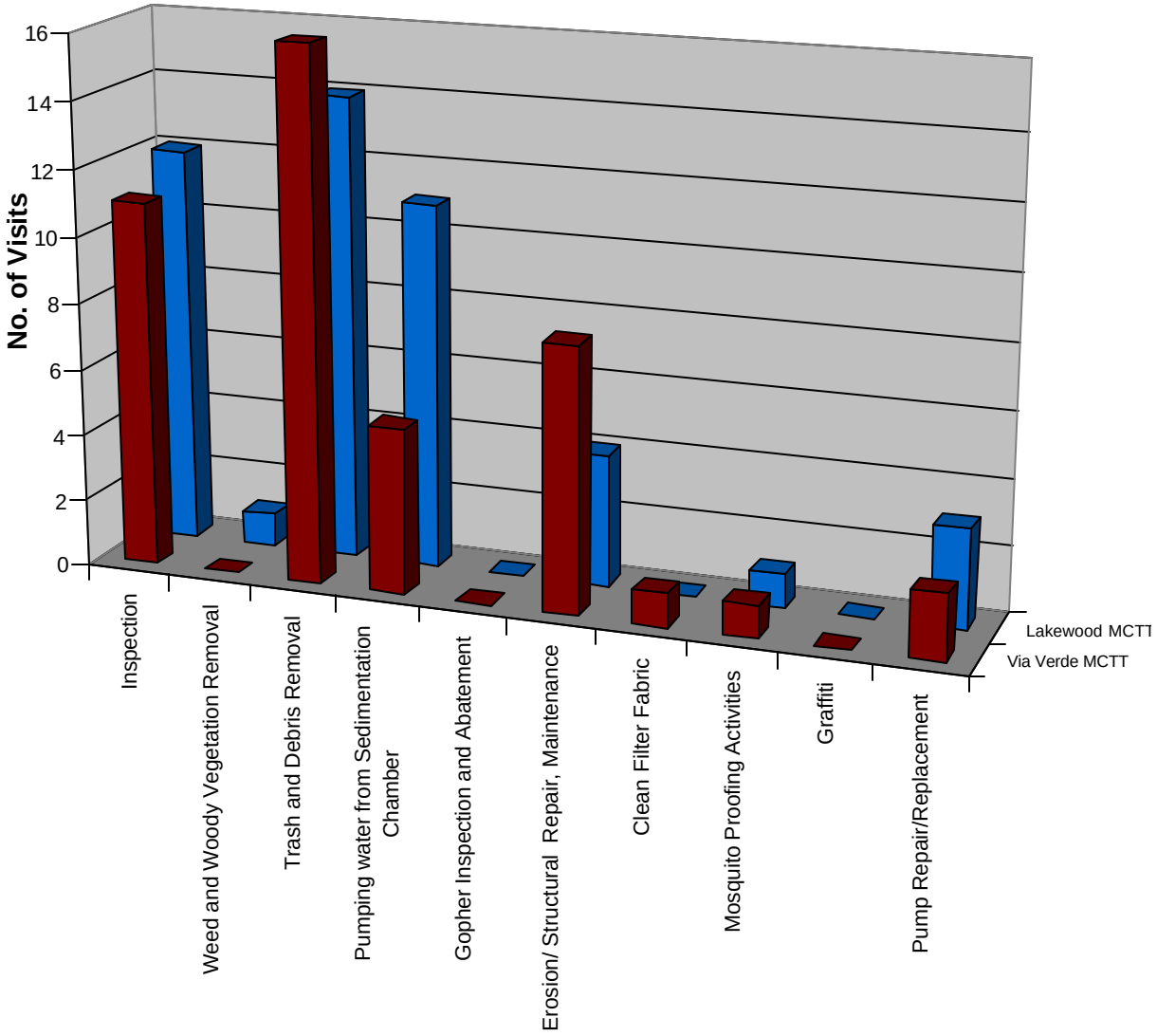
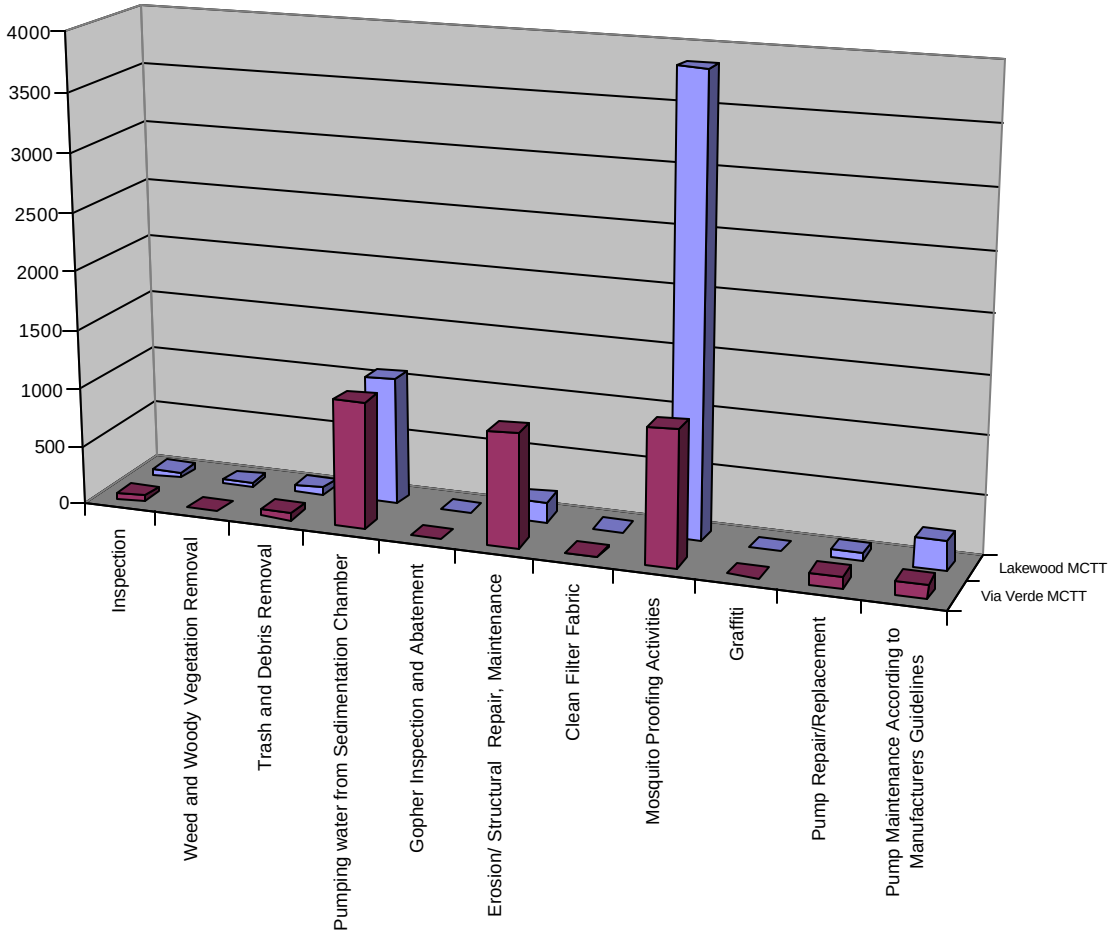


Figure 3-5b: Average Maintenance Times at the Multi-chambered Treatment Trains



3.1.6 CDS Units

Overall Review of Maintenance Activities at the Continuous Deflective Separation Units

Maintenance activities at the Continuous Deflective Separation Units consisted of unscheduled and routine maintenance. Unscheduled maintenance at each Continuous Deflective Separation Unit consisted of the following:

1. Grouting the weir box to eliminate the sump in July 2000.

2. Installing a riser section above the separation screen in July 2000.

3. Installing a new separation screen with larger openings in October 2000. Due to clogging problems experienced by the manufacturer, resulting in unreasonably high maintenance requirements, the original screen size will no longer be made. It was replaced with one with larger openings and hence less clogging potential.

4. Mosquito-proofing the unit. A series of modifications were made to improve the mosquito-proofing of the litter bypass bag, after Vector Control District personnel observed breeding in the units:

   In November 2000:

   - The original bypass bag was replaced with a white plankton screen mosquito proof bag.
   - Weather stripping was installed on the CDS cover and on the weir box cover.
   - The CDS cover was secured with bolts.
   - Holes were sealed with silicone.

   In February 2001:

   - The end of the white litter bypass/mosquito proofing bag was cut off in order to prevent impedance of flow from the CDS unit, which was observed during the January 10-12, 2001 storm event. The end of the bag was weighted down to prevent mosquitoes entering. A new litter bypass collection basket was fabricated and installed downstream of the H-flume.

   In March 2001:

   - The white mosquito proof bag was replaced with a new mosquito screen, which was a more flexible material and is UV protected. It is woven with holes smaller in size than typical mosquito screens. A tube was made by sewing (double-stitching) the screen with monofilament i.e., fishing line. A peripheral pocket was also sewn on the outlet to encase a chain, which is used to help close the end.

Routine inspections were conducted on a monthly basis and weekly during extended periods of wet weather. In accordance with the MID and OMM Plan, routine maintenance activities at each Continuous Deflective Separation Unit consisted of the following:

1. Removing trash and debris from the BMP area.

2. Clearing the weir box of sediment and debris by pushing it into the sump.

3. Cleaning out gross pollutants (litter and vegetation) from the sump, weir box and bypass bag, in accordance with the MID. The maintenance threshold for gross pollutants in the sump was set at 85% full, which was reached in January and March 2001 at the Orcas site, and in January 2001 at the Filmore site. Both units were also cleaned out in May 2001, in accordance with the MID. The following table shows the accumulation over time of floatable and settable material in the sump at both CDS sites:

Table 3-1: Depth of Settable and Floatable Gross Pollutants in CDS Units

Date	Settlables (inches)		Floatables (inches)	
	Orcas	**Filmore**	**Orcas**	**Filmore**
11/7/00	5.75	7.5	8-9	1
12/8/00	9.5	13.75	4	1
1/15/01	42	26	12	3
1/16/01	**MAINTENANCE**			
2/6/01	1	1.5	1	0.5
2/15/01	14	4	4	1.5
2/24/01	13	7.5	1	1
3/2/01	17	4.5	2-3	1-2.5
3/4/01	18	8	1	1
3/6/01	18	8	ND[1]	ND
3/7/01	19-19.5	8	ND	ND
3/12/01	19-20.75	<85% full	ND	ND
3/12/01	**MAINTENANCE**	<85% full	**MAINTENANCE**	ND
4/7/01	3	10	ND	ND
4/20/01	3	8.5	1	0.5
5/3/01	**MAINTENANCE**			

[1]ND = No Data

The total wet weight and volume of floatables, settlables, weir box material and bypass material were measured following each clean out. The litter and vegetation were separated and similarly measured. They were then left to dry on separate drying racks for a minimum period of 24 hours. The racks were photographed. Dry weights and volumes of floatables, settlables, weir box material and bypass material were measured for litter and for vegetation. The vegetation was then disposed of, and the litter was segregated into the following categories:

- Cardboard/Chipboard
- Cigarette Butts
- Cloth
- Glass
- Metal (foil and molded)
- Paper
- Plastic-Film
- Plastic-Moldable

- Styrofoam
- Wood Debris
- Other

Those categories were further segregated into the following usages:

- Smoking-related
- Food-related
- General unknown

Finally, each type of litter category within floatables, settlables, weir box material and bypass material was measured, weighed, and counted, and the litter was then disposed of. The breakdown of litter versus vegetation, and types of litter can be seen in Figures 41a and 41b.

Overall Review of Maintenance Activities at the I-210/East of Orcas Avenue Continuous Deflective Separation Unit (73102)

Site-specific maintenance activities at the I-210/East of Orcas Avenue Continuous Deflective Separation Unit consisted of routine maintenance.

Routine maintenance at the Continuous Deflective Separation Unit consisted of the following:

1. Trimming trees, which had damaged the barbed wire at the top of the fence surrounding the site.

2. Repairing the damaged barbed wire.

3. Removing sediment from the concrete ditch adjacent to the CDS unit. The sediment was a result of the embankment eroding.

4. Removing weeds from the BMP area.

Overall Review of Maintenance Activities at the I-210/East of Filmore Street Continuous Deflective Separation Unit (73103)

Site-specific maintenance activities at the I-210/East of Filmore Street Continuous Deflective Separation Unit consisted of routine maintenance.

Routine maintenance at the Continuous Deflective Separation Unit consisted of the following:

1. Removing graffiti from the enclosure and flume.

Figure 3-6a summarizes the frequency of maintenance activities (i.e., number of times maintenance was conducted at the BMP) and Figure 3-6b summarizes the average amount of time spent performing each activity.

Figure 3-6a: Frequency of Maintenance Activities at the Continuous Deflective Separation Units

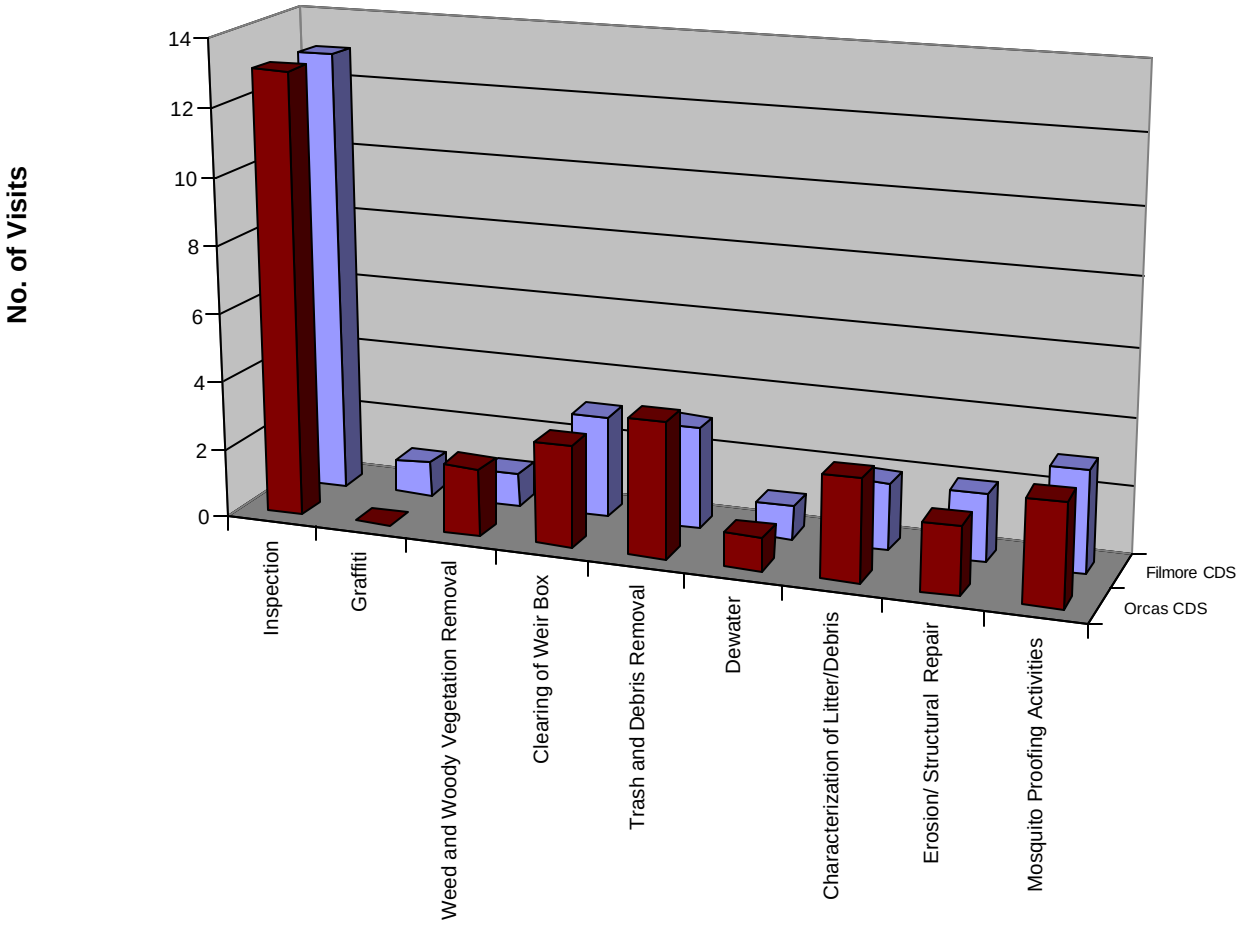
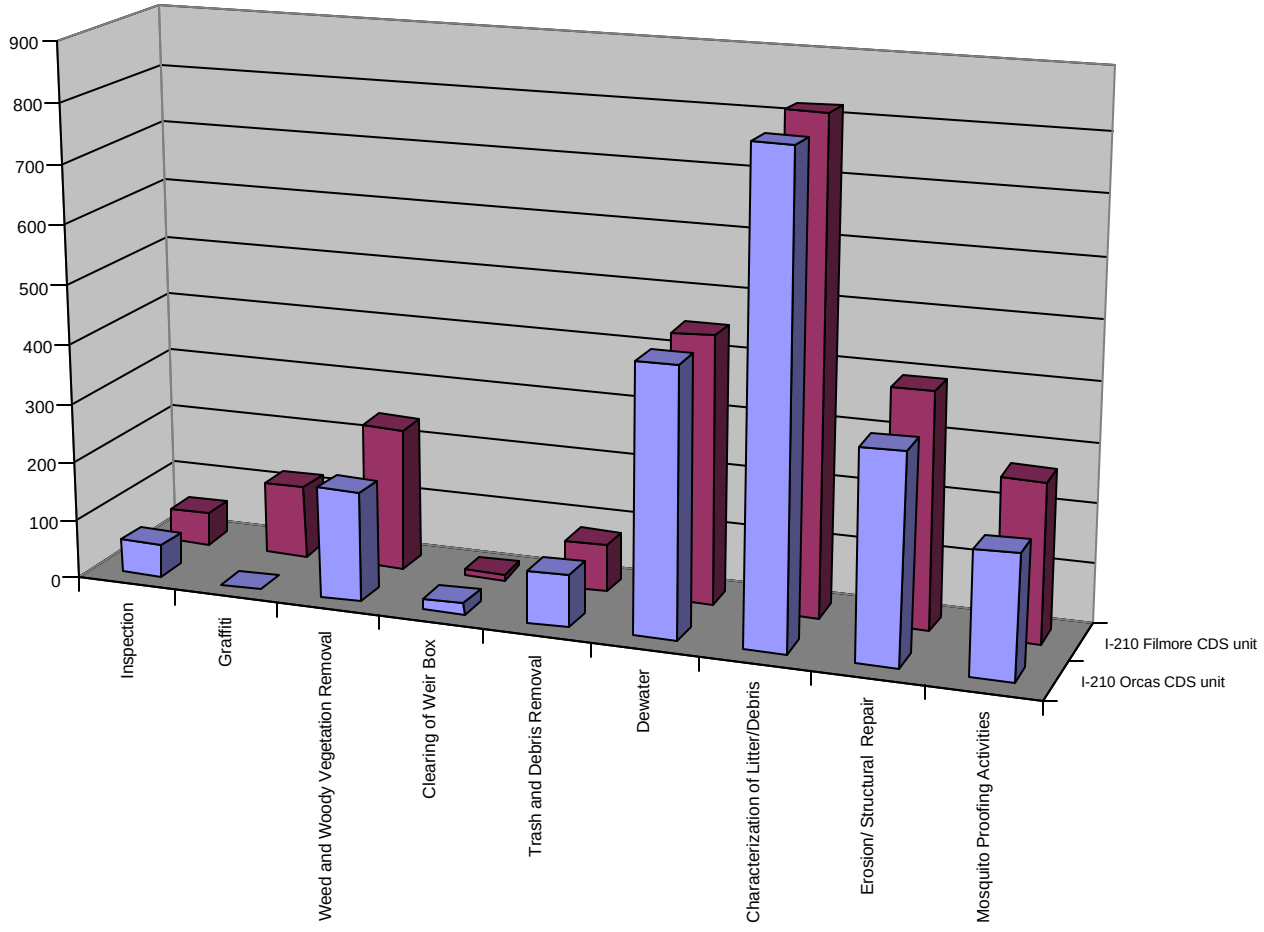


Figure 3-6b: Average Maintenance Times at the Continuous Deflective Separation Units



3.1.7 Drain Inlet Inserts

Overall Review of Maintenance Activities at the Foothill Maintenance Station StreamGuardä DII (73216N)

Maintenance activities at the Foothill Maintenance Station StreamGuard™ DII consisted of one-time maintenance activities.

One-time maintenance activities conducted at the site include the following:

1. Prior to the 2000/01 wet season, the DII was installed and the interface gap between the DII fabric and the drain inlet was eliminated using wood shims to compress the DII fabric against the drain inlet walls.

Routine inspections were conducted at the site prior to and during each storm event. The thresholds for replacement of the DII provided in the MID were not reached. The DII was removed during the first week of May 2001 and subsequently analyzed.

Figure 3-7a summarizes the frequency of maintenance activities (i.e., number of times maintenance was conducted at the BMP) and Figure 3-7b summarizes the average amount of time spent performing each activity.

Overall Review of Maintenance Activities at the Las Flores Maintenance Station StreamGuardä DII (73217N)

Maintenance activities at the Las Flores Maintenance Station StreamGuard™ DII consisted of routine maintenance activities.

Routine maintenance activities conducted at the site include the following:

1. Prior to the 2000/01 wet season, the DII was installed and the interface gap between the DII fabric and the drain inlet was eliminated using wood shims to compress the DII fabric against the drain inlet walls.

The rubber berm surrounding the sampling chamber was repaired five times.

1. The DII slipped in one location along the inlet edge, creating a gap between the DII and the drain inlet wall. The DII was subsequently returned to its original position and the inlet-DII interface was tightened using additional wood shims.

Routine inspections were conducted at the site prior to and during each storm event, and the thresholds for replacement of the DII provided in the MID were reached once, due to a rip being discovered in the StreamGuard fabric. The DII was replaced on January 23, 2001, and removed during the first week in May 2001. The DII materials were subsequently analyzed on both occasions.

Figure 3-7a summarizes the frequency of maintenance activities (i.e., number of times maintenance was conducted at the BMP) and Figure 3-7b summarizes the average amount o time spent performing each activity.

Overall Review of Maintenance Activities at the Rosemead Maintenance Station StreamGuardä DII (73218S)

Maintenance activities at the Rosemead Maintenance Station StreamGuard™ DII consisted of one-time maintenance activities and routine maintenance activities.

One-time/routine maintenance activities conducted at the site include the following:

1. Prior to the 2000/01 wet season, the DII was installed and the interface gap between the DII fabric and the drain inlet was eliminated using wood shims to compress the DII fabric against the drain inlet walls.

2. Removed leaves from the top of the inlet grate, to avoid impedance of flow into the DII, and stored in an on-site storage container designed to emulate DII conditions.

3. The DII slipped in one location along the inlet edge, creating a gap between the DII and the drain inlet wall. The DII was subsequently returned to its original position and the inlet-DII interface was tightened using additional wood shims. On another occasion, the inlet-DII interface was tightened using additional wood shims to prevent slippage.

Routine inspections were conducted at the site prior to and during each storm event. The thresholds for replacement of the DII provided in the MID were not reached. The DII was removed during the first week in May 2001 and subsequently analyzed.

Figure 3-7a summarizes the frequency of maintenance activities (i.e., number of times maintenance was conducted at the BMP) and Figure 3-7b summarizes the average amount of time spent performing each activity.

Overall Review of Maintenance Activities at the Foothill Maintenance Station Fossil Filterä DII (73216S)

Maintenance activities at the Foothill Maintenance Station Fossil Filter™ DII consisted of routine and unscheduled maintenance activities.

Routine maintenance activities conducted at the site include the following:

1. Prior to the 2000/01 wet season, the DII adsorbent material was installed.

2. The interface between the DII and the inlet was checked for gaps prior to the beginning of the 2000/01 wet season and throughout the wet season; no gaps were found.

3. The stainless steel screws holding the caps on the ends of the cartridges had come loose and were replaced.

4. The rubber berm surrounding the sampling chamber was repaired once.

Routine inspections were conducted at the site prior to, during, and after each storm event. Generally, small amounts of trash, debris, and sediment were removed from the DII both before and once during a storm event, and sometimes after the storm event. Removed trash, debris, and sediment were placed in an on-site storage container designed to emulate DII conditions.

Unscheduled maintenance activities conducted at the site include the following:

1. Cleanup of the site and replacement of the adsorbent granules following a diesel spill on October 5, 2000. Caltrans soaked up the diesel fuel using a super-fine absorbent material on the asphalt and within the BMP. The DII was removed and the adsorbent material was disposed of with the diesel fuel. The fuel had drained through the subsurface pipe to the monitoring vault. The Palmer-Bowlus flume apparently prevented the fuel from entering the storm drain. Caltrans placed a barrier at this point to prevent fuel from entering the storm drain. A high pressure steam cleaner was used to wash down the concrete/asphalt pavement, the DII, the drain inlet, and, as much as possible, the concrete pipe connecting the drain inlet to the monitoring vault. A vacuum truck was used to vacuum out the fuel and rinse water as it entered this chamber. Steam cleaning was continued until there was no longer an oil sheen in the rinse water. No detergents were used during the cleaning, only high-pressure steam. The Fossil Filter DII cartridges appeared to be adequately clean so new adsorbent material was replaced and the DII was reinstalled.

The thresholds for replacement of the DII provided in the MID were not reached after the reinstallation following the diesel spill. The adsorbent granules were removed during the first week in May 2001. Subsequently, the adsorbent granules from the cartridges and trash, debris, and sediment collected during the 2000/01 wet season were sent to the laboratory for analysis.

Figure 3-7a summarizes the frequency of maintenance activities (i.e., number of times maintenance was conducted at the BMP) and Figure 3-7b summarizes the average amount of time spent performing each activity.

Overall Review of Maintenance Activities at the Las Flores Maintenance Station Fossil Filterä DII (73217S)

Maintenance activities at the Las Flores Maintenance Station Fossil Filter™ DII consisted of one-time maintenance activities and routine maintenance activities.

One-time/routine maintenance activities conducted at the site include the following:

1. Prior to the 2000/01 wet season, the DII adsorbent material was installed.

2. The interface between the DII and the inlet was checked for gaps prior to the beginning of the 2000/01 wet season and throughout the wet season; a gap was found one time and sealed with spray foam.

3. The stainless steel screws holding the caps on the ends of the cartridges had come loose and were replaced.

4. The rubber berm surrounding the sampling chamber was repaired twice.

Routine inspections were conducted at the site prior to, during, and after each storm event. Generally, small amounts of trash, debris, and sediment were removed from the DII both before and once during a storm event, and sometimes after the storm event. Removed trash, debris, and sediment were placed in an on-site storage container designed to emulate DII conditions.

The thresholds for replacement of the DII provided in the MID were not reached. The adsorbent granules were removed during the first week in May 2001. Subsequently, the adsorbent granules from the cartridges and trash, debris, and sediment collected during the 2000/01 wet season were sent to the laboratory for analysis.

Figure 3-7a summarizes the frequency of maintenance activities (i.e., number of times maintenance was conducted at the BMP) and Figure 3-7b summarizes the average amount of time spent performing each activity.

Overall Review of Maintenance Activities at the Rosemead Maintenance Station Fossil Filterä DII (73218N)

Maintenance activities at the Rosemead Maintenance Station Fossil Filter™ DII consisted of one-time maintenance activities and routine maintenance activities.

One-time/routine maintenance activities conducted at the site include the following:

1. Prior to the 2000/01 wet season, the DII adsorbent material was installed.
2. The interface between the DII and the inlet was checked for gaps prior to the beginning of the 2000/01 wet season and throughout the wet season; a gap was found one time and repaired by securing a loose piece of rubber.
3. The stainless steel screws holding the caps on the ends of the cartridges had come loose and were replaced.
4. The rubber berm surrounding the sampling chamber was repaired twice.

Routine inspections were conducted at the site prior to, during, and after each storm event. Generally, small amounts of trash, debris, and sediment were removed from the DII both before and once during a storm event, and sometimes after the storm event. Removed trash, debris, and sediment were placed in an on-site storage container designed to emulate DII conditions.

The thresholds for replacement of the DII provided in the MID were not reached. The adsorbent granules were removed during the first week in May 2001. Subsequently, the adsorbent granules from the cartridges and trash, debris, and sediment collected during the 2000/01 wet season were sent to the laboratory for analysis.

Figure 3-7a summarizes the frequency of maintenance activities (i.e., number of times maintenance was conducted at the BMP) and Figure 3-7b summarizes the average amount of time spent performing each activity.

Figure 3-7a: Frequency of Maintenance Activities at the DII Sites

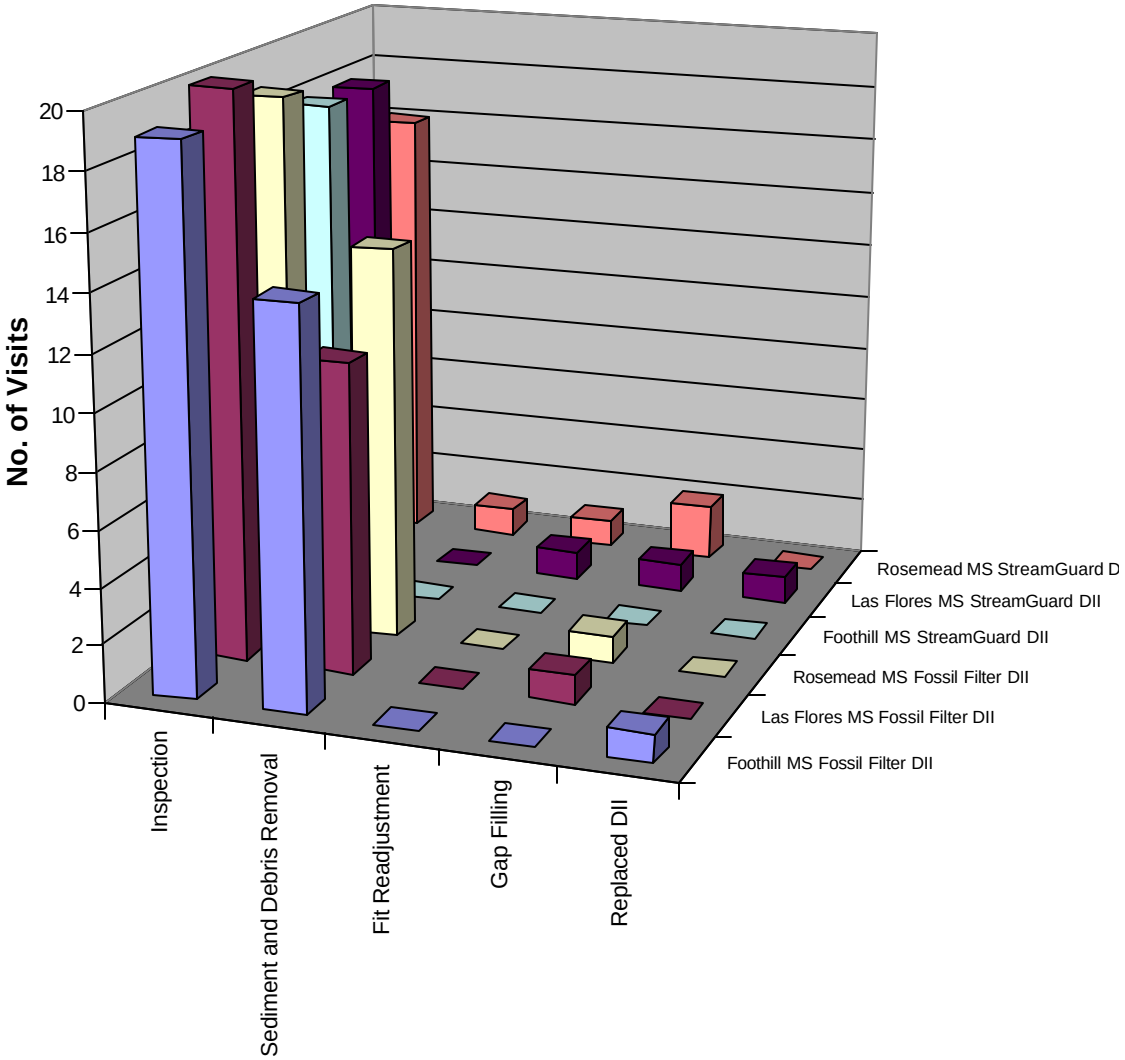
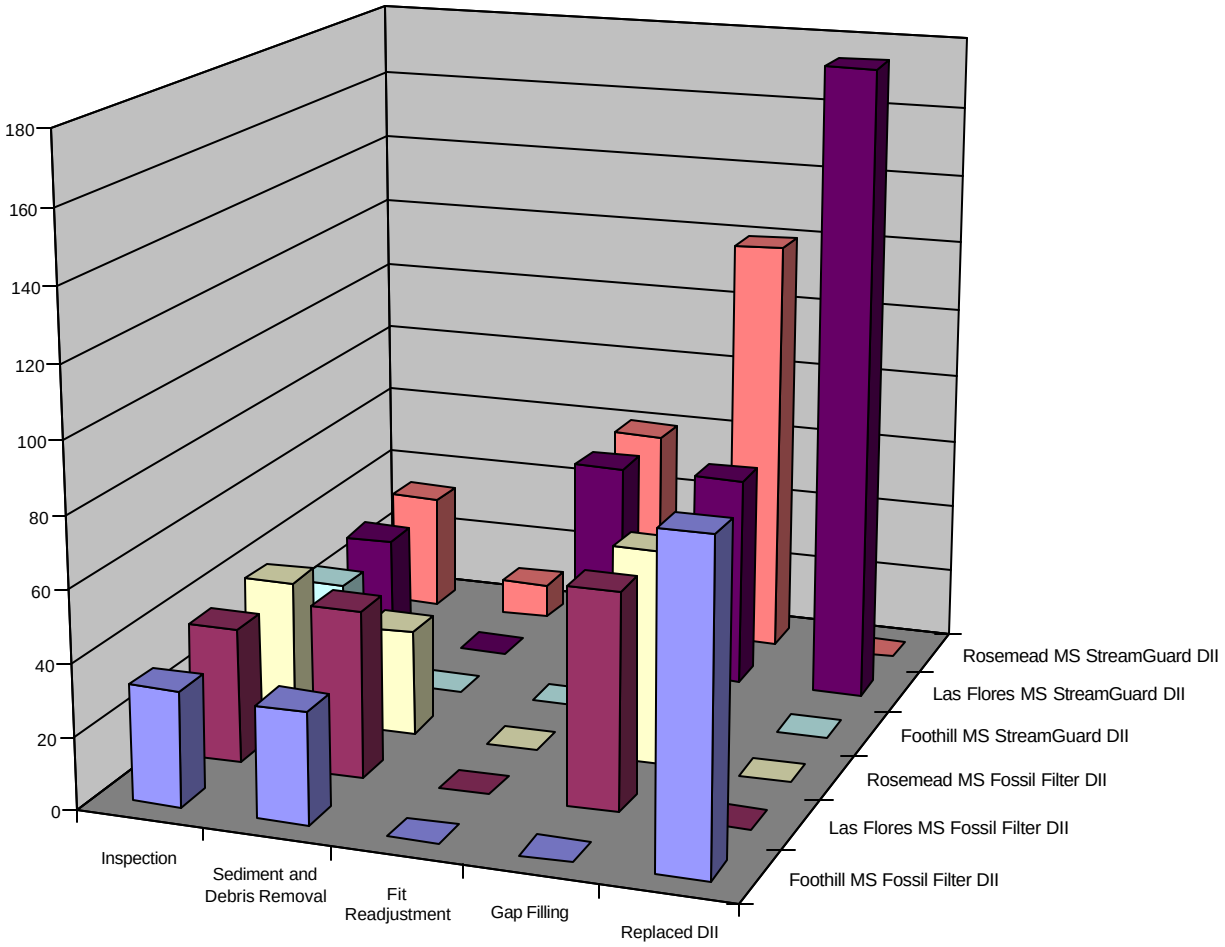


Figure 3-7b: Average Maintenance Times at the DII Sites



3.1.8 Oil/Water Separator

Overall Review of Maintenance Activities at the Alameda Maintenance Station Oil/Water Separator (74201)

Maintenance activities at the Alameda Maintenance Station Oil/Water Separator consisted of routine maintenance activities.

Routine maintenance activities conducted at the site include the following:

1. Removing trash and debris from the BMP area.
2. Removing graffiti.
3. Sediment removed from the trench drain and drummed during the 1999-2000 wet season, was characterized and disposed of. The analytical results are presented in Table 1-5b.

Routine inspections were conducted per the OMM Plan and MID. The MID was revised on October 19, 2000, incorporating a change in frequency of sediment and oil inspection in the chambers of the Oil/Water Separator from monthly to quarterly.

Figure 3-8a summarizes the frequency of maintenance activities (i.e., number of times maintenance was conducted at the BMP) and Figure 3-8b summarizes the average amount of time spent performing each activity.

Figure 3-8a: Frequency of Maintenance Activities at the Oil/Water Separator

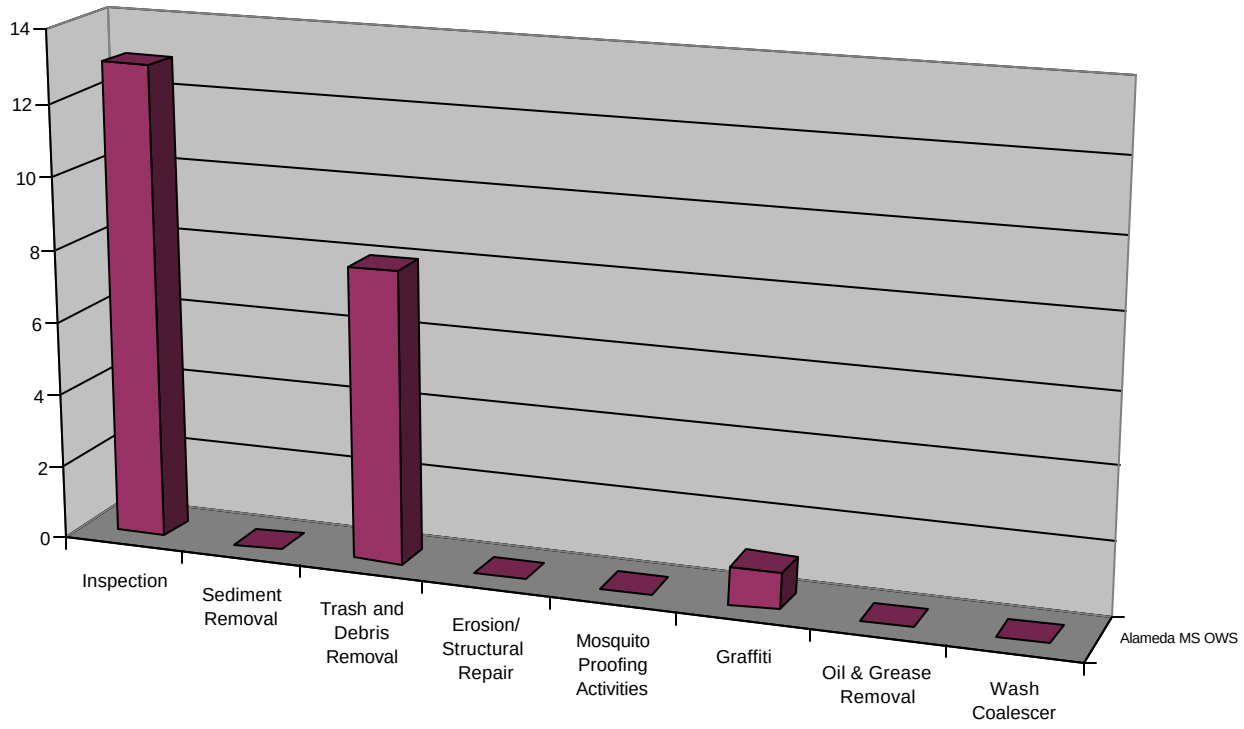
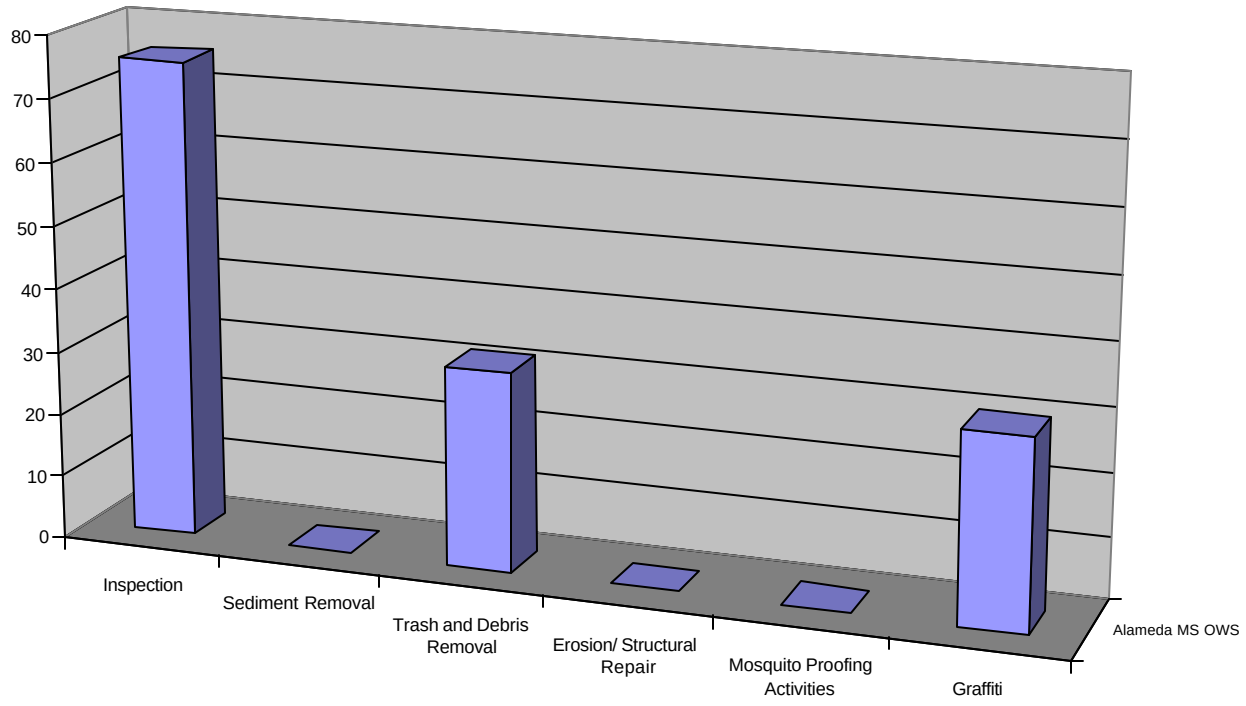


Figure 3-8b: Average Maintenance Times at the Oil/Water Separator



3.1.9 Infiltration Basin

Overall Review of Maintenance Activities at the I-605/SR-91 Infiltration Basin (73101)

Maintenance activities at the I-605/SR-91 Infiltration Basin (IB) consisted of routine maintenance activities.

Routine inspections were conducted per the OMM Plan and MID. Routine maintenance included removal of trash and debris, removal of woody vegetation, cutting the vegetation to a height of approximately six inches and removing and disposing of the cuttings, repairing erosion downstream of the access road asphalt swale, repairing the cover to the overflow junction box, and compaction of ground squirrel holes and gopher burrows.

Figure 3-9a summarizes the frequency of maintenance activities (i.e., number of times maintenance was conducted at the BMP) and Figure 3-9b summarizes the average amount of time spent performing each activity.

Figure 3-9a: Frequency of Maintenance Activities at the Infiltration Basin

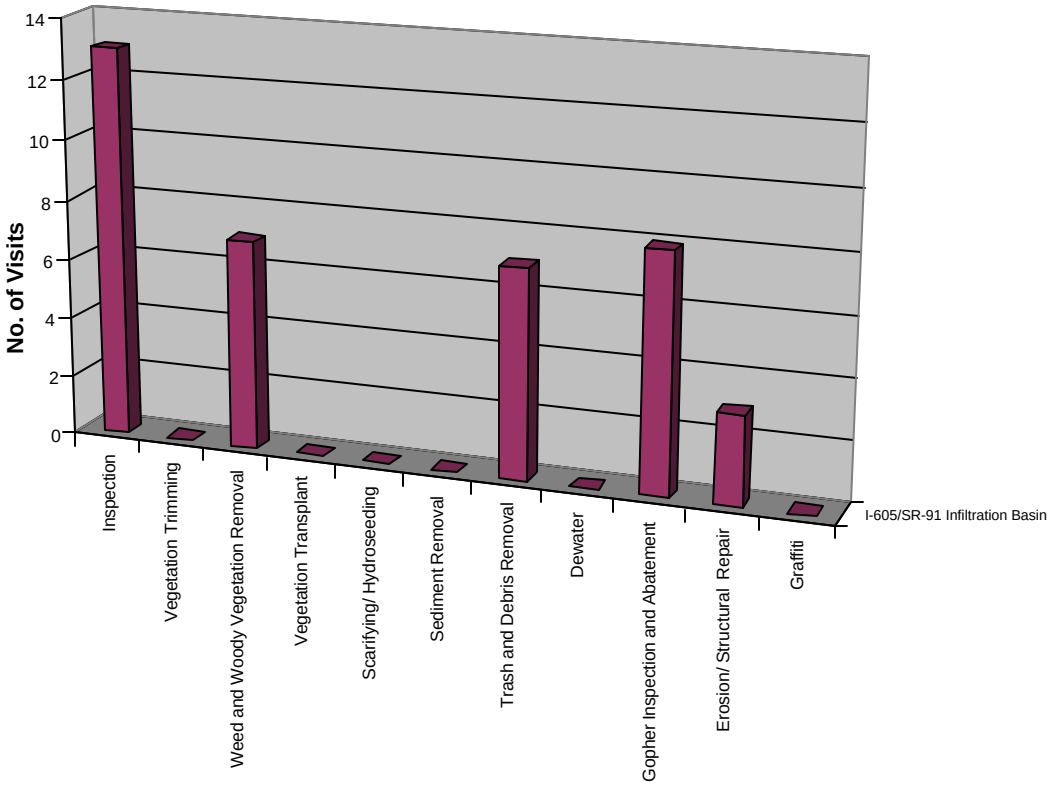
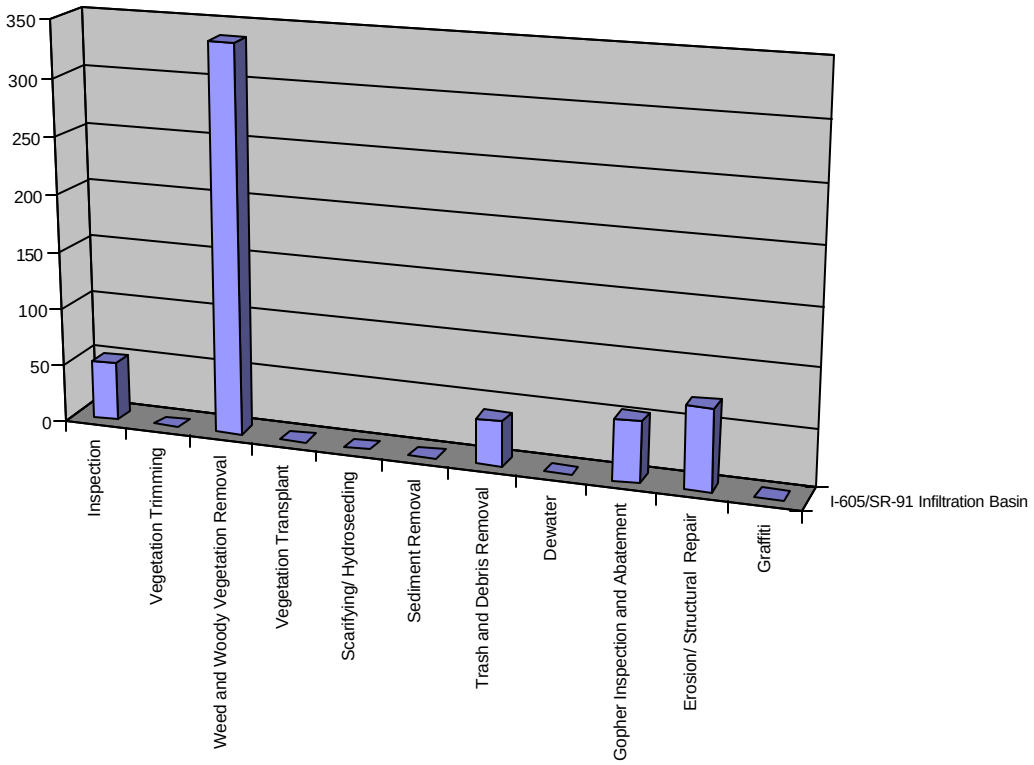


Figure 3-9b: Average Maintenance Times at the Infiltration Basin



3.1.10 Infiltration Trench

Overall Review of Maintenance Activities at the Altadena Maintenance Station Infiltration Trench (73211b)

Very little maintenance activity was conducted at the Altadena Maintenance Station Infiltration Trench. Routine inspections, required by the OMM Plan and MID, were conducted. Routine maintenance activities included the removal of small amounts of trash and debris, and some weeds, plus realigning the gate with the fence.

Figure 3-9a summarizes the frequency of maintenance activities (i.e., number of times maintenance was conducted at the BMP) and Figure 3-9b summarizes the average amount of time spent performing each activity.

Figure 3-10a: Frequency of Maintenance Activities at the Infiltration Trench

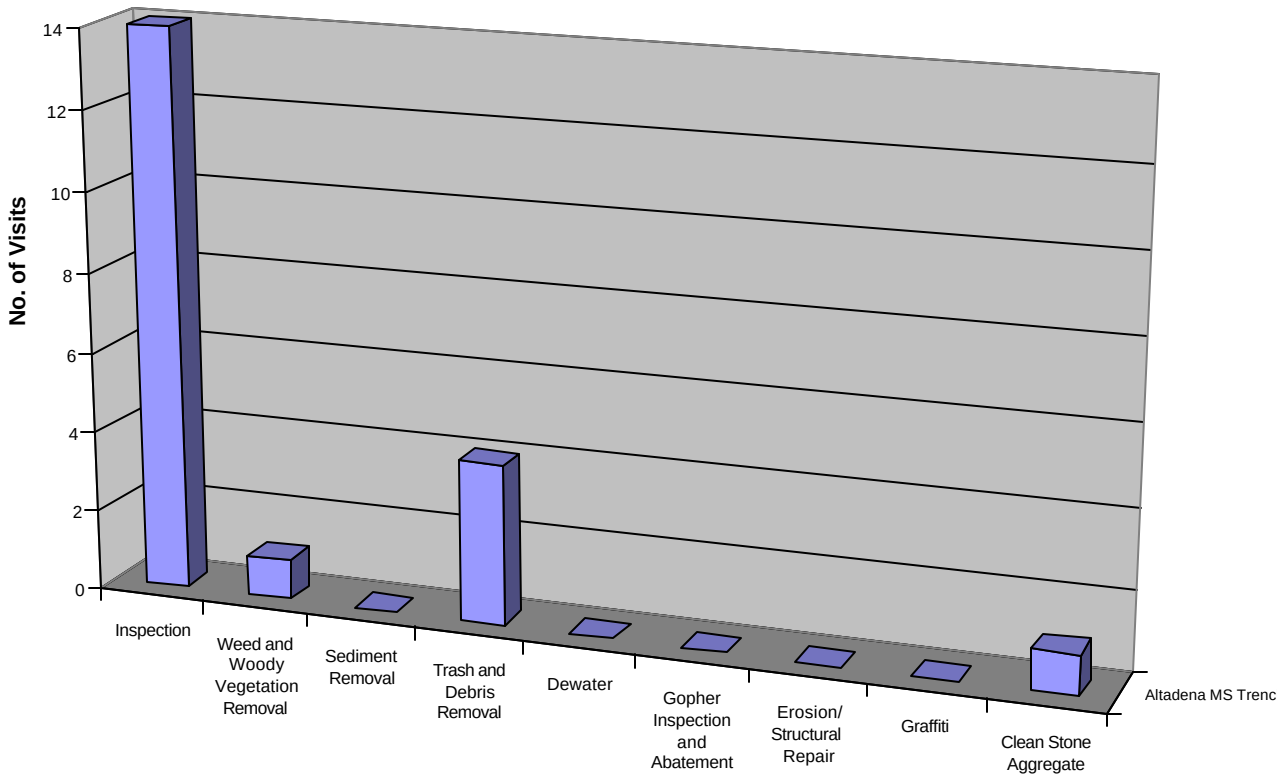
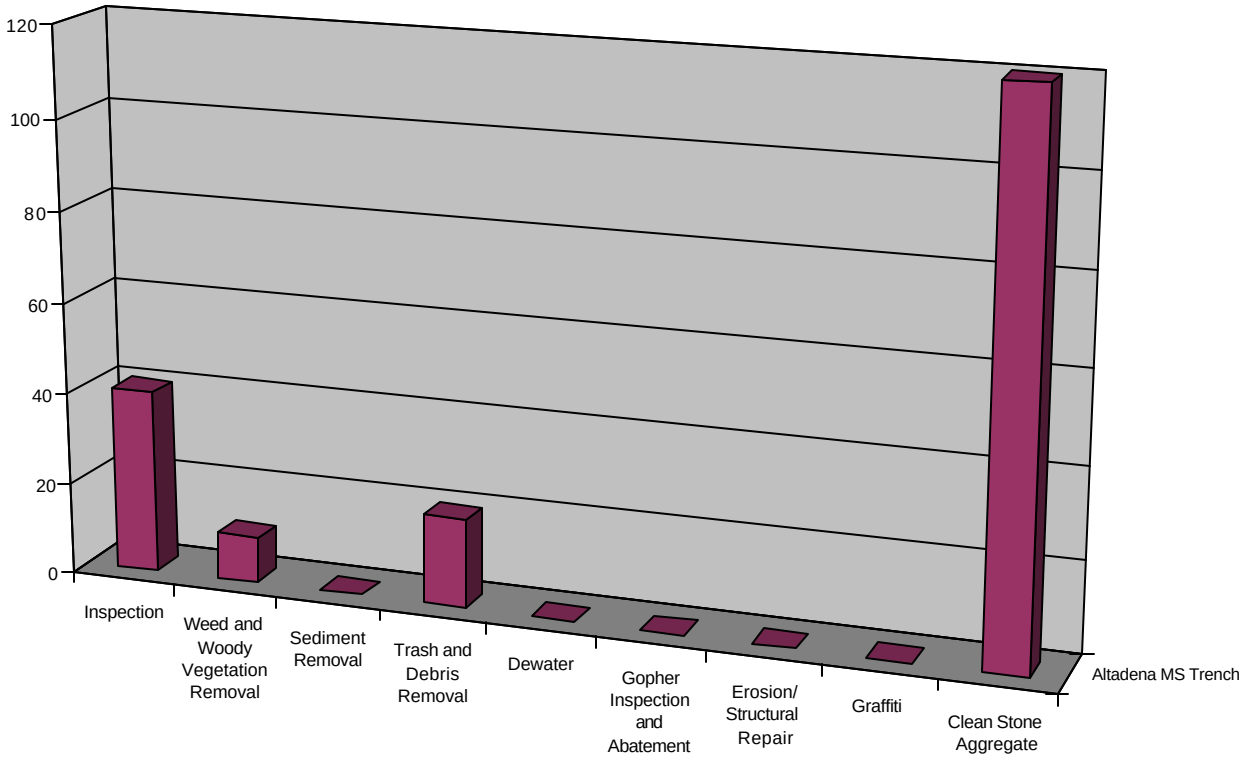


Figure 3-10b: Average Maintenance Times at the Infiltration Trench



4.0 COST SUMMARY

A cost summary for maintenance of the BMPs during the 2000/2001 year is provided in the following spreadsheets, covering the period from October 2000 to May 2001. These cost summaries provided maintenance hours with generic rates.

BMP Retrofit Pilot Program
Maintenance Operation
Cost Accounting Summary, 2000-01

DISTRICT: 7	LOCATION: I-605/SR-91 Interchange	SITE NO. 73101	BMP TYPE: Infiltration Basin	CONSULTANT: Montgomery Watson/LAW Crandall

	TASK	2000			2001									Total (hrs)	Avg. Rate	TOTAL $
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep			
Labor (hours)	***Administration***															
	General program support/Follow-up	3.1	5.2	10.7	1.9	6.5	9.6	4.3	12.5	17.5	1.8	3.0	3.8	79.8	$120	$ 9,571
	Encroachment Permits													0.0	$87	$ -
	Travel	1.2	3.0	6.1	1.7	7.6	4.6	1.9	12.2	7.1			0.9	46.2	$87	$ 4,021
	Unscheduled events													0.0	$87	$ -
	Monthly Subtotal (hours)	4.2	8.2	16.8	3.6	14.1	14.3	6.2	24.7	24.5	1.8	3.0	4.7	126.0		
	Monthly Subtotal ($)	$467	$883	$1,810	$373	$1,436	$1,560	$683	$2,558	$2,711	$220	$358	$535	$13,592		
														Task Subtotal =		$13,592
	Operation															
	Wet season inspections	1.0	1.0	0.5	1.0	1.0	1.5	1.0						7.0	$55	$ 385
	Dry season inspections								1.0	0.5			0.5	2.0	$55	$ 110
	Unscheduled inspections/field calls						0.5							0.5	$60	$ 30
	Monthly Subtotal (hours)	1.0	1.0	0.5	1.0	1.0	2.0	1.0	1.0	0.5	0.0	0.0	0.5	9.5		
	Monthly Subtotal ($)	$55	$55	$28	$55	$55	$113	$55	$55	$28	$0	$0	$28	$525		
														Task Subtotal =		$525
	Maintenance															
	Scheduled maintenance		1.0	28.3		25.5	2.0	0.3	55.8	33.0				145.8	$55	$ 8,016
	Unscheduled maintenance													0.0	$55	$ -
	Vandalism													0.0	$55	$ -
	Acts of God													0.0	$55	$ -
	Landscape Maintenance Contractor													0.0	$0	$ -
	Sediment Removal Contractor													0.0	$0	$ -
	Vegetation Consultant													0.0	$75	$ -
	Other Contractor													0.0	$0	$ -
	Other Contractor													0.0	$0	$ -
	Monthly Subtotal (hours)	0.0	1.0	28.3	0.0	25.5	2.0	0.3	55.8	33.0	0.0	0.0	0.0	145.8		
	Monthly Subtotal ($)	$0	$55	$1,554	$0	$1,403	$110	$14	$3,066	$1,815	$0	$0	$0	$8,016		
														Task Subtotal =		$8,016
	Vector Control															
	Contract & General administration	0.1	0.1	0.1	0.1									0.4	$120	$ 48
	Vector prevention maint. (consultant)													0.0	$65	$ -
	Response to VCD calls (consultant)													0.0	$55	$ -
	VCD efforts (contracted)	6.5	5.8	5.1	3.5	3.3	3.2	3.9	3.2	4.1	3.1	3.5	4.4	49.5	$46	$ 2,298
	Monthly Subtotal (hours)	6.6	5.9	5.2	3.6	3.3	3.2	3.9	3.2	4.1	3.1	3.5	4.4	49.9		
	Monthly Subtotal ($)	$312	$281	$247	$176	$154	$149	$179	$150	$192	$143	$162	$202	$2,346		
														Task Subtotal =		$2,346
Non-Recurring Equipment (hours)	***Equipment***															
	Weedwacker								26.5	10.0				36.5	$5	$ 183
	Piece of Equipment 2													0.0	$0	$ -
	Piece of Equipment 3													0.0	$0	$ -
	Piece of Equipment 4													0.0	$0	$ -
	Piece of Equipment 5													0.0	$0	$ -
	Piece of Equipment 6													0.0	$0	$ -
	Piece of Equipment 7													0.0	$0	$ -
	Monthly Subtotal (hours)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.5	10.0	0.0	0.0	0.0	36.5		
	Monthly Subtotal ($)	$0	$0	$0	$0	$0	$0	$0	$133	$50	$0	$0	$0	$183		
														Equipment Subtotal =		$183
Dollars ($)	***Direct Costs***															Total $
	VCD supplies (direct costs less labor)															$ -
	Reproduction	$ 1	$ 1	$ 1	$ 1											$ 3
	Postage/FedEx	$ 2	$ 2	$ 3	$ 2	$ 2	$ 6		$ 14	$ 0.5	$ 0.3	$ 2				$ 33
	Lodging	$ 11		$ 10	$ 11	$ 9			$ 2							$ 43
	Per Diem	$ 5		$ 5	$ 5	$ 5			$ 0.4							$ 20
	Incidentals	$ 9	$ 34	$ 1	$ 1											$ 44
	Vehicle Rental/Lease	$ 8	$ 25	$ 28	$ 13	$ 79	$ 41	$ 9	$ 340	$ 124			$ 6			$ 673
	Airfare															$ -
	Field Supp./Expendables	$ 4	$ 1	$ 4	$ 1	$ 1	$ 3	$ 11	$ 3	$ 5						$ 34
	Equipment Rental															$ -
	Sediment Analyses															$ -
	Sediment Disposal															$ -
	Weed Wacker															$ -
	Vegetation Disposal															$ -
	Scarifying/Hydroseeding															$ -
	Monthly Subtotal	$ 40	$ 63	$ 52	$ 33	$ 95	$ 50	$ 20	$ 360	$ 130	$ 0	$ 2	$ 6			$ 851
	MONTHLY TOTAL	$874	$1,337	$3,690	$636	$3,143	$1,982	$950	$6,321	$4,925	$363	$521	$771	**2000/2001 TOTAL =**		**$25,513**

BMP Retrofit Pilot Program
Maintenance Operation
Cost Accounting Summary, 2000-01

DISTRICT: 7	LOCATION: I-210/East of Orcas Avenue	SITE NO. 73102	BMP TYPE: Continuous Deflective Separation Unit	CONSULTANT: Montgomery Watson/LAW Crandall

	TASK	2000			2001									Total (hrs)	Avg. Rate	TOTAL $
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep			
Labor (hours)	***Administration***															
	General program support/Follow-up	4.0	9.5	4.7	5.2	3.7	16.9	5.7	8.9	3.5	1.8	6.0	5.8	75.6	$120	$ 9,073
	Encroachment Permits													0.0	$87	$ -
	Travel	1.7	6.0	2.6	5.2	4.7	14.9	1.9	8.4	0.8		1.1	1.7	49.1	$87	$ 4,268
	Unscheduled events													0.0	$87	$ -
	Monthly Subtotal (hours)	5.8	15.5	7.3	10.3	8.4	31.7	7.7	17.4	4.3	1.8	7.0	7.5	124.7		
	Monthly Subtotal ($)	$633	$1,667	$793	$1,070	$850	$3,314	$854	$1,804	$487	$220	$809	$841	$13,341		
														Task Subtotal =		$13,341
	Operation															
	Wet season inspections	0.5	0.8	1.0	1.0	1.5	1.0	0.5						6.3	$55	$ 344
	Dry season inspections								1.0	0.3			1.0	2.3	$55	$ 124
	Unscheduled inspections/field calls						3.0							3.0	$60	$ 180
	Monthly Subtotal (hours)	0.5	0.8	1.0	1.0	1.5	4.0	0.5	1.0	0.3	0.0	0.0	1.0	11.5		
	Monthly Subtotal ($)	$28	$41	$55	$55	$83	$235	$28	$55	$14	$0	$0	$55	$648		
														Task Subtotal =		$648
	Maintenance															
	Scheduled maintenance	0.5	0.5	0.3	4.3	4.3	27.0	4.3	41.8			0.8	8.3	91.8	$55	$ 5,046
	Unscheduled maintenance	8.8	9.0				2.3							20.0	$55	$ 1,100
	Vandalism													0.0	$55	$ -
	Acts of God													0.0	$55	$ -
	Landscape Maintenance Contractor													0.0	$0	$ -
	Sediment Removal Contractor													0.0	$0	$ -
	Vegetation Consultant													0.0	$75	$ -
	Other Contractor													0.0	$0	$ -
	Other Contractor													0.0	$0	$ -
	Monthly Subtotal (hours)	9.3	9.5	0.3	4.3	4.3	29.3	4.3	41.8	0.0	0.0	0.8	8.3	111.8		
	Monthly Subtotal ($)	$509	$523	$14	$234	$234	$1,609	$234	$2,296	$0	$0	$41	$454	$6,146		
														Task Subtotal =		$6,146
	Vector Control															
	Contract & General administration	0.1	0.1	0.1	0.1									0.4	$120	$ 48
	Vector prevention maint. (consultant)													0.0	$65	$ -
	Response to VCD calls (consultant)													0.0	$55	$ -
	VCD efforts (contracted)	9.8	10.0	7.6	4.3	4.1	3.9	4.5	3.9	4.8	3.8	4.2	5.4	66.2	$46	$ 3,075
	Monthly Subtotal (hours)	9.9	10.1	7.7	4.4	4.1	3.9	4.5	3.9	4.8	3.8	4.2	5.4	66.6		
	Monthly Subtotal ($)	$465	$477	$365	$211	$192	$181	$209	$179	$221	$178	$195	$251	$3,123		
														Task Subtotal =		$3,123
Non-Recurring Equipment (hours)	***Equipment***															
	Generator								7.5					7.5	$5	$ 38
	Compressor pump								7.5					7.5	$5	$ 38
	Piece of Equipment 3													0.0	$0	$ -
	Piece of Equipment 4													0.0	$0	$ -
	Piece of Equipment 5													0.0	$0	$ -
	Piece of Equipment 6													0.0	$0	$ -
	Monthly Subtotal (hours)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0	0.0	0.0	0.0	0.0	15.0		
	Monthly Subtotal ($)	$0	$0	$0	$0	$0	$0	$0	$75	$0	$0	$0	$0	$75		
														Equipment Subtotal =		$75
Dollars ($)	***Direct Costs***														Total $	
	VCD supplies (direct costs less labor)														$ -	
	Reproduction	$ 2	$ 1	$ 1	$ 1										$ 4	
	Postage/FedEx	$ 3	$ 2	$ 3	$ 2	$ 2	$ 6		$ 14	$ 0.5	$ 0.3	$ 2			$ 34	
	Lodging	$ 11		$ 10	$ 11	$ 9			$ 2						$ 43	
	Per Diem	$ 5		$ 5	$ 5	$ 5			$ 0.4						$ 20	
	Incidentals	$ 10	$ 34	$ 1	$ 1										$ 46	
	Vehicle Rental/Lease	$ 12	$ 50	$ 12	$ 40	$ 49	$ 131	$ 9	$ 235	$ 14		$ 20	$ 12		$ 585	
	Airfare														$ -	
	Field Supp./Expendables	$ 4	$ 1	$ 4	$ 1	$ 1	$ 33	$ 11	$ 3	$ 5					$ 64	
	Equipment Rental														$ -	
	Sediment Analyses														$ -	
	Sediment Disposal													$ 767	$ 767	
	Weed Wacker														$ -	
	Vegetation Disposal														$ -	
	Storage Container														$ -	
	Monthly Subtotal	$ 48	$ 88	$ 36	$ 60	$ 66	$ 170	$ 20	$ 255	$ 19	$ 0	$ 22	$ 779		$ 1,563	
	MONTHLY TOTAL	$1,682	$2,795	$1,263	$1,630	$1,423	$5,508	$1,344	$4,665	$741	$398	$1,067	$2,380	**2000/2001 TOTAL =**		**$24,896**

BMP Retrofit Pilot Program
Maintenance Operation
Cost Accounting Summary, 2000-01

DISTRICT: 7	LOCATION: I-210/East of Filmore Street	SITE NO. 73103	BMP TYPE: Continuous Deflective Separation Unit	CONSULTANT: Montgomery Watson/LAW Crandall

Labor (hours)

TASK	2000 Oct	2000 Nov	2000 Dec	2001 Jan	2001 Feb	2001 Mar	2001 Apr	2001 May	2001 Jun	2001 Jul	2001 Aug	2001 Sep	Total (hrs)	Avg. Rate	TOTAL $
Administration															
General program support/Follow-up	4.0	9.5	4.7	5.2	3.7	13.5	5.7	8.9	3.5	1.8	6.0	5.8	72.3	$120	$ 8,671
Encroachment Permits													0.0	$87	$ -
Travel	2.3	5.3	2.6	5.2	3.8	6.5	3.2	8.4	0.8		1.1	1.3	40.5	$87	$ 3,519
Unscheduled events													0.0	$87	$ -
Monthly Subtotal (hours)	6.3	14.8	7.3	10.3	7.4	20.0	8.9	17.4	4.3	1.8	7.0	7.1	112.7		
Monthly Subtotal ($)	$683	$1,602	$793	$1,070	$767	$2,186	$967	$1,804	$487	$220	$809	$804	$12,190		
													Task Subtotal =		$12,190
Operation															
Wet season inspections	0.5	0.8	1.0	1.0	1.5	1.0	0.5						6.3	$55	$ 344
Dry season inspections								1.0	0.3			1.0	2.3	$55	$ 124
Unscheduled inspections/field calls						3.5							3.5	$60	$ 210
Monthly Subtotal (hours)	0.5	0.8	1.0	1.0	1.5	4.5	0.5	1.0	0.3	0.0	0.0	1.0	12.0		
Monthly Subtotal ($)	$28	$41	$55	$55	$83	$265	$28	$55	$14	$0	$0	$55	$678		
													Task Subtotal =		$678
Maintenance															
Scheduled maintenance	0.5	0.5	0.3	7.0	1.5		3.8	40.8			0.8	5.5	60.5	$55	$ 3,328
Unscheduled maintenance	10.0	8.0				2.3							20.3	$55	$ 1,114
Vandalism													0.0	$55	$ -
Acts of God													0.0	$55	$ -
Landscape Maintenance Contractor													0.0	$0	$ -
Sediment Removal Contractor													0.0	$0	$ -
Vegetation Consultant													0.0	$75	$ -
Other Contractor													0.0	$0	$ -
Other Contractor													0.0	$0	$ -
Monthly Subtotal (hours)	10.5	8.5	0.3	7.0	1.5	2.3	3.8	40.8	0.0	0.0	0.8	5.5	80.8		
Monthly Subtotal ($)	$578	$468	$14	$385	$83	$124	$206	$2,241	$0	$0	$41	$303	$4,441		
													Task Subtotal =		$4,441
Vector Control															
Contract & General administration	0.1	0.1	0.1	0.1									0.4	$120	$ 48
Vector prevention maint. (consultant)													0.0	$65	$ -
Response to VCD calls (consultant)													0.0	$55	$ -
VCD efforts (contracted)	9.1	7.2	6.2	4.0	4.1	3.9	4.7	3.8	4.8	3.8	4.2	5.2	61.0	$46	$ 2,831
Monthly Subtotal (hours)	9.2	7.3	6.3	4.1	4.1	3.9	4.7	3.8	4.8	3.8	4.2	5.2	61.4		
Monthly Subtotal ($)	$435	$344	$300	$198	$191	$179	$217	$176	$224	$178	$193	$243	$2,879		
													Task Subtotal =		$2,879

Non-Recurring Equipment (hours)

Equipment															
Generator								5.0					5.0	$5	$ 25
Compressor pump								5.0					5.0	$5	$ 25
Piece of Equipment 3													0.0	$0	$ -
Piece of Equipment 4													0.0	$0	$ -
Piece of Equipment 5													0.0	$0	$ -
Piece of Equipment 6													0.0	$0	$ -
Monthly Subtotal (hours)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	0.0	0.0	0.0	0.0	10.0		
Monthly Subtotal ($)	$0	$0	$0	$0	$0	$0	$0	$50	$0	$0	$0	$0	$50		
													Equipment Subtotal =		$50

Dollars ($)

Direct Costs													Total $
VCD supplies (direct costs less labor)													$ -
Reproduction	$ 2	$ 1	$ 1	$ 1									$ 4
Postage/FedEx	$ 3	$ 2	$ 3	$ 2	$ 2	$ 6		$ 14	$ 0.5	$ 0.3	$ 2		$ 34
Lodging	$ 11		$ 10	$ 11	$ 9			$ 2					$ 43
Per Diem	$ 5		$ 5	$ 5	$ 5			$ 0.4					$ 20
Incidentals	$ 10	$ 34	$ 1	$ 1									$ 46
Vehicle Rental/Lease	$ 16	$ 43	$ 12	$ 40	$ 40	$ 57	$ 15	$ 235	$ 14		$ 20	$ 9	$ 502
Airfare													$ -
Field Supp./Expendables	$ 4	$ 1	$ 4	$ 1	$ 1	$ 33	$ 11	$ 3	$ 5				$ 64
Equipment Rental													$ -
Sediment Analyses													$ -
Sediment Disposal												$ 767	$ 767
Weed Wacker													$ -
Vegetation Disposal													$ -
Storage Container													$ -
Monthly Subtotal	$ 52	$ 82	$ 36	$ 60	$ 56	$ 96	$ 26	$ 255	$ 19	$ 0	$ 22	$ 776	$ 1,480

MONTHLY TOTAL	$1,775	$2,536	$1,198	$1,768	$1,179	$2,849	$1,443	$4,582	$744	$398	$1,065	$2,181	**2000/2001 TOTAL = $21,719**

BMP Retrofit Pilot Program
Maintenance Operation
Cost Accounting Summary, 2000-01

DISTRICT: 7	LOCATION: I-5/I-605 Intersection	SITE NO. 74101	BMP TYPE: Extended Detention Basin	CONSULTANT: Montgomery Watson/LAW Crandall

	TASK	2000			2001									Total (hrs)	Avg. Rate	TOTAL $
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep			
Labor (hours)	***Administration***															
	General program support/Follow-up	1.9	13.7	9.7	6.6	8.9	10.1	14.8	10.3	16.6	1.8	3.0	3.8	101.2	$120	$ 12,148
	Encroachment Permits													0.0	$87	$ -
	Travel	1.2	8.3	7.9	6.9	10.4	5.6	8.4	9.3	6.3			0.9	65.0	$87	$ 5,655
	Unscheduled events													0.0	$87	$ -
	Monthly Subtotal (hours)	3.0	21.9	17.5	13.5	19.3	15.7	23.2	19.6	22.9	1.8	3.0	4.7	166.2		
	Monthly Subtotal ($)	$325	$2,361	$1,842	$1,394	$1,975	$1,701	$2,507	$2,046	$2,538	$220	$358	$535	$17,803		
														Task Subtotal =		$17,803
	Operation															
	Wet season inspections	1.0	1.0	1.0	1.5	1.5	3.5	0.8						10.3	$45	$ 461
	Dry season inspections								1.5	0.5			0.5	2.5	$45	$ 113
	Unscheduled inspections/field calls													0.0	$90	$ -
	Monthly Subtotal (hours)	1.0	1.0	1.0	1.5	1.5	3.5	0.8	1.5	0.5	0.0	0.0	0.5	12.8		
	Monthly Subtotal ($)	$45	$45	$45	$68	$68	$158	$34	$68	$23	$0	$0	$23	$574		
														Task Subtotal =		$574
	Maintenance															
	Scheduled maintenance		9.5	18.0		14.3	9.8	32.3	38.75	9				131.5	$45	$ 5,918
	Unscheduled maintenance		13.5		30.0	15.0								58.5	$45	$ 2,633
	Vandalism													0.0	$45	$ -
	Acts of God													0.0	$45	$ -
	Landscape Maintenance Contractor													0.0	$45	$ -
	Sediment Removal Contractor													0.0	$45	$ -
	Other Contractor													0.0	$45	$ -
	Other Contractor													0.0	$45	$ -
	Other Contractor													0.0	$45	$ -
	Monthly Subtotal (hours)	0.0	23.0	18.0	30.0	29.3	9.8	32.3	38.8	9.0	0.0	0.0	0.0	190.0		
	Monthly Subtotal ($)	$0	$1,035	$810	$1,350	$1,316	$439	$1,451	$1,744	$405	$0	$0	$0	$8,550		
														Task Subtotal =		$8,550
	Vector Control															
	Contract & General administration													0.0	$120	$ -
	Vector prevention maint. (consultant)													0.0	$65	$ -
	Response to VCD calls (consultant)													0.0	$80	$ -
	VCD efforts (contracted)	3.9	8.2	7.5	4.3	3.3	3.3	3.9	3.3	4.1	3.0	3.5	4.4	52.5	$49	$ 2,572
	Monthly Subtotal (hours)	3.9	8.2	7.5	4.3	3.3	3.3	3.9	3.3	4.1	3.0	3.5	4.4	52.5		
	Monthly Subtotal ($)	$190	$401	$367	$212	$163	$159	$191	$160	$202	$145	$171	$213	$2,572		
														Task Subtotal =		$2,572
Non-Recurring Equipment (hours)	***Equipment***															
	Generator				7.0									7.0	$5	$ 35
	Shop vacuum				7.0									7.0	$5	$ 35
	Hammer drill				7.0									7.0	$5	$ 35
	Concrete hole corer				7.0									7.0	$5	$ 35
	Weedwacker								18.0					18.0	$5	$ 90
	Piece of Equipment 6													0.0	$0	$ -
	Piece of Equipment 7													0.0	$0	$ -
	Piece of Equipment 8													0.0	$0	$ -
	Monthly Subtotal (hours)	0.0	0.0	0.0	28.0	0.0	0.0	0.0	18.0	0.0	0.0	0.0	0.0	46.0		
	Monthly Subtotal ($)	$0	$0	$0	$140	$0	$0	$0	$90	$0	$0	$0	$0	$230		
														Equipment Subtotal =		$230
Dollars ($)	***Direct Costs***															Total $
	VCD supplies (direct costs less labor)															$ -
	Reproduction															$ -
	Postage/FedEx	$ 1	$ 1	$ 2	$ 1	$ 2	$ 6		$ 14	$ 0.5	$ 0.3	$ 2				$ 29
	Lodging	$ 11		$ 10	$ 11	$ 9			$ 2							$ 43
	Per Diem	$ 5		$ 5	$ 5	$ 5			$ 0.4							$ 20
	Incidentals	$ 8	$ 34													$ 41
	Vehicle Rental/Lease	$ 8	$ 68	$ 36	$ 54	$ 109	$ 49	$ 39	$ 261	$ 110			$ 6			$ 741
	Airfare															$ -
	Field Supp./Expendables	$ 4	$ 1	$ 4	$ 1	$ 416	$ 3	$ 11	$ 3	$ 5						$ 449
	Equipment Rental															$ -
	Sediment Analyses															$ -
	Sediment Disposal															$ -
	Other Direct Costs															$ -
	Transfer Pump Replacement/Repair															$ -
	Other Direct Costs															$ -
	Monthly Subtotal	$ 38	$ 105	$ 57	$ 71	$ 540	$ 58	$ 50	$ 281	$ 116	$ 0	$ 2	$ 6			$ 1,324
	MONTHLY TOTAL	$597	$3,946	$3,121	$3,235	$4,061	$2,515	$4,232	$4,388	$3,284	$364	$530	$777	**2000/2001 TOTAL =**		**$31,052**

BMP Retrofit Pilot Program
Maintenance Operation
Cost Accounting Summary, 2000-01

DISTRICT: 7	LOCATION: I-605/SR-91 Intersection	SITE NO. 74102	BMP TYPE: Extended Detention Basin	CONSULTANT: Montgomery Watson/LAW Crandall

	TASK	2000			2001									Total (hrs)	Avg. Rate	TOTAL $
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep			
Labor (hours)	***Administration***															
	General program support/Follow-up	1.9	7.5	9.7	1.7	8.1	10.1	14.8	10.3	16.6	1.8	3.0	3.8	89.2	$120	$ 10,709
	Encroachment Permits													0.0	$87	$ -
	Travel	1.2	4.5	3.5	1.7	9.5	3.7	6.4	10.3	7.1			0.9	48.7	$87	$ 4,236
	Unscheduled events													0.0	$87	$ -
	Monthly Subtotal (hours)	3.0	12.0	13.2	3.4	17.6	13.9	21.3	20.6	23.7	1.8	3.0	4.7	137.9		
	Monthly Subtotal ($)	$325	$1,288	$1,463	$349	$1,795	$1,540	$2,339	$2,128	$2,606	$220	$358	$535	$14,945		
														Task Subtotal =		$14,945
	Operation															
	Wet season inspections	1.0	1.0	1.0	1.5	1.5	3.5	0.8						10.3	$45	$ 461
	Dry season inspections								1.5	0.5			0.5	2.5	$45	$ 113
	Unscheduled inspections/field calls													0.0	$90	$ -
	Monthly Subtotal (hours)	1.0	1.0	1.0	1.5	1.5	3.5	0.8	1.5	0.5	0.0	0.0	0.5	12.8		
	Monthly Subtotal ($)	$45	$45	$45	$68	$68	$158	$34	$68	$23	$0	$0	$23	$574		
														Task Subtotal =		$574
	Maintenance															
	Scheduled maintenance		5.5	2.0		8.3		21.0	32	9				77.8	$45	$ 3,499
	Unscheduled maintenance													0.0	$45	$ -
	Vandalism													0.0	$45	$ -
	Acts of God													0.0	$45	$ -
	Landscape Maintenance Contractor													0.0	$45	$ -
	Sediment Removal Contractor													0.0	$45	$ -
	Other Contractor													0.0	$45	$ -
	Other Contractor													0.0	$45	$ -
	Other Contractor													0.0	$45	$ -
	Monthly Subtotal (hours)	0.0	5.5	2.0	0.0	8.3	0.0	21.0	32.0	9.0	0.0	0.0	0.0	77.8		
	Monthly Subtotal ($)	$0	$248	$90	$0	$371	$0	$945	$1,440	$405	$0	$0	$0	$3,499		
														Task Subtotal =		$3,499
	Vector Control															
	Contract & General administration													0.0	$120	$ -
	Vector prevention maint. (consultant)													0.0	$65	$ -
	Response to VCD calls (consultant)													0.0	$80	$ -
	VCD efforts (contracted)	3.4	6.1	5.5	4.0	3.9	3.6	4.3	3.5	4.4	3.3	3.7	4.7	50.3	$49	$ 2,465
	Monthly Subtotal (hours)	3.4	6.1	5.5	4.0	3.9	3.6	4.3	3.5	4.4	3.3	3.7	4.7	50.3		
	Monthly Subtotal ($)	$164	$297	$271	$194	$191	$174	$210	$171	$218	$163	$183	$230	$2,465		
														Task Subtotal =		$2,465
Non-Recurring Equipment (hours)	***Equipment***															
	Weedwacker								14.0					14.0	$5	$ 70
	Piece of Equipment 2													0.0	$0	$ -
	Piece of Equipment 3													0.0	$0	$ -
	Piece of Equipment 4													0.0	$0	$ -
	Piece of Equipment 5													0.0	$0	$ -
	Piece of Equipment 6													0.0	$0	$ -
	Piece of Equipment 7													0.0	$0	$ -
	Piece of Equipment 8													0.0	$0	$ -
	Monthly Subtotal (hours)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.0	0.0	0.0	0.0	0.0	14.0		
	Monthly Subtotal ($)	$0	$0	$0	$0	$0	$0	$0	$70	$0	$0	$0	$0	$70		
														Equipment Subtotal =		$70
Dollars ($)	***Direct Costs***														Total $	
	VCD supplies (direct costs less labor)														$ -	
	Reproduction														$ -	
	Postage/FedEx	$ 1	$ 1	$ 2	$ 1	$ 2	$ 6		$ 14	$ 0.5	$ 0.3	$ 2			$ 29	
	Lodging	$ 11		$ 10	$ 11	$ 9			$ 2						$ 43	
	Per Diem	$ 5		$ 5	$ 5	$ 5			$ 0.4						$ 20	
	Incidentals	$ 8	$ 34												$ 41	
	Vehicle Rental/Lease	$ 8	$ 37	$ 16	$ 13	$ 99	$ 33	$ 30	$ 288	$ 124			$ 6		$ 654	
	Airfare														$ -	
	Field Supp./Expendables	$ 4	$ 1	$ 4	$ 1	$ 1	$ 3	$ 11	$ 3	$ 5					$ 34	
	Equipment Rental														$ -	
	Sediment Analyses														$ -	
	Sediment Disposal														$ -	
	Other Direct Costs														$ -	
	Transfer Pump Replacement/Repair														$ -	
	Other Direct Costs														$ -	
	Monthly Subtotal	$ 38	$ 74	$ 37	$ 31	$ 115	$ 41	$ 41	$ 307	$ 130	$ 0	$ 2	$ 6		$ 822	
	MONTHLY TOTAL	$572	$1,951	$1,906	$641	$2,539	$1,913	$3,569	$4,184	$3,381	$383	$543	$794	**2000/2001 TOTAL =**		**$22,374**

BMP Retrofit Pilot Program
Maintenance Operation
Cost Accounting Summary, 2000-01

DISTRICT: 7	LOCATION: Paxton Park & Ride	SITE NO. 74103	BMP TYPE: Media Filter (Sand)	CONSULTANT: Montgomery Watson/LAW Crandall

	TASK	2000			2001									Total (hrs)	Avg. Rate	TOTAL $
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep			
Labor (hours)	***Administration***															
	General program support/Follow-up													0.0	$120	$ -
	Encroachment Permits													0.0	$87	$ -
	Travel													0.0	$87	$ -
	Unscheduled events													0.0	$87	$ -
	Monthly Subtotal (hours)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
	Monthly Subtotal ($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0		
														Task Subtotal =		$0
	Operation															
	Wet season inspections													0.0	$45	$ -
	Dry season inspections													0.0	$45	$ -
	Unscheduled inspections/field calls													0.0	$90	$ -
	Monthly Subtotal (hours)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
	Monthly Subtotal ($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0		
														Task Subtotal =		$0
	Maintenance															
	Scheduled maintenance													0.0	$45	$ -
	Unscheduled maintenance													0.0	$45	$ -
	Vandalism													0.0	$45	$ -
	Acts of God													0.0	$45	$ -
	Landscape Maintenance Contractor													0.0	$45	$ -
	Sediment Removal Contractor													0.0	$45	$ -
	Other Contractor													0.0	$45	$ -
	Other Contractor													0.0	$45	$ -
	Other Contractor													0.0	$45	$ -
	Monthly Subtotal (hours)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
	Monthly Subtotal ($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0		
														Task Subtotal =		$0
	Vector Control															
	Contract & General administration													0.0	$120	$ -
	Vector prevention maint. (consultant)													0.0	$65	$ -
	Response to VCD calls (consultant)													0.0	$80	$ -
	VCD efforts (contracted)													0.0	$49	$ -
	Monthly Subtotal (hours)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
	Monthly Subtotal ($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0		
														Task Subtotal =		$0
Non-Recurring Equipment (hours)	***Equipment***															
	Piece of Equipment 1													0.0	$0	$ -
	Piece of Equipment 2													0.0	$0	$ -
	Piece of Equipment 3													0.0	$0	$ -
	Piece of Equipment 4													0.0	$0	$ -
	Piece of Equipment 5													0.0	$0	$ -
	Piece of Equipment 6													0.0	$0	$ -
	Monthly Subtotal (hours)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
	Monthly Subtotal ($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0		
														Equipment Subtotal =		$0

	Direct Costs													Total $
Dollars ($)	VCD supplies (direct costs less labor)													$ -
	Reproduction													$ -
	Postage/FedEx													$ -
	Lodging													$ -
	Per Diem													$ -
	Incidentals													$ -
	Vehicle Rental/Lease													$ -
	Airfare													$ -
	Field Supp./Expendables													$ -
	Equipment Rental													$ -
	Sediment Analyses													$ -
	Sediment Disposal													$ -
	Other Direct Costs													$ -
	Transfer Pump Replacement/Repair													$ -
	Other Direct Costs													$ -
	Monthly Subtotal	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

MONTHLY TOTAL	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**2000/2001 TOTAL =**	**$0**

BMP Retrofit Pilot Program
Maintenance Operation
Cost Accounting Summary, 2000-01

DISTRICT: 7	LOCATION: Metro Maintenance Station	SITE NO. 74104	BMP TYPE: Multi-chambered Treatement Train	CONSULTANT: Montgomery Watson/LAW Crandall

	TASK	2000			2001									Total (hrs)	Avg. Rate	TOTAL $
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep			
Labor (hours)	***Administration***															
	General program support/Follow-up													0.0	$120	$ -
	Encroachment Permits													0.0	$87	$ -
	Travel													0.0	$87	$ -
	Unscheduled events													0.0	$87	$ -
	Monthly Subtotal (hours)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
	Monthly Subtotal ($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0		
															Task Subtotal =	$0
	Operation															
	Wet season inspections													0.0	$45	$ -
	Dry season inspections													0.0	$45	$ -
	Unscheduled inspections/field calls													0.0	$90	$ -
	Monthly Subtotal (hours)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
	Monthly Subtotal ($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0		
															Task Subtotal =	$0
	Maintenance															
	Scheduled maintenance													0.0	$45	$ -
	Unscheduled maintenance													0.0	$45	$ -
	Vandalism													0.0	$45	$ -
	Acts of God													0.0	$45	$ -
	Landscape Maintenance Contractor													0.0	$45	$ -
	Sediment Removal Contractor													0.0	$45	$ -
	Other Contractor													0.0	$45	$ -
	Other Contractor													0.0	$45	$ -
	Other Contractor													0.0	$45	$ -
	Monthly Subtotal (hours)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
	Monthly Subtotal ($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0		
															Task Subtotal =	$0
	Vector Control															
	Contract & General administration													0.0	$120	$ -
	Vector prevention maint. (consultant)													0.0	$65	$ -
	Response to VCD calls (consultant)													0.0	$80	$ -
	VCD efforts (contracted)													0.0	$49	$ -
	Monthly Subtotal (hours)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
	Monthly Subtotal ($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0		
															Task Subtotal =	$0
Non-Recurring Equipment (hours)	***Equipment***															
	Piece of Equipment 1													0.0	$0	$ -
	Piece of Equipment 2													0.0	$0	$ -
	Piece of Equipment 3													0.0	$0	$ -
	Piece of Equipment 4													0.0	$0	$ -
	Piece of Equipment 5													0.0	$0	$ -
	Piece of Equipment 6													0.0	$0	$ -
	Monthly Subtotal (hours)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
	Monthly Subtotal ($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0		
															Equipment Subtotal =	$0
Dollars ($)	***Direct Costs***													**Total $**		
	VCD supplies (direct costs less labor)													$ -		
	Reproduction													$ -		
	Postage/FedEx													$ -		
	Lodging													$ -		
	Per Diem													$ -		
	Incidentals													$ -		
	Vehicle Rental/Lease													$ -		
	Airfare													$ -		
	Field Supp./Expendables													$ -		
	Equipment Rental													$ -		
	Sediment Analyses													$ -		
	Sediment Disposal													$ -		
	Other Direct Costs													$ -		
	Transfer Pump Replacement/Repair													$ -		
	Other Direct Costs													$ -		
	Monthly Subtotal	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -		
	MONTHLY TOTAL	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**2000/2001 TOTAL =**		**$0**

BMP Retrofit Pilot Program
Maintenance Operation
Cost Accounting Summary, 2000-01

DISTRICT: 7	LOCATION: Alameda Maintenance Station	SITE NO. 74201	BMP TYPE: Oil/Water Separator	CONSULTANT: Montgomery Watson/LAW Crandall

	TASK	2000			2001									Total (hrs)	Avg. Rate	TOTAL $
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep			
Labor (hours)	***Administration***															
	General program support/Follow-up	2.8	5.0	4.5	1.7	3.2	3.9	4.3	0.9	3.5	1.8	6.0	1.3	38.7	$120	$ 4,646
	Encroachment Permits													0.0	$87	$ -
	Travel	2.9	3.0	2.6	1.7	3.8	1.9	1.9		0.8		1.1		19.7	$87	$ 1,712
	Unscheduled events													0.0	$87	$ -
	Monthly Subtotal (hours)	5.7	8.0	7.1	3.4	7.0	5.7	6.2	0.9	4.3	1.8	7.0	1.3	58.4		
	Monthly Subtotal ($)	$587	$859	$763	$349	$718	$625	$683	$107	$487	$220	$809	$154	$6,359		
														Task Subtotal =		$6,359
	Operation															
	Wet season inspections	0.5	3.0	0.5	0.5	2.8	1.5	3.8						12.5	$45	$ 563
	Dry season inspections									0.3				0.3	$45	$ 11
	Unscheduled inspections/field calls													0.0	$90	$ -
	Monthly Subtotal (hours)	0.5	3.0	0.5	0.5	2.8	1.5	3.8	0.0	0.3	0.0	0.0	0.0	12.8		
	Monthly Subtotal ($)	$23	$135	$23	$23	$124	$68	$169	$0	$11	$0	$0	$0	$574		
														Task Subtotal =		$574
	Maintenance															
	Scheduled maintenance	0.8		0.5		0.3		0.8				0.75		3.0	$45	$ 135
	Unscheduled maintenance													0.0	$45	$ -
	Vandalism													0.0	$45	$ -
	Acts of God													0.0	$45	$ -
	Landscape Maintenance Contractor													0.0	$45	$ -
	Sediment Removal Contractor													0.0	$45	$ -
	Other Contractor													0.0	$45	$ -
	Other Contractor													0.0	$45	$ -
	Other Contractor													0.0	$45	$ -
	Monthly Subtotal (hours)	0.8	0.0	0.5	0.0	0.3	0.0	0.8	0.0	0.0	0.0	0.8	0.0	3.0		
	Monthly Subtotal ($)	$34	$0	$23	$0	$11	$0	$34	$0	$0	$0	$34	$0	$135		
														Task Subtotal =		$135
	Vector Control															
	Contract & General administration													0.0	$120	$ -
	Vector prevention maint. (consultant)													0.0	$65	$ -
	Response to VCD calls (consultant)													0.0	$80	$ -
	VCD efforts (contracted)	3.2	5.8	5.1	3.4	3.8	3.2	3.9	3.3	4.1	3.0	3.5	4.5	46.7	$49	$ 2,288
	Monthly Subtotal (hours)	3.2	5.8	5.1	3.4	3.8	3.2	3.9	3.3	4.1	3.0	3.5	4.5	46.69		
	Monthly Subtotal ($)	$158	$282	$248	$167	$186	$157	$189	$162	$202	$147	$171	$218	$2,288		
														Task Subtotal =		$2,288
Non-Recurring Equipment (hours)	***Equipment***															
	Piece of Equipment 1													0.0	$0	$ -
	Piece of Equipment 2													0.0	$0	$ -
	Piece of Equipment 3													0.0	$0	$ -
	Piece of Equipment 4													0.0	$0	$ -
	Piece of Equipment 5													0.0	$0	$ -
	Piece of Equipment 6													0.0	$0	$ -
	Monthly Subtotal (hours)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
	Monthly Subtotal ($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0		
														Equipment Subtotal =		$0
Dollars ($)	***Direct Costs***														Total $	
	VCD supplies (direct costs less labor)														$ -	
	Reproduction														$ -	
	Postage/FedEx	$ 1	$ 1	$ 2	$ 1	$ 2	$ 6		$ 14	$ 0.5	$ 0.3	$ 2			$ 29	
	Lodging	$ 11		$ 10	$ 11	$ 9			$ 2						$ 43	
	Per Diem	$ 5		$ 5	$ 5	$ 5			$ 0.4						$ 20	
	Incidentals	$ 8	$ 34												$ 41	
	Vehicle Rental/Lease	$ 20	$ 25	$ 12	$ 13	$ 40	$ 16	$ 9		$ 14		$ 20			$ 170	
	Airfare														$ -	
	Field Supp./Expendables	$ 4	$ 1	$ 4	$ 1	$ 1	$ 3	$ 11	$ 3	$ 5					$ 34	
	Equipment Rental														$ -	
	Sediment Analyses														$ -	
	Sediment Disposal													$ 192	$ 192	
	Other Direct Costs														$ -	
	Transfer Pump Replacement/Repair														$ -	
	Other Direct Costs														$ -	
	Monthly Subtotal	$ 50	$ 61	$ 33	$ 31	$ 56	$ 25	$ 20	$ 20	$ 19	$ 0	$ 22	$ 192		$ 529	
	MONTHLY TOTAL	$852	$1,337	$1,089	$569	$1,094	$875	$1,094	$288	$720	$367	$1,036	$563		**2000/2001 TOTAL =**	**$9,884**

BMP Retrofit Pilot Program
Maintenance Operation
Cost Accounting Summary, 2000-01

DISTRICT: 7	LOCATION: Eastern Regional Maintenance Station	SITE NO. 74202	BMP TYPE: Media Filter (Sand)	CONSULTANT: Montgomery Watson/LAW Crandall

Labor (hours)

TASK	2000 Oct	2000 Nov	2000 Dec	2001 Jan	2001 Feb	2001 Mar	2001 Apr	2001 May	2001 Jun	2001 Jul	2001 Aug	2001 Sep	Total (hrs)	Avg. Rate	TOTAL $
Administration															
General program support/Follow-up	6.5	13.7	3.5	4.1	6.2	9.6	11.4	2.7	5.2	1.8	6.0	2.3	73.2	$120	$ 8,778
Encroachment Permits													0.0	$87	$ -
Travel	3.5	8.3	2.6	1.7	7.6	5.6	5.2	1.9	1.6		1.1		38.9	$87	$ 3,383
Unscheduled events													0.0	$87	$ -
Monthly Subtotal (hours)	10.0	21.9	6.1	5.9	13.8	15.2	16.6	4.6	6.8	1.8	7.0	2.3	112.0		
Monthly Subtotal ($)	$1,087	$2,361	$644	$646	$1,404	$1,641	$1,820	$484	$765	$220	$809	$281	$12,161		
													Task Subtotal =		$12,161
Operation															
Wet season inspections	0.7	1.0	0.5	0.6	1.8	2.4	1.5						8.5	$45	$ 383
Dry season inspections								1.5	0.5				2.0	$45	$ 90
Unscheduled inspections/field calls					1.0								1.0	$90	$ 90
Monthly Subtotal (hours)	0.7	1.0	0.5	0.6	2.8	2.4	1.5	1.5	0.5	0.0	0.0	0.0	11.5		
Monthly Subtotal ($)	$30	$45	$23	$27	$172	$109	$68	$68	$23	$0	$0	$0	$563		
													Task Subtotal =		$563
Maintenance															
Scheduled maintenance	15.0	23.5	1.0	0.8	3.0	3.3	21.3				0.5		68.3	$45	$ 3,071
Unscheduled maintenance		1.0			2.8								3.8	$45	$ 172
Vandalism													0.0	$45	$ -
Acts of God													0.0	$45	$ -
Landscape Maintenance Contractor													0.0	$45	$ -
Sediment Removal Contractor													0.0	$45	$ -
Other Contractor													0.0	$45	$ -
Other Contractor													0.0	$45	$ -
Other Contractor													0.0	$45	$ -
Monthly Subtotal (hours)	15.0	24.5	1.0	0.8	5.8	3.3	21.3	0.0	0.0	0.0	0.5	0.0	72.1		
Monthly Subtotal ($)	$675	$1,103	$45	$34	$262	$146	$956	$0	$0	$0	$23	$0	$3,244		
													Task Subtotal =		$3,244
Vector Control															
Contract & General administration													0.0	$120	$ -
Vector prevention maint. (consultant)													0.0	$65	$ -
Response to VCD calls (consultant)													0.0	$80	$ -
VCD efforts (contracted)	5.7	8.0	5.0	4.1	3.7	3.6	4.0	3.2	4.1	3.0	3.5	4.4	52.2	$49	$ 2,560
Monthly Subtotal (hours)	5.7	8.0	5.0	4.1	3.7	3.6	4.0	3.2	4.1	3.0	3.5	4.4	52.2		
Monthly Subtotal ($)	$281	$394	$245	$199	$179	$178	$197	$158	$202	$145	$169	$213	$2,560		
													Task Subtotal =		$2,560

Non-Recurring Equipment (hours)

Equipment															
Crane							1.5						1.5	$85	$ 128
Piece of Equipment 2													0.0	$0	$ -
Piece of Equipment 3													0.0	$0	$ -
Piece of Equipment 4													0.0	$0	$ -
Piece of Equipment 5													0.0	$0	$ -
Piece of Equipment 6													0.0	$0	$ -
Monthly Subtotal (hours)	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	1.5		
Monthly Subtotal ($)	$0	$0	$0	$0	$0	$0	$128	$0	$0	$0	$0	$0	$128		
													Equipment Subtotal =		$128

Dollars ($)

													Total $
Direct Costs													
VCD supplies (direct costs less labor)													$ -
Reproduction													$ -
Postage/FedEx	$ 1	$ 1	$ 2	$ 1	$ 2	$ 6		$ 14	$ 0.5	$ 0.3	$ 2		$ 29
Lodging	$ 11		$ 10	$ 11	$ 9			$ 2					$ 43
Per Diem	$ 5		$ 5	$ 5	$ 5			$ 0.4					$ 20
Incidentals	$ 8	$ 34											$ 41
Vehicle Rental/Lease	$ 25	$ 68	$ 12	$ 13	$ 79	$ 49	$ 24	$ 52	$ 28		$ 20		$ 371
Airfare													$ -
Field Supp./Expendables	$ 4	$ 1	$ 4	$ 1	$ 201	$ 3	$ 11	$ 3	$ 5				$ 234
Equipment Rental													$ -
Sediment Analyses													$ -
Sediment Disposal												$ 767	$ 767
Other Direct Costs													$ -
Transfer Pump Replacement/Repair													$ -
Other Direct Costs													$ -
Monthly Subtotal	$ 54	$ 105	$ 33	$ 31	$ 295	$ 58	$ 35	$ 72	$ 33	$ 0	$ 22	$ 767	$ 1,505

MONTHLY TOTAL	$2,126	$4,007	$990	$937	$2,313	$2,133	$3,203	$782	$1,024	$364	$1,022	$1,261	**2000/2001 TOTAL = $20,161**

BMP Retrofit Pilot Program
Maintenance Operation
Cost Accounting Summary, 2000-01

DISTRICT: 7	LOCATION: Foothill Maintenance Station	SITE NO. 74203	BMP TYPE: Media Filter (Sand)	CONSULTANT: Montgomery Watson/LAW Crandall

	TASK	2000			2001									Total (hrs)	Avg. Rate	TOTAL $
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep			
Labor (hours)	***Administration***															
	General program support/Follow-up	4.7	10.0	3.5	4.1	6.2	9.6	11.4	2.7	5.2	1.8	6.0	1.3	66.5	$120	$ 7,979
	Encroachment Permits													0.0	$87	$ -
	Travel	2.9	6.0	1.8	5.2	7.6	4.6	5.2	1.9	1.6		1.1		37.7	$87	$ 3,281
	Unscheduled events													0.0	$87	$ -
	Monthly Subtotal (hours)	7.6	16.0	5.2	9.3	13.8	14.3	16.6	4.6	6.8	1.8	7.0	1.3	104.2		
	Monthly Subtotal ($)	$812	$1,717	$569	$946	$1,404	$1,560	$1,820	$484	$765	$220	$809	$154	$11,260		
														Task Subtotal =		$11,260
	Operation															
	Wet season inspections	0.7	0.8	0.5	0.6	1.8	2.4	1.5						8.3	$45	$ 372
	Dry season inspections								1.5	0.5				2.0	$45	$ 90
	Unscheduled inspections/field calls					1.0								1.0	$90	$ 90
	Monthly Subtotal (hours)	0.7	0.8	0.5	0.6	2.8	2.4	1.5	1.5	0.5	0.0	0.0	0.0	11.3		
	Monthly Subtotal ($)	$30	$34	$23	$27	$172	$109	$68	$68	$23	$0	$0	$0	$552		
														Task Subtotal =		$552
	Maintenance															
	Scheduled maintenance	1.8	3.3	0.5	3.0	0.3	2.0	20.8				0.5		32.0	$45	$ 1,440
	Unscheduled maintenance		11.0			2.8								13.8	$45	$ 622
	Vandalism													0.0	$45	$ -
	Acts of God													0.0	$45	$ -
	Landscape Maintenance Contractor													0.0	$45	$ -
	Sediment Removal Contractor													0.0	$45	$ -
	Electrical Contractor					6.2								6.2	$45	$ 279
	Other Contractor													0.0	$45	$ -
	Other Contractor													0.0	$45	$ -
	Monthly Subtotal (hours)	1.8	14.3	0.5	3.0	9.3	2.0	20.8	0.0	0.0	0.0	0.5	0.0	52.0		
	Monthly Subtotal ($)	$79	$641	$23	$135	$418	$90	$934	$0	$0	$0	$23	$0	$2,341		
														Task Subtotal =		$2,341
	Vector Control															
	Contract & General administration													0.0	$120	$ -
	Vector prevention maint. (consultant)													0.0	$65	$ -
	Response to VCD calls (consultant)													0.0	$80	$ -
	VCD efforts (contracted)				0.7	0.7	0.9							2.3	$68	$ 155
	Monthly Subtotal (hours)	0.0	0.0	0.0	0.7	0.7	0.9	0.0	0.0	0.0	0.0	0.0	0.0	2.3		
	Monthly Subtotal ($)	$0	$0	$0	$48	$45	$62	$0	$0	$0	$0	$0	$0	$155		
														Task Subtotal =		$155
Non-Recurring Equipment (hours)	***Equipment***															
	Crane							2.0						2.0	$85	$ 170
	Piece of Equipment 2													0.0	$0	$ -
	Piece of Equipment 3													0.0	$0	$ -
	Piece of Equipment 4													0.0	$0	$ -
	Piece of Equipment 5													0.0	$0	$ -
	Piece of Equipment 6													0.0	$0	$ -
	Monthly Subtotal (hours)	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0		
	Monthly Subtotal ($)	$0	$0	$0	$0	$0	$0	$170	$0	$0	$0	$0	$0	$170		
														Equipment Subtotal =		$170
Dollars ($)	***Direct Costs***														Total $	
	VCD supplies (direct costs less labor)														$ -	
	Reproduction														$ -	
	Postage/FedEx	$ 1	$ 1	$ 2	$ 1	$ 2	$ 6		$ 14	$ 0.5	$ 0.3	$ 2			$ 29	
	Lodging	$ 11		$ 10	$ 11	$ 9			$ 2						$ 43	
	Per Diem	$ 5		$ 5	$ 5	$ 5			$ 0.4						$ 20	
	Incidentals	$ 8	$ 34												$ 41	
	Vehicle Rental/Lease	$ 20	$ 50	$ 8	$ 44	$ 83	$ 45	$ 24	$ 52	$ 28		$ 20			$ 374	
	Airfare														$ -	
	Field Supp./Expendables	$ 4	$ 1	$ 4	$ 1	$ 201	$ 3	$ 11	$ 3	$ 5					$ 234	
	Equipment Rental														$ -	
	Sediment Analyses														$ -	
	Sediment Disposal													$ 767	$ 767	
	Other Direct Costs														$ -	
	Transfer Pump Replacement/Repair														$ -	
	VCD Mileage Costs														$ -	
	Monthly Subtotal	$ 50	$ 86	$ 29	$ 61	$ 299	$ 54	$ 35	$ 72	$ 33	$ 0	$ 22	$ 767		$ 1,509	
	MONTHLY TOTAL	$970	$2,478	$643	$1,218	$2,338	$1,876	$3,026	$624	$821	$220	$853	$921	**2000/2001 TOTAL =**		**$15,988**

BMP Retrofit Pilot Program
Maintenance Operation
Cost Accounting Summary, 2000-01

DISTRICT: 7	LOCATION: Termination Park & Ride	SITE NO. 74204	BMP TYPE: Media Filter (Sand)	CONSULTANT: Montgomery Watson/LAW Crandall

	TASK	2000			2001									Total (hrs)	Avg. Rate	TOTAL $
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep			
Labor (hours)	***Administration***															
	General program support/Follow-up	6.5	14.9	3.5	4.1	6.2	9.6	14.3	2.7	5.2	1.8	6.0	2.3	77.3	$120	$ 9,270
	Encroachment Permits													0.0	$87	$ -
	Travel	4.6	9.0	1.8	6.1	6.6	3.7	6.4	1.9	1.6		1.1		42.7	$87	$ 3,716
	Unscheduled events													0.0	$87	$ -
	Monthly Subtotal (hours)	11.2	23.9	5.2	10.2	12.8	13.4	20.7	4.6	6.8	1.8	7.0	2.3	120.0		
	Monthly Subtotal ($)	$1,187	$2,576	$569	$1,022	$1,321	$1,480	$2,273	$484	$765	$220	$809	$281	$12,986		
														Task Subtotal =		$12,986
	Operation															
	Wet season inspections	0.7	1.0	0.5	0.6	1.8	2.4	1.5						8.5	$45	$ 383
	Dry season inspections								1.5	0.5				2.0	$45	$ 90
	Unscheduled inspections/field calls					1.0		1.0						2.0	$90	$ 180
	Monthly Subtotal (hours)	0.7	1.0	0.5	0.6	2.8	2.4	2.5	1.5	0.5	0.0	0.0	0.0	12.5		
	Monthly Subtotal ($)	$30	$45	$23	$27	$172	$109	$158	$68	$23	$0	$0	$0	$653		
														Task Subtotal =		$653
	Maintenance															
	Scheduled maintenance	15.5	2.5	0.5	11.5			33.3				0.5		63.8	$45	$ 2,869
	Unscheduled maintenance		13.8			2.8								16.6	$45	$ 746
	Vandalism													0.0	$45	$ -
	Acts of God													0.0	$45	$ -
	Landscape Maintenance Contractor													0.0	$45	$ -
	Sediment Removal Contractor													0.0	$45	$ -
	Electrical Contractor		80.7			13.5								94.2	$45	$ 4,239
	Other Contractor													0.0	$45	$ -
	Other Contractor													0.0	$45	$ -
	Monthly Subtotal (hours)	15.5	97.0	0.5	11.5	16.3	0.0	33.3	0.0	0.0	0.0	0.5	0.0	174.5		
	Monthly Subtotal ($)	$698	$4,363	$23	$518	$735	$0	$1,496	$0	$0	$0	$23	$0	$7,854		
														Task Subtotal =		$7,854
	Vector Control															
	Contract & General administration													0.0	$120	$ -
	Vector prevention maint. (consultant)													0.0	$65	$ -
	Response to VCD calls (consultant)													0.0	$80	$ -
	VCD efforts (contracted)	3.9	6.9	5.3	6.3	3.9	3.6	4.2	3.2	4.2	3.0	3.5	4.4	52.4	$49	$ 2,566
	Monthly Subtotal (hours)	3.9	6.9	5.3	6.3	3.9	3.6	4.2	3.2	4.2	3.0	3.5	4.4	52.4		
	Monthly Subtotal ($)	$190	$340	$262	$310	$191	$176	$206	$158	$205	$145	$171	$213	$2,566		
														Task Subtotal =		$2,566
Non-Recurring Equipment (hours)	***Equipment***															
	Crane							1.0						1.0	$85	$ 85
	Piece of Equipment 2													0.0	$0	$ -
	Piece of Equipment 3													0.0	$0	$ -
	Piece of Equipment 4													0.0	$0	$ -
	Piece of Equipment 5													0.0	$0	$ -
	Piece of Equipment 6													0.0	$0	$ -
	Monthly Subtotal (hours)	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0		
	Monthly Subtotal ($)	$0	$0	$0	$0	$0	$0	$85	$0	$0	$0	$0	$0	$85		
														Equipment Subtotal =		$85
Dollars ($)	***Direct Costs***														Total $	
	VCD supplies (direct costs less labor)														$ -	
	Reproduction														$ -	
	Postage/FedEx	$ 1	$ 1	$ 2	$ 1	$ 2	$ 6		$ 14	$ 0.5	$ 0.3	$ 2			$ 29	
	Lodging	$ 11		$ 10	$ 11	$ 9			$ 2						$ 43	
	Per Diem	$ 5		$ 5	$ 5	$ 5			$ 0.4						$ 20	
	Incidentals	$ 8	$ 34												$ 41	
	Vehicle Rental/Lease	$ 33	$ 74	$ 8	$ 47	$ 69	$ 33	$ 30	$ 52	$ 28		$ 20			$ 394	
	Airfare														$ -	
	Field Supp./Expendables	$ 4	$ 1	$ 4	$ 41	$ 201	$ 3	$ 11	$ 3	$ 5					$ 275	
	Equipment Rental														$ -	
	Sediment Analyses														$ -	
	Sediment Disposal													$ 1,151	$ 1,151	
	Other Direct Costs					$ 48		$ 30		$ 10					$ 89	
	Transfer Pump Replacement/Repair					$ 63									$ 63	
	Other Direct Costs														$ -	
	Monthly Subtotal	$ 62	$ 111	$ 29	$ 105	$ 396	$ 41	$ 71	$ 72	$ 43	$ 0	$ 22	$ 1,151		$ 2,105	
	MONTHLY TOTAL	$2,167	$7,434	$905	$1,982	$2,815	$1,806	$4,289	$782	$1,036	$364	$1,024	$1,645	**2000/2001 TOTAL =**		**$26,249**

BMP Retrofit Pilot Program
Maintenance Operation
Cost Accounting Summary, 2000-01

DISTRICT: 7	LOCATION: Via Verde Park & Ride	SITE NO. 74206	BMP TYPE: Multi-chambered Treatment Train	CONSULTANT: Montgomery Watson/LAW Crandall

	TASK	2000			2001									Total (hrs)	Avg. Rate	TOTAL $
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep			
Labor (hours)	***Administration***															
	General program support/Follow-up	7.5	10.0	18.6	19.8	13.8	28.9	4.3	6.7	5.2	1.8	6.0	2.3	124.9	$120	$ 14,986
	Encroachment Permits													0.0	$87	$ -
	Travel	4.6	6.0	10.5	20.7	16.1	13.9	1.9	3.7	1.6		1.1		80.2	$87	$ 6,973
	Unscheduled events													0.0	$87	$ -
	Monthly Subtotal (hours)	12.1	16.0	29.1	40.6	29.9	42.8	6.2	10.4	6.8	1.8	7.0	2.3	205.0		
	Monthly Subtotal ($)	$1,298	$1,717	$3,140	$4,183	$3,051	$4,681	$683	$1,129	$765	$220	$809	$281	$21,959		
														Task Subtotal =		$21,959
	Operation															
	Wet season inspections	0.5	1.0	0.5	0.8	1.3	1.3	0.6						5.9	$45	$ 265
	Dry season inspections								1.0	0.8				1.8	$45	$ 79
	Unscheduled inspections/field calls			31.0										31.0	$90	$ 2,790
	Monthly Subtotal (hours)	0.5	1.0	31.5	0.8	1.3	1.3	0.6	1.0	0.8	0.0	0.0	0.0	38.6		
	Monthly Subtotal ($)	$23	$45	$2,813	$34	$56	$56	$28	$45	$34	$0	$0	$0	$3,133		
														Task Subtotal =		$3,133
	Maintenance															
	Scheduled maintenance	4.0	2.5	0.5	0.8		17.8	6.8	27.5			0.5		60.3	$45	$ 2,711
	Unscheduled maintenance	15.0	6.5		137.5	39.5	33.8							232.3	$45	$ 10,451
	Vandalism													0.0	$45	$ -
	Acts of God													0.0	$45	$ -
	Landscape Maintenance Contractor													0.0	$45	$ -
	Sediment Removal Contractor													0.0	$45	$ -
	Other Contractor				346.0									346.0	$45	$ 15,570
	Other Contractor						442.2							442.2	$45	$ 19,899
	Other Contractor													0.0	$45	$ -
	Monthly Subtotal (hours)	19.0	9.0	0.5	484.3	39.5	493.7	6.8	27.5	0.0	0.0	0.5	0.0	1080.7		
	Monthly Subtotal ($)	$855	$405	$23	$21,791	$1,778	$22,217	$304	$1,238	$0	$0	$23	$0	$48,632		
														Task Subtotal =		$48,632
	Vector Control															
	Contract & General administration													0.0	$120	$ -
	Vector prevention maint. (consultant)													0.0	$65	$ -
	Response to VCD calls (consultant)													0.0	$80	$ -
	VCD efforts (contracted)				1.4	1.0	1.3							3.7	$68	$ 248
	Monthly Subtotal (hours)	0.0	0.0	0.0	1.4	1.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	3.7		
	Monthly Subtotal ($)	$0	$0	$0	$96	$68	$85	$0	$0	$0	$0	$0	$0	$248		
														Task Subtotal =		$248
Non-Recurring Equipment (hours)	***Equipment***															
	LEL/O_2 Meter	5.0							11.5					16.5	$16	$ 260
	Trash pump				8.0	8.0								16.0	$5	$ 80
	Air compressor					6.0								6.0	$5	$ 30
	Electric air blower								11.5					11.5	$1	$ 9
	SCBA								11.5					11.5	$8	$ 91
	2-safety harness								11.5					11.5	$1	$ 13
	Tripod with winch								11.5					11.5	$9	$ 98
	Monthly Subtotal (hours)	5.0	0.0	0.0	8.0	14.0	0.0	0.0	57.5	0.0	0.0	0.0	0.0	84.5		
	Monthly Subtotal ($)	$79	$0	$0	$40	$70	$0	$0	$392	$0	$0	$0	$0	$551		
														Equipment Subtotal =		$581
Dollars ($)	***Direct Costs***														Total $	
	VCD supplies (direct costs less labor)														$ -	
	Reproduction														$ -	
	Postage/FedEx	$ 1	$ 1	$ 2	$ 1	$ 2	$ 6		$ 14	$ 0.5	$ 0.3	$ 2			$ 29	
	Lodging	$ 11		$ 10	$ 11	$ 9			$ 2						$ 43	
	Per Diem	$ 5		$ 5	$ 5	$ 5			$ 0.4						$ 20	
	Incidentals	$ 8	$ 34												$ 41	
	Vehicle Rental/Lease	$ 33	$ 50	$ 48	$ 170	$ 176	$ 133	$ 9	$ 105	$ 28		$ 20			$ 770	
	Airfare														$ -	
	Field Supp./Expendables	$ 202	$ 1	$ 4	$ 1	$ 1	$ 3	$ 11	$ 3	$ 5			$ 228		$ 461	
	Equipment Rental														$ -	
	Sediment Analyses						$ 1,538								$ 1,538	
	Sediment Disposal												$ 1,342		$ 1,342	
	Other Direct Costs														$ -	
	Transfer Pump Replacement/Repair														$ -	
	VCD Mileage Costs														$ -	
	Monthly Subtotal	$ 260	$ 86	$ 69	$ 187	$ 192	$ 1,679	$ 20	$ 124	$ 33	$ 0	$ 22	$ 1,571		$ 4,244	
	MONTHLY TOTAL	$2,515	$2,253	$6,045	$26,331	$5,215	$28,718	$1,035	$2,928	$832	$220	$853	$1,851	**2000/2001 TOTAL =**		**$78,797**

BMP Retrofit Pilot Program
Maintenance Operation
Cost Accounting Summary, 2000-01

DISTRICT: 7	LOCATION: Lakewood Park & Ride	SITE NO. 74208	BMP TYPE: Multi-chambered Treatment Train	CONSULTANT: Montgomery Watson/LAW Crandall

	TASK	2000			2001									Total (hrs)	Avg. Rate	TOTAL $
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep			
Labor (hours)	***Administration***															
	General program support/Follow-up	9.3	6.2	5.9	1.7	3.2	19.3	4.3	6.7	5.2	1.8	6.0	2.3	72.0	$120	$ 8,642
	Encroachment Permits													0.0	$87	$ -
	Travel	5.8	3.8	3.5	1.7	3.8	9.3	1.9	8.4	1.6		1.1		40.8	$87	$ 3,550
	Unscheduled events													0.0	$87	$ -
	Monthly Subtotal (hours)	15.1	10.0	9.4	3.4	7.0	28.6	6.2	15.1	6.8	1.8	7.0	2.3	112.8		
	Monthly Subtotal ($)	$1,624	$1,073	$1,016	$349	$718	$3,121	$683	$1,536	$765	$220	$809	$281	$12,193		
														Task Subtotal =		$12,193
	Operation															
	Wet season inspections	0.5	1.0	0.5	0.5	1.3	1.3	0.6						5.6	$45	$ 253
	Dry season inspections								1.0	0.8				1.8	$45	$ 79
	Unscheduled inspections/field calls													0.0	$90	$ -
	Monthly Subtotal (hours)	0.5	1.0	0.5	0.5	1.3	1.3	0.6	1.0	0.8	0.0	0.0	0.0	7.4		
	Monthly Subtotal ($)	$23	$45	$23	$23	$56	$56	$28	$45	$34	$0	$0	$0	$332		
														Task Subtotal =		$332
	Maintenance															
	Scheduled maintenance	8.3	2.5	1.0	0.5	0.5	18.0	6.5	39.8			0.5		77.5	$45	$ 3,488
	Unscheduled maintenance	18.0					3.0							21.0	$45	$ 945
	Vandalism													0.0	$45	$ -
	Acts of God													0.0	$45	$ -
	Landscape Maintenance Contractor													0.0	$45	$ -
	Sediment Removal Contractor													0.0	$45	$ -
	Other Contractor													0.0	$45	$ -
	Other Contractor													0.0	$45	$ -
	Other Contractor													0.0	$45	$ -
	Monthly Subtotal (hours)	26.3	2.5	1.0	0.5	0.5	21.0	6.5	39.8	0.0	0.0	0.5	0.0	98.5		
	Monthly Subtotal ($)	$1,181	$113	$45	$23	$23	$945	$293	$1,789	$0	$0	$23	$0	$4,433		
														Task Subtotal =		$4,433
	Vector Control															
	Contract & General administration													0.0	$120	$ -
	Vector prevention maint. (consultant)													0.0	$65	$ -
	Response to VCD calls (consultant)													0.0	$80	$ -
	VCD efforts (contracted)	4.9	13.3	12.3	8.4	4.7	5.4	6.1	5.0	5.0	4.1	4.5	4.7	78.4	$49	$ 3,840
	Monthly Subtotal (hours)	4.9	13.3	12.3	8.4	4.7	5.4	6.1	5.0	5.0	4.1	4.5	4.7	78.4		
	Monthly Subtotal ($)	$242	$651	$603	$410	$230	$262	$300	$245	$245	$199	$222	$230	$3,840		
														Task Subtotal =		$3,840
Non-Recurring Equipment (hours)	***Equipment***															
	LEL/O_2 Meter	6.5							12.5					19.0	$16	$ 300
	Electric air blower								12.5					12.5	$1	$ 9
	SCBA								12.5					12.5	$8	$ 98
	2-safety harness								12.5					12.5	$1	$ 14
	Tripod with winch								12.5					12.5	$9	$ 107
	Piece of Equipment 6													0.0	$0	$ -
	Monthly Subtotal (hours)	6.5	0.0	0.0	0.0	0.0	0.0	0.0	62.5	0.0	0.0	0.0	0.0	69.0		
	Monthly Subtotal ($)	$103	$0	$0	$0	$0	$0	$0	$426	$0	$0	$0	$0	$529		
														Equipment Subtotal =		$529
Dollars ($)	***Direct Costs***														Total $	
	VCD supplies (direct costs less labor)														$ -	
	Reproduction														$ -	
	Postage/FedEx	$ 1	$ 1	$ 2	$ 1	$ 2	$ 6		$ 14	$ 0.5	$ 0.3	$ 2			$ 29	
	Lodging	$ 11		$ 10	$ 11	$ 9			$ 2						$ 43	
	Per Diem	$ 5		$ 5	$ 5	$ 5			$ 0.4						$ 20	
	Incidentals	$ 8	$ 34												$ 41	
	Vehicle Rental/Lease	$ 41	$ 31	$ 16	$ 13	$ 40	$ 82	$ 9	$ 235	$ 28		$ 20			$ 515	
	Airfare														$ -	
	Field Supp./Expendables	$ 202	$ 1	$ 4	$ 1	$ 1	$ 3	$ 11	$ 3	$ 5			$ 228		$ 461	
	Equipment Rental														$ -	
	Sediment Analyses						$ 513								$ 513	
	Sediment Disposal												$ 767		$ 767	
	Other Direct Costs														$ -	
	Transfer Pump Replacement/Repair														$ -	
	Other Direct Costs														$ -	
	Monthly Subtotal	$ 269	$ 67	$ 37	$ 31	$ 56	$ 603	$ 20	$ 255	$ 33	$ 0	$ 22	$ 995		$ 2,389	
	MONTHLY TOTAL	$3,440	$1,949	$1,724	$834	$1,082	$4,987	$1,324	$4,295	$1,078	$419	$1,076	$1,506	**2000/2001 TOTAL =**		**$23,715**

BMP Retrofit Pilot Program
Maintenance Operation
Cost Accounting Summary, 2000-01

DISTRICT: 7	LOCATION: Altadena Maintenance Station	SITE NO. 73211a	BMP TYPE: Infiltration Trench	CONSULTANT: Montgomery Watson/LAW Crandall

	TASK	2000			2001									Total (hrs)	Avg. Rate	TOTAL $
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep			
Labor (hours)	***Administration***															
	General program support/Follow-up	3.1	5.2	4.7	2.7	2.4	3.9	4.3	1.8	3.5	1.8	3.0	3.8	40.1	$120	$ 4,814
	Encroachment Permits													0.0	$87	$ -
	Travel	1.2	3.0	2.6	2.6	2.8	1.9	1.9	0.9	0.8			0.9	18.6	$87	$ 1,616
	Unscheduled events													0.0	$87	$ -
	Monthly Subtotal (hours)	4.2	8.2	7.3	5.3	5.3	5.7	6.2	2.7	4.3	1.8	3.0	4.7	58.7		
	Monthly Subtotal ($)	$467	$883	$793	$547	$539	$625	$683	$296	$487	$220	$358	$535	$6,431		
														Task Subtotal =		$6,431
	Operation															
	Wet season inspections	0.5	0.3	0.5	0.5	0.8	0.8	0.5						3.8	$55	$ 206
	Dry season inspections								0.5	0.3			0.5	1.3	$55	$ 69
	Unscheduled inspections/field calls													0.0	$60	$ -
	Monthly Subtotal (hours)	0.5	0.3	0.5	0.5	0.8	0.8	0.5	0.5	0.3	0.0	0.0	0.5	5.0		
	Monthly Subtotal ($)	$28	$14	$28	$28	$41	$41	$28	$28	$14	$0	$0	$28	$275		
														Task Subtotal =		$275
	Maintenance															
	Scheduled maintenance		0.3	0.3	0.3			1.8						2.5	$55	$ 138
	Unscheduled maintenance													0.0	$55	$ -
	Vandalism													0.0	$55	$ -
	Acts of God													0.0	$55	$ -
	Landscape Maintenance Contractor													0.0	$0	$ -
	Sediment Removal Contractor													0.0	$0	$ -
	Vegetation Consultant													0.0	$75	$ -
	Other Contractor													0.0	$0	$ -
	Other Contractor													0.0	$0	$ -
	Monthly Subtotal (hours)	0.0	0.3	0.3	0.3	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	2.5		
	Monthly Subtotal ($)	$0	$14	$14	$14	$0	$0	$96	$0	$0	$0	$0	$0	$138		
														Task Subtotal =		$138
	Vector Control															
	Contract & General administration	0.1	0.1	0.1	0.1									0.4	$120	$ 48
	Vector prevention maint. (consultant)													0.0	$65	$ -
	Response to VCD calls (consultant)													0.0	$55	$ -
	VCD efforts (contracted)	3.3	2.9	2.5	1.8	1.7	1.7	2.0	1.6	2.1	1.5	1.7	2.2	25.1	$46	$ 1,165
	Monthly Subtotal (hours)	3.4	3.0	2.6	1.9	1.7	1.7	2.0	1.6	2.1	1.5	1.7	2.2	25.5		
	Monthly Subtotal ($)	$167	$147	$130	$95	$79	$78	$93	$75	$98	$69	$81	$101	$1,213		
														Task Subtotal =		$1,213
Non-Recurring Equipment (hours)	***Equipment***															
	Piece of Equipment 1													0.0	$0	$ -
	Piece of Equipment 2													0.0	$0	$ -
	Piece of Equipment 3													0.0	$0	$ -
	Piece of Equipment 4													0.0	$0	$ -
	Piece of Equipment 5													0.0	$0	$ -
	Piece of Equipment 6													0.0	$0	$ -
	Monthly Subtotal (hours)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
	Monthly Subtotal ($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0		
														Equipment Subtotal =		$0
Dollars ($)	***Direct Costs***														Total $	
	VCD supplies (direct costs less labor)														$ -	
	Reproduction	$ 1	$ 1	$ 1	$ 1										$ 3	
	Postage/FedEx	$ 2	$ 2	$ 3	$ 2	$ 2	$ 6		$ 14	$ 0.5	$ 0.3	$ 2			$ 33	
	Lodging	$ 11		$ 10	$ 11	$ 9			$ 2						$ 43	
	Per Diem	$ 5		$ 5	$ 5	$ 5			$ 0.4						$ 20	
	Incidentals	$ 9	$ 34	$ 1	$ 1										$ 44	
	Vehicle Rental/Lease	$ 8	$ 25	$ 12	$ 20	$ 30	$ 16	$ 9	$ 26	$ 14			$ 6		$ 166	
	Airfare														$ -	
	Field Supp./Expendables	$ 4	$ 1	$ 4	$ 1	$ 1	$ 3	$ 11	$ 3	$ 5					$ 34	
	Equipment Rental														$ -	
	Sediment Analyses														$ -	
	Sediment Disposal														$ -	
	Weed Wacker														$ -	
	Vegetation Disposal														$ -	
	Storage Container														$ -	
	Monthly Subtotal	$ 40	$ 63	$ 36	$ 40	$ 46	$ 25	$ 20	$ 46	$ 19	$ 0	$ 2	$ 6		$ 344	

MONTHLY TOTAL	$702	$1,121	$1,000	$723	$705	$769	$920	$444	$617	$289	$440	$670	**2000/2001 TOTAL =**	**$8,400**

BMP Retrofit Pilot Program
Maintenance Operation
Cost Accounting Summary, 2000-01

DISTRICT: 7	LOCATION: Altadena Maintenance Station	SITE NO. 73211b	BMP TYPE: Biofiltration Strip	CONSULTANT: Montgomery Watson/LAW Crandall

	TASK	2000			2001									Total (hrs)	Avg. Rate	TOTAL $
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep			
Labor (hours)	***Administration***															
	General program support/Follow-up	3.5	7.7	7.7	3.1	7.4	8.7	14.8	3.7	9.0	6.7	3.0	3.8	79.2	$120	$ 9,503
	Encroachment Permits													0.0	$87	$ -
	Travel	4.0	5.3	7.0	6.9	3.8	2.8	4.5	1.9	2.4	5.4		0.9	44.8	$87	$ 3,895
	Unscheduled events													0.0	$87	$ -
	Monthly Subtotal (hours)	7.6	12.9	14.7	10.0	11.2	11.5	19.3	5.6	11.4	12.1	3.0	4.7	124.0		
	Monthly Subtotal ($)	$774	$1,377	$1,529	$972	$1,220	$1,291	$2,171	$609	$1,284	$1,277	$358	$535	$13,398		
														Task Subtotal =		$13,398
	Operation															
	Wet season inspections	1.5	1.1	1.3	1.0	1.1	1.3	0.8						8.1	$55	$ 444
	Dry season inspections								0.8	0.5			0.5	1.8	$55	$ 101
	Unscheduled inspections/field calls													0.0	$60	$ -
	Monthly Subtotal (hours)	1.5	1.1	1.3	1.0	1.1	1.3	0.8	0.8	0.5	0.0	0.0	0.5	9.9		
	Monthly Subtotal ($)	$83	$59	$69	$55	$59	$73	$46	$43	$30	$0	$0	$28	$545		
														Task Subtotal =		$545
	Maintenance															
	Scheduled maintenance	3.0	1.3	3.8	21.5	7.0	3.0	17.0		4.0	10.0			70.5	$55	$ 3,878
	Unscheduled maintenance													0.0	$55	$ -
	Vandalism													0.0	$55	$ -
	Acts of God													0.0	$55	$ -
	Landscape Maintenance Contractor													0.0	$0	$ -
	Sediment Removal Contractor													0.0	$0	$ -
	Vegetation Consultant													0.0	$75	$ -
	Other Contractor													0.0	$0	$ -
	Other Contractor													0.0	$0	$ -
	Monthly Subtotal (hours)	3.0	1.3	3.8	21.5	7.0	3.0	17.0	0.0	4.0	10.0	0.0	0.0	70.5		
	Monthly Subtotal ($)	$165	$69	$206	$1,183	$385	$165	$935	$0	$220	$550	$0	$0	$3,878		
														Task Subtotal =		$3,878
	Vector Control															
	Contract & General administration	0.1	0.1	0.1	0.1									0.4	$120	$ 48
	Vector prevention maint. (consultant)													0.0	$65	$ -
	Response to VCD calls (consultant)													0.0	$55	$ -
	VCD efforts (contracted)	3.3	2.9	2.5	1.8	1.7	1.7	2.0	1.6	2.1	1.5	1.7	2.2	25.1	$46	$ 1,165
	Monthly Subtotal (hours)	3.4	3.0	2.6	1.9	1.7	1.7	2.0	1.6	2.1	1.5	1.7	2.2	25.5		
	Monthly Subtotal ($)	$167	$147	$130	$95	$79	$78	$93	$75	$98	$69	$81	$101	$1,213		
														Task Subtotal =		$1,213
Non-Recurring Equipment (hours)	***Equipment***															
	Weedwacker				5.5	3.5					2.5			11.5	$5	$ 58
	20" Push Lawnmower										2.5			2.5	$9	$ 23
	Piece of Equipment 3													0.0	$0	$ -
	Piece of Equipment 4													0.0	$0	$ -
	Piece of Equipment 5													0.0	$0	$ -
	Piece of Equipment 6													0.0	$0	$ -
	Piece of Equipment 7													0.0	$0	$ -
	Monthly Subtotal (hours)	0.0	0.0	0.0	5.5	3.5	0.0	0.0	0.0	0.0	5.0	0.0	0.0	14.0		
	Monthly Subtotal ($)	$0	$0	$0	$28	$18	$0	$0	$0	$0	$35	$0	$0	$80		
														Equipment Subtotal =		$80
Dollars ($)	***Direct Costs***													Total $		
	VCD supplies (direct costs less labor)													$ -		
	Reproduction	$ 1	$ 1	$ 1	$ 1									$ 3		
	Postage/FedEx	$ 2	$ 2	$ 3	$ 2	$ 2	$ 6		$ 14	$ 0.5	$ 0.3	$ 2		$ 33		
	Lodging	$ 11		$ 10	$ 11	$ 9			$ 2					$ 43		
	Per Diem	$ 5		$ 5	$ 5	$ 5			$ 0.4					$ 20		
	Incidentals	$ 9	$ 34	$ 1	$ 1									$ 44		
	Vehicle Rental/Lease	$ 29	$ 43	$ 32	$ 54	$ 40	$ 25	$ 21	$ 52	$ 41	$ 263		$ 6	$ 606		
	Airfare													$ -		
	Field Supp./Expendables	$ 4	$ 1	$ 4	$ 1	$ 1	$ 3	$ 11	$ 3	$ 5				$ 34		
	Equipment Rental													$ -		
	Sediment Analyses													$ -		
	Sediment Disposal													$ -		
	Weed Wacker													$ -		
	Vegetation Disposal													$ -		
	Storage Container													$ -		
	Monthly Subtotal	$ 60	$ 82	$ 56	$ 74	$ 56	$ 33	$ 32	$ 72	$ 47	$ 264	$ 2	$ 6	$ 783		
	MONTHLY TOTAL	$1,249	$1,735	$1,990	$2,406	$1,817	$1,640	$3,277	$800	$1,679	$2,195	$440	$670	**2000/2001 TOTAL =**		**$19,897**

BMP Retrofit Pilot Program
Maintenance Operation
Cost Accounting Summary, 2000-01

DISTRICT: 7	LOCATION: Foothill Maintenance Station	SITE NO. 73216a	BMP TYPE: Drain Inlet Insert (StreamGuard)	CONSULTANT: Montgomery Watson/LAW Crandall

	TASK	2000			2001									Total (hrs)	Avg. Rate	TOTAL $
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep			
Labor (hours)	***Administration***															
	General program support/Follow-up	4.4	3.5	5.5	4.3	2.4	6.3	6.0	2.7	1.8	1.8	3.0		41.6	$120	$ 4,987
	Encroachment Permits													0.0	$87	$ -
	Travel	2.3	1.5	2.6	4.3	2.8	2.8	2.6	1.9					20.8	$87	$ 1,810
	Unscheduled events													0.0	$87	$ -
	Monthly Subtotal (hours)	6.7	5.0	8.1	8.7	5.3	9.1	8.5	4.6	1.8	1.8	3.0	0.0	62.4		
	Monthly Subtotal ($)	$724	$553	$882	$895	$539	$995	$938	$484	$210	$220	$358	$0	$6,798		
														Task Subtotal =		$6,798
	Operation															
	Wet season inspections	1.0	0.5	0.8	1.3	0.9	1.0	1.3						6.6	$55	$ 362
	Dry season inspections								0.5					0.5	$55	$ 28
	Unscheduled inspections/field calls													0.0	$60	$ -
	Monthly Subtotal (hours)	1.0	0.5	0.8	1.3	0.9	1.0	1.3	0.5	0.0	0.0	0.0	0.0	7.1		
	Monthly Subtotal ($)	$55	$28	$41	$69	$48	$53	$69	$28	$0	$0	$0	$0	$390		
														Task Subtotal =		$390
	Maintenance															
	Scheduled maintenance								1.8					1.8	$55	$ 96
	Unscheduled maintenance													0.0	$55	$ -
	Vandalism													0.0	$55	$ -
	Acts of God													0.0	$55	$ -
	Landscape Maintenance Contractor													0.0	$0	$ -
	Sediment Removal Contractor													0.0	$0	$ -
	Other Contractor													0.0	$0	$ -
	Other Contractor													0.0	$0	$ -
	Other Contractor													0.0	$0	$ -
	Monthly Subtotal (hours)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	1.8		
	Monthly Subtotal ($)	$0	$0	$0	$0	$0	$0	$0	$96	$0	$0	$0	$0	$96		
														Task Subtotal =		$96
	Vector Control															
	Contract & General administration	0.1	0.1	0.1	0.1									0.4	$120	$ 48
	Vector prevention maint. (consultant)													0.0	$65	$ -
	Response to VCD calls (consultant)													0.0	$55	$ -
	VCD efforts (contracted)	0.8			0.8	0.4	0.6							2.7	$46	$ 125
	Monthly Subtotal (hours)	0.9	0.1	0.1	0.9	0.4	0.6	0.0	0.0	0.0	0.0	0.0	0.0	3.1		
	Monthly Subtotal ($)	$51	$12	$12	$49	$20	$29	$0	$0	$0	$0	$0	$0	$173		
														Task Subtotal =		$173
Non-Recurring Equipment (hours)	***Equipment***															
	Piece of Equipment 1													0.0	$0	$ -
	Piece of Equipment 2													0.0	$0	$ -
	Piece of Equipment 3													0.0	$0	$ -
	Piece of Equipment 4													0.0	$0	$ -
	Piece of Equipment 5													0.0	$0	$ -
	Piece of Equipment 6													0.0	$0	$ -
	Monthly Subtotal (hours)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
	Monthly Subtotal ($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0		
														Equipment Subtotal =		$0
Dollars ($)	***Direct Costs***													Total $		
	VCD supplies (direct costs less labor)													$ -		
	Reproduction	$ 1	$ 1	$ 1	$ 1									$ 3		
	Postage/FedEx	$ 2	$ 2	$ 3	$ 2	$ 2	$ 6		$ 14	$ 0.5	$ 0.3	$ 2		$ 33		
	Lodging	$ 11		$ 10	$ 11	$ 9			$ 2					$ 43		
	Per Diem	$ 5		$ 5	$ 5	$ 5			$ 0.4					$ 20		
	Incidentals	$ 9	$ 34	$ 1	$ 1									$ 44		
	Vehicle Rental/Lease	$ 18	$ 12	$ 12	$ 35	$ 31	$ 27	$ 12	$ 52					$ 200		
	Airfare													$ -		
	Field Supp./Expendables	$ 4	$ 1	$ 4	$ 1	$ 1	$ 3	$ 11	$ 3					$ 29		
	Equipment Rental													$ -		
	Sediment Analyses													$ -		
	Sediment Disposal													$ -		
	StreamGuard Drain Inlet Insert													$ -		
	Vegetation Disposal													$ -		
	Storage Container													$ -		
	Monthly Subtotal	$ 50	$ 51	$ 36	$ 55	$ 48	$ 35	$ 23	$ 72	$ 0	$ 0	$ 2	$ -	$ 373		
	MONTHLY TOTAL	$880	$643	$971	$1,069	$654	$1,113	$1,029	$680	$210	$220	$359	$0	**2000/2001 TOT**		**$7,829**

BMP Retrofit Pilot Program
Maintenance Operation
Cost Accounting Summary, 2000-01

DISTRICT: 7	LOCATION: Foothill Maintenance Station	SITE NO. 73216b	BMP TYPE: Drain Inlet Insert (Fossil Filter)	CONSULTANT: Montgomery Watson/LAW Crandall

	TASK	2000			2001									Total (hrs)	Avg. Rate	TOTAL $
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep			
Labor (hours)	***Administration***															
	General program support/Follow-up	5.9	3.5	5.5	4.3	2.4	6.3	6.0	2.7	1.8	1.8	3.0		43.1	$120	$ 5,166
	Encroachment Permits													0.0	$87	$ -
	Travel	3.5	1.5	2.6	4.3	2.8	2.8	3.2	1.9					22.6	$87	$ 1,968
	Unscheduled events													0.0	$87	$ -
	Monthly Subtotal (hours)	9.3	5.0	8.1	8.7	5.3	9.1	9.2	4.6	1.8	1.8	3.0	0.0	65.7		
	Monthly Subtotal ($)	$1,004	$553	$882	$895	$539	$995	$994	$484	$210	$220	$358	$0	$7,134		
														Task Subtotal =		$7,134
	Operation															
	Wet season inspections	1.3	0.5	0.8	1.3	0.9	1.0	1.5						7.1	$55	$ 390
	Dry season inspections								0.5					0.5	$55	$ 28
	Unscheduled inspections/field calls	3.0												3.0	$60	$ 180
	Monthly Subtotal (hours)	4.3	0.5	0.8	1.3	0.9	1.0	1.5	0.5	0.0	0.0	0.0	0.0	10.6		
	Monthly Subtotal ($)	$249	$28	$41	$69	$48	$53	$83	$28	$0	$0	$0	$0	$597		
														Task Subtotal =		$597
	Maintenance															
	Scheduled maintenance	0.8	0.5	0.5	1.3	0.5	0.3	1.0	1.8					6.5	$55	$ 358
	Unscheduled maintenance													0.0	$55	$ -
	Vandalism													0.0	$55	$ -
	Acts of God													0.0	$55	$ -
	Landscape Maintenance Contractor													0.0	$0	$ -
	Sediment Removal Contractor													0.0	$0	$ -
	Other Contractor													0.0	$0	$ -
	Other Contractor													0.0	$0	$ -
	Other Contractor													0.0	$0	$ -
	Monthly Subtotal (hours)	0.8	0.5	0.5	1.3	0.5	0.3	1.0	1.8	0.0	0.0	0.0	0.0	6.5		
	Monthly Subtotal ($)	$41	$28	$28	$69	$28	$14	$55	$96	$0	$0	$0	$0	$358		
														Task Subtotal =		$358
	Vector Control															
	Contract & General administration	0.1	0.1	0.1	0.1									0.4	$120	$ 48
	Vector prevention maint. (consultant)													0.0	$65	$ -
	Response to VCD calls (consultant)													0.0	$55	$ -
	VCD efforts (contracted)	0.8			0.8	0.4	0.6							2.7	$46	$ 125
	Monthly Subtotal (hours)	0.9	0.1	0.1	0.9	0.4	0.6	0.0	0.0	0.0	0.0	0.0	0.0	3.1		
	Monthly Subtotal ($)	$51	$12	$12	$49	$20	$29	$0	$0	$0	$0	$0	$0	$173		
														Task Subtotal =		$173
Non-Recurring Equipment (hours)	***Equipment***															
	Piece of Equipment 1													0.0	$0	$ -
	Piece of Equipment 2													0.0	$0	$ -
	Piece of Equipment 3													0.0	$0	$ -
	Piece of Equipment 4													0.0	$0	$ -
	Piece of Equipment 5													0.0	$0	$ -
	Piece of Equipment 6													0.0	$0	$ -
	Monthly Subtotal (hours)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
	Monthly Subtotal ($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0		
														Equipment Subtotal =		$0

	Direct Costs													Total $
Dollars ($)	VCD supplies (direct costs less labor)													$ -
	Reproduction	$ 1	$ 1	$ 1	$ 1									$ 3
	Postage/FedEx	$ 2	$ 2	$ 3	$ 2	$ 2	$ 6		$ 14	$ 0.5	$ 0.3	$ 2		$ 33
	Lodging	$ 11		$ 10	$ 11	$ 9			$ 2					$ 43
	Per Diem	$ 5		$ 5	$ 5	$ 5			$ 0.4					$ 20
	Incidentals	$ 9	$ 34	$ 1	$ 1									$ 44
	Vehicle Rental/Lease	$ 26	$ 12	$ 12	$ 35	$ 31	$ 27	$ 15	$ 52					$ 212
	Airfare													$ -
	Field Supp./Expendables	$ 4	$ 1	$ 4	$ 1	$ 1	$ 3	$ 11	$ 3					$ 29
	Equipment Rental													$ -
	Sediment Analyses													$ -
	Sediment Disposal													$ -
	Fossil Filter Adsorbent Material ($15/repl)													$ -
	Vegetation Disposal													$ -
	Storage Container													$ -
	Monthly Subtotal	$ 58	$ 51	$ 36	$ 55	$ 48	$ 35	$ 26	$ 72	$ 0	$ 0	$ 2	$ -	$ 384

MONTHLY TOTAL	$1,403	$671	$999	$1,137	$681	$1,127	$1,158	$680	$210	$220	$359	$0	**2000/2001 TOT. $8,645**

BMP Retrofit Pilot Program
Maintenance Operation
Cost Accounting Summary, 2000-01

DISTRICT: 7	LOCATION: Las Flores Maintenance Station	SITE NO. 73217a	BMP TYPE: Drain Inlet Insert (StreamGuard)	CONSULTANT: Montgomery Watson/LAW Crandall

	TASK	2000			2001									Total (hrs)	Avg. Rate	TOTAL $
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep			
Labor (hours)	***Administration***															
	General program support/Follow-up	4.4	3.5	5.5	4.3	2.4	6.3	6.0	2.7	1.8	1.8	3.0		41.6	$120	$ 4,987
	Encroachment Permits													0.0	$87	$ -
	Travel	2.3	1.5	2.6	4.3	2.8	2.8	2.6	1.9					20.8	$87	$ 1,810
	Unscheduled events													0.0	$87	$ -
	Monthly Subtotal (hours)	6.7	5.0	8.1	8.7	5.3	9.1	8.5	4.6	1.8	1.8	3.0	0.0	62.4		
	Monthly Subtotal ($)	$724	$553	$882	$895	$539	$995	$938	$484	$210	$220	$358	$0	$6,798		
														Task Subtotal =		$6,798
	Operation															
	Wet season inspections	1.0	0.5	0.8	1.3	0.9	1.0	1.3						6.6	$55	$ 362
	Dry season inspections								0.5					0.5	$55	$ 28
	Unscheduled inspections/field calls						0.5							0.5	$60	$ 30
	Monthly Subtotal (hours)	1.0	0.5	0.8	1.3	0.9	1.5	1.3	0.5	0.0	0.0	0.0	0.0	7.6		
	Monthly Subtotal ($)	$55	$28	$41	$69	$48	$83	$69	$28	$0	$0	$0	$0	$420		
														Task Subtotal =		$420
	Maintenance															
	Scheduled maintenance				5.3				1.8					7.0	$55	$ 385
	Unscheduled maintenance													0.0	$55	$ -
	Vandalism													0.0	$55	$ -
	Acts of God													0.0	$55	$ -
	Landscape Maintenance Contractor													0.0	$0	$ -
	Sediment Removal Contractor													0.0	$0	$ -
	Other Contractor													0.0	$0	$ -
	Other Contractor													0.0	$0	$ -
	Other Contractor													0.0	$0	$ -
	Monthly Subtotal (hours)	0.0	0.0	0.0	5.3	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	7.0		
	Monthly Subtotal ($)	$0	$0	$0	$289	$0	$0	$0	$96	$0	$0	$0	$0	$385		
														Task Subtotal =		$385
	Vector Control															
	Contract & General administration	0.1	0.1	0.1	0.1									0.4	$120	$ 48
	Vector prevention maint. (consultant)													0.0	$65	$ -
	Response to VCD calls (consultant)													0.0	$55	$ -
	VCD efforts (contracted)	4.0	5.0				5.0	4.0	5.0	4.0	4.0	4.0	5.0	40.0	$66	$ 2,621
	Monthly Subtotal (hours)	4.1	5.1	0.1	0.1	0.0	5.0	4.0	5.0	4.0	4.0	4.0	5.0	40.4		
	Monthly Subtotal ($)	$274	$340	$12	$12	$0	$328	$262	$328	$262	$262	$262	$328	$2,669		
														Task Subtotal =		$2,669
Non-Recurring Equipment (hours)	***Equipment***															
	Piece of Equipment 1													0.0	$0	$ -
	Piece of Equipment 2													0.0	$0	$ -
	Piece of Equipment 3													0.0	$0	$ -
	Piece of Equipment 4													0.0	$0	$ -
	Piece of Equipment 5													0.0	$0	$ -
	Piece of Equipment 6													0.0	$0	$ -
	Monthly Subtotal (hours)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
	Monthly Subtotal ($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0		
														Equipment Subtotal =		$0
Dollars ($)	***Direct Costs***													Total $		
	VCD supplies (direct costs less labor)													$ -		
	Reproduction	$ 1	$ 1	$ 1	$ 1									$ 3		
	Postage/FedEx	$ 2	$ 2	$ 3	$ 2	$ 2	$ 6		$ 14	$ 0.5	$ 0.3	$ 2		$ 33		
	Lodging	$ 11		$ 10	$ 11	$ 9			$ 2					$ 43		
	Per Diem	$ 5		$ 5	$ 5	$ 5			$ 0.4					$ 20		
	Incidentals	$ 9	$ 34	$ 1	$ 1									$ 44		
	Vehicle Rental/Lease	$ 27	$ 25	$ 12	$ 34	$ 30	$ 37	$ 22	$ 65	$ 10	$ 10	$ 10	$ 13	$ 295		
	Airfare													$ -		
	Field Supp./Expendables	$ 4	$ 1	$ 4	$ 1	$ 1	$ 3	$ 11	$ 3					$ 29		
	Equipment Rental													$ -		
	Sediment Analyses													$ -		
	Sediment Disposal													$ -		
	StreamGuard Drain Inlet Insert				$ 105									$ 105		
	Vegetation Disposal													$ -		
	Storage Container													$ -		
	Monthly Subtotal	$ 58	$ 64	$ 36	$ 159	$ 46	$ 46	$ 33	$ 85	$ 11	$ 10	$ 12	$ 13	$ 572		
	MONTHLY TOTAL	$1,112	$984	$971	$1,424	$633	$1,452	$1,302	$1,020	$483	$492	$632	$340	**2000/2001 TOT**		**$10,844**

BMP Retrofit Pilot Program
Maintenance Operation
Cost Accounting Summary, 2000-01

DISTRICT: 7	LOCATION: Las Flores Maintenance Station	SITE NO. 73217b	BMP TYPE: Drain Inlet Insert (Fossil Filter)	CONSULTANT: Montgomery Watson/LAW Crandall

	TASK	2000			2001									Total (hrs)	Avg. Rate	TOTAL $
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep			
Labor (hours)	***Administration***															
	General program support/Follow-up	4.4	3.5	5.5	4.3	2.4	6.3	6.0	2.7	1.8	1.8	3.0		41.6	$120	$ 4,987
	Encroachment Permits													0.0	$87	$ -
	Travel	2.9	2.3	2.6	4.3	2.8	2.8	2.6	1.9					22.1	$87	$ 1,926
	Unscheduled events													0.0	$87	$ -
	Monthly Subtotal (hours)	7.3	5.8	8.1	8.7	5.3	9.1	8.5	4.6	1.8	1.8	3.0	0.0	63.7		
	Monthly Subtotal ($)	$775	$618	$882	$895	$539	$995	$938	$484	$210	$220	$358	$0	$6,913		
														Task Subtotal =		$6,913
	Operation															
	Wet season inspections	1.3	0.5	0.8	1.3	0.9	1.0	1.5						7.1	$55	$ 390
	Dry season inspections								0.5					0.5	$55	$ 28
	Unscheduled inspections/field calls						0.5							0.5	$60	$ 30
	Monthly Subtotal (hours)	1.3	0.5	0.8	1.3	0.9	1.5	1.5	0.5	0.0	0.0	0.0	0.0	8.1		
	Monthly Subtotal ($)	$69	$28	$41	$69	$48	$83	$83	$28	$0	$0	$0	$0	$447		
														Task Subtotal =		$447
	Maintenance															
	Scheduled maintenance	1.0	1.0	0.5	1.3	0.5	0.5	0.5	1.8					7.0	$55	$ 385
	Unscheduled maintenance													0.0	$55	$ -
	Vandalism													0.0	$55	$ -
	Acts of God													0.0	$55	$ -
	Landscape Maintenance Contractor													0.0	$0	$ -
	Sediment Removal Contractor													0.0	$0	$ -
	Other Contractor													0.0	$0	$ -
	Other Contractor													0.0	$0	$ -
	Other Contractor													0.0	$0	$ -
	Monthly Subtotal (hours)	1.0	1.0	0.5	1.3	0.5	0.5	0.5	1.8	0.0	0.0	0.0	0.0	7.0		
	Monthly Subtotal ($)	$55	$55	$28	$69	$28	$28	$28	$96	$0	$0	$0	$0	$385		
														Task Subtotal =		$385
	Vector Control															
	Contract & General administration	0.1	0.1	0.1	0.1									0.4	$120	$ 48
	Vector prevention maint. (consultant)													0.0	$65	$ -
	Response to VCD calls (consultant)													0.0	$55	$ -
	VCD efforts (contracted)	4.0	5.0				5.0	4.0	5.0	4.0	4.0	4.0	5.0	40.0	$66	$ 2,621
	Monthly Subtotal (hours)	4.1	5.1	0.1	0.1	0.0	5.0	4.0	5.0	4.0	4.0	4.0	5.0	40.4		
	Monthly Subtotal ($)	$274	$340	$12	$12	$0	$328	$262	$328	$262	$262	$262	$328	$2,669		
														Task Subtotal =		$2,669
Non-Recurring Equipment (hours)	***Equipment***															
	Piece of Equipment 1													0.0	$0	$ -
	Piece of Equipment 2													0.0	$0	$ -
	Piece of Equipment 3													0.0	$0	$ -
	Piece of Equipment 4													0.0	$0	$ -
	Piece of Equipment 5													0.0	$0	$ -
	Piece of Equipment 6													0.0	$0	$ -
	Monthly Subtotal (hours)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
	Monthly Subtotal ($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0		
														Equipment Subtotal =		$0
Dollars ($)	***Direct Costs***													**Total $**		
	VCD supplies (direct costs less labor)													$ -		
	Reproduction	$ 1	$ 1	$ 1	$ 1									$ 3		
	Postage/FedEx	$ 2	$ 2	$ 3	$ 2	$ 2	$ 6		$ 14	$ 0.5	$ 0.3	$ 2		$ 33		
	Lodging	$ 11		$ 10	$ 11	$ 9			$ 2					$ 43		
	Per Diem	$ 5		$ 5	$ 5	$ 5			$ 0.4					$ 20		
	Incidentals	$ 9	$ 34	$ 1	$ 1									$ 44		
	Vehicle Rental/Lease	$ 31	$ 31	$ 12	$ 34	$ 30	$ 37	$ 22	$ 65	$ 10	$ 10	$ 10	$ 13	$ 305		
	Airfare													$ -		
	Field Supp./Expendables	$ 4	$ 1	$ 4	$ 1	$ 1	$ 3	$ 11	$ 3					$ 29		
	Equipment Rental													$ -		
	Sediment Analyses													$ -		
	Sediment Disposal													$ -		
	Fossil Filter Adsorbent Material ($15/repl)													$ -		
	Vegetation Disposal													$ -		
	Storage Container													$ -		
	Monthly Subtotal	$ 63	$ 70	$ 36	$ 53	$ 46	$ 46	$ 33	$ 85	$ 11	$ 10	$ 12	$ 13	$ 477		
	MONTHLY TOTAL	$1,235	$1,110	$999	$1,098	$660	$1,479	$1,343	$1,020	$483	$492	$632	$340	**2000/2001 TOT**		**$10,892**

BMP Retrofit Pilot Program
Maintenance Operation
Cost Accounting Summary, 2000-01

DISTRICT: 7	LOCATION: Rosemead Maintenance Station	SITE NO. 73218a	BMP TYPE: Drain Inlet Insert (StreamGuard)	CONSULTANT: Montgomery Watson/LAW Crandall

	TASK	2000			2001									Total (hrs)	Avg. Rate	TOTAL $
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep			
Labor (hours)	***Administration***															
	General program support/Follow-up	4.4	3.5	5.5	4.3	2.4	6.3	6.0	2.7	1.8	1.8	3.0		41.6	$120	$ 4,987
	Encroachment Permits													0.0	$87	$ -
	Travel	2.3	3.0	3.5	4.3	2.8	2.8	2.6	1.9					23.2	$87	$ 2,017
	Unscheduled events													0.0	$87	$ -
	Monthly Subtotal (hours)	6.7	6.5	8.9	8.7	5.3	9.1	8.5	4.6	1.8	1.8	3.0	0.0	64.7		
	Monthly Subtotal ($)	$724	$683	$958	$895	$539	$995	$938	$484	$210	$220	$358	$0	$7,004		
														Task Subtotal =		$7,004
	Operation															
	Wet season inspections	1.0	0.5	0.8	1.3	0.9	1.0	1.3						6.6	$55	$ 362
	Dry season inspections								0.5					0.5	$55	$ 28
	Unscheduled inspections/field calls													0.0	$60	$ -
	Monthly Subtotal (hours)	1.0	0.5	0.8	1.3	0.9	1.0	1.3	0.5	0.0	0.0	0.0	0.0	7.1		
	Monthly Subtotal ($)	$55	$28	$41	$69	$48	$53	$69	$28	$0	$0	$0	$0	$390		
														Task Subtotal =		$390
	Maintenance															
	Scheduled maintenance	0.5	2.5	3.0	0.3				1.8					8.0	$55	$ 440
	Unscheduled maintenance													0.0	$55	$ -
	Vandalism													0.0	$55	$ -
	Acts of God													0.0	$55	$ -
	Landscape Maintenance Contractor													0.0	$0	$ -
	Sediment Removal Contractor													0.0	$0	$ -
	Other Contractor													0.0	$0	$ -
	Other Contractor													0.0	$0	$ -
	Other Contractor													0.0	$0	$ -
	Monthly Subtotal (hours)	0.5	2.5	3.0	0.3	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	8.0		
	Monthly Subtotal ($)	$28	$138	$165	$14	$0	$0	$0	$96	$0	$0	$0	$0	$440		
														Task Subtotal =		$440
	Vector Control															
	Contract & General administration	0.1	0.1	0.1	0.1									0.4	$120	$ 48
	Vector prevention maint. (consultant)													0.0	$65	$ -
	Response to VCD calls (consultant)													0.0	$55	$ -
	VCD efforts (contracted)	0.9			0.8	0.5	0.7							2.9	$46	$ 133
	Monthly Subtotal (hours)	1.0	0.1	0.1	0.9	0.5	0.7	0.0	0.0	0.0	0.0	0.0	0.0	3.3		
	Monthly Subtotal ($)	$55	$12	$12	$48	$23	$30	$0	$0	$0	$0	$0	$0	$181		
														Task Subtotal =		$181
Non-Recurring Equipment (hours)	***Equipment***															
	Piece of Equipment 1													0.0	$0	$ -
	Piece of Equipment 2													0.0	$0	$ -
	Piece of Equipment 3													0.0	$0	$ -
	Piece of Equipment 4													0.0	$0	$ -
	Piece of Equipment 5													0.0	$0	$ -
	Piece of Equipment 6													0.0	$0	$ -
	Monthly Subtotal (hours)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
	Monthly Subtotal ($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0		
														Equipment Subtotal =		$0
Dollars ($)	***Direct Costs***													Total $		
	VCD supplies (direct costs less labor)													$ -		
	Reproduction	$ 1	$ 1	$ 1	$ 1									$ 3		
	Postage/FedEx	$ 2	$ 2	$ 3	$ 2	$ 2	$ 6		$ 14	$ 0.5	$ 0.3	$ 2		$ 33		
	Lodging	$ 11		$ 10	$ 11	$ 9			$ 2					$ 43		
	Per Diem	$ 5		$ 5	$ 5	$ 5			$ 0.4					$ 20		
	Incidentals	$ 9	$ 34	$ 1	$ 1									$ 44		
	Vehicle Rental/Lease	$ 19	$ 25	$ 16	$ 36	$ 32	$ 27	$ 12	$ 52					$ 219		
	Airfare													$ -		
	Field Supp./Expendables	$ 4	$ 1	$ 4	$ 1	$ 1	$ 3	$ 11	$ 3					$ 29		
	Equipment Rental													$ -		
	Sediment Analyses													$ -		
	Sediment Disposal													$ -		
	StreamGuard Drain Inlet Insert													$ -		
	Vegetation Disposal													$ -		
	Storage Container													$ -		
	Monthly Subtotal	$ 51	$ 63	$ 40	$ 56	$ 48	$ 36	$ 23	$ 72	$ 0	$ 0	$ 2	$ -	$ 391		
	MONTHLY TOTAL	$912	$924	$1,216	$1,082	$658	$1,115	$1,029	$680	$210	$220	$359	$0	**2000/2001 TOT**		**$8,405**

BMP Retrofit Pilot Program
Maintenance Operation
Cost Accounting Summary, 2000-01

DISTRICT: 7	LOCATION: Rosemead Maintenance Station	SITE NO. 73218b	BMP TYPE: Drain Inlet Insert (Fossil Filter)	CONSULTANT: Montgomery Watson/LAW Crandall

	TASK	2000			2001									Total (hrs)	Avg. Rate	TOTAL $
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep			
Labor (hours)	***Administration***															
	General program support/Follow-up	4.4	3.5	5.5	4.3	2.4	6.3	6.0	2.7	1.8	1.8	3.0		41.6	$120	$ 4,987
	Encroachment Permits													0.0	$87	$ -
	Travel	2.9	2.3	4.4	4.3	2.8	2.8	2.6	1.9					23.9	$87	$ 2,078
	Unscheduled events													0.0	$87	$ -
	Monthly Subtotal (hours)	7.3	5.8	9.8	8.7	5.3	9.1	8.5	4.6	1.8	1.8	3.0	0.0	65.4		
	Monthly Subtotal ($)	$775	$618	$1,033	$895	$539	$995	$938	$484	$210	$220	$358	$0	$7,065		
														Task Subtotal =		$7,065
	Operation															
	Wet season inspections	1.3	0.5	0.8	1.3	0.9	1.0	1.5						7.1	$55	$ 390
	Dry season inspections								0.5					0.5	$55	$ 28
	Unscheduled inspections/field calls													0.0	$60	$ -
	Monthly Subtotal (hours)	1.3	0.5	0.8	1.3	0.9	1.0	1.5	0.5	0.0	0.0	0.0	0.0	7.6		
	Monthly Subtotal ($)	$69	$28	$41	$69	$48	$53	$83	$28	$0	$0	$0	$0	$417		
														Task Subtotal =		$417
	Maintenance															
	Scheduled maintenance	1.3	0.5	1.8	1.0	1.0	1.3	2.3	1.8					10.8	$55	$ 591
	Unscheduled maintenance													0.0	$55	$ -
	Vandalism													0.0	$55	$ -
	Acts of God													0.0	$55	$ -
	Landscape Maintenance Contractor													0.0	$0	$ -
	Sediment Removal Contractor													0.0	$0	$ -
	Other Contractor													0.0	$0	$ -
	Other Contractor													0.0	$0	$ -
	Other Contractor													0.0	$0	$ -
	Monthly Subtotal (hours)	1.3	0.5	1.8	1.0	1.0	1.3	2.3	1.8	0.0	0.0	0.0	0.0	10.8		
	Monthly Subtotal ($)	$69	$28	$96	$55	$55	$69	$124	$96	$0	$0	$0	$0	$591		
														Task Subtotal =		$591
	Vector Control															
	Contract & General administration	0.1	0.1	0.1	0.1									0.4	$120	$ 48
	Vector prevention maint. (consultant)													0.0	$65	$ -
	Response to VCD calls (consultant)													0.0	$55	$ -
	VCD efforts (contracted)	0.9			0.8	0.5	0.7							2.9	$46	$ 133
	Monthly Subtotal (hours)	1.0	0.1	0.1	0.9	0.5	0.7	0.0	0.0	0.0	0.0	0.0	0.0	3.3		
	Monthly Subtotal ($)	$55	$12	$12	$48	$23	$30	$0	$0	$0	$0	$0	$0	$181		
														Task Subtotal =		$181
Non-Recurring Equipment (hours)	***Equipment***															
	Piece of Equipment 1													0.0	$0	$ -
	Piece of Equipment 2													0.0	$0	$ -
	Piece of Equipment 3													0.0	$0	$ -
	Piece of Equipment 4													0.0	$0	$ -
	Piece of Equipment 5													0.0	$0	$ -
	Piece of Equipment 6													0.0	$0	$ -
	Monthly Subtotal (hours)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
	Monthly Subtotal ($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0		
														Equipment Subtotal =		$0
Dollars ($)	***Direct Costs***													Total $		
	VCD supplies (direct costs less labor)													$ -		
	Reproduction	$ 1	$ 1	$ 1	$ 1									$ 3		
	Postage/FedEx	$ 2	$ 2	$ 3	$ 2	$ 2	$ 6		$ 14	$ 0.5	$ 0.3	$ 2		$ 33		
	Lodging	$ 11		$ 10	$ 11	$ 9			$ 2					$ 43		
	Per Diem	$ 5		$ 5	$ 5	$ 5			$ 0.4					$ 20		
	Incidentals	$ 9	$ 34	$ 1	$ 1									$ 44		
	Vehicle Rental/Lease	$ 23	$ 19	$ 20	$ 36	$ 32	$ 27	$ 12	$ 52					$ 221		
	Airfare													$ -		
	Field Supp./Expendables	$ 4	$ 1	$ 4	$ 1	$ 1	$ 3	$ 11	$ 3					$ 29		
	Equipment Rental													$ -		
	Sediment Analyses													$ -		
	Sediment Disposal													$ -		
	Fossil Filter Adsorbent Material ($15/repl)													$ -		
	Vegetation Disposal													$ -		
	Storage Container													$ -		
	Monthly Subtotal	$ 55	$ 57	$ 44	$ 56	$ 48	$ 36	$ 23	$ 72	$ 0	$ 0	$ 2	$ -	$ 393		
	MONTHLY TOTAL	$1,021	$742	$1,227	$1,123	$713	$1,183	$1,167	$680	$210	$220	$359	$0	**2000/2001 TOT**		**$8,647**

BMP Retrofit Pilot Program
Maintenance Operation
Cost Accounting Summary, 2000-01

DISTRICT: 7	LOCATION: I-605/SR-91 Interchange	SITE NO. 73222a	BMP TYPE: Biofiltration Strip	CONSULTANT: Mongomery Watson/LAW Crandall

	TASK	2000			2001									Total (hrs)	Avg. Rate	TOTAL $
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep			
Labor (hours)	***Administration***															
	General program support/Follow-up	3.5	8.9	7.7	3.1	7.4	8.7	14.8	3.7	9.0	6.7	3.0	3.8	80.4	$120	$ 9,652
	Encroachment Permits													0.0	$87	$ -
	Travel	2.3	5.3	3.5	1.7	12.3	1.9	14.2	1.9	3.9	6.8		0.9	54.6	$87	$ 4,746
	Unscheduled events													0.0	$87	$ -
	Monthly Subtotal (hours)	5.8	14.2	11.2	4.8	19.7	10.6	29.0	5.6	12.9	13.5	3.0	4.7	135.0		
	Monthly Subtotal ($)	$623	$1,526	$1,225	$521	$1,962	$1,211	$3,011	$609	$1,421	$1,396	$358	$535	$14,397		
														Task Subtotal =		$14,397
	Operation															
	Wet season inspections	1.0	1.1	1.0	1.0	1.1	1.3	0.8						7.3	$55	$ 403
	Dry season inspections								0.8	0.5			0.5	1.8	$55	$ 101
	Unscheduled inspections/field calls													0.0	$60	$ -
	Monthly Subtotal (hours)	1.0	1.1	1.0	1.0	1.1	1.3	0.8	0.8	0.5	0.0	0.0	0.5	9.2		
	Monthly Subtotal ($)	$55	$59	$55	$55	$59	$73	$46	$43	$30	$0	$0	$28	$503		
														Task Subtotal =		$503
	Maintenance															
	Scheduled maintenance		2.8	3.0		33.3		92.8		7.0	10.0			148.8	$55	$ 8,181
	Unscheduled maintenance	2.0	9.8											11.8	$55	$ 646
	Vandalism													0.0	$55	$ -
	Acts of God													0.0	$55	$ -
	Landscape Maintenance Contractor													0.0	$0	$ -
	Sediment Removal Contractor													0.0	$0	$ -
	Vegetation Consultant													0.0	$75	$ -
	Other Contractor													0.0	$0	$ -
	Other Contractor													0.0	$0	$ -
	Monthly Subtotal (hours)	2.0	12.5	3.0	0.0	33.3	0.0	92.8	0.0	7.0	10.0	0.0	0.0	160.5		
	Monthly Subtotal ($)	$110	$688	$165	$0	$1,829	$0	$5,101	$0	$385	$550	$0	$0	$8,828		
														Task Subtotal =		$8,828
	Vector Control															
	Contract & General administration	0.1	0.1	0.1	0.1									0.4	$120	$ 48
	Vector prevention maint. (consultant)													0.0	$65	$ -
	Response to VCD calls (consultant)													0.0	$55	$ -
	VCD efforts (contracted)	3.3	3.1	2.7	2.0	2.0	1.8	2.1	1.7	2.2	1.7	1.9	2.4	26.8	$46	$ 1,244
	Monthly Subtotal (hours)	3.4	3.2	2.8	2.1	2.0	1.8	2.1	1.7	2.2	1.7	1.9	2.4	27.2		
	Monthly Subtotal ($)	$166	$157	$139	$104	$91	$82	$97	$80	$103	$78	$87	$110	$1,292		
														Task Subtotal =		$1,292
Non-Recurring Equipment (hours)	***Equipment***															
	Traffic cones & signs		3.8											3.8	$28	$ 105
	Weedwacker					8.0								8.0	$5	$ 40
	Piece of Equipment 3													0.0	$0	$ -
	Piece of Equipment 4													0.0	$0	$ -
	Piece of Equipment 5													0.0	$0	$ -
	Piece of Equipment 6													0.0	$0	$ -
	Piece of Equipment 7													0.0	$0	$ -
	Piece of Equipment 8													0.0	$0	$ -
	Monthly Subtotal (hours)	0.0	3.8	0.0	0.0	8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.8		
	Monthly Subtotal ($)	$0	$105	$0	$0	$40	$0	$0	$0	$0	$0	$0	$0	$145		
														Equipment Subtotal =		$145
Dollars ($)	***Direct Costs***													Total $		
	VCD supplies (direct costs less labor)													$ -		
	Reproduction	$ 1	$ 1	$ 1	$ 1									$ 3		
	Postage/FedEx	$ 2	$ 2	$ 3	$ 2	$ 2	$ 6		$ 14	$ 0.5	$ 0.3	$ 2		$ 33		
	Lodging	$ 11		$ 10	$ 11	$ 9			$ 2					$ 43		
	Per Diem	$ 5		$ 5	$ 5	$ 5			$ 0.4					$ 20		
	Incidentals	$ 9	$ 34	$ 1	$ 1									$ 44		
	Vehicle Rental/Lease	$ 16	$ 43	$ 16	$ 13	$ 128	$ 16	$ 66	$ 52	$ 69	$ 329		$ 6	$ 756		
	Airfare													$ -		
	Field Supp./Expendables	$ 4	$ 195	$ 4	$ 1	$ 1	$ 3	$ 11	$ 3	$ 5				$ 228		
	Equipment Rental													$ -		
	Sediment Analyses													$ -		
	Sediment Disposal													$ -		
	Weed Wacker													$ -		
	Vegetation Disposal													$ -		
	Scarifying/Hydroseeding													$ -		
	Monthly Subtotal	$ 48	$ 276	$ 40	$ 33	$ 145	$ 25	$ 77	$ 72	$ 75	$ 329	$ 2	$ 6	$ 1,128		
	MONTHLY TOTAL	$1,003	$2,811	$1,624	$713	$4,125	$1,391	$8,331	$805	$2,013	$2,353	$446	$678	**2000/2001 TOTAL**		**$26,293**

BMP Retrofit Pilot Program
Maintenance Operation
Cost Accounting Summary, 2000-01

DISTRICT: 7	LOCATION: I-605/SR-91 Interchange	SITE NO. 73222b	BMP TYPE: Biofiltration Swale	CONSULTANT: Mongomery Watson/LAW Crandall

	TASK	2000			2001									Total (hrs)	Avg. Rate	TOTAL $
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep			
Labor (hours)	***Administration***															
	General program support/Follow-up	3.5	7.7	7.7	3.1	7.4	8.7	14.8	3.7	9.0	6.7	3.0	3.8	79.2	$120	$ 9,503
	Encroachment Permits													0.0	$87	$ -
	Travel	1.2	5.3	3.5	4.3	7.6	3.7	5.2	3.7	2.4	4.1		0.9	41.7	$87	$ 3,627
	Unscheduled events													0.0	$87	$ -
	Monthly Subtotal (hours)	4.7	12.9	11.2	7.4	15.0	12.5	20.0	7.5	11.4	10.8	3.0	4.7	120.9		
	Monthly Subtotal ($)	$523	$1,377	$1,225	$747	$1,550	$1,372	$2,228	$772	$1,284	$1,159	$358	$535	$13,130		
														Task Subtotal =		$13,130
	Operation															
	Wet season inspections	1.0	1.1	1.0	1.0	1.1	1.3	0.8						7.3	$55	$ 403
	Dry season inspections								0.8	0.5			0.5	1.8	$55	$ 101
	Unscheduled inspections/field calls													0.0	$60	$ -
	Monthly Subtotal (hours)	1.0	1.1	1.0	1.0	1.1	1.3	0.8	0.8	0.5	0.0	0.0	0.5	9.2		
	Monthly Subtotal ($)	$55	$59	$55	$55	$59	$73	$46	$43	$30	$0	$0	$28	$503		
														Task Subtotal =		$503
	Maintenance															
	Scheduled maintenance		3.5	2.0	12.0	15.0	2.5	18.0	1.0	2.0	8.8			64.8	$55	$ 3,561
	Unscheduled maintenance													0.0	$55	$ -
	Vandalism													0.0	$55	$ -
	Acts of God													0.0	$55	$ -
	Landscape Maintenance Contractor													0.0	$0	$ -
	Sediment Removal Contractor													0.0	$0	$ -
	Vegetation Consultant													0.0	$75	$ -
	Other Contractor													0.0	$0	$ -
	Other Contractor													0.0	$0	$ -
	Monthly Subtotal (hours)	0.0	3.5	2.0	12.0	15.0	2.5	18.0	1.0	2.0	8.8	0.0	0.0	64.8		
	Monthly Subtotal ($)	$0	$193	$110	$660	$825	$138	$990	$55	$110	$481	$0	$0	$3,561		
														Task Subtotal =		$3,561
	Vector Control															
	Contract & General administration	0.1	0.1	0.1	0.1									0.4	$120	$ 48
	Vector prevention maint. (consultant)													0.0	$65	$ -
	Response to VCD calls (consultant)													0.0	$55	$ -
	VCD efforts (contracted)	3.3	3.1	2.7	2.0	2.0	1.8	2.1	1.7	2.2	1.7	1.9	2.4	26.8	$46	$ 1,244
	Monthly Subtotal (hours)	3.4	3.2	2.8	2.1	2.0	1.8	2.1	1.7	2.2	1.7	1.9	2.4	27.2		
	Monthly Subtotal ($)	$166	$157	$139	$104	$91	$82	$97	$80	$103	$78	$87	$110	$1,292		
														Task Subtotal =		$1,292
Non-Recurring Equipment (hours)	***Equipment***															
	Weedwacker				7.0									7.0	$5	$ 35
	Piece of Equipment 2													0.0	$0	$ -
	Piece of Equipment 3													0.0	$0	$ -
	Piece of Equipment 4													0.0	$0	$ -
	Piece of Equipment 5													0.0	$0	$ -
	Piece of Equipment 6													0.0	$0	$ -
	Piece of Equipment 7													0.0	$0	$ -
	Piece of Equipment 8													0.0	$0	$ -
	Monthly Subtotal (hours)	0.0	0.0	0.0	7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0		
	Monthly Subtotal ($)	$0	$0	$0	$35	$0	$0	$0	$0	$0	$0	$0	$0	$35		
														Equipment Subtotal =		$35
Dollars ($)	***Direct Costs***													Total $		
	VCD supplies (direct costs less labor)													$ -		
	Reproduction	$ 1	$ 1	$ 1	$ 1									$ 3		
	Postage/FedEx	$ 2	$ 2	$ 3	$ 2	$ 2	$ 6		$ 14	$ 0.5	$ 0.3	$ 2		$ 33		
	Lodging	$ 11		$ 10	$ 11	$ 9			$ 2					$ 43		
	Per Diem	$ 5		$ 5	$ 5	$ 5			$ 0.4					$ 20		
	Incidentals	$ 9	$ 34	$ 1	$ 1									$ 44		
	Vehicle Rental/Lease	$ 8	$ 43	$ 16	$ 34	$ 79	$ 33	$ 24	$ 105	$ 41	$ 197		$ 6	$ 586		
	Airfare													$ -		
	Field Supp./Expendables	$ 4	$ 1	$ 4	$ 1	$ 1	$ 3	$ 11	$ 3	$ 5				$ 34		
	Equipment Rental													$ -		
	Sediment Analyses													$ -		
	Sediment Disposal													$ -		
	Weed Wacker													$ -		
	Vegetation Disposal													$ -		
	Scarifying/Hydroseeding													$ -		
	Monthly Subtotal	$ 40	$ 82	$ 40	$ 53	$ 95	$ 41	$ 35	$ 124	$ 47	$ 198	$ 2	$ 6	$ 764		
	MONTHLY TOTAL	$785	$1,869	$1,569	$1,654	$2,620	$1,705	$3,395	$1,075	$1,574	$1,916	$446	$678	**2000/2001 TOTA**		**$19,286**

BMP Retrofit Pilot Program
Maintenance Operation
Cost Accounting Summary, 2000-01

DISTRICT: 7	LOCATION: Cerritos Maintenance Station	SITE NO. 73223	BMP TYPE: Biofiltration Swale	CONSULTANT: Mongomery Watson/LAW Crandall

	TASK	2000			2001									Total (hrs)	Avg. Rate	TOTAL $
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep			
Labor (hours)	***Administration***															
	General program support/Follow-up	3.5	12.7	7.7	3.1	7.4	8.7	14.8	3.7	9.0	6.7	3.0	3.8	84.2	$120	$ 10,100
	Encroachment Permits													0.0	$87	$ -
	Travel	2.3	7.5	3.5	1.7	10.4	7.4	5.2	3.7	3.1			0.9	45.8	$87	$ 3,982
	Unscheduled events													0.0	$87	$ -
	Monthly Subtotal (hours)	5.8	20.2	11.2	4.8	17.8	16.2	20.0	7.5	12.1	6.7	3.0	4.7	129.9		
	Monthly Subtotal ($)	$623	$2,171	$1,225	$521	$1,797	$1,695	$2,228	$772	$1,353	$804	$358	$535	$14,082		
														Task Subtotal =		$14,082
	Operation															
	Wet season inspections	1.0	1.1	1.0	1.0	1.1	1.3	0.8						7.3	$55	$ 403
	Dry season inspections								0.8	0.5			0.5	1.8	$55	$ 101
	Unscheduled inspections/field calls						0.5							0.5	$60	$ 30
	Monthly Subtotal (hours)	1.0	1.1	1.0	1.0	1.1	1.8	0.8	0.8	0.5	0.0	0.0	0.5	9.7		
	Monthly Subtotal ($)	$55	$59	$55	$55	$59	$103	$46	$43	$30	$0	$0	$28	$533		
														Task Subtotal =		$533
	Maintenance															
	Scheduled maintenance	1.3	26.5	1.0		14.3	13.5	10.5	1.0	2.0				70.0	$55	$ 3,850
	Unscheduled maintenance													0.0	$55	$ -
	Vandalism													0.0	$55	$ -
	Acts of God													0.0	$55	$ -
	Landscape Maintenance Contractor													0.0	$0	$ -
	Sediment Removal Contractor													0.0	$0	$ -
	Vegetation Consultant													0.0	$75	$ -
	Other Contractor													0.0	$0	$ -
	Other Contractor													0.0	$0	$ -
	Monthly Subtotal (hours)	1.3	26.5	1.0	0.0	14.3	13.5	10.5	1.0	2.0	0.0	0.0	0.0	70.0		
	Monthly Subtotal ($)	$69	$1,458	$55	$0	$784	$743	$578	$55	$110	$0	$0	$0	$3,850		
														Task Subtotal =		$3,850
	Vector Control															
	Contract & General administration	0.1	0.1	0.1	0.1									0.4	$120	$ 48
	Vector prevention maint. (consultant)													0.0	$65	$ -
	Response to VCD calls (consultant)													0.0	$55	$ -
	VCD efforts (contracted)	6.5	5.8	5.0	3.6	3.4	3.3	3.8	3.2	4.1	3.1	3.5	4.3	49.4	$46	$ 2,295
	Monthly Subtotal (hours)	6.6	5.9	5.1	3.7	3.4	3.3	3.8	3.2	4.1	3.1	3.5	4.3	49.8		
	Monthly Subtotal ($)	$312	$280	$244	$178	$156	$151	$177	$150	$192	$143	$162	$200	$2,343		
														Task Subtotal =		$2,343
Non-Recurring Equipment (hours)	***Equipment***															
	Weedwacker					2.5								2.5	$5	$ 13
	Piece of Equipment 2													0.0	$0	$ -
	Piece of Equipment 3													0.0	$0	$ -
	Piece of Equipment 4													0.0	$0	$ -
	Piece of Equipment 5													0.0	$0	$ -
	Piece of Equipment 6													0.0	$0	$ -
	Piece of Equipment 7													0.0	$0	$ -
	Piece of Equipment 8													0.0	$0	$ -
	Piece of Equipment 9													0.0	$0	$ -
	Piece of Equipment 10													0.0	$0	$ -
	Piece of Equipment 11													0.0	$0	$ -
	Monthly Subtotal (hours)	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5		
	Monthly Subtotal ($)	$0	$0	$0	$0	$13	$0	$0	$0	$0	$0	$0	$0	$13		
														Equipment Subtotal =		$13
Dollars ($)	***Direct Costs***													Total $		
	VCD supplies (direct costs less labor)													$ -		
	Reproduction	$ 1	$ 1	$ 1	$ 1									$ 3		
	Postage/FedEx	$ 2	$ 2	$ 3	$ 2	$ 2	$ 6		$ 14	$ 0.5	$ 0.3	$ 2		$ 33		
	Lodging	$ 11		$ 10	$ 11	$ 9			$ 2					$ 43		
	Per Diem	$ 5		$ 5	$ 5	$ 5			$ 0.4					$ 20		
	Incidentals	$ 9	$ 34	$ 1	$ 1									$ 44		
	Vehicle Rental/Lease	$ 16	$ 62	$ 16	$ 13	$ 109	$ 66	$ 24	$ 105	$ 55			$ 6	$ 472		
	Airfare													$ -		
	Field Supp./Expendables	$ 4	$ 1	$ 4	$ 1	$ 1	$ 3	$ 11	$ 3	$ 5				$ 34		
	Equipment Rental													$ -		
	Sediment Analyses													$ -		
	Sediment Disposal													$ -		
	Weed Wacker													$ -		
	Vegetation Disposal													$ -		
	Scarifying/Hydroseeding/Reseeding	$ 203												$ 203		
	Monthly Subtotal	$ 251	$ 101	$ 40	$ 33	$ 125	$ 74	$ 35	$ 124	$ 61	$ 0	$ 2	$ 6	$ 852		
	MONTHLY TOTAL	$1,310	$4,068	$1,619	$787	$2,934	$2,766	$3,062	$1,144	$1,745	$947	$521	$769	**2000/2001 TOTAL**		**$21,673**

BMP Retrofit Pilot Program
Maintenance Operation
Cost Accounting Summary, 2000-01

DISTRICT: 7	LOCATION: I-5/I-605	SITE NO. 73224	BMP TYPE: Biofiltration Swale	CONSULTANT: Montgomery Watson/LAW Crandall

	TASK	2000			2001									Total (hrs)	Avg. Rate	TOTAL $
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep			
Labor (hours)	***Administration***															
	General program support/Follow-up	3.5	7.7	7.7	3.1	7.4	8.7	14.8	3.7	9.0	6.7	3.0	3.8	79.2	$120	$ 9,503
	Encroachment Permits													0.0	$87	$ -
	Travel	1.2	4.5	3.5	1.7	12.3	3.7	5.8	3.7	4.7	5.4		0.9	47.4	$87	$ 4,127
	Unscheduled events													0.0	$87	$ -
	Monthly Subtotal (hours)	4.7	12.2	11.2	4.8	19.7	12.5	20.6	7.5	13.7	12.1	3.0	4.7	126.6		
	Monthly Subtotal ($)	$523	$1,312	$1,225	$521	$1,962	$1,372	$2,283	$772	$1,490	$1,277	$358	$535	$13,630		
														Task Subtotal =		$13,630
	Operation															
	Wet season inspections	1.0	1.1	1.0	1.0	1.1	1.3	0.8						7.3	$55	$ 403
	Dry season inspections								0.8	0.5			0.5	1.8	$55	$ 101
	Unscheduled inspections/field calls													0.0	$60	$ -
	Monthly Subtotal (hours)	1.0	1.1	1.0	1.0	1.1	1.3	0.8	0.8	0.5	0.0	0.0	0.5	9.2		
	Monthly Subtotal ($)	$55	$59	$55	$55	$59	$73	$46	$43	$30	$0	$0	$28	$503		
														Task Subtotal =		$503
	Maintenance															
	Scheduled maintenance		2.0	2.0		20.5	2.5	23.8	1.0	5.5	5.5			62.8	$55	$ 3,451
	Unscheduled maintenance													0.0	$55	$ -
	Vandalism													0.0	$55	$ -
	Acts of God													0.0	$55	$ -
	Landscape Maintenance Contractor													0.0	$0	$ -
	Sediment Removal Contractor													0.0	$0	$ -
	Vegetation Consultant													0.0	$75	$ -
	Other Contractor													0.0	$0	$ -
	Other Contractor													0.0	$0	$ -
	Monthly Subtotal (hours)	0.0	2.0	2.0	0.0	20.5	2.5	23.8	1.0	5.5	5.5	0.0	0.0	62.8		
	Monthly Subtotal ($)	$0	$110	$110	$0	$1,128	$138	$1,306	$55	$303	$303	$0	$0	$3,451		
														Task Subtotal =		$3,451
	Vector Control															
	Contract & General administration	0.1	0.1	0.1	0.1									0.4	$120	$ 48
	Vector prevention maint. (consultant)													0.0	$65	$ -
	Response to VCD calls (consultant)													0.0	$55	$ -
	VCD efforts (contracted)	6.4	5.9	5.1	3.5	3.4	3.2	3.9	3.2	4.1	2.9	3.5	4.4	49.6	$46	$ 2,302
	Monthly Subtotal (hours)	6.5	6.0	5.2	3.6	3.4	3.2	3.9	3.2	4.1	2.9	3.5	4.4	50.0		
	Monthly Subtotal ($)	$307	$288	$250	$173	$160	$149	$182	$150	$192	$136	$162	$202	$2,350		
														Task Subtotal =		$2,350
Non-Recurring Equipment (hours)	***Equipment***															
	Weedwacker					9.0					1.3			10.3	$5	$ 51
	20" Push Lawnmower										1.5			1.5	$9	$ 14
	Piece of Equipment 3													0.0	$0	$ -
	Piece of Equipment 4													0.0	$0	$ -
	Piece of Equipment 5													0.0	$0	$ -
	Piece of Equipment 6													0.0	$0	$ -
	Piece of Equipment 7													0.0	$0	$ -
	Piece of Equipment 8													0.0	$0	$ -
	Monthly Subtotal (hours)	0.0	0.0	0.0	0.0	9.0	0.0	0.0	0.0	0.0	2.8	0.0	0.0	11.8		
	Monthly Subtotal ($)	$0	$0	$0	$0	$45	$0	$0	$0	$0	$20	$0	$0	$65		
														Equipment Subtotal =		$65
Dollars ($)	***Direct Costs***													Total $		
	VCD supplies (direct costs less labor)													$ -		
	Reproduction	$ 1	$ 1	$ 1	$ 1									$ 3		
	Postage/FedEx	$ 2	$ 2	$ 3	$ 2	$ 2	$ 6		$ 14	$ 0.5	$ 0.3	$ 2		$ 33		
	Lodging	$ 11		$ 10	$ 11	$ 9			$ 2					$ 43		
	Per Diem	$ 5		$ 5	$ 5	$ 5			$ 0.4					$ 20		
	Incidentals	$ 9	$ 34	$ 1	$ 1									$ 44		
	Vehicle Rental/Lease	$ 8	$ 37	$ 16	$ 13	$ 128	$ 33	$ 27	$ 105	$ 83	$ 263		$ 6	$ 719		
	Airfare													$ -		
	Field Supp./Expendables	$ 4	$ 1	$ 4	$ 1	$ 1	$ 3	$ 11	$ 3	$ 5				$ 34		
	Equipment Rental													$ -		
	Sediment Analyses													$ -		
	Sediment Disposal													$ -		
	Weed Wacker													$ -		
	Vegetation Disposal													$ -		
	Scarifying/Hydroseeding													$ -		
	Monthly Subtotal	$ 40	$ 76	$ 40	$ 33	$ 145	$ 41	$ 38	$ 124	$ 88	$ 264	$ 2	$ 6	$ 897		
	MONTHLY TOTAL	$925	$1,845	$1,680	$782	$3,498	$1,773	$3,855	$1,144	$2,102	$1,999	$521	$771	**2000/2001 TOTAI**		**$20,896**

BMP Retrofit Pilot Program
Maintenance Operation
Cost Accounting Summary, 2000-01

DISTRICT: 7	LOCATION: I-605/Carson & Del Amo Avenue	SITE NO. 73255	BMP TYPE: Biofiltration Swale	CONSULTANT: Montgomery Watson/LAW Crandall

	TASK	2000			2001									Total (hrs)	Avg. Rate	TOTAL $
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep			
Labor (hours)	***Administration***															
	General program support/Follow-up	3.5	7.7	7.7	3.1	7.4	8.7	14.8	3.7	9.0	6.7	3.0	3.8	79.2	$120	$ 9,503
	Encroachment Permits													0.0	$87	$ -
	Travel	1.2	3.0	5.2	1.7	5.7	0.9	3.9	2.8	3.1			0.9	28.4	$87	$ 2,472
	Unscheduled events													0.0	$87	$ -
	Monthly Subtotal (hours)	4.7	10.7	12.9	4.8	13.1	9.7	18.7	6.5	12.1	6.7	3.0	4.7	107.6		
	Monthly Subtotal ($)	$523	$1,181	$1,377	$521	$1,386	$1,130	$2,115	$690	$1,353	$804	$358	$535	$11,974		
														Task Subtotal =		$11,974
	Operation															
	Wet season inspections	1.0	1.1	1.0	1.0	1.1	1.3	0.8						7.3	$55	$ 403
	Dry season inspections								0.8	0.5			0.5	1.8	$55	$ 101
	Unscheduled inspections/field calls													0.0	$60	$ -
	Monthly Subtotal (hours)	1.0	1.1	1.0	1.0	1.1	1.3	0.8	0.8	0.5	0.0	0.0	0.5	9.2		
	Monthly Subtotal ($)	$55	$59	$55	$55	$59	$73	$46	$43	$30	$0	$0	$28	$503		
														Task Subtotal =		$503
	Maintenance															
	Scheduled maintenance		2.0	6.0		11.8		5.0	0.8	3.0				28.5	$55	$ 1,568
	Unscheduled maintenance													0.0	$55	$ -
	Vandalism													0.0	$55	$ -
	Acts of God													0.0	$55	$ -
	Landscape Maintenance Contractor													0.0	$0	$ -
	Sediment Removal Contractor													0.0	$0	$ -
	Vegetation Consultant													0.0	$75	$ -
	Other Contractor													0.0	$0	$ -
	Other Contractor													0.0	$0	$ -
	Monthly Subtotal (hours)	0.0	2.0	6.0	0.0	11.8	0.0	5.0	0.8	3.0	0.0	0.0	0.0	28.5		
	Monthly Subtotal ($)	$0	$110	$330	$0	$646	$0	$275	$41	$165	$0	$0	$0	$1,568		
														Task Subtotal =		$1,568
	Vector Control															
	Contract & General administration	0.1	0.1	0.1	0.1									0.4	$120	$ 48
	Vector prevention maint. (consultant)													0.0	$65	$ -
	Response to VCD calls (consultant)													0.0	$55	$ -
	VCD efforts (contracted)	6.6	6.0	5.4	3.7	3.5	3.5	4.2	3.5	4.4	3.3	3.7	4.7	52.5	$46	$ 2,439
	Monthly Subtotal (hours)	6.7	6.1	5.5	3.8	3.5	3.5	4.2	3.5	4.4	3.3	3.7	4.7	52.9		
	Monthly Subtotal ($)	$318	$289	$261	$185	$164	$163	$193	$162	$206	$154	$174	$218	$2,487		
														Task Subtotal =		$2,487
Non-Recurring Equipment (hours)	***Equipment***															
	Weedwacker					3.0								3.0	$5	$ 15
	Piece of Equipment 2													0.0	$0	$ -
	Piece of Equipment 3													0.0	$0	$ -
	Piece of Equipment 4													0.0	$0	$ -
	Piece of Equipment 5													0.0	$0	$ -
	Piece of Equipment 6													0.0	$0	$ -
	Piece of Equipment 7													0.0	$0	$ -
	Monthly Subtotal (hours)	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0		
	Monthly Subtotal ($)	$0	$0	$0	$0	$15	$0	$0	$0	$0	$0	$0	$0	$15		
														Equipment Subtotal =		$15
Dollars ($)	***Direct Costs***													Total $		
	VCD supplies (direct costs less labor)													$ -		
	Reproduction	$ 1	$ 1	$ 1	$ 1									$ 3		
	Postage/FedEx	$ 2	$ 2	$ 3	$ 2	$ 2	$ 6		$ 14	$ 0.5	$ 0.3	$ 2		$ 33		
	Lodging	$ 11		$ 10	$ 11	$ 9			$ 2					$ 43		
	Per Diem	$ 5		$ 5	$ 5	$ 5			$ 0.4					$ 20		
	Incidentals	$ 9	$ 34	$ 1	$ 1									$ 44		
	Vehicle Rental/Lease	$ 8	$ 25	$ 24	$ 13	$ 59	$ 8	$ 18	$ 78	$ 55			$ 6	$ 295		
	Airfare													$ -		
	Field Supp./Expendables	$ 4	$ 1	$ 4	$ 1	$ 1	$ 3	$ 11	$ 3	$ 5				$ 34		
	Equipment Rental													$ -		
	Sediment Analyses													$ -		
	Sediment Disposal													$ -		
	Weed Wacker													$ -		
	Vegetation Disposal													$ -		
	Scarifying/Hydroseeding													$ -		
	Monthly Subtotal	$ 40	$ 63	$ 48	$ 33	$ 76	$ 17	$ 29	$ 98	$ 61	$ 0	$ 2	$ 6	$ 473		
	MONTHLY TOTAL	$936	$1,703	$2,072	$794	$2,345	$1,383	$2,658	$1,035	$1,815	$959	$533	$787	**2000/2001 TOTA**		**$17,020**