Capacity Analysis of Sonoma County Water Agency Wohler Radial Collector Wells 1, 2, and 6

Santa Rosa, California

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SONOMA COUNTY WATER AGENCY

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Sonoma County Water Agency

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Santa Rosa, California

February 2010

Project No. 0090596

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LIST OF ACRONYMS

Brechtel	Brechtel Radial Collector Wells, LLC
CWI	Collector Wells International, Inc.
DO	Dissolved Oxygen
ERM	Environmental Resources Management
gpd/ft	gallons per day per foot
gpm	gallons per minute
gpm/ft	gallons per minute per foot of drawdown
gpm/lft	gallons per minute per linear foot of lateral
HASPs	Health and Safety Plans
HP	Horsepower
LLDLs	Long, large diameter laterals
μmhos/cm	micromhos per centimeter
mgd	million gallons per day
mg/L	milligram per liter
NAVD 88	North American Vertical Datum of 1988
NGVD 29	National Geodetic Vertical Datum of 1929
ORP	Oxygen Reduction Potential
PVC	Polyvinyl chloride
RRWF	Russian River Well Field
SCWA	Sonoma County Water Agency
TDS	Total Dissolved Solids
UCM	Underground Construction Managers, Inc.
USGS	United States Geological Survey

EXECUTIVE SUMMARY

Sonoma County Water Agency provides water to several municipalities and water districts in Sonoma and Marin Counties. These entities include the cities of Santa Rosa, Sonoma, Cotati, Rohnert Park, and Petaluma, in addition to the Forestville Water District, Valley of the Moon Water District, North Marin Water District, and Marin Municipal Water District. The SCWA water system serves approximately 570,000 people and has a peak water production capacity in excess of 100 million gallons per day (mgd).

Environmental Resources Management (ERM) and Brechtel Radial Collector Wells, LLC (Brechtel) were contracted by the Sonoma County Water Agency (SCWA) to provide a groundwater production capacity analysis of radial collector wells located along the Russian River west of Santa Rosa, California. This report documents the field procedures, data, and results of the study.

The objectives of this project included the following:

- Document a repeatable program to test and evaluate the capacities of the SCWA collector wells on a regular basis to establish the expected lifespan and possible maintenance improvements for each collector;
- Implement this program for the first time on three collectors to demonstrate its effectiveness and document the current physical conditions and capacities of the collectors, as well as compare current capacities to estimated past capacities; and
- Assist the Agency in the implementation of this program on the remaining three collector wells in 2010.

The collector wells are located along the Russian River in the Wohler area (Collectors 1, 2, and 6) and the Mirabel area nearby to the south (Collectors 3, 4, and 5). These collector wells provide the majority of SCWA's water supply, although the Agency also operates conventional vertical wells. Collectors 1 through 5 were constructed between 1959 and 1982, whereas Collector 6 was constructed in 2002 and began operation in 2006. This project was initially planned to include testing all six of SCWA's collector wells in 2008. The testing was subsequently modified to include the Wohler Collectors in 2008 and the Mirabel Collectors in 2010. This report presents an evaluation of the test results for Collectors 1, 2 and 6.

Over time, the water production capacities of Collectors 1 through 5 appear to have declined, although consistent records have not been kept. In 1998, SCWA contracted Collector Wells International, Inc. (CWI) to evaluate the magnitude and potential cause(s) of the capacity declines. This inspection concluded that the capacities of Collectors 1 through 5 had declined significantly relative to when they were first constructed. The declines were estimated to range from 24% to 77%, with the largest decrease observed in Collectors 1 and 2. Data evaluation, however, was hindered by hydraulic interferences related to the operation of nearby collectors during the testing.

Potential causes of collector capacity declines include the following:

- Clogging of the lateral well screens;
- Clogging of the aquifer adjacent to the lateral well screens;
- Compaction of the alluvial aquifer material due to long term pumping;
- Problems with the equipment in the collectors, including pumps, piping, and valves;
- Decreased recharge from the ponds and/or river due to silt/organic material build up or changes in the operation of the inflatable dam at Mirabel; and
- Regional declines in ground water levels due to changes in precipitation, river discharge, and/or ground water extraction.

SCWA initiated an effort to develop a repeatable evaluation program to better understand the magnitude, rate, and cause(s) of the loss of capacity in each collector over time. The testing included the following: pumping cessation/recovery test; visual diver inspection; lateral casing thickness measurements; constant rate pumping test; lateral video inspection; lateral flowmeter measurements; and water quality monitoring. The results were compared to previous capacity testing and will be used as a baseline for comparison to future testing. This evaluation will also be updated with the results of the testing that is planned for the Mirabel area in Fall of 2010.

The field methods were demonstrated to be effective for evaluating the conditions of the collectors, specific capacities, and flow in the laterals and the aquifer. These methods provide a valid basis for evaluating future changes in the capacities of the collectors. The field methods were also efficient, allowing for the completion of significantly more lateral inspections and flow testing than planned within the project budget. None of the tests reached steady state conditions. The results are valid for the capacity comparisons; however, longer term testing would improve estimates of yield. Table ES-1 is included at the end of this Executive Summary to present collector capacities in previous studies with the results of the evaluation documented herein.

The inspection of Collector 1 indicated that the caisson and underwater structures appear to be in good condition. The specific capacity calculated for Collector 1 at 72 hours of pumping in 2008 was 336 gpm/ft, which is 17% higher than that calculated during the 2002 evaluation (286 gpm/ft) and 63% lower than that based on the 1959 testing (914 gpm/ft). The results suggest a decline in the capacity of Collector 1 since it was constructed in 1959, but not since 2002.

The inspection of Collector 2 indicated that the caisson and underwater structures are in good condition. Collector 2 had a specific capacity of 524 gpm/ft after 72 hours of pumping, which is a 40% decline from the value obtained during initial testing in 1959 (869 gpm/ft). Short term testing in 1998 does not provide a basis for evaluating more recent capacity declines. The specific capacity results suggest a decline in the capacity of Collector 2 since it was constructed in 1959.

A preliminary conclusion of this study is that the apparent loss in capacity in Collectors 1 and 2 since 1959 is attributed in large part to lower water levels and less saturated thickness during the 2008 testing period, when compared to 1959. Aquifer compaction, differences in the timing of the 1959 test (May – river bed more scoured and better recharge) and 2008 test (November – silt and biological material buildup inhibit recharge), and the recent introduction of pumping in Collector 6 are also possible factors leading to the capacity declines.

The inspection of Collector 6 indicated that the caisson and underwater structures appear to be in good condition. The results of the testing indicates that Collector 6 has a specific capacity of 1,065 gpm/ft at 72 hours of pumping, which is comparable to the specific capacity computed from the 2002 event (1,014 gpm/ft). A specific capacity calculated for Collector 6 at 24 hours (1,310 gpm/ft) is comparable to that calculated for the 24-hour 2006 event (1,279 gpm/ft). The overall capacity of Collector 6 remains good and is comparable to that determined when the well was originally constructed.

SCWA intends to complete capacity testing in the Mirabel collectors during August and September of 2010 to establish a data set that is similar to the Wohler results. Modifications to the testing should be considered such as running longer tests, depending upon operational constraints. An operations plan for this testing will be developed in 2010 with SCWA input. The dam and ponds will require consideration in this process.

Table ES-1
Summary of Specific Capacities - Collectors 1, 2 and 6
Sonoma County Water Agency

Collector	2008 Test	2006 Test	2003 Test	2002 Test	1998 Test	1959 Test
Collector 1	336	NA	286	NA	224	914
Collector 2	524	NA	NA	NA	NA	868
Collector 6	1,066	1,280	NA	1,014	NA	NA

NOTES:
Specific capacities provided in gallons per minute per foot (gpm/ft).
NA- Not applicable
2006 test on Collector 6 included the Long Large Diameter Laterals.
2003 test on Collector 1 was post-rehabiliative efforts.
2002 test on Collector 6 included only the 12-inch diameter laterals.

1.0 INTRODUCTION

Environmental Resources Management (ERM) and Brechtel Radial Collector Wells, LLC (Brechtel) were contracted by the Sonoma County Water Agency (SCWA) to provide a capacity analysis of radial collector wells located along the Russian River west of Santa Rosa, California (Figures 1 and 2). This report documents the field procedures, data, and results of the evaluation. This project was completed in accordance with the workplan entitled *Capacity Analysis Operations Plan for Selected Sonoma County Water Agency Collector Wells* (Operations Plan) (ERM, 2008), which is provided as Appendix A.

1.1 DOCUMENT ORGANIZATION

This report is divided into the following sections:

- Section 1 – Provides the project objectives and background;
- Section 2 – Summarizes the field methods;
- Section 3 – Presents the results of the testing and evaluation of the data;
- Section 4 – Provides conclusions and recommendations; and
- Section 5 – Lists the references used in preparing this document.

Figures and tables referenced in the text are inserted after Section 6. Appendices A through I follow the tables, including:

- Appendix A – Operations Plan
- Appendix B – Water Level Monitoring Data;
- Appendix C – Collector Inspection Photographs;
- Appendix D – Collector Inspection Videos;
- Appendix E – Capacity Testing Photographs;
- Appendix F – Lateral Inspection Videos;
- Appendix G – Collector Operation and System Data;
- Appendix H – Collector 1 Capacity Evaluation Field Data;
- Appendix I - Collector 2 Capacity Evaluation Field Data; and
- Appendix J - Collector 6 Capacity Evaluation Field Data.

1.2 PROJECT OBJECTIVES

The objectives of this project included the following:

- Document a repeatable program to test and evaluate the capacities of the SCWA collector wells on a regular basis to establish the expected lifespan and possible maintenance improvements for each collector;
- Implement this program for the first time on Collectors 1, 2, and 6 to demonstrate its effectiveness and document the current physical conditions and capacities of the collectors, as well as compare current capacities to estimated past capacities; and
- Assist the Agency in the implementation of this program on the remaining three collector wells in 2010.

This project was initially planned to include testing all six of SCWA's collector wells in 2008. The testing was subsequently modified to include three wells in 2008 (Wohler Collectors 1, 2, and 6) and three wells in 2010 (Mirabel Collectors 3, 4, and 5). The approach was modified to ensure that the testing protocols would meet the project goals before all of the collectors were evaluated. This report presents a preliminary evaluation of the test results for Collectors 1, 2 and 6. A report will be prepared following the completion of tests of the Mirabel Collectors 3, 4, and 5 in the Fall of 2010. The second report will provide more detailed recommendations concerning test protocols and evaluation methods for long-term capacity monitoring.

1.3 PROJECT BACKGROUND

Sonoma County Water Agency provides water to several municipalities and water districts in Sonoma and Marin Counties. These entities include the cities of Santa Rosa, Sonoma, Cotati, Rohnert Park, and Petaluma, in addition to the Forestville Water District, Valley of the Moon Water District, North Marin Water District, and Marin Municipal Water District. The SCWA water system serves approximately 570,000 people and has an estimated peak production capacity of 112 million gallons per day (mgd).

Water production for SCWA is concentrated along the Russian River west of Santa Rosa (Figures 1 and 2). In this area, the Agency operates six radial collector wells and seven conventional vertical wells. The conventional wells are referred to as the Russian River Well Field (RRWF). SCWA also operates three conventional vertical wells along the Cotati Intertie Pipeline.

As seen in Figure 2, the collector wells are located in two areas along the Russian River. Collectors 1, 2, and 6 are on the east bank of the Russian River north of the Wohler Bridge, referred to as the Wohler area. Collectors 3, 4, and 5 are approximately one mile south on the west bank of the river, referred to as the Mirabel area (Figure 2). The ages of Collectors 1 and 2 (1959), Collectors 3 and 4 (1975), Collector 5 (1982), and Collector 6 (2006) span 40 years. The focus of this initial phase of the project is the radial collector wells in the Wohler area (Collectors 1, 2, and 6; Figure 3).

In the Mirabel area, SCWA operates an inflatable dam and four infiltration ponds (Mirabel Ponds 1 through Pond 4)(Figure 3). The dam, which was installed in the mid-1970s, is inflated during the dry portion of the year (Summer and Fall) to divert water to the ponds and raise water levels in the aquifer by increasing direct recharge from the river. Backwater from the dam extends approximately 1 mile upstream of Collector 6 near the McLaughlin Pond in Riverside Park. With the dam inflated, the total sustained capacity of the collector wells increases significantly, from approximately 50 to more than 90 mgd.

Over time, the water production capacities of Collectors 1 through 5 appear to have declined, although consistent records have not been kept. In 1998, SCWA contracted Collector Wells International, Inc. (CWI) to evaluate the magnitude and potential cause(s) of the capacity declines. The results of this study are presented in *Inspection of Collector Wells 1 and 2 at Wohler and 3, 4, and 5 at Mirabel* (CWI Report), dated November 1998. This inspection concluded that the capacities of Collectors 1 through 5 had declined significantly relative to when they were first constructed. The declines were estimated to range from 24% to 77%, with the largest decrease observed in Collectors 1 and 2. Data evaluation, however, was hindered by hydraulic interferences related to the operation of nearby collectors during the testing.

Although lacking consistent operational data over time, SCWA has continued to observe apparent decreasing performance since the 1998 inspections. Some potential causes of collector capacity declines include the following:

- Clogging of the lateral well screens;
- Clogging of the aquifer adjacent to the lateral well screens;
- Compaction of the alluvial aquifer material due to long term pumping;
- Problems with the equipment in the collectors, including pumps, piping, and valves;

- Decreased recharge from the ponds and/or river due to long term silt/organic material build up or changes in the operation of the inflatable dam; and
- Regional declines in ground water levels due to changes in precipitation, river discharge, and/or ground water extraction.

Therefore, SCWA requested the development of a repeatable evaluation program to better understand the magnitude, rate, and cause(s) of the loss of capacity in each collector over time.

1.4 COLLECTOR 1 BACKGROUND

Collector 1 is located north of Wohler Road, adjacent to the Russian River, and was constructed in 1959 by Ranney Method Western Corporation (Figure 3). The construction information presented herein was taken from the September 2003 Ranney Method report entitled *Rehabilitative Efforts Conducted on Ranney Well No. 1* (Ranney, 2003). The lateral information is summarized in Table 1 and Figure 4 contains a well diagram with a schematic of the orientation and length of each lateral.

The well consists of a 13-foot inside diameter (16-foot outside diameter) steel reinforced concrete caisson, 103.20 feet in total length, and 99.7 feet from the bottom of the top slab to the floor of the caisson. The initial well configuration consisted of nine 8-inch diameter, carbon steel laterals that ranged in length from 45 to 181 feet with a total of approximately 1,000 lineal feet of screen. The original laterals are equipped with 10-inch diameter valves and extend into the aquifer from approximately 35 to 38 inches above the caisson floor. The well is equipped with two vertical turbine pumps with 1,000 horsepower (HP) motors.

Initial performance testing following installation of Collector 1 was done together with Collector 2 and the combined flow was rated at 25.8 mgd (CWI, 1998). The CWI Report indicated that Collector 1 was pumped at a rate of 12.5 mgd (8,680 gallons per minute [gpm]) for 72 hours, with an observed drawdown in the caisson of between 9 and 10 feet. This corresponds to an apparent specific capacity of 914 gpm/foot of drawdown. It is not known whether or not stabilization was achieved by the end of the 72 hour test; however, based on the testing described in this report, it is considered unlikely.

A subsequent evaluation was completed by CWI in November 1998 and summarized in *Inspection of Collector Wells 1 and 2 at Wohler and 3, 4 and 5 at Mirabel* (CWI, 1998). Collector 1 had reportedly been operating at a rate of approximately 11.1 mgd (7,708 gpm) for 72 hours prior to conducting the inspection; however, Collector 2 was turned on several hours before the inspection, causing the rate at Collector 1 to drop to about 9.7 mgd (6,736 gm) due to changes in line pressure. This evaluation indicated a 77% decline in the apparent specific capacity of the well when compared with its initial performance testing. The report indicates that steady-state conditions had not been reached during the Collector 1 evaluation due to interference from Collector 2 and that the apparent capacity decline is estimated.

To address this decline, SCWA contracted Ranney Division of Layne Christensen Company to clean and redevelop the original laterals, line the original laterals with 6-inch diameter, 304-grade stainless steel wire wrap screen (0.150-inch slot size), and install two new 12-inch diameter laterals (10A and 11A). The work was completed between 2001 and 2002 and was documented in *Report of Ranney Well No. 1 Rehabilitative Efforts for Sonoma County Water Agency, Santa Rosa, California* (Ranney Division of Reynolds, Inc., 2005). The new laterals used 304-grade stainless steel wire wrap screen with slot sizes varying from 0.100 to 0.175-inch and were constructed approximately 90 inches above the caisson floor. The lateral information for the relined and new laterals is included in Table 1 and the new laterals are depicted on Figure 4. The old laterals were relined to address degradation of the original lateral screens, which were reportedly in poor structural condition.

Following rehabilitation, Collector 1 was pumped at a rate of approximately 20.8 mgd (14,450 gpm) for 28 hours during a 2003 post-maintenance test. Collector 2 was not operated during this test period and the dam was not inflated. Observed drawdown was reported at 47.93 feet for an apparent specific capacity of 301 gallons per minute per foot of drawdown (gpm/ft), although steady state conditions had not been reached. The data obtained during the 28-hour pump test was used to project an apparently stabilized drawdown following seven days of pumping, which was estimated to be 53 feet for an apparent specific capacity of 273 gpm/ft. The post-maintenance short-term yield of Collector 1 was estimated to be approximately 21 mgd assuming no interference from Collector 2.

1.5 COLLECTOR 2 BACKGROUND

Collector 2 is located north of Wohler Road approximately 250 feet downstream (south) of Collector 1, adjacent to the Russian River, and was constructed in 1959 by Ranney Method Western Corporation (Figure 3). The following construction information provided herein was taken from the 1998 Ranney Method report entitled *Inspection of Collector Wells 1 and 2* *at Wohler and 3, 4 and 5 at Mirabel* (CWI, 1998). The lateral information is summarized in Table 1 and Figure 5 contains a well diagram with a schematic of the orientation and length of each lateral.

The well consists of a 13-foot inside diameter (16-foot outside diameter) steel reinforced concrete caisson that is 103 feet from the floor of the pump house to the floor of the caisson. The well configuration consists of nine 8-inch diameter carbon steel laterals that range in length from 57 to 167 feet with a total of approximately 1,016 lineal feet of screen. The laterals are equipped with 10-inch diameter valves and extend into the aquifer from approximately 35 to 38 inches above the caisson floor. The well is equipped with two vertical turbine pumps with 1,000 HP motors.

The initial performance testing following installation of Collector 2 was done together with Collector 1 and the combined flow was rated at 25.8 mgd (CWI, 1998). The CWI Report indicated that Collector 2 was pumped at a rate of 12.5 mgd (8,680 gpm) for 72 hours, with an observed drawdown in the caisson reported between 9 and 11 feet. This corresponds to an apparent specific capacity of approximately 850 to 900 gpm/foot of drawdown. As was the case with Collector 1, it is not known whether or not stabilization was achieved by the end of the 72 hour test; however, based on the testing described in this report, it is considered unlikely.

A subsequent evaluation was completed by CWI in November 1998 and summarized in *Inspection of Collector Wells 1 and 2 at Wohler and 3, 4 and 5 at Mirabel* (CWI, 1998). During this evaluation, Collector 2 was inspected and reported to be in good condition. During the inspection, Collector 2 had been operated for about four hours at a pumping rate of 9.5 mgd (6,600 gpm), and water levels continued to decline following completion of the inspection. Specific capacity of the well was computed at 218 gpm/ft after 4 hours of pumping, with long-term yield estimated at 11.2 mgd (7,766 gpm) under stabilized conditions. The 1998 evaluation indicated a 77% decline in the apparent specific capacity of the well when compared with its initial performance testing. The report indicates that steady-state conditions had not been reached during the Collector 2 evaluation and pumping water levels continued to decline beyond the end of the inspection (CWI, 1998). Collector 1 was reportedly also operating during the testing of Collector 2 at a rate of approximately 9 to 10 mgd.

1.6 COLLECTOR 6 BACKGROUND

Collector 6 was constructed in 2002 approximately 2,300 feet upstream (north) of Collector 1 and approximately 400 feet south of the Russian

River (Figure 3). The construction information provided herein was taken from the report entitled *Wohler Ranney Collector Well No. 6, New Lateral Design, Installation & Capacity Testing* (Layne Christensen Company, 2002) and the 2007 Underground Construction Managers, Inc. (UCM) report entitled *Pilot Study: Installation of Long, Large Diameter Laterals* (UCM, 2007). Table 1 includes a summary of lateral construction data. Figure 6 shows a cross-section and plan view of the well.

The well consists of an 18-foot inside diameter (23.5-foot outside diameter) steel reinforced concrete caisson, 119 feet in total length from top of caisson to bottom of shoe. The initial well configuration consisted of ten 12-inch diameter, stainless steel laterals installed by traditional direct push and horizontal jacking methods, and ranged in length from 70 to 170 feet. The laterals were projected into the aquifer from approximately 34 inches above the caisson floor. Two long, large diameter laterals (LLDLs) (Laterals 12 and 15) were installed between 2001 and 2003 by jacking and drilling techniques. These 18-inch diameter laterals are constructed of API 5L-X65 steel, pipe-based screen and range in length from 350 to 375 feet. The 18-inch diameter laterals were projected into the aquifer at approximately 11.3 feet above the caisson floor. The total length of screen distributed among the twelve laterals is approximately 2,075 lineal feet.

Performance testing was conducted on Collector 6 following installation of the 12-inch diameter laterals and again following the installation of the LLDLs to determine the capacity of the well. During the initial testing in 2002, a 72-hour constant-rate test was conducted with only the 12-inch laterals open at a pumping rate of approximately 18 mgd (12,506 gpm). Drawdown in the collector after 72 hours of pumping and accounting for changes in river level was reported at 12.33 feet, corresponding to a specific capacity of 1,014 gpm/ft. The yield of Collector 6 with only the 12-inch laterals open was computed at 38.3 mgd (25,597 gpm) under stabilized conditions and favorable recharge. Collector yield during times of low flow in the river was projected to drop to between 30 and 35 mgd (20,833 and 24,306 gpm).

Joint testing of the LLDLs and conventional laterals was undertaken in 2006. With all laterals open, Collector 6 was operated at a pumping rate of 35 mgd (24,306 gpm) for approximately 24 hours, while nearby Collector Wells 1 and 2 were taken off-line. Drawdown in the well was reported at 19 feet, representing an apparent specific capacity of 1,279 gpm/ft. Data indicate stabilized conditions were not achieved during the 24 hour test.

2.0 EVALUATION PROCEDURES

The following is a summary of the scope of work completed by ERM and Brechtel to document the conditions and evaluate the capacities of Collector Wells 1, 2, and 6. These procedures were outlined in the 10 October 2008 Operations Plan, which is presented as Appendix A. Professional scuba diver services were provided by Aqua-Tech Company. In addition, Pipe Eye Video Inspection Services was contracted to provide video inspection services for the laterals.

2.1 PRE-TEST PROCEDURES

ERM and Brechtel developed a detailed scope of work to address SCWA's stated objectives for the site. This scope of work was presented in the Operations Plan, which documented the equipment, procedures, and schedule for the evaluation. This document was prepared to provide a template for a repeatable program to periodically assess the condition of the collector wells. The Operations Plan also included Health and Safety Plans (HASPs) that were developed to address the field activities completed as part of the evaluation. ERM's HASP addresses the installation of the water level data loggers and water quality testing activities. Brecthtel's HASP addresses additional activities including oversight of diver inspection of the well, videotaping and flow testing, and assisting the divers with equipment and ingress/egress to and from the well caisson. The HASPs were presented as Appendices A (ERM HASP) and B (Brechtel HASP) in the Operations Plan.

The consultant team met with representatives of SCWA and Aqua-Tech to coordinate the activities, roles, and schedules of the various tasks. The goal of this coordination was to ensure that the field work was performed safely, did not disrupt water supply operations, and resulted in proper data collection.

2.2 CAPACITY TEST PROCEDURES

The following subsections document the procedures that were implemented to complete the capacity test evaluation.

2.2.1 *Recovery Test Procedures*

A recovery test was completed at each collector well prior to capacity testing to document the recovery of ground water levels to stable or near-stable conditions. The collector wells were shut off approximately 1 week before the initiation of the constant rate test to allow for recovery. Prior to shut down, ERM installed pressure transducers with data loggers (In-Situ Mini-Troll Pro 30 psi) within the locations specified for the test, as outlined in Tables 2 (Collector 6) and 3 (Collectors 1 and 2) and shown on Figure 3. In addition, a pressure transducer was installed within the Russian River north of Collector 6 for the Collector 6 testing and adjacent to Collector 2 for the Collector 1 and 2 tests. The transducer was secured along the river bank to limit transducer movement and provided the magnitude of changes in river stage over the testing period.

As seen in Table 3, transducers were proposed for Wohler Infiltration Ponds 1 and 2 during the capacity test; however, neither pond contained water during the installation of the transducers on 9 October 2008. On 27 October 2008, water was noted in Wohler Infiltration Pond 2 following a week of non-pumping conditions in the Collector 1 and 2 area. A photo of the pond with water is included in Appendix E (Photograph 15). The pond went dry a short time after pumping was reinitiated on 27 October 2008 as part of the Collector 2 capacity testing, indicating that the water in the pond was most likely due to rising ground water resulting from the cessation of pumping in the area.

The pressure transducers were installed approximately 3 days prior to shut down to allow for background pumping water levels to be monitored. The data loggers were installed into the Collector 6 monitoring points on 2 October 2008 and into the Collectors 1 and 2 monitoring points on 9 October 2008. Data collection intervals were programmed into the data loggers following the schedules presented in Tables 2 and 3. Appendix B provides the raw water level data collected during the capacity test evaluation of the Wohler collectors.

At the completion of background monitoring and immediately prior to pump shutdown, ERM downloaded the background data, ensured that all of the data loggers were operating, and programmed the data loggers with the appropriate data collection schedule. The internal data logger clocks were synchronized with the clock of the In-Situ Rugged Reader and pump shut down was based on this clock to ensure that the initiation of the data collection and pump shutdown coincided. The pump shutdown time was coordinated between SCWA and ERM, and SCWA shutdown the pumps at the agreed upon time to start the recovery tests.

2.2.2 *Caisson Inspection and Pump Basket Installation*

To evaluate the underwater condition of each well, a professional diver entered Collectors 1, 2, and 6 to conduct a visual inspection prior to the initiation of capacity testing activities. Prior to diving in each of the collectors for inspection and testing, chlorination of the collector water was temporarily ceased as a health and safety consideration. Chlorine concentrations were increased in the other Wohler collectors during the test period to compensate for the cessation of chlorination in the collector well being evaluated. In addition, prior to entry into the collectors, the divers underwent a disinfection procedure. Visual inspections for Collectors 6, 2, 1 were completed on 7 October 2008, 22 October 2008, and 31 October 2008, respectively. The items that were inspected included but were not limited to the bottom floor and interior walls of the caisson, pump intakes, gate valves, and stem riser assemblies, if present. The diver numbered each lateral using a temporary identification tag attached to each gate valve for identification purposes during the inspection and testing. The conditions of the collector wells were documented with still photographs and video. The photographs are provided in Appendix C and the inspection videos are provided as Appendix D.

During the inspection dives, temporary wire pump baskets were installed over the pump intakes. This precaution was undertaken to ensure a safe working environment for the divers during subsequent underwater activities. During the inspection of Collector 6, it was found that the laterals contained 2-inch diameter PVC pipe as part of the lateral sampling system. Photographs of the pipes are provided in Appendix C. Before the video inspection and lateral flow evaluation could be completed in this collector, the PVC pipes in each of the laterals to be evaluated were cut prior to the lateral inspection. The PVC pipes were reattached with a coupler after the evaluation so that the pipes can be easily removed for subsequent collector evaluations.

2.2.3 *Lateral Structural Integrity Determination*

A Cygnus 1 underwater ultrasonic digital thickness gauge was used by the diver to estimate the wall thickness of each of the lateral screens in Collectors 1, 2, and 6. The gauge was calibrated on 8 August 2008 and the manufacturer's accuracy of the gauge is specified as $\pm$ 0.005 inches. This evaluation was completed as part of the pre-capacity test inspection in Collectors 1 and 2 and, in Collector 6, as part of post-capacity testing work. The diver inserted the gauge into the section of the lateral nearest the caisson and obtained thickness measurements at the 12:00, 3:00, and 9:00 positions within the lateral. Thickness data was relayed topside and recorded. The data is presented in tables in subsequent sections.

2.2.4 *Constant Rate Capacity Test*

To evaluate capacity, Collector Wells 1, 2, and 6 were separately pumped continuously for a period of approximately 5 days. The Collector 6 test was completed during the week of 13 October 2008; Collector 2 was tested during the week of 27 October 2008; and Collector 1 testing was completed during the week of 10 November 2008.

Following the recovery period and prior to the initiation of pumping, the background data was downloaded from the data loggers and the data loggers were reprogrammed with the appropriate collection schedule for the pump startup. At the completion of the data logger activities, the collector well undergoing testing was placed back on-line at a controlled pumping rate roughly comparable to typical operating conditions. Start-up of each collector was monitored by ERM and Brechtel personnel. Periodic measurements of water levels within the collector and site monitoring wells were taken by ERM and Brechtel personnel using an electric tape accurate to within 0.01 foot. Appendix B provides the raw water level data collected during the capacity testing.

During the evaluation period, SCWA maintained a constant pumping rate from the operating collector wells within the Wohler area. Daily records of pumping rates, water level, and production were maintained by SCWA personnel on each collector during the duration of the project. In addition, river stage data was obtained from the United States Geological Survey (USGS) for gages maintained at Healdsburg and Guerneville (Hacienda Bridge) for the test period.

2.2.5 *Lateral Flow Testing*

Following the initiation of pumping in the collector well, a diver entered the well to conduct additional testing. The initial testing completed at each collector involved measuring total flow from each of the collector well laterals. To determine flow, the diver held a mechanical flow meter (Gurley Price Type AA flow meter – See Appendix E Photograph 10) at the mouth of each lateral for a minimum of 1 minute. Data was subsequently transmitted to the surface, where it was read by a geologist using a Gurley Model 110 digital indicator (Appendix E – Photograph 8). Once the data was recorded, the diver was instructed to move to the next lateral where the process was repeated until measurements at all laterals were completed. Videos of the process at each collector are provided in Appendix D. Photographs of the equipment and relative lateral flow testing activities are provided in Appendix E.

2.2.6 *Initial Video Inspection of Laterals*

Upon completion of the lateral flow testing, an underwater video camera was inserted into the first 10 feet of every lateral within each of the collector wells to provide preliminary information on the condition of the laterals. Based on the results of the initial video inspection and the flow testing, laterals were prioritized for full-accessible length video inspection and lateral flow profiling. The resulting initial video inspections, as well as the subsequent videos documenting the inspections of the entire accessible lengths of the laterals, are provided in Appendix D.

2.2.7 *Lateral Video Inspection and Flow Profiling*

Upon completion of the flow evaluation and the video inspection of each lateral, the data was evaluated and the laterals were prioritized for video inspection and flow profiling along the entire accessible length. Laterals were prioritized based on relative flow rates, length, direction, and condition. The number of laterals for full-accessible length testing was a function of the amount of dive time available to the diver given the pumping water level prevalent during each test. Video inspection and lateral flow testing was completed in a total of 22 laterals within the three collector wells, including eight of nine in Collector 1 (Laterals 1 through 7 and 9), eight of nine in Collector 2 (Laterals 1 through 8), and six of twelve in Collector 6 (Laterals 2, 3, 6, 8, 12 and 15). The number of laterals inspected and profiled for flow in each collector during the evaluation was greater than stated in the Operations Plan, where we projected the inspection and flow profiling of a minimum of 3 laterals per collector.

To complete this task, a Gurley Price Type AA (Appendix E – Photograph 10) or Pygmy flow meter (Appendix E- Photograph 11), depending on the diameter of the lateral, was positioned inside a protective basket and attached to the video camera vehicle. Photographs of the vehicle and the flow meter are provided in Appendix E (Photographs 12 through 14). The video camera vehicle was controlled remotely and was used to position the flow meter within the lateral and flow velocity was measured and recorded at 10-foot increments along the accessible length of the lateral. The flow meter remained at each position within the lateral for a minimum of 1 minute and the data was transmitted to the surface and read by a Brechtel geologist using a Gurley Model 110 digital indicator (Appendix E – Photograph 8). In a number of high velocity laterals, an aluminum bull float rod approximately 7 feet in length was used in conjunction with a cable and slip-fit ring to hold the flow meter and camera vehicle in place. The lateral flow rate data for the collectors is presented in tables in subsequent sections. The results of the video inspection are presented in Appendix F.

2.2.8 Water Quality Monitoring

Water quality data was collected during the collector well capacity testing to document parameters that may be useful for evaluating capacity changes. Data was collected using a YSI Model 6920 with a downhole probe that transmits data in real time to the surface via a cable. The diver inserted the probe into each lateral, where it was allowed to equilibrate for approximately 3 minutes. The parameters measured included pH, oxygen reduction potential (ORP), dissolved oxygen (DO), conductivity, salinity, total dissolved solids (TDS), turbidity, and temperature. The YSI unit was rented from Equipco Services of Concord, California and was calibrated by Equipco the day before each sampling event. The accuracy of the water quality parameters are as follows:

- pH - ± 0.2 units;
- ORP - ± 20 millivolts;
- DO - ± 0.1 milligram per liter;
- Conductivity - ± 0.5% of reading plus 0.001 millisiemens per centimeter;
- Salinity - ± 0.1 parts per thousand;
- TDS – Internally calculated based on conductivity readings using algorithms found in 1989 edition of *Standard Methods for the Examination of Water and Wastewater* (American Public Health Association, 1989).;
- Turbidity - ± 0.3 Nephelometric Turbidity Units; and
- Temperature - + 0.15 degrees Celsius.

These parameters were measured for each lateral and at the pump intake of each collector. The data is presented in tables in subsequent sections.

3.0 EVALUATION RESULTS

This section presents relevant hydrologic information, as well as the results of the inspections, capacity testing, and lateral flow profiling for each of the collector wells within the Wohler area. The primary goal of the evaluation is to establish a standardized procedure and baseline data set that will allow for comparison with the results of future testing and identify potential changes in well production. We have also compared the results with previous testing dating back to the original construction of the collector wells. Prior testing was not conducted in the same manner as the 2008 protocols; however, the comparison with previous evaluations provides a meaningful assessment of overall capacity changes since the collectors were installed.

3.1 PRECIPITATION AND RIVER STAGE DURING TEST PERIOD

Precipitation and river stage data were obtained for the test period and are presented to identify potential influences on collector capacity. The goal of this task is to track potential short-term and long-term changes in recharge conditions and ground water elevations that may account for changes in collector capacities. For example, a sustained drought and ground water declines could cause collector capacities to decrease.

Figure 7 provides precipitation and Russian River stage data collected during the test period (1 October through 15 November 2008). The precipitation data was collected at the Santa Rosa airport weather station and the river stage data was collected at two USGS monitoring stations at Healdsburg (Station # 11464000), approximately 9 miles upriver from the Wohler area, and Guerneville (Hacienda Bridge Station # 11467000), approximately 4 miles downriver from the Wohler area. As seen in Figure 7, a rain event occurred between 31 October and 2 November 2008 and provided over 2.5 inches of precipitation to the area.

Figure 7 shows that the river stage at Healdsburg rose approximately 1 foot from 1.5 to 2.5 feet as a result of this event. The rise in river stage began on 1 November 2008 and returned to pre-storm levels by approximately 10 November 2008. Further down river, the river stage at Guerneville rose approximately 2.75 feet from 1.75 to 4.5 feet. The rise in river stage at the Guerneville station began on 31 October 2008 and eventually stabilized approximately 0.25 foot above the pre-storm level by 24 November 2008. The relative river level (not absolute elevation) monitored during the Collector 1 and 2 capacity tests also shows a rise of approximately 1.25 feet in the river level adjacent to the collectors following the rain event, as shown in Figure 8. The rise in the river level adjacent to the Collector 1 and 2 area began on 1 November 2008, reached its highest level on 4 November 2008, and returned to the previous level by 10 November 2008.

River elevation is also monitored by SCWA along the upriver side of the inflatable dam in the Mirabel area (Figure 2). Figure 9 shows the river elevation at the inflatable dam during the duration of the Wohler collector evaluation period, as well as the river elevations at the Healdsburg and Guerneville stations. As seen on Figure 9, the rain event caused a rise in river elevation of approximately 1 foot at the inflatable dam. The rise in river elevation at the inflatable dam began on 31 October 2008, peaked on 4 November 2008, and returned to the pre-storm elevation by 15 November 2008.

As seen in Figure 8, five ground water monitoring wells were monitored in the Collector 1 and 2 area as part of the capacity testing protocol. Due to the continued pumping of Collector 2 during and immediately following the rain event, it was not possible to ascertain a change in the water table due to the precipitation. However, given the short period of precipitation and generally minor river stage increase relative to the pumping induced ground water elevation changes, it is unlikely that the rain event caused a significant enough rise in the water table to introduce a bias in the capacity testing.

Future testing will be completed in August and September, where possible, to minimize the potential for rainfall to influence the test results. It will be important to evaluate the relative elevations of the water table when comparing the recent tests with future tests to account for changes in the saturated thickness of the aquifer, which is hydraulically connected with the river.

3.2 WOHLER COLLECTOR WELL OPERATION

The expected schedule for the general operation of the collector wells during the capacity test was presented in the Operations Plan. Due to SCWA operational needs, the schedule was modified during the capacity testing. The modified operational schedule did not adversely affect the test results. Figure 10 presents the operational history of the Wohler collector wells during the capacity testing period. In addition, the figure also shows the operational history of the 54-inch intertie valve during the capacity testing period. This was included as the operation of this valve during the first 2 days of capacity testing at Collector 2 changed the pumping rate. The raw data used to create Figure 10 is presented in Appendix G. As seen in Figure 10, the intertie valve was left open during the remainder of capacity testing at Collector 2, as well as during the Collector 1 capacity testing, and pumping rates remained relatively consistent during these time periods.

In addition, the pumping rate at Collector 6 fluctuated cyclically by approximately 1 mgd during the test period. According to SCWA personnel, the pumping rate fluctuations were caused by changes in line pressure during the filling of water tanks in the morning. In general, the pumping rates during the test period were consistent enough for the capacity evaluation and future testing should generally emulate the 2008 testing operation.

3.3 COLLECTOR WELL RESULTS

This section presents the results of the capacity test evaluations for the Wohler collectors. This includes the results of the visual inspection of the caisson and laterals, as well as the capacity and lateral flow testing.

3.3.1 Collector 1 Results

The Collector 1 caisson inspection was completed on 31 October 2008. The capacity testing portion of the evaluation was completed between 10 November and 14 November 2008.

3.3.1.1 Caisson and Lateral Condition

Based on the results of the 31 October 2008 inspection, the caisson of Collector 1 appeared to be in good structural condition. Still photographs documenting the caisson, lateral gate valves, and pump equipment conditions are provided in Appendix C. The diver caisson inspection videos for this collector are provided in Appendix D. As seen in the photographs and video, there is no evidence of fracturing or spalling in the caisson and all underwater structures appeared to be in good condition. The bottom of the caisson was relatively clean with only minor amounts of sand observed across the floor.

The nine original carbon steel laterals in Collector 1 were relined in 2002 with 6-inch diameter stainless-steel, wire-wrapped screen in an effort to reduce the risk of the original laterals collapsing. To assess the condition of the lateral screens, a video camera was advanced along the accessible length of eight of the nine original laterals (Laterals 1 through 7 and 9). Lateral 8 was obstructed by the pump column and could not be accessed by the video camera. Laterals 10A and 11A, the newer 12-inch diameter laterals remained closed during the 2008 inspection. Distances accessed by the video camera vehicle in each lateral are included in Table 4. It should be noted that the lengths of Laterals 2, 3, and 9, as verified by the recent inspection, are slightly less than that reported in the 1998 CWI Report (Lateral 2 - 109 feet versus 121 feet reported; Lateral 3 - 176 feet versus 181 feet reported; and Lateral 9 – 84 feet versus 89 feet reported).

The video inspections of the relined laterals indicate that the 6-inch screens look to be in new condition with little to no buildup or encrustation and slots open to the original 8-inch lateral interior. A slight bend was observed in the 6-inch screen in Lateral 1 at a distance of approximately 40 feet from the caisson. Although the screen did not appear structurally damaged at this distance, the bend was enough to prevent further access into the lateral by the video camera and flow meter.

With the exception of the initial 2 to 4 feet of each lateral, it was not possible to inspect the condition of the original carbon steel screens in Collector 1. However, the carbon steel laterals in Collector 2, which was also constructed in 1959 and not relined, were in good condition with screen slots appearing open and well defined. The inspection revealed that none of the 6-inch diameter, stainless-steel screens installed within the original 8-inch diameter laterals extend completely back to the interior face of the gate valves. As a result, as much as 4 feet of the original carbon-steel screen is exposed at the mouth of each lateral. The exposed portions of the original screens did not exhibit excessive encrustation.

The diver obtained measurements of metal thickness of the carbon-steel lateral screen just outside the gate valves, which are summarized in Table 4. Although the exact construction of the pipe-based screen used in the original laterals is not known, it is assumed from similar projects of this era that the carbon-steel screen used in Collector 1 had an original wall thickness of approximately 0.322 inches. The average thickness of the screen metal in the original carbon-steel laterals during the inspection ranged from approximately 0.203 inches in Lateral 7 to 0.325 inches in Lateral 2. Although these data indicate some thinning of the screen thickness, the data do not suggest that the thinning is compromising the competency of the lateral screen. Given the age of the 6-inch screen liners as well as the resistance to corrosion of stainless-steel, it can be assumed that the thickness of the 6-inch stainless-steel screens has not appreciably decreased.

3.3.1.2 *Specific Capacity and Lateral Flow Testing*

Figure 10 presents the pumping schedule for the duration of the tests. On 10 November 2008, following nearly a week of recovery, Pump #2 of Collector 1 was placed on-line at approximately 10:50 am at a pumping rate of approximately 11 mgd (7,639 gpm). The total test duration for Collector 1 was approximately 99 hours. The pumps in Collector 2 had been shut off on 3 November 2008 following the capacity test in Collector 2 and remained off during the Collector 1 evaluation. As shown in Figure 10, Collector 6 was operated during the Collector 1 evaluation at an approximate rate of 21.67 mgd (15,049 gpm).

Water levels in Collector 1 and adjacent observation wells are graphically illustrated in Figure 8. As shown in Figure 8, the recovery in Collector 1 had stabilized prior to the beginning of the capacity testing. Ground water elevations in the Collector 1 caisson and the associated monitoring locations at 24 hour increments during the capacity testing period are presented on Figure 11. SCWA provided ground water elevations for other nearby monitoring wells in addition to those specified in the Operations Plan and these data are provided on Figure 11 as well. Figure 11 also presents the contoured potentiometric surface in the Collector 1 area prior to capacity testing and at the end of the test period, based on the ground water elevations. Prior to testing, the ground water flow direction was to the north, toward the operating Collector 6, with a gradient of 0.004 feet per foot from well TW-16 to the collector. At the end of the test, a cone of depression had developed around Collector 1 and the gradient increased to 0.027 over the same distance. As seen in Figure 11, the potentiometric surface at the end of the test period shows the development of a ground water divide between Collector 1 and Collector 6. As seen in Figure 8, drawdown in Collector 1 and the monitoring wells had not yet stabilized at the completion of the test period, but the rate of change had begun to decrease. The results are sufficient for a meaningful capacity evaluation.

Specific Capacity Evaluation

To compare the 2008 specific capacity with previous data, the drawdown in Collector 1 at 72 hours was used, which is consistent with the evaluation completed following the rehabilitative work completed in this well in 2002. Drawdown observed in Collector 1 after 72 hours of pumping at 7,639 gpm was 22.74 feet for a specific capacity of 336 gpm/ft. Specific capacities from the current and previous tests are provided in Table 5. Detailed pumping rates for Collector 1 during the test are provided in Appendix G. This value is approximately 17% higher than the specific capacity of 286 gpm/ft computed after the re-screening effort in 2002 and 50% higher than the specific capacity of 224 gpm/ft calculated during the 1998 testing (72-hour test). Laterals 10A and 11A remained closed during the 2008 testing. The capacity at the end of the test (14 November 2008 at 1:54 PM – approximately 99 hours) was calculated to be 309 gpm/ft (7,639 gpm/24.72 ft of drawdown).

During the original performance testing in 1959, Collector 1 was reportedly pumped at a rate of 12.5 mgd (8,680 gpm) individually for 72 hours prior to the combined testing. Drawdown observed in the caisson after 72 hours of pumping was between 9 and 10 feet (9.5 feet was used to calculate the specific capacity). This corresponds to an apparent specific capacity of approximately 914 gpm/ft. As seen in Table 5, the current specific capacity calculated represents nearly an apparent 63% decline in specific capacity based on the value derived from the original performance testing conducted in 1959.

Comparing the results of the 2003 and 2008 capacity tests suggest that the specific capacity of Collector 1 has remained relatively stable in recent years. The comparison of the 2008 results with the 1959 data indicates a decline in the efficiency of Collector 1 since its construction. As previously mentioned, drawdown in Collector 1 had not stabilized at the end of the test period; however, although it is not documented in the report of the 1959 test, it is unlikely that the drawdown in Collector 1 had stabilized during the 72 hour test completed in 1959. As previously discussed, there are a number of potential causes for the decline including clogging of the lateral screen or the aquifer in the vicinity of the lateral, compaction of the aquifer, timing of the different tests, problems with collector equipment, decreased recharge, and declines in water levels within the area. Two additional potential causes for the Collector 1 decline include non-representative results from the 1959 test and the effect of Collector 6 on the Collector 1 and 2 areas.

Future testing will be required to identify root causes. A preliminary evaluation of each of the potential factors is presented below:

- Clogging of the lateral screen - Based on the results of the Collector 1 and 2 inspections of the laterals, there was no visual evidence that the lateral screens in Collector 1 are significantly clogged. However, with the exception of a 2 to 4-foot long section near the gate valve, we were not able to directly assess the condition of the original 8-inch carbon-steel screens in Collector 1 and it is possible that this could account for a portion of the decline in performance from this well. Based on the condition of similar-aged screens in Collector 2, we do not expect this to be a major contributor to the capacity decline.
- Clogging of the aquifer in the vicinity of the lateral – Although there is no direct evidence, it is likely that this is part of the cause of the

decline in efficiency. This is a normal and expected process as finer grained formation materials migrate towards the lateral and fill the interstices of the aquifer material, thus reducing the permeability of the aquifer around the lateral.

- Compaction of the aquifer – It is possible that after many years of pumping within the Wohler area that portions of the aquifer have been compacted, which would decrease the porosity, which in turn would decrease the permeability of the aquifer. SCWA has observed significant dewatering near the Collectors during pumping and the presence of unsaturated conditions between the river and the water table. These conditions would be expected to result in aquifer compaction.
- Timing of the different tests – The timing of the tests can influence the results. For example, during the late summer and fall, sedimentation on and in the riverbed increases due to a decrease in water flow in the river. This increased sedimentation decreases the hydraulic conductivity of the riverbed, which could lower the capacity of the collector wells. During winter and early spring, when storm events and higher water flow occur, the riverbed surface is scoured and the hydraulic conductivity of the riverbed increases, which could lead to higher recharge to the aquifer and calculated capacities within the collector wells. The 1959 testing was in May (higher recharge conditions through the riverbed), whereas the 2008 testing was performed in November (lower recharge conditions through the riverbed).
- Problems with the collector equipment including pumps, piping, and valves – It appears that the Collector 1 equipment is generally consistent with that used in the 1959 tests and the current equipment is well maintained. Therefore, we do not believe that this is responsible for the decline in Collector 1.
- Decreased recharge and local decline in water levels – Based on our current evaluation, we believe that a significant cause of the decline of capacity is a regional decline in water levels. Ground water levels during design (August 1954 and August 1955) and initial installation (May 1959) testing in Collector 1 were at approximately 37 to 38 feet msl referenced to National Geodetic Vertical Datum of 1929 (NGVD 29). Static water levels in the Collector 1 caisson during the 1998, 2003, and 2008 testing were approximately 34 feet msl referenced to North American Vertical Datum of 1988 (NAVD 88). Converting the NAVD 88 data to NGVD 29 for comparison of the water levels indicates that the current water levels would be approximately 31.15 feet msl referenced to NGVD 29. This indicates that current water levels in the area are approximately 6 to 7 feet lower than those measured in the

1950s. This reduction in the saturated thickness of the aquifer could account for a significant portion of the observed capacity decline.

- Non-representative results from the initial testing - The 1959 specific capacity of Collector 1 was most likely conducted before shifting of aquifer materials around the lateral well screens had occurred. In addition, the initial performance testing was conducted concurrently with Collector 2 and, therefore, is not directly comparable to the current testing. Either or both of these factors could account for the apparently high specific capacity in 1959.
- Effect of Collector 6 – The recent water level data collected during the evaluation indicates that the cones of depression generated during the operation of Collector 6 and Collectors 1 and/or 2 overlap. Monitoring well TW-2, located approximately 1,400 feet northeast of Collector 1 and 1,050 feet south of Collector 6, responded to pumping in both collectors. Water levels in this well declined by over 2.75 feet during the testing of Collector 2 and over 4 feet during the testing of Collector 1. During the recovery period (3 to 10 November 2008) between the testing of Collector 2 (27 to 31 October 2008 test period) and Collector 1 (10 to 14 November 2008 test period), the water levels in TW-2 remained over 2.5 feet below the pre-pumping water levels indicating that water levels in this well were influenced by pumping in Collector 6. A similar, less pronounced effect was seen in TW-1, located approximately 800 feet north of Collector 1 and 1,520 feet south of Collector 6. These results suggest that the operation of Collector 6 is responsible for a portion of the decline in capacity of Collector 1 since the start up of Collector 6 in April 2006. The results of the 2008 testing will be used as a baseline for subsequent testing using a similar protocol to that outlined in this document so that a meaningful comparison can be made and account for interferences between Collector 6 and Collectors 1 and 2.

Lateral Flow Testing

This section documents the flows that were measured at the mouths of the laterals where they connect with the caisson. The relative distribution of flow among Collector 1 laterals as determined during the 2008 evaluation is shown in Table 6 and on Figure 12. Table 6 also presents the results from the 1998 pre-maintenance and the 2003 post-maintenance testing for comparison. During the 2008 evaluation the relative flow percent ranged from 7.5% (Lateral 3) to 16.5% (Lateral 6) with lateral inflow generally evenly distributed among the nine laterals. It should be noted that the inflow to Lateral 6 would decrease significantly during the operation of Collector 2. As Table 6 illustrates, seven of nine lateral's relative flows were between 7.5% and 11.5%. Laterals 6 and 8 were the largest producers and had relative flow percentages of 16.5% and 13%, respectively.

Table 6 also provides gpm per lineal foot (gpm/lft) for the nine laterals. The values provided in Table 6 were obtained by dividing the total flow measured at the mouth of each lateral by the total length of each lateral. As seen in Table 6, gpm/lft ranges between 3.1 (Lateral 3) and 21.6 (Lateral 8). The remaining seven laterals had values ranging from 5.9 to 11.2 gpm/lft. Lateral 8 has consistently shown a high gpm/lft ratio and did not display any signs of excessive encrustation or corrosion during the visual inspection. This lateral is a short lateral (45 feet in length) oriented towards the river.

Table 6 provides a comparison with the 2003 and 1998 tests. Although, the 2008 and 2003 tests were not consistently performed, we believe meaningful information can be obtained from a comparison of the two tests. During the 2003 test, two pumps were operated and Laterals 10A and 11A were opened, whereas the 2008 test used one pump and only the original 9 laterals were opened. Our evaluation is based on relative percentage of flow and not the magnitude of flow, which allows for comparison. Flow from the nine original laterals increased during the 2008 testing over that measured for these laterals in the 2003 test as a result of the closure of Laterals 10A and 11A (Table 6). To evaluate this, the contributions of Laterals 10A and 11A were subtracted from the total flow during the 2003 testing. By comparing the individual contribution of the original nine laterals as a portion of the remaining flow during the 2003 test, the normalized relative percentages of flow for the original nine laterals are generally consistent with the 2008 testing. During the 2008 testing, the nine laterals maintained similar relative contributions to the 2003 testing even though Laterals 10A and 11A were closed during the more recent test.

Potential relationships between lateral flow and both orientation and length were generally evaluated. The laterals with the highest flow during the current testing include Laterals 6 (16.5%), 8 (13%), 7 (11.5%), 9 (11%), and 1 (11%). As seen in Figure 4, three of these laterals are oriented towards the river (Laterals 1, 8, and 9) and two are roughly parallel (Laterals 6 and 7). All of the laterals oriented towards the river (Laterals 1, 2, 8, and 9) produced 45% (3,322 of 7,465 gpm) of the overall flow. These laterals account for approximately 33% (328 of 1,021 feet) of the reported lengths of all the operating laterals. This indicates that the laterals oriented towards the river produce more flow per lineal foot of lateral (10.1 gpm/lft) than those oriented roughly parallel to the river (4,143 gpm/693 linear feet = 6.0 gpm/lft).

We have also reviewed the flow from the shorter laterals (arbitrarily 100 feet or less in length) versus the longer laterals (arbitrarily greater than 100 feet in length) to determine if the length of the laterals influence performance in Collector 1. Four of the laterals have lengths less than 100 feet (Laterals 1, 5, 8, and 9) and the lengths of the remaining five (Laterals 2, 3, 4, 6 and 7) are greater than 100 feet. Approximately 45% (3,360 gpm of 7,465 gpm) of the overall flow of Collector 1 is obtained from the short laterals, which represent approximately 30% (304 of 1,021 feet) of the total length of the operating laterals. In Collector 1, the shorter laterals produce less flow overall but more flow per lineal foot (11.05 gpm/lft) than the longer laterals (4,105 gpm/717 linear feet = 5.7 gpm/lft). It should be noted that in Collector 1, the shorter laterals tend to extend toward the river.

Lateral Flow Profiling

This section presents the results of flow measurements that were collected along the lengths of the laterals at different distances from the caisson. The data evaluation began with converting meter readings to flow. Based on meter readings at the mouth of each lateral, the relative flow of an individual lateral as a proportion (percentage) of the total well pumping rate was used to assign a flow rate for the lateral. These total flow estimates were presented for each lateral in the preceding section. Meter readings were also recorded along the length of the laterals, with zero distance being assigned to the caisson end of the lateral. These readings were converted to a flow rate at each monitoring point by converting the impeller revolutions per 30 second interval to gpm using a unit flow in gpm per revolution, which was determined using the total flow at the mouth of each lateral divided by the number of revolutions measured at the mouth during a 30 second interval.

The data collected during the lateral profiling portion of the testing was evaluated to assess flow variability along the lateral. The results of this evaluation are presented in the paragraphs below. This is the first time this type of information has been collected from the laterals and the evaluations presented herein are considered preliminary. Comparisons with similar data in the future may use similar approaches to those described below, but modified approaches may also be employed depending on future test conditions and results.

Flow Variability Along Laterals **-** The tabulated average meter readings and associated flow for portions of the tested laterals are presented as Table 7. The incremental flow for a given interval of the lateral is represented by the difference in flow for two individual monitoring locations within a lateral. For example, in Lateral 1, the incremental flow for the 2 to 10 foot interval (from the caisson) is equal to the difference in flow measured at 2 feet (837 gpm) and that measured at 10 feet (555 gpm), which would be a flow of 282 gpm. Flow contribution for each increment in each of the tested laterals is graphically presented in Figure 13. Flow at different distances along the laterals is depicted in Figure 14. The table and figures illustrate variations in flow contribution along the laterals. Although these data are only a snapshot of a transient condition, they provide an overview of the general intervals of higher production versus lower production. The measured flow variations could be the result of individual or combined influences related to geologic heterogeneity, gradient variations, plugging of the aquifer or well screen, or measurement variability.

Water Production and Proximity to Caisson – Table 8 provides three approaches to evaluate production from the Collector 1 laterals by distance from the caisson and by segment. The first approach (top portion of Table 8) presents total flow (gpm) and normalized flow (gpm/lft of screen) contribution versus distance from the caisson for 50-foot sections of the laterals. For the second approach (middle portion of Table 8), the quasi-radius of the shorter laterals was used to compare flow from inside that radius with outside that radius in the longer laterals. A third approach (bottom portion of Table 8) was derived for each lateral based on proportions of its own individual length, by using inner-middle-outer thirds to see how the laterals compared. The length of each one of these thirds varies with the length of lateral, being 30-foot increments in a 90-foot lateral and 60-foot increments in a 180-foot lateral, which normalizes end effects and near-caisson effects.

The following observations can be made from the Collector 1 data presented in Table 8:

- Top Portion of Table - 68.2% of the overall production of the tested laterals is obtained within the first 50 feet immediately outside the caisson and approximately 90% of production is from the first 100 feet. This can also be seen in Figure 14, which presents a graph of total flow in gpm versus distance from the caisson.
- Middle Portion of Table - As discussed above, lateral performance was also considered from the perspective of a radius that circumscribes an area representing the length of the shortest two or three laterals within the projection pattern. A radius of 60 feet was chosen based on the lengths of Laterals 1 and 8. Nearly two-thirds of the total production of the tested laterals was obtained within the first 60 feet of the lateral indicating that the majority of flow in Collector 1 was produced near the caisson. Unit flow rates within the first 60 feet of the tested laterals range from 5.58 to 16.87 gpm/lft and average 10.36 gpm/lft.

- Bottom Portion of Table - In addition, to evaluate the production profile within the tested laterals, the production for each profiled lateral was divided into three segments representing the inner, middle and outer third of the laterals. For Collector Well 1, the inner third of each lateral collectively averaged 60% of the total production. In general, the middle third was the least productive, although in a number of the laterals (Lateral 3 and 6), the flow produced in the middle third was comparable to that produced in the outer third.

End of Lateral Effects **-** Brechtel has observed that the end of laterals have greater unit flow capacities in terms of gpm/lft, regardless of the overall length. This phenomena has been observed in unpublished, in-house research and development work for The Ranney Division of the Hydro Group Inc. completed by Ernie Williams in the 1980s on collector wells in Mankato, Minnesota, as well as by Brechtel personnel on similar work in Europe. A possible explanation for the higher flow rate at the lateral ends is that in a radial lateral pattern, there is less competition for water at the ends of the lateral. The flow pattern for a radial collector provided as Figure 15 also indicates greater flow at the ends of the lateral (Brechtel, personal communication). Figure 16 shows the running average unit flow of each lateral in gpm/lft. For this figure, the total flow measured at each position along the lateral from the caisson was attributed to the distance remaining to the end of the lateral. Laterals 9 and 5 demonstrate a typical response, with a distinct increase in unit flow near the end of the laterals, within the outer 20 to 30 feet. This characteristic performance is much more subdued in Laterals 2, 4, and 7, and virtually absent in the remaining laterals 1, 3, and 6. The data from Lateral 1 may be biased by lack of access to the final 30 feet of the lateral.

Table 9 presents an analysis of flow within the final 30 feet of the profiled length in the tested laterals, as well as the change in unit flow rates within the last 30 feet of the end of the lateral. The following observations can be made from the data presented in Table 9:

- The overall percentage of flow produced in the last 30 feet of the tested laterals in Collector 1 ranges from 7.7% (Lateral 3) to 24.2% (Lateral 5).
- Laterals 5 and 9 produced 24.2% and 23.4% of their flow in the outermost 30 feet measured.
- High unit flow rates at the last accessible measurement in the laterals ranged from 3.61 (Lateral 6) to 34.02 (Lateral 5) gpm/lft, with four of the laterals (Laterals 2, 4, 5, and 9) having unit flow rates of 10 gpm/lft or greater.
- The unit flow rates declined with increased distance from the measured end of the laterals back toward the caisson with flow rates at

30 feet from the measured end of the laterals ranging from 1.97 (Lateral 3) to 7.31 (Lateral 5) gpm/lft. This is shown in Figure 16.

3.3.1.3 *Water Quality Characteristics*

The results of the water quality testing conducted at Collector Well 1 are presented in Table 10. Parameters included pH, ORP, DO, conductivity, salinity, TDS, turbidity, and temperature. Data was collected within each open lateral, as well as at the pump intake. As seen in Table 10, there was generally little variation in the measured parameters collected from each of the laterals and the pump intake parameters. In addition, with the exception of temperature and DO, the measured parameters did not vary significantly between the laterals. Temperature in the laterals ranged from 15.45 (Lateral 1) to 17.62 (Lateral 6) degrees Celsius with the laterals oriented towards the river (Laterals 1, 2, and 9) generally having lower temperatures. Concentrations of DO in Laterals 3, 4, and 5, ranged between 5.25 (Lateral 3) and 6.8 (Lateral 5) milligrams per liter (mg/ L) and were higher than those detected in the remaining laterals, which ranged between 4.05 (Lateral 8) and 4.95 (Lateral 2) mg/L. These laterals extending north and were three of the four lowest producing laterals during the current test. Temperature affects dissolved oxygen levels in water with higher oxygen solubility in colder water. The laterals with the highest DO concentrations (Laterals 5 and 4) were laterals with higher temperatures (17.22 and 17.06 degrees Celsius respectively), which is the opposite of the expected relationship. There does not appear to be an obvious relationship between water quality parameters and flow percentage, lateral orientation, and/or lateral length.

SCWA collects weekly water quality parameters from the collector wells including pH, temperature, conductivity, and turbidity. The data collected during the study were consistent with historical data for these parameters.

3.3.1.4 *Collector 1 Primary Observations*

The primary observations for the Collector 1 evaluation are:

- The test protocol proposed in the Operations Plan proved to be technically effective and efficient, allowing for data (video and flow) to be collected in five additional laterals (for a total of eight laterals) beyond the three laterals originally planned.
- The inspection indicated that the caisson and underwater structures appear to be in good condition.

- The stainless steel screens of the relined laterals are in new condition although they do not extend back to the interior face of the gate valves. With the exception of the initial 2 to 4 feet in the lateral, the condition of the original carbon steel screens could not be evaluated. The accessible portions of the original screens did not exhibit excessive encrustation.
- The capacity testing occurred between 10 and 14 November 2008 at a pumping rate of approximately 11 mgd, and the river stage and precipitation data suggest that the hydrogeologic system was relatively stable during this time period. The inflatable dam was in operation during the test period.
- Steady state conditions were not achieved during the Collector 1 test after 99 hours of pumping; however, the rate of water level change had decreased and the test conditions are adequate for capacity evaluation.
- The results of the testing indicates that Collector 1 has a specific capacity of 336 gpm/ft at 72 hours, which is 17% higher than the 2003 results (286 gpm/ft) but 37% of the value (914 gpm/ft) obtained during initial testing in 1959. The difference in specific capacity between the 2008 and the 2003 evaluations can be partially explained by the differences in water temperature during the two tests. The water temperature at the pump during the current testing was approximately 62.6 degrees Fahrenheit whereas the water temperature during the 2003 evaluation was 55.6 degrees Fahrenheit. The seven degree difference in water temperature could account for up to 10.5% decrease in performance, assuming a 1.5% change in performance per degree Fahrenheit due to changes in viscosity. In addition, for comparison purposes, during the 2003 evaluation, Collector 1 was pumped at a rate of 20.8 mgd for 28 hours with Collector 2 offline and the inflatable dam was not in service. The specific capacity at the end of the 2008 test (99 hours) was 309 gpm/ft.
- Relative flow percent for the laterals during the 2008 testing ranged from 7.5% to 16.5% with Laterals 6 (16.5%) and 8 (13%) being the largest producers.
- Laterals oriented towards the river produced more flow per lineal foot of lateral (10.1 gpm/lft) than those oriented roughly parallel to the river (6.0 gpm/lft).
- Shorter laterals (less than 100 feet in length) produce less flow but more flow per lineal foot (11.05 gpm/lft) than the longer laterals (5.7 gpm/lft); however, the shorter laterals in Collector 1 extend toward the river.

- In Collector 1, a higher percentage of flow is derived from the inner portions of the laterals closer to the caisson.
- Specific capacity results suggest a decline in the capacity of Collector 1 since it was constructed in 1959, but not since 2002. The decline in performance in Collector 1 could be due to a number of issues including clogging of the aquifer around the laterals, encrustation on the non-visible sections of the original screens, aquifer compaction due to 50 years of operation, the timing of the different tests, non-representative results from the initial testing, influence from operation of Collector 6, and regional ground water declines. A preliminary conclusion of this study is that the apparent loss in capacity in Collector 1 since 1959 is attributed in large part to lower water levels and less saturated thickness during the 2008 testing period, when compared to 1959. Aquifer compaction, differences in the timing of the 1959 test (May – river bed more scoured and better recharge) and 2008 test (November – silt and biological material buildup inhibit recharge), and the recent introduction of pumping in Collector 6 are also expected to be factors leading to the capacity declines.

3.3.2 *Collector 2 Results*

The Collector 2 caisson inspection was completed on 22 October 2008. The capacity testing portion of the evaluation was completed between 27 October and 31 October 2008.

3.3.2.1 *Caisson and Lateral Condition*

Based on the results of the 22 October 2008 inspection, the caisson of Collector 2 appeared to be in good structural condition. Still photographs documenting the caisson, lateral gate valves, and pump equipment conditions are provided in Appendix C. The diver caisson inspection videos for this collector are provided in Appendix D. As seen in the photographs and video, there is no evidence of fracturing or spalling in the caisson and all underwater structures appeared to be in good condition. The floor of the caisson appeared relatively rough and uneven, with a minor amount of sand and gravel scattered across the floor. A PVC manifold was observed lying in the bottom of the well and weighed down with several large pieces of concrete.

Collector 2 is equipped with the nine original carbon-steel laterals installed in 1959. To assess the condition of the lateral screens, a video camera was advanced along the accessible length of eight of the nine original laterals (Laterals 1 through 8). Lateral 9 was obstructed by the pump column and could not be accessed by the video camera. Sand buildup in the bottom of the screens prevented total access in 7 of 8 of Collector 2 laterals. The total length of Lateral 7 was determined to be 107 feet, not 113 feet as previously reported. Distances accessed by the video camera vehicle in each lateral are included in Table 11.

The video inspections of the laterals indicate that the 8-inch screens look to be in excellent condition given their age. No breaks or separations were observed in any of the laterals inspected. Screen slots appeared open and well defined, with gravel commonly observed against the exterior edge of the lateral.

Screen metal thickness measurements obtained within Collector 2 laterals are summarized in Table 11. The raw data is included in Appendix I. As previously stated, the exact construction of the pipe-based screen used in the original laterals is not known. Based on our experience, we have assumed a thickness of 0.322 inches, which is consistent with projects of similar age. Average thickness of the carbon-steel screen during the inspection ranged from approximately 0.208 inches in Lateral 9 to 0.357 inches in Lateral 2. Although these data indicate some thinning of the screens, the data do not suggest that the thinning is compromising the competency of the laterals.

3.3.2.2 *Specific Capacity and Lateral Flow Testing*

On 27 October 2008, following approximately a week of recovery, Pump #3 of Collector 2 was placed on-line at approximately 10:10 am at a pumping rate of approximately 10 mgd (6,944 gpm). The total test duration for Collector 2 was approximately 102 hours (pumping and caisson water level data extend to 168 hours). The pumping rate in Collector 2 increased to approximately 12.02 mgd (8,347 gpm) 26 hours into the test after the intertie valve was opened. Pumps in Collector 1 had been shut off on 20 October 2008 and remained off during the Collector 2 evaluation. Collector 6 was operated during the Collector 2 evaluation. The pumping rate in Collector 6 was initially 18.77 mgd (13,035 gpm) until the 54-inch intertie valve was opened and the rate increased to approximately 21.5 mgd (14,931 gpm) for the remainder of the test. Figure 10 presents the pumping schedule for the duration of the tests.

Water levels in Collector 2 and adjacent observation wells are graphically illustrated in Figure 8. As shown in Figure 8, the recovery in Collector 2 had stabilized prior to the beginning of the capacity testing. Ground water elevations in the Collector 2 caisson and the associated monitoring locations at 24 hour increments during the capacity testing period are presented on Figure 17. In addition, Figure 17 presents the contoured potentiometric surface in the Collector 2 area prior to capacity testing and at the end of the test period. Prior to testing, the ground water flow direction was to the north, toward the operating Collector 6, with a gradient of 0.006 feet per foot from well TW-16 to the collector. At the end of the test, a cone of depression had developed around Collector 2 and the gradient increased to 0.021 over the same distance. As shown on Figure 8, the pumping level in Collector 2 had not completely stabilized at the completion of the test period, although the drawdown had established a relatively consistent, slightly downward trend. The data are sufficient for a meaningful capacity evaluation.

Specific Capacity Evaluation

To compare the 2008 specific capacity with previous data, the drawdown in Collector 2 at 72 hours was used. Drawdown observed in Collector 2 after 72 hours of pumping was approximately 15.93 feet for a specific capacity of 524 gpm/ft. Specific capacity of Collector 2 was estimated at approximately 218 gpm/ft based on the 1998 testing. However, the 1998 CWI Report indicates that the data for Collector 2 was collected following 4 hours of pumping. Therefore, the specific capacity obtained from this data is not comparable to the 2008 value. The specific capacity just prior to the cessation of pumping at Collector 2 at 10 AM on 3 November 2008 (168 hours) was 464 gpm/ft (7780 gpm/16.77 feet of drawdown).

As seen in Table 12, the 2008 specific capacity (524 gpm/ft) represents nearly a 40% decline in specific capacity based on the value derived from the original performance testing conducted in 1959 (10 feet of drawdown or 868 gpm/ft).

The comparison of the current results with the 1959 results indicates a decline in the specific capacity of Collector 2. There are a number of potential causes for the decline including clogging of the lateral screen or the aquifer in the vicinity of the lateral, compaction of the aquifer, the timing of the different tests, problems with collector equipment, decreased recharge, and a local decline in water levels. Two additional potential causes for the Collector 2 decline include non-representative results from the 1959 test and the effect of Collector 6 on the Collector 1 and 2 area.

An evaluation of each of the potential causes is presented below:

- Clogging of the lateral screen - We did not see any evidence that the lateral screens in Collector 2 are significantly clogged. Therefore, clogging of the well screen is most likely not a major contributor to the decline in performance from the 1959 results.
- Clogging of the aquifer in the vicinity of the lateral – Although we do not have direct evidence, it is likely that this is part of the cause of the

decline in specific capacity. This is a normal and expected process as finer grained formation materials migrate towards the lateral and fill the interstices of the aquifer material thus reducing the permeability of the aquifer in the area around the lateral.

- Compaction of the aquifer – It is possible that after many years of pumping within the Wohler area that portions of the aquifer have been compacted, which would decrease the porosity, which in turn would decrease the permeability of the aquifer. SCWA has observed significant dewatering near the Collectors during pumping and the presence of unsaturated conditions between the river and the water table. These conditions would be expected to result in aquifer compaction.
- Timing of the different tests – The timing of the tests can influence the results. For example, during the late summer and fall, sedimentation on and in the riverbed increases due to a decrease in water flow in the river. This increased sedimentation decreases the hydraulic conductivity of the riverbed, which could lower the capacity of the collector wells. During winter and early spring, when storm events and higher water flow occur, the riverbed surface is scoured and the hydraulic conductivity of the riverbed increases, which could lead to higher recharge to the aquifer and calculated capacities within the collector wells. The 1959 testing was in May (higher recharge conditions through the riverbed), whereas the 2008 testing was performed in November (lower recharge conditions through the riverbed).
- Problems with the collector equipment including pumps, piping, and valves – It appears that the Collector 2 equipment is generally consistent with that used in the 1959 tests and the current equipment is well maintained. Therefore, we do not believe that this is a cause of decline in Collector 2.
- Decreased recharge and local decline in water levels – Based on our current evaluation, we believe that a significant cause of the decline of capacity is a regional decline in water levels. Ground water levels during design (August 1954 and August 1955) and initial installation (May 1959) testing in Collector 1 were at approximately 37 to 38 feet msl referenced to National Geodetic Vertical Datum of 1929 (NGVD 29). Static water levels in the Collector 1 caisson during the 1998, 2003, and 2008 testing were approximately 34 feet msl referenced to North American Vertical Datum of 1988 (NAVD 88). Converting the NAVD 88 data to NGVD 29 for comparison of the water levels indicates that the current water levels would be approximately 31.15 feet msl referenced to NGVD 29. This indicates that current water levels in the area are approximately 6 to 7 feet lower than those measured in the

1950s. This reduction in the saturated thickness of the aquifer could account for a significant portion of the observed capacity decline.

- Non-representative results from the initial testing - The 1959 specific capacity of Collector 2 was most likely conducted before shifting of aquifer materials around the lateral well screens had occurred. In addition, the initial performance testing was conducted concurrently with Collector 1 and, therefore, is not directly comparable to the current testing. Either or both of these factors could account for the apparently high specific capacity in 1959.
- Effect of Collector 6 – As discussed in Section 3.3.1.2, the recent water level data collected during the evaluation indicates that the cones of depression generated during the operation of Collector 6 and Collectors 1 and/or 2 overlap. Monitoring wells TW-1, located approximately 800 feet north of Collector 1 and 1,520 feet south of Collector 6, and TW-2, located approximately 1,400 feet northeast of Collector 1 and 1,050 feet south of Collector 6, responded to pumping in all collectors. These results suggest that the operation of Collector 6 starting in April 2006 is responsible for a portion of the decline in capacity of Collector 2.

Lateral Flow Testing

This section documents the flows that were measured at the mouths of the laterals where they connect with the caisson. The relative distribution of flow among Collector 2 laterals as determined during the 2008 evaluation is shown in Table 13 and Figure 18. Table 13 also presents the results from the 1998 evaluation for comparison. During the 2008 evaluation the relative flow percent ranged from 9.5% (Lateral 2) to 12.5% (Lateral 8) with lateral inflow generally evenly distributed among the nine laterals. Laterals 6 and 8 were the largest producers and had relative flow percentages of 12% and 12.5%, respectively.

Table 13 also provides gpm/lft for the nine laterals. As shown in Table 13, this normalized unit flow ranges between 5.2 (Lateral 1) and 11.9 (Lateral 2). The remaining seven laterals had values ranging from 5.6 to 10.9 gpm/lft. Lateral 2 has consistently shown a larger gpm/lft ratio and it did not display any signs of excessive encrustation or corrosion during the visual inspection.

As seen in Table 13, five of the laterals (Laterals 2, 3, 4, 6, and 9) produced more relative flow in 2008 than in 1998 and four laterals (Lateral 1, 5, 7, and 8) produced slightly smaller flows. Based on the data presented in Table 13, the relative performance of the laterals does not appear to have changed significantly since the well was last tested in 1998. Comparison with the previous test results indicate that the relative individual lateral production hasn't changed by more than approximately 2% during the past 10 years.

Potential relationships between lateral flow and both orientation and length were generally evaluated. The laterals with the largest flow during the current testing include Laterals 8 (12.5%), 6 (12%), 7 (11.5%), and 3 (11.5%). As shown on Figure 5, three of these laterals are oriented roughly parallel to the river (Laterals 6, 7, and 8) and one is oriented towards the river (Lateral 3). All of the laterals oriented towards the river (Laterals 1, 2, 3, 4, and 9) produced 53% (3,791 of 7,153 gpm) of the overall flow. These laterals account for approximately 48% (484 of 1,016 feet) of the reported lengths of all the operating laterals. This indicates that the laterals oriented towards the river produce slightly more flow per lineal foot of lateral (7.83 gpm/lft) than those oriented roughly parallel to the river (3,362 gpm/532 lft = 6.32 gpm/lft).

We have also reviewed the flow from the shorter laterals (arbitrarily 100 feet or less in length) versus the longer laterals (arbitrarily greater than 100 feet in length) to determine if the length of the laterals influence performance in Collector 2. Three of the laterals have lengths less than 100 feet (Laterals 2, 3, and 4) and the lengths of the remaining six (Laterals 1, 5, 6, 7, 8, and 9) are greater than 100 feet. Approximately 32% (2,289 of 7,153 gpm) of the flow of Collector 2 is obtained from the short laterals, which represent approximately 21% (218 of 1,016 lft) of the total length of the operating laterals. This indicates that shorter laterals produce less total flow but more flow per lineal foot (10.5 gpm/lft) than the longer laterals (6.1 gpm/lft).

Lateral Flow Profiling

This section presents the results of flow measurements that were collected along the lengths of the laterals at different distances from the caisson. The data collection and evaluation protocol was discussed in the Collector 1 results in Section 3.3.1.2.

Flow Variability Along Laterals **-** The tabulated average meter readings and associated flow for each of the tested laterals in Collector 2 is presented as Table 14. Flow contributions for portions of the laterals are graphically presented in Figures 19 and 20. Although these data are only a snapshot of a transient condition, they provide an overview of the general intervals of higher production versus lower production. The measured flow variations could be the result of individual or combined influences related to geologic heterogeneity, gradient variations, plugging of the aquifer or well screen, or measurement variability.

Water Production and Proximity to Caisson **-** Table 15 provides the same data for Collector 2 that is provided for Collector 1 in Table 8. The following observations can be made from the data presented in Table 15:

- Top Portion of Table - 43.1% of the overall production of the tested laterals is obtained within the first 50 feet immediately outside the caisson. This can be seen in Figure 19, which presents a graph of total flow in gpm versus distance from the caisson. In part, this is influenced by the shorter laterals (Laterals 2 [57 feet], 3 [89 feet], and 4 [72 feet]), where the commonly seen effect of higher flow rates in the outermost 20 to 30 feet crosses over into the first 50 feet from the caisson. Nevertheless, the near-caisson production in the remaining, longer laterals is noteworthy. This is less than what was observed in Collector 1, which indicated that 68.2% of the production is from the first 50 feet.
- Middle Portion of Table - Lateral performance was also considered from the perspective of a radius that circumscribes an area representing the length of the shortest two or three laterals within the projection pattern. A radius of 60 feet was chosen based on the lengths of Laterals 2 and 4. Half of the total production of the tested laterals was obtained within the first 60 feet of the lateral. Unit flow rates within the first 60 feet of the tested laterals range from 4.48 to 13.9 gpm/lft and average 8.71 gpm/lft.
- Bottom Portion of Table - To evaluate the production profile within the tested laterals, the production for each profiled lateral was divided into three segments representing the inner, middle and outer third of the laterals. For Collector 2, the outer third of each tested lateral collectively averaged 42.5% of their total production. For half of the tested laterals (Lateral 1, 3, 7, and 8) within Collector 2, the outer third was the most productive interval. The inner third of the remaining four laterals (Laterals 2, 4, 5, and 6) was the most productive interval. These observations are inconsistent with those made in the Collector 1 evaluation where the majority of the flow in all of the laterals was from the inner third. Consistent with Collector 1 evaluation, with the exception of Lateral 1, the middle third in each tested lateral was generally the least productive interval.

End of Lateral Effect **-** Brechtel has observed that the ends of laterals have greater unit flow capacities in terms of gpm/lft, regardless of the overall length. Figure 21 shows the running average unit flow capacity of each lateral in gpm/lft. In general, the laterals demonstrate a typical response, with a distinct increase in unit flow near the end of the laterals, within their outer 20 to 30 feet.

Table 16 presents an analysis of flow within the final 30 feet of the profiled length of the tested laterals. The following observations can be made from the data presented in Table 16:

- The overall percentage of flow produced in the last 30 feet of the tested laterals in Collector 2 ranges from 23.2% (Lateral 5) to 53.4% (Lateral 2).
- Laterals 2 and 3 produce 47.3% and 43.9% of their flow in the outermost 20 feet measured and in excess of half of their flow within the outer 30 feet measured.
- High unit flow rates at the last accessible measurement in the laterals ranged from 16.83 (Lateral 1) to 41.16 (Lateral 7) gpm/lft, with five of the laterals (Laterals 2, 3, 6, 7, and 8) having unit flow rates of 25 gpm/lft or greater.
- The unit flow rates declined with increased distance from the measured end of the laterals toward the caisson with flow rates at 30 feet from the measured end of the laterals ranging from 6.79 (Lateral 5) to 14.62 (Lateral 7) gpm/lft. This is shown in Figure 21.

3.3.2.3 *Water Quality Characteristics*

The results of the water quality testing conducted at Collector 2 are presented in Table 17. Parameters included pH, ORP, DO, conductivity, salinity, TDS, turbidity, and temperature. Data was collected within each open lateral, as well as at the pump intake. As shown in Table 17, there was generally very little variation in the measured parameters collected from each of the laterals and the pump intake parameters. In addition, with the exception of temperature and DO, the measured parameters did not vary significantly between the laterals.

Temperature in the laterals ranged from 17.73 (Lateral 3) to 19.53 (Lateral 8) degrees Celsius. Concentrations of DO ranged from 5.6 (Lateral 6) to 8.94 (Lateral 7) mg/L with six of the nine laterals having DO concentrations greater than 7.0 mg/L. The three laterals with the lower DO concentrations included Lateral 1 (6.16 mg/L), Lateral 6 (5.60 mg/L), and Lateral 8 (6.15 mg/L). Orientation of these laterals range from the southeast to the southwest and laterals with higher concentrations of DO are interspersed between these laterals. Temperature affects dissolved oxygen levels with higher oxygen solubility in colder water. The data collected during this evaluation were consistent with this relationship as the laterals with the highest DO concentrations (Laterals 1, 2 and 7) were laterals with lower temperatures (17.94, 17.73, and 18.00 degrees Celsius respectively). There does not appear to be an obvious relationship between water quality parameters and flow percentage, lateral orientation, and/or lateral length.

In addition, SCWA collects weekly water quality parameters from the collector wells including pH, temperature, conductivity, and turbidity. With the exception of conductivity, the data collected during the study were consistent with historical data for these parameters. The conductivity values collected during the current testing ranged from 198 to 205 micromhos/centimeter (μmhos/cm), which were slightly less than the range of historical data (228 to 362 μmhos/cm).

3.3.2.4 Collector 2 Primary Observations

The primary observations for the Collector 2 evaluation are:

- The test protocol proposed in the Operations Plan proved to be technically effective and efficient, allowing for data (video and flow) to be collected in five additional laterals (for a total of eight laterals) beyond the three laterals originally planned.
- The inspection indicated that the caisson and underwater structures appear to be in good condition.
- The original carbon steel screens appear to be in good condition given their age with no breaks or separations, little encrustation, and well defined screen slots.
- The capacity testing occurred between 27 and 31 October 2008 at a rate of 10 mgd and the river stage and precipitation data suggest that the hydrogeologic system was relatively stable during this time period.
- Steady state conditions were not achieved during the Collector 2 test after approximately 168 hours of pumping; however, the rate of water level change had decreased and the test conditions are adequate for capacity evaluations.
- The results of the testing indicate that Collector 2 has a specific capacity of 524 gpm/ft, which is a 40% decline from the value obtained during initial testing in 1959 (869 gpm/ft). As previously discussed, water temperature can influence performance due to changes in viscosity. At approximately 60 degrees Fahrenheit, a decrease of 1 degree Fahrenheit can cause a 1.5% change in performance. The water temperature at the Collector 2 intake was 65.6 degrees Fahrenheit, which was 3 degrees warmer than the intake water temperature in Collector 1. Normalizing the Collector 2 performance for the difference in water temperature leads to a specific capacity of 500 gpm/ft for Collector 2 compared to 336 gpm/ft for Collector 1. The specific capacity at the cessation of pumping in Collector 2 (168 hours) was 464 gpm/ft.

- Relative flow percent for the laterals during the current testing ranged from 9.5% to 12.5%.
- Laterals oriented towards the river produce slightly more flow per lineal foot of lateral (7.83 gpm/lft) than those oriented roughly parallel to the river (6.32 gpm/lft).
- Shorter laterals (less than 100 feet in length) produce less flow but more flow per lineal foot (10.5 gpm/ft) than the longer laterals (6.1 gpm/lft).
- Flow contribution in Collector 2 is dominated by the inner and outer portions of the laterals, with less flow from the middle sections. The data are similar to Collector 1, except that Collector 2 derives relatively less flow from the innermost sections of the laterals near the caisson and more flow from the outermost sections.
- Specific capacity results suggest a decline in the capacity of Collector 2 since it was constructed in 1959, but not since the 1998 testing. The decline in performance in Collector 2 could be due to a number of issues including clogging of the aquifer around the laterals, encrustation on the non-visible sections of the original screens, aquifer compaction due to 50 years of operation, the timing of the different tests, non-representative results from the initial testing, influence from operation of Collector 6, and regional ground water declines. A preliminary conclusion of this study is that the apparent loss in capacity in Collector 2 since 1959 is attributed in large part to lower water levels and less saturated thickness during the 2008 testing period, when compared to 1959. Aquifer compaction, differences in the timing of the 1959 test (May – river bed more scoured and better recharge) and 2008 test (November – silt and biological material buildup inhibit recharge), and the recent introduction of pumping in Collector 6 are also expected to be factors leading to the capacity declines.

3.3.3 Collector 6 Results

The Collector 6 caisson inspection was completed on 7 October 2008 and the capacity testing portion of the evaluation was completed between 13 October and 17 October 2008.

3.3.3.1 Caisson and Lateral Condition

Based on the results of the 7 October 2008 inspection, the caisson of Collector 6 appeared to be in good structural condition. Still photographs documenting the caisson, lateral gate valves, and pump equipment conditions are provided in Appendix C. The diver caisson inspection videos for this collector are provided in Appendix D. As seen in the photographs and video, there is no evidence of fracturing or spalling in the caisson and all underwater structures appeared to be in good condition. The bottom of the caisson was relatively clean with only minor amounts of sand and gravel observed across the floor, particularly between Laterals 1 and 10. The diver collected two grab samples of the material on the floor of the caisson for SCWA personnel during the inspection.

Collector 6 is equipped with ten 12-inch diameter, stainless-steel wire-wrapped screened laterals installed between 2001 and 2002. Two additional LLDLs (18-inch diameter carbon steel screens) were installed in 2003 and 2004 (UCM, 2007). To assess the condition of the lateral screens, a video camera was advanced along the accessible length of four of the ten original laterals (Laterals 2, 3, 6, and 8), as well as both of the LLDLs (Laterals 12 and 15). Distances accessed by the video camera vehicle in each lateral are included in Table 18. Reported lengths were verified in all conventional laterals accessed during the 2008 inspection. Sand encountered in the bottom of Lateral 12 prevented access beyond 299 feet of the 350-foot length. The length of Lateral 15 coupled with the limited amount of bottom time for the diver prevented the complete inspection beyond 320 feet of the 375-foot length.

The video inspections of individual laterals in Collector 6 are included in Appendix F. The raw data is included in Appendix J. The video inspections of the laterals indicate that both the 12-inch diameter conventional laterals as well as the two LLDLs appeared to be in good condition. The stainless-steel, wire-wrapped screen in the conventional laterals appeared new, with individual rods and wires visible throughout the interior of each lateral. Some discoloration and encrustation was occasionally observed on the interior of the screens, primarily at the interface between the screen body and the coupling. In its current form, this encrustation is not significant enough to influence well performance.

The carbon steel screens of Laterals 12 and 15 were slightly coated with approximately 1/8-inch of light brown to gray encrustation. Screen slot openings were generally visible and open to the lateral interior, particularly along the top and sides of the laterals. The encrustation did not appear substantial enough to have an effect on yield at the present time. A slight inflow of fine sand particles was observed at the mouth of Lateral 15, but it is not believed to be coming from any breaks or separations within the screen.

A pile of sand and large gravel approximately 1.5-inches in height was encountered in Lateral 3 at a distance of approximately 125 feet from the caisson. This gravel was too large to have come into the lateral through the screen slots; however, no breaks or separations were observed within the screen. Moreover, sand was not observed to be actively entering the lateral during video inspection. It is believed that the accumulation of sand and gravel observed in the bottom of Lateral 3 can be attributed to a void left between the end of the first section of screen and the caisson wall port. A "K-packer" system was used on the first piece of screen just inside of the gate valve to seal the end of the lateral screen by filling the annular space between the outside diameter of the screen and the inside diameter of the lateral projection casing. A closer inspection of the Lateral 3 photographs and video revealed that the K-packer had been damaged and come apart. The damaged K-packer can be seen in inspection photographs presented in Appendix C. It is possible that while retracting the projection casing the seal was damaged, thus allowing aquifer material to enter around the outside diameter of the screen until it bridged. This material in turn may have been transported down the length of the lateral as a result of the development process.

Screen metal thickness measurements obtained within Collector 6 laterals are summarized in Table 18. The original thickness of the conventional laterals is assumed to be equivalent to the wire height of the wire-wrapped screen, suggested by the manufacturer to be approximately 0.25 inches. The original thickness of the pipe-based screen used in pilot Laterals 12 and 15 was reported at 0.50 inches. As expected, the data suggest that little, if any, thinning of the screen metal has occurred within any of the laterals since they were installed. The average thickness of the screen metal in the conventional wire-wrapped laterals ranged from approximately 0.187 inches in Lateral 9 to 0.298 in Lateral 10. The average thickness of the screen metal in the LLDLs was approximately 0.530 inches in Lateral 15 and 0.558 inches in Lateral 12.

3.3.3.2 *Specific Capacity and Lateral Flow Testing*

On 13 October 2008, following approximately a week of recovery, Pump #12 of Collector 6 was placed on-line at approximately 12:40 PM. The total test duration for Collector 6 was approximately 97 hours. During testing, the pumping rate in the collector varied between approximately 19.3 mgd (13,403 gpm) in the morning and 18.2 mgd (12,639 gpm) in the evening in response to changes in line pressure within the system. Figure 10 presents the pumping schedule for the duration of the tests. As shown in Figure 10, Collector 2 was shut off approximately 4 hours prior to Collector 6 start-up, whereas Collector 1 was operated during the evaluation period at a rate of approximately 9 mgd (6,250 gpm). Water levels in Collector 6 and adjacent observation wells are graphically illustrated on Figure 22. As shown in Figure 22, the recovery in Collector 6 had stabilized prior to the beginning of the capacity testing. Ground water elevations in the Collector 6 caisson and the associated monitoring locations at 24 hour increments during the capacity testing period are presented on Figure 23. In addition, Figure 23 presents the contoured potentiometric surface in the Collector 6 area prior to capacity testing and at the end of the test period. Prior to testing, the ground water flow direction was to the south with a gradient of 0.003 feet per foot from the collector to TW-3. At the end of the test, a cone of depression had developed around the well and ground water flow was to the north toward Collector 6 with a gradient of 0.010 over the same distance. In addition, a ground water divide is beginning to develop between the Collector 6 area and Collector 1 and 2 area. This divide is more developed during the subsequent testing of Collectors 1 and 2, as seen in Figures 11 and 17. As seen in Figure 22, drawdown in Collector 6 and monitoring wells had not completely stabilized at the completion of the test period, but the rate of change had begun to decrease. The data are sufficient for a meaningful capacity evaluation.

Specific Capacity Evaluation

To compare the specific capacity to previous data, the drawdown in Collector 6 at 72 hours was used. As shown on Table 19, drawdown observed in Collector 6 after 72 hours of pumping was approximately 12.22 feet for an apparent specific capacity of 1,065 gpm/ft, assuming an average pumping rate of 18.75 mgd (13,021 gpm). This value is comparable to the specific capacity (1,014 gpm/ft) computed in 2002 prior to the construction of the LLDLs. Specific capacity of Collector 6 was computed at 1,279 gpm/ft with all the laterals open during the 2006 evaluation; however, the pumping duration was only 24 hours. For comparison purposes, at 24 hours during the 2008 testing, the specific capacity was calculated to be 1,310 gpm/ft. The specific capacity at the end of the test period (97 hours) was calculated to be 1,044 gpm/ft. This collector is considered to be too new to discern significant changes in performance, which is consistent with the results to date.

Lateral Flow Testing

This section documents the flows that were measured at the mouths of the laterals where they connect with the caisson. The relative distribution of flow among Collector 6 laterals as determined during the 2008 evaluation is shown in Table 20 and Figure 24. Table 20 also presents the results from the 2002 evaluation for comparison (before the LLDLs). During the current evaluation, the relative flow percent in the 12-inch laterals ranged from 3% (Lateral 4) to 10% (Lateral 2), with the 18-inch laterals contributing 17% (Lateral 12) and 26% (Lateral 15). The largest producers of the 12-inch laterals included Laterals 2 (10%) and 3 (7%). As shown on Figure 23, these laterals extend northeast and southeast of the caisson. The significant production from Laterals 12 and 15 is readily apparent. During the October 2008 inspection, these two laterals produced 2,088 and 3,238 gpm respectively, or approximately 43% of the total collector capacity. By comparison, they constitute about 37%of the total lateral footage projected in Collector Well 6, although since they are larger diameter they constitute approximately 56% of the total screened area for the wells (approximately 2,562 of 4573 square feet). Table 20 also provides gpm/lft for the twelve laterals. As seen in Table 20, gpm/lft ranges between 4.6 (Lateral 2) and 9.0 (Lateral 15). The remaining nine laterals had values ranging from 4.9 to 7.8 gpm/lft.

A comparison of lateral performance in 2008 versus in 2002 is shown in Table 21. The comparison suggests that the 12-inch laterals all lost capacity after the construction and operation of the two LLDLs. This was to be expected, particularly at Laterals 1, 2, 3 and 10, which are the most proximal to the LLDLs and consequently compete for the same water. However, if the 2008 test results are prorated to remove the production of Laterals 12 and 15, the change in performance potentially caused by age and operation can be evaluated. The third column in this table gives the prorated flow percentage for the conventional laterals with Laterals 12 and 15 removed, and the far right column gives the relative change between the 2002 performance and the 2008 prorated results. In general, six of the 12-inch laterals (Laterals 1, 3, 4, 5, 6, and 9) have lost up to 3.3% of their flow, three laterals (Laterals 2, 7, and 8) have gained up to 5.6%, and one (Lateral 10) has remained essentially unchanged. Overall, the 12-inch laterals have an average loss of 2.7%, which indicates essentially no change in the performance of the laterals since 2002.

Potential relationships between lateral flow and both orientation and length were generally evaluated. All of the laterals oriented towards the river (Laterals 1, 7, 8, 9, 10, and 12) produced 43% (5,584 of 12,986 gpm) of the overall flow. These laterals account for approximately 44% (860 of 1,935 feet) of the reported lengths of all the operating laterals. This indicates that the laterals oriented towards the river produce approximately the same flow per lineal foot (6.5 gpm/ft) that the laterals oriented parallel and away produce (6.89 gpm/ft).

We have also reviewed the flow from the shorter laterals (arbitrarily 100 feet or less in length) versus the longer laterals (arbitrarily greater than 100 feet in length) to determine if the length of the laterals influence performance in Collector 6, independent of orientation. Four of the laterals have lengths of 100 feet or less (Laterals 1, 4, 9, and 10). Approximately 16.5% (2,143 of 12,986 gpm) of the flow of Collector 6 is obtained from the short laterals, which represent approximately 17.6%

(340 of 1,935 lft) of the total length of the operating laterals. Short laterals produce slightly less flow per lineal foot (6.3 gpm/lft) than the longer laterals (6.8 gpm/ft).

Lateral Flow Profiling

The data collection and evaluation protocol was discussed in the Collector 1 results in Section 3.3.1.2. Flow profiling of laterals at Collector 6 offered unique opportunities to evaluate hydraulic performance of radial collector wells. At this site, the lateral projection pattern encompasses a more radial distribution. In addition, there is a mixture of lateral lengths and diameters. In particular, Collector 6 includes two long, 18-inch diameter laterals, Laterals 12 and 15, that extend out to lengths of 350 feet and 375 feet, respectively.

Flow Variability Along Laterals **-** The tabulated average meter readings and associated flow for each of the tested laterals in Collector 6 is presented in Table 22. Flow contribution is graphically presented in Figures 25 and 26. Although these data are only a snapshot of a transient condition, they provide an overview of the general intervals of higher production versus lower production. In general, Collector 6 exhibits flow variability and derives more flow from the outer portions of the laterals. The measured flow variations could be the result of individual or combined influences related to geologic heterogeneity, gradient variations, plugging of the aquifer or well screen, or measurement variability. ERM reviewed the sieve analysis data provided as Appendix A of the 2002 Layne Christensen Company to determine if a correlation could be made between grain size and intervals of high and low flow. The sieve analysis data for four of the tested laterals (Laterals 2, 3, 6, and 8) was plotted to determine the range and percentages of grain sizes within each of the samples. The plots are presented as Appendix K. Our review of the data indicated that there was no obvious correlation between the results of the grain size analyses and flow production along the lateral.

Water Production and Proximity to Caisson **-** The incremental breakdown of lateral flows by distance and relative segment reveal a distinctly different performance at Collector 6 than that observed at Collectors 1 and 2. Because restrictions in diving time limited the number of laterals probed, only 6 of the 12 laterals could be flow profiled along their accessible length. Nevertheless, the consistency of hydraulic response in these six laterals makes it reasonable to infer similar performance in the non-tested laterals. The following observations can be made from the data presented in Table 23:

- Top Portion of Table - Approximately 21% of the lateral production was derived within 100 feet of the caisson. More than three-fourths of the production comes from beyond 100 feet, and more than half is obtained from beyond 150 feet, even though only 24% of the total lateral footage is projected beyond that length. This can be seen in Figure 25, which presents a graph of total flow in gpm versus distance from the caisson.

- Middle Portion of Table – Flow was also considered from the perspective of a radius that circumscribes an area representing the length of the shortest two or three laterals within the projection pattern. A radius of 70 feet was chosen based on the lengths of Laterals 4 and 9. To complete this analysis, it was necessary to estimate flow from the laterals not flow profiled. As presented in Table 23, laterals for which flow meter measurements were collected are marked with asterisks. For the non-tested laterals, prorated percentage flow was estimated based on the respective projected lateral lengths, orientation, and performance of adjacent flow-profiled laterals. The calculated result of 22% production within 70 feet of the caisson agrees reasonably well with the other presented results for the inner portions of the laterals and provides another basis of comparison with Collectors 1 and 2.

- Bottom Portion of Table - Table 23 and Figure 26 also show that only 16.8% of flow comes from the inner third of the lateral lengths, whereas 62.4% comes from the outer third alone. These results are markedly different than the production characteristics observed at Collectors 1 and 2.

End of Lateral Effect **-** Brechtel has observed that the ends of laterals have greater unit flow capacities in terms of gpm/lft, regardless of the overall length. Figure 27 shows the running average unit flow capacity of each lateral in gpm/lft. As evident in Figure 27, unit flow rates in the Collector 6 laterals increase significantly in the outermost 20 to 30 feet of each lateral, regardless of length or orientation. Unit flow rates (gpm/lft) remain relatively consistent for all laterals as flow approaches the caisson.

Table 24 presents an analysis of flow within the final 30 feet of the tested laterals. The following observations can be made from the data presented in Table 24:

- The overall percentage of flow produced in the last 30 feet of the tested laterals in Collector 6 ranges from 22.2% (Lateral 15) to 71% (Lateral 8).

- The tested 12-inch laterals produced 46.4% to 71% of their flow within the final 30 feet of the lateral; the 18-inch laterals produced 22.2% to 32.3% of their flow from the final 30 feet. These relatively smaller percentages for the LLDLs are due to their extra length, which provides for greater overall production, thus limiting the proportional influence of the final 30 feet.

- Unit flow rates at the last accessible measurement in the 12-inch laterals ranged from 25.16 (Lateral 2) to 97.82 (Lateral 6) gpm/lft. The unit flow rate for the LLDLs at the last accessible measurement was 54.58 (Lateral 12) and 44.97 (Lateral 15) gpm/lft. It should be noted also that these unit flow comparisons start with the last available meter measurement, and, in Laterals 12 and 15, the meter could not be advanced beyond 299 and 320 feet, respectively. To what extent flow rates increase further within those inaccessible portions of the two longer laterals is unknown.
- The unit flow rates declined with increasing distance from the measured end of the laterals toward the caisson with flow rates at 30 feet from the measured end of the laterals ranging from 16.15 (Lateral 15) to 19.56 (Lateral 6) gpm/lft and percent reductions ranging from 33.7% in Lateral 2 to 80.5% in Lateral 3. This is shown in Figure 27.

3.3.3.3 *Water Quality Characteristics*

Results of the water quality testing conducted at Collector 6 are presented in Table 25. Parameters included pH, ORP, DO, conductivity, salinity, TDS, turbidity, and temperature. Data was collected within each open lateral, as well as at the pump intake. As seen in Table 25, there was generally very little variation in the measured parameters collected from each of the laterals and the pump intake parameters. In addition, with the exception of temperature and DO, the measured parameters did not vary significantly between the laterals, although parameters from Lateral 10 appear to be slightly different than those of the other laterals with the lowest pH and temperature values and the highest ORP, conductivity, salinity, and TDS values.

Temperature in the laterals ranged from 16.98 (Lateral 10) to 19.28 (Lateral 15) degrees Celsius; DO ranged from 1.58 (Lateral 3) to 3.3 mg/L (Lateral 12). Temperature affects dissolved oxygen levels with higher oxygen solubility in colder water. The laterals with the highest DO concentrations (Laterals 12 and 6) were laterals with higher temperatures (18.28 and 18.98 degrees Celsius respectively), which is the opposite of the expected relationship. There does not appear to be an obvious relationship between water quality parameters and flow percentage, lateral orientation, and/or lateral length.

In addition, SCWA collects weekly water quality parameters from the collector wells including pH, temperature, conductivity, and turbidity. With the exception of conductivity, the data collected during the study were consistent with historical data for these parameters. Eleven of the twelve conductivity values collected during the current testing ranged from 204 to 231 μmhos/cm, which are slightly less than the range of historical data (233 to 368 μmhos/cm).

3.3.3.4 *Collector 6 Primary Observations*

The primary observations for the Collector 6 evaluation are:

- The test protocol proposed in the Operations Plan proved to be technically effective and efficient, allowing for data (video and flow) to be collected in three additional laterals (for a total of six laterals) beyond the three originally planned.
- The inspection indicated that the caisson and underwater structures appear to be in good condition.
- The 12-inch stainless steel and the 18-inch carbon steel screens appear to be in good condition although a significant pile of sand and large gravel was observed in Lateral 3 and may be due to the damaged K-packer in this lateral.
- The capacity testing occurred between 13 and 17 October 2008 and the river stage and precipitation data suggest that the hydrogeologic system was relatively stable during this time period.
- Steady state conditions were not achieved during the Collector 6 test after 97 hours of pumping; however, the rate of water level change had decreased and the test conditions are adequate for capacity evaluations.
- The results of the testing indicate that Collector 6 has a specific capacity of 1,065 gpm/ft, which is comparable to the specific capacity computed from the 2002 event (1,014 gpm/ft). A specific capacity calculated for Collector 6 at 24 hours (1,310 gpm/ft) is comparable to that calculated for the 24-hour 2006 event (1,279 gpm/ft). The specific capacity at the completion of testing in Collector 6 (97 hours) was 1,044 gpm/ft.
- Relative flow percent for the 12-inch laterals during the current testing ranged from 3% to 10%, and 17% (Lateral 12) to 26% (Lateral 15) for the 18-inch LLDLs.
- Laterals 2 (10%) and 3 (7%) were the largest 12-inch lateral producers and are oriented parallel and away, respectively, from the Russian

River. Lateral 15 was the largest producing LLDL in Collector 6 and is oriented away from the Russian River.

- All 12-inch laterals lost capacity to the LLDLs, which account for approximately 43% of the total flow and only 37.5% of the total screen length.
- Lateral flow testing results suggest that orientation of the laterals has little effect on their performance at this location.
- The lateral flow profiling indicates that the majority of flow from Collector 6 is derived from the outer portions of the laterals away from the caisson. This observation is in contrast to Collectors 1 and 2.
- The overall capacity of Collector 6 remains good and is comparable to that determined when the well was originally installed.

4.0 CONCLUSIONS AND RECOMMENDATIONS

This section presents the conclusions of the capacity testing. These conclusions are based on the first application of the testing program described herein, and we expect that future work will allow for refinement of the results. Recommendations are also provided for SCWA consideration in planning for future work.

5.1 CONCLUSIONS

This section presents general conclusions, followed by specific observations related to each collector well.

The following general conclusions are applicable to the testing performed in 2008:

- The field methods were demonstrated to be effective for evaluating the conditions of the collectors, specific capacities, and flow in the laterals and the aquifer. These methods provide a valid basis for evaluating future changes in the capacities of the collectors.
- The field methods were efficient, allowing for the completion of significantly more lateral inspections and flow testing than planned within the project budget.
- The pumping rates of the collector wells during the test period were consistent enough for the capacity evaluations and the testing did not disrupt water service.
- The river stage and precipitation data indicate that the hydrologic system was sufficiently stable for the capacity test evaluation.
- None of the tests reached steady state conditions. The results are valid for the capacity comparisons; however, longer term testing would improve estimates of yield.
- The water quality data collected from the collector wells during the evaluation is consistent with historical results collected by SCWA and indicates that there is no obvious relationship between water quality parameters and flow percentage, lateral orientation, and/or lateral length.

Observations specific to each collector are presented below. Table 26 provides a summary of specific capacities for Collector 1 based on current and previous tests.

Collector 1

The following results relate specifically to the Collector 1 testing:

- The inspection indicated that the caisson and underwater structures appear to be in good condition. The inspection revealed that none of the 6-inch diameter, stainless-steel screens installed within the original 8-inch diameter laterals extend completely back to the interior face of the gate valves. The new screen and exposed portions of the original screen appear to be in excellent shape and are not expected to have contributed significantly to the capacity decrease in Collector 1; however, the majority of the original screens could not be observed.
- The specific capacity calculated for Collector 1 at 72 hours of pumping in 2008 was 336 gpm/ft, which is 17% higher than that calculated during the 2002 evaluation (286 gpm/ft) and 63% lower than that based on the 1959 testing (914 gpm/ft).
- The ground water temperature in Collector 1 was 16.98 degrees Celsius, approximately 2 degrees colder than Collector 2. Water temperature can influence performance due to changes in viscosity and the lower water temperature in Collector 1 could be partially responsible for the lower capacity calculated for this collector.
- In Collector 1, flow is generally uniformly distributed between the nine laterals, ranging from 7.5% to 16.5% of total flow. Laterals oriented towards the river produced more flow per lineal foot of lateral (10.1 gpm/lft) than those oriented roughly parallel to the river (6.0 gpm/lft). Shorter laterals (less than 100 feet in length) produce less flow but more flow per lineal foot (11.05 gpm/lft) than the longer laterals (5.7 gpm/lft); however, the shorter laterals in Collector 1 extend toward the river.
- The lateral flow profiling of Collector 1 reflects flow variability along the laterals. The measured flow variations could be the result of individual or combined influences related to geologic heterogeneity, gradient variations, plugging of the aquifer or well screen, or measurement variability. The majority of flow is obtained near the laterals, the middle sections of the laterals demonstrate the lowest flow, and the outer portions of the laterals exhibit flow rates between the two. The outermost ends of some of the laterals exhibit the highest unit flows.
- Specific capacity results suggest a decline in the capacity of Collector 1 since it was constructed in 1959, but not since 2002. A preliminary conclusion of this study is that the apparent loss in capacity in Collector 1 since 1959 is attributed in large part to lower water levels and less saturated thickness during the 2008 testing period, when

compared to 1959. Aquifer compaction, differences in the timing of the 1959 test (May – river bed more scoured and better recharge) and 2008 test (November – silt and biological material buildup inhibit recharge), and the recent introduction of pumping in Collector 6 are also expected to be factors leading to the capacity declines.

Collector 2

The following are conclusions are based on the data generated during the current evaluation of Collector 2:

- The inspection indicated that the caisson and underwater structures are in good condition. The original carbon steel screens appear to be in good condition given their age with no breaks or separations, little encrustation, and well defined screen slots.
- The results of the testing indicates that Collector 2 has a specific capacity of 524 gpm/ft after 72 hours of pumping, which is a 40% decline from the value obtained during initial testing in 1959 (869 gpm/ft). Short term testing in 1998 does not provide a basis for evaluating more recent capacity declines. Table 26 provides a summary of specific capacities for Collector 2 based on current and previous tests.
- Flow in the laterals is generally uniformly distributed, with percentages of total flow ranging from 9.5% to 12.5%. Laterals oriented towards the river produce slightly more flow per lineal foot of lateral (7.83 gpm/lft) than those oriented roughly parallel to the river (6.32 gpm/lft). Shorter laterals (less than 100 feet in length) produce less overall flow but more flow per lineal foot (10.5 gpm/ft) than the longer laterals (6.1 gpm/lft).
- Flow contribution in Collector 2 is primarily from the inner and outer portions of the laterals, with less flow from the middle sections, somewhat similar to Collector 1. The outermost ends of some of the laterals exhibit the highest unit flows.
- The specific capacity results suggest a decline in the capacity of Collector 2 since it was constructed in 1959. A preliminary conclusion of this study is that the apparent loss in capacity in Collector 2 since 1959 is attributed in large part to lower water levels and less saturated thickness during the 2008 testing period, when compared to 1959. Aquifer compaction, differences in the timing of the 1959 test (May – river bed more scoured and better recharge) and 2008 test (November – silt and biological material buildup inhibit recharge), and the recent introduction of pumping in Collector 6 are also expected to be factors leading to the capacity declines.

Collector 6

The following are conclusions are based on the data generated during the current evaluation of Collector 6:

- The inspection indicated that the caisson and underwater structures appear to be in good condition. The 12-inch stainless steel and the 18-inch carbon steel screens appear to be in good condition, although a significant pile of sand and large gravel was observed in Lateral 3 and may be due to the damaged K-packer in this lateral.
- The results of the testing indicates that Collector 6 has a specific capacity of 1,065 gpm/ft at 72 hours of pumping, which is comparable to the specific capacity computed from the 2002 event (1,014 gpm/ft). A specific capacity calculated for Collector 6 at 24 hours (1,310 gpm/ft) is comparable to that calculated for the 24-hour 2006 event (1,279 gpm/ft). Table 26 provides a summary of specific capacities for Collector 6 based on current and previous tests.
- Relative flow percent for the 12-inch laterals during the current testing ranged from 3% to 10%, and 17% to 26% for the 18-inch LLDLs. All 12-inch laterals lost capacity to the LLDLs, which account for approximately 43% of the total flow and only 37.5% of the total lateral footage of Collector 6.
- Lateral flow testing results suggest that orientation of the laterals has little effect on their performance at this location. The lateral flow profiling indicates that the majority of flow from Collector 6 is derived from the outer portions of the laterals away from the caisson. This observation is in contrast to Collectors 1 and 2.
- The overall capacity of Collector 6 remains good and is comparable to that determined when the well was originally installed.

5.2 *RECOMMENDATIONS*

The following recommendations are provided for SCWA consideration based on the results of the capacity testing.

- Consider extending the 6-inch diameter stainless-steel screen inserts in the Collector 1 laterals back to the inside face of each lateral gate valve to ensure that potential degradation of the original carbon-steel screen near the gate valve will not cause the introduction of sand and gravel into the caisson and the laterals.
- Consider repairing the seal between the wall port spool piece and the initial section of screen in all ten conventional laterals of Collector 6.

- Where possible, coordinate with normal operations of Collectors 1, 2, and 6 to perform monitoring that emulates a longer term capacity test (3 to 4 weeks). The tests should be conducted at a constant pumping rate and include water level monitoring in the collectors, monitoring wells, and river during periods of consistent collector operation without precipitation.
- If monitoring identifies a distinct decline in the performance of a collector, more intensive testing should be considered. If monitoring does not identify any distinct declines in capacity, the collectors should be evaluated every 5 to 7 years or even less frequently.
- The 2008 testing (and planned 2010 testing) should be compared to future testing with similar approaches. Additional evaluation methods should be considered. An example, as suggested by SCWA, would be to compare water levels in monitoring wells at similar time steps during different testing phases to evaluate capacity changes in the area, in addition to within the caissons. This evaluation would be similar to creating distance-drawdown graphs at several time steps.
- Complete capacity testing in the Mirabel collectors during August and September of 2010 to establish a data set that is similar to the Wohler results. Modifications to the testing should be considered such as running longer tests, depending upon operational constraints. An operations plan for this testing will be developed in 2010 with SCWA input. The dam and ponds will require consideration in this process.

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Figures

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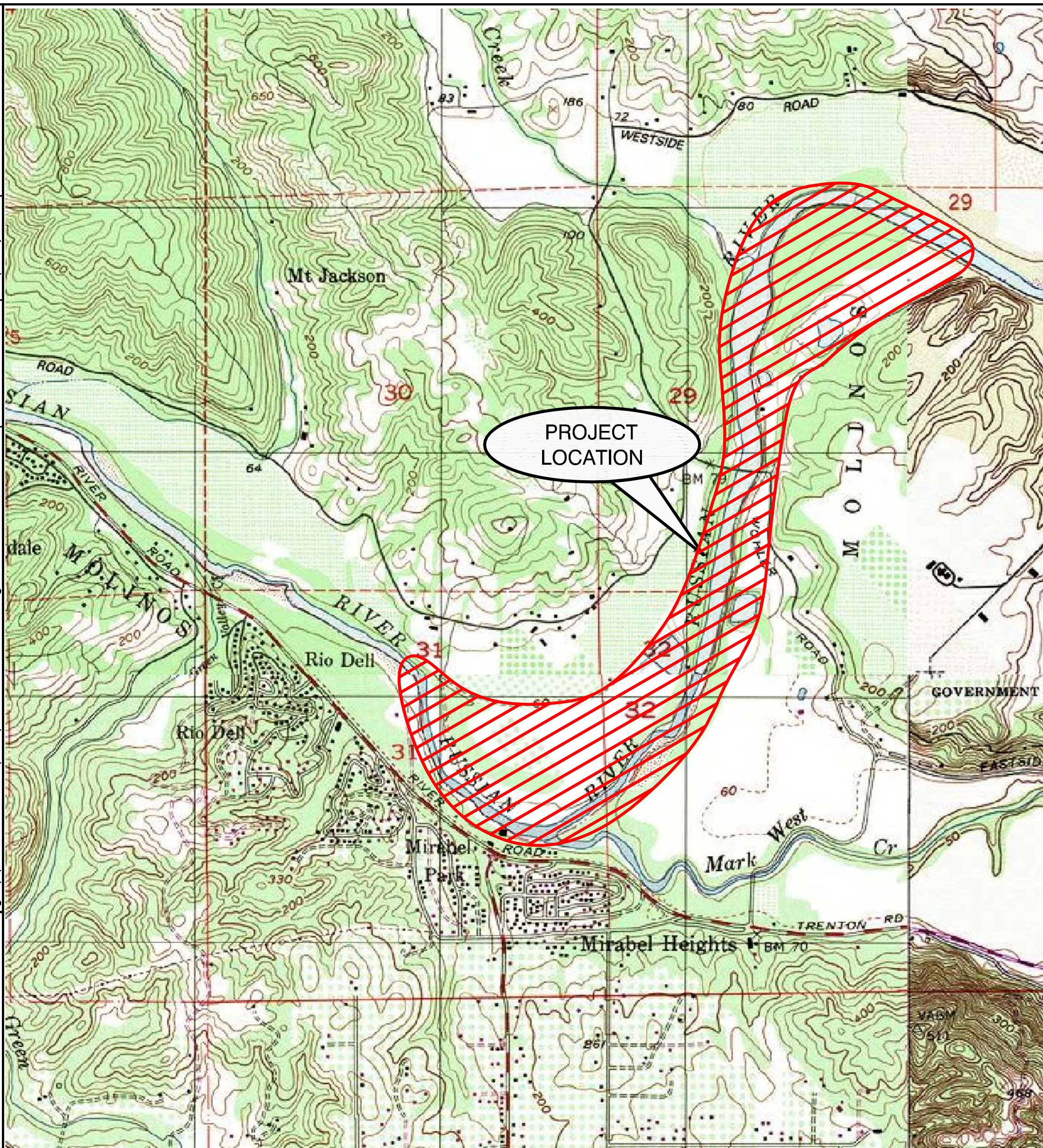

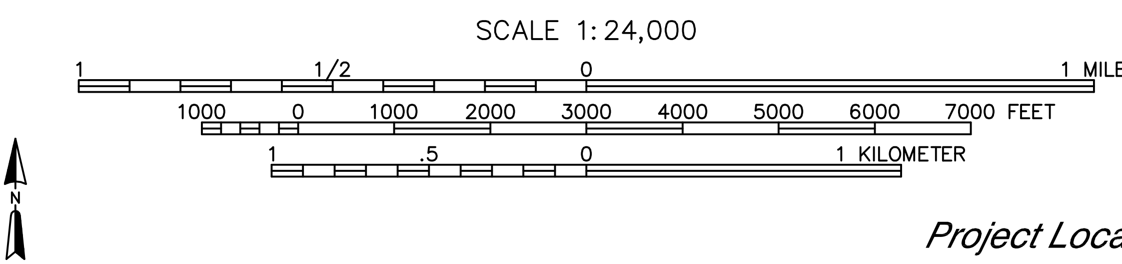

Figure 1
Project Location Map
Wohler and Mirabel Areas
Sonoma County Water Agency
Sonoma County, California

References:
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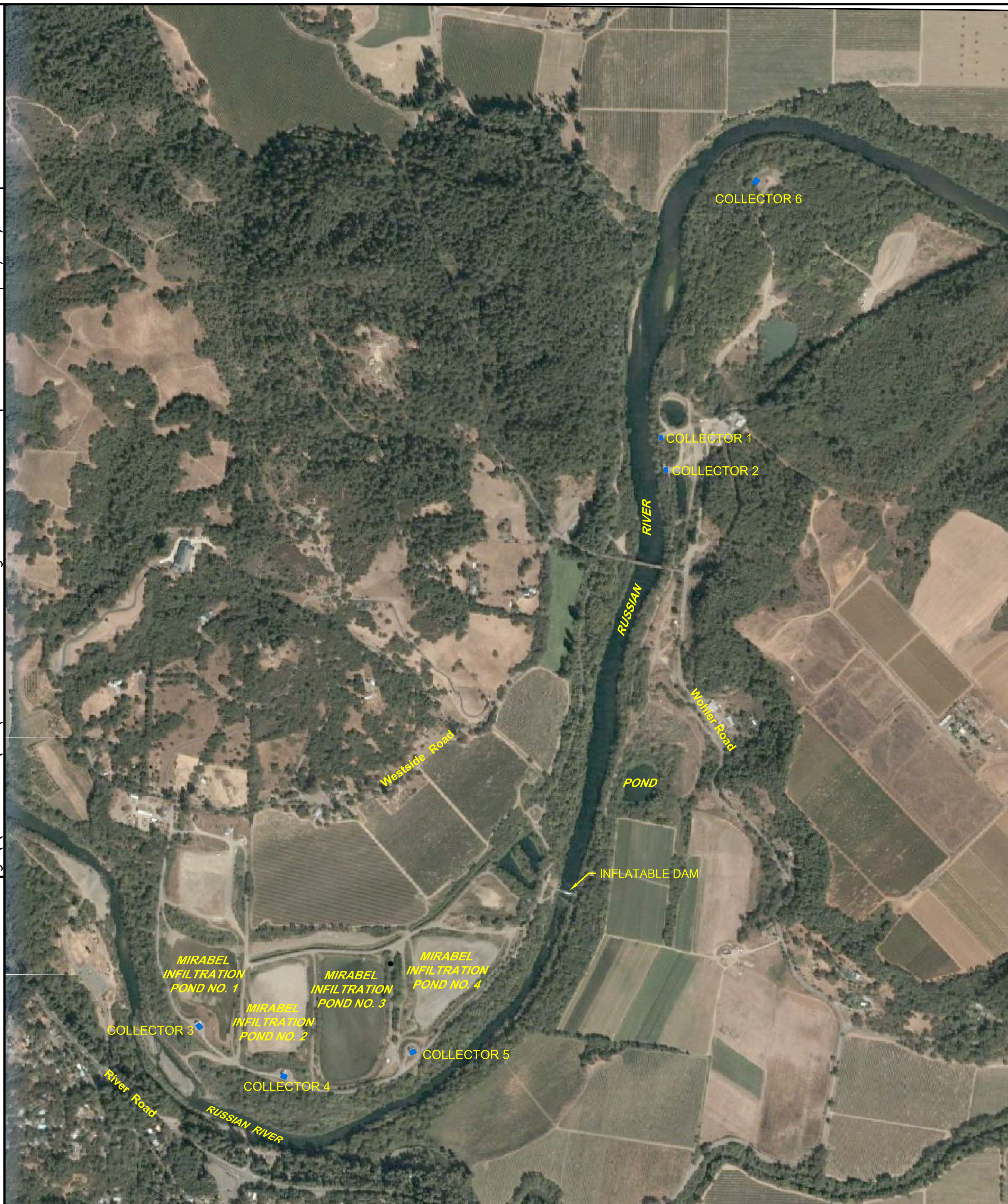

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Figure 2
Project Area Map
Wohler and Mirabel Areas
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Sonoma County, California

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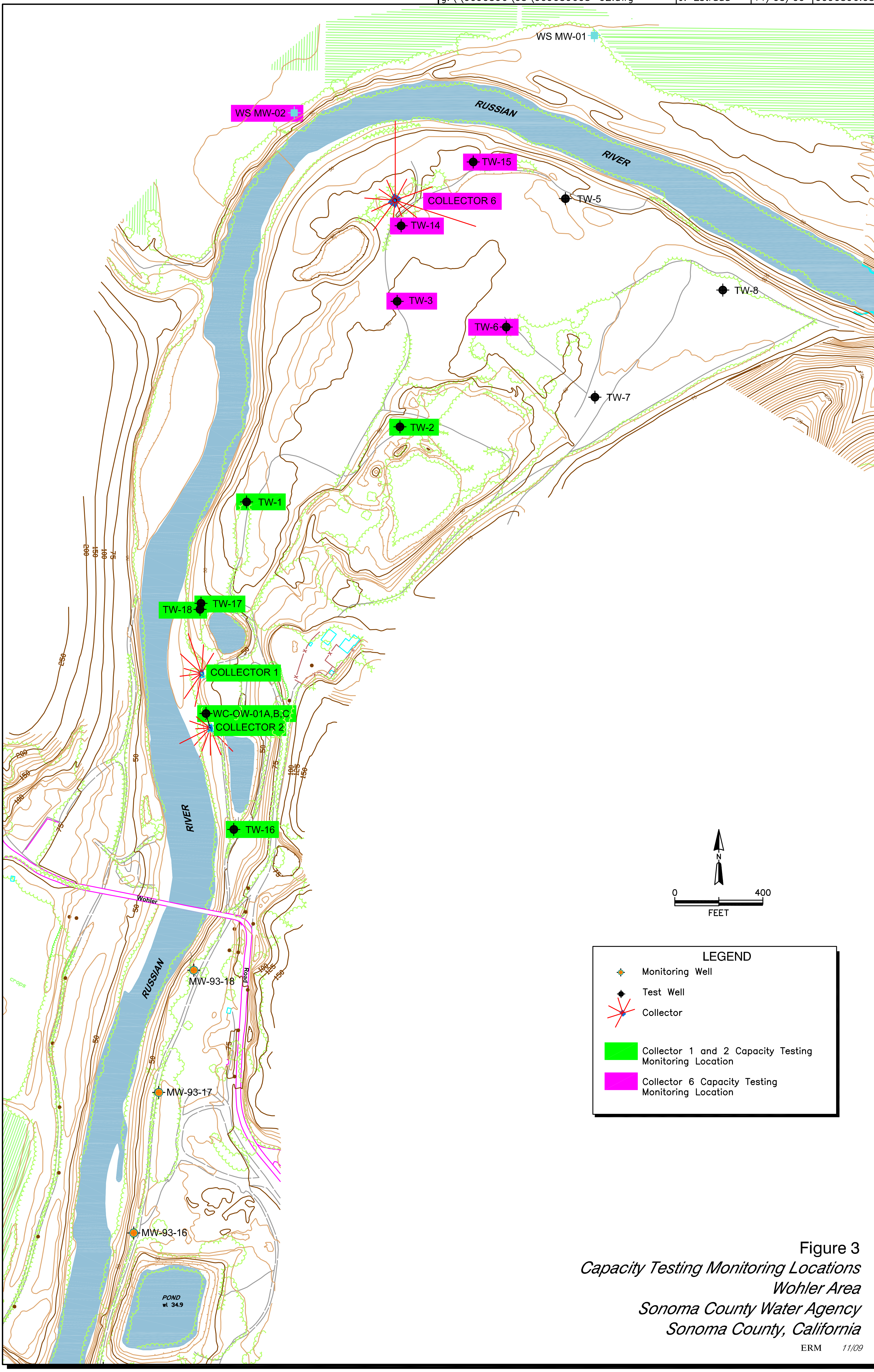

Figure 3
Capacity Testing Monitoring Locations
Wohler Area
Sonoma County Water Agency
Sonoma County, California

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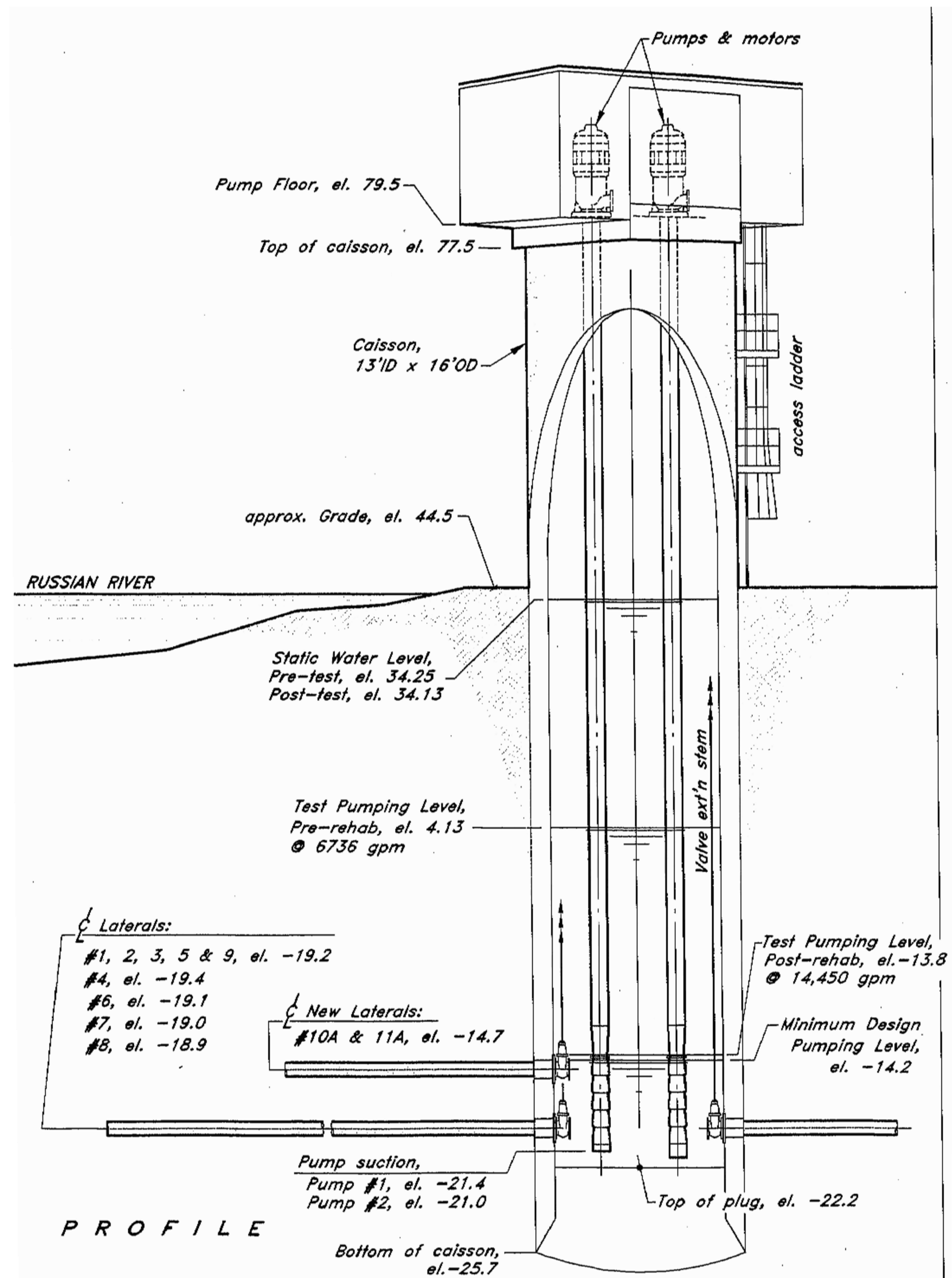

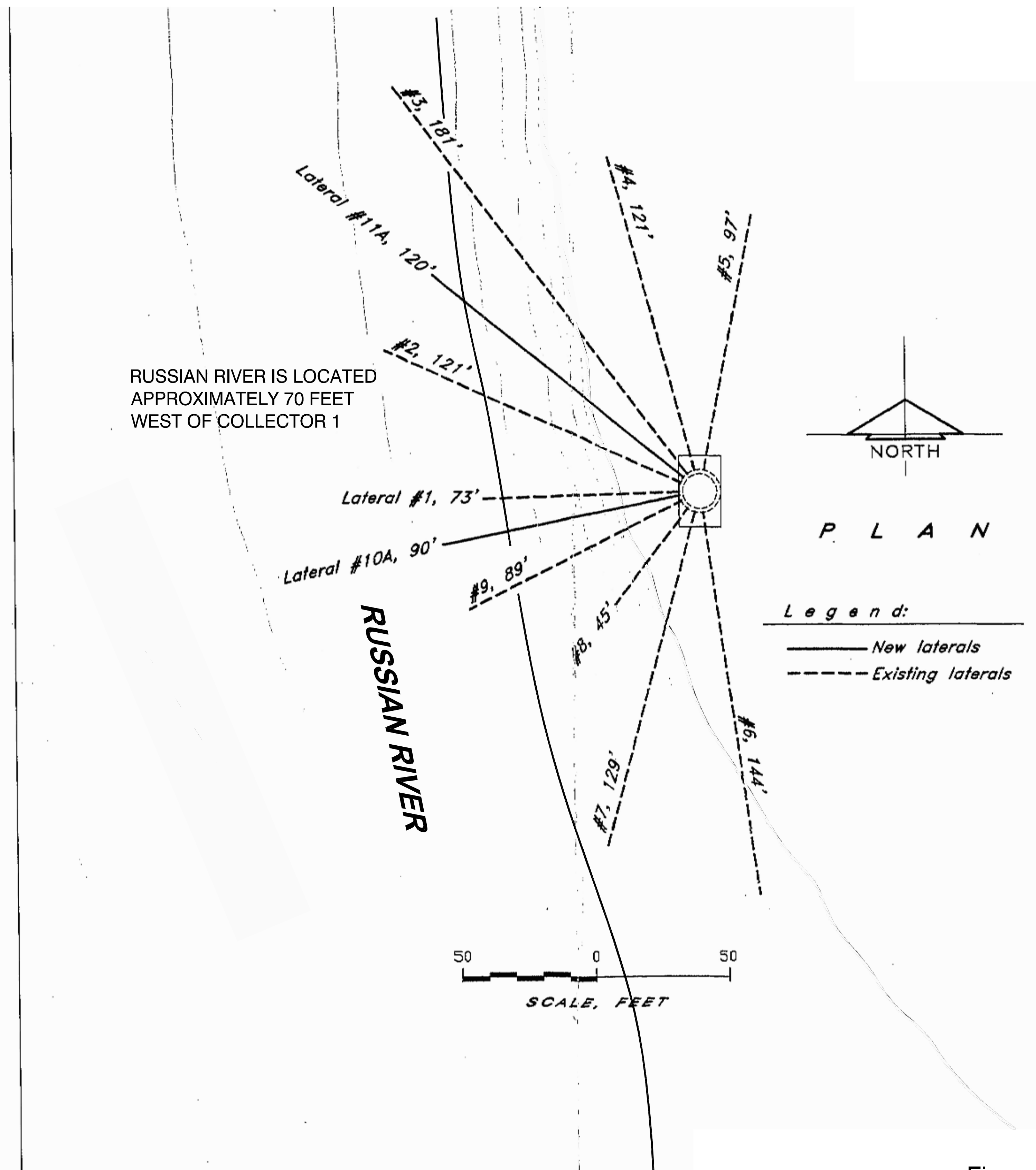

Figure 4
Collector 1 Section and Plan View
Sonoma County Water Agency
Sonoma County, California

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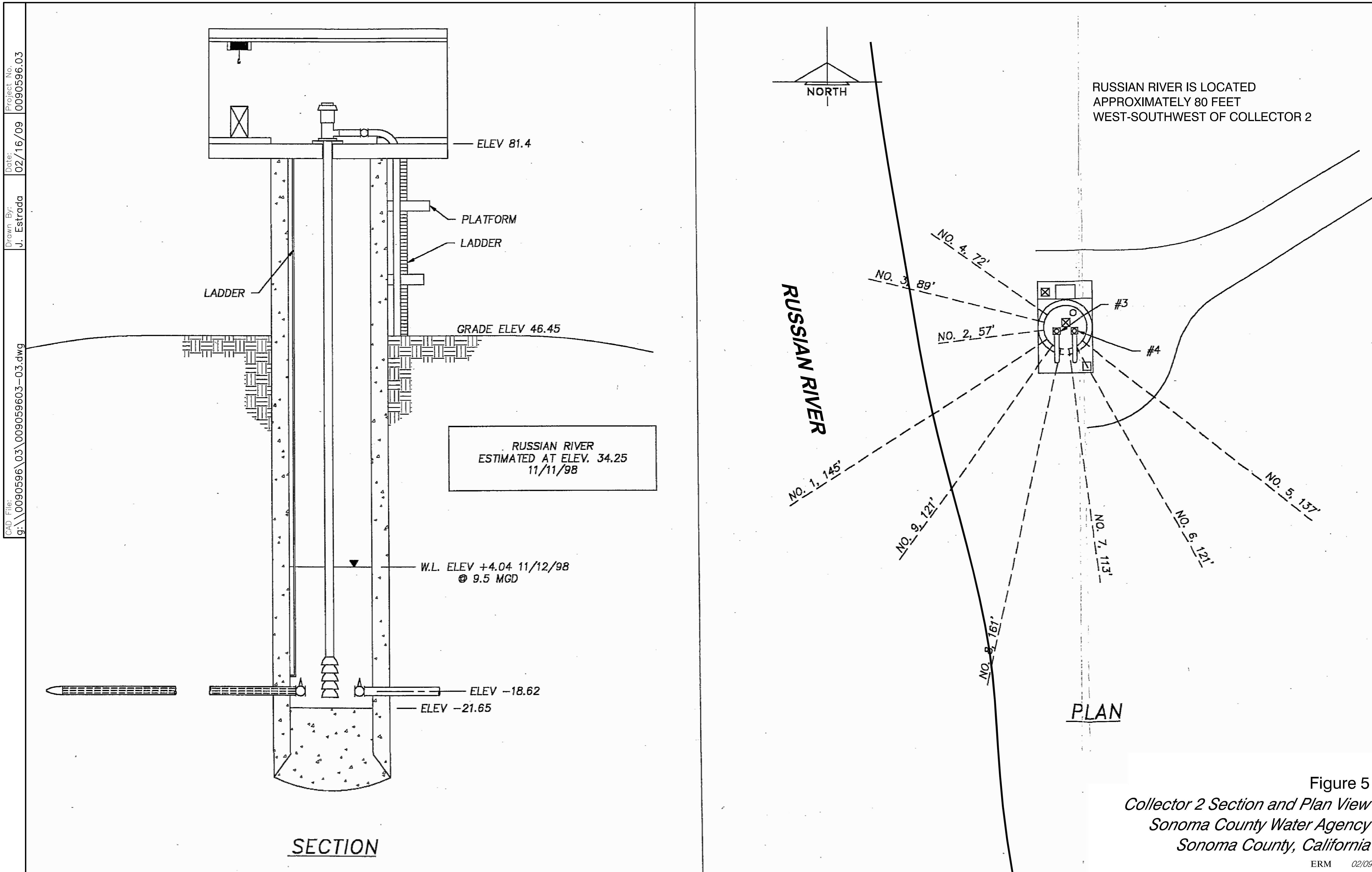

Figure 5
Collector 2 Section and Plan View
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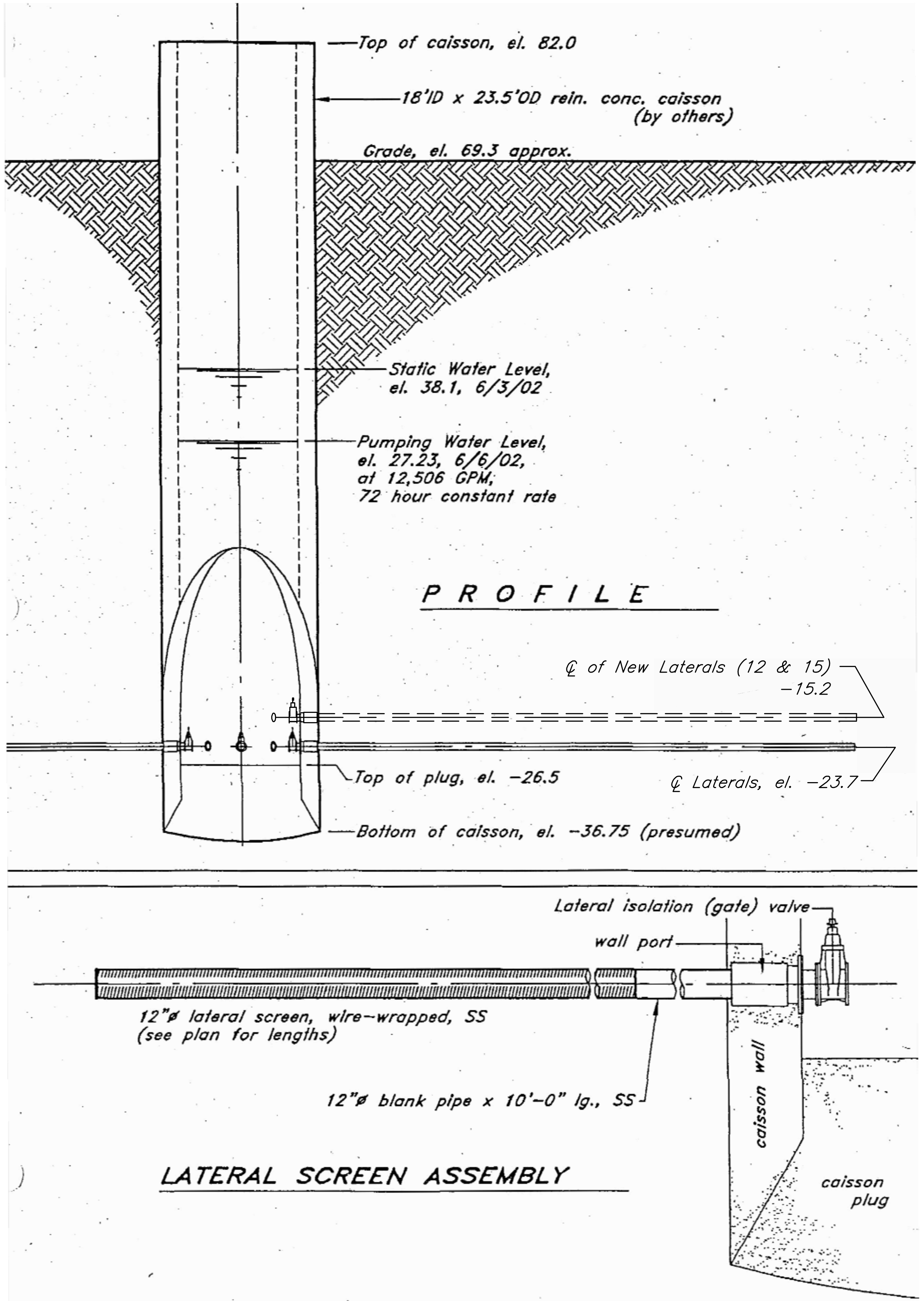
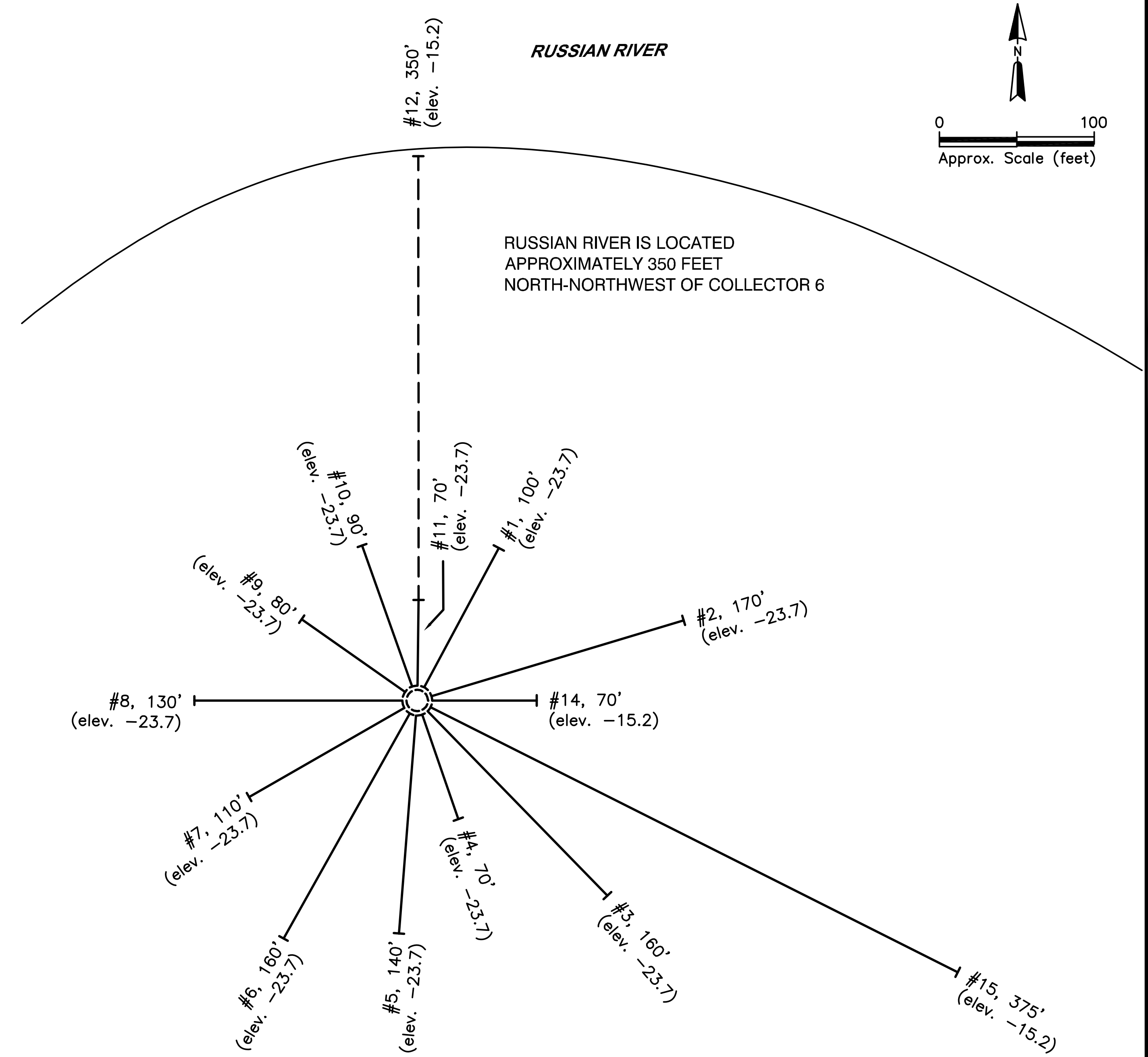




LEGEND

— — —	New Laterals
———	Existing Laterals

Figure 6
Collector 6 Section and Plan View
Sonoma County Water Agency
Sonoma County, California

ERM *02/09*

CAD File:	Drawn By:	Date:	Project No.
g:\\000090596\03\009059603-04.dwg	J. Estrada	11/06/09	0090596.03

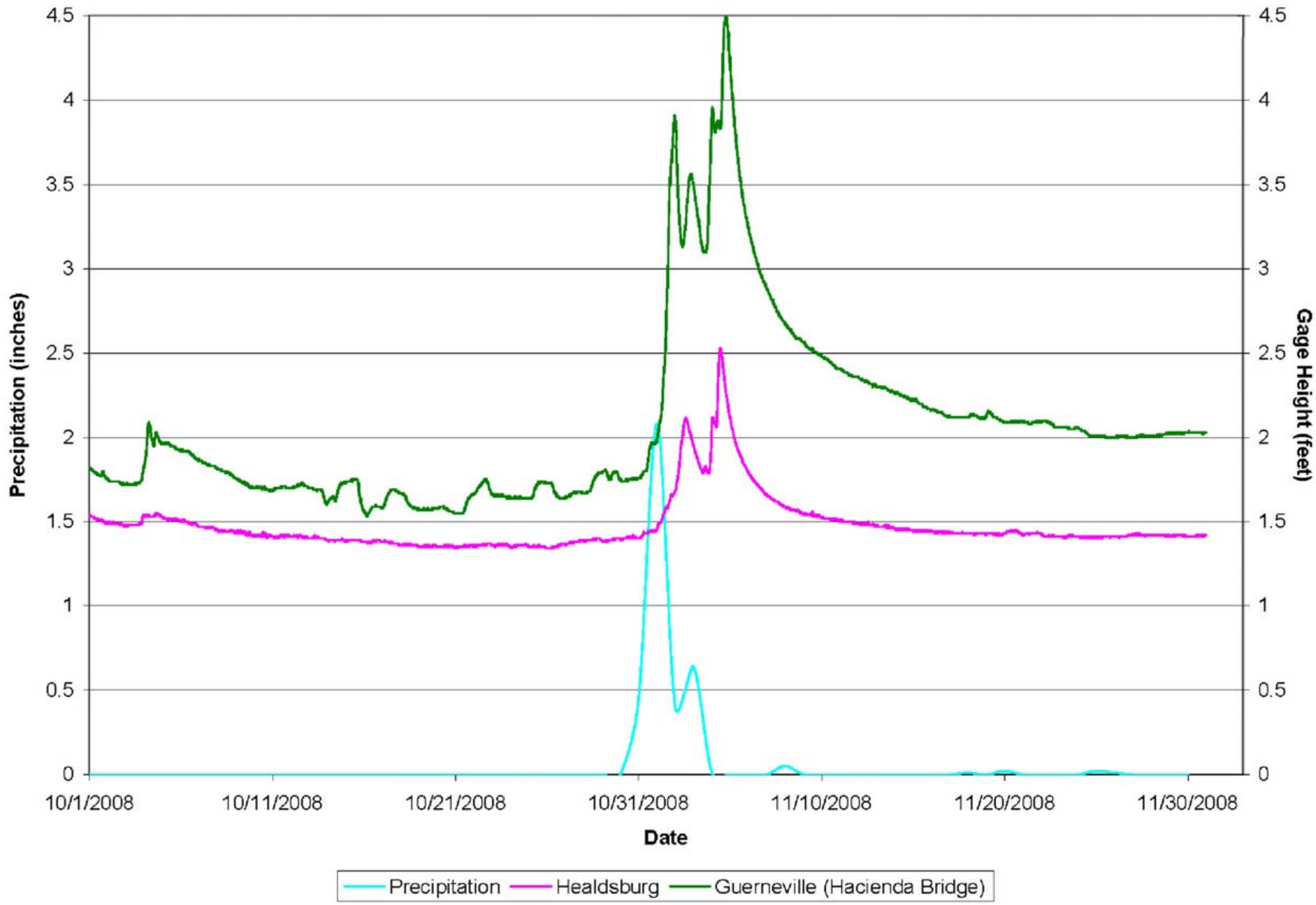


Figure 7

Precipitation and River Stage during Evaluation Period

Sonoma County Water Agency

Sonoma County, California

ERM *11/09*

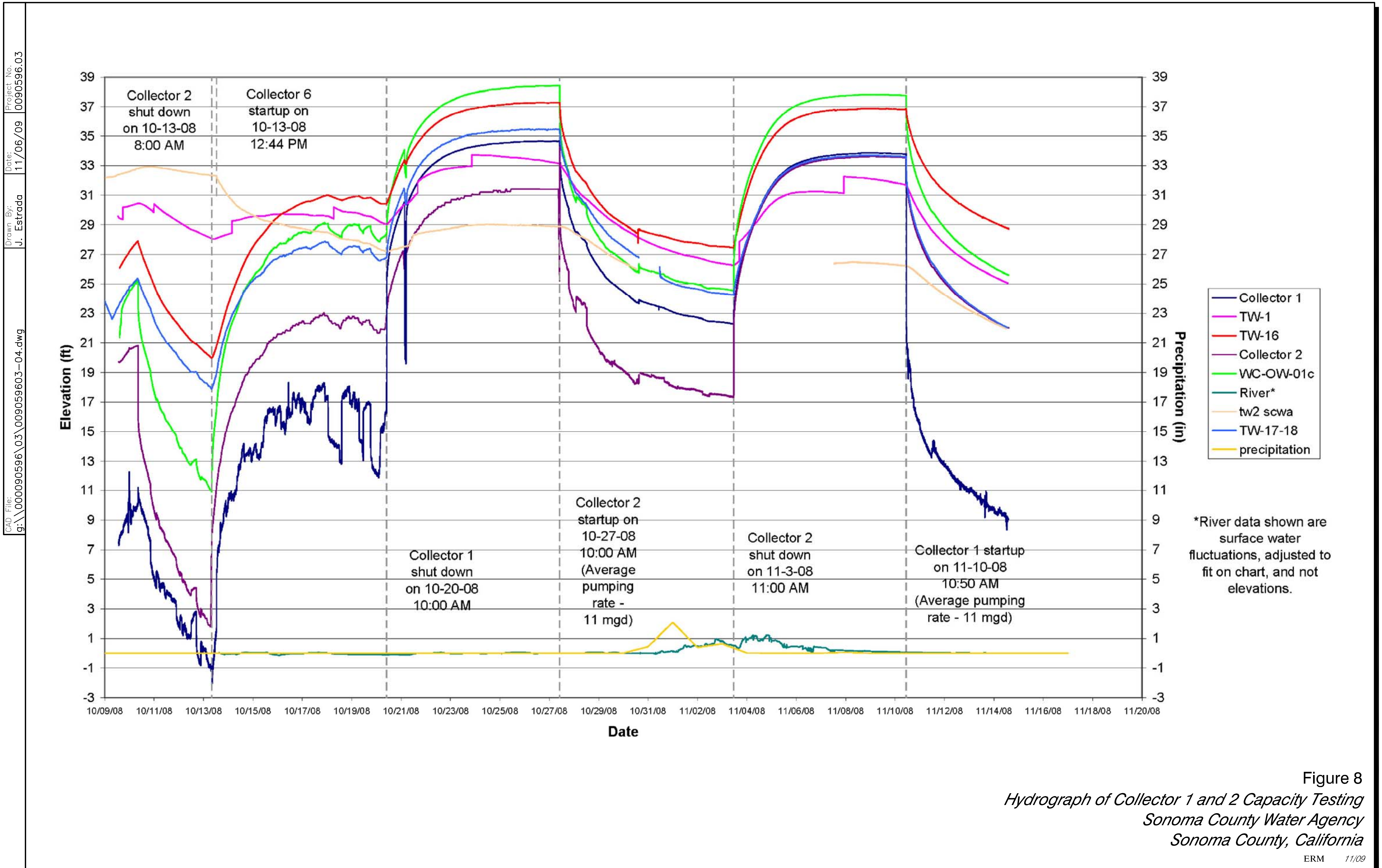


Figure 8

Hydrograph of Collector 1 and 2 Capacity Testing
Sonoma County Water Agency
Sonoma County, California

ERM *11/09*

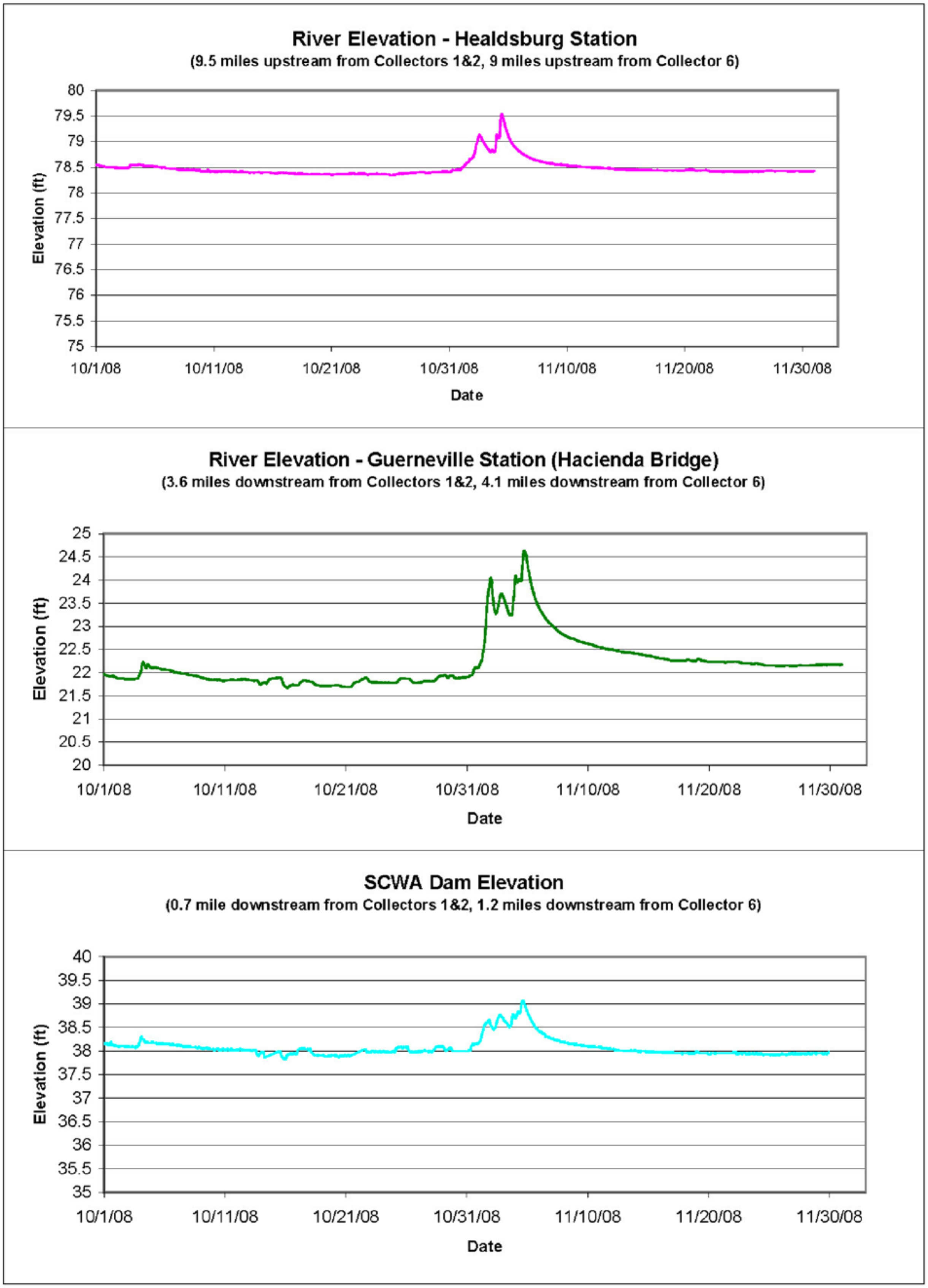


Figure 9

River Elevation during Evaluation Period

Sonoma County Water Agency

Sonoma County, California

ERM 11/09

Project No. 0090596.03

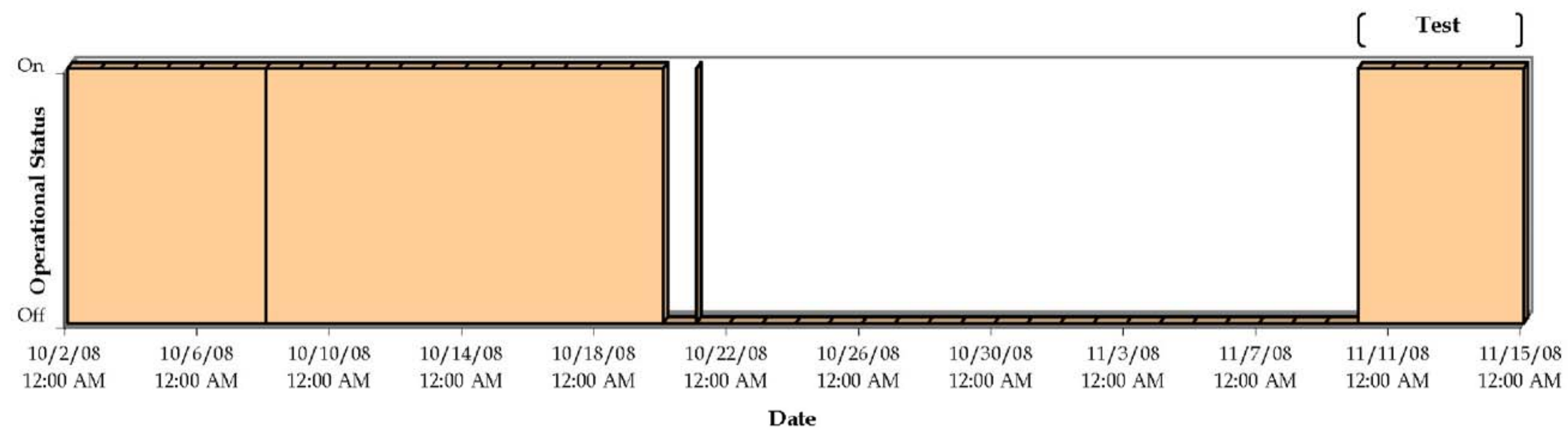
Date: 11/10/09

Drawn By: J. Estrada

CAD File: g:\\0090596\03\009059603-04.dwg

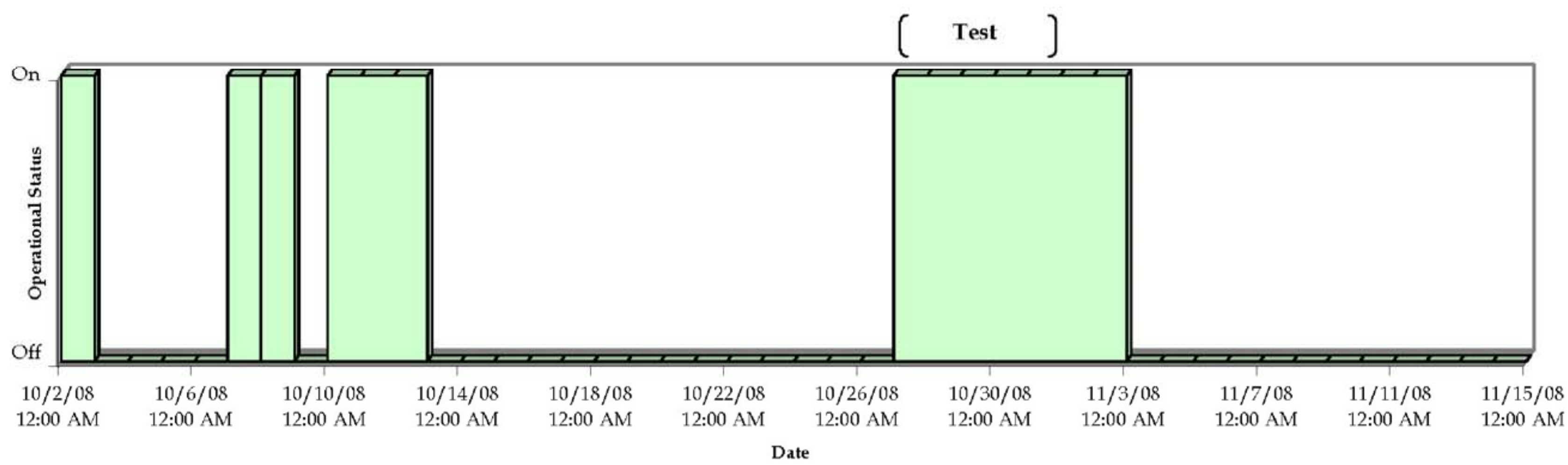
CAD File:	Drawn By:	Date:	Project No.
g:\\0090596\03\009059603-04.dwg	J. Estrada	11/06/09	0090596.03

Collector 1



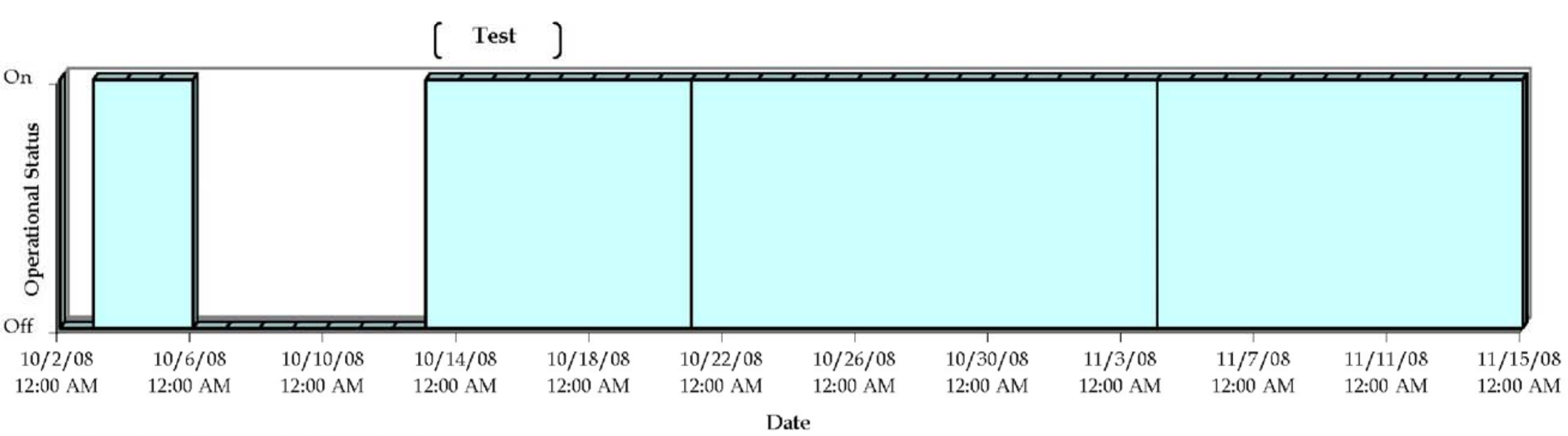
-Pump 2 used during entire test period.
-Collector 1 test period between 11-10-08 (10:50 AM) and 11-14-08 (2:30 PM).
-Average pumping rate during test period - 11 mgd.

Collector 2



-Pump 3 used between 10-2-08 (12:00 AM) and 10-30-08 (2:00 PM).
-Pump 4 used between 10-30-08 (3:00 PM) and end of test period.
-Collector 2 test period between 10-27-08 (10:00 AM) and 10-31-08 (4:00 PM).
-Average pumping rate during test period - 11 mgd.

Collector 6



-Pump 11 used between 10-2-08 and 10-6-08.
-Pump 12 used between 10-13-08 and 10-21-08 (7:00 AM).
-Pump 11 used on 10-21-08 (12:00 PM).
-Pump 12 used between 10-21-08 (1:00 PM) and end of test period.
-Collector 6 test period between 10-13-08 (12:44 PM) and 10-17-08 (2:30 PM).
-Average pumping rate during test period - 19 mgd.

54" Intertie Valve

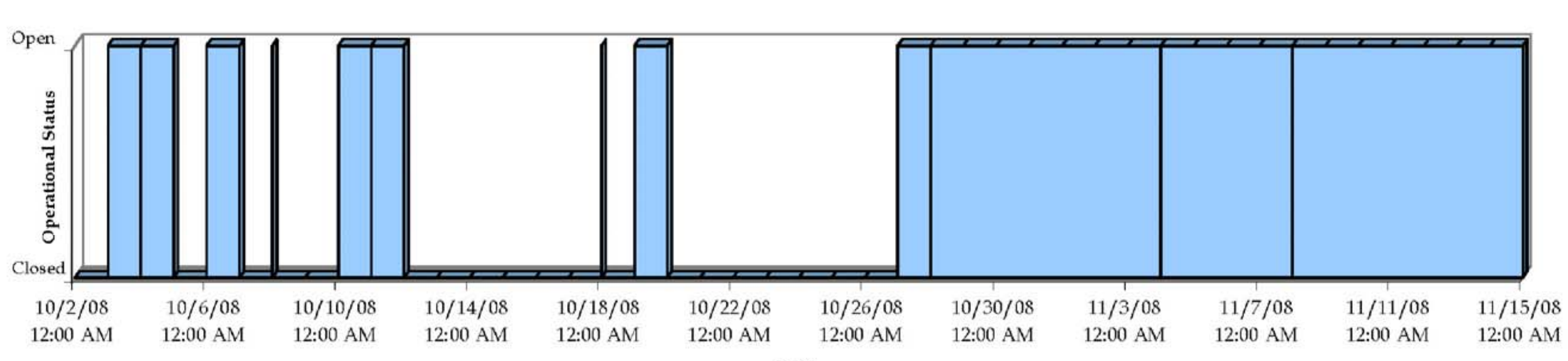


Figure 10
Collector Operation during the Test Period
Sonoma County Water Agency
Sonoma County, California

ERM *11/09*

CAD File:	Drawn By:	Date:	Project No.
g:\\0090596\03\009059603-13.dwg	J. Estrada	11/06/09	0090596.03

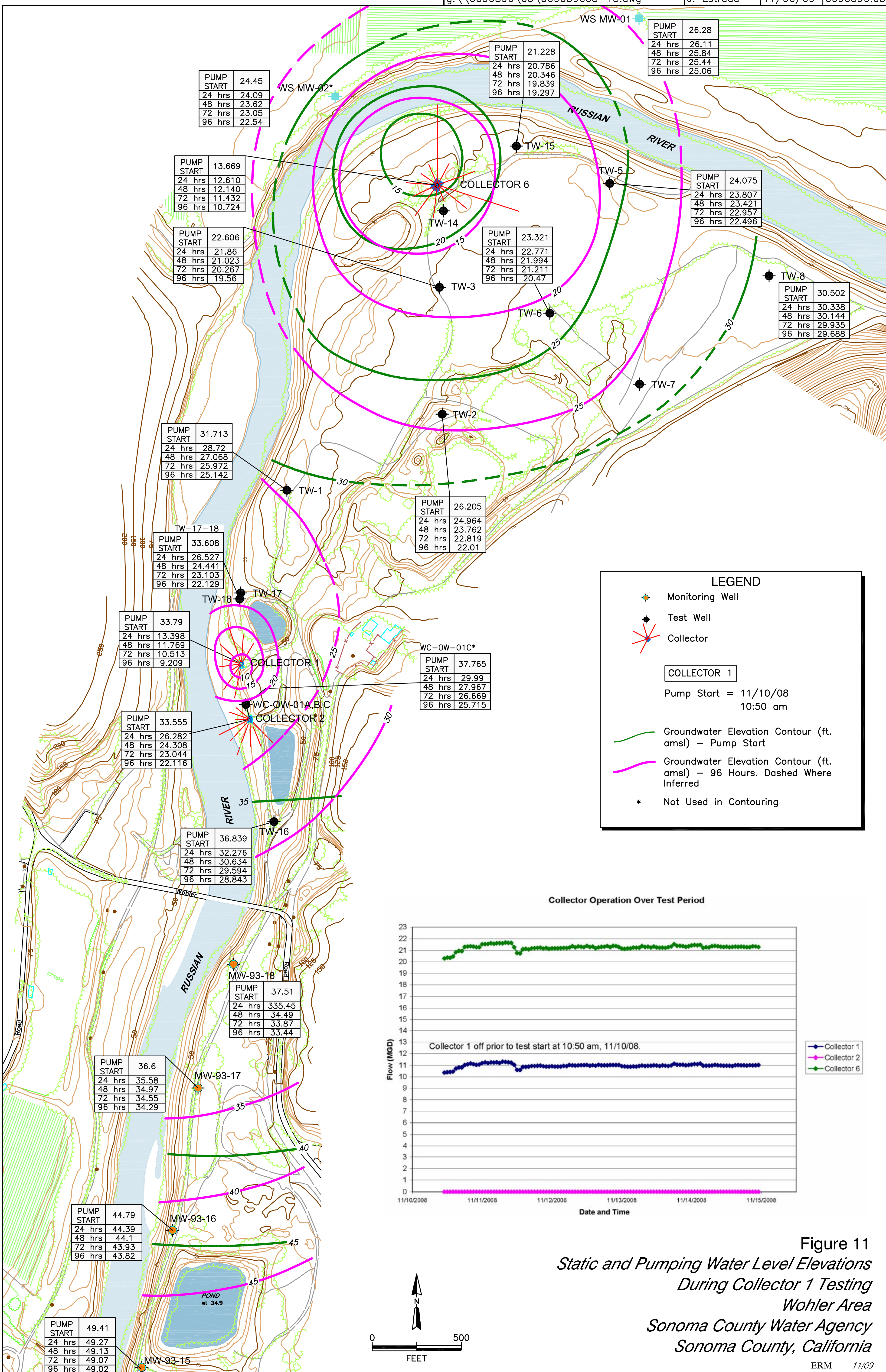
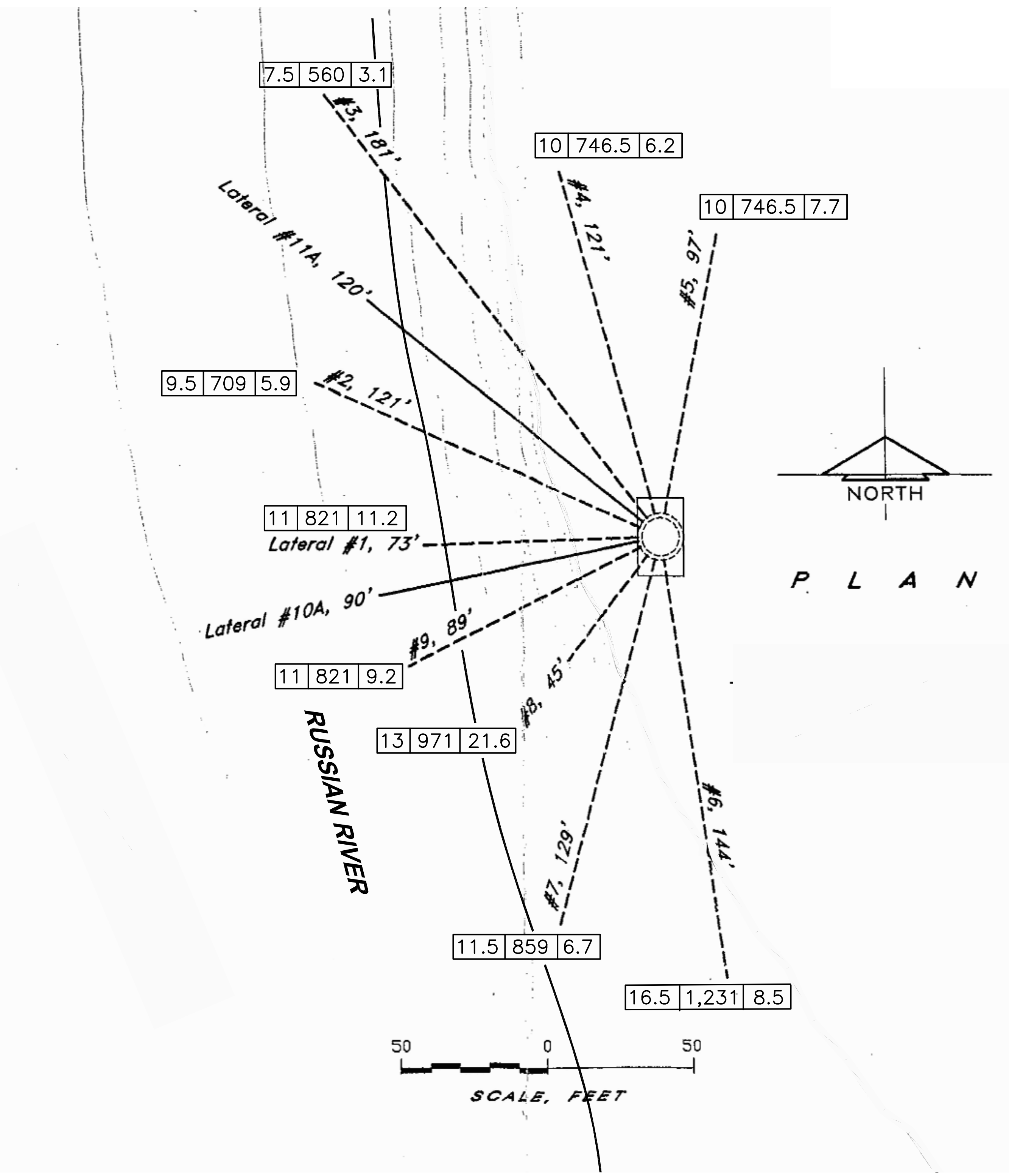


Figure 11
Static and Pumping Water Level Elevations
During Collector 1 Testing
Wohler Area
Sonoma County Water Agency
Sonoma County, California

ERM *11/09*

CAD File: g:\\0090596\03\009059603-06.dwg
Drawn By: J. Estrada
Date: 02/09/09
Project No. 0090596.03

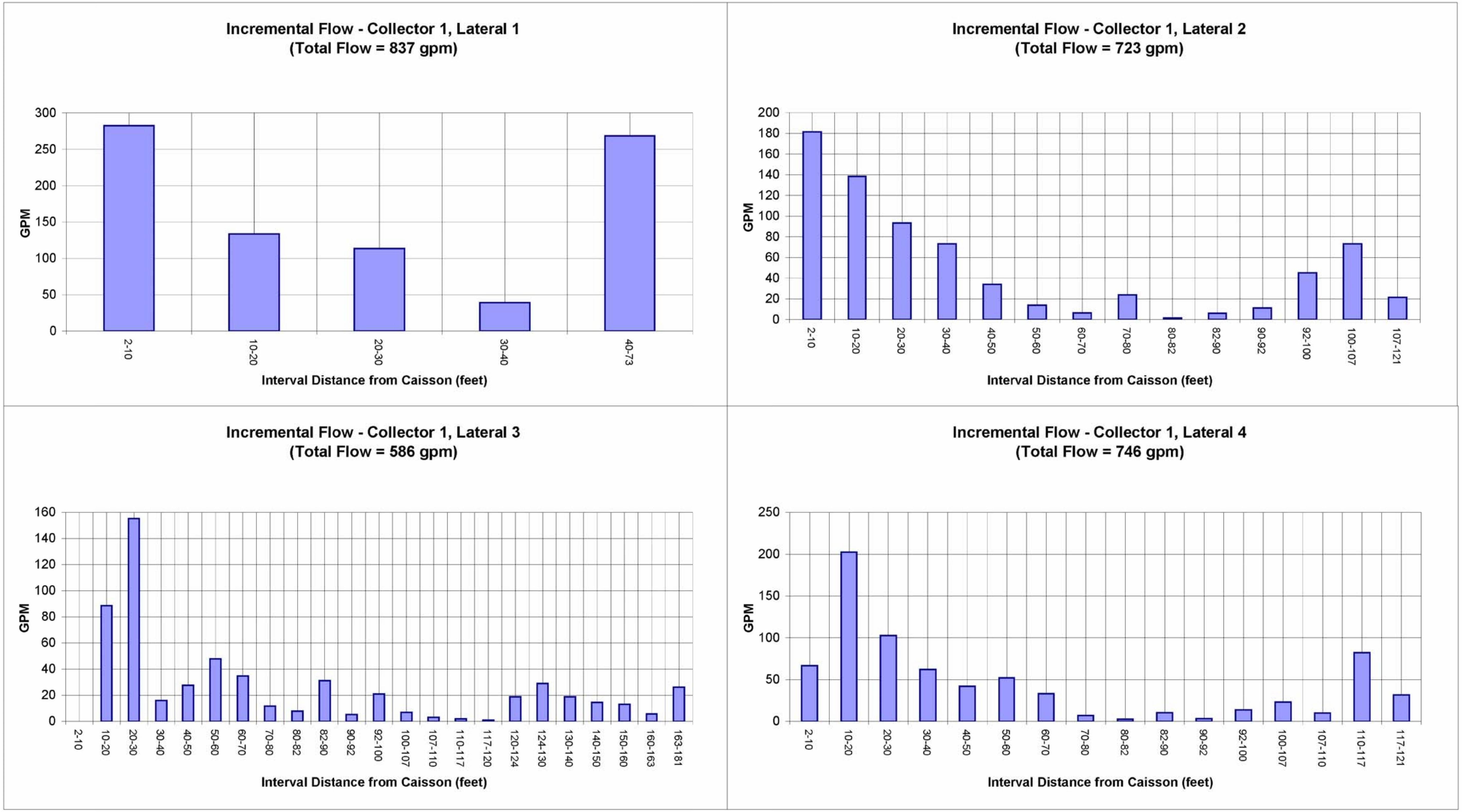


Note: Total flow in Collector 1 – 7,465 gpm.

LEGEND
Existing Laterals
New Laterals
5 | 649 | 4.6
gpm/ft
gpm
%

Figure 12
Relative Lateral Flow Percentages
Collector 1
Sonoma County Water Agency
Sonoma County, California

ERM 02/09



CAD File: g:\\0000090596\03\009059603-10.dwg
Drawn By: J. Estrada
Date: 03/04/09
Project No. 0090596.03

Figure 13a
Incremental Flow - Collector 1 Laterals
Sonoma County Water Agency
Sonoma County, California

ERM 03/09

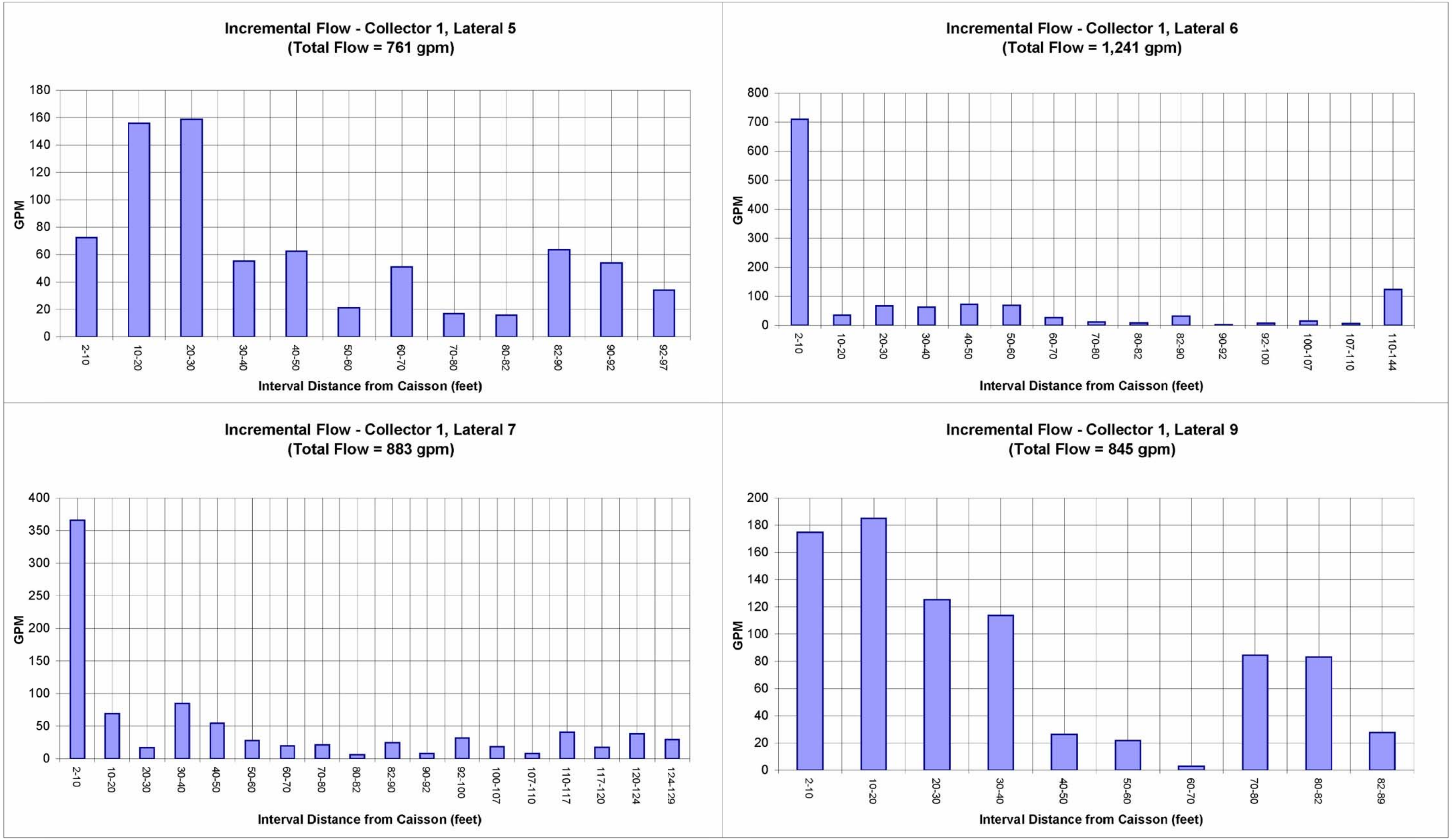


Figure 13b

Incremental Flow - Collector 1 Laterals

Sonoma County Water Agency

Sonoma County, California

ERM *03/09*

Project No. 0090596.03 | Date: 03/04/09 | Drawn By: J. Estrada | CAD File: g:\000090596\03\009059603-10.dwg

CAD File:	Drawn By:	Date:	Project No.
g:\\000090596\03\009059603-04.dwg	J. Estrada	03/04/09	0090596.03

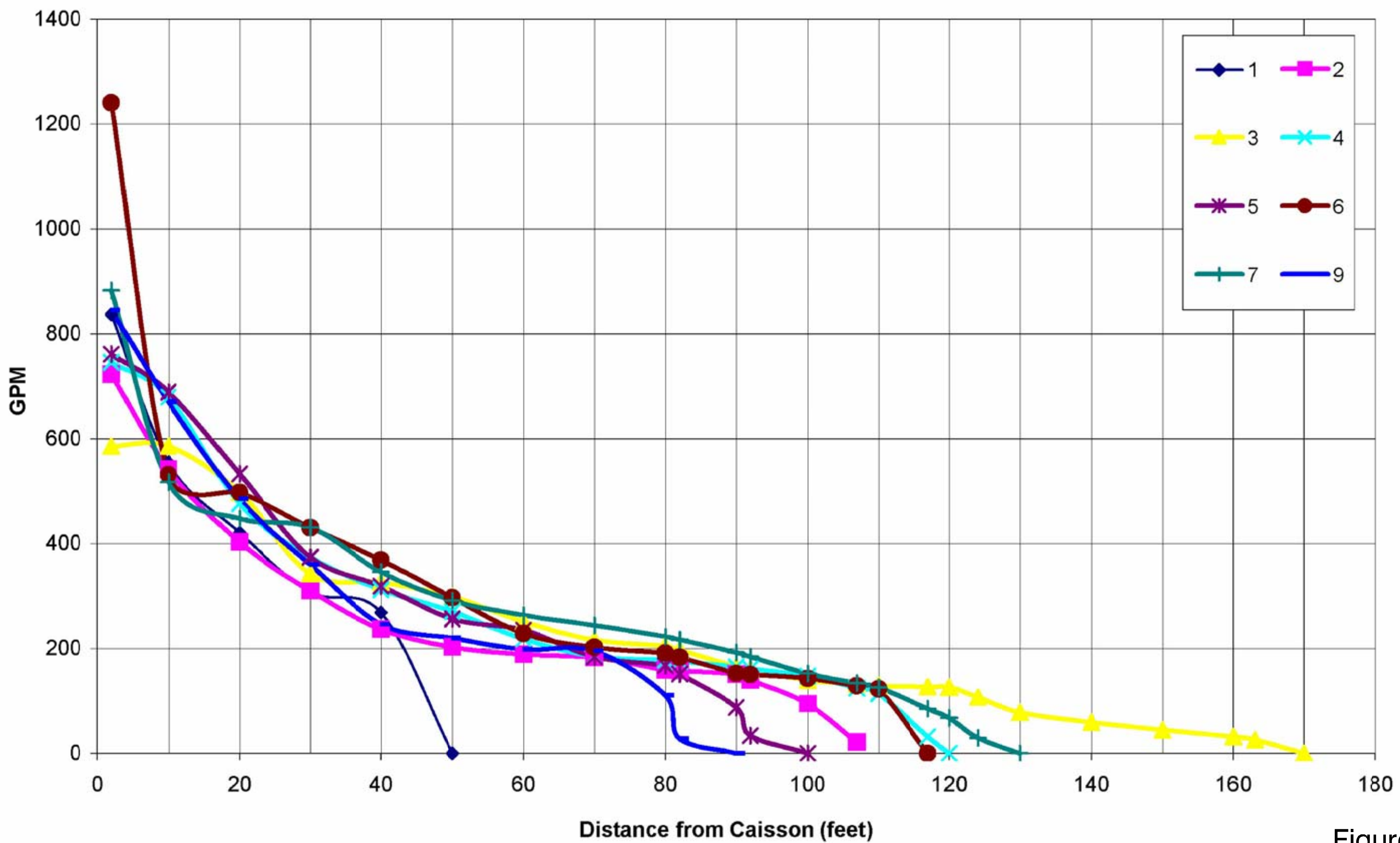


Figure 14
Flow versus Distance from Caisson
Collector 1 Laterals
Sonoma County Water Agency
Sonoma County, California

ERM *03/09*

CAD File:	Drawn By:	Date:	Project No.
G:\\0099713\0003\0018\009971300030018-03.dwg	R. Olson	11/10/09	0099713.0003.0018

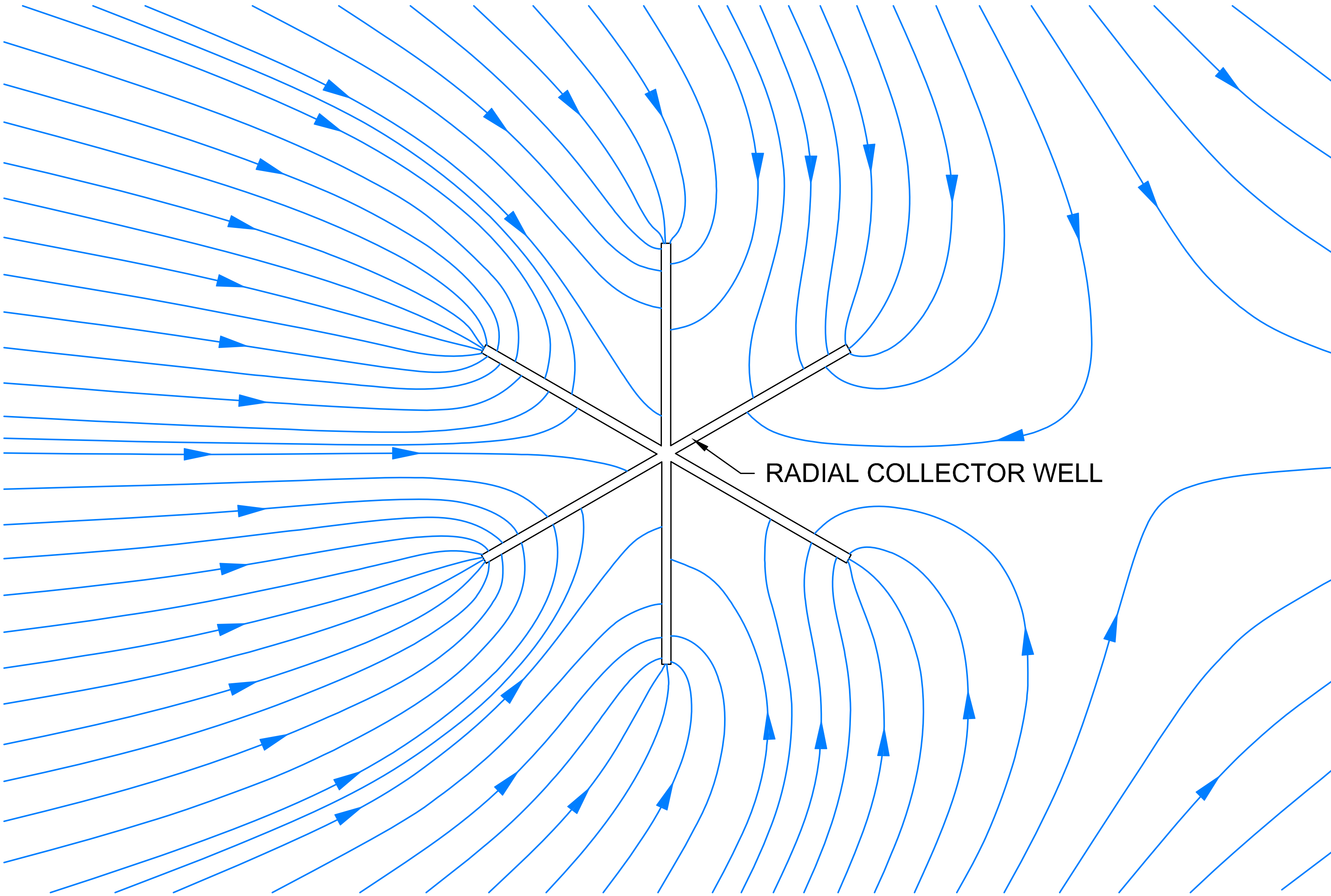


Figure 15

Flow Pattern for a Fully Penetrating Radial Collector Well

Sonoma County Water Agency

Sonoma County, California

Note: Planview representation of flow pattern for a fully penetrating radial collector well in a field of uniform flow is based on unpublished data provided by Brechtel.

ERM *11/09*

CAD File:	Drawn By:	Date:	Project No.
g:\\000090596\03\009059603-14.dwg	J. Estrada	11/10/09	0090596.03

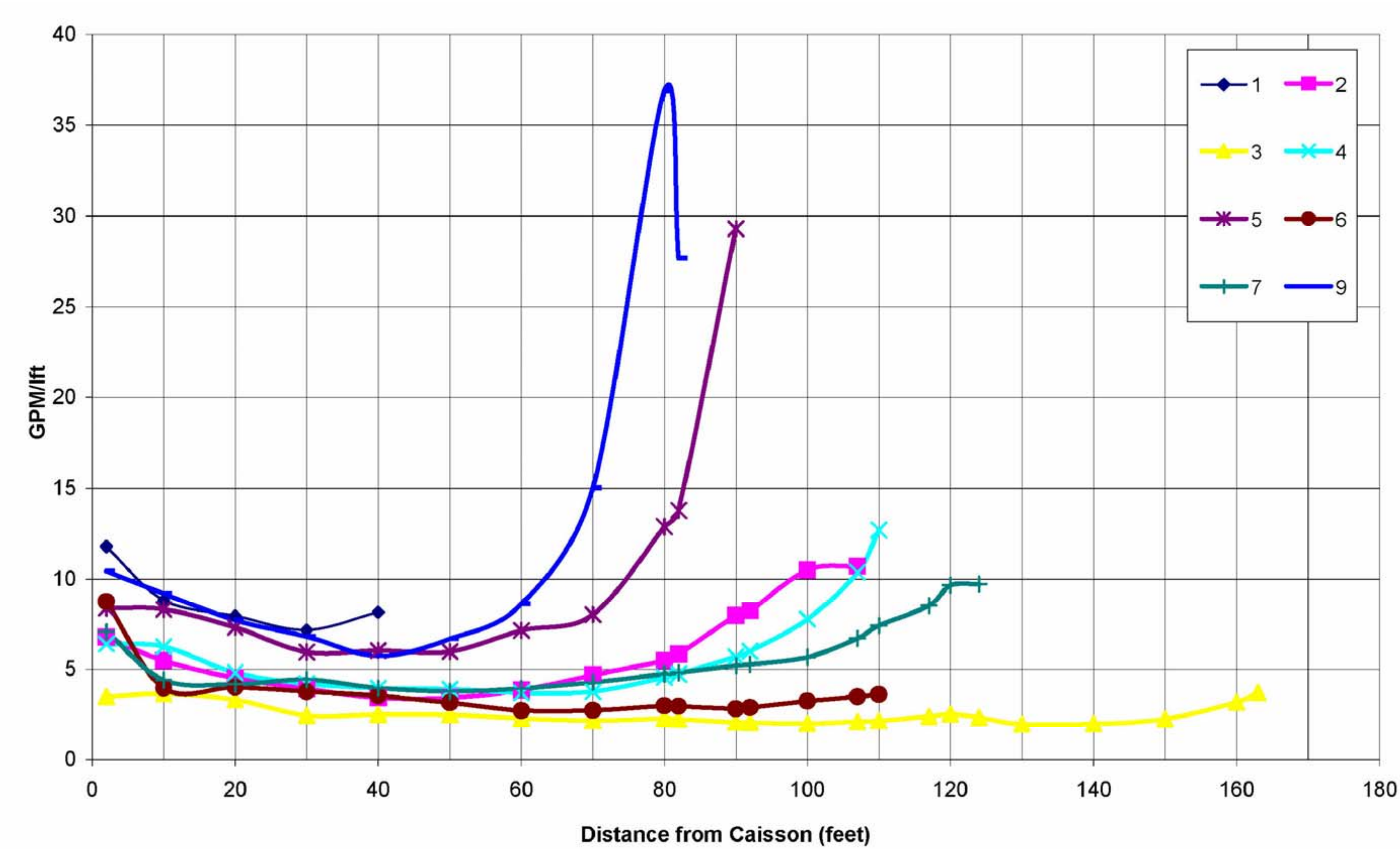


Figure 16

Flow/Screen Length at Distances from Caisson in Collecter 1 Laterals

Sonoma County Water Agency

Sonoma County, California

ERM *11/09*

CAD File:	Drawn By:	Date:	Project No.
g:\\0090596\03\009059603-12.dwg	J. Estrada	11/10/09	0090596.03

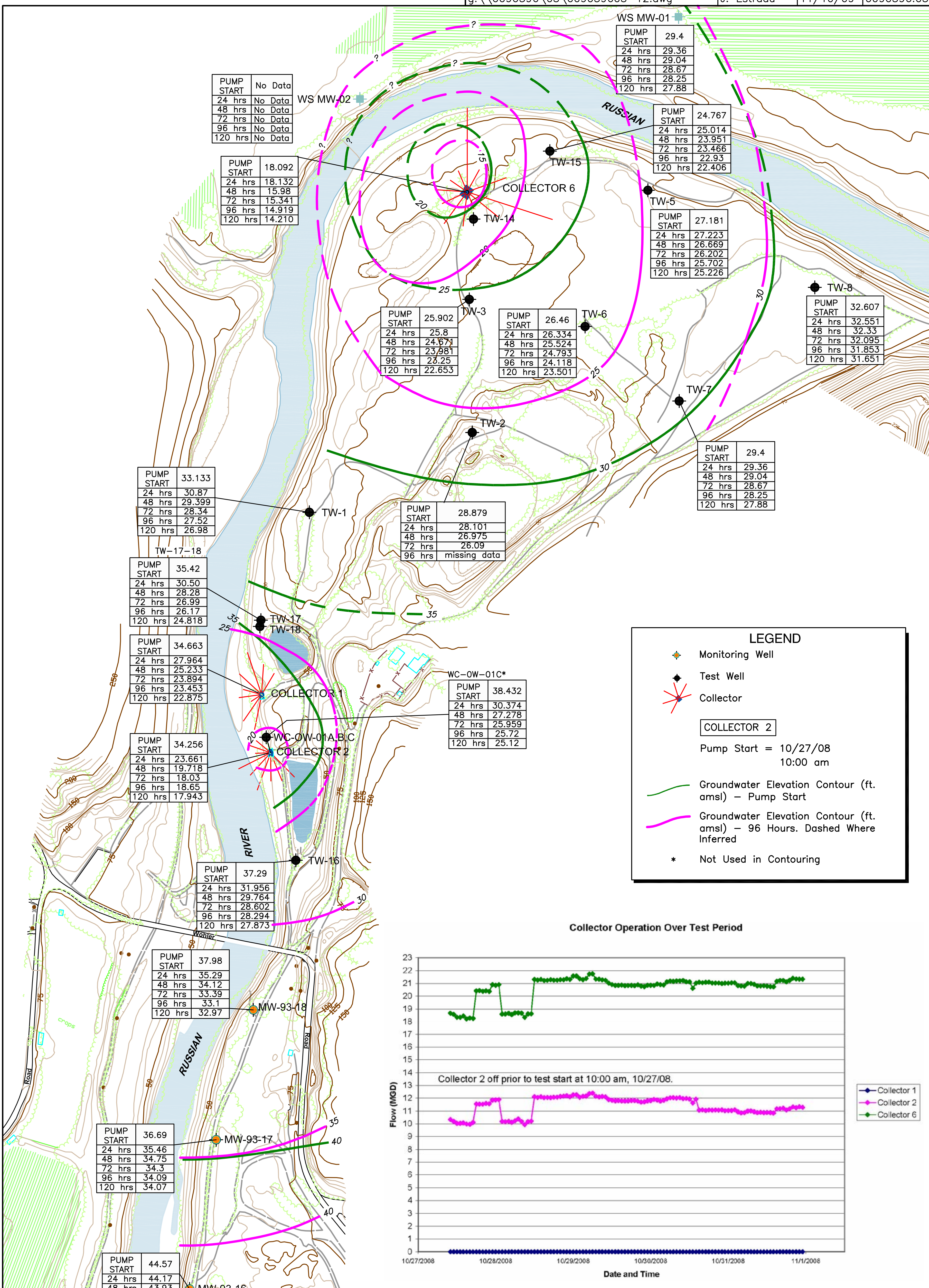
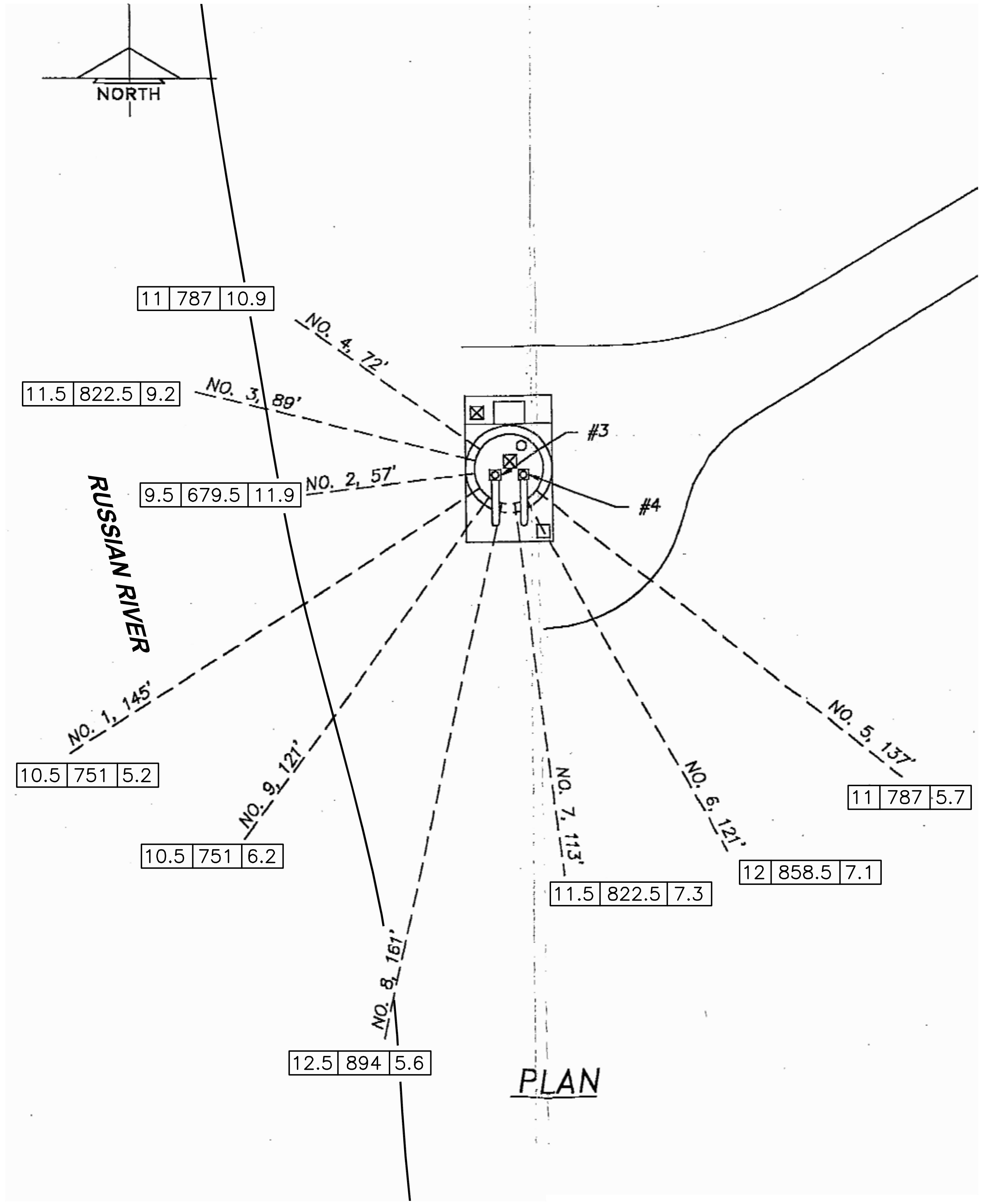


Figure 17
Static and Pumping Water Level Elevations During Collector 2 Testing
Wohler Area
Sonoma County Water Agency
Sonoma County, California

ERM 11/09



Note: Total flow in Collector 2 – 7,153 gpm.

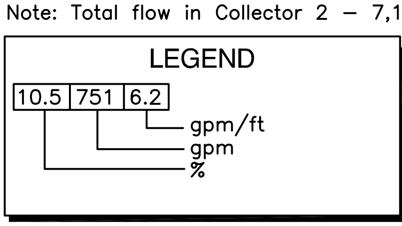
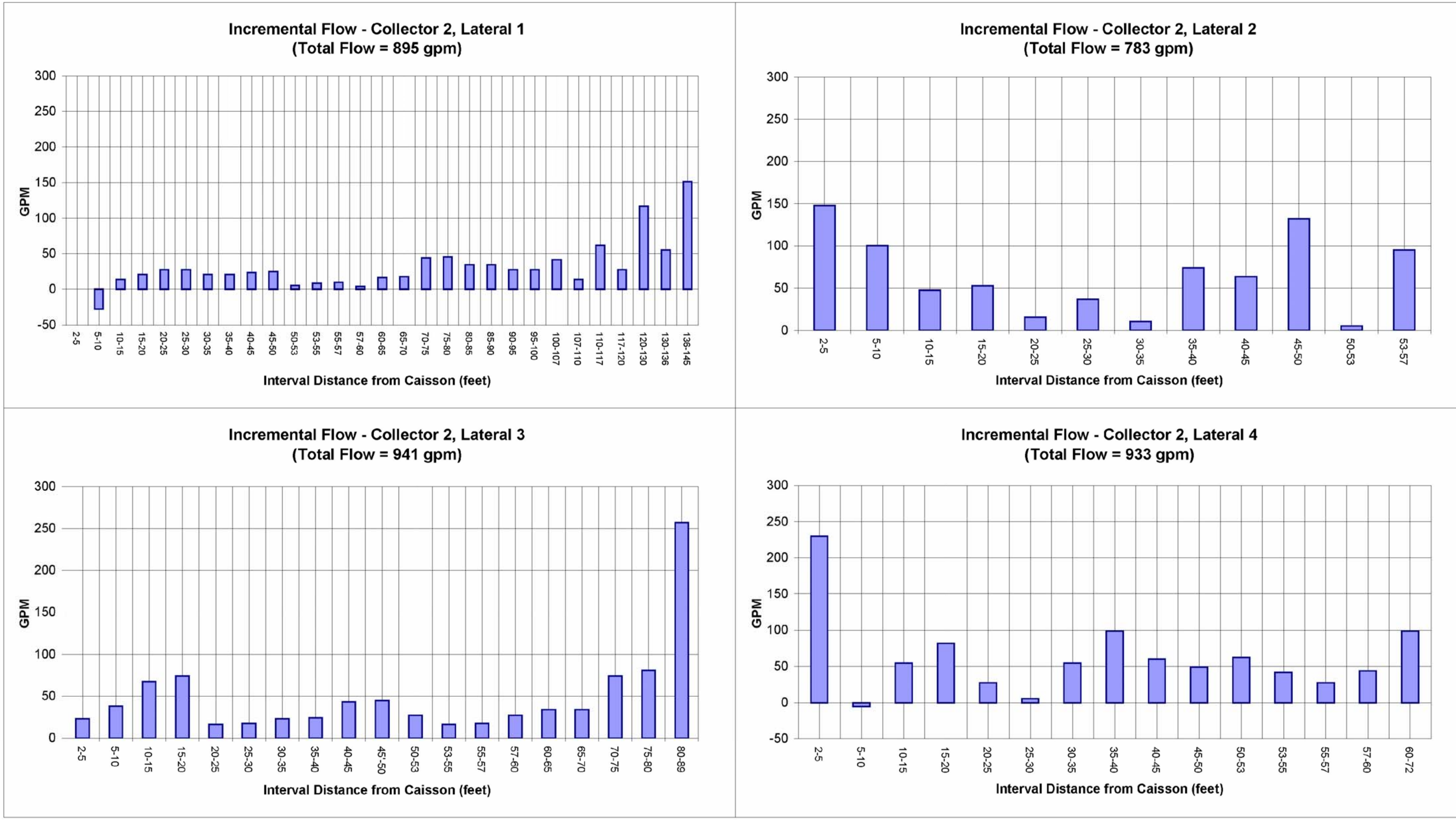


Figure 18
Relative Lateral Flow Data
Collector 2
Sonoma County Water Agency
Sonoma County, California

ERM 03/09



Project No. 0090596.03
Date: 11/10/09
Drawn By: J. Estrada
CAD File: g:\\0000090596\03\009059603-10.dwg

Figure 19a

Incremental Flow - Collector 2 Laterals

Sonoma County Water Agency

Sonoma County, California

ERM *11/09*

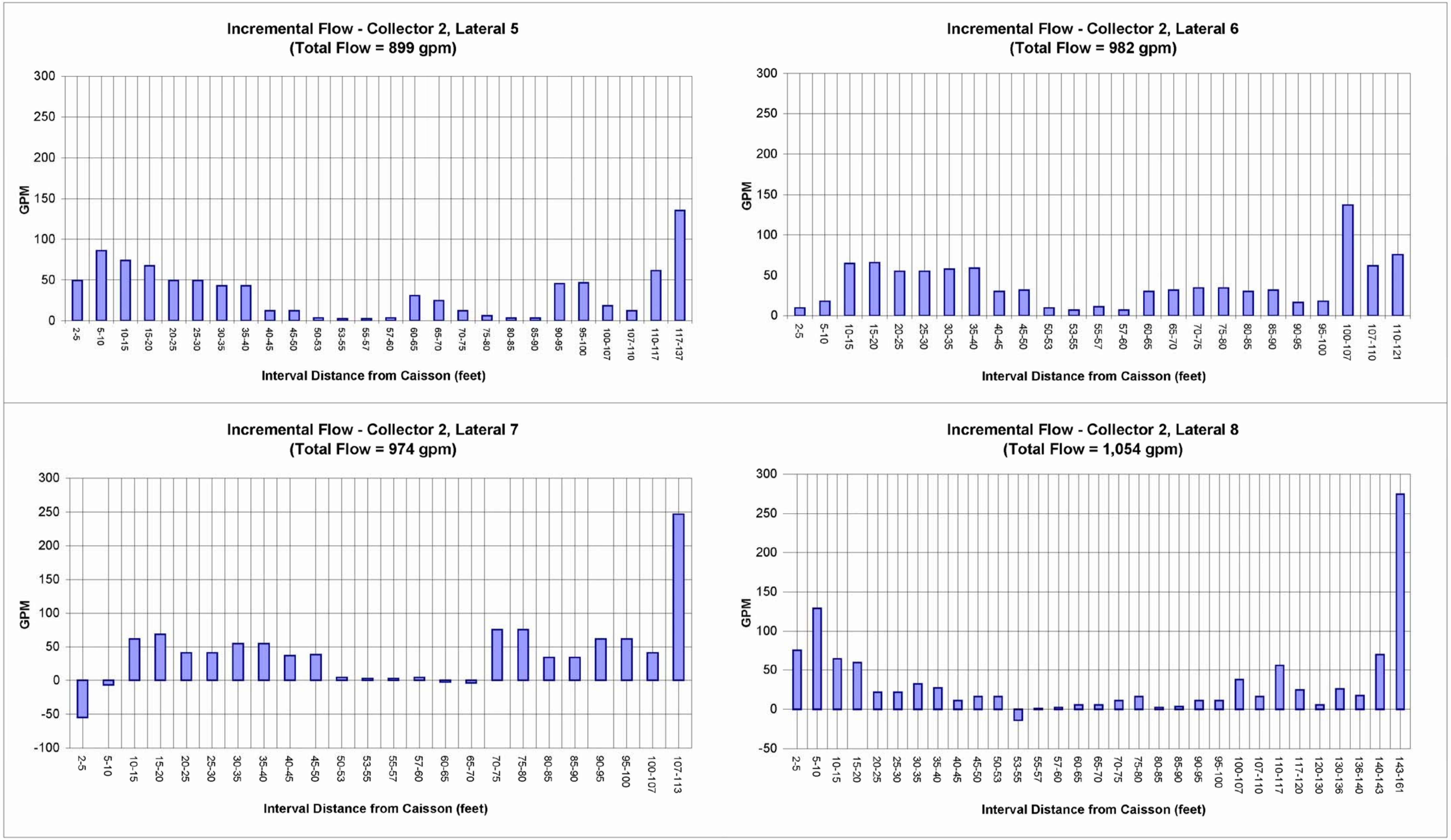


Figure 19b

Incremental Flow - Collector 2 Laterals

Sonoma County Water Agency

Sonoma County, California

ERM *11/09*

CAD File: g:\000090596\03\009059603-10.dwg | Drawn By: J. Estrada | Date: 11/10/09 | Project No. 0090596.03

CAD File:	Drawn By:	Date:	Project No.
g:\\000090596\03\009059603-14.dwg	J. Estrada	11/10/09	0090596.03

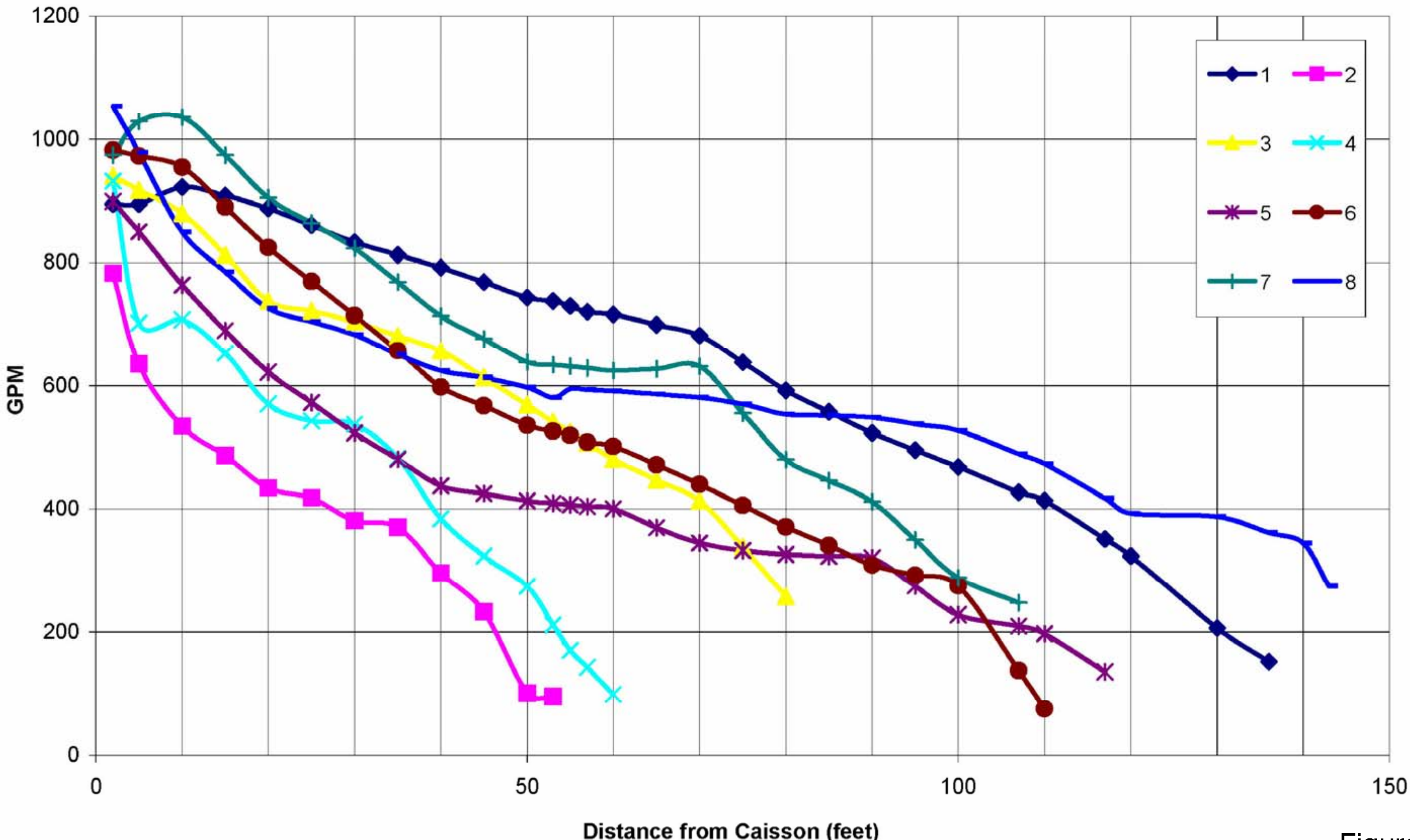


Figure 20

Flow versus Distance from Caisson

Collector 2 Laterals

Sonoma County Water Agency

Sonoma County, California

ERM *11/09*

CAD File:	Drawn By:	Date:	Project No.
g:\\000090596\03\009059603-14.dwg	J. Estrada	11/10/09	0090596.03

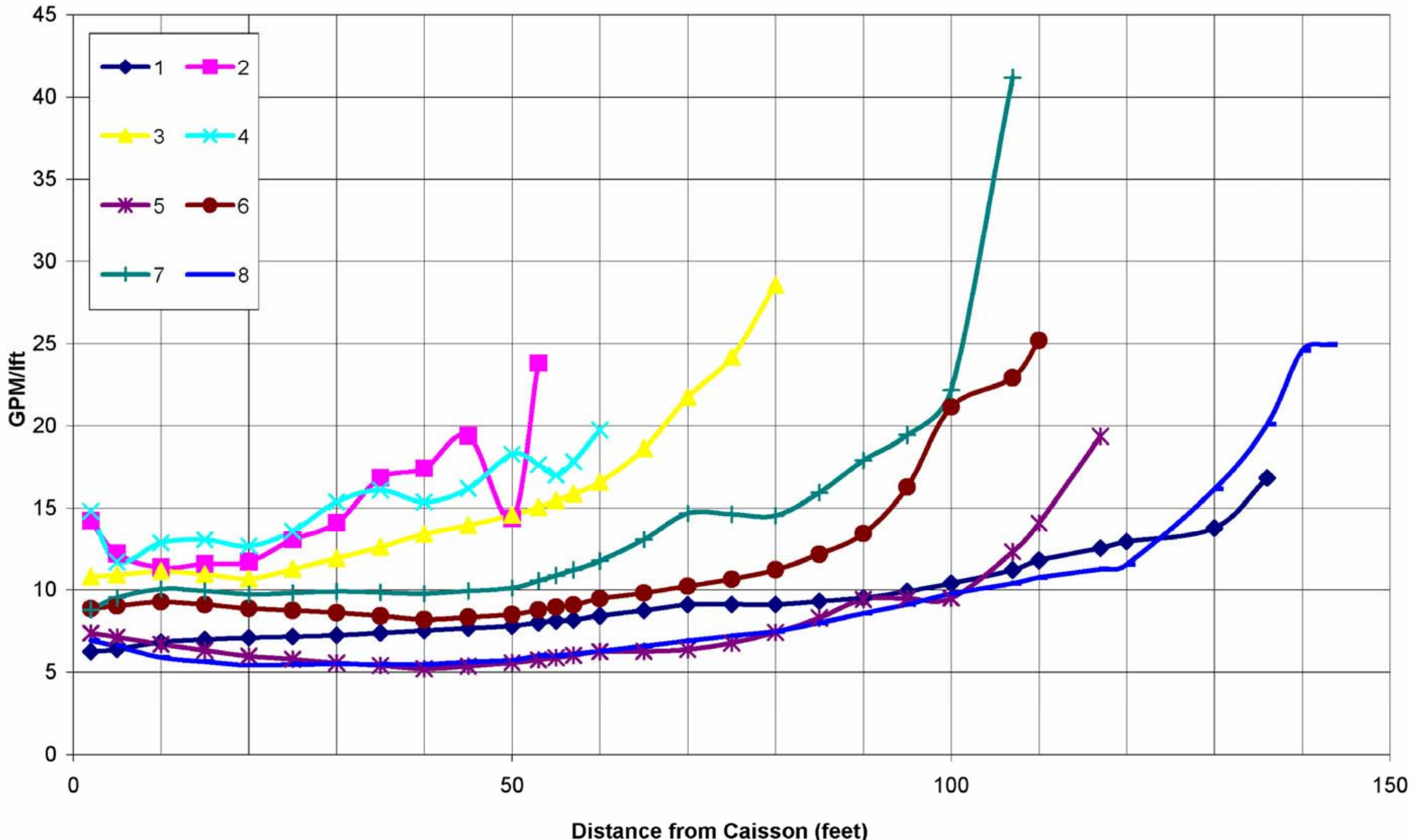


Figure 21

Flow/Screen Length at Distances from Caisson in Collector 2 Laterals

Sonoma County Water Agency

Sonoma County, California

ERM 11/09

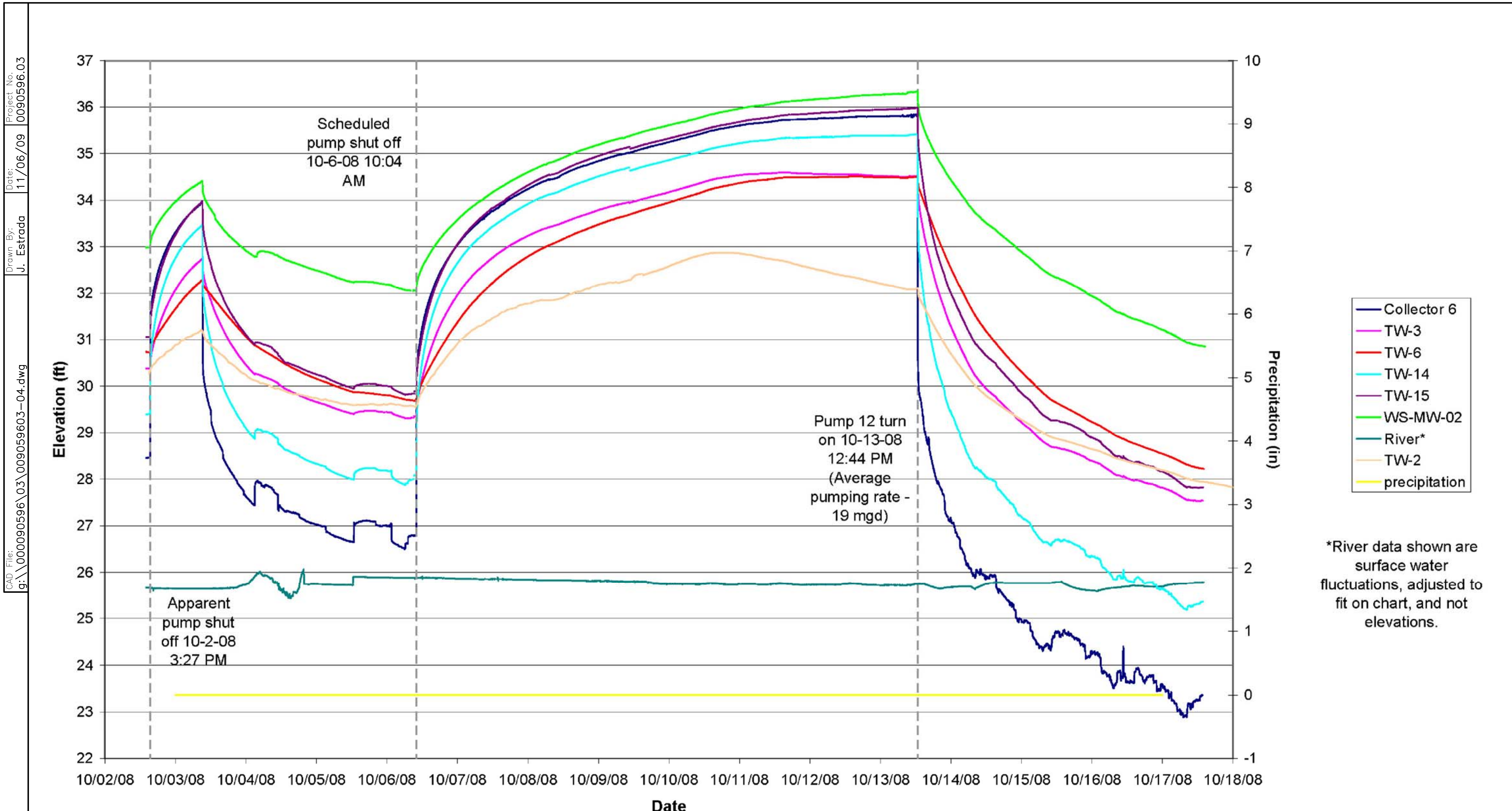


Figure 22

Hydrograph of Collector 6 Capacity Testing
Sonoma County Water Agency
Sonoma County, California

ERM 11/09

CAD File:	Drawn By:	Date:	Project No.
g:\\0090596\03\009059603-11.dwg	J. Estrada	11/06/09	0090596.03

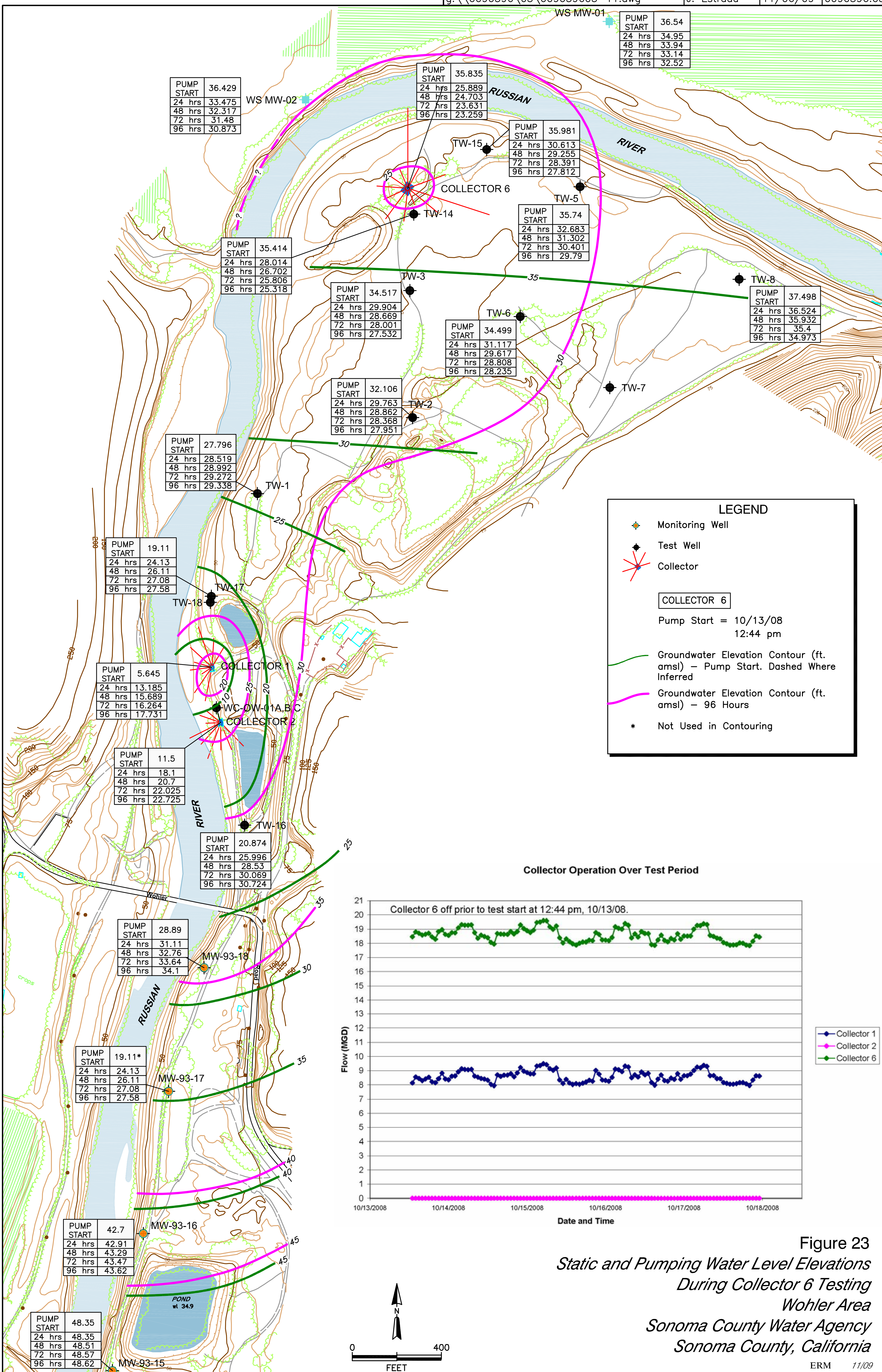


Figure 23

Static and Pumping Water Level Elevations During Collector 6 Testing Wohler Area Sonoma County Water Agency Sonoma County, California

ERM 11/09

Project No. 0090596.03
Date: 11/10/09
Drawn By: J. Estrada
CAD File: g:\\0090596\03\009059603-06.dwg

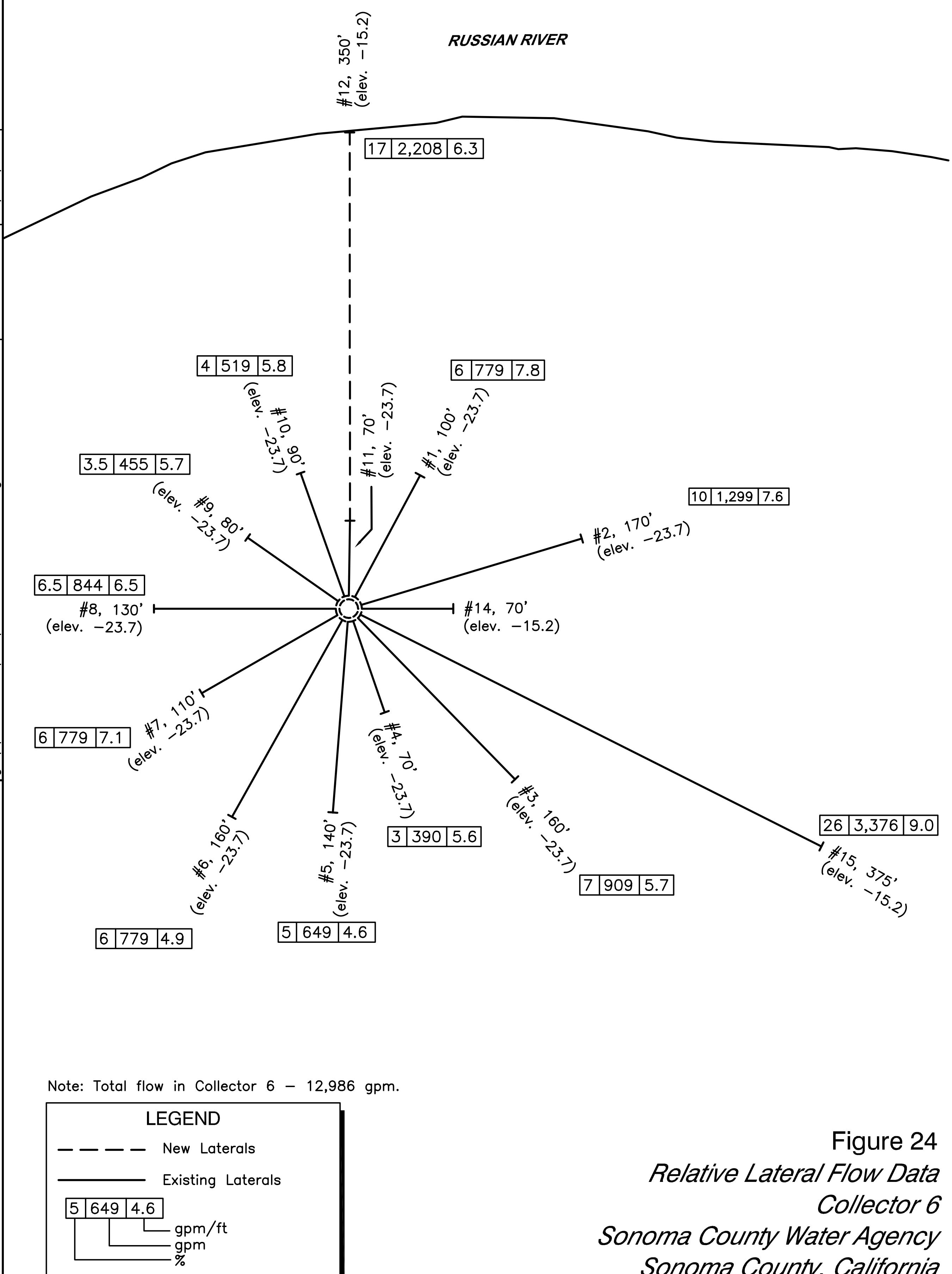


Figure 24
Relative Lateral Flow Data
Collector 6
Sonoma County Water Agency
Sonoma County, California

ERM 11/09

Project No. 0090596.03
Date: 11/10/09
Drawn By: J. Estrada
CAD File: g:\\0000090596\03\009059603-10.dwg

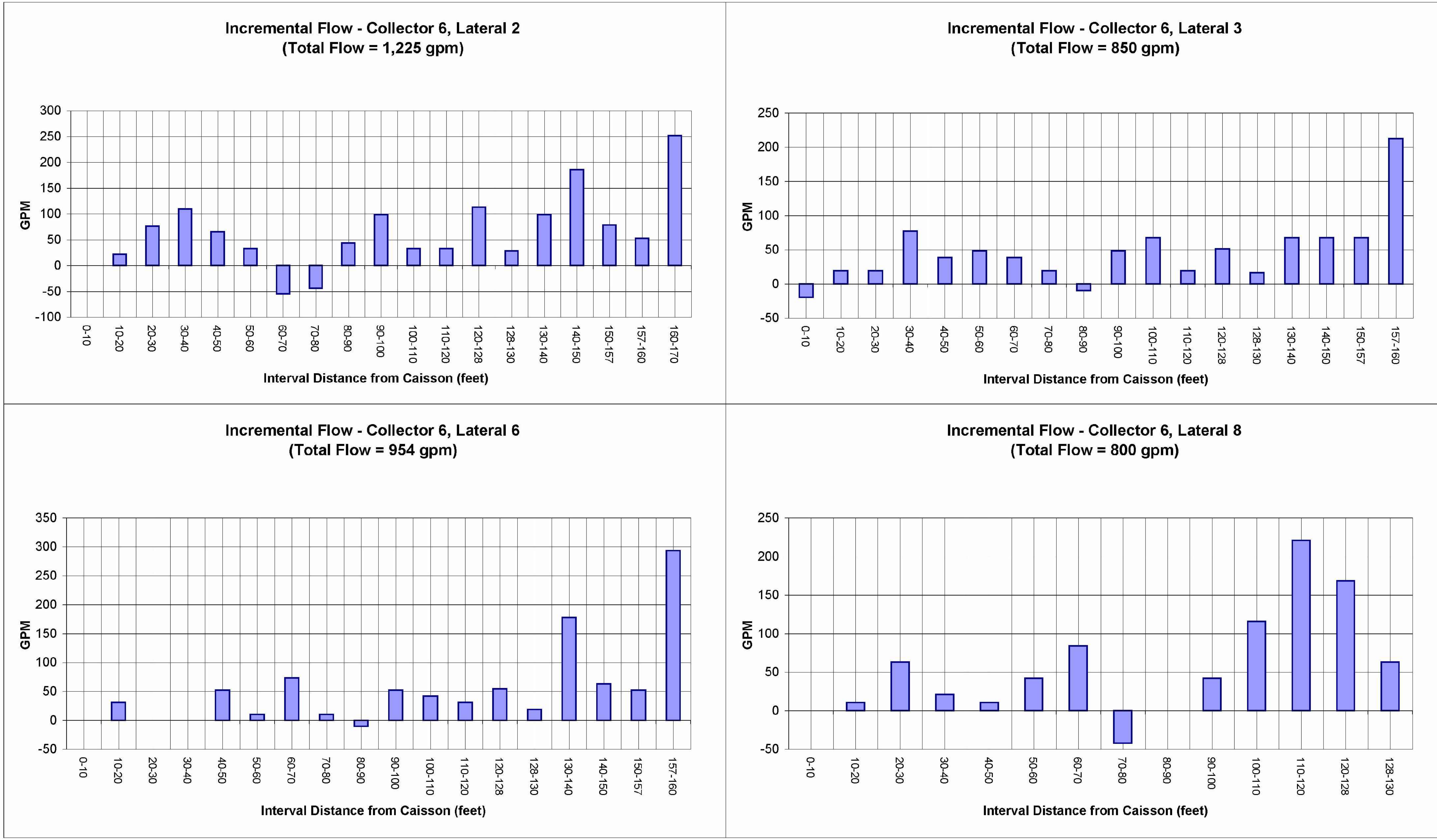
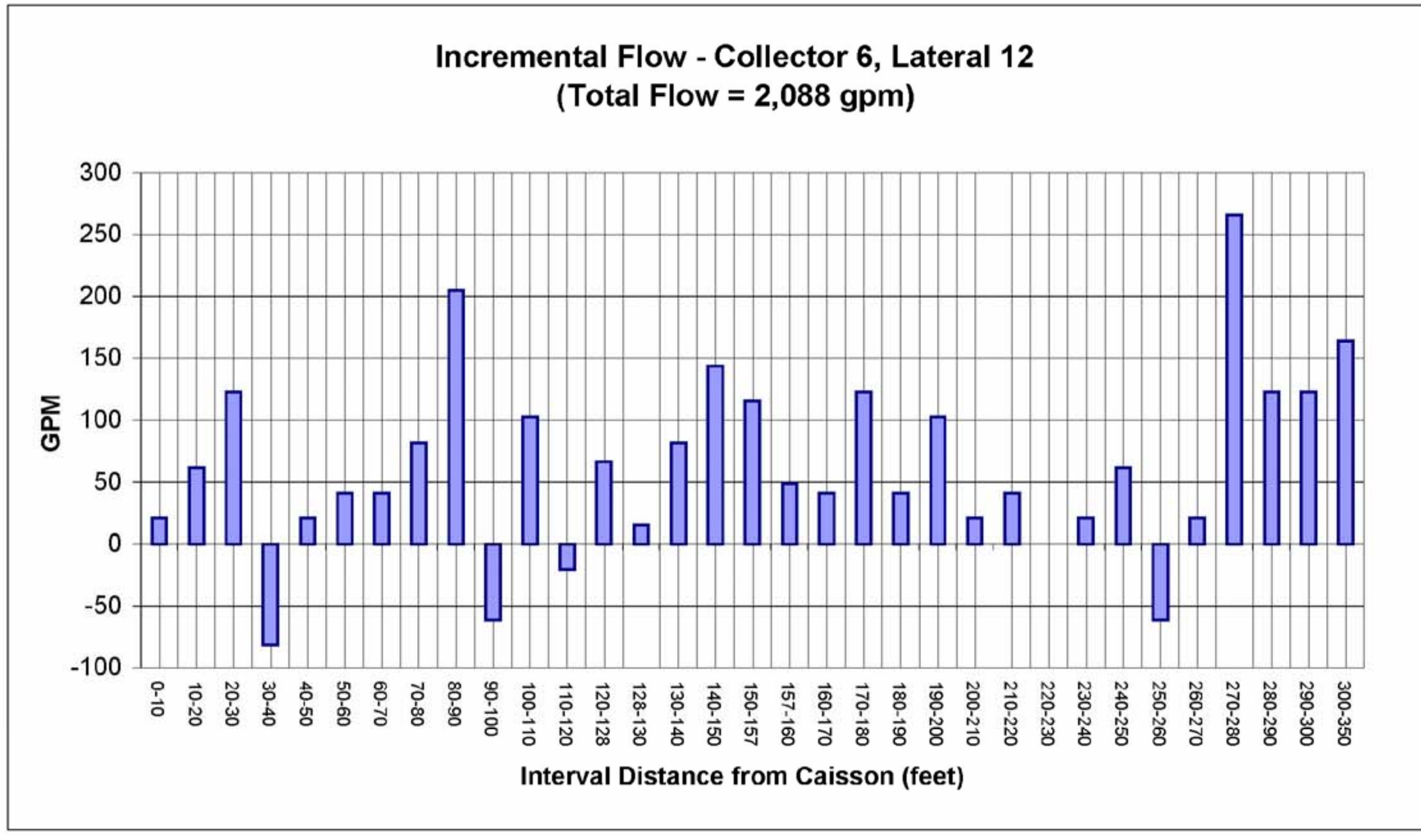


Figure 25a
Incremental Flow - Collector 6 Laterals
Sonoma County Water Agency
Sonoma County, California

ERM *11/09*

CAD File: g:\\000090596\03\009059603-10.dwg
Drawn By: J. Estrada
Date: 11/10/09
Project No. 0090596.03



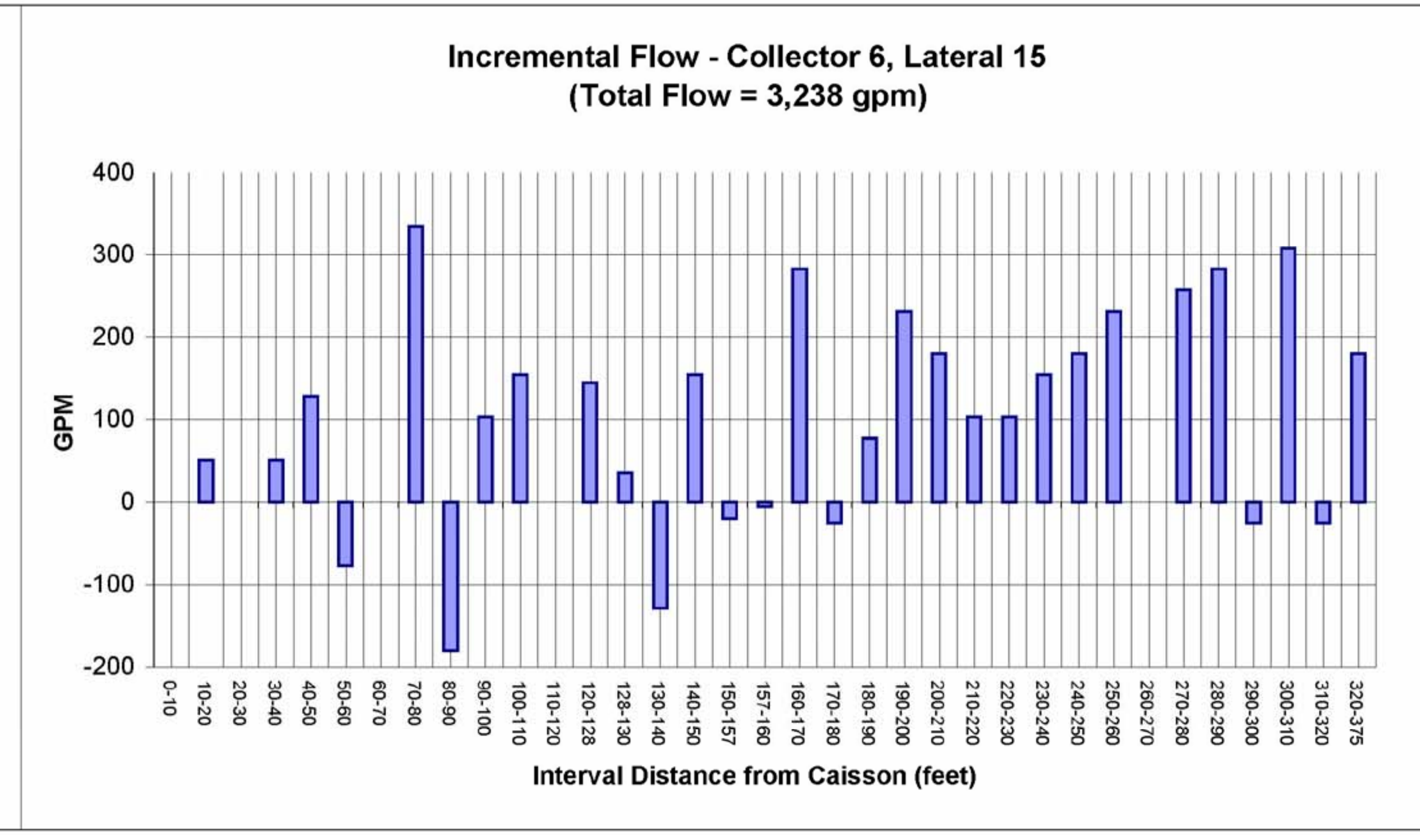


Figure 25b
Incremental Flow - Collector 6 Laterals
Sonoma County Water Agency
Sonoma County, California

ERM *11/09*

CAD File:	Drawn By:	Date:	Project No.
g:\\000090596\03\009059603-14.dwg	J. Estrada	11/10/09	0090596.03

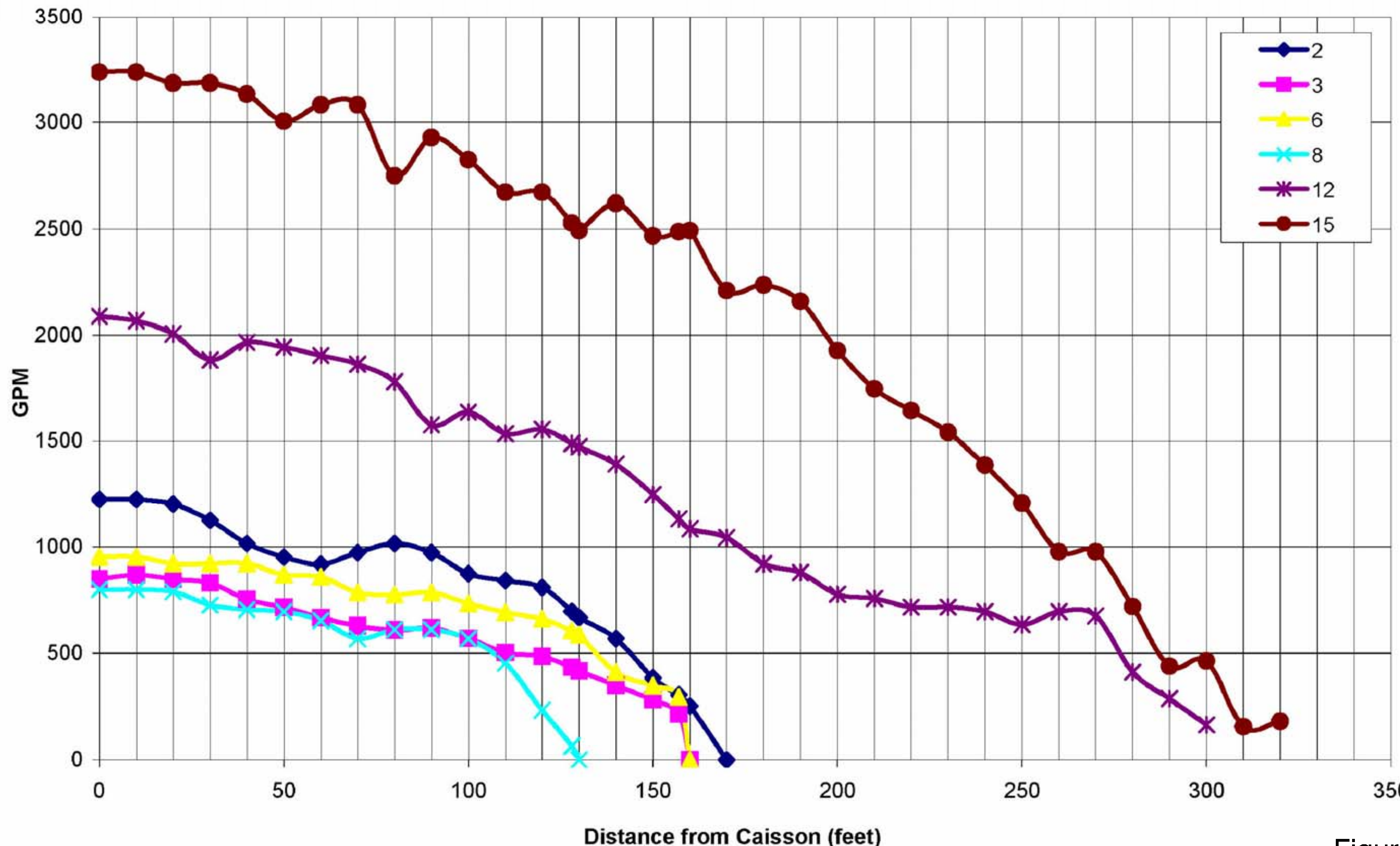


Figure 26
Flow versus Distance from Caisson
Collector 6 Laterals
Sonoma County Water Agency
Sonoma County, California

ERM *11/09*

CAD File:	Drawn By:	Date:	Project No.
g:\\000090596\03\009059603-04.dwg	J. Estrada	03/04/09	0090596.03

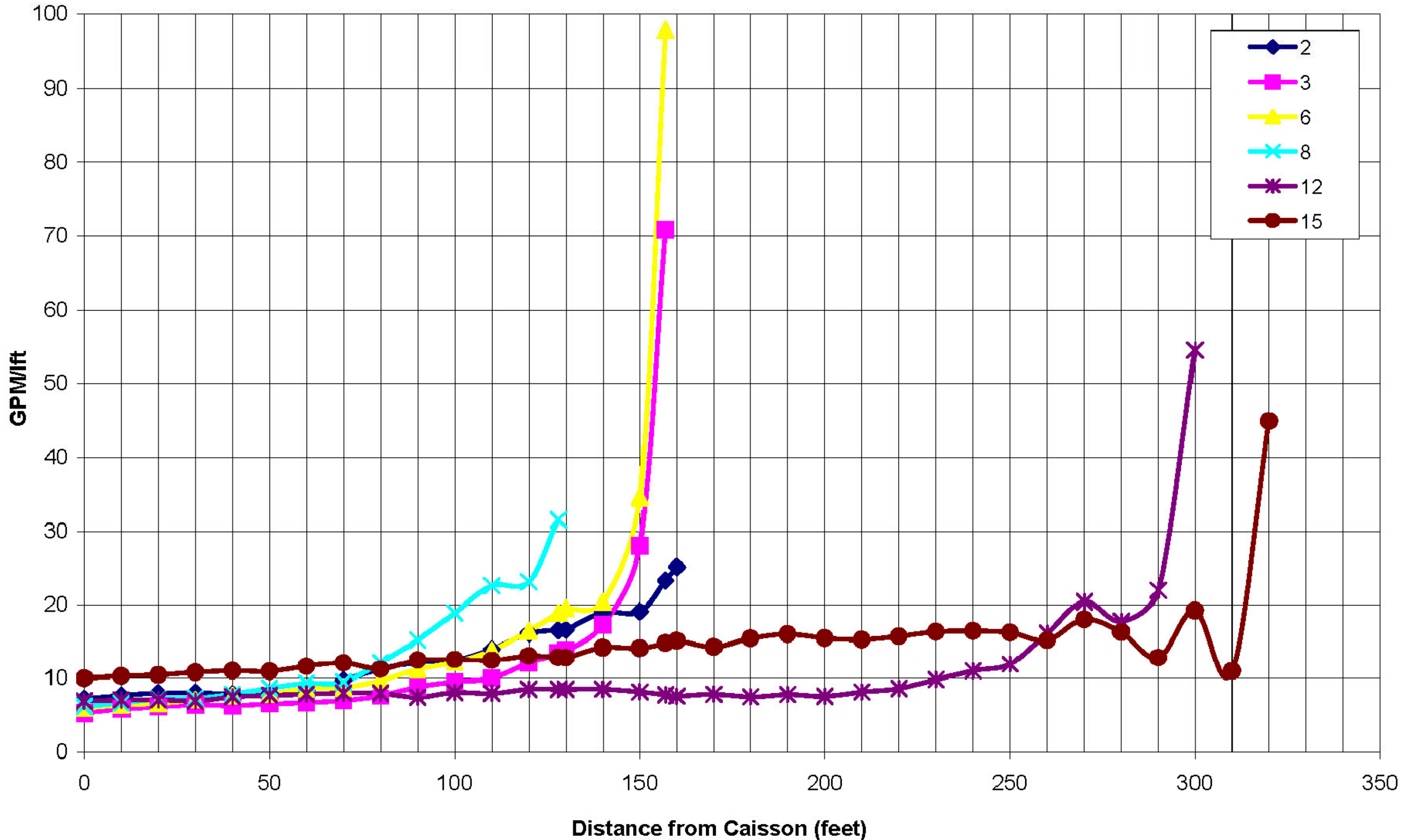


Figure 27

Flow/Screen Length at Distances from Caisson in Collector 6 Laterals

Sonoma County Water Agency

Sonoma County, California

ERM *03/09*

Tables

Collector Well 1	
Year Constructed	1959
Pump Floor Elevation, ft AMSL	79.5
Bottom Floor Elevation, ft AMSL	-22.2
Total Caisson Length, feet	101.7
Inside Diameter of Caisson, feet	13
Minimum Design Pumping Level, ft AMSL	-14.2

Lateral Number	Diameter (in)	Length (ft)	Material	Elevation (msl)	Notes
1	6	73	Mild steel with stainlees steel liners	-19.2	Mild steel casing relined with 304-grade, wire wrap with 0.15 in slot
2	6	121	Mild steel with stainlees steel liners	-19.2	Mild steel casing relined with 304-grade, wire wrap with 0.15 in slot
3	6	181	Mild steel with stainlees steel liners	-19.2	Mild steel casing relined with 304-grade, wire wrap with 0.15 in slot
4	6	121	Mild steel with stainlees steel liners	-19.4	Mild steel casing relined with 304-grade, wire wrap with 0.15 in slot
5	6	97	Mild steel with stainlees steel liners	-19.2	Mild steel casing relined with 304-grade, wire wrap with 0.15 in slot
6	6	144	Mild steel with stainlees steel liners	-19.1	Mild steel casing relined with 304-grade, wire wrap with 0.15 in slot
7	6	129	Mild steel with stainlees steel liners	-19	Mild steel casing relined with 304-grade, wire wrap with 0.15 in slot
8	6	45	Mild steel with stainlees steel liners	-18.9	Mild steel casing relined with 304-grade, wire wrap with 0.15 in slot
9	6	89	Mild steel with stainlees steel liners	-19.2	Mild steel casing relined with 304-grade, wire wrap with 0.15 in slot
10A	12	90	Stainless steel	-14.7	304-grade, wire wrap with slots from 0.1 to 0.175 in
11A	12	120	Stainless steel	-14.7	304-grade, wire wrap with slots from 0.1 to 0.175 in

Table 1
Summary of Construction Parameters, Collectors 1, 2, & 6
Sonoma County Water Agency

Collector Well 2	
Year Constructed	1959
Pump Floor Elevation, ft AMSL	81.4
Bottom Floor Elevation, ft AMSL	-21.65
Total Caisson Length, feet	103.05
Inside Diameter of Caisson, feet	13
Minimum Design Pumping Level, ft AMSL	-13

Lateral Number	Diameter (in)	Length (ft)	Material	Elevation (msl)	Notes
1	8	145	Mild Steel	-18.62	
2	8	57	Mild Steel	-18.62	
3	8	89	Mild Steel	-18.62	
4	8	72	Mild Steel	-18.62	
5	8	137	Mild Steel	-18.62	
6	8	121	Mild Steel	-18.62	
7	8	113	Mild Steel	-18.62	
8	8	161	Mild Steel	-18.62	
9	8	121	Mild Steel	-18.62	

Collector Well 6

Collector Well 6	
Year Initially Constructed	2002
Year Operational	2006
Pump Floor Elevation, ft AMSL	85.6
Bottom Floor Elevation, ft AMSL	-26.5
Total Caisson Length, feet	112.1
Inside Diameter of Caisson, feet	18
Minimum Design Pumping Level, ft AMSL	-3.7

Lateral Number	Diameter (in)	Length (ft)	Material	Elevation (msl)	Notes
1	12	100	Stainless Steel	-23.7	
2	12	170	Stainless Steel	-23.7	
3	12	160	Stainless Steel	-23.7	
4	12	70	Stainless Steel	-23.7	
5	12	140	Stainless Steel	-23.7	
6	12	160	Stainless Steel	-23.7	
7	12	110	Stainless Steel	-23.7	
8	12	130	Stainless Steel	-23.7	
9	12	80	Stainless Steel	-23.7	
10	12	90	Stainless Steel	-23.7	
11	18	70	Stainless Steel	-15.2	
12	18	350	Stainless Steel	-15.2	
13					Blank Port
14	18	70	API 5L-X65 Steel	-15.2	
15	18	375	API 5L-X65 Steel	-15.2	

Observation Points	Background (both wells running)		Recovery (Collector 2 shut down)		Recovery (both wells shut down)		Collector 2 Pump Test		Recovery (both wells shut down)		Collector 1 Pump Test	
	Measurement Frequency	Period	Measurement Frequency	Period	Measurement Frequency	Period	Measurement Frequency	Period	Measurement Frequency	Period	Measurement Frequency	Period
Date	**10/9/2008**		**10/13/2008**		**10/20/2008**		**10/27/2008**		**10/31/2008**		**11/10/2008**	
Collector 1	1 min	10/9-10/13	1 sec	60 min prior to 180 minutes after pump shutdown	1 sec	60 min prior to 180 minutes after pump shutdown	1 sec	60 min prior to 180 minutes after pump start	1 min	Until 11/10	1 sec	60 min prior to 180 minutes after pump start
			1 min	Until 10/20	1 min	Until 10/27	1 min	Until 10/31			1 min	Until 11/14
Collector 2	1 min	10/9-10/13	1 sec	60 min prior to 180 minutes after pump shutdown	1 sec	60 min prior to 180 minutes after pump shutdown	1 sec	60 min prior to 180 minutes after pump start	1 min	Until 11/10	1 sec	60 min prior to 180 minutes after pump start
			1 min	Until 10/20	1 min	Until 10/27	1 min	Until 10/31			1 min	Until 11/14
WC-OW-01A (s)	1 min	10/9-10/13	1 sec	60 min prior to 180 minutes after pump shutdown	1 sec	60 min prior to 180 minutes after pump shutdown	1 sec	60 min prior to 180 minutes after pump start	1 min	Until 11/10	1 sec	60 min prior to 180 minutes after pump start
			1 min	Until 10/20	1 min	Until 10/27	1 min	Until 10/31			1 min	Until 11/14
TW-17 or 18	1 min	10/9-10/13	1 sec	60 min prior to 180 minutes after pump shutdown	1 sec	60 min prior to 180 minutes after pump shutdown	1 sec	60 min prior to 180 minutes after pump start	1 min	Until 11/10	1 sec	60 min prior to 180 minutes after pump start
			1 min	Until 10/20	1 min	Until 10/27	1 min	Until 10/31			1 min	Until 11/14
TW-1	1 min	10/9-10/13	1 sec	60 min prior to 180 minutes after pump shutdown	1 sec	60 min prior to 180 minutes after pump shutdown	1 sec	60 min prior to 180 minutes after pump start	1 min	Until 11/10	1 sec	60 min prior to 180 minutes after pump start
			1 min	Until 10/20	1 min	Until 10/27	1 min	Until 10/31			1 min	Until 11/14
TW-16	1 min	10/9-10/13	1 sec	60 min prior to 180 minutes after pump shutdown	1 sec	60 min prior to 180 minutes after pump shutdown	1 sec	60 min prior to 180 minutes after pump start	1 min	Until 11/10	1 sec	60 min prior to 180 minutes after pump start
			1 min	Until 10/20	1 min	Until 10/27	1 min	Until 10/31			1 min	Until 11/14
Wohler Pond 1	1 min	10/9-10/13	1 sec	60 min prior to 180 minutes after pump shutdown	1 sec	60 min prior to 180 minutes after pump shutdown	1 sec	60 min prior to 180 minutes after pump start	1 min	Until 11/10	1 sec	60 min prior to 180 minutes after pump start
			1 min	Until 10/20	1 min	Until 10/27	1 min	Until 10/31			1 min	Until 11/14
Wohler Pond 2	1 min	10/9-10/13	1 sec	60 min prior to 180 minutes after pump shutdown	1 sec	60 min prior to 180 minutes after pump shutdown	1 sec	60 min prior to 180 minutes after pump start	1 min	Until 11/10	1 sec	60 min prior to 180 minutes after pump start
			1 min	Until 10/20	1 min	Until 10/27	1 min	Until 10/31			1 min	Until 11/14
River	1 min	10/9-10/13	1 sec	60 min prior to 180 minutes after pump shutdown	1 sec	60 min prior to 180 minutes after pump shutdown	1 sec	60 min prior to 180 minutes after pump start	1 min	Until 11/10	1 sec	60 min prior to 180 minutes after pump start
			1 min	Until 10/20	1 min	Until 10/27	1 min	Until 10/31			1 min	Until 11/14

Table 3
Capacity Testing Monitoring Schedule, Collector Well 6
Sonoma County Water Agency

Observation Points	**Background** Measurement Frequency	**Background** Period	**Recovery** Measurement Frequency	**Recovery** Period	**Test** Measurement Frequency	**Test** Period
Date	**10/2/2008**		**10/6/2008**		**10/13/2008**	
Collector 6	1 min	10/2-10/6	1 sec 1 min	60 min prior to 180 minutes after pump shutdown Until 10/13	1 sec 1 min	60 min prior to 180 minutes after pump start Until 10/17
TW-14	1 min	10/2-10/6	1 sec 1 min	60 min prior to 180 minutes after pump shutdown Until 10/13	1 sec 1 min	60 min prior to 180 minutes after pump start Until 10/17
TW-3	1 min	10/2-10/6	1 sec 1 min	60 min prior to 180 minutes after pump shutdown Until 10/13	1 sec 1 min	60 min prior to 180 minutes after pump start Until 10/17
TW-15	1 min	10/2-10/6	1 sec 1 min	60 min prior to 180 minutes after pump shutdown Until 10/13	1 sec 1 min	60 min prior to 180 minutes after pump start Until 10/17
WS MW-02	1 min	10/2-10/6	1 sec 1 min	60 min prior to 180 minutes after pump shutdown Until 10/13	1 sec 1 min	60 min prior to 180 minutes after pump start Until 10/17
TW-6	1 min	10/2-10/6	1 sec 1 min	60 min prior to 180 minutes after pump shutdown Until 10/13	1 sec 1 min	60 min prior to 180 minutes after pump start Until 10/17
River	1 min	10/2-10/6	1 sec 1 min	60 min prior to 180 minutes after pump shutdown Until 10/13	1 sec 1 min	60 min prior to 180 minutes after pump start Until 10/17

Table 4
Collector Well 1 Lateral Structural Integrity Determination
Sonoma County Water Agency

Lateral	Reported Length (feet)	Accessed Length (feet)	Original Screen Metal Thickness (inches)	Measured Thickness (inches) 9:00 position	Measured Thickness (inches) 12:00 position	Measured Thickness (inches) 3:00 position	Average Thickness (inches)	Change in Thickness (inches)
1	73	40	0.322	0.175	0.320	0.240	0.245	-0.08
2	121	109	0.322	0.405	0.220	0.350	0.325	0.00
3	181	176	0.322	0.385	0.235	0.310	0.310	-0.01
4	121	121	0.322	0.315	0.290	0.290	0.298	-0.02
5	97	97	0.322	0.180	0.275	0.310	0.255	-0.07
6	144	109.5	0.322	0.315	0.280	0.310	0.302	-0.02
7	129	129	0.322	0.180	0.180	0.250	0.203	-0.12
8	45	NA	0.322	0.215	0.295	0.245	0.252	-0.07
9	89	84	0.322	0.275	0.180	0.195	0.217	-0.11
10A	90	NA		NM	NM	NM		
11A	120	NA		NM	NM	NM		
	1,210	*865.5*						

NOTE:
Lateral screen thicknesses measured using Check-Line underwater ultrasonic digital thickness gauge at the 9:00, 12:00, and 3:00 positions.
Original screen metal thickness of Laterals 1-9 represents the wall thickness of the carbon steel screen. This value is deemed most crucial for evaluating potential collapse, given the fact that the 6-inch wire-wrapped screen inserts do not fully extend back to the lateral valve.
NA - Not accessed
NM - Not measured

Table 5
Results of Collector Well 1 Capacity Testing
Sonoma County Water Agency

	1959 Test	1998 Inspection	2003 Maintenance	Collector 1 2008 Evaluation	2008 Evaluation Collector 2	TW-1	TW-2	TW-16	TW-18	WC-OW-01c	Russian River*
Static Water Level (ft msl)				33.79	33.56	31.72	26.21	36.85	33.61	37.77	0.06
Pumping Water Level (72 hours) (ft msl)				11.05	23.04	25.97	22.82	29.59	23.10	26.67	0.00
Observed Drawdown (72 hours) (feet)	9.5	30.12	50.5	22.74	10.51	5.75	3.40	7.26	10.51	11.10	0.06
Pumping Rate (gpm)	8,680	6,736	14,450	7,639							
Specific Capacity (gpm/ft)	913.7	223.6	286.1	335.9							
Differential (ft/1,000 gpm)					1.57	1.95	1.54	2.43	1.58	2.04	

NOTES:
The inflatable dam was in operation during the current Collector 1 testing.
Collector 6 was in operation during the Collector 1 testing at an approximate flow rate of 21 million gallons per day.
* - Russian River data are relative changes in water level and not elevations.
Data from 1959 and 1998 test were obtained from 1998 Collector Well International report.
Data from 2003 evaluation obtained from 2005 Ranney Division of Reynolds report.
ft msl - feet mean sea level
gpm - gallons per minute
gpm/ft - gallons per minute per foot
ft/1,000 gpm - feet drawdown per 1,000 gallons per minute

Table 6
Collector Well 1 Relative Lateral Flow Analysis
Sonoma County Water Agency

Lateral	Reported Length (feet)	Accessed Length (feet)	2008 Capacity Testing Relative Flow (Percent)	2008 Relative Flow (gpm)	2008 Relative Flow (gpm/lft)	2008 Temperature (Degrees C)	2003 Post-Maintenance Test Relative Flow (Percent)	2003 Relative Flow (gpm)	2003 Relative Flow (gpm/lft)	2003 Temperature (Degrees C)	1998 Inspection Relative Flow (Percent)	1998 Relative Flow (gpm)	1998 Relative Flow (gpm/lft)	1998 Temperature (Degrees C)
1	73	40	11	821	11.2	15.45	5.1	723.4	9.9	NA	10.1	680	9.3	NA
2	121	109	9.5	709	5.9	16.54	4.80	680.9	5.6	NA	9.75	657	5.4	NA
3	181	176	7.5	560	3.1	16.63	5.80	822.7	4.5	NA	10.85	731	4.0	NA
4	121	121	10	746.5	6.2	17.06	6.6	936.2	7.7	NA	15.8	1,064	8.8	NA
5	97	97	10	746.5	7.7	17.22	5.3	751.8	7.8	NA	16.4	1,105	11.4	NA
6	144	109.5	16.5	1,231	8.5	17.62	7.7	1,092.2	7.6	NA	closed	NA	NA	NA
7	129	129	11.5	859	6.7	16.88	5.1	723.4	5.6	NA	15.6	1,051	8.1	NA
8	45	NA	13	971	21.6	17.58	4.4	624.1	13.9	NA	13.2	889	19.8	NA
9	89	84	11	821	9.2	16.52	5.3	751.8	8.4	NA	8.3	559	6.3	NA
10A	90	NA	closed	NA	NA	NA	21.3	3,021	33.6	NA	NA	NA	NA	NA
11A	120	NA	closed	NA	NA	NA	28.6	4,037	33.6	NA	NA	NA	NA	NA
Total	**1,210**	**865.5**	**100**	**7,465**			**100**	**14,165**			**100**	**6,736**		

NOTES:
Data from 1998 test were obtained from 1998 Collector Well International report.
Data from 2003 evaluation obtained from 2005 Ranney Division of Reynolds report.
NA - Laterals not tested.
Laterals 10A and 11A have been closed indefinitely.
gpm - gallons per minute
gpm/ft - gallons per minute per lineal foot
C - Celsius

Table 7
Flow Distribution Along Collector Well 1 Laterals
November 2008
Sonoma County Water Agency

Distance (feet)	**Lateral No. 1** Total Length = 73 feet 11% of Total Flow Rate			**Lateral No. 2** Total Length = 121 feet 9.5% of Total Flow Rate			**Lateral No. 3** Total Length = 181 feet 7.7% of Total Flow Rate			**Lateral No. 4** Total Length = 121 feet 9.8% of Total Flow Rate			**Lateral No. 5** Total Length = 97 feet 10% of Total Flow Rate			**Lateral No. 6** Total Length = 144 feet 16.3% of Total Flow Rate			**Lateral No. 7** Total Length = 129 feet 11.6% of Total Flow Rate			**Lateral No. 9** Total Length = 89 feet 11.1% of Total Flow Rate		
	Meter	**GPM**	**GPM/lft**	**Meter**	**GPM**	**GPM/lft**	**Meter**	**GPM**	**GPM/lft**	**Meter**	**GPM**	**GPM/lft**	**Meter**	**GPM**	**GPM/lft**	**Meter**	**GPM**	**GPM/lft**	**Meter**	**GPM**	**GPM/lft**	**Meter**	**GPM**	**GPM/lft**
2	332	837	11.79	287	723	6.76	202	586	3.49	258	746	6.38	268.5	761	8.36	399	1,241	8.74	333	883	7.06	290	845	10.43
10	220	555	8.81	215	542	5.47	202	586	3.66	235	679	6.23	243	689	8.30	171	532	3.97	195	517	4.42	230	670	9.18
20	167	421	7.95	160	403	4.53	171.5	498	3.32	165	477	4.82	188	533	7.30	160	497	4.01	169	448	4.19	166.5	485	7.70
30	122	308	7.15	123	310	3.92	118	342	2.45	129.5	374	4.21	132	374	5.94	138.5	431	3.78	162.5	431	4.44	123.5	360	6.79
40	106.5	269	8.14	94	237	3.43	112.5	326	2.51	108	312	3.95	112.5	319	6.02	118.5	368	3.54	130.5	346	3.98	84.5	246	5.72
50	na	na	na	80.5	203	3.44	103	299	2.49	93.5	270	3.92	90.5	257	5.97	95.5	297	3.16	110	292	3.79	75.5	220	6.66
60	na	na	na	75	189	3.86	86.5	251	2.28	75.5	218	3.70	83	235	7.13	73.5	229	2.72	99.5	264	3.94	68	198	8.61
70	na	na	na	72.5	183	4.68	74.5	216	2.16	64	185	3.78	65	184	8.01	65	202	2.73	92	244	4.28	67	195	15.01
80	-	-	-	63	159	5.47	70.5	205	2.27	61.5	178	4.56	59	167	12.86	61.5	191	2.99	84	223	4.74	38	111	36.90
82	-	-	-	62.4	157	5.82	67.8	197	2.24	60.6	175	4.73	53.4	151	13.76	59	183	2.96	81.7	217	4.81	9.5	28	27.68
90	-	-	-	60	151	7.96	57	165	2.07	57	165	5.68	31	88	29.29	49	152	2.82	72.5	192	5.20	-	-	-
92	-	-	-	55.5	140	8.22	55.2	160	2.05	55.8	161	5.97	12	34	34.02	48.4	150	2.89	69.5	184	5.26	-	-	-
100	-	-	-	37.5	94	10.50	48	139	1.99	51	147	7.76	-	-	-	46	143	3.25	57.5	152	5.65	-	-	-
107	-	-	-	8.5	21	10.71	45.6	132	2.10	43	124	10.36	-	-	-	41.5	129	3.49	50.5	134	6.69	-	-	-
110	-	-	-	-	-	-	44.5	129	2.15	39.5	114	12.69	-	-	-	39.5	123	3.61	47.5	126	7.41	-	-	-
117	-	-	-	-	-	-	43.8	127	2.40	11	32	15.90	-	-	-	-	-	-	32.1	85	8.51	-	-	-
120	-	-	-	-	-	-	43.5	126	2.52	-	-	-	-	-	-	-	-	-	25.5	68	9.66	-	-	-
124	-	-	-	-	-	-	37	107	2.33	-	-	-	-	-	-	-	-	-	11	29	9.72	-	-	-
130	-	-	-	-	-	-	27	78	1.96	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140	-	-	-	-	-	-	20.5	59	1.98	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
150	-	-	-	-	-	-	15.5	45	2.25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
160	-	-	-	-	-	-	11	32	3.19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
163	-	-	-	-	-	-	9	26	3.73	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
170	-	-	-	-	-	-	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
GPM = gallons per minute
GPM/ft = gallons per minute per lineal foot
Meter value equals number of flow meter revolutions per 30 seconds.
na = not accessed
Flow during test period = 10.96 millions of gallons per day (MGD)
Flow rate during test period = 7,611 GPM

Table 8
Incremental Flow Along Collector Well 1 Laterals
Sonoma County Water Agency
November 2008 Evaluation

Distance from	**Lateral 1**		**Lateral 2**		**Lateral 3**		**Lateral 4**		**Lateral 5**		**Lateral 6**		**Lateral 7**		**Lateral 9**		**** For Tested Laterals**		
Caisson, feet	**GPM**	**GPM/lft**	**GPM**	**GPM/lft**	**GPM**	**GPM/lft**	**GPM**	**GPM/lft**	**GPM**	**GPM/lft**	**GPM**	**GPM/lft**	**GPM**	**GPM/lft**	**GPM**	**GPM/lft**	**** GPM**	**** Percent**	**** GPM/lft**
0 - 50	568/40'	14.20	520	10.40	287	5.74	476	9.52	504	10.08	944	18.88	591	11.82	625	12.50	4515	68.2%	11.58
50 - 100	269/33'	8.15	109	2.18	160	3.20	123	2.46	257/47'	5.47	154	3.08	140	2.80	220/39'	5.64	1432	21.6%	3.88
100 - 150			94/21'	4.48	94	1.88	147/21'	7.00			143/44'	3.25	152/29'	5.24			630	9.5%	3.82
150 - 200					45/31'	1.45											45	0.7%	1.45
																	** 6622	100.0%	

Performance of Collector Laterals within Approximately 60 Feet of Caisson

Lateral No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**9**	**Overall**
Distance Used	0 - 40' *	0 - 60'	0 - 60'	0 - 60'	0 - 60'	0 - 60'	0 - 60'	0 - 60'	460
GPM	568	534	335	528	526	1012	619	647	4769
% Flow	67.9%	73.9%	57.2%	70.8%	69.1%	81.5%	70.1%	76.6%	62.7%
GPM/lft	6.73	8.90	5.58	8.80	8.77	16.87	10.32	10.78	10.36

Percentage Flow Contribution by Relative Segment of Lateral

Lateral No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**9**	**Average**
Inner Third	49.7%	67.2%	57.2%	58.2%	52.3%	76.1%	62.8%	57.4%	60.1%
Middle Third	18.2%	10.8%	21.3%	18.0%	20.1%	12.2%	13.9%	19.2%	16.7%
Outer Third	32.1%	22.0%	21.5%	23.9%	27.6%	11.8%	23.2%	23.4%	23.2%

LEGEND:
269/33' - Used for laterals that did not span the entire distance range and corresponds gpm per feet of lateral within the interval.

NOTE:
* - The interval 0 to 40 feet used for Lateral 1 as this was the accessible portion of this lateral.
GPM - Gallons Per Minute
GPM/ft - Gallons Per Minute per lineal foot

Table 9
Flow at Outer Ends of Collector Well 1 Laterals
Sonoma County Water Agency
November 2008 Evaluation

Percentage Flow at Outer End of Laterals

	Within Outer 20 feet		Within Outer 30 feet	
Lateral No.	GPM	% Flow	GPM	% Flow
1	n.a.	n.a.	n.a.	n.a.
2	94	13.0%	151	20.9%
3	32	5.5%	45	7.7%
4	147	19.7%	165	22.1%
5	167	21.9%	184	24.2%
6	n.a.	n.a.	123	9.9%
7	126	14.3%	152	17.2%
9	195	23.1%	198	23.4%

Reduction in Unit Flow Rate at Ends of Laterals
(End Starting Point is Last Measured Flow Meter Reading)

	Last Measured GPM/ft Near	20 feet From Measured End		30 feet From Measured End	
Lateral No.	End of Lateral	GPM/lft	% Change	GPM/lft	% Change
1	8.14	7.95	-2.3%	8.81	+8.2%
2	10.71	6.89	-35.7%	5.23	-51.1%
3	3.73	2.06	-44.7%	1.97	-47.2%
4	15.90	6.87	-56.8%	5.21	-67.3%
5	34.02	8.98	-73.6%	7.31	-78.5%
6	3.61	2.82	-21.9%	2.99	-17.2%
7	9.72	6.17	-36.5%	5.36	-44.9%
9	27.68	9.89	-64.3%	7.05	-74.5%

NOTE:
n.a. - not applicable as due to access issues within Lateral 1 beyond 40 feet.
GPM/ft - Gallons Per Minute per lineal foot

Table 10
Collector Well 1 Water Quality Field Results
Sonoma County Water Agency

Lateral Number	Elevation (msl)	Date	Time	pH	ORP (mV)	DO (mg/L)	Conductivity (mS/cm)	Salinity (ppt)	TDS (g/L)	Turbidity (NTU)	Temp (Celsius)
1	-19.2	11/12/2008	10:04	7.31	234.3	4.90	0.210	0.12	0.167	0.0	15.45
2	-19.2	11/12/2008	10:10	7.26	229.0	4.95	0.205	0.12	0.159	0.0	16.54
3	-19.2	11/12/2008	10:16	7.18	226.0	5.25	0.203	0.12	0.157	0.0	16.63
4	-19.4	11/12/2008	10:22	7.10	222.3	6.05	0.207	0.12	0.159	0.0	17.06
5	-19.2	11/12/2008	10:28	6.97	221.6	6.80	0.205	0.11	0.157	0.0	17.22
6	-19.1	11/12/2008	10:35	7.11	214.1	4.41	0.198	0.11	0.149	0.0	17.62
7	-19	11/12/2008	10:41	7.15	208.6	4.48	0.202	0.11	0.156	0.0	16.88
8	-18.9	11/12/2008	10:48	7.23	194.5	4.05	0.204	0.11	0.155	0.0	17.58
9	-19.2	11/12/2008	10:54	7.16	198.5	4.47	0.211	0.12	0.164	0.0	16.52
Total Discharge (pump intake)		**11/12/2008**	**11:00**	**7.10**	**197.7**	**5.02**	**0.205**	**0.12**	**0.158**	**0.0**	**16.98**

NOTE:
Parameters measured using a YSI Model 6920 downhole probe.
ORP - Oxygen Reduction Potential
DO - Dissolved Oxygen
TDS - Total Dissolved Solids
msl - mean sea level
mV - millivolts
mg/L - milligrams per liter
mS/cm - millisiemens per centimeter
ppt - parts per thousand
g/L - grams per liter
NTU - Nephelometric Turbidity Units

Table 11
Collector Well 2 Lateral Structural Integrity Determination
Sonoma County Water Agency

Lateral	Reported Length (feet)	Accessed Length (feet)	Original Screen Metal Thickness (inches)	Measured Thickness (inches) 9:00 Position	12:00 Position	3:00 Position	Average Thickness (inches)	Change in Thickness (inches)
1	145	135	0.322	0.385	0.375	0.310	0.357	0.03
2	57	53	0.322	0.295	0.305	0.205	0.268	-0.05
3	89	80	0.322	0.315	0.325	0.320	0.320	0.00
4	72	60	0.322	0.305	0.165	0.305	0.258	-0.06
5	137	117	0.322	0.220	0.250	0.290	0.253	-0.07
6	121	111	0.322	0.350	0.410	0.225	0.328	0.01
7	113	107	0.322	0.295	0.300	0.195	0.263	-0.06
8	161	143	0.322	0.310	0.275	0.330	0.305	-0.02
9	121	NA	0.322	0.190	0.160	0.275	0.208	-0.11
Total Lengths	*1016*	*806*						

NOTE:
Lateral screen thicknesses measured using Check-Line underwater ultrasonic digital thickness gauge at the 9:00, 12:00, and 3:00 positions.
NA - Not Accessed

Table 12
Results of Collector Well 2 Capacity Testing
Sonoma County Water Agency

	1959 Test	Collector 2 2008 Evaluation	2008 Evaluation Collector 1	TW-1	TW-2	TW-16	TW-18	WC-OW-01c	Russian River*
Static Water Level (ft msl)		34.10	34.66	33.14	28.88	37.29	35.46	38.43	0.00
Pumping Water Level (72 hours) (ft msl)		18.17	23.91	28.35	26.09	28.61	26.99	25.96	-0.01
Observed Drawdown (72 hours) (feet)	10	15.93	10.75	4.79	2.79	8.68	8.47	12.47	0.01
Pumping Rate (gpm)	8,680	8,347							
Specific Capacity (gpm/ft)	868.0	524.0							
Differential (ft/1,000 gpm)			0.69	1.22	0.95	1.25	1.06	0.93	

NOTES:
The inflatable dam was in operation during the current Collector 2 testing.
Collector 6 was in operation during the Collector 2 testing at flows ranging from 19 to 21 million gallons per day.
* - Russian River data are relative changes in water level and not elevations.
Data from 1959 test were obtained from 1998 Collector Well International report.
Both Collectors 1 and 2 were pumped during the 1959 tests.
ft msl - feet mean sea level
gpm - gallons per minute
gpm/ft - gallons per minute per foot
ft/1,000 gpm - feet drawdown per 1,000 gallons per minute

Table 13
Collector Well 2 Relative Lateral Flow Analysis
Sonoma County Water Agency

	Reported	Accessed	2008 Capacity Testing				1998 Inspection			
	Length	Length	Relative Flow			Temperature	Relative Flow			Temperature
Lateral	**(feet)**	**(feet)**	**(Percent)**	**(gpm)**	**(gpm/lft)**	**(Degrees C)**	**(Percent)**	**(gpm)**	**(gpm/lft)**	**(Degrees C)**
1	145	135	10.5	751	5.2	18.74	11.5	759	5.2	NA
2	57	53	9.5	679.5	11.9	17.94	7.85	518	9.1	NA
3	89	80	11.5	822.5	9.2	17.73	9.3	615	6.9	NA
4	72	60	11	787	10.9	18.82	9.5	627	8.7	NA
5	137	117	11	787	5.7	18.84	12.6	831	6.1	NA
6	121	111	12	858.5	7.1	19.33	12	792	6.5	NA
7	113	107	11.5	822.5	7.3	18.00	13.7	904	8.0	NA
8	161	143	12.5	894	5.6	19.53	13.7	904	5.6	NA
9	121	NA	10.5	751	6.2	18.50	9.85	650	5.4	NA
Total	**1,016**	**806**	**100**	**7,153**			**100**	**6,600**		

NOTES:
Data from 1998 test were obtained from 1998 Collector Well International report.
NA - Laterals not tested.
gpm - gallons per minute
gpm/ft - gallons per minute per lineal foot
C - Celsius

Table 14
Flow Distribution Along Collector Well 2 Laterals
November 2008
Sonoma County Water Agency

	Lateral No. 1			**Lateral No. 2**			**Lateral No. 3**			**Lateral No. 4**			**Lateral No. 5**			**Lateral No. 6**			**Lateral No. 7**			**Lateral No. 8**		
	Total Length = 145 feet			Total Length = 57 feet			Total Length = 89 feet			Total Length = 72 feet			Total Length = 137 feet			Total Length = 121 feet			Total Length = 113 feet			Total Length = 161 feet		
Distance	10.75% of Total Flow Rate			9.4% of Total Flow Rate			11.3% of Total Flow Rate			11.2% of Total Flow Rate			10.8% of Total Flow Rate			11.8% of Total Flow Rate			11.7% of Total Flow Rate			12.66% of Total Flow Rate		
(feet)	**Meter**	**GPM**	**GPM/lft**	**Meter**	**GPM**	**GPM/lft**	**Meter**	**GPM**	**GPM/lft**	**Meter**	**GPM**	**GPM/lft**	**Meter**	**GPM**	**GPM/lft**	**Meter**	**GPM**	**GPM/lft**	**Meter**	**GPM**	**GPM/lft**	**Meter**	**GPM**	**GPM/lft**
2	65	895	6.26	74	783	14.23	69.5	941	10.81	85	933	14.80	73	899	7.37	71.5	982	8.85	71	974	8.78	98	1,054	6.93
5	65	895	6.39	60	635	12.20	67.8	918	10.93	64	702	11.70	69	850	7.14	70.8	973	9.01	75	1,029	9.53	91	979	6.57
10	67	923	6.83	50.5	534	11.36	65	880	11.14	64.5	708	12.87	62	764	6.70	69.5	955	9.27	75.5	1,036	10.06	79	850	5.90
15	66	909	6.99	46	487	11.58	60	812	10.98	59.5	653	13.06	56	690	6.33	64.8	890	9.09	71	974	9.94	73	785	5.65
20	64.5	888	7.11	41	434	11.72	54.5	738	10.69	52	570	12.68	50.5	622	5.98	60	824	8.87	66	906	9.74	67.5	726	5.42
25	62.5	861	7.17	39.5	418	13.06	53.3	722	11.27	49.5	543	13.58	46.5	573	5.79	56	769	8.74	63	864	9.82	65.5	705	5.46
30	60.5	833	7.24	36	381	14.10	52	704	11.93	49	538	15.36	42.5	524	5.57	52	715	8.61	60	823	9.92	63.5	683	5.51
35	59	812	7.39	35	370	16.83	50.3	681	12.61	44	483	16.09	39	480	5.40	47.8	657	8.42	56	768	9.85	60.5	651	5.47
40	57.5	792	7.54	28	296	17.42	48.5	657	13.40	35	384	15.36	35.5	437	5.21	43.5	598	8.19	52	713	9.77	58	624	5.47
45	55.8	768	7.68	22	233	19.39	45.3	613	13.94	29.5	324	16.18	34.5	425	5.38	41.3	567	8.35	49.3	676	9.95	57	613	5.62
50	54	744	7.83	9.5	100	14.35	42	569	14.58	25	274	18.28	33.5	413	5.58	39	536	8.51	46.5	638	10.13	55.5	597	5.74
53	53.6	738	8.02	9	95	23.80	40	541	15.04	19.3	212	17.64	33.2	409	5.76	38.3	526	8.77	46.2	634	10.56	54	581	5.75
55	53	730	8.11	-	-	-	38.8	525	15.45	15.5	170	17.00	33	406	5.89	37.8	519	8.96	46	631	10.88	55.3	595	6.01
57	52.3	720	8.18	-	-	-	37.5	508	15.86	13	143	17.83	32.8	404	6.03	37	508	9.08	45.8	628	11.22	55.2	594	6.12
60	52	716	8.42	-	-	-	35.5	481	16.57	9	99	19.75	32.5	400	6.26	36.5	502	9.46	45.5	624	11.78	55	592	6.29
65	50.8	700	8.74	-	-	-	33	447	18.61	-	-	-	30	370	6.26	34.3	471	9.82	45.7	627	13.06	54.5	586	6.59
70	49.5	682	9.09	-	-	-	30.5	413	21.73	-	-	-	28	345	6.39	32	440	10.23	46	631	14.68	54	581	6.91
75	46.3	638	9.11	-	-	-	25	338	24.17	-	-	-	27	333	6.79	29.5	405	10.67	40.5	556	14.62	53	570	7.22
80	43	592	9.11	-	-	-	19	257	28.58	-	-	-	26.5	326	7.42	27	371	11.24	35	480	14.55	51.5	554	7.49
85	40.5	558	9.29	-	-	-	-	-	-	-	-	-	26.25	323	8.29	24.8	341	12.17	32.5	446	15.93	51.3	552	8.00
90	38	523	9.51	-	-	-	-	-	-	-	-	-	26	320	9.42	22.5	309	13.44	30	412	17.90	51	549	8.57
95	36	496	9.91	-	-	-	-	-	-	-	-	-	22.3	275	9.47	21.3	293	16.26	25.5	350	19.44	50	538	9.12
100	34	468	10.40	-	-	-	-	-	-	-	-	-	18.5	228	9.50	20	275	21.14	21	288	22.16	49	527	9.76
107	31	427	11.23	-	-	-	-	-	-	-	-	-	17	209	12.32	10	137	22.90	18	247	41.16	45.5	489	10.41
110	30	413	11.80	-	-	-	-	-	-	-	-	-	16	197	14.08	5.5	76	25.19	-	-	-	44	473	10.76
117	25.5	351	12.54	-	-	-	-	-	-	-	-	-	11	135	19.36	-	-	-	-	-	-	38.8	417	11.28
120	23.5	324	12.94	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36.5	393	11.55
130	15	207	13.77	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36	387	16.13
136	11	151	16.83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	33.6	361	20.08
140	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32	344	24.58
143	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25.5	274	24.93

Notes:
GPM = gallons per minute
GPM/ft = gallons per minute per lineal foot
Meter value equals number of flow meter revolutions per 30 seconds.
Flow during test period = 11.99 millions of gallons per day (MGD)
Flow rate during test period = 8,326 GPM

Table 15
Incremental Flow along Collector Well 2 Laterals
Sonoma County Water Agency
November 2008 Evaluation

Distance from	Lateral 1		Lateral 2		Lateral 3		Lateral 4		Lateral 5		Lateral 6		Lateral 7		Lateral 8		Overall		
Caisson, feet	GPM	GPM/lft	GPM	GPM/lft	GPM	GPM/lft	GPM	GPM/lft	GPM	GPM/lft	GPM	GPM/lft	GPM	GPM/lft	GPM	GPM/lft	GPM	Percent	GPM/lft
0 - 50	151	3.02	683	13.66	372	7.44	659	13.18	486	9.72	446	8.92	336	6.72	457	9.14	3590	43.1%	8.98
50 - 100	276	5.52	100/7'	14.29	569/39'	14.59	274/22'	12.45	185	3.70	261	5.72	350	7.00	70	1.40	2085	25.0%	6.56
100 - 150	468/45'	10.40							228/37'	6.16	275/21'	13.10	288/13'	22.16	527/61'	8.64	1786	21.5%	10.09

Performance of Collector Laterals within Approximately 60 Feet of Caisson

Lateral No.	1	2	3	4	5	6	7	8	Overall
Distance Used	0 - 60'	0 - 57' *	0 - 60'	0 - 60'	0 - 60'	0 - 60'	0 - 60'	0 - 60'	477
GPM	269	783	460	834	499	480	350	462	4137
% Flow	30.0%	100.0%	48.9%	89.4%	55.5%	48.9%	35.9%	43.8%	50.0%
GPM/lft	4.48	13.74	7.67	13.9	8.32	8.00	5.83	7.70	8.71

Percentage Flow Contribution by Relative Segment of Lateral

Lateral No.	1	2	3	4	5	6	7	8	Average
Inner Third	16.9%	44.6%	25.2%	41.8%	52.7%	39.1%	26.8%	44.9%	36.5%
Middle Third	30.8%	17.6%	23.7%	28.8%	11.7%	23.1%	23.9%	8.7%	21.0%
Outer Third	52.3%	37.8%	51.1%	29.4%	35.6%	37.8%	49.3%	46.4%	42.5%

LEGEND:
269/33' - Used for laterals that did not span the entire range and corresponds to gpm per feet of lateral within the interval. For the example shown, this corresponds to 269 gpm for 33 feet of lateral.

NOTE:
* - The interval 0 to 57 feet used as this is the reported extent of Lateral 2.
GPM - Gallons Per Minute
GPM/ft - Gallons Per Minute per lineal foot

Table 16
Flow at Outer Ends of Collector Well 2 Laterals
Sonoma County Water Agency
November 2008 Evaluation

Percentage Flow at Outer End of Laterals

	Within Outer 20 feet		Within Outer 30 feet	
Lateral No.	**GPM**	**% Flow**	**GPM**	**% Flow**
1	266	29.7%	351	39.2%
2	370	47.3%	418	53.4%
3	413	43.9%	481	51.1%
4	212	22.7%	324	34.7%
5	135	15.0%	209	23.2%
6	275	28.0%	309	31.5%
7	350	35.9%	446	45.8%
8	344	32.6%	387	36.7%

Reduction in Unit Flow Rate at Ends (Extent) of Laterals
(End Starting Point is Last Measured Flow Meter Reading)

	Last Measured GPM/ft Near	20 feet From Measured End		30 feet From Measured End	
Lateral No.	**End of Lateral**	**GPM/lft**	**% Reduction**	**GPM/lft**	**% Reduction**
1	16.83	12.54	25.5%	11.23	33.2%
2	23.80	16.83	29.3%	13.06	45.1%
3	28.58	16.57	42.0%	14.58	49.0%
4	19.75	15.36	22.2%	14.47 *	26.7%
5	19.36	9.47	51.1%	6.79	64.9%
6	25.19	13.44	46.6%	11.24	55.4%
7	41.16	15.93	61.3%	14.62	64.5%
8	24.93	11.55	53.6%	10.76	56.8%

NOTE:
* - Averaged 2 meter measurements for 30-ft flow in Lateral 4.
GPM/ft - Gallons Per Minute per lineal foot

Table 17
Collector Well 2 Water Quality Field Results
Sonoma County Water Agency

Lateral Number	Elevation (msl)	Date	Time	pH	ORP (mV)	DO (mg/L)	Conductivity (mS/cm)	Salinity (ppt)	TDS (g/L)	Turbidity (NTU)	Temp (Celsius)
1	-18.62	10/28/2008	9:39:16	7.07	212	6.16	0.200	0.11	0.148	0.0	18.74
2	-18.62	10/28/2008	9:44:41	7.11	206	8.28	0.198	0.11	0.149	0.0	17.94
3	-18.62	10/28/2008	9:48:51	7.12	208	8.61	0.198	0.11	0.150	0.0	17.73
4	-18.62	10/28/2008	9:53:36	7.15	221	8.05	0.201	0.11	0.148	0.0	18.82
5	-18.62	10/28/2008	9:57:41	7.01	218	7.03	0.202	0.11	0.149	0.0	18.84
6	-18.62	10/28/2008	10:01:37	7.15	211	5.60	0.205	0.11	0.150	0.0	19.33
7	-18.62	10/28/2008	10:06:38	7.23	209	8.94	0.198	0.11	0.149	0.0	18.00
8	-18.62	10/28/2008	10:10:40	7.29	202	6.15	0.202	0.11	0.147	0.0	19.53
9	-18.62	10/28/2008	10:15:33	7.21	204	7.79	0.200	0.11	0.148	0.0	18.50
Total Discharge (pump intake)		**10/28/2008**	**10:19:47**	**7.05**	**219**	**7.89**	**0.201**	**0.11**	**0.149**	**0.0**	**18.66**

NOTE:
Parameters measured using a YSI Model 6920 downhole probe.
ORP - Oxygen Reduction Potential
DO - Dissolved Oxygen
TDS - Total Dissolved Solids
msl - mean sea level
mV - millivolts
mg/L - milligrams per liter
mS/cm - millisiemens per centimeter
ppt - parts per thousand
g/L - grams per liter
NTU - Nephelometric Turbidity Units

Table 18
Collector Well 6 Lateral Structural Integrity Determination
Sonoma County Water Agency

Lateral	Reported Length (feet)	Accessed Length (feet)	Original Screen Metal Thickness (inches)	Measured Thickness (inches) 9:00	12:00	3:00	Average Thickness (inches)	Change in Thickness (inches)
1	100	NA	0.25	0.275	0.195	0.175	0.215	-0.04
2	170	160	0.25	0.280	0.235	0.215	0.243	-0.01
3	160	160	0.25	0.240	0.195	0.240	0.225	-0.03
4	70	NA	0.25	0.175	0.290	0.175	0.213	-0.04
5	140	NA	0.25	0.195	0.180	0.190	0.188	-0.06
6	160	160	0.25	0.185	0.195	0.185	0.188	-0.06
7	110	NA	0.25	0.190	0.190	0.190	0.190	-0.06
8	130	130	0.25	0.190	0.185	0.190	0.188	-0.06
9	80	NA	0.25	0.185	0.185	0.190	0.187	-0.06
10	90	NA	0.25	0.300	0.300	0.295	0.298	0.05
11	70	Blank	NM	NM	NM	NM	NM	NM
12	350	299	0.50	0.560	0.550	0.565	0.558	0.06
15	375	320	0.50	0.490	0.555	0.545	0.530	0.03
	2,005	*1,229*						

NOTES:
Lateral screen thicknesses measured using Check-Line underwater ultrasonic digital thickness gauge at the 9:00, 12:00, and 3:00 positions.
Original screen metal thickness of Laterals 1-10 is assumed to be equivalent to the wire height of the wire-wrapped screen.
NM - Not measured

Table 19
Results of Collector Well 6 Capacity Testing
Sonoma County Water Agency

	2002 Conventional Laterals Only	2006 All Laterals Open / 24 Hours	Collector 6 2008 Evaluation	2008 Evaluation						
				TW-2	**TW-3**	**TW-6**	**TW-14**	**TW-15**	**WS-MW-02**	**Russian River ***
Static Water Level (ft msl)			35.83	32.08	34.51	34.50	35.41	35.98	36.33	25.74
Pumping Water Level (72 hours) (ft msl)			23.61	28.37	28.00	28.81	25.81	28.39	31.48	25.70
Observed Drawdown (72 hours) (feet)	12.33	19	12.22	3.72	6.51	5.69	9.60	7.58	4.85	0.05
Pumping Rate (gpm)	12,506	24,306	13,021							
Specific Capacity (gpm/ft)	1,014.3	1,279.3	1,065.6							
Differential (ft/1,000 gpm)				0.37	0.34	0.40	0.17	0.37	0.60	

NOTES:
The inflatable dam was in operation during the current Collector 6 testing.
Collector 1 was in operation during the Collector 6 testing at flows ranging from 8 to 9 million gallons per day.
* - Russian River data are relative changes in water level and not elevations.
Data from 2002 test were obtained from September 2002 Ranney Division of Layne Christensen report.
ft msl - feet mean sea level
gpm - gallons per minute
gpm/ft - gallons per minute per foot
ft/1,000 gpm - feet drawdown per 1,000 gallons per minute

Table 20
Collector Well 6 Relative Lateral Flow Analysis
Sonoma County Water Agency

	Reported	Accessed	2008 Capacity Testing				2002 Performance Testing			
	Length	Length	Relative Flow			Temperature	Relative Flow			Temperature
Lateral	**(feet)**	**(feet)**	**(Percent)**	**(gpm)**	**(gpm/lft)**	**(Degrees C)**	**(Percent)**	**(gpm)**	**(gpm/lft)**	**(Degrees C)**
1	100	NA	6.0	779	7.8	18.21	9.9	1,241	12.4	14.4
2	170	160	10.0	1,299	7.6	18.14	11.5	1,437	8.5	14.4
3	160	160	7.0	909	5.7	17.59	14.6	1,829	11.4	14.4
4	70	NA	3.0	390	5.6	17.74	6.0	751	10.7	14.4
5	140	NA	5.0	649	4.6	18.80	10.4	1,306	9.3	14.4
6	160	160	6.0	779	4.9	18.98	12.0	1,502	9.4	14.4
7	110	NA	6.0	779	7.1	18.74	10.2	1,274	11.6	14.4
8	130	130	6.5	844	6.5	18.80	8.9	1,110	8.5	14.4
9	80	NA	3.5	455	5.7	18.33	9.4	1,176	14.7	14.4
10	90	NA	4.0	519	5.8	16.98	7.0	882	9.8	14.4
11	70	Blank								
12	350	299	17	2,208	6.3	18.28				
13	Blank	Blank								
14	70	Blank								
15	375	320	26	3,376	9.0	19.28				
Total	**2,075**	**1,229**	**100**	**12,986**			**99.9**	**12,506**		

NOTES:
NA - Laterals not tested.
Data from 2002 test were obtained from September 2002 Ranney Division of Layne Christensen report.
gpm - gallons per minute
gpm/ft - gallons per minute per lineal foot
C - Celsius

Table 21
Change in Collector Well 6 Lateral Performance Since 2002
Sonoma County Water Agency

	2008			
Lateral No.	**With 12 & 15**	**Without 12 & 15**	**2002**	**Change**
1	5.5%	9.6%	9.9%	-0.3%
2	9.8%	17.1%	11.5%	5.6%
3	6.8%	11.8%	14.6%	-2.8%
4	2.8%	4.8%	6.0%	-1.2%
5	4.8%	8.3%	10.4%	-2.1%
6	6.2%	10.8%	12.0%	-1.2%
7	6.1%	10.6%	10.2%	0.4%
8	6.4%	11.1%	8.9%	2.2%
9	3.5%	6.1%	9.4%	-3.3%
10	4.0%	7.0%	7.0%	0.0%
12	16.7%			-
15	25.9%			-
			Overall Change	-2.7%

NOTES:
Data from 2002 test were obtained from September 2002 Ranney Division of Layne Christensen report.
Without 12 & 15 - Normalized flow for Laterals 1 through 10 after removing Laterals 12 and 15 contribution.
Laterals 12 and 15 were installed after the 2002 testing.

Table 22
Flow Distribution Along Collector Well 6 Laterals
October 2008
Sonoma County Water Agency

	Lateral No. 2			Lateral No. 3			Lateral No. 6			Lateral No. 8			Lateral No. 12			Lateral No. 15		
Distance (feet)	Total Length = 170 feet 9.8% of Total Flow Rate			Total Length = 160 feet 6.8% of Total Flow Rate			Total Length = 160 feet 7.63% of Total Flow Rate			Total Length = 130 feet 6.4% of Total Flow Rate			Total Length = 350 feet 16.7% of Total Flow Rate			Total Length = 375 feet 25.9% of Total Flow Rate		
	Meter	**GPM**	**GPM/lft**	**Meter**	**GPM**	**GPM/lft**	**Meter**	**GPM**	**GPM/lft**	**Meter**	**GPM**	**GPM/lft**	**Meter**	**GPM**	**GPM/lft**	**Meter**	**GPM**	**GPM/lft**
0	56	1,225	7.21	44	850	5.31	45.5	954	5.96	38	800	6.15	51	2,088	6.89	63	3,238	9.99
10	56	1,225	7.66	45	869	5.80	45.5	954	6.36	38	800	6.67	50.5	2,067	7.05	63	3,238	10.31
20	55	1,203	8.02	44	850	6.07	44	922	6.59	37.5	789	7.18	49	2,006	7.09	62	3,186	10.48
30	51.5	1,127	8.05	43	831	6.39	44	922	7.09	34.5	726	7.26	46	1,883	6.90	62	3,186	10.84
40	46.5	1,017	7.82	39	753	6.28	44	922	7.69	33.5	705	7.84	48	1,965	7.47	61	3,135	11.04
50	43.5	952	7.93	37	715	6.50	41.5	870	7.91	33	695	8.68	47.5	1,944	7.68	58.5	3,006	10.97
60	42	919	8.35	34.5	666	6.66	41	859	8.59	31	653	9.32	46.5	1,903	7.83	60	3,083	11.68
70	44.5	973	9.73	32.5	628	6.98	37.5	786	8.73	27	568	9.47	45.5	1,862	7.99	60	3,083	12.14
80	46.5	1,017	11.30	31.5	609	7.61	37	776	9.69	29	611	12.21	43.5	1,781	7.98	53.5	2,749	11.27
90	44.5	973	12.17	32	618	8.83	37.5	786	11.23	29	611	15.26	38.5	1,576	7.40	57	2,929	12.52
100	40	875	12.50	29.5	570	9.50	35	734	12.23	27	568	18.95	40	1,637	8.07	55	2,826	12.62
110	38.5	842	14.04	26	502	10.05	33	692	13.83	21.5	453	22.63	37.5	1,535	7.95	52	2,672	12.49
120	37	809	16.19	25	483	12.07	31.5	660	16.51	11	232	23.16	38	1,555	8.50	52	2,672	13.10
128	31.8	696	16.58	22.4	432	13.49	28.9	606	18.95	3	63	31.58	36.4	1,489	8.51	49.2	2,528	12.90
130	30.5	667	16.68	21.5	415	13.84	28	587	19.56	0	0	0	36	1,474	8.52	48.5	2,492	12.85
140	26	569	18.96	18	348	17.39	19.5	409	20.44	-	-	-	34	1,392	8.54	51	2,621	14.24
150	17.5	383	19.14	14.5	280	28.01	16.5	346	34.59	-	-	-	30.5	1,248	8.16	48	2,467	14.18
157	13.9	304	23.35	11	213	70.83	14	293	97.82	-	-	-	27.7	1,133	7.76	48.4	2,487	14.89
160	11.5	252	25.16	0	0	0	0	0	0	-	-	-	26.5	1,085	7.59	48.5	2,492	15.20
170	0	0	0	-	-	-	-	-	-	-	-	-	25.5	1,044	7.85	43	2,210	14.35
180	-	-	-	-	-	-	-	-	-	-	-	-	22.5	921	7.49	43.5	2,235	15.52
190	-	-	-	-	-	-	-	-	-	-	-	-	21.5	880	7.79	42	2,158	16.11
200	-	-	-	-	-	-	-	-	-	-	-	-	19	778	7.55	37.5	1,927	15.54
210	-	-	-	-	-	-	-	-	-	-	-	-	18.5	757	8.14	34	1,747	15.33
220	-	-	-	-	-	-	-	-	-	-	-	-	17.5	716	8.63	32	1,644	15.81
230	-	-	-	-	-	-	-	-	-	-	-	-	17.5	716	9.81	30	1,542	16.40
240	-	-	-	-	-	-	-	-	-	-	-	-	17	696	11.04	27	1,388	16.52
250	-	-	-	-	-	-	-	-	-	-	-	-	15.5	634	11.97	23.5	1,208	16.32
260	-	-	-	-	-	-	-	-	-	-	-	-	17	696	16.18	19	976	15.26
270	-	-	-	-	-	-	-	-	-	-	-	-	16.5	675	20.47	19	976	18.08
280	-	-	-	-	-	-	-	-	-	-	-	-	10	409	17.80	14	719	16.35
290	-	-	-	-	-	-	-	-	-	-	-	-	7	287	22.04	8.5	437	12.85
300	-	-	-	-	-	-	-	-	-	-	-	-	4	164	54.58	9	463	19.27
310	-	-	-	-	-	-	-	-	-	-	-	-	blocked	-	-	3	154	11.01
320	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.5	180	44.97

Notes:
GPM = gallons per minute
GPM/lft = gallons per minute per lineal foot
Meter value equals number of flow meter revolutions per 30 seconds.
Flow during test period = 18.0 millions of gallons per day (MGD)
Flow rate during test period = 12,500 GPM

Table 23
Incremental Flow along Collector Well 6 Laterals
Sonoma County Water Agency
October 2008 Evaluation

Distance from	Lateral 2		Lateral 3		Lateral 6		Lateral 8		Lateral 12		Lateral 15		** For Profiled Laterals		
Caisson (feet)	GPM	GPM/lft	GPM	GPM/lft	GPM	GPM/lft	GPM	GPM/lft	GPM	GPM/lft	GPM	GPM/lft	** GPM	** Percent	** GPM/lft
0 - 50	273	5.46	135	2.70	84	1.68	105	2.10	144	2.88	232	4.64	973	10.6%	3.24
50 - 100	77	1.54	145	2.90	136	2.72	127	2.54	307	6.14	180	3.60	972	10.6%	3.24
100 - 150	492	9.84	290	5.80	388	7.76	568/30'	18.93	389	7.78	359	7.18	2486	27.2%	8.88
150 - 200	383/20'	19.15	280/10'	28.0	346/10'	34.6			470	9.40	540	10.80	2019/140'	22.1%	14.42
200 - 250									144	2.88	719	14.38	863/100'	9.4%	8.63
250 - 300									470	9.40	745	14.90	1215/100'	13.3%	12.15
> 300									164/10'+	≤16.4	283/20'	14.15	627/125'	6.8%	5.02
									blocked at 310		180 beyond 320' (blocked)		** 9155	100.0%	

Performance of Collector Laterals within Approximately 70 Feet of Caisson

Lateral No.	1	2	3	4	5	6	7	8	9	10	12	15	Overall	
Distance Used	0 - 80'	0 - 70'	0 - 70'	0 - 70'	0 - 70'	0 - 70'	0 - 70'	0 - 70'	20' - 80'	0 - 70'	0 - 70'	0 - 70'	840'	
GPM Profiled		*	*			*		*			*	*		
Estimated % Flow	60%			60%	20%		25%		60%	60%				
GPM	413	252	222	207	120	168	190	232	262.5	300	226	155	2748	(22%)
GPM/lft	+/- 5.16	3.60	3.17	+/- 2.96	+/- 1.71	2.40	2.71	3.31	4.38	4.29	3.23	2.21	3.27	

Percentage Flow Contribution by Relative Segment of Lateral

Lateral No.	2	3	6	8	12	15	Average
Inner Third	25.0%	15.9%	8.8%	11.9%	21.7%	17.5%	16.8%
Middle Third	9.0%	17.1%	14.3%	11.8%	41.1%	36.5%	21.6%
Outer Third	66.0%	67.1%	76.9%	76.4%	37.3%	50.8%	62.4%

LEGEND:
269/33' - Used for laterals that did not span the entire distance range and corresponds gpm per feet of lateral within the interval.

NOTE:
* - Laterals where flow meter measurements were collected.
** - GPM, percentage, and GPM/lft for intervals within laterals where flow meter measurements were collected.
GPM - Gallons Per Minute
GPM/lft - Gallons Per Minute per lineal foot

Table 24
Flow at Outer Ends of Collector Well 6 Laterals
Sonoma County Water Agency
October 2008 Evaluation

Percentage Flow at Outer End of Laterals

	Within Outer 20 feet		Within Outer 30 feet	
Lateral No.	**GPM**	**% Flow**	**GPM**	**% Flow**
2	383	31.3%	569	46.4%
3	348	40.9%	415	48.8%
6	409	42.9%	587	61.5%
8	453	56.6%	568	71.0%
12	409	19.6%	675 *	32.3%
15	463	14.3%	719 **	22.2%

NOTES:
* - In Lateral 12, meter reading at 30 ft adjusted by 3-point average
** - In Lateral 15, used meter reading at 40 ft instead of 30 ft

Reduction in Unit Flow Rate at Ends of Laterals
(End Starting Point is Last Measured Flow Meter Reading)

	Last Measured GPM/lft Near	20 feet From Measured End		30 feet From Measured End	
Lateral No.	**End of Lateral**	**GPM/lft**	**% Reduction**	**GPM/lft**	**% Reduction**
2	25.16	18.96	24.6%	16.68	33.7%
3	70.83	17.39	75.4%	13.84	80.5%
6	97.82	20.44	79.1%	19.56	80.0%
8	31.58	22.63	28.3%	18.95	40.0%
12	54.58	20.10	63.2%	18.15 *	66.7%
15	44.97	19.27	57.1%	16.15 *	64.0%

NOTE:
* - 3-point average used at 30 feet for Laterals 12 and 15
GPM/lft - Gallons Per Minute per lineal foot

Table 25
Collector Well 6 Water Quality Field Results
Sonoma County Water Agency

Lateral Number	Elevation (msl)	Date	Time	pH	ORP (mV)	DO (mg/L)	Conductivity (mS/cm)	Salinity (ppt)	TDS (g/L)	Turbidity (NTU)	Temp (Celsius)
1	-23.7	10/14/2008	9:41:11	6.85	116	3.15	0.229	0.13	0.171	0.0	18.21
2	-23.7	10/14/2008	9:46:41	6.71	122	1.86	0.213	0.12	0.160	0.0	18.14
3	-23.7	10/14/2008	9:55:18	6.73	119	1.58	0.213	0.12	0.161	0.0	17.59
4	-23.7	10/14/2008	9:58:54	6.68	125	2.74	0.222	0.12	0.167	0.0	17.74
5	-23.7	10/14/2008	10:02:53	6.80	121	3.04	0.218	0.12	0.161	0.0	18.80
6	-23.7	10/14/2008	10:06:43	6.85	118	3.22	0.207	0.11	0.152	0.0	18.98
7	-23.7	10/14/2008	10:10:41	6.89	111	2.95	0.205	0.11	0.152	0.0	18.74
8	-23.7	10/14/2008	10:16:40	6.80	119	2.71	0.204	0.11	0.151	0.0	18.80
9	-23.7	10/14/2008	10:20:51	6.82	117	3.02	0.212	0.12	0.158	0.0	18.33
10	-23.7	10/14/2008	10:25:55	6.61	132	3.15	0.267	0.15	0.205	0.0	16.98
12	-15.2	10/14/2008	10:30:59	6.75	123	3.30	0.231	0.13	0.172	0.0	18.28
15	-15.2	10/14/2008	10:37:08	6.70	121	2.43	0.211	0.11	0.154	0.0	19.28
Total Discharge (pump intake)		**10/14/2008**	**10:43:00**	**6.62**	**125**	**2.68**	**0.216**	**0.12**	**0.160**	**0.0**	**18.54**

NOTE:
Parameters measured using a YSI Model 6920 downhole probe.
ORP - Oxygen Reduction Potential
DO - Dissolved Oxygen
TDS - Total Dissolved Solids
msl - mean sea level
mV - millivolts
mg/L - milligrams per liter
mS/cm - millisiemens per centimeter
ppt - parts per thousand
g/L - grams per liter
NTU - Nephelometric Turbidity Units

Table 26
Summary of Specific Capacities - Collectors 1, 2 and 6
Sonoma County Water Agency

Collector	2008 Test	2006 Test	2003 Test	2002 Test	1998 Test	1959 Test
Collector 1	336	NA	286	NA	224	914
Collector 2	524	NA	NA	NA	NA	868
Collector 6	1,066	1,280	NA	1,014	NA	NA

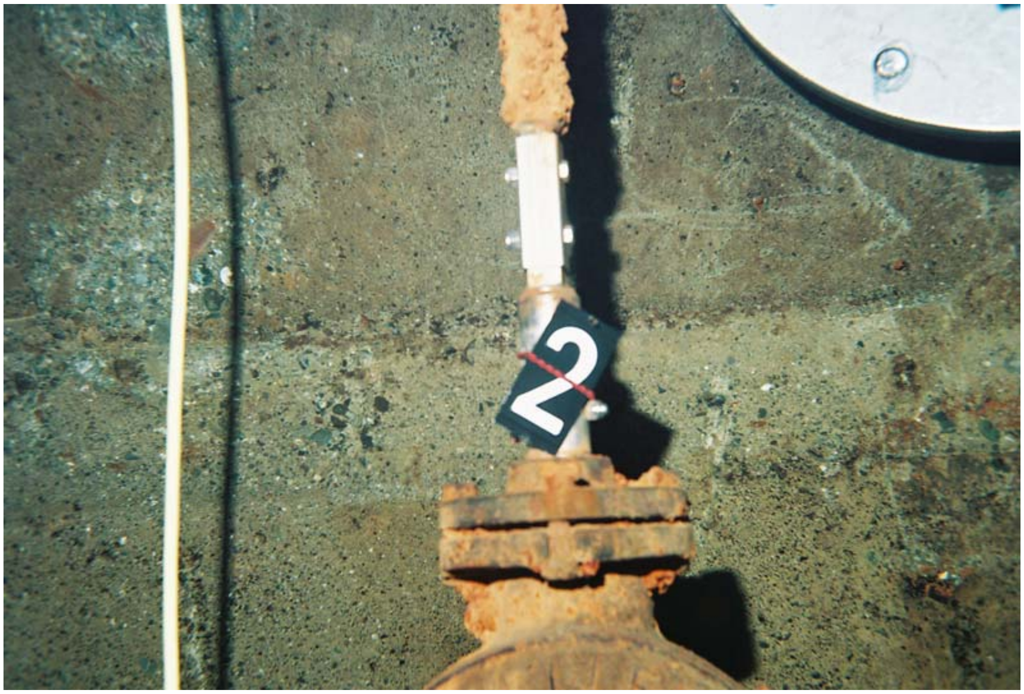
NOTES:
Specific capacities provided in gallons per minute per foot (gpm/ft).
NA- Not applicable
2006 test on Collector 6 included the Long Large Diameter Laterals.
2003 test on Collector 1 was post-rehabiliative efforts.
2002 test on Collector 6 included only the 12-inch diameter laterals.

Appendix A
Capacity Analysis Operations Plan
(on CD)

Appendix B
Water Level Monitoring Data
(on CD)

Appendix C
Collector Inspection Photographs

Collector 1 Lateral #2

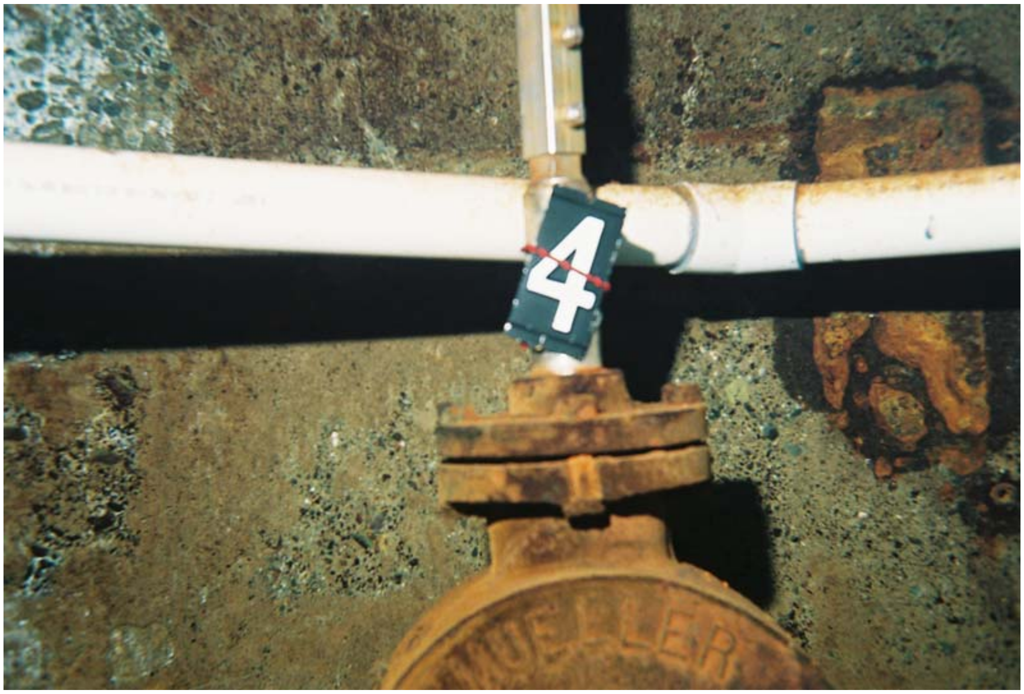


Collector 1 Lateral #2—Old Screen Lined with 6” Stainless Screen

Collector 1 Valve Lateral #3

Collector 1 Lateral #3—Old Screen Lined with 6" Stainless Screen

Collector 1 Lateral #4

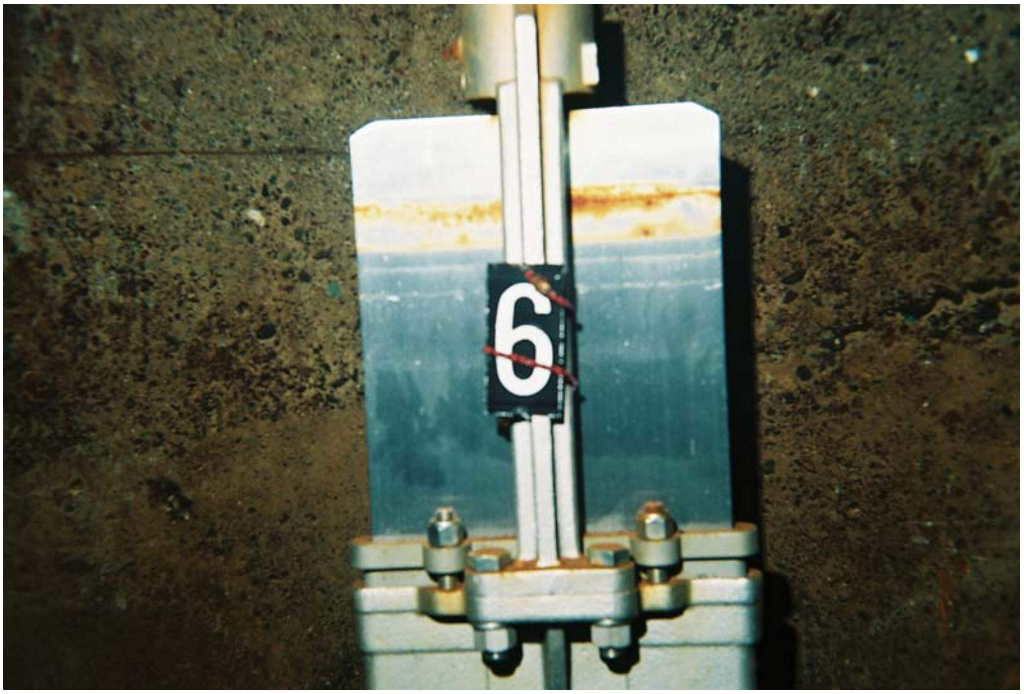


Collector 1 Lateral #4—Old Screen Lined with 6” Stainless Screen

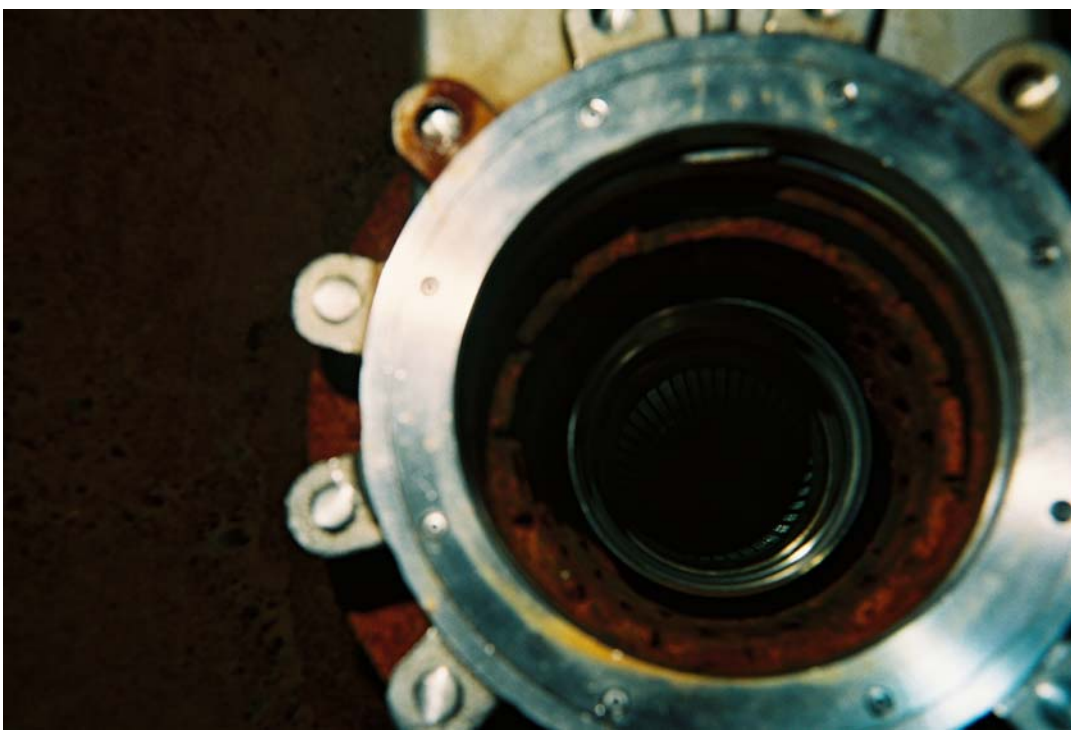
Collector 1 Lateral #5

Collector 1 Lateral #5 Old Screen Lined with 6” Stainless

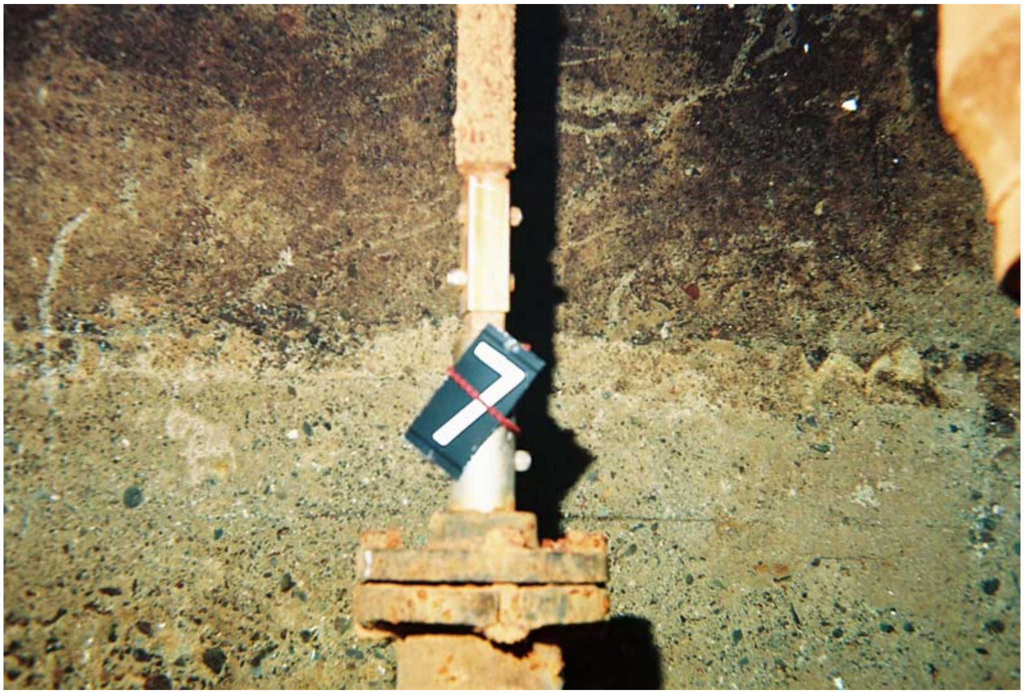
Collector 1 Lateral #6



Collector 1 Lateral #6—Old Screen Lined with 6" Stainless Screen



Collector 1 Lateral #7



Collector 1 Lateral #7—Old Screen Lined with 6" Stainless Screen

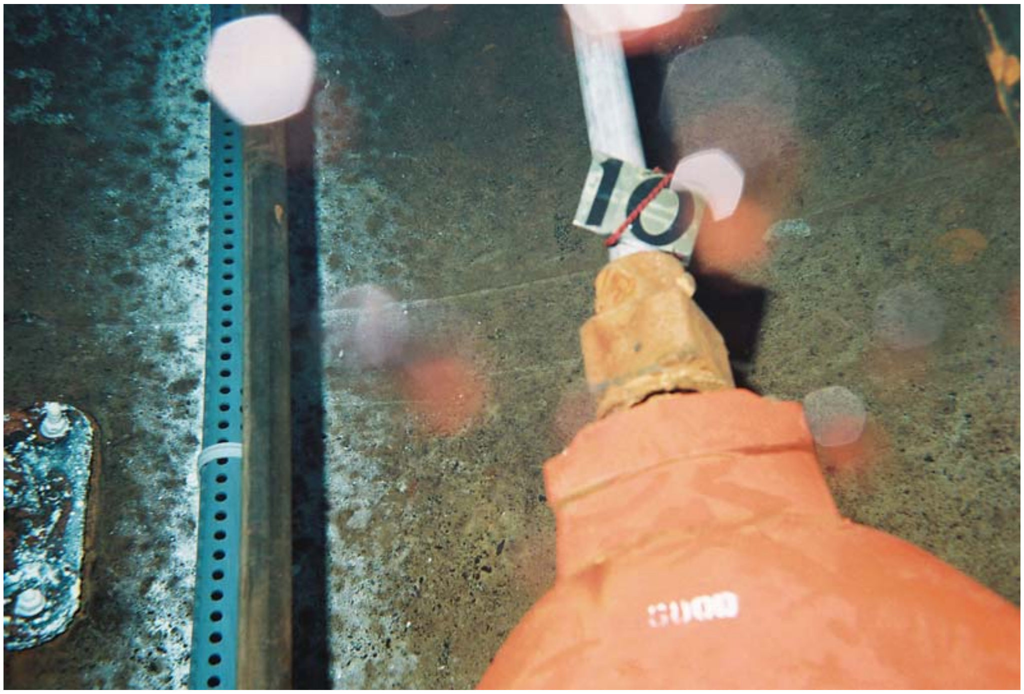
Collector 1 Lateral #8

Collector 1 Lateral #8—Old Screen Lined with 6” Stainless Screen

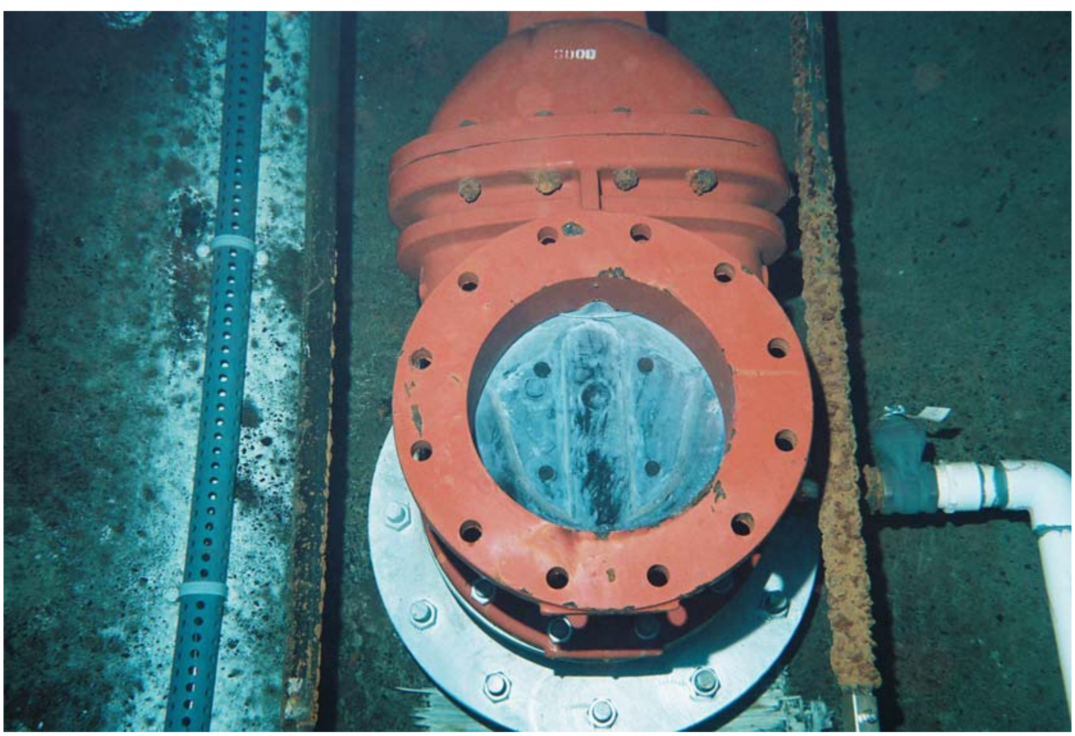
Collector 1 Lateral #9

Collector 1 Lateral #9—Old Screen Lined with 6” Stainless Screen

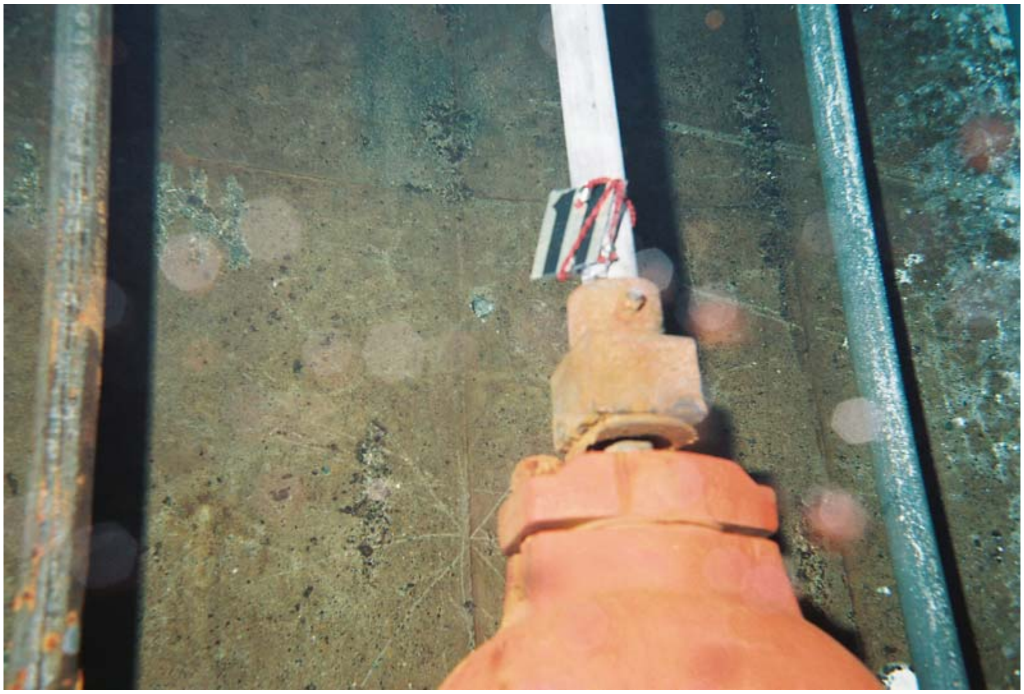
Collector 1 Lateral #10



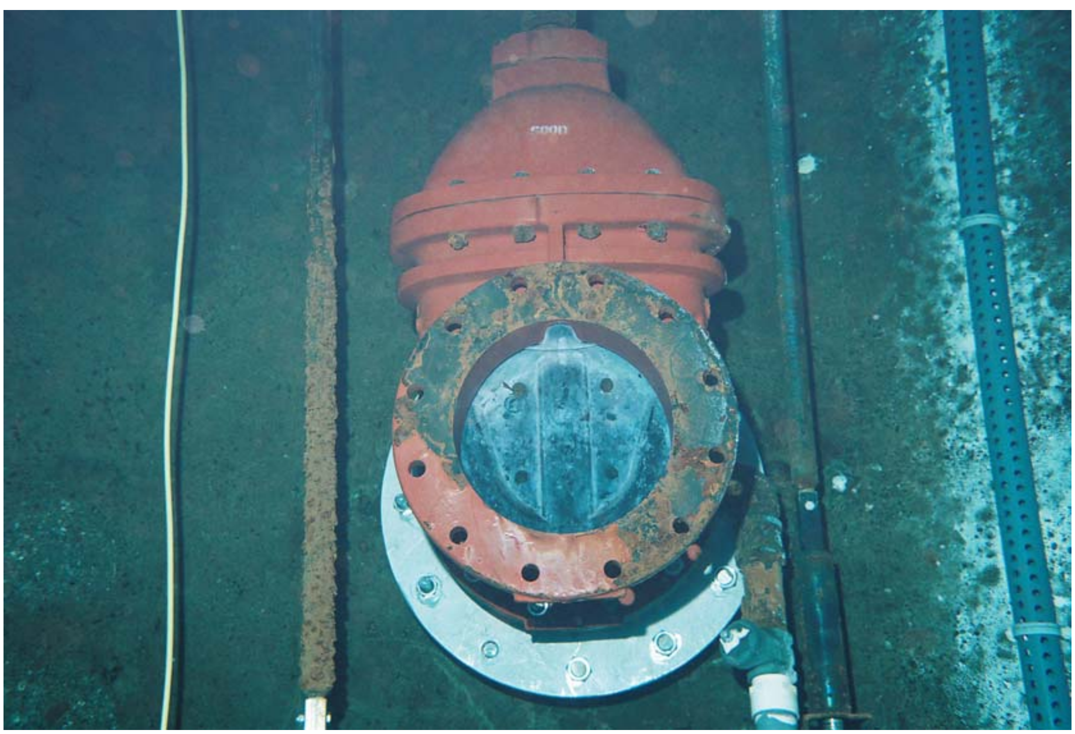
Collector 1 Blanked Valve #10



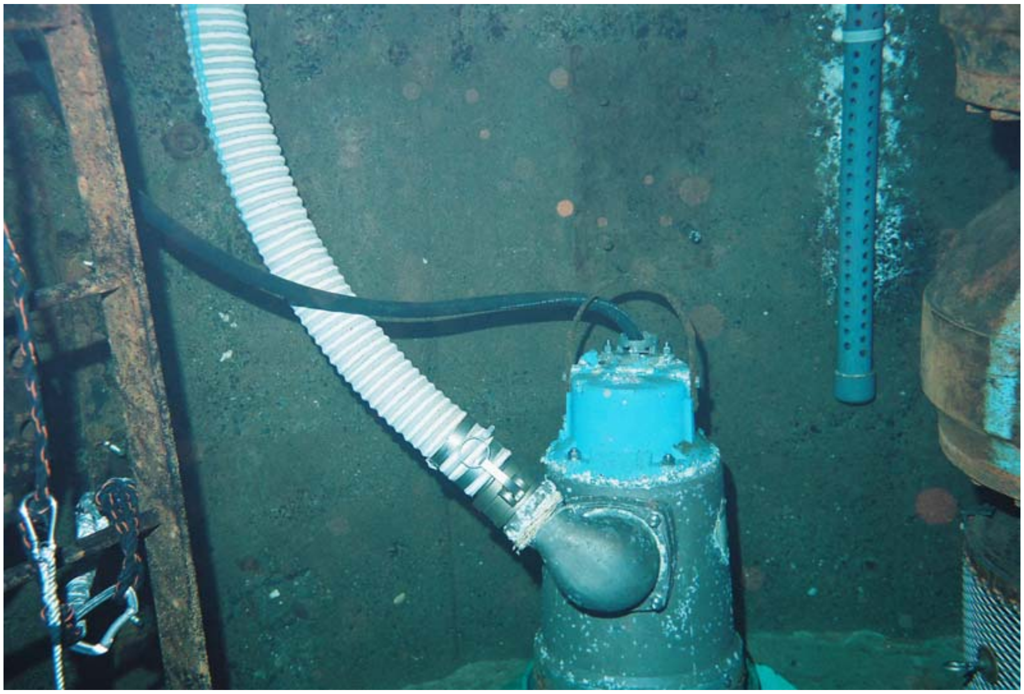
Collector 1 Lateral #11



Collector 1 Lateral #11 Blanked Valve



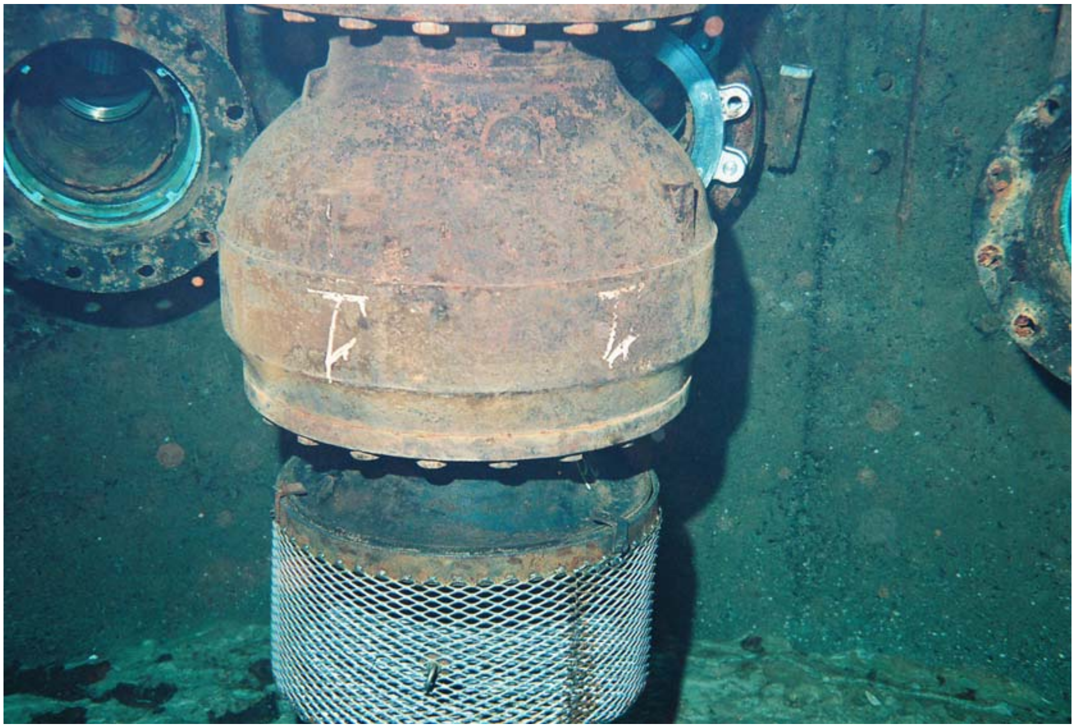
Collector 1 Sump Pump



Collector 1 Turbine Pump

Collector 1 Turbine Pump Column

Collector 1 Turbine Pump



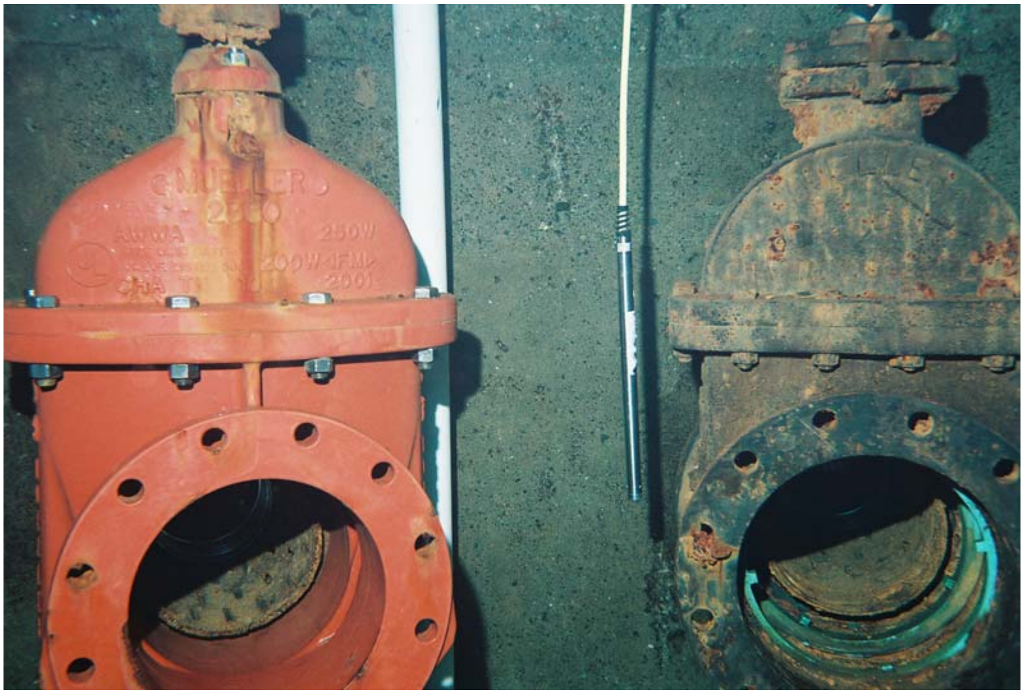
Collector 1 Turbine Pump Column Detail

Collector 1 Sump Pump

Collector 1 Sump Pump—Floor

Collector 1 Caisson Floor

Collector 1 Transducers and Laterals

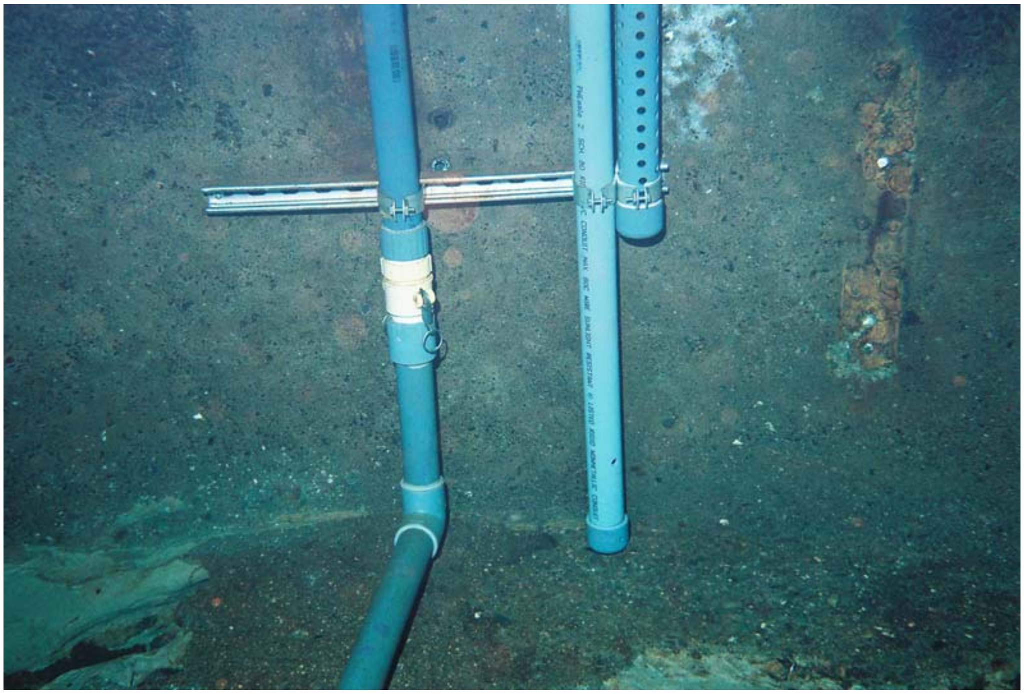


Collector 1 Ladder and Caisson Floor

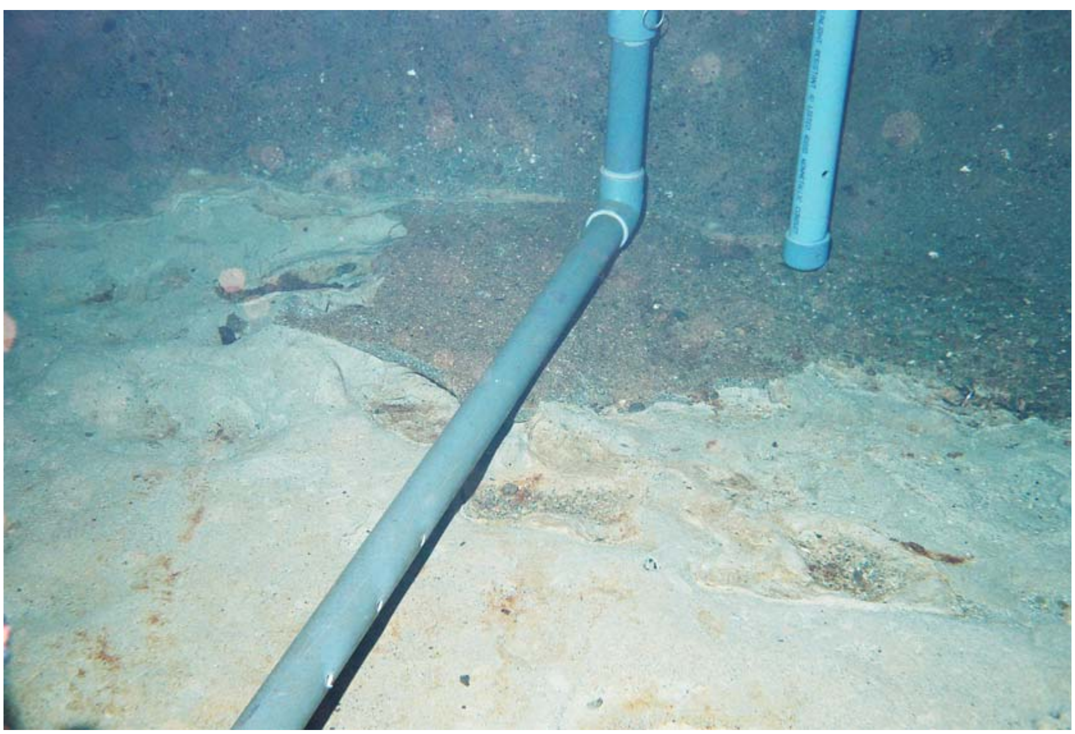
Collector 1 Ladder

Collector 1 Caisson Floor

Collector 1 Piping



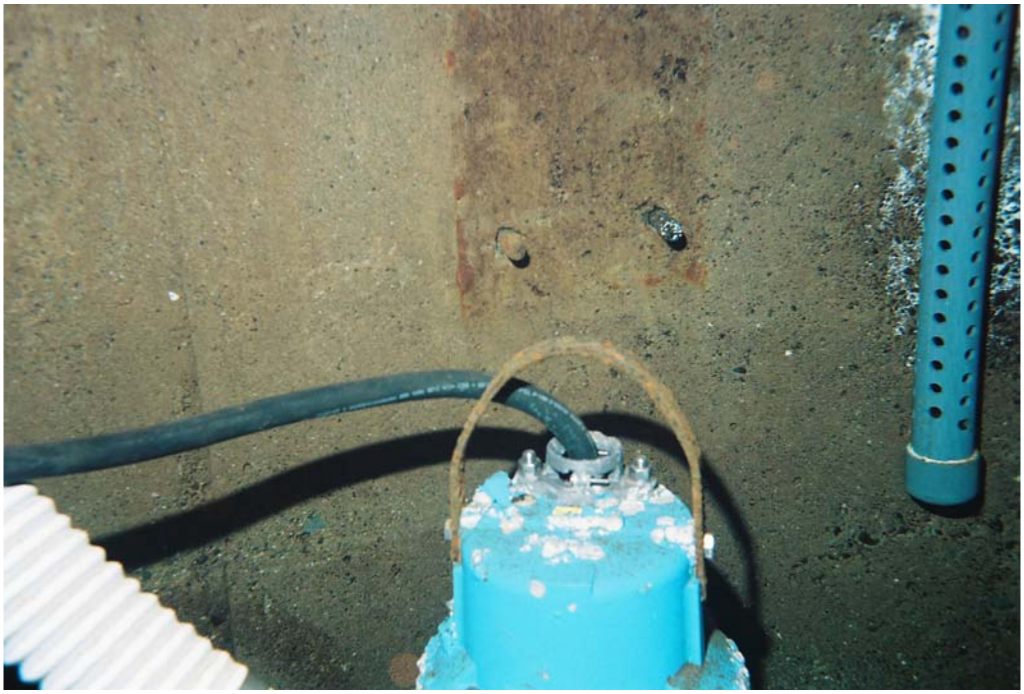
Collector 1 Piping—Caisson Floor



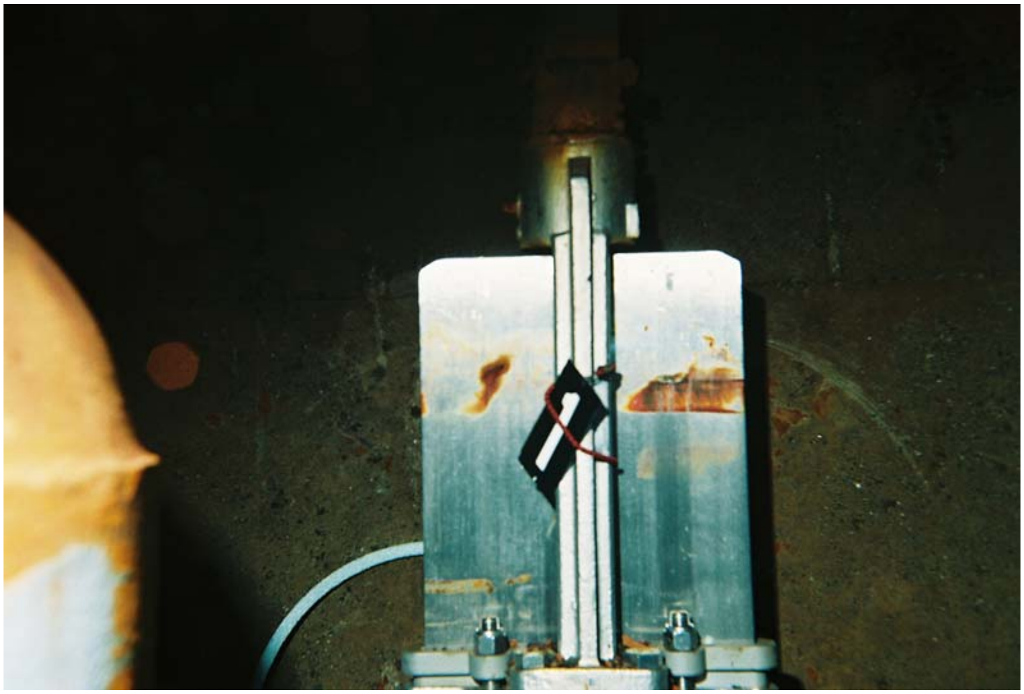
Collector 1 Caisson Floor Detail

Collector 1 Ladder and Piping

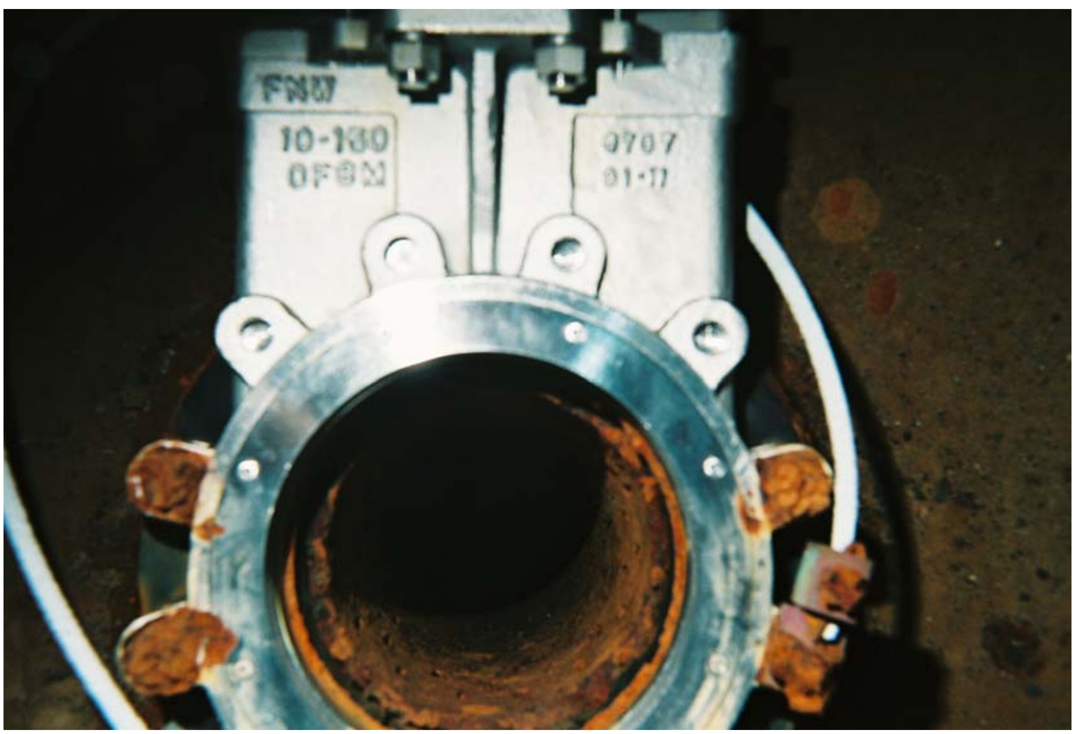
Collector 1 Sump Pump



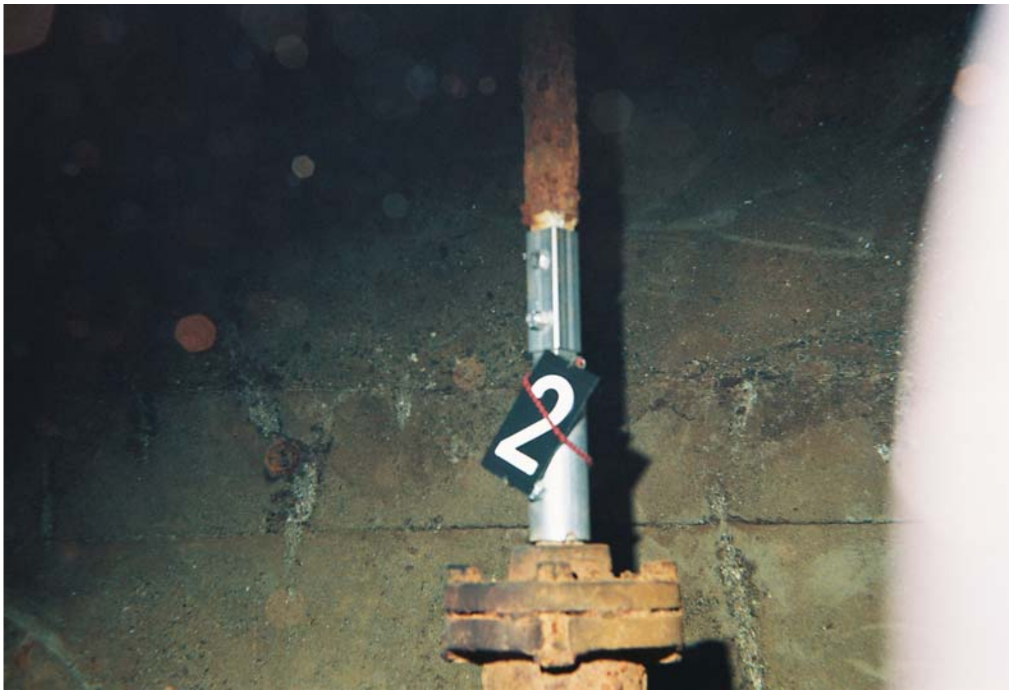
Collector 2   Valve on Lateral #1



Collector 2   Lateral #1

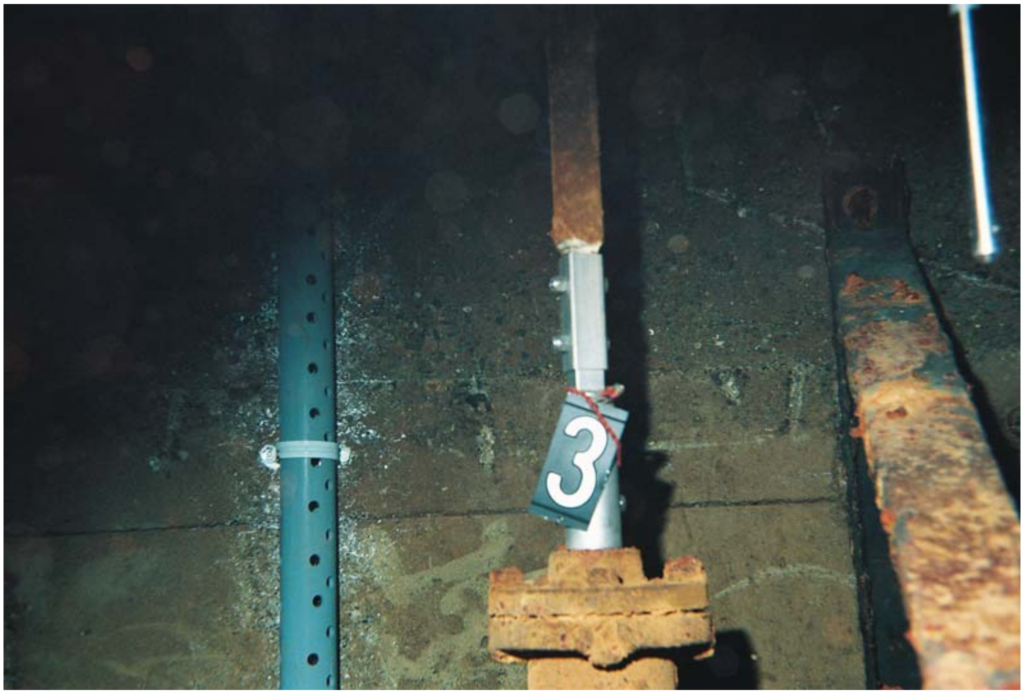


Collector 2   Lateral #2



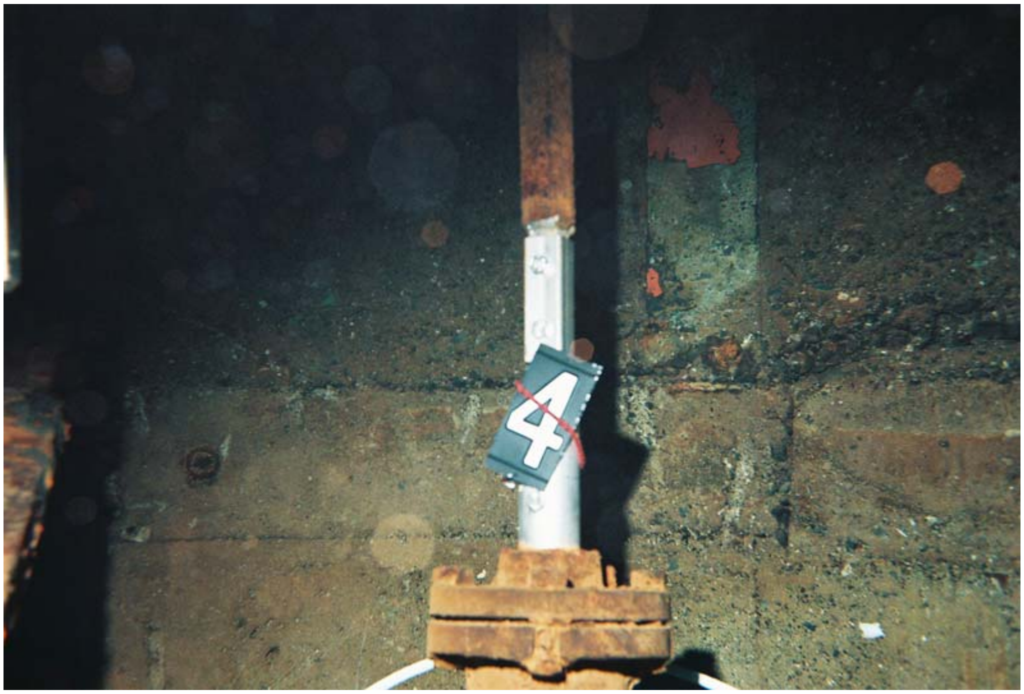
Collector 2   Lateral #2

Collector 2 Lateral #3

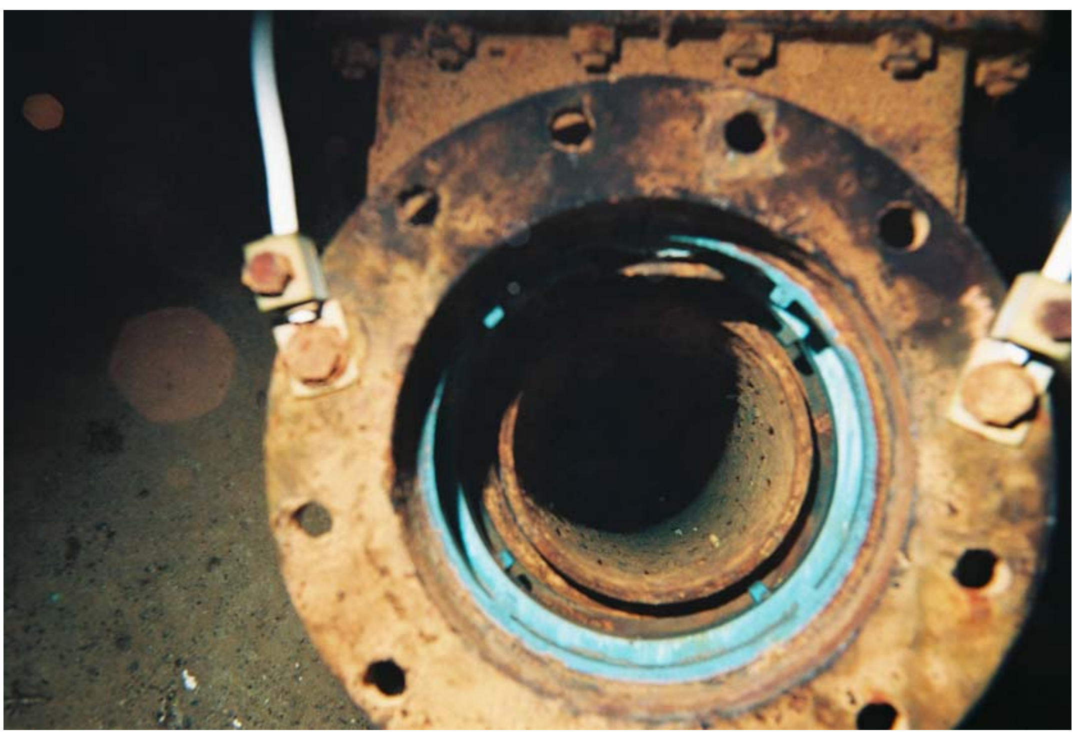


Collector 2 Lateral #3

Collector 2 Lateral #4



Collector 2 Lateral #4

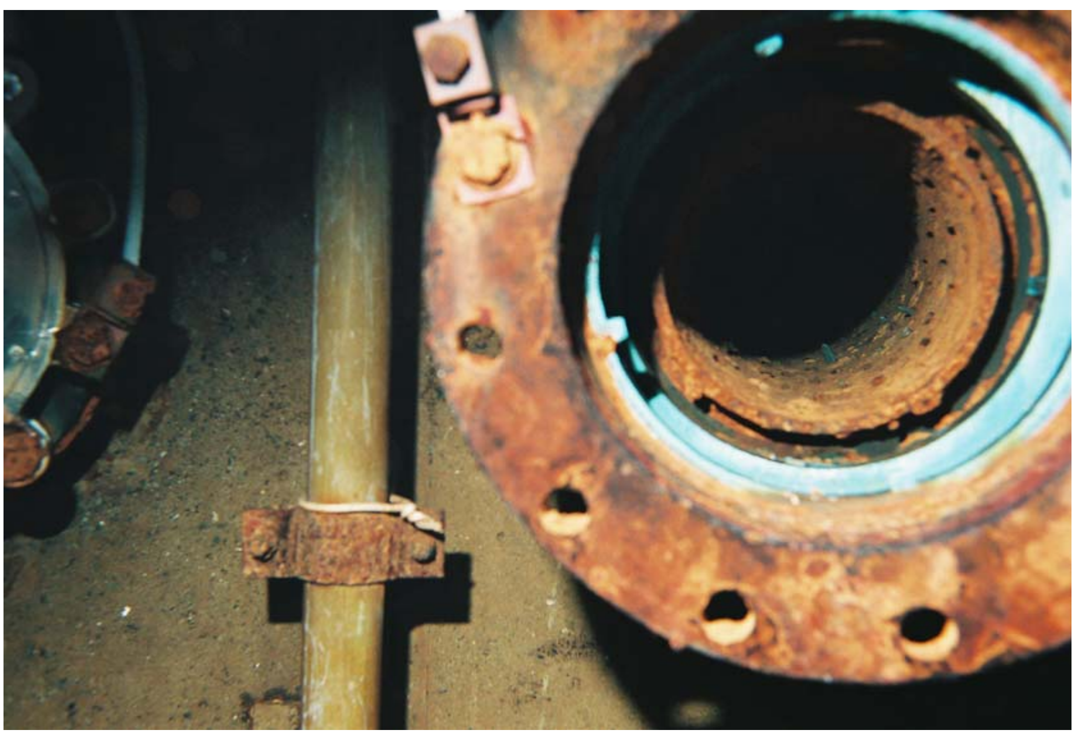


Collector 2 Lateral #5

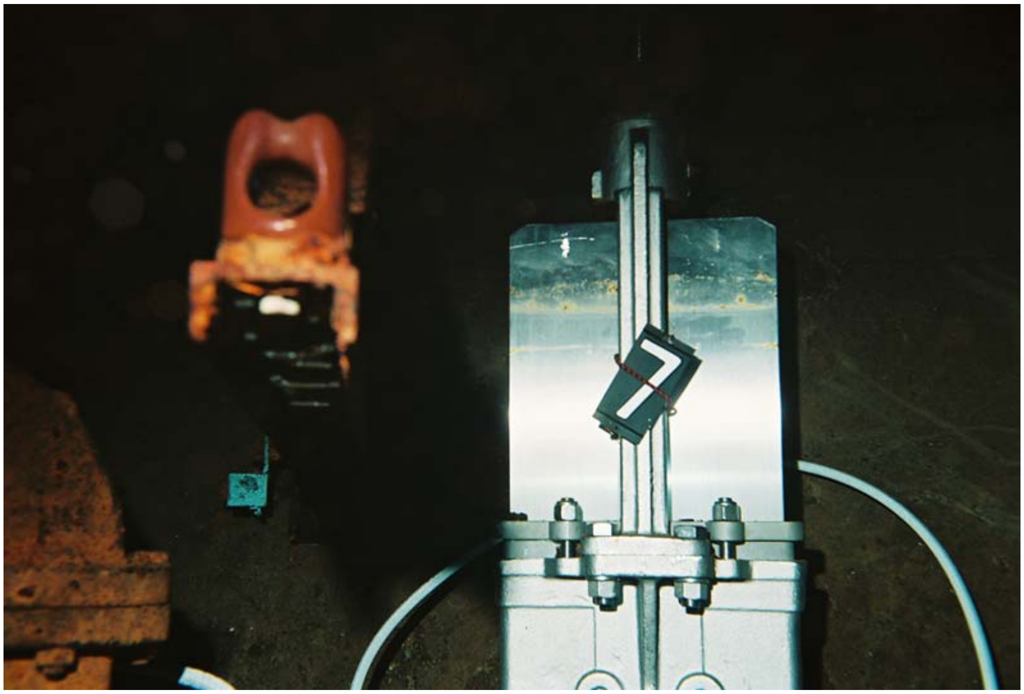
Collector 2 Lateral #5

Collector 2 Lateral #6

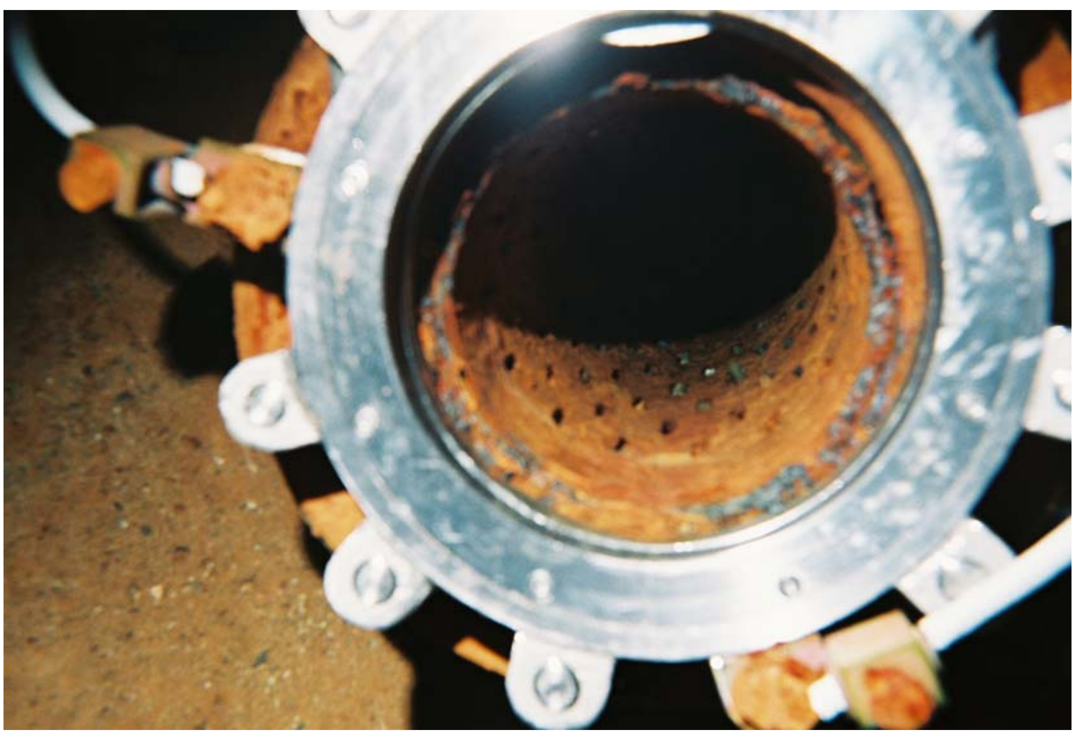
Collector 2 Lateral #6



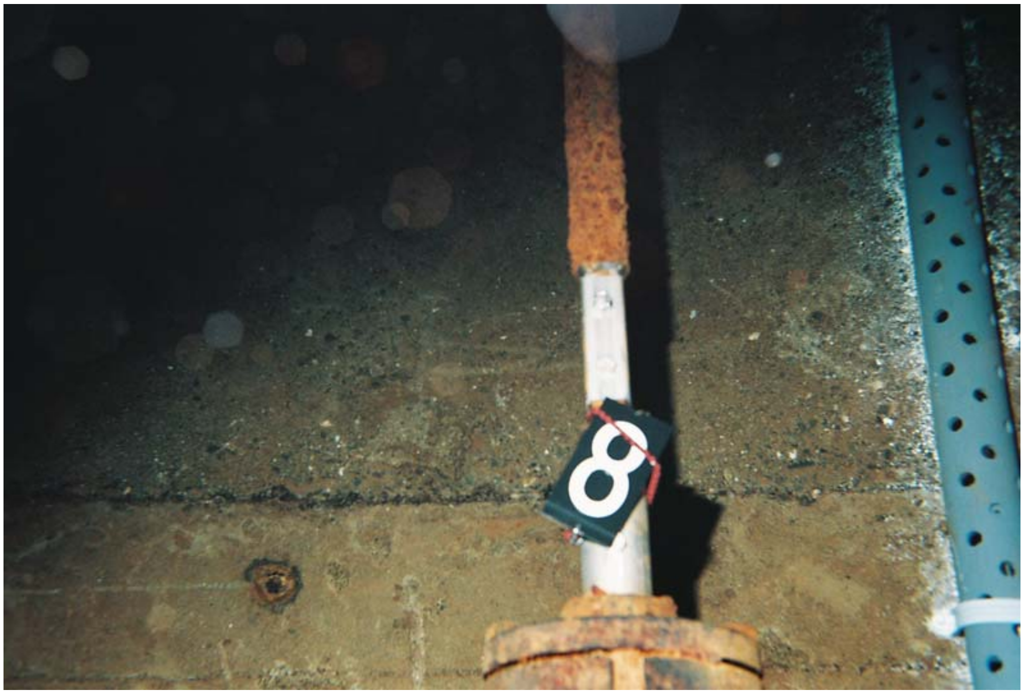
Collector 2 Lateral #7



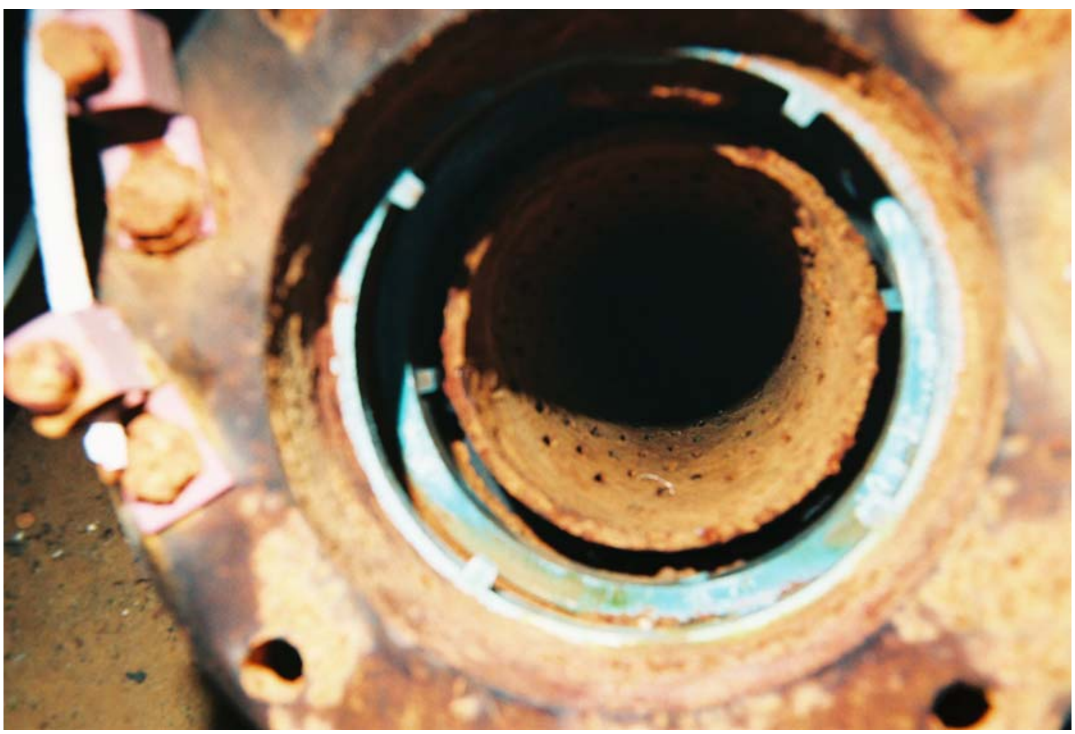
Collector 2 Lateral #7



Collector 2 Lateral #8



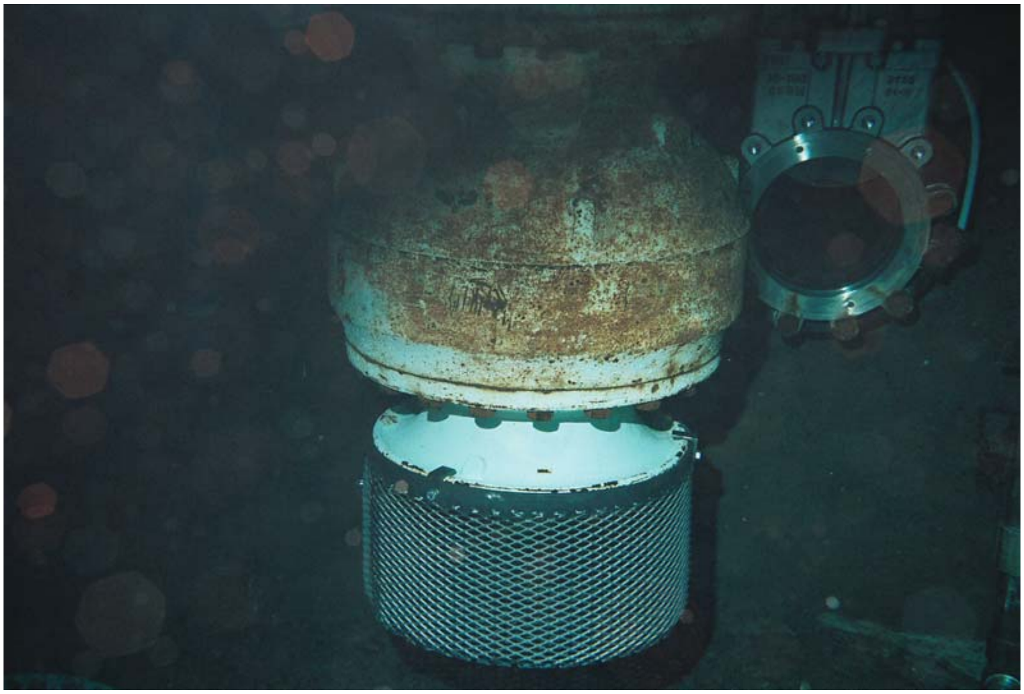
Collector 2 Lateral #8



Collector 2 Lateral #9

Collector 2 Lateral #9

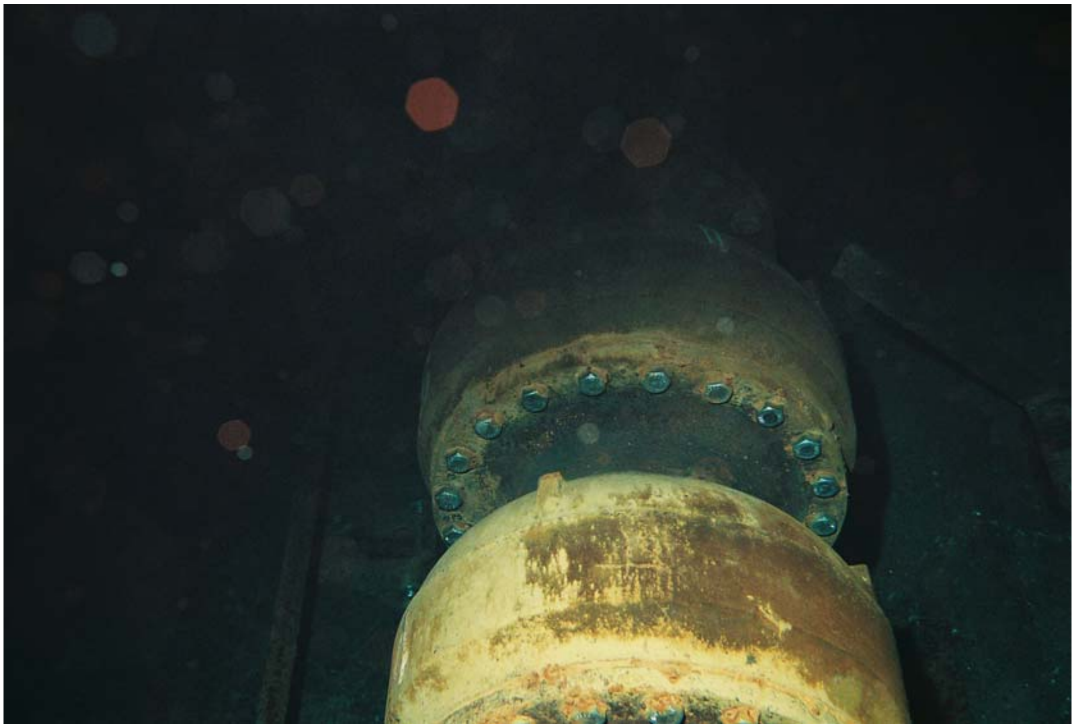
Collector 2 Turbine Pump Intake with Basket



Collector 2 Pump Column

Collector 2 Turbine Pump Intake with Basket

Collector 2 Pump Column

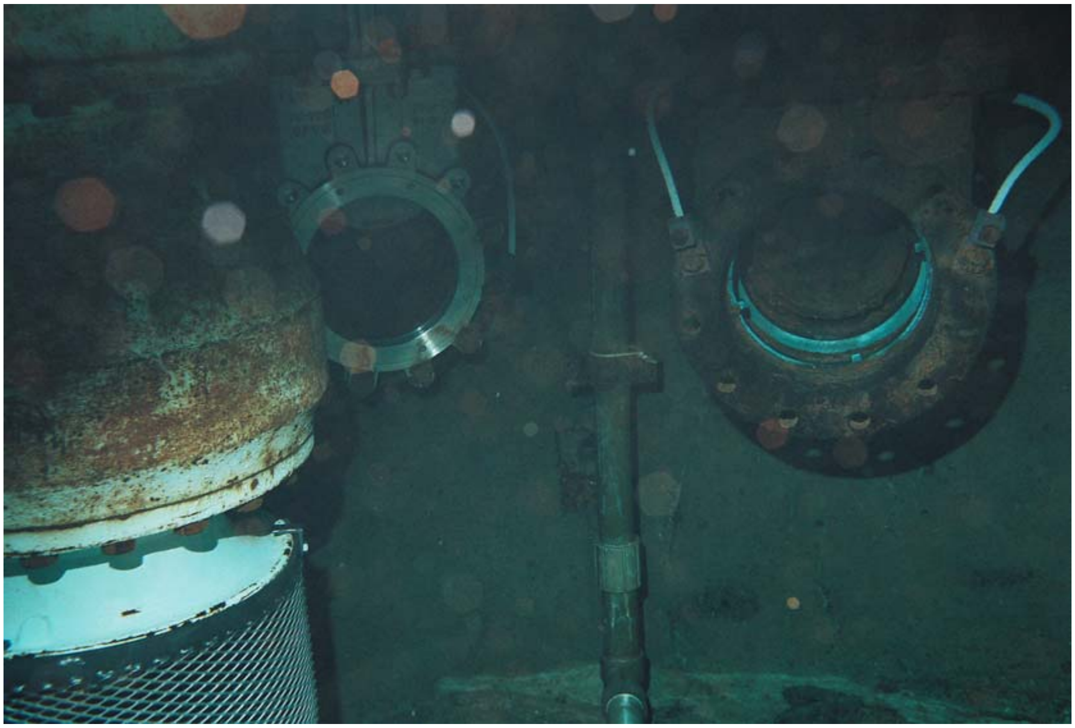


Collector 2 Caisson Floor Detail

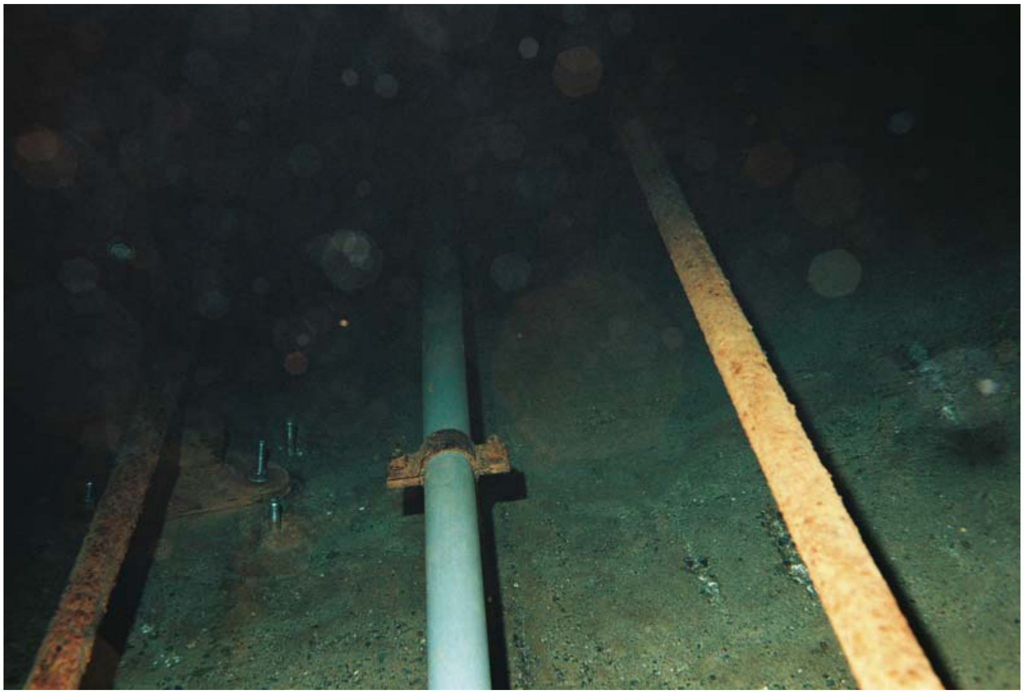
Collector 2 Caisson Floor Detail

Collector 2 Caisson Floor

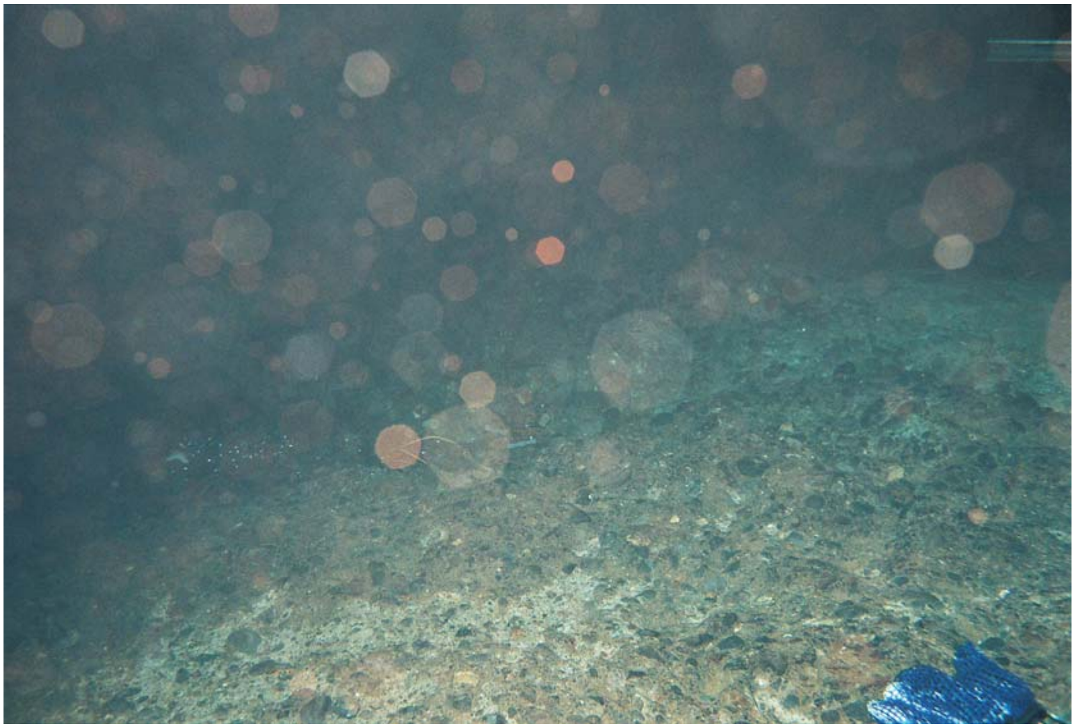
Collector 2 Turbine Pump Intake and Laterals



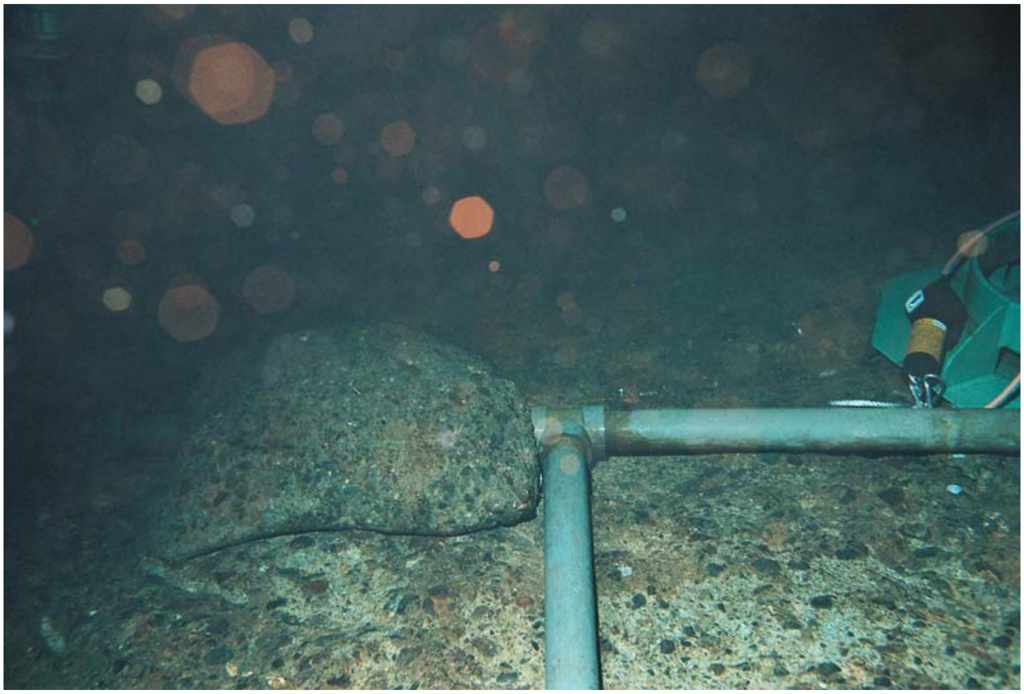
Collector 2 Valve Stems and Piping



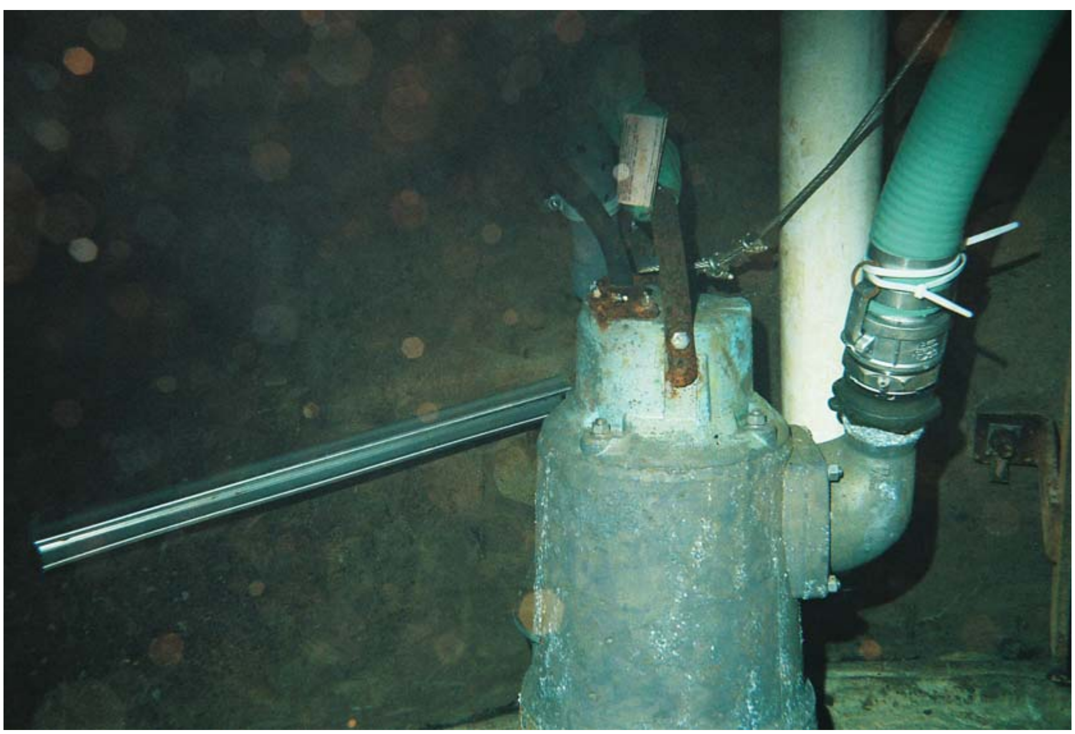
Collector 2 Caisson Floor



Collector 2 Caisson Floor and Piping

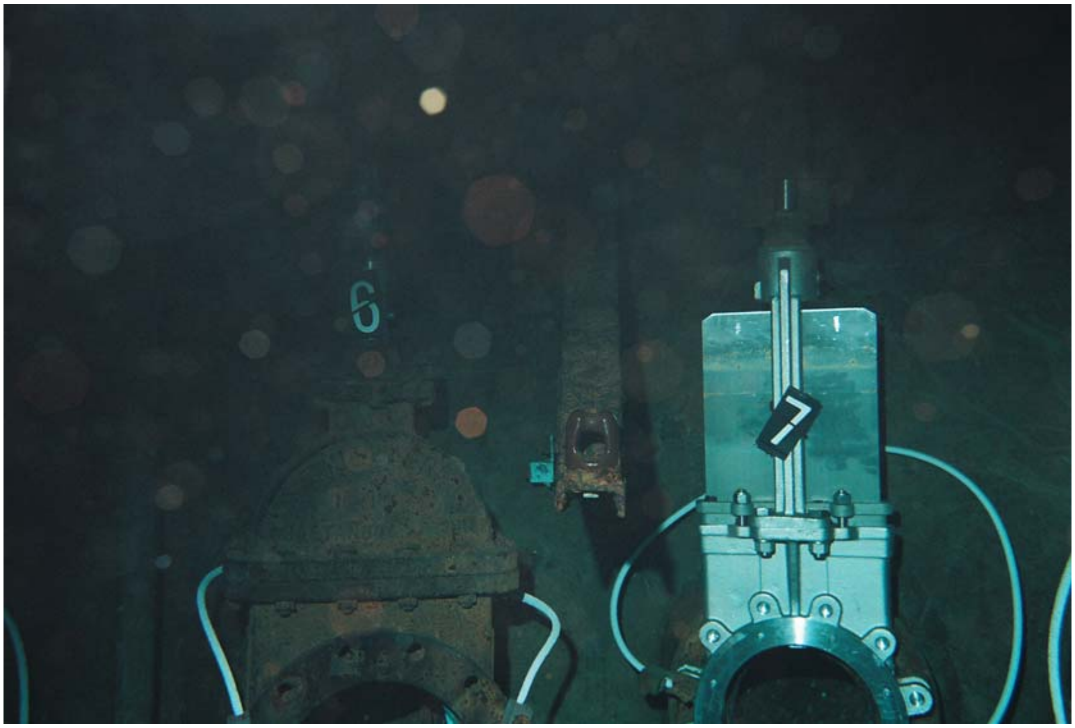


Collector 2 Sump Pump

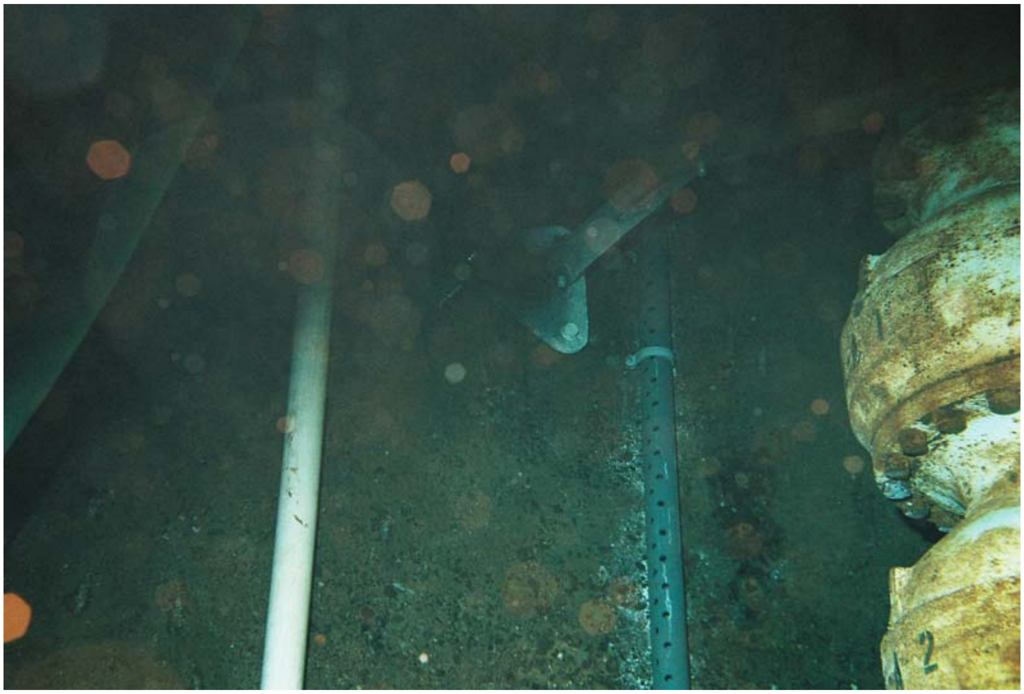


Collector 2 Sump Pump Base

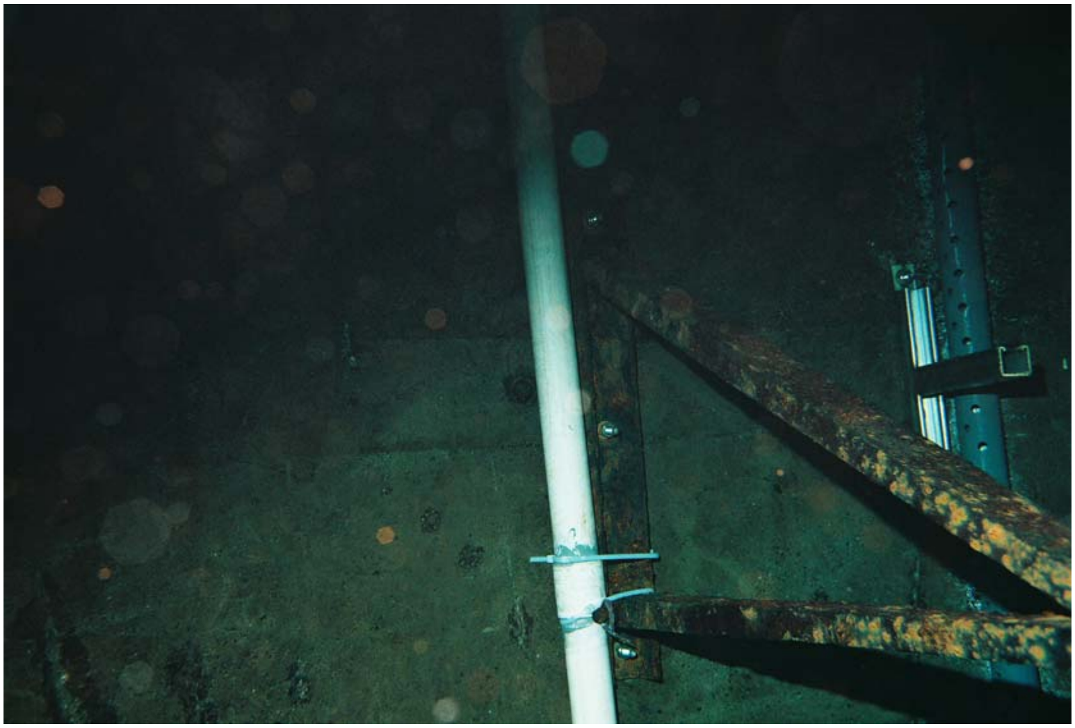
Collector 2 Laterals 6 & 7



Collector 2 Pump Column and Piping



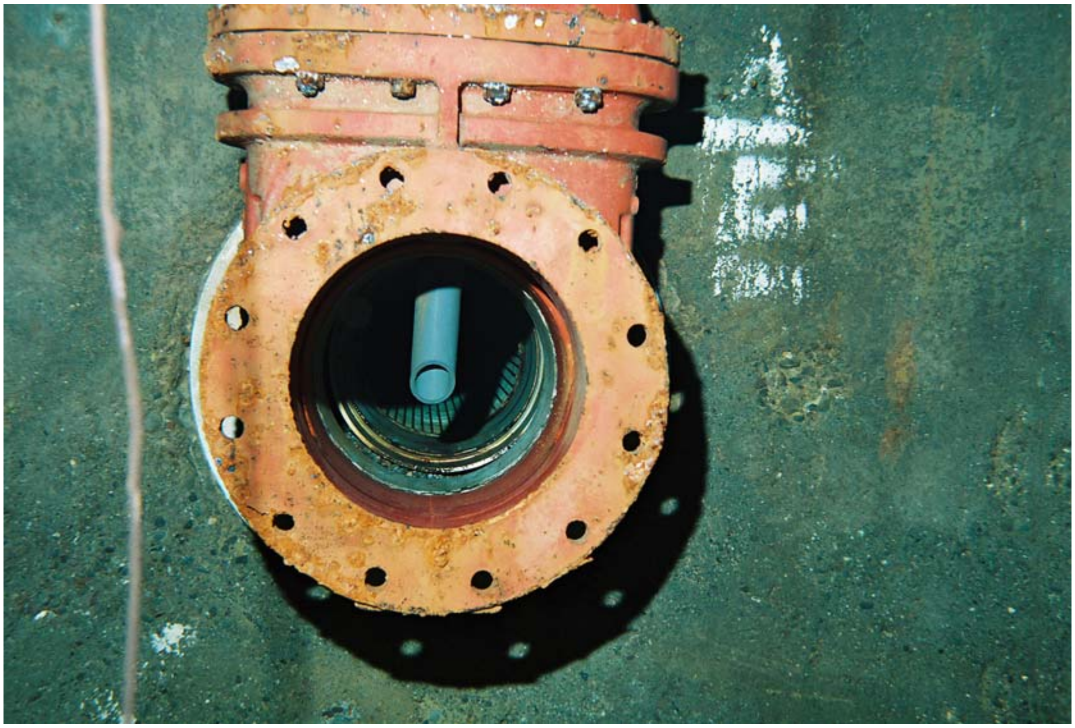
Collector 2 Piping



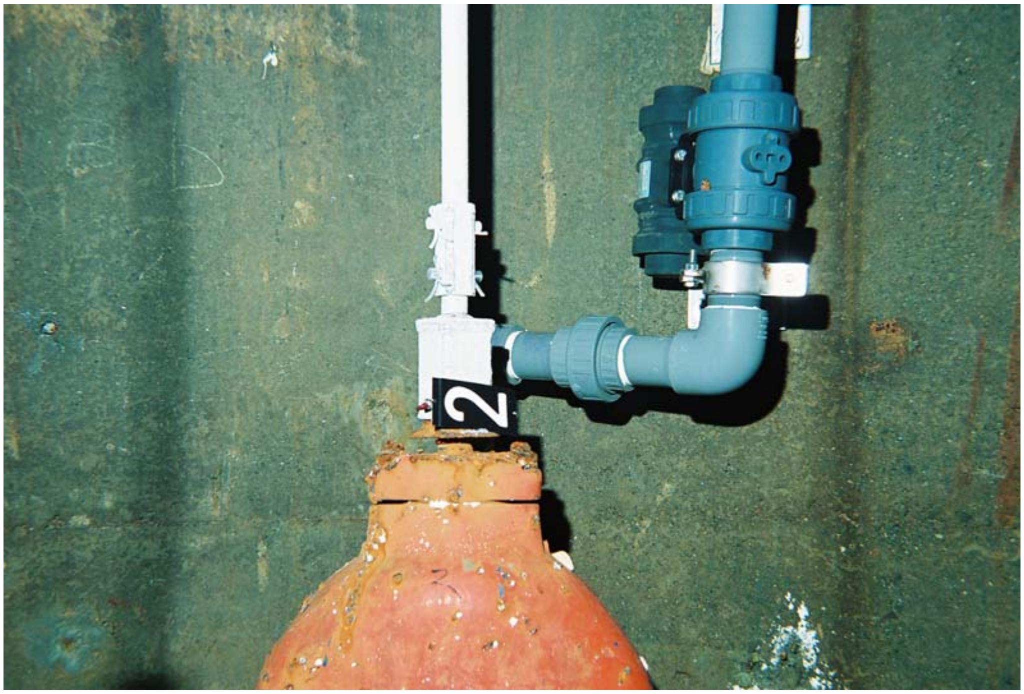
Collector 2 Sump Pump

Collector 6 Lateral #1

Collector 6 Lateral #1 with Sampling Port



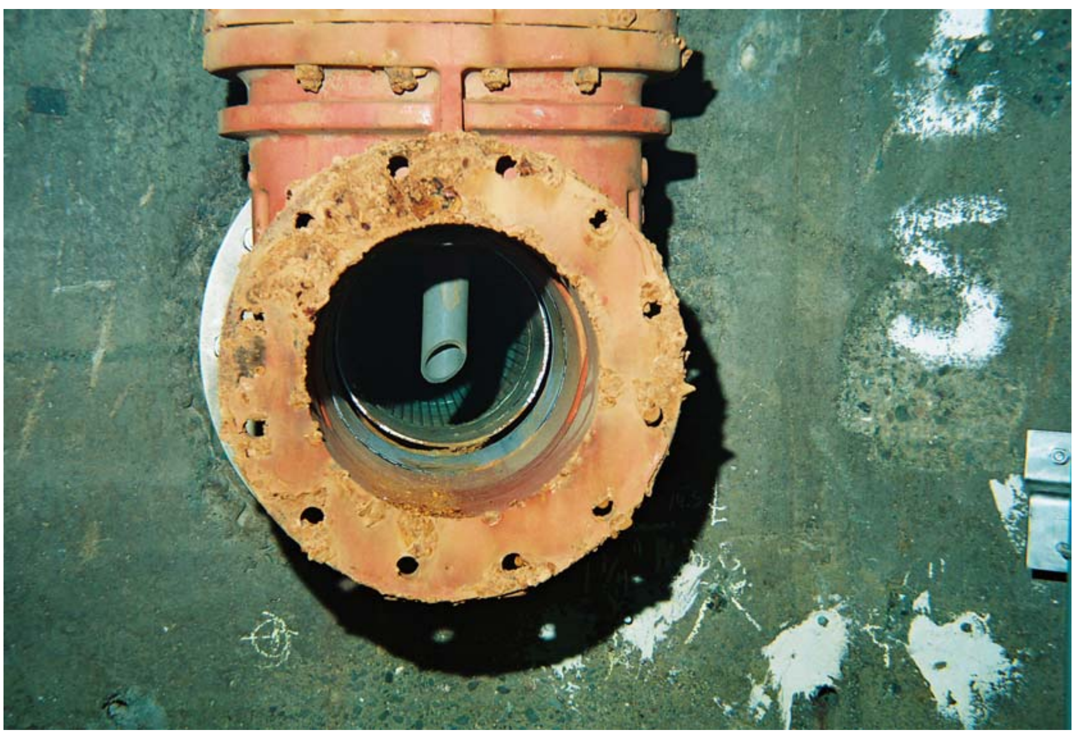
Collector 6 Lateral #2



Collector 6 Lateral #2 with Sampling Port

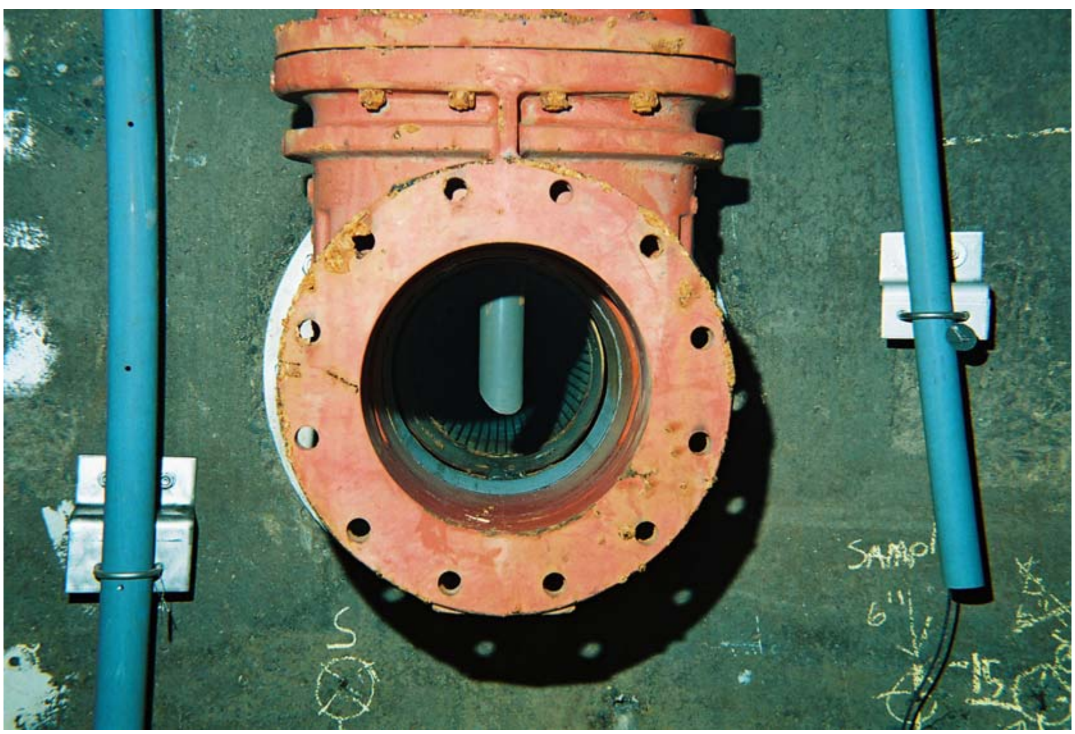
Collector 6   Lateral #3

Collector 6   Lateral #3 with Sampling Port

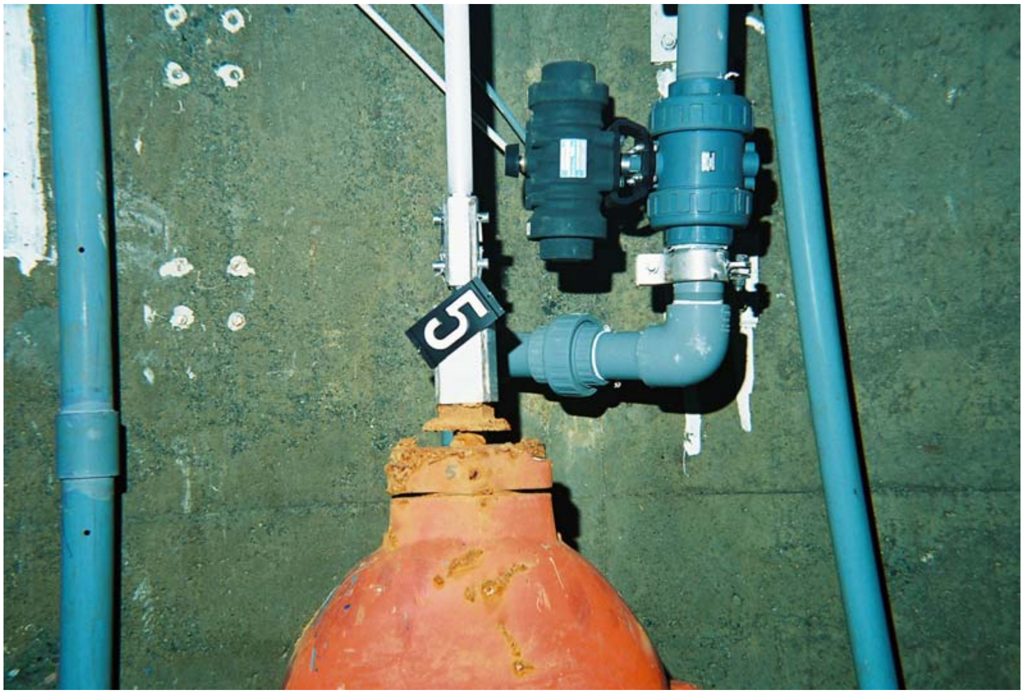


Collector 6   Lateral #4

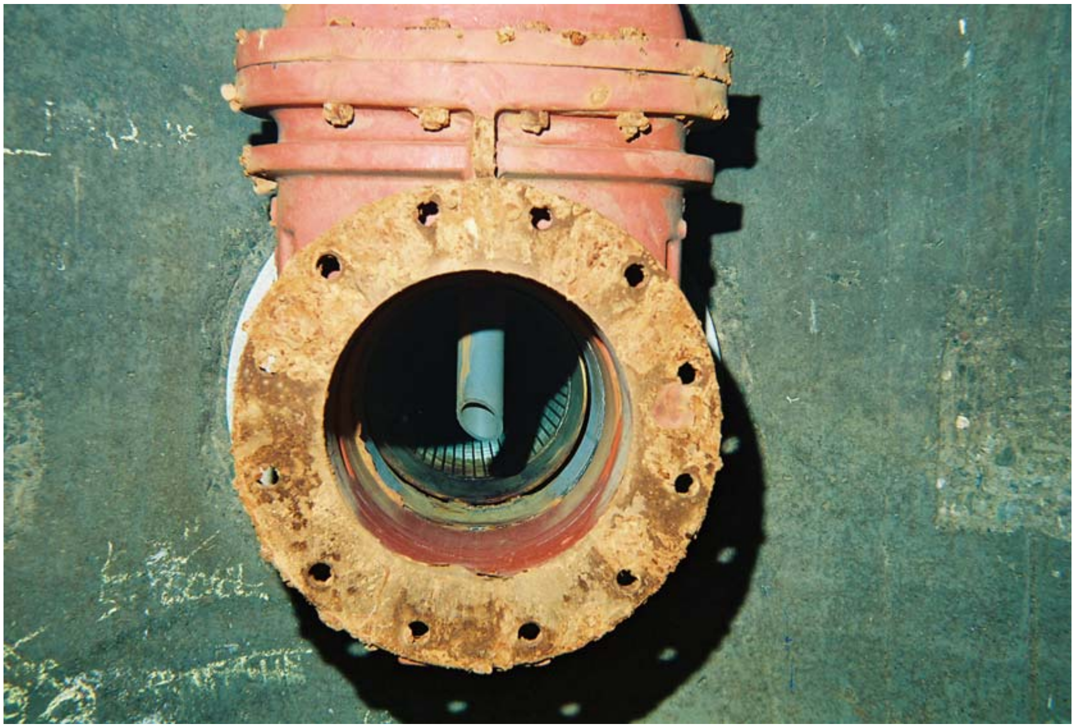
Collector 6   Lateral #4 with Sampling Port



Collector 6 Lateral #5

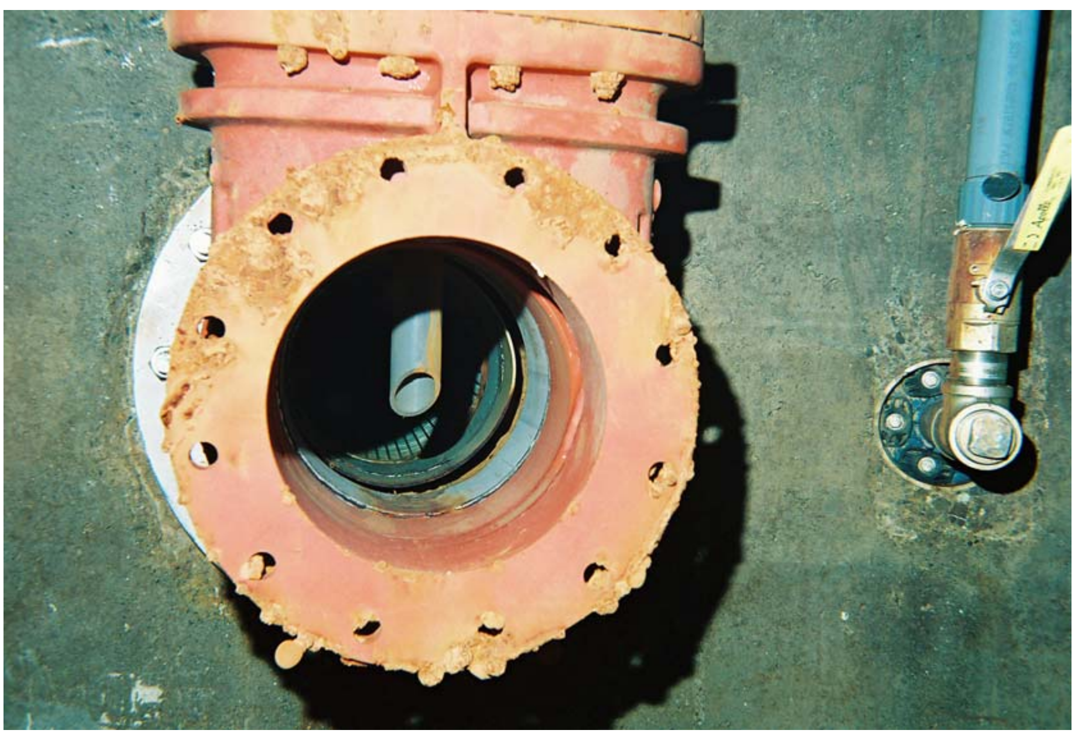


Collector 6 Lateral #5 with Sampling Port

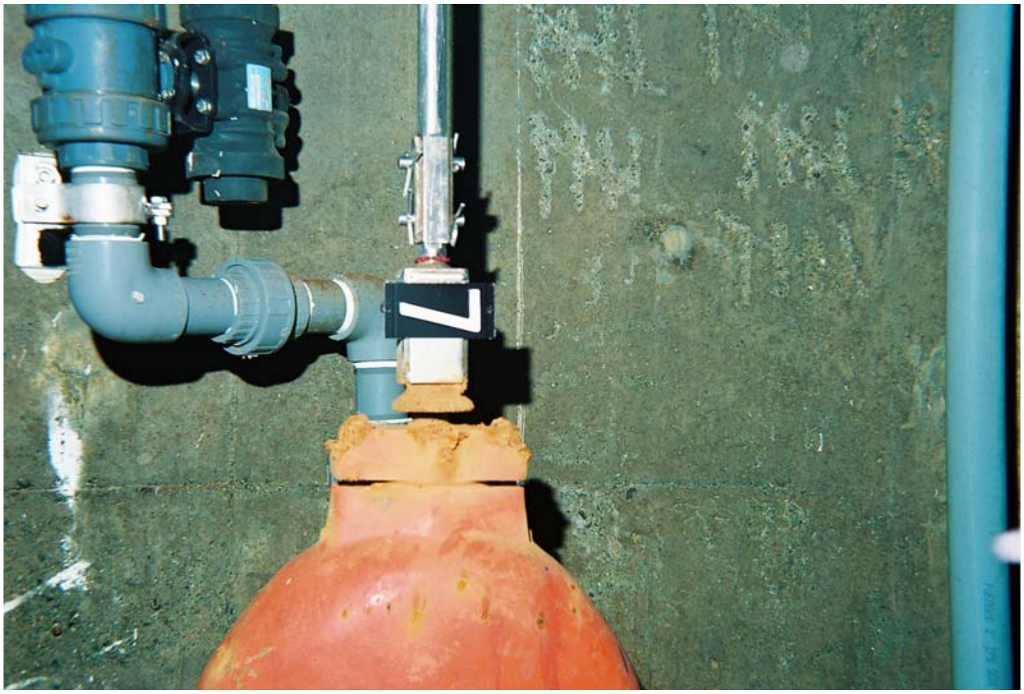


Collector 6   Lateral #6

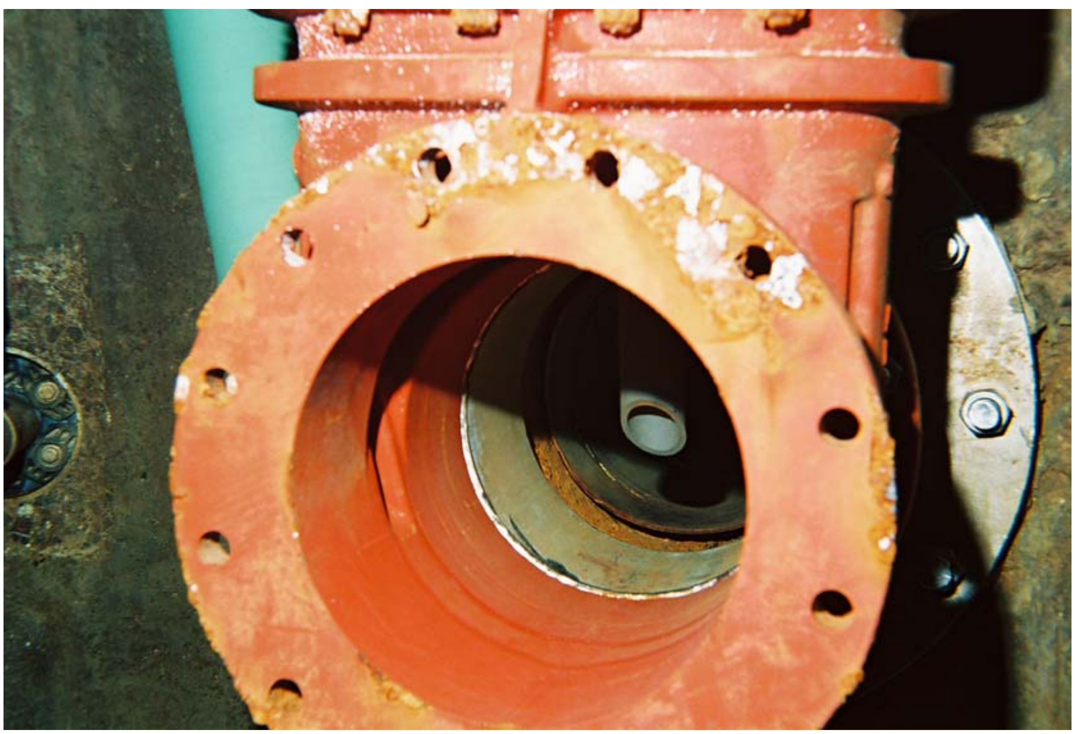
Collector 6   Lateral #6 with Sampling Port



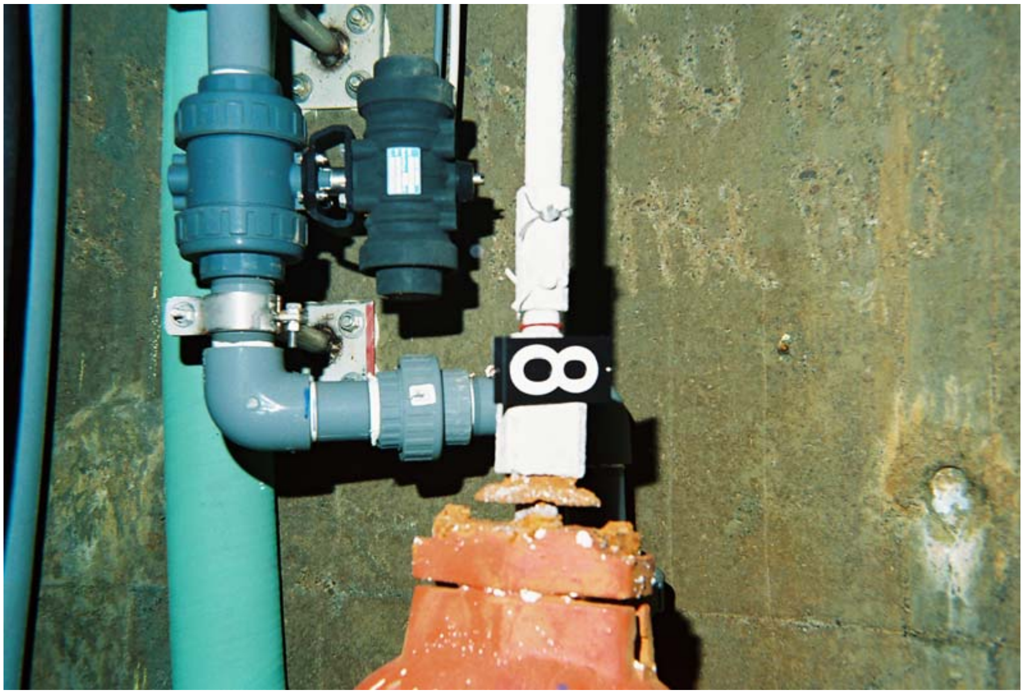
Collector 6 Lateral #7



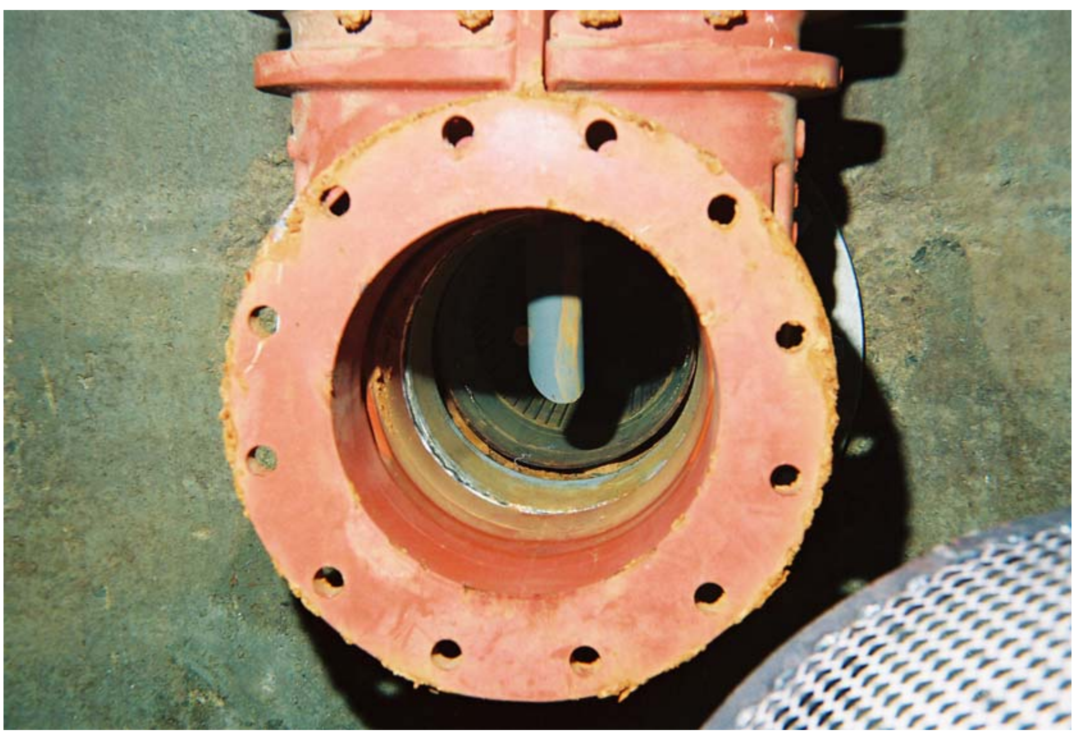
Collector 6 Lateral #7 with Sampling Port



Collector 6   Lateral #8

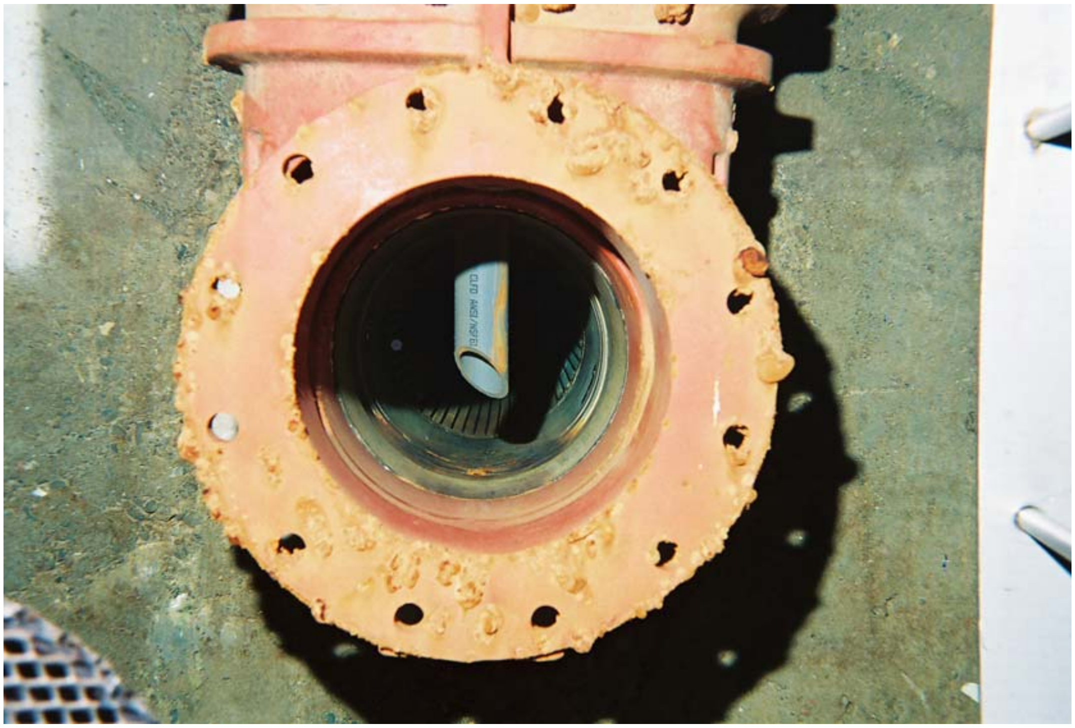


Collector 6   Lateral #8 with Sampling Port



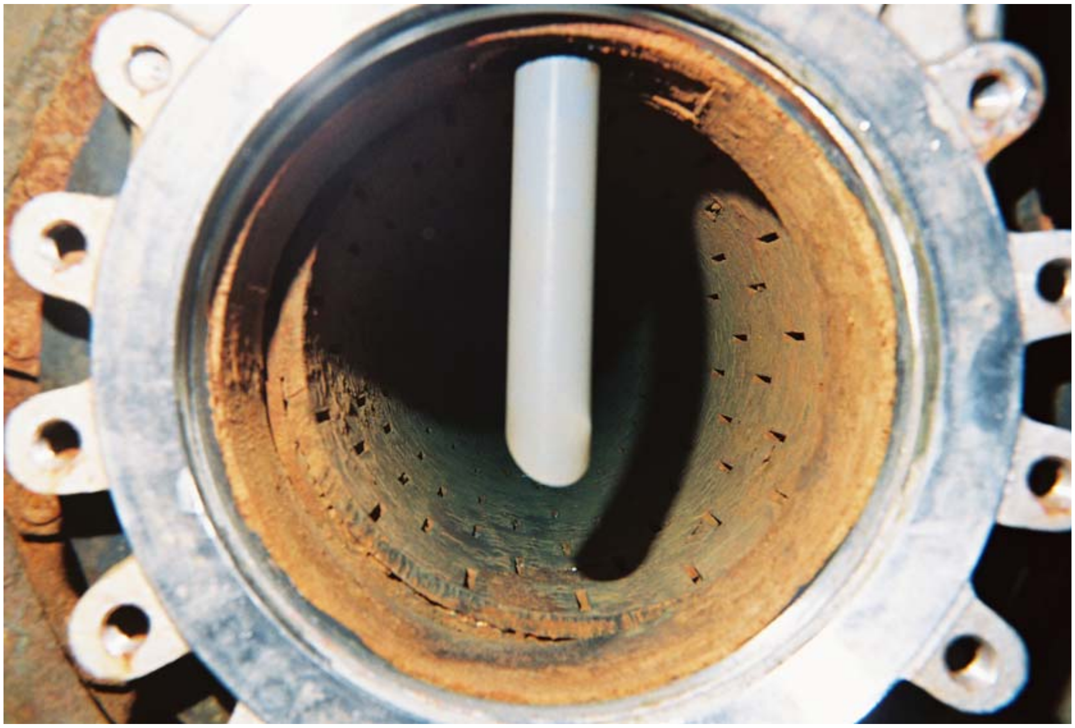
Collector 6 Lateral #9

Collector 6 Lateral #9 with Sampling Port



Collector 6 Lateral #10

Collector 6 Lateral #10 with Sampling Port



Collector 6   Lateral #15

Collector 6   Turbine Pump Intake

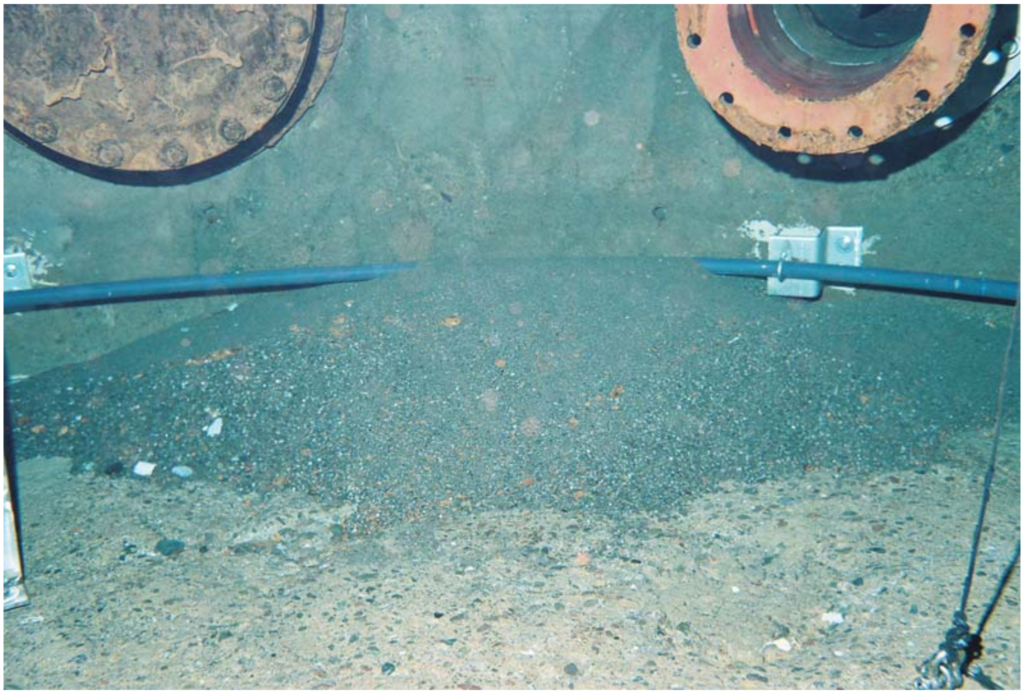
Collector 6 Turbine Pump #11 Bowl with Basket

Collector 6 Turbine Pump Column

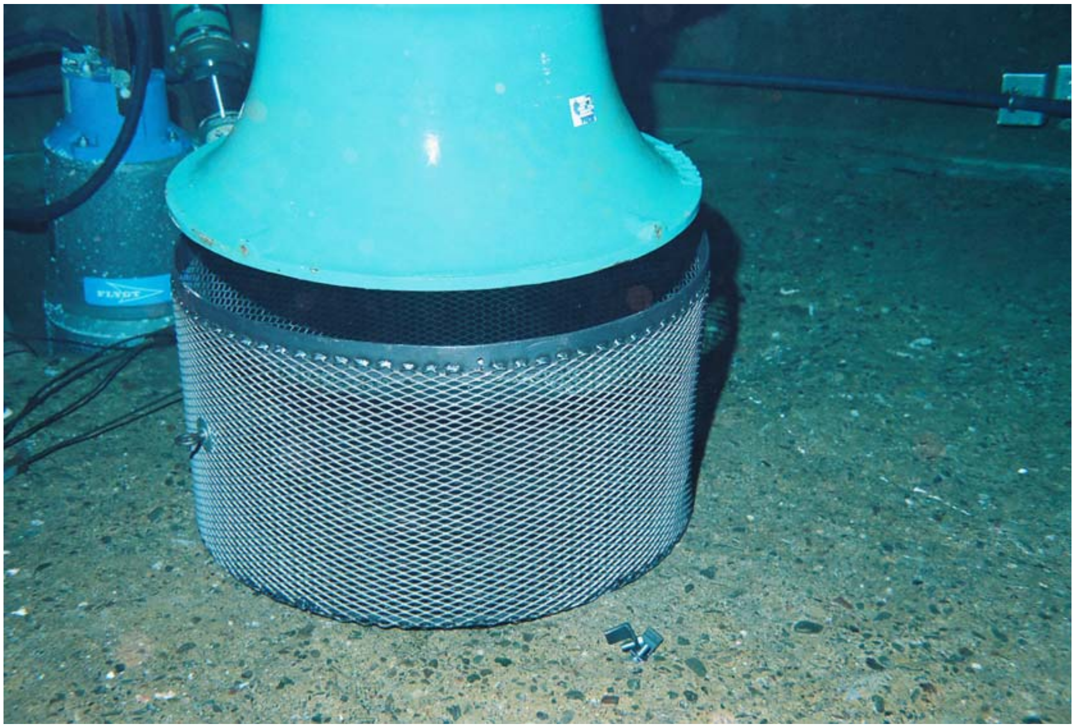
Collector 6 Turbine Pump Column

Collector 6 Abandoned Lateral 11

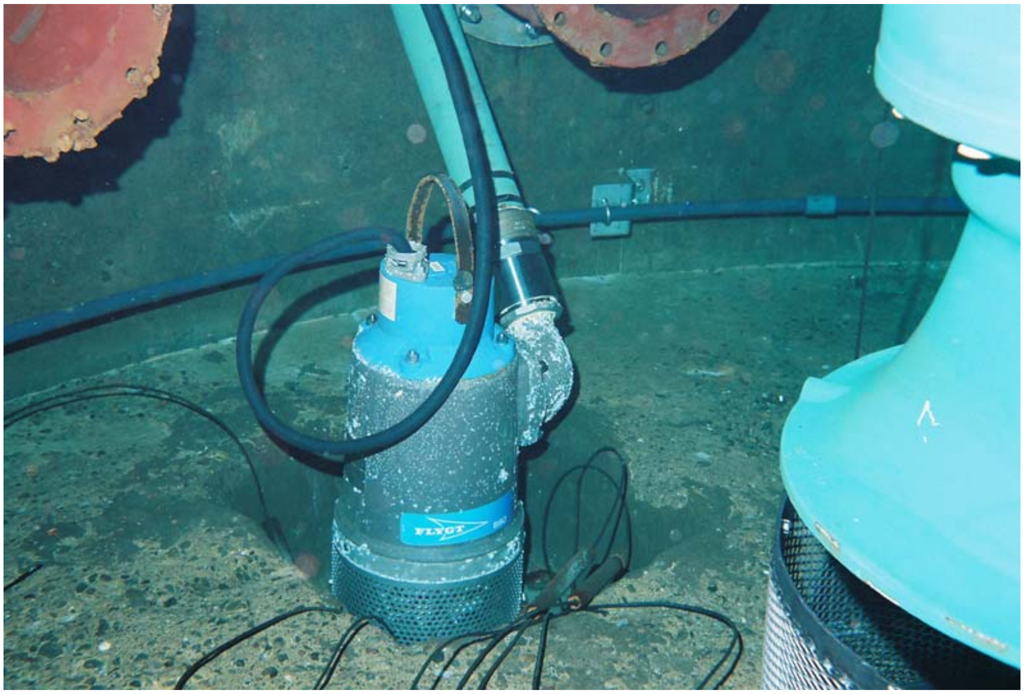
Collector 6   Sand on Caisson Floor



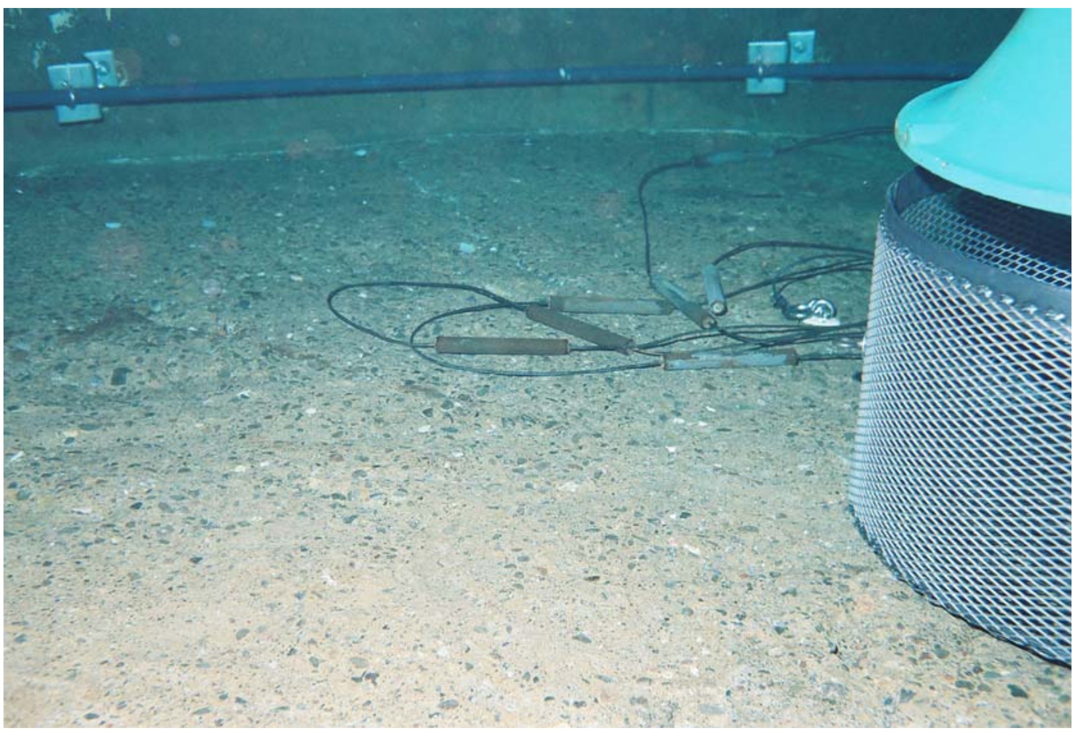
Collector 6   Turbine Pump #12 with Temporary Basket



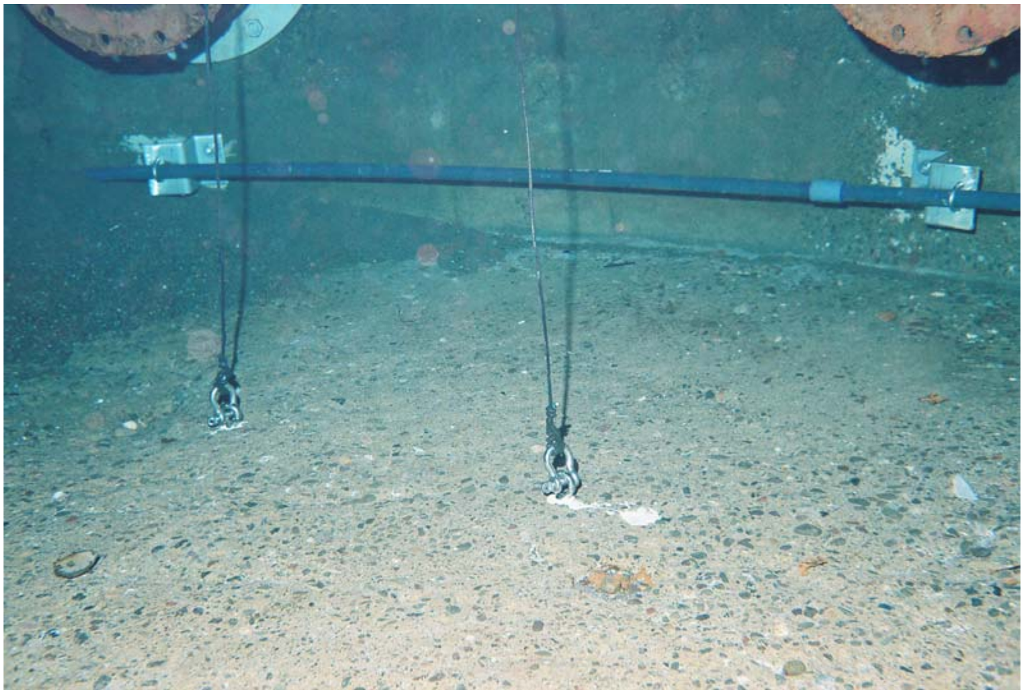
Collector 6   Sump Pump



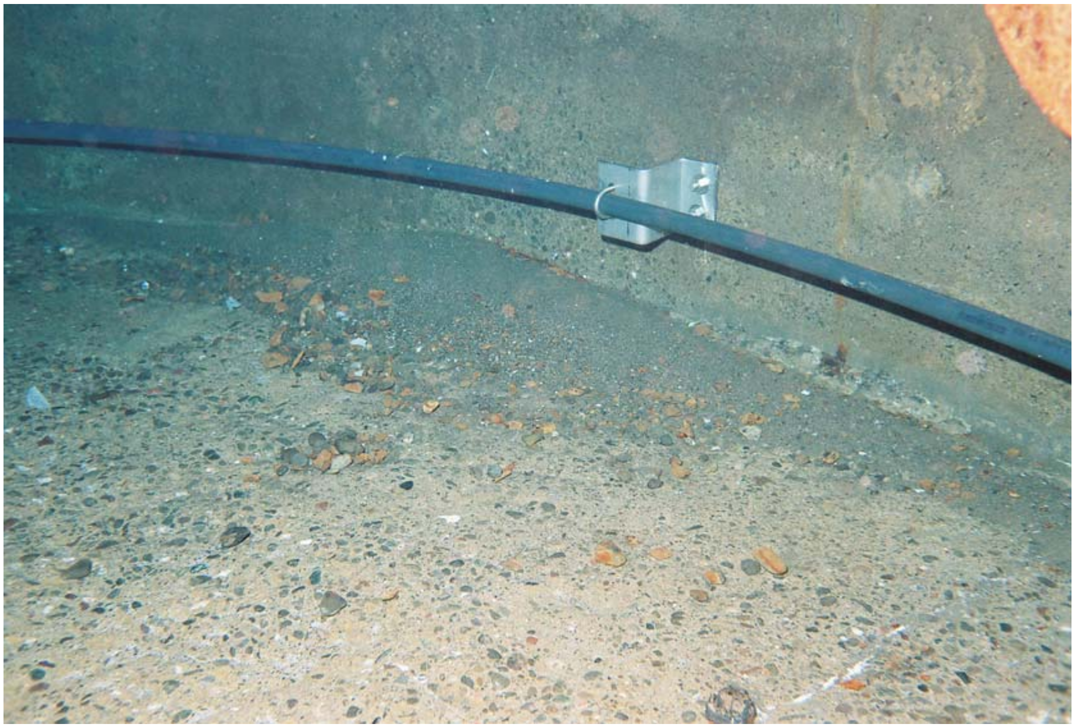
Collector 6   Temporary Pump Basket on Caisson Floor



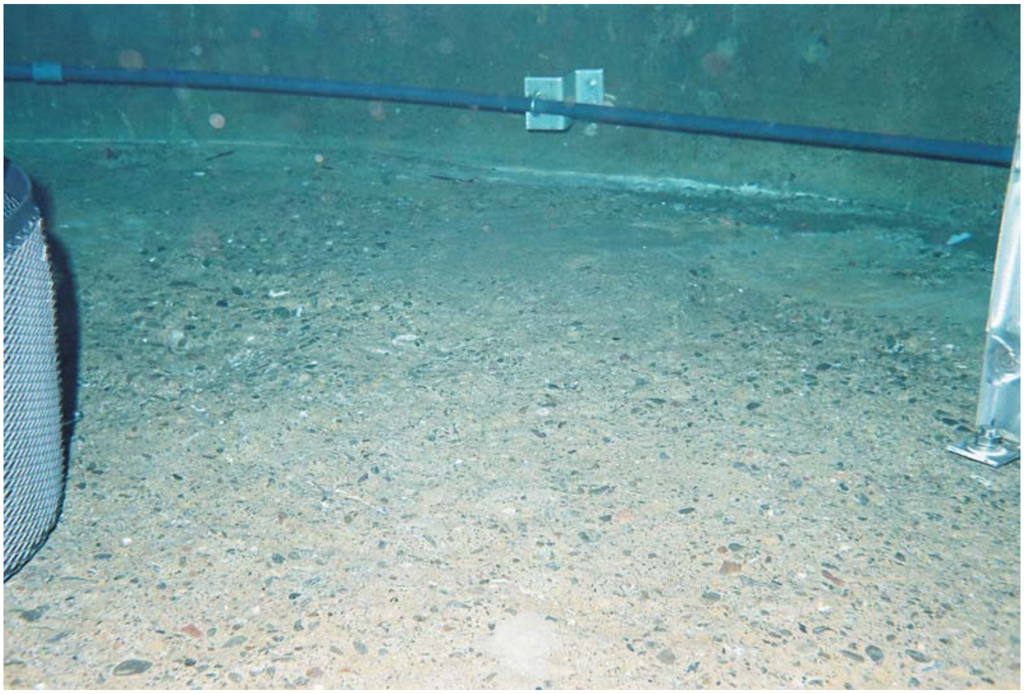
Collector 6 Cathode Protectors



Collector 6 Piping Along Caisson Floor



Collector 6 Piping Along Caisson Floor



Appendix D
Collector Inspection Videos

Appendix D
Collector Inspection Videos
by Aqua-Tech Co.
(916) 482-3703

10/31/2008	SCWA Caisson #1	Mil Test & Inspection
11/10/2008	SCWA Caisson #1	Laterals 10 ft. Insp., Flow Test & Opening
11/12/2008	SCWA Caisson #1	YSI-Test, Laterals # 6& 7 (10 Ft. In) Lat. 5
11/13/2008	SCWA Caisson #1	Laterals # 1, 6 & 7
11/14/2008	SCWA Caisson #1	Laterals # 2, 3, 4 & 9
10/22/2008	SCWA Caisson #2	Inspect/Install Screens, Mil Test
10/27/2008	SCWA Caisson #2	Flow Tests and 10 Ft. Insp.
10/28/2008	SCWA Caisson #2	YSI Reading/Lateral #5
10/29/2008	SCWA Caisson #2	Laterals #8, 2, 7 & 1
10/30/2008	SCWA Caisson #2	Laterals #2, 4 & 6
10/7/2008	SCWA Caisson #6	Inspection
10/8/2008	SCWA Caisson #6	Basket Install / Flow test
10/13 - 10/15/08	SCWA Caisson #6	Disc #1
1015/08	SCWA Caisson #6	Disc #2
10/16/2008	SCWA Caisson #6	
10/17/2008	SCWA Caisson #6	Laterals #15 & #3
10/21/2008	SCWA Caisson #6	Mil Test & PVC Install

Appendix E
Capacity Testing Photographs

Photograph #1

Collector 6 pump house.

Photograph #2

Collector 6 pump house interior.

Wohler Capacity Analysis – Sonoma County Water Agency

Photograph #3

Collector 2 caisson and pump house.

Wohler Capacity Analysis – Sonoma County Water Agency

Photograph #4

Collector 1 caisson and pump house.

Wohler Capacity Analysis – Sonoma County Water Agency

Photograph #5

Diver preparing to enter the Collector 6 caisson.

Photograph #6

Diver entering the Collector 6 caisson.

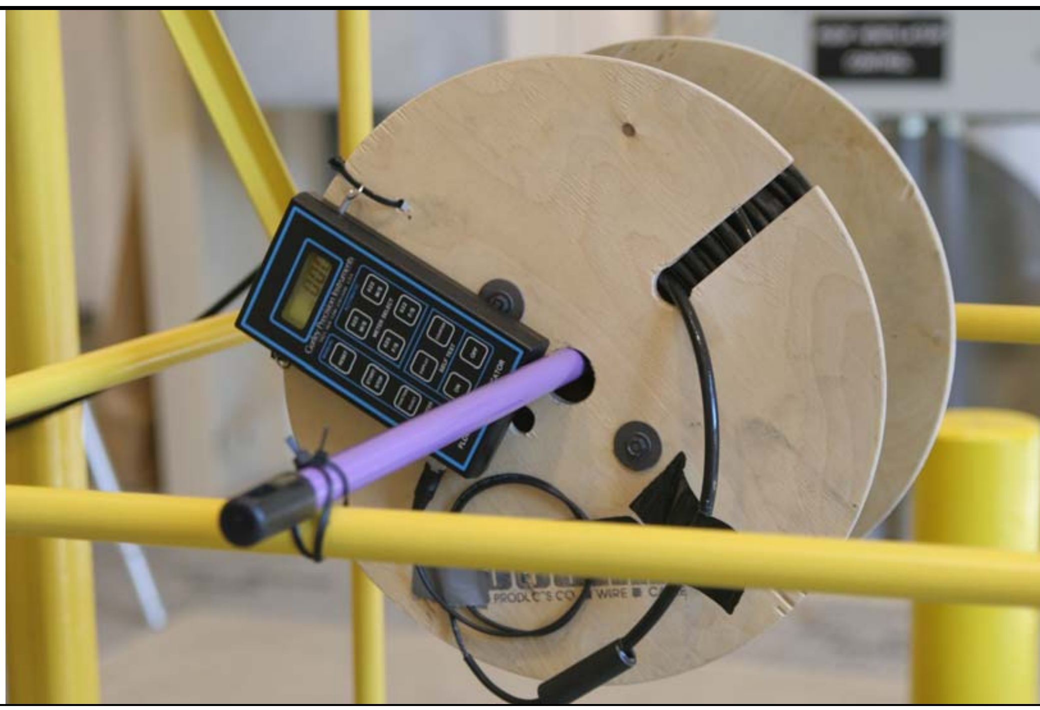
Wohler Capacity Analysis – Sonoma County Water Agency

Photograph #7

Lateral videotaping and flow equipment setup at Collector 6.

Wohler Capacity Analysis – Sonoma County Water Agency

Photograph #8



Lateral flow apparatus and Gurley Model 1100 digital indicator.

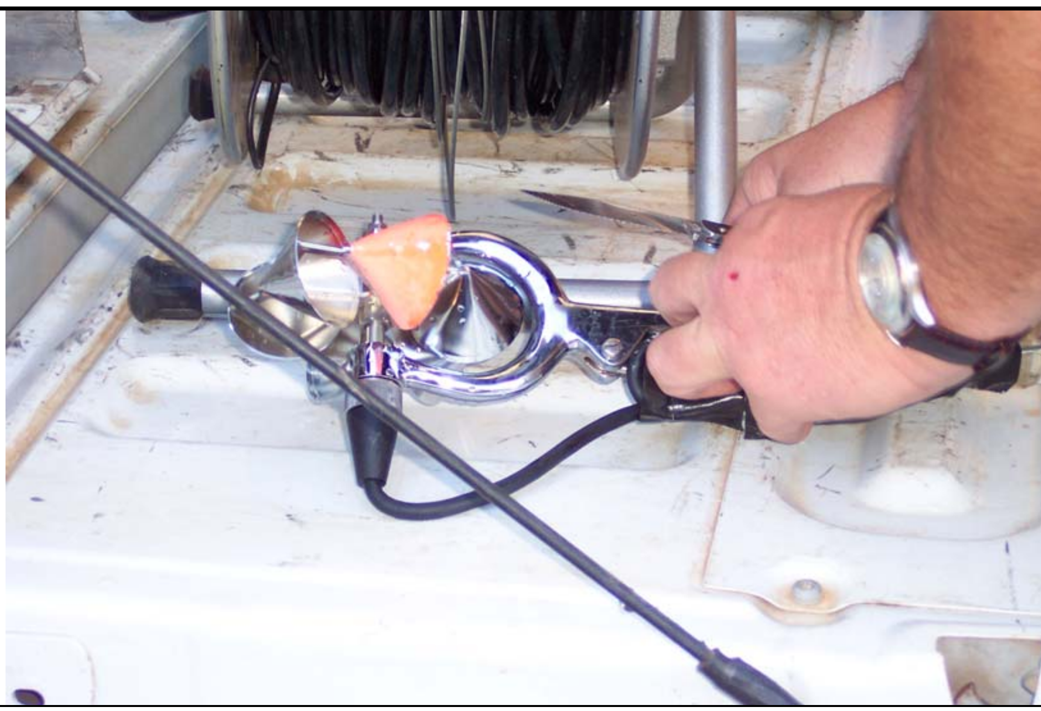
Wohler Capacity Analysis – Sonoma County Water Agency

Photograph #9

Lateral flow measurement activities in Collector 6.

Wohler Capacity Analysis – Sonoma County Water Agency

Photograph #10



Gurley Price Type AA flow meter used for relative flow measurements in all wells and lateral flow measurements in all wells except the relined laterals in Collector 1.

Wohler Capacity Analysis – Sonoma County Water Agency

Photograph #11

Pygmy flow meter and associated equipment.

Wohler Capacity Analysis – Sonoma County Water Agency

Photograph #12

Attaching and preparing flow meter apparatus to the video camera vehicle.

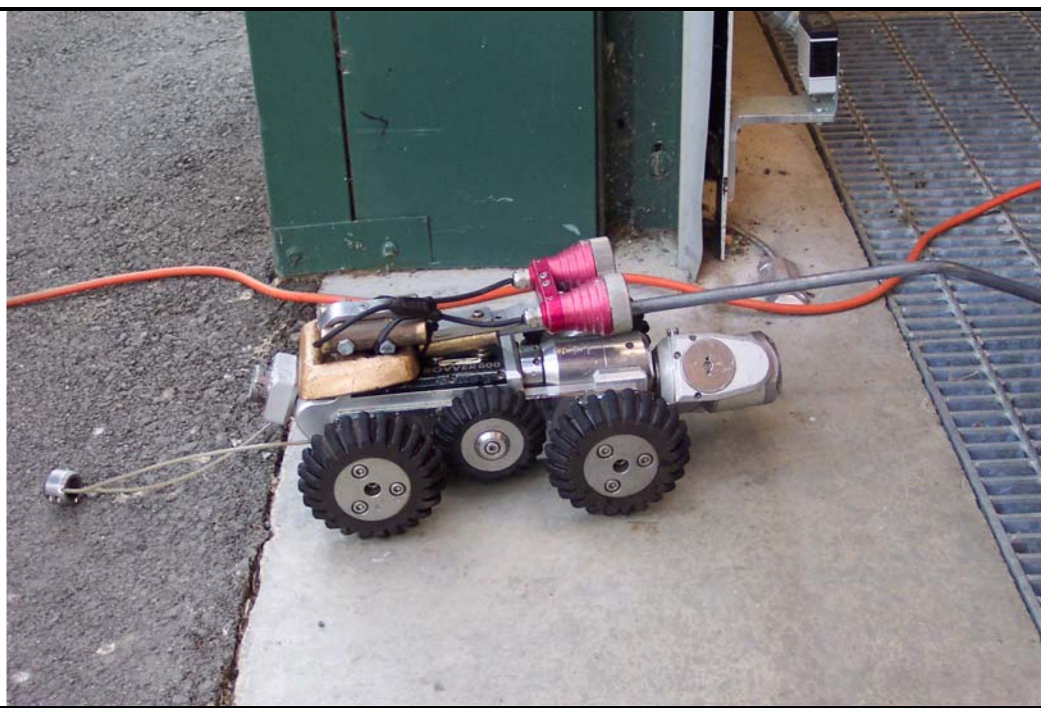
Wohler Capacity Analysis – Sonoma County Water Agency

Photograph #13

Attaching and preparing flow meter apparatus to the video camera vehicle.

Wohler Capacity Analysis – Sonoma County Water Agency

Photograph #14



Remote control vehicle used for videotaping and flow testing of laterals.

Wohler Capacity Analysis – Sonoma County Water Agency

Photograph #15

Surface water in Wohler Pond #2 prior to initiation of capacity testing at Collector 2.

Wohler Capacity Analysis – Sonoma County Water Agency

Photograph #16

Diver entering Collector 2 caisson.

Wohler Capacity Analysis – Sonoma County Water Agency

Photograph #17

Lateral flow measurement activities.

Wohler Capacity Analysis – Sonoma County Water Agency

Photograph #18

Lateral camera vehicle and flow meter with protective cage.

Wohler Capacity Analysis – Sonoma County Water Agency

Photograph #19

Lateral video camera setup, Collector 1.

Wohler Capacity Analysis – Sonoma County Water Agency

Photograph #20

Water quality testing activities using a YSI Model 6920 with a downhole probe at Collector 1.

Wohler Capacity Analysis – Sonoma County Water Agency

Appendix F
Lateral Inspection Videos

Appendix F
Lateral Inspection Videos
Sonoma County Water
by PIPEeye

Station #1	10' of all Laterals	11/2008
Station #1	Lateral-1	11/2008
Station #1	Lateral-2	11/2008
Station #1	Lateral-3	11/2008
Station #1	Lateral-4	11/2008
Station #1	Lateral-5	11/2008
Station #1	Lateral-6	11/2008
Station #1	Lateral-7	11/2008
Station #1	Lateral-9	11/2008
Station #2	10' of all Laterals	10/2008
Station #2	Laterals 1	10/2008
Station #2	Laterals 2	10/2008
Station #2	Lateral 3	10/2008
Station #2	Lateral 4	10/2008
Station #2	Lateral 5	10/2008
Station #2	Lateral 6	10/2008
Station #2	Lateral 7	10/2008
Station #2	Lateral 8	10/2008
Station #6	Lateral-2	10/2008
Station #6	Lateral-3	10/2008
Station #6	Lateral-6	10/2008
Station #6	Lateral-8	10/2008
Station #6	Lateral-12	10/2008
Station #6	Lateral-15	10/2008

Appendix G
Collector Operation and System Data

Caisson 1 Flow	Caisson 1 Level	Pump 1 Status Run	Pump 2 Status Run	Caisson 2 Flow	Caisson 2 Level	Pump 3 Status Run	Pump 4 Status Run	Caisson 6 Total Flow	Pump 11 Flow	Pump 12 Flow	Caisson 6 Level	Pump 11 Status Run	Pump 12 Status Run	54" Intertie Flow	54" Intertie Flow - North	54" Intertie Flow - South	54" Intertie Valve Status Open	Date	Interval
0.00141026	44.4375	0	0	10.9576	36.65	1	0	NULL	13.1805	0.00208181	52.0747	1	0	0.00201465	-9.10E-16	-0.00124542	0	10/2/2008	0:00
0.00141026	44.4375	0	0	10.9026	36.65	1	0	NULL	13.1305	0.00208181	52.0747	1	0	0.00201465	-9.10E-16	-0.00124542	0	10/2/2008	1:00
0.00141026	44.4375	0	0	10.8776	36.75	1	0	NULL	13.1305	0.00208181	52.0747	1	0	0.00201465	-9.10E-16	-0.00124542	0	10/2/2008	2:00
0.00141026	44.5875	0	0	10.9676	36.75	1	0	NULL	13.1805	0.00208181	51.8985	1	0	0.00201465	-9.10E-16	-0.00124542	0	10/2/2008	3:00
0.00141026	44.5875	0	0	11.0676	36.6	1	0	NULL	13.3305	0.00208181	51.7985	1	0	0.00201465	-9.10E-16	-0.00124542	0	10/2/2008	4:00
0.00141026	44.6875	0	0	11.1626	36.6	1	0	NULL	13.3305	0.00208181	51.7985	1	0	0.00201465	-9.10E-16	-0.00124542	0	10/2/2008	5:00
0.00141026	44.6875	0	0	11.1798	36.6	1	0	NULL	13.3805	0.00208181	51.6985	1	0	0.00201465	-9.10E-16	-0.00124542	0	10/2/2008	6:00
0.00141026	44.6875	0	0	11.1198	36.75	1	0	NULL	13.3805	0.00208181	51.7485	1	0	0.00201465	-9.10E-16	-0.00124542	0	10/2/2008	7:00
8.11641	37.4375	0	1	9.53984	37	1	0	NULL	11.7805	0.00208181	52.2485	1	0	0.00201465	-9.10E-16	-0.00124542	0	10/2/2008	8:00
8.02141	36.6375	0	1	9.49484	36.5	1	0	NULL	11.7805	0.00208181	52.2485	1	0	0.00201465	-9.10E-16	-0.00124542	0	10/2/2008	9:00
8.17641	36.1375	0	1	9.60484	36.05	1	0	NULL	11.8805	0.00208181	52.1485	1	0	0.00201465	-9.10E-16	-0.00124542	0	10/2/2008	10:00
8.14141	35.6375	0	1	9.61984	35.8	1	0	NULL	11.8805	0.00208181	52.2485	1	0	0.00201465	-9.10E-16	-0.00124542	0	10/2/2008	11:00
8.19141	35.3875	0	1	9.63484	35.65	1	0	NULL	11.8305	0.00208181	52.1855	1	0	0.00201465	-9.10E-16	-0.00124542	0	10/2/2008	12:00
7.97641	35.4875	0	1	9.36484	35.5	1	0	NULL	11.6805	0.00208181	52.2855	1	0	0.00201465	-9.10E-16	-0.00124542	0	10/2/2008	13:00
7.94046	35.2875	0	1	9.36496	35.35	1	0	NULL	11.6805	0.00208181	52.3355	1	0	0.00201465	-9.10E-16	-0.00124542	0	10/2/2008	14:00
9.81046	32.2875	0	1	11.05	34.1	1	0	NULL	-0.019536	0.00208181	55.5855	0	0	0.00201465	-9.10E-16	-0.00124542	0	10/2/2008	15:00
9.81546	31.7375	0	1	10.99	33.6	1	0	NULL	-0.019536	0.00208181	55.9855	0	0	0.00201465	-9.10E-16	-0.00124542	0	10/2/2008	16:00
9.79546	31.3875	0	1	11.005	33.2	1	0	NULL	-0.019536	0.00208181	56.2855	0	0	0.00201465	-9.10E-16	-0.00124542	0	10/2/2008	17:00
9.80046	30.9375	0	1	11.05	32.8	1	0	NULL	-0.019536	0.00208181	56.4355	0	0	0.00201465	-9.10E-16	-0.00124542	0	10/2/2008	18:00
9.81046	30.7875	0	1	11.035	32.55	1	0	NULL	-0.019536	0.00208181	56.6855	0	0	0.00201465	-9.10E-16	-0.00124542	0	10/2/2008	19:00
9.78546	30.4375	0	1	10.925	32.3	1	0	NULL	-0.019536	0.00208181	56.7855	0	0	0.00201465	-9.10E-16	-0.00124542	0	10/2/2008	20:00
9.83046	30.1375	0	1	10.995	31.95	1	0	NULL	-0.019536	0.00208181	56.8855	0	0	0.00201465	-9.10E-16	-0.00124542	0	10/2/2008	21:00
9.97046	29.6375	0	1	11.185	31.5	1	0	NULL	-0.019536	0.00208181	56.9855	0	0	0.00201465	-9.10E-16	-0.00124542	0	10/2/2008	22:00
9.87546	29.4875	0	1	11.105	31.35	1	0	NULL	-0.019536	0.00208181	57.1355	0	0	0.00201465	-9.10E-16	-0.00124542	0	10/2/2008	23:00
9.92546	29.2375	0	1	11.145	31.1	1	0	NULL	-0.019536	0.00208181	57.3394	0	0	0.00201465	-9.10E-16	-0.00124542	0	10/3/2008	0:00
9.93372	28.9375	0	1	11.1575	30.85	1	0	NULL	-0.019536	0.00208181	57.2894	0	0	0.00201465	-9.10E-16	-0.00124542	0	10/3/2008	1:00
9.91372	28.7875	0	1	11.1125	30.75	1	0	NULL	-0.019536	0.00208181	57.3894	0	0	0.00201465	-9.10E-16	-0.00124542	0	10/3/2008	2:00
9.98372	28.4375	0	1	11.1075	30.5	1	0	NULL	-0.019536	0.00208181	57.4394	0	0	0.00201465	-9.10E-16	-0.00124542	0	10/3/2008	3:00
9.81872	28.4375	0	1	11.0425	30.35	1	0	NULL	-0.019536	0.00208181	57.5894	0	0	0.00201465	-9.10E-16	-0.00124542	0	10/3/2008	4:00
10.1087	27.8875	0	1	11.2525	29.95	1	0	NULL	-0.019536	0.00208181	57.5894	0	0	0.00201465	-9.10E-16	-0.00124542	0	10/3/2008	5:00
10.0937	27.5375	0	1	11.2875	29.8	1	0	NULL	-0.019536	0.00208181	57.6894	0	0	0.00201465	-9.10E-16	-0.00124542	0	10/3/2008	6:00
9.83372	27.6875	0	1	11.0775	29.6	1	0	NULL	-0.019536	0.00208181	57.6894	0	0	0.00201465	-9.10E-16	-0.00124542	0	10/3/2008	7:00
9.75872	27.7875	0	1	10.9575	29.5	1	0	NULL	-0.019536	0.00208181	57.7894	0	0	0.00201465	-9.10E-16	-0.00124542	0	10/3/2008	8:00
9.51872	29.2875	0	1	-0.00249084	35.05	0	0	NULL	13.1049	0.00208181	53.8394	1	0	0.00201465	-9.10E-16	-0.00124542	0	10/3/2008	9:00
9.63372	29.8375	0	1	-0.00249084	35.95	0	0	NULL	13.2049	0.00208181	53.5509	1	0	0.00201465	-9.10E-16	-0.00124542	0	10/3/2008	10:00
9.58372	30.3875	0	1	-0.00249084	36.6	0	0	NULL	13.2049	0.00208181	53.3009	1	0	0.00201465	-9.10E-16	-0.00124542	0	10/3/2008	11:00
10.3286	29.7375	0	1	-0.00249084	36.95	0	0	NULL	13.8549	0.00208181	52.9509	1	0	7.59201	-9.10E-16	7.58875	1	10/3/2008	12:00
10.3436	29.9875	0	1	-0.00249084	37.375	0	0	NULL	13.8549	0.00208181	52.6509	1	0	8.16201	-9.10E-16	8.15875	1	10/3/2008	13:00

Caisson 1 Flow	Caisson 1 Level	Pump 1 Status Run	Pump 2 Status Run	Caisson 2 Flow	Caisson 2 Level	Pump 3 Status Run	Pump 4 Status Run	Caisson 6 Total Flow	Pump 11 Flow	Pump 12 Flow	Caisson 6 Level	Pump 11 Status Run	Pump 12 Status Run	54" Intertie Flow	54" Intertie Flow - North	54" Intertie Flow - South	54" Intertie Valve Status Open	Date	Interval
10.2686	30.45	0	1	-0.00249084	37.575	0	0	NULL	13.7996	0.00208181	52.5509	1	0	7.26896	-9.10E-16	7.26875	1	10/3/2008	14:00
10.2936	30.7	0	1	-0.00249084	37.925	0	0	NULL	13.7996	0.00208181	52.5509	1	0	7.17896	-9.10E-16	7.17875	1	10/3/2008	15:00
10.6823	30.2	0	1	-0.00249084	38.075	0	0	NULL	14.0996	0.00208181	52.1509	1	0	11.254	-9.10E-16	11.251	1	10/3/2008	16:00
10.6073	30.45	0	1	-0.00249084	38.225	0	0	NULL	14.0996	0.00208181	52.0509	1	0	11.529	-9.10E-16	11.531	1	10/3/2008	17:00
10.6323	30.55	0	1	-0.00249084	38.375	0	0	NULL	14.0996	0.00208181	51.9509	1	0	11.489	-9.10E-16	11.486	1	10/3/2008	18:00
10.6973	30.8	0	1	-0.00249084	38.575	0	0	NULL	14.0996	0.00208181	51.8311	1	0	11.064	-9.10E-16	11.061	1	10/3/2008	19:00
10.6823	30.95	0	1	-0.00249084	38.825	0	0	NULL	14.2496	0.00208181	51.8311	1	0	10.184	-9.10E-16	10.181	1	10/3/2008	20:00
10.7623	30.95	0	1	-0.00249084	38.925	0	0	NULL	14.2496	0.00208181	51.6811	1	0	11.019	-9.10E-16	11.016	1	10/3/2008	21:00
10.7973	31.05	0	1	-0.00249084	38.925	0	0	NULL	14.2496	0.00208181	51.5811	1	0	11.019	-9.10E-16	11.016	1	10/3/2008	22:00
10.9323	30.95	0	1	-0.00249084	39.225	0	0	NULL	14.4496	0.00208181	51.5311	1	0	13.4785	-9.10E-16	13.481	1	10/3/2008	23:00
10.9723	30.95	0	1	-0.00249084	39.375	0	0	NULL	14.4496	0.00208181	51.4311	1	0	13.6685	-9.10E-16	13.671	1	10/4/2008	0:00
10.9873	31.15	0	1	-0.00249084	39.375	0	0	NULL	14.4496	0.00208181	51.3811	1	0	13.0135	-9.10E-16	13.011	1	10/4/2008	1:00
10.9823	31.15	0	1	-0.00249084	39.575	0	0	NULL	14.4496	0.00208181	51.2811	1	0	13.5985	-9.10E-16	0.000989011	0	10/4/2008	2:00
9.38392	33.95	0	1	-0.00249084	39.925	0	0	NULL	12.8496	0.00208181	51.8811	1	0	-0.00119048	-9.10E-16	0.000989011	0	10/4/2008	3:00
9.52392	33.95	0	1	-0.00249084	40.075	0	0	NULL	12.9996	0.00208181	51.7811	1	0	-0.00119048	-9.10E-16	0.000989011	0	10/4/2008	4:00
9.69892	33.75	0	1	-0.00249084	40.175	0	0	NULL	13.1496	0.00208181	51.6811	1	0	-0.00119048	-9.10E-16	0.000989011	0	10/4/2008	5:00
9.54392	34.05	0	1	-0.00249084	40.375	0	0	NULL	12.9496	0.00208181	51.6615	1	0	-0.00119048	-9.10E-16	0.000989011	0	10/4/2008	6:00
9.59892	34.2	0	1	-0.00249084	40.475	0	0	NULL	13.0496	0.00208181	51.7115	1	0	-0.00119048	-9.10E-16	0.000989011	0	10/4/2008	7:00
9.61392	34.2	0	1	-0.00249084	40.625	0	0	NULL	13.0496	0.00208181	51.5115	1	0	-0.00119048	-9.10E-16	0.000989011	0	10/4/2008	8:00
9.74892	34.2	0	1	-0.00249084	40.725	0	0	NULL	13.1996	0.00208181	51.5115	1	0	-0.00119048	-9.10E-16	0.000989011	0	10/4/2008	9:00
10.7839	33.2	0	1	-0.00249084	40.875	0	0	NULL	14.2496	0.00208181	51.2115	1	0	10.7388	-9.10E-16	0.000989011	0	10/4/2008	10:00
10.4389	33.4	0	1	-0.00249084	40.875	0	0	NULL	13.8496	0.00208181	51.2115	1	0	7.80881	-9.10E-16	7.81099	1	10/4/2008	11:00
10.3789	33.4	0	1	-0.00249084	40.875	0	0	NULL	13.8496	0.00208181	51.1115	1	0	7.89881	-9.10E-16	7.89599	1	10/4/2008	12:00
10.4539	33.4	0	1	-0.00249084	40.975	0	0	NULL	13.8496	0.00208181	51.0615	1	0	7.92881	-9.10E-16	7.92599	1	10/4/2008	13:00
10.4706	33.5	0	1	-0.00249084	41.175	0	0	NULL	13.8496	0.00208181	51.0115	1	0	8.02881	-9.10E-16	8.03099	1	10/4/2008	14:00
10.4006	33.65	0	1	-0.00249084	41.175	0	0	NULL	13.8496	0.00208181	51.0615	1	0	8.04381	-9.10E-16	8.04599	1	10/4/2008	15:00
10.2856	33.9	0	1	-0.00249084	41.175	0	0	NULL	13.7496	0.00208181	51.0615	1	0	7.26881	-9.10E-16	7.26599	1	10/4/2008	16:00
10.3806	33.9	0	1	-0.00249084	41.325	0	0	NULL	13.7496	0.00208181	51.0615	1	0	6.72381	-9.10E-16	6.72599	1	10/4/2008	17:00
10.4456	33.65	0	1	-0.00249084	41.325	0	0	NULL	13.8996	0.00208181	51.0115	1	0	9.05381	-9.10E-16	9.05599	1	10/4/2008	18:00
10.4706	33.65	0	1	-0.00249084	41.425	0	0	NULL	13.8996	0.00208181	50.9115	1	0	8.67381	-9.10E-16	8.6726	1	10/4/2008	19:00
10.5706	33.65	0	1	-0.00249084	41.575	0	0	NULL	13.8996	0.00208181	50.919	1	0	7.71952	-9.10E-16	7.7226	1	10/4/2008	20:00
10.5206	33.75	0	1	-0.00249084	41.575	0	0	NULL	13.8996	0.00208181	50.969	1	0	7.54452	-9.10E-16	7.5476	1	10/4/2008	21:00
10.4906	33.75	0	1	-0.00249084	41.575	0	0	NULL	13.8996	0.00208181	50.869	1	0	7.45952	-9.10E-16	7.4576	1	10/4/2008	22:00
10.5106	33.75	0	1	-0.00249084	41.675	0	0	NULL	13.8996	0.00208181	50.919	1	0	7.41452	-9.10E-16	7.4126	1	10/4/2008	23:00
10.4906	33.9	0	1	-0.00249084	41.725	0	0	NULL	13.8996	0.00208181	50.869	1	0	7.57452	-9.10E-16	7.5726	1	10/5/2008	0:00
10.5328	33.9	0	1	-0.00249084	41.725	0	0	NULL	13.8996	0.00208181	50.819	1	0	7.32452	-9.10E-16	7.3276	1	10/5/2008	1:00
10.4628	34.15	0	1	-0.00249084	41.725	0	0	NULL	13.8996	0.00208181	50.769	1	0	8.21952	-9.10E-16	8.2176	1	10/5/2008	2:00
10.7528	33.65	0	1	-0.00249084	41.725	0	0	NULL	14.0996	0.00208181	50.669	1	0	12.0145	-9.10E-16	12.0126	1	10/5/2008	3:00

Caisson 1 Flow	Caisson 1 Level	Pump 1 Status Run	Pump 2 Status Run	Caisson 2 Flow	Caisson 2 Level	Pump 3 Status Run	Pump 4 Status Run	Caisson 6 Total Flow	Pump 11 Flow	Pump 12 Flow	Caisson 6 Level	Pump 11 Status Run	Pump 12 Status Run	54" Intertie Flow	54" Intertie Flow - North	54" Intertie Flow - South	54" Intertie Valve Status Open	Date	Interval
10.8078	33.5	0	1	-0.00249084	41.725	0	0	NULL	14.2496	0.00208181	50.769	1	0	11.0045	-9.10E-16	11.0026	1	10/5/2008	4:00
10.8128	33.5	0	1	-0.00249084	41.875	0	0	NULL	14.2496	0.00208181	50.569	1	0	11.0345	-9.10E-16	11.0335	1	10/5/2008	5:00
10.7678	33.65	0	1	-0.00249084	41.875	0	0	NULL	14.1496	0.00208181	50.619	1	0	11.6638	-9.10E-16	11.6635	1	10/5/2008	6:00
10.7928	33.65	0	1	-0.00249084	41.875	0	0	NULL	14.1496	0.00208181	50.619	1	0	11.9988	-9.10E-16	11.9985	1	10/5/2008	7:00
10.8278	33.65	0	1	-0.00249084	41.875	0	0	NULL	14.1496	0.00208181	50.669	1	0	11.8538	-9.10E-16	11.8535	1	10/5/2008	8:00
10.8228	33.65	0	1	-0.00249084	41.975	0	0	NULL	14.1496	0.00208181	50.419	1	0	11.3688	-9.10E-16	11.3685	1	10/5/2008	9:00
10.8328	33.75	0	1	-0.00249084	41.975	0	0	NULL	14.1496	0.00208181	50.519	1	0	11.2538	-9.10E-16	11.2535	1	10/5/2008	10:00
10.8278	33.75	0	1	-0.00249084	42.125	0	0	NULL	14.1496	0.00208181	50.519	1	0	11.7488	-9.10E-16	11.7485	1	10/5/2008	11:00
9.69282	35.55	0	1	-0.00249084	42.225	0	0	NULL	13.0996	0.00208181	50.919	1	0	-0.00124542	-9.10E-16	-0.0014652	0	10/5/2008	12:00
9.61782	35.8	0	1	-0.00249084	42.375	0	0	NULL	13.0996	0.00208181	50.919	1	0	-0.00124542	-9.10E-16	-0.0014652	0	10/5/2008	13:00
9.6337	35.95	0	1	-0.00249084	42.475	0	0	NULL	13.0996	0.00208181	50.869	1	0	-0.00124542	-9.10E-16	-0.0014652	0	10/5/2008	14:00
9.6937	35.95	0	1	-0.00249084	42.475	0	0	NULL	12.9496	0.00208181	50.969	1	0	-0.00124542	-9.10E-16	-0.0014652	0	10/5/2008	15:00
9.6337	36.05	0	1	-0.00249084	42.475	0	0	NULL	12.9496	0.00208181	50.919	1	0	-0.00124542	-9.10E-16	-0.0014652	0	10/5/2008	16:00
9.6787	36.2	0	1	-0.00249084	42.675	0	0	NULL	12.9496	0.00208181	50.869	1	0	-0.00124542	-9.10E-16	-0.0014652	0	10/5/2008	17:00
9.6987	36.2	0	1	-0.00249084	42.675	0	0	NULL	13.0996	0.00208181	50.869	1	0	-0.00124542	-9.10E-16	-0.0014652	0	10/5/2008	18:00
9.6987	36.2	0	1	-0.00249084	42.675	0	0	NULL	13.0996	0.00208181	50.869	1	0	-0.00124542	-9.10E-16	-0.0014652	0	10/5/2008	19:00
9.8687	35.95	0	1	-0.00249084	42.875	0	0	NULL	13.2996	0.00208181	50.769	1	0	-0.00124542	-9.10E-16	-0.0014652	0	10/5/2008	20:00
9.8737	35.95	0	1	-0.00249084	42.875	0	0	NULL	13.2996	0.00208181	50.669	1	0	-0.00124542	-9.10E-16	-0.0014652	0	10/5/2008	21:00
9.8187	36.05	0	1	-0.00249084	42.875	0	0	NULL	13.1996	0.00208181	50.769	1	0	-0.00124542	-9.10E-16	-0.0014652	0	10/5/2008	22:00
9.8087	36.05	0	1	-0.00249084	42.875	0	0	NULL	13.1996	0.00208181	50.869	1	0	-0.00124542	-9.10E-16	-0.0014652	0	10/5/2008	23:00
9.7887	36.2	0	1	-0.00249084	42.975	0	0	NULL	13.1996	0.00208181	50.819	1	0	-0.00124542	-9.10E-16	-0.0014652	0	10/6/2008	0:00
10.8037	34.7	0	1	-0.00249084	42.975	0	0	NULL	14.1996	0.00208181	50.519	1	0	12.3788	-9.10E-16	12.3785	1	10/6/2008	1:00
10.7989	34.55	0	1	-0.00249084	42.975	0	0	NULL	14.1996	0.00208181	50.369	1	0	12.3538	-9.10E-16	12.3535	1	10/6/2008	2:00
10.8439	34.55	0	1	-0.00249084	42.975	0	0	NULL	14.1996	0.00208181	50.419	1	0	11.2988	-9.10E-16	11.296	1	10/6/2008	3:00
10.8589	34.55	0	1	-0.00249084	42.875	0	0	NULL	14.1996	0.00208181	50.369	1	0	11.1648	-9.10E-16	11.166	1	10/6/2008	4:00
10.8789	34.45	0	1	-0.00249084	42.975	0	0	NULL	14.1996	0.00208181	50.369	1	0	10.8848	-9.10E-16	10.886	1	10/6/2008	5:00
10.4689	35.05	0	1	-0.00249084	42.975	0	0	NULL	13.8496	0.00208181	50.519	1	0	6.57984	-9.10E-16	6.58101	1	10/6/2008	6:00
10.1089	36	0	1	-0.00249084	42.975	0	0	NULL	13.4496	0.00208181	50.669	1	0	-0.000164835	-9.10E-16	0.00100733	1	10/6/2008	7:00
9.92888	36	0	1	-0.00249084	43.175	0	0	NULL	13.3496	0.00208181	50.619	1	0	-0.000164835	-9.10E-16	0.00100733	1	10/6/2008	8:00
9.91388	36.1	0	1	-0.00249084	43.175	0	0	NULL	13.3496	0.00208181	50.669	1	0	-0.000164835	-9.10E-16	0.00100733	1	10/6/2008	9:00
10.4389	35.3	0	1	-0.00249084	43.175	0	0	NULL	-0.0003663	0.00208181	54.6353	0	0	7.66484	7.665	0.00100733	1	10/6/2008	10:00
10.4889	35.45	0	1	-0.00249084	43.075	0	0	NULL	-0.0003663	0.00208181	55.1853	0	0	7.51484	7.515	0.00100733	1	10/6/2008	11:00
10.3639	35.45	0	1	-0.00249084	43.175	0	0	NULL	-0.0003663	0.00208181	55.3853	0	0	7.20984	7.21	0.00100733	1	10/6/2008	12:00
10.4469	35.45	0	1	-0.00249084	43.175	0	0	NULL	-0.0003663	0.00208181	55.5853	0	0	7.67984	7.68	0.00100733	1	10/6/2008	13:00
10.735	34.9375	0	1	0	43.1875	0	0	NULL	-0.0003663	0.00208181	55.7353	0	0	2.52E-17	2.52E-17	0	1	10/6/2008	14:00
10.785	34.7875	0	1	0	43.1875	0	0	NULL	-0.0003663	0.00208181	55.9353	0	0	2.52E-17	2.52E-17	0	1	10/6/2008	15:00
10.805	34.7875	0	1	0	43.1875	0	0	NULL	-0.0003663	0.00208181	56.1251	0	0	2.52E-17	2.52E-17	0	1	10/6/2008	16:00
10.815	34.9375	0	1	0	43.1875	0	0	NULL	-0.0003663	0.00208181	56.2751	0	0	2.52E-17	2.52E-17	0	1	10/6/2008	17:00

Caisson 1 Flow	Caisson 1 Level	Pump 1 Status Run	Pump 2 Status Run	Caisson 2 Flow	Caisson 2 Level	Pump 3 Status Run	Pump 4 Status Run	Caisson 6 Total Flow	Pump 11 Flow	Pump 12 Flow	Caisson 6 Level	Pump 11 Status Run	Pump 12 Status Run	54" Intertie Flow	54" Intertie Flow - North	54" Intertie Flow - South	54" Intertie Valve Status Open	Date	Interval
10.915	34.6875	0	1	0	43.1875	0	0	NULL	-0.0003663	0.00208181	56.3751	0	0	2.52E-17	2.52E-17	0	1	10/6/2008	18:00
10.895	34.6875	0	1	0	43.1875	0	0	NULL	-0.0003663	0.00208181	56.4751	0	0	2.52E-17	2.52E-17	0	1	10/6/2008	19:00
10.96	34.5375	0	1	0	43.1875	0	0	NULL	-0.0003663	0.00208181	56.5751	0	0	2.52E-17	2.52E-17	0	1	10/6/2008	20:00
10.88	34.6875	0	1	0	43.1875	0	0	NULL	-0.0003663	0.00208181	56.6251	0	0	2.52E-17	2.52E-17	0	1	10/6/2008	21:00
10.9	34.6875	0	1	0	43.1875	0	0	NULL	-0.0003663	0.00208181	56.8251	0	0	2.52E-17	2.52E-17	0	1	10/6/2008	22:00
10.895	34.6875	0	1	0	43.1875	0	0	NULL	-0.0003663	0.00208181	56.8751	0	0	2.52E-17	2.52E-17	0	1	10/6/2008	23:00
10.99	34.6875	0	1	0	43.1875	0	0	NULL	-0.0003663	0.00208181	56.9751	0	0	2.52E-17	2.52E-17	0	1	10/7/2008	0:00
10.6143	33.5875	0	1	11.81	36.7375	1	0	NULL	-0.0003663	0.00208181	57.0751	0	0	6.61	2.52E-17	6.61	1	10/7/2008	1:00
10.6593	32.8375	0	1	11.81	35.9375	1	0	NULL	-0.0003663	0.00208181	57.0751	0	0	6.475	2.52E-17	6.475	1	10/7/2008	2:00
10.5543	32.2875	0	1	11.76	35.4375	1	0	NULL	-0.0003663	0.00208181	57.1751	0	0	6.695	2.52E-17	6.695	1	10/7/2008	3:00
10.5693	31.9375	0	1	11.79	34.8375	1	0	NULL	-0.0003663	0.00208181	57.2251	0	0	6.93	2.52E-17	6.93	1	10/7/2008	4:00
10.3293	31.9375	0	1	11.515	34.6375	1	0	NULL	-0.0003663	0.00208181	57.3231	0	0	4.835	2.52E-17	4.835	1	10/7/2008	5:00
9.78934	32.2875	0	1	11.005	34.4875	1	0	NULL	-0.0003663	0.00208181	57.4231	0	0	1.33E-15	2.52E-17	1.33E-15	0	10/7/2008	6:00
9.89934	31.7875	0	1	11.165	33.9875	1	0	NULL	-0.0003663	0.00208181	57.4731	0	0	1.33E-15	2.52E-17	1.33E-15	0	10/7/2008	7:00
9.80434	31.7875	0	1	11.005	33.9875	1	0	NULL	-0.0003663	0.00208181	57.5231	0	0	1.33E-15	2.52E-17	1.33E-15	0	10/7/2008	8:00
9.82934	31.5375	0	1	11.02	33.7375	1	0	NULL	-0.0003663	0.00208181	57.5231	0	0	1.33E-15	2.52E-17	1.33E-15	0	10/7/2008	9:00
11.1043	30.8875	0	1	-4.94E-16	39.1875	0	0	NULL	-0.0003663	0.00208181	57.5731	0	0	1.33E-15	2.52E-17	1.33E-15	0	10/7/2008	10:00
11.0993	31.2375	0	1	-4.94E-16	39.7375	0	0	NULL	-0.0003663	0.00208181	57.6231	0	0	1.33E-15	2.52E-17	1.33E-15	0	10/7/2008	11:00
11.0643	31.5375	0	1	-4.94E-16	39.9875	0	0	NULL	-0.0003663	0.00208181	57.6731	0	0	1.33E-15	2.52E-17	1.33E-15	0	10/7/2008	12:00
11.1046	31.6875	0	1	-4.94E-16	40.3875	0	0	NULL	-0.0003663	0.00208181	57.6731	0	0	1.33E-15	2.52E-17	1.33E-15	0	10/7/2008	13:00
11.0746	31.9375	0	1	-4.94E-16	40.5875	0	0	NULL	-0.0003663	0.00208181	57.6731	0	0	1.33E-15	2.52E-17	1.33E-15	0	10/7/2008	14:00
9.8296	33.1375	0	1	10.995	35.6375	1	0	NULL	-0.0003663	0.00208181	57.7231	0	0	1.33E-15	2.52E-17	1.33E-15	0	10/7/2008	15:00
9.8096	32.4875	0	1	11.05	34.7375	1	0	NULL	-0.0003663	0.00208181	57.6731	0	0	1.33E-15	2.52E-17	1.33E-15	0	10/7/2008	16:00
9.8396	31.9375	0	1	11.04	34.1375	1	0	NULL	-0.0003663	0.00208181	57.8731	0	0	1.33E-15	2.52E-17	1.33E-15	0	10/7/2008	17:00
9.8746	31.4875	0	1	11.0399	33.6875	1	0	NULL	-0.0003663	0.00208181	57.8731	0	0	1.33E-15	2.52E-17	1.33E-15	0	10/7/2008	18:00
9.8846	31.0875	0	1	11.0749	33.3375	1	0	NULL	-0.0003663	0.00208181	57.8623	0	0	1.33E-15	2.52E-17	1.33E-15	0	10/7/2008	19:00
10.0596	30.5875	0	1	11.2449	32.8375	1	0	NULL	-0.0003663	0.00208181	58.0123	0	0	1.33E-15	2.52E-17	1.33E-15	0	10/7/2008	20:00
10.0446	30.2375	0	1	11.2099	32.4875	1	0	NULL	-0.0003663	0.00208181	58.0123	0	0	1.33E-15	2.52E-17	1.33E-15	0	10/7/2008	21:00
10.0293	30.1375	0	1	11.2449	32.2375	1	0	NULL	-0.0003663	0.00208181	58.1123	0	0	1.33E-15	2.52E-17	1.33E-15	0	10/7/2008	22:00
9.9393	29.7875	0	1	11.1349	32.1375	1	0	NULL	-0.0003663	0.00208181	58.1123	0	0	1.33E-15	2.52E-17	1.33E-15	0	10/7/2008	23:00
10.0243	29.5375	0	1	11.1949	31.8375	1	0	NULL	-0.0003663	0.00208181	58.0623	0	0	1.33E-15	2.52E-17	1.33E-15	0	10/8/2008	0:00
9.9493	29.2875	0	1	11.1699	31.5875	1	0	NULL	-0.0003663	0.00208181	58.2623	0	0	1.33E-15	2.52E-17	1.33E-15	0	10/8/2008	1:00
9.8193	29.4375	0	1	11.0199	31.4375	1	0	NULL	-0.0003663	0.00208181	58.1123	0	0	1.33E-15	2.52E-17	1.33E-15	0	10/8/2008	2:00
9.8293	29.2875	0	1	10.9949	31.3375	1	0	NULL	-0.0003663	0.00208181	58.2123	0	0	1.33E-15	2.52E-17	1.33E-15	0	10/8/2008	3:00
10.0343	28.7875	0	1	11.2249	30.9375	1	0	NULL	-0.0003663	0.00208181	58.3123	0	0	1.33E-15	2.52E-17	1.33E-15	0	10/8/2008	4:00
10.1443	28.3875	0	1	11.3501	30.6875	1	0	NULL	-0.0003663	0.00208181	58.3123	0	0	1.33E-15	2.52E-17	1.33E-15	0	10/8/2008	5:00
10.1243	27.9875	0	1	11.3651	30.3375	1	0	NULL	-0.0003663	0.00208181	58.4123	0	0	1.33E-15	2.52E-17	1.33E-15	0	10/8/2008	6:00
10.0343	27.8875	0	1	11.3201	30.1875	1	0	NULL	-0.0003663	0.00208181	58.2623	0	0	1.33E-15	2.52E-17	1.33E-15	0	10/8/2008	7:00

Caisson 1 Flow	Caisson 1 Level	Pump 1 Status Run	Pump 2 Status Run	Caisson 2 Flow	Caisson 2 Level	Pump 3 Status Run	Pump 4 Status Run	Caisson 6 Total Flow	Pump 11 Flow	Pump 12 Flow	Caisson 6 Level	Pump 11 Status Run	Pump 12 Status Run	54" Intertie Flow	54" Intertie Flow - North	54" Intertie Flow - South	54" Intertie Valve Status Open	Date	Interval
9.9793	27.85	0	1	11.2401	30.0375	1	0	NULL	-0.0003663	0.00208181	58.3123	0	0	1.33E-15	2.52E-17	1.33E-15	0	10/8/2008	8:00
10.9693	26.9	0	1	7.33E-05	34.7375	0	0	NULL	-0.0003663	0.00208181	58.4623	0	0	1.33E-15	2.52E-17	1.33E-15	0	10/8/2008	9:00
0	40	0	0	7.33E-05	36.9375	0	0	NULL	-0.0003663	0.00208181	58.4123	0	0	1.33E-15	2.52E-17	1.33E-15	0	10/8/2008	10:00
10.815	29.85	0	1	7.33E-05	37.5375	0	0	NULL	-0.0003663	0.00208181	58.4026	0	0	3.825	3.825	1.33E-15	1	10/8/2008	11:00
11.06	29.5	0	1	7.33E-05	37.6875	0	0	NULL	-0.0003663	0.00208181	58.4026	0	0	1.49E-15	1.55E-16	1.49E-15	1	10/8/2008	12:00
11.465	29.35	0	1	7.33E-05	37.9875	0	0	NULL	-0.0003663	0.00208181	58.4026	0	0	3.81	3.81	1.31E-15	1	10/8/2008	13:00
11.255	29.5	0	1	7.33E-05	38.2375	0	0	NULL	-0.0003663	0.00208181	58.5026	0	0	4.47	-2.60E-17	4.47	1	10/8/2008	14:00
11.255	29.6	0	1	7.33E-05	38.3875	0	0	NULL	-0.0003663	0.00208181	58.4526	0	0	3.795	-2.60E-17	3.795	1	10/8/2008	15:00
10.445	31.1	0	1	7.33E-05	38.6875	0	0	NULL	-0.0003663	0.00208181	58.4526	0	0	6.71	6.71	7.13E-16	1	10/8/2008	16:00
10.43	31.4	0	1	7.33E-05	38.8875	0	0	NULL	-0.0003663	0.00208181	58.6026	0	0	7.00505	7.005	7.13E-16	1	10/8/2008	17:00
10.455	31.65	0	1	7.33E-05	39.1375	0	0	NULL	-0.0003663	0.00208181	58.5026	0	0	7.09005	7.09	7.13E-16	1	10/8/2008	18:00
10.475	31.8	0	1	7.33E-05	39.3875	0	0	NULL	-0.0003663	0.00208181	58.5526	0	0	7.54505	7.545	7.13E-16	1	10/8/2008	19:00
10.54	31.8	0	1	7.33E-05	39.4875	0	0	NULL	-0.0003663	0.00208181	58.5526	0	0	8.55505	8.555	7.13E-16	1	10/8/2008	20:00
10.28	32.05	0	1	3.05007	39.0375	1	0	NULL	-0.0003663	0.00208181	58.6526	0	0	7.24005	6.02E-16	7.13E-16	0	10/8/2008	21:00
10.0005	31.25	0	1	11.2651	33.6375	1	0	NULL	-0.0003663	0.00208181	58.7526	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/8/2008	22:00
10.0305	30.65	0	1	11.2551	33.0375	1	0	NULL	-0.0003663	0.00208181	58.7026	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/8/2008	23:00
10.0655	30.25	0	1	11.2901	32.5375	1	0	NULL	-0.0003663	0.00208181	58.7526	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/9/2008	0:00
9.84048	30.25	0	1	11.0751	32.2875	1	0	NULL	-0.0003663	0.00208181	58.7526	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/9/2008	1:00
9.96548	29.75	0	1	11.1851	31.8875	1	0	NULL	-0.0003663	0.00208181	58.7526	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/9/2008	2:00
9.84048	29.75	0	1	11.0051	31.6375	1	0	NULL	-0.0003663	0.00208181	58.8026	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/9/2008	3:00
9.78048	29.55	0	1	11.0333	31.2875	1	0	NULL	-0.0003663	0.00208181	58.8026	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/9/2008	4:00
10.0155	28.95	0	1	11.2233	30.9375	1	0	NULL	-0.0003663	0.00208181	58.8026	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/9/2008	5:00
9.93548	28.7	0	1	11.2083	30.6875	1	0	NULL	-0.0003663	0.00208181	58.8026	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/9/2008	6:00
11.0905	28	0	1	-0.00168498	36.0375	0	0	NULL	-0.0003663	0.00208181	58.9526	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/9/2008	7:00
11.1509	28.4	0	1	-0.00168498	36.8875	0	0	NULL	-0.0003663	0.00208181	58.8026	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/9/2008	8:00
11.1859	28.75	0	1	-0.00168498	37.2875	0	0	NULL	-0.0003663	0.00208181	58.8896	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/9/2008	9:00
11.1559	29.3	0	1	-0.00168498	37.6875	0	0	NULL	-0.0003663	0.00208181	58.8896	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/9/2008	10:00
11.1659	29.65	0	1	-0.00168498	38.0375	0	0	NULL	-0.0003663	0.00208181	58.8396	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/9/2008	11:00
11.1809	29.65	0	1	-0.00168498	38.1875	0	0	NULL	-0.0003663	0.00208181	58.7896	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/9/2008	12:00
11.1559	29.9	0	1	-0.00168498	38.3875	0	0	NULL	-0.0003663	0.00208181	58.7896	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/9/2008	13:00
11.1359	30.05	0	1	-0.00168498	38.5375	0	0	NULL	-0.0003663	0.00208181	58.9896	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/9/2008	14:00
11.2159	30.2	0	1	-0.00168498	38.8875	0	0	NULL	-0.0003663	0.00208181	58.9396	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/9/2008	15:00
11.1809	30.4	0	1	-0.00168498	38.9875	0	0	NULL	-0.0003663	0.00208181	58.9396	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/9/2008	16:00
11.2109	30.5	0	1	-0.00168498	39.1375	0	0	NULL	-0.0003663	0.00208181	58.9896	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/9/2008	17:00
11.0909	30.875	0	1	-0.00168498	39.3875	0	0	NULL	-0.0003663	0.00208181	58.9896	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/9/2008	18:00
10.9459	31.125	0	1	-0.00168498	39.5	0	0	NULL	-0.0003663	0.00208181	59.0896	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/9/2008	19:00
11.0572	31.125	0	1	-0.00168498	39.65	0	0	NULL	-0.0003663	0.00208181	59.0896	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/9/2008	20:00
10.8772	31.575	0	1	-0.00168498	39.75	0	0	NULL	-0.0003663	0.00208181	59.1896	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/9/2008	21:00

Caisson 1 Flow	Caisson 1 Level	Pump 1 Status Run	Pump 2 Status Run	Caisson 2 Flow	Caisson 2 Level	Pump 3 Status Run	Pump 4 Status Run	Caisson 6 Total Flow	Pump 11 Flow	Pump 12 Flow	Caisson 6 Level	Pump 11 Status Run	Pump 12 Status Run	54" Intertie Flow	54" Intertie Flow - North	54" Intertie Flow - South	54" Intertie Valve Status Open	Date	Interval
10.8272	31.425	0	1	-0.00168498	39.9	0	0	NULL	-0.0003663	0.00208181	59.1396	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/9/2008	22:00
9.26216	34.375	0	1	-0.00168498	40.15	0	0	NULL	-0.0003663	0.00208181	59.0896	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/9/2008	23:00
10.8572	32.025	0	1	-0.00168498	40.15	0	0	NULL	-0.0003663	0.00208181	59.1896	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/10/2008	0:00
11.5072	31.125	0	1	-0.00168498	40.25	0	0	NULL	-0.0003663	0.00208181	59.2896	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/10/2008	1:00
11.2072	31.625	0	1	-0.00168498	40.4	0	0	NULL	-0.0003663	0.00208181	59.2592	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/10/2008	2:00
11.0822	31.875	0	1	-0.00168498	40.5	0	0	NULL	-0.0003663	0.00208181	59.2592	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/10/2008	3:00
11.0772	32.025	0	1	-0.00168498	40.5	0	0	NULL	-0.0003663	0.00208181	59.3092	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/10/2008	4:00
11.2322	31.875	0	1	-0.00168498	40.65	0	0	NULL	-0.0003663	0.00208181	59.2092	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/10/2008	5:00
11.1295	32.025	0	1	-0.00168498	40.75	0	0	NULL	-0.0003663	0.00208181	59.2592	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/10/2008	6:00
11.1645	32.125	0	1	-0.00168498	40.75	0	0	NULL	-0.0003663	0.00208181	59.3092	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/10/2008	7:00
9.94949	32.875	0	1	11.2033	35.25	1	0	NULL	-0.0003663	0.00208181	59.3092	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/10/2008	8:00
9.75949	32.575	0	1	10.9883	34.55	1	0	NULL	-0.0003663	0.00208181	59.3092	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/10/2008	9:00
9.78949	32.175	0	1	11.0333	34.1	1	0	NULL	-0.0003663	0.00208181	59.3092	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/10/2008	10:00
9.77449	31.725	0	1	10.9583	33.75	1	0	NULL	-0.0003663	0.00208181	59.3092	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/10/2008	11:00
9.58949	31.725	0	1	10.8133	33.5	1	0	NULL	-0.0003663	0.00208181	59.4592	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/10/2008	12:00
9.60949	31.425	0	1	10.8333	33.1	1	0	NULL	-0.0003663	0.00208181	59.3592	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/10/2008	13:00
9.60449	31.325	0	1	10.7783	33	1	0	NULL	-0.0003663	0.00208181	59.3592	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/10/2008	14:00
9.56949	31.075	0	1	10.7083	32.75	1	0	NULL	-0.0003663	0.00208181	59.3592	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/10/2008	15:00
9.55949	30.825	0	1	10.7679	32.6	1	0	NULL	-0.0003663	0.00208181	59.3592	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/10/2008	16:00
9.55449	30.575	0	1	10.7779	32.25	1	0	NULL	-0.0003663	0.00208181	59.3592	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/10/2008	17:00
9.79449	30.075	0	1	10.9729	32	1	0	NULL	-0.0003663	0.00208181	59.4592	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/10/2008	18:00
9.72824	29.925	0	1	10.9579	31.8	1	0	NULL	-0.0003663	0.00208181	59.3592	0	0	5.49E-05	6.02E-16	7.13E-16	0	10/10/2008	19:00
10.5932	28.175	0	1	11.7779	30.85	1	0	NULL	-0.0003663	0.00208181	59.4136	0	0	9.27505	6.02E-16	9.275	1	10/10/2008	20:00
10.6732	27.825	0	1	11.8229	30.6	1	0	NULL	-0.0003663	0.00208181	59.5136	0	0	8.22005	6.02E-16	8.22007	1	10/10/2008	21:00
10.5932	27.575	0	1	11.7279	30.2	1	0	NULL	-0.0003663	0.00208181	59.5136	0	0	8.28005	6.02E-16	8.28007	1	10/10/2008	22:00
10.6132	27.225	0	1	11.7679	29.85	1	0	NULL	-0.0003663	0.00208181	59.5136	0	0	8.28005	6.02E-16	8.28007	1	10/10/2008	23:00
10.6082	26.925	0	1	11.8079	29.6	1	0	NULL	-0.0003663	0.00208181	59.4636	0	0	8.03005	6.02E-16	8.03007	1	10/11/2008	0:00
10.6682	26.675	0	1	11.8079	29.45	1	0	NULL	-0.0003663	0.00208181	59.4636	0	0	7.88278	6.02E-16	7.88507	1	10/11/2008	1:00
9.93324	27.675	0	1	11.0696	29.7	1	0	NULL	-0.0003663	0.00208181	59.4636	0	0	-0.00221612	6.02E-16	7.33E-05	0	10/11/2008	2:00
9.99324	27.375	0	1	11.2246	29.45	1	0	NULL	-0.0003663	0.00208181	59.6136	0	0	-0.00221612	6.02E-16	7.33E-05	0	10/11/2008	3:00
10.2582	26.925	0	1	11.3996	29.2	1	0	NULL	-0.0003663	0.00208181	59.6636	0	0	-0.00221612	6.02E-16	7.33E-05	0	10/11/2008	4:00
10.2582	26.575	0	1	11.4996	28.95	1	0	NULL	-0.0003663	0.00208181	59.6636	0	0	-0.00221612	6.02E-16	7.33E-05	0	10/11/2008	5:00
9.97896	26.825	0	1	11.2296	28.95	1	0	NULL	-0.0003663	0.00208181	59.6636	0	0	-0.00221612	6.02E-16	7.33E-05	0	10/11/2008	6:00
9.96896	26.825	0	1	11.1446	28.8	1	0	NULL	-0.0003663	0.00208181	59.5636	0	0	-0.00221612	6.02E-16	7.33E-05	0	10/11/2008	7:00
9.74896	26.9375	0	1	11.0496	28.8	1	0	NULL	-0.0003663	0.00208181	59.6636	0	0	-0.00221612	6.02E-16	7.33E-05	0	10/11/2008	8:00
9.90396	26.6875	0	1	11.1196	28.55	1	0	NULL	-0.0003663	0.00208181	59.6636	0	0	-0.00221612	6.02E-16	7.33E-05	0	10/11/2008	9:00
10.064	26.1875	0	1	11.2796	28.25	1	0	NULL	-0.0003663	0.00208181	59.6636	0	0	-0.00221612	6.02E-16	7.33E-05	0	10/11/2008	10:00
9.90396	26.2375	0	1	11.0996	28.25	1	0	NULL	-0.0003663	0.00208181	59.5636	0	0	-0.00221612	6.02E-16	7.33E-05	0	10/11/2008	11:00

Caisson 1 Flow	Caisson 1 Level	Pump 1 Status Run	Pump 2 Status Run	Caisson 2 Flow	Caisson 2 Level	Pump 3 Status Run	Pump 4 Status Run	Caisson 6 Total Flow	Pump 11 Flow	Pump 12 Flow	Caisson 6 Level	Pump 11 Status Run	Pump 12 Status Run	54" Intertie Flow	54" Intertie Flow - North	54" Intertie Flow - South	54" Intertie Valve Status Open	Date	Interval
9.78896	26.4375	0	1	11.0056	28.1	1	0	NULL	-0.0003663	0.00208181	59.6636	0	0	-0.00221612	6.02E-16	7.33E-05	0	10/11/2008	12:00
9.77896	26.2875	0	1	10.9656	28.1	1	0	NULL	-0.0003663	0.00208181	59.5973	0	0	-0.00221612	6.02E-16	7.33E-05	0	10/11/2008	13:00
9.75896	26.1875	0	1	10.9206	28	1	0	NULL	-0.0003663	0.00208181	59.5473	0	0	-0.00221612	6.02E-16	7.33E-05	0	10/11/2008	14:00
9.69896	26.1875	0	1	10.9006	27.85	1	0	NULL	-0.0003663	0.00208181	59.5973	0	0	-0.00221612	6.02E-16	7.33E-05	0	10/11/2008	15:00
9.80896	25.9375	0	1	10.9606	27.6	1	0	NULL	-0.0003663	0.00208181	59.5973	0	0	-0.00221612	6.02E-16	7.33E-05	0	10/11/2008	16:00
9.77289	25.7875	0	1	10.9906	27.6	1	0	NULL	-0.0003663	0.00208181	59.5973	0	0	-0.00221612	6.02E-16	7.33E-05	0	10/11/2008	17:00
9.64289	25.7875	0	1	10.8506	27.5	1	0	NULL	-0.0003663	0.00208181	59.5973	0	0	-0.00221612	6.02E-16	7.33E-05	0	10/11/2008	18:00
9.66289	25.7875	0	1	10.8406	27.5	1	0	NULL	-0.0003663	0.00208181	59.5973	0	0	-0.00221612	6.02E-16	7.33E-05	0	10/11/2008	19:00
9.68289	25.7875	0	1	10.8156	27.35	1	0	NULL	-0.0003663	0.00208181	59.5973	0	0	-0.00221612	6.02E-16	7.33E-05	0	10/11/2008	20:00
10.1979	24.6375	0	1	11.4356	26.95	1	0	NULL	-0.0003663	0.00208181	59.6973	0	0	5.97778	1.93E-16	5.98007	1	10/11/2008	21:00
10.2837	24.3875	0	1	11.4456	26.55	1	0	NULL	-0.0003663	0.00208181	59.7973	0	0	5.05278	1.93E-16	5.05507	1	10/11/2008	22:00
10.2437	24.2375	0	1	11.4506	26.45	1	0	NULL	-0.0003663	0.00208181	59.6973	0	0	5.06778	1.93E-16	5.07007	1	10/11/2008	23:00
10.2787	23.9875	0	1	11.4519	26.3	1	0	NULL	-0.0003663	0.00208181	59.6973	0	0	5.14278	1.93E-16	5.14507	1	10/12/2008	0:00
9.74374	24.7375	0	1	10.9519	26.5	1	0	NULL	-0.0003663	0.00208181	59.7973	0	0	-0.00221612	1.93E-16	7.33E-05	0	10/12/2008	1:00
9.81874	24.5375	0	1	11.0269	26.35	1	0	NULL	-0.0003663	0.00208181	59.7973	0	0	-0.00221612	1.93E-16	7.33E-05	0	10/12/2008	2:00
10.2587	23.5375	0	1	11.4219	25.8	1	0	NULL	-0.0003663	0.00208181	59.6973	0	0	4.43778	1.93E-16	7.33E-05	0	10/12/2008	3:00
9.95374	24.0375	0	1	11.1269	26	1	0	NULL	-0.0003663	0.00208181	59.7995	0	0	-0.00221612	1.93E-16	7.33E-05	0	10/12/2008	4:00
9.78874	24.1875	0	1	10.9869	26	1	0	NULL	-0.0003663	0.00208181	59.7495	0	0	-0.00221612	1.93E-16	7.33E-05	0	10/12/2008	5:00
9.91374	23.9375	0	1	11.1069	25.85	1	0	NULL	-0.0003663	0.00208181	59.7495	0	0	-0.00221612	1.93E-16	7.33E-05	0	10/12/2008	6:00
10.1187	23.3875	0	1	11.3469	25.6	1	0	NULL	-0.0003663	0.00208181	59.7495	0	0	-0.00221612	1.93E-16	7.33E-05	0	10/12/2008	7:00
10.0387	23.4875	0	1	11.2169	25.5	1	0	NULL	-0.0003663	0.00208181	59.7495	0	0	-0.00221612	1.93E-16	7.33E-05	0	10/12/2008	8:00
10.0166	23.3875	0	1	11.2069	25.35	1	0	NULL	-0.0003663	0.00208181	59.6995	0	0	-0.00221612	1.93E-16	7.33E-05	0	10/12/2008	9:00
9.94163	23.3875	0	1	11.1519	25.35	1	0	NULL	-0.0003663	0.00208181	59.7495	0	0	-0.00221612	1.93E-16	7.33E-05	0	10/12/2008	10:00
9.76663	23.6375	0	1	10.9363	25.4	1	0	NULL	-0.0003663	0.00208181	59.6495	0	0	-0.00221612	1.93E-16	7.33E-05	0	10/12/2008	11:00
9.26163	24.4375	0	1	10.4763	25.7	1	0	NULL	-0.0003663	0.00208181	59.6995	0	0	-0.00221612	1.93E-16	7.33E-05	0	10/12/2008	12:00
9.21663	24.5375	0	1	10.4713	25.7	1	0	NULL	-0.0003663	0.00208181	59.6495	0	0	-0.00221612	1.93E-16	7.33E-05	0	10/12/2008	13:00
9.05663	24.8875	0	1	10.2913	25.9	1	0	NULL	-0.0003663	0.00208181	59.7495	0	0	-0.00221612	1.93E-16	7.33E-05	0	10/12/2008	14:00
9.05663	24.8875	0	1	10.2513	26	1	0	NULL	-0.0003663	0.00208181	59.6995	0	0	-0.00221612	1.93E-16	7.33E-05	0	10/12/2008	15:00
8.97663	24.9875	0	1	10.2563	26	1	0	NULL	-0.0003663	0.00208181	59.6995	0	0	-0.00221612	1.93E-16	7.33E-05	0	10/12/2008	16:00
10.5566	22.3875	0	1	11.6713	24.8	1	0	NULL	-0.0003663	0.00208181	59.6495	0	0	9.52278	1.93E-16	9.52381	1	10/12/2008	17:00
10.5566	22.0375	0	1	11.6313	24.55	1	0	NULL	-0.0003663	0.00208181	59.7495	0	0	9.47778	1.93E-16	9.47881	1	10/12/2008	18:00
10.5416	21.7875	0	1	11.6863	24.3	1	0	NULL	-0.0003663	0.00208181	59.6995	0	0	9.43778	1.93E-16	9.43381	1	10/12/2008	19:00
10.5551	21.6875	0	1	11.6613	24.2	1	0	NULL	-0.0003663	0.00208181	59.6147	0	0	9.43778	1.93E-16	9.43381	1	10/12/2008	20:00
9.59015	22.9875	0	1	10.8063	24.55	1	0	NULL	-0.0003663	0.00208181	59.7147	0	0	-0.00221612	1.93E-16	-0.00119048	0	10/12/2008	21:00
9.98015	22.4375	0	1	11.1263	24.3	1	0	NULL	-0.0003663	0.00208181	59.7147	0	0	-0.00221612	1.93E-16	-0.00119048	0	10/12/2008	22:00
9.76515	22.6375	0	1	10.9897	24.3	1	0	NULL	-0.0003663	0.00208181	59.7147	0	0	-0.00221612	1.93E-16	-0.00119048	0	10/12/2008	23:00
9.82515	22.6375	0	1	11.0097	24.3	1	0	NULL	-0.0003663	0.00208181	59.7647	0	0	-0.00221612	1.93E-16	-0.00119048	0	10/13/2008	0:00
9.76015	22.4875	0	1	10.9547	24.2	1	0	NULL	-0.0003663	0.00208181	59.8647	0	0	-0.00221612	1.93E-16	-0.00119048	0	10/13/2008	1:00

Caisson 1 Flow	Caisson 1 Level	Pump 1 Status Run	Pump 2 Status Run	Caisson 2 Flow	Caisson 2 Level	Pump 3 Status Run	Pump 4 Status Run	Caisson 6 Total Flow	Pump 11 Flow	Pump 12 Flow	Caisson 6 Level	Pump 11 Status Run	Pump 12 Status Run	54" Intertie Flow	54" Intertie Flow - North	54" Intertie Flow - South	54" Intertie Valve Status Open	Date	Interval
10.0051	22.1375	0	1	11.1347	24	1	0	NULL	-0.0003663	0.00208181	59.8647	0	0	-0.00221612	1.93E-16	-0.00119048	0	10/13/2008	2:00
10.0751	21.8875	0	1	11.2297	24	1	0	NULL	-0.0003663	0.00208181	59.7647	0	0	-0.00221612	1.93E-16	-0.00119048	0	10/13/2008	3:00
10.1851	21.6375	0	1	11.3497	23.7	1	0	NULL	-0.0003663	0.00208181	59.8147	0	0	-0.00221612	1.93E-16	-0.00119048	0	10/13/2008	4:00
10.1701	21.4375	0	1	11.3397	23.55	1	0	NULL	-0.0003663	0.00208181	59.8147	0	0	-0.00221612	1.93E-16	-0.00119048	0	10/13/2008	5:00
10.1001	21.4375	0	1	11.2797	23.55	1	0	NULL	-0.0003663	0.00208181	59.8647	0	0	-0.00221612	1.93E-16	-0.00119048	0	10/13/2008	6:00
10.1551	21.1875	0	1	11.2897	23.45	1	0	NULL	-0.0003663	0.00208181	59.8647	0	0	-0.00221612	1.93E-16	-0.00119048	0	10/13/2008	7:00
10.9867	21.2875	0	1	0.00184982	29.4	0	0	NULL	-0.0003663	0.00208181	59.8647	0	0	-0.00221612	1.93E-16	-0.00119048	0	10/13/2008	8:00
11.0826	21.9375	0	1	0.00184982	30.4	0	0	NULL	-0.0003663	0.00208181	59.8147	0	0	-0.00221612	1.93E-16	-0.00119048	0	10/13/2008	9:00
10.9676	22.6875	0	1	0.00184982	31.05	0	0	NULL	-0.0003663	0.00208181	59.7179	0	0	-0.00221612	1.93E-16	-0.00119048	0	10/13/2008	10:00
10.9226	23.3375	0	1	0.00184982	31.7	0	0	NULL	-0.0003663	0.00208181	59.7179	0	0	-0.00221612	1.93E-16	-0.00119048	0	10/13/2008	11:00
8.38306	27.7375	0	1	0.00184982	32.4	0	0	NULL	-0.0003663	18.8171	53.9647	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/13/2008	12:00
8.13163	29.1375	0	1	0.00184982	33.15	0	0	NULL	-0.0003663	18.4671	53.4147	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/13/2008	13:00
8.55782	28.9875	0	1	0.00184982	33.65	0	0	NULL	-0.0003663	18.8171	52.8647	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/13/2008	14:00
8.45282	29.6875	0	1	0.00184982	34.2	0	0	NULL	-0.0003663	18.7221	52.6647	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/13/2008	15:00
8.29282	30.2375	0	1	0.00184982	34.55	0	0	NULL	-0.0003663	18.5953	52.4147	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/13/2008	16:00
8.41782	30.4875	0	1	0.00184982	34.95	0	0	NULL	-0.0003663	18.6503	52.2147	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/13/2008	17:00
8.53282	30.7375	0	1	0.00184982	35.4	0	0	NULL	-0.0003663	18.7163	51.8647	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/13/2008	18:00
8.21282	31.4875	0	1	0.00184982	35.75	0	0	NULL	-0.0003663	18.4663	51.7647	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/13/2008	19:00
8.14782	31.9875	0	1	0.00184982	36.05	0	0	NULL	-0.0003663	18.3013	51.6147	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/13/2008	20:00
8.43782	31.9875	0	1	0.00184982	36.5	0	0	NULL	-0.0003663	18.8382	51.2593	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/13/2008	21:00
8.82782	31.6875	0	1	0.00184982	36.65	0	0	NULL	-0.0003663	18.9732	51.0593	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/13/2008	22:00
8.41782	32.4375	0	1	0.00184982	37	0	0	NULL	-0.0003663	18.6405	51.0593	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/13/2008	23:00
8.35747	32.7375	0	1	0.00184982	37.2	0	0	NULL	-0.0003663	18.5705	51.0093	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/14/2008	0:00
8.60247	32.7375	0	1	0.00184982	37.45	0	0	NULL	-0.0003663	18.7655	50.8093	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/14/2008	1:00
8.63247	32.8875	0	1	0.00184982	37.7	0	0	NULL	-0.0003663	18.75	50.6593	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/14/2008	2:00
8.92247	32.6875	0	1	0.00184982	37.95	0	0	NULL	-0.0003663	19.105	50.3593	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/14/2008	3:00
9.13747	32.5875	0	1	0.00184982	38.05	0	0	NULL	-0.0003663	19.327	50.1593	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/14/2008	4:00
9.09247	32.8375	0	1	0.00184982	38.25	0	0	NULL	-0.0003663	19.287	50.1093	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/14/2008	5:00
9.06747	33.0875	0	1	0.00184982	38.35	0	0	NULL	-0.0003663	19.287	50.0593	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/14/2008	6:00
9.09747	33.075	0	1	0.00184982	38.6	0	0	NULL	-0.0003663	19.3162	49.9093	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/14/2008	7:00
8.62247	34.025	0	1	0.00184982	38.85	0	0	NULL	-0.0003663	18.7612	50.0593	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/14/2008	8:00
8.54247	34.275	0	1	0.00184982	39	0	0	NULL	-0.0003663	18.3701	49.9092	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/14/2008	9:00
8.45247	34.525	0	1	0.00184982	39.25	0	0	NULL	-0.0003663	18.5851	49.8592	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/14/2008	10:00
8.4106	34.775	0	1	0.00184982	39.35	0	0	NULL	-0.0003663	18.4896	49.7092	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/14/2008	11:00
8.3306	35.175	0	1	0.00184982	39.6	0	0	NULL	-0.0003663	18.4046	49.8092	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/14/2008	12:00
8.0356	35.675	0	1	0.00184982	39.75	0	0	NULL	-0.0003663	18.0746	49.7592	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/14/2008	13:00
7.9556	36.025	0	1	0.00184982	40	0	0	NULL	-0.0003663	17.9552	49.8592	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/14/2008	14:00
8.7056	35.125	0	1	0.00184982	40.1	0	0	NULL	-0.0003663	18.7002	49.4592	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/14/2008	15:00

Caisson 1 Flow	Caisson 1 Level	Pump 1 Status Run	Pump 2 Status Run	Caisson 2 Flow	Caisson 2 Level	Pump 3 Status Run	Pump 4 Status Run	Caisson 6 Total Flow	Pump 11 Flow	Pump 12 Flow	Caisson 6 Level	Pump 11 Status Run	Pump 12 Status Run	54" Intertie Flow	54" Intertie Flow - North	54" Intertie Flow - South	54" Intertie Valve Status Open	Date	Interval
8.5956	35.425	0	1	0.00184982	40.35	0	0	NULL	-0.0003663	18.6642	49.4548	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/14/2008	16:00
8.6806	35.425	0	1	0.00184982	40.5	0	0	NULL	-0.0003663	18.6492	49.4548	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/14/2008	17:00
8.6906	35.425	0	1	0.00184982	40.5	0	0	NULL	-0.0003663	18.6442	49.3548	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/14/2008	18:00
8.7906	35.425	0	1	0.00184982	40.6	0	0	NULL	-0.0003663	18.8479	49.2548	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/14/2008	19:00
8.5706	35.825	0	1	0.00184982	40.75	0	0	NULL	-0.0003663	18.6729	49.3048	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/14/2008	20:00
8.8406	35.575	0	1	0.00184982	41	0	0	NULL	-0.0003663	18.8462	49.1048	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/14/2008	21:00
9.2306	35.125	0	1	0.00184982	41	0	0	NULL	-0.0003663	19.3112	48.9548	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/14/2008	22:00
8.97332	35.525	0	1	0.00184982	41.1	0	0	NULL	-0.0003663	19.0527	48.8548	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/14/2008	23:00
8.87332	35.775	0	1	0.00184982	41.25	0	0	NULL	-0.0003663	18.9077	48.9548	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/15/2008	0:00
8.78332	36.075	0	1	0.00184982	41.25	0	0	NULL	-0.0003663	18.7777	48.8548	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/15/2008	1:00
8.77832	36.075	0	1	0.00184982	41.35	0	0	NULL	-0.0003663	18.9356	48.9048	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/15/2008	2:00
9.33832	35.425	0	1	0.00184982	41.5	0	0	NULL	-0.0003663	19.4856	48.5548	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/15/2008	3:00
9.36332	35.425	0	1	0.00184982	41.55	0	0	NULL	-0.0003663	19.5094	48.5048	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/15/2008	4:00
9.49332	35.375	0	1	0.00184982	41.55	0	0	NULL	-0.0003663	19.6094	48.4048	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/15/2008	5:00
9.42832	35.525	0	1	0.00184982	41.55	0	0	NULL	-0.0003663	19.5977	48.3916	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/15/2008	6:00
9.14832	35.775	0	1	0.00184982	41.7	0	0	NULL	-0.0003663	19.1777	48.4416	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/15/2008	7:00
9.03332	36.275	0	1	0.00184982	41.8	0	0	NULL	-0.0003663	19.0027	48.3416	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/15/2008	8:00
9.19332	36.075	0	1	0.00184982	41.8	0	0	NULL	-0.0003663	19.2309	48.3416	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/15/2008	9:00
8.34238	37.275	0	1	0.00184982	41.95	0	0	NULL	-0.0003663	18.3934	48.5416	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/15/2008	10:00
8.09738	37.875	0	1	0.00184982	42.05	0	0	NULL	-0.0003663	18.0359	48.6416	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/15/2008	11:00
8.38738	37.625	0	1	0.00184982	42.2	0	0	NULL	-0.0003663	18.3209	48.4916	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/15/2008	12:00
8.13738	38.075	0	1	0.00184982	42.35	0	0	NULL	-0.0003663	18.1309	48.5416	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/15/2008	13:00
8.03738	38.25	0	1	0.00184982	42.6	0	0	NULL	-0.0003663	17.9749	48.5416	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/15/2008	14:00
8.08238	38.25	0	1	0.00184982	42.6	0	0	NULL	-0.0003663	17.8899	48.6275	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/15/2008	15:00
8.04238	38.4	0	1	0.00184982	42.75	0	0	NULL	-0.0003663	18.0115	48.5275	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/15/2008	16:00
8.11738	38.4	0	1	0.00184982	42.75	0	0	NULL	-0.0003663	18.1015	48.4775	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/15/2008	17:00
8.20738	38.45	0	1	0.00184982	42.85	0	0	NULL	-0.0003663	18.1036	48.4775	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/15/2008	18:00
8.32238	38.3	0	1	0.00184982	42.85	0	0	NULL	-0.0003663	18.2336	48.3275	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/15/2008	19:00
8.25738	38.45	0	1	0.00184982	43	0	0	NULL	-0.0003663	18.1936	48.3275	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/15/2008	20:00
9.0206	37.35	0	1	0.00184982	43	0	0	NULL	-0.0003663	18.7662	48.0775	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/15/2008	21:00
8.7606	37.75	0	1	0.00184982	43	0	0	NULL	-0.0003663	18.6312	48.2775	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/15/2008	22:00
8.3456	38.4	0	1	0.00184982	43.1	0	0	NULL	-0.0003663	18.2515	48.2775	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/15/2008	23:00
8.3156	38.45	0	1	0.00184982	43.25	0	0	NULL	-0.0003663	18.2415	48.2275	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/16/2008	0:00
8.2556	38.55	0	1	0.00184982	43.25	0	0	NULL	-0.0003663	18.1979	48.2579	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/16/2008	1:00
8.5356	38.3	0	1	0.00184982	43.25	0	0	NULL	-0.0003663	18.4229	48.1079	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/16/2008	2:00
9.1156	37.3	0	1	0.00184982	43.25	0	0	NULL	-0.0003663	19.1829	47.8079	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/16/2008	3:00
9.0706	37.55	0	1	0.00184982	43.25	0	0	NULL	-0.0003663	19.0727	47.8079	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/16/2008	4:00
8.9356	37.65	0	1	0.00184982	43.35	0	0	NULL	-0.0003663	19.0127	47.7079	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/16/2008	5:00

Caisson 1 Flow	Caisson 1 Level	Pump 1 Status Run	Pump 2 Status Run	Caisson 2 Flow	Caisson 2 Level	Pump 3 Status Run	Pump 4 Status Run	Caisson 6 Total Flow	Pump 11 Flow	Pump 12 Flow	Caisson 6 Level	Pump 11 Status Run	Pump 12 Status Run	54" Intertie Flow	54" Intertie Flow - North	54" Intertie Flow - South	54" Intertie Valve Status Open	Date	Interval
9.3256	37.1	0	1	0.00184982	43.35	0	0	NULL	-0.0003663	19.4128	47.7079	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/16/2008	6:00
9.26136	37.25	0	1	0.00184982	43.35	0	0	NULL	-0.0003663	19.2878	47.4579	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/16/2008	7:00
8.50636	38.45	0	1	0.00184982	43.5	0	0	NULL	-0.0003663	18.3883	47.8579	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/16/2008	8:00
8.71136	38.05	0	1	0.00184982	43.525	0	0	NULL	-0.0003663	18.6733	47.8079	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/16/2008	9:00
8.55636	38.45	0	1	0.00184982	43.475	0	0	NULL	-0.0003663	18.4509	47.7687	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/16/2008	10:00
8.90636	38.05	0	1	0.00184982	43.475	0	0	NULL	-0.0003663	18.8364	47.6187	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/16/2008	11:00
8.71136	38.05	0	1	0.00184982	43.475	0	0	NULL	-0.0003663	18.7079	47.4687	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/16/2008	12:00
8.81136	38.25	0	1	0.00184982	43.675	0	0	NULL	-0.0003663	18.6979	47.5687	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/16/2008	13:00
8.16636	39.25	0	1	0.00184982	43.675	0	0	NULL	-0.0003663	17.9097	47.8187	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/16/2008	14:00
7.98636	39.55	0	1	0.00184982	43.825	0	0	NULL	-0.0003663	17.8697	47.7687	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/16/2008	15:00
8.40136	39	0	1	0.00184982	43.825	0	0	NULL	-0.0003663	18.2497	47.5687	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/16/2008	16:00
8.69636	38.6	0	1	0.00184982	43.825	0	0	NULL	-0.0003663	18.5834	47.5687	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/16/2008	17:00
8.30608	39.05	0	1	0.00184982	43.925	0	0	NULL	-0.0003663	18.2184	47.6187	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/16/2008	18:00
8.25108	39.3	0	1	0.00184982	43.925	0	0	NULL	-0.0003663	18.1119	47.6187	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/16/2008	19:00
8.48108	39.05	0	1	0.00184982	43.875	0	0	NULL	-0.0003663	18.3569	47.6176	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/16/2008	20:00
8.38608	39.05	0	1	0.00184982	44.025	0	0	NULL	-0.0003663	18.2519	47.5676	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/16/2008	21:00
8.78608	38.625	0	1	0.00184982	44.025	0	0	NULL	-0.0003663	18.683	47.3676	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/16/2008	22:00
8.39608	39.125	0	1	0.00184982	44.025	0	0	NULL	-0.0003663	18.298	47.4676	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/16/2008	23:00
8.64608	38.825	0	1	0.00184982	44.125	0	0	NULL	-0.0003663	18.5293	47.3176	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/17/2008	0:00
8.64608	38.825	0	1	0.00184982	44.125	0	0	NULL	-0.0003663	18.5143	47.3676	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/17/2008	1:00
8.76108	38.775	0	1	0.00184982	43.975	0	0	NULL	-0.0003663	18.5271	47.4176	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/17/2008	2:00
9.01608	38.375	0	1	0.00184982	43.975	0	0	NULL	-0.0003663	19.0071	47.2676	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/17/2008	3:00
9.2596	38.025	0	1	0.00184982	43.975	0	0	NULL	-0.0003663	19.2721	46.9676	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/17/2008	4:00
9.2096	37.875	0	1	0.00184982	43.975	0	0	NULL	-0.0003663	19.2589	47.0676	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/17/2008	5:00
9.3796	37.675	0	1	0.00184982	43.975	0	0	NULL	-0.0003663	19.3939	46.9176	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/17/2008	6:00
9.3046	37.825	0	1	0.00184982	43.975	0	0	NULL	-0.0003663	19.3344	46.9676	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/17/2008	7:00
8.6446	38.725	0	1	0.00184982	43.975	0	0	NULL	-0.0003663	18.5644	47.1176	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/17/2008	8:00
8.6646	38.925	0	1	0.00184982	44.125	0	0	NULL	-0.0003663	18.4917	47.1176	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/17/2008	9:00
8.4446	39.175	0	1	0.00184982	44.125	0	0	NULL	-0.0003663	18.3767	47.2447	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/17/2008	10:00
8.4396	39.375	0	1	0.00184982	44.275	0	0	NULL	-0.0003663	18.3228	47.2447	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/17/2008	11:00
8.1596	39.725	0	1	0.00184982	44.275	0	0	NULL	-0.0003663	18.0628	47.2947	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/17/2008	12:00
8.1096	39.875	0	1	0.00184982	44.375	0	0	NULL	-0.0003663	17.9728	47.2947	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/17/2008	13:00
8.0496	39.975	0	1	0.00184982	44.375	0	0	NULL	-0.0003663	17.877	47.2447	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/17/2008	14:00
8.05326	39.975	0	1	0.00184982	44.375	0	0	NULL	-0.0003663	17.892	47.1947	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/17/2008	15:00
8.08826	39.975	0	1	0.00184982	44.375	0	0	NULL	-0.0003663	17.9013	47.1947	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/17/2008	16:00
8.15326	39.875	0	1	0.00184982	44.525	0	0	NULL	-0.0003663	18.0413	47.1947	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/17/2008	17:00
8.16326	39.875	0	1	0.00184982	44.475	0	0	NULL	-0.0003663	18.0113	47.1947	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/17/2008	18:00
8.07326	40.125	0	1	0.00184982	44.475	0	0	NULL	-0.0003663	17.8858	47.2947	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/17/2008	19:00

Caisson 1 Flow	Caisson 1 Level	Pump 1 Status Run	Pump 2 Status Run	Caisson 2 Flow	Caisson 2 Level	Pump 3 Status Run	Pump 4 Status Run	Caisson 6 Total Flow	Pump 11 Flow	Pump 12 Flow	Caisson 6 Level	Pump 11 Status Run	Pump 12 Status Run	54" Intertie Flow	54" Intertie Flow - North	54" Intertie Flow - South	54" Intertie Valve Status Open	Date	Interval
7.96826	40.225	0	1	0.00184982	44.575	0	0	NULL	-0.0003663	17.8458	47.2947	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/17/2008	20:00
8.33826	39.825	0	1	0.00184982	44.675	0	0	NULL	-0.0003663	18.1499	47.1947	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/17/2008	21:00
8.64326	39.125	0	1	0.00184982	44.475	0	0	NULL	-0.0003663	18.5399	46.9773	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/17/2008	22:00
8.62826	39.225	0	1	0.00184982	44.475	0	0	NULL	-0.0003663	18.4615	47.0273	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/17/2008	23:00
8.55826	39.425	0	1	0.00184982	44.475	0	0	NULL	-0.0003663	18.4515	46.9273	0	1	-0.00221612	1.93E-16	-0.00119048	0	10/18/2008	0:00
10.2783	36.825	0	1	0.00184982	44.375	0	0	NULL	-0.0003663	20.4465	46.1773	0	1	12.4559	1.93E-16	12.4538	1	10/18/2008	1:00
10.295	36.475	0	1	0.00184982	44.225	0	0	NULL	-0.0003663	20.4722	46.0773	0	1	12.0859	1.93E-16	12.0888	1	10/18/2008	2:00
10.295	36.475	0	1	0.00184982	44.125	0	0	NULL	-0.0003663	20.5172	45.9773	0	1	10.6809	1.93E-16	10.6838	1	10/18/2008	3:00
10.225	36.525	0	1	0.00184982	44.125	0	0	NULL	-0.0003663	20.5196	45.9773	0	1	12.6459	1.93E-16	12.6438	1	10/18/2008	4:00
10.3	36.325	0	1	0.00184982	43.975	0	0	NULL	-0.0003663	20.5396	45.9773	0	1	11.6609	1.93E-16	11.6638	1	10/18/2008	5:00
10.35	36.325	0	1	0.00184982	43.975	0	0	NULL	-0.0003663	20.5996	45.7773	0	1	10.6509	1.93E-16	10.6538	1	10/18/2008	6:00
10.39	36.175	0	1	0.00184982	43.975	0	0	NULL	-0.0003663	20.6183	45.6773	0	1	10.1959	1.93E-16	10.1957	1	10/18/2008	7:00
10.315	36.175	0	1	0.00184982	43.975	0	0	NULL	-0.0003663	20.5083	45.7773	0	1	11.5009	1.93E-16	11.5007	1	10/18/2008	8:00
10.335	36.075	0	1	0.00184982	43.875	0	0	NULL	-0.0003663	20.5672	45.613	0	1	12.5409	1.93E-16	12.5407	1	10/18/2008	9:00
10.36	36.075	0	1	0.00184982	43.875	0	0	NULL	-0.0003663	20.5972	45.563	0	1	12.2209	1.93E-16	12.2207	1	10/18/2008	10:00
10.255	36.075	0	1	0.00184982	43.875	0	0	NULL	-0.0003663	20.4806	45.613	0	1	13.1303	1.93E-16	13.1257	1	10/18/2008	11:00
10.9	35.125	0	1	0.00184982	43.725	0	0	NULL	-0.0003663	21.2556	45.213	0	1	19.6053	1.93E-16	19.6057	1	10/18/2008	12:00
10.815	35.125	0	1	0.00184982	43.625	0	0	NULL	-0.0003663	21.2156	45.163	0	1	19.5753	1.93E-16	19.5775	1	10/18/2008	13:00
8.03002	39.375	0	1	0.00184982	43.875	0	0	NULL	-0.0003663	17.9384	46.463	0	1	0.000347985	1.93E-16	-0.00247253	0	10/18/2008	14:00
8.22502	39.325	0	1	0.00184982	44.025	0	0	NULL	-0.0003663	18.1384	46.413	0	1	0.000347985	1.93E-16	-0.00247253	0	10/18/2008	15:00
8.08002	39.625	0	1	0.00184982	44.175	0	0	NULL	-0.0003663	17.953	46.413	0	1	0.000347985	1.93E-16	-0.00247253	0	10/18/2008	16:00
8.03756	39.725	0	1	0.00184982	44.175	0	0	NULL	-0.0003663	17.908	46.663	0	1	0.000347985	1.93E-16	-0.00247253	0	10/18/2008	17:00
8.29256	39.475	0	1	0.00184982	44.175	0	0	NULL	-0.0003663	18.108	46.513	0	1	0.000347985	1.93E-16	-0.00247253	0	10/18/2008	18:00
7.94256	39.875	0	1	0.00184982	44.325	0	0	NULL	-0.0003663	17.8121	46.663	0	1	0.000347985	1.93E-16	-0.00247253	0	10/18/2008	19:00
8.08756	39.775	0	1	0.00184982	44.325	0	0	NULL	-0.0003663	17.9471	46.563	0	1	0.000347985	1.93E-16	-0.00247253	0	10/18/2008	20:00
8.18256	39.825	0	1	0.00184982	44.425	0	0	NULL	-0.0003663	18.0391	46.5718	0	1	0.000347985	1.93E-16	-0.00247253	0	10/18/2008	21:00
8.60256	39.025	0	1	0.00184982	44.325	0	0	NULL	-0.0003663	18.4141	46.4218	0	1	0.000347985	1.93E-16	-0.00247253	0	10/18/2008	22:00
8.76756	38.825	0	1	0.00184982	44.325	0	0	NULL	-0.0003663	18.6653	46.3718	0	1	0.000347985	1.93E-16	-0.00247253	0	10/18/2008	23:00
8.56256	39.125	0	1	0.00184982	44.325	0	0	NULL	-0.0003663	18.4003	46.3218	0	1	0.000347985	1.93E-16	-0.00247253	0	10/19/2008	0:00
8.25756	39.625	0	1	0.00184982	44.425	0	0	NULL	-0.0003663	18.1453	46.4218	0	1	0.000347985	1.93E-16	-0.00247253	0	10/19/2008	1:00
8.44756	39.425	0	1	0.00184982	44.425	0	0	NULL	-0.0003663	18.31	46.4218	0	1	0.000347985	1.93E-16	-0.00247253	0	10/19/2008	2:00
8.82256	38.825	0	1	0.00184982	44.325	0	0	NULL	-0.0003663	18.705	46.2218	0	1	0.000347985	1.93E-16	-0.00247253	0	10/19/2008	3:00
8.71062	39.075	0	1	0.00184982	44.325	0	0	NULL	-0.0003663	18.5511	46.2218	0	1	0.000347985	1.93E-16	-0.00247253	0	10/19/2008	4:00
8.88562	38.675	0	1	0.00184982	44.325	0	0	NULL	-0.0003663	18.8161	46.1218	0	1	0.000347985	1.93E-16	-0.00247253	0	10/19/2008	5:00
8.55062	39.125	0	1	0.00184982	44.325	0	0	NULL	-0.0003663	18.3761	46.2218	0	1	0.000347985	1.93E-16	-0.00247253	0	10/19/2008	6:00
10.3056	36.525	0	1	0.00184982	44.125	0	0	NULL	-0.0003663	20.4843	45.4218	0	1	10.4603	1.93E-16	10.4625	1	10/19/2008	7:00
10.1956	36.525	0	1	0.00184982	44.025	0	0	NULL	-0.0003663	20.3843	45.3218	0	1	11.8403	1.93E-16	11.8375	1	10/19/2008	8:00
10.1906	36.375	0	1	0.00184982	44.025	0	0	NULL	-0.0003663	20.3474	45.3218	0	1	11.7653	1.93E-16	11.7675	1	10/19/2008	9:00

Caisson 1 Flow	Caisson 1 Level	Pump 1 Status Run	Pump 2 Status Run	Caisson 2 Flow	Caisson 2 Level	Pump 3 Status Run	Pump 4 Status Run	Caisson 6 Total Flow	Pump 11 Flow	Pump 12 Flow	Caisson 6 Level	Pump 11 Status Run	Pump 12 Status Run	54" Intertie Flow	54" Intertie Flow - North	54" Intertie Flow - South	54" Intertie Valve Status Open	Date	Interval
10.5706	35.675	0	1	0.00184982	43.875	0	0	NULL	-0.0003663	20.9074	45.0718	0	1	16.4703	1.93E-16	16.4675	1	10/19/2008	10:00
8.83562	38.575	0	1	0.00184982	44.075	0	0	NULL	-0.0003663	18.6713	45.7978	0	1	0.000347985	1.93E-16	-0.00247253	0	10/19/2008	11:00
8.76062	38.575	0	1	0.00184982	44.075	0	0	NULL	-0.0003663	18.6513	45.9478	0	1	0.000347985	1.93E-16	-0.00247253	0	10/19/2008	12:00
8.68225	38.675	0	1	0.00184982	44.075	0	0	NULL	-0.0003663	18.4493	45.9478	0	1	0.000347985	1.93E-16	-0.00247253	0	10/19/2008	13:00
8.62225	38.875	0	1	0.00184982	44.175	0	0	NULL	-0.0003663	18.4143	45.8978	0	1	0.000347985	1.93E-16	-0.00247253	0	10/19/2008	14:00
8.58725	38.875	0	1	0.00184982	44.175	0	0	NULL	-0.0003663	18.4593	45.8978	0	1	0.000347985	1.93E-16	-0.00247253	0	10/19/2008	15:00
8.68725	39.025	0	1	0.00184982	44.175	0	0	NULL	-0.0003663	18.4715	45.9478	0	1	0.000347985	1.93E-16	-0.00247253	0	10/19/2008	16:00
8.74225	38.825	0	1	0.00184982	44.175	0	0	NULL	-0.0003663	18.4965	45.9152	0	1	0.000347985	1.93E-16	-0.00247253	0	10/19/2008	17:00
10.8773	35.325	0	1	0.00184982	43.875	0	0	NULL	-0.0003663	21.2537	44.8652	0	1	22.4903	1.93E-16	22.4925	1	10/19/2008	18:00
11.0273	34.875	0	1	0.00184982	43.875	0	0	NULL	-0.0003663	21.5787	44.6652	0	1	24.8194	1.93E-16	24.8225	1	10/19/2008	19:00
11.1423	34.625	0	1	0.00184982	43.775	0	0	NULL	-0.0003663	21.5637	44.5652	0	1	24.7744	1.93E-16	24.7775	1	10/19/2008	20:00
11.1573	34.625	0	1	0.00184982	43.625	0	0	NULL	-0.0003663	21.635	44.4652	0	1	23.8394	1.93E-16	23.8375	1	10/19/2008	21:00
11.1723	34.425	0	1	0.00184982	43.525	0	0	NULL	-0.0003663	21.64	44.3152	0	1	23.2091	1.93E-16	23.2075	1	10/19/2008	22:00
11.1423	34.325	0	1	0.00184982	43.525	0	0	NULL	-0.0003663	21.6845	44.2152	0	1	23.6341	1.93E-16	23.6349	1	10/19/2008	23:00
11.1673	34.175	0	1	0.00184982	43.525	0	0	NULL	-0.0003663	21.7045	44.2152	0	1	23.5041	1.93E-16	23.4999	1	10/20/2008	0:00
11.1773	34.175	0	1	0.00184982	43.325	0	0	NULL	-0.0003663	21.6861	44.1652	0	1	23.4741	1.93E-16	23.4749	1	10/20/2008	1:00
10.9152	34.425	0	1	0.00184982	43.325	0	0	NULL	-0.0003663	21.3061	44.2152	0	1	18.4591	1.93E-16	18.4599	1	10/20/2008	2:00
9.79518	36.125	0	1	0.00184982	43.325	0	0	NULL	-0.0003663	19.8647	44.6652	0	1	5.43414	1.93E-16	-0.000128205	0	10/20/2008	3:00
9.24018	37.175	0	1	0.00184982	43.575	0	0	NULL	-0.0003663	19.2697	45.0652	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/20/2008	4:00
9.18518	37.375	0	1	0.00184982	43.575	0	0	NULL	-0.0003663	19.2147	44.9738	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/20/2008	5:00
9.18518	37.375	0	1	0.00184982	43.575	0	0	NULL	-0.0003663	19.1689	45.0738	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/20/2008	6:00
9.04518	37.625	0	1	0.00184982	43.575	0	0	NULL	-0.0003663	18.9689	45.0738	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/20/2008	7:00
8.67518	38.325	0	1	0.00184982	43.575	0	0	NULL	-0.0003663	18.5214	45.3238	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/20/2008	8:00
8.60018	38.375	0	1	0.00184982	43.775	0	0	NULL	-0.0003663	18.4164	45.3238	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/20/2008	9:00
0.00018315	47.375	0	0	0.00184982	44.875	0	0	NULL	-0.0003663	20.0673	44.6738	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/20/2008	10:00
0.00018315	47.975	0	0	0.00184982	45.425	0	0	NULL	-0.0003663	20.0223	44.7738	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/20/2008	11:00
0.00018315	48.425	0	0	0.00184982	45.875	0	0	NULL	-0.0003663	19.5053	44.8238	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/20/2008	12:00
0.00018315	48.725	0	0	0.00184982	46.125	0	0	NULL	-0.0003663	18.2735	45.3238	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/20/2008	13:00
0.00018315	49.125	0	0	0.00184982	46.375	0	0	NULL	-0.0003663	18.2685	45.4238	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/20/2008	14:00
0.00018315	49.425	0	0	0.00184982	46.675	0	0	NULL	-0.0003663	18.2073	45.4238	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/20/2008	15:00
0.00018315	49.675	0	0	0.00184982	46.925	0	0	NULL	-0.0003663	18.6523	45.1597	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/20/2008	16:00
0.00018315	49.975	0	0	0.00184982	47.175	0	0	NULL	-0.0003663	19.7975	44.8097	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/20/2008	17:00
0.00018315	50.125	0	0	0.00184982	47.425	0	0	NULL	-0.0003663	19.9625	44.6597	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/20/2008	18:00
0.00018315	50.375	0	0	0.00184982	47.575	0	0	NULL	-0.0003663	19.9573	44.6097	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/20/2008	19:00
0.00018315	50.475	0	0	0.00184982	47.825	0	0	NULL	-0.0003663	19.7823	44.7597	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/20/2008	20:00
0.00018315	50.825	0	0	0.00184982	48.075	0	0	NULL	-0.0003663	19.9673	44.7097	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/20/2008	21:00
0.00018315	50.975	0	0	0.00184982	48.175	0	0	NULL	-0.0003663	20.3477	44.4097	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/20/2008	22:00
0.00018315	51.125	0	0	0.00184982	48.425	0	0	NULL	-0.0003663	20.2327	44.4097	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/20/2008	23:00

Caisson 1 Flow	Caisson 1 Level	Pump 1 Status Run	Pump 2 Status Run	Caisson 2 Flow	Caisson 2 Level	Pump 3 Status Run	Pump 4 Status Run	Caisson 6 Total Flow	Pump 11 Flow	Pump 12 Flow	Caisson 6 Level	Pump 11 Status Run	Pump 12 Status Run	54" Intertie Flow	54" Intertie Flow - North	54" Intertie Flow - South	54" Intertie Valve Status Open	Date	Interval
0.00018315	51.375	0	0	0.00184982	48.575	0	0	NULL	-0.0003663	20.2075	44.4597	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/21/2008	0:00
0.00018315	51.625	0	0	0.00184982	48.775	0	0	NULL	-0.0003663	19.9675	44.4597	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/21/2008	1:00
0.00018315	51.625	0	0	0.00184982	48.875	0	0	NULL	-0.0003663	19.839	44.5097	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/21/2008	2:00
8.85018	42.425	0	1	0.00184982	47.825	0	0	NULL	-0.0003663	18.699	45.0597	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/21/2008	3:00
8.46018	41.925	0	1	0.00184982	47.375	0	0	NULL	-0.0003663	19.359	44.8097	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/21/2008	4:00
0.00018315	51.325	0	0	0.00184982	48.675	0	0	NULL	-0.0003663	20.0857	44.3324	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/21/2008	5:00
0.00018315	51.625	0	0	0.00184982	48.925	0	0	NULL	-0.0003663	20.1607	44.4324	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/21/2008	6:00
0.00018315	51.875	0	0	0.00184982	49.175	0	0	NULL	-0.0003663	20.1612	44.4324	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/21/2008	7:00
0.00018315	52.125	0	0	0.00184982	49.325	0	0	NULL	-0.0003663	0.00115995	50.4324	0	0	-0.000860806	1.93E-16	-0.000128205	0	10/21/2008	8:00
0.00018315	52.225	0	0	0.00184982	49.575	0	0	NULL	-0.0003663	0.00115995	51.3824	0	0	-0.000860806	1.93E-16	-0.000128205	0	10/21/2008	9:00
0.00018315	52.375	0	0	0.00184982	49.575	0	0	NULL	-0.0003663	0.00115995	51.9324	0	0	-0.000860806	1.93E-16	-0.000128205	0	10/21/2008	10:00
0.00018315	52.625	0	0	0.00184982	49.825	0	0	NULL	-0.0003663	0.00115995	52.2824	0	0	-0.000860806	1.93E-16	-0.000128205	0	10/21/2008	11:00
0.00018315	52.725	0	0	0.00184982	49.925	0	0	NULL	13.5496	0.00115995	48.8824	1	0	-0.000860806	1.93E-16	-0.000128205	0	10/21/2008	12:00
0.00018315	52.725	0	0	0.00184982	50.075	0	0	NULL	-0.0003663	20.1212	46.1207	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/21/2008	13:00
0.00018315	52.975	0	0	0.00184982	50.175	0	0	NULL	-0.0003663	20.1465	45.9207	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/21/2008	14:00
0.00018315	52.975	0	0	0.00184982	50.225	0	0	NULL	-0.0003663	20.1365	45.5207	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/21/2008	15:00
0.00018315	53.125	0	0	0.00184982	50.375	0	0	NULL	-0.0003663	20.1354	45.4707	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/21/2008	16:00
0.00018315	53.225	0	0	0.00184982	50.375	0	0	NULL	-0.0003663	20.1404	45.2707	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/21/2008	17:00
0.00018315	53.375	0	0	0.00184982	50.575	0	0	NULL	-0.0003663	20.0431	45.3207	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/21/2008	18:00
0.00018315	53.375	0	0	0.00184982	50.575	0	0	NULL	-0.0003663	20.0381	45.0707	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/21/2008	19:00
0.00018315	53.575	0	0	0.00184982	50.675	0	0	NULL	-0.0003663	20.0981	45.0707	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/21/2008	20:00
0.00018315	53.575	0	0	0.00184982	50.825	0	0	NULL	-0.0003663	19.946	45.1207	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/21/2008	21:00
0.00018315	53.675	0	0	0.00184982	50.925	0	0	NULL	-0.0003663	20.181	45.0707	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/21/2008	22:00
0.00018315	53.675	0	0	0.00184982	51.075	0	0	NULL	-0.0003663	20.1454	44.9707	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/21/2008	23:00
0.00018315	53.825	0	0	0.00184982	51.075	0	0	NULL	-0.0003663	20.3554	44.7707	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/22/2008	0:00
0.00018315	53.925	0	0	0.00184982	51.175	0	0	NULL	-0.0003663	20.3435	44.7707	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/22/2008	1:00
0.00018315	53.925	0	0	0.00184982	51.175	0	0	NULL	-0.0003663	20.3685	44.7368	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/22/2008	2:00
0.00018315	54.075	0	0	0.00184982	51.375	0	0	NULL	-0.0003663	20.6035	44.6368	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/22/2008	3:00
0.00018315	54.175	0	0	0.00184982	51.375	0	0	NULL	-0.0003663	20.5638	44.6368	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/22/2008	4:00
0.00018315	54.175	0	0	0.00184982	51.375	0	0	NULL	-0.0003663	20.6088	44.6368	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/22/2008	5:00
0.00018315	54.325	0	0	0.00184982	51.475	0	0	NULL	-0.0003663	20.495	44.5868	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/22/2008	6:00
0.00018315	54.325	0	0	0.00184982	51.475	0	0	NULL	-0.0003663	20.645	44.4368	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/22/2008	7:00
0.00018315	54.325	0	0	0.00184982	51.625	0	0	NULL	-0.0003663	20.0871	44.7368	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/22/2008	8:00
0.00018315	54.325	0	0	0.00184982	51.625	0	0	NULL	-0.0003663	20.0171	44.6368	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/22/2008	9:00
0.00018315	54.425	0	0	0.00184982	51.725	0	0	NULL	-0.0003663	20.2221	44.6368	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/22/2008	10:00
0.00018315	54.625	0	0	0.00184982	51.725	0	0	NULL	-0.0003663	20.1643	44.5868	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/22/2008	11:00
0.00018315	54.625	0	0	0.00184982	51.875	0	0	NULL	-0.0003663	20.0743	44.6368	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/22/2008	12:00
0.00018315	54.625	0	0	0.00184982	51.875	0	0	NULL	-0.0003663	19.9249	44.6368	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/22/2008	13:00

Caisson 1 Flow	Caisson 1 Level	Pump 1 Status Run	Pump 2 Status Run	Caisson 2 Flow	Caisson 2 Level	Pump 3 Status Run	Pump 4 Status Run	Caisson 6 Total Flow	Pump 11 Flow	Pump 12 Flow	Caisson 6 Level	Pump 11 Status Run	Pump 12 Status Run	54" Intertie Flow	54" Intertie Flow - North	54" Intertie Flow - South	54" Intertie Valve Status Open	Date	Interval
0.00018315	54.625	0	0	0.00184982	51.875	0	0	NULL	-0.0003663	19.9249	44.5868	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/22/2008	14:00
0.00018315	54.625	0	0	0.00184982	51.875	0	0	NULL	-0.0003663	19.9389	44.4868	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/22/2008	15:00
0.00018315	54.725	0	0	0.00184982	51.975	0	0	NULL	-0.0003663	20.1889	44.5368	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/22/2008	16:00
0.00018315	54.725	0	0	0.00184982	51.975	0	0	NULL	-0.0003663	20.2589	44.4824	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/22/2008	17:00
0.00018315	54.875	0	0	0.00184982	51.975	0	0	NULL	-0.0003663	20.267	44.4324	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/22/2008	18:00
0.00018315	54.875	0	0	0.00184982	52.175	0	0	NULL	-0.0003663	20.227	44.5324	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/22/2008	19:00
0.00018315	54.875	0	0	0.00184982	52.175	0	0	NULL	-0.0003663	20.1876	44.5324	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/22/2008	20:00
0.00018315	54.975	0	0	0.00184982	52.175	0	0	NULL	-0.0003663	20.1876	44.5324	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/22/2008	21:00
0.00018315	54.975	0	0	0.00184982	52.175	0	0	NULL	-0.0003663	20.1871	44.5824	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/22/2008	22:00
0.00018315	54.975	0	0	0.00184982	52.175	0	0	NULL	-0.0003663	20.1821	44.4824	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/22/2008	23:00
0.00018315	55.075	0	0	0.00184982	52.175	0	0	NULL	-0.0003663	20.0971	44.5324	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/23/2008	0:00
0.00018315	55.075	0	0	0.00184982	52.375	0	0	NULL	-0.0003663	20.0982	44.5824	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/23/2008	1:00
0.00018315	55.075	0	0	0.00184982	52.375	0	0	NULL	-0.0003663	20.0432	44.5324	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/23/2008	2:00
0.00018315	55.075	0	0	0.00184982	52.375	0	0	NULL	-0.0003663	20.047	44.5324	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/23/2008	3:00
0.00018315	55.175	0	0	0.00184982	52.375	0	0	NULL	-0.0003663	19.772	44.6824	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/23/2008	4:00
0.00018315	55.175	0	0	0.00184982	52.375	0	0	NULL	-0.0003663	19.389	44.8324	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/23/2008	5:00
0.00018315	55.175	0	0	0.00184982	52.375	0	0	NULL	-0.0003663	19.164	44.9324	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/23/2008	6:00
0.00018315	55.175	0	0	0.00184982	52.475	0	0	NULL	-0.0003663	19.424	44.9194	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/23/2008	7:00
0.00018315	55.325	0	0	0.00184982	52.375	0	0	NULL	-0.0003663	19.0961	45.0194	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/23/2008	8:00
0.00018315	55.3125	0	0	0.00184982	52.375	0	0	NULL	-0.0003663	18.6261	45.2194	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/23/2008	9:00
0.00018315	55.3125	0	0	0.00184982	52.475	0	0	NULL	-0.0003663	18.7364	45.0694	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/23/2008	10:00
0.00018315	55.3125	0	0	0.00184982	52.475	0	0	NULL	-0.0003663	20.1114	44.6694	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/23/2008	11:00
0.00018315	55.3125	0	0	0.00184982	52.475	0	0	NULL	-0.0003663	19.8738	44.6694	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/23/2008	12:00
0.00018315	55.4625	0	0	0.00184982	52.475	0	0	NULL	-0.0003663	19.8588	44.5694	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/23/2008	13:00
0.00018315	55.3125	0	0	0.00184982	52.625	0	0	NULL	-0.0003663	19.8546	44.5694	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/23/2008	14:00
0.00018315	55.3125	0	0	0.00184982	52.625	0	0	NULL	-0.0003663	19.8596	44.5694	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/23/2008	15:00
0.00018315	55.3125	0	0	0.00184982	52.625	0	0	NULL	-0.0003663	19.9096	44.5694	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/23/2008	16:00
0.00018315	55.4625	0	0	0.00184982	52.625	0	0	NULL	-0.0003663	20.1484	44.5694	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/23/2008	17:00
0.00018315	55.3125	0	0	0.00184982	52.625	0	0	NULL	-0.0003663	20.1384	44.4672	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/23/2008	18:00
0.00018315	55.3125	0	0	0.00184982	52.625	0	0	NULL	-0.0003663	20.1948	44.5672	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/23/2008	19:00
0.00018315	55.4625	0	0	0.00184982	52.625	0	0	NULL	-0.0003663	20.0098	44.4672	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/23/2008	20:00
0.00018315	55.4625	0	0	0.00184982	52.725	0	0	NULL	-0.0003663	19.8673	44.5672	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/23/2008	21:00
0.00018315	55.4625	0	0	0.00184982	52.725	0	0	NULL	-0.0003663	20.1773	44.4672	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/23/2008	22:00
0.00018315	55.4625	0	0	0.00184982	52.725	0	0	NULL	-0.0003663	20.1023	44.4672	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/23/2008	23:00
0.00018315	55.4625	0	0	0.00184982	52.725	0	0	NULL	-0.0003663	20.1687	44.5172	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/24/2008	0:00
0.00018315	55.4625	0	0	0.00184982	52.725	0	0	NULL	-0.0003663	20.1237	44.5172	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/24/2008	1:00
0.00018315	55.4125	0	0	0.00184982	52.725	0	0	NULL	-0.0003663	20.1275	44.5172	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/24/2008	2:00
0.00018315	55.5625	0	0	0.00184982	52.725	0	0	NULL	-0.0003663	20.3675	44.3172	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/24/2008	3:00

Caisson 1 Flow	Caisson 1 Level	Pump 1 Status Run	Pump 2 Status Run	Caisson 2 Flow	Caisson 2 Level	Pump 3 Status Run	Pump 4 Status Run	Caisson 6 Total Flow	Pump 11 Flow	Pump 12 Flow	Caisson 6 Level	Pump 11 Status Run	Pump 12 Status Run	54" Intertie Flow	54" Intertie Flow - North	54" Intertie Flow - South	54" Intertie Valve Status Open	Date	Interval
0.00018315	55.5625	0	0	0.00184982	52.725	0	0	NULL	-0.0003663	20.3775	44.3172	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/24/2008	4:00
0.00018315	55.5625	0	0	0.00184982	52.875	0	0	NULL	-0.0003663	20.5316	44.3313	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/24/2008	5:00
0.00018315	55.5625	0	0	0.00184982	52.875	0	0	NULL	-0.0003663	20.5666	44.2313	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/24/2008	6:00
0.00018315	55.5625	0	0	0.00184982	52.875	0	0	NULL	-0.0003663	19.7611	44.5313	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/24/2008	7:00
0.00018315	55.5625	0	0	0.00184982	52.875	0	0	NULL	-0.0003663	19.2411	44.7313	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/24/2008	8:00
0.00018315	55.5625	0	0	0.00184982	52.875	0	0	NULL	-0.0003663	18.673	44.9313	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/24/2008	9:00
0.00018315	55.5625	0	0	0.00184982	52.875	0	0	NULL	-0.0003663	18.683	44.8313	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/24/2008	10:00
0.00018315	55.5625	0	0	0.00184982	52.875	0	0	NULL	-0.0003663	18.6146	44.9313	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/24/2008	11:00
0.00018315	55.5625	0	0	0.00184982	52.875	0	0	NULL	-0.0003663	19.9496	44.3813	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/24/2008	12:00
0.00018315	55.7125	0	0	0.00184982	52.875	0	0	NULL	-0.0003663	20.1396	44.2313	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/24/2008	13:00
0.00018315	55.7125	0	0	0.00184982	52.875	0	0	NULL	-0.0003663	20.1305	44.0813	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/24/2008	14:00
0.00018315	55.7125	0	0	0.00184982	52.875	0	0	NULL	-0.0003663	20.0605	44.2313	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/24/2008	15:00
0.00018315	55.7125	0	0	0.00184982	52.875	0	0	NULL	-0.0003663	20.1027	44.1313	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/24/2008	16:00
0.00018315	55.7125	0	0	0.00184982	52.875	0	0	NULL	-0.0003663	20.0877	44.1476	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/24/2008	17:00
0.00018315	55.7125	0	0	0.00184982	52.975	0	0	NULL	-0.0003663	20.1954	44.0976	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/24/2008	18:00
0.00018315	55.7125	0	0	0.00184982	52.975	0	0	NULL	-0.0003663	20.1454	44.0976	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/24/2008	19:00
0.00018315	55.7125	0	0	0.00184982	52.975	0	0	NULL	-0.0003663	20.0904	44.1476	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/24/2008	20:00
0.00018315	55.7125	0	0	0.00184982	52.975	0	0	NULL	-0.0003663	20.1604	44.1976	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/24/2008	21:00
0.00018315	55.7125	0	0	0.00184982	52.875	0	0	NULL	-0.0003663	20.2804	44.2639	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/24/2008	22:00
0.00018315	55.7125	0	0	0.00184982	52.975	0	0	NULL	-0.0003663	20.4012	44.1639	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/24/2008	23:00
0.00018315	55.7125	0	0	0.00184982	52.975	0	0	NULL	-0.0003663	20.4012	44.1139	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/25/2008	0:00
0.00018315	55.7125	0	0	0.00184982	52.875	0	0	NULL	-0.0003663	20.3612	44.1139	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/25/2008	1:00
0.00018315	55.7125	0	0	0.00184982	52.875	0	0	NULL	-0.0003663	20.2797	44.2139	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/25/2008	2:00
0.00018315	55.7125	0	0	0.00184982	52.875	0	0	NULL	-0.0003663	20.1847	44.2639	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/25/2008	3:00
0.00018315	55.7125	0	0	0.00184982	52.875	0	0	NULL	-0.0003663	20.3219	44.2139	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/25/2008	4:00
0.00018315	55.7125	0	0	0.00184982	52.875	0	0	NULL	-0.0003663	20.4269	44.1139	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/25/2008	5:00
0.00018315	55.7125	0	0	0.00184982	53.075	0	0	NULL	-0.0003663	20.5869	44.1139	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/25/2008	6:00
0.00018315	55.7125	0	0	0.00184982	52.925	0	0	NULL	-0.0003663	20.5367	44.0639	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/25/2008	7:00
0.00018315	55.7125	0	0	0.00184982	52.925	0	0	NULL	-0.0003663	20.3767	44.0639	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/25/2008	8:00
0.00018315	55.8125	0	0	0.00184982	52.925	0	0	NULL	-0.0003663	20.3985	43.9639	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/25/2008	9:00
0.00018315	55.8125	0	0	0.00184982	52.925	0	0	NULL	-0.0003663	20.3585	44.0139	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/25/2008	10:00
0.00018315	55.8125	0	0	0.00184982	53.075	0	0	NULL	-0.0003663	20.3846	44.0639	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/25/2008	11:00
0.00018315	55.8125	0	0	0.00184982	53.075	0	0	NULL	-0.0003663	20.3846	43.9639	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/25/2008	12:00
0.00018315	55.8125	0	0	0.00184982	53.075	0	0	NULL	-0.0003663	20.3946	43.9454	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/25/2008	13:00
0.00018315	55.8125	0	0	0.00184982	53.075	0	0	NULL	-0.0003663	20.3219	44.0454	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/25/2008	14:00
0.00018315	55.8125	0	0	0.00184982	53.075	0	0	NULL	-0.0003663	20.1719	44.0954	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/25/2008	15:00
0.00018315	55.8125	0	0	0.00184982	53.075	0	0	NULL	-0.0003663	20.2608	44.0454	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/25/2008	16:00
0.00018315	55.6625	0	0	0.00184982	53.075	0	0	NULL	-0.0003663	20.2008	43.9954	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/25/2008	17:00

Caisson 1 Flow	Caisson 1 Level	Pump 1 Status Run	Pump 2 Status Run	Caisson 2 Flow	Caisson 2 Level	Pump 3 Status Run	Pump 4 Status Run	Caisson 6 Total Flow	Pump 11 Flow	Pump 12 Flow	Caisson 6 Level	Pump 11 Status Run	Pump 12 Status Run	54" Intertie Flow	54" Intertie Flow - North	54" Intertie Flow - South	54" Intertie Valve Status Open	Date	Interval
0.00018315	55.8125	0	0	0.00184982	53.075	0	0	NULL	-0.0003663	20.2458	43.9954	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/25/2008	18:00
0.00018315	55.6625	0	0	0.00184982	53.075	0	0	NULL	-0.0003663	20.2403	44.0954	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/25/2008	19:00
0.00018315	55.6625	0	0	0.00184982	53.075	0	0	NULL	-0.0003663	20.2453	44.0954	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/25/2008	20:00
0.00018315	55.8125	0	0	0.00184982	53.075	0	0	NULL	-0.0003663	20.2069	44.0954	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/25/2008	21:00
0.00018315	55.8125	0	0	0.00184982	53.075	0	0	NULL	-0.0003663	20.2319	44.0954	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/25/2008	22:00
0.00018315	55.6625	0	0	0.00184982	53.075	0	0	NULL	-0.0003663	20.4257	43.9954	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/25/2008	23:00
0.00018315	55.6625	0	0	0.00184982	53.075	0	0	NULL	-0.0003663	20.4207	43.9954	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/26/2008	0:00
0.00018315	55.6625	0	0	0.00184982	53.075	0	0	NULL	-0.0003663	20.4107	43.9954	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/26/2008	1:00
0.00018315	55.8125	0	0	0.00184982	53.075	0	0	NULL	-0.0003663	20.4535	43.9954	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/26/2008	2:00
0.00018315	55.8125	0	0	0.00184982	53.075	0	0	NULL	-0.0003663	20.3285	44.0954	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/26/2008	3:00
0.00018315	55.8125	0	0	0.00184982	53.075	0	0	NULL	-0.0003663	20.4036	43.9954	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/26/2008	4:00
0.00018315	55.8125	0	0	0.00184982	53.075	0	0	NULL	-0.0003663	20.3486	44.0454	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/26/2008	5:00
0.00018315	55.8125	0	0	0.00184982	53.075	0	0	NULL	-0.0003663	20.5433	43.9443	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/26/2008	6:00
0.00018315	55.8125	0	0	0.00184982	53.075	0	0	NULL	-0.0003663	20.5433	43.9443	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/26/2008	7:00
0.00018315	55.8125	0	0	0.00184982	53.075	0	0	NULL	-0.0003663	20.2783	43.9943	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/26/2008	8:00
0.00018315	55.8125	0	0	0.00184982	53.075	0	0	NULL	-0.0003663	20.4323	43.9443	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/26/2008	9:00
0.00018315	55.8125	0	0	0.00184982	53.075	0	0	NULL	-0.0003663	20.3723	43.8443	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/26/2008	10:00
0.00018315	55.8125	0	0	0.00184982	53.075	0	0	NULL	-0.0003663	20.383	43.8943	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/26/2008	11:00
0.00018315	55.9625	0	0	0.00184982	53.075	0	0	NULL	-0.0003663	20.358	43.8943	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/26/2008	12:00
0.00018315	55.9625	0	0	0.00184982	53.075	0	0	NULL	-0.0003663	20.328	43.8943	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/26/2008	13:00
0.00018315	55.8125	0	0	0.00184982	53.075	0	0	NULL	-0.0003663	20.3675	43.8943	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/26/2008	14:00
0.00018315	55.8125	NULL	NULL	0.00184982	53.0625	NULL	NULL	NULL	-0.0003663	20.2037	43.9443	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/26/2008	15:00
0.00018315	55.8125	0	0	0.00184982	53.0625	0	0	NULL	-0.0003663	20.2182	44.0454	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/26/2008	16:00
0.00018315	55.8125	0	0	0.00184982	53.0625	0	0	NULL	-0.0003663	20.2032	44.0454	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/26/2008	17:00
0.00018315	55.8125	0	0	0.00184982	53.0625	0	0	NULL	-0.0003663	20.2809	43.8954	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/26/2008	18:00
0.00018315	55.6625	0	0	0.00184982	53.0625	0	0	NULL	-0.0003663	20.2359	43.8954	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/26/2008	19:00
0.00018315	55.8125	0	0	0.00184982	53.0625	0	0	NULL	-0.0003663	20.1909	43.9454	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/26/2008	20:00
0.00018315	55.6625	0	0	0.00184982	53.0625	0	0	NULL	-0.0003663	20.2891	43.9454	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/26/2008	21:00
0.00018315	55.8125	0	0	0.00184982	53.0625	0	0	NULL	-0.0003663	20.3241	43.8954	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/26/2008	22:00
0.00018315	55.6625	0	0	0.00184982	53.0625	0	0	NULL	-0.0003663	20.2209	43.8454	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/26/2008	23:00
0.00018315	55.6625	0	0	0.00184982	53.0625	0	0	NULL	-0.0003663	20.5059	43.7421	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/27/2008	0:00
0.00018315	55.6625	0	0	0.00184982	53.0625	0	0	NULL	-0.0003663	20.4909	43.8421	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/27/2008	1:00
0.00018315	55.6625	0	0	0.00184982	53.0625	0	0	NULL	-0.0003663	20.4256	43.8921	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/27/2008	2:00
0.00018315	55.8125	0	0	0.00184982	53.0625	0	0	NULL	-0.0003663	20.5306	43.7921	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/27/2008	3:00
0.00018315	55.8125	0	0	0.00184982	53.0625	0	0	NULL	-0.0003663	20.3701	43.9421	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/27/2008	4:00
0.00018315	55.8125	0	0	0.00184982	53.0625	0	0	NULL	-0.0003663	20.5701	43.7921	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/27/2008	5:00
0.00018315	55.8125	0	0	0.00184982	53.0625	0	0	NULL	-0.0003663	20.6493	43.6421	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/27/2008	6:00
0.00018315	55.8125	0	0	0.00184982	53.0625	0	0	NULL	-0.0003663	20.5943	43.7421	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/27/2008	7:00

Caisson 1 Flow	Caisson 1 Level	Pump 1 Status Run	Pump 2 Status Run	Caisson 2 Flow	Caisson 2 Level	Pump 3 Status Run	Pump 4 Status Run	Caisson 6 Total Flow	Pump 11 Flow	Pump 12 Flow	Caisson 6 Level	Pump 11 Status Run	Pump 12 Status Run	54" Intertie Flow	54" Intertie Flow - North	54" Intertie Flow - South	54" Intertie Valve Status Open	Date	Interval
0.00018315	55.8125	0	0	0.00184982	53.0625	0	0	NULL	-0.0003663	20.4743	43.7921	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/27/2008	8:00
0.00018315	55.8125	0	0	0.00184982	53.0625	0	0	NULL	-0.0003663	20.1905	43.8921	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/27/2008	9:00
0.00018315	53.8125	0	0	10.3377	46.8625	1	0	NULL	-0.0003663	18.6705	44.5921	0	1	-0.000860806	1.93E-16	-0.000128205	0	10/27/2008	10:00
0	53.1625	0	0	10.2	46.4125	1	0	NULL	0	18.5791	44.6106	0	1	0	0	0	0	10/27/2008	11:00
0	52.8125	0	0	10.0282	46.0625	1	0	NULL	0	18.3541	44.7106	0	1	0	0	0	0	10/27/2008	12:00
0	52.4125	0	0	10.0382	45.8125	1	0	NULL	0	18.3541	44.7106	0	1	0	0	0	0	10/27/2008	13:00
0	52.1125	0	0	10.0732	45.3125	1	0	NULL	0	18.4539	44.5606	0	1	0	0	0	0	10/27/2008	14:00
0	51.8625	0	0	9.98315	45.2125	1	0	NULL	0	18.2339	44.7106	0	1	0	0	0	0	10/27/2008	15:00
0	51.6125	0	0	9.96315	44.9625	1	0	NULL	0	18.305	44.8106	0	1	0	0	0	0	10/27/2008	16:00
0	51.5125	0	0	10.1182	44.7125	1	0	NULL	0	18.265	44.8606	0	1	0	0	0	0	10/27/2008	17:00
0	51.1125	0	0	11.5532	43.5625	1	0	NULL	0	20.4278	44.0606	0	1	13.7	0	13.7	1	10/27/2008	18:00
0	50.8125	0	0	11.5471	43.2125	1	0	NULL	0	20.4478	44.0106	0	1	13.26	0	13.26	1	10/27/2008	19:00
0	50.5625	0	0	11.5371	42.9625	1	0	NULL	0	20.3846	43.9106	0	1	13.76	0	13.76	1	10/27/2008	20:00
0	50.4125	0	0	11.6021	42.8125	1	0	NULL	0	20.4296	43.9106	0	1	13.32	0	13.32	1	10/27/2008	21:00
0	50.1625	0	0	11.5671	42.5625	1	0	NULL	0	20.3746	43.7606	0	1	13.67	0	13.67	1	10/27/2008	22:00
0	49.9125	0	0	11.8621	42.1125	1	0	NULL	0	20.9041	43.6606	0	1	16.705	0	16.705	1	10/27/2008	23:00
0	49.8125	0	0	11.8771	42.1125	1	0	NULL	0	20.8591	43.4606	0	1	16.585	0	16.585	1	10/28/2008	0:00
0	49.6625	0	0	11.8971	41.8125	1	0	NULL	0	20.9119	43.5606	0	1	16.265	0	2.29E-16	0	10/28/2008	1:00
0	49.6625	0	0	10.1921	42.8125	1	0	NULL	0	18.6119	44.3824	0	1	-2.61E-16	0	2.29E-16	0	10/28/2008	2:00
0	49.6625	0	0	10.1671	42.7125	1	0	NULL	0	18.6119	44.4824	0	1	-2.61E-16	0	2.29E-16	0	10/28/2008	3:00
0	49.5625	0	0	10.2121	42.7125	1	0	NULL	0	18.6747	44.4324	0	1	-2.61E-16	0	2.29E-16	0	10/28/2008	4:00
0	49.5625	0	0	10.1321	42.5625	1	0	NULL	0	18.5647	44.5324	0	1	-2.61E-16	0	2.29E-16	0	10/28/2008	5:00
0	49.4125	0	0	10.2421	42.4625	1	0	NULL	0	18.7058	44.5324	0	1	-2.61E-16	0	2.29E-16	0	10/28/2008	6:00
0	49.3125	0	0	10.3887	42.3125	1	0	NULL	0	18.7008	44.5324	0	1	-2.61E-16	0	2.29E-16	0	10/28/2008	7:00
0	49.1625	0	0	10.1828	42.3125	1	0	NULL	0	18.6864	44.4824	0	1	-2.61E-16	0	2.29E-16	0	10/28/2008	8:00
0	49.1625	0	0	9.9328	42.4625	1	0	NULL	0	18.3464	44.6824	0	1	-2.61E-16	0	2.29E-16	0	10/28/2008	9:00
0	49.0625	0	0	10.1778	42.3125	1	0	NULL	0	18.6164	44.6324	0	1	-2.61E-16	0	2.29E-16	0	10/28/2008	10:00
0	49.0625	0	0	10.2178	42.0625	1	0	NULL	0	18.6258	44.5324	0	1	-2.61E-16	0	2.29E-16	0	10/28/2008	11:00
0	48.7625	0	0	12.1078	40.8125	1	0	NULL	0	21.3058	43.4824	0	1	22.625	0	22.625	1	10/28/2008	12:00
0	48.5125	0	0	12.0528	40.5625	1	0	NULL	0	21.2643	43.3824	0	1	22.915	0	22.915	1	10/28/2008	13:00
0	48.3625	0	0	12.1038	40.3125	1	0	NULL	0	21.3193	43.2824	0	1	22.2862	0	22.2862	1	10/28/2008	14:00
0	48.2625	0	0	12.0438	40.1125	1	0	NULL	0	21.2343	43.1824	0	1	22.1112	0	22.1112	1	10/28/2008	15:00
0	48.0625	0	0	12.0588	40.1125	1	0	NULL	0	21.2443	43.0824	0	1	21.9612	0	21.9612	1	10/28/2008	16:00
0	47.9125	0	0	12.0488	40.0125	1	0	NULL	0	21.2926	43.1692	0	1	21.8762	0	21.8762	1	10/28/2008	17:00
0	47.9125	0	0	12.0788	39.7625	1	0	NULL	0	21.2576	43.1192	0	1	21.8162	0	21.8162	1	10/28/2008	18:00
0	47.8125	0	0	12.0788	39.6125	1	0	NULL	0	21.2576	43.0192	0	1	21.7412	0	21.7412	1	10/28/2008	19:00
0	47.6125	0	0	12.1338	39.5625	1	0	NULL	0	21.2932	43.1192	0	1	21.6862	0	21.6862	1	10/28/2008	20:00
0	47.5125	0	0	12.1588	39.4625	1	0	NULL	0	21.2832	42.8192	0	1	21.7162	0	21.7162	1	10/28/2008	21:00

Caisson 1 Flow	Caisson 1 Level	Pump 1 Status Run	Pump 2 Status Run	Caisson 2 Flow	Caisson 2 Level	Pump 3 Status Run	Pump 4 Status Run	Caisson 6 Total Flow	Pump 11 Flow	Pump 12 Flow	Caisson 6 Level	Pump 11 Status Run	Pump 12 Status Run	54" Intertie Flow	54" Intertie Flow - North	54" Intertie Flow - South	54" Intertie Valve Status Open	Date	Interval
0	47.3625	0	0	12.1838	39.3125	1	0	NULL	0	21.3664	42.9192	0	1	20.9212	0	20.9212	1	10/28/2008	22:00
0	47.3625	0	0	12.1088	39.3125	1	0	NULL	0	21.3064	42.9692	0	1	20.9662	0	20.9662	1	10/28/2008	23:00
0	47.2625	0	0	12.2588	39.0125	1	0	NULL	0	21.5796	42.7692	0	1	23.8088	0	23.8088	1	10/29/2008	0:00
0	47.1125	0	0	12.2711	38.8625	1	0	NULL	0	21.5746	42.7192	0	1	24.0138	0	24.0138	1	10/29/2008	1:00
0	47.0125	0	0	12.0711	39.0125	1	0	NULL	0	21.3596	42.7692	0	1	21.8038	0	21.8038	1	10/29/2008	2:00
0	47.0125	0	0	12.1461	38.8625	1	0	NULL	0	21.2942	42.7692	0	1	21.2738	0	-0.00122711	1	10/29/2008	3:00
0	46.8625	0	0	12.1611	38.8625	1	0	NULL	0	21.3792	42.7692	0	1	21.0838	0	-0.00122711	1	10/29/2008	4:00
0	46.8625	0	0	12.3661	38.6125	1	0	NULL	0	21.728	42.5192	0	1	23.3988	0	-0.00122711	1	10/29/2008	5:00
0	46.7625	0	0	12.3961	38.5125	1	0	NULL	0	21.748	42.4692	0	1	23.1638	0	-0.00122711	1	10/29/2008	6:00
0	46.6125	0	0	12.1461	38.3625	1	0	NULL	0	21.3383	42.63	0	1	18.8888	0	18.8888	1	10/29/2008	7:00
0	46.5125	0	0	12.0961	38.3625	1	0	NULL	0	21.3333	42.53	0	1	19.8388	0	19.8388	1	10/29/2008	8:00
0	46.5125	0	0	12.1311	38.3625	1	0	NULL	0	21.2783	42.58	0	1	20.1472	0	20.1488	1	10/29/2008	9:00
0	46.3625	0	0	12.1111	38.2625	1	0	NULL	0	21.2504	42.48	0	1	20.2622	0	20.2638	1	10/29/2008	10:00
0	46.3625	0	0	11.8961	38.2625	1	0	NULL	0	21.0204	42.53	0	1	17.5222	0	17.5238	1	10/29/2008	11:00
0	46.3625	0	0	11.8461	38.25	1	0	NULL	0	20.9091	42.63	0	1	16.9072	0	16.9091	1	10/29/2008	12:00
0	46.1625	0	0	11.7961	38.25	1	0	NULL	0	20.8491	42.63	0	1	17.4072	0	17.4041	1	10/29/2008	13:00
0	46.1625	0	0	11.8242	38.25	1	0	NULL	0	20.8541	42.58	0	1	17.3772	0	17.3791	1	10/29/2008	14:00
0	46.1625	0	0	11.7892	38.2	1	0	NULL	0	20.8741	42.58	0	1	17.4372	4.90E-16	17.4341	1	10/29/2008	15:00
0	46.0625	0	0	11.7892	38.05	1	0	NULL	0	20.8291	42.48	0	1	17.0122	4.90E-16	17.0091	1	10/29/2008	16:00
0	46.0625	0	0	11.7892	38.05	1	0	NULL	0	20.8408	42.48	0	1	17.2022	4.90E-16	17.1991	1	10/29/2008	17:00
0	45.9125	0	0	11.8242	38.05	1	0	NULL	0	20.8508	42.48	0	1	17.2022	4.90E-16	17.1991	1	10/29/2008	18:00
0	45.9125	0	0	11.8242	38.05	1	0	NULL	0	20.8308	42.53	0	1	17.1892	4.90E-16	17.1891	1	10/29/2008	19:00
0	45.8125	0	0	11.7742	37.95	1	0	NULL	0	20.8908	42.3615	0	1	17.0392	4.90E-16	17.0391	1	10/29/2008	20:00
0	45.8125	0	0	11.6992	37.8	1	0	NULL	0	20.8008	42.5615	0	1	18.0492	4.90E-16	18.0513	1	10/29/2008	21:00
0	45.8125	0	0	11.7142	37.8	1	0	NULL	0	20.7464	42.4115	0	1	18.1242	4.90E-16	18.1263	1	10/29/2008	22:00
0	45.6625	0	0	11.7942	37.8	1	0	NULL	0	20.8664	42.4115	0	1	17.2592	4.90E-16	17.2613	1	10/29/2008	23:00
0	45.5625	0	0	11.8242	37.7	1	0	NULL	0	20.8525	42.4615	0	1	17.1592	4.90E-16	17.1563	1	10/30/2008	0:00
0	45.5625	0	0	11.9038	37.7	1	0	NULL	0	20.8475	42.3115	0	1	16.5992	4.90E-16	16.6013	1	10/30/2008	1:00
0	45.5625	0	0	11.8688	37.55	1	0	NULL	0	20.9529	42.3115	0	1	21.3042	4.90E-16	21.3063	1	10/30/2008	2:00
0	45.5625	0	0	11.7788	37.55	1	0	NULL	0	20.9079	42.4115	0	1	21.9492	4.90E-16	21.9463	1	10/30/2008	3:00
0	45.4125	0	0	11.8538	37.45	1	0	NULL	0	20.8779	42.2115	0	1	21.5542	4.90E-16	21.5513	1	10/30/2008	4:00
0	45.4125	0	0	11.9538	37.45	1	0	NULL	0	21.1058	42.3115	0	1	20.4112	4.90E-16	20.4113	1	10/30/2008	5:00
0	45.3125	0	0	12.0388	37.25	1	0	NULL	0	21.1908	42.0908	0	1	19.3712	4.90E-16	19.3713	1	10/30/2008	6:00
0	45.1625	0	0	12.0438	37.1	1	0	NULL	0	21.1538	42.0408	0	1	19.3412	4.90E-16	19.3407	1	10/30/2008	7:00
0	45.1625	0	0	12.0138	37.1	1	0	NULL	0	21.2038	41.9908	0	1	20.4262	4.90E-16	20.4257	1	10/30/2008	8:00
0	45.1625	0	0	12.0438	37	1	0	NULL	0	21.1988	41.9908	0	1	19.9862	4.90E-16	19.9857	1	10/30/2008	9:00
0	45.0625	0	0	11.9788	36.85	1	0	NULL	0	21.2322	41.8408	0	1	20.1912	4.90E-16	20.1907	1	10/30/2008	10:00
0	45.0625	0	0	11.9938	36.85	1	0	NULL	0	21.1272	41.8908	0	1	21.8162	4.90E-16	21.8157	1	10/30/2008	11:00

Caisson 1 Flow	Caisson 1 Level	Pump 1 Status Run	Pump 2 Status Run	Caisson 2 Flow	Caisson 2 Level	Pump 3 Status Run	Pump 4 Status Run	Caisson 6 Total Flow	Pump 11 Flow	Pump 12 Flow	Caisson 6 Level	Pump 11 Status Run	Pump 12 Status Run	54" Intertie Flow	54" Intertie Flow - North	54" Intertie Flow - South	54" Intertie Valve Status Open	Date	Interval
0	45.0625	0	0	11.9477	36.85	1	0	NULL	0	21.1188	41.8908	0	1	21.9362	4.90E-16	21.9357	1	10/30/2008	12:00
0	44.9125	0	0	11.6327	37.15	1	0	NULL	0	20.6188	42.0408	0	1	17.2312	4.90E-16	17.2307	1	10/30/2008	13:00
0	44.9125	0	0	11.9277	36.9	1	0	NULL	0	21.0184	41.9408	0	1	21.5812	4.90E-16	21.5807	1	10/30/2008	14:00
0	45.2125	0	0	11.0785	37.65	0	1	NULL	0	21.0884	41.8408	0	1	21.0269	4.90E-16	21.0274	1	10/30/2008	15:00
0	45.2125	0	0	11.0985	37.65	0	1	NULL	0	21.0484	41.8408	0	1	20.9069	4.90E-16	20.9074	1	10/30/2008	16:00
0	45.0125	0	0	11.0535	37.65	0	1	NULL	0	21.085	41.8408	0	1	20.9369	4.90E-16	20.9374	1	10/30/2008	17:00
0	45.0125	0	0	11.0835	37.65	0	1	NULL	0	21.095	41.9408	0	1	20.8205	4.90E-16	20.8224	1	10/30/2008	18:00
0	45.0125	0	0	11.0785	37.5	0	1	NULL	0	21.0234	41.7408	0	1	21.0105	4.90E-16	21.0117	1	10/30/2008	19:00
0	45.0125	0	0	11.0835	37.5	0	1	NULL	0	21.0234	41.7408	0	1	21.0705	4.90E-16	21.0717	1	10/30/2008	20:00
0	45.0125	0	0	11.0685	37.5	0	1	NULL	0	21.0234	41.719	0	1	20.9655	4.90E-16	20.9667	1	10/30/2008	21:00
0	45.0125	0	0	11.0935	37.5	0	1	NULL	0	20.9973	41.769	0	1	21.0255	4.90E-16	21.0267	1	10/30/2008	22:00
0	45.0125	0	0	11.0335	37.55	0	1	NULL	0	21.0173	41.569	0	1	21.2905	4.90E-16	21.2917	1	10/30/2008	23:00
0	45.0125	0	0	11.0485	37.45	0	1	NULL	0	21.0177	41.569	0	1	20.4405	4.90E-16	20.4417	1	10/31/2008	0:00
0	44.8625	0	0	11.0485	37.45	0	1	NULL	0	21.0427	41.519	0	1	20.4555	4.90E-16	20.4567	1	10/31/2008	1:00
0	44.8625	0	0	11.0973	37.45	0	1	NULL	0	21.0451	41.569	0	1	20.9255	4.90E-16	20.9217	1	10/31/2008	2:00
0	44.8625	0	0	10.9323	37.45	0	1	NULL	0	20.8351	41.569	0	1	17.0256	4.90E-16	17.0267	1	10/31/2008	3:00
0	44.8625	0	0	10.8573	37.5625	0	1	NULL	0	20.8101	41.569	0	1	17.8306	4.90E-16	17.83	1	10/31/2008	4:00
0	44.8625	0	0	10.8723	37.4125	0	1	NULL	0	20.7898	41.569	0	1	17.6406	4.90E-16	17.64	1	10/31/2008	5:00
0	44.7625	0	0	11.0023	37.4125	0	1	NULL	0	20.9948	41.469	0	1	16.9206	4.90E-16	3.91E-15	1	10/31/2008	6:00
0	44.7625	0	0	11.0123	37.4125	0	1	NULL	0	20.9851	41.519	0	1	16.6606	4.90E-16	4.20E-15	1	10/31/2008	7:00
0	44.7625	0	0	10.9473	37.4625	0	1	NULL	0	20.9351	41.469	0	1	17.6556	4.90E-16	17.655	1	10/31/2008	8:00
0	44.7625	0	0	10.8738	37.3125	0	1	NULL	0	20.8142	41.469	0	1	18.2418	4.90E-16	18.2395	1	10/31/2008	9:00
0	44.7625	0	0	10.9011	37.3125	0	1	NULL	0	20.8042	41.419	0	1	18.2268	4.90E-16	18.2285	1	10/31/2008	10:00
0	44.7625	0	0	10.8711	37.3125	0	1	NULL	0	20.8242	41.419	0	1	18.3018	4.90E-16	18.2985	1	10/31/2008	11:00
0	44.6125	0	0	10.8861	37.3125	0	1	NULL	0	20.7825	41.4158	0	1	18.3168	4.90E-16	18.3135	1	10/31/2008	12:00
0	44.6125	0	0	10.8711	37.3125	0	1	NULL	0	20.7525	41.4158	0	1	18.2118	4.90E-16	18.2135	1	10/31/2008	13:00
0	44.6125	0	0	10.8425	37.3125	0	1	NULL	0	20.7343	41.4158	0	1	16.3218	4.90E-16	16.3235	1	10/31/2008	14:00
0	44.6125	0	0	11.1775	37.0625	0	1	NULL	0	21.1593	41.1658	0	1	21.2168	4.90E-16	21.2185	1	10/31/2008	15:00
0	44.5125	0	0	11.1775	37.0625	0	1	NULL	0	21.2343	41.1658	0	1	21.7018	4.90E-16	21.6985	1	10/31/2008	16:00
0	44.5125	0	0	11.2225	36.9125	0	1	NULL	0	21.2337	41.0658	0	1	21.5518	4.90E-16	21.5535	1	10/31/2008	17:00
0	44.5125	0	0	11.0825	37.0625	0	1	NULL	0	21.1187	41.0658	0	1	20.3218	4.90E-16	20.3235	1	10/31/2008	18:00
0	44.3625	0	0	11.1775	36.9125	0	1	NULL	0	21.2393	41.0658	0	1	22.7696	4.90E-16	22.7685	1	10/31/2008	19:00
0	44.3625	0	0	11.3125	36.8125	0	1	NULL	0	21.3993	40.9658	0	1	26.4446	4.90E-16	26.4485	1	10/31/2008	20:00
0	44.3625	0	0	11.2525	36.8125	0	1	NULL	0	21.3504	40.8658	0	1	26.2546	4.90E-16	26.2585	1	10/31/2008	21:00
0	44.3625	0	0	11.3275	36.8125	0	1	NULL	0	21.3304	40.9158	0	1	26.4596	4.90E-16	26.4635	1	10/31/2008	22:00
0	44.3625	0	0	11.2825	36.8125	0	1	NULL	0	21.3354	40.9158	0	1	26.8296	4.90E-16	26.8285	1	10/31/2008	23:00
0	44.3625	0	0	11.3475	36.8125	0	1	NULL	0	21.4086	40.9658	0	1	26.7846	4.90E-16	26.7839	1	11/1/2008	0:00
0	44.3625	0	0	11.303	36.6625	0	1	NULL	0	21.4186	40.8658	0	1	26.8996	4.90E-16	26.8989	1	11/1/2008	1:00

Caisson 1 Flow	Caisson 1 Level	Pump 1 Status Run	Pump 2 Status Run	Caisson 2 Flow	Caisson 2 Level	Pump 3 Status Run	Pump 4 Status Run	Caisson 6 Total Flow	Pump 11 Flow	Pump 12 Flow	Caisson 6 Level	Pump 11 Status Run	Pump 12 Status Run	54" Intertie Flow	54" Intertie Flow - North	54" Intertie Flow - South	54" Intertie Valve Status Open	Date	Interval
0	44.2625	0	0	11.313	36.6625	0	1	NULL	0	21.3664	40.7658	0	1	26.9446	4.90E-16	26.9439	1	11/1/2008	2:00
0	44.2625	0	0	11.368	36.6625	0	1	NULL	0	21.4514	40.8658	0	1	25.6246	4.90E-16	25.6239	1	11/1/2008	3:00
0	44.2625	0	0	11.108	36.8125	0	1	NULL	0	21.0795	40.9158	0	1	20.5996	4.90E-16	20.5989	1	11/1/2008	4:00
0	44.2625	0	0	11.233	36.6125	0	1	NULL	0	21.3545	40.7603	0	1	21.8606	4.90E-16	21.8589	1	11/1/2008	5:00
0	44.2625	0	0	11.243	36.6125	0	1	NULL	0	21.2643	40.9103	0	1	20.8356	4.90E-16	20.8339	1	11/1/2008	6:00
0	44.1125	0	0	11.203	36.6125	0	1	NULL	0	21.2193	40.8103	0	1	20.8206	4.90E-16	20.8189	1	11/1/2008	7:00
0	44.1125	0	0	11.218	36.6125	0	1	NULL	0	21.2143	40.6603	0	1	20.8656	4.90E-16	20.8639	1	11/1/2008	8:00
0	44.1125	0	0	11.203	36.6125	0	1	NULL	0	21.2399	40.6603	0	1	20.8356	4.90E-16	20.8339	1	11/1/2008	9:00
0	44.1125	0	0	NULL	36.6125	0	1	NULL	0	21.2499	40.7103	0	1	NULL	4.90E-16	NULL	1	11/1/2008	10:00
0	44.1125	0	0	11.2179	36.6125	0	1	NULL	0	21.2493	40.7603	0	1	20.4698	4.90E-16	20.4698	1	11/1/2008	11:00
0	44.1125	0	0	11.2179	36.6125	0	1	NULL	0	21.2493	40.7103	0	1	20.5548	4.90E-16	20.5548	1	11/1/2008	12:00
0	44.1125	0	0	11.1629	36.5125	0	1	NULL	0	21.1943	40.6603	0	1	20.7198	4.90E-16	20.7198	1	11/1/2008	13:00
0	44.0125	0	0	11.1579	36.5125	0	1	NULL	0	21.2393	40.6603	0	1	21.0998	4.90E-16	21.0998	1	11/1/2008	14:00
0	44.0125	0	0	11.2029	36.5125	0	1	NULL	0	21.2193	40.6603	0	1	21.1998	4.90E-16	21.1998	1	11/1/2008	15:00
0	44.0125	0	0	11.1479	36.5125	0	1	NULL	0	21.1848	40.5592	0	1	21.2298	4.90E-16	21.2298	1	11/1/2008	16:00
0	44.0125	0	0	11.1229	36.5125	0	1	NULL	0	21.1298	40.7592	0	1	19.8848	4.90E-16	19.8848	1	11/1/2008	17:00
0	44.0125	0	0	11.1079	36.5125	0	1	NULL	0	21.1398	40.7092	0	1	20.1148	4.90E-16	20.1148	1	11/1/2008	18:00
0	44.0125	0	0	11.0929	36.5125	0	1	NULL	0	21.0539	40.6592	0	1	20.1748	4.90E-16	20.1748	1	11/1/2008	19:00
0	44.0125	0	0	11.0979	36.5125	0	1	NULL	0	21.1289	40.6092	0	1	20.4087	4.90E-16	20.4087	1	11/1/2008	20:00
0	44.0125	0	0	11.1379	36.5125	0	1	NULL	0	21.1272	40.5592	0	1	20.2787	4.90E-16	20.2787	1	11/1/2008	21:00
0	44.0125	0	0	11.1405	36.5125	0	1	NULL	0	21.1922	40.6092	0	1	20.9687	4.90E-16	20.9687	1	11/1/2008	22:00
0	43.8625	0	0	11.1405	36.5125	0	1	NULL	0	21.1661	40.5092	0	1	20.8487	4.90E-16	20.8487	1	11/1/2008	23:00
0	43.8625	0	0	11.1355	36.5125	0	1	NULL	0	21.2011	40.5092	0	1	22.2287	4.90E-16	22.2287	1	11/2/2008	0:00
0	43.8625	0	0	11.1655	36.3625	0	1	NULL	0	21.1661	40.4092	0	1	22.1987	4.90E-16	22.1987	1	11/2/2008	1:00
0	43.8625	0	0	11.1305	36.3625	0	1	NULL	0	21.1822	40.4592	0	1	22.5037	4.90E-16	22.5037	1	11/2/2008	2:00
0	43.8625	0	0	11.1855	36.3625	0	1	NULL	0	21.2572	40.4592	0	1	22.0637	4.90E-16	22.0637	1	11/2/2008	3:00
0	43.8625	0	0	11.1505	36.3625	0	1	NULL	0	21.2409	40.5092	0	1	19.8087	4.90E-16	19.8087	1	11/2/2008	4:00
0	43.7625	0	0	11.3705	36.2625	0	1	NULL	0	21.5059	40.3222	0	1	23.7937	4.90E-16	23.7968	1	11/2/2008	5:00
0	43.8625	0	0	11.4055	36.1125	0	1	NULL	0	21.569	40.3222	0	1	23.6616	4.90E-16	23.6618	1	11/2/2008	6:00
0	43.8625	0	0	11.3855	36.2625	0	1	NULL	0	21.479	40.3222	0	1	23.8266	4.90E-16	23.8218	1	11/2/2008	7:00
0	43.75	0	0	11.3905	36.1125	0	1	NULL	0	21.509	40.2222	0	1	23.9566	4.90E-16	23.9568	1	11/2/2008	8:00
0	43.75	0	0	11.3705	36.1125	0	1	NULL	0	21.5185	40.2222	0	1	23.4266	4.90E-16	23.4268	1	11/2/2008	9:00
0	43.75	0	0	11.3693	36.1125	0	1	NULL	0	21.4585	40.2222	0	1	23.4016	4.90E-16	23.3968	1	11/2/2008	10:00
0	43.75	0	0	11.1143	36.2625	0	1	NULL	0	21.1277	40.3222	0	1	18.4316	4.90E-16	18.4318	1	11/2/2008	11:00
0	43.75	0	0	11.1343	36.2625	0	1	NULL	0	21.1027	40.2722	0	1	18.4616	4.90E-16	18.4618	1	11/2/2008	12:00
0	43.75	0	0	11.1193	36.2625	0	1	NULL	0	21.1577	40.3222	0	1	18.6366	4.90E-16	18.6368	1	11/2/2008	13:00
0	43.75	0	0	11.0643	36.2625	0	1	NULL	0	21.115	40.3222	0	1	18.5616	4.90E-16	18.5618	1	11/2/2008	14:00
0	43.75	0	0	11.1143	36.2625	0	1	NULL	0	21.085	40.3222	0	1	19.1666	4.90E-16	19.1667	1	11/2/2008	15:00

Caisson 1 Flow	Caisson 1 Level	Pump 1 Status Run	Pump 2 Status Run	Caisson 2 Flow	Caisson 2 Level	Pump 3 Status Run	Pump 4 Status Run	Caisson 6 Total Flow	Pump 11 Flow	Pump 12 Flow	Caisson 6 Level	Pump 11 Status Run	Pump 12 Status Run	54" Intertie Flow	54" Intertie Flow - North	54" Intertie Flow - South	54" Intertie Valve Status Open	Date	Interval
0	43.75	0	0	11.0493	36.2625	0	1	NULL	0	21.08	40.3222	0	1	21.0255	4.90E-16	21.0267	1	11/2/2008	16:00
0	43.75	0	0	11.1193	36.2625	0	1	NULL	0	21.135	40.3222	0	1	21.1155	4.90E-16	21.1117	1	11/2/2008	17:00
0	43.75	0	0	11.0843	36.1125	0	1	NULL	0	21.0794	40.2722	0	1	21.2005	4.90E-16	21.2017	1	11/2/2008	18:00
0	43.75	0	0	11.1043	36.1125	0	1	NULL	0	21.1494	40.1222	0	1	21.2611	4.90E-16	21.2617	1	11/2/2008	19:00
0	43.6	0	0	11.1343	36.1125	0	1	NULL	0	21.1094	40.1222	0	1	21.4211	4.90E-16	21.4217	1	11/2/2008	20:00
0	43.6	0	0	11.1293	36.1125	0	1	NULL	0	21.1227	40.1211	0	1	21.3911	4.90E-16	21.3917	1	11/2/2008	21:00
0	43.6	0	0	11.0989	36.0125	0	1	NULL	0	21.1427	40.2211	0	1	21.5111	4.90E-16	21.5067	1	11/2/2008	22:00
0	43.6	0	0	11.1639	36.1125	0	1	NULL	0	21.1766	40.2211	0	1	21.8011	4.90E-16	21.8017	1	11/2/2008	23:00
0	43.6	0	0	11.1439	36.1125	0	1	NULL	0	21.1416	40.2211	0	1	21.8611	4.90E-16	21.8617	1	11/3/2008	0:00
0	43.6	0	0	11.1039	36.1125	0	1	NULL	0	21.1705	40.2711	0	1	22.0211	4.90E-16	22.0218	1	11/3/2008	1:00
0	43.6	0	0	11.1439	36.1125	0	1	NULL	0	21.1405	40.2211	0	1	22.2561	4.90E-16	22.2568	1	11/3/2008	2:00
0	43.6	0	0	11.1939	36.1125	0	1	NULL	0	21.1955	40.2211	0	1	21.1261	4.90E-16	21.1268	1	11/3/2008	3:00
0	43.6	0	0	11.1939	36.0125	0	1	NULL	0	21.2232	40.1211	0	1	21.1261	4.90E-16	21.1268	1	11/3/2008	4:00
0	43.6	0	0	11.2039	36.0125	0	1	NULL	0	21.2132	40.1711	0	1	21.3053	4.90E-16	21.3018	1	11/3/2008	5:00
0	43.6	0	0	11.2139	36.0125	0	1	NULL	0	21.2749	40.1711	0	1	21.2303	4.90E-16	21.2318	1	11/3/2008	6:00
0	43.6	0	0	11.2239	36.0125	0	1	NULL	0	21.2649	40.1211	0	1	21.4053	4.90E-16	21.4068	1	11/3/2008	7:00
0	43.65	0	0	11.2139	36.0125	0	1	NULL	0	21.2621	40.1211	0	1	22.0203	4.90E-16	22.0218	1	11/3/2008	8:00
0	43.5	0	0	11.2325	36.0125	0	1	NULL	0	21.2221	40.0211	0	1	21.2603	4.90E-16	21.2618	1	11/3/2008	9:00
0	43.5	0	0	11.2025	36.0125	0	1	NULL	0	21.2943	40.0211	0	1	21.2003	4.90E-16	21.2018	1	11/3/2008	10:00
0	44.8	0	0	-0.00249084	41.8625	0	0	NULL	0	21.5393	39.9211	0	1	13.0553	4.90E-16	13.0568	1	11/3/2008	11:00
0	45.5	0	0	-0.00249084	42.5625	0	0	NULL	0	21.4893	39.8515	0	1	14.1703	4.90E-16	14.1668	1	11/3/2008	12:00
0	45.95	0	0	-0.00249084	43.2	0	0	NULL	0	21.4918	39.9015	0	1	14.0653	4.90E-16	14.0668	1	11/3/2008	13:00
0	46.3	0	0	-0.00249084	43.55	0	0	NULL	0	21.5368	39.8515	0	1	14.5353	4.90E-16	14.5368	1	11/3/2008	14:00
0	46.75	0	0	-0.00249084	44.05	0	0	NULL	0	21.5818	39.7515	0	1	14.5062	4.90E-16	14.5068	1	11/3/2008	15:00
0	47.1	0	0	-0.00249084	44.35	0	0	NULL	0	21.6068	39.8015	0	1	14.6062	4.90E-16	14.6068	1	11/3/2008	16:00
0	47.45	0	0	-0.00249084	44.7	0	0	NULL	0	21.5817	39.6515	0	1	13.7712	4.90E-16	13.7718	1	11/3/2008	17:00
0	47.7	0	0	-0.00249084	45.05	0	0	NULL	0	21.6317	39.7015	0	1	13.8612	4.90E-16	13.8618	1	11/3/2008	18:00
0	48	0	0	-0.00249084	45.3	0	0	NULL	0	21.6217	39.7515	0	1	13.8612	4.90E-16	13.8618	1	11/3/2008	19:00
0	48.3	0	0	-0.00249084	45.45	0	0	NULL	0	21.6445	39.7015	0	1	13.2612	4.90E-16	13.2617	1	11/3/2008	20:00
0	48.55	0	0	-0.00249084	45.8	0	0	NULL	0	21.5995	39.7015	0	1	14.2262	4.90E-16	14.2267	1	11/3/2008	21:00
0	48.75	0	0	-0.00249084	45.95	0	0	NULL	0	21.6378	39.7015	0	1	14.3312	4.90E-16	14.3317	1	11/3/2008	22:00
0	49.05	0	0	-0.00249084	46.25	0	0	NULL	0	21.6128	39.6308	0	1	14.7562	4.90E-16	14.7567	1	11/3/2008	23:00
0	49.2	0	0	-0.00249084	46.55	0	0	NULL	0	21.6928	39.6308	0	1	14.8262	4.90E-16	14.8267	1	11/4/2008	0:00
0	49.35	0	0	-0.00249084	46.75	0	0	NULL	0	21.6728	39.5808	0	1	14.7996	4.90E-16	14.7967	1	11/4/2008	1:00
0	49.6	0	0	-0.00249084	46.85	0	0	NULL	0	21.6428	39.6808	0	1	14.9146	4.90E-16	14.9167	1	11/4/2008	2:00
0	49.75	0	0	-0.00249084	47.05	0	0	NULL	0	21.6911	39.5308	0	1	14.3596	4.90E-16	14.3567	1	11/4/2008	3:00
0	50	0	0	-0.00249084	47.3	0	0	NULL	0	21.7111	39.6808	0	1	14.2396	4.90E-16	14.2417	1	11/4/2008	4:00
0	50.25	0	0	-0.00249084	47.55	0	0	NULL	0	21.3777	39.7308	0	1	9.96458	4.90E-16	9.96172	1	11/4/2008	5:00

Caisson 1 Flow	Caisson 1 Level	Pump 1 Status Run	Pump 2 Status Run	Caisson 2 Flow	Caisson 2 Level	Pump 3 Status Run	Pump 4 Status Run	Caisson 6 Total Flow	Pump 11 Flow	Pump 12 Flow	Caisson 6 Level	Pump 11 Status Run	Pump 12 Status Run	54" Intertie Flow	54" Intertie Flow - North	54" Intertie Flow - South	54" Intertie Valve Status Open	Date	Interval
0	50.45	0	0	-0.00249084	47.75	0	0	NULL	0	21.4427	39.6808	0	1	9.87458	4.90E-16	9.87324	1	11/4/2008	6:00
0	50.55	0	0	-0.00249084	47.85	0	0	NULL	0	21.498	39.6808	0	1	9.25958	4.90E-16	9.25824	1	11/4/2008	7:00
0	50.7	0	0	-0.00249084	48	0	0	NULL	0	20.493	40.1308	0	1	-0.000421245	4.90E-16	-0.00175824	0	11/4/2008	8:00
0	50.95	0	0	-0.00249084	48.1	0	0	NULL	0	-0.00013431	45.3808	0	0	-0.000421245	4.90E-16	-0.00175824	0	11/4/2008	9:00
0	51.1	0	0	-0.00249084	48.35	0	0	NULL	0	-0.00013431	47.1808	0	0	10.1696	10.17	-0.00175824	1	11/4/2008	10:00
0	51.25	0	0	-0.00249084	48.5	0	0	NULL	0	-0.00013431	48.0143	0	0	10.0946	10.095	-0.00175824	1	11/4/2008	11:00
0	51.35	0	0	-0.00249084	48.75	0	0	NULL	0	-0.00013431	48.6643	0	0	10.0961	10.095	-0.00175824	1	11/4/2008	12:00
0	51.55	0	0	-0.00249084	48.85	0	0	NULL	0	20.2999	42.3643	0	1	0.00108059	2.65E-15	-0.00175824	0	11/4/2008	13:00
0	51.7	0	0	-0.00249084	49	0	0	NULL	0	20.3549	41.8643	0	1	0.00108059	2.65E-15	-0.00175824	0	11/4/2008	14:00
0	51.95	0	0	-0.00249084	49.1	0	0	NULL	0	20.368	41.6643	0	1	0.00108059	2.65E-15	-0.00175824	0	11/4/2008	15:00
0	51.95	0	0	-0.00249084	49.25	0	0	NULL	0	20.373	41.6143	0	1	0.00108059	2.65E-15	-0.00175824	0	11/4/2008	16:00
0	52.1	0	0	-0.00249084	49.35	0	0	NULL	0	20.2586	41.4643	0	1	0.00108059	2.65E-15	-0.00175824	0	11/4/2008	17:00
0	52.25	0	0	-0.00249084	49.55	0	0	NULL	0	20.4836	41.5643	0	1	0.00108059	2.65E-15	-0.00175824	0	11/4/2008	18:00
0	52.35	0	0	-0.00249084	49.55	0	0	NULL	0	20.4636	41.4143	0	1	0.00108059	2.65E-15	-0.00175824	0	11/4/2008	19:00
0	52.5	0	0	-0.00249084	49.8	0	0	NULL	0	21.3973	41.0143	0	1	9.37608	2.65E-15	9.37824	1	11/4/2008	20:00
0	52.6	0	0	-0.00249084	49.95	0	0	NULL	0	21.4173	40.8643	0	1	9.53608	2.65E-15	9.53824	1	11/4/2008	21:00
0	52.75	0	0	-0.00249084	50.05	0	0	NULL	0	21.4058	40.9643	0	1	10.2261	2.65E-15	10.2282	1	11/4/2008	22:00
0	52.75	0	0	-0.00249084	50.2	0	0	NULL	0	21.3808	40.8266	0	1	10.3311	2.65E-15	10.3282	1	11/4/2008	23:00
0	52.85	0	0	-0.00249084	50.25	0	0	NULL	0	21.3008	40.8266	0	1	10.3311	2.65E-15	10.3282	1	11/5/2008	0:00
0	53	0	0	-0.00249084	50.35	0	0	NULL	0	21.3364	40.7266	0	1	10.0511	2.65E-15	10.0532	1	11/5/2008	1:00
0	53.1	0	0	-0.00249084	50.35	0	0	NULL	0	21.3864	40.7266	0	1	9.84608	2.65E-15	9.84824	1	11/5/2008	2:00
0	53.25	0	0	-0.00249084	50.35	0	0	NULL	0	21.388	40.7266	0	1	9.71608	2.65E-15	9.71359	1	11/5/2008	3:00
0	53.35	0	0	-0.00249084	50.5	0	0	NULL	0	21.463	40.5266	0	1	9.01108	2.65E-15	9.00859	1	11/5/2008	4:00
0	53.35	0	0	-0.00249084	50.6	0	0	NULL	0	21.4552	40.6418	0	1	9.15612	2.65E-15	9.15859	1	11/5/2008	5:00
0	53.35	0	0	-0.00249084	50.75	0	0	NULL	0	21.5002	40.6918	0	1	8.27612	2.65E-15	8.27859	1	11/5/2008	6:00
0	53.5	0	0	-0.00249084	50.75	0	0	NULL	0	21.4452	40.5918	0	1	7.85112	2.65E-15	7.85359	1	11/5/2008	7:00
0	53.5	0	0	-0.00249084	50.75	0	0	NULL	0	21.4874	40.5918	0	1	8.45612	2.65E-15	8.45359	1	11/5/2008	8:00
0	53.6	0	0	-0.00249084	50.75	0	0	NULL	0	21.4874	40.5418	0	1	8.58612	2.65E-15	8.58359	1	11/5/2008	9:00
0	53.75	0	0	-0.00249084	50.85	0	0	NULL	0	21.4274	40.5418	0	1	8.16112	2.65E-15	8.16359	1	11/5/2008	10:00
0	53.75	0	0	-0.00249084	51	0	0	NULL	0	21.3624	40.5918	0	1	8.58612	2.65E-15	8.58359	1	11/5/2008	11:00
0	53.85	0	0	-0.00249084	51.1	0	0	NULL	0	21.4114	40.5418	0	1	8.60112	2.65E-15	8.59859	1	11/5/2008	12:00
0	53.85	0	0	-0.00249084	51.1	0	0	NULL	0	21.6864	40.4918	0	1	13.4211	2.65E-15	13.4224	1	11/5/2008	13:00
0	54	0	0	-0.00249084	51.25	0	0	NULL	0	21.6564	40.2918	0	1	13.3311	2.65E-15	13.3324	1	11/5/2008	14:00
0	54	0	0	-0.00249084	51.25	0	0	NULL	0	21.5895	40.3711	0	1	13.9051	2.65E-15	13.9024	1	11/5/2008	15:00
0	54	0	0	-0.00249084	51.35	0	0	NULL	0	21.6895	40.3211	0	1	13.4201	2.65E-15	13.4224	1	11/5/2008	16:00
0	54.1	0	0	-0.00249084	51.35	0	0	NULL	0	21.5912	40.3211	0	1	13.3501	2.65E-15	13.3474	1	11/5/2008	17:00
0	54.1	0	0	-0.00249084	51.35	0	0	NULL	0	21.6962	40.2211	0	1	12.3651	2.65E-15	12.3674	1	11/5/2008	18:00
0	54.1	0	0	-0.00249084	51.35	0	0	NULL	0	21.64	40.2211	0	1	12.4851	2.65E-15	12.4824	1	11/5/2008	19:00

Caisson 1 Flow	Caisson 1 Level	Pump 1 Status Run	Pump 2 Status Run	Caisson 2 Flow	Caisson 2 Level	Pump 3 Status Run	Pump 4 Status Run	Caisson 6 Total Flow	Pump 11 Flow	Pump 12 Flow	Caisson 6 Level	Pump 11 Status Run	Pump 12 Status Run	54" Intertie Flow	54" Intertie Flow - North	54" Intertie Flow - South	54" Intertie Valve Status Open	Date	Interval
0	54.1	0	0	-0.00249084	51.35	0	0	NULL	0	21.705	40.2211	0	1	12.8951	2.65E-15	12.8924	1	11/5/2008	20:00
0	54.1	0	0	-0.00249084	51.55	0	0	NULL	0	21.65	40.2211	0	1	12.9401	2.65E-15	12.9374	1	11/5/2008	21:00
0	54.1	0	0	-0.00249084	51.55	0	0	NULL	0	21.6483	40.2211	0	1	13.1001	2.65E-15	13.0982	1	11/5/2008	22:00
0	54.3	0	0	-0.00249084	51.7	0	0	NULL	0	21.6983	40.1711	0	1	14.1851	2.65E-15	14.1832	1	11/5/2008	23:00
0	54.3	0	0	-0.00249084	51.7	0	0	NULL	0	21.6122	40.1211	0	1	14.2588	2.65E-15	14.2582	1	11/6/2008	0:00
0	54.3	0	0	-0.00249084	51.7	0	0	NULL	0	21.6872	40.1211	0	1	14.2838	2.65E-15	14.2882	1	11/6/2008	1:00
0	54.45	0	0	-0.00249084	51.7	0	0	NULL	0	21.6478	40.1211	0	1	14.3588	2.65E-15	14.3582	1	11/6/2008	2:00
0	54.45	0	0	-0.00249084	51.7	0	0	NULL	0	21.6628	40.0711	0	1	14.5188	2.65E-15	14.5182	1	11/6/2008	3:00
0	54.45	0	0	-0.00249084	51.7	0	0	NULL	0	21.3428	40.12	0	1	9.24385	2.65E-15	9.24321	1	11/6/2008	4:00
0	54.45	0	0	-0.00249084	51.7	0	0	NULL	0	21.3753	40.22	0	1	9.34885	2.65E-15	9.34821	1	11/6/2008	5:00
0	54.45	0	0	-0.00249084	51.8	0	0	NULL	0	21.4003	40.17	0	1	9.24385	2.65E-15	9.24321	1	11/6/2008	6:00
0	54.45	0	0	-0.00249084	51.8	0	0	NULL	0	21.4713	40.12	0	1	8.29385	2.65E-15	8.29321	1	11/6/2008	7:00
0	54.45	0	0	-0.00249084	51.95	0	0	NULL	0	21.4213	40.22	0	1	9.00885	2.65E-15	9.00908	1	11/6/2008	8:00
0	54.55	0	0	-0.00249084	51.95	0	0	NULL	0	21.4063	40.27	0	1	9.36385	2.65E-15	9.36408	1	11/6/2008	9:00
0	54.55	0	0	-0.00249084	51.95	0	0	NULL	0	21.6903	40.07	0	1	11.2087	2.65E-15	11.2088	1	11/6/2008	10:00
0	54.55	0	0	-0.00249084	51.95	0	0	NULL	0	21.6853	40.02	0	1	11.3987	2.65E-15	11.3988	1	11/6/2008	11:00
0	54.55	0	0	-0.00249084	51.95	0	0	NULL	0	21.6306	40.07	0	1	11.3687	2.65E-15	11.3688	1	11/6/2008	12:00
0	54.55	0	0	-0.00249084	51.95	0	0	NULL	0	21.6256	39.9852	0	1	12.7187	2.65E-15	12.7188	1	11/6/2008	13:00
0	54.55	0	0	-0.00249084	51.95	0	0	NULL	0	21.6855	39.9852	0	1	13.6137	2.65E-15	13.6138	1	11/6/2008	14:00
0	54.7	0	0	-0.00249084	51.95	0	0	NULL	0	21.7655	39.9352	0	1	13.9637	2.65E-15	13.9638	1	11/6/2008	15:00
0	54.7	0	0	-0.00249084	51.95	0	0	NULL	0	21.6955	39.9352	0	1	14.0387	2.65E-15	14.0388	1	11/6/2008	16:00
0	54.7	0	0	-0.00249084	52.05	0	0	NULL	0	21.4943	39.9852	0	1	10.5937	2.65E-15	10.5938	1	11/6/2008	17:00
0	54.7	0	0	-0.00249084	52.05	0	0	NULL	0	21.5243	39.9852	0	1	9.62868	2.65E-15	9.62879	1	11/6/2008	18:00
0	54.7	0	0	-0.00249084	52.05	0	0	NULL	0	21.5007	39.9852	0	1	9.63868	2.65E-15	9.63879	1	11/6/2008	19:00
0	54.7	0	0	-0.00249084	52.2	0	0	NULL	0	21.4957	40.0852	0	1	9.21429	2.65E-15	9.21533	1	11/6/2008	20:00
0	54.7	0	0	-0.00249084	52.05	0	0	NULL	0	21.4974	39.9852	0	1	9.03929	2.65E-15	9.04033	1	11/6/2008	21:00
0	54.7	0	0	-0.00249084	52.2	0	0	NULL	0	21.4724	40.0352	0	1	10.0522	2.65E-15	10.0503	1	11/6/2008	22:00
0	54.7	0	0	-0.00249084	52.2	0	0	NULL	0	21.4424	40.0352	0	1	10.0522	2.65E-15	10.0503	1	11/6/2008	23:00
0	54.8	0	0	-0.00249084	52.05	0	0	NULL	0	21.4214	40.0352	0	1	10.5472	2.65E-15	10.5503	1	11/7/2008	0:00
0	54.7	0	0	-0.00249084	52.05	0	0	NULL	0	21.4714	40.0352	0	1	10.5372	2.65E-15	10.5353	1	11/7/2008	1:00
0	54.8	0	0	-0.00249084	52.05	0	0	NULL	0	21.4575	40.0852	0	1	10.5772	2.65E-15	10.5803	1	11/7/2008	2:00
0	54.8	0	0	-0.00249084	52.2	0	0	NULL	0	21.4225	39.9852	0	1	10.5772	2.65E-15	10.5803	1	11/7/2008	3:00
0	54.8	0	0	-0.00249084	52.05	0	0	NULL	0	21.4474	40.0863	0	1	9.2322	2.65E-15	9.23033	1	11/7/2008	4:00
0	54.8	0	0	-0.00249084	52.2	0	0	NULL	0	21.2574	40.0363	0	1	7.2972	2.65E-15	7.29533	1	11/7/2008	5:00
0	54.8	0	0	-0.00249084	52.2	0	0	NULL	0	21.2874	39.9863	0	1	7.1522	2.65E-15	7.14879	1	11/7/2008	6:00
0	54.8	0	0	-0.00249084	52.2	0	0	NULL	0	21.382	40.0863	0	1	5.86115	2.65E-15	5.85879	1	11/7/2008	7:00
0	54.8	0	0	-0.00249084	52.2	0	0	NULL	0	21.277	40.0863	0	1	6.55115	2.65E-15	6.54879	1	11/7/2008	8:00
0	54.8	0	0	-0.00249084	52.2	0	0	NULL	0	21.0367	40.1363	0	1	3.89615	2.65E-15	3.89879	1	11/7/2008	9:00

Caisson 1 Flow	Caisson 1 Level	Pump 1 Status Run	Pump 2 Status Run	Caisson 2 Flow	Caisson 2 Level	Pump 3 Status Run	Pump 4 Status Run	Caisson 6 Total Flow	Pump 11 Flow	Pump 12 Flow	Caisson 6 Level	Pump 11 Status Run	Pump 12 Status Run	54" Intertie Flow	54" Intertie Flow - North	54" Intertie Flow - South	54" Intertie Valve Status Open	Date	Interval
0	54.8	0	0	-0.00249084	52.2	0	0	NULL	0	20.9967	40.0863	0	1	4.20615	2.65E-15	4.20379	1	11/7/2008	10:00
0	54.8	0	0	-0.00249084	52.2	0	0	NULL	0	20.9208	40.2863	0	1	5.34615	2.65E-15	5.34879	1	11/7/2008	11:00
0	54.95	0	0	-0.00249084	52.2	0	0	NULL	0	20.8908	40.2863	0	1	5.30615	2.65E-15	5.30379	1	11/7/2008	12:00
0	54.95	0	0	-0.00249084	52.2	0	0	NULL	0	20.9258	40.2048	0	1	5.37615	2.65E-15	5.37879	1	11/7/2008	13:00
0	54.8	0	0	-0.00249084	52.2	0	0	NULL	0	20.9302	40.2548	0	1	5.30615	2.65E-15	5.30379	1	11/7/2008	14:00
0	54.8	0	0	-0.00249084	52.3	0	0	NULL	0	20.9102	40.2048	0	1	5.34615	2.65E-15	5.34938	1	11/7/2008	15:00
0	54.8	0	0	-0.00249084	52.2	0	0	NULL	0	20.8752	40.1548	0	1	5.24615	2.65E-15	5.24438	1	11/7/2008	16:00
0	54.8	0	0	-0.00249084	52.2	0	0	NULL	0	20.9602	40.2548	0	1	5.21473	2.65E-15	5.21438	1	11/7/2008	17:00
0	54.8	0	0	-0.00249084	52.2	0	0	NULL	0	20.9508	40.2548	0	1	3.71973	2.65E-15	3.71938	1	11/7/2008	18:00
0	54.8	0	0	-0.00249084	52.2	0	0	NULL	0	20.9408	40.2048	0	1	3.85473	2.65E-15	3.85438	1	11/7/2008	19:00
0	54.8	0	0	-0.00249084	52.2	0	0	NULL	0	20.9658	40.2048	0	1	4.29473	2.65E-15	4.29438	1	11/7/2008	20:00
0	54.85	0	0	-0.00249084	52.3	0	0	NULL	0	20.8814	40.2048	0	1	5.40473	2.65E-15	5.40438	1	11/7/2008	21:00
0	54.95	0	0	-0.00249084	52.2	0	0	NULL	0	20.9214	40.2048	0	1	5.44973	2.65E-15	5.44938	1	11/7/2008	22:00
0	54.95	0	0	-0.00249084	52.2	0	0	NULL	0	20.8347	40.2048	0	1	5.56973	2.65E-15	5.56938	1	11/7/2008	23:00
0	54.95	0	0	-0.00249084	52.3	0	0	NULL	0	20.0897	40.4548	0	1	-0.000274725	2.65E-15	-0.000622711	0	11/8/2008	0:00
0	54.95	0	0	-0.00249084	52.3	0	0	NULL	0	20.1597	40.5548	0	1	-0.000274725	2.65E-15	-0.000622711	0	11/8/2008	1:00
0	54.95	0	0	-0.00249084	52.3	0	0	NULL	0	20.0815	40.7048	0	1	-0.000274725	2.65E-15	-0.000622711	0	11/8/2008	2:00
0	54.95	0	0	-0.00249084	52.3	0	0	NULL	0	20.1015	40.5048	0	1	-0.000274725	2.65E-15	-0.000622711	0	11/8/2008	3:00
0	54.95	0	0	-0.00249084	52.3	0	0	NULL	0	20.1809	40.6548	0	1	-0.000274725	2.65E-15	-0.000622711	0	11/8/2008	4:00
0	54.95	0	0	-0.00249084	52.3	0	0	NULL	0	20.3909	40.5059	0	1	-0.000274725	2.65E-15	-0.000622711	0	11/8/2008	5:00
0	54.95	0	0	-0.00249084	52.3	0	0	NULL	0	20.3552	40.5559	0	1	-0.000274725	2.65E-15	-0.000622711	0	11/8/2008	6:00
0	54.95	0	0	-0.00249084	52.3	0	0	NULL	0	20.3602	40.4559	0	1	-0.000274725	2.65E-15	-0.000622711	0	11/8/2008	7:00
0	54.95	0	0	-0.00249084	52.3	0	0	NULL	0	21.5402	40.1559	0	1	12.8647	2.65E-15	12.8644	1	11/8/2008	8:00
0	54.95	0	0	-0.00249084	52.3	0	0	NULL	0	21.6618	40.0059	0	1	12.2497	2.65E-15	12.2505	1	11/8/2008	9:00
0	54.95	0	0	-0.00249084	52.3	0	0	NULL	0	21.6668	39.8559	0	1	11.9247	2.65E-15	11.9255	1	11/8/2008	10:00
0	54.95	0	0	-0.00249084	52.3	0	0	NULL	0	21.6056	39.9559	0	1	11.9728	2.65E-15	11.9705	1	11/8/2008	11:00
0	54.95	0	0	-0.00249084	52.3	0	0	NULL	0	21.6606	39.9559	0	1	12.1628	2.65E-15	12.1605	1	11/8/2008	12:00
0	54.95	0	0	-0.00249084	52.2875	0	0	NULL	0	21.2587	40.0559	0	1	7.19278	2.65E-15	7.19548	1	11/8/2008	13:00
0	54.95	0	0	-0.00249084	52.4375	0	0	NULL	0	21.2187	39.9559	0	1	6.90278	2.65E-15	6.90048	1	11/8/2008	14:00
0	54.95	0	0	-0.00249084	52.4375	0	0	NULL	0	21.1537	40.0178	0	1	7.82278	2.65E-15	7.82548	1	11/8/2008	15:00
0	54.95	0	0	-0.00249084	52.4375	0	0	NULL	0	21.15	40.0178	0	1	8.35278	2.65E-15	8.35048	1	11/8/2008	16:00
0	54.925	0	0	-0.00249084	52.4375	0	0	NULL	0	21.17	40.0178	0	1	8.36778	2.65E-15	8.36548	1	11/8/2008	17:00
0	55.075	0	0	-0.00249084	52.4375	0	0	NULL	0	21.1433	40.0178	0	1	8.40778	2.65E-15	8.41048	1	11/8/2008	18:00
0	54.925	0	0	-0.00249084	52.4375	0	0	NULL	0	21.1783	40.0178	0	1	8.43778	2.65E-15	8.43817	1	11/8/2008	19:00
0	55.075	0	0	-0.00249084	52.2875	0	0	NULL	0	21.1533	40.0678	0	1	8.67278	2.65E-15	8.67317	1	11/8/2008	20:00
0	55.075	0	0	-0.00249084	52.2875	0	0	NULL	0	21.1733	40.0678	0	1	8.77864	2.65E-15	8.77817	1	11/8/2008	21:00
0	54.925	0	0	-0.00249084	52.4375	0	0	NULL	0	21.2133	40.0178	0	1	7.95364	2.65E-15	7.95817	1	11/8/2008	22:00
0	55.075	0	0	-0.00249084	52.2875	0	0	NULL	0	21.1155	40.0178	0	1	9.03864	2.65E-15	9.03817	1	11/8/2008	23:00

Caisson 1 Flow	Caisson 1 Level	Pump 1 Status Run	Pump 2 Status Run	Caisson 2 Flow	Caisson 2 Level	Pump 3 Status Run	Pump 4 Status Run	Caisson 6 Total Flow	Pump 11 Flow	Pump 12 Flow	Caisson 6 Level	Pump 11 Status Run	Pump 12 Status Run	54" Intertie Flow	54" Intertie Flow - North	54" Intertie Flow - South	54" Intertie Valve Status Open	Date	Interval
0	54.925	0	0	-0.00249084	52.2875	0	0	NULL	0	21.1305	40.0178	0	1	9.12864	2.65E-15	9.12817	1	11/9/2008	0:00
0	54.925	0	0	-0.00249084	52.2875	0	0	NULL	0	21.1644	40.0178	0	1	9.21364	2.65E-15	9.21817	1	11/9/2008	1:00
0	55.075	0	0	-0.00249084	52.2875	0	0	NULL	0	21.1944	40.0178	0	1	9.34864	2.65E-15	9.34817	1	11/9/2008	2:00
0	55.075	0	0	-0.00249084	52.2875	0	0	NULL	0	21.1344	40.0178	0	1	9.40864	2.65E-15	9.40817	1	11/9/2008	3:00
0	55.075	0	0	-0.00249084	52.4375	0	0	NULL	0	21.2282	40.0178	0	1	8.21864	2.65E-15	8.21817	1	11/9/2008	4:00
0	54.925	0	0	-0.00249084	52.4375	0	0	NULL	0	21.2782	39.9678	0	1	8.18864	2.65E-15	8.19152	1	11/9/2008	5:00
0	54.975	0	0	-0.00249084	52.4375	0	0	NULL	0	21.2493	39.9178	0	1	8.21864	2.65E-15	8.22152	1	11/9/2008	6:00
0	54.975	0	0	-0.00249084	52.4375	0	0	NULL	0	21.2593	39.9678	0	1	9.18786	2.65E-15	9.18652	1	11/9/2008	7:00
0	54.975	0	0	-0.00249084	52.4375	0	0	NULL	0	21.2171	39.9178	0	1	8.96786	2.65E-15	8.96652	1	11/9/2008	8:00
0	54.975	0	0	-0.00249084	52.4375	0	0	NULL	0	21.3121	39.9178	0	1	8.84786	2.65E-15	8.85152	1	11/9/2008	9:00
0	54.975	0	0	-0.00249084	52.4375	0	0	NULL	0	21.3271	39.9178	0	1	7.58786	2.65E-15	7.59152	1	11/9/2008	10:00
0	54.975	0	0	-0.00249084	52.4375	0	0	NULL	0	21.3371	39.7656	0	1	7.51786	2.65E-15	7.51652	1	11/9/2008	11:00
0	54.975	0	0	-0.00249084	52.4375	0	0	NULL	0	21.4021	39.8156	0	1	8.51286	2.65E-15	8.51152	1	11/9/2008	12:00
0	54.975	0	0	-0.00249084	52.4375	0	0	NULL	0	21.3542	39.8656	0	1	8.60286	2.65E-15	8.60152	1	11/9/2008	13:00
0	54.975	0	0	-0.00249084	52.4375	0	0	NULL	0	21.2442	39.7656	0	1	9.59786	2.65E-15	9.59652	1	11/9/2008	14:00
0	54.975	0	0	-0.00249084	52.2875	0	0	NULL	0	21.2554	39.7656	0	1	9.64286	2.65E-15	9.64207	1	11/9/2008	15:00
0	54.975	0	0	-0.00249084	52.2875	0	0	NULL	0	21.2954	39.8656	0	1	9.77286	2.65E-15	9.77207	1	11/9/2008	16:00
0	54.975	0	0	-0.00249084	52.2875	0	0	NULL	0	21.3454	39.7156	0	1	9.41903	2.65E-15	9.42207	1	11/9/2008	17:00
0	54.975	0	0	-0.00249084	52.2875	0	0	NULL	0	21.3026	39.8156	0	1	9.18903	2.65E-15	9.18707	1	11/9/2008	18:00
0	54.975	0	0	-0.00249084	52.2875	0	0	NULL	0	21.3376	39.8156	0	1	8.21903	2.65E-15	8.22207	1	11/9/2008	19:00
0	54.975	0	0	-0.00249084	52.2875	0	0	NULL	0	21.3042	39.7156	0	1	8.73403	2.65E-15	8.73207	1	11/9/2008	20:00
0	54.975	0	0	-0.00249084	52.2875	0	0	NULL	0	21.3242	39.8156	0	1	9.77403	2.65E-15	9.77207	1	11/9/2008	21:00
0	54.975	0	0	-0.00249084	52.2875	0	0	NULL	0	21.2954	39.8156	0	1	9.94903	2.65E-15	9.94707	1	11/9/2008	22:00
0	54.975	0	0	-0.00249084	52.2875	0	0	NULL	0	21.2504	39.8319	0	1	10.079	2.65E-15	10.0821	1	11/9/2008	23:00
0	54.975	0	0	-0.00249084	52.2875	0	0	NULL	0	21.2737	39.8319	0	1	10.169	2.65E-15	10.1671	1	11/10/2008	0:00
0	54.975	0	0	-0.00249084	52.2875	0	0	NULL	0	21.3087	39.6819	0	1	10.254	2.65E-15	10.2582	1	11/10/2008	1:00
0	54.975	0	0	-0.00249084	52.2875	0	0	NULL	0	21.6887	39.5319	0	1	15.004	2.65E-15	15.0032	1	11/10/2008	2:00
0	54.975	0	0	-0.00249084	52.2875	0	0	NULL	0	21.5867	39.6319	0	1	14.8558	2.65E-15	14.8582	1	11/10/2008	3:00
0	54.975	0	0	-0.00249084	52.2875	0	0	NULL	0	21.7467	39.5819	0	1	13.2308	2.65E-15	13.2332	1	11/10/2008	4:00
0	54.975	0	0	-0.00249084	52.2875	0	0	NULL	0	21.7394	39.5819	0	1	12.8658	2.65E-15	12.8632	1	11/10/2008	5:00
0	54.975	0	0	-0.00249084	52.2875	0	0	NULL	0	21.7644	39.5819	0	1	12.9508	2.65E-15	12.9532	1	11/10/2008	6:00
0	54.975	0	0	-0.00249084	52.1875	0	0	NULL	0	21.7694	39.5819	0	1	12.9658	2.65E-15	12.9682	1	11/10/2008	7:00
0	54.975	0	0	-0.00249084	52.1875	0	0	NULL	0	20.9338	39.8319	0	1	0.000750916	2.65E-15	-0.00184982	1	11/10/2008	8:00
0	54.975	0	0	-0.00249084	52.3375	0	0	NULL	0	20.9038	39.8319	0	1	0.000750916	2.65E-15	-0.00184982	1	11/10/2008	9:00
7.715	44.375	0	1	-0.00249084	51.4375	0	0	NULL	0	20.3286	40.0319	0	1	7.63575	2.65E-15	7.63315	1	11/10/2008	10:00
10.364	42.175	0	1	-0.00249084	50.1875	0	0	NULL	0	20.3036	40.1689	0	1	9.87511	2.65E-15	9.87685	1	11/10/2008	11:00
10.4006	41.325	0	1	-0.00249084	49.5375	0	0	NULL	0	20.3806	40.1189	0	1	13.5971	2.65E-15	13.5968	1	11/10/2008	12:00
10.4156	41.075	0	1	-0.00249084	49.1375	0	0	NULL	0	20.3606	40.0189	0	1	13.6421	2.65E-15	13.6418	1	11/10/2008	13:00

Caisson 1 Flow	Caisson 1 Level	Pump 1 Status Run	Pump 2 Status Run	Caisson 2 Flow	Caisson 2 Level	Pump 3 Status Run	Pump 4 Status Run	Caisson 6 Total Flow	Pump 11 Flow	Pump 12 Flow	Caisson 6 Level	Pump 11 Status Run	Pump 12 Status Run	54" Intertie Flow	54" Intertie Flow - North	54" Intertie Flow - South	54" Intertie Valve Status Open	Date	Interval
10.4556	40.675	0	1	-0.00249084	48.7375	0	0	NULL	0	20.4785	40.1189	0	1	13.9171	2.65E-15	13.9208	1	11/10/2008	14:00
10.7156	39.825	0	1	-0.00249084	48.3875	0	0	NULL	0	20.8585	39.9189	0	1	17.8771	2.65E-15	17.8758	1	11/10/2008	15:00
10.8056	39.475	0	1	-0.00249084	48.1375	0	0	NULL	0	20.9535	39.8189	0	1	16.6021	2.65E-15	16.6008	1	11/10/2008	16:00
10.8139	39.125	0	1	-0.00249084	47.8875	0	0	NULL	0	20.9324	39.8656	0	1	16.5271	2.65E-15	16.5258	1	11/10/2008	17:00
11.0239	38.425	0	1	-0.00249084	47.6375	0	0	NULL	0	21.3024	39.5656	0	1	20.9971	2.65E-15	20.9958	1	11/10/2008	18:00
11.0939	38.175	0	1	-0.00249084	47.4375	0	0	NULL	0	21.3408	39.5656	0	1	27.0601	2.65E-15	27.0608	1	11/10/2008	19:00
11.1589	37.925	0	1	-0.00249084	47.1375	0	0	NULL	0	21.3658	39.5656	0	1	26.8001	2.65E-15	26.8008	1	11/10/2008	20:00
11.1039	37.825	0	1	-0.00249084	46.9875	0	0	NULL	0	21.3308	39.4656	0	1	27.0901	2.65E-15	27.094	1	11/10/2008	21:00
11.0389	37.675	0	1	-0.00249084	46.6875	0	0	NULL	0	21.2798	39.5156	0	1	27.8951	2.65E-15	27.899	1	11/10/2008	22:00
11.0689	37.575	0	1	-0.00249084	46.5875	0	0	NULL	0	21.2748	39.5156	0	1	28.1751	2.65E-15	28.174	1	11/10/2008	23:00
11.1939	37.125	0	1	-0.00249084	46.3875	0	0	NULL	0	21.5363	39.4156	0	1	26.2551	2.65E-15	26.254	1	11/11/2008	0:00
11.2539	36.825	0	1	-0.00249084	46.2375	0	0	NULL	0	21.5463	39.5156	0	1	25.2451	2.65E-15	25.244	1	11/11/2008	1:00
11.1939	36.675	0	1	-0.00249084	46.1375	0	0	NULL	0	21.5646	39.3156	0	1	24.9651	2.65E-15	24.969	1	11/11/2008	2:00
11.2539	36.525	0	1	-0.00249084	45.9875	0	0	NULL	0	21.6246	39.4156	0	1	24.2051	2.65E-15	24.204	1	11/11/2008	3:00
11.2398	36.375	0	1	-0.00249084	45.8375	0	0	NULL	0	21.5746	39.3656	0	1	24.4851	2.65E-15	24.484	1	11/11/2008	4:00
11.2598	36.125	0	1	-0.00249084	45.6375	0	0	NULL	0	21.624	39.3156	0	1	24.2027	2.65E-15	24.204	1	11/11/2008	5:00
11.2098	35.975	0	1	-0.00249084	45.4875	0	0	NULL	0	21.634	39.2601	0	1	24.1477	2.65E-15	24.149	1	11/11/2008	6:00
11.3181	35.875	0	1	-0.00249084	45.3375	0	0	NULL	0	21.6139	39.2101	0	1	23.7227	2.65E-15	23.7202	1	11/11/2008	7:00
11.2881	35.725	0	1	-0.00249084	45.1875	0	0	NULL	0	21.6889	39.1101	0	1	22.8577	2.65E-15	22.8552	1	11/11/2008	8:00
11.2581	35.575	0	1	-0.00249084	45.0875	0	0	NULL	0	21.6539	39.2101	0	1	23.2827	2.65E-15	23.2802	1	11/11/2008	9:00
11.2331	35.425	0	1	-0.00249084	45.0875	0	0	NULL	0	21.6584	39.2101	0	1	23.7227	2.65E-15	23.7202	1	11/11/2008	10:00
11.0281	35.675	0	1	-0.00249084	44.9375	0	0	NULL	0	21.2684	39.1101	0	1	18.9877	2.65E-15	18.9902	1	11/11/2008	11:00
10.5931	36.175	0	1	-0.00249084	44.8375	0	0	NULL	0	20.7688	39.2601	0	1	14.3877	2.65E-15	14.3902	1	11/11/2008	12:00
10.5931	36.225	0	1	-0.00249084	44.8375	0	0	NULL	0	20.7388	39.3101	0	1	15.0477	2.65E-15	15.0452	1	11/11/2008	13:00
10.8631	35.625	0	1	-0.00249084	44.6375	0	0	NULL	0	21.0977	39.1601	0	1	19.4277	2.65E-15	19.4302	1	11/11/2008	14:00
10.8631	35.625	0	1	-0.00249084	44.4875	0	0	NULL	0	21.1427	39.2101	0	1	19.5336	2.65E-15	19.5302	1	11/11/2008	15:00
10.8881	35.475	0	1	-0.00249084	44.3375	0	0	NULL	0	21.0844	39.0764	0	1	19.5586	2.65E-15	19.5602	1	11/11/2008	16:00
10.9381	35.225	0	1	-0.00249084	44.3375	0	0	NULL	0	21.1794	39.0764	0	1	18.2436	2.65E-15	18.2397	1	11/11/2008	17:00
10.9364	35.125	0	1	-0.00249084	44.1875	0	0	NULL	0	21.2044	39.0764	0	1	18.2286	2.65E-15	18.2247	1	11/11/2008	18:00
10.9514	35.125	0	1	-0.00249084	44.0875	0	0	NULL	0	21.2222	38.9764	0	1	19.0186	2.65E-15	19.0197	1	11/11/2008	19:00
10.9664	34.975	0	1	-0.00249084	44.0875	0	0	NULL	0	21.2372	38.9764	0	1	19.8686	2.65E-15	19.8697	1	11/11/2008	20:00
10.9164	34.975	0	1	-0.00249084	43.9375	0	0	NULL	0	21.1588	39.0764	0	1	19.8086	2.65E-15	19.8097	1	11/11/2008	21:00
10.8864	34.8125	0	1	-0.00249084	43.9375	0	0	NULL	0	21.2188	39.0264	0	1	20.3786	2.65E-15	20.3797	1	11/11/2008	22:00
10.8864	34.6625	0	1	-0.00249084	43.8375	0	0	NULL	0	21.1344	38.9764	0	1	20.4986	2.65E-15	20.4997	1	11/11/2008	23:00
10.9214	34.6625	0	1	-0.00249084	43.8375	0	0	NULL	0	21.1744	38.9764	0	1	20.6736	2.65E-15	20.6747	1	11/12/2008	0:00
10.8814	34.6625	0	1	-0.00249084	43.6875	0	0	NULL	0	21.18	38.9764	0	1	20.8376	2.65E-15	20.8347	1	11/12/2008	1:00
10.8864	34.5625	0	1	-0.00249084	43.5875	0	0	NULL	0	21.18	38.9264	0	1	20.8626	2.65E-15	20.8647	1	11/12/2008	2:00
10.8864	34.4125	0	1	-0.00249084	43.4375	0	0	NULL	0	21.205	38.8405	0	1	20.5876	2.65E-15	20.5877	1	11/12/2008	3:00

Caisson 1 Flow	Caisson 1 Level	Pump 1 Status Run	Pump 2 Status Run	Caisson 2 Flow	Caisson 2 Level	Pump 3 Status Run	Pump 4 Status Run	Caisson 6 Total Flow	Pump 11 Flow	Pump 12 Flow	Caisson 6 Level	Pump 11 Status Run	Pump 12 Status Run	54" Intertie Flow	54" Intertie Flow - North	54" Intertie Flow - South	54" Intertie Valve Status Open	Date	Interval
10.9464	34.3125	0	1	-0.00249084	43.4375	0	0	NULL	0	21.215	38.7905	0	1	20.1176	2.65E-15	20.1177	1	11/12/2008	4:00
10.9247	34.3125	0	1	-0.00249084	43.3375	0	0	NULL	0	21.21	38.7905	0	1	20.0576	2.65E-15	20.0577	1	11/12/2008	5:00
11.0197	34.0625	0	1	-0.00249084	43.3375	0	0	NULL	0	21.2498	38.6405	0	1	19.6926	2.65E-15	19.6927	1	11/12/2008	6:00
10.9947	33.9125	0	1	-0.00249084	43.1875	0	0	NULL	0	21.3698	38.6905	0	1	18.4626	2.65E-15	18.4627	1	11/12/2008	7:00
10.9797	33.9125	0	1	-0.00249084	43.1875	0	0	NULL	0	21.2648	38.6905	0	1	19.3126	2.65E-15	19.3127	1	11/12/2008	8:00
10.9947	33.9125	0	1	-0.00249084	43.0875	0	0	NULL	0	21.3443	38.6405	0	1	19.9276	2.65E-15	19.9277	1	11/12/2008	9:00
11.0097	33.8125	0	1	-0.00249084	42.9375	0	0	NULL	0	21.3143	38.6405	0	1	20.0126	2.65E-15	20.0127	1	11/12/2008	10:00
11.0097	33.7125	0	1	-0.00249084	42.8375	0	0	NULL	0	21.2754	38.6405	0	1	20.029	2.65E-15	20.0277	1	11/12/2008	11:00
11.0197	33.7125	0	1	-0.00249084	42.8375	0	0	NULL	0	21.3854	38.4905	0	1	20.119	2.65E-15	20.1177	1	11/12/2008	12:00
10.9647	33.5625	0	1	-0.00249084	42.6875	0	0	NULL	0	21.2926	38.5905	0	1	20.659	2.65E-15	20.6606	1	11/12/2008	13:00
11.0097	33.1125	0	1	-0.00249084	42.6875	0	0	NULL	0	21.3426	38.5405	0	1	20.659	2.65E-15	20.6606	1	11/12/2008	14:00
10.9647	33.3625	0	1	-0.00249084	42.6875	0	0	NULL	0	21.1826	38.4905	0	1	20.719	2.65E-15	20.7156	1	11/12/2008	15:00
11.0397	33.3125	0	1	-0.00249084	42.6875	0	0	NULL	0	21.2621	38.3405	0	1	19.604	2.65E-15	19.6056	1	11/12/2008	16:00
11.0037	33.3125	0	1	-0.00249084	42.4875	0	0	NULL	0	21.3071	38.3665	0	1	19.619	2.65E-15	19.6206	1	11/12/2008	17:00
10.9987	33.1125	0	1	-0.00249084	42.4875	0	0	NULL	0	21.3192	38.3665	0	1	25.729	2.65E-15	25.7306	1	11/12/2008	18:00
10.9987	33.1125	0	1	-0.00249084	42.4875	0	0	NULL	0	21.3742	38.3665	0	1	26.929	2.65E-15	26.9306	1	11/12/2008	19:00
11.0237	33.1125	0	1	-0.00249084	42.3375	0	0	NULL	0	21.2815	38.2665	0	1	27.459	2.65E-15	27.4556	1	11/12/2008	20:00
11.0187	33.0125	0	1	-0.00249084	42.3375	0	0	NULL	0	21.3915	38.2665	0	1	26.7993	2.65E-15	26.8006	1	11/12/2008	21:00
11.0237	33.0125	0	1	-0.00249084	42.1875	0	0	NULL	0	21.3815	38.2165	0	1	26.8593	2.65E-15	26.8556	1	11/12/2008	22:00
11.0237	33.0125	0	1	-0.00249084	42.1875	0	0	NULL	0	21.2959	38.1665	0	1	27.0343	2.65E-15	27.0331	1	11/12/2008	23:00
10.9237	33.0125	0	1	-0.00249084	42.1875	0	0	NULL	0	21.1559	38.1665	0	1	21.1593	2.65E-15	21.1581	1	11/13/2008	0:00
10.8987	33.0125	0	1	-0.00249084	42.0875	0	0	NULL	0	21.1355	38.2165	0	1	21.3343	2.65E-15	21.3331	1	11/13/2008	1:00
10.8787	33.0125	0	1	-0.00249084	42.0875	0	0	NULL	0	21.1705	38.2665	0	1	21.2743	2.65E-15	21.2731	1	11/13/2008	2:00
10.8787	32.8625	0	1	-0.00249084	41.9375	0	0	NULL	0	21.1705	38.2665	0	1	21.2443	2.65E-15	21.2431	1	11/13/2008	3:00
10.8987	32.7625	0	1	-0.00249084	41.9375	0	0	NULL	0	21.2455	38.2165	0	1	19.8993	2.65E-15	19.8981	1	11/13/2008	4:00
10.8887	32.7625	0	1	-0.00249084	41.7875	0	0	NULL	0	21.2405	38.1817	0	1	20.1893	2.65E-15	20.1881	1	11/13/2008	5:00
10.9354	32.7625	0	1	-0.00249084	41.7875	0	0	NULL	0	21.2354	38.1317	0	1	19.5443	2.65E-15	19.5481	1	11/13/2008	6:00
10.9804	32.5625	0	1	-0.00249084	41.7875	0	0	NULL	0	21.3804	38.0317	0	1	18.2395	2.65E-15	18.2431	1	11/13/2008	7:00
10.9354	32.5625	0	1	-0.00249084	41.7875	0	0	NULL	0	21.2959	38.0317	0	1	19.0345	2.65E-15	19.0309	1	11/13/2008	8:00
10.9504	32.5625	0	1	-0.00249084	41.6875	0	0	NULL	0	21.3259	38.0317	0	1	18.8845	2.65E-15	18.8859	1	11/13/2008	9:00
10.9604	32.4625	0	1	-0.00249084	41.6875	0	0	NULL	0	21.2465	38.0817	0	1	19.2945	2.65E-15	19.2959	1	11/13/2008	10:00
10.9954	32.3125	0	1	-0.00249084	41.6875	0	0	NULL	0	21.3365	37.9317	0	1	20.9545	2.65E-15	20.9509	1	11/13/2008	11:00
10.9754	32.3125	0	1	-0.00249084	41.6875	0	0	NULL	0	21.2576	37.8817	0	1	21.3795	2.65E-15	21.3759	1	11/13/2008	12:00
10.9354	32.3125	0	1	-0.00249084	41.5375	0	0	NULL	0	21.2326	37.7817	0	1	21.4945	2.65E-15	21.4959	1	11/13/2008	13:00
10.9954	32.2125	0	1	-0.00249084	41.5375	0	0	NULL	0	21.2376	37.7817	0	1	21.8595	2.65E-15	21.8609	1	11/13/2008	14:00
10.9604	32.2125	0	1	-0.00249084	41.4375	0	0	NULL	0	21.2216	37.7817	0	1	21.8045	2.65E-15	21.8009	1	11/13/2008	15:00
10.9354	32.2125	0	1	-0.00249084	41.4375	0	0	NULL	0	21.2816	37.7817	0	1	20.7195	2.65E-15	20.7159	1	11/13/2008	16:00
10.9837	32.0125	0	1	-0.00249084	41.4375	0	0	NULL	0	21.3415	37.7317	0	1	20.4378	2.65E-15	20.4396	1	11/13/2008	17:00

Caisson 1 Flow	Caisson 1 Level	Pump 1 Status Run	Pump 2 Status Run	Caisson 2 Flow	Caisson 2 Level	Pump 3 Status Run	Pump 4 Status Run	Caisson 6 Total Flow	Pump 11 Flow	Pump 12 Flow	Caisson 6 Level	Pump 11 Status Run	Pump 12 Status Run	54" Intertie Flow	54" Intertie Flow - North	54" Intertie Flow - South	54" Intertie Valve Status Open	Date	Interval
11.1287	31.7625	0	1	-0.00249084	41.2875	0	0	NULL	0	21.5465	37.5817	0	1	23.9128	2.65E-15	23.9146	1	11/13/2008	18:00
11.0487	32.0125	0	1	-0.00249084	41.2875	0	0	NULL	0	21.3919	37.6317	0	1	26.3578	2.65E-15	26.3596	1	11/13/2008	19:00
11.0387	31.8625	0	1	-0.00249084	41.1875	0	0	NULL	0	21.3919	37.6088	0	1	26.7228	2.65E-15	26.7246	1	11/13/2008	20:00
11.0487	31.8625	0	1	-0.00249084	41.3375	0	0	NULL	0	21.3719	37.5588	0	1	27.3982	2.65E-15	27.3996	1	11/13/2008	21:00
10.9987	31.8625	0	1	-0.00249084	41.1875	0	0	NULL	0	21.3064	37.6088	0	1	28.2782	2.65E-15	28.2796	1	11/13/2008	22:00
11.0237	31.8625	0	1	-0.00249084	41.1875	0	0	NULL	0	21.3514	37.6088	0	1	28.6032	2.65E-15	28.5996	1	11/13/2008	23:00
11.0537	31.6125	0	1	-0.00249084	41.0375	0	0	NULL	0	21.4347	37.5588	0	1	25.9332	2.65E-15	25.9346	1	11/14/2008	0:00
11.1087	31.5125	0	1	-0.00249084	41.0375	0	0	NULL	0	21.4697	37.5588	0	1	25.8882	2.65E-15	25.8896	1	11/14/2008	1:00
11.0937	31.5125	0	1	-0.00249084	40.9375	0	0	NULL	0	21.4447	37.3588	0	1	26.0932	2.65E-15	26.0946	1	11/14/2008	2:00
11.1437	31.5125	0	1	-0.00249084	40.9375	0	0	NULL	0	21.4763	37.4588	0	1	25.8482	2.65E-15	25.8439	1	11/14/2008	3:00
10.9587	31.6125	0	1	-0.00249084	40.9375	0	0	NULL	0	21.2263	37.4088	0	1	21.5982	2.65E-15	21.5989	1	11/14/2008	4:00
10.9581	31.6125	0	1	-0.00249084	40.9375	0	0	NULL	0	21.2743	37.4088	0	1	21.5532	2.65E-15	21.5539	1	11/14/2008	5:00
10.9731	31.6125	0	1	-0.00249084	40.9375	0	0	NULL	0	21.2593	37.3588	0	1	21.7132	2.65E-15	21.7139	1	11/14/2008	6:00
10.9881	31.4625	0	1	-0.00249084	40.9375	0	0	NULL	0	21.3693	37.274	0	1	20.2028	2.65E-15	20.2039	1	11/14/2008	7:00
11.0331	31.4625	0	1	-0.00249084	40.7875	0	0	NULL	0	21.393	37.324	0	1	20.9678	2.65E-15	20.9689	1	11/14/2008	8:00
11.0031	31.4625	0	1	-0.00249084	40.7875	0	0	NULL	0	21.363	37.324	0	1	21.3778	2.65E-15	21.3789	1	11/14/2008	9:00
10.9831	31.3125	0	1	-0.00249084	40.7875	0	0	NULL	0	21.3148	37.324	0	1	21.4778	2.65E-15	21.4789	1	11/14/2008	10:00
10.9581	31.3625	0	1	-0.00249084	40.6875	0	0	NULL	0	21.2948	37.224	0	1	21.3928	2.65E-15	21.3939	1	11/14/2008	11:00
10.9681	31.3625	0	1	-0.00249084	40.6875	0	0	NULL	0	21.3243	37.174	0	1	22.4478	2.65E-15	22.4445	1	11/14/2008	12:00
10.9581	31.3625	0	1	-0.00249084	40.5375	0	0	NULL	0	21.2754	37.224	0	1	22.4928	2.65E-15	22.4895	1	11/14/2008	13:00
10.9381	31.3125	0	1	-0.00249084	40.6875	0	0	NULL	0	21.3004	37.174	0	1	22.4328	2.65E-15	22.4345	1	11/14/2008	14:00
11.0031	31.3125	0	1	-0.00249084	40.6875	0	0	NULL	0	21.3204	37.074	0	1	21.3787	2.65E-15	21.3795	1	11/14/2008	15:00
11.019	31.2625	0	1	-0.00249084	40.6875	0	0	NULL	0	21.3053	36.974	0	1	21.3037	2.65E-15	21.3045	1	11/14/2008	16:00
10.994	31.2625	0	1	-0.00249084	40.6875	0	0	NULL	0	21.3253	37.1185	0	1	21.5087	2.65E-15	21.5095	1	11/14/2008	17:00
11.004	31.2625	0	1	-0.00249084	40.5375	0	0	NULL	0	21.312	37.1685	0	1	22.0537	2.65E-15	22.0495	1	11/14/2008	18:00
10.974	31.1125	0	1	-0.00249084	40.5375	0	0	NULL	0	21.287	37.1685	0	1	22.1537	2.65E-15	22.1545	1	11/14/2008	19:00
11.009	31.1125	0	1	-0.00249084	40.5375	0	0	NULL	0	21.287	37.1685	0	1	22.3287	2.65E-15	22.3295	1	11/14/2008	20:00
10.994	31.0125	0	1	-0.00249084	40.5375	0	0	NULL	0	21.3565	37.1185	0	1	21.5687	2.65E-15	21.5695	1	11/14/2008	21:00
11.004	31.0125	0	1	-0.00249084	40.4375	0	0	NULL	0	21.3415	37.0185	0	1	21.5687	2.65E-15	21.5692	1	11/14/2008	22:00
11.024	31.0125	0	1	-0.00249084	40.4375	0	0	NULL	0	21.2931	37.0685	0	1	21.6837	2.65E-15	21.6842	1	11/14/2008	23:00
11.009	31.0125	0	1	-0.00249084	40.4375	0	0	NULL	0	21.3481	36.9685	0	1	22.5937	2.65E-15	22.5942	1	11/15/2008	0:00
10.984	31.0125	0	1	-0.00249084	40.2875	0	0	NULL	0	21.2515	36.9185	0	1	22.6667	2.65E-15	22.6692	1	11/15/2008	1:00
10.939	31.0125	0	1	-0.00249084	40.2875	0	0	NULL	0	21.3015	36.8685	0	1	23.1217	2.65E-15	23.1192	1	11/15/2008	2:00
10.969	30.8625	0	1	-0.00249084	40.2875	0	0	NULL	0	21.3315	36.9185	0	1	23.1667	2.65E-15	23.1642	1	11/15/2008	3:00
10.924	30.9625	0	1	-0.00249084	40.1875	0	0	NULL	0	21.2519	36.8185	0	1	20.7317	2.65E-15	20.7342	1	11/15/2008	4:00
10.9451	30.9625	0	1	-0.00249084	40.1875	0	0	NULL	0	21.2919	36.9185	0	1	20.8517	2.65E-15	20.8492	1	11/15/2008	5:00
10.9801	30.9625	0	1	-0.00249084	40.1875	0	0	NULL	0	21.2321	36.9185	0	1	20.7317	2.65E-15	20.7342	1	11/15/2008	6:00
10.9801	30.8125	0	1	-0.00249084	40.1875	0	0	NULL	0	21.2521	36.9185	0	1	20.4567	2.65E-15	20.4542	1	11/15/2008	7:00

Caisson 1 Flow	Caisson 1 Level	Pump 1 Status Run	Pump 2 Status Run	Caisson 2 Flow	Caisson 2 Level	Pump 3 Status Run	Pump 4 Status Run	Caisson 6 Total Flow	Pump 11 Flow	Pump 12 Flow	Caisson 6 Level	Pump 11 Status Run	Pump 12 Status Run	54" Intertie Flow	54" Intertie Flow - North	54" Intertie Flow - South	54" Intertie Valve Status Open	Date	Interval
10.9001	30.9625	0	1	-0.00249084	40.1875	0	0	NULL	0	21.2432	36.8185	0	1	20.0567	2.65E-15	20.0579	1	11/15/2008	8:00
10.9651	30.8125	0	1	-0.00249084	40.1875	0	0	NULL	0	21.2932	36.7185	0	1	19.1067	2.65E-15	19.1079	1	11/15/2008	9:00
10.9401	30.8125	0	1	-0.00249084	40.1875	0	0	NULL	0	21.2632	36.8185	0	1	19.0317	2.65E-15	19.0329	1	11/15/2008	10:00
10.9901	30.8125	0	1	-0.00249084	40.1875	0	0	NULL	0	21.231	36.6185	0	1	18.9294	2.65E-15	18.9329	1	11/15/2008	11:00
10.9084	30.8125	0	1	-0.00249084	40.0375	0	0	NULL	0	21.2132	36.7185	0	1	18.8694	2.65E-15	18.8729	1	11/15/2008	12:00
10.9684	30.8125	0	1	-0.00249084	40.0375	0	0	NULL	0	21.2521	36.8163	0	1	19.2244	2.65E-15	19.2229	1	11/15/2008	13:00
10.9284	30.6625	0	1	-0.00249084	40.0375	0	0	NULL	0	21.2321	36.7163	0	1	19.1944	2.65E-15	19.1927	1	11/15/2008	14:00
10.9384	30.6625	0	1	-0.00249084	40.0375	0	0	NULL	0	21.1927	36.5163	0	1	19.3544	2.65E-15	19.3577	1	11/15/2008	15:00
10.6134	31.1125	0	1	-0.00249084	40.0875	0	0	NULL	0	20.8477	36.8163	0	1	15.7494	2.65E-15	15.7527	1	11/15/2008	16:00
10.5298	31.3625	0	1	-0.00249084	40.0875	0	0	NULL	0	20.7077	36.7663	0	1	15.6494	2.65E-15	15.6477	1	11/15/2008	17:00
10.4998	31.3625	0	1	-0.00249084	40.0875	0	0	NULL	0	20.701	36.8163	0	1	15.809	2.65E-15	15.8077	1	11/15/2008	18:00
10.5498	31.3625	0	1	-0.00249084	40.0875	0	0	NULL	0	20.691	36.8163	0	1	15.939	2.65E-15	15.9427	1	11/15/2008	19:00
10.4748	31.3625	0	1	-0.00249084	39.9375	0	0	NULL	0	20.7043	36.8163	0	1	16.059	2.65E-15	16.0577	1	11/15/2008	20:00
10.5648	31.2625	0	1	-0.00249084	39.9375	0	0	NULL	0	20.7243	36.8163	0	1	15.119	2.65E-15	15.1227	1	11/15/2008	21:00
10.5648	31.2625	0	1	-0.00249084	39.9375	0	0	NULL	0	20.7287	36.8163	0	1	15.004	2.65E-15	15.0027	1	11/15/2008	22:00
10.5148	31.2625	0	1	-0.00249084	39.9375	0	0	NULL	0	20.7437	36.8663	0	1	16.119	2.65E-15	16.1177	1	11/15/2008	23:00

Appendix H
Collector 1 Capacity Evaluation
Field Data

WATER QUALITY MONITORING
SONOMA COUNTY WATER AGENCY
RADIAL COLLECTOR WELLS
ERM-WEST 0090596

Date: 11/12/08
Set up time: 0800
Weather: OVERCAST/COOL
Samplers: EKO

COLLECTOR WELL 1

Date	Time	Lateral Number	Diameter (in)	Length (ft)	Depth to Lateral (ft bgs)	pH	ORP (mV)	Dissolved Oxygen (mg/L)	Conductivity (uS/cm)	Salinity (ppt)	Total Dissolved Solids (g/L)	Turbidity (NTU)	Temperature (C)	Comments
	1000	1	6	73		7.35	244.9	4.92	212	0.12	0.168	-0.8	15.40	
	1002					7.34	238.7	4.89	210	0.12	0.167	-0.7	15.41	
	1004					7.31	234.3	4.90	210	0.12	0.167	~~0~~-0.7	15.45	
	1006	2	6	121		7.29	230.9	5.05	205	0.12	0.159	-0.8	16.54	
	1008					7.25	231.3	4.95	205	0.12	0.159	-0.9	16.54	
	1010					7.26	229.0	4.95	205	0.12	0.159	-1.0	16.54	
	1012	3	6	181		7.19	228.3	5.34	204	0.12	0.157	-1.1	16.71	
	1014					7.19	226.3	5.27	204	0.12	0.158	-1.1	16.62	
	1016					7.18	226.0	5.25	203	0.12	0.157	-1.1	16.63	
	1018	4	6	121		7.16	221.1	6.16	208	0.12	0.159	-1.2	17.09	
	1020					7.11	222.3	6.05	208	0.12	0.159	-1.3	17.08	
	1022					7.10	222.3	6.05	207	0.12	0.159	-1.3	17.06	
	1024	5	6	97		7.06	223.5	6.87	205	0.11	0.156	-1.4	17.21	
	1026					6.99	223.0	6.81	205	0.11	0.157	-1.4	17.21	
	1028					6.97	221.6	6.80	205	0.11	0.157	-1.4	17.22	
	1031	6	6	144		7.11	215.8	4.66	197	0.11	0.149	-1.4	17.58	
	1033					7.10	215.5	4.43	197	0.11	0.149	-1.5	17.61	
	1035					7.11	214.1	4.41	198	0.11	0.149	-1.5	17.62	
	1037	7	6	129		7.14	208.7	4.68	202	0.11	0.155	-1.4	16.87	
	1039					7.15	208.9	4.50	202	0.11	0.155	-1.3	16.87	
	1041					7.15	208.6	4.48	202	0.11	0.156	-1.3	16.88	
	1044	8	6	45		7.20	190.4	4.17	204	0.11	0.154	-1.2	17.71	
	1046					7.22	193.2	4.09	204	0.11	0.155	-1.3	17.59	
	1048					7.23	194.5	4.05	204	0.11	0.155	-1.4	17.58	
	1050	9	6	89		7.20	196.8	4.66	211	0.12	0.164	-1.2	16.54	
	1052					7.17	198.3	4.49	211	0.12	0.164	-1.1	16.52	
	1054					7.16	198.5	4.47	211	0.12	0.164	-1.0	16.52	

WATER QUALITY MONITORING
SONOMA COUNTY WATER AGENCY
RADIAL COLLECTOR WELLS
ERM-WEST 0090596

Date:
Set up time:
Weather:
Samplers:

COLLECTOR WELL 1

Date	Time	Lateral Number	Diameter (in)	Length (ft)	Depth to Lateral (ft bgs)	pH	ORP (mV)	Dissolved Oxygen (mg/L)	Conductivity (uS/cm)	Salinity (ppt)	Total Dissolved Solids (g/L)	Turbidity (NTU)	Temperature (C)	Comments
		(10A	12	90)										
		(11A	12	120)										
	total discharge (near pump intake)													
	1056	INTAKE				7.17	198.5	5.11	206	0.12	0.158	-1.0	16.97	
	1058					7.10	198.6	5.07	206	0.12	0.158	-1.2	16.98	
	1100					7.10	197.7	5.02	205	0.12	0.158	-1.2	16.98	

Field Observations/Notes:

Collector Well 1 Testing - SCWA

- CW-1 off, CW-2 off, CW-6 = 21.67 MGD @ 0807 hrs, 11/10/08
- XD pulled up ~ 1237 → 1237 hrs, 11/10 - snagged on diver hose
- No dives on Tuesday, 11/11/08 as team awaits arrival of new pygmy flow meter
- Insert push camera in Lateral 6, 7, 8 First 10' @ 1108 - 1118 hrs on 11/12
- Lats 5, 1, 6 → 7
- XD snagged & pulled up @ 1515 hrs on 11/13/08; - replaced by 1520 hrs; again pulled between 1540 hrs & 1545 hrs
- 6" screen was 0.100" inserted into CW-1 lats; had 3 centralizing teflon slides on end pieces

SCWA CW-1

Time	DTW, '	XD Level	MGD	PSI	
0820	48.66	54.7'	- OFF -		11/10/08
0947	48.65'	54.7	- OFF -		
* Pump #2 On @ 0949 hrs *					
0950	49.27	54.0			
0951	50.82	52.2			
0952	52.94	50.4			
0953	54.97	48.3			
0954	56.53	46.8			
0955	58.81	45.5	10.40	150	
1000	60.27	43.2	10.43	150	
1052	61.66	41.8	10.35	149	
1250	62.70'	40.7	10.39	146	
1419	CW-1 @ plant = 10.73 MGD; CW-6 = 20.41 MGD				
1446	63.94'	37.6	10.69	137	
1547	64.24	39.2	10.74		
0821	70.00'	33.6	10.97	134	11/12
(CW-1 @ plant = 11.0 MGD; CW-6 = 21.67 MGD)					
1526	71.38'	33.1	10.93	134	
(CW-1 @ plant = 11.01 MGD; CW-6 = 21.67 MGD)					
0847	71.36'	32.2	10.97	134	
(CW-1 @ plant = 11.1 MGD; CW-6 = 21.67 MGD)					
1302	71.52'	32.0	10.94	133	11/13

CW-1 cont

Time	DTW, '	Level	MGD	PSI	
1546	71.70	31.8	10.99	132	
0755	72.42'	31.1	11.03	129	11/14/0[illegible]
0904	72.43'	31.1	10.98	129	

[illegible] Flow Analysis - CW-1

[illegible] a month of each lateral using the Royce Flow Meter (1515 hrs on 11/10/08; Flow = 10.775 MGD)

[illegible]	Revs. / 30 secs	%	GPM	Temp
	100 / 100	11.2	821	
	86 / 86	9.5	709	
	70 / 70	7.5	560	
	87.5 89 / 88	10	746.5	
	90.5 90 / 91	10	746.5	
	146.5 149 / 146 / 150	16.5	1231	
	105 / 105	11.5	859	
	119 / 117	13	971	
	101 / 100	11	821	
	- CLOSED -			
	- CLOSED -			
	907	100	7465	

SCWA CW-1 Lateral 5 Flow Analysis

- Conducted @ 1330 hrs on 11/12/08 (10.97 MGD)

Distance	Revs. / 30 secs
2'	268 / 269
10'	197 / 213 / 238 / 189 (Way out: 242 / 246 / 243) w/ rod
20'	188 / 185 / 188
30'	131 / 133
40'	112 / 113
50'	91 / 90
60'	83 / 83
70'	64 / 66
80'	59 / 59
90'	31 / 31
92'	12 / 13

- end of lateral @ 97'
(95' & 97' both were Ø flow)

- Rate = 10.95 MGD @ 1515 hrs after analysis over

SCWA CW-1 Lateral 1 Flow Analysis

- Conducted @ 0930 hrs, 11/13/08 (10.96 MGD)

Distance	Revs. / 30 secs	On Way Out
2'	332 / 334 / 330	
10'	218 / 221 / 222	
20'	166 / 168 / 167	
30'	121 / 122 / 123	
40'	107 / 106	

- Lateral deflection prevented further access by camera & sled for fear of getting stuck in line

SCWA CW-1 Lateral 6 Flow Analysis

- conducted @ 1020 hrs, 11/13/08 (10.96 MGD)

Distance	Revs. / 30 secs	On Way Out
2'	380/391/401/404	
10'	173/168/171	
20'	160/159/161	
30'	138/139	
40'	119/118	
50'	95/96	
60'	73/74	
70'	65/65	
80'	61/62	
90'	49/49	
100'	47/45	
109.5'	40/39	

- Could not access past 109.5' due to coupling
- Rate = 11.01 MGD upon end of analysis

SCWA CW-1 Lateral 7 Flow Analysis

- conducted @ 1345 hrs, 11/13/08 (10.93 MGD)

Distance	Revs / 30 secs	On Way Out
2	329/333/333	
10	195/194/195	
20	171/168/169	
30	162/163	
40	131/130	
50	107/112/107/112	
60	100/99	
70	93/91/92	
80	84/84	
90	72/73	
100	58/57	
110	47/48	
120	26/25	
124	11/11	

- Rate = 10.95 MGD by end of test

SCWA CW-1 Lateral 4 Flow Analysis

- Conducted 0945 hrs, 11/14/08 (10.98 MGD)

Distance	Revs / 30 secs	On Way Out
2'	219/225/226	(254/258/259)
10'	235/234/237	
20'	164/166	
30'	129/130	
40'	108/108	
50'	94/93	
60'	76/75	
70'	65/63	
80'	61/62	
90'	57/57	
100'	51/51	
110'	39/40	
117'	11/11	

- end of line reported @ 121'

SCWA CW-1 Lateral 3 Flow Analysis

- Conducted 1100 hrs, 11/14/08 (10.99 MGD)

Distance	Revs / 30 secs	On Way Out
2'	174/184/180/184	
10'	201/203/202	
20'	172/171	
30'	119/117/118	
40'	113/112	
50'	103/103	
60'	86/87	
70'	75/74	
80'	71/70	
90'	57/57	
100'	48/48	
110'	44/45	
120'	43/44	
130'	27/27	
140'	21/20	
150'	7/6	(16/15)
160'	3/6/3/6	(11/11)
163'	9/9/9	

- 170' - no flow ; end @ 176' (no flow)

SCWA CW-1 Lateral 2 Flow Analysis

- Conducted 1345 hrs, 11/14/08 (10.94 MGD)

Distance	Revs. / 30 secs.	Way Out
2'	287/283/287	
10'	215/214/215	
20'	160/160	
30'	121/126/123	
40'	96/93/94	
50'	80/81	
60'	75/75	
70'	73/72	
80'	64/62	
90'	60/61 *	(60/60)
100'	38/37	
107'	9/8/9	

- End cap @ 109'

SCWA CW-1 Lateral 9 Flow Analysis

- Conducted 1425 hrs, 11/14/08 (10.94 MGD)

Distance	Revs. / 30 secs.	Way Out
2'	290/287/292	
10'	231/228/230	
20'	165/168/167	
30'	123/124	
40'	84/85	
50'	75/76	
60'	68/68	
70'	67/68/67	
80'	38/38	
82'	9/10/10	

- end of lateral = 84'

Appendix I
Collector 2 Capacity Evaluation
Field Data

WATER QUALITY MONITORING
SONOMA COUNTY WATER AGENCY
RADIAL COLLECTOR WELLS
ERM-WEST 0090596

Date: 10-28-08
Set up time: 0850
Weather: 50°
Samplers: CY

COLLECTOR WELL 2

datalogging every 5 sec.

Date	Time	Lateral Number	Diameter (in)	Length (ft)	Depth to Lateral (ft bgs)	pH	ORP (mV)	Dissolved Oxygen (mg/L)	Conductivity (uS/cm)	Salinity (ppt)	Total Dissolved Solids (g/L)	Turbidity (NTU)	Temperature (C)	Comments
10-28-08	0934	1	8	145		7.06	221.1	6.14	200	0.11	0.148	-0.4	18.73	Start
	0936					7.07	215.4	6.08	200	0.11	0.148	-0.4	18.73	~2 min
	0938					7.07	212.0	6.14	200	0.11	0.147	-0.4	18.73	~4 min
	0940	2	8	57		7.12	209.1	7.82	198	0.11	0.148	-0.4	18.19	start
	0942					7.11	208.0	7.81	199	0.11	0.148	-0.4	18.06	~2 min
	0944					7.11	207.2	8.22	198	0.11	0.149	-0.4	17.94	~4 min DO incr.
	0945	3	8	89		7.12	207.0	8.79	199	0.11	0.150	-0.4	17.75	start
	0947					7.12	207.6	8.59	198	0.11	0.150	-0.4	17.74	~2 min
	0948					7.12	207.1	8.61	198	0.11	0.150	-0.4	17.73	~4 min
	0949	4	8	72		7.16	210.0	8.23	201	0.11	0.148	-0.4	18.81	start
	0951					7.15	215.6	7.97	201	0.11	0.148	-0.4	18.82	~2 min
	0953					7.15	219.3	8.03	201	0.11	0.148	-0.4	18.82	~4 min
	0954	5	8	137		7.03	222.9	7.40	202	0.11	0.149	-0.4	18.84	Start
	0956					7.02	218.5	7.03	202	0.11	0.149	-0.4	18.84	~2 min
	0957					7.01	218.3	7.05	202	0.11	0.149	-0.4	18.84	~4 min
	0958	6	8	121		7.14	212.3	6.50	205	0.11	0.150	-0.4	19.22	Start
	1000					7.15	213	5.58	205	0.11	0.149	-0.4	19.32	~2 min
	1001					7.15	210.3	5.59	206	0.11	0.150	-0.4	19.33	~4 min
	1002	7	8	113	~	7.28	207.8	8.55	198	0.11	0.149	-0.3	17.96	Start
	1004					7.22	210.2	8.80	198	0.11	0.149	-0.3	18.00	~2 min
	1006					7.22	209.4	8.91	198	0.11	0.149	-0.4	18.00	~4 min
	1007	8	8	161		7.27	205.6	6.92	202	0.11	0.146	-0.4	19.55	Start
	1009					7.28	204.2	6.15	202	0.11	0.147	-0.4	19.53	~2 min
	1010					7.30	202.6	6.15	202	0.11	0.146	-0.4	19.53	~4 min
	1011	9	8	121		7.22	203.7	7.83	200	0.11	0.148	-0.4	18.52	start – probe inserted about 1 ft. *
	1013					7.21	204.3	7.76	200	0.11	0.148	-0.4	18.51	~2 min
	1015					7.22	205.8	7.78	200	0.11	0.148	-0.4	18.50	~4 min

*pump is located near Lateral 9, restricting access inside lateral.

WATER QUALITY MONITORING
SONOMA COUNTY WATER AGENCY
RADIAL COLLECTOR WELLS
ERM-WEST 0090596

Date:
Set up time:
Weather:
Samplers:

COLLECTOR WELL 2

Date	Time	Lateral Number	Diameter (in)	Length (ft)	Depth to Lateral (ft bgs)	pH	ORP (mV)	Dissolved Oxygen (mg/L)	Conductivity (uS/cm)	Salinity (ppt)	Total Dissolved Solids (g/L)	Turbidity (NTU)	Temperature (C)	Comments
10-28-00	1016	total discharge (near pump intake)	—	—	.	7.07	209.5	8.00	201	0.11	0.148	-0.4	18.66	start
	1018					7.03	217.3	7.90	201	0.11	0.148	-0.4	18.67	~2 min
	1019					7.03	219.9	7.89	202	0.11	0.149	-0.4	18.66	~4 min

Field Observations/Notes:

SCWA Collector 2 Inspection & Testing

Start pump in CW-2 on 10/27/08

- CW-2 & CW-1 both off upon arrival on 10/27; CW-6 pumping @ 20.3 MGD @ 0830 hrs.

- Elev. of Top Slab = 81.4' AMSL; Bottom Floor = -21.65

- Pump 3 on @ 1009 hrs on 10/27/08

CW-2: = 47.29' @ 0840, 10/27 (well off)

- MP. = access hatch in top slab
- Level = 53.1' on wellhouse XD
(P.L. = 34.1' AMSL or 55.76' H_2O in well)

Time	DTW	XD	Q	psi	
1004 hrs	47.30'	53.1	OFF		
1010	47.62'		On		(1 min)
1011	48.31				
1012	49.61'	50.3			
1013	50.58'	49.6			
1014	51.27	48.9			
1015	51.64	48.6	10.25 MGD		
1020	52.37'	47.8	10.32		
1025	52.65'	47.6	10.34	175	
1030	52.83'	47.5	10.34		
1035	52.96'	47.3	10.33	175	
(CW-2 @ plant = 10.38 MGD; CW-6 = 18.77 MGD @ 1037 hrs)					
1040	53.07'	47.2	10.32		
1045	53.15'	47.2	10.33		
1057	53.34'	47.0	10.31		
1236	54.17'	46.1	10.17	175	
1424	54.68'	45.6	9.98	180	
1541	55.06'	45.2	9.95	180	

(CW-2 @ plant = 10.01 MGD; CW-6 = 18.66 MGD @ 1602)

CW-2 Flow Analysis - All Laterals @ Mouth

1125 hrs on 10/27/08 → Rate = 10.30 MGD

Lateral	Revs./30 secs.	%	GPM	Temp
1	2 → 2			
	(84 → 85) Re-test	10.5	751	18.93°C
2	74 → 74	9.5	679.5	17.94°C
	(68 → 71) Retest			
3	89 → 89	11.5	822.5	17.73°C
4	89 → 87	11	787	18.82°C
5	84 → 86	11	787	18.84°C
6	93 → 93	12	858.5	19.33°C
7	92 → 92	11.5	822.5	18.00°C
8	99 → 100	12.5	894	19.53°C
9	82 → 81	10.5	751	18.50°C
	(Pump blocking lateral)			
	786.5	100%	7153 gpm	18.66°C (composite)

Video Inspection - 1st Ten Feet @ CW-2

Lateral 1 - slots open, no obstructions
Lateral 2 - Same
Lateral 3 - Same
Lateral 4 - Same
Lateral 5 - "
Lateral 6 - "
Lateral 7 - " (possibly different slots)
Lateral 8 - "
Lateral 9 - Inaccessible → behind pump #3

Screen Thickness Readings (in mils):

Lateral	12:00	3:00	9:00
1	.375	.310	.385
2	.305	.205	.295
3	.325	.320	.315
4	.165	.305	.305
5	.250	.290	.220
6	.410	.225	.350
7	.300	.195	.295
8	.275	.330	.310
9	.160	.275	.190

CW-2:

= 57.99' @ 0807, 10/28 (XD = 42.3'; 10.22 MGD; 175 psi)
(Pumping Rate @ CW-2 = 10.4 MGD @ plant; CW-6 = 18.77 MGD)

Time	DTW	XD Level	MGD	PSI	
1045	57.98'	42.3'	10.10	180	
1231	59.41'	40.9'	12.13	126	

(P. Rate @ CW-2 = 12.17 MGD @ plant; CW-6 = 21.47 MGD)
- opened up 54" intertie, ↑ rate; pressure)

1445	59.91'	40.3'	12.05	126	

(Rate @ CW-2 = 12.09 MGD @ plant; CW-6 = 21.47 MGD)
- 54" still open

0800	61.80'	38.5'	12.12	127	10/29/08

(Rate @ CW-2 = 12.2 MGD @ plant; CW-6 21.5 MGD)
- 54" still open

1055	61.98'	38.2'	12.10	126	
1203	61.95'	38.3'	11.86	132	

(Rate @ CW-2 = 11.9 MGD @ plant; CW-6 = 21.5 MGD)
- 54" still open

1355	61.96'	38.2'	11.79	133	

(Rate @ CW-2 = 11.8 MGD @ plant; CW-6 = 21.5 MGD)
- 54" still open

0753	63.08'	37.2'	12.02	129	10/30/08

(Rate @ CW-2 = 11.93 MGD @ plant; CW-6 = 20.47 MGD)
- 54" still open

CW-2 Lateral 5 Flow Analysis

- Conducted @ 1345 hrs on 10/28 (Rate = 12.08 MGD)

Distance	Revs./30 secs	
2'	74/73	(74/72 - retest on way out)
10'	71/71	(62/62 - retest on way out)
20'	51/50	
30'	42/43	
40'	36/35	
50'	33/34	
60'	32/33	
70'	28/28	
80'	27/26	
90'	26/26	
100'	18/19	
110'	16/16	
117'	11/11	- sand in bottom

CW-2 Lateral 8 Flow Analysis

- Conducted 0930 hrs on 10/29/08 (Rate = 12.2 MGD)

Distance	Revs./30 secs.	
2'	97/99	
10'	79/79	
20'	68/67	
30'	63/64	
40'	58/58	
50'	55/56	
60'	55/55	
70'	54/54	
80'	51/52	
90'	51/51	
100'	49/49	
110'	44/44	
120'	37/36	
130'	36/36	
140'	32/32	
143'	26/25	sand encountered

CW-2 Lateral 2 Flow Analysis

- Conducted 1015 hrs on 10/29/08 (Rate = 12.12 MGD)

Distance	Revs/30 secs.	
2'	70/74/74	
5'	63/60/60	
10'	51/50	
15'	49/46/46	
20'	41/41	
25'	40/39	
30'	36/36	
35'	35/35	
40'	28/28	
45'	22/23	(22/22 - back out)
50'	10/9	
53'	9/9	sand encountered

CW-2 Lateral 7 Flow Analysis

- Conducted 1245 hrs on 10/29/08 (Rate = 11.84 MGD)

Distance	Revs. / 30 secs.		
2'	70 / 75 / 74	(70/71)	- retest on way out)
10'	76 / 75		
20'	65 / 67		
30'	60 / 60		
40'	52 / 52		
50'	47 / 46		
60'	45 / 46		
70'	46 / 46		
80'	35 / 35		
90'	30 / 30		
100'	21 / 21		
107'	18 / 18		- at end of line

CW-2 Lateral 7 Flow Analysis

- Conducted 1310 hrs on 10/29/08 (Rate = 11.81 MGD)

Distance	Revs. / 30 secs.	
2'	64 / 63	
10'	67 / 67	
20'	64 / 65	
30'	61 / 60	
40'	57 / 58	
50'	54 / 54	
60'	52 / 52	
70'	49 / 50	
80'	43 / 43	
90'	38 / 38	
100'	34 / 34	
110'	30 / 30	
120'	23 / 24	
130'	15 / 15	
135'	11 / 11	Sand & gravel encountered

CW-2 Lateral 3 Flow Analysis

- conducted 0915 hrs on 10/30/08 (Rate = 11.96 MGD)

Distance	Revs. / 30 secs.	
2'	69/70	
10'	65/65	
20'	53/54	
30'	52/52	
40'	49/48	
50'	42/42	
60'	35/36	
70'	30/31	
80'	19/19	- sand encountered

CW-2 Lateral 4 Flow Analysis

- conducted 0950 hrs on 10/30/08 (Rate = 11.97 MGD)

Distance	Revs. / 30 secs.	
2'	85/85	
* 5'	63/65/65	(63/65 - on way out)
10'	64/65/64	
15'	59/60	
20'	52/52	
25'	49/50	
30'	42/42	(49/49 - on way out)
* 35'	34/34	(43/44/44 - on way out)
40'	35/35	
45'	30/29	
50'	25/25	
55'	15/16	
60'	9/9	- sand encountered

CW-2 Lateral 6 Flow Analysis

- Conducted 1220 hrs, 10/30/08 (Rate = 11.96 MGD)

Distance	Revs./30 secs.	
2'	72/71	
10'	69/70	
20'	60/60	
30'	52/52	
40'	44/43	
* 50'	38/38	(39/39 - on way out)
60'	37/36/37	
70'	32/32	
80'	27/27	
90'	23/22	
100'	20/20	
110'	6/5/5	- sand encountered
111'	9/9	- " " (contracted)

CW-2: (Cont.-)

Time	DTW'	XD Level'	MGD	PSI	
0842	63.13	37.1	12.01	127	10/30/08
1054	63.37	36.8	12.02	127	

Appendix J
Collector 6 Capacity Evaluation
Field Data

WATER QUALITY MONITORING
SONOMA COUNTY WATER AGENCY
RADIAL COLLECTOR WELLS
ERM-WEST 0090596

Date: 10-14-08
Set up time: 0800
Weather: 50°
Samplers: CY

COLLECTOR WELL 6

- all: datalogging every 5 sec.

Date	Time	Lateral Number	Diameter (in)	Length (ft)	Depth to Lateral (ft bgs)	pH	ORP (mV)	Dissolved Oxygen (mg/L)	Conductivity (uS/cm)	Salinity (ppt)	Total Dissolved Solids (g/L)	Turbidity (NTU)	Temperature (C)	Comments
10-14-08	0937	1	12	100	-23.7	6.93	114.0	3.23	229	0.13	0.171	-0.4	18.22	start
	0939				elev.	6.88	114.2	3.18	229	0.13	0.171	-0.5	18.22	1.5 min
	0940					6.85	115.6	3.15	229	0.13	0.171	-0.5	18.22	3 min - end
	0943	2	12	170		6.86	114.3	2.07	214	0.12	0.160	-0.4	18.05	start
	0944					6.93	117.4	1.85	214	0.12	0.160	-0.5	18.07	1.5 min
	0946					6.83	114.7	1.84	213	0.12	0.160	-0.5	18.12	end ~3min
	0948	3	12	160		6.90	112.5	1.77	213	0.12	0.161	-0.2	17.60	start
	0950					6.71	121.2	2.40	218	0.12	0.162	-0.4	18.36	1.5 min
						Probe came out of lateral - try again								end ~3min
	0955	4	12	70		6.73	120.9	2.55	221	0.12	0.167	-0.5	17.73	start
	0957					6.70	123.6	2.78	222	0.12	0.167	-0.5	17.74	1.5 min
	0958					6.69	124.4	2.74	222	0.12	0.167	-0.5	17.74	end ~3min
	0959	5	12	140		6.66	123.7	2.88	218	0.12	0.161	-0.4	18.78	start
	1000					6.75	122.4	3.03	218	0.12	0.161	-0.4	18.80	1.5 min
	1002					6.80	120.3	3.04	218	0.12	0.161	-0.5	18.80	end ~3 min
	1003	6	12	160		6.86	117.0	3.11	208	0.11	0.153	-0.4	18.97	start
	1004					6.83	118.4	3.21	208	0.11	0.153	-0.5	18.98	1.5 min
	1006					6.85	117.1	3.22	208	0.11	0.152	-0.6	18.98	end
	1007	7	12	110		6.93	115.5	3.06	206	0.11	0.152	-0.4	18.73	start
	1008					6.88	113.6	2.95	206	0.11	0.152	-0.3	18.74	1.5 min
	1010					6.90	110.9	2.94	206	0.11	0.152	-0.2	18.74	end
	1012	8	12	130		6.77	119.7	2.79	204	0.11	0.151	-0.5	18.81	start
	1014					6.77	119.2	2.71	204	0.11	0.151	-0.5	18.82	1.5 min
	1016					6.79	119.7	2.71	204	0.11	0.151	-0.5	18.80	end
	1017	9	12	80		6.83	119.4	2.94	211	0.11	0.157	-0.5	18.34	start
	1018					6.82	118.6	3.02	212	0.12	0.157	-0.5	18.35	1.5 min
	1020					6.82	117.6	3.02	212	0.12	0.157	-0.5	18.36	end

WATER QUALITY MONITORING
SONOMA COUNTY WATER AGENCY
RADIAL COLLECTOR WELLS
ERM-WEST 0090596

Date:
Set up time:
Weather:
Samplers:

COLLECTOR WELL 6

Date	Time	Lateral Number	Diameter (in)	Length (ft)	Depth to Lateral (ft bgs)	pH	ORP (mV)	Dissolved Oxygen (mg/L)	Conductivity (uS/cm)	Salinity (ppt)	Total Dissolved Solids (g/L)	Turbidity (NTU)	Temperature (C)	Comments
	1021	10	12	90		6.94	112.5	2.99	267	0.15	0.205	-0.5	16.97	Start
	1023					6.71	124.9	3.13	268	0.15	0.206	-0.4	16.93	1.5 min
	1025					6.64	129.7	3.14	267	0.15	0.205	-0.4	16.97	end
	X	11	18	70										
	1027	12	18	350		6.79	121.6	3.23	229	0.12	0.170	-0.4	18.34	start
	1028					6.65	128.8	3.29	231	0.13	0.172	-0.3	18.27	1.5 min
	1030					6.80	120.9	3.30	231	0.13	0.172	-0.5	18.29	end
	X	13	Blank Port											
	X	14	18	70										
	1033	15	18	375		6.76	121.4	2.51	211	0.11	0.154	-0.5	19.28	Start
	1035					6.73	120.9	2.43	211	0.11	0.154	-0.5	19.28	1.5 min
	1037					6.73	119.6	2.43	211	0.11	0.154	-0.5	19.28	end
	X	16	Blank Port											
	X	17	Blank Port											
	X	18	Blank Port											

WATER QUALITY MONITORING
SONOMA COUNTY WATER AGENCY
RADIAL COLLECTOR WELLS
ERM-WEST 0090596

Date:
Set up time:
Weather:
Samplers:

COLLECTOR WELL 6

Date	Time	Lateral Number	Diameter (in)	Length (ft)	Depth to Lateral (ft bgs)	pH	ORP (mV)	Dissolved Oxygen (mg/L)	Conductivity (uS/cm)	Salinity (ppt)	Total Dissolved Solids (g/L)	Turbidity (NTU)	Temperature (C)	Comments
	1039	total				6.60	127.7	2.74	217	0.12	0.160	-0.5	18.61	start
	1040	discharge				6.61	124.9	2.69	216	0.12	0.160	-0.5	18.66	1.5 min
	1042	(center of				6.63	125.1	2.68	217	0.12	0.161	-0.4	18.54	end
		caisson												
		near												
		pump												
		intake)												
	0952	3				6.93	112.9	2.03	213	0.12	0.161	0.0	17.60	start
	0953	(2nd				6.77	121.4	1.59	213	0.12	0.161	-0.5	17.59	1.5 min
	0954	try)				6.74	119.5	1.59	213	0.12	0.161	-0.5	17.59	end

Field Observations/Notes:

WATER QUALITY MONITORING
SONOMA COUNTY WATER AGENCY
RADIAL COLLECTOR WELLS
ERM-WEST 0090596

Date:
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Weather:
Samplers:

COLLECTOR WELL 6

Date	Time	Lateral Number	Diameter (in)	Length (ft)	Depth to Lateral (ft bgs)	pH	ORP (mV)	Dissolved Oxygen (mg/L)	Conductivity (uS/cm)	Salinity (ppt)	Total Dissolved Solids (g/L)	Turbidity (NTU)	Temperature (C)	Comments

SCWA - Sonoma County Water Agency

Collector Well 6 : 49.89' @ 0743, 10/13/08
- MP. = Pump Hole @ Top Slab (FFE = 85.6' AMSL)
- Well Off (Bottom of Caisson = -71.5' AMSL)
→ P.L. = 35.71' AMSL or 67.21' H2O in well
(59.8' H2O in well on Level Indicator)
= 49.89' @ 0800 (CW-2 on; CW-6 off)
= 49.89' @ 0833 (CW-2 off; CW-6 off)
CW-2 was 11.35 MGD → off @ 0810 hrs, 10/13
CW-1 on @ 10.12 MGD → well on
= 49.90' @ 0939 (XD = 59.8')
= 49.89 @ 1157 (XD = 59.7')

- Pump 12 in CW-6 started @ 1242 hrs, 10/13/08
(CW-1 on @ 8.22 MGD @ 1327 hrs; down from 10.12)

No. 6 ON @ 1242 Pump #12

TIME	PWL		
1005	49.90	(SWL)	
1026	49.88	(SWL)	
1157	49.89	(SWL)	
On @ 1242			
1243	52.31		
1243.5	53.31		
1244	53.93		
1244.5	54.35	175 psi	
1245	54.64		
1245.5	54.84		
1246	54.98		
1246.5	55.09		
1247	55.17		
1247.5	55.26		
1248	55.28		
1249	55.35	XD 54.3	
1250	55.43		
1251	55.49	XD 54.2	
1252	55.52	18.9 MGD	10,427 M gal
1253	55.55	178 psi	
1255	55.61		
1257	55.66		
1259	55.69	178 psi XD 53.9	
1300	55.71	18.895 MGD	
1305	55.79		

10-13-08 Sonoma No 6

Time	PWL	XD	Q	psi	
1310	55.85	53.8	18.80	178	
1315	55.89				
1320	55.94	53.7	18.80	178	
1516	56.74	52.9	18.80	179	
0748	59.80	49.9	19.30	169	10/14/08
(CW-1 = 9.10 MGD ; CW-6 = 18.75 MGD)					
1020	59.76	49.9	18.6	180	
(Tanks fill in morning, ∴ rate drops off in afternoon)					
1323	59.82	49.9	18.3	186	
0754	61.34	48.4	19.30	168	10/15/08
(CW-1 = 9.15 MGD ; CW-6 = 19.77 MGD @ plant)					
1325	61.11	48.6	18.2	186	
1604	61.06'	48.6	18.2	187	
0753	62.18'	47.5	19.4	167	10/16/08
(CW-1 = 9.32 MGD ; CW-6 = 18.75 MGD @ plant)					
1021	62.00'	47.7	18.8	176	
1405	62.12'	47.5	18.8	177	
1628	61.95'	47.7	18.3	184	
0803	62.85'	46.9	19.4	167	10/17/08
0907	62.58'	47.1	18.7	177	
(CW-1 = 8.73 MGD ; CW-6 = 19.49 MGD @ plant)					
1350	62.39'	47.3	18.1	187	
(CW-1 = 8.10 MGD ; CW-6 = 18.5 MGD @ plant)					

SCWA CW-6 : Flow @ Mouth of Laterals
(12,986 gpm)

Flow = 18.7 MID ; 1335 hrs on 10/13/08

Lateral	Revs. / 30 secs.	Flow	Temp	Comments
1	31 → 29 (30)	7%	18.22 °C	
2	55 → 52 (53)	12%	18.17 °C	
3	36 → 38 (37)	9%	17.59 °C	
4	15 → 15 (15)	3.5%	17.74 °C	
5	26 → 26 (26)	6%	18.80 °C	
6	41 → 42 (41)	9.5%	18.98 °C	
7	33 → 33 (33)	7.5%	18.74 °C	
8	35 → 35 (35)	8%	18.80 °C	
9	18 → 20 (19)	4.5%	18.36 °C	
10	22 → 22 (22)	5%	16.97 °C	
11	- BLANK -			
12	49 → 49 (49)	11%	18.29 °C	High, 18"
13	- BLANK -			
14	- BLANK -			
15	75 → 78 (76)	17%	19.78 °C	High, 18"
	(436)			

$\frac{7\%}{100\%} = \frac{x}{12,986}$

Composite Temp: 18.54 °C

Lateral 1 - clean ; no sand or encrust.
(Spool piece ; no blank)

Lateral 2 - Clean ; no sand
(sand in mouth of valve)

Lateral 3 - Clean ; no sand or encrust.
(Sand in mouth of valve) ; K-packer out

Lateral 4 - clean ; no sand or encrust.
(Sand in mouth of valve)

Lateral 5 - clean, no sand or encrust.
(no blank)

Lateral 6 - clean ; no sand or encrust.
(no blank)

Lateral 7 - clean

Lateral 8 - same ; sand in mouth of valve

Lateral 9 - same ; " " " " "

Lateral 10 - clean ; little amt. of sand in mouth

Lateral 12 - some slots visible on sides and top ; 1/16 - 1/8" encrust.

Lateral 15 - some slots visible, even on bottom
1/8" encrust. - Some sand coming in

- Pile of sand between Lat. 1 & 2 (?)

SCWA CW-6 : Flow @ Mouth of Laterals

(12,986 gpm)

Flow = 18.7 MGD ; 1335 hrs on 10/13/08

Lateral	Revs./30 secs.	Flow	Temp	Comments
1	31 → 29 (30)	7%	18.22°C	
2	55 → 52 (53)	12%	18.12°C	
3	36 → 38 (37)	9%	17.59°C	
4	15 → 15 (15)	3.5%	17.74°C	
5	26 → 26 (26)	6%	18.80°C	
6	41 → 42 (41)	9.5%	18.98°C	
7	33 → 33 (33)	7.5%	18.74°C	
8	35 → 35 (35)	8%	18.80°C	
9	18 → 20 (19)	4.5%	18.36°C	
10	22 → 22 (22)	5%	16.97°C	
11	- BLANK -			
12	49 → 49 (49)	11%	18.29°C	High, 18"
13	- BLANK -			
14	- BLANK -			
15	75 → 78 (76)	17%	19.78°C	High, 18"
	(436)			

$\frac{7\%}{100\%}$, $\frac{x}{18.[illegible]}$

Composite Temp: 18.59°C

Lateral 1 - Clean ; no sand or encrust.
(Spool piece ; no blank)

Lateral 2 - Clean ; no sand
(Sand in mouth of valve)

Lateral 3 - Clean ; no sand or encrust.
(Sand in mouth of valve) ; K-packer out

Lateral 4 - clean ; no sand or encrust.
(Sand in mouth of valve)

Lateral 5 - Clean ; no sand or encrust.
(no blank)

Lateral 6 - clean ; no sand or encrust.
(no blank)

Lateral 7 - clean

Lateral 8 - same ; sand in mouth of valve

Lateral 9 - same ; " " " " "

Lateral 10 - clean ; little amt. of sand in mouth

Lateral 12 - some slots visible on sides and top ; 1/16 - 1/8" encrust.

Lateral 15 - some slots visible, even on bottom. 1/8" encrust. - Some sand coming in

- Pile of sand between Lat. 1 & 2 (?)

Lateral 2, Chl-6 10/15/08, 0950 hrs (19.3 MGD)

Revs/30 secs

Mouth	50 revs/30 secs		
16'	58 → 62		(2nd joint)
20'	56 → 56		
30'	53 → 53		
40'	43 → 44		
50'	42 → 42		
60'	43 → 44		(7th joint)
70'	44 → 45		
80'	47 → 47		(joint 10)
90'	45 → 45		
100'	41 → 42		
110'	39 → 39		(12.5 joints)
120'	30 → 30		(14 joint)
*130'	21 → 21	(140'?)	(16 joint)
140'	11 → 11	(150'?)	
End	3 → 2		

→ averaged last reading over 1 minute

Lateral 2, Chl-6: (return) (18.5 MGD - First dive)

(18.0 MGD - Second dive)

2'	56 → 56	
0	56 → 56	
10'	55 → 55	(joint 15)
20'	51 → 52	(joint 14)
30'	47 → 46	(joint 13)
40'	44 → 43	(joint 12)
50'	43 → 41	(joint 11)
60'	44 → 45	(joint 10)
70'	46 → 47	(joint 9)
80'	45 → 44	(joint 8)
90'	40 → 40	(joint 7)
100'	39 → 38	(joint 6)
110'	36 → 36	(joint 5)
120'	31 → 30	(joint 4)
130'	26 → 26	(joint 3)
140'	18 → 17	(joint 2)
150'	11 → 11	} same reading
160'	12 → 12	(joint 1)

Lateral 8, CW-6 : going in lateral, 10/15/08
18.1 MGD

(1')	Revs./30 secs.		
Mouth	34 → 36		
10'	39 → 37		(Joint 1)
20'	38 → 37		(Joint 2)
30'	34 → 35		(Joint 3)
40'	35 → 33		(Joint 4)
50'	33 → 33		(Joint 5)
60'	31 → 31		(Joint 6)
70'	27 → 25	(28 → 27)	(Joint 7)
80'	29 → 29		(Joint 8)
90'	29 → 29		(Joint 9)
100'	27 → 27		(Joint 10)
110'	21 → 22		(Joint 11)
120'	10 → 12		(Joint 12)
128'	6 → 6		

- last reading over 60 secs instead of 30 secs.

→ End @ 130' like drawing

Flow Analysis

Lateral 12, CW-6 : 1030 hrs, 10/16/08 (18.8 MGD)
(18.9 MGD @ 1156 hrs)

Footage	Revs / 30 secs.		
mouth	45 → 48		
10'	50 → 51		
20'	48 → 50		past 2nd weld
30'	45 → 47		
40'	48 → 48		past 4th weld
50'	47 → 48		past 6th weld
60'	47 → 46		
70'	46 → 45		past 8th weld
80'	44 → 43		
90'	39 → 38	(41 → 41)	
100'	40 → 40		
110'	38 → 37		
120'	38 → 38		
130'	36 → 36		
140'	34 → 34		
150'	30 → 31		
160'	25 → 28	(27 → 29)	
170'	26 → 25		
180'	22 → 23		
190'	22 → 21		
200'	19 → 19		
210'	19 → 18		

Lateral 12 - cont.

Footage	Revs. / 30 secs.
220'	18 → 17
230'	18 → 17
240'	17 → 17
250'	16 → 15
260'	17 → 17
270'	17 → 16
280'	10 → 10
290'	7 → 7
299'	4 → 4

- pile of sand preventing Further access

Lateral 6, CW-6 Flow Analysis

1530 hrs, 10/16/08

(18.0 MGD)

Footage	Revs. / 30 secs.
Mouth	42 → 43
10'	45 → 46
20'	44 → 44
30'	44 → 44
40'	44 → 44
50'	42 → 41
60'	41 → 41
70'	37 → 38
80'	37 → 37
90'	37 → 38
100'	35 → 35
110'	33 → 33
120'	31 → 32
130'	28 → 28
140'	20 → 19
150'	17 → 16
157'	14 → 14

- 1st Joint (at 10')

- end ~ 160'

(mouth)

Lateral	Revs / 30 secs
7	25/28
5	24/22
4	16/17
3	28/27
2	60/61
1	38/37

Lateral 15, CW-6 ; 0930 hrs, 10/17/08

Rate = 18.7 MGD

Rate = 18.4 MGD (second dive)

- Barely in

- More Appropriate Reading

Footage	Revs. / 30 secs	
Mouth (1)	59 → 59	
Mouth (2)	35 → 20 → 39 → 32	
10'	57 → 63 → 63	
20'	62 → 62	
30'	63 → 61	
40'	61 → 61	
50'	32 - 34 - 58 - 53 - 59	
60'	61 → 59	
70'	61 → 59	
80'	35 → 54 → 53	
90'	55 → 58 → 57	
100'	55 → 55	
110'	53 → 51	
120'	52 → 52	
130'	20 → 50 → 47	
140'	51 → 51	
150'	48 → 48	
160'	43 → 49 → 50 → 47	
170'	44 → 33 → 42	
180'	43 → 44	
190'	42 → 42	
200'	37 → 38	
210'	34 → 34	
220'	32 → 32	
230'	30 → 30	
240'	27 → 27	
250'	24 → 23	
260'	19 → 19	
270'	19 → 19	
280'	19 → 17 → 17	(Ernie counted 14)
290'	* 8 → 12 → 9	(second dive; rate = 18.4 MGD)
300'	9 → 10 → 9	(Ernie counted 8.5)
310'	3 → 3	
320'	7 → 7	7.5 rev/min EBW

- last reading over 1 minute

Lateral 3, CW-6 : 1240 hrs, 10/17/08
- 18.4 MGD, Level XD = 47.2'

Footage	Revs. / 30 secs
Mouth	43 → 43
10'	45 → 45
30'	43 → 43
40'	39 → 39
50'	37 → 37
60'	35 → 34
70'	32 → 33
80'	32 → 31
90'	32 → 32
100'	29 → 30
110'	26 → 26
120'	25 → 23
130'	22 → 21
140'	18 → 18
150'	15 → 14
157'	11 → 11

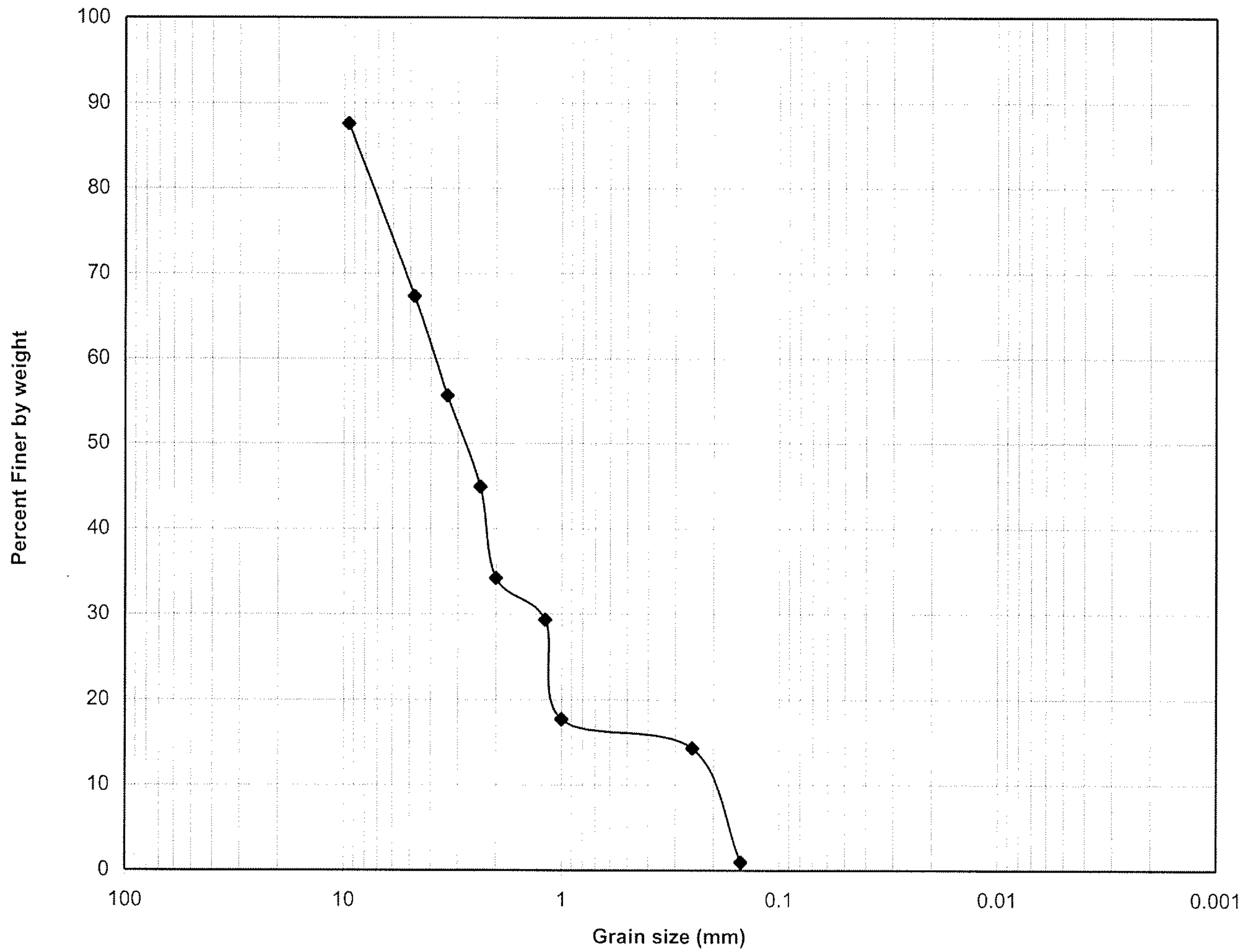
CW-6 Lateral Screen Thickness Readings (in mils)

Lateral	12:00	3:00	9:00
1	.195	.175	.225
2	.235	.215	.280
3	.195	.240	.240
4	.290	.175	.175
5	.180	.190	.195
6	.195	.185	.185
7	.190	.190	.190
8	.185	.190	.190
9	.185	.190	.185
10	.300	.295	.300
11	- BLANK -		
12	.550	.565	.560
13	.555	.545	.490

- All measurements taken while well was off-line → Ø flow

Appendix K
Collector 6 Particle Size Plots

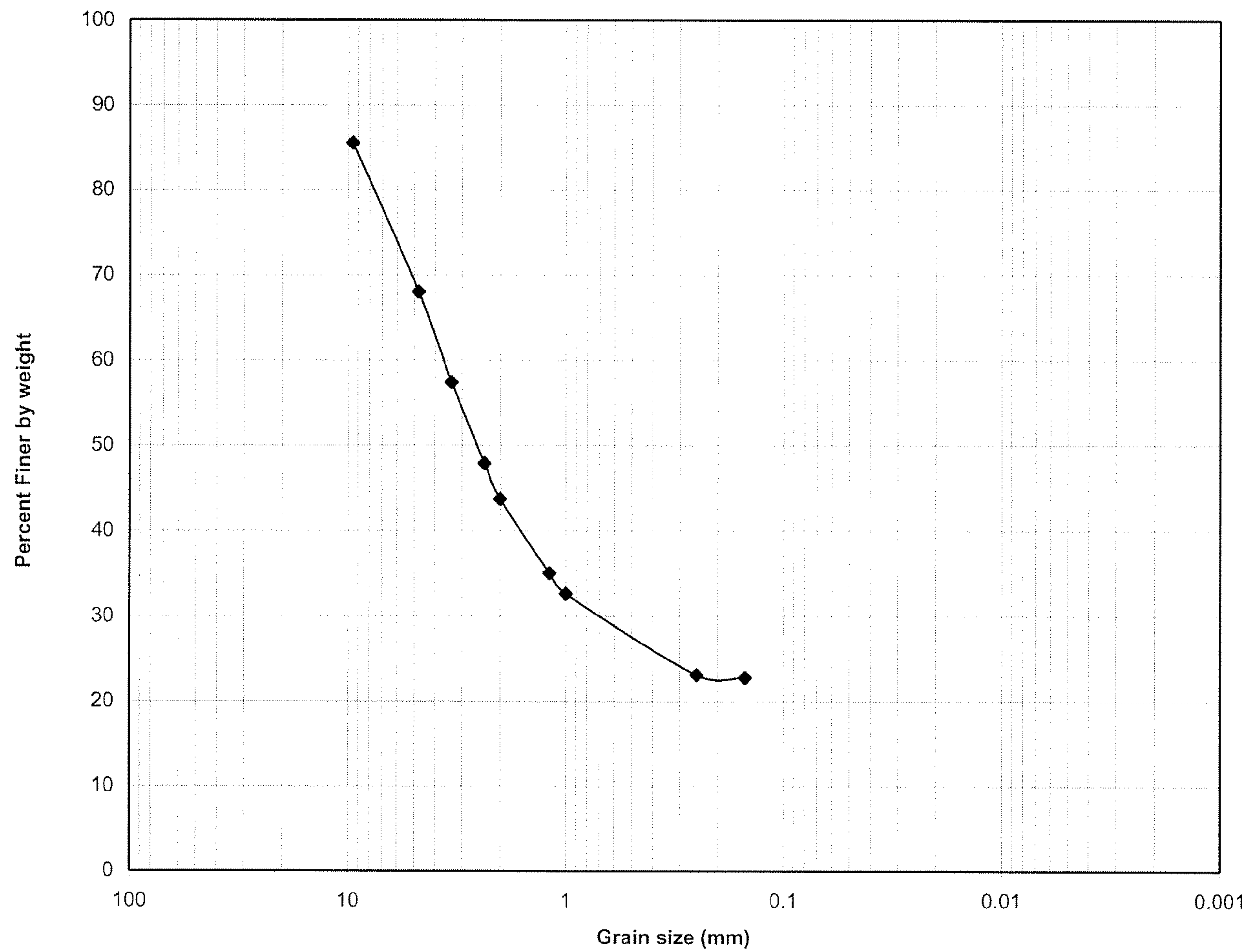
Collector 6, Lateral 1



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 1
64 to 68Feet

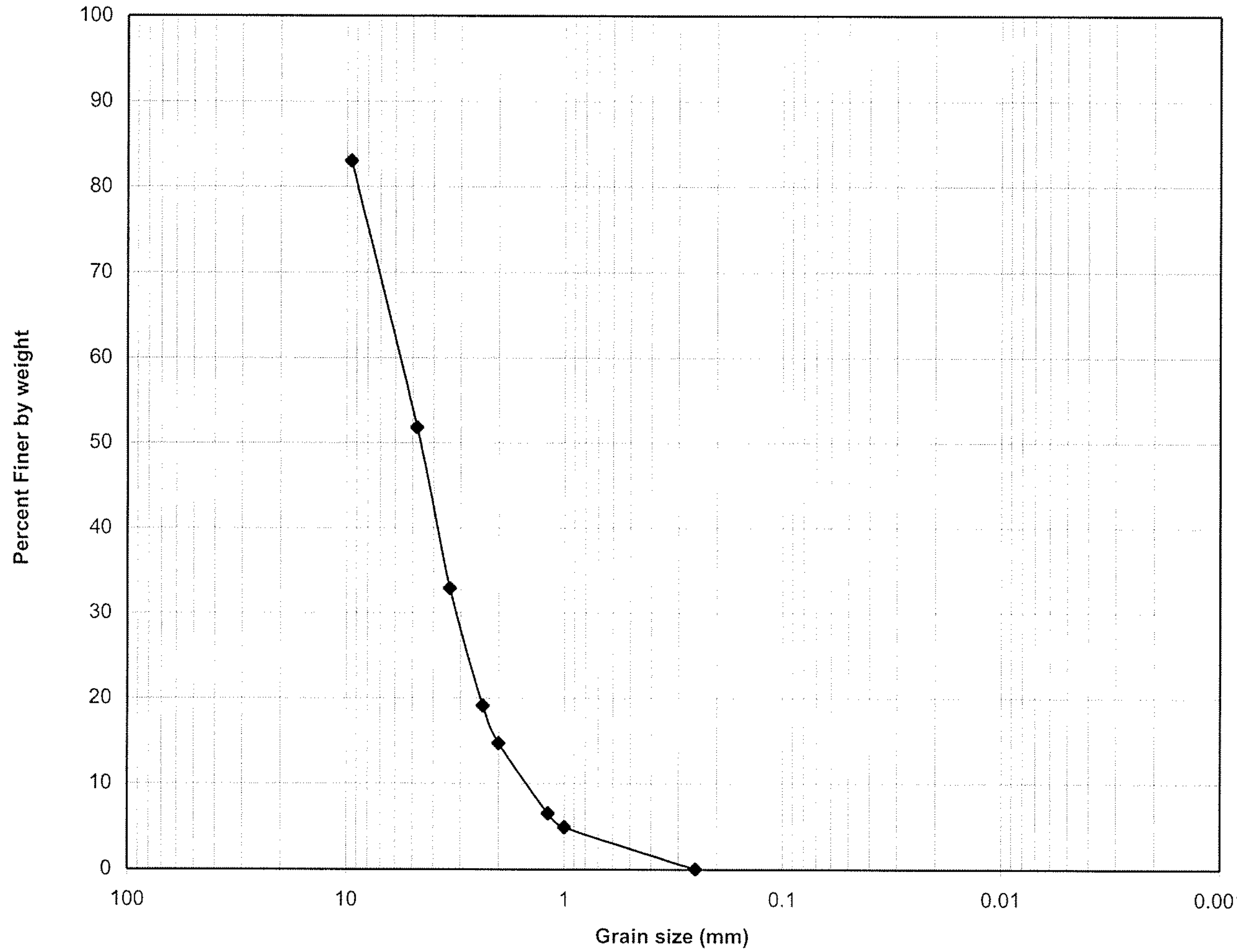
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 1
72 to 75 Feet

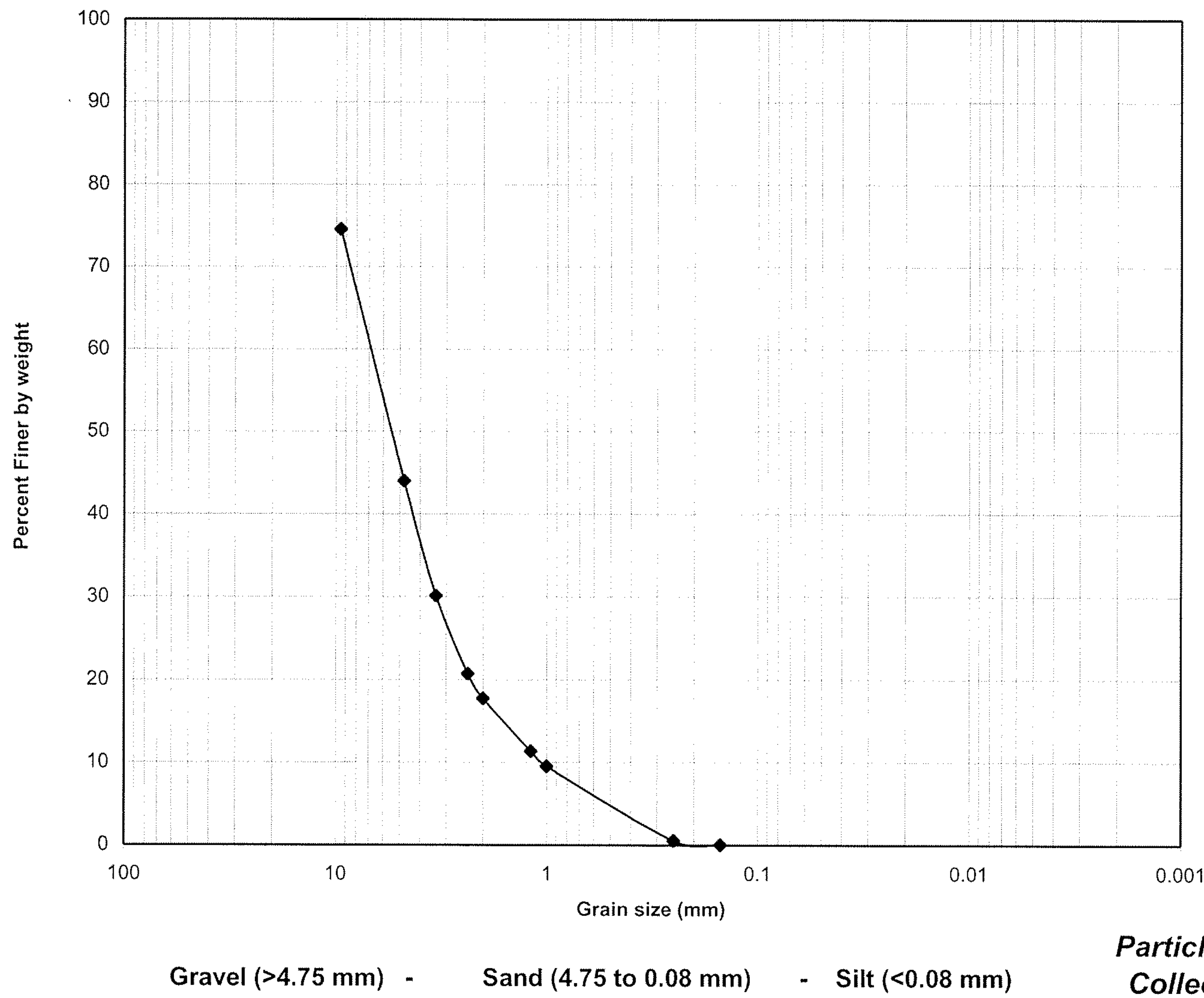
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

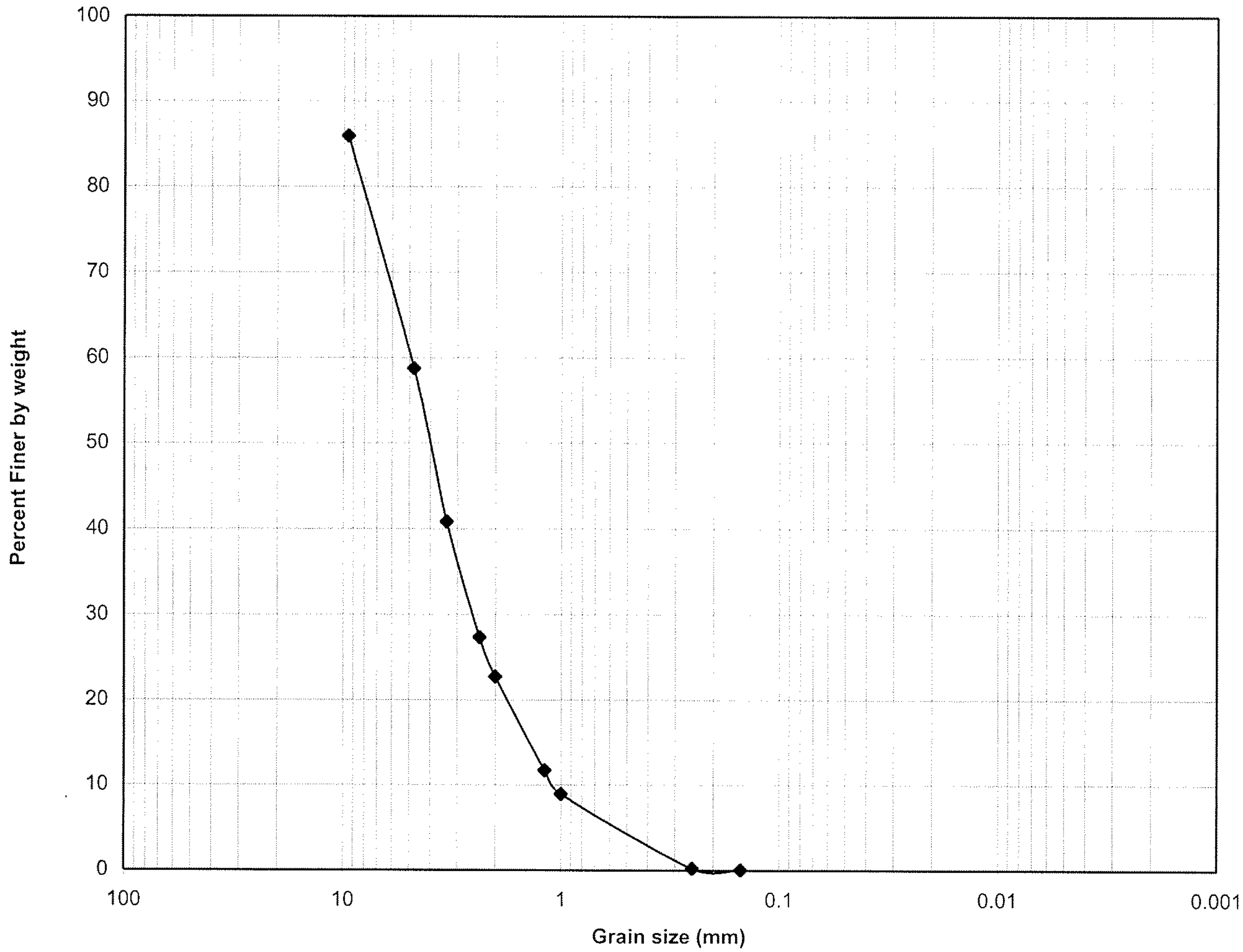
Particle Size Analysis
Collector 6, Lateral 1
79 to 82 Feet

ERM 4/09



Particle Size Analysis
Collector 6, Lateral 1
86 to 90 Feet

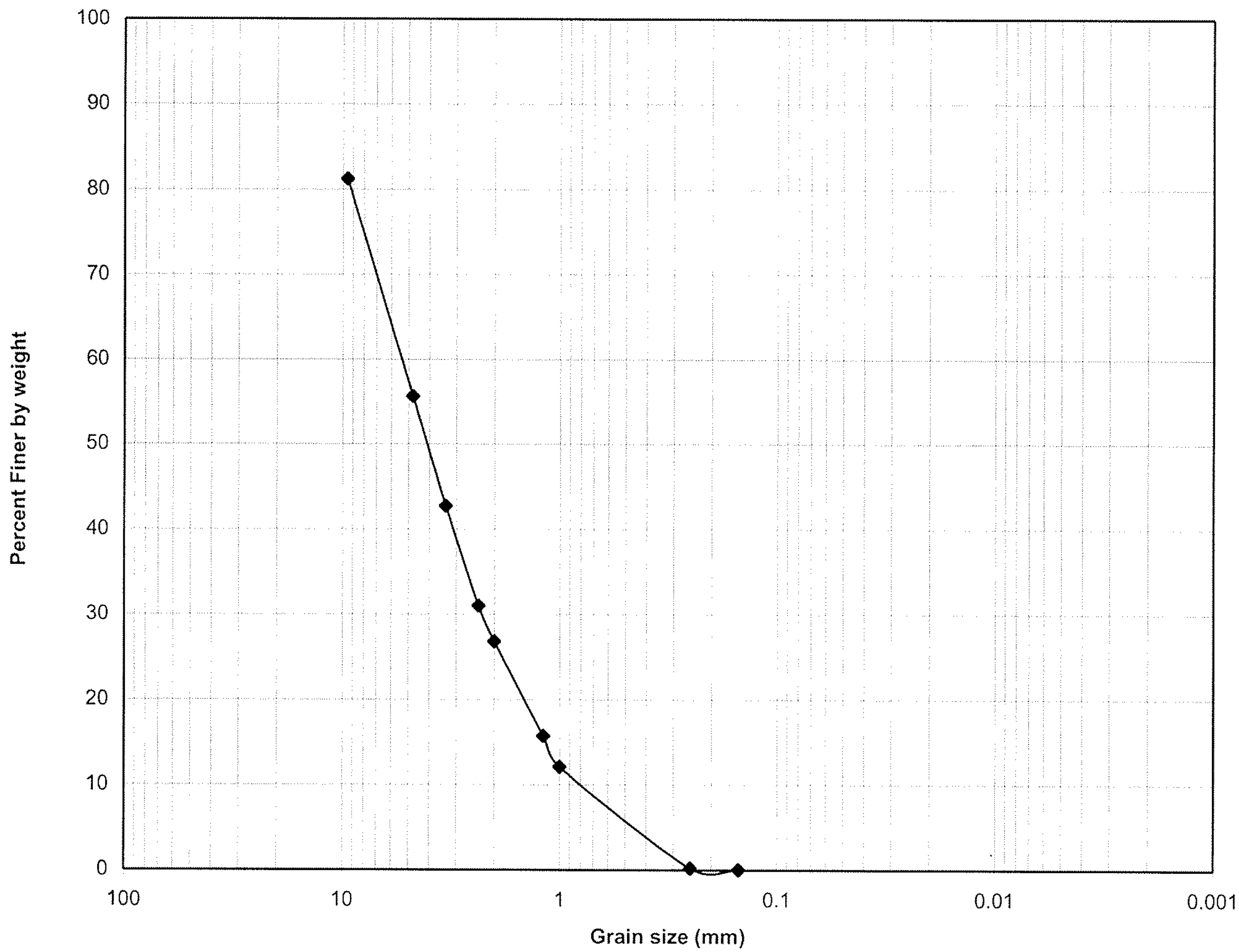
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 1
93 to 97 Feet

ERM 4/09

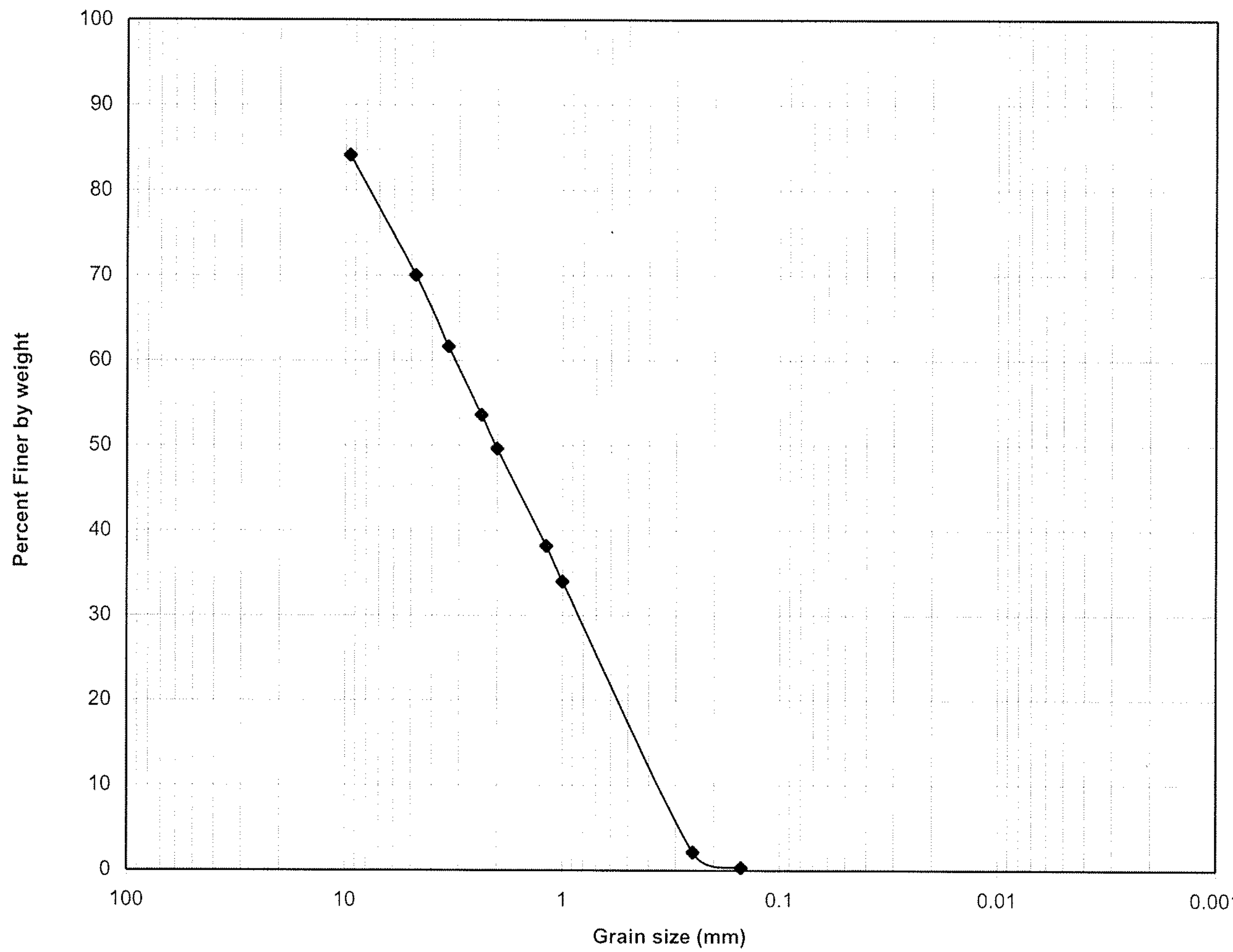


Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 1
100 to 104 Feet

ERM 4/09

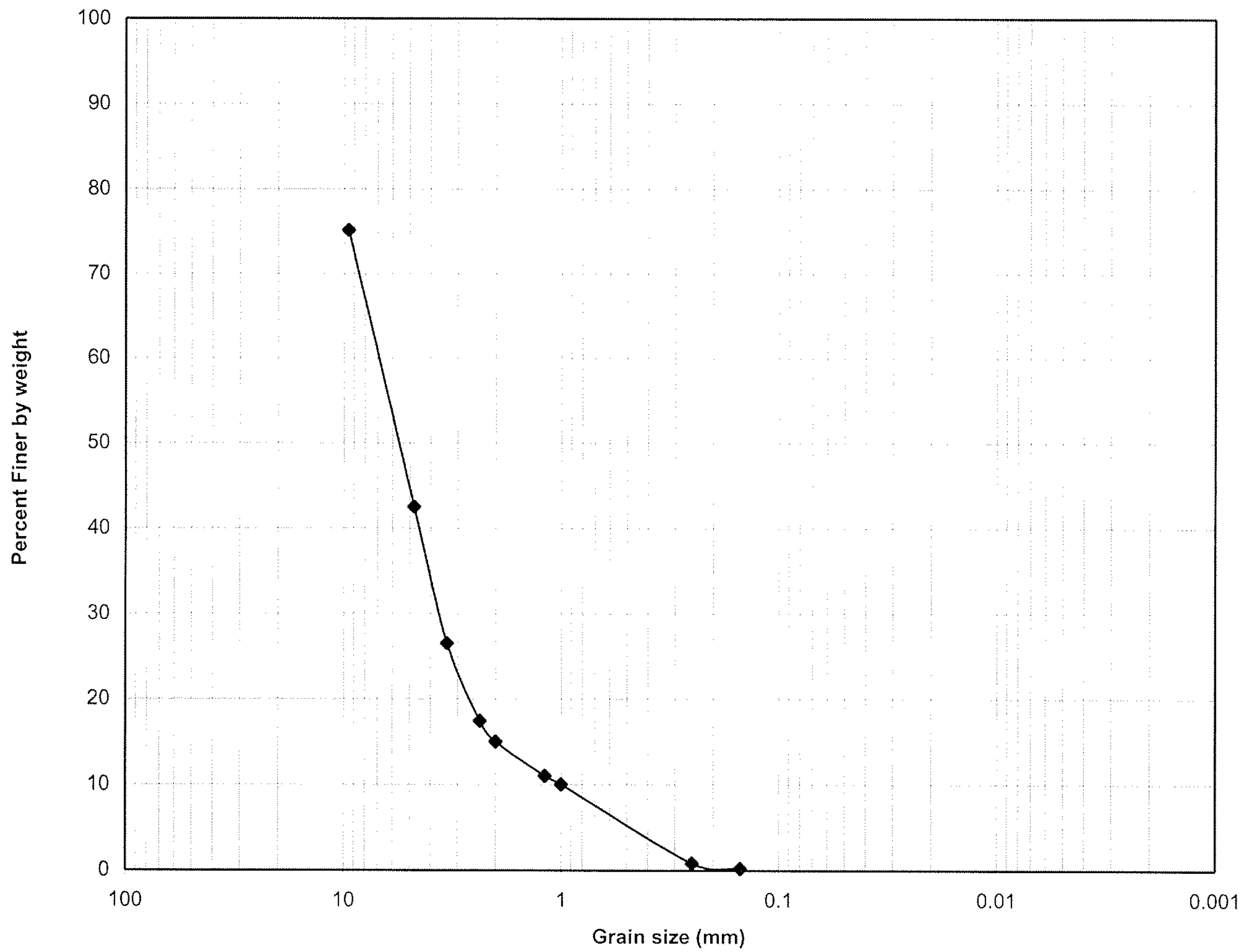
Collector 6, Lateral 2



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 2
7 to 11 Feet

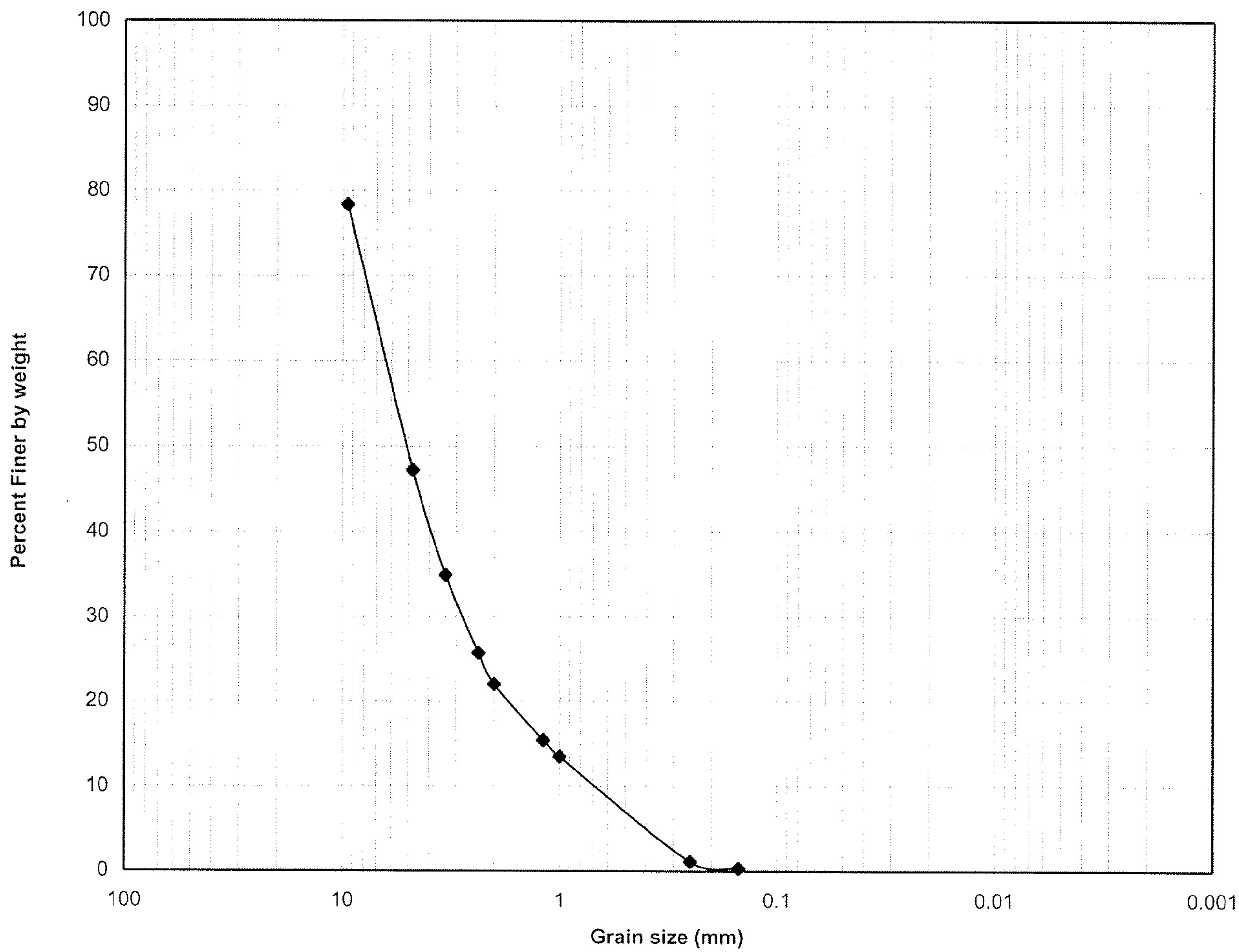
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 2
14 to 18 Feet

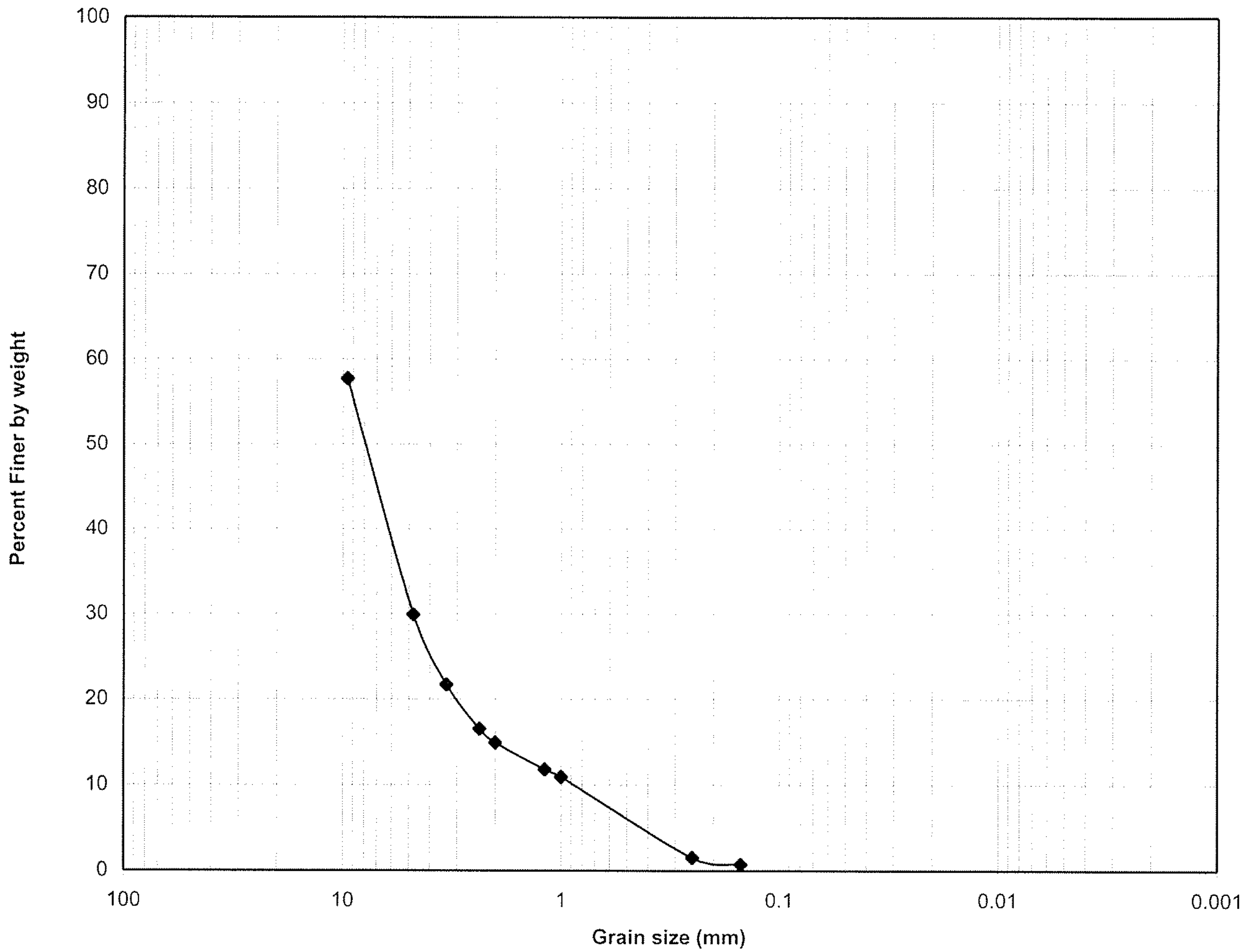
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 2
21 to 25 Feet

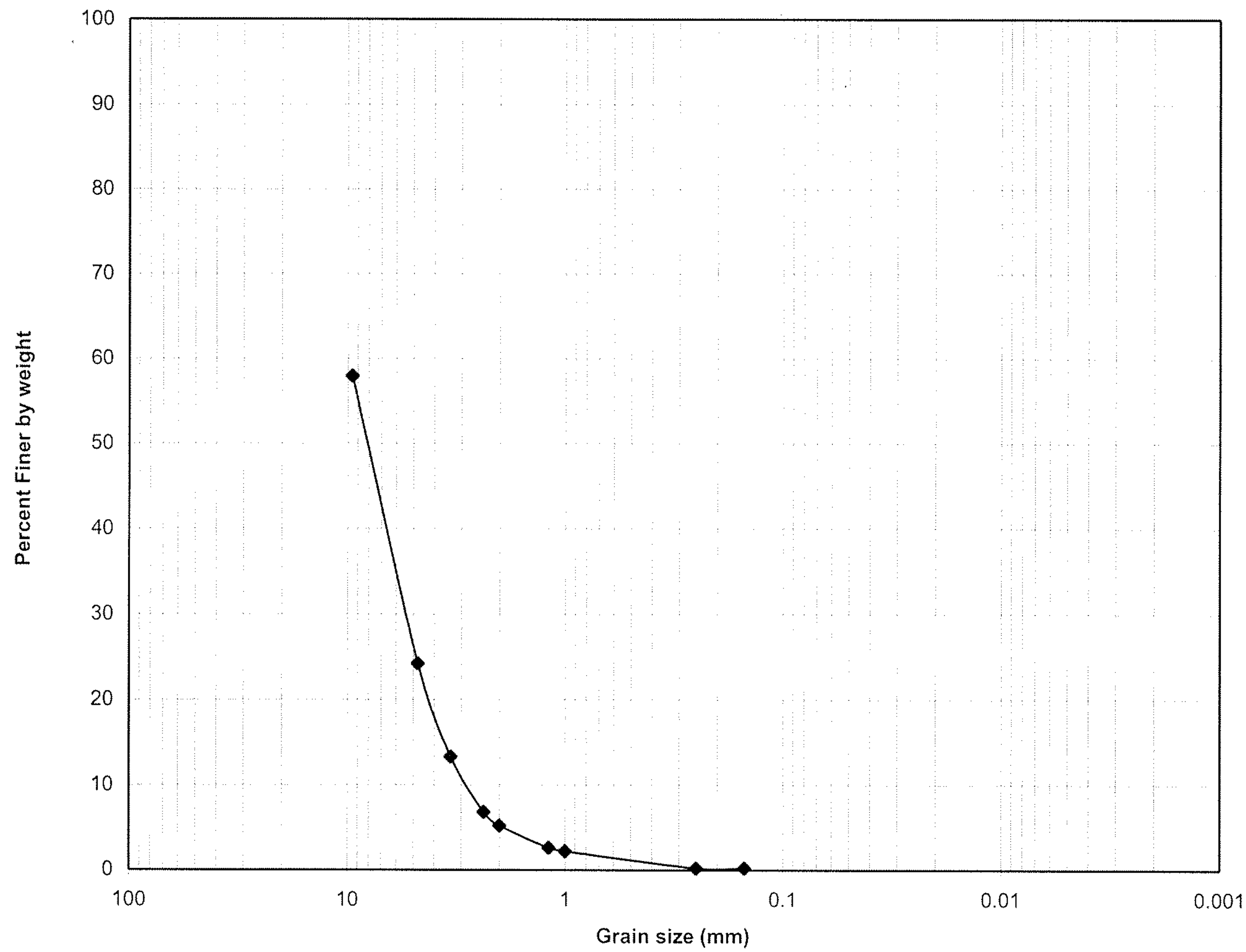
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 2
29 to 32 Feet

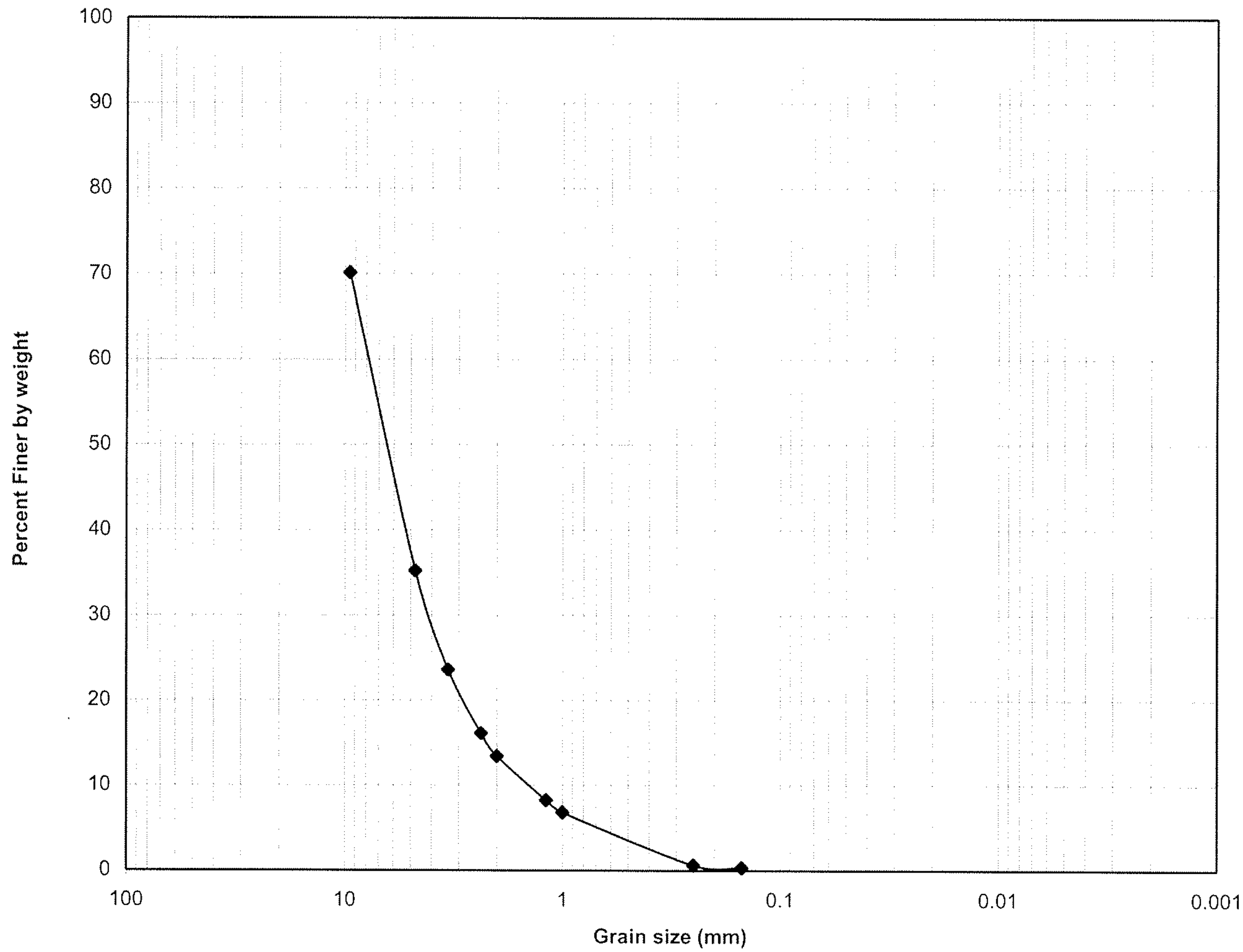
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 2
36 to 39 Feet

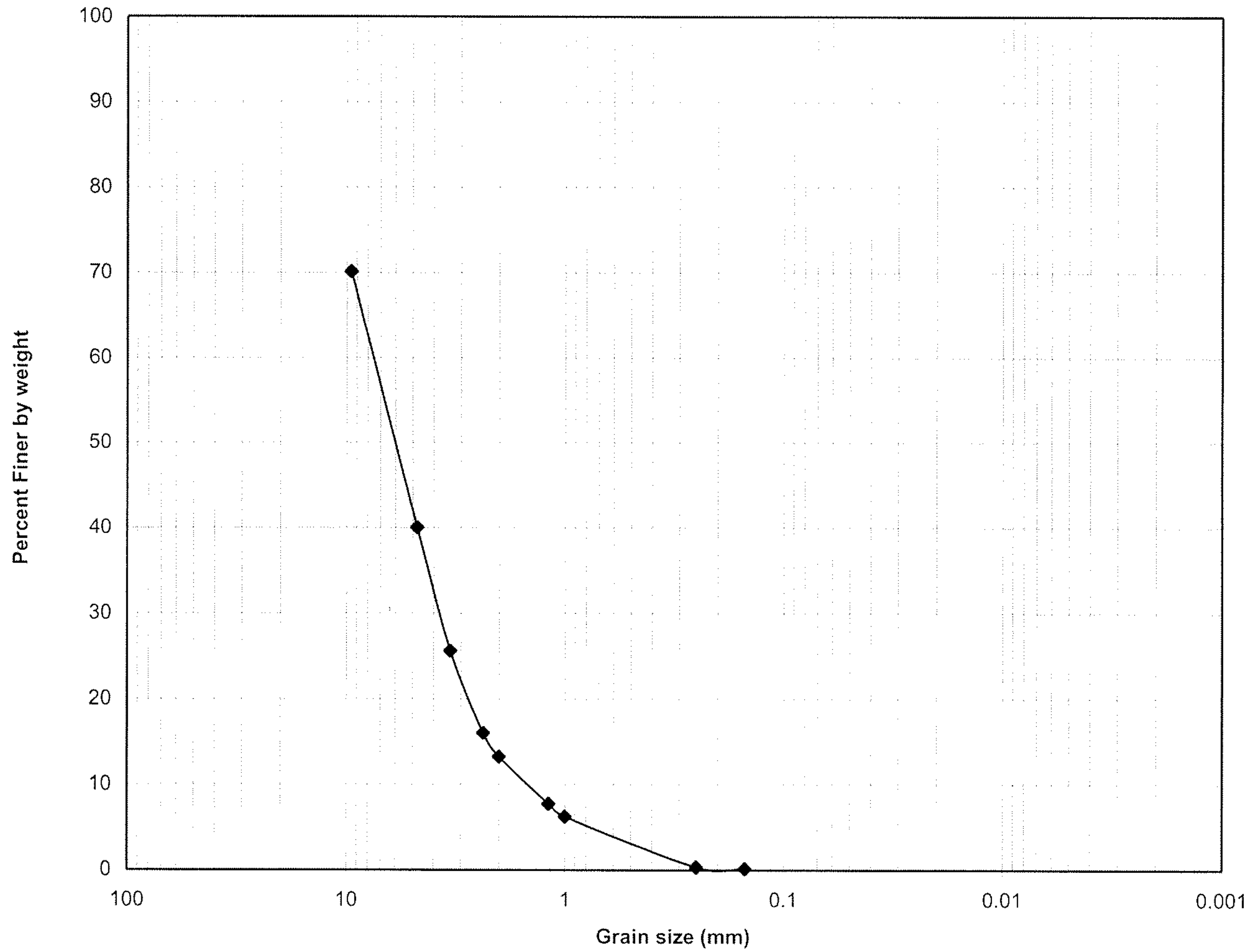
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 2
43 to 47 Feet

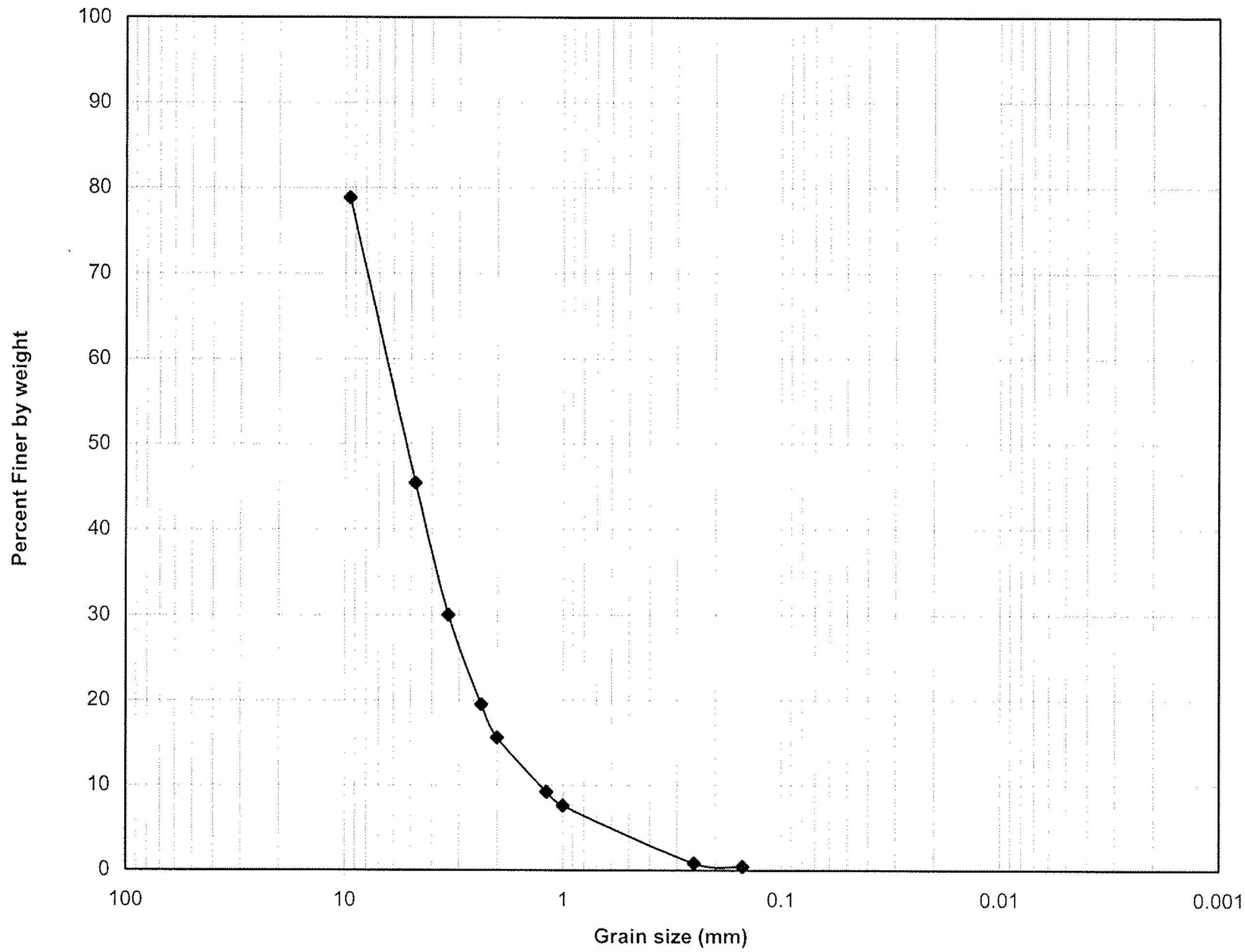
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 2
50 to 54 Feet

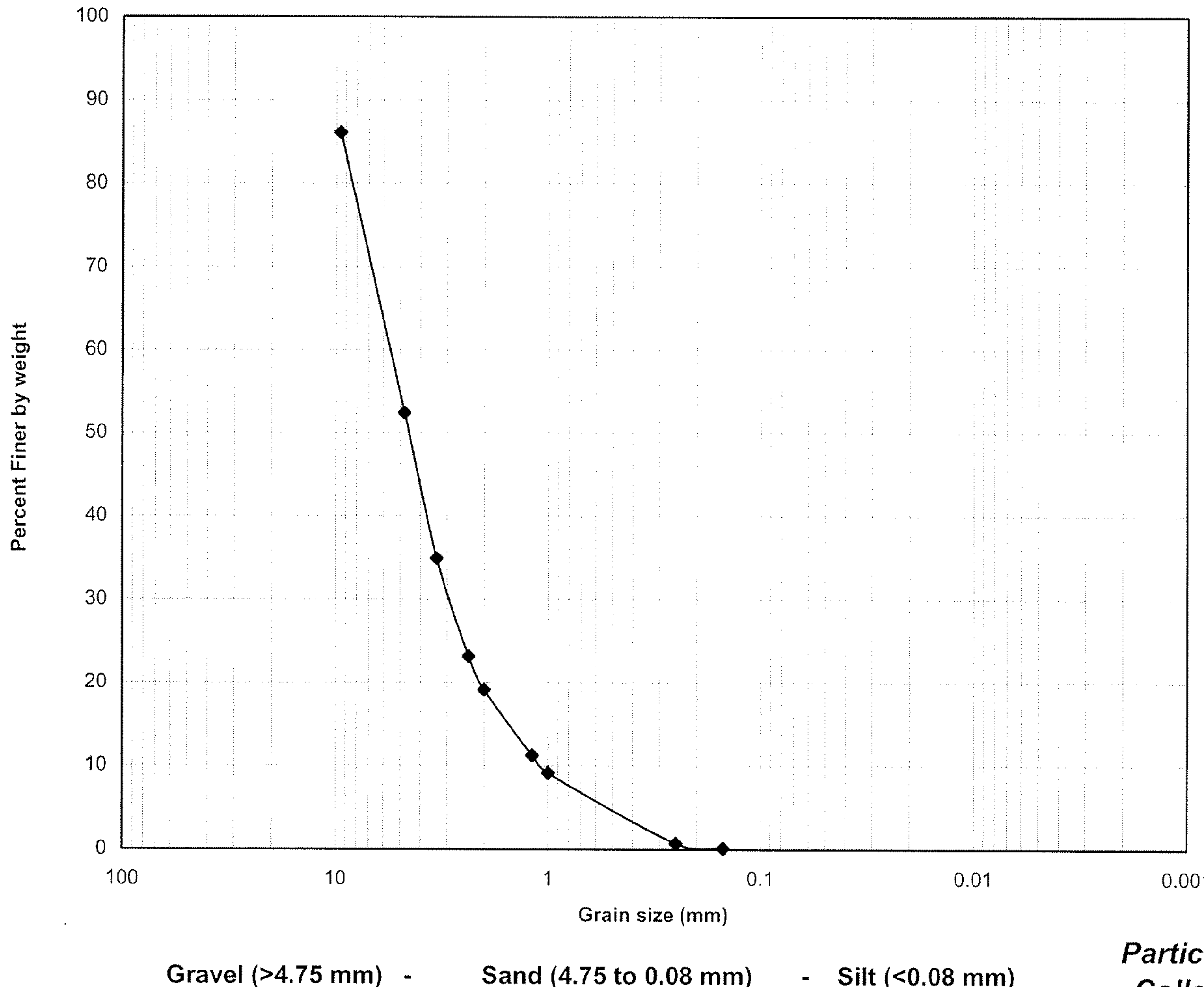
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

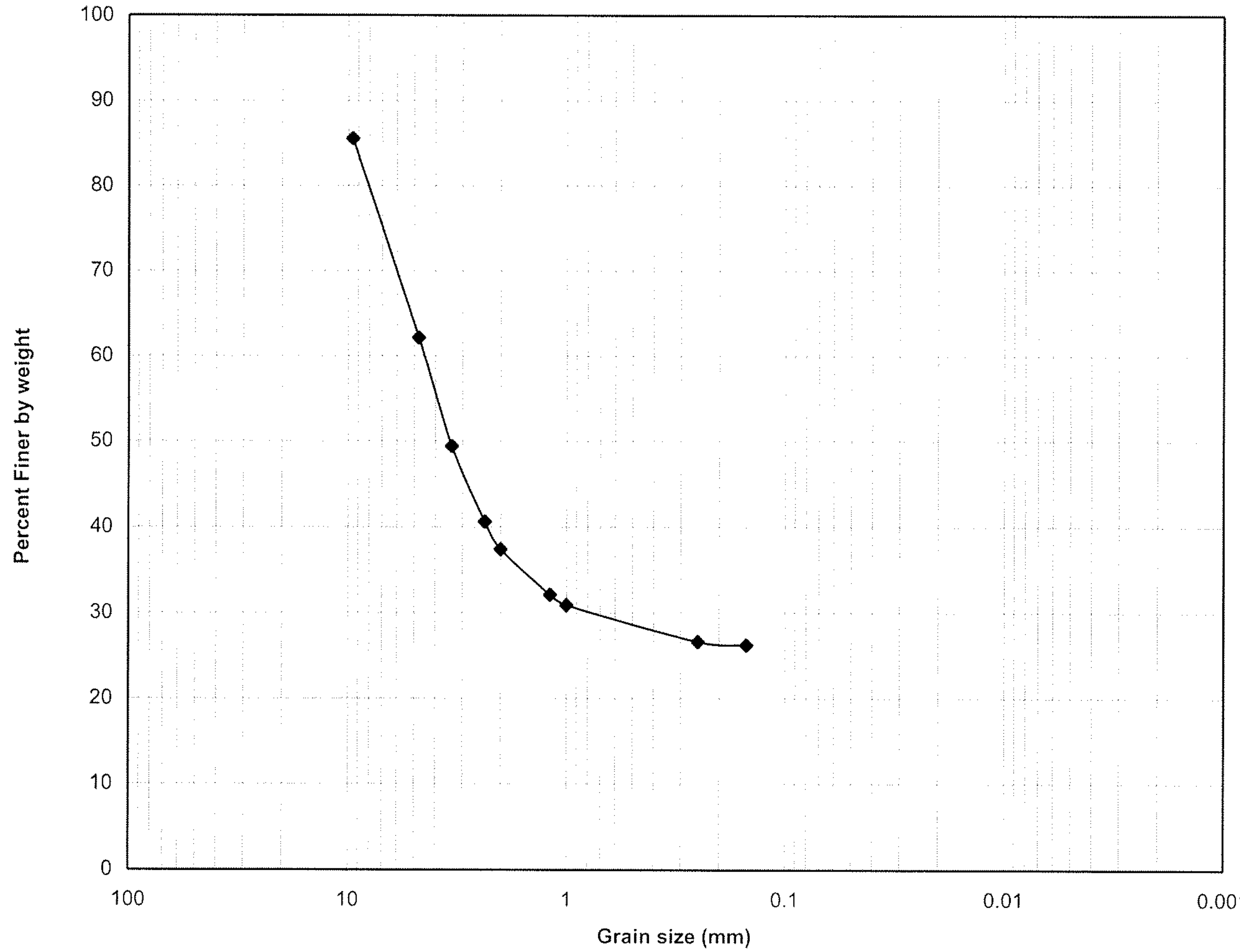
Particle Size Analysis
Collector 6, Lateral 2
57 to 61 Feet

ERM 4/09



Particle Size Analysis
Collector 6, Lateral 2
64 to 68 Feet

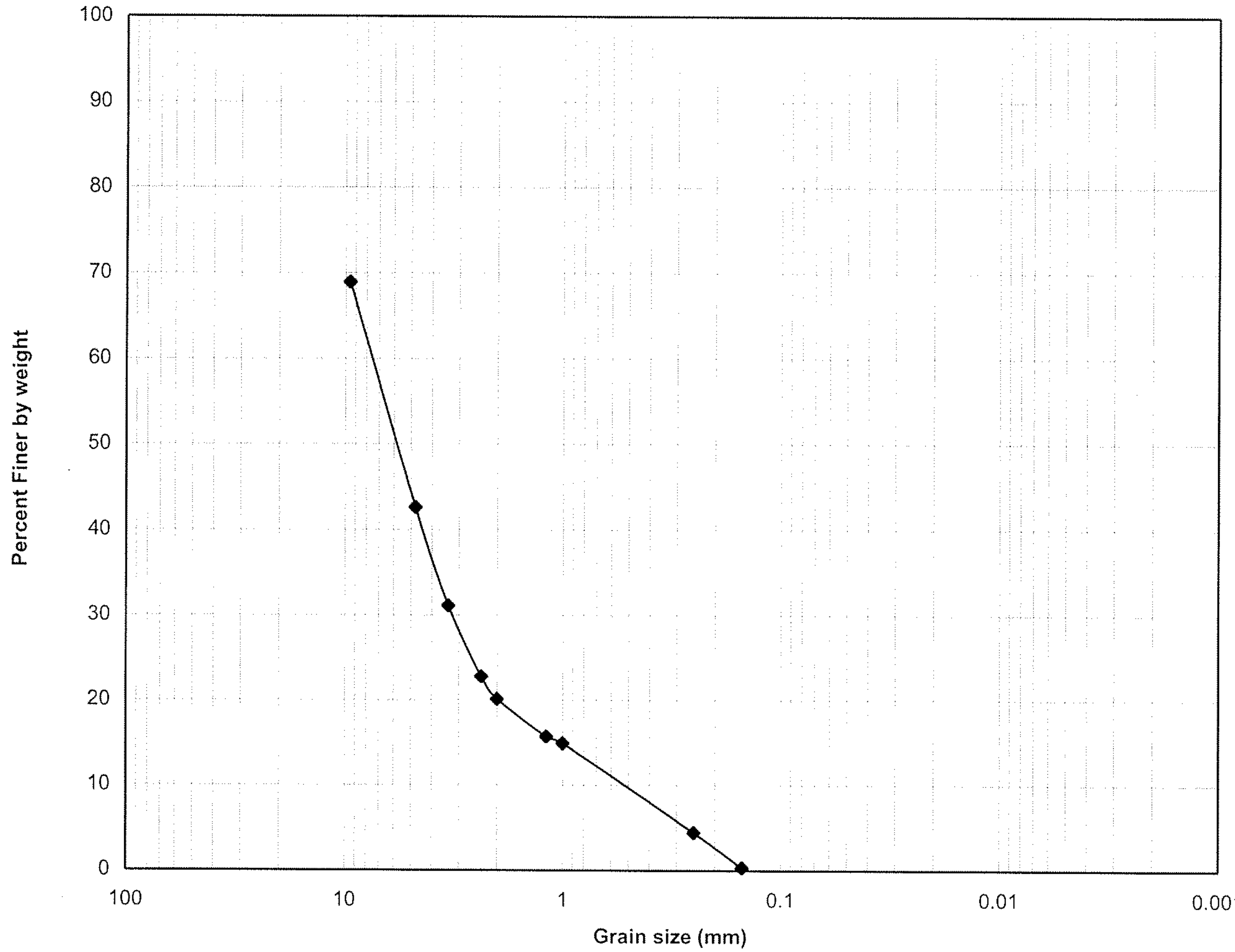
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 2
72 to 75 Feet

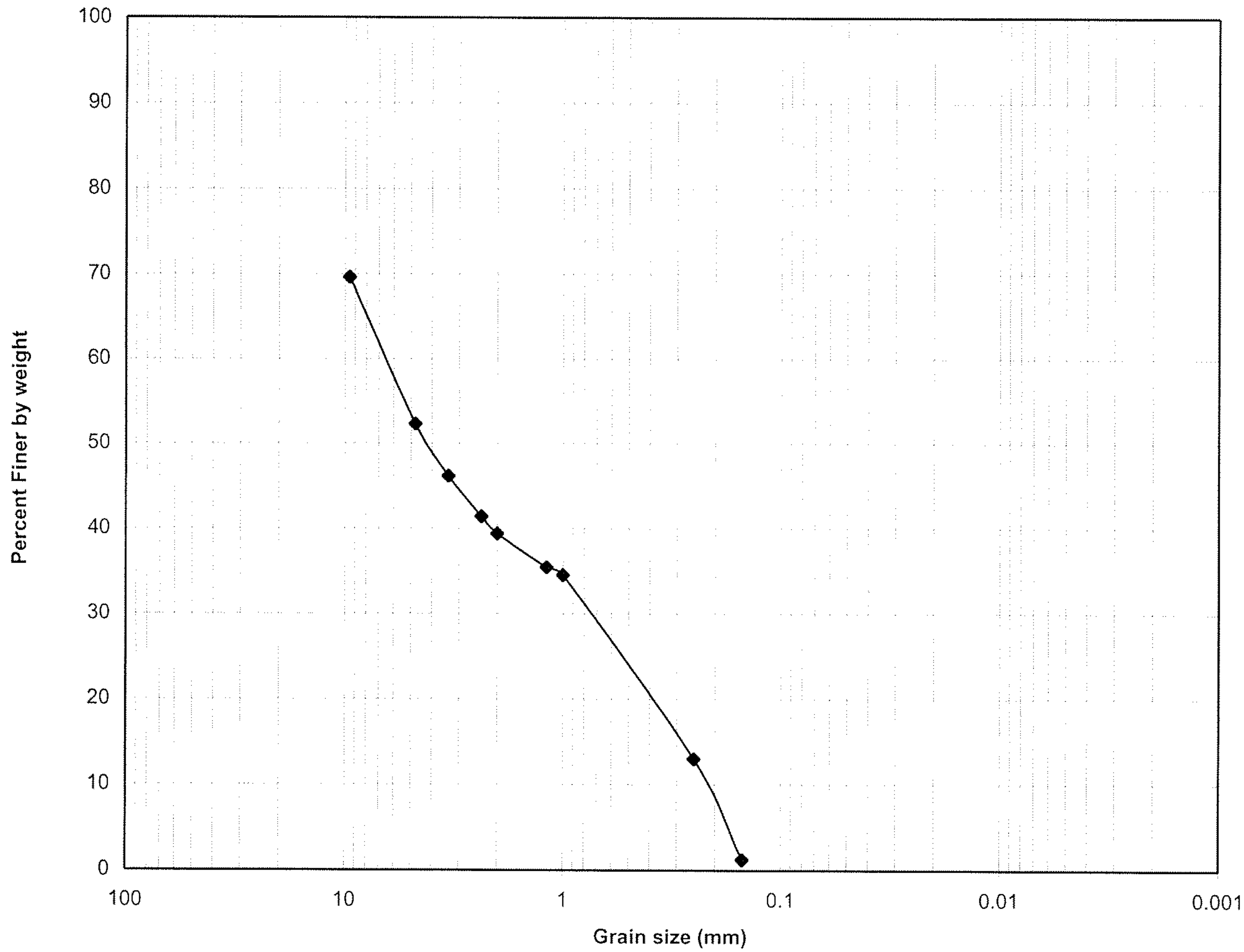
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 2
79 to 82 Feet

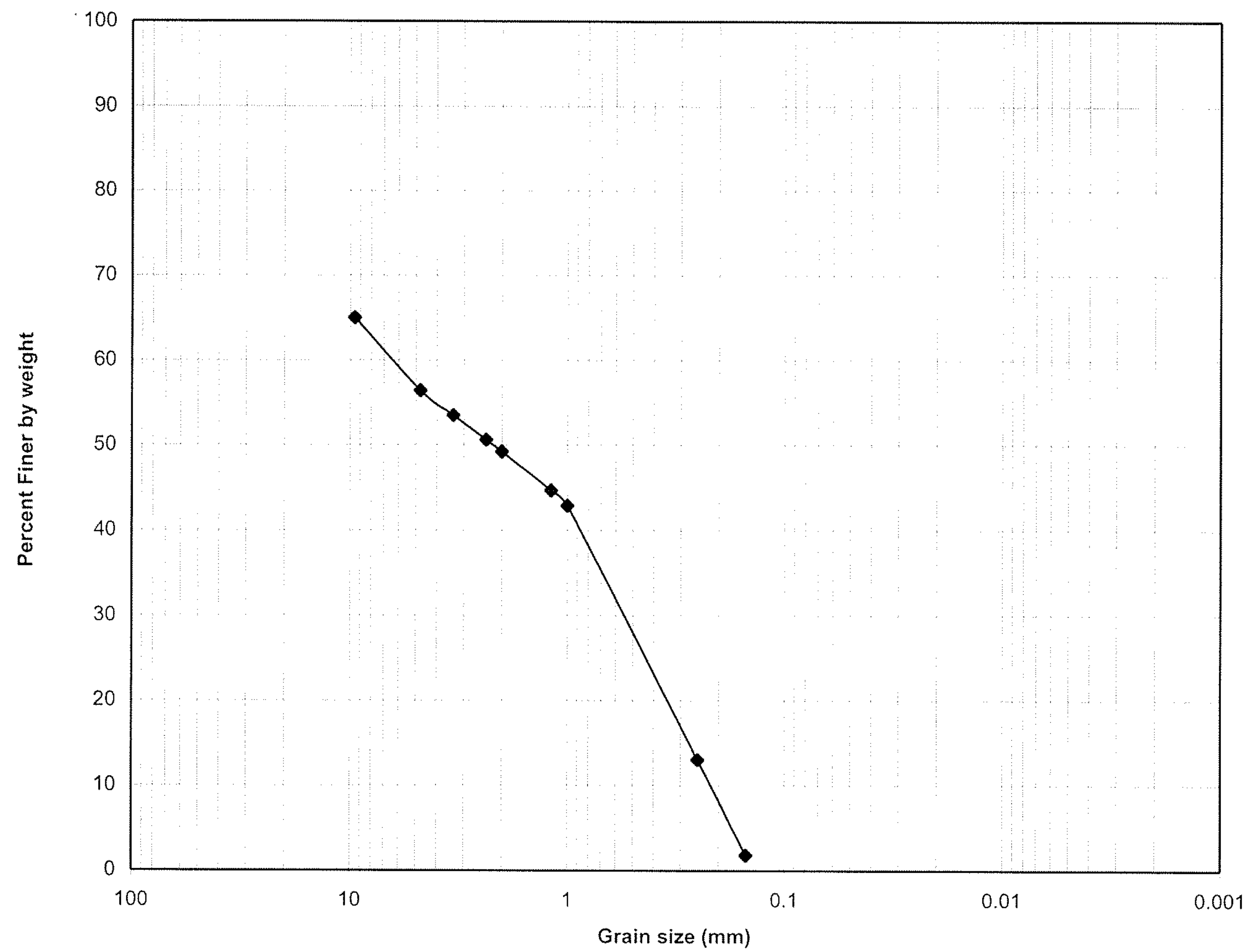
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 2
86 to 90 Feet

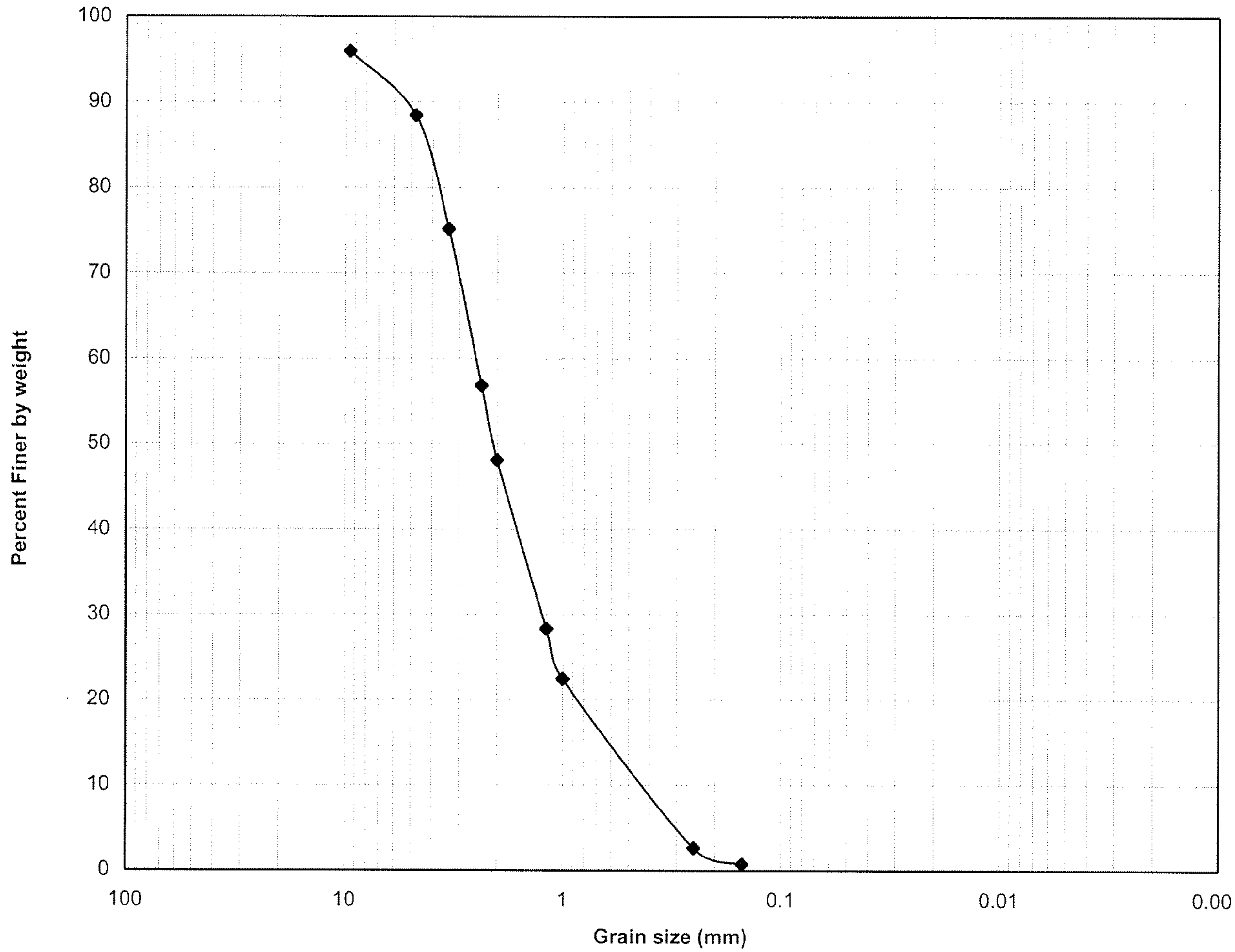
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 2
93 to 97 Feet

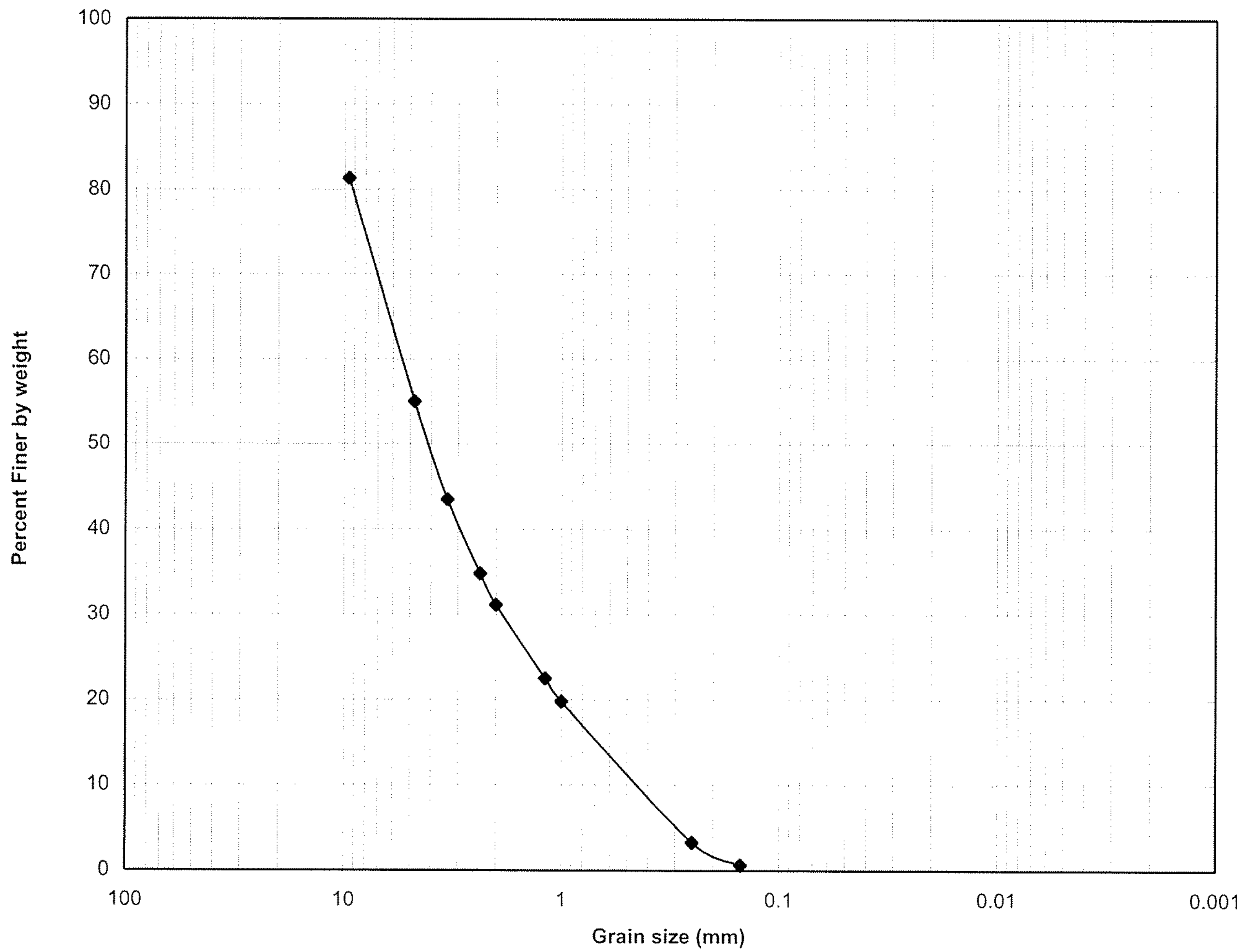
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 2
100 to 104 Feet

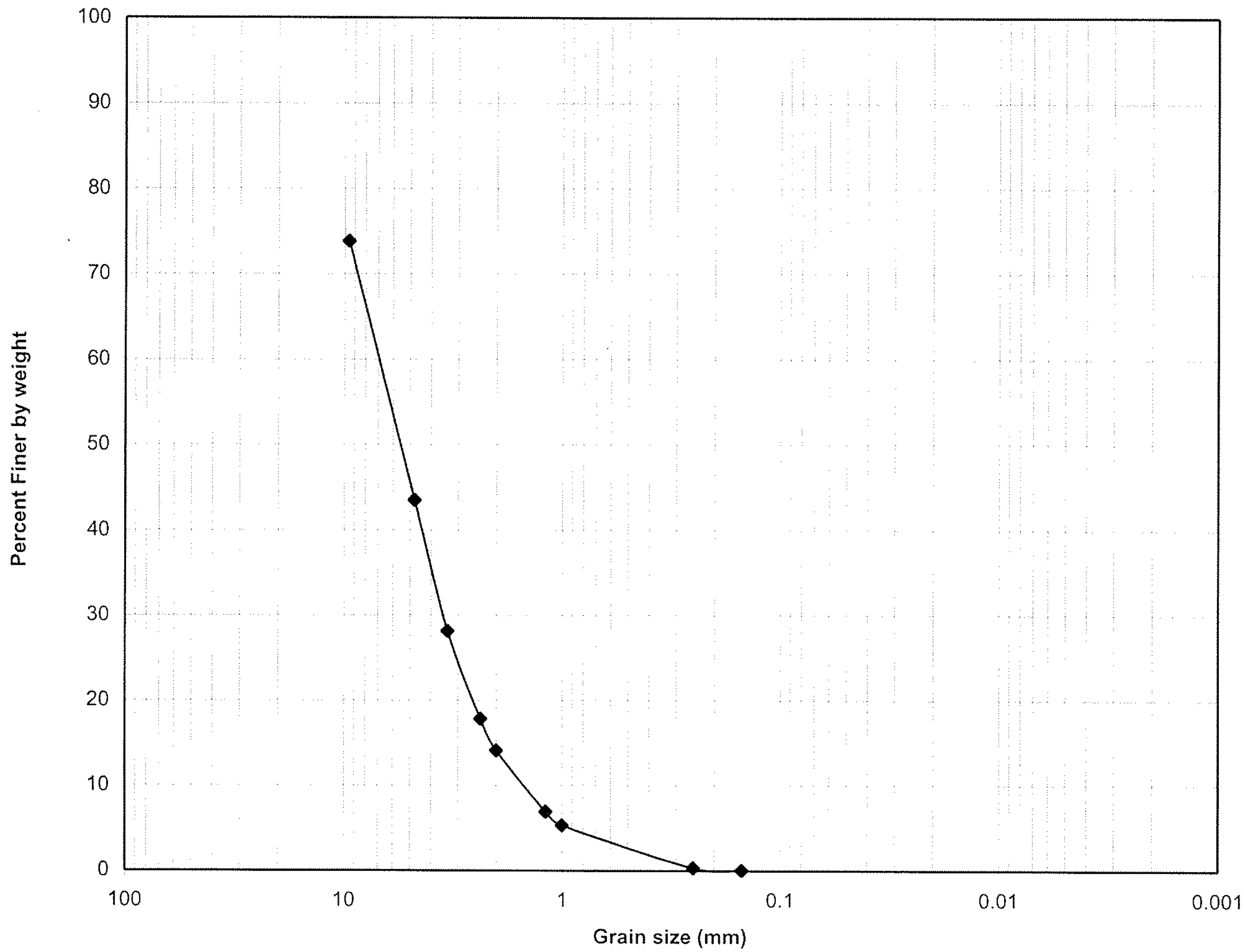
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 2
107 to 111 Feet

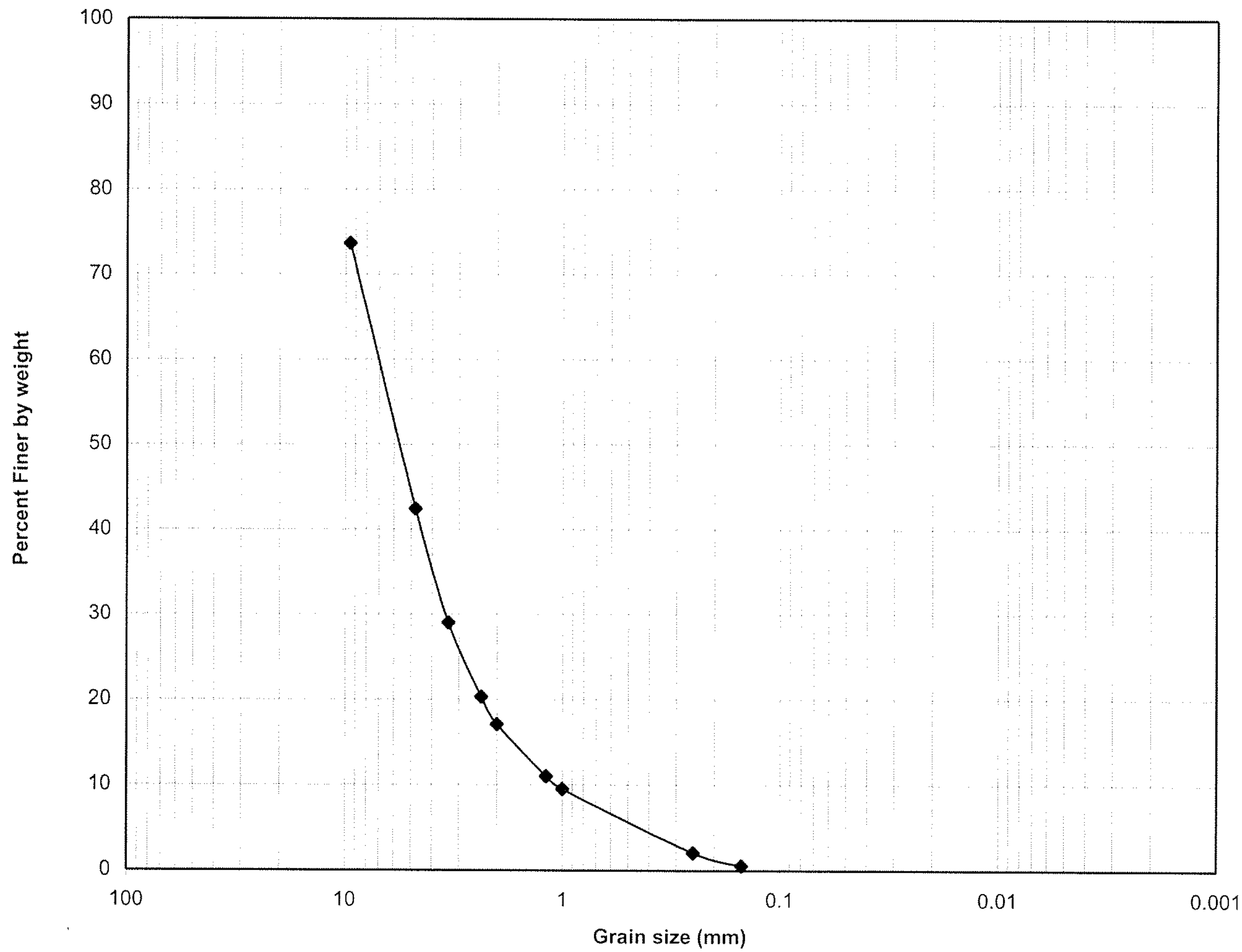
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 2
115 to 118 Feet

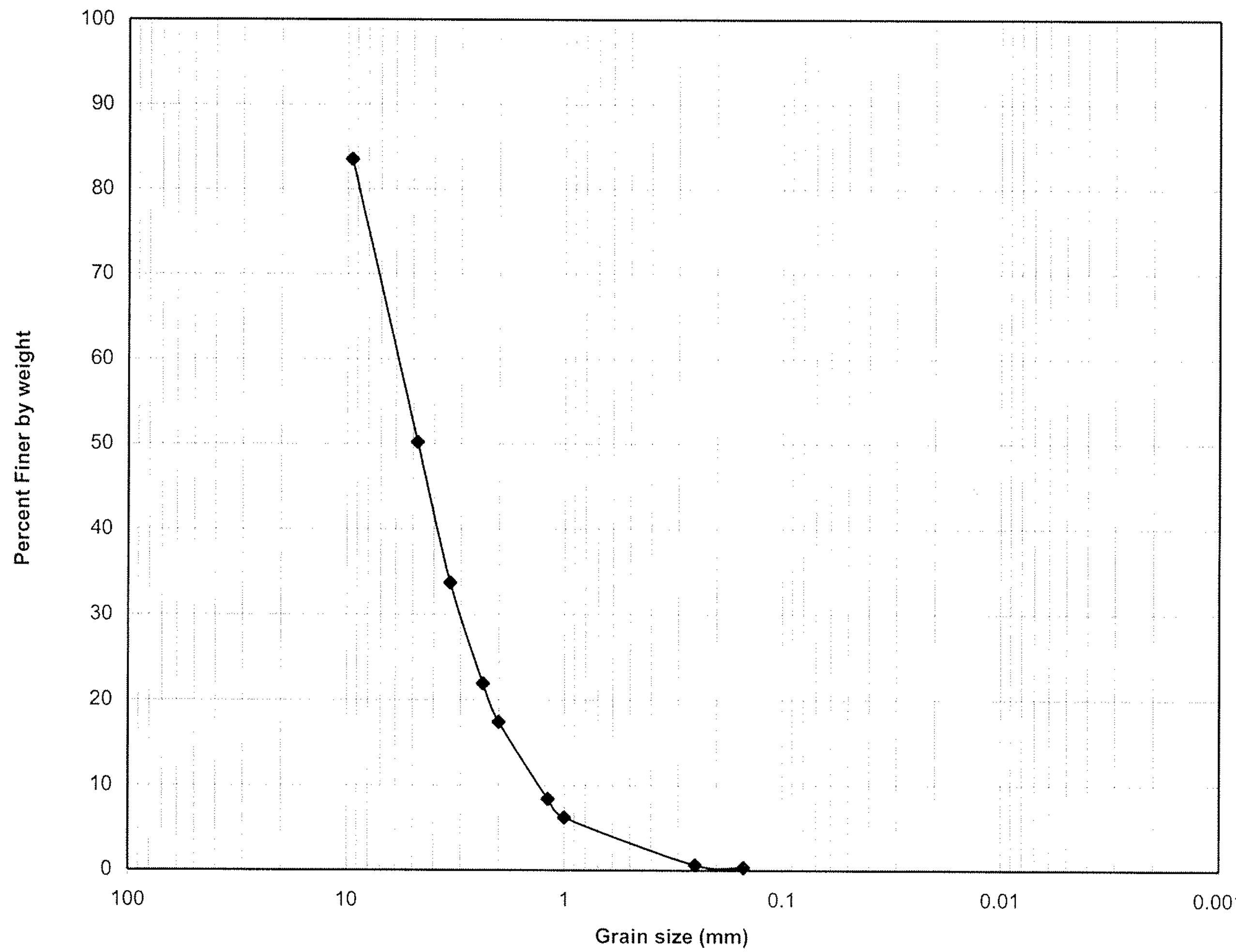
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 2
122 to 125 Feet

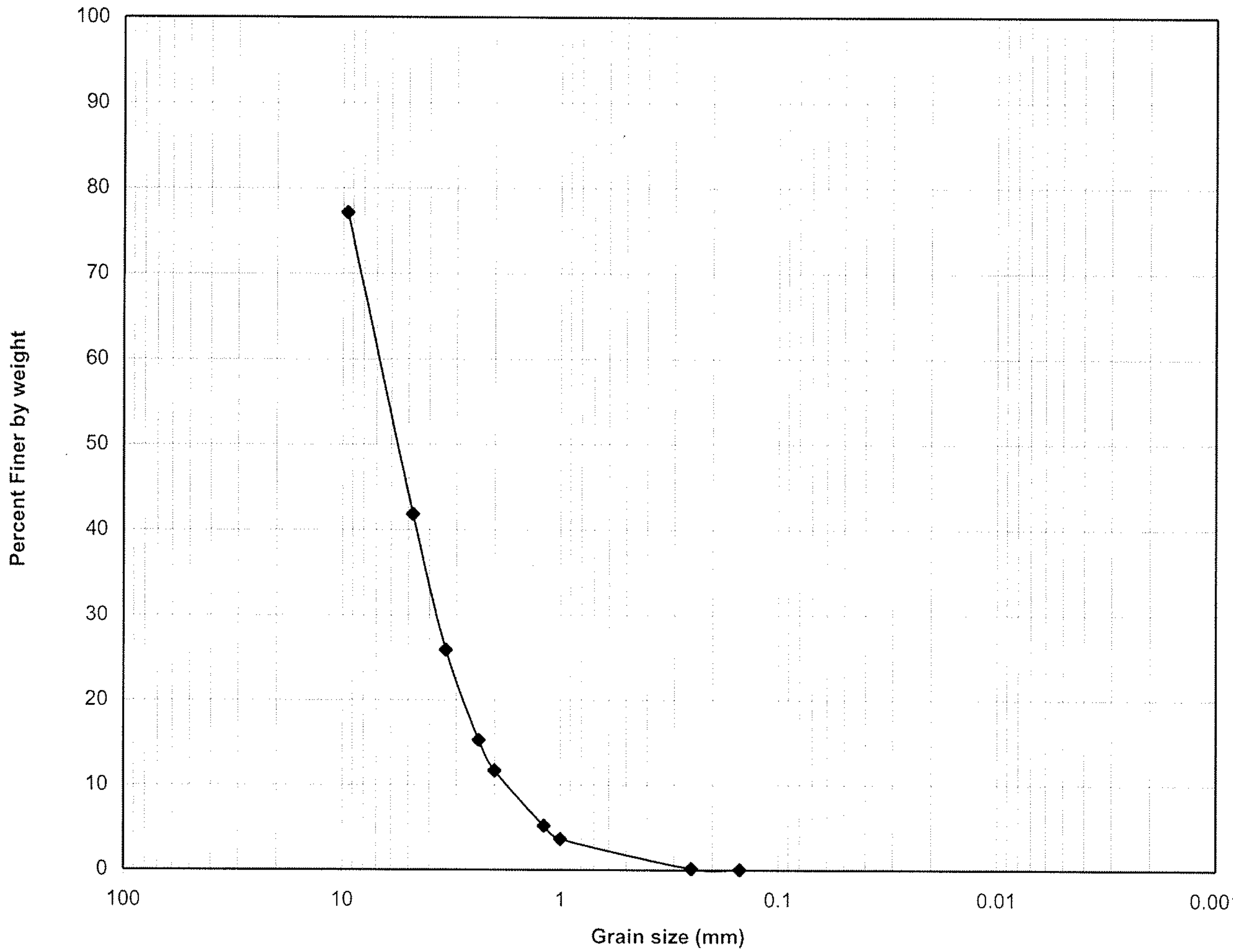
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 2
129 to 132 Feet

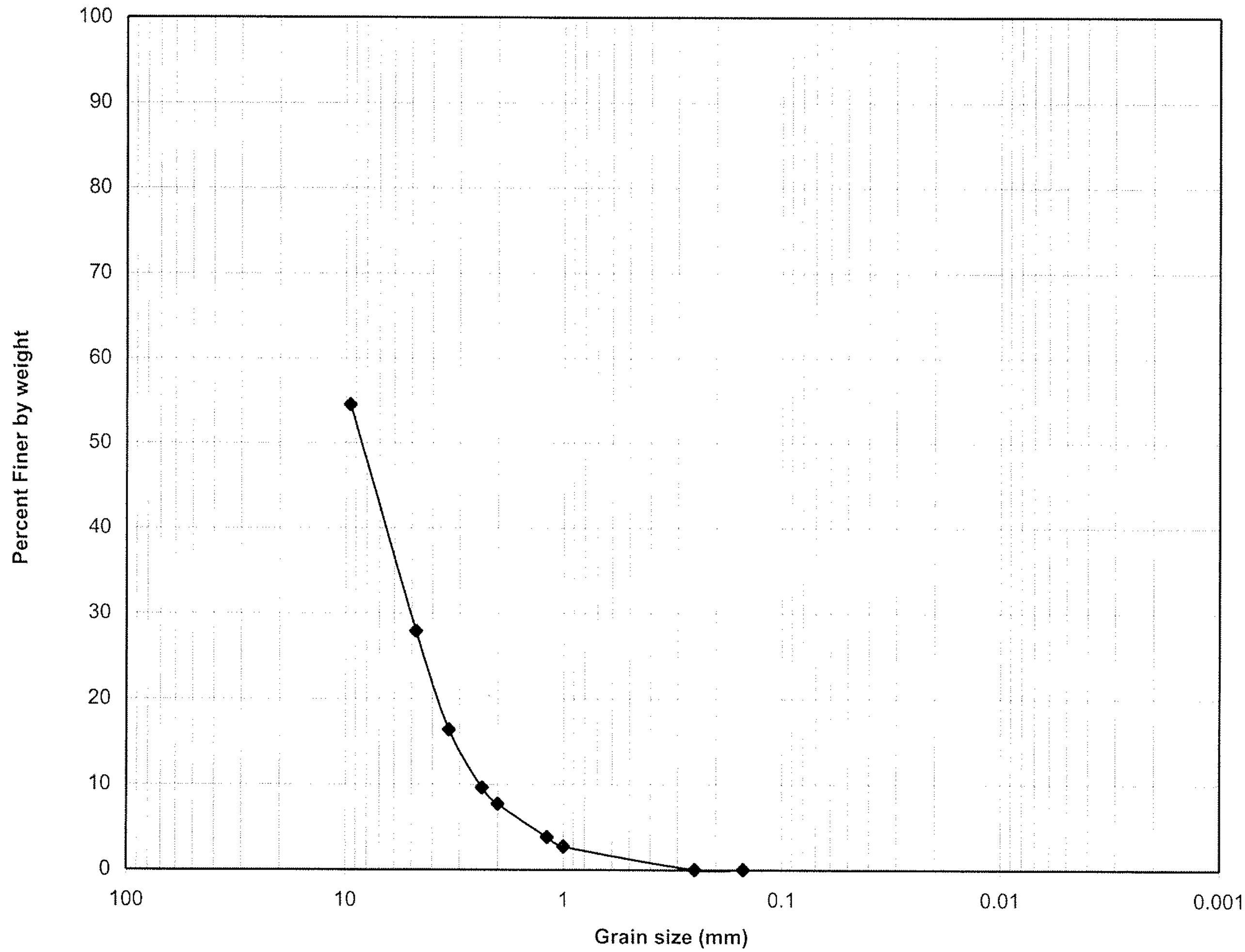
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 2
136 to 140 Feet

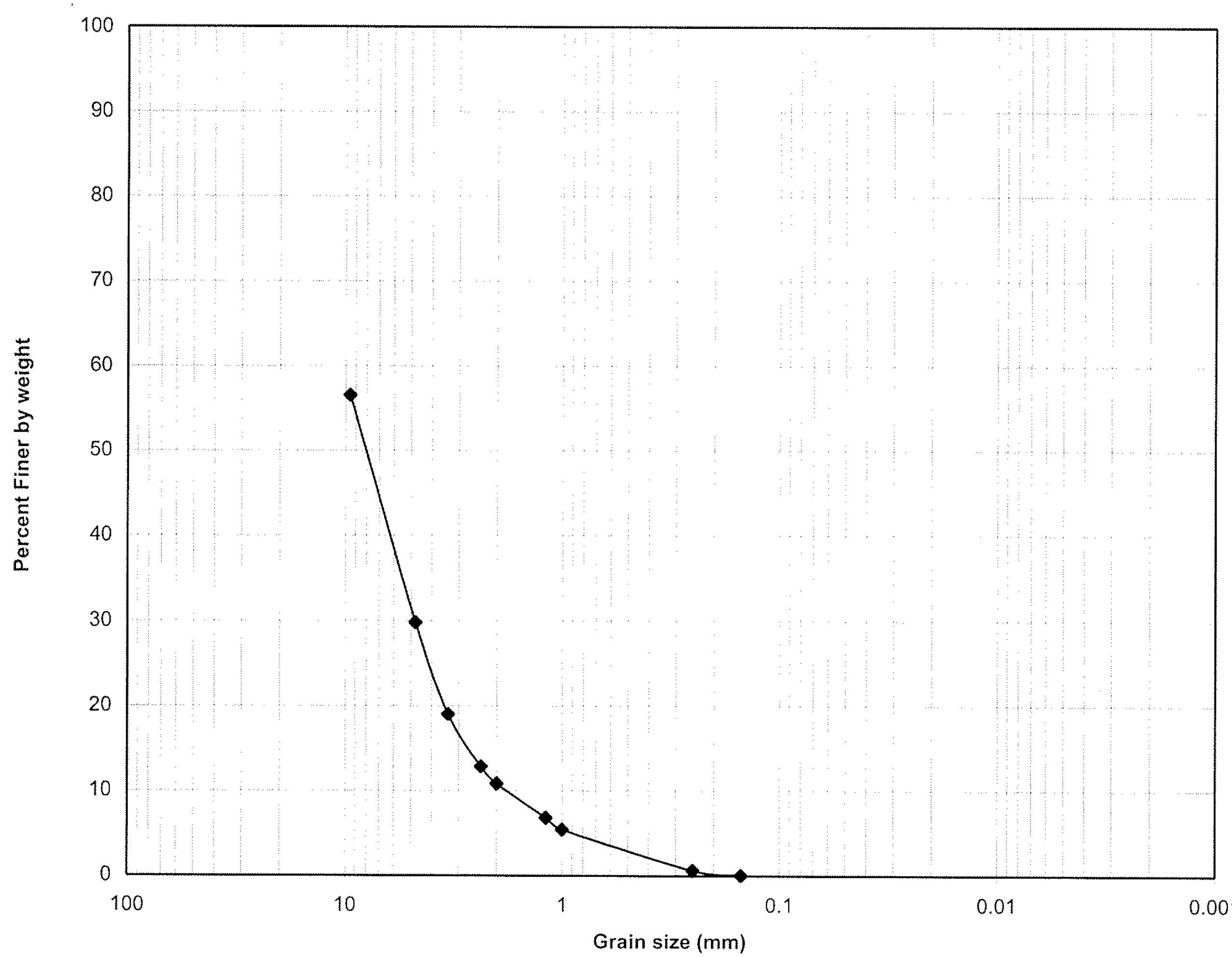
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 2
143 to 147 Feet

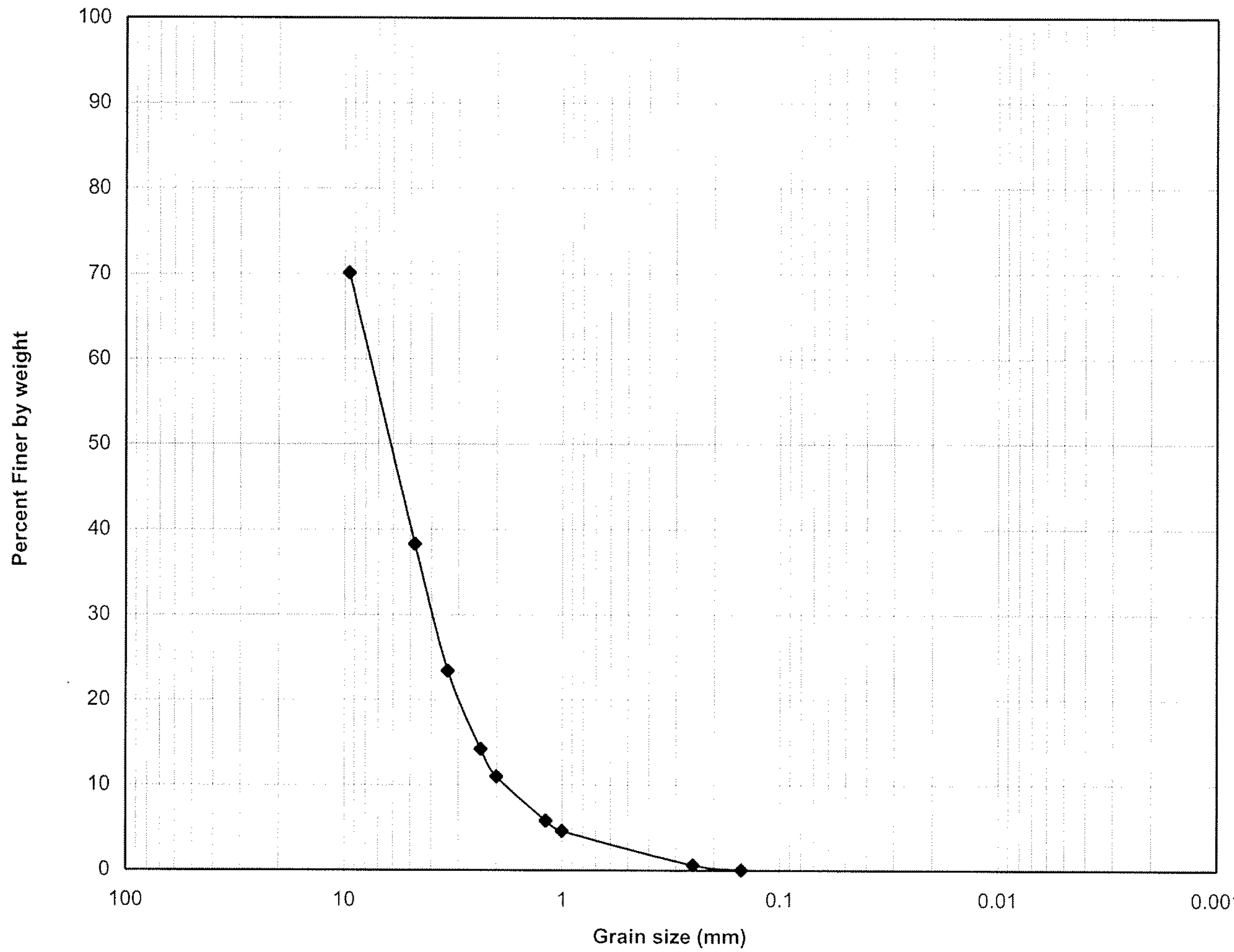
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 2
150 to 154 Feet

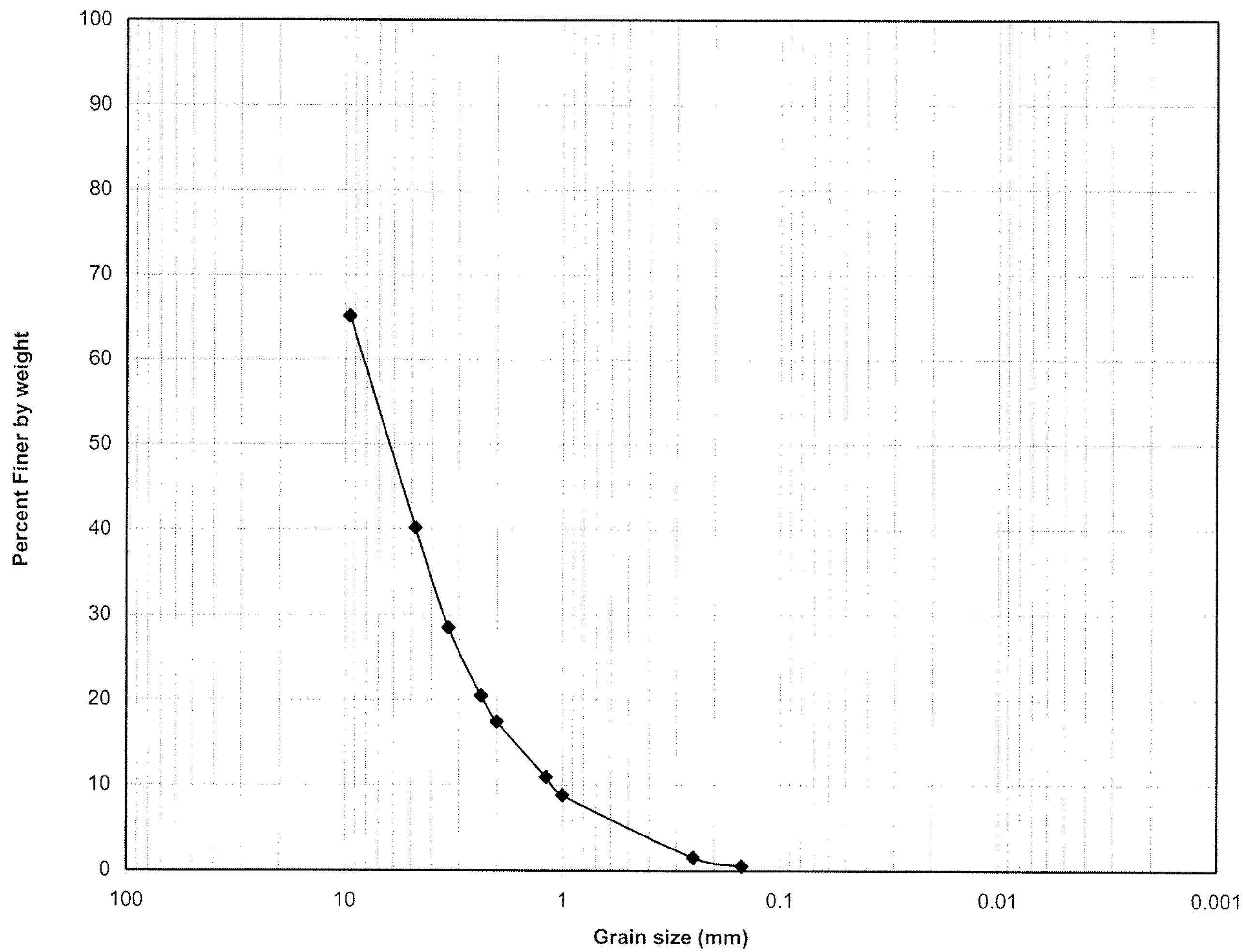
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 2
158 to 161 Feet

ERM 4/09

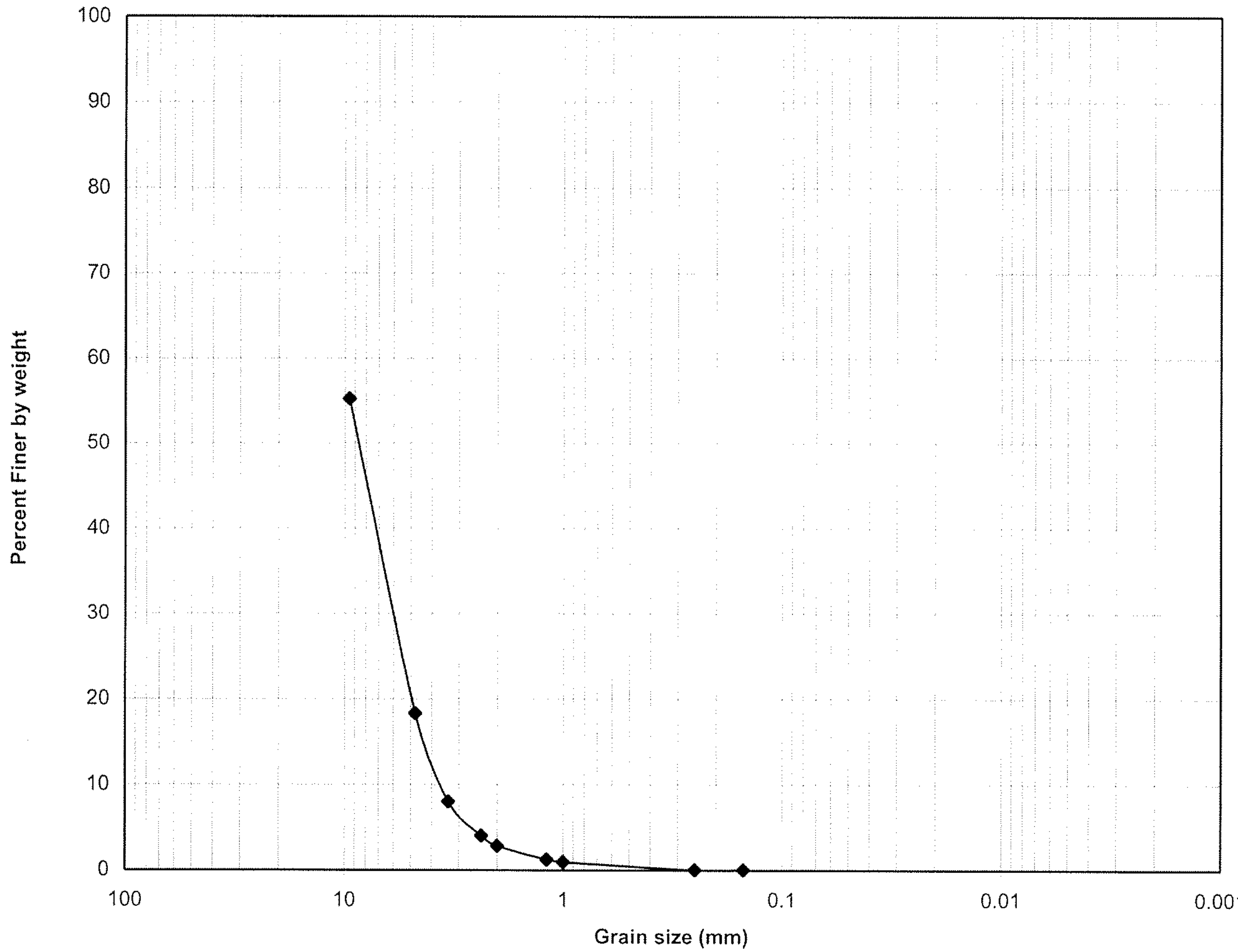


Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 2
165 to 168 Feet

ERM 4/09

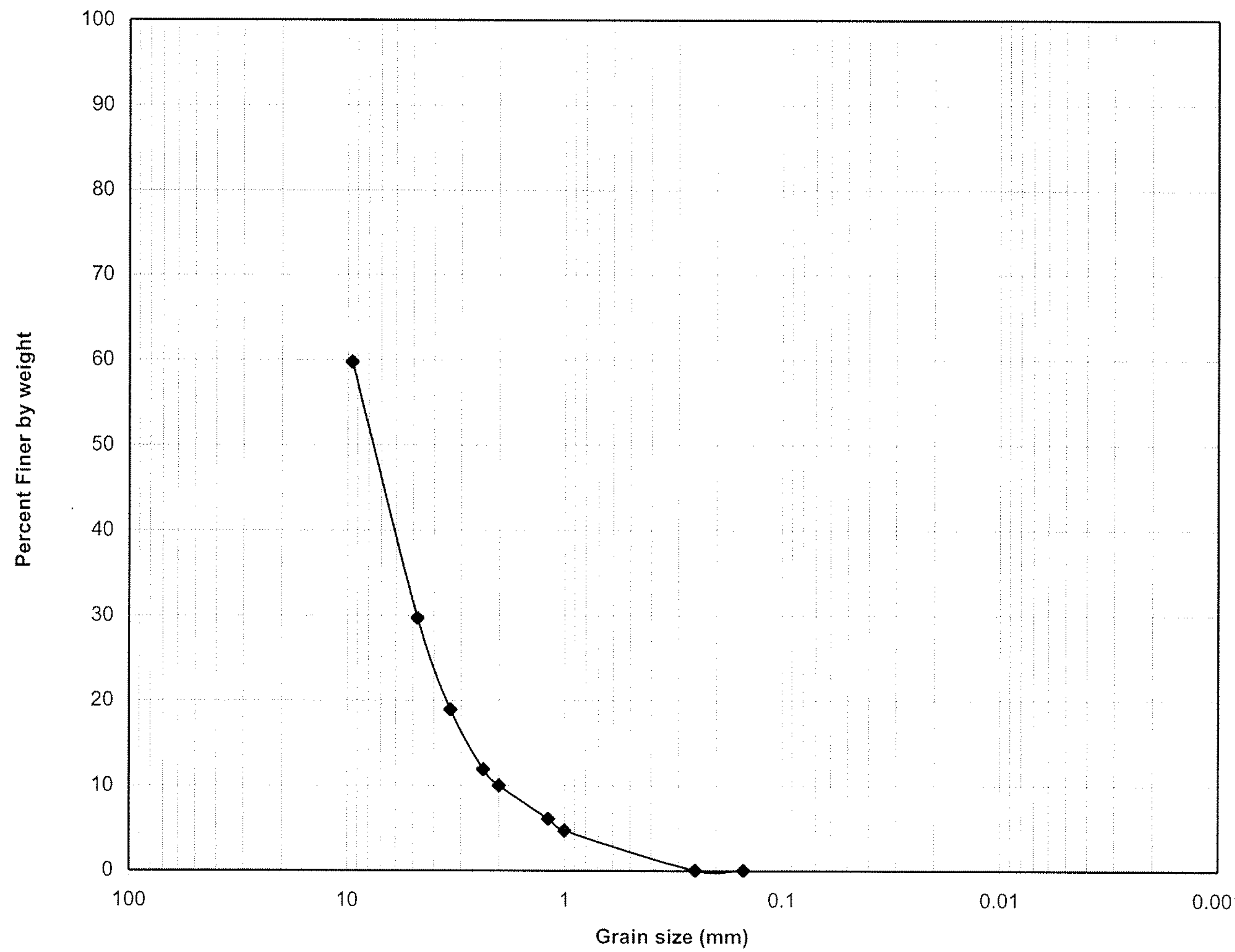
Collector 6, Lateral 3



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

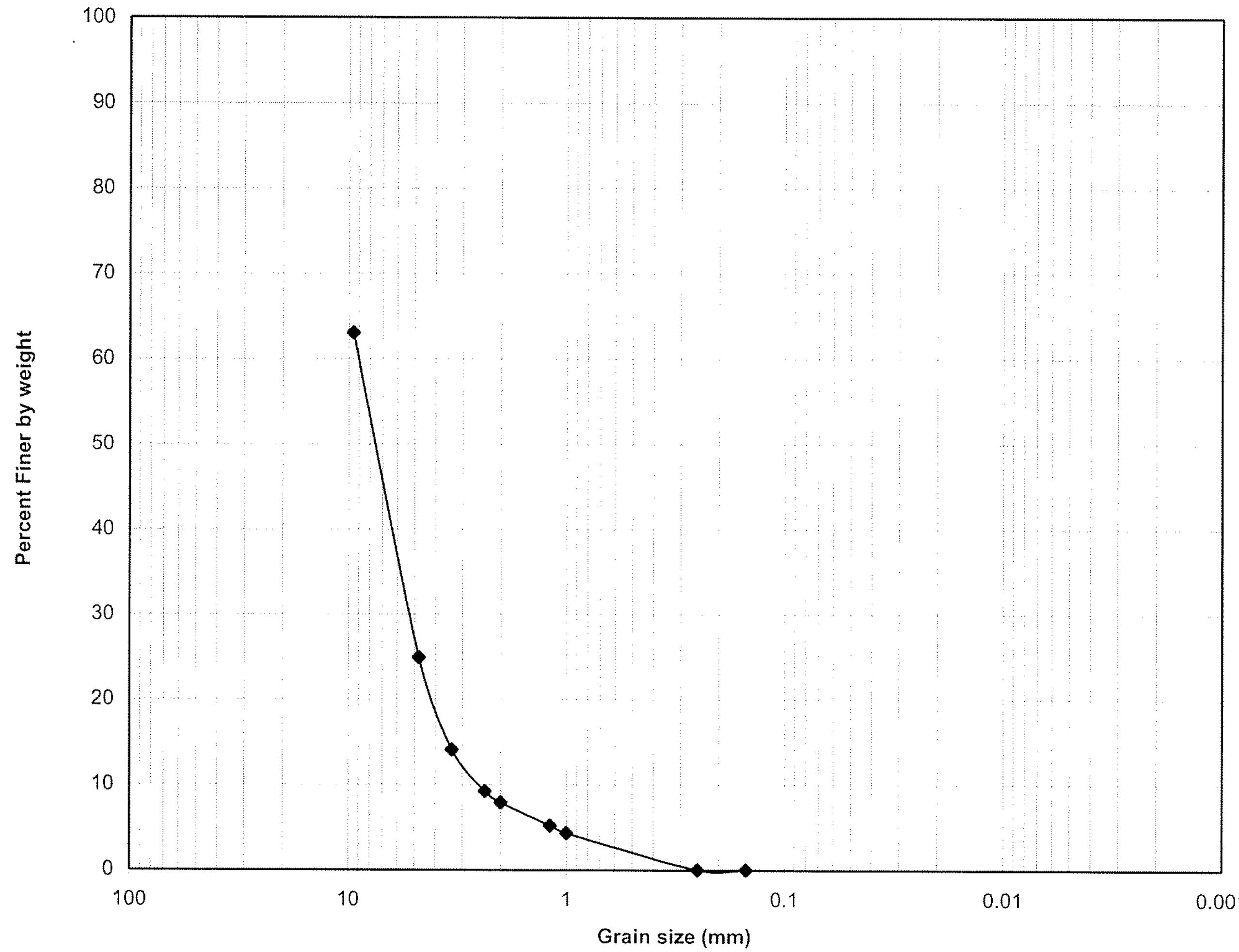
Particle Size Analysis
Collector 6, Lateral 3
7 to 11 Feet

ERM 4/09



Particle Size Analysis
Collector 6, Lateral 3
14 to 18 Feet

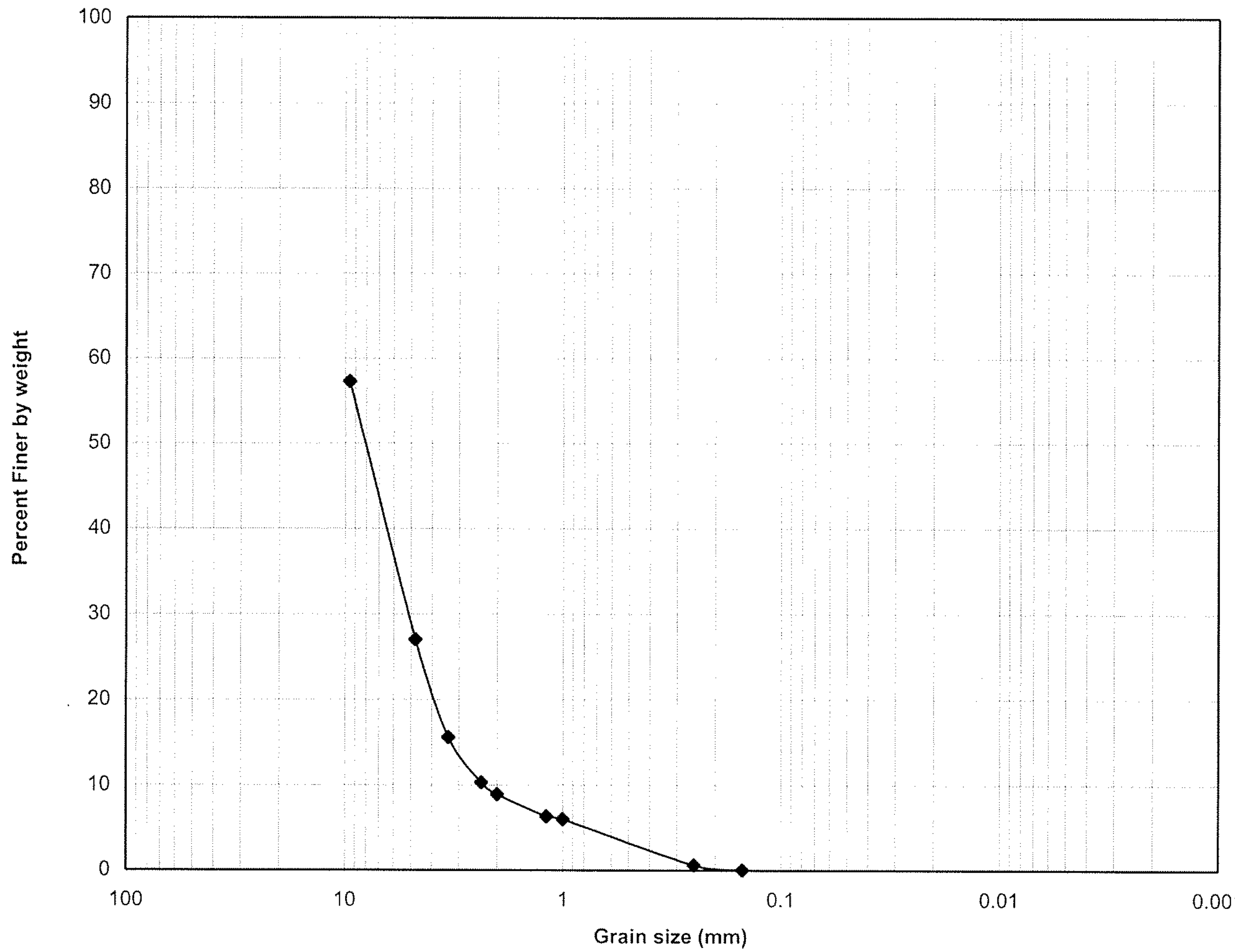
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 3
21 to 25 Feet

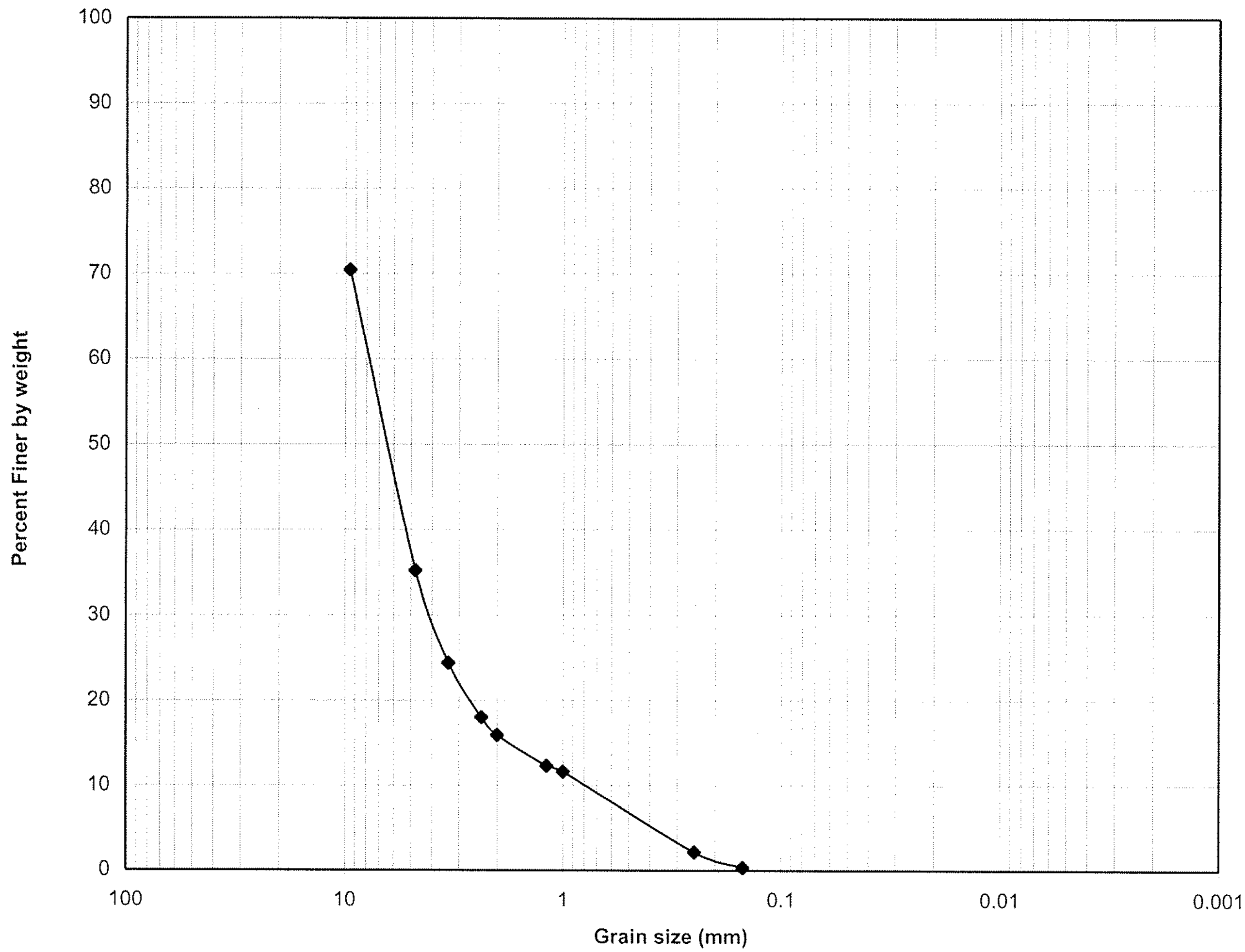
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 3
29 to 32 Feet

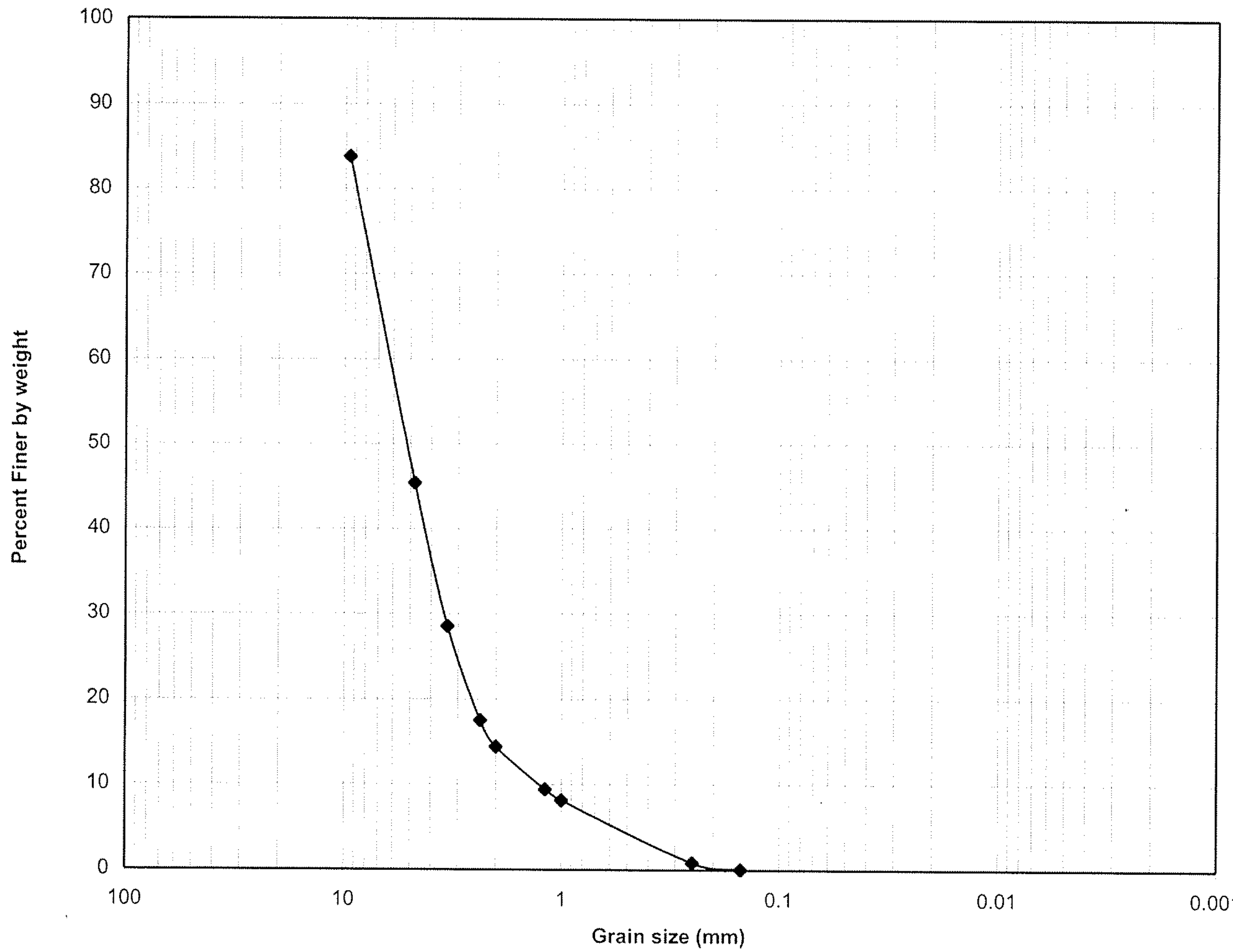
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 3
36 to 39 Feet

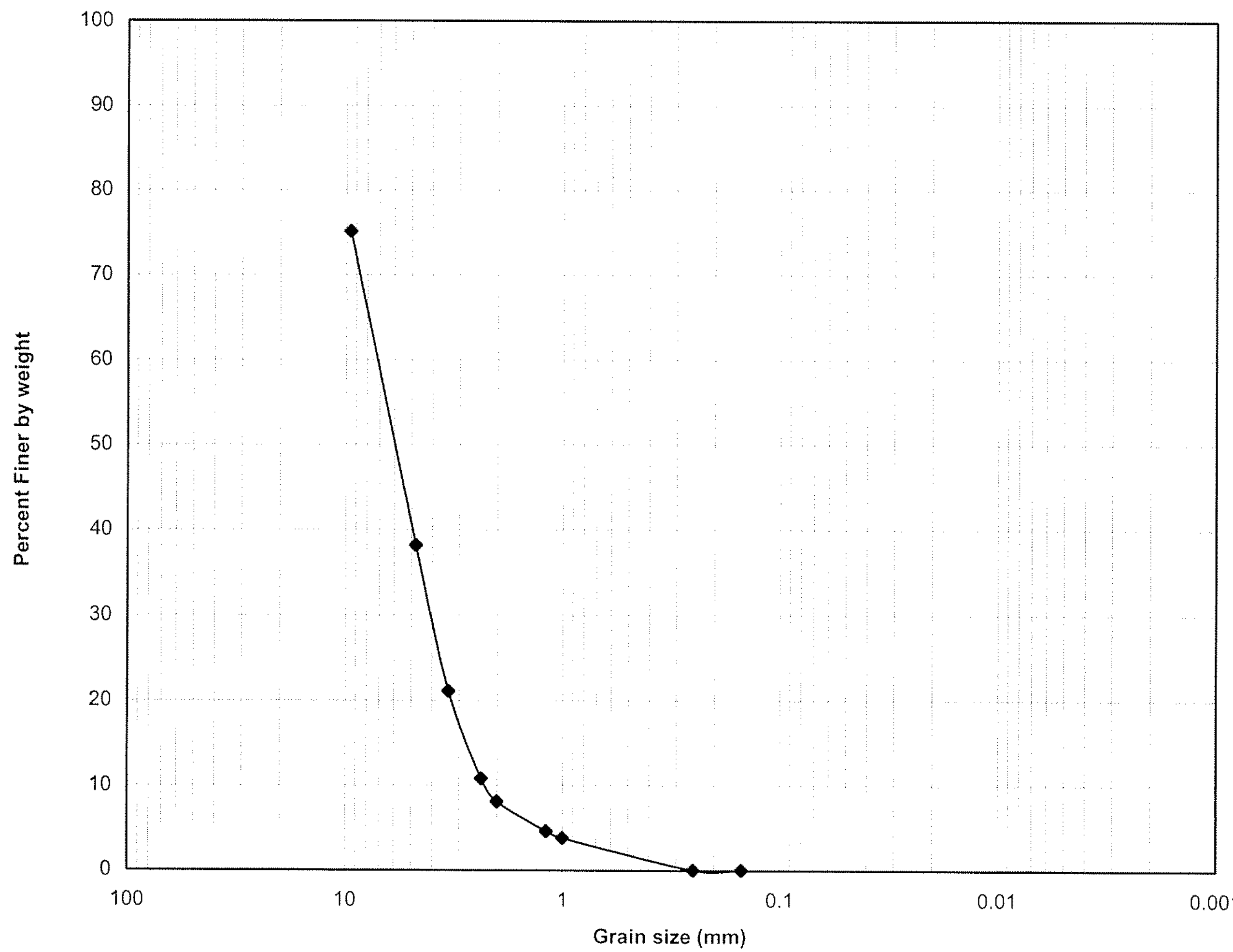
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 3
43 to 47 Feet

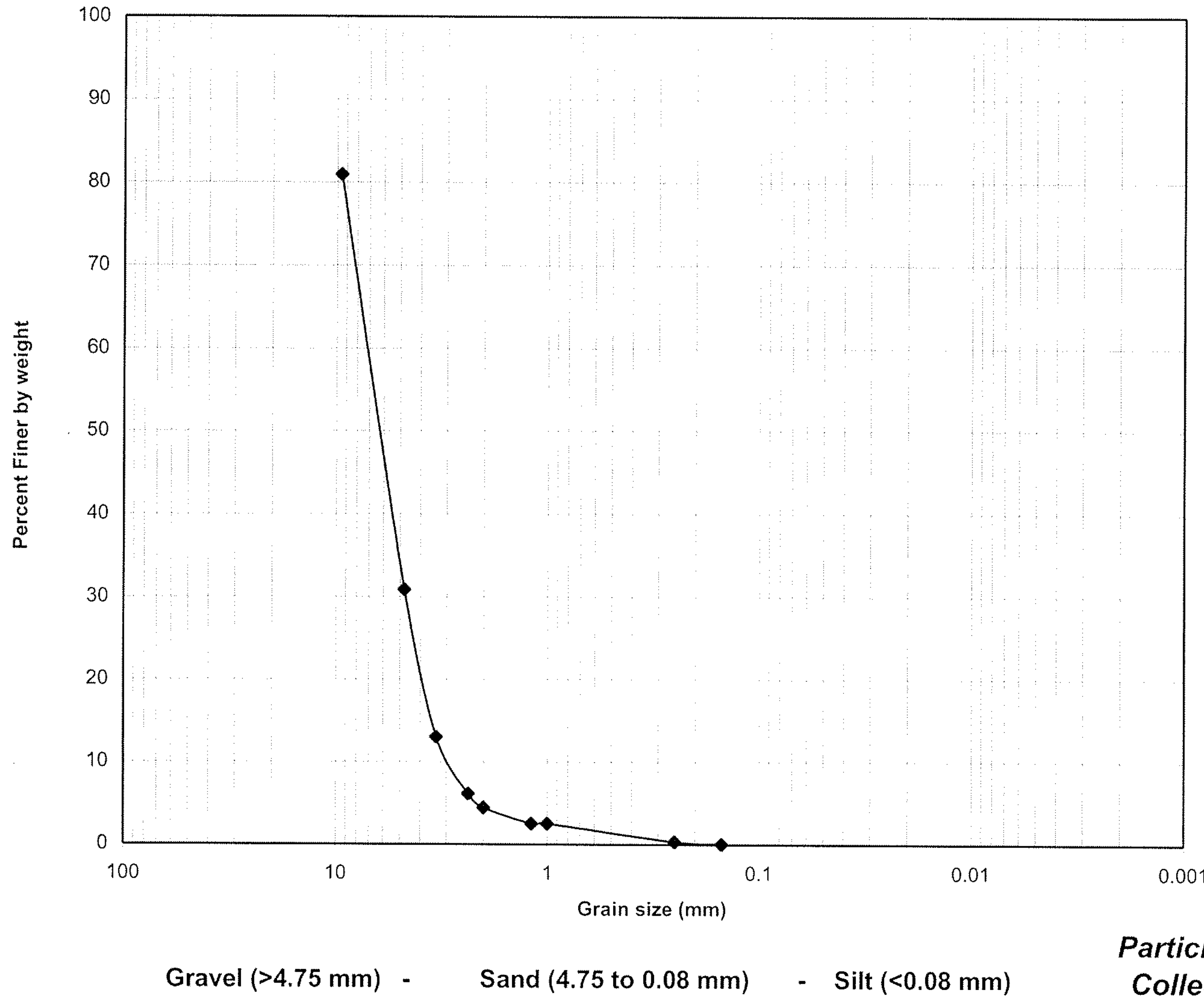
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

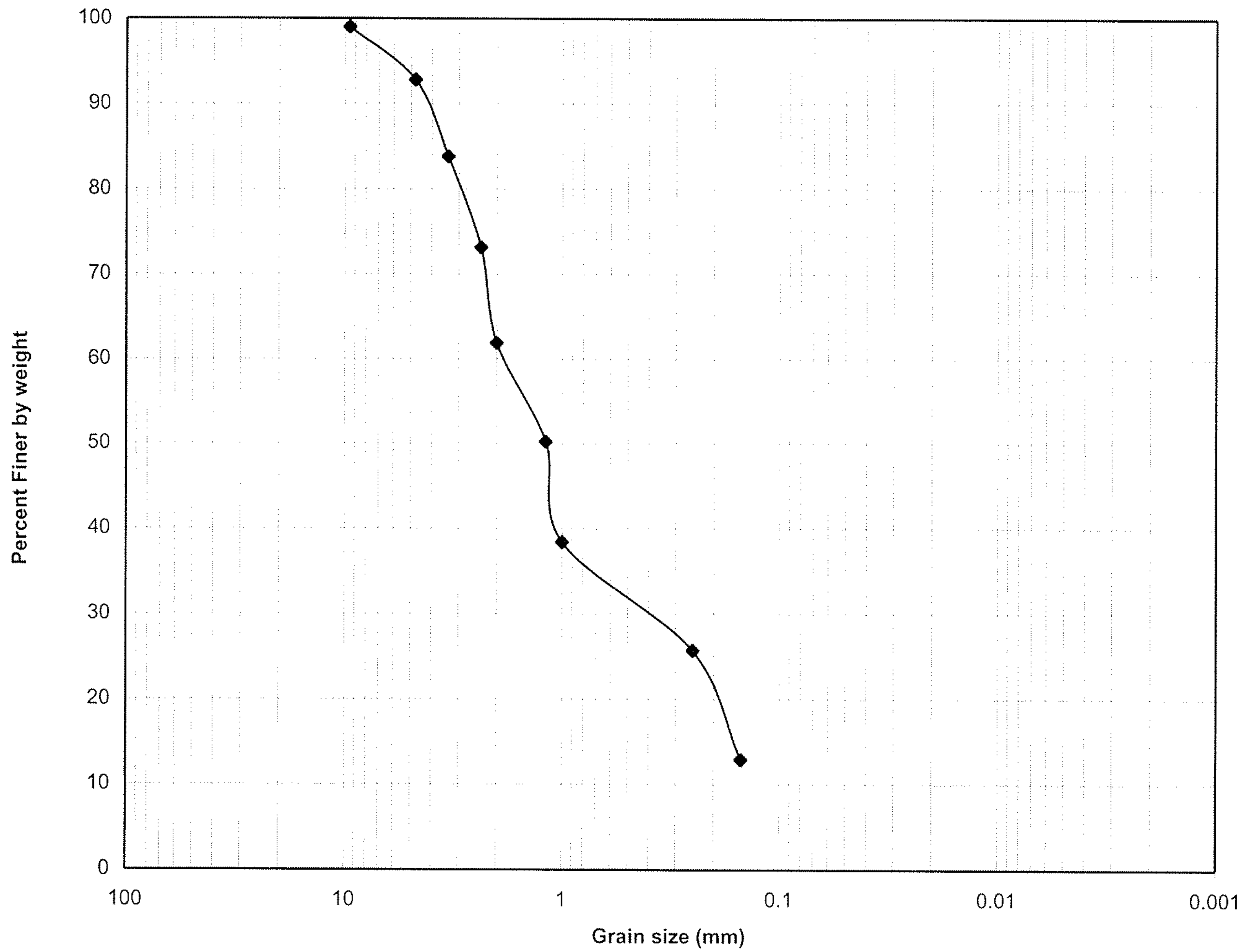
Particle Size Analysis
Collector 6, Lateral 3
50 to 54 Feet

ERM 4/09



Particle Size Analysis
Collector 6, Lateral 3
57 to 61 Feet

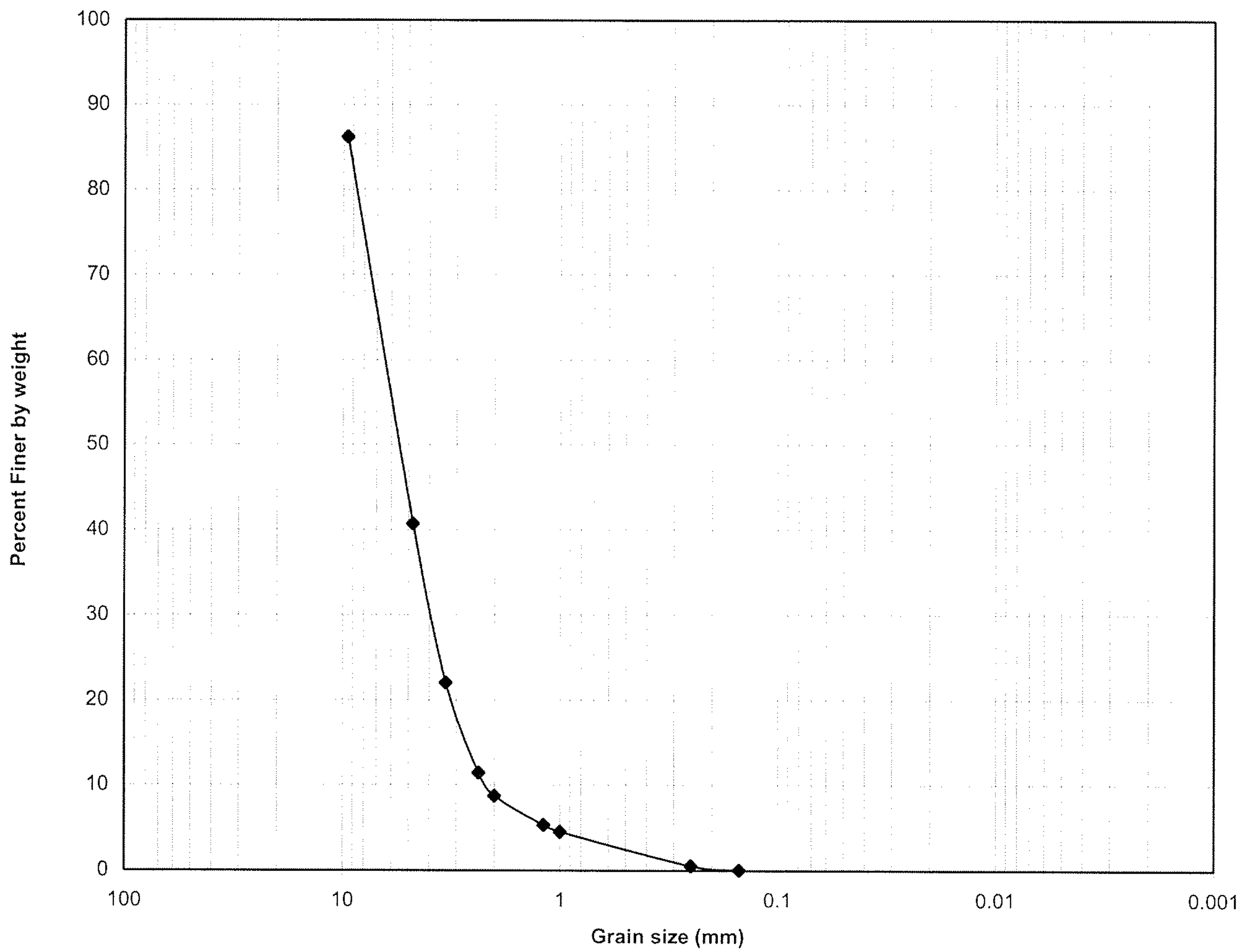
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 3
64 to 68 Feet

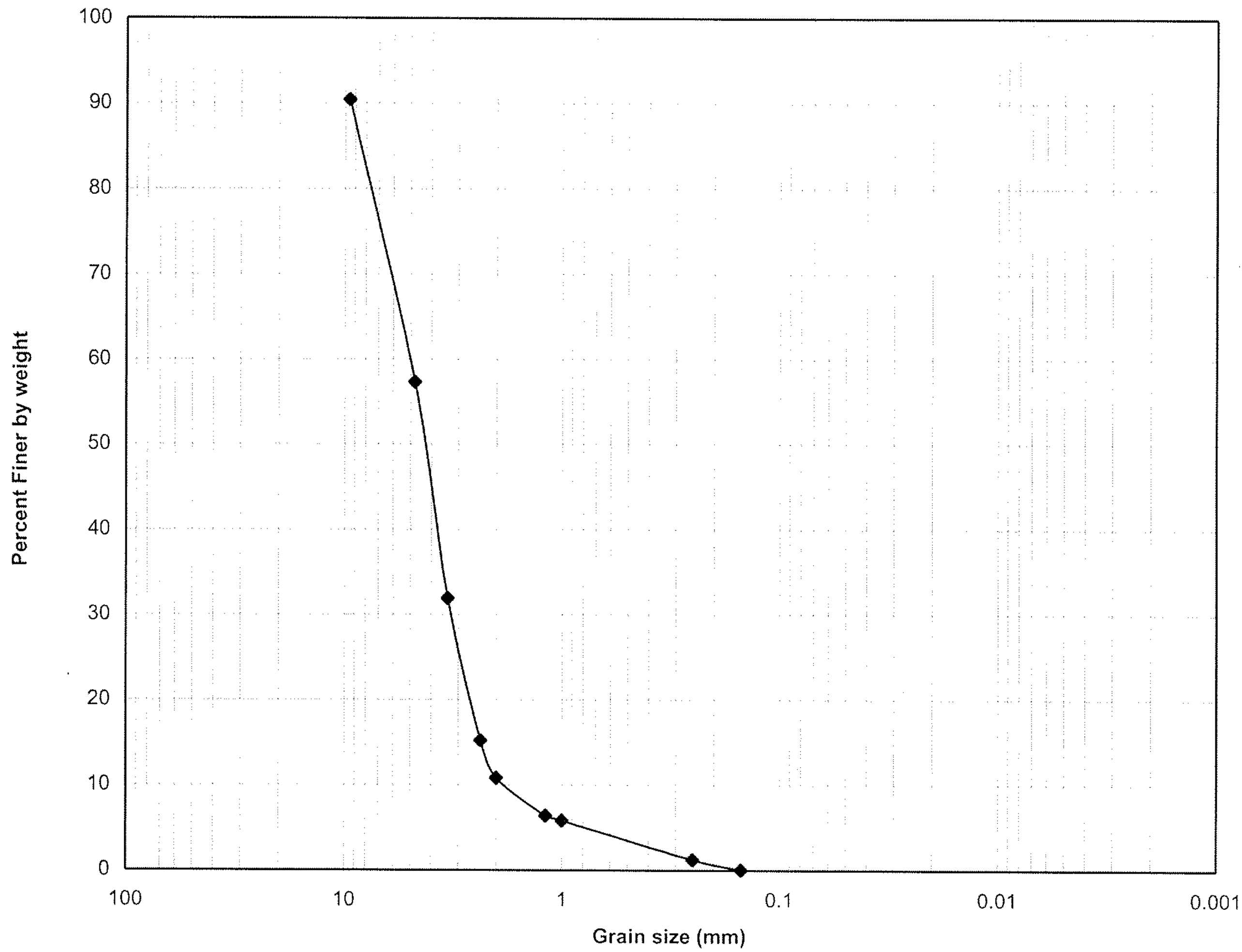
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 3
72 to 75 Feet

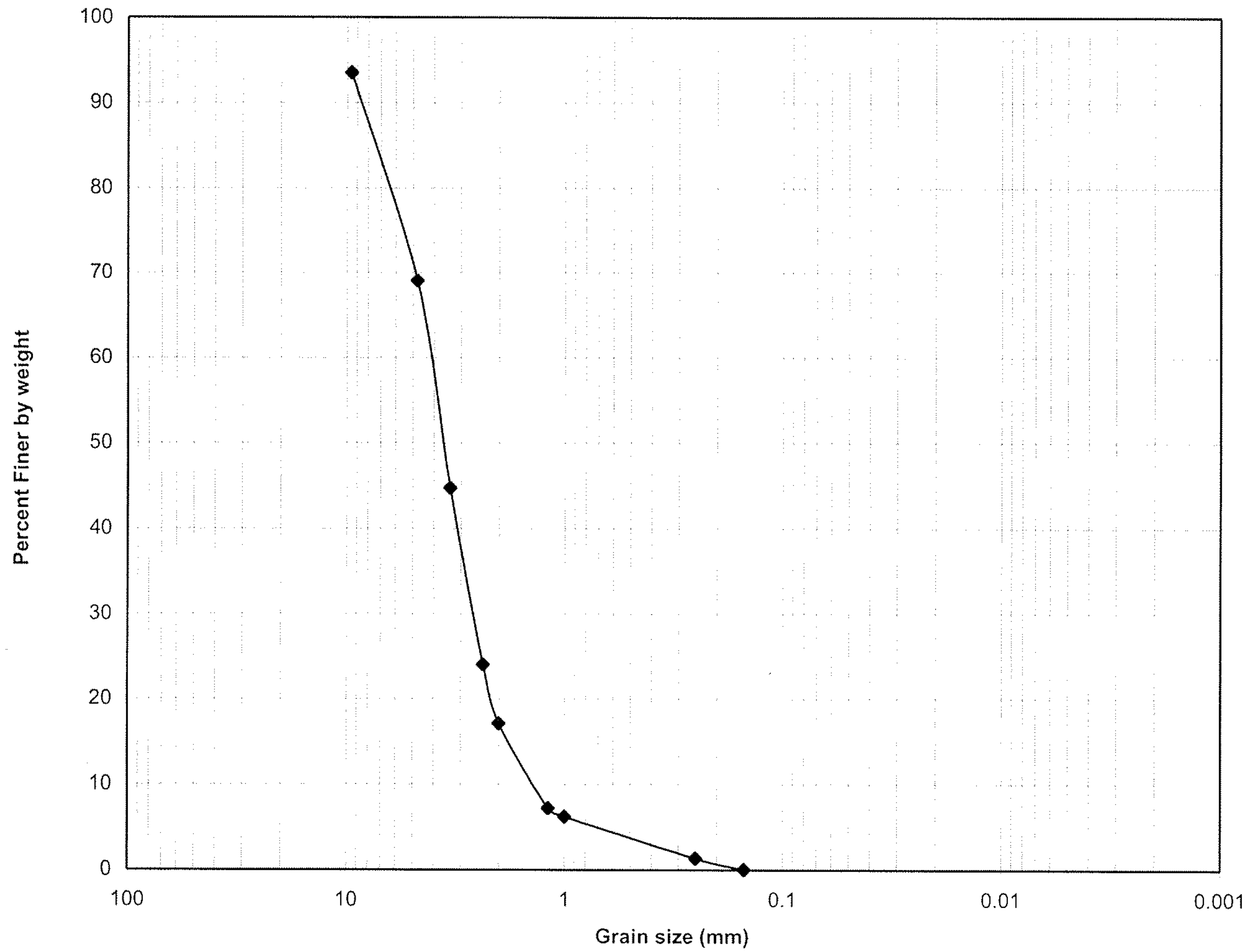
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 3
79 to 82 Feet

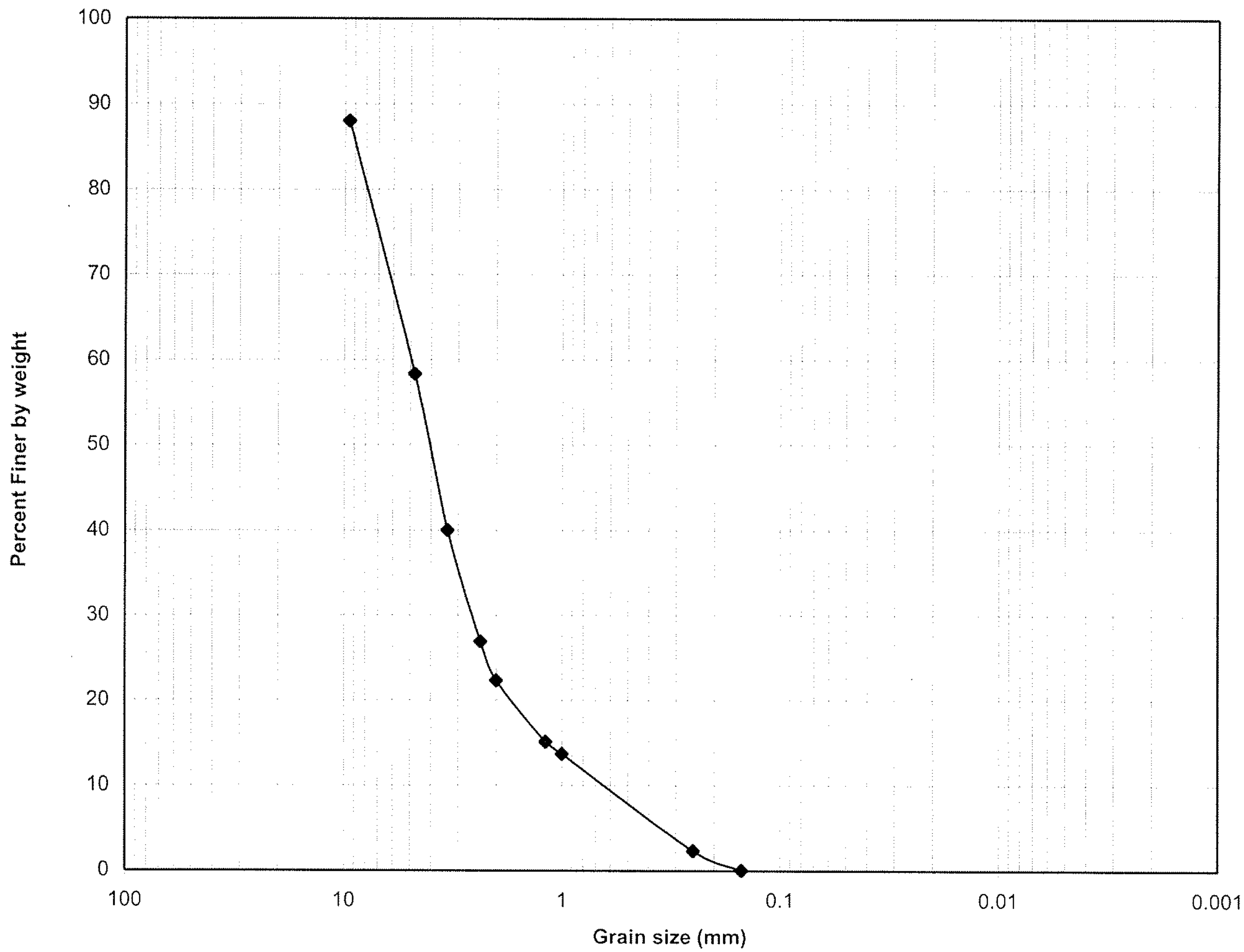
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 3
86 to 90 Feet

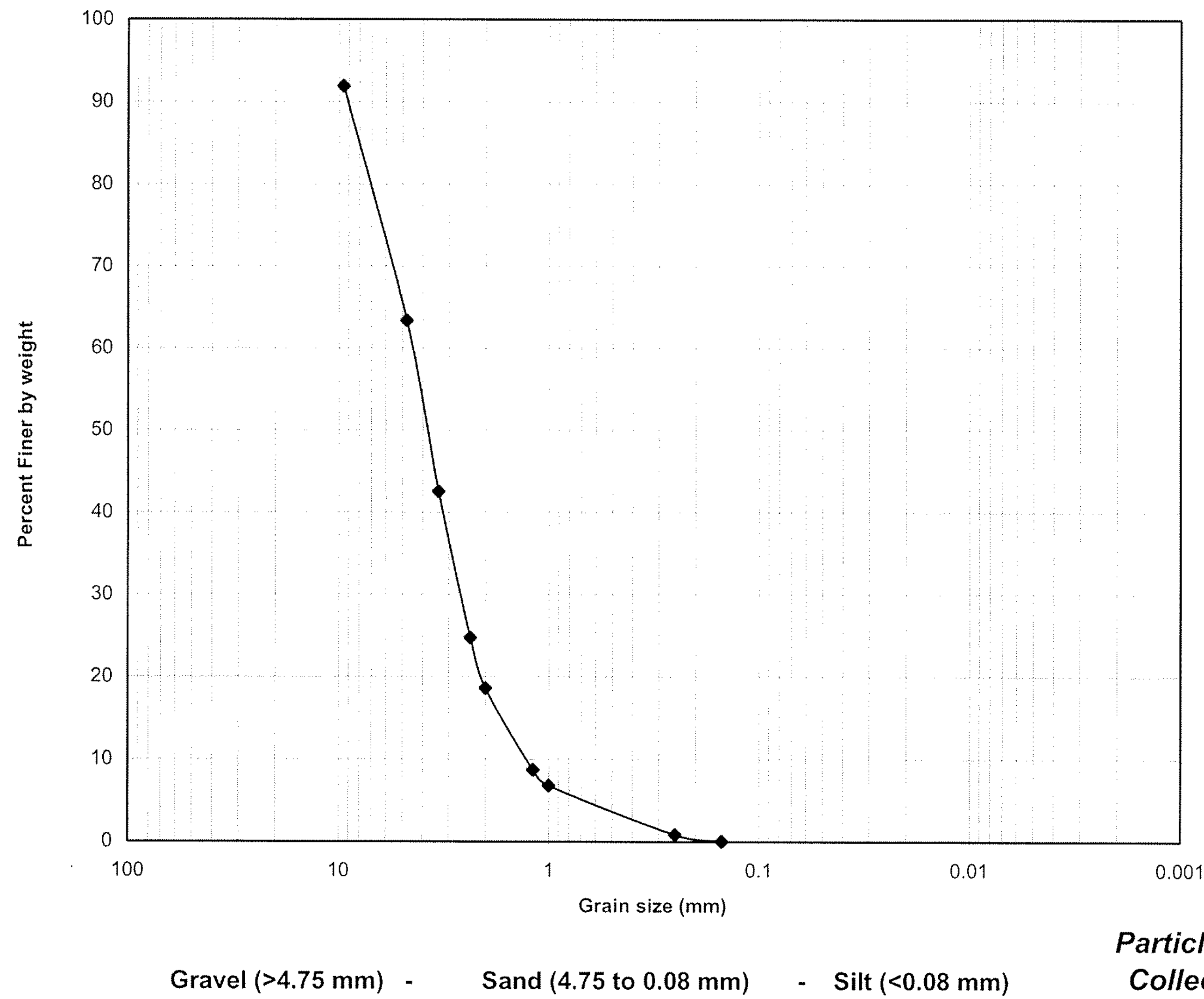
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

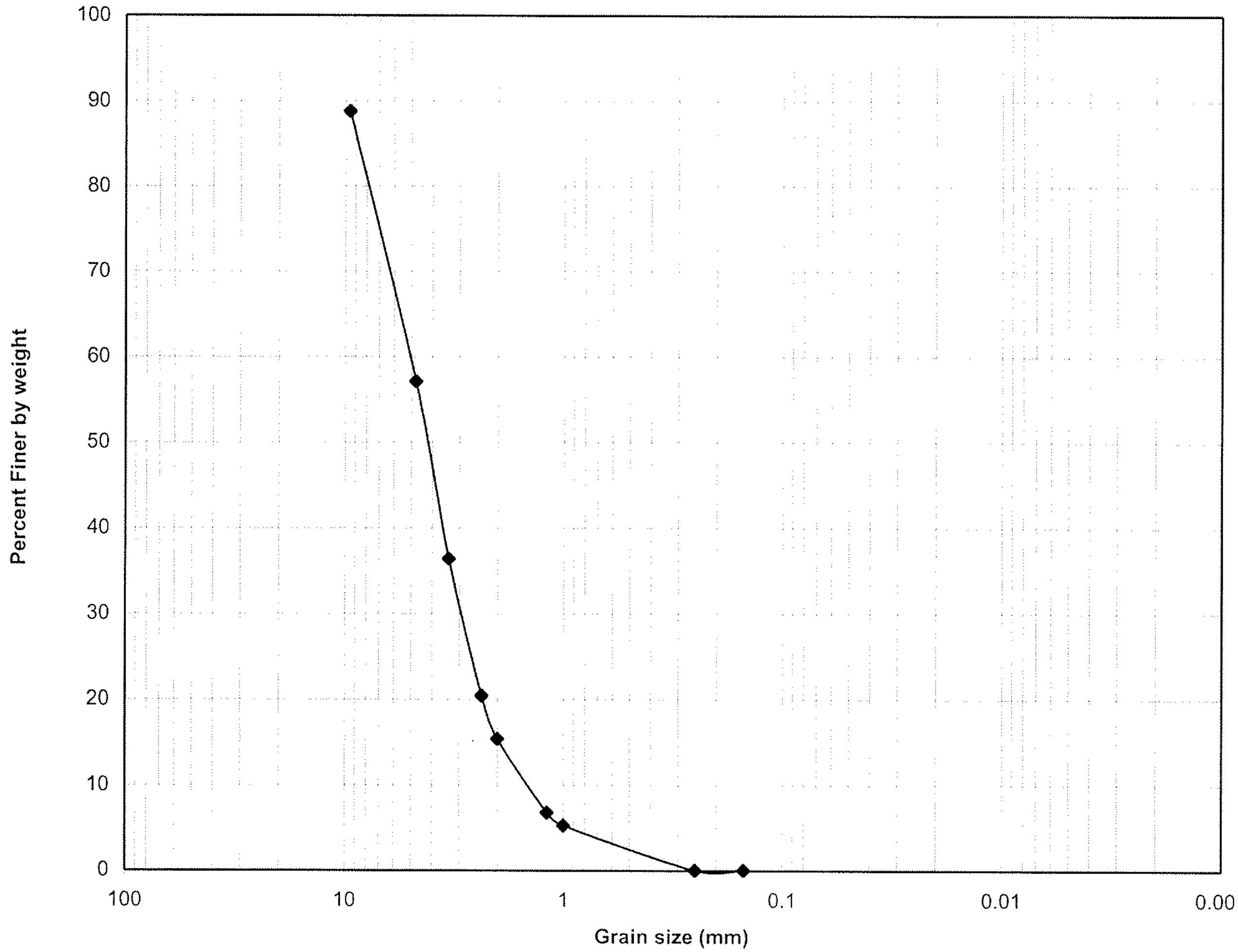
Particle Size Analysis
Collector 6, Lateral 3
93 to 97 Feet

ERM 4/09



Particle Size Analysis
Collector 6, Lateral 3
100 to 104 Feet

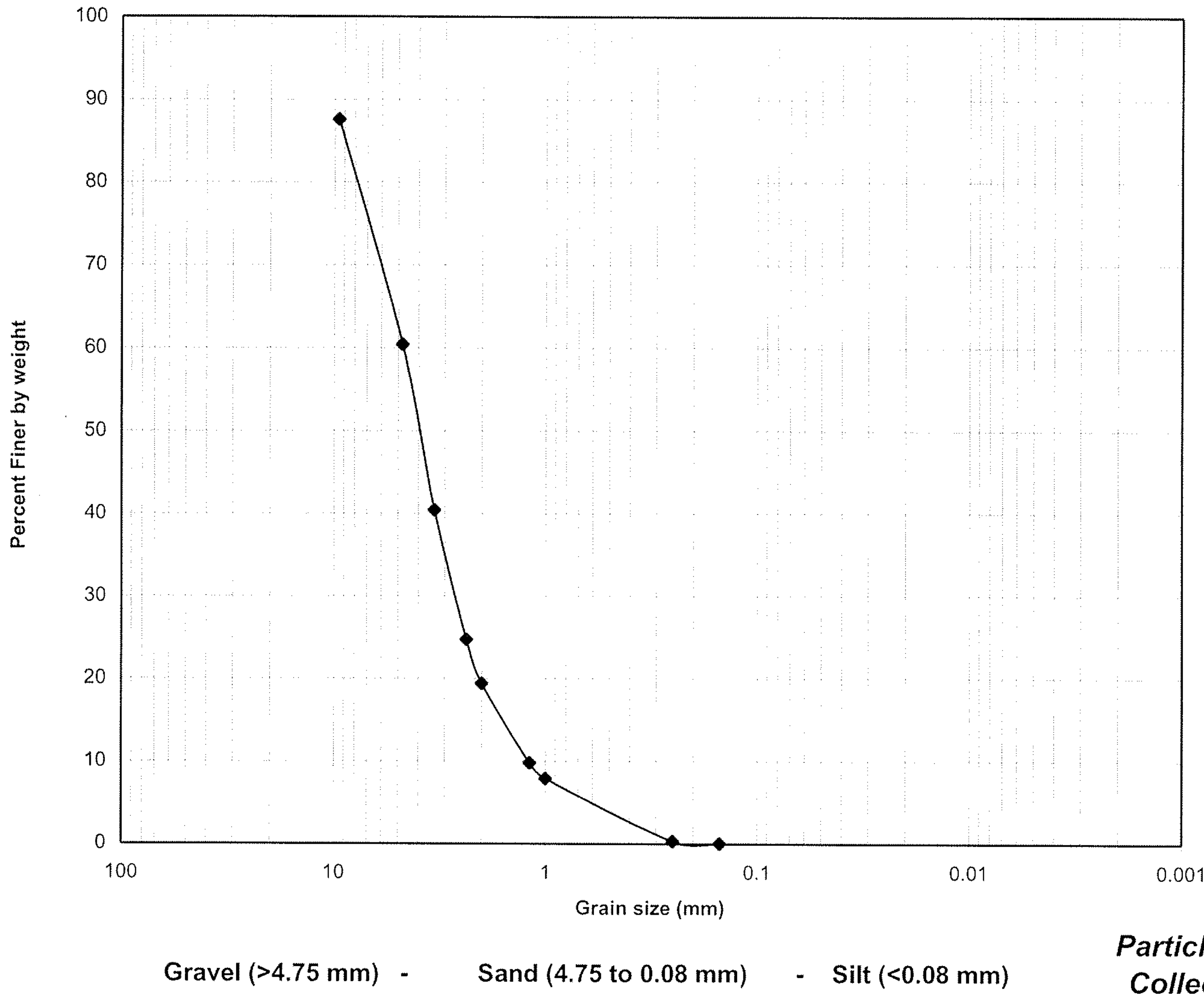
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

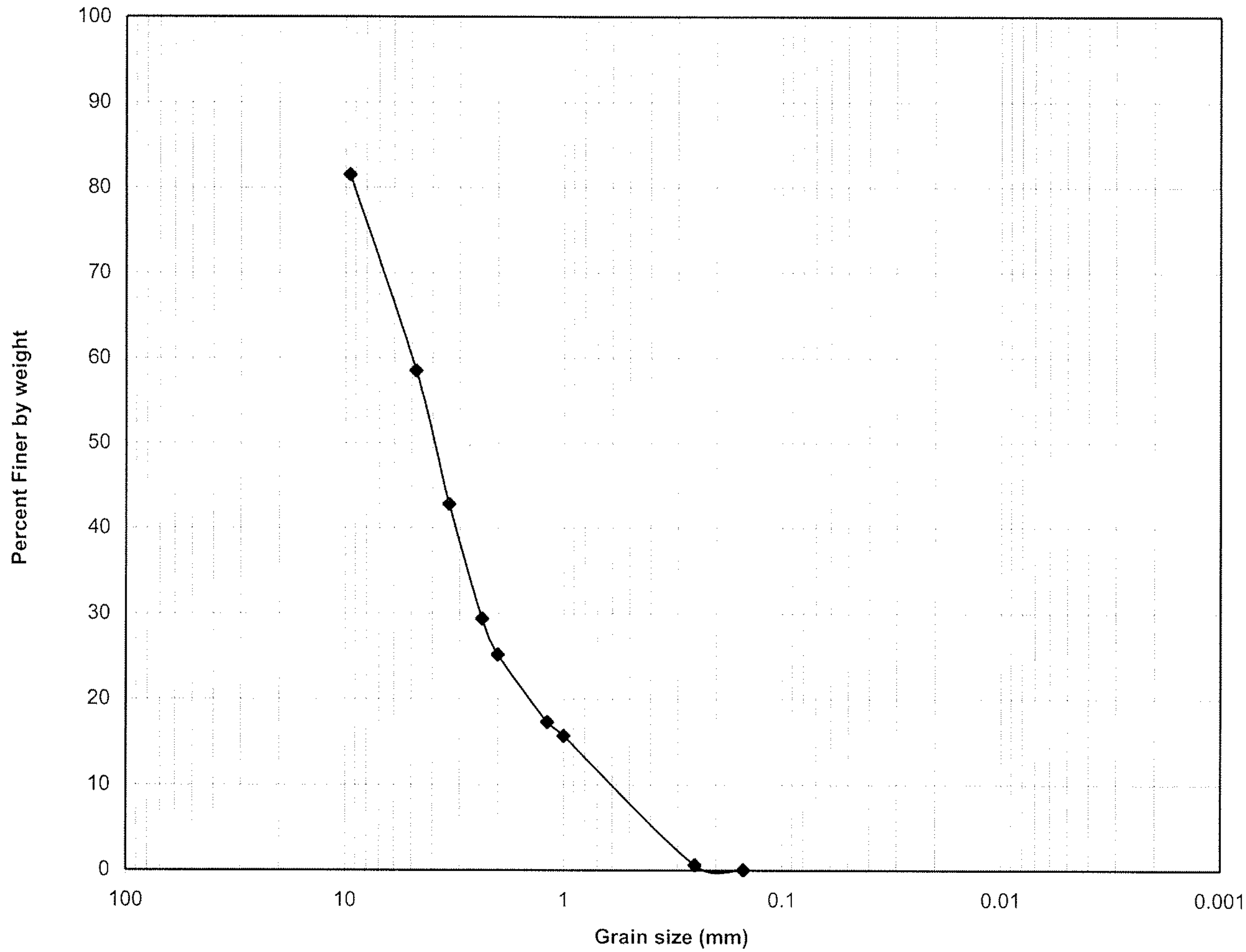
Particle Size Analysis
Collector 6, Lateral 3
107 to 111 Feet

ERM 4/09



Particle Size Analysis
Collector 6, Lateral 3
115 to 118 Feet

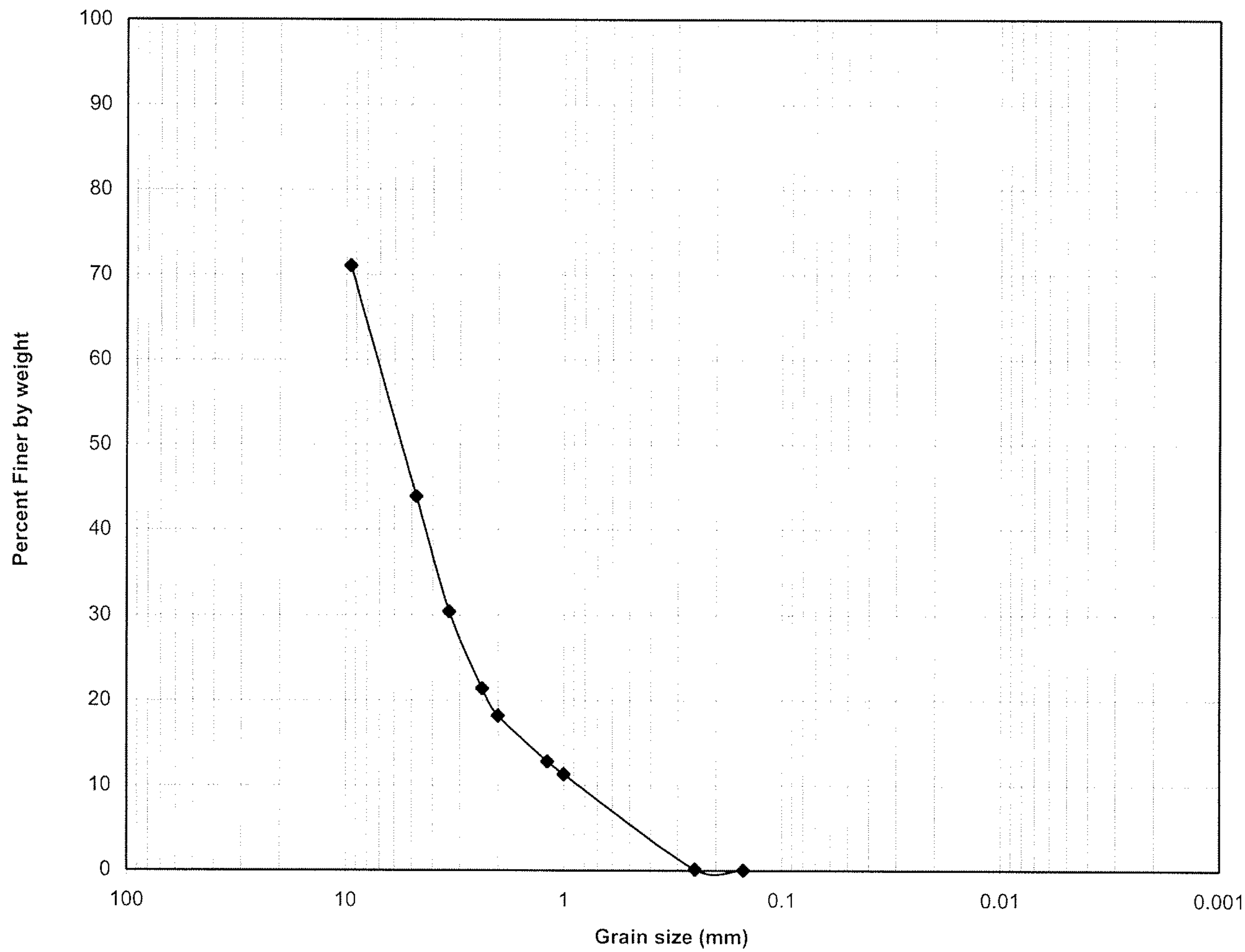
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 3
122 to 125 Feet

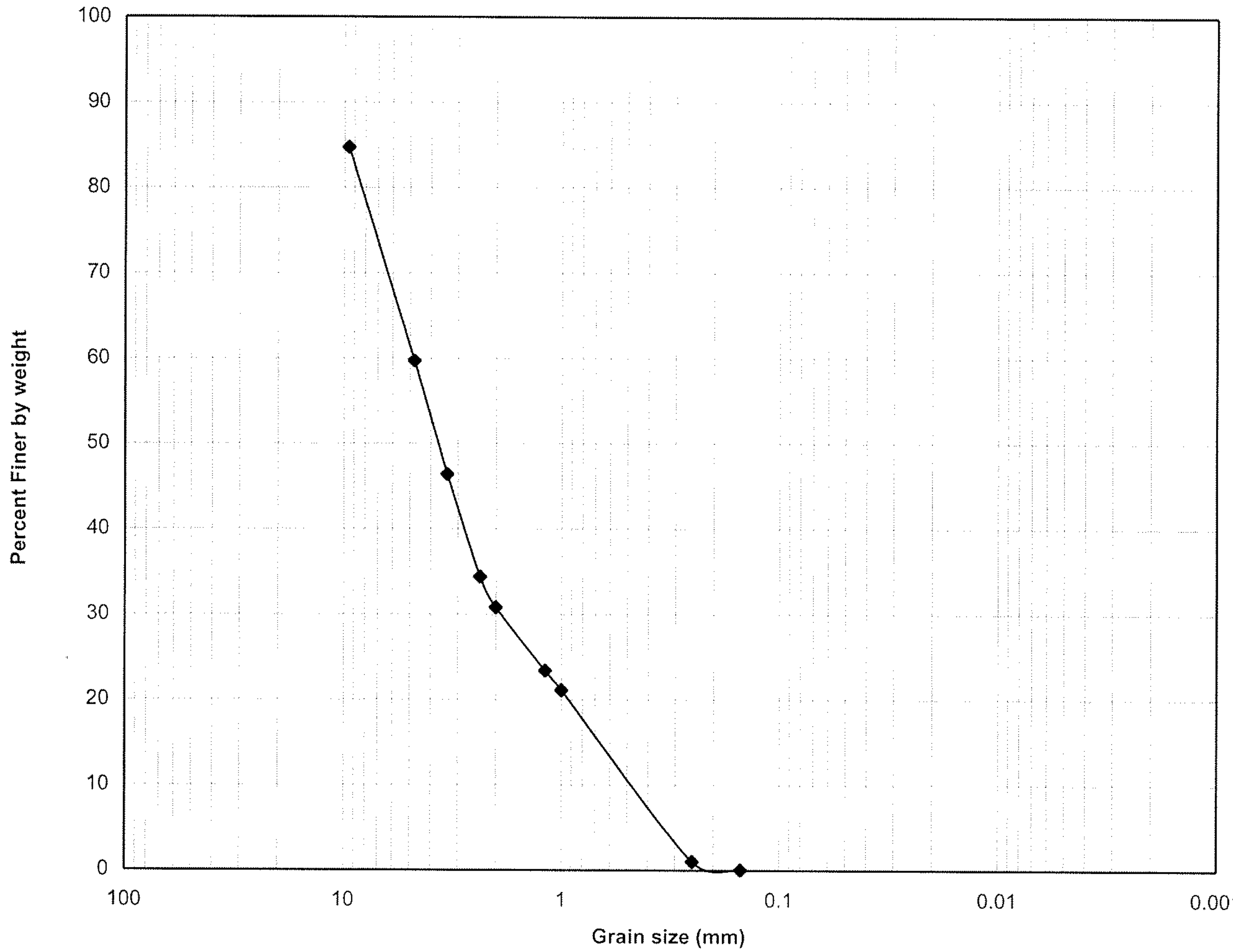
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 3
129 to 132 Feet

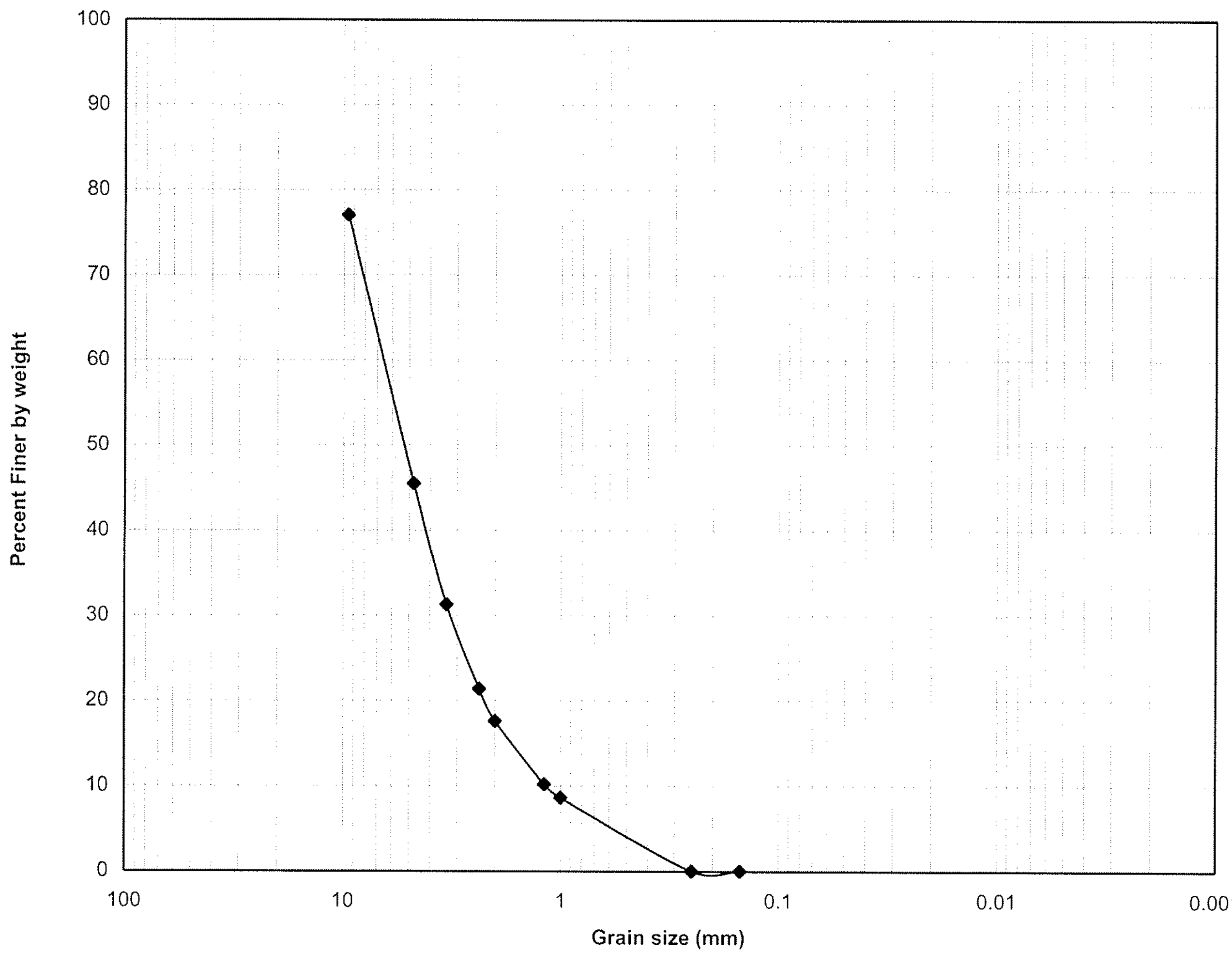
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 3
136 to 140 Feet

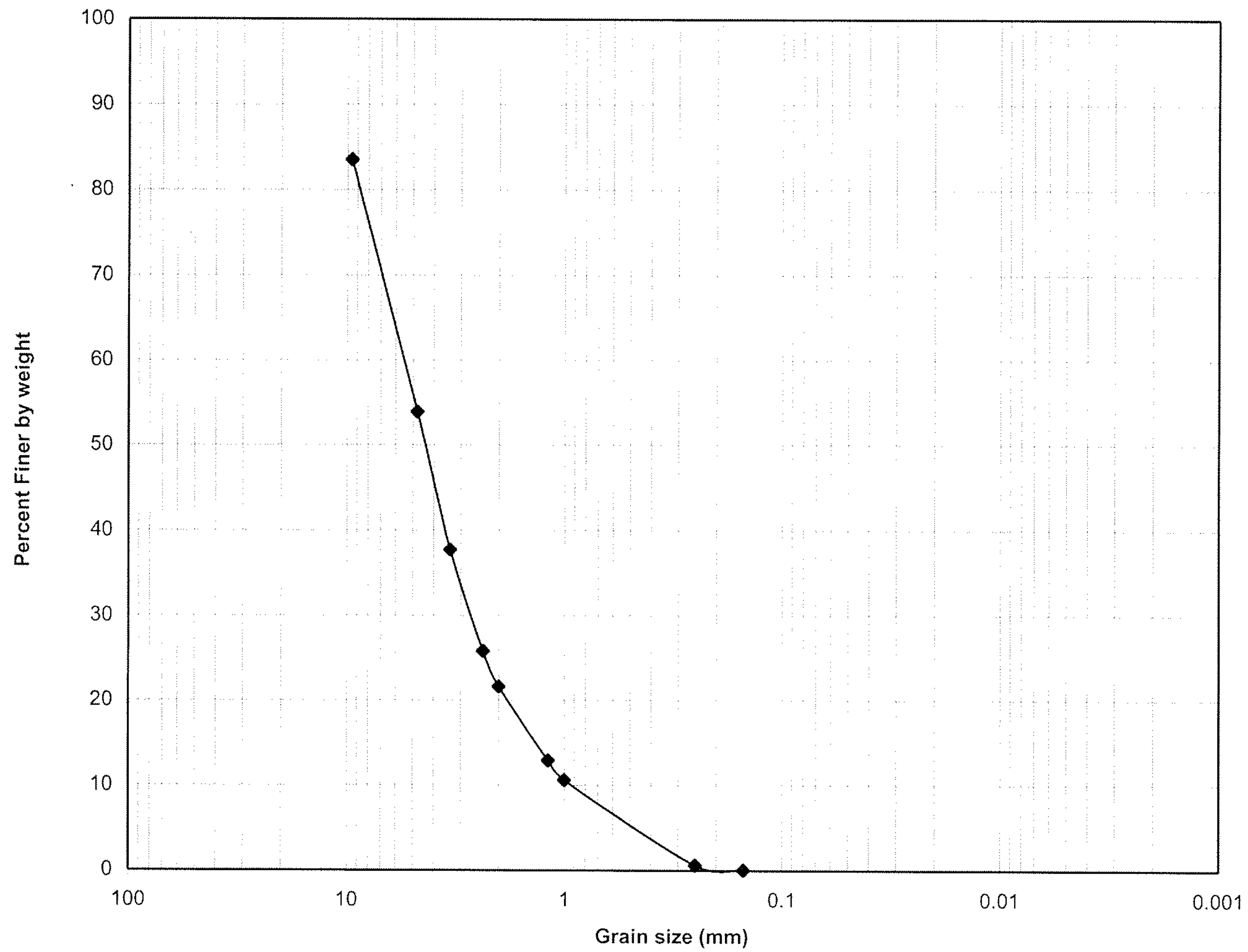
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 3
143 to 147 Feet

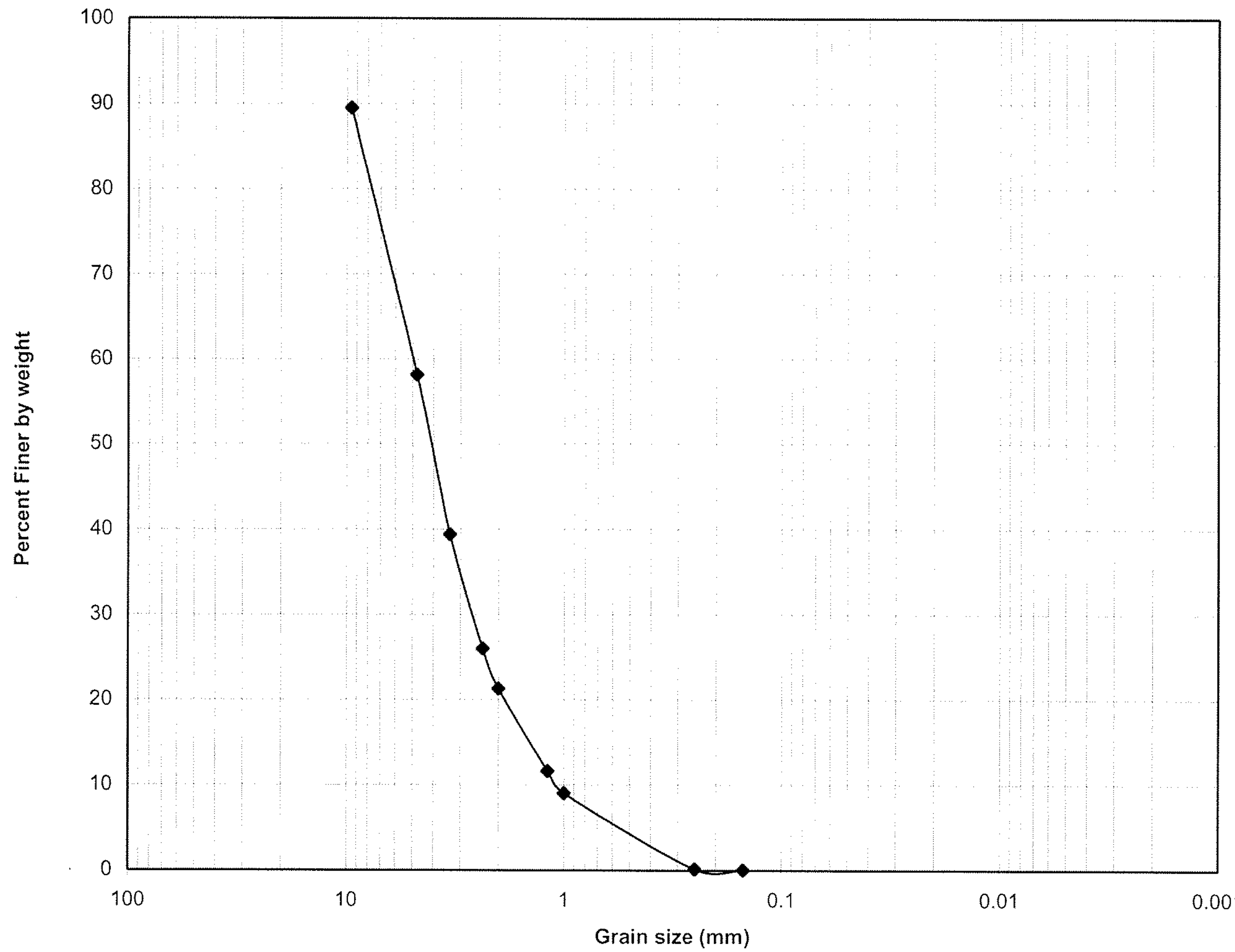
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 3
150 to 154 Feet

ERM 4/09

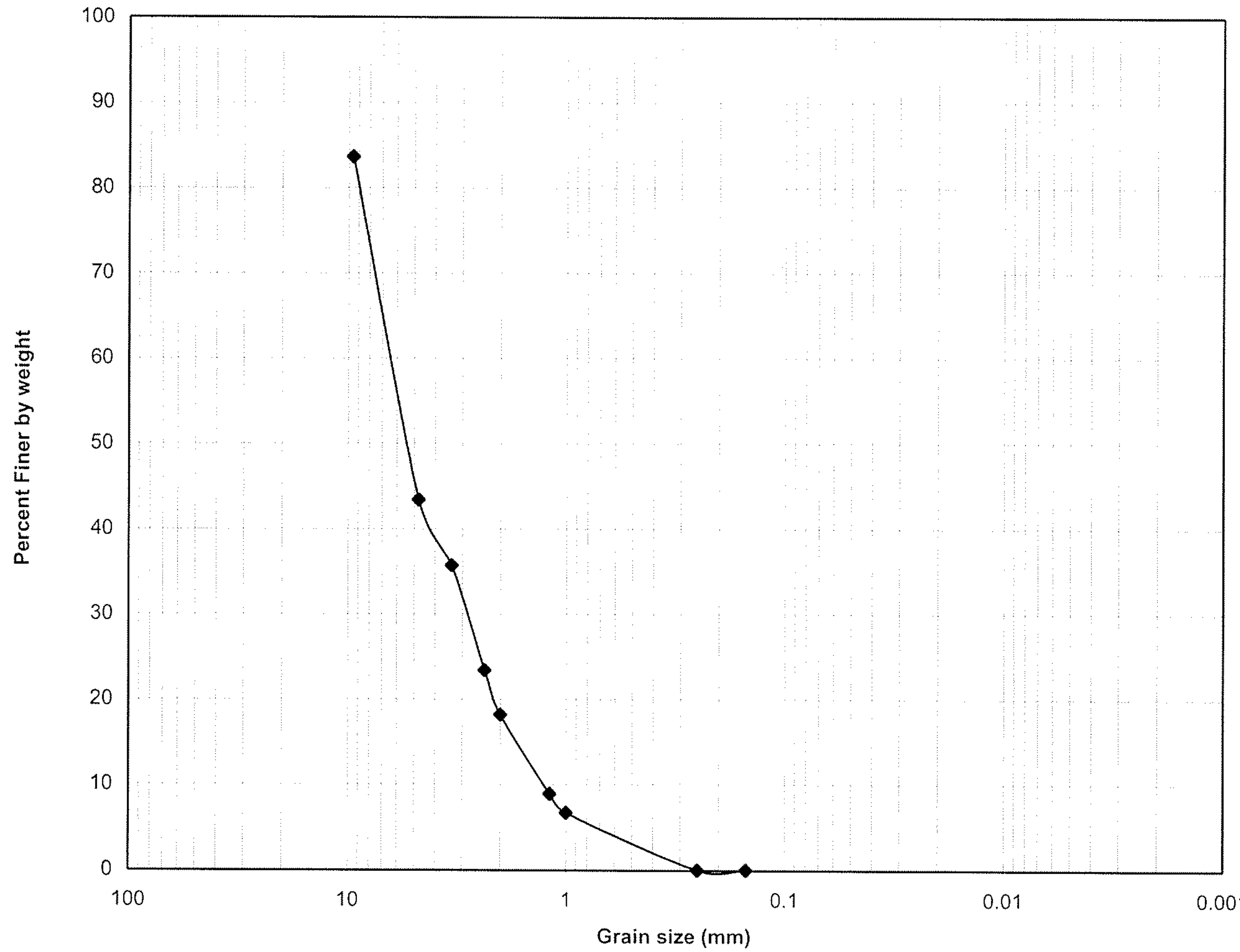


Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 3
158 to 161 Feet

ERM 4/09

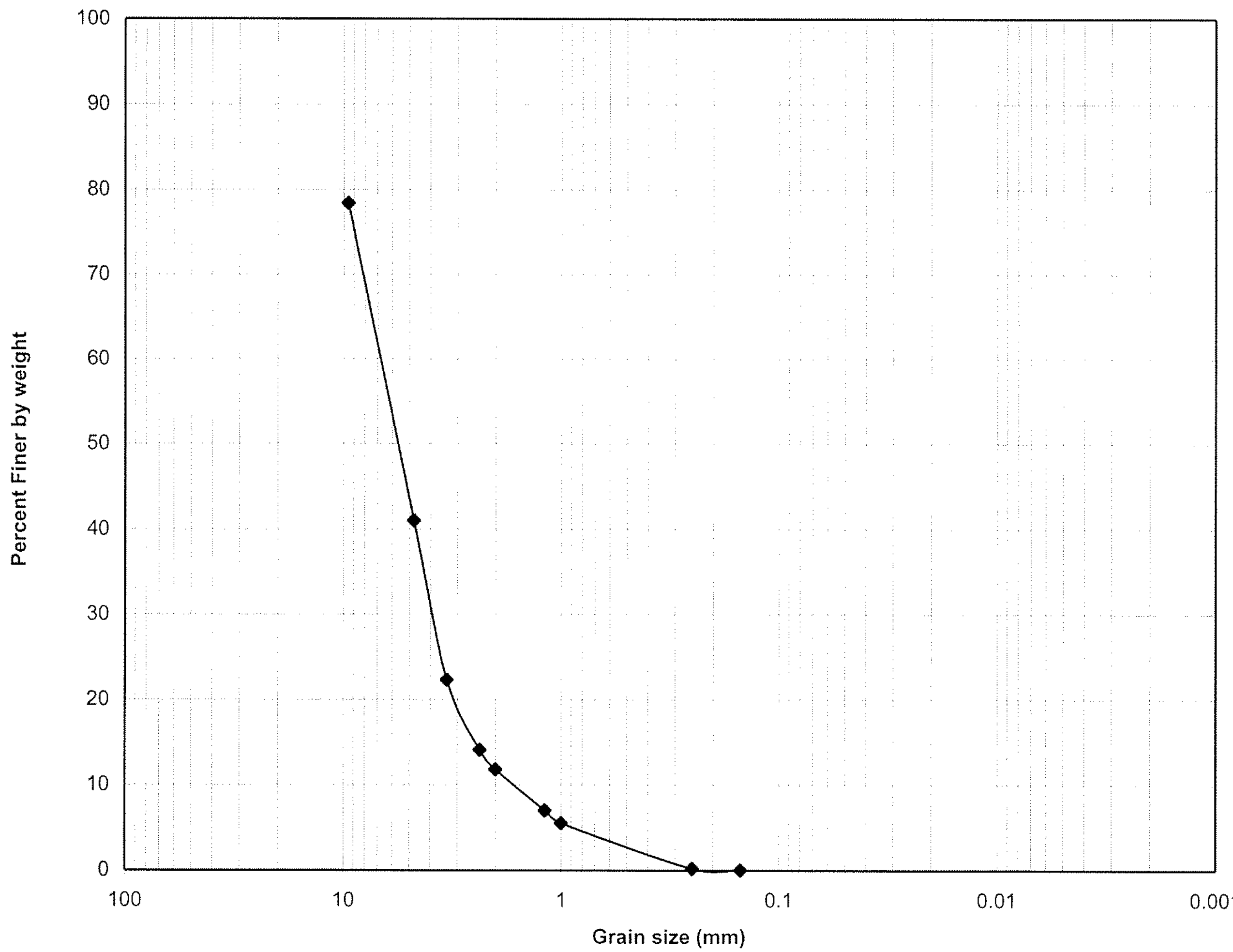
Collector 6, Lateral 4



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 4
7 to 11 Feet

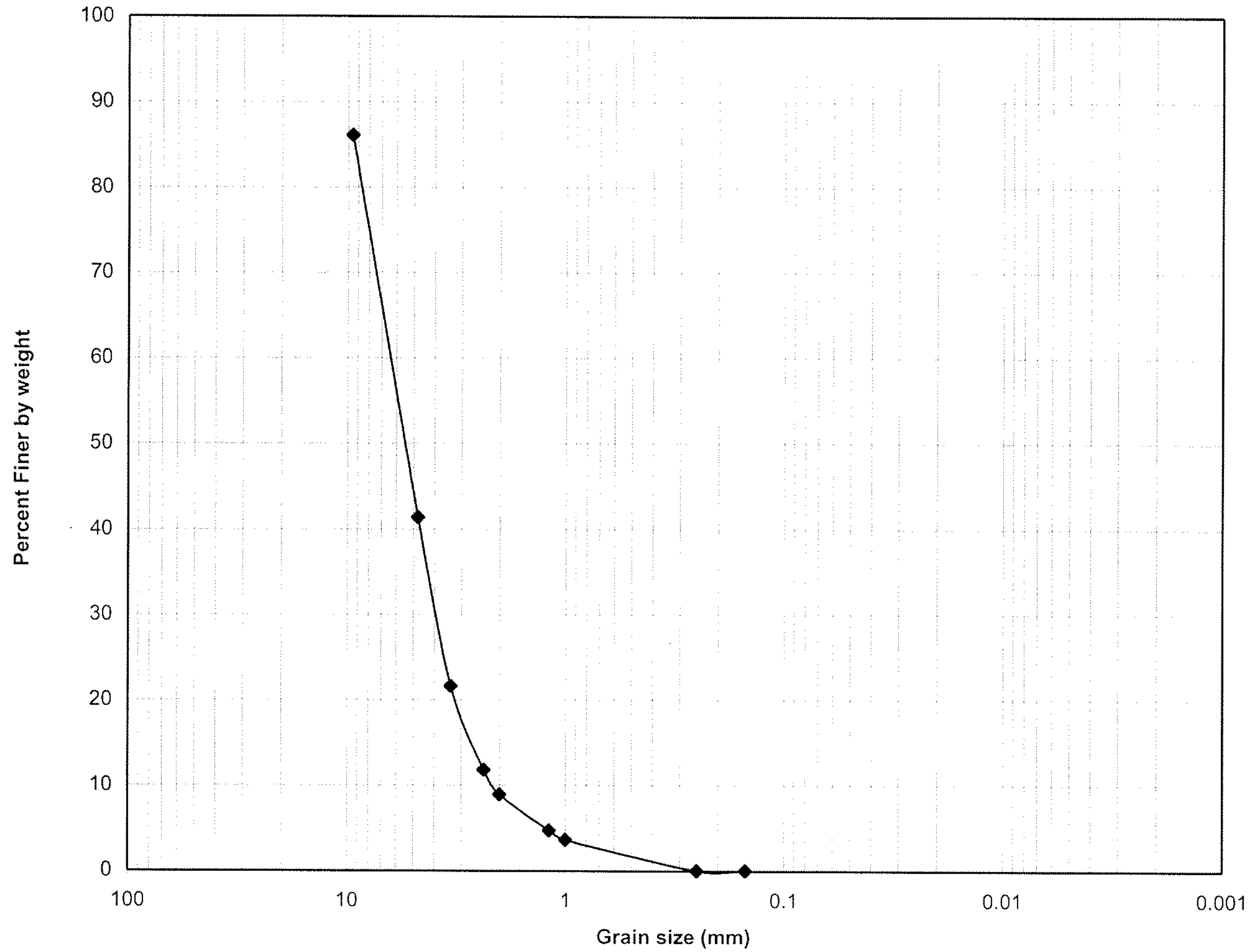
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 4
14 to 18 Feet

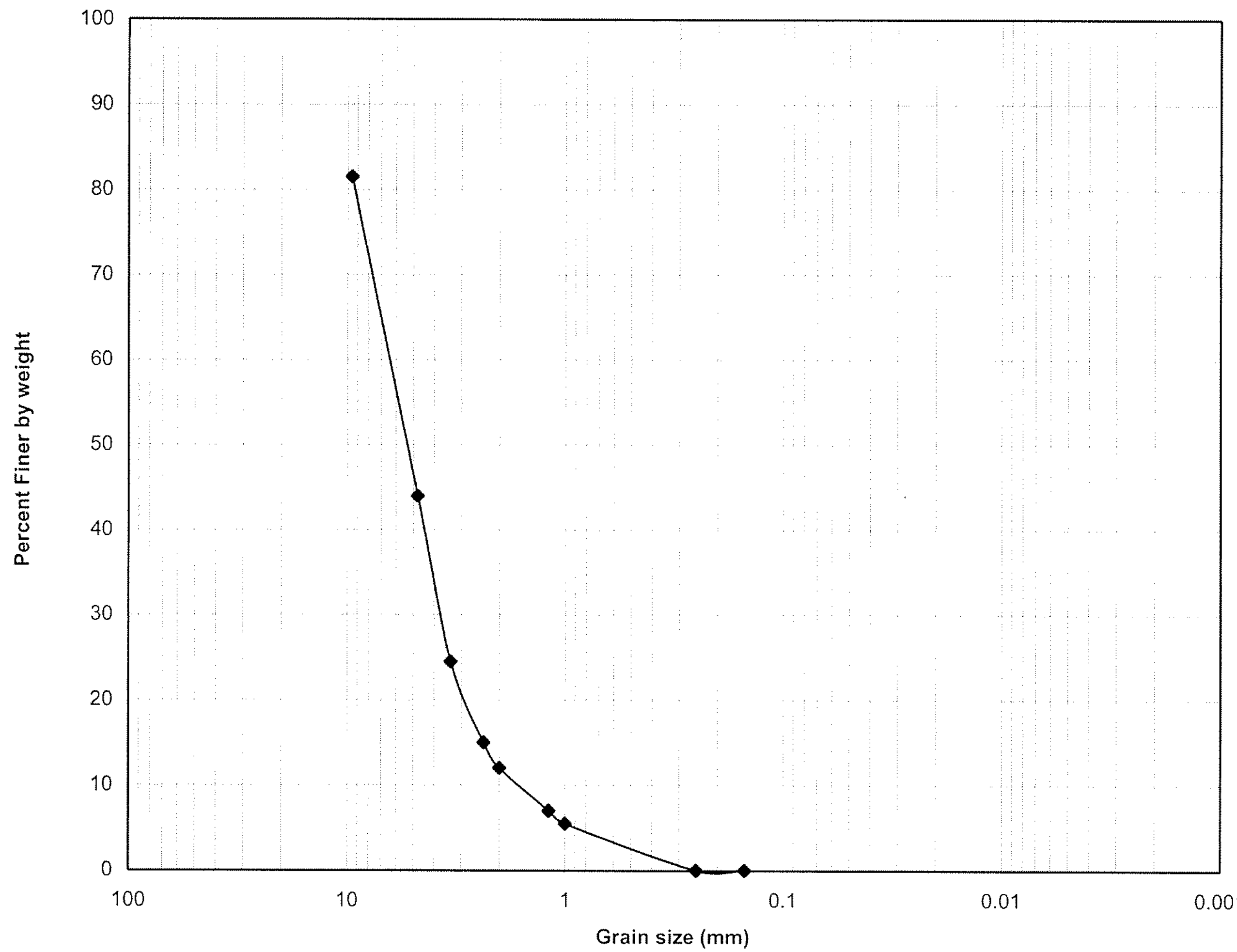
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 4
21 to 25 Feet

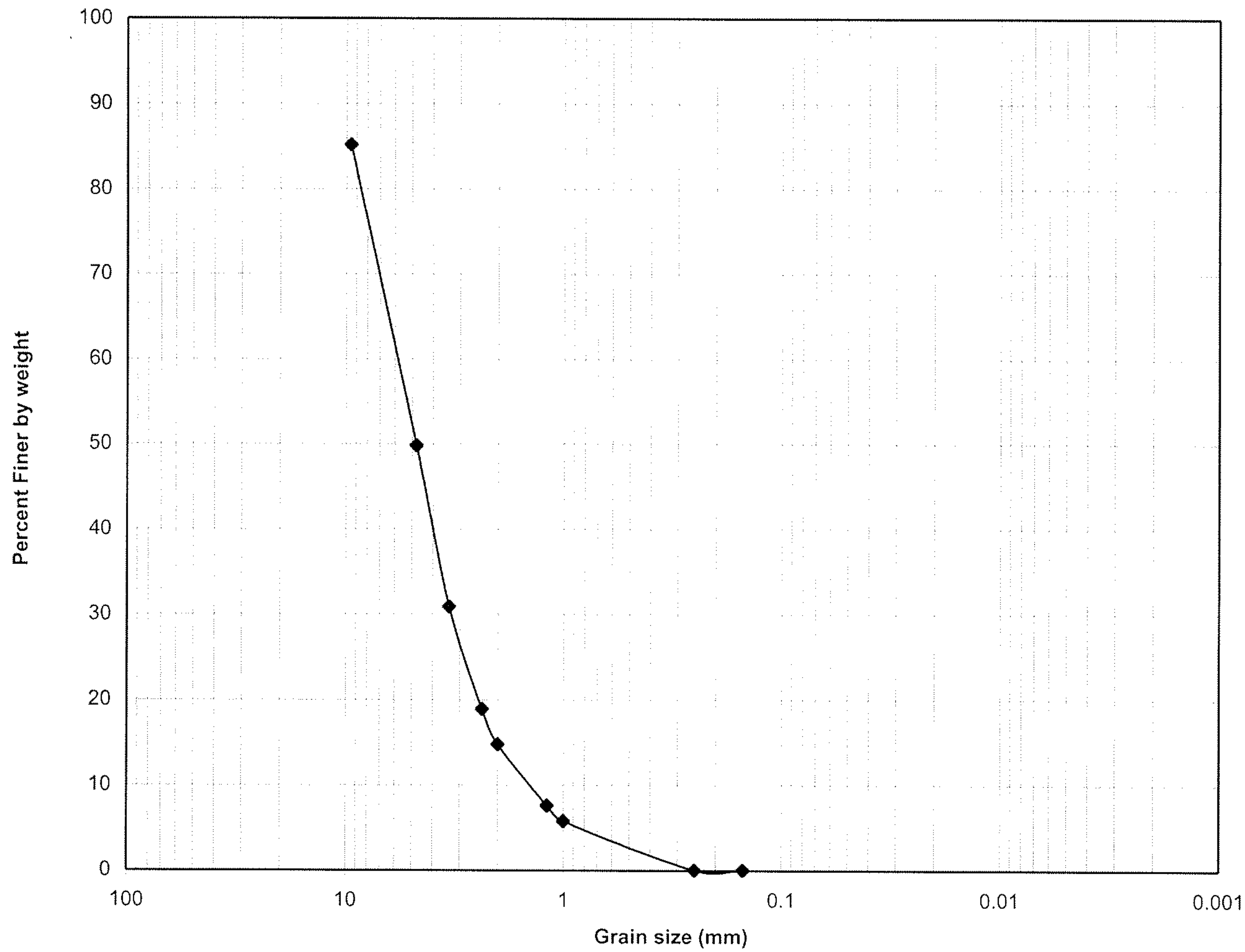
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 4
29 to 32 Feet

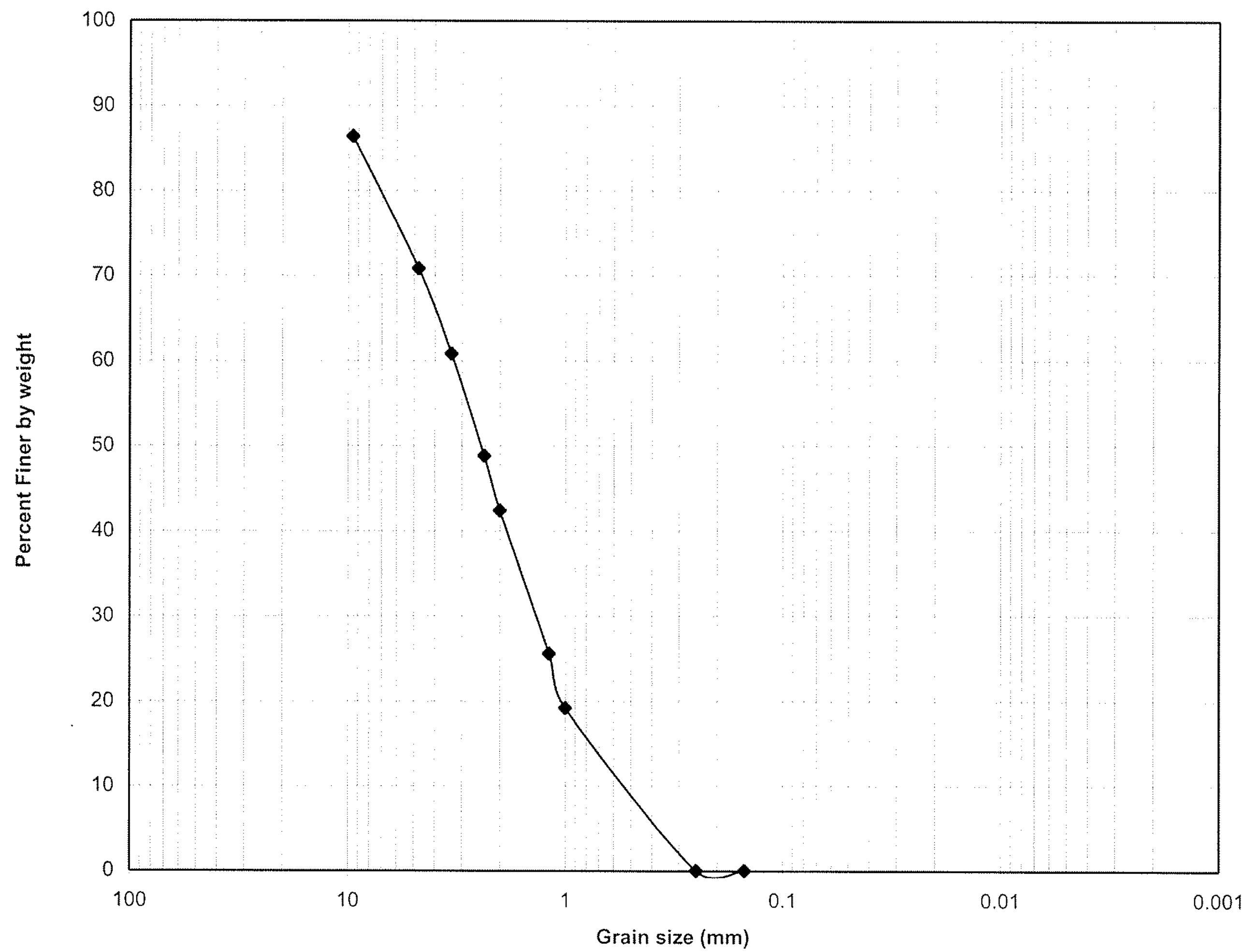
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 4
36 to 39 Feet

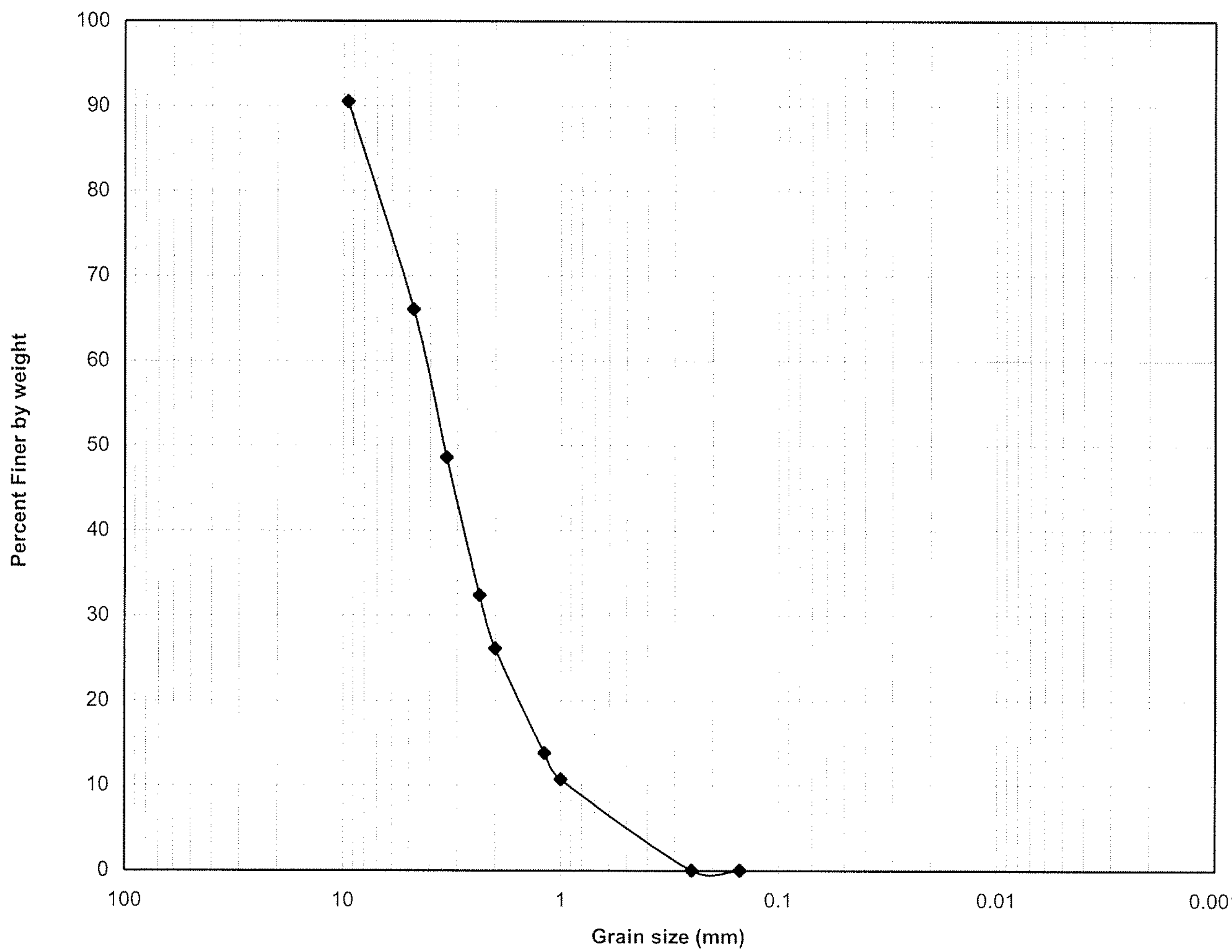
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 4
43 to 47 Feet

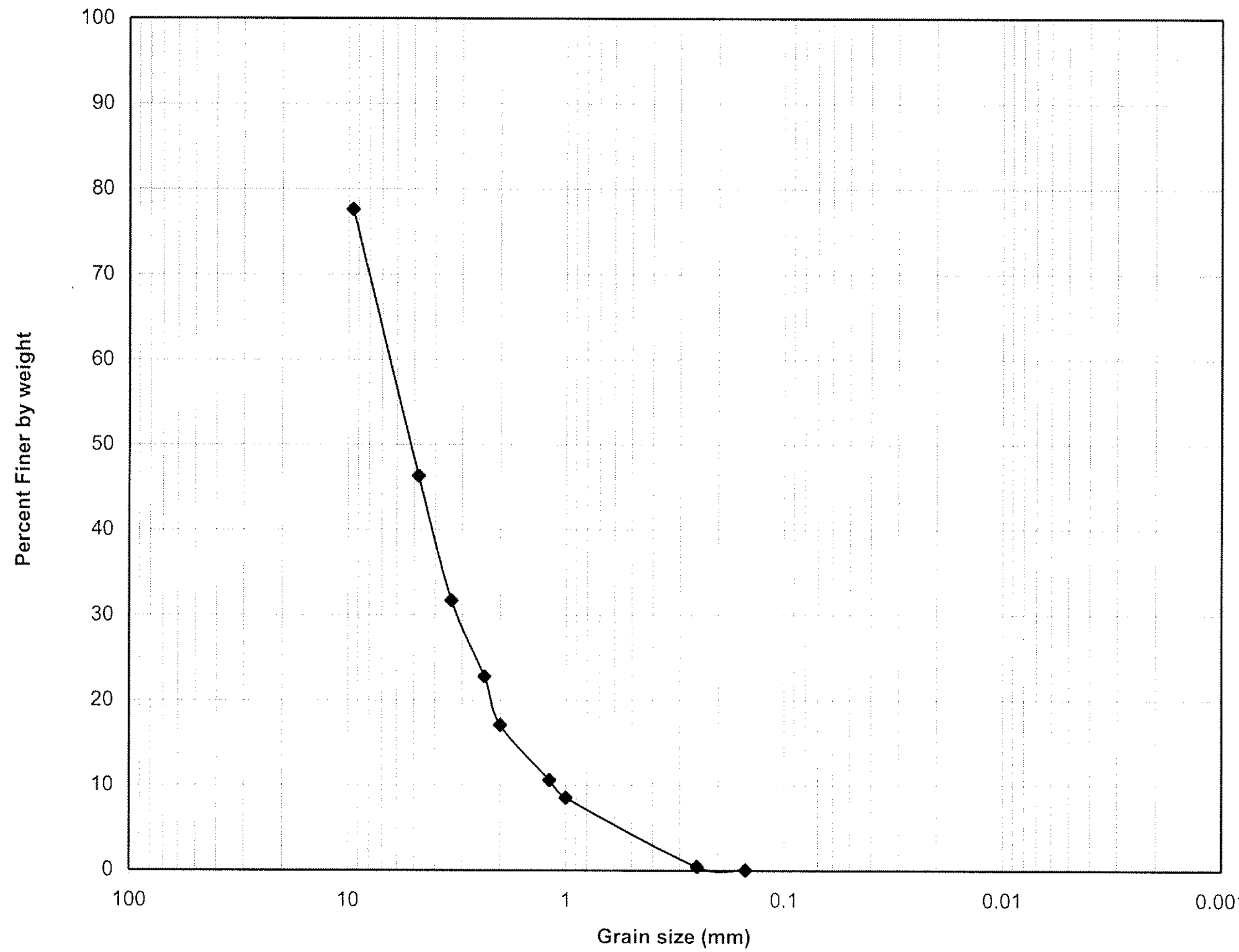
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 4
50 to 54 Feet

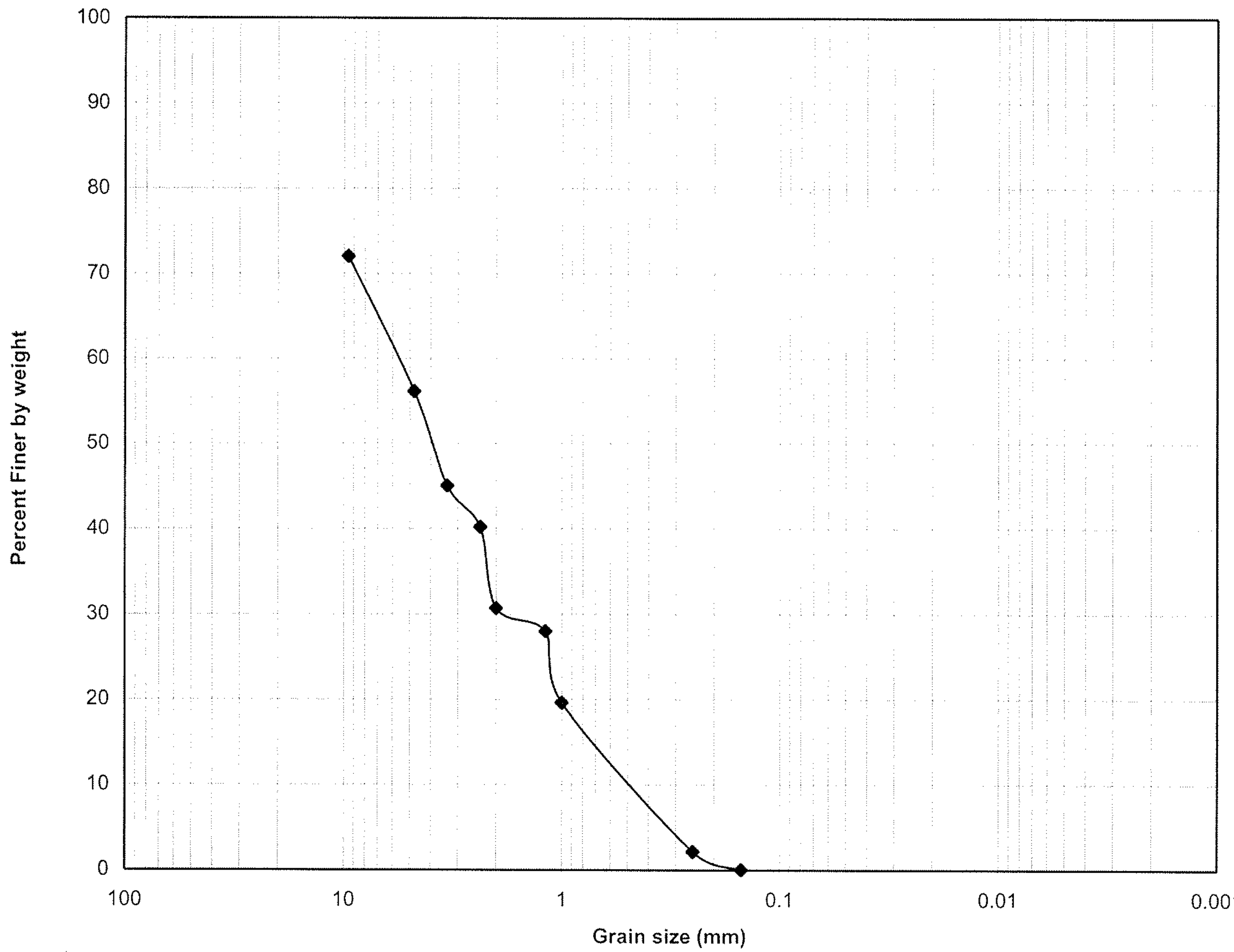
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 4
57 to 61 Feet

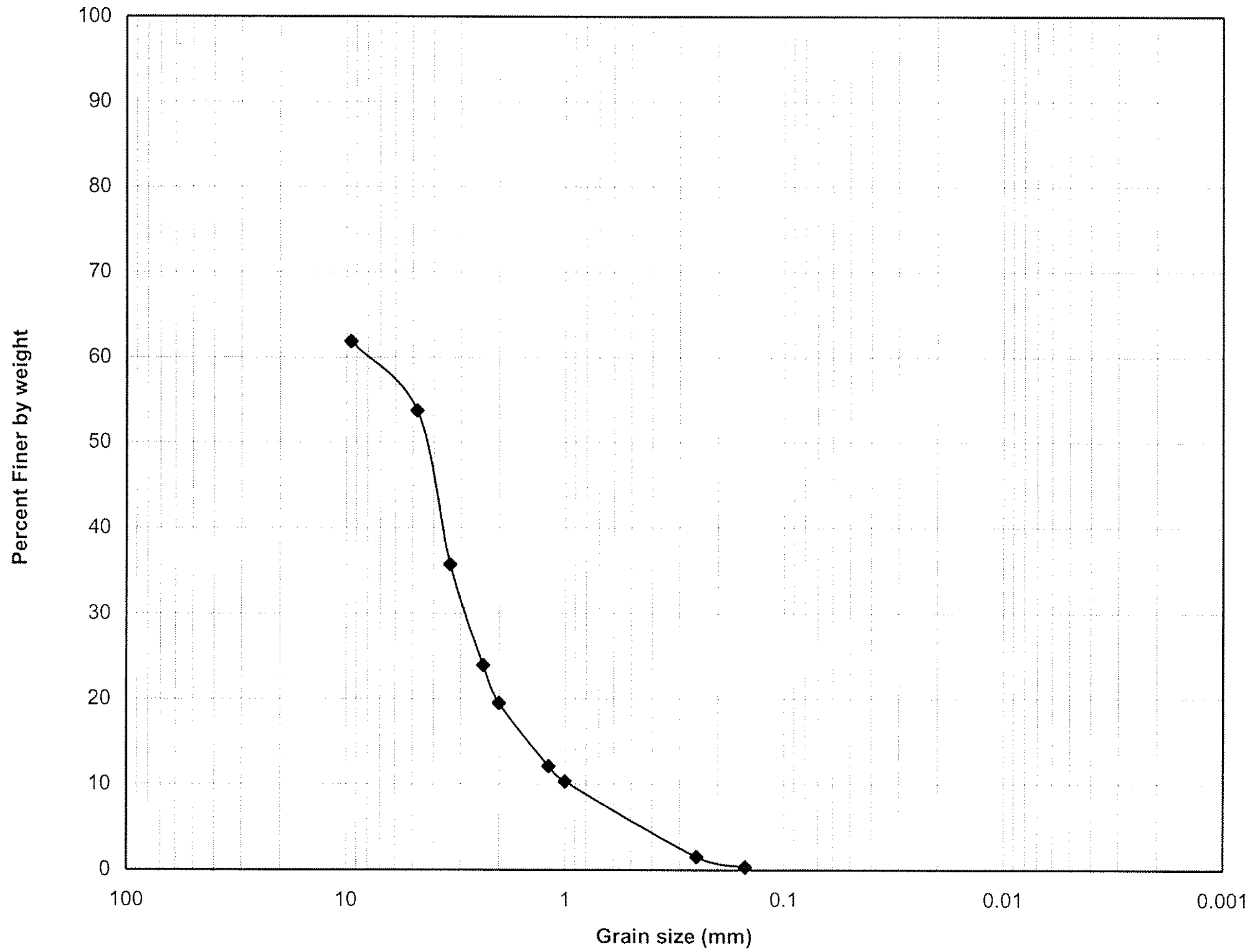
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 4
64 to 68 Feet

ERM 4/09

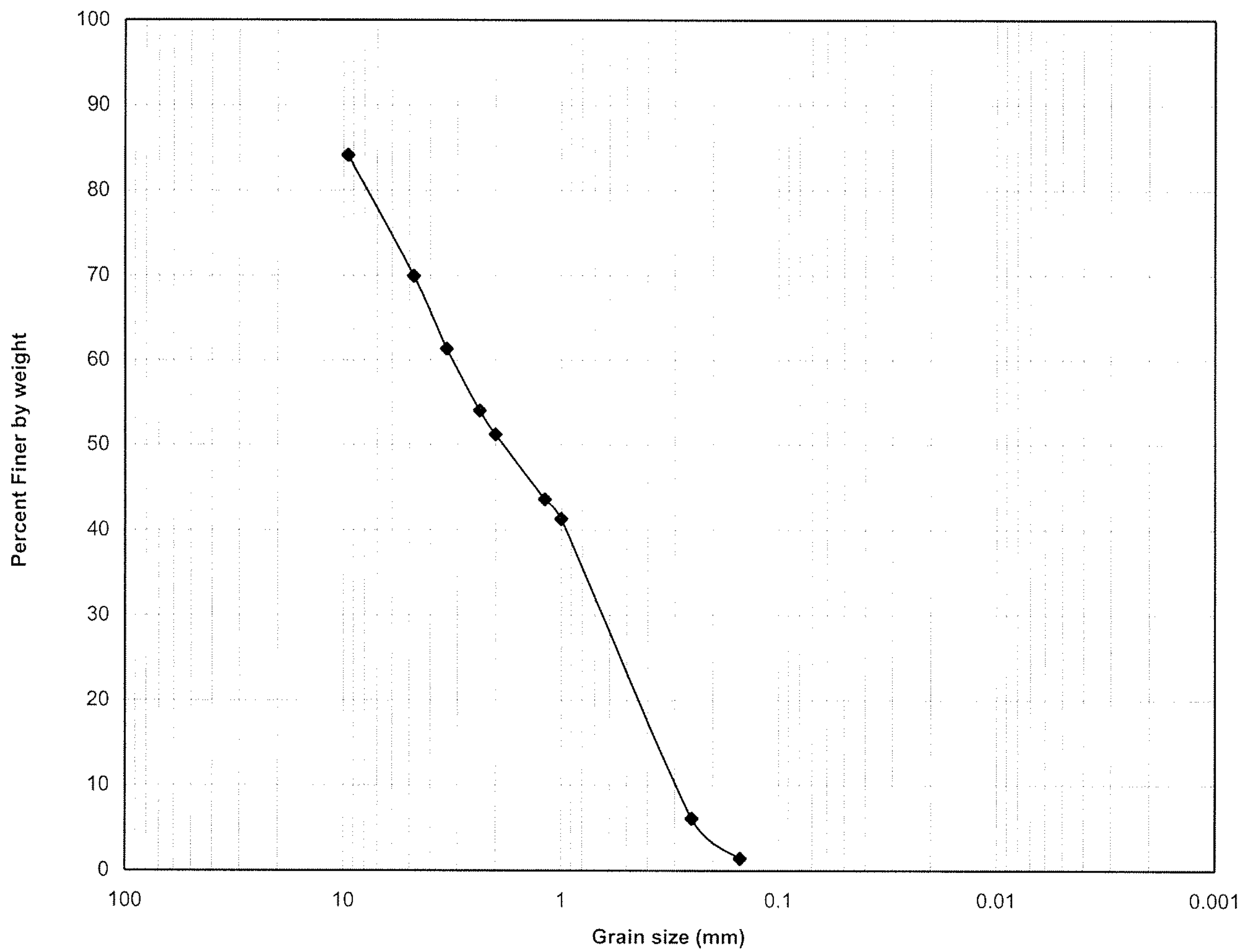


Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 4
72 to 75 Feet

ERM 4/09

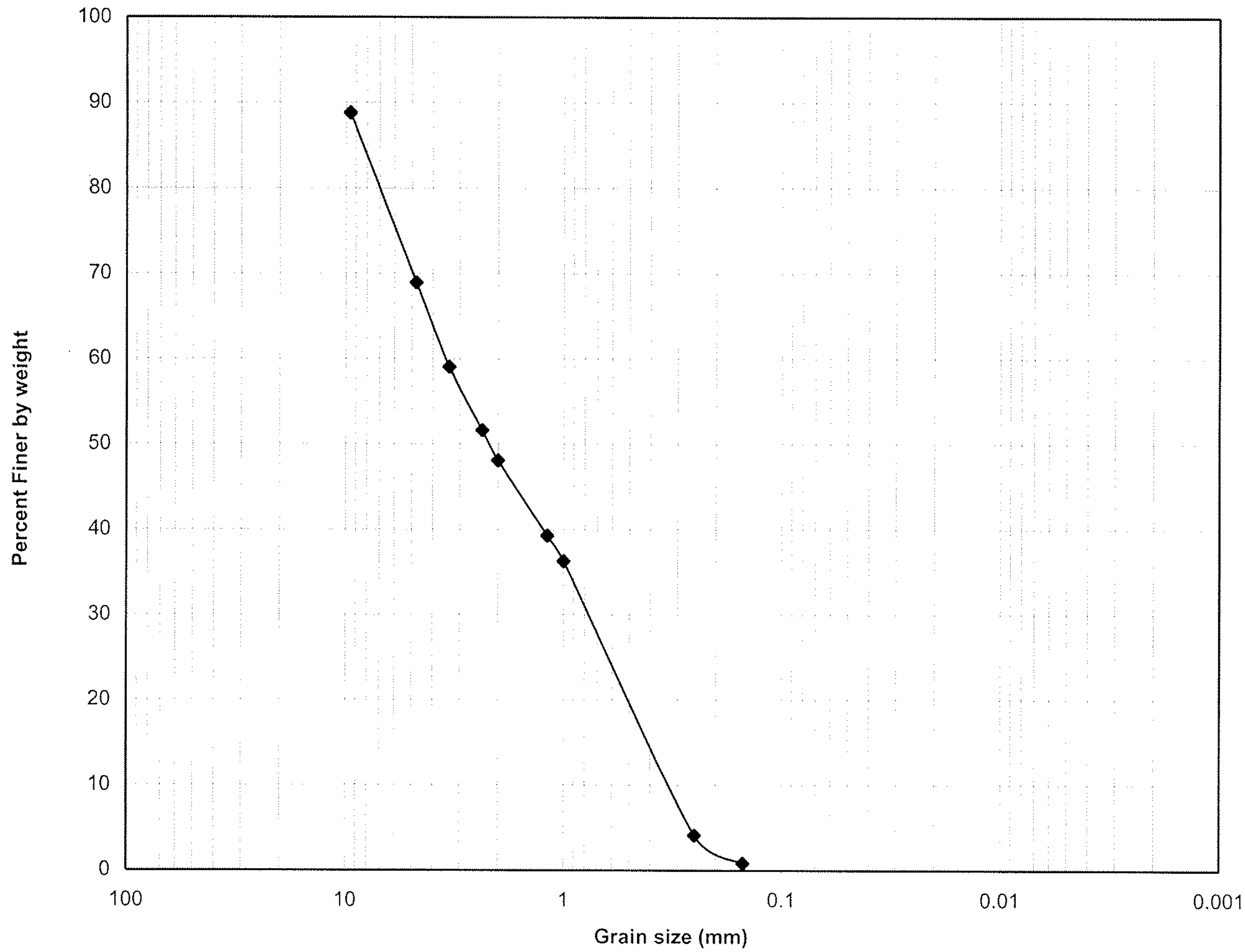
Collector 6, Lateral 5



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 5
7 to 11 Feet

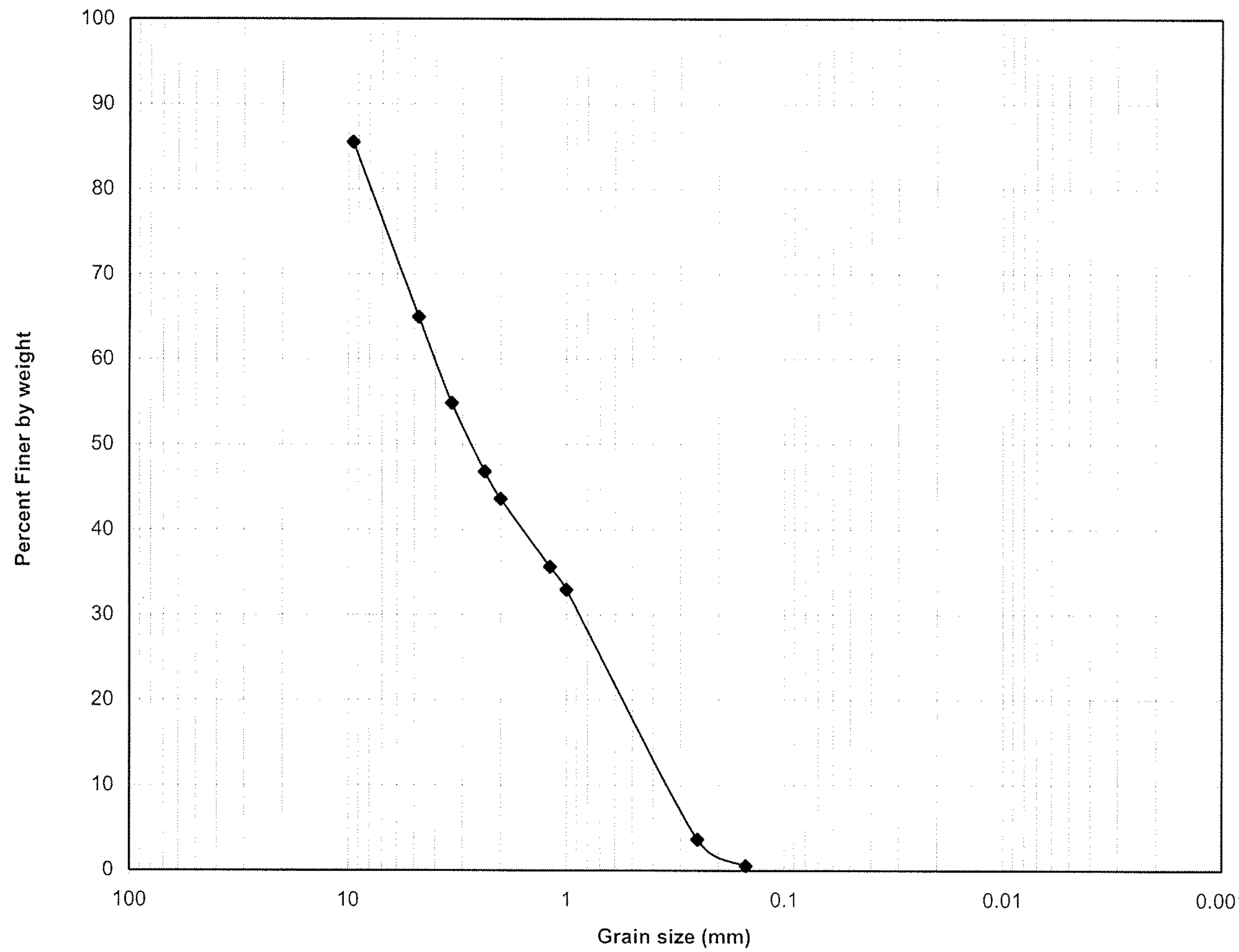
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 5
14 to 18 Feet

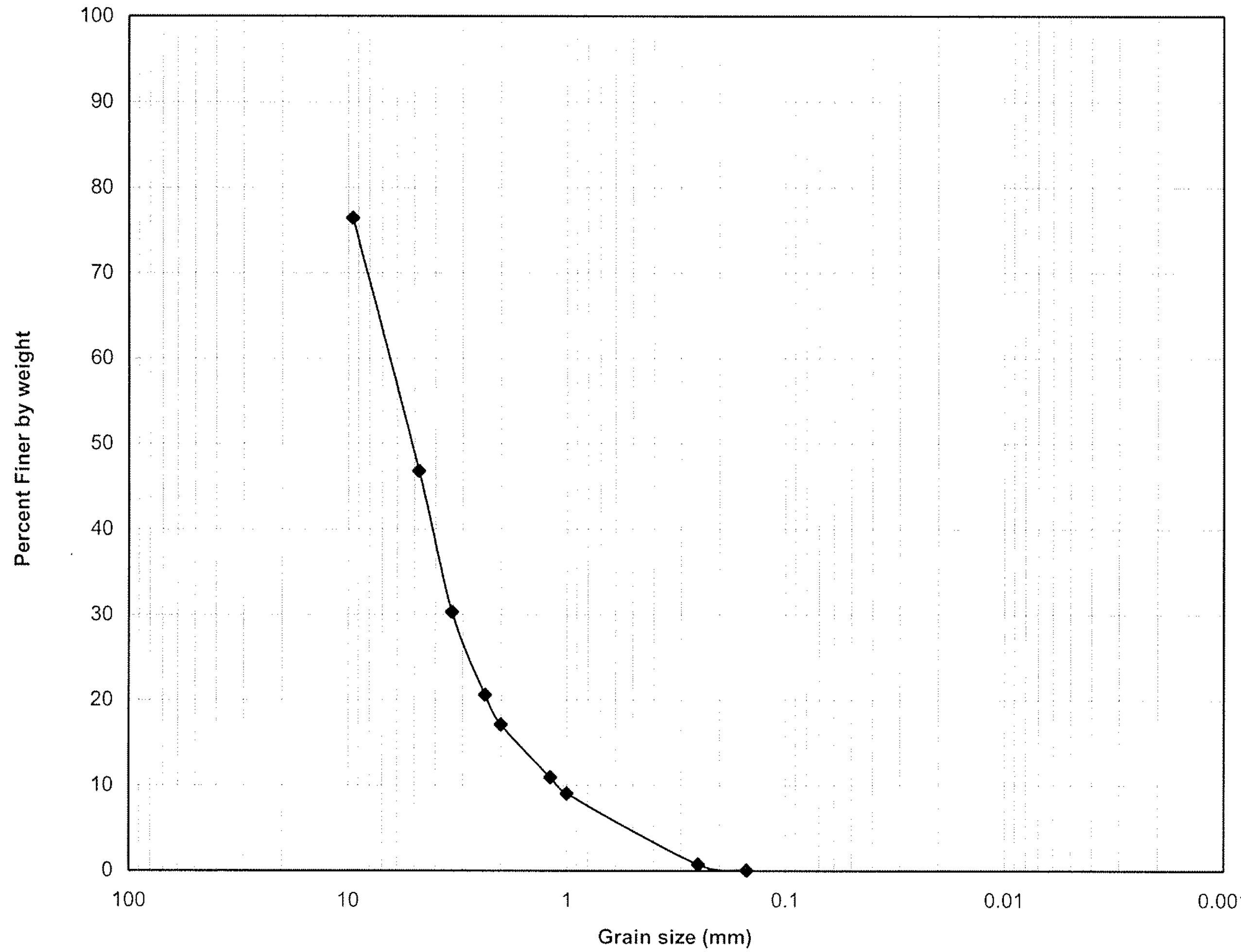
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 5
21 to 25 Feet

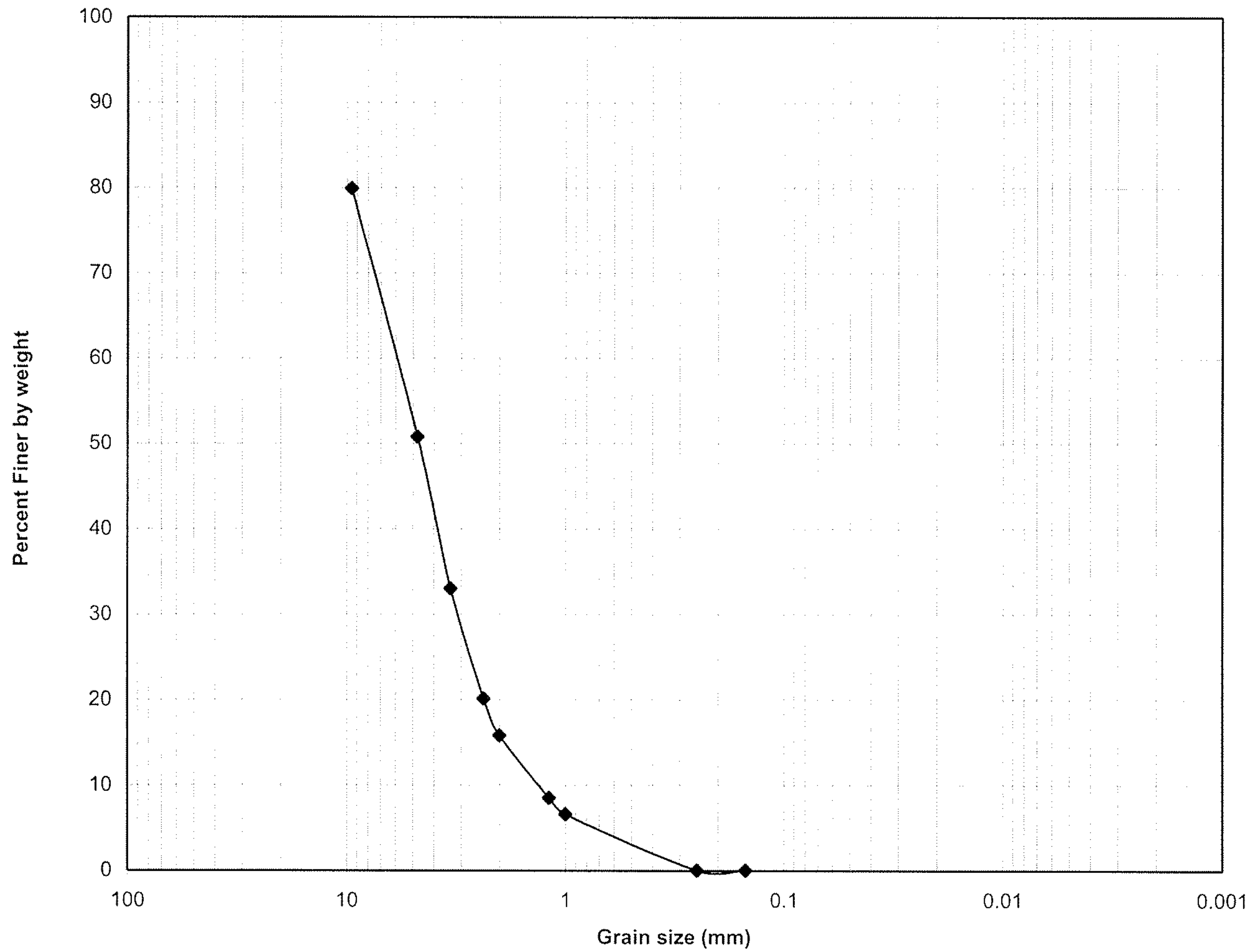
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 5
29 to 32 Feet

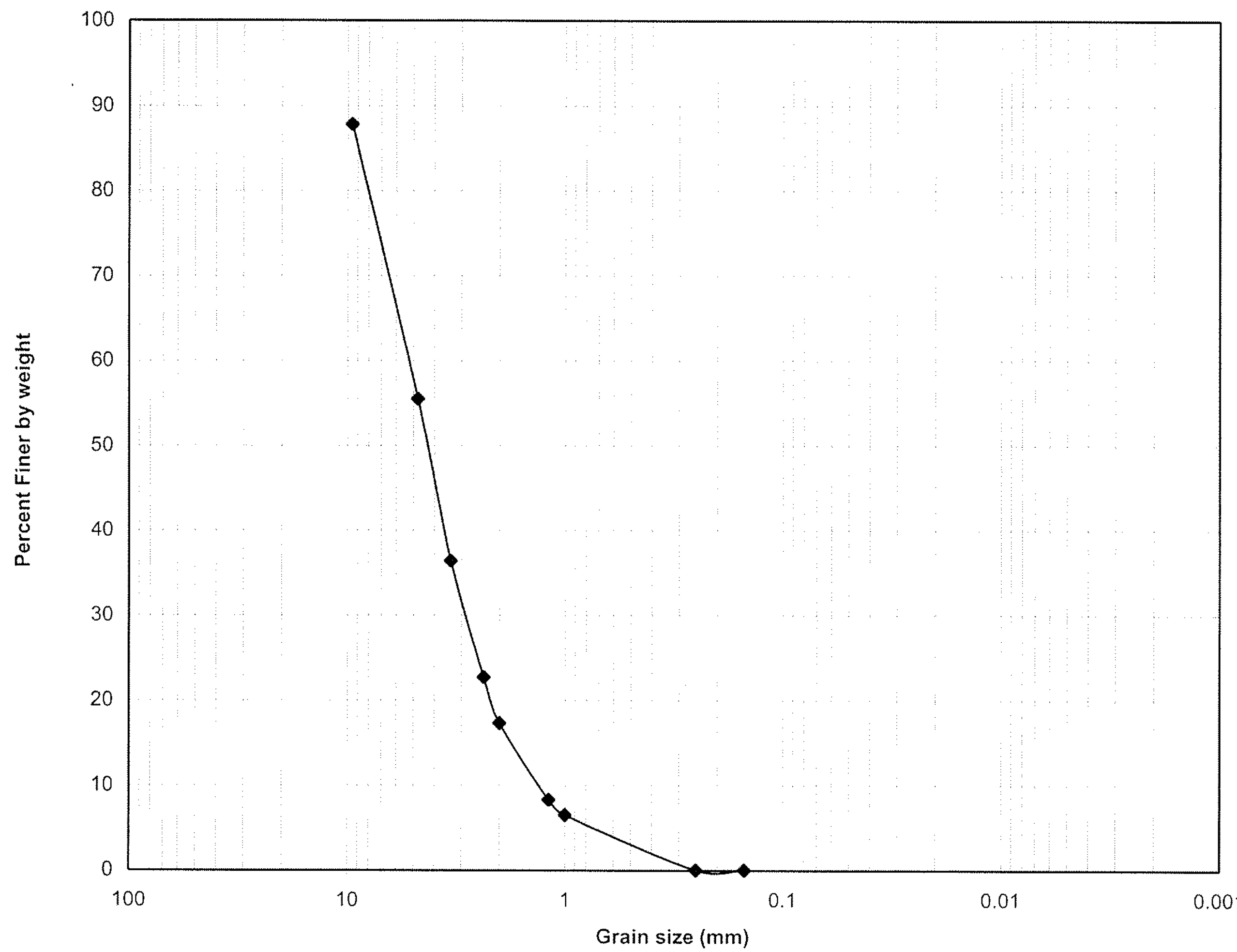
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 5
36 to 39 Feet

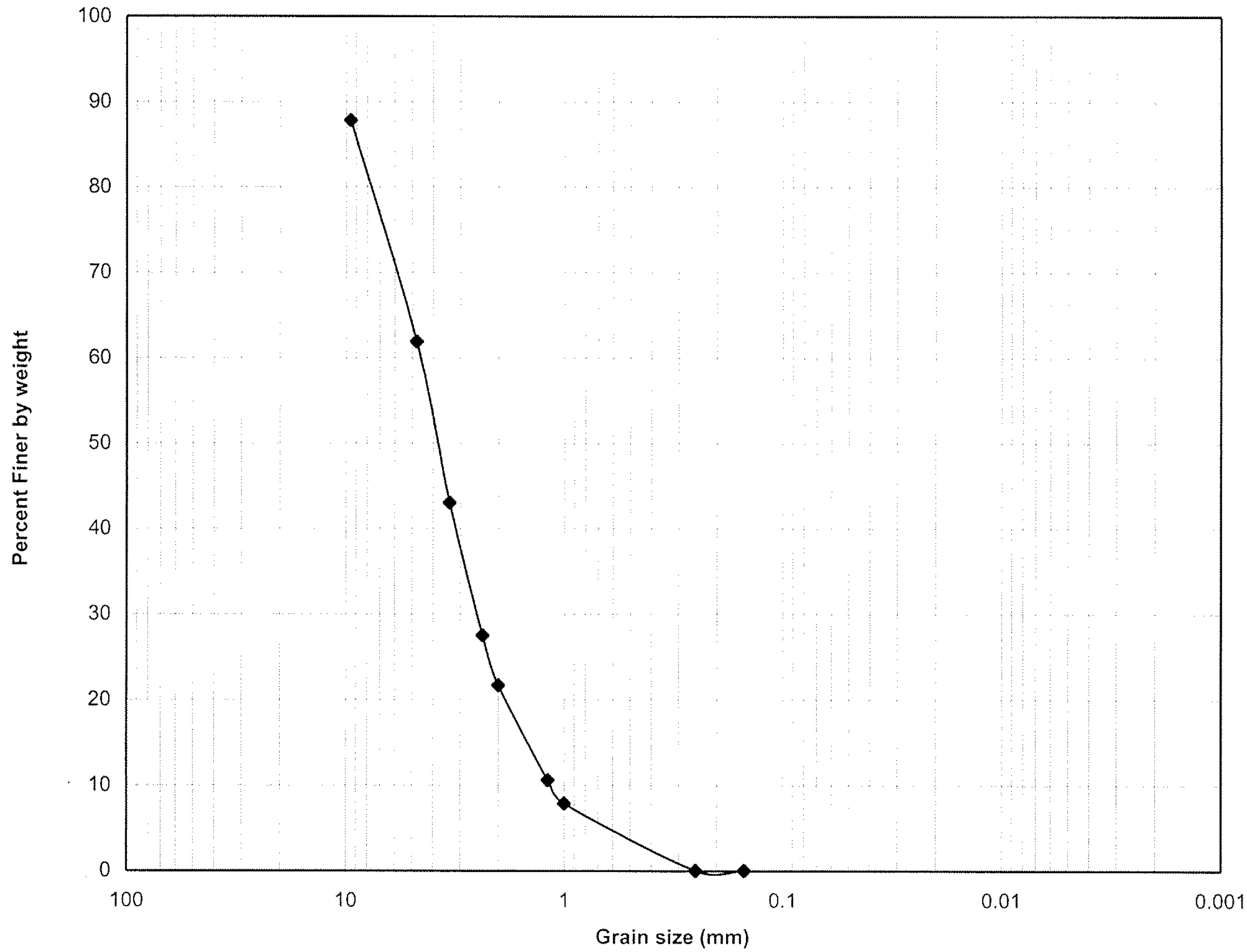
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 5
43 to 47 Feet

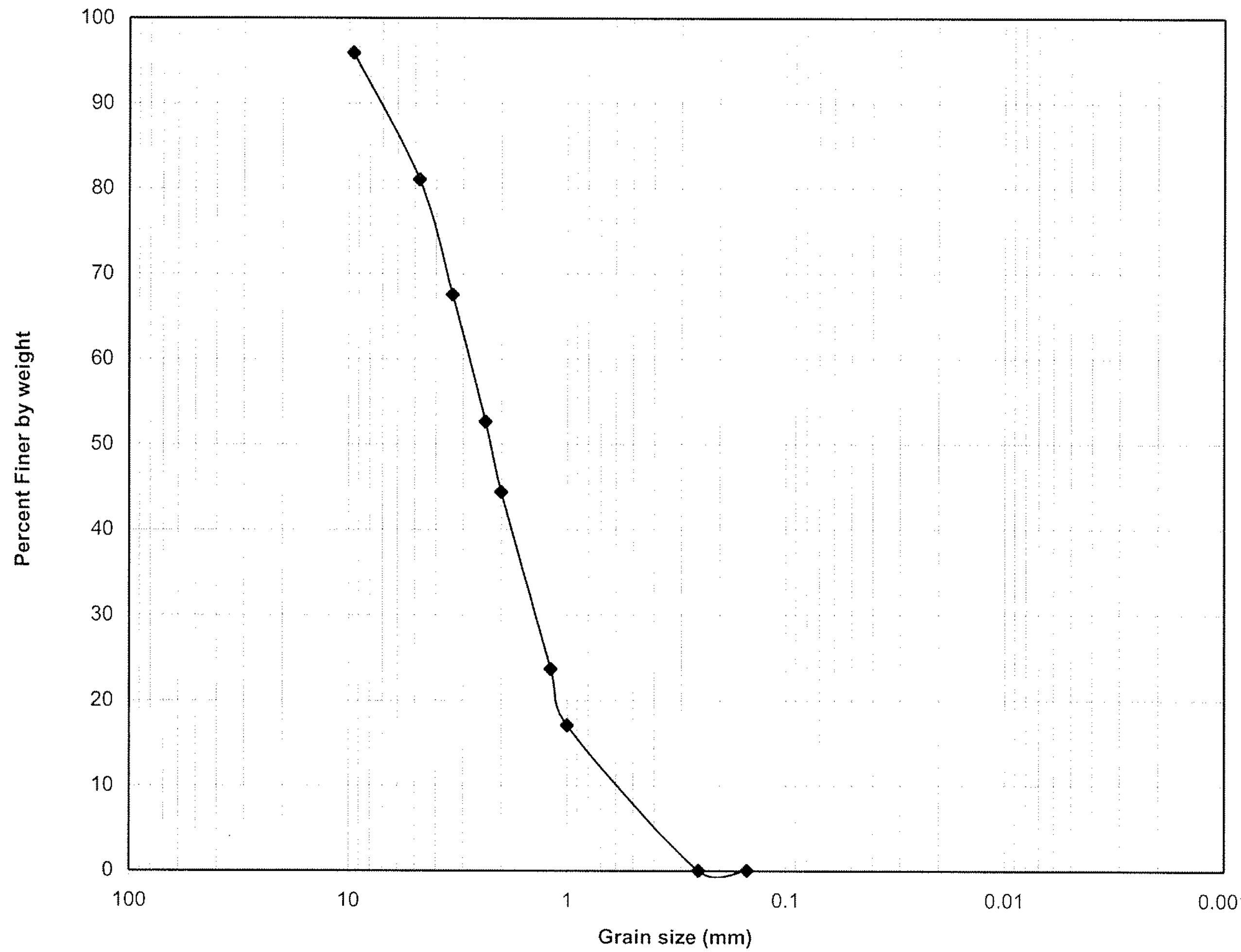
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 5
50 to 54 Feet

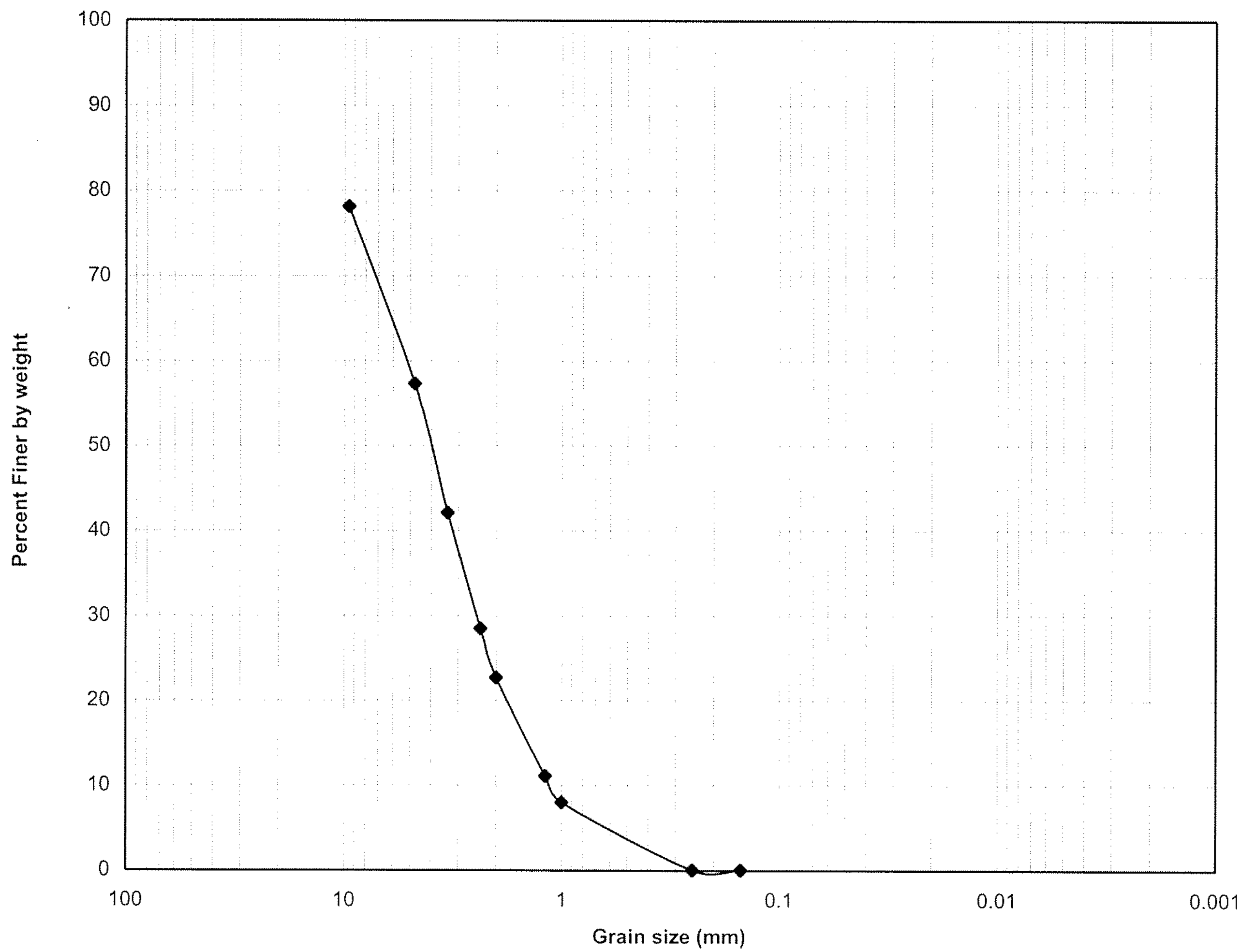
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 5
57 to 61 Feet

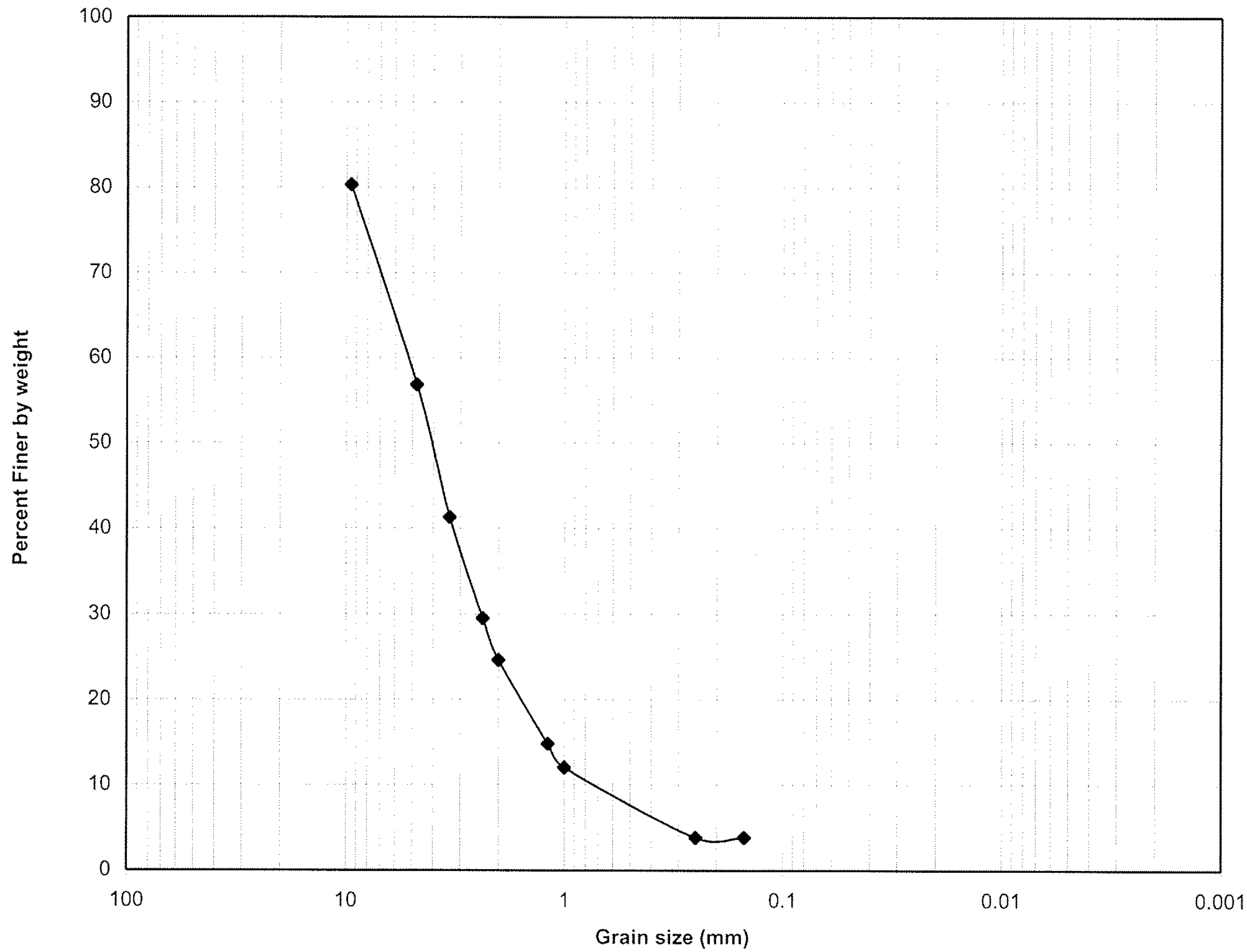
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 5
64 to 68 Feet

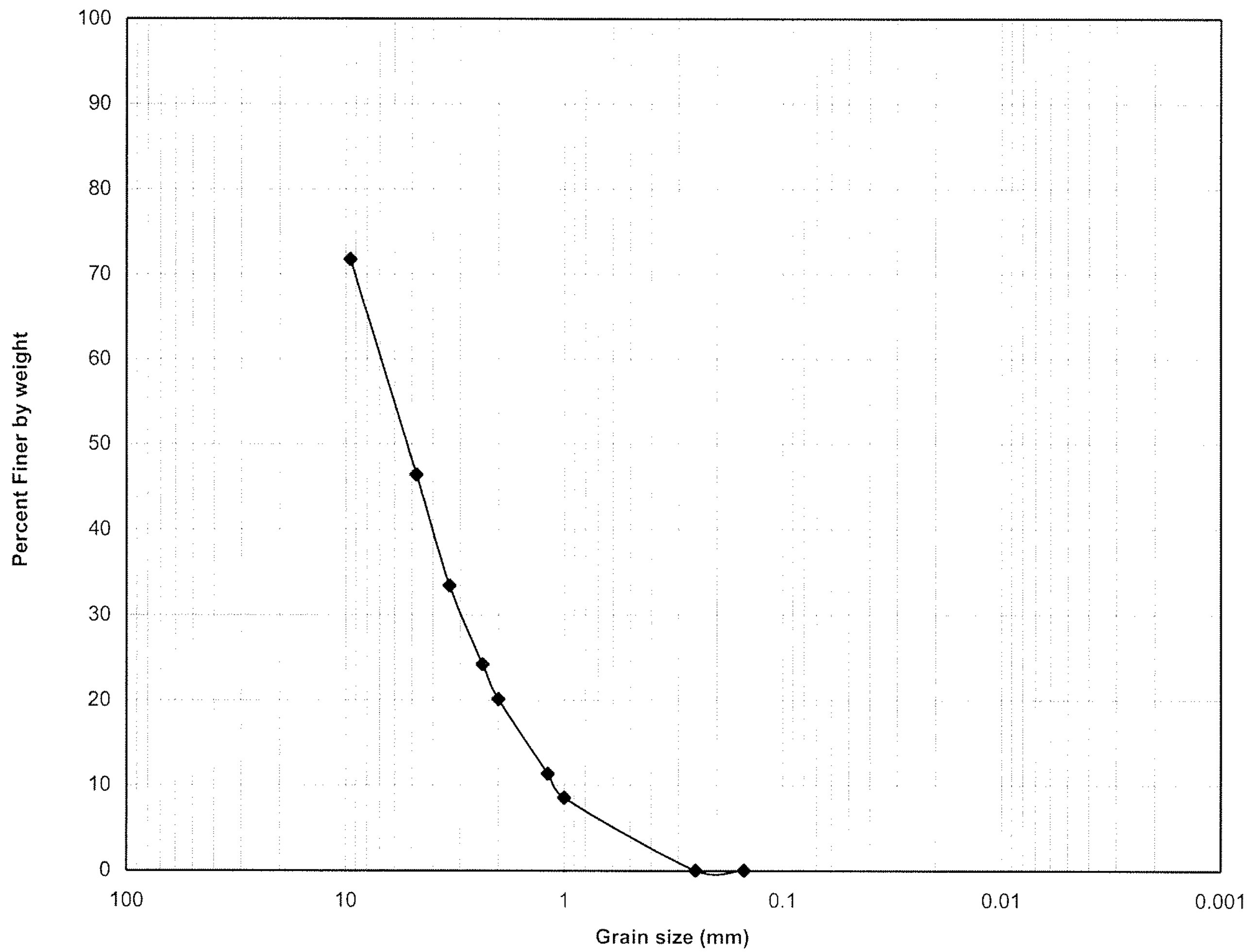
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 5
72 to 75 Feet

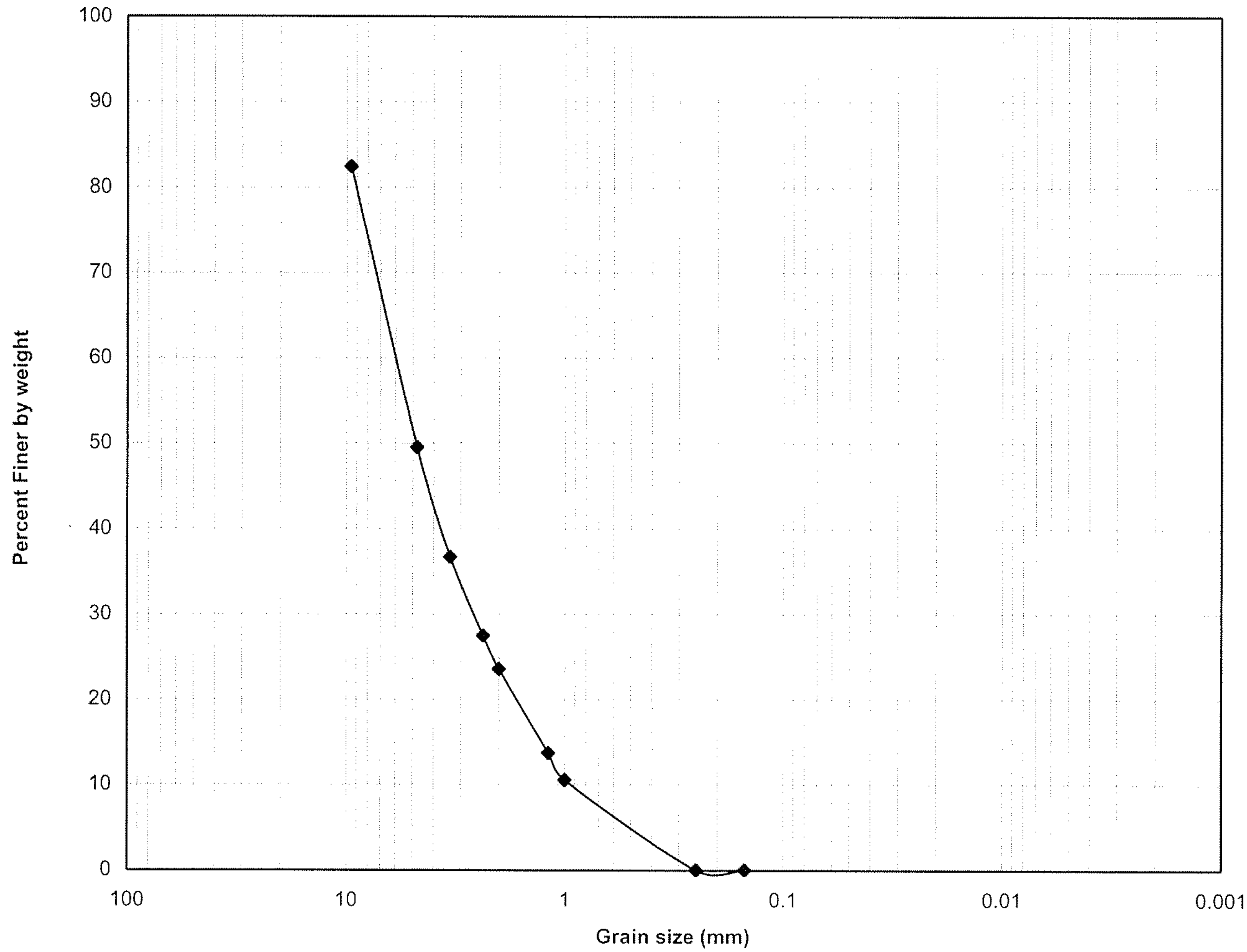
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 5
79 to 82 Feet

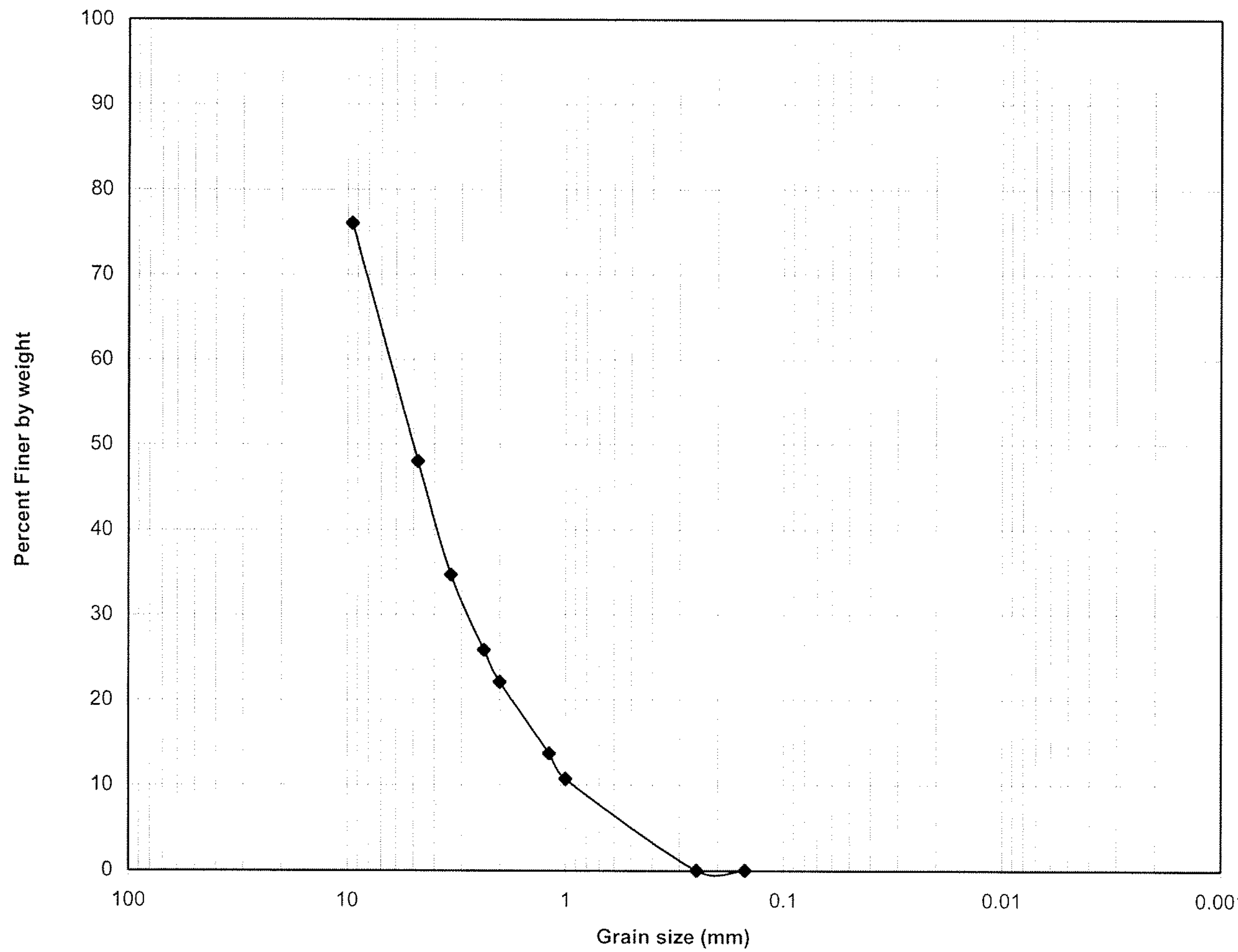
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 5
86 to 90 Feet

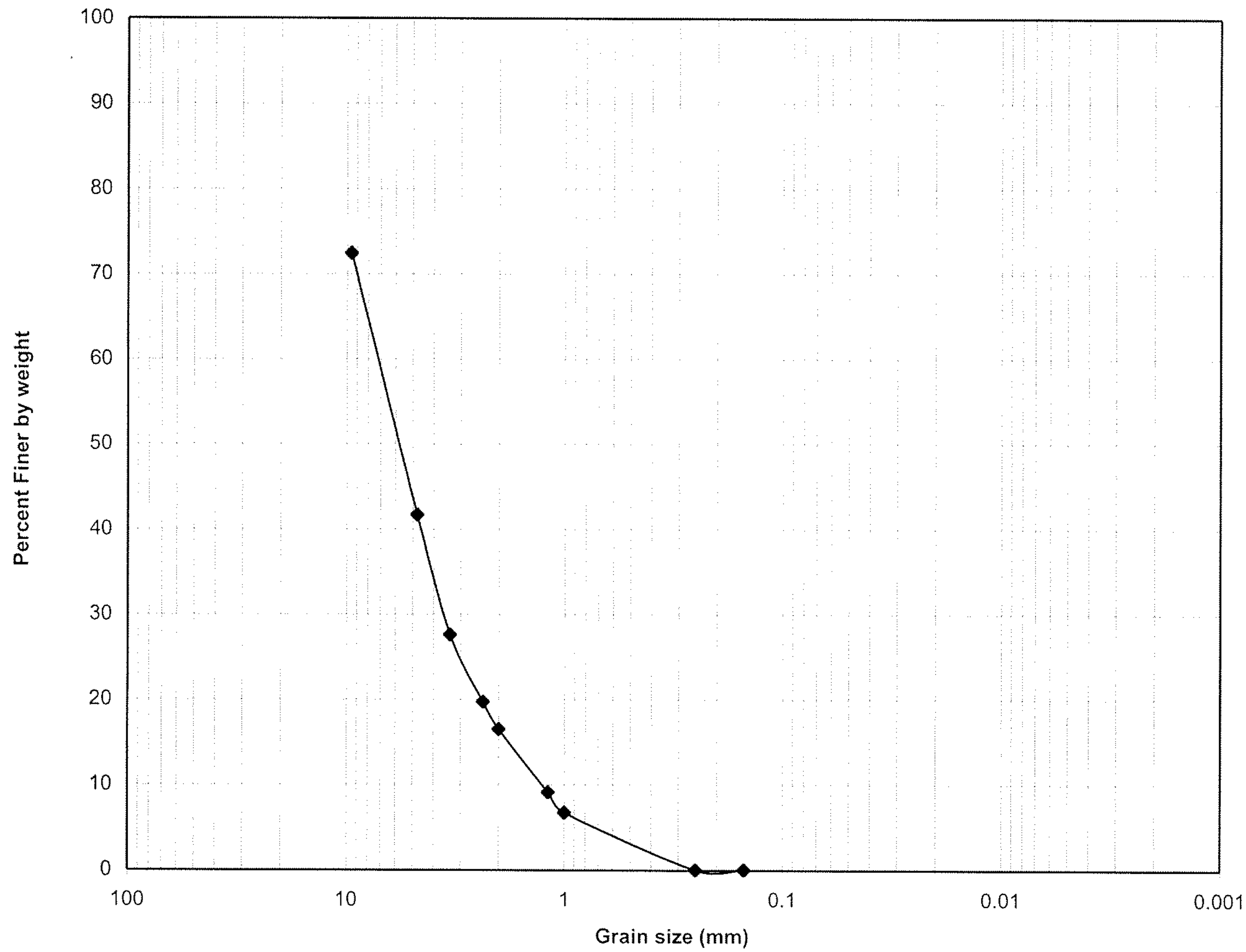
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 5
93 to 97 Feet

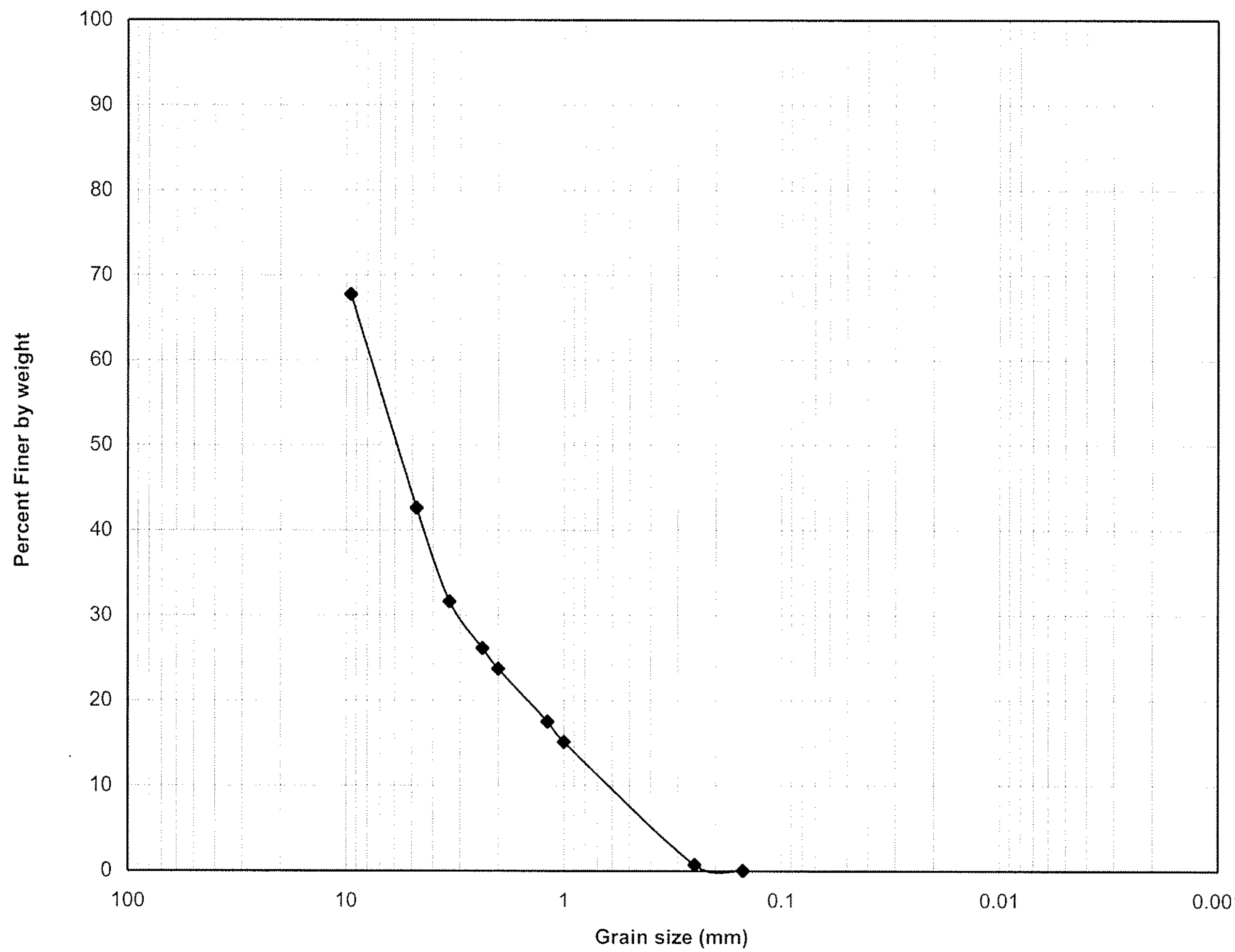
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 5
100 to 104 Feet

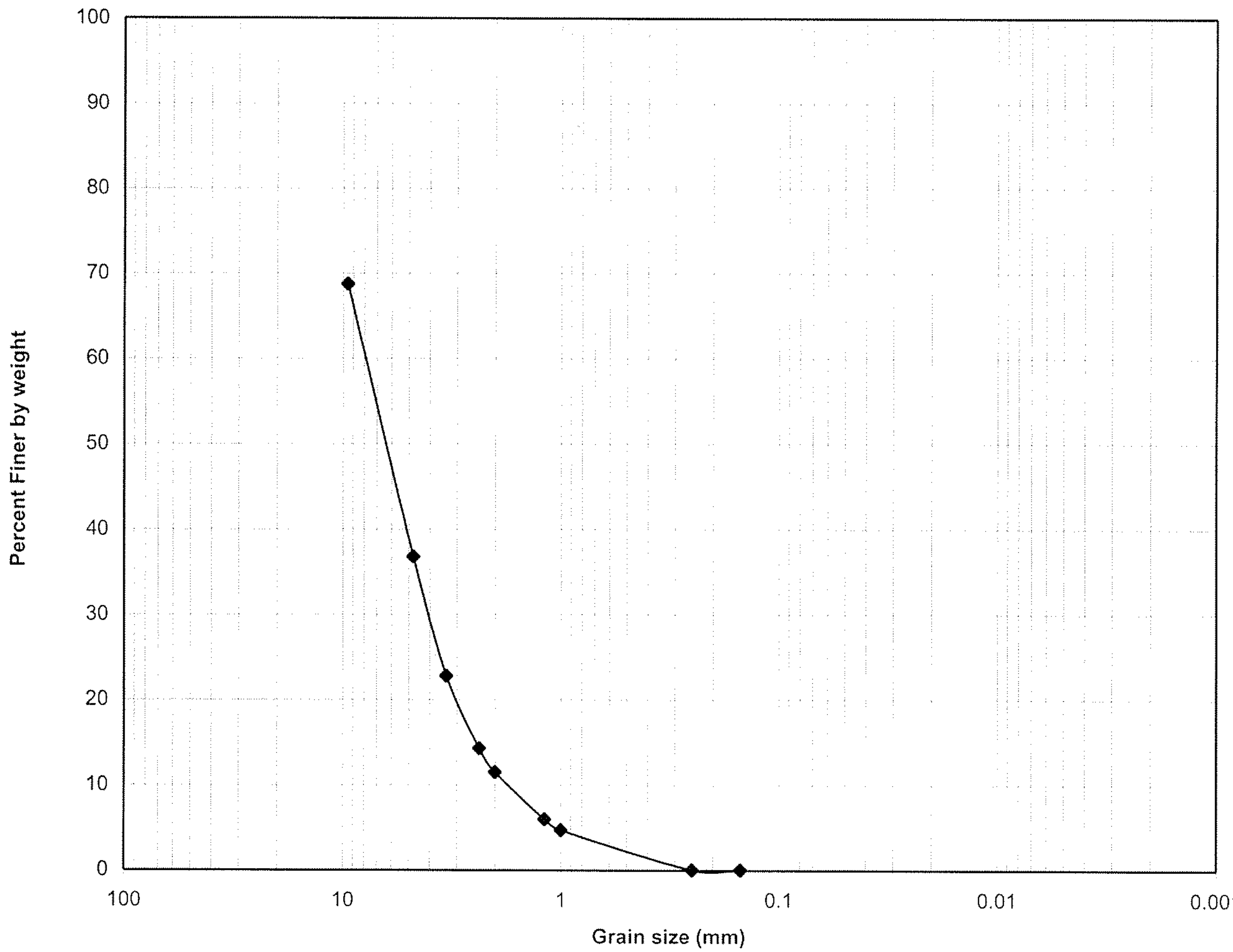
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 5
107 to 111 Feet

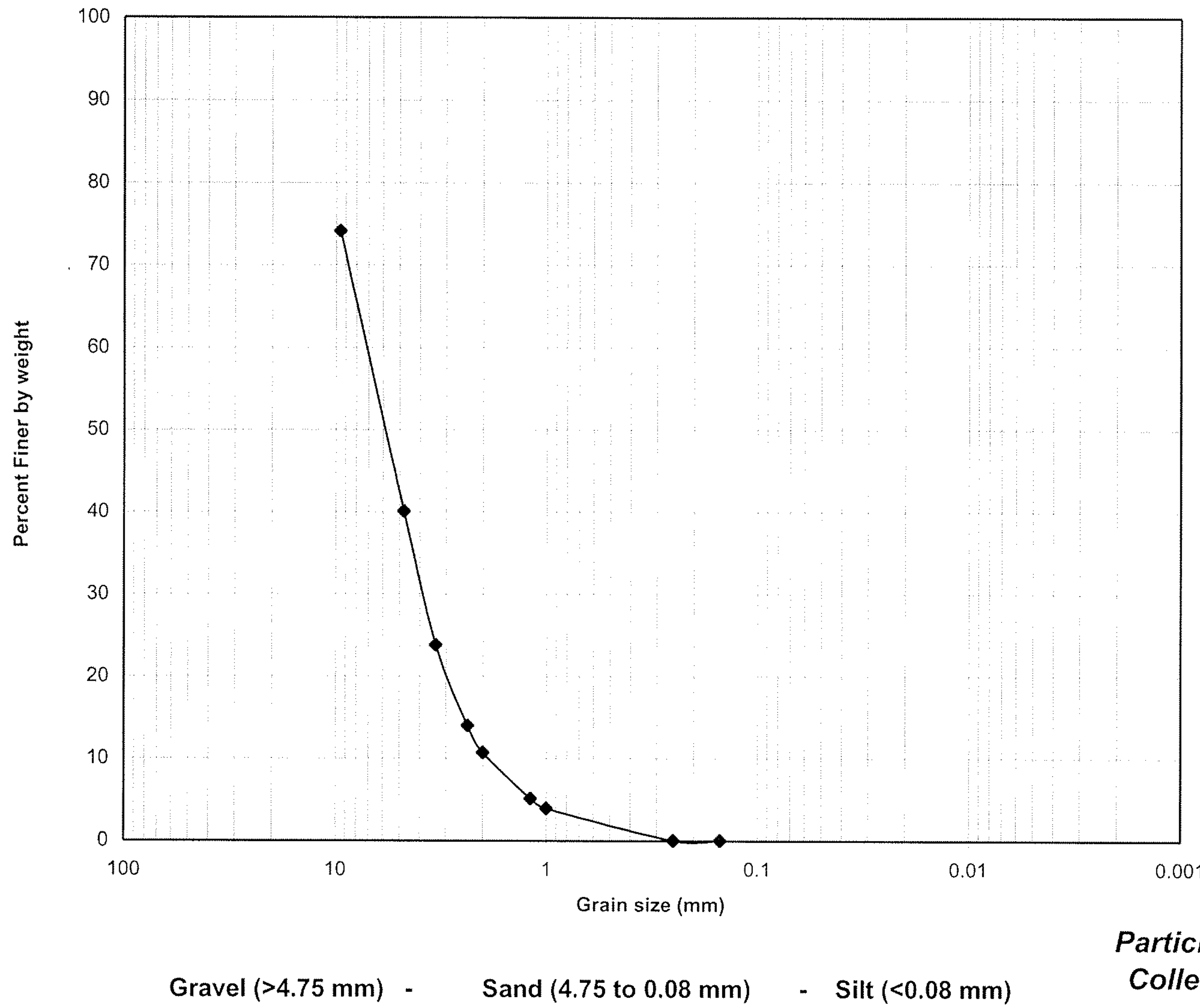
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

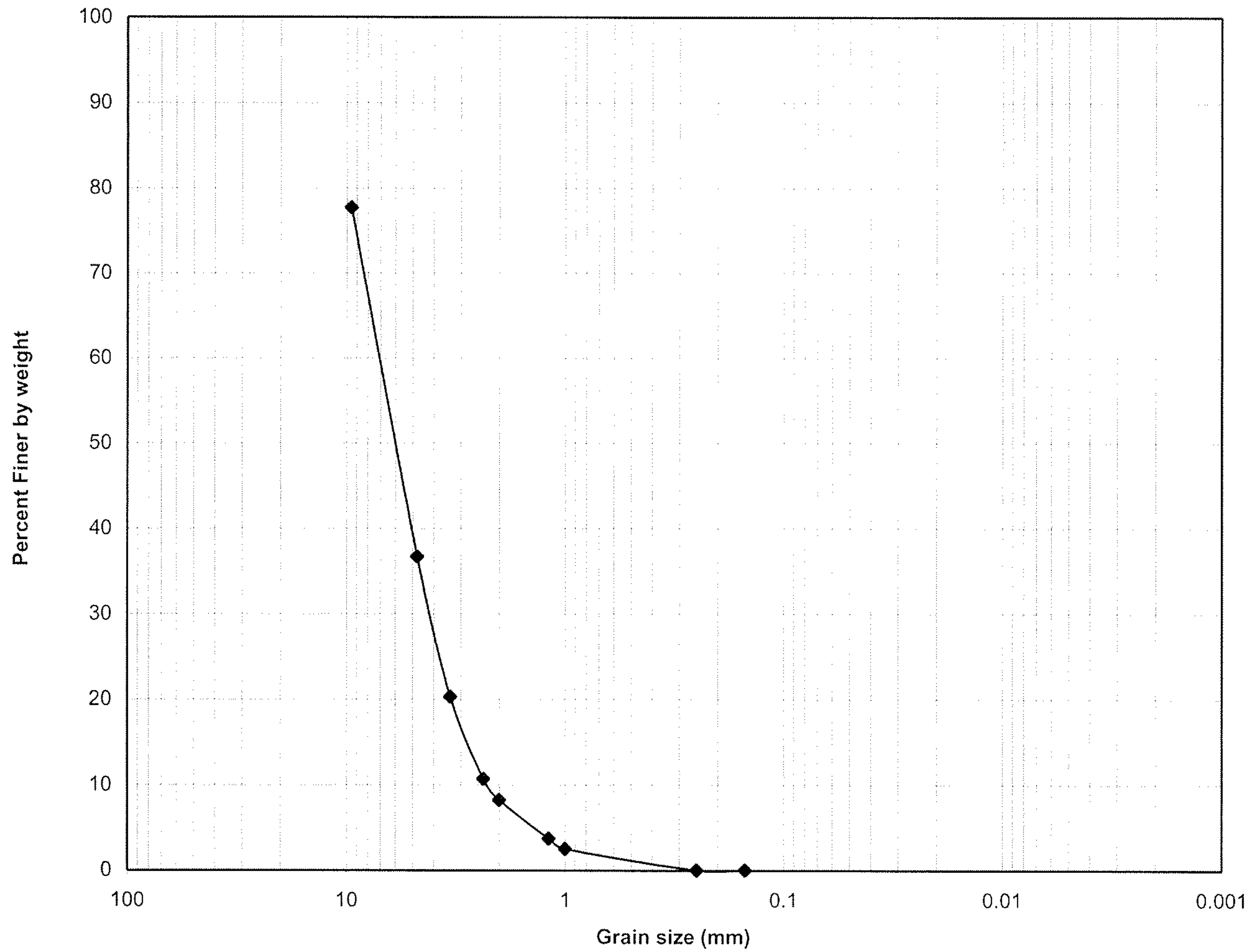
Particle Size Analysis
Collector 6, Lateral 5
115 to 118 Feet

ERM 4/09



Particle Size Analysis
Collector 6, Lateral 5
122 to 125 Feet

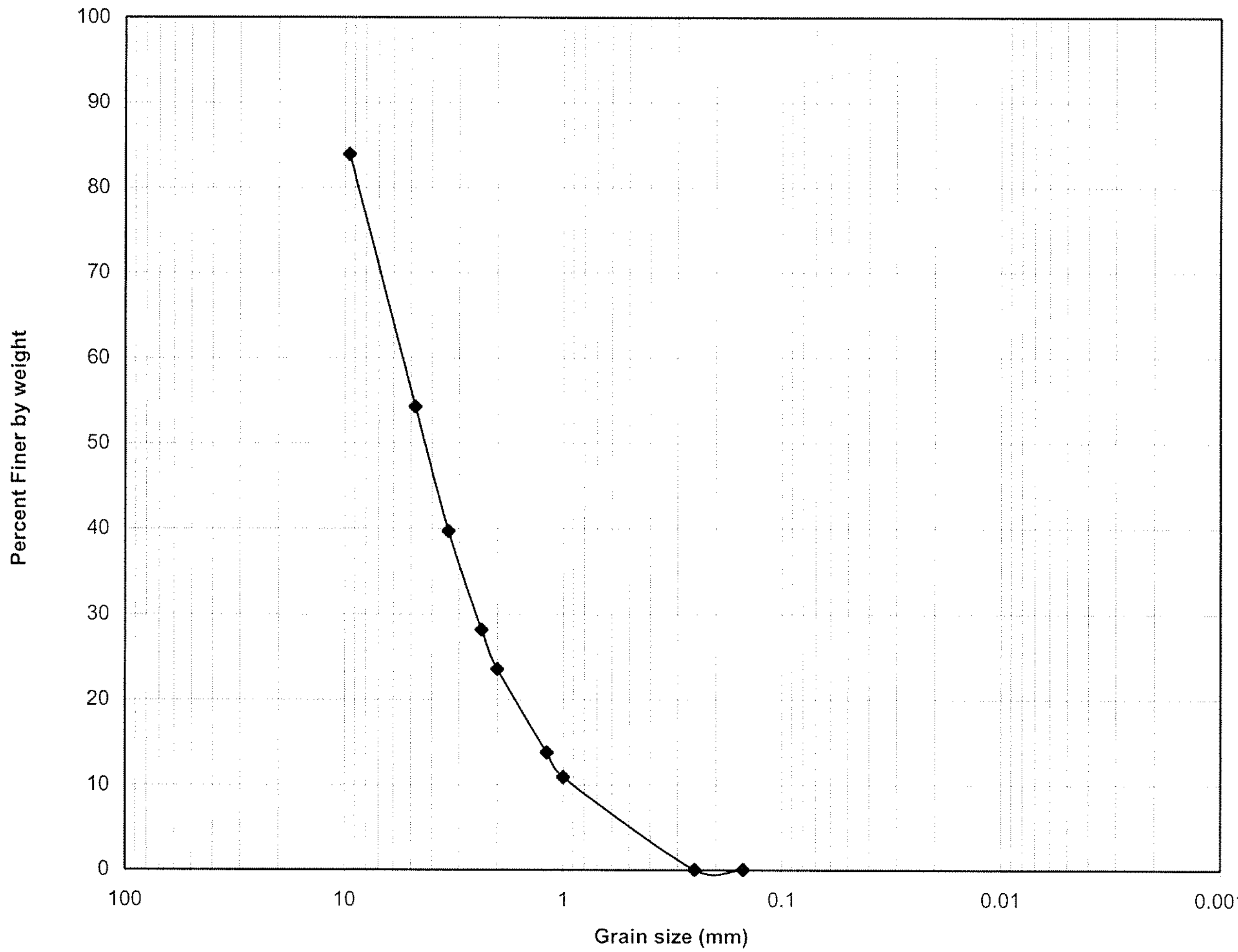
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 5
129 to 132 Feet

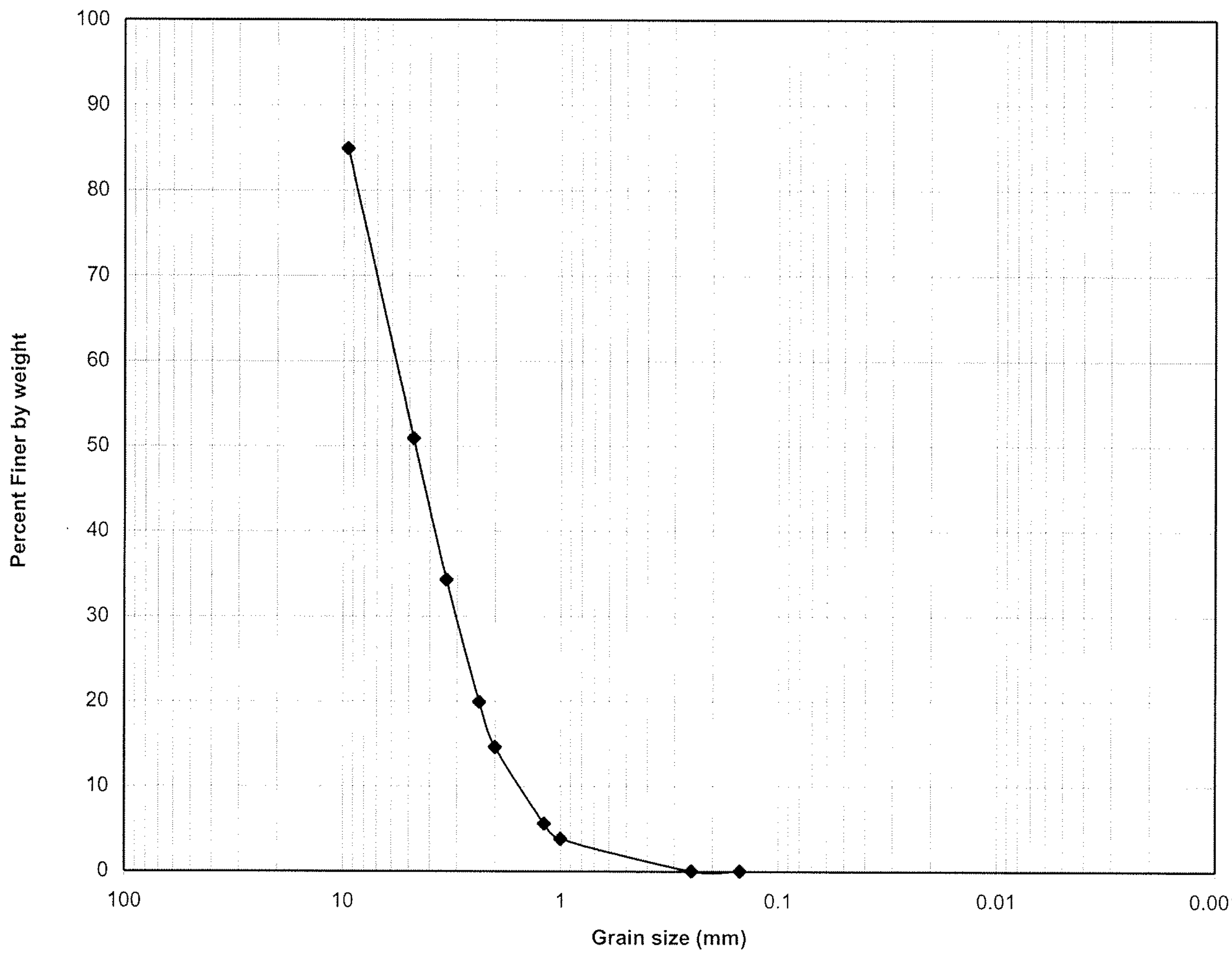
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 5
136 to 140 Feet

ERM 4/09

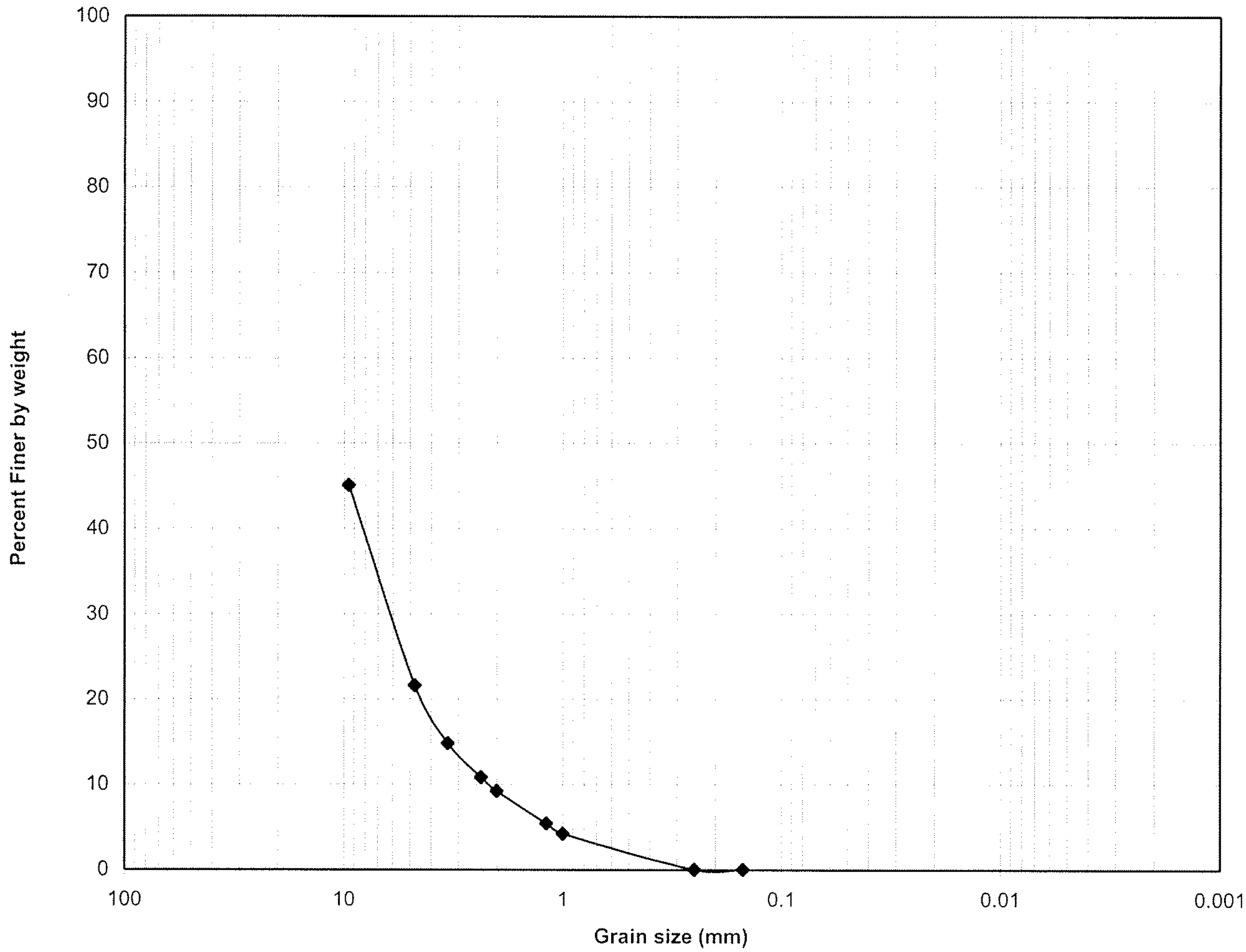


Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 5
143 to 147 Feet

ERM 4/09

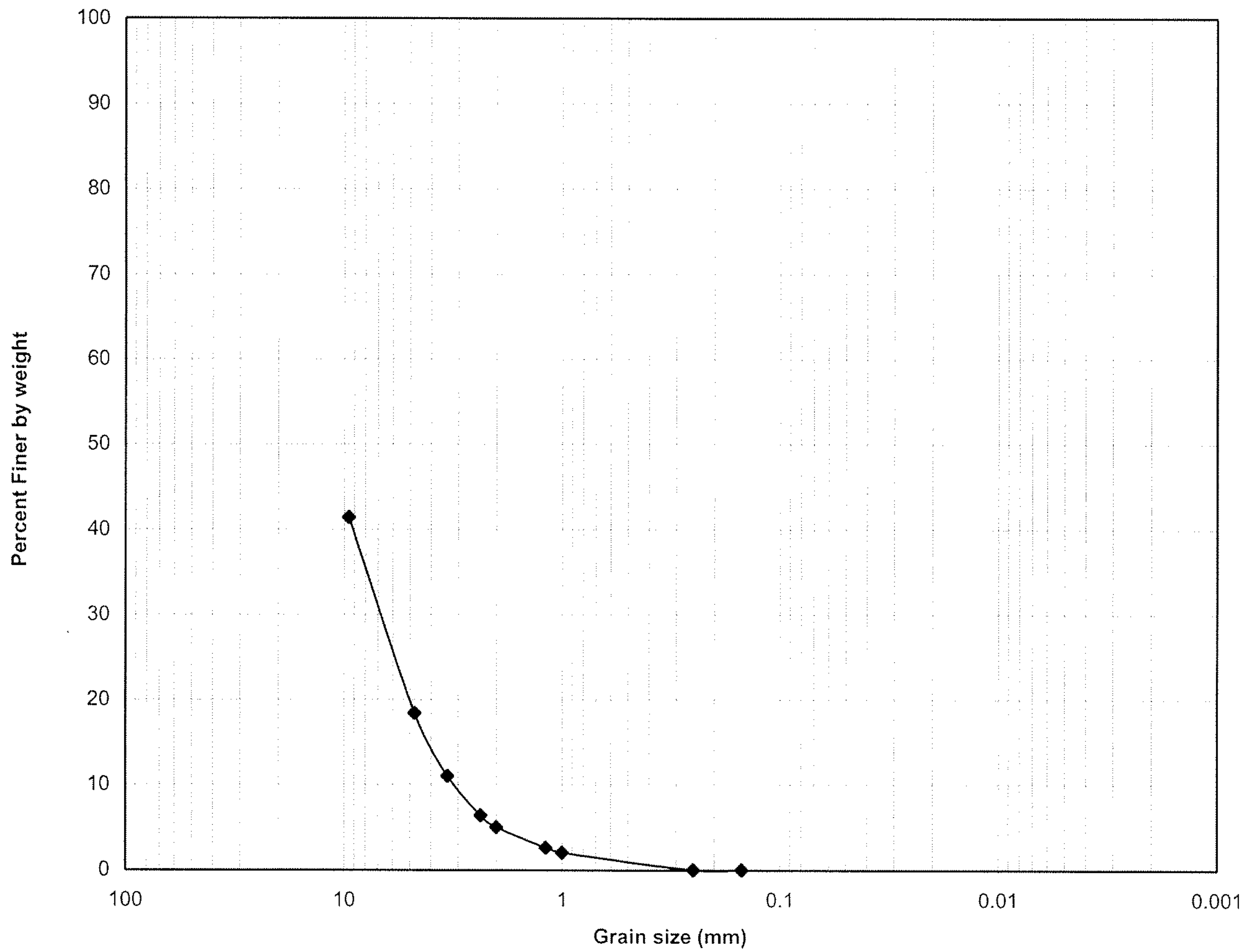
Collector 6, Lateral 6



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 6
7 to 11 Feet

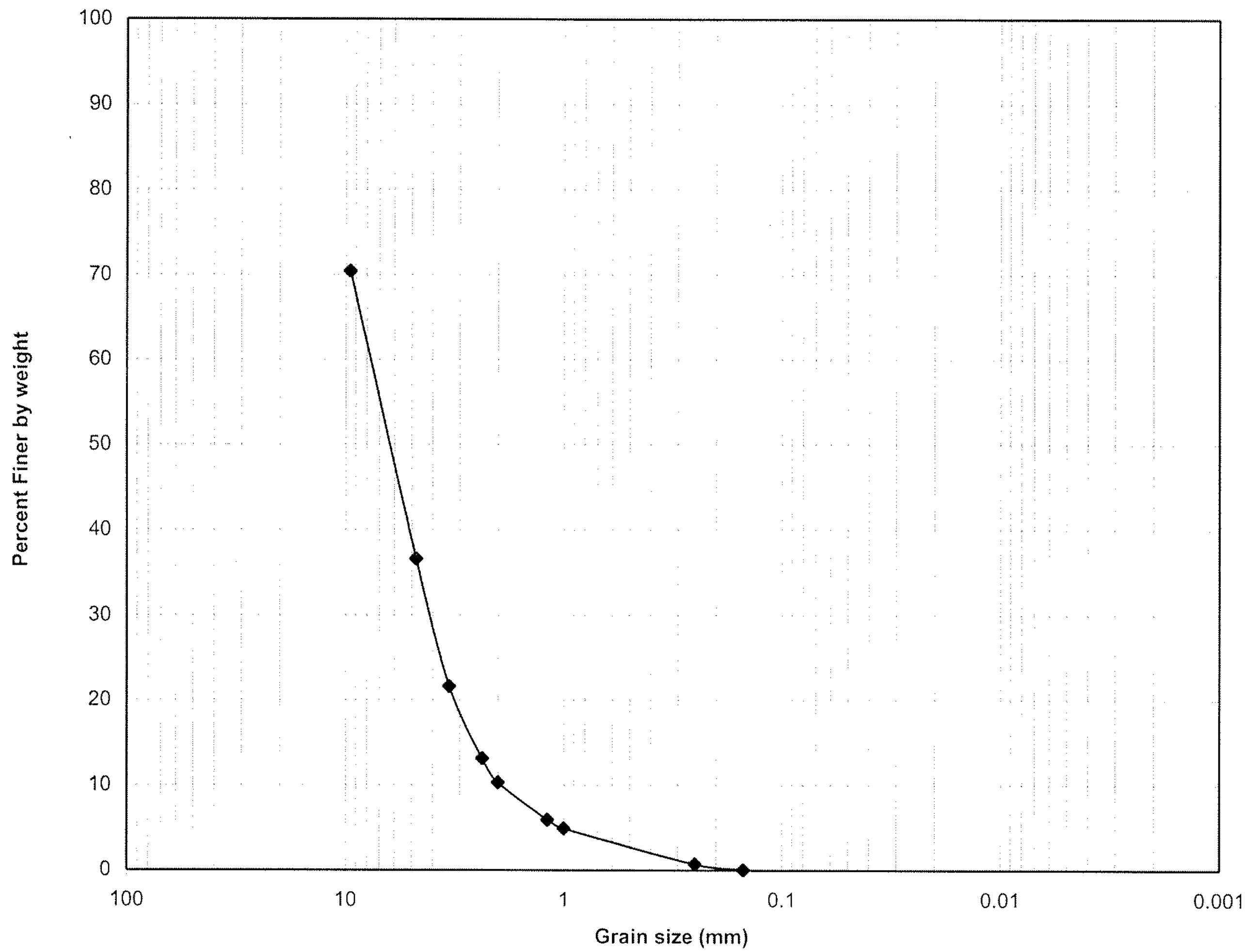
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 6
14 to 18 Feet

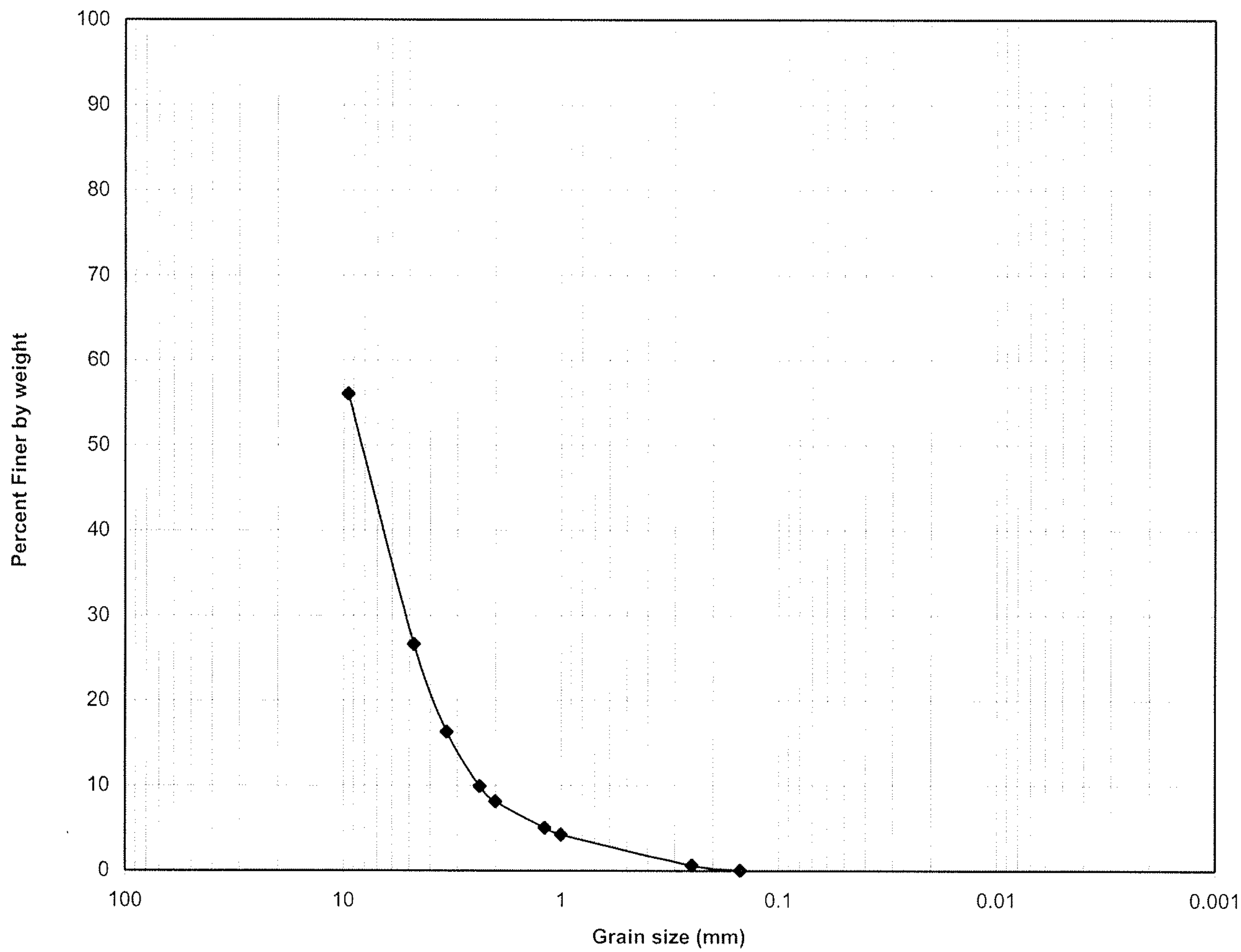
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 6
21 to 25 Feet

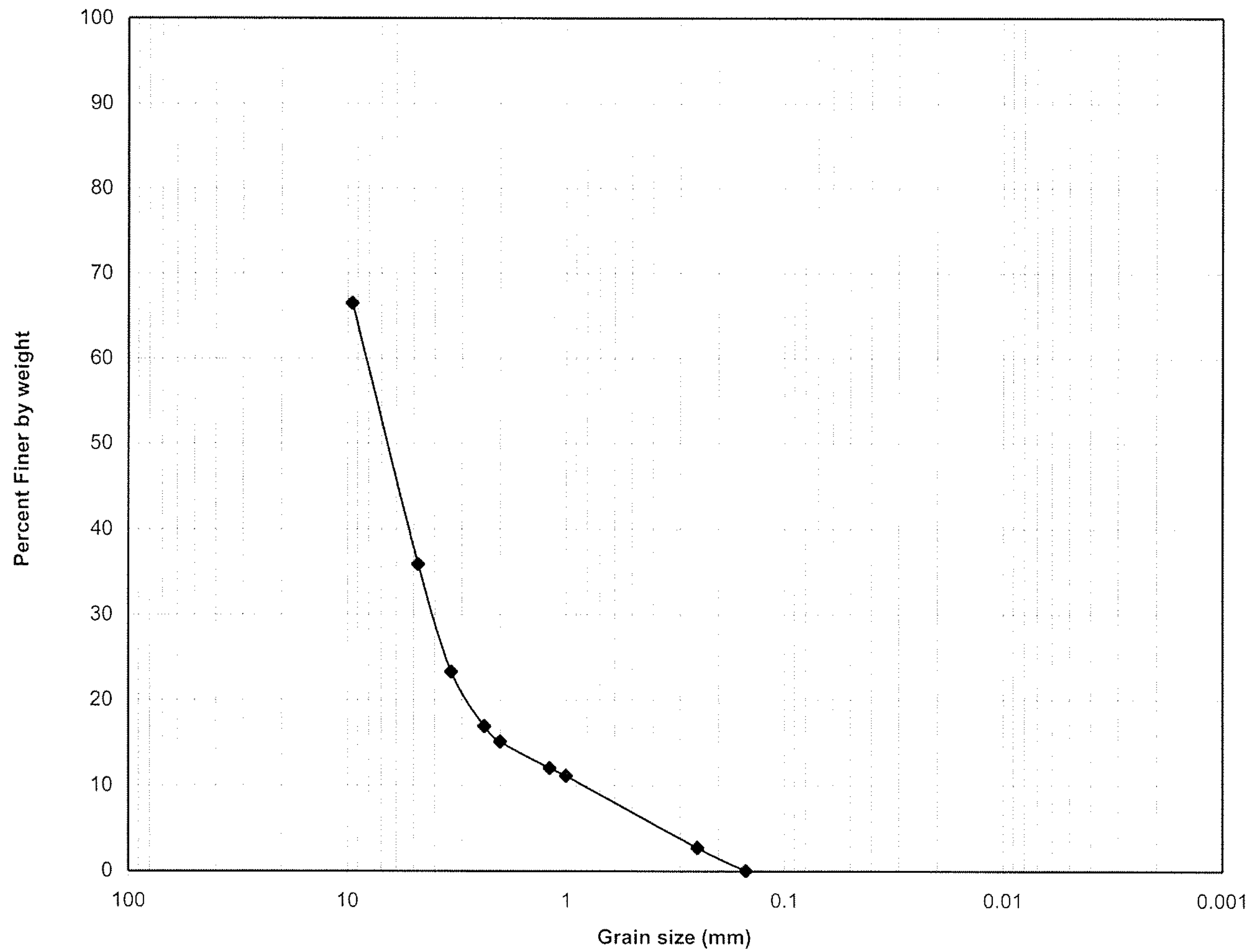
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 6
29 to 32 Feet

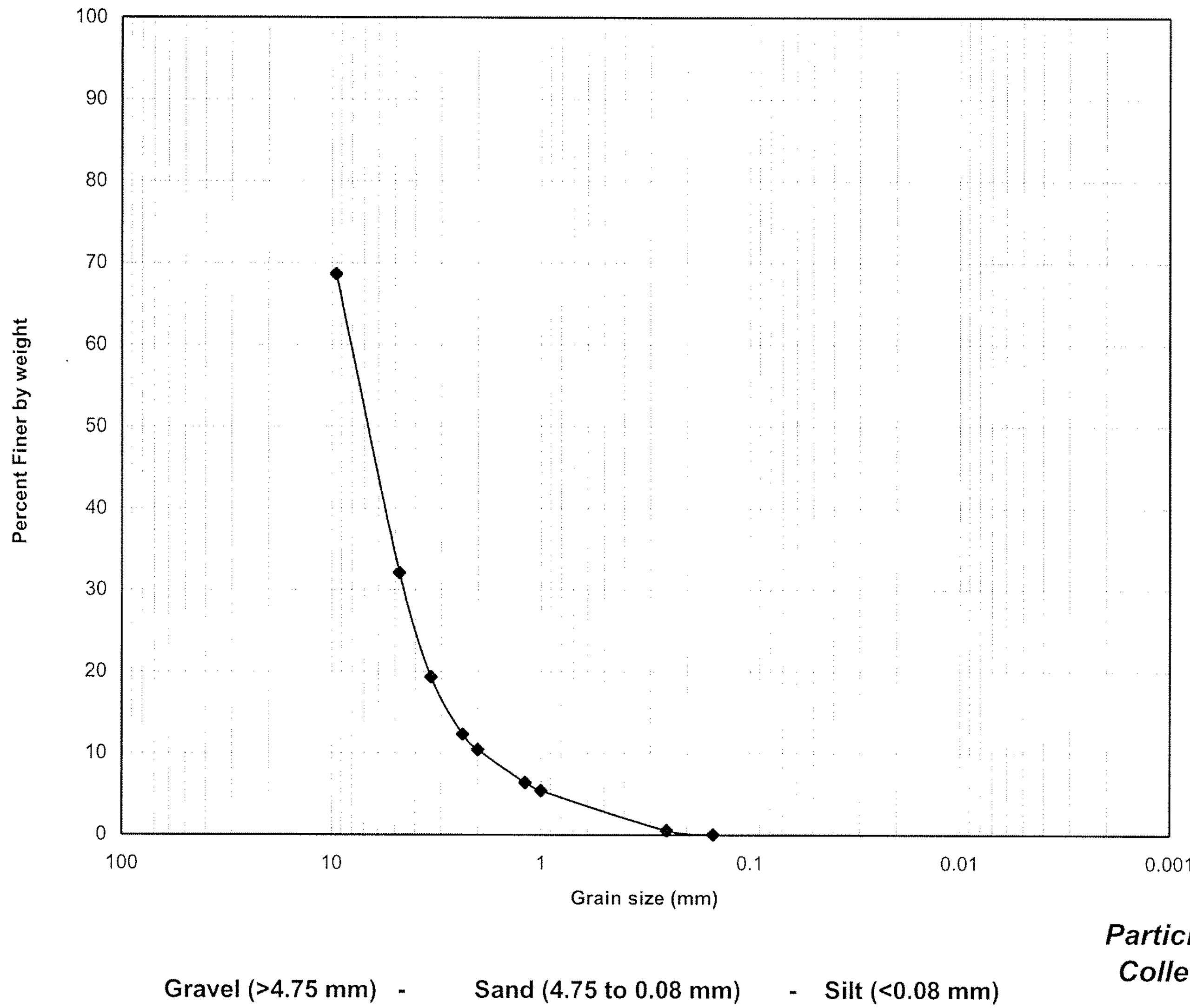
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

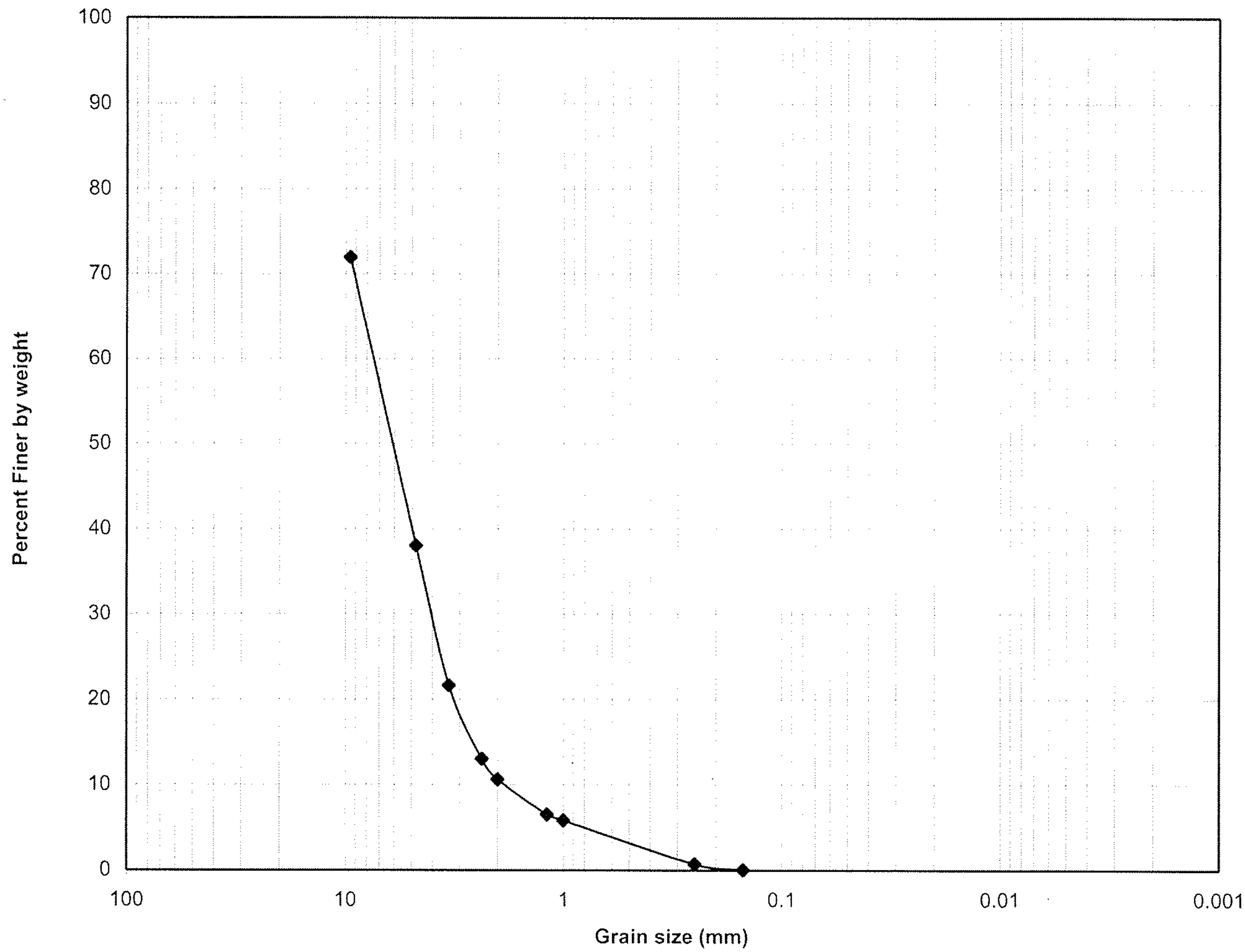
Particle Size Analysis
Collector 6, Lateral 6
36 to 39 Feet

ERM 4/09



Particle Size Analysis
Collector 6, Lateral 6
43 to 47 Feet

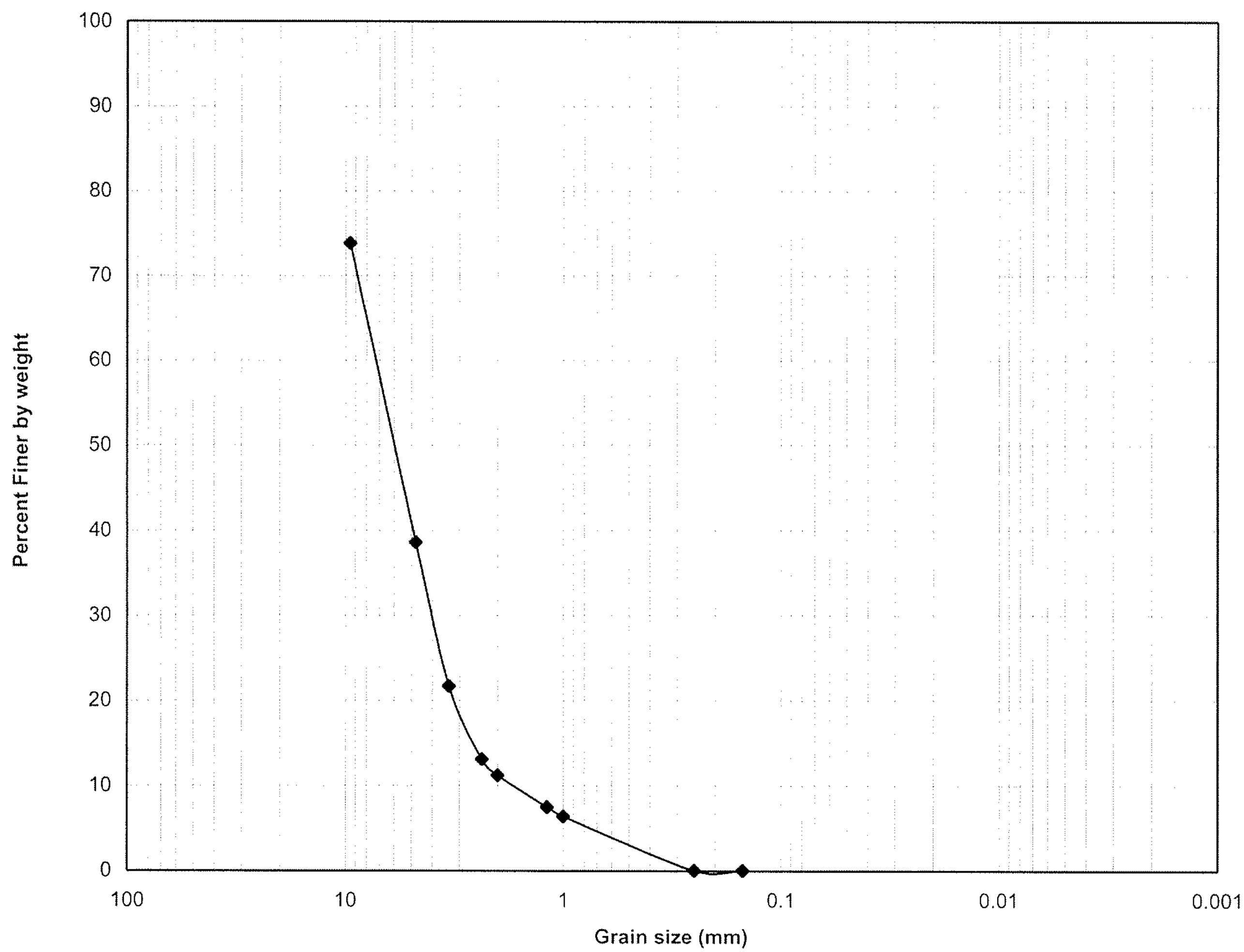
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 6
50 to 54 Feet

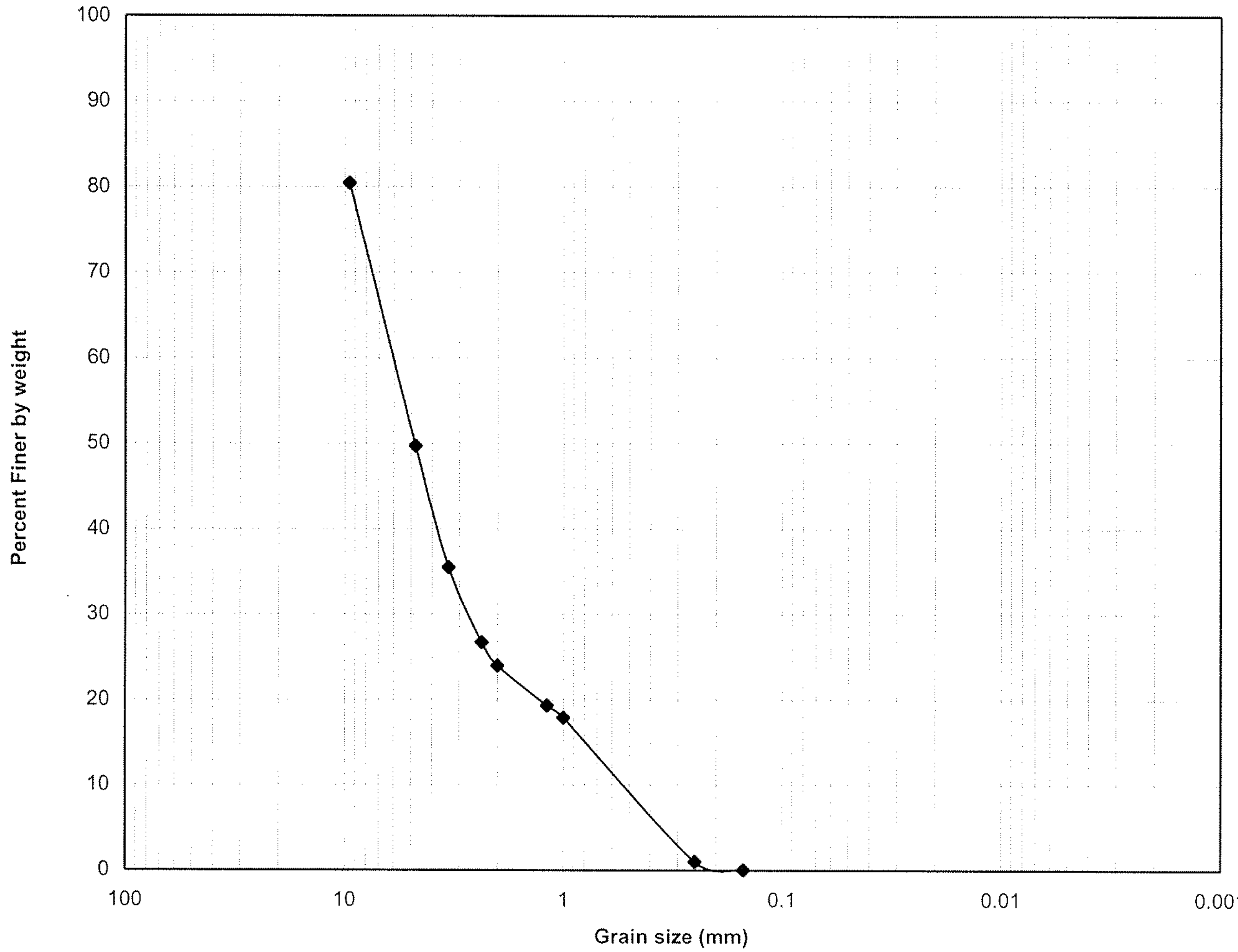
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 6
57 to 61 Feet

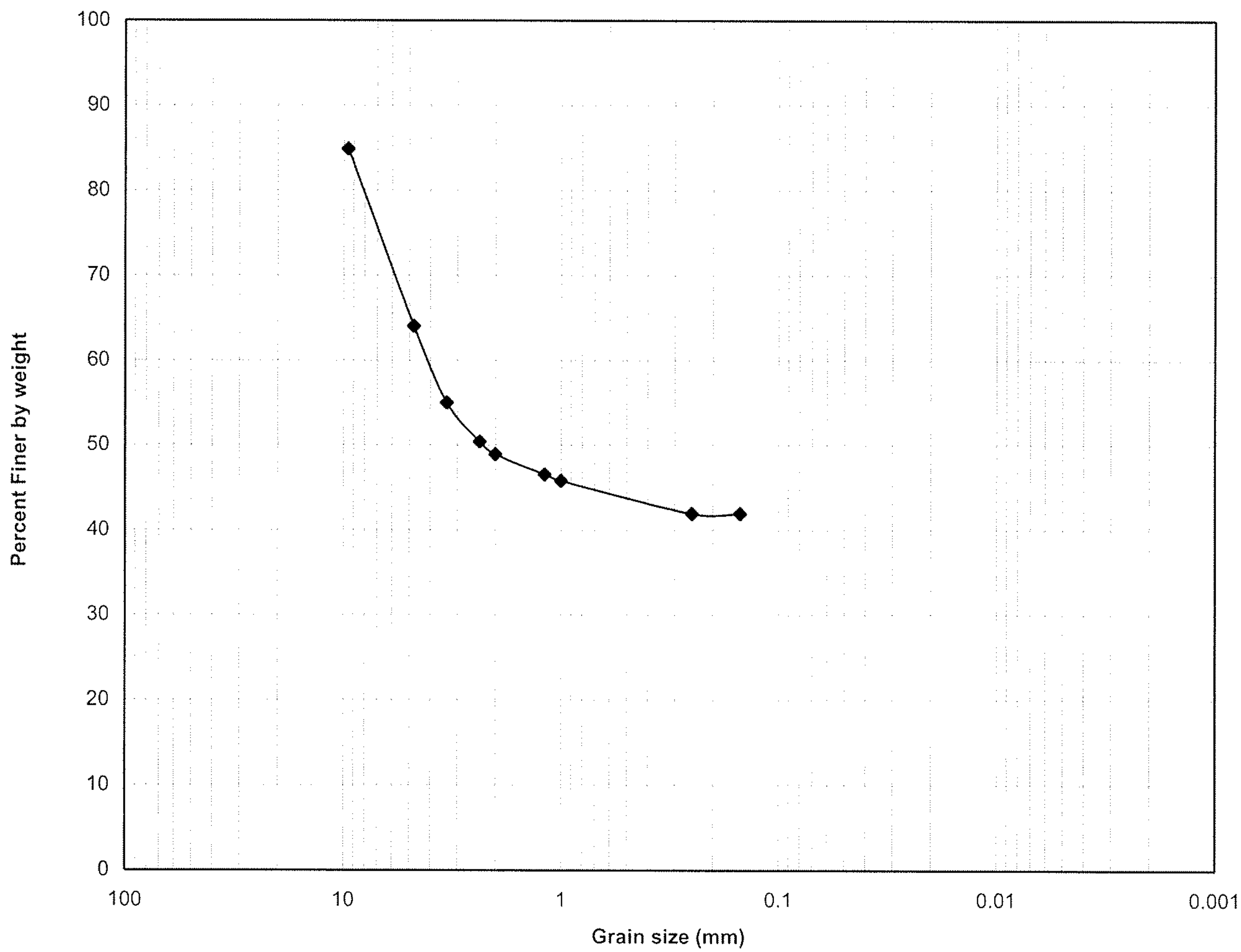
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 6
64 to 68 Feet

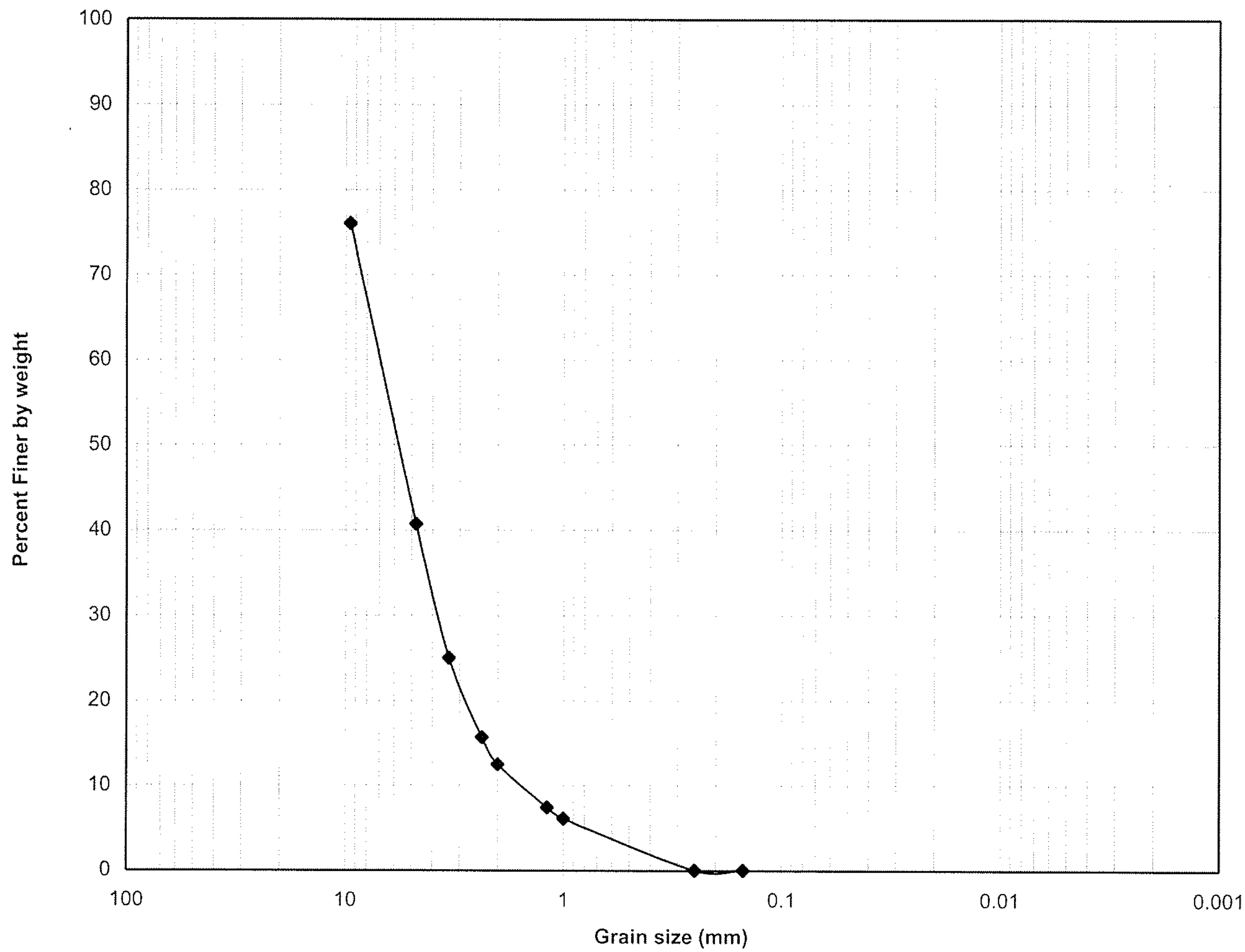
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 6
72 to 75 Feet

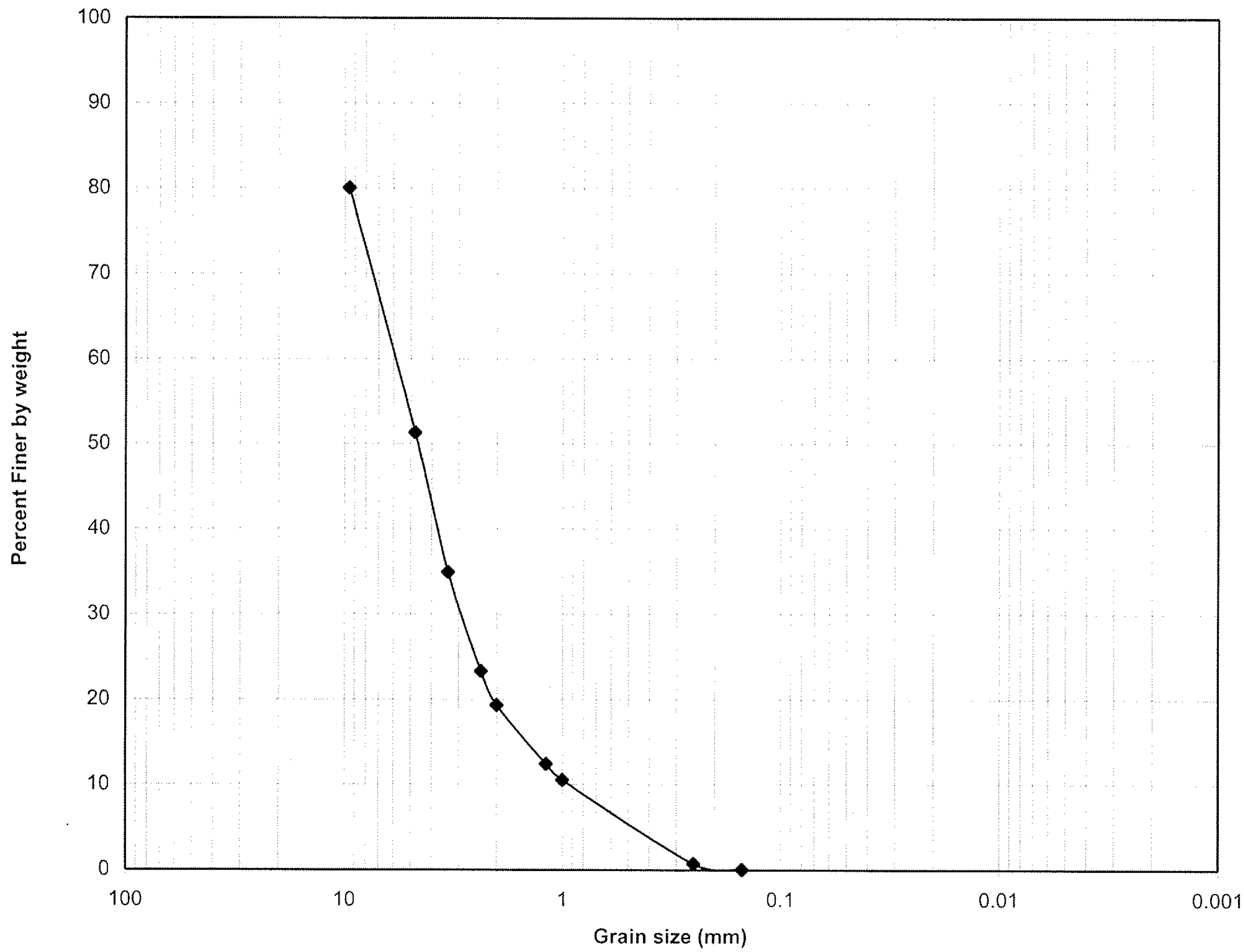
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 6
79 to 82 Feet

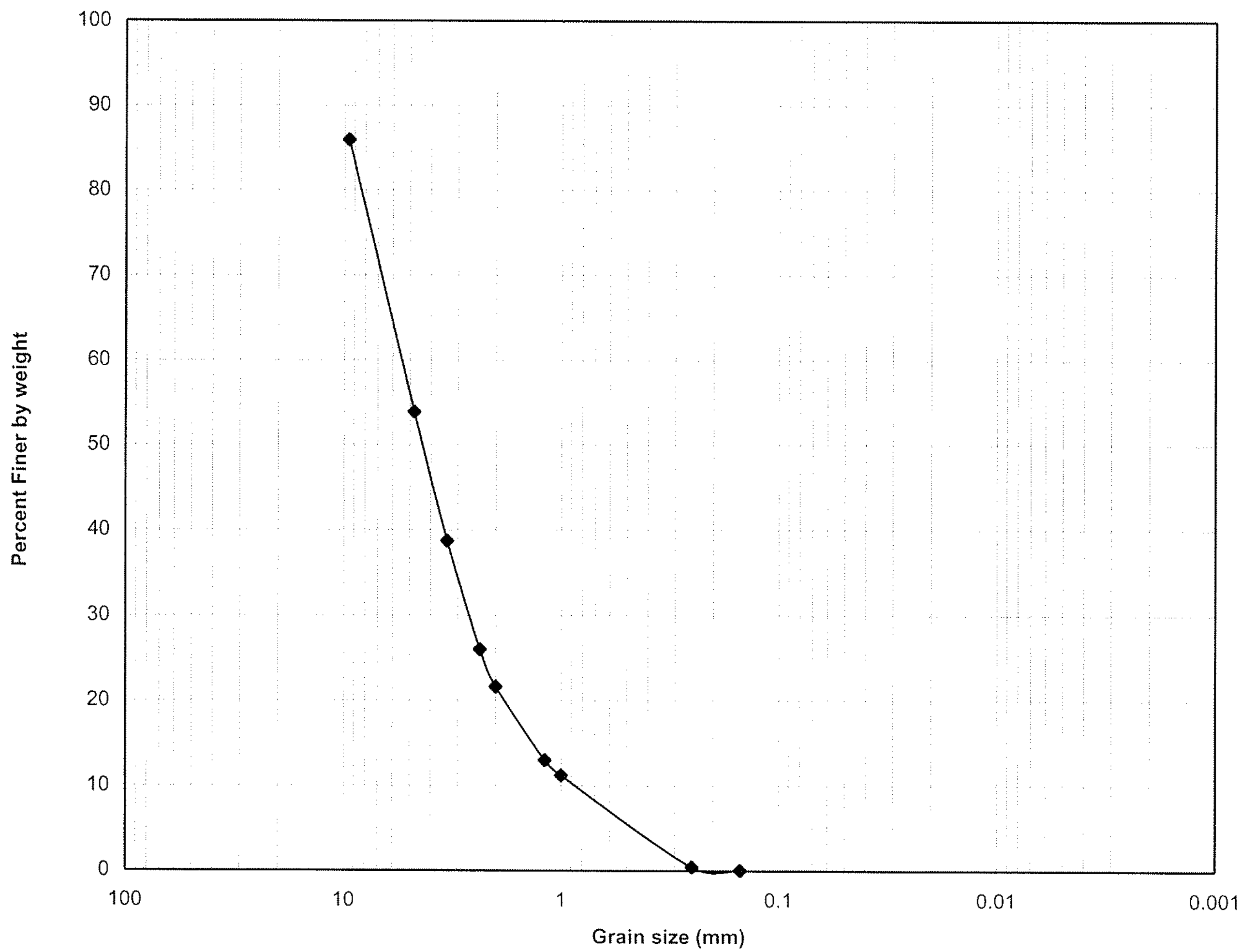
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 6
86 to 90 Feet

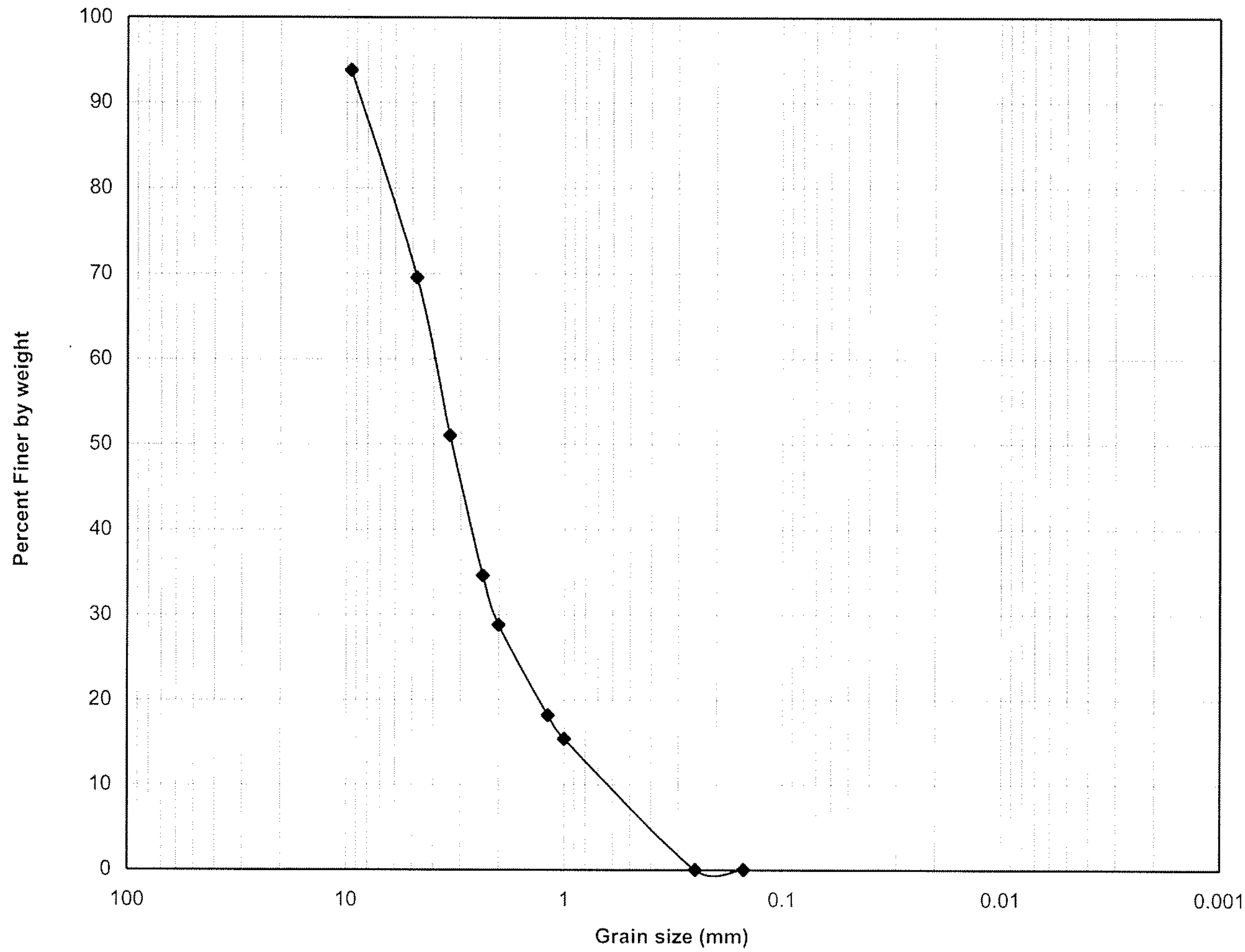
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 6
93 to 97 Feet

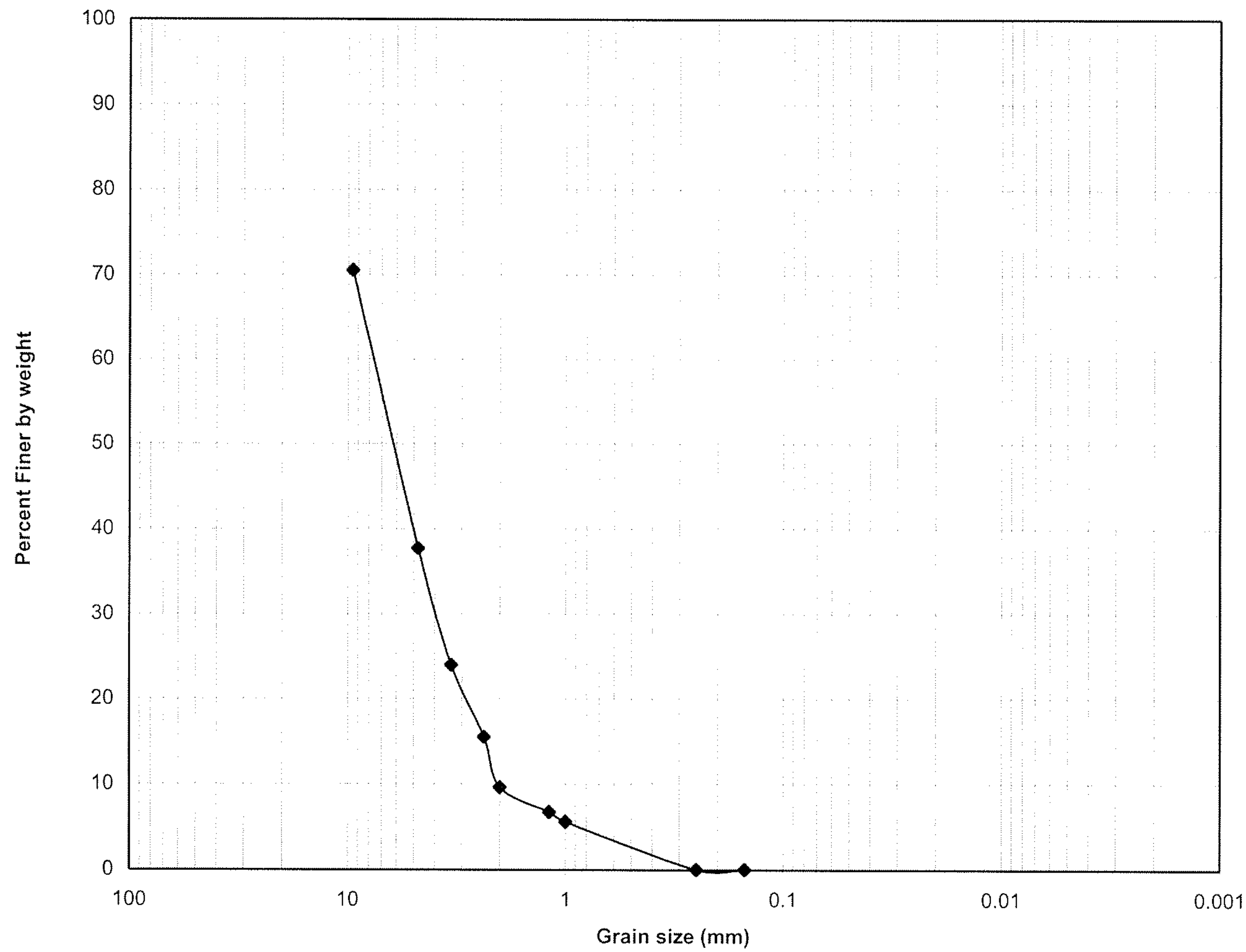
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 6
100 to 104 Feet

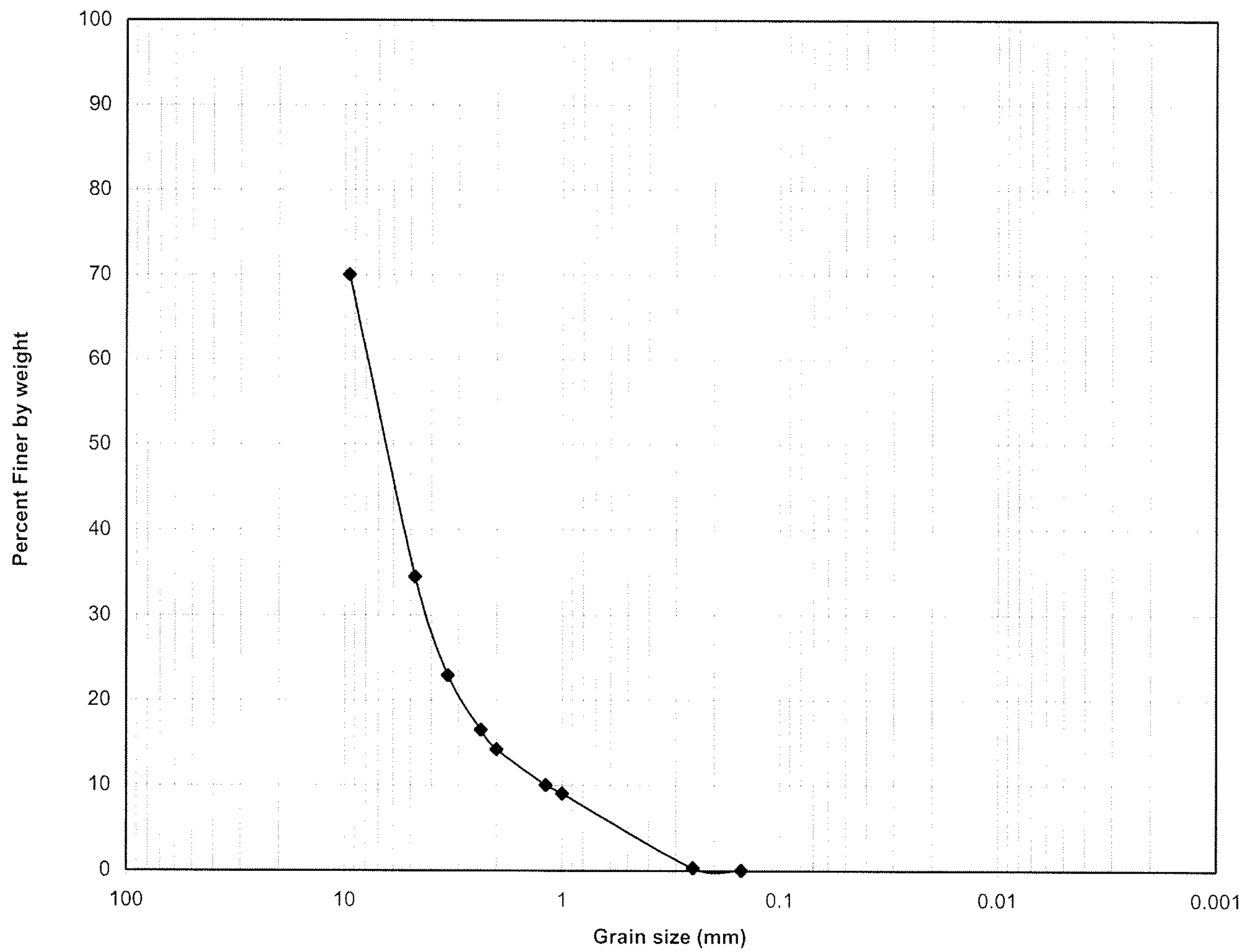
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 6
107 to 111 Feet

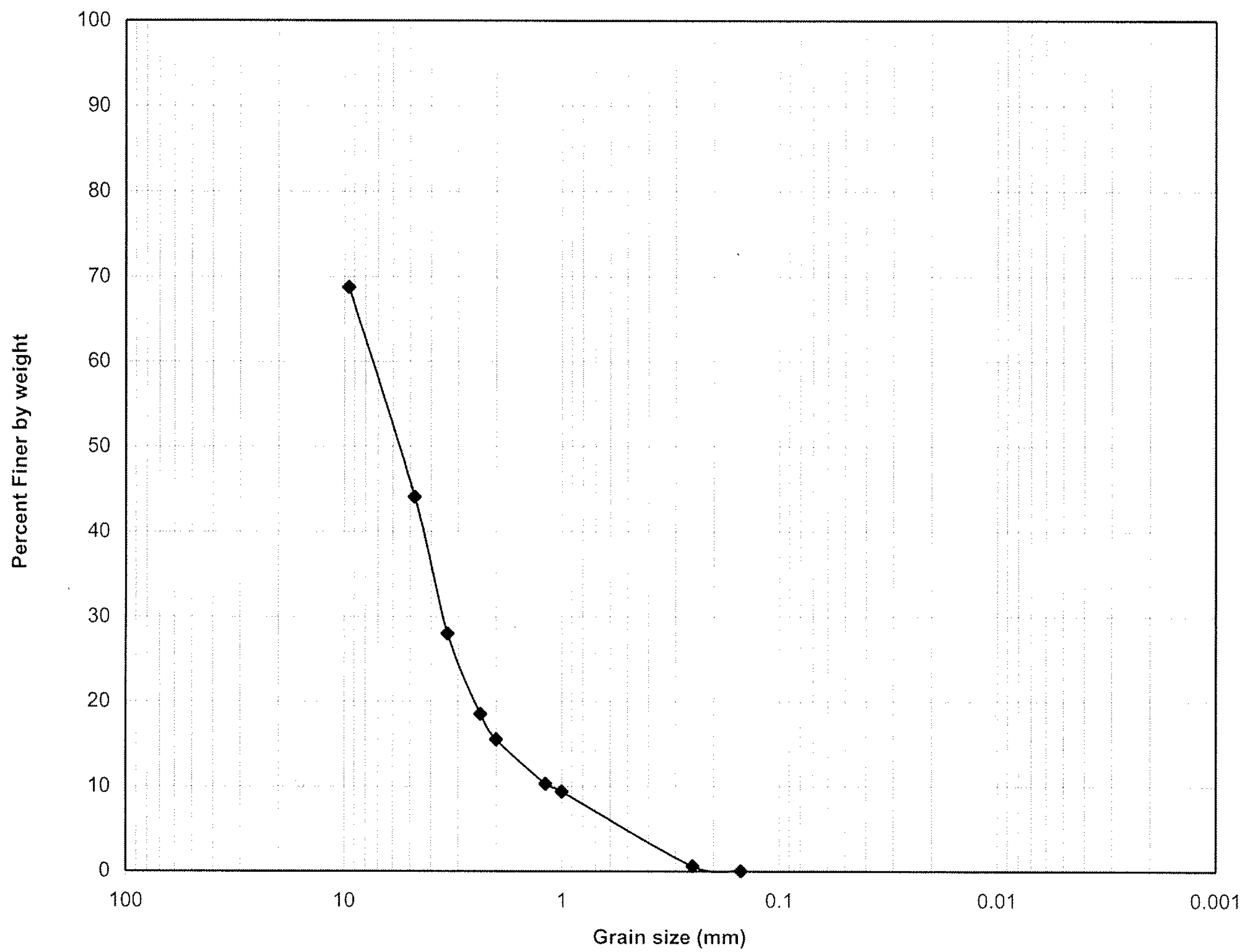
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 6
115 to 118 Feet

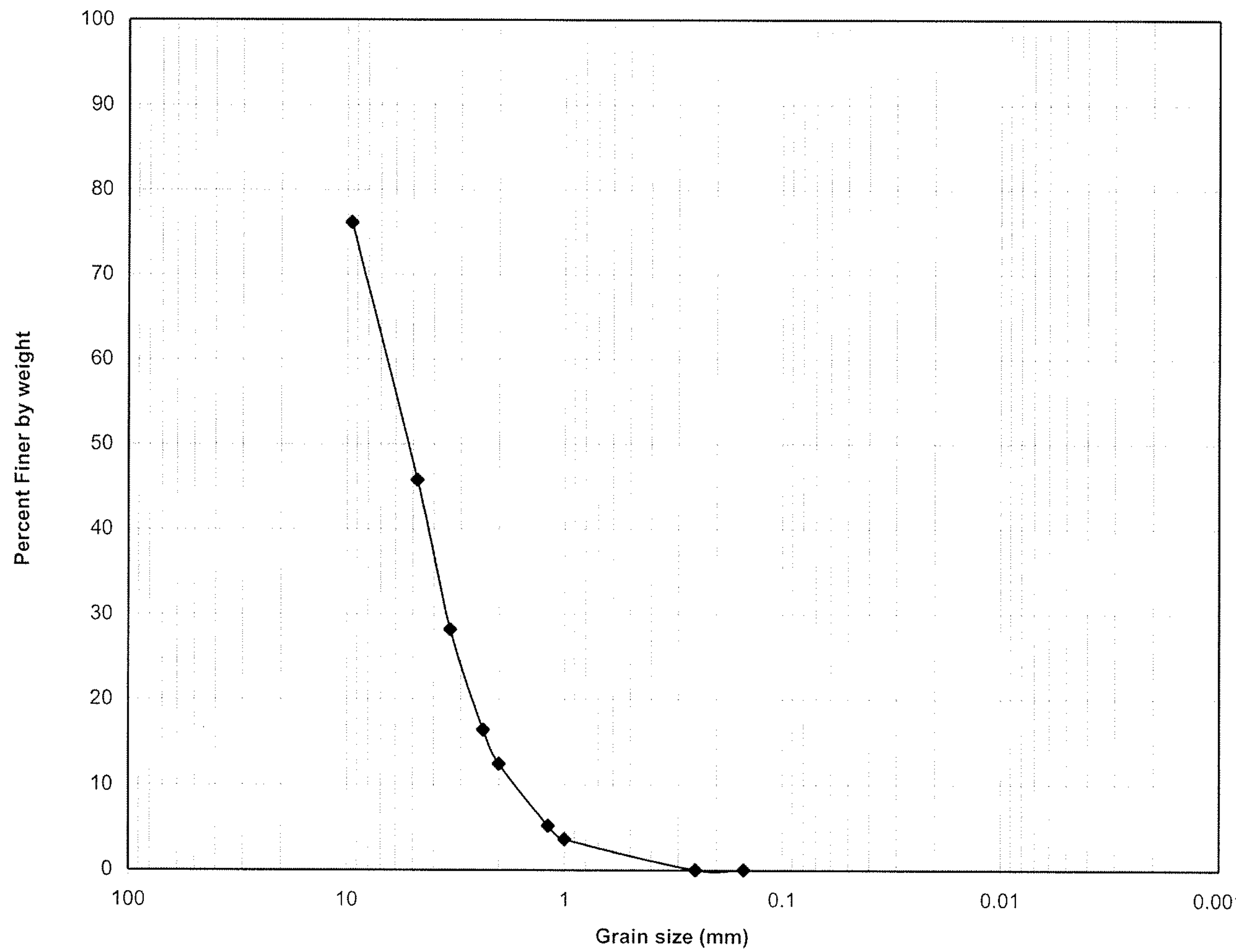
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 6
122 to 125 Feet

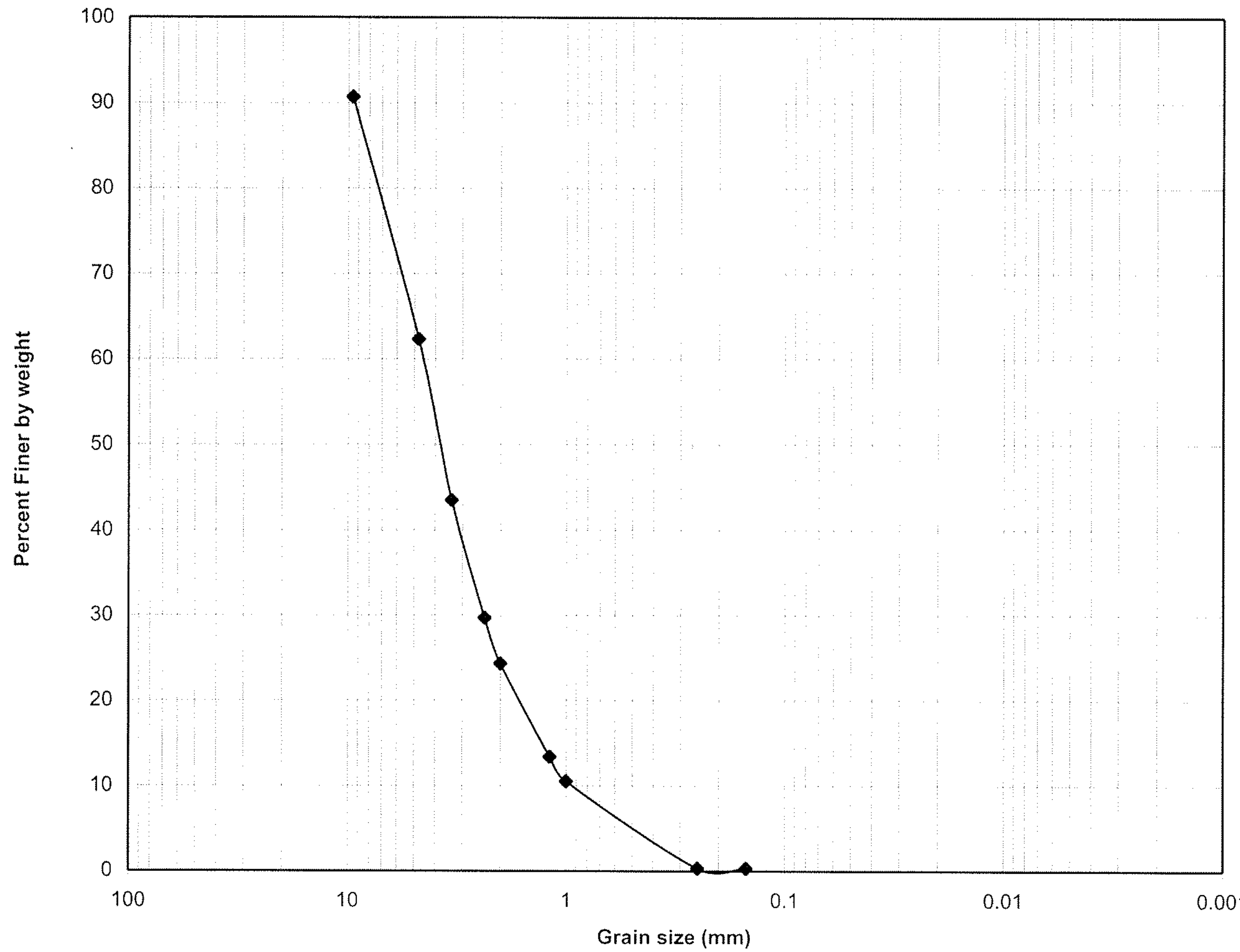
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 6
129 to 132 Feet

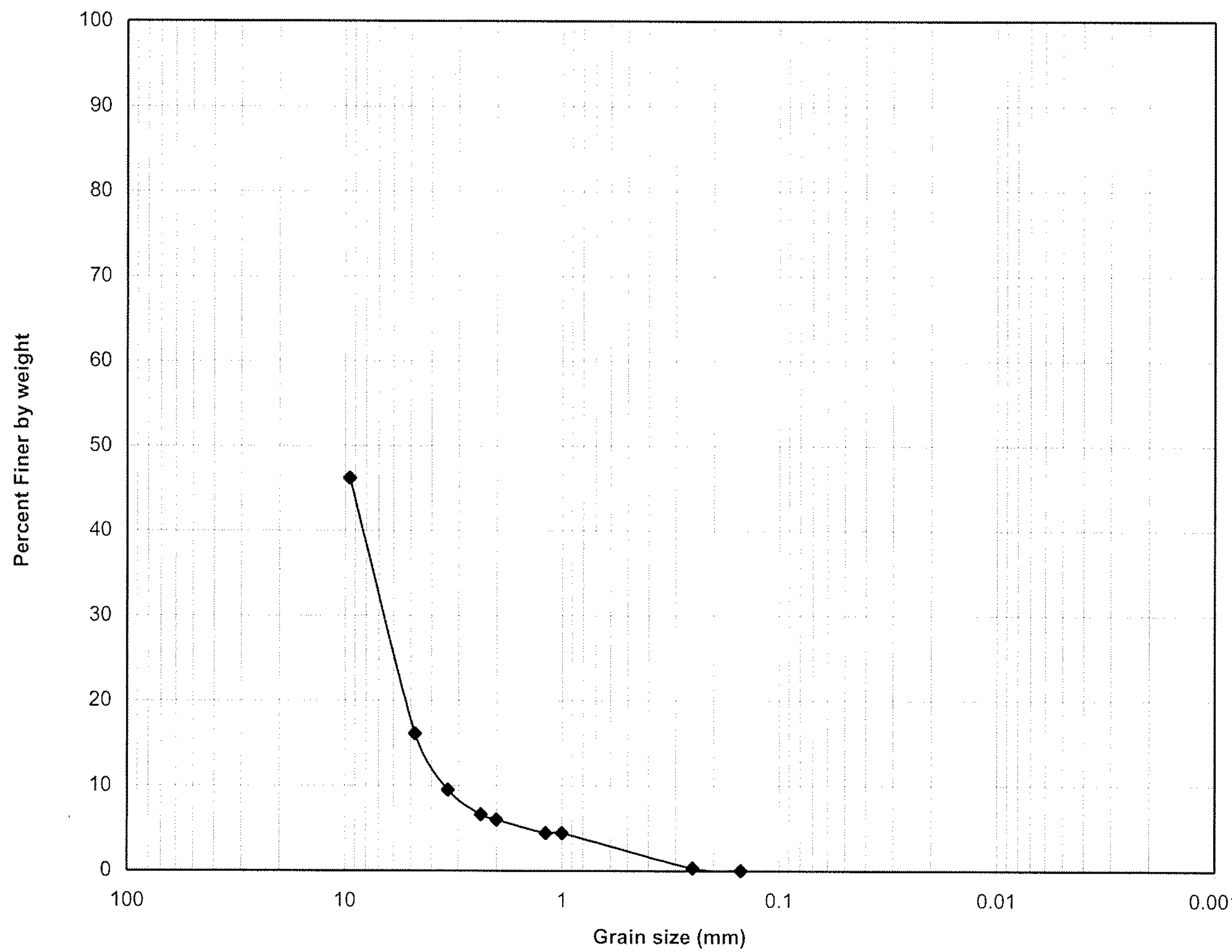
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 6
136 to 140 Feet

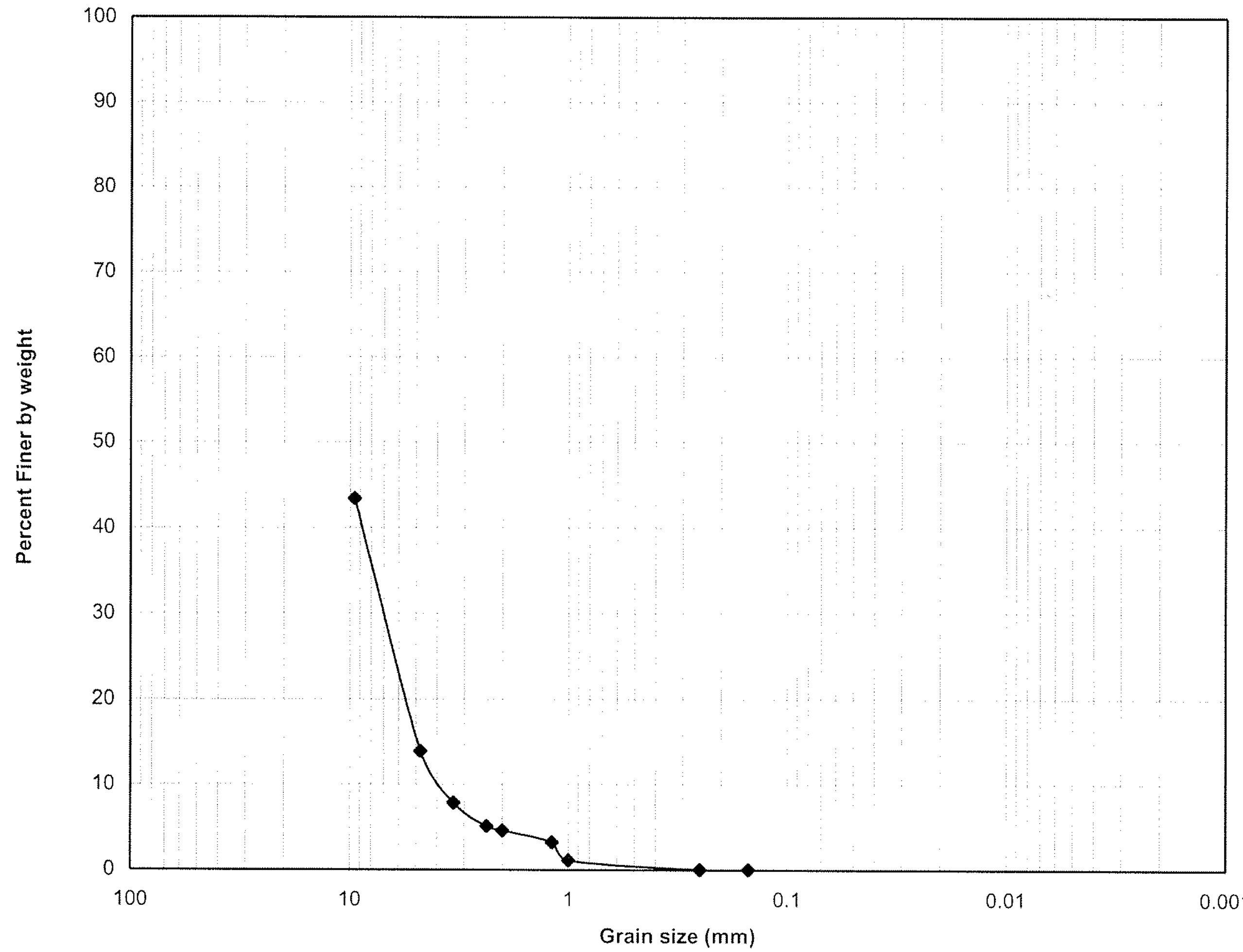
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 6
143 to 147 Feet

ERM 4/09

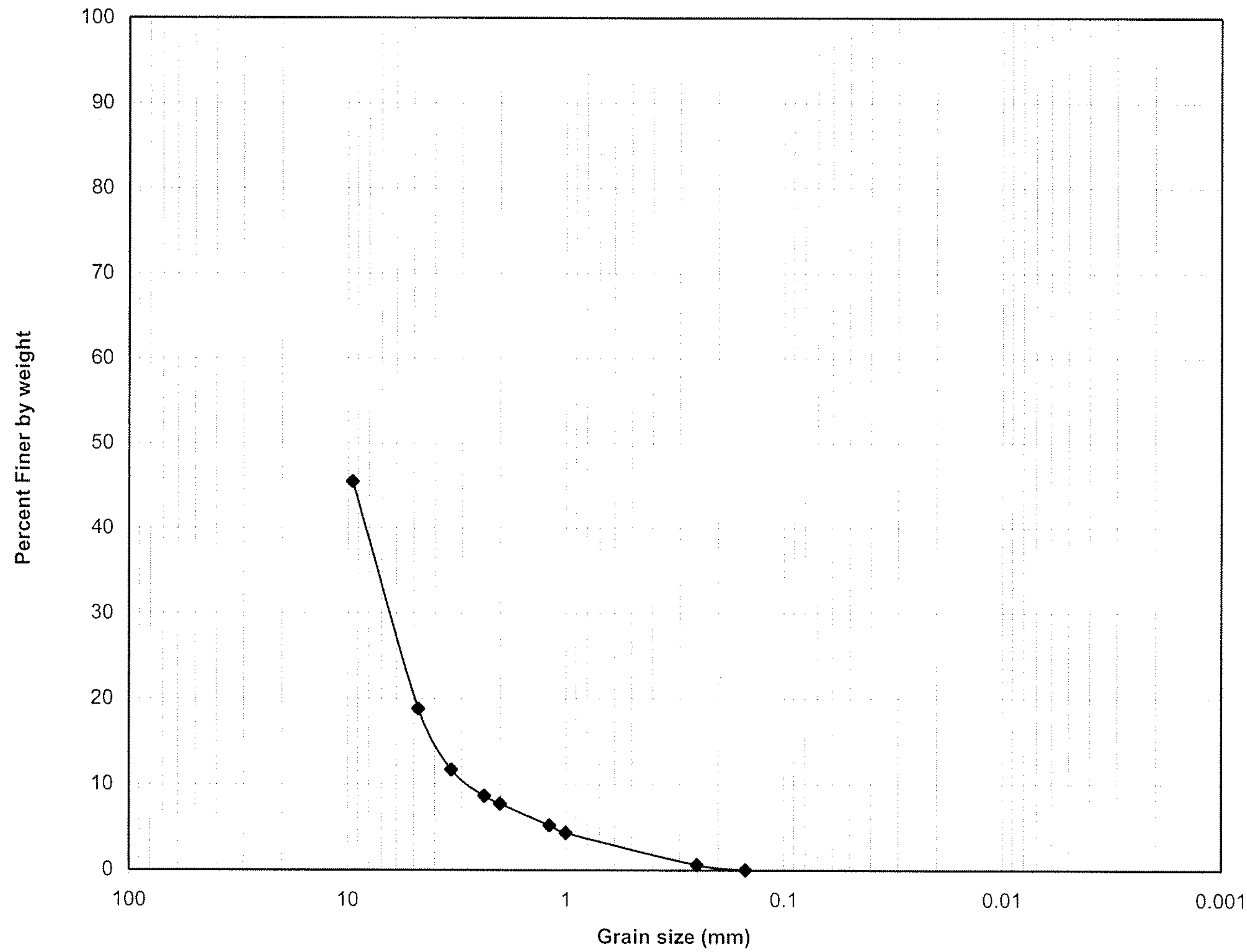


Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 6
150 to 154 Feet

ERM 4/09

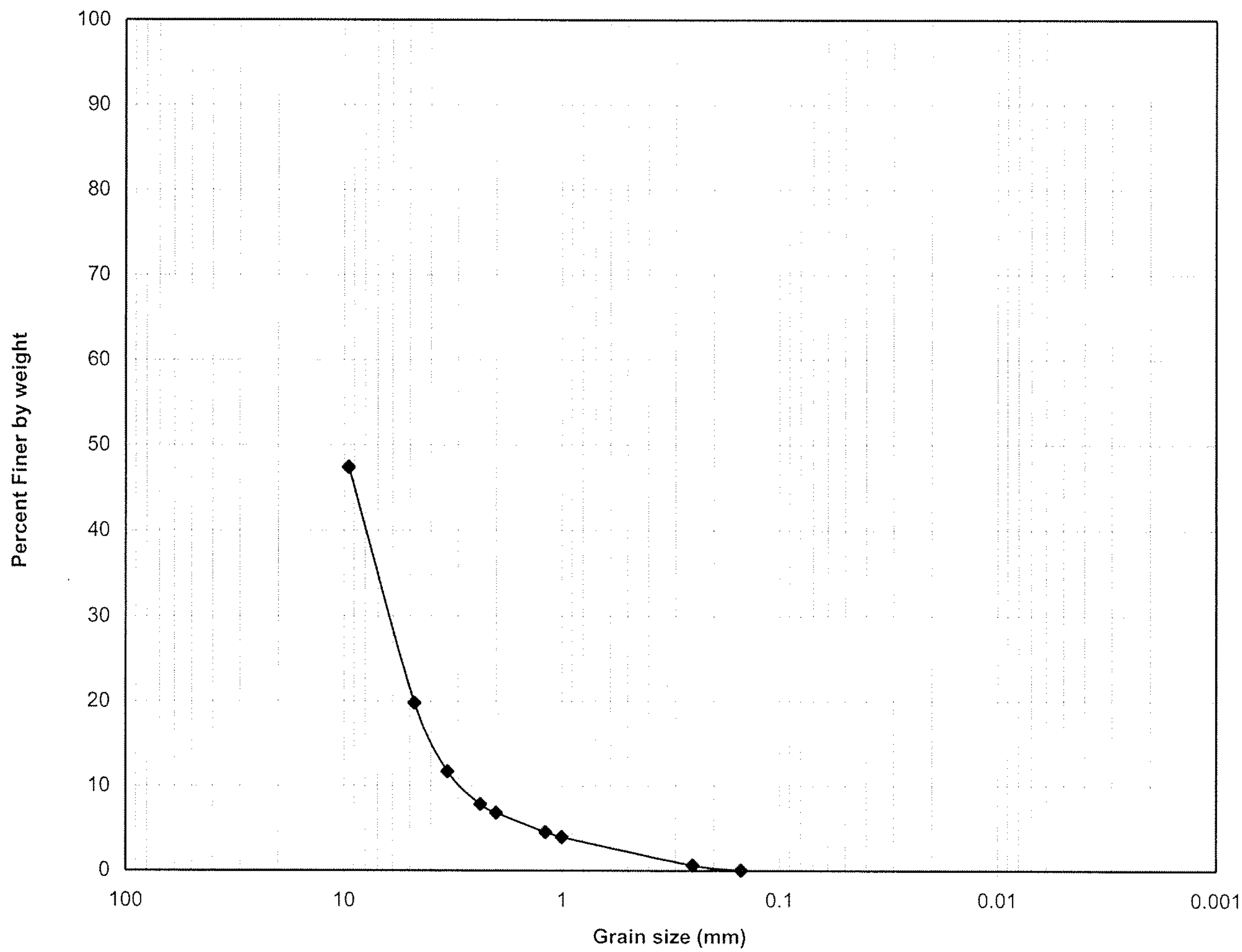
Collector 6, Lateral 7



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 7
7 to 11 Feet

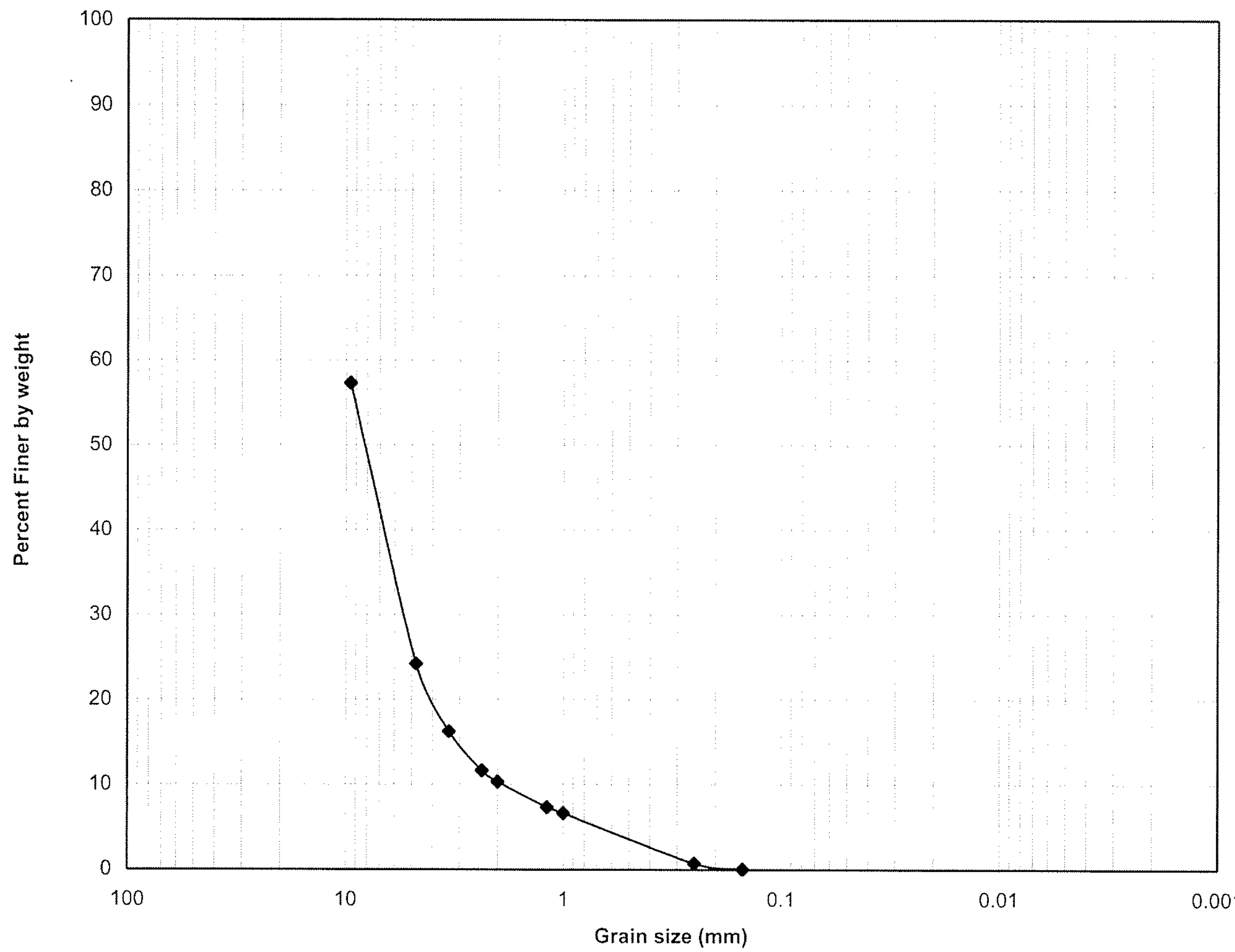
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 7
14 to 18 Feet

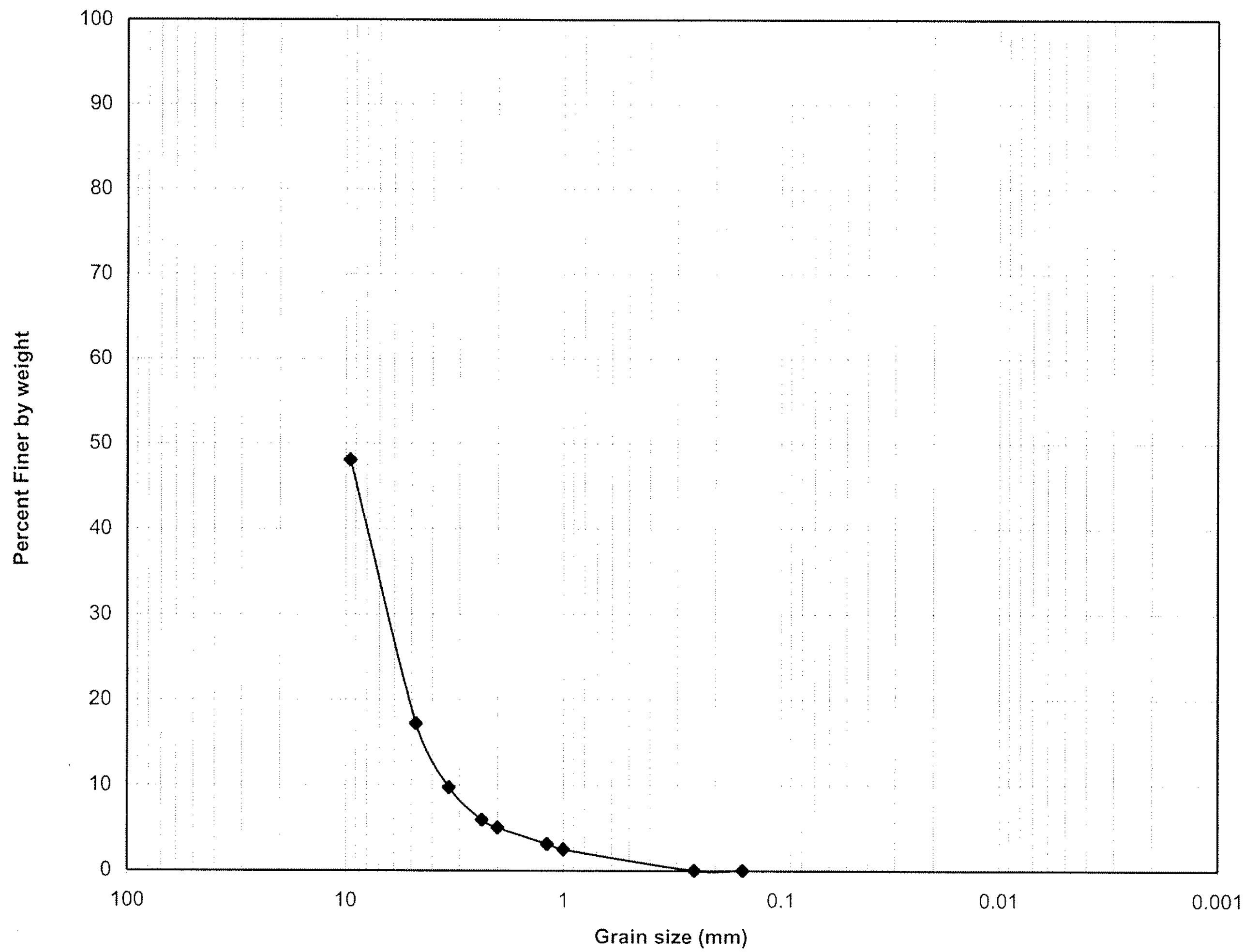
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 7
21 to 25 Feet

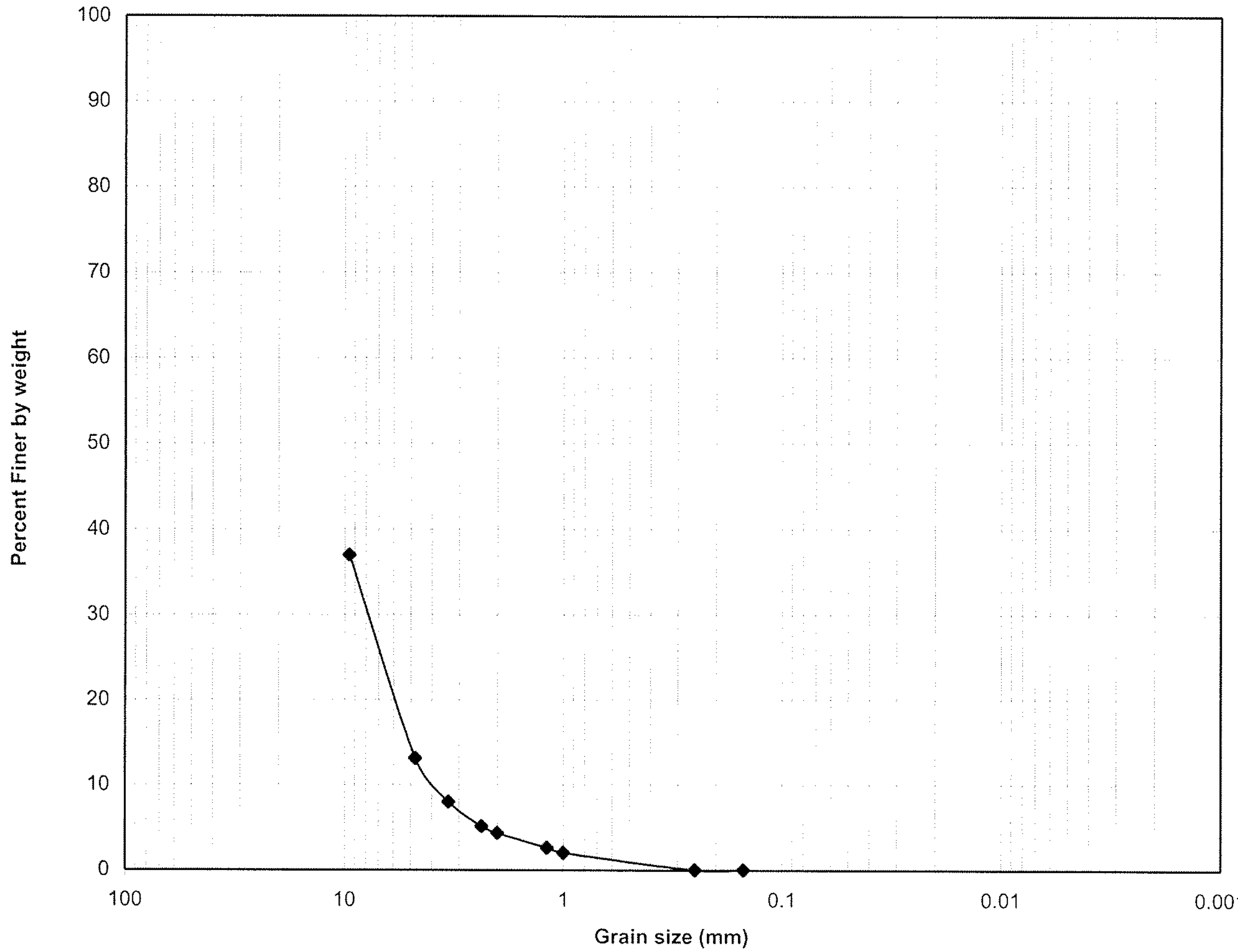
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 7
29 to 32 Feet

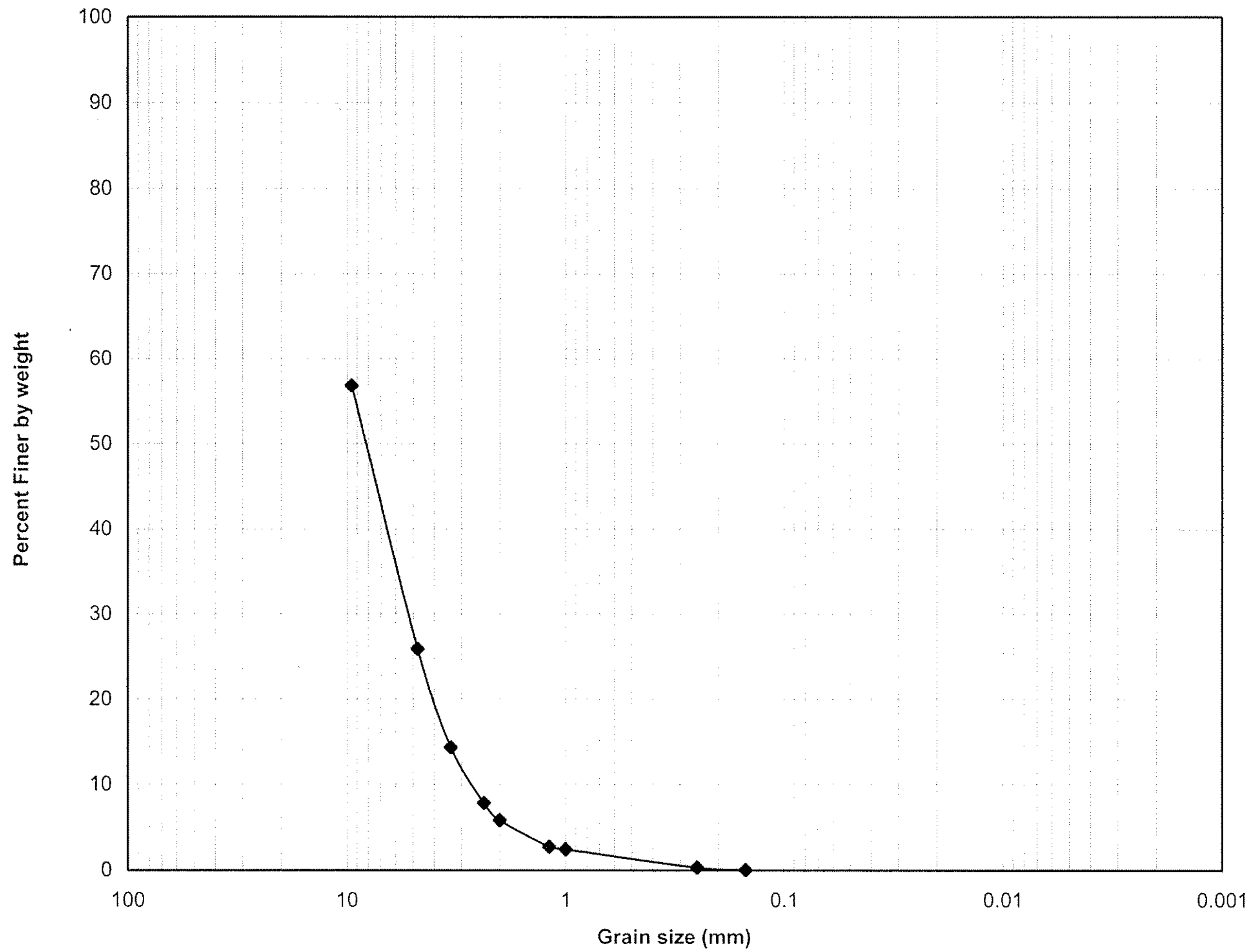
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 7
36 to 39 Feet

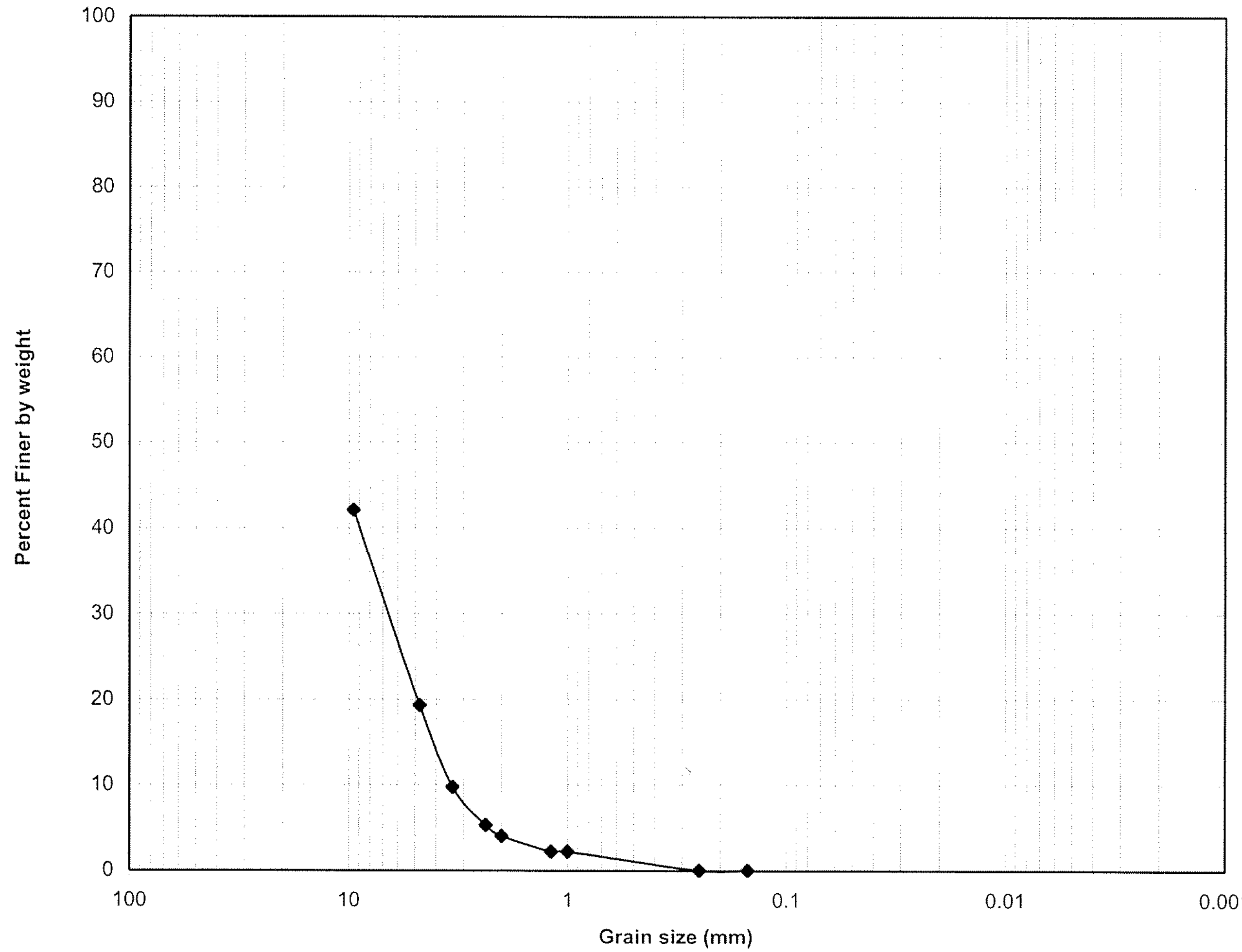
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 7
43 to 47 Feet

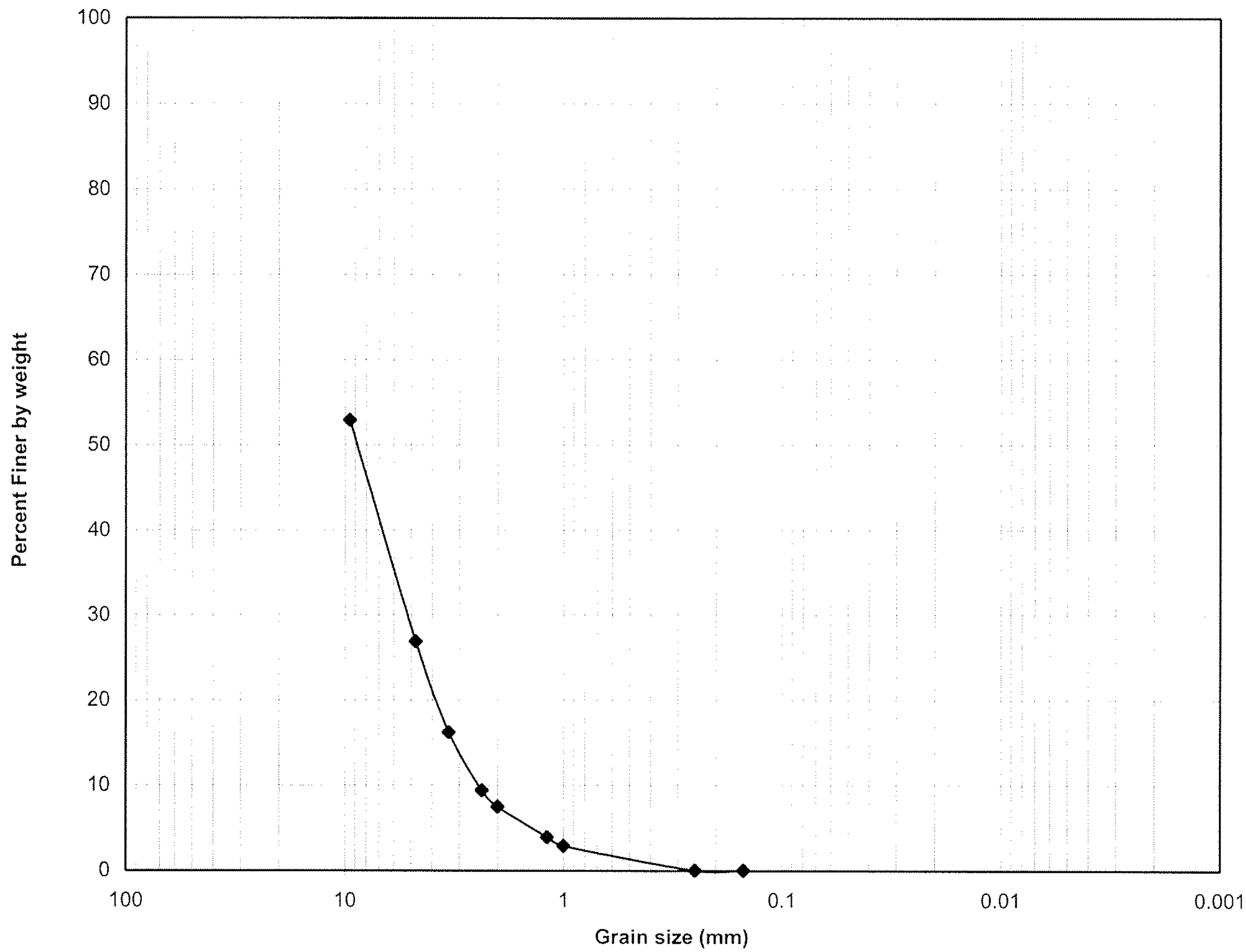
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 7
50 to 54 Feet

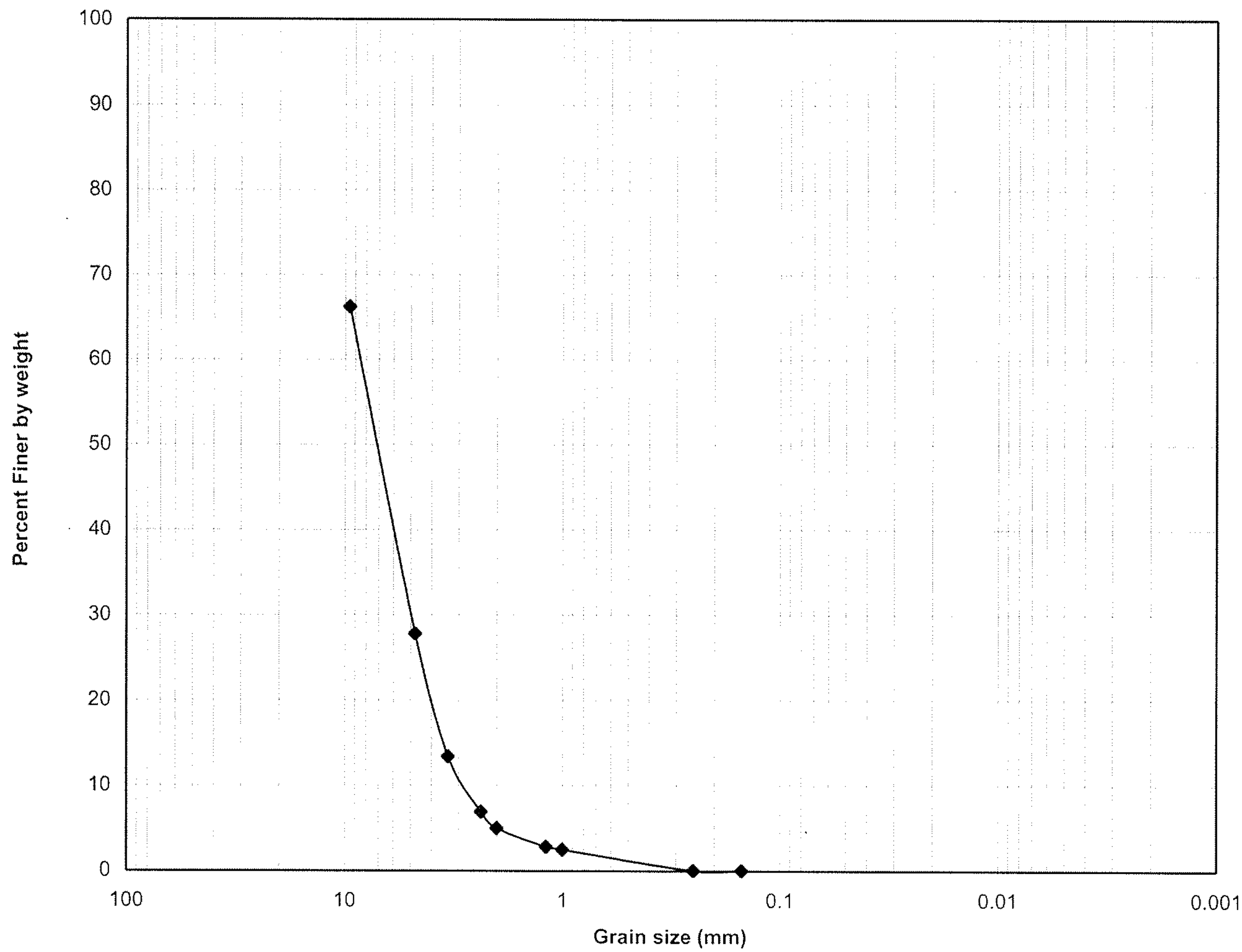
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 7
57 to 61 Feet

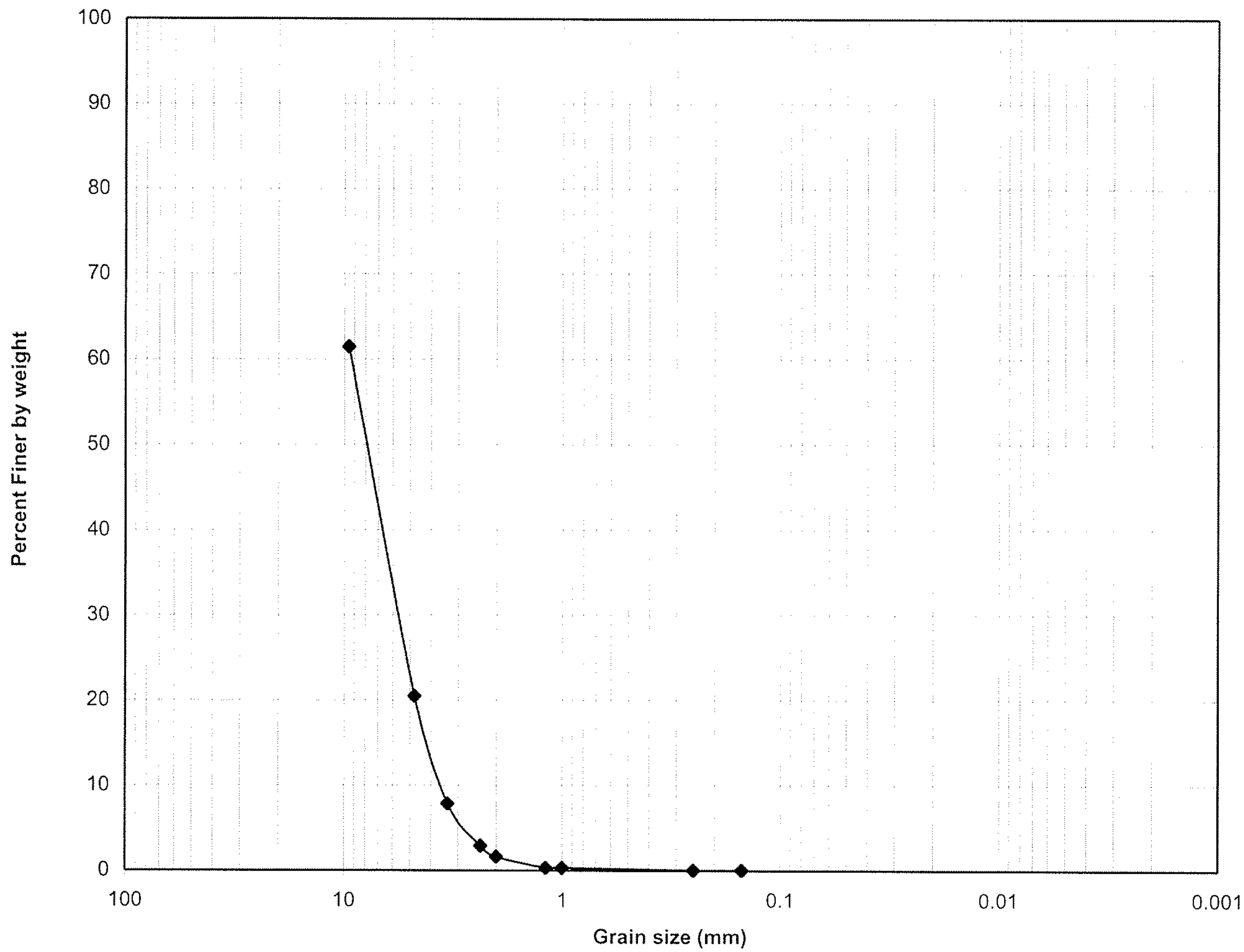
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 7
64 to 68 Feet

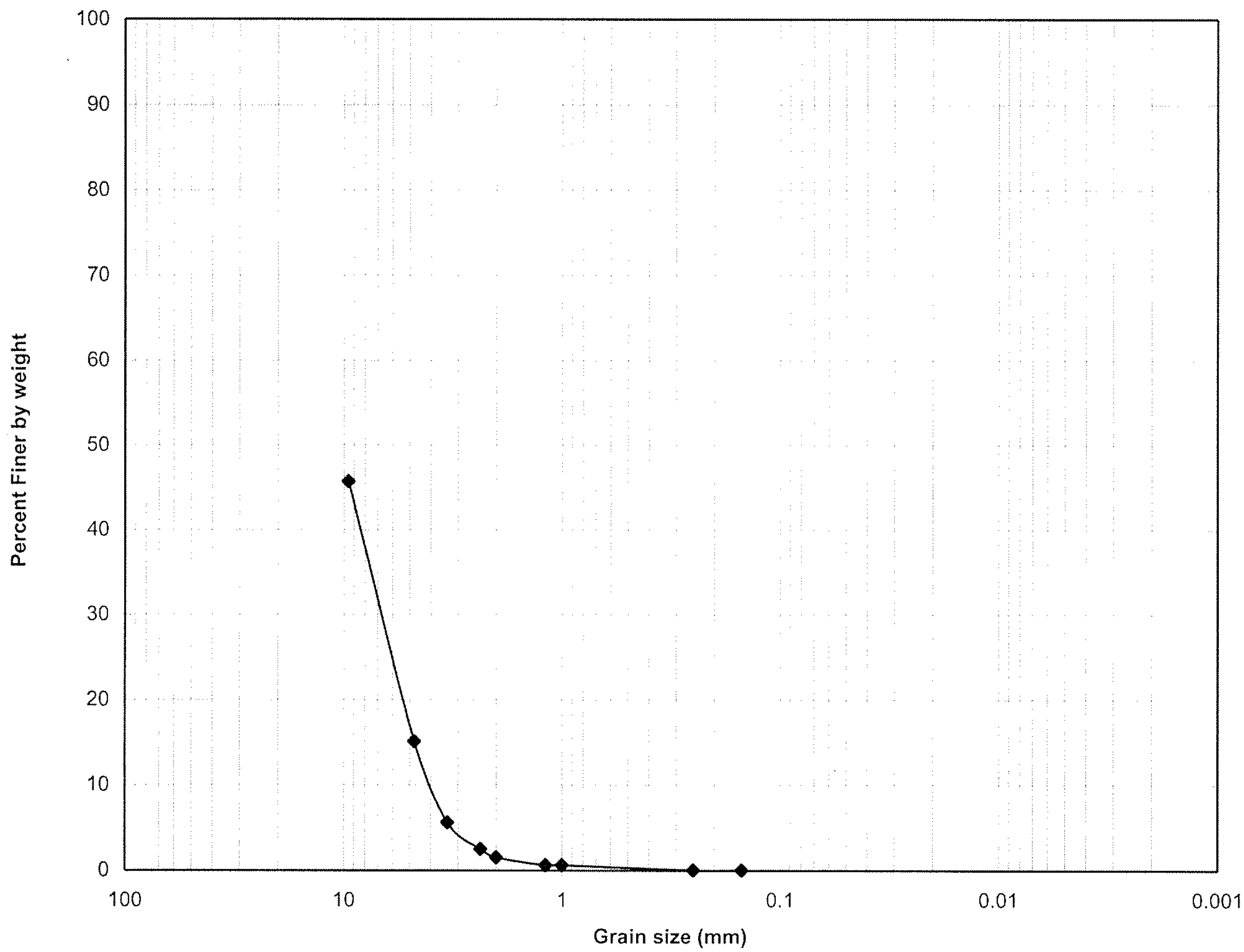
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 7
72 to 75 Feet

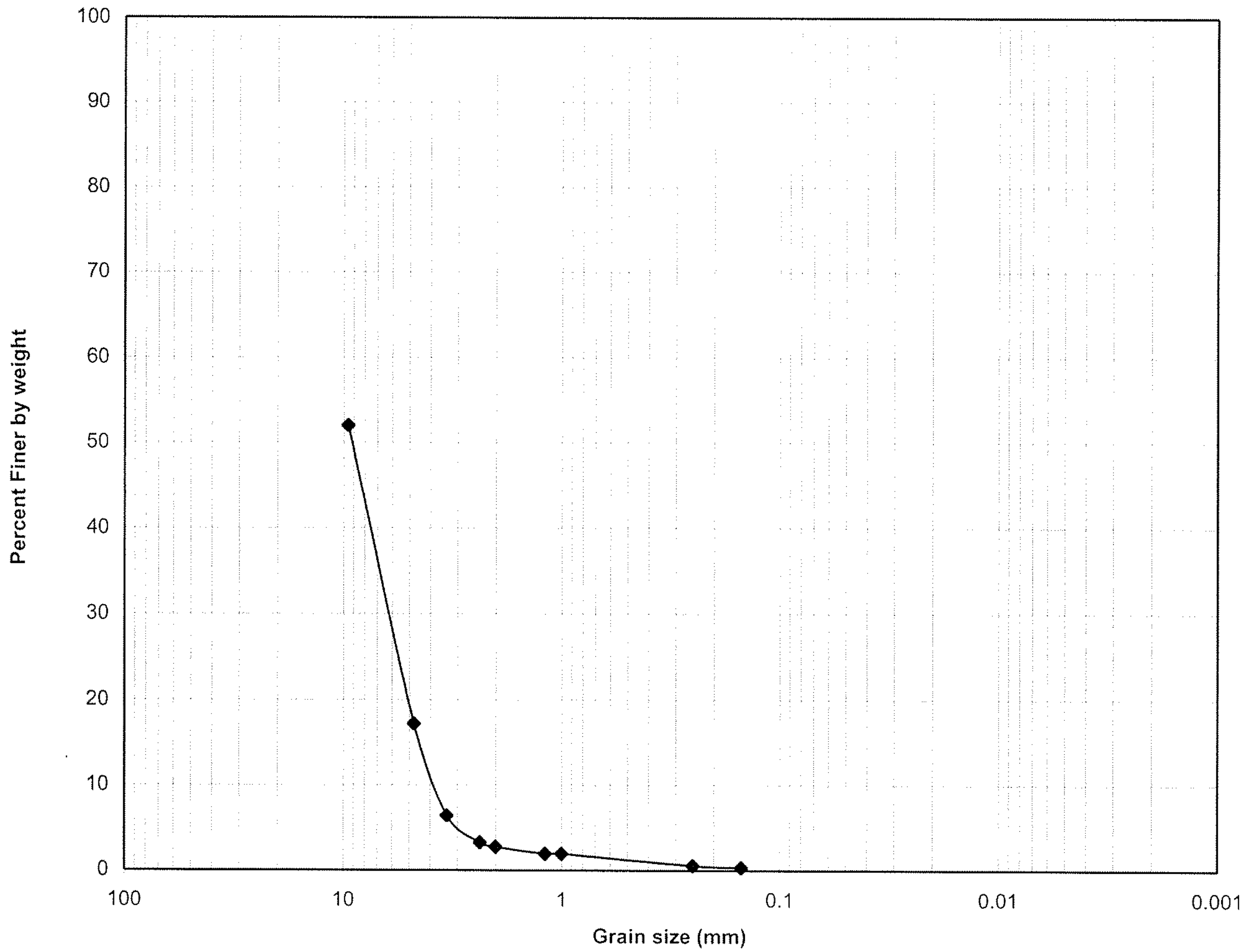
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 7
79 to 82 Feet

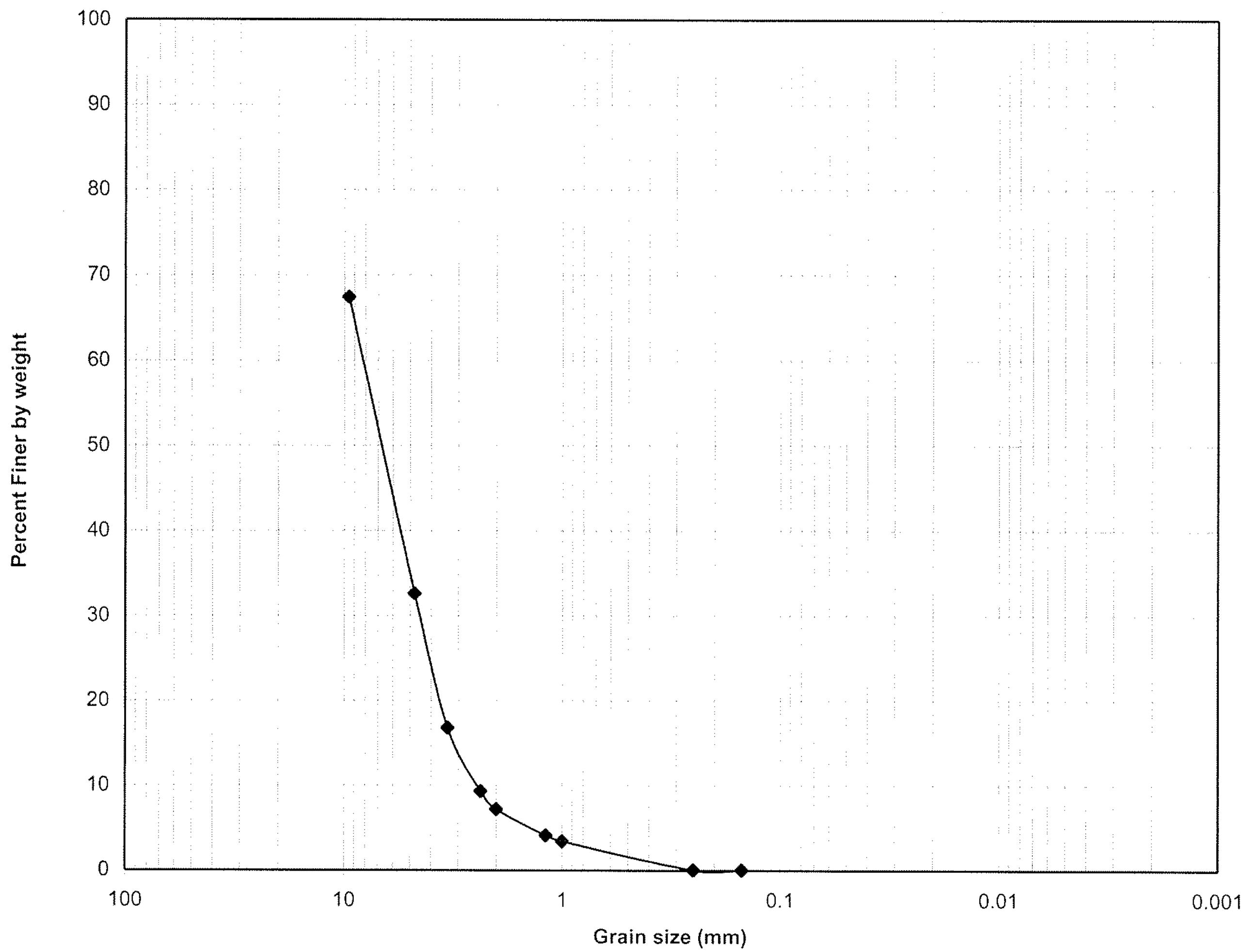
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 7
86 to 90 Feet

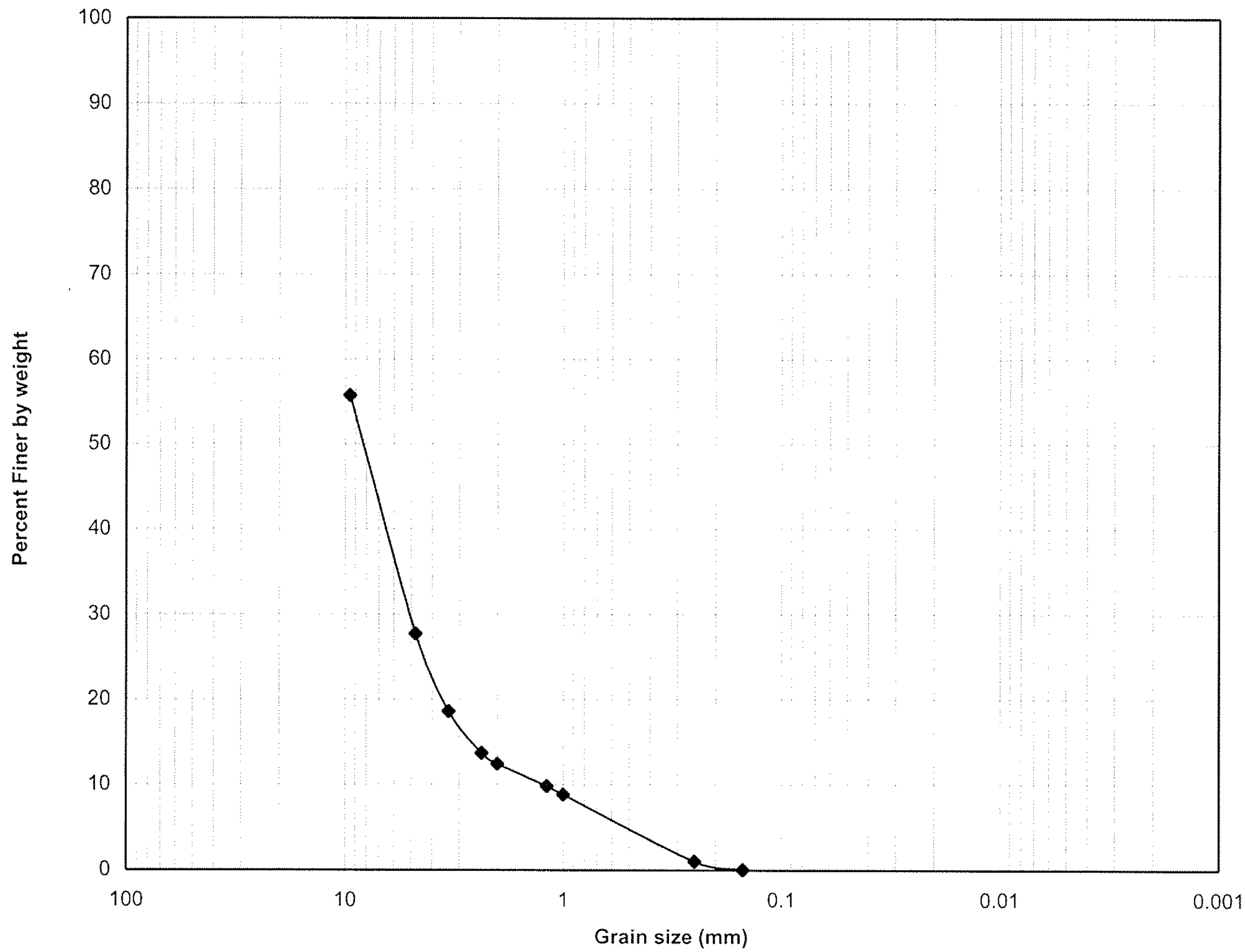
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 7
93 to 97 Feet

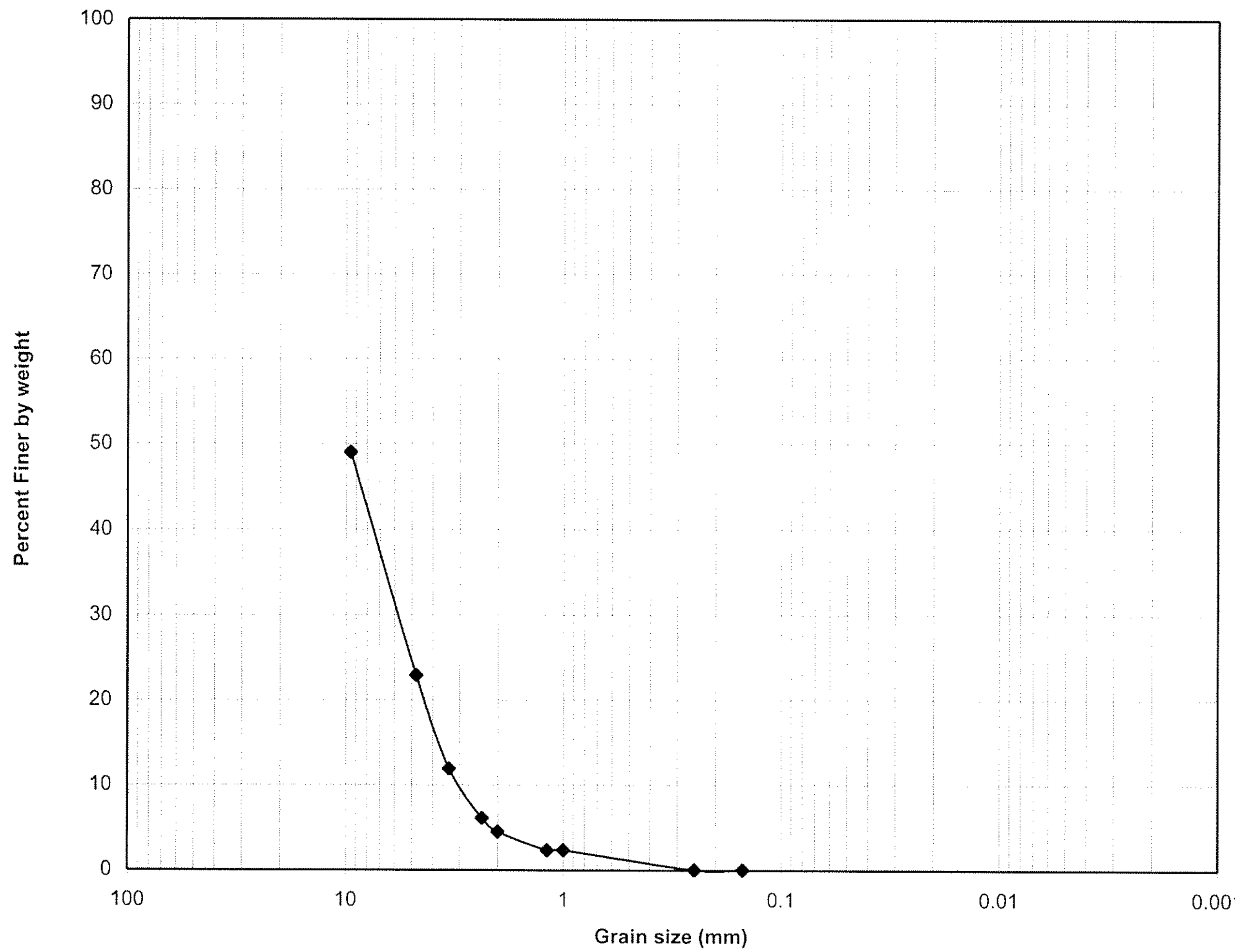
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 7
100 to 104 Feet

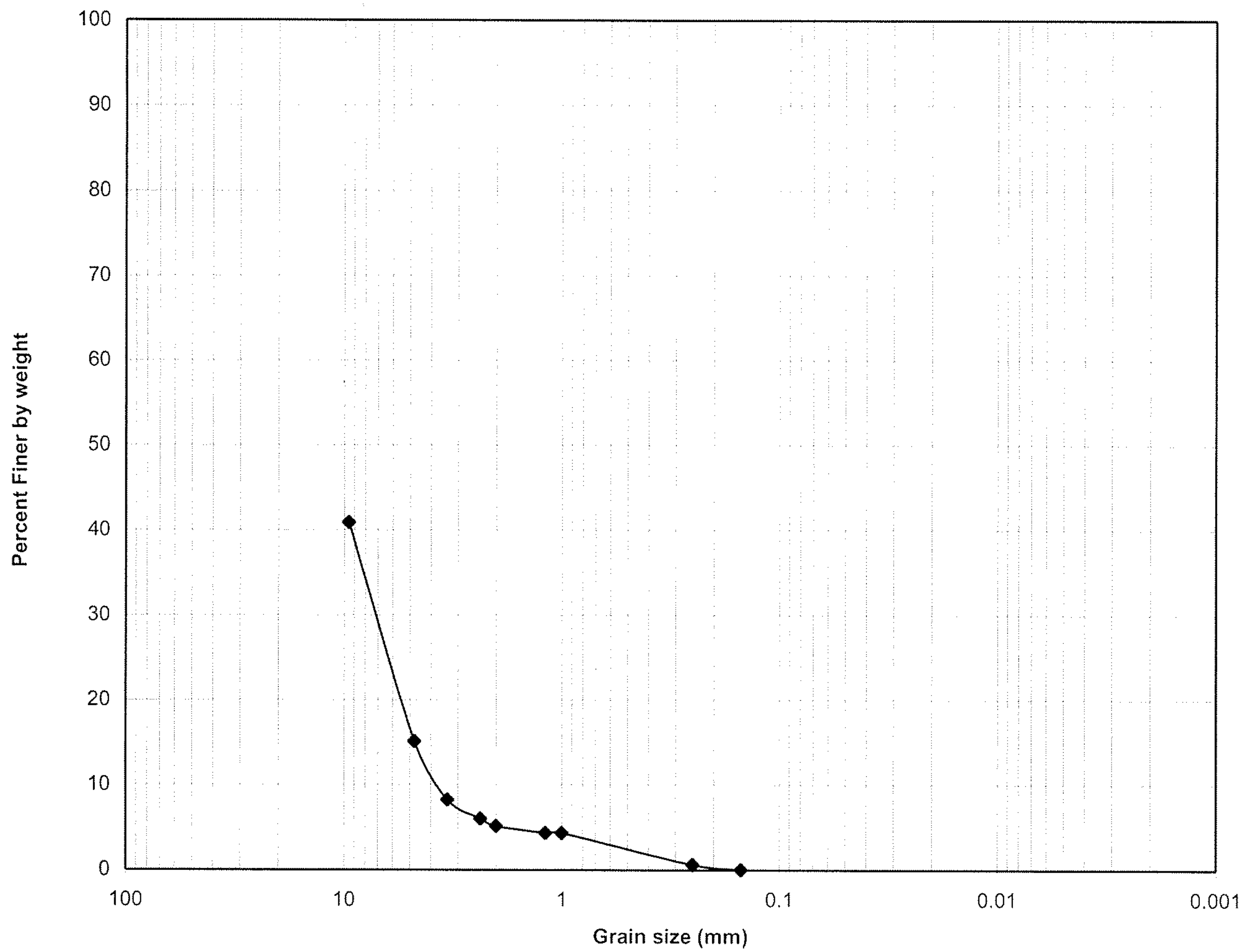
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 7
107 to 111 Feet

ERM 4/09

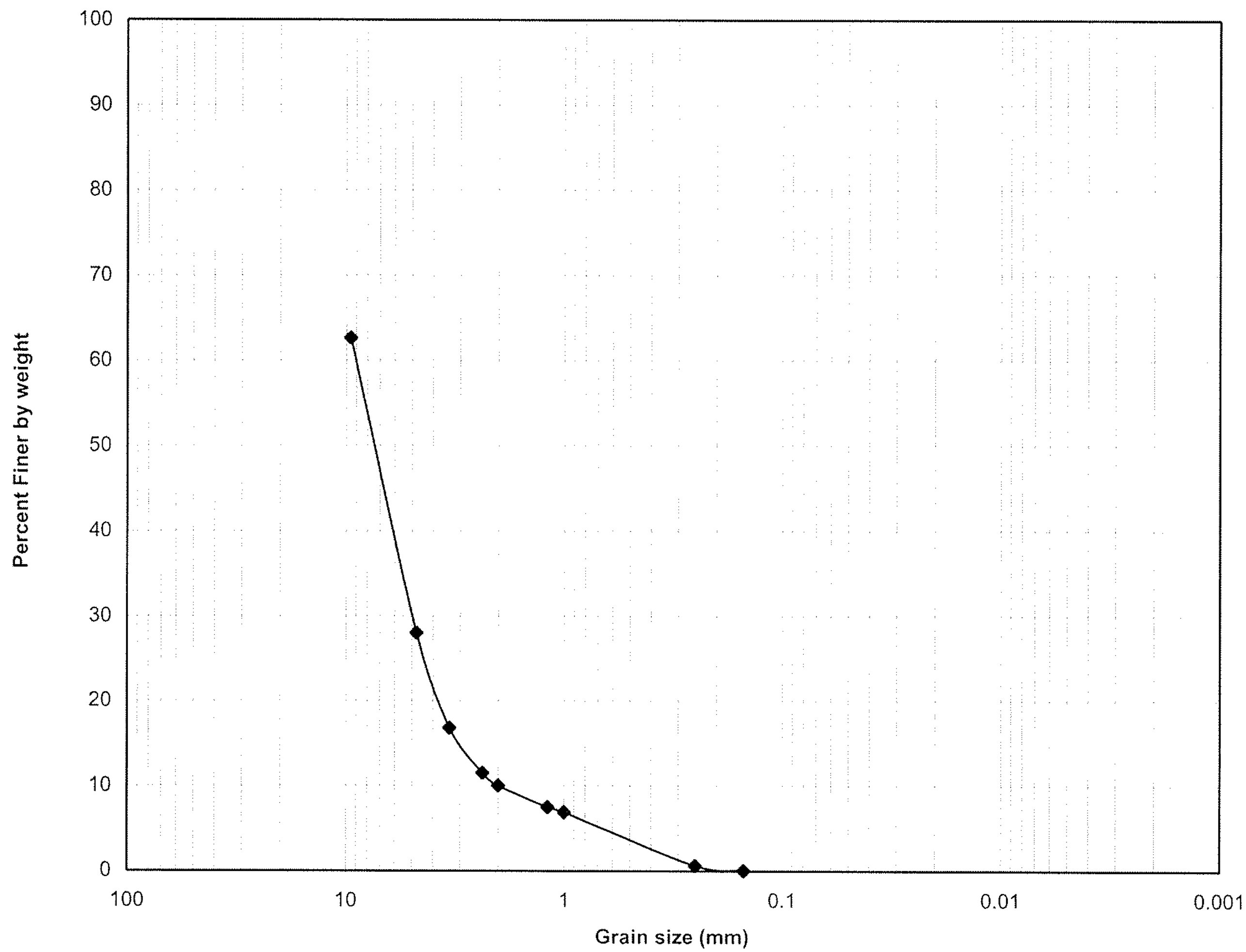


Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 7
115 to 118 Feet

ERM 4/09

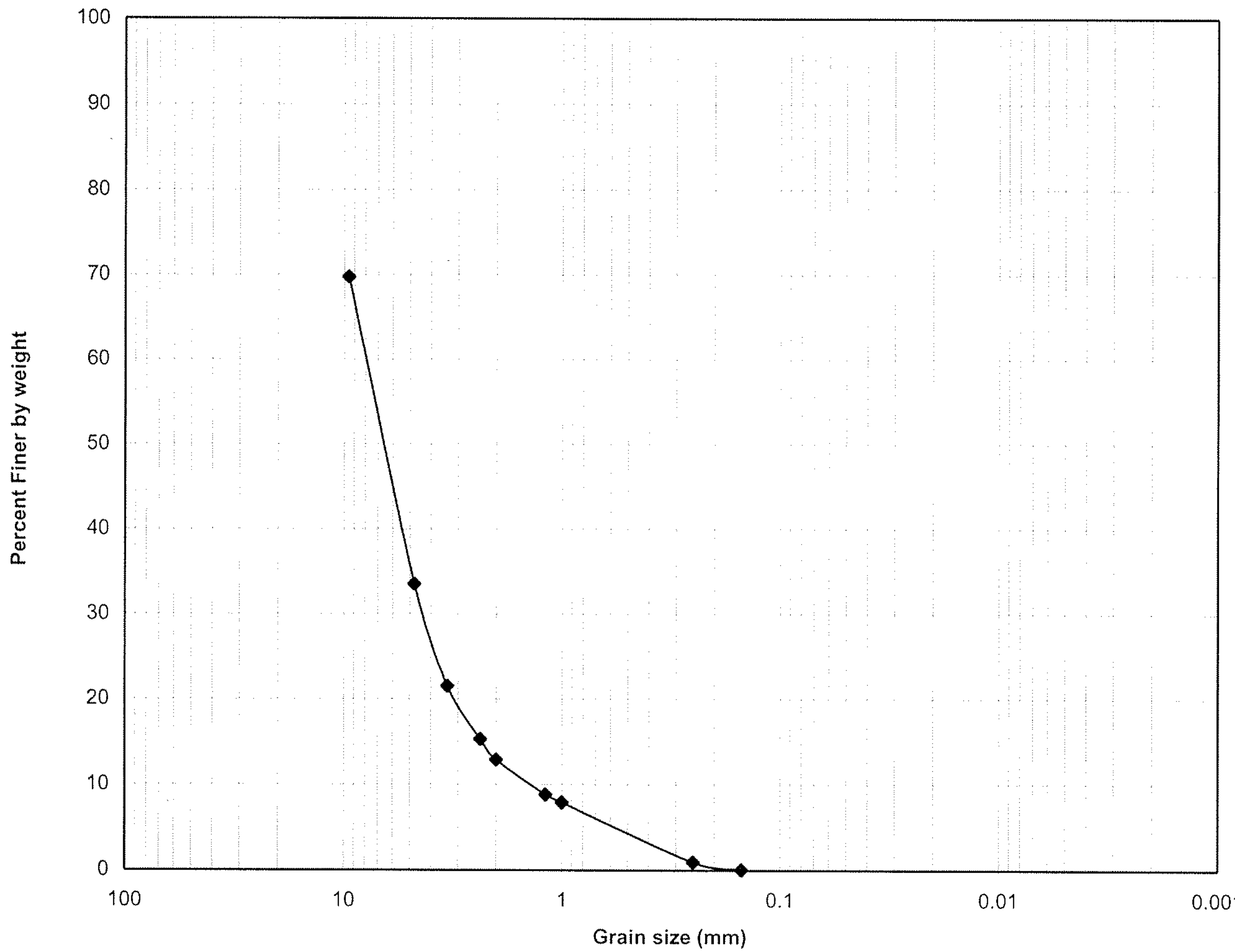
Collector 6, Lateral 8



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 8
7 to 11 Feet

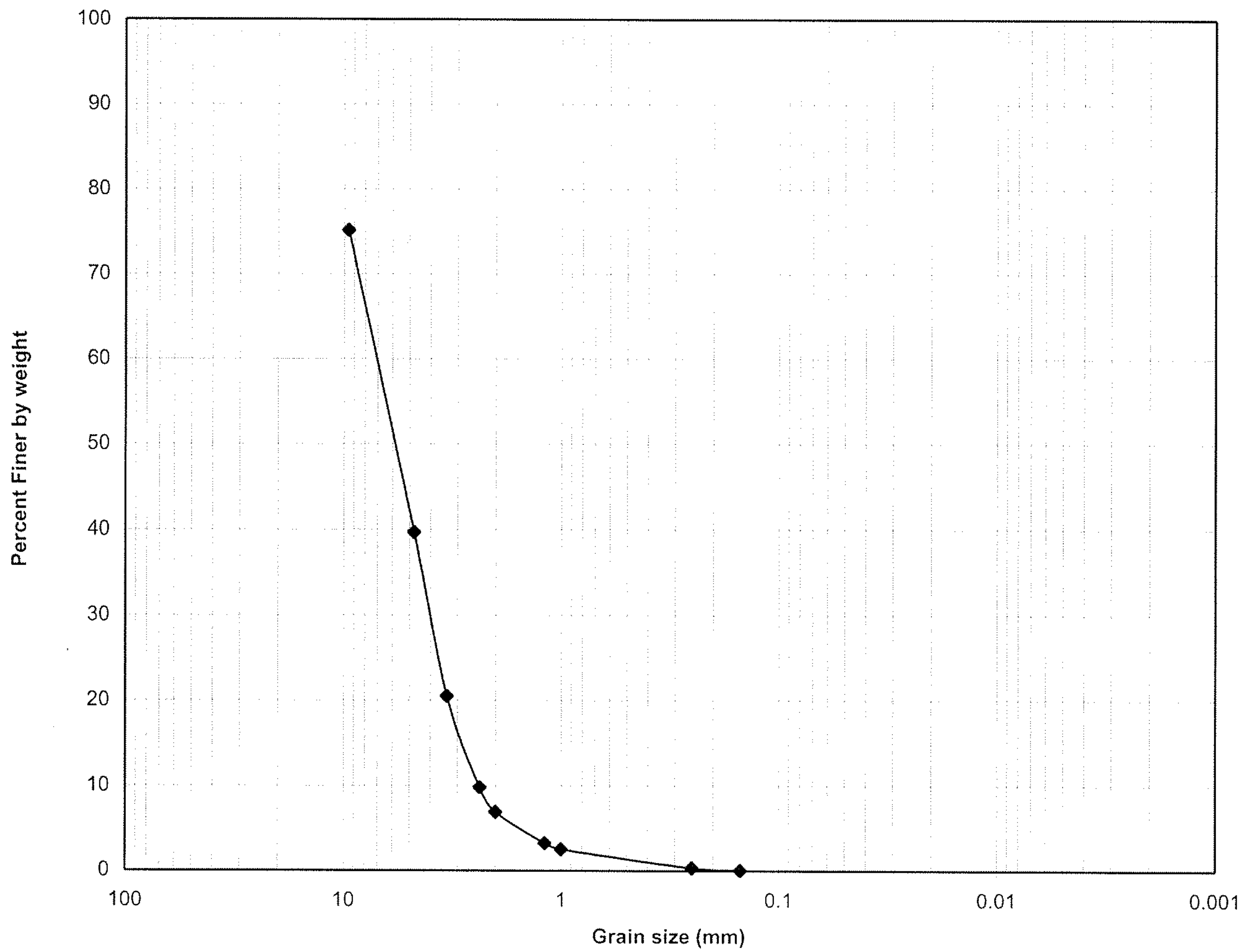
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 8
14 to 18 Feet

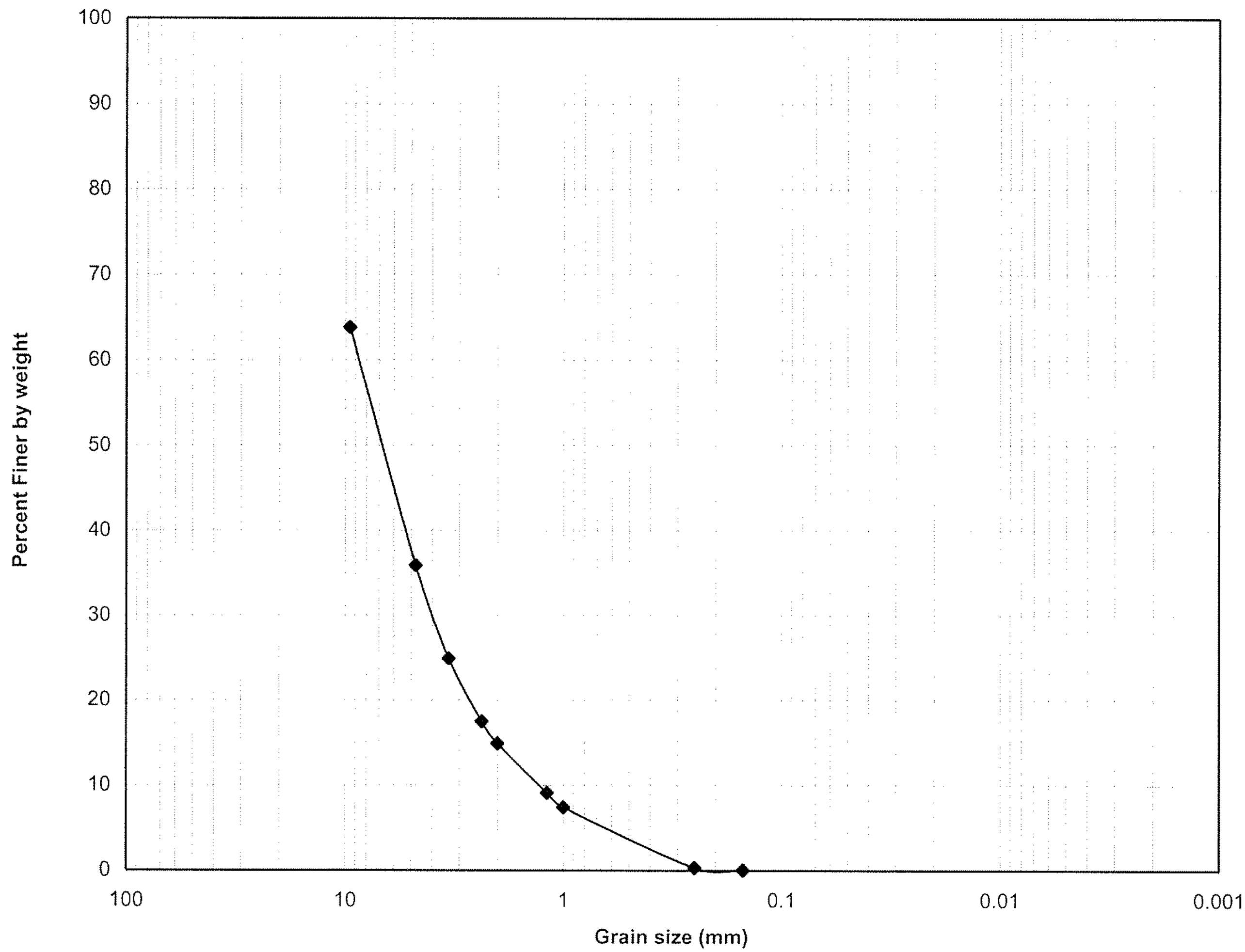
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 8
21 to 25 Feet

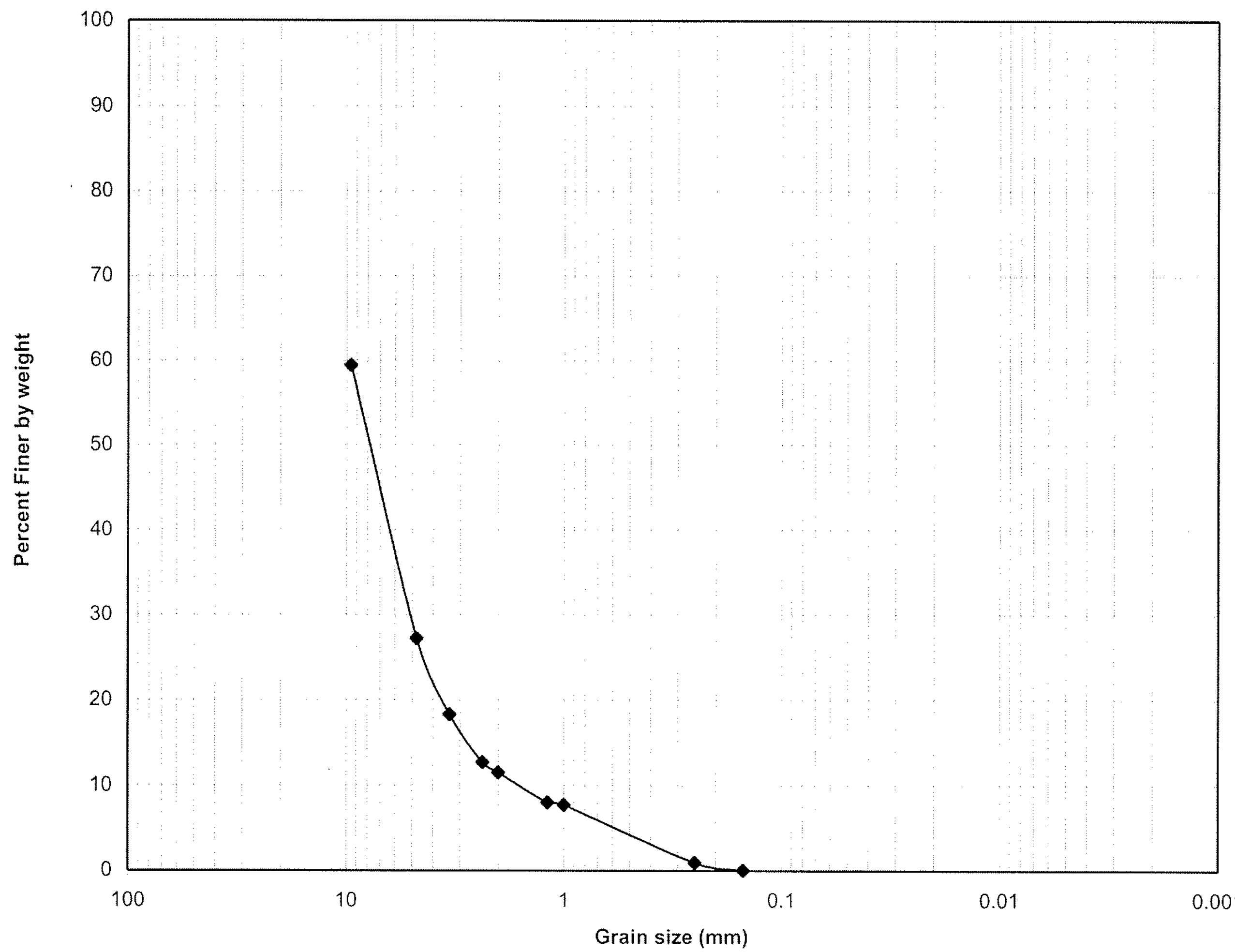
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 8
29 to 32 Feet

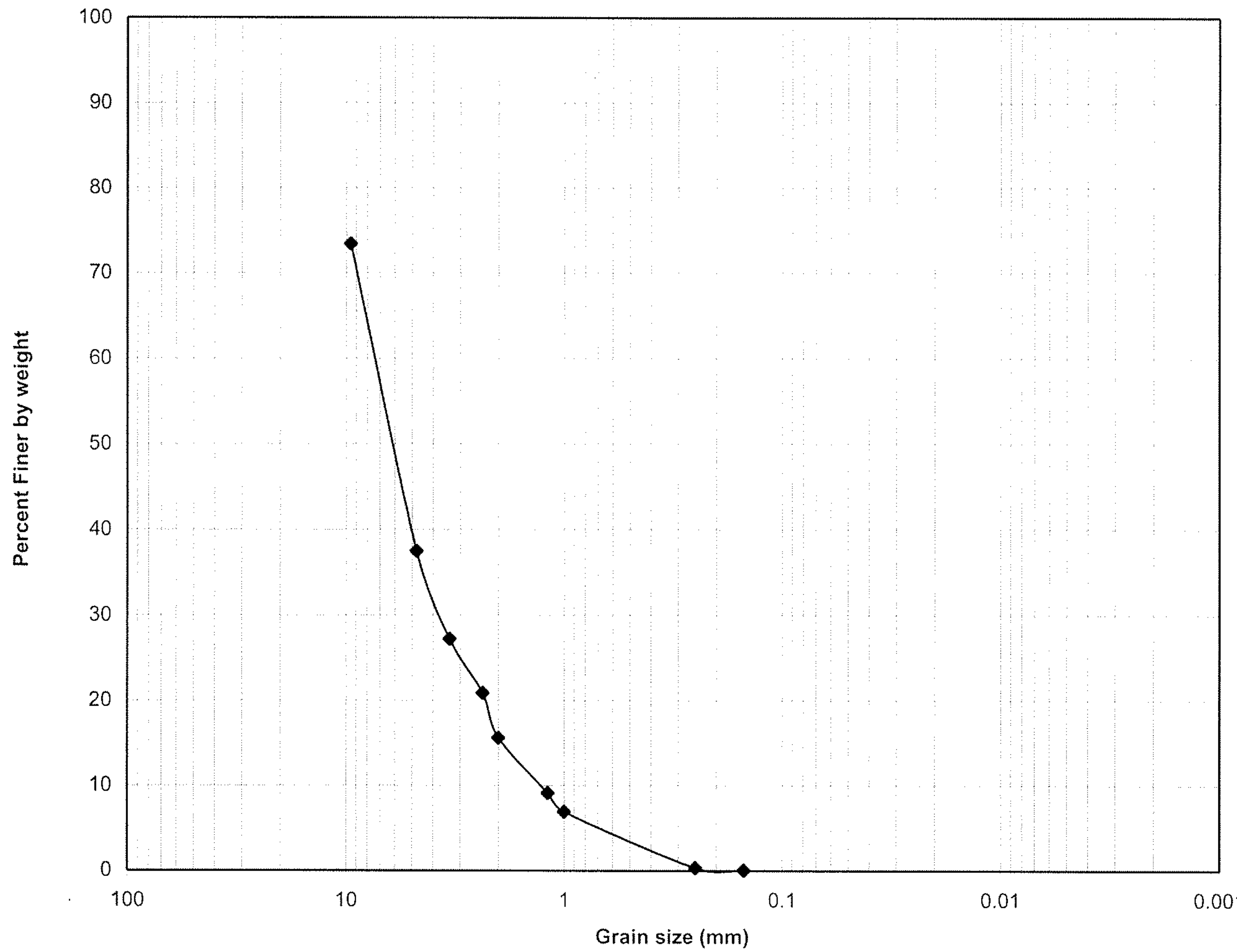
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 8
36 to 39 Feet

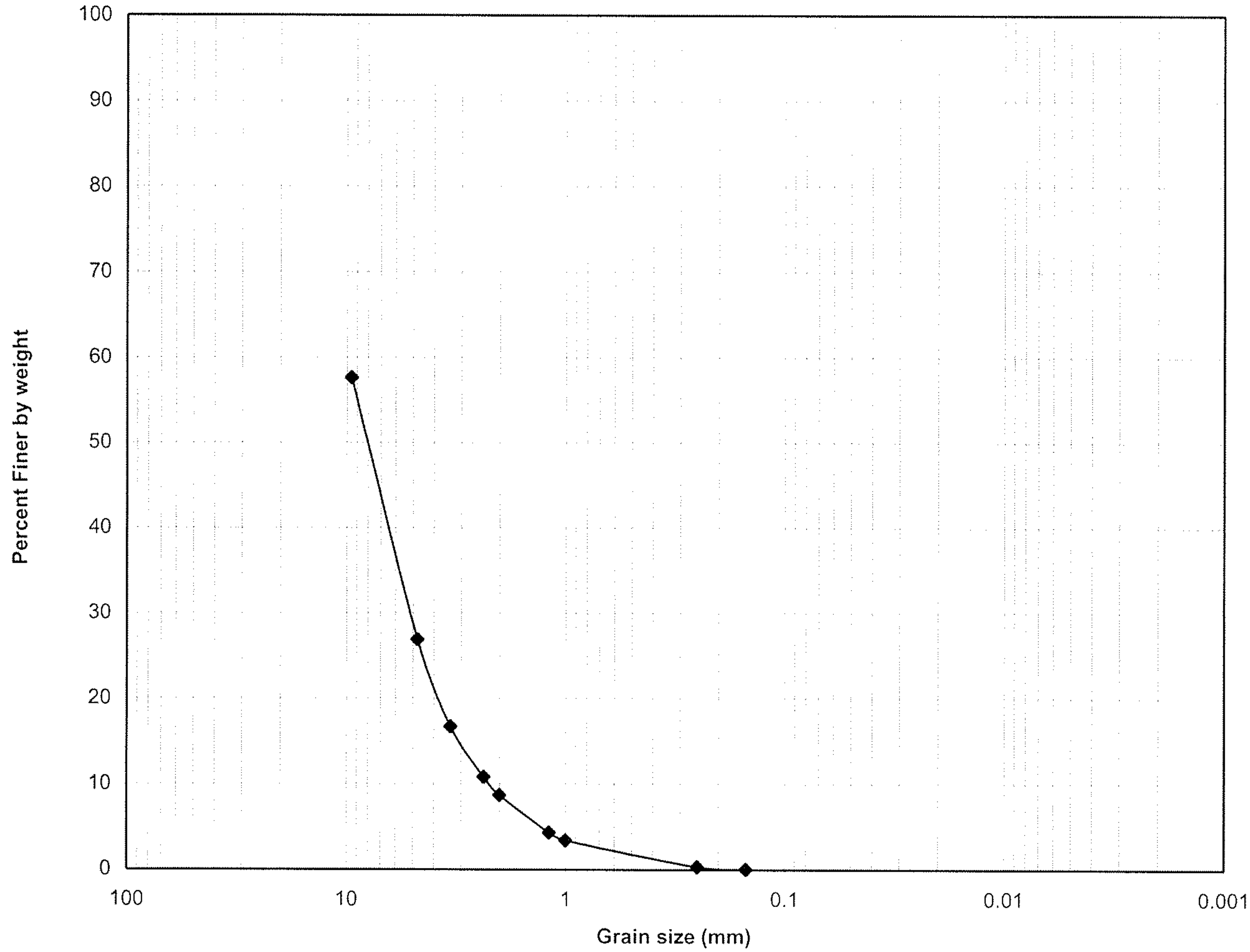
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 8
43 to 47 Feet

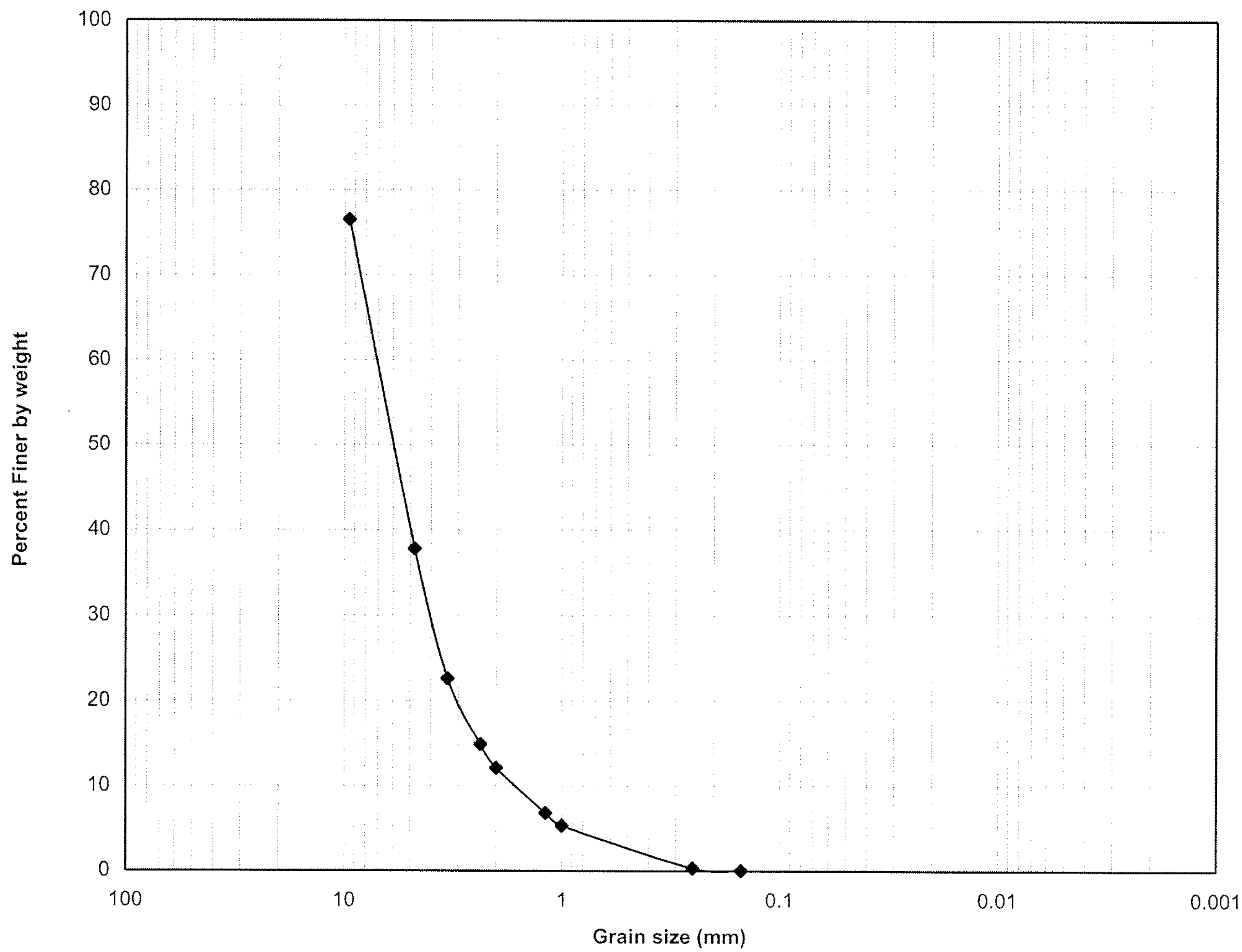
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 8
50 to 54 Feet

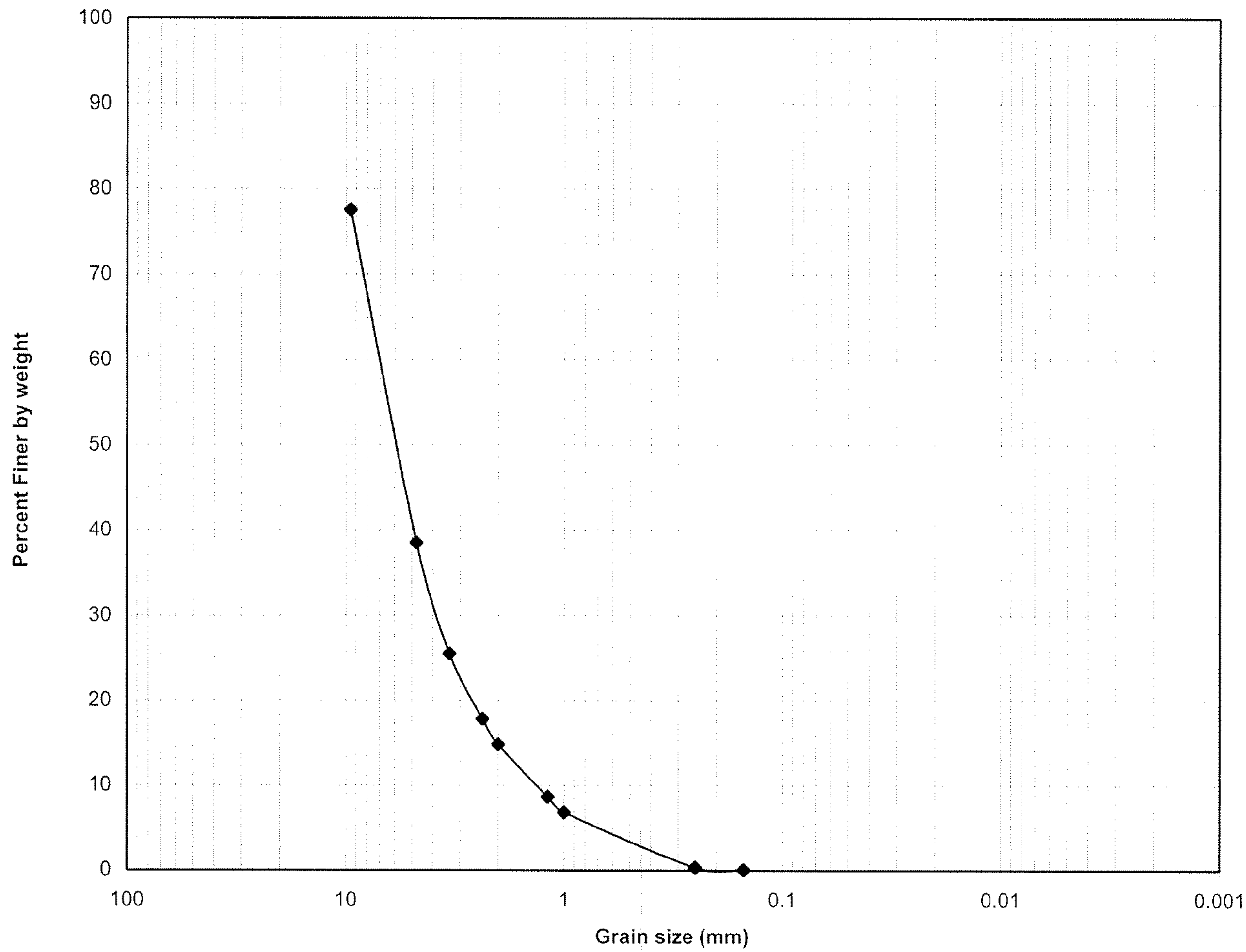
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 8
57 to 61 Feet

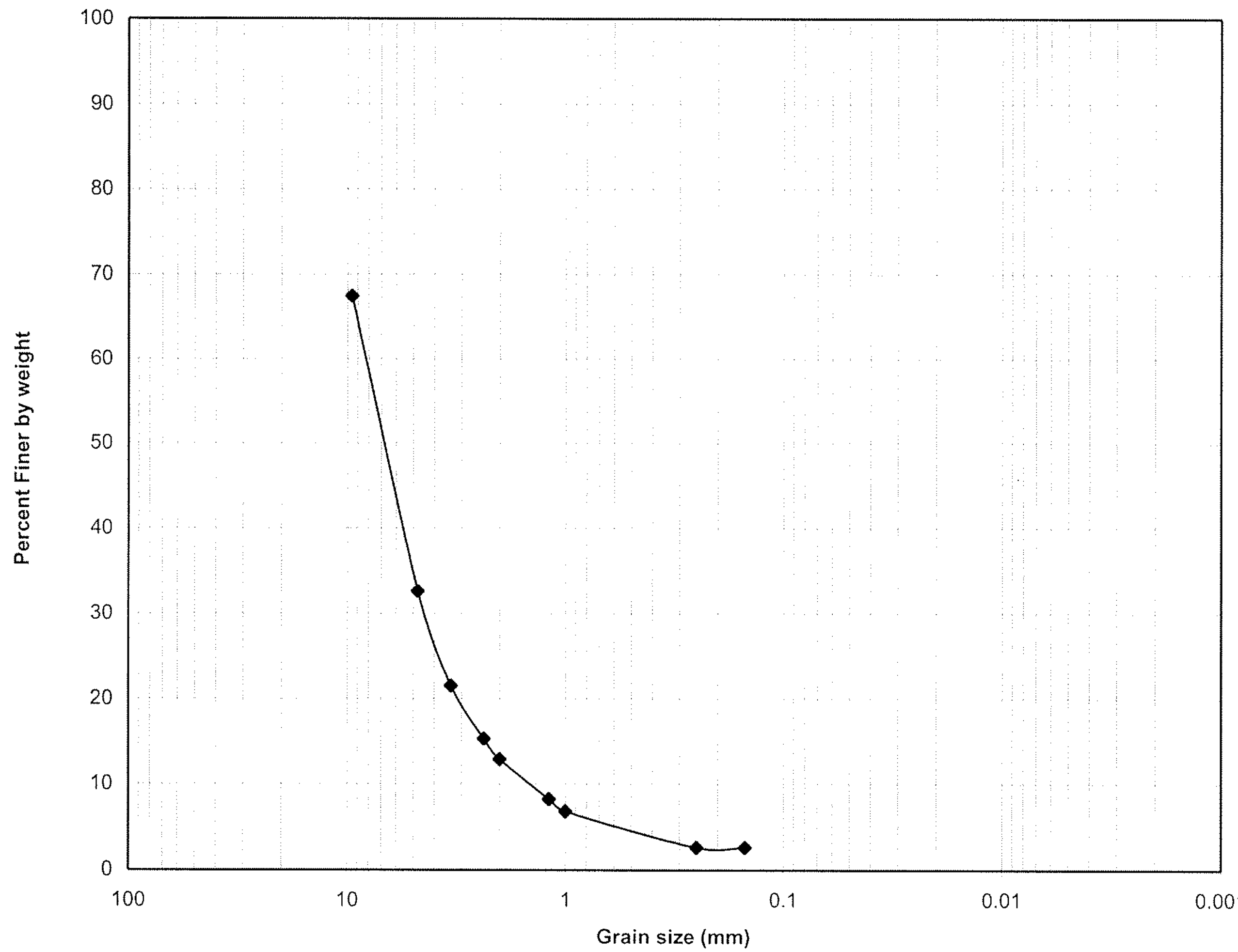
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 8
64 to 68 Feet

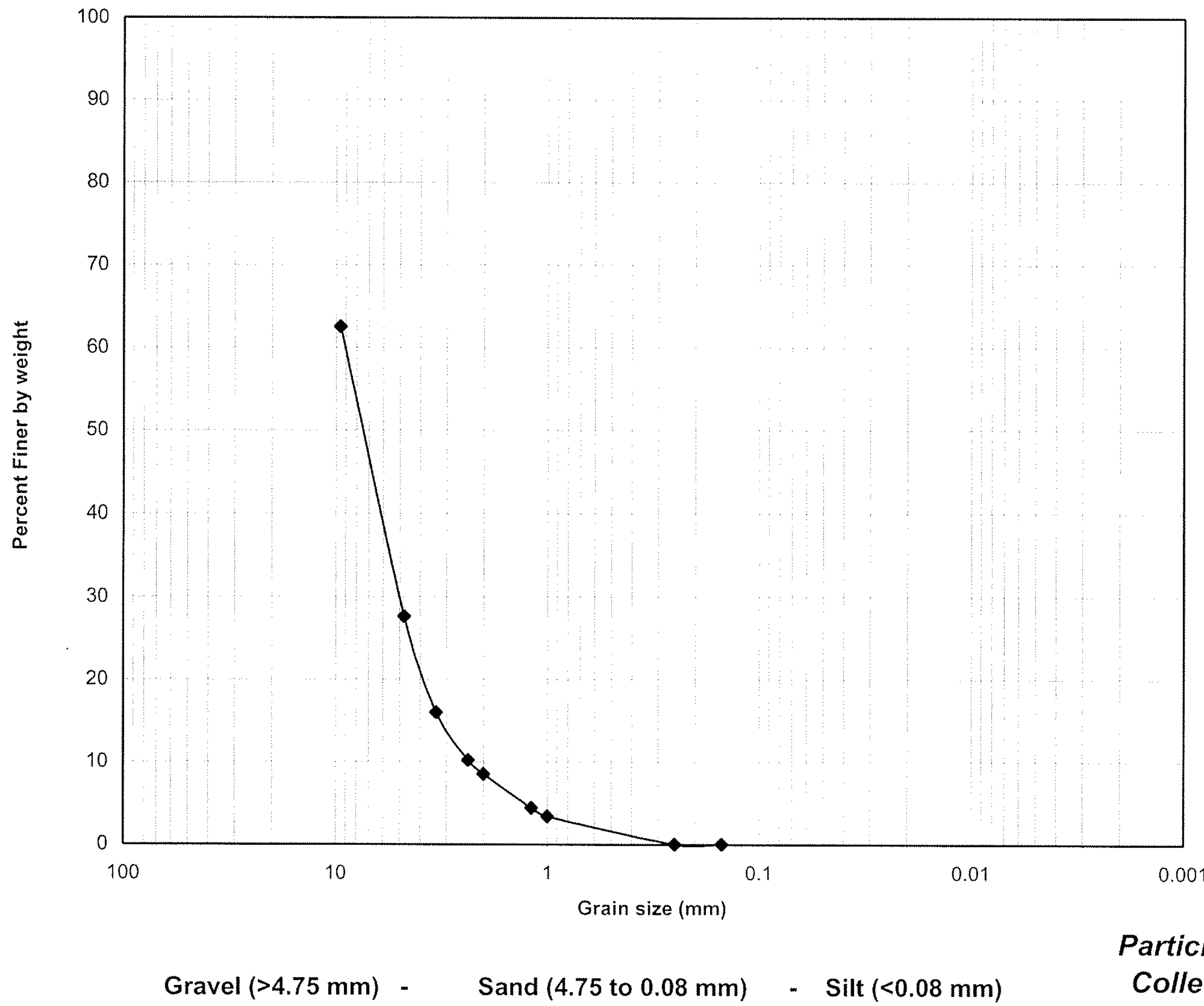
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

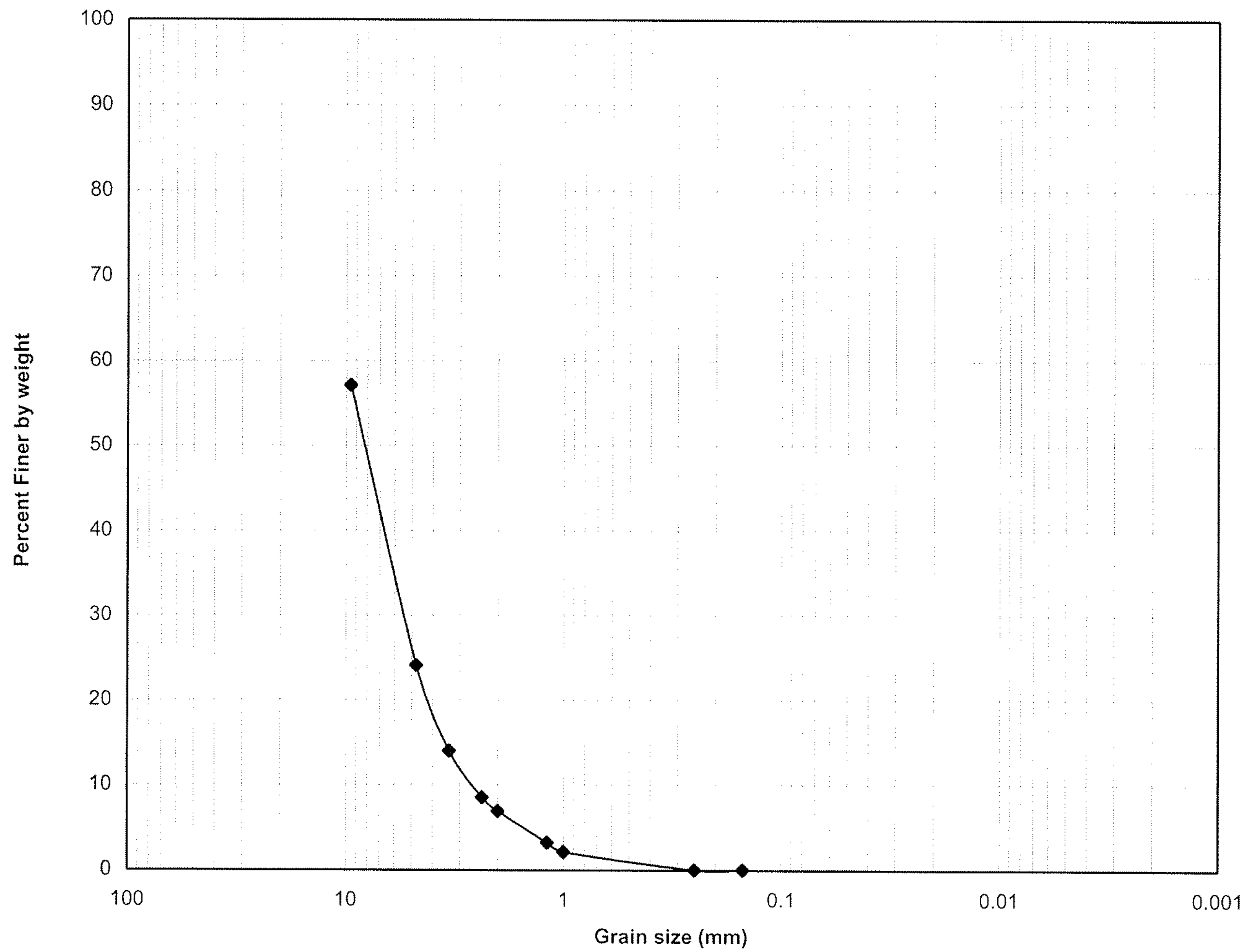
Particle Size Analysis
Collector 6, Lateral 8
72 to 75 Feet

ERM 4/09



Particle Size Analysis
Collector 6, Lateral 8
79 to 82 Feet

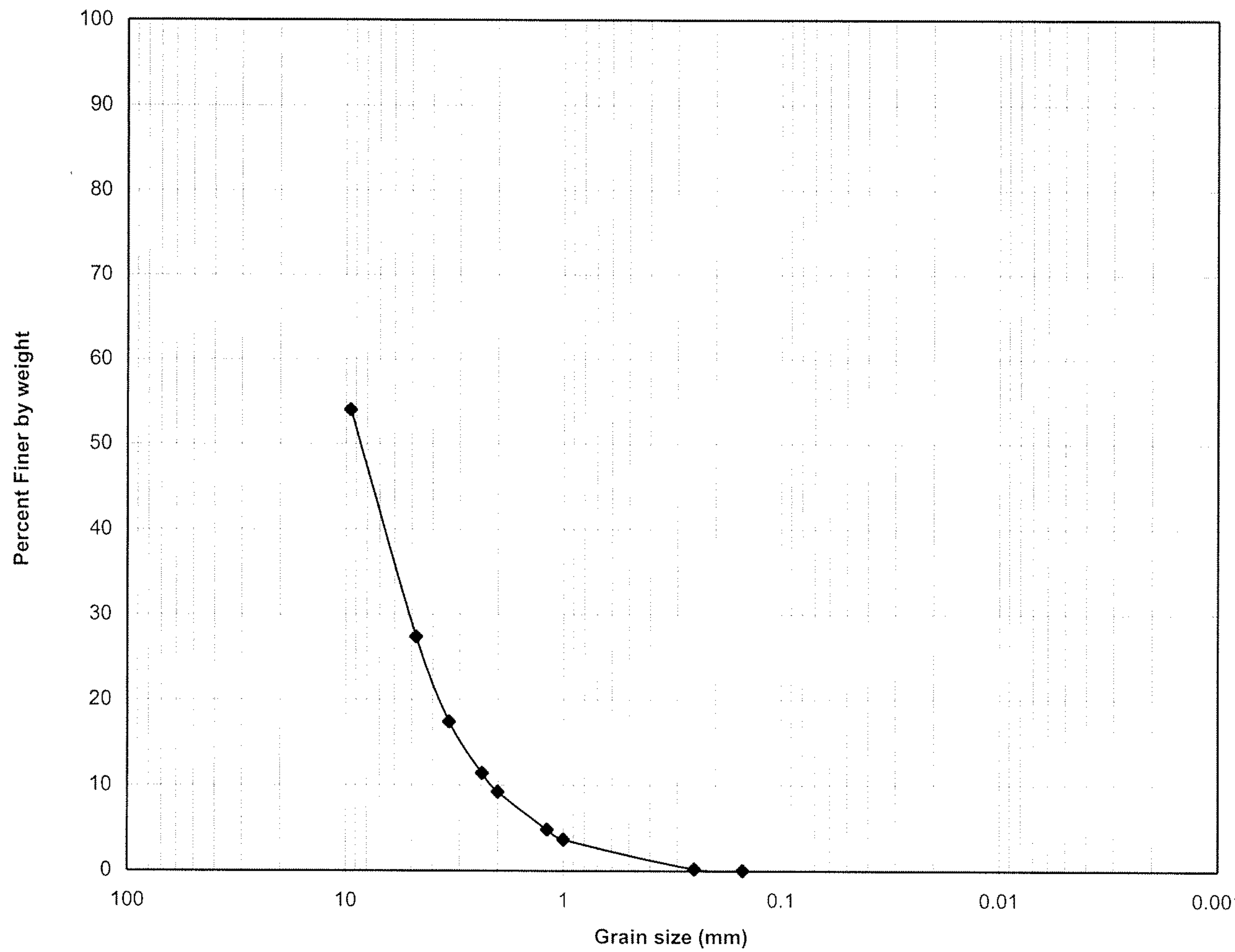
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 8
86 to 90 Feet

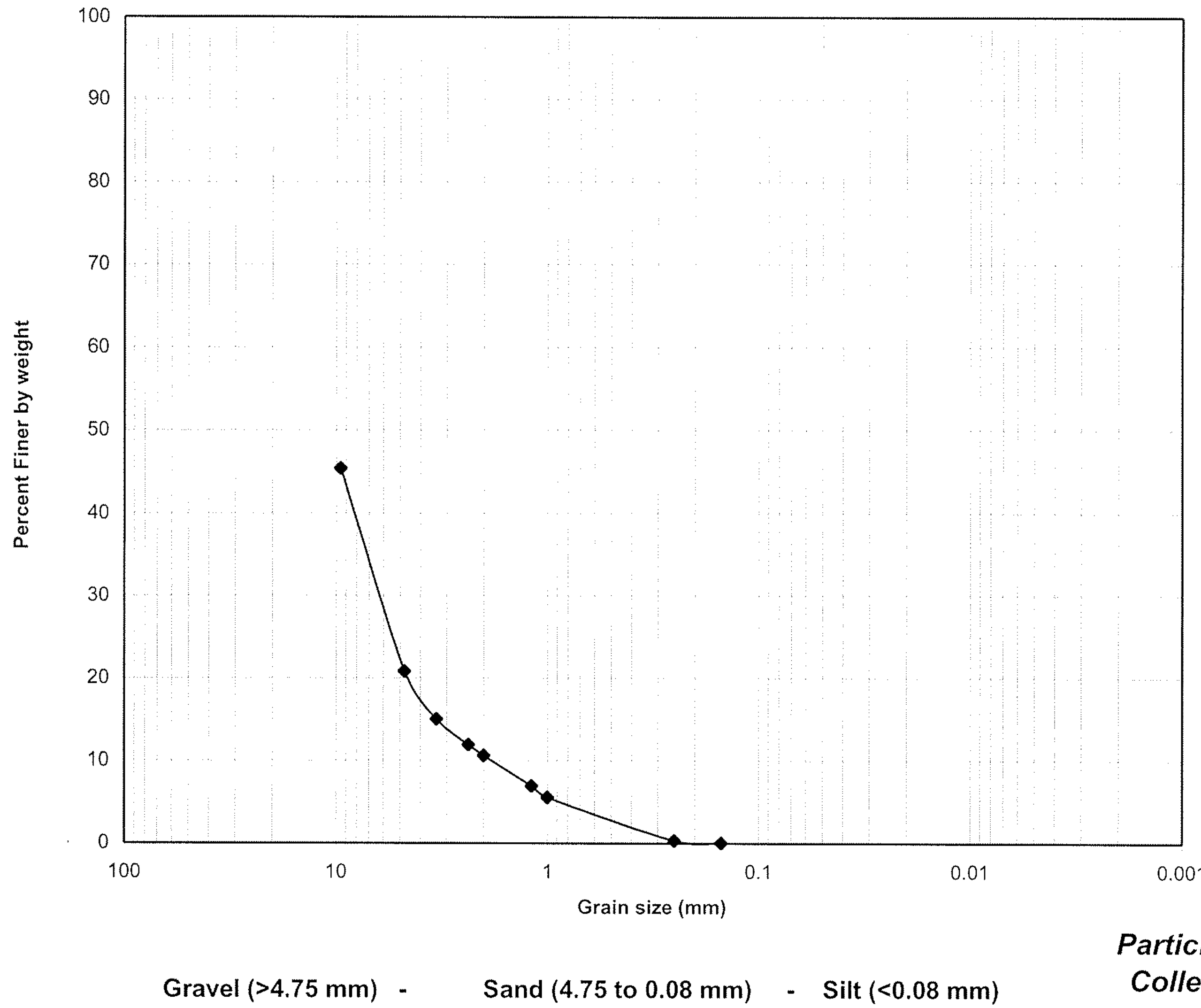
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

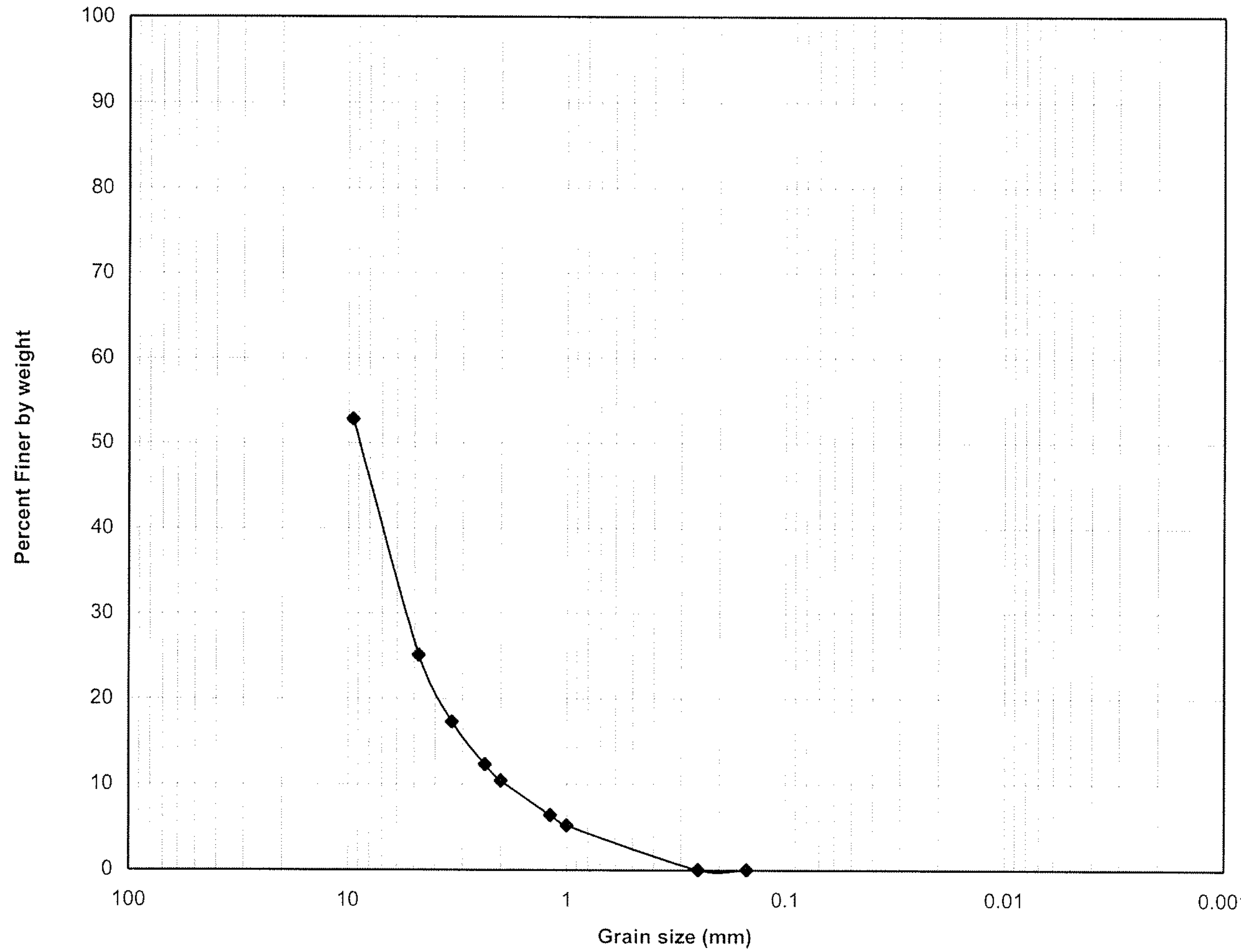
Particle Size Analysis
Collector 6, Lateral 8
93 to 97 Feet

ERM 4/09



Particle Size Analysis
Collector 6, Lateral 5
100 to 104 Feet

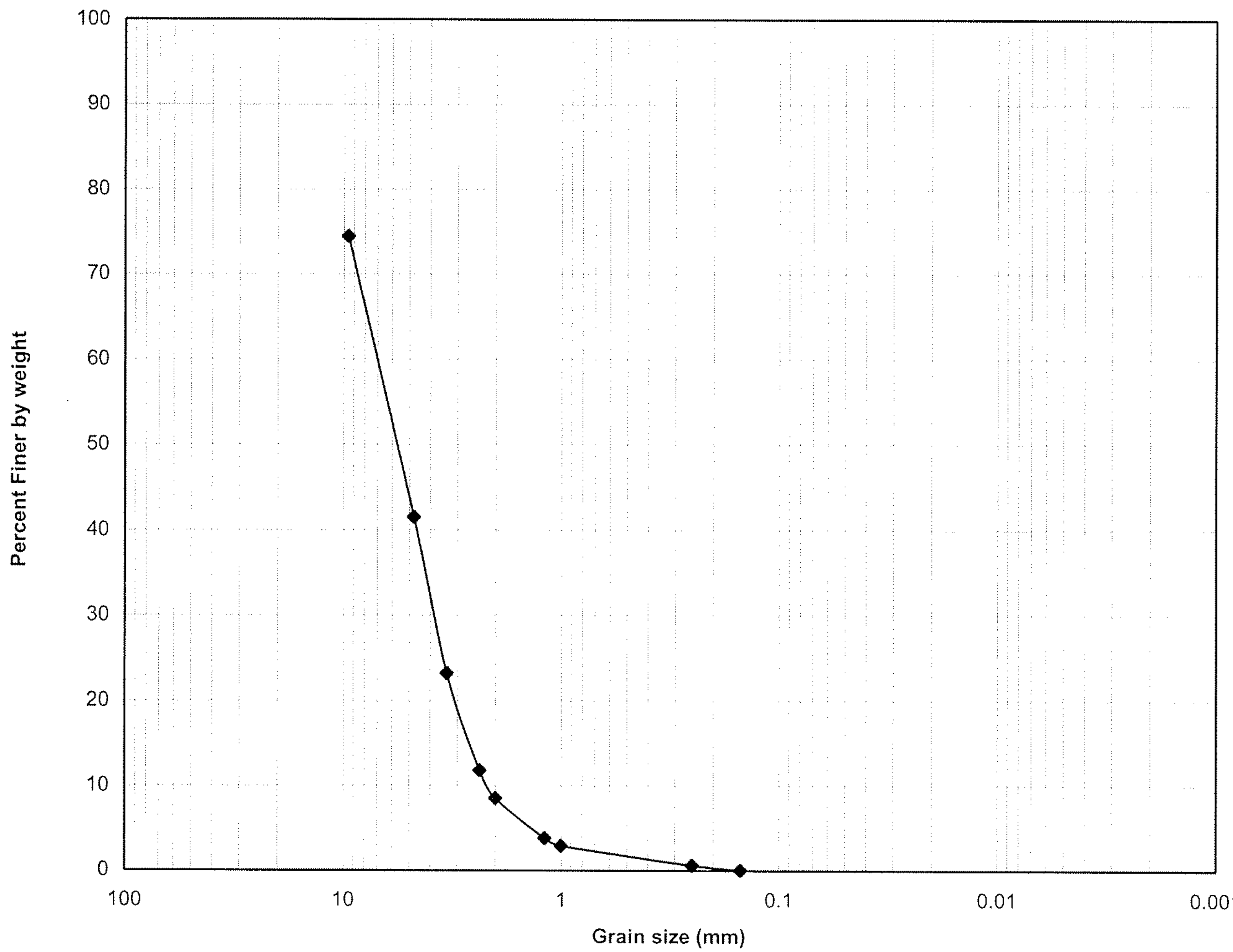
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 8
107 to 111 Feet

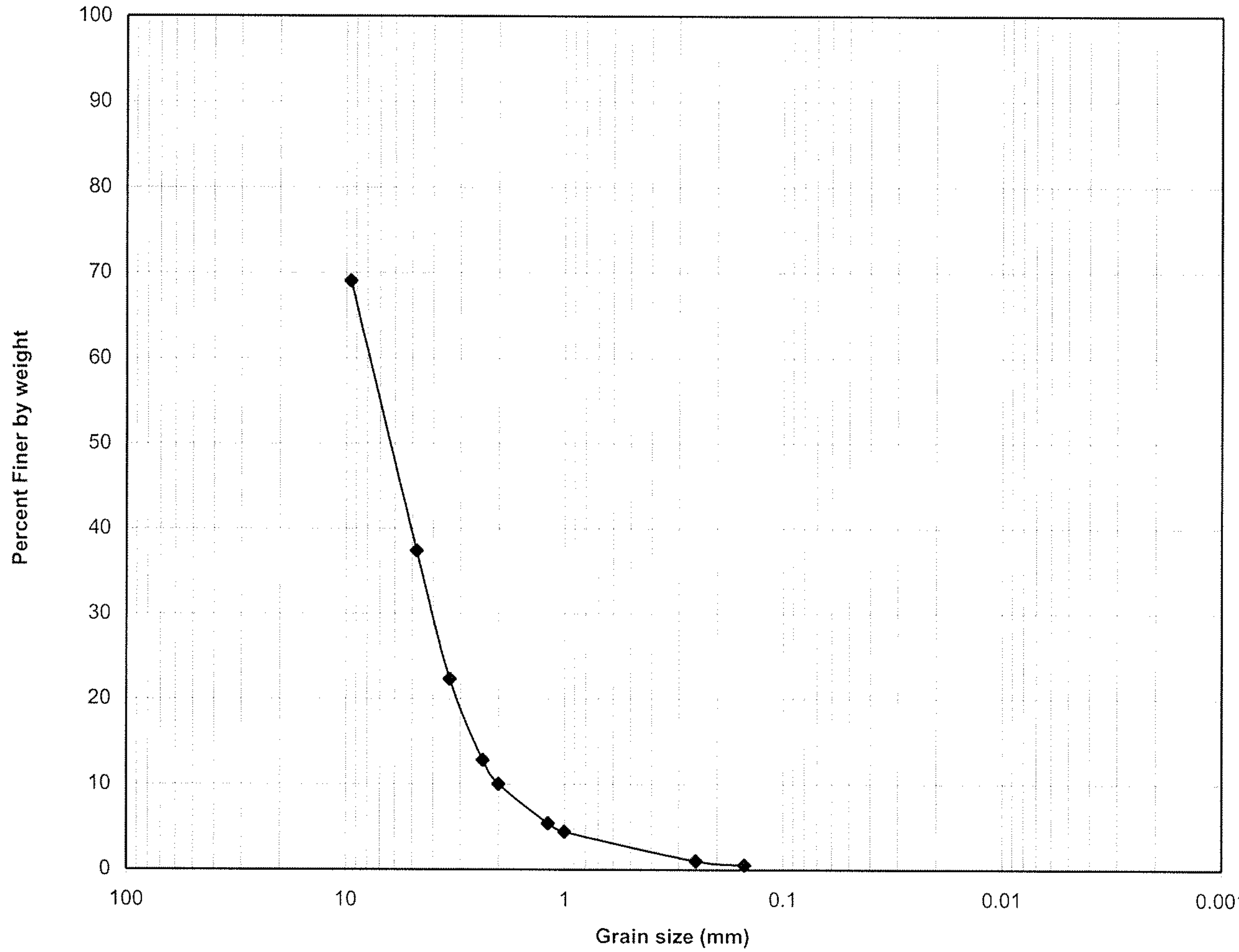
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 8
115 to 118 Feet

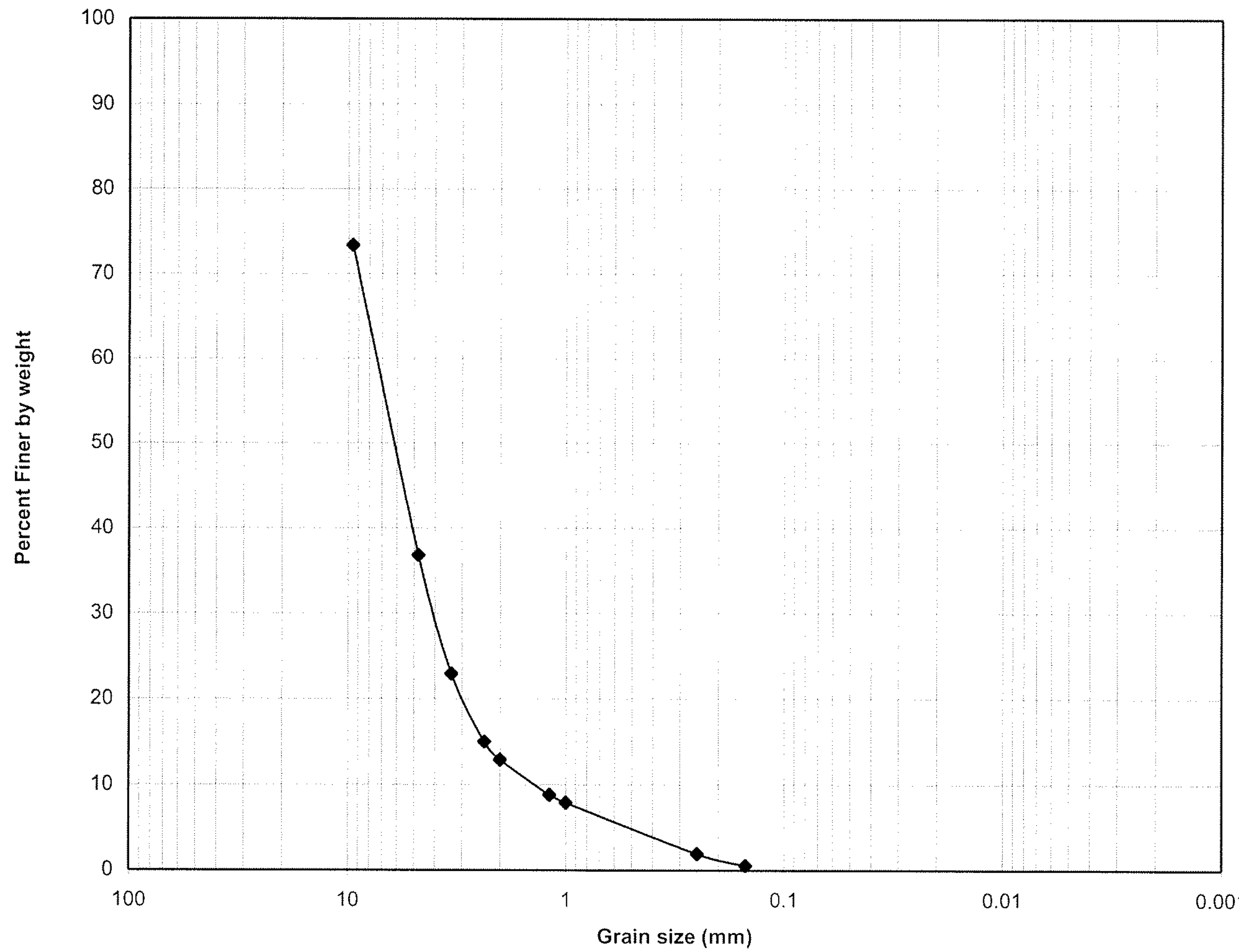
ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 8
122 to 125 Feet

ERM 4/09



Gravel (>4.75 mm) - Sand (4.75 to 0.08 mm) - Silt (<0.08 mm)

Particle Size Analysis
Collector 6, Lateral 8
129 to 132 Feet

ERM 4/09