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Sandia National Laboratories

Sandia National Laboratories/New Mexico Environmental Restoration Operations

SUMMARY REPORT FOR BURN SITE GROUNDWATER CHARACTERIZATION FIELD PROGRAM

Installation of Groundwater Monitoring Wells CYN-MW9, CYN-MW10, CYN-MW11, and CYN-MW12

Collection of Subsurface Soil Samples at Boreholes BSG-BH001 through BSG-BH010

January 2012

United States Department of Energy
Sandia Site Office

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ACRONYMS AND ABBREVIATIONS

AOC	area of concern
AOP	administrative operating procedure
ARCH	air-rotary casing hammer
bgs	below ground surface
BH	borehole
BSG	Burn Site Groundwater
°C	(degrees) Celsius
CME	Corrective Measures Evaluation
CSS	Colorado Silica Sand
CYN	Canyons (Burn Site Groundwater)
DAF	dilution attenuation factor
DOE	U.S. Department of Energy
DRO	diesel range organics
EFO	Environmental Field Office
EPA	U.S. Environmental Protection Agency
ER	Environmental Restoration
FOP	field operating procedure
ft/min	feet per minute
GEL	GEL Laboratories LLC
GRO	gasoline range organics
HE	high explosives
HSA	hollow-stem auger
HSWA	Hazardous and Solid Waste Amendments
IMWP	Interim Measures Work Plan
KAFB	Kirtland Air Force Base
MCL	maximum contaminant level
MDA	minimum detectable activity
MDL	method detection limit
µg/kg	microgram(s) per kilogram
µg/L	microgram(s) per liter
mg/kg	milligram(s) per kilogram
mg/L	milligram(s) per liter
NAD	North American Datum
NMED	New Mexico Environment Department
NMOSE	New Mexico Office of the State Engineer
NMSPC	New Mexico State Plane Coordinates
NPN	nitrate plus nitrite
OD	outside diameter
PPE	personal protective equipment
PQL	practical quantitation limit
PVC	polyvinyl chloride
RCRA	Resource Conservation and Recovery Act
RPD	relative percent difference
Sandia	Sandia Corporation
SC	specific conductivity
SNL/NM	Sandia National Laboratories, New Mexico
SSL	soil screening level

ACRONYMS AND ABBREVIATIONS (Concluded)

SWMU	Solid Waste Management Unit
SVOC	semivolatile organic compound
TAL	Target Analyte List
TPH	total petroleum hydrocarbons
VOC	volatile organic compound
WDC	WDC Exploration and Wells, Inc.

1.0 INTRODUCTION

This report documents the activities for soil sampling and installation of groundwater monitoring wells at the Burn Site Groundwater (BSG) area of concern (AOC) (hereafter referred to as the Study Area) at Sandia National Laboratories, New Mexico (SNL/NM). SNL/NM is managed and operated by Sandia Corporation (Sandia), a wholly-owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's (DOE) National Nuclear Security Administration under contract DE-AC04-94AL85000.

The project activities were performed from July through August 2010 by SNL/NM Environmental Restoration (ER) Operations (formerly ER Project) personnel and the SNL/NM drilling contractor, WDC Exploration and Wells Inc. (WDC). Drilling activities began with borehole drilling and sampling during the week of July 5, 2010. Well construction and development fieldwork was completed at the end of July 2010. Land surveys of the four new wells to establish the location coordinates and elevations were completed on August 16, 2010, and transmitted to SNL/NM personnel on August 26, 2010. This report also discusses the results for hydrologic slug tests and two quarters of groundwater monitoring data obtained from the newly installed wells.

1.1 Regulatory Action

The New Mexico Environment Department (NMED) Hazardous Waste Bureau provides regulatory oversight of SNL/NM ER Operations and implements and enforces federal regulations mandated by the Resource Conservation and Recovery Act (RCRA). All ER Operations Solid Waste Management Units (SWMUs) and AOCs are listed in Module IV of the SNL/NM RCRA Part B Operating Permit, "Special Conditions Pursuant to the 1984 Hazardous and Solid Waste Amendments (HSWA) to RCRA for Sandia National Laboratories" (NMED 1993).

In April 2004, the Compliance Order on Consent (the Order) (NMED April 2004) between the NMED, DOE, and Sandia became effective, which specifically identified the Study Area as requiring a corrective measure. The groundwater monitoring activities for the Study Area are not associated with a single SWMU, but are more regional in nature. Before the finalization of the Order in April 2004, groundwater investigations at the Study Area had been conducted voluntarily by SNL/NM ER Operations.

Initially, groundwater monitoring in the Study Area was initiated to satisfy the requirements of the SNL/NM HSWA Permit. The Order transferred regulatory authority for this corrective action from the HSWA module of the Permit to the Order. The corrective action of the Study Area must comply with requirements set forth in the Order for site characterization and the development of a Corrective Measures Evaluation (CME).

In response to the Order, the DOE and Sandia initially submitted the following two documents to the NMED: (1) "Current Conceptual Model of Groundwater Flow and Contaminant Transport at Sandia National Laboratories/New Mexico Burn Site" (current conceptual model [SNL/NM June 2004a]), and (2) "Corrective Measures Evaluation Work Plan for Sandia National Laboratories/New Mexico Burn Site" (SNL/NM June 2004b). The current conceptual model provides site-specific characteristics by which remedial alternatives were evaluated. The

CME Work Plan provides a description and justification of which remedial alternatives were considered and the methods and criteria to be used in the evaluation. The CME Work Plan was completed to comply with both the requirements set forth in the Order and guidance provided by the U.S. Environmental Protection Agency's (EPA) RCRA Corrective Action Plan (EPA 1994).

On March 1, 2005, the DOE and Sandia received a letter from the NMED (February 2005) that rejected the CME Work Plan and stipulated the following requirements for DOE and Sandia completion:

- Prepare and submit an Interim Measures Work Plan (IMWP) within 90 days from the receipt of the letter (by May 30, 2005).
- Perform additional characterization of the nitrate-contaminated groundwater near the Burn Site. Specifically, the downgradient extent of groundwater with nitrate concentrations greater than 10 milligrams per liter (mg/L) shall be determined.
- Install one additional monitoring well "adjacent to SWMU-94F in order to establish groundwater conditions in this petroleum-contamination source area."

The DOE and Sandia submitted the IMWP to the NMED in May 2005 that proposed the installation of additional groundwater monitoring wells to characterize the extent of nitrate contamination in the aquifer downgradient of CYN-MW1D and fuel-related compounds downgradient of SWMU 94F (SNL/NM May 2005). (The Study Area was formerly referred to as the "Canyons Area Groundwater"; therefore, "CYN" is the prefix used to identify the groundwater monitoring wells.) The selected interim measures described in the IMWP included installation of three additional groundwater monitoring wells, groundwater monitoring, and institutional controls.

Data collected as part of additional characterization required by the IMWP were incorporated into an updated version of the current conceptual model (SNL/NM April 2008a). The revised conceptual model provides the basis for a technically defensible remediation program that was developed and documented in the CME Work Plan (SNL/NM April 2008b), the results of which will eventually be documented in the CME Report. The April 2008 CME Work Plan was developed to address the concerns outlined in the letter from the NMED (February 2005) and comply with requirements of the Order. The CME Work Plan presents information and data gathered during interim measures, performance and compliance goals, as well as objectives for the remediation of the BSG.

A letter to the DOE and Sandia was received from the NMED on April 30, 2009 (NMED April 2009) entitled, "Perchlorate Contamination in Groundwater, Sandia National Laboratories, EPA ID# NM5890110518." The NMED's letter discussed the occurrence of perchlorate in groundwater at concentrations at or greater than 1 microgram per liter (µg/L) at various locations at SNL/NM. The letter states:

> Perchlorate contamination occurs in groundwater at or near the Lawrence [sic] Canyon Burn Site (CYN-MW6) at about 6-9 µg/L [micrograms per liter]. Pursuant to Section VI.K.1.b of the Consent Order, the Permittees must characterize the nature and extent of the perchlorate contamination at or near the Lawrence [sic] Canyon Burn Site. The Permittees must submit to the NMED a plan for such characterization within 90 days of receipt of this letter. The plan shall include a schedule for implementation of the characterization work that is planned.

The "Burn Site Groundwater Characterization Work Plan, Installation of Groundwater Monitoring Wells CYN-MW9, CYN-MW10, and CYN-MW11; Collection of Subsurface Soil Samples" (hereafter referred to as "the Characterization Work Plan") (SNL/NM November 2009) was prepared in response to the NMED's April 2009 letter. The April 2009 NMED letter required that the DOE and Sandia prepare the Characterization Work Plan for NMED approval by July 30, 2009. The DOE and Sandia requested an extension of the due date for a response to the April 2009 NMED letter in order to meet with the NMED to review existing data and outline further characterization strategies. DOE and Sandia personnel met with NMED representatives in June and July 2009 (SNL/NM June 2009a and SNL/NM July 2009) and submitted a letter requesting an extension to November 30, 2009 (DOE July 2009). The results of the discussions at the June and July meetings (SNL/NM June 2009a and July 2009) were incorporated in the Characterization Work Plan.

In February 2010, the DOE and Sandia received the "Notice of Conditional Approval, Burn Site Groundwater Characterization Work Plan" from the NMED (February 2010). The conditions of approval included the following requirements:

- Install the new groundwater monitoring well CYN-MW11 within 10 feet of the existing Burn Site Production Well
- Install polyvinyl chloride (PVC) well screens that are no longer than 20 feet in length
- Provide clarification on the information to be submitted with the Field Report and subsequent reports

1.2 Site Description and History

SNL/NM personnel manage the Coyote Canyon Test Area in the eastern portion of Kirtland Air Force Base (KAFB) (Figure 1.2-1). The Study Area is located in Lurance Canyon, one of three canyons that are located on the eastern edge of the Coyote Canyon Test Area within the Manzanita Mountains. Two other canyons, Madera Canyon and Sol se Mete Canyon, intersect Lurance Canyon to the west of the Study Area. These three canyons are the headwaters of Arroyo del Coyote.

The Study Area is located along the eastern margin of the Albuquerque Basin, and the terrain is characterized by large topographic relief, exceeding 500 feet. Lurance Canyon provides local westward drainage of ephemeral surface-water flows to Arroyo del Coyote and deeply cuts through Paleozoic and Precambrian rocks.

The Lurance Canyon Burn Site (SWMU 94) and the collocated Lurance Canyon Explosive Test Site (SWMU 65) have been used since 1967. Most research has involved testing the fire survivability of transportation containers, weapon components, simulated weapons, and satellite components. Historical operations also include open detonation of high explosives (HE) and the open burning of HE materials, liquid propellants, and solid propellants. Most HE testing occurred between 1967 and 1975 and was completely phased out by the 1980s. Burn testing began in the early 1970s and has continued to the present.

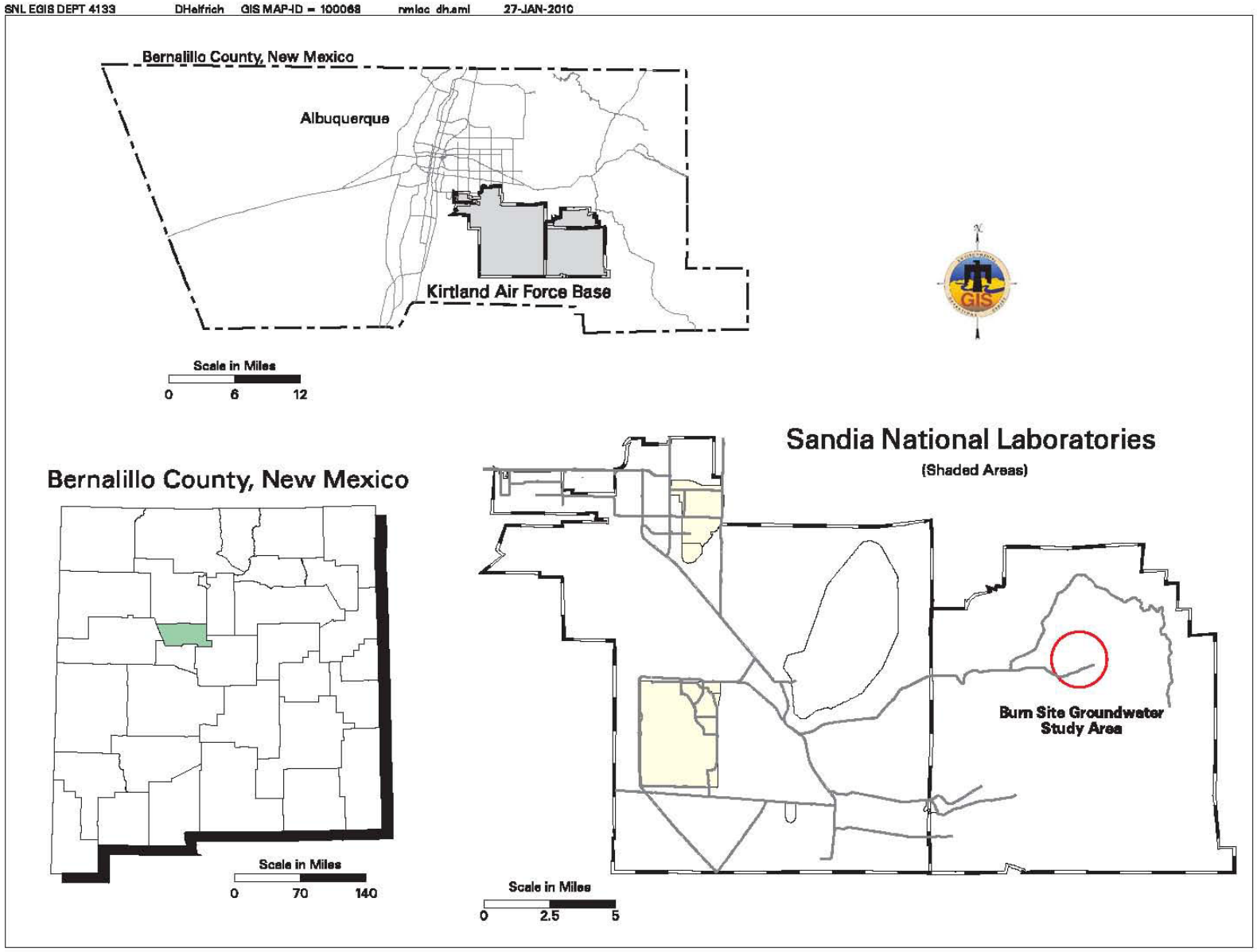

Figure 1.2-1
Location of the Burn Site Groundwater Study Area

Early burn testing was conducted in unlined pits excavated in native soil. By 1975, portable steel burn pans were used for open burning operations primarily conducted with JP-4 (jet fuel composition 4). The Light Air Transport Accident Resistant Container Unit was constructed in 1980, and other engineered burn units were constructed by 1983. These burn units used jet fuel, gasoline, and diesel for the burn tests.

Groundwater samples collected during 1996 from the Burn Site Well (a nonpotable production well used for fire suppression) contained elevated concentrations of nitrate (24.3 mg/L in November 1996). In 1997, the NMED, DOE, and Sandia agreed to investigate the source of this contamination. Later in 1997, monitoring well CYN-MW1D and piezometer CYN-MW2S were installed downgradient of the Burn Site well. Samples from well CYN-MW1D contained nitrate concentrations above the maximum contaminant level (MCL) of 10 mg/L. Two more wells, CYN-MW3 and CYN-MW4 were installed between 1999 and 2001 to further characterize the Study Area. Based on further regulatory requirements, monitoring wells CYN-MW6, CYN-MW7, and CYN-MW8 were installed in 2006.

Since the initial discovery of nitrate at the Study Area, numerous characterization activities have been conducted. The results of these characterization activities are summarized in two versions of the "Current Conceptual Model of Groundwater Flow and Contaminant Transport at Sandia National Laboratories/New Mexico Burn Site" (SNL/NM June 2004a and April 2008a). These two versions of the Burn Site conceptual model provide a comprehensive list of groundwater monitoring data sources used to support the summary of investigations.

Routine sampling of the six wells in the Study Area revealed that CYN-MW6 had reported perchlorate detections above the screening level specified in the Order (NMED April 2004). Based on these perchlorate detections, SNL/NM personnel were required to sample site soil and install the groundwater monitoring wells described in this report (NMED April 2009).

1.3 Geologic Setting

The Manzanita Mountains are composed of a complex sequence of uplifted Precambrian metamorphic and granitic units that were subjected to significant deformation. These units are capped by Paleozoic sandstones, shales, and limestones of the Sandia Formation and Madera Group. The geologic history of the Manzanita Mountains is thoroughly described in the *Groundwater Investigation, Canyons Test Area, Operable Unit 1333 Burn Site, Lurance Canyon* (SNL/NM November 2001) and utilizes the model presented by Brown et al. (1999). The local geology is also summarized in two versions of the current conceptual model of the Study Area (SNL/NM June 2004a and April 2008a).

Groundwater in the Manzanita Mountains predominantly occurs in fractured metamorphic and intrusive units that consist of metavolcanics, quartzite, metasediments (schists and phyllites), and the Manzanita Granite. Groundwater migrates through bedrock fractures in a generally westward direction. The Burn Site Spring is the only perennial spring in the area and is located upgradient of the testing facilities at a limestone outcrop. The permeability of the fractured bedrock units is low and well yields are small. Groundwater discharges to small ephemeral springs located at the base of the Manzanita Mountains approximately 3 miles west of the Burn Site. Additionally, some groundwater may discharge as underflow to unconsolidated sedimentary deposits of the Albuquerque Basin.

The Precambrian metamorphic rocks are typically fractured as a result of the long and complex history of regional deformation. Drill core samples and surface exposures indicate that the fractures in shallow bedrock are filled with chemical precipitates such as calcium carbonate. The carbonate precipitation likely occurred when the water table was elevated prior to the development of the Rio Grande. As chemical precipitates filled the fractures, permeability was effectively reduced, creating a semiconfined unit above underlying bedrock with open fractures.

The Study Area is bisected by a north-south–trending system of faults, consisting locally of several high-angle normal faults that are downfaulted to the east. Faults (where exposed) are characterized by zones of crushing and brecciation. The Burn Site fault exhibits a north to south trend in the vicinity of the Burn Site Well and monitoring well CYN-MW4. Nearby outcrops indicate that the fault displacement is approximately 160 feet.

The canyon floor at the Study Area consists of unconsolidated alluvial fill deposits over bedrock. Typically, these deposits are composed of sand and gravel derived from the erosion of upslope colluvium and bedrock. Based on borehole data, alluvial thickness in the Study Area ranges from 21 to 55 feet.

When the Burn Site Well was drilled in 1986, the depth to groundwater-bearing strata was approximately 222 feet below ground surface (bgs). Following completion of the well in fractured bedrock, the water level rose approximately 150 feet due to positive head. The fractured rocks of the Manzanita Mountains are recharged by infiltration of precipitation, largely occurring during summer thundershowers and, to a lesser degree, winter snowfall on the higher elevations. Groundwater recharge is restricted by high evapotranspiration rates (losses to the atmosphere by evaporation and plant transpiration) and low permeability of the fractured bedrock.

Regionally, groundwater in the western Manzanita Mountains flows generally towards the west from a groundwater flow divide located east of the Study Area (SNL/NM November 2001). Westward groundwater flow across Lurance Canyon discharges primarily as direct underflow to the unconsolidated basin-fill deposits of the Albuquerque Basin. Based on field observations, some discharge also occurs at springs along the mountain front. Much of the flow that discharges from these springs undergoes evapotranspiration. Some flow from the springs infiltrates nearby alluvial deposits.

Annual precipitation in the Manzanita Mountains is in the form of rainfall and minimal snowfall. July and August are typically the wettest months; 45 to 62% of annual precipitation accumulates during summer thunderstorms from July to October (WRCC 2002). The average annual precipitation in this drainage basin is estimated to range between 12 and 16 inches (SNL/NM April 2008a). Annual potential evapotranspiration in the Albuquerque area greatly exceeds annual precipitation. Because much of the rainfall in the Lurance Canyon drainage occurs during the summer, losses to evapotranspiration are high. A small percentage may infiltrate into the exposed bedrock or into alluvial deposits along the canyon floor.

Ephemeral surface-water flows occur in response to precipitation in the drainage basin. Two piezometers (12AUP-01 and CYN-MW2D) were constructed in the Study Area to monitor moisture within the channel deposits at the contact with underlying Precambrian bedrock. No appreciable water has been detected in either piezometer.

Figure 1.3-1 provides the locations of the new groundwater monitoring wells and shows the potentiometric surface for the Study Area monitoring well network based on October 2010 water level measurements. The general direction of groundwater flow beneath the Study Area is to the west as indicated by the potentiometric surface. No water supply wells are located near the Study Area, except for the Burn Site Well that had been used only occasionally before 2003 for nonpotable applications such as fire suppression. Groundwater levels in the Paleozoic rocks near the Study Area are not influenced by regional water supply well pumping from the basin-fill alluvial deposits of the Albuquerque Basin.

The apparent horizontal groundwater gradient based on Study Area wells varies from approximately 0.004 to 0.14 feet per foot (SNL/NM April 2008a). The hydraulic gradient west of the Study Area flattens substantially. The wide-ranging hydraulic gradients in the Study Area indicate that localized groundwater systems associated with brecciated fault zones in the low-permeability fractured bedrock are poorly connected and are effectively compartmentalized.

1.4 Project Objectives

The objectives of this field program were to perform soil sampling at 10 borehole (BH) locations (BH001 through BH010) and to install and develop four groundwater monitoring wells (CYN-MW9, CYN-MW10, CYN-MW11, and CYN-MW12). This report is organized by activity, as follows:

- Chapter 2.0 describes the drilling and sampling of the 10 deep boreholes (BH001 through BH010).
- Chapter 3.0 presents the well installation and development activities for wells CYN-MW9, CYN-MW10, CYN-MW11, and CYN-MW12.
- Chapter 4.0 discusses the land surveying performed for wells CYN-MW9, CYN-MW10, CYN-MW11, and CYN-MW12.
- Chapter 5.0 discusses waste management activities.
- Chapter 6.0 discusses hydrologic slug tests performed on the four new wells.
- Chapter 7.0 addresses variances from the Characterization Work Plan (SNL/NM November 2009).
- Chapter 8.0 discusses groundwater analytical results for two quarters of monitoring.
- Chapter 9.0 lists the references cited in this report.

This report meets the reporting requirements of both the NMED and New Mexico Office of the State Engineer (NMOSE) as described in the Characterization Work Plan (SNL/NM November 2009). The Order specifies the required elements for reporting installation of monitoring wells (NMED April 2004). The NMOSE requirements are provided in “Rules and Regulations Governing Well Driller Licensing; Construction, Repair and Plugging of Wells” (NMOSE August 2005) and in 19.27.4 New Mexico Administrative Code. Appendix A presents the well data required by the NMED for the newly installed BSG monitoring wells.

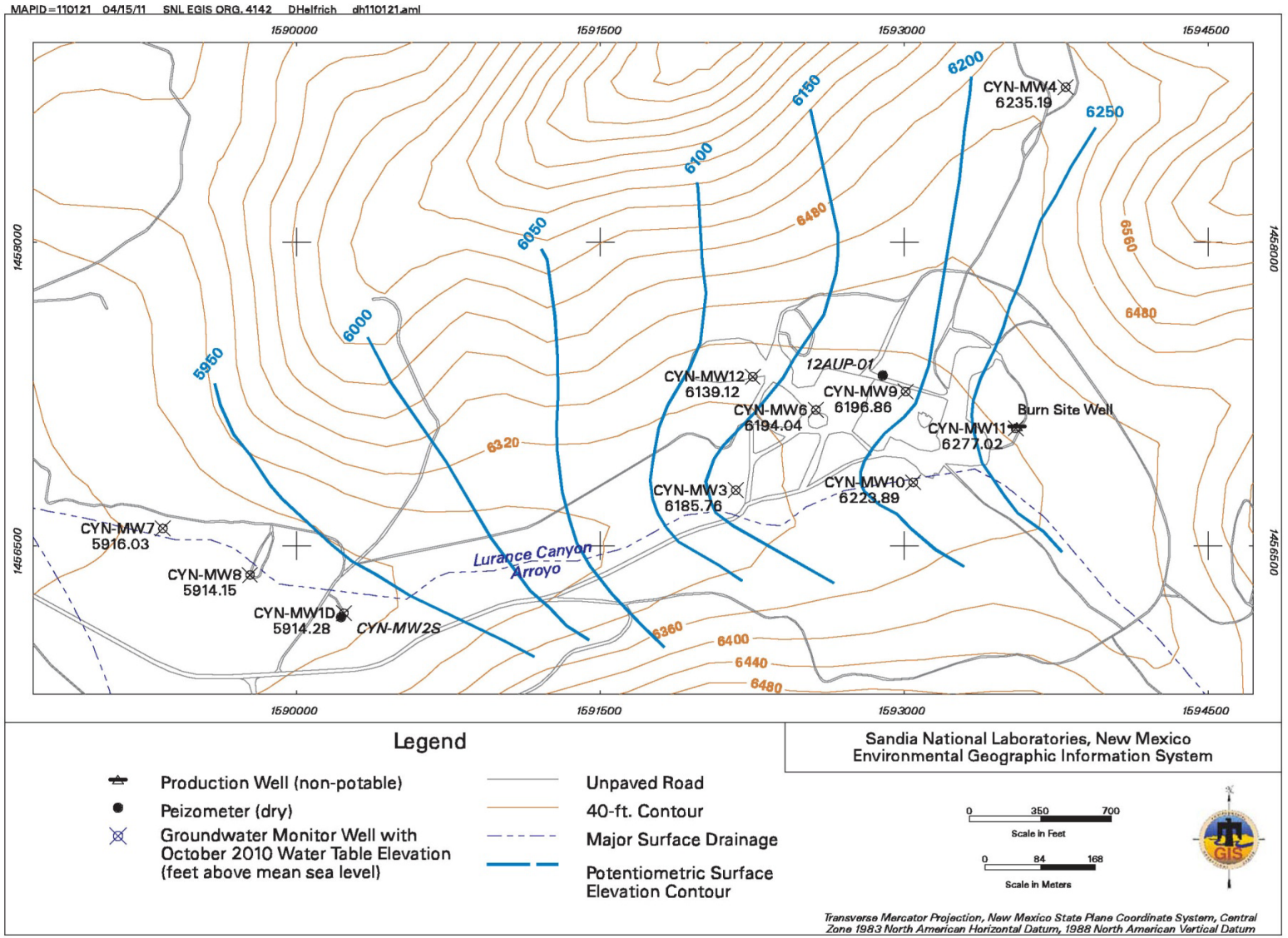

Figure 1.3-1
Burn Site Groundwater Monitoring Well Network and Potentiometric Surface Map (October 2010)

2.0 DRILLING AND SAMPLING OF DEEP BOREHOLES

2.1 Drilling and Sampling

SNL/NM personnel conducted soil sampling in the vicinity of CYN-MW6 to determine whether a continuing source of perchlorate or other constituents of concern is present in unconsolidated deposits. All drilling and soil sampling operations were performed by WDC and supervised by ER Operations personnel. The boreholes at the soil sampling locations were drilled using a hollow-stem auger (HSA) drilling rig and associated equipment. The soil sampling field activities consisted of mobilization, sample collection, and sample shipping. The activities followed the SNL/NM administrative operating procedures (AOPs) and field operating procedures (FOPs) as described in the NMED-approved Characterization Work Plan (SNL/NM November 2009).

Deep borehole drilling and soil sampling were completed in July 2010 and consisted of sampling at 10 locations along two north-south lines that straddle monitoring well CYN-MW6 (Figure 2.1-1). The north-south–trending lines contained five locations each. The western line of sampling locations was established so that location BH003 was within 20 feet of CYN-MW6. The eastern line of sampling locations was placed 200 feet east of the western line to avoid the clean backfill associated with SWMU 94F between the two lines of borehole locations.

Samples were collected from unconsolidated deposits (alluvium and colluvium) at 2 and 5 feet bgs and at approximate 5-foot intervals downward to the top of bedrock (Table 2.1-1). These sampling intervals were target depths only; the unconsolidated deposits contained a considerable percentage of cobbles, and sufficient amounts of soil could not be collected for analysis. Competent bedrock was not sampled. The unconsolidated deposits were found to have a maximum thickness of 35 feet on the southern end of the two sampling lines. The unconsolidated deposits thin rapidly to the north into exposures of bedrock near the northernmost sampling locations.

In accordance with FOP 94-05 (SNL/NM February 1994), a geologist described the lithology of the soil types encountered during drilling. The samples were collected by personnel from the Environmental Field Office (EFO) and quickly transferred from the split spoon into the sample containers. Samples were immediately labeled and placed into a cooler, stored at 4°Celsius (°C), and delivered to the Sample Management Office for processing and shipment to the appropriate analytical laboratory. A completed Analysis Request and Chain-of-Custody form accompanied each shipment.

All soil samples were shipped to GEL Laboratories LLC (GEL) in Charleston, South Carolina, for analyses. Soil samples from all locations and depths were analyzed for nitrate plus nitrite (NPN), perchlorate, semivolatile organic compounds (SVOCs), and volatile organic compounds (VOCs) following EPA analytical methods (Table 2.1-2). GEL was responsible for implementing the requirements of the method, including analytical methodology, target analytes for quantification, and internal quality assurance/quality control procedures.

As previously discussed, the unconsolidated deposits contained a considerable percentage of cobbles. Even with multiple sampling runs at a specified depth, sufficient amounts of soil were not collected in the sample spoon to perform all analyses on all samples. As a result, some sampling depths produced no soil for analyses, and several other sampling depths produced a limited sample volume that required analyte prioritization (Table 2.1-1).

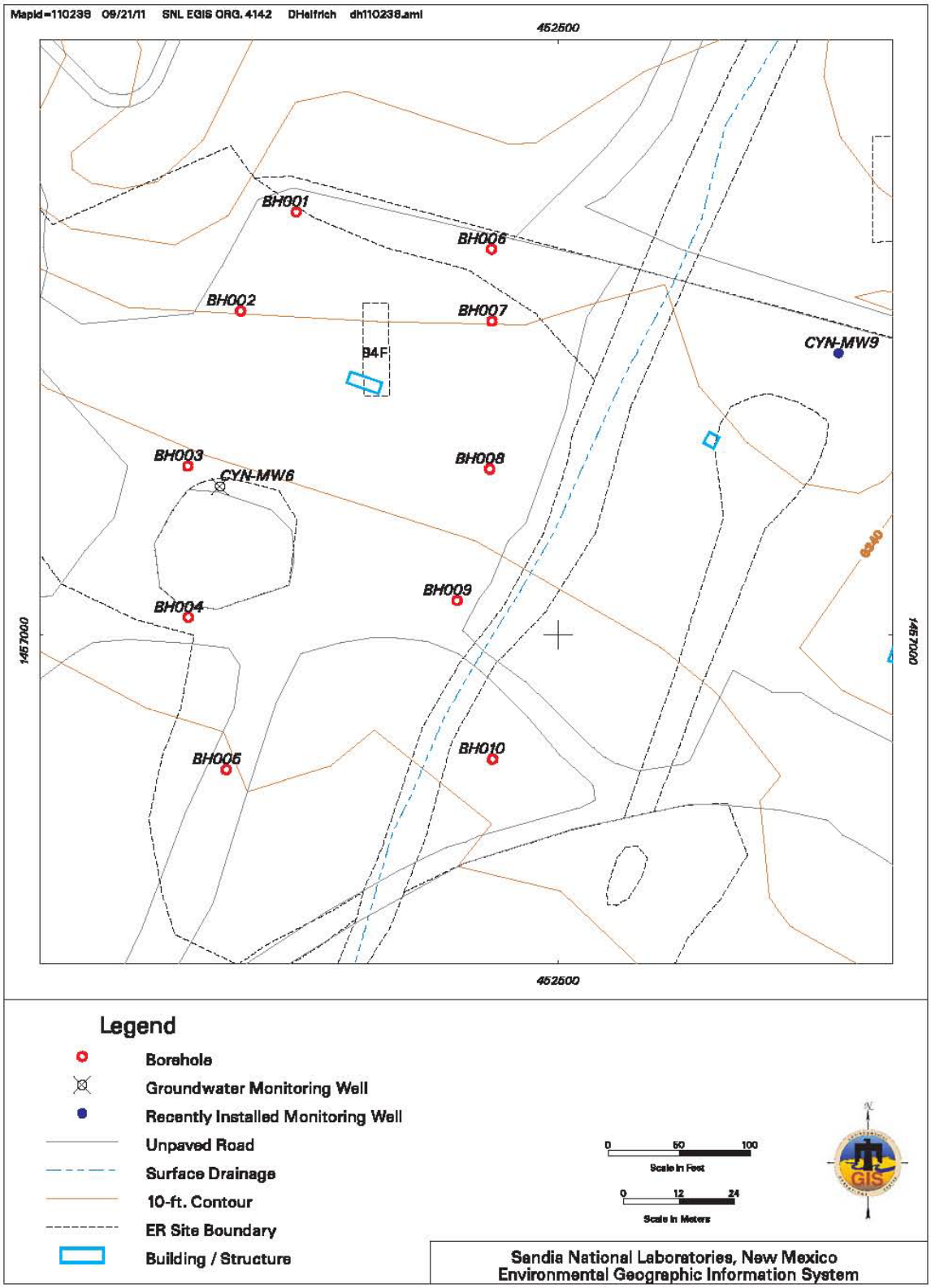

Figure 2.1-1
Burn Site Groundwater Characterization Soil Sampling Locations, July 2010

Table 2.1-1
Summary of Burn Site Groundwater Characterization Soil Samples, July 2010

Sample Location	Sample Interval (ft bgs)	ER Sample ID	Sample Date	AR/COC	Sample Number	Sample Type	Comments
BH001	0–2	BSG-BH001-0002	7-Jul-10	613136	089274	Environmental	
	4.5–5.5	BSG-BH001-0005	7-Jul-10	613136	089275	Environmental	
	9.5–10.5	BSG-BH001-0010	7-Jul-10	613136	089276	Environmental	
	14.5–15.5	BSG-BH001-0015	7-Jul-10	613136	089277	Environmental	
	19.5–20.5	BSG-BH001-0020	7-Jul-10	613136	089278	Environmental	
BH002	0–2	BSG-BH002-0002	8-Jul-10	613137	089282	Environmental	
	0–2	BSG-BH002-0002	8-Jul-10	613137	089283	Duplicate	
	4.5–5.5	BSG-BH002-0005	8-Jul-10	613137	089284	Environmental	
BH003	0–2	BSG-BH003-0002	8-Jul-10	613137	089285	Environmental	
	0–2	BSG-BH003-0002	8-Jul-10	613137	089286	Duplicate	
	4.5–5.5	BSG-BH003-0005	8-Jul-10	613137	089287	Environmental	
BH004	0–2	BSG-BH004-0002	8-Jul-10	613137	089288	Environmental	
	4.5–5.5	BSG-BH004-0005	8-Jul-10	613137	089289	Environmental	
	9.5–10.5	BSG-BH004-0010	8-Jul-10	613137	089290	Environmental	
	14.5–15.5	BSG-BH004-0015	8-Jul-10	613137	089291	Environmental	
BH005	0–2	BSG-BH005-0002	8-Jul-10	613137	089292	Environmental	
	9.5–10.5	BSG-BH005-0010	8-Jul-10	613137	089293	Environmental	
	14.5–15.5	BSG-BH005-0015	8-Jul-10	613137	089294	Environmental	Limited recovery, no VOC sample
	19.5–20.5	BSG-BH005-0020	8-Jul-10	613137	089295	Environmental	Limited recovery, no VOC sample
	24.5–25.5	—	—	—	—	—	Very coarse gravel, no sample recovery
	29.5–30.5	—	—	—	—	—	Very coarse gravel, no sample recovery
	34.5–35.5	BSG-BH005-0035	8-Jul-10	613137	089296	Environmental	Limited recovery, no VOC sample
BH006	0–2	BSG-BH006-0002	8-Jul-10	613138	089298	Environmental	
	4.5 -5.5	BSG-BH006-0005	8-Jul-10	613138	089299	Environmental	Limited recovery, no VOC sample
BH007	0 -2	BSG-BH007-0002	8-Jul-10	613138	089300	Environmental	
	4.5–5.5	BSG-BH007-0005	8-Jul-10	613138	089301	Environmental	
	9.5–10.5	BSG-BH007-0010	8-Jul-10	613138	089302	Environmental	Limited recovery, no VOC sample
BH008	0 -2	BSG-BH008-0002	8-Jul-10	613138	089304	Environmental	
	0 -2	BSG-BH008-0002	8-Jul-10	613138	089305	Duplicate	
	4.5–5.5	BSG-BH008-0005	8-Jul-10	613138	089306	Environmental	
	9.5–10.5	BSG-BH008-0010	8-Jul-10	613138	089307	Environmental	
	14.5 -15.5	BSG-BH008-0015	8-Jul-10	613138	089308	Environmental	
	19.5–20.5	BSG-BH008-0020	8-Jul-10	613138	089309	Environmental	
BH009	0–2	BSG-BH009-0002	8-Jul-10	613139	089311	Environmental	
	4.5–5.5	BSG-BH009-0005	8-Jul-10	613139	089312	Environmental	
	9.5–10.5	BSG-BH009-0010	8-Jul-10	613139	089313	Environmental	
	14.5–15.5	BSG-BH009-0015	8-Jul-10	613139	089314	Environmental	
	19.5–20.5	BSG-BH009-0020	8-Jul-10	613139	089315	Environmental	Limited recovery, no VOC sample
	24.5–25.5	BSG-BH009-0025	8-Jul-10	613139	089316	Environmental	

Refer to footnotes at end of table.

Table 2.1-1 (Concluded)
Summary of Burn Site Groundwater Characterization Soil Samples, July 2010

Sample Location	Sample Interval (ft bgs)	ER Sample ID	Sample Date	AR/COC	Sample Number	Sample Type	Comments
BH010	0–2	BSG-BH010-0002	8-Jul-10	613139	089318	Environmental	
	0–2	BSG-BH010-0002	8-Jul-10	613139	089319	Duplicate	
	4.5–5.5	BSG-BH010-0005	8-Jul-10	613139	089320	Environmental	
	9.5–10.5	BSG-BH010-0010	8-Jul-10	613139	089321	Environmental	
	14.5–15.5	BSG-BH010-0015	8-Jul-10	613139	089322	Environmental	
	19.5–20.5	—	—	—	—	—	Very coarse gravel, no sample recovery
	24.5–25.5	—	—	—	—	—	Very coarse gravel, no sample recovery
	29.5–30.5	—	—	—	—	—	Very coarse gravel, no sample recovery
	34.5–35.5	—	—	—	—	—	Very coarse gravel, no sample recovery. Weathered bedrock in drive shoe.

— = Insufficient soil volume recovered for analysis.
AR/COC = Analysis request/chain-of-custody record.
BH = Borehole.
BSG = Burn Site Groundwater (Study Area).
ER = Environmental Restoration.
ft bgs = Foot (feet) below ground surface.
ID = Identification number.
VOC = Volatile organic compound.

Table 2.1-2
Analytical Parameters for Burn Site Groundwater Characterization Soil Samples

Analyte	Analytical Method	Reference
Nitrate plus Nitrite	EPA 353.2	EPA 1983
Semivolatile Organic Compounds	SW846-8270	EPA 1986 (and updates)
Volatile Organic Compounds	SW846-8260	EPA 1986 (and updates)
Perchlorate	EPA 314.0	EPA 1999

EPA = U.S. Environmental Protection Agency.
SW = Solid Waste.

Several of the borehole locations had to be modified from the locations proposed in the original Characterization Work Plan figure due to geologic or logistical reasons (Table 2.1-3). Bedrock exposed at the land surface did not permit geologic sampling of unconsolidated deposits. Logistical reasons for slight adjustments of the borehole locations include buried utilities and topography that precluded the safe operation of the drill rig. After sampling was complete, the boreholes were located by SNL/NM GIS [Geographic Information Systems] staff using a hand-held Trimble Global Positioning System unit. The New Mexico State Plane Coordinate System (NMSPC) coordinates for the boreholes are provided in Table 2.1-3.

Table 2.1-3
Location Data for July 2010 Boreholes in the Burn Site Groundwater Study Area

Borehole Location ID	NMSPC Coordinates[a]		Comments
	Northing	Easting	
BH001	1,457,361	1,592,625	Moved ~80 ft east from the proposed location due to geologic conditions
BH002	1,457,291	1,592,586	Moved ~40 ft east from the proposed location due to underground utilities
BH003	1,457,182	1,592,549	
BH004	1,457,076	1,592,549	
BH005	1,456,968	1,592,576	Moved ~25 ft east from the proposed location due to drill rig access issues
BH006	1,457,334	1,592,763	Moved ~40 ft south from the proposed location due to geologic conditions
BH007	1,457,284	1,592,763	
BH008	1,457,180	1,592,761	
BH009	1,457,087	1,592,738	Moved ~25 ft west from the proposed location due to drill rig access issues
BH010	1,456,976	1,592,763	

[a]Coordinates based on the NMSPC, Central Zone, NAD of 1983 converted mathematically from NAD of 1927 using ARC/Info Workstation Automated Machine Language.
BH = Borehole.
ft = Foot (feet).
ID = Identification number.
NAD = North American Datum.
NMSPC = New Mexico State Plane Coordinate System.

2.2 Soil Sampling Analytical Results

The analytical results for detected analytes in the soil samples are presented in Tables 2.2-1 through 2.2-3. As required by Section VI.K.2 of the Order (NMED April 2004), the concentrations reported in site soil samples were compared with the soil screening levels (SSLs) presented in "New Mexico Environment Department Technical Background Document for Development of Soil Screening Levels, Revision 5.0" (NMED August 2009). For comparison purposes, the tables provide the following three values (if available) for each analyte: (1) the SSL for residential soil; (2) the SSL for the groundwater pathway with a dilution attenuation factor (DAF) of 20; and (3) the SSL for the groundwater pathway with a DAF of 1. This section summarizes the analytical results for each analyte or group of analytes, and Section 2.3 discusses the extent of these analytes in the Study Area soil.

Table 2.2-1
Summary of 2010 Soil Sample Nitrate plus Nitrite
Analytical Results for the Burn Site Groundwater Study Area

Sample Attributes			NPN[b] (EPA Method 353.2) (mg/kg)
Record Number[a]	ER Sample ID	Sample Depth (ft)	
613136	BSG-BH001-0002	0–2	1.09 J
613136	BSG-BH001-0005	4.5–5.5	5.02 J
613136	BSG-BH001-0010	9.5–10.5	3.32 J
613136	BSG-BH001-0015	14.5–15.5	0.794 J
613136	BSG-BH001-0020	19.5–20.5	4.83 J
613137	BSG-BH002-0002	0–2	2.48 J
613137	BSG-BH002-0002—DUP	0–2	3.39 J
613137	BSG-BH002-0005	4.5–5.5	2.73 J
613137	BSG-BH003-0002	0–2	15.7 J
613137	BSG-BH003-0002—DUP	0–2	18.6 J
613137	BSG-BH003-0005	4.5–5.5	25.1 J
613137	BSG-BH004-0002	0–2	19.7 J
613137	BSG-BH004-0005	4.5–5.5	5.34 J
613137	BSG-BH004-0010	9.5–10.5	0.484 J
613137	BSG-BH004-0015	14.5–15.5	0.377 J
613137	BSG-BH005-0002	0–2	0.715 J
613137	BSG-BH005-0010	9.5–10.5	0.424 J
613137	BSG-BH005-0015	14.5–15.5	0.413 J
613137	BSG-BH005-0020	19.5–20.5	0.412 J
613137	BSG-BH005-0035	34.5–35.5	0.651 J+
613138	BSG-BH006-0002	0–2	1.59 J+
613138	BSG-BH006-0005	4.5 -5.5	5.38 J+
613138	BSG-BH007-0002	0 -2	2.29 J+
613138	BSG-BH007-0005	4.5–5.5	1.13 J+
613138	BSG-BH007-0010	9.5–10.5	5.17 J+
613138	BSG-BH008-0002	0 -2	4.74 J+
613138	BSG-BH008-0002—DUP	0 -2	7.15 J+
613138	BSG-BH008-0005	4.5–5.5	9.49 J+
613138	BSG-BH008-0010	9.5–10.5	13.8 J+
613138	BSG-BH008-0015	14.5 -15.5	2.94 J+
613138	BSG-BH008-0020	19.5–20.5	8.14 J+
613139	BSG-BH009-0002	0–2	2.14 J+
613139	BSG-BH009-0005	4.5–5.5	3.33 J+
613139	BSG-BH009-0010	9.5–10.5	2.41 J+
613139	BSG-BH009-0015	14.5–15.5	1.59 J+
613139	BSG-BH009-0020	19.5–20.5	4.53 J+
613139	BSG-BH009-0025	24.5–25.5	4.38 J+
613139	BSG-BH010-0002	0–2	1.60 J+
613139	BSG-BH010-0002—DUP	0–2	1.28 J+

Refer to footnotes at end of table.

Table 2.2-1 (Concluded)
Summary of 2010 Soil Sample Nitrate plus Nitrite
Analytical Results for the Burn Site Groundwater Study Area

Sample Attributes			NPN[b] (EPA Method 353.2) (mg/kg)
Record Number[a]	ER Sample ID	Sample Depth (ft)	
613139	BSG-BH010-0005	4.5–5.5	0.338 J+
613139	BSG-BH010-0010	9.5–10.5	0.496 J+
613139	BSG-BH010-0015	14.5–15.5	1.32 J+

[a]Analysis request/chain-of-custody record.
[b]For data comparison purposes:
NMED Soil Screening Level for Nitrate, Residential is 125,000 mg/kg.
NMED Soil Screening Level for Nitrate, Groundwater Pathway, DAF of 20 is 335 mg/kg.
NMED Soil Screening Level for Nitrate, Groundwater Pathway, DAF of 1 is 16.7 mg/kg.
Reference: NMED August 2009, "New Mexico Environment Department Technical Background Document for Development of Soil Screening Levels, Revision 5.0."

BH = Borehole.
BSG = Burn Site Groundwater (Study Area).
DAF = Dilution Attenuation Factor.
DUP = Duplicate.
EPA = U.S. Environmental Protection Agency
ER = Environmental Restoration.
ft = Foot (feet).
ID = Identification number.
J = Estimated value as determined during data validation.
J+ = Estimated value with a suspected positive bias as determined during data validation.
mg/kg = Milligram(s) per kilogram.
NMED = New Mexico Environment Department.
NPN = Nitrate plus nitrite.

Table 2.2-2
Summary of 2010 Soil Sample Semivolatile Organic Compound
Analytical Results for the Burn Site Groundwater Study Area

Sample Attributes			SVOCs[b] (EPA Method 8270) (µg/kg)
Record Number[a]	ER Sample ID	Sample Depth (ft)	bis(2-Ethylhexyl)phthalate
613136	BSG-BH001-0002	0–2	ND (<66.7)
613136	BSG-BH001-0005	4.5–5.5	ND (<66.6)
613136	BSG-BH001-0010	9.5–10.5	ND (<66.7)
613136	BSG-BH001-0015	14.5–15.5	ND (<66.7)
613136	BSG-BH001-0020	19.5–20.5	131
613137	BSG-BH002-0002	0–2	87.9
613137	BSG-BH002-0002—DUP	0–2	131
613137	BSG-BH002-0005	4.5–5.5	110
613137	BSG-BH003-0002	0–2	ND (<66.6)
613137	BSG-BH003-0002—DUP	0–2	ND (<66.6)
613137	BSG-BH003-0005	4.5–5.5	96.2
613137	BSG-BH004-0002	0–2	ND (<66.7)
613137	BSG-BH004-0005	4.5–5.5	ND (<66.5)
613137	BSG-BH004-0010	9.5–10.5	ND (<66.7)
613137	BSG-BH004-0015	14.5–15.5	ND (<66.5)
613137	BSG-BH005-0002	0–2	ND (<66.7)
613137	BSG-BH005-0010	9.5–10.5	ND (<66.6)
613137	BSG-BH005-0015	14.5–15.5	ND (<66.6)
613137	BSG-BH005-0020	19.5–20.5	ND (<66.5)
613137	BSG-BH005-0035	34.5–35.5	ND (<66.6)
613138	BSG-BH006-0002	0–2	ND (<66.7)
613138	BSG-BH006-0005	4.5 -5.5	ND (<66.7)
613138	BSG-BH007-0002	0 -2	ND (<66.6)
613138	BSG-BH007-0005	4.5–5.5	ND (<66.6)
613138	BSG-BH007-0010	9.5–10.5	ND (<66.6)
613138	BSG-BH008-0002	0 -2	ND (<66.6)
613138	BSG-BH008-0002—DUP	0 -2	ND (<66.7)
613138	BSG-BH008-0005	4.5–5.5	ND (<66.6)
613138	BSG-BH008-0010	9.5–10.5	ND (<66.7)
613138	BSG-BH008-0015	14.5 -15.5	ND (<66.5)
613138	BSG-BH008-0020	19.5–20.5	ND (<66.6)
613139	BSG-BH009-0002	0–2	ND (<66.5)
613139	BSG-BH009-0005	4.5–5.5	ND (<333) U
613139	BSG-BH009-0010	9.5–10.5	ND (<66.6)
613139	BSG-BH009-0015	14.5–15.5	ND (<66.7)
613139	BSG-BH009-0020	19.5–20.5	ND (<66.5)
613139	BSG-BH009-0025	24.5–25.5	ND (<66.6)
613139	BSG-BH010-0002	0–2	ND (<66.6)
613139	BSG-BH010-0002—DUP	0–2	ND (<66.5)

Refer to footnotes at end of table.

Table 2.2-2 (Concluded)
Summary of 2010 Soil Sample Semivolatile Organic Compound
Analytical Results for the Burn Site Groundwater Study Area

Sample Attributes			SVOCs[b] (EPA Method 8270) (µg/kg)
Record Number[a]	ER Sample ID	Sample Depth (ft)	bis(2-Ethylhexyl)phthalate
613139	BSG-BH010-0005	4.5–5.5	ND (<66.4)
613139	BSG-BH010-0010	9.5–10.5	ND (<66.3)
613139	BSG-BH010-0015	14.5–15.5	ND (<66.2)

[a]Analysis request/chain-of-custody record.
[b]For data comparison purposes:
NMED Soil Screening Level for bis(2-Ethylhexyl)phthalate, Residential is 347,000 µg/kg.
NMED Soil Screening Level for bis(2-Ethylhexyl)phthalate, Groundwater Pathway, DAF of 20 is 238,000 µg/kg.
NMED Soil Screening Level for bis(2-Ethylhexyl)phthalate, Groundwater Pathway, DAF of 1 is 11,900 µg/kg.
Reference: NMED August 2009, "New Mexico Environment Department Technical Background Document for Development of Soil Screening Levels, Revision 5.0."

BH = Borehole.
BSG = Burn Site Groundwater (Study Area).
DAF = Dilution Attenuation Factor.
DUP = Duplicate.
EPA = U.S. Environmental Protection Agency.
ER = Environmental Restoration.
ft = Foot (feet).
ID = Identification number.
µg/kg = Microgram(s) per kilogram.
ND = Final concentration in the sample was found to be below the effective detection limit (in parentheses).
NMED = New Mexico Environment Department.
SVOC = Semivolatile organic compound.
U = Not detected below effective practical quantitation limit as determined during data validation (in parentheses).

Table 2.2-3
Summary of 2010 Soil Sample Volatile Organic Compound
Analytical Results for the Burn Site Groundwater Study Area

Sample Attributes			VOCs[b] (EPA Method 8260) (µg/kg)	
Record Number[a]	ER Sample ID	Sample Depth (ft)	Toluene	Xylene
613136	BSG-BH001-0002	0–2	ND (<0.300)	ND (<0.300)
613136	BSG-BH001-0005	4.5–5.5	1.03	ND (<0.300)
613136	BSG-BH001-0010	9.5–10.5	0.750	ND (<0.300)
613136	BSG-BH001-0015	14.5–15.5	5.99	ND (<0.300)
613136	BSG-BH001-0020	19.5–20.5	ND (<0.300)	ND (<0.300)
613137	BSG-BH002-0002	0–2	ND (<0.300)	0.350
613137	BSG-BH002-0002—DUP	0–2	ND (<0.300)	ND (<0.300)
613137	BSG-BH002-0005	4.5–5.5	4.10	ND (<0.300)
613137	BSG-BH003-0002	0–2	ND (<0.300)	0.320
613137	BSG-BH003-0002—DUP	0–2	ND (<0.300)	ND (<0.300)
613137	BSG-BH003-0005	4.5–5.5	20.4	ND (<0.300)
613137	BSG-BH004-0002	0–2	ND (<0.300)	0.550
613137	BSG-BH004-0005	4.5–5.5	9.84	ND (<0.300)
613137	BSG-BH004-0010	9.5–10.5	ND (<0.300)	ND (<0.300)
613137	BSG-BH004-0015	14.5–15.5	31.9	ND (<0.300)
613137	BSG-BH005-0002	0–2	ND (<0.300)	ND (<0.300)
613137	BSG-BH005-0010	9.5–10.5	3.75	ND (<0.300)
613138	BSG-BH006-0002	0–2	ND (<0.300)	0.430
613138	BSG-BH007-0002	0 -2	ND (<0.300)	0.380
613138	BSG-BH007-0005	4.5–5.5	11.9	ND (<0.300)
613138	BSG-BH008-0002	0 -2	ND (<0.300)	ND (<0.300)
613138	BSG-BH008-0002—DUP	0 -2	ND (<0.300)	0.340
613138	BSG-BH008-0005	4.5–5.5	19.6	ND (<0.300)
613138	BSG-BH008-0010	9.5–10.5	26.4	0.640
613138	BSG-BH008-0015	14.5 -15.5	15.4	ND (<0.300)
613138	BSG-BH008-0020	19.5–20.5	2.21	ND (<0.300)
613139	BSG-BH009-0002	0–2	ND (<0.300)	ND (<0.300)
613139	BSG-BH009-0005	4.5–5.5	5.05	ND (<0.300)
613139	BSG-BH009-0010	9.5–10.5	11.4	ND (<0.300)
613139	BSG-BH009-0015	14.5–15.5	9.44	ND (<0.300)
613139	BSG-BH009-0025	24.5–25.5	2.01	ND (<0.300)
613139	BSG-BH010-0002	0–2	ND (<0.300)	0.410
613139	BSG-BH010-0002—DUP	0–2	ND (<0.300)	ND (<0.300)

Refer to footnotes at end of table.

Table 2.2-3 (Concluded)
Summary of 2010 Soil Sample Volatile Organic Compound
Analytical Results at the Burn Site Groundwater Study Area

Sample Attributes			VOCs[b] (EPA Method 8260) (µg/kg)	
Record Number[a]	ER Sample ID	Sample Depth (ft)	Toluene	Xylene
613139	BSG-BH010-0005	4.5–5.5	4.44	ND (<0.300)
613139	BSG-BH010-0010	9.5–10.5	8.9	ND (<0.300)
613139	BSG-BH010-0015	14.5–15.5	10.8	0.340

[a]Analysis request/chain-of-custody record.
[b]For data comparison purposes:
NMED Soil Screening Levels for Toluene and Xylene, Residential are 5,570,000 and 1,090,000 µg/kg, respectively.
NMED Soil Screening Levels for Toluene and Xylene, Groundwater Pathway, DAF of 20 are 27,700 and 3,520 µg/kg, respectively.
NMED Soil Screening Levels for Toluene and Xylene, Groundwater Pathway, DAF of 1 are 1,380 and 176 µg/kg, respectively.
Reference: NMED August 2009, "New Mexico Environment Department Technical Background Document for Development of Soil Screening Levels, Revision 5.0."

BH = Borehole.
BSG = Burn Site Groundwater (Study Area).
DAF = Dilution Attenuation Factor.
DUP = Duplicate.
EPA = U.S. Environmental Protection Agency.
ER = Environmental Restoration.
ft = Foot (feet).
ID = Identification number.
µg/kg = Microgram(s) per kilogram.
ND = Final concentration in the sample was found to be below the effective detection limit (in parentheses).
NMED = New Mexico Environment Department.
VOC = Volatile organic compound.

Perchlorate. Of 42 samples analyzed, all results were nondetected at a method detection limit (MDL) of 0.040 milligrams per kilogram (mg/kg).

NPN. Of 42 samples analyzed, all results indicated detectable concentrations, ranging from 0.338J (where "J" represents an estimated concentration) to 25.1J mg/kg (Table 2.2-1). All the concentration results were assigned "J" or "J+" estimated values based on data validation findings. The NPN concentrations are four orders of magnitude below the NMED SSL for residential soil, and less than one order of magnitude below the NMED SSL for the groundwater pathway with a DAF of 20 (335 mg/kg). Four of the results are within the range (slightly below to slightly above) of the NMED SSL for the groundwater pathway with a DAF of 1 (16.7 mg/kg).

SVOCs. Of 42 samples analyzed, only bis(2-ethylhexyl)phthalate was detected in 5 samples at concentrations ranging from 87.9 to 131 micrograms per kilogram (µg/kg) (Table 2.2-2). All detected values are reported at concentrations above the effective MDL and below the effective practical quantitation limit (PQL). One sample result was qualified during data validation as not detected as the compound was reported at a concentration less than 10 times the method blank contamination and less than the effective PQL. The concentrations of bis(2-ethylhexyl)phthalate are extremely low, several orders of magnitude below the NMED SSLs. This SVOC is a common laboratory contaminant.

VOCs. Of 36 samples analyzed, only toluene and xylene (total xylenes) were detected (Table 2.2-3). Toluene was detected in 20 samples at concentrations ranging from 0.750 to 31.9 µg/kg, and xylene (total xylenes) was detected in 9 samples at concentrations ranging from 0.320 to 0.640 µg/kg. One toluene result and all xylene results were detected at concentrations above the MDL and below the PQL. The concentrations of toluene and xylene (total xylenes) are very low, several orders of magnitude below the NMED SSLs. These two VOCs are common laboratory contaminants.

2.3 Extent of Constituents of Concern in Burn Site Groundwater Study Area Soil

Figure 2.3-1 shows the distribution of NPN concentrations in the Study Area soil samples. NPN was detected at all depths within each of the 10 boreholes. The maximum concentration (25.1J mg/kg) was detected at the 5-foot depth in BH003 adjacent to groundwater monitoring well CYN-MW6. Other locations with the higher concentrations include the 2-foot depth in BH004 and the 10-foot depth in BH008; these locations are adjacent to BH003. No systematic vertical distribution of the NPN concentrations is apparent.

Figure 2.3-2 shows the distribution of bis(2-ethylhexyl)phthalate concentrations in the Study Area soil samples. Extremely low concentrations of bis(2-ethylhexyl)phthalate were detected in samples from BH001, BH002, and BH003, located in the northwestern corner of the Study Area with a maximum concentration of 131 µg/kg. No systematic vertical distribution of the bis(2-ethylhexyl)phthalate concentrations is apparent.

Figure 2.3-3 shows the distribution of toluene, and Figure 2.3-4 shows the distribution of xylenes (total) concentrations in the Study Area soil samples. As seen with bis(2-ethylhexyl)phthalate, concentrations of toluene and xylenes (total) are extremely low with no apparent systematic distribution of the concentrations.

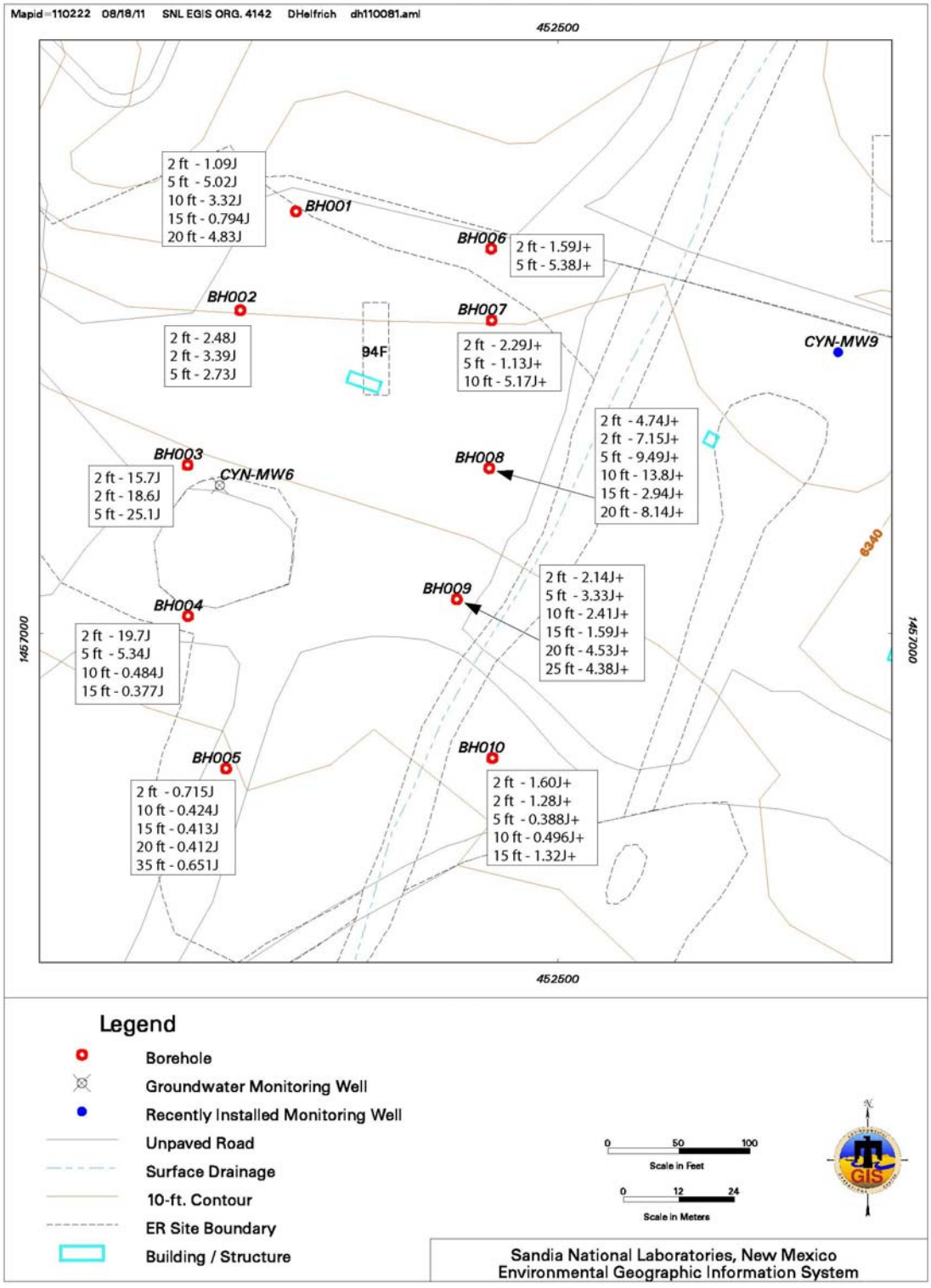

Figure 2.3-1
Nitrate plus Nitrite (NPN) Results (mg/kg) for
Burn Site Groundwater Characterization Soil Samples, July 2010

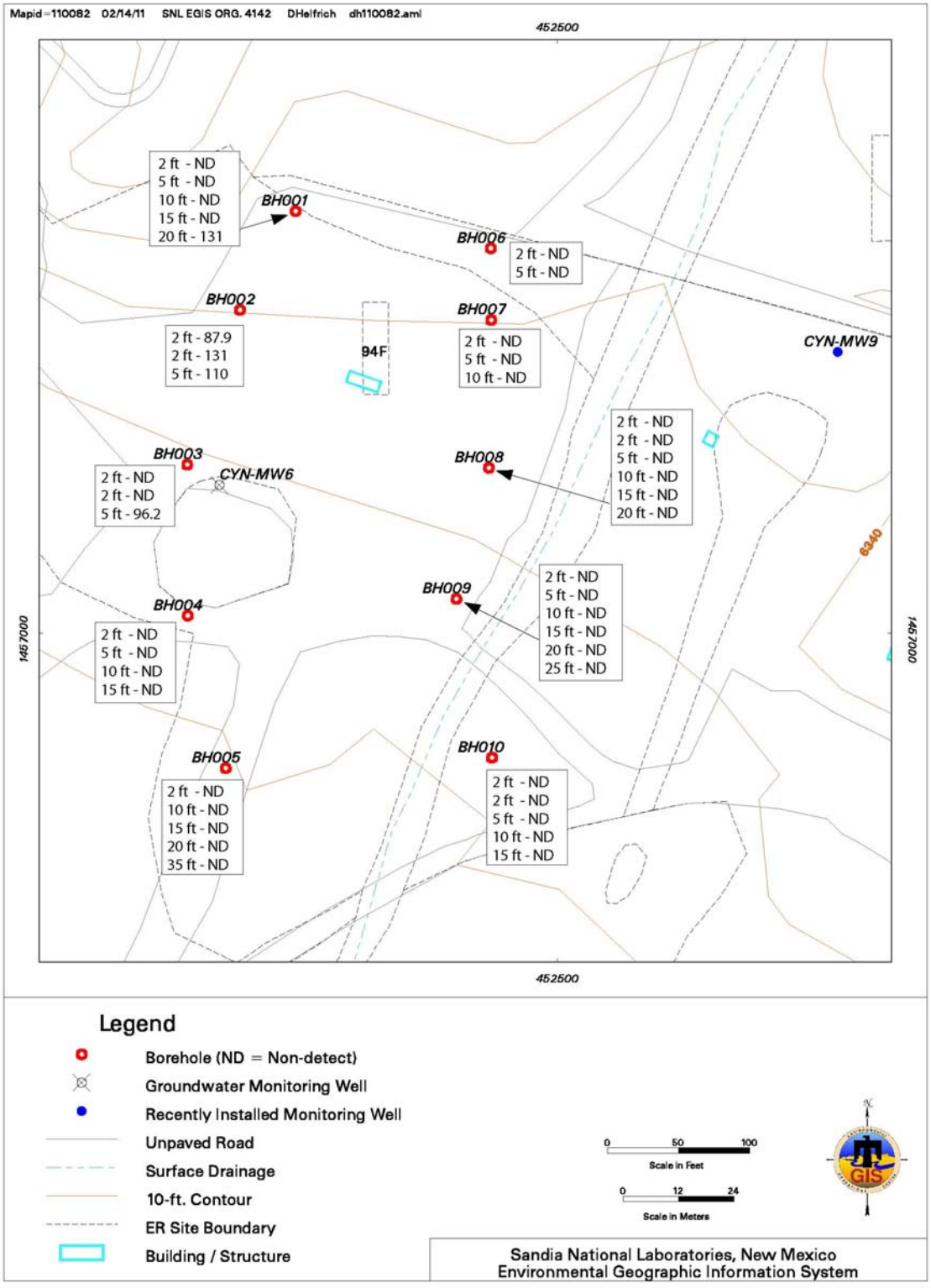

Figure 2.3-2
bis(2-Ethylhexyl)phthalate Results (µg/kg) for
Burn Site Groundwater Characterization Soil Samples, July 2010

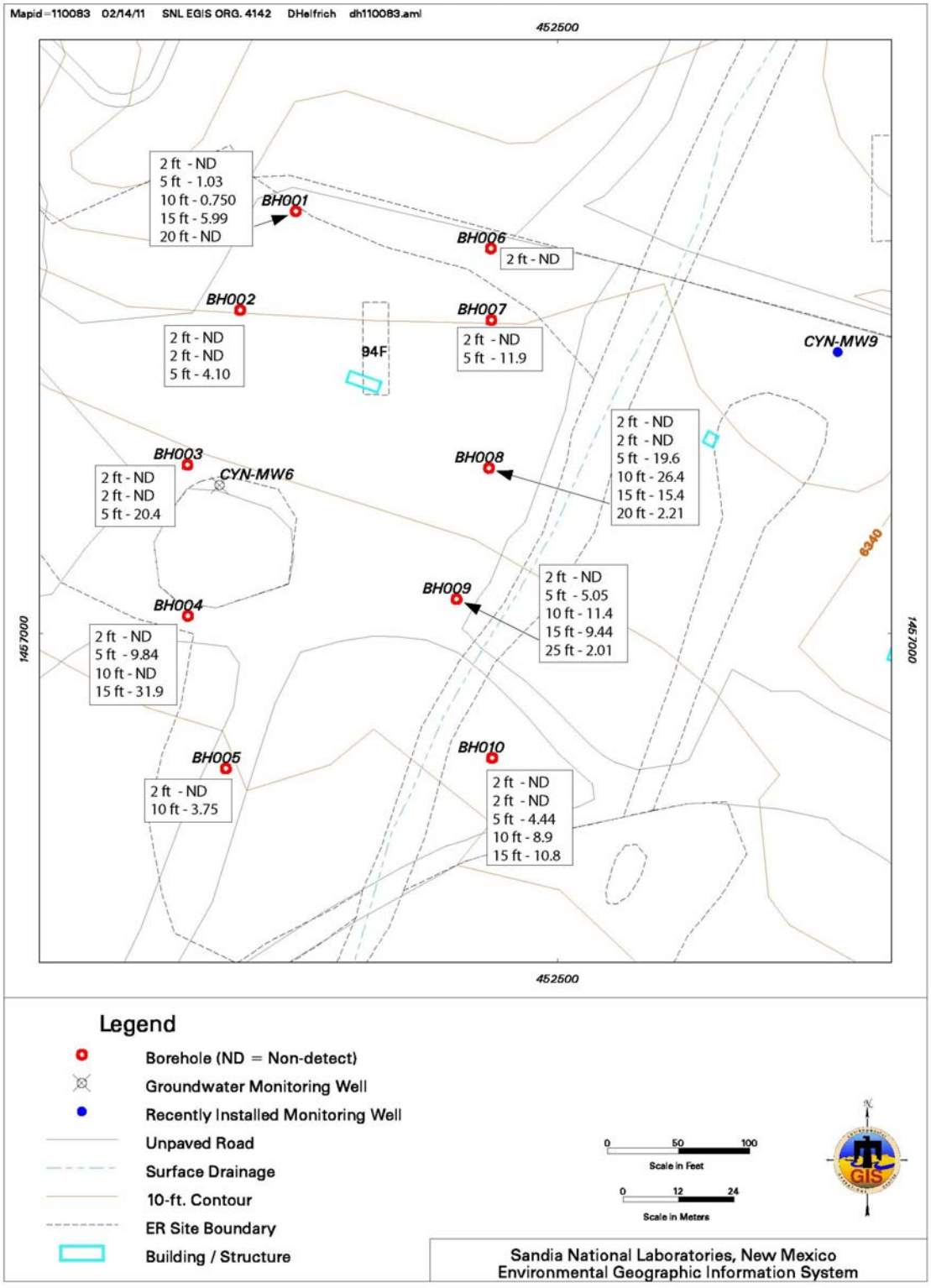

Figure 2.3-3
Toluene Results (µg/kg) for
Burn Site Groundwater Characterization Soil Samples, July 2010

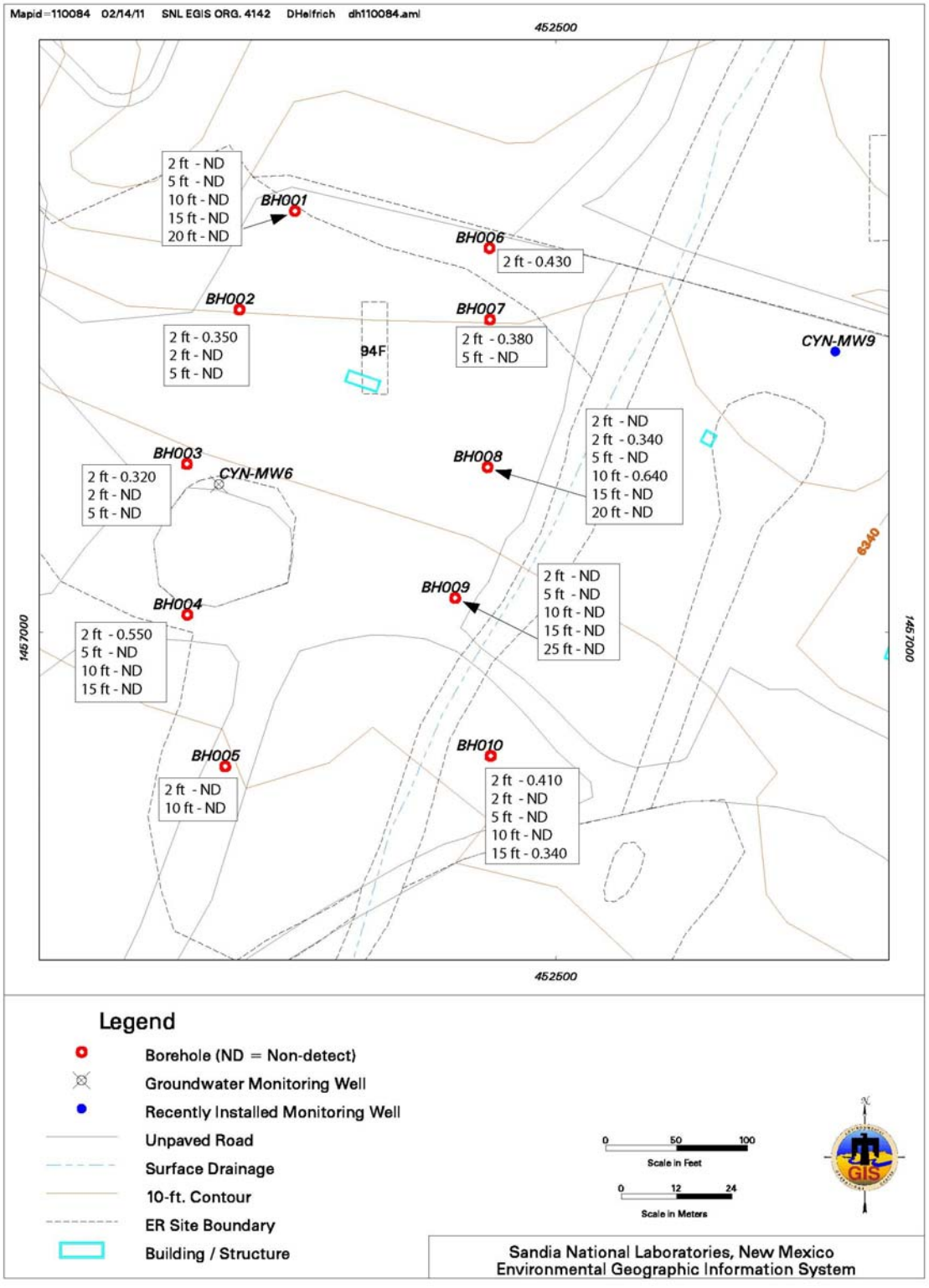

Figure 2.3-4
Xylene (Total Xylenes) Results (µg/kg) for
Burn Site Groundwater Characterization Soil Samples, July 2010

In summary, perchlorate was not detected in any sample, and the VOC and SVOC concentrations reported are negligible. Although NPN was detected in every soil sample, the concentrations do not present a risk to human health or represent a significant source of nitrate that could further impact groundwater. The groundwater pathway at the Study Area is best represented by the DAF of 20 (deep groundwater, confined conditions due to filled fractures in the upper portion of the bedrock), and all NPN concentrations detected are significantly less than the NMED SSL 335 mg/kg.

Based on the best professional judgment of SNL/NM personnel, the concentrations of these detected compounds did not justify a second phase of deep soil sampling, and it was proposed to the NMED that Phase 2 sampling was not necessary. On August 4, 2010, DOE, Sandia, and NMED personnel met to discuss the Phase 1 soil sampling results. During this meeting, the DOE, Sandia, and NMED reached mutual agreement that based on the perchlorate, NPN, VOC, and SVOC results, a second phase of soil sampling was not required (Tso August 2010).

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3.0 MONITORING WELL DRILLING, INSTALLATION, AND DEVELOPMENT

All drilling and monitoring well installation operations were performed by WDC and supervised by SNL/NM ER Operations personnel. The boreholes for groundwater monitoring wells CYN-MW9, CYN-MW10, CYN-MW11, and CYN-MW12 (Figure 1.3-1) were drilled using the air-rotary casing hammer (ARCH) method with a Speedstar 50K drilling rig and associated equipment.

The following sections describe the borehole drilling and well construction for each of the four new BSG groundwater monitoring wells. Lithologic logs based on the cuttings returned from the boreholes were generated by the ER Operations geologists and are provided in Appendix B. Appendix C contains the well construction diagrams. Complete field documentation, field forms, daily driller reports, lithologic and geophysical logs, and other documentation for this project are on file at the SNL/NM Customer Funded Records Center.

3.1 General Procedures

The drilling equipment was decontaminated with a high-pressure water sprayer (steam cleaner) at a temporary on-site decontamination pad prior to the start of drilling operations. The first 16 to 36 feet of each borehole were advanced with a tricone bit and 9-5/8–inch outside diameter (OD) drive casing to accommodate drilling through the unconsolidated deposits above competent bedrock. After a sufficient socket was drilled into competent bedrock, the drive casing was left in place and the remainder of the borehole was drilled with straight air rotary.

The lithology of the borehole (based on cuttings returned to the surface during drilling) consisted of unconsolidated to semiconsolidated deposits of silt, sand, and gravel. The bedrock at all locations consisted of Precambrian greenish-gray to reddish-pink phyllite. In addition to describing the cuttings returned to the surface, each borehole was video-logged before well materials were installed (Appendix D).

All well materials were installed through the temporary steel drive casing, and the well annulus was grouted to the surface. The well was constructed of nominal 5-inch-diameter (inside diameter of 4.767 inches and OD of 5.563 inches), Schedule 80 PVC, flush-threaded, blank casing and a 20-foot length of 0.020-inch slot, Schedule 80 PVC screen. The sump consisted of a 5-foot length of nominal 5-inch-diameter, Schedule 80 PVC, flush-threaded, blank casing with a threaded end cap placed at the bottom. A 5-inch-long PVC plug was placed in the bottom of the sump to reduce the possibility of dislodging the end cap during future well development and sampling activities. PVC centralizers were placed above and below the screen section and subsequently at every 100 feet along the blank casing.

Colorado Silica Sand (CSS) (No. 10-20) was used as the primary sand pack in the annulus around the screen and extended approximately 5 feet above the top of the screen. A secondary sand pack using No. 60 CSS was placed above the primary sand pack. A bentonite chip plug consisting of 3/8-inch Holeplug™ bentonite chips was placed above the secondary filter pack. The chips were hydrated with approximately 50 gallons of water, and the plug was allowed to set (hydrate) before the first lift of bentonite grout was pumped into the well annulus with a tremie pipe.

Bentonite grout (consisting of Quik Grout™ granulated bentonite and water) was used to fill the remainder of the well annulus to the surface. The first lift of approximately 100 feet of grout (consisting of eight 50-pound bags of Quik Grout™ plus 300 gallons of water) was pumped into the well annulus with a tremie pipe and allowed to set for 24 hours. The subsequent lifts of grout (each batch consisting of eight 50-pound bags of Quik Grout™ plus 300 gallons of water) were then pumped into the annulus with the tremie pipe in approximate 100-foot lifts until the annulus was filled to the surface.

3.2 Wellhead Construction

The wellhead construction for all four groundwater monitoring wells was similar and followed procedures described in the approved Characterization Work Plan (SNL/NM November 2009). For each well, the inner well PVC casing was cut to approximately 30 inches above the ground surface, and a 10-foot length of nominal 12-inch-diameter steel casing was used as the protective casing at the surface. The steel casing, equipped with a hinged locking cap, was placed approximately 7 feet bgs and 3 feet above the ground surface. A fitted locking well cap was also placed on the PVC casing. Concrete was poured into the annulus from the final top of the grout (approximately 5 to 10 feet bgs in each borehole) to the surface. A 3- by 3-foot concrete pad was built around the casing, and a brass marker cap stamped with the well name was placed in the pad. Four steel guard posts were placed around the pad, and the posts and protective casing were painted yellow.

3.3 Well Development

Well development of newly installed wells was performed in accordance with the Well Development FOP 94-41 (SNL/NM November 1994) and the approved Characterization Work Plan (SNL/NM November 2009). The wells were developed with the WDC well development rig.

The following water quality parameters were measured and recorded during well development to determine whether representative water was being produced from the wells at the conclusion of the development process:

- Temperature (°C)
- Specific Conductivity (SC) (micromhos/centimeter)
- pH
- Turbidity (measured in nephelometric turbidity units)

The well development field forms that were completed during development of each of the four wells are provided in Appendix E.

The predevelopment water level readings and the calculated saturated wellbore volumes (defined as the volume of water in the saturated portion of the well screen plus the volume of water in the pore spaces of the annular sand pack [estimated at 30% porosity] adjacent to the saturated portion of the screen) were calculated for the four wells. Because the wells had completely submerged screens, they all have the same wellbore volume of approximately 43 gallons. Therefore, the target volume of 5 saturated wellbores was approximately 215 gallons. The FOP (SNL/NM November 1994) defines the completion of well development at the point where the minimum wellbore volumes have been removed and representative water is obtained. Representative water is obtained when pH, temperature, turbidity, and SC

measurements are within 10% for three consecutive readings. The final water quality parameters measured during well development are presented in Table 3.3-1.

Table 3.3-1
Final Water Quality Parameters Measured During Well Development

Well	Date	Total Gallons Bailed and Pumped	Temperature (°C)	Specific Conductivity (µS/cm)	pH	Turbidity (NTU)
CYN-MW9	27-Jul-2010	296	21.90	1162	6.72	8.33
CYN-MW10	28-Jul-2010	200	19.82	958	7.06	2.17
CYN-MW11	29-Jul-2010	406	18.99	1002	7.01	4.03
CYN-MW12	29-Jul-2010	435	22.60	1073	6.74	2.47

°C = Degree(s) Celsius.
µS/cm = Microsiemen(s)/centimeter (equivalent to micromhos/centimeter).
CYN = Canyons (Burn Site Groundwater).
MW = Monitoring well.
NTU = Nephelometric turbidity unit.

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4.0 MONITORING WELL LAND SURVEYING

Land surveying for the four new wells was completed in the field on August 18, 2010. The survey determined the New Mexico State Plane northing and easting coordinates and high precision elevations (reported to 0.01 feet above mean sea level) of the ground surface, concrete well pad, top of the north side of the PVC well casing, and top of the north side of the protective steel casing. This work was completed by registered professional surveying personnel from Survey Control, Inc., and the survey results were transmitted to SNL/NM personnel on August 26, 2010.

Well coordinate and elevation data is presented in Table 4-1 and on the well construction diagrams in Appendix C of this report. Until recently, ER Operations provided survey coordinates that were based on the NMSPC, Central Zone, North American Datum (NAD) of 1927 and Northern Geographic Vertical Datum of 1929 for elevations. To be consistent with current SNL/NM Facilities and KAFB survey practices, ER Operations survey data now are based on NMSPC Central Zone, NAD of 1983 and North American Vertical Datum of 1988. Location information for older wells has been mathematically converted to the new datum using National Geodetic Survey-approved software. All previously submitted survey data for the preexisting wells are superseded by the converted data.

Table 4-1
Survey Data for All Wells Currently in the Burn Site Groundwater Monitoring Network

Well	NMSPC Coordinates[a]		Elevations (ft amsl)[b]	
	Northing	Easting	Ground Surface	Measuring Point (top of PVC Casing)
CYN-MW1D	1,456,166.83	1,590,234.04	6236.7	6239.59
CYN-MW3	1,456,774.34	1,592,168.20	6311.9	6313.26
CYN-MW4	1,458,765.86	1,593,795.99	6454.7	6455.48
CYN-MW6	1,457,170.60	1,592,563.70	6340.5	6343.37
CYN-MW7	1,456,589.07	1,589,340.22	6213.7	6216.35
CYN-MW8	1,456,386.76	1,589,756.06	6227.8	6230.11
CYN-MW9	1,457,261.48	1,593,006.71	6358.5	6360.67
CYN-MW10	1,456,813.04	1,593,043.38	6342.8	6345.45
CYN-MW11	1,457,079.74	1,593,549.25	6371.9	6374.41
CYN-MW12	1,457,335.12	1,592,251.79	6342.9	6345.16

[a]Coordinates based on the NMSPC, Central Zone, NAD of 1983; coordinates for wells CYN-MW1D, CYN-MW4, CYN-MW7, and CYN-MW8 converted mathematically from NAD of 1927 using ARC/Info Workstation Automated Machine Language.
[b]Elevations based on North American Vertical Datum of 1988; elevations for wells CYN-MW1D, CYN-MW4, CYN-MW7, and CYN-MW8 converted mathematically from Northern Geographic Vertical Datum of 1929 using Blue Marble Geographics software.
amsl = Above mean sea level.
CYN = Canyons (Burn Site Groundwater).
ft = Foot/feet.
MW = Monitoring well.
NAD = North American Datum.
NMSPC = New Mexico State Plane Coordinate System.
PVC = Polyvinyl chloride.

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5.0 WASTE MANAGEMENT

Six nonregulated waste streams were generated during the soil sampling and monitoring well drilling and development as follows:

1. Decontamination water—placed into 55-gallon drums
2. Development groundwater—placed into 55-gallon drums
3. Soil/rock chips—cuttings from ARCH drilling of the well boreholes
4. Soil—cuttings from HSA drilling for borehole sampling
5. Personal protective equipment (PPE)—gloves required during soil sampling to prevent cross contamination
6. Wipes—from decontamination of the borehole video camera survey

All waste was managed in accordance with applicable SNL/NM waste disposal requirements contained in the Sandia Corporate Policy System, Environmental Safety and Health Policy Area and documented within an approved waste management plan. The various types of wastes generated during this project were managed, sampled for waste characterization, and disposed of in accordance with requirements specified in the waste management plan that was prepared for this project. Management and disposition of the waste streams consisted of the following activities:

- Solid waste (PPE, plastic, paper, and wipes) generated during drilling, decontamination, and sampling activities was managed as nonregulated waste and disposed of in the regular trash after waste characterization data for associated decontamination water were received.
- Soil cuttings from the HSA were used to backfill the borehole after all borehole samples were collected. In addition to the soil cuttings, the contractor placed a 1-foot-thick layer of bentonite chips at the very bottom and a 1-foot-thick layer at 5-foot intervals thereafter. The bentonite was added and hydrated to prevent the borehole from becoming a preferential pathway from the land surface to the top of bedrock or to the aquifer.
- Soil/rock chip cuttings from ARCH drilling were spread around the land surface near the wellhead.
- Decontamination water was placed into eight 55-gallon drums, and water samples were collected to determine suitability of disposition into the sanitary sewer system. Based on analytical results, approval was granted to dispose approximately 400 gallons of wastewater to the sanitary sewer system.

- Development groundwater was placed into forty-eight 55-gallon drums, and water samples were collected to determine suitability of disposition into the sanitary sewer system. Based on analytical results, approval was granted to dispose approximately 1,400 gallons of wastewater to the sanitary sewer system.

6.0 HYDRAULIC CONDUCTIVITY ANALYSIS

This section describes the activities associated with conducting slug tests at the four new groundwater monitoring wells in the Study Area (CYN-MW9, CYN-MW10, CYN-MW11, and CYN-MW12). The slug tests were performed to determine the hydraulic conductivity of the aquifer materials. Hydraulic conductivity is expressed as a velocity and is often presented in units of centimeters per second or feet per minute (ft/min). The hydraulic conductivity data determined in this study will be used to refine the BSG hydrogeologic conceptual model.

The slug tests were completed between December 15, 2010, and January 28, 2011. Equipment used to conduct the slug tests included support vehicles and the water-sampling truck, which was used for hauling the required equipment and also as the platform for injecting and withdrawing the slug. The slug was raised and lowered by means of a large diameter (approximately 4-foot) motorized spool with a graduated 1/4-inch cable. The slug is a solid aluminum rod with a diameter of 3.25 inches and a length of 48 inches, providing a total displacement of approximately 397 cubic inches. Another reel with the transducer cable was mounted on a support truck, and a third hand-held reel was used to lower the downhole barometer. The slug and any submerged cable were decontaminated at the EFO or at the wellhead before injecting the slug into the well.

FOP 09-05 (SNL/NM June 2009b) was followed for all investigation activities at this site. After completion of the field portion of the slug test, the data sets were prepared and analyzed. The data gathered during the slug tests were analyzed using AquiferTest™ 3.0 Software developed by Waterloo Hydrogeologic, Inc. (2001). This software employs analytical methods developed by Hvorslev (1951) and Bouwer and Rice (1976) to produce graphical solutions of hydraulic conductivity. The use of the software followed the manufacturer's operating manual. The analysis determined the hydraulic conductivity for each of the tests (Appendix F). The hydraulic conductivity values were then compiled into Table 6-1 with averages calculated for each well.

Table 6-1
Average Hydraulic Conductivity Values for
Burn Site Groundwater Monitoring Wells Tested
December 2010 and January 2011

Well ID	Hydraulic Conductivity (K)			
	(ft/min)	(ft/day)	(ft/year)	(cm/sec)
CYN-MW9	1.21E-03	1.75E+00	638	6.17E-04
CYN-MW10	7.76E-04	1.12E+00	408	3.94E-04
CYN-MW11	1.21E-03	1.74E+00	636	6.15E-04
CYN-MW12	3.85E-04	5.54E-01	202	1.96E-04

cm/sec = Centimeters per second.
CYN = Canyons (Burn Site Groundwater).
ft = Foot (feet).
ft/min = Foot (feet) per minute.
ID = Identification number.
K = Hydraulic conductivity.
MW = Monitoring well.

The ranges of hydraulic conductivity for the four BSG wells tested in December 2010 and January 2011 vary over an order of magnitude (Table 6-1). It should be noted that slug test analyses were developed for use in unconsolidated deposits, and analyses of bedrock aquifer slug tests are of limited value. The hydraulic conductivity measured in bedrock aquifers is overwhelmingly dominated by fracture flow (water flowing through the matrix of crystalline bedrock is negligible); therefore, the conductivity values determined are highly dependent on the nature of the fractures intercepted in specific wells.

All the conductivity values for these four wells are within the range of conductivity (10^{-5} to 10^{-2} ft/min) determined for the regional aquifer within the unconsolidated Santa Fe Group sediments west of the Study Area (SNL/NM March 1999). This suggests that qualitatively fracture flow in BSG wells is capable of moving significant amounts of groundwater.

7.0 VARIANCES

All SNL/NM FOPs and AOPs cited in the Characterization Work Plan (SNL/NM November 2009) were followed. Several variances that occurred during the field program are discussed as follows.

Variance 1 occurred during the drilling of the boreholes for soil sampling. As discussed in Section 2.1, several of the borehole locations had to be modified due to geologic (surface exposure of bedrock) or logistical reasons (buried utilities). Suitable replacement locations were determined in the field and provided data that met the intent of the sampling.

Variance 2 occurred during the collection of soil samples. As discussed in Section 2.1, the unconsolidated deposits contained a considerable percentage of cobbles. Sufficient soil volume was not collected in some sample runs to perform analyses for any or all analytes. Some sampling depths produced no soil for analyses, and several other sampling depths produced a limited sample volume that required analyte prioritization.

Variance 3 occurred during the drilling of the boreholes for soil sampling. A HSA drill rig was used in lieu of the ARCH or Dual Tube methods discussed in the Characterization Work Plan (SNL/NM November 2009). The drilling contractor determined that the HSA was better suited to complete the deep borehole sampling.

Variance 4 occurred during decontamination of the drill rigs. An on-site, temporary, decontamination pad was used instead of the decontamination pad located in Technical Area III.

Variance 5 occurred when SNL/NM personnel elected to install a fourth monitoring well (CYN-MW12) west of CYN-MW6. This decision was based on the potentiometric surface map prepared with groundwater elevations obtained from CYN-MW9, CYN-MW10, CYN-MW11, and the previously existing wells. The location of CYN-MW12 was selected with the concurrence of the NMED.

Variance 6 occurred during the installation of the well screens in all four monitoring wells. The intent was to install the 20-foot screens capturing the air-water interface (15 feet below the water table and 5 feet above water). However, due to the semiconfined conditions encountered in each borehole, all 20-foot screens are completely submerged. These completions are consistent with the groundwater monitoring wells previously installed in the Study Area.

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8.0 GROUNDWATER MONITORING

Multiple quarterly groundwater monitoring events have been completed in the Study Area since the installation of the four new wells. This section briefly describes the results of the first two sampling events with tables of the analytical results provided in Appendices G and H. Of note, perchlorate was not detected in samples from any of the four new wells, and nitrate was detected at or above the MCL (10 mg/L) in samples from each of the four new wells.

8.1 Burn Site Groundwater Monitoring, Fourth Quarter, Fiscal Year 2010

SNL/NM personnel performed groundwater sampling in the Study Area from September 14 to September 29, 2010. Groundwater samples were collected from the following monitoring wells:

- CYN-MW1D
- CYN-MW3
- CYN-MW4
- CYN-MW6
- CYN-MW7
- CYN-MW8
- CYN-MW9
- CYN-MW10
- CYN-MW11
- CYN-MW12

This represented the initial groundwater sampling event for newly installed monitoring wells CYN-MW9, CYN-MW10, CYN-MW11, and CYN-MW12.

Samples collected from all wells were analyzed for VOCs, target analyte list (TAL) metals plus uranium, major anions, alkalinity, NPN, total petroleum hydrocarbons (TPH)-diesel range organics (DRO) and TPH-gasoline range organics (GRO), gamma spectroscopy, gross alpha/gross beta activity, isotopic uranium, and tritium. Additional samples were collected from the newly installed monitoring wells and analyzed for SVOCs, HE compounds, and major cations. Groundwater samples were collected and analyzed for perchlorate from monitoring wells CYN-MW6, CYN-MW9, CYN-MW10, CYN-MW11, and CYN-MW12. Also, duplicate samples were collected from CYN-MW4 and CYN-MW9 for all analytical parameters.

Groundwater samples were submitted to GEL for chemical and radiological analyses. Samples were analyzed in accordance with applicable EPA analytical methods. Groundwater sampling results are compared with EPA MCLs for drinking water supplies. All chemical and radiological data were reviewed and qualified in accordance with AOP 00-03, “Data Validation Procedure for Chemical and Radiochemical Data” (SNL/NM July 2007).

The results of the chemical analyses are presented in Appendix G, Tables G-1 through G-11. The analytical results are summarized as follows.

VOCs, SVOCs, and HE Compounds—Carbon disulfide was the only analyte detected (1.58 µg/L) above the laboratory MDL (Table G-1). The associated MDLs for all VOCs, SVOCs, and HE compounds are presented in Tables G-2 and G-3.

NPN—NPN was detected above the MCL (10 mg/L) in samples from six wells (CYN-MW1D, CYN-MW3, CYN-MW6, CYN-MW9, CYN-MW10, and CYN-MW12 [Table G-4]). The NPN concentrations ranged up to 30.1 mg/L.

TPH-GRO and TPH-DRO—Neither of these analytes was detected above the laboratory MDLs (Table G-5).

Major Anions, Major Cations, and Alkalinity—Anions include bromide, chloride, fluoride, and sulfate; cations include calcium, magnesium, potassium, and sodium; and alkalinity results are reported as bicarbonate and carbonate. No parameters were detected above established MCLs (Table G-6).

Perchlorate—Perchlorate was detected in the sample from CYN-MW6 at a concentration of 6.14 µg/L. No perchlorate detections above the MDL of 4 µg/L were reported in samples from the newly installed monitoring wells CYN-MW9, CYN-MW10, CYN-MW11, and CYN-MW12 (Table G-7).

TAL Metals plus Uranium—No metal parameters were detected above established regulatory limits in any groundwater sample (Table G-8).

Gamma Spectroscopy, Gross Alpha/Gross Beta Activity, Isotopic Uranium, and Tritium—Gamma spectroscopy activity levels for short-list radionuclides were less than the associated minimal detectable activity (MDA), except for potassium-40 in the sample from CYN-MW8. Corrected gross alpha activity results, gross beta results, and isotopic uranium activity results are all below the MCLs. The reported tritium activity levels are below the MDAs (Table G-9).

Field Parameters—Field water quality measurements collected prior to sampling are presented in Table G-10.

Duplicate Environmental Samples—Duplicate environmental samples were collected from CYN-MW4 and CYN-MW9. Duplicate sample analytical results were used to calculate the relative percent difference (RPD) (Table G-11); duplicate sample results show good correlation with RPD values considerably lower than 20.

8.2 Burn Site Groundwater Monitoring, First Quarter, Fiscal Year 2011

SNL/NM personnel performed groundwater sampling in the Study Area from October 27 to November 2, 2010. Groundwater samples were collected from monitoring wells CYN-MW9, CYN-MW10, CYN-MW11, and CYN-MW12. This represented the second groundwater sampling event for these four newly installed monitoring wells.

Samples collected from all wells were analyzed for VOCs, NPN, TPH-DRO, TPH-GRO, SVOCs, HE compounds, and perchlorate. Also, a duplicate sample was collected from CYN-MW10 for all analytical parameters.

Groundwater samples were submitted to GEL for chemical analyses. Samples were analyzed in accordance with applicable EPA analytical methods. Groundwater sampling results are compared with EPA MCLs for drinking water supplies. All chemical data were reviewed and qualified in accordance with AOP 00-03, "Data Validation Procedure for Chemical and Radiochemical Data" (SNL/NM July 2007).

The results of the chemical analyses are presented in Appendix H, Tables H-1 through H-7. The analytical results are summarized as follows.

VOCs, SVOCs, and HE Compounds—No analytes were detected above the laboratory MDLs. The associated MDLs for all VOCs, SVOCs, and HE compounds are presented in Tables H-1 and H-2.

NPN—NPN was detected above the MCL (10 mg/L) in samples from all four wells with concentrations ranging up to 36.6 mg/L (Table H-3).

TPH-GRO and TPH-DRO—Neither of these analytes was detected above the laboratory MDLs (Table H-4).

Perchlorate—No perchlorate detections above the MDL of 4 µg/L were reported in samples from the four newly installed monitoring wells (Table H-5).

Field Parameters—Field water quality measurements collected prior to sampling are presented in Table H-6.

Duplicate Environmental Samples—Duplicate environmental samples were collected from CYN-MW10. Duplicate sample analytical results were used to calculate the RPD (Table H-7); duplicate sample results show good correlation with RPD values considerably lower than 20.

8.3 Burn Site Groundwater Monitoring Summary

Based on two rounds of groundwater sampling in the Study Area the following points can be made:

- Perchlorate was not detected in any sample from the newly installed monitoring wells. Concentrations in the samples from CYN-MW6 are comparable to historical values.
- NPN was detected in samples from each of the new wells at or above the MCL, confirming earlier conceptual models of nonpoint source low to moderate NPN contamination in the Study Area.
- Groundwater sample analytical results for VOCs, TAL metals, uranium, major anions, alkalinity, TPH-DRO, TPH-GRO, gamma spectroscopy, gross alpha/gross beta activity, isotopic uranium, tritium, SVOCs, HE compounds, and major cations were nondetect to below MCLs and comparable to historical results in the Study Area.
- A full eight quarters of data will be collected before the Study Area Current Conceptual Model is updated.

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APPENDIX A
Well Data for CYN-MW9, CYN-MW10, CYN-MW11, and CYN-MW12

Well Data for CYN-MW9
Burn Site Groundwater Study Area, Sandia National Laboratories/New Mexico

Items Required by the Order[a] Section VIII.D	Comments
1. Well name/number	CYN-MW9
2. Date of well construction	July 27, 2010 (construction and development done)
3. Drilling method	Air-rotary casing hammer, air-rotary
4. Drilling contractor and name of driller	WDC Exploration and Wells Inc., Del Leavitt
5. Borehole diameter and well casing diameter	Borehole: 9-5/8 inches
	Well casing: 5.563 inches OD, 4.767 inches ID
6. Well depth	200.8 ft bgs
7. Casing length	Approximately 203 ft (2.2 ft above ground surface)
8. Casing materials	Schedule 80 PVC
9. Casing and screen joint type	Flush thread
10. Screened interval(s)	175.8 to 195.8 ft bgs
11. Screen materials	Schedule 80 PVC
12. Screen slot size and design	0.020-inch slotted screen
13. Filter pack material and gradation	Primary: #10-20 CSS
	Secondary: #60 CSS
14. Filter pack volume (calculated and actual)[b]	Calculated: 17.5 ft^3
	Actual: 19.0 ft^3
15. Filter pack placement method	Gravity feed through drive casing
16. Filter pack interval(s)	Primary: 171 to 200.8 ft bgs
	Secondary: 166 to 171 ft bgs
17. Annular sealant composition	Volclay (bentonite) chip plug, bentonite grout
18. Annular sealant placement method	Chips: gravity feed through drive casing, bentonite grout installed with tremie pipe
19. Annular sealant volume (calculated and actual)	Calculated: Plug 14.1 ft^3 Grout: 50.7 ft^3 (379 gallons)
	Actual: Plug: 12.6 ft^3 Grout: 80.2 ft^3 (600 gallons)
20. Annular sealant interval(s)	Grout: 10 to 132 ft bgs
	Plug: 132 to 166 ft bgs
21. Surface sealant composition	Concrete
22. Surface seal placement method	Gravity fed into annulus
23. Surface sealant volume (calculated and actual)	Calculated: 4.2 ft^3
	Actual: not recorded, placed concrete 0 to 10 ft bgs
24. Surface sealant interval	0 to 10 ft bgs
25. Surface seal and well apron design and construction	3- by 3-ft by ~4-inch-deep concrete pad
26. Well development procedure and turbidity measurements	Bail, surge, submersible pump (see Appendix E for turbidity measurements)
27. Well development purge volume(s) and stabilization parameter measurements	Total of 296 gallons (see Appendix E for field parameter measurements)

Refer to footnotes at end of table.

Well Data for CYN-MW9
Burn Site Groundwater Study Area, Sandia National Laboratories/New Mexico

Items Required by the Order[a] Section VIII.D	Comments
28. Type and design and construction of protective casing	10-ft length of 12-inch-diameter steel casing with hinged cap (7 ft bgs and 3 ft above ground surface)
29. Well cap and lock	Hinged cap on protective casing with padlock and locking well cap with padlock on well casing
30. Ground surface elevation	6358.5 ft amsl
31. Survey reference point elevation on well casing	6360.67 ft amsl
32. Top of monitoring well casing elevation	6360.67 ft amsl
33. Top of protective steel casing elevation	6361.18 ft amsl (locking cover removed)
34. Name of geologist	Michael Skelly and Clinton Lum
35. Initial water level	161.55 ft bgs; 6196.93 ft amsl (pre-development water level, July 23, 2010)
36. Final water level	161.44 ft bgs; 6197.04 ft amsl (post-development water level, August 30, 2010)
37. Date of well development	July 27, 2010

[a]New Mexico Environment Department, April 2004. "Compliance Order on Consent Pursuant to the New Mexico Hazardous Waste Act," § 74-4-10, New Mexico Environment Department, Santa Fe, New Mexico.
[b]Filter pack volume defined as the total volume of filter pack sand placed in well, both adjacent to the well casing, screen, and sump and below the sump (if applicable).

amsl = Above mean sea level.
bgs = Below ground surface.
CSS = Colorado Silica Sand.
CYN = Canyons (Burn Site Groundwater).
ft = Foot (feet).
ft^3 = Cubic foot (feet).
ID = Inside diameter.
MW = Monitoring well.
OD = Outside diameter.
PVC = Polyvinyl chloride.

Well Data for CYN-MW10
Burn Site Groundwater Study Area, Sandia National Laboratories/New Mexico

Items Required by the Order[a] Section VIII.D	Comments
1. Well name/number	CWL-MW10
2. Date of well construction	July 28, 2010 (construction and development done)
3. Drilling method	Air-rotary casing hammer, air-rotary
4. Drilling contractor and name of driller	WDC Exploration and Wells Inc., Del Leavitt
5. Borehole diameter and well casing diameter	Borehole: 9-5/8 inches
	Well casing: 5.563 inches OD, 4.767 inches ID
6. Well depth	175.4 ft bgs
7. Casing length	Approximately 178.1 ft total (2.7 ft above ground surface)
8. Casing materials	Schedule 80 PVC
9. Casing and screen joint type	Flush thread
10. Screened interval(s)	150.4 to 170.4 ft bgs
11. Screen materials	Schedule 80 PVC
12. Screen slot size and design	0.020-inch slotted screen
13. Filter pack material and gradation	Primary: #10-20 CSS
	Secondary: #60 CSS
14. Filter pack volume (calculated and actual)[b]	Calculated: 17.5 ft^3
	Actual: 17.0 ft^3
15. Filter pack placement method	Gravity feed through drive casing
16. Filter pack interval(s)	Primary: 145 to 175.4 ft bgs
	Secondary: 140.1 to 145 ft bgs
17. Annular sealant composition	Volclay (bentonite) chip plug, bentonite grout
18. Annular sealant placement method	Chips: gravity feed through drive casing, bentonite grout installed with tremie pipe
19. Annular sealant volume (calculated and actual)	Calculated: Plug 14.2 ft^3 Grout: 41.5 ft^3 (310 gallons)
	Actual: Plug: 12.6 ft^3 Grout: 80.2 ft^3 (600 gallons)
20. Annular sealant interval(s)	Grout: 6 to 106 ft bgs
	Plug: 106 to 140.1 ft bgs
21. Surface sealant composition	Concrete
22. Surface seal placement method	Gravity fed into annulus
23. Surface sealant volume (calculated and actual)	Calculated: 2.5 ft^3
	Actual: not recorded, placed concrete 0 to 6 ft bgs
24. Surface sealant interval	0 to 6 ft bgs
25. Surface seal and well apron design and construction	3- by 3-ft by ~4-inch-deep concrete pad
26. Well development procedure and turbidity measurements	Bail, surge, submersible pump (see Appendix E for turbidity measurements)
27. Well development purge volume(s) and stabilization parameter measurements	Total of 200 gallons (see Appendix E for field parameter measurements)

Refer to footnotes at end of table.

Well Data for CYN-MW10
Burn Site Groundwater Study Area, Sandia National Laboratories/New Mexico

Items Required by the Order[a] Section VIII.D	Comments
28. Type and design and construction of protective casing	10-ft length of 12-inch-diameter steel casing with hinged cap (7 ft bgs and 3 ft above ground surface)
29. Well cap and lock	Hinged cap on protective casing with padlock and locking well cap with padlock on well casing
30. Ground surface elevation	6342.8 ft amsl
31. Survey reference point elevation on well casing	6345.45 ft amsl
32. Top of monitoring well casing elevation	6345.45 ft amsl
33. Top of protective steel casing elevation	6346.00 ft amsl (locking cover removed)
34. Name of geologist	Michael Skelly and Clinton Lum
35. Initial water level	117.84 ft bgs; 6224.96 ft amsl (predevelopment water level, July 23, 2010)
36. Final water level	118.43 ft bgs; 6224.37 ft amsl (post-development water level, August 30, 2010)
37. Date of well development	July 27 to July 28, 2010

[a]New Mexico Environment Department, April 2004. "Compliance Order on Consent Pursuant to the New Mexico Hazardous Waste Act," § 74-4-10, New Mexico Environment Department, Santa Fe, New Mexico.
[b]Filter pack volume defined as the total volume of filter pack sand placed in well, both adjacent to the well casing, screen, and sump and below the sump (if applicable).

amsl = Above mean sea level.
bgs = Below ground surface.
CSS = Colorado Silica Sand.
CYN = Canyons (Burn Site Groundwater).
ft = Foot (feet).
ft^3 = Cubic foot (feet).
ID = Inside diameter.
MW = Monitoring well.
OD = Outside diameter.
PVC = Polyvinyl chloride.

Well Data for CYN-MW11
Burn Site Groundwater Study Area, Sandia National Laboratories/New Mexico

Items Required by the Order[a] Section VIII.D	Comments
1. Well name/number	CYN-MW11
2. Date of well construction	July 29, 2010 (construction and development done)
3. Drilling method	Air-rotary casing hammer, air rotary
4. Drilling contractor and name of driller	WDC Exploration and Wells Inc., Del Leavitt
5. Borehole diameter and well casing diameter	Borehole: 9-5/8 inches
	Well casing: 5.563 inches OD, 4.767 inches ID
6. Well depth	254.8 ft bgs
7. Casing length	Approximately 257.3 ft total (2.5 ft above ground surface)
8. Casing materials	Schedule 80 PVC
9. Casing and screen joint type	Flush thread
10. Screened interval(s)	229.8 to 249.8 ft bgs
11. Screen materials	Schedule 80 PVC
12. Screen slot size and design	0.020-inch slotted screen
13. Filter pack material and gradation	Primary: #10-20 CSS
	Secondary: #60 CSS
14. Filter pack volume (calculated and actual)[b]	Calculated: 17.5 ft^3
	Actual: 18 ft^3
15. Filter pack placement method	Chips: gravity feed through drive casing, Bentonite grout installed with tremie pipe
16. Filter pack interval(s)	Primary: 225 to 254.8 ft bgs
	Secondary: 220 to 225 ft bgs
17. Annular sealant composition	Volclay (bentonite) chip plug, bentonite grout
18. Annular sealant placement method	Chips: gravity feed through drive casing, Bentonite grout installed with tremie pipe
19. Annular sealant volume (calculated and actual)	Calculated: Plug: 14.1 ft^3 Grout: 73.1 ft^3 (547 gallons)
	Actual: Plug: 12.6 ft^3 Grout: 120 ft^3 (900 gallons)
20. Annular sealant interval(s)	Grout: 5 to 186 ft bgs
	Plug: 186 to 220 ft bgs
21. Surface sealant composition	Concrete
22. Surface seal placement method	Gravity fed into annulus
23. Surface sealant volume (calculated and actual)	Calculated: 4.2 ft^3
	Actual: not recorded, placed concrete 0 to 5 ft bgs
24. Surface sealant interval	0 to 5 ft bgs
25. Surface seal and well apron design and construction	3- by 3-ft by ~4-inch-deep concrete pad
26. Well development procedure and turbidity measurements	Bail, surge, submersible pump (see Appendix E for turbidity measurements)

Refer to footnotes at end of table.

Well Data for CYN-MW11
Burn Site Groundwater Study Area, Sandia National Laboratories/New Mexico

Items Required by the Order[a] Section VIII.D	Comments
27. Well development purge volume(s) and stabilization parameter measurements	Total of 406 gallons (see Appendix E for field parameter measurements)
28. Type and design and construction of protective casing	10-ft length of 12-inch-diameter steel casing with hinged cap (7 ft bgs and 3 ft above ground surface)
29. Well cap and lock	Hinged cap on protective casing with padlock and locking well cap with padlock on well casing
30. Ground surface elevation	6371.9 ft amsl
31. Survey reference point elevation on well casing	6374.41 ft amsl
32. Top of monitoring well casing elevation	6374.41 ft amsl
33. Top of protective steel casing elevation	6374.87 ft amsl (locking cover removed)
34. Name of geologist	Franz Lauffer and Clinton Lum
35. Initial water level	93.67 ft bgs; 6278.27 (predevelopment water level, July 23, 2010)
36. Final water level	94.19 ft bgs (post-development water level, August 30, 2010)
37. Date of well development	July 28 to July 29, 2010

[a]New Mexico Environment Department, April 2004. "Compliance Order on Consent Pursuant to the New Mexico Hazardous Waste Act," § 74-4-10, New Mexico Environment Department, Santa Fe, New Mexico.
[b]Filter pack volume defined as the total volume of filter pack sand placed in well, both adjacent to the well casing, screen, and sump and below the sump (if applicable).
amsl = Above mean sea level.
bgs = Below ground surface.
CSS = Colorado Silica Sand.
CYN = Canyons (Burn Site Groundwater).
ft = Foot (feet).
ft^3 = Cubic foot (feet).
ID = Inside diameter.
MW = Monitoring well.
OD = Outside diameter.
PVC = Polyvinyl chloride.

Well Data for CYN-MW12
Burn Site Groundwater Study Area, Sandia National Laboratories/New Mexico

Items Required by the Order[a] Section VIII.D	Comments
1. Well name/number	CYN-MW12
2. Date of well construction	July 29, 2010 (construction and development done)
3. Drilling method	Air-rotary casing hammer, air-rotary
4. Drilling contractor and name of driller	WDC Exploration and Wells Inc., Del Leavitt
5. Borehole diameter and well casing diameter	Borehole: 9-5/8 inches
	Well casing: 5.563 inches OD, 4.767 inches ID
6. Well depth	277.5 ft bgs
7. Casing length	Approximately 279.7 ft (2.2 ft above ground surface)
8. Casing materials	Schedule 80 PVC
9. Casing and screen joint type	Flush thread
10. Screened interval(s)	252.5 to 272.5 ft bgs
11. Screen materials	Schedule 80 PVC
12. Screen slot size and design	0.020-inch slotted screen
13. Filter pack material and gradation	Primary: #10-20 CSS
	Secondary: #60 CSS
14. Filter pack volume (calculated and actual)[b]	Calculated: 18.0 ft^3
	Actual: 21.0 ft^3
15. Filter pack placement method	Gravity feed through drive casing
16. Filter pack interval(s)	Primary: 247.5 to 277.5 ft bgs
	Secondary: 242.8 to 247.5 ft bgs
17. Annular sealant composition	Volclay (bentonite) chip plug, bentonite grout
18. Annular sealant placement method	Chips: gravity feed through drive casing, bentonite grout installed with tremie pipe
19. Annular sealant volume (calculated and actual)	Calculated: Plug 13.6 ft^3 Grout: 84.3 ft^3 (630 gallons)
	Actual: Plug: 12.6 ft^3 Grout: 120 ft^3 (900 gallons)
20. Annular sealant interval(s)	Grout: 5 to 210 ft bgs
	Plug: 210 o 242.8 ft bgs
21. Surface sealant composition	Concrete
22. Surface seal placement method	Gravity fed into annulus
23. Surface sealant volume (calculated and actual)	Calculated: 2.9 ft^3
	Actual: not recorded, placed concrete 0 to 7 ft bgs
24. Surface sealant interval	0 to 7 ft bgs
25. Surface seal and well apron design and construction	3- by 3-ft by ~4-inch-deep concrete pad
26. Well development procedure and turbidity measurements	Bail, surge, submersible pump (see Appendix E for turbidity measurements)
27. Well development purge volume(s) and stabilization parameter measurements	Total of 435 gallons (see Appendix E for field parameter measurements)

Refer to footnotes at end of table.

Well Data for CYN-MW12
Burn Site Groundwater Study Area, Sandia National Laboratories/New Mexico

Items Required by the Order[a] Section VIII.D	Comments
28. Type and design and construction of protective casing	10-ft length of 12-inch-diameter steel casing with hinged cap (7 ft bgs and 3 ft above ground surface)
29. Well cap and lock	Hinged cap on protective casing with padlock and locking well cap with padlock on well casing
30. Ground surface elevation	6342.9 ft amsl
31. Survey reference point elevation on well casing	6345.16 ft amsl
32. Top of monitoring well casing elevation	6345.16 ft amsl
33. Top of protective steel casing elevation	6345.67 ft amsl (locking cover removed)
34. Name of geologist	Michael Skelly, Clinton Lum, and Franz Lauffer
35. Initial water level	203.59 ft bgs; 6136.33 ft amsl (pre-development water level, July 23, 2010)
36. Final water level	203.54 ft bgs; 6139.38 ft amsl (post-development water level, August 30, 2010)
37. Date of well development	July 29, 2010

[a]New Mexico Environment Department, April 2004. "Compliance Order on Consent Pursuant to the New Mexico Hazardous Waste Act," § 74-4-10, New Mexico Environment Department, Santa Fe, New Mexico.
[b]Filter pack volume defined as the total volume of filter pack sand placed in well, both adjacent to the well casing, screen, and sump and below the sump (if applicable).

amsl = Above mean sea level.
bgs = Below ground surface.
CSS = Colorado Silica Sand.
CYN = Canyons (Burn Site Groundwater).
ft = Foot (feet).
ft^3 = Cubic foot (feet).
ID = Inside diameter.
MW = Monitoring well.
OD = Outside diameter.
PVC = Polyvinyl chloride.

APPENDIX B
Lithologic Logs for CYN-MW9, CYN-MW10, CYN-MW11, and CYN-MW12

VISUAL CLASSIFICATION OF SOILS

TA/OU:	SITE NUMBER:	
BORING NUMBER: BH001	COORDINATES:	DATE: 07JULY10
ELEVATION:	GWL: Depth Date/Time	DATE STARTED:
ENGINEER/GEOLOGIST:	Depth Date/Time	DATE COMPLETED:
DRILLING METHODS:		PAGE: 1 OF 1

DEPTH (ft)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	LITHOLOGY	REMARKS
	Grab			0-2' Sand + gravel (artificial fill?) Pale yellowish brown (10YR 6/2) to moderate yellowish brown (10YR 5/4); slightly damp; gravels up to 2"	GW		
5	SS			5' sand + gravel, as above			
10	SS			10' sand + gravel; finer grained gravel, moderate yellowish brown; damp; some silt; gravels to 2", most pea gravel			
15	SS			15' sand, with some gravel (to 1") mostly med sand light brown (5YR 6/4); damp shoe had weathered bedrock (green + purple			Driller notes change in resistance @ 16-17ft. color change in cuttings
20	SS			20' sand, as above @ 15', damp			
25	SS			25' weathered bedrock pale red (5R 6/2) to moderate red (5R 5/4) phyllite/schist			
30							

NOTES:

VISUAL CLASSIFICATION OF SOILS

TA/OU:	SITE NUMBER:	
BORING NUMBER: BH002	COORDINATES:	DATE: 08 JULY 2010
ELEVATION:	GWL: Depth Date/Time	DATE STARTED:
ENGINEER/GEOLOGIST:	Depth Date/Time	DATE COMPLETED:
DRILLING METHODS:		PAGE: 1 OF 1

DEPTH ( )	SAMPLE TYPE & NO.	BLOWS ON SAMPLER( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	LITHOLOGY	REMARKS
5	grab SS			0-2' Sand & gravel (artificial fill?) large limestone 1-2' rock Dark yellowish brown (10YR 4/2) to Mod. yellowish brown (10YR 5/4) slightly damp, gravels 2-3" ~3' basal gravels? 4' weathered bedrock 5' light brown (5YR 6/4 - 5YR 5/6) bedrock phyllite schist.	GW		
10							
15							
20							

NOTES:

VISUAL CLASSIFICATION OF SOILS

TA/OU:	SITE NUMBER:	
BORING NUMBER: BH 003	COORDINATES:	DATE: 08 JULY 2010.
ELEVATION:	GWL: Depth Date/Time	DATE STARTED:
ENGINEER/GEOLOGIST:	Depth Date/Time	DATE COMPLETED:
DRILLING METHODS:		PAGE: 1 OF 1

DEPTH ( )	SAMPLE TYPE & NO.	BLOWS ON SAMPLER( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	LITHOLOGY	REMARKS
	grab			0-2' sand + gravel (artificial fill?) slightly damp, gravels ½-1" moderate brown (5YR 4/4) to Pale brown (5YR 5/2).			
5	SS			4' weathered bedrock, slightly damp pale red (5R 6/2) Moderate red (5R 5/4)			
				5' consolidated weathered bedrock hard penetration. Pale red (5R 6/2) to moderate red (5R 5/4)			
10							
15							

NOTES:

VISUAL CLASSIFICATION OF SOILS

TA/OU:	SITE NUMBER:	
BORING NUMBER: BH 004	COORDINATES:	DATE: 08 JULY 2010.
ELEVATION:	GWL: Depth Date/Time	DATE STARTED:
ENGINEER/GEOLOGIST:	Depth Date/Time	DATE COMPLETED:
DRILLING METHODS:		PAGE: 1 OF 1

DEPTH ( )	SAMPLE TYPE & NO.	BLOWS ON SAMPLER( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	LITHOLOGY	REMARKS
	grab			0-2' sand and gravel (artificial fill) slightly damp, gravels ½-2" pale brown (5YR 5/2) light brown (5YR 6/4)			
5	SS			5' same as above.			
10	SS			10' sand and gravel, slightly moister, pale brown (5YR 5/2) to moderate brown (5YR 4/4)			
				13' weathered bedrock pale red (5R 6/2) moderate red (5R 5/4). <observation>.			
15	SS			15' phyllite schist bedrock. pale red (5R 6/2) to moderate red (5R 5/4).			

NOTES:

VISUAL CLASSIFICATION OF SOILS

TA/OU:	SITE NUMBER:	
BORING NUMBER: BH 005	COORDINATES:	DATE: 08 JULY 2010
ELEVATION:	GWL: Depth Date/Time	DATE STARTED:
ENGINEER/GEOLOGIST:	Depth Date/Time	DATE COMPLETED:
DRILLING METHODS:		PAGE: 1 OF 2

DEPTH ( )	SAMPLE TYPE & NO.	BLOWS ON SAMPLER/( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	LITHOLOGY	REMARKS
	geob.			0-2' sand and gravel. artificial fill? Pale brown (5YR 5/2) light brown (5YR 6/4) very slightly damp.	GW		
5	ø			5' coarse gravel (limestone) no sample available ↓	GP		
				9' sand and gravel			
10	SS			10' coarse gravel w/ sand limestone gravel very slightly damp. grayish orange pink (5YR 7/2) - Pale brown (5YR 5/2).			
15	SS			15' coarse limestone gravel. w/ some sand. ss only are filled sample.			
20	SS			20' coarse gravel slightly more fines. 5-10% increase to ~ 20%. very slightly damp. grayish orange pink (5YR 7/2) light brown (5YR 6/4).			
				23' changed to predominant sand grayish orange (10YR 7/4).			
25	SS.			25' coarse gravel limestone and some coarse sandstone. no sample			

NOTES:

VISUAL CLASSIFICATION OF SOILS

TA/OU:	SITE NUMBER:	
BORING NUMBER: BH 005	COORDINATES:	DATE: 08 JULY 2010.
ELEVATION:	GWL: Depth Date/Time	DATE STARTED:
ENGINEER/GEOLOGIST:	Depth Date/Time	DATE COMPLETED:
DRILLING METHODS:		PAGE: 2 OF 2

DEPTH ( )	SAMPLE TYPE & NO.	BLOWS ON SAMPLER( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	LITHOLOGY	REMARKS
	30			30' sand and gravel. very slightly damp. grayish orange (10YR 7/4).			
				31'-34 primarily gravel from coarse 1-2" to smaller ½-1"			
35'				35' sand and gravel grayish orange (10YR 7/4) - pale yellowish brown (10YR 6/2) very slightly damp. only one sample taken.			
40'				37' weathered bedrock. grab sample very pale orange (10YR 8/2) to grayish orange (10YR 7/4).			
				37-38' phyllite schist bedrock layered grayish blue green (5BG 5/2) to dusky blue green (5BG 3/2) w/ whitish stringers.			

NOTES:

VISUAL CLASSIFICATION OF SOILS

TA/OU:	SITE NUMBER:	
BORING NUMBER: BH 006	COORDINATES:	DATE: 08 JULY 2010.
ELEVATION:	GWL: Depth Date/Time	DATE STARTED:
ENGINEER/GEOLOGIST:	Depth Date/Time	DATE COMPLETED:
DRILLING METHODS:		PAGE: OF

DEPTH ( )	SAMPLE TYPE & NO.	BLOWS ON SAMPLER( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	LITHOLOGY	REMARKS
	grab			0-2' sand and gravel. gravel fill? light brown (5YR 6/4) pale brown (5YR 5/2) slightly damp			
5	SS			3' weathered phyllite. moderate orange pink (10R 7/4) – pale red (10R 6/2)			
				5' phyllite schist bedrock.			
10							
15							

NOTES:

VISUAL CLASSIFICATION OF SOILS

TA/OU:	SITE NUMBER:	
BORING NUMBER: BH 007	COORDINATES:	DATE: 08 JULY 2010
ELEVATION:	GWL: Depth Date/Time	DATE STARTED:
ENGINEER/GEOLOGIST:	Depth Date/Time	DATE COMPLETED:
DRILLING METHODS:		PAGE: OF

DEPTH ( )	SAMPLE TYPE & NO.	BLOWS ON SAMPLER( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	LITHOLOGY	REMARKS
	grab			0-2 sand & gravel (artificial fill?) slightly damp. moderate brown (5YR 4/4 – 5YR 3/4) gravel 1-2"	GW		
5	SS			5' same as above 4-8' gravel (limestone) layer 1-2" in size.			
10			9	9-10' weathered bedrock light brown (5YR 6/4) grayish orange pink (5YR 7/2) one split spoon sample tested VOC. Note: second 5' sample taken for SVOC/nitrate/perchlorate. approx 3-2' north of first sample location.	GP		

NOTES:

VISUAL CLASSIFICATION OF SOILS

TA/OU:	SITE NUMBER:	
BORING NUMBER: BH 008	COORDINATES:	DATE: 08 JULY 2010
ELEVATION:	GWL: Depth Date/Time	DATE STARTED:
ENGINEER/GEOLOGIST:	Depth Date/Time	DATE COMPLETED:
DRILLING METHODS:		PAGE: OF

DEPTH ( )	SAMPLE TYPE & NO.	BLOWS ON SAMPLER( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	LITHOLOGY	REMARKS
	grab			0-2' sand and gravel. Artificial fill gravel 1-2" Part yellowish orange (10YR 6/6) moderate yellowish brown (10YR 5/4) 2-3.½ soils? slightly damp. 3½-5 back into sand and gravel.	GW		
5	ss			5' same as above.			
				9' gravel layer (limestone) 1-2"			
10	ss			10' sand and gravel, dark yellowish orange (10YR 6/6), moderate yellowish brown (10YR 5/4), slightly damp gravels 1-2"	GW		
15	ss			15' clayey sand and gravel same as above moisture content increase slightly and fines have more clay.	GW		
				~18-19' basal gravel.			
20'	ss			20' weathered phyllite schist. grayish orange pink (5YR 7/2) – light brown (5YR 6/4) bottom of split shoe held weathered phyllitic schist. layered grayish blue green (5BG 5/2) – dusty blue green (5BG 3/2) w/ ~~white~~ stringers white	GP		

NOTES:

VISUAL CLASSIFICATION OF SOILS

TA/OU:	SITE NUMBER:	
BORING NUMBER: BH 009	COORDINATES:	DATE: 08 JULY 2010.
ELEVATION:	GWL: Depth Date/Time	DATE STARTED:
ENGINEER/GEOLOGIST:	Depth Date/Time	DATE COMPLETED:
DRILLING METHODS:		PAGE: 1 OF 2

DEPTH ( )	SAMPLE TYPE & NO.	BLOWS ON SAMPLER( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	LITHOLOGY	REMARKS
	grab			0-2' sand and gravel (artificial fill) dark yellowish orange (10YR 6/6) - moderate yellowish brown (10YR 5/4) very slightly damp gravels 1-2"	GW		
5	SS			5' same as above. Note: layered heterogeneous distribution of horizontall gravel layers. 0-10' typical	GW		
10	SS			10' same as above, but fines are coarser and more heterogeneous.	GW		
15	SS			15' same as 10' slightly damp. moderate yellowish brown (10YR 5/4)	GW		
20'	SS			20' sand and gravel (artificial fill) dark yellowish orange (10YR 6/6) moderate yellowish brown (10YR 5/4). very slightly damp, coarse fines. gravels 1-2" only one SS sample.			
25'				25' same as above.			

NOTES:

VISUAL CLASSIFICATION OF SOILS

TA/OU:	SITE NUMBER:	
BORING NUMBER: BH 009	COORDINATES:	DATE: 08 JULY 2010
ELEVATION:	GWL: Depth Date/Time	DATE STARTED:
ENGINEER/GEOLOGIST:	Depth Date/Time	DATE COMPLETED:
DRILLING METHODS:		PAGE: 2 OF 2

DEPTH ( )	SAMPLE TYPE & NO.	BLOWS ON SAMPLER/( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	LITHOLOGY	REMARKS
30	SS.			same as above. No sample large gravel			
35'				35' transition above ~34' to weathered bedrock Phyllite schist light brown (5YR 6/4)			

NOTES:

VISUAL CLASSIFICATION OF SOILS

TA/OU:	SITE NUMBER:	
BORING NUMBER: BH 010	COORDINATES:	DATE: 08 JULY 2010.
ELEVATION:	GWL: Depth Date/Time	DATE STARTED:
ENGINEER/GEOLOGIST:	Depth Date/Time	DATE COMPLETED:
DRILLING METHODS:		PAGE: OF

DEPTH ( )	SAMPLE TYPE & NO.	BLOWS ON SAMPLER( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	LITHOLOGY	REMARKS
	grab			0-2' silty sand w/ some gravel. gravel ½-1" slightly damp. moderate yellowish brown (10YR 5/4)			
				~3' gravel layer			
5	SS			5' same as above. lower proportion gravels ~ 5-10%			
				~8' gravel layer.			
10	SS			10' same as above.			
				~11-12' gravel layer (limestone)			
				↓			
15	SS			15' same as above, except increase in gravel content (limestone) to 60-70% gravel ½-1"			
20'	∅ no sample			20' same as above. No sample recovered. ~20+' gravel layer: gravel content as high as 70-80%			
25'	∅ no sample			25' same as above. No sample. 26 back thin soil/sand layer.			
30'				30' bedrock found in H.S. auger after SS was recovered.			

NOTES:

VISUAL CLASSIFICATION OF SOILS

TA/OU:	SITE NUMBER: Burn Site	
BORING NUMBER: CYN - MW9	COORDINATES:	DATE: 12 JULY 2010
ELEVATION:	GWL: Depth Date/Time	DATE STARTED:
ENGINEER/GEOLOGIST: C Lum	Depth Date/Time	DATE COMPLETED:
DRILLING METHODS: Tri cone		PAGE: 1 OF 6

DEPTH ( )	SAMPLE TYPE & NO.	BLOWS ON SAMPLER( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	LITHOLOGY	REMARKS
0	grab			0-16' clay with some sand, moderate brown (5YR 4/4 - 5YR 3/4) slightly damp.	CL		
5							
10	grab			10-15' sandy clay w/ limestone gravels. matrix grayish orange pink (5YR 7/2) - light brown (5YR 6/4), might be weathered phyllite and artificial fill gravels.	GW		
15	grab						
	grab			15-18' back into clay matrix moderate brown (5YR 4/4 - 5YR 3/4) w/ limestone gravels	GW		
20				18'-20' well graded sand. light brown (5YR 6/4) aeolian sand	SP		
25	grab	~~grab~~		25' fine grained aeolian sand w/ limestone gravel. color ranges from grayish orange (10YR 7/4) to grayish orange pink (5YR 7/2)	GW		
30							

NOTES:

VISUAL CLASSIFICATION OF SOILS

TA/OU:	SITE NUMBER:		
BORING NUMBER: CYN - MW9	COORDINATES:		DATE: 12 JULY 2010
ELEVATION:	GWL: Depth	Date/Time	DATE STARTED:
ENGINEER/GEOLOGIST: C Lum	Depth	Date/Time	DATE COMPLETED:
DRILLING METHODS: Tri core change to hammer @ 38'			PAGE: 2 OF 6

DEPTH ( )	SAMPLE TYPE & NO.	BLOWS ON SAMPLER/( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	LITHOLOGY	REMARKS
				Note: no weathered phyllites schist obs.			
35	grab			35' Phyllite schist bedrock unweathered dusky green (5G 3/2) still mixed w/ sand and limestone gravel. @ depth transitioned to mostly medium dark gray (N4) to grayish blue (5PB 5/2).			
40				Approx ~ 38' changed from tricore to hammer bit. cutting character changed. same formation Phyllite schist.			
45 ~~50~~							
50	grab			50' phyllite schist bedrock. unweathered dusky green w/ layering (5G 3/2), primarily 1/2 - 1/4 grains and dust cuttings. no hint of massive powdered matrix cutting ranges from light gray (N7) to med light gray (N6) with a blue tint.			
55							
60	grab			60' same as 50' - lithology.			

NOTES:

VISUAL CLASSIFICATION OF SOILS

TA/OU:	SITE NUMBER:	
BORING NUMBER: CYN - MW9	COORDINATES:	DATE: 12 JULY 2010
ELEVATION:	GWL: Depth Date/Time	DATE STARTED:
ENGINEER/GEOLOGIST: C. Lum	Depth Date/Time	DATE COMPLETED:
DRILLING METHODS: Hammer bit.		PAGE: 3 OF 6

DEPTH ( )	SAMPLE TYPE & NO.	BLOWS ON SAMPLER( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	LITHOLOGY	REMARKS
65							
70	grab			70' same as 50' - lithology			
75							
80	grab			80' same as 50'. lithology			
85							
90	grab			90' same as 50' - lithology			

NOTES:

VISUAL CLASSIFICATION OF SOILS

TA/OU:	SITE NUMBER:	
BORING NUMBER: OPN - MW9	COORDINATES:	DATE: 12/13 JULY 2010
ELEVATION:	GWL: Depth Date/Time	DATE STARTED:
ENGINEER/GEOLOGIST: C. Lum	Depth Date/Time	DATE COMPLETED:
DRILLING METHODS: Hammer bit		PAGE: 4 OF 6

DEPTH ( )	SAMPLE TYPE & NO.	BLOWS ON SAMPLER( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	LITHOLOGY	REMARKS
95							
100	grab			100' same as 50' - lithology			
105							
110	grab			110' same as 50' lithology			
115							
120	grab			120' same as 50' - lithology			

NOTES:

VISUAL CLASSIFICATION OF SOILS

TA/OU:	SITE NUMBER:	
BORING NUMBER: GPN - MW9	COORDINATES:	DATE: 13 JULY 2010
ELEVATION:	GWL: Depth Date/Time	DATE STARTED:
ENGINEER/GEOLOGIST: C Lum	Depth Date/Time	DATE COMPLETED:
DRILLING METHODS: Hammer bit		PAGE: 5 OF 6

DEPTH ( )	SAMPLE TYPE & NO.	BLOWS ON SAMPLER( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	LITHOLOGY	REMARKS
125							
130							
140	grab			140' same as 80' - lithology			
145							
150							
160	grab			160' same as 80' - lithology.			

NOTES:

VISUAL CLASSIFICATION OF SOILS

TA/OU:	SITE NUMBER:	
BORING NUMBER: GW - MW9	COORDINATES:	DATE: 13 JULY 2010
ELEVATION:	GWL: Depth Date/Time	DATE STARTED:
ENGINEER/GEOLOGIST: C. Lum	Depth Date/Time	DATE COMPLETED:
DRILLING METHODS: Hammer bit.		PAGE: 6 OF 6

DEPTH ( )	SAMPLE TYPE & NO.	BLOWS ON SAMPLER/( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	LITHOLOGY	REMARKS
165				Note video recording of borehole shows phyllite schist w/ seal fractures. borehole is fine with no significant deviations or blow outs in sidewall - some slight color variations in grey-green color obs. could not make any obs below water. Water level obs 160-161'.			
170				170' ~~bit~~ casing added			
175				175' approx moisture obs in hole 176' driller states moisture in hole.			
180				180' water in hole samples wet phyllite schist. TD.			

NOTES:

VISUAL CLASSIFICATION OF SOILS

TA/OU:	SITE NUMBER: Burn Site	
BORING NUMBER: CYN - MW10	COORDINATES:	DATE: 14 JULY 2010
ELEVATION:	GWL: Depth Date/Time	DATE STARTED:
ENGINEER/GEOLOGIST: C. Lum	Depth Date/Time	DATE COMPLETED:
DRILLING METHODS: Tri cone		PAGE: 1 OF 6

DEPTH ( )	SAMPLE TYPE & NO.	BLOWS ON SAMPLER/( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	LITHOLOGY	REMARKS
0				0-10' fine grained uniform sand pale yellowish brown (10YR 6/2) interbedded w/ gravels limestone sample dry.	GW		
5							
10	grab						
15							
20	grab			20' same as above, sand is now very pale orange (10YR 8/2) to grayish orange (10YR 7/4.) Note: past 20'-> gravel content of alluvium is increasing.	GW		
25							
30	grab			30' same as before w/ an increase in limestone gravel contents.			

NOTES: ~~[illegible] Mike Skelly~~

VISUAL CLASSIFICATION OF SOILS

TA/OU:	SITE NUMBER:	
BORING NUMBER: CNY - MW 10	COORDINATES:	DATE: 14 JULY 2010
ELEVATION:	GWL: Depth Date/Time	DATE STARTED:
ENGINEER/GEOLOGIST: C Lum	Depth Date/Time	DATE COMPLETED:
DRILLING METHODS: Hammer bit		PAGE: 2 OF 6

DEPTH ( )	SAMPLE TYPE & NO.	BLOWS ON SAMPLER( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	LITHOLOGY	REMARKS
35	~~35~~ grab			15 July 2010 bottom drive casing 34' from top of ground. 35' Phyllite schist bedrock. layered pale purple (5P 6/2) to grayish purple (5P 4/2)			
40							
45							
50	grab			50' same as above - lithology			
55							
60							

NOTES:

VISUAL CLASSIFICATION OF SOILS

TA/OU:	SITE NUMBER:	
BORING NUMBER: [illegible]	COORDINATES:	DATE: [illegible]
ELEVATION:	GWL: Depth Date/Time	DATE STARTED:
ENGINEER/GEOLOGIST: C Lum	Depth Date/Time	DATE COMPLETED:
DRILLING METHODS: Hammer bit		PAGE: 3 OF 6

DEPTH ( )	SAMPLE TYPE & NO.	BLOWS ON SAMPLER/( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	LITHOLOGY	REMARKS
65							
				~64' wall spalling			
70	grab			70' same as 35' - lithology			
75							
80							
85							
90				90' same as 35 - lithology			

NOTES:

VISUAL CLASSIFICATION OF SOILS

TA/OU:	SITE NUMBER:	
BORING NUMBER: [illegible]	COORDINATES:	DATE: [illegible]
ELEVATION:	GWL: Depth Date/Time	DATE STARTED:
ENGINEER/GEOLOGIST: [illegible]	Depth Date/Time	DATE COMPLETED:
DRILLING METHODS: Hammer bit.		PAGE: 4 OF 6

DEPTH ( )	SAMPLE TYPE & NO.	BLOWS ON SAMPLER/( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	LITHOLOGY	REMARKS
95							
100							
105							
110	grab			110' Same as 35' - lithology.			
115				[illegible] water level [illegible] 123.83 - 6' stickup = 117.83' 119.96 - 117.83			
				(118') is [illegible] top of water			
120							

NOTES:

VISUAL CLASSIFICATION OF SOILS

TA/OU:	SITE NUMBER:	
BORING NUMBER: [illegible]	COORDINATES:	DATE: [illegible]
ELEVATION:	GWL: Depth Date/Time	DATE STARTED:
ENGINEER/GEOLOGIST: C Lum	Depth Date/Time	DATE COMPLETED:
DRILLING METHODS: hammer bit		PAGE: 5 OF 6

DEPTH ( )	SAMPLE TYPE & NO.	BLOWS ON SAMPLER/( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	LITHOLOGY	REMARKS
125							
130							
135							
140							
145				149 samples are damp moisture oks.			
150							

NOTES:

VISUAL CLASSIFICATION OF SOILS

TA/OU:	SITE NUMBER:	
BORING NUMBER: OPR - [illegible]	COORDINATES:	DATE: 14 JULY 2010
ELEVATION:	GWL: Depth Date/Time	DATE STARTED:
ENGINEER/GEOLOGIST: C wm	Depth Date/Time	DATE COMPLETED:
DRILLING METHODS: Hammer bit.		PAGE: 6 OF 6

DEPTH ( )	SAMPLE TYPE & NO.	BLOWS ON SAMPLER/( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	LITHOLOGY	REMARKS
155				151-171' screen planned set.			
160							
165							
170				15 JULY 2010 camera operator tagged TD @ 173'			
175				15 JULY 2010 T.D. now 176' driller rept. believes bottom of hole may have fallen in due to water [illegible]			
180				181 TD @ 14 JULY 2010			

NOTES:

VISUAL CLASSIFICATION OF SOILS

TA/OU:	SITE NUMBER: Burn Site	
BORING NUMBER: CYN - MW 11	COORDINATES:	DATE: 15 JULY 2010
ELEVATION:	GWL: Depth Date/Time	DATE STARTED:
ENGINEER/GEOLOGIST: C. Lum	Depth Date/Time	DATE COMPLETED:
DRILLING METHODS: Tri Cone.		PAGE: 1 OF 7

DEPTH ( )	SAMPLE TYPE & NO.	BLOWS ON SAMPLER( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	LITHOLOGY	REMARKS
0				0-10' silty sand w/ gravel layers color ranges from grayish orange (10YR 7/4) to pale yellowish brown (10YR 6/2) limestone gravels ½-¼" matrix slightly moist.	GW		
5							
10	grab						
15							
20	grab			20' same as above. gravels now 1"-¼", moisture content increased slightly. color darker mod. yellowish brown 10YR 5/4 due to moisture.	GW		
25							
30	grab			Approx 29' lag gravel. Approx 30' red/pink dust no phyllite cuttings or hand samples. Change to hammer bit ~32'	GW		

NOTES: ex. MW-11 Depth to bedrock. 29'
Depth to water

Top of bedrock ~29.
gravels → red dust no phyllite samples possibly ground by tricone. or weathered rock

VISUAL CLASSIFICATION OF SOILS

TA/OU:	SITE NUMBER:	
BORING NUMBER: CYN - MW 11	COORDINATES:	DATE: 15 JULY 2020
ELEVATION:	GWL: Depth Date/Time	DATE STARTED:
ENGINEER/GEOLOGIST: C Lum	Depth Date/Time	DATE COMPLETED:
DRILLING METHODS: Hammer bit		PAGE: 2 OF 7

DEPTH ( )	SAMPLE TYPE & NO.	BLOWS ON SAMPLER/( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	LITHOLOGY	REMARKS
	30+ grab			30'+ sample. light brownish gray (5YR 6/1) - pale red ~~(10R 6/2)~~ (10R 6/2) phyllit schist bedrock dry			
35							
40							
45							
50	grab			50' phyllitic schist bedrock pale red (10R 6/2) dry.			
55							
60							

NOTES:

VISUAL CLASSIFICATION OF SOILS

TA/OU:	SITE NUMBER:		
BORING NUMBER: CYN - MW11	COORDINATES:		DATE: 15 JULY 2010
ELEVATION:	GWL: Depth	Date/Time	DATE STARTED:
ENGINEER/GEOLOGIST: C Lum	Depth	Date/Time	DATE COMPLETED:
DRILLING METHODS: Hammer bit			PAGE: 3 OF 7

DEPTH ( )	SAMPLE TYPE & NO.	BLOWS ON SAMPLER/( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	LITHOLOGY	REMARKS
	65						
	70	grab		70' same as 50' - lithology			
75							
80							
85				Video log obs fractures ~ 85-90' moisture?			
				90' same as 50' lithology slight moisture			
90	grab			90+ 16 JULY 2010 small amount of water produced samples wet then moist quickly. gone when well/rig circulated			

NOTES:

VISUAL CLASSIFICATION OF SOILS

TA/OU:	SITE NUMBER:	
BORING NUMBER: CYN - MW11	COORDINATES:	DATE: 16 JULY 2010
ELEVATION:	GWL: Depth Date/Time	DATE STARTED:
ENGINEER/GEOLOGIST: C. Lum	Depth Date/Time	DATE COMPLETED:
DRILLING METHODS: hammer bit		PAGE: 4 OF 7

DEPTH ( )	SAMPLE TYPE & NO.	BLOWS ON SAMPLER/( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	LITHOLOGY	REMARKS
				~~Note: scale change~~			
95		▼		Video log water level 95' 16 JULY 2010 ~ 1:00PM. Driller comment water level may rise over 3 days <weekend> closer to 90'. 90' was were moisture was first encountered			
100							
105							
110	grab			110' same as 90' - lithology same gravel log cuttings limestone. ½ - ¾"			
115							
120							

NOTES:

VISUAL CLASSIFICATION OF SOILS

TA/OU:	SITE NUMBER:		
BORING NUMBER: OU4N - MW11	COORDINATES:		DATE: 16 JULY 2010
ELEVATION:	GWL: Depth	Date/Time	DATE STARTED:
ENGINEER/GEOLOGIST: C Lum	Depth	Date/Time	DATE COMPLETED:
DRILLING METHODS: Hammer bit			PAGE: 5 OF 7

DEPTH ( )	SAMPLE TYPE & NO.	BLOWS ON SAMPLER( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	LITHOLOGY	REMARKS
				Note: scale change index 5'–70'			
130	grab			130' same as 50' or 110' - lithology phyllite schist bedrock w/ gravel laj eavings			
140							
150	grab			150' sample same as 110' - lithology color changed to slightly gray color heterogeneous sample. light brownish gray (5YR 6/1) to pale red (10R 6/2)			
160							
170	grab			170' same as 110' lithology sample heterogeneous w/ increase gray content ~ 60% to pale red 40% (rough approx).			
180							

NOTES:

VISUAL CLASSIFICATION OF SOILS

TA/OU:	SITE NUMBER:		
BORING NUMBER: CYN - MW 11	COORDINATES:		DATE: 16 JULY 2010
ELEVATION:	GWL: Depth	Date/Time	DATE STARTED:
ENGINEER/GEOLOGIST: C. Lum	Depth	Date/Time	DATE COMPLETED:
DRILLING METHODS: Hammer bit			PAGE: 6 OF 7

DEPTH ( )	SAMPLE TYPE & NO.	BLOWS ON SAMPLER( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	LITHOLOGY	REMARKS
190	grab			190' phyllite schist bedrock. light gray (N7) to med. light gray (N6). 194-206' driller reports lot of fractures. difficult drilling.			
200							
210				210' phyllite schist bedrock light brownish gray (5YR 6/1)			
220							
230				226' moist samples - same as 210' ~230' confirmed water. lithology			
231				231'-251' planned to set screens			
240							

NOTES:

VISUAL CLASSIFICATION OF SOILS

TA/OU:	SITE NUMBER:	
BORING NUMBER: CYN - MW11	COORDINATES:	DATE: 16 JULY 2010
ELEVATION:	GWL: Depth Date/Time	DATE STARTED:
ENGINEER/GEOLOGIST: C. Lum	Depth Date/Time	DATE COMPLETED:
DRILLING METHODS: Hammer bit.		PAGE: 7 OF 7

DEPTH ( )	SAMPLE TYPE & NO.	BLOWS ON SAMPLER( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	LITHOLOGY	REMARKS
250	251			231 - 251' planned to set screen Note: while drilling high production of water. TD 256 same as 210'- lithology.			
260							

NOTES:

VISUAL CLASSIFICATION OF SOILS

TA/OU: Burn Site Groundwater	SITE NUMBER:		
BORING NUMBER: CKN-MW12	COORDINATES:		DATE: 20JUL10
ELEVATION: TBD	GWL: Depth 203,5 Date/Time 23JUL10		DATE STARTED: 20JUL10
ENGINEER/GEOLOGIST: M. Skelly	Depth	Date/Time	DATE COMPLETED: 21JUL10
DRILLING METHODS: ARCH			PAGE: 1 OF 4

DEPTH (ft)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	LITHOLOGY	REMARKS
	GRAB ↓			0-5' Sand and gravel, Moderate yellowish brown (10YR 5/4) to Dark Yellowish brown (10YR 4/2), dry to slightly damp, sand mostly medium to coarse, some fine. Gravel is sub-angular to subrounded mostly limestone and phyllite.	GW		? possible artificial fill in native soils by 5'
5				5-10' Sand and gravel, as above (0-5') except Pale yellowish brown (10YR 6/2) to Moderate yellowish brown (10YR 5/4), sand mostly medium sand, dry.	GW/SP		
10				10-15' Sand and gravel, grayish orange (10YR 7/4), mostly fine sand, well sorted, well rounded. Gravel mostly pea sized, some coarser. Gravel lithologies = limestone, phyllite, and olive brown sandstone. dry to slightly damp.	SP		possibly eolian deposit
15				16ft: weathered bedrock reddish-purple phyllite			
				16-20ft Phyllite, mottled red, purple, gray, green and brown some quartz stringers (white to red to brown) overall finely ground up cuttings produce pale red purple (5RP 6/2) to grayish red purple (5RP 4/2).			
20				20-30ft: phyllite, as above.			
25							
30							

NOTES:

VISUAL CLASSIFICATION OF SOILS

TA/OU: Burn Site Groundwater	SITE NUMBER:	
BORING NUMBER: CYN-MW12	COORDINATES:	DATE: 20JUL10
ELEVATION: TBD	GWL: Depth 203.5 Date/Time 23JUL10	DATE STARTED: 20JUL10
ENGINEER/GEOLOGIST: M. Stelly	Depth Date/Time	DATE COMPLETED: 21JUL10
DRILLING METHODS: ARCH		PAGE: 2 OF 4

DEPTH (ft)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	LITHOLOGY	REMARKS
30	GRAB ↓			30-50: Phyllite, as above, dry.			
50				50-70': phyllite, as above, dry.			
70				70-90': phyllite, as above, dry.			
90				90-110': phyllite, as above, dry.			
110				110-130': phyllite, as above, more red than purple (Pale Red, 10YR 6/2) to Pale red purple (5RP 6/2), dry.			
130				142': Major color change to light Bluish gray (5B 7/1) and Grayish blue green (5BG 5/2), still Phyllite (more chlorite), dry.			
150							

NOTES:

VISUAL CLASSIFICATION OF SOILS

TA/OU: Burn Site Groundwater	SITE NUMBER:	
BORING NUMBER: CYN-MW12	COORDINATES:	DATE: 20+21 JUL 10
ELEVATION: TBD	GWL: Depth 203.5 Date/Time 23 JUL 10	DATE STARTED: 20 JUL 10
ENGINEER/GEOLOGIST: M. Skelly	Depth Date/Time	DATE COMPLETED: 21 JUL 10
DRILLING METHODS: ARCH		PAGE: 3 OF 4

DEPTH (ft)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER/( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	LITHOLOGY	REMARKS
150	GRAB ↓			150-170: grey green phyllite as above, more abundant qtz veins (red + white), dry.			
170				170-190; grey green phyllite, as above, dry.			
190				190-210; grey green phyllite as above, more abundant qtz veins (red, pink, white) and quatzite, dry.			
210				210-230: grey green phyllite, as above, dry			
230				230-250: grey green phyllite, dry			Rough drilling conditions
250				250-270: grey green phyllite, damp cuttings starting at ~253' free water being made at ~261' brick red fine-grained material coming up with the grey green phyllite	as above		Possibly fault gouge.
270							

NOTES:

VISUAL CLASSIFICATION OF SOILS

TA/OU: Burn Site Groundwater	SITE NUMBER:	
BORING NUMBER: CYN-MW12	COORDINATES:	DATE: 21 JUL 10
ELEVATION: TBD	GWL: Depth 203.5 Date/Time 23 JUL 10	DATE STARTED: 20 JUL 10
ENGINEER/GEOLOGIST: M. Skelly	Depth Date/Time	DATE COMPLETED: 21 JUL 10
DRILLING METHODS: ARCH		PAGE: 4 OF 4

DEPTH (ft)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	LITHOLOGY	REMARKS
270	GRAB			270-290: grey green phyllite as above, saturated.			
290				TD = 290 ft			

NOTES:

APPENDIX C
Well Construction Diagrams for CYN-MW9, CYN-MW10, CYN-MW11, and CYN-MW12

Well Name:	CYN-MW9	**Drilling Contractor:**	WDC EXPLORATION & WELLS
Project Name:	ER PROJECT	**Drilling Method:**	AIR ROTARY CASING HAMMER
NMOSE Well File Code:	RG-90065, POINT OF DIVERSION: 109	**Borehole Depth (FBGS):**	207
Owner Name:	SNL/NM	**Casing Depth (FBGS):**	200.8
Date Drilling Started:	07/12/2010	**Geo Location:**	SNL/NM BURN SITE
Date Well Dev. Completed:	07/27/2010	**Completion Zone:**	BEDROCK
		Completion Formation:	PRECAMBRIAN PHYLLITE

Survey Data

Survey Date: 08/18/2010

Surveyed By: STEPHEN TOLER

State Plane Coordinates: NAD 83

(X) Easting: 1593006.71

(Y) Northing: 1457261.48

Surveyed Evaluations (FAMSL) NAVD 88

Protective Casing: 6361.18

Top of Inner Well Casing: 6360.67

Concrete Pad: 6358.77

Ground Surface: 6358.5

Calculated Depths and Elevations

Initial Water Elevation (FAMSL): 6197.04

Initial Depth to Water (FBGS): 163.63

Last Measured Water Elevation (FAMSL): 6194.39

Date Last Measured: 7/6/2011

Miscellaneous Information

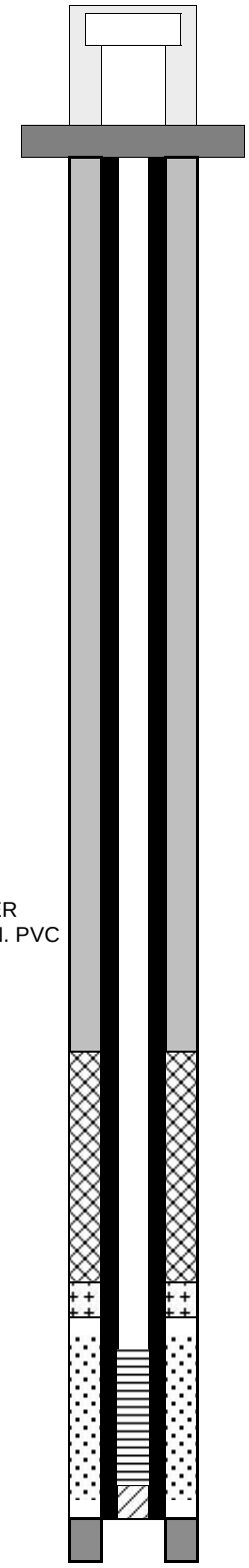
Date of Last Maintenance:

Date Updated: 22-SEP-2010

Date Printed from EDMS: 8/22/2011 4:12:18 PM

Comments:

AQUIFER IS SEMI-CONFINED, FIRST FREE WATER SEEN DURING DRILLING WAS AT 180 FBGS. 5 IN. PVC BUNG INSTALLED IN BOTTOM OF SUMP.



Completion Data Measured Depths (FBGS)

Casing Stickup: 2.2

Interval	Material	Start	Stop	Length	ID / OD (in.)
BOREHOLE		0	207	207	/ 9.625
CASING	PVC	0	200.8	200.8	4.77 / 5.56
GROUT/BACKFILL	BENT. GROUT/CONC	0	132	132	
SEAL	3/8 IN. BENT. CHIPS	132	166	34	
SECONDARY PACK	60 SILICA SAND	166	171	5	
PRIMARY PACK	10-20 SILICA SAND	171	200.8	29.8	
SCREEN	PVC	175.8	195.8	20	
SUMP		195.8	200.8	5	
PLUG BACK	10-20 SILICA SAND	200.8	207	6.2	

Well Name: CYN-MW10
Project Name: ER PROJECT
NMOSE Well File Code: RG-90065, POINT OF DIVERSION: 110
Owner Name: SNL/NM
Date Drilling Started: 07/14/2010
Date Well Dev. Completed: 07/28/2010

Drilling Contractor: WDC EXPLORATION & WELLS
Drilling Method: AIR ROTARY CASING HAMMER
Borehole Depth (FBGS): 181
Casing Depth (FBGS): 175.4
Geo Location: SNL/NM BURN SITE
Completion Zone: BEDROCK
Completion Formation: PRECAMBRIAN PHYLLITE

Survey Data

Survey Date: 08/18/2010
Surveyed By: STEPHEN TOLER

State Plane Coordinates: NAD 83
(X) Easting: 1593043.38
(Y) Northing: 1456813.04

Surveyed Evaluations (FAMSL) NAVD 88

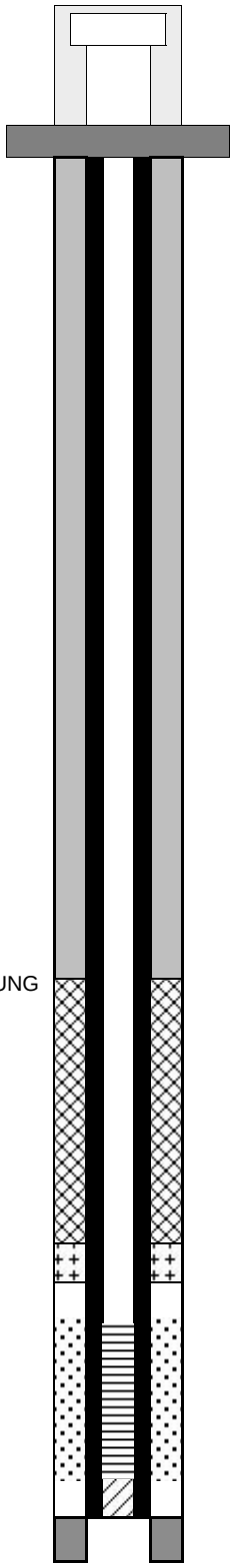
Protective Casing: 6346
Top of Inner Well Casing: 6345.45
Concrete Pad: 6343.32
Ground Surface: 6342.8

Calculated Depths and Elevations

Initial Water Elevation (FAMSL): 6224.37
Initial Depth to Water (FBGS): 121.08
Last Measured Water Elevation (FAMSL): 6221.12
Date Last Measured: 7/6/2011

Miscellaneous Information

Date of Last Maintenance:
Date Updated: 22-SEP-2010
Date Printed from EDMS: 8/22/2011 4:13:38 PM
Comments:
AQUIFER IS SEMI-CONFINED, FIRST VERY DAMP CUTTINGS SEEN DURING DRILLING WAS AT ~160 FBGS. BOREHOLE CUTTINGS AND SAND WERE USED IN THE PLUG BACK INTERVAL. 5 IN. PVC BUNG INSTALLED IN BOTTOM OF SUMP.



Completion Data Measured Depths (FBGS)

Casing Stickup: 2.7

Interval	Material	Start	Stop	Length	ID / OD (in.)
BOREHOLE		0	181	181	/ 9.625
CASING	PVC	0	175.4	175.4	4.77 / 5.56
GROUT/BACKFILL	BENT. GROUT/CEME	0	106	106	
SEAL	3/8 IN. BENT. CHIPS	106	140.1	34.1	
SECONDARY PACK	60 SILICA SAND	140.1	145	4.9	
PRIMARY PACK	10-20 SILICA SAND	145	175.4	30.4	
SCREEN	PVC	150.4	170.4	20	
SUMP		170.4	175.4	5	
PLUG BACK	10-20 SILICA SAND	175.4	181	5.6	

Well Name: CYN-MW11
Project Name: ER PROJECT
NMOSE Well File Code: RG-90065, POINT IF DIVERSION: 111
Owner Name: SNL/NM
Date Drilling Started: 07/15/2010
Date Well Dev. Completed: 07/29/2010

Drilling Contractor: WDC EXPLORATION & WELLS
Drilling Method: AIR ROTARY CASING HAMMER
Borehole Depth (FBGS): 258
Casing Depth (FBGS): 254.8
Geo Location: SNL/NM BURN SITE
Completion Zone: BEDROCK
Completion Formation: PRECAMBRIAN PHYLLITE

Survey Data

Survey Date: 08/18/2010
Surveyed By: STEPHEN TOLER

State Plane Coordinates: NAD 83
(X) Easting: 1593549.25
(Y) Northing: 1457079.74

Surveyed Evaluations (FAMSL) NAVD 88

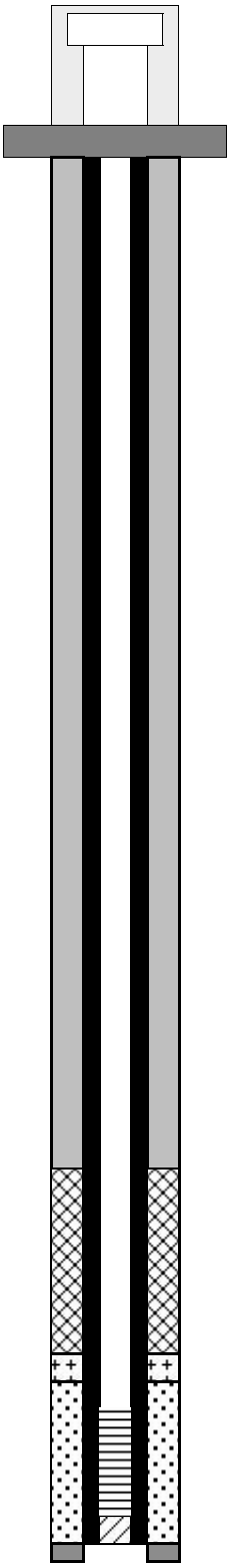
Protective Casing: 6374.87
Top of Inner Well Casing: 6374.41
Concrete Pad: 6372.27
Ground Surface: 6371.9

Calculated Depths and Elevations

Initial Water Elevation (FAMSL): 6277.75
Initial Depth to Water (FBGS): 96.66
Last Measured Water Elevation (FAMSL): 6274.28
Date Last Measured: 7/6/2011

Miscellaneous Information

Date of Last Maintenance:
Date Updated: 22-SEP-2010
Date Printed from EDMS: 8/22/2011 4:14:48 PM
Comments:
AQUIFER IS SEMI-CONFINED, FIRST FREE WATER SEEN DURING DRILLING AT ~230 FBGS. 5 IN. PVC BUNG INSTALLED IN BOTTOM OF SUMP.



Completion Data Measured Depths (FBGS)

Casing Stickup: 2.5

Interval	Material	Start	Stop	Length	ID / OD (in.)
BOREHOLE		0	258	258	/ 9.625
CASING	PVC	0	254.8	254.8	4.77 / 5.56
GROUT/BACKFILL	BENT. GROUT/CEME	0	186	186	
SEAL	3/8 IN. BENT. CHIPS	186	220	34	
SECONDARY PACK	60 SILICA SAND	220	225	5	
PRIMARY PACK	10-20 SILICA SAND	225	254.8	29.8	
SCREEN	PVC	229.8	249.8	20	
SUMP		249.8	254.8	5	
PLUG BACK	10-20 SILICA SAND	254.8	258	3.2	

Well Name: CYN-MW12
Project Name: ER PROJECT
NMOSE Well File Code: RG-90065, POINT OF DIVERSION: 112
Owner Name: SNL/NM
Date Drilling Started: 07/20/2010
Date Well Dev. Completed: 07/29/2010

Drilling Contractor: WDC EXPLORATION & WELLS
Drilling Method: AIR ROTARY CASING HAMMER
Borehole Depth (FBGS): 290
Casing Depth (FBGS): 277.5
Geo Location: SNL/NM BURN SITE
Completion Zone: BEDROCK
Completion Formation: PRECAMBRIAN PHYLLITE

Survey Data

Survey Date: 08/18/2010
Surveyed By: STEPHEN TOLER

State Plane Coordinates: NAD 83
(X) Easting: 1592251.79
(Y) Northing: 1457335.12

Surveyed Evaluations (FAMSL) NAVD 88

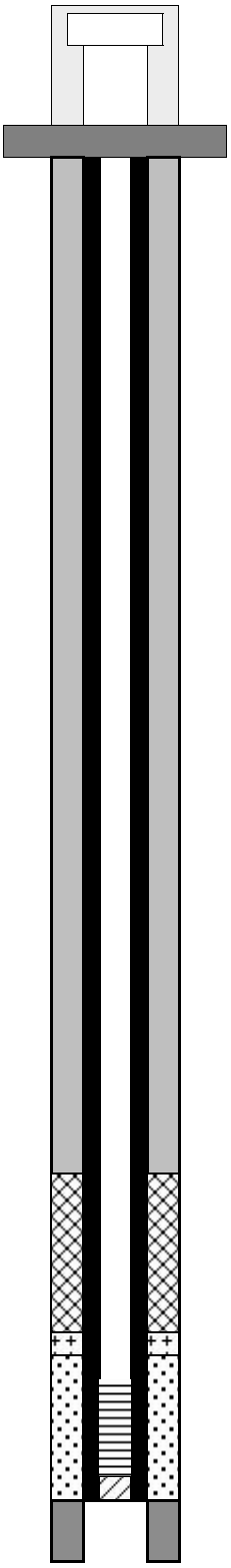
Protective Casing: 6345.67
Top of Inner Well Casing: 6345.16
Concrete Pad: 6343.15
Ground Surface: 6342.9

Calculated Depths and Elevations

Initial Water Elevation (FAMSL): 6139.38
Initial Depth to Water (FBGS): 205.78
Last Measured Water Elevation (FAMSL): 6136.91
Date Last Measured: 7/6/2011

Miscellaneous Information

Date of Last Maintenance:
Date Updated: 22-SEP-2010
Date Printed from EDMS: 8/22/2011 4:15:50 PM
Comments:
AQUIFER IS SEMI-CONFINED, FIRST FREE WATER SEEN DURING DRILLING AT ~261 FBGS. 5 IN. PVC BUNG INSTALLED IN BOTTOM OF SUMP.



Completion Data Measured Depths (FBGS)

Casing Stickup: 2.2

Interval	Material	Start	Stop	Length	ID / OD (in.)
BOREHOLE		0	290	290	/ 9.625
CASING	PVC	0	277.5	277.5	4.77 / 5.56
GROUT/BACKFILL	BENT. GROUT/CEME	0	210	210	
SEAL	3/8 IN. BENT. CHIPS	210	242.8	32.8	
SECONDARY PACK	60 SILICA SAND	242.8	247.5	4.7	
PRIMARY PACK	10-20 SILICA SAND	247.5	277.5	30	
SCREEN	PVC	252.5	272.5	20	
SUMP		272.5	277.5	5	
PLUG BACK	10-20 SILICA SAND	277.5	290	12.5	

APPENDIX D
Video Borehole Logs for CYN-MW9, CYN-MW10, CYN-MW11, and CYN-MW12

Borehole Video Results for CYN-MW9
Conducted by Bruce Reavis and Gary Hall (notes by Mike Skelly), 13 July 2010

Depth (ft bgs)[a]	Feature	Comments
0 to 36	Drive Casing	Casing joints at 5 ft, 10 ft, 15 ft, and 35 ft. Drive shoe from 35 to 36 ft. Some fine-grained drill cuttings raining down past the camera.
36 to 41	Phyllite	Entered bedrock, fairly consistent-sized borehole with hackly fracture; dusty; with occasional horizontal and vertical drill bit scars. Phyllite with near vertical fabric (schistocity), unable to determine color variations.
41 to 43	Fracture	Nearly vertical, less than 1 inch, filled with white mineral.
43 to 46	Phyllite	As above.
46	Fracture	High angle, filled with white mineral.
46 to 60	Phyllite	As above.
60	Fracture Set	Sub horizontal, borehole enlarged and more irregular.
60 to 82	Phyllite	As above, starting at ~69 ft the borehole wall has several prominent vertical drill bit scars that last for tens of feet to the bottom of the borehole.
82	Fracture	Medium angle, filled with white mineral.
82 to 95	Phyllite	As above, starting at 90 ft slight change to smoother borehole.
95 to 97	Fracture Set	Multiple sets of medium angle fractures filled with white mineral.
97 to 102	Phyllite	As above.
102	Fracture	High angle, filled with white mineral.
102 to 104	Phyllite	As above.
104	Fracture	Medium angle, filled with white mineral.
104 to 107	Phyllite	As above.
107	Fracture	Medium angle, filled with white mineral.
107 to 110	Phyllite	As above.
110	Fracture	Low angle, filled with white mineral.
110 to 116	Phyllite	As above.
116	Fracture	Medium angle, no mineralization.
116 to 120	Phyllite	As above.
120	Fracture	Medium angle, no mineralization.
120 to 134	Phyllite	As above.
134	Fracture Set	Medium angle, no mineralization, borehole around fracture set is rougher and enlarged.
134 to 139	Phyllite	As above.
139	Fracture	Medium angle, filled with white mineral.
139 to 142	Phyllite	As above.
142	Fracture	Medium angle, no mineralization.
142 to 143	Phyllite	As above.
143 to 145	Fracture Set	Low angle, filled with white mineral.
145 to 151	Phyllite	As above.
151	Fracture	Low angle, filled with white mineral.
151 to 153	Phyllite	As above.
153 to 158	Fracture Set	Complex, medium to low angle, some filled with white mineral, some with no mineralization.
158 to 161	Phyllite	As above; borehole wall darker, possibly due to dampness. No free water seen in fractures, no groundwater dripping into pool at 161 ft.
161	Groundwater	Very cloudy/opaque. Pool of water is very still, no drips or seeps disturbing surface. Entered groundwater with camera to depth of 171 ft, but due to poor visibility unable to see any geologic features. Tagged bottom of borehole at 207 ft.
171		**END VIDEO**

Notes:

[a] = Feet below ground surface (ft bgs); Footage based on camera cable reading, may differ slightly from lithologic log.

Borehole Video Results for CYN-MW10
Conducted by Bruce Reavis and Gary Hall (notes by Mike Skelly), 15 July 2010

Depth (ft bgs)[a]	Feature	Comments
0 to 34	Drive Casing	Casing joints at 4 ft, 9 ft, and 14 ft. No drive shoe (damaged while drilling on MW9). Some fine-grained drill cuttings raining down past the camera.
34 to 38	Phyllite	Entered bedrock, fairly consistent-sized borehole with hackly fracture; dusty; with occasional horizontal and vertical drill bit scars. Phyllite with near vertical fabric (schistocity), unable to determine color variations.
38 to 40	Fracture Set	High angle, less than 1 inch, filled with white mineral.
40 to 49	Phyllite	As above.
49 to 52	Fracture Set	High angle, filled with white mineral.
52 to 66	Phyllite	As above.
66 to 68	Fracture	High angle to vertical, no mineralization, borehole enlarged and more irregular.
68 to 75	Phyllite	As above.
75 to 77	Fracture	High angle, no mineralization, borehole enlarged and more irregular.
77 to 78	Phyllite	As above.
78	Fracture	High angle, no mineralization.
78 to 82	Phyllite	As above.
82	Fracture	Medium angle, no mineralization.
82 to 90	Phyllite	As above.
90 to 92	Fracture	Vertical, less than 1/2 inch, filled with white mineral.
92 to 108	Phyllite	As above.
108 to 114	Fracture Set	All angles, some filled with white mineral, some with no mineralization, borehole enlarged and more irregular.
114 to 116	Phyllite	As above.
116	Groundwater	Very cloudy/opaque. Pool of water is very still, no drips or seeps disturbing surface. Entered groundwater with camera to depth of 173 ft, some sediment turbidity currents. Bumped into pile of sediment at the bottom of the borehole at 173 ft. Due to poor visibility unable to see any geologic features.
173		**END VIDEO**

Notes:

[a] = Feet below ground surface (ft bgs); Footage based on camera cable reading, may differ slightly from lithologic log.

Borehole Video Results for CYN-MW11
Conducted by Bruce Reavis and Gary Hall (notes by Mike Skelly), 16 July 2010

Depth (ft bgs)[a]	Feature	Comments
0 to 26	Drive Casing	Casing joint at 7 ft. Some fine-grained drill cuttings raining down past the camera.
26 to 29	Colluvium/Alluvium	Sand to cobble sized particles, clasts are angular, borehole enlarged and irregular.
29 to 35	Phyllite	Entered bedrock, highly weathered to 30 ft, fairly consistent-sized borehole with hackly fracture; with occasional horizontal and vertical drill bit scars. Phyllite with near vertical fabric (schistocity), unable to determine color variations.
35 to 36	Fracture	High angle, less than 1 inch, no mineralization, borehole damp from drilling.
36 to 44	Phyllite	As above.
44	Fracture Set	High angle, filled with white mineral.
44 to 53	Phyllite	As above.
53	Fracture Set	High angle, no mineralization.
53 to 62	Phyllite	As above.
62	Fracture	High angle, no mineralization.
62 to 68	Phyllite	As above.
68 to 71	Fracture Set	Low to medium angle, some mineralization.
71 to 77	Phyllite	As above.
77 to 78	Fracture/Fault	Medium angle, no mineralization, borehole enlarged and irregular.
78 to 82	Phyllite	As above.
82	Fracture	High angle.
82 to 87	Phyllite	As above.
87 to 89	Fracture Set	Medium angle, some filled with white mineral, some with no mineralization.
89 to 90	Phyllite	As above.
90	Fracture/Fault	Large feature, borehole enlarged and irregular.
90 to 95	Phyllite	As above.
95	Groundwater	Very cloudy/opaque. Pool of water is very still, no drips or seeps disturbing surface. Entered groundwater with camera to depth of 193 ft. Due to poor visibility unable to see any geologic features. Tagged bottom of borehole at 258 ft.
193		**END VIDEO**

Notes:

[a] = Feet below ground surface (ft bgs); Footage based on camera cable reading, may differ slightly from lithologic log.

Borehole Video Results for CYN-MW12
Conducted by Bruce Reavis and Gary Hall (notes by Mike Skelly), 21 July 2010

Depth (ft bgs)[a]	Feature	Comments
0 to 16	Drive Casing	Technical problems with the camera unable to clearly see geologic features until 199 ft.
16 to 199	Unknown	Technical problems with the camera unable to clearly see geologic features until 199 ft.
199 to 204	Phyllite	Bedrock, consistent-sized borehole with hackly fracture; with occasional horizontal and vertical drill bit scars. Phyllite with near vertical fabric (schistocity), unable to determine color variations.
204	Fracture/Fault	High angle.
204 to 209	Phyllite	As above.
209	Fracture Set	Large low angle, no mineralization, borehole enlarged and irregular; very wet possible groundwater seeping into borehole.
209 to 216	Phyllite	As above.
216	Fracture/Fault	High angle, no mineralization.
216 to 217	Phyllite	As above.
217	Fracture	Horizontal, no mineralization; groundwater spraying into borehole from left of view (~9 o'clock), much less than 1 gallon per minute. Attempt to side scan the fracture but camera snags on rough borehole. Borehole very wet to total depth, groundwater drops falling around camera.
217 to 222	Phyllite	As above.
222	Fracture Set	Low to high angle, some filled with white mineral.
222 to 226	Phyllite	As above.
226	Fracture	Low to high angle, some filled with white mineral; groundwater slowly seeping into borehole from lower-most fracture and flowing down borehole wall.
226 to 232	Phyllite	As above.
232	Groundwater	Very cloudy/opaque. Pool of water shows signs of flow with dripping/seeping water disturbing surface. Entered groundwater with camera to depth of 233 ft. Due to poor visibility unable to see any geologic features. Tagged bottom of borehole at 290 ft.
233		**END VIDEO**

Notes:

[a] = Feet below ground surface (ft bgs); Footage based on camera cable reading, may differ slightly from lithologic log.

APPENDIX E
Well Development Forms for CYN-MW9, CYN-MW10, CYN-MW11, and CYN-MW12

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ATTACHMENT A

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: Burn Site Groundwater	Project No.:
Well I.D.: CKU-MW9	Date: 27 JULY 2010
Weather: Monsoon Season	
Method: X Portable pump ____ Dedicated pump	Pump depth: ~ 190 ft bgs

PURGE MEASUREMENTS

DO mg/L

Depth to Water (FT)	Time 24 hr	Vol ~~L~~ gls	Temp °C	Ec µmho	ORP MV	pH	Flow L gls	Turb NTU	DO %	~~Color and appearance~~
161.5 bgs	1003	50				Bailed				
	1006	62	19.45	1154	107.9	6.91	~1 gpm	766	53.2	4.97
	1010	66	18.56	1108	117.5	6.89	"	640	56.1	5.25
	1014	70	18.69	1140	118.5	6.94	"	572	55.4	5.15
	1018	74	19.35	1139	121.1	6.95	"	337	56.3	5.16
	1022	78	20.00	1136	123.9	6.92	"	161	54.3	5.07
	1025	82	20.36	1135	127.1	6.88	"	114	50.4	4.53
	1029	86	20.53	1130	130.0	6.85	"	79.4	50.4	4.52
	1033	90	20.80	1137	132.9	6.83	"	47.0	51.1	4.60
	1040	98	20.88	1138	132.9	6.82	"	41.6	48.6	4.33
	1048	106	21.32	1138	139.0	6.79	"	21.5	48.2	4.26
	1053	114	21.41	1142	143.7	6.78	"	22.4	53.9	4.75
	1100	122	21.41	1142	149.2	6.74	"	17.0	48.2	4.25
	1106	130	21.66	1145	152.0	6.75	"	25.5	48.1	4.22

COC number(s): N/A

Sample number(s): N/A

Purge Volume Calculations

Well Diameter

2" well: 0.16 gal/ft X____ (height of water column) = _____ gallons

4" well: 0.65 gal/ft X____ (height of water column) = _____ gallons

6" well: 1.47 gal/ft X____ (height of water column) = _____ gallons

Tubing Diameter

1/4" OD: 2.4 ml/ft X____ (length of tubing) = _____ milliileters

3/8" OD: 9.7 ml/ft X____ (length of tubing) = _____ milliileters

1/2" OD!: 2 1.6 ml/ft X____ (length of tubing)) = _____ milliileters

ATTACHMENT A

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: Burn Site Groundwater	Project No.:
Well I.D.: CKN-MW9	Date: 27 JUL 2010
Weather: Monsoon Season	
Method: X Portable pump _____ Dedicated pump	Pump depth: ~190 ft bgs

PURGE MEASUREMENTS

DO mg/L

Depth to Water (FT)	Time 24 hr	Vol. L gls	Temp °C	Ec µmho	ORP MV	pH	Flow L gls	Turb NTU	DO %	~~Color and appearance~~
	1115	138	21.54	1146	156.6	6.73	~1 gpm	18.8	49.5	4.35
	1121	146	21.79	1147	156.9	6.75	~1 gpm	15.2	48.5	4.25
	1130	154	21.88	1149	160.4	6.76	~1 gpm	15.3	48.8	4.25
	1138	162	21.70	1150	162.2	6.77	1 gpm	16.0	51.9	4.52
	1146	170	22.10	1148	161.5	6.75	1 gpm	21.6	48.8	4.24
	1152	178	21.80	1154	164.4	6.72	~1 gpm	11.7	48.7	4.25
	1159	184	22.15	1152	165.1	6.71	~1 gpm	13.7	49.6	4.31
	1207	192	22.07	1149	166.2	6.71	"	13.2	48.6	4.22
	1215	200	22.16	1151	165.1	6.71	"	12.5	48.6	4.22
	1223	208	22.20	1156	~~456~~	6.72	"	11.4	48.7	4.22
	1230	216	22.21	1155	~~456~~	6.72	"	11.1	49.9	4.34
	1237	224	22.22	1156	169.4	6.71	"	10.1	49.0	4.24
	1244	232	22.19	1157	170.5	6.70	"	9.55	48.2	4.18
	1253	240	22.29	1158	170.0	6.71	"	9.44	49.1	4.25
COC number(s): N/A										
Sample number(s): N/A										

Purge Volume Calculations

Well Diameter

2" well: 0.16 gal/ft X____ (height of water column) = _____ gallons
4" well: 0.65 gal/ft X____ (height of water column) = _____ gallons
6" well: 1.47 gal/ft X____ (height of water column) = _____ gallons

Tubing Diameter

1/4" OD: 2.4 ml/ft X____ (length of tubing) = _____ milliliters
3/8" OD: 9.7 ml/ft X____ (length of tubing) = _____ milliliters
1/2" ODl: 2 1.6 ml/ft X____ (length of tubing)) = _____ milliliters

ATTACHMENT A

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: Burn Site Groundwater	Project No.:
Well I.D.: CYN-MW09	Date: 27 JULY 2010
Weather Monsoon Season	
Method: X Portable pump _____ Dedicated pump	Pump depth: ~190 ft bgs

PURGE MEASUREMENTS

DO mg/L

Depth to Water (FT)	Time 24 hr	Vol. L gls	Temp °C	Ec µmho	ORP MV	pH	Flow L gls	Turb NTU	DO %	~~Color and appearance~~
	1300	248	22.28	1157	170.1	6.71	~1 gpm	6.53	49.4	4.28
	1309	256	22.19	1160	170.1	6.72	"	6.84	48.3	4.20
	1315	264	22.32	1152	171.4 6.71	5.54	"	5.54	48.9	4.24
	1323	272	22.11	1160	170.7	6.72	"	8.23	50.0	4.34
	1330	280	21.94	1160	172.1	6.72	"	6.89	50.0	4.36
	1337	288	21.91	1162	172.7	6.71	"	5.99	49.5	4.31
	1342	296	21.90	1162	173.9	6.72	"	8.33	49.7	4.33

COC number(s): N/A

Sample number(s): N/A

Purge Volume Calculations

Well Diameter

2" well: 0.16 gal/ft X____ (height of water column) = _____ gallons

4" well: 0.65 gal/ft X____ (height of water column) = _____ gallons

6" well: 1.47 gal/ft X____ (height of water column) = _____ gallons

Tubing Diameter

1/4" OD: 2.4 ml/ft X____ (length of tubing) = _____ millileters

3/8" OD: 9.7 ml/ft X____ (length of tubing) = _____ millileters

1/2" OD!: 2 1.6 ml/ft X____ (length of tubing)) = _____ millileters

ATTACHMENT A

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: Burn Site Groundwater	Project No.:
Well I.D.: CAU-MW10	Date: 27 JUL 10 & 28 JULY 10
Weather: Monsoon Season	
Method: X Portable pump ____ Dedicated pump	Pump depth: ~ 165 ft bgs

PURGE MEASUREMENTS

DO mg/L

Depth to Water (FT)	Time 24 hr	Vol. L gls	Temp °C	Ec µmho	ORP MV	pH	Flow L gls	Turb NTU	DO %	~~Color and appearance~~
118.0 bgs		100	—	—	Bailed and over pumped					—
28 JULY 10	735	104	15.99	964	105.2	7.46	~1 gpm	32.5	21.3	2.10
	738	108	15.55	960	103.7	7.38	~1 gpm	-e3-	13.3	1.32
	7:42	112	16.44	990	110.7	7.26	~ "	79.5	44.1	4.30
	7:46	116	17.66	973	115.1	7.23	~ "	31.9	~~31.9~~ 46.2	4.55
	7:49	120	17.77	972	118.5	7.19	"	23.8	46.8	4.44
	7:51	124	18.11	971	122.5	7.16	"	21.8	46.5	4.38
	7:54	128	18.47	969	124.9	7.14	"	25.6	47.7	4.46
	7:58	132	18.70	967	127.3	7.11	"	57.6	48.8	4.54
	8:01	136	18.88	966	127.3	7.12	"	79.2	51.6	4.81
	8:03	140	19.02	965	128.3	7.10	"	59.6	50.8	4.70
	8:05	144	19.12	963	129.0	7.09	"	52.6	52.0	4.79
	8:08	148	19.20	959	129.5	7.09	"	35.7	52.7	4.86
	8:12	152	19.27	961	129.9	7.10	"	35.7	54.5	5.01
COC number(s): N/A										
Sample number(s): N/A										

Purge Volume Calculations

Well Diameter

2" well: 0.16 gal/ft X____ (height of water column) = _____ gallons
4" well: 0.65 gal/ft X____ (height of water column) = _____ gallons
6" well: 1.47 gal/ft X____ (height of water column) = _____ gallons

Tubing Diameter

1/4" OD: 2.4 ml/ft X____ (length of tubing) = _____ milliliters
3/8" OD: 9.7 ml/ft X____ (length of tubing) = _____ milliliters
1/2" OD!: 2 1.6 ml/ft X____ (length of tubing)) = _____ milliliters

ATTACHMENT A

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: Burn Site Groundwater	Project No.:
Well I.D.: CYN-MW10	Date: 28 JULY 2010
Weather: Monsoon Season	
Method: X Portable pump _____ Dedicated pump	Pump depth: ~165 ft bgs

PURGE MEASUREMENTS

DO mg/L

Depth to Water (FT)	Time 24 hr	Vol. L gls	Temp °C	Ec µmho	ORP MV	pH	Flow L gls	Turb NTU	DO %	~~Color and appearance~~
▲ 8 gal	8:17	160	19.32	961	131.1	7.08	~1 gpm	35.7	54.4	4.99
	8:22	168	19.47	960	133.7	7.06	"	6.15	55.7	5.11
	8:29	176	X6. 19.60	957	134.8	7.06	"	4.91	56.2	5.14
	8:35	184	19.70	959	136.4	7.05	"	3.42	57.0	5.20
	8:42	192	19.74	959	138.2	7.04	"	3.07	57.8	5.27
	8:48	200	19.82	958	139.0	7.06	"	2.17	58.1	5.29

COC number(s): N/A

Sample number(s): N/A

Purge Volume Calculations

Well Diameter

2" well: 0.16 gal/ft X____ (height of water column) = _____ gallons

4" well: 0.65 gal/ft X____ (height of water column) = _____ gallons

6" well: 1.47 gal/ft X____ (height of water column) = _____ gallons

Tubing Diameter

1/4" OD: 2.4 ml/ft X____ (length of tubing) = _____ millileters

3/8" OD: 9.7 ml/ft X____ (length of tubing) = _____ millileters

1/2" OD!: 2 1.6 ml/ft X____ (length of tubing)) = _____ millileters

ATTACHMENT A

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: Burn Site Groundwater	Project No.:
Well I.D.: CAN-MW11	Date: 28 JULY 2010.
Weather: Monsoon Season	
Method: X Portable pump ____ Dedicated pump	Pump depth: ~245 ftbgs

PURGE MEASUREMENTS

DO mg/L

Depth to Water (FT)	Time 24 hr	Vol. L gls 50	Temp °C	Ec µmho	ORP MV	pH	Flow L gls	Turb NTU	DO %	~~Color and appearance~~
93.9 bgs	12:09	54	18.31	1014	59.9	7.56	~1 gpm	E3	12.1	1.12
	12:12	58	18.53	1008	71.1	7.14	"	E3	7.9	0.73
	12:15	62	18.79	1012	74.5	7.00	"	E3	6.8	0.63
	12:19	66	19.08	1009	72.0	6.99	"	E3	6.4	0.59
	12:22	70	18.65	1000	68.8	7.03	"	E3	5.5	6.51
	12:26	74	18.47	0.983	65.2	7.07	"	E3	4.7	0.43
	12:30	78	18.49	0.974	59.3	7.09	"	"1000"	4.3	0.40
	12:33	82	18.52	969	55.8	7.11	"	"1000"	4.0	0.37
	12:37	86	18.87	970	50.9	7.11		"1000"	5.0	0.46
	12:41	90	19.36	0975	51.1	7.10	"	E3	5.7	0.52
	12:45	94	19.45	975	50.0	7.11	"	E3	7.0	0.62
	12:49	98	19.63	975	50.0	7.09	"	E3	6.3	0.58
	12:54	102	19.37	977	47.3	7.10	"	E3	6.0	0.55
	12:57	106	19.17	979	47.0	7.10	"	E3	6.0	0.55

COC number(s): N/A

Sample number(s): N/A

Purge Volume Calculations

Well Diameter

2" well: 0.16 gal/ft X____ (height of water column) = _____ gallons
4" well: 0.65 gal/ft X____ (height of water column) = _____ gallons
6" well: 1.47 gal/ft X____ (height of water column) = _____ gallons

Tubing Diameter

1/4" OD: 2.4 ml/ft X____ (length of tubing) = _____ millileters
3/8" OD: 9.7 ml/ft X____ (length of tubing) = _____ millileters
1/2" OD!: 2 1.6 ml/ft X____ (length of tubing)) = _____ millileters

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ATTACHMENT A

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: Burn Site Groundwater	Project No.:
Well I.D.: CYN - MW11	Date: 28 JULY 2010
Weather: Monsoon Season	
Method: X Portable pump _____ Dedicated pump	Pump depth: ~245 ftbgs

PURGE MEASUREMENTS

DO mg/L

Depth to Water (FT)	Time 24 hr	Vol. L gls	Temp °C	Ec µmho	ORP MV	pH	Flow L gls	Turb NTU	DO %	~~Color and appearance~~
▲ 8 gal.	13:06	114	19.20	981	48.4	7.10	~ 1 gpm	"E3"	6.4	0.60
	13:13	122	19.47	982	57.0	7.14	~ "	"E3"	8.3	0.76
	13:17	130	19.46	982	56.2	7.10	"	E3	8.3	0.76
	13:21	138	20.07	982	59.3	7.09	"	E3	9.4	0.85
	13:25	146	19.81	989	62.2	7.13	"	"1000"	9.3	0.84
	13:30	154	19.71	982	65.7	7.11	"	"1000"	11.4	1.04
▲ 16 gal.	13:36	170	19.66	985	69.3	7.10	~ 2 gpm	"1000"	17.5	1.61
	13:42	186	19.58	986	74.1	7.10	"	687	15.3	1.40
	13:49	202	19.47	988	77.3	7.07	"	523	14.1	1.29
	13:54	~~226~~ 218	19.53	987	80.7	7.09	"	456	16.0	1.46
	14:00	236	19.32	991	84.1	7.08	"	384	16.1	1.50
	14:06	252	19.22	991	86.8	7.07	"	391	16.7	1.54
	14:12	278	19.15	995	90.5	7.06	"	326	17.6	1.62
	14:17	294	19.11	995	92.7	7.07	"	357	18.5	1.70
COC number(s): N/A										
Sample number(s): N/A										

Purge Volume Calculations

Well Diameter

2" well: 0.16 gal/ft X____ (height of water column) = _____ gallons
4" well: 0.65 gal/ft X____ (height of water column) = _____ gallons
6" well: 1.47 gal/ft X____ (height of water column) = _____ gallons

Tubing Diameter

1/4" OD: 2.4 ml/ft X____ (length of tubing) = _____ millileters
3/8" OD: 9.7 ml/ft X____ (length of tubing) = _____ millileters
1/2" OD!: 2 1.6 ml/ft X____ (length of tubing)) = _____ millileters

ATTACHMENT A

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: Burn Site Groundwater	Project No.:
Well I.D.: CYN-MW11	Date: 28 JULY 2010
Weather: Monsoon Season	
Method: X Portable pump ____ Dedicated pump	Pump depth: ~245 ftbgs

PURGE MEASUREMENTS

DO mg/L

Depth to Water (FT)	Time 24 hr	Vol. L gls	Temp °C	Ec µmho	ORP MV	pH	Flow L gls	Turb NTU	DO %	~~Color and appearance~~
16 gal.	14:23	310	19.07	1000	96.2	7.06	~2 gpm	322	18.2	1.67
7/29/10		336								
8	7:45	318	16.63	1011	-2.8	7.29	1 gpm	29.2	5.6	0.54
	7:48	326	17.13	1013	8.8	7.21	1 gpm	410	12.0	1.15
	7:54	334	17.75	1013	39.7	7.15	1 gpm	37.4	10.3	0.96
	8:00	342	17.98	1007	46.5	7.13	1 gpm	20.7	8.2	0.77
	8:08	350	18.24	1001	58.4	7.09	1 gpm	15.8	8.8	0.92
	8:13	358	18.38	997	63.5	7.07	1 gpm	12.2	9.4	0.88
	8:19	366	18.52	1000	68.9	7.04	1 gpm	9.86	10.8	1.01
	8:24	374	18.55	999	74.2	7.03	1 gpm	8.15	12.2	1.13
	8:28	382	18.7	1001	79.6	7.04	1 gpm	7.00	12.2	1.13
	8:34	390	18.82	1004	84.7	7.00	1 gpm	4.37	12.7	1.18
	8:38	398	18.88	1002	87.7	7.02	1 gpm	4.58	14.4	1.33
	8:44	406	18.99	1002	92.6	7.01	1 gpm	4.03	14.7	1.36
COC number(s): N/A										
Sample number(s): N/A										

Purge Volume Calculations

Well Diameter

2" well: 0.16 gal/ft X____ (height of water column) = _____ gallons
4" well: 0.65 gal/ft X____ (height of water column) = _____ gallons
6" well: 1.47 gal/ft X____ (height of water column) = _____ gallons

Tubing Diameter

1/4" OD: 2.4 ml/ft X____ (length of tubing) = _____ millileters
3/8" OD: 9.7 ml/ft X____ (length of tubing) = _____ millileters
1/2" ODl: 2 1.6 ml/ft X____ (length of tubing)) = _____ millileters

ATTACHMENT A

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: Burn Site Groundwater	Project No.:
Well I.D.: CYN- MW12	Date: 7/29/10
Weather Monsoon Season	
Method: Y Portable pump _____ Dedicated pump	Pump depth: ~268' bgs

PURGE MEASUREMENTS

DO mg/L

Depth to Water (FT)	Time 24 hr	Vol. L gls	Temp °C	Ec µmho	ORP MV	pH	Flow L gls	Turb NTU	DO %	~~Color and appearance~~
203.5 bgs	[redacted]									
16:40		175 gal	+	55 gal	BAILED					
12:42		175	21.09	1055	-6.7	7.07	1 gpm	149	52.3	4.62
12:46		191	20.88	1046	-16.8	6.72	1 gpm	103	50.9	4.52
12:50		199	22.22	1048	-11.9	6.64	1 gpm	61.2	50.5	4.47
12:55		207	21.32	1048	-38.2	6.65	1 gpm	45.4	49.3	4.35
13:00		215	21.68	1009	-33.4	6.68	1 gpm	250	44.6	3.90
13:07		223	22.02	1048	-46.9	6.71	1 gpm	101	39.0	3.38
13:14		231	22.55	1052	-50.4	6.73	1 gpm	252	35.4	3.05
13:20		239	22.42	1056	-48.3	6.71	1 gpm	169	31.8	2.75
13:26		247	22.3	1054	-48.8	6.72	1 gpm	184	27.4	2.73
13:34		255	22.16	1054	-49.3	6.71	1 gpm	69.3	24.1	2.09
13:43		263	21.87	1054	-64.6	6.74	1 gpm	26.9	21.6	1.89
COC number(s): N/A										
Sample number(s): N/A										

Purge Volume Calculations

Well Diameter

2" well: 0.16 gal/ft X____ (height of water column) = _____ gallons
4" well: 0.65 gal/ft X____ (height of water column) = _____ gallons
6" well: 1.47 gal/ft X____ (height of water column) = _____ gallons

Tubing Diameter

1/4" OD: 2.4 ml/ft X____ (length of tubing) = _____ millileters
3/8" OD: 9.7 ml/ft X____ (length of tubing) = _____ millileters
1/2" OD!: 2 1.6 ml/ft X____ (length of tubing)) = _____ millileters

ATTACHMENT A

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name:	Burn Site Groundwater	Project No.:	
Well I.D.:	CYN-MW12	Date:	7/29/10
Weather	Monsoon Season		
Method:	X Portable pump	____ Dedicated pump	Pump depth: ~268' bgs

PURGE MEASUREMENTS

DO mg/L

Depth to Water (FT)	Time 24 hr	Vol. L gls	Temp °C	Ec µmho	ORP MV	pH	Flow L gls	Turb NTU	DO %	~~Color and appearance~~
13:49		271	21.76	1057	-42.6	6.73	1gpm	17.8	20.7	1.87
13:56		279	21.71	1054	-36.3	6.74		13.0	20.7	1.81
14:03		287	21.85	1055	-21.2	6.74	1gpm	11.9	19.9	1.71
14:10		295	21.8	1058	-16.9	6.75	1gpm	6.02	19.5	1.52
14:17		303	21.86	1065	-13.9	6.73	1GPM	7.79	17.0	1.48
14:24		311	21.96	1059	-10.1	6.76	1GPM	6.61	23.	2.05
14:32		319	22.16	1061	-11.9	6.75	1GPM	16.00	18.2	1.56
14:50		327	21.72	1068	-56	6.8	1GPM	12.5	15.1	1.32
14:55		335	21.81	1064	-11.2	6.78	1GPM	9.72	14.7	1.29
15:02		403	21.97	1066	-8.6	6.78	1GPM	12.4	15.5	1.35
15:08		411	22.21	1067	3.2	6.77	1GPM	11.00	16.0	1.38
15:15		419	22.36	1041	8.1	6.75	1GPM	2.79	15.8	1.36
15:23		427	22.6	1072	~~-2.4~~ -0.6	6.74	1GPM	3.05	15.4	1.33
COC number(s):		N/A								
Sample number(s):		N/A								

Purge Volume Calculations

Well Diameter

2" well: 0.16 gal/ft X____ (height of water column) = _____ gallons
4" well: 0.65 gal/ft X____ (height of water column) = _____ gallons
6" well: 1.47 gal/ft X____ (height of water column) = _____ gallons

Tubing Diameter

1/4" OD: 2.4 ml/ft X____ (length of tubing) = _____ milliileters
3/8" OD: 9.7 ml/ft X____ (length of tubing) = _____ milliileters
1/2" OD!: 2 1.5 ml/ft X____ (length of tubing)) = _____ milliileters

ATTACHMENT A

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: Burn Site Groundwater	Project No.:
Well I.D.: CYN-MW12	Date: 7/29/10
Weather Monsoon Season	
Method: X Portable pump _____ Dedicated pump	Pump depth: 268 ft bgs ~~ZZ~~

PURGE MEASUREMENTS

DO mg/L

Depth to Water (FT)	Time 24 hr	Vol. L gls	Temp °C	Ec µmho	ORP MV	pH	Flow L gls	Turb NTU	DO %	~~Color and appearance~~
	15:27	435	22.6	1073	1.7	6.74	1 GPM	2.47	16.1	1.39
COC number(s): N/A										
Sample number(s): N/A										

Purge Volume Calculations

Well Diameter

2" well: 0.16 gal/ft X____ (height of water column) = _____ gallons
4" well: 0.65 gal/ft X____ (height of water column) = _____ gallons
6" well: 1.47 gal/ft X____ (height of water column) = _____ gallons

Tubing Diameter

1/4" OD: 2.4 ml/ft X____ (length of tubing) = _____ milliileters
3/8" OD: 9.7 ml/ft X____ (length of tubing) = _____ milliileters
1/2" OD!: 2 1.6 ml/ft X____ (length of tubing)) = _____ milliileters

APPENDIX F
Slug Test Field Report for CYN-MW9, CYN-MW10, CYN-MW11, and CYN-MW12

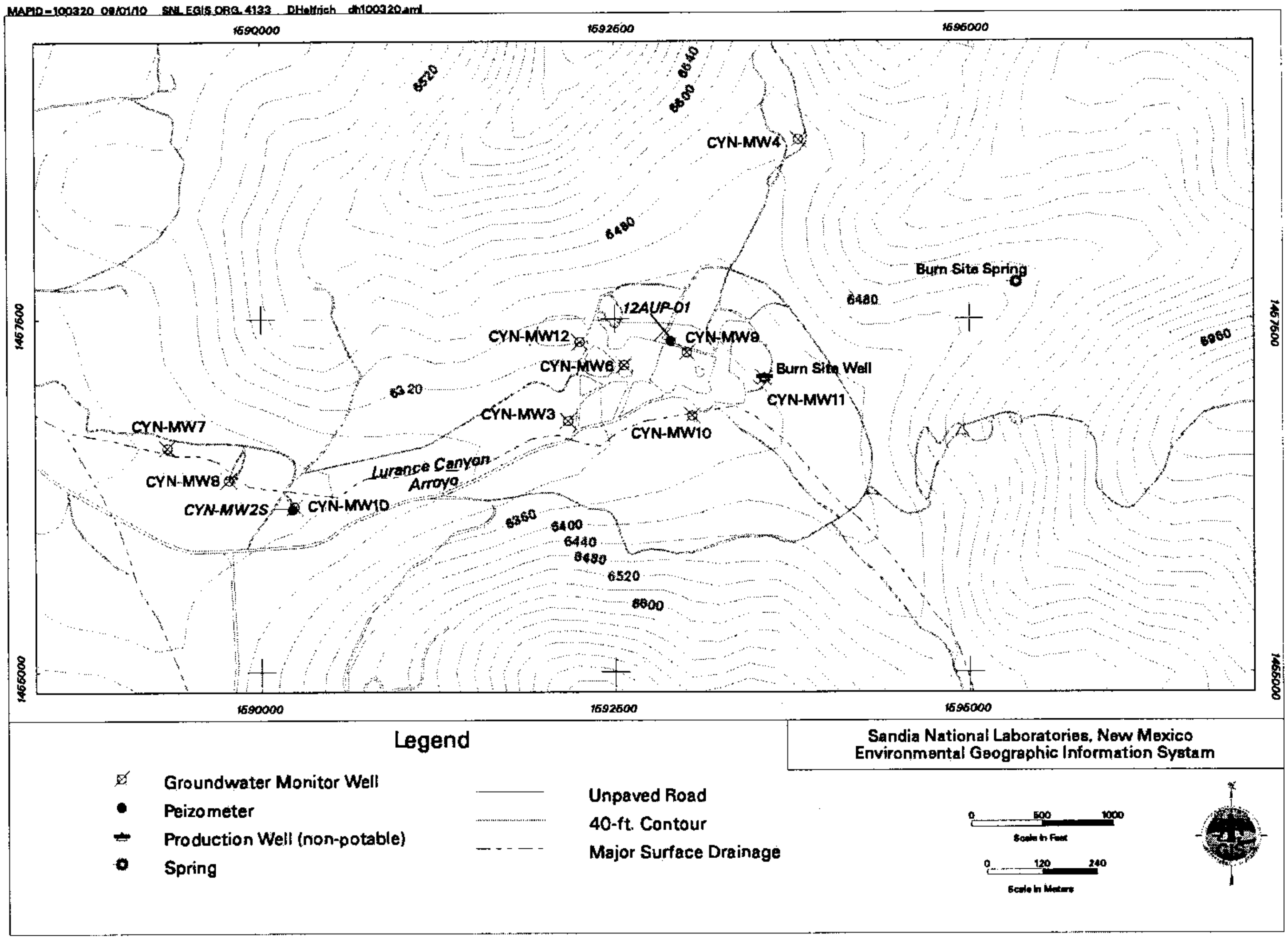
Technical Memorandum—Field Report
Slug Tests at Burn Site Groundwater Monitoring Wells
SNL/NM Environmental Restoration Project

Introduction/Background

This Field Report describes the activities associated with conducting slug tests at groundwater monitoring wells at the Burn Site Groundwater (BSG) study are. The slug tests were performed to determine the hydraulic conductivity of the aquifer materials in the study area. Hydraulic conductivity is expressed as a velocity, and is often presented in units of centimeters per second (cm/sec) or feet per minute (ft/min). The equivalent hydraulic conductivities presented in the tables of this report are also presented as ft/day and ft/year, units that may be more intuitive for some readers.

The hydraulic conductivity data presented in this report will be used to refine the BSG hydrogeologic conceptual model. The objective of this field investigation was to determine the hydraulic properties of the regional aquifer. In general, the hydraulic properties of an aquifer can be determined either by conducting pumping tests or slug tests. Pumping tests were not considered for the BSG study area because of logistical considerations, such as the need to contain and dispose of high volumes of groundwater. Slug tests induce stress on an aquifer by instantaneously injecting or removing a discrete volume of material into the well and measuring changes in the water level over time as the aquifer returns to equilibrium. Originally, slug tests were designed to insert or withdraw a specific volume of water. However, slug tests using an "artificial slug" (solid cylinder of known volume) are more commonly performed.

The four groundwater monitoring wells tested in this report were installed at the BSG study area in December 2010 and January 2011 and include CYN-MW9, CYN-MW10, CYN-MW11, and CYN-MW12 (Figure 1; Table 1).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1590000
1592500
1595000
1467500
1465000
CYN-MW4
CYN-MW7
CYN-MW8
CYN-MW2S
CYN-MW1D
CYN-MW12
CYN-MW6
CYN-MW3
CYN-MW9
CYN-MW10
CYN-MW11
12AUP-01
Burn Site Well
Burn Site Spring
Lurance Canyon Arroyo
6520
6640
6600
6480
6320
6360
6400
6440
6480
6520
6600
6960
Legend
Groundwater Monitor Well
Peizometer
Production Well (non-potable)
Spring
Unpaved Road
40-ft. Contour
Major Surface Drainage
Sandia National Laboratories, New Mexico
Environmental Geographic Information System
0 500 1000
Scale in Feet
0 120 240
Scale in Meters

Table 1

Monitoring Wells Selected for Slug Testing in the BSG Study Area.

Well ID	Year Installed	Depth to Water[a] (ft btoc)	Date(s) Tested
BSG-MW9	2010	164.28	15 December 2010
BSG-MW10	2010	122.28	16 December 2010
BSG-MW11	2010	98.60	28 January 2011
BSG-MW12	2010	206.86	28 January 2011

[a] = Groundwater depths measured on the test date prior to initiating the slug test.
BSG = Burn Site Groundwater.
btoc = below top of casing.
ft = feet.
ID = identification.
MW = monitoring well.

Field Methods

The slug tests were completed between 15 December, 2010 and 28 January, 2011, and the field team consisted of:

Robert Lynch	Field Technician/Site Safety Officer Designee
Alfred Santillanes	Field Technician
William Gibson	Field Technician

Equipment used to conduct the slug tests included support vehicles and the water-sampling truck for hauling the required equipment, and also used as the platform for injecting and withdrawing the slug. The slug was raised and lowered by means of a large diameter (~4 ft) motorized spool with a graduated ¼ inch cable. The slug is a solid aluminum rod with a diameter of 3.25 inches and a length of 48 inches, providing a total displacement of approximately 397 in^3. Another reel with the transducer cable was mounted on a support truck, and a third handheld reel was used to lower the down-hole barometer. The slug and any submerged cable were decontaminated at the Environmental Restoration Field Office or at the well head before injecting the slug into the well.

The Field Operating Procedure (FOP) 09-05 (SNL/NM June 2009) was used for all investigation activities at this site. In brief, the following steps were used at each well:

- The static water level was measured and recorded.
- The transducer was lowered into the well to a depth of approximately 10 ft below the static water level and allowed to stabilize. The transducer was a Solinst™ electronic pressure transducer (Levelogger® Model RL 3001) and Leveloader™ Gold data logger software.
- The slug was lowered into the well to approximately 5 ft above the static water level.
- The barometer was programmed to take periodic atmospheric pressure readings and lowered into the well to a depth of approximately 10 ft above the static water level. The barometer transducer was a Solinst™ Barologger™ (Model 3001).
- The measurement interval was set up at a variable rate, with frequent measurements at the start of the test and less frequent measurements later in the test. The variable measurement interval was used for slug tests because the water level changes rapidly in the first few seconds of the test and then slower as the test continues.
- The data logger was started and recorded several static pressure readings.
- The slug was lowered into the water-column in the well as quickly and smoothly as possible to raise the water level (to simulate "injection") and the water level was allowed to stabilize. Water-level changes induced in the wells were measured to $\pm$ 0.0001 ft by the transducer.
- The water level and time measurements were continuously recorded until the water level was within 0.1 foot of the static water level, or until recovery was 95%. The data logger was stopped and the water level allowed to re-stabilize, if it was not already.
- The barometer was removed and barometric data from the test interval downloaded on the laptop computer. The computer software compensates the water level data for barometric changes and the corrected data curves were viewed on the laptop to ensure usability.
- The barometer was re-inserted and the slug was removed to lower the water level (to simulate "withdrawal") and the water level was allowed to stabilize. Again, the transducer measured water-level changes induced in the wells.
- The slug was lowered and raised at a consistent rate of 0.72 seconds per foot, which equates to completely submerging or exposing the entire slug in 2.9 seconds.
- In order to document the reproducibility of the test, the process was repeated such that slug was injected twice and withdrawn twice for a total of four data sets for wells CYN-

MW9 and CYN-MW10. Due to time constraints, there were only two injection and one withdrawal for a total of three data sets for wells CYN-MW11 and CYN-MW12.

For all slug test activities Level D personal protective equipment was required. Daily tailgate safety meetings were held by the site health and safety officer (or designee) and documented on the Tailgate Safety Meeting Form. All equipment and personnel followed appropriate decontamination procedures per FOP 05-03 (SNL/NM August 2007). Less than 1 gallon of decontamination water per day was generated by slug test activities and discharged to the land surface.

Data Analysis

After completion of the field portion of the slug test, the following steps were used to prepare each data set for analysis:

- Electronic information in the transducer was directly transferred to a laptop computer.
- Data logger recordings were imported from a text file into a spreadsheet.
- In the spreadsheet, the time-of-day readings were converted to elapsed time, and changes in water level relative to the transducer were converted to depth to water measurements.
- Time-versus-water level curves were generated and inspected.
- Data was culled for extraneous data points (such as too many data points after water levels have stabilized).
- Selected data was imported into the AquiferTest™ Software (Waterloo Hydrogeologic 2001) and analytical solutions were generated using the Hvorslev and Bouwer-Rice methods (described below).
- The analytical solutions were compiled and are provided on Table 2.
- Records generated from this procedure were submitted to the SNL/NM Customer Funded Record Center.

The data gathered during the slug tests was analyzed using AquiferTest™ 3.0 Software developed by Waterloo Hydrogeologic, Inc (Waterloo Hydrogeologic 2001). This software employs analytical methods developed by M.J. Hvorslev (1951) and Bouwer-Rice (1976) to produce graphical solutions of hydraulic conductivity. The use of the software followed the manufacturer's operating manual. The result of the analysis was the determination of the hydraulic conductivity for each of the tests. The hydraulic conductivity values were then compiled into Table 2 with averages calculated for each well.

Table 2

Summary of Hydraulic Conductivity Values for BSG Monitoring Wells Tested December 2010 and January 2011

Well ID	Test ID	Analysis Method	Hydraulic Conductivity (K)			
			(ft/min)	(ft/day)	(ft/year)	(cm/sec)
CYN-MW9	Injection 1	Hvorslev	3.13E-04	4.51E-01	165	1.59E-04
		Bouwer-Rice	2.66E-04	3.83E-01	140	1.35E-04
	Withdrawal 1	Hvorslev	1.44E-03	2.08E+00	759	7.34E-04
		Bouwer-Rice	1.23E-03	1.77E+00	646	6.24E-04
	Injection 2	Hvorslev	2.03E-03	2.93E+00	1069	1.03E-03
		Bouwer-Rice	1.73E-03	2.49E+00	909	8.78E-04
	Withdrawal 2	Hvorslev	1.46E-03	2.10E+00	767	7.41E-04
		Bouwer-Rice	1.24E-03	1.79E+00	653	6.31E-04
	Average		**1.21E-03**	**1.75E+00**	**638**	**6.17E-04**
CYN-MW10	Injection 1	Hvorslev	9.38E-04	1.35E+00	493	4.76E-04
		Bouwer-Rice	8.54E-04	1.23E+00	449	4.34E-04
	Withdrawal 1	Hvorslev	7.57E-04	1.09E+00	398	3.85E-04
		Bouwer-Rice	6.94E-04	9.99E-01	365	3.52E-04
	Injection 2	Hvorslev	7.29E-04	1.05E+00	383	3.70E-04
		Bouwer-Rice	6.65E-04	9.57E-01	349	3.38E-04
	Withdrawal 2	Hvorslev	8.19E-04	1.18E+00	431	4.16E-04
		Bouwer-Rice	7.50E-04	1.08E+00	394	3.81E-04
	Average		**7.76E-04**	**1.12E+00**	**408**	**3.94E-04**
CYN-MW11	Injection 1	Hvorslev	1.35E-03	1.94E+00	708	6.84E-04
		Bouwer-Rice	1.45E-03	2.09E+00	763	7.37E-04
	Withdrawal 1	Hvorslev	9.38E-04	1.35E+00	493	4.76E-04
		Bouwer-Rice	1.01E-03	1.46E+00	533	5.15E-04
	Injection 2	Hvorslev	1.21E-03	1.74E+00	635	6.14E-04
		Bouwer-Rice	1.31E-03	1.88E+00	686	6.63E-04
	Average		**1.21E-03**	**1.74E+00**	**636**	**6.15E-04**

Table 2 (concluded)

Summary of Hydraulic Conductivity Values for BSG Monitoring Wells Tested December 2010 and January 2011

Well ID	Test ID	Analysis Method	Hydraulic Conductivity (K)			
			(ft/min)	(ft/day)	(ft/year)	(cm/sec)
CYN-MW12	Injection 1	Hvorslev	3.01E-04	4.33E-01	158	1.53E-04
		Bouwer-Rice	2.88E-04	4.15E-01	151	1.46E-04
	Withdrawal 1	Hvorslev	2.56E-04	3.69E-01	135	1.30E-04
		Bouwer-Rice	2.46E-04	3.54E-01	129	1.25E-04
	Injection 2	Hvorslev	6.23E-04	8.97E-01	327	3.16E-04
		Bouwer-Rice	5.96E-04	8.58E-01	313	3.03E-04
	Average		**3.85E-04**	**5.54E-01**	**202**	**1.47E-04**
Range of Conductivities		**Low**	2.46E-04	3.54E-01	129	1.25E-04
		High	2.03E-03	2.93E+00	1069	1.03E-03
Average (all wells/tests/analytical solutions)			**8.97E-04**	**1.29E+00**	**471**	**4.43E-04**

Notes:
Cm/sec = Centimeters per second.
CYN = Canyons (Burn Site Groundwater).
ft = Foot (feet)
ft/min = Foot (feet) per minute.
K = Hydraulic conductivity.
MW = Monitoring well.

Results:

The ranges of hydraulic conductivities for the four BSG wells tested in December 2010 and January 2011 vary over an order of magnitude from 2.46E-04 to 2.03E-03 ft/min (Table 2). It should be noted that slug test analyses were developed for use in unconsolidated deposits and analyses of bedrock aquifer slug tests are of limited value. The hydraulic conductivity measured in bedrock aquifers is overwhelmingly dominated by fracture flow (water flowing through the matrix of crystalline bedrock is negligible), therefore the conductivities determined are very dependent on the nature of the fractures intercepted in specific wells.

All the conductivity values for these four wells are within the range of conductivities (10^{-5} to 10^{-2} ft/min) determined for the regional aquifer within the unconsolidated Santa Fe Group sediments west of the BSG study area (SNL/NM March 1999). This suggests that qualitatively fracture flow in BSG wells is capable of moving significant amounts of groundwater.

References:

Bouwer, H. and R.C. Rice, 1976. *"A Slug Test Method for Determining Hydraulic Conductivity of Unconfined Aquifers with Completely or Partially Penetrating Wells."* Water Resources Research, vol. 12, No. 3 pp. 423-428.

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Sandia National Laboratories/New Mexico (SNL/NM), August 2007. *"Field Operating Procedure (FOP) 05-03, General Equipment Decontamination"*, FOP 05-03, Prepared by Sandia National Laboratories Environmental Programs and Assurance Department, Albuquerque, New Mexico. August 16, 2007.

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Waterloo Hydrogeologic, Inc, 2001. *"AquiferTest™ User's Manual: Graphical Analysis and Reporting of Pumping Test & Slug Test Data"*. Waterloo, Ontario, Canada.

List of Attachments:

Attachment A -- Transducer Field Data Tables

Attachment B -- AquiferTest™ Water Level versus Time Plots and Analytical Solutions

Technical Memorandum—Field Report
Slug Tests at Burn Site Groundwater Study Area
Groundwater Monitoring Wells

Attachment A
Transducer Field Data Tables
for
CYN-MW9
CYN-MW10
CYN-MW11
CYN-MW12

Technical Memorandum—Field Report
Slug Tests at Burn Site Groundwater Study Area
Groundwater Monitoring Wells

Table A-1
Transducer Field Data for CYN-MW9

Serial Number
□1040608
Project ID
□BSG Slug tests
Location
□CYN-MW9
Level
□Unit
□□ft
□Offset
□□0.00 ft
□Altitude
□□6358 ft
Temperature
□Unit
□□Deg C

	Date	Time	100 ms	Level	Temperature
1	12/15/2010	8:50:00	0	14.8168	16.725
2	12/15/2010	8:50:01	0	14.818	16.734
3	12/15/2010	8:50:02	0	14.8101	16.739
4	12/15/2010	8:50:03	0	14.8172	16.743
5	12/15/2010	8:50:04	0	14.8242	16.745
6	12/15/2010	8:50:05	0	14.8222	16.748
7	12/15/2010	8:50:06	0	15.3275	16.75
8	12/15/2010	8:50:07	0	16.046	16.752
9	12/15/2010	8:50:08	0	16.4761	16.753
10	12/15/2010	8:50:09	0	16.85	16.756
11	12/15/2010	8:50:10	0	16.8597	16.757
12	12/15/2010	8:50:11	0	16.7901	16.758
13	12/15/2010	8:50:12	0	16.7169	16.759
14	12/15/2010	6:50:13	0	16.6491	16.76
15	12/15/2010	6:50:14	0	16.6148	16.761
16	12/15/2010	8:50:15	0	16.6018	16.763
17	12/15/2010	8:50:16	0	16.5531	16.763
18	12/15/2010	8:50:17	0	16.4959	16.764
19	12/15/2010	8:50:18	0	16.5011	16.765
20	12/15/2010	8:50:19	0	16.5739	16.767
21	12/15/2010	6:50:20	0	16.3276	16.767
22	12/15/2010	8:50:21	0	16.3338	16.768
23	12/15/2010	6:50:22	0	16.2984	16.768
24	12/15/2010	6:50:23	0	16.2593	16.769
25	12/15/2010	6:50:24	0	16.2555	16.77
26	12/15/2010	8:50:25	0	16.1942	16.771
27	12/15/2010	8:50:26	0	16.1681	16.771
28	12/15/2010	6:50:27	0	16.1369	16.772
29	12/15/2010	8:50:26	0	16.1084	16.773
30	12/15/2010	6:50:29	0	16.0748	16.774
31	12/15/2010	6:50:30	0	16.0422	16.774
32	12/15/2010	6:50:31	0	16.017	16.775
33	12/15/2010	8:50:32	0	15.9865	16.776
34	12/15/2010	8:50:33	0	15.9574	16.776
35	12/15/2010	6:50:34	0	15.9288	16.777
36	12/15/2010	6:50:35	0	15.9091	16.778
37	12/15/2010	8:50:36	0	15.8758	16.778
38	12/15/2010	8:50:37	0	15.8275	16.778
39	12/15/2010	8:50:38	0	15.8037	16.779
40	12/15/2010	8:50:39	0	15.803	16.78
41	12/15/2010	8:50:40	0	15.7655	16.78
42	12/15/2010	8:50:41	0	15.7576	16.781
43	12/15/2010	8:50:42	0	15.7475	16.781
44	12/15/2010	8:50:43	0	15.7135	16.781
45	12/15/2010	6:50:44	0	15.6981	16.782
46	12/15/2010	8:50:45	0	15.6686	16.782
47	12/15/2010	8:50:46	0	15.6531	16.784
48	12/15/2010	8:50:47	0	15.6351	16.783
49	12/15/2010	8:50:48	0	15.6147	16.765
50	12/15/2010	8:50:49	0	15.594	16.784
51	12/15/2010	8:50:50	0	15.577	16.786
52	12/15/2010	8:50:51	0	15.5585	16.785
53	12/15/2010	8:50:52	0	15.5429	16.785
54	12/15/2010	8:50:53	0	15.5221	16.786
55	12/15/2010	8:50:54	0	15.527	16.786
56	12/15/2010	8:50:55	0	15.4935	16.786
57	12/15/2010	8:50:56	0	15.4627	16.787
58	12/15/2010	8:50:57	0	15.426	16.787
59	12/15/2010	8:50:58	0	15.4436	16.788
60	12/15/2010	8:50:59	0	15.4401	16.788
61	12/15/2010	8:51:00	0	15.4173	16.789
62	12/15/2010	8:51:01	0	15.4068	16.789
63	12/15/2010	8:51:02	0	15.3872	16.789
64	12/15/2010	8:51:03	0	15.3788	16.789
65	12/15/2010	6:51:04	0	15.3624	16.791
66	12/15/2010	6:51:05	0	15.3498	16.79
67	12/15/2010	6:51:06	0	15.343	16.791
68	12/15/2010	8:51:07	0	15.3265	16.791
69	12/15/2010	8:51:08	0	15.3171	16.791
70	12/15/2010	8:51:09	0	15.3085	16.79
71	12/15/2010	8:51:10	0	15.2923	16.792
72	12/15/2010	8:51:11	0	15.285	16.792
73	12/15/2010	8:51:12	0	15.2767	16.792
74	12/15/2010	8:51:13	0	15.2628	16.792
75	12/15/2010	8:51:14	0	15.253	16.792
76	12/15/2010	8:51:15	0	15.244	16.793
77	12/15/2010	8:51:16	0	15.2359	16.793
78	12/15/2010	8:51:17	0	15.2261	16.793
79	12/15/2010	8:51:18	0	15.2141	16.793
80	12/15/2010	8:51:19	0	15.2103	16.793
81	12/15/2010	8:51:20	0	15.2008	16.794
82	12/15/2010	8:51:21	0	15.1884	16.794
83	12/15/2010	8:51:22	0	15.1823	16.794
84	12/15/2010	8:51:23	0	15.174	16.795
85	12/15/2010	8:51:24	0	15.1676	16.794
86	12/15/2010	8:51:25	0	15.1655	16.795

87	12/15/2010	8:51:26	0	15.1558	16.794
88	12/15/2010	8:51:27	0	15.1452	16.795
89	12/15/2010	8:51:28	0	15.1428	16.796
90	12/15/2010	8:51:29	0	15.1335	16.795
91	12/15/2010	8:51:30	0	15.1295	16.796
92	12/15/2010	8:51:31	0	15.1173	16.796
93	12/15/2010	8:51:32	0	15.1106	16.796
94	12/15/2010	8:51:33	0	15.108	16.796
95	12/15/2010	8:51:34	0	15.0984	16.796
96	12/15/2010	8:51:35	0	15.0963	16.796
97	12/15/2010	8:51:36	0	15.0908	16.797
98	12/15/2010	8:51:37	0	15.0845	16.797
99	12/15/2010	8:51:38	0	15.0763	16.797
100	12/15/2010	8:51:39	0	15.0786	16.796
101	12/15/2010	8:51:40	0	15.0689	16.797
102	12/15/2010	8:51:41	0	15.0634	16.797
103	12/15/2010	8:51:42	0	15.0579	16.798
104	12/15/2010	8:51:43	0	15.0572	16.798
105	12/15/2010	8:51:44	0	15.0302	16.797
106	12/15/2010	8:51:45	0	15.0471	16.798
107	12/15/2010	8:51:46	0	15.0418	16.798
108	12/15/2010	8:51:47	0	15.0366	16.799
109	12/15/2010	8:51:48	0	15.0346	16.798
110	12/15/2010	8:51:49	0	15.0315	16.798
111	12/15/2010	8:51:50	0	15.0203	16.798
112	12/15/2010	8:51:51	0	15.0224	16.798
113	12/15/2010	8:51:52	0	15.0225	16.799
114	12/15/2010	8:51:53	0	15.0116	16.799
115	12/15/2010	8:51:54	0	15.0146	16.799
116	12/15/2010	8:51:55	0	15.0104	16.799
117	12/15/2010	8:51:56	0	15.0012	16.8
118	12/15/2010	8:51:57	0	15.0026	16.799
119	12/15/2010	8:51:58	0	14.9964	16.8
120	12/15/2010	8:51:59	0	14.9964	16.8
121	12/15/2010	8:52:00	0	14.9968	16.799
122	12/15/2010	8:52:01	0	14.988	16.8
123	12/15/2010	8:52:02	0	14.9845	16.8
124	12/15/2010	8:52:03	0	14.9806	16.799
125	12/15/2010	8:52:04	0	14.978	16.9
126	12/15/2010	8:52:05	0	14.9787	16.8
127	12/15/2010	8:52:06	0	14.979	16.8
128	12/15/2010	8:52:07	0	14.9723	16.9
129	12/15/2010	8:52:08	0	14.9715	16.9
130	12/15/2010	8:52:09	0	14.9711	16.8
131	12/15/2010	8:52:10	0	14.9631	16.9
132	12/15/2010	8:52:11	0	14.9653	16.801
133	12/15/2010	8:52:12	0	14.9617	16.799
134	12/15/2010	8:52:13	0	14.9587	16.8
135	12/15/2010	8:52:14	0	14.957	16.8
136	12/15/2010	8:52:15	0	14.9572	16.8
137	12/15/2010	6:52:16	0	14.9587	16.8
138	12/15/2010	8:52:17	0	14.9499	16.802
139	12/15/2010	8:52:18	0	14.9505	16.8
140	12/15/2010	8:52:19	0	14.952	16.801
141	12/15/2010	8:52:20	0	14.9442	16.801
142	12/15/2010	8:52:21	0	14.9491	16.801
143	12/15/2010	8:52:22	0	14.9378	16.8
144	12/15/2010	8:52:23	0	14.9401	16.801
145	12/15/2010	8:52:24	0	14.939	16.802
146	12/15/2010	8:52:25	0	14.9316	16.801
147	12/15/2010	8:52:26	0	14.9351	16.801
148	12/15/2010	8:52:27	0	14.9429	16.801
149	12/15/2010	8:52:28	0	14.9324	16.801
150	12/15/2010	8:52:29	0	14.9306	16.802
151	12/15/2010	8:52:30	0	14.9318	16.801
152	12/15/2010	8:52:31	0	14.9269	16.802
153	12/15/2010	8:52:32	0	14.9291	16.802
154	12/15/2010	8:52:33	0	14.9284	16.802
155	12/15/2010	8:52:34	0	14.9249	16.801
156	12/15/2010	8:52:35	0	14.9214	16.801
157	12/15/2010	8:52:36	0	14.9236	16.803
158	12/15/2010	8:52:37	0	14.9244	16.802
159	12/15/2010	8:52:38	0	14.9164	16.801
160	12/15/2010	8:52:39	0	14.9195	16.902
161	12/15/2010	8:52:40	0	14.9214	16.802
162	12/15/2010	8:52:41	0	14.915	16.802
163	12/15/2010	6:52:42	0	14.9192	16.802
164	12/15/2010	6:52:43	0	14.9165	16.802
165	12/15/2010	8:52:44	0	14.9106	16.802
166	12/15/2010	8:52:45	0	14.916	16.802
167	12/15/2010	8:52:46	0	14.9164	16.802
168	12/15/2010	8:52:47	0	14.9091	16.802
169	12/15/2010	8:52:48	0	14.9106	16.802
170	12/15/2010	8:52:49	0	14.9066	16.801
171	12/15/2010	8:52:50	0	14.9109	16.803
172	12/15/2010	8:52:51	0	14.9049	16.802
173	12/15/2010	8:52:52	0	14.9033	16.802
174	12/15/2010	8:52:53	0	14.9067	16.802
175	12/15/2010	8:52:54	0	14.9029	16.802
176	12/15/2010	8:52:55	0	14.9052	16.802
177	12/15/2010	8:52:56	0	14.9033	16.802
178	12/15/2010	8:52:57	0	14.9035	16.802
179	12/15/2010	8:52:58	0	14.9063	16.802
180	12/15/2010	8:52:59	0	14.8991	16.802
191	12/15/2010	8:53:00	0	14.8979	16.802
192	12/15/2010	8:53:01	0	14.9011	16.803
183	12/15/2010	8:53:02	0	14.9045	16.802
184	12/15/2010	8:53:03	0	14.8975	16.802
185	12/15/2010	8:53:04	0	14.9003	16.803
186	12/15/2010	8:53:05	0	14.9053	16.802
187	12/15/2010	8:53:06	0	14.8961	16.802
188	12/15/2010	8:53:07	0	14.8916	16.802
189	12/15/2010	8:53:08	0	14.8982	16.802

190	12/15/2010	8:53:09	0	14.8949	16.803
191	12/15/2010	8:53:10	0	14.8961	16.803
192	12/15/2010	8:53:11	0	14.8999	16.802
193	12/15/2010	8:53:12	0	14.8909	16.802
194	12/15/2010	8:53:13	0	14.8925	16.803
195	12/15/2010	8:53:14	0	14.893	16.803
196	12/15/2010	8:53:15	0	14.8886	16.802
197	12/15/2010	8:53:16	0	14.8922	16.802
198	12/15/2010	8:53:17	0	14.8896	16.802
199	12/15/2010	8:53:18	0	14.8892	16.803
200	12/15/2010	8:53:19	0	14.8919	16.802
201	12/15/2010	8:53:20	0	14.8846	16.802
202	12/15/2010	8:53:21	0	14.8906	16.802
203	12/15/2010	8:53:22	0	14.8922	16.802
204	12/15/2010	8:53:23	0	14.8825	16.802
205	12/15/2010	8:53:24	0	14.8889	16.802
206	12/15/2010	8:53:25	0	14.8906	16.802
207	12/15/2010	8:53:26	0	14.8845	16.802
208	12/15/2010	8:53:27	0	14.9259	16.802
209	12/15/2010	8:53:28	0	14.8844	16.803
210	12/15/2010	8:53:29	0	14.8854	16.802
211	12/15/2010	8:53:30	0	14.8896	16.802
212	12/15/2010	8:53:31	0	14.8827	16.803
213	12/15/2010	8:53:32	0	14.8832	16.802
214	12/15/2010	8:53:33	0	14.8814	16.802
215	12/15/2010	8:53:34	0	14.8846	16.802
216	12/15/2010	8:53:35	0	14.8824	16.802
217	12/15/2010	8:53:36	0	14.8847	16.802
218	12/15/2010	8:53:37	0	14.8777	16.802
219	12/15/2010	8:53:38	0	14.882	16.802
220	12/15/2010	8:53:39	0	14.8854	16.802
221	12/15/2010	8:53:40	0	14.8803	16.802
222	12/15/2010	8:53:41	0	14.8819	16.802
223	12/15/2010	8:53:42	0	14.8829	16.802
224	12/15/2010	8:53:43	0	14.8834	16.802
225	12/15/2010	8:53:44	0	14.8818	18.802
226	12/15/2010	8:53:45	0	14.8803	16.803
227	12/15/2010	8:53:46	0	14.8784	16.803
228	12/15/2010	8:53:47	0	14.8822	16.802
229	12/15/2010	8:53:48	0	14.8806	16.802
230	12/15/2010	8:53:49	0	14.8804	16.802
231	12/15/2010	8:53:50	0	14.8763	16.802
232	12/15/2010	8:53:51	0	14.8782	16.803
233	12/15/2010	8:53:52	0	14.8813	16.803
234	12/15/2010	8:53:53	0	14.8802	16.802
235	12/15/2010	8:53:54	0	14.8777	16.802
236	12/15/2010	8:53:55	0	14.8772	16.803
237	12/15/2010	8:53:56	0	14.8784	16.802
238	12/15/2010	8:53:57	0	14.8765	16.803
239	12/15/2010	8:53:58	0	14.8787	16.802
240	12/15/2010	8:53:59	0	14.8753	16.803
241	12/15/2010	8:54:00	0	14.875	16.802
242	12/15/2010	8:54:01	0	14.8775	16.803
243	12/15/2010	8:54:02	0	14.8758	16.802
244	12/15/2010	8:54:03	0	14.8773	16.802
245	12/15/2010	8:54:04	0	14.8754	16.803
246	12/15/2010	8:54:05	0	14.8772	16.802
247	12/15/2010	8:54:06	0	14.8763	16.802
248	12/15/2010	8:54:07	0	14.8739	16.803
249	12/15/2010	8:54:08	0	14.8774	16.802
250	12/15/2010	8:54:09	0	14.87	16.802
251	12/15/2010	8:54:10	0	14.873	16.802
252	12/15/2010	8:54:11	0	14.8762	16.802
253	12/15/2010	8:54:12	0	14.8707	16.802
254	12/15/2010	8:54:13	0	14.875	16.802
255	12/15/2010	8:54:14	0	14.8696	16.802
256	12/15/2010	8:54:15	0	14.8724	16.802
257	12/15/2010	8:54:16	0	14.8653	16.802
258	12/15/2010	8:54:17	0	14.871	16.802
259	12/15/2010	8:54:18	0	14.8708	16.802
260	12/15/2010	8:54:19	0	14.8692	16.803
261	12/15/2010	8:54:20	0	14.8651	16.803
262	12/15/2010	8:54:21	0	14.9122	16.803
263	12/15/2010	8:54:22	0	14.877	16.802
264	12/15/2010	8:54:23	0	14.8697	16.802
265	12/15/2010	8:54:24	0	14.8682	16.802
266	12/15/2010	8:54:25	0	14.8631	16.803
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273	12/15/2010	8:54:32	0	14.8613	16.802
274	12/15/2010	8:54:33	0	14.872	16.802
275	12/15/2010	8:54:34	0	14.8621	16.802
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283	12/15/2010	8:54:42	0	14.8708	16.802
284	12/15/2010	8:54:43	0	14.871	16.802
285	12/15/2010	8:54:44	0	14.8671	16.802
286	12/15/2010	8:54:45	0	14.8669	16.802
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288	12/15/2010	8:54:47	0	14.8646	16.802
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293	12/15/2010	8:54:52	0	14.871	16.802
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295	12/15/2010	8:54:54	0	14.8697	16.803
296	12/15/2010	8:54:55	0	14.8613	18.802
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324	12/15/2010	8:55:23	0	14.865	16.802
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326	12/15/2010	8:55:25	0	14.871	16.802
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334	12/15/2010	8:55:33	0	14.8598	16.802
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343	12/15/2010	8:55:42	0	14.864	16.802
344	12/15/2010	8:55:43	0	14.8623	16.802
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363	12/15/2010	8:56:02	0	14.8603	16.801
364	12/15/2010	8:56:03	0	14.8661	16.801
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374	12/15/2010	8:56:13	0	14.8608	16.801
375	12/15/2010	8:56:14	0	14.8616	16.801
376	12/15/2010	8:56:15	0	14.8636	16.802
377	12/15/2010	8:56:16	0	14.8606	16.802
378	12/15/2010	8:56:17	0	14.8633	16.802
379	12/15/2010	8:56:18	0	14.8599	16.801
380	12/15/2010	8:56:19	0	14.8604	16.802
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384	12/15/2010	8:56:23	0	14.8591	18.801
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386	12/15/2010	8:56:25	0	14.8591	16.801
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440	12/15/2010	8:57:19	0	14.8572	16.801
441	12/15/2010	8:57:20	0	14.8564	16.801
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446	12/15/2010	8:57:25	0	14.8567	16.801
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560	12/15/2010	8:59:19	0	14.8522	16.802
561	12/15/2010	8:59:20	0	14.8552	16.803
562	12/15/2010	8:59:21	0	14.8524	15.802
563	12/15/2010	8:59:22	0	14.8492	16.802
564	12/15/2010	8:59:23	0	14.851	16.802
565	12/15/2010	8:59:24	0	14.8624	16.802
566	12/15/2010	8:59:25	0	14.8496	16.802
567	12/15/2010	8:59:26	0	14.8526	16.802
568	12/15/2010	8:59:27	0	14.8512	16.802
569	12/15/2010	8:59:28	0	14.8526	16.802
570	12/15/2010	8:59:29	0	14.8494	16.802
571	12/15/2010	8:59:30	0	14.8511	16.802
572	12/15/2010	8:59:31	0	14.8517	16.802
573	12/15/2010	8:59:32	0	14.8522	16.802
574	12/15/2010	8:59:33	0	14.8522	15.802
575	12/15/2010	8:59:34	0	14.8517	16.802
576	12/15/2010	8:59:35	0	14.8524	16.802
577	12/15/2010	8:59:36	0	14.8531	16.802
578	12/15/2010	8:59:37	0	14.8534	16.802
579	12/15/2010	8:59:38	0	14.8498	16.802
580	12/15/2010	8:59:39	0	14.8499	16.802
581	12/15/2010	8:59:40	0	14.8527	16.802
582	12/15/2010	8:59:41	0	14.8479	16.802
583	12/15/2010	8:59:42	0	14.8526	16.802
584	12/15/2010	8:59:43	0	14.8519	16.801
585	12/15/2010	8:59:44	0	14.83	16.802
586	12/15/2010	8:59:45	0	14.8504	16.802
587	12/15/2010	8:59:46	0	14.8663	16.802
588	12/15/2010	8:59:47	0	14.8531	16.802
589	12/15/2010	8:59:48	0	14.8539	16.802
590	12/15/2010	8:59:49	0	14.8561	16.802
591	12/15/2010	8:59:50	0	14.8522	16.802
592	12/15/2010	8:59:51	0	14.8545	15.802
593	12/15/2010	8:59:52	0	14.8524	15.802
594	12/15/2010	8:59:53	0	14.8517	16.803
595	12/15/2010	8:59:54	0	14.8524	16.802
596	12/15/2010	8:59:55	0	14.8516	16.802
597	12/15/2010	8:59:56	0	14.8495	16.802
599	12/15/2010	8:59:57	0	14.8522	16.802
599	12/15/2010	8:59:58	0	14.8361	16.802
600	12/15/2010	8:59:59	0	14.8569	16.802
601	12/15/2010	9:00:00	0	14.8464	16.802

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603	12/15/2010	9:00:06	0	14.8414	16.782
604	12/15/2010	9:00:09	0	14.8447	16.778
605	12/15/2010	9:00:12	0	14.8419	16.776
606	12/15/2010	9:00:15	0	14.853	16.774
607	12/15/2010	9:00:18	0	14.8458	16.772
608	12/15/2010	9:00:21	0	14.8447	16.77
609	12/15/2010	9:00:24	0	14.8579	16.77
610	12/15/2010	9:00:27	0	14.8562	16.768
611	12/15/2010	9:00:30	0	14.8533	16.766
612	12/15/2010	9:00:33	0	14.8469	16.765
613	12/15/2010	9:00:36	0	14.8479	16.764
614	12/15/2010	9:00:39	0	14.8499	16.762
615	12/15/2010	9:00:42	0	14.8486	16.762
616	12/15/2010	9:00:45	0	14.8501	16.76
617	12/15/2010	9:00:48	0	14.848	16.76
618	12/15/2010	9:00:51	0	14.8451	16.759
619	12/15/2010	9:00:54	0	14.8511	16.759
620	12/15/2010	9:00:57	0	14.8493	16.758
621	12/15/2010	9:01:00	0	14.8491	16.757
622	12/15/2010	9:01:03	0	14.8495	16.756
623	12/15/2010	9:01:06	0	14.8461	16.756
624	12/15/2010	9:01:09	0	14.8463	16.755
625	12/15/2010	9:01:12	0	14.8487	16.754
626	12/15/2010	9:01:15	0	14.8466	16.753
627	12/15/2010	9:01:18	0	14.8441	16.753
628	12/15/2010	9:01:21	0	14.8555	16.753
629	12/15/2010	9:01:24	0	14.8488	16.753
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632	12/15/2010	9:01:33	0	14.8463	16.751
633	12/15/2010	9:01:36	0	14.8438	16.751
634	12/15/2010	9:01:39	0	14.8418	16.75
635	12/15/2010	9:01:42	0	14.8438	16.75
636	12/15/2010	9:01:45	0	14.8392	16.75
637	12/15/2010	9:01:48	0	14.8451	16.75
638	12/15/2010	9:01:51	0	14.8474	16.749
639	12/15/2010	9:01:54	0	14.8468	16.749
640	12/15/2010	9:01:57	0	14.8451	16.748
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643	12/15/2010	9:02:06	0	14.8439	16.747
644	12/15/2010	9:02:09	0	14.8394	16.747
645	12/15/2010	9:02:12	0	14.8451	16.747
646	12/15/2010	9:02:15	0	14.8448	16.747
647	12/15/2010	9:02:18	0	14.8453	16.746
648	12/15/2010	9:02:21	0	14.8453	16.747
649	12/15/2010	9:02:24	0	14.8471	16.746
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651	12/15/2010	9:02:30	0	14.8506	16.746
652	12/15/2010	9:02:33	0	14.8505	16.745
653	12/15/2010	9:02:36	0	14.8465	16.745
654	12/15/2010	9:02:39	0	14.8488	16.745
655	12/15/2010	9:02:42	0	14.8481	16.745
656	12/15/2010	9:02:45	0	14.8481	16.745
657	12/15/2010	9:02:48	0	14.8501	16.745
658	12/15/2010	9:02:51	0	14.847	16.745
659	12/15/2010	9:02:54	0	14.8476	16.744
660	12/15/2010	9:02:57	0	14.8463	16.744
661	12/15/2010	9:03:00	0	14.8547	16.744
662	12/15/2010	9:03:03	0	14.8454	16.744
663	12/15/2010	9:03:06	0	14.8434	16.744
664	12/15/2010	9:03:09	0	14.8475	16.744
665	12/15/2010	9:03:12	0	14.8453	16.743
666	12/15/2010	9:03:15	0	14.7408	16.744
667	12/15/2010	9:03:18	0	14.847	16.743
668	12/15/2010	9:03:21	0	14.8464	16.743
669	12/15/2010	9:03:24	0	14.8456	16.743
670	12/15/2010	9:03:27	0	14.8464	16.743
671	12/15/2010	9:03:30	0	14.8454	16.742
672	12/15/2010	9:03:33	0	14.8436	16.742
673	12/15/2010	9:03:36	0	14.851	16.742
674	12/15/2010	9:03:39	0	14.84	16.741
675	12/15/2010	9:03:42	0	14.842	16.742
676	12/15/2010	9:03:45	0	14.8479	16.741
677	12/15/2010	9:03:48	0	14.8463	16.741
678	12/15/2010	9:03:51	0	14.8456	16.741
679	12/15/2010	9:03:54	0	14.8411	16.741
680	12/15/2010	9:03:57	0	14.8435	16.741
681	12/15/2010	9:04:00	0	14.8412	16.74
682	12/15/2010	9:04:03	0	14.8438	16.741
683	12/15/2010	9:04:06	0	14.8458	16.74
684	12/15/2010	9:04:09	0	14.8604	16.74
685	12/15/2010	9:04:12	0	14.844	16.74
686	12/15/2010	9:04:15	0	14.8449	16.74
687	12/15/2010	9:04:18	0	14.8443	16.74
688	12/15/2010	9:04:21	0	14.8436	16.74
689	12/15/2010	9:04:24	0	14.8448	16.74
690	12/15/2010	9:04:27	0	14.8448	16.739
691	12/15/2010	9:04:30	0	14.843	16.74
692	12/15/2010	9:04:33	0	14.8438	16.74
693	12/15/2010	9:04:36	0	14.8488	16.738
694	12/15/2010	9:04:39	0	14.8441	16.738
695	12/15/2010	9:04:42	0	14.8444	16.739
696	12/15/2010	9:04:45	0	14.8478	16.738
697	12/15/2010	9:04:48	0	14.8446	16.738
698	12/15/2010	9:04:51	0	14.8426	16.738
699	12/15/2010	9:04:54	0	14.8426	16.738
700	12/15/2010	9:04:57	0	14.8435	16.738
701	12/15/2010	9:05:00	0	14.8436	16.737
702	12/15/2010	9:05:03	0	14.8416	16.737
703	12/15/2010	9:05:06	0	14.8683	16.736
704	12/15/2010	9:05:09	0	14.7803	16.737

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706	12/15/2010	9:05:15	0	12.8435	16.737
707	12/15/2010	9:05:18	0	12.9879	16.737
708	12/15/2010	9:05:21	0	13.1216	16.736
709	12/15/2010	9:05:24	0	13.2422	16.737
710	12/15/2010	9:05:27	0	13.362	16.737
711	12/15/2010	9:05:30	0	13.4697	16.736
712	12/15/2010	9:05:33	0	13.5682	16.736
713	12/15/2010	9:05:36	0	13.6614	16.736
714	12/15/2010	9:05:39	0	13.7443	16.736
715	12/15/2010	9:05:42	0	13.8217	16.735
716	12/15/2010	9:05:45	0	13.8958	16.735
717	12/15/2010	9:05:48	0	13.9636	16.735
718	12/15/2010	9:05:51	0	14.0205	16.735
719	12/15/2010	9:05:54	0	14.0763	16.735
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724	12/15/2010	9:06:09	0	14.3105	16.734
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726	12/15/2010	9:06:15	0	14.379	16.734
727	12/15/2010	9:06:18	0	14.4168	16.733
728	12/15/2010	9:06:21	0	14.444	16.734
729	12/15/2010	9:06:24	0	14.4695	16.733
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732	12/15/2010	9:06:33	0	14.537	16.733
733	12/15/2010	9:06:36	0	14.5603	16.733
734	12/15/2010	9:06:39	0	14.5762	16.733
735	12/15/2010	9:06:42	0	14.5963	16.733
736	12/15/2010	9:06:45	0	14.6126	16.733
737	12/15/2010	9:06:48	0	14.6251	16.733
738	12/15/2010	9:06:51	0	14.6364	16.733
739	12/15/2010	9:06:54	0	14.6524	16.733
740	12/15/2010	9:06:57	0	14.6554	16.733
741	12/15/2010	9:07:00	0	14.6695	16.732
742	12/15/2010	9:07:03	0	14.6754	16.733
743	12/15/2010	9:07:06	0	14.6866	16.732
744	12/15/2010	9:07:09	0	14.6932	16.732
745	12/15/2010	9:07:12	0	14.7021	16.732
746	12/15/2010	9:07:15	0	14.707	16.733
747	12/15/2010	9:07:18	0	14.7124	16.732
748	12/15/2010	9:07:21	0	14.7211	16.732
749	12/15/2010	9:07:24	0	14.7253	16.732
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751	12/15/2010	9:07:30	0	14.7343	16.732
752	12/15/2010	9:07:33	0	14.7371	16.731
753	12/15/2010	9:07:36	0	14.7409	16.732
754	12/15/2010	9:07:39	0	14.7469	16.731
755	12/15/2010	9:07:42	0	14.7464	16.732
756	12/15/2010	9:07:45	0	14.7505	16.731
757	12/15/2010	9:07:48	0	14.7562	16.732
758	12/15/2010	9:07:51	0	14.7589	16.731
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760	12/15/2010	9:07:57	0	14.7645	16.731
761	12/15/2010	9:08:00	0	14.7693	16.731
762	12/15/2010	9:08:03	0	14.766	16.731
763	12/15/2010	9:08:06	0	14.7742	16.731
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765	12/15/2010	9:08:12	0	14.7736	16.73
766	12/15/2010	9:08:15	0	14.7748	16.731
767	12/15/2010	9:08:18	0	14.7761	16.731
768	12/15/2010	9:08:21	0	14.7832	16.731
769	12/15/2010	9:08:24	0	14.7804	16.731
770	12/15/2010	9:08:27	0	14.7832	16.731
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772	12/15/2010	9:08:33	0	14.7808	16.731
773	12/15/2010	9:08:36	0	14.7808	16.73
774	12/15/2010	9:08:39	0	14.7847	16.73
775	12/15/2010	9:08:42	0	14.787	16.73
776	12/15/2010	9:08:45	0	14.788	16.731
777	12/15/2010	9:08:48	0	14.7865	16.73
778	12/15/2010	9:08:51	0	14.7865	16.73
779	12/15/2010	9:08:54	0	14.785	16.73
780	12/15/2010	9:08:57	0	14.7898	16.73
781	12/15/2010	9:09:00	0	14.7937	16.73
782	12/15/2010	9:09:03	0	14.7931	16.729
783	12/15/2010	9:09:06	0	14.7941	16.73
784	12/15/2010	9:09:09	0	14.7963	16.73
785	12/15/2010	9:09:12	0	14.7939	16.73
786	12/15/2010	9:09:15	0	14.7934	16.73
787	12/15/2010	9:09:18	0	14.7962	16.73
788	12/15/2010	9:09:21	0	14.7954	16.73
789	12/15/2010	9:09:24	0	14.7986	16.73
790	12/15/2010	9:09:27	0	14.7965	16.729
791	12/15/2010	9:09:30	0	14.7952	16.728
792	12/15/2010	9:09:33	0	14.7969	16.729
793	12/15/2010	9:09:36	0	14.8011	16.729
794	12/15/2010	9:09:39	0	14.7993	16.729
795	12/15/2010	9:09:42	0	14.7967	16.729
796	12/15/2010	9:09:45	0	14.7981	16.729
797	12/15/2010	9:09:48	0	14.7999	16.729
798	12/15/2010	9:09:51	0	14.8018	16.728
799	12/15/2010	9:09:54	0	14.8001	16.729
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802	12/15/2010	8:10:05	0	14.8026	16.725
803	12/15/2010	9:10:10	0	14.8011	16.724
804	12/15/2010	9:10:15	0	14.8019	16.723
805	12/15/2010	9:10:20	0	14.9036	16.722
806	12/15/2010	9:10:25	0	14.8056	16.722
807	12/15/2010	9:10:30	0	14.8038	16.721

808	12/15/2010	9:10:35	0	14.8	16.72
809	12/15/2010	9:10:40	0	14.8065	16.72
810	12/15/2010	9:10:45	0	14.8084	16.72
811	12/15/2010	9:10:50	0	14.8035	16.719
812	12/15/2010	9:10:55	0	14.8067	16.72
813	12/15/2010	9:11:00	0	14.8031	16.719
814	12/15/2010	9:11:05	0	14.804	16.719
815	12/15/2010	9:11:10	0	14.8082	16.718
816	12/15/2010	9:11:15	0	14.8085	16.719
817	12/15/2010	9:11:20	0	14.8055	16.718
818	12/15/2010	9:11:25	0	14.8082	16.718
819	12/15/2010	9:11:30	0	14.8077	16.717
820	12/15/2010	9:11:35	0	14.8089	16.717
821	12/15/2010	9:11:40	0	14.81	16.718
822	12/15/2010	9:11:45	0	14.8103	16.718
623	12/15/2010	9:11:50	0	14.8098	16.717
824	12/15/2010	9:11:55	0	14.8077	16.717
825	12/15/2010	9:12:00	0	14.8093	16.717
826	12/15/2010	9:12:05	0	14.8075	16.717
627	12/15/2010	9:12:10	0	14.8098	16.717
628	12/15/2010	9:12:15	0	14.8093	16.717
829	12/15/2010	9:12:20	0	14.8065	16.717
830	12/15/2010	9:12:25	0	14.811	16.717
831	12/15/2010	9:12:30	0	14.8107	16.716
832	12/15/2010	9:12:35	0	14.8075	16.716
833	12/15/2010	9:12:40	0	14.8095	16.716
834	12/15/2010	9:12:45	0	14.809	16.716
835	12/15/2010	9:12:50	0	14.8028	16.716
836	12/15/2010	9:12:55	0	14.8075	16.715
837	12/15/2010	9:13:00	0	14.8115	16.715
838	12/15/2010	9:13:05	0	14.8117	16.715
839	12/15/2010	9:13:10	0	14.8122	16.715
840	12/15/2010	9:13:15	0	14.8103	16.715
841	12/15/2010	9:13:20	0	14.8155	16.715
842	12/15/2010	9:13:25	0	14.8102	16.715
843	12/15/2010	9:13:30	0	14.815	16.715
844	12/15/2010	9:13:35	0	14.8118	16.714
845	12/15/2010	9:13:40	0	14.8103	16.714
846	12/15/2010	9:13:45	0	14.811	16.714
847	12/15/2010	9:13:50	0	14.8135	16.714
848	12/15/2010	9:13:55	0	14.8127	16.714
849	12/15/2010	9:14:00	0	14.8126	16.714
850	12/15/2010	9:14:05	0	14.811	16.714
851	12/15/2010	9:14:10	0	14.8088	16.714
852	12/15/2010	9:14:15	0	14.8132	16.714
853	12/15/2010	9:14:20	0	14.8127	16.715
854	12/15/2010	9:14:25	0	14.814	16.714
855	12/15/2010	9:14:30	0	14.8137	16.714
856	12/15/2010	9:14:35	0	14.8137	16.715
857	12/15/2010	9:14:40	0	14.8127	16.715
858	12/15/2010	9:14:45	0	14.8125	16.715
859	12/15/2010	9:14:50	0	14.8123	16.715
860	12/15/2010	9:14:55	0	14.819	16.716
861	12/15/2010	9:15:00	0	14.8124	16.716
862	12/15/2010	9:15:05	0	14.8139	16.716
863	12/15/2010	9:15:10	0	14.8103	16.717
864	12/15/2010	9:15:15	0	14.8107	16.717
865	12/15/2010	9:15:20	0	14.8149	16.717
866	12/15/2010	9:15:25	0	14.8133	16.717
867	12/15/2010	9:15:30	0	14.8082	16.718
868	12/15/2010	9:15:35	0	14.8142	16.718
869	12/15/2010	9:15:40	0	14.8198	16.719
870	12/15/2010	9:15:45	0	14.8216	16.719
871	12/15/2010	9:15:50	0	14.8142	16.719
872	12/15/2010	9:15:55	0	14.8117	16.72
873	12/15/2010	9:16:00	0	14.8234	16.72
874	12/15/2010	9:16:05	0	14.8175	16.721
875	12/15/2010	9:16:10	0	14.813	16.721
876	12/15/2010	9:16:15	0	14.8182	16.721
877	12/15/2010	9:16:20	0	14.813	16.722
878	12/15/2010	9:16:25	0	14.8148	16.722
679	12/15/2010	9:16:30	0	14.8122	16.722
880	12/15/2010	9:16:35	0	14.8056	16.722
681	12/15/2010	9:16:40	0	14.8139	16.724
662	12/15/2010	9:16:45	0	14.8163	16.723
883	12/15/2010	9:16:50	0	14.8189	16.724
884	12/15/2010	9:16:55	0	14.8146	16.724
885	12/15/2010	9:17:00	0	14.8195	16.724
886	12/15/2010	9:17:05	0	14.8184	16.725
887	12/15/2010	9:17:10	0	14.8191	16.725
888	12/15/2010	9:17:15	0	14.8177	16.724
869	12/15/2010	9:17:20	0	14.8165	16.725
890	12/15/2010	9:17:25	0	14.8172	16.726
891	12/15/2010	9:17:30	0	14.8147	16.726
892	12/15/2010	9:17:35	0	14.8161	16.726
893	12/15/2010	9:17:40	0	14.812	16.725
894	12/15/2010	9:17:45	0	14.8158	16.726
895	12/15/2010	9:17:50	0	14.8178	16.726
896	12/15/2010	9:17:55	0	14.8188	16.726
897	12/15/2010	9:18:00	0	14.8164	16.726
898	12/15/2010	9:18:05	0	14.817	16.726
899	12/15/2010	9:18:10	0	14.8139	16.726
900	12/15/2010	9:18:15	0	14.8125	16.726
901	12/15/2010	9:18:20	0	14.8205	16.727
902	12/15/2010	9:18:25	0	14.8084	16.726
903	12/15/2010	9:18:30	0	14.8159	16.727
904	12/15/2010	9:18:35	0	14.8222	16.726
905	12/15/2010	9:18:40	0	14.8165	16.726
906	12/15/2010	9:18:45	0	14.8083	16.726
907	12/15/2010	9:18:50	0	14.8132	16.727
908	12/15/2010	9:18:55	0	14.8081	16.726
909	12/15/2010	9:19:00	0	14.8196	16.727
910	12/15/2010	9:19:05	0	14.8105	16.726

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912	12/15/2010	9:19:15	0	14.8202	16.726
913	12/15/2010	9:19:20	0	14.8153	16.726
914	12/15/2010	9:19:25	0	14.8192	16.726
915	12/15/2010	9:19:30	0	14.8164	16.726
916	12/15/2010	9:19:35	0	14.8136	16.726
917	12/15/2010	9:19:40	0	14.8178	16.726
918	12/15/2010	9:19:45	0	14.8133	16.726
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921	12/15/2010	9:20:00	0	14.815	16.726
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926	12/15/2010	9:20:05	0	14.8222	16.748
927	12/15/2010	9:20:06	0	15.2909	16.75
928	12/15/2010	9:20:07	0	16.0815	16.751
929	12/15/2010	9:20:08	0	16.7059	16.752
930	12/15/2010	9:20:09	0	16.9287	16.753
931	12/15/2010	9:20:10	0	16.7893	16.754
932	12/15/2010	9:20:11	0	16.7668	16.756
933	12/15/2010	9:20:12	0	16.7181	16.756
934	12/15/2010	9:20:13	0	16.6989	16.758
935	12/15/2010	9:20:14	0	16.6803	16.758
936	12/15/2010	9:20:15	0	16.6031	16.759
937	12/15/2010	9:20:16	0	16.5383	16.76
938	12/15/2010	9:20:17	0	16.5156	16.76
939	12/15/2010	9:20:18	0	16.4614	16.761
940	12/15/2010	9:20:19	0	16.5708	16.762
941	12/15/2010	9:20:20	0	16.3698	16.762
942	12/15/2010	9:20:21	0	16.3042	16.763
943	12/15/2010	9:20:22	0	16.2834	16.764
944	12/15/2010	9:20:23	0	16.2668	16.765
945	12/15/2010	9:20:24	0	16.2456	16.765
946	12/15/2010	9:20:25	0	16.1922	16.765
947	12/15/2010	9:20:26	0	16.162	16.767
948	12/15/2010	9:20:27	0	16.1323	16.767
949	12/15/2010	9:20:28	0	16.097	16.767
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952	12/15/2010	9:20:31	0	16.0048	16.769
953	12/15/2010	9:20:32	0	15.9807	16.769
954	12/15/2010	9:20:33	0	15.9516	16.769
955	12/15/2010	9:20:34	0	15.9218	16.771
956	12/15/2010	9:20:35	0	15.8974	16.77
957	12/15/2010	9:20:36	0	15.8683	16.771
958	12/15/2010	9:20:37	0	15.8538	16.771
959	12/15/2010	9:20:38	0	15.8178	16.771
960	12/15/2010	9:20:39	0	15.7946	16.772
961	12/15/2010	9:20:40	0	15.7758	16.773
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964	12/15/2010	9:20:43	0	15.7084	16.773
965	12/15/2010	9:20:44	0	15.6857	16.774
966	12/15/2010	9:20:45	0	15.6676	16.775
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968	12/15/2010	9:20:47	0	15.6273	16.775
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970	12/15/2010	9:20:49	0	15.5846	16.776
971	12/15/2010	9:20:50	0	15.5673	16.775
972	12/15/2010	9:20:51	0	15.5497	16.776
973	12/15/2010	9:20:52	0	15.532	16.776
974	12/15/2010	9:20:53	0	15.5179	16.776
975	12/15/2010	9:20:54	0	15.4982	16.777
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979	12/15/2010	9:20:58	0	15.4406	16.777
980	12/15/2010	9:20:59	0	15.4207	16.778
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982	12/15/2010	9:21:01	0	15.3977	16.778
983	12/15/2010	9:21:02	0	15.3835	16.778
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985	12/15/2010	9:21:04	0	15.3554	16.779
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989	12/15/2010	9:21:08	0	15.311	16.78
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993	12/15/2010	9:21:12	0	15.2697	16.78
994	12/15/2010	9:21:13	0	15.2559	16.781
995	12/15/2010	9:21:14	0	15.2435	16.78
996	12/15/2010	9:21:15	0	15.2405	16.78
997	12/15/2010	9:21:16	0	15.2265	16.781
998	12/15/2010	9:21:17	0	15.2149	16.781
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1003	12/15/2010	9:21:22	0	15.1764	16.781
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1012	12/15/2010	9:21:31	0	15.1139	16.782
1013	12/15/2010	9:21:32	0	15.106	16.782

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1115	12/15/2010	9:23:14	0	14.8804	16.786
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1122	12/15/2010	9:23:21	0	14.8821	16.785
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1127	12/15/2010	9:23:26	0	14.8702	16.786
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1168	12/15/2010	9:24:07	0	14.8678	16.785
1169	12/15/2010	9:24:08	0	14.8673	16.786
1170	12/15/2010	9:24:09	0	14.8625	16.785
1171	12/15/2010	9:24:10	0	14.8745	16.786
1172	12/15/2010	9:24:11	0	14.8616	16.786
1173	12/15/2010	9:24:12	0	14.8642	16.786
1174	12/15/2010	9:24:13	0	14.8715	16.786
1175	12/15/2010	9:24:14	0	14.8665	16.786
1176	12/15/2010	9:24:15	0	14.961	16.785
1177	12/15/2010	9:24:16	0	14.8716	16.786
1178	12/15/2010	9:24:17	0	14.8654	16.786
1179	12/15/2010	9:24:18	0	14.8647	16.786
1180	12/15/2010	9:24:19	0	14.864	16.787
1181	12/15/2010	9:24:20	0	14.8675	16.785
1182	12/15/2010	9:24:21	0	14.8652	16.785
1183	12/15/2010	9:24:22	0	14.8702	16.786
1184	12/15/2010	9:24:23	0	14.8641	16.785
1185	12/15/2010	9:24:24	0	14.8699	16.786
1186	12/15/2010	9:24:25	0	14.8667	16.786
1187	12/15/2010	9:24:26	0	14.8638	16.786
1188	12/15/2010	9:24:27	0	14.8643	16.786
1189	12/15/2010	9:24:28	0	14.8682	16.786
1190	12/15/2010	9:24:29	0	14.8659	16.786
1191	12/15/2010	9:24:30	0	14.8646	16.786
1192	12/15/2010	9:24:31	0	14.8615	16.786
1193	12/15/2010	9:24:32	0	14.857	16.785
1194	12/15/2010	9:24:33	0	14.8628	16.786
1195	12/15/2010	9:24:34	0	14.8628	16.786
1196	12/15/2010	9:24:35	0	14.8625	16.786
1197	12/15/2010	9:24:36	0	14.8611	16.785
1198	12/15/2010	9:24:37	0	14.8636	16.785
1199	12/15/2010	9:24:38	0	14.8646	16.786
1200	12/15/2010	9:24:39	0	14.8579	16.785
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1202	12/15/2010	9:24:41	0	14.8586	16.785
1203	12/15/2010	9:24:42	0	14.8589	16.786
1204	12/15/2010	9:24:43	0	14.8637	16.786
1205	12/15/2010	9:24:44	0	14.8594	16.786
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1207	12/15/2010	9:24:46	0	14.8645	16.785
1208	12/15/2010	9:24:47	0	14.8561	16.785
1209	12/15/2010	9:24:48	0	14.8616	16.786
1210	12/15/2010	9:24:49	0	14.8602	16.786
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1212	12/15/2010	9:24:51	0	14.8653	16.786
1213	12/15/2010	9:24:52	0	14.8596	16.786
1214	12/15/2010	9:24:53	0	14.8559	16.786
1215	12/15/2010	9:24:54	0	14.863	16.786
1216	12/15/2010	9:24:55	0	14.8576	16.786
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1218	12/15/2010	9:24:57	0	14.8599	16.786
1219	12/15/2010	9:24:58	0	14.8563	16.786

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1221	12/15/2010	9:25:00	0	14.8592	16.786
1222	12/15/2010	9:25:01	0	14.8613	16.786
1223	12/15/2010	9:25:02	0	14.858	16.786
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1229	12/15/2010	9:25:08	0	14.858	16.786
1230	12/15/2010	9:25:09	0	14.8581	16.785
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1237	12/15/2010	9:25:16	0	14.8553	16.785
1238	12/15/2010	9:25:17	0	14.8566	16.785
1239	12/15/2010	9:25:18	0	14.86	16.786
1240	12/15/2010	9:25:19	0	14.8623	16.786
1241	12/15/2010	9:25:20	0	14.859	16.785
1242	12/15/2010	9:25:21	0	14.8556	16.785
1243	12/15/2010	9:25:22	0	14.8583	16.786
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1245	12/15/2010	9:25:24	0	14.8571	16.785
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1247	12/15/2010	9:25:26	0	14.8631	16.786
1248	12/15/2010	9:25:27	0	14.8583	16.786
1249	12/15/2010	9:25:28	0	14.8573	16.785
1250	12/15/2010	9:25:29	0	14.8584	16.786
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1267	12/15/2010	9:25:46	0	14.8524	16.785
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1269	12/15/2010	9:25:48	0	14.8575	16.786
1270	12/15/2010	9:25:49	0	14.8551	16.786
1271	12/15/2010	9:25:50	0	14.8466	16.785
1272	12/15/2010	9:25:51	0	14.8581	16.786
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1274	12/15/2010	9:25:53	0	14.8554	16.787
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1276	12/15/2010	9:25:55	0	14.8558	16.785
1277	12/15/2010	9:25:56	0	14.8529	16.786
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1280	12/15/2010	9:25:59	0	14.8549	16.786
1281	12/15/2010	9:26:00	0	14.852	16.785
1282	12/15/2010	9:26:01	0	14.8513	16.786
1283	12/15/2010	9:26:02	0	14.8566	16.785
1284	12/15/2010	9:26:03	0	14.8558	16.785
1285	12/15/2010	9:26:04	0	14.8486	16.785
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1293	12/15/2010	9:26:12	0	14.6512	16.786
1294	12/15/2010	9:26:13	0	14.8551	16.785
1295	12/15/2010	9:26:14	0	14.8571	16.785
1296	12/15/2010	9:26:15	0	14.8514	16.786
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1298	12/15/2010	9:26:17	0	14.8548	16.785
1299	12/15/2010	9:26:18	0	14.8517	16.784
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1303	12/15/2010	9:26:22	0	14.8499	16.785
1304	12/15/2010	9:26:23	0	14.8521	16.785
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1307	12/15/2010	9:26:26	0	14.8556	16.785
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1309	12/15/2010	9:26:28	0	14.8504	16.785
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1315	12/15/2010	9:26:34	0	14.8579	18.784
1316	12/15/2010	9:26:35	0	14.8533	16.784
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1320	12/15/2010	9:26:39	0	14.8576	16.784
1321	12/15/2010	9:26:40	0	14.8538	16.784
1322	12/15/2010	9:26:41	0	14.8544	16.783

1323	12/15/2010	9:26:42	0	14.8222	16.783
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1332	12/15/2010	9:26:51	0	14.8539	16.783
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1334	12/15/2010	9:26:53	0	14.8512	16.783
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1338	12/15/2010	9:26:57	0	14.8692	16.783
1339	12/15/2010	9:26:58	0	14.8559	16.783
1340	12/15/2010	9:26:59	0	14.848	16.783
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1344	12/15/2010	9:27:03	0	14.8542	16.783
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1358	12/15/2010	9:27:17	0	14.8489	16.783
1359	12/15/2010	9:27:18	0	14.8511	16.782
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1371	12/15/2010	9:27:30	0	14.8479	16.783
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1374	12/15/2010	9:27:33	0	14.8734	16.781
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1376	12/15/2010	9:27:35	0	14.8511	16.782
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1395	12/15/2010	9:27:54	0	14.8475	16.782
1396	12/15/2010	9:27:55	0	14.8473	16.782
1397	12/15/2010	9:27:56	0	14.8504	16.782
1398	12/15/2010	9:27:57	0	14.8467	16.781
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1400	12/15/2010	9:27:59	0	14.8491	16.781
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1403	12/15/2010	9:28:02	0	14.8483	16.781
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1419	12/15/2010	9:28:18	0	14.8492	16.782
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1455	12/15/2010	9:28:54	0	14.8551	16.781
1456	12/15/2010	9:28:55	0	14.8427	16.761
1457	12/15/2010	9:28:56	0	14.8486	16.761
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1461	12/15/2010	9:29:00	0	14.8263	16.781
1462	12/15/2010	9:29:01	0	14.8544	16.781
1463	12/15/2010	9:29:02	0	14.8508	16.781
1464	12/15/2010	9:29:03	0	14.8394	16.781
1465	12/15/2010	9:29:04	0	14.8536	16.781
1466	12/15/2010	9:29:05	0	14.8287	16.781
1467	12/15/2010	9:29:06	0	14.8451	16.781
1468	12/15/2010	9:29:07	0	14.8571	16.781
1469	12/15/2010	9:29:06	0	14.8408	16.78
1470	12/15/2010	9:29:09	0	14.8479	16.781
1471	12/15/2010	9:29:10	0	14.8456	16.781
1472	12/15/2010	9:29:11	0	14.8499	16.78
1473	12/15/2010	9:29:12	0	14.8556	16.78
1474	12/15/2010	9:29:13	0	14.8339	16.78
1475	12/15/2010	9:29:14	0	14.8556	16.781
1476	12/15/2010	9:29:15	0	14.8474	16.781
1477	12/15/2010	9:29:16	0	14.8457	16.78
1478	12/15/2010	9:29:17	0	14.854	16.78
1479	12/15/2010	9:29:18	0	14.8446	16.781
1480	12/15/2010	9:29:19	0	14.8493	16.781
1481	12/15/2010	9:29:20	0	14.8476	16.781
1482	12/15/2010	9:29:21	0	14.8503	16.781
1483	12/15/2010	9:29:22	0	14.8398	16.781
1484	12/15/2010	9:29:23	0	14.8491	16.781
1485	12/15/2010	9:29:24	0	14.8513	16.781
1486	12/15/2010	9:29:25	0	14.8432	16.78
1487	12/15/2010	9:29:26	0	14.8537	16.781
1488	12/15/2010	9:29:27	0	14.8532	16.781
1489	12/15/2010	9:29:28	0	14.8481	16.78
1490	12/15/2010	9:29:29	0	14.8479	16.781
1491	12/15/2010	9:29:30	0	14.8508	16.781
1492	12/15/2010	9:29:31	0	14.8471	16.78
1493	12/15/2010	9:29:32	0	14.8481	16.781
1494	12/15/2010	9:29:33	0	14.8454	16.78
1495	12/15/2010	9:29:34	0	14.8464	16.781
1496	12/15/2010	9:29:35	0	14.8463	16.781
1497	12/15/2010	9:29:36	0	14.846	16.781
1498	12/15/2010	9:29:37	0	14.6501	16.781
1499	12/15/2010	9:29:38	0	14.8463	16.781
1500	12/15/2010	9:29:39	0	14.8592	16.781
1501	12/15/2010	9:29:40	0	14.852	16.761
1502	12/15/2010	9:29:41	0	14.8476	16.781
1503	12/15/2010	9:29:42	0	14.8446	16.781
1504	12/15/2010	9:29:43	0	14.847	16.78
1505	12/15/2010	9:29:44	0	14.8408	16.781
1506	12/15/2010	9:29:45	0	14.8248	16.781
1507	12/15/2010	9:29:46	0	14.8494	16.781
1508	12/15/2010	9:29:47	0	14.8439	16.781
1509	12/15/2010	9:29:48	0	14.841	16.781
1510	12/15/2010	9:29:49	0	14.8486	16.781
1511	12/15/2010	9:29:50	0	14.846	16.781
1512	12/15/2010	9:29:51	0	14.8467	16.781
1513	12/15/2010	9:29:52	0	14.8469	16.781
1514	12/15/2010	9:29:53	0	14.8474	16.78
1515	12/15/2010	9:29:54	0	14.8444	16.781
1516	12/15/2010	9:29:55	0	14.8444	16.781
1517	12/15/2010	9:29:56	0	14.8444	16.781
1518	12/15/2010	9:29:57	0	14.8445	16.781
1519	12/15/2010	9:29:58	0	14.8482	16.781
1520	12/15/2010	9:29:59	0	14.8476	16.78
1521	12/15/2010	9:30:00	0	14.8437	16.781
1522	12/15/2010	9:30:03	0	14.8459	16.766
1523	12/15/2010	9:30:06	0	14.8414	16.761
1524	12/15/2010	8:30:09	0	14.8434	16.758
1525	12/15/2010	9:30:12	0	14.8444	16.755
1526	12/15/2010	9:30:15	0	14.8446	16.752
1527	12/15/2010	9:30:18	0	14.8444	16.751
1528	12/15/2010	9:30:21	0	14.8404	16.75

1529	12/15/2010	9:30:24	0	14.8425	16.747
1530	12/15/2010	9:30:27	0	14.8466	16.746
1531	12/15/2010	9:30:30	0	14.8329	16.745
1532	12/15/2010	9:30:33	0	14.8359	16.744
1533	12/15/2010	9:30:36	0	14.8412	16.742
1534	12/15/2010	9:30:39	0	14.8413	16.741
1535	12/15/2010	9:30:42	0	14.8395	16.74
1536	12/15/2010	9:30:45	0	14.8416	16.738
1537	12/15/2010	9:30:48	0	14.8422	16.737
1538	12/15/2010	9:30:51	0	14.8349	16.737
1539	12/15/2010	9:30:54	0	14.8384	16.737
1540	12/15/2010	9:30:57	0	14.841	16.735
1541	12/15/2010	9:31:00	0	14.9498	16.735
1542	12/15/2010	9:31:03	0	14.8398	16.733
1543	12/15/2010	9:31:06	0	14.8419	16.733
1544	12/15/2010	9:31:09	0	14.84	16.733
1545	12/15/2010	9:31:12	0	14.8421	16.731
1546	12/15/2010	9:31:15	0	14.8326	16.731
1547	12/15/2010	9:31:18	0	14.8225	16.731
1549	12/15/2010	9:31:21	0	14.8358	16.73
1549	12/15/2010	9:31:24	0	14.8459	16.73
1550	12/15/2010	9:31:27	0	14.843	16.729
1551	12/15/2010	9:31:30	0	14.8426	16.73
1552	12/15/2010	9:31:33	0	14.8385	16.729
1553	12/15/2010	9:31:36	0	14.8394	16.728
1554	12/15/2010	9:31:39	0	14.8452	16.728
1555	12/15/2010	9:31:42	0	14.84	16.727
1556	12/15/2010	9:31:45	0	14.848	16.727
1557	12/15/2010	9:31:48	0	14.8433	16.727
1558	12/15/2010	9:31:51	0	14.8438	16.727
1559	12/15/2010	9:31:54	0	14.8421	16.725
1560	12/15/2010	9:31:57	0	14.8409	16.726
1561	12/15/2010	9:32:00	0	14.8416	16.725
1562	12/15/2010	9:32:03	0	14.8381	16.726
1563	12/15/2010	9:32:06	0	14.8366	16.725
1564	12/15/2010	9:32:09	0	14.8451	16.724
1565	12/15/2010	9:32:12	0	14.8428	16.724
1566	12/15/2010	9:32:15	0	14.8498	16.724
1567	12/15/2010	9:32:19	0	14.8449	16.724
1568	12/15/2010	9:32:21	0	14.8416	16.723
1569	12/15/2010	9:32:24	0	14.8445	16.723
1570	12/15/2010	9:32:27	0	14.8445	16.723
1571	12/15/2010	9:32:30	0	14.8397	16.723
1572	12/15/2010	9:32:33	0	14.846	16.723
1573	12/15/2010	9:32:36	0	14.8289	16.723
1574	12/15/2010	9:32:39	0	14.8406	16.723
1575	12/15/2010	9:32:42	0	14.8404	16.722
1576	12/15/2010	9:32:45	0	14.8465	16.723
1577	12/15/2010	9:32:48	0	14.844	16.722
1578	12/15/2010	9:32:51	0	14.8425	16.722
1579	12/15/2010	9:32:54	0	14.8506	16.722
1580	12/15/2010	9:32:57	0	14.8409	16.722
1581	12/15/2010	9:33:00	0	14.8516	16.722
1582	12/15/2010	9:33:03	0	14.8404	16.722
1583	12/15/2010	9:33:06	0	14.8472	16.722
1584	12/15/2010	9:33:09	0	14.8368	16.722
1585	12/15/2010	9:33:12	0	14.8494	16.722
1596	12/15/2010	9:33:15	0	14.8458	16.722
1587	12/15/2010	9:33:18	0	14.8358	16.722
1588	12/15/2010	9:33:21	0	14.8375	16.722
1589	12/15/2010	9:33:24	0	14.8277	16.722
1590	12/15/2010	9:33:27	0	14.8369	16.722
1591	12/15/2010	9:33:30	0	14.8374	16.722
1592	12/15/2010	9:33:33	0	14.9415	16.722
1593	12/15/2010	9:33:36	0	14.8441	16.722
1594	12/15/2010	9:33:39	0	14.843	16.722
1595	12/15/2010	9:33:42	0	14.8423	16.723
1596	12/15/2010	9:33:45	0	14.837	16.722
1597	12/15/2010	9:33:48	0	14.8397	16.723
1598	12/15/2010	9:33:51	0	14.8409	16.722
1599	12/15/2010	9:33:54	0	14.8441	16.723
1600	12/15/2010	9:33:57	0	14.8397	16.723
1601	12/15/2010	9:34:00	0	14.8354	16.723
1602	12/15/2010	9:34:03	0	14.8361	16.723
1603	12/15/2010	9:34:06	0	14.8369	16.723
1604	12/15/2010	9:34:09	0	14.8356	16.723
1605	12/15/2010	9:34:12	0	14.8431	16.724
1606	12/15/2010	9:34:15	0	14.8364	16.724
1607	12/15/2010	9:34:18	0	14.8374	16.724
1608	12/15/2010	9:34:21	0	14.8378	16.725
1609	12/15/2010	9:34:24	0	14.8364	16.724
1610	12/15/2010	9:34:27	0	14.8364	16.724
1611	12/15/2010	9:34:30	0	14.8388	16.725
1612	12/15/2010	9:34:33	0	14.8322	16.725
1613	12/15/2010	9:34:36	0	14.8371	16.725
1614	12/15/2010	9:34:39	0	14.8402	16.725
1615	12/15/2010	9:34:42	0	14.8349	16.725
1616	12/15/2010	9:34:45	0	14.8323	16.725
1617	12/15/2010	9:34:48	0	14.8309	16.725
1618	12/15/2010	9:34:51	0	14.8351	16.728
1619	12/15/2010	9:34:54	0	14.8366	16.728
1620	12/15/2010	9:34:57	0	14.8317	16.725
1621	12/15/2010	9:35:00	0	14.8385	16.725
1622	12/15/2010	9:35:03	0	14.8441	16.725
1623	12/15/2010	9:35:06	0	14.7586	16.725
1624	12/15/2010	9:35:09	0	14.5299	16.726
1625	12/15/2010	9:35:12	0	13.7498	16.726
1626	12/15/2010	9:35:15	0	12.858	16.726
1627	12/15/2010	9:35:18	0	12.9953	16.726
1628	12/15/2010	9:35:21	0	13.1278	16.726
1629	12/15/2010	9:35:24	0	13.2529	16.727
1630	12/15/2010	9:35:27	0	13.3689	16.727
1631	12/15/2010	9:35:30	0	13.4736	16.726

1632	12/15/2010	9:35:33	0	13.5703	16.727
1633	12/15/2010	9:35:36	0	13.6628	16.727
1634	12/15/2010	9:35:39	0	13.7448	16.728
1635	12/15/2010	9:35:42	0	13.8282	16.727
1636	12/15/2010	9:35:45	0	13.8966	18.727
1637	12/15/2010	9:35:48	0	13.9623	16.727
1638	12/15/2010	9:35:51	0	14.0243	16.727
1639	12/15/2010	9:35:54	0	14.0825	16.727
1640	12/15/2010	9:35:57	0	14.1409	16.727
1641	12/15/2010	9:36:00	0	14.1872	16.727
1642	12/15/2010	9:36:03	0	14.2348	16.727
1643	12/15/2010	9:36:06	0	14.2725	16.727
1644	12/15/2010	9:36:09	0	14.3136	16.727
1645	12/15/2010	9:36:12	0	14.3509	16.727
1646	12/15/2010	9:36:15	0	14.3826	18.727
1647	12/15/2010	9:36:18	0	14.4159	16.727
1648	12/15/2010	9:36:21	0	14.4408	16.727
1649	12/15/2010	9:36:24	0	14.4681	16.727
1650	12/15/2010	9:36:27	0	14.4925	16.728
1651	12/15/2010	9:36:30	0	14.5156	16.728
1652	12/15/2010	9:36:33	0	14.5339	16.727
1653	12/15/2010	9:36:36	0	14.5531	18.728
1654	12/15/2010	9:36:39	0	14.5752	16.728
1655	12/15/2010	9:36:42	0	14.5939	16.728
1656	12/15/2010	9:36:45	0	14.6067	16.728
1657	12/15/2010	9:36:48	0	14.6163	16.729
1658	12/15/2010	9:36:51	0	14.6308	16.728
1659	12/15/2010	9:36:54	0	14.6449	16.729
1660	12/15/2010	9:36:57	0	14.6494	16.729
1661	12/15/2010	9:37:00	0	14.6656	16.729
1662	12/15/2010	9:37:03	0	14.672	16.729
1663	12/15/2010	9:37:06	0	14.686	16.73
1664	12/15/2010	9:37:09	0	14.6903	16.73
1665	12/15/2010	9:37:12	0	14.6978	16.731
1666	12/15/2010	9:37:15	0	14.7016	16.73
1667	12/15/2010	9:37:18	0	14.7087	16.73
1668	12/15/2010	9:37:21	0	14.7164	16.731
1669	12/15/2010	9:37:24	0	14.723	16.731
1670	12/15/2010	9:37:27	0	14.7222	16.731
1671	12/15/2010	9:37:30	0	14.7277	16.731
1672	12/15/2010	9:37:33	0	14.733	16.732
1673	12/15/2010	9:37:36	0	14.7385	16.732
1674	12/15/2010	9:37:39	0	14.7397	16.732
1675	12/15/2010	9:37:42	0	14.7428	16.732
1676	12/15/2010	9:37:45	0	14.7466	16.732
1677	12/15/2010	9:37:48	0	14.7514	16.732
1678	12/15/2010	9:37:51	0	14.7588	16.733
1679	12/15/2010	9:37:54	0	14.7606	16.734
1680	12/15/2010	9:37:57	0	14.7586	16.734
1681	12/15/2010	9:38:00	0	14.7638	16.733
1682	12/15/2010	9:38:03	0	14.7595	16.733
1683	12/15/2010	9:38:06	0	14.7641	16.734
1684	12/15/2010	9:38:09	0	14.7652	16.733
1685	12/15/2010	9:38:12	0	14.7715	16.733
1686	12/15/2010	9:38:15	0	14.7713	16.734
1687	12/15/2010	9:38:18	0	14.7703	16.734
1688	12/15/2010	9:38:21	0	14.7773	16.734
1689	12/15/2010	9:38:24	0	14.7713	16.733
1690	12/15/2010	9:38:27	0	14.7753	16.733
1691	12/15/2010	9:38:30	0	14.7766	16.734
1692	12/15/2010	9:38:33	0	14.7796	16.734
1693	12/15/2010	9:38:36	0	14.7813	16.734
1694	12/15/2010	9:38:39	0	14.779	16.734
1695	12/15/2010	9:38:42	0	14.782	16.733
1696	12/15/2010	9:38:45	0	14.7781	16.733
1697	12/15/2010	9:38:48	0	14.7775	16.733
1698	12/15/2010	9:38:51	0	14.7815	16.733
1699	12/15/2010	9:38:54	0	14.781	18.733
1700	12/15/2010	9:38:57	0	14.782	16.734
1701	12/15/2010	9:39:00	0	14.7807	16.733
1702	12/15/2010	9:39:03	0	14.7838	16.734
1703	12/15/2010	9:39:06	0	14.7863	16.734
1704	12/15/2010	9:39:09	0	14.7838	16.733
1705	12/15/2010	9:39:12	0	14.7877	16.732
1706	12/15/2010	9:39:15	0	14.7891	16.733
1707	12/15/2010	9:39:18	0	14.7927	16.733
1708	12/15/2010	9:39:21	0	14.7929	16.732
1709	12/15/2010	9:39:24	0	14.7925	16.732
1710	12/15/2010	9:39:27	0	14.7925	16.732
1711	12/15/2010	9:39:30	0	14.7927	16.732
1712	12/15/2010	9:39:33	0	14.7953	16.732
1713	12/15/2010	9:39:36	0	14.7973	16.732
1714	12/15/2010	9:39:39	0	14.7896	16.732
1715	12/15/2010	9:39:42	0	14.7941	16.731
1716	12/15/2010	9:39:45	0	14.7917	16.731
1717	12/15/2010	9:39:48	0	14.7942	16.731
1718	12/15/2010	9:39:51	0	14.7937	16.731
1719	12/15/2010	9:39:54	0	14.7927	16.731
1720	12/15/2010	9:39:57	0	14.789	18.731
1721	12/15/2010	9:40:00	0	14.7956	18.731
1722	12/15/2010	9:40:05	0	14.7951	18.728
1723	12/15/2010	9:40:10	0	14.7948	16.727
1724	12/15/2010	9:40:15	0	14.7979	16.725
1725	12/15/2010	9:40:20	0	14.795	16.725
1726	12/15/2010	9:40:25	0	14.7927	16.723
1727	12/15/2010	9:40:30	0	14.8013	16.722
1728	12/15/2010	9:40:35	0	14.8045	16.722
1729	12/15/2010	9:40:40	0	14.7983	16.721
1730	12/15/2010	9:40:45	0	14.8048	16.722
1731	12/15/2010	9:40:50	0	14.7947	16.721
1732	12/15/2010	9:40:55	0	14.7926	16.72
1733	12/15/2010	9:41:00	0	14.8078	16.72
1734	12/15/2010	9:41:05	0	14.7995	16.719

1735	12/15/2010	9:41:10	0	14.803	16.719
1736	12/15/2010	9:41:15	0	14.7979	16.719
1737	12/15/2010	9:41:20	0	14.8008	16.718
1738	12/15/2010	9:41:25	0	14.7973	16.719
1739	12/15/2010	9:41:30	0	14.8003	16.719
1740	12/15/2010	9:41:35	0	14.8043	16.718
1741	12/15/2010	9:41:40	0	14.8	16.719
1742	12/15/2010	9:41:45	0	14.803	16.718
1743	12/15/2010	9:41:50	0	14.8051	16.718
1744	12/15/2010	9:41:55	0	14.8035	16.718
1745	12/15/2010	9:42:00	0	14.8017	16.717
1746	12/15/2010	9:42:05	0	14.7996	16.717
1747	12/15/2010	9:42:10	0	14.7988	16.717
1748	12/15/2010	9:42:15	0	14.806	16.717
1749	12/15/2010	9:42:20	0	14.8013	16.716
1750	12/15/2010	9:42:25	0	14.8055	16.717
1751	12/15/2010	9:42:30	0	14.7999	16.716
1752	12/15/2010	9:42:35	0	14.8073	16.716
1753	12/15/2010	9:42:40	0	14.8102	16.716
1754	12/15/2010	9:42:45	0	14.8043	16.716
1755	12/15/2010	9:42:50	0	14.8083	16.715
1756	12/15/2010	9:42:55	0	14.8031	16.715
1757	12/15/2010	9:43:00	0	14.8018	16.715
1758	12/15/2010	9:43:05	0	14.8093	16.715
1759	12/15/2010	9:43:10	0	14.8074	16.715
1760	12/15/2010	9:43:15	0	14.8028	16.714
1761	12/15/2010	9:43:20	0	14.8087	16.714
1762	12/15/2010	9:43:25	0	14.8053	16.714
1763	12/15/2010	9:43:30	0	14.8083	16.714
1764	12/15/2010	9:43:35	0	14.8072	16.714
1765	12/15/2010	9:43:40	0	14.8048	16.714
1766	12/15/2010	9:43:45	0	14.8048	16.713
1767	12/15/2010	9:43:50	0	14.8121	16.713
1768	12/15/2010	9:43:55	0	14.809	16.713
1769	12/15/2010	9:44:00	0	14.8079	16.713
1770	12/15/2010	9:44:05	0	14.8018	16.712
1771	12/15/2010	9:44:10	0	14.8068	16.712
1772	12/15/2010	9:44:15	0	14.8071	16.712
1773	12/15/2010	9:44:20	0	14.8083	16.712
1774	12/15/2010	9:44:25	0	14.8052	16.711
1775	12/15/2010	9:44:30	0	14.7991	16.711
1776	12/15/2010	9:44:35	0	14.8056	16.711
1777	12/15/2010	9:44:40	0	14.8057	16.711
1778	12/15/2010	9:44:45	0	14.8064	16.711
1779	12/15/2010	9:44:50	0	14.8113	16.711
1780	12/15/2010	9:44:55	0	14.8023	16.71
1781	12/15/2010	9:45:00	0	14.8112	16.711
1782	12/15/2010	9:45:05	0	14.8098	16.71
1783	12/15/2010	9:45:10	0	14.8095	16.711
1784	12/15/2010	9:45:15	0	14.8142	16.71
1785	12/15/2010	9:45:20	0	14.815	16.71
1786	12/15/2010	9:45:25	0	14.7994	16.709
1787	12/15/2010	9:45:30	0	14.8021	16.71
1788	12/15/2010	9:45:35	0	14.8126	16.709
1789	12/15/2010	9:45:40	0	14.8048	16.71
1790	12/15/2010	9:45:45	0	14.813	16.71
1791	12/15/2010	9:45:50	0	14.8087	16.71
1792	12/15/2010	9:45:55	0	14.8119	16.711
1793	12/15/2010	9:46:00	0	14.8058	16.71
1794	12/15/2010	9:46:05	0	14.8128	16.711
1795	12/15/2010	9:46:10	0	14.8082	16.71
1796	12/15/2010	9:46:15	0	14.815	16.71
1797	12/15/2010	9:46:20	0	14.814	16.711
1798	12/15/2010	9:46:25	0	14.8093	16.711
1799	12/15/2010	9:46:30	0	14.8081	16.711
1800	12/15/2010	9:46:35	0	14.8144	16.71
1801	12/15/2010	9:46:40	0	14.8112	16.711
1802	12/15/2010	9:46:45	0	14.8119	16.711
1803	12/15/2010	9:46:50	0	14.8132	16.711
1804	12/15/2010	9:46:55	0	14.8069	16.711
1805	12/15/2010	9:47:00	0	14.8076	16.711
1806	12/15/2010	9:47:05	0	14.8088	16.711
1807	12/15/2010	9:47:10	0	14.8102	16.71
1808	12/15/2010	9:47:15	0	14.8127	16.71
1809	12/15/2010	9:47:20	0	14.814	16.711
1810	12/15/2010	9:47:25	0	14.81	16.711
1811	12/15/2010	9:47:30	0	14.8134	16.711
1812	12/15/2010	9:47:35	0	14.8036	16.711
1813	12/15/2010	9:47:40	0	14.824	16.711
1814	12/15/2010	9:47:45	0	14.8021	16.711
1815	12/15/2010	9:47:50	0	14.8138	16.71
1816	12/15/2010	9:47:55	0	14.812	16.711
1817	12/15/2010	9:48:00	0	14.8145	16.71
1818	12/15/2010	9:48:05	0	14.8137	16.71
1819	12/15/2010	9:48:10	0	14.814	16.711
1820	12/15/2010	9:48:15	0	14.8138	16.711
1821	12/15/2010	9:48:20	0	14.8159	16.711
1822	12/15/2010	9:48:25	0	14.8013	16.711
1823	12/15/2010	9:48:30	0	14.8102	16.711
1824	12/15/2010	9:48:35	0	14.8131	16.71
1825	12/15/2010	9:48:40	0	14.8152	16.711
1826	12/15/2010	9:48:45	0	14.8142	16.711
1827	12/15/2010	9:48:50	0	14.8119	16.71
1828	12/15/2010	9:48:55	0	14.8105	16.711
1829	12/15/2010	9:49:00	0	14.8167	16.71
1830	12/15/2010	9:49:05	0	14.815	16.711
1831	12/15/2010	9:49:10	0	14.8152	16.71
1832	12/15/2010	9:49:15	0	14.8088	16.71
1833	12/15/2010	9:49:20	0	14.8133	16.711
1834	12/15/2010	9:49:25	0	14.8076	16.711
1835	12/15/2010	9:49:30	0	14.8184	16.711
1836	12/15/2010	9:49:35	0	14.8131	16.71
1837	12/15/2010	9:49:40	0	14.8159	16.71

1838	12/15/2010	9:49:45	0	14.8136	16.711
1839	12/15/2010	9:49:50	0	14.8131	16.711
1840	12/15/2010	9:49:55	0	14.8122	16.71
1841	12/15/2010	9:50:00	0	14.8115	16.711
1842	12/15/2010	9:50:01	0	14.8105	16.719
1843	12/15/2010	9:50:02	0	14.8154	16.724
1844	12/15/2010	9:50:03	0	14.8149	16.727
1945	12/15/2010	9:50:04	0	14.9148	16.73
1846	12/15/2010	9:50:05	0	14.8159	16.732
1847	12/15/2010	9:50:06	0	14.8164	16.733
1949	12/15/2010	9:50:07	0	14.8141	16.735
1849	12/15/2010	9:50:08	0	14.8162	16.737
1850	12/15/2010	9:50:09	0	14.8157	16.738
1851	12/15/2010	9:50:10	0	14.8133	16.739
1852	12/15/2010	9:50:11	0	14.8106	16.74
1853	12/15/2010	9:50:12	0	14.8097	16.742
1854	12/15/2010	9:50:13	0	14.8113	16.742
1855	12/15/2010	9:50:14	0	14.8086	16.743
1856	12/15/2010	9:50:15	0	14.7333	16.743
1857	12/15/2010	9:50:16	0	13.7522	16.745
1858	12/15/2010	9:50:17	0	14.3743	16.746
1859	12/15/2010	9:50:18	0	14.4492	16.746
1860	12/15/2010	9:50:19	0	14.5742	16.748
1861	12/15/2010	9:50:20	0	14.6372	16.748
1862	12/15/2010	9:50:21	0	14.7033	16.748
1863	12/15/2010	9:50:22	0	14.7191	16.749
1864	12/15/2010	9:50:23	0	14.7144	16.749
1865	12/15/2010	9:50:24	0	14.717	16.75
1866	12/15/2010	9:50:25	0	14.8212	16.751
1867	12/15/2010	9:50:26	0	14.8549	16.751
1868	12/15/2010	9:50:27	0	15.0614	16.752
1869	12/15/2010	9:50:28	0	15.6011	16.753
1870	12/15/2010	9:50:29	0	15.0537	16.753
1871	12/15/2010	9:50:30	0	13.1712	16.754
1872	12/15/2010	9:50:31	0	10.9267	16.754
1873	12/15/2010	9:50:32	0	8.8636	16.754
1874	12/15/2010	9:50:33	0	6.7269	16.755
1875	12/15/2010	9:50:34	0	4.5792	16.756
1876	12/15/2010	9:50:35	0	2.8344	16.756
1877	12/15/2010	9:50:36	0	2.8272	16.757
1878	12/15/2010	9:50:37	0	2.8391	16.757
1879	12/15/2010	9:50:38	0	2.8233	16.757
1880	12/15/2010	9:50:39	0	2.8301	16.758
1881	12/15/2010	9:50:40	0	2.8297	16.758
1882	12/15/2010	9:50:41	0	2.8264	16.758
1883	12/15/2010	9:50:42	0	2.809	16.758
1884	12/15/2010	9:50:43	0	2.8167	16.759
1885	12/15/2010	9:50:44	0	2.8305	16.759
1886	12/15/2010	9:50:45	0	2.81	16.759
1887	12/15/2010	9:50:46	0	2.8095	16.759
1888	12/15/2010	9:50:47	0	2.8172	16.759
1889	12/15/2010	9:50:48	0	2.8139	16.759
1890	12/15/2010	9:50:49	0	2.8079	16.759
1891	12/15/2010	9:50:50	0	2.8081	16.759
1992	12/15/2010	9:50:51	0	2.8023	16.758
1993	12/15/2010	9:50:52	0	2.8017	16.759
1894	12/15/2010	9:50:53	0	2.7997	16.759
1995	12/15/2010	9:50:54	0	2.7919	16.759
1896	12/15/2010	9:50:55	0	2.7952	16.758
1897	12/15/2010	9:50:56	0	2.7926	16.758
1898	12/15/2010	9:50:57	0	2.7844	16.758
1899	12/15/2010	9:50:58	0	2.7818	16.757
1900	12/15/2010	9:50:59	0	2.7814	16.756
1901	12/15/2010	9:51:00	0	2.7819	16.756
1902	12/15/2010	9:51:01	0	2.775	16.756
1903	12/15/2010	9:51:02	0	2.7711	16.755
1904	12/15/2010	9:51:03	0	2.7814	16.754
1905	12/15/2010	9:51:04	0	2.7668	16.753
1906	12/15/2010	9:51:05	0	2.7604	16.753
1907	12/15/2010	9:51:06	0	2.7713	16.753
1908	12/15/2010	9:51:07	0	2.7624	16.752
1909	12/15/2010	9:51:08	0	2.7565	16.751
1910	12/15/2010	9:51:09	0	2.7616	16.75
1911	12/15/2010	9:51:10	0	2.756	16.75
1912	12/15/2010	9:51:11	0	2.7516	16.749
1913	12/15/2010	9:51:12	0	2.752	16.749
1914	12/15/2010	9:51:13	0	2.7534	16.747
1915	12/15/2010	9:51:14	0	2.7437	16.747
1916	12/15/2010	9:51:15	0	2.7425	16.745
1917	12/15/2010	9:51:16	0	2.7353	16.744
1918	12/15/2010	9:51:17	0	2.739	16.743
1919	12/15/2010	9:51:18	0	2.7313	16.742
1920	12/15/2010	9:51:19	0	2.7288	16.741
1921	12/15/2010	9:51:20	0	2.7274	16.74
1922	12/15/2010	9:51:21	0	2.7293	16.739
1923	12/15/2010	9:51:22	0	2.7229	16.738
1924	12/15/2010	9:51:23	0	2.7204	16.736
1925	12/15/2010	9:51:24	0	2.7197	16.736
1926	12/15/2010	9:51:25	0	2.7153	16.734
1927	12/15/2010	9:51:26	0	2.7169	16.732
1928	12/15/2010	9:51:27	0	2.7075	16.731
1929	12/15/2010	9:51:28	0	2.7075	16.73
1930	12/15/2010	9:51:29	0	2.7062	16.729
1931	12/15/2010	9:51:30	0	2.7018	16.727
1932	12/15/2010	9:51:31	0	2.6961	16.726
1933	12/15/2010	9:51:32	0	2.6961	16.724
1934	12/15/2010	9:51:33	0	2.6913	16.722
1935	12/15/2010	9:51:34	0	2.8903	16.72
1936	12/15/2010	9:51:35	0	2.6666	16.719
1937	12/15/2010	9:51:36	0	2.6719	16.717
1938	12/15/2010	9:51:37	0	2.6739	16.715
1939	12/15/2010	9:51:38	0	2.6968	16.712
1940	12/15/2010	9:51:39	0	2.694	16.71

1941	12/15/2010	9:51:40	0	2.6946	16.706
1942	12/15/2010	9:51:41	0	2.6956	16.703
1943	12/15/2010	9:51:42	0	2.6985	16.698
1944	12/15/2010	9:51:43	0	2.6953	16.693
1945	12/15/2010	9:51:44	0	2.6926	16.688
1946	12/15/2010	9:51:45	0	2.6931	16.682
1947	12/15/2010	9:51:46	0	2.7005	16.676
1948	12/15/2010	9:51:47	0	2.6882	16.671
1949	12/15/2010	9:51:48	0	2.6952	16.663
1950	12/15/2010	9:51:49	0	2.6953	16.656
1951	12/15/2010	9:51:50	0	2.6971	16.648
1952	12/15/2010	9:51:51	0	2.698	16.641
1953	12/15/2010	9:51:52	0	2.6981	16.633
1954	12/15/2010	9:51:53	0	2.6993	16.625
1955	12/15/2010	9:51:54	0	2.7026	16.616
1956	12/15/2010	9:51:55	0	2.7001	16.609
1957	12/15/2010	9:51:56	0	2.7032	16.6
1958	12/15/2010	9:51:57	0	2.7016	16.594
1959	12/15/2010	9:51:58	0	2.6995	16.587
1960	12/15/2010	9:51:59	0	2.7081	16.58
1961	12/15/2010	9:52:00	0	2.7057	16.574
1962	12/15/2010	9:52:01	0	2.704	16.567
1963	12/15/2010	9:52:02	0	2.7028	16.562
1964	12/15/2010	9:52:03	0	2.7098	16.557
1965	12/15/2010	9:52:04	0	2.7089	16.552
1966	12/15/2010	9:52:05	0	2.6981	16.548
1967	12/15/2010	9:52:06	0	2.6973	16.546
1968	12/15/2010	9:52:07	0	2.7076	16.544
1969	12/15/2010	9:52:08	0	2.706	16.542
1970	12/15/2010	9:52:09	0	2.7055	16.54
1971	12/15/2010	9:52:10	0	2.7035	16.538
1972	12/15/2010	9:52:11	0	2.7017	16.538
1973	12/15/2010	9:52:12	0	2.7033	16.536
1974	12/15/2010	9:52:13	0	2.6998	16.536
1975	12/15/2010	9:52:14	0	2.7017	16.536
1976	12/15/2010	9:52:15	0	2.7011	16.536
1977	12/15/2010	9:52:16	0	2.6996	16.535
1978	12/15/2010	9:52:17	0	2.6981	16.534
1979	12/15/2010	9:52:18	0	2.6988	16.533
1980	12/15/2010	9:52:19	0	2.6969	16.533
1981	12/15/2010	9:52:20	0	2.6996	16.532
1982	12/15/2010	9:52:21	0	2.7001	16.53
1983	12/15/2010	9:52:22	0	2.6978	16.529
1984	12/15/2010	9:52:23	0	2.7023	16.528
1985	12/15/2010	9:52:24	0	2.7012	16.527
1986	12/15/2010	9:52:25	0	2.7035	16.521
1987	12/15/2010	9:52:26	0	2.6995	16.526
1988	12/15/2010	9:52:27	0	2.7013	16.522
1989	12/15/2010	9:52:28	0	2.6995	16.52
1990	12/15/2010	9:52:29	0	2.6993	16.517
1991	12/15/2010	9:52:30	0	2.7036	16.515
1992	12/15/2010	9:52:31	0	2.7007	16.512
1993	12/15/2010	9:52:32	0	2.6998	16.509
1994	12/15/2010	9:52:33	0	2.7011	16.506
1995	12/15/2010	9:52:34	0	2.7024	16.503
1996	12/15/2010	9:52:35	0	2.701	16.5
1997	12/15/2010	9:52:36	0	2.7019	16.496
1998	12/15/2010	9:52:37	0	2.6983	16.492
1999	12/15/2010	9:52:38	0	2.7019	16.488
2000	12/15/2010	9:52:39	0	2.7042	16.484
2001	12/15/2010	9:52:40	0	2.7013	16.479
2002	12/15/2010	9:52:41	0	2.7005	16.475
2003	12/15/2010	9:52:42	0	2.7003	16.469
2004	12/15/2010	9:52:43	0	2.7024	16.465
2005	12/15/2010	9:52:44	0	2.7031	16.46
2006	12/15/2010	9:52:45	0	2.701	16.454
2007	12/15/2010	9:52:46	0	2.7038	16.448
2008	12/15/2010	9:52:47	0	2.7033	16.442
2009	12/15/2010	9:52:48	0	2.7072	16.434

Technical Memorandum—Field Report
Slug Tests at Burn Site Groundwater Study Area
Groundwater Monitoring Wells

Table A-2
Transducer Field Data for CYN-MW10

Serial Number
└ 1040608
Project ID
└ BSG Slug tests
Location
└ CYN-MW10
Level
└ Unit
└ └ ft
└ Offset
└ └ 0.00 ft
└ Altitude
└ └ 6350 ft
Temperature
└ Unit
└ └ Deg C

	Date	Time	100 ms	Level	Temperature
1	12/16/2010	8:20:00	0	10.7297	15.311
2	12/16/2010	8:20:01	0	10.7302	15.32
3	12/16/2010	8:20:02	0	10.7304	15.325
4	12/16/2010	8:20:03	0	10.7312	15.329
5	12/16/2010	8:20:04	0	10.7298	15.332
6	12/16/2010	8:20:05	0	10.7267	15.334
7	12/16/2010	8:20:06	0	10.7332	15.336
8	12/16/2010	8:20:07	0	10.7312	15.338
9	12/16/2010	8:20:08	0	10.731	15.34
10	12/16/2010	8:20:09	0	10.7331	15.34
11	12/16/2010	8:20:10	0	10.7336	15.342
12	12/16/2010	8:20:11	0	10.8275	15.344
13	12/16/2010	8:20:12	0	11.5109	15.344
14	12/16/2010	8:20:13	0	12.0925	15.346
15	12/16/2010	8:20:14	0	12.7562	15.346
16	12/16/2010	8:20:15	0	12.853	15.348
17	12/16/2010	8:20:16	0	12.7784	15.349
18	12/16/2010	8:20:17	0	12.5281	15.349
19	12/16/2010	8:20:18	0	12.7638	15.351
20	12/16/2010	8:20:19	0	13.5062	15.351
21	12/16/2010	8:20:20	0	12.0172	15.352
22	12/16/2010	8:20:21	0	12.7867	15.353
23	12/16/2010	8:20:22	0	12.7901	15.354
24	12/16/2010	8:20:23	0	12.8894	15.354
25	12/16/2010	8:20:24	0	12.6753	15.356
26	12/16/2010	8:20:25	0	12.7509	15.356
27	12/16/2010	8:20:26	0	12.6847	15.356
28	12/16/2010	8:20:27	0	12.6708	15.357
29	12/16/2010	8:20:28	0	12.6562	15.358
30	12/16/2010	8:20:29	0	12.6473	15.359
31	12/16/2010	8:20:30	0	12.6313	15.359
32	12/16/2010	8:20:31	0	12.6227	15.36
33	12/16/2010	8:20:32	0	12.6099	15.361
34	12/16/2010	8:20:33	0	12.5987	15.361
35	12/16/2010	8:20:34	0	12.5853	15.361
36	12/16/2010	8:20:35	0	12.5817	15.362
37	12/16/2010	8:20:36	0	12.5816	15.363
38	12/16/2010	8:20:37	0	12.5756	15.363
39	12/16/2010	8:20:38	0	12.5394	15.364
40	12/16/2010	8:20:39	0	12.4952	15.364
41	12/16/2010	8:20:40	0	12.631	15.365
42	12/16/2010	8:20:41	0	12.5013	15.365
43	12/16/2010	8:20:42	0	12.4696	15.365
44	12/16/2010	8:20:43	0	12.4891	15.367
45	12/16/2010	8:20:44	0	12.4658	15.368
46	12/16/2010	8:20:45	0	12.4062	15.368
47	12/16/2010	8:20:46	0	12.4131	15.367
48	12/16/2010	8:20:47	0	12.4445	15.368
49	12/16/2010	8:20:48	0	12.4355	15.368
50	12/16/2010	8:20:49	0	12.4246	15.368
51	12/16/2010	8:20:50	0	12.4149	15.368
52	12/16/2010	8:20:51	0	12.4037	15.37
53	12/16/2010	8:20:52	0	12.3951	15.37
54	12/16/2010	8:20:53	0	12.3851	15.37
55	12/16/2010	8:20:54	0	12.3749	15.371
56	12/16/2010	8:20:55	0	12.3698	15.371
57	12/16/2010	8:20:56	0	12.3544	15.371
58	12/16/2010	8:20:57	0	12.3463	15.371
59	12/16/2010	8:20:58	0	12.3346	15.372
60	12/16/2010	8:20:59	0	12.326	15.373
61	12/16/2010	8:21:00	0	12.3109	15.372
62	12/16/2010	8:21:01	0	12.3129	15.373
63	12/16/2010	8:21:02	0	12.2987	15.374
64	12/16/2010	8:21:03	0	12.2285	15.373
65	12/16/2010	8:21:04	0	12.2905	15.373
66	12/16/2010	8:21:05	0	12.2708	15.374
67	12/16/2010	8:21:06	0	12.2633	15.374
68	12/16/2010	8:21:07	0	12.2481	15.374
69	12/16/2010	8:21:08	0	12.2475	15.375
70	12/16/2010	8:21:09	0	12.2342	15.375
71	12/16/2010	8:21:10	0	12.2275	15.375
72	12/16/2010	8:21:11	0	12.2197	15.375
73	12/16/2010	8:21:12	0	12.2118	15.375
74	12/16/2010	8:21:13	0	12.2026	15.378
75	12/16/2010	8:21:14	0	12.1923	15.376
76	12/16/2010	8:21:15	0	12.1837	15.377
77	12/16/2010	8:21:16	0	12.1728	15.378
78	12/16/2010	8:21:17	0	12.1653	15.377
79	12/16/2010	8:21:18	0	12.1613	15.377
80	12/16/2010	8:21:19	0	12.1489	15.377
81	12/16/2010	8:21:20	0	12.1337	15.377
82	12/16/2010	8:21:21	0	12.1338	15.378
83	12/16/2010	8:21:22	0	12.1296	15.377
84	12/16/2010	8:21:23	0	12.1155	15.377
85	12/16/2010	8:21:24	0	12.1127	15.378
86	12/16/2010	8:21:25	0	12.1016	15.378
87	12/16/2010	8:21:26	0	12.0931	15.378
88	12/16/2010	8:21:27	0	12.1315	15.378
89	12/16/2010	8:21:28	0	12.0542	15.379
90	12/16/2010	8:21:29	0	12.0519	15.379
91	12/16/2010	8:21:30	0	11.9738	15.379
92	12/16/2010	8:21:31	0	12.0217	15.379
93	12/16/2010	8:21:32	0	12.0473	15.379
94	12/16/2010	8:21:33	0	12.0406	15.378
95	12/16/2010	8:21:34	0	12.0321	15.379
96	12/16/2010	8:21:35	0	12.0226	15.379
97	12/16/2010	8:21:36	0	12.0162	15.378
98	12/16/2010	8:21:37	0	12.0088	15.379
99	12/16/2010	8:21:38	0	12.0024	15.38
100	12/16/2010	8:21:39	0	11.9968	15.38
101	12/16/2010	8:21:40	0	11.9871	15.38
102	12/16/2010	8:21:41	0	11.9835	15.38
103	12/16/2010	8:21:42	0	11.9742	15.38
104	12/16/2010	8:21:43	0	11.9662	15.379
105	12/16/2010	8:21:44	0	11.9599	15.38
106	12/16/2010	8:21:45	0	11.9543	15.38
107	12/16/2010	8:21:46	0	11.9455	15.38
108	12/16/2010	8:21:47	0	11.9359	15.381

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110	12/16/2010	8:21:49	0	11.9245	15.381
111	12/16/2010	8:21:50	0	11.9168	15.38
112	12/16/2010	8:21:51	0	11.9124	15.381
113	12/16/2010	8:21:52	0	11.9038	15.38
114	12/16/2010	8:21:53	0	11.9166	15.381
115	12/16/2010	8:21:54	0	11.8911	15.38
116	12/16/2010	8:21:55	0	11.8654	15.381
117	12/16/2010	8:21:56	0	11.8696	15.38
118	12/16/2010	8:21:57	0	11.8695	15.38
119	12/16/2010	8:21:58	0	11.8647	15.38
120	12/16/2010	8:21:59	0	11.8573	15.381
121	12/16/2010	8:22:00	0	11.8515	15.381
122	12/16/2010	8:22:01	0	11.8448	15.381
123	12/16/2010	8:22:02	0	11.8391	15.381
124	12/16/2010	8:22:03	9	11.8346	15.38
125	12/16/2010	8:22:04	0	11.826	15.38
126	12/16/2010	8:22:05	0	11.8211	15.381
127	12/16/2010	8:22:06	0	11.8138	15.381
128	12/16/2010	8:22:07	0	11.8082	15.381
129	12/16/2010	8:22:08	0	11.8032	15.381
130	12/16/2010	8:22:09	0	11.7967	15.381
131	12/16/2010	8:22:10	0	11.7884	15.381
132	12/16/2010	8:22:11	0	11.7835	15.381
133	12/16/2010	8:22:12	0	11.7771	15.38
134	12/16/2010	8:22:13	0	11.7723	15.381
135	12/16/2010	8:22:14	0	11.7669	15.381
136	12/16/2010	8:22:15	0	11.7584	15.381
137	12/16/2010	8:22:16	0	11.7542	15.381
138	12/16/2010	8:22:17	0	11.7501	15.38
139	12/16/2010	8:22:18	0	11.7427	15.38
140	12/16/2010	8:22:19	0	11.7364	15.381
141	12/16/2010	8:22:20	0	11.7313	15.38
142	12/16/2010	8:22:21	0	11.7268	15.381
143	12/16/2010	8:22:22	0	11.7225	15.38
144	12/16/2010	8:22:23	0	11.7141	15.38
145	12/16/2010	8:22:24	0	11.7104	15.38
146	12/16/2010	8:22:25	0	11.7029	15.381
147	12/16/2010	8:22:26	0	11.6987	15.381
148	12/16/2010	8:22:27	0	11.6912	15.381
149	12/16/2010	8:22:28	0	11.6883	15.38
150	12/16/2010	8:22:29	0	11.684	15.381
151	12/16/2010	8:22:30	0	11.6766	15.38
152	12/16/2010	8:22:31	0	11.6703	15.381
153	12/16/2010	8:22:32	0	11.6685	15.38
154	12/16/2010	8:22:33	0	11.6594	15.381
155	12/16/2010	8:22:34	9	11.6567	15.381
156	12/16/2010	8:22:35	0	11.6492	15.381
157	12/16/2010	8:22:36	0	11.6457	15.38
158	12/16/2010	8:22:37	9	11.6414	15.38
159	12/16/2010	8:22:38	0	11.6371	15.381
160	12/16/2010	8:22:39	0	11.6298	15.381
161	12/16/2010	8:22:40	0	11.6243	15.38
162	12/16/2010	8:22:41	0	11.6181	15.38
163	12/16/2010	8:22:42	0	11.6147	15.38
164	12/16/2010	8:22:43	0	11.6095	15.38
165	12/16/2010	8:22:44	0	11.6058	15.381
166	12/16/2010	8:22:45	0	11.5987	15.38
167	12/16/2010	8:22:46	0	11.5973	15.379
168	12/16/2010	8:22:47	0	11.589	15.38
169	12/16/2010	8:22:48	0	11.5879	15.38
170	12/16/2010	8:22:49	0	11.5823	15.38
171	12/16/2010	8:22:50	0	11.579	15.381
172	12/16/2010	8:22:51	0	11.571	15.38
173	12/16/2010	8:22:52	0	11.5643	15.38
174	12/16/2010	8:22:53	0	11.5625	15.38
175	12/16/2010	8:22:54	0	11.5585	15.38
176	12/16/2010	8:22:55	0	11.5536	15.38
177	12/16/2010	8:22:56	0	11.5498	15.38
178	12/16/2010	8:22:57	0	11.5436	15.38
179	12/16/2010	8:22:58	0	11.5373	15.38
180	12/16/2010	8:22:59	0	11.535	15.379
181	12/16/2010	8:23:00	0	11.5317	15.38
182	12/16/2010	8:23:01	0	11.5263	15.379
183	12/16/2010	8:23:02	0	11.5249	15.379
184	12/16/2010	8:23:03	0	11.5147	15.379
185	12/16/2010	8:23:04	0	11.5141	15.379
186	12/16/2010	8:23:05	0	11.5091	15.379
187	12/16/2010	8:23:06	0	11.5019	15.38
188	12/16/2010	8:23:07	0	11.4998	15.379
189	12/16/2010	8:23:08	0	11.4965	15.379
190	12/16/2010	8:23:09	0	11.4827	15.378
191	12/16/2010	8:23:10	0	11.4875	15.379
192	12/16/2010	8:23:11	0	11.4826	15.378
193	12/16/2010	8:23:12	0	11.4786	15.379
194	12/16/2010	8:23:13	0	11.4721	15.378
195	12/16/2010	8:23:14	0	11.4716	15.379
196	12/16/2010	8:23:15	0	11.4645	15.379
197	12/16/2010	8:23:16	0	11.4604	15.379
198	12/16/2010	8:23:17	9	11.4577	15.378
199	12/16/2010	8:23:18	0	11.4556	15.379
200	12/16/2010	8:23:19	0	11.4502	15.378
201	12/16/2010	8:23:20	0	11.4462	15.379
202	12/16/2010	8:23:21	0	11.4401	15.379
203	12/16/2010	8:23:22	0	11.4421	15.378
204	12/16/2010	8:23:23	0	11.4364	15.378
205	12/16/2010	8:23:24	0	11.4313	15.379
206	12/16/2010	8:23:25	0	11.4287	15.378
207	12/16/2010	8:23:26	0	11.4226	15.378
208	12/16/2010	8:23:27	0	11.4208	15.379
209	12/16/2010	8:23:28	0	11.4166	15.379
210	12/16/2010	8:23:29	0	11.4115	15.377
211	12/16/2010	8:23:30	0	11.4071	15.379
212	12/16/2010	8:23:31	0	11.4037	15.378
213	12/16/2010	8:23:32	0	11.4017	15.378
214	12/16/2010	8:23:33	0	11.401	15.378
215	12/16/2010	8:23:34	0	11.3938	15.378
216	12/16/2010	8:23:35	0	11.3912	15.377
217	12/16/2010	8:23:36	0	11.3838	15.377
218	12/16/2010	8:23:37	0	11.3845	15.378
219	12/16/2010	8:23:38	0	11.38	15.377
220	12/16/2010	8:23:38	0	11.377	15.378
221	12/16/2010	8:23:40	0	11.3734	15.378
222	12/16/2010	8:23:41	0	11.3669	15.378
223	12/16/2010	8:23:42	0	11.3658	15.378
224	12/16/2010	8:23:43	0	11.3829	15.377
225	12/16/2010	8:23:44	0	11.3587	15.378
226	12/16/2010	8:23:45	0	11.3554	15.377
227	12/16/2010	8:23:46	0	11.3533	15.377
228	12/16/2010	8:23:47	0	11.3486	15.377
229	12/16/2010	8:23:48	0	11.3482	15.377
230	12/16/2010	8:23:49	0	11.3416	15.377
231	12/16/2010	8:23:50	0	11.339	15.377
232	12/16/2010	8:23:51	0	11.3319	15.377
233	12/16/2010	8:23:52	0	11.333	15.376

234	12/16/2010	8:23:53	0	11.3295	15.377
235	12/16/2010	8:23:54	0	11.3263	15.377
236	12/16/2010	8:23:55	8	11.3207	15.377
237	12/16/2010	8:23:56	0	11.3197	15.377
238	12/16/2010	8:23:57	0	11.3134	15.377
239	12/16/2010	8:23:58	8	11.3143	15.377
240	12/16/2010	8:23:58	8	11.3101	15.377
241	12/16/2010	8:24:00	0	11.307	15.377
242	12/16/2010	8:24:01	0	11.3065	15.377
243	12/16/2010	8:24:02	0	11.3024	15.377
244	12/16/2010	8:24:03	0	11.299	15.377
245	12/16/2010	8:24:04	0	11.2937	15.376
246	12/16/2010	8:24:05	0	11.2897	15.376
247	12/16/2010	8:24:06	0	11.2906	15.376
248	12/16/2010	8:24:07	0	11.2851	15.376
249	12/16/2010	8:24:08	0	11.2826	15.376
250	12/16/2010	8:24:09	8	11.2817	15.378
251	12/16/2010	8:24:10	0	11.2766	15.376
252	12/16/2010	8:24:11	0	11.2712	15.375
253	12/16/2010	8:24:12	0	11.2687	15.378
254	12/16/2010	8:24:13	0	11.2684	15.376
255	12/16/2010	8:24:14	0	11.2661	15.376
256	12/16/2010	8:24:15	0	11.2624	15.375
257	12/16/2010	8:24:16	0	11.2596	15.376
258	12/16/2010	8:24:17	0	11.2578	15.375
259	12/16/2010	8:24:18	8	11.2524	15.378
260	12/16/2010	8:24:19	9	11.2516	15.375
261	12/16/2010	8:24:20	9	11.2499	15.375
262	12/16/2010	8:24:21	0	11.247	15.375
263	12/16/2010	8:24:22	0	11.2432	15.375
264	12/16/2010	8:24:23	0	11.2401	15.375
265	12/16/2010	8:24:24	0	11.2374	15.375
266	12/16/2010	8:24:25	0	11.236	15.375
267	12/16/2010	8:24:26	8	11.4416	15.375
268	12/16/2010	8:24:27	0	11.246	15.375
269	12/16/2010	8:24:28	0	11.1627	15.375
270	12/16/2010	8:24:29	0	11.0902	15.375
271	12/16/2010	8:24:30	8	11.2205	15.375
272	12/16/2010	8:24:31	0	11.2171	15.375
273	12/16/2010	8:24:32	0	11.2153	15.375
274	12/16/2010	8:24:33	8	11.2166	15.375
275	12/16/2010	8:24:34	0	11.2109	15.375
276	12/16/2010	8:24:35	0	11.2105	15.374
277	12/16/2010	8:24:36	0	11.2078	15.375
278	12/16/2010	8:24:37	8	11.2032	15.374
279	12/16/2010	8:24:38	0	11.1992	15.374
280	12/16/2010	8:24:39	0	11.1993	15.375
281	12/16/2010	8:24:40	0	11.198	15.374
282	12/16/2010	8:24:41	8	11.1944	15.375
283	12/16/2010	8:24:42	8	11.1902	15.374
284	12/16/2010	8:24:43	0	11.1885	15.374
285	12/16/2010	8:24:44	0	11.1868	15.374
286	12/16/2010	8:24:45	0	11.1876	15.374
287	12/16/2010	8:24:46	8	11.1821	15.374
288	12/16/2010	8:24:47	8	11.1831	15.374
289	12/16/2010	8:24:48	0	11.1916	15.374
290	12/16/2010	8:24:49	0	11.1973	15.374
291	12/16/2010	8:24:50	8	11.1868	15.374
292	12/16/2010	8:24:51	8	11.1758	15.374
293	12/16/2010	8:24:52	0	11.3813	15.374
294	12/16/2010	8:24:53	0	11.2749	15.374
295	12/16/2010	8:24:54	0	11.152	15.374
296	12/16/2010	8:24:55	0	11.1779	15.374
297	12/16/2010	8:24:56	0	11.1992	15.373
298	12/16/2010	8:24:57	0	11.156	15.373
299	12/16/2010	8:24:58	0	11.1543	15.373
300	12/16/2010	8:24:59	8	11.1527	15.373
301	12/16/2010	8:25:00	0	11.1495	15.373
302	12/16/2010	8:25:03	0	11.1431	15.356
303	12/16/2010	8:25:06	0	11.1226	15.353
304	12/16/2010	8:25:09	0	11.1377	15.35
305	12/16/2010	8:25:12	8	11.1239	15.347
306	12/16/2010	8:25:15	0	11.1148	15.345
307	12/16/2010	8:25:18	0	11.3095	15.343
308	12/16/2010	8:25:21	0	11.1116	15.341
309	12/16/2010	8:25:24	8	11.0988	15.34
310	12/16/2010	8:25:27	0	11.0941	15.338
311	12/16/2010	8:25:30	0	11.0885	15.336
312	12/16/2010	8:25:33	0	11.0831	15.334
313	12/16/2010	8:25:36	9	11.0806	15.334
314	12/16/2010	8:25:39	0	11.0747	15.333
315	12/16/2010	8:25:42	0	11.0727	15.331
316	12/16/2010	8:25:45	9	11.0632	15.33
317	12/16/2010	8:25:48	0	11.0585	15.329
318	12/16/2010	8:25:51	0	11.0541	15.328
319	12/16/2010	8:25:54	0	11.0476	15.327
320	12/16/2010	8:25:57	0	11.0485	15.326
321	12/16/2010	8:26:00	8	11.0416	15.326
322	12/16/2010	8:26:03	0	11.0482	15.325
323	12/16/2010	8:26:06	0	11.029	15.323
324	12/16/2010	8:26:09	0	11.0255	15.323
325	12/16/2010	8:26:12	0	11.8267	15.323
326	12/16/2010	8:26:15	0	11.0156	15.322
327	12/16/2010	8:26:18	0	11.0129	15.321
328	12/16/2010	8:26:21	0	11.0071	15.321
329	12/16/2010	8:26:24	0	11.0052	15.32
330	12/16/2010	8:26:27	0	11.0021	15.319
331	12/16/2010	8:26:30	0	10.9971	15.319
332	12/16/2010	8:26:33	0	10.9928	15.318
333	12/16/2010	8:26:36	0	10.9867	15.318
334	12/16/2010	8:26:39	0	10.9862	15.316
335	12/16/2010	8:26:42	8	10.9823	15.317
336	12/16/2010	8:26:45	9	10.976	15.317
337	12/16/2010	8:26:48	9	18.6755	15.317
338	12/16/2010	8:26:51	0	10.9727	15.316
339	12/16/2010	8:26:54	0	10.9695	15.316
340	12/16/2010	8:26:57	0	10.966	15.316
341	12/16/2010	8:27:00	8	10.9636	15.315
342	12/16/2010	8:27:03	0	10.9571	15.315
343	12/16/2010	8:27:06	0	10.6568	15.315
344	12/16/2010	8:27:09	0	10.9534	15.315
345	12/16/2010	8:27:12	0	10.9485	15.314
346	12/16/2010	8:27:15	0	10.9446	15.314
347	12/16/2010	8:27:18	0	10.9437	15.314
348	12/16/2010	8:27:21	0	10.9374	15.314
349	12/16/2010	8:27:24	0	10.9394	15.313
350	12/16/2010	8:27:27	0	10.9329	15.314
361	12/16/2010	8:27:30	0	10.933	15.313
352	12/16/2010	8:27:33	0	18.9285	15.313
353	12/16/2010	8:27:36	0	18.9261	15.312
354	12/16/2010	8:27:38	0	10.9232	15.312
355	12/16/2010	8:27:42	0	10.9188	15.312
356	12/16/2010	8:27:45	9	10.6183	15.312
357	12/16/2010	8:27:48	0	10.9167	15.312
358	12/16/2010	8:27:51	0	10.9109	15.311

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360	12/16/2010	8:27:57	0	10.9119	15.311
361	12/16/2010	8:28:00	0	10.904	15.311
362	12/16/2010	8:28:03	0	10.9041	15.311
363	12/16/2010	8:28:06	0	10.9009	15.311
364	12/16/2010	8:28:09	0	10.8981	15.31
365	12/16/2010	8:28:12	0	10.897	15.31
366	12/16/2010	8:28:15	0	10.8951	15.31
367	12/16/2010	8:28:18	0	10.8924	15.31
368	12/16/2010	8:28:21	0	10.8898	15.31
369	12/16/2010	8:28:24	0	10.8884	15.31
370	12/16/2010	8:28:27	0	10.8866	15.31
371	12/16/2010	8:28:30	0	10.8854	15.31
372	12/16/2010	8:28:33	0	10.8821	15.309
373	12/16/2010	8:28:36	0	10.8817	15.309
374	12/16/2010	8:28:39	0	10.8811	15.309
375	12/16/2010	8:28:42	0	10.8764	15.309
376	12/16/2010	8:28:45	0	10.8752	15.309
377	12/16/2010	8:28:48	0	10.8754	15.308
378	12/16/2010	8:28:51	0	10.8718	15.308
379	12/16/2010	8:28:54	0	10.868	15.308
380	12/16/2010	8:28:57	0	10.868	15.308
381	12/16/2010	8:29:00	0	10.8658	15.308
382	12/16/2010	8:29:03	0	10.8616	15.308
383	12/16/2010	8:29:06	0	10.8622	15.308
384	12/16/2010	8:29:09	0	10.8598	15.307
385	12/16/2010	8:29:12	0	10.8611	15.308
386	12/16/2010	8:29:15	0	10.8604	15.307
387	12/16/2010	8:29:18	0	10.8589	15.307
388	12/16/2010	8:29:21	0	10.8562	15.307
389	12/16/2010	8:29:24	0	10.8507	15.307
390	12/16/2010	8:29:27	0	10.8519	15.306
391	12/16/2010	8:29:30	0	10.8501	15.306
392	12/16/2010	8:29:33	0	10.8506	15.306
393	12/16/2010	8:29:38	0	10.8477	15.307
394	12/16/2010	8:29:39	0	10.8456	15.306
395	12/16/2010	8:29:42	0	10.8434	15.306
396	12/16/2010	8:29:45	0	10.8447	15.306
397	12/16/2010	8:29:48	0	10.8448	15.306
398	12/16/2010	8:29:51	0	10.8399	15.308
399	12/16/2010	8:29:54	0	10.8416	15.306
400	12/16/2010	8:29:57	0	10.8382	15.306
401	12/16/2010	8:30:00	0	10.8364	15.305
402	12/16/2010	8:30:05	0	10.8353	15.302
403	12/16/2010	8:30:10	0	10.8344	15.301
404	12/16/2010	8:30:15	0	10.8331	15.3
405	12/16/2010	6:30:20	0	10.8273	15.299
406	12/16/2010	8:30:25	0	10.8269	15.3
407	12/16/2010	8:30:30	0	10.8251	15.299
408	12/16/2010	8:30:35	0	10.8232	15.298
409	12/16/2010	8:30:40	0	10.8217	15.298
410	12/16/2010	8:30:45	0	10.8207	15.297
411	12/16/2010	8:30:50	0	10.8184	15.297
412	12/16/2010	8:30:55	0	10.8178	15.297
413	12/16/2010	8:31:00	0	10.8153	15.296
414	12/16/2010	8:31:05	0	10.8147	15.296
415	12/16/2010	6:31:10	0	10.8438	15.296
416	12/16/2010	8:31:15	0	10.8128	15.296
417	12/16/2010	8:31:20	0	10.8133	15.296
418	12/16/2010	8:31:25	0	10.8057	15.296
419	12/16/2010	8:31:30	0	10.8085	15.295
420	12/16/2010	6:31:35	0	10.8068	15.295
421	12/16/2010	8:31:40	0	10.8071	15.295
422	12/16/2010	8:31:45	0	10.8037	15.294
423	12/16/2010	6:31:50	0	10.804	15.294
424	12/16/2010	6:31:55	0	10.8021	15.294
425	12/16/2010	8:32:00	0	10.801	15.293
426	12/16/2010	8:32:05	0	10.8	15.294
427	12/16/2010	6:32:10	0	10.8005	15.294
428	12/16/2010	8:32:15	0	10.7824	15.294
429	12/16/2010	8:32:20	0	10.7987	15.293
430	12/16/2010	8:32:25	0	10.7966	15.294
431	12/16/2010	8:32:30	0	10.7945	15.293
432	12/16/2010	8:32:35	0	10.794	15.293
433	12/16/2010	8:32:40	0	10.7904	15.293
434	12/16/2010	8:32:45	0	10.7953	15.293
435	12/16/2010	8:32:50	0	10.7907	15.293
436	12/16/2010	8:32:55	0	10.7725	15.293
437	12/16/2010	8:33:00	0	10.7861	15.292
438	12/16/2010	8:33:05	0	10.7893	15.293
439	12/16/2010	8:33:10	0	10.7866	15.293
440	12/16/2010	8:33:15	0	10.7626	15.282
441	12/16/2010	8:33:20	0	10.7851	15.292
442	12/16/2010	8:33:25	0	10.7898	15.293
443	12/16/2010	8:33:30	0	10.7872	15.293
444	12/16/2010	8:33:35	0	10.7831	15.292
445	12/16/2010	8:33:40	0	10.7855	15.293
446	12/16/2010	8:33:45	0	10.7675	15.292
447	12/16/2010	6:33:50	0	10.784	15.293
448	12/16/2010	8:33:55	0	10.7677	15.292
449	12/16/2010	8:34:00	0	10.8986	15.292
450	12/16/2010	8:34:05	0	10.7768	15.262
451	12/16/2010	8:34:10	0	10.7623	15.292
452	12/16/2010	8:34:15	0	10.7894	15.292
453	12/16/2010	8:34:20	0	10.7623	15.292
454	12/16/2010	8:34:25	0	10.7803	15.293
455	12/16/2010	6:34:30	0	10.7798	15.292
456	12/16/2010	8:34:35	0	10.7757	15.293
457	12/16/2010	8:34:40	0	10.7765	15.292
458	12/16/2010	8:34:45	0	10.7772	15.292
459	12/16/2010	8:34:50	0	10.7765	15.292
460	12/16/2010	6:34:55	0	10.778	15.293
461	12/16/2010	6:35:00	0	10.7844	15.292
462	12/16/2010	8:35:01	0	10.7776	15.301
463	12/16/2010	8:35:02	0	10.7749	15.306
464	12/16/2010	8:35:03	0	10.764	15.309
465	12/16/2010	8:35:04	0	10.7506	15.312
466	12/16/2010	8:35:05	0	10.2063	15.313
467	12/16/2010	8:35:06	0	9.5349	15.315
468	12/16/2010	8:35:07	0	8.9814	15.317
469	12/16/2010	8:35:08	0	8.6533	15.319
470	12/16/2010	6:35:09	0	8.6702	15.32
471	12/16/2010	8:35:10	0	8.6869	15.321
472	12/16/2010	8:35:11	0	8.7066	15.321
473	12/16/2010	6:35:12	0	8.7153	15.323
474	12/16/2010	6:35:13	0	8.735	15.323
475	12/16/2010	8:35:14	0	8.7485	15.325
476	12/16/2010	8:35:15	0	8.7694	15.325
477	12/16/2010	8:35:16	0	8.7705	15.326
478	12/16/2010	8:35:17	0	8.7686	15.327
479	12/16/2010	8:35:18	0	8.8015	15.327
480	12/16/2010	8:35:19	0	8.8131	15.326
481	12/16/2010	8:35:20	0	8.8281	15.329
482	12/16/2010	6:35:21	0	8.8396	15.33
483	12/16/2010	8:35:22	0	8.852	15.33

484	12/16/2010	8:35:23	0	8.8627	15.331
485	12/16/2010	8:35:24	0	8.8733	15.332
486	12/16/2010	8:35:25	0	8.8899	15.332
487	12/16/2010	8:35:26	0	8.8988	15.333
489	12/16/2010	8:35:27	0	8.9109	15.333
489	12/16/2010	9:35:29	0	8.9246	15.334
490	12/16/2010	8:35:29	0	8.9325	15.335
491	12/16/2010	8:35:30	0	8.9462	15.335
492	12/16/2010	9:35:31	0	8.9584	15.335
493	12/16/2010	8:35:32	0	9.968	15.336
494	12/16/2010	8:35:33	0	8.9795	15.338
495	12/16/2010	8:35:34	0	8.9918	15.337
496	12/16/2010	8:35:35	0	9.0036	15.338
497	12/16/2010	8:35:36	0	9.0138	15.338
498	12/16/2010	8:35:37	0	9.0207	15.339
499	12/16/2010	8:35:38	0	8.0342	15.339
500	12/16/2010	8:35:39	0	9.0441	15.34
501	12/16/2010	9:35:40	0	9.0559	15.34
502	12/16/2010	8:36:41	0	9.0653	15.34
503	12/16/2010	8:35:42	0	9.0755	15.341
504	12/16/2010	8:35:43	0	9.0856	15.341
505	12/16/2010	8:35:44	0	9.0933	15.342
506	12/16/2010	8:35:45	0	9.1024	15.342
507	12/16/2010	8:35:46	0	9.1161	15.342
508	12/16/2010	8:35:47	0	9.128	15.342
509	12/16/2010	9:35:48	0	9.1369	15.342
510	12/16/2010	8:35:49	0	9.1437	15.342
511	12/16/2010	8:35:50	0	9.1538	15.343
512	12/16/2010	8:35:51	0	9.1641	15.343
513	12/16/2010	8:35:52	0	9.1744	15.343
514	12/16/2010	8:35:53	0	9.1646	15.344
515	12/16/2010	8:35:54	0	9.192	15.344
516	12/16/2010	8:35:55	0	9.201	15.345
517	12/16/2010	8:35:56	0	9.2083	15.345
518	12/16/2010	8:35:57	0	9.2194	15.346
519	12/16/2010	8:35:58	0	9.2277	15.346
520	12/16/2010	8:35:59	0	9.2382	15.346
521	12/16/2010	8:36:00	0	9.2462	15.346
522	12/16/2010	8:36:01	0	9.2535	15.347
523	12/16/2010	8:36:02	0	9.2633	15.347
524	12/16/2010	8:36:03	0	9.2741	15.347
525	12/16/2010	9:36:04	0	9.2817	15.347
526	12/16/2018	8:36:85	0	9.2917	15.347
527	12/16/2010	8:36:06	0	9.3083	15.348
528	12/16/2018	8:36:07	0	9.3081	15.348
529	12/16/2010	8:36:08	0	9.3143	15.349
538	12/16/2018	8:36:09	8	9.3248	15.348
531	12/16/2010	8:36:10	8	9.3333	15.349
532	12/16/2010	8:36:11	0	9.3414	15.349
533	12/16/2010	8:36:12	0	9.3494	15.349
534	12/16/2010	8:36:13	0	9.3567	15.35
535	12/16/2010	9:36:14	0	9.3673	15.349
536	12/16/2010	8:36:15	0	9.3749	15.35
537	12/16/2010	8:38:16	0	9.3819	15.35
538	12/16/2010	8:36:17	0	9.3892	15.35
539	12/16/2010	8:36:18	0	9.4015	15.35
540	12/16/2010	8:38:19	0	9.408	15.351
541	12/16/2010	8:38:20	0	9.4137	15.351
542	12/16/2010	8:36:21	0	9.4228	15.351
543	12/16/2010	8:36:22	0	9.4285	15.351
544	12/16/2010	8:38:23	0	9.4353	15.351
545	12/16/2018	9:36:24	0	9.4436	15.361
546	12/16/2010	8:36:25	0	9.4505	15.351
547	12/16/2010	8:36:28	0	9.4575	15.361
548	12/16/2810	8:38:27	0	9.4658	15.351
549	12/16/2010	8:36:28	0	9.4784	15.352
550	12/16/2018	8:36:29	0	9.482	15.351
551	12/16/2010	8:36:30	0	8.4891	15.351
552	12/16/2010	8:38:31	8	9.4951	15.351
553	12/16/2010	8:36:32	0	9.5036	15.351
554	12/16/2010	8:36:33	0	9.5107	15.352
555	12/16/2010	8:36:34	0	9.517	15.352
556	12/16/2010	8:36:35	0	9.5244	15.352
557	12/16/2010	9:36:36	0	9.5314	15.352
558	12/16/2010	8:36:37	0	9.5393	15.352
559	12/16/2010	8:36:38	0	9.5472	15.353
560	12/16/2010	8:36:39	8	9.5547	15.353
561	12/16/2010	8:38:40	0	9.5632	15.353
562	12/16/2010	8:38:41	8	9.5668	15.363
583	12/16/2010	8:36:42	0	9.5725	15.353
564	12/16/2010	8:36:43	0	9.5826	15.353
565	12/16/2018	8:36:44	0	9.5877	15.353
566	12/16/2010	8:36:45	0	8.5937	15.352
567	12/16/2010	8:38:46	0	9.6009	15.353
568	12/16/2010	8:36:47	8	9.6071	15.353
569	12/16/2010	8:36:48	8	9.6151	15.353
570	12/16/2010	8:36:49	0	9.6214	15.353
571	12/16/2010	8:36:50	0	9.8295	15.353
572	12/16/2018	8:38:51	0	9.832	15.353
573	12/16/2010	8:38:52	0	9.6419	15.354
574	12/16/2018	8:36:53	0	9.6493	15.354
575	12/16/2010	9:36:54	0	9.6544	15.354
576	12/16/2010	8:36:55	0	9.6623	15.354
577	12/16/2010	8:36:56	0	9.6674	15.354
578	12/16/2010	8:36:57	0	9.6712	15.354
579	12/16/2010	8:36:58	0	9.6789	15.354
560	12/16/2010	8:36:59	0	9.685	15.356
581	12/16/2010	8:37:00	0	9.6908	15.355
582	12/16/2018	8:37:81	0	9.6964	15.354
583	12/16/2810	8:37:82	0	9.7005	15.354
584	12/16/2010	8:37:03	0	9.7076	15.355
585	12/16/2810	8:37:04	8	9.7125	15.354
586	12/16/2010	8:37:85	0	9.7192	15.355
587	12/16/2018	8:37:06	0	8.7269	15.355
588	12/16/2010	8:37:07	8	9.7307	15.354
589	12/16/2010	8:37:08	8	9.7362	15.354
590	12/16/2010	8:37:09	8	9.7431	15.355
591	12/16/2010	8:37:10	0	9.7486	15.355
592	12/16/2010	8:37:11	0	9.7549	15.355
593	12/16/2010	8:37:12	8	9.782	15.355
594	12/16/2010	8:37:13	0	9.7674	15.355
595	12/16/2010	8:37:14	0	9.789	15.355
596	12/16/2010	8:37:15	8	9.7789	15.355
597	12/16/2010	9:37:16	0	9.7812	15.356
598	12/16/2010	8:37:17	0	9.7884	15.356
599	12/16/2010	8:37:18	0	9.7941	15.356
600	12/16/2010	8:37:19	0	9.7999	15.355
601	12/16/2010	8:37:20	0	9.8055	15.355
602	12/16/2010	8:37:21	0	9.8082	15.355
603	12/16/2010	8:37:22	0	8.8169	15.355
604	12/16/2010	8:37:23	0	9.8225	15.355
605	12/16/2810	8:37:24	8	9.6247	15.356
606	12/16/2010	8:37:25	8	8.8325	15.356
607	12/16/2010	8:37:26	0	9.8372	15.356
608	12/16/2810	8:37:27	0	9.8409	15.355

609	12/16/2010	8:37:28	0	9.8459	15.356
610	12/16/2010	8:37:29	0	9.8509	15.355
611	12/16/2010	8:37:30	0	9.8576	15.355
612	12/16/2010	8:37:31	0	9.8618	15.356
613	12/16/2010	8:37:32	0	9.8694	15.356
614	12/16/2010	8:37:33	0	9.8718	15.356
615	12/16/2010	8:37:34	0	9.8773	15.356
616	12/16/2010	8:37:35	0	9.8888	15.356
617	12/16/2010	9:37:36	0	9.8882	15.356
618	12/16/2010	8:37:37	0	9.888	15.356
619	12/16/2010	8:37:38	0	9.899	15.356
620	12/16/2010	8:37:39	0	9.9997	15.356
621	12/16/2010	8:37:40	0	9.9086	15.356
622	12/16/2010	8:37:41	0	9.9128	15.357
623	12/16/2010	8:37:42	0	9.9157	15.356
624	12/16/2010	9:37:43	0	9.9201	15.356
625	12/16/2010	8:37:44	8	9.9269	15.356
626	12/16/2010	8:37:45	0	9.9296	15.356
627	12/16/2010	8:37:46	0	9.9333	15.357
628	12/16/2010	9:37:47	0	9.9394	15.356
629	12/16/2010	8:37:48	0	9.9409	15.357
630	12/16/2010	8:37:49	0	9.9499	15.356
631	12/16/2010	8:37:50	0	9.9535	15.356
632	12/16/2010	8:37:51	0	9.9579	15.356
633	12/16/2010	8:37:52	0	9.9641	15.357
634	12/16/2010	8:37:53	0	9.9697	15.356
635	12/16/2010	8:37:54	0	9.9717	15.357
636	12/16/2010	8:37:55	0	9.9756	15.357
637	12/16/2010	8:37:56	0	9.9795	15.357
638	12/16/2010	8:37:57	0	9.9823	15.357
639	12/16/2010	9:37:58	0	9.9863	15.357
640	12/16/2010	8:37:59	0	9.99	15.367
641	12/16/2010	8:38:00	0	9.9983	15.358
642	12/16/2010	8:38:01	0	9.9985	15.357
643	12/16/2010	8:39:02	0	10.0039	15.358
644	12/16/2010	8:39:03	0	10.0112	15.358
645	12/16/2010	8:39:04	0	10.0139	15.357
646	12/16/2010	8:38:05	0	10.0163	15.357
647	12/16/2010	8:39:06	0	10.0224	15.357
649	12/16/2010	8:38:07	0	10.0273	15.357
649	12/16/2010	9:39:08	0	10.0278	15.356
650	12/16/2010	8:38:09	0	18.0339	15.358
651	12/16/2010	9:39:10	0	10.0351	15.358
652	12/16/2010	6:38:11	0	10.0419	15.358
653	12/16/2010	9:38:12	0	10.0458	15.358
654	12/16/2010	8:38:13	0	10.0474	15.358
655	12/16/2010	8:38:14	0	10.0536	15.358
656	12/16/2010	8:38:15	0	10.0578	15.358
657	12/16/2010	6:38:16	0	10.0586	15.358
658	12/16/2010	6:38:17	0	10.0655	15.358
659	12/16/2010	8:38:18	0	10.0677	15.358
660	12/16/2010	8:39:19	0	10.0738	15.358
661	12/16/2010	8:39:20	0	10.8769	15.358
662	12/16/2010	8:36:21	0	10.0801	15.358
663	12/16/2010	8:36:22	0	10.0818	15.358
664	12/16/2010	8:38:23	0	10.0896	15.358
665	12/16/2010	8:38:24	0	10.0902	15.359
666	12/16/2010	8:38:25	0	10.0943	15.359
667	12/16/2010	8:36:26	0	10.898	15.358
668	12/16/2010	8:38:27	0	10.1009	15.358
669	12/16/2010	8:39:29	0	10.1052	15.358
670	12/16/2010	6:38:29	0	10.1103	15.358
671	12/16/2010	8:38:30	0	10.1123	15.359
672	12/16/2010	9:39:31	0	10.1189	15.358
673	12/16/2010	6:38:32	0	10.1166	15.359
674	12/16/2010	6:38:33	0	10.1224	15.358
675	12/16/2010	8:38:34	8	10.1267	15.358
676	12/16/2010	8:38:35	0	10.1288	15.359
677	12/16/2010	6:38:36	0	10.1332	15.359
678	12/16/2010	6:38:37	0	10.1376	15.36
679	12/16/2010	6:38:38	0	10.1488	15.359
680	12/16/2010	8:38:39	0	10.1449	15.359
681	12/16/2010	8:38:40	0	10.1463	15.359
682	12/16/2010	8:39:41	0	10.1462	15.359
683	12/16/2010	8:38:42	0	10.1549	15.359
684	12/16/2010	8:38:43	0	10.1543	15.359
685	12/16/2010	9:38:44	0	10.1593	15.39
686	12/16/2010	8:38:45	0	10.1648	15.36
687	12/16/2010	8:36:46	0	10.1648	15.36
688	12/16/2010	8:36:47	0	10.1672	15.359
689	12/16/2010	8:36:48	0	10.17	15.36
690	12/16/2010	6:38:49	0	10.1734	15.359
691	12/16/2010	8:39:50	0	10.1812	15.36
692	12/16/2010	6:38:51	0	10.1823	15.36
693	12/16/2010	8:39:52	0	10.1853	15.39
694	12/16/2010	8:38:53	0	10.1888	15.36
695	12/16/2010	6:38:54	0	10.1917	15.36
696	12/16/2010	8:38:55	0	10.1954	15.38
697	12/16/2010	8:38:56	0	10.197	15.36
698	12/16/2010	8:38:57	0	10.1994	15.359
699	12/16/2010	8:38:58	0	10.2043	15.39
700	12/16/2010	8:38:59	0	10.205	15.36
701	12/16/2010	8:39:00	0	10.2075	15.361
702	12/16/2010	8:39:01	0	10.2133	15.36
703	12/16/2010	6:39:02	0	10.2153	15.391
704	12/16/2010	8:39:03	0	10.215	15.361
705	12/16/2010	8:39:04	0	10.2229	15.361
706	12/16/2010	8:39:05	0	10.226	15.361
707	12/16/2010	8:39:00	8	10.2292	15.38
708	12/16/2010	8:39:07	0	10.228	15.381
709	12/16/2010	9:39:08	0	10.2317	15.36
710	12/16/2010	8:39:09	0	10.2356	15.36
711	12/16/2010	8:39:18	0	10.2363	15.361
712	12/16/2010	8:39:11	0	10.2427	15.391
713	12/16/2010	9:39:12	0	10.2414	15.361
714	12/16/2010	8:39:13	0	10.2439	15.361
715	12/16/2010	8:39:14	0	10.2509	15.361
716	12/16/2010	9:39:15	0	10.2537	15.361
717	12/16/2010	8:39:16	0	10.2531	15.361
718	12/16/2010	8:39:17	0	10.2585	15.381
719	12/16/2010	9:39:16	0	10.2611	15.361
720	12/16/2010	8:39:19	0	10.2643	15.361
721	12/16/2010	8:39:20	0	10.2828	15.391
722	12/16/2010	9:39:21	0	10.2686	15.362
723	12/16/2010	8:39:22	0	10.2714	15.362
724	12/16/2010	8:39:23	0	10.2727	15.361
725	12/16/2010	8:39:24	0	10.2728	15.361
726	12/16/2010	8:39:25	0	10.2795	15.362
727	12/16/2010	8:39:26	0	10.2788	15.362
728	12/16/2010	8:39:27	0	10.2833	15.362
729	12/16/2010	8:39:28	0	10.2849	15.362
730	12/16/2010	8:39:29	0	10.2905	15.362
731	12/16/2010	8:39:38	0	10.2909	15.392
732	12/16/2010	8:39:31	0	10.2935	15.362
733	12/16/2010	8:39:32	0	10.2917	15.362

734	12/16/2018	8:39:33	0	10.2958	15.381
735	12/16/2818	8:39:34	0	10.2985	15.362
736	12/16/2010	8:39:35	0	10.3018	15.362
737	12/18/2010	8:39:36	8	18.3883	15.362
738	12/16/2018	8:39:37	0	10.3091	15.362
739	12/16/2010	9:39:38	0	10.3085	15.362
748	12/16/2010	8:39:39	8	10.3127	15.362
741	12/16/2818	8:38:40	0	10.3148	15.362
742	12/16/2010	8:39:41	0	10.3167	15.362
743	12/18/2010	8:39:42	0	10.3191	15.362
744	12/16/2810	8:39:43	8	10.3228	15.362
745	12/16/2010	8:39:44	0	18.324	15.362
746	12/16/2010	8:39:45	0	10.3258	15.382
747	12/16/2010	8:39:48	0	10.3287	15.362
748	12/16/2010	8:38:47	8	10.3294	15.362
749	12/16/2010	8:38:48	0	18.3348	15.362
750	12/16/2010	8:39:49	0	10.3356	15.382
751	12/16/2010	8:39:50	0	10.3385	15.362
752	12/16/2018	8:39:51	8	10.3414	15.363
753	12/16/2010	8:38:52	0	10.3415	15.362
754	12/16/2010	8:39:53	0	10.3453	15.383
755	12/16/2818	8:39:54	0	10.3467	15.363
756	12/16/2818	8:39:55	8	10.3485	15.383
757	12/16/2010	8:39:56	0	10.3511	15.363
758	12/16/2010	8:39:57	0	10.351	15.363
759	12/16/2818	8:39:58	0	10.3564	15.363
760	12/16/2818	8:38:58	8	18.3628	15.363
761	12/16/2010	8:40:00	0	10.3581	15.363
762	12/16/2010	8:40:03	0	10.3663	15.349
763	12/16/2010	8:40:06	0	10.3718	15.344
764	12/16/2018	8:48:09	8	10.3761	15.34
765	12/16/2010	8:40:12	0	10.3838	15.337
766	12/16/2010	8:40:15	0	10.3876	15.336
767	12/16/2018	8:40:18	0	10.3946	15.333
768	12/18/2010	8:48:21	8	18.3975	15.332
769	12/16/2010	8:40:24	0	10.4075	15.331
770	12/16/2010	8:40:27	0	10.4098	15.33
771	12/16/2010	8:40:36	0	10.4152	15.328
772	12/16/2818	8:48:33	8	10.423	15.327
773	12/16/2010	8:48:36	0	18.4247	15.326
774	12/16/2010	8:40:39	0	10.4314	15.325
775	12/16/2010	8:40:42	0	10.4359	15.325
776	12/16/2018	8:40:45	0	10.4431	15.323
777	12/16/2018	8:48:48	8	18.4487	15.323
778	12/16/2010	8:40:51	0	10.4512	15.322
779	12/16/2010	8:40:54	0	10.4545	15.322
780	12/16/2018	8:40:57	0	10.4614	15.321
781	12/16/2018	8:41:00	8	18.4642	15.321
782	12/16/2010	8:41:03	0	10.4702	15.32
783	12/16/2010	8:41:06	0	10.4704	15.32
784	12/16/2010	8:41:09	0	10.4753	15.318
785	12/16/2018	8:41:12	8	18.4786	15.318
786	12/16/2010	8:41:15	0	10.486	15.317
787	12/16/2010	8:41:18	0	10.4872	15.317
788	12/16/2018	8:41:21	8	10.493	15.317
788	12/16/2010	8:41:24	0	10.4984	15.317
790	12/16/2010	8:41:27	0	10.5017	15.316
791	12/16/2010	8:41:38	8	10.5062	15.316
782	12/16/2018	8:41:33	8	18.5062	15.315
793	12/16/2010	8:41:36	0	10.5106	15.315
794	12/16/2010	8:41:39	0	10.5147	15.314
795	12/16/2010	8:41:42	0	10.5176	15.314
796	12/16/2018	8:41:45	8	18.5223	15.313
787	12/16/2810	8:41:48	0	10.5258	15.313
798	12/16/2010	8:41:51	0	10.5285	15.313
799	12/16/2010	8:41:54	0	10.5318	15.312
800	12/16/2810	8:41:57	8	18.5366	15.312
801	12/16/2010	8:42:06	0	10.5392	15.312
802	12/16/2010	8:42:03	0	10.5427	15.311
803	12/16/2818	8:42:06	8	18.5458	15.311
804	12/16/2010	8:42:09	0	10.5508	15.31
805	12/16/2010	8:42:12	0	10.5504	15.31
806	12/18/2018	8:42:15	8	18.5555	15.31
807	12/16/2010	8:42:18	0	10.5569	15.31
808	12/16/2010	8:42:21	0	10.5588	15.309
809	12/16/2010	8:42:24	0	10.5593	15.31
818	12/16/2818	8:42:27	8	18.5834	15.309
811	12/16/2010	8:42:30	0	10.5687	15.309
812	12/16/2010	8:42:33	0	10.5713	15.308
813	12/16/2010	8:42:36	0	10.5707	15.308
814	12/16/2810	8:42:39	8	18.5765	15.308
815	12/16/2010	8:42:42	0	10.5774	15.307
816	12/16/2010	8:42:45	0	10.5827	15.307
817	12/16/2010	8:42:48	0	10.5821	15.307
818	12/16/2010	8:42:51	0	18.5815	15.387
819	12/16/2818	8:42:54	8	18.5874	15.307
828	12/16/2818	8:42:57	0	10.5896	15.307
821	12/16/2010	8:43:06	0	10.59	15.307
822	12/16/2010	8:43:03	0	10.5928	15.306
823	12/16/2010	8:43:06	0	10.5948	15.387
824	12/16/2818	8:43:09	8	10.5968	15.306
825	12/16/2010	8:43:12	0	10.5984	15.306
826	12/16/2010	8:43:15	0	10.6056	15.306
827	12/16/2010	8:43:18	8	18.6052	15.387
828	12/16/2818	8:43:21	8	10.6082	15.306
829	12/16/2010	8:43:24	0	10.6066	15.306
830	12/16/2010	8:43:27	0	10.6082	15.306
831	12/16/2010	8:43:30	8	18.6114	15.306
832	12/16/2818	8:43:33	0	10.8132	15.305
833	12/16/2010	8:43:36	0	10.6163	15.305
834	12/16/2010	8:43:39	0	10.8187	15.306
835	12/16/2010	8:43:42	0	18.6199	15.306
836	12/16/2018	8:43:45	8	10.823	15.306
837	12/16/2818	8:43:48	0	10.8211	15.305
838	12/16/2010	8:43:51	0	10.8295	15.306
839	12/16/2010	8:43:54	0	10.8257	15.385
840	12/16/2010	8:43:57	8	18.828	15.306
841	12/16/2818	8:44:00	0	10.8302	15.306
842	12/16/2810	8:44:03	0	10.6328	15.305
843	12/16/2010	8:44:06	8	18.8312	15.306
844	12/16/2818	8:44:88	0	10.6323	15.305
845	12/16/2010	8:44:12	0	18.6351	15.385
846	12/16/2010	8:44:15	8	10.6384	15.306
847	12/16/2818	8:44:18	0	10.6404	15.305
848	12/16/2010	8:44:21	0	10.638	15.385
849	12/16/2010	6:44:24	8	10.6395	15.305
650	12/16/2810	8:44:27	0	10.6454	15.305
651	12/16/2010	6:44:30	0	18.6452	15.385
652	12/16/2818	8:44:33	8	10.6429	15.305
853	12/16/2010	8:44:36	0	10.6484	15.305
854	12/16/2010	6:44:39	0	18.6512	15.304
855	12/16/2818	8:44:42	0	10.8496	15.305
856	12/16/2010	6:44:45	0	10.6494	15.305
857	12/16/2010	6:44:46	8	18.6536	15.305
858	12/16/2010	6:44:51	8	10.6548	15.304

859	12/16/2010	9:44:54	0	10.6557	15.304
860	12/16/2010	8:44:57	0	10.6573	15.305
861	12/16/2010	8:45:00	0	10.6548	15.304
862	12/16/2010	8:45:05	0	10.6585	15.301
863	12/16/2010	8:45:10	0	10.6588	15.3
864	12/16/2010	8:45:15	0	10.6837	15.299
865	12/16/2010	8:45:20	0	10.6598	15.299
866	12/16/2010	8:45:25	0	10.6649	15.298
867	12/16/2010	8:45:30	0	19.6657	15.297
868	12/16/2010	8:45:35	0	10.669	15.296
869	12/16/2010	8:45:40	0	10.6697	15.296
870	12/16/2010	8:45:45	9	10.8732	15.295
871	12/16/2010	8:45:50	0	10.875	15.294
872	12/16/2010	8:45:55	0	10.8727	15.294
873	12/16/2010	8:46:00	0	10.6787	15.294
874	12/16/2010	8:46:05	0	10.68	15.294
875	12/16/2010	8:46:10	0	10.6788	15.293
876	12/16/2010	8:46:15	0	10.6819	15.292
977	12/16/2010	8:46:20	0	10.6835	15.293
978	12/16/2010	8:46:25	0	10.6798	15.292
879	12/16/2010	8:46:30	0	19.6813	15.292
880	12/16/2010	8:46:35	0	19.6852	15.291
881	12/16/2010	8:46:40	0	10.6833	15.291
882	12/16/2010	9:46:45	0	19.6881	15.291
883	12/16/2010	8:46:50	9	19.6869	15.29
884	12/16/2010	8:46:55	9	19.6907	15.29
885	12/16/2010	8:47:00	0	10.6889	15.29
886	12/16/2010	8:47:05	0	10.6904	15.29
887	12/16/2010	8:47:10	9	19.8927	15.289
888	12/16/2010	8:47:15	9	19.8934	15.289
888	12/16/2010	8:47:20	9	10.6959	15.288
890	12/16/2010	8:47:25	0	10.695	15.289
891	12/16/2010	8:47:30	9	10.888	15.288
892	12/16/2010	8:47:35	0	10.6973	15.288
993	12/16/2010	8:47:40	0	10.6987	15.287
894	12/16/2010	8:47:45	0	19.6982	15.287
895	12/16/2010	9:47:50	0	19.6985	15.288
896	12/16/2010	8:47:55	0	10.7001	15.286
897	12/16/2010	8:48:00	0	10.7024	15.286
898	12/16/2010	8:48:05	0	19.7027	15.287
899	12/16/2010	9:48:10	0	10.7051	15.286
900	12/16/2010	8:48:15	0	10.7037	15.286
901	12/16/2010	9:48:20	0	10.7062	15.286
902	12/16/2010	8:48:25	0	10.7065	15.286
903	12/16/2010	8:48:30	0	10.7038	15.295
904	12/16/2010	8:48:35	0	10.7046	15.285
905	12/16/2010	8:49:40	0	19.7973	15.285
906	12/16/2010	8:48:45	0	10.7081	15.285
907	12/16/2010	8:48:50	0	19.7112	15.284
908	12/16/2010	8:48:55	0	10.7075	15.285
909	12/16/2010	8:49:00	0	10.7084	15.295
910	12/16/2010	8:49:05	0	10.709	15.285
911	12/16/2910	8:49:10	0	10.7107	15.285
912	12/16/2010	8:49:15	0	10.7099	15.284
913	12/16/2010	8:49:20	9	10.7129	15.284
914	12/16/2010	8:49:25	0	19.7128	15.284
915	12/16/2010	8:49:30	0	10.7118	15.283
916	12/16/2010	8:49:35	9	10.7157	15.282
917	12/16/2919	9:49:48	9	10.711	15.283
919	12/16/2019	8:49:45	9	10.7132	15.282
919	12/16/2010	8:49:50	0	10.7153	15.283
920	12/16/2010	8:49:55	0	10.7097	15.282
921	12/16/2010	8:50:00	0	10.7149	15.282
922	12/16/2010	9:50:01	0	10.7138	15.29
923	12/16/2010	8:50:02	0	10.7137	15.295
924	12/16/2010	8:50:93	0	10.7188	15.299
925	12/16/2010	9:50:04	0	10.7146	15.301
926	12/16/2010	8:50:05	0	10.7174	15.302
927	12/16/2010	8:50:06	0	10.7148	15.304
928	12/16/2010	8:50:07	0	10.7137	15.306
929	12/16/2010	8:50:08	0	19.7157	15.307
939	12/16/2010	8:50:09	9	10.7144	15.309
931	12/16/2010	8:50:10	0	10.7171	15.31
932	12/16/2010	8:50:11	0	10.7134	15.311
933	12/16/2010	8:50:12	0	11.1785	15.312
934	12/16/2010	8:50:13	0	11.828	15.313
935	12/16/2010	8:50:14	0	12.4949	15.314
936	12/16/2010	8:50:15	0	12.8385	15.314
937	12/16/2010	8:50:18	0	12.7986	15.315
938	12/16/2010	9:50:17	9	12.7777	15.315
939	12/16/2010	8:50:18	0	12.7208	15.317
940	12/16/2010	8:50:19	0	12.3106	15.317
941	12/16/2010	8:50:20	0	12.5783	15.318
942	12/16/2019	8:50:21	0	12.7984	15.318
943	12/16/2010	8:50:22	0	12.9093	15.319
944	12/16/2010	8:50:23	0	12.7297	15.32
945	12/16/2010	8:50:24	0	12.8869	15.32
946	12/16/2010	8:50:25	0	12.6838	15.321
947	12/16/2010	8:50:26	0	12.87	15.321
949	12/16/2010	8:50:27	0	12.6556	15.323
949	12/16/2010	8:50:28	0	12.6413	15.322
950	12/16/2010	8:50:29	0	12.6341	15.323
951	12/16/2010	8:50:30	0	12.2488	15.323
952	12/16/2010	8:50:31	0	12.5562	15.324
953	12/16/2010	8:50:32	0	12.5904	15.325
954	12/16/2010	8:50:33	0	12.5131	15.325
955	12/16/2010	8:50:34	0	12.5714	15.326
956	12/16/2010	8:50:35	0	12.5428	15.326
857	12/16/2010	8:50:36	9	12.5519	15.326
958	12/16/2010	8:50:37	0	12.5386	15.326
959	12/16/2910	8:50:38	0	12.5284	15.327
960	12/16/2010	8:50:39	0	12.5212	15.327
961	12/16/2010	8:50:40	0	12.5099	15.327
962	12/16/2010	8:50:41	0	12.4945	15.327
963	12/16/2010	8:50:42	0	12.4682	15.328
964	12/16/2010	8:50:43	0	12.4746	15.329
965	12/16/2010	8:50:44	0	12.4627	15.329
966	12/16/2010	8:50:45	0	12.4538	15.33
967	12/16/2010	8:50:46	0	12.4436	15.33
968	12/16/2010	8:50:47	0	12.4328	15.33
969	12/16/2010	8:50:48	0	12.421	15.331
970	12/16/2010	8:50:49	0	12.4127	15.331
971	12/16/2019	8:50:50	0	12.4034	15.332
972	12/16/2010	8:50:51	0	12.3919	15.332
973	12/16/2910	8:50:52	0	12.3776	15.331
974	12/16/2010	8:50:53	9	12.3696	15.332
975	12/16/2010	8:50:54	0	12.3601	15.333
976	12/16/2010	8:50:55	0	12.3519	15.333
977	12/16/2010	8:50:56	0	12.3437	15.332
978	12/16/2010	8:50:57	0	12.3344	15.334
979	12/16/2010	8:50:58	0	12.3202	15.334
980	12/16/2010	8:50:59	0	12.3116	15.333
981	12/16/2010	8:51:00	0	12.3018	15.333
982	12/16/2910	8:51:91	0	12.294	15.334
983	12/16/2010	8:51:02	0	12.2844	15.335

984	12/16/2010	8:51:03	0	12.2751	15.335
985	12/16/2010	8:51:04	0	12.265	15.335
986	12/16/2010	8:51:05	0	12.2553	15.335
987	12/16/2010	8:51:06	0	12.2465	15.336
988	12/16/2010	8:51:07	0	12.2375	15.335
989	12/16/2010	8:51:08	0	12.2315	15.335
990	12/16/2010	8:51:09	0	12.2198	15.336
991	12/16/2010	8:51:10	0	12.2108	15.336
992	12/16/2010	8:51:11	0	12.2065	15.337
993	12/16/2010	8:51:12	0	12.2211	15.337
994	12/16/2010	8:51:13	0	12.1757	15.337
996	12/16/2010	8:51:14	0	12.2094	15.337
996	12/16/2010	8:51:15	0	12.1669	15.336
997	12/16/2010	8:51:16	0	12.1604	15.337
998	12/16/2010	8:51:17	0	12.1534	15.337
999	12/16/2010	8:51:18	0	12.1109	15.337
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1003	12/16/2010	8:51:22	0	12.1115	15.336
1004	12/16/2010	8:51:23	0	12.1047	15.338
1005	12/16/2010	8:51:24	0	12.0978	15.339
1006	12/16/2010	8:51:25	0	12.0866	15.339
1007	12/16/2010	8:51:26	0	12.0793	15.339
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1018	12/16/2010	8:51:37	0	11.9914	15.341
1019	12/16/2010	8:51:38	0	11.9874	15.341
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1195	12/16/2010	6:54:34	0	11.2161	15.345
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1225	12/16/2010	8:55:12	0	11.1142	15.32
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1231	12/16/2010	6:55:30	0	11.0794	15.31
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1293	12/16/2010	9:58:39	0	10.9751	15.29
1294	12/16/2010	9:56:39	0	10.9729	15.29
1295	12/16/2010	8:56:42	0	10.9701	15.269
1296	12/16/2010	9:58:45	0	10.8669	15.299
1297	12/16/2010	9:58:48	0	10.8672	15.299
1298	12/16/2010	8:58:51	0	10.8655	15.299
1299	12/16/2010	6:58:54	0	10.867	15.288
1300	12/16/2010	9:58:57	0	10.863	15.288
1301	12/16/2010	9:59:00	0	10.8604	15.288
1302	12/16/2010	8:59:03	0	10.9606	15.267
1303	12/16/2010	9:59:06	0	10.9563	15.288
1304	12/16/2010	9:59:09	0	10.9548	15.287
1305	12/16/2010	8:59:12	0	10.854	15.297
1306	12/16/2010	9:59:15	0	10.8503	15.297
1307	12/16/2010	8:59:19	0	10.8511	15.297
1308	12/16/2010	8:59:21	0	10.8478	15.286
1309	12/16/2010	9:59:24	0	10.9529	15.286
1310	12/16/2010	9:59:27	0	10.647	15.286
1311	12/16/2010	9:59:30	0	10.8442	15.286
1312	12/16/2010	9:59:33	0	10.8407	15.285
1313	12/16/2010	9:59:36	0	10.8431	15.285
1314	12/16/2010	9:59:39	0	10.8409	15.289
1315	12/16/2010	9:59:42	0	10.8404	15.295
1316	12/16/2010	9:56:45	8	10.9381	15.286
1317	12/16/2010	8:59:49	0	10.8391	15.284
1318	12/16/2010	8:59:51	0	10.8379	15.295
1319	12/16/2010	9:59:54	0	10.8371	15.295
1320	12/16/2010	9:59:57	0	10.8354	15.285
1321	12/16/2010	9:00:00	0	10.9306	15.286
1322	12/16/2010	9:00:05	0	10.9313	15.282
1323	12/16/2010	9:00:10	0	10.9297	15.29
1324	12/16/2010	9:00:15	0	10.9271	15.28
1325	12/16/2010	9:00:20	0	10.7232	15.279
1326	12/16/2010	9:00:25	0	10.9239	15.277
1327	12/16/2010	9:00:30	0	10.9183	15.277
1329	12/16/2010	9:00:35	0	10.9186	15.277
1329	12/16/2010	9:00:40	0	10.9172	15.276
1330	12/16/2010	9:00:45	0	10.9193	15.275
1331	12/16/2010	9:00:50	0	10.9151	15.275
1332	12/16/2010	9:00:55	0	10.9131	15.274
1333	12/16/2010	9:01:00	0	10.9108	15.274
1334	12/16/2010	9:01:05	0	10.912	15.274
1335	12/16/2010	9:01:10	0	10.8070	15.274
1338	12/16/2010	9:01:15	0	10.8098	15.273
1337	12/16/2010	9:01:20	0	10.8067	15.273
1339	12/16/2010	9:01:25	0	10.6044	15.273
1339	12/16/2010	9:01:30	0	10.9038	15.273
1340	12/16/2010	9:01:35	0	10.8038	15.272
1341	12/16/2010	9:01:40	0	10.8009	15.272
1342	12/16/2010	9:01:45	0	10.8029	15.272
1343	12/16/2010	9:01:50	0	10.7988	15.272
1344	12/16/2010	0:01:55	0	10.7999	15.271
1345	12/16/2010	9:02:00	0	10.7933	15.271
1349	12/16/2010	9:02:05	0	10.7984	15.271
1347	12/16/2010	9:02:10	0	10.7844	15.271
1349	12/16/2010	9:02:15	0	10.7937	15.27
1349	12/16/2010	9:02:20	0	10.7956	15.271
1350	12/16/2010	9:02:25	0	19.7908	15.27
1351	12/16/2010	9:02:30	0	10.7934	15.271
1352	12/16/2010	9:02:35	0	10.7994	15.27
1353	12/16/2010	9:02:40	0	10.7862	15.271
1354	12/16/2010	9:02:45	0	10.7884	15.27
1355	12/16/2010	9:02:50	0	10.7883	15.27
1356	12/16/2010	9:02:55	0	10.7879	15.27
1357	12/16/2010	9:03:00	0	10.7867	15.27
1358	12/16/2010	9:03:05	0	10.784	15.27

1359	12/16/2010	9:03:10	0	10.7824	15.27
1360	12/16/2010	9:03:15	0	10.7837	15.27
1361	12/16/2010	9:03:20	0	10.7846	15.271
1362	12/16/2010	9:03:25	0	10.7794	15.271
1363	12/16/2010	9:03:30	0	10.7932	15.27
1364	12/16/2010	9:03:35	0	10.761	15.271
1365	12/16/2010	9:03:40	0	10.783	15.27
1366	12/16/2010	9:03:45	0	10.7607	15.271
1367	12/16/2010	9:03:50	0	10.7809	15.271
1368	12/16/2010	9:03:55	0	10.7756	15.271
1369	12/16/2010	9:04:00	0	10.7777	15.271
1370	12/16/2010	9:04:05	0	10.779	15.271
1371	12/16/2010	9:04:10	0	10.7777	15.272
1372	12/16/2010	9:04:15	0	10.7765	15.272
1373	12/16/2010	9:04:20	0	10.7747	15.272
1374	12/16/2010	9:04:25	0	10.7779	15.273
1375	12/16/2010	9:04:30	0	10.7742	15.272
1376	12/16/2010	9:04:35	0	10.7737	15.273
1377	12/16/2010	9:04:40	0	10.7754	15.273
1378	12/16/2010	9:04:45	0	10.7751	15.273
1379	12/16/2010	9:04:50	0	10.7759	15.273
1380	12/16/2010	9:04:55	0	10.7742	15.272
1381	12/16/2010	9:05:00	0	10.7727	15.273
1382	12/16/2010	9:05:01	0	10.7731	15.28
1383	12/16/2010	9:05:02	0	10.7697	15.286
1384	12/16/2010	9:05:03	0	10.7726	15.29
1385	12/16/2010	9:05:04	0	10.7727	15.291
1386	12/16/2010	9:05:05	0	10.7725	15.294
1387	12/16/2010	9:05:06	0	10.7729	15.295
1388	12/16/2010	9:05:07	0	10.7743	15.297
1389	12/16/2010	9:05:09	0	10.7747	15.299
1390	12/16/2010	9:05:09	0	10.7736	15.3
1391	12/16/2010	8:05:10	0	10.7738	15.3
1392	12/16/2010	9:05:11	0	10.7707	15.302
1393	12/16/2010	9:05:12	0	10.7725	15.303
1394	12/16/2010	9:05:13	0	10.774	15.303
1395	12/16/2010	9:05:14	0	10.7733	15.304
1396	12/16/2010	9:05:15	0	10.7721	15.305
1397	12/16/2010	9:05:16	0	10.7744	15.306
1398	12/16/2010	9:05:17	0	10.7759	15.306
1399	12/16/2010	9:05:18	0	10.7732	15.307
1400	12/16/2010	9:05:18	0	10.7741	15.308
1401	12/16/2010	9:05:20	0	10.7362	15.309
1402	12/16/2010	9:05:21	0	10.7722	15.31
1403	12/16/2010	9:05:22	0	10.7527	15.31
1404	12/16/2010	9:05:23	0	10.7726	15.31
1405	12/16/2010	9:05:24	0	10.7713	15.31
1406	12/16/2010	3:05:25	0	10.7742	15.311
1407	12/16/2010	9:05:26	0	10.7746	15.312
1408	12/16/2010	9:05:27	0	10.7726	15.312
1409	12/16/2010	9:05:26	0	10.7732	15.313
1410	12/16/2010	9:05:29	0	10.7713	15.313
1411	12/16/2010	9:05:30	0	10.7705	15.314
1412	12/16/2010	8:05:31	0	10.7831	15.315
1413	12/16/2010	9:05:32	0	10.7733	15.315
1414	12/16/2010	9:05:33	0	10.7699	15.316
1415	12/16/2010	9:05:34	0	10.8742	15.317
1416	12/16/2010	9:05:35	0	10.7309	15.317
1417	12/16/2010	9:05:36	0	10.643	15.317
1418	12/16/2010	9:05:37	0	10.6306	15.318
1419	12/16/2010	9:05:38	0	10.723	15.318
1420	12/16/2010	9:05:39	0	10.6832	15.318
1421	12/16/2010	9:05:40	0	10.1827	15.319
1422	12/16/2010	9:05:41	0	9.6638	15.319
1423	12/16/2010	9:05:42	0	8.9592	15.32
1424	12/16/2010	9:05:43	0	8.846	15.32
1425	12/16/2010	8:05:44	0	8.6667	15.321
1426	12/16/2010	9:05:45	0	8.6767	15.321
1427	12/16/2010	9:05:46	0	8.6938	15.321
1428	12/16/2010	9:05:47	0	8.7127	15.321
1429	12/16/2010	9:05:48	0	8.7281	15.321
1430	12/16/2010	9:05:48	0	8.7398	15.322
1431	12/16/2010	9:05:50	0	8.7547	15.322
1432	12/16/2010	9:05:51	0	8.7675	15.323
1433	12/16/2010	8:05:52	0	8.7791	15.323
1434	12/16/2010	9:05:53	0	8.7932	15.323
1435	12/16/2010	9:05:54	0	8.8091	15.323
1436	12/16/2010	9:05:55	0	8.8221	15.324
1437	12/16/2010	9:05:56	0	8.8315	15.324
1438	12/16/2010	9:05:57	0	8.8442	15.324
1439	12/16/2010	9:05:58	0	8.8574	15.325
1440	12/16/2010	9:05:59	0	8.8742	15.325
1441	12/16/2010	9:06:00	0	9.8822	15.325
1442	12/16/2010	8:06:01	0	8.896	15.325
1443	12/16/2010	9:06:02	0	8.9036	15.326
1444	12/16/2010	9:06:03	0	8.9197	15.326
1445	12/16/2010	9:06:04	0	8.827	15.325
1446	12/16/2010	9:06:05	0	8.9387	15.328
1447	12/16/2010	8:06:06	0	8.9514	15.328
1448	12/16/2010	9:08:07	0	8.9615	15.326
1449	12/16/2010	9:06:08	0	8.9736	15.327
1450	12/16/2010	9:06:09	0	8.9834	15.327
1451	12/16/2010	9:06:10	0	8.9981	15.328
1452	12/16/2010	9:06:11	0	9.0056	15.327
1453	12/16/2010	9:06:12	0	9.0166	15.327
1454	12/16/2010	9:06:13	0	9.0295	15.328
1455	12/16/2010	9:06:14	0	9.0393	15.328
1456	12/16/2010	9:06:15	0	9.0471	15.328
1457	12/16/2010	8:06:16	0	9.0583	15.328
1458	12/16/2010	9:06:17	0	9.0681	15.329
1459	12/16/2010	9:06:18	0	9.0808	15.328
1460	12/16/2010	8:06:19	0	9.0905	15.329
1461	12/16/2010	9:06:20	0	9.0962	15.329
1462	12/16/2010	9:06:21	0	9.1075	15.329
1463	12/16/2010	9:06:22	0	9.12	15.329
1464	12/16/2010	9:06:23	0	9.1284	15.329
1465	12/16/2010	9:08:24	0	9.139	15.33
1466	12/16/2010	9:06:25	0	9.1503	15.33
1467	12/16/2010	9:06:26	0	9.1609	15.33
1468	12/16/2010	9:06:27	0	9.1651	15.33
1469	12/16/2010	9:06:28	0	9.1745	15.33
1470	12/16/2010	9:06:29	0	9.1873	15.331
1471	12/16/2010	9:06:30	9	9.1994	15.331
1472	12/16/2010	9:06:31	0	9.2955	15.331
1473	12/16/2010	9:06:32	0	9.2145	15.331
1474	12/16/2010	9:06:33	0	9.2265	15.331
1475	12/16/2010	9:06:34	0	9.2355	15.331
1476	12/16/2010	9:06:35	0	9.2422	15.332
1477	12/16/2010	9:06:36	0	9.2518	15.332
1478	12/16/2910	9:06:37	0	9.2606	15.332
1479	12/16/2010	9:06:36	0	9.2714	15.332
1480	12/16/2919	9:06:39	0	9.2809	15.332
1481	12/16/2010	9:98:40	0	9.2864	15.332
1482	12/16/2010	9:06:41	0	9.2965	15.332
1483	12/16/2010	9:06:42	0	9.3018	15.332

1484	12/16/2010	9:06:43	0	9.3109	15.333
1485	12/16/2010	9:06:44	0	9.3215	15.333
1486	12/16/2010	9:06:45	0	9.3324	15.333
1487	12/16/2010	9:06:46	0	9.3374	15.333
1488	12/16/2010	9:06:47	0	9.3449	15.334
1489	12/16/2010	9:06:48	0	9.3553	15.334
1490	12/16/2010	9:06:49	0	9.3628	15.334
1491	12/16/2010	9:06:50	0	9.3712	15.334
1492	12/16/2010	9:06:51	0	9.3795	15.334
1493	12/16/2010	9:06:52	0	9.3862	15.334
1494	12/16/2010	9:06:53	0	9.3942	15.334
1495	12/16/2010	8:06:54	0	9.4028	15.335
1496	12/16/2010	9:06:55	0	8.414	15.335
1497	12/16/2010	9:06:56	0	9.421	15.335
1498	12/16/2010	9:06:57	0	9.4246	15.335
1499	12/16/2010	9:06:58	0	9.435	15.335
1500	12/16/2010	9:06:59	0	8.4415	15.338
1501	12/16/2010	9:07:00	0	9.4484	15.335
1502	12/16/2010	9:07:01	0	9.4567	15.336
1583	12/16/2010	9:07:02	0	9.4677	15.336
1504	12/16/2010	9:07:03	0	9.4726	15.335
1505	12/16/2010	9:07:04	0	9.4778	15.336
1506	12/16/2010	9:07:05	0	9.4878	15.337
1507	12/16/2010	9:07:06	0	9.4906	15.337
1508	12/16/2010	9:07:07	0	9.5027	15.336
1509	12/16/2010	9:07:08	0	9.5091	15.336
1510	12/16/2010	9:07:09	0	9.5151	15.337
1511	12/16/2010	9:07:10	0	9.5249	15.337
1512	12/16/2010	9:07:11	0	9.5329	15.338
1513	12/16/2010	9:07:12	0	9.5381	15.336
1514	12/16/2010	9:07:13	0	9.542	15.338
1515	12/16/2010	9:07:14	0	8.552	15.338
1516	12/16/2010	9:07:15	0	9.5593	15.338
1517	12/16/2010	9:07:16	0	9.5631	15.339
1518	12/16/2010	9:07:17	0	8.5715	15.338
1519	12/16/2010	9:07:18	0	8.5782	15.338
1520	12/16/2010	9:07:19	0	9.5837	15.338
1521	12/16/2010	9:07:20	0	9.5926	15.338
1522	12/16/2010	9:07:21	0	9.6009	15.338
1523	12/16/2010	9:07:22	0	8.6067	15.338
1524	12/16/2010	9:07:23	0	9.6132	15.338
1525	12/16/2010	9:07:24	0	9.6212	15.339
1526	12/16/2010	9:07:25	0	9.6263	15.339
1527	12/16/2010	8:07:26	0	8.6337	15.339
1528	12/16/2010	9:07:27	0	9.6406	15.339
1529	12/16/2010	9:07:28	0	9.6442	15.339
1530	12/16/2010	9:07:29	0	8.6529	15.339
1531	12/16/2010	9:07:30	0	9.658	15.338
1532	12/16/2010	9:07:31	0	9.6535	15.339
1533	12/16/2010	9:07:32	0	9.6707	15.339
1534	12/16/2010	9:07:33	0	9.8745	15.34
1535	12/16/2010	9:07:34	0	8.6835	15.34
1536	12/16/2010	9:07:35	0	9.6879	15.339
1537	12/16/2010	9:07:36	0	9.6948	15.34
1538	12/16/2010	9:07:37	0	9.7008	15.34
1539	12/16/2010	9:07:38	0	9.7073	15.34
1540	12/16/2010	9:07:39	0	9.7134	15.34
1541	12/16/2010	9:07:40	0	9.7189	15.341
1542	12/16/2010	9:07:41	0	9.7248	15.34
1543	12/16/2010	9:07:42	0	9.7295	15.34
1544	12/16/2010	9:07:43	0	9.7383	15.341
1545	12/16/2010	9:07:44	0	9.7425	15.341
1546	12/16/2010	9:07:45	0	9.7487	15.34
1547	12/16/2010	9:07:48	0	9.7549	15.34
1548	12/16/2010	9:07:47	0	9.7585	15.341
1549	12/16/2010	9:07:48	0	9.7658	15.341
1550	12/16/2010	9:07:49	0	9.7739	15.341
1551	12/16/2010	9:07:50	0	9.7794	15.341
1552	12/16/2010	9:07:51	0	9.7822	15.342
1553	12/16/2010	9:07:52	0	8.789	15.342
1554	12/16/2010	9:07:53	0	9.794	15.341
1555	12/16/2010	9:07:54	0	9.7995	15.342
1556	12/16/2010	9:07:55	0	9.8042	15.342
1557	12/16/2010	9:07:56	0	9.8068	15.342
1558	12/16/2010	9:07:57	0	9.8163	15.342
1559	12/16/2010	9:07:58	0	9.8194	15.342
1560	12/16/2010	8:07:58	0	8.8274	15.341
1561	12/16/2010	9:08:00	0	9.6332	15.342
1562	12/16/2010	9:08:01	0	9.6362	15.342
1563	12/16/2010	9:08:02	0	9.8402	15.342
1564	12/16/2010	9:08:03	0	8.8482	15.342
1565	12/16/2010	8:08:04	0	8.8531	15.342
1566	12/16/2010	9:08:05	0	9.8564	15.342
1567	12/16/2010	9:08:06	0	9.8568	15.342
1568	12/16/2010	9:08:07	0	9.8661	15.342
1569	12/16/2010	9:08:08	0	9.8704	15.342
1570	12/16/2010	9:08:09	0	9.8781	15.342
1571	12/16/2010	9:08:10	0	8.884	15.342
1572	12/16/2010	8:08:11	0	8.8876	15.342
1573	12/16/2010	9:08:12	0	9.8907	15.343
1574	12/16/2010	9:06:13	0	9.899	15.342
1575	12/16/2010	9:08:14	0	9.9012	15.343
1576	12/16/2010	9:08:15	0	9.9091	15.342
1577	12/16/2010	8:08:16	0	9.8116	15.342
1578	12/16/2010	9:08:17	0	9.9146	15.343
1578	12/16/2010	9:08:18	0	9.9217	15.343
1580	12/16/2010	9:08:19	0	9.9261	15.343
1581	12/16/2010	9:08:20	0	9.9278	15.343
1582	12/16/2010	8:08:21	0	8.9327	15.343
1583	12/16/2010	9:08:22	0	9.9394	15.343
1504	12/16/2010	9:08:23	0	9.9438	15.343
1585	12/16/2010	9:08:24	0	8.8503	15.344
1586	12/16/2010	9:08:25	0	9.9531	15.343
1587	12/16/2010	9:08:28	0	9.9575	15.343
1588	12/16/2010	9:08:27	0	8.9642	15.343
1588	12/16/2010	9:08:28	8	9.9656	15.343
1590	12/16/2010	9:08:29	0	9.9684	15.343
1591	12/16/2010	9:08:30	0	9.9748	15.344
1592	12/16/2010	8:08:31	0	9.9796	15.344
1593	12/16/2010	9:08:32	0	9.9859	15.343
1594	12/16/2010	9:08:33	0	9.9883	15.344
1595	12/16/2010	8:08:34	0	9.9923	15.344
1596	12/16/2010	9:08:35	0	9.9944	15.344
1597	12/16/2010	9:08:36	0	10.0018	15.344
1598	12/16/2010	8:08:37	0	10.0055	15.344
1599	12/16/2010	9:08:38	0	10.0076	15.345
1600	12/16/2010	9:08:39	0	10.0133	15.345
1601	12/16/2010	9:08:40	0	10.0188	15.345
1602	12/16/2010	9:08:41	0	10.0198	15.344
1603	12/16/2010	9:08:42	0	10.0261	15.344
1604	12/16/2010	9:08:43	0	10.0286	15.344
1605	12/16/2010	9:08:44	0	10.0329	15.345
1606	12/16/2010	9:08:45	0	10.0368	15.345
1607	12/16/2010	9:08:46	8	10.0418	15.345
1608	12/16/2010	9:08:47	0	10.0432	15.344

1609	12/16/2010	9:08:48	0	10.0497	15.345
1610	12/16/2010	9:08:49	0	10.053	15.344
1611	12/16/2010	9:08:50	0	10.0559	15.346
1612	12/16/2010	9:08:51	0	10.0635	15.345
1613	12/16/2010	9:08:52	0	10.0684	15.345
1614	12/16/2010	9:08:53	0	10.0686	15.345
1615	12/16/2010	9:08:54	0	10.072	15.345
1616	12/16/2010	9:08:55	0	10.0764	15.346
1617	12/16/2010	9:08:56	0	10.0819	15.344
1618	12/16/2010	9:08:57	0	10.0837	15.346
1619	12/16/2010	9:08:58	0	10.0869	15.346
1620	12/16/2010	9:08:59	0	10.0891	15.345
1621	12/16/2010	9:09:00	0	10.095	15.346
1622	12/16/2010	9:09:01	0	10.0967	15.346
1623	12/16/2010	9:09:02	0	10.0979	15.346
1624	12/16/2010	9:09:03	0	10.1038	15.346
1625	12/16/2010	9:09:04	0	10.109	15.346
1626	12/16/2010	9:09:05	0	10.1109	15.346
1627	12/16/2010	9:09:06	0	10.1162	15.346
1628	12/16/2010	9:09:07	0	10.1211	15.346
1629	12/16/2010	9:09:08	0	10.1224	15.346
1630	12/16/2010	9:09:09	0	10.1259	15.346
1631	12/16/2010	9:09:10	0	10.1293	15.346
1632	12/16/2010	9:09:11	0	10.1315	15.346
1633	12/16/2010	9:09:12	0	10.1413	15.346
1634	12/16/2010	9:09:13	0	10.1388	15.346
1635	12/16/2010	9:09:14	0	10.1454	15.347
1636	12/16/2010	9:09:15	0	10.1452	15.346
1637	12/16/2010	9:09:16	0	10.1505	15.346
1638	12/16/2010	9:09:17	0	10.1561	15.347
1639	12/16/2010	9:09:18	0	10.1553	15.346
1640	12/16/2010	9:09:19	0	10.1632	15.346
1641	12/16/2010	9:09:20	0	10.1627	15.347
1642	12/16/2010	9:09:21	0	10.1684	15.346
1643	12/16/2010	9:09:22	0	10.1696	15.347
1644	12/16/2010	9:09:23	0	10.1716	15.347
1645	12/16/2010	9:09:24	0	10.1737	15.347
1646	12/16/2010	9:09:25	0	10.1803	15.347
1647	12/16/2010	9:09:26	0	10.1809	15.347
1649	12/16/2010	9:09:27	0	10.1835	15.347
1649	12/16/2010	9:09:28	0	10.1674	15.347
1650	12/16/2010	9:09:29	0	10.1903	15.347
1651	12/16/2010	9:09:30	0	10.1958	15.347
1652	12/16/2010	9:09:31	0	10.1956	15.347
1653	12/16/2010	9:09:32	0	10.2032	15.347
1654	12/16/2010	9:09:33	0	10.2024	15.347
1655	12/16/2010	9:09:34	0	10.2088	15.347
1656	12/16/2010	9:09:35	0	10.2098	15.347
1657	12/16/2010	9:09:36	0	10.2155	15.347
1658	12/16/2010	9:09:37	0	10.2152	15.346
1659	12/16/2010	9:09:38	0	10.2169	15.347
1660	12/16/2010	9:09:39	0	10.2194	15.347
1661	12/16/2010	9:09:40	0	10.2261	15.346
1662	12/16/2010	9:09:41	0	10.2311	15.349
1663	12/16/2010	9:09:42	0	10.2279	15.347
1664	12/16/2010	9:09:43	0	10.231	15.347
1665	12/16/2010	9:09:44	0	10.2368	15.346
1666	12/16/2010	9:09:45	0	10.2385	15.347
1667	12/16/2010	9:09:46	0	10.2408	15.346
1668	12/16/2010	9:09:47	0	10.2433	15.346
1669	12/16/2010	9:09:48	0	10.246	15.347
1670	12/16/2010	9:09:49	0	10.2494	15.346
1671	12/16/2010	9:09:50	0	10.2512	15.349
1672	12/16/2010	9:09:51	0	10.2519	15.346
1673	12/16/2010	9:09:52	0	10.2597	15.346
1674	12/16/2010	9:09:53	0	10.2602	15.349
1675	12/16/2010	9:09:54	0	10.2627	15.347
1676	12/16/2010	9:09:55	0	10.2653	15.349
1677	12/16/2010	9:09:56	0	10.2689	15.346
1678	12/16/2010	9:09:57	0	10.2709	15.349
1679	12/16/2010	9:09:58	0	10.2711	15.348
1680	12/16/2010	9:09:59	0	10.2736	15.347
1681	12/16/2010	9:10:00	0	10.276	15.346
1682	12/16/2010	9:10:03	0	10.2629	15.333
1683	12/16/2010	9:10:06	0	10.2925	15.326
1684	12/16/2010	9:10:09	0	10.3002	15.325
1685	12/16/2010	9:10:12	0	10.3073	15.322
1686	12/16/2010	9:10:15	0	10.3174	15.32
1687	12/16/2010	9:10:16	0	10.3218	15.316
1688	12/16/2010	9:10:21	0	10.3295	15.317
1689	12/16/2010	9:10:24	0	10.3379	15.315
1690	12/16/2010	9:10:27	0	10.3411	15.313
1691	12/16/2010	9:10:30	0	10.3494	15.312
1692	12/16/2010	9:10:33	0	10.356	15.311
1693	12/16/2010	9:10:36	0	10.3603	15.31
1694	12/16/2010	9:10:39	0	10.3687	15.309
1695	12/16/2010	9:10:42	0	10.3742	15.306
1696	12/16/2010	9:10:45	0	10.3788	15.307
1697	12/16/2010	9:10:48	0	10.3849	15.306
1698	12/16/2010	9:10:51	0	10.3913	15.306
1699	12/16/2010	9:10:54	0	10.3989	15.305
1700	12/16/2010	9:10:57	0	10.4036	15.305
1701	12/16/2010	9:11:00	0	10.4071	15.303
1702	12/16/2010	9:11:03	0	10.4111	15.303
1703	12/16/2010	9:11:06	0	10.4211	15.303
1704	12/16/2010	9:11:09	0	10.4235	15.302
1705	12/16/2010	9:11:12	0	10.4267	15.301
1706	12/16/2010	9:11:15	0	10.433	15.301
1707	12/16/2010	9:11:16	0	10.4416	15.3
1706	12/16/2010	9:11:21	0	10.4423	15.3
1709	12/16/2010	9:11:24	0	10.4455	15.3
1710	12/16/2010	9:11:27	0	10.4537	15.3
1711	12/16/2010	9:11:30	0	10.4546	15.298
1712	12/16/2010	9:11:33	0	10.4642	15.299
1713	12/16/2010	9:11:36	0	10.4702	15.298
1714	12/16/2010	9:11:39	0	10.4695	15.297
1715	12/16/2010	9:11:42	0	10.474	15.298
1716	12/16/2010	9:11:45	0	10.4795	15.298
1717	12/16/2010	9:11:46	0	10.4836	15.298
1718	12/16/2010	9:11:51	0	10.488	15.297
1719	12/16/2010	9:11:54	0	10.4893	15.298
1720	12/16/2010	9:11:57	0	10.4943	15.297
1721	12/16/2010	9:12:00	0	10.4973	15.298
1722	12/16/2010	9:12:03	0	10.5015	15.298
1723	12/16/2010	9:12:06	0	10.5064	15.296
1724	12/16/2010	9:12:09	0	10.5103	15.296
1725	12/16/2010	9:12:12	0	10.5134	15.296
1726	12/16/2010	9:12:15	0	10.5167	15.295
1727	12/16/2010	9:12:16	0	10.521	15.295
1728	12/16/2010	9:12:21	0	10.5198	15.295
1729	12/16/2010	9:12:24	0	10.5241	15.295
1730	12/16/2010	9:12:27	0	10.5295	15.295
1731	12/16/2010	9:12:30	0	10.5353	15.294
1732	12/16/2010	9:12:33	0	10.5355	15.294
1733	12/16/2010	9:12:36	0	10.5396	15.294

1734	12/16/2010	9:12:39	0	10.5436	15.294
1735	12/16/2010	9:12:42	0	10.5458	15.294
1736	12/16/2010	9:12:45	0	10.5501	15.294
1737	12/16/2010	9:12:48	0	10.5534	15.293
1738	12/16/2010	9:12:51	9	10.5513	15.292
1739	12/16/2010	9:12:54	0	10.5551	15.292
1740	12/16/2010	9:12:57	0	19.5615	15.283
1741	12/16/2010	9:13:00	0	10.5643	15.293
1742	12/16/2010	9:13:03	9	10.5669	15.292
1743	12/16/2010	9:13:06	9	10.5676	15.292
1744	12/16/2010	9:13:09	0	19.5738	15.292
1745	12/16/2010	9:13:12	0	10.5729	15.291
1746	12/16/2010	9:13:15	9	19.5772	15.292
1747	12/16/2010	9:13:18	0	10.5795	15.292
1748	12/16/2010	9:13:21	9	10.5826	15.292
1749	12/16/2010	9:13:24	0	19.5828	15.292
1750	12/16/2010	9:13:27	0	10.5858	15.292
1751	12/16/2010	9:13:30	0	19.5895	15.291
1752	12/16/2010	9:13:33	0	19.5905	15.291
1753	12/16/2010	9:13:38	0	19.5928	15.291
1754	12/16/2010	9:13:39	9	10.5966	15.291
1755	12/16/2010	9:13:42	9	19.5963	15.291
1756	12/16/2010	9:13:45	9	19.5959	15.291
1757	12/16/2010	9:13:48	9	19.6018	15.291
1758	12/16/2010	9:13:51	0	10.6044	15.291
1759	12/16/2010	9:13:54	9	19.6031	15.291
1760	12/16/2010	9:13:57	0	19.6939	15.291
1761	12/16/2010	8:14:00	0	10.6089	15.291
1782	12/16/2010	9:14:03	0	10.6118	15.291
1763	12/16/2010	9:14:06	9	10.614	15.291
1764	12/16/2010	9:14:09	9	19.6159	15.29
1765	12/16/2010	9:14:12	0	19.6188	15.29
1766	12/16/2010	9:14:15	0	19.8169	15.291
1767	12/16/2010	9:14:18	0	19.6234	15.29
1768	12/16/2010	9:14:21	9	19.6251	15.291
1769	12/16/2010	9:14:24	0	19.6238	15.29
1779	12/16/2010	9:14:27	9	10.6272	15.29
1771	12/16/2010	9:14:30	9	19.6293	15.29
1772	12/16/2010	9:14:33	9	19.6397	15.29
1773	12/16/2010	9:14:36	0	10.6301	15.28
1774	12/16/2010	9:14:39	9	19.6341	15.289
1775	12/16/2010	9:14:42	9	19.6372	15.289
1776	12/16/2010	9:14:45	9	19.6368	15.269
1777	12/16/2010	9:14:48	0	10.6351	15.28
1778	12/16/2010	9:14:51	9	19.6399	15.29
1779	12/16/2010	9:14:54	9	10.6396	15.29
1769	12/16/2010	9:14:57	9	19.6417	15.29
1761	12/16/2010	9:15:00	0	10.6455	15.29
1782	12/16/2010	9:15:95	9	10.6444	15.287
1763	12/16/2010	9:15:10	9	19.6453	15.285
1784	12/16/2010	9:15:15	9	10.6511	15.284
1765	12/16/2010	9:15:20	9	19.6509	15.285
1786	12/16/2010	9:15:25	0	10.6539	15.284
1787	12/16/2010	9:15:30	9	19.8595	15.284
1768	12/16/2010	9:15:35	9	19.6586	15.284
1799	12/16/2010	9:15:40	0	10.6625	15.283
1790	12/16/2010	9:15:45	0	19.6613	15.284
1791	12/16/2010	9:15:50	0	19.6619	15.264
1792	12/16/2010	9:15:55	0	10.664	15.283
1793	12/16/2010	9:18:00	9	19.6667	15.284
1794	12/16/2010	9:16:95	9	19.6685	15.263
1796	12/16/2010	9:16:10	9	19.6735	15.284
1796	12/16/2010	9:16:15	9	19.6737	15.284
1797	12/16/2010	9:16:20	9	10.6723	15.284
1798	12/16/2010	9:16:25	9	19.875	15.284
1799	12/16/2010	9:16:30	9	10.6757	15.284
1800	12/16/2010	9:16:35	9	19.6771	15.284
1801	12/16/2010	9:16:40	0	10.6798	15.284
1802	12/16/2010	9:16:45	9	19.861	15.284
1803	12/16/2010	9:16:50	9	10.6817	15.284
1804	12/16/2010	9:16:55	9	10.6859	15.284
1805	12/16/2010	9:17:00	0	10.683	15.284
1806	12/16/2010	9:17:95	9	19.6846	15.284
1697	12/16/2010	9:17:10	9	19.6863	15.284
1608	12/16/2010	9:17:15	0	10.6864	15.284
1809	12/16/2010	9:17:20	0	19.8903	15.284
1619	12/16/2010	9:17:25	9	19.691	15.284
1611	12/16/2010	9:17:30	0	19.6912	15.284
1612	12/16/2010	9:17:35	0	19.8933	15.284
1813	12/16/2010	9:17:40	0	19.691	15.283
1614	12/16/2010	9:17:45	9	19.6967	15.283
1615	12/16/2010	9:17:50	0	10.6938	15.283
1818	12/16/2010	9:17:55	9	19.695	15.283
1817	12/16/2010	9:16:99	9	19.8962	15.283
1916	12/16/2010	9:16:95	9	19.6986	15.283
1619	12/16/2010	9:16:10	9	19.6992	15.282
1829	12/16/2010	9:16:15	9	19.6995	15.282
1821	12/16/2010	9:18:20	9	19.8981	15.262
1822	12/16/2010	9:18:25	9	19.7931	15.261
1823	12/16/2010	9:16:30	9	19.7925	15.262
1824	12/16/2010	9:18:35	9	19.7934	15.261
1825	12/16/2010	9:16:40	9	10.7054	15.281
1826	12/16/2010	9:16:45	0	10.7925	15.28
1627	12/16/2010	9:18:50	9	19.7971	15.28
1828	12/16/2010	9:18:55	9	19.7076	15.28
1829	12/16/2010	9:19:99	0	10.706	15.26
1630	12/16/2010	9:19:05	0	10.798	15.29
1831	12/16/2010	9:19:10	9	19.7065	15.28
1932	12/16/2010	9:19:15	9	19.7066	15.26
1633	12/16/2010	9:19:20	0	10.7094	15.279
1634	12/16/2010	9:19:25	9	19.7986	15.279
1835	12/16/2010	9:19:30	9	10.711	15.279
1836	12/16/2010	9:19:35	0	10.7127	15.278
1837	12/16/2010	9:19:40	9	19.7983	15.279
1638	12/16/2010	9:19:45	9	19.71	15.279
1839	12/16/2010	9:19:50	9	19.7195	15.279
1849	12/16/2010	9:19:55	9	10.712	15.279
1841	12/16/2010	9:20:00	9	19.7142	15.279

Technical Memorandum—Field Report
Slug Tests at Burn Site Groundwater Study Area
Groundwater Monitoring Wells

Table A-3
Transducer Field Data for CYN-MW11

Serial Number
1040608
Project ID
CYN Slug tests
Location
CYN MW11
Level
Unit
ft
Offset
0.00 ft
Altitude
6000 ft
Temperature
Unit
Deg C

	Date	Time	100 ms	Level	Temperature
1	1/28/2011	9:20:00	0	21.1846	15.936
2	1/28/2011	9:20:01	0	21.1833	15.951
3	1/28/2011	9:20:02	0	21.1865	15.961
4	1/28/2011	9:20:03	0	21.1844	15.967
5	1/28/2011	9:20:04	0	21.1838	15.973
6	1/28/2011	9:20:05	0	21.1848	15.978
7	1/28/2011	9:20:06	0	21.4997	15.982
8	1/28/2011	9:20:07	0	21.1693	15.986
9	1/28/2011	9:20:08	0	21.1938	15.989
10	1/28/2011	9:20:09	0	21.2665	15.993
11	1/28/2011	9:20:10	0	21.1439	15.996
12	1/28/2011	9:20:11	0	21.1541	15.998
13	1/28/2011	9:20:12	0	20.6664	16.001
14	1/28/2011	9:20:13	0	19.9912	16.003
15	1/28/2011	9:20:14	0	19.3484	16.005
16	1/28/2011	9:20:15	0	19.0223	16.008
17	1/28/2011	9:20:16	0	19.0682	16.01
18	1/28/2011	9:20:17	0	19.0925	16.012
19	1/28/2011	9:20:18	0	19.1284	16.014
20	1/28/2011	9:20:19	0	19.1579	16.016
21	1/28/2011	9:20:20	0	19.1833	16.018
22	1/28/2011	9:20:21	0	19.2118	16.02
23	1/28/2011	9:20:22	0	19.2373	16.022
24	1/28/2011	9:20:23	0	19.2627	16.024
25	1/28/2011	9:20:24	0	19.2871	16.025
26	1/28/2011	9:20:25	0	19.3109	16.027
27	1/28/2011	9:20:26	0	19.3339	16.029
28	1/28/2011	9:20:27	0	19.3551	16.031
29	1/28/2011	9:20:28	0	19.3817	16.032
30	1/28/2011	9:20:29	0	19.4048	18.035
31	1/28/2011	9:20:30	0	19.4257	16.035
32	1/28/2011	9:20:31	0	19.4451	16.038
33	1/28/2011	9:20:32	0	19.4667	16.039
34	1/28/2011	9:20:33	0	19.4872	16.041
35	1/28/2011	9:20:34	0	19.5057	18.043
36	1/28/2011	9:20:35	0	19.5256	16.045
37	1/28/2011	9:20:36	0	19.5493	16.046
38	1/28/2011	9:20:37	0	19.5641	16.048
39	1/28/2011	9:20:38	0	19.5844	16.049
40	1/28/2011	9:20:39	0	19.6011	16.051
41	1/28/2011	9:20:40	0	19.6173	16.052
42	1/28/2011	9:20:41	0	19.6362	18.053
43	1/28/2011	9:20:42	0	19.6546	16.055
44	1/28/2011	9:20:43	0	19.6712	16.057
45	1/28/2011	9:20:44	0	19.6883	16.058
46	1/28/2011	9:20:45	0	19.7031	16.06
47	1/28/2011	9:20:46	0	19.7203	16.06
48	1/28/2011	9:20:47	0	19.735	16.062
49	1/28/2011	9:20:48	0	19.7508	16.064
50	1/28/2011	9:20:49	0	19.767	16.066
51	1/28/2011	9:20:50	0	19.7798	16.07
52	1/28/2011	9:20:51	0	19.7965	16.069
53	1/28/2011	9:20:52	0	19.8114	16.068
54	1/28/2011	9:20:53	0	19.8245	16.07
55	1/28/2011	9:20:54	0	19.8398	16.07
56	1/28/2011	9:20:55	0	19.8531	16.072
57	1/28/2011	9:20:56	0	19.8704	16.07
58	1/28/2011	9:20:57	0	19.8851	16.073
59	1/28/2011	9:20:58	0	19.9961	16.071
60	1/28/2011	9:20:59	0	19.9137	16.076
61	1/28/2011	9:21:00	0	19.9236	16.078
62	1/28/2011	9:21:01	0	19.937	16.076
63	1/28/2011	9:21:02	0	19.9453	16.06
64	1/28/2011	9:21:03	0	19.9595	16.062
65	1/28/2011	9:21:04	0	19.9732	16.062
66	1/28/2011	9:21:05	0	19.982	16.063
67	1/28/2011	9:21:06	0	19.9976	18.064
68	1/28/2011	9:21:07	0	20.0115	18.064
69	1/28/2011	8:21:08	0	20.022	16.064
70	1/28/2011	9:21:09	0	20.0314	16.057
71	1/28/2011	9:21:10	0	20.0441	16.052
72	1/28/2011	9:21:11	0	20.0529	16.048
73	1/28/2011	9:21:12	0	20.0654	16.045
74	1/28/2011	9:21:13	0	20.0766	16.043
75	1/28/2011	9:21:14	0	20.0864	16.042
76	1/28/2011	9:21:15	0	20.098	16.04
77	1/28/2011	9:21:16	0	20.1058	16.04
78	1/28/2011	9:21:17	0	20.1187	16.039
79	1/28/2011	9:21:18	0	20.1298	16.037
80	1/28/2011	9:21:19	0	20.1378	16.037
81	1/28/2011	9:21:20	0	20.1506	16.036
82	1/28/2011	9:21:21	0	20.1597	16.036
83	1/28/2011	9:21:22	0	20.1692	16.034
84	1/28/2011	9:21:23	0	20.1796	16.035
85	1/28/2011	9:21:24	0	20.1928	16.034
86	1/28/2011	9:21:25	0	20.2004	18.033
87	1/28/2011	9:21:26	0	20.2096	16.033
88	1/28/2011	9:21:27	0	20.2169	16.032
89	1/28/2011	9:21:28	0	20.229	16.032
90	1/28/2011	9:21:29	0	20.2353	16.032
91	1/28/2011	9:21:30	0	20.2476	16.031
92	1/28/2011	9:21:31	0	20.2545	16.03
93	1/28/2011	9:21:32	0	20.2633	16.03
94	1/28/2011	9:21:33	0	20.2728	16.028

95	1/28/2011	9:21:34	0	20.2825	16.029
96	1/28/2011	9:21:35	0	20.2918	16.029
97	1/28/2011	9:21:36	0	20.298	16.028
98	1/28/2011	9:21:37	0	20.3082	16.029
99	1/28/2011	9:21:38	0	20.317	16.028
100	1/28/2011	9:21:39	0	20.3216	16.028
101	1/28/2011	9:21:40	0	20.3308	16.027
102	1/28/2011	9:21:41	0	20.3434	16.027
103	1/28/2011	9:21:42	0	20.3494	16.027
104	1/28/2011	9:21:43	0	20.3583	16.026
105	1/28/2011	9:21:44	0	20.3657	16.026
106	1/28/2011	9:21:45	0	20.3731	16.026
107	1/28/2011	9:21:46	0	20.3825	16.026
108	1/28/2011	9:21:47	0	20.3872	16.025
109	1/28/2011	9:21:48	0	20.3968	16.025
110	1/28/2011	9:21:49	0	20.4029	16.025
111	1/28/2011	9:21:50	0	20.4118	16.024
112	1/28/2011	9:21:51	0	20.4178	16.024
113	1/28/2011	9:21:52	0	20.4241	16.023
114	1/28/2011	9:21:53	0	20.4331	16.023
115	1/28/2011	9:21:54	0	20.4398	16.023
116	1/28/2011	9:21:55	0	20.4485	16.023
117	1/28/2011	9:21:56	0	20.4544	16.023
118	1/28/2011	9:21:57	0	20.4613	16.022
119	1/28/2011	9:21:58	0	20.4658	16.022
120	1/28/2011	9:21:59	0	20.4736	16.022
121	1/28/2011	9:22:00	0	20.479	16.022
122	1/28/2011	9:22:01	0	20.4843	16.021
123	1/28/2011	8:22:02	0	20.4944	16.021
124	1/28/2011	8:22:03	0	20.5024	16.022
125	1/28/2011	9:22:04	0	20.5064	16.021
126	1/28/2011	9:22:05	0	20.5125	16.021
127	1/28/2011	9:22:06	0	20.5187	16.021
128	1/28/2011	9:22:07	0	20.5254	16.021
129	1/28/2011	9:22:08	0	20.5318	16.02
130	1/28/2011	9:22:09	0	20.538	16.02
131	1/28/2011	9:22:10	0	20.5433	16.019
132	1/28/2011	9:22:11	0	20.5492	16.019
133	1/28/2011	9:22:12	0	20.5571	16.02
134	1/28/2011	9:22:13	0	20.5612	16.019
135	1/28/2011	9:22:14	0	20.567	16.019
136	1/28/2011	9:22:15	0	20.5734	16.019
137	1/28/2011	9:22:16	0	20.577	16.019
138	1/28/2011	9:22:17	0	20.5852	16.018
139	1/28/2011	9:22:18	0	20.5887	16.018
140	1/28/2011	9:22:19	0	20.5979	16.018
141	1/28/2011	9:22:20	0	20.601	16.018
142	1/28/2011	9:22:21	0	20.6069	16.018
143	1/28/2011	9:22:22	0	20.6116	16.018
144	1/28/2011	9:22:23	0	20.6171	16.018
145	1/28/2011	9:22:24	0	20.6225	16.017
146	1/28/2011	9:22:25	0	20.6283	16.018
147	1/28/2011	9:22:26	0	20.6347	16.017
148	1/28/2011	9:22:27	0	20.6407	16.017
149	1/28/2011	9:22:28	0	20.6426	16.017
150	1/28/2011	9:22:29	0	20.6482	16.017
151	1/29/2011	9:22:30	0	20.6527	16.017
152	1/28/2011	9:22:31	0	20.657	16.017
153	1/28/2011	9:22:32	0	20.6608	16.017
154	1/28/2011	9:22:33	0	20.6662	16.017
155	1/28/2011	9:22:34	0	20.6722	16.016
156	1/28/2011	8:22:35	0	20.676	16.016
157	1/28/2011	9:22:36	0	20.6825	16.017
158	1/28/2011	9:22:37	0	20.6873	16.016
159	1/28/2011	9:22:38	0	20.6842	16.016
160	1/28/2011	8:22:39	0	20.6936	16.016
161	1/28/2011	9:22:40	0	20.6983	16.016
162	1/28/2011	9:22:41	0	20.6999	16.016
163	1/28/2011	9:22:42	0	20.7094	16.016
164	1/28/2011	9:22:43	0	20.71	16.016
165	1/28/2011	9:22:44	0	20.7162	16.016
166	1/28/2011	9:22:45	0	20.7201	16.016
167	1/28/2011	9:22:46	0	20.7243	16.028
168	1/28/2011	9:22:47	0	20.7281	16.022
168	1/28/2011	9:22:48	0	20.7332	16.02
170	1/28/2011	9:22:49	0	20.739	16.019
171	1/28/2011	9:22:50	0	20.7413	16.018
172	1/28/2011	9:22:51	0	20.7438	16.018
173	1/28/2011	9:22:52	0	20.7497	16.017
174	1/28/2011	9:22:53	0	20.7528	16.016
175	1/28/2011	9:22:54	0	20.7569	16.017
176	1/28/2011	9:22:55	0	20.7614	16.016
177	1/28/2011	9:22:56	0	20.7621	16.017
178	1/28/2011	9:22:57	0	20.7686	16.017
179	1/28/2011	9:22:58	0	20.7699	16.017
180	1/28/2011	9:22:59	0	20.7766	16.016
181	1/28/2011	9:23:00	0	20.7773	16.017
182	1/28/2011	9:23:01	0	20.7817	16.016
183	1/28/2011	9:23:02	0	20.786	16.017
184	1/28/2011	9:23:03	0	20.7857	16.016
185	1/28/2011	9:23:04	0	20.7938	16.016
186	1/28/2011	9:23:05	0	20.7968	16.016
187	1/28/2011	9:23:06	0	20.7994	16.015
188	1/28/2011	9:23:07	0	20.8026	16.015
188	1/28/2011	9:23:09	0	20.8075	16.015
190	1/28/2011	9:23:09	0	20.81	16.016
191	1/28/2011	9:23:10	0	20.8102	16.015
192	1/28/2011	9:23:11	0	20.9147	16.016
193	1/28/2011	9:23:12	0	20.8209	16.015
194	1/28/2011	9:23:13	0	20.8235	16.016
195	1/28/2011	9:23:14	0	20.8267	16.015
196	1/28/2011	9:23:15	0	20.8274	16.015
197	1/28/2011	9:23:16	0	20.8319	16.015
198	1/28/2011	9:23:17	0	20.8334	16.016
199	1/28/2011	9:23:18	0	20.8376	16.016
200	1/28/2011	8:23:19	0	20.8406	16.015
201	1/28/2011	9:23:20	0	20.8447	16.015
202	1/28/2011	9:23:21	0	20.848	16.015
203	1/28/2011	9:23:22	0	20.8489	16.015
204	1/28/2011	9:23:23	0	20.8529	16.015
205	1/28/2011	9:23:24	0	20.8559	16.015

206	1/28/2011	9:23:25	0	20.8585	16.015
207	1/28/2011	9:23:26	0	20.8609	16.015
208	1/28/2011	9:23:27	0	20.8643	16.015
209	1/28/2011	9:23:28	0	20.8652	16.015
210	1/28/2011	9:23:29	0	20.8693	16.015
211	1/28/2011	9:23:30	0	20.8708	16.015
212	1/28/2011	9:23:31	0	20.8742	16.015
213	1/28/2011	9:23:32	0	20.8775	16.014
214	1/28/2011	9:23:33	0	20.8772	16.015
215	1/28/2011	9:23:34	0	20.8932	16.015
216	1/28/2011	9:23:35	0	20.8865	16.015
217	1/28/2011	9:23:36	0	20.8877	16.014
219	1/28/2011	9:23:37	0	20.8899	16.015
219	1/28/2011	9:23:38	0	20.891	16.014
220	1/28/2011	9:23:39	0	20.8962	16.014
221	1/28/2011	9:23:40	0	20.8966	16.014
222	1/28/2011	9:23:41	0	20.9017	16.015
223	1/28/2011	9:23:42	0	20.9044	16.014
224	1/28/2011	9:23:43	0	20.9068	16.014
225	1/28/2011	9:23:44	0	20.9049	16.015
226	1/28/2011	9:23:45	0	20.9102	16.015
227	1/28/2011	9:23:46	0	20.9115	16.015
228	1/28/2011	9:23:47	0	20.9112	16.015
229	1/28/2011	9:23:49	0	20.9145	16.015
230	1/28/2011	9:23:49	0	20.9198	16.015
231	1/28/2011	9:23:50	0	20.9202	16.015
232	1/28/2011	9:23:51	0	20.9248	16.014
233	1/28/2011	9:23:52	0	20.9244	16.015
234	1/28/2011	9:23:53	0	20.9274	16.014
235	1/28/2011	9:23:54	0	20.9289	16.014
236	1/28/2011	9:23:55	0	20.9297	16.014
237	1/28/2011	9:23:56	0	20.9337	16.015
238	1/28/2011	9:23:57	0	20.9352	16.014
239	1/28/2011	9:23:58	0	20.9376	16.014
240	1/28/2011	9:23:59	0	20.939	16.015
241	1/28/2011	9:24:00	0	20.9385	16.014
242	1/28/2011	9:24:01	0	20.9423	16.014
243	1/28/2011	9:24:02	0	20.9439	16.014
244	1/28/2011	9:24:03	0	20.9455	16.015
245	1/28/2011	9:24:04	0	20.9471	16.015
246	1/28/2011	9:24:05	0	20.9508	16.014
247	1/28/2011	9:24:06	0	20.9529	16.014
248	1/28/2011	9:24:07	0	20.9562	16.014
249	1/28/2011	9:24:08	0	20.9576	16.014
250	1/28/2011	9:24:09	0	20.9578	16.014
251	1/28/2011	9:24:10	0	20.9598	16.014
252	1/28/2011	9:24:11	0	20.9632	16.014
253	1/28/2011	9:24:12	0	20.9632	16.014
254	1/28/2011	9:24:13	0	20.9655	16.014
255	1/28/2011	9:24:14	0	20.9652	16.015
256	1/28/2011	9:24:15	0	20.9702	16.014
257	1/28/2011	9:24:16	0	20.9693	16.014
258	1/28/2011	9:24:17	0	20.9728	16.014
259	1/28/2011	9:24:18	0	20.9752	16.014
260	1/28/2011	9:24:19	0	20.9745	16.015
261	1/28/2011	9:24:20	0	20.9796	16.014
262	1/28/2011	9:24:21	0	20.9789	16.014
263	1/28/2011	9:24:22	0	20.9806	16.015
264	1/28/2011	9:24:23	0	20.9825	16.014
265	1/28/2011	9:24:24	0	20.9825	16.014
266	1/28/2011	9:24:25	0	20.9856	16.014
267	1/28/2011	9:24:26	0	20.9854	16.014
268	1/28/2011	9:24:27	0	20.9892	16.014
269	1/28/2011	9:24:28	0	20.9909	16.013
270	1/28/2011	9:24:29	0	20.9934	16.014
271	1/28/2011	9:24:30	0	20.9942	16.015
272	1/28/2011	9:24:31	0	20.9964	16.014
273	1/28/2011	9:24:32	0	20.9959	16.014
274	1/28/2011	9:24:33	0	20.9986	16.014
275	1/28/2011	9:24:34	0	20.999	16.014
276	1/28/2011	9:24:35	0	20.9986	16.014
277	1/28/2011	9:24:36	0	21.0028	16.014
278	1/28/2011	9:24:37	0	21.0018	16.014
279	1/28/2011	9:24:38	0	21.0022	16.014
280	1/28/2011	9:24:39	0	21.0064	16.014
281	1/28/2011	9:24:40	0	21.0065	16.014
282	1/28/2011	9:24:41	0	21.0093	16.014
283	1/28/2011	9:24:42	0	21.0106	16.036
284	1/28/2011	9:24:43	0	21.0099	16.022
285	1/28/2011	9:24:44	0	21.0119	16.019
286	1/28/2011	9:24:45	0	21.0143	16.017
287	1/28/2011	9:24:46	0	21.0138	16.017
288	1/28/2011	9:24:47	0	21.0195	16.017
289	1/28/2011	9:24:48	0	21.0183	16.017
290	1/28/2011	9:24:49	0	21.0204	16.015
291	1/28/2011	9:24:50	0	21.0216	16.015
292	1/28/2011	9:24:51	0	21.0181	16.015
293	1/28/2011	9:24:52	0	21.0224	16.015
294	1/28/2011	9:24:53	0	21.0213	16.015
295	1/28/2011	9:24:54	0	21.0246	16.015
296	1/28/2011	9:24:55	0	21.028	16.033
297	1/28/2011	9:24:56	0	21.0283	16.023
298	1/28/2011	9:24:57	0	21.0288	16.021
299	1/28/2011	9:24:58	0	21.0291	16.019
300	1/28/2011	9:24:59	0	21.0306	16.017
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303	1/28/2011	9:25:10	0	21.0397	15.987
304	1/28/2011	9:25:15	0	21.0451	15.982
305	1/28/2011	9:25:20	0	21.0512	15.978
306	1/28/2011	9:25:25	0	21.0549	15.975
307	1/28/2011	9:25:30	0	21.06	15.975
308	1/28/2011	9:25:35	0	21.0638	15.972
309	1/28/2011	9:25:40	0	21.0687	15.986
310	1/28/2011	9:25:45	0	21.0721	15.968
311	1/28/2011	9:25:50	0	21.0743	15.966
312	1/28/2011	9:25:55	0	21.0763	15.964
313	1/28/2011	9:26:00	0	21.0819	15.966
314	1/28/2011	9:26:05	0	21.0832	15.963
315	1/28/2011	9:26:10	0	21.084	15.961
316	1/28/2011	9:26:15	0	21.0897	15.962

317	1/28/2011	9:26:20	0	21.0919	15.972
318	1/28/2011	9:26:25	0	21.092	15.961
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320	1/28/2011	9:26:35	0	21.0984	15.961
321	1/28/2011	9:26:40	0	21.1033	15.958
322	1/28/2011	9:26:45	0	21.1027	15.957
323	1/28/2011	9:26:50	0	21.1026	15.955
324	1/28/2011	9:26:55	0	21.1075	15.955
325	1/28/2011	9:27:00	0	21.1084	15.954
326	1/28/2011	9:27:05	0	21.1111	15.953
327	1/28/2011	9:27:10	0	21.1148	15.953
328	1/28/2011	9:27:15	0	21.1151	15.952
329	1/28/2011	9:27:20	0	21.1162	15.951
330	1/28/2011	9:27:25	0	21.1171	15.951
331	1/28/2011	9:27:30	0	21.1167	15.949
332	1/28/2011	9:27:35	0	21.1227	15.949
333	1/28/2011	9:27:40	0	21.1183	15.949
334	1/28/2011	9:27:45	0	21.1234	15.948
335	1/28/2011	9:27:50	0	21.128	15.948
336	1/28/2011	9:27:55	0	21.1254	15.947
337	1/28/2011	9:28:00	0	21.128	15.948
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339	1/28/2011	9:28:10	0	21.1274	15.948
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341	1/28/2011	9:28:20	0	21.1308	15.946
342	1/28/2011	9:28:25	0	21.1318	15.946
343	1/28/2011	9:28:30	0	21.1302	15.946
344	1/28/2011	9:28:35	0	21.1367	15.946
345	1/28/2011	9:28:40	0	21.134	15.946
346	1/28/2011	9:28:45	0	21.1337	15.946
347	1/28/2011	9:28:50	0	21.1361	15.946
348	1/28/2011	9:28:55	0	21.137	15.946
349	1/28/2011	9:29:00	0	21.1376	15.946
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354	1/28/2011	9:29:25	0	21.1398	15.945
355	1/28/2011	9:29:30	0	21.1418	15.945
356	1/28/2011	9:29:35	0	21.1406	15.946
357	1/28/2011	9:29:40	0	21.1433	15.946
358	1/28/2011	9:29:45	0	21.1402	15.945
359	1/28/2011	9:29:50	0	21.1447	15.949
360	1/28/2011	9:29:55	0	21.1445	15.947
361	1/28/2011	9:30:00	0	21.1467	15.947
362	1/28/2011	9:30:01	0	21.1447	15.955
363	1/28/2011	9:30:02	0	21.1438	15.961
364	1/28/2011	9:30:03	0	21.1423	15.964
365	1/28/2011	9:30:04	0	21.147	15.966
366	1/28/2011	9:30:05	0	21.1456	15.968
367	1/28/2011	9:30:06	0	21.1434	15.97
368	1/28/2011	9:30:07	0	21.1443	15.983
369	1/28/2011	9:30:08	0	21.1466	15.979
370	1/28/2011	9:30:09	0	21.1491	15.978
371	1/28/2011	9:30:10	0	21.1484	15.979
372	1/28/2011	9:30:11	0	21.7445	15.994
373	1/28/2011	9:30:12	0	22.4163	16.008
374	1/28/2011	9:30:13	0	23.1355	16.013
375	1/28/2011	9:30:14	0	23.3986	16.017
376	1/28/2011	9:30:15	0	23.2106	16.02
377	1/28/2011	9:30:16	0	23.2912	16.027
379	1/28/2011	9:30:17	0	23.1687	16.024
379	1/28/2011	9:30:18	0	23.1776	16.014
380	1/28/2011	9:30:19	0	23.1227	16.015
381	1/28/2011	9:30:20	0	23.1549	16.017
382	1/28/2011	9:30:21	0	23.1095	16.02
383	1/28/2011	9:30:22	0	23.1118	16.022
384	1/28/2011	9:30:23	0	23.0166	16.024
385	1/28/2011	9:30:24	0	23.0202	16.026
386	1/28/2011	9:30:25	0	22.9962	16.027
387	1/28/2011	9:30:26	0	22.9698	16.019
389	1/28/2011	9:30:27	0	22.9502	16.042
389	1/28/2011	9:30:28	0	22.9334	16.037
390	1/28/2011	9:30:29	0	22.9619	16.038
391	1/28/2011	9:30:30	0	22.8855	16.038
392	1/28/2011	9:30:31	0	22.8637	16.038
393	1/28/2011	9:30:32	0	22.8451	16.04
394	1/28/2011	9:30:33	0	22.824	16.042
395	1/28/2011	9:30:34	0	22.8064	16.043
396	1/28/2011	9:30:35	0	22.7843	16.044
397	1/28/2011	9:30:36	0	22.7704	16.047
398	1/28/2011	9:30:37	0	22.7505	16.048
399	1/28/2011	9:30:38	0	22.7294	16.049
400	1/28/2011	9:30:39	0	22.7131	18.05
401	1/28/2011	9:30:40	0	22.6973	16.051
402	1/28/2011	9:30:41	0	22.679	16.053
403	1/28/2011	9:30:42	0	22.6816	16.054
404	1/28/2011	9:30:43	0	22.8473	16.055
405	1/28/2011	9:30:44	0	22.6272	16.057
406	1/28/2011	9:30:45	0	22.6107	16.058
407	1/28/2011	9:30:48	0	22.5974	16.059
408	1/28/2011	9:30:47	0	22.5816	16.06
409	1/28/2011	9:30:48	0	22.5651	16.063
410	1/28/2011	9:30:49	0	22.5483	16.063
411	1/28/2011	9:30:50	0	22.5361	16.064
412	1/28/2011	9:30:51	0	22.5211	16.054
413	1/28/2011	9:30:52	0	22.5031	16.048
414	1/28/2011	9:30:53	0	22.4893	18.044
415	1/28/2011	9:30:54	0	22.4753	16.042
416	1/28/2011	9:30:55	0	22.4601	16.041
417	1/28/2011	9:30:56	0	22.4474	18.038
418	1/28/2011	9:30:57	0	22.4371	16.038
419	1/28/2011	9:30:58	0	22.4253	16.037
420	1/28/2011	9:30:59	0	22.4083	18.036
421	1/28/2011	9:31:00	0	22.3954	16.035
422	1/28/2011	9:31:01	0	22.3802	16.035
423	1/28/2011	9:31:02	0	22.3689	16.035
424	1/28/2011	9:31:03	0	22.3591	16.035
425	1/28/2011	9:31:04	0	22.3459	16.034
426	1/28/2011	9:31:05	0	22.334	16.033
427	1/28/2011	9:31:06	0	22.3218	16.034

428	1/28/2011	9:31:07	0	22.3089	16.033
429	1/28/2011	9:31:08	0	22.2958	16.033
430	1/28/2011	9:31:09	0	22.286	16.033
431	1/28/2011	9:31:10	0	22.2742	16.032
432	1/28/2011	9:31:11	0	22.2623	16.032
433	1/28/2011	9:31:12	0	22.2498	16.032
434	1/28/2011	9:31:13	0	22.238	16.032
435	1/28/2011	9:31:14	0	22.2289	16.031
436	1/28/2011	9:31:15	0	22.2174	16.031
437	1/28/2011	9:31:16	0	22.2066	16.031
438	1/28/2011	9:31:17	0	22.1937	16.031
439	1/28/2011	9:31:18	0	22.1854	16.031
440	1/28/2011	9:31:19	0	22.1769	16.031
441	1/28/2011	9:31:20	0	22.1665	16.03
442	1/28/2011	9:31:21	0	22.1553	16.03
443	1/28/2011	9:31:22	0	22.1456	16.03
444	1/28/2011	9:31:23	0	22.1349	16.03
445	1/28/2011	9:31:24	0	22.1273	16.03
446	1/28/2011	9:31:25	0	22.1155	16.029
447	1/28/2011	9:31:26	0	22.1058	16.03
448	1/28/2011	9:31:27	0	22.0944	16.029
449	1/28/2011	9:31:28	0	22.0853	16.029
450	1/28/2011	9:31:29	0	22.0776	16.029
451	1/28/2011	9:31:30	0	22.0694	16.029
452	1/28/2011	9:31:31	0	22.0614	16.028
453	1/28/2011	9:31:32	0	22.0497	16.028
454	1/28/2011	9:31:33	0	22.0425	16.028
455	1/28/2011	9:31:34	0	22.0332	16.028
456	1/28/2011	9:31:35	0	22.0245	16.028
457	1/28/2011	9:31:36	0	22.0162	16.028
458	1/28/2011	9:31:37	0	22.0088	16.029
459	1/28/2011	9:31:38	0	21.9989	16.027
460	1/28/2011	9:31:39	0	21.9913	16.027
461	1/28/2011	9:31:40	0	21.9814	16.027
462	1/28/2011	9:31:41	0	21.9741	16.027
463	1/28/2011	9:31:42	0	21.966	16.027
464	1/28/2011	9:31:43	0	21.9558	16.027
465	1/28/2011	9:31:44	0	21.9515	16.027
466	1/28/2011	9:31:45	0	21.9402	16.026
467	1/28/2011	9:31:46	0	21.9329	16.026
468	1/28/2011	9:31:47	0	21.9262	16.026
469	1/28/2011	9:31:48	0	21.9194	16.025
470	1/28/2011	9:31:49	0	21.9114	16.025
471	1/28/2011	9:31:50	0	21.9049	16.026
472	1/28/2011	9:31:51	0	21.8961	16.026
473	1/28/2011	9:31:52	0	21.8873	16.025
474	1/28/2011	9:31:53	0	21.882	16.025
475	1/28/2011	9:31:54	0	21.8756	16.025
476	1/28/2011	9:31:55	0	21.8672	16.025
477	1/28/2011	9:31:56	0	21.8569	16.024
478	1/28/2011	9:31:57	0	21.9546	16.025
479	1/28/2011	9:31:58	0	21.8476	16.024
480	1/28/2011	9:31:59	0	21.8434	16.025
481	1/28/2011	9:32:00	0	21.8357	16.024
482	1/28/2011	9:32:01	0	21.8263	16.025
483	1/28/2011	9:32:02	0	21.8212	16.024
484	1/29/2011	9:32:03	0	21.8169	16.024
485	1/28/2011	9:32:04	0	21.8074	16.024
486	1/28/2011	9:32:05	0	21.8005	16.024
487	1/28/2011	9:32:06	0	21.7965	16.024
488	1/28/2011	9:32:07	0	21.7882	16.025
489	1/28/2011	9:32:08	0	21.7819	16.024
490	1/28/2011	9:32:09	0	21.7768	16.024
491	1/28/2011	9:32:10	0	21.7693	16.024
492	1/28/2011	9:32:11	0	21.7647	16.025
493	1/28/2011	9:32:12	0	21.757	16.024
494	1/28/2011	9:32:13	0	21.7535	16.024
495	1/28/2011	9:32:14	0	21.749	16.024
496	1/28/2011	9:32:15	0	21.7448	16.023
497	1/28/2011	9:32:16	0	21.7349	16.023
498	1/28/2011	9:32:17	0	21.7315	16.024
499	1/28/2011	9:32:18	0	21.7235	16.023
500	1/28/2011	9:32:19	0	21.7196	16.023
501	1/28/2011	9:32:20	0	21.7151	16.023
502	1/28/2011	9:32:21	0	21.7074	16.024
503	1/28/2011	9:32:22	0	21.7018	16.023
504	1/28/2011	9:32:23	0	21.6988	16.023
505	1/28/2011	9:32:24	0	21.6925	16.023
506	1/28/2011	9:32:25	0	21.6874	16.023
507	1/28/2011	9:32:26	0	21.6831	16.023
508	1/28/2011	9:32:27	0	21.6763	16.023
509	1/28/2011	9:32:28	0	21.6763	16.023
510	1/28/2011	9:32:29	0	21.6666	16.023
511	1/28/2011	9:32:30	0	21.6847	16.041
512	1/28/2011	9:32:31	0	21.6589	16.031
513	1/28/2011	9:32:32	0	21.6552	16.028
514	1/28/2011	9:32:33	0	21.6489	16.026
515	1/28/2011	9:32:34	0	21.6404	16.026
516	1/28/2011	9:32:35	0	21.641	16.025
517	1/28/2011	9:32:36	0	21.6377	16.025
518	1/28/2011	9:32:37	0	21.6309	16.025
519	1/28/2011	9:32:38	0	21.8278	16.024
520	1/28/2011	9:32:39	0	21.6212	16.041
521	1/28/2011	9:32:40	0	21.618	16.033
522	1/28/2011	9:32:41	0	21.6111	16.03
523	1/28/2011	9:32:42	0	21.6089	16.028
524	1/28/2011	9:32:43	0	21.605	16.027
525	1/28/2011	9:32:44	0	21.6017	16.027
526	1/28/2011	9:32:45	0	21.596	16.026
527	1/28/2011	9:32:46	0	21.5961	16.026
528	1/28/2011	9:32:47	0	21.5882	16.025
529	1/28/2011	9:32:48	0	21.587	16.025
530	1/28/2011	9:32:49	0	21.5792	16.025
531	1/28/2011	9:32:50	0	21.5734	16.026
532	1/28/2011	9:32:51	0	21.5712	16.025
533	1/28/2011	9:32:52	0	21.5675	16.025
534	1/28/2011	9:32:53	0	21.5644	16.025
535	1/28/2011	9:32:54	0	21.5629	16.026
536	1/28/2011	9:32:55	0	21.5559	16.024
537	1/28/2011	9:32:56	0	21.5555	16.025
538	1/28/2011	9:32:57	0	21.5487	16.025

539	1/28/2011	9:32:58	0	21.546	16.025
540	1/28/2011	9:32:59	0	21.5397	16.025
541	1/28/2011	9:33:00	0	21.5389	16.025
542	1/28/2011	9:33:01	0	21.5362	16.025
543	1/28/2011	9:33:02	0	21.5316	16.025
544	1/28/2011	9:33:03	0	21.5275	16.025
545	1/28/2011	9:33:04	0	21.5258	16.024
546	1/28/2011	9:33:05	0	21.5242	16.024
547	1/26/2011	9:33:06	0	21.52	16.025
548	1/26/2011	9:33:07	0	21.5131	16.025
548	1/26/2011	9:33:08	0	21.5111	16.024
550	1/26/2011	9:33:09	0	21.5073	16.025
551	1/28/2011	9:33:10	0	21.5027	16.025
552	1/26/2011	9:33:11	0	21.5008	16.024
553	1/26/2011	9:33:12	0	21.4974	18.025
554	1/28/2011	9:33:13	0	21.4943	16.025
555	1/28/2011	9:33:14	0	21.494	16.024
556	1/28/2011	9:33:15	0	21.489	16.025
557	1/28/2011	9:33:16	0	21.4841	16.025
558	1/28/2011	9:33:17	0	21.4823	16.025
558	1/28/2011	9:33:18	0	21.4787	16.025
560	1/28/2011	9:33:19	0	21.4753	16.025
561	1/28/2011	9:33:20	0	21.4735	16.042
562	1/28/2011	9:33:21	0	21.4706	16.032
563	1/28/2011	9:33:22	0	21.4686	16.03
564	1/28/2011	9:33:23	0	21.4676	16.029
565	1/28/2011	9:33:24	0	21.4642	16.027
566	1/28/2011	9:33:25	0	21.4583	16.027
567	1/28/2011	9:33:26	0	21.4588	16.026
568	1/28/2011	9:33:27	0	21.4544	16.026
569	1/28/2011	9:33:28	0	21.4518	16.026
570	1/28/2011	9:33:29	0	21.4473	16.026
571	1/28/2011	9:33:30	0	21.4445	18.025
572	1/28/2011	9:33:31	0	21.4413	16.025
573	1/26/2011	9:33:32	0	21.441	16.025
574	1/26/2011	9:33:33	0	21.4401	18.026
575	1/28/2011	9:33:34	0	21.4334	16.026
576	1/26/2011	9:33:35	0	21.433	16.026
577	1/26/2011	9:33:36	0	21.4304	16.026
578	1/28/2011	9:33:37	0	21.4301	16.026
579	1/26/2011	9:33:38	0	21.4269	16.026
580	1/28/2011	9:33:39	0	21.4251	16.025
581	1/26/2011	9:33:40	0	21.4199	18.026
582	1/26/2011	9:33:41	0	21.4207	16.026
583	1/28/2011	9:33:42	0	21.4151	16.025
584	1/26/2011	9:33:43	0	21.4128	16.025
595	1/28/2011	9:33:44	0	21.4103	16.025
586	1/28/2011	9:33:45	0	21.4105	16.026
587	1/26/2011	9:33:46	0	21.406	16.025
588	1/26/2011	9:33:47	0	21.4053	16.025
589	1/28/2011	9:33:49	0	21.4035	16.025
590	1/28/2011	9:33:49	0	21.401	16.026
591	1/26/2011	9:33:50	0	21.3977	16.026
592	1/26/2011	9:33:51	0	21.3941	16.026
593	1/29/2011	9:33:52	0	21.3947	16.026
594	1/28/2011	9:33:53	0	21.3905	16.025
595	1/28/2011	9:33:54	0	21.3902	16.025
596	1/28/2011	9:33:55	0	21.3892	16.025
597	1/28/2011	9:33:56	0	21.385	16.025
598	1/28/2011	9:33:57	0	21.3946	16.026
599	1/28/2011	9:33:56	0	21.38	16.025
600	1/28/2011	9:33:59	0	21.3817	16.026
601	1/28/2011	9:34:00	0	21.3801	16.025
602	1/28/2011	9:34:01	0	21.3772	16.026
603	1/28/2011	9:34:02	0	21.3736	16.026
604	1/28/2011	9:34:03	0	21.3702	16.025
605	1/28/2011	9:34:04	0	21.3723	16.035
606	1/28/2011	9:34:05	0	21.3684	16.031
607	1/28/2011	9:34:06	0	21.3666	16.029
606	1/28/2011	9:34:07	0	21.363	16.028
609	1/28/2011	9:34:08	0	21.3626	16.028
610	1/28/2011	9:34:09	0	21.3609	16.027
611	1/28/2011	9:34:10	0	21.3584	16.027
612	1/28/2011	9:34:11	0	21.3566	16.027
613	1/28/2011	9:34:12	0	21.3553	16.027
614	1/28/2011	9:34:13	0	21.3561	16.027
615	1/28/2011	9:34:14	0	21.3475	16.027
616	1/28/2011	9:34:15	0	21.3494	16.026
617	1/28/2011	9:34:16	0	21.3496	16.027
618	1/28/2011	9:34:17	0	21.3493	16.025
619	1/28/2011	9:34:18	0	21.346	16.027
620	1/28/2011	9:34:19	0	21.3451	16.026
621	1/28/2011	9:34:20	0	21.3422	16.026
622	1/28/2011	9:34:21	0	21.3442	16.026
623	1/28/2011	9:34:22	0	21.3381	16.027
624	1/28/2011	9:34:23	0	21.3388	16.027
625	1/28/2011	9:34:24	0	21.3365	16.026
626	1/28/2011	9:34:25	0	21.3357	16.026
627	1/28/2011	9:34:26	0	21.3312	16.026
629	1/28/2011	9:34:27	0	21.3351	16.026
629	1/28/2011	9:34:28	0	21.3331	16.026
630	1/28/2011	9:34:29	0	21.3293	16.026
631	1/28/2011	9:34:30	0	21.3294	16.026
632	1/26/2011	9:34:31	0	21.3265	16.026
633	1/26/2011	9:34:32	0	21.3257	16.026
634	1/28/2011	9:34:33	0	21.3251	16.026
635	1/26/2011	9:34:34	0	21.3209	16.026
636	1/26/2011	9:34:35	0	21.3196	16.026
637	1/26/2011	9:34:36	0	21.317	16.026
638	1/26/2011	9:34:37	0	21.318	16.026
639	1/28/2011	9:34:38	0	21.3134	16.026
640	1/26/2011	9:34:39	0	21.3142	16.026
641	1/26/2011	9:34:40	0	21.313	16.026
642	1/28/2011	9:34:41	0	21.3127	16.026
643	1/28/2011	9:34:42	0	21.3107	16.026
644	1/28/2011	9:34:43	0	21.3084	16.026
645	1/28/2011	9:34:44	0	21.3054	16.026
646	1/28/2011	9:34:45	0	21.3096	16.026
647	1/28/2011	9:34:46	0	21.3025	16.026
648	1/28/2011	9:34:47	0	21.3055	16.026
649	1/28/2011	9:34:48	0	21.3046	16.026

650	1/28/2011	9:34:49	0	21.301	16.026
651	1/28/2011	9:34:50	0	21.2992	16.026
652	1/28/2011	9:34:51	0	21.2973	16.027
653	1/28/2011	9:34:52	0	21.3021	16.026
654	1/28/2011	9:34:53	0	21.2967	16.025
655	1/28/2011	9:34:54	0	21.2936	16.026
656	1/28/2011	9:34:55	0	21.2926	16.026
657	1/28/2011	9:34:56	0	21.2998	16.025
658	1/28/2011	9:34:57	0	21.2945	16.026
659	1/28/2011	9:34:58	0	21.2904	16.025
660	1/28/2011	9:34:59	0	21.2895	16.026
661	1/28/2011	9:35:00	0	21.2879	16.025
662	1/28/2011	9:35:05	0	21.2625	16.004
663	1/28/2011	9:35:10	0	21.2762	15.997
664	1/28/2011	9:35:15	0	21.2736	15.992
665	1/28/2011	9:35:20	0	21.2703	15.994
666	1/28/2011	9:35:25	0	21.2655	15.967
667	1/28/2011	9:35:30	0	21.2618	15.984
668	1/28/2011	9:35:35	0	21.2575	15.981
669	1/28/2011	9:35:40	0	21.2522	15.976
670	1/28/2011	9:35:45	0	21.2504	15.977
671	1/28/2011	9:35:50	0	21.2468	15.975
672	1/28/2011	9:35:55	0	21.2437	15.974
673	1/28/2011	9:36:00	0	21.2394	15.975
674	1/28/2011	9:36:05	0	21.2355	15.972
675	1/28/2011	9:36:10	0	21.2331	15.97
676	1/28/2011	9:36:15	0	21.2315	15.969
677	1/28/2011	9:36:20	0	21.2271	15.966
678	1/28/2011	9:36:25	0	21.2259	15.971
679	1/28/2011	9:36:30	0	21.2211	15.968
680	1/28/2011	9:36:35	0	21.2178	15.967
681	1/28/2011	9:36:40	0	21.2175	15.965
682	1/28/2011	9:36:45	0	21.2179	15.964
683	1/28/2011	9:36:50	0	21.2142	15.964
684	1/28/2011	9:36:55	0	21.2112	15.963
685	1/28/2011	9:37:00	0	21.2122	15.962
686	1/28/2011	9:37:05	0	21.2084	15.962
687	1/28/2011	9:37:10	0	21.2071	15.961
688	1/28/2011	9:37:15	0	21.2059	15.96
689	1/28/2011	9:37:20	0	21.2055	15.96
690	1/28/2011	9:37:25	0	21.2001	15.959
691	1/28/2011	9:37:30	0	21.2003	15.959
692	1/28/2011	9:37:35	0	21.2007	15.956
693	1/28/2011	9:37:40	0	21.1991	15.959
694	1/28/2011	9:37:45	0	21.1967	15.957
695	1/28/2011	9:37:50	0	21.1961	15.958
696	1/28/2011	9:37:55	0	21.1927	15.957
697	1/29/2011	9:36:00	0	21.195	15.957
698	1/28/2011	9:38:05	0	21.1931	15.957
699	1/28/2011	9:38:10	0	21.1919	15.956
700	1/28/2011	9:36:15	0	21.19	15.955
701	1/29/2011	9:36:20	0	21.1895	15.956
702	1/28/2011	9:38:25	0	21.189	15.956
703	1/26/2011	9:38:30	0	21.1884	15.955
704	1/28/2011	9:39:35	0	21.1862	15.955
705	1/28/2011	9:38:40	0	21.1865	15.955
706	1/28/2011	9:38:45	0	21.1852	15.955
707	1/28/2011	9:38:50	0	21.1854	15.954
708	1/28/2011	9:39:55	0	21.1828	15.954
709	1/28/2011	9:39:00	0	21.1853	15.954
710	1/28/2011	9:39:05	0	21.1835	15.954
711	1/28/2011	9:39:10	0	21.1845	15.954
712	1/28/2011	9:39:15	0	21.1819	15.957
713	1/28/2011	9:39:20	0	21.1813	15.955
714	1/28/2011	9:39:25	0	21.1818	15.955
715	1/28/2011	9:39:30	0	21.1813	15.954
716	1/28/2011	9:39:35	0	21.1795	15.954
717	1/26/2011	9:39:40	0	21.1815	15.97
716	1/28/2011	9:39:45	0	21.1826	15.994
719	1/28/2011	9:39:50	0	21.1952	16.005
720	1/28/2011	9:39:55	0	21.1832	16.01
721	1/28/2011	9:40:00	0	21.1792	15.996
722	1/28/2011	9:40:01	0	21.1809	16.006
723	1/26/2011	9:40:02	0	21.1815	16.013
724	1/28/2011	9:40:03	0	21.1826	18.017
725	1/28/2011	9:40:04	0	21.1907	16.021
726	1/28/2011	9:40:05	0	21.1823	16.024
727	1/28/2011	9:40:06	0	21.1812	16.027
726	1/28/2011	9:40:07	0	20.8903	16.026
729	1/28/2011	9:40:08	0	21.07	16.032
730	1/28/2011	9:40:09	0	21.169	16.033
731	1/28/2011	9:40:10	0	21.2493	16.035
732	1/28/2011	9:40:11	0	21.1677	16.038
733	1/28/2011	9:40:12	0	21.1135	16.04
734	1/28/2011	9:40:13	0	20.6065	16.041
735	1/28/2011	9:40:14	0	20.1247	16.042
736	1/28/2011	9:40:15	0	19.4493	16.044
737	1/28/2011	9:40:16	0	19.0146	16.046
738	1/28/2011	9:40:17	0	19.0572	16.046
739	1/28/2011	9:40:16	0	19.0829	16.049
740	1/28/2011	9:40:19	0	19.1176	16.051
741	1/28/2011	9:40:20	0	19.1486	16.053
742	1/28/2011	9:40:21	0	19.1732	16.054
743	1/28/2011	9:40:22	0	19.2012	16.055
744	1/28/2011	9:40:23	0	19.2262	16.057
745	1/28/2011	9:40:24	0	19.2562	16.056
746	1/28/2011	9:40:25	0	19.2799	16.06
747	1/28/2011	9:40:26	0	19.3041	16.061
748	1/28/2011	9:40:27	0	19.3274	16.062
749	1/28/2011	9:40:26	0	19.3537	16.064
750	1/28/2011	9:40:29	0	19.3746	16.065
751	1/28/2011	9:40:30	0	19.3946	16.067
752	1/28/2011	9:40:31	0	19.4152	16.067
753	1/28/2011	9:40:32	0	19.4375	16.069
754	1/28/2011	9:40:33	0	19.4596	16.07
755	1/28/2011	9:40:34	0	19.4769	16.072
756	1/28/2011	9:40:35	0	19.5007	16.073
757	1/28/2011	9:40:36	0	19.5232	16.074
758	1/28/2011	9:40:37	0	19.5404	16.075
759	1/26/2011	9:40:38	0	19.5581	16.076
760	1/26/2011	9:40:39	0	19.5782	16.078

761	1/28/2011	9:40:40	0	19.5933	16.079
762	1/28/2011	9:40:41	0	19.6163	16.08
763	1/28/2011	9:40:42	0	19.6292	16.081
764	1/28/2011	9:40:43	0	19.6486	16.082
765	1/28/2011	9:40:44	0	19.6669	16.083
766	1/28/2011	9:40:45	0	19.6847	16.084
767	1/28/2011	9:40:46	0	19.6999	16.085
768	1/28/2011	9:40:47	0	19.7174	16.087
769	1/28/2011	9:40:48	0	19.7311	16.089
770	1/28/2011	9:40:49	0	19.7464	16.089
771	1/28/2011	9:40:50	0	19.7648	16.09
772	1/28/2011	9:40:51	0	19.778	16.09
773	1/28/2011	9:40:52	0	19.7949	16.092
774	1/28/2011	9:40:53	0	19.8113	16.093
775	1/28/2011	9:40:54	0	19.8223	16.094
776	1/28/2011	9:40:55	0	19.8385	16.095
777	1/28/2011	9:40:56	0	19.8538	16.096
778	1/28/2011	9:40:57	0	19.8642	16.097
779	1/28/2011	9:40:59	0	19.8811	16.099
780	1/28/2011	9:40:59	0	19.893	16.1
781	1/28/2011	9:41:00	0	19.9085	16.096
782	1/28/2011	9:41:01	0	19.9179	16.099
783	1/28/2011	9:41:02	0	19.9364	16.099
784	1/28/2011	9:41:03	0	19.9493	18.102
785	1/28/2011	9:41:04	0	19.961	18.099
786	1/28/2011	9:41:05	0	19.9731	16.106
787	1/28/2011	9:41:06	0	19.9863	16.103
788	1/28/2011	9:41:07	0	19.9976	16.102
789	1/28/2011	9:41:08	0	20.01	16.103
790	1/28/2011	9:41:09	0	20.023	16.103
791	1/28/2011	9:41:10	0	20.0347	16.104
792	1/28/2011	9:41:11	0	20.0454	18.09
793	1/28/2011	9:41:12	0	20.055	16.081
794	1/28/2011	9:41:13	0	20.067	16.076
795	1/28/2011	9:41:14	0	20.0759	16.073
796	1/28/2011	9:41:15	0	20.0996	16.069
797	1/28/2011	9:41:16	0	20.0965	16.067
798	1/28/2011	9:41:17	0	20.1097	16.066
799	1/28/2011	9:41:18	0	20.1197	16.064
800	1/28/2011	9:41:19	0	20.1299	16.063
801	1/28/2011	9:41:20	0	20.1426	16.062
802	1/28/2011	9:41:21	0	20.1517	16.061
803	1/28/2011	9:41:22	0	20.1605	16.06
804	1/28/2011	9:41:23	0	20.1703	18.059
805	1/28/2011	9:41:24	0	20.18	16.059
806	1/28/2011	9:41:25	0	20.1896	16.058
807	1/28/2011	9:41:26	0	20.2001	16.057
909	1/28/2011	9:41:27	0	20.211	16.056
809	1/28/2011	9:41:28	0	20.2189	16.056
810	1/28/2011	9:41:29	0	20.2301	16.055
811	1/28/2011	9:41:30	0	20.2397	16.054
812	1/28/2011	9:41:31	0	20.25	16.054
813	1/28/2011	9:41:32	0	20.2553	16.054
814	1/28/2011	9:41:33	0	20.268	16.053
815	1/28/2011	9:41:34	0	20.2736	16.053
816	1/28/2011	9:41:35	0	20.2825	16.052
817	1/28/2011	9:41:36	0	20.2913	16.052
818	1/28/2011	9:41:37	0	20.3012	16.051
819	1/28/2011	9:41:38	0	20.3081	16.049
920	1/28/2011	9:41:39	0	20.3211	16.049
821	1/28/2011	9:41:40	0	20.3268	16.049
822	1/28/2011	9:41:41	0	20.3336	16.048
823	1/28/2011	9:41:42	0	20.3442	16.048
824	1/28/2011	9:41:43	0	20.3492	16.047
925	1/28/2011	9:41:44	0	20.3594	16.048
826	1/28/2011	9:41:45	0	20.3656	16.046
827	1/28/2011	9:41:46	0	20.3742	16.046
828	1/28/2011	9:41:47	0	20.3845	16.047
829	1/28/2011	9:41:48	0	20.3898	16.045
830	1/28/2011	9:41:49	0	20.399	16.045
831	1/28/2011	9:41:50	0	20.4071	16.044
832	1/28/2011	9:41:51	0	20.4136	16.044
633	1/28/2011	9:41:52	0	20.4181	16.043
834	1/28/2011	9:41:53	0	20.4284	16.043
835	1/28/2011	9:41:54	0	20.435	16.043
936	1/28/2011	9:41:55	0	20.4411	16.042
837	1/28/2011	9:41:56	0	20.4522	16.043
838	1/28/2011	9:41:57	0	20.4595	16.042
839	1/28/2011	9:41:59	0	20.4635	16.042
840	1/28/2011	9:41:59	0	20.4687	16.041
841	1/28/2011	9:42:00	0	20.4776	16.04
942	1/28/2011	9:42:01	0	20.4825	16.041
843	1/28/2011	9:42:02	0	20.4916	16.04
844	1/28/2011	9:42:03	0	20.4988	16.04
845	1/28/2011	9:42:04	0	20.5034	16.04
846	1/28/2011	9:42:05	0	20.5133	16.039
847	1/28/2011	9:42:06	0	20.5163	16.039
848	1/28/2011	9:42:07	0	20.5191	16.039
849	1/28/2011	9:42:08	0	20.5303	16.039
850	1/28/2011	9:42:09	0	20.5334	16.039
851	1/28/2011	9:42:10	0	20.5431	16.038
852	1/28/2011	9:42:11	0	20.5481	16.036
953	1/28/2011	9:42:12	0	20.5528	16.038
854	1/28/2011	9:42:13	0	20.5589	16.037
855	1/28/2011	9:42:14	0	20.5648	16.037
856	1/28/2011	9:42:15	0	20.5699	16.036
657	1/28/2011	9:42:16	0	20.5756	18.036
958	1/28/2011	9:42:17	0	20.5836	16.036
859	1/28/2011	9:42:18	0	20.588	16.036
860	1/28/2011	9:42:19	0	20.5971	16.035
961	1/28/2011	9:42:20	0	20.5991	16.035
862	1/28/2011	9:42:21	0	20.6031	16.035
863	1/28/2011	9:42:22	0	20.6108	16.034
864	1/28/2011	9:42:23	0	20.6166	16.035
965	1/28/2011	9:42:24	0	20.6232	16.035
866	1/28/2011	9:42:25	0	20.6281	16.034
867	1/28/2011	9:42:26	0	20.6285	16.034
868	1/28/2011	9:42:27	0	20.6368	16.034
869	1/28/2011	9:42:29	0	20.6408	16.034
870	1/28/2011	9:42:29	0	20.6457	16.034
871	1/28/2011	9:42:30	0	20.6497	16.034

872	1/28/2011	9:42:31	0	20.6524	16.033
873	1/28/2011	9:42:32	0	20.6595	16.033
874	1/28/2011	9:42:33	0	20.6678	16.032
875	1/28/2011	9:42:34	0	20.6711	16.033
876	1/28/2011	9:42:35	0	20.676	16.032
877	1/28/2011	9:42:36	0	20.6773	16.033
878	1/28/2011	9:42:37	0	20.6825	16.033
879	1/28/2011	9:42:38	0	20.6905	16.032
880	1/28/2011	9:42:39	0	20.6918	16.032
881	1/28/2011	9:42:40	0	20.6972	16.032
882	1/28/2011	9:42:41	0	20.7005	16.032
883	1/29/2011	9:42:42	0	20.7096	16.032
884	1/28/2011	9:42:43	0	20.7104	16.032
885	1/28/2011	9:42:44	0	20.7137	16.032
886	1/28/2011	9:42:45	0	20.7183	16.031
887	1/28/2011	9:42:46	0	20.7219	16.031
888	1/28/2011	9:42:47	0	20.7281	16.031
889	1/28/2011	9:42:48	0	20.7341	16.031
890	1/28/2011	9:42:49	0	20.7368	16.031
891	1/28/2011	9:42:50	0	20.7401	16.031
892	1/28/2011	9:42:51	0	20.7436	16.031
893	1/28/2011	9:42:52	0	20.7447	16.031
894	1/28/2011	9:42:53	0	20.7487	16.031
895	1/28/2011	9:42:54	0	20.7545	16.03
896	1/28/2011	9:42:55	0	20.7593	16.031
897	1/28/2011	9:42:56	0	20.7641	16.031
898	1/28/2011	9:42:57	0	20.7686	16.03
899	1/28/2011	9:42:58	0	20.7761	16.03
900	1/28/2011	9:42:59	0	20.7761	16.029
901	1/28/2011	9:43:00	0	20.7792	16.03
902	1/28/2011	9:43:01	0	20.7822	16.03
903	1/28/2011	9:43:02	0	20.7871	16.03
904	1/28/2011	9:43:03	0	20.7915	16.03
905	1/28/2011	9:43:04	0	20.7951	16.046
906	1/28/2011	9:43:05	0	20.7944	16.038
907	1/28/2011	9:43:06	0	20.8001	16.034
908	1/28/2011	9:43:07	0	20.8049	18.033
909	1/28/2011	9:43:08	0	20.8075	16.032
910	1/28/2011	9:43:09	0	20.8094	16.032
911	1/28/2011	9:43:10	0	20.8132	16.031
912	1/28/2011	9:43:11	0	20.8159	16.031
913	1/28/2011	9:43:12	0	20.8206	16.031
914	1/28/2011	9:43:13	0	20.8206	16.031
915	1/28/2011	9:43:14	0	20.8255	16.031
916	1/28/2011	9:43:15	0	20.8283	16.031
917	1/28/2011	9:43:16	0	20.8338	16.031
918	1/28/2011	9:43:17	0	20.8362	16.03
919	1/28/2011	9:43:18	0	20.8386	16.03
920	1/28/2011	9:43:19	0	20.8407	16.03
921	1/28/2011	9:43:20	0	20.8446	16.03
922	1/28/2011	9:43:21	0	20.8451	16.03
923	1/28/2011	9:43:22	0	20.853	18.03
924	1/28/2011	9:43:23	0	20.852	16.03
925	1/28/2011	9:43:24	0	20.8561	16.029
926	1/28/2011	9:43:25	0	20.8582	18.029
927	1/28/2011	9:43:26	0	20.8597	16.03
928	1/28/2011	9:43:27	0	20.8644	16.029
929	1/28/2011	9:43:28	0	20.8683	16.029
930	1/28/2011	9:43:29	0	20.9683	16.03
931	1/28/2011	9:43:30	0	20.8745	16.029
932	1/28/2011	9:43:31	0	20.8756	16.029
933	1/28/2011	9:43:32	0	20.8771	16.03
934	1/28/2011	9:43:33	0	20.88	16.029
935	1/28/2011	9:43:34	0	20.8819	16.029
936	1/28/2011	9:43:35	0	20.8877	16.029
937	1/28/2011	9:43:36	0	20.8885	16.03
938	1/28/2011	9:43:37	0	20.891	18.042
939	1/28/2011	9:43:38	0	20.8939	16.036
940	1/28/2011	9:43:39	0	20.8981	16.034
941	1/28/2011	9:43:40	0	20.8985	16.033
942	1/28/2011	9:43:41	0	20.8989	16.032
943	1/28/2011	9:43:42	0	20.9006	18.032
944	1/28/2011	9:43:43	0	20.9048	16.031
945	1/28/2011	9:43:44	0	20.9093	16.031
946	1/28/2011	9:43:45	0	20.9113	16.031
947	1/28/2011	9:43:46	0	20.9132	16.031
949	1/28/2011	9:43:47	0	20.9157	16.031
949	1/28/2011	9:43:48	0	20.9175	16.031
950	1/28/2011	9:43:49	0	20.9197	16.031
951	1/28/2011	9:43:50	0	20.9212	16.03
952	1/28/2011	9:43:51	0	20.9208	16.031
953	1/28/2011	9:43:52	0	20.9266	16.031
954	1/28/2011	9:43:53	0	20.9272	16.03
955	1/28/2011	9:43:54	0	20.9304	18.031
956	1/28/2011	9:43:55	0	20.9318	16.03
957	1/28/2011	9:43:56	0	20.9343	16.03
958	1/28/2011	9:43:57	0	20.9389	16.031
959	1/28/2011	9:43:58	0	20.9388	16.03
960	1/28/2011	9:43:59	0	20.9402	16.03
961	1/28/2011	9:44:00	0	20.9413	16.03
962	1/28/2011	9:44:01	0	20.947	16.031
963	1/28/2011	9:44:02	0	20.949	16.03
964	1/28/2011	9:44:03	0	20.9487	16.03
965	1/28/2011	9:44:04	0	20.9505	16.03
966	1/28/2011	9:44:05	0	20.9529	16.03
967	1/28/2011	9:44:06	0	20.955	16.03
968	1/28/2011	9:44:07	0	20.9596	16.031
969	1/28/2011	9:44:08	0	20.9587	16.03
970	1/28/2011	9:44:09	0	20.96	16.029
971	1/28/2011	9:44:10	0	20.9595	16.029
972	1/28/2011	9:44:11	0	20.9641	16.03
973	1/28/2011	9:44:12	0	20.9655	16.03
974	1/28/2011	9:44:13	0	20.9685	16.029
975	1/29/2011	9:44:14	0	20.9686	16.029
976	1/28/2011	9:44:15	0	20.9686	16.029
977	1/28/2011	9:44:16	0	20.9704	16.029
978	1/28/2011	9:44:17	0	20.9751	16.029
979	1/28/2011	9:44:18	0	20.9748	16.029
980	1/28/2011	9:44:19	0	20.9771	16.042
981	1/28/2011	9:44:20	0	20.9789	16.036
982	1/28/2011	9:44:21	0	20.9803	16.034

983	1/28/2011	9:44:22	0	20.9819	16.033
984	1/28/2011	9:44:23	0	20.9805	16.032
985	1/28/2011	9:44:24	0	20.9874	16.032
886	1/28/2011	8:44:25	0	20.9864	16.031
887	1/28/2011	8:44:26	0	20.9875	16.031
888	1/28/2011	9:44:27	0	20.9814	16.031
989	1/28/2011	9:44:28	0	20.8836	16.031
990	1/28/2011	8:44:29	0	20.9826	16.031
981	1/28/2011	8:44:30	0	20.9954	16.031
882	1/28/2011	9:44:31	0	20.9973	16.031
983	1/28/2011	9:44:32	0	20.9868	16.031
994	1/28/2011	9:44:33	0	20.9871	16.03
995	1/28/2011	8:44:34	0	21.0006	16.03
886	1/28/2011	9:44:35	0	20.999	16.031
987	1/28/2011	9:44:36	0	21.0015	16.031
998	1/28/2011	9:44:37	0	21.0022	16.031
999	1/28/2011	8:44:38	0	21.0068	16.03
1000	1/28/2011	8:44:38	0	21.0057	16.031
1001	1/28/2011	8:44:40	0	21.009	16.031
1002	1/28/2011	9:44:41	0	21.0082	16.03
1003	1/28/2011	9:44:42	0	21.0082	16.031
1004	1/28/2011	9:44:43	0	21.0136	16.03
1005	1/28/2011	9:44:44	0	21.0135	16.031
1006	1/28/2011	8:44:45	0	21.0149	16.03
1007	1/28/2011	9:44:46	0	21.0132	16.031
1008	1/28/2011	9:44:47	0	21.0173	16.031
1009	1/28/2011	9:44:48	0	21.0159	16.03
1010	1/28/2011	8:44:49	0	21.0204	16.03
1011	1/28/2011	9:44:50	0	21.0205	16.031
1012	1/28/2011	9:44:51	0	21.023	16.03
1013	1/28/2011	9:44:52	0	21.0244	16.031
1014	1/28/2011	9:44:53	0	21.0248	16.03
1015	1/28/2011	9:44:54	0	21.0248	16.03
1016	1/29/2011	9:44:55	0	21.0278	16.031
1017	1/28/2011	9:44:56	0	21.0281	16.03
1018	1/28/2011	9:44:57	0	21.03	16.03
1019	1/28/2011	9:44:58	0	21.0317	16.03
1020	1/28/2011	9:44:58	0	21.0304	16.03
1021	1/28/2011	9:45:00	0	21.0327	16.03
1022	1/28/2011	9:45:05	0	21.0358	16.011
1023	1/28/2011	9:45:10	0	21.0417	16.003
1024	1/28/2011	9:45:15	0	21.0478	15.888
1025	1/28/2011	9:45:20	0	21.05	15.887
1026	1/28/2011	9:45:25	0	21.0576	15.883
1027	1/28/2011	9:45:30	0	21.0629	15.99
1028	1/28/2011	8:45:35	0	21.0631	15.987
1028	1/28/2011	8:45:40	0	21.0701	15.987
1030	1/28/2011	9:45:45	0	21.0726	15.984
1031	1/28/2011	9:45:50	0	21.0742	15.981
1032	1/28/2011	8:45:55	0	21.0815	15.88
1033	1/28/2011	9:46:00	0	21.0844	15.978
1034	1/28/2011	9:46:05	0	21.0855	15.977
1035	1/28/2011	8:46:10	0	21.0886	15.975
1036	1/28/2011	9:46:15	0	21.0811	15.874
1037	1/28/2011	9:46:20	0	21.0836	15.875
1038	1/28/2011	9:46:25	0	21.0844	15.874
1039	1/28/2011	9:46:30	0	21.0889	15.972
1040	1/28/2011	9:46:35	0	21.1022	15.971
1041	1/28/2011	9:46:40	0	21.1052	15.97
1042	1/29/2011	8:46:45	0	21.1063	15.968
1043	1/28/2011	9:46:50	0	21.1079	15.968
1044	1/28/2011	9:46:55	0	21.1112	15.968
1045	1/28/2011	9:47:00	0	21.1117	15.875
1046	1/28/2011	9:47:05	0	21.1152	15.869
1047	1/28/2011	9:47:10	0	21.1157	15.987
1048	1/28/2011	9:47:15	0	21.1178	15.966
1049	1/28/2011	9:47:20	0	21.1183	15.866
1050	1/28/2011	9:47:25	0	21.1204	15.973
1051	1/28/2011	9:47:30	0	21.1216	15.967
1052	1/28/2011	9:47:35	0	21.1227	15.966
1053	1/28/2011	9:47:40	0	21.1222	15.865
1054	1/28/2011	9:47:45	0	21.1254	15.964
1055	1/28/2011	9:47:50	0	21.1264	15.984
1056	1/28/2011	9:47:55	0	21.1275	15.864
1057	1/28/2011	9:48:00	0	21.128	15.863
1058	1/28/2011	9:48:05	0	21.128	15.962
1058	1/28/2011	9:48:10	0	21.1326	15.965
1060	1/28/2011	9:48:15	0	21.1299	15.963
1061	1/28/2011	9:48:20	0	21.1313	15.962
1062	1/28/2011	8:48:25	0	21.1332	15.962
1063	1/28/2011	9:48:30	0	21.1312	15.961
1064	1/28/2011	9:48:35	0	21.1324	15.96
1065	1/28/2011	8:48:40	0	21.1359	15.959
1066	1/28/2011	9:48:45	0	21.1338	15.96
1067	1/28/2011	9:48:50	0	21.1382	15.864
1068	1/28/2011	9:48:55	0	21.1411	15.96
1069	1/28/2011	9:49:00	0	21.1371	15.96
1070	1/28/2011	9:49:05	0	21.1376	15.96
1071	1/28/2011	9:49:10	0	21.1383	15.859
1072	1/28/2011	9:49:15	0	21.1385	15.859
1073	1/28/2011	8:49:20	0	21.1411	15.959
1074	1/28/2011	9:49:25	0	21.1419	15.958
1075	1/28/2011	9:49:30	0	21.1419	15.958
1076	1/28/2011	9:48:35	0	21.1421	15.957
1077	1/28/2011	8:48:40	0	21.1447	15.963
1078	1/29/2011	9:49:45	0	21.1439	15.959
1078	1/28/2011	9:49:50	0	21.146	15.962
1080	1/28/2011	9:48:55	0	21.1427	15.86
1081	1/28/2011	9:50:00	0	21.1467	15.959

Technical Memorandum—Field Report
Slug Tests at Burn Site Groundwater Study Area
Groundwater Monitoring Wells

Table A-4
Transducer Field Data for CYN-MW12

Serial Number
□1040608
Project ID
□CYN Slug tests
Location
□CYN MW12
Level
□Unit
□□ft
□Offset
□□0.00 ft
□Altitude
□□6000 ft
Temperature
□Unit
□□Deg C

	Date	Time	100 ms	Level	Temperature
1	1/28/2011	10:55:00	0	16.2657	17.991
2	1/28/2011	10:55:01	0	16.261	18.003
3	1/28/2011	10:55:02	0	16.2629	18.01
4	1/28/2011	10:55:03	0	16.1085	18.015
5	1/28/2011	10:55:04	0	16.2543	18.019
6	1/28/2011	10:55:05	0	16.239	18.021
7	1/28/2011	10:55:06	0	16.2917	18.011
8	1/28/2011	10:55:07	0	16.2755	18.014
9	1/28/2011	10:55:08	0	16.2043	18.018
10	1/28/2011	10:55:09	0	16.2901	18.02
11	1/28/2011	10:55:10	0	16.0886	18.023
12	1/28/2011	10:55:11	0	15.4966	18.025
13	1/28/2011	10:55:12	0	14.8732	18.027
14	1/28/2011	10:55:13	0	14.254	18.029
15	1/28/2011	10:55:14	0	14.1776	18.032
16	1/28/2011	10:55:15	0	14.1918	18.033
17	1/28/2011	10:55:16	0	14.1965	18.035
18	1/28/2011	10:55:17	0	14.2002	18.037
19	1/28/2011	10:55:18	0	14.2085	18.039
20	1/28/2011	10:55:19	0	14.2074	18.041
21	1/28/2011	10:55:20	0	14.2087	18.043
22	1/28/2011	10:55:21	0	14.2217	18.044
23	1/28/2011	10:55:22	0	14.2239	18.046
24	1/28/2011	10:55:23	0	14.228	18.047
25	1/28/2011	10:55:24	0	14.2313	18.05
26	1/28/2011	10:55:25	0	14.2361	18.051
27	1/28/2011	10:55:26	0	14.2353	18.053
28	1/28/2011	10:55:27	0	14.2405	18.055
29	1/28/2011	10:55:28	0	14.247	18.056
30	1/28/2011	10:55:29	0	14.2487	18.058
31	1/28/2011	10:55:30	0	14.2522	18.06
32	1/28/2011	10:55:31	0	14.2582	18.06
33	1/28/2011	10:55:32	0	14.2596	18.062
34	1/28/2011	10:55:33	0	14.2627	18.064
35	1/28/2011	10:55:34	0	14.2672	18.065
36	1/28/2011	10:55:35	0	14.2726	18.067
37	1/28/2011	10:55:36	0	14.2733	18.068
38	1/28/2011	10:55:37	0	14.2758	18.069
39	1/28/2011	10:55:38	0	14.2805	18.071
40	1/28/2011	10:55:39	0	14.2824	18.071
41	1/28/2011	10:55:40	0	14.2864	18.073
42	1/28/2011	10:55:41	0	14.2929	18.074
43	1/28/2011	10:55:42	0	14.292	18.075
44	1/28/2011	10:55:43	0	14.2954	18.077
45	1/28/2011	10:55:44	0	14.3005	18.078
46	1/28/2011	10:55:45	0	14.3038	18.079
47	1/28/2011	10:55:46	0	14.3092	18.08
48	1/28/2011	10:55:47	0	14.3067	18.081
49	1/28/2011	10:55:48	0	14.3144	18.083
50	1/28/2011	10:55:49	0	14.3125	18.084
51	1/28/2011	10:55:50	0	14.3188	18.085
52	1/28/2011	10:55:51	0	14.3216	18.087
53	1/28/2011	10:55:52	0	14.3238	18.088
54	1/28/2011	10:55:53	0	14.3288	18.088
55	1/28/2011	10:55:54	0	14.3295	18.09
56	1/28/2011	10:55:55	0	14.335	18.091
57	1/28/2011	10:55:56	0	14.3375	18.092
58	1/28/2011	10:55:57	0	14.3401	18.093
59	1/28/2011	10:55:58	0	14.3446	18.094
60	1/28/2011	10:55:59	0	14.3456	18.095
61	1/28/2011	10:56:00	0	14.3484	18.096
62	1/28/2011	10:56:01	0	14.3543	18.098
63	1/28/2011	10:56:02	0	14.3549	18.099
64	1/28/2011	10:56:03	0	14.3584	18.1
65	1/28/2011	10:56:04	0	14.364	18.101
66	1/28/2011	10:56:05	0	14.3647	18.102
67	1/28/2011	10:56:06	0	14.3697	18.079
68	1/28/2011	10:56:07	0	14.3733	18.081
69	1/28/2011	10:56:08	0	14.3755	18.104
70	1/28/2011	10:56:09	0	14.3772	18.098
71	1/28/2011	10:56:10	0	14.3833	18.097
72	1/28/2011	10:56:11	0	14.3839	18.096
73	1/28/2011	10:56:12	0	14.3832	18.096
74	1/28/2011	10:56:13	0	14.3875	18.097
75	1/28/2011	10:56:14	0	14.3932	18.098
76	1/28/2011	10:56:15	0	14.3945	18.098
77	1/28/2011	10:56:16	0	14.3983	18.1
78	1/28/2011	10:56:17	0	14.4051	18.1
79	1/28/2011	10:56:18	0	14.4061	18.1
80	1/28/2011	10:56:19	0	14.4059	18.101
81	1/28/2011	10:56:20	0	14.4082	18.102
82	1/28/2011	10:56:21	0	14.4144	18.102
83	1/28/2011	10:56:22	0	14.4154	18.104
84	1/28/2011	10:56:23	0	14.4192	18.104
85	1/28/2011	10:56:24	0	14.4201	18.105
86	1/28/2011	10:56:25	0	14.4231	18.105
87	1/28/2011	10:56:26	0	14.4288	18.106
88	1/28/2011	10:56:27	0	14.4325	18.107

89	1/28/2011	10:56:28	0	14.4327	18.108
90	1/28/2011	10:56:29	0	14.4373	18.109
91	1/28/2011	10:56:30	0	14.4392	18.11
92	1/28/2011	10:56:31	0	14.4395	18.11
93	1/28/2011	10:56:32	0	14.4412	18.11
94	1/28/2011	10:56:33	0	14.4442	18.112
95	1/28/2011	10:56:34	0	14.4512	18.112
96	1/28/2011	10:56:35	0	14.4526	18.112
97	1/28/2011	10:56:36	0	14.4551	18.114
98	1/28/2011	10:56:37	0	14.458	18.115
99	1/28/2011	10:56:38	0	14.461	18.115
100	1/28/2011	10:56:39	0	14.4646	18.116
101	1/28/2011	10:56:40	0	14.4674	18.116
102	1/28/2011	10:56:41	0	14.4698	18.118
103	1/28/2011	10:56:42	0	14.4727	18.118
104	1/28/2011	10:56:43	0	14.4757	18.115
105	1/28/2011	10:56:44	0	14.4766	18.117
106	1/28/2011	10:56:45	0	14.4804	18.118
107	1/28/2011	10:56:46	0	14.4839	18.118
108	1/28/2011	10:56:47	0	14.4861	18.119
109	1/28/2011	10:56:48	0	14.4868	18.119
110	1/28/2011	10:56:49	0	14.491	18.122
111	1/28/2011	10:56:50	0	14.4951	18.12
112	1/28/2011	10:56:51	0	14.4969	18.118
113	1/28/2011	10:56:52	0	14.4993	18.119
114	1/28/2011	10:56:53	0	14.5002	18.123
115	1/28/2011	10:56:54	0	14.5055	18.12
116	1/28/2011	10:56:55	0	14.5058	18.107
117	1/28/2011	10:56:56	0	14.5074	16.106
118	1/28/2011	10:56:57	0	14.5126	18.107
119	1/28/2011	10:56:58	0	14.5126	18.107
120	1/28/2011	10:56:59	0	14.5147	18.107
121	1/28/2011	10:57:00	0	14.5163	18.106
122	1/28/2011	10:57:01	0	14.5217	18.107
123	1/28/2011	10:57:02	0	14.5239	18.108
124	1/28/2011	10:57:03	0	14.5297	18.108
125	1/28/2011	10:57:04	0	14.5291	18.108
126	1/28/2011	10:57:05	0	14.5321	18.109
127	1/28/2011	10:57:06	0	14.5342	18.109
128	1/28/2011	10:57:07	0	14.5366	18.109
129	1/28/2011	10:57:08	0	14.54	18.109
130	1/28/2011	10:57:09	0	14.5431	18.11
131	1/28/2011	10:57:10	0	14.5461	18.11
132	1/28/2011	10:57:11	0	14.5459	18.1
133	1/28/2011	10:57:12	0	14.5513	18.094
134	1/28/2011	10:57:13	0	14.5533	18.09
135	1/28/2011	10:57:14	0	14.5559	18.087
136	1/28/2011	10:57:15	0	14.5577	18.085
137	1/28/2011	10:57:16	0	14.56	18.083
138	1/28/2011	10:57:17	0	14.5586	18.081
139	1/28/2011	10:57:18	0	14.5634	18.079
140	1/28/2011	10:57:19	0	14.5679	18.078
141	1/28/2011	10:57:20	0	14.5681	18.077
142	1/28/2011	10:57:21	0	14.5744	18.076
143	1/28/2011	10:57:22	0	14.5743	18.074
144	1/28/2011	10:57:23	0	14.5764	18.074
145	1/28/2011	10:57:24	0	14.5768	18.073
146	1/28/2011	10:57:25	0	14.5816	18.071
147	1/28/2011	10:57:26	0	14.5841	18.071
148	1/28/2011	10:57:27	0	14.5858	18.07
149	1/28/2011	10:57:28	0	14.587	18.069
150	1/28/2011	10:57:29	0	14.594	18.068
151	1/28/2011	10:57:30	0	14.5953	18.068
152	1/28/2011	10:57:31	0	14.5962	18.067
153	1/28/2011	10:57:32	0	14.5996	18.065
154	1/28/2011	10:57:33	0	14.6025	18.066
155	1/28/2011	10:57:34	0	14.6046	18.064
156	1/28/2011	10:57:35	0	14.6057	18.063
157	1/28/2011	10:57:36	0	14.6079	18.063
158	1/28/2011	10:57:37	0	14.609	18.063
159	1/28/2011	10:57:38	0	14.6112	18.062
160	1/28/2011	10:57:39	0	14.6161	18.062
161	1/28/2011	10:57:40	0	14.6158	18.06
162	1/28/2011	10:57:41	0	14.6211	18.06
163	1/28/2011	10:57:42	0	14.6229	18.059
164	1/28/2011	10:57:43	0	14.6232	18.059
165	1/28/2011	10:57:44	0	14.6272	18.058
166	1/28/2011	10:57:45	0	14.6299	18.057
167	1/28/2011	10:57:46	0	14.632	18.056
168	1/28/2011	10:57:47	0	14.6376	18.056
169	1/28/2011	10:57:48	0	14.6363	18.055
170	1/28/2011	10:57:49	0	14.6405	18.055
171	1/28/2011	10:57:50	0	14.6412	18.054
172	1/28/2011	10:57:51	0	14.6442	18.054
173	1/28/2011	10:57:52	0	14.6479	18.053
174	1/28/2011	10:57:53	0	14.6475	18.053
175	1/28/2011	10:57:54	0	14.6496	18.052
176	1/28/2011	10:57:55	0	14.6538	18.052
177	1/28/2011	10:57:56	0	14.6542	18.051
178	1/28/2011	10:57:57	0	14.6565	18.05
179	1/28/2011	10:57:58	0	14.6562	18.05
180	1/28/2011	10:57:59	0	14.6629	18.05
181	1/28/2011	10:58:00	0	14.6626	18.049
182	1/28/2011	10:58:01	0	14.6677	18.049
183	1/28/2011	10:58:02	0	14.6715	18.048
184	1/28/2011	10:58:03	0	14.6724	18.047
185	1/28/2011	10:58:04	0	14.6728	18.047
186	1/28/2011	10:58:05	0	14.6767	18.046
187	1/28/2011	10:58:06	0	14.6752	18.046
188	1/28/2011	10:58:07	0	14.6804	18.046
189	1/28/2011	10:58:08	0	14.6826	18.046
190	1/28/2011	10:58:09	0	14.6847	18.045
191	1/28/2011	10:58:10	0	14.686	18.045
192	1/28/2011	10:58:11	0	14.6893	18.044
193	1/28/2011	10:58:12	0	14.6928	18.044

194	1/28/2011	10:58:13	0	14.6944	18.043
195	1/28/2011	10:58:14	0	14.6957	18.043
196	1/28/2011	10:58:15	0	14.6982	18.043
197	1/28/2011	10:58:16	0	14.6993	18.042
198	1/28/2011	10:58:17	0	14.7005	18.042
199	1/28/2011	10:58:18	0	14.7035	18.042
200	1/28/2011	10:58:19	0	14.7075	18.042
201	1/28/2011	10:58:20	0	14.7096	18.041
202	1/28/2011	10:58:21	0	14.7115	18.04
203	1/28/2011	10:58:22	0	14.7171	18.04
204	1/28/2011	10:58:23	0	14.7161	18.04
205	1/28/2011	10:58:24	0	14.7193	18.04
206	1/28/2011	10:58:25	0	14.7217	16.039
207	1/28/2011	10:58:26	0	14.7199	18.04
208	1/28/2011	10:58:27	0	14.7264	18.038
209	1/28/2011	10:58:28	0	14.7269	18.038
210	1/28/2011	10:58:29	0	14.7317	18.038
211	1/28/2011	10:58:30	0	14.7299	18.038
212	1/28/2011	10:58:31	0	14.7325	18.037
213	1/28/2011	10:58:32	0	14.7348	18.037
214	1/28/2011	10:58:33	0	14.7403	16.037
215	1/28/2011	10:58:34	0	14.7392	16.036
216	1/28/2011	10:58:35	0	14.7421	16.036
217	1/28/2011	10:58:36	0	14.7465	18.036
218	1/28/2011	10:58:37	0	14.7493	18.036
219	1/28/2011	10:58:38	0	14.7494	18.035
220	1/28/2011	10:58:39	0	14.749	18.035
221	1/28/2011	10:58:40	0	14.7539	18.035
222	1/28/2011	10:58:41	0	14.7542	18.034
223	1/28/2011	10:58:42	0	14.7574	18.035
224	1/28/2011	10:58:43	0	14.761	18.034
225	1/28/2011	10:58:44	0	14.7614	18.034
226	1/28/2011	10:58:45	0	14.7638	18.034
227	1/28/2011	10:58:46	0	14.7668	18.033
228	1/28/2011	10:58:47	0	14.7687	18.033
229	1/28/2011	10:58:48	0	14.7691	18.033
230	1/28/2011	10:58:49	0	14.7733	18.033
231	1/28/2011	10:58:50	0	14.7747	18.033
232	1/28/2011	10:58:51	0	14.7743	18.033
233	1/28/2011	10:58:52	0	14.78	16.032
234	1/28/2011	10:58:53	0	14.78	18.031
235	1/28/2011	10:58:54	0	14.7839	18.032
236	1/28/2011	10:58:55	0	14.7869	16.031
237	1/28/2011	10:56:56	0	14.7885	18.031
238	1/28/2011	10:58:57	0	14.7907	18.031
239	1/28/2011	10:58:58	0	14.7903	18.03
240	1/28/2011	10:58:59	0	14.7917	18.031
241	1/28/2011	10:59:00	0	14.7965	18.031
242	1/28/2011	10:59:01	0	14.7984	18.03
243	1/28/2011	10:59:02	0	14.7993	18.03
244	1/28/2011	10:59:03	0	14.8004	18.03
245	1/28/2011	10:59:04	0	14.8035	18.03
246	1/28/2011	10:59:05	0	14.8057	18.029
247	1/28/2011	10:59:06	0	14.8077	18.029
248	1/28/2011	10:59:07	0	14.8104	18.029
249	1/28/2011	10:59:08	0	14.8115	18.029
250	1/28/2011	10:59:09	0	14.8154	18.029
251	1/28/2011	10:59:10	0	14.8159	16.029
252	1/28/2011	10:59:11	0	14.8166	18.028
253	1/28/2011	10:59:12	0	14.819	18.028
254	1/28/2011	10:59:13	0	14.8182	18.028
255	1/28/2011	10:59:14	0	14.8226	18.028
256	1/28/2011	10:59:15	0	14.8244	18.028
257	1/28/2011	10:59:16	0	14.826	18.028
258	1/28/2011	10:59:17	0	14.8313	18.028
259	1/28/2011	10:59:18	0	14.831	18.027
260	1/28/2011	10:59:19	0	14.8351	18.027
261	1/28/2011	10:59:20	0	14.834	18.027
262	1/28/2011	10:59:21	0	14.8356	18.027
263	1/28/2011	10:59:22	0	14.8412	18.027
264	1/28/2011	10:59:23	0	14.8409	18.027
265	1/28/2011	10:59:24	0	14.8432	18.027
268	1/28/2011	10:59:25	0	14.8451	18.026
267	1/28/2011	10:59:26	0	14.849	18.027
268	1/28/2011	10:59:27	0	14.8476	18.026
269	1/28/2011	10:59:28	0	14.8541	16.026
270	1/28/2011	10:59:29	0	14.8554	18.026
271	1/28/2011	10:59:30	0	14.8554	18.026
272	1/28/2011	10:59:31	0	14.858	18.026
273	1/28/2011	10:59:32	0	14.8617	18.025
274	1/28/2011	10:59:33	0	14.8601	18.025
275	1/28/2011	10:59:34	0	14.8627	18.025
276	1/28/2011	10:59:35	0	14.8643	18.026
277	1/28/2011	10:59:36	0	14.8669	18.025
278	1/28/2011	10:59:37	0	14.8694	18.025
279	1/28/2011	10:59:38	0	14.874	18.025
280	1/28/2011	10:59:39	0	14.8711	18.025
281	1/28/2011	10:59:40	0	14.8753	18.025
282	1/28/2011	10:59:41	0	14.8777	18.025
283	1/28/2011	10:59:42	0	14.8799	18.025
284	1/28/2011	10:59:43	0	14.8805	18.024
285	1/28/2011	10:59:44	0	14.883	18.025
286	1/28/2011	10:59:45	0	14.8855	16.024
287	1/28/2011	10:59:46	0	14.8854	18.024
288	1/28/2011	10:59:47	0	14.8915	18.024
289	1/28/2011	10:59:46	0	14.8906	18.024
290	1/28/2011	10:59:49	0	14.8925	18.023
291	1/28/2011	10:59:50	0	14.8933	18.023
292	1/28/2011	10:59:51	0	14.898	18.024
293	1/28/2011	10:59:52	0	14.8968	18.024
294	1/28/2011	10:59:53	0	14.8983	18.023
295	1/28/2011	10:59:54	0	14.9015	18.023
296	1/28/2011	10:59:55	0	14.9057	18.023
297	1/28/2011	10:59:56	0	14.9041	18.023
298	1/28/2011	10:59:57	0	14.907	18.023

299	1/28/2011	10:59:58	0	14.9079	18.023
300	1/28/2011	10:59:59	0	14.9097	18.023
301	1/28/2011	11:00:00	0	14.9119	18.023
302	1/28/2011	11:00:05	0	14.9214	18.001
303	1/28/2011	11:00:10	0	14.9322	17.994
304	1/28/2011	11:00:15	0	14.9398	17.989
305	1/28/2011	11:00:20	0	14.9456	17.985
306	1/28/2011	11:00:25	0	14.9582	17.981
307	1/28/2011	11:00:30	0	14.9668	17.977
308	1/28/2011	11:00:35	0	14.9741	17.975
309	1/28/2011	11:00:40	0	14.9831	17.973
310	1/28/2011	11:00:45	0	14.9923	17.97
311	1/28/2011	11:00:50	0	15.0039	17.968
312	1/28/2011	11:00:55	0	15.011	17.967
313	1/28/2011	11:01:00	0	15.0177	17.965
314	1/28/2011	11:01:05	0	15.0256	17.963
315	1/28/2011	11:01:10	0	15.0331	17.963
316	1/28/2011	11:01:15	0	15.0448	17.961
317	1/28/2011	11:01:20	0	15.0493	17.96
318	1/28/2011	11:01:25	0	15.0582	17.959
319	1/28/2011	11:01:30	0	15.0684	17.959
320	1/28/2011	11:01:35	0	15.0749	17.958
321	1/28/2011	11:01:40	0	15.0817	17.958
322	1/28/2011	11:01:45	0	15.089	17.957
323	1/28/2011	11:01:50	0	15.0992	17.956
324	1/28/2011	11:01:55	0	15.1078	17.956
325	1/28/2011	11:02:00	0	15.1144	17.955
326	1/28/2011	11:02:05	0	15.1229	17.955
327	1/28/2011	11:02:10	0	15.1328	17.954
328	1/28/2011	11:02:15	0	15.1331	17.954
329	1/28/2011	11:02:20	0	15.1421	17.954
330	1/28/2011	11:02:25	0	15.1538	17.953
331	1/28/2011	11:02:30	0	15.1576	17.96
332	1/28/2011	11:02:35	0	15.1644	17.956
333	1/28/2011	11:02:40	0	15.1744	17.954
334	1/28/2011	11:02:45	0	15.1802	17.958
335	1/28/2011	11:02:50	0	15.1843	17.956
336	1/28/2011	11:02:55	0	15.1918	17.954
337	1/28/2011	11:03:00	0	15.2022	17.955
338	1/28/2011	11:03:05	0	15.2079	17.955
339	1/28/2011	11:03:10	0	15.2129	17.958
340	1/28/2011	11:03:15	0	15.2198	17.956
341	1/28/2011	11:03:20	0	15.2242	17.954
342	1/28/2011	11:03:25	0	15.2346	17.954
343	1/28/2011	11:03:30	0	15.2413	17.953
344	1/28/2011	11:03:35	0	15.2505	17.954
345	1/28/2011	11:03:40	0	15.2517	17.953
346	1/28/2011	11:03:45	0	15.2611	17.952
347	1/28/2011	11:03:50	0	15.268	17.952
348	1/28/2011	11:03:55	0	15.2764	17.951
349	1/28/2011	11:04:00	0	15.281	17.951
350	1/28/2011	11:04:05	0	15.2852	17.95
351	1/28/2011	11:04:10	0	15.2951	17.95
352	1/28/2011	11:04:15	0	15.3005	17.949
353	1/28/2011	11:04:20	0	15.3064	17.949
354	1/28/2011	11:04:25	0	15.3107	17.949
355	1/28/2011	11:04:30	0	15.316	17.948
356	1/28/2011	11:04:35	0	15.3258	17.948
357	1/28/2011	11:04:40	0	15.3298	17.948
358	1/28/2011	11:04:45	0	15.3344	17.948
359	1/28/2011	11:04:50	0	15.3455	17.947
360	1/28/2011	11:04:55	0	15.352	17.947
361	1/28/2011	11:05:00	0	15.3562	17.96
362	1/28/2011	11:05:05	0	15.3583	17.948
363	1/28/2011	11:05:10	0	15.3674	17.948
364	1/28/2011	11:05:15	0	15.3721	17.947
365	1/28/2011	11:05:20	0	15.3759	17.947
366	1/28/2011	11:05:25	0	15.3819	17.946
367	1/28/2011	11:05:30	0	15.387	17.946
368	1/28/2011	11:05:35	0	15.3966	17.946
369	1/28/2011	11:05:40	0	15.3999	17.946
370	1/28/2011	11:05:45	0	15.4075	17.945
371	1/28/2011	11:05:50	0	15.412	17.945
372	1/28/2011	11:05:55	0	15.4172	17.945
373	1/28/2011	11:06:00	0	15.4216	17.945
374	1/28/2011	11:06:05	0	15.4244	17.945
375	1/28/2011	11:06:10	0	15.4309	17.945
376	1/28/2011	11:06:15	0	15.4368	17.944
377	1/28/2011	11:06:20	0	15.4436	17.945
378	1/28/2011	11:06:25	0	15.4484	17.944
379	1/28/2011	11:06:30	0	15.4515	17.945
380	1/28/2011	11:06:35	0	15.4596	17.945
381	1/28/2011	11:06:40	0	15.4654	17.944
382	1/28/2011	11:06:45	0	15.4659	17.944
383	1/28/2011	11:06:50	0	15.4742	17.944
384	1/28/2011	11:06:55	0	15.4768	17.944
385	1/28/2011	11:07:00	0	15.4862	17.945
386	1/28/2011	11:07:05	0	15.4875	17.944
387	1/28/2011	11:07:10	0	15.4926	17.944
388	1/28/2011	11:07:15	0	15.4964	17.945
389	1/28/2011	11:07:20	0	15.5016	17.945
390	1/28/2011	11:07:25	0	15.5084	17.945
391	1/28/2011	11:07:30	0	15.5131	17.945
392	1/28/2011	11:07:35	0	15.5152	17.945
393	1/28/2011	11:07:40	0	15.5204	17.946
394	1/28/2011	11:07:45	0	15.5245	17.948
395	1/28/2011	11:07:50	0	15.532	17.947
396	1/28/2011	11:07:55	0	15.5374	17.961
397	1/28/2011	11:08:00	0	15.5386	17.949
398	1/28/2011	11:08:05	0	15.5435	17.948
399	1/28/2011	11:08:10	0	15.5484	17.948
400	1/28/2011	11:08:15	0	15.5526	17.949
401	1/28/2011	11:08:20	0	15.5572	17.948
402	1/28/2011	11:08:25	0	15.5599	17.948
403	1/28/2011	11:08:30	0	15.5676	17.948

404	1/28/2011	11:08:35	0	15.5685	17.948
405	1/28/2011	11:08:40	0	15.5749	17.948
406	1/28/2011	11:08:45	0	15.5803	17.948
407	1/28/2011	11:08:50	0	15.5814	17.949
408	1/28/2011	11:08:55	0	15.5868	17.948
409	1/28/2011	11:09:00	0	15.5846	17.948
410	1/28/2011	11:09:05	0	15.5922	17.948
411	1/28/2011	11:09:10	0	15.5968	17.948
412	1/28/2011	11:09:15	0	15.6012	17.948
413	1/28/2011	11:09:20	0	15.6066	17.948
414	1/28/2011	11:09:25	0	15.6095	17.948
415	1/28/2011	11:09:30	0	15.6166	17.948
416	1/28/2011	11:09:35	0	15.6146	17.948
417	1/28/2011	11:09:40	0	15.6218	17.948
418	1/28/2011	11:09:45	0	15.626	17.954
419	1/28/2011	11:09:50	0	15.6275	17.95
420	1/28/2011	11:09:55	0	15.6342	17.949
421	1/28/2011	11:10:00	0	15.6393	17.949
422	1/28/2011	11:10:05	0	15.6361	17.949
423	1/28/2011	11:10:10	0	15.6461	17.949
424	1/28/2011	11:10:15	0	15.6486	17.949
425	1/28/2011	11:10:20	0	15.6534	17.949
426	1/28/2011	11:10:25	0	15.6555	17.949
427	1/28/2011	11:10:30	0	15.6558	17.948
428	1/28/2011	11:10:35	0	15.6639	17.949
429	1/28/2011	11:10:40	0	15.6641	17.948
430	1/28/2011	11:10:45	0	15.6714	17.948
431	1/28/2011	11:10:50	0	15.6727	17.956
432	1/28/2011	11:10:55	0	15.6785	17.95
433	1/28/2011	11:11:00	0	15.6766	17.949
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436	1/28/2011	11:11:15	0	15.6923	17.96
437	1/28/2011	11:11:20	0	15.6932	17.95
438	1/28/2011	11:11:25	0	15.695	17.949
439	1/28/2011	11:11:30	0	15.6965	17.949
440	1/28/2011	11:11:35	0	15.7068	17.948
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442	1/28/2011	11:11:45	0	15.709	17.949
443	1/28/2011	11:11:50	0	15.7141	17.948
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445	1/28/2011	11:12:00	0	15.7183	17.949
446	1/28/2011	11:12:05	0	15.7248	17.949
447	1/28/2011	11:12:10	0	15.7259	17.949
448	1/28/2011	11:12:15	0	15.728	17.948
449	1/28/2011	11:12:20	0	15.7307	17.949
450	1/28/2011	11:12:25	0	15.7349	17.951
451	1/28/2011	11:12:30	0	15.7412	17.95
452	1/28/2011	11:12:35	0	15.7429	17.949
453	1/28/2011	11:12:40	0	15.7402	17.95
454	1/28/2011	11:12:45	0	15.7463	17.949
455	1/28/2011	11:12:50	0	15.7464	17.949
456	1/28/2011	11:12:55	0	15.7505	17.951
457	1/28/2011	11:13:00	0	15.7566	17.949
458	1/28/2011	11:13:05	0	15.7537	17.949
459	1/28/2011	11:13:10	0	15.7598	17.948
460	1/28/2011	11:13:15	0	15.7647	17.948
461	1/28/2011	11:13:20	0	15.7655	17.948
462	1/28/2011	11:13:25	0	15.7703	17.948
463	1/28/2011	11:13:30	0	15.7697	17.953
464	1/28/2011	11:13:35	0	15.7716	17.949
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466	1/28/2011	11:13:45	0	15.7812	17.948
467	1/28/2011	11:13:50	0	15.7836	17.95
468	1/28/2011	11:13:55	0	15.7852	17.949
469	1/28/2011	11:14:00	0	15.7888	17.956
470	1/28/2011	11:14:05	0	15.7892	17.977
471	1/28/2011	11:14:10	0	15.7874	17.952
472	1/28/2011	11:14:15	0	15.7924	17.951
473	1/28/2011	11:14:20	0	15.8003	17.949
474	1/28/2011	11:14:25	0	15.7984	17.949
475	1/28/2011	11:14:30	0	15.8022	17.974
476	1/28/2011	11:14:35	0	15.8097	17.99
477	1/28/2011	11:14:40	0	15.8079	17.998
478	1/28/2011	11:14:45	0	15.8095	17.987
479	1/28/2011	11:14:50	0	15.8156	17.992
480	1/28/2011	11:14:55	0	15.817	17.998
481	1/28/2011	11:15:00	0	15.8167	18.003
482	1/28/2011	11:15:01	0	15.8176	18.012
483	1/28/2011	11:15:02	0	15.8168	18.018
484	1/28/2011	11:15:03	0	15.8191	18.022
485	1/28/2011	11:15:04	0	15.8197	18.025
486	1/28/2011	11:15:05	0	15.8213	18.029
487	1/28/2011	11:15:06	0	15.8214	18.031
488	1/28/2011	11:15:07	0	15.8242	18.033
489	1/28/2011	11:15:08	0	15.8218	18.036
490	1/28/2011	11:15:09	0	15.8225	18.038
491	1/28/2011	11:15:10	0	15.8285	18.04
492	1/28/2011	11:15:11	0	16.0976	18.042
493	1/28/2011	11:15:12	0	16.6562	18.043
494	1/28/2011	11:15:13	0	17.3148	18.046
495	1/28/2011	11:15:14	0	17.9088	18.047
496	1/28/2011	11:15:15	0	17.9434	18.049
497	1/28/2011	11:15:16	0	17.9224	18.05
498	1/28/2011	11:15:17	0	17.8779	18.052
499	1/28/2011	11:15:18	0	17.8899	18.053
500	1/28/2011	11:15:19	0	17.9019	18.054
501	1/28/2011	11:15:20	0	17.8577	18.056
502	1/28/2011	11:15:21	0	17.8887	18.058
503	1/28/2011	11:15:22	0	17.8622	18.059
504	1/28/2011	11:15:23	0	17.8814	18.06
505	1/28/2011	11:15:24	0	17.9948	18.062
506	1/28/2011	11:15:25	0	17.8369	18.063
507	1/28/2011	11:15:26	0	17.8299	18.064
508	1/28/2011	11:15:27	0	17.8246	18.066

509	1/28/2011	11:15:28	0	17.8233	18.067
510	1/28/2011	11:15:29	0	17.8214	18.069
511	1/28/2011	11:15:30	0	17.8147	18.07
512	1/28/2011	11:15:31	0	17.8116	18.071
513	1/28/2011	11:15:32	0	17.8067	18.072
514	1/28/2011	11:15:33	0	17.8053	18.074
515	1/28/2011	11:15:34	0	17.8028	18.075
516	1/28/2011	11:15:35	0	17.7989	18.076
517	1/28/2011	11:15:36	0	17.7945	18.077
518	1/28/2011	11:15:37	0	17.7906	18.079
519	1/28/2011	11:15:38	0	17.7886	18.08
520	1/28/2011	11:15:39	0	17.7885	18.081
521	1/28/2011	11:15:40	0	17.7835	18.082
522	1/28/2011	11:15:41	0	17.7811	18.066
523	1/28/2011	11:15:42	0	17.7756	18.059
524	1/28/2011	11:15:43	0	17.7745	18.054
525	1/28/2011	11:15:44	0	17.7705	18.052
526	1/28/2011	11:15:45	0	17.7649	18.05
527	1/28/2011	11:15:46	0	17.7629	18.048
528	1/28/2011	11:15:47	0	17.761	18.047
529	1/28/2011	11:15:48	0	17.7606	18.046
530	1/28/2011	11:15:49	0	17.7568	18.045
531	1/28/2011	11:15:50	0	17.7535	18.044
532	1/28/2011	11:15:51	0	17.7499	18.043
533	1/28/2011	11:15:52	0	17.7465	18.043
534	1/28/2011	11:15:53	0	17.7424	18.042
535	1/28/2011	11:15:54	0	17.7401	18.042
536	1/28/2011	11:15:55	0	17.7401	18.042
537	1/28/2011	11:15:56	0	17.7332	18.041
538	1/28/2011	11:15:57	0	17.7337	18.04
539	1/28/2011	11:15:58	0	17.7297	18.04
540	1/28/2011	11:15:59	0	17.7249	18.04
541	1/28/2011	11:16:00	0	17.7252	18.039
542	1/28/2011	11:16:01	0	17.7241	18.039
543	1/28/2011	11:16:02	0	17.7202	18.039
544	1/28/2011	11:18:03	0	17.7187	18.038
545	1/28/2011	11:16:04	0	17.7155	18.038
546	1/28/2011	11:16:05	0	17.7121	18.037
547	1/28/2011	11:16:06	0	17.7123	18.036
548	1/28/2011	11:16:07	0	17.708	18.037
549	1/28/2011	11:16:08	0	17.7055	18.036
550	1/28/2011	11:16:09	0	17.7036	18.036
551	1/28/2011	11:16:10	0	17.6999	18.035
552	1/28/2011	11:16:11	0	17.6517	18.035
553	1/28/2011	11:16:12	0	17.6943	18.034
554	1/28/2011	11:16:13	0	17.6872	18.034
555	1/28/2011	11:16:14	0	17.692	18.034
556	1/28/2011	11:16:15	0	17.6875	18.033
557	1/28/2011	11:16:16	0	17.6831	18.033
559	1/28/2011	11:16:17	0	17.6796	18.033
559	1/28/2011	11:16:18	0	17.6795	18.033
560	1/28/2011	11:16:19	0	17.6765	18.033
561	1/28/2011	11:16:20	0	17.6757	18.032
562	1/28/2011	11:16:21	0	17.6672	18.032
563	1/28/2011	11:16:22	0	17.6675	18.031
564	1/28/2011	11:16:23	0	17.6635	18.031
565	1/28/2011	11:16:24	0	17.6637	18.031
566	1/28/2011	11:16:25	0	17.6602	18.031
567	1/28/2011	11:16:26	0	17.6596	18.031
568	1/28/2011	11:16:27	0	17.6563	18.03
569	1/28/2011	11:16:28	0	17.6475	18.03
570	1/28/2011	11:16:29	0	17.6498	18.03
571	1/28/2011	11:16:30	0	17.6497	18.029
572	1/28/2011	11:16:31	0	17.6456	18.029
573	1/28/2011	11:16:32	0	17.6435	18.029
574	1/28/2011	11:16:33	0	17.6394	18.028
575	1/28/2011	11:16:34	0	17.639	18.029
576	1/28/2011	11:16:35	0	17.6386	18.028
577	1/28/2011	11:16:36	0	17.6333	18.028
578	1/28/2011	11:16:37	0	17.6318	18.026
579	1/28/2011	11:16:38	0	17.6275	18.027
580	1/28/2011	11:16:39	0	17.625	18.027
581	1/28/2011	11:16:40	0	17.6228	18.027
582	1/28/2011	11:16:41	0	17.6224	18.027
583	1/28/2011	11:16:42	0	17.6195	18.026
584	1/28/2011	11:16:43	0	17.6201	18.026
585	1/28/2011	11:16:44	0	17.6121	18.026
586	1/28/2011	11:16:45	0	17.6128	18.026
587	1/28/2011	11:16:46	0	17.6099	18.025
588	1/28/2011	11:16:47	0	17.608	18.025
589	1/28/2011	11:16:48	0	17.6054	18.025
590	1/28/2011	11:16:49	0	17.6019	18.025
591	1/28/2011	11:16:50	0	17.6	18.025
592	1/28/2011	11:16:51	0	17.5983	18.025
593	1/28/2011	11:16:52	0	17.596	18.024
594	1/28/2011	11:16:53	0	17.597	18.024
595	1/28/2011	11:16:54	0	17.5917	18.024
596	1/28/2011	11:16:55	0	17.5903	18.023
597	1/28/2011	11:16:56	0	17.5906	18.023
598	1/28/2011	11:16:57	0	17.5886	18.023
599	1/28/2011	11:16:58	0	17.584	18.023
600	1/28/2011	11:16:59	0	17.5833	18.023
601	1/28/2011	11:17:00	0	17.5765	18.023
602	1/28/2011	11:17:01	0	17.5761	18.023
603	1/28/2011	11:17:02	0	17.5742	18.023
604	1/28/2011	11:17:03	0	17.5706	18.023
605	1/28/2011	11:17:04	0	17.5673	18.023
606	1/28/2011	11:17:05	0	17.5674	18.022
607	1/28/2011	11:17:06	0	17.5656	18.022
608	1/28/2011	11:17:07	0	17.5643	18.022
609	1/28/2011	11:17:08	0	17.5622	18.022
610	1/28/2011	11:17:09	0	17.5587	18.022
611	1/28/2011	11:17:10	0	17.5555	18.022
612	1/28/2011	11:17:11	0	17.5548	18.021
613	1/28/2011	11:17:12	0	17.5538	18.021

614	1/28/2011	11:17:13	0	17.5514	18.021
615	1/28/2011	11:17:14	0	17.5481	18.021
616	1/28/2011	11:17:15	0	17.5473	18.021
617	1/28/2011	11:17:16	0	17.5409	18.021
618	1/28/2011	11:17:17	0	17.5425	18.021
619	1/28/2011	11:17:18	0	17.54	18.021
620	1/28/2011	11:17:19	0	17.5377	18.02
621	1/28/2011	11:17:20	0	17.5359	18.021
622	1/28/2011	11:17:21	0	17.5339	18.021
623	1/28/2011	11:17:22	0	17.528	18.02
624	1/28/2011	11:17:23	0	17.528	18.021
625	1/28/2011	11:17:24	0	17.5262	18.021
626	1/28/2011	11:17:25	0	17.5262	18.019
627	1/28/2011	11:17:26	0	17.5195	18.02
628	1/28/2011	11:17:27	0	17.5212	18.02
629	1/28/2011	11:17:28	0	17.5173	18.02
630	1/28/2011	11:17:29	0	17.5143	18.019
631	1/28/2011	11:17:30	0	17.5135	18.02
632	1/28/2011	11:17:31	0	17.5116	18.019
633	1/28/2011	11:17:32	0	17.5056	18.019
634	1/28/2011	11:17:33	0	17.5033	18.02
635	1/28/2011	11:17:34	0	17.5041	18.02
636	1/28/2011	11:17:35	0	17.5029	18.019
637	1/28/2011	11:17:36	0	17.5016	18.019
638	1/28/2011	11:17:37	0	17.4969	18.019
639	1/28/2011	11:17:38	0	17.4982	18.019
640	1/28/2011	11:17:39	0	17.4939	18.019
641	1/28/2011	11:17:40	0	17.4932	18.019
642	1/28/2011	11:17:41	0	17.4921	18.019
643	1/28/2011	11:17:42	0	17.4857	18.019
644	1/28/2011	11:17:43	0	17.484	18.018
645	1/28/2011	11:17:44	0	17.495	18.019
646	1/28/2011	11:17:45	0	17.4791	18.019
647	1/28/2011	11:17:46	0	17.4802	18.019
648	1/28/2011	11:17:47	0	17.4798	18.019
649	1/28/2011	11:17:48	0	17.4768	18.019
650	1/28/2011	11:17:49	0	17.4713	18.019
651	1/28/2011	11:17:50	0	17.4704	18.019
652	1/28/2011	11:17:51	0	17.4693	18.018
653	1/28/2011	11:17:52	0	17.4678	18.018
654	1/28/2011	11:17:53	0	17.4657	18.019
655	1/28/2011	11:17:54	0	17.4658	18.019
656	1/28/2011	11:17:55	0	17.4606	18.018
657	1/28/2011	11:17:56	0	17.4598	18.018
658	1/28/2011	11:17:57	0	17.4576	18.018
659	1/28/2011	11:17:58	0	17.457	18.018
660	1/28/2011	11:17:59	0	17.4527	18.019
661	1/28/2011	11:18:00	0	17.4506	18.018
662	1/28/2011	11:16:01	0	17.4507	18.019
663	1/29/2011	11:18:02	0	17.4518	18.018
664	1/28/2011	11:18:03	0	17.4488	18.019
665	1/28/2011	11:18:04	0	17.4456	18.018
666	1/28/2011	11:18:05	0	17.4408	18.018
667	1/28/2011	11:18:06	0	17.4389	18.018
668	1/28/2011	11:18:07	0	17.4383	18.018
669	1/28/2011	11:18:08	0	17.4336	18.019
670	1/28/2011	11:18:09	0	17.4346	18.019
671	1/28/2011	11:18:10	0	17.4339	18.018
672	1/28/2011	11:18:11	0	17.4292	18.018
673	1/28/2011	11:18:12	0	17.4273	18.018
674	1/28/2011	11:18:13	0	17.4287	18.018
675	1/28/2011	11:18:14	0	17.4227	18.018
676	1/28/2011	11:18:15	0	17.4223	18.018
677	1/28/2011	11:18:16	0	17.4185	18.018
678	1/28/2011	11:18:17	0	17.4165	18.018
679	1/28/2011	11:18:18	0	17.4152	18.018
680	1/28/2011	11:18:19	0	17.4134	18.018
681	1/28/2011	11:18:20	0	17.4135	18.018
682	1/28/2011	11:18:21	0	17.4122	18.017
683	1/28/2011	11:18:22	0	17.4117	18.018
684	1/28/2011	11:18:23	0	17.4071	18.018
685	1/28/2011	11:18:24	0	17.4037	18.018
686	1/28/2011	11:18:25	0	17.4037	18.018
687	1/28/2011	11:16:26	0	17.3995	18.018
688	1/28/2011	11:18:27	0	17.399	18.019
689	1/28/2011	11:18:28	0	17.3966	18.018
690	1/28/2011	11:18:29	0	17.3962	18.018
691	1/28/2011	11:18:30	0	17.3911	18.018
692	1/28/2011	11:18:31	0	17.3876	18.017
693	1/28/2011	11:18:32	0	17.3889	18.018
694	1/28/2011	11:18:33	0	17.3863	18.018
695	1/28/2011	11:18:34	0	17.3864	18.018
696	1/28/2011	11:18:35	0	17.3822	18.018
697	1/28/2011	11:18:36	0	17.3824	18.018
698	1/28/2011	11:18:37	0	17.3791	18.018
699	1/28/2011	11:18:38	0	17.379	18.018
700	1/28/2011	11:18:39	0	17.3755	18.018
701	1/28/2011	11:18:40	0	17.3731	18.018
702	1/28/2011	11:18:41	0	17.373	18.018
703	1/28/2011	11:18:42	0	17.3702	18.018
704	1/28/2011	11:18:43	0	17.3694	18.018
705	1/28/2011	11:18:44	0	17.3629	18.018
706	1/28/2011	11:18:45	0	17.3627	18.018
707	1/28/2011	11:18:46	0	17.3651	18.018
708	1/28/2011	11:18:47	0	17.3595	18.018
709	1/28/2011	11:18:48	0	17.3575	18.018
710	1/28/2011	11:18:49	0	17.3556	18.018
711	1/28/2011	11:18:50	0	17.3549	18.018
712	1/28/2011	11:18:51	0	17.3535	18.018
713	1/28/2011	11:18:52	0	17.3501	18.018
714	1/28/2011	11:18:53	0	17.3501	18.017
715	1/26/2011	11:18:54	0	17.348	18.018
716	1/28/2011	11:18:55	0	17.3472	18.018
717	1/28/2011	11:18:56	0	17.3429	18.018
718	1/28/2011	11:18:57	0	17.3436	18.018

719	1/28/2011	11:18:58	0	17.3419	18.018
720	1/28/2011	11:18:59	0	17.338	18.018
721	1/28/2011	11:19:00	0	17.3402	18.018
722	1/28/2011	11:19:01	0	17.3347	18.018
723	1/28/2011	11:19:02	0	17.3306	18.018
724	1/28/2011	11:19:03	0	17.3311	18.018
725	1/28/2011	11:19:04	0	17.3298	18.018
726	1/28/2011	11:19:05	0	17.3268	18.019
727	1/28/2011	11:19:06	0	17.3262	18.018
728	1/28/2011	11:19:07	0	17.3251	18.017
729	1/28/2011	11:19:08	0	17.3199	18.018
730	1/28/2011	11:19:09	0	17.3205	18.018
731	1/28/2011	11:19:10	0	17.3184	18.017
732	1/28/2011	11:19:11	0	17.3194	18.018
733	1/28/2011	11:19:12	0	17.3151	18.018
734	1/28/2011	11:19:13	0	17.3152	18.018
735	1/28/2011	11:19:14	0	17.3084	18.018
736	1/28/2011	11:19:15	0	17.3089	18.019
737	1/28/2011	11:19:16	0	17.3048	18.018
738	1/28/2011	11:19:17	0	17.3053	18.018
739	1/28/2011	11:19:18	0	17.3046	18.018
740	1/28/2011	11:19:19	0	17.3009	18.018
741	1/28/2011	11:19:20	0	17.2994	18.018
742	1/28/2011	11:19:21	0	17.2983	18.018
743	1/28/2011	11:19:22	0	17.2957	18.018
744	1/28/2011	11:19:23	0	17.2957	18.018
745	1/28/2011	11:19:24	0	17.2942	18.018
746	1/28/2011	11:19:25	0	17.2924	18.018
747	1/28/2011	11:19:26	0	17.2925	18.018
748	1/28/2011	11:19:27	0	17.2886	18.018
749	1/28/2011	11:19:28	0	17.2855	18.018
750	1/28/2011	11:19:29	0	17.2842	18.018
751	1/28/2011	11:19:30	0	17.2857	18.018
752	1/28/2011	11:19:31	0	17.2803	18.018
753	1/28/2011	11:19:32	0	17.2776	18.018
754	1/28/2011	11:19:33	0	17.2802	18.017
755	1/28/2011	11:19:34	0	17.2762	18.018
756	1/28/2011	11:19:35	0	17.2762	18.018
757	1/28/2011	11:19:36	0	17.2742	18.017
758	1/28/2011	11:19:37	0	17.2717	18.018
759	1/28/2011	11:19:38	0	17.2711	18.018
760	1/28/2011	11:19:39	0	17.2674	18.018
761	1/28/2011	11:19:40	0	17.2677	18.018
762	1/28/2011	11:19:41	0	17.262	18.017
763	1/28/2011	11:19:42	0	17.2632	18.018
764	1/28/2011	11:19:43	0	17.2607	18.018
765	1/28/2011	11:19:44	0	17.2608	18.018
766	1/28/2011	11:19:45	0	17.2556	18.018
767	1/28/2011	11:19:46	0	17.2552	18.018
768	1/28/2011	11:19:47	0	17.2566	18.018
769	1/28/2011	11:19:48	0	17.2512	18.018
770	1/28/2011	11:19:49	0	17.2511	18.018
771	1/28/2011	11:19:50	0	17.2479	18.018
772	1/28/2011	11:19:51	0	17.2455	18.018
773	1/28/2011	11:19:52	0	17.2459	18.018
774	1/28/2011	11:19:53	0	17.2444	18.018
775	1/28/2011	11:19:54	0	17.2415	18.017
776	1/28/2011	11:19:55	0	17.24	18.017
777	1/28/2011	11:19:56	0	17.2397	18.018
778	1/28/2011	11:19:57	0	17.2366	18.018
779	1/28/2011	11:19:58	0	17.2348	18.018
780	1/28/2011	11:19:59	0	17.2337	18.019
781	1/28/2011	11:20:00	0	17.2323	18.018
782	1/28/2011	11:20:05	0	17.2202	17.996
783	1/28/2011	11:20:10	0	17.2147	17.99
784	1/28/2011	11:20:15	0	17.2105	17.984
785	1/28/2011	11:20:20	0	17.1975	17.981
786	1/28/2011	11:20:25	0	17.1904	17.978
787	1/28/2011	11:20:30	0	17.1817	17.975
788	1/28/2011	11:20:35	0	17.175	17.972
789	1/28/2011	11:20:40	0	17.1691	17.969
790	1/28/2011	11:20:45	0	17.1574	17.968
791	1/28/2011	11:20:50	0	17.1528	17.966
792	1/28/2011	11:20:55	0	17.1457	17.965
793	1/28/2011	11:21:00	0	17.1353	17.963
794	1/28/2011	11:21:05	0	17.1305	17.962
795	1/28/2011	11:21:10	0	17.121	17.961
796	1/28/2011	11:21:15	0	17.1124	17.959
797	1/28/2011	11:21:20	0	17.1076	17.958
798	1/28/2011	11:21:25	0	17.0986	17.958
799	1/28/2011	11:21:30	0	17.0898	17.956
800	1/28/2011	11:21:35	0	17.0861	17.956
801	1/28/2011	11:21:40	0	17.0756	17.955
802	1/28/2011	11:21:45	0	17.0682	17.954
803	1/28/2011	11:21:50	0	17.0613	17.954
804	1/28/2011	11:21:55	0	17.0549	17.954
805	1/28/2011	11:22:00	0	17.0448	17.953
806	1/28/2011	11:22:05	0	17.0399	17.953
807	1/28/2011	11:22:10	0	17.0349	17.952
808	1/28/2011	11:22:15	0	17.042	17.952
809	1/28/2011	11:22:20	0	17.0218	17.951
810	1/28/2011	11:22:25	0	17.0132	17.951
811	1/28/2011	11:22:30	0	17.0109	17.954
812	1/28/2011	11:22:35	0	17.0026	17.952
813	1/28/2011	11:22:40	0	16.9944	17.952
814	1/28/2011	11:22:45	0	16.9915	17.951
815	1/28/2011	11:22:50	0	16.9835	17.951
816	1/28/2011	11:22:55	0	16.9736	17.967
817	1/28/2011	11:23:00	0	16.9706	17.953
818	1/28/2011	11:23:05	0	16.9627	17.952
819	1/28/2011	11:23:10	0	16.9551	17.952
820	1/28/2011	11:23:15	0	16.9487	17.951
821	1/28/2011	11:23:20	0	16.9423	17.951
822	1/28/2011	11:23:25	0	16.9373	17.951
823	1/28/2011	11:23:30	0	16.9292	17.951

824	1/28/2011	11:23:35	0	16.9264	17.95
825	1/28/2011	11:23:40	0	16.9173	17.95
826	1/28/2011	11:23:45	0	16.916	17.95
827	1/28/2011	11:23:50	0	16.9066	17.949
828	1/28/2011	11:23:55	0	16.902	17.949
829	1/28/2011	11:24:00	0	16.8936	17.948
830	1/28/2011	11:24:05	0	16.8884	17.948
831	1/28/2011	11:24:10	0	16.8833	17.948
832	1/28/2011	11:24:15	0	16.8795	17.948
833	1/28/2011	11:24:20	0	16.8699	17.947
834	1/28/2011	11:24:25	0	16.8655	17.947
835	1/28/2011	11:24:30	0	16.8612	17.947
836	1/28/2011	11:24:35	0	16.8563	17.947
837	1/28/2011	11:24:40	0	16.8507	17.947
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839	1/28/2011	11:24:50	0	16.8384	17.946
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842	1/28/2011	11:25:05	0	16.824	17.946
843	1/28/2011	11:25:10	0	16.8199	17.946
844	1/28/2011	11:25:15	0	16.8124	17.949
845	1/28/2011	11:25:20	0	16.8077	17.947
846	1/28/2011	11:25:25	0	16.8	17.946
847	1/28/2011	11:25:30	0	16.7963	17.946
848	1/28/2011	11:25:35	0	16.793	17.947
849	1/28/2011	11:25:40	0	16.7858	17.946
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851	1/28/2011	11:25:50	0	16.7773	17.946
852	1/28/2011	11:25:55	0	16.773	17.945
853	1/28/2011	11:26:00	0	16.7694	17.946
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855	1/28/2011	11:26:10	0	16.7576	17.946
856	1/28/2011	11:26:15	0	16.7526	17.946
857	1/28/2011	11:26:20	0	16.7489	17.945
858	1/28/2011	11:26:25	0	16.7458	17.96
859	1/28/2011	11:26:30	0	16.7385	17.947
860	1/28/2011	11:26:35	0	16.7322	17.946
861	1/28/2011	11:26:40	0	16.7271	17.946
862	1/28/2011	11:26:45	0	16.7236	17.946
863	1/28/2011	11:26:50	0	16.7195	17.946
864	1/28/2011	11:26:55	0	16.7183	17.946
865	1/28/2011	11:27:00	0	16.7123	17.946
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868	1/28/2011	11:27:15	0	16.6979	17.946
869	1/28/2011	11:27:20	0	16.6956	17.946
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872	1/28/2011	11:27:35	0	16.6806	17.948
873	1/28/2011	11:27:40	0	16.6776	17.948
874	1/28/2011	11:27:45	0	16.6752	17.948
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876	1/28/2011	11:27:55	0	16.6634	17.949
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894	1/28/2011	11:29:25	0	16.5963	17.952
895	1/28/2011	11:29:30	0	16.5936	17.952
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897	1/28/2011	11:29:40	0	16.5892	17.952
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907	1/28/2011	11:30:30	0	16.5515	17.955
908	1/28/2011	11:30:35	0	16.5483	17.955
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917	1/28/2011	11:31:20	0	16.5223	17.956
918	1/28/2011	11:31:25	0	16.5194	17.957
919	1/28/2011	11:31:30	0	16.5166	17.957
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921	1/28/2011	11:31:40	0	16.513	17.958
922	1/28/2011	11:31:45	0	16.5084	17.958
923	1/28/2011	11:31:50	0	16.5047	17.958
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927	1/28/2011	11:32:10	0	16.4937	17.958
928	1/28/2011	11:32:15	0	16.4899	17.961

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942	1/28/2011	11:33:25	0	16.4565	17.958
943	1/28/2011	11:33:30	0	16.4517	17.958
944	1/28/2011	11:33:35	0	16.451	17.958
945	1/28/2011	11:33:40	0	16.4442	17.958
946	1/28/2011	11:33:45	0	16.4443	17.958
947	1/28/2011	11:33:50	0	16.4416	17.963
948	1/28/2011	11:33:55	0	16.4384	17.959
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955	1/28/2011	11:34:30	0	16.421	17.959
956	1/28/2011	11:34:35	0	16.4225	17.959
957	1/28/2011	11:34:40	0	16.4189	17.971
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964	1/28/2011	11:35:03	0	16.4107	18.037
965	1/28/2011	11:35:04	0	16.4136	18.04
966	1/28/2011	11:35:05	0	16.411	18.043
967	1/28/2011	11:35:06	0	16.4105	18.047
968	1/28/2011	11:35:07	0	16.2111	18.047
969	1/28/2011	11:35:08	0	16.561	18.05
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972	1/28/2011	11:35:11	0	16.284	18.055
973	1/28/2011	11:35:12	0	16.4065	18.055
974	1/28/2011	11:35:13	0	16.3803	18.059
975	1/28/2011	11:35:14	0	15.761	18.059
976	1/28/2011	11:35:15	0	15.172	18.064
977	1/28/2011	11:35:16	0	14.5738	18.064
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979	1/28/2011	11:35:18	0	14.3313	18.042
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982	1/28/2011	11:35:21	0	14.3474	18.056
983	1/28/2011	11:35:22	0	14.3464	18.058
984	1/28/2011	11:35:23	0	14.3543	18.058
985	1/28/2011	11:35:24	0	14.3609	18.06
986	1/28/2011	11:35:25	0	14.3625	18.061
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988	1/28/2011	11:35:27	0	14.3755	18.063
989	1/28/2011	11:35:28	0	14.3788	18.064
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991	1/28/2011	11:35:30	0	14.3837	18.066
992	1/28/2011	11:35:31	0	14.3855	18.068
993	1/28/2011	11:35:32	0	14.3913	18.069
994	1/28/2011	11:35:33	0	14.3958	18.07
995	1/28/2011	11:35:34	0	14.399	18.071
996	1/28/2011	11:35:35	0	14.3996	18.073
997	1/28/2011	11:35:36	0	14.4063	18.073
998	1/28/2011	11:35:37	0	14.4069	18.075
999	1/28/2011	11:35:38	0	14.4108	18.076
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1002	1/28/2011	11:35:41	0	14.4198	18.079
1003	1/28/2011	11:35:42	0	14.4245	18.081
1004	1/28/2011	11:35:43	0	14.428	18.08
1005	1/28/2011	11:35:44	0	14.4306	18.082
1006	1/28/2011	11:35:45	0	14.4335	18.083
1007	1/28/2011	11:35:46	0	14.4389	18.083
1008	1/28/2011	11:35:47	0	14.441	18.085
1009	1/28/2011	11:35:48	0	14.4427	18.086
1010	1/28/2011	11:35:49	0	14.4464	18.086
1011	1/28/2011	11:35:50	0	14.4473	18.088
1012	1/28/2011	11:35:51	0	14.4509	18.089
1013	1/28/2011	11:35:52	0	14.4579	18.09
1014	1/28/2011	11:35:53	0	14.4572	18.09
1015	1/28/2011	11:35:54	0	14.4635	18.091
1016	1/28/2011	11:35:55	0	14.4618	18.092
1017	1/28/2011	11:35:56	0	14.4668	18.093
1018	1/28/2011	11:35:57	0	14.4692	18.094
1019	1/28/2011	11:35:58	0	14.4725	18.094
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1023	1/28/2011	11:36:02	0	14.4831	18.098
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1025	1/28/2011	11:36:04	0	14.4871	18.1
1026	1/28/2011	11:36:05	0	14.4894	18.101
1027	1/28/2011	11:36:06	0	14.4977	18.102
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1035	1/28/2011	11:36:14	0	14.5171	18.108
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1037	1/28/2011	11:36:16	0	14.524	18.11
1038	1/28/2011	11:36:17	0	14.5272	18.088
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1044	1/28/2011	11:36:23	0	14.5433	18.104
1045	1/28/2011	11:36:24	0	14.5461	18.104
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1047	1/28/2011	11:36:26	0	14.5524	18.105
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1050	1/28/2011	11:36:29	0	14.5625	18.106
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1056	1/28/2011	11:36:35	0	14.5711	18.11
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1059	1/28/2011	11:36:38	0	14.5803	18.112
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1061	1/28/2011	11:36:40	0	14.5861	18.113
1062	1/28/2011	11:36:41	0	14.5873	18.113
1063	1/28/2011	11:36:42	0	14.5937	18.114
1064	1/28/2011	11:36:43	0	14.5938	18.115
1065	1/28/2011	11:36:44	0	14.5967	18.115
1066	1/28/2011	11:36:45	0	14.5966	18.115
1067	1/28/2011	11:36:46	0	14.6051	18.117
1068	1/28/2011	11:36:47	0	14.6041	18.117
1069	1/28/2011	11:36:48	0	14.6083	18.118
1070	1/28/2011	11:36:49	0	14.6128	18.118
1071	1/28/2011	11:36:50	0	14.6095	18.119
1072	1/28/2011	11:36:51	0	14.6168	18.121
1073	1/28/2011	11:36:52	0	14.619	18.097
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1075	1/28/2011	11:36:54	0	14.6198	18.109
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1077	1/28/2011	11:36:56	0	14.6289	18.11
1078	1/28/2011	11:36:57	0	14.6302	18.11
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1090	1/28/2011	11:37:09	0	14.6611	18.116
1091	1/28/2011	11:37:10	0	14.6628	18.116
1092	1/28/2011	11:37:11	0	14.6675	18.117
1093	1/28/2011	11:37:12	0	14.6692	18.117
1094	1/28/2011	11:37:13	0	14.6719	18.117
1095	1/28/2011	11:37:14	0	14.6746	18.118
1096	1/28/2011	11:37:15	0	14.6727	18.119
1097	1/28/2011	11:37:16	0	14.6786	18.12
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1099	1/28/2011	11:37:18	0	14.6832	18.12
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1102	1/28/2011	11:37:21	0	14.6911	18.121
1103	1/28/2011	11:37:22	0	14.6914	18.122
1104	1/28/2011	11:37:23	0	14.697	18.123
1105	1/28/2011	11:37:24	0	14.6969	18.123
1106	1/28/2011	11:37:25	0	14.6973	18.123
1107	1/28/2011	11:37:26	0	14.7004	18.124
1108	1/28/2011	11:37:27	0	14.7081	18.125
1109	1/28/2011	11:37:28	0	14.7067	18.102
1110	1/28/2011	11:37:29	0	14.7085	18.102
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1112	1/28/2011	11:37:31	0	14.7124	18.119
1113	1/28/2011	11:37:32	0	14.7157	18.117
1114	1/28/2011	11:37:33	0	14.7173	18.116
1115	1/28/2011	11:37:34	0	14.7206	18.116
1116	1/28/2011	11:37:35	0	14.7238	18.116
1117	1/28/2011	11:37:36	0	14.7266	18.117
1118	1/28/2011	11:37:37	0	14.7298	18.117
1119	1/28/2011	11:37:38	0	14.7286	18.118
1120	1/28/2011	11:37:39	0	14.7315	18.118
1121	1/28/2011	11:37:40	0	14.7343	18.118
1122	1/28/2011	11:37:41	0	14.7324	18.118
1123	1/28/2011	11:37:42	0	14.7394	18.119
1124	1/28/2011	11:37:43	0	14.739	18.119
1125	1/28/2011	11:37:44	0	14.744	18.12
1126	1/28/2011	11:37:45	0	14.7467	18.12
1127	1/28/2011	11:37:46	0	14.7468	18.121
1128	1/28/2011	11:37:47	0	14.7487	18.121
1129	1/28/2011	11:37:48	0	14.7501	18.121
1130	1/28/2011	11:37:49	0	14.7556	18.122
1131	1/28/2011	11:37:50	0	14.7576	18.122
1132	1/28/2011	11:37:51	0	14.759	18.122
1133	1/28/2011	11:37:52	0	14.7599	18.123
1134	1/28/2011	11:37:53	0	14.7625	18.123
1135	1/28/2011	11:37:54	0	14.7646	18.123
1136	1/28/2011	11:37:55	0	14.7679	18.124
1137	1/28/2011	11:37:56	0	14.7711	18.125
1138	1/28/2011	11:37:57	0	14.7739	18.125

1139	1/28/2011	11:37:58	0	14.7743	18.126
1140	1/28/2011	11:37:59	0	14.7767	18.126
1141	1/28/2011	11:38:00	0	14.7775	18.127
1142	1/28/2011	11:38:01	0	14.7807	18.128
1143	1/28/2011	11:38:02	0	14.782	18.128
1144	1/28/2011	11:38:03	0	14.7876	18.129
1145	1/28/2011	11:38:04	0	14.7884	18.13
1146	1/28/2011	11:38:05	0	14.7904	18.13
1147	1/28/2011	11:38:06	0	14.7943	18.13
1148	1/28/2011	11:38:07	0	14.7953	18.131
1149	1/28/2011	11:38:08	0	14.7964	18.128
1150	1/28/2011	11:38:09	0	14.7968	18.129
1151	1/28/2011	11:38:10	0	14.8027	18.13
1152	1/28/2011	11:38:11	0	14.8036	18.133
1153	1/28/2011	11:38:12	0	14.8062	18.129
1154	1/28/2011	11:38:13	0	14.8065	18.127
1155	1/28/2011	11:38:14	0	14.8087	18.128
1156	1/28/2011	11:38:15	0	14.8112	18.13
1157	1/28/2011	11:38:16	0	14.8141	18.13
1158	1/28/2011	11:38:17	0	14.8159	18.116
1159	1/28/2011	11:38:18	0	14.817	18.115
1160	1/28/2011	11:38:19	0	14.819	18.115
1161	1/28/2011	11:38:20	0	14.8189	18.115
1162	1/28/2011	11:38:21	0	14.8222	18.115
1163	1/28/2011	11:38:22	0	14.8249	18.115
1164	1/28/2011	11:38:23	0	14.8288	18.115
1165	1/28/2011	11:38:24	0	14.8302	18.115
1166	1/28/2011	11:38:25	0	14.8321	18.106
1167	1/28/2011	11:38:26	0	14.8349	18.126
1168	1/28/2011	11:38:27	0	14.8375	18.12
1169	1/28/2011	11:38:28	0	14.8395	18.118
1170	1/28/2011	11:38:29	0	14.8401	18.117
1171	1/28/2011	11:38:30	0	14.8404	18.117
1172	1/28/2011	11:38:31	0	14.8429	18.117
1173	1/28/2011	11:38:32	0	14.8474	18.117
1174	1/28/2011	11:38:33	0	14.8486	18.118
1175	1/28/2011	11:38:34	0	14.8488	18.118
1176	1/28/2011	11:38:35	0	14.8531	18.118
1177	1/28/2011	11:38:36	0	14.8559	18.118
1178	1/28/2011	11:38:37	0	14.8575	18.118
1179	1/28/2011	11:38:38	0	14.8588	18.118
1180	1/28/2011	11:38:39	0	14.8635	18.119
1181	1/28/2011	11:38:40	0	14.8629	18.119
1182	1/28/2011	11:38:41	0	14.8665	18.119
1183	1/28/2011	11:38:42	0	14.8638	18.119
1184	1/28/2011	11:38:43	0	14.8705	18.12
1185	1/28/2011	11:38:44	0	14.8691	18.12
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1187	1/28/2011	11:38:46	0	14.874	18.121
1188	1/28/2011	11:38:47	0	14.8785	18.121
1189	1/28/2011	11:38:48	0	14.8757	18.121
1190	1/28/2011	11:38:49	0	14.8809	18.122
1191	1/28/2011	11:38:50	0	14.8844	18.122
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1193	1/28/2011	11:38:52	0	14.8864	18.123
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1195	1/28/2011	11:38:54	0	14.8913	18.123
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1197	1/28/2011	11:38:56	0	14.8965	18.124
1198	1/28/2011	11:38:57	0	14.8973	18.124
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1215	1/28/2011	11:39:14	0	14.9308	18.131
1216	1/28/2011	11:39:15	0	14.9307	18.132
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1223	1/28/2011	11:39:22	0	14.9455	18.133
1224	1/28/2011	11:39:23	0	14.9464	18.131
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1232	1/28/2011	11:39:31	0	14.9621	18.117
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1254	1/28/2011	11:39:53	0	15.0044	18.091
1255	1/28/2011	11:39:54	0	15.0028	18.088
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1258	1/28/2011	11:39:57	0	15.0087	18.085
1259	1/28/2011	11:39:58	0	15.0096	18.083
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1271	1/28/2011	11:40:50	0	15.0981	18.012
1272	1/28/2011	11:40:55	0	15.1054	17.995
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1281	1/28/2011	11:41:40	0	15.1771	17.973
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1284	1/28/2011	11:41:55	0	15.1961	17.969
1285	1/28/2011	11:42:00	0	15.2058	17.967
1286	1/28/2011	11:42:05	0	15.2108	17.966
1287	1/28/2011	11:42:10	0	15.218	17.965
1288	1/28/2011	11:42:15	0	15.2265	17.964
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1290	1/28/2011	11:42:25	0	15.2388	17.965
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1292	1/28/2011	11:42:35	0	15.256	17.961
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1309	1/28/2011	11:44:00	0	15.3631	17.954
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1312	1/28/2011	11:44:15	0	15.3788	17.955
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1415	1/28/2011	11:52:50	0	15.797	17.949
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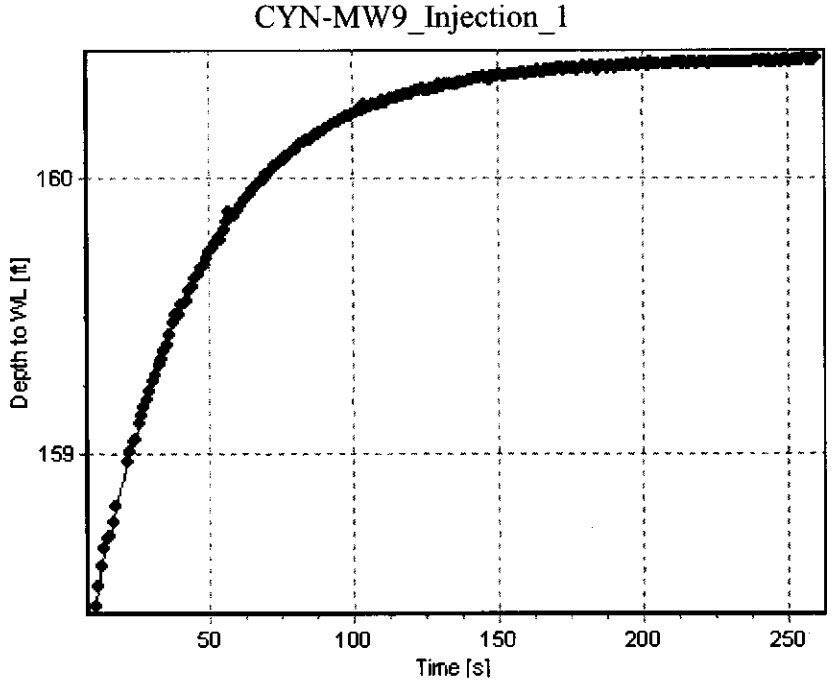
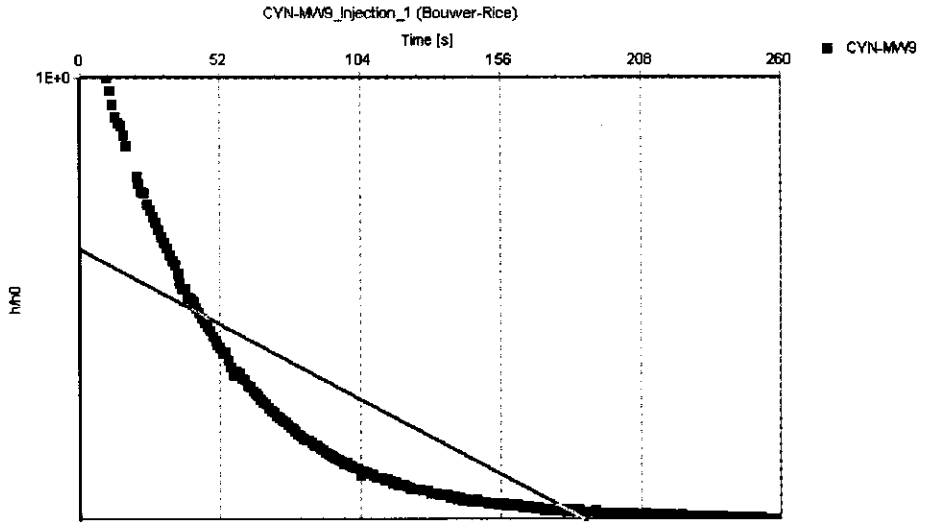
1433	1/28/2011	11:54:20	0	15.8407	17.945
1434	1/28/2011	11:54:25	0	15.8438	17.945
1435	1/28/2011	11:54:30	0	15.8477	17.946
1436	1/28/2011	11:54:35	0	15.8491	17.945
1437	1/28/2011	11:54:40	0	15.8514	17.945
1438	1/28/2011	11:54:45	0	15.8533	17.944
1439	1/28/2011	11:54:50	0	15.8561	17.945
1440	1/28/2011	11:54:55	0	15.8593	17.945
1441	1/28/2011	11:55:00	0	15.8631	17.944

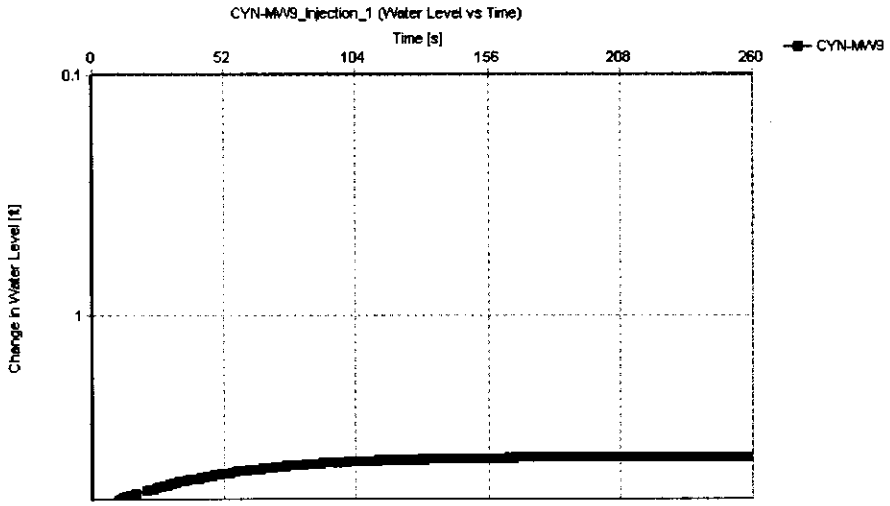
Technical Memorandum—Field Report
Slug Tests at Burn Site Groundwater Study Area
Groundwater Monitoring Wells

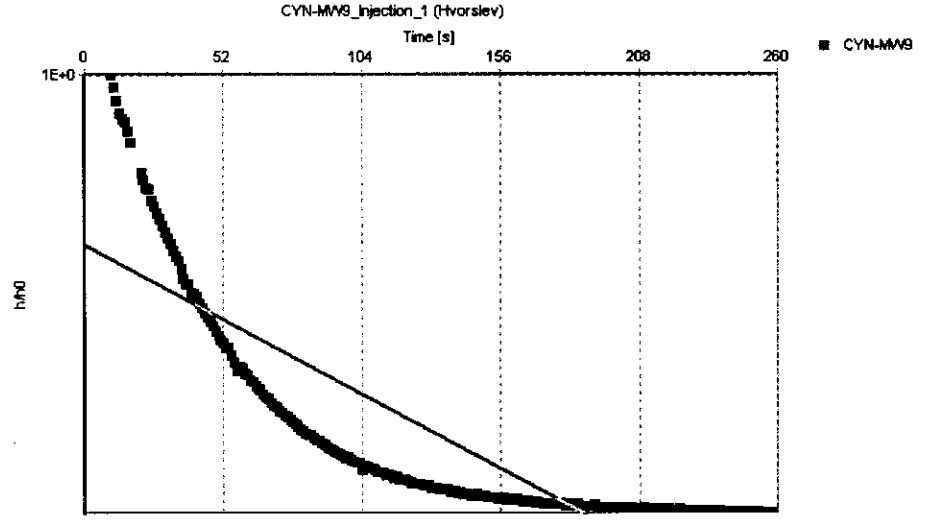
Attachment B
AquiferTest™ Water Level versus Time Plots and Analytical Solutions
for
CYN-MW9
CYN-MW10
CYN-MW11
CYN-MW12



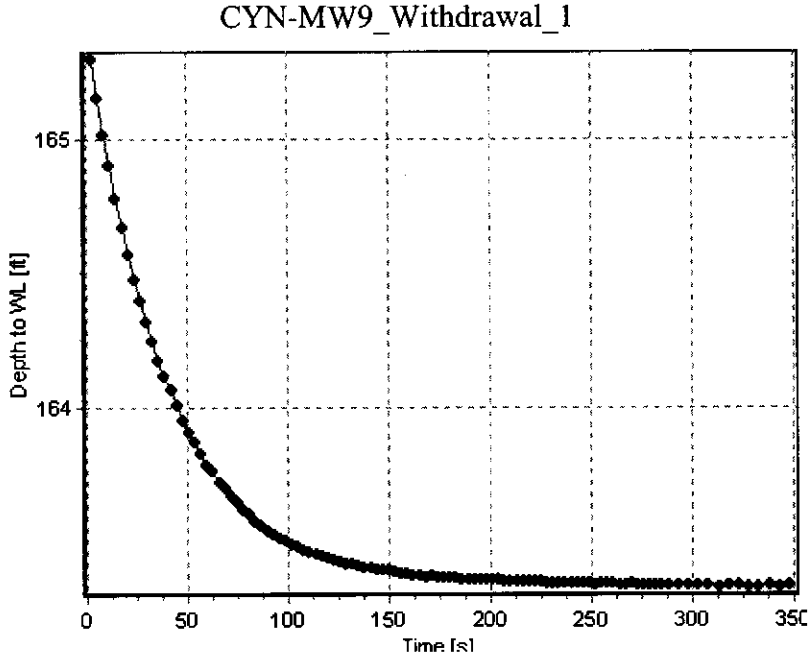


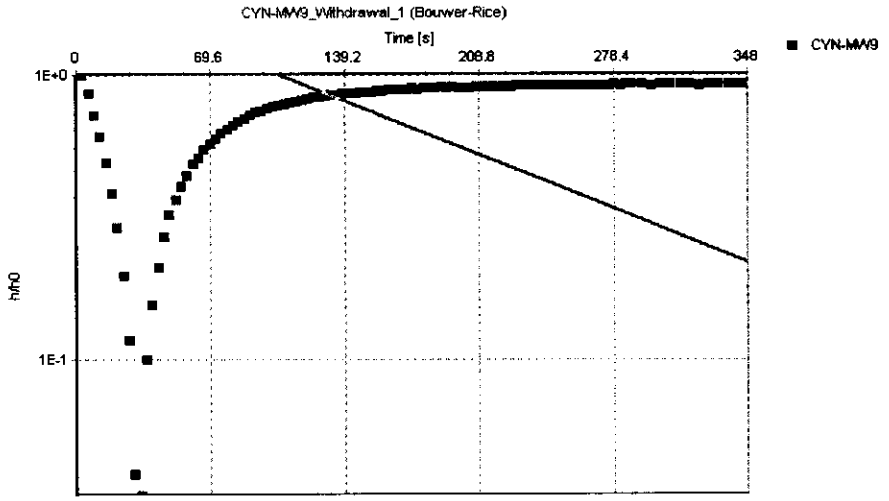
Conductivity: 3.83E-1 ft/d



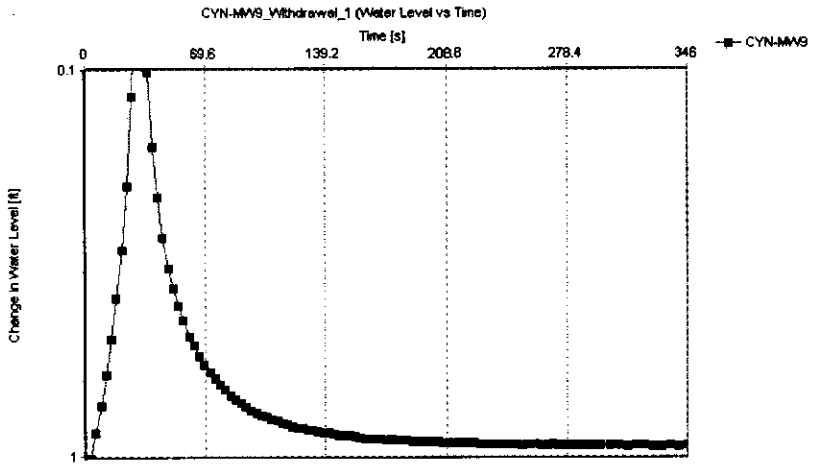


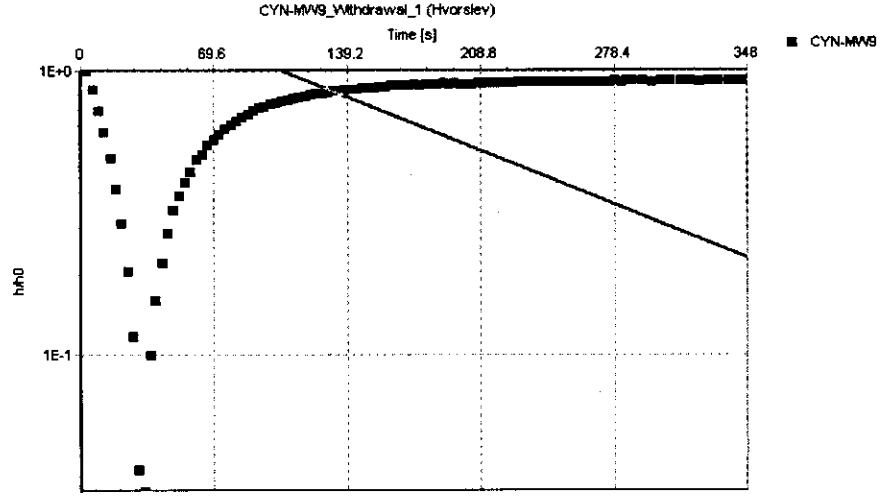
Conductivity: 4.51E-1 ft/d





Conductivity: 1.77E+0 ft/d





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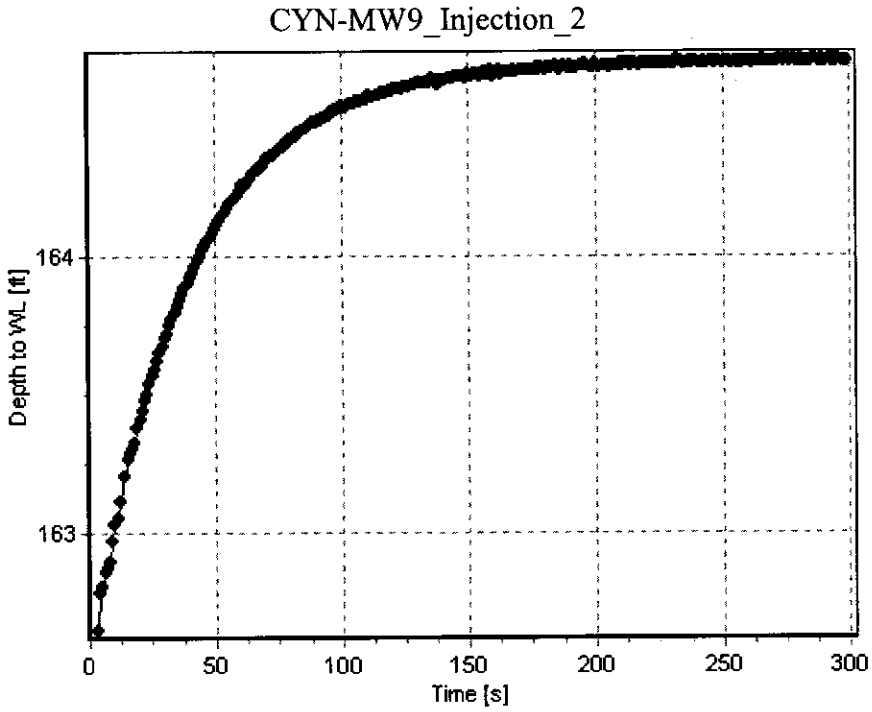

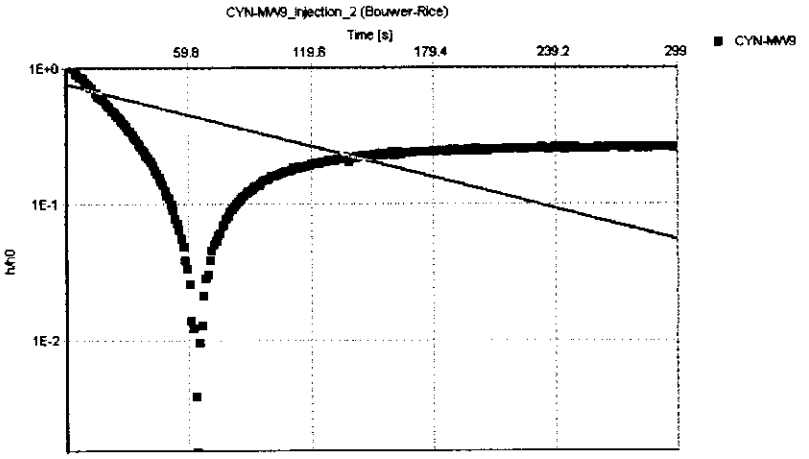

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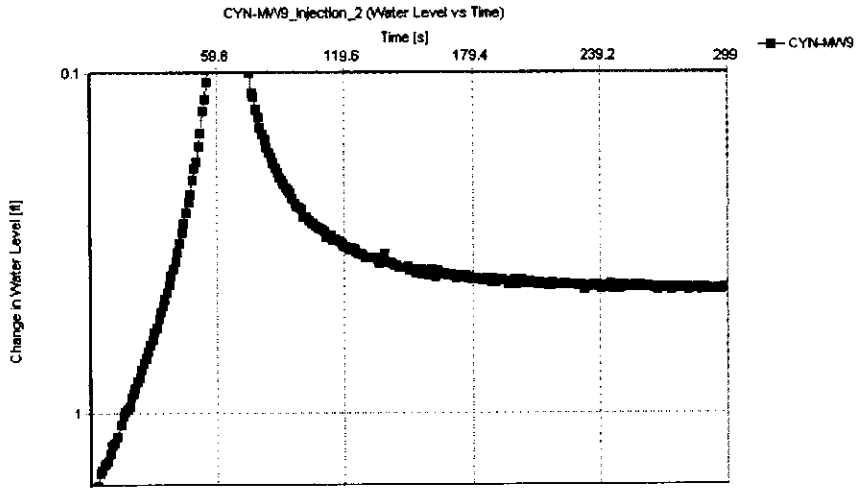

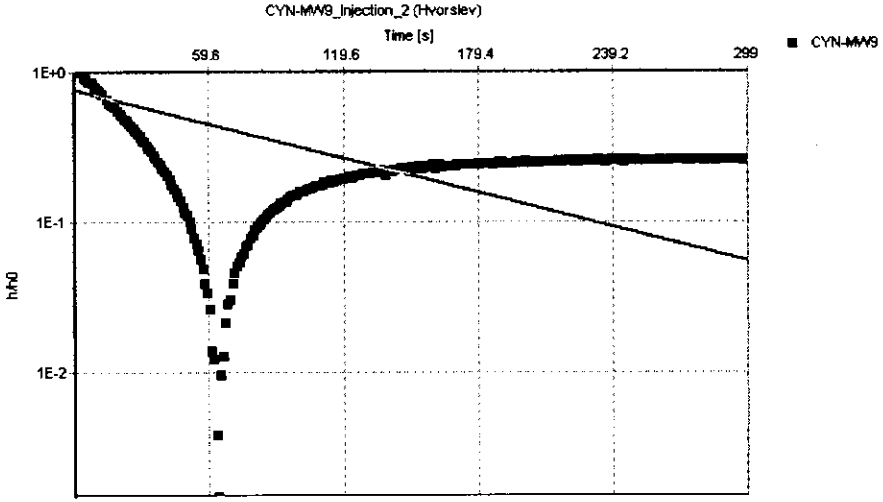

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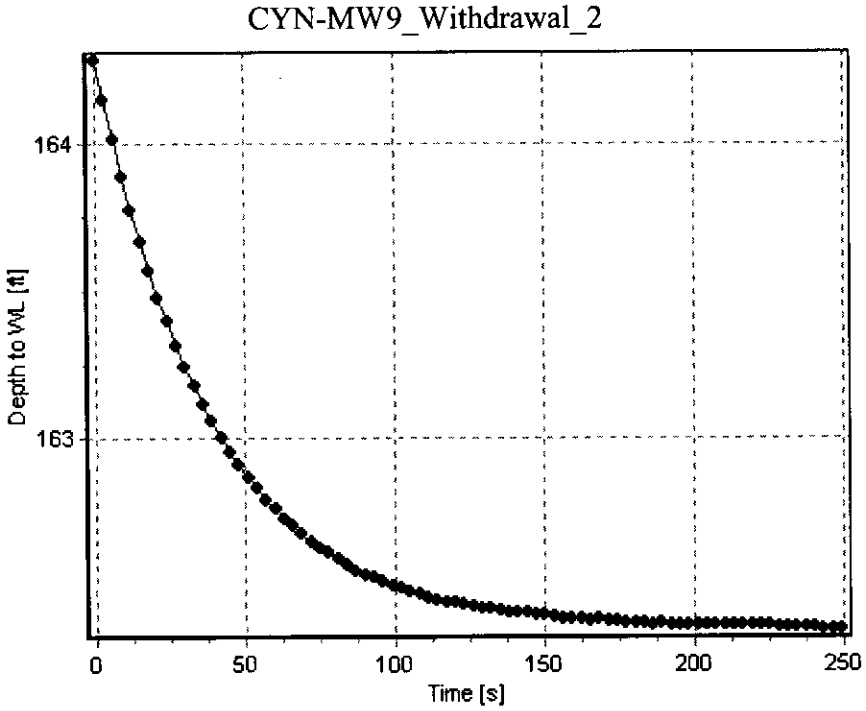

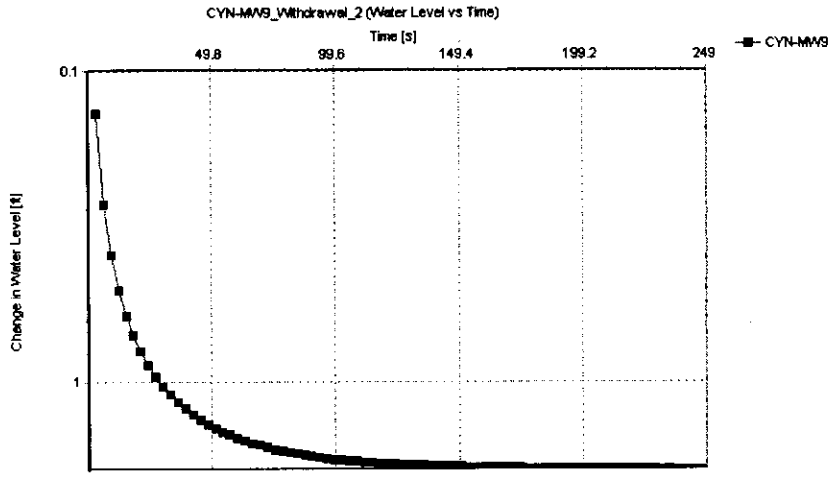

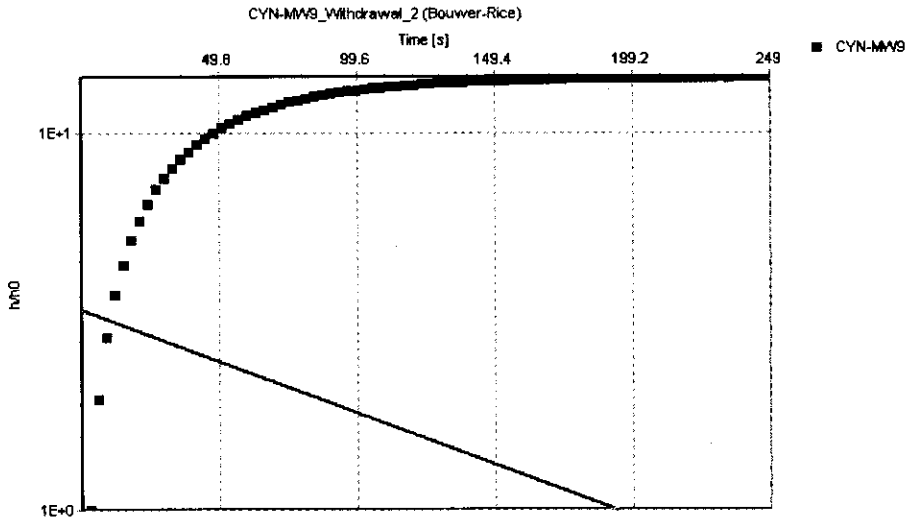

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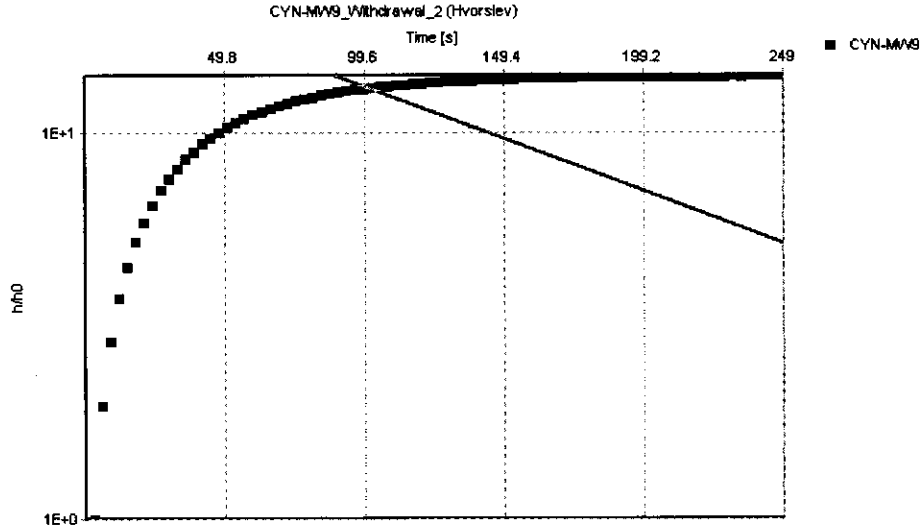

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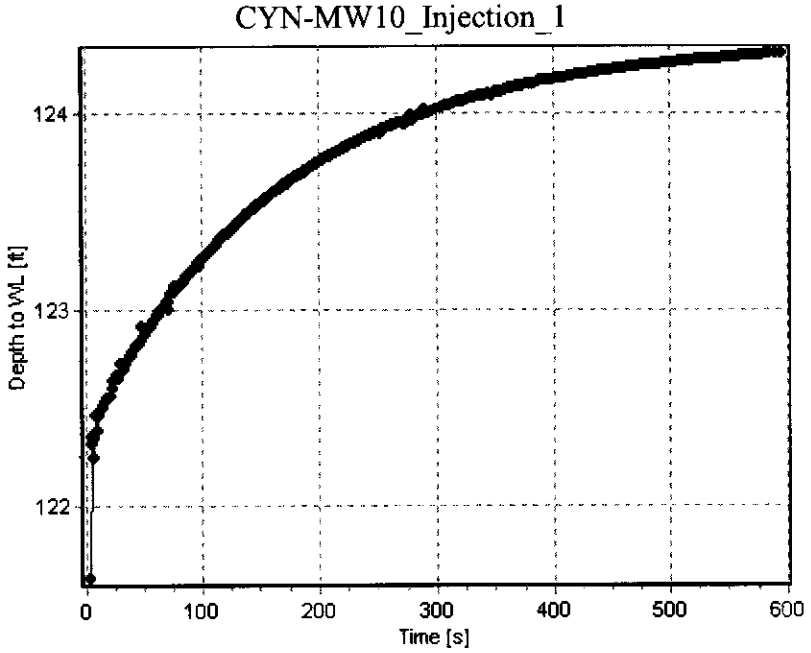

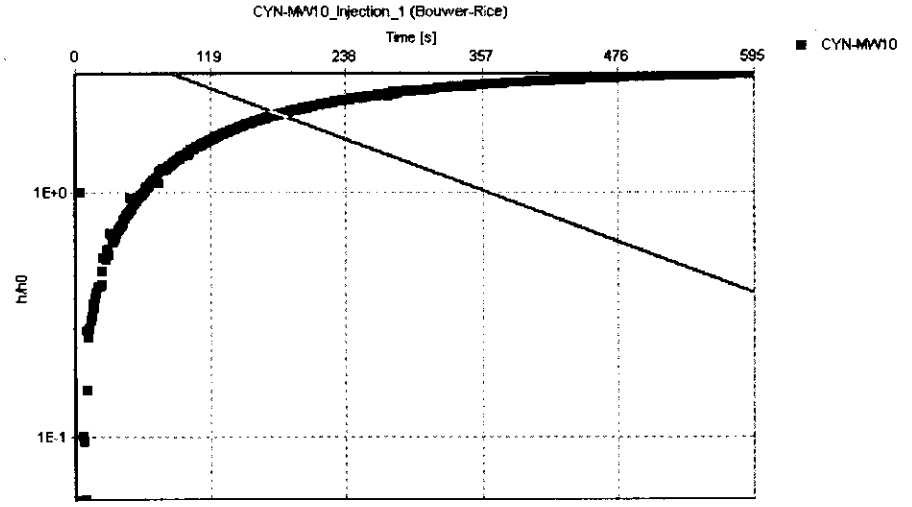

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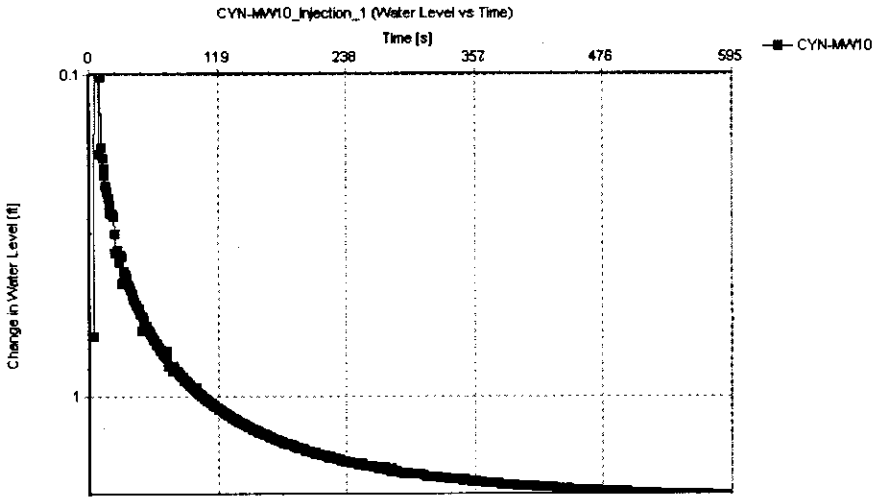

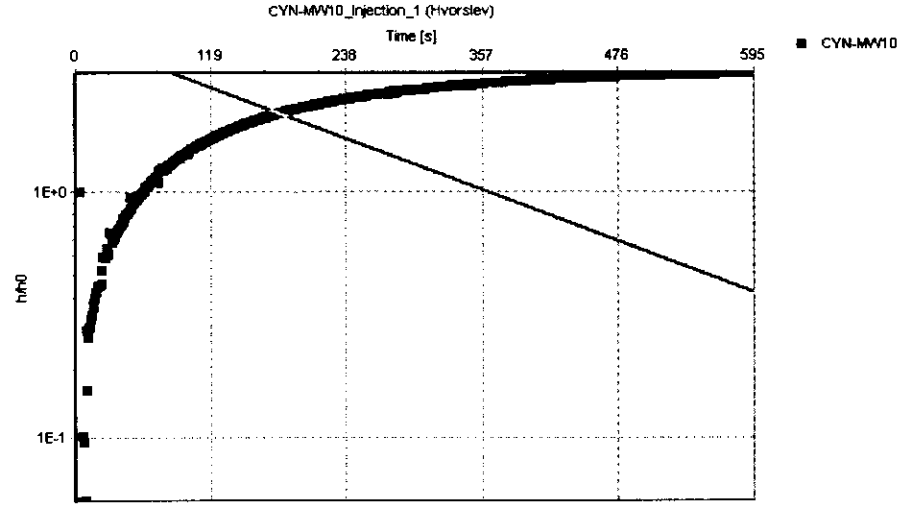

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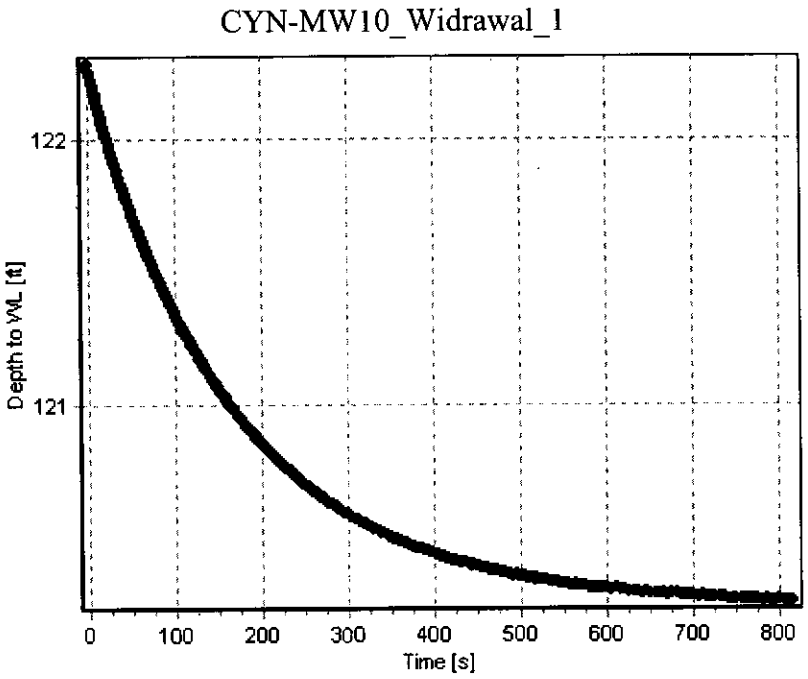

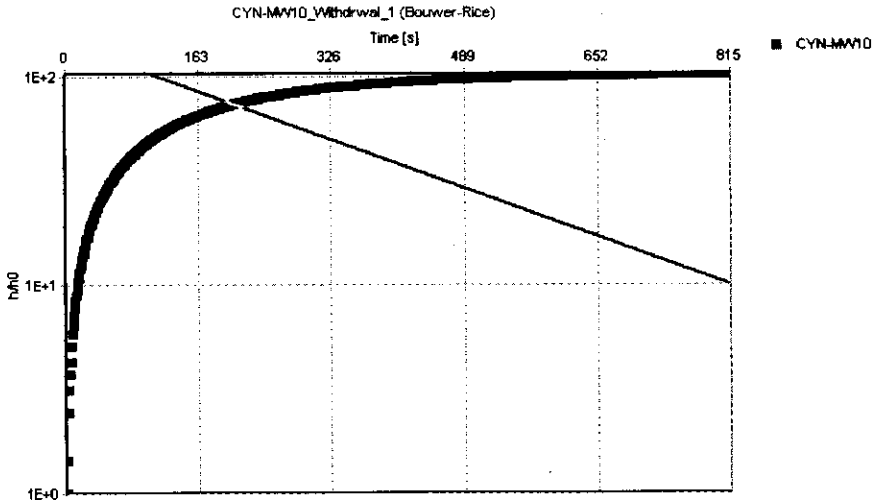

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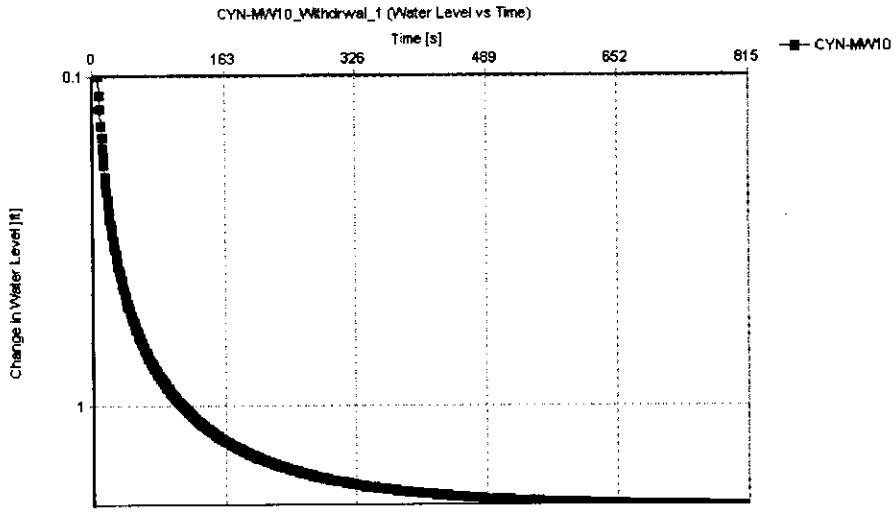

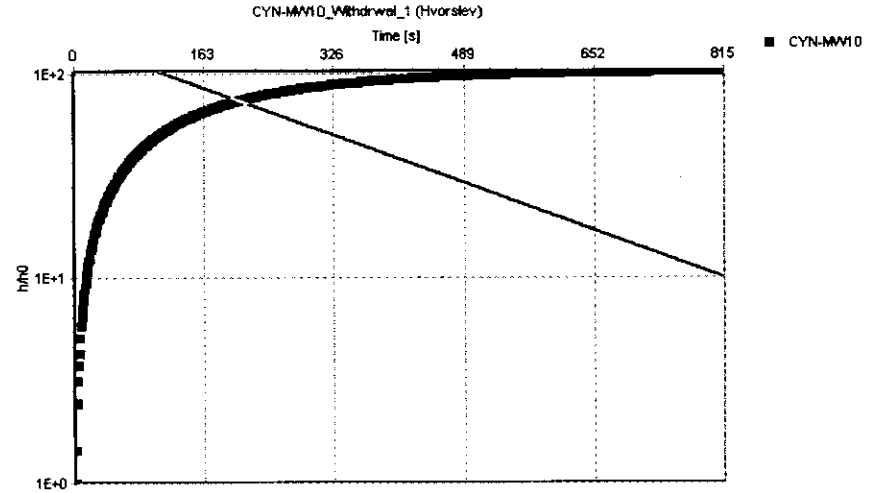

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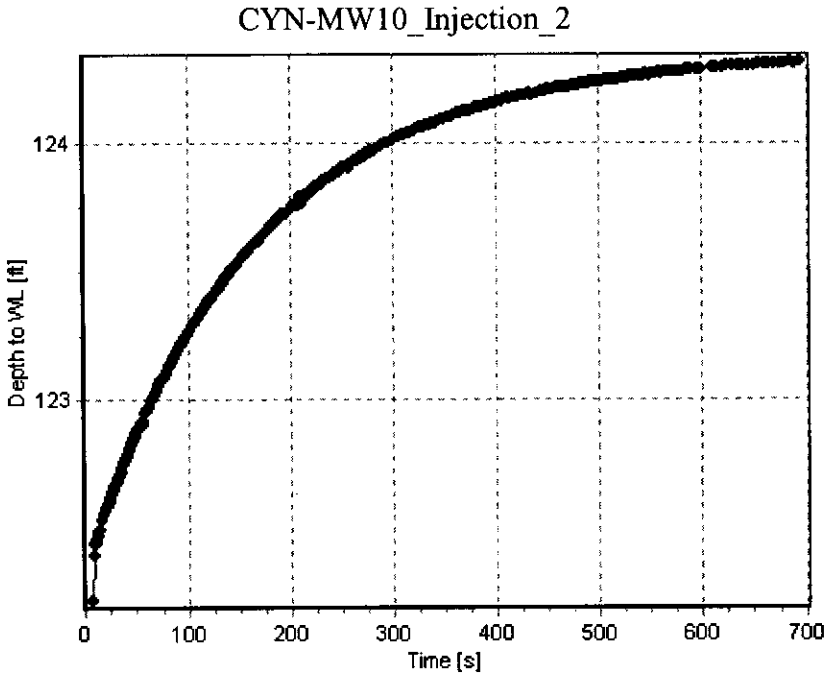

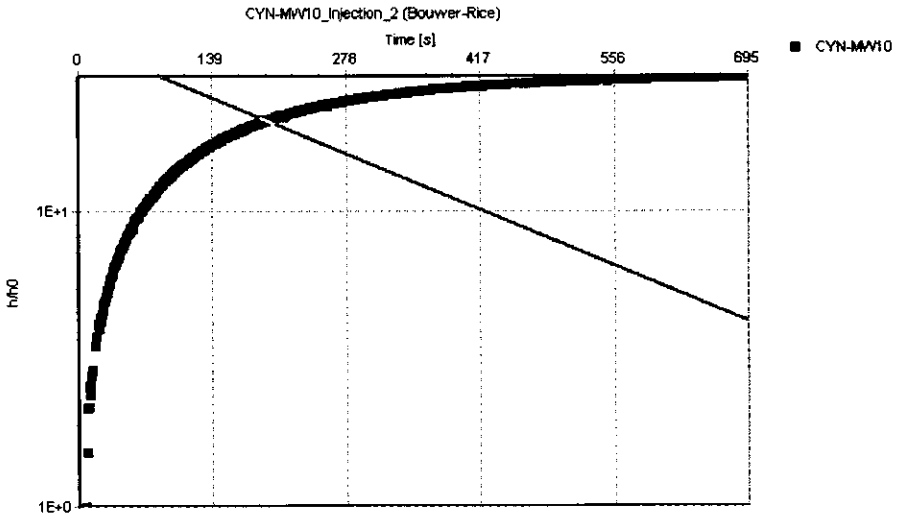

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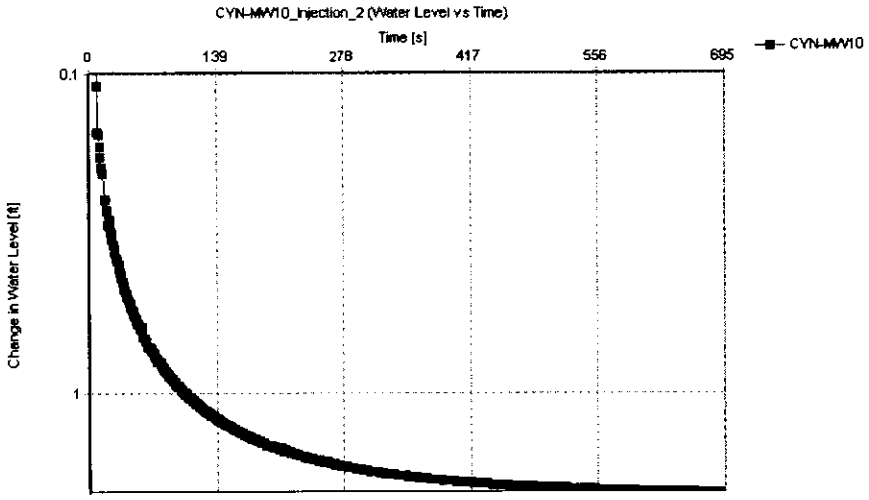

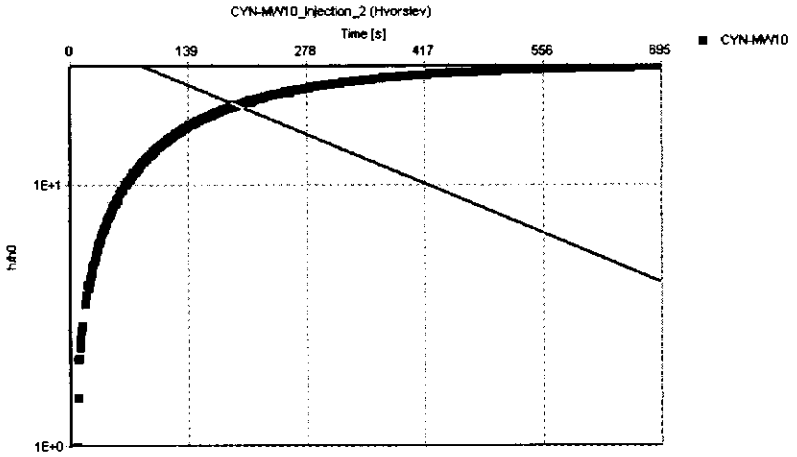

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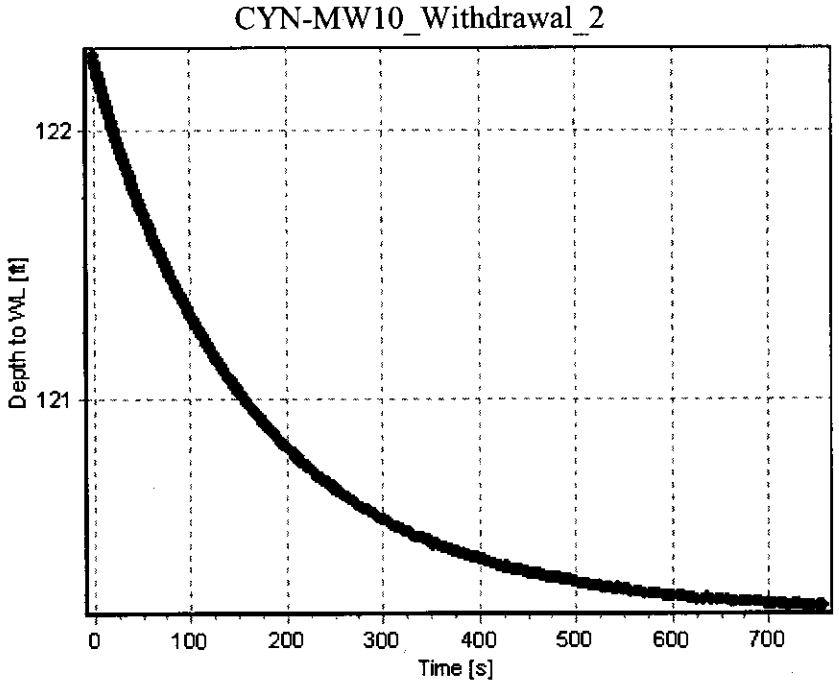

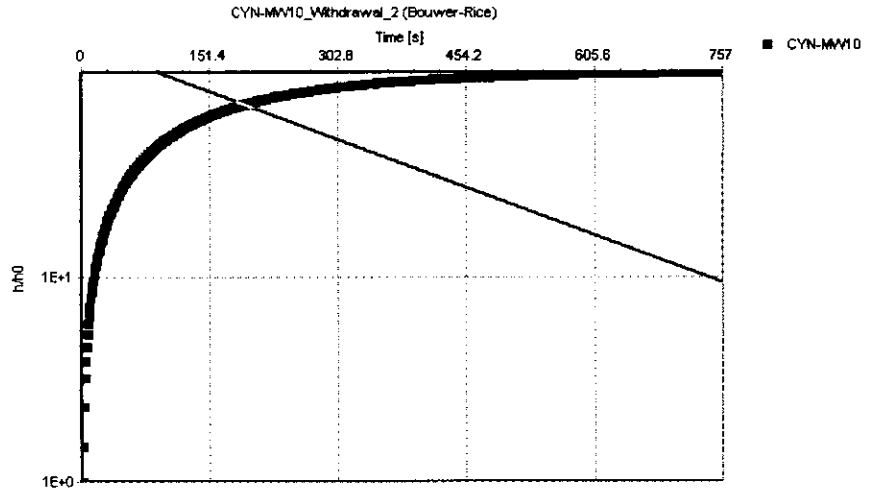

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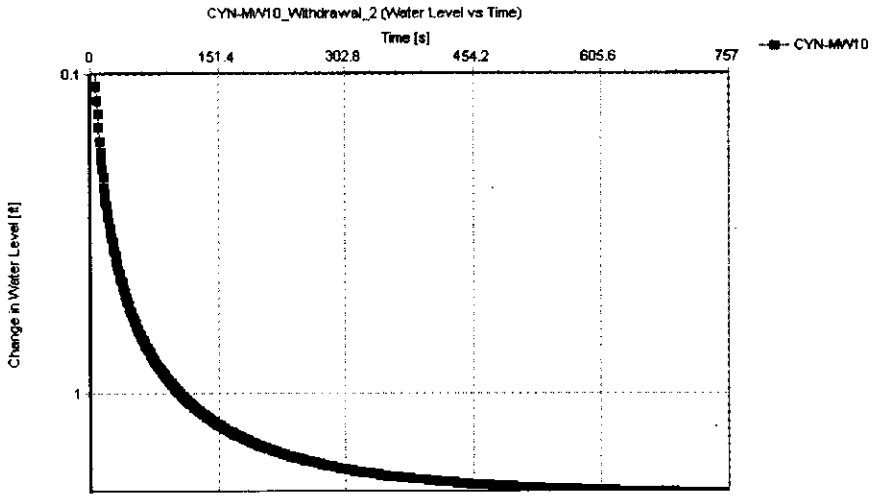

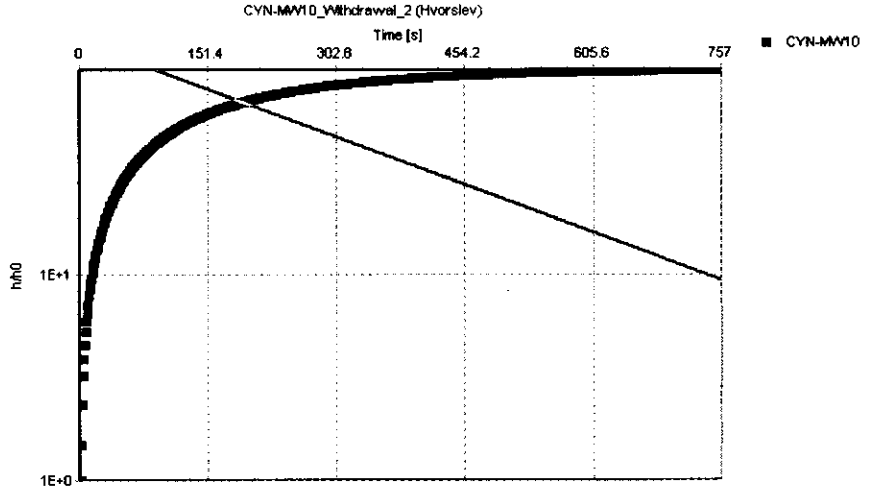

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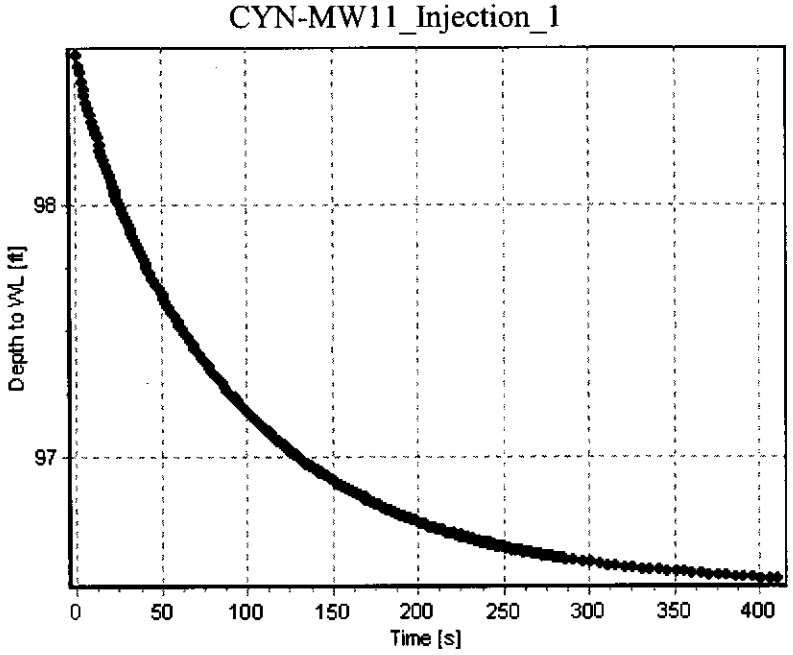

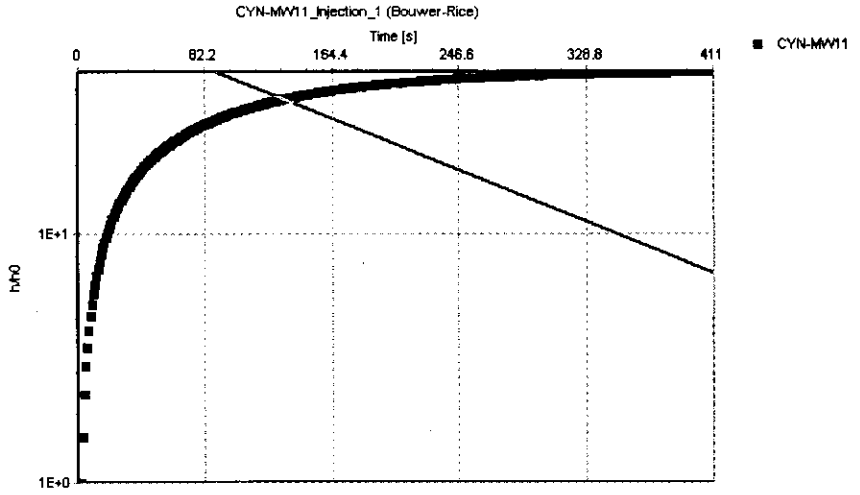

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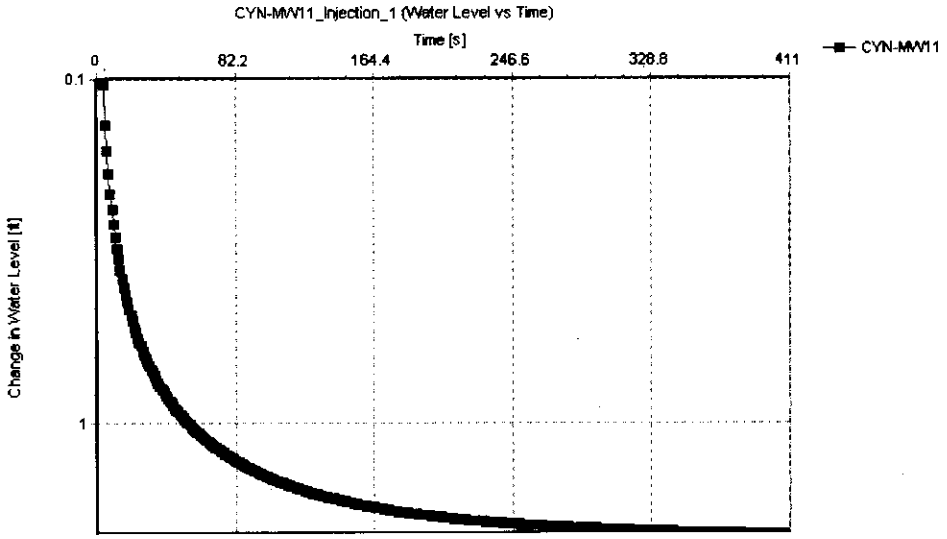

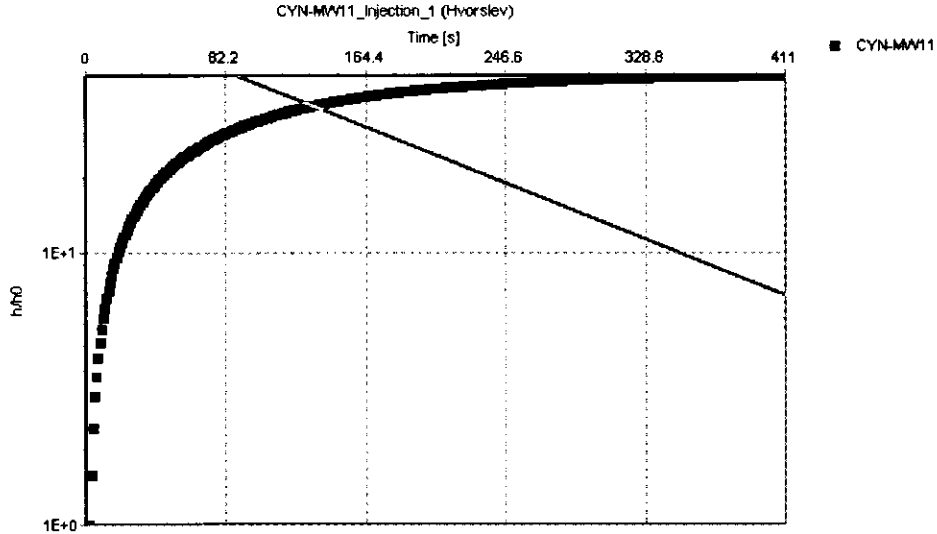

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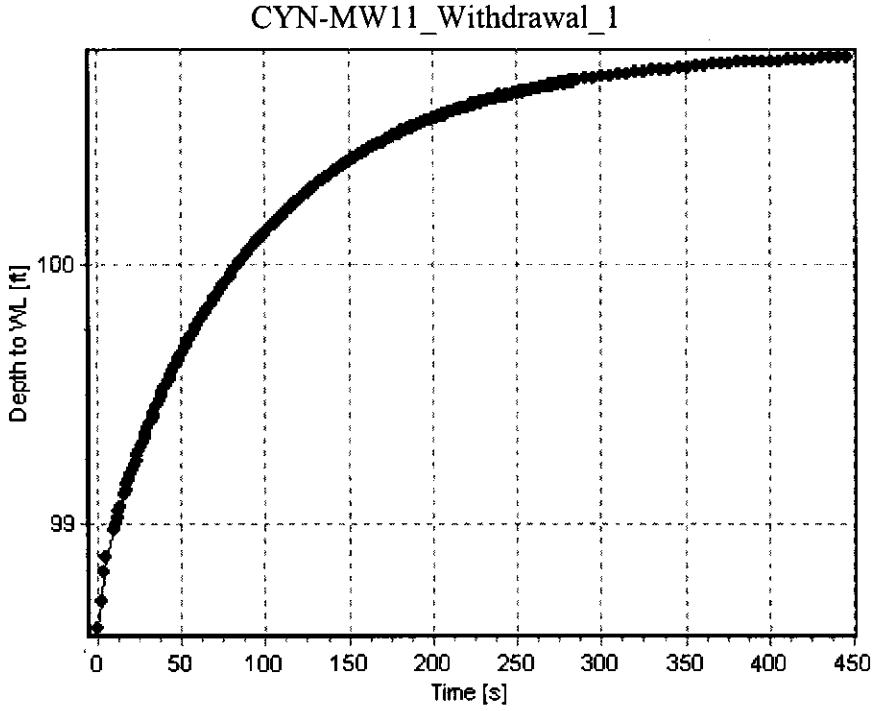

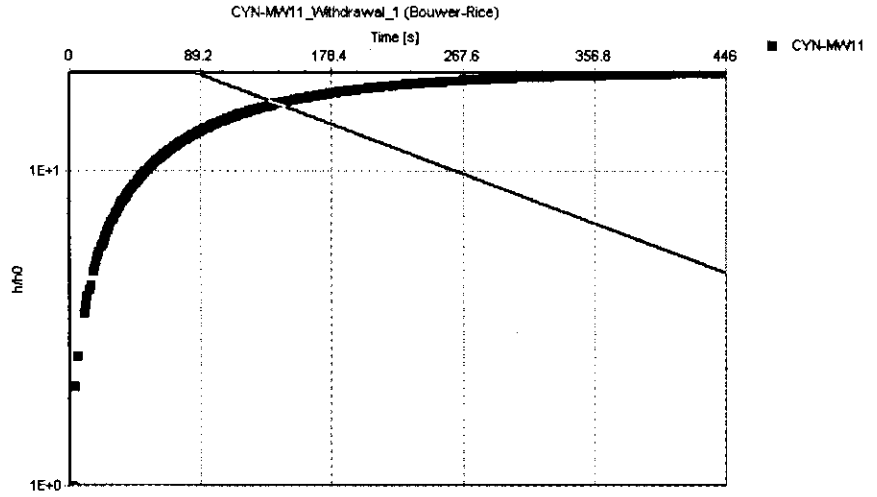

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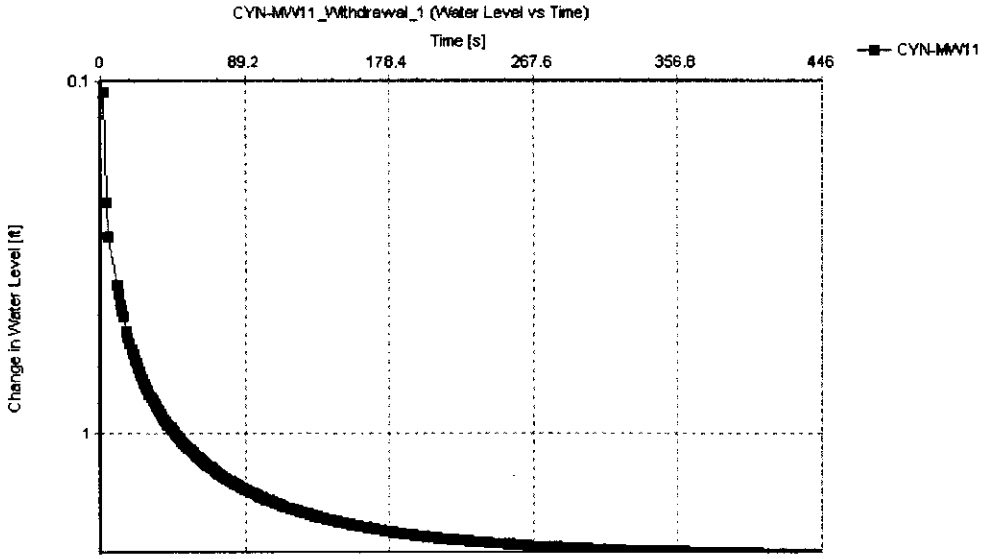

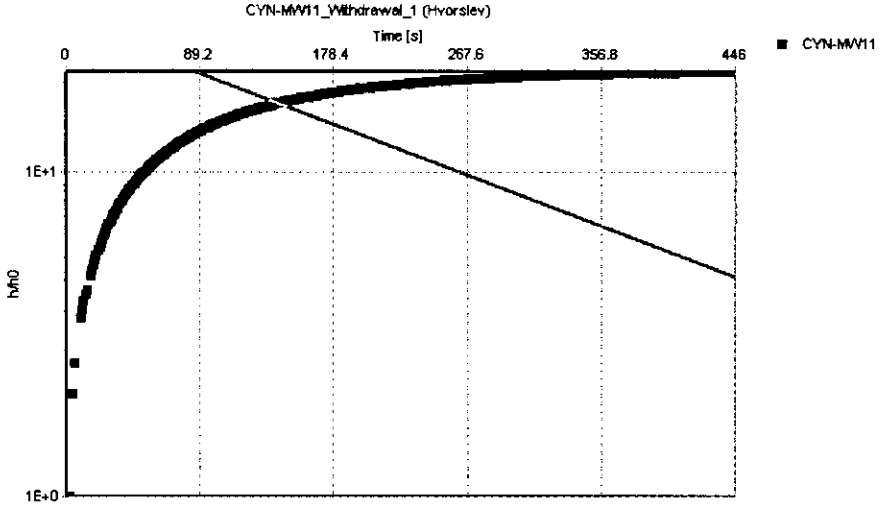

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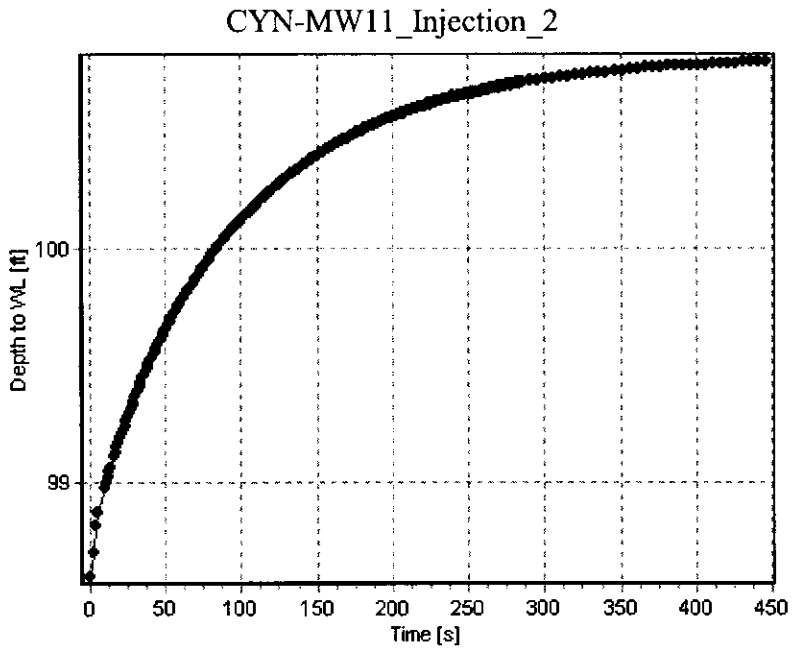

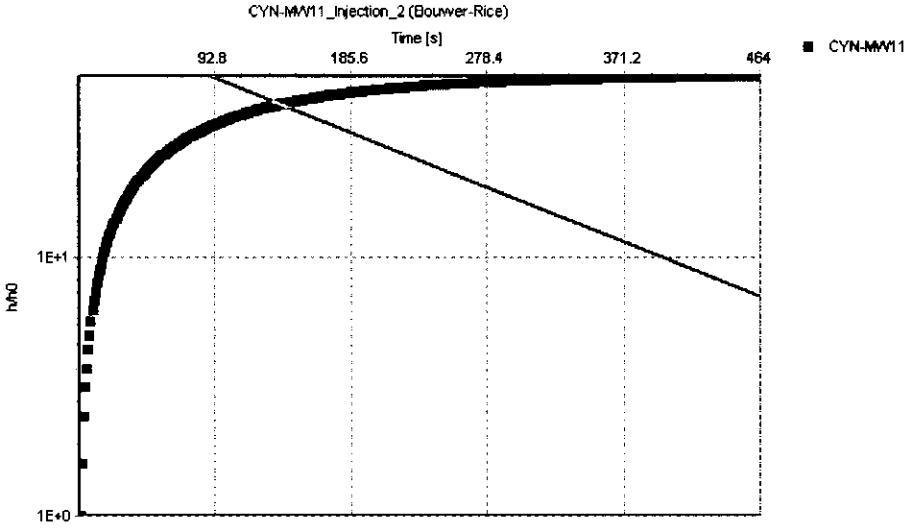

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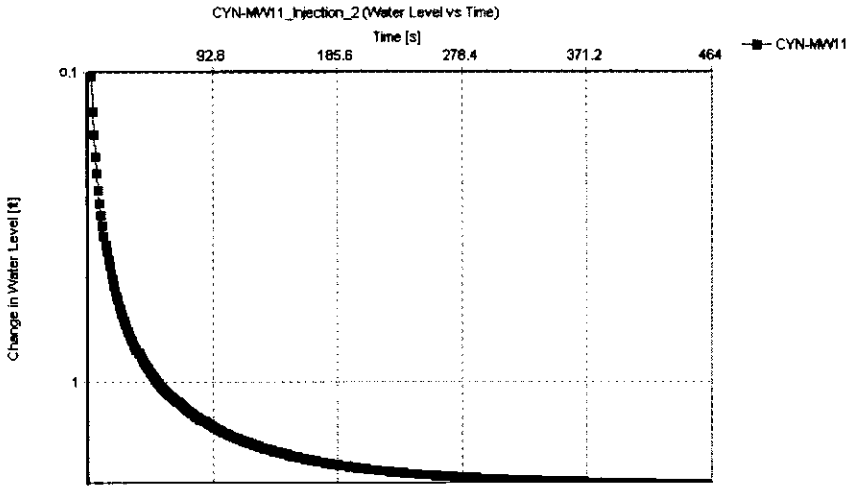

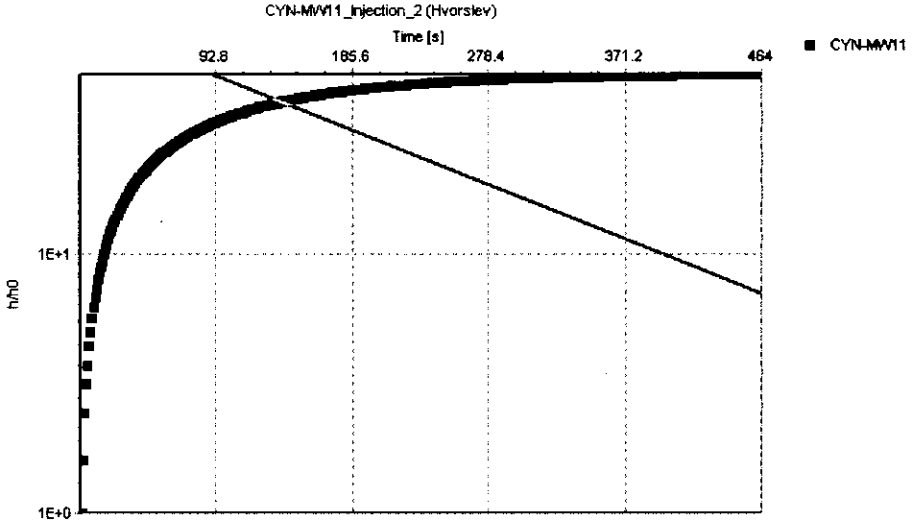

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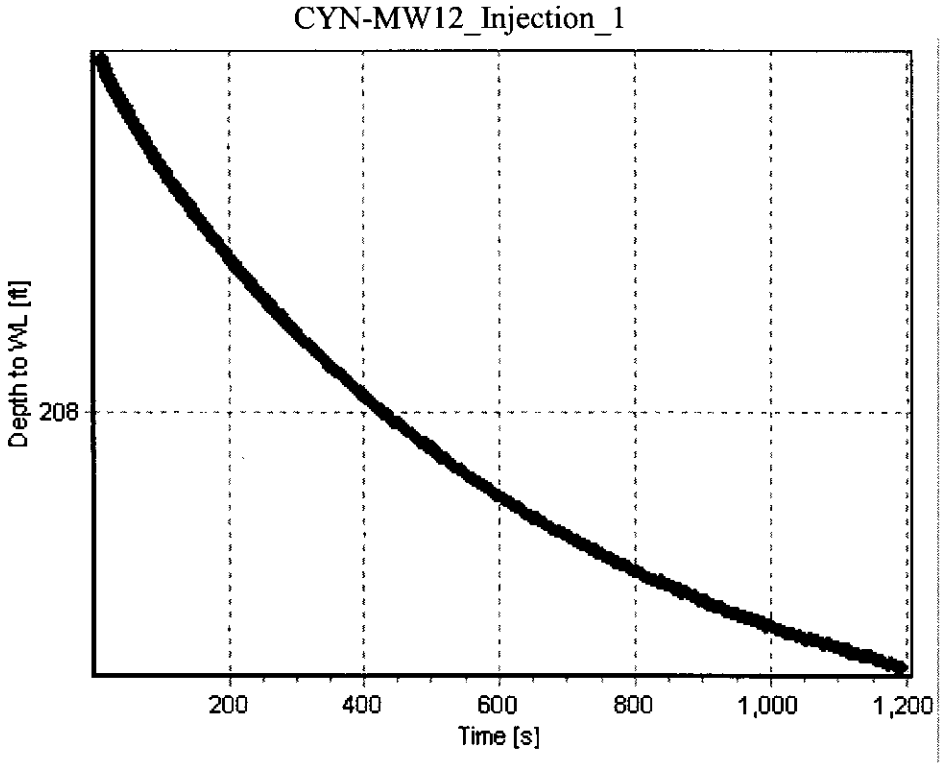

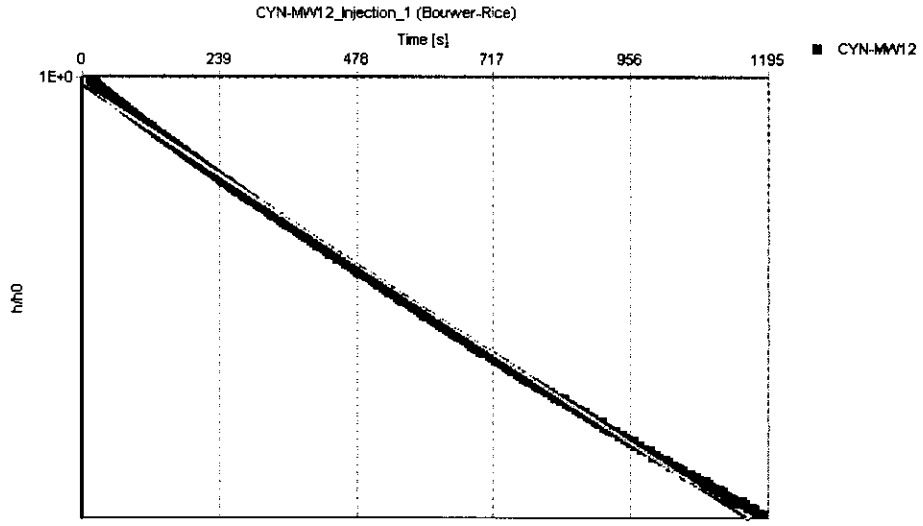

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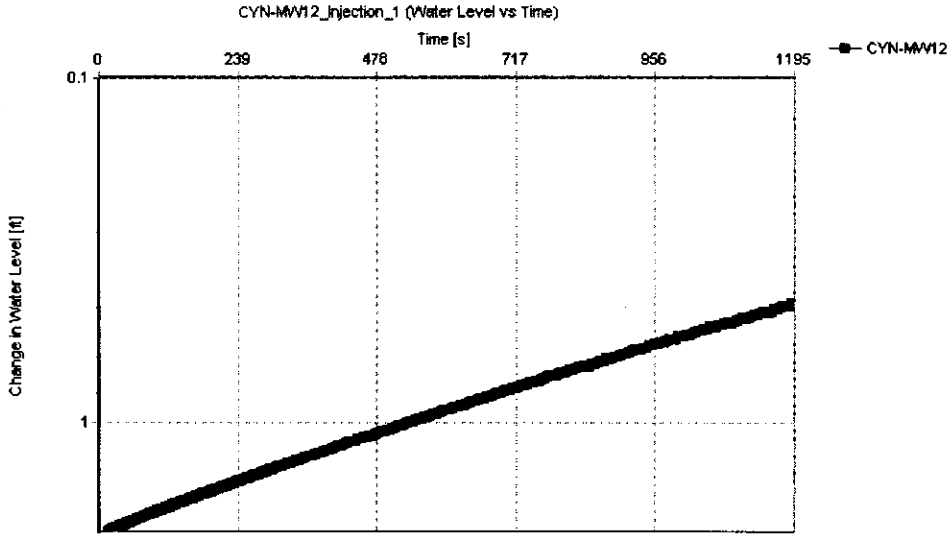

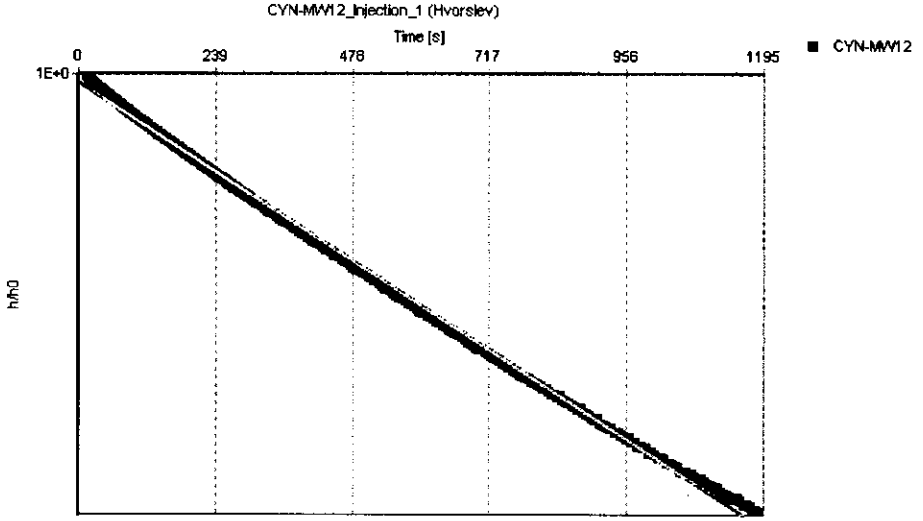

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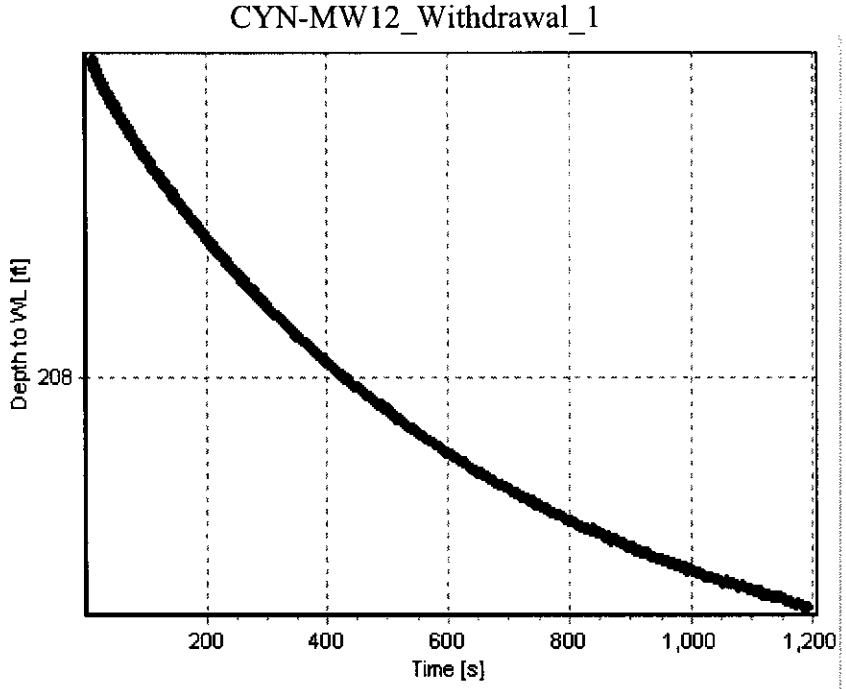

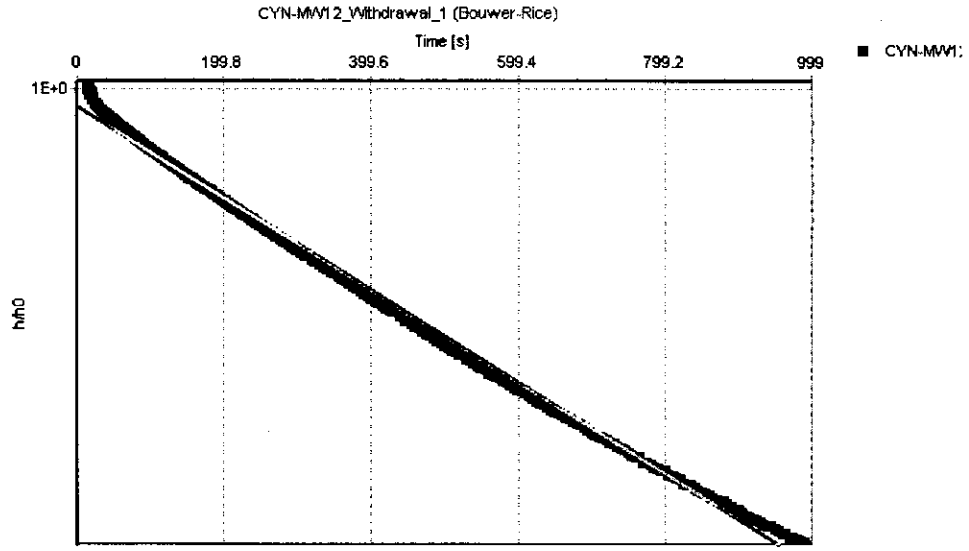

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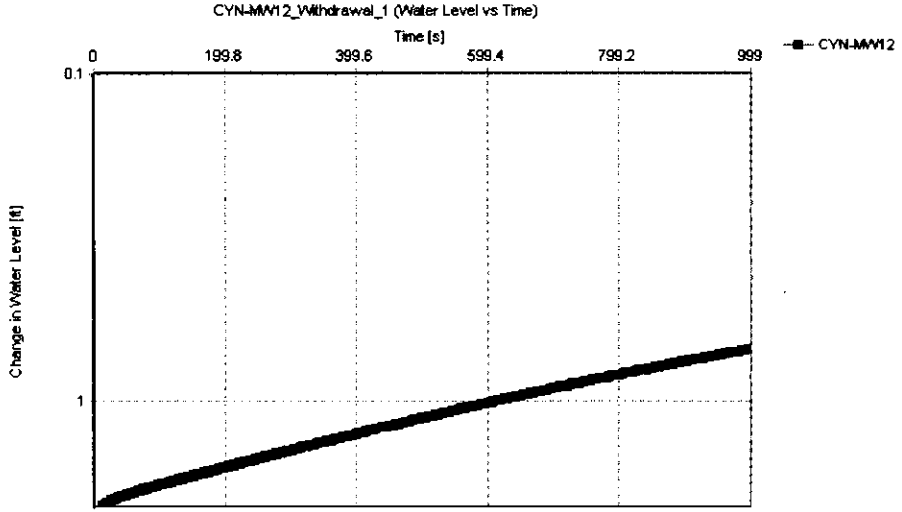

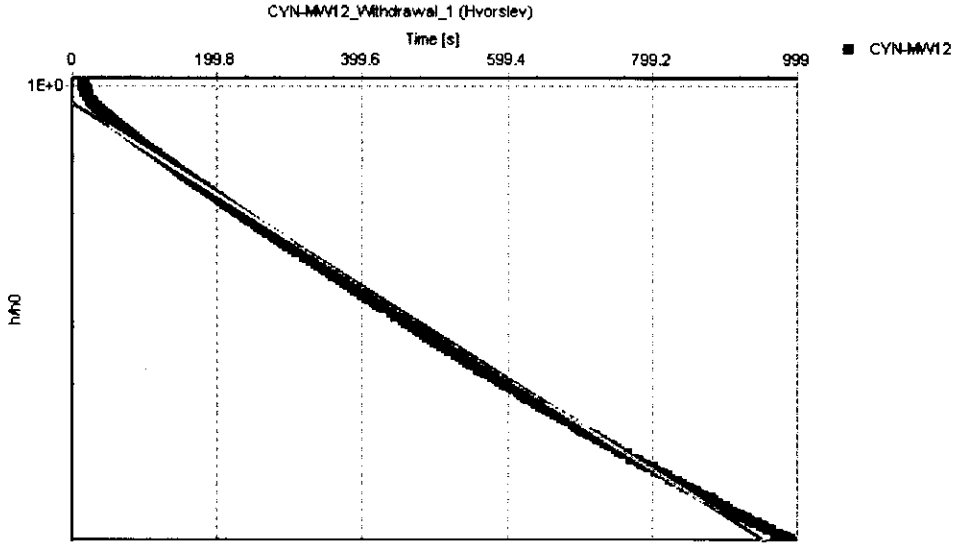

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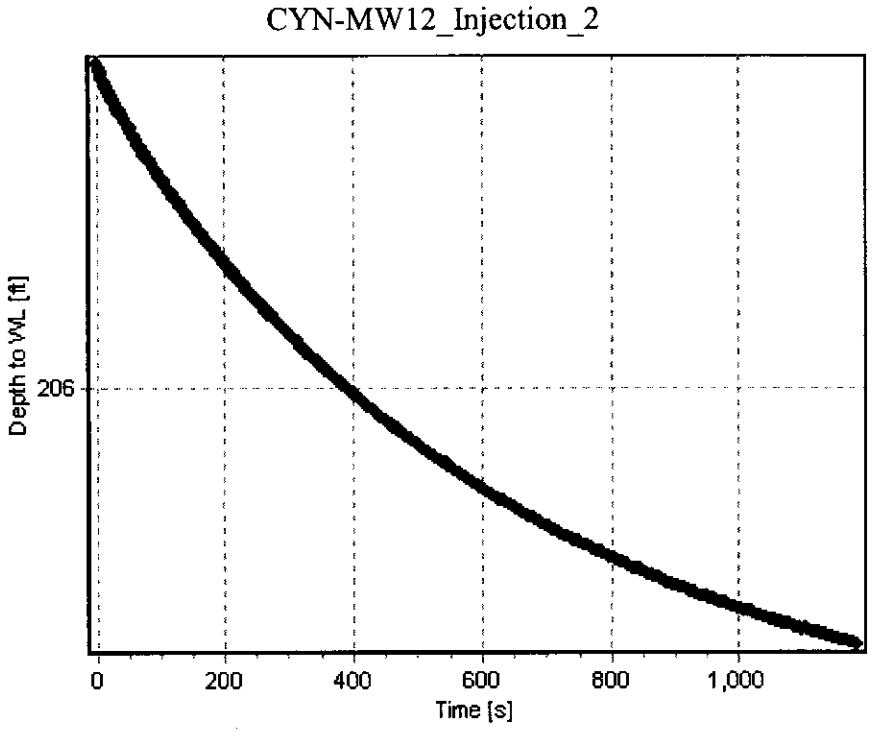

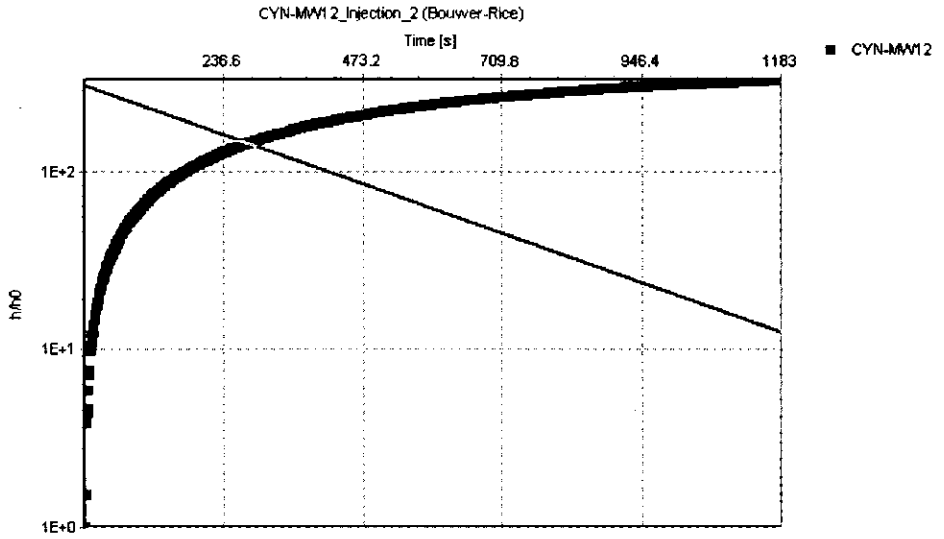

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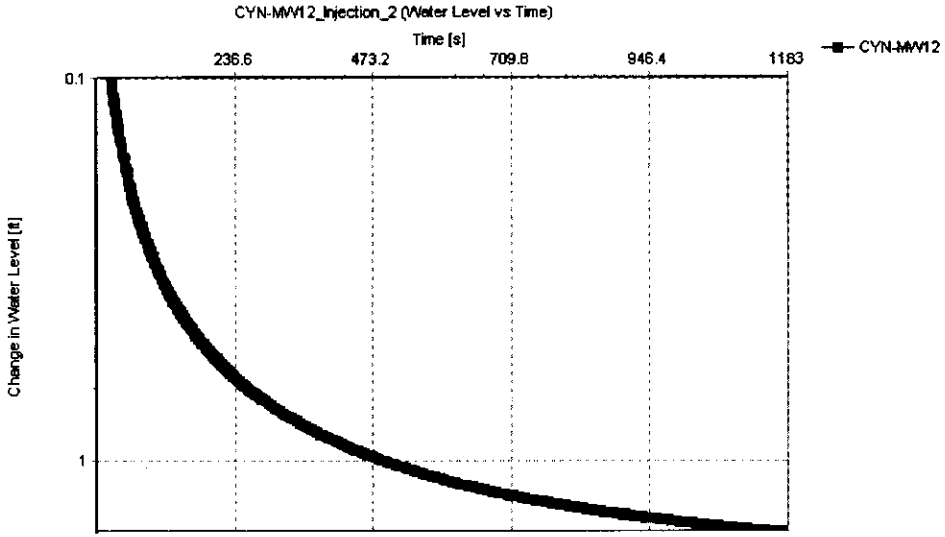

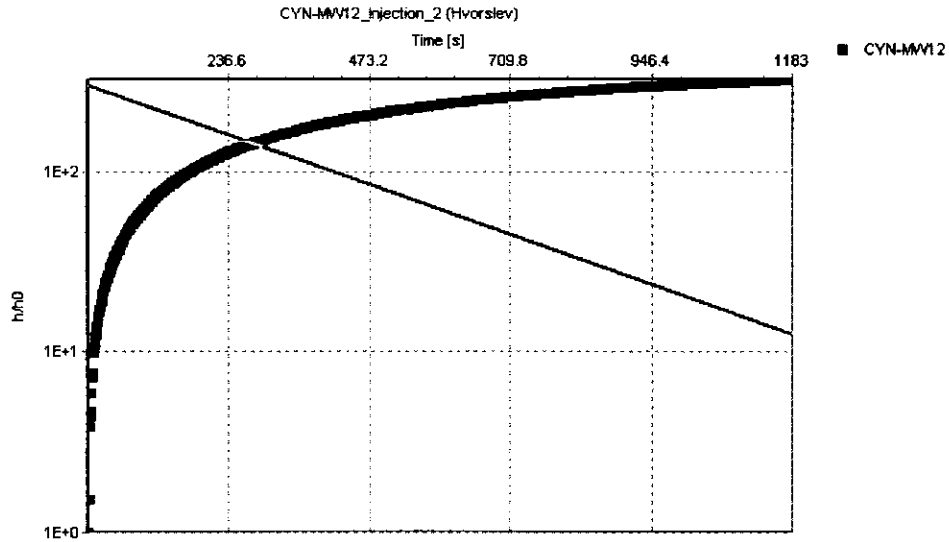

Conductivity: 8.97E-1 ft/d

APPENDIX G
Groundwater Analytical Results for Samples Collected During Fourth Quarter of Fiscal Year 2010

Table G-1
Summary of Detected Volatile Organic, Semivolatile Organic, and High Explosive Compounds
Burn Site Groundwater Monitoring

Fiscal Year 2010, Fourth Quarter

Well ID	Analyte	Result[a] (µg/L)	MDL[b] (µg/L)	PQL[c] (µg/L)	MCL[d] (µg/L)	Laboratory Qualifier[e]	Validation Qualifier[f]	Sample No.	Analytical Method[g]
CYN-MW1D 21-Sep-10	Carbon Disulfide	1.58	1.25	5.00	NE	J		089661-001	SW846-8260B

Refer to footnotes on page G-29.

Table G-2
Method Detection Limits for Volatile Organic and Semivolatile Organic Compounds
Burn Site Groundwater Monitoring

Fiscal Year 2010, Fourth Quarter

Analyte	MDL[b] (µg/L)	Analytical Method[g]	Analyte	MDL[b] (µg/L)	Analytical Method[g]	Analyte	MDL[b] (µg/L)	Analytical Method[g]
1,1,1-Trichloroethane	0.325	8260B	1,2,4-Trichlorobenzene	2.00–2.41	8270C	Di-n-butyl phthalate	2.00–2.41	8270C
1,1,2,2-Tetrachloroethane	0.250	8260B	1,2-Dichlorobenzene	2.00–2.41	8270C	Di-n-octyl phthalate	3.00–3.61	8270C
1,1,2-Trichloroethane	0.250	8260B	1,3-Dichlorobenzene	2.00–2.41	8270C	Dibenz[a,h]anthracene	0.200–0.241	8270C
1,1-Dichloroethane	0.300	8260B	1,4-Dichlorobenzene	2.00–2.41	8270C	Dibenzofuran	2.00–2.41	8270C
1,1-Dichloroethene	0.300	8260B	2,4,5-Trichlorophenol	2.00–2.41	8270C	Diethylphthalate	2.00–2.41	8270C
1,2-Dichloroethane	0.250	8260B	2,4,6-Trichlorophenol	2.00–2.41	8270C	Dimethylphthalate	2.00–2.41	8270C
1,2-Dichloropropane	0.250	8260B	2,4-Dichlorophenol	2.00–2.41	8270C	Dinitro-o-cresol	3.00–3.61	8270C
2-Butanone	1.25	8260B	2,4-Dimethylphenol	2.00–2.41	8270C	Diphenyl amine	3.00–3.61	8270C
2-Hexanone	1.25	8260B	2,4-Dinitrophenol	5.00–6.02	8270C	Fluoranthene	0.200–0.241	8270C
4-methyl-, 2-Pentanone	1.25	8260B	2,4-Dinitrotoluene	2.00–2.41	8270C	Fluorene	0.200–0.241	8270C
Acetone	3.50	8260B	2,6-Dinitrotoluene	2.00–2.41	8270C	Hexachlorobenzene	2.00–2.41	8270C
Benzene	0.300	8260B	2-Chloronaphthalene	0.300–0.361	8270C	Hexachlorobutadiene	2.00–2.41	8270C
Bromodichloromethane	0.250	8260B	2-Chlorophenol	2.00–2.41	8270C	Hexachlorocyclopentadiene	3.00–3.61	8270C
Bromoform	0.250	8260B	2-Methylnaphthalene	0.300–0.361	8270C	Hexachloroethane	2.00–2.41	8270C
Bromomethane	0.300	8260B	2-Nitroaniline	2.00–2.41	8270C	Indeno(1,2,3-c,d)pyrene	0.200–0.241	8270C
Carbon disulfide	1.25	8260B	2-Nitrophenol	2.00–2.41	8270C	Isophorone	3.00–3.61	8270C
Carbon tetrachloride	0.300	8260B	3,3'-Dichlorobenzidine	2.00–2.41	8270C	Naphthalene	0.300–0.361	8270C
Chlorobenzene	0.250	8260B	3-Nitroaniline	2.00–2.41	8270C	Nitro-benzene	3.00–3.61	8270C
Chloroethane	0.300	8260B	4-Bromophenyl phenyl ether	2.00–2.41	8270C	Pentachlorophenol	2.00–2.41	8270C
Chloroform	0.250	8260B	4-Chloro-3-methylphenol	2.00–2.41	8270C	Phenanthrene	0.200–0.241	8270C
Chloromethane	0.300	8260B	4-Chlorobenzenamine	2.00–2.41	8270C	Phenol	1.00–1.20	8270C
Dibromochloromethane	0.300	8260B	4-Chlorophenyl phenyl ether	2.00–2.41	8270C	Pyrene	0.300–0.361	8270C
Ethyl benzene	0.250	8260B	4-Nitroaniline	3.00–3.61	8270C	bis(2-Chloroethoxy)methane	3.00–3.61	8270C
Methylene chloride	3.00	8260B	4-Nitrophenol	2.00–2.41	8270C	bis(2-Chloroethyl)ether	2.00–2.41	8270C
Styrene	0.250	8260B	Acenaphthene	0.310–0.373	8270C	bis(2-Ethylhexyl)phthalate	2.00–2.41	8270C
Tetrachloroethene	0.300	8260B	Acenaphthylene	0.200–0.241	8270C	bis-Chloroisopropyl ether	2.00–2.41	8270C
Toluene	0.250	8260B	Anthracene	0.200–0.241	8270C	m,p-Cresol	3.00–3.61	8270C
Trichloroethene	0.250	8260B	Benzo(a)anthracene	0.200–0.241	8270C	n-Nitrosodipropylamine	2.00–2.41	8270C
Vinyl acetate	1.50	8260B	Benzo(a)pyrene	0.200–0.241	8270C	o-Cresol	2.00–2.41	8270C
Vinyl chloride	0.500	8260B	Benzo(b)fluoranthene	0.200–0.241	8270C			
Xylene	0.300	8260B	Benzo(ghi)perylene	0.200–0.241	8270C			
cis-1,2-Dichloroethene	0.300	8260B	Benzo(k)fluoranthene	0.200–0.241	8270C			
cis-1,3-Dichloropropene	0.250	8260B	Butylbenzyl phthalate	2.00–2.41	8270C			
trans-1,2-Dichloroethene	0.300	8260B	Carbazole	0.200–0.241	8270C			
trans-1,3-Dichloropropene	0.250	8260B	Chrysene	0.200–0.241	8270C			

Refer to footnotes on page G-29.

Table G-3
Method Detection Limits for High Explosive Compounds (EPA Method[g] SW846-8321A)
Burn Site Groundwater Investigation

Fiscal Year 2010, Fourth Quarter

Analyte	MDL[b] (µg/L)
1,3,5-Trinitrobenzene	0.104
1,3-Dinitrobenzene	0.104
2,4,6-Trinitrotoluene	0.104
2,4-Dinitrotoluene	0.104
2,6-Dinitrotoluene	0.0779
2-Amino-4,6-dinitrotoluene	0.104
2-Nitrotoluene	0.104
3-Nitrotoluene	0.104
4-Amino-2,6-dinitrotoluene	0.104
4-Nitrotoluene	0.104
HMX	0.104
Nitrobenzene	0.104
Pentaerythritol tetranitrate	0.130
RDX	0.104
Tetryl	0.130

Refer to footnotes on page G-29.

Table G-4
Summary of Nitrate plus Nitrite Results
Burn Site Groundwater Monitoring

Fiscal Year 2010, Fourth Quarter

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	Laboratory Qualifier[e]	Validation Qualifier[f]	Sample No.	Analytical Method[g]
CYN-MW1D 21-Sep-10	Nitrate plus nitrite as N	**12.2**	0.250	1.25	10.0	B		089661-018	EPA 353.2
CYN-MW3 22-Sep-10	Nitrate plus nitrite as N	**12.0**	0.250	1.25	10.0	B		089663-018	EPA 353.2
CYN-MW4 16-Sep-10	Nitrate plus nitrite as N	0.149	0.050	0.250	10.0	J		089656-018	EPA 353.2
CYN-MW4 (Duplicate) 16-Sep-10	Nitrate plus nitrite as N	0.150	0.050	0.250	10.0	J		089657-018	EPA 353.2
CYN-MW6 20-Sep-10	Nitrate plus nitrite as N	**29.9**	0.500	2.50	10.0	B		089659-018	EPA 353.2
CYN-MW7 15-Sep-10	Nitrate plus nitrite as N	2.15	0.100	0.500	10.0			089652-018	EPA 353.2
CYN-MW8 14-Sep-10	Nitrate plus nitrite as N	5.08	0.250	1.25	10.0			089650-018	EPA 353.2
CYN-MW9 28-Sep-10	Nitrate plus nitrite as N	**30.1**	0.500	2.50	10.0			089672-018	EPA 353.2
CYN-MW9 (Duplicate) 28-Sep-10	Nitrate plus nitrite as N	**30.1**	0.500	2.50	10.0			089673-018	EPA 353.2
CYN-MW10 27-Sep-10	Nitrate plus nitrite as N	**11.0**	0.250	1.25	10.0			089668-018	EPA 353.2
CYN-MW11 29-Sep-10	Nitrate plus nitrite as N	10.0	0.250	1.25	10.0			089675-018	EPA 353.2
CYN-MW12 23-Sep-10	Nitrate plus nitrite as N	**12.2**	0.250	1.25	10.0	B		089665-018	EPA 353.2

Refer to footnotes on page G-29.

Table G-5
Summary of Diesel Range Organics and Gasoline Range Organics Results
Burn Site Groundwater Monitoring

Fiscal Year 2010, Fourth Quarter

Well ID	Analyte	Result[a] (µg/L)	MDL[b] (µg/L)	PQL[c] (µg/L)	MCL[d] (µg/L)	Laboratory Qualifier[e]	Validation Qualifier[f]	Sample No.	Analytical Method[g]
CYN-MW1D	Diesel Range Organics	ND	69.9	215	NE	U		089661-005	SW846 8015A/B
21-Sep-10	Gasoline Range Organics	19.1	10.5	50.0	NE	J	50U	089661-006	SW846 8015B
CYN-MW3	Diesel Range Organics	ND	67.7	208	NE	U		089663-005	SW846 8015A/B
22-Sep-10	Gasoline Range Organics	ND	10.5	50.0	NE	U		089663-006	SW846 8015B
CYN-MW4	Diesel Range Organics	ND	70.7	217	NE	U		089656-005	SW846 8015A/B
16-Sep-10	Gasoline Range Organics	10.8	10.5	50.0	NE	J	50U	089656-006	SW846 8015B
CYN-MW4 (Reanalysis) 16-Sep-10	Gasoline Range Organics	14.8	10.5	50.0	NE	H, J	50UJ	089656-R06	SW846 8015B
CYN-MW4 (Duplicate)	Diesel Range Organics	ND	70.7	217	NE	U		089657-005	SW846 8015A/B
16-Sep-10	Gasoline Range Organics	11.4	10.5	50.0	NE	J	50U	089657-006	SW846 8015B
CYN-MW4 (Duplicate Reanalysis) 16-Sep-10	Gasoline Range Organics	ND	10.5	50.0	NE	H, U	UJ	089657-R06	SW846 8015B
CYN-MW6	Diesel Range Organics	ND	65.0	200	NE	U		089659-005	SW846 8015A/B
20-Sep-10	Gasoline Range Organics	ND	10.5	50.0	NE	U		089659-006	SW846 8015B
CYN-MW7	Diesel Range Organics	ND	69.1	213	NE	U		089652-005	SW846 8015A/B
15-Sep-10	Gasoline Range Organics	ND	10.5	50.0	NE	U		089652-006	SW846 8015B
CYN-MW7 (Reanalysis) 15-Sep-10	Gasoline Range Organics	ND	10.5	50.0	NE	H, U	UJ	089652-R06	SW846 8015B
CYN-MW8	Diesel Range Organics	ND	74.7	230	NE	U		089650-005	SW846 8015A/B
14-Sep-10	Gasoline Range Organics	ND	10.5	50.0	NE	U		089650-006	SW846 8015B
CYN-MW8 (Reanalysis) 14-Sep-10	Gasoline Range Organics	13.5	10.5	50.0	NE	H, J	50UJ	089650-R06	SW846 8015B
CYN-MW9	Diesel Range Organics	ND	73.0	225	NE	U		089672-005	SW846 8015A/B
28-Sep-10	Gasoline Range Organics	14.8	10.5	50.0	NE	J	50U	089672-006	SW846 8015B
CYN-MW9 (Duplicate)	Diesel Range Organics	ND	71.4	220	NE	U		089673-005	SW846 8015A/B
28-Sep-10	Gasoline Range Organics	13.1	10.5	50.0	NE	J	50U	089673-006	SW846 8015B
CYN-MW10	Diesel Range Organics	ND	72.2	222	NE	U		089668-005	SW846 8015A/B
27-Sep-10	Gasoline Range Organics	13.5	10.5	50.0	NE	J	50U	089668-006	SW846 8015B
CYN-MW11	Diesel Range Organics	ND	68.4	211	NE	U		089675-005	SW846 8015A/B
29-Sep-10	Gasoline Range Organics	12.1	10.5	50.0	NE	J	50U	089675-006	SW846 8015B
CYN-MW12	Diesel Range Organics	ND	71.4	220	NE	U		089665-005	SW846 8015A/B
23-Sep-10	Gasoline Range Organics	14.4	10.5	50.0	NE	J	50U	089665-006	SW846 8015B

Refer to footnotes on page G-29.

Table G-6
Summary of Anion, Cation, and Alkalinity Results
Burn Site Groundwater Monitoring

Fiscal Year 2010, Fourth Quarter

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	Laboratory Qualifier[e]	Validation Qualifier[f]	Sample No.	Analytical Method[g]
CYN-MW1D	Bicarbonate Alkalinity	72.9	0.725	1.00	NE	B		089661-016	SM2320B
21-Sep-10	Carbonate Alkalinity	ND	0.725	1.00	NE	U		089661-016	SM2320B
	Bromide	0.429	0.066	0.200	NE			089661-016	SW846 9056
	Chloride	27.2	0.660	2.00	NE			089661-016	SW846 9056
	Fluoride	1.81	0.033	0.100	4.0			089661-016	SW846 9056
	Sulfate	114	1.00	4.00	NE			089661-016	SW846 9056
	Calcium	70.0	0.200	2.00	NE	B		089661-017	SW846-6020
	Magnesium	14.6	0.005	0.015	NE			089661-017	SW846-6020
	Potassium	2.62	0.080	0.300	NE			089661-017	SW846-6020
	Sodium	34.8	0.080	0.250	NE			089661-017	SW846-6020
CYN-MW3	Bicarbonate Alkalinity	239	0.725	1.00	NE	B		089663-016	SM2320B
22-Sep-10	Carbonate Alkalinity	ND	0.725	1.00	NE	U		089663-016	SM2320B
	Bromide	0.748	0.066	0.200	NE			089663-016	SW846 9056
	Chloride	120	0.660	2.00	NE			089663-016	SW846 9056
	Fluoride	0.639	0.033	0.100	4.0			089663-016	SW846 9056
	Sulfate	365	1.00	4.00	NE			089663-016	SW846 9056
	Calcium	129	0.200	2.00	NE	B		089663-017	SW846-6020
	Magnesium	35.4	0.005	0.015	NE			089663-017	SW846-6020
	Potassium	2.03	0.080	0.300	NE			089663-017	SW846-6020
	Sodium	40.7	0.080	0.250	NE			089663-017	SW846-6020
CYN-MW3 (Re-analysis)	Bromide	0.750	0.066	0.200	NE	H	J	089663-R16	SW846 9056
22-Sep-10	Chloride	55.3	0.660	2.00	NE	H	J	089663-R16	SW846 9056
	Fluoride	0.675	0.033	0.100	4.0	H	J	089663-R16	SW846 9056
	Sulfate	167	1.00	4.00	NE	H	J	089663-R16	SW846 9056
CYN-MW4	Bicarbonate Alkalinity	223	0.725	1.00	NE	B		089656-016	SM2320B
16-Sep-10	Carbonate Alkalinity	ND	0.725	1.00	NE	U		089656-016	SM2320B
	Bromide	0.378	0.066	0.200	NE			089656-016	SW846 9056
	Chloride	24.2	0.660	2.00	NE			089656-016	SW846 9056
	Fluoride	0.780	0.033	0.100	4.0			089656-016	SW846 9056
	Sulfate	130	1.00	4.00	NE			089656-016	SW846 9056
	Calcium	69.7	0.200	2.00	NE			089656-017	SW846-6020
	Magnesium	33.9	0.025	0.075	NE			089656-017	SW846-6020
	Potassium	6.27	0.400	1.50	NE			089656-017	SW846-6020
	Sodium	46.6	0.400	1.50	NE			089656-017	SW846-6020

Refer to footnotes on page G-29.

Table G-6 (Continued)
Summary of Anion, Cation, and Alkalinity Results
Burn Site Groundwater Monitoring

Fiscal Year 2010, Fourth Quarter

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	Laboratory Qualifier[e]	Validation Qualifier[f]	Sample No.	Analytical Method[g]
CYN-MW4 (Duplicate)	Bicarbonate Alkalinity	223	0.725	1.00	NE	B		089657-016	SM2320B
16-Sep-10	Carbonate Alkalinity	ND	0.725	1.00	NE	U		089657-016	SM2320B
	Bromide	0.396	0.066	0.200	NE			089657-016	SW846 9056
	Chloride	24.0	0.660	2.00	NE			089657-016	SW846 9056
	Fluoride	0.784	0.033	0.100	4.0			089657-016	SW846 9056
	Sulfate	128	1.00	4.00	NE			089657-016	SW846 9056
	Calcium	68.4	0.200	2.00	NE			089657-017	SW846-6020
	Magnesium	36.3	0.025	0.075	NE			089657-017	SW846-6020
	Potassium	6.87	0.400	1.50	NE			089657-017	SW846-6020
	Sodium	45.5	0.400	1.25	NE			089657-017	SW846-6020
CYN-MW6	Bicarbonate Alkalinity	296	0.725	1.00	NE	B		089659-016	SM2320B
20-Sep-10	Carbonate Alkalinity	ND	0.725	1.00	NE	U		089659-016	SM2320B
	Bromide	0.875	0.066	0.200	NE			089659-016	SW846 9056
	Chloride	61.1	0.660	2.00	NE			089659-016	SW846 9056
	Fluoride	0.624	0.033	0.100	4.0			089659-016	SW846 9056
	Sulfate	132	1.00	4.00	NE			089659-016	SW846 9056
	Calcium	162	0.200	2.00	NE	B		089659-017	SW846-6020
	Magnesium	42.3	0.005	0.015	NE			089659-017	SW846-6020
	Potassium	2.33	0.080	0.300	NE			089659-017	SW846-6020
	Sodium	44.4	0.080	0.250	NE			089659-017	SW846-6020
CYN-MW7	Bicarbonate Alkalinity	256	0.725	1.00	NE	B		089652-016	SM2320B
15-Sep-10	Carbonate Alkalinity	ND	0.725	1.00	NE	U		089652-016	SM2320B
	Bromide	0.626	0.066	0.200	NE			089652-016	SW846 9056
	Chloride	41.3	0.330	1.00	NE			089652-016	SW846 9056
	Fluoride	1.30	0.033	0.100	4.0			089652-016	SW846 9056
	Sulfate	82.8	0.500	2.00	NE			089652-016	SW846 9056
	Calcium	103	0.200	2.00	NE			089652-017	SW846-6020
	Magnesium	20.4	0.025	0.075	NE			089652-017	SW846-6020
	Potassium	2.43	0.400	1.50	NE			089652-017	SW846-6020
	Sodium	44.1	0.400	1.25	NE			089652-017	SW846-6020

Refer to footnotes on page G-29.

Table G-6 (Continued)
Summary of Anion, Cation, and Alkalinity Results
Burn Site Groundwater Monitoring

Fiscal Year 2010, Fourth Quarter

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	Laboratory Qualifier[e]	Validation Qualifier[f]	Sample No.	Analytical Method[g]
CYN-MW8	Bicarbonate Alkalinity	237	0.725	1.00	NE	B		089650-016	SM2320B
14-Sep-10	Carbonate Alkalinity	ND	0.725	1.00	NE	U		089650-016	SM2320B
	Bromide	0.752	0.066	0.200	NE			089650-016	SW846 9056
	Chloride	56.9	0.660	2.00	NE			089650-016	SW846 9056
	Fluoride	1.40	0.033	0.100	4.0			089650-016	SW846 9056
	Sulfate	119	1.00	4.00	NE			089650-016	SW846 9056
	Calcium	114	0.200	2.00	NE			089650-017	SW846-6020
	Magnesium	24.3	0.025	0.075	NE			089650-017	SW846-6020
	Potassium	2.32	0.400	1.50	NE			089650-017	SW846-6020
	Sodium	45.9	0.400	1.25	NE			089650-017	SW846-6020
CYN-MW9	Bicarbonate Alkalinity	236	0.725	1.00	NE	B		089672-016	SM2320B
28-Sep-10	Carbonate Alkalinity	ND	0.725	1.00	NE	U		089672-016	SM2320B
	Bromide	1.13	0.066	0.200	NE			089672-016	SW846 9056
	Chloride	79.2	0.660	2.00	NE			089672-016	SW846 9056
	Fluoride	0.609	0.033	0.100	4.0			089672-016	SW846 9056
	Sulfate	173	1.00	4.00	NE			089672-016	SW846 9056
	Calcium	169	0.400	4.00	NE		J	089672-017	SW846-6020
	Magnesium	48.6	0.050	0.150	NE			089672-017	SW846-6020
	Potassium	2.71	0.080	0.300	NE			089672-017	SW846-6020
	Sodium	40.3	0.800	2.50	NE			089672-017	SW846-6020
CYN-MW9 (Duplicate)	Bicarbonate Alkalinity	238	0.725	1.00	NE	B		089673-016	SM2320B
28-Sep-10	Carbonate Alkalinity	ND	0.725	1.00	NE	U		089673-016	SM2320B
	Bromide	1.15	0.066	0.200	NE			089673-016	SW846 9056
	Chloride	80.2	0.660	2.00	NE			089673-016	SW846 9056
	Fluoride	0.600	0.033	0.100	4.0			089673-016	SW846 9056
	Sulfate	175	1.00	4.00	NE			089673-016	SW846 9056
	Calcium	170	0.400	4.00	NE		J	089673-017	SW846-6020
	Magnesium	50.6	0.050	0.150	NE			089673-017	SW846-6020
	Potassium	2.63	0.080	0.300	NE			089673-017	SW846-6020
	Sodium	43.6	0.800	2.50	NE			089673-017	SW846-6020

Refer to footnotes on page G-29.

Table G-6 (Concluded)
Summary of Anion, Cation, and Alkalinity Results
Burn Site Groundwater Monitoring

Fiscal Year 2010, Fourth Quarter

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	Laboratory Qualifier[e]	Validation Qualifier[f]	Sample No.	Analytical Method[g]
CYN-MW10	Bicarbonate Alkalinity	236	0.725	1.00	NE	B		089668-016	SM2320B
27-Sep-10	Carbonate Alkalinity	ND	0.725	1.00	NE	U		089668-016	SM2320B
	Bromide	0.789	0.066	0.200	NE			089668-016	SW846 9056
	Chloride	53.2	0.660	2.00	NE			089668-016	SW846 9056
	Fluoride	0.626	0.033	0.100	4.0			089668-016	SW846 9056
	Sulfate	172	1.00	4.00	NE			089668-016	SW846 9056
	Calcium	128	0.500	5.00	NE		J	089668-017	SW846-6020
	Magnesium	36.4	0.025	0.075	NE			089668-017	SW846-6020
	Potassium	1.96	0.080	0.300	NE			089668-017	SW846-6020
	Sodium	37.6	0.400	1.25	NE			089668-017	SW846-6020
CYN-MW11	Bicarbonate Alkalinity	257	0.725	1.00	NE	B		089675-016	SM2320B
29-Sep-10	Carbonate Alkalinity	ND	0.725	1.00	NE	U		089675-016	SM2320B
	Bromide	1.00	0.066	0.200	NE			089675-016	SW846 9056
	Chloride	73.6	0.660	2.00	NE			089675-016	SW846 9056
	Fluoride	0.660	0.033	0.100	4.0			089675-016	SW846 9056
	Sulfate	178	1.00	4.00	NE			089675-016	SW846 9056
	Calcium	142	0.400	4.00	NE		J	089675-017	SW846-6020
	Magnesium	44.0	0.050	0.150	NE			089675-017	SW846-6020
	Potassium	3.33	0.080	0.300	NE			089675-017	SW846-6020
	Sodium	45.5	0.800	2.50	NE			089675-017	SW846-6020
CYN-MW12	Bicarbonate Alkalinity	250	0.725	1.00	NE	B		089665-016	SM2320B
23-Sep-10	Carbonate Alkalinity	ND	0.725	1.00	NE	U		089665-016	SM2320B
	Bromide	0.928	0.066	0.200	NE			089665-016	SW846 9056
	Chloride	88.8	0.330	1.00	NE			089665-016	SW846 9056
	Fluoride	1.04	0.033	0.100	4.0			089665-016	SW846 9056
	Sulfate	208	1.00	4.00	NE			089665-016	SW846 9056
	Calcium	164	0.200	2.00	NE	B		089665-017	SW846-6020
	Magnesium	44.2	0.005	0.015	NE			089665-017	SW846-6020
	Potassium	5.86	0.080	0.300	NE			089665-017	SW846-6020
	Sodium	51.4	0.800	2.50	NE			089665-017	SW846-6020

Refer to footnotes on page G-29.

Table G-7
Summary of Perchlorate Results
Burn Site Groundwater Monitoring

Fiscal Year 2010, Fourth Quarter

Well ID	Perchlorate Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	Laboratory Qualifier[e]	Validation Qualifier[f]	Sample No.	Analytical Method[g]
CYN-MW6 20-Sep-10	0.00614	0.004	0.012	NE	J		089659-020	EPA 314.0
CYN-MW9 28-Sep-10	ND	0.004	0.012	NE	U		089672-020	EPA 314.0
CYN-MW9 (Duplicate) 28-Sep-10	ND	0.004	0.012	NE	U		089673-020	EPA 314.0
CYN-MW10 27-Sep-10	ND	0.004	0.012	NE	U		089668-020	EPA 314.0
CYN-MW11 29-Sep-10	ND	0.004	0.012	NE	U		089675-020	EPA 314.0
CYN-MW12 23-Sep-10	ND	0.004	0.012	NE	U		089665-020	EPA 314.0

Refer to footnotes on page G-29.

Table G-8
Summary of Total Metal Results
Burn Site Groundwater Monitoring

Fiscal Year 2010, Fourth Quarter

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	Laboratory Qualifier[e]	Validation Qualifier[f]	Sample No.	Analytical Method[g]
CYN-MW1D	Aluminum	0.0245	0.010	0.030	NE	J		089661-010	SW846 6020
21-Sep-10	Antimony	ND	0.0005	0.003	0.006	U		089661-010	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	U		089661-010	SW846 6020
	Barium	0.0467	0.0005	0.002	2.00			089661-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		089661-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	U		089661-010	SW846 6020
	Calcium	67.3	0.200	2.00	NE	B		089661-010	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	U		089661-010	SW846 6020
	Cobalt	0.000325	0.0001	0.001	NE	J		089661-010	SW846 6020
	Copper	0.00245	0.0003	0.001	NE			089661-010	SW846 6020
	Iron	8.36	0.010	0.100	NE			089661-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		089661-010	SW846 6020
	Magnesium	14.4	0.005	0.015	NE			089661-010	SW846 6020
	Manganese	0.0675	0.001	0.005	NE			089661-010	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	U		089661-010	SW846 7470
	Nickel	0.00168	0.0005	0.002	NE	J		089661-010	SW846 6020
	Potassium	2.52	0.080	0.300	NE			089661-010	SW846 6020
	Selenium	0.002	0.001	0.005	0.050	J		089661-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		089661-010	SW846 6020
	Sodium	33.4	0.080	0.250	NE			089661-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	U		089661-010	SW846 6020
	Uranium	0.00111	0.00005	0.0002	0.030			089661-010	SW846 6020
	Vanadium	ND	0.003	0.010	NE	U		089661-010	SW846 6020
	Zinc	ND	0.0026	0.010	NE	U		089661-010	SW846 6020

Refer to footnotes on page G-29.

Table G-8 (Continued)
Summary of Total Metal Results
Burn Site Groundwater Monitoring

Fiscal Year 2010, Fourth Quarter

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	Laboratory Qualifier[e]	Validation Qualifier[f]	Sample No.	Analytical Method[g]
CYN-MW3	Aluminum	0.0158	0.010	0.030	NE	J		089663-010	SW846 6020
22-Sep-10	Antimony	ND	0.0005	0.003	0.006	U		089663-010	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	U		089663-010	SW846 6020
	Barium	0.0502	0.0005	0.002	2.00			089663-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		089663-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	U		089663-010	SW846 6020
	Calcium	140	0.200	2.00	NE	B		089663-010	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	U		089663-010	SW846 6020
	Cobalt	0.000179	0.0001	0.001	NE	J	J+	089663-010	SW846 6020
	Copper	0.00348	0.0003	0.001	NE			089663-010	SW846 6020
	Iron	0.233	0.010	0.100	NE			089663-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		089663-010	SW846 6020
	Magnesium	37.0	0.005	0.015	NE			089663-010	SW846 6020
	Manganese	ND	0.001	0.005	NE	U		089663-010	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	U		089663-010	SW846 7470
	Nickel	0.00274	0.0005	0.002	NE			089663-010	SW846 6020
	Potassium	2.13	0.080	0.300	NE			089663-010	SW846 6020
	Selenium	0.00811	0.001	0.005	0.050			089663-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		089663-010	SW846 6020
	Sodium	41.2	0.080	0.250	NE			089663-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	U		089663-010	SW846 6020
	Uranium	0.00624	0.00005	0.0002	0.030			089663-010	SW846 6020
	Vanadium	ND	0.003	0.010	NE	U		089663-010	SW846 6020
	Zinc	0.00283	0.0026	0.010	NE	J		089663-010	SW846 6020

Refer to footnotes on page G-29.

Table G-8 (Continued)
Summary of Total Metal Results
Burn Site Groundwater Monitoring

Fiscal Year 2010, Fourth Quarter

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	Laboratory Qualifier[e]	Validation Qualifier[f]	Sample No.	Analytical Method[g]
CYN-MW4	Aluminum	ND	0.050	0.150	NE	U		089656-010	SW846 6020
16-Sep-10	Antimony	ND	0.0005	0.003	0.006	U		089656-010	SW846 6020
	Arsenic	0.00185	0.0015	0.005	0.010	J		089656-010	SW846 6020
	Barium	0.0471	0.0005	0.002	2.00			089656-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		089656-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	U		089656-010	SW846 6020
	Calcium	69.7	0.200	2.00	NE			089656-010	SW846 6020
	Chromium	ND	0.0125	0.050	0.100	U		089656-010	SW846 6020
	Cobalt	ND	0.0005	0.005	NE	U		089656-010	SW846 6020
	Copper	ND	0.0015	0.005	NE	U		089656-010	SW846 6020
	Iron	0.128	0.050	0.500	NE	J		089656-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		089656-010	SW846 6020
	Magnesium	34.6	0.025	0.075	NE			089656-010	SW846 6020
	Manganese	ND	0.005	0.025	NE	U		089656-010	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	U		089656-010	SW846 7470
	Nickel	ND	0.0025	0.010	NE	U		089656-010	SW846 6020
	Potassium	6.34	0.400	1.50	NE			089656-010	SW846 6020
	Selenium	0.0148	0.001	0.005	0.050			089656-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		089656-010	SW846 6020
	Sodium	45.7	0.400	1.25	NE			089656-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	U		089656-010	SW846 6020
	Uranium	0.0126	0.00005	0.0002	0.030	B		089656-010	SW846 6020
	Vanadium	ND	0.003	0.010	NE	U		089656-010	SW846 6020
	Zinc	0.00672	0.0026	0.010	NE	J	0.041U	089656-010	SW846 6020

Refer to footnotes on page G-29.

Table G-8 (Continued)
Summary of Total Metal Results
Burn Site Groundwater Monitoring

Fiscal Year 2010, Fourth Quarter

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	Laboratory Qualifier[e]	Validation Qualifier[f]	Sample No.	Analytical Method[g]
CYN-MW4 (Duplicate) 16-Sep-10	Aluminum	ND	0.050	0.150	NE	U		089657-010	SW846 6020
	Antimony	ND	0.0005	0.003	0.006	U		089657-010	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	U		089657-010	SW846 6020
	Barium	0.0464	0.0005	0.002	2.00			089657-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		089657-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	U		089657-010	SW846 6020
	Calcium	69.1	0.200	2.00	NE			089657-010	SW846 6020
	Chromium	ND	0.0125	0.050	0.100	U		089657-010	SW846 6020
	Cobalt	ND	0.0005	0.005	NE	U		089657-010	SW846 6020
	Copper	ND	0.0015	0.005	NE	U		089657-010	SW846 6020
	Iron	0.127	0.050	0.500	NE	J		089657-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		089657-010	SW846 6020
	Magnesium	35.4	0.025	0.075	NE			089657-010	SW846 6020
	Manganese	ND	0.005	0.025	NE	U		089657-010	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	U		089657-010	SW846 7470
	Nickel	ND	0.0025	0.010	NE	U		089657-010	SW846 6020
	Potassium	6.41	0.400	1.50	NE			089657-010	SW846 6020
	Selenium	0.0146	0.001	0.005	0.050			089657-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		089657-010	SW846 6020
	Sodium	46.3	0.400	1.25	NE			089657-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	U		089657-010	SW846 6020
	Uranium	0.0126	0.00005	0.0002	0.030	B		089657-010	SW846 6020
	Vanadium	ND	0.003	0.010	NE	U		089657-010	SW846 6020
	Zinc	0.00651	0.0026	0.010	NE	J	0.041U	089657-010	SW846 6020

Refer to footnotes on page G-29.

Table G-8 (Continued)
Summary of Total Metal Results
Burn Site Groundwater Monitoring

Fiscal Year 2010, Fourth Quarter

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	Laboratory Qualifier[e]	Validation Qualifier[f]	Sample No.	Analytical Method[g]
CYN-MW6	Aluminum	0.0138	0.010	0.030	NE	J		089659-010	SW846 6020
20-Sep-10	Antimony	ND	0.0005	0.003	0.006	U		089659-010	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	U		089659-010	SW846 6020
	Barium	0.0664	0.0005	0.002	2.00			089659-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		089659-010	SW846 6020
	Cadmium	0.000124	0.00011	0.001	0.005	J	J+	089659-010	SW846 6020
	Calcium	160	0.200	2.00	NE	B		089659-010	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	U		089659-010	SW846 6020
	Cobalt	0.000299	0.0001	0.001	NE	J	J+	089659-010	SW846 6020
	Copper	0.00628	0.0003	0.001	NE			089659-010	SW846 6020
	Iron	0.253	0.010	0.100	NE			089659-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		089659-010	SW846 6020
	Magnesium	46.4	0.005	0.015	NE			089659-010	SW846 6020
	Manganese	0.00148	0.001	0.005	NE	J	J+	089659-010	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	U		089659-010	SW846 7470
	Nickel	0.00361	0.0005	0.002	NE			089659-010	SW846 6020
	Potassium	2.37	0.080	0.300	NE			089659-010	SW846 6020
	Selenium	0.0101	0.001	0.005	0.050			089659-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		089659-010	SW846 6020
	Sodium	45.2	0.080	0.250	NE			089659-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	U		089659-010	SW846 6020
	Uranium	0.0087	0.00005	0.0002	0.030			089659-010	SW846 6020
	Vanadium	ND	0.003	0.010	NE	U		089659-010	SW846 6020
	Zinc	0.0197	0.0026	0.010	NE			089659-010	SW846 6020

Refer to footnotes on page G-29.

Table G-8 (Continued)
Summary of Total Metal Results
Burn Site Groundwater Monitoring

Fiscal Year 2010, Fourth Quarter

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	Laboratory Qualifier[e]	Validation Qualifier[f]	Sample No.	Analytical Method[g]
CYN-MW7	Aluminum	0.0562	0.050	0.150	NE	J	J+	089652-010	SW846 6020
15-Sep-10	Antimony	ND	0.0005	0.003	0.006	U		089652-010	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	U		089652-010	SW846 6020
	Barium	0.106	0.0005	0.002	2.00			089652-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		089652-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	U		089652-010	SW846 6020
	Calcium	107	0.200	2.00	NE			089652-010	SW846 6020
	Chromium	ND	0.0125	0.050	0.100	U		089652-010	SW846 6020
	Cobalt	ND	0.0005	0.005	NE	U		089652-010	SW846 6020
	Copper	ND	0.0015	0.005	NE	U		089652-010	SW846 6020
	Iron	0.203	0.050	0.500	NE	J		089652-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		089652-010	SW846 6020
	Magnesium	21.2	0.025	0.075	NE			089652-010	SW846 6020
	Manganese	ND	0.005	0.025	NE	U		089652-010	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	U		089652-010	SW846 7470
	Nickel	0.00322	0.0025	0.010	NE	J		089652-010	SW846 6020
	Potassium	2.52	0.400	1.50	NE			089652-010	SW846 6020
	Selenium	0.00449	0.001	0.005	0.050	J		089652-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		089652-010	SW846 6020
	Sodium	39.9	0.400	1.25	NE			089652-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	U		089652-010	SW846 6020
	Uranium	0.00682	0.00005	0.0002	0.030	B		089652-010	SW846 6020
	Vanadium	ND	0.003	0.010	NE	U		089652-010	SW846 6020
	Zinc	0.004	0.0026	0.010	NE	J		089652-010	SW846 6020

Refer to footnotes on page G-29.

Table G-8 (Continued)
Summary of Total Metal Results
Burn Site Groundwater Monitoring

Fiscal Year 2010, Fourth Quarter

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	Laboratory Qualifier[e]	Validation Qualifier[f]	Sample No.	Analytical Method[g]
CYN-MW8	Aluminum	ND	0.010	0.030	NE	U		089650-010	SW846 6020
14-Sep-10	Antimony	ND	0.0005	0.003	0.006	U		089650-010	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	U		089650-010	SW846 6020
	Barium	0.0598	0.0005	0.002	2.00			089650-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		089650-010	SW846 6020
	Cadmium	0.000171	0.00011	0.001	0.005	J	J+	089650-010	SW846 6020
	Calcium	116	0.200	2.00	NE			089650-010	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	U		089650-010	SW846 6020
	Cobalt	0.000309	0.0001	0.001	NE	J	J+	089650-010	SW846 6020
	Copper	0.000956	0.0003	0.001	NE	B, J	0.0019U	089650-010	SW846 6020
	Iron	0.188	0.010	0.100	NE			089650-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		089650-010	SW846 6020
	Magnesium	24.4	0.025	0.075	NE			089650-010	SW846 6020
	Manganese	0.00305	0.001	0.005	NE	J	J+	089650-010	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	U		089650-010	SW846 7470
	Nickel	0.00324	0.0005	0.002	NE		J+	089650-010	SW846 6020
	Potassium	2.62	0.400	1.50	NE			089650-010	SW846 6020
	Selenium	0.00708	0.001	0.005	0.050			089650-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		089650-010	SW846 6020
	Sodium	49.2	0.400	1.25	NE			089650-010	SW846 6020
	Thallium	0.000434	0.0003	0.001	0.002	J	0.0023U	089650-010	SW846 6020
	Uranium	0.00797	0.00005	0.0002	0.030	B		089650-010	SW846 6020
	Vanadium	ND	0.003	0.010	NE	U		089650-010	SW846 6020
	Zinc	0.00609	0.0026	0.010	NE	J		089650-010	SW846 6020

Refer to footnotes on page G-29.

Table G-8 (Continued)
Summary of Total Metal Results
Burn Site Groundwater Monitoring

Fiscal Year 2010, Fourth Quarter

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	Laboratory Qualifier[e]	Validation Qualifier[f]	Sample No.	Analytical Method[g]
CYN-MW9	Aluminum	ND	0.010	0.030	NE	U		089672-010	SW846 6020
28-Sep-10	Antimony	ND	0.0005	0.003	0.006	U		089672-010	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	U		089672-010	SW846 6020
	Barium	0.0738	0.0005	0.002	2.00			089672-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		089672-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	U		089672-010	SW846 6020
	Calcium	166	0.400	4.00	NE		J	089672-010	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	U		089672-010	SW846 6020
	Cobalt	0.000365	0.0001	0.001	NE	J	J+	089672-010	SW846 6020
	Copper	0.0015	0.0003	0.001	NE		0.0098UJ	089672-010	SW846 6020
	Iron	0.368	0.010	0.100	NE			089672-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		089672-010	SW846 6020
	Magnesium	48.1	0.050	0.150	NE			089672-010	SW846 6020
	Manganese	0.0658	0.001	0.005	NE		J+	089672-010	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	U		089672-010	SW846 7470
	Nickel	0.00524	0.0005	0.002	NE		J+	089672-010	SW846 6020
	Potassium	2.68	0.080	0.300	NE			089672-010	SW846 6020
	Selenium	0.00822	0.001	0.005	0.050			089672-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		089672-010	SW846 6020
	Sodium	42.0	0.800	2.50	NE			089672-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	U		089672-010	SW846 6020
	Uranium	0.00821	0.00005	0.0002	0.030	B		089672-010	SW846 6020
	Vanadium	ND	0.003	0.010	NE	U		089672-010	SW846 6020
	Zinc	0.0359	0.0026	0.010	NE		J+	089672-010	SW846 6020

Refer to footnotes on page G-29.

Table G-8 (Continued)
Summary of Total Metal Results
Burn Site Groundwater Monitoring

Fiscal Year 2010, Fourth Quarter

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	Laboratory Qualifier[e]	Validation Qualifier[f]	Sample No.	Analytical Method[g]
CYN-MW9 (Duplicate) 28-Sep-10	Aluminum	0.012	0.010	0.030	NE	J		089673-010	SW846 6020
	Antimony	ND	0.0005	0.003	0.006	U		089673-010	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	U		089673-010	SW846 6020
	Barium	0.074	0.0005	0.002	2.00			089673-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		089673-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	U		089673-010	SW846 6020
	Calcium	174	0.400	4.00	NE		J	089673-010	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	U		089673-010	SW846 6020
	Cobalt	0.000378	0.0001	0.001	NE	J	J+	089673-010	SW846 6020
	Copper	0.00152	0.0003	0.001	NE		0.0098UJ	089673-010	SW846 6020
	Iron	0.388	0.010	0.100	NE			089673-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		089673-010	SW846 6020
	Magnesium	49.8	0.050	0.150	NE			089673-010	SW846 6020
	Manganese	0.068	0.001	0.005	NE		J+	089673-010	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	U		089673-010	SW846 7470
	Nickel	0.00547	0.0005	0.002	NE		J+	089673-010	SW846 6020
	Potassium	2.75	0.080	0.300	NE			089673-010	SW846 6020
	Selenium	0.00831	0.001	0.005	0.050			089673-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		089673-010	SW846 6020
	Sodium	40.2	0.800	2.50	NE			089673-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	U		089673-010	SW846 6020
	Uranium	0.00827	0.00005	0.0002	0.030	B		089673-010	SW846 6020
	Vanadium	ND	0.003	0.010	NE	U		089673-010	SW846 6020
	Zinc	0.0368	0.0026	0.010	NE		J+	089673-010	SW846 6020

Refer to footnotes on page G-29.

Table G-8 (Continued)
Summary of Total Metal Results
Burn Site Groundwater Monitoring

Fiscal Year 2010, Fourth Quarter

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	Laboratory Qualifier[e]	Validation Qualifier[f]	Sample No.	Analytical Method[g]
CYN-MW10	Aluminum	ND	0.010	0.030	NE	U		089668-010	SW846 6020
27-Sep-10	Antimony	ND	0.0005	0.003	0.006	U		089668-010	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	U		089668-010	SW846 6020
	Barium	0.0644	0.0005	0.002	2.00			089668-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		089668-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	U		089668-010	SW846 6020
	Calcium	133	0.100	1.00	NE			089668-010	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	U		089668-010	SW846 6020
	Cobalt	0.000197	0.0001	0.001	NE	J	J+	089668-010	SW846 6020
	Copper	0.000989	0.0003	0.001	NE	J		089668-010	SW846 6020
	Iron	0.282	0.010	0.100	NE			089668-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		089668-010	SW846 6020
	Magnesium	35.2	0.025	0.075	NE			089668-010	SW846 6020
	Manganese	0.00296	0.001	0.005	NE	J	J+	089668-010	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	U		089668-010	SW846 7470
	Nickel	0.00399	0.0005	0.002	NE		J+	089668-010	SW846 6020
	Potassium	1.99	0.080	0.300	NE			089668-010	SW846 6020
	Selenium	0.00771	0.001	0.005	0.050			089668-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		089668-010	SW846 6020
	Sodium	37.2	0.400	1.25	NE			089668-010	SW846 6020
	Thallium	0.000588	0.0003	0.001	0.002	B, J	0.0031U	089668-010	SW846 6020
	Uranium	0.0068	0.00005	0.0002	0.030	B		089668-010	SW846 6020
	Vanadium	ND	0.003	0.010	NE	U		089668-010	SW846 6020
	Zinc	0.00305	0.0026	0.010	NE	J	J+	089668-010	SW846 6020

Refer to footnotes on page G-29.

Table G-8 (Continued)
Summary of Total Metal Results
Burn Site Groundwater Monitoring

Fiscal Year 2010, Fourth Quarter

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	Laboratory Qualifier[e]	Validation Qualifier[f]	Sample No.	Analytical Method[g]
CYN-MW11	Aluminum	0.0478	0.010	0.030	NE			089675-010	SW846 6020
29-Sep-10	Antimony	0.000617	0.0005	0.003	0.006	J		089675-010	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	U		089675-010	SW846 6020
	Barium	0.0868	0.0005	0.002	2.00			089675-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		089675-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	U		089675-010	SW846 6020
	Calcium	128	0.400	4.00	NE		J	089675-010	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	U		089675-010	SW846 6020
	Cobalt	0.00127	0.0001	0.001	NE		J+	089675-010	SW846 6020
	Copper	0.00153	0.0003	0.001	NE			089675-010	SW846 6020
	Iron	0.394	0.010	0.100	NE			089675-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		089675-010	SW846 6020
	Magnesium	44.2	0.050	0.150	NE			089675-010	SW846 6020
	Manganese	0.771	0.001	0.005	NE			089675-010	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	U		089675-010	SW846 7470
	Nickel	0.00593	0.0005	0.002	NE		J+	089675-010	SW846 6020
	Potassium	3.62	0.080	0.300	NE			089675-010	SW846 6020
	Selenium	0.00548	0.001	0.005	0.050			089675-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		089675-010	SW846 6020
	Sodium	51.8	0.800	2.50	NE			089675-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	U		089675-010	SW846 6020
	Uranium	0.00771	0.00005	0.0002	0.030	B		089675-010	SW846 6020
	Vanadium	ND	0.003	0.010	NE	U		089675-010	SW846 6020
	Zinc	0.735	0.0026	0.010	NE			089675-010	SW846 6020

Refer to footnotes on page G-29.

Table G-8 (Concluded)
Summary of Total Metal Results
Burn Site Groundwater Monitoring

Fiscal Year 2010, Fourth Quarter

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	Laboratory Qualifier[e]	Validation Qualifier[f]	Sample No.	Analytical Method[g]
CYN-MW12	Aluminum	0.0105	0.010	0.030	NE	J		089665-010	SW846 6020
23-Sep-10	Antimony	ND	0.0005	0.003	0.006	U		089665-010	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	U		089665-010	SW846 6020
	Barium	0.0435	0.0005	0.002	2.00			089665-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		089665-010	SW846 6020
	Cadmium	0.00029	0.00011	0.001	0.005	J		089665-010	SW846 6020
	Calcium	157	0.200	2.00	NE	B		089665-010	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	U		089665-010	SW846 6020
	Cobalt	0.00126	0.0001	0.001	NE		J+	089665-010	SW846 6020
	Copper	0.0036	0.0003	0.001	NE			089665-010	SW846 6020
	Iron	0.280	0.010	0.100	NE			089665-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		089665-010	SW846 6020
	Magnesium	43.6	0.005	0.015	NE			089665-010	SW846 6020
	Manganese	0.588	0.001	0.005	NE			089665-010	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	U		089665-010	SW846 7470
	Nickel	0.00425	0.0005	0.002	NE			089665-010	SW846 6020
	Potassium	5.56	0.080	0.300	NE			089665-010	SW846 6020
	Selenium	0.00668	0.001	0.005	0.050			089665-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		089665-010	SW846 6020
	Sodium	48.2	0.080	0.250	NE			089665-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	U		089665-010	SW846 6020
	Uranium	0.00877	0.00005	0.0002	0.030			089665-010	SW846 6020
	Vanadium	ND	0.003	0.010	NE	U		089665-010	SW846 6020
	Zinc	0.231	0.013	0.050	NE			089665-010	SW846 6020

Refer to footnotes on page G-29.

Table G-9
Summary of Tritium, Gross Alpha, Gross Beta, Gamma Spectroscopy, and Isotopic Uranium Results
Burn Site Groundwater Monitoring

Fiscal Year 2010, Fourth Quarter

Well ID	Analyte	Activity[a] (pCi/L)	MDA[b] (pCi/L)	Critical Level[c] (pCi/L)	MCL[d] (pCi/L)	Laboratory Qualifier[e]	Validation Qualifier[f]	Sample No.	Analytical Method[g]
CYN-MW1D	Americium-241	-7.19 ± 13.0	21.5	10.7	NE	U	BD	089661-033	EPA 901.1
21-Sep-10	Cesium-137	0.949 ± 2.02	3.45	1.73	NE	U	BD	089661-033	EPA 901.1
	Cobalt-60	0.0907 ± 2.20	3.66	1.83	NE	U	BD	089661-033	EPA 901.1
	Potassium-40	12.2 ± 46.9	33.1	16.5	NE	U	BD	089661-033	EPA 901.1
	Gross Alpha	0.50	NA	NA	15	NA	None	089661-034	EPA 900.0
	Gross Beta	2.53 ± 1.07	1.56	0.756	4 mrem/yr		J	089661-034	EPA 900.0
	Uranium-233/234	2.04 ± 0.320	0.0513	0.0216	NE			089661-035	HASL-300
	Uranium-235/236	0.0413 ± 0.0271	0.0396	0.0147	NE		J	089661-035	HASL-300
	Uranium-238	0.331 ± 0.0771	0.031	0.0114	NE			089661-035	HASL-300
	Tritium	32.4 ± 86.6	147	71.6	NE	U	BD	089661-036	EPA 906.0 M
CYN-MW3	Americium-241	4.37 ± 12.4	18.7	9.36	NE	U	BD	089663-033	EPA 901.1
22-Sep-10	Cesium-137	0.398 ± 1.92	3.26	1.63	NE	U	BD	089663-033	EPA 901.1
	Cobalt-60	0.879 ± 1.94	3.34	1.67	NE	U	BD	089663-033	EPA 901.1
	Potassium-40	21.1 ± 50.1	28.4	14.2	NE	U	BD	089663-033	EPA 901.1
	Gross Alpha	2.00	NA	NA	15	NA	None	089663-034	EPA 900.0
	Gross Beta	5.63 ± 1.86	2.43	1.17	4 mrem/yr		J	089663-034	EPA 900.0
	Uranium-233/234	6.16 ± 0.899	0.0559	0.0235	NE			089663-035	HASL-300
	Uranium-235/236	0.213 ± 0.0659	0.0431	0.016	NE		J	089663-035	HASL-300
	Uranium-238	1.93 ± 0.310	0.0338	0.0124	NE			089663-035	HASL-300
	Tritium	56.6 ± 92.7	156	75.8	NE	U	BD	089663-036	EPA 906.0 M
CYN-MW4	Americium-241	7.34 ± 7.95	12.5	6.25	NE	U	BD	089656-033	EPA 901.1
16-Sep-10	Cesium-137	0.416 ± 1.86	3.15	1.57	NE	U	BD	089656-033	EPA 901.1
	Cobalt-60	-1.53 ± 1.89	2.98	1.49	NE	U	BD	089656-033	EPA 901.1
	Potassium-40	-15.4 ± 38.4	41.6	20.8	NE	U	BD	089656-033	EPA 901.1
	Gross Alpha	3.74	NA	NA	15	NA	None	089656-034	EPA 900.0
	Gross Beta	13.3 ± 2.71	1.45	0.691	4 mrem/yr			089656-034	EPA 900.0
	Uranium-233/234	32.5 ± 4.76	0.123	0.0548	NE			089656-035	HASL-300
	Uranium-235/236	0.721 ± 0.166	0.0628	0.0232	NE			089656-035	HASL-300
	Uranium-238	4.34 ± 0.690	0.0546	0.0207	NE			089656-035	HASL-300
	Tritium	8.74 ± 63.4	114	52.5	NE	U	BD	089656-036	EPA 906.0 M

Refer to footnotes on page G-29.

Table G-9 (Continued)
Summary of Tritium, Gross Alpha, Gross Beta, Gamma Spectroscopy, and Isotopic Uranium Results
Burn Site Groundwater Monitoring

Fiscal Year 2010, Fourth Quarter

Well ID	Analyte	Activity[a] (pCi/L)	MDA[b] (pCi/L)	Critical Level[c] (pCi/L)	MCL[d] (pCi/L)	Laboratory Qualifier[e]	Validation Qualifier[f]	Sample No.	Analytical Method[g]
CYN-MW4 (Duplicate)	Americium-241	0.182 ± 4.58	7.70	3.85	NE	U	BD	089657-033	EPA 901.1
16-Sep-10	Cesium-137	-0.564 ± 1.55	2.60	1.30	NE	U	BD	089657-033	EPA 901.1
	Cobalt-60	1.65 ± 1.59	2.90	1.45	NE	U	BD	089657-033	EPA 901.1
	Potassium-40	-22.2 ± 34.1	39.2	19.6	NE	U	BD	089657-033	EPA 901.1
	Gross Alpha	-5.15	NA	NA	15	NA	None	089657-034	EPA 900.0
	Gross Beta	4.08 ± 2.00	2.79	1.36	4 mrem/yr		J	089657-034	EPA 900.0
	Uranium-233/234	33.9 ± 4.93	0.116	0.0515	NE			089657-035	HASL-300
	Uranium-235/236	0.355 ± 0.103	0.059	0.0218	NE			089657-035	HASL-300
	Uranium-238	4.39 ± 0.689	0.0514	0.0195	NE			089657-035	HASL-300
	Tritium	-5.95 ± 63.3	116	53.6	NE	U	BD	089657-036	EPA 906.0 M
CYN-MW6	Americium-241	-8.49 ± 12.8	21.1	10.6	NE	U	BD	089659-033	EPA 901.1
20-Sep-10	Cesium-137	-0.25 ± 2.03	3.38	1.69	NE	U	BD	089659-033	EPA 901.1
	Cobalt-60	-0.781 ± 2.21	3.55	1.78	NE	U	BD	089659-033	EPA 901.1
	Potassium-40	-46.4 ± 36.7	42.3	21.2	NE	U	BD	089659-033	EPA 901.1
	Gross Alpha	-1.69	NA	NA	15	NA	None	089659-034	EPA 900.0
	Gross Beta	4.25 ± 2.00	2.95	1.43	4 mrem/yr		J	089659-034	EPA 900.0
	Uranium-233/234	10.6 ± 1.55	0.0889	0.0373	NE			089659-035	HASL-300
	Uranium-235/236	0.247 ± 0.0895	0.0685	0.0255	NE		J	089659-035	HASL-300
	Uranium-238	2.84 ± 0.463	0.0537	0.0197	NE			089659-035	HASL-300
	Tritium	83.3 ± 93.5	155	75.2	NE	U	BD	089659-036	EPA 906.0 M
CYN-MW7	Americium-241	-2.87 ± 10.6	17.8	8.90	NE	U	BD	089652-033	EPA 901.1
15-Sep-10	Cesium-137	0.889 ± 1.96	3.37	1.68	NE	U	BD	089652-033	EPA 901.1
	Cobalt-60	-0.333 ± 2.09	3.43	1.71	NE	U	BD	089652-033	EPA 901.1
	Potassium-40	40.8 ± 24.8	45.2	22.6	NE	U	BD	089652-033	EPA 901.1
	Gross Alpha	-1.94	NA	NA	15	NA	None	089652-034	EPA 900.0
	Gross Beta	4.99 ± 1.48	1.60	0.761	4 mrem/yr			089652-034	EPA 900.0
	Uranium-233/234	19.3 ± 2.80	0.107	0.0479	NE			089652-035	HASL-300
	Uranium-235/236	0.127 ± 0.054	0.0549	0.0203	NE		J	089652-035	HASL-300
	Uranium-238	2.41 ± 0.397	0.0478	0.0181	NE			089652-035	HASL-300
	Tritium	0.00 ± 63.0	115	52.9	NE	U	BD	089652-036	EPA 906.0 M

Refer to footnotes on page G-29.

Table G-9 (Continued)
Summary of Tritium, Gross Alpha, Gross Beta, Gamma Spectroscopy, and Isotopic Uranium Results
Burn Site Groundwater Monitoring

Fiscal Year 2010, Fourth Quarter

Well ID	Analyte	Activity[a] (pCi/L)	MDA[b] (pCi/L)	Critical Level[c] (pCi/L)	MCL[d] (pCi/L)	Laboratory Qualifier[e]	Validation Qualifier[f]	Sample No.	Analytical Method[g]
CYN-MW8	Americium-241	-2.01 ± 12.0	20.4	10.2	NE	U	BD	089650-033	EPA 901.1
14-Sep-10	Cesium-137	-5.26 ± 3.74	4.14	2.07	NE	U	BD	089650-033	EPA 901.1
	Cobalt-60	-1.19 ± 1.88	3.01	1.50	NE	U	BD	089650-033	EPA 901.1
	Potassium-40	40.3 ± 26.9	31.8	15.9	NE		J	089650-033	EPA 901.1
	Gross Alpha	-5.59	NA	NA	15	NA	None	089650-034	EPA 900.0
	Gross Beta	5.96 ± 1.78	2.08	1.00	4 mrem/yr		J	089650-034	EPA 900.0
	Uranium-233/234	24.9 ± 3.62	0.157	0.0702	NE			089650-035	HASL-300
	Uranium-235/236	0.326 ± 0.109	0.0804	0.0297	NE			089650-035	HASL-300
	Uranium-238	2.96 ± 0.499	0.070	0.0265	NE			089650-035	HASL-300
	Tritium	-48.3 ± 58.3	114	52.7	NE	U	BD	089650-036	EPA 906.0 M
CYN-MW9	Americium-241	2.16 ± 12.5	18.8	9.41	NE	U	BD	089672-033	EPA 901.1
28-Sep-10	Cesium-137	1.92 ± 1.83	3.23	1.62	NE	U	BD	089672-033	EPA 901.1
	Cobalt-60	1.30 ± 1.92	3.37	1.69	NE	U	BD	089672-033	EPA 901.1
	Potassium-40	-6.03 ± 43.5	45.6	22.8	NE	U	BD	089672-033	EPA 901.1
	Gross Alpha	-0.49	NA	NA	15	NA	None	089672-034	EPA 900.0
	Gross Beta	3.93 ± 1.57	2.18	1.05	4 mrem/yr		J	089672-034	EPA 900.0
	Uranium-233/234	8.21 ± 1.18	0.0533	0.0224	NE			089672-035	HASL-300
	Uranium-235/236	0.218 ± 0.0646	0.0411	0.0153	NE		J	089672-035	HASL-300
	Uranium-238	2.46 ± 0.381	0.0322	0.0118	NE			089672-035	HASL-300
	Tritium	58.0 ± 67.2	111	50.8	NE	U	BD	089672-036	EPA 906.0 M
CYN-MW9 (Duplicate)	Americium-241	-8.95 ± 13.1	21.8	10.9	NE	U	BD	089673-033	EPA 901.1
28-Sep-10	Cesium-137	-0.77 ± 1.85	3.04	1.52	NE	U	BD	089673-033	EPA 901.1
	Cobalt-60	0.220 ± 2.04	3.43	1.72	NE	U	BD	089673-033	EPA 901.1
	Potassium-40	3.29 ± 45.0	51.5	25.8	NE	U	BD	089673-033	EPA 901.1
	Gross Alpha	3.00	NA	NA	15	NA	None	089673-034	EPA 900.0
	Gross Beta	4.19 ± 1.84	2.66	1.29	4 mrem/yr		J	089673-034	EPA 900.0
	Uranium-233/234	9.03 ± 1.31	0.0585	0.0246	NE			089673-035	HASL-300
	Uranium-235/236	0.158 ± 0.0568	0.0451	0.0167	NE		J	089673-035	HASL-300
	Uranium-238	2.51 ± 0.395	0.0354	0.013	NE			089673-035	HASL-300
	Tritium	76.9 ± 68.0	108	49.5	NE	U	BD	089673-036	EPA 906.0 M

Refer to footnotes on page G-29.

Table G-9 (Concluded)
Summary of Tritium, Gross Alpha, Gross Beta, Gamma Spectroscopy, and Isotopic Uranium Results
Burn Site Groundwater Monitoring

Fiscal Year 2010, Fourth Quarter

Well ID	Analyte	Activity[a] (pCi/L)	MDA[b] (pCi/L)	Critical Level[c] (pCi/L)	MCL[d] (pCi/L)	Laboratory Qualifier[e]	Validation Qualifier[f]	Sample No.	Analytical Method[g]
CYN-MW10	Americium-241	-6.54 ± 11.8	17.2	8.61	NE	U	BD	089668-033	EPA 901.1
27-Sep-10	Cesium-137	0.0486 ± 1.92	3.28	1.64	NE	U	BD	089668-033	EPA 901.1
	Cobalt-60	-0.572 ± 2.04	3.42	1.71	NE	U	BD	089668-033	EPA 901.1
	Potassium-40	-25.4 ± 36.9	45.4	22.7	NE	U	BD	089668-033	EPA 901.1
	Gross Alpha	-0.99	NA	NA	15	NA	None	089668-034	EPA 900.0
	Gross Beta	2.82 ± 1.32	1.91	0.921	4 mrem/yr		J	089668-034	EPA 900.0
	Uranium-233/234	6.21 ± 0.916	0.0601	0.0253	NE			089668-035	HASL-300
	Uranium-235/236	0.132 ± 0.0507	0.0463	0.0172	NE		J	089668-035	HASL-300
	Uranium-238	2.19 ± 0.352	0.0363	0.0134	NE			089668-035	HASL-300
	Tritium	31.6 ± 62.9	109	49.9	NE	U	BD	089668-036	EPA 906.0 M
CYN-MW11	Americium-241	11.0 ± 7.72	11.9	5.96	NE	U	BD	089675-033	EPA 901.1
29-Sep-10	Cesium-137	0.980 ± 1.90	3.23	1.61	NE	U	BD	089675-033	EPA 901.1
	Cobalt-60	2.25 ± 2.02	3.63	1.82	NE	U	BD	089675-033	EPA 901.1
	Potassium-40	4.29 ± 40.8	28.4	14.2	NE	U	BD	089675-033	EPA 901.1
	Gross Alpha	0.88	NA	NA	15	NA	None	089675-034	EPA 900.0
	Gross Beta	9.26 ± 3.64	5.19	2.53	4 mrem/yr		J	089675-034	EPA 900.0
	Uranium-233/234	6.28 ± 0.911	0.053	0.0223	NE			089675-035	HASL-300
	Uranium-235/236	0.143 ± 0.0525	0.0409	0.0152	NE		J	089675-035	HASL-300
	Uranium-238	2.22 ± 0.348	0.032	0.0118	NE			089675-035	HASL-300
	Tritium	34.3 ± 62.4	108	49.2	NE	U	BD	089675-036	EPA 906.0 M
CYN-MW12	Americium-241	-8.69 ± 13.3	22.1	11.1	NE	U	BD	089665-033	EPA 901.1
23-Sep-10	Cesium-137	0.466 ± 1.90	3.24	1.62	NE	U	BD	089665-033	EPA 901.1
	Cobalt-60	-0.594 ± 2.03	3.31	1.65	NE	U	BD	089665-033	EPA 901.1
	Potassium-40	13.1 ± 47.0	33.7	16.9	NE	U	BD	089665-033	EPA 901.1
	Gross Alpha	0.521	NA	NA	15	NA	None	089665-034	EPA 900.0
	Gross Beta	7.33 ± 2.61	3.59	1.75	4 mrem/yr		J	089665-034	EPA 900.0
	Uranium-233/234	11.1 ± 1.60	0.0583	0.0245	NE			089665-035	HASL-300
	Uranium-235/236	0.239 ± 0.0708	0.0449	0.0167	NE		J	089665-035	HASL-300
	Uranium-238	2.84 ± 0.440	0.0352	0.0129	NE			089665-035	HASL-300
	Tritium	61.7 ± 92.8	156	75.7	NE	U	BD	089665-036	EPA 906.0 M

Refer to footnotes on page G-29.

Table G-10
Summary of Field Water Quality Measurements[h]
Burn Site Groundwater Monitoring

Fiscal Year 2010, Fourth Quarter

Well ID	Sample Date	Temperature (°C)	Specific Conductivity (µmho/cm)	Oxidation Reduction Potential (mV)	pH	Turbidity (NTU)	Dissolved Oxygen (% Sat)	Dissolved Oxygen (mg/L)
CYN-MW1D	21-Sep-10	20.31	495	-20.6	7.75	105.0	9.6	0.88
CYN-MW3	22-Sep-10	18.35	900	142.5	7.29	0.33	66.5	6.19
CYN-MW4	16-Sep-10	20.50	672	180.5	7.29	0.12	34.8	3.12
CYN-MW6	20-Sep-10	18.53	1059	103.8	7.04	0.37	20.6	1.92
CYN-MW7	15-Sep-10	21.62	707	166.1	7.09	1.11	39.1	3.44
CYN-MW8	14-Sep-10	21.46	811	158.1	7.13	0.19	48.1	4.24
CYN-MW9	28-Sep-10	18.93	1089	197.3	7.03	0.45	48.6	4.50
CYN-MW10	27-Sep-10	19.86	905	145.5	7.33	0.40	71.3	6.49
CYN-MW11	29-Sep-10	21.51	992	58.9	7.27	3.73	5.5	0.51
CYN-MW12	23-Sep-10	18.47	1045	50.8	7.10	0.90	5.4	0.51

Refer to footnotes on page G-29.

Table G-11
Summary of Environmental and Duplicate Analyses
Burn Site Groundwater Monitoring

Fiscal Year 2010, Fourth Quarter

Parameter	Environmental Sample (R1)	Duplicate Sample (R2)	RPD[i]
	mg/L unless otherwise noted		
CYN-MW4			
Nitrate plus Nitrite	0.149	0.150	1
Bicarbonate Alkalinity	223	223	<1
Bromide (filtered)	0.378	0.396	5
Chloride (filtered)	24.2	24.0	1
Fluoride (filtered)	0.780	0.784	1
Sulfate (filtered)	130	128	2
Calcium (filtered)	69.7	68.4	2
Magnesium (filtered)	33.9	36.3	7
Potassium (filtered)	6.27	6.87	9
Sodium (filtered)	46.6	45.5	2
Arsenic	0.00185	ND	NC
Barium	0.0471	0.0464	1
Calcium	69.7	69.1	1
Iron	0.128	0.127	1
Magnesium	34.6	35.4	2
Potassium	6.34	6.41	1
Selenium	0.0148	0.0146	1
Sodium	45.7	46.3	1
Uranium	0.0126	0.0126	<1
CYN-MW9			
Nitrate plus Nitrite	30.1	30.1	<1
Bicarbonate Alkalinity	236	238	1
Bromide (filtered)	1.13	1.15	2
Chloride (filtered)	79.2	80.2	1
Fluoride (filtered)	0.609	0.600	1
Sulfate (filtered)	173	175	1
Calcium (filtered)	169	170	1
Magnesium (filtered)	48.6	50.6	4
Potassium (filtered)	2.71	2.63	3
Sodium (filtered)	40.3	43.6	8
Aluminum	ND	0.012	NC
Barium	0.0738	0.0740	<1
Calcium	166.0	174.0	5
Cobalt	0.000365	0.000378	3
Iron	0.368	0.388	5
Magnesium	48.1	49.8	3
Manganese	0.0658	0.0680	3
Nickel	0.00524	0.00547	4
Potassium	2.68	2.75	3
Selenium	0.00822	0.00831	1
Sodium	42.0	40.2	4
Uranium	0.00821	0.00827	1
Zinc	0.0359	0.0368	2

Refer to footnotes on page G-29.

Footnotes for Burn Site Groundwater Monitoring Tables

[a]Result
- Values in bold exceed the established MCL.
- ND = not detected (at method detection limit).
- Activities of zero or less are considered to be not detected.
- Gross alpha activity measurements were corrected by subtracting out the total uranium activity (40 CFR Parts 9, 141, and 142, Table I-4)
- μg/L = Micrograms per liter.
- mg/L = Milligrams per liter.
- pCi/L = Picocuries per liter.

[b]MDL or MDA

Method detection limit. The minimum concentration or activity that can be measured and reported with 99% confidence that the analyte is greater than zero; analyte is matrix-specific.

Minimum detectable activity. The minimum detectable activity or minimum measured activity in a sample required to ensure a 95% probability that the measured activity is accurately quantified above the critical level.

NA = not applicable for gross alpha activities. The MDA could not be calculated as the gross alpha activity was corrected by subtracting out the total uranium activity.

[c]PQL or Critical Level

Practical quantitation limit. The lowest concentration of analytes in a sample that can be reliably determined within specified limits of precision and accuracy by that indicated method under routine laboratory operating conditions.

Critical level. The minimum activity that can be measured and reported with 99% confidence that the analyte is greater than zero; analyte is matrix-specific.

NA = not applicable for gross alpha activities. The critical level could not be calculated as the gross alpha activity was corrected by subtracting out the total uranium activity.

[d]MCL
- Maximum contaminant level. Established by the U.S. Environmental Protection Agency Primary Water Regulations (40 CFR 141.11(b)), National Primary Drinking Water Standards, EPA, July 2002.
- NE = not established.
- The following are the MCLs for gross alpha particles and beta particles in community water systems:
  15 pCi/L = Gross alpha particle activity, excluding total uranium (40 CFR Parts 9, 141, and 142, Table I-4).
  4 mrem/yr = any combination of beta and/or gamma emitting radionuclides (as dose rate).

[e]Laboratory Qualifier

B = Analyte is detected in associated laboratory method blank.
J = Amount detected is below the practical quantitation limit.
H = Analytical holding time was exceeded.
NA = Not applicable.
U = Analyte is absent or below the method detection limit.

[f]Validation Qualifier

If cell is blank, then all quality control samples met acceptance criteria with respect to submitted samples.

BD = Below detection limit as used in radiochemistry to identify results that are not statistically different from zero.
J = The associate value is an estimated quantity.
J+ = The associated numerical value is an estimated quantity with suspected positive bias.
None = No data validation for corrected gross alpha activity.
U = The analyte was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.
UJ = The analyte was analyzed for but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

Footnotes for Burn Site Groundwater Monitoring Tables (Concluded)

[g]Analytical Method

- U.S. Environmental Protection Agency, 1999 (and updates), "Perchlorate in Drinking Water Using Ion Chromatography," EPA 815/R-00-014.
- U.S. Environmental Protection Agency, 1986 (and updates), "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, 3rd ed.
- U.S. Environmental Protection Agency, 1984, "Methods for Chemical Analysis of Water and wastes." EPA 600-4-79-020.
- U.S. Environmental Protection Agency, 1983, "The Determination of Inorganic Anions in Water by Ion Chromatography-Method 300.0," EPA-600/4-84-017.
- U.S. Environmental Protection Agency, 1980, "Prescribed Procedures for Measurement of Radioactivity in Drinking Water," EPA-600/4-80-032, U.S. Environmental Protection Agency, Cincinnati, Ohio
- U.S. Environmental Protection Agency, Washington, D.C.; or Clesceri, Greenburg, and Eaton, 1998, "Standard Methods for the Examination of Water and Wastewater," 20th ed., Method 2320B.
- U.S. Department of Energy, Environmental Measurements Laboratory, 1990, "EML Procedures Manual," 27th ed., Vol. 1, Rev. 1992, HASL-300.

[h]Field Water Quality Measurements

- Field measurements collected prior to sampling.

°C = Degrees Celsius.
% Sat = Present saturation.
μmho/cm = Micromhos per centimeter.
mg/L = Milligrams per liter.
mV = Millivolts.
NTU = Nephelometric turbidity units.
pH = Potential of hydrogen (negative logarithm of the hydrogen ion concentration).

[i]RPD

RPD = Relative percent difference is calculated with the following equation and rounded to nearest whole number.

$$RPD = \frac{\left|R_1 - R_2\right|}{[(R_1 + R_2)/2]} \times 100$$

where:

R_1 = Analysis result.
R_2 = Duplicate analysis result.
NC = Not calculated.

CFR = Code of Federal Regulations.
CYN = Canyons (Burn Site Groundwater).
EPA = U.S. Environmental Protection Agency.
HASL = Health and Safety Laboratory.
HMX = Octahydro-1,3,5,7-Tetranitro-1,3,5,7-Tetrazocine.
ID = Identification number.
mrem/yr = Millirem per year.
MW = Monitoring well.
NC = Not calculated.
RDX = Hexahydro-Trinitro-Triazine.
SW = Solid Waste.
Tetryl = 2,4,6-Trinitrophenylmethyinitramine.

APPENDIX H
Groundwater Analytical Results for Samples Collected During First Quarter of Fiscal Year 2011

Table H-1
Method Detection Limits for Volatile Organic and Semivolatile Organic Compounds
Burn Site Groundwater Monitoring

Fiscal Year 2011, First Quarter

Analyte	MDL[b] (µg/L)	Analytical Method[g]	Analyte	MDL[b] (µg/L)	Analytical Method[g]	Analyte	MDL[b] (µg/L)	Analytical Method[g]
1,1,1-Trichloroethane	0.325	8260B	1,2,4-Trichlorobenzene	1.89–2.13	8270C	Di-n-butyl phthalate	1.89–2.13	8270C
1,1,2,2-Tetrachloroethane	0.250	8260B	1,2-Dichlorobenzene	1.89–2.13	8270C	Di-n-octyl phthalate	2.83–3.19	8270C
1,1,2-Trichloroethane	0.250	8260B	1,3-Dichlorobenzene	1.89–2.13	8270C	Dibenz[a,h]anthracene	0.189–0.213	8270C
1,1-Dichloroethane	0.300	8260B	1,4-Dichlorobenzene	1.89–2.13	8270C	Dibenzofuran	1.89–2.13	8270C
1,1-Dichloroethene	0.300	8260B	2,4,5-Trichlorophenol	1.89–2.13	8270C	Diethylphthalate	1.89–2.13	8270C
1,2-Dichloroethane	0.250	8260B	2,4,6-Trichlorophenol	1.89–2.13	8270C	Dimethylphthalate	1.89–2.13	8270C
1,2-Dichloropropane	0.250	8260B	2,4-Dichlorophenol	1.89–2.13	8270C	Dinitro-o-cresol	2.83–3.19	8270C
2-Butanone	1.25	8260B	2,4-Dimethylphenol	1.89–2.13	8270C	Diphenyl amine	2.83–3.19	8270C
2-Hexanone	1.25	8260B	2,4-Dinitrophenol	4.72–5.32	8270C	Fluoranthene	0.189–0.213	8270C
4-methyl-, 2-Pentanone	1.25	8260B	2,4-Dinitrotoluene	1.89–2.13	8270C	Fluorene	0.189–0.213	8270C
Acetone	3.50	8260B	2,6-Dinitrotoluene	1.89–2.13	8270C	Hexachlorobenzene	1.89–2.13	8270C
Benzene	0.300	8260B	2-Chloronaphthalene	0.283–0.319	8270C	Hexachlorobutadiene	1.89–2.13	8270C
Bromodichloromethane	0.250	8260B	2-Chlorophenol	1.89–2.13	8270C	Hexachlorocyclopentadiene	2.83–3.19	8270C
Bromoform	0.250	8260B	2-Methylnaphthalene	0.283–0.319	8270C	Hexachloroethane	1.89–2.13	8270C
Bromomethane	0.300	8260B	2-Nitroaniline	1.89–2.13	8270C	Indeno(1,2,3-c,d)pyrene	0.189–0.213	8270C
Carbon disulfide	1.25	8260B	2-Nitrophenol	1.89–2.13	8270C	Isophorone	2.83–3.19	8270C
Carbon tetrachloride	0.300	8260B	3,3'-Dichlorobenzidine	1.89–2.13	8270C	Naphthalene	0.283–0.319	8270C
Chlorobenzene	0.250	8260B	3-Nitroaniline	1.89–2.13	8270C	Nitro-benzene	2.83–3.19	8270C
Chloroethane	0.300	8260B	4-Bromophenyl phenyl ether	1.89–2.13	8270C	Pentachlorophenol	1.89–2.13	8270C
Chloroform	0.250	8260B	4-Chloro-3-methylphenol	1.89–2.13	8270C	Phenanthrene	0.189–0.213	8270C
Chloromethane	0.300	8260B	4-Chlorobenzenamine	1.89–2.13	8270C	Phenol	0.943–1.06	8270C
Dibromochloromethane	0.300	8260B	4-Chlorophenyl phenyl ether	1.89–2.13	8270C	Pyrene	0.283–0.319	8270C
Ethyl benzene	0.250	8260B	4-Nitroaniline	2.83–3.19	8270C	bis(2-Chloroethoxy)methane	2.83–3.19	8270C
Methylene chloride	3.00	8260B	4-Nitrophenol	1.89–2.13	8270C	bis(2-Chloroethyl)ether	1.89–2.13	8270C
Styrene	0.250	8260B	Acenaphthene	0.292–0.33	8270C	bis(2-Ethylhexyl)phthalate	1.89–2.13	8270C
Tetrachloroethene	0.300	8260B	Acenaphthylene	0.189–0.213	8270C	bis-Chloroisopropyl ether	1.89–2.13	8270C
Toluene	0.250	8260B	Anthracene	0.189–0.213	8270C	m,p-Cresol	2.83–3.19	8270C
Trichloroethene	0.250	8260B	Benzo(a)anthracene	0.189–0.213	8270C	n-Nitrosodipropylamine	1.89–2.13	8270C
Vinyl acetate	1.50	8260B	Benzo(a)pyrene	0.189–0.213	8270C	o-Cresol	1.89–2.13	8270C
Vinyl chloride	0.500	8260B	Benzo(b)fluoranthene	0.189–0.213	8270C			
Xylene	0.300	8260B	Benzo(ghi)perylene	0.189–0.213	8270C			
cis-1,2-Dichloroethene	0.300	8260B	Benzo(k)fluoranthene	0.189–0.213	8270C			
cis-1,3-Dichloropropene	0.250	8260B	Butylbenzyl phthalate	1.89–2.13	8270C			
trans-1,2-Dichloroethene	0.300	8260B	Carbazole	0.189–0.213	8270C			
trans-1,3-Dichloropropene	0.250	8260B	Chrysene	0.189–0.213	8270C			

Refer to footnotes on page H-8.

Table H-2
Method Detection Limits for High Explosive Compounds (EPA Method[g] SW846-8321A)
Burn Site Groundwater Investigation

Fiscal Year 2011, First Quarter

Analyte	MDL[b] (µg/L)
1,3,5-Trinitrobenzene	0.104
1,3-Dinitrobenzene	0.104
2,4,6-Trinitrotoluene	0.104
2,4-Dinitrotoluene	0.104
2,6-Dinitrotoluene	0.0779
2-Amino-4,6-dinitrotoluene	0.104
2-Nitrotoluene	0.104
3-Nitrotoluene	0.104
4-Amino-2,6-dinitrotoluene	0.104
4-Nitrotoluene	0.104
HMX	0.104
Nitrobenzene	0.104
Pentaerythritol tetranitrate	0.130
RDX	0.104
Tetryl	0.130

Refer to footnotes on page H-8.

Table H-3
Summary of Nitrate plus Nitrite Results
Burn Site Groundwater Monitoring

Fiscal Year 2011, First Quarter

Well ID	Analyte	Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	Laboratory Qualifier[e]	Validation Qualifier[f]	Sample No.	Analytical Method[g]
CYN-MW9 27-Oct-10	Nitrate plus nitrite as N	**36.6**	5.00	25.0	10.0			089759-018	EPA 353.2
CYN-MW10 02-Nov-10	Nitrate plus nitrite as N	**11.4**	0.250	1.25	10.0			089773-018	EPA 353.2
CYN-MW10 (Duplicate) 02-Nov-10	Nitrate plus nitrite as N	**11.4**	0.250	1.25	10.0			089774-018	EPA 353.2
CYN-MW11 01-Nov-10	Nitrate plus nitrite as N	**10.6**	0.250	1.25	10.0			089765-018	EPA 353.2
CYN-MW12 28-Oct-10	Nitrate plus nitrite as N	**14.4**	0.500	2.50	10.0			089762-018	EPA 353.2

Refer to footnotes on page H-8.

Table H-4
Summary of Diesel Range and Gasoline Range Organics Results
Burn Site Groundwater Monitoring

Fiscal Year 2011, First Quarter

Well ID	Analyte	Result[a] (µg/L)	MDL[b] (µg/L)	PQL[c] (µg/L)	MCL[d] (µg/L)	Laboratory Qualifier[e]	Validation Qualifier[f]	Sample No.	Analytical Method[g]
CYN-MW9	Diesel Range Organics	ND	65.0	200	NE	U		089759-005	SW846 8015A/B
27-Oct-10	Gasoline Range Organics	ND	10.5	50.0	NE	U		089759-006	SW846 8015B
CYN-MW10	Diesel Range Organics	ND	65.7	202	NE	U		089773-005	SW846 8015A/B
02-Nov-10	Gasoline Range Organics	ND	10.5	50.0	NE	U		089773-006	SW846 8015B
CYN-MW10 (Duplicate)	Diesel Range Organics	ND	66.3	204	NE	U		089774-005	SW846 8015A/B
02-Nov-10	Gasoline Range Organics	ND	10.5	50.0	NE	U		089774-006	SW846 8015B
CYN-MW11	Diesel Range Organics	ND	64.4	198	NE	U		089765-005	SW846 8015A/B
01-Nov-10	Gasoline Range Organics	ND	10.5	50.0	NE	U		089765-006	SW846 8015B
CYN-MW12	Diesel Range Organics	ND	71.4	220	NE	U		089762-005	SW846 8015A/B
28-Oct-10	Gasoline Range Organics	ND	10.5	50.0	NE	U		089762-006	SW846 8015B

Refer to footnotes on page H-8.

Table H-5
Summary of Perchlorate Results
Burn Site Groundwater Monitoring

Fiscal Year 2011, First Quarter

Well ID	Perchlorate Result[a] (mg/L)	MDL[b] (mg/L)	PQL[c] (mg/L)	MCL[d] (mg/L)	Laboratory Qualifier[e]	Validation Qualifier[f]	Sample No.	Analytical Method[g]
CYN-MW9 27-Oct-10	ND	0.004	0.012	NE	U		089759-020	EPA 314.0
CYN-MW10 02-Nov-10	ND	0.004	0.012	NE	U		089773-020	EPA 314.0
CYN-MW10 (Duplicate) 02-Nov-10	ND	0.004	0.012	NE	U		089774-020	EPA 314.0
CYN-MW11 01-Nov-10	ND	0.004	0.012	NE	U		089765-020	EPA 314.0
CYN-MW12 28-Oct-10	ND	0.004	0.012	NE	U		089762-020	EPA 314.0

Refer to footnotes on page H-8.

Table H-6
Summary of Field Water Quality Measurements[h]
Burn Site Groundwater Monitoring

Fiscal Year 2011, First Quarter

Well ID	Sample Date	Temperature (°C)	Specific Conductivity (µmho/cm)	Oxidation Reduction Potential (mV)	pH	Turbidity (NTU)	Dissolved Oxygen (% Sat)	Dissolved Oxygen (mg/L)
CYN-MW9	27-Oct-10	16.07	1081	210.7	7.08	0.28	48.5	475
CYN-MW10	02-Nov-10	16.40	899	259.3	7.37	0.39	66.8	6.52
CYN-MW11	01-Nov-10	16.98	975	81.3	7.34	0.57	5.4	0.55
CYN-MW12	28-Oct-10	17.59	1035	173.4	7.16	0.26	6.6	0.63

Refer to footnotes on page H-8.

Table H-7
Summary of Environmental and Duplicate Analyses
Burn Site Groundwater Monitoring

Fiscal Year 2011, First Quarter

Parameter	Environmental Sample (R1)	Duplicate Sample (R2)	RPD[i]
	mg/L unless otherwise noted		
CYN-MW10			
Nitrate plus Nitrite	11.4	11.4	< 1

Refer to footnotes on page H-8.

Footnotes for Burn Site Groundwater Monitoring Tables

[a]Result
- Values in bold exceed the established MCL.
- ND = not detected (at method detection limit).
- µg/L = Micrograms per liter.
- mg/L = Milligrams per liter.

[b]MDL
Method detection limit. The minimum concentration or activity that can be measured and reported with 99% confidence that the analyte is greater than zero, analyte is matrix specific.

[c]PQL
Practical quantitation limit. The lowest concentration of analytes in a sample that can be reliably determined within specified limits of precision and accuracy by that indicated method under routine laboratory operating conditions.

[d]MCL
- Maximum contaminant level. Established by the U.S. Environmental Protection Agency Primary Water Regulations (40 CFR 141.11[b]), National Primary Drinking Water Standards, EPA, July 2002.
- NE = not established.

[e]Laboratory Qualifier
U = Analyte is absent or below the method detection limit.

[f]Validation Qualifier
If cell is blank, then all quality control samples met acceptance criteria with respect to submitted samples.

[g]Analytical Method
- U.S. Environmental Protection Agency, 1999 (and updates), "Perchlorate in Drinking Water Using Ion Chromatography," EPA 815/R-00-014.
- U.S. Environmental Protection Agency, 1986 (and updates), "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, 3rd ed.
- U.S. Environmental Protection Agency, 1984, "Methods for Chemical Analysis of Water and Wastes." EPA 600-4-79-020.

[h]Field Water Quality Measurements
- Field measurements collected prior to sampling.

°C = Degrees Celsius.
% Sat = Present saturation.
µmho/cm = Micromhos per centimeter.
mg/L = Milligrams per liter.
mV = Millivolts.
NTU = Nephelometric turbidity units.
pH = Potential of hydrogen (negative logarithm of the hydrogen ion concentration).

[i]RPD
RPD = Relative percent difference is calculated with the following equation and rounded to nearest whole number.

$$RPD = \frac{\left|R_1 - R_2\right|}{[(R_1 + R_2)/2]} \times 100$$

where:

R_1 = analysis result
R_2 = duplicate analysis result

Footnotes for Burn Site Groundwater Monitoring Tables *(Concluded)*

CFR = Code of Federal Regulations.
CYN = Canyons (Burn Site Groundwater).
EPA = U.S. Environmental Protection Agency.
HMX = Octahydro-1,3,5,7-Tetranitro-1,3,5,7-Tetrazocine.
ID = Identification number.
MW = Monitoring well.
RDX = Hexahydro-Trinitro-Triazine.
SW = Solid Waste.
Tetryl = 2,4,6-Trinitrophenylmethyinitramine

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