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Monticello Mill Tailings Site Environmental Report for Calendar Year 1993

May 1994

U.S. Department of Energy
Grand Junction Projects Office
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RUST Geotech Inc.

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Prepared for
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Abbreviations, Acronyms, and Initialisms

CAS	Chemical Abstracts Service
CDT	Conductivity
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
DCG	derived concentration guideline
DOE	U.S. Department of Energy
EDE	effective dose equivalent
Eh	oxidation-reduction potential
EML	Environmental Measurements Laboratory
EMSL	Environmental Measurement Systems Laboratory
EPA	U.S. Environmental Protection Agency
g/F	grams per filter
GJPO	Grand Junction Projects Office
HQ	Headquarters
MED	Manhattan Engineer District
mg/L	milligrams per liter
MMTS	Monticello Mill Tailings Site
mrem	millirems
mrem/yr	millirems per year
mV	millivolts
NEPA	National Environmental Policy Act
OU	Operable Unit
PCB	polychlorinated biphenyl
pCi/F	picocuries per filter
pCi/L	picocuries per liter
pg/mL	picograms per milliliter
PM_{10}	particulate matter less than or equal to 10 micrometers in diameter
ppm	parts per million
QA	quality assurance
QAPP	Quality Assurance Program Plan
QC	quality control
RI/FS—EA	Remedial Investigation/Feasibility Study—Environmental Assessment
scfm	standard cubic feet per minute
TCL	Target Compound List
TDS	total dissolved solids
TLD	thermoluminescent dosimeter
TSCA	Toxic Substances Control Act
μCi/mL	microcuries per milliliter
μg/F	micrograms per filter
μg/L	micrograms per liter
$\mu g/m^3$	micrograms per cubic meter
μg/mL	micrograms per milliliter

μm	micrometer
μmhos/cm	micromhos per centimeter
UMTRCA	Uranium Mill Tailings Radiation Control Act
UPDES	Utah Pollution Discharge Elimination System
VCA	Vanadium Corporation of America

Executive Summary

This report contains information pertaining to environmental activities conducted during calendar year 1993 at and near the Monticello Mill Tailings Site (MMTS) in Monticello, Utah. It has been prepared in accordance with the requirements of U.S. Department of Energy (DOE) Order 5400.1, *General Environmental Protection Program*, and supplemental information received from DOE Headquarters. Monitoring and report preparation were performed by RUST Geotech Inc., the DOE contractor for the Grand Junction Projects Office facility in Grand Junction, Colorado.

Environmental activities conducted at the MMTS during 1993 included those associated with remedial action, the analysis of tailings disposal sites, and compliance monitoring. Compliance monitoring consisted of both radiological and nonradiological monitoring of air, surface water, and ground water.

Remedial action activities were conducted in compliance with the "substantial and continuous physical on-site remedial action" requirement of the Comprehensive Environmental Response, Compensation, and Liability Act. Construction of Operable Unit I Phase I (Millsite Site Preparation) was completed; construction of Operable Unit I Phase II (Millsite Pre-Excavation) was initiated; and 18 monitoring wells, 6 coreholes, and 2 drillholes on the MMTS were abandoned.

An analysis of potential disposal sites for MMTS uranium and vanadium mill tailings was conducted in 1993. In April, DOE determined that the Record of Decision-selected alternative of storing tailings and related waste materials in a permanent on-site repository south of the millsite (Far South Site) needed to be reevaluated. As a result, an area immediately south of the millsite (Near South Site) and the millsite itself were evaluated as potential permanent repositories. Field work was performed during the summer and fall to provide characterization data needed to support evaluations of the Near South Site and millsite alternatives. In late fall, emphasis of the alternatives analysis project shifted to the Umetco Haul alternative, which involves the transport of the tailings to the U.S. Nuclear Regulatory Commission-licensed facility at Blanding, Utah. To date, a decision has not been made concerning the permanent storage of the MMTS waste materials.

Radiological and nonradiological air monitoring at the MMTS included measurement of atmospheric radon, particulate matter, and gamma radiation. Atmospheric radon concentration was measured at eight locations off the millsite and two locations on the millsite boundary until the third quarter of 1993. At that time, seven locations off the millsite were added to the sampling network in response to an increase in remedial activities. Results of the year's monitoring indicated that at one of the off-site and both of the site-boundary locations, radon concentrations exceeded the U.S. Environmental Protection Agency (EPA) standard for atmospheric radon. These results are consistent with analytical results from previous years. The effective dose equivalent to the maximally exposed individual near the millsite was calculated at 14.8 millirems per year (mrem/yr), exclusive of background. This dose, which included radon, air particulate,

and gamma source terms, was below the DOE standard of 100 mrem/yr above background.

Air particulate monitoring for radiological and nonradiological constituents was conducted with high-volume particulate samplers at one on-site and two off-site locations. In November, seven low-volume radioparticulate samplers were installed adjacent to the millsite and throughout the city of Monticello in response to an increase in remedial activities. The maximum airborne concentrations of radium-226, thorium-230, and total uranium at all locations were several orders of magnitude below the regulatory limits specified by DOE Order 5400.5, *Radiation Protection of the Public and the Environment*. EPA's standards of 50 micrograms per cubic meter ($\mu g/m^3$) (annual arithmetic mean) and 150 $\mu g/m^3$ (24-hour average) for acceptable levels of particulate matter smaller than or equal to 10 micrometers were not exceeded at any location.

Through the third quarter of 1993, gamma radiation was monitored at eight on-site and five off-site locations. In the fourth quarter, seven sampling locations were added to the network to further define the off-site gamma dose. Four of the on-site monitoring locations yielded gamma radiation levels above the DOE standard of 100 mrem/yr (above background), whereas all off-site locations yielded levels below the standard.

Surface-water sources upgradient of, on, and downgradient of the millsite were sampled in March, April, July, and October. Montezuma Creek, a perennial stream that flows through the millsite property, and on-site ponds and seeps typically have contained contaminants at levels exceeding state of Utah surface-water standards. Some of this contamination is the result of discharge from the alluvial aquifer beneath the millsite. During 1993, levels of iron, nitrate, pH, selenium, total dissolved solids, gross alpha, and gross beta exceeded their respective state standards in one or more samples collected from Montezuma Creek. In the on-site ponds and seeps, levels of arsenic, iron, nitrate, selenium, total dissolved solids, gross alpha, gross beta, and radium-226+228 exceeded their respective state standards in one or more samples.

Ground-water monitoring was conducted within three stratigraphic zones on and near the millsite: the shallow, upper flow system (alluvial aquifer); the deeper, Burro Canyon aquifer; and the Dakota Sandstone, which acts as an aquitard between the two aquifers. The shallow alluvial aquifer is contaminated by leached products of uranium and vanadium mill tailings. During 1993, Uranium Mill Tailings Radiation Control Act and state of Utah ground-water standards for arsenic, lead, molybdenum, nitrate, pH, selenium, gross alpha, radium-226+228, and uranium-234+238 were exceeded in one or more alluvial wells. Standards for selenium and uranium-234+238 were exceeded in a ground-water sample collected from a downgradient Burro Canyon well, but these results were anomalous when compared with historical results from the same well. All other samples from Burro Canyon wells contained analyte concentrations below standards. The Burro Canyon aquifer is used as a domestic water supply source in the Monticello area. Samples from wells in the Dakota Sandstone contained levels of fluoride, molybdenum, pH, and gross alpha that exceeded standards. Because of the limited amount of Dakota Sandstone well data available, it cannot yet be determined whether these excessive concentrations are natural background values or are a result of tailings contamination.

Introduction

The Monticello Mill Tailings Site (MMTS), located in San Juan County, Utah, comprises several tracts of land, including the Monticello millsite, the Bureau of Land Management compound, the South Site (Figures 1 and 2), and 25 peripheral properties surrounding the millsite. The U.S. Department of Energy (DOE) owns the former three tracts and several of the peripheral properties. Other entities or individuals own the remaining peripheral properties. The millsite is a 31.6-hectare (78-acre) tract of land located within the city limits of Monticello (1990 population of 1,838) and consists of the mill area, which comprises approximately 4 hectares (10 acres), and the tailings impoundment area, which comprises about 28 hectares (68 acres). Except for a maintenance shed, none of the original mill buildings remain on site. Residential dwellings are located on peripheral properties adjacent to the north, south, and east boundaries of the millsite.

The millsite is located in the valley of Montezuma Creek, a perennial stream that flows eastward through the center of the millsite. Underlying the site are two primary aquifers: an upper flow system (referred to as the alluvial aquifer) composed of unconsolidated materials deposited by Montezuma Creek, fill material, weathered bedrock, and hillslope colluvium, and a confined-to-semiconfined sandstone aquifer in the Burro Canyon Formation. The alluvial aquifer is approximately 5 to 7 meters (15 to 20 feet) thick near Montezuma Creek but thins gradually toward the valley sides. The Burro Canyon aquifer is at a depth of approximately 15 meters (50 feet) and is approximately 36 meters (120 feet) thick. This sandstone aquifer supplies domestic water and is capable of yielding as much as 200 gallons per minute. Variably saturated, low permeability units comprising the Mancos Shale and Dakota Sandstone separate the alluvial aquifer from the Burro Canyon aquifer.

Uranium and vanadium mill tailings and by-product materials produced during early mill operations contaminate the millsite and peripheral properties. The tailings impoundment area contains an estimated 1,426,000 cubic meters (1,865,000 cubic yards) of tailings and contaminated soil in four discrete piles (Figure 2). An additional 401,000 cubic meters (525,000 cubic yards) of contaminated material is present on or has been removed from peripheral properties (Chem-Nuclear Geotech, Inc. 1993a). When these tailings and contaminated materials are removed under remedial action, they will be permanently stored in a repository in accordance with applicable regulations.

The Vanadium Corporation of America (VCA) constructed the mill in 1942 with funds from the Defense Plant Corporation. Initially, the VCA processed only vanadium, but from 1943 to 1944, the VCA processed a uranium-vanadium sludge for the Manhattan Engineer District (MED). After VCA milling operations ceased in 1944, the mill was leased from 1945 to 1946 to continue the production of uranium-vanadium sludge for MED. The U.S. Atomic Energy Commission purchased the millsite in 1948. Uranium milling began in September 1949 and continued until January 1960 when the mill was permanently closed. At that time, part of the land was transferred to the Bureau of

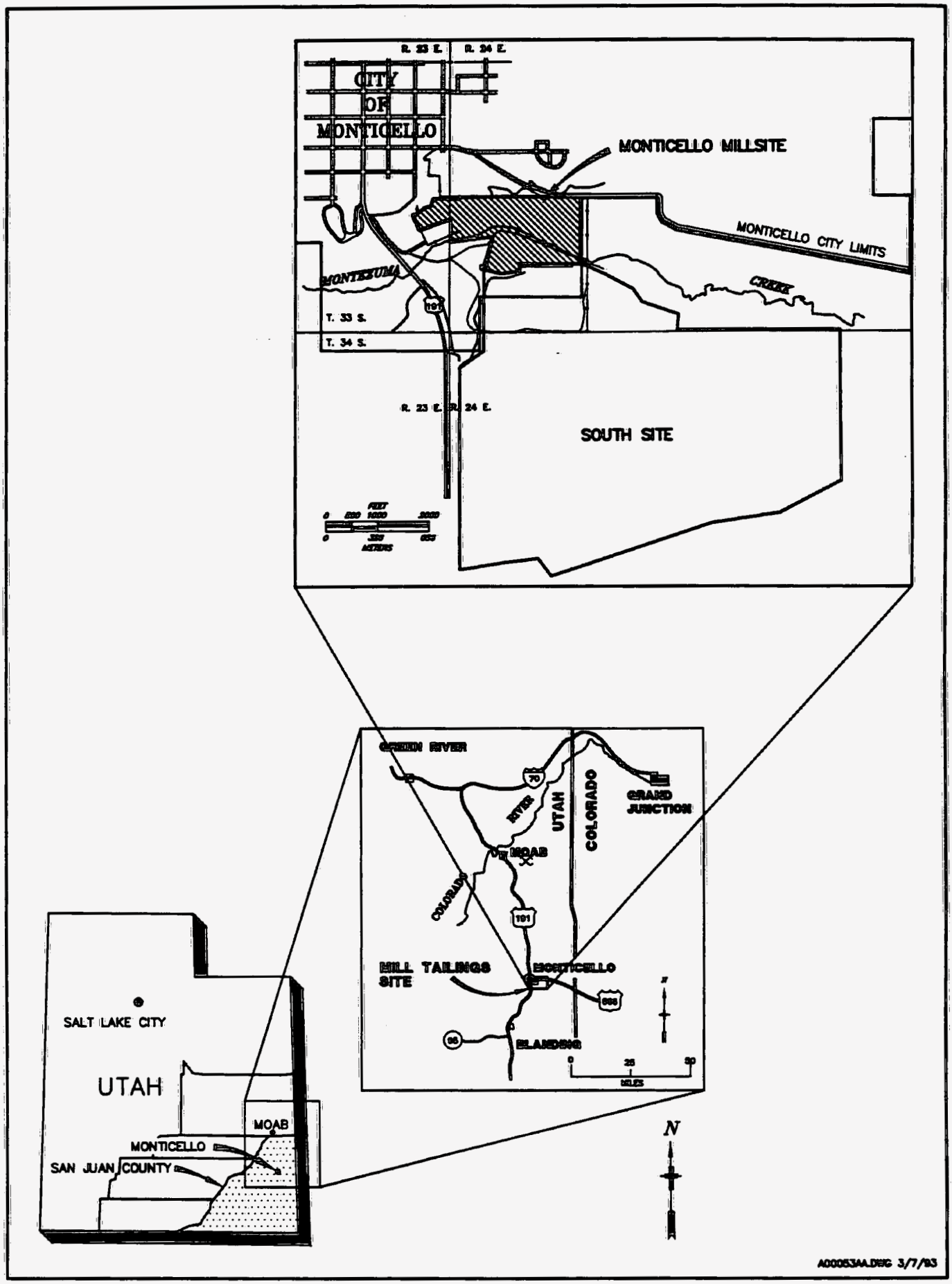

Figure 1. Site Location Map of MMTS

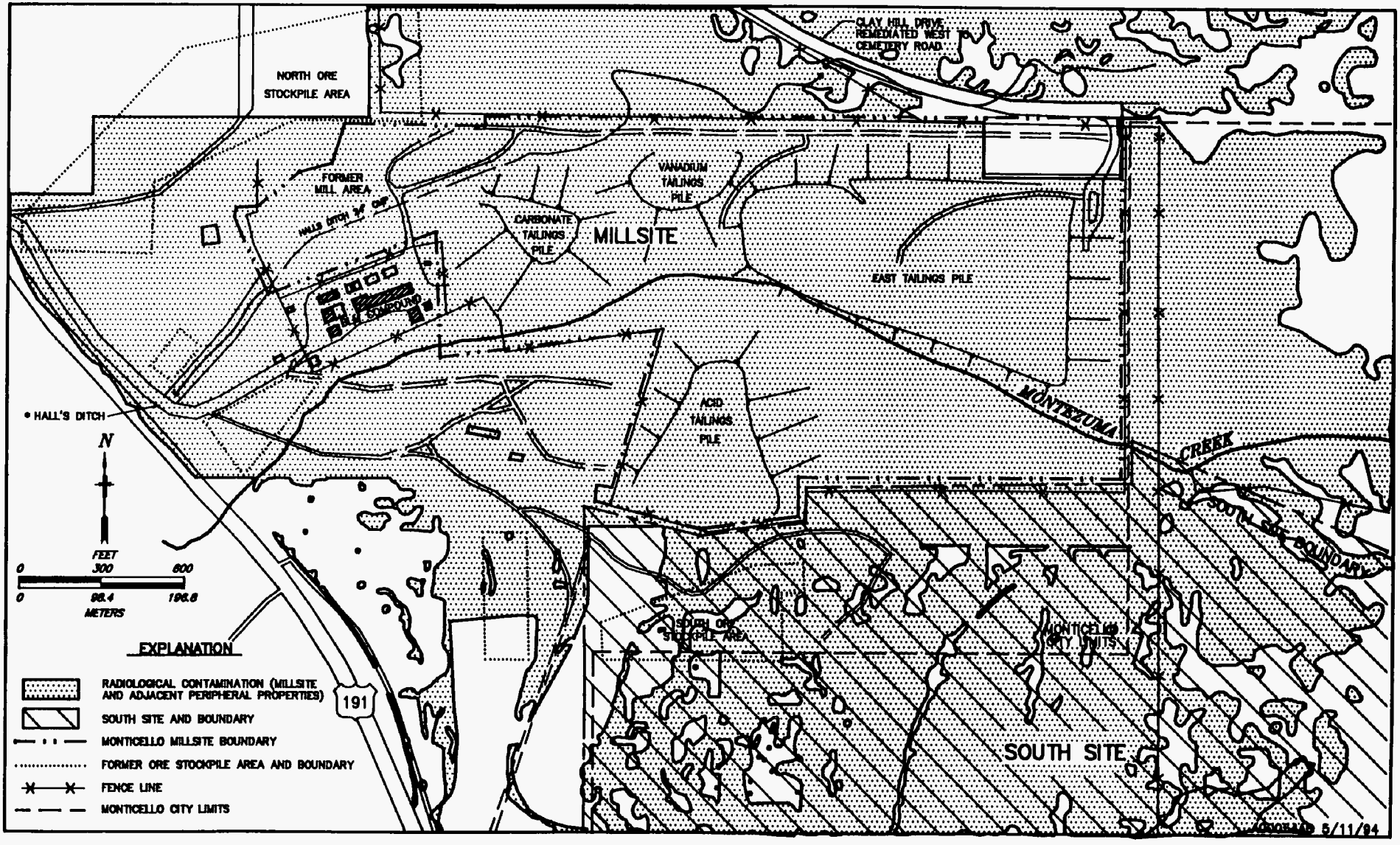

Figure 2. Radiological Contamination Map of the Monticello Millsite

Land Management. This land was returned to DOE in 1990, and DOE now owns and manages this returned parcel along with the remainder of the millsite.

Prior to 1955, the environmental problems receiving attention at the millsite arose from the salt roast procedure used to enhance vanadium recovery. Along with chlorine and hydrogen chloride gas, an average of nearly 1,182 kilograms (2,600 pounds) of dust containing 0.363-percent uranium oxide and 1.52-percent vanadium pentoxide escaped daily through the roaster stack (Allen and Klemenic 1954). In response to complaints from local residents, the mill operator verified corrosion of wire fences, clotheslines, and galvanized roofs.

Liquid effluent from the salt roast/carbonate leach plant (which contained substantial concentrations of chloride, sulfate, carbonate, bicarbonate, sodium, and other dissolved species) was released into Montezuma Creek. Also released into the creek was radium-226 from wind and water erosion of the tailings piles. During milling operations, the tailings were usually moist, and erosion by wind was minimal. Within a year after shutdown, however, the tailings dams and surfaces of the tailings piles dried out, and tailings sand began to migrate as dunes. Whitman and Beverly (1958) documented that dry tailings were being washed into the creek. Soluble radium activity in Montezuma Creek was measured as high as 160 picocuries per liter (pCi/L).

Several cleanup activities conducted by the U.S. Atomic Energy Commission after mill closure substantially stabilized the area but did not eliminate surface- and ground-water contamination. Extensive studies (Lennemann 1956, George 1958, George 1959, Whitman and Beverly 1958, UNC Geotech 1990) conducted at the millsite demonstrated that all four tailings piles contribute to the contamination of the alluvial aquifer and surface water, both on and off site. Currently, the contaminated water in the alluvial aquifer is not used for any purpose, whereas the water in Montezuma Creek is used for livestock watering, wildlife habitat, and irrigation downstream of the millsite.

The site was accepted into the Surplus Facilities Management Program in 1980. Under this program, the chief objective was to minimize potential health hazards to the public and environment that were associated with the tailings at the millsite. To provide a basis for making decisions regarding the remediation of the site, an environmental and engineering characterization was completed and documented in the *Monticello Remedial Action Project Site Analysis Report* (Abramiuk and others 1984). The *Final Remedial Investigation/Feasibility Study—Environmental Assessment for the Monticello, Utah, Uranium Mill Tailings Site* (RI/FS—EA) (UNC Geotech 1990) was completed in March 1990, and the *Monticello Mill Tailings Site—Declaration for the Record of Decision and Record of Decision Summary* (DOE 1990) was approved by the U.S. Environmental Protection Agency (EPA), state of Utah, and DOE in September 1990.

The Record of Decision describes selected remedial actions for two of the three operable units (OUs) encompassed by the MMTS and summarizes the extent of contamination, as previously understood, in the third OU. It addresses the excavation of mill tailings and other by-product materials from the millsite (OU I) and their containment in a permanent repository. Excavation of radioactively contaminated soils and by-product materials from properties peripheral to the millsite is addressed for

OU II. Collectively, the remedial actions for OU I and OU II are referred to as the Monticello Remedial Action Project. Remedial action for OU III, which addresses ground water and surface water on the millsite and downstream peripheral properties, will be selected in a separate Record of Decision after completion of a focused RI/FS.

Responsibility for the administration, maintenance, and environmental monitoring of the inactive millsite and tailings area resides with the DOE Grand Junction Projects Office (GJPO). RUST Geotech Inc. (Geotech), the prime contractor for DOE-GJPO, performs the environmental monitoring at the millsite.

This Site Environmental Report presents information pertaining to environmental activities conducted during calendar year 1993 at the MMTS. It is organized into nine major sections: Compliance Summary—January 1, 1993, through December 31, 1993; Environmental Program Information; Environmental Radiological Program Information; Environmental Nonradiological Program Information; Ground-Water Protection Program; Quality Assurance; Appendix A, Monitoring Data; Appendix B, Time-Concentration Graphs; and Appendix C, Well Location Maps Showing Ground-Water Analytes that Exceed Federal/State Standards.

The Compliance Summary section summarizes DOE-GJPO compliance with major federal and state environmental requirements at the MMTS for the period January 1, 1993, through December 31, 1993.

Included in the Environmental Program Information section are (1) a description of the contamination present at the MMTS; (2) a summary of air and surface-water monitoring performed on and near the MMTS, including a discussion of how monitoring results compare with applicable standards; (3) a list of environmental documents completed in 1993 pertaining to MMTS activities; and (4) a summary of significant environmental activities conducted at the MMTS.

The Environmental Radiological and Environmental Nonradiological Program Information sections summarize the results of the radiological and nonradiological monitoring programs conducted on and near the MMTS.

In the Ground-Water Protection Program section, the hydrogeology at the millsite and the program conducted to monitor ground water are described. Analytical results of ground-water monitoring are compared with federal and state standards, and diagrams showing maximum contaminant concentrations within ground water are presented.

The Quality Assurance section summarizes the measures taken to ensure the quality of monitoring data collected on and near the MMTS. This section also includes results of the participation of the GJPO Analytical Chemistry Laboratory in interlaboratory cross-check programs.

Appendix A comprises analytical data collected during 1993 and is organized according to medium and sample date. Sample media include air (radon, air particulates, direct gamma radiation), surface water, and ground water.

In Appendix B, data from selected media and locations are presented graphically to show changes in analyte concentrations over time. Included in the graphs is a comparison of collected data with the applicable state or federal standard.

In Appendix C, maps of well locations identify which ground-water analytes exceeded their respective federal/state standards at each well. Results of the four 1993 sampling events are presented.

An Abbreviations, Acronyms, and Initialisms section follows the Contents page of the report; a References section follows the Quality Assurance section; and a Distribution List section that lists persons and organizations who receive copies of this report follows the References section.

Compliance Summary—January 1, 1993, through December 31, 1993

Compliance Status

The compliance status for each of the major federal and state environmental statutes applicable to the MMTS is discussed below.

Comprehensive Environmental Response, Compensation, and Liability Act

The MMTS was listed on the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) National Priorities List on November 21, 1989. Environmental restoration of the MMTS is prescribed in a Federal Facilities Agreement, signed in December 1988, among DOE-GJPO, EPA, and the state of Utah. DOE-GJPO activities associated with the MMTS have been conducted in full compliance with the Federal Facilities Agreement. Remedial actions at the MMTS will include removal of mill tailings and hazardous substances, site reconstruction, and cleanup of contaminated ground and surface waters.

Designs for several phases of the Monticello Remedial Action Project were prepared in accordance with the applicable or relevant and appropriate requirements identified in the MMTS Record of Decision. Design documents submitted to DOE Headquarters (DOE-HQ) and/or EPA and the state of Utah for review during 1993 included

- Millsite Pre-Excavation Pre-Final Design, Phase II
- Millsite Pre-Excavation Final Design, Phase II
- Conceptual Design of the Lined Repository, Phase IV
- Remedial Action Design Packages for Peripheral Properties
  —MP-00178-VL, Phase I and MP-00198-VL
  —MP-00963-OT, Phase I
  —MP-00178-RS, Phase II and MP-00963-OT, Phase II
  —MP-00180-CS and MP-00845-VL
  —MP-00948-VL and MP-00949-RS

The *Draft Monticello Surface- and Ground-Water Remedial Action Project CERCLA Management Plan* (Chem-Nuclear Geotech, Inc. 1993b), required for the investigation and remediation of OU III, was submitted to EPA and the state of Utah in November 1991. The plan was revised during 1993 and resubmitted to EPA and the state of Utah in October 1993.

Various activities, including the construction of OU I Phase I (Millsite Site Preparation), initiation of construction of OU I Phase II (Millsite Pre-Excavation), and well abandonment occurred during 1993. These activities represented "substantial and continuous physical on-site remedial action," as required by CERCLA, Section 120.

In April, August, and December 1993, the Information Repositories for the Monticello Mill Tailings National Priorities List Site and OU III were updated. The repositories are located at the GJPO Technical Resource Center in Grand Junction, Colorado, and at Geotech's Monticello Field Office.

Early in 1993, DOE determined that the Record of Decision-selected alternative of transporting tailings from the MMTS to a permanent on-site repository south of the millsite needed reevaluation. DOE-HQ, DOE-GJPO, EPA, and state representatives met the week of April 12, 1993, to identify possible implementable and cost-effective disposal alternatives for investigation. During this alternatives analysis, it was determined that the Umetco Haul Alternative, which involves the transport of excavated tailings to the U.S. Nuclear Regulatory Commission-licensed facility at Blanding, Utah, would be further investigated. Agency representatives believed that off-site disposal at the Blanding facility could be equally protective of human health and the environment and more cost effective than the On-Site Repository Alternative selected in the MMTS Record of Decision. Although the Umetco Haul Alternative was described in the MMTS RI/FS—EA, and the general concept of the alternative has remained the same, it is being further evaluated through the preparation of the *Supporting Information Document for the Monticello Mill Tailings Site Record of Decision and Finding of No Significant Impact.*

Resource Conservation and Recovery Act

To date, no Resource Conservation and Recovery Act-listed or characteristic hazardous wastes have been managed or identified at the MMTS. The Utah Hazardous Waste Management Regulations may be considered an applicable or relevant and appropriate requirement if hazardous waste is encountered before or during remedial activities.

National Environmental Policy Act

The RI/FS—EA prepared for the MMTS was approved by EPA and the state of Utah in January 1990 and finalized in March 1990; a Finding of No Significant Impact for the remediation was issued in February 1990. The *Draft Environmental Assessment of Additional Lands Proposed for Acquisition for the Monticello, Utah, Uranium Mill Tailings Repository* (Chem-Nuclear Geotech, Inc. 1992), prepared for the acquisition of 800 acres of land adjacent to the millsite, was submitted to DOE-HQ for review and approval in February 1992. The DOE-HQ Office of Environmental Restoration and Waste Management notified DOE-GJPO in a February 1993 letter that the EA was not required for the planned land acquisition; therefore, the EA was retracted from the review and approval process.

In late 1993, preparation of the *Supporting Information Document for the Monticello Mill Tailings Site Record of Decision and Finding of No Significant Impact* was initiated to evaluate the Umetco Haul Alternative. This document will supplement the MMTS RI/FS—EA and provide information specific to the transport and disposal of tailings under the proposed alternative.

Other proposed MMTS actions reviewed under the National Environmental Policy Act (NEPA) during 1993 in accordance with DOE regulations codified at 10 CFR 1021 and DOE Order 5440.1D were

- South Site Ground-Water Characterization, OU I
- Alternatives Assessment, OU I
- Monticello Mill Tailings Site, OU III, Characterization of Sediments in Upper and Lower Montezuma Creek Canyon
- Well Abandonment
- Borehole Geophysics, Crosshole Seismic Surveying, and Packer Testing Proposals
- Field Demonstrations of the Monticello Remedial Action Project Repository Cover

All actions were determined to be within the scope of work described in the MMTS RI/FS—EA and were authorized to proceed without further NEPA review or documentation.

Uranium Mill Tailings Radiation Control Act

The Uranium Mill Tailings Radiation Control Act (UMTRCA) of 1978 authorized remedial action at certain inactive uranium milling sites that were not owned by the federal government. Because the MMTS is owned by DOE, this is not an applicable requirement. However, UMTRCA is considered to be a relevant and appropriate requirement for remedial activities associated with this site. Cleanup of the radioactive component of the contamination on lands and buildings is conducted to the standards specified in 40 CFR 192 and UMTRCA.

Clean Air Act/National Emission Standards for Hazardous Air Pollutants

Air quality at the millsite is monitored to verify conformance with ambient air-quality standards. As determined in the MMTS RI/FS—EA, the Clean Air Act is an applicable requirement for remedial action at the millsite. The millsite is specifically identified under and subject to the provisions of 40 CFR 61, Subpart Q, which defines a radon-flux standard (20 pCi per square meter per second) for DOE facilities. This flux standard is exceeded at the tailings piles on the millsite. One objective of the planned environmental restoration will be to remove the contaminant source (i.e., tailings piles) so that the radon-flux standard is no longer exceeded. The revised compliance position paper for Subpart Q requirements addressing the Memorandum of Understanding negotiated between DOE-GJPO and EPA was submitted to EPA and the state of Utah in December 1991; no further action was necessary.

Fugitive dust control requirements, as established by Section R446-1-4.5 of the Utah Air Conservation Regulations, are applicable to the MMTS. Although not required by the state regulations, opacity measurements were taken by a certified opacity observer to ensure that dust emissions did not exceed permissible levels. Measures taken to comply with the state requirements included the application of water spray to construction areas

and haul roads and the cessation of construction operations when wind speeds exceeded 40 miles per hour.

Clean Water Act/National Pollutant Discharge Elimination System

As determined in the MMTS RI/FS—EA, the Clean Water Act is an applicable requirement for remedial action. Waters affected by the millsite are routinely monitored, and collected data are compared to state of Utah water-quality standards, which were promulgated by the Clean Water Act. Both surface water and ground water at the millsite are contaminated by leachate from mill tailings and contain radiological levels and inorganic contaminant concentrations that exceed applicable standards (see discussion in Surface Water subsection of the Environmental Program Information chapter). One objective of the planned environmental restoration will be to remove the source of contamination, which will improve water quality on the site. The remedial action for surface water and ground water will be selected through the CERCLA process.

Through consultations with the Utah Division of Water Quality, Department of Environmental Quality, DOE-GJPO prepared and submitted a Utah Pollution Discharge Elimination System (UPDES) permit application for the water treatment plant planned for construction in 1995 adjacent to the millsite. Specific water-quality threshold limits were determined for the discharge from this plant into Montezuma Creek. In 1993, samples were collected from Montezuma Creek to determine background levels of specific parameters that are required to be monitored under the UPDES regulations. Results of surface-water sampling are discussed in the Surface Water subsection of the Environmental Program Information chapter.

Discharges of storm-water runoff also are regulated by the UPDES program. Because remedial activities at the millsite and several peripheral properties will result in land disturbances that exceed 5 acres, storm-water pollution prevention and erosion control measures were incorporated into the remedial design of each property. The specific measures incorporated were derived from the *Authorization to Discharge Under the UPDES General Permit for Storm-Water Discharges from Construction Activities That Are Classified as "Associated with Industrial Activity"* (State of Utah 1992). DOE-GJPO received concurrence from the state of Utah and EPA that this management approach satisfied the applicable requirements.

Safe Drinking Water Act

The provisions of the Safe Drinking Water Act are potentially relevant to the MMTS because of the presence of the Burro Canyon Formation, which is located beneath the millsite and is used as a public water supply. Should contamination associated with millsite activities be identified in the Burro Canyon aquifer, maximum contaminant levels identified under the Safe Drinking Water Act may be used to establish cleanup standards.

Toxic Substances Control Act

The Toxic Substances Control Act (TSCA) regulates the manufacture of chemicals and the control of substances such as asbestos and polychlorinated biphenyls. Asbestos was tentatively identified at the MMTS in 1993. A plan to inspect and sample the site is being prepared; if necessary, a Management Plan for asbestos materials will be developed subsequent to the inspection in accordance with TSCA requirements. To date, PCBs have not been identified at the MMTS.

Federal Insecticide, Fungicide, and Rodenticide Act

The Federal Insecticide, Fungicide, and Rodenticide Act governs the use and registration of pesticides. It is not applicable to activities at the MMTS.

Endangered Species Act

The Endangered Species Act requires DOE to ensure that any actions authorized, funded, or carried out at the MMTS will not jeopardize the continued existence of any threatened or endangered species or destroy or adversely modify critical habitat required for the continued existence of that species. A list of threatened or endangered species that could occur at or in the vicinity of the MMTS has been compiled; to date, none of the species has been observed at the site. Activities associated with the MMTS have been and will be conducted in accordance with this applicable requirement.

National Historic Preservation Act/Archaeological Resources Protection Act

The National Historic Preservation Act and the Archaeological Resources Protection Act establish procedures to provide for the preservation and protection of historical and archaeological resources that may be affected by a federal construction project or federally licensed activity or program. Activities associated with the MMTS have been and will be conducted in accordance with these applicable requirements. Archeological surveys were conducted on 28 hectares (70 acres) being investigated for quarry use and on 83 hectares (205 acres) within the 60-meter (200-foot)-wide corridor of a proposed road alignment associated with the Umetco Haul Alternative. The former survey identified four prehistoric sites, the latter identified eight prehistoric and four historic sites; all findings were reported to the Utah Historic Preservation Office.

Executive Order 11988, "Floodplain Management"

Because the U.S. Army Corps of Engineers determined in 1990 that the MMTS is located within the floodplain of Montezuma Creek, Executive Order 11988, "Floodplain Management," is an applicable requirement for remedial action. DOE evaluated each remedial design it prepared in 1993 to ensure that adverse impacts associated with direct and indirect development of the floodplain were avoided.

Executive Order 11990, "Protection of Wetlands"

Wetlands on and downstream of the Monticello millsite were delineated by the U.S. Army Corps of Engineers in 1989. Delineation of the wetlands was discussed in the MMTS RI/FS—EA. Because remedial actions on the millsite will disturb these wetlands, a permit application was submitted in March 1992 to the U.S. Army Corps of Engineers in accordance with Section 404 of the Clean Water Act and Executive Order 11990, "Protection of Wetlands." Wetlands will be reestablished as part of the millsite reclamation design and in accordance with state and federal requirements. No actions specific to Executive Order 11990 occurred at the MMTS during 1993.

State of Utah Ground-Water Quality Protection Regulations

The Utah Ground-Water Quality Protection Regulations are applicable to OU III and are potentially applicable to the tailings disposal facility in Blanding, Utah, which may be selected as the final disposal site. DOE will ensure that measures are taken to protect ground-water quality on the MMTS; UMETCO Minerals Corporation will work with the state of Utah to ensure compliance with these regulations at the Blanding facility.

Title 73, "Water and Irrigation," Utah Code Annotated

This provision of Utah law controls the consumption of water within the state. In accordance with the requirements of Section 73-3, application for the right to use a portion of the unappropriated water of the state of Utah was made to the State Engineer in November 1993. Applications were filed to make use of storm-water runoff occurring on the Monticello millsite and of shallow ground water encountered during remedial actions at the millsite and adjacent peripheral properties.

In accordance with Section 73-5A-202, applications for the construction of dams associated with the Monticello millsite retention ponds Nos. 1, 2, and 3 were submitted to the State Engineer in November 1993. Because each dam will impound less than 20 acre-feet of water, none is considered to constitute a threat to human life in the event of its failure. Therefore, the State Engineer did not require that formal plans detailing the dam constructions be submitted with the dam applications.

Current Issues and Actions

In accordance with the Federal Facilities Agreement, two milestones were established for environmental restoration activities at the MMTS in 1993: completion of a minimum of four peripheral property remedial action design packages, and award of the subcontract for Phase IIA, Millsite Pre-Excavation. Both milestones were completed on schedule.

Several areas on the MMTS have been identified as suspect source areas where CERCLA hazardous substances (heavy metals, solvents, and waste oils) may have been released to the environment. Efforts to preliminarily characterize these suspect source

areas are under way. During 1993, two Work Plans and one Sampling and Analysis Plan were prepared to initiate investigations. Pending an evaluation of the preliminary characterization results, follow-up delineation characterization may be required.

Summary of Facility Permits

As specified at 40 CFR 300.400, federal, state, or local permits are not required for on-site response actions conducted pursuant to CERCLA. Although this language reduces the administrative burdens associated with permits, the intent of all applicable or relevant and appropriate requirements must be met. Permit applications for ground-water monitoring well installations, discharges of processed waste water (UPDES), stream channel alterations, and wetlands disturbances have been submitted as tools for formalizing communications with the state of Utah or appropriate federal agency. To date, the only permits issued for MMTS activities have been two drilling permits for the installation of monitoring wells on the Near South Site and millsite. The permits (Nos. 93-09-004-M and 93-09-002-M) were issued in June and July by the state of Utah and were valid throughout 1993. Well drilling was completed in December 1993.

Environmental Program Information

Sources of Contamination

Uranium and vanadium mill tailings are the principal types of waste at the MMTS; residual uranium ore in old ore stockpile areas at the millsite is an additional, although minor, type of waste. According to Albrethsen and McGinley (1982), 819,291 metric tons (903,298 short tons) of uranium ore was processed at the Monticello mill between 1948 and 1960 to yield approximately 2,077 metric tons (2,290 short tons) of uranium oxide and 1,061 metric tons (1,170 short tons) of vanadium pentoxide. Most of the original constituents of the ore, as well as the chemicals added during the milling process, reside in the tailings. Historically, environmental concern focused on the radiological hazards associated with the tailings and ore, but later, it was recognized that a number of trace elements also occurred at elevated concentrations in uranium ore (Dreesen and others 1982). These trace elements were not recovered during milling operations but were passed through the processing circuit to the tailings piles.

The tailings generated by the milling operations are contained in four piles referred to, in order of their construction, as the Carbonate, Vanadium, Acid, and the East tailings piles (Figure 2). The Carbonate and Vanadium tailings piles were formed from 1949 to 1955 when the mill was recovering vanadium and some uranium. The process used for the recovery was a salt roast/carbonate leach process. Use of the Acid tailings pile commenced about 1955. This pile received tailings from the acid leach resin-in-pulp process and a carbonate leach circuit. The East tailings pile was in use from 1956 until mill shutdown in 1960 and received tailings from the acid leach circuit and the high-temperature, carbonate leach resin-in-pulp circuit. Windblown tailings from these piles contaminated the peripheral properties that are part of the MMTS.

Photographs taken during the operation of the millsite indicate that earthen berms were initially used to impound the tailings. As the impoundment filled, sandy tailings were apparently used as berm material to maintain the ponds. After closure of the mill, the piles were regraded and stabilized by covering them with pit-run gravel and top soil and by seeding a vegetative cover. Materials from all four tailings piles provide a contaminant source for ground-water leachate and atmospheric releases. A critical pathways analysis, in which source terms and pathways of radiation exposure were determined, was performed and documented in the RI/FS—EA (UNC Geotech 1990).

Environmental Monitoring Summary

Air

Atmospheric Radon

The atmospheric radon monitoring program was initiated at the MMTS in 1984 with the installation of radon detectors at 19 sample locations. After a 12-month collection of

baseline data, the sampling network was reduced to eight representative locations. In response to increased remediation activities, seven locations were added during the third quarter of 1993. Radon concentration was measured at these locations (Figure 3) with Landauer Radtrak alpha-sensitive detectors. The detectors were exposed in duplicate 1 meter above the ground surface and were analyzed quarterly (3-month exposure).

The EPA standard (40 CFR 192) for atmospheric radon concentration (at the edge of an inactive uranium mill tailings pile) of 0.50 picocurie per liter (pCi/L) above background has been adopted for the MMTS. From a natural background concentration of 0.4 pCi/L (UNC Geotech 1990), the site-specific standard of 0.9 pCi/L was calculated. As shown in Table 1, the atmospheric radon concentrations measured during 1993 exceeded the EPA standard at both locations along the millsite boundary and at one location (RN-M-04) off the millsite. Concentrations at the remaining off-site locations were below the standard. These values are consistent with previous years' analytical results. Quarterly data collected at each location are listed in Tables A-1 through A-4 in Appendix A.

Table 1. Comparison of Average Annual Radon Concentrations At and Near MMTS with the EPA Standard

Sampling Location	Radon Concentration	
	Annual Average (pCi/L)[a]	EPA Standard (including background) (pCi/L)
On-Site		
RN-M-06	1.1	0.9
RN-M-07	2.8	0.9
Off-Site		
RN-M-04	1.1	0.9
RN-M-10	0.7	0.9
RN-M-11	0.1	0.9
RN-M-13	0.3	0.9
RN-M-14	0.2	0.9
RN-M-15	0.4	0.9
R-M-1-RN	0.5	0.9
R-M-2-RN	0.4	0.9
R-M-3-RN	0.5	0.9
R-M-4-RN	0.5	0.9
R-M-5-RN	0.7	0.9
R-M-6-RN	0.4	0.9
R-M-7-RN	0.4	0.9

[a]1 pCi/L = 3.7×10^{-2} becquerel per liter.

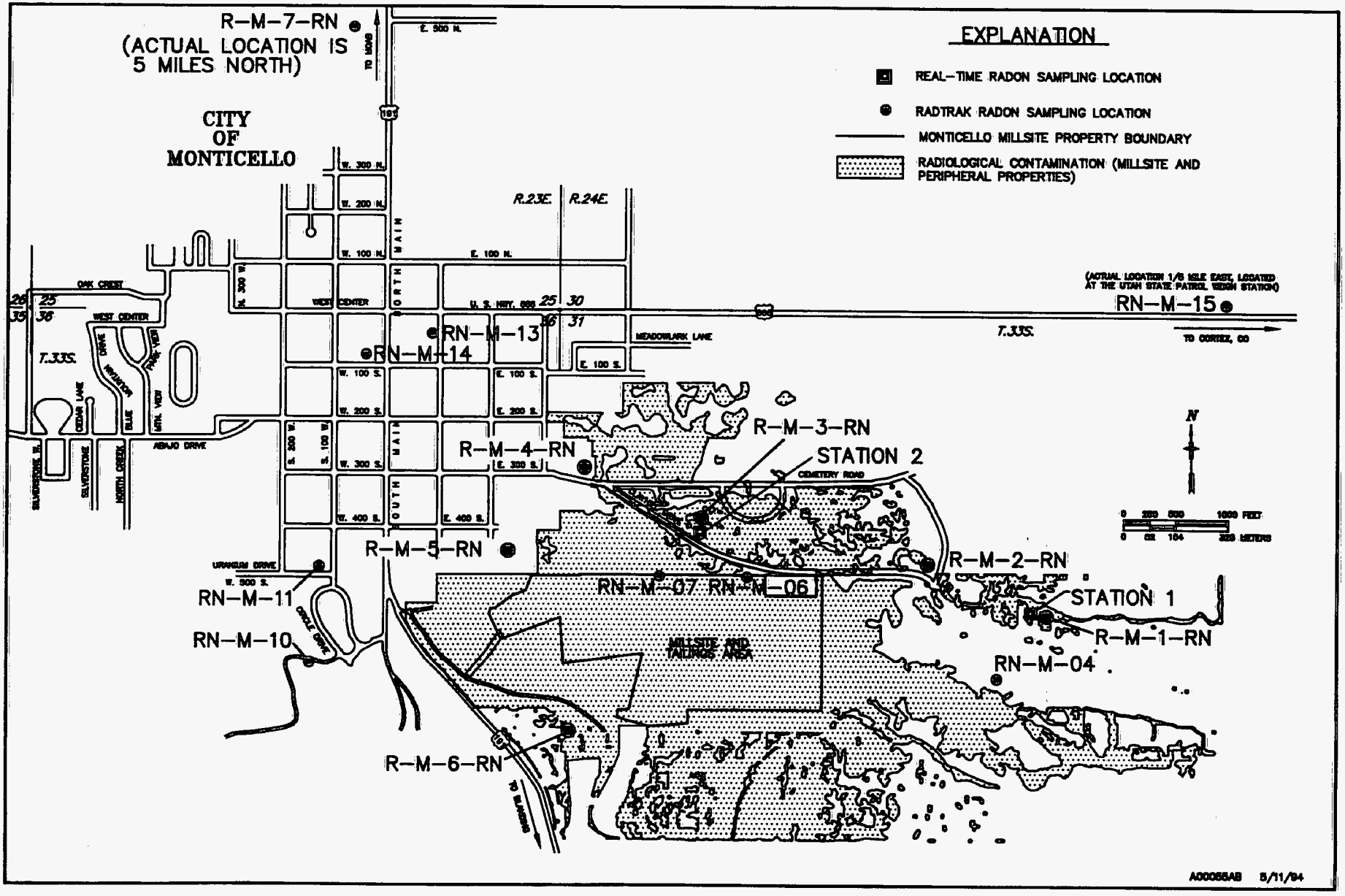

Figure 3. Atmospheric Radon Monitoring Locations At and Near MMTS

Two Pylon AB-5 real-time radon monitors were installed adjacent to the millsite (Stations 1 and 2 in Figure 3) in August 1992 to determine the effect of increased construction activity on ambient radon concentrations. The monitors were placed in downwind, residential locations where the highest concentrations of radon were expected. Results of the monitoring indicated that radon concentrations (Table 2) were consistently below the EPA standard and the DOE derived concentration guideline (DCG) established for radon. The radon DCG, which represents the concentration that would cause a member of the public to receive a dose of 100 millirems per year (mrem/yr) from inhalation of radon, is established by DOE Order 5400.5, *Radiation Protection of the Public and the Environment*.

Table 2. Comparison of Average Monthly Real-Time Radon Monitoring Results with EPA and DOE Standards

Sampling Period	Sampling Locations		EPA Standard (40 CFR 192)[a]	DOE DCG (DOE Order 5400.5)[a]
	Station 1 (pCi/L)	Station 2 (pCi/L)		
January	0.4	ND	0.9	3.4
February	0.5	ND	0.9	3.4
March	0.3	0.2	0.9	3.4
April	0.3	0.3	0.9	3.4
May	0.4	0.3	0.9	3.4
June	0.6	0.4	0.9	3.4
July	0.8	0.5	0.9	3.4
August	0.7	0.5	0.9	3.4
September	ND	ND	0.9	3.4
October	0.7	0.6	0.9	3.4
November	0.6	0.7	0.9	3.4
December	0.6	ND	0.9	3.4

[a]Values listed include the background value of 0.4 pCi/L;
1 pCi/L = 3.7×10^{-2} becquerel per liter; ND = no data were collected.

Air Particulates

Air particulate monitoring at and near the MMTS is conducted to comply with federal regulatory requirements. DOE Order 5400.1, *General Environmental Protection Program,* specifies that environmental surveillance will be conducted to monitor the effects of DOE activities on natural resources. Demonstration of compliance with the public dose limits of DOE Order 5400.5 is based on calculations that make use of information obtained from the air particulate monitoring program. In addition, DOE Order 5400.5 lists DCGs for air that provide reference values for conducting radiological environmental protection programs. The DOE *Environmental Regulatory Guide for Radiological Effluent Monitoring and Environmental Surveillance* (DOE 1991) recommends identifying and monitoring diffuse sources such as tailings piles. National primary and secondary air-quality standards (40 CFR 50), which were deemed appropriate and applicable for this facility at the program outset, define maximum acceptable levels of particulate matter necessary to protect public health.

Air particulate monitoring was initiated in August 1983. The original air sampling network consisted of three high-volume air samplers that sampled ambient air at 40 standard cubic feet per minute (scfm) for 24 hours every sixth day. Particulates were collected on a glass-fiber filter. In March 1987, 10-micrometer (μm) size-selective inlets were installed in the intake of the samplers to separate particulate matter 10 μm or smaller (PM_{10}) from larger particles. The PM_{10} particles were considered to be the respirable and biologically damaging component and were collected on a glass-fiber filter in the sampler. The heavier, windblown particulates and fugitive dust were eliminated by the 10-μm size-selective inlet.

Wind-direction data collected on the millsite were used to identify two primary wind vectors in the area: one to the east and one to the north-northeast. Sampling stations AIR-M-4 and AIR-M-5 are located downwind from the tailings piles along these two predominant wind directions, and AIR-M-6 is located at a representative background site (Figure 4). AIR-M-4 is located on the millsite on the eastern edge of the East tailings pile; the sampler intake is mounted approximately 3 meters (10 feet) above ground level. Because of construction activities, this sampler was moved about 30 meters (100 feet) to the east in May 1993 and was renamed AIR-M-4A. AIR-M-5 is located on the west side of the Monticello cemetery grounds. This station is 230 meters (750 feet) north of the tailings area at an elevation of 100 meters (330 feet) above the piles; the sampler intake is 4 meters (13 feet) above ground level. AIR-M-6 is located approximately 0.8 kilometer (0.5 mile) west of Monticello near the pump house building for the city water supply; the land west of the pump house building is relatively undisturbed desert and mountainous terrain. The intake port for this sampler is 3 meters above ground level.

In November 1993, seven low-volume (flow rate of 60 liters per minute) radioparticulate samplers were installed adjacent to the millsite and the city of Monticello (Figure 4) in response to an increase in remedial activities. The low-volume samplers operated

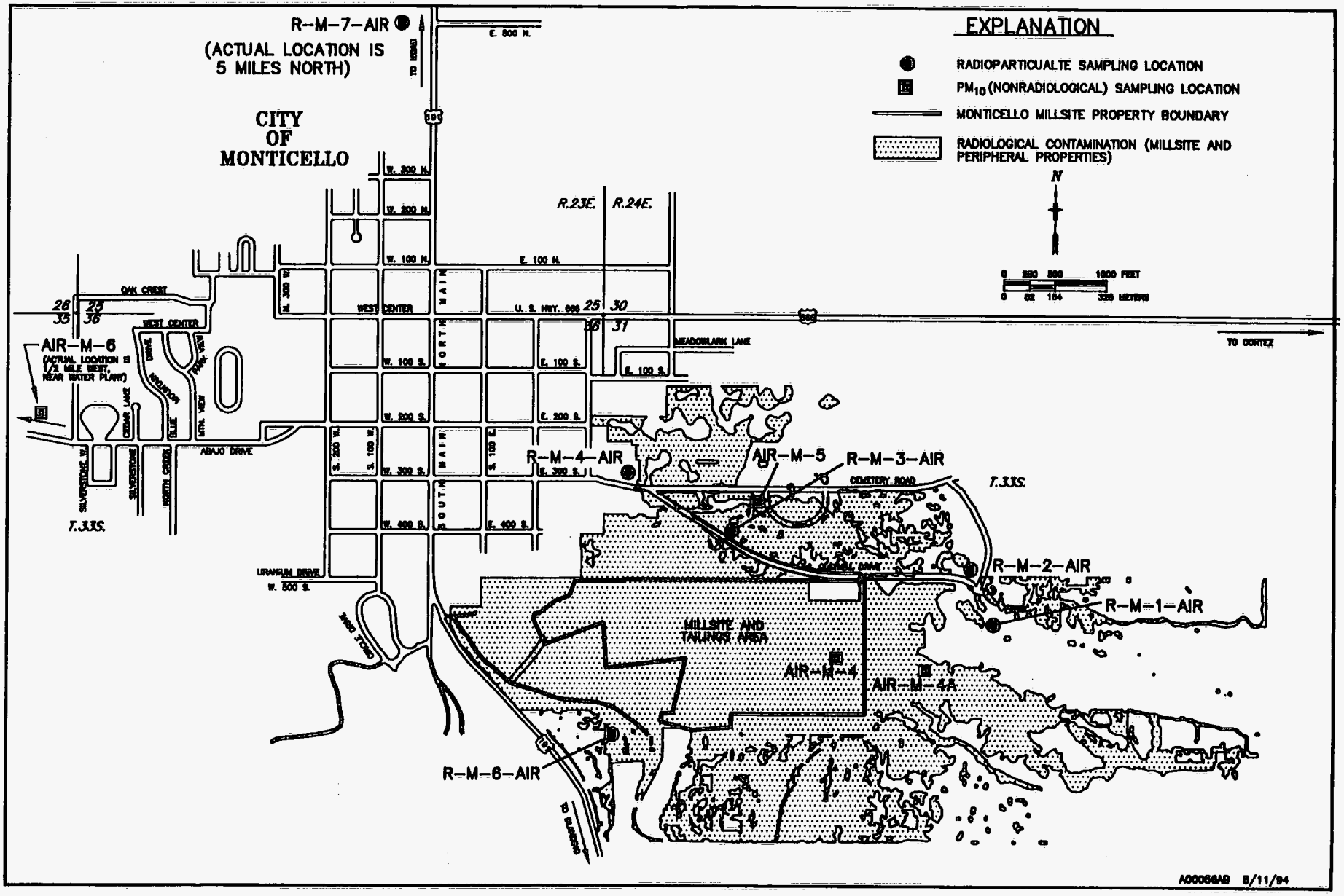

Figure 4. Air Particulate Sampling Locations At and Near MMTS

24 hours a day, 7 days a week. Samples were retained on a 47-millimeter filter in each sampler and collected weekly. To obtain average monthly values of radioparticulate concentrations, four weekly filter samples were composited and analyzed as one sample. After the addition of the low-volume radioparticulate samplers to the monitoring network, the three high-volume samplers were used for sampling nonradiological PM_{10} only.

Filters were analyzed for total uranium, radium-226, thorium-230, and PM_{10}. Radiological analyses were performed by the GJPO Analytical Chemistry Laboratory; PM_{10} determinations were made by subtracting the presample filter weight from the postsample filter weight. Results of 1993 sampling are reported in Tables A-5 through A-8 in Appendix A.

Table 3 compares total uranium, radium-226, and thorium-230 DCGs (inclusive of background levels) with maximum and average concentrations measured at and near the MMTS during 1993. In Appendix B, Figures B-1 through B-3 show concentrations of total uranium, thorium-230, and radium-226 as a percentage of their respective DCGs at station AIR-M-4/AIR-M-4A. Graphs for the other radioparticulate sampling sites, although not included in this report, exhibit similar trends to AIR-M-4/AIR-M-4A graphs. All measured concentrations were well below the respective DCGs.

Acceptable levels of PM_{10} are defined by the EPA under the National Ambient Air Quality Standards. These PM_{10} standards specify a maximum annual arithmetic mean of 50 micrograms per cubic meter ($\mu g/m^3$) and a 24-hour maximum concentration of 150 $\mu g/m^3$. In 1993, the maximum PM_{10} annual average of 12.5 $\mu g/m^3$ and the maximum 24-hour concentration of 42.3 $\mu g/m^3$ were measured at station AIR-M-4A (Table 3). Figure B-4 shows measured PM_{10} concentrations as a percentage of the EPA standard at station AIR-M-4/AIR-M-4A. Although not included in this report, graphs for stations AIR-M-6 and AIR-M-5 are similar to AIR-M-4/AIR-M-4A graphs.

Direct Gamma Radiation Monitoring

A direct environmental radiation monitoring program was initiated at the MMTS in April 1991 to assess the potential gamma radiation dose to persons on and near the millsite, in accordance with DOE Order 5400.5 and the DOE guidance document, *Environmental Regulatory Guide for Radiological Effluent Monitoring and Environmental Surveillance* (DOE 1991). Gamma radiation measurements are included, along with radiation measurements associated with radon and air particulates, in the calculation of total off-site dose to the public to determine compliance with the DOE standard of 100 mrem/yr above background (see Off-Site Dose Modeling section).

During 1993, radiation measurements were made using $CaSO_4$:Dy (calcium sulfate: dysprosium) thermoluminescent dosimeters (TLDs). Thirteen monitoring locations (Figure 5) on the millsite and surrounding areas were monitored quarterly. In the fourth quarter of 1993, seven TLDs were added to the sampling network to further define the off-site gamma dose (Figure 5). Results of the monitoring are presented in Appendix A, Tables A-9 through A-12, and are summarized in Table 4, which compares measured

Table 3. Results of MMTS Air Particulate Monitoring Conducted during 1993[a,b,c]

		Radiological Element					Suspended Particulates
		Radium-226 (μCi/mL)[d]	Thorium-230 (μCi/mL)	Thorium-230 (pg/mL)[e]	Uranium (pg/mL)	Uranium (μCi/mL)[f]	PM_{10} ($\mu g/m^3$)
	Standard	1.0E-12	4.0E-14	No Standard	No Standard	2.0E-12	150 Maximum 50 Annual Average
Station							
AIR-M-4	Maximum	1.6E-15	3.8E-16	2.0E-08	6.2E-04	4.1E-16	10.4
	Average	1.6E-15	3.2E-16	1.6E-08	5.9E-04	3.9E-16	4.4
	Count	2 (1)	2 (2)	2 (2)	2 (2)	2 (2)	20 (20)
AIR-M-4A	Maximum	3.6E-16	4.1E-16	2.1E-08	7.4E-04	4.9E-16	42.3
	Average	3.6E-16	3.1E-16	1.6E-08	6.2E-04	4.1E-16	12.5
	Count	4 (1)	4 (2)	4 (2)	4 (4)	4 (4)	27 (27)
AIR-M-5	Maximum	<2.2E-16	4.7E-16	2.4E-08	7.4E-04	4.9E-16	20.3
	Average		3.5E-16	1.8E-08	6.0E-04	4.0E-16	9.4
	Count	5 (0)	5 (3)	5 (3)	5 (5)	5 (5)	42 (42)
AIR-M-6	Maximum	<1.5E-16	2.6E-16	1.3E-08	6.4E-04	4.3E-16	17.9
	Average		2.5E-16	1.3E-08	5.2E-04	3.5E-16	6.9
	Count	6 (0)	6 (3)	6 (3)	6 (6)	6 (6)	43 (43)
R-M-1-AIR	Maximum	<4.4E-16	<1.6E-16	<8.2E-09	2.7E-04	1.8E-16	
	Average				2.6E-04	1.7E-16	
	Count	2 (0)	2 (0)	2 (0)	2 (2)	2 (2)	
R-M-2-AIR	Maximum	<2.1E-16	<9.1E-17	<4.7E-09	1.6E-04	1.1E-16	
	Average				8.1E-05	5.4E-17	
	Count	2 (0)	2 (0)	2 (0)	2 (2)	2 (2)	
R-M-3-AIR	Maximum	<2.0E-15	<1.7E-16	<8.8E-09	3.4E-04	2.3E-16	
	Average				2.6E-04	1.7E-16	
	Count	2 (0)	2 (0)	2 (0)	2 (2)	2 (2)	
R-M-4-AIR	Maximum	<4.3E-16	<1.6E-16	<8.2E-09	1.9E-04	1.3E-16	
	Average				1.9E-04	1.3E-16	
	Count	2 (0)	2 (0)	2 (0)	2 (2)	2 (2)	
R-M-6-AIR	Maximum	<4.0E-16	<1.5E-16	<7.7E-09	2.4E-04	1.6E-16	
	Average				1.8E-04	1.2E-16	
	Count	2 (0)	2 (0)	2 (0)	2 (2)	2 (2)	
R-M-7-AIR	Maximum	<9.7E-16	<2.8E-16	<1.4E-08	1.2E-04	8.0E-17	
	Average				1.1E-04	7.3E-17	
	Count	2 (0)	2 (0)	2 (0)	2 (2)	2 (2)	

[a]The numbers given in this table are defined as follows:
Maximum - Maximum concentration.
Average - Annual average concentration. Samples above detection limit were used in calculation.
Count - Number of samples collected; the number in parentheses indicates the number of samples having concentrations above the detection limit.

[b]Where no above-detection-limit data are observed, the average is not calculated; the maximum is calculated using the highest detection limit.

[c]Scientific notation E-15 = "x 10^{-15}."

[d]1 μCi/mL = 3.7 x 10^4 becquerels per milliliter.

[e]pg/mL = picograms per milliliter. The conversion of thorium-230 concentrations between microcuries and picograms assumed equilibrium and an activity of 0.0194 μCi/μg.

[f]The conversion of uranium concentrations between microcuries and picograms assumed equilibrium and an activity of 0.666 pCi/μg.

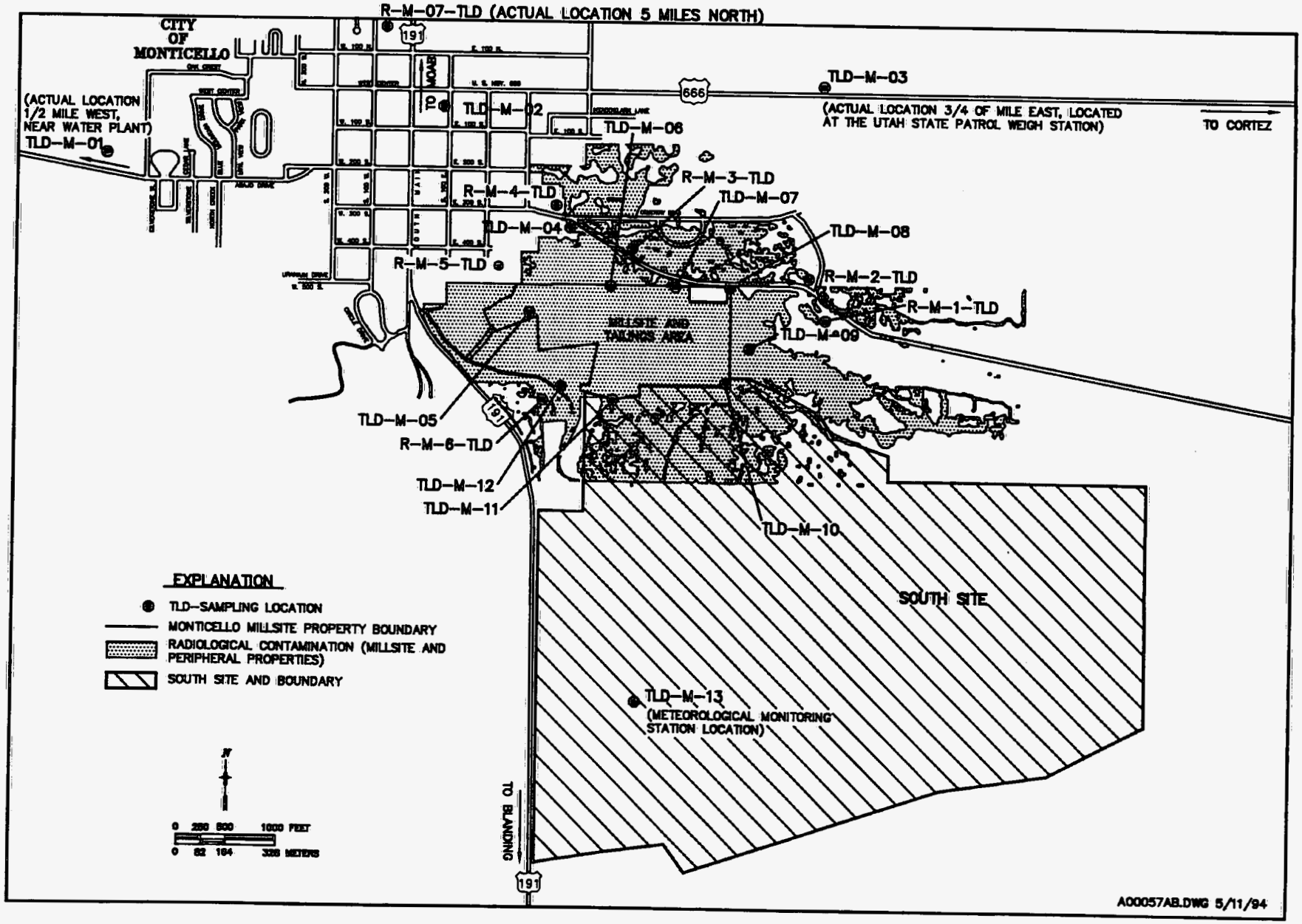

Figure 5. Direct Gamma Radiation Monitoring Locations At and Near MMTS

Table 4. Average Annual Gamma Exposure Rates At and Near MMTS during 1993

Sampling Location	Gamma Exposure	
	Annual Average (mrem/yr)[a]	DOE Standard (mrem/yr)[b]
On-Site		
TLD-M-05	356	195
TLD-M-06	331	195
TLD-M-07	178	195
TLD-M-08	116	195
TLD-M-09	212	195
TLD-M-10	112	195
TLD-M-11	180	195
TLD-M-12	463	195
Off-Site		
R-M-1-TLD	78	195
R-M-2-TLD	78	195
R-M-3-TLD	79	195
R-M-4-TLD	98	195
R-M-5-TLD	65	195
R-M-6-TLD	103	195
R-M-7-TLD	82	195
TLD-M-01	95	195
TLD-M-02	104	195
TLD-M-03	97	195
TLD-M-04	114	195
TLD-M-13	91	195

[a]1 mrem/yr = 0.01 millisieverts per year.
[b]Standard includes background of 95 mrem/yr.

values with the DOE standard. The background level of gamma radiation, measured at station TLD-M-1, was estimated at 95 mrem/yr. Four locations on the millsite yielded annual average measurements greater than the standard; annual averages of measurements collected off the millsite were well below the standard. Levels of gamma radiation on the millsite are expected to decrease to background levels after remediation is completed.

Meteorology

Because of administrative and technical problems, meteorological monitoring at the MMTS did not begin until November 1993. The loss of 1993 meteorological data did not significantly affect modeling results because atmospheric transport models make use

of several years of data to obtain average conditions. Meteorological data used in 1993 dose modeling were collected at the MMTS from 1982 to 1991.

Surface Water

Montezuma Creek, which flows through the millsite property from west to east, is the main source of surface water in the MMTS area. Although generally perennial, the creek's flow can be quite low or dry during the late summer. Montezuma Creek water is diverted and used for irrigation supply about 1.6 kilometers (1 mile) upstream of the millsite. Downstream of the millsite, the creek water is used primarily for livestock watering, wildlife habitat, and irrigation. Other surface-water bodies on the millsite include several ponds, seeps, and drainages.

The primary goals of surface-water sampling at the MMTS are (1) to compare upstream water quality conditions within Montezuma Creek with conditions on and downstream of the MMTS, (2) to characterize the type and extent of contamination in surface-water sources, (3) to verify compliance with state surface-water quality standards, and (4) to detect changes in water quality resulting from remedial action.

Utah state regulations (Utah Administrative Code Rule 448-2) place the segment of Montezuma Creek that flows through and below the millsite into four use classifications: Domestic Source 1C, Recreation and Aesthetics 2B, Aquatic Wildlife 3B, and Agriculture. These classifications are associated with specific numeric water-quality standards, which are listed in Table 5. These standards also are applicable to the on-site ponds and seeps.

During 1993, upgradient surface-water quality was sampled at the locations designated as SW92-01, SW92-02, SW92-03, and W-5 in Figure 6. Although the latter site, W-5, is located on an irrigation ditch, it is considered an upgradient site because water within the ditch is diverted from Montezuma Creek upstream of the millsite.

On-site surface-water quality samples were collected at five locations: the drainage between the Carbonate and Vanadium tailings piles (W-2 in Figure 6), the seep-fed pond adjacent to the Carbonate tailings pile (Carbonate Seep), the "low spot" between the Carbonate and Vanadium tailings piles (North Drainage), and two locations on Montezuma Creek (SW92-04 and SW92-05).

Downgradient water quality within Montezuma Creek was sampled at seven locations: W-4, SW92-06, Sorenson site, SW92-07, SW92-08, SW92-09, and Montezuma Canyon. The latter site is approximately 10 kilometers (6 miles) downstream of the millsite (Figure 7).

Water quality samples were collected from upgradient, on-site, and downgradient locations in March, April, July, and October 1993. Samples were analyzed for metals (aluminum, antimony, arsenic, barium, beryllium, boron, cadmium, cobalt, chromium, copper, cyanide, iron, manganese, mercury, molybdenum, nickel, lead, selenium, silver,

Table 5. Comparison of State of Utah Water Quality Standards[a] with 1993 and Historical Maximum Concentrations Within Montezuma Creek[b]

Constituent	State Standard		1993 Maximum[c]			Historical Maximum[c,d]		
			Up-gradient	On Site	Down-gradient	Up-gradient	On Site	Down-gradient
Common Ions								
Fluoride[e]	1.4-2.4	mg/L	~0.156	~0.139	~0.189	~0.145	~0.126	0.267
Nitrate (as N)[f]	4	mg/L	5.67	1.102	1.398	0.452	2.982	10.007
Total Dissolved Solids	1200	mg/L	1842	1586	1630	1540	1860	1620
Field Measurement								
pH	6.5-9.0		7.22-8.19	7.56-8.67	7.08-9.1	7.2-9.16	6.6-8.6	6.74-8.6
Metals[g]								
Arsenic	0.05	mg/L	<0.004	~0.0103	~0.0086	~0.0039	0.0339	0.027
Barium	1.0	mg/L	~0.0922	~0.0587	0.103	0.1	0.1	0.12
Boron	0.75	mg/L	0.14	~0.0926	0.13	~0.0603	~0.0758	0.115
Cadmium	0.01	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	0.05	mg/L	~0.0049	<0.004	~0.0087	<0.006	<0.006	<0.006
Copper	0.2	mg/L	~0.0101	~0.017	~0.02	<0.004	<0.004	<0.004
Iron	1.0	mg/L	0.849	0.564	4.45	2.85	1.34	0.34
Lead	0.05	mg/L	0.0245	<0.001	0.0065	0.004	0.0051	0.0045
Mercury	0.002	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	~0.0002	<0.0001
Selenium	0.01	mg/L	0.0097	0.012	0.0196	0.009	0.0115	0.042
Silver	0.05	mg/L	<0.007	<0.007	<0.007	<0.006	<0.006	<0.006
Herbicides								
2,4,5-TP (Silvex)	10	µg/L	<0.22	<0.22	---	<0.20	<0.20	---
2,4-D	100	µg/L	<0.28	<0.28	---	<0.25	<0.25	---
Pesticides and PCBs								
Endrin	0.2	µg/L	<0.10	<0.10	---	<0.10	<0.10	---
Methoxychlor	100	µg/L	<0.52	<0.52	---	<0.51	<0.50	---
Toxaphene	5	µg/L	<5.2	<5.2	---	<5.1	<5.0	---
gamma-BHC (Lindane)	4	µg/L	<0.052	<0.052	---	<0.051	<0.050	---
Radiological								
Gross Alpha	15	pCi/L	76	162	210	<60.	80.	517
Gross Beta	50	pCi/L	26.5	29.9	79.6	<40.	40.	187
Radium-226+228	5	pCi/L	0.8	0.9	1.3	3.3	0.7	1.6

[a]State of Utah Water Quality Standards for the Montezuma Creek segment, Utah Administrative Code Rule 448-2. Not all state standards are listed in this table.

[b]A "---" indicates no data available; a "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit); a "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).

[c]The values are in units shown under the State Standard column.

[d]Based on maximum concentrations observed from 1984 through 1992.

[e]Allowable maximum concentration varies according to the daily maximum mean air temperature.

[f]Nitrate (as N) was derived for measured nitrate using the following conversion, nitrate (as N) = $NO_3 \div 4.427$.

[g]The acid soluble method used by the State Health Laboratory involves acidification of the sample in the field, filtration in the laboratory, no digestion process, and analysis by atomic absorption spectrophotometry. The method employed by the GJPO Analytical Chemistry Laboratory is similar except that the sample is filtered in the field before acidification.

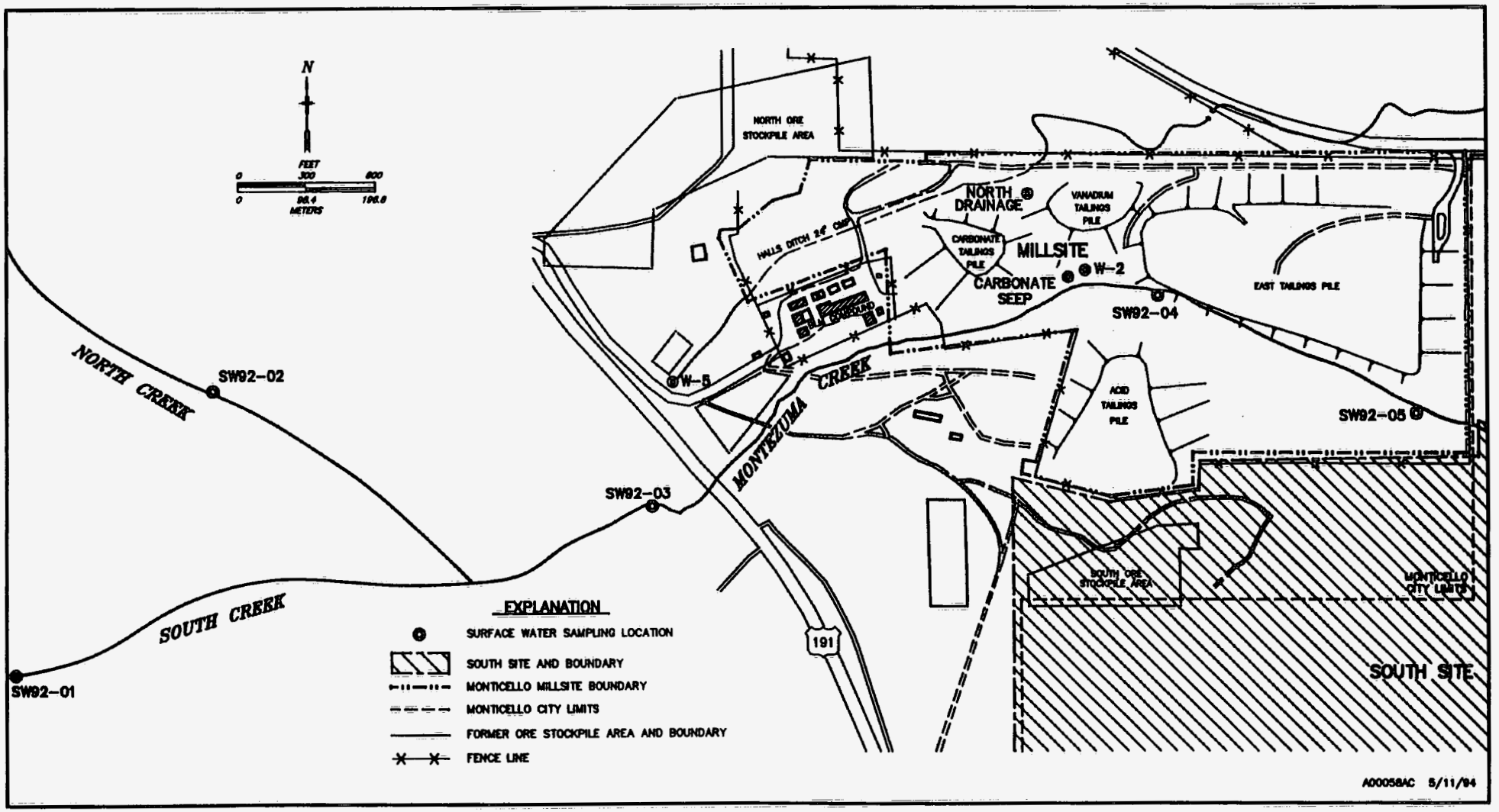

Figure 6. Surface-Water Sampling Locations On Site and Upgradient of the Monticello Millsite

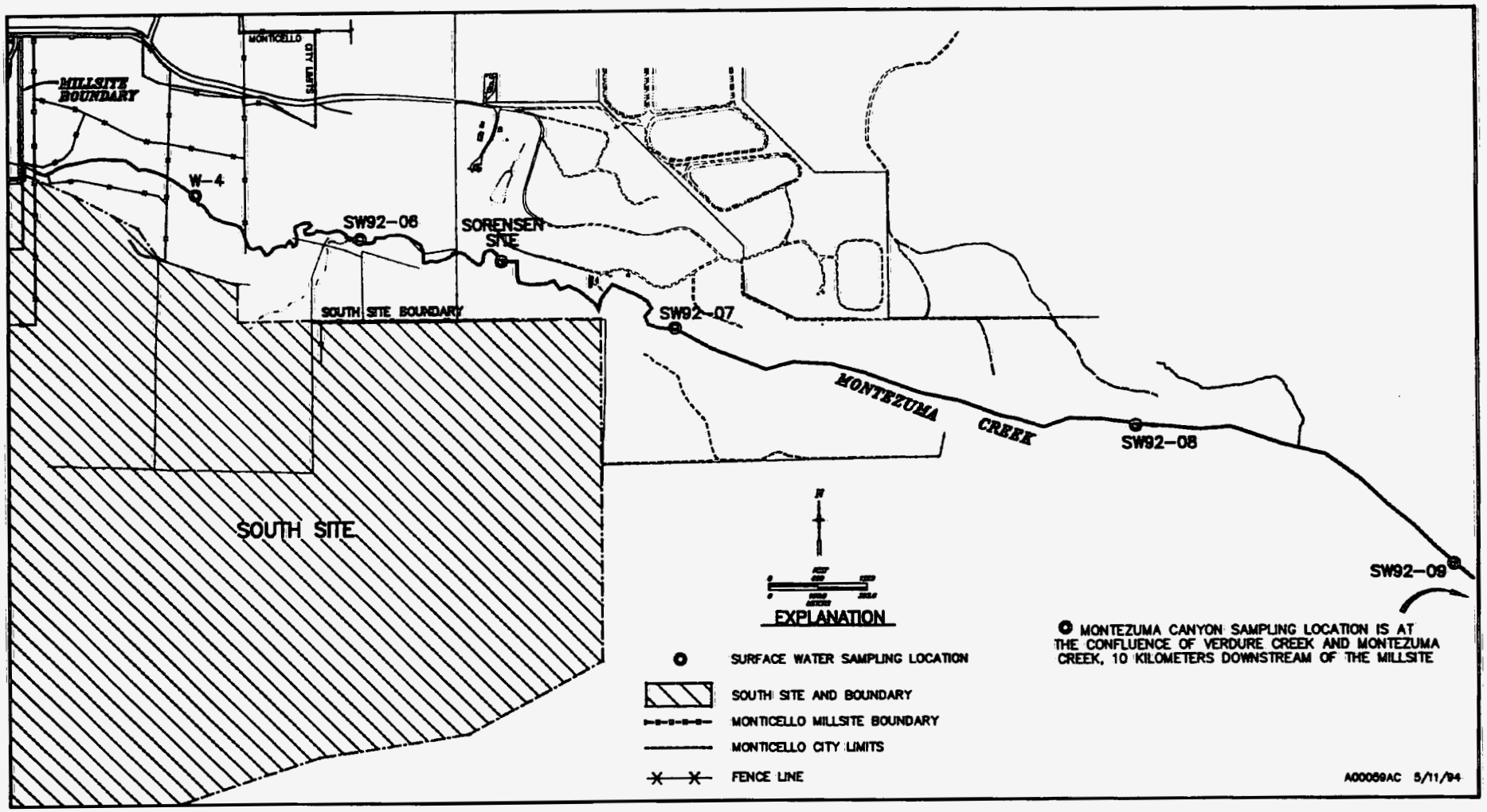

Figure 7. Surface-Water Sampling Locations Downgradient of the Monticello Millsite

strontium, thallium, uranium, vanadium, and zinc), common ions (ammonium, calcium, chloride, fluoride, magnesium, nitrate, nitrite, potassium, sodium, sulfate, and total dissolved solids), and radiological analytes (gross alpha, gross beta, lead-210, polonium-210, radium-226, radium-228, radon-222, thorium-230, thorium-232, uranium-234, uranium-235, and uranium-238). [Note: Analyses were not conducted for some of the listed metals during the October sampling event]. In addition, alkalinity, pH, conductivity, and temperature were measured in the field. Organic constituents (herbicides, pesticides/polychlorinated biphenyls [PCBs], semivolatiles, and volatiles) were measured in samples obtained upgradient of and on the millsite during the March, April, and July sampling events. Table A-13 in Appendix A provides a complete list of the Target Compound List (TCL) of organic constituents that were included in the analysis of surface waters.

Analytical results of 1993 surface-water sampling are listed in Appendix A, Table A-14. The results indicated that concentrations of molybdenum, selenium, uranium, and gross alpha activity increased within Montezuma Creek across the millsite. This increase in mill-tailings-related contaminants may have been a result of increased discharge of the contaminated alluvial aquifer into the creek downstream of the millsite. Seeps from the shallow aquifer are visible along the creek downstream of the eastern millsite boundary, and creek discharge increases throughout this section for approximately 2 kilometers (1.25 miles). Historical assessments of water-quality data (UNC Geotech 1990) indicated that the highest concentrations of mill-tailings-related constituents occur at either the W-4 or Sorenson site.

Maximum 1993 and historical analyte concentrations within Montezuma Creek are compared with Utah state standards in Table 5. At upgradient sampling locations, standards for nitrate, total dissolved solids, and gross alpha were exceeded. At on-site sampling locations, standards for selenium, total dissolved solids, and gross alpha were exceeded. Downgradient of the millsite, standards for iron, pH, selenium, total dissolved solids, gross alpha, and gross beta were exceeded in samples from the creek.

Higher concentrations of mill-tailings-related contaminants were found in the ponds and seeps on the millsite than in Montezuma Creek because the ponds and seeps are surface expressions of the ground water (see Ground-Water Protection Program chapter of this report). Levels of arsenic, iron, nitrate, selenium, total dissolved solids, gross alpha, gross beta, and radium-226+228 exceeded state standards in one or more of the pond/seep samples (Table 6).

Graphs showing the levels of selenium and gross alpha over time at upgradient, on-site, and downgradient locations are presented in Appendix B, Figures B-5 through B-16. Since 1987, selenium concentrations consistently have been below the state standard at the W-5 upgradient location (Figure B-5). At the W-2 and Carbonate Seep on-site locations (Figures B-6 and B-7) and the W-4 and Sorenson downgradient locations (Figures B-8 and B-9), selenium concentrations have exceeded the state standard. Ten kilometers downstream of the millsite, at the Montezuma Canyon location, selenium concentrations consistently have been below the state standard (Figure B-10).

Table 6. Comparison of State of Utah Water Quality Standards[a] with 1993 and Historical Maximum Concentrations Within MMTS Ponds and Seeps[b]

Constituent	State Standard		1993 Maximum[c]	Historical Maximum[c,d]
Common Ions				
Fluoride[e]	1.4-2.4	mg/L	0.891	0.431
Nitrate (as N)[f]	4	mg/L	4.179	88.096
Total Dissolved Solids	1200	mg/L	2040	1820
Field Measurement				
pH	6.5-9.0		7.86-8.62	7.30-10.0
Metals[g]				
Arsenic	0.05	mg/L	0.454	3.6
Barium	1.0	mg/L	~0.0869	0.1
Boron	0.75	mg/L	0.396	0.28
Cadmium	0.01	mg/L	<0.001	<0.001
Chromium	0.05	mg/L	<0.004	<0.006
Copper	0.2	mg/L	~0.0171	<0.004
Iron	1.0	mg/L	1.4	1.17
Lead	0.05	mg/L	0.0035	0.0033
Mercury	0.002	mg/L	0.00091	<0.0001
Selenium	0.01	mg/L	0.0414	3.11
Silver	0.05	mg/L	<0.007	<0.006
Herbicides				
2,4,5-TP (Silvex)	10	µg/L	<0.22	<0.20
2,4-D	100	µg/L	<0.27	<0.25
Pesticides and PCBs				
Endrin	0.2	µg/L	<0.10	<0.10
Methoxychlor	100	µg/L	<0.50	<0.50
Toxaphene	5	µg/L	<5.0	<5.0
gamma-BHC (Lindane)	4	µg/L	<0.050	<0.050
Radiological				
Gross Alpha	15	pCi/L	1900	6425
Gross Beta	50	pCi/L	1164	3376
Radium-226+228	5	pCi/L	9.1	23.8

[a]State of Utah Water Quality Standards for the Montezuma Creek segment, Utah Administrative Code Rule 448-2. Not all state standards are listed in this table.

[b]A "---" indicates no data available; a "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit); a "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).

[c]The values are in units shown under the State Standard column.

[d]Based on maximum concentrations observed from 1984 through 1992.

[e]Allowable maximum concentration varies according to the daily maximum mean air temperature.

[f]Nitrate (as N) was derived for measured nitrate using the following conversion, nitrate (as N) = $NO_3 \div 4.427$.

[g]The acid soluble method used by the State Health Laboratory involves acidification of the sample in the field, filtration in the laboratory, no digestion process, and analysis by atomic absorption spectrophotometry. The method employed by the GJPO Analytical Chemistry Laboratory is similar except that the sample is filtered in the field before acidification.

Since 1987, gross alpha levels generally have been below detection limits at the W-5 upgradient location (Figure B-11). Because detection limits were variable and often above the Utah state standard, it is uncertain whether actual concentrations were above the standard. Gross alpha concentrations consistently have exceeded the state standard at on-site (Figures B-12 and B-13) and downgradient locations (Figures B-14, B-15, and B-16).

Significant concentrations of TCL organic constituents were not measured in MMTS surface-water sources. All measured concentrations of herbicides, pesticides/PCBs, and TCL semivolatiles were below reporting limits. Nine volatile compound measurements were above reporting limits, but the concentrations of these compounds were so minimal (maximum of 2.4 μg/L) that they were not considered contaminants. The specific compounds detected were acetone, methylene chloride, 4-methyl-2-pentanone, 1,2-dichloroethane, and toluene (see Appendix A, Table A-15).

Semivolatile and volatile compounds that were not TCL constituents, but were detected, were labeled as "tentatively identified compounds" and are listed in Table A-15. Tentatively identified compounds were labeled as such because the laboratory instrument was not calibrated for that specific compound, resulting in an estimated concentration. Because of the low estimated concentrations detected ($\sim$53 μg/L and below), these compounds were not considered potential contaminants in the surface water. Sampling for organics in surface water was discontinued at the MMTS after the July 1993 sampling event.

Environmental Documents/Permits

Key environmental documents completed in 1993 included

- *Work Plan for the Bureau of Land Management Compound Characterization, Monticello Mill Tailings Site* (RUST Geotech Inc. 1993a).

- *Sampling and Analysis Plan for Regulated Waste Characterization of Bureau of Land Management Compound, Peripheral Property MP-00181-OT, Phase I, Monticello Mill Tailings Site* (RUST Geotech Inc. 1993b).

- *Draft Work and Sampling Plan for Preliminary Source Characterization at Peripheral Properties MP-00181-OT, Phase III, and MP-00211-VL, Monticello Mill Tailings Site* (RUST Geotech Inc. 1993c).

Two position papers were issued to EPA and the state of Utah during 1993. These were titled *Position Paper on Regulatory Definition, Description, and Handling of Waste Material on the Monticello Mill Tailings Site* and *Position Paper on Remediation of Nonradiologically Contamination on Monticello Vicinity Properties*.

Two drilling permits were issued to DOE-GJPO by the state of Utah for the installation of monitoring wells on the Near South Site and millsite. Well drilling was completed within the designated time periods established by the permits.

Environmental Activities Summary

During 1993, geotechnical, engineering, and hydrogeologic evaluations of the Near South Site and millsite were conducted as part of an alternatives analysis of tailings disposal locations. Coreholes and/or wells were installed at 32 locations for use in collecting data concerning ground-water depth, hydraulic conductivity of the underlying aquifers, ground-water quality, geologic strata, and moisture content of rock formations. Results of the evaluations will be summarized in the *Monticello Remedial Action Project Alternatives Analysis Data Summary Report* (in preparation).

A characterization study of ground-water systems at the Far South Site was completed in 1993. This study established baseline ground-water quality conditions and classified the shallow ground-water system in accordance with Utah classification standards. Analytical results were summarized in a memorandum titled "Ground-Water Chemistry on the Monticello Remedial Action Project South Site" (Meininger 1993).

Eighteen monitoring wells, six coreholes, and two drillholes on the MMTS were abandoned in 1993 in accordance with the Utah Division of Water Rights regulations. The wells and holes were abandoned because they were damaged or incorrectly completed, or they lacked sufficient completion information. A potential conduit for contaminant migration from the alluvial aquifer into the Burro Canyon aquifer was eliminated by abandoning these wells.

Sampling at the Bureau of Land Management compound was conducted November 15-19, 1993, to determine the presence of regulated wastes. Results of the sampling will be summarized in the *Preliminary Site Characterization Report for the Bureau of Land Management Compound Peripheral Property MP-00181-OT, Phase I* (in preparation).

Several environmental training courses were conducted for workers at the MMTS in compliance with federal regulations and DOE orders. Following is a description of the courses:

- Pre-Entry Site Briefing—provides a briefing of site hazards and health and safety requirements for all personnel who access the MMTS.
- Radiation Worker Training—completed by all personnel who work in radiologically controlled areas.
- General Employee Radiation Training—provides basic radiation training; required for unescorted access to controlled areas on the facility.
- Health and Safety Update—provides an annual refresher of the health, safety, and security orientation.

Environmental Radiological Program Information

Radioactive Effluent Data

The only significant radioactive effluent released from the MMTS during 1993 was radon-222, which has a half-life of 0.01 year. A radon-flux survey conducted in 1984 (UNC Geotech 1990) revealed that radon emanates from the millsite at a rate of 1,608 curies per year. Results of the 1993 radiological air particulate monitoring indicated that levels of uranium, radium-226, and thorium-230 were well below DCGs.

Environmental Sampling for Radioactivity

Surface water, ground water, and air were sampled on the millsite and analyzed for radioactive constituents. Surface- and ground-water analytes included lead-210, polonium-210, radium-226, radium-228, radon-222, thorium-230, thorium-232, uranium-234, uranium-235, uranium-238, gross alpha, and gross beta; air was analyzed for radon and for particulates containing radium-226, thorium-230, and uranium. Sampling locations, frequency, methodology, and results are discussed under the Ground-Water Protection Program and Environmental Program Information sections in this report. Also included in those sections are comparisons of measured constituent levels with federal and state regulatory levels.

Off-Site Dose Modeling

Off-site dose modeling was conducted to estimate the collective population dose caused by radon emissions. The dose assessment model CAP88PC predicted that the collective dose to persons residing within an 80-kilometer radius of the MMTS was 22.25 person-rem per year (0.22 person-sievert per year). Because a reliable source term for radionuclides could not be derived, it was not included in the population dose estimate. However, the population dose resulting from radionuclide releases was expected to be minimal on the basis of ambient air radionuclide concentrations measured at the site (see Table 3 in this report). The population file used in the dose modeling was compiled from 1990 U.S. Bureau of Census data; the meteorological data file was derived from 9 years of meteorological data collected at the MMTS.

Monitoring data collected during 1993 were used to calculate the effective dose equivalent (EDE) to the maximally exposed off-site individual near the MMTS. Calculation of the EDE of the maximally exposed off-site individual living approximately 100 meters north of the site boundary involved summing the radon, air particulate, and gamma source terms at this location. The total dose caused by these sources was 14.8 mrem/yr (0.15 millisievert per year) above background, which is well below the DOE standard (established in DOE Order 5400.5) of 100 mrem/yr above background. The breakdown of the total dose by source was 3.3 mrem/yr from radon, 0.5 mrem/yr from radioparticulates, and 11.0 mrem/yr from direct gamma radiation.

Environmental Nonradiological Program Information

Nonradiological Effluent Data

Nonradiological effluent was released in the form of air particulates (PM_{10}) from the MMTS during 1993. Monitoring indicated that PM_{10} levels were below EPA standards (see Air Particulates subsection of this report for a complete description of the monitoring program).

Environmental Sampling for Nonradiological Pollution

Surface water and ground water were sampled for a variety of nonradiological constituents on and near the MMTS. These sampling programs are described in the Environmental Program Information and Ground-Water Protection Program chapters of this report. Comparisons of measured constituent levels with federal and state regulatory levels also are in those chapters.

Superfund Amendments and Reauthorization Act, Title III, Reporting

No Superfund Amendments and Reauthorization Act, Title III, reporting was required at the MMTS.

Ground-Water Protection Program

Hydrogeology

Two aquifers underlie the Monticello millsite and surrounding area: the upper ground-water flow system (herein referred to as the alluvial aquifer) and the Burro Canyon aquifer. Unconsolidated materials deposited by Montezuma Creek, fill material, weathered bedrock, and hillslope colluvium constitute the alluvial aquifer along the valley bottom. The underlying Burro Canyon aquifer is separated from the alluvial aquifer by variably saturated, low permeability units comprising the Mancos Shale and Dakota Sandstone (Figure 8).

The alluvial aquifer is approximately 5 meters (16 feet) thick near Montezuma Creek in the vicinity of the Carbonate tailings pile and thins gradually upgradient and downgradient from this location and toward the valley sides. Montezuma Creek is in hydraulic communication with the alluvial aquifer on the upstream side of the East tailings pile. However, because of a realignment of the stream channel, the alluvial aquifer and Montezuma Creek are separated in the area adjacent to the East tailings pile. The creek and the aquifer are reunited downstream of the East tailings pile.

Recharge of the alluvial aquifer is from infiltration of precipitation and surface water inflow. Like the local surface waters, water levels within the aquifer fluctuate seasonally. The alluvial aquifer discharges contaminated ground water into Montezuma Creek. Transmissivity values for the alluvial aquifer beneath the East tailings pile were determined from a pump test and ranged from 3.3×10^{-4} to 5.4×10^{-4} square meters per second (2,329 to 3,744 gallons per day per foot) (Chem-Nuclear Geotech, Inc. 1991). As alluvial ground water moves across the site, it is degraded by constituents such as arsenic, uranium, vanadium, radium, sulfate, selenium, and molybdenum that are leached from the mill tailings. Generally, ground-water flow direction is to the east and southeast. Water from the alluvial aquifer currently is not used for any purpose.

The Burro Canyon is a confined aquifer under the millsite that is separated from the alluvial aquifer by an aquitard consisting of the Mancos Shale, where it has not eroded, and fine-grained units of the Dakota Sandstone. The Burro Canyon aquifer is recharged through the tilted, exposed area of the formation located along the margin of the Abajo Dome west of the millsite. Discharge from the aquifer occurs across the Great Sage Plain, along erosional margins, and in areas where canyons dissect the formation. Numerous stock ponds and marshy areas are created as a result of spring-fed discharge from the aquifer. To date, analysis of ground-water samples indicates that the Burro Canyon aquifer is not being degraded by leached products of mill tailings. Water in the Burro Canyon aquifer is used as a domestic water supply source in the Monticello area.

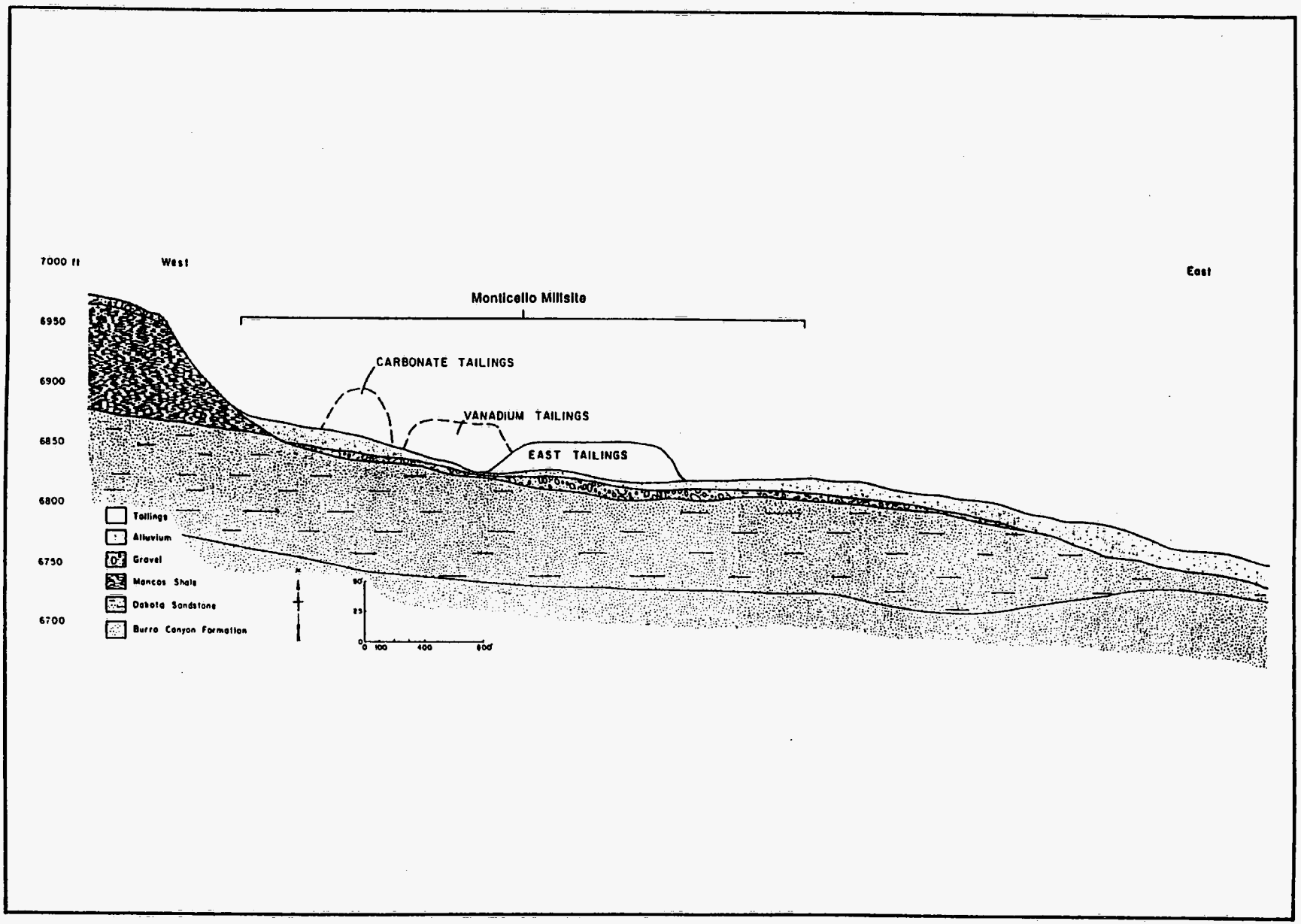

Figure 8. Generalized West-East Cross Section Through the Monticello Millsite

Ground-Water Monitoring Program

The objectives of the ground-water monitoring program at the MMTS are (1) to determine the baseline water quality and quantity conditions of the shallow alluvial aquifer, Dakota Sandstone, and the Burro Canyon aquifer underlying the site; (2) to characterize the type and extent of contamination within the alluvial aquifer; (3) to determine if water quality within the Burro Canyon aquifer is being degraded by contaminated alluvial ground water; (4) to verify compliance with federal and state ground-water quality standards; and (5) to detect changes in water quality resulting from remedial action at the site.

Monitoring programs conducted since 1980 at wells on and downgradient of the millsite have been used to estimate baseline conditions and to characterize contaminant types within the ground water. As part of the OU III remedial investigation, monitoring during 1993 focused on determining background water-quality conditions upgradient of the millsite and providing a better definition of the extent of contamination downgradient of the millsite. Monitoring objectives 3 and 4 also were pursued in 1993. In meeting objective 4, measured water-quality values were compared with federal and state standards promulgated by UMTRCA and Title 26, Chapter 11, of the Utah Code Annotated, respectively. The numeric standards that apply to the millsite are listed in Table 7 (Table 7 combines federal and state standards into one list for comparison purposes; federal standards are listed separately in 40 CFR 192.12).

Ground-water sampling was conducted in March, April, July, and October. Table 8 lists the wells that were sampled and the analytes measured during each of the sampling events. Field measurements made at each well included alkalinity, conductivity, dissolved oxygen, oxidation-reduction potential, temperature, and turbidity. Figure 9 shows the sampling locations of upgradient and on-site wells, and Figure 10 shows the sampling locations of downgradient wells. After the July sampling event, the baseline characterization portion of the OU III remedial investigation was completed, and the sampling strategy (number of wells sampled, analytes measured, frequency of sampling) was altered. For example, several analytes (antimony, strontium, beryllium, cyanide, mercury, nitrite, and organic compounds) were not measured in October (except nitrite in well 31SW91-23) because of their consistently low (near or below reporting limits) concentrations. On-site alluvial wells 82-36A and 82-31B-W were dropped from the sampling network and replaced by wells 31SW91-03 and 82-31B-E because the latter wells produced more water for sampling. Burro Canyon wells 84-74, 84-75, and 84-76 were abandoned; Burro Canyon well 84-77 was drilled out, reconstructed, and relabeled as well 93-01 before the October sampling event.

Ground-water samples were collected with a dedicated bladder pump, peristaltic pump, or Teflon bailer, depending on individual well conditions. Those requiring filtration were run through a 0.45-μm filter in line with the collection vessel. Samples were then preserved and analyzed according to procedures prescribed in the *Analytical Chemistry Laboratory Handbook of Analytical and Sample-Preparation Procedures* (RUST Geotech Inc. 1993d). Analytical results of all 1993 well samples are in Appendix A, Tables A-16 and A-17. Maximum concentrations of analytes measured in alluvial wells are listed in Table 7 and compared to federal and/or state standards and historical maximums.

Table 7. Comparison of Federal[a] and State of Utah[b] Ground-Water Quality Standards with 1993 and Historical Maximum Concentrations in the Alluvial Aquifer[c]

Constituent	Federal/State Standard		1993 Maximum[d]			Historical Maximum[d,e]		
			Up-gradient	On Site	Down-gradient	Up-gradient	On Site	Down-gradient
Common Ions								
Fluoride	2.4	mg/L	~0.199	0.866	0.457	~0.137	1.2	0.8
Nitrate (as N)[f]	10.0	mg/L	4.721	60.086	12.13	~0.082	67.766	33.308
Field Measurement								
pH	6.5-8.5		6.52-7.21	6.27-7.43	6.02-6.88	6.48-6.84	6.0-8.25	6.0-8.8
Metals								
Arsenic	0.05	mg/L	~0.005	0.123	0.0343	<0.003	3.1	0.131
Barium	1.0	mg/L	0.134	0.286	~0.0725	~0.0653	0.85	2.25
Cadmium	0.01	mg/L	<0.001	~0.0032	<0.001	<0.001	0.005	0.005
Chromium	0.05	mg/L	0.0106	0.014	~0.0043	<0.006	0.037	0.0797
Copper	1.0	mg/L	~0.0061	0.465	0.0285	<0.004	0.0524	0.197
Lead	0.05	mg/L	0.0113	0.0528	0.0248	~0.0012	0.0229	0.0891
Mercury	0.002	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	0.0023	<0.001
Molybdenum	0.1	mg/L	~0.0038	0.969	0.23	~0.003	108.	0.53
Selenium	0.01	mg/L	~0.0051	0.0584	0.0574	<0.003	3.3	0.06
Silver	0.05	mg/L	<0.007	~0.0043	<0.007	<0.006	~0.0067	<0.025
Zinc	5.0	mg/L	0.0375	0.0787	~0.017	0.0405	5.02	0.5
Radiological								
Gross Alpha (excluding radon and uranium)[g]	15	pCi/L	<52	4318.9	333.96	<50	2530.6	157.1
Radium-226+228	5	pCi/L	0.56	16.14	1.1	0.4	44	0.9
Uranium-234+238[h]	30	pCi/L	155.03[i]	8391.6	1953.9	3.8628	8524.8	2264.4
Herbicides								
2,4,5-TP (Silvex)	0.01	mg/L	<0.00022	<0.00022	---	<0.0002	<0.0002	<0.0002
2,4-D	0.1	mg/L	<0.00027	<0.00028	---	<0.00025	<0.0004	<0.0004
Pesticides and PCBs								
Endrin	0.0002	mg/L	<0.0001	<0.00011	---	<0.0001	<0.0001	<0.0001
Methoxychlor	0.1	mg/L	<0.00052	<0.00056	---	<0.00052	<0.001	<0.001
Toxaphene	0.005	mg/L	<0.0052	<0.0056	---	<0.0052	<0.0052	<0.005
gamma-BHC (Lindane)	0.004	mg/L	<0.00005	<0.00005	---	<0.00005	<0.00005	<0.00005
Semivolatile Organic								
1,4-Dichlorobenzene	0.075	mg/L	<0.01	<0.01	---	<0.01	<0.01	<0.01
Volatile Organics								
1,1,1-Trichloroethane	0.200	mg/L	<0.001	<0.001	---	<0.001	<0.001	<0.001
1,1-Dichloroethene	0.007	mg/L	<0.001	<0.001	---	<0.001	<0.001	<0.001
1,2-Dichloroethane	0.005	mg/L	<0.001	<0.001	---	<0.001	<0.001	<0.001
Benzene	0.005	mg/L	<0.001	<0.001	---	<0.001	<0.001	<0.001
Carbon Tetrachloride	0.005	mg/L	<0.001	<0.001	---	<0.001	<0.001	<0.001
Trichloroethene	0.005	mg/L	<0.001	<0.001	---	<0.001	<0.001	<0.001
Trihalomethanes[k]	0.1	mg/L	<0.001	<0.001	---	<0.001	<0.001	<0.001
Vinyl Chloride	0.002	mg/L	<0.002	<0.002	---	<0.002	<0.002	<0.002

[a]Standards from the Uranium Mill Tailings Radiation Control Act (40CFR 192.12), revised in 1986.

[b]State of Utah Ground Water Quality Standards, Title 26, Chapter 11, Utah Code Annotated. Not all state standards are listed in this table.

[c]A "---" indicates no data available; a "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit); a "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).

[d]The values are in units shown under the Federal/State Standard column.

[e]Based on maximum concentrations observed from 1984 through 1992.

[f]Nitrate (as N) was derived for measured nitrate using the following conversion, nitrate (as N) = $NO_3 \div 4.427$.

[g]Measured values represent total gross alpha minus uranium activity using assumptions in footnote i.

[h]Uranium concentrations, which were measured in milligrams per liter, were converted to picocuries per liter for comparison purposes. The conversion assumes equilibrium and an activity of 0.666 pCi/µg

[i]This value is a potential outlier; to date, a sufficient number of samples has not been collected to perform an evaluation.

[k]Trihalomethanes include bromodichloromethane, bromoform, dibromochloromethane, and chloroform.

Table 8. 1993 Ground-Water Sampling and Analytical Design Schedule

Month		Wells Sampled	Analytes Measured
March	Upgradient	Alluvial: 92-01, 92-03, 92-05	TCL-volatiles, TCL-semivolatiles, pesticides/PCBs, herbicides, Cl, Fl, NO_3, NO_2, SO_4, NH_4, Ca, Mg, K, Na, Al, Sb, As, Ba, Be, B, Cd, Cr, Cu, cyanide, Fe, Pb, Mn, Hg, Mo, Ni, Se, Ag, Sr, Tl, V, Zn, total dissolved solids, gross beta, Pb-210, Po-210, Ra-226, Ra-228, Th-230, Th-232, U-234, U-235, and U-238
		Burro Canyon: 92-02, 92-04, 92-06	Same as Upgradient Alluvial
	On Site	Alluvial: 82-30B, 82-31BW, 82-36A, 82-40A, 82-42, 31SW91-14, 31SW91-23	Same as Upgradient Alluvial
		Burro Canyon: 84-75, 84-76, 84-77	Same as Upgradient Alluvial
	Downgradient	Alluvial: 82-07, 88-85, 92-07, 92-08, 92-09, 92-11	Same as Upgradient Alluvial except for TCL-volatiles, TCL-semivolatiles, pesticides/PCBs, and herbicides
		Burro Canyon: 84-75, 83-70, 92-10	Same as Upgradient Alluvial except for TCL-volatiles, TCL-semivolatiles, pesticides/PCBs, and herbicides
April	Upgradient	Alluvial: 92-01, 92-03, 92-05	Same as March Upgradient Alluvial
		Burro Canyon: 92-02, 92-04, 92-06	Same as March Upgradient Alluvial
	On Site	Alluvial: 82-30B, 82-31BW, 82-36A, 82-40A, 82-42, 31SW91-14, 31SW91-23	Same as March Upgradient Alluvial
		Burro Canyon: 84-75, 84-76, 84-77	Same as March Upgradient Alluvial
	Downgradient	Alluvial: 82-07, 88-85, 92-07, 92-08, 92-09, 92-11	Same as March Upgradient Alluvial except for TCL-volatiles, TCL-semivolatiles, pesticides/PCBs, and herbicides
		Burro Canyon: 84-75, 83-70, 92-10	Same as March Upgradient Alluvial except for TCL-volatiles, TCL-semivolatiles, pesticides/PCBs, and herbicides

Table 8 (continued). 1993 Ground-Water Sampling and Analytical Design Schedule

Month		Wells Sampled	Analytes Measured
July	Upgradient	Alluvial: 92-01, 92-03, 92-05	Same as March Upgradient Alluvial
		Burro Canyon: 92-02, 92-04, 92-06	Same as March Upgradient Alluvial
	On Site	Alluvial: 82-30B, 82-31BW, 82-36A, 82-40A, 82-42, 31SW91-14, 31SW91-23	Same as March Upgradient Alluvial
		Burro Canyon: 84-75, 84-76, 84-77	Same as March Upgradient Alluvial
	Downgradient	Alluvial: 82-07, 88-85, 92-07, 92-08, 92-09, 92-11	Same as March Upgradient Alluvial except for TCL-volatiles, TCL-semivolatiles, pesticides/PCBs, and herbicides
		Burro Canyon: 84-75, 83-70, 92-10	Same as March Upgradient Alluvial except for TCL-volatiles, TCL-semivolatiles, pesticides/PCBs, and herbicides
October	Upgradient	Alluvial: 92-01, 92-03, 92-05	Same as March Upgradient Alluvial except for TCL-volatiles, TCL-semivolatiles, pesticides/PCBs, herbicides, cyanide, Sb, Sr, Be, Hg, and NO_2
		Burro Canyon: 92-02, 92-04, 92-06	Same as March Upgradient Alluvial except for TCL-volatiles, TCL-semivolatiles, pesticides/PCBs, herbicides, cyanide, Sb, Sr, Be, Hg, and NO_2
		Dakota Sandstone: 92-13	Same as March Upgradient Alluvial except for TCL-volatiles, TCL-semivolatiles, pesticides/PCBs, herbicides, cyanide, Sb, Sr, Be, Hg, and NO_2
	On Site	Alluvial: 82-30B, 82-31B-E, 31SW91-03, 82-40A, 82-42, 31SW91-14, 31SW91-23	Same as March Upgradient Alluvial except for TCL-volatiles, TCL-semivolatiles, pesticides/PCBs, herbicides, cyanide, Sb, Sr, Be, Hg, and NO_2 (NO_2 was sampled for at well 31SW91-23)
		Burro Canyon: 93-01	Same as March Upgradient Alluvial except for TCL-volatiles, TCL-semivolatiles, pesticides/PCBs, herbicides, cyanide, Sb, Sr, Be, Hg, and NO_2
	Downgradient	Alluvial: 82-07, 88-85, 92-07, 92-08, 92-09, 92-11	Same as March Upgradient Alluvial except for TCL-volatiles, TCL-semivolatiles, pesticides/PCBs, herbicides, cyanide, Sb, Sr, Be, Hg, and NO_2
		Burro Canyon: 83-70, 92-10	Same as March Upgradient Alluvial except for TCL-volatiles, TCL-semivolatiles, pesticides/PCBs, herbicides, cyanide, Sb, Sr, Be, Hg, and NO_2
		Dakota Sandstone: 92-12	Same as March Upgradient Alluvial except for TCL-volatiles, TCL-semivolatiles, pesticides/PCBs, herbicides, cyanide, Sb, Sr, Be, Hg, and NO_2

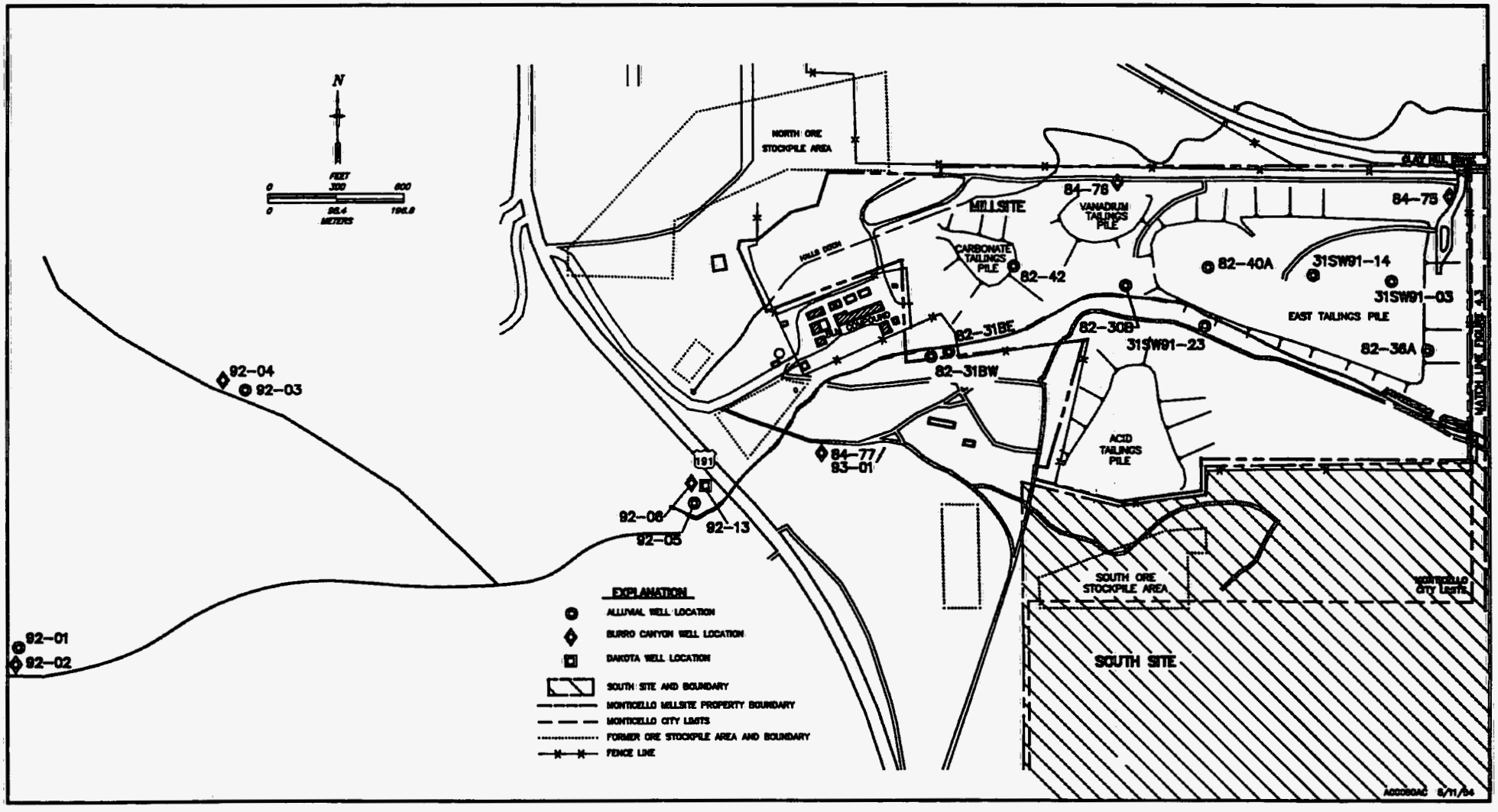

Figure 9. Ground-Water Sampling Locations On Site and Upgradient of the Monticello Millsite

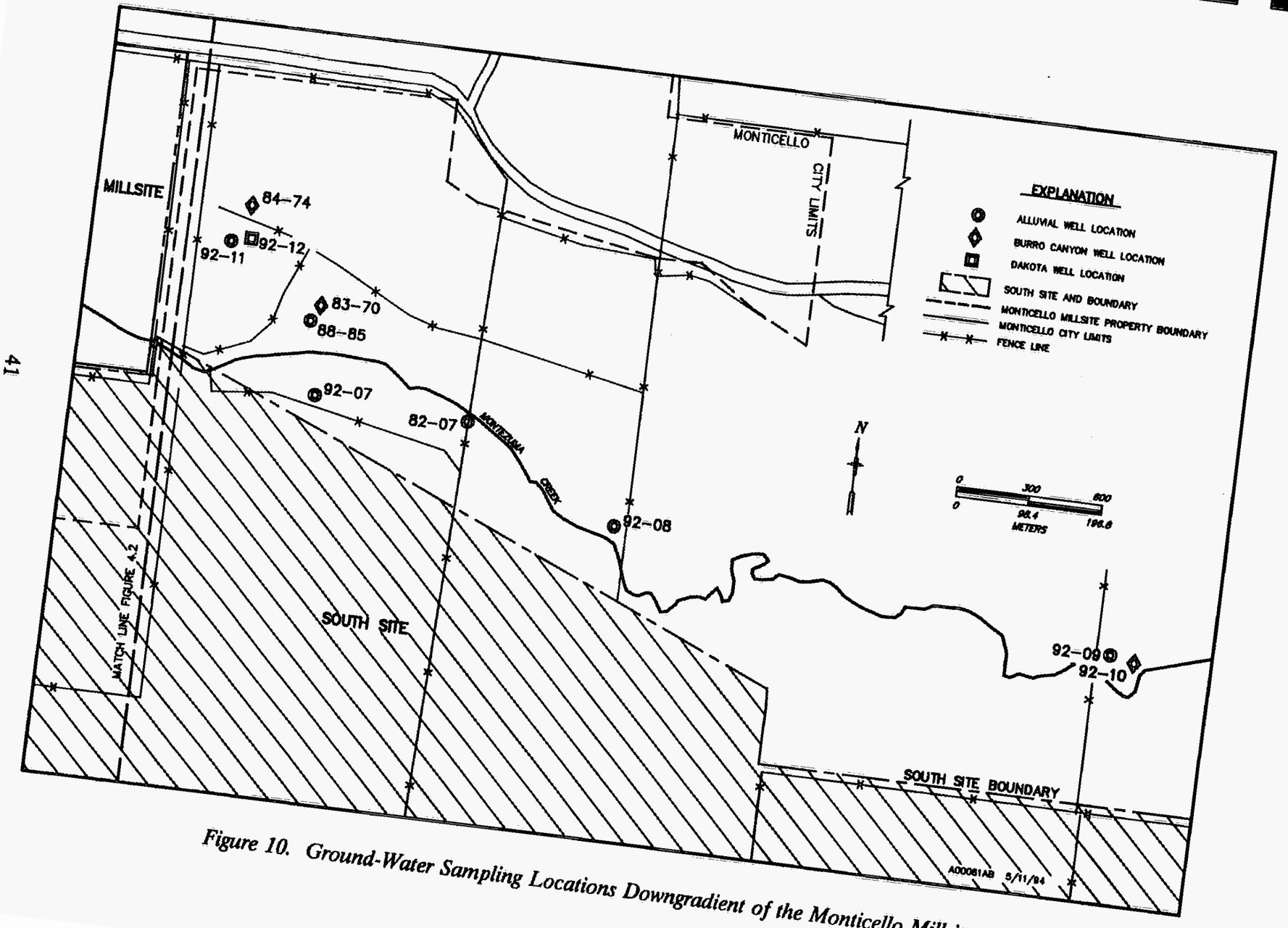

Figure 10. Ground-Water Sampling Locations Downgradient of the Monticello Millsite

With a few exceptions, ground water sampled in upgradient alluvial, Burro Canyon, and Dakota Sandstone wells contained analyte concentrations below federal and state standards. An anomalous result of 155.03 pCi/L for uranium-234+238 was measured in a sample from alluvial well 92-01. This high isotopic uranium result was not substantiated by the gross alpha activity (<48 pCi/L) or the total uranium concentration (~0.0049 mg/L) measured in the same sample. Extreme-value testing using data from all upgradient alluvial wells indicated that this value was an outlier. Another sample from upgradient Dakota Sandstone well 92-13 contained analyte concentrations that exceeded the fluoride, molybdenum, and pH standards (results of 2.4 mg/L, 0.249 mg/L, and 10.74 respectively).

On the millsite, alluvial ground water is contaminated by elements leached from the mill tailings piles. In general, the highest contaminant concentrations have been in samples obtained in the vicinity of the Vanadium and East tailings piles. The pH and concentrations of arsenic, mercury, molybdenum, nitrate, selenium, zinc, gross alpha, radium-226+228, and uranium-234+238 historically have exceeded standards (Table 7). In 1993, the pH and concentrations of arsenic, lead, molybdenum, nitrate, selenium, gross alpha, radium-226+228, and uranium-234+238 exceeded standards in samples from one or more on-site alluvial wells. (Note: gross alpha measurements were compared with the standard, which excludes uranium and radon, by subtracting uranium activities from the reported gross alpha activities; the analytical process for the determination of gross alpha eliminates radon from the sample). All samples from the on-site Burro Canyon wells contained analyte concentrations below the standards. Because of the limited amount of Burro Canyon well data presently available, it is unknown whether these below-standard concentrations exceed or are equal to background concentrations.

Samples from downgradient alluvial wells on private property east of the millsite (Figure 10) have provided evidence of contaminant migration. At times in the past, the pH and concentrations of nitrate, arsenic, barium, chromium, lead, molybdenum, selenium, gross alpha, and uranium-234+238 have exceeded standards (Table 7). In 1993, the pH and concentrations of nitrate, molybdenum, selenium, gross alpha, and uranium-234+238 exceeded standards. Uranium-234+238 activity exceeded the UMTRCA standard of 30 pCi/L in samples from all downgradient alluvial wells, including the sample from the easternmost well (well 92-09, 1.3 kilometers east of the millsite boundary). Samples from well 92-09 had an average uranium-234+238 activity of 275 pCi/L.

Two standards were exceeded in a ground-water sample collected from downgradient Burro Canyon well 83-70 in March. These results (0.169 mg/L of selenium and 309 pCi/L of uranium-234+238) were anomalous when compared with historical sample results from the well. When more data are collected from this well, statistical tests will be conducted to assess whether these values are outliers. All other samples from downgradient Burro Canyon wells contained analyte concentrations below standards. The sample collected in October from downgradient Dakota Sandstone well 92-12 contained concentrations that exceeded standards for gross alpha and molybdenum (analytical results of 16 pCi/L and 0.103 mg/L, respectively). Because of the limited amount of Dakota Sandstone well data available, it cannot yet be determined whether

these excessive concentrations are natural background values or are a result of tailings contamination.

Maximum concentrations of ground-water analytes that exceeded standards in 1993 are listed for each well in Figures 11 and 12. Concentrations that exceeded standards in each of the four sampling events are listed for each well in Appendix C, Figures C-1 through C-8.

Graphical presentations of ground-water data are included in Appendix B of this report and show the variability in data over time and among upgradient, on-site, and downgradient wells. In addition, the data are graphically compared to federal/state standards. Figures B-17 through B-20 illustrate historical and 1993 arsenic concentrations in samples from an upgradient alluvial well, an on-site alluvial well, and two downgradient alluvial wells (one immediately downgradient of the millsite; the other further downgradient). Similar graphs are presented for molybdenum (Figures B-21 through B-24), uranium-234+238 (Figures B-25 through B-28), and radium-226+228 (Figures B-29 through B-32).

Sampling for TCL volatiles, semivolatiles, herbicides, and pesticides/PCBs (see analyte list in Appendix A, Table A-13) in the alluvial and Burro Canyon aquifers was conducted in March, April, and July. Significant concentrations of these analytes were not measured in samples from any of the wells. Except for two volatile compounds, methylene chloride and toluene, and one semivolatile compound, bis(2-ethylhexyl)phthalate, all measured concentrations were below reporting limits. Concentrations of the two detected volatile compounds were so minimal (maximum of 2 μg/L) that they were not considered contaminants. The detected semivolatile compound, which was measured in two well samples (maximum concentration of 25 μg/L) and the associated laboratory blanks, was probably introduced during the sampling and analysis process. Results of organic analyses are listed in Appendix A, Table A-17 and are compared with federal/state standards in Table 7.

Semivolatile and volatile compounds that were not TCL constituents, but were detected, were labeled as "tentatively identified compounds" and are listed in Table A-17. Tentatively identified compounds were labeled as such because the laboratory instrument was not calibrated for that specific compound, which resulted in an estimated concentration. Because of the low estimated concentrations detected (maximum of 48 μg/L), these compounds were not considered potential contaminants in the ground water. Sampling for organics in ground water was discontinued at the MMTS after the July 1993 sampling event.

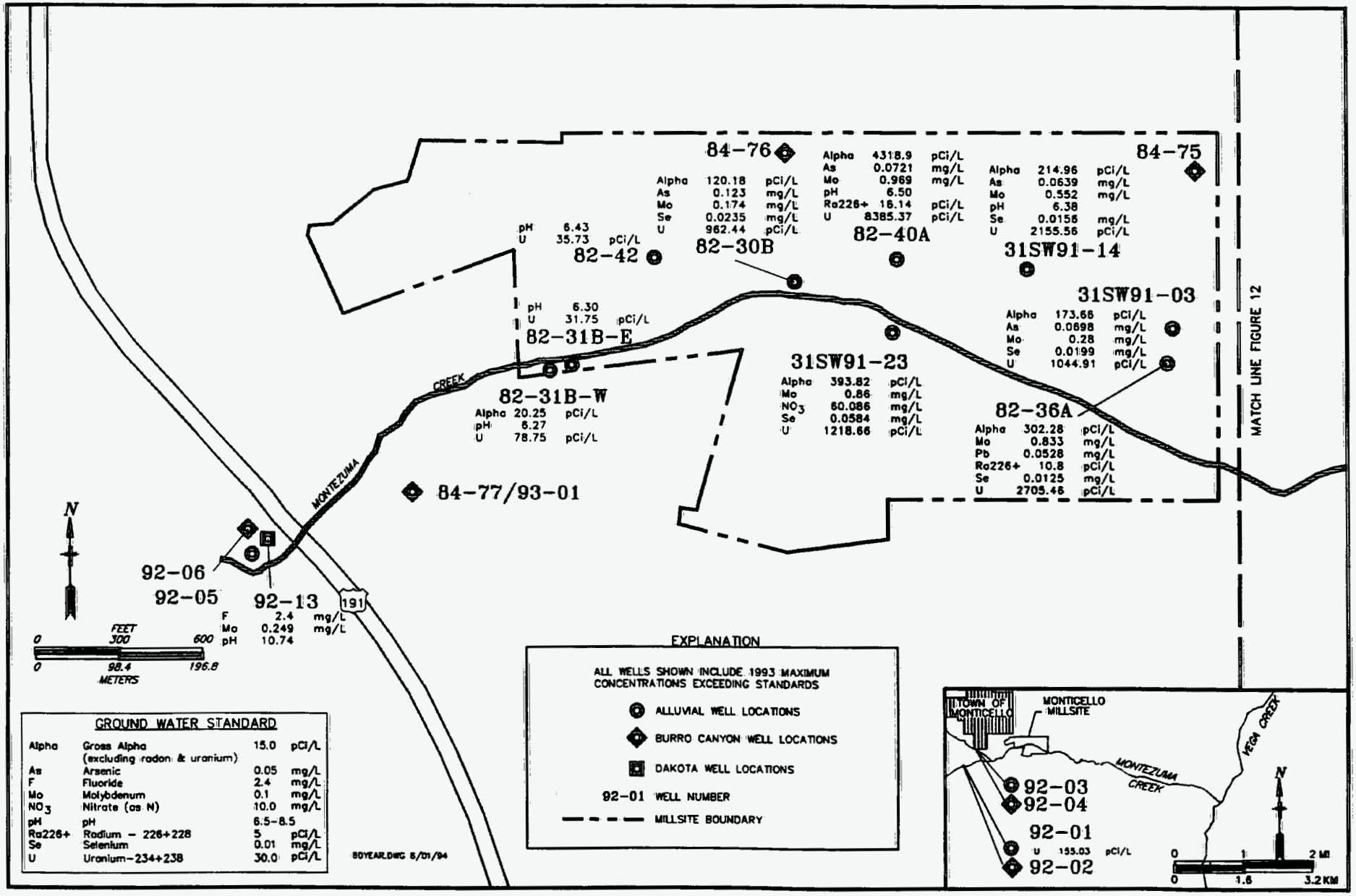

Figure 11. Maximum Concentrations of Ground-Water Analytes Exceeding Federal/State Standards in Well Samples On Site and Upgradient of the Monticello Millsite

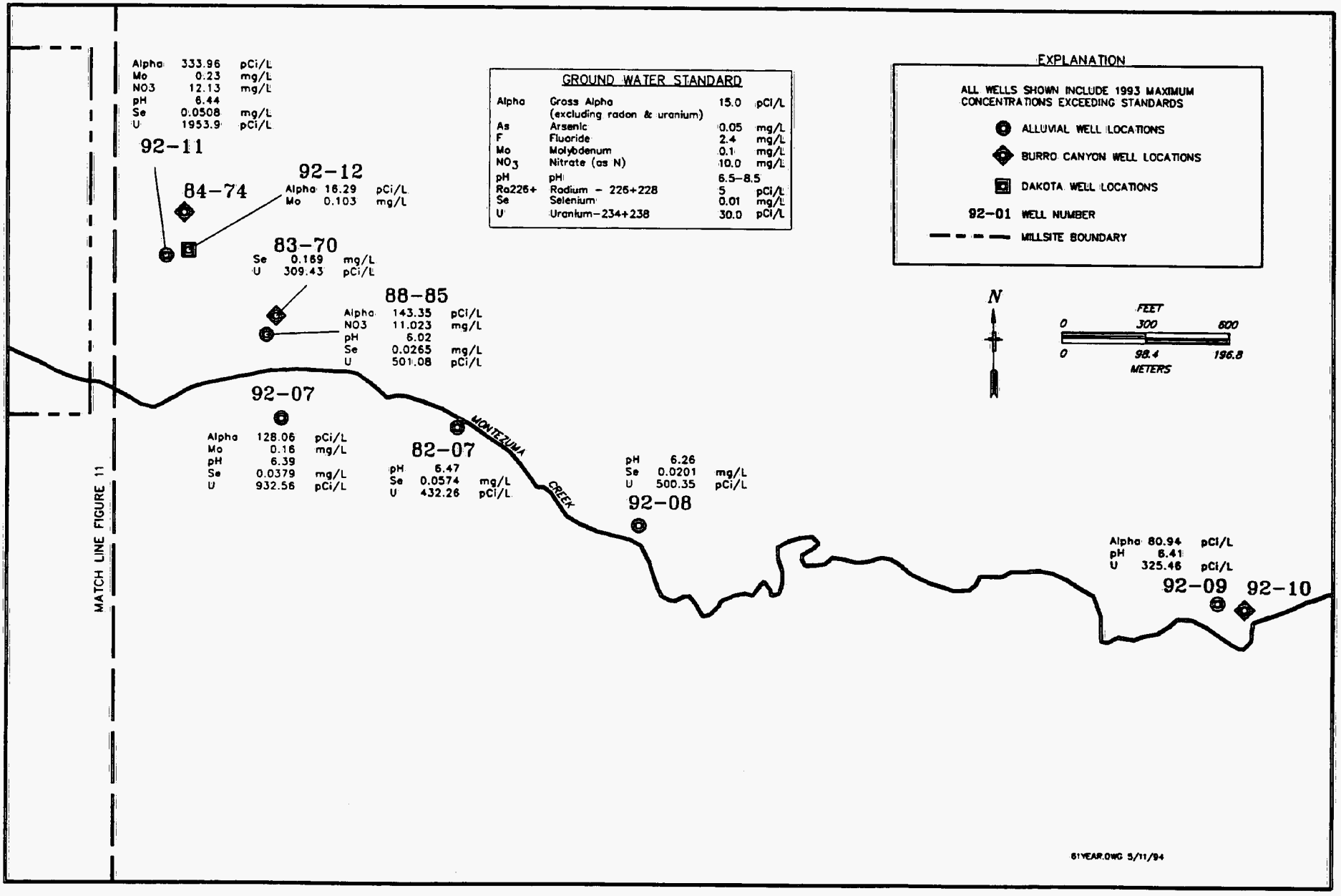

Figure 12. Maximum Concentrations of Ground-Water Analytes Exceeding Federal/State Standards in Well Samples Downgradient of the Monticello Millsite

Quality Assurance

The DOE-GJPO has a Quality Assurance (QA) Program that is consistent with and responsive to DOE Order 5700.6C, *Quality Assurance,* and that addresses the requirements of the American Society for Mechanical Engineers NQA-1 (1989), *Quality Assurance Program Requirements for Nuclear Facilities*. This program provides a structured approach for the application of QA principles to work performed by DOE and is implemented through the *Quality Assurance Manual* (RUST Geotech Inc. 1993e).

A Quality Assurance Program Plan (QAPP) was developed for specific environmental monitoring and surveillance needs at the MMTS and is appended to the *Environmental Monitoring Plan* (RUST Geotech Inc. 1993f). The primary purpose of the QAPP is to ensure that all data and documentation are valid and traceable and that they meet requirements. In addition, the QAPP addresses organizational responsibility, design, procedures, records, and audits. Field and laboratory quality control (QC), human factors, chain-of-custody, performance reporting, and independent data verification are addressed by the organizations responsible for the work.

Sampling

Sampling methodologies used for environmental monitoring at the MMTS are described in the *Environmental Procedures Catalog* (RUST Geotech Inc. 1993g) and follow EPA guidance given in *Test Methods for Evaluating Solid Waste* (EPA 1986). QA and QC measures are integrated into all sampling activities to ensure sample representativeness, sample accuracy, sample precision, data comparability, and data completeness.

Laboratory Analysis

The Analytical Chemistry Laboratory performs analyses in support of the environmental monitoring programs and implements QA requirements through the *Analytical Chemistry Laboratory Administrative Plan and Quality Control Procedures* (RUST Geotech Inc. 1993h). The Analytical Chemistry Laboratory's objective is to provide high-quality analytical data that adequately meet the environmental monitoring program requirements. This objective is met by implementing laboratory protocol to ensure that a sample will retain its proper identity, analytical results will be obtained and reported correctly, and a well-documented sample history will be maintained. QA measures addressed include organizational responsibility, training/qualification of personnel, laboratory records, records control, laboratory QC, data acceptance, sample analysis, data recording and calculation, data deficiencies, chain-of-custody, procurement of services, and quality assessment. Sampling and analytical methodologies are in the *Analytical Chemistry Laboratory Handbook of Analytical and Sample-Preparation Procedures* (RUST Geotech Inc. 1993d).

The Analytical Chemistry Laboratory maintains an internal QA organization to provide independent data review and evaluation of QC data. The QA Section staff includes in its audit program the evaluation of the effectiveness of the Analytical Chemistry Laboratory QA program. Subcontracted analytical laboratories are under the supervision of the Analytical Chemistry Laboratory. The Analytical Chemistry Laboratory has the responsibility to monitor a subcontracted laboratory's methodologies and sample results and to ensure that proper QC is practiced.

Interlaboratory Quality Assurance Programs

The Analytical Chemistry Laboratory participates in the DOE interlaboratory QA program coordinated by the DOE Environmental Measurements Laboratory (EML) for radioactive materials, as mandated by DOE Order 5400.1. This interlaboratory program is designed to test the quality of the environmental measurements being reported to DOE by its contractors. Real or synthetic environmental samples that have been prepared and thoroughly analyzed at the program laboratory are distributed to the contractors for analysis, and the results are compiled for comparison. The Analytical Chemistry Laboratory also participates in two non-DOE interlaboratory QA programs: (1) EPA's Environmental Measurement Systems Laboratory (EMSL) Program for radioactive materials and (2) the National Institute for Occupational Safety and Health Proficiency Analytical Testing Program for airborne metal, silica, and asbestos. A summary of the 1993 Analytical Chemistry Laboratory's results for the EML and EMSL interlaboratory QA programs is shown in Table 9. The accuracy of the laboratory's results can be determined by comparing the reported laboratory values with the reference values listed in Table 9.

Data Management

Data management objectives for environmental monitoring activities are to maximize the usefulness and protection of important program information and to minimize the record-keeping burden and cost. These objectives were achieved through establishment and implementation of continuous, systematic, and effective controls for each phase of a record's life cycle. Records were stored electronically in a retrievable state and were protected against deterioration, damage, and loss.

Data management activities included receipt of laboratory results via network transfer, entry of data, and formatting of data for report preparation. All environmental monitoring data were stored in an ORACLE data base that is maintained by Geotech.

Records generated in support of environmental monitoring activities were subject to the requirements for maximum-level records as specified in the QAPP for the *Environmental Monitoring Plan* (RUST Geotech Inc. 1993f) and in Section 13 of Geotech's *Management Policies Manual* (RUST Geotech Inc. 1993i).

Table 9. Summary of Analytical Results for the Interlaboratory Quality Assurance Programs

Date of Analysis	Type of Matrix	Isotope Analyzed	Reported Laboratory Value[a]	Reference Value[a]	Ratio Reported/ Reference
DOE Environmental Measurements Laboratory					
03/93	Air	Be-7	0.274	0.274	1.00
03/93	Air	Mn-54	0.130	0.117	1.11
03/93	Air	Co-57	0.255	0.271	0.94
03/93	Air	Co-60	0.152	0.170	0.89
03/93	Air	Sr-90	0.203	0.152	1.34
03/93	Air	Cs-134	0.216	0.196	1.10
03/93	Air	Cs-137	0.405	0.307	1.32
03/93	Air	Ce-144	0.186	0.193	0.96
03/93	Air	U	0.200	0.180	1.11
03/93	Soil	K-40	0.329	0.321	1.02
03/93	Soil	Sr-90	0.424	0.417	1.02
03/93	Soil	Cs-137	0.971	0.923	1.05
03/93	Soil	Pu-239	0.105	0.116	0.91
03/93	Soil	Am-241	0.618	0.650	0.95
03/93	Soil	U-234	0.372	0.378	0.98
03/93	Soil	U-238	0.386	0.376	1.03
03/93	Soil	U	0.270	0.304	0.89
03/93	Vegetation	K-40	0.376	0.383	0.98
03/93	Vegetation	Sr-90	0.227	0.237	0.96
03/93	Vegetation	Cs-137	0.272	0.246	1.11
03/93	Vegetation	Pu-238	0.121	0.114	1.06
03/93	Vegetation	Pu-239	0.320	0.323	0.99
03/93	Vegetation	Am-241	0.241	0.231	1.04
03/93	Water	Mn-54	0.995	1.05	0.95
03/93	Water	Co-60	0.460	0.453	1.02
03/93	Water	Sr-90	0.118	0.103	1.15
03/93	Water	Cs-134	0.481	0.424	1.13
03/93	Water	Cs-137	0.550	0.508	1.08
03/93	Water	Pu-238	0.464	0.494	0.94
03/93	Water	Pu-239	0.775	0.828	0.94
03/93	Water	Am-241	0.507	0.440	1.15
03/93	Water	U	0.110	0.117	0.94
Environmental Monitoring Systems Laboratory					
01/15/93	Water	Sr-89	12.33	15.0	0.82
01/15/93	Water	Sr-90	10.33	10.0	1.03
01/22/93	Water	Pu-239	19.43	20.0	0.97
02/12/93	Water	U (nat)	7.40	7.6	0.97
03/05/93	Water	Ra-226	9.37	9.8	0.96
03/05/93	Water	Ra-228	19.10	18.5	1.03
06/04/93	Water	H_3	9182.67	9844.0	0.93
06/11/93	Water	Co-60	16.67	15.0	1.11
06/11/93	Water	Zn-65	109.67	103.0	1.07
06/11/93	Water	Ru-106	116.00	119.0	0.98
06/11/93	Water	Cs-134	6.67	5.0	1.33
06/11/93	Water	Cs-137	6.67	5.0	1.33
06/11/93	Water	Ba-133	101.00	99.0	1.02
07/16/93	Water	Sr-89	30.67	34.0	0.90
07/16/93	Water	Sr-90	25.67	25.0	1.03
08/13/93	Water	U (nat)	25.10	25.3	0.99
09/17/93	Water	Ra-226	13.87	14.9	0.93
09/17/93	Water	Ra-228	19.63	20.4	0.96
10/29/93	Water	Gross Alpha	13.33	20.0	0.67
10/29/93	Water	Gross Beta	20.33	15.0	1.36
11/05/93	Water	H_3	7466.00	7398.0	1.01
08/27/93	Air	Gross Alpha	17.33	19.0	0.91
08/27/93	Air	Gross Beta	48.00	47.00	1.02
08/27/93	Air	Sr-90	18.33	19.0	0.97
08/27/93	Air	Cs-137	10.33	9.0	1.15

[a] All values are relative. Exponents are not included; therefore, values do not indicate actual concentrations.

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Appendix A

Monitoring Data

Table A-1. Radon Data for Monticello, First Quarter 1993
(date installed: 12/21/1992; date removed: 04/01/1993)

Sample Location	Detector Number	Reported Radon[a] Concentration (pCi/L)	Corrected Radon[b] Concentration (pCi/L)	Radon Concentration[c] (μCi/mL)
RN-M-04	3557801	0.4	0.5	5.0E-10
RN-M-04	3557802	0.4	0.6	6.0E-10
RN-M-06	3557812	0.8	1.0	1.0E-09
RN-M-06	3557821	0.7	0.9	9.0E-10
RN-M-07	3557806	2.3	3.1	3.1E-09
RN-M-07	3557813	1.9	2.5	2.5E-09
RN-M-10	3557808	1.4	1.9	1.9E-09
RN-M-10	3557811	1.4	1.9	1.9E-09
RN-M-11	3557809	<0.1	<0.1	<1.0E-10
RN-M-11	3557815	0.2	0.3	3.0E-10
RN-M-13	3557803	0.3	0.4	4.0E-10
RN-M-13	3557814	0.2	0.2	2.0E-10
RN-M-14	3557810	<0.1	<0.1	<1.0E-10
RN-M-14	3557818	<0.1	<0.1	<1.0E-10
RN-M-15	3557805	0.1	0.2	2.0E-10
RN-M-15	3557822	0.2	0.3	3.0E-10

[a]The reported radon value is the result received from the subcontracted laboratory. A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit).

[b]The corrected radon value is derived by applying a correction factor to the reported value. The correction factor is the ratio of a known exposure value to the value that is measured and reported.

[c]Scientific notation E-10 = "x 10^{-10}."

Table A-2. Radon Data for Monticello, Second Quarter 1993
(date installed: 04/01/1993; date removed: 06/30/1993)

Sample Location	Detector Number	Reported Radon[a] Concentration (pCi/L)	Corrected Radon[b] Concentration (pCi/L)	Radon Concentration[c] (μCi/mL)
RN-M-04	3557869	1.2	1.1	1.1E-09
RN-M-04	3557886	1.1	1.0	1.0E-09
RN-M-06	3557868	1.2	1.1	1.1E-09
RN-M-06	3557876	0.7	0.6	6.0E-10
RN-M-07	3557870	1.7	1.5	1.5E-09
RN-M-07	3557889	1.6	1.5	1.5E-09
RN-M-10	3557875	0.2	0.2	2.0E-10
RN-M-10	3557880	0.2	0.2	2.0E-10
RN-M-11	3557872	0.4	0.4	4.0E-10
RN-M-11	3557890	<0.1	<0.1	<1.0E-10
RN-M-13	3557874	0.4	0.3	3.0E-10
RN-M-13	3557885	0.1	0.1	1.0E-10
RN-M-14	3557878	<0.1	<0.1	<1.0E-10
RN-M-14	3557882	0.2	0.2	2.0E-10
RN-M-15	3557873	0.5	0.5	5.0E-10
RN-M-15	3557884	0.4	0.3	3.0E-10

[a]The reported radon value is the result received from the subcontracted laboratory. A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit).

[b]The corrected radon value is derived by applying a correction factor to the reported value. The correction factor is the ratio of a known exposure value to the value that is measured and reported.

[c]Scientific notation E-10 = "x 10^{-10}."

Table A-3. Radon Data for Monticello, Third Quarter 1993
(date installed: 06/30/1993; date removed: 09/29/1993)

Sample Location	Detector Number	Reported Radon[a] Concentration (pCi/L)	Corrected Radon[b] Concentration (pCi/L)	Radon Concentration[c] (μCi/mL)
RN-M-01-PY	3176961	0.5	0.5	5.0E-10
RN-M-01-PY	3176985	0.4	0.4	4.0E-10
RN-M-02-PY	3176962	0.2	0.2	2.0E-10
RN-M-02-PY	3176992	0.4	0.4	4.0E-10
RN-M-04	3807607	1.3	1.3	1.3E-09
RN-M-04	3807638	1.9	1.9	1.9E-09
RN-M-06	3807590	1.4	1.4	1.4E-09
RN-M-06	3807603	1.2	1.2	1.2E-09
RN-M-07	3807587	3.4	3.5	3.5E-09
RN-M-07	3807591	3.5	3.6	3.6E-09
RN-M-10	3807595	0.3	0.3	3.0E-10
RN-M-10	3807616	0.1	0.1	1.0E-10
RN-M-11	3807566	0.1	<0.1	<1.0E-10
RN-M-11	3808706	0.2	0.2	2.0E-10
RN-M-13	3807600	0.5	0.5	5.0E-10
RN-M-13	3807620	0.3	0.3	3.0E-10
RN-M-14	3807617	0.3	0.3	3.0E-10
RN-M-14	3807676	0.3	0.3	3.0E-10
RN-M-15	3807586	0.4	0.5	5.0E-10
RN-M-15	3808711	0.7	0.7	7.0E-10

[a]The reported radon value is the result received from the subcontracted laboratory. A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit).

[b]The corrected radon value is derived by applying a correction factor to the reported value. The correction factor is the ratio of a known exposure value to the value that is measured and reported.

[c]Scientific notation E-10 = "x 10^{-10}."

Table A-4. Radon Data for Monticello, Fourth Quarter 1993
(date installed: 09/29/1993; date removed: 12/29/1993)

Sample Location	Detector Number	Reported Radon[a] Concentration (pCi/L)	Corrected Radon[b] Concentration (pCi/L)	Radon Concentration[c] (μCi/mL)
R-M-1-RN	3808722	0.7	0.6	6.0E-10
R-M-1-RN	3808730	0.5	0.5	5.0E-10
R-M-2-RN	3808727	0.4	0.3	3.0E-10
R-M-2-RN	3808744	0.5	0.4	4.0E-10
R-M-3-RN	3808745	0.5	0.4	4.0E-10
R-M-3-RN	3808749	0.6	0.6	6.0E-10
R-M-4-RN	3808712	0.6	0.5	5.0E-10
R-M-4-RN	3808736	0.5	0.4	4.0E-10
R-M-5-RN	3808726	0.8	0.7	7.0E-10
R-M-5-RN	3808734	0.7	0.6	6.0E-10
R-M-6-RN	3808717	0.6	0.5	5.0E-10
R-M-6-RN	3808756	0.3	0.2	2.0E-10
R-M-7-RN	3808716	0.4	0.3	3.0E-10
R-M-7-RN	3808746	0.4	0.4	4.0E-10
RN-M-04	3808738	1.1	1.0	1.0E-09
RN-M-04	3808755	1.5	1.4	1.4E-09
RN-M-06	3808720	1.2	1.1	1.1E-09
RN-M-06	3808739	1.5	1.4	1.4E-09
RN-M-07	3808728	4.0	3.6	3.6E-09
RN-M-07	3808740	3.5	3.1	3.1E-09
RN-M-10	3808750	0.4	0.4	4.0E-10
RN-M-10	3808754	0.5	0.4	4.0E-10
RN-M-11	3808718	<0.1	<0.1	<1.0E-10
RN-M-11	3808757	0.1	0.1	1.0E-10

[a]The reported radon value is the result received from the subcontracted laboratory. A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit).

[b]The corrected radon value is derived by applying a correction factor to the reported value. The correction factor is the ratio of a known exposure value to the value that is measured and reported.

[c]Scientific notation E-10 = "x 10^{-10}."

Table A-4 (continued). Radon Data for Monticello, Fourth Quarter 1993
(date installed: 09/29/1993; date removed: 12/29/1993)

Sample Location	Detector Number	Reported Radon[a] Concentration (pCi/L)	Corrected Radon[b] Concentration (pCi/L)	Radon Concentration[c] (μCi/mL)
RN-M-13	3808714	0.6	0.5	5.0E-10
RN-M-13	3808731	0.2	0.2	2.0E-10
RN-M-14	3808719	0.3	0.3	3.0E-10
RN-M-14	3808735	0.3	0.3	3.0E-10
RN-M-15	3808721	0.4	0.4	4.0E-10
RN-M-15	3808742	0.5	0.5	5.0E-10

[a]The reported radon value is the result received from the subcontracted laboratory. A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit).

[b]The corrected radon value is derived by applying a correction factor to the reported value. The correction factor is the ratio of a known exposure value to the value that is measured and reported.

[c]Scientific notation E-10 = "x 10^{-10}."

Table A-5. Radiological Air Sample Results for 1993[a]

Sample Location	Sample Date	Flow Rate (scfm)	Sample Time (hours)	Radium-226		Thorium-230			Uranium		
				(pCi/F)[b]	(μCi/mL)	(pCi/F)	(μCi/mL)	(pg/mL)[c]	(μg/F)[d]	(μg/m3)	(μCi/mL)[e]
AIR-M-4	03/1993	34	98.41	9.3	1.6E-15	2.1	3.8E-16	2.0E-08	3.2	5.6E-04	3.7E-16
AIR-M-4	05/1993	32	76.74	<0.6	<1.4E-16	1.0	2.6E-16	1.3E-08	2.6	6.2E-04	4.1E-16
AIR-M-4A	06/1993	31.5	80.59	<0.6	<1.4E-16	1.7	4.1E-16	2.1E-08	3.2	7.4E-04	4.9E-16
AIR-M-4A	07/1993	31.6	100.57	<0.6	<1.2E-16	1.2	2.2E-16	1.1E-08	3.1	5.7E-04	3.8E-16
AIR-M-4A	09/1993	31.7	95.26	<0.5	<1.1E-16	<1.2	<2.5E-16	<1.3E-08	2.9	5.7E-04	3.8E-16
AIR-M-4A	10/1993	32.9	100.85	2.0	3.6E-16	<1.0	<1.9E-16	<9.8E-09	3.4	6.0E-04	4.0E-16
AIR-M-5	03/1993	33	98.53	<1.0	<1.8E-16	1.5	2.8E-16	1.4E-08	2.8	5.1E-04	3.4E-16
AIR-M-5	05/1993	32	75.57	<0.5	<1.3E-16	1.1	2.9E-16	1.5E-08	2.7	6.6E-04	4.4E-16
AIR-M-5	06/1993	31.5	80.58	<0.9	<2.2E-16	2.0	4.7E-16	2.4E-08	3.2	7.4E-04	4.9E-16
AIR-M-5	07/1993	31.6	101.08	<0.6	<1.3E-16	<0.9	<1.7E-16	<8.8E-09	2.9	5.3E-04	3.5E-16
AIR-M-5	09/1993	31.7	94.00	<0.6	<1.2E-16	<0.7	<1.5E-16	<7.7E-09	2.8	5.5E-04	3.7E-16
AIR-M-6	03/1993	33	96.82	<0.5	<1.0E-16	1.3	2.6E-16	1.3E-08	2.4	4.4E-04	2.9E-16
AIR-M-6	05/1993	32	74.88	<0.5	<1.4E-16	1.0	2.6E-16	1.3E-08	2.6	6.4E-04	4.3E-16
AIR-M-6	06/1993	31.5	80.65	<0.6	<1.5E-16	<0.9	<2.2E-16	<1.1E-08	2.7	6.3E-04	4.2E-16
AIR-M-6	07/1993	31.6	101.05	<0.1	<2.2E-17	1.2	2.3E-16	1.2E-08	2.8	5.2E-04	3.5E-16
AIR-M-6	09/1993	31.7	93.05	<0.6	<1.3E-16	<0.8	<1.7E-16	<8.8E-09	2.7	5.4E-04	3.6E-16
AIR-M-6	10/1993	32.9	102.07	<0.5	<9.5E-17	<0.5	<9.1E-17	<4.7E-09	2.2	3.9E-04	2.6E-16
R-M-1-AIR	11/1993	2.1	330.30	<0.5	<4.4E-16	<0.1	<1.6E-16	<8.2E-09	~0.3	~2.7E-04	~1.8E-16
R-M-1-AIR	12/1993	2.1	672.95	<0.7	<3.0E-16	<0.2	<1.1E-16	<5.7E-09	~0.5	~2.5E-04	~1.7E-16
R-M-2-AIR	11/1993	2.1	336.30	<0.4	<3.8E-16	<0.1	<1.4E-16	<7.2E-09	~0.3	~2.5E-04	~1.7E-16
R-M-2-AIR	12/1993	2.1	672.58	<0.5	<2.1E-16	<0.2	<9.2E-17	<4.7E-09	~0.3	~1.6E-04	~1.1E-16
R-M-3-AIR	11/1993	2.1	336.75	<2.3	<2.0E-15	<0.1	<1.4E-16	<7.2E-09	~0.4	~3.4E-04	~2.3E-16
R-M-3-AIR	12/1993	2.1	671.25	<1.4	<6.2E-16	<0.4	<1.7E-16	<8.8E-09	~0.4	~1.9E-04	~1.3E-16
R-M-4-AIR	11/1993	2.1	336.75	<0.4	<4.1E-16	<0.1	<1.2E-16	<6.2E-09	~0.2	~1.9E-04	~1.3E-16
R-M-4-AIR	12/1993	2.1	670.25	<1.0	<4.3E-16	<0.3	<1.6E-16	<8.2E-09	~0.4	~1.9E-04	~1.3E-16
R-M-6-AIR	11/1993	2.1	336.67	<0.4	<4.0E-16	<0.1	<1.5E-16	<7.7E-09	~0.2	~2.4E-04	~1.6E-16
R-M-6-AIR	12/1993	2.1	666.70	<0.4	<2.0E-16	<0.2	<1.2E-16	<6.2E-09	~0.2	~1.2E-04	~8.0E-17
R-M-7-AIR	11/1993	2.1	336.67	<1.1	<9.7E-16	<0.3	<2.8E-16	<1.4E-08	~0.1	~1.0E-04	~6.7E-17
R-M-7-AIR	12/1993	2.1	666.35	<0.5	<2.5E-16	<0.3	<1.4E-16	<7.2E-09	~0.2	~1.2E-04	~8.0E-17

[a]A "<" indicates that the maximum concentration was below the detection limit (number show is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated.

[b]pCi/F = picocuries per filter.

[c]pg/mL = picograms per milliliter. The conversion of thorium-230 concentrations between microcuries and picograms assumed equilibrium and an activity of 0.194 μCi/μg.

[d]μg/F = micrograms per filter.

[e]The conversion of uranium concentrations between microcuries per milliliter and micrograms per cubic meter assumed equilibrium and an activity of 0.666 pCi/μg.

Table A-6. Suspended Particulates (PM_{10}) Data Obtained at Station AIR-M-4 and AIR-M-4A during 1993

Sample Location	Sample Date	Ticket Number	Filter Number	Flow Rate (scfm)	Sample Time (hours)	Weight (g/F)[a]	Conc. ($\mu g/m^3$)
AIR-M-4	01/19/1993	01231993-04	5916222	33	23.93	0.0013	1
AIR-M-4	01/25/1993	01281993-04	6011891	33	23.90	0.0089	7
AIR-M-4	01/31/1993	02051993-04	6011886	33	24.01	0.0028	2
AIR-M-4	02/06/1993	02101993-04	6011885	34	23.91	0.0075	5
AIR-M-4	02/12/1993	02121993-04	6011882	34	23.91	0.0019	1
AIR-M-4	02/18/1993	02181993-04	6011879	34	23.90	0.0048	3
AIR-M-4	02/24/1993	02241993-04	6011874	34	23.92	0.0049	4
AIR-M-4	03/02/1993	03021993-04	6011873	34	24.16	0.0062	4
AIR-M-4	03/08/1993	03081993-04	6011870	34	23.92	0.0073	5
AIR-M-4	03/14/1993	03141993-04	6011840	34	23.94	0.0035	3
AIR-M-4	03/20/1993	03221993-04	6011834	34	23.90	0.0022	2
AIR-M-4	03/26/1993	03291993-04	6011831	33	24.18	0.0106	8
AIR-M-4	04/01/1993	04051993-04	6011827	34	23.96	0.0042	3
AIR-M-4	04/07/1993	04121993-04	6011825	34	23.95	0.0030	2
AIR-M-4	04/13/1993	04161993-04	6011822	34	23.96	0.0094	7
AIR-M-4	04/19/1993	04231993-04	6011819	34	23.96	0.0094	7
AIR-M-4	04/25/1993	04271993-04	6011817	34	23.88	0.0074	5
AIR-M-4	05/01/1993	05031993-04	6011815	34	24.05	0.0144	10
AIR-M-4	05/07/1993	05101993-04	6011085	32	24.06	0.0053	4
AIR-M-4	05/19/1993	05191993-04	6011081	32	24.05	0.0047	4
AIR-M-4A	05/25/1993	05251993-04	6011076	32	24.02	0.0215	16
AIR-M-4A	06/12/1993	06121993-04	6011067	31.5	24.08	0.0127	10
AIR-M-4A	06/18/1993	06181993-04	6011063	31.5	24.01	0.0071	6
AIR-M-4A	06/24/1993	06241993-04	6011060	31.5	24.04	0.0236	18
AIR-M-4A	06/30/1993	06301993-04	6011057	31.5	24.01	0.0226	18
AIR-M-4A	07/06/1993	07061993-04	6011054	31.5	24.03	0.0238	19
AIR-M-4A	07/12/1993	07121993-04	6011051	31.6	24.01	0.0122	9
AIR-M-4A	07/18/1993	07181993-04	6011048	31.6	24.06	0.0146	11
AIR-M-4A	07/30/1993	07301993-04	6009893	31.6	24.01	0.0213	17
AIR-M-4A	08/05/1993	08051993-04	6009890	31.6	24.08	0.0142	11
AIR-M-4A	09/04/1993	09041993-04	6009872	31.7	24.04	0.0205	16
AIR-M-4A	09/16/1993	09161993-04	6009860	31.7	24.01	0.0198	15
AIR-M-4A	09/22/1993	09221993-04	6009858	32	24.00	0.0210	16
AIR-M-4A	09/28/1993	09281993-04	6009856	32	24.00	0.0265	20
AIR-M-4A	10/10/1993	10101993-04	6009852	32	24.03	0.0053	4
AIR-M-4A	10/16/1993	10161993-04	6009848	32.9	24.04	0.0032	2
AIR-M-4A	10/22/1993	10221993-04	6009846	32.0	24.04	0.0227	17
AIR-M-4A	10/28/1993	10281993-04	6009844	32.9	24.01	0.0236	18

[a]Grams per filter.

Table A-6 (continued). Suspended Particulates (PM_{10}) Data Obtained at Station AIR-M-4 and AIR-M-4A during 1993[a]

Sample Location	Sample Date	Ticket Number	Filter Number	Flow Rate (scfm)	Sample Time (hours)	Weight (g/F)[b]	Conc. ($\mu g/m^3$)
AIR-M-4A	11/03/1993	11031993-04	6009842	33.2	24.04	0.0311	23
AIR-M-4A	11/09/1993	11091993-04	6009839	33.2	28.04	0.0669	42
AIR-M-4A	11/15/1993	11151993-04	6009804	33.2	19.87	0.0035	3
AIR-M-4A	11/21/1993	11211993-04	6009801	32.9	24.05	0.0006	<1
AIR-M-4A	11/27/1993	11271993-04	6011199	32.9	23.91	0.0058	4
AIR-M-4A	12/03/1993	12031993-04	6011196	32.9	24.03	0.0083	6
AIR-M-4A	12/09/1993	12091993-04	6011194	33.2	24.04	0.0130	10
AIR-M-4A	12/15/1993	12151993-04	6011193	33.2	24.07	0.0022	2
AIR-M-4A	12/21/1993	12211993-04	6011189	33.2	24.07	0.0064	5

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit).
[b]Grams per filter.

Table A-7. Suspended Particulates (PM_{10}) Data Obtained at Station AIR-M-5 during 1993

Sample Date	Ticket Number	Filter Number	Flow Rate (scfm)	Sample Time (hours)	Weight (g/F)[a]	Conc. ($\mu g/m^3$)
01/13/1993	01151993-05	5916225	33	24.27	0.0007	1
01/19/1993	01231993-05	5916223	33	24.25	0.0017	1
01/25/1993	01271993-05	6011890	33	24.25	0.0056	4
01/31/1993	02051993-05	6011888	33	24.28	0.0037	3
02/06/1993	02101993-05	6011884	33	24.27	0.0165	12
02/12/1993	02121993-05	6011881	33	24.25	0.0088	6
02/18/1993	02181993-05	6011878	33	24.25	0.0051	4
03/02/1993	03021993-05	6011872	33	24.27	0.0066	5
03/08/1993	03081993-05	6011869	33	24.28	0.0159	12
03/14/1993	03141993-05	6011839	33	24.27	0.0078	6
03/20/1993	03221993-05	6011833	33	24.23	0.0116	9
03/26/1993	03291993-05	6011830	33	24.23	0.0103	8
04/01/1993	04051993-05	6011828	33	21.48	0.0144	12
05/01/1993	05031993-05	6011091	32	24.25	0.0138	10
05/07/1993	05101993-05	6011086	32	24.27	0.0045	3
05/13/1993	05131993-05	6011083	32	24.27	0.0161	12
05/25/1993	05251993-05	6011077	32	24.58	0.0137	10
05/31/1993	05311993-05	6011075	32	23.30	0.0128	10
06/06/1993	06061993-05	6011071	32	23.30	0.0188	15
06/12/1993	06121993-05	6011068	31.5	23.30	0.0201	16
06/18/1993	06181993-05	6011062	31.5	23.30	0.0038	3
06/24/1993	06241993-05	6011059	31.5	23.30	0.0103	8
06/30/1993	06301993-05	6011056	31.5	23.32	0.0193	15
07/06/1993	07061993-05	6011053	31.5	23.30	0.0150	12
07/12/1993	07121993-05	6011050	31.6	23.32	0.0112	9
07/18/1993	07181993-05	6011047	31.6	23.32	0.0031	2
07/24/1993	07241993-05	6009895	31.6	23.32	0.0191	15
07/30/1993	07301993-05	6009892	31.6	23.30	0.0204	16
08/05/1993	08051993-05	6009889	31.6	23.35	0.0103	8
08/11/1993	08111993-05	6009886	31.7	23.30	0.0140	11
08/17/1993	08171993-05	6009884	31.7	23.32	0.0102	8
08/23/1993	08231993-05	6009881	31.7	23.32	0.0122	10
08/29/1993	08291993-05	6009879	31.7	23.30	0.0089	7
11/09/1993	11091993-05	6009838	33.2	23.35	0.0267	20
11/15/1993	11151993-05	6009803	33.2	23.33	0.0107	8
11/21/1993	11211993-05	6011200	32.9	13.32	0.0109	15
11/27/1993	11271993-05	6011198	32.9	23.32	0.0229	18
12/03/1993	12031993-05	6011197	32.9	23.32	0.0078	6
12/09/1993	12091993-05	6011195	32.9	23.32	0.0250	19
12/15/1993	12151993-05	6011192	33.2	23.30	0.0037	3
12/21/1993	12211993-05	6011188	33.2	23.32	0.0251	19
12/27/1993	12271993-05	6011186	33.2	23.42	0.0042	3

[a]Grams per filter.

Table A-8. Suspended Particulates (PM_{10}) Data Obtained at Station AIR-M-6 during 1993[a]

Sample Date	Ticket Number	Filter Number	Flow Rate (scfm)	Sample Time (hours)	Weight (g/F)[b]	Conc. ($\mu g/m^3$)
01/13/1993	01151993-06	5916226	33	24.02	0.0019	1
02/06/1993	02101993-06	6011883	34	24.02	0.0050	4
02/12/1993	02121993-06	6011880	33	24.00	0.0006	<1
02/18/1993	02181993-06	6011877	34	24.02	0.0041	3
03/02/1993	03021993-06	6011871	34	23.98	0.0060	4
03/20/1993	03221993-06	6011832	33	24.00	0.0023	2
03/26/1993	03291993-06	6011829	33	24.02	0.0067	5
04/01/1993	04051993-06	6011826	33	24.00	0.0033	2
04/13/1993	04161993-06	6011820	33	23.98	0.0033	2
04/19/1993	04231993-06	6011818	33	24.00	0.0039	3
04/25/1993	04271993-06	6011816	33	24.03	0.0027	2
05/01/1993	05031993-06	6011092	33	24.08	0.0040	3
05/07/1993	05101993-06	6011087	32	24.00	0.0027	2
05/13/1993	05171993-06	6011082	32	24.00	0.0126	10
05/19/1993	05191993-06	6011079	32	24.00	0.0064	5
05/25/1993	05251993-06	6011078	32	24.02	0.0139	11
05/31/1993	05311993-06	6011074	32	24.03	0.0151	12
06/06/1993	06061993-06	6011070	32	24.03	0.0166	13
06/12/1993	06121993-06	6011069	31.5	24.02	0.0230	18
06/18/1993	06181993-06	6011061	31.5	23.15	0.0044	4
06/24/1993	06241993-06	6011058	31.5	24.00	0.0080	6
06/30/1993	06301993-06	6011055	31.5	23.32	0.0163	13
07/06/1993	07061993-06	6011052	31.5	24.00	0.0168	13
07/12/1993	07121993-06	6011049	31.6	24.00	0.0181	14
07/18/1993	07181993-06	6009900	31.6	24.00	0.0140	11
07/24/1993	07241993-06	6009894	31.6	24.05	0.0119	9
07/30/1993	07301993-06	6009891	31.6	24.02	0.0189	15
08/05/1993	08051993-06	6009888	31.6	24.03	0.0087	7
08/11/1993	08111993-06	6009885	31.7	24.02	0.0061	5
08/17/1993	08171993-06	6009883	31.7	24.03	0.0078	6
08/23/1993	08231993-06	6009882	31.7	24.02	0.0086	7
08/29/1993	08291993-06	6009878	31.7	24.03	0.0103	8
09/04/1993	09041993-06	6009874	31.7	24.00	0.0139	11
09/10/1993	09101993-06	6009861	31.7	23.52	0.0166	13
09/16/1993	09161993-06	6009859	31.7	24.03	0.0141	11
09/22/1993	09221993-06	6009857	32	24.00	0.0108	8
09/28/1993	09281993-06	6009855	32	24.00	0.0111	9
10/04/1993	10041993-06	6009853	32	24.02	0.0141	11
10/10/1993	10101993-06	6009851	32	24.00	0.0007	1
10/16/1993	10161993-06	6009847	32.9	24.02	0.0030	2
10/28/1993	10281993-06	6009843	32.9	24.00	0.0082	6
11/03/1993	11031993-06	6009840	33.2	24.03	0.0073	5
11/09/1993	11091993-06	6009837	33.2	24.03	0.0023	2

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit).
[b]Grams per filter.

Table A-9. Direct Gamma Radiation Data for Monticello, First Quarter 1993

Report Number	Report Date	Date Installed	Date Removed	Days Exposed
8052-8	04/20/1993	12/22/1992	04/01/1993	100

TLD Number	Field Location	Reported Value[a] for Quarter (mrem)	Corrected Value[b] Daily Exposure (mrem)	Approximate Annual Exposure (mrem)
GJ-1	TLD-M-01	23.5	0.2	85.8
GJ-6	TLD-M-02	27.2	0.3	99.3
GJ-8	TLD-M-03	26.9	0.3	98.2
GJ-7	TLD-M-04	27.5	0.3	100.4
GJ-12	TLD-M-05	70.9	0.7	258.8
GJ-2	TLD-M-06	77.6	0.8	283.2
GJ-4	TLD-M-06[c]	82.2	0.8	300.0
GJ-5	TLD-M-07	40.8	0.4	148.9
GJ-14	TLD-M-08	28.3	0.3	103.3
GJ-10	TLD-M-09	48.3	0.5	176.3
GJ-13	TLD-M-10	25.2	0.3	92.0
GJ-3	TLD-M-11	36.5	0.4	133.2
GJ-11	TLD-M-12	70.6	0.7	257.7
GJ-9	TLD-M-13	25.5	0.3	93.1

[a]The reported values are the results received from the subcontracted laboratory.

[b]The corrected values are derived by subtracting the exposure received by the TLDs while in transit from the reported values.

[c]Duplicate sample.

Table A-10. Direct Gamma Radiation Data for Monticello, Second Quarter 1993

Report Number	Report Date	Date Installed	Date Removed	Days Exposed
8052-9	07/28/1993	04/01/1993	07/01/1993	90

TLD Number	Field Location	Reported Value[a] for Quarter (mrem)	Corrected Value[b] Daily Exposure (mrem)	Approximate Annual Exposure (mrem)
GJ-21	TLD-M-01	28.2	0.3	114.4
GJ-31	TLD-M-03	26.0	0.3	105.4
GJ-26	TLD-M-04	30.7	0.3	124.5
GJ-28	TLD-M-05	115.4	1.3	468.0
GJ-17	TLD-M-06	91.7	1.0	371.9
GJ-23	TLD-M-06[c]	93.7	1.0	380.0
GJ-19	TLD-M-07	43.7	0.5	177.2
GJ-27	TLD-M-08	34.1	0.4	138.3
GJ-29	TLD-M-09	56.4	0.6	228.7
GJ-20	TLD-M-10	32.4	0.4	131.4
GJ-24	TLD-M-11	48.6	0.5	197.1
GJ-22	TLD-M-12	136.2	1.5	552.4
GJ-25	TLD-M-13	26.9	0.3	109.1

[a]The reported values are the results received from the subcontracted laboratory.

[b]The corrected values are derived by subtracting the exposure received by the TLDs while in transit from the reported values.

[c]Duplicate sample.

Table A-11. Direct Gamma Radiation Data for Monticello, Third Quarter 1993

Report Number	Report Date	Date Installed	Date Removed	Days Exposed
8052-10	12/09/1993	06/30/1993	10/26/1993	118

TLD Number	Field Location	Reported Value[a] for Quarter (mrem)	Corrected Value[b] Daily Exposure (mrem)	Approximate Annual Exposure (mrem)
GJ-23	TLD-M-01	32.5	0.3	100.5
GJ-10	TLD-M-02	29.2	0.2	90.3
GJ-34	TLD-M-03	27.3	0.2	84.4
GJ-04	TLD-M-04	41.9	0.4	129.6
GJ-27	TLD-M-05	122.5	1.0	378.9
GJ-30	TLD-M-06	114.7	1.0	354.8
GJ-32	TLD-M-06[c]	112.7	1.0	348.6
GJ-6	TLD-M-07	54.8	0.5	169.5
GJ-1	TLD-M-08	36.1	0.3	111.7
GJ-12	TLD-M-09	71.1	0.6	219.9
GJ-2	TLD-M-10	42.3	0.4	130.8
GJ-7	TLD-M-11	64.7	0.5	200.1
GJ-18	TLD-M-12	165.1	1.4	510.7
GJ-14	TLD-M-13	31.5	0.3	97.4

[a]The reported values are the results received from the subcontracted laboratory.

[b]The corrected values are derived by subtracting the exposure received by the TLDs while in transit from the reported values.

[c]Duplicate sample.

Table A-12. Direct Gamma Radiation Data for Monticello, Fourth Quarter 1993

Report Number	Report Date	Date Installed	Date Removed	Days Exposed
8052-11	02/08/1994	10/27/1993	12/30/1993	63

TLD Number	Field Location	Reported Value[a] for Quarter (mrem)	Corrected Value[b] Daily Exposure (mrem)	Approximate Annual Exposure (mrem)
GJ-36	R-M-1-TLD	13.4	0.2	77.6
GJ-28	R-M-2-TLD	13.4	0.2	77.6
GJ-29	R-M-3-TLD	13.6	0.2	78.8
GJ-23	R-M-4-TLD	16.9	0.3	97.9
GJ-38	R-M-5-TLD	11.3	0.2	65.5
GJ-27	R-M-6-TLD	17.7	0.3	102.5
GJ-21	R-M-7-TLD	14.2	0.2	82.3
GJ-31	TLD-M-01	13.5	0.2	78.2
GJ-13	TLD-M-02	21.0	0.3	121.7
GJ-19	TLD-M-03	17.4	0.3	100.8
GJ-30	TLD-M-04	17.4	0.3	100.8
GJ-32	TLD-M-05	54.8	0.9	317.5
GJ-18	TLD-M-06	54.0	0.9	312.9
GJ-22	TLD-M-06[c]	51.2	0.8	296.6
GJ-10	TLD-M-07	37.0	0.6	214.4
GJ-16	TLD-M-08	19.3	0.3	111.8
GJ-20	TLD-M-09	38.4	0.6	222.5
GJ-39	TLD-M-10	16.2	0.3	93.9
GJ-15	TLD-M-11	32.6	0.5	188.9
GJ-14	TLD-M-12	91.7	1.5	531.3
GJ-34	TLD-M-13	11.0	0.2	63.7

[a]The reported values are the results received from the subcontracted laboratory.

[b]The corrected values are derived by subtracting the exposure received by the TLDs while in transit from the reported values.

[c]Duplicate sample.

Table A-13. Target Compound List of Organic Constituents Included in Analysis of Surface and Ground Waters

CAS Number[a]	Constituent	Requested Reporting Limit[b] (µg/L)
Herbicides		
93-76-5	2,4,5-T	0.20
93-72-1	2,4,5-TP (Silvex)	0.17
94-75-7	2,4-D	1.2
94-82-6	2,4-DB	0.91
75-99-0	Dalapon	5.8
120-36-5	Dichloroprop	0.65
Pesticides and PCBs		
72-54-8	4,4'-DDD	0.10
72-55-9	4,4'-DDE	0.10
50-29-3	4,4'-DDT	0.10
309-00-2	Aldrin	0.05
319-84-6	alpha-BHC	0.05
5103-71-9	alpha-Chlordane	0.05
12674-11-2	Aroclor-1016	0.5
11104-28-2	Aroclor-1221	0.5
11141-16-5	Aroclor-1232	0.5
53469-21-9	Aroclor-1242	0.5
12672-29-6	Aroclor-1248	0.5
11097-69-1	Aroclor-1254	1.0
11096-82-5	Aroclor-1260	1.0
319-85-7	beta-BHC	0.05
319-86-8	delta-BHC	0.05
60-57-1	Dieldrin	0.10
959-98-8	Endosulfan I	0.05
33213-65-9	Endosulfan II	0.10
1031-07-8	Endosulfan Sulfate	0.10
72-20-8	Endrin	0.10
7421-93-4	Endrin Aldehyde	0.10
58-89-9	gamma-BHC (Lindane)	0.05
5103-74-2	gamma-Chlordane	0.05
76-44-8	Heptachlor	0.05
1024-57-3	Heptachlor Epoxide	0.05
72-43-5	Methoxychlor	0.5
8001-35-2	Toxaphene	1.0
Semivolatile Organics		
120-82-1	1,2,4-Trichlorobenzene	10
95-50-1	1,2-Dichlorobenzene	10
541-73-1	1,3-Dichlorobenzene	10
106-46-7	1,4-Dichlorobenzene	10

[a]CAS = Chemical Abstracts Service.
[b]Actual laboratory reporting limits may vary.

Table A-13 (continued). Target Compound List of Organic Constituents Included in the Analysis of Surface and Ground Waters

CAS Number[a]	Constituent	Requested Reporting Limit[b] (µg/L)
Semivolatile Organics (continued)		
108-60-1	2,2-oxybis(1-Chloropropane)	10
95-95-4	2,4,5-Trichlorophenol	50
88-06-2	2,4,6-Trichlorophenol	10
120-83-2	2,4-Dichlorophenol	10
105-67-9	2,4-Dimethylphenol	10
51-28-5	2,4-Dinitrophenol	50
121-14-2	2,4-Dinitrotoluene	10
606-20-2	2,6-Dinitrotoluene	10
91-58-7	2-Chloronaphthalene	10
95-57-8	2-Chlorophenol	10
91-57-6	2-Methylnaphthalene	10
95-48-7	2-Methylphenol	10
88-74-4	2-Nitroaniline	50
88-75-5	2-Nitrophenol	10
91-94-1	3,3'-Dichlorobenzidine	20
99-09-2	3-Nitroaniline	50
534-52-1	4,6-Dinitro-2-Methylphenol	50
101-55-3	4-Bromophenyl-phenylether	10
59-50-7	4-Chloro-3-methylphenol	10
106-47-8	4-Chloroaniline	10
7005-72-3	4-Chlorophenyl phenyl ether	10
106-44-5	4-Methylphenol	10
100-01-6	4-Nitroaniline	50
100-02-7	4-Nitrophenol	50
83-32-9	Acenaphthene	10
208-96-8	Acenaphthylene	10
120-12-7	Anthracene	10
56-55-3	Benzo(a)anthracene	10
50-32-8	Benzo(a)pyrene	10
205-99-2	Benzo(b)fluoranthene	10
191-24-2	Benzo(g,h,i)perylene	10
207-08-9	Benzo(k)fluoranthene	10
111-91-1	bis(2-Chloroethoxy)Methane	10
111-44-4	bis(2-Chloroethyl)Ether	10
117-81-7	bis(2-ethylhexyl)Phthalate	10
85-68-7	Butyl benzyl phthalate	10
218-01-9	Chrysene	10
84-74-2	di-n-Butylphthalate	10
117-84-0	di-n-Octylphthalate	10
53-70-3	Dibenzo(a,h)anthracene	10
132-64-9	Dibenzofuran	10
84-66-2	Diethylphthalate	10
131-11-3	Dimethylphthalate	10
206-44-0	Fluoranthene	10
86-73-7	Fluorene	10

[a]CAS = Chemical Abstracts Service.
[b]Actual laboratory reporting limits may vary.

Table A-13 (continued). Target Compound List of Organic Constituents Included in the Analysis of Surface and Ground Waters

CAS Number[a]	Constituent	Requested Reporting Limit[b] (µg/L)
Semivolatile Organics (continued)		
118-74-1	Hexachlorobenzene	10
87-68-3	Hexachlorobutadiene	10
77-47-4	Hexachlorocyclopentadiene	10
67-72-1	Hexachloroethane	10
193-39-5	Indeno(1,2,3-cd)pyrene	10
78-59-1	Isophorone	10
621-64-7	N-Nitroso-di-n-dipropylamine	10
86-30-6	N-Nitrosodiphenylamine	10
91-20-3	Naphthalene	10
98-95-3	Nitrobenzene	10
87-86-5	Pentachlorophenol	50
85-01-8	Phenanthrene	10
108-95-2	Phenol	10
129-00-0	Pyrene	10
Volatile Organics		
71-55-6	1,1,1-Trichloroethane	1
79-34-5	1,1,2,2-Tetrachloroethane	1
79-00-5	1,1,2-Trichloroethane	1
75-34-3	1,1-Dichloroethane	1
75-35-4	1,1-Dichloroethene	1
107-06-2	1,2-Dichloroethane	1
78-87-5	1,2-Dichloropropane	1
78-93-3	2-Butanone	2
591-78-6	2-Hexanone	2
108-10-1	4-Methyl-2-Pentanone	2
67-64-1	Acetone	2
71-43-2	Benzene	1
75-27-4	Bromodichloromethane	1
75-25-2	Bromoform	1
74-83-9	Bromomethane	2
75-15-0	Carbon Disulfide	1
56-23-5	Carbon Tetrachloride	1
108-90-7	Chlorobenzene	1
75-00-3	Chloroethane	2
67-66-3	Chloroform	1
74-87-3	Chloromethane	2
10061-01-5	*cis*-1,3-Dichloropropene	1
124-48-1	Dibromochloromethane	1
100-41-4	Ethyl benzene	1
75-09-2	Methylene Chloride	1
100-42-5	Styrene	1
127-18-4	Tetrachloroethene	1

[a]CAS = Chemical Abstracts Service.
[b]Actual laboratory reporting limits may vary.

Table A-13 (continued). Target Compound List of Organic Constituents Included in the Analysis of Surface and Ground Waters

CAS Number[a]	Constituent	Requested Reporting Limit[b] (µg/L)
Volatile Organics (continued)		
108-88-3	Toluene	1
156-60-5	*trans*-1,2-Dichloroethene	1
10061-02-6	*trans*-1,3-Dichloropropene	1
79-01-6	Trichloroethene	1
108-05-4	Vinyl Acetate	2
75-01-4	Vinyl Chloride	2
1330-20-7	Xylenes (total)	1

[a]CAS = Chemical Abstracts Service.
[b]Actual laboratory reporting limits may vary.

Table A-14. Surface-Water Chemistry Data Collected At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Ag (µg/L)	Al (µg/L)	Alkalinity (as $CaCO_3$) (ppm)	Alpha (pCi/L)[b]	As (µg/L)	B (µg/L)	Ba (µg/L)	Be (µg/L)	Beta (pCi/L)[b]
Carbonate Seep	NBB-239	04/27/1993	<4.0	~86.2	315	1900	454	249	~45.4	<1.0	1100
	NBB-435	07/21/1993	<7.0	~98.4	193	1209	298	396	~38.1	<1.0	320
	NBB-563	11/02/1993	<1.0	477	223	1780	438	277	~67.7	No Data	1164
Montezuma Canyon	NBB-277	03/01/1993	<4.0	3210	193	<21	<3.0	~61.8	~91.2	<1.0	<19.6
	NBB-231	04/22/1993	<4.0	3550	80	<13.2	<3.0	~35.2	103	<1.0	<20
	NBB-440	07/22/1993	<7.0	240	145	55	~3.3	109	~57.2	<1.0	<19.5
	NBB-557	10/28/1993	<1.0	~58.5	208	77	<4.0	130	~59.7	No Data	44.3
North Drainage	NBB-289	03/08/1993	<4.0	1360	277	61	<3.0	~99.2	~86.9	<1.0	<33
	NBB-236	04/22/1993	<4.0	463	No Data	<22	<3.0	106	~62.0	<1.0	27.6
	NBB-235	04/23/1993	<4.0	403	330	50	<3.0	107	~52.3	<1.0	<22
SW92-01	NBB-283	03/02/1993	<4.0	~75.9	206	<30	<3.0	~96.9	~28.0	<1.0	<20
	NBB-227	04/19/1993	<4.0	107	212	<38	<3.0	~74.2	~41.0	<1.0	<22
	NBB-427	07/19/1993	<7.0	310	113	<16.0	<3.0	~30.7	~41.1	<1.0	<19.2
	NBB-551	10/27/1993	<1.0	~31.4	179	<11.4	<4.0	~54.8	~38.8	No Data	<9.8
SW92-02	NBB-280	03/02/1993	<4.0	~47.7	No Data	<17.1	<3.0	~58.1	~52.4	<1.0	<19.3
	NBB-279	03/02/1993	<4.0	~15.8	196	<16.2	<3.0	~43.1	~47.8	<1.0	<19.3
	NBB-228	04/20/1993	<4.0	405	117	<13.9	<3.0	~61.2	~54.5	<1.0	<20
	NBB-428	07/20/1993	<7.0	207	159	<9.9	<3.0	~41.2	~67.1	<1.0	<6.7
	NBB-552	10/27/1993	<1.0	~178	162	<14.1	<4.0	~41.5	~92.2	No Data	<8.2
SW92-03	NBB-293	03/09/1993	<4.0	~50.0	233	<14.1	<3.0	~43.0	~66.9	<1.0	<10.0
	NBB-255	05/05/1993	<4.0	~143	137	<13.9	<3.0	~30.1	~53.9	<1.0	<10.0
	NBB-429	07/20/1993	<7.0	~126	114	<12.7	<3.0	~31.2	~40.8	<1.0	<9.9
	NBB-554	10/28/1993	<1.0	<29.0	No Data	<32	<4.0	~48.5	~54.0	No Data	<20
	NBB-553	10/28/1993	<1.0	<29.0	166	<33	<4.0	~50.5	~53.2	No Data	<32
SW92-04	NBB-287	03/08/1993	<4.0	~176	286	148	~7.2	~77.4	~49.1	<1.0	<33
	NBB-263	05/06/1993	<4.0	267	202	27.3	<3.0	~45.6	~58.1	<1.0	25.2
	NBB-436	07/21/1993	<7.0	~188	124	<17.3	<3.0	~49.9	~36.5	<1.0	<19.3
	NBB-564	11/02/1993	<1.0	~54.4	215	<45	~7.1	~65.1	~58.7	No Data	<39
SW92-05	NBB-285	03/04/1993	<4.0	507	261	162	~10.3	~92.6	~53.4	<1.0	29.9
	NBB-264	05/06/1993	<4.0	287	168	17.3	<3.0	~40.6	~54.1	<1.0	<10.2
	NBB-430	07/20/1993	<7.0	~129	123	<18.5	~3.7	~38.8	~36.8	<1.0	<19.4
	NBB-565	11/02/1993	<1.0	~55.7	195	<50	~4.4	~66.7	~58.7	No Data	<40

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).

[b]The values listed multiplied by 10^{-9} will result in microcuries per milliliter.

Table A-14 (continued). Surface-Water Chemistry Data Collected At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Ag (µg/L)	Al (µg/L)	Alkalinity (as $CaCO_3$) (ppm)	Alpha (pCi/L)[b]	As (µg/L)	B (µg/L)	Ba (µg/L)	Be (µg/L)	Beta (pCi/L)[b]
SW92-06	NBB-278	03/01/1993	<4.0	211	275	190	~4.1	118	~46.3	<1.0	43.4
	NBB-256	05/05/1993	<4.0	247	201	42.8	~3.4	~44.8	~60.3	<1.0	21.9
	NBB-439	07/22/1993	<7.0	296	126	50	~3.0	~53.1	~43.6	<1.0	<19.4
	NBB-437	07/22/1993	<7.0	281	126	42.2	<3.0	~45.5	~44.3	<1.0	<19.4
	NBB-559	10/29/1993	<1.0	~136	226	141	~4.1	~72.8	~48.3	No Data	55.9
SW92-07	NBB-299	03/10/1993	<4.0	~88.0	297	189	<3.0	~82.2	~46.3	<1.0	79.6
	NBB-258	05/05/1993	<4.0	261	189	59	<3.0	~46.1	~60.2	<1.0	32.9
	NBB-433	07/21/1993	<7.0	269	175	50	~3.1	~47.3	~46.0	<1.0	34.4
	NBB-560	10/29/1993	<1.0	~72.3	213	157	<4.0	~94.8	~56.6	No Data	58.0
SW92-08	NBB-300	03/10/1993	<4.0	~77.4	250	162	<3.0	112	~43.8	<1.0	62.3
	NBB-259	05/05/1993	<4.0	~147	182	57	<3.0	~46.3	~62.3	<1.0	29.4
	NBB-442	07/22/1993	<7.0	~84.4	151	64	~3.2	~75.8	~43.9	<1.0	17.6
	NBB-561	11/01/1993	<1.0	<29.0	220	141	<4.0	~91.0	~67.6	No Data	75
SW92-09	NBB-201	03/10/1993	<4.0	~67.3	245	141	<3.0	104	~40.1	<1.0	51.2
	NBB-260	05/05/1993	<4.0	262	176	27.7	<3.0	~43.0	~64.0	<1.0	22.5
	NBB-441	07/22/1993	<7.0	~65.8	151	65	<3.0	~49.5	~43.9	<1.0	12.4
	NBB-562	11/01/1993	<1.0	~31.5	262	164	<4.0	~91.6	~65.1	No Data	60
Sorenson	NBB-298	03/09/1993	<4.0	222	233	159	~5.0	108	~49.3	<1.0	<33
	NBB-257	05/05/1993	<4.0	209	183	60	<3.0	~48.2	~57.4	<1.0	36.2
	NBB-431	07/20/1993	<7.0	~110	167	55	~3.1	~49.4	~47.7	<1.0	31.1
	NBB-558	10/28/1993	<1.0	~51.2	No Data	210	<4.0	~96.0	~49.1	No Data	64.1
W-2	NBB-288	03/08/1993	<4.0	554	288	95	~9.7	111	~77.0	<1.0	<33
	NBB-241	04/27/1993	<4.0	~169	No Data	66	25.2	107	~53.3	<1.0	<20
	NBB-240	04/27/1993	<4.0	~107	282	37	21.9	107	~50.6	<1.0	32.0
W-4	NBB-276	03/01/1993	<4.0	~186	281	165	~8.6	~96.0	~47.3	<1.0	39.9
	NBB-261	05/05/1993	<4.0	393	150	39.9	~3.2	~35.4	~54.4	<1.0	33.3
	NBB-434	07/21/1993	<7.0	~157	147	35.5	<3.0	~38.7	~40.3	<1.0	12.0
	NBB-556	10/28/1993	<1.0	~49.8	No Data	90	~6.0	~61.1	~50.5	No Data	27.5
	NBB-555	10/28/1993	<1.0	~74.6	202	71	~5.8	~69.2	~52.5	No Data	25.4
W-5	NBB-291	03/08/1993	<4.0	574	No Data	76	<3.0	116	~68.6	<1.0	<19.7
	NBB-290	03/08/1993	<4.0	608	230	60	<3.0	140	~61.5	<1.0	26.5
	NBB-238	04/26/1993	<4.0	652	371	<26	<3.0	129	~82.2	<1.0	<19.8

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).

[b]The values listed multiplied by 10^{-9} will result in microcuries per milliliter.

Table A-14 (continued). Surface-Water Chemistry Data Collected At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Ca (µg/L)	Cd (µg/L)	CDT[b] (µmhos/cm)	Cl (µg/L)	CN (µg/L)	Co (µg/L)	Cr (µg/L)	Cu (µg/L)	F (µg/L)
Carbonate Seep	NBB-239	04/27/1993	165000	<1.0	1849	51500	<4.0	No Data	<3.0	~5.5	499
	NBB-435	07/21/1993	87300	<1.0	2540	117000	<4.0	No Data	<4.0	~5.0	891
	NBB-563	11/02/1993	159000	<1.0	1987	71400	No Data	No Data	<4.0	~17.1	653
Montezuma Canyon	NBB-277	03/01/1993	119000	<1.0	1055	44000	<10.0	<6.0	<3.0	<3.0	~178
	NBB-231	04/22/1993	45000	<1.0	241	3820	<4.0	No Data	<3.0	~4.6	~75.7
	NBB-440	07/22/1993	118000	<1.0	997	24000	<4.0	No Data	<4.0	<5.0	~112
	NBB-557	10/28/1993	178000	<1.0	1662	70900	No Data	No Data	<4.0	<3.0	~189
North Drainage	NBB-289	03/08/1993	201000	<1.0	1614	112000	<10.0	<6.0	<3.0	<3.0	~141
	NBB-236	04/22/1993	218000	<1.0	No Data	54000	<4.0	No Data	<3.0	~3.4	~161
	NBB-235	04/23/1993	200000	<1.0	1760	53800	<4.0	No Data	<3.0	<3.0	~158
SW92-01	NBB-283	03/02/1993	329000	<1.0	1674	7270	<10.0	~6.6	~4.9	<3.0	~121
	NBB-227	04/19/1993	403000	<1.0	1979	5310	<4.0	No Data	<3.0	<3.0	~104
	NBB-427	07/19/1993	96400	<1.0	602	2490	<4.0	No Data	<4.0	<5.0	~97.5
	NBB-551	10/27/1993	431000	<1.0	2080	8190	No Data	No Data	<4.0	<3.0	~140
SW92-02	NBB-280	03/02/1993	97200	<1.0	No Data	6860	<10.0	<6.0	<3.0	<3.0	~154
	NBB-279	03/02/1993	96100	<1.0	676	7060	<10.0	<6.0	<3.0	<3.0	~156
	NBB-228	04/20/1993	49600	<1.0	383	5230	<4.0	No Data	<3.0	<3.0	~111
	NBB-428	07/20/1993	63700	<1.0	857	4860	<4.0	No Data	<4.0	<5.0	~154
	NBB-552	10/27/1993	113000	<1.0	745	9270	No Data	No Data	<4.0	<3.0	~120
SW92-03	NBB-293	03/09/1993	109000	<1.0	751	9010	<10.0	<6.0	<3.0	<3.0	~130
	NBB-255	05/05/1993	102000	<1.0	682	5420	<4.0	No Data	<3.0	<3.0	~104
	NBB-429	07/20/1993	98400	<1.0	659	2840	<4.0	No Data	<4.0	<5.0	~78.7
	NBB-554	10/28/1993	325000	<1.0	No Data	7560	No Data	No Data	<4.0	<3.0	~95.0
	NBB-553	10/28/1993	331000	<1.0	No Data	8000	No Data	No Data	<4.0	<3.0	~100
SW92-04	NBB-287	03/08/1993	235000	<1.0	1562	48200	<10.0	<6.0	<3.0	<3.0	~125
	NBB-263	05/06/1993	138000	<1.0	931	13600	<4.0	No Data	<3.0	~3.1	~104
	NBB-436	07/21/1993	114000	<1.0	733	4350	<4.0	No Data	<4.0	<5.0	~102
	NBB-564	11/02/1993	344000	<1.0	1956	11400	No Data	No Data	<4.0	<3.0	~82.0
SW92-05	NBB-285	03/04/1993	264000	<1.0	1740	57600	<10.0	<6.0	<3.0	<3.0	~139
	NBB-264	05/06/1993	131000	<1.0	901	10800	<4.0	No Data	<3.0	~17.0	~99.9
	NBB-430	07/20/1993	120000	<1.0	800	5520	<4.0	No Data	<4.0	<5.0	~92.6
	NBB-565	11/02/1993	344000	<1.0	1940	12300	No Data	No Data	<4.0	<3.0	~125

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).

[b]Conductivity in micromhos per centimeter.

Table A-14 (continued). Surface-Water Chemistry Data Collected during 1993 At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Ca (µg/L)	Cd (µg/L)	CDT[b] (µmhos/cm)	Cl (µg/L)	CN (µg/L)	Co (µg/L)	Cr (µg/L)	Cu (µg/L)	F (µg/L)
SW92-06	NBB-278	03/01/1993	258000	<1.0	1765	58800	<10.0	<6.0	~4.6	<3.0	~131
	NBB-256	05/05/1993	133000	<1.0	945	17400	<4.0	No Data	<3.0	<3.0	~103
	NBB-439	07/22/1993	130000	<1.0	958	12700	<4.0	No Data	<4.0	~20.0	~99.6
	NBB-437	07/22/1993	130000	<1.0	958	12700	<4.0	No Data	<4.0	<5.0	~112
	NBB-559	10/29/1993	318000	<1.0	1146	25300	No Data	No Data	<4.0	<3.0	~155
SW92-07	NBB-299	03/10/1993	202000	<1.0	1836	62100	<10.0	<6.0	<3.0	<3.0	~149
	NBB-258	05/05/1993	137000	<1.0	1004	22600	<4.0	No Data	<3.0	<3.0	~126
	NBB-433	07/21/1993	137000	<1.0	983	16600	<4.0	No Data	<4.0	<5.0	~127
	NBB-560	10/29/1993	262000	<1.0	1924	46700	No Data	No Data	<4.0	<3.0	~104
SW92-08	NBB-300	03/10/1993	200000	<1.0	1663	64100	<10.0	<6.0	<3.0	<3.0	~151
	NBB-259	05/05/1993	133000	<1.0	985	20600	<4.0	No Data	<3.0	<3.0	~108
	NBB-442	07/22/1993	127000	<1.0	944	16500	<4.0	No Data	<4.0	<5.0	~101
	NBB-561	11/01/1993	264000	<1.0	1936	46200	No Data	No Data	<4.0	<3.0	~97.0
SW92-09	NBB-201	03/10/1993	200000	<1.0	1669	69700	<10.0	<6.0	<3.0	<3.0	~154
	NBB-260	05/05/1993	134000	<1.0	1013	23700	<4.0	No Data	<3.0	<3.0	~122
	NBB-441	07/22/1993	125000	<1.0	914	17200	<4.0	No Data	<4.0	<5.0	~110
	NBB-562	11/01/1993	255000	<1.0	1918	49100	No Data	No Data	<4.0	<3.0	~157
Sorenson	NBB-298	03/09/1993	211000	<1.0	1584	52000	<10.0	<6.0	<3.0	<3.0	~146
	NBB-257	05/05/1993	137000	<1.0	999	21800	<4.0	No Data	<3.0	~3.3	~125
	NBB-431	07/20/1993	146000	<1.0	1072	21600	<4.0	No Data	~8.7	<5.0	~127
	NBB-558	10/28/1993	291000	<1.0	1917	46300	No Data	No Data	<4.0	<3.0	~168
W-2	NBB-288	03/08/1993	204000	<1.0	1650	113000	<10.0	<6.0	<3.0	<3.0	~148
	NBB-241	04/27/1993	193000	<1.0	No Data	53700	<4.0	No Data	<3.0	<3.0	~171
	NBB-240	04/27/1993	195000	<1.0	1432	53100	<4.0	No Data	<3.0	<3.0	~175
W-4	NBB-276	03/01/1993	277000	<1.0	1846	53000	<10.0	<6.0	<3.0	<3.0	~123
	NBB-261	05/05/1993	128000	<1.0	897	18100	<4.0	No Data	<3.0	~5.7	~110
	NBB-434	07/21/1993	121000	<1.0	823	8000	<4.0	No Data	<4.0	<5.0	~115
	NBB-556	10/28/1993	322000	<1.0	No Data	15000	No Data	No Data	<4.0	<3.0	~100
	NBB-555	10/28/1993	324000	<1.0	1645	15400	No Data	No Data	<4.0	~10.7	~163
W-5	NBB-291	03/08/1993	150000	<1.0	No Data	54100	<10.0	<6.0	<3.0	<3.0	~125
	NBB-290	03/08/1993	145000	<1.0	1106	54300	<10.0	<6.0	<3.0	<3.0	~127
	NBB-238	04/26/1993	193000	<1.0	1276	36100	<4.0	No Data	<3.0	~10.1	~145

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).
[b]Conductivity in micromhos per centimeter.

Table A-14 (continued). Surface-Water Chemistry Data Collected during 1993 At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Fe (µg/L)	Herbicide (µg/L)	Hg (µg/L)	K (µg/L)	Mg (µg/L)	Mn (µg/L)	Mo (µg/L)	Na (µg/L)	NH_4 (µg/L)
Carbonate Seep	NBB-239	04/27/1993	~97.3	No Detect	<0.10	24100	44200	25.7	314	212000	~18.0
	NBB-435	07/21/1993	140	No Detect	<0.10	45300	60700	47.5	321	402000	65.0
	NBB-563	11/02/1993	541	No Data	No Data	32700	49100	88.9	185	267000	49.0
Montezuma Canyon	NBB-277	03/01/1993	1580	No Data	<0.10	~4140	28800	227	<22.0	91200	136
	NBB-231	04/22/1993	4450	No Data	<0.10	2770	5840	157	~1.4	5280	21.0
	NBB-440	07/22/1993	267	No Data	<0.10	~3120	26100	54.1	~16.5	56000	62.0
	NBB-557	10/28/1993	248	No Data	No Data	5540	45800	175	~18.2	122000	38.3
North Drainage	NBB-289	03/08/1993	1400	No Detect	<0.10	5240	39900	56.9	<22.0	83200	248
	NBB-236	04/22/1993	583	No Detect	<0.10	4190	44000	38.1	<1.0	59800	60.0
	NBB-235	04/23/1993	483	No Detect	<0.10	3950	40700	33.3	~1.2	55900	63.0
SW92-01	NBB-283	03/02/1993	164	No Detect	<0.10	~2560	35500	115	<22.0	25800	48.0
	NBB-227	04/19/1993	267	No Detect	<0.10	3640	49300	97.9	~17.9	32100	21.0
	NBB-427	07/19/1993	544	No Detect	<0.10	~1590	13500	43.7	~1.3	8390	71.0
	NBB-551	10/27/1993	144	No Data	No Data	~3410	58300	122	~2.9	33200	30.2
SW92-02	NBB-280	03/02/1993	~50.1	No Detect	<0.10	<917	14700	16.8	<22.0	29100	24.0
	NBB-279	03/02/1993	~9.5	No Detect	<0.10	~1720	14600	~1.4	<22.0	29100	80.0
	NBB-228	04/20/1993	392	No Detect	<0.10	1390	7800	37.2	~20.2	13600	97.0
	NBB-428	07/20/1993	275	No Detect	<0.10	<906	9670	18.0	~2.1	17800	77.0
	NBB-552	10/27/1993	255	No Data	No Data	~1190	17100	23.2	~1.8	25200	~16.8
SW92-03	NBB-293	03/09/1993	~72.2	No Detect	<0.10	<917	14300	17.9	<22.0	25200	60.0
	NBB-255	05/05/1993	177	No Detect	<0.10	1010	15600	38.3	~2.2	18600	~22.0
	NBB-429	07/20/1993	177	No Detect	<0.10	<906	14500	21.6	<1.0	10200	80.0
	NBB-554	10/28/1993	~28.7	No Data	No Data	~2760	46300	~6.7	~2.5	29800	27.5
	NBB-553	10/28/1993	~35.8	No Data	No Data	~2110	46700	~6.6	~2.7	30000	35.6
SW92-04	NBB-287	03/08/1993	226	No Detect	<0.10	~3630	44100	341	<22.0	63100	98.0
	NBB-263	05/06/1993	373	No Detect	<0.10	1000	23100	165	~5.2	29900	23.0
	NBB-436	07/21/1993	247	No Detect	<0.10	~1330	17900	50.6	~2.8	15800	53.0
	NBB-564	11/02/1993	~81.0	No Data	No Data	~2890	54000	192	~13.0	49700	30.2
SW92-05	NBB-285	03/04/1993	564	No Detect	<0.10	~3560	50000	382	<22.0	70100	104
	NBB-264	05/06/1993	355	No Detect	<0.10	1270	21800	132	~4.6	28200	23.0
	NBB-430	07/20/1993	192	No Detect	<0.10	~1420	19200	57.8	~4.1	19100	71.0
	NBB-565	11/02/1993	~95.2	No Data	No Data	~3650	54200	187	~11.1	49700	32.9

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).

Table A-14 (continued). Surface-Water Chemistry Data Collected At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Fe (µg/L)	Herbicide (µg/L)	Hg (µg/L)	K (µg/L)	Mg (µg/L)	Mn (µg/L)	Mo (µg/L)	Na (µg/L)	NH4 (µg/L)
SW92-06	NBB-278	03/01/1993	358	No Data	<0.10	~4050	51500	460	<22.0	81900	60.0
	NBB-256	05/05/1993	349	No Data	<0.10	1920	22800	161	~8.6	37500	42.0
	NBB-439	07/22/1993	433	No Data	<0.10	~3210	21900	158	~14.7	51800	45.0
	NBB-437	07/22/1993	421	No Data	<0.10	~2630	21800	159	~14.5	35100	59.0
	NBB-559	10/29/1993	201	No Data	No Data	~4020	53900	138	~25.0	73900	43.6
SW92-07	NBB-299	03/10/1993	237	No Data	<0.10	5250	45500	368	<22.0	95000	100
	NBB-258	05/05/1993	427	No Data	<0.10	2080	24900	237	~11.2	46600	45.0
	NBB-433	07/21/1993	415	No Data	<0.10	~2830	24000	158	~16.8	40700	68.0
	NBB-560	10/29/1993	285	No Data	No Data	5540	53700	245	~28.1	105000	46.3
SW92-08	NBB-300	03/10/1993	228	No Data	<0.10	5480	46200	330	<22.0	98700	48.0
	NBB-259	05/05/1993	357	No Data	<0.10	1820	24400	302	~10.2	45400	57.0
	NBB-442	07/22/1993	184	No Data	<0.10	~2620	23000	60.3	~15.7	40300	62.0
	NBB-561	11/01/1993	213	No Data	No Data	~4930	54800	200	~28.3	108000	46.3
SW92-09	NBB-201	03/10/1993	205	No Data	<0.10	5310	47400	282	<22.0	106000	68.0
	NBB-260	05/05/1993	464	No Data	<0.10	2880	25000	306	~10.3	48500	72.0
	NBB-441	07/22/1993	143	No Data	<0.10	~1870	23900	51.6	~16.4	41600	53.0
	NBB-562	11/01/1993	187	No Data	No Data	6530	54300	161	~27.8	109000	46.3
Sorenson	NBB-298	03/09/1993	389	No Data	<0.10	5060	43000	372	<22.0	85500	92.0
	NBB-257	05/05/1993	339	No Data	<0.10	1530	24600	195	~10.6	44600	38.0
	NBB-431	07/20/1993	297	No Data	<0.10	~4150	27300	101	~24.0	51100	68.0
	NBB-558	10/28/1993	237	No Data	No Data	5340	58000	190	~33.2	106000	51.7
W-2	NBB-288	03/08/1993	608	No Detect	<0.10	~4330	40600	41.0	<22.0	87300	160
	NBB-241	04/27/1993	176	No Detect	0.91	3690	41900	25.6	~23.6	68300	38.0
	NBB-240	04/27/1993	109	No Detect	<0.10	3930	42100	25.7	~21.4	68700	31.0
W-4	NBB-276	03/01/1993	217	No Data	<0.10	~3750	52900	366	<22.0	69800	142
	NBB-261	05/05/1993	467	No Data	<0.10	1650	21300	119	~7.5	34900	48.0
	NBB-434	07/21/1993	279	No Data	<0.10	~1950	19400	81.8	~12.9	23600	65.0
	NBB-556	10/28/1993	~62.3	No Data	No Data	~3570	52800	139	~21.6	57000	32.9
	NBB-555	10/28/1993	~62.2	No Data	No Data	~3930	53200	140	~20.9	57600	38.3
W-5	NBB-291	03/08/1993	633	No Detect	<0.10	~4130	29200	33.7	<22.0	39300	110
	NBB-290	03/08/1993	656	No Detect	<0.10	~4160	28200	32.2	<22.0	37600	104
	NBB-238	04/26/1993	849	No Detect	<0.10	4930	38900	45.0	~2.3	49600	42.0

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).

Table A-14 (continued). Surface-Water Chemistry Data Collected At and Near the MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Ni (µg/L)	NO_2 (µg/L)	NO_3 (µg/L)	NO_3+NO_2-N[b] (µg/L)	Pb (µg/L)	Pb-210 (pCi/L)[c]	Pesticide (µg/L)	pH	Po-210 (pCi/L)[c]
Carbonate Seep	NBB-239	04/27/1993	<9.0	~27.8	~41.7	No Data	<1.0	4.6	No Detect	7.86	0.65
	NBB-435	07/21/1993	<14.0	<8.0	~60.8	No Data	~1.3	9.3	No Detect	8.29	<0.25
	NBB-563	11/02/1993	<11.0	No Data	No Data	~11.5	3.5	33.8	No Data	8.23	<0.37
Montezuma Canyon	NBB-277	03/01/1993	~11.6	~6.7	360	No Data	3.2	<2	No Data	8.38	<0.5
	NBB-231	04/22/1993	<9.0	~7.4	~181	No Data	6.5	<2	No Data	8.21	<0.23
	NBB-440	07/22/1993	<14.0	~6.1	~83.2	No Data	~1.1	2	No Data	8.69	<0.16
	NBB-557	10/28/1993	<11.0	No Data	No Data	~18.0	<1.0	<2	No Data	9.1	<0.09
North Drainage	NBB-289	03/08/1993	~9.1	~86.8	18000	No Data	~2.3	<2	No Detect	8.57	<0.5
	NBB-236	04/22/1993	<9.0	~51.2	13300	No Data	~4.4	<2	No Detect	No Data	<2.12
	NBB-235	04/23/1993	<9.0	~66.2	12700	No Data	~1.3	<2	No Detect	7.94	<0.83
SW92-01	NBB-283	03/02/1993	<9.0	~8.6	~298	No Data	<1.0	<2	No Detect	7.93	<0.5
	NBB-227	04/19/1993	~10.0	~30.2	~50.6	No Data	~3.4	<2	No Detect	8.17	<0.13
	NBB-427	07/19/1993	<14.0	~16.1	894	No Data	7.1	<2	No Detect	7.70	<0.27
	NBB-551	10/27/1993	<11.0	No Data	No Data	1580	<1.0	<2	No Data	7.84	<0.08
SW92-02	NBB-280	03/02/1993	~11.2	<4.0	~117	No Data	<1.0	<2	No Detect	No Data	<0.5
	NBB-279	03/02/1993	<9.0	~2.1	~120	No Data	<1.0	<2	No Detect	8.12	<0.5
	NBB-228	04/20/1993	<9.0	~5.0	327	No Data	~3.2	<2	No Detect	7.68	<0.16
	NBB-428	07/20/1993	<14.0	~23.9	353	No Data	~1.1	<2	No Detect	7.56	<0.27
	NBB-552	10/27/1993	<11.0	No Data	No Data	~93.4	<1.0	<2	No Data	7.31	<0.09
SW92-03	NBB-293	03/09/1993	<9.0	~6.2	600	No Data	<1.0	<2	No Detect	7.89	<0.5
	NBB-255	05/05/1993	<9.0	~8.3	929	No Data	<1.0	<2	No Detect	8.19	<0.16
	NBB-429	07/20/1993	<14.0	~8.5	1200	No Data	<1.0	<2	No Detect	7.84	<0.16
	NBB-554	10/28/1993	<11.0	No Data	No Data	1010	<1.0	<2	No Data	No Data	<0.12
	NBB-553	10/28/1993	<11.0	No Data	No Data	1040	24.5	<2	No Data	7.99	<0.08
SW92-04	NBB-287	03/08/1993	<9.0	~20.4	4880	No Data	<1.0	<2	No Detect	8.42	<0.5
	NBB-263	05/06/1993	<9.0	~27.2	2150	No Data	<1.0	<2	No Detect	7.61	<0.27
	NBB-436	07/21/1993	<14.0	~16.4	1110	No Data	<1.0	<2	No Detect	7.97	<0.21
	NBB-564	11/02/1993	<11.0	No Data	No Data	1870	<1.0	<2	No Data	7.95	<0.19
SW92-05	NBB-285	03/04/1993	~11.4	~33.1	3240	No Data	<1.0	<2	No Detect	8.67	<0.5
	NBB-264	05/06/1993	<9.0	~28.7	2960	No Data	<1.0	<2	No Detect	7.56	<0.21
	NBB-430	07/20/1993	<14.0	~16.4	2240	No Data	<1.0	<2	No Detect	8.44	<0.11
	NBB-565	11/02/1993	<11.0	No Data	No Data	2010	<1.0	<2	No Data	7.87	<0.33

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).

[b](Nitrate + nitrite) as nitrogen.

[c]The values listed multiplied by 10^{-9} will result in microcuries per milliliter.

Table A-14 (continued). Surface-Water Chemistry Data Collected At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Ni (µg/L)	NO_2 (µg/L)	NO_3 (µg/L)	NO_3+NO_2-N[b] (µg/L)	Pb (µg/L)	Pb-210 (pCi/L)[c]	Pesticide (µg/L)	pH	Po-210 (pCi/L)[c]
SW92-06	NBB-278	03/01/1993	<9.0	~28.8	1940	No Data	<1.0	<2	No Data	7.31	<0.5
	NBB-256	05/05/1993	<9.0	~27.4	3350	No Data	<1.0	<2	No Data	8.16	<0.19
	NBB-439	07/22/1993	<14.0	~26.1	4150	No Data	<1.0	<2	No Data	7.82	<0.17
	NBB-437	07/22/1993	<14.0	~22.9	3680	No Data	<1.0	<2	No Data	7.82	<0.16
	NBB-559	10/29/1993	<11.0	No Data	No Data	1480	<1.0	<2	No Data	7.08	<0.09
SW92-07	NBB-299	03/10/1993	~10.0	~55.6	6190	No Data	<1.0	<2	No Data	8.50	<1.08
	NBB-258	05/05/1993	<9.0	~27.3	3060	No Data	<1.0	<2	No Data	7.66	<0.30
	NBB-433	07/21/1993	<14.0	~24.7	2600	No Data	<1.0	<2	No Data	7.88	<0.18
	NBB-560	10/29/1993	<11.0	No Data	No Data	760	<1.0	<2	No Data	7.34	<0.25
SW92-08	NBB-300	03/10/1993	<9.0	~45.0	3900	No Data	<1.0	<2	No Data	8.10	<1.02
	NBB-259	05/05/1993	<9.0	~24.3	2720	No Data	4.0	<2	No Data	8.00	<0.27
	NBB-442	07/22/1993	<14.0	~19.6	1820	No Data	~1.5	<2	No Data	8.32	<0.55
	NBB-561	11/01/1993	<11.0	No Data	No Data	609	<1.0	2.7	No Data	8.12	<0.20
SW92-09	NBB-201	03/10/1993	<9.0	~37.0	2930	No Data	<1.0	<2	No Data	8.23	<0.94
	NBB-260	05/05/1993	<9.0	~36.2	2640	No Data	<1.0	<2	No Data	7.98	<0.48
	NBB-441	07/22/1993	<14.0	~15.4	1500	No Data	<1.0	<2	No Data	8.53	<0.58
	NBB-562	11/01/1993	<11.0	No Data	No Data	482	<1.0	2.6	No Data	8.59	<0.21
Sorenson	NBB-298	03/09/1993	<9.0	~41.0	3620	No Data	<1.0	<2	No Data	7.90	<0.15
	NBB-257	05/05/1993	<9.0	~29.5	3090	No Data	<1.0	<2	No Data	8.01	<0.31
	NBB-431	07/20/1993	<14.0	~25.3	2410	No Data	<1.0	<2	No Data	8.25	<0.30
	NBB-558	10/28/1993	<11.0	No Data	No Data	913	<1.0	<2	No Data	7.50	<0.09
W-2	NBB-288	03/08/1993	<9.0	~77.2	18500	No Data	<1.0	<2	No Detect	8.62	<0.5
	NBB-241	04/27/1993	<9.0	~52.1	10500	No Data	~1.1	<2	No Detect	No Data	<0.19
	NBB-240	04/27/1993	<9.0	~77.9	10400	No Data	<1.0	<2	No Detect	8.18	<0.28
W-4	NBB-276	03/01/1993	<9.0	~18.8	2780	No Data	<1.0	<2	No Data	8.23	<0.5
	NBB-261	05/05/1993	<9.0	~24.4	3250	No Data	<1.0	<2	No Data	8.54	<0.30
	NBB-434	07/21/1993	<14.0	~19.7	2920	No Data	~1.0	<2	No Data	7.30	<0.15
	NBB-556	10/28/1993	<11.0	No Data	No Data	1880	<1.0	<2	No Data	No Data	<0.09
	NBB-555	10/28/1993	<11.0	No Data	No Data	1840	<1.0	<2	No Data	7.85	<0.07
W-5	NBB-291	03/08/1993	<9.0	~46.7	25100	No Data	<1.0	<2	No Detect	No Data	<0.09
	NBB-290	03/08/1993	~13.3	~29.6	24600	No Data	<1.0	<2	No Detect	7.22	<0.98
	NBB-238	04/26/1993	<9.0	~30.0	7190	No Data	~2.6	<2	No Detect	7.72	<0.20

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).

[b](Nitrate + nitrite) as nitrogen.

[c]The values listed multiplied by 10^{-9} will result in microcuries per milliliter.

Table A-14 (continued). Surface-Water Chemistry Data Collected At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Ra-226 (pCi/L)[b]	Ra-228 (pCi/L)[b]	Rn-222 (pCi/L)[b]	Sb (µg/L)	Se (µg/L)	Semivolatile (µg/L)	SO_4 (µg/L)	Sr (µg/L)	TDS[c] (mg/L)
Carbonate Seep	NBB-239	04/27/1993	7.36	<4	2524	<1.0	41.4	See Table	633000	1490	1422
	NBB-435	07/21/1993	9.10	<3	644	~2.2	16.5	See Table	980000	1360	2040
	NBB-563	11/02/1993	6.81	<4	3663	No Data	19.1	No Data	666000	No Data	1580
Montezuma Canyon	NBB-277	03/01/1993	0.2	<1	<90	<1.0	~2.5	No Data	275000	1510	766
	NBB-231	04/22/1993	<0.04	<1	<83	~1.1	<2.0	No Data	46400	358	~168
	NBB-440	07/22/1993	0.32	<2	~3	<1.0	<3.0	No Data	319000	1210	786
	NBB-557	10/28/1993	0.33	<2	<45	No Data	<2.0	No Data	500000	No Data	1217
North Drainage	NBB-289	03/08/1993	1.8	<4	270	<1.0	8.6	See Table	357000	2160	1070
	NBB-236	04/22/1993	0.78	<1.55	<72	~1.5	6.2	See Table	400000	2450	1102
	NBB-235	04/23/1993	<0.22	<1	<71	~1.2	8.0	See Table	422000	2260	1090
SW92-01	NBB-283	03/02/1993	<0.1	<2	<80	<1.0	<2.0	See Table	715000	2620	1340
	NBB-227	04/19/1993	<0.07	<1	<129	~2.0	9.7	See Table	254000	3490	1826
	NBB-427	07/19/1993	<0.17	<2	~37	~1.0	<3.0	See Table	188000	855	~414
	NBB-551	10/27/1993	<0.58	<2	<51	No Data	<2.0	No Data	1000000	No Data	1842
SW92-02	NBB-280	03/02/1993	0.1	<2	130	<1.0	~2.4	See Table	116000	715	425
	NBB-279	03/02/1993	0.2	<2	170	<1.0	<2.0	See Table	116000	708	436
	NBB-228	04/20/1993	<0.08	<1	<108	~2.0	~2.3	See Table	62100	318	~244
	NBB-428	07/20/1993	<0.08	<1	~61	<1.0	<3.0	See Table	63600	421	~298
	NBB-552	10/27/1993	<0.46	<2	123	No Data	<2.0	No Data	146000	No Data	~498
SW92-03	NBB-293	03/09/1993	0.1	<2	<80	~1.4	~2.3	See Table	142000	743	483
	NBB-255	05/05/1993	<0.21	<4	<69	<1.0	~4.1	See Table	181000	801	~454
	NBB-429	07/20/1993	<0.45	<2	<70	<1.0	<3.0	See Table	197000	891	~450
	NBB-554	10/28/1993	<0.24	<2	<45	No Data	<2.0	No Data	734000	No Data	1418
	NBB-553	10/28/1993	0.80	<2	<45	No Data	<2.0	No Data	739000	No Data	1420
SW92-04	NBB-287	03/08/1993	0.9	<3	730	<1.0	12.0	See Table	501000	2090	1220
	NBB-263	05/06/1993	0.36	<2	266	<1.0	~3.7	See Table	272000	1140	656
	NBB-436	07/21/1993	<0.15	<2	83	<1.0	<15.0	See Table	295000	1030	542
	NBB-564	11/02/1993	0.22	<2	576	No Data	7.1	No Data	762000	No Data	1586
SW92-05	NBB-285	03/04/1993	0.7	<3	290	<1.0	~4.6	See Table	592000	2330	1350
	NBB-264	05/06/1993	<0.15	<9	121	<1.0	~3.5	See Table	254000	1060	630
	NBB-430	07/20/1993	<0.20	<3	90	<1.0	~3.5	See Table	257000	1100	594
	NBB-565	11/02/1993	0.28	<2	254	No Data	<2.0	No Data	795000	No Data	1572

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated). "See Table" indicates that the reader should refer to Table A-15 in the report for a list of detected constituents.

[b]The values listed multiplied by 10^{-9} will result in microcuries per milliliter.

[c]Total dissolved solids.

Table A-14 (continued). Surface-Water Chemistry Data Collected At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Ra-226 (pCi/L)[b]	Ra-228 (pCi/L)[b]	Rn-222 (pCi/L)[b]	Sb (µg/L)	Se (µg/L)	Semivolatile (µg/L)	SO_4 (µg/L)	Sr (µg/L)	TDS[c] (mg/L)
SW92-06	NBB-278	03/01/1993	0.6	<2	110	<1.0	~2.8	No Data	649000	2400	1420
	NBB-256	05/05/1993	<0.13	<3	<68	<1.0	<2.0	No Data	264000	1110	654
	NBB-439	07/22/1993	0.29	<1	~41	<1.0	<3.0	No Data	277000	1220	652
	NBB-437	07/22/1993	0.37	<2	61	<1.0	<3.0	No Data	279000	1210	676
	NBB-559	10/29/1993	0.57	<3	61	No Data	<2.2	No Data	755000	No Data	1566
SW92-07	NBB-299	03/10/1993	1.3	<2	430	<1.0	19.6	No Data	526000	1950	1220
	NBB-258	05/05/1993	0.52	<2	164	<1.0	~2.0	No Data	293000	1160	692
	NBB-433	07/21/1993	0.73	<2	~59	<1.0	<3.3	No Data	300000	1250	792
	NBB-560	10/29/1993	1.16	<2	1699	No Data	~2.3	No Data	677000	No Data	1510
SW92-08	NBB-300	03/10/1993	0.7	<3	150	<1.0	~3.4	No Data	538000	1930	1240
	NBB-259	05/05/1993	0.57	<2	<67	<1.0	~2.4	No Data	279000	1130	686
	NBB-442	07/22/1993	0.56	<1	~37	<1.0	<3.0	No Data	298000	1160	686
	NBB-561	11/01/1993	<1.20	<2	81	No Data	<2.0	No Data	683000	No Data	1492
SW92-09	NBB-201	03/10/1993	0.8	<2	210	<1.0	~2.7	No Data	535000	1910	1220
	NBB-260	05/05/1993	1.28	<2	129	<1.0	<2.0	No Data	294000	1130	702
	NBB-441	07/22/1993	0.64	<1	~53	<1.0	<3.0	No Data	301000	1140	706
	NBB-562	11/01/1993	0.96	<2	132	No Data	<2.0	No Data	730000	No Data	1442
Sorenson	NBB-298	03/09/1993	0.5	<3	150	<1.0	7.8	No Data	507000	1920	1190
	NBB-257	05/05/1993	0.40	<4	89	<1.0	<2.0	No Data	291000	1150	710
	NBB-431	07/20/1993	0.33	<5	~67	~1.9	<3.3	No Data	347000	1400	788
	NBB-558	10/28/1993	0.63	<2	147	No Data	<2.0	No Data	787000	No Data	1630
W-2	NBB-288	03/08/1993	2.2	<2	1150	<1.0	21.2	See Table	368000	2230	1120
	NBB-241	04/27/1993	2.19	<3	1931	<1.0	10.8	See Table	400000	2200	1044
	NBB-240	04/27/1993	1.93	<3	1922	<1.0	15.3	See Table	416000	2200	1058
W-4	NBB-276	03/01/1993	0.6	<2	120	<1.0	9.6	No Data	650000	2500	1410
	NBB-261	05/05/1993	<0.13	<2	<67	<1.0	~3.2	No Data	245000	1020	614
	NBB-434	07/21/1993	<0.11	<2	97	<1.0	<3.3	No Data	257000	1060	588
	NBB-556	10/28/1993	0.64	<2	55	No Data	<2.0	No Data	768000	No Data	1538
	NBB-555	10/28/1993	0.64	<2	<45	No Data	<2.2	No Data	756000	No Data	1512
W-5	NBB-291	03/08/1993	0.5	<2	1810	<1.0	<2.2	See Table	195000	1490	702
	NBB-290	03/08/1993	0.5	<2	1550	<1.0	~3.2	See Table	196000	1440	698
	NBB-238	04/26/1993	0.55	<4	326	<1.0	<2.0	See Table	285000	1970	932

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated). "See Table" indicates that the reader should refer to Table A-15 in the report for a list of detected constituents.

[b]The values listed multiplied by 10^{-9} will result in microcuries per milliliter.

[c]Total dissolved solids.

Table A-14 (continued). Surface-Water Chemistry Data Collected At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Temperature (degrees C)	Th-230 (pCi/L)[b]	Th-232 (pCi/L)[b]	Tl (µg/L)	U (µg/L)	U-234 (pCi/L)[b]	U-235 (pCi/L)[b]	U-238 (pCi/L)[b]	V (µg/L)
Carbonate Seep	NBB-239	04/27/1993	11.0	<5.23	<3.88	<2.0	2850	1064.78	42.85	1063.50	7830
	NBB-435	07/21/1993	24.1	<8.93	<5.31	<1.0	1350	476.43	21.46	450.92	1560
	NBB-563	11/02/1993	4.4	<1.25	<1.10	<1.0	3230	1060.67	39.22	1060.39	8420
Montezuma Canyon	NBB-277	03/01/1993	6.7	<0.3	<0.3	<1.0	45.2	16.77	No Data	15.34	<4.0
	NBB-231	04/22/1993	11.2	<0.09	<0.07	<2.0	<1.0	2.42	<0.13	1.87	-8.0
	NBB-440	07/22/1993	20.8	<0.10	<0.09	<1.0	83.1	31.21	1.06	31.80	-13.4
	NBB-557	10/28/1993	9.1	<0.11	<0.08	<1.0	110	39.28	1.74	40.02	<5.0
North Drainage	NBB-289	03/08/1993	7.2	<0.3	<0.3	<1.0	133	50.68	No Data	48.65	-26.9
	NBB-236	04/22/1993	No Data	<0.14	<0.10	<2.0	55.4	23.53	<0.25	20.84	-12.4
	NBB-235	04/23/1993	11.8	<0.07	<0.05	<2.0	52.4	22.87	<0.17	20.18	-9.6
SW92-01	NBB-283	03/02/1993	4.0	<0.3	<0.3	<1.0	-2.9	2.74	No Data	1.29	<4.0
	NBB-227	04/19/1993	13.1	<0.09	<0.05	<2.0	<1.0	4.78	<0.13	2.08	<4.0
	NBB-427	07/19/1993	11.5	<0.23	<0.21	<1.0	<1.0	1.65	<0.26	<0.41	<8.0
	NBB-551	10/27/1993	9.6	<0.06	<0.05	<1.0	5.6	4.57	<0.12	2.07	<5.0
SW92-02	NBB-280	03/02/1993	No Data	<0.3	<0.3	<1.0	-1.5	1.68	No Data	0.80	<4.0
	NBB-279	03/02/1993	6.0	<0.3	<0.3	<1.0	-1.8	1.62	No Data	0.76	<4.0
	NBB-228	04/20/1993	10.0	<0.06	<0.05	<2.0	<1.0	0.77	0.09	0.36	-4.6
	NBB-428	07/20/1993	9.6	<0.13	<0.13	<1.0	<1.0	1.08	<0.19	<0.32	<8.0
	NBB-552	10/27/1993	6.2	<0.07	<0.06	<1.0	-2.0	1.94	<0.10	0.93	<5.0
SW92-03	NBB-293	03/09/1993	3.8	<0.3	<0.3	<1.0	-2.6	2.53	No Data	1.29	<4.0
	NBB-255	05/05/1993	4.1	<0.14	<0.12	<2.0	-1.0	1.37	<0.11	0.79	-5.4
	NBB-429	07/20/1993	10.1	<0.13	<0.10	<1.0	<1.0	1.55	<0.17	<0.28	<8.0
	NBB-554	10/28/1993	No Data	<0.08	<0.06	<1.0	-4.5	3.68	<0.11	1.85	<5.0
	NBB-553	10/28/1993	1.2	<0.09	<0.07	<1.0	-4.3	3.98	<0.13	1.73	<5.0
SW92-04	NBB-287	03/08/1993	3.3	<0.3	<0.3	<1.0	209	74.14	No Data	74.43	229
	NBB-263	05/06/1993	6.5	<0.28	<0.19	<2.0	40.3	32.64	7.04	20.62	85.5
	NBB-436	07/21/1993	16.9	<0.41	<0.22	<1.0	8.3	5.44	<0.56	3.78	-22.8
	NBB-564	11/02/1993	3.4	<0.59	<0.47	<1.0	62.0	22.13	<2.24	21.75	180
SW92-05	NBB-285	03/04/1993	6.2	0.36	<0.3	<1.0	202	5.97	No Data	3.59	264
	NBB-264	05/06/1993	5.6	<0.24	<0.21	<2.0	26.5	11.80	<0.30	10.32	-48.8
	NBB-430	07/20/1993	17.9	<0.21	<0.19	<1.0	12.0	5.71	<0.38	4.88	-37.2
	NBB-565	11/02/1993	4.5	<0.06	<0.05	<1.0	59.1	22.57	2.19	21.28	133

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).

[b]The values listed multiplied by 10^{-9} will result in microcuries per milliliter.

Table A-14 (continued). Surface-Water Chemistry Data Collected At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Temperature (degrees C)	Th-230 (pCi/L)[b]	Th-232 (pCi/L)[b]	Tl (µg/L)	U (µg/L)	U-234 (pCi/L)[b]	U-235 (pCi/L)[b]	U-238 (pCi/L)[b]	V (µg/L)
SW92-06	NBB-278	03/01/1993	4.5	<0.3	<0.3	<1.0	239	88.11	No Data	87.40	129
	NBB-256	05/05/1993	4.9	<0.12	<0.10	<2.0	61.7	24.04	<0.37	23.19	106
	NBB-439	07/22/1993	No Data	<0.12	<0.11	<1.0	74.7	28.70	<0.64	27.86	~36.3
	NBB-437	07/22/1993	10.3	<0.12	<0.10	<1.0	71.7	27.32	1.16	28.46	~35.4
	NBB-559	10/29/1993	4.7	<0.08	<0.05	<1.0	149	52.32	4.89	47.38	110
SW92-07	NBB-299	03/10/1993	7.3	<0.3	<0.3	<1.0	281	101.79	No Data	99.49	73.3
	NBB-258	05/05/1993	6.6	<0.52	<0.38	<2.0	79.1	28.81	<0.74	28.59	77.0
	NBB-433	07/21/1993	10.3	<0.54	<0.39	<1.0	91.0	36.58	<1.45	32.80	~31.4
	NBB-560	10/29/1993	5.8	<0.12	<0.11	<1.0	192	70.98	<3.54	71.63	~25.5
SW92-08	NBB-300	03/10/1993	5.4	<0.3	<0.3	<1.0	242	86.82	No Data	87.33	~30.8
	NBB-259	05/05/1993	6.0	<0.64	<0.41	<2.0	73.7	28.47	<0.80	27.08	~44.0
	NBB-442	07/22/1993	17.2	<0.33	<0.30	<1.0	86.6	26.86	1.79	28.06	~26.1
	NBB-561	11/01/1993	5.0	0.30	0.09	<1.0	191	69.22	<0.04	67.19	~15.9
SW92-09	NBB-201	03/10/1993	4.9	0.30	<0.3	<1.0	231	84.69	No Data	81.96	~27.4
	NBB-260	05/05/1993	5.8	<0.53	<0.47	<2.0	74.0	29.33	<0.95	27.19	~30.1
	NBB-441	07/22/1993	17.5	<0.42	<0.35	<1.0	88.1	33.94	<1.17	32.90	~24.4
	NBB-562	11/01/1993	6.1	<0.23	<0.21	<1.0	193	73.69	<1.21	71.05	~15.8
Sorenson	NBB-298	03/09/1993	8.1	<0.3	<0.3	<1.0	292	107.48	No Data	110.02	119
	NBB-257	05/05/1993	7.4	<0.98	<0.92	<2.0	78.6	32.75	<1.80	31.52	85.3
	NBB-431	07/20/1993	20.8	<0.52	<0.33	<1.0	121	16.47	0.96	16.51	51.1
	NBB-558	10/28/1993	8.8	<0.46	<0.36	<1.0	221	81.43	<3.29	75.00	~46.4
W-2	NBB-288	03/08/1993	6.6	<0.3	<0.3	<1.0	146	55.35	No Data	55.99	200
	NBB-241	04/27/1993	No Data	<0.09	<0.08	<2.0	69.7	27.75	3.01	23.65	553
	NBB-240	04/27/1993	13.0	<1.67	<1.38	<2.0	67.3	33.45	<2.26	27.24	553
W-4	NBB-276	03/01/1993	4.4	<0.3	<0.3	<1.0	203	70.44	No Data	70.93	203
	NBB-261	05/05/1993	7.4	<0.24	<0.20	<2.0	59.5	24.42	<1.79	22.65	117
	NBB-434	07/21/1993	11.7	<0.21	<0.15	<1.0	47.7	48.34	2.46	48.21	~37.6
	NBB-556	10/28/1993	No Data	<0.09	<0.07	<1.0	90.4	32.55	1.11	30.79	141
	NBB-555	10/28/1993	6.6	<0.45	<0.19	<1.0	90.8	36.57	<2.72	29.12	137
W-5	NBB-291	03/08/1993	No Data	<0.3	<0.3	<1.0	117	39.06	No Data	37.55	~5.9
	NBB-290	03/08/1993	4.8	<0.3	<0.3	<1.0	103	39.30	No Data	38.07	~5.9
	NBB-238	04/26/1993	14.5	<0.10	<0.07	<2.0	36.0	10.20	<0.16	7.93	<4.0

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).

[b]The values listed multiplied by 10^{-9} will result in microcuries per milliliter.

Table A-14 (continued). Surface-Water Chemistry Data Collected At and Near the MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Volatile (µg/L)	Zn (µg/L)
Carbonate Seep	NBB-239	04/27/1993	See Table	~5.0
	NBB-435	07/21/1993	See Table	~8.7
	NBB-563	11/02/1993	No Data	~11.9
Montezuma Canyon	NBB-277	03/01/1993	No Data	23.1
	NBB-231	04/22/1993	No Data	33.6
	NBB-440	07/22/1993	No Data	~8.5
	NBB-557	10/28/1993	No Data	<7.0
North Drainage	NBB-289	03/08/1993	No Detect	~18.9
	NBB-236	04/22/1993	No Detect	~11.9
	NBB-235	04/23/1993	See Table	~7.8
SW92-01	NBB-283	03/02/1993	No Detect	~19.6
	NBB-227	04/19/1993	No Detect	<3.0
	NBB-427	07/19/1993	See Table	~16.4
	NBB-551	10/27/1993	No Data	~9.7
SW92-02	NBB-280	03/02/1993	No Detect	~8.3
	NBB-279	03/02/1993	See Table	~4.9
	NBB-228	04/20/1993	See Table	~6.0
	NBB-428	07/20/1993	No Detect	~6.5
	NBB-552	10/27/1993	No Data	34.1
SW92-03	NBB-293	03/09/1993	No Detect	21.8
	NBB-255	05/05/1993	No Detect	~10.3
	NBB-429	07/20/1993	See Table	~4.2
	NBB-554	10/28/1993	No Data	~18.8
	NBB-553	10/28/1993	No Data	~17.0
SW92-04	NBB-287	03/08/1993	No Detect	~9.4
	NBB-263	05/06/1993	No Detect	22.3
	NBB-436	07/21/1993	No Detect	~7.2
	NBB-564	11/02/1993	No Data	~9.0
SW92-05	NBB-285	03/04/1993	See Table	~12.6
	NBB-264	05/06/1993	No Detect	~19.0
	NBB-430	07/20/1993	See Table	~5.2
	NBB-565	11/02/1993	No Data	<7.0

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated). "See Table" indicates that the reader should refer to Table A-15 in the report for a list of detected constituents.

Table A-14 (continued). Surface-Water Chemistry Data Collected At and Near the MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Volatile (µg/L)	Zn (µg/L)
SW92-06	NBB-278	03/01/1993	No Data	23.2
	NBB-256	05/05/1993	No Data	~13.4
	NBB-439	07/22/1993	No Data	~13.3
	NBB-437	07/22/1993	No Data	~17.2
	NBB-559	10/29/1993	No Data	~7.0
SW92-07	NBB-299	03/10/1993	No Data	~6.4
	NBB-258	05/05/1993	No Data	~11.5
	NBB-433	07/21/1993	No Data	~7.7
	NBB-560	10/29/1993	No Data	~13.2
SW92-08	NBB-300	03/10/1993	No Data	~4.8
	NBB-259	05/05/1993	No Data	~8.0
	NBB-442	07/22/1993	No Data	~5.6
	NBB-561	11/01/1993	No Data	<7.0
SW92-09	NBB-201	03/10/1993	No Data	~3.1
	NBB-260	05/05/1993	No Data	~4.6
	NBB-441	07/22/1993	No Data	~4.2
	NBB-562	11/01/1993	No Data	~10.7
Sorenson	NBB-298	03/09/1993	No Data	~12.5
	NBB-257	05/05/1993	No Data	~15.5
	NBB-431	07/20/1993	No Data	~9.0
	NBB-558	10/28/1993	No Data	24.2
W-2	NBB-288	03/08/1993	No Detect	~15.4
	NBB-241	04/27/1993	No Detect	~9.6
	NBB-240	04/27/1993	No Detect	~7.6
W-4	NBB-276	03/01/1993	No Data	21.2
	NBB-261	05/05/1993	No Data	~18.3
	NBB-434	07/21/1993	No Data	~9.1
	NBB-556	10/28/1993	No Data	~12.8
	NBB-555	10/28/1993	No Data	26.9
W-5	NBB-291	03/08/1993	No Detect	~13.5
	NBB-290	03/08/1993	No Detect	~10.8
	NBB-238	04/26/1993	No Detect	~19.6

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).

Table A-15. Organic Constituents Detected in Samples Collected from Surface Water At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Analyte Name	CAS Number[b]	Conc. (µg/L)	Category	TCL Constituent[c]
Carbonate Seep	NBB-239	04/27/1993	Acetone	67-64-1	2.2	Volatile	X
			Unknown Hydrocarbon	UNK-22.60	~10	Semivolatile	
	NBB-435	07/21/1993	3,6-Dimethyl decane	17312-53-7	~3	Semivolatile	
			bis(2-ethylhexyl)Phthalate	117-81-7	~2	Semivolatile	X
			Chloromethane	74-87-3	~1.1	Volatile	X
North Drainage	NBB-289	03/08/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~4	Semivolatile	X
			Phosphine oxide, triphenyl-	791-28-6	~7	Semivolatile	
			Unknown	UNK-3.38	~2	Semivolatile	
			Unknown	UNK-4.23	~2	Semivolatile	
	NBB-236	04/22/1993	Unknown	UNK-5.10	~2	Semivolatile	
	NBB-235	04/23/1993	Toluene	108-88-3	1.1	Volatile	X
			Unknown	UNK-5.00	~2	Semivolatile	
SW92-01	NBB-283	03/02/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~3	Semivolatile	X
	NBB-227	04/19/1993	Unknown Hydrocarbon	UNK-22.55	~3	Semivolatile	
	NBB-427	07/19/1993	1,2-Dichloroethane	107-06-2	1.8	Volatile	X
			bis(2-ethylhexyl)Phthalate	117-81-7	~3	Semivolatile	X
			Methylene Chloride	75-09-2	1.1	Volatile	X
			Phosphine oxide, triphenyl-	791-28-6	~53	Semivolatile	
SW92-02	NBB-279	03/02/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~3	Semivolatile	X
			Methylene Chloride	75-09-2	1.3	Volatile	X
	NBB-280	03/02/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~2	Semivolatile	X
			Phosphine oxide, triphenyl-	791-28-6	~2	Semivolatile	
	NBB-228	04/20/1993	Methylene Chloride	75-09-2	1.1	Volatile	X
			Unknown Hydrocarbon	UNK-22.54	~5	Semivolatile	
	NBB-428	07/20/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~2	Semivolatile	X
			Phosphine oxide, triphenyl-	791-28-6	~10	Semivolatile	

[a]A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).
[b]CAS numbers are not assigned to unknown analytes; identifiers listed in this column for unknown analytes reflect the peak and range as displayed graphically by the mass spectrometer.
[c]Constituents not identified by an "X" are tentatively identified compounds.

Table A-15 (continued). Organic Constituents Detected in Samples Collected from Surface Water At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Analyte Name	CAS Number[b]	Conc. (µg/L)	Category	TCL Constituent[c]
SW92-03	NBB-293	03/09/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~5	Semivolatile	X
			Phosphine oxide, triphenyl-	791-28-6	~3	Semivolatile	
			Unknown	UNK-4.57	~3	Semivolatile	
	NBB-255	05/05/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~2	Semivolatile	X
			Unknown	UNK-5.15a	~4	Semivolatile	
			Unknown Hydrocarbon	UNK-22.69	~16	Semivolatile	
	NBB-429	07/20/1993	1,2-Dichloroethane	107-06-2	2.4	Volatile	X
			4-Ethyl-tetradecane	55045-14-2	~3	Semivolatile	
			bis(2-ethylhexyl)Phthalate	117-81-7	~2	Semivolatile	X
			Unknown	UNK-30.92	~2	Semivolatile	
			Unknown	UNK-33.11	~5	Semivolatile	
			Unknown Hydrocarbon	UNK-27.76	~2	Semivolatile	
SW92-04	NBB-287	03/08/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~2	Semivolatile	X
			Tricosane	638-67-5	~3	Semivolatile	
			Unknown	UNK-5.50	~5	Semivolatile	
	NBB-263	05/06/1993	Unknown	UNK-26.86	~2	Semivolatile	
			Unknown	UNK-5.03	~2	Semivolatile	
	NBB-436	07/21/1993	6-Ethyl-2-methyl-octane	62016-19-7	~3	Semivolatile	
			bis(2-ethylhexyl)Phthalate	117-81-7	~2	Semivolatile	X
			Phosphine oxide, triphenyl-	791-28-6	~5	Semivolatile	
SW92-05	NBB-285	03/04/1993	4-Methyl-2-Pentanone	108-10-1	2.2	Volatile	X
			bis(2-ethylhexyl)Phthalate	117-81-7	~3	Semivolatile	X
	NBB-264	05/06/1993	Phosphine oxide, triphenyl-	791-28-6	~5	Semivolatile	
	NBB-430	07/20/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~1	Semivolatile	X
			Methylene Chloride	75-09-2	1.1	Volatile	X
			Undecane, 4,7-dimethyl-	17301-32-5	~3	Semivolatile	
W-2	NBB-288	03/08/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~4	Semivolatile	X
			Unknown	UNK-4.67	~2	Semivolatile	
	NBB-240	04/27/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~3	Semivolatile	X
			Unknown	UNK-5.22	~2	Semivolatile	
			Unknown Hydrocarbon	UNK-22.72	~9	Semivolatile	
	NBB-241	04/27/1993	Unknown Hydrocarbon	UNK-22.72	~4	Semivolatile	

[a]A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).

[b]CAS numbers are not assigned to unknown analytes; identifiers listed in this column for unknown analytes reflect the peak and range as displayed graphically by the mass spectrometer.

[c]Constituents not identified by an "X" are tentatively identified compounds.

Table A-15 (continued). Organic Constituents Detected in Samples Collected from Surface Water At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Analyte Name	CAS Number[b]	Conc. (µg/L)	Category	TCL Constituent[c]
W-5	NBB-290	03/08/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~2	Semivolatile	X
			Ethanol, 2-butoxy-	111-76-2	~2	Semivolatile	
	NBB-291	03/08/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~2	Semivolatile	X
			Phosphine oxide, triphenyl-	791-28-6	~2	Semivolatile	
	NBB-238	04/26/1993	Unknown	UNK-5.05	~4	Semivolatile	
			Unknown Hydrocarbon	UNK-22.60	~5	Semivolatile	

[a]A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).

[b]CAS numbers are not assigned to unknown analytes; identifiers listed in this column for unknown analytes reflect the peak and range as displayed graphically by the mass spectrometer.

[c]Constituents not identified by an "X" are tentatively identified compounds.

Table A-16. Ground-Water Chemistry Data Collected At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Ag (µg/L)	Al (µg/L)	Alkalinity (as $CaCO_3$) (ppm)	Alpha (pCi/L)[b]	As (µg/L)	B (µg/L)	Ba (µg/L)	Be (µg/L)	Beta (pCi/L)[b]
31SW91-03	NBB-546	11/03/1993	<1.0	~37.9	431	1240	69.8	112	~25.2	No Data	525
31SW91-14	NBB-195	03/10/1993	<4.0	~50.2	462	1920	40.5	180	~18.1	<1.0	770
	NBB-252	04/29/1993	<4.0	~71.0	494	2370	63.9	123	~19.8	<1.0	1144
	NBB-413	07/26/1993	<7.0	~44.6	440	2380	52.1	129	~21.4	<1.0	599
	NBB-570	11/03/1993	<1.0	~43.8	404	1860	44.3	118	~23.3	No Data	899
31SW91-23	NBB-177	03/03/1993	<4.0	~48.2	470	684	<3.0	162	~12.5	<1.0	170
	NBB-244	04/27/1993	<4.0	728	452	1030	<3.0	155	~30.0	<1.0	666
	NBB-446	07/27/1993	<7.0	1020	1448	1590	<3.0	184	~29.4	<1.0	443
	NBB-544	11/03/1993	<1.0	~39.8	489	1520	<4.0	195	~21.2	No Data	609
82-07	NBB-204	03/16/1993	<4.0	~65.1	327	308	~3.7	544	~37.2	<1.0	114
	NBB-251	04/28/1993	<4.0	~97.2	408	387	~4.1	~95.1	~50.3	<1.0	207
	NBB-422	07/29/1993	<7.0	<14.0	417	369	~3.3	123	~53.0	<1.0	113
	NBB-542	11/02/1993	<1.0	<29.0	372	302	~4.9	153	~69.6	No Data	187
82-30B	NBB-182	03/04/1993	<4.0	~35.4	No Data	680	81.2	127	~49.2	<1.0	183
	NBB-181	03/04/1993	<4.0	~47.2	443	540	123	165	~47.5	<1.0	159
	NBB-211	04/21/1993	<4.0	~30.4	526	1130	93.7	133	~74.4	<1.0	587
	NBB-449	07/27/1993	<7.0	~26.4	415	748	81.7	129	~46.1	<1.0	230
	NBB-547	11/03/1993	<1.0	<29.0	400	816	81.2	109	~47.0	No Data	316
82-31B-E	NBB-572	11/04/1993	<1.0	<29.0	345	<162	<4.0	197	~15.6	No Data	<193
82-31B-W	NBB-175	03/02/1993	<4.0	343	No Data	46	<3.0	~82.7	~40.1	<1.0	<21
	NBB-174	03/02/1993	<4.0	776	327	<36	<3.0	~95.8	~48.8	<1.0	<21
	NBB-249	04/29/1993	<4.0	370	353	74	<3.0	~92.8	~71.7	<1.0	<41
	NBB-415	07/27/1993	<7.0	~155	359	<63	<3.0	102	~43.8	<1.0	<51
82-36A	NBB-194	03/10/1993	~4.3	1390	573	2030	23.3	198	~58.4	<1.0	629
	NBB-243	04/27/1993	<4.0	1620	588	2970	49.5	144	~102	<1.0	1490
	NBB-445	07/27/1993	<7.0	6480	560	2720	44.7	176	286	<1.0	680
82-40A	NBB-183	03/04/1993	<4.0	202	No Data	881	49.2	258	~26.7	<1.0	286
	NBB-250	04/29/1993	<4.0	~23.5	395	1283	51.7	~95.0	~31.3	<1.0	610
	NBB-419	07/28/1993	<7.0	~17.1	No Data	4320	43.1	114	~32.4	<1.0	773
	NBB-418	07/28/1993	<7.0	~32.5	431	5060	53.7	114	~34.8	<1.0	856
	NBB-571	11/03/1993	<1.0	~63.0	540	9780	72.1	154	~29.7	No Data	3300

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).

[b]The values listed multiplied by 10^{-9} will result in microcuries per milliliter.

Table A-16 (continued). Ground-Water Chemistry Data Collected At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Ag (µg/L)	Al (µg/L)	Alkalinity (as $CaCO_3$) (ppm)	Alpha (pCi/L)[b]	As (µg/L)	B (µg/L)	Ba (µg/L)	Be (µg/L)	Beta (pCi/L)[b]
82-42	NBB-178	03/03/1993	<4.0	~102	320	39	~5.8	147	~44.6	<1.0	<19.8
	NBB-248	04/28/1993	<4.0	~116	No Data	34	~3.6	~56.0	~46.7	<1.0	20.9
	NBB-247	04/28/1993	<4.0	233	317	<33	~4.3	~57.8	~43.5	<1.0	<20
	NBB-269	07/28/1993	<7.0	~142	295	<32	~3.0	~77.6	~47.5	<1.0	<21
	NBB-569	11/03/1993	<1.0	260	260	<26	~4.5	~73.9	~46.9	No Data	<32
83-70	NBB-169	03/01/1993	<4.0	<12.0	205	321	13.9	118	~29.9	<1.0	90
	NBB-221	04/27/1993	<4.0	~38.7	230	<17.1	<3.0	~46.5	~16.1	<1.0	<19.3
	NBB-406	07/21/1993	<7.0	<14.0	184	<12.7	<3.0	~46.7	~24.6	<1.0	<9.9
	NBB-541	11/02/1993	<1.0	~30.9	210	<12.3	<4.0	~43.0	~23.2	No Data	<13.0
84-74	NBB-197	03/11/1993	<4.0	~21.2	241	<11.8	<3.0	~49.0	~20.7	<1.0	<9.9
	NBB-218	04/23/1993	<4.0	~22.7	228	<41	<3.0	~70.2	~19.4	<1.0	<51
	NBB-409	07/21/1993	<7.0	~28.0	179	<12.9	<3.0	~49.5	~22.9	<1.0	<9.9
84-75	NBB-196	03/10/1993	<4.0	~15.0	235	<10.5	<3.0	~79.8	~27.1	<1.0	<6.7
	NBB-253	04/29/1993	<4.0	~21.4	284	<13.6	<3.0	~49.0	~27.9	<1.0	<13.0
	NBB-450	07/28/1993	<7.0	<14.0	214	<12.7	<3.0	~71.0	~31.4	<1.0	<13.3
84-76	NBB-179	03/03/1993	<4.0	~20.5	194	<15.2	<3.0	~97.2	~51.9	<1.0	<19.2
	NBB-246	04/28/1993	<4.0	~53.8	178	<10.5	<3.0	~54.5	~53.0	<1.0	<9.8
	NBB-416	07/27/1993	<7.0	<14.0	186	<10.2	<3.0	~55.3	~52.5	<1.0	<10.0
84-77	NBB-173	03/02/1993	<4.0	~45.3	185	<15.7	<3.0	~58.9	~22.3	<1.0	<19.2
	NBB-223	04/27/1993	<4.0	~35.9	225	<11.6	<3.0	~34.0	~18.6	<1.0	<9.8
	NBB-414	07/27/1993	<7.0	<14.0	149	<12.5	<3.0	~31.2	~24.2	<1.0	<10.2
88-85	NBB-171	03/01/1993	<4.0	~13.5	395	<16.0	<3.0	~66.2	~18.9	<1.0	<19.2
	NBB-222	04/27/1993	<4.0	~24.2	418	655	14.2	166	~48.9	<1.0	282
	NBB-408	07/21/1993	<7.0	~26.8	No Data	528	20.2	123	~37.2	<1.0	165
	NBB-407	07/21/1993	<7.0	<14.0	339	462	20.5	126	~33.2	<1.0	165
	NBB-568	11/02/1993	<1.0	~39.9	338	395	15.4	136	~39.4	No Data	155
92-01	NBB-186	03/08/1993	<4.0	733	265	<48	~3.1	~79.1	~36.0	<1.0	<39
	NBB-214	04/22/1993	<4.0	~70.3	308	<49	<3.0	~67.4	~17.7	<1.0	<52
	NBB-402	07/20/1993	<7.0	~17.2	90	<37	~3.6	~65.2	~25.3	<1.0	<21
	NBB-527	10/26/1993	<1.0	212	288	<52	<4.0	~59.7	~38.1	No Data	<40

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).

[b]The values listed multiplied by 10^{-9} will result in microcuries per milliliter.

Table A-16 (continued). Ground-Water Chemistry Data Collected At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Ag (µg/L)	Al (µg/L)	Alkalinity (ppm) (as $CaCO_3$)	Alpha (pCi/L)[b]	As (µg/L)	B (µg/L)	Ba (µg/L)	Be (µg/L)	Beta (pCi/L)[b]
92-02	NBB-309	03/16/1993	<4.0	304	153	12.6	<3.0	103	~55.5	<1.0	<6.6
	NBB-207	04/20/1993	<4.0	~45.3	158	<8.9	~3.1	~41.7	~47.9	<1.0	<10.3
	NBB-401	07/19/1993	<7.0	~14.2	97	<7.6	~3.3	~17.5	~50.3	<1.0	<6.6
	NBB-532	10/28/1993	<1.0	<29.0	149	<7.0	~5.5	<26.0	~41.3	No Data	<6.5
92-03	NBB-190	03/09/1993	<4.0	2600	308	<12.1	<3.0	~67.4	~110	<1.0	<7.0
	NBB-215	04/22/1993	<4.0	3550	211	<13.3	~5.0	~47.1	134	~1.1	<10.5
	NBB-444	07/26/1993	<7.0	964	701	<12.5	<3.0	~45.9	~56.5	<1.0	<10.2
	NBB-533	10/27/1993	<1.0	~97.3	228	<12.1	<4.0	~45.1	~49.9	No Data	<9.9
92-04	NBB-187	03/08/1993	<4.0	~37.1	207	<13.5	~6.7	150	~68.9	<1.0	<10.0
	NBB-209	04/20/1993	<4.0	~27.7	No Data	<12.9	~6.6	~84.2	~55.7	<1.0	<10.5
	NBB-208	04/20/1993	<4.0	~35.6	202	<12.9	~6.8	~79.0	~58.9	<1.0	<10.5
	NBB-403	07/20/1993	<7.0	~20.5	243	<13.5	~8.9	~51.6	~52.7	<1.0	<10.0
	NBB-539	10/29/1993	<1.0	<29.0	No Data	<11.9	~10.6	~42.7	~39.1	No Data	<9.9
	NBB-538	10/29/1993	<1.0	<29.0	208	<12.3	12.3	~39.2	~39.6	No Data	<9.9
92-05	NBB-191	03/09/1993	<4.0	3920	290	<19.3	<3.0	~85.7	~147	<1.0	<13.3
	NBB-233	04/22/1993	<4.0	1940	372	<26	<3.0	107	115	<1.0	<21
	NBB-410	07/22/1993	<7.0	645	178	<25	~3.0	~67.8	~99.0	<1.0	<19.8
	NBB-528	10/26/1993	<1.0	~151	276	<33	<4.0	~53.1	~74.0	No Data	<20
92-06	NBB-192	03/09/1993	<4.0	~15.9	215	<10.2	<3.0	~39.9	~24.6	<1.0	<6.7
	NBB-212	04/21/1993	<4.0	~31.1	190	<11.0	<3.0	~52.3	~19.2	<1.0	<10.4
	NBB-405	07/20/1993	<7.0	~25.0	No Data	<12.1	<3.0	~53.7	~27.1	<1.0	<9.9
	NBB-404	07/20/1993	<7.0	~18.5	153	<11.9	<3.0	~46.8	~26.5	<1.0	<9.9
	NBB-526	10/25/1993	<1.0	<29.0	182	<11.2	<4.4	~31.0	~24.2	No Data	<9.8
92-07	NBB-205	03/16/1993	<4.0	~43.3	402	836	16.4	197	~48.0	<1.0	256
	NBB-225	04/28/1993	<4.0	~61.4	430	746	20.2	~87.2	~50.8	<1.0	561
	NBB-421	07/29/1993	<7.0	~15.0	299	338	14.7	108	~31.7	<1.0	114
	NBB-543	11/02/1993	<1.0	<29.0	393	1008	~8.0	103	~72.5	No Data	380
92-08	NBB-199	03/11/1993	<4.0	~24.1	274	366	<3.0	~93.8	~35.5	<1.0	200
	NBB-224	04/28/1993	<4.0	<12.0	412	440	<3.0	~86.6	~36.6	<1.0	285
	NBB-420	07/29/1993	<7.0	<14.0	338	492	<3.0	119	~40.2	<1.0	148
	NBB-548	11/04/1993	<1.0	<29.0	348	398	<4.0	106	~41.4	No Data	156

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).

[b]The values listed multiplied by 10^{-9} will result in microcuries per milliliter.

Table A-16 (continued). Ground-Water Chemistry Data Collected At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Ag (µg/L)	Al (µg/L)	Alkalinity (ppm) (as $CaCO_3$)	Alpha (pCi/L)[b]	As (µg/L)	B (µg/L)	Ba (µg/L)	Be (µg/L)	Beta (pCi/L)[b]
92-09	NBB-202	03/15/1993	<4.0	~32.4	415	309	<3.0	143	~15.3	<1.0	94
	NBB-216	04/22/1993	<4.0	~23.1	395	300	<3.0	114	~8.9	<1.0	125
	NBB-412	07/22/1993	<7.0	<14.0	422	319	~4.3	166	~19.6	<1.0	115
	NBB-537	10/28/1993	<1.0	~40.4	No Data	353	<4.0	182	~18.5	No Data	111
	NBB-536	10/28/1993	<1.0	~61.7	427	304	<4.0	185	~20.5	No Data	100
92-10	NBB-203	03/15/1993	<4.0	~56.8	250	<133	<3.0	459	~27.1	<1.0	<99
	NBB-217	04/22/1993	<4.0	~37.7	230	<14.1	<3.0	~47.7	~21.1	<1.0	<10.6
	NBB-411	07/22/1993	<7.0	~15.3	154	<11.8	<3.0	~53.6	~23.4	<1.0	<9.9
	NBB-535	10/28/1993	<1.0	<29.0	176	<13.1	~4.0	~40.7	~24.8	No Data	<9.9
92-11	NBB-200	03/12/1993	<4.0	~60.3	425	1400	28.8	141	~27.2	<1.0	428
	NBB-220	04/26/1993	<4.0	~27.7	No Data	2030	32.9	116	~27.1	<1.0	1040
	NBB-219	04/26/1993	<4.0	~22.7	414	2300	34.3	117	~26.2	<1.0	1040
	NBB-549	11/04/1993	<1.0	~129	400	1241	29.8	109	~34.5	No Data	416
92-12	NBB-567	11/02/1993	<1.0	1160	190	27.8	<4.0	~85.8	~107	No Data	<19.6
92-13	NBB-566	11/02/1993	<1.0	829	251	<17.3	33.8	180	~42.2	No Data	<19.4
93-01	NBB-540	11/01/1993	<1.0	<29.0	200	25.9	<4.4	~28.0	~46.2	No Data	<13.1
Equipment Blank	NBB-281	03/02/1993	No Data	No Data	No Data	<3.7	No Data	No Data	No Data	No Data	<6.3
	NBB-188	03/08/1993	<4.0	~21.0	No Data	<3.7	<3.0	~15.3	<3.0	<1.0	<6.3
	NBB-232	04/22/1993	No Data	No Data	No Data	<2.7	No Data	No Data	No Data	No Data	<5.0
	NBB-438	07/22/1993	No Data	No Data	No Data	<2.7	No Data	No Data	No Data	No Data	<4.7
	NBB-448	07/27/1993	<7.0	<14.0	No Data	<3.6	<3.0	~23.5	~2.9	<1.0	<6.4
	NBB-545	11/03/1993	<1.0	<29.0	No Data	4	<4.0	<26.0	<5.0	No Data	6.6

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).

[b]The values listed multiplied by 10^{-9} will result in µCi/mL.

Table A-16 (continued). Ground-Water Chemistry Data Collected At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Ca (µg/L)	Cd (µg/L)	CDT[b] (µmhos/cm)	Cl (µg/L)	CN (µg/L)	Co (µg/L)	Cr (µg/L)	Cu (µg/L)	DO[c] (mg/L)
31SW91-03	NBB-546	11/03/1993	226000	<1.0	2970	95000	No Data	No Data	<4.0	<3.0	1.06
31SW91-14	NBB-195	03/10/1993	175000	<1.0	3270	97000	<10.0	~8.8	~3.6	<3.0	1.10
	NBB-252	04/29/1993	200000	<1.0	3590	117000	<4.0	No Data	<3.0	~22.4	2.31
	NBB-413	07/26/1993	224000	<1.0	3280	108000	<4.0	No Data	<4.0	<5.0	0.66
	NBB-570	11/03/1993	207000	<1.0	3500	113000	No Data	No Data	<4.0	~3.7	0.80
31SW91-23	NBB-177	03/03/1993	351000	<1.0	5060	35000	<10.0	<6.0	<3.0	<3.0	No Data
	NBB-244	04/27/1993	432000	<1.0	4970	23300	<4.0	No Data	<3.0	~5.9	No Data
	NBB-446	07/27/1993	437000	<1.0	495	18600	<4.0	No Data	~6.2	<5.0	No Data
	NBB-544	11/03/1993	440000	<1.0	5050	28300	No Data	No Data	<4.0	<3.0	1.83
82-07	NBB-204	03/16/1993	249000	<1.0	2040	79900	<10.0	<6.0	<3.0	~3.8	1.65
	NBB-251	04/28/1993	360000	<1.0	2650	146000	~6.9	No Data	<3.0	~19.9	1.14
	NBB-422	07/29/1993	397000	<1.0	2760	165000	10.3	No Data	<4.0	<5.0	1.03
	NBB-542	11/02/1993	374000	<1.0	2740	123000	No Data	No Data	<4.0	<3.0	1.75
82-30B	NBB-182	03/04/1993	191000	<1.0	No Data	45000	<10.0	<6.0	<3.0	<3.0	No Data
	NBB-181	03/04/1993	195000	<1.0	2220	44900	<10.0	<6.0	<3.0	<3.0	2.10
	NBB-211	04/21/1993	319000	<1.0	2530	77800	<4.0	No Data	~3.6	<3.0	2.01
	NBB-449	07/27/1993	177000	<1.0	2178	62000	<4.0	No Data	<4.0	<5.0	No Data
	NBB-547	11/03/1993	174000	<1.0	2090	68500	No Data	No Data	<4.0	<3.0	0.49
82-31B-E	NBB-572	11/04/1993	606000	<1.0	3390	38200	No Data	No Data	<4.0	<3.0	1.02
82-31B-W	NBB-175	03/02/1993	456000	<1.0	No Data	10800	<10.0	<6.0	<3.0	<3.0	No Data
	NBB-174	03/02/1993	439000	<1.0	2420	10900	<10.0	<6.0	<3.0	<3.0	2.81
	NBB-249	04/29/1993	513000	<1.0	2760	140000	~4.2	No Data	<3.0	~5.4	1.68
	NBB-415	07/27/1993	458000	<1.0	2440	55500	<4.0	No Data	<4.0	<5.0	1.21
82-36A	NBB-194	03/10/1993	328000	~1.3	5050	109000	<10.0	~11.4	~7.8	98.3	No Data
	NBB-243	04/27/1993	366000	<1.0	5540	106000	<4.0	No Data	~6.5	174	No Data
	NBB-445	07/27/1993	396000	~3.2	504	122000	<4.0	No Data	11.9	465	No Data
82-40A	NBB-183	03/04/1993	193000	<1.0	2030	45200	<10.0	~23.1	<3.0	~3.4	2.0
	NBB-250	04/29/1993	228000	<1.0	2102	72300	<4.0	No Data	<3.0	<3.0	3.82
	NBB-419	07/28/1993	313000	<1.0	No Data	92100	<4.0	No Data	<4.0	<5.0	No Data
	NBB-418	07/28/1993	327000	<1.0	2870	94400	<4.0	No Data	<4.0	<5.0	5.51
	NBB-571	11/03/1993	333000	<1.0	3950	91800	No Data	No Data	14.0	<3.0	0.71

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).

[b]Conductivity in micromhos per centimeter.

[c]Dissolved oxygen.

Table A-16 (continued). Ground-Water Chemistry Data Collected At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Ca (µg/L)	Cd (µg/L)	CDT[b] (µmhos/cm)	Cl (µg/L)	CN (µg/L)	Co (µg/L)	Cr (µg/L)	Cu (µg/L)	DO[c] (mg/L)
82-42	NBB-178	03/03/1993	207000	<1.0	1332	21300	<10.0	<6.0	<3.0	<3.0	1.2
	NBB-248	04/28/1993	222000	<1.0	No Data	85800	<4.0	No Data	<3.0	<3.0	No Data
	NBB-247	04/28/1993	221000	<1.0	1437	83800	<4.0	No Data	<3.0	<3.0	6.71
	NBB-269	07/28/1993	223000	<1.0	1444	59300	<4.0	No Data	<4.0	<5.0	2.33
	NBB-569	11/03/1993	188000	<1.0	1257	23200	No Data	No Data	<4.0	~11.0	2.85
83-70	NBB-169	03/01/1993	280000	<1.0	618	2880	<10.0	<6.0	<3.0	<3.0	0.92
	NBB-221	04/27/1993	55100	<1.0	617	2880	<4.0	No Data	<3.0	~6.1	0.23
	NBB-406	07/21/1993	53900	<1.0	592	2780	<4.0	No Data	<4.0	<5.0	1.21
	NBB-541	11/02/1993	54700	<1.0	622	2820	No Data	No Data	<4.0	<3.0	0.45
84-74	NBB-197	03/11/1993	45800	<1.0	630	3570	<10.0	<6.0	<3.0	<3.0	0.91
	NBB-218	04/23/1993	46300	<1.0	643	3580	<4.0	No Data	<3.0	<3.0	0.36
	NBB-409	07/21/1993	45900	<1.0	611	3490	<4.0	No Data	<4.0	~23.0	0.94
84-75	NBB-196	03/10/1993	26200	<1.0	624	4370	<10.0	<6.0	<3.0	<3.0	3.71
	NBB-253	04/29/1993	27000	<1.0	619	4290	<4.0	No Data	<3.0	<3.0	0.66
	NBB-450	07/28/1993	27000	<1.0	600	4290	<4.0	No Data	<4.0	<5.0	2.66
84-76	NBB-179	03/03/1993	13900	<1.0	498	3030	<10.0	<6.0	~3.3	<3.0	4.53
	NBB-246	04/28/1993	14500	<1.0	480	3060	<4.0	No Data	<3.0	~18.3	7.09
	NBB-416	07/27/1993	14300	<1.0	478	2870	<4.0	No Data	<4.0	<5.0	3.08
84-77	NBB-173	03/02/1993	67100	<1.0	595	2220	<10.0	<6.0	<3.0	<3.0	1.90
	NBB-223	04/27/1993	67200	<1.0	596	2280	<4.0	No Data	<3.0	~24.7	0.33
	NBB-414	07/27/1993	69200	<1.0	571	2210	<4.0	No Data	<4.0	<5.0	1.16
88-85	NBB-171	03/01/1993	53700	<1.0	2249	101000	<10.0	<6.0	<3.0	<3.0	2.04
	NBB-222	04/27/1993	408000	<1.0	3420	207000	<4.0	No Data	<3.0	~4.8	0.55
	NBB-408	07/21/1993	268000	<1.0	No Data	120000	~6.0	No Data	<4.0	28.5	No Data
	NBB-407	07/21/1993	261000	<1.0	2350	125000	<4.0	No Data	<4.0	<5.0	1.38
	NBB-568	11/02/1993	283000	<1.0	2550	125000	No Data	No Data	<4.0	~4.6	1.82
92-01	NBB-186	03/08/1993	404000	<1.0	2150	10800	<10.0	<6.0	<3.0	<3.0	5.60
	NBB-214	04/22/1993	408000	<1.0	2240	17100	<4.0	No Data	<3.0	<3.0	5.40
	NBB-402	07/20/1993	367000	<1.0	1883	13100	<4.0	No Data	<4.0	<5.0	4.65
	NBB-527	10/26/1993	517000	<1.0	2570	14400	No Data	No Data	<4.0	<3.0	3.51

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).

[b]Conductivity in micromhos per centimeter.

[c]Dissolved oxygen.

Table A-16 (continued). Ground-Water Chemistry Data Collected At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Ca (µg/L)	Cd (µg/L)	CDT[b] (µmhos/cm)	Cl (µg/L)	CN (µg/L)	Co (µg/L)	Cr (µg/L)	Cu (µg/L)	DO[c] (mg/L)
92-02	NBB-309	03/16/1993	60800	<1.0	No Data	1190	<10.0	<6.0	<3.0	-4.9	No Data
	NBB-207	04/20/1993	60000	<1.0	402	1100	<4.0	No Data	<3.0	<3.0	1.23
	NBB-401	07/19/1993	57400	<1.0	395	1080	<4.0	No Data	<4.0	<5.0	2.05
	NBB-532	10/28/1993	58500	<1.0	396	1200	No Data	No Data	<4.0	<3.0	1.93
92-03	NBB-190	03/09/1993	155000	<1.0	887	9820	<10.0	<6.0	-3.4	<3.0	No Data
	NBB-215	04/22/1993	217000	<1.0	590	6840	<4.0	No Data	<3.0	-4.1	No Data
	NBB-444	07/26/1993	92000	<1.0	514	2820	<4.0	No Data	<4.0	<5.0	No Data
	NBB-533	10/27/1993	98600	<1.0	675	5760	No Data	No Data	<4.0	<3.0	2.45
92-04	NBB-187	03/08/1993	76700	<1.0	672	2700	<10.0	<6.0	<3.0	<3.0	1.70
	NBB-209	04/20/1993	75000	<1.0	No Data	5480	<4.0	No Data	<3.0	<3.0	No Data
	NBB-208	04/20/1993	76600	<1.0	672	2760	<4.0	No Data	-7.3	<3.0	1.36
	NBB-403	07/20/1993	77300	<1.0	646	2630	<4.0	No Data	<4.0	<5.0	4.90
	NBB-539	10/29/1993	77100	<1.0	No Data	2790	No Data	No Data	<4.0	<3.0	No Data
	NBB-538	10/29/1993	76800	<1.0	657	2760	No Data	No Data	<4.0	<3.0	2.52
92-05	NBB-191	03/09/1993	126000	<1.0	833	9060	<10.0	<6.0	10.6	<3.0	No Data
	NBB-233	04/22/1993	222000	<1.0	1295	10800	<4.0	No Data	-4.4	-6.1	No Data
	NBB-410	07/22/1993	224000	<1.0	1207	7080	<4.0	No Data	<4.0	<5.0	No Data
	NBB-528	10/26/1993	346000	<1.0	1868	10700	No Data	No Data	<4.0	<3.0	6.48
92-06	NBB-192	03/09/1993	68100	<1.0	553	1810	<10.0	<6.0	<3.0	<3.0	5.20
	NBB-212	04/21/1993	70300	<1.0	553	1820	<4.0	No Data	<3.0	<3.0	4.80
	NBB-405	07/20/1993	68500	<1.0	No Data	1850	<4.0	No Data	<4.0	<5.0	No Data
	NBB-404	07/20/1993	69600	<1.0	529	1900	<4.0	No Data	<4.0	<5.0	4.71
	NBB-526	10/25/1993	71700	<1.0	558	1840	No Data	No Data	<4.0	<3.0	5.15
92-07	NBB-205	03/16/1993	251000	<1.0	2380	85200	<10.0	<6.0	-3.4	<3.0	2.10
	NBB-225	04/28/1993	276000	<1.0	2570	111000	-4.9	No Data	<3.0	-24.6	0.81
	NBB-421	07/29/1993	123000	<1.0	1073	18900	<4.0	No Data	<4.0	-13.4	2.40
	NBB-543	11/02/1993	260000	<1.0	2351	81500	No Data	No Data	<4.0	<3.0	3.99
92-08	NBB-199	03/11/1993	260000	<1.0	2110	58300	<10.0	<6.0	-4.2	<3.0	0.64
	NBB-224	04/28/1993	253000	<1.0	2080	69900	<4.0	No Data	<3.0	<3.0	0.80
	NBB-420	07/29/1993	317000	<1.0	2190	111000	-6.3	No Data	<4.0	<5.0	0.58
	NBB-548	11/04/1993	245000	<1.0	2010	60500	No Data	No Data	<4.0	<3.0	4.68

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).

[b]Conductivity in micromhos per centimeter.

[c]Dissolved oxygen.

Table A-16 (continued). Ground-Water Chemistry Data Collected At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Ca (µg/L)	Cd (µg/L)	CDT[b] (µmhos/cm)	Cl (µg/L)	CN (µg/L)	Co (µg/L)	Cr (µg/L)	Cu (µg/L)	DO[c] (mg/L)
92-09	NBB-202	03/15/1993	267000	<1.0	2660	104000	<10.0	<6.0	<3.0	~4.5	0.85
	NBB-216	04/22/1993	182000	<1.0	2130	70500	<4.0	No Data	<3.0	<3.0	0.26
	NBB-412	07/22/1993	239000	<1.0	2190	88400	<4.0	No Data	<4.0	<5.0	0.41
	NBB-537	10/28/1993	293000	<1.0	No Data	117000	No Data	No Data	<4.0	<3.0	No Data
	NBB-536	10/28/1993	299000	<1.0	2650	115000	No Data	No Data	<4.0	<3.0	1.58
92-10	NBB-203	03/15/1993	75400	<1.0	719	13700	<10.0	<6.0	~3.3	~4.7	9.10
	NBB-217	04/22/1993	72900	<1.0	738	12600	<4.0	No Data	<3.0	<3.0	6.42
	NBB-411	07/22/1993	75400	<1.0	679	13400	<4.0	No Data	<4.0	<5.0	5.70
	NBB-535	10/28/1993	74900	<1.0	700	11900	No Data	No Data	<4.0	<3.0	No Data
92-11	NBB-200	03/12/1993	257000	<1.0	No Data	114000	<10.0	<6.0	~4.3	<3.0	0.41
	NBB-220	04/26/1993	269000	<1.0	No Data	115000	<4.0	No Data	<3.0	<3.0	No Data
	NBB-219	04/26/1993	264000	<1.0	2870	112000	<4.0	No Data	<3.0	<3.0	0.63
	NBB-549	11/04/1993	228000	<1.0	2570	91100	No Data	No Data	<4.0	<3.0	0.69
92-12	NBB-567	11/02/1993	34000	<1.0	825	5730	No Data	No Data	<4.0	<3.0	No Data
92-13	NBB-566	11/02/1993	12700	<1.0	854	5580	No Data	No Data	<4.0	~6.4	No Data
93-01	NBB-540	11/01/1993	70400	<1.0	644	2280	No Data	No Data	<4.0	<3.0	1.07
Equipment Blank	NBB-281	03/02/1993	No Data	No Data	No Data	<16.0	No Data	No Data	No Data	No Data	No Data
	NBB-188	03/08/1993	~18.3	<1.0	No Data	~58.0	<10.0	<6.0	<3.0	<3.0	No Data
	NBB-232	04/22/1993	No Data	No Data	No Data	~88.7	No Data	No Data	No Data	No Data	No Data
	NBB-438	07/22/1993	No Data	No Data	No Data	~44.4	No Data	No Data	No Data	No Data	No Data
	NBB-448	07/27/1993	~37.9	<1.0	No Data	~103	<4.0	No Data	<4.0	<5.0	No Data
	NBB-545	11/03/1993	<52.0	<1.0	No Data	~283	No Data	No Data	<4.0	<3.0	No Data

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).

[b]Conductivity in micromhos per centimeter.

[c]Dissolved oxygen.

Table A-16 (continued). Ground-Water Chemistry Data Collected At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Eh[b] (mV)	F (µg/L)	Fe (µg/L)	H_2O Depth (feet)	Herbicide (µg/L)	Hg (µg/L)	K (µg/L)	Mg (µg/L)	Mn (µg/L)
31SW91-03	NBB-546	11/03/1993	192	583	~33.2	7.53	No Data	No Data	38500	61000	7020
31SW91-14	NBB-195	03/10/1993	376	744	~46.4	44.00	No Detect	<0.10	47600	58500	9780
	NBB-252	04/29/1993	182	671	~38.7	44.40	No Detect	<0.10	47700	66200	11500
	NBB-413	07/26/1993	187	838	~33.4	44.50	No Detect	<0.10	50800	69000	11800
	NBB-570	11/03/1993	143	725	~36.4	44.56	No Data	No Data	50800	64200	10800
31SW91-23	NBB-177	03/03/1993	No Data	524	~31.6	15.00	No Detect	<0.10	5290	131000	232
	NBB-244	04/27/1993	No Data	485	2510	11.90	No Detect	<0.10	4870	160000	338
	NBB-446	07/27/1993	No Data	639	4300	13.0	No Detect	<0.10	5130	153000	356
	NBB-544	11/03/1993	224	560	~34.7	14.15	No Data	No Data	7630	150000	413
82-07	NBB-204	03/16/1993	233	230	~45.4	7.05	No Data	<0.10	9310	52100	76.0
	NBB-251	04/28/1993	227	204	~96.9	6.95	No Data	<0.10	10600	73700	150
	NBB-422	07/29/1993	192	232	~17.3	8.34	No Data	<0.10	12300	81400	187
	NBB-542	11/02/1993	184	321	<19.0	9.13	No Data	No Data	12500	75900	113
82-30B	NBB-182	03/04/1993	No Data	652	~99.5	No Data	No Detect	<0.10	41700	40600	5380
	NBB-181	03/04/1993	215	667	~92.4	14.10	No Detect	<0.10	41400	41300	5540
	NBB-211	04/21/1993	193	492	120	11.83	No Detect	<0.10	50700	64800	11300
	NBB-449	07/27/1993	No Data	614	111	14.4	No Detect	<0.10	35800	36000	6120
	NBB-547	11/03/1993	148	652	~63.9	16.30	No Data	No Data	37300	35000	5560
82-31B-E	NBB-572	11/04/1993	151	~75.0	<19.0	3.55	No Data	No Data	7100	113000	45.8
82-31B-W	NBB-175	03/02/1993	No Data	~87.2	413	No Data	No Detect	<0.10	~3370	84900	199
	NBB-174	03/02/1993	236	~90.7	1020	4.25	No Detect	<0.10	~4170	79800	285
	NBB-249	04/29/1993	120	~87.7	435	4.02	No Detect	<0.10	5480	91600	195
	NBB-415	07/27/1993	68	~128	187	4.42	No Detect	<0.10	~4010	82300	111
82-36A	NBB-194	03/10/1993	No Data	604	3740	45.16	No Detect	<0.10	48900	115000	11900
	NBB-243	04/27/1993	No Data	484	6410	44.00	No Detect	<0.10	50100	126000	12600
	NBB-445	07/27/1993	No Data	680	14600	44.8	No Detect	<0.10	51500	122000	12900
82-40A	NBB-183	03/04/1993	-44	675	3210	19.62	No Detect	<0.10	24500	29900	3210
	NBB-250	04/29/1993	-57	491	3060	17.85	No Detect	<0.10	26900	37400	4190
	NBB-419	07/28/1993	No Data	686	5010	No Data	No Detect	<0.10	26400	38600	4550
	NBB-418	07/28/1993	-54	686	5140	18.79	No Detect	<0.10	28000	39400	4670
	NBB-571	11/03/1993	-49	~866	7860	20.09	No Data	No Data	27300	39300	4520

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).

[b]Oxidation potential in millivolts.

Table A-16 (continued). Ground-Water Chemistry Data Collected At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Eh[b] (mV)	F (µg/L)	Fe (µg/L)	H_2O Depth (feet)	Herbicide (µg/L)	Hg (µg/L)	K (µg/L)	Mg (µg/L)	Mn (µg/L)
82-42	NBB-178	03/03/1993	58.7	~112	420	35.64	No Detect	<0.10	~4880	32000	442
	NBB-248	04/28/1993	No Data	~107	212	No Data	No Detect	<0.10	4400	34700	231
	NBB-247	04/28/1993	74	~113	216	35.80	No Detect	<0.10	3250	34600	233
	NBB-269	07/28/1993	132	~125	256	36.85	No Detect	<0.10	~3810	33900	200
	NBB-569	11/03/1993	187	~84.5	521	37.66	No Data	No Data	~3820	28800	192
83-70	NBB-169	03/01/1993	-28.7	~149	~22.2	33.67	No Data	<0.10	8970	63300	<1.0
	NBB-221	04/27/1993	-75	~141	323	33.68	No Data	<0.10	2300	11100	272
	NBB-406	07/21/1993	-92	~160	285	33.54	No Data	<0.10	~2940	10700	281
	NBB-541	11/02/1993	-91	~126	464	33.52	No Data	No Data	~3150	11200	278
84-74	NBB-197	03/11/1993	85	~133	655	62.95	No Data	<0.10	~3070	11300	227
	NBB-218	04/23/1993	-83	~144	567	62.70	No Data	<0.10	2840	11500	228
	NBB-409	07/21/1993	-10	~143	1180	62.73	No Data	<0.10	~2570	10800	230
84-75	NBB-196	03/10/1993	190	~175	143	99.79	No Detect	<0.10	~2380	7620	85.1
	NBB-253	04/29/1993	-64	~164	103	99.80	No Detect	<0.10	1550	7740	80.4
	NBB-450	07/28/1993	108	~187	151	99.70	No Detect	<0.10	~1850	7700	90.9
84-76	NBB-179	03/03/1993	182.7	230	105	106.7	No Detect	<0.10	~1240	~3820	31.3
	NBB-246	04/28/1993	-75	240	120	106.71	No Detect	<0.10	1810	3950	31.3
	NBB-416	07/27/1993	-63	254	~95.3	106.69	No Detect	<0.10	<906	~3760	31.7
84-77	NBB-173	03/02/1993	34.7	~118	336	107.60	No Detect	<0.10	~1660	11100	390
	NBB-223	04/27/1993	-44	~118	206	107.27	No Detect	<0.10	1250	11200	371
	NBB-414	07/27/1993	14	~143	1280	107.37	No Detect	<0.10	~1280	11100	395
88-85	NBB-171	03/01/1993	159.7	251	355	6.45	No Data	<0.10	~1690	10800	269
	NBB-222	04/27/1993	200	205	~51.6	4.35	No Data	<0.10	12300	90800	~2.5
	NBB-408	07/21/1993	No Data	327	~15.6	No Data	No Data	<0.10	11100	65700	~2.7
	NBB-407	07/21/1993	119	292	~12.3	3.14	No Data	<0.10	9830	64300	~2.3
	NBB-568	11/02/1993	162	318	~28.5	7.79	No Data	No Data	10400	72500	~4.1
92-01	NBB-186	03/08/1993	233	~122	1080	21.95	No Detect	<0.10	~2400	60800	75.1
	NBB-214	04/22/1993	241	~151	77.8	21.13	No Detect	<0.10	1820	60600	~4.8
	NBB-402	07/20/1993	139	~149	131	21.22	No Detect	<0.10	~2150	56600	~1.2
	NBB-527	10/26/1993	181	~183	313	21.69	No Data	No Data	~2130	76600	17.1

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).

[b]Oxidation potential in millivolts.

Table A-16 (continued). Ground-Water Chemistry Data Collected At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Eh[b] (mV)	F (µg/L)	Fe (µg/L)	H_2O Depth (feet)	Herbicide (µg/L)	Hg (µg/L)	K (µg/L)	Mg (µg/L)	Mn (µg/L)
92-02	NBB-309	03/16/1993	No Data	~135	692	187.25	No Detect	<0.10	~1540	8480	617
	NBB-207	04/20/1993	100	~142	~38.0	187.04	No Detect	<0.10	1270	8250	612
	NBB-401	07/19/1993	31	~117	132	187.15	No Detect	<0.10	~1210	7900	485
	NBB-532	10/28/1993	33	~119	~60.1	187.33	No Data	No Data	~1110	8130	351
92-03	NBB-190	03/09/1993	No Data	~130	3140	10.42	No Detect	<0.10	~2510	17700	258
	NBB-215	04/22/1993	No Data	~157	5190	8.80	No Detect	<0.10	2570	14500	520
	NBB-444	07/26/1993	No Data	~199	1080	11.08	No Detect	<0.10	~1380	10800	42.9
	NBB-533	10/27/1993	No Data	~115	~95.3	11.14	No Data	No Data	~1410	13200	~4.9
92-04	NBB-187	03/08/1993	-16.0	~125	~71.0	172.75	No Detect	<0.10	~2520	12600	753
	NBB-209	04/20/1993	No Data	~121	138	No Data	No Detect	<0.10	1820	12200	686
	NBB-208	04/20/1993	-109	~120	224	172.70	No Detect	<0.10	2460	12600	709
	NBB-403	07/20/1993	-43	~125	216	172.80	No Detect	<0.10	~2280	12400	632
	NBB-539	10/29/1993	No Data	~97.9	150	No Data	No Data	No Data	~2370	12400	503
	NBB-538	10/29/1993	-12	~155	158	174.00	No Data	No Data	~1800	12300	502
92-05	NBB-191	03/09/1993	No Data	~154	6180	11.22	No Detect	<0.10	~2880	20700	325
	NBB-233	04/22/1993	No Data	~86.6	3110	6.84	No Detect	<0.10	3950	33500	200
	NBB-410	07/22/1993	No Data	~101	975	12.10	No Detect	<0.10	~2100	31900	28.7
	NBB-528	10/26/1993	198	~114	204	15.30	No Data	No Data	~2070	53100	~7.1
92-06	NBB-192	03/09/1993	223	~109	~62.4	109.85	No Detect	<0.10	~1160	10500	423
	NBB-212	04/21/1993	55	~125	58.1	109.79	No Detect	<0.10	2350	10700	439
	NBB-405	07/20/1993	No Data	~112	~80.5	No Data	No Detect	<0.10	~1560	10400	430
	NBB-404	07/20/1993	41	~126	154	109.75	No Detect	<0.10	~1450	10500	439
	NBB-526	10/25/1993	54	~156	~54.8	109.78	No Data	No Data	~1860	10600	427
92-07	NBB-205	03/16/1993	240	280	~60.0	18.38	No Data	<0.10	20800	53800	47.2
	NBB-225	04/28/1993	235	259	~22.6	17.05	No Data	<0.10	21100	59700	170
	NBB-421	07/29/1993	173	423	~8.3	17.92	No Data	<0.10	16000	24400	212
	NBB-543	11/02/1993	212	376	<19.0	No Data	No Data	No Data	21500	52500	481
92-08	NBB-199	03/11/1993	267	~193	~22.9	6.57	No Data	<0.10	10300	55400	1000
	NBB-224	04/28/1993	215	~198	~11.6	7.25	No Data	<0.10	9820	53400	992
	NBB-420	07/29/1993	190	244	~14.8	8.12	No Data	<0.10	11400	61700	1120
	NBB-548	11/04/1993	218	253	<19.0	9.00	No Data	No Data	11400	49400	921

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).

[b]Oxidation potential in millivolts.

Table A-16 (continued). Ground-Water Chemistry Data Collected At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Eh[b] (mV)	F (µg/L)	Fe (µg/L)	H_2O Depth (feet)	Herbicide (µg/L)	Hg (µg/L)	K (µg/L)	Mg (µg/L)	Mn (µg/L)
92-09	NBB-202	03/15/1993	88	~110	1340	7.65	No Data	<0.10	~1540	68300	216
	NBB-216	04/22/1993	-1	~112	774	8.45	No Data	<0.10	1250	46700	123
	NBB-412	07/22/1993	16	~157	814	8.45	No Data	<0.10	~1440	57400	115
	NBB-537	10/28/1993	No Data	~145	966	No Data	No Data	No Data	<1070	68100	127
	NBB-536	10/28/1993	6	~182	983	9.06	No Data	No Data	~1380	69300	131
92-10	NBB-203	03/15/1993	74	~111	426	12.18	No Data	<0.10	~2080	13100	327
	NBB-217	04/22/1993	-21	~113	783	11.60	No Data	<0.10	2860	13000	328
	NBB-411	07/22/1993	-42	~143	1460	12.42	No Data	<0.10	~2490	12900	333
	NBB-535	10/28/1993	-38	~93.7	492	12.15	No Data	No Data	~3290	13300	319
92-11	NBB-200	03/12/1993	250	290	~80.5	8.28	No Data	<0.10	25200	57600	910
	NBB-220	04/26/1993	No Data	307	~23.6	No Data	No Data	<0.10	25200	58200	608
	NBB-219	04/26/1993	226	371	~22.0	7.10	No Data	<0.10	23700	57400	601
	NBB-549	11/04/1993	197	457	288	7.31	No Data	No Data	29200	53000	1160
92-12	NBB-567	11/02/1993	No Data	495	1320	47.79	No Data	No Data	~3820	9200	182
92-13	NBB-566	11/02/1993	No Data	2400	340	106.17	No Data	No Data	~3740	~595	16.6
93-01	NBB-540	11/01/1993	-36	250	~47.0	106.35	No Data	No Data	~4530	11400	354
Equipment Blank	NBB-281	03/02/1993	No Data	<6.0	No Data	No Data	No Data	No Data	No Data	No Data	No Data
	NBB-188	03/08/1993	No Data	<6.0	~81.5	No Data	No Detect	<0.10	<917	<62.0	<1.0
	NBB-232	04/22/1993	No Data	<5.0	No Data	No Data	No Data	No Data	No Data	No Data	No Data
	NBB-438	07/22/1993	No Data	<6.0	No Data	No Data	No Data	No Data	No Data	No Data	No Data
	NBB-448	07/27/1993	No Data	~12.3	~16.8	No Data	No Detect	<0.10	<906	<67.0	<1.0
	NBB-545	11/03/1993	No Data	<10.0	~95.7	No Data	No Data	No Data	<1070	<69.0	~1.0

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).
[b]Oxidation potential in millivolts.

Table A-16 (continued). Ground-Water Chemistry Data Collected At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Mo (µg/L)	Na (µg/L)	NH_4 (µg/L)	Ni (µg/L)	NO_2 (µg/L)	NO_3 (µg/L)	NO_3+NO_2-N[b] (µg/L)	Pb (µg/L)	Pb-210 (pCi/L)[c]
31SW91-03	NBB-546	11/03/1993	280	362000	12100	<11.0	No Data	No Data	732	<1.0	5.6
31SW91-14	NBB-195	03/10/1993	423	437000	20500	~20.1	~126	3910	No Data	<1.0	8.43
	NBB-252	04/29/1993	552	513000	26700	~18.1	~16.7	1580	No Data	<1.0	2.8
	NBB-413	07/26/1993	520	537000	20000	<14.0	~35.5	3700	No Data	<1.0	21.4
	NBB-570	11/03/1993	480	511000	20300	~18.1	No Data	No Data	848	<1.0	28.4
31SW91-23	NBB-177	03/03/1993	522	629000	7180	~11.8	~379	258000	No Data	<1.0	<2
	NBB-244	04/27/1993	751	704000	5180	~9.1	1470	266000	No Data	3.3	20.4
	NBB-446	07/27/1993	774	689000	4590	<14.0	~110	198000	No Data	3.7	11.2
	NBB-544	11/03/1993	860	649000	7120	<11.0	~205	183000	No Data	<1.0	14.3
82-07	NBB-204	03/16/1993	~45.2	148000	116	~10.3	~29.9	11300	No Data	~2.1	<2
	NBB-251	04/28/1993	54.0	171000	50.0	<9.0	~131	32700	No Data	~1.6	9.0
	NBB-422	07/29/1993	58.7	217000	54.0	<14.0	~338	28600	No Data	<1.0	8.8
	NBB-542	11/02/1993	55.1	191000	27.5	<11.0	No Data	No Data	2570	<1.0	4.1
82-30B	NBB-182	03/04/1993	154	226000	3040	<9.0	<2.0	~44.7	No Data	~1.2	<2
	NBB-181	03/04/1993	143	231000	2950	<9.0	<2.0	~40.6	No Data	<1.0	<2
	NBB-211	04/21/1993	126	302000	4070	~12.0	~6.7	305	No Data	~1.2	10.2
	NBB-449	07/27/1993	156	250000	2690	<14.0	<8.0	~47.9	No Data	<1.0	4.3
	NBB-547	11/03/1993	174	232000	2880	<11.0	No Data	No Data	~7.0	<1.0	8.17
82-31B-E	NBB-572	11/04/1993	~2.1	162000	30.2	~11.6	No Data	No Data	111	~2.7	<2
82-31B-W	NBB-175	03/02/1993	<22.0	79300	54.0	~11.9	~8.6	262	No Data	<1.0	<2
	NBB-174	03/02/1993	<22.0	74800	54.0	~14.9	~8.7	304	No Data	~2.7	<2
	NBB-249	04/29/1993	~3.2	104000	54.0	<9.0	~33.0	29200	No Data	~1.6	<2
	NBB-415	07/27/1993	~4.8	111000	86.0	<14.0	~46.3	8160	No Data	<1.0	<2
82-36A	NBB-194	03/10/1993	833	748000	17600	46.3	~79.3	32000	No Data	10.1	13.44
	NBB-243	04/27/1993	~834	824000	18700	63.1	~57.5	18600	No Data	19.2	6.0
	NBB-445	07/27/1993	812	800000	18600	59.3	~36.5	13100	No Data	52.8	<2
82-40A	NBB-183	03/04/1993	176	203000	2940	~12.7	<4.0	~37.3	No Data	<1.0	6.3
	NBB-250	04/29/1993	158	217000	2390	~10.4	~10.5	~78.8	No Data	~2.0	<2
	NBB-419	07/28/1993	364	356000	2940	<14.0	~22.5	~81.3	No Data	~1.3	55.2
	NBB-418	07/28/1993	398	363000	3070	<14.0	~12.0	~74.6	No Data	<1.0	28.4
	NBB-571	11/03/1993	969	712000	4030	~19.2	No Data	No Data	~23.3	<1.0	34.9

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).

[b](Nitrate + nitrite) as nitrogen.

[c]The values listed multiplied by 10^{-9} will result in µCi/mL.

Table A-16 (continued). Ground-Water Chemistry Data Collected At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Mo (µg/L)	Na (µg/L)	NH_4 (µg/L)	Ni (µg/L)	NO_2 (µg/L)	NO_3 (µg/L)	NO_3+NO_2-N[b] (µg/L)	Pb (µg/L)	Pb-210 (pCi/L)[c]
82-42	NBB-178	03/03/1993	<22.0	46700	68.0	<9.0	<2.0	-28.3	No Data	<1.0	<2
	NBB-248	04/28/1993	-3.3	48700	<6.0	<9.0	-15.1	3040	No Data	<1.0	<2
	NBB-247	04/28/1993	-3.3	49200	-12.0	-9.8	-15.3	3010	No Data	<1.0	<2
	NBB-269	07/28/1993	-4.7	57500	30.0	<14.0	-13.7	6600	No Data	<1.0	<2
	NBB-569	11/03/1993	-3.6	56300	22.1	<11.0	No Data	No Data	-87.3	<1.0	<2
83-70	NBB-169	03/01/1993	-23.5	158000	272	<9.0	-3.0	<10.0	No Data	<1.0	<2
	NBB-221	04/27/1993	<1.0	61200	239	<9.0	-6.7	-17.9	No Data	<1.0	<2
	NBB-406	07/21/1993	<1.0	57000	253	<14.0	<4.0	-58.4	No Data	<1.0	<2
	NBB-541	11/02/1993	<1.0	63800	256	<11.0	No Data	No Data	-14.1	<1.0	<2
84-74	NBB-197	03/11/1993	<22.0	74900	40.0	<9.0	<2.0	-17.3	No Data	<1.0	<2
	NBB-218	04/23/1993	<1.0	75200	279	<9.0	-3.8	-32.7	No Data	6.1	<2
	NBB-409	07/21/1993	<1.0	71200	268	<14.0	<4.0	-8.5	No Data	<1.0	<2
84-75	NBB-196	03/10/1993	<22.0	98800	124	<9.0	<2.0	-25.7	No Data	<1.0	<2
	NBB-253	04/29/1993	<1.0	101000	178	<9.0	-6.9	-25.3	No Data	<1.0	<2
	NBB-450	07/28/1993	<1.0	101000	185	<14.0	-6.6	-45.6	No Data	<1.0	<2
84-76	NBB-179	03/03/1993	<22.0	91300	180	<9.0	<2.0	-33.1	No Data	<1.0	<2
	NBB-246	04/28/1993	<1.0	95300	124	<9.0	-7.0	-82.0	No Data	-2.1	<2
	NBB-416	07/27/1993	-1.5	90600	182	<14.0	-5.9	-51.7	No Data	<1.0	<2
84-77	NBB-173	03/02/1993	<22.0	39500	230	<9.0	-8.3	-30.9	No Data	<1.0	<2
	NBB-223	04/27/1993	-1.2	41000	204	<9.0	-7.9	-16.2	No Data	<1.0	<2
	NBB-414	07/27/1993	-2.8	39600	191	<14.0	<4.0	-68.5	No Data	<1.0	<2
88-85	NBB-171	03/01/1993	<22.0	58300	54.0	<9.0	-69.4	<10.0	No Data	<1.0	<2
	NBB-222	04/27/1993	-46.0	348000	45.0	-11.7	-14.7	48800	No Data	-1.7	18.3
	NBB-408	07/21/1993	59.8	213000	189	<14.0	<16.0	15000	No Data	<1.0	6.4
	NBB-407	07/21/1993	56.6	216000	206	<14.0	-10.0	15600	No Data	<1.0	5.2
	NBB-568	11/02/1993	-48.4	211000	274	<11.0	No Data	No Data	2350	<1.0	2.7
92-01	NBB-186	03/08/1993	<22.0	48400	36.0	<9.0	<2.0	254	No Data	<1.0	<2
	NBB-214	04/22/1993	<1.0	59000	51.0	<9.0	-5.3	3280	No Data	-1.1	<2
	NBB-402	07/20/1993	<1.0	47800	24.0	<14.0	<8.0	20900	No Data	<1.0	<2
	NBB-527	10/26/1993	-1.9	64800	30.2	<11.0	No Data	No Data	4330	<1.0	<2

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "-" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).

[b](Nitrate + nitrite) as nitrogen.

[c]The values listed multiplied by 10^{-9} will result in µCi/mL.

Table A-16 (continued). Ground-Water Chemistry Data Collected At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Mo (µg/L)	Na (µg/L)	NH_4 (µg/L)	Ni (µg/L)	NO_2 (µg/L)	NO_3 (µg/L)	NO_3+NO_2-N[b] (µg/L)	Pb (µg/L)	Pb-210 (pCi/L)[c]
92-02	NBB-309	03/16/1993	<22.0	11200	76.0	~15.1	<2.0	528	No Data	~2.0	<2
	NBB-207	04/20/1993	~14.7	10500	72.0	~11.8	<2.0	~20.4	No Data	~1.2	<2
	NBB-401	07/19/1993	~10.6	10100	78.0	<14.0	~10.8	~48.8	No Data	<1.0	<2
	NBB-532	10/28/1993	~7.1	10700	51.7	<11.0	No Data	No Data	~42.2	<1.0	<2
92-03	NBB-190	03/09/1993	<22.0	36100	48.0	<9.0	~5.7	~191	No Data	5.1	<2
	NBB-215	04/22/1993	~1.4	25000	45.0	<9.0	~12.1	1260	No Data	11.3	<2
	NBB-444	07/26/1993	~3.8	23100	36.0	<14.0	~9.0	365	No Data	~2.6	<2
	NBB-533	10/27/1993	~2.8	25800	35.6	<11.0	No Data	No Data	~41.8	<1.0	<2
92-04	NBB-187	03/08/1993	<22.0	47700	230	<9.0	~7.4	~17.9	No Data	~2.3	<2
	NBB-209	04/20/1993	~17.1	44800	176	<9.0	~10.4	1470	No Data	~3.9	<2
	NBB-208	04/20/1993	~23.5	45200	179	~10.2	~9.1	~37.6	No Data	~1.3	<2
	NBB-403	07/20/1993	~17.0	45700	165	<14.0	~6.6	~56.8	No Data	7.6	<2
	NBB-539	10/29/1993	~25.1	47700	164	<11.0	No Data	No Data	~36.3	<1.0	<2
	NBB-538	10/29/1993	~25.8	47400	180	<11.0	No Data	No Data	~33.7	<1.0	<2
92-05	NBB-191	03/09/1993	<22.0	31900	60.0	<9.0	~11.7	1750	No Data	6.2	<2
	NBB-233	04/22/1993	~2.1	37600	21.0	<9.0	~3.9	8040	No Data	6.1	<2
	NBB-410	07/22/1993	~1.4	28900	72.0	<14.0	<8.0	5000	No Data	~1.6	<2
	NBB-528	10/26/1993	~2.0	43200	49.0	<11.0	No Data	No Data	1830	<1.0	<2
92-06	NBB-192	03/09/1993	<22.0	31000	192	<9.0	<2.0	<10.0	No Data	<1.0	<2
	NBB-212	04/21/1993	<1.0	30700	188	<9.0	<2.0	~45.7	No Data	~1.8	<2
	NBB-405	07/20/1993	~1.0	29600	151	<14.0	<4.0	~34.6	No Data	<1.0	<2
	NBB-404	07/20/1993	~1.3	30200	168	<14.0	<4.0	~53.3	No Data	~2.2	<2
	NBB-526	10/25/1993	~2.4	32100	157	<11.0	No Data	No Data	~18.6	<1.0	<2
92-07	NBB-205	03/16/1993	122	226000	34.0	<9.0	~3.3	19100	No Data	~2.2	<2
	NBB-225	04/28/1993	137	231000	95.0	~12.8	~22.7	36500	No Data	~1.2	15.8
	NBB-421	07/29/1993	160	92100	231	<14.0	<20.0	~81.0	No Data	<1.0	6.9
	NBB-543	11/02/1993	159	219000	59.7	<11.0	No Data	No Data	352	<1.0	21.0
92-08	NBB-199	03/11/1993	71.3	136000	34.0	<9.0	~5.3	506	No Data	<1.0	<2
	NBB-224	04/28/1993	82.7	142000	25.0	<9.0	~21.4	2180	No Data	<1.0	3.3
	NBB-420	07/29/1993	83.9	162000	36.0	<14.0	~74.6	16700	No Data	~1.6	4.7
	NBB-548	11/04/1993	93.5	157000	27.5	<11.0	No Data	No Data	491	<1.0	3.2

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).

[b](Nitrate + nitrite) as nitrogen.

[c]The values listed multiplied by 10^{-9} will result in µCi/mL.

Table A-16 (continued). Ground-Water Chemistry Data Collected At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Mo (µg/L)	Na (µg/L)	NH_4 (µg/L)	Ni (µg/L)	NO_2 (µg/L)	NO_3 (µg/L)	$NO_3+NO_2-N^b$ (µg/L)	Pb (µg/L)	Pb-210 (pCi/L)[c]
92-09	NBB-202	03/15/1993	<22.0	283000	88.0	<9.0	~4.5	~62.7	No Data	24.8	<2
	NBB-216	04/22/1993	~2.1	247000	66.0	<9.0	<4.0	~68.1	No Data	~1.2	<2
	NBB-412	07/22/1993	~3.9	232000	95.0	<14.0	~17.1	~48.2	No Data	~2.0	<2
	NBB-537	10/28/1993	~4.0	242000	83.9	<11.0	No Data	No Data	~26.5	<1.0	<2
	NBB-536	10/28/1993	~4.1	249000	78.5	<11.0	No Data	No Data	~19.4	<1.0	<2
92-10	NBB-203	03/15/1993	<22.0	55000	192	<9.0	~30.9	~30.2	No Data	3.0	<2
	NBB-217	04/22/1993	<1.0	52100	295	<9.0	~3.9	~32.3	No Data	~3.5	<2
	NBB-411	07/22/1993	~1.1	52100	206	<14.0	<4.0	~26.1	No Data	~2.3	<2
	NBB-535	10/28/1993	~1.7	55500	213	<11.0	No Data	No Data	~42.1	~1.6	<2
92-11	NBB-200	03/12/1993	144	297000	1440	~10.9	~76.8	53700	No Data	<1.0	11.87
	NBB-220	04/26/1993	198	326000	1660	~14.1	~15.8	20200	No Data	<1.0	6.0
	NBB-219	04/26/1993	196	324000	1700	~12.2	~25.2	19900	No Data	<1.0	18.4
	NBB-549	11/04/1993	230	285000	4840	<11.0	No Data	No Data	1770	<1.0	3.9
92-12	NBB-567	11/02/1993	103	137000	54.4	<11.0	No Data	No Data	246	4.1	<2
92-13	NBB-566	11/02/1993	249	159000	3690	<11.0	No Data	No Data	~25.4	~2.7	<2
93-01	NBB-540	11/01/1993	~29.3	45600	243	<11.0	No Data	No Data	~16.4	<1.0	<2
Equipment Blank	NBB-281	03/02/1993	No Data	No Data	~18.0	No Data	~6.9	<20.0	No Data	No Data	<2
	NBB-188	03/08/1993	<22.0	~47.8	42.0	<9.0	<2.0	~15.0	No Data	<1.0	<2
	NBB-232	04/22/1993	No Data	No Data	~8.0	No Data	<2.0	~39.5	No Data	No Data	<2
	NBB-438	07/22/1993	No Data	No Data	33.0	No Data	<4.0	345	No Data	No Data	<2
	NBB-448	07/27/1993	~1.9	~165	~16.0	<14.0	~34.9	~91.4	No Data	<1.0	<2
	NBB-545	11/03/1993	<1.0	~65.7	30.2	<11.0	No Data	No Data	~17.8	<1.0	<2

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).

[b](Nitrate + nitrite) as nitrogen. The samples were acidified in the field, thus the nitrite is oxidized to nitrate.

[c]The values listed multiplied by 10^{-9} will result in µCi/mL.

Table A-16 (continued). Ground-Water Chemistry Data Collected At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Pesticide (µg/L)	pH	Po-210 (pCi/L)[b]	Ra-226 (pCi/L)[b]	Ra-228 (pCi/L)[b]	Rn-222 (pCi/L)[b]	Sb (µg/L)	Se (µg/L)	Semivolatile (µg/L)
31SW91-03	NBB-546	11/03/1993	No Data	6.55	<0.14	0.35	<3	825	No Data	19.9	No Data
31SW91-14	NBB-195	03/10/1993	No Detect	6.74	<0.86	<0.3	<2	1090	<1.0	12.7	See Table
	NBB-252	04/29/1993	No Detect	6.81	<0.22	<0.17	<3	1069	<1.0	7.0	No Detect
	NBB-413	07/26/1993	No Detect	6.38	<0.34	<0.04	<2	1210	<1.0	14.0	See Table
	NBB-570	11/03/1993	No Data	6.49	<0.24	0.33	<3	1081	No Data	15.6	No Data
31SW91-23	NBB-177	03/03/1993	No Detect	6.79	<0.5	0.1	<2	180	<1.0	~4.7	See Table
	NBB-244	04/27/1993	No Detect	6.85	<0.22	<0.74	<4	184	<1.0	41.4	See Table
	NBB-446	07/27/1993	No Detect	6.78	<0.34	0.18	<2	202	<1.0	58.4	See Table
	NBB-544	11/03/1993	No Data	6.58	<0.23	<0.42	<3	183	No Data	21.1	No Data
82-07	NBB-204	03/16/1993	No Data	6.55	<0.15	0.1	<2	1040	<1.0	27.5	No Data
	NBB-251	04/28/1993	No Data	6.58	<0.27	<0.28	<3	1006	<1.0	57.4	No Data
	NBB-422	07/29/1993	No Data	6.56	<0.42	0.33	<2	967	<1.0	21.5	No Data
	NBB-542	11/02/1993	No Data	6.47	<0.14	<0.43	<2	557	No Data	16.1	No Data
82-30B	NBB-182	03/04/1993	No Detect	No Data	<0.5	0.3	<2	3170	<1.0	23.5	See Table
	NBB-181	03/04/1993	No Detect	6.80	<0.5	0.3	<2	3080	<1.0	19.1	See Table
	NBB-211	04/21/1993	No Detect	6.72	<0.34	0.51	<1	2906	~1.0	19.0	No Detect
	NBB-449	07/27/1993	No Detect	6.91	<0.35	0.19	<1	3438	<1.0	7.9	See Table
	NBB-547	11/03/1993	No Data	6.76	<0.28	0.75	<3	3384	No Data	12.9	No Data
82-31B-E	NBB-572	11/04/1993	No Data	6.30	<0.26	<0.41	<3	1185	No Data	<2.0	No Data
82-31B-W	NBB-175	03/02/1993	No Detect	No Data	<0.5	0.1	<1	1030	<1.0	<2.0	See Table
	NBB-174	03/02/1993	No Detect	6.47	<0.5	0.2	<2	1140	<1.0	<2.0	See Table
	NBB-249	04/29/1993	No Detect	6.43	<0.25	0.30	<3	1028	<1.0	~3.6	See Table
	NBB-415	07/27/1993	No Detect	6.27	<0.26	0.29	<2	1005	<1.0	<3.0	See Table
82-36A	NBB-194	03/10/1993	No Detect	6.90	2.31	10.8	<7	7820	<1.0	8.9	See Table
	NBB-243	04/27/1993	No Detect	6.91	1.04	7.32	<5	9284	<1.0	7.1	See Table
	NBB-445	07/27/1993	No Detect	6.85	1.82	8.16	<3	13096	~1.2	12.5	See Table
82-40A	NBB-183	03/04/1993	No Detect	6.92	1.5	5.7	<3	28700	<1.0	<2.0	See Table
	NBB-250	04/29/1993	No Detect	6.65	1.64	<0.20	<3	18938	<1.0	<2.0	See Table
	NBB-419	07/28/1993	No Detect	No Data	2.40	12.45	<4	27568	<1.0	<3.0	See Table
	NBB-418	07/28/1993	No Detect	6.50	2.57	12.01	<4	28168	<1.0	<3.0	See Table
	NBB-571	11/03/1993	No Data	6.67	2.88	16.14	<5	59651	No Data	<2.0	No Data

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated). "See Table" indicates that the reader should refer to Table A-17 in the report for a list of detected constituents.

[b]The values listed multiplied by 10^{-9} will result in µCi/mL.

Table A-16 (continued). Ground-Water Chemistry Data Collected At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Pesticide (µg/L)	pH	Po-210 (pCi/L)[b]	Ra-226 (pCi/L)[b]	Ra-228 (pCi/L)[b]	Rn-222 (pCi/L)[b]	Sb (µg/L)	Se (µg/L)	Semivolatile (µg/L)
82-42	NBB-178	03/03/1993	No Detect	6.51	<0.5	1.6	<2	1720	<1.0	<2.0	See Table
	NBB-248	04/28/1993	No Detect	No Data	<0.29	0.98	<3	1327	<1.0	-2.1	See Table
	NBB-247	04/28/1993	No Detect	6.43	<0.24	0.79	<3	1317	<1.0	-3.9	No Detect
	NBB-269	07/28/1993	No Detect	7.25	<0.36	0.38	<2	1344	<1.0	<3.0	See Table
	NBB-569	11/03/1993	No Data	6.44	<0.11	0.29	<2	1080	No Data	<2.0	No Data
83-70	NBB-169	03/01/1993	No Data	7.41	<0.5	0.1	<1	240	<1.0	169	No Data
	NBB-221	04/27/1993	No Data	7.43	<0.15	<0.41	<3	217	<1.0	<2.0	No Data
	NBB-406	07/21/1993	No Data	7.29	<0.16	1.09	<3	298	<1.0	<3.3	No Data
	NBB-541	11/02/1993	No Data	7.25	<0.20	1.20	<3	224	No Data	<2.0	No Data
84-74	NBB-197	03/11/1993	No Data	7.11	<0.08	1.3	<2	240	<1.0	<2.0	No Data
	NBB-218	04/23/1993	No Data	7.14	<0.19	1.01	<1	219	-2.1	<2.0	No Data
	NBB-409	07/21/1993	No Data	7.02	<0.14	1.22	<2	250	<1.0	<3.0	No Data
84-75	NBB-196	03/10/1993	No Detect	7.79	<1.49	0.8	<2	190	<1.0	<2.0	See Table
	NBB-253	04/29/1993	No Detect	7.78	<0.26	<0.51	<5	203	<1.0	<2.2	See Table
	NBB-450	07/28/1993	No Detect	7.63	<0.24	0.75	<2	151	<1.0	<3.0	See Table
84-76	NBB-179	03/03/1993	No Detect	7.87	<0.5	0.3	<2	90	<1.0	<2.0	See Table
	NBB-246	04/28/1993	No Detect	7.36	<0.18	0.66	<3	118	<1.0	<2.0	See Table
	NBB-416	07/27/1993	No Detect	7.30	<0.17	0.34	<2	99	<1.0	<3.0	See Table
84-77	NBB-173	03/02/1993	No Detect	7.13	<0.5	0.5	<2	160	<1.0	<2.0	See Table
	NBB-223	04/27/1993	No Detect	7.24	<0.15	<0.35	<4	121	<1.0	<2.0	See Table
	NBB-414	07/27/1993	No Detect	6.82	<0.40	0.57	<2	142	<1.0	<3.0	See Table
88-85	NBB-171	03/01/1993	No Data	6.58	<0.5	1.1	<2	4580	<1.0	<2.0	No Data
	NBB-222	04/27/1993	No Data	6.67	0.72	<0.07	<4	10591	<1.0	26.5	No Data
	NBB-408	07/21/1993	No Data	No Data	<0.02	<0.11	<1	7872	<1.0	<15.0	No Data
	NBB-407	07/21/1993	No Data	6.52	<6.33	0.19	<2	7811	<1.0	9.6	No Data
	NBB-568	11/02/1993	No Data	6.02	<0.21	<1.33	<2	2383	No Data	14.1	No Data
92-01	NBB-186	03/08/1993	No Detect	6.64	<0.5	0.1	<1	790	<1.0	<2.0	See Table
	NBB-214	04/22/1993	No Detect	6.68	<0.14	<0.07	<1	940	-1.8	-4.7	See Table
	NBB-402	07/20/1993	No Detect	7.05	<0.15	<0.10	<2	1068	<1.0	-5.1	See Table
	NBB-527	10/26/1993	No Data	6.54	<0.15	<0.55	<2	620	No Data	<10.0	No Data

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "-" indicates an approximate value (the value was outside the limits for which the instrument was calibrated). "See Table indicates that the reader should refer to Table A-17 in the report for a list of detected constituents.

[b]The values listed multiplied by 10^{-9} will result in µCi/mL.

Table A-16 (continued). Ground-Water Chemistry Data Collected At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Pesticide (µg/L)	pH	Po-210 (pCi/L)[b]	Ra-226 (pCi/L)[b]	Ra-228 (pCi/L)[b]	Rn-222 (pCi/L)[b]	Sb (µg/L)	Se (µg/L)	Semivolatile (µg/L)
92-02	NBB-309	03/16/1993	No Detect	6.66	<0.18	0.3	<3	90	~4.0	<2.0	See Table
	NBB-207	04/20/1993	No Detect	7.44	<0.18	1.80	<1	175	~4.1	~3.1	No Detect
	NBB-401	07/19/1993	No Detect	6.81	<0.21	0.65	<3	152	~3.8	<3.3	See Table
	NBB-532	10/28/1993	No Data	6.96	<0.11	0.50	<2	87	No Data	<2.0	No Data
92-03	NBB-190	03/09/1993	No Detect	7.00	<1.01	0.4	<2	930	<1.0	~2.0	See Table
	NBB-215	04/22/1993	No Detect	7.21	<0.16	0.22	<1	959	~1.4	<2.0	See Table
	NBB-444	07/26/1993	No Detect	6.85	<0.28	<0.05	<2	580	<1.0	<3.0	See Table
	NBB-533	10/27/1993	No Data	6.89	<0.12	<0.29	<3	284	No Data	<2.0	No Data
92-04	NBB-187	03/08/1993	No Detect	7.26	<0.5	0.4	<2	90	~1.3	<2.0	See Table
	NBB-209	04/20/1993	No Detect	No Data	<0.24	0.53	<1	<107	~1.8	<2.0	No Detect
	NBB-208	04/20/1993	No Detect	7.35	<0.24	<0.15	<1	<106	~1.7	~2.2	No Detect
	NBB-403	07/20/1993	No Detect	6.98	<0.17	0.75	<3	99	~6.3	<3.0	See Table
	NBB-539	10/29/1993	No Data	No Data	<0.11	1.36	<2	75	No Data	<2.0	No Data
	NBB-538	10/29/1993	No Data	7.08	<0.10	0.85	<2	87	No Data	<2.0	No Data
92-05	NBB-191	03/09/1993	No Detect	6.80	<0.92	0.4	<2	370	<1.0	~2.0	See Table
	NBB-233	04/22/1993	No Detect	6.59	<0.10	<0.07	<1	864	~1.2	~4.3	See Table
	NBB-410	07/22/1993	No Detect	6.78	<0.26	0.56	<1	1265	~2.0	<15.0	See Table
	NBB-528	10/26/1993	No Data	6.52	<0.38	0.23	<2	549	No Data	<2.0	No Data
92-06	NBB-192	03/09/1993	No Detect	7.66	<0.90	0.5	<3	<80	<1.0	<2.0	See Table
	NBB-212	04/21/1993	No Detect	7.42	<0.27	0.57	<1.06	<93	~1.5	<2.0	See Table
	NBB-405	07/20/1993	No Detect	No Data	<0.14	1.29	<2	123	<1.0	<3.0	See Table
	NBB-404	07/20/1993	No Detect	7.16	<0.20	0.60	<1	117	<1.0	<3.3	See Table
	NBB-526	10/25/1993	No Data	7.17	<0.08	0.67	<2	<67	No Data	<2.2	No Data
92-07	NBB-205	03/16/1993	No Data	6.63	<0.19	0.1	<2	1170	<1.0	37.9	No Data
	NBB-225	04/28/1993	No Data	6.67	<0.32	<0.06	<3	1192	<1.0	23.2	No Data
	NBB-421	07/29/1993	No Data	6.39	<0.30	<0.08	<2	2110	<1.0	<3.3	No Data
	NBB-543	11/02/1993	No Data	6.68	<0.13	<0.20	<3	601	No Data	~3.5	No Data
92-08	NBB-199	03/11/1993	No Data	6.74	<0.09	0.1	<2	960	<1.0	9.8	No Data
	NBB-224	04/28/1993	No Data	6.75	<0.16	<0.41	<7	1118	<1.0	~5.3	No Data
	NBB-420	07/29/1993	No Data	6.26	<0.32	0.14	<2	1333	<1.0	19.4	No Data
	NBB-548	11/04/1993	No Data	6.47	<0.06	<0.09	<2	1229	No Data	20.1	No Data

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated). "See Table" indicates that the reader should refer to Table A-17 in the report for a list of detected constituents.

[b]The values listed multiplied by 10^{-9} will result in µCi/mL.

Table A-16 (continued). Ground-Water Chemistry Data Collected At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Pesticide (µg/L)	pH	Po-210 (pCi/L)[b]	Ra-226 (pCi/L)[b]	Ra-228 (pCi/L)[b]	Rn-222 (pCi/L)[b]	Sb (µg/L)	Se (µg/L)	Semivolatile (µg/L)
92-09	NBB-202	03/15/1993	No Data	6.81	<0.09	<0.4	<2	490	<1.0	6.0	No Data
	NBB-216	04/22/1993	No Data	6.88	<0.15	<0.06	<1	614	~1.2	<2.0	No Data
	NBB-412	07/22/1993	No Data	6.41	<0.18	<0.12	<2	861	<1.0	<3.0	No Data
	NBB-537	10/28/1993	No Data	No Data	<0.31	0.32	<2	524	No Data	<2.0	No Data
	NBB-536	10/28/1993	No Data	6.82	<0.09	<0.03	<3	456	No Data	<2.0	No Data
92-10	NBB-203	03/15/1993	No Data	7.36	<0.09	1.4	<3	120	~3.0	<2.0	No Data
	NBB-217	04/22/1993	No Data	7.24	<0.19	0.97	<1.41	111	~1.0	<2.0	No Data
	NBB-411	07/22/1993	No Data	7.06	<0.11	1.10	<2	167	<1.0	<3.0	No Data
	NBB-535	10/28/1993	No Data	7.22	<0.73	1.37	<3	77	No Data	<2.0	No Data
92-11	NBB-200	03/12/1993	No Data	6.54	<0.12	<0.1	<2	1070	<1.0	50.8	No Data
	NBB-220	04/26/1993	No Data	No Data	<0.14	<0.14	<2	973	<1.0	11.3	No Data
	NBB-219	04/26/1993	No Data	6.69	<0.15	<0.09	<4	978	<1.0	18.3	No Data
	NBB-549	11/04/1993	No Data	6.44	<0.16	<0.20	<2	947	No Data	10.5	No Data
92-12	NBB-567	11/02/1993	No Data	7.15	<0.32	0.27	<2	34	No Data	~2.2	No Data
92-13	NBB-566	11/02/1993	No Data	10.74	<0.32	<0.19	<2	209	No Data	~3.7	No Data
93-01	NBB-540	11/01/1993	No Data	7.43	<0.30	1.09	<3	67	No Data	<2.0	No Data
Equipment Blank	NBB-281	03/02/1993	No Data	No Data	<0.5	<0.1	<2	No Data	No Data	No Data	No Data
	NBB-188	03/08/1993	No Detect	No Data	<0.5	<0.1	<2	<30	<1.0	<2.0	See Table
	NBB-232	04/22/1993	No Data	No Data	<0.37	<0.05	<1	No Data	No Data	No Data	No Data
	NBB-438	07/22/1993	No Data	No Data	<0.12	<0.12	<1	No Data	No Data	No Data	No Data
	NBB-448	07/27/1993	No Detect	No Data	<0.19	<0.18	<2	~7	<1.0	<3.0	See Table
	NBB-545	11/03/1993	No Data	No Data	<0.18	<0.05	<2	<23	No Data	<2.0	No Data

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated). "See Table" indicates that the reader should refer to Table A-17 in the report for a list of detected constituents.

[b]The values listed multiplied by 10^{-9} will result in µCi/mL.

Table A-16 (continued). Ground-Water Chemistry Data Collected At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	SO_4 (µg/L)	Sr (µg/L)	TDS[b] (mg/L)	Temperature (degrees C)	Th-230 (pCi/L)[c]	Th-232 (pCi/L)[c]	Tl (µg/L)	Turbidity (NTU)[d]	U (µg/L)
31SW91-03	NBB-546	11/03/1993	1000000	No Data	2182	10.7	<0.09	<0.06	<1.0	4.12	1520
31SW91-14	NBB-195	03/10/1993	1130000	1940	2340	10.3	<0.3	<0.3	<1.0	4.77	2810
	NBB-252	04/29/1993	1330000	2270	2460	10.6	<0.69	<0.42	<2.0	3.88	2790
	NBB-413	07/26/1993	1330000	2380	2712	11.6	<7.79	<6.82	~1.1	2.14	3170
	NBB-570	11/03/1993	1240000	No Data	2542	10.5	<1.54	<0.63	<1.0	0.71	2880
31SW91-23	NBB-177	03/03/1993	2060000	3790	3930	7.9	0.55	0.88	<1.0	30.8	1130
	NBB-244	04/27/1993	2380000	4120	4260	7.5	<4.43	<4.05	<2.0	313	1670
	NBB-446	07/27/1993	2350000	4170	4424	11.3	<0.19	<0.14	<1.0	134	2190
	NBB-544	11/03/1993	2330000	No Data	4240	11.9	<0.10	<0.05	<1.0	1.07	1980
82-07	NBB-204	03/16/1993	599000	2660	1470	7.8	<0.3	<0.3	<1.0	2.98	491
	NBB-251	04/28/1993	875000	3620	2060	7.8	<1.91	<1.76	<2.0	2.87	552
	NBB-422	07/29/1993	1060000	4220	2466	11.1	<6.59	<4.95	<1.0	3.16	571
	NBB-542	11/02/1993	970000	No Data	1594	12.0	<0.46	<0.31	<1.0	0.68	467
82-30B	NBB-182	03/04/1993	689000	1440	1570	No Data	<0.3	<0.3	<1.0	No Data	847
	NBB-181	03/04/1993	693000	1480	1590	10.2	<0.3	<0.3	<1.0	0.48	850
	NBB-211	04/21/1993	1060000	2350	2308	9.2	<0.24	<0.23	<2.0	1.40	1490
	NBB-449	07/27/1993	586000	1300	1522	8.9	<0.19	<0.12	<1.0	0.74	1060
	NBB-547	11/03/1993	555000	No Data	1464	10.0	<0.16	<0.12	<1.0	0.94	914
82-31B-E	NBB-572	11/04/1993	1590000	No Data	3172	11.1	<0.18	<0.13	<1.0	0.81	26.6
82-31B-W	NBB-175	03/02/1993	1230000	4500	2200	No Data	<0.3	<0.3	<1.0	No Data	44.0
	NBB-174	03/02/1993	1230000	4220	2140	5.3	<0.3	<0.3	<1.0	18.5	56.9
	NBB-249	04/29/1993	1180000	4710	2510	9.1	<0.14	<0.14	<2.0	53.3	111
	NBB-415	07/27/1993	1110000	4500	2338	17.9	<0.11	<0.07	<1.0	15.4	46.4
82-36A	NBB-194	03/10/1993	2210000	3750	3960	9.6	<0.6	<0.5	<1.0	473	3570
	NBB-243	04/27/1993	2280000	4140	4303	11.3	<3.62	<3.64	<2.0	25.1	3980
	NBB-445	07/27/1993	2110000	4310	4120	12.1	<3.23	<3.02	<1.0	>1000	3490
82-40A	NBB-183	03/04/1993	613000	2730	1430	No Data	0.42	0.46	<1.0	0.45	1520
	NBB-250	04/29/1993	684000	2630	1592	11.0	<1.10	<0.92	<2.0	4.08	1390
	NBB-419	07/28/1993	1020000	4510	2282	No Data	<0.24	<0.14	<1.0	No Data	3960
	NBB-418	07/28/1993	1030000	4660	2290	10.5	<3.33	<1.94	<1.0	3.63	4130
	NBB-571	11/03/1993	1750000	No Data	3276	10.7	<1.59	<1.04	<1.0	4.1	12600

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).

[b]Total dissolved solids.

[c]The values listed multiplied by 10^{-9} will result in µCi/mL.

[d]Nephelometric turbidity units.

Table A-16 (continued). Ground-Water Chemistry Data Collected At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	SO_4 (µg/L)	Sr (µg/L)	TDS[b] (mg/L)	Temperature (degrees C)	Th-230 (pCi/L)[c]	Th-232 (pCi/L)[c]	Tl (µg/L)	Turbidity (NTU)[d]	U (µg/L)
82-42	NBB-178	03/03/1993	366000	1610	968	10.0	0.34	<0.3	<1.0	13.7	63.3
	NBB-248	04/28/1993	348000	1700	894	No Data	<0.16	<0.13	<2.0	No Data	39.9
	NBB-247	04/28/1993	346000	1700	922	10.5	<0.22	<0.22	<2.0	10.0	40.1
	NBB-269	07/28/1993	386000	1720	1062	10.2	<0.12	<0.10	<1.0	4.79	37.2
	NBB-569	11/03/1993	316000	No Data	886	9.6	<0.07	<0.07	<1.0	4.72	29.6
83-70	NBB-169	03/01/1993	100000	3480	423	10.1	<0.3	<0.3	<1.0	0.78	490
	NBB-221	04/27/1993	101000	1400	-494	10.3	<0.21	<0.13	<2.0	0.27	<1.0
	NBB-406	07/21/1993	97800	1440	-496	10.8	<0.15	<0.15	<1.0	0.45	<1.0
	NBB-541	11/02/1993	98700	No Data	602	10.5	<0.08	<0.06	<1.0	4.77	<1.0
84-74	NBB-197	03/11/1993	105000	1380	571	10.1	<0.3	<0.3	<1.0	4.86	<1.0
	NBB-218	04/23/1993	104000	1410	622	10.3	<0.06	<0.04	<2.0	2.86	6.2
	NBB-409	07/21/1993	102000	1390	568	10.8	<0.12	<0.08	<1.0	4.65	<1.0
84-75	NBB-196	03/10/1993	90800	711	650	10.3	0.42	0.56	<1.0	2.18	~1.3
	NBB-253	04/29/1993	90700	716	616	10.8	<0.14	<0.11	<2.0	1.86	<1.0
	NBB-450	07/28/1993	88900	728	654	11.2	<0.17	<0.12	<1.0	1.27	~1.3
84-76	NBB-179	03/03/1993	55800	315	487	10.4	<0.3	<0.3	<1.0	1.30	<1.0
	NBB-246	04/28/1993	57100	314	546	11.2	<0.12	<0.09	<2.0	2.52	~1.1
	NBB-416	07/27/1993	54600	313	542	11.4	<0.13	<0.11	<1.0	0.93	~2.1
84-77	NBB-173	03/02/1993	99200	1530	402	9.8	<0.3	<0.3	<1.0	2.03	<1.0
	NBB-223	04/27/1993	101000	1490	~362	10.0	<0.12	<0.12	<2.0	1.88	<1.0
	NBB-414	07/27/1993	98000	1530	~430	10.4	<0.19	<0.15	<1.0	4.66	~2.9
88-85	NBB-171	03/01/1993	707000	1430	1730	7.7	<0.3	<0.3	<1.0	6.22	<1.0
	NBB-222	04/27/1993	1320000	4740	904	9.7	<0.08	<0.07	<2.0	0.59	690
	NBB-408	07/21/1993	775000	3450	1900	No Data	<0.32	<0.31	<1.0	No Data	670
	NBB-407	07/21/1993	792000	3360	1898	12.4	<3.37	<2.94	<1.0	0.37	659
	NBB-568	11/02/1993	774000	No Data	1940	10.5	<0.76	<0.49	<1.0	2.24	563
92-01	NBB-186	03/08/1993	991000	3650	1830	8.9	<0.3	<0.3	<1.0	23.9	~4.9
	NBB-214	04/22/1993	1020000	3630	1948	8.5	<0.07	<0.06	<2.0	1.18	6.2
	NBB-402	07/20/1993	854000	3330	1624	8.8	<0.09	<0.08	<1.0	2.51	~4.6
	NBB-527	10/26/1993	1200000	No Data	2264	9.7	<0.09	<0.07	<1.0	9.84	6.3

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).

[b]Total dissolved solids.

[c]The values listed multiplied by 10^{-9} will result in µCi/mL.

[d]Nephelometric turbidity units.

Table A-16 (continued). Ground-Water Chemistry Data Collected At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	SO_4 (µg/L)	Sr (µg/L)	TDS[b] (mg/L)	Temperature (degrees C)	Th-230 (pCi/L)[c]	Th-232 (pCi/L)[c]	Tl (µg/L)	Turbidity (NTU)[d]	U (µg/L)
92-02	NBB-309	03/16/1993	56500	634	271	13.1	<0.3	<0.3	<1.0	1.74	~1.4
	NBB-207	04/20/1993	52700	647	~314	10.5	<0.08	<0.05	<2.0	0.84	<1.0
	NBB-401	07/19/1993	46800	604	~276	11.0	<0.13	<0.10	<1.0	0.82	<1.0
	NBB-532	10/28/1993	48100	No Data	~260	10.7	<0.26	<0.25	<1.0	0.46	<1.0
92-03	NBB-190	03/09/1993	164000	1020	555	7.2	<0.3	<0.3	<1.0	>1000	5.7
	NBB-215	04/22/1993	106000	969	~412	6.5	<0.14	<0.14	<2.0	590	~4.0
	NBB-444	07/26/1993	70800	607	~354	12.5	<0.22	<0.17	<1.0	235	~3.3
	NBB-533	10/27/1993	102000	No Data	~436	12.4	<0.16	<0.15	<1.0	22.8	~2.8
92-04	NBB-187	03/08/1993	120000	1790	436	10.8	<0.3	<0.3	<1.0	0.44	<1.0
	NBB-209	04/20/1993	489000	1790	~486	No Data	<0.08	<0.05	<2.0	No Data	<1.0
	NBB-208	04/20/1993	129000	1820	542	10.8	<0.07	<0.05	<2.0	0.48	<1.0
	NBB-403	07/20/1993	120000	1860	~440	11.8	<0.11	<0.07	<1.0	1.11	<1.0
	NBB-539	10/29/1993	117000	No Data	~426	No Data	<0.07	<0.05	<1.0	No Data	<1.0
	NBB-538	10/29/1993	118000	No Data	~430	10.5	<0.06	<0.05	<1.0	0.72	<1.0
92-05	NBB-191	03/09/1993	187000	987	548	4.8	0.45	0.55	<1.0	651	~4.4
	NBB-233	04/22/1993	418000	1760	990	7.9	<0.07	<0.06	<2.0	233	7.3
	NBB-410	07/22/1993	452000	1700	986	8.9	<0.12	<0.09	<1.0	34.4	~3.1
	NBB-528	10/26/1993	742000	No Data	1534	9.5	<0.07	<0.06	<1.0	5.65	5.3
92-06	NBB-192	03/09/1993	89600	1360	355	10.0	<0.3	<0.3	<1.0	1.20	<1.0
	NBB-212	04/21/1993	89800	1430	~340	10.2	<0.07	<0.06	<2.0	1.99	<1.0
	NBB-405	07/20/1993	88100	1410	~354	No Data	<0.12	<0.09	<1.0	No Data	<1.0
	NBB-404	07/20/1993	88100	1430	~352	10.8	<0.12	<0.09	<1.0	0.47	<1.0
	NBB-526	10/25/1993	89700	No Data	~368	10.0	<0.16	<0.18	<1.0	0.46	<1.0
92-07	NBB-205	03/16/1993	792000	2470	1740	7.6	<0.3	<0.3	<1.0	2.07	1080
	NBB-225	04/28/1993	856000	2640	1894	8.4	<0.30	<0.33	<2.0	1.13	1420
	NBB-421	07/29/1993	250000	1120	792	14.0	<2.63	<2.41	<1.0	0.38	678
	NBB-543	11/02/1993	773000	No Data	1798	10.5	<0.51	<0.46	<1.0	0.19	1330
92-08	NBB-199	03/11/1993	723000	2610	1600	7.5	<0.3	<0.3	<1.0	1.11	636
	NBB-224	04/28/1993	682000	2480	1506	7.5	<0.44	<0.32	<2.0	0.41	632
	NBB-420	07/29/1993	755000	3040	1826	9.3	<2.73	<2.34	<1.0	0.96	713
	NBB-548	11/04/1993	634000	No Data	1420	11.1	<1.09	<0.97	<1.0	0.29	578

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).

[b]Total dissolved solids.

[c]The values listed multiplied by 10^{-9} will result in µCi/mL.

[d]Nephelometric turbidity units.

Table A-16 (continued). Ground-Water Chemistry Data Collected At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	SO_4 (µg/L)	Sr (µg/L)	TDS[b] (mg/L)	Temperature (degrees C)	Th-230 (pCi/L)[c]	Th-232 (pCi/L)[c]	Tl (µg/L)	Turbidity (NTU)[d]	U (µg/L)
92-09	NBB-202	03/15/1993	936000	1870	2090	8.8	<0.3	<0.3	<1.0	1.43	412
	NBB-216	04/22/1993	636000	1280	1628	7.8	0.38	0.16	<2.0	1.71	351
	NBB-412	07/22/1993	689000	1570	1768	11.0	<0.14	<0.13	<1.0	0.80	431
	NBB-537	10/28/1993	856000	No Data	2004	No Data	<0.08	<0.06	<1.0	No Data	365
	NBB-536	10/28/1993	839000	No Data	2010	12.2	<0.19	<0.16	<1.0	1.19	369
92-10	NBB-203	03/15/1993	143000	1480	511	9.7	<0.3	<0.3	<1.0	1.22	<1.0
	NBB-217	04/22/1993	136000	1490	~458	10.0	0.42	0.12	<2.0	8.96	<1.0
	NBB-411	07/22/1993	137000	1480	~444	10.0	<0.14	<0.10	<1.0	8.38	<1.0
	NBB-535	10/28/1993	130000	No Data	~446	9.8	<0.05	<0.05	<1.0	2.83	<1.0
92-11	NBB-200	03/12/1993	929000	2610	2070	8.8	<0.3	<0.3	<1.0	3.58	2620
	NBB-220	04/26/1993	984000	2680	2868	No Data	<0.11	<0.09	<2.0	No Data	2720
	NBB-219	04/26/1993	965000	2630	2074	9.6	<0.11	<0.08	<2.0	0.57	2870
	NBB-549	11/04/1993	811000	No Data	1854	11.5	<1.01	<0.86	<1.0	2.69	1370
92-12	NBB-567	11/02/1993	128000	No Data	686	10.0	<0.07	<0.06	<1.0	121	7.9
92-13	NBB-566	11/02/1993	62500	No Data	630	9.2	<0.06	<0.05	<1.0	>1000	~2.2
93-01	NBB-540	11/01/1993	118000	No Data	534	9.7	<0.12	<0.09	<1.0	0.47	~3.2
Equipment Blank	NBB-281	03/02/1993	19900	No Data	33	No Data	<0.3	<0.3	No Data	No Data	No Data
	NBB-188	03/08/1993	~134	<1.0	248	No Data	<0.3	<0.3	<1.0	No Data	<1.0
	NBB-232	04/22/1993	~139	No Data	No Data	No Data	<0.07	<0.07	No Data	No Data	No Data
	NBB-438	07/22/1993	~43.5	No Data	No Data	No Data	<0.18	<0.12	No Data	No Data	No Data
	NBB-448	07/27/1993	~356	<1.0	~118	No Data	<0.14	<0.07	<1.0	No Data	~1.8
	NBB-545	11/03/1993	~377	No Data	~148	No Data	<0.86	<0.54	<1.0	No Data	<1.0

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).

[b]Total dissolved solids.

[c]The values listed multiplied by 10^{-9} will result in µCi/mL.

[d]Nephelometric turbidity units.

Table A-16 (continued). Ground-Water Chemistry Data Collected At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	U-234 (pCi/L)[b]	U-235 (pCi/L)[b]	U-238 (pCi/L)[b]	V (µg/L)	Volatile (µg/L)	Zn (µg/L)
31SW91-03	NBB-546	11/03/1993	506.19	21.43	538.72	1300	No Data	~10.7
31SW91-14	NBB-195	03/10/1993	863.40	No Data	901.08	824	No Detect	~6.2
	NBB-252	04/29/1993	1061.96	50.19	1093.60	749	No Detect	27.3
	NBB-413	07/26/1993	1001.47	164.90	998.67	934	No Detect	~5.9
	NBB-570	11/03/1993	908.52	49.92	920.49	936	No Data	~17.1
31SW91-23	NBB-177	03/03/1993	374.95	No Data	388.90	<4.0	No Detect	~15.2
	NBB-244	04/27/1993	588.12	22.90	592.16	<4.0	No Detect	20.4
	NBB-446	07/27/1993	550.17	40.67	605.34	~9.1	No Detect	~17.5
	NBB-544	11/03/1993	612.74	24.49	605.92	<5.0	No Data	<7.0
82-07	NBB-204	03/16/1993	174.96	No Data	178.38	76.3	No Data	~16.5
	NBB-251	04/28/1993	223.36	13.53	208.90	65.7	No Data	~13.9
	NBB-422	07/29/1993	205.33	<13.83	219.39	73.3	No Data	~8.1
	NBB-542	11/02/1993	155.93	6.56	159.39	82.0	No Data	~9.2
82-30B	NBB-182	03/04/1993	281.93	No Data	285.66	2670	No Detect	~6.9
	NBB-181	03/04/1993	286.20	No Data	294.58	2730	No Detect	~7.8
	NBB-211	04/21/1993	489.80	47.38	472.64	2170	No Detect	~3.1
	NBB-449	07/27/1993	317.66	13.79	341.29	2110	No Detect	<3.0
	NBB-547	11/03/1993	355.32	17.99	357.75	2410	No Data	<7.0
82-31B-E	NBB-572	11/04/1993	23.47	<0.17	8.28	<5.0	No Data	<7.0
82-31B-W	NBB-175	03/02/1993	14.61	No Data	11.14	<4.0	See Table	27.5
	NBB-174	03/02/1993	14.29	No Data	11.28	<4.0	See Table	20.8
	NBB-249	04/29/1993	41.40	3.52	37.35	<4.0	No Detect	~10.0
	NBB-415	07/27/1993	22.60	1.82	18.07	<8.0	No Detect	~6.4
82-36A	NBB-194	03/10/1993	1154.74	No Data	1195.23	793	No Detect	29.9
	NBB-243	04/27/1993	1352.30	72.56	1353.16	573	No Detect	49.7
	NBB-445	07/27/1993	1155.97	134.70	1127.05	674	No Detect	78.7
82-40A	NBB-183	03/04/1993	415.46	No Data	449.28	157	No Detect	~11.7
	NBB-250	04/29/1993	496.66	19.94	493.56	131	No Detect	~12.3
	NBB-419	07/28/1993	0.90	0.01	0.19	110	No Detect	~4.9
	NBB-418	07/28/1993	1339.66	194.37	1310.78	110	No Detect	~5.6
	NBB-571	11/03/1993	4096.48	163.36	4288.89	86.0	No Data	<7.0

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated). "See Table" indicates that the reader should refer to Table A-17 in the report for a list of detected constituents.

[b]The values listed multiplied by 10^{-9} will result in µCi/mL.

Table A-16 (continued). Ground-Water Chemistry Data Collected At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	U-234 (pCi/L)[b]	U-235 (pCi/L)[b]	U-238 (pCi/L)[b]	V (µg/L)	Volatile (µg/L)	Zn (µg/L)
82-42	NBB-178	03/03/1993	18.29	No Data	17.44	173	No Detect	~7.0
	NBB-248	04/28/1993	16.65	1.56	15.50	208	No Detect	~5.0
	NBB-247	04/28/1993	17.78	2.35	16.13	208	No Detect	~9.6
	NBB-269	07/28/1993	14.93	<0.44	12.78	204	No Detect	~5.6
	NBB-569	11/03/1993	11.35	<0.14	9.93	216	No Data	~14.1
83-70	NBB-169	03/01/1993	155.03	No Data	154.40	404	No Data	~11.1
	NBB-221	04/27/1993	<0.46	<0.18	<0.32	<4.0	No Data	28.3
	NBB-406	07/21/1993	<0.49	<0.19	<0.27	<8.0	No Data	~9.0
	NBB-541	11/02/1993	<0.23	<0.13	<0.17	<5.0	No Data	<7.0
84-74	NBB-197	03/11/1993	0.86	No Data	0.52	<4.0	No Data	~3.4
	NBB-218	04/23/1993	<0.14	<0.06	<0.07	<4.0	No Data	<3.0
	NBB-409	07/21/1993	<0.32	<0.11	<0.12	<8.0	No Data	~14.3
84-75	NBB-196	03/10/1993	5.46	No Data	5.08	<4.0	No Detect	~3.8
	NBB-253	04/29/1993	1.14	<0.09	0.49	<4.0	No Detect	<3.0
	NBB-450	07/28/1993	1.01	<0.24	<0.31	<8.0	No Detect	~4.1
84-76	NBB-179	03/03/1993	0.95	No Data	0.37	<4.0	No Detect	~6.9
	NBB-246	04/28/1993	0.61	<0.09	<0.16	<4.0	See Table	20.9
	NBB-416	07/27/1993	<0.28	<0.16	<0.20	<8.0	No Detect	~5.9
84-77	NBB-173	03/02/1993	0.45	No Data	0.36	<4.0	No Detect	~18.5
	NBB-223	04/27/1993	<0.17	<0.11	<0.16	<4.0	No Detect	33.3
	NBB-414	07/27/1993	<0.26	<0.17	<0.23	<8.0	No Detect	<3.0
88-85	NBB-171	03/01/1993	1.07	No Data	0.52	<4.0	No Data	~16.1
	NBB-222	04/27/1993	245.06	10.57	256.02	436	No Data	~12.9
	NBB-408	07/21/1993	232.88	19.63	235.68	456	No Data	~16.4
	NBB-407	07/21/1993	244.84	<11.01	242.91	445	No Data	<3.0
	NBB-568	11/02/1993	192.21	8.69	199.79	438	No Data	~9.4
92-01	NBB-186	03/08/1993	77.50	No Data	77.53	<4.0	No Detect	~7.3
	NBB-214	04/22/1993	5.03	<0.14	2.15	<4.0	See Table	~11.6
	NBB-402	07/20/1993	3.94	<0.14	1.71	<8.0	No Detect	~5.1
	NBB-527	10/26/1993	5.26	<0.11	2.49	<5.0	No Data	~8.0

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated). "See Table" indicates that the reader should refer to Table A-17 in the report for a list of detected constituents.

[b]The values listed multiplied by 10^{-9} will result in µCi/mL.

Table A-16 (continued). Ground-Water Chemistry Data Collected At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	U-234 (pCi/L)[b]	U-235 (pCi/L)[b]	U-238 (pCi/L)[b]	V (µg/L)	Volatile (µg/L)	Zn (µg/L)
92-02	NBB-309	03/16/1993	12.17	No Data	3.18	<4.0	See Table	~9.6
	NBB-207	04/20/1993	6.89	0.35	0.48	~4.5	No Detect	~4.0
	NBB-401	07/19/1993	4.19	<0.14	<0.22	<8.0	No Detect	~5.1
	NBB-532	10/28/1993	2.82	<0.10	<0.17	<5.0	No Data	<7.0
92-03	NBB-190	03/09/1993	4.89	No Data	2.29	<4.0	No Detect	26.0
	NBB-215	04/22/1993	2.73	<0.22	1.76	~8.8	No Detect	37.5
	NBB-444	07/26/1993	1.65	<0.14	0.92	<8.0	No Detect	24.6
	NBB-533	10/27/1993	<0.04	<0.29	<0.28	<5.0	No Data	<7.0
92-04	NBB-187	03/08/1993	4.76	No Data	0.48	<4.0	No Detect	~11.4
	NBB-209	04/20/1993	3.62	0.10	0.35	<4.0	No Detect	~10.0
	NBB-208	04/20/1993	3.74	<0.10	0.41	~5.5	No Detect	~9.9
	NBB-403	07/20/1993	3.18	<0.15	<0.30	<8.0	No Detect	~8.0
	NBB-539	10/29/1993	4.56	<0.23	<0.28	<5.0	No Data	~11.8
	NBB-538	10/29/1993	4.77	<0.24	<0.28	<5.0	No Data	~9.6
92-05	NBB-191	03/09/1993	3.32	No Data	1.82	~4.5	No Detect	32.5
	NBB-233	04/22/1993	4.08	0.49	2.15	~4.9	No Detect	25.4
	NBB-410	07/22/1993	2.81	<0.20	1.31	<8.0	No Detect	~7.6
	NBB-528	10/26/1993	3.52	<0.12	1.90	<5.0	No Data	<7.0
92-06	NBB-192	03/09/1993	0.58	No Data	0.27	<4.0	No Detect	~4.0
	NBB-212	04/21/1993	1.77	<0.12	0.95	<4.0	No Detect	~6.7
	NBB-405	07/20/1993	<0.28	<0.15	<0.15	<8.0	No Detect	~3.8
	NBB-404	07/20/1993	<0.34	<0.15	<0.13	<8.0	No Detect	~9.4
	NBB-526	10/25/1993	<0.16	<0.08	<0.10	<5.0	No Data	<7.0
92-07	NBB-205	03/16/1993	385.92	No Data	388.05	381	No Data	~10.4
	NBB-225	04/28/1993	463.16	18.45	469.40	351	No Data	~17.0
	NBB-421	07/29/1993	267.92	<16.77	288.07	369	No Data	~15.4
	NBB-543	11/02/1993	420.69	16.71	442.54	385	No Data	<7.0
92-08	NBB-199	03/11/1993	227.40	No Data	223.18	<4.0	No Data	~4.3
	NBB-224	04/28/1993	255.59	11.35	244.76	<4.0	No Data	~3.7
	NBB-420	07/29/1993	235.22	<8.98	246.98	<8.0	No Data	<3.0
	NBB-548	11/04/1993	207.19	9.12	206.45	<5.0	No Data	<7.0

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated). "See Table" indicates that the reader should refer to Table A-17 in the report for a list of detected constituents.

[b]The values listed multiplied by 10^{-9} will result in µCi/mL.

Table A-16 (continued). Ground-Water Chemistry Data Collected At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	U-234 (pCi/L)[b]	U-235 (pCi/L)[b]	U-238 (pCi/L)[b]	V (µg/L)	Volatile (µg/L)	Zn (µg/L)
92-09	NBB-202	03/15/1993	144.09	No Data	145.37	<4.0	No Data	~4.7
	NBB-216	04/22/1993	127.76	6.26	121.95	<4.0	No Data	~8.9
	NBB-412	07/22/1993	166.72	16.45	158.74	<8.0	No Data	~5.3
	NBB-537	10/28/1993	133.99	11.41	126.66	<5.0	No Data	<7.0
	NBB-536	10/28/1993	126.33	5.30	122.30	<5.0	No Data	<7.0
92-10	NBB-203	03/15/1993	3.89	No Data	1.64	<4.0	No Data	~6.7
	NBB-217	04/22/1993	3.98	<0.15	1.66	<4.0	No Data	20.9
	NBB-411	07/22/1993	2.45	<0.18	0.50	<8.0	No Data	~6.0
	NBB-535	10/28/1993	2.73	<0.21	<0.21	<5.0	No Data	~9.6
92-11	NBB-200	03/12/1993	623.51	No Data	640.97	756	No Data	~9.5
	NBB-220	04/26/1993	949.37	51.46	974.01	802	No Data	~6.3
	NBB-219	04/26/1993	968.26	41.32	985.64	786	No Data	~15.9
	NBB-549	11/04/1993	420.19	25.89	460.96	880	No Data	~7.8
92-12	NBB-567	11/02/1993	8.85	<0.12	2.66	<5.0	No Data	~17.6
92-13	NBB-566	11/02/1993	2.39	<0.09	1.24	~36.5	No Data	<7.0
93-01	NBB-540	11/01/1993	22.82	<0.16	1.48	<5.0	No Data	~10.6
Equipment Blank	NBB-281	03/02/1993	0.31	No Data	0.02	No Data	No Data	No Data
	NBB-188	03/08/1993	0.09	No Data	<0.3	<4.0	See Table	~4.7
	NBB-232	04/22/1993	<0.30	<0.27	<0.29	No Data	No Data	No Data
	NBB-438	07/22/1993	<0.21	<0.18	<0.18	No Data	No Data	No Data
	NBB-448	07/27/1993	<0.52	<0.35	<0.37	<8.0	See Table	~4.0
	NBB-545	11/03/1993	<2.30	<1.43	<1.89	<5.0	No Data	~10.4

[a]A "<" indicates that the maximum concentration was below the detection limit (number shown is detection limit). A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated). "See Table" indicates that the reader should refer to Table A-17 in the report for a list of detected constituents.

[b]The values listed multiplied by 10^{-9} will result in µCi/mL.

Table A-17. Organic Constituents Detected in Samples Collected from Ground Water At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Analyte Name	CAS Number[b]	Conc. (µg/L)	Category	TCL Constituent[c]
31SW91-14	NBB-195	03/10/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~2	Semivolatile	X
			Ethanol, 2-(2-methoxyethoxy)	111-77-3	~4	Semivolatile	
			Phosphine oxide, triphenyl-	791-28-6	~3	Semivolatile	
			Unknown	UNK-21.72	~2	Semivolatile	
			Unknown	UNK-23.14	~5	Semivolatile	
			Unknown	UNK-4.52a	~3	Semivolatile	
			Unknown	UNK-5.47a	~3	Semivolatile	
			Unknown Hydrocarbon	UNK-3.65	~3	Semivolatile	
	NBB-413	07/26/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~5	Semivolatile	X
			Unknown	UNK-27.94	~3	Semivolatile	
31SW91-23	NBB-177	03/03/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~3	Semivolatile	X
	NBB-244	04/27/1993	Unknown	UNK-5.12a	~7	Semivolatile	
	NBB-446	07/27/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~2	Semivolatile	X
			Phosphine oxide, triphenyl-	791-28-6	~21	Semivolatile	
82-30B	NBB-181	03/04/1993	bis(2-ethylhexyl)Phthalate	117-81-7	25	Semivolatile	X
			Unknown	UNK-23.57	~2	Semivolatile	
			Unknown	UNK-27.82	~5	Semivolatile	
			Unknown Hydrocarbon	UNK-19.87a	~2	Semivolatile	
			Unknown Hydrocarbon	UNK-20.90	~3	Semivolatile	
			Unknown Hydrocarbon	UNK-21.62	~5	Semivolatile	
			Unknown Hydrocarbon	UNK-21.89	~4	Semivolatile	
			Unknown Hydrocarbon	UNK-22.25	~2	Semivolatile	
			Unknown Hydrocarbon	UNK-22.57	~3	Semivolatile	
			Unknown Hydrocarbon	UNK-23.10	~3	Semivolatile	
			Unknown Hydrocarbon	UNK-23.49	~3	Semivolatile	
			Unknown Hydrocarbon	UNK-24.05	~7	Semivolatile	
			Unknown Hydrocarbon	UNK-25.37	~8	Semivolatile	
			Unknown Hydrocarbon	UNK-28.14	~5	Semivolatile	
	NBB-182	03/04/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~2	Semivolatile	X
	NBB-449	07/27/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~2	Semivolatile	X

[a]A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).
[b]CAS numbers are not assigned to unknown analytes; identifiers listed in this column for unknown analytes reflect the peak and range as displayed graphically by the mass spectrometer.
[c]Constituents not identified by an "X" are tentatively identified compounds.

Table A-17 (continued). Organic Constituents Detected in Samples Collected from Ground Water At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Analyte Name	CAS Number[b]	Conc. (µg/L)	Category	TCL Constituent[c]
82-31B-W	NBB-174	03/02/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~3	Semivolatile	X
			Methylene Chloride	75-09-2	1.8	Volatile	X
	NBB-175	03/02/1993	5-Ethyl-2,4-dimethyl-2-heptene	74421-06-0	~2	Semivolatile	
			bis(2-ethylhexyl)Phthalate	117-81-7	~4	Semivolatile	X
			Methylene Chloride	75-09-2	1.7	Volatile	X
	NBB-249	04/29/1993	Unknown	UNK-5.15a	~5	Semivolatile	
			Unknown Hydrocarbon	UNK-22.67	~7	Semivolatile	
	NBB-415	07/27/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~2	Semivolatile	X
			Phosphine oxide, triphenyl-	791-28-6	~21	Semivolatile	
82-36A	NBB-194	03/10/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~5	Semivolatile	X
			Ethanol, 2-(2-methoxyethoxy)	111-77-3	~5	Semivolatile	
			Phosphine oxide, triphenyl-	791-28-6	~10	Semivolatile	
			Unknown	UNK-3.73	~3	Semivolatile	
			Unknown	UNK-4.60	~2	Semivolatile	
			Unknown Hydrocarbon	UNK-21.79	~9	Semivolatile	
	NBB-243	04/27/1993	1-Hexanol, 2-ethyl-	104-76-7	~2	Semivolatile	
			Unknown Hydrocarbon	UNK-22.67	~7	Semivolatile	
	NBB-445	07/27/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~3	Semivolatile	X
			Phosphine oxide, triphenyl-	791-28-6	~19	Semivolatile	
82-40A	NBB-183	03/04/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~2	Semivolatile	X
	NBB-250	04/29/1993	Unknown	UNK-5.17	~3	Semivolatile	
	NBB-418	07/28/1993	bis(2-ethylhexyl)Phthalate	117-81-7	23	Semivolatile	X
			Unknown Hydrocarbon	UNK-8.77	~2	Semivolatile	
	NBB-419	07/28/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~4	Semivolatile	X
			Unknown Hydrocarbon	UNK-8.79	~2	Semivolatile	
82-42	NBB-178	03/03/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~3	Semivolatile	X
	NBB-248	04/28/1993	Unknown	UNK-25.14	~3	Semivolatile	
	NBB-269	07/28/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~1	Semivolatile	X
			Unknown Hydrocarbon	UNK-8.79	~2	Semivolatile	

[a]A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).

[b]CAS numbers are not assigned to unknown analytes; identifiers listed in this column for unknown analytes reflect the peak and range as displayed graphically by the mass spectrometer.

[c]Constituents not identified by an "X" are tentatively identified compounds.

Table A-17 (continued). Organic Constituents Detected in Samples Collected from Ground Water At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Analyte Name	CAS Number[b]	Conc. (µg/L)	Category	TCL Constituent[c]
84-75	NBB-196	03/10/1993	Ethanol, 2-(2-methoxyethoxy)	111-77-3	~3	Semivolatile	
			Unknown	UNK-3.62	~3	Semivolatile	
			Unknown	UNK-4.48	~3	Semivolatile	
	NBB-253	04/29/1993	Unknown Hydrocarbon	UNK-22.69	~9	Semivolatile	
	NBB-450	07/28/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~2	Semivolatile	X
84-76	NBB-179	03/03/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~2	Semivolatile	X
	NBB-246	04/28/1993	Unknown	UNK-23.85	~5	Volatile	
			Unknown Hydrocarbon	UNK-22.57	~11	Semivolatile	
	NBB-416	07/27/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~1	Semivolatile	X
			Phosphine oxide, triphenyl-	791-28-6	~26	Semivolatile	
84-77	NBB-173	03/02/1993	2-Cyclohexen-1-one	930-68-7	~4	Semivolatile	
			bis(2-ethylhexyl)Phthalate	117-81-7	~5	Semivolatile	X
			Phosphine oxide, triphenyl-	791-28-6	~4	Semivolatile	
	NBB-223	04/27/1993	Unknown	UNK-26.96	~3	Semivolatile	
			Unknown Hydrocarbon	UNK-21.90	~2	Semivolatile	
			Unknown Hydrocarbon	UNK-22.70	~15	Semivolatile	
	NBB-414	07/27/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~2	Semivolatile	X
			Phosphine oxide, triphenyl-	791-28-6	~18	Semivolatile	
92-01	NBB-186	03/08/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~2	Semivolatile	X
			Unknown Hydrocarbon	UNK-21.89	~2	Semivolatile	
	NBB-214	04/22/1993	Toluene	108-88-3	1.1	Volatile	X
			Unknown	UNK-4.98	~4	Semivolatile	
	NBB-402	07/20/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~1	Semivolatile	X
			Octane, 5-ethyl-2-methyl-	62016-18-6	~2	Semivolatile	
			Phosphine oxide, triphenyl-	791-28-6	~17	Semivolatile	
92-02	NBB-309	03/16/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~3	Semivolatile	X
			Methylene Chloride	75-09-2	2	Volatile	X
			Phosphine oxide, triphenyl-	791-28-6	~2	Semivolatile	
			Unknown	UNK-3.58	~2	Semivolatile	
	NBB-401	07/19/1993	6-Ethyl-2-methyl-octane	62016-19-7	~2	Semivolatile	
			bis(2-ethylhexyl)Phthalate	117-81-7	~7	Semivolatile	X
			Phosphine oxide, triphenyl-	791-28-6	~48	Semivolatile	

[a]A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).

[b]CAS numbers are not assigned to unknown analytes; identifiers listed in this column for unknown analytes reflect the peak and range as displayed graphically by the mass spectrometer.

[c]Constituents not identified by an "X" are tentatively identified compounds.

Table A-17 (continued). Organic Constituents Detected in Samples Collected from Ground Water At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Analyte Name	CAS Number[b]	Conc. (µg/L)	Category	TCL Constituent[c]
92-03	NBB-190	03/09/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~2	Semivolatile	X
			Phosphine oxide, triphenyl-	791-28-6	~3	Semivolatile	
	NBB-215	04/22/1993	Unknown	UNK-4.98	~3	Semivolatile	
	NBB-444	07/26/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~2	Semivolatile	X
92-04	NBB-187	03/08/1993	Sulfur, mol. (S8)	10544-50-0	~9	Semivolatile	
	NBB-403	07/20/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~1	Semivolatile	X
92-05	NBB-191	03/09/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~4	Semivolatile	X
			Phosphine oxide, triphenyl-	791-28-6	~7	Semivolatile	
			Unknown	UNK-4.23	~4	Semivolatile	
	NBB-233	04/22/1993	Unknown	UNK-4.98	~2	Semivolatile	
	NBB-410	07/22/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~3	Semivolatile	X
			Eicosane	112-95-8	~3	Semivolatile	
			Heptacosane	593-49-7	~3	Semivolatile	
			Octacosane	630-02-4	~2	Semivolatile	
			Phosphine oxide, triphenyl-	791-28-6	~28	Semivolatile	
			Unknown Hydrocarbon	UNK-32.74	~3	Semivolatile	
92-06	NBB-192	03/09/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~2	Semivolatile	X
	NBB-212	04/21/1993	Phosphine oxide, triphenyl-	791-28-6	~2	Semivolatile	
	NBB-404	07/20/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~3	Semivolatile	X
			Phosphine oxide, triphenyl-	791-28-6	~36	Semivolatile	
	NBB-405	07/20/1993	bis(2-ethylhexyl)Phthalate	117-81-7	~2	Semivolatile	X
			Phosphine oxide, triphenyl-	791-28-6	~36	Semivolatile	
			Unknown	UNK-27.96	~2	Semivolatile	
			Unknown	UNK-33.12	~4	Semivolatile	
Equipment Blank	NBB-188	03/08/1993	2-Butanone	78-93-3	10	Volatile	X
			Acetone	67-64-1	26	Volatile	X
			bis(2-ethylhexyl)Phthalate	117-81-7	~1	Semivolatile	X
			Bromodichloromethane	75-27-4	3	Volatile	X
			Chloroform	67-66-3	27	Volatile	X
	NBB-448	07/27/1993	Acetone	67-64-1	42	Volatile	X
			bis(2-ethylhexyl)Phthalate	117-81-7	10	Semivolatile	X
			Chloroform	67-66-3	17	Volatile	X
			Phosphine oxide, triphenyl-	791-28-6	~20	Semivolatile	

[a]A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).
[b]CAS numbers are not assigned to unknown analytes; identifiers listed in this column for unknown analytes reflect the peak and range as displayed graphically by the mass spectrometer.
[c]Constituents not identified by an "X" are tentatively identified compounds.

Table A-17 (continued). Organic Constituents Detected in Samples Collected from Ground Water At and Near MMTS during 1993[a]

Sample Location	Ticket Number	Sample Date	Analyte Name	CAS Number[b]	Conc. (µg/L)	Category	TCL Constituent[c]
Trip Blank	NBB-308	03/16/1993	Methylene Chloride	75-09-2	2	Volatile	X
	NBB-206	04/19/1993	1,2-Dichloroethane	107-06-2	3.3	Volatile	X
	NBB-268	07/28/1993	methyl ester Acetic acid	79-20-9	~20	Volatile	

[a]A "~" indicates an approximate value (the value was outside the limits for which the instrument was calibrated).
[b]CAS numbers are not assigned to unknown analytes; identifiers listed in this column for unknown analytes reflect the peak and range as displayed graphically by the mass spectrometer.
[c]Constituents not identified by an "X" are tentatively identified compounds.

Appendix B

Time-Concentration Graphs

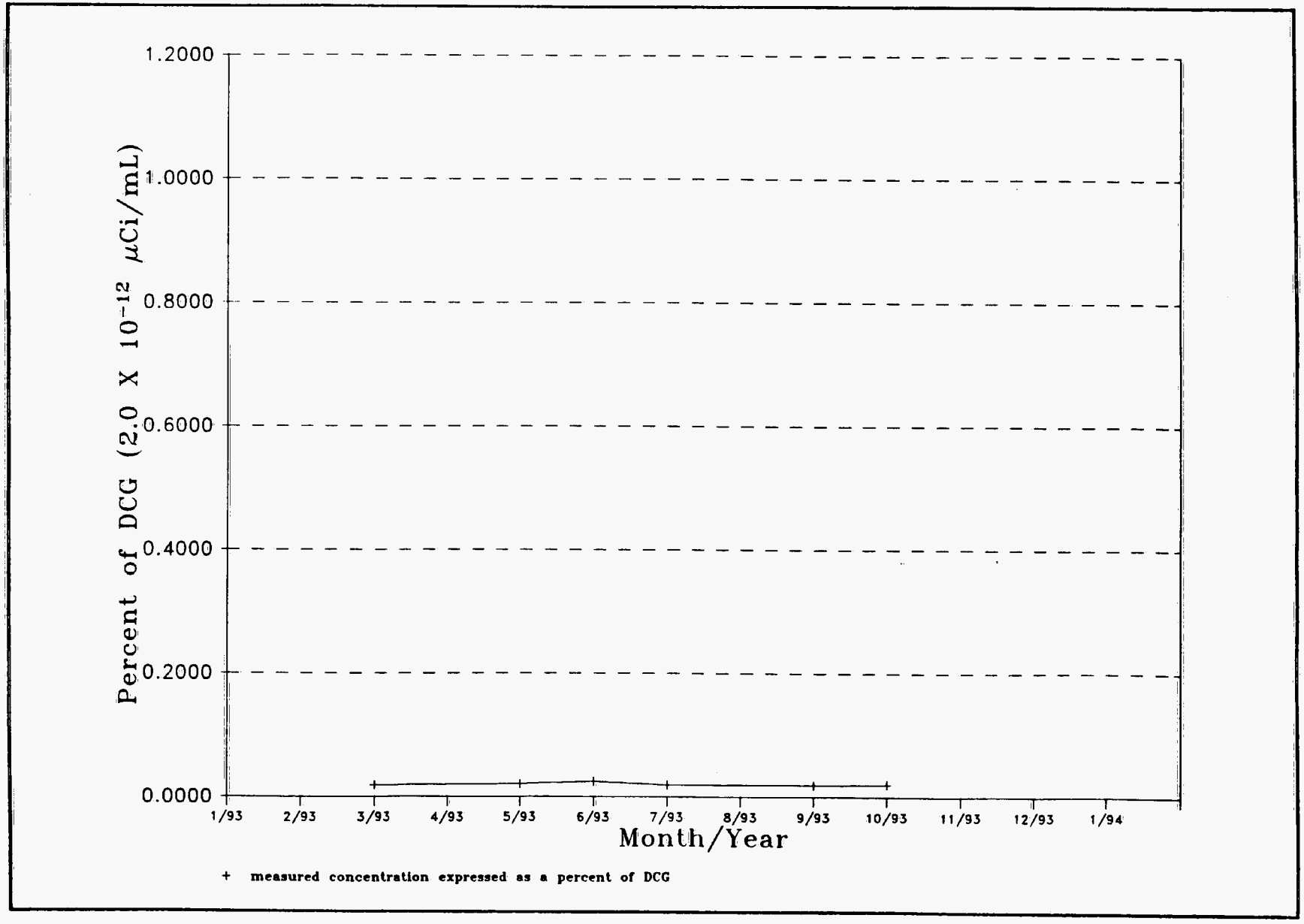


Figure B-1. Uranium Activities in Ambient Air as a Percentage of the DCG at Station AIR-M-4/AIR-M-4A from March through October 1993

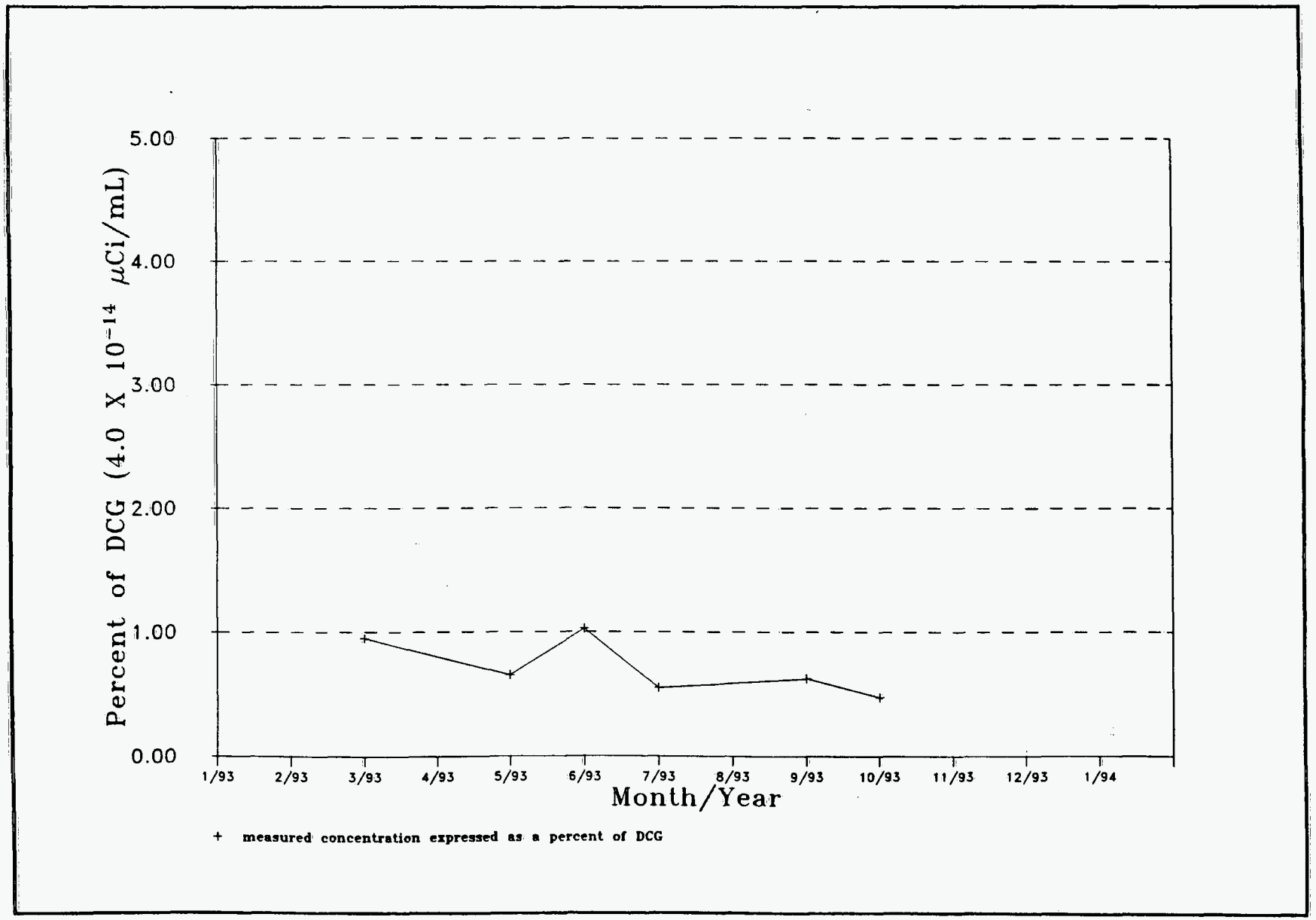


Figure B-2. Thorium-230 Activities in Ambient Air as a Percentage of the DCG at Station AIR-M-4/AIR-M-4A from March through October 1993

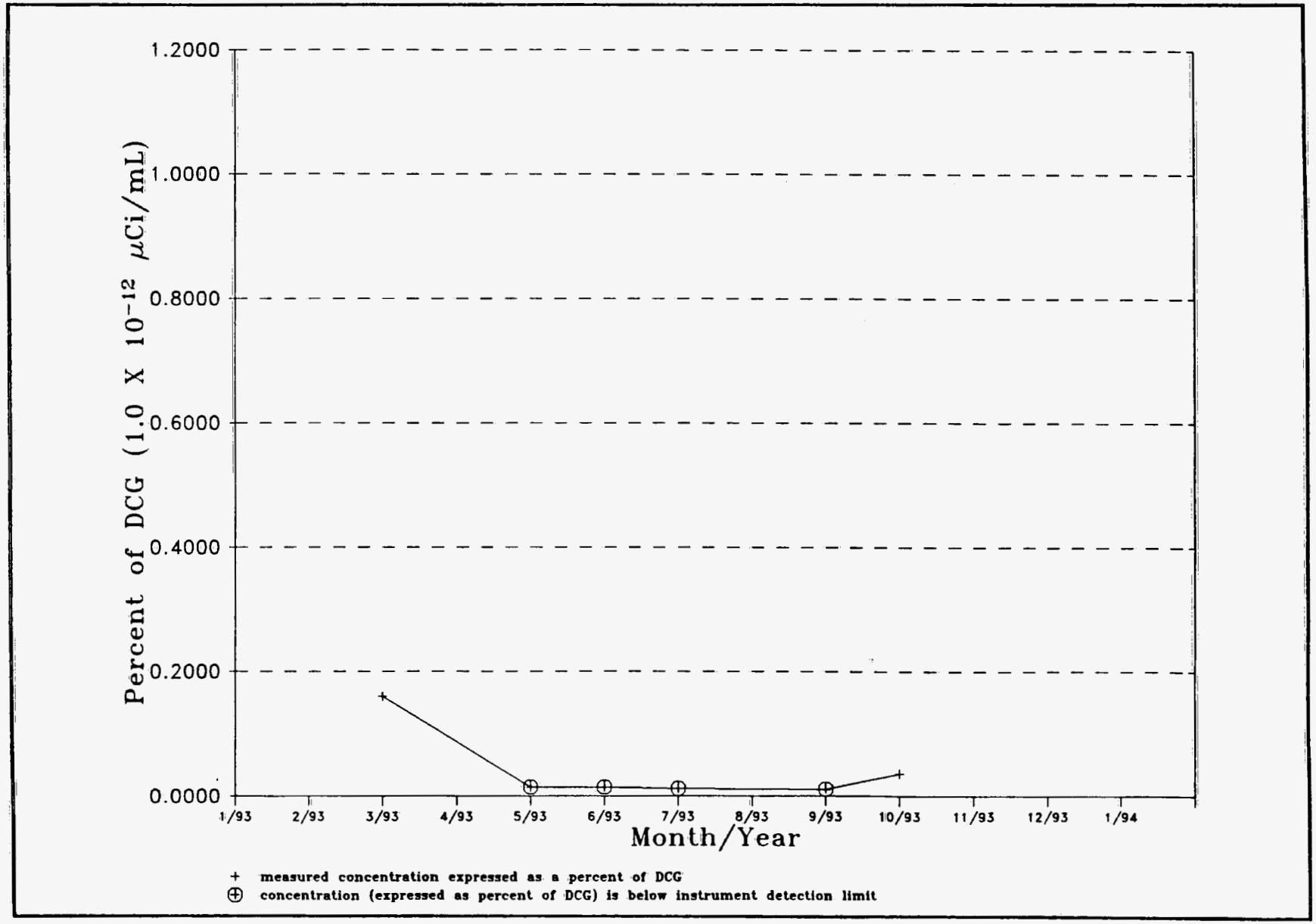


Figure B-3. Radium-226 Activities in Ambient Air as a Percentage of the DCG at Station AIR-M-4/AIR-M-4A from March through October 1993

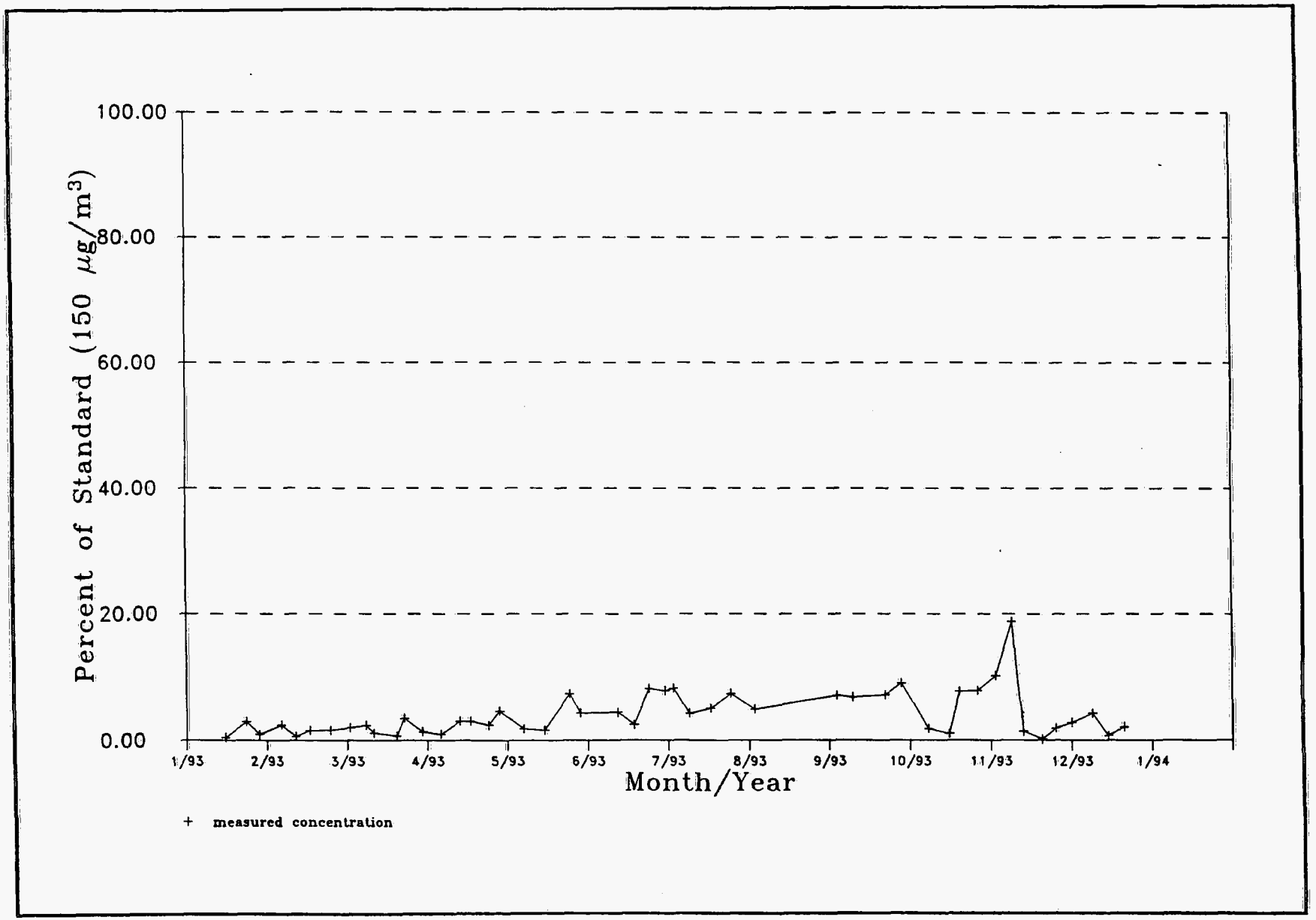


Figure B-4. PM_{10} Concentrations in Ambient Air as a Percentage of the EPA Standard at Station AIR-M-4/AIR-M-4A from January through December 1993

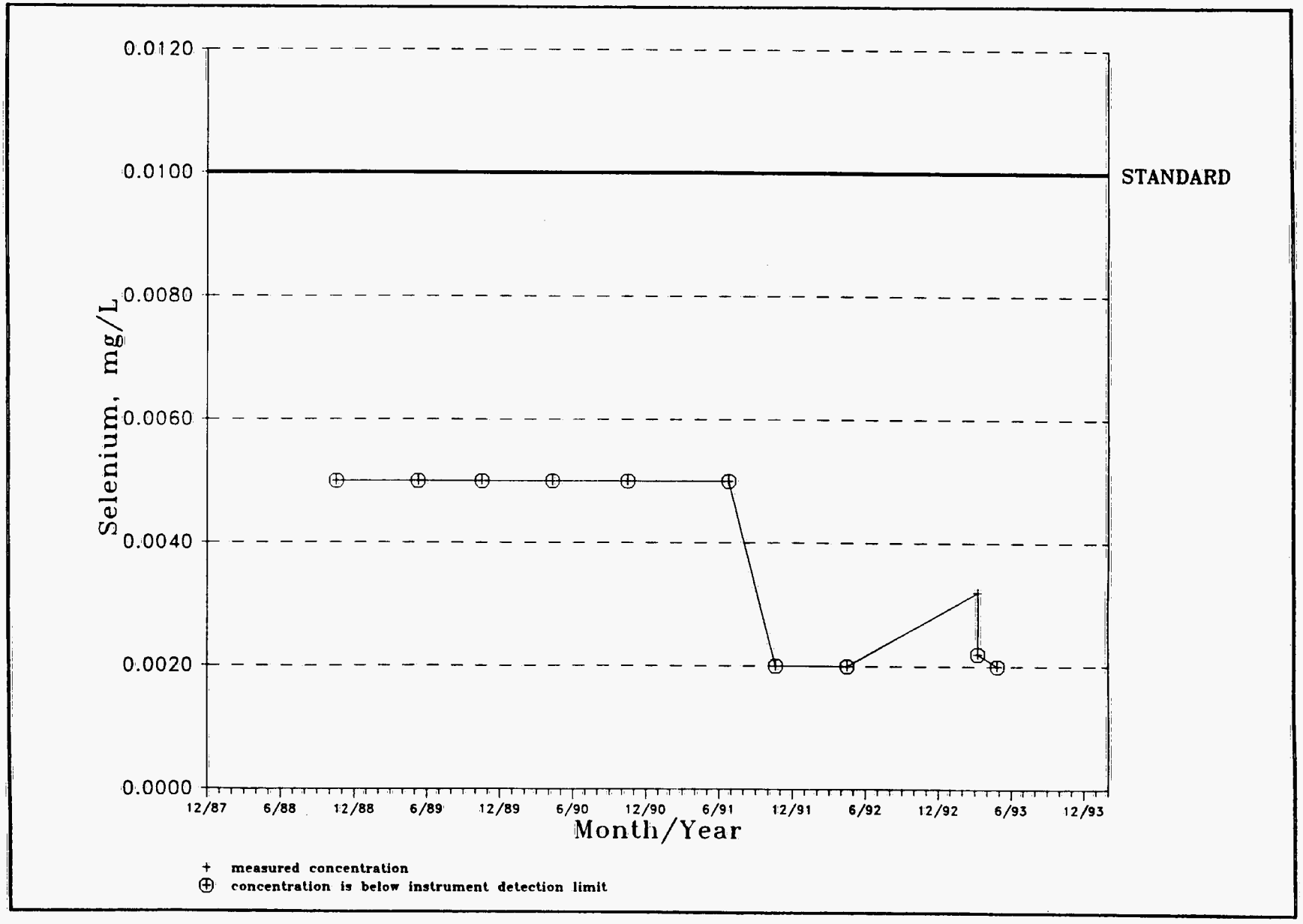


Figure B-5. Selenium Concentrations at W-5 (upgradient) from October 1988 through May 1993

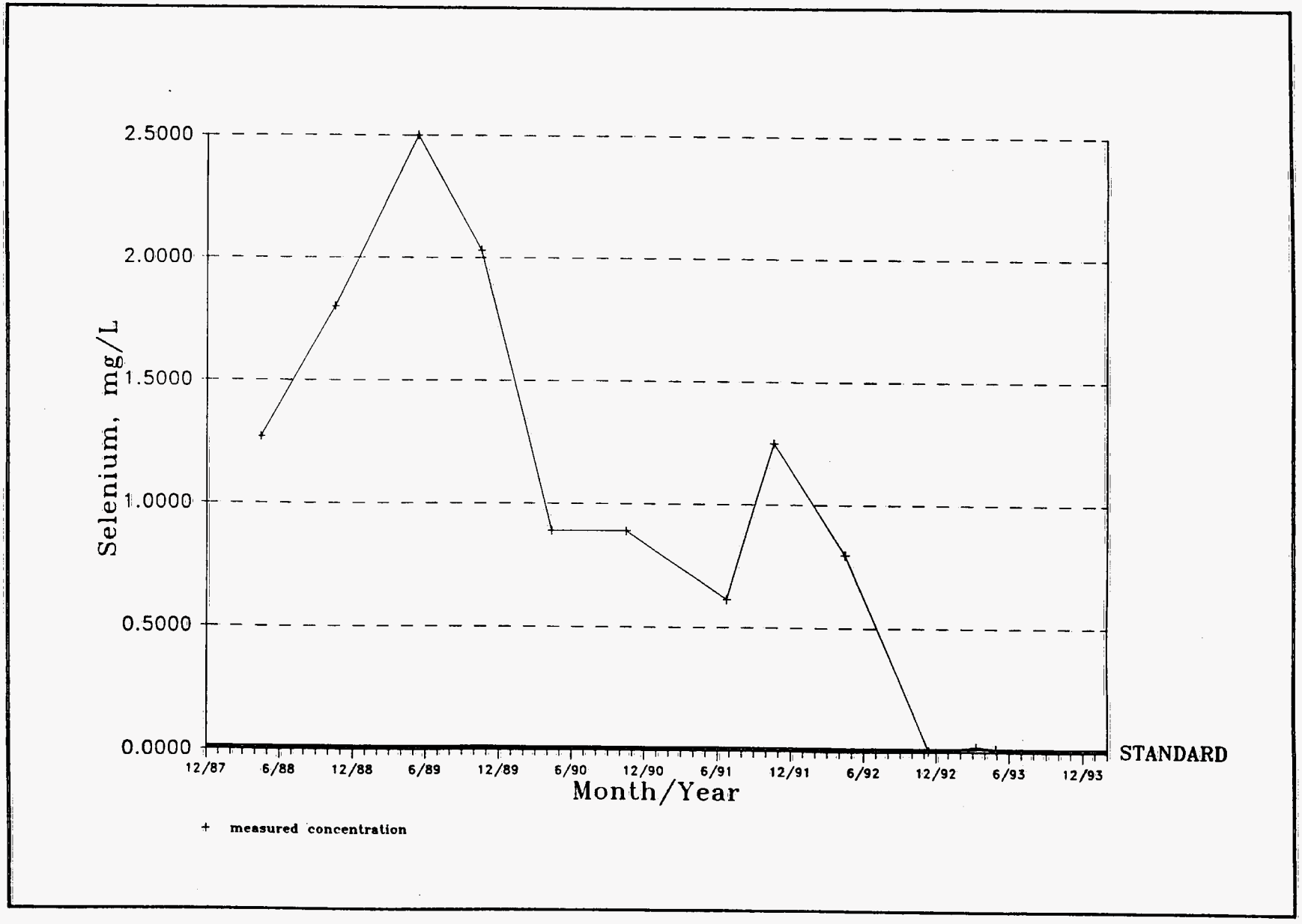


Figure B-6. Selenium Concentrations at W-2 (on site) from April 1988 through May 1993

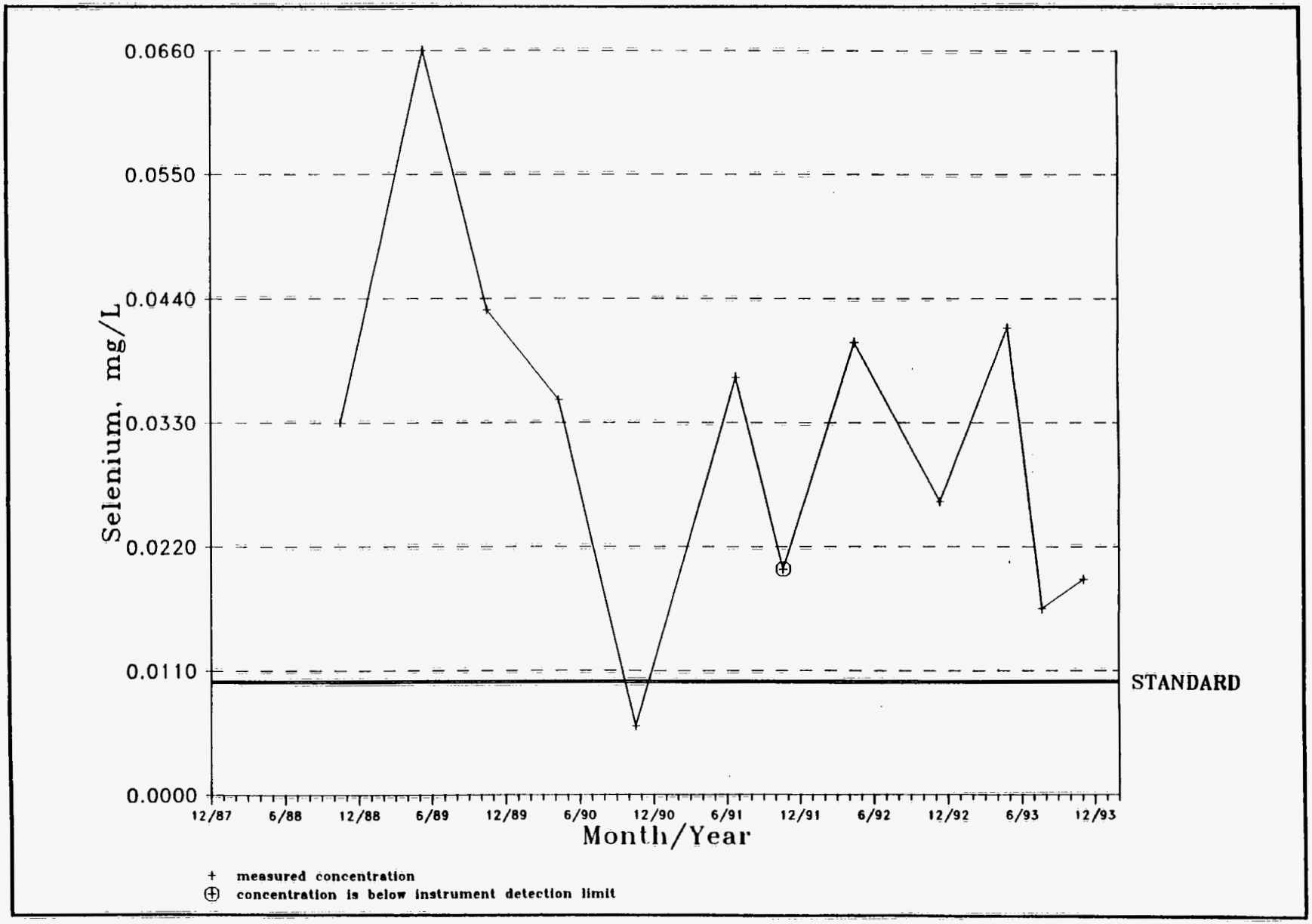


Figure B-7. Selenium Concentrations at Carbonate Seep Site (on site) from October 1988 through November 1993

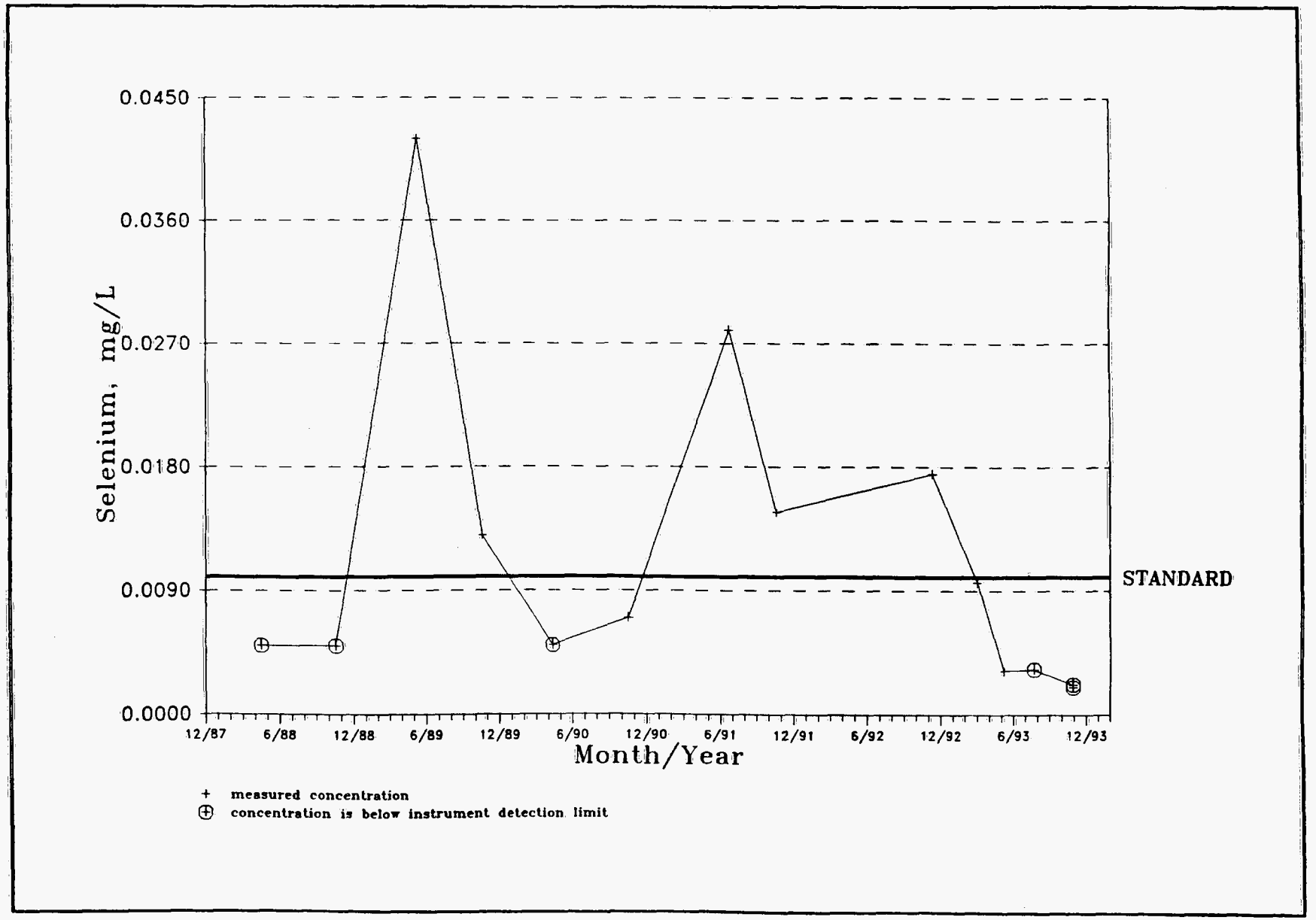


Figure B-8. Selenium Concentrations at W-4 (downgradient) from April 1988 through November 1993

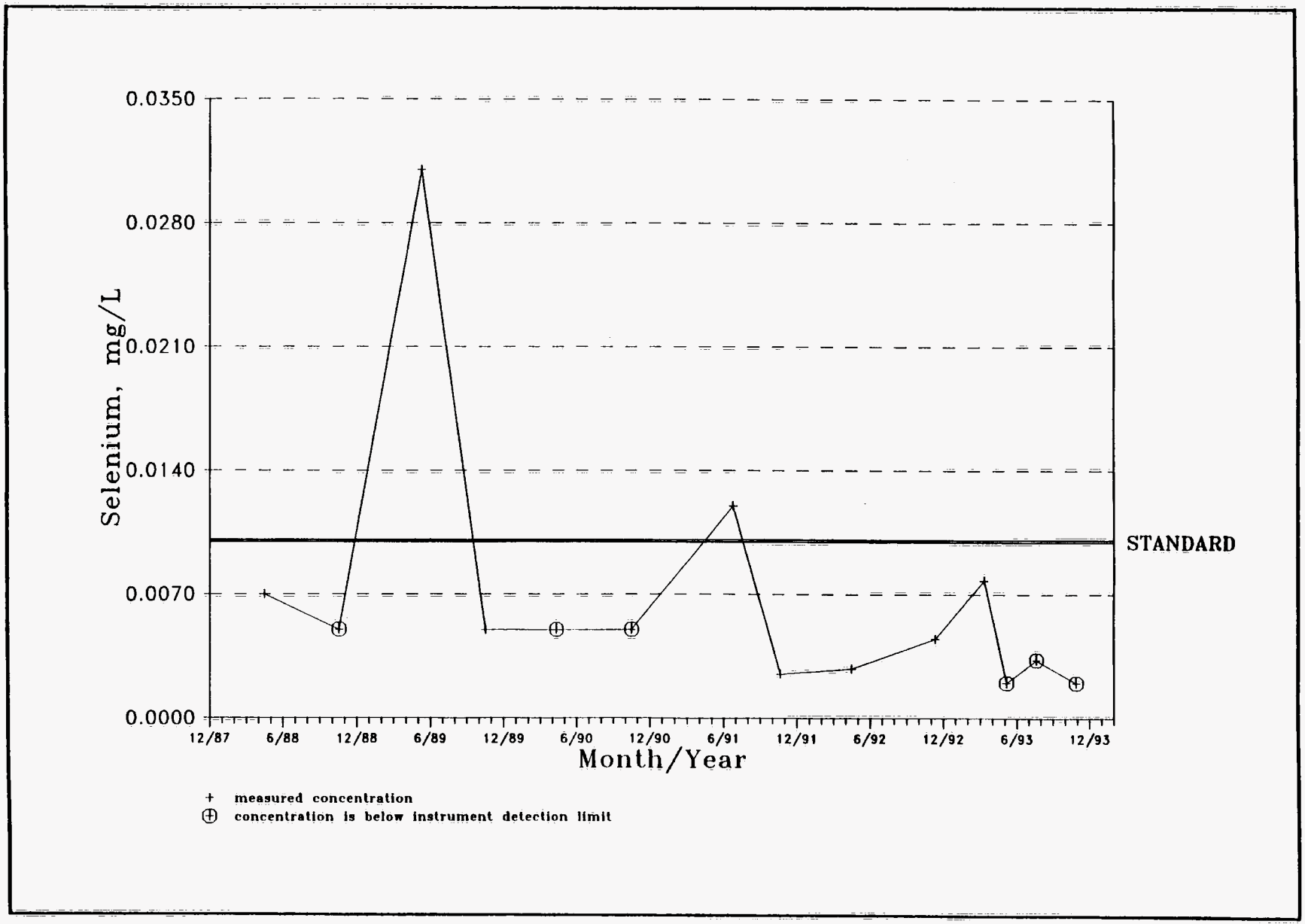


Figure B-9. Selenium Concentrations at Sorenson Site (downgradient) from April 1988 through November 1993

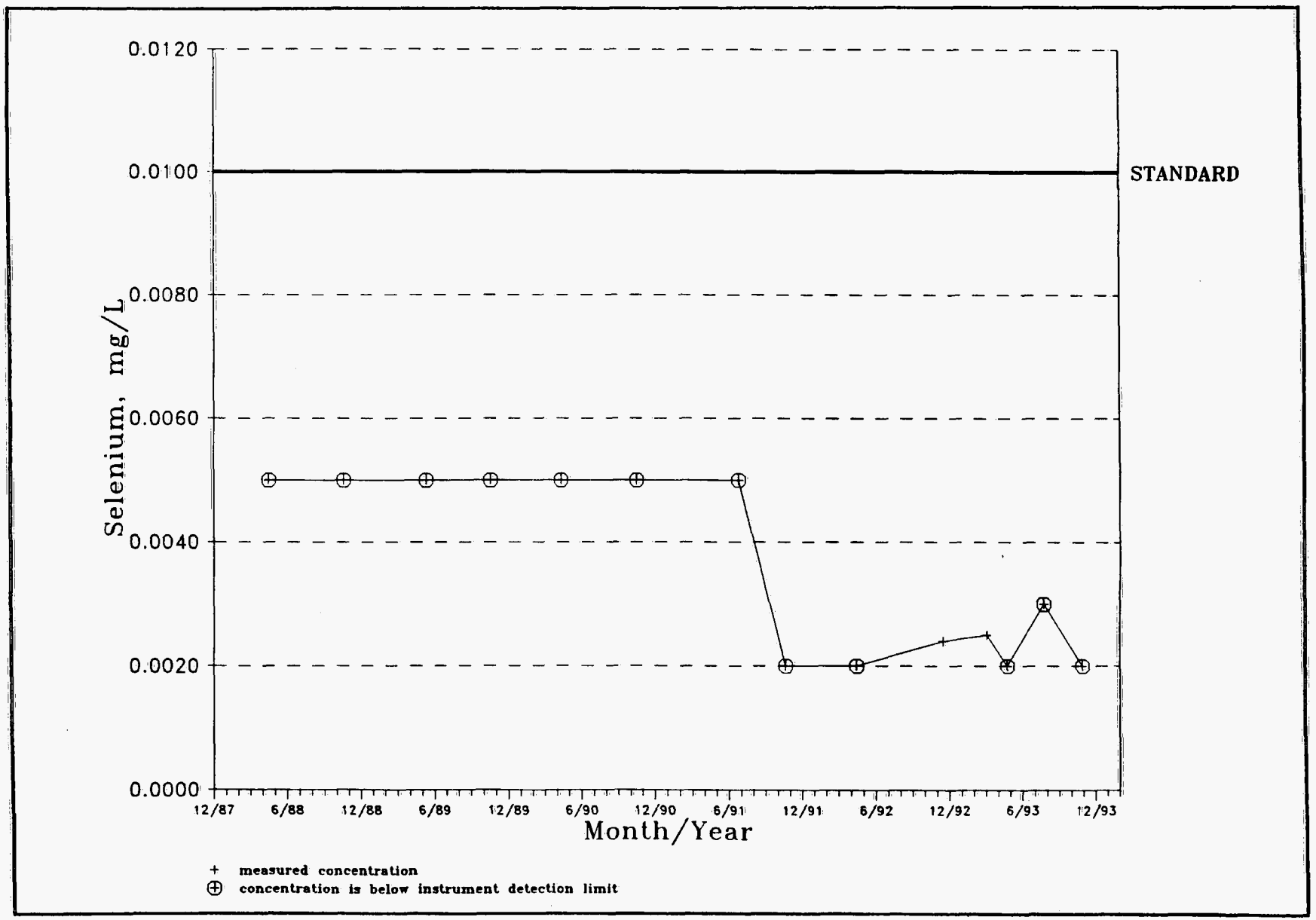


Figure B-10. Selenium Concentrations at Montezuma Canyon (downgradient) from April 1988 through November 1993

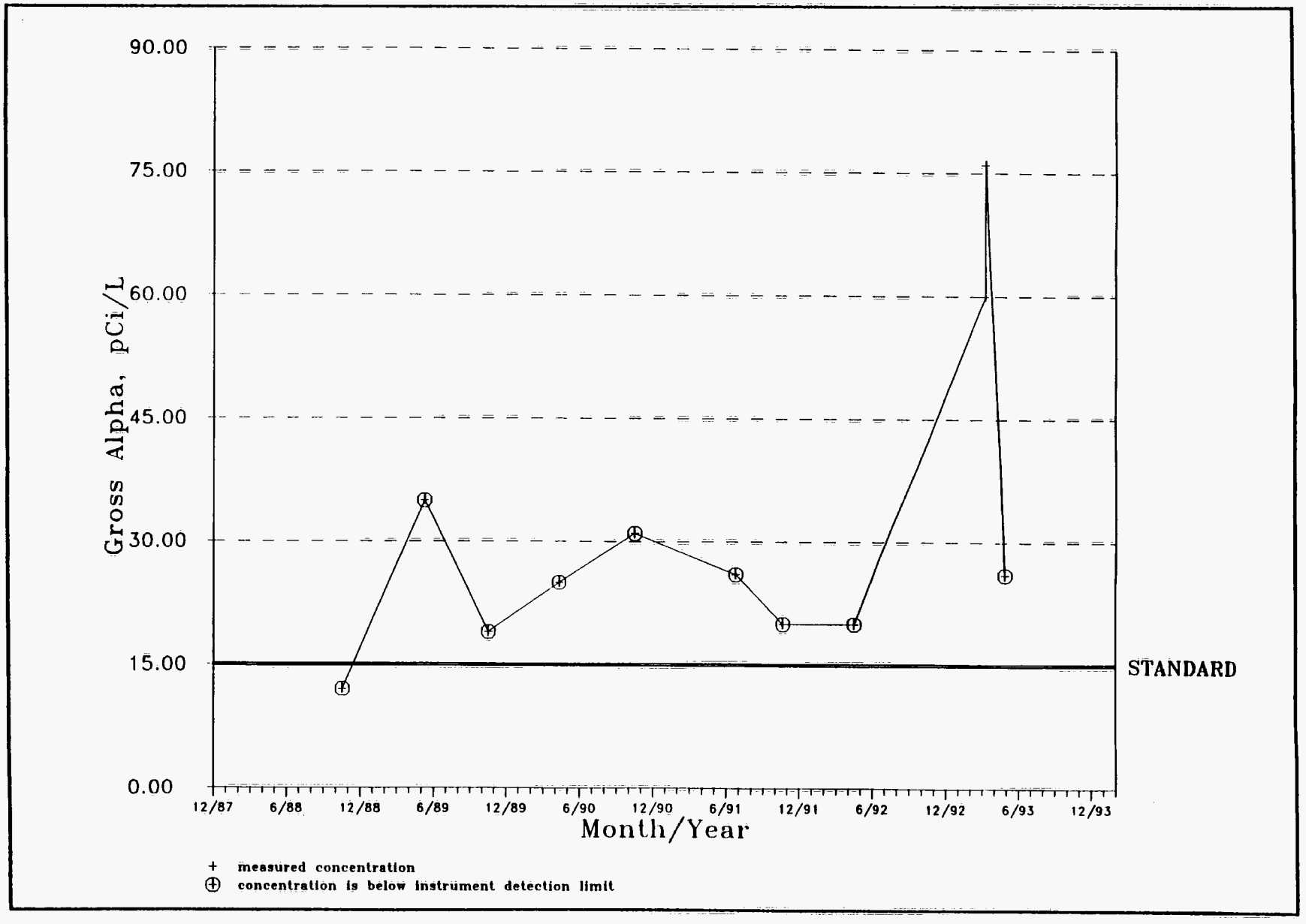


Figure B-11. Gross Alpha Activities at W-5 (upgradient) from November 1988 through June 1993

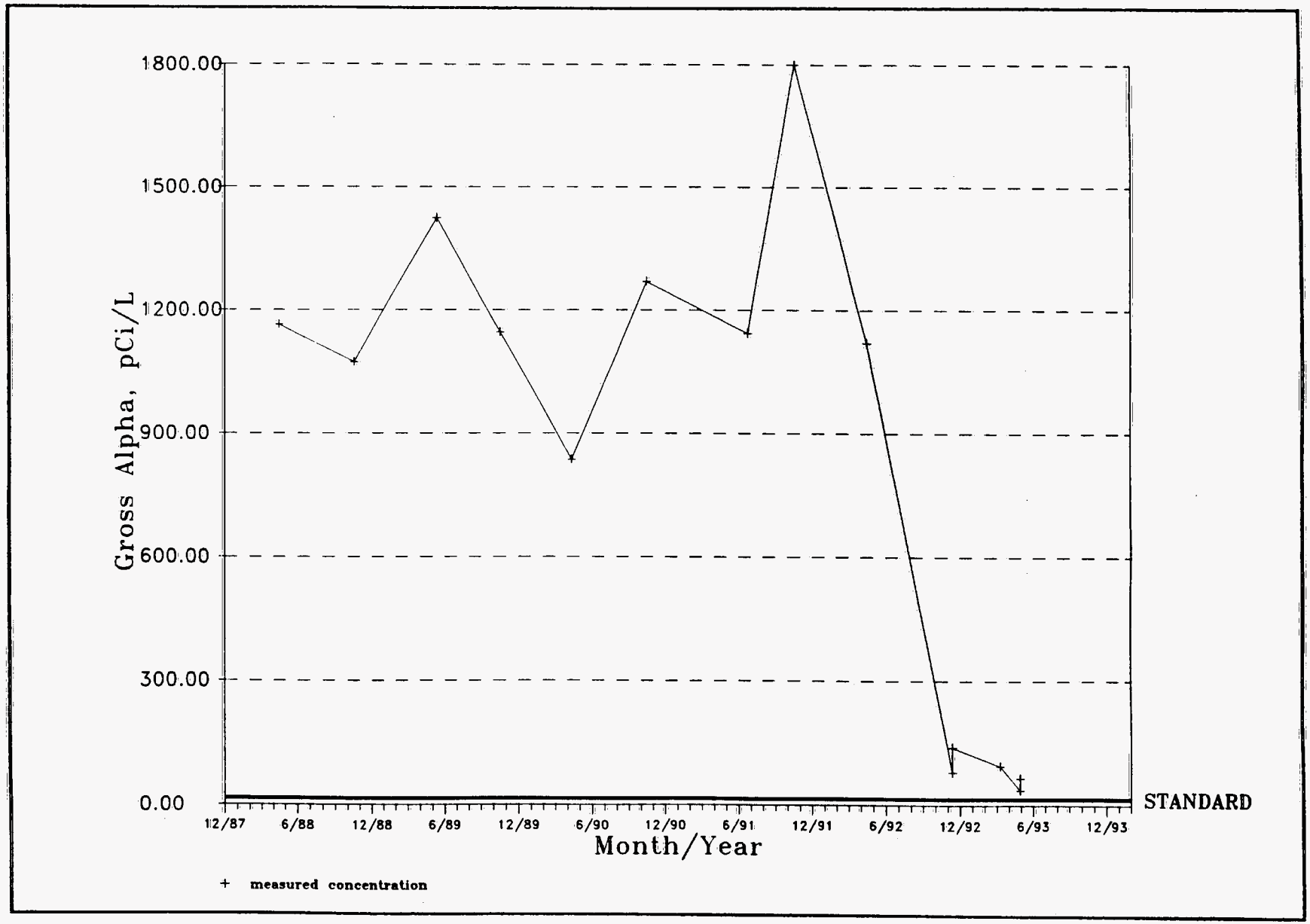


Figure B-12. Gross Alpha Activities at W-2 (on site) from May 1988 through May 1993

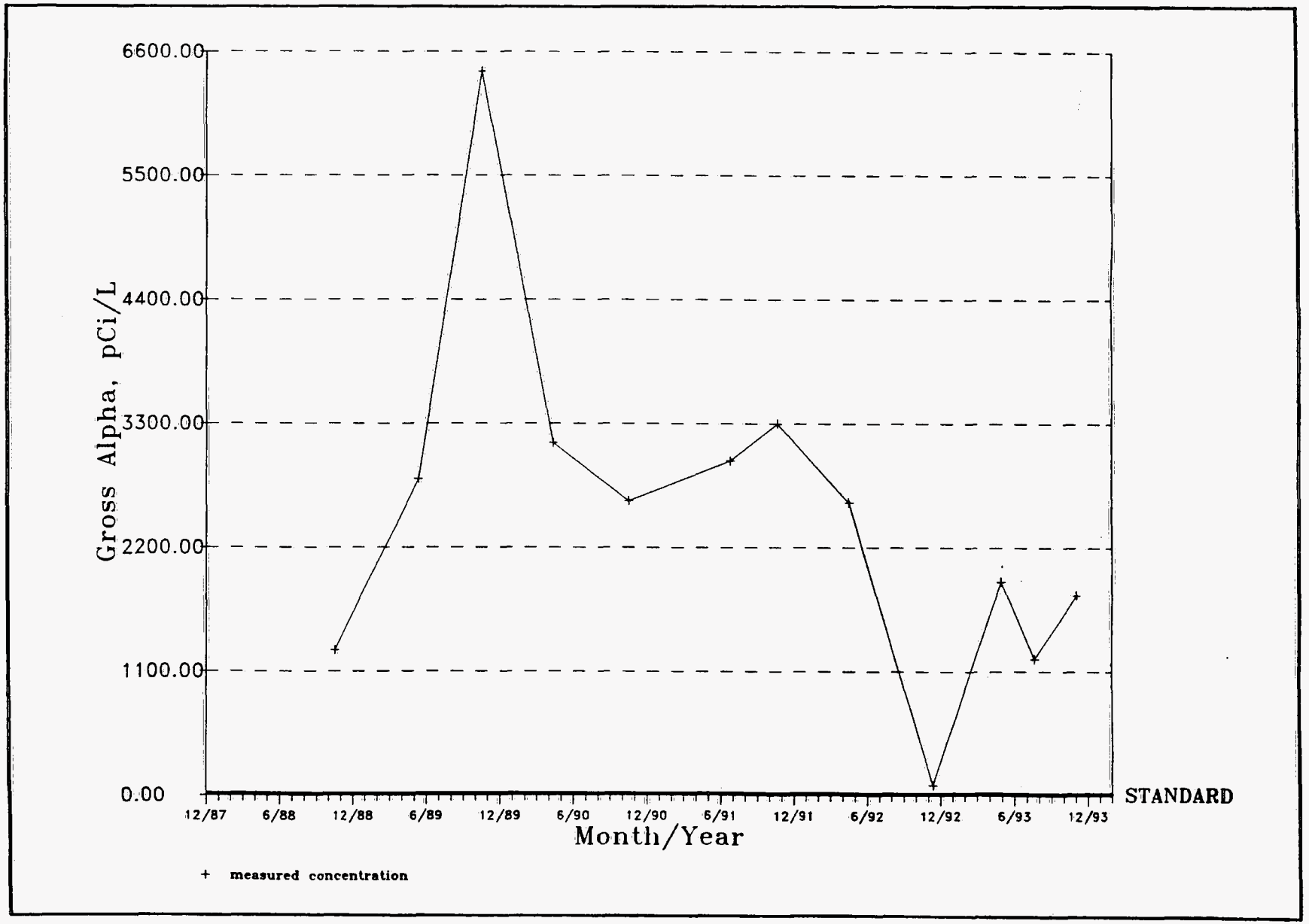


Figure B-13. Gross Alpha Activities at Carbonate Seep Site (on site) from November 1988 through November 1993

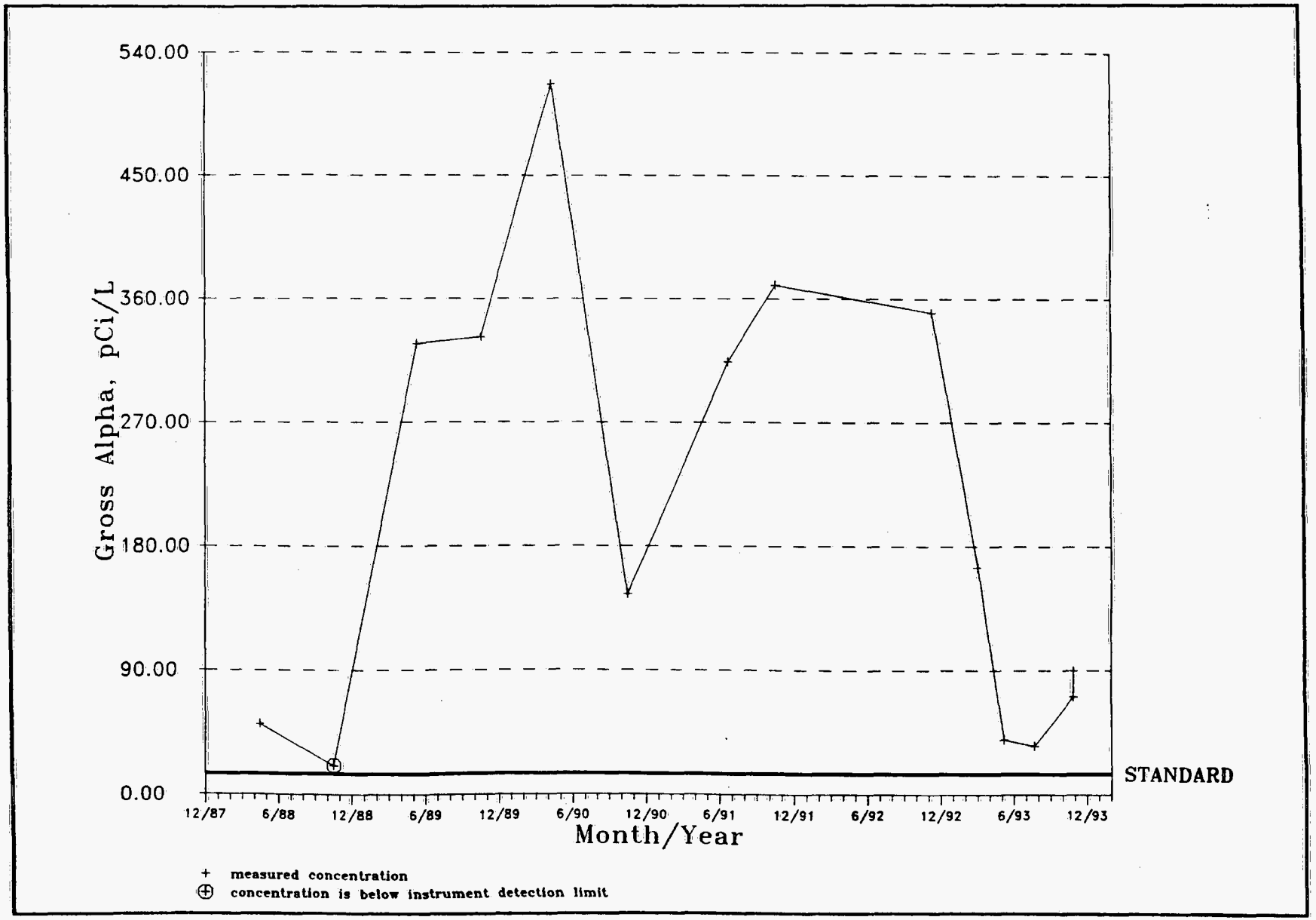


Figure B-14. Gross Alpha Activities at W-4 (downgradient) from May 1988 through November 1993

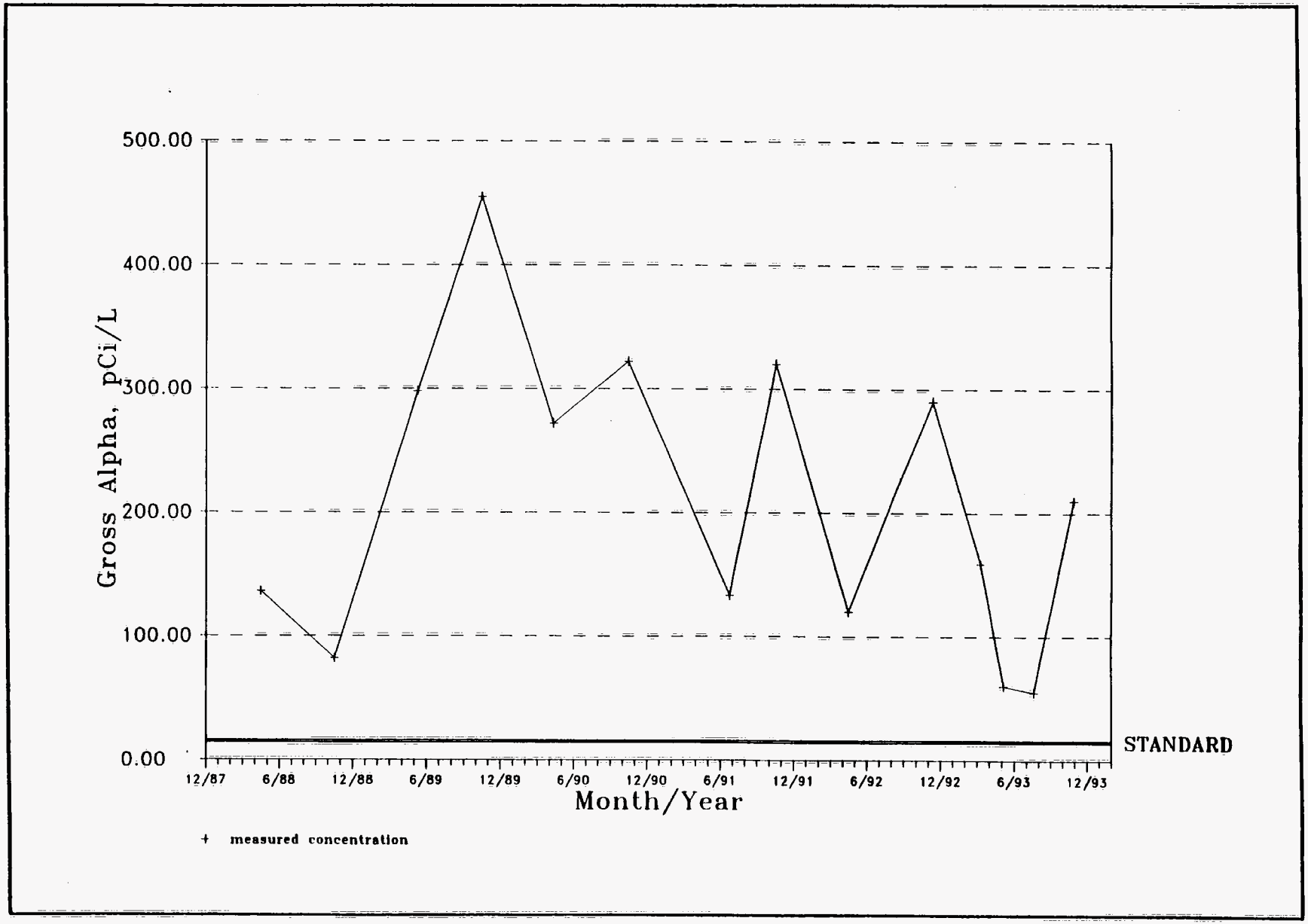


Figure B-15. Gross Alpha Activities at Sorenson Site (downgradient) from May 1988 through November 1993

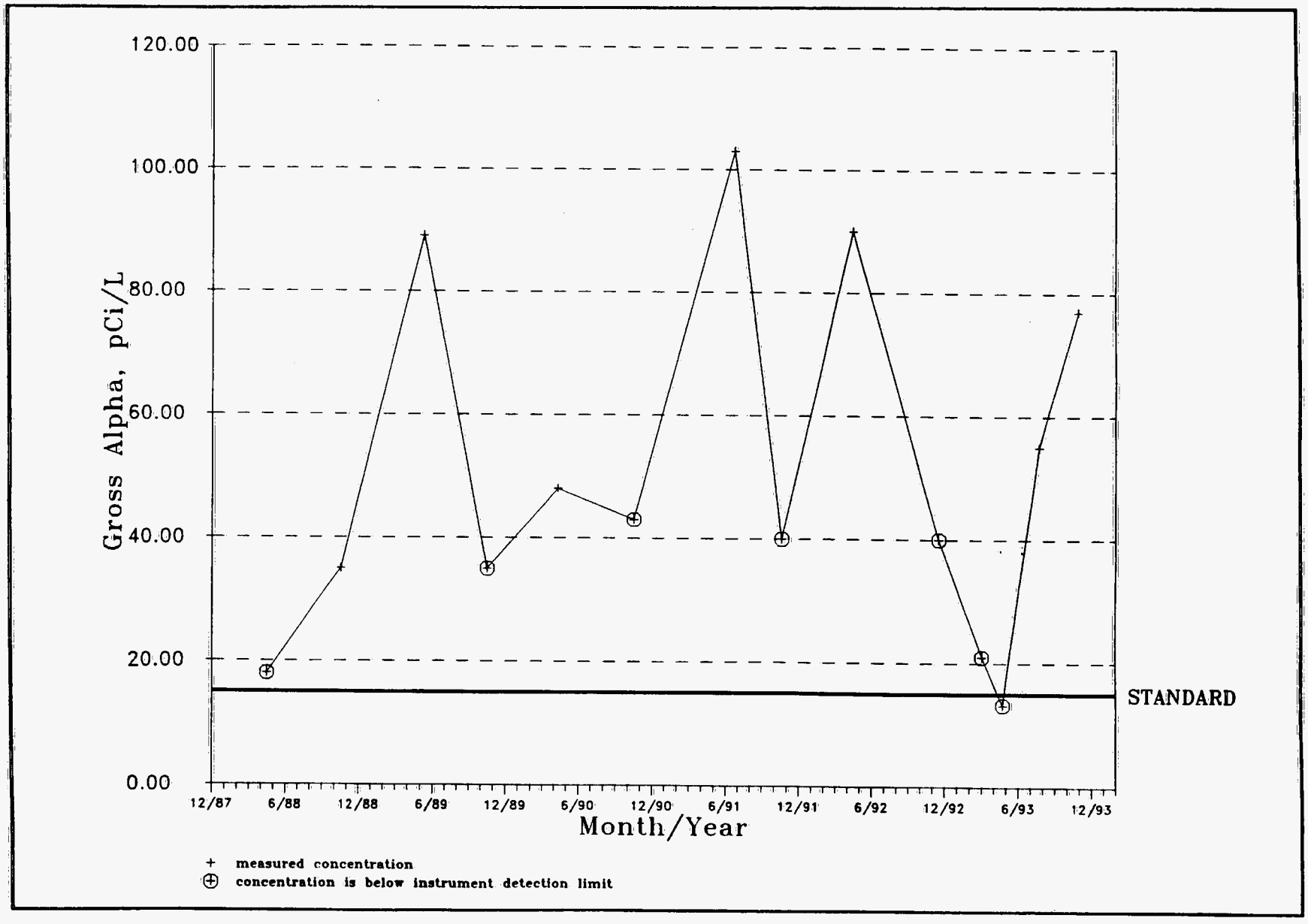


Figure B-16. Gross Alpha Activities at Montezuma Canyon (downgradient) from April 1988 through November 1993

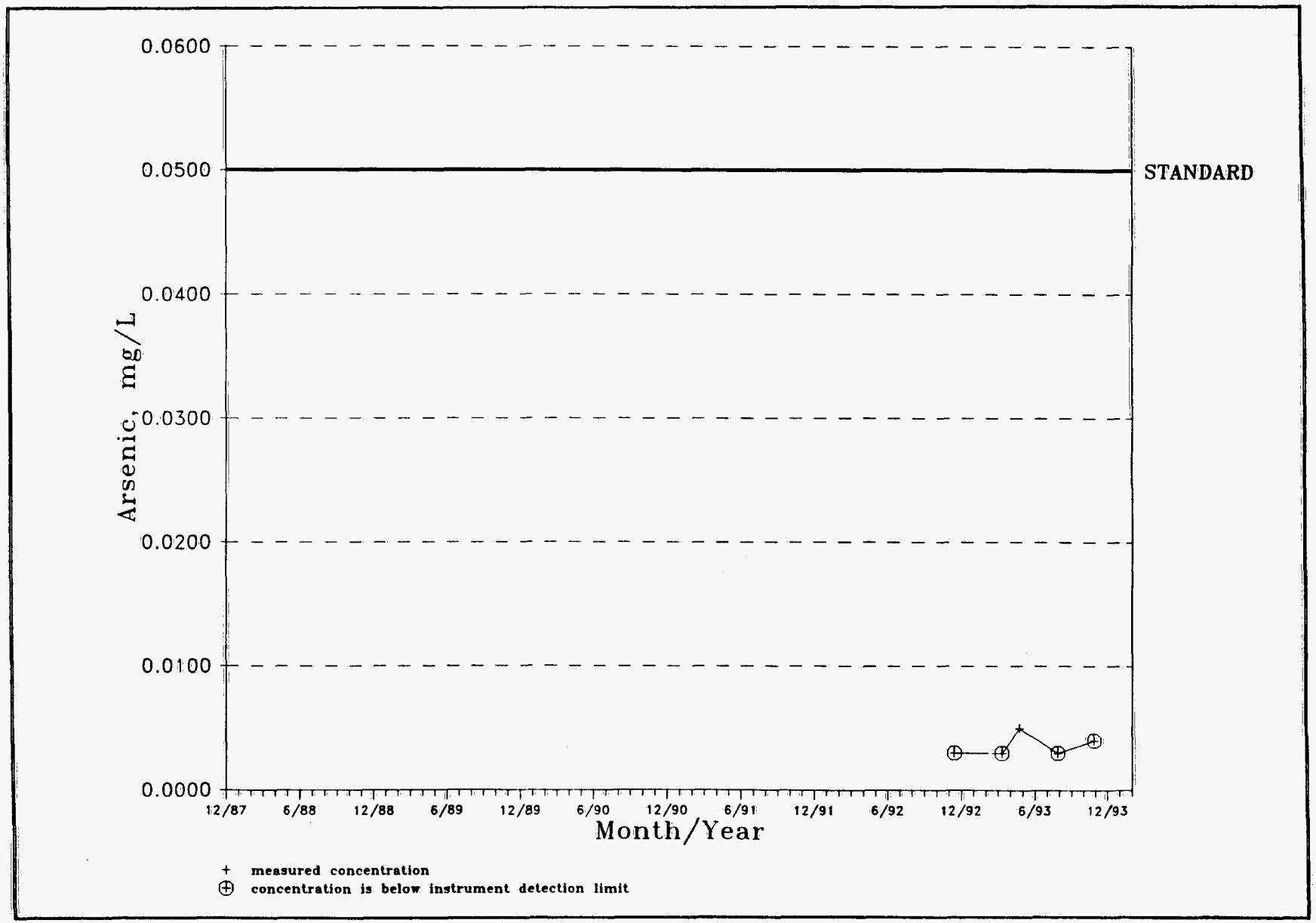


Figure B-17. Arsenic Concentrations in Upgradient Well 92-03 from November 1992 through November 1993

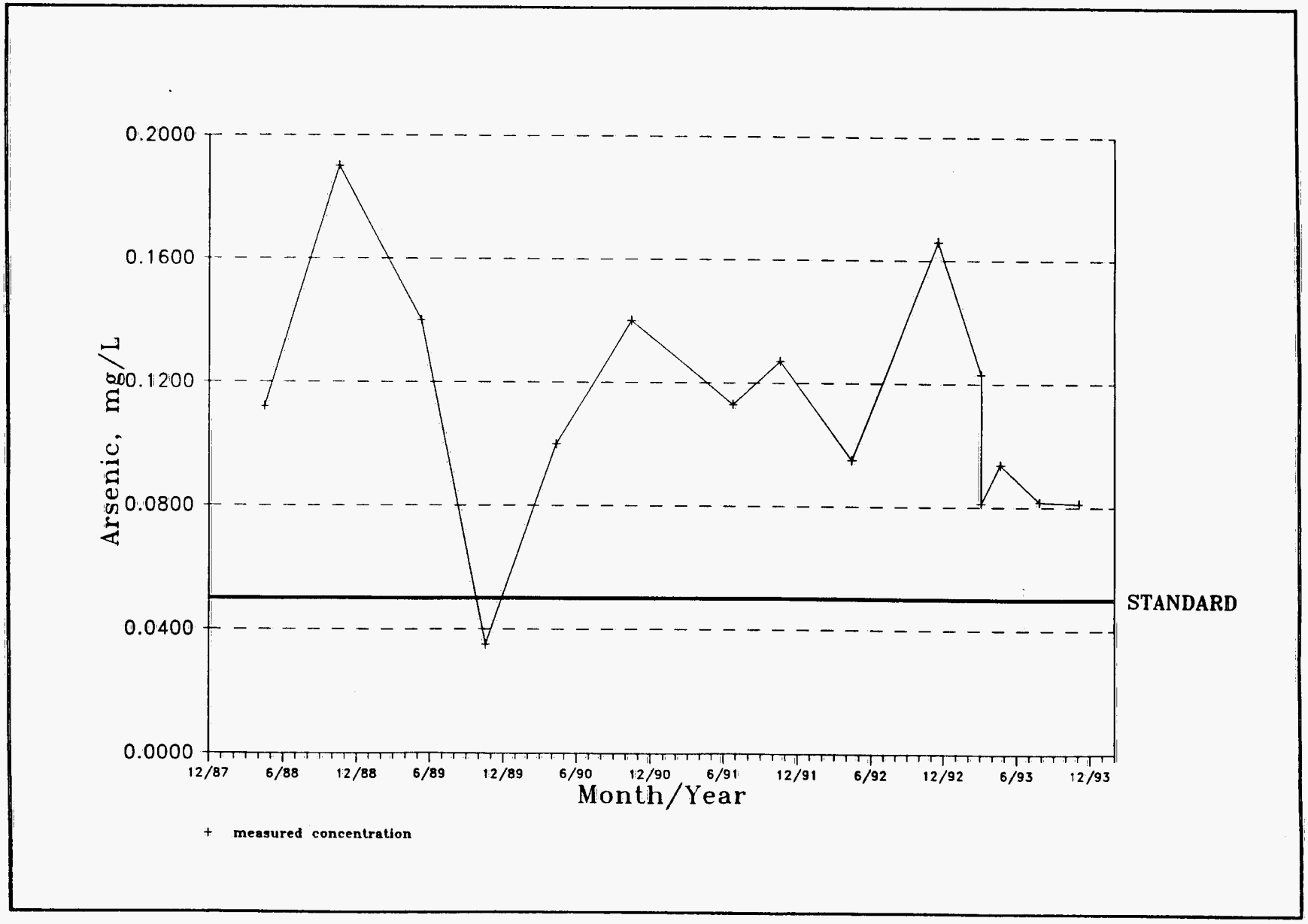


Figure B-18. Arsenic Concentrations in On-Site Well 82-30B from April 1988 through November 1993

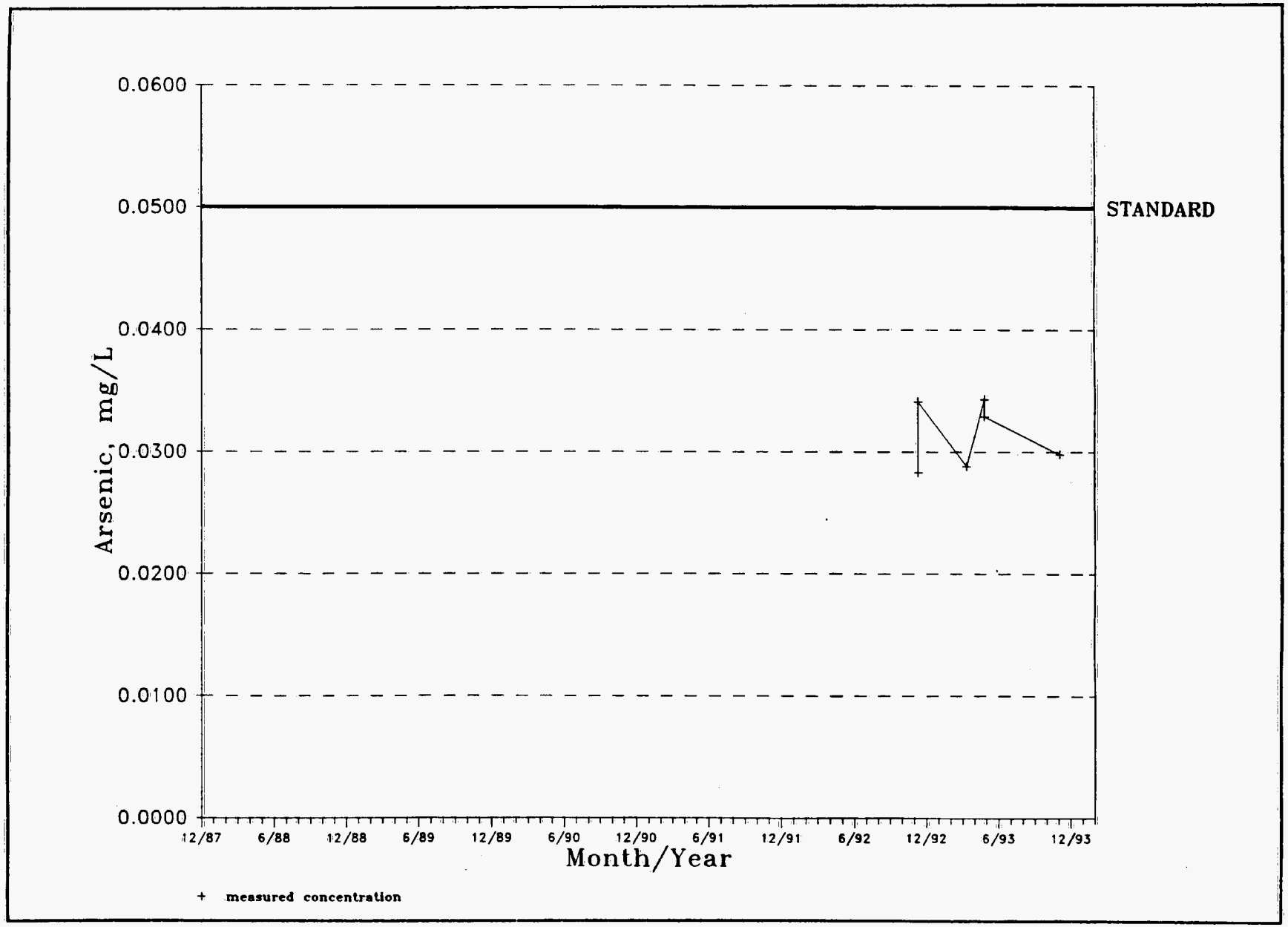


Figure B-19. Arsenic Concentrations in Downgradient Well 92-11 from November 1992 through November 1993

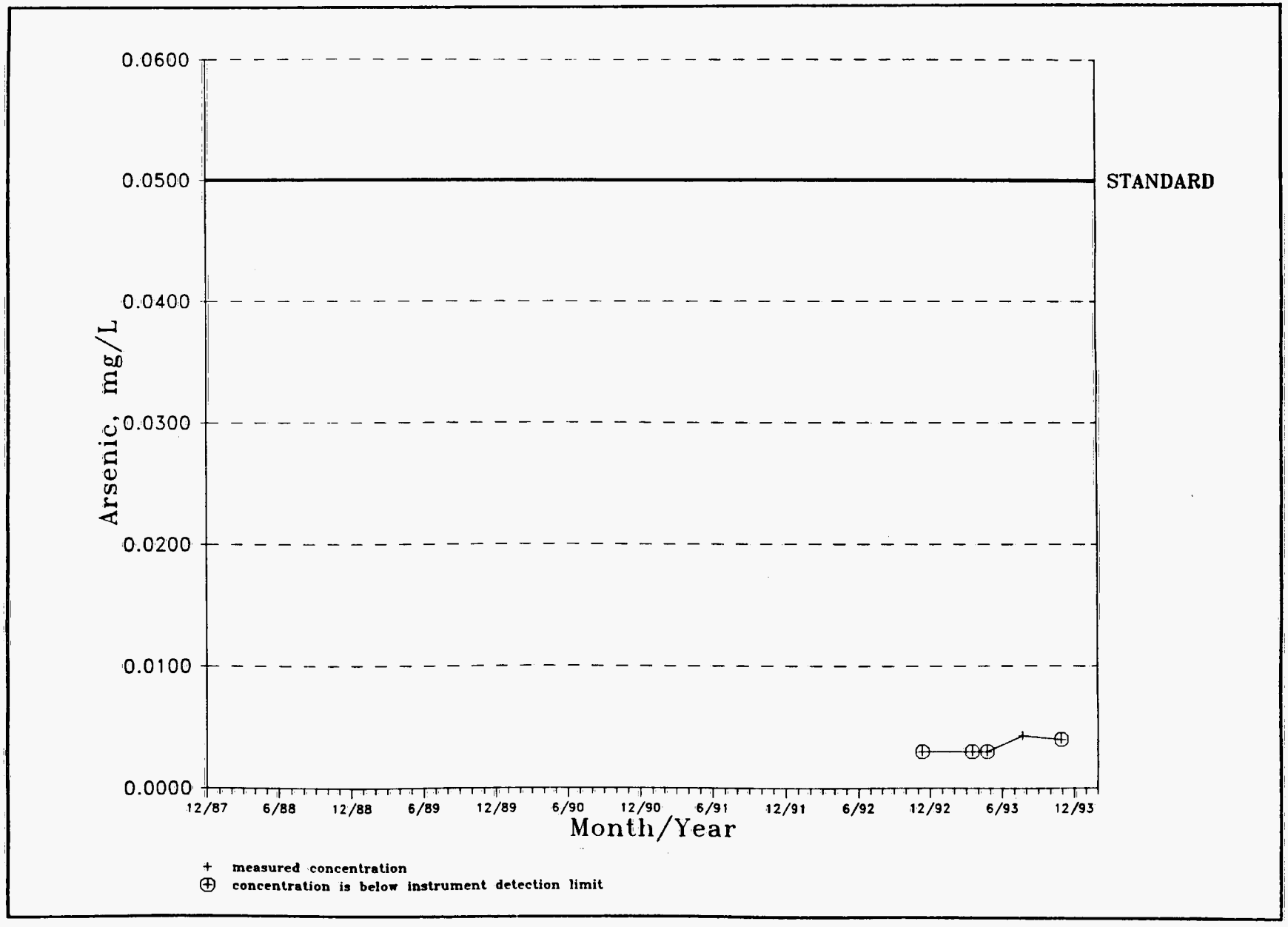


Figure B-20. Arsenic Concentrations in Downgradient Well 92-09 from November 1992 through November 1993

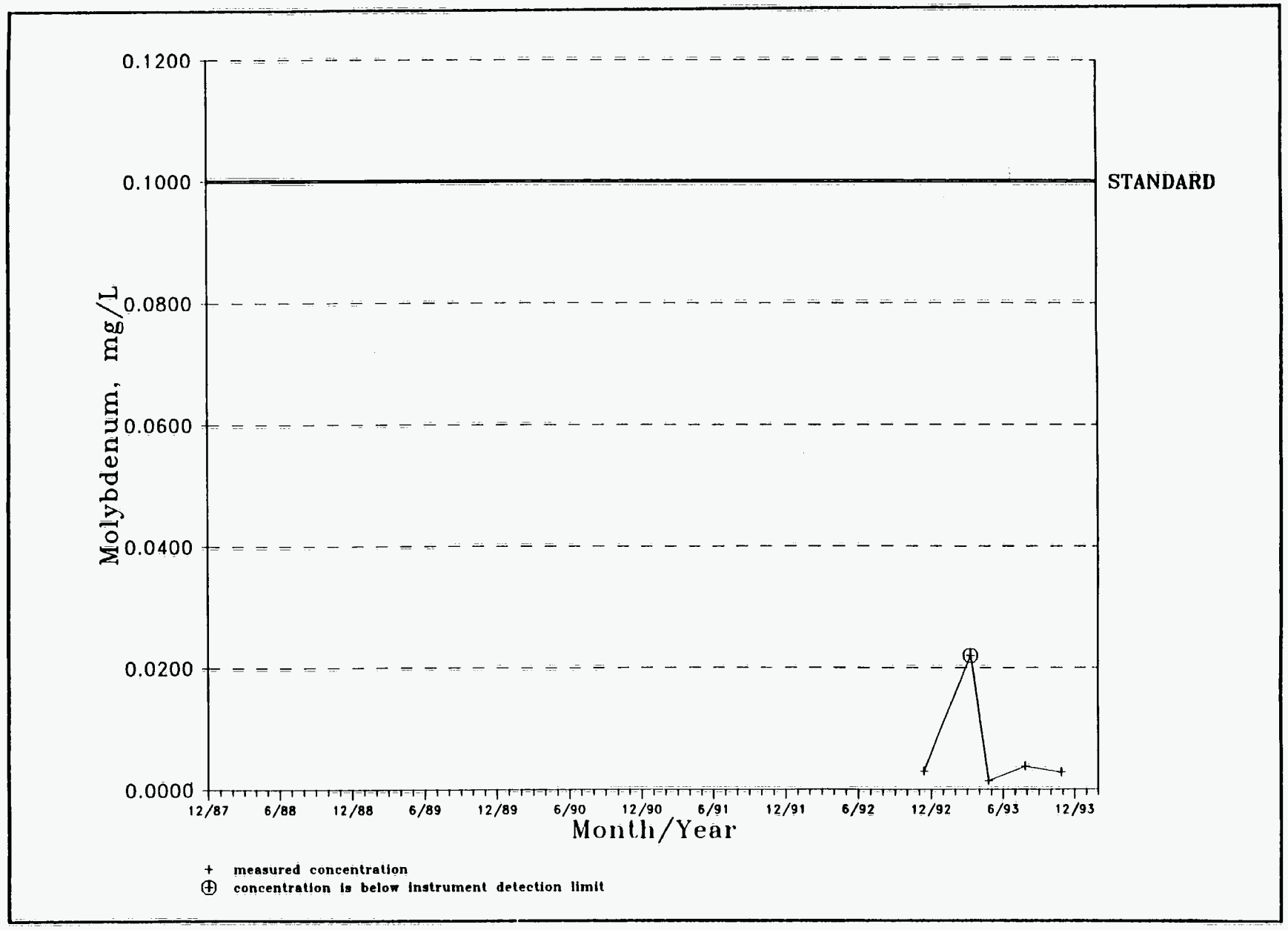


Figure B-21. Molybdenum Concentrations in Upgradient Well 92-03 from November 1992 through November 1993

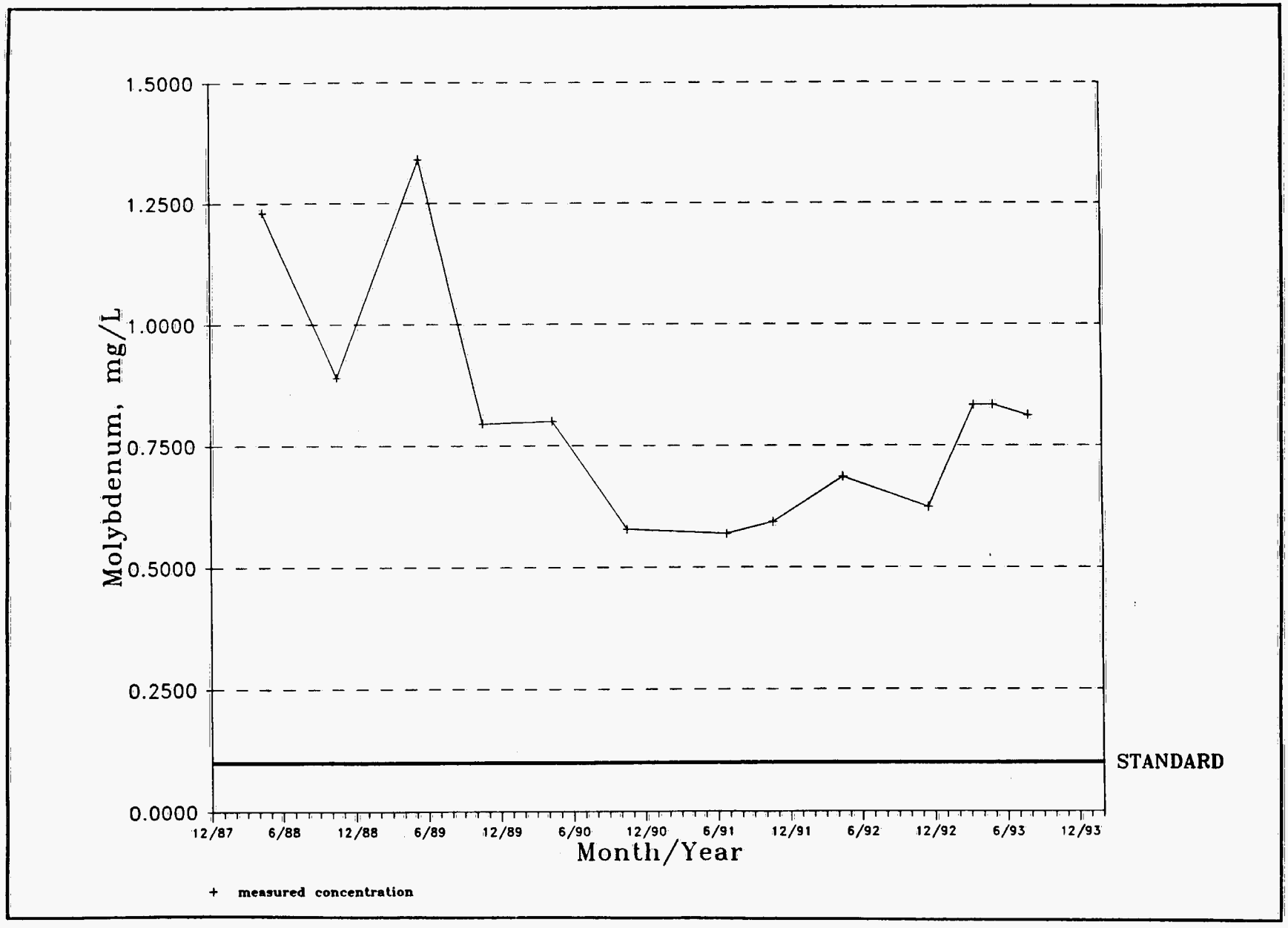


Figure B-22. Molybdenum Concentrations in On-Site Well 82-36A from April 1988 through August 1993

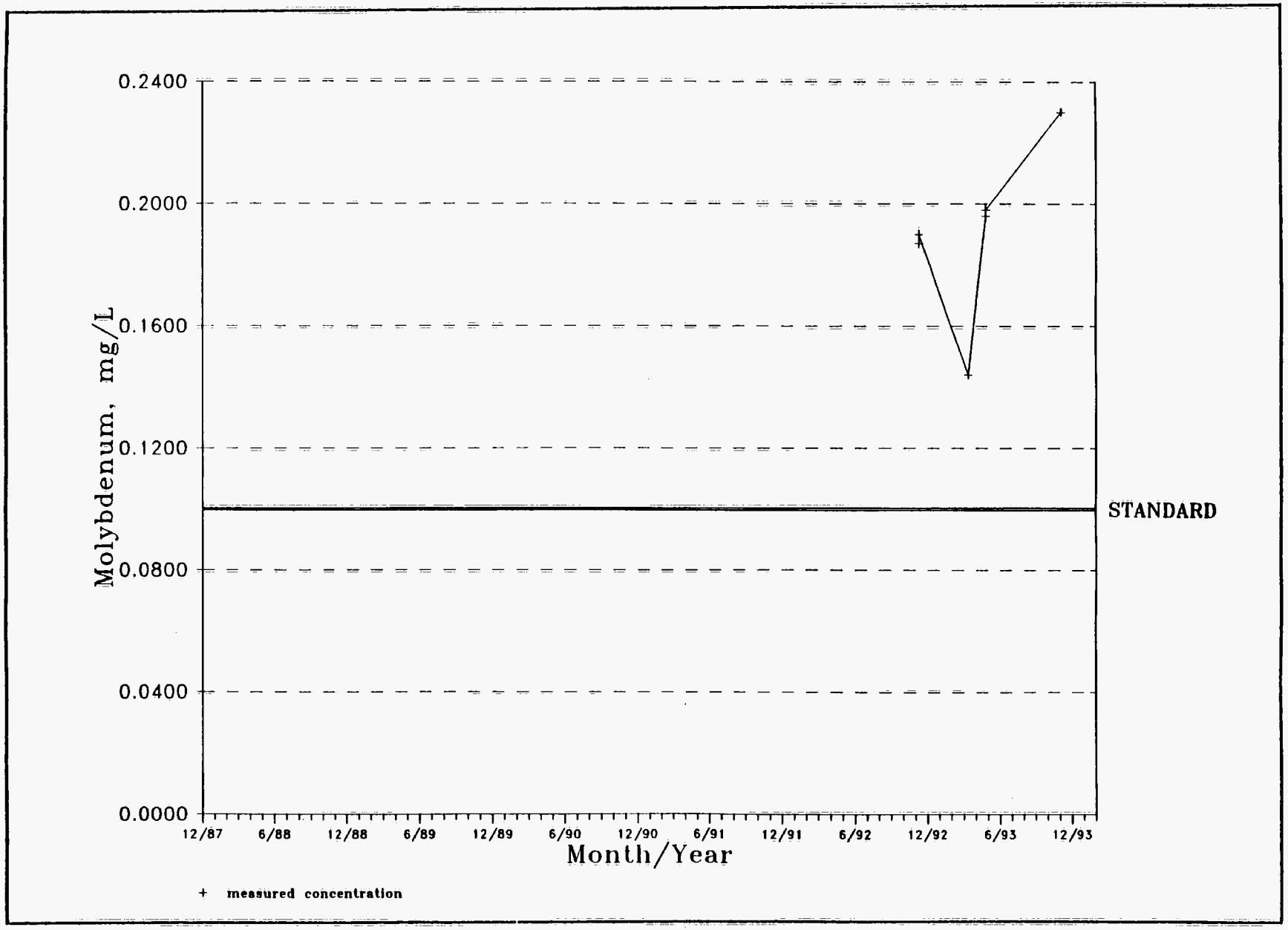


Figure B-23. Molybdenum Concentrations in Downgradient Well 92-11 from November 1992 through November 1993

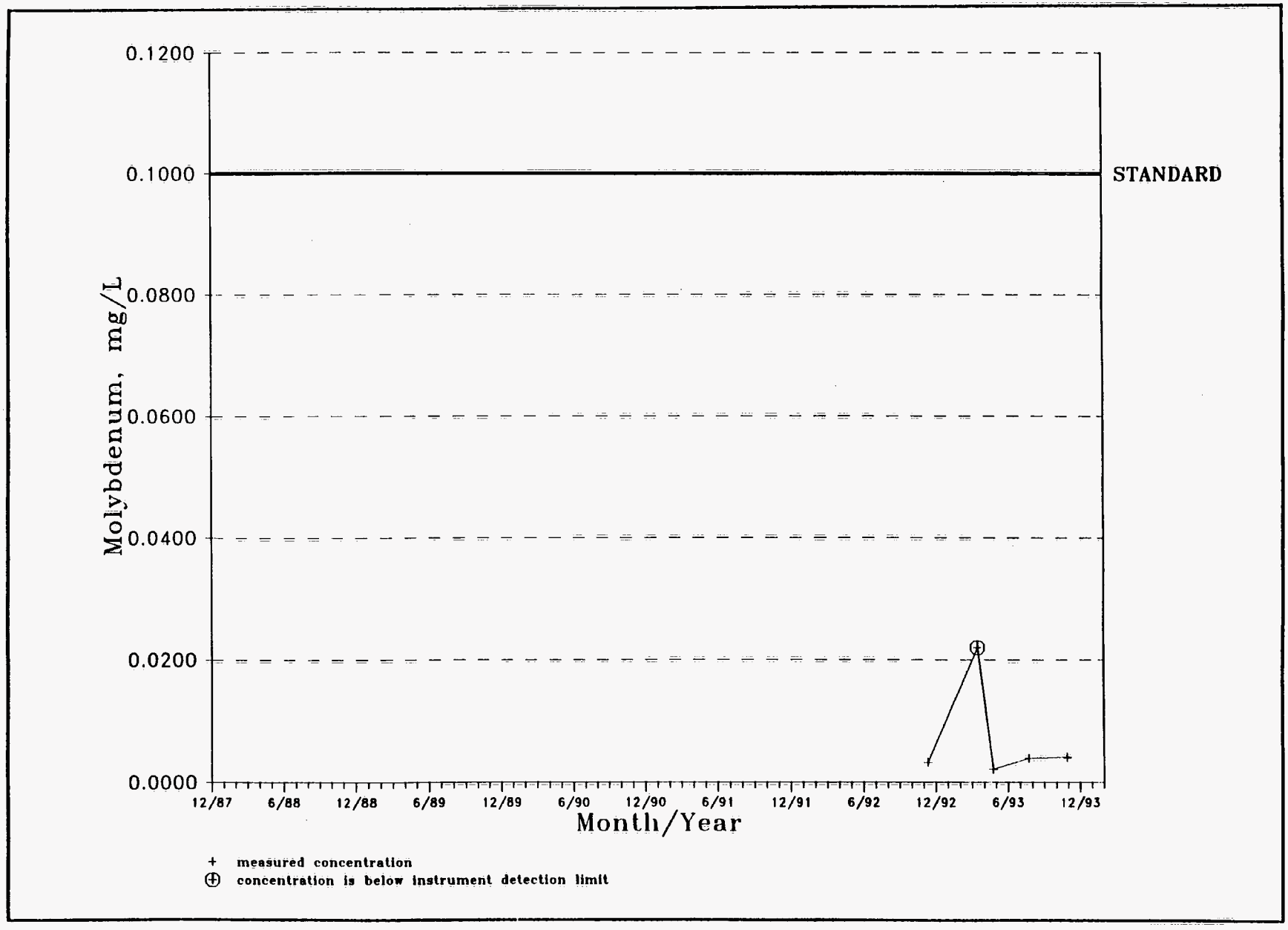


Figure B-24. Molybdenum Concentrations in Downgradient Well 92-09 from November 1992 through November 1993

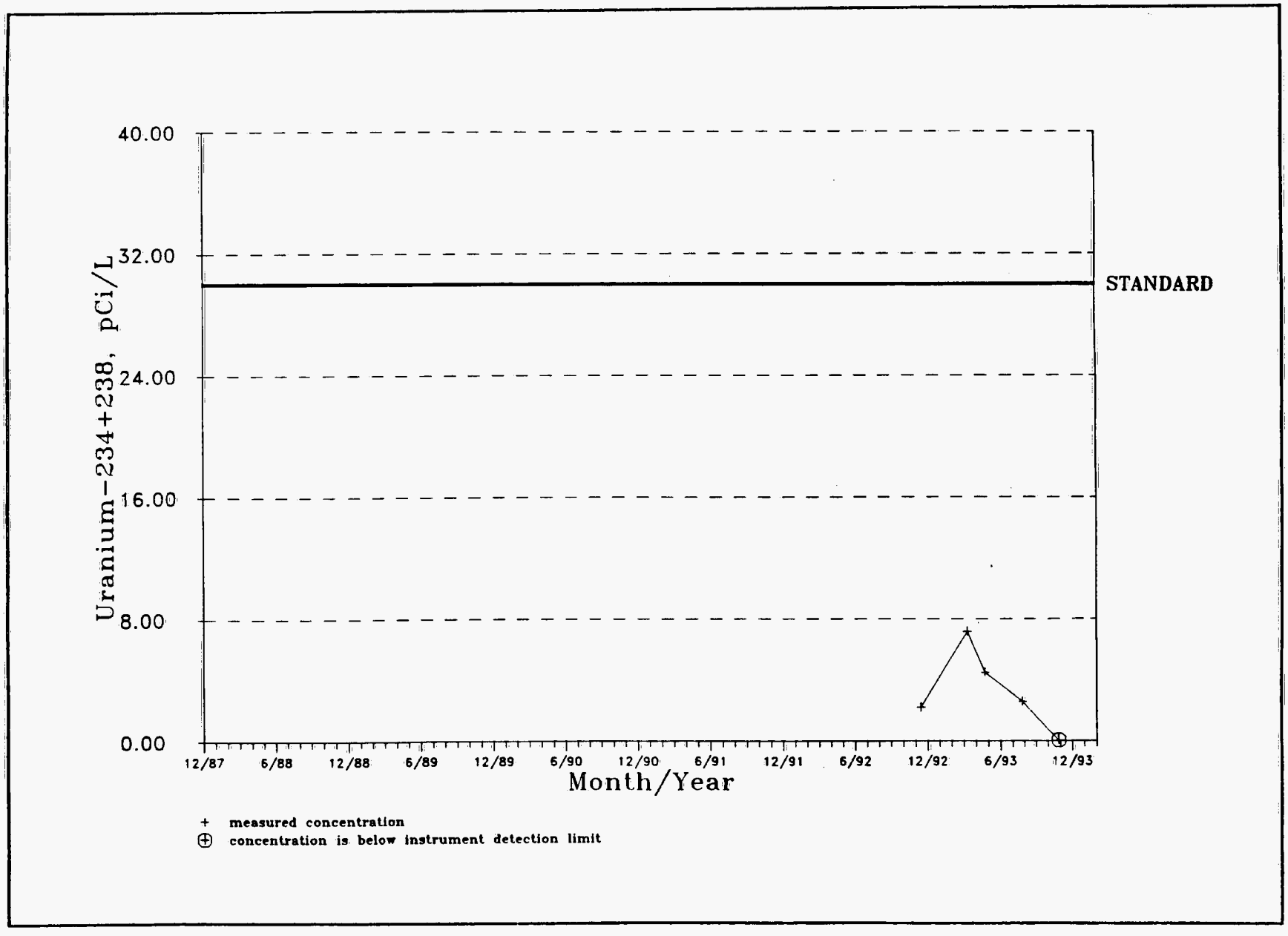


Figure B-25. Uranium-234+238 Activities in Upgradient Well 92-03 from November 1992 through November 1993

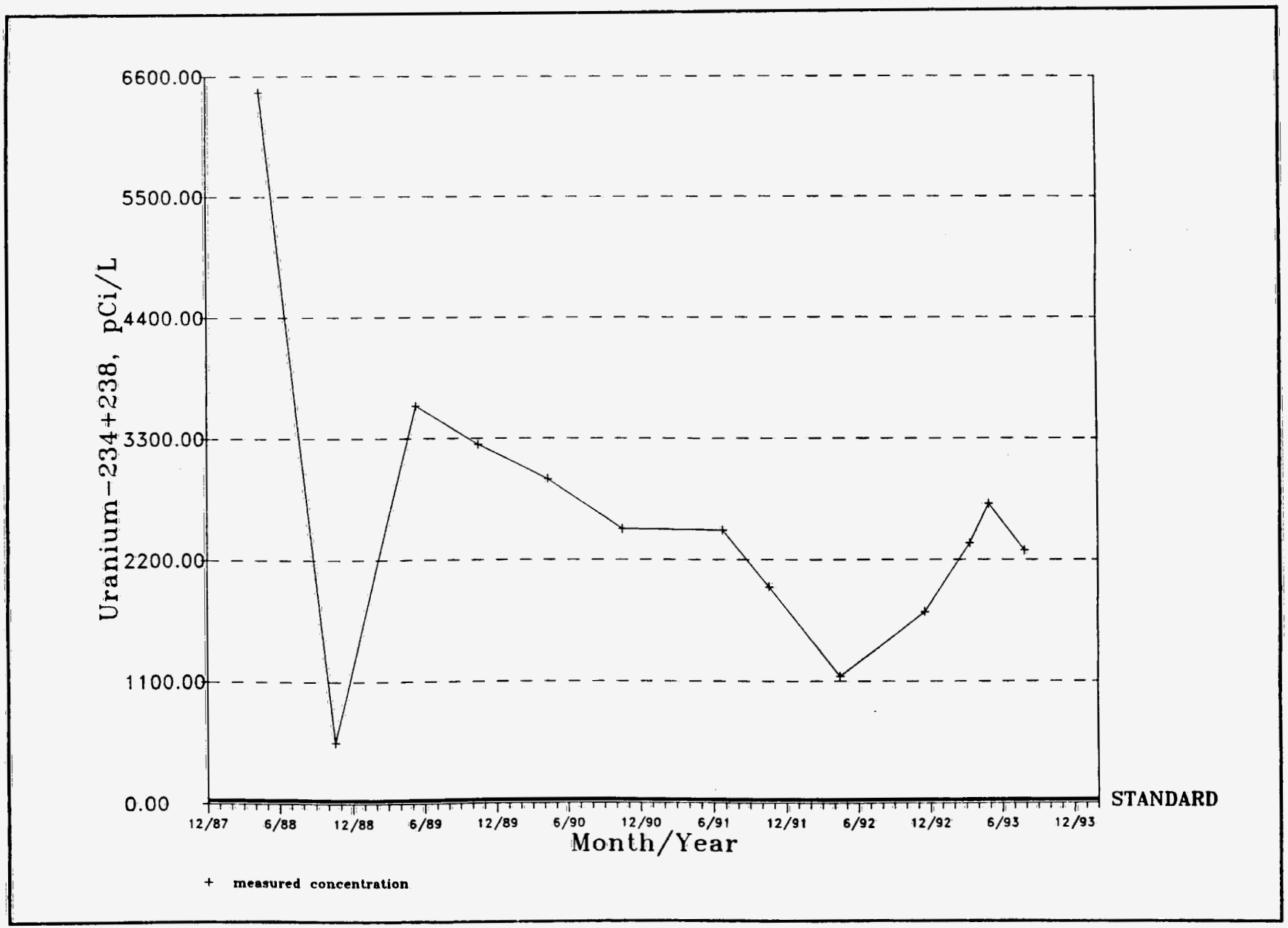


Figure B-26. Uranium-234+238 Activities in On-Site Well 82-36A from April 1988 through August 1993

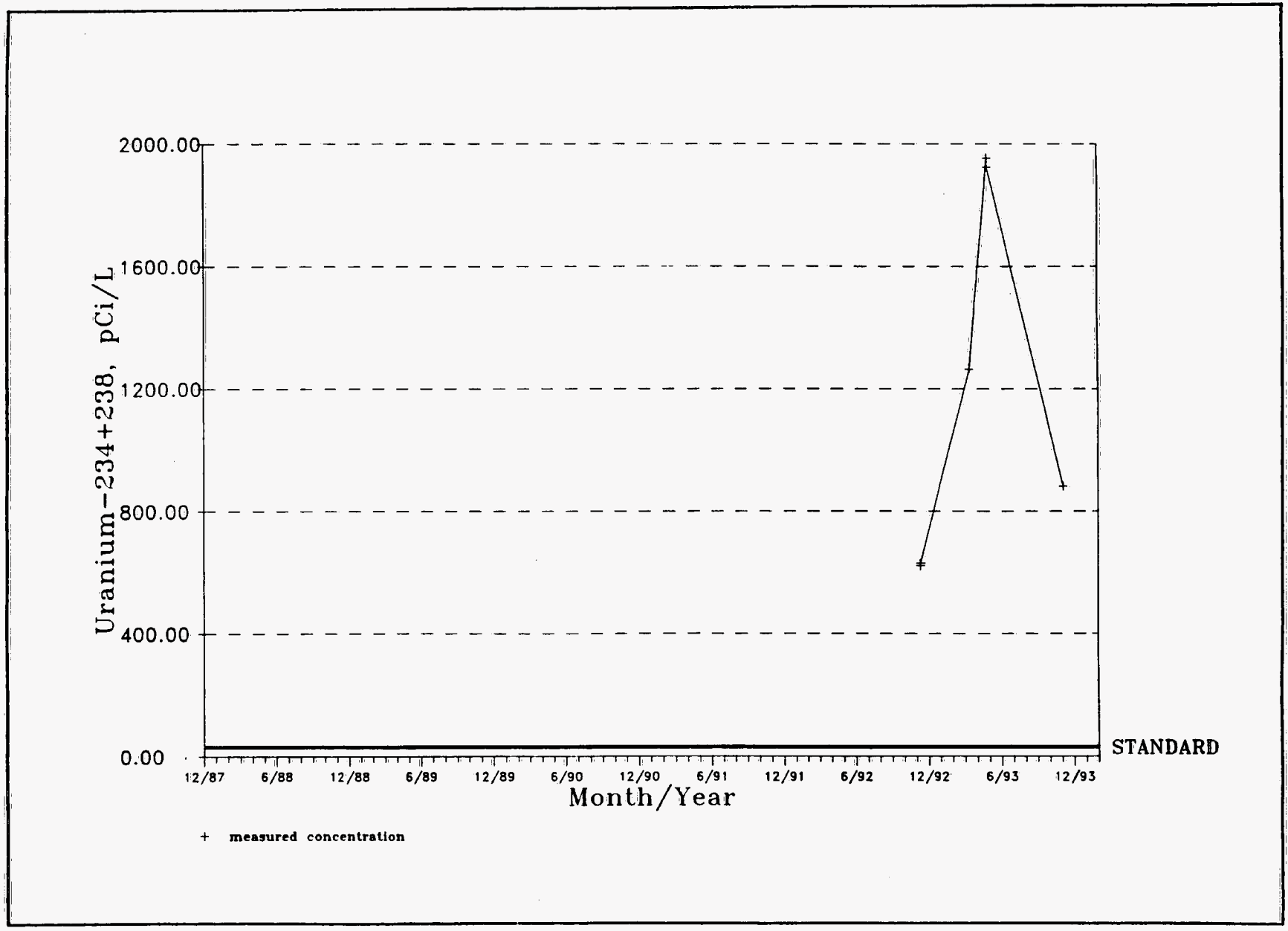


Figure B-27. Uranium-234+238 Activities in Downgradient Well 92-11 from November 1992 through November 1993

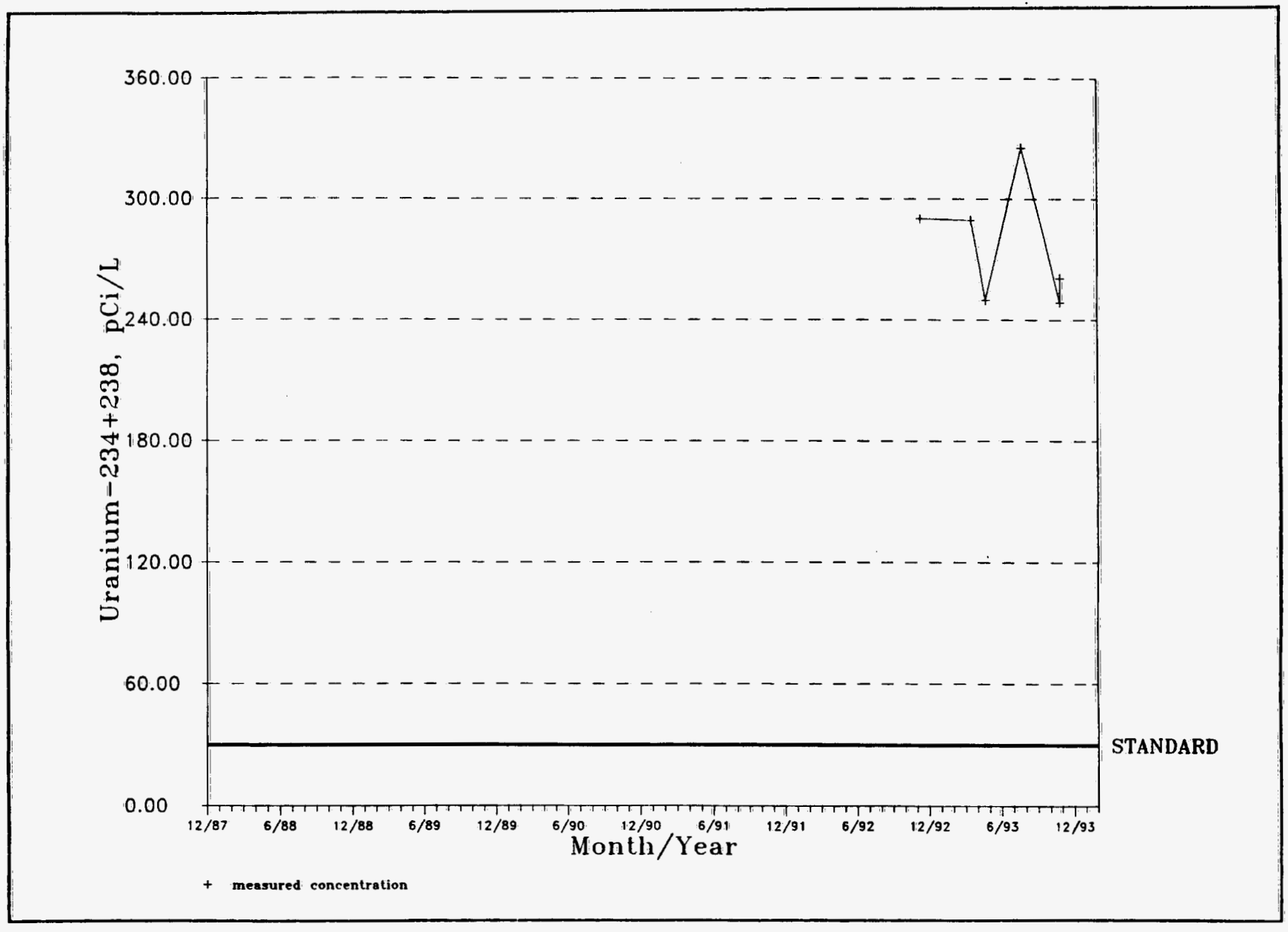


Figure B-28. Uranium-234+238 Activities in Downgradient Well 92-09 from November 1992 through November 1993

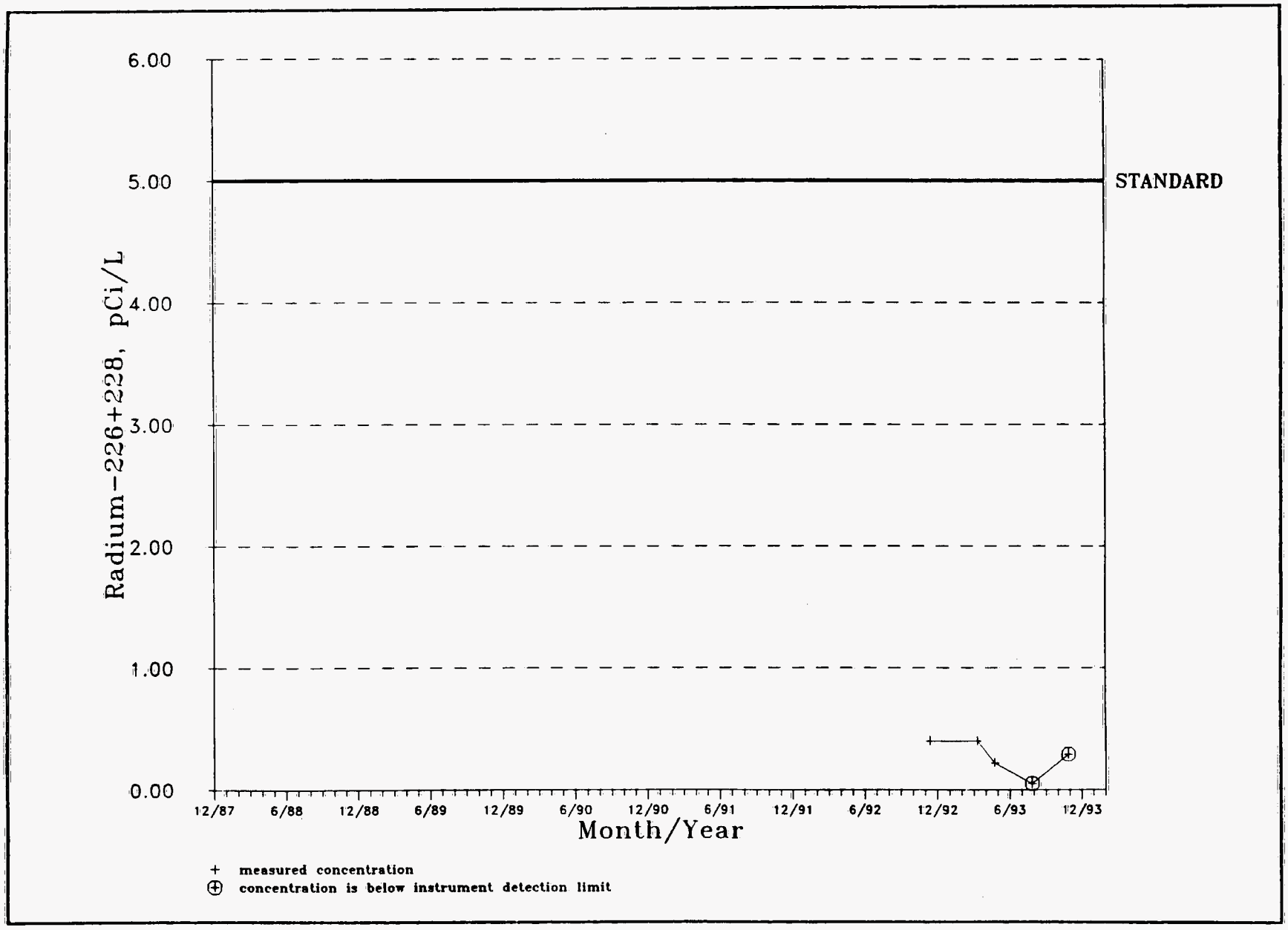


Figure B-29. Radium-226+228 Activities in Upgradient Well 92-03 from November 1992 through November 1993

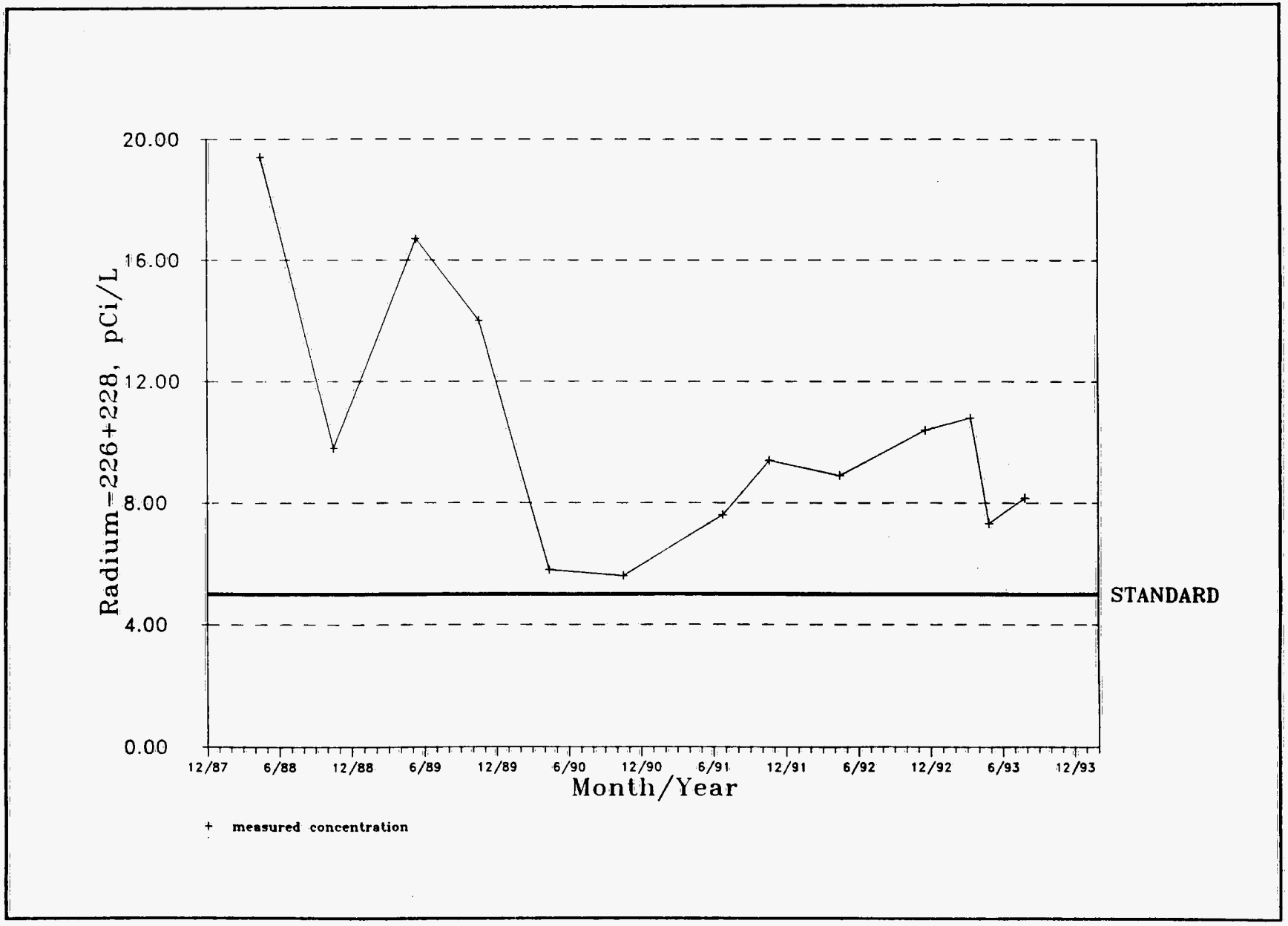


Figure B-30. Radium-226+228 Activities in On-Site Well 82-36A from April 1988 through August 1993

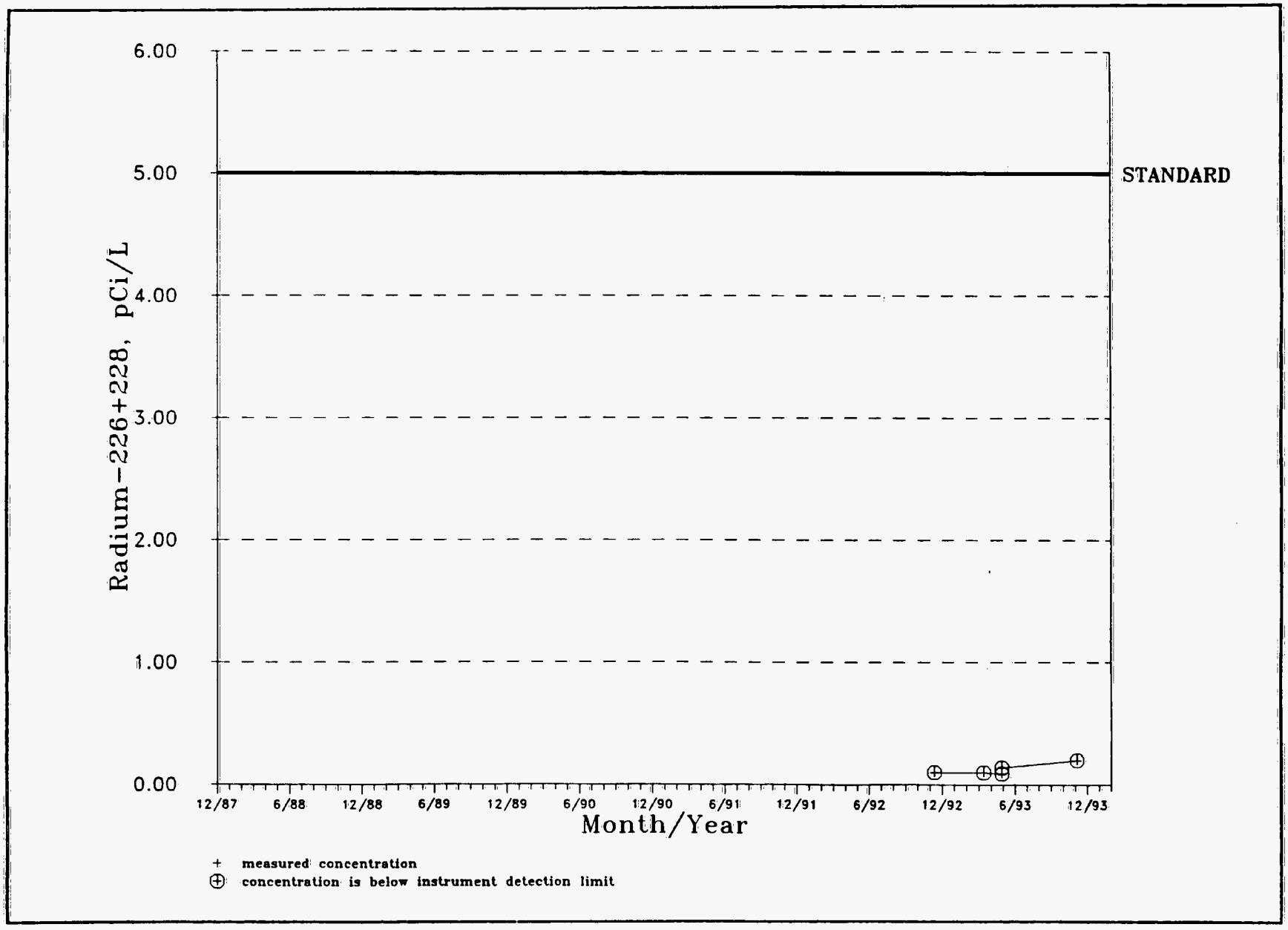


Figure B-31. Radium-226+228 Activities in Downgradient Well 92-11 from November 1992 through November 1993

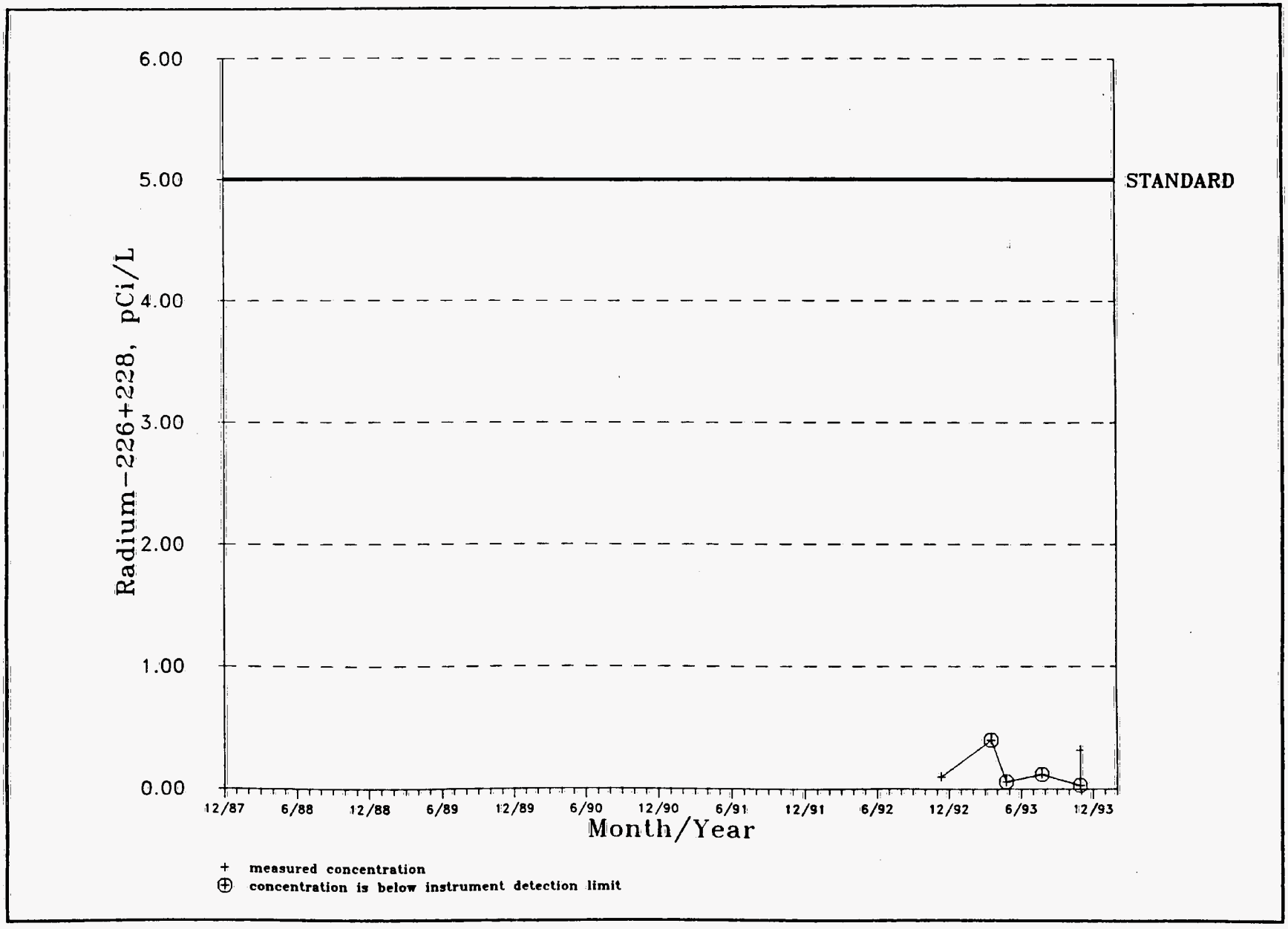


Figure B-32. Radium-226+228 Activities in Downgradient Well 92-09 from November 1992 through November 1993

Appendix C

Well Location Maps Showing Ground-Water Analytes that Exceed Federal/State Standards

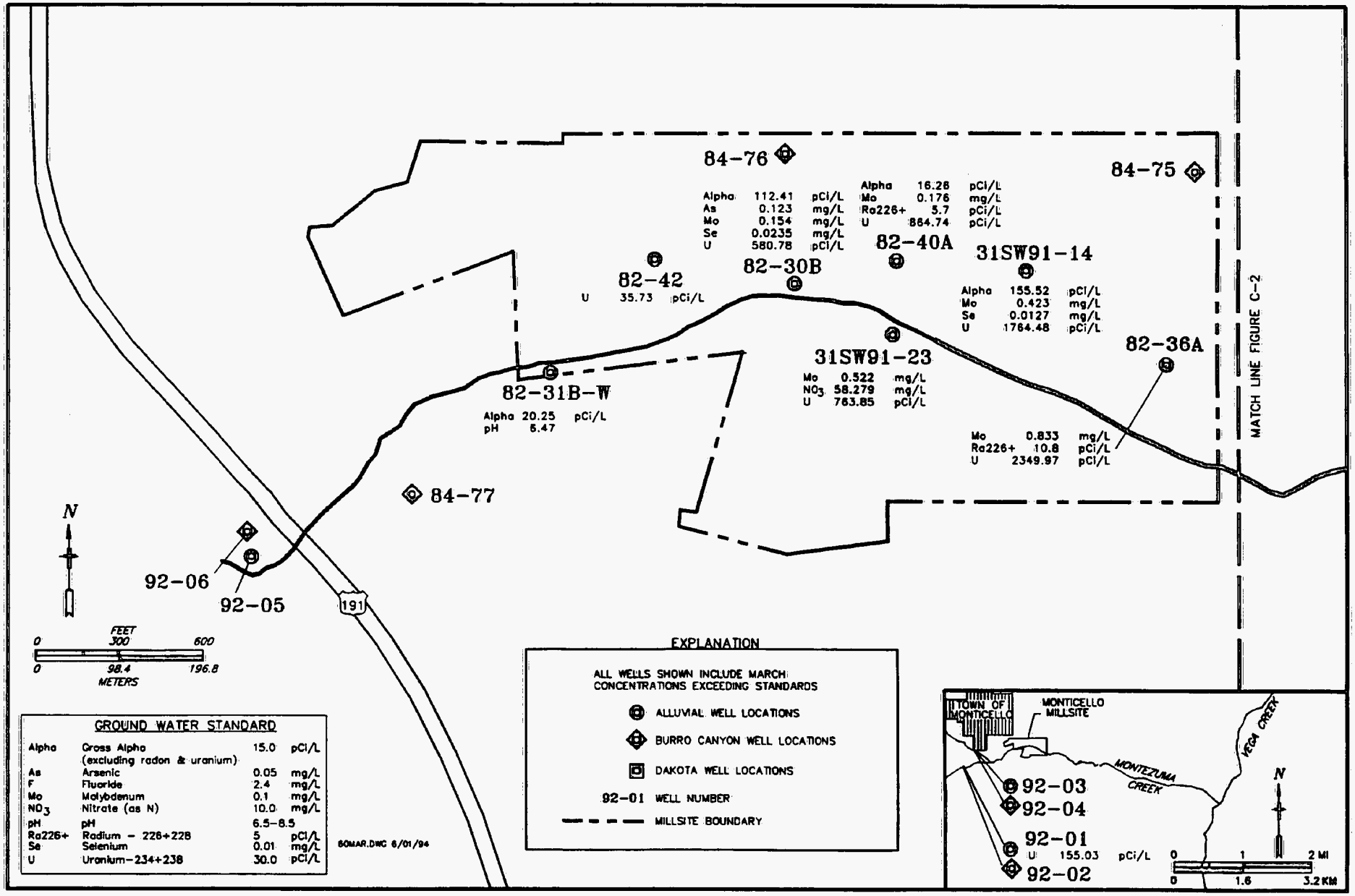


Figure C-1. Concentrations of Ground-Water Analytes Exceeding Federal/State Standards in Well Samples On and Upgradient of the Monticello Millsite in March 1993

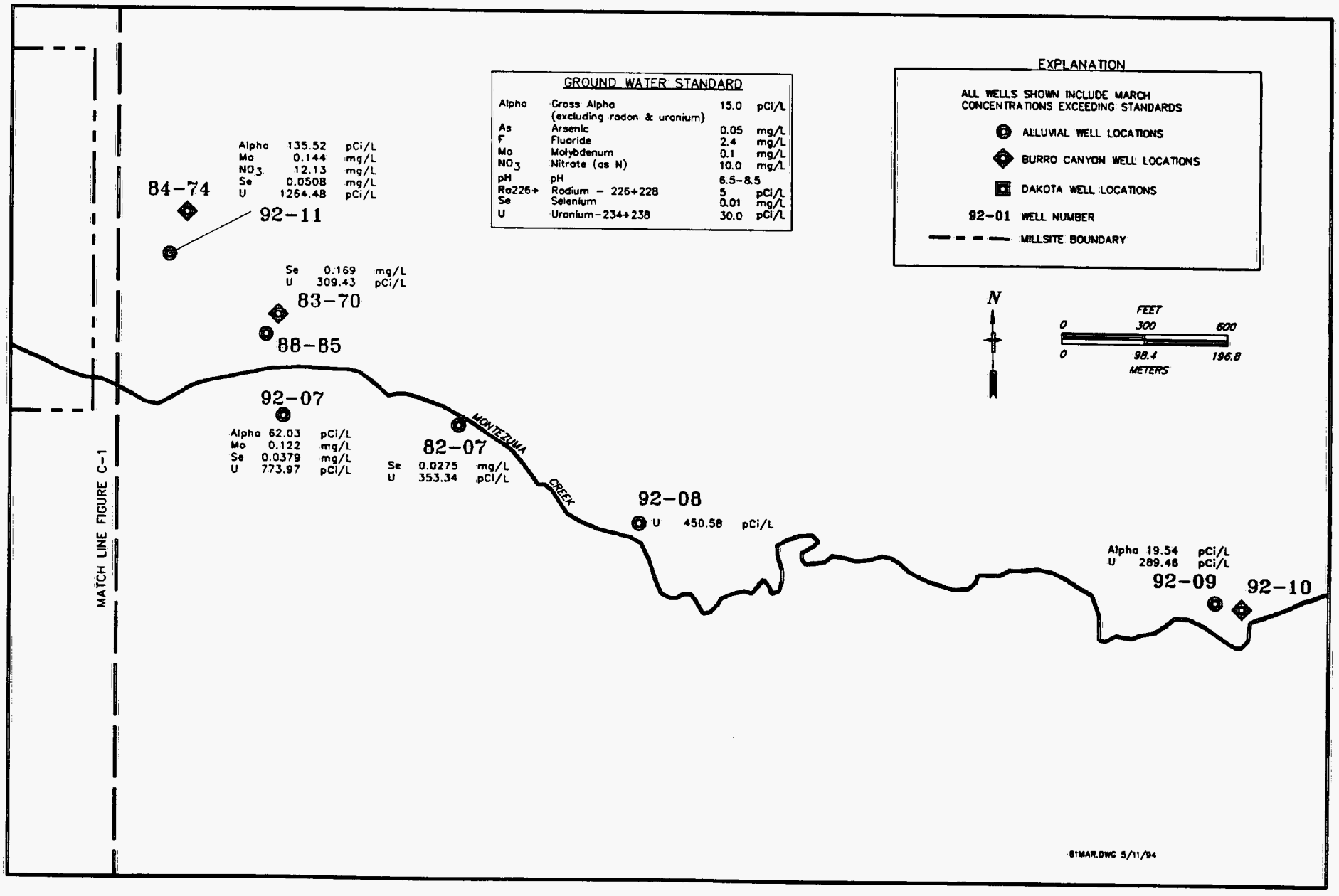


Figure C-2. Concentrations of Ground-Water Analytes Exceeding Federal/State Standards in Well Samples Downgradient of the Monticello Millsite in March 1993

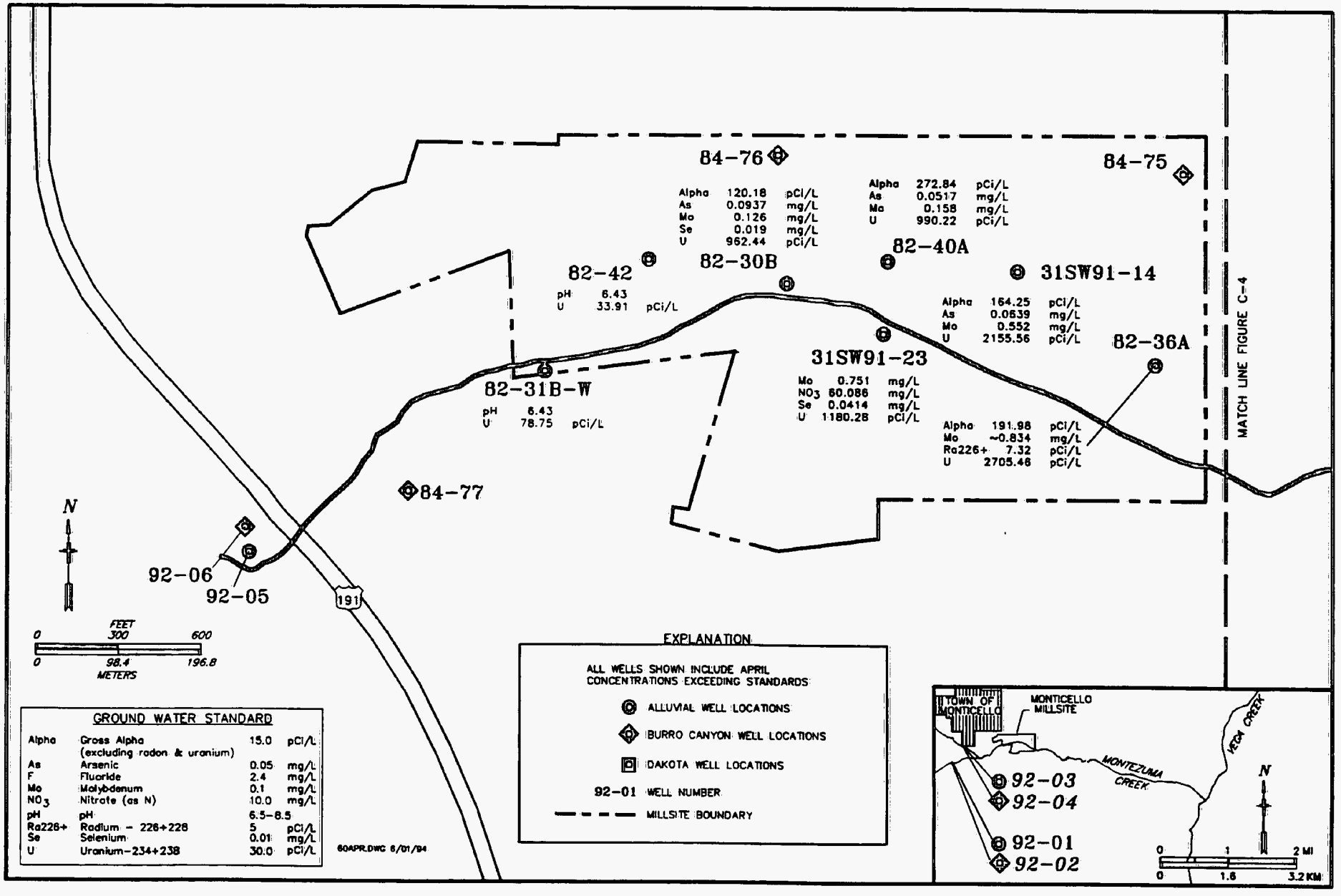
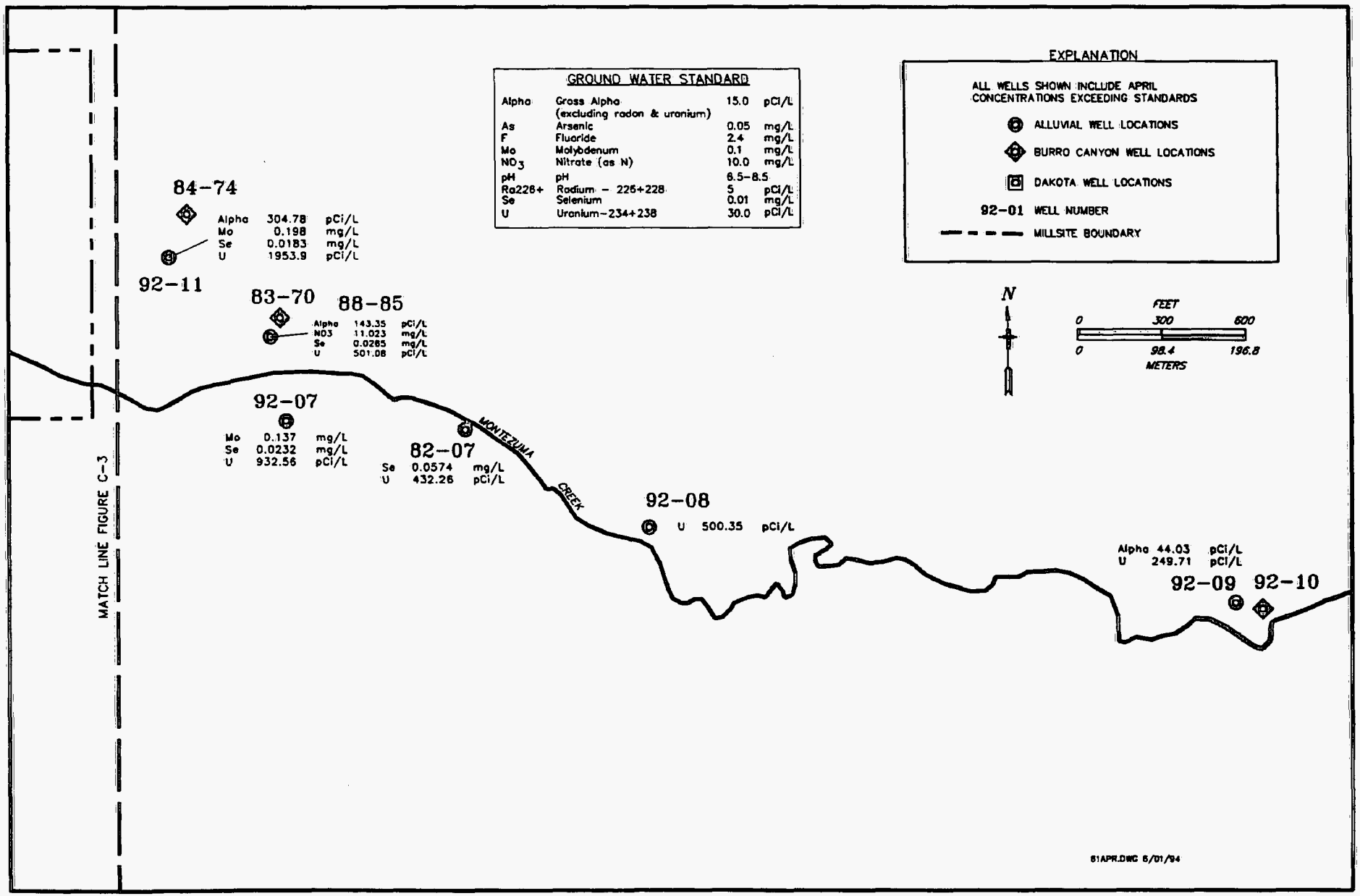


Figure C-3. Concentrations of Ground-Water Analytes Exceeding Federal/State Standards in Well Samples On and Upgradient of the Monticello Millsite in April 1993



C-6

Figure C-4. Concentrations of Ground-Water Analytes Exceeding Federal/State Standards in Well Samples Downgradient of the Monticello Millsite in April 1993

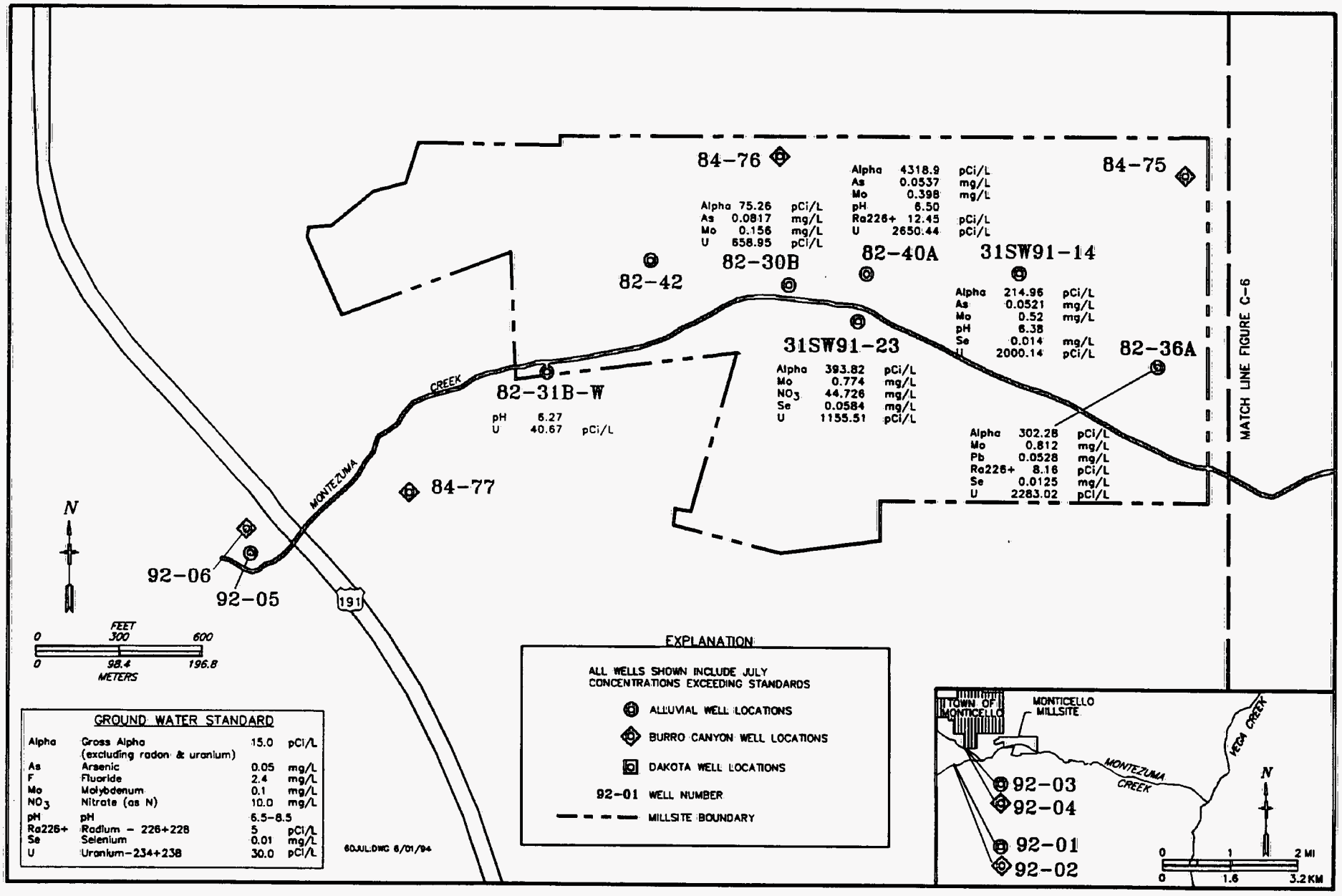


Figure C-5. Concentrations of Ground-Water Analytes Exceeding Federal/State Standards in Well Samples On and Upgradient of the Monticello Millsite in July 1993

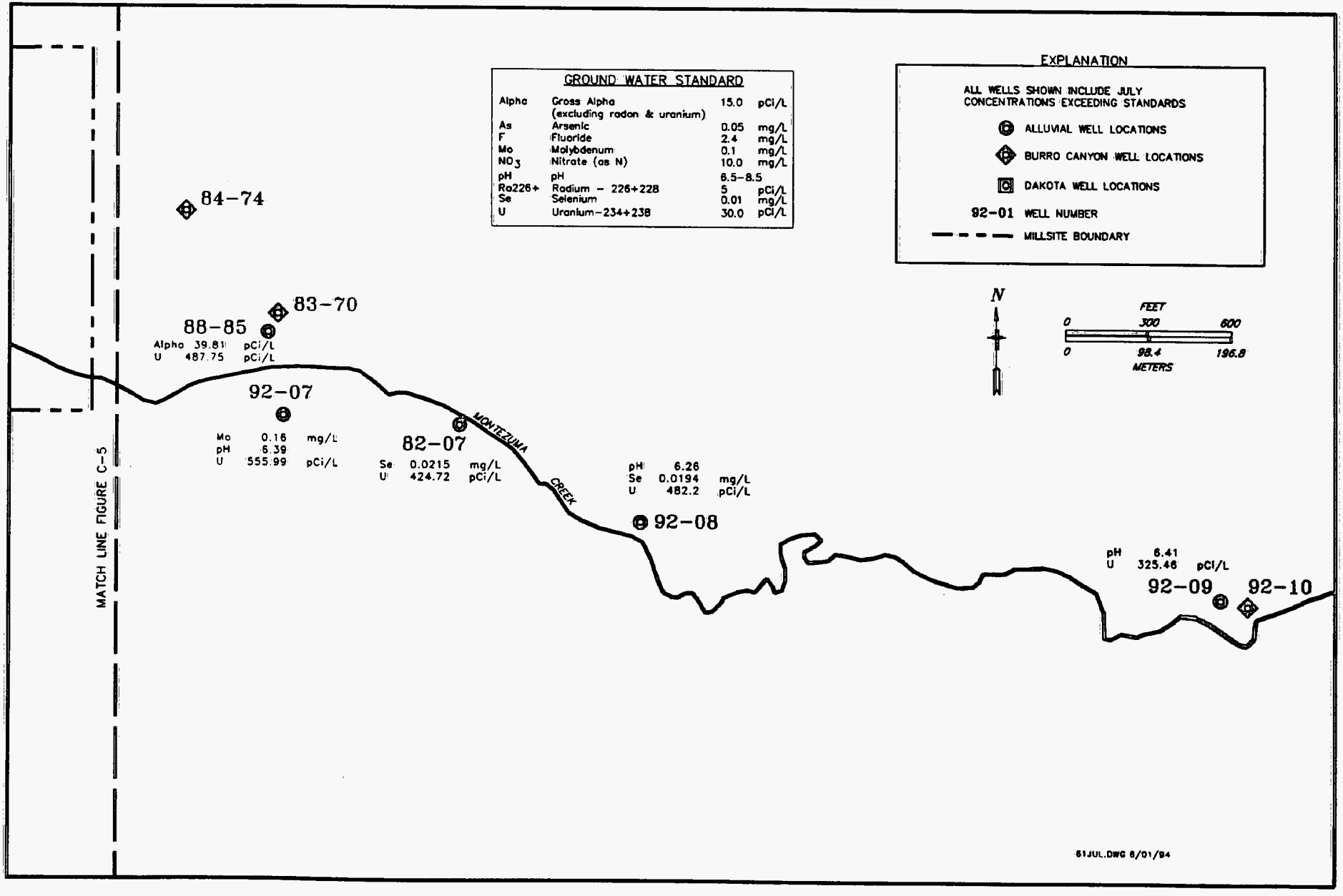


Figure C-6. Concentrations of Ground-Water Analytes Exceeding Federal/State Standards in Well Samples Downgradient of the Monticello Millsite in July 1993

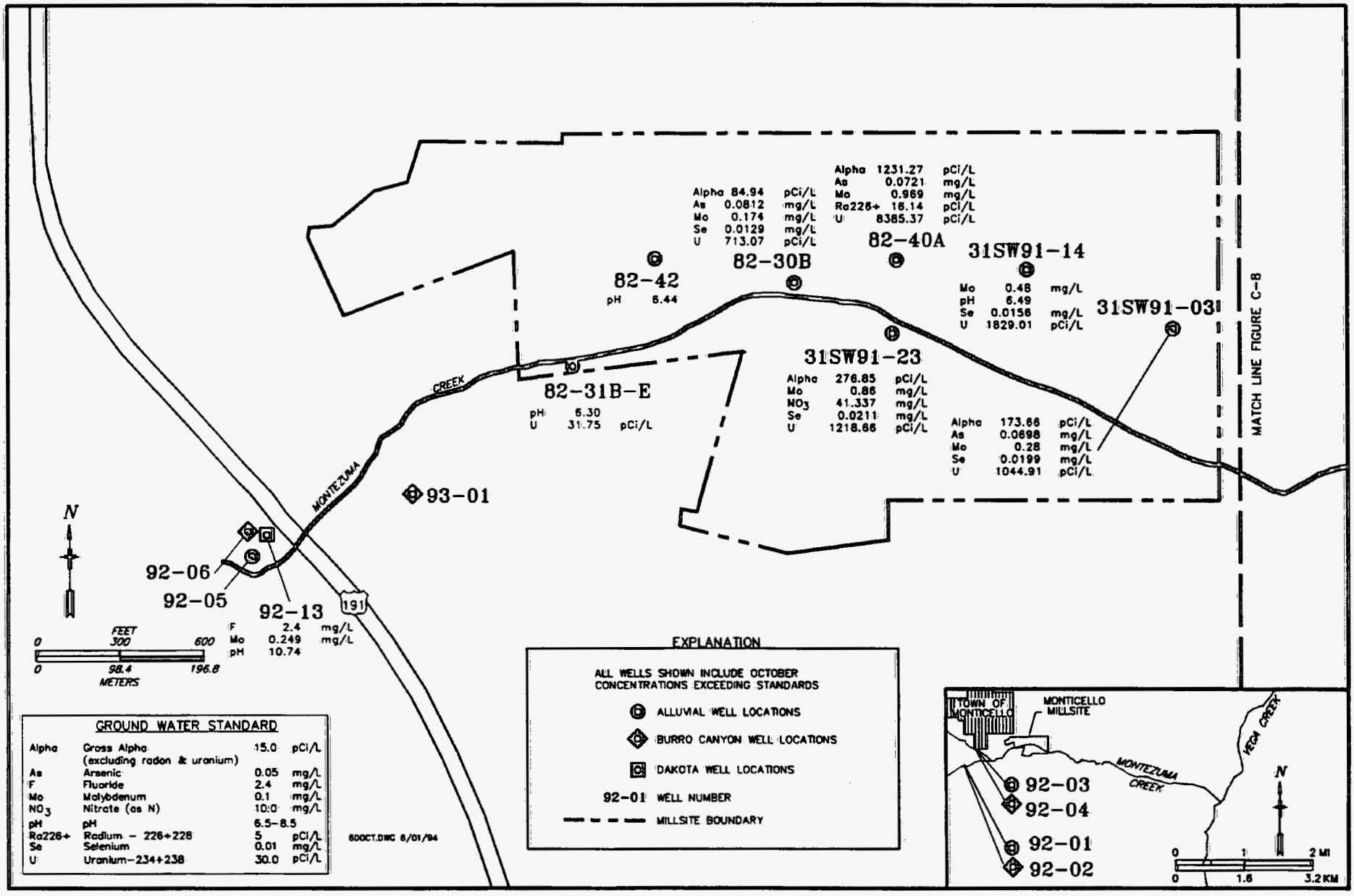


Figure C-7. Concentrations of Ground-Water Analytes Exceeding Federal/State Standards in Well Samples On and Upgradient of the Monticello Millsite in October 1993

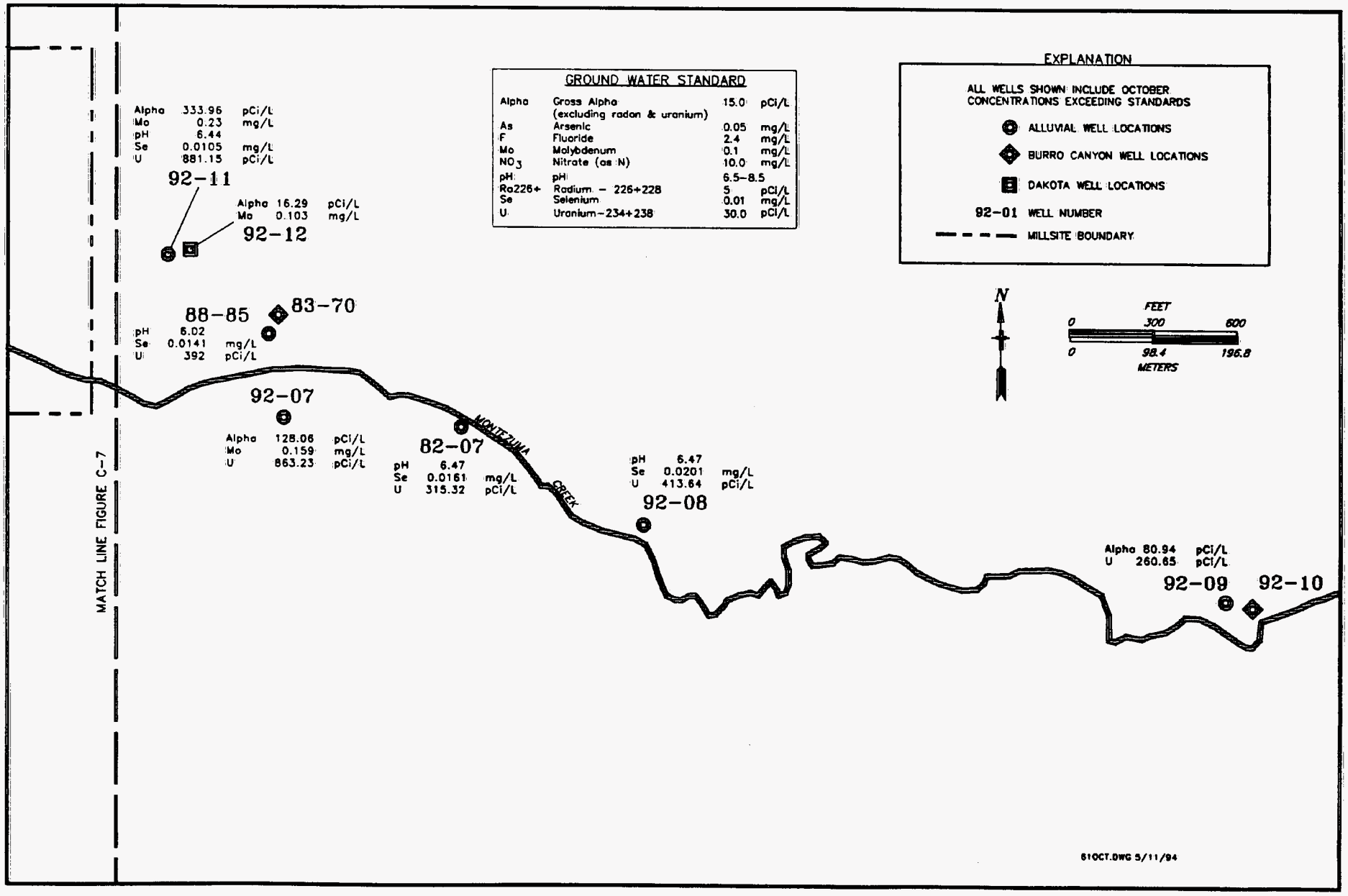


Figure C-8. Concentrations of Ground-Water Analytes Exceeding Federal/State Standards in Well Samples Downgradient of the Monticello Millsite in October 1993