Annual Environmental Monitoring Report - 1999
FUSRAP Maywood Superfund Site
Maywood and, Lodi, and Rochelle Park, New Jersey

Contract No. DACW41-99-D-9001
Task Order No. 0001
WAD 02, WBS 07

Submitted to:

Department of the Army
U.S. Army Engineer District, Kansas City
Corps of Engineers
700 Federal Building
Kansas City, Missouri 64106

Department of the Army
U.S. Army Engineer District, New York
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March 2001

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LIST OF ABBREVIATIONS AND ACRONYMS

AEC	Atomic Energy Commission
AL	Action Level
ANL	Argonne National Laboratory
ASTM	American Society for Testing and Materials
BEE	Baseline Ecological Evaluation
Bgs	Below Ground Surface
BNI	Bechtel National, Incorporated
Bq	Becquerel
CAA	Clean Air Act
CAP88-PC	Clean Air Act Assessment Package 1988 – Personal Computer
CFR	Code of Federal Regulations
cm	Centimeter
DOE	Department of Energy
DTW	Depth to Water
EMP	Environmental Monitoring Program
EPA	U.S. Environmental Protection Agency
ft	Feet
FUSRAP	Formerly Utilized Sites Remedial Action Program
g	Gram
gal	Gallon
GWQC	Groundwater Quality Criteria
ha	Hectare
IG	Instruction Guides
in.	Inches
kg	Kilogram
km	Kilometers
L	Liters
lb	Pound
LEL	Lowest Effect Level
LNAPL	Light, non-aqueous phase Liquid
m	Meters
m3	Cubic meters
mg/l	Milligrams per liter
mi	Miles
MCL	Maximum Contaminant Level
MCW	Maywood Chemical Works
MDA	Minimum Detectable Activity
MISS	Maywood Interim Storage Site
ml	Milliliter

mSv	Millisievert
mrem	Millirem
mrem/yr	Millirem per year
MSL	Mean Sea Level
N/A	Not Applicable
NJAC	New Jersey Administrative Code
NJDEP	New Jersey Department of Environmental Protection
NESHAPS	Nation Emission Standards for Hazardous Air Pollutants
NRC	Nuclear Regulatory Commission
oz	Ounces
pCi	Picocurie
pCi/g	Picocuries per gram
pCi/l	Picocuries per liter
ppm	Parts per million
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SCC	Soil Cleanup Criteria
SEL	Severe Effects Level
SDWA	Safe Drinking Water Act
SD	Sediment
SMCL	Secondary Maximum Contaminant Level
SQL	Sample Quantitation Limit
SW	Surface Water
TBD	To Be Determined
TETLD	Tissue-equivalent Thermo-luminescent Dosimter
TOR	Top of Riser
uq	Micrograms
USACE	U. S. Army Corps of Engineers
VOC	Volatile Organic Compound
VP	Vicinity Property
WL	Working Level
yd3	Cubic yard

EXECUTIVE SUMMARY

This report presents and interprets analytical results and measurements obtained from the 1999 Environmental Monitoring Program (EMP) for the Maywood Interim Storage Site (MISS) under the Formerly Utilized Sites Remedial Action Program (FUSRAP). The FY 1998 Energy and Water Appropriations Bill, signed into law on October 13, 1997, transferred management of FUSRAP from the U.S. Department of Energy (DOE) to the U.S. Army Corps of Engineers (USACE). Consistent with USACE policy, U.S. Nuclear Regulatory Commission (NRC) and U. S. Environmental Protection Agency (EPA) criteria for radionuclides have been used to evaluate analytical results. DOE criteria for radionuclides have been retained when the criteria are either agreed to by EPA, are site specific, or in the absence of criteria from the EPA or NRC.

In the early history of the site (i.e., from 1916 to 1959), Maywood Chemical Works (MCW) extracted radioactive thorium from monazite sand resulting in contamination of the property with low levels of thorium and lower levels of uranium and radium. The EMP for the site includes sampling of air, water, and streambed sediment to aid in the evaluation of potential hazards to the offsite population presented by these materials. This report compares the results of 1999 external gamma radiation measurements, radon gas measurements and samples of environmental media to historical background conditions and to regulatory and other criteria.

Federal and State regulations and other criteria are used to evaluate concentrations of radioactive constituents and doses at the site. The calculated dose to the maximally exposed individual from direct gamma radiation at MISS in 1999, based on the measured TETLD results, is 7.31 mrem; well below the NRC standard of 100 mrem. Based on TETLD measurements from 1//99 to 1/00, the maximum gamma radiation (corrected for background, exposure duration, and attenuation) value obtained was 730.3 mrem/yr. Measured radon-222 concentrations for 1999 ranged from non-detect to 0.6 pCi/l, which is well below the 4 pCi/l EPA action level. Radon-220 concentrations ranged from 0.08 pCi/l to a maximum of 4.66 pCi/l. This was the only location (on the northern perimeter of the site) to exceed the EPA action level.

The airborne particulate dose to the hypothetically maximally exposed individual in 1999 was 0.006 mrem/year which is well below the 10 mrem/year standard specified in 40 CFR, Part 61, Subpart H. No other radiological parameter exceeded relevant criteria, with the following exceptions:

- Sediment samples from one location in the eastern tributary of Lodi Brook (SWSD006) exceeded the DOE/EPA soil criteria for radium-226, radium-228 and thorium-232. The measured concentration of radium-226 (8.04 pCi/g), radium-228 (7.67 pCi/g), and thorium-232 (8.13 pCi/g) are the highest concentrations measured at the site in 1999. In the absence of regulatory criteria for sediment, the limits established by the DOE/EPA agreement are used to evaluate concentrations of radioactive constituents in shallow streambed sediment. At SWSD005 located further downstream at the confluence of the east and west tributaries of Lodi Brook, the

concentrations of all radionuclides are below the established limits for the individual isotopes, but the sum of the ratios criterion for mixtures is greater than 1 (1.09). Results for 1999 are within the historical range for these radionuclides and confirm the presence of localized contamination in the streambed sediment of the eastern tributary of Lodi Brook. No increased contamination is indicated.

Conservative Federal and State standards for chemical contamination in soil and water were used as criteria to evaluate monitoring results for streambed sediments, surface water, and groundwater. No metal concentrations at any of the sediment sampling locations exceeded proposed New Jersey Soil cleanup criteria. Some metals and volatile organic compounds (VOCs) in groundwater samples exceeded these standards:

- Lodi Brook sediment concentrations of arsenic (SWSD006) and lead (SWSD007) were elevated but less than the State proposed soil cleanup criteria. Elevated concentration of metals are expected given the generally industrialized nature of the area surrounding the site. Offsite contributors of these metals are likely. Concentrations of heavy metals at upstream and downstream environmental monitoring locations have frequently exceeded the proposed New Jersey soil cleanup criteria. The somewhat sporadic nature of the fluctuations in metal concentrations implies that the contamination is present in localized areas that are distributed during heavy runoff.

- Metals which exceeded either the Safe Drinking Water Act maximum contaminant levels or New Jersey Groundwater Quality Standards for Class IIA aquifers in at least one groundwater sample include arsenic, chromium, lead, and nickel. These metals were detected in both onsite and offsite wells. Although groundwater at MISS is not used as a public drinking water supply, state groundwater quality limits and Federal drinking water standards were used as a conservative basis of comparison for chemical concentrations in groundwater.

- The detection of VOCs in groundwater in 1999 is consistent with historical results. The detected VOCs in groundwater at MISS are tetrachloroethene and its degredation products: trichloroethene, dichloroethenes, and vinyl chloride. VOCs are present in both onsite (primarily in bedrock) and offsite (shallow and bedrock) groundwater. The presence of VOCs in downgradient monitoring wells B38W14D, B38W14S, and MISS07B is due to either groundwater movement or infiltration from Westerly Brook to these wells.

The results described above are comparable to results reported in previous years. No significant changes were observed.

1.0 INTRODUCTION

The Maywood Interim Storage Site (MISS) is located in Bergen County, New Jersey, approximately 20 km (12 mi) northwest of New York City and 21 km (13 mi) northeast of Newark, New Jersey (Figure 1). The Maywood site includes the 4.7-ha (11.7 acres) federally-owned MISS and over 85 vicinity properties (VPs) in Maywood, Lodi, and Rochelle Park. The site is bordered to the west by State Route 17, to the north by a New York Susquehanna and Western Railroad line, and to the south and east by commercial and industrial properties.

The Maywood Chemical Works (MCW) site was constructed in 1895. During the years 1916 to 1959, MCW extracted radioactive thorium and rare earth metals from monazite sand for production of mantles for gas lanterns. The waste materials generated during this process contained thorium-232 and associated decay products, with lesser amounts of radionuclides in the uranium-238 decay series. Slurry containing waste from these operations was pumped into two earthen-diked retention ponds west of the plant. These ponds were subsequently capped. Some process waste sands were combined with tea and coca leaves from other MCW operations, and then removed from the site and used as mulch and fill material on nearby properties. Additional waste was transported offsite by the Lodi Brook that ran southward along the facility property line and into the Borough of Lodi. Thorium residues in the brook settled onto adjacent properties where buildings and residences were subsequently built. In 1959, the MCW facility was sold to the Stepan Company. The Stepan Company has never processed radioactive material (DOE 1992).

In 1961, the Atomic Energy Commission (AEC) issued a radioactive material license to Stepan Company for radioactive material storage and remediation of the facility. Between 1966 to 1968, contaminated material was removed from the property west of New Jersey Route 17 and buried in three pits on the Stepan Company site.

In 1983, the Environmental Protection Agency (EPA) added the Maywood site to the National Priorities List and, the following year, cleanup of radioactive contamination at the Maywood Site was assigned to DOE by Congress. To expedite remediation of the Maywood site and its VPs, DOE purchased a 4.7-ha (11.7 acre) portion of the Stepan Company property for use as an interim storage facility for radioactively-contaminated materials (DOE 1992). This property was referred to as the Maywood Interim Storage Site (MISS). On October 13, 1997, the FY 1998 Energy and Water Appropriations Bill transferred management of FUSRAP from DOE to USACE. The USACE became a successor to the DOE as of March 17, 1999. FUSRAP activities presently continue with USACE.

1.1 Measured Parameters

The key elements of the 1999 EMP program at MISS were:

- measurement of external gamma radiation;
- measurement of radon gas concentrations in air (from radon-220 and radon-222);
- sampling and analysis of streambed sediment for radioactive constituents and metals;
- sampling and analysis of surface water for lithium; and
- sampling and analysis of groundwater for radioactive constituents, metals, and volatile organic compounds (VOCs).

1.2 Unit Conversions

The following tables list the units of measurement and appropriate abbreviations used in this document. Conventional units for radioactivity are used because the regulatory guidelines are generally provided in these terms; Système Internationale (SI) units of measurement are used in the discussion of all other parameters. Unit conversions are provided in the text for water level information only.

Units of Measurement and Conversion Factors - Radioactivity

Parameter	Conventional Units	SI Units	Conversion Factor
Dose	millirem (mrem)	MilliSievert (mSv)	1 mrem = 0.01 mSv
Activity	picocurie (pCi)	Becquerel (Bq)	1 pCi = 0.037 Bq

Units of Measurement and Conversion Factors - Mass, Length, Area, and Volume

Parameter	SI Units	English Units	Conversion Factor
Mass	gram (g)	ounce (oz)	1 g = 0.035 oz
	kilogram (kg)	pound (lb)	1 kg = 2.2046 lb
Length	centimeter (cm)	inch (in.)	1 cm = 0.394 in.
	meter (m)	foot (ft)	1 m = 3.281 ft
	kilometer (km)	mile (mi)	1 km = 0.621 mi
Area	hectare (ha)	Acre	1 ha = 2.47 acres
Volume	Milliliter (mL)	fluid ounce (fl. oz.)	1 mL = 0.0338 fl. oz.
	liter (L)	gallon (gal)	1 L = 0.264 gal
	cubic meter (m^3)	cubic yard (yd^3)	1 m^3 = 1.307 yd^3

2.0 EVALUATION CRITERIA

Regulatory and other criteria used to evaluate the results of the 1999 EMP program at MISS are summarized below, categorized by media and parameters.

2.1 External Gamma Radiation and Air (Radon Gas and Airborne Particulates)

Criteria for evaluating calculated maximum doses from external gamma radiation and inhalation of radioactive particulates, and measured concentrations of radon gas are as follows:

- Title 10 Code of Federal Regulations Part 20

  Dose limits for members of the public are presented in this NRC standard. The primary dose limit is expressed as a total effective dose equivalent. The limit of 100-mrem total effective dose equivalent above background from all sources for a period of a year is specified in this standard. External gamma radiation dose and the calculated doses from all releases are included in the calculation of the total effective dose equivalent. The 100-mrem total effective dose equivalent above background specified in this standard includes all pathways.

- Title 40 Code of Federal Regulations Part 192

  The applicable limit for radon in air is provided in this standard as 0.02 Working Levels (WLs), including background. The WL of 0.02 is applied to buildings only, where ventilation and other effective methods could be provided to maintain this limit. EPA guidance documents related to radon in homes refer to an Action Level (AL) of 4pCi/L. Radon concentrations that exceed the AL of 4 pCi/L require mitigation (EPA 1992d).

- Title 40 Code of Federal Regulations Part 61, Subparts H and Q

  Section 112 of the Clean Air Act authorized EPA to promulgate the National Emission Standards for Hazardous Air Pollutants (NESHAPs), which is applicable at MISS under Subpart H (i.e., for non-radon, radioactive constituents) and Subpart Q (for radon emissions). Compliance with Subpart H is verified by applying the EPA-approved Clean Air Act Assessment Package 1988-Personal Computer (CAP88-PC) model (EPA 1992a). Until the storage pile was removed in 1996, compliance with subpart Q was verified by semi-annual monitoring for radon-222 flux. Radon flux monitoring was discontinued after the pile was removed in 1996 (DOE 1996).

Summary of Radiological Criteria Used
External Gamma Radiation and Air

Parameter	NRC Standard	Other EPA Standard or Guideline
Radon-222		4 pCi/L [a]
Radon-220		--[b]
Radionuclide Emissions (airborne particulates and radioactive gases)	10 mrem/yr. [c]	10 mrem/yr. [d]
Total Effective Dose Equivalent (total contribution from all sources [e])	100 mrem/yr.[f]	

[a] EPA standard from 40 CFR 192.
[b] Provisions applicable to radon-222 shall apply to radon-220 (40CFR192.41, provisions).
[c] NRC standard from 10 CFR 20 for particulate and radon-220 emissions only; excludes radon-222.
[d] EPA standard from 40 CFR Part 61, Subpart H, for particulate emissions only; excludes radon-222 and radon-220.
[e] Contributing sources at MISS consist of external gamma radiation exposure, radionuclide emissions listed above, and ingested radionuclides in water and soil/sediment.
[f] NRC standard from 10 CFR 20; background is excluded in the calculation of dose.

2.2 Sediment, Surface Water and Groundwater - Radioactive Constituents

Criteria for evaluating the measured concentrations of radionuclides in sediment, surface water, and groundwater at MISS are:

- Soil Cleanup Criteria for the Maywood Site

  The criteria for radionuclides in soil were agreed to by DOE and EPA in 1994 (DOE 1994a). The radiological soil cleanup criteria for radium and thorium are 5 pCi/g above background regardless of depth at Phase I properties. The EMP does not include analysis of onsite soils; however, because there are no standards for sediment, the soil cleanup criteria are used as a basis for evaluating the analytical results for sediment.

- The MISS site-specific soil cleanup criterion for total uranium, developed at Argonne National Laboratory (ANL) for DOE, is 100 pCi/g above background (DOE 1994b). For mixtures of radionuclides, the data are evaluated by the sum-of-ratios method.

By this method, the above-background concentration of each of the radioisotopes (radium-226 or thorium-230, whichever is greater; thorium-232 or radium-228, whichever is greater; and total uranium) is divided by its respective criterion values, and the ratios are summed. If the result is greater than 1, the mixture of radionuclides fails the sum-of-ratios test and is thereby considered to exceed the soil guidelines.

- Title 40 Code of Federal Regulations Part 141

The regulations in 40 CFR Part 141 set maximum permissible levels of organic, inorganic, radiological and microbial contaminants in drinking water by specifying the maximum contaminant level (MCL) for each. MCLs have been promulgated for combined concentrations of radium-226 and -228. Although groundwater at MISS is not a public drinking water supply, the MCLs for drinking water are considered relevant and appropriate and are used as a conservative basis for evaluating analytical results. New Jersey drinking water regulations [New Jersey Administrative Code (NJAC) 7:10] incorporate, by reference, all the Federal drinking water standards unless a more stringent State standard for a hazardous contaminant has been promulgated. Although there is an MCL for gross alpha, sampling was only performed for specific radiological contaminants known to exist at MISS (Rad-226/228, Th-230/232, Total Uranium). With respect to Th-230/232, comparisons will be made to the gross alpha MCL of 15 pCi/L. For total uranium comparisons will be made to the Federal/State MCL (N.J.A.C. 7:9-6) of 30 ug/L (27pCi/L).

Summary of Radiological Criteria Used
Water and Sediment

Parameter	New Jersey Groundwater Quality Standards	EPA Drinking Water Standard	Sediment Criteria
Radium-226	5 pCi/L[a]	5 pCi/L[a]	5 pCi/g[c]
Radium-228	5 pCi/L[a]	5 pCi/L[a]	5 pCi/g[c]
Thorium-230	15 pCi/L[b]		5 pCi/g[c]
Thorium-232	15 pCi/L[b]		5 pCi/g[c]
Total Uranium	30 ug/L	30 ug/L	100 pCi/g[d]

[a] Current SDWA, MCL for the combined concentration of radium-226 and radium-228 in drinking water.
[b] Comparisons are made to the Gross Alpha criteria of 15 pCi/L.
[c] Soil cleanup criteria established by DOE and EPA are used as a basis for evaluating analytical results for sediment. If a mixture of radionuclides is present, then the sum-of--ratios of the concentration of each isotope (radium-226 or thorium-230, whichever is greater; radium-228 or thorium-232, whichever is greater; and uranium) to the allowable limit must be less than one.
[d] Site-specific soil cleanup criteria developed by ANL for DOE.

2.3 Sediment - Chemical Parameters

Criteria for evaluating the detected concentrations of chemical parameters in sediment at MISS are as follows:

- New Jersey Proposed Cleanup Standards for Contaminated Sites

  These standards are currently being provided as guidance by the New Jersey Department of Environmental Protection (NJDEP). Because there are no standards for sediment, the New Jersey proposed cleanup standards for residential and nonresidential properties were used as a conservative basis for evaluating results of analyses for metals in sediment (NJDEP 1992).

- Sediment Screening Values for use in the Baseline Ecological Evaluation (BEE) (NJDEP 1998).

  To aid in the identification of contaminants of potential ecological concern, site-related sediment data are compared to established screening level criteria in the

Baseline Ecological Evaluation (BEE). An exceedance above the Lowest effect Level (LEL) in the BEE indicates a potential risk (not cleanup) to the benthic community and need for further investigation.

2.4 Groundwater - Chemical Parameters

Although the groundwater at MISS is not used as a public drinking water supply, Federal standards for drinking water and State groundwater standards are used in this document as a conservative basis for comparison of chemical analytical results.

- Title 40 Code of Federal Regulations Part 141

  As noted above, the SDWA is the primary Federal law applicable to the operation of a public water system and the development of drinking water quality standards. The regulations establish MCLs for organic, inorganic and microbial contaminants in drinking water. In some cases, secondary maximum contaminant levels (SMCLs), which are not Federally enforceable (40 CFR 143), are provided as guidelines for the various states.

- New Jersey Groundwater Quality Criteria - Class IIA

  Groundwater in New Jersey is classified according to its hydrogeological characteristics and uses. The primary designated use for Class IIA groundwater is as a potable water supply, although Class IIA uses also include agricultural and industrial water. NJAC 7:9-6 lists groundwater quality criteria (GWQC) and practical quantitation limits (PQLs).

3.0 SAMPLING LOCATIONS AND RATIONALE

Contamination at MISS is present in the former retention ponds, on the ground surface and in onsite structures. Exposure to members of the public by this radioactively-contaminated material at MISS is unlikely because of site access restrictions (e.g., fences) and engineering controls (e.g., pile covers). Potential pathways include direct exposure to external gamma radiation; inhalation of radon or radioactively-contaminated particulates in air; and contact with or ingestion of contaminated streambed sediments, surface water, or groundwater. The EMP at MISS has been developed in order to evaluate and monitor these potential exposure routes through periodic sampling and analysis for radioactive and chemical constituents. Figures 2 and 3 show the EMP sampling locations at MISS, and indicate the type of media sampled at each location. Table 1 summarizes the 1999 monitoring program at MISS for external gamma radiation, radon gas, surface water, sediment, and groundwater.

Measurements of external gamma radiation are taken along fenceline locations surrounding MISS in order to assess potential exposure levels to the public and site workers (Figure 2).

Atmospheric monitoring of radon gas is conducted onsite both in known areas of contamination and at fenceline locations (Figure 2).

Surface water and sediment sampling includes the analysis for radioactive constituents and metals along Westerly Brook and the upper catchment of Lodi Brook (Figure 3). Sampling locations along Westerly Brook are used to assess both upstream and downstream conditions. Because Lodi Brook receives drainage from areas of known contamination, sampling is also conducted along the eastern and western tributaries of this stream.

Water level measurements and groundwater samples from monitoring wells enable the assessment of groundwater flow patterns and are used to evaluate groundwater quality upgradient and downgradient of the site, in the source area and at the MISS/Stepan Company boundary (Figure 2). Groundwater in both the surficial unconsolidated sediments and bedrock is monitored at MISS. Groundwater samples were collected using the USEPA Region II memo dated March 20, 1988 titled *Final USEPA Region II Low Stress (Low Flow) Groundwater Sampling Standard Operating Procedure*. In general, groundwater samples were obtained from the monitoring wells once in-situ parameters (pH, temperature, conductivity, and dissolved oxygen) stabilized to within 10 percent for three consecutive readings taken at five-minute intervals. Purge rates were typically 150-350 mL/min in order to minimize drawdown and turbidity. Sampling rates were on the order of 250 mL/min.

4.0 MONITORING METHODOLOGY

Under the MISS EMP conducted in 1999, standard analytical methods approved and published by EPA and the American Society for Testing and Materials (ASTM) were used for chemical (i.e., all non-radiological) analyses. The laboratories conducting the radiological analyses adhere to EPA-approved methods and procedures developed by the Environmental Measurements Laboratory (EML) and ASTM. All laboratories analyzing FUSRAP chemical samples are certified by NJDEP. A detailed listing of the specific procedures and the data quality objectives for the monitoring conducted in 1999 program is provided in the FUSRAP *Environmental Surveillance Plan* (BNI 1996a).

All 1999 environmental monitoring activities at MISS were conducted in accordance with the *Environmental Surveillance Plan* (BNI 1996a) and the instruction guides (IGs) listed in the following table. The IGs are based on guidelines provided in *RCRA Ground Water Monitoring: Draft Technical Guidance* (EPA 1992b); *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846* (EPA 1992c); and *A Compendium of Superfund Field Operations Methods* (EPA 1987).

FUSRAP Instruction Guides Used for Environmental Monitoring Activities

Document Number	Document Title
191-IG-007	Groundwater Level and Meteorological Measurements (BNI 1996b)
191-IG-011	Decontamination of Field Sampling Equipment at FUSRAP Sites (BNI 1996c)
191-IG-028	Surface Water and Sediment Sampling Activities (BNI 1993a)
191-IG-029	Radon/Thoron and TETLD Exchange (BNI 1993b)
191-IG-033	Groundwater Sampling Activities (BNI 1993c)

5.0 ANALYTICAL DATA AND INTERPRETATION OF RESULTS

This section presents the data and interpretation of results for the 1999 EMP at MISS. Data for 1999 are presented in Tables 2 through 13.

In data tables containing results of analyses for radioactive constituents, some results may be expressed as negative numbers. This phenomenon occurs if the average background activity of the laboratory counting instrument exceeds the measured sample activity. In such cases, when this instrumental background activity is subtracted from the sample activity, a negative number results. For the purposes of interpretation, all values below the baseline minimum detectable activity (MDA) are interpreted as having an unknown value between zero and the MDA. Such a value is referred to as a "non-detect."

The most precise analytical method for analysis of total uranium yields results in values expressed as µg/L and µg/g for water and sediment samples, respectively. To allow direct comparison of results to relevant standards and the DOE/EPA soil cleanup criteria, the data must be converted to pCi/L and pCi/g units, as appropriate. In the final Radionuclide Rule, the EPA states that the generic conversion factor for total uranium from ug/L to pCi/L is 0.9, therefore since the new MCL for uranium is expressed as 30 ug/L, it should also be listed as 27 pCi/L. Only the converted data are provided in the tables and text of this document. The following discussions compare results to historic data presented in Appendices A-1, A-2, A-3, and A-4.

5.1 External Gamma Radiation

External gamma radiation dose rates are measured using tissue-equivalent thermoluminescent dosimeters (TETLDs) in place at MISS continuously throughout the year. Location of TETLDs are shown on Figure 2. Each TETLD measures a cumulative dose over the period of exposure (approximately one year). When corrected for shelter/absorption and background, and normalized to exactly one year's exposure, these detectors provide a measurement of the annual external gamma radiation dose at that location. TETLD results for the 1999 external gamma radiation dose (i.e., both raw and corrected data) are summarized in Table 2.

The corrected data are used to calculate the external gamma radiation dose to a hypothetical maximally exposed individual. Identification of this hypothetical individual is a function of the fenceline dose, the distance of the individual from the fenceline, and the amount of time that the individual spends at the specific location. The data from the side of the site displaying the highest radiation readings (i.e., location 21) are averaged, and the external gamma dose rate at the distance to individuals at the nearest commercial/industrial facility or residence is then determined. The calculated maximally exposed individual from direct gamma radiation at MISS in 1999 was 7.31 mrem (calc. 08575-0207-001).

5.2 Radon-220 and Radon-222

Results of the 1999 monitoring for radon gas (radon-220 and 222) are presented in Table 3; detector locations are shown on Figure 2. At each location, two types of detectors are exposed. One detector type, the RadTrack®, allows both isotopes of radon to enter. The other detector type, the RadTrack®-modified, contains a membrane that specifically excludes radon-220. Radon-222 results are reported as received from the laboratory (i.e., the data are obtained directly from the RadTrack®-modified detectors). Radon-220 concentrations are calculated using the RadTrack® and RadTrack®-modified data (BNI 1997b).

Radon-222 concentrations for 1999 ranged from non-detect to 0.6 pCi/L; below the EPA AL of 4 pCi/L. Radon-220 concentrations ranged from 0.08 pCi/L to a maximum of 4.66 pCi/L (location 5), which exceeded the EPA AL.

As with most low concentrations of gases in an open, unconfined area, the radon emitted from this area dissipates quickly and does not significantly affect the general population, located offsite. The closest residential inhabitants live to the northeast. Locations 32 and 33 (Figure 2) were installed in 1996 in order to examine radon gas concentrations in this area. Radon-220 results at these two locations were well below the EPA AL and were significantly lower than the concentrations detected onsite.

5.3 Radon-222 Flux

Upon completion of pile removal in December 1996, radon flux monitoring was discontinued as allowed for by the CAA Memorandum of Agreement between DOE and EPA (DOE 1996).

5.4 Airborne Particulate Dose

To determine the annual effective dose from airborne emissions of radioactive particulates potentially released from MISS during 1999, multiple sources were considered, including wind erosion, the transfer and loading of contaminated vicinity property soil, and the removal/replacement of contaminated soil involved with the construction of test pits. The particulate release rates from in situ wind erosion, vicinity property soil transfer, and the test pit excavations were calculated using the methodology contained in the "Industrial Wind Erosion" section of EPA's AP-42, (EPA 1995). Radionuclide emission rates were based on the particulate release rates and average radionuclide source concentrations obtained from soil measurements. Source concentrations for isotopes of uranium (U-238), radium (Ra-226), and thorium (Th-232) were based on average values obtained from the measurement of these radionuclides in surface soil samples for the in situ soil (BNI 1987) and average values measured in soil samples obtained during the transfer of vicinity property soil and the construction of test pits. Unknown radionuclide source concentrations were based on the known source concentrations assuming secular equilibrium in the decay chains (Shlein 1992).

Although the direct emission of radon gas is not considered in this analysis, the daughters of radon generated by the decay of Radon-226 in dust offsite is accounted for by the model in the computation of the effective dose equivalents for the various internal and external exposure pathways. The total airborne radionuclide emissions for the year were calculated as the sum of these releases and is then entered into the "Clean Air Act Assessment Package-1988-Personal Computer" (CAP88-PC computer model) (EPA 1992a) to perform two calculations:

1. Estimation of the hypothetical doses from airborne radioactive particulates to individuals located at distances to the nearest residences, and to the nearest commercial/industrial facilities as measured from the center of the site. Hypothetical doses were then corrected for the residential occupancy (conservatively assumed to be 24 h/day) and commercial/industrial facility occupancy (40 h/week, 50 weeks/year). The hypothetical individual receiving the highest of these calculated doses was then identified as the individual maximally-exposed to airborne particulate dose. Because this dose is based in part on wind direction and not simply on distance from the site, this hypothetical maximally-exposed individual may not be the same as the person identified in the dose calculation for external gamma radiation dose (Section 5.1).

2. The hypothetical collective dose from airborne radioactive particulates for the population within 80 km of the site was estimated using a population file (generated from county population densities) to determine the number of people in graduated, concentric grid sections radiating outward to 80 km from the center of the site.

The CAP88-PC model determines the maximally exposed individual based on the radionuclide emissions, local meteorological data and other factors. The model can calculate the effective dose equivalent for any receptor of interest (e.g., residences, schools, workers). Although particulate sampling is conducted around the perimeter of the site, it would not be practical to install samplers at all potential offsite receptor locations to capture the worst case impacts. Also, it is difficult to reliably measure the dose at off-site receptors because the dose is so small to the natural background levels. For these reasons, modeling is EPA's preferred approach for demonstrating compliance.

The CAP88-PC program computes radionuclide concentrations in air, rates of deposition on ground surfaces, concentrations in food, and intake rates to people from ingestion of food produced in the assessment area. By coupling the output of the atmospheric transport models with terrestrial food chain models from the U.S. Nuclear Regulatory Commission Regulatory Guide 1.109 ("Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I"), the program estimates the radionuclide concentrations in produce, leafy vegetables, milk, and meat consumed by humans. The population distribution array used in the computer model was calculated from known land surrounding the site and 1990 census figures. The program calculates the effective dose equivalent by combining the inhalation and ingestion intake rates and the air and ground surface concentrations with dose conversion factors, using the weighting factors in "Recommendations of the International Commission on Radiological Protection" (ICRP publication 26, 1977). CAP-88 PC

calculates dose to the gonads, breast, lungs, red marrow, thyroid, and endosteum in addition to the 50-year effective dose equivalent. Doses can be tabulated as a function of radionuclide, pathway, location, and organ as shown in the calculation presented in Appendix C.

The hypothetical maximally exposed individual in 1999 was an individual with 100 percent occupancy time at a residence 90 m northeast of the site. The 1999 airborne particulate dose to that individual, considering all site contributions throughout the year, was 0.006 mrem/yr., which is well below the 10 mrem/yr. standard specified in 40 CFR Part 61, Subpart H. The second calculation indicates that the hypothetical airborne particulate collective dose to the population within 80 km of the site was 0.007 person-rem/yr.

5.5 Surface Water and Sediment

Surface water courses and drainage near MISS include Westerly and Lodi brooks (Figure 3). Westerly Brook flows through a culvert after it enters the northwestern corner of MISS. The subsurface culvert redirects Westerly Brook to the west, south and then to the west again, along the northern and western property boundaries. After leaving MISS, the culvert remains below grade for approximately 335 m before it terminates. At this point, Westerly Brook reemerges and resumes its westward course. Ultimately, Westerly Brook discharges into the Saddle River.

Sampling points for 1999 monitoring of surface water and streambed sediment were downstream of the site, at SWSD002 along Westerly Brook; SWSD006 and SWSD007, on the eastern tributary of Lodi Brook; and SWSD0005, at the confluence of the eastern and western tributaries of Lodi Brook (the western branch of Lodi Brook drains portions of the MISS, Stepan Company, and Sears properties). Background sampling was conducted in Westerly Brook, upstream (north) of the site, at SWSD003.

5.5.1 Surface Water

Surface water samples in 1999 were collected and analyzed for lithium, a MCW process-related metal present at the site. Surface waters were not sampled for radionuclides. According to the 1992 Environmental Surveillance Report submitted by BNI, the radiological results for surface water samples were at background levels for the previous five (5) years (1986-1991). Thus, surface water sampling for radionuclides was discontinued at that time. Downstream lithium concentrations ranged from 35.10 µg/L to 372 µg/L (Table 4). All downstream concentrations were significantly higher than the background sample location SWSD003 (19.10 µg/L), with the maximum concentration of 372 µg/L occurring in Westerly Brook, downstream from the site at location (SWSD002). There are currently no regulatory limits for lithium in surface water.

5.5.2 Sediment

Sediment samples are collected at one upstream location, one downstream location in Westerly Brook, and three downstream locations in Lodi Brook (Figure 3). The sediment samples are collected in the proximate location of the surface water samples.

Radioactive Constituents

As noted in analytical results from previous years, sediment samples from Westerly Brook (SWSD002) do not exhibit elevated concentrations of the analyzed radionuclides. Results for this location are comparable to background measurements at SWSD003 (Table 5).

In the eastern tributary of Lodi Brook, results of sample analyses exceeded the soil cleanup criteria for radium-226, radium-228 and thorium-232 (Table 5). The highest concentrations (8.04 pCi/g radium-226, 7.67 radium-228, and 8.13 pCi/g thorium-232) were detected at the upstream location, at SWSD006. Further downstream, at location SWSD007, detected concentrations of all radionuclides were above background, but below the soil cleanup criteria for radium-226, radium-228, and thorium-232 and the sum-of-ratios criterion for mixtures.

At SWSD005, at the confluence of the western and eastern branches of Lodi Brook, detected concentrations of all analyzed radionuclides were below the soil cleanup criteria for the individual isotopes but the sum-of-ratios criterion for mixtures was greater than 1.0 (1.09) which is above the soil clean up criteria.

Results for 1999 confirm the presence of localized contamination in the streambed sediment of the eastern tributary of Lodi Brook. Variation of sediment concentrations from one year to another is typical and due to factors, such as local disturbances during and prior to sampling, and the time since the last rainfall event. Although the majority of results for 1999 are lower than for 1998, several results were higher in 1999. While station SWSD007 in 1999 had the lowest results ever recorded (at that station) for Ra-228, Th-230, and Th-232, upstream station SWSD006 in 1999 had the highest results ever recorded (at any station) for Ra-226 and Total Uranium. Thus, no definite trend is indicated.

Metals

Metals concentrations in sediment are compared to the proposed New Jersey Soil Cleanup Criteria (SCC), and to the Sediment Screening Values in the BEE (NJDEP 1998).

The New Jersey residential, and less stringent nonresidential, proposed soil cleanup standards provide a basis for evaluating metal concentrations in sediment for the mixed

land use area around MISS (NJDEP 1992). These proposed standards, as appropriate for the zoning of a given sampling location, are provided in Table 6 along with the detected concentrations of metals in sediment. Sampling locations SWSD003 (background), SWSD005, SWSD006, and SWSD007 are in areas zoned as light industrial (nonresidential), while sampling location SWSD002 is in an area zoned for residential use.

No metal concentrations at any of the sampling locations exceeded proposed New Jersey Soil Cleanup Criteria. The sampling results for 1999 are summarized below for each sampling location.

- No metals concentrations exceeded either the proposed residential or nonresidential soil cleanup criteria at the upstream, background location (SWSD003). Although the upstream location is in an area zoned for nonresidential use, one downstream sampling location is zoned for residential use; therefore, it is prudent to evaluate upstream data against residential cleanup standards as well.

- At SWSD002, the residential downstream location along Westerly Brook, no metals concentrations exceeded the proposed residential soil guidelines.

- At SWSD005, at the confluence of the eastern and western tributaries of Lodi Brook, no metals concentrations exceeded the proposed residential soil guidelines.

- At SWSD006, downstream location along Lodi Brook, no metals concentrations exceeded the proposed nonresidential soil guidelines. However, elevated concentrations of arsenic and lead were reported at 18.2 mg/kg and 294 mg/kg, respectively. The concentrations of arsenic and lead were above background concentration, but below the proposed state limit of 20 mg/kg and 600 mg/kg and below respective values recorded in 1998. Upstream of this sampling location and downstream from MISS, there are multiple potential industrial sources for these metals.

- At SWSD007, in the eastern tributary of Lodi Brook, arsenic (6.7 mg/kg) and lead (140.0 mg/kg) were present but below the proposed New Jersey nonresidential soil cleanup standards and below respective values recorded in 1998. Upstream of this sampling location and downstream from MISS, there are multiple potential industrial sources for these metals.

Sediment Screening Values in the Baseline Ecological Evaluation.

To aid in the identification of contaminants of potential ecological concern, site related metal concentrations in sediment are compared to the Lowest Effects Level (LEL) and Severe Effects Level (SEL) concentrations listed in the screening level criteria presented in the "Guidance for Sediment Quality Evaluations" (NJDEP 1998).

- No metal concentrations exceeded the SEL concentrations, but various metal concentrations at the five locations exceeded the LEL used in the Baseline Ecological Evaluation (BEE).

- At SWSD002, while none of the metal concentrations exceeded the SEL, most of the metals (except chromium and nickel) listed in the BEE exceeded LEL.

- At SWSD005, at the confluence of the eastern and western tributaries of Lodi Brook, no metal concentrations (except copper) exceeded the LEL. Copper concentration of 82.60 mg/kg exceeded the proposed criteria of 16 mg/kg.

- At SWSD006, upstream location along Lodi Brook, no metals concentration exceeded the SEL. However, all metal concentrations listed in the BEE exceeded the LEL (Table 6).

- At SWSD007, in the eastern tributary of Lodi Brook, no metal concentrations exceeded the SEL. However, Arsenic, Copper, and Lead exceeded the LEL.

5.6 Groundwater

The locations of groundwater monitoring wells at MISS are shown in Figure 2. Background information, descriptions of activities performed under the groundwater monitoring program and monitoring results are discussed below.

5.6.1 Groundwater Flow System

Natural System

Groundwater in the Maywood area occurs in both the bedrock and the overlying unconsolidated sediments. Bedrock is composed of fractured sandstone and shale belonging to the Passaic Formation. Unconsolidated sediments are composed of interbedded sand and clay of glacial origin. Although there is no continuous confining layer present across the Maywood Site, the Remedial Investigation report for the Maywood Site (DOE 1992), indicated that the unconsolidated overburden deposits may be divided into three units that interfinger with the underlying and overlying unit. The lower lithostratigraphic unit is characterized as consisting of stratified, moderately well

sorted to well sorted fine grained sands and silts, with varying amounts of organic material. The middle lithostratigraphic unit consists of layers of clayey silt and silty clay with clayey to clean sand. The upper lithostratigraphic unit consists of undifferentiated deposits of sand, silt and gravel. These deposits are poorly to moderately sorted.

Although the fine grained sediments present in the middle lithostratigraphic unit are not continuous across the site, the presence of silts and clays overlying bedrock may be one cause for the higher potentiometric surface encountered in the northeastern portion of the site in the vicinity of the bedrock monitoring well B38W05B. Bulk groundwater flow is predominantly horizontal, however, hydraulic head elevations obtained within the Maywood Site indicates that there is a downward component to groundwater flow within the MISS/Stepan property, and an apparent upward component of groundwater flow near groundwater discharge points such as the Saddle River and Lodi Brook.

Water Level Measurements

Water level measurements are obtained semiannually from 35 monitoring wells (Figure 2). Water Level Record Sheets for June 1999 and August 1999 are provided in Appendix B. Water levels fluctuate in response to short and long term seasonal changes in precipitation and evapo-transpiration. In the unconsolidated sediments, groundwater levels measured during the August, 1999 synoptic gauging round ranged from 1.15 m (B38W01S) to 5.19 m (MISS-1AA) (5.94 to 17.01 ft) below ground surface (bgs). Similarly, water level elevations collected on June 22, 1999 ranged from 1.14 m (B38W01S) to 4.59 m (MISS-1AA) (3.74 to 15.05 ft) bgs. The elevation of the water table in June 1999 ranged from 13.05 m (B38W12A) to 16.41 m (B38W01S) (42.79 ft to 53.81 ft) above mean sea level (MSL). Table 7 presents information regarding depth to groundwater in relationship to ground surface and to top of the riser pipe, water table elevations, and the differences in hydraulic head for the June and August 1999 synoptic gauging rounds.

In the bedrock aquifer, groundwater levels measured during the June 22, 1999 synoptic gauging round ranged from 1.37 m (B38W12B) to 4.89 m (B38W02D) (4.49 to 16.05 ft) bgs. Similarly, depth to water measurements collected in August 1999 ranged from 2.39 m (B38W12B) to 7.84 m (B38W02D) (7.84 to 20.46 ft) bgs. The piezometric surface in the bedrock aquifer in June 1999 ranged from 13.12 m (B38W12B) to 17.58 m (B38W05B) (43.04 to 57.65 ft) above MSL. In August 1999, the piezometric surface ranged from 12.1 m (B38W12B) to 16.19 m (B38W05B) (39.69 to 53.10 ft) above MSL. Table 8 presents information regarding depth to groundwater in relationship to ground surface and to top of the riser pipe/surface casing, piezometric surface elevations, and the differences in hydraulic heads measured for the June 1999 and August 1999 synoptic gauging rounds.

Groundwater levels in the unconsolidated sediments and shallow bedrock fluctuate. Observed head variances in groundwater levels are calculated as the difference between the maximum and minimum water levels in a given well. Observed head differences in water levels in the unconsolidated sediments ranged between 0.01 m (MISS07A) and

0.96 m (B38W12A) (0.3 to 3.15 ft) from June 22 to August 10/12 1999. Water level fluctuations in bedrock ranged between 0.49 m (B38W24D) and 1.39 m B38W05B (1.6 ft and 4.55 ft) in the same period. Tables 7 and 8 provide information regarding the elevation fluctuations in the overburden and bedrock monitoring wells, respectively.

Groundwater Flow System

Potentiometric surface maps for the unconsolidated and bedrock groundwater flow systems during the June and August 1999 synoptic gauging rounds are presented in Figures 4 through 7. Lateral groundwater flow at the MISS is strongly controlled by the morphology of the bedrock surface. The bedrock slopes westward across the site, flattens, and then rises to a subtle ridge along the Saddle River (DOE 1992). Horizontal hydraulic gradients reflect this configuration and flatten offsite, to the west. A figure depicting the contours of the bedrock surface excerpted from the Remedial Investigation report (DOE 1992), are presented as Figure 8. Bedrock highs exist in the northeast portion of the site within the Stepan property, these bedrock highs form a local groundwater divide, and control the direction of groundwater flow in the overburden and bedrock aquifers.

In the unconsolidated sediments, the horizontal hydraulic gradient varies spatially from approximately 0.007 ft/ft to 0.012 ft/ft. The direction of groundwater flow in the overburden aquifer is predominantly to the west-southwest as presented in Figures 4 and 5. As depicted in these figures, the highest hydraulic head was present in monitoring well B38W01S, this well is located west of the bedrock high. The linear groundwater velocity of 0.02 m/day (0.05 ft/day) has previously been estimated for the unconsolidated sediments (DOE 1992).

In the bedrock aquifer, the horizontal hydraulic gradients ranged between 0.015 to 0.020 ft/ft. The direction of groundwater flow in bedrock is presented in Figures 6 and 7. As depicted in these figures, groundwater flow is dictated by the presence of a groundwater high, which roughly coincides with a bedrock high located in the northeast corner of the site in the vicinity of the Stepan property, as shown on Figure 8. Figures 6 and 7 depict a groundwater divide, with groundwater flowing predominantly to the west-southwest, with a component of groundwater flow to the northwest. It is likely that the northwest component of groundwater flow turns from a northwestern component of flow to a westerly component of flow based on isopleths presented in Figures 6 and 7. The average linear groundwater velocity of the bedrock has previously been estimated to range between 0.1 and 0.7 m/day (0.3 to 2 ft/day) (DOE 1992).

Based on synoptic gauging rounds, information regarding the vertical component of groundwater flow may be inferred. Table 9 presents the hydraulic heads observed at the 13 well clusters located within the FMSS. With the exception of wells MISS-3A/3B, B38W12A/12B, B38W17A/17B and B38W25S/25D, the well clusters show a downward component of groundwater flow. The downward component of groundwater flow depicts recharge areas in the unconsolidated/overburden aquifer. The exception to this statement

are for the aforementioned well clusters where the hydraulic heads measured in the bedrock aquifer are higher than those measured in the unconsolidated overburden aquifer.

The hydraulic heads measured in well cluster MISS-3A/3B, located on Stepan's property depicts an upward gradient during the August 1999 gauging round, although the gradient cannot be quantified. In August 1999, the water level in the shallow overburden well was below the base of the well screen/sump. The elevation of the base of the sump is 43.86 ft MSL in MISS-3A. The elevation of the piezometric surface in well MISS-3B was 44.85 ft MSL. As a result, the vertical gradient is upward, but the gradient cannot be quantified. In June 1999, the vertical gradient was determined to be downward as denoted by the hydraulic head measurements provided in Table 9.

With respect to well cluster B38W25S/25D located on the MISS, the hydraulic head difference between the bedrock well and the overburden well was determined to be 0.35 ft and 0.58 ft during the August and June gauging rounds, respectively. As indicated in the Remedial Investigation report (DOE 1992), in the vicinity of B38W25S/25D, fracture zones orientated approximately 90 degrees apart have resulted in the gouging out of the bedrock surface. The bedrock surface has been gouged and filled with unconsolidated material. Based on hydraulic heads measured in March 1992 (DOE 1992), the presence of sand, silt, and clay overlying the weathered bedrock surface may act as a confining layer, and the hydraulic head in the vicinity of this well cluster may be under confining conditions. As part of the GWRI investigation, the measured upward gradients present on the MISS/Stepan property will be further evaluated.

With respect to monitoring well clusters located off-site, water levels measured in June 1999 from well cluster B38W12A/12B indicated a measured difference of 0.25 ft. in an upward direction. In August 1999, the vertical gradient was still upward but the head difference was 0.05 ft. The proximity of this well cluster to Lodi Brook may justify an upward component of groundwater flow.

With respect to well cluster B38W17A/17B, the head differences were measured to be 0.02 ft. in June 1999 and 0.04 ft in August 1999. Although the water level instrument is sensitive to 0.01 ft., it is feasible that the difference in hydraulic heads are close enough to one another that the vertical component of groundwater flow is negligible, and that the predominant component of groundwater flow is horizontal.

5.6.2 Groundwater Quality

Field Parameters

Table 10 presents a summary of field parameters measured during annual sampling activities at MISS. Field parameters include: temperature, pH, oxidation/reduction potential (Eh), turbidity, specific conductance, and dissolved oxygen. These parameters are monitored during the purging of the wells to determine when to commence sample collection. Field procedures require these parameters to reach a stable condition prior to sampling. Measurements are taken systematically during the purging procedure and are

recorded in field logbooks. The field data for 1999 are recorded in logbooks LB-138-135 and LB-138-136.

Water Quality Parameters

Groundwater quality at MISS has been evaluated historically for the standard parameters sodium, potassium, magnesium, calcium, carbonate, bicarbonate, chloride, nitrate, sulfate, and total dissolved solids (TDS). Analyses for these parameters were discontinued after 1996.

5.6.3 Groundwater - Radioactive Constituents

Groundwater samples collected from monitoring wells both onsite and offsite (Figure 2) in May 1999 were analyzed for radioactive constituents. Eleven shallow wells and twelve deep wells are included in the monitoring plan to be sampled for radionuclides, metals, and VOCs. The location of these wells with respect to MISS are:

- Upgradient wells:

  B38W-01S, 02D

- On-site Wells:

  MISS-1AA, 1B, 2A, 2B, 5A, 5B, 6A, 7B
  B38W-19S, 19D, 18D, 24S, 24D, 25S, 25D

- Downgradient Wells:

  B38W-14S, 14D, 15S, 15D, 17A, 17B

Four wells were not sampled during 1999. Well MISS05B had a bladder pump with an inoperative check valve. At well B38W01S the peristaltic sampling tube was dropped into the well and recovery attempts were unsuccessful. Well pair B38W15S and B38W15D at 26 Grove Avenue were not sampled due to a problem with the access agreement. Although groundwater at the site is not used as a source of potable water, Federal drinking water and New Jersey groundwater standards are used as a conservative basis for evaluation of the results. Results are provided in Table 11 and discussed below.

- Onsite and downgradient radium-226 results ranged from non-detect at 0.08 pCi/L (MISS07B) and 0.08 pCi/L (B38W25S) to 0.68 pCi/L (MISS05A). Consistent with historical results, detected radium-226 concentrations are significantly less than the State and Federal drinking water standard of 5 pCi/L (for combined Radium-226 and Radium-228). Although the SDWA does not apply because groundwater at MISS is

not used as a source of drinking water, combined radium-226 and 228 concentrations are also well below the SDWA MCL of 5 pCi/L.

- Radium-228 was detected in only one groundwater sample. The reported detected concentration of radium-228 was 0.40 pCi/L in a sample from well B38W14S. This concentration is well below the Federal and State drinking water standard of 5 pCi/L.

- Thorium-230 was detected in approximately half of the groundwater samples. Where it was detected, it ranged from 0.57 pCi/L (MISS01B) to 1.67 pCi/L (B38W25D) and 2.26 pCi/L in a duplicate sample (B38W25D). The results are substantially below the State drinking water standard of 15 pCi/L for Gross Alpha.

- Thorium-232 was not detected in any groundwater samples.

- Total uranium concentrations in groundwater were less than average historical values with one exception. Total uranium was detected in MISS05A at a concentration of 74.78 pCi/L. MISS05A is an overburden monitoring well located on-site near former retention ponds and areas of contaminated soils. This result is above the State and Federal drinking water standard of 30 ug/L (27 pCi/L). Monitoring well B38W18D (bedrock well) located near Building 76 contained 4.08 pCi/L of total uranium. The maximum offsite concentration reported was 1.42 pCi/L from monitoring well B38W14S southwest and downgradient of the site.

5.6.4 Groundwater - Metals

Although groundwater at MISS is not used as a source for public drinking water, the SDWA MCLs and the New Jersey Groundwater Quality Standards for Class IIA aquifers were used as a basis for comparison for metal analytical data at MISS. Metals detected in groundwater are reported in Table 12.

Common metals that occur in abundance at the background location and in most of the monitoring wells include iron, manganese, aluminum, and sodium. These metals often exceed New Jersey Groundwater Quality Standards for Class IIA aquifers. Results for other metals are discussed below.

- Sodium, Manganese, and iron routinely exceeded drinking water limits in groundwater samples from upgradient and downgradient wells. These metals are

common constituents of soil and groundwater and are not directly related to contamination from the site.

- In 1999, arsenic concentrations in groundwater exceeded the SDWA MCL (50 µg/L) in two onsite wells MISS02A (6350 µg/L) and B38W19D (55.1 µg/L). Wells B38W19S (17.8 µg/L) and MISS07B (49.9 µg/L) exceeded the State water quality limit (0.02 µg/L with a practical quantitation limit of 8 µ g/L). These wells have historically exhibited comparable concentrations for the metal.

Results from all other wells were less than the Federal limit but many of the wells exceeded the State groundwater quality criterion. Although the measured concentrations from the other wells exceeded the more stringent State groundwater quality criteria, all but two were less than the practical quantitation limit (PQL), which is published by the State as that concentration that can reasonably be quantified by standard analytical methods. In such cases, where the PQL is higher than the groundwater quality criterion, the New Jersey regulations do not consider a discharge to be causing a contravention of that constituent standard as long as the concentration of the constituent in the affected groundwater is less than the relevant PQL (NJAC 7:9-6.9). Therefore, only at wells B38W19S and MISS07B (as well as MISS02A and B38W19D) was the State limit, PQL, exceeded.

- Antimony was detected in four wells, with a maximum concentration of 3.9 µg/L (MISS02A). All detected concentrations were less than the Federal drinking water limit (6 µg/L) and the State PQL (20 µg/L) which is higher than the GWQC. The detection limit was sufficiently low to show that only the concentration at MISS02A was greater than the State GWQC of 2 µg/L.

- The maximum beryllium concentration was detected at well B38W24S (1.1 µg/L) in 1999. All detected beryllium concentrations (B38W18D, andB38W24D) were less than the Federal limit of 4 µg/L. All detected concentrations from the wells ranged from 0.42 to 1.1 µg/L which exceed the State GWQC (0.008 µg/L), however, all results were well below the PQL (20 µg/L) and therefore do not constitute a "contravention of that constituent standard" according to the State regulations.

- Cadmium was detected in two wells with a maximum concentration of 2.2 µg/L (MISS06A). All detected concentrations were less than the State standard of 4 µg/L and Federal standard of 5 µg/L.

- Chromium was detected in 13 of the 19 wells sampled during 1999, but concentrations exceeded the State and Federal limits (100 µg/L) in only one location (B38W25S µg/L) at a concentration of 106 µg/L.

- Lead was detected in 9 of the 19 wells sampled in 1999 with concentrations ranging from 0.35 µg/L (MISS05A) to 11 µg/L (MISS02A). All detected concentrations were less than the Federal drinking water limit (15 µg/L); in only one location (MISS02A) the concentration exceeded the State criteria of 5µg/L.

- Lithium is a metal present at the site as a result of MCW site processing activities. However no state or Federal limits have been set. Samples are analyzed for this parameter to establish a database of information on its distribution. Lithium was detected in all 19 sampled wells at concentrations ranging from 11.7 µg/L (B38W02D) to 12,100 µg/L (MISS02B). Lithium concentrations have consistently been highest in MISS02B (Appendix A, Table A-3).

- As in the previous six years, the highest concentration of nickel was detected in well B38W17A (118 µg/L). This result is consistent with historical data and represents the only result that exceeds the State water quality limit (100 µg/L).

5.6.5 Groundwater - Organic Compounds

Groundwater samples were also analyzed for volatile organic compounds (VOCs). The pattern of groundwater contamination with VOCs in 1999 (Table 13) is consistent with historical results Table (A-4).

The prevalent organic constituents in groundwater at MISS are tetrachloroethene and its degradation products: trichloroethene, dichloroethenes, and vinyl chloride. As seen historically, at offsite well pairs B38W14D and B38W14S, some or all of these compounds were detected in concentrations that exceeded the State groundwater quality standards for class IIA waters and Federal drinking water limits. The denser compounds were all detected in higher concentrations in the deep wells.

- Historically tetrachloroethene, trichloroethene, and dichloroethenes were also identified in onsite deep well MISS07B, but not in its shallow counterpart.

- Chloroform was identified in wells B38W14D and B38W14S (2μg/L in both wells) at a concentration above the State groundwater limit of 1 μg/L but less than the PQL of 6 μg/L.

6.0 CONCLUSIONS

6.1 External Gamma Radiation

The 1999, monitors for gamma radiation (TETLD's) were collected at 14 site locations and 1 offsite background location (Figure 2). Site results, corrected for background, exposure duration, and attenuation, ranged from a minimum equal to background (location 32 and 33) to a maximum of 730.3 mrem/yr (above background) at location 21 (Table 2). At 7 of the 14 locations, measured external gamma radiation exceeded the 100 mrem annual dose limit specified by the U.S. Department of Energy (DOE) and the Nuclear Regulatory Commission (NRC).

At Stepan property locations 30 and 31, south of the lawn, external gamma results were 55.7 and 103.5 mrem/yr, respectively. North of the lawn at locations 32 and 33, results were lower than background. These 4 locations are closest to potential receptors, and when time and distance are factored any doses would likely be less than regulatory limits. The doses measured at these locations represent the potential dose a person could receive if he or she spent the entire year at that location. This scenario is highly implausible; any received doses would be considerably lower than these measured results because the potential receptors would spend much less time at these locations.

Calculated dose from direct gamma exposure at MISS to a hypothetical maximally-exposed individual residing 50 ft north of the fenceline was 7.31 mrem (calc. 08575-0207-001)

6.2 Radon-220 and Radon-222

Cumulative radon measurements were collected at 14 site locations and 1 offsite background location (Figure 2, and Table 3). Measured radon-222 concentrations ranged from non-detect to 0.6 pCi/L and were therefore well below the 4 pCi/L action level identified by EPA (EPA 1992d).

Radon-220 concentrations ranged from 0.08 pCi/L to a maximum of 4.66 pCi/L (location 5). Radon concentrations exceeded the EPA limit only at this location, on the northern perimeter of the site.

6.3 Airborne Particulate Dose

The airborne particulate dose to the hypothetical maximally exposed individual in 1999 was an individual with 100 percent occupancy time at a residence 90 m northeast of the site.

The 1999 airborne particulate dose to that individual, considering all site contributions throughout the year, was 0.006 mrem/yr, which is well below the 10 mrem/yr standard specified in 40 CFR, Part 61, Subpart H. The hypothetical airborne particulate collective dose to the population within 80 km of the site was .007 person rem/yr.

The maximum annual effective doses are almost entirely the result of the internal doses from the inhalation of dust particles and the ingestion of plant borne dust. The air immersion in the dust plume and ground surface irradiation from dust deposition pathways contribute a negligible amount to the total dose. The dominant pathway is inhalation as discussed in Appendix C.

6.4 Cumulative Dose from External Gamma Radiation and Airborne Particulate

Because the airborne particulate dose is very small, the calculated cumulative dose from external gamma radiation and airborne particulates to a hypothetical maximally-exposed individual is determined by the external gamma radiation dose. Therefore, the calculated cumulative dose of 7.31 mrem is below the NRC 100 mrem/yr standard (from all sources, excluding radon).

6.5 Surface Water

Surface water samples in 1999 were collected (Table 4) and analyzed for lithium only, a MCW process-related metal historically present at the site. Historically, surface water has not exhibited above-background concentrations of radionuclides (BNI 1997a) during past environmental sampling rounds. Downstream lithium concentrations ranged from 35.1 to 372 µg/L, significantly in excess of the background concentration reported at location SWSD003 of 19.10µg/L. The maximum concentration occurred in Westerly Brook immediately downstream from the site (SWSD002). There are currently no established regulatory limits for lithium in surface water.

6.6. Sediment

Sediment samples are collected at one upstream location, one downstream location in Westerly Brook, and three downstream locations in Lodi Brook (Figure 3).

Radionuclide concentrations in sediment samples collected in Westerly Brook represented by sampling location SWSD002 (Table 5) were comparable to background values measured at SWSD003.

In 1999 the concentrations in samples collected at the eastern tributary of Lodi Brook (SDSD006) exceeded the DOE soil limits for radium-226, radium-228, and thorium-232.

At SWSD006, the location closest to the site, the measured concentrations of radium-226 (8.04 pCi/g), radium-228 (7.67 pCi/g) and thorium-232 (8.13 pCi/g) are the highest measured at the site in 1999. At location SWSD007, the location farther downstream in the same tributary, results were lower, with radium-226 at 1.07 pCi/g, radium-228 at 1.79 pCi/g, and thorium-232 at 1.9 pCi/g.

At SWSD005, located further downstream at the confluence of the east and west tributaries of Lodi Brook, concentrations of all radionuclides are below the DOE limits for the individual isotopes but the sum of the ratios criterion for mixtures was greater than 1.0 (1.09).

Results for 1999 confirm the presence of localized contamination in the streambed sediment of the eastern tributary of Lodi Brook. Although the majority of results for 1999 are lower than for 1998, several results were higher in 1999 and no definite trend is indicated.

Various metal concentrations in sediment samples collected in Westerly Brook (SWSD002) and Lodi Brook (SWSD006, SWSD007) exceeded the LEL. None of the metal concentrations collected exceeded the SEL.

6.7 Groundwater

Concentrations of all radionuclides sampled in groundwater (except total uranium for MISS05A) in 1999 (radium-226 and 228, and thorium-230 and 232, and total uranium) were well below the State and Federal drinking water standards. Total uranium concentrations, typically the highest in aqueous samples, ranged from 0.02 pCi/L (B38W25D) to 74.78 pCi/L (MISS05A). Consistent with historical results, the highest concentration was detected in well MISS05A.

Although groundwater at MISS is not a source of drinking water, State and Federal drinking water standards are used for evaluating groundwater data. Radium concentrations in groundwater were well below the SDWA MCL of 5 pCi/L for combined radium-226 and radium-228.

The presence of arsenic at concentrations above SDWA drinking water standards was identified in two onsite wells; MISS02A (6350 µg/L) and B38W19D (55.1 µg/L). Two other locations exceeded the State limit (PQL). All detected concentrations of beryllium were less than the Federal limit. Cadmium was reported in two wells, but all detected concentrations were less than the State standard and Federal standard. Chromium was detected in 13 wells, but only one exceeded State and Federal limits. Lead was detected in 9 of 19 wells. All detected concentrations were less than the Federal standard and only one location exceeded State standard. As mentioned previously, there is currently no State or Federal limit for lithium which was present in all wells sampled. Nickel was

present above State standards in one off-site well where it has been reported consistently in the past.

Tetrachloroethene and its degradation products were present in monitoring wells both onsite and offsite at concentrations exceeding New Jersey Groundwater Quality standards for Class IIA aquifers and SDWA MCLs. Results for VOCs are within the historical range, no significant increase or decrease in contaminant concentration is observed.

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Table 1
Maywood Interim Storage Site
1999 Environmental Monitoring Program Summary
External Gamma Radiation and Radon Gas

Air Monitoring

Measured Parameter	Station Identification	Number of Analyses or Measurements																						Total Analyses per Year
		No. of Sample Locations				Sample Duplicate				Ship Blank				Contingency Sample				Matrix Spike				Matrix Spike Duplica				
		CY Quarter				CY Quarter				CY Quarter				CY Quarter				CY Quarter				CY Quarter				
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
External gamma radiation (TETLDs)	4, 5, 10, 12, 19, 20,	16		16						1		1		17		17										68
Radon-222/Radon-220	21, 22, 23, 24, 25,	16		16		1		1																		34
Radon-222	26, 30, 31, 32, 33	16		16		1		1																		34

Table 1 (continued)
1999 Environmental Monitoring Program Summary
Groundwater
Maywood Interim Storage Site

Measured Parameter	Station Identification	Number of Analyses or Measurements																						Total Analyses per Year
		No. of Sample Locations				Rinsate Blank				Trip Blank				Sample Duplicate				Matrix Spike				Matrix Spike Duplicate				
		CY Quarter				CY Quarter				CY Quarter				CY Quarter				CY Quarter				CY Quarter				
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
FIELD MEASUREMENTS																										
Chemical/Physical	MISS01AA, MISS01B, MISS02A,																									
Dissolved oxygen	MISS02B, MISS05A, MISS05B,		23																							23
Eh[a]	MISS06A, MISS07B, B38W01S,		23																							23
Turbidity	B38W02D, B38W14S, B38W14D,		23																							23
Temperature	B38W15S, B38W15D, B38W17A,		23																							23
Specific conductivity	B38W17B, B38W18D, B38W19S,		23																							23
pH	B38W19D, B38W24S, B38W24D, B38W25S, B38W25D		23																							23
LABORATORY MEASURMENTS																										
Radiological																										
Total uranium			23				10								2											35
Thorium-230	MISS01AA, MISS01B, MISS02A,		23				10								2											35
Thorium-232	MISS02B, MISS05A, MISS05B,		23				10								2											35
Radium-226	MISS06A, MISS07B, B38W01S,		23				10								2											35
Radium-228	B38W02D, B38W14S, B38W14D,		23				10								2											35
Chemical	B38W15S, B38W15D, B38W17A,																									
ICPAES Metals[b]	B38W17B, B38W18D, B38W19S,		23				10								2				2				2			39
GFAA Metals[b]	B38W19D, B38W24S, B38W24D,		23				10								2				2				2			39
Volatile organic compounds[b]	B38W25S, B38W25D		23				10				10				2				2				2			49

Table 1 (continued)
1999 Environmental Monitoring Program Summary
Surface Water and Sediment
Maywood Interim Storage Site

Surface Water and Sediment Monitoring

Measured Parameter	Station Identification	Number of Analyses or Measurements																				Total Analyses per Year
		Samples				Rinsate Blank				Trip Blank				Sample Duplicate				Matrix Spike				Matrix Spike Duplicate				
		CY Quarter				CY Quarter				CY Quarter				CY Quarter				CY Quarter				CY Quarter				
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
FIELD MEASUREMENTS																										
Chemical/Physical																										
Dissolved oxygen			5																							5
Eh[a]	SWSD002		5																							5
Turbidity	SWSD003		5																							5
Temperature	SWSD005		5																							5
Specific conductivity	SWSD006		5																							5
pH	SWSD007		5																							5
LABORATORY MEASURMENTS																										
SEDIMENT																										
Radiological																										
Total uranium			5				1								1											7
Thorium-230			5				1								1											7
Thorium-232			5				1								1											7
Radium-226			5				1								1											7
Radium-228			5				1								1											7
Chemical	SWSD002, SWSD003,																									
ICPAES Metals[b]	SWSD005, SWSD006,		5				1								1				1				1			9
GFAA Metals[b]	SWSD007		5				1								1				1				1			9
SURFACE WATER																										
Lithium			5												1				1				1			8

[a] Oxidation/reduction potential (Eh).

[b] See Table 11 for a comprehensive list of metals.

Table 2
1999 External Gamma Radiation Dose Rates
Maywood Interim Storage Site

1/12/99 to 8/10-12/99 TETLD[a]				1/12/99 to 1/26/2000 TETLD[a]		
Monitoring Location[b]		Readings (mrem)	Corrected[c] (mrem/yr)	Monitoring Location[b]	Readings (mrem)	Corrected[c] (mrem/yr)
MISS	4	83.0	71.8	4	152.6	81.4
Perimeter		89.8	84.4		155.6	84.5
	5	145.4	187.3	5	226.4	157.8
		142.2	181.4		243.4	175.4
	10	149.2	194.3	10	261.0	193.6
		148.2	192.5		247.4	179.5
	12	85.2	75.9	12	136.2	64.4
		80.6	67.4		130.2	58.2
	20	60.8	30.7	20	102.0	29
		60.6	30.4		102.6	29.6
	21	438.8	730.3	21	689.8	637.5
		415.8	687.8		703.6	651.8
	22	116.0	134.9	22	189.4	119.5
		116.8	136.4		187.8	117.8
	23	93.4	92.7	23	159.8	88.8
		83.6	74.4		148.8	77.4
	24	198.6	289.3	24	355.4	291.3
		228.2	344.6		347.0	282.6
	25	385.2	637.9	25	702.0	650.2
		362.0	594.6		684.2	631.7
	30	73.6	55.7	30	132.4	60.5
		74.2	56.8		126.8	54.7
	31	95.8	97.2	31	152.2	81
		99.2	103.5		156.8	85.7
	32	0.0	- 81.8	32	71.2	-2.9
		125.1	- 10.1		69.2	-5
	33	46.6	5.3	33	76.8	2.9
		48.4	8.6		79.0	5.2
Background	19	44.4	82.2	19	75.2	77.9
		44.0	81.4		72.8	75.4

[a] TETLD = Tissue-equivalent thermoluminescent dosimeter. There are two TETLDs per station.

[b] Monitoring locations are shown on Figure 2.

[c] All TETLD readings are corrected for shelter/absorption factor (s/a = 1.075) and are normalized to exactly one year's exposure. Average corrected background is then subtracted from all other corrected readings.

Table 3
1999 Radon Gas Concentrations
Maywood Interim Storage Site

Monitoring Location[a]		Average Daily Concentration (pCi/L) 01/12/99 to 08/10/99		Average Daily Concentration (pCi/L) 08/10/99 to 01/26/2000	
		Radon-220[b]	Radon-222[c]	Radon-220[b]	Radon-222[c]
MISS perimeter	4	0.26	0.2	0.85	0.4
	5	4.66	0.1*	2.15	0.6
	10	1.20	0.1*	1.97	0.1*
	12	1.19	0.1*	1.56	0.5
	20	1.20	0.1*	1.4	0.2
	21	1.49	0.1*	3.83	0.3
Duplicate[d]	21	1.71	0.1*	3.4	0.5
	22	0.09	0.1*	0.11	0.4
	23	1.14	0.1*	1.58	0.3
	24	2.40	0.1*	3.36	0.3
	25	0.84	0.1*	0.88	0.3
	30	1.01	0.1*	0.71	0.2
	31	3.56	0.1*	3.82	0.5
	32	0.08	0.1*	0.16	0.3
	33	0.56	0.1*	0.28	0.3
Background	19	0.1	0.1*	0.1*	0.3

(*) Indicates detection limit is reported. Actual result is less than this value.

[a] Monitoring locations are shown on Figure 2.

[b] Radon-220 gas concentrations are calculated according to the method outlined in FUSRAP committed calculation 191-CV-028, Rev. 1, using data from RadTrack® and RadTack®-modified detectors.

[c] The EPA Action Level for radon-222 is 4.0 pCi/L and assumes that radon 220 is present and in equilibrium, 40 CFR 192 (October 1999).

[d] A quality control duplicate is collected at the same time and location, and is analyzed by the same method in order to evaluate precision in sampling and analysis.

Table 4
1999 Surface Water Analytical Results - Lithium
Maywood Interim Storage Site

Sampling Location	Date Collected	Detected Analyte	Result (µg/L)	Data Qualifiers[a]		Reporting Limit (µg/L)	Related Regulations	
				BNI	Lab		Federal[b] (µg/L)	State[c] (µg/L)
Background								
SWSD003	21-May-99	Lithium	19.10			0.2	NE[e]	NE
Duplicate[d]	21-May-99	Lithium	19.10			0.2	NE	NE
SWSD005	21-May-99	Lithium	35.10			0.2	NE	NE
SWSD007	21-May-99	Lithium	120.00			0.2	NE	NE
SWSD006	21-May-99	Lithium	207.00			0.2	NE	NE
SWSD002	21-May-99	Lithium	372.00			0.2	NE	NE

[a] No BNI or laboratory data qualifier flags.

[b] EPA surface water criteria for New Jersey, 40 CFR 131.36 (d) (3).

[c] New Jersey Surface Water Quality Standards, NJAC 7:9B (January 1999).

[d] A quality control duplicate is collected at the same time and location, and is analyzed by the same method in order to evaluate precision in sampling and analysis.

[e] Not established (NE).

Table 5
1999 Sediment Analytical Results - Radioactive Constituents
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result [a] (pCi/g)	BNI Flag [b]	MDA [c] (pCi/g)	Cleanup Criteria [d] (pCi/g)
SWSD003 Background	21-May-99	Radium-226	0.3 ± 0.18		0.50	5
	21-May-99	Radium-228	0.35 ± 0.18		0.50	5
	21-May-99	Thorium-230	0.96 ± 0.31		0.50	5
	21-May-99	Thorium-232	0.2 ± 0.13	U	0.50	5
	21-May-99	Total uranium	1.06 ± 0.03		0.07	100
Duplicate	21-May-99	Radium-226	0.66 ± 0.31		0.50	5
	21-May-99	Radium-228	0.3 ± 0.18		0.50	5
	21-May-99	Thorium-230	0.73 ± 0.27		0.50	5
	21-May-99	Thorium-232	0.48 ± 0.21	U	0.50	5
	21-May-99	Total uranium	1.19 ± 0.03	U	0.07	100
SWSD002	21-May-99	Radium-226	0.36 ± 0.17		0.50	5
	21-May-99	Radium-228	0.74 ± 0.27		0.50	5
	21-May-99	Thorium-230	0.55 ± 0.22		0.50	5
	21-May-99	Thorium-232	0.39 ± 0.18		0.50	5
	21-May-99	Total uranium	1.27 ± 0.03		0.07	100
SWSD005	21-May-99	Radium-226	1.44 ± 0.34		0.50	5
	21-May-99	Radium-228	3.13 ± 0.78		0.50	5
	21-May-99	Thorium-230	1.81 ± 0.52		0.50	5
	21-May-99	Thorium-232	3.56 ± 0.85		0.50	5
	21-May-99	Total uranium	1.18 ± 0.04		0.07	100
SWSD006	21-May-99	Radium-226	8.04 ± 1.33		0.50	5
	21-May-99	Radium-228	7.67 ± 1.64		0.50	5
	21-May-99	Thorium-230	1.62 ± 0.50		0.50	5
	21-May-99	Thorium-232	8.13 ± 1.71		0.50	5
	21-May-99	Total uranium	12.41 ± 0.9		0.07	100
SWSD007	21-May-99	Radium-226	1.07 ± 0.30		0.50	5
	21-May-99	Radium-228	1.79 ± 0.49		0.50	5
	21-May-99	Thorium-230	1.18 ± 0.37		0.50	5
	21-May-99	Thorium-232	1.9 ± 0.51		0.50	5
	21-May-99	Total uranium	2.0 ± 0.05		0.07	100

[a] Results reported with ± radiological error equal at 2 sigma (95% confidence level), Shaded results indicate reported value exceeds criteria.

[b] BNI data qualifier flags:
U = The analyte was not detected.
J = Reported as an estimated value.

[c] Minimum Detectable Activity (MDA)

[d] DOE/EPA soil criteria (DOE 1994a) and DOE site-specific criterion (DOE 1994b).

[e] A quality control duplicate is collected at the same time and location and is analyzed by the same method in order to evaluate precision in sampling and analysis.

Table 6
1999 Sediment Analytical Results - Detected Metals
Maywood Interim Storage Site

Sampling Location	Date Collected	Detected Analyte[a]	Result (mg/kg)	Data Qualifiers[b] BNI	Data Qualifiers[b] Lab	Reporting Limits (mg/kg)	State Proposed Criteria[c] (mg/kg)	Lowest Effects Level (LEL)[d] (mg/kg)	Severe Effects Level (SEL)[d] (mg/kg)
SWSD003 Background (nonresidential)	21-May-99	Aluminum	2,090.0			1.4	NE		
	21-May-99	Antimony	0.4 J			0.13	340		
	21-May-99	Arsenic	2.8			0.16	20	6	33
	21-May-99	Barium	35.00			0.01	47000		
	21-May-99	Beryllium	0.30			0.007	1		
	21-May-99	Boron	3.4			0.14	NE		
	21-May-99	Cadmium	0.69			0.02	100	**0.6**	10
	21-May-99	Calcium	3,030.00 J			1.1	NE		
	21-May-99	Chromium	14.00			0.04	NE	26	110
	21-May-99	Cobalt	3.2			0.05	NE		
	21-May-99	Copper	54.9 J			0.07	600	**16**	110
	21-May-99	Iron	8,550.00			1.3	NE		
	21-May-99	Lead	91.60			0.2	600	**31**	250
	21-May-99	Lithium	3.2			0.01	NE		
	21-May-99	Magnesium	1,600.00 J			0.19	NE		
	21-May-99	Manganese	82.00			0.01	NE		
	21-May-99	Molybdenum	1.10			0.08	NE		
	21-May-99	Nickel	13.3			0.08	2400	16	75
	21-May-99	Potassium	206.0			1.9	NE		
	21-May-99	Sodium	166.0			0.28	NE		
	21-May-99	Vanadium	9.2			0.05	7100		
	21-May-99	Zinc	184.0 J			0.03	1500	**120**	820
SWSD003 Duplicate[e]	21-May-99	Aluminum	2,670.00			1.4	NE		
	21-May-99	Antimony	0.55 J			0.13	340		
	21-May-99	Arsenic	3.60			0.16	20	6	33
	21-May-99	Barium	50.80			0.01	47000		
	21-May-99	Beryllium	0.22			0.007	1		
	21-May-99	Boron	4.20			0.14	NE		
	21-May-99	Cadmium	0.59			0.02	100	0.6	10
	21-May-99	Calcium	3,150.00 J			1.1	NE		
	21-May-99	Chromium	17.20			0.04	NE	26	110
	21-May-99	Cobalt	3.00			0.05	NE		
	21-May-99	Copper	38.10 J			0.07	600	**16**	110
	21-May-99	Iron	7,410.00			1.3	NE		
	21-May-99	Lead	96.80			0.2	600	**31**	250
	21-May-99	Lithium	3.90			0.01	NE		
	21-May-99	Magnesium	1,670.00			0.19	NE		
	21-May-99	Manganese	74.20 J			0.01	NE		
	21-May-99	Molybdenum	0.90			0.08	NE		
	21-May-99	Nickel	10.90			0.08	2400	16	75
	21-May-99	Potassium	213.00			1.9	NE		
	21-May-99	Sodium	183.00			0.28	NE		
	21-May-99	Vanadium	10.10			0.05	7100		
	21-May-99	Zinc	165.00			0.03	1500	**120**	820

Table 6
1999 Sediment Analytical Results - Detected Metals
Maywood Interim Storage Site

Sampling Location	Date Collected	Detected Analyte[a]	Result (mg/kg)	Data Qualifiers[b] BNI	Data Qualifiers[b] Lab	Reporting Limits (mg/kg)	State Proposed Criteria[c] (mg/kg)	Lowest Effects Level (LEL)[d] (mg/kg)	Severe Effects Level (SEL)[d] (mg/kg)
SWSD002 (residential)	21-May-99	Aluminum	2,800.0			1.3	NE		
	21-May-99	Antimony	0.70 J			0.13	14		
	21-May-99	Arsenic	6.2			0.15	20	**6**	33
	21-May-99	Barium	46.2			0.01	700		
	21-May-99	Beryllium	0.29			0.007	1		
	21-May-99	Boron	4.7			0.13	NE		
	21-May-99	Cadmium	0.75			0.02	1	**0.6**	10
	21-May-99	Calcium	4,120.0 J			1.1	NE		
	21-May-99	Chromium	18.5			0.04	NE	26	110
	21-May-99	Cobalt	3.8			0.05	NE		
	21-May-99	Copper	61.9 J			0.07	600	**16**	110
	21-May-99	Iron	10,900.0			1.3	NE		
	21-May-99	Lead	102.0			0.19	400	**31**	250
	21-May-99	Lithium	4.9			0.01	NE		
	21-May-99	Magnesium	2,140.0 J			0.18	NE		
	21-May-99	Manganese	182.0			0.01	NE		
	21-May-99	Molybdenum	0.96			0.08	NE		
	21-May-99	Nickel	13.2			0.08	250	16	75
	21-May-99	Potassium	271.0			1.8	NE		
	21-May-99	Sodium	124.0			0.27	NE		
	21-May-99	Vanadium	12.8			0.05	370		
	21-May-99	Zinc	212.0 J			0.03	1500	**120**	820
SWSD005 (nonresidential)	21-May-99	Aluminum	2,090.00			1.4	NE		
	21-May-99	Antimony	0.28 J			0.13	340		
	21-May-99	Arsenic	2.70			0.16	20	6	33
	21-May-99	Barium	48.70			0.01	47,000		
	21-May-99	Beryllium	0.19			0.007	1		
	21-May-99	Boron	8.70			0.14	NE		
	21-May-99	Cadmium	0.55			0.02	100	0.6	10
	21-May-99	Calcium	6,440.00 J			1.1	NE		
	21-May-99	Chromium	16.40			0.04	NE	26	110
	21-May-99	Cobalt	2.80			0.05	NE		
	21-May-99	Copper	82.60 J			0.07	600	**16**	110
	21-May-99	Iron	9,480.00			1.3	NE		
	21-May-99	Lead	26.20			0.2	600	31	250
	21-May-99	Lithium	4.20			0.01	NE		
	21-May-99	Magnesium	2,500.00 J			0.19	NE		
	21-May-99	Manganese	360.00			0.01	NE		
	21-May-99	Molybdenum	4.80			0.08	NE		
	21-May-99	Nickel	8.10			0.08	2,400	16	75
	21-May-99	Potassium	228.00			1.9	NE		
	21-May-99	Sodium	130.00			0.28	NE		
	21-May-99	Thallium	0.32			0.24			
	21-May-99	Vanadium	8.30			0.06	7,100		
	21-May-99	Zinc	105.0 J			0.03	1,500	120	820

Table 6
1999 Sediment Analytical Results - Detected Metals
Maywood Interim Storage Site

Sampling Location	Date Collected	Detected Analyte[a]	Result (mg/kg)	Data Qualifiers[b] BNI	Data Qualifiers[b] Lab	Reporting Limits (mg/kg)	State Proposed Criteria[c] (mg/kg)	Lowest Effects Level (LEL)[d] (mg/kg)	Severe Effects Level (SEL)[d] (mg/kg)
SWSD006 (nonresidential)	21-May-99	Aluminum	6,250.0 J			0.19	NE		
	21-May-99	Antimony	2.2 J			0.26	340		
	21-May-99	Arsenic	18.2 J			0.31	20	**6**	33
	21-May-99	Barium	274.0 J			0.03	47,000		
	21-May-99	Beryllium	0.61 J			0.01	1		
	21-May-99	Boron	7.1 J			0.27	NE		
	21-May-99	Cadmium	2.9 J			0.04	100	**0.6**	10
	21-May-99	Calcium	12,900.0 J			2.2	NE		
	21-May-99	Chromium	260.0 J			0.08	NE	**26**	110
	21-May-99	Cobalt	4.6 J			0.1	NE		
	21-May-99	Copper	109.0 J			0.14	600	**16**	110
	21-May-99	Iron	11,200.0 J			2.6	NE		
	21-May-99	Lead	294.0 J			0.39	600	**31**	250
	21-May-99	Lithium	40.2 J			0.03	NE		
	21-May-99	Magnesium	2,060.0 J			0.38	NE		
	21-May-99	Manganese	259.0 J			0.03	NE		
	21-May-99	Molybdenum	2.4 J			0.16	NE		
	21-May-99	Nickel	19.8 J			0.16	2,400	**16**	75
	21-May-99	Potassium	446.0 J			3.8	NE		
	21-May-99	Selenium	1.5 J			0.64	3,100		
	21-May-99	Sodium	750.0 J			0.56	NE		
	21-May-99	Vanadium	36.9 J			0.11	7,100		
	21-May-99	Zinc	498.0 J			0.07	1,500	**120**	820
SWSD007 (nonresidential)	21-May-99	Aluminum	3,450.0			1.2	NE		
	21-May-99	Antimony	0.6 J			0.12	340		
	21-May-99	Arsenic	6.7			0.14	20	**6**	33
	21-May-99	Barium	114.0			0.01	47,000		
	21-May-99	Beryllium	0.28			0.006	1		
	21-May-99	Boron	2.9			0.12	NE		
	21-May-99	Cadmium	0.49			0.02	100	0.6	10
	21-May-99	Calcium	2,460.0 J			1	NE		
	21-May-99	Chromium	122.0			0.04	NE	26	110
	21-May-99	Cobalt	3.4			0.04	NE		
	21-May-99	Copper	24.5 J			0.06	600	**16**	110
	21-May-99	Iron	8,480.0			1.2	NE		
	21-May-99	Lead	140.0			0.18	600	**31**	250
	21-May-99	Lithium	7.8			0.01	NE		
	21-May-99	Magnesium	1,240.0 J			0.17	NE		
	21-May-99	Manganese	134.0			0.01	NE		
	21-May-99	Molybdenum	1.0			0.07	NE		
	21-May-99	Nickel	8.7			0.07	2,400	16	75
	21-May-99	Potassium	351.0			1.7	NE		
	21-May-99	Selenium	0.44			0.29	3,100		
	21-May-99	Sodium	212.0			0.25	NE		
	21-May-99	Thallium	0.28			0.21			
	21-May-99	Vanadium	17.7			0.05	7,100		
	21-May-99	Zinc	94.9			0.03	1,500	120	820

Table 6
1999 Sediment Analytical Results - Detected Metals
Maywood Interim Storage Site

Sampling Location	Date Collected	Detected Analyte[a]	Result (mg/kg)	Data Qualifiers[b] BNI	Data Qualifiers[b] Lab	Reporting Limits (mg/kg)	State Proposed Criteria[c] (mg/kg)	Lowest Effects Level (LEL)[d] (mg/kg)	Severe Effects Level (SEL)[d] (mg/kg)

[a] Only the analytes that were detected are reported. Shaded results indicate reported value exceeds criteria.

[b] BNI and laboratory data qualifier flags:

U= The analyte was not detected

J= Reported as estimated value

[c] New Jersey Proposed Cleanup Standards for Contaminated Sites: Residential and Non-residential Soil Cleanup Standards (N.J.A.C. 7:26). Residential or non-residential limits are presented, depending upon the zoning of the sampling location.

[d] New Jersey Department of Environmental Protection Guidance for Sediment Quality Evaluation, November 1998. Bolded value indicates exceedance of screening criteria.

[e] A quality control duplicate is collected at the same time and location, and is analyzed by the same method in order to evaluate precision in sampling and analysis.

TABLE 7

DEPTH TO GROUNDWATER AND GROUNDWATER ELEVATIONS FOR OVERBURDEN MONITORING WELLS
JUNE AND AUGUST 1999

MAYWOOD FUSRAP SUPERFUND SITE
MAYWOOD, NJ

					8/10-8/12/1999			6/22/1999			
Well Name	Northing	Easting	Elevation TOR (ft MSL)	Ground Surface Elevation (ft MSL)	DTW Below Ground Surface (ft)	DTW Below TOR (ft)	Groundwater Elevation (ft MSL)	DTW Below Ground Surface (ft)	DTW Below TOR (ft)	Groundwater Elevation (ft MSL)	Elevation Differences Between Synoptic Gauging Rounds (ft)
MISS01AA	752,963.64	2,164,101.98	62.7	60.50	17.01	19.21	43.49	15.05	17.25	45.45	1.96
MISS02A	752,788.00	2,164,706.13	61.47	60.56	12.47	13.38	48.09	9.49	10.4	51.07	2.98
MISS03A	752,302.00	2,164,437.77	58.52	56.56	Dry	Dry	<43.86(1)	7.72	9.68	48.84	N/A
MISS04A	752,109.73	2,164,349.46	57.17	55.36	Dry	Dry	<45.66(1)	8.59	10.4	46.77	N/A
MISS05A	752,360.40	2,164,044.20	58.65	57.86	15.08	15.87	42.78	13.26	14.05	44.6	1.82
MISS06A	752,645.21	2,164,224.78	58.26	57.07	12.61	13.8	44.46	10.51	11.7	46.56	2.1
MISS07A	752,657.57	2,164,053.10	55.6	53.52	7.47	9.55	46.05	7.17	9.25	46.35	0.3
B38\V01S	752,836.02	2,164,805.24	60.72	57.55	5.94	9.11	51.61	3.74	6.91	53.81	2.2
B38W12A	750,774.61	2,165,389.50	50.1	47.23	7.59	10.46	39.64	4.44	7.31	42.79	3.15
B38W14S	752,600.98	2,163,384.82	45.07	45.47	5.61	5.21	39.86	NG	NG	NA	NA
B38W15S	752,365.46	2,163,471.15	46.92	47.42	NG	NG	NA	NG	NG	NA	NA
B38W17A	752,019.80	2,163,922.90	53.24	50.70	9.45	11.99	41.25	7.44	9.98	43.26	2.01
B38W19S	752,513.62	2,164,049.13	59.91	57.48	15.31	17.74	42.17	13.95	16.38	43.53	1.36
B38W24S	752,193.57	2,164,291.43	55.04	55.38	11.84	11.5	43.54	10.69	10.35	44.69	1.15
B38W25S	752,512.97	2,164,346.37	57.44	55.67	9.33	11.1	46.34	6.36	8.13	49.31	2.97

Date	Minimum DTW - ft BGS	Maximum DTW - ft BGS	Minimum Groundwater Elevation - ft MSL	Maximum Groundwater Elevation - ft MSL
August 10-12, 1999	5.61	17.01	39.64	51.61
June 22, 1999	3.74	15.05	42.79	53.81

Legend

TOR - Top of Riser
DTW - Depth to Water
BGS - Below Ground Surface
ft - feet
MSL - Mean Sea Level
NG - Not Gauged
NA - Not Applicable
(1) - Denotes that water level elevation was determined using elevation of the bottom of the sump/screen

TABLE 8

DEPTH TO GROUNDWATER AND GROUNDWATER ELEVATION FOR BEDROCK MONITORING WELLS
JUNE AND AUGUST 1999

MAYWOOD FUSRAP SUPERFUND SITE
MAYWOOD, NJ

					8/10-8/12/1999			6/22/1999			
Well	Northing	Easting	Elevation TOR (ft MSL)	Ground Surface Elevation (ft MSL)	DTW Below Ground Surface (ft)	DTW Below TOR (ft)	Groundwater Elevation (ft MSL)	DTW Below Ground Surface (ft)	DTW Below TOR (ft)	Groundwater Elevation (ft MSL)	Elevation Differences Between Synoptic Gauging Rounds (ft)
MISS01B	752,964.86	2,164,092.32	61.98	60.42	17.23	18.79	43.19	15.24	16.80	45.18	1.99
MISS02B	752,771.91	2,164,709.45	61.64	61.15	13.56	14.05	47.59	11.36	11.85	49.79	2.20
MISS03B	752,296.78	2,164,451.46	57.66	56.78	11.93	12.81	44.85	9.72	10.60	47.06	2.21
MISS04B	752,096.08	2,164,353.55	56.42	55.38	12.32	13.36	43.06	10.50	11.54	44.88	1.82
MISS05B	752,371.68	2,164,044.40	59.76	58.09	16.28	17.95	41.81	14.65	16.32	43.44	1.63
MISS07A	752,657.57	2,164,053.10	55.60	53.52	7.47	9.55	46.05	7.17	9.25	46.35	0.30
MISS07B	752,652.98	2,164,048.77	55.77	53.99	11.37	13.15	42.62	9.72	11.50	44.27	1.65
B38W02D	752,558.00	2,165,243.20	67.70	64.75	20.46	23.41	44.29	16.05	19.00	48.70	4.41
B38W03B	752,253.19	2,164,513.81	58.27	56.93	12.02	13.36	44.91	9.31	10.65	47.62	2.71
B38W04B	752,093.44	2,164,950.21	65.85	63.02	10.63	13.46	52.39	7.65	10.48	55.37	2.98
B38W05B	752,175.06	2,165,367.58	71.05	68.18	15.08	17.95	53.10	10.53	13.40	57.65	4.55
B38W06B	752,016.47	2,164,670.94	54.41	51.70	NG	NG	NA	NG	NG	NA	NA
B38W07B	751,974.49	2,164,168.36	54.63	52.25	10.09	12.47	42.16	8.15	10.53	44.10	1.94
B38W12B	750,766.38	2,165,393.46	49.78	47.53	7.84	10.09	39.69	4.49	6.74	43.04	3.35
B38W14D	752,597.24	2,163,391.63	44.88	45.38	NG	NG	NA	5.71	5.21	39.67	NA
B38W15D	752,369.12	2,163,474.42	46.99	47.49	NG	NG	NA	NG	NG	NA	NA
B38W17B	752,021.78	2,163,927.32	53.28	50.68	9.39	11.99	41.29	7.40	10.00	43.28	1.99
B38W18D	752,505.39	2,164,783.97	57.85	58.02	6.37	6.20	51.65	4.47	4.30	53.55	1.90
B38W19D	752,522.83	2,164,045.10	59.98	57.49	15.99	18.48	41.50	14.07	16.56	43.42	1.92
B38W24D	752,193.57	2,164,291.33	54.91	55.29	11.88	11.50	43.41	10.28	9.90	45.01	1.60
B38W25D	752,520.38	2,164,353.79	58.24	56.13	9.44	11.55	46.69	6.24	8.35	49.89	3.20

Date	Minimum DTW - ft BGS	Maximum DTW - ft BGS	Minimum Groundwater Elevation - ft MSL	Maximum Groundwater Elevation - ft MSL
August 10-12, 1999	6.37	20.46	39.69	53.10
June 22, 1999	4.47	16.05	39.67	57.65

Legend

TOR - Top of Riser
DTW - Depth to Water
BGS - Below Ground Surface
ft - feet
MSL - Mean Sea Level
NG - Not Gauged
NA - Not Applicable

TABLE 9

VERTICAL GRADIENT CALCULATIONS
FOR MONITORING WELL CLUSTERS

MAYWOOD FUSRAP SUPERFUND SITE
MAYWOOD, NJ

	8/10-8/12/1999		6/22/1999	
Well Cluster	DTW referenced to TOR/Well Casing (ft)	Groundwater Elevation (ft MSL)	DTW referenced to TOR/Well Casing (ft)	Groundwater Elevation (ft MSL)
MISS01AA	19.21	43.49	17.25	45.45
MISS01B	18.79	43.19	16.80	45.18
Hydraulic Head Difference (ft)		0.30		0.27
Gradient Direction		Downward		Downward
MISS02A	13.38	48.09	10.4	51.07
MISS02B	14.05	47.59	11.85	49.79
Hydraulic Head Difference (ft)		0.50		1.28
Gradient Direction		Downward		Downward
MISS03A	Dry	<43.86	9.68	48.84
MISS03B	12.81	44.85	10.60	47.06
Hydraulic Head Difference (ft)		N/A		1.78
Gradient Direction		Upward		Downward
MISS04A	Dry	<45.66	10.4	46.77
MISS04B	13.36	43.06	11.54	44.88
Hydraulic Head Difference		N/A		1.89
Gradient Direction		Unknown		Downward
MISS05A	15.87	42.78	14.05	44.60
MISS05B	17.95	41.81	16.32	43.44
Hydraulic Head Difference (ft)		0.97		1.16
Gradient Direction		Downward		Downward
MISS07A	9.55	46.05	9.25	46.35
MISS07B	13.15	42.62	11.50	44.27
Hydraulic Head Difference (ft)		3.43		2.08
Gradient Direction		Downward		Downward
B38W12A	10.46	39.64	7.31	42.79
B38W12B	10.09	39.69	6.74	43.04
Hydraulic Head Difference (ft)		-0.05		-0.25
Gradient Direction		Upward		Upward
B38W14S	5.21	39.86	NG	N/A
B38W14D	NG	N/A	5.21	39.67
Hydraulic Head Difference (ft)		N/A		N/A
B38W15S	NG	N/A	NG	N/A
B38W15D	NG	N/A	NG	N/A
Hydraulic Head Difference (ft)		N/A		N/A
B38W17A	11.99	41.25	9.98	43.26
B38W17B	11.99	41.29	10.00	43.28
Hydraulic Head Difference (ft)		-0.04		-0.02
Gradient Direction		Upward		Upward
B38W19S	17.74	42.17	16.38	43.53
B38W19D	18.48	41.50	16.56	43.42
Hydraulic Head Difference (ft)		0.67		0.11
Gradient Direction		Downward		Downward
B38W24S	11.50	43.54	10.35	44.69
B38W24D	11.50	43.41	9.90	45.01
Hydraulic Head Difference (ft)		0.13		-0.32
Gradient Direction		Downward		Upward
B38W25S	11.10	46.34	8.13	49.31
B38W25D	11.55	46.69	8.35	49.89
Hydraulic Head Difference (ft)		-0.35		-0.58
Gradient Direction		Upward		Upward

Legend

DTW - Depth to Water
TOR - Top of Riser
N/A - Not Applicable
NG - Not Gauged

Table 10
1999 Field Parameter Summary
Maywood Interim Storage Site

Sampling Location	Date	Temp (C)	Spec. Cond.[a] (mS/cm)	pH	Eh (mV)[b]	DO[c] %	Turbidity (NTU)[d]	Volume Purged (gal)[e]	Discharge (GPM)[f]
GROUNDWATER									
MISS01AA	05/12/99	13.54	2.669	7.07	252	1.31	11.6	3.0	0.08
MISS01B	05/25/99	13.31	1.019	7.05	268	1.18	9.8	26	0.10
MISS02A	05/18/99	12.78	6.679	7.58	243	6.43	7.9	1.5	0.08
MISS02B	05/18/99	13.31	5.567	6.99	109	0.38	1.6	30	0.09
MISS05A	05/14/99	14.16	3.810	6.50	304	2.5	3.8	2.0	0.04
MISS05B	--[g]	--[g]	--[g]	--[g]	--[g]	--[g]	--[g]	--[g]	--[g]
MISS06A	05/17/99	13.38	1.367	6.74	341	2.91	0.0	2.0	0.06
MISS07B	05/27/99	13.04	7.095	6.97	212	1.05	28.9	30	0.09
B38W01S	--[h]	--[h]	--[h]	--[h]	--[h]	--[h]	--[h]	--[h]	--[h]
B38W02D	05/20/99	13.03	0.526	6.86	238	0.98	3.2	5.0	0.08
B38W14S	05/17/99	13.30	0.334	7.15	212	0.69	1.9	2.0	0.08
B38W14D	05/17/99	13.52	1.060	7.12	188	0.45	0.3	8.0	0.10
B38W15S	--[J]	--[J]	--[J]	--[J]	--[J]	--[J]	--[J]	--[J]	--[J]
B38W15D	--[J]	--[J]	--[J]	--[J]	--[J]	--[J]	--[J]	--[J]	--[J]
B38W17A	05/13/99	13.77	1.040	6.65	239	1.10	4.8	2.5	0.06
B38W17B	05/13/99	15.10	3.420	7.01	140	0.73	0.0	3.0	0.05
B38W18D	05/20/99	15.44	1.121	5.97	225	0.46	2.9	24	0.10
B38W19S	05/14/99	13.20	1.250	7.13	219	0.57	2.0	2.75	0.08
B38W19D	05/27/99	13.09	4.045	6.71	156	0.86	3.5	6.0	0.10
B38W24S	05/13/99	17.57	1.723	6.06	231	0.57	12.5	2.5	0.08
B38W24D	05/13/99	15.61	1.026	6.36	156	0.52	10.6	3.75	0.08
B38W25S	05/17/99	12.65	1.325	6.81	133	1.10	0.4	2.0	0.08
B38W25D	05/26/99	12.39	0.991	6.70	175	4.41	2.5	4.0	0.12

Table 10 (continued)
1999 Field Parameter Summary
Maywood Interim Storage Site

Sampling Location	Date	Temp (C)	Spec. Cond.[a] (mS/cm)	pH	Eh (mV)[b]	DO[c] %	Turbidity (NTU)[d]	Volume Purged (gal)[e]	Discharge (GPM)[f]
SURFACE WATER	2nd quarter					mg/L			
SWSD002	05/21/99	13.60	1.126	7.08	474	8.19	3.7	--[k]	--[k]
SWSD003	05/21/99	14.97	0.26	6.78	498	6.04	0.0	--[k]	--[k]
SWSD005	05/21/99	27.78	0.636	7.49	601	5.53	1.3	--[k]	--[k]
SWSD006	05/21/99	18.59	1.144	7.06	608	6.66	0.0	--[k]	--[k]
SWSD007	05/21/99	13.79	1.127	7.07	593	6.10	0.0	--[k]	--[k]

[a] Specific conductance, measured in milliSiemens/centimeter (mS/cm).

[b] Oxidation/reduction potential (Eh), measured in milliVolts (mV).

[c] Dissolved oxygen recorded as a percent on the Hydrolab Surveyor #4 instrument used during groundwater sampling. Dissolved oxygen reported in mg/L for surface water samples.

[d] Nephelometric turbidity units.

[e] Volume purged is measured in gallons (gal).

[f] Gallons per Minute (GPM).

[g] Well was not sampled because the bladder pump check valve was inoperative.

[h] Well was not sampled because peristaltic tube was dropped into well and recovery attempts were uncuccessful.

[j] Wells were not sampled at 26 Grove Ave. due to a problem with access agreement

[k] Parameter not applicable.

TABLE 11
1999 Groundwater Analytical Results - Radioactive Constituents
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result[a] (pCi/L)		BNI Flag[b]	MDA[c] (pCi/L)	NJ GWQS[d] (pCi/L)
Monitoring wells completed in unconsolidated sediment:							
B38W14S	17-May-99	Radium-226	0.16 ±	0.16	UJ	0.50	5
	17-May-99	Radium-228	0.40 ±	0.38		0.50	5
	17-May-99	Thorium-230	0.2 ±	0.29	UJ	0.50	15
	17-May-99	Thorium-232	0.07 ±	0.17	UJ	0.50	15
	17-May-99	Total uranium	0.96 ±	0.03		0.02	27
B38W17A	13-May-99	Radium-226	0.62 ±	0.41	J	0.50	5
	13-May-99	Radium-228	1.06 ±	0.31	UJ	0.50	5
	13-May-99	Thorium-230	1.47 ±	0.83	J	0.50	15
	13-May-99	Thorium-232	0.44 ±	0.03	UJ	0.50	15
	13-May-99	Total uranium	0.09 ±	0.01		0.02	27
Duplicate[t]	13-May-99	Radium-226	0.62 ±	0.39		0.50	5
	13-May-99	Radium-228	0.4 ±	0.54	UJ	0.50	5
	13-May-99	Thorium-230	0.81 ±	0.67	J	0.50	15
	13-May-99	Thorium-232	0.26 ±	0.4	UJ	0.50	15
	13-May-99	Total uranium	0.21 ±	0.06		0.02	27
B38W19S	14-May-99	Radium-226	0.35 ±	0.3	UJ	0.50	5
	14-May-99	Radium-228	0.48 ±	0.15	U	0.50	5
	14-May-99	Thorium-230	0.07 ±	0.17	UJ	0.50	15
	14-May-99	Thorium-232	0.02 ±	0.1	UJ	0.50	15
	14-May-99	Total uranium	0.27 ±	0		0.02	27
B38W24S	13-May-99	Radium-226	0.23 ±	0.24	UJ	0.50	5
	13-May-99	Radium-228	0.1 ±	0.25	UJ	0.50	5
	13-May-99	Thorium-230	0.6 ±	0.43		0.50	15
	13-May-99	Thorium-232	0.09 ±	0.2	UJ	0.50	15
	13-May-99	Total uranium	0.02 ±	0	UJ	0.02	27
Duplicate[t]	13-May-99	Radium-226	0.09 ±	0.15		0.02	5
	13-May-99	Radium-228	0.13 ±	0.19	UJ	0.50	5
	13-May-99	Thorium-230	0.53 ±	0.34		0.50	15
	13-May-99	Thorium-232	0.09 ±	0.13	UJ	0.50	15
	13-May-99	Total uranium	0.02 ±	0	UJ	0.50	27
B38W25S	17-May-99	Radium-226	0.08 ±	0.13	UJ	0.50	5
	17-May-99	Radium-228	0.12 ±	0.22	UJ	0.50	5
	17-May-99	Thorium-230	0.26 ±	0.26	UJ	0.50	15
	17-May-99	Thorium-232	0.13 ±	0.18	UJ	0.50	15
	17-May-99	Total uranium	0.12 ±	0		0.02	27
MISS01AA	17-May-99	Radium-226	0.26 ±	0.24	UJ	0.50	5
	17-May-99	Radium-228	0.08 ±	0.24	UJ	0.50	5
	17-May-99	Thorium-230	0.25 ±	0.29	UJ	0.50	15
	17-May-99	Thorium-232	0.25 ±	0.26	UJ	0.50	15
	17-May-99	Total uranium	0.54 ±	0.01		0.02	27

TABLE 11
1999 Groundwater Analytical Results - Radioactive Constituents
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result[a] (pCi/L)		BNI Flag[b]	MDA[c] (pCi/L)	NJ GWQS[d] (pCi/L)
MISS02A	18-May-99	Radium-226	0.29 ±	0.22	J	0.50	5
	18-May-99	Radium-228	0.17 ±	0.35	UJ	0.50	5
	18-May-99	Thorium-230	1.2 ±	0.73		0.50	15
	18-May-99	Thorium-232	0.12 ±	0.28	UJ	0.50	15
	18-May-99	Total uranium	0.58 ±	0.03		0.02	27
MISS05A	14-May-99	Radium-226	0.68 ±	0.48		0.50	5
	14-May-99	Radium-228	0.16 ±	0.31	UJ	0.50	5
	14-May-99	Thorium-230	0.69 ±	0.48		0.50	15
	14-May-99	Thorium-232	0.17 ±	0.26	UJ	0.50	15
	14-May-99	Total uranium	74.78 ±	1.70		0.02	27
MISS06A	17-May-99	Radium-226	0.32 ±	0.27	UJ	0.50	5
	17-May-99	Radium-228	0.99 ±	0.31	U	0.50	5
	17-May-99	Thorium-230	0.21 ±	0.34	UJ	0.50	15
	17-May-99	Thorium-232	0.08 ±	0.19	UJ	0.50	15
	17-May-99	Total uranium	3.92 ±	0.09		0.02	27
Duplicate[f]	17-May-99	Radium-226	0.7 ±	0.43	J	0.50	5
	17-May-99	Radium-228	0.02 ±	0.14	UJ	0.50	5
	17-May-99	Thorium-230	0.22 ±	0.21		0.50	15
	17-May-99	Thorium-232	0.06 ±	0.13	UJ	0.50	15
	17-May-99	Total uranium	4.07 ±	0.09		0.02	27
MISS07B	27-May-99	Radium-226	0.08 ±	0.19	UJ	0.50	5
	27-May-99	Radium-228	0.21 ±	0.31	UJ	0.50	5
	27-May-99	Thorium-230	1.06 ±	0.58		0.50	15
	27-May-99	Thorium-232	0.39 ±	0.04	U	0.50	15
	27-May-99	Total uranium	4.23 ±	0.09		0.02	27
Duplicate[f]	27-May-99	Radium-226	0.13 ±	0.17	UJ	0.50	5
	27-May-99	Radium-228	0.05 ±	0.19	UJ	0.50	5
	27-May-99	Thorium-230	2.26 ±	0.88		0.50	15
	27-May-99	Thorium-232	0.06 ±	0.13	UJ	0.50	15
	27-May-99	Total uranium	4.21 ±	0.09		0.02	27
Monitoring wells completed in bedrock:							
B38W02D[e]	20-May-99	Radium-226	0.2 ±	0.21	UJ	0.50	5
Background	20-May-99	Radium-228	0.09 ±	0.4	UJ	0.50	5
	20-May-99	Thorium-230	0.97 ±	0.71		0.50	15
	20-May-99	Thorium-232	0.05 ±	0.32	UJ	0.50	15
	20-May-99	Total uranium	0.21 ±	0.01		0.03	27
B38W14D	17-May-99	Radium-226	0.34 ±	0.08	U	0.50	5
	17-May-99	Radium-228	0.02 ±	0.23	UJ	0.50	5
	17-May-99	Thorium-230	1.02 ±	0.61		0.50	15
	17-May-99	Thorium-232	0.1 ±	0.22	UJ	0.50	15
	17-May-99	Total uranium	0.7 ±	0.02		0.03	27

TABLE 11
1999 Groundwater Analytical Results - Radioactive Constituents
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result[a] (pCi/L)		BNI Flag[b]	MDA[c] (pCi/L)	NJ GWQS[d] (pCi/L)
B38W17B	13-May-99	Radium-226	0.46 ±	0.4	UJ	0.50	5
	13-May-99	Radium-228	0.26 ±	0.53	UJ	0.50	5
	13-May-99	Thorium-230	0.51 ±	0.56	UJ	0.50	15
	13-May-99	Thorium-232	0.16 ±	0.32	UJ	0.50	15
	13-May-99	Total uranium	0.02 ±	0	UJ	0.03	27
B38W18D	20-May-99	Radium-226	0.28 ±	0.23	UJ	0.50	5
	20-May-99	Radium-228	0.19 ±	0.37	UJ	0.50	5
	20-May-99	Thorium-230	0.29 ±	0.36	UJ	0.50	15
	20-May-99	Thorium-232	0.71 ±	0.08	U	0.50	15
	20-May-99	Total uranium	2.76 ±	0.08		0.03	27
Duplicate[f]	20-May-99	Radium-226	0.26 ±	0.02	U	0.50	5
	20-May-99	Radium-228	0.60 ±	0.15	U	0.50	5
	20-May-99	Thorium-230	0.32 ±	0.3	UJ	0.50	15
	20-May-99	Thorium-232	0.20 ±	0.25	UJ	0.50	15
	20-May-99	Total uranium	2.88 ±	0.07		0.03	27
B38W19D	27-May-99	Radium-226	0.33 ±	0.26	UJ	0.50	5
	27-May-99	Radium-228	0.13 ±	0.39	UJ	0.50	5
	27-May-99	Thorium-230	0.67 ±	0.57	UJ	0.50	15
	27-May-99	Thorium-232	0.22 ±	0.32	UJ	0.50	15
	27-May-99	Total uranium	0.18 ±	0.01		0.03	27
B38W24D	13-May-99	Radium-226	0.19 ±	0.26	UJ	0.50	5
	13-May-99	Radium-228	0.06 ±	0.23	UJ	0.50	5
	13-May-99	Thorium-230	0.17 ±	0.28	UJ	0.50	15
	13-May-99	Thorium-232	0.19 ±	0.25	UJ	0.50	15
	13-May-99	Total uranium	0.02 ±	0	UJ	0.03	27
B38W25D	26-May-99	Radium-226	0.34 ±	0.22	J	0.50	5
	26-May-99	Radium-228	0.07 ±	0.26	UJ	0.50	5
	26-May-99	Thorium-230	1.67 ±	0.73		0.50	15
	26-May-99	Thorium-232	0.5 ±	0.14	U	0.50	15
	26-May-99	Total uranium	0.02 ±	0	UJ	0.03	27
Duplicate[f]	26-May-99	Radium-226	0.24 ±	0.25	UJ	0.50	5
	26-May-99	Radium-228	0.14 ±	0.29	UJ	0.50	5
	26-May-99	Thorium-230	2.26 ±	0.87		0.50	15
	26-May-99	Thorium-232	0.21 ±	0.25	UJ	0.50	15
	26-May-99	Total uranium	0.02 ±	0	UJ	0.03	27
MISS01B	25-May-99	Radium-226	0.14 ±	0.18	UJ	0.50	5
	25-May-99	Radium-228	0.38 ±	0.35	UJ	0.50	5
	25-May-99	Thorium-230	0.57 ±	0.41		0.50	15
	25-May-99	Thorium-232	0.12 ±	0.22	UJ	0.50	15
	25-May-99	Total uranium	0.86 ±	0.02		0.03	27

TABLE 11
1999 Groundwater Analytical Results - Radioactive Constituents
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result[a] (pCi/L)		BNI Flag[b]	MDA[c] (pCi/L)	NJ GWQS[d] (pCi/L)
MISS02B	18-May-99	Radium-226	0.46 ±	0.31		0.50	5
	18-May-99	Radium-228	0.02 ±	0.17	UJ	0.50	5
	18-May-99	Thorium-230	0.59 ±	0.4		0.50	15
	18-May-99	Thorium-232	0.04 ±	0.11	UJ	0.50	15
	18-May-99	Total uranium	0.12 ±	0		0.03	27
Duplicate[f]	18-May-99	Radium-226	0.46 ±	0.27		0.50	5
	18-May-99	Radium-228	0.45 ±	0.05	U	0.50	5
	18-May-99	Thorium-230	0.68 ±	0.44		0.50	15
	18-May-99	Thorium-232	0.15 ±	0.21	UJ	0.50	15
	18-May-99	Total uranium	0.19 ±	0.01		0.03	27

[a] Results reported with (±) radiological error quoted at 2 sigma (95 percent confidence level).

[b] BNI data qualifier flags:
U = The analyte was not detected.
UJ = Analyte was not detected; estimated value reported. The result is below the MDA or less than the associated error term.
J= Reported as an estimated value.

[c] Minimum Detectable Activity (MDA).

[d] New Jersey Groundwater Quality Standards(NJAC 7:9-6)

[e] Monitoring well B38W02D is the background location for wells that are completed in bedrock.

[f] A quality control duplicate is collected at the same time and location, and is analyzed by the same method in order to evaluate precision in sampling and analysis.

Table 12
1999 Groundwater Analytical Results - Detected Metals
Maywood Interim Storage Site

Sampling Location	Date Collected	Detected Analyte[a]	Result (µg/L)	Data Qualifiers[b] BNI	Data Qualifiers[b] Lab	Reporting Limit (µg/L)	Related Regulations Federal[c] (µg/L)	Related Regulations State[d] (µg/L)
Monitoring wells completed in unconsolidated sediment:								
B38W14S	17-May-99	Aluminum	[redacted]			20.1	NE	200
	17-May-99	Arsenic	[redacted]			0.3	50	0.02/8
	17-May-99	Barium	86.6			0.2	2000	2000
	17-May-99	Boron	38.6			2.0	NE	NE
	17-May-99	Cadmium	0.97			0.3	5	4
	17-May-99	Calcium	95600			16.4	NE	NE
	17-May-99	Chromium	67.2			0.6	100	100
	17-May-99	Cobalt	1.5			0.7	NE	NE
	17-May-99	Copper	4.9			1.0	1300	1000
	17-May-99	Iron	[redacted]	J		19.4	NE	300
	17-May-99	Lead	2.5			0.4	15	5 / 10
	17-May-99	Lithium	38			0.2	NE	NE
	17-May-99	Magnesium	27400			2.8	NE	NE
	17-May-99	Manganese	32.1	J		0.2	NE	50
	17-May-99	Molybdenum	9.4			1.2	NE	NE
	17-May-99	Nickel	23.5			1.2	NE	100
	17-May-99	Potassium	4810			27.9	NE	NE
	17-May-99	Selenium	1.1	U		1.1	50	50
	17-May-99	Sodium	22800			4.1	NE	50000
	17-May-99	Vanadium	2.9			0.8	NE	NE
	17-May-99	Zinc	6.9			0.5	NE	5000
B38W17A	13-May-99	Aluminum	32.4			20.1	NE	200
	13-May-99	Barium	63.1			0.2	2000	2000
	13-May-99	Boron	66.2			2.0	NE	NE
	13-May-99	Calcium	87100			16.4	NE	NE
	13-May-99	Chromium	66.3			0.6	100	100
	13-May-99	Cobalt	1.1			0.7	NE	NE
	13-May-99	Copper	2.9			1.0	1300	1000
	13-May-99	Iron	[redacted]			19.4	NE	300
	13-May-99	Lithium	359			0.2	NE	NE
	13-May-99	Magnesium	9190			2.8	NE	NE
	13-May-99	Manganese	38			0.2	NE	50
	13-May-99	Molybdenum	2.6			1.2	NE	NE
	13-May-99	Nickel	[redacted]			1.2	NE	100
	13-May-99	Potassium	24900			27.9	NE	NE
	13-May-99	Sodium	[redacted]			4.1	NE	50000
	13-May-99	Vanadium	0.8			0.8	NE	NE
	13-May-99	Zinc	5.4			0.5	NE	5000
B38W19S	14-May-99	Arsenic	[redacted]			0.6	50	0.02 / 8
	14-May-99	Barium	43.2			0.2	2000	2000
	14-May-99	Boron	756			2.0	NE	NE
	14-May-99	Calcium	654000			58.5	NE	NE
	14-May-99	Chromium	2.6			0.6	100	100

Table 12
1999 Groundwater Analytical Results - Detected Metals
Maywood Interim Storage Site

Sampling Location	Date Collected	Detected Analyte[a]	Result (µg/L)	Data Qualifiers[b] BNI	Data Qualifiers[b] Lab	Reporting Limit (µg/L)	Related Regulations Federal[c] (µg/L)	Related Regulations State[d] (µg/L)
B38W19S	14-May-99	Iron	[redacted]			19.4	NE	300
	14-May-99	Lithium	1400	J		0.2	NE	NE
	14-May-99	Magnesium	46100			2.8	NE	NE
	14-May-99	Manganese	[redacted]			0.2	NE	50
	14-May-99	Nickel	4.2			1.2	NE	100
	14-May-99	Potassium	35500			27.9	NE	NE
	14-May-99	Sodium	21700	J		4.1	NE	50000
	14-May-99	Vanadium	2			0.8	NE	NE
	14-May-99	Zinc	1.7			0.5	NE	5000
B38W24S	13-May-99	Aluminum	46.1			20.1	NE	200
	13-May-99	Barium	38.1			0.2	2000	2000
	13-May-99	Beryllium	[redacted]			0.1	4	0.008 / 20
	13-May-99	Boron	104			2.0	NE	NE
	13-May-99	Calcium	67100			16.4	NE	NE
	13-May-99	Copper	9.4			1.0	1300	1000
	13-May-99	Iron	[redacted]			19.4	NE	300
	13-May-99	Lithium	32.1			0.2	NE	NE
	13-May-99	Magnesium	9110	J		1.2	NE	NE
	13-May-99	Manganese	[redacted]			0.2	NE	50
	13-May-99	Potassium	7600			27.9	NE	NE
	13-May-99	Sodium	15200	J		4.1	NE	50000
	13-May-99	Vanadium	0.89			0.8	NE	NE
	13-May-99	Zinc	30.4			0.5	NE	5000
B38W25S	17-May-99	Aluminum	146			20.1	NE	200
	17-May-99	Arsenic	[redacted]			0.6	50	0.02 / 8
	17-May-99	Barium	73.6			0.2	2000	2000
	17-May-99	Boron	79.6			2.0	NE	NE
	17-May-99	Calcium	185000			16.4	NE	NE
	17-May-99	Chromium	[redacted]			0.6	100	100
	17-May-99	Cobalt	3.2			0.7	NE	NE
	17-May-99	Copper	2.8			1.0	1300	1000
	17-May-99	Iron	[redacted]	J		19.4	NE	300
	17-May-99	Lead	0.66			0.4	15	5 / 10
	17-May-99	Lithium	793			0.2	NE	NE
	17-May-99	Magnesium	6150			2.8	NE	NE
	17-May-99	Manganese	[redacted]	J		0.2	NE	50
	17-May-99	Molybdenum	16.6			1.2	NE	NE
	17-May-99	Nickel	78.1			1.2	NE	100
	17-May-99	Potassium	74400			27.9	NE	NE
	17-May-99	Sodium	29900			4.1	NE	50000
	17-May-99	Vanadium	1.7			0.8	NE	NE
	17-May-99	Zinc	29.7			0.5	NE	5000

Table 12
1999 Groundwater Analytical Results - Detected Metals
Maywood Interim Storage Site

Sampling Location	Date Collected	Detected Analyte[a]	Result (µg/L)	Data Qualifiers[b] BNI	Data Qualifiers[b] Lab	Reporting Limit (µg/L)	Related Regulations Federal[c] (µg/L)	Related Regulations State[d] (µg/L)
MISS01AA	12-May-99	Aluminum	43			20.1	NE	200
	12-May-99	Antimony	0.7			0.7	6	2/20
	12-May-99	Arsenic	[redacted]			0.6	50	0.02 / 8
	12-May-99	Barium	8.7			0.2	2000	2000
	12-May-99	Boron	278			2.0	NE	NE
	12-May-99	Calcium	645000			58.5	NE	NE
	12-May-99	Chromium	1			0.6	100	100
	12-May-99	Iron	[redacted]			19.4	NE	300
	12-May-99	Lead	1.6			0.4	15	5 / 10
	12-May-99	Lithium	224	J		0.2	NE	NE
	12-May-99	Magnesium	31700			2.8	NE	NE
	12-May-99	Manganese	[redacted]			0.2	NE	50
	12-May-99	Nickel	3.6			1.2	NE	100
	12-May-99	Potassium	1590			27.9	NE	NE
	12-May-99	Sodium	5140			4.1	NE	50000
	12-May-99	Vanadium	2.8			0.8	NE	NE
MISS02A	18-May-99	Aluminum	[redacted]			20.1	NE	200
	18-May-99	Antimony	[redacted]			1.4	6	2 / 20
	18-May-99	Arsenic	[redacted]			275.0	50	0.02 / 8
	18-May-99	Barium	21			0.2	2000	2000
	18-May-99	Boron	1680			2.0	NE	NE
	18-May-99	Calcium	116000			16.4	NE	NE
	18-May-99	Chromium	94.1			0.6	100	100
	18-May-99	Cobalt	2.2			0.7	NE	NE
	18-May-99	Copper	366			1.0	1300	1000
	18-May-99	Iron	[redacted]			19.4	NE	300
	18-May-99	Lead	[redacted]			0.4	15	5 / 10
	18-May-99	Lithium	9300			0.2	NE	NE
	18-May-99	Magnesium	5700			2.8	NE	NE
	18-May-99	Manganese	[redacted]			0.2	NE	50
	18-May-99	Molybdenum	11.2			1.2	NE	NE
	18-May-99	Nickel	31.1			1.2	NE	100
	18-May-99	Potassium	12500			27.9	NE	NE
	18-May-99	Silver	1.4			1.4	NE	NE
	18-May-99	Sodium	[redacted]			350.0	NE	50000
	18-May-99	Thallium	0.36			0.3	2	0.5/10
	18-May-99	Vanadium	9.7			0.8	NE	NE
	18-May-99	Zinc	36			0.5	NE	5000
MISS05A	14-May-99	Aluminum	28.9			20.1	NE	200
	14-May-99	Antimony	0.7			0.7	6	2 / 20
	14-May-99	Arsenic	[redacted]			0.6	50	0.02 / 8
	14-May-99	Barium	20.3			0.2	2000	2000
	14-May-99	Boron	352			2.0	NE	NE
	14-May-99	Calcium	677000			58.5	NE	NE

Table 12
1999 Groundwater Analytical Results - Detected Metals
Maywood Interim Storage Site

Sampling Location	Date Collected	Detected Analyte[a]	Result (µg/L)	Data Qualifiers[b] BNI	Data Qualifiers[b] Lab	Reporting Limit (µg/L)	Related Regulations Federal[c] (µg/L)	Related Regulations State[d] (µg/L)
	14-May-99	Cobalt	14.1			0.7	NE	NE
MISS05A	14-May-99	Copper	1.7			1.0	1300	1000
	14-May-99	Iron	[redacted]			19.4	NE	300
	14-May-99	Lead	0.35			0.4	15	5 / 10
	14-May-99	Lithium	863	J		0.2	NE	NE
	14-May-99	Magnesium	47700			2.8	NE	NE
	14-May-99	Manganese	[redacted]			0.2	NE	50
	14-May-99	Molybdenum	1.9			1.2	NE	NE
	14-May-99	Nickel	22.8			1.2	NE	100
	14-May-99	Potassium	58300			27.9	NE	NE
	14-May-99	Selenium	1.1			1.1	50	50
	14-May-99	Silver	1.5			1.4	NE	NE
	14-May-99	Sodium	18000			4.1	NE	50000
	14-May-99	Thallium	0.3			0.3	2	0.5/10
	14-May-99	Vanadium	1.6			0.8	NE	NE
	14-May-99	Zinc	74.5			0.5	NE	5000
MISS06A	17-May-99	Aluminum	47.9			20.1	NE	200
	17-May-99	Antimony	0.81			0.7	6	2 / 20
	17-May-99	Arsenic	[redacted]			0.6	50	0.02 / 8
	17-May-99	Barium	48			0.2	2000	2000
	17-May-99	Boron	352			2.0	NE	NE
	17-May-99	Cadmium	2.2			0.3	5	4
	17-May-99	Calcium	250000			16.4	NE	NE
	17-May-99	Copper	29.4			1.0	1300	1000
	17-May-99	Iron	[redacted]			19.4	NE	300
	17-May-99	Lead	2.9			0.4	15	5 / 10
	17-May-99	Lithium	2130			0.2	NE	NE
	17-May-99	Magnesium	12300			2.8	NE	NE
	17-May-99	Manganese	[redacted]	J		0.2	NE	50
	17-May-99	Nickel	8.5			1.2	NE	100
	17-May-99	Potassium	15800			27.9	NE	NE
	17-May-99	Selenium	1.3			1.1	50	50
	17-May-99	Sodium	21200	J		4.1	NE	50000
	17-May-99	Vanadium	1.2			0.8	NE	NE
	17-May-99	Zinc	928			0.5	NE	5000
Monitoring wells completed in bedrock								
B38W02D[e]	20-May-99	Aluminum	22.4			20.1	NE	200
	20-May-99	Arsenic	[redacted]			0.6	50	0.02 / 8
Background	20-May-99	Barium	342			0.2	2000	2000
	20-May-99	Boron	24.2			2.0	NE	NE
	20-May-99	Calcium	96500			16.4	NE	NE
	20-May-99	Chromium	9.7			0.6	100	100
	20-May-99	Copper	2.9			1.0	1300	1000

Table 12
1999 Groundwater Analytical Results - Detected Metals
Maywood Interim Storage Site

Sampling Location	Date Collected	Detected Analyte[a]	Result (µg/L)	Data Qualifiers[b] BNI	Data Qualifiers[b] Lab	Reporting Limit (µg/L)	Related Regulations Federal[c] (µg/L)	Related Regulations State[d] (µg/L)
	20-May-99	Iron	28.8			19.4	NE	300
B38W02D[e]	20-May-99	Lithium	11.7			0.2	NE	NE
	20-May-99	Magnesium	4020			2.8	NE	NE
	20-May-99	Manganese	[redacted]			0.2	NE	50
	20-May-99	Nickel	5.7			1.2	NE	100
	20-May-99	Potassium	777			27.9	NE	NE
	20-May-99	Silver	1.4			1.4	NE	NE
	20-May-99	Sodium	8350			4.1	NE	50000
	20-May-99	Vanadium	1			0.8	NE	NE
	20-May-99	Zinc	2.5			0.5	NE	5000
B38W14D	20-May-99	Aluminum	56.3			20.1	NE	200
	20-May-99	Arsenic	[redacted]			0.6	50	0.02 / 8
	20-May-99	Barium	116			0.2	2000	2000
	20-May-99	Boron	47.5			2.0	NE	NE
	20-May-99	Calcium	119000			16.4	NE	NE
	20-May-99	Chromium	1			0.6	100	100
	20-May-99	Copper	3.6			1.0	1300	1000
	20-May-99	Iron	64.2	J		19.4	NE	300
	20-May-99	Lead	0.86			0.4	15	5 / 10
	20-May-99	Lithium	34.3	J		0.2	NE	NE
	20-May-99	Magnesium	30000			2.0	NE	NE
	20-May-99	Manganese	6.1	J		0.2	NE	50
	20-May-99	Nickel	3.3			1.2	NE	100
	20-May-99	Potassium	4140			27.9	NE	NE
	20-May-99	Sodium	38800			4.1	NE	50000
	20-May-99	Vanadium	1.1			0.8	NE	NE
B38W14D	20-May-99	Zinc	4.7	U		0.5	NE	5000
B38W17B	13-May-99	Aluminum	32			20.1	NE	200
	13-May-99	Arsenic	[redacted]			0.6	50	0.02 / 8
	13-May-99	Barium	89.1			0.2	2000	2000
	13-May-99	Boron	317			2.0	NE	NE
	13-May-99	Calcium	303000			16.4	NE	NE
	13-May-99	Chromium	1.4			0.6	100	100
	13-May-99	Copper	1.2			1.0	1300	1000
	13-May-99	Iron	[redacted]			19.4	NE	300
	13-May-99	Lithium	1460	J		0.2	NE	NE
	13-May-99	Magnesium	25200			2.0	NE	NE
	13-May-99	Manganese	[redacted]			0.2	NE	50
	13-May-99	Nickel	1.6			1.2	NE	100
	13-May-99	Potassium	98900			395.0	NE	NE
	13-May-99	Silver	1.4			1.4	NE	NE
	13-May-99	Sodium	[redacted]			17.5	NE	50000
	13-May-99	Vanadium	2.1			0.8	NE	NE

Table 12
1999 Groundwater Analytical Results - Detected Metals
Maywood Interim Storage Site

Sampling Location	Date Collected	Detected Analyte[a]	Result (µg/L)	Data Qualifiers[b] BNI	Data Qualifiers[b] Lab	Reporting Limit (µg/L)	Related Regulations Federal[c] (µg/L)	Related Regulations State[d] (µg/L)
B38W18D	20-May-99	Aluminum	130			20.1	NE	200
	20-May-99	Arsenic	[redacted]			0.6	50	0.02 / 8
	20-May-99	Barium	20.8			0.2	2000	2000
	20-May-99	Beryllium	0.98			0.1	4	0.008 / 20
	20-May-99	Boron	366			2.0	NE	NE
	20-May-99	Calcium	161000			16.4	NE	NE
	20-May-99	Chromium	39.5			0.6	100	100
	20-May-99	Cobalt	15.7			0.7	NE	NE
	20-May-99	Iron	[redacted]			19.4	NE	300
	20-May-99	Lead	1.1			0.4	15	5 / 10
	20-May-99	Lithium	2850			0.2	NE	NE
	20-May-99	Magnesium	14500			2.8	NE	NE
	20-May-99	Manganese	[redacted]			0.2	NE	50
	20-May-99	Nickel	24.9			1.2	NE	100
	20-May-99	Potassium	7360			27.9	NE	NE
	20-May-99	Sodium	34300			4.1	NE	50000
	20-May-99	Zinc	78			0.5	NE	5000
B38W19D	27-May-99	Arsenic	[redacted]	J		5.5	50	0.02 / 8
	27-May-99	Barium	31			0.2	2000	2000
	27-May-99	Boron	1120			2.0	NE	NE
	27-May-99	Cadmium	0.3	J		0.3	5	4
	27-May-99	Calcium	258000			16.4	NE	NE
	27-May-99	Iron	[redacted]			19.4	NE	300
	27-May-99	Lead	[redacted]	J		0.4	15	5/10
	27-May-99	Lithium	6350	J		0.2	NE	NE
	27-May-99	Magnesium	42000			2.8	NE	NE
	27-May-99	Manganese	[redacted]			0.2	NE	50
	27-May-99	Nickel	1.7			1.2	NE	100
	27-May-99	Potassium	408000	J		69.8	NE	NE
	27-May-99	Silver	1.4			1.4	NE	NE
	27-May-99	Sodium	[redacted]			43.8	NE	50000
	27-May-99	Vanadium	8.2			0.8	NE	NE
	27-May-99	Zinc	2.1			0.5	NE	5000
B38W24D	13-May-99	Aluminum	93.7			20.1	NE	200
	13-May-99	Barium	45.6			0.2	2000	2000
	13-May-99	Beryllium	[redacted]			0.1	4	0.008 / 20
	13-May-99	Boron	98.3			2.0	NE	NE
	13-May-99	Cadmium	2.5	U		0.3	5	4
	13-May-99	Calcium	98800			16.4	NE	NE
	13-May-99	Chromium	6.4			0.6	100	100
	13-May-99	Copper	3			1.0	1300	1000
	13-May-99	Iron	[redacted]			19.4	NE	300
	13-May-99	Lead	[redacted]			0.4	15	5 / 10
	13-May-99	Lithium	50.4			0.2	NE	NE

Table 12
1999 Groundwater Analytical Results - Detected Metals
Maywood Interim Storage Site

Sampling Location	Date Collected	Detected Analyte[a]	Result (µg/L)	Data Qualifiers[b] BNI	Data Qualifiers[b] Lab	Reporting Limit (µg/L)	Related Regulations Federal[c] (µg/L)	Related Regulations State[d] (µg/L)
B38W24D	13-May-99	Magnesium	11400			2.8	NE	NE
	13-May-99	Manganese	[redacted]			0.2	NE	50
	13-May-99	Nickel	4.4			1.2	NE	100
	13-May-99	Potassium	12800			27.9	NE	NE
	13-May-99	Sodium	40000			4.1	NE	50000
	13-May-99	Vanadium	0.8			0.8	NE	NE
	13-May-99	Zinc	5.9			0.5	NE	5000
B38W25D	26-May-99	Aluminum	20.1			20.1	NE	200
	26-May-99	Antimony	0.35	UJ		0.4	6	2 / 20
	26-May-99	Arsenic	0.55	UJ		0.6	50	0.02 / 8
	26-May-99	Barium	58.4			0.2	2000	2000
	26-May-99	Boron	146			2.0	NE	NE
	26-May-99	Calcium	109000			16.4	NE	NE
	26-May-99	Iron	4980			19.4	NE	300
	26-May-99	Lithium	1290	J		0.2	NE	NE
	26-May-99	Magnesium	5290			2.8	NE	NE
	26-May-99	Manganese	1390			0.2	NE	50
	26-May-99	Nickel	2.7	J		1.2	NE	100
	26-May-99	Potassium	56100			27.9	NE	NE
	26-May-99	Sodium	27700	J		4.1	NE	50000
	26-May-99	Zinc	4.5			0.5	NE	5000
MISS01B[g]	25-May-99	Antimony	0.35	UJ		0.4	6	2/20
	25-May-99	Arsenic	[redacted]	J		0.6	50	0.02 / 8
	25-May-99	Barium	73.5			0.2	2000	2000
	25-May-99	Boron	61.6			2.0	NE	NE
	25-May-99	Cadmium	0.3	UJ		0.3	5	4
	25-May-99	Calcium	96600	J		16.4	NE	NE
	25-May-99	Iron	1060			19.4	NE	300
	25-May-99	Lithium	95.6	J		0.2	NE	NE
	25-May-99	Magnesium	18800			2.8	NE	NE
	25-May-99	Manganese	359			0.2	NE	50
	25-May-99	Molybdenum	1.2			1.2	NE	NE
	25-May-99	Nickel	1.8			1.2	NE	100
	25-May-99	Potassium	11900			27.9	NE	NE
	25-May-99	Selenium	1.7	J		1.1	50	50
	25-May-99	Silver	1.4			1.4	NE	NE
	25-May-99	Sodium	51500			4.1	NE	50000
	25-May-99	Vanadium	3.4			0.8	NE	NE
	25-May-99	Zinc	2.9			0.5	NE	5000
MISS02B	18-May-99	Aluminum	53.4			20.1	NE	200
	18-May-99	Barium	11			0.2	2000	2000
	18-May-99	Beryllium	0.84			0.1	4	0.008 / 20
	18-May-99	Boron	1580			2.0	NE	NE

Table 12
1999 Groundwater Analytical Results - Detected Metals
Maywood Interim Storage Site

Sampling Location	Date Collected	Detected Analyte[a]	Result (µg/L)	Data Qualifiers[b] BNI	Data Qualifiers[b] Lab	Reporting Limit (µg/L)	Related Regulations Federal[c] (µg/L)	Related Regulations State[d] (µg/L)
	18-May-99	Calcium	302000			16.4	NE	NE
MISS02B	18-May-99	Chromium	7.5			0.6	100	100
	18-May-99	Cobalt	3			0.7	NE	NE
	18-May-99	Iron	[redacted]			19.4	NE	300
	18-May-99	Lithium	12100			0.2	NE	NE
	18-May-99	Magnesium	40100			2.8	NE	NE
	18-May-99	Manganese	[redacted]			0.2	NE	50
	18-May-99	Nickel	9.6			1.2	NE	100
	18-May-99	Potassium	70700	J		27.9	NE	NE
	18-May-99	Silver	1.4			1.4	NE	NE
	18-May-99	Sodium	[redacted]			350.0	NE	50000
	18-May-99	Vanadium	3.8			0.8	NE	NE
MISS07B	27-May-99	Arsenic	[redacted]	J		2.8	50	0.02 / 8
	27-May-99	Antimony	2	J		0.7	6	2/20
	27-May-99	Barium	21.4			0.2	2000	2000
	27-May-99	Beryllium	[redacted]	U		0.1	4	0.008 / 20
	27-May-99	Boron	1670			2.0	NE	NE
	27-May-99	Calcium	244000			16.4	NE	NE
	27-May-99	Chromium	3.1			0.6	100	100
	27-May-99	Cobalt	3.7			0.7	NE	NE
	27-May-99	Copper	1			1.0	1300	1000
	27-May-99	Iron	[redacted]			19.4	NE	300
	27-May-99	Lithium	6870			0.2	NE	NE
	27-May-99	Magnesium	85400			2.8	NE	NE
	27-May-99	Manganese	[redacted]			0.2	NE	50
	27-May-99	Nickel	5.9			1.2	NE	100
	27-May-99	Potassium	43700		J	27.9	NE	NE
	27-May-99	Silver	1.9		J	1.4	NE	NE
	27-May-99	Sodium	[redacted]			87.5	NE	50000
	27-May-99	Vanadium	18.8			0.8	NE	NE
	27-May-99	Zinc	4.6		J	0.5	NE	5000

[a] Only the analytes that were detected are reported. Shaded result indicates value exceeds criteria.

[b] BNI and laboratory data qualifier flags: J = Reported as an estimated value, U= analyte was not detected.

[c] Federal SDWA MCLs, 40 CFR 141. Regulations pertain to drinking water quality and are listed for comparison purposes only. Not established (NE).

[d] New Jersey Class IIA Groundwater Quality Standards NJAC 7:9-6. Analytes for which the PQL is greater than the GWQC are noted as such: GWQC/PQL.

[e] Monitoring well B38W01S is the background location for wells completed in unconsolidated sediment. Monitoring well B38W02D is the background location for wells completed in bedrock.

Table 13
1999 Groundwater Analytical Results - Detected Volatile Organic Compounds
Maywood Interim Storage Site

Sampling Location	Date Collected	Detected Analyte[a]	Result (µg/L)	Data Qualifiers[b] BNI	Data Qualifiers[b] Lab	Reporting Limit (µg/L)	Related Regulations Federal[c] (µg/L)	Related Regulations State[d] (µg/L)
Monitoring wells completed in unconsolidated sediment:								
B38W14S	17-May-99	1,1,1-TRICHLOROETHANE	2	J	J	5	200	30
		1,1-DICHLOROETHENE	3	J	J	5	7	1
		1,2-DICHLOROETHENE (TOTAL)	43			5	70 / 100	10 / 100[g]
		2-BUTANONE	13	J		10		
		ACETONE	3	UJ	JB	10		
		CHLOROFORM	2	J	J	5	NE	1/6
		DICHLOROMETHANE	3	UJ	JB	5		
		TETRACHLOROETHENE	290		D	5	5	0.4 / 1
		TOLUENE	1	J	J	5		
		TRICHLOROETHENE	67			5	5	1
B38W17A	13-May-99	ACETONE	2	UJ	JB	10		
		BROMOMETHANE	10	UJ	U	10		
		CHLOROETHANE	10	UJ	U	10		
		CHLOROMETHANE	10	UJ	U	10		
		DICHLOROMETHANE	3	UJ	U	5		
		VINYL CHLORIDE	10	UJ	U	2	2	.8/5
B38W19S	14-May-99	2-BUTANONE	16			10		
		ACETONE	6	UJ	JB	10		
		BROMOMETHANE	10	UJ	U	10		
		CHLOROETHANE	10	UJ	U	10		
		CHLOROMETHANE	10	UJ	U	10		
		DICHLOROMETHANE	3	UJ	JB	5		
		TOLUENE	3	J	J	5		
		VINYL CHLORIDE	10	UJ	U	10	2	.8/5
B38W24S	13-May-99	2-BUTANONE	18			10		
		ACETONE	7	UJ	JB	10		
		TOLUENE	2	J	J	5		
B38W25S	17-May-99	2-BUTANONE	5	J	J	10		
		ACETONE	2	UJ	JB	10	NE	700
		DICHLOROMETHANE	3	UJ	JB	5		
MISS01AA	12-May-99	ACETONE	6	UJ	JB	10		
MISS05A	14-May-99	1,1-DICHLOROETHENE	5	UJ	U	5		
		ACETONE	5	UJ	JB	10		
		BROMOMETHANE	10	UJ	U	10		
		CHLOROETHANE	10	UJ	U	10		
		CHLOROMETHANE	3	UJ	JB	10		
		TOLUENE	2	J	J	5		
		VINYL CHLORIDE	10	UJ	U	10	2	.8/5
MISS06A	17-May-99	2-BUTANONE	3	J	J	10		
		ACETONE	3	UJ	BJ	10		
		DICHLOROMETHANE	3	UJ	BJ	5		

Table 13
1999 Groundwater Analytical Results - Detected Volatile Organic Compounds
Maywood Interim Storage Site

Sampling Location	Date Collected	Detected Analyte[a]	Result (µg/L)	Data Qualifiers[b] BNI	Data Qualifiers[b] Lab	Reporting Limit (µg/L)	Related Regulations Federal[c] (µg/L)	Related Regulations State[d] (µg/L)
Monitoring wells completed in bedrock:								
B38W02D	20-May-99	BROMOMETHANE	10	UJ	U	10		
		CHLOROETHANE	10	UJ	U	10		
		CHLOROMETHANE	10	UJ	U	10		
		DICHLOROMETHANE	4	UJ	BJ	5		
		VINYL CHLORIDE	10	UJ	U	10	2	.8/5
Background[e]								
B38W14D	17-May-99	1,1,1-TRICHLOROETHANE	3	J	J	5	200	30
		1,1-DICHLOROETHANE	2	J	J	5	7	1
		1,1-DICHLOROETHENE	3	J	J	5		
		1,2-DICHLOROETHENE (TOTAL)	77			5	70 / 100	10 / 100[g]
		ACETONE	2	UJ	JB	10		
		CHLOROFORM	2	J	J	5		
		DICHLOROMETHANE	3	UJ	JB	5		
		TETRACHLOROETHENE	630		D	5	5	0.4 / 1
		TRICHLOROETHENE	160			5	5	1
B38W17B	13-May-99	1,1-DICHLOROETHENE	5	UJ	U	5	7	1
		ACETONE	10	UJ	JB	10		
		BROMOMETHANE	10	UJ	U	10		
		CHLOROETHANE	10	UJ	U	10		
		CHLOROMETHANE	10	UJ	U	10		
		DICHLOROMETHANE	3	UJ	JB	10		
		VINYL CHLORIDE	10	UJ	U	10	2	.8/5
B38W18D	20-May-99	2-BUTANONE	7	J	J	10		
		ACETONE	5	UJ	JB	10		
		BROMOMETHANE	10	UJ	U	10		
		CHLOROETHANE	10	UJ	U	10		
		TOLUENE	1	J	J	5		
		VINYL CHLORIDE	10	UJ	U	10	2	.8/5
B38W19D	27-May-99	DICHLOROMETHANE	4	UJ	BJ	5		
B38W24D	13-May-99	2-BUTANONE	13			10		
		ACETONE	7	UJ	JB	10		
B38W25D	26-May-99	1,1-DICHLOROETHENE	5	UJ	U	5		
		2-BUTANONE	6	J	J	10		
		ACETONE	4	UJ	BJ	10		
		BROMOMETHANE	10	UJ	U	10		
		CHLOROETHANE	10	UJ	U	10		
		CHLOROMETHANE	10	UJ	U	10		
		DICHLOROMETHANE	6	UJ	B	5		
		TOLUENE	1	J	J	5		
		VINYL CHLORIDE	10	UJ	U	10	2	.8/5

Table 13
1999 Groundwater Analytical Results - Detected Volatile Organic Compounds
Maywood Interim Storage Site

Sampling Location	Date Collected	Detected Analyte[a]	Result (µg/L)	Data Qualifiers[b] BNI	Data Qualifiers[b] Lab	Reporting Limit (µg/L)	Related Regulations Federal[c] (µg/L)	Related Regulations State[d] (µg/L)
MISS01B	25-May-99	1,1-DICHLOROETHENE	5	UJ	U	5	7	1
		1,2-DICHLOROETHENE	2	J		5		
		TETRACHLOROETHENE	15			5	5	.4/1
		2-BUTANONE	2	J		10		
		1,2-DICHLOROETHENE (TOTAL)	2	J	J	5	70 / 100	10 / 100[g]
		2-BUTANONE	2	J	J	10		
		ACETONE	5	UJ	BJ	10		
		BROMOMETHANE	10	UJ	U	10		
		CHLOROETHANE	10	UJ	U	10		
		CHLOROMETHANE	10	UJ	U	10		
		DICHLOROMETHANE	6	UJ	B	5		
		VINYL CHLORIDE	10	UJ	U	10	2	.8/5
MISS02B		ACETONE	8	UJ	JB	10		
MISS07B	27-May-99	1,2-DICHLOROETHENE (TOTAL)	6			5	70 / 100	10 / 100[g]
		DICHLOROMETHANE	4	UJ	BJ	5		
		TETRACHLOROETHENE	24			5	5	0.4 / 1
		TRICHLOROETHENE	2	J	J	5	5	1

[a] Only the analytes that were detected are reported.

[b] BNI and laboratory data qualifier flags:

U= Analyte was analyzed for but not detected.
J = Reported as an estimated value. Data quality evaluation indicates that the analytical result is an estimate of the actual value.
D = Diluted out. Value is estimated to be non-detect (NJ).
B= The analyte is found in the associated blank as well as in the sample. It indicates possible blank contaminatuion.
UJ= Analyte was analyzed for but not detected, it must be estimated due to quality control consideration.

[c] Federal SDWA MCLs, 40 CFR 141 (October 1999).

[d] New Jersey Class IIA Groundwater Quality Standards, NJAC 7:9-6 (October 1999). Analytes for which the published PQL is greater than the GWQC are noted as such: GWQC / PQL.

[e] Monitoring well B38W01S is the background location for wells that are completed in unconsolidated sediment. Monitoring well B38W02D is the background location for wells that are completed in bedrock.

[f] No VOCs were detected during 1999 sampling of this monitoring well.

[g] Limits for cis-isomer/trans-isomer; PQL is 2 µg/L.

Table 14
1999 List of Analytes and Detection Limits for
Metals and Volatile Organic Compounds
Maywood Interim Storage Site

	Detection Limit	
Metals	Groundwater (µg/L)	Sediment (mg/kg)
Aluminum	20.1	1.4
Antimony	1.4	0.26
Arsenic	0.6	0.31
Barium	0.2	0.03
Beryllium	0.1	0.01
Boron	2	0.14
Cadmium	0.3	0.04
Calcium	16.4	2.2
Chromium	0.6	0.04
Cobalt	0.7	0.05
Copper	1	0.14
Iron	19.4	2.6
Lead	0.4	0.39
Lithium	0.2	0.03
Magnesium	2	0.38
Manganese	0.2	0.03
Molybdenum	1.2	0.16
Nickel	1.2	0.16
Potassium	27.9	3.8
Selenium	2.2	0.64
Sodium	4.1	0.56
Thallium	0.3	0.24
Vanadium	0.8	0.11
Zinc	0.5	0.07

Note: The detection limit listed is the maximum sample quantitation limit from all nondetects of the specified analyte. If there were no nondetects, then the maximum sample quantitation limit is provided.

Groundwater Volatile Organic Compounds	Detection Limit (µg/L)
1,1,1-Trichloroethane	5
1,1,2,2-Tetrachloroethane	5
1,1,2-Trichloroethane	5
1,1-Dichloroethane	5
1,1-Dichloroethene	5
1,2-Dichloroethane	5
1,2-Dichloroethene (total)	5
1,2-Dichloropropane	5
2-Butanone	10
2-Hexanone	10
4-Methyl-2-pentanone	10
Acetone	10
Benzene	5
Bromodichloromethane	5
Bromomethane	10
Carbon disulfide	5
Carbon tetrachloride	5
Chlorobenzene	5
Chloroethane	10
Chloroform	5
Chloromethane	10
Cis-1,3-dichloropropene	5
Dibromochloromethane	5
Dichloromethane	6
Ethylbenzene	5
Styrene	5
Tetrachloroethene	5
Toluene	5
Trans-1,3-dichloropropene	5
Tribromomethane	5
Trichloroethene	5
Vinyl chloride	10
Xylenes (total)	5

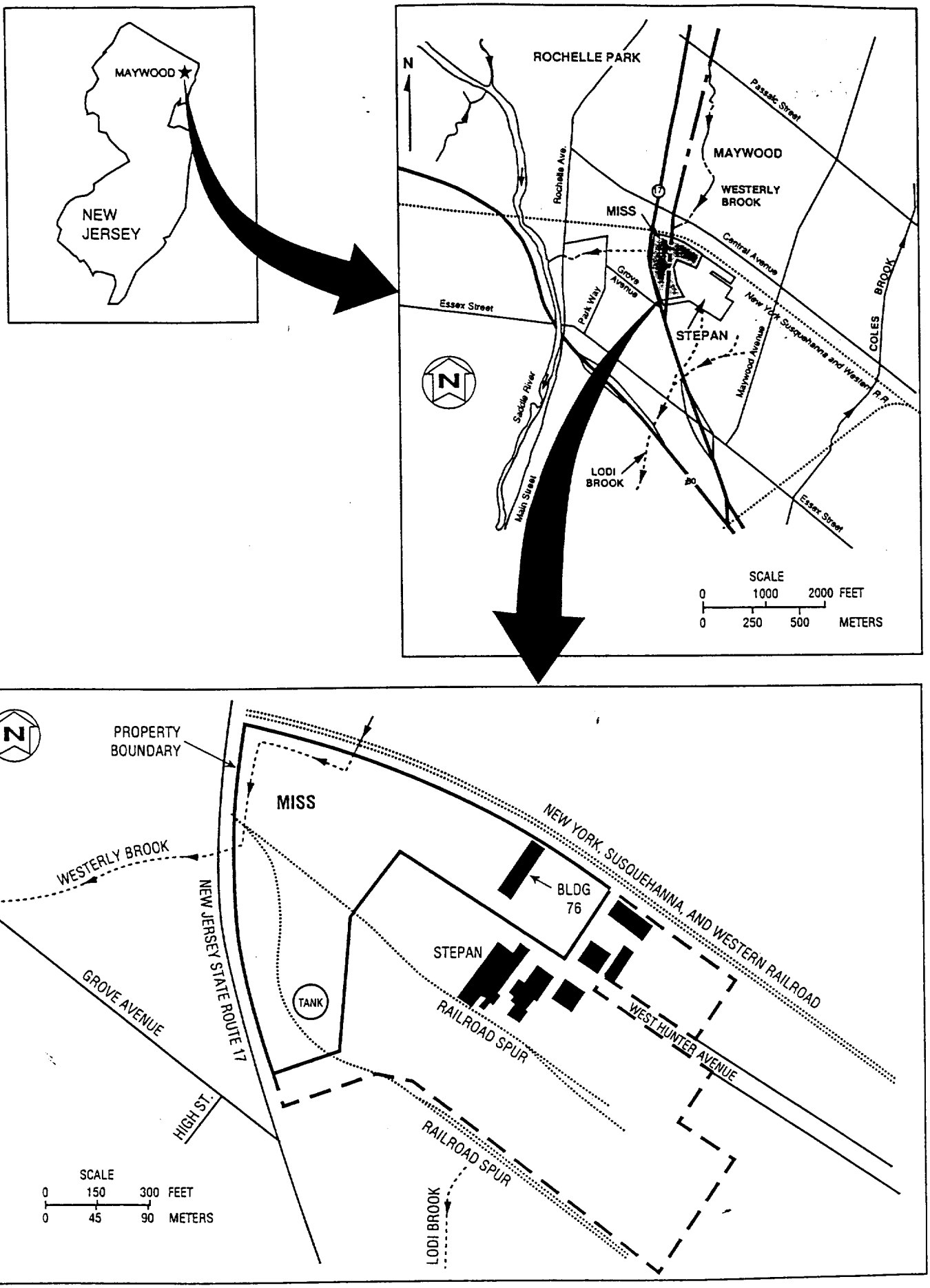


Figure 1
Maywood Interim Storage Site, Site Location and Site Map

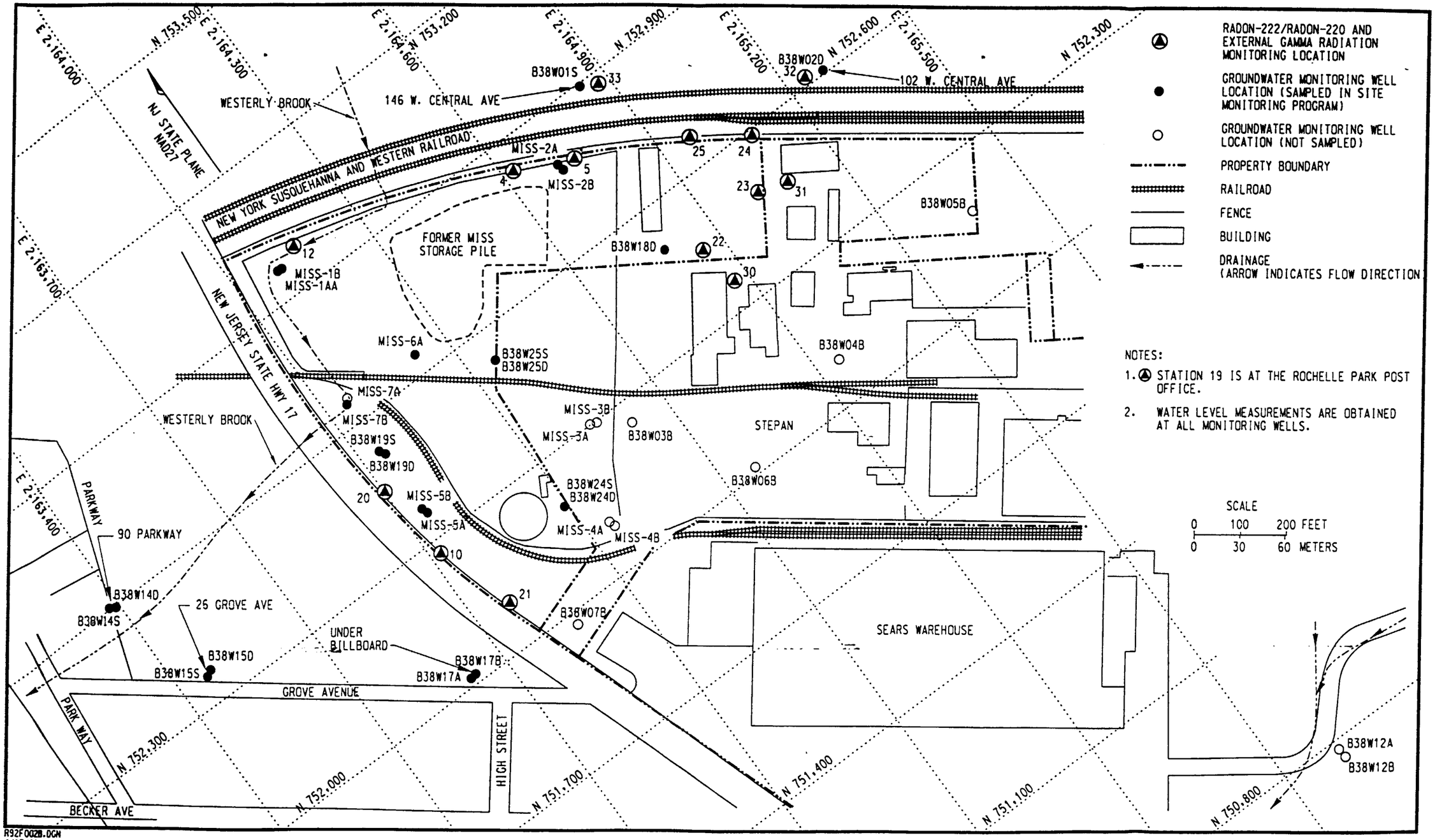
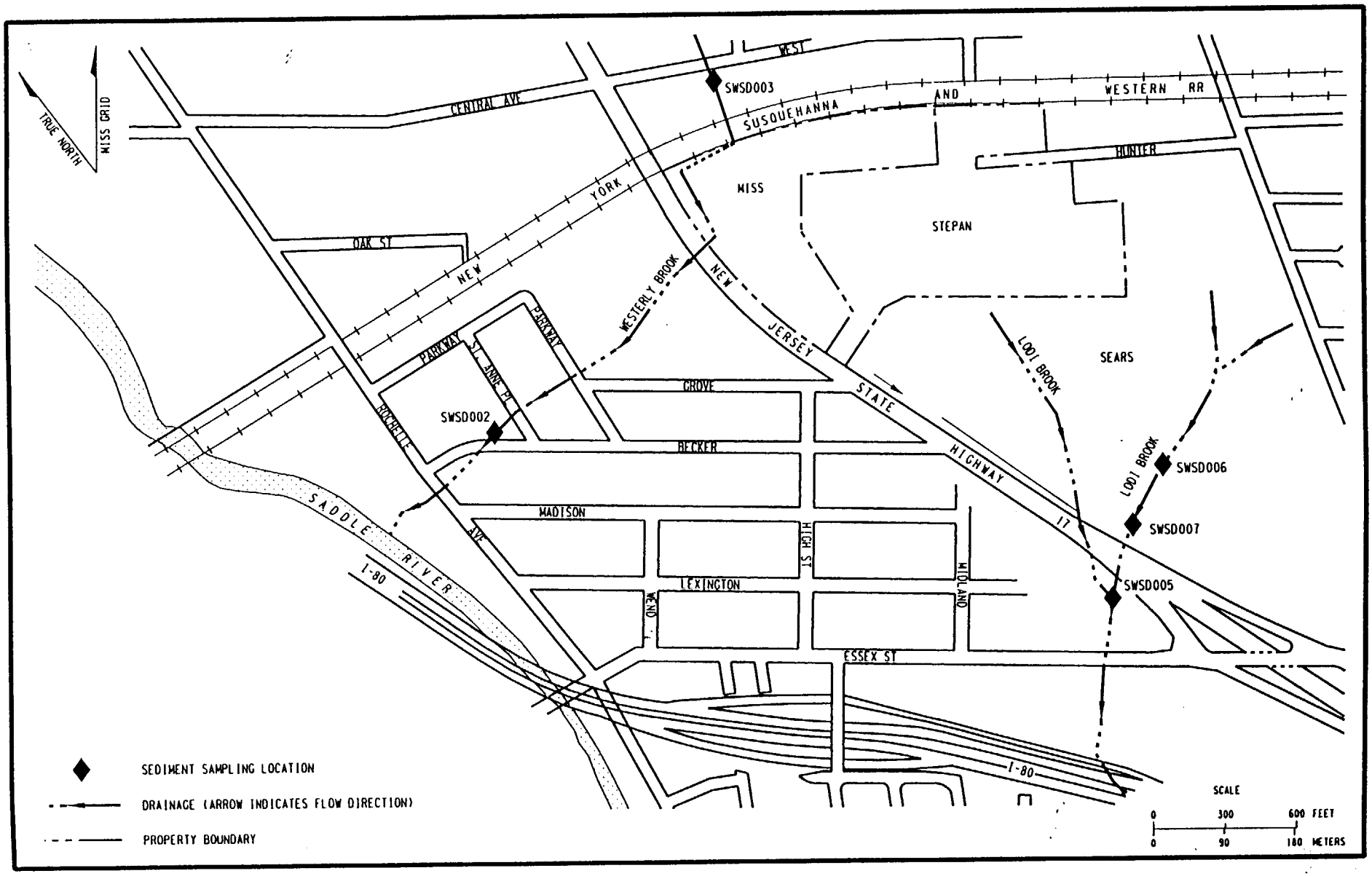


Figure 2
Maywood Interim Storage Site Environmental Monitoring Sampling Locations: External Gamma Radiation, Radon-222/Radon-220, and Groundwater



R94F006.DGN

Figure 3
Surface Water and Sediment Sampling Locations

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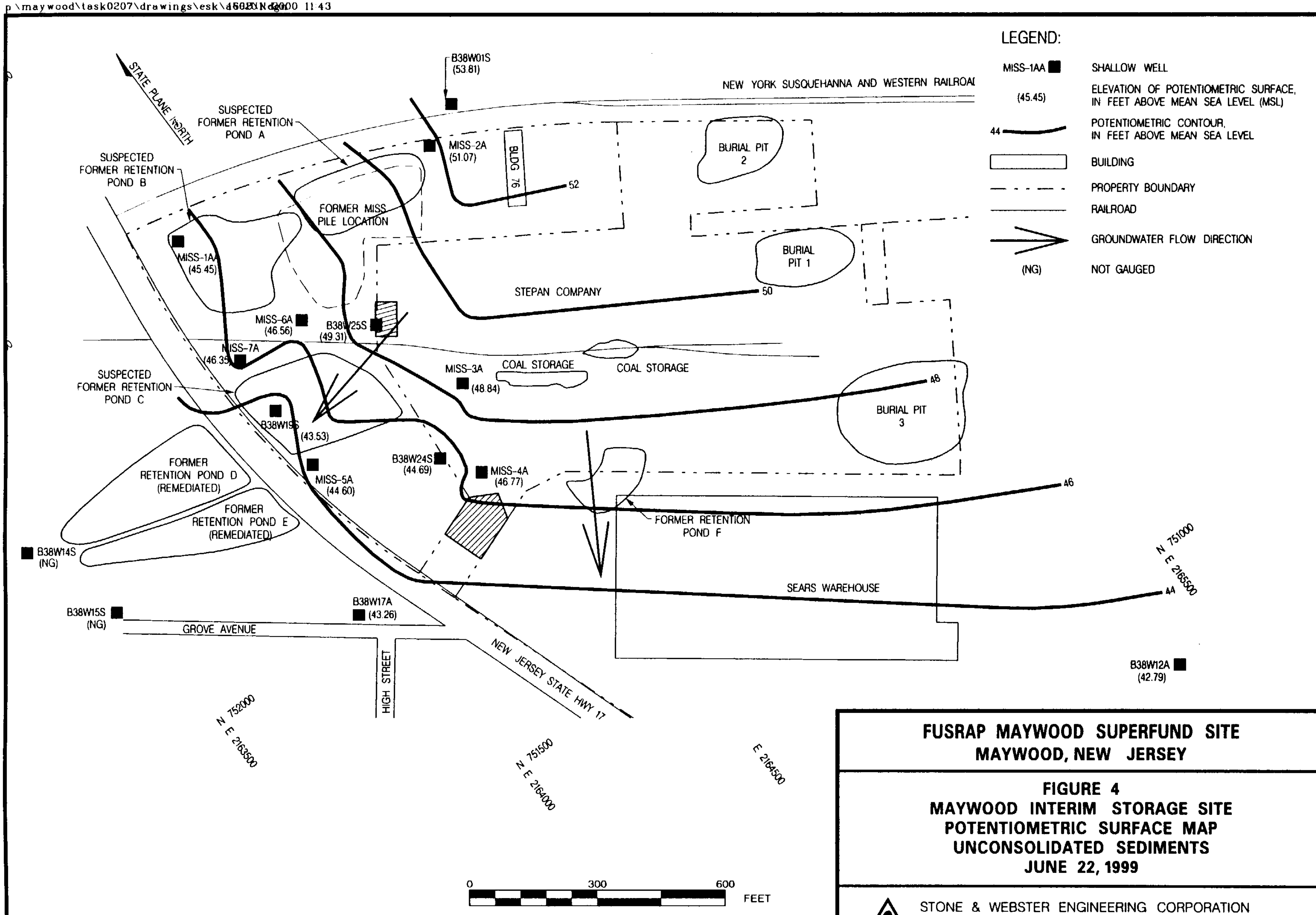

FUSRAP MAYWOOD SUPERFUND SITE
MAYWOOD, NEW JERSEY

FIGURE 4
MAYWOOD INTERIM STORAGE SITE
POTENTIOMETRIC SURFACE MAP
UNCONSOLIDATED SEDIMENTS
JUNE 22, 1999

STONE & WEBSTER ENGINEERING CORPORATION
BOSTON, MASSACHUSETTS

MAY 2000

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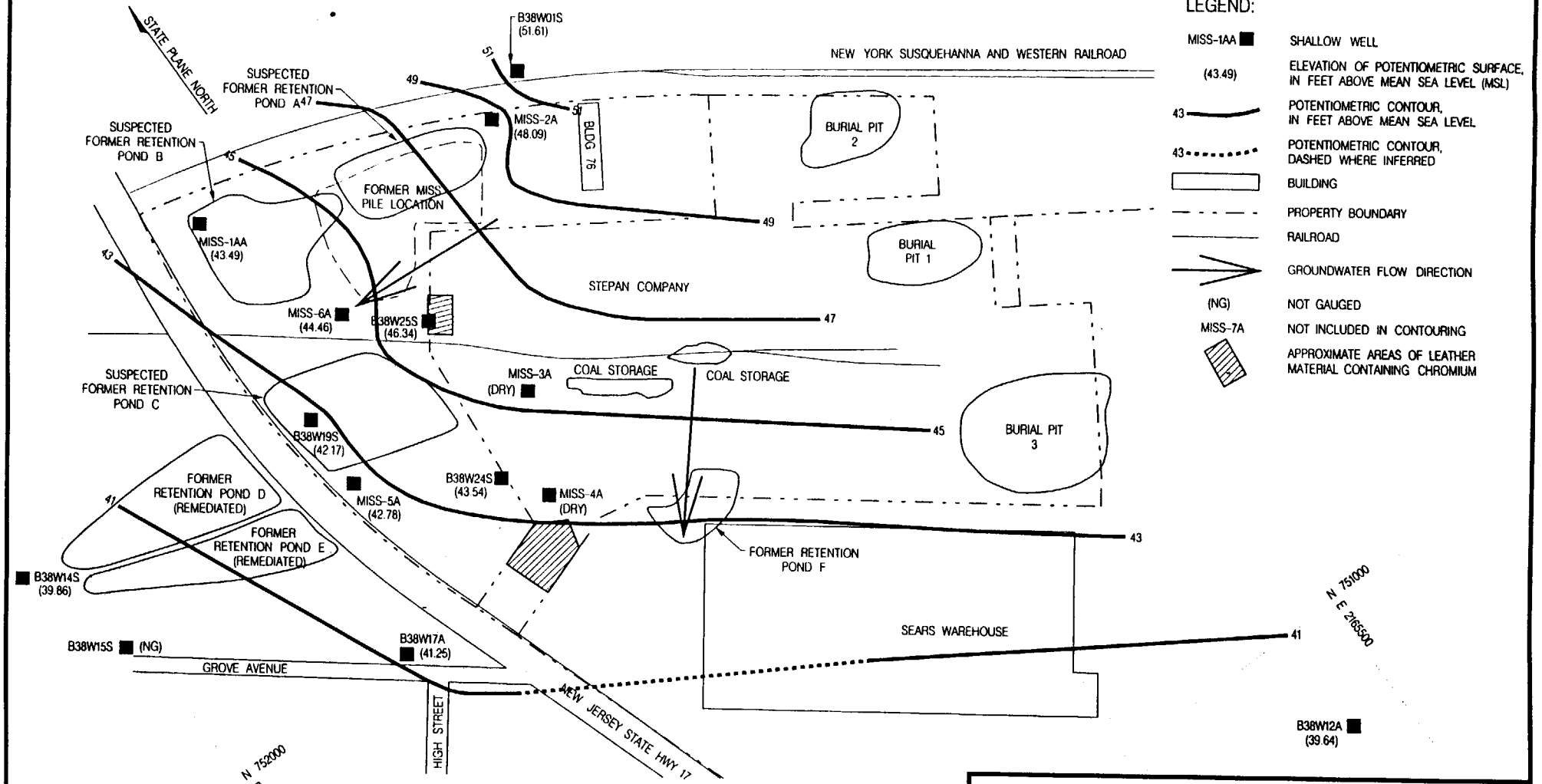
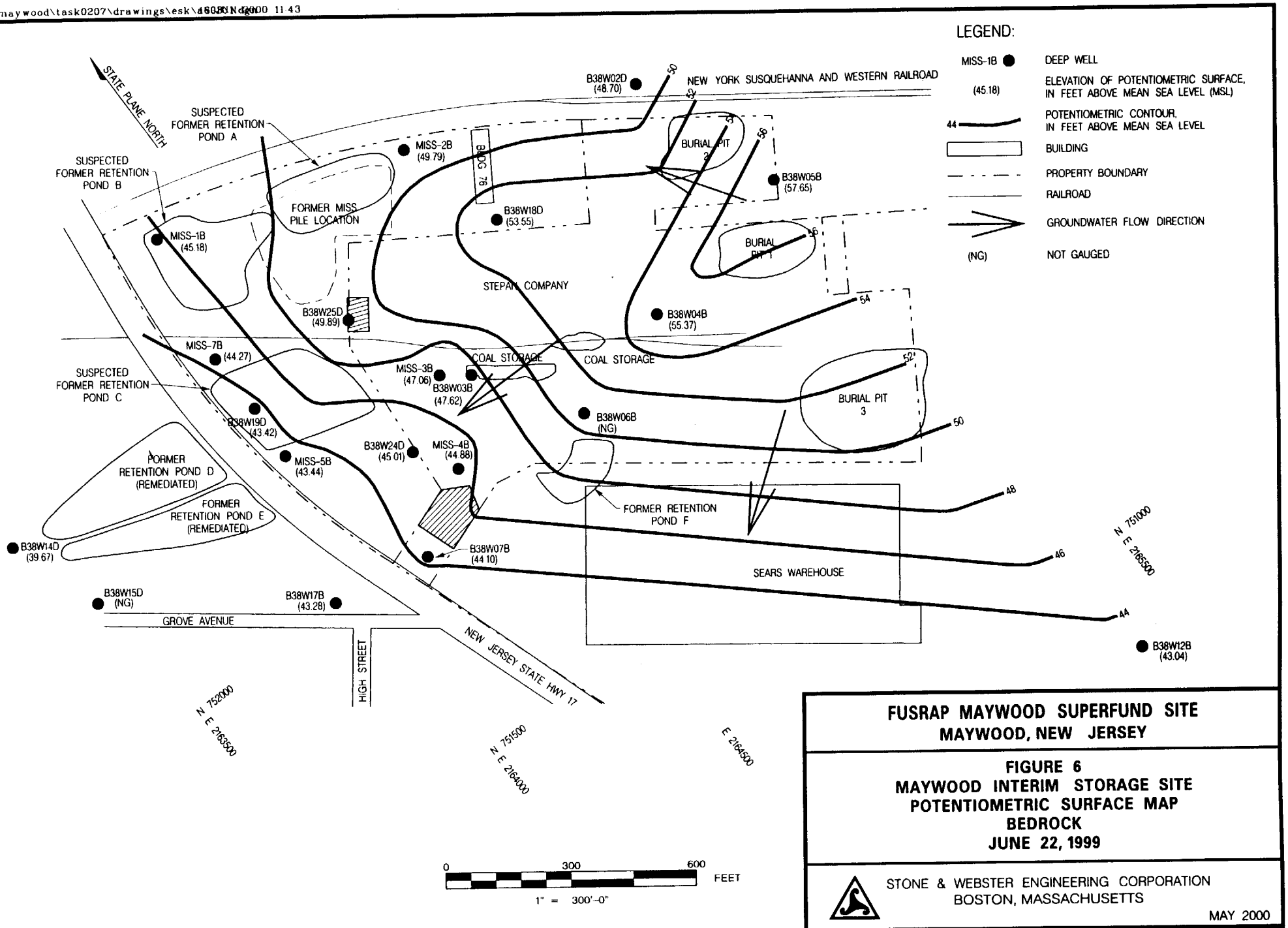


FUSRAP MAYWOOD SUPERFUND SITE
MAYWOOD, NEW JERSEY

FIGURE 5
MAYWOOD INTERIM STORAGE SITE
POTENTIOMETRIC SURFACE MAP
UNCONSOLIDATED SEDIMENTS
AUGUST 10, 1999

STONE & WEBSTER ENGINEERING CORPORATION
BOSTON, MASSACHUSETTS

MAY 2000

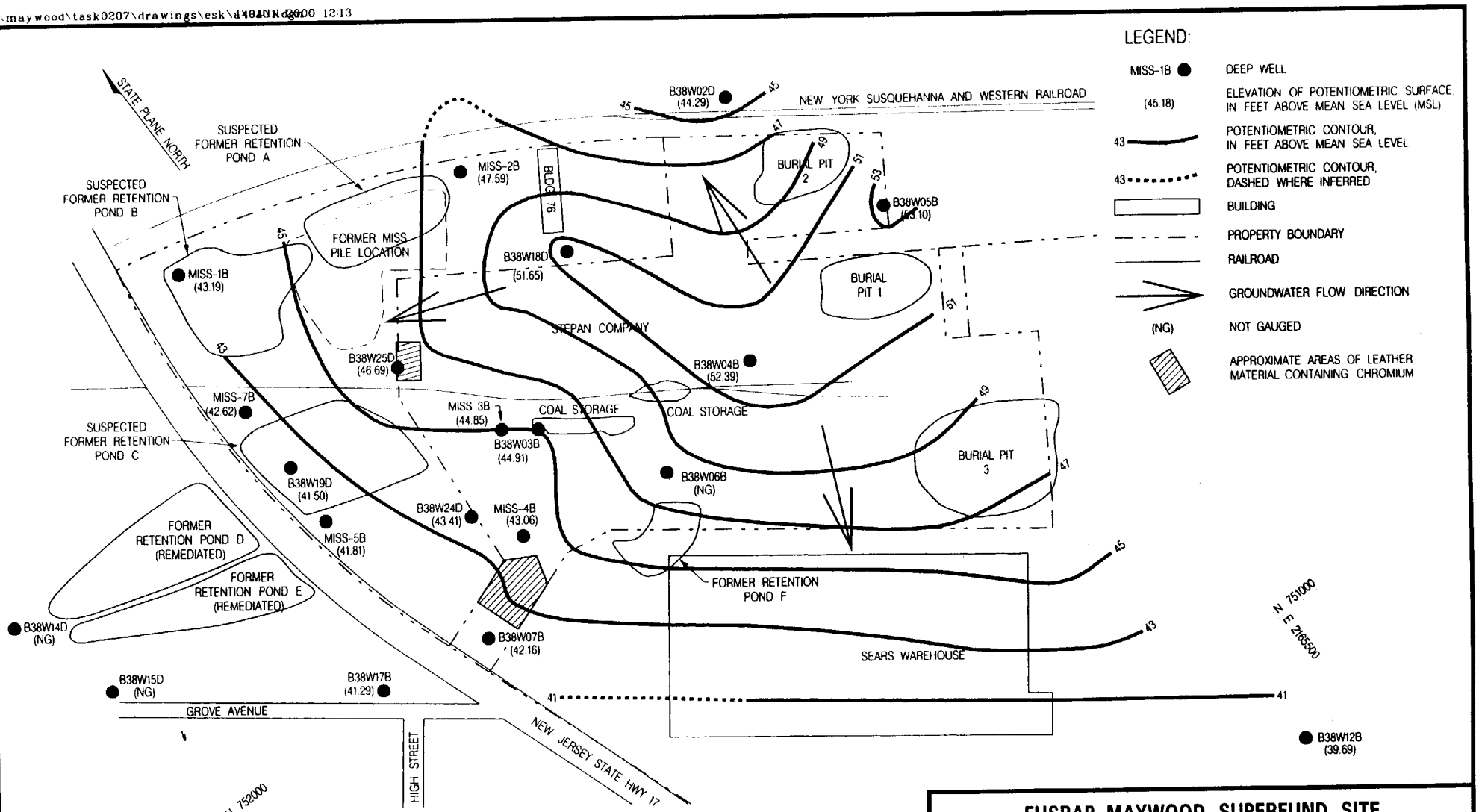


FUSRAP MAYWOOD SUPERFUND SITE
MAYWOOD, NEW JERSEY

FIGURE 6
MAYWOOD INTERIM STORAGE SITE
POTENTIOMETRIC SURFACE MAP
BEDROCK
JUNE 22, 1999

STONE & WEBSTER ENGINEERING CORPORATION
BOSTON, MASSACHUSETTS

MAY 2000



FUSRAP MAYWOOD SUPERFUND SITE
MAYWOOD, NEW JERSEY

FIGURE 7
MAYWOOD INTERIM STORAGE SITE
POTENTIOMETRIC SURFACE MAP
BEDROCK
AUGUST 10, 1999

STONE & WEBSTER ENGINEERING CORPORATION
BOSTON, MASSACHUSETTS

MAY 2000

TABLE A-1
Historical Results for Radioactive Parameters in Sediment at MISS

STATION	DATE	ANALYTE	RESULT (pCi/g)	RESULT (ug/g)	QUALIFIER	DETECTION LIMIT(pCi/g)
SWSD002	04/10/92	Radium-226	0.55		J	0.00
SWSD002	10/26/92	Radium-226	0.25			0.18
SWSD002	04/21/93	Radium-226	0.44			0.27
SWSD002	10/07/93	Radium-226	0.57		J	0.28
SWSD002	05/30/94	Radium-226	0.47			0.23
SWSD002	05/08/95	Radium-226	0.48			0.09
SWSD002	11/13/95	Radium-226	0.30			0.09
SWSD002	05/08/96	Radium-226	0.41			0.13
SWSD002	10/15/96	Radium-226	0.57			0.11
SWSD002	05/05/97	Radium-226	0.67			0.13
SWSD002	06/02/98	Radium-226	0.31			1.00
SWSD002	11/03/98	Radium-226	0.52			1.00
SWSD002	05/21/99	Radium-226	0.36			0.18
SWSD003	04/10/92	Radium-226	0.52		J	0.00
SWSD003	10/26/92	Radium-226	0.45			0.16
SWSD003	04/21/93	Radium-226	0.35			0.33
SWSD003	10/07/93	Radium-226	0.39		J	0.30
SWSD003	05/30/94	Radium-226	0.46			0.29
SWSD003	05/08/95	Radium-226	0.55			0.08
SWSD003	11/13/95	Radium-226	0.29			0.05
SWSD003	05/08/96	Radium-226	0.52			0.12
SWSD003	10/15/96	Radium-226	0.70			0.10
SWSD003	05/05/97	Radium-226	0.49			0.10
SWSD003	06/02/98	Radium-226	0.28			1.00
SWSD003	11/03/98	Radium-226	0.28			1.00
SWSD003	05/21/99	Radium-226	0.3			0.19
SWSD005	04/10/92	Radium-226	0.51		J	0.00
SWSD005	10/26/92	Radium-226	0.44			0.16
SWSD005	04/21/93	Radium-226	0.35		UJ	0.35
SWSD005	10/07/93	Radium-226	0.00		UJ	0.44
SWSD005	05/30/94	Radium-226	0.76			0.26
SWSD005	05/30/94	Radium-226	0.87		J	0.25
SWSD005	08/31/94	Radium-226	1.30		U	0.11
SWSD005	05/08/95	Radium-226	1.50			0.09
SWSD005	05/08/95	Radium-226	1.70			0.12
SWSD005	11/13/95	Radium-226	1.28			0.16
SWSD005	11/13/95	Radium-226	2.79			0.09
SWSD005	05/08/96	Radium-226	0.50			0.09
SWSD005	10/15/96	Radium-226	0.97			0.07
SWSD005	05/05/97	Radium-226	0.90			0.15
SWSD005	06/02/98	Radium-226	1.26			1.00
SWSD005	11/03/98	Radium-226	1.01			1.00
SWSD005	05/21/99	Radium-226	1.44			0.16
SWSD006	05/30/94	Radium-226	3.10			0.99
SWSD006	08/31/94	Radium-226	2.90			0.14
SWSD006	05/08/95	Radium-226	1.30			0.12
SWSD006	11/13/95	Radium-226	4.45			0.15
SWSD006	05/08/96	Radium-226	0.99			0.09
SWSD006	10/15/96	Radium-226	4.50			0.08
SWSD006	05/05/97	Radium-226	3.50			0.15

TABLE A-1 (continued)
Historical Results for Radioactive Parameters in Sediment at MISS

STATION	DATE	ANALYTE	RESULT (pCi/g)	RESULT (ug/g)	QUALIFIER	DETECTION LIMIT(pCi/g)
SWSD006	06/02/98	Radium-226	4.65			1.00
SWSD006	11/03/98	Radium-226	3.86			1.00
SWSD006	05/21/99	Radium-226	8.04			0.28
SWSD007	08/31/94	Radium-226	0.99		U	0.11
SWSD007	05/08/95	Radium-226	5.40			0.12
SWSD007	11/13/95	Radium-226	3.32			0.12
SWSD007	05/08/96	Radium-226	3.70			0.05
SWSD007	05/08/96	Radium-226	3.29			0.18
SWSD007	10/15/96	Radium-226	5.05			0.14
SWSD007	10/15/96	Radium-226	4.04			0.11
SWSD007	05/05/97	Radium-226	4.25			0.18
SWSD007	05/05/97	Radium-226	5.23			0.20
SWSD007	06/02/98	Radium-226	6.97			1.00
SWSD007	11/03/98	Radium-226	2.22			1.00
SWSD007	05/21/99	Radium-226	1.07			0.12
SWSD002	04/10/92	Radium-228	0.98		J	0.00
SWSD002	10/26/92	Radium-228	0.29		J	0.32
SWSD002	04/21/93	Radium-228	0.44		UJ	0.44
SWSD002	10/07/93	Radium-228	0.00		UJ	0.71
SWSD002	05/30/94	Radium-228	0.81		J	0.41
SWSD002	11/13/95	Radium-228	1.60			0.42
SWSD002	05/08/96	Radium-228	0.60			0.16
SWSD002	10/15/96	Radium-228	0.72			0.13
SWSD002	05/05/97	Radium-228	0.56			0.17
SWSD002	06/02/98	Radium-228	0.55			1.00
SWSD002	11/03/98	Radium-228	0.54			1.00
SWSD002	05/21/99	Radium-228	0.74			0.17
SWSD003	04/10/92	Radium-228	0.74		J	0.00
SWSD003	10/26/92	Radium-228	0.65		J	0.29
SWSD003	04/21/93	Radium-228	0.77			0.31
SWSD003	10/07/93	Radium-228	0.00		UJ	0.61
SWSD003	11/13/95	Radium-228	0.90			0.50
SWSD003	05/08/96	Radium-228	0.40		U	0.11
SWSD003	10/15/96	Radium-228	0.43			0.14
SWSD003	05/05/97	Radium-228	0.45			0.14
SWSD003	06/02/98	Radium-228	0.4			1.00
SWSD003	11/03/98	Radium-228	0.65			1.00
SWSD003	05/21/99	Radium-228	0.35			0.19
SWSD005	04/10/92	Radium-228	0.73		J	0.00
SWSD005	10/26/92	Radium-228	0.47		J	0.29
SWSD005	04/21/93	Radium-228	0.69			0.24
SWSD005	10/07/93	Radium-228	0.00		UJ	0.76
SWSD005	05/30/94	Radium-228	3.00		J	0.44
SWSD005	05/30/94	Radium-228	3.60		J	0.46
SWSD005	11/13/95	Radium-228	1.60			0.58
SWSD005	11/13/95	Radium-228	13.60			0.69
SWSD005	05/08/96	Radium-228	0.90			0.13
SWSD005	10/15/96	Radium-228	3.34			0.11
SWSD005	05/05/97	Radium-228	2.84			0.16
SWSD005	06/02/98	Radium-228	2.32			1.00
SWSD005	11/03/98	Radium-228	4.41			1.00
SWSD005	05/21/99	Radium-228	3.13			0.19

TABLE A-1 (continued)
Historical Results for Radioactive Parameters in Sediment at MISS

STATION	DATE	ANALYTE	RESULT (pCi/g) (ug/g)	QUALIFIER	DETECTION LIMIT(pCi/g)
SWSD006	05/30/94	Radium-228	19.60	J	1.70
SWSD006	11/13/95	Radium-228	9.60		0.53
SWSD006	05/08/96	Radium-228	5.15		0.16
SWSD006	10/15/96	Radium-228	20.33		0.30
SWSD006	05/05/97	Radium-228	17.33		0.13
SWSD006	06/02/98	Radium-228	16.22	J	1.00
SWSD006	11/03/98	Radium-228	17.74		1.00
SWSD006	05/21/99	Radium-228	7.67		0.26
SWSD007	11/13/95	Radium-228	11.70		0.56
SWSD007	05/08/96	Radium-228	14.22		0.12
SWSD007	05/08/96	Radium-228	8.16		0.10
SWSD007	10/15/96	Radium-228	22.41		0.29
SWSD007	10/15/96	Radium-228	16.79		0.25
SWSD007	05/05/97	Radium-228	8.75		0.17
SWSD007	05/05/97	Radium-228	8.78		0.18
SWSD007	06/02/98	Radium-228	16.46	J	1.00
SWSD007	11/03/98	Radium-228	8.49		1.00
SWSD007	05/21/99	Radium-228	1.79		0.17
SWSD002	05/08/96	Thorium-230	1.11	U	0.09
SWSD002	10/15/96	Thorium-230	0.67		0.05
SWSD002	05/05/97	Thorium-230	0.80	U	0.12
SWSD002	06/02/98	Thorium-230	0.52	U	1.00
SWSD002	11/03/98	Thorium-230	0.91		1.00
SWSD002	05/21/99	Thorium-230	0.55	U	0.17
SWSD003	05/08/96	Thorium-230	1.33	U	0.15
SWSD003	10/15/96	Thorium-230	0.47		0.06
SWSD003	05/05/97	Thorium-230	0.66	U	0.09
SWSD003	06/02/98	Thorium-230	0.52	U	1.00
SWSD003	11/03/98	Thorium-230	0.64		1.00
SWSD003	05/21/99	Thorium-230	0.96		0.15
SWSD005	05/08/96	Thorium-230	0.97	U	0.08
SWSD005	10/15/96	Thorium-230	1.33		0.06
SWSD005	05/05/97	Thorium-230	2.08		0.16
SWSD005	06/02/98	Thorium-230	0.7	U	1.00
SWSD005	11/03/98	Thorium-230	1.42		1.00
SWSD005	05/21/99	Thorium-230	1.81		0.10
SWSD006	05/08/96	Thorium-230	1.48	U	0.12
SWSD006	10/15/96	Thorium-230	4.72		0.11
SWSD006	05/05/97	Thorium-230	3.54		0.05
SWSD006	06/02/98	Thorium-230	3.28	J	1.00
SWSD006	11/03/98	Thorium-230	4.29		1.00
SWSD006	05/21/99	Thorium-230	1.62		0.22
SWSD007	05/08/96	Thorium-230	3.19		0.09
SWSD007	05/08/96	Thorium-230	1.81		0.05
SWSD007	10/15/96	Thorium-230	4.52		0.18
SWSD007	10/15/96	Thorium-230	3.31		0.14
SWSD007	05/05/97	Thorium-230	2.64		0.16
SWSD007	05/05/97	Thorium-230	2.09		0.09
SWSD007	06/02/98	Thorium-230	3.37	J	1.00
SWSD007	11/03/98	Thorium-230	2.42		1.00
SWSD007	05/21/99	Thorium-230	1.18		0.13
SWSD002	04/10/92	Thorium-232	0.80		0.00
SWSD002	10/26/92	Thorium-232	0.42		0.25
SWSD002	04/21/93	Thorium-232	0.70		0.20

TABLE A-1 (continued)
Historical Results for Radioactive Parameters in Sediment at MISS

STATION	DATE	ANALYTE	RESULT (pCi/g)	(ug/g)	QUALIFIER	DETECTION LIMIT(pCi/g)
SWSD002	10/07/93	Thorium-232	0.59			0.40
SWSD002	05/30/94	Thorium-232	0.71			0.36
SWSD002	05/08/95	Thorium-232	0.50			0.08
SWSD002	11/13/95	Thorium-232	0.39		U	0.05
SWSD002	05/08/96	Thorium-232	0.44			0.15
SWSD002	10/15/96	Thorium-232	0.62			0.08
SWSD002	05/05/97	Thorium-232	0.33			0.06
SWSD002	06/02/98	Thorium-232	0.33			1.00
SWSD002	11/03/98	Thorium-232	0.5		U	1.00
SWSD002	05/21/99	Thorium-232	0.39		U	0.12
SWSD003	04/10/92	Thorium-232	0.85		J	0.00
SWSD003	10/26/92	Thorium-232	0.65			0.23
SWSD003	04/21/93	Thorium-232	0.66			0.24
SWSD003	10/07/93	Thorium-232	0.00		UJ	0.49
SWSD003	05/30/94	Thorium-232	0.65		UJ	0.65
SWSD003	05/08/95	Thorium-232	0.56			0.10
SWSD003	11/13/95	Thorium-232	0.32		U	0.04
SWSD003	05/08/96	Thorium-232	0.57			0.11
SWSD003	10/15/96	Thorium-232	0.30			0.06
SWSD003	05/05/97	Thorium-232	0.37			0.10
SWSD003	06/02/98	Thorium-232	0.39			1.00
SWSD003	11/03/98	Thorium-232	0.57		U	1.00
SWSD003	05/21/99	Thorium-232	0.48		U	0.11
SWSD005	04/10/92	Thorium-232	0.76		J	0.00
SWSD005	10/26/92	Thorium-232	0.55			0.23
SWSD005	04/21/93	Thorium-232	0.65			0.19
SWSD005	10/07/93	Thorium-232	0.00		UJ	0.60
SWSD005	05/30/94	Thorium-232	3.20		J	0.38
SWSD005	05/30/94	Thorium-232	3.60			0.39
SWSD005	08/31/94	Thorium-232	1.00			0.05
SWSD005	05/08/95	Thorium-232	2.40			0.08
SWSD005	05/08/95	Thorium-232	2.20			0.05
SWSD005	11/13/95	Thorium-232	2.53			0.06
SWSD005	11/13/95	Thorium-232	12.62			0.10
SWSD005	05/08/96	Thorium-232	0.92			0.10
SWSD005	10/15/96	Thorium-232	3.18			0.11
SWSD005	05/05/97	Thorium-232	2.94			0.13
SWSD005	06/02/98	Thorium-232	2.33			1.00
SWSD005	11/03/98	Thorium-232	4			1.00
SWSD005	05/21/99	Thorium-232	3.56			0.15
SWSD006	05/30/94	Thorium-232	20.90			1.50
SWSD006	08/31/94	Thorium-232	16.80			0.04
SWSD006	05/08/95	Thorium-232	2.50			0.04
SWSD006	11/13/95	Thorium-232	11.47			0.04
SWSD006	05/08/96	Thorium-232	4.93			0.13
SWSD006	10/15/96	Thorium-232	21.66			0.11
SWSD006	05/05/97	Thorium-232	17.34			0.09
SWSD006	06/02/98	Thorium-232	15.78		J	1.00
SWSD006	11/03/98	Thorium-232	17.97			1.00
SWSD006	05/21/99	Thorium-232	8.13			0.15
SWSD007	08/31/94	Thorium-232	1.10			0.10

TABLE A-1 (continued)
Historical Results for Radioactive Parameters in Sediment at MISS

STATION	DATE	ANALYTE	RESULT (pCi/g)	RESULT (ug/g)	QUALIFIER	DETECTION LIMIT(pCi/g)
SWSD007	05/08/95	Thorium-232	14.60			0.07
SWSD007	11/13/95	Thorium-232	9.49			0.04
SWSD007	05/08/96	Thorium-232	14.75			0.05
SWSD007	05/08/96	Thorium-232	7.63			0.08
SWSD007	10/15/96	Thorium-232	18.47			0.14
SWSD007	10/15/96	Thorium-232	22.50			0.21
SWSD007	05/05/97	Thorium-232	7.39			0.07
SWSD007	05/05/97	Thorium-232	8.54			0.07
SWSD007	06/02/98	Thorium-232	17.08		J	1.00
SWSD007	11/03/98	Thorium-232	8.76			1.00
SWSD007	05/21/99	Thorium-232	1.9			0.11

STATION	DATE	ANALYTE	RESULT (pCi/g)	RESULT (ug/g)	QUALIFIER	DETECTION LIMIT(ug/g)
SWSD002	04/10/92	Total Uranium	2.90	4.29		0.00
SWSD002	10/26/92	Total Uranium	1.42	2.10		0.10
SWSD002	04/21/93	Total Uranium	1.62	2.40	J	0.10
SWSD002	10/07/93	Total Uranium	0.88	1.30	U	0.10
SWSD002	05/30/94	Total Uranium	0.88	1.30		0.10
SWSD002	05/08/95	Total Uranium	0.74	1.10	U	0.10
SWSD002	11/13/95	Total Uranium	1.10	1.62	U	0.10
SWSD002	05/08/96	Total Uranium	1.16	1.72		0.10
SWSD002	10/15/96	Total Uranium	1.20	1.77	U	0.10
SWSD002	05/05/97	Total Uranium	0.93	1.38		0.10
SWSD002	06/02/98	Total Uranium	1.23	1.91		1.00
SWSD002	11/03/98	Total Uranium	2.01	3.12	U	1.00
SWSD002	05/21/99	Total Uranium	1.27	1.87		0.10
SWSD003	04/10/92	Total Uranium	2.72	4.02		0.00
SWSD003	10/26/92	Total Uranium	2.10	3.10		0.10
SWSD003	04/21/93	Total Uranium	2.57	3.80	J	0.10
SWSD003	10/07/93	Total Uranium	0.81	1.20	U	0.10
SWSD003	05/30/94	Total Uranium	0.68	1.00	U	0.10
SWSD003	05/08/95	Total Uranium	1.29	1.90	U	0.10
SWSD003	11/13/95	Total Uranium	1.27	1.88	U	0.10
SWSD003	05/08/96	Total Uranium	1.02	1.50	U	0.10
SWSD003	10/15/96	Total Uranium	1.16	1.72	U	0.10
SWSD003	05/05/97	Total Uranium	1.06	1.56		0.10
SWSD003	06/02/98	Total Uranium	1.11	1.72		1.00
SWSD003	11/03/98	Total Uranium	2.13	3.3	U	1.00
SWSD003	05/21/99	Total Uranium	1.19	1.76		0.10
SWSD005	04/10/92	Total Uranium	2.94	4.34		0.00
SWSD005	10/26/92	Total Uranium	2.30	3.40		0.10
SWSD005	04/21/93	Total Uranium	2.71	4.00	J	0.10
SWSD005	10/07/93	Total Uranium	0.74	1.10	U	0.10
SWSD005	05/30/94	Total Uranium	1.42	2.10		0.10
SWSD005	05/30/94	Total Uranium	1.56	2.30		0.10
SWSD005	08/31/94	Total Uranium	1.49	2.20	U	0.10
SWSD005	05/08/95	Total Uranium	1.42	2.10	U	0.10
SWSD005	05/08/95	Total Uranium	1.22	1.80	U	0.10
SWSD005	11/13/95	Total Uranium	1.66	2.45	U	0.10
SWSD005	11/13/95	Total Uranium	3.22	4.76		0.10
SWSD005	05/08/96	Total Uranium	1.21	1.79		0.10
SWSD005	10/15/96	Total Uranium	1.79	2.64		0.10

TABLE A-1 (continued)
Historical Results for Radioactive Parameters in Sediment at MISS

STATION	DATE	ANALYTE	RESULT (pCi/g)	RESULT (ug/g)	QUALIFIER	DETECTION LIMIT(ug/g)
SWSD005	05/05/97	Total Uranium	1.20	1.77		0.10
SWSD005	06/02/98	Total Uranium	1.24	1.92		1.00
SWSD005	11/03/98	Total Uranium	3.97	6.17		1.00
SWSD005	05/21/99	Total Uranium	1.18	1.75		0.10
SWSD006	05/30/94	Total Uranium	7.04	10.40		0.10
SWSD006	08/31/94	Total Uranium	9.27	13.70		0.10
SWSD006	05/08/95	Total Uranium	1.35	2.00	U	0.10
SWSD006	11/13/95	Total Uranium	7.18	10.61		0.10
SWSD006	05/08/96	Total Uranium	2.86	4.22		0.10
SWSD006	10/15/96	Total Uranium	8.86	13.09		0.10
SWSD006	05/05/97	Total Uranium	7.39	10.91		0.10
SWSD006	06/02/98	Total Uranium	8.06	12.51		1.00
SWSD006	11/03/98	Total Uranium	10.05	15.61		1.00
SWSD006	05/21/99	Total Uranium	12.41	18.33		0.10
SWSD007	08/31/94	Total Uranium	2.03	3.00	U	0.10
SWSD007	05/08/95	Total Uranium	6.16	9.10		0.10
SWSD007	11/13/95	Total Uranium	6.11	9.03		0.10
SWSD007	05/08/96	Total Uranium	5.84	8.62		0.10
SWSD007	05/08/96	Total Uranium	3.97	5.86		0.10
SWSD007	10/15/96	Total Uranium	8.88	13.12		0.10
SWSD007	10/15/96	Total Uranium	8.77	12.96		0.10
SWSD007	05/05/97	Total Uranium	5.29	7.82		0.10
SWSD007	05/05/97	Total Uranium	5.04	7.44		0.10
SWSD007	06/02/98	Total Uranium	5.13	8.02		1.00
SWSD007	11/03/98	Total Uranium	5.15	7.99		1.00
SWSD007	05/21/99	Total Uranium	2.00	3.00		0.10

TABLE A-2
Historical Results for Radioactive Parameters in Groundwater at MISS

STATION_ID	DATE	ANALYTE NAME	RESULT	REV Q	ERROR	SQL	UNITS
B38W19D	23-JUL-93	RADIUM-226	0.04	UJ	0.08	0.21	PCI/L
B38W19D	16-May-94	RADIUM-226	1.3	U	0.37	0.15	PCI/L
B38W19D	10-MAY-95	RADIUM-226	0.09	UJ	0.1	0.16	PCI/L
B38W19D	16-MAY-96	RADIUM-226	0.19		0.12	0.14	PCI/L
B38W19D	16-MAY-97	RADIUM-226	0.29		0.16	0.16	PCI/L
B38W19D	17-JUN-98	RADIUM-226	0.15	UJ	0.2	0.41	PCI/L
B38W19D	27-May-99	RADIUM-226	0.33	UJ	0.26	0.38	PCI/L
B38W19S	27-MAY-94	RADIUM-226	0.78		0.28	0.11	PCI/L
B38W19S	17-MAY-95	RADIUM-226	0.11		0.09	0.05	PCI/L
B38W19S	10-MAY-96	RADIUM-226	0.11		0.09	0.09	PCI/L
B38W19S	29-JUN-98	RADIUM-226	0.32	UJ	0.24	0.34	PCI/L
B38W19S	14-May-99	RADIUM-226	0.35	UJ	0.3	0.4	PCI/L
B38W25S	03-AUG-93	RADIUM-226	0.34		0.22	0.09	PCI/L
B38W25S	24-MAY-94	RADIUM-226	0.37		0.19	0.13	PCI/L
B38W25S	15-MAY-95	RADIUM-226	0.16		0.12	0.09	PCI/L
B38W25S	15-MAY-96	RADIUM-226	0.26	UJ	0	0.26	PCI/L
B38W25S	05-JUN-97	RADIUM-226	0.13	UJ	0.1	0.14	PCI/L
B38W25S	01-JUL-98	RADIUM-226	0.13	UJ	0.17	0.34	PCI/L
B38W25S	17-May-99	RADIUM-226	0.08	UJ	0.13	0.27	PCI/L
MISS02B	20-JUL-93	RADIUM-226	0.05	UJ	0.1	0.29	PCI/L
MISS02B	13-MAY-94	RADIUM-226	2	U	0.46	0.14	PCI/L
MISS02B	09-MAY-95	RADIUM-226	0.1		0.09	0.06	PCI/L
MISS02B	14-MAY-96	RADIUM-226	0.11	UJ	0.11	0.2	PCI/L
MISS02B	19-MAY-97	RADIUM-226	0.28		0.16	0.12	PCI/L
MISS02B	10-JUN-98	RADIUM-226	0.35		0.24	0.3	PCI/L
MISS02B	18-May-99	RADIUM-226	0.46		0.31	0.42	PCI/L
MISS05A	27-MAY-94	RADIUM-226	1.33		0.54	0.14	PCI/L
MISS05A	12-MAY-95	RADIUM-226	0.2	UJ	0.18	0.22	PCI/L
MISS05A	10-MAY-96	RADIUM-226	0.04	UJ	0.06	0.16	PCI/L
MISS05A	02-JUN-97	RADIUM-226	0.52		0.27	0.27	PCI/L
MISS05A	29-JUN-98	RADIUM-226	0.23	UJ	0.24	0.42	PCI/L
MISS05A	14-May-99	RADIUM-226	0.68		0.48	0.64	PCI/L
B38W19D	16-MAY-96	RADIUM-228	0.04	UJ	0.08	0.24	PCI/L
B38W19D	16-MAY-97	RADIUM-228	0.08	UJ	0.12	0.22	PCI/L
B38W19D	17-JUN-98	RADIUM-228	0.04	UJ	0.18	0.46	PCI/L
B38W19D	27-May-99	RADIUM-228	0.13	UJ	0.39	0.91	PCI/L
B38W19S	10-MAY-96	RADIUM-228	0.11	UJ	0.15	0.31	PCI/L
B38W19S	29-JUN-98	RADIUM-228	0.26	UJ	0.27	0.41	PCI/L
B38W19S	14-May-99	RADIUM-228	0.48	UJ	0.15	0.48	PCI/L
B38W25S	15-MAY-96	RADIUM-228	0.21		0.19	0.19	PCI/L
B38W25S	05-JUN-97	RADIUM-228	0.13	UJ	0.15	0.26	PCI/L
B38W25S	01-JUL-98	RADIUM-228	0.3	UJ	0.31	0.48	PCI/L
B38W25S	17-May-99	RADIUM-228	0.12	UJ	0.22	0.44	PCI/L
MISS02B	14-MAY-96	RADIUM-228	0.09	UJ	0.12	0.39	PCI/L
MISS02B	19-MAY-97	RADIUM-228	0.05	UJ	0.14	0.34	PCI/L
MISS02B	10-JUN-98	RADIUM-228	0.01	UJ	0.12	0.37	PCI/L
MISS02B	18-May-99	RADIUM-228	0.02	UJ	0.17	0.48	PCI/L
MISS05A	10-MAY-96	RADIUM-228	0.14	UJ	0.21	0.46	PCI/L
MISS05A	02-JUN-97	RADIUM-228	0.67		0.44	0.51	PCI/L
MISS05A	29-JUN-98	RADIUM-228	0.55		0.42	0.53	PCI/L
MISS05A	14-May-99	RADIUM-228	0.16	UJ	0.31	0.66	PCI/L

TABLE A-2
Historical Results for Radioactive Parameters in Groundwater at MISS

STATION_ID	DATE	ANALYTE NAME	RESULT	REV Q	ERROR	SQL	UNITS
B38W19D	16-MAY-96	THORIUM-228	0.04	UJ	0.08	0.24	PCI/L
B38W19D	16-MAY-97	THORIUM-228	0.08	UJ	0.12	0.22	PCI/L
B38W19D	17-JUN-98	THORIUM-228	0.04	UJ	0.18	0.46	PCI/L
B38W19D	17-May-99	THORIUM-228	0.13	U	0.39	0.91	PCI/L
B38W19S	10-MAY-96	THORIUM-228	0.11	UJ	0.15	0.31	PCI/L
B38W19S	29-JUN-98	THORIUM-228	0.26	UJ	0.27	0.41	PCI/L
B38W19S	14-May-99	THORIUM-228	0.48	U	0.15	0.48	PCI/L
B38W25S	15-MAY-96	THORIUM-228	0.21		0.19	0.19	PCI/L
B38W25S	15-MAY-96	THORIUM-228	0.21	UJ	0.19	0.33	PCI/L
B38W25S	05-JUN-97	THORIUM-228	0.13	UJ	0.15	0.26	PCI/L
B38W25S	01-JUL-98	THORIUM-228	0.3	UJ	0.31	0.48	PCI/L
B38W25S	17-May-99	THORIUM-228	0.12	UJ	0.22	0.44	PCI/L
MISS02B	14-MAY-96	THORIUM-228	0.09	UJ	0.12	0.39	PCI/L
MISS02B	19-MAY-97	THORIUM-228	0.05	UJ	0.14	0.34	PCI/L
MISS02B	10-JUN-98	THORIUM-228	0.01	UJ	0.12	0.37	PCI/L
MISS02B	18-May-99	THORIUM-228	0.02	UJ	0.17	0.48	PCI/L
MISS05A	10-MAY-96	THORIUM-228	0.14	UJ	0.21	0.46	PCI/L
MISS05A	02-JUN-97	THORIUM-228	0.67		0.44	0.51	PCI/L
MISS05A	29-JUN-98	THORIUM-228	0.55		0.42	0.53	PCI/L
MISS05A	14-May-99	THORIUM-228	0.16	UJ	0.31	0.66	PCI/L
B38W19D	10-MAY-95	THORIUM-230	0.37	U	0.23	0.09	PCI/L
B38W19D	16-MAY-96	THORIUM-230	0.24		0.2	0.11	PCI/L
B38W19D	16-MAY-97	THORIUM-230	0.5	U	0.3	0.25	PCI/L
B38W19D	17-JUN-98	THORIUM-230	0.17	UJ	0.24	0.42	PCI/L
B38W19D	27-May-99	THORIUM-230	0.67	UJ	0.57	0.76	PCI/L
B38W19S	17-MAY-95	THORIUM-230	0.35	U	0.25	0.18	PCI/L
B38W19S	10-MAY-96	THORIUM-230	3.4	J	1.03	0.14	PCI/L
B38W19S	29-JUN-98	THORIUM-230	0.17	UJ	0.21	0.34	PCI/L
B38W19S	29-May-99	THORIUM-230	0.07	UJ	0.17	0.4	PCI/L
B38W25S	15-MAY-95	THORIUM-230	0.14	UJ	0.16	0.21	PCI/L
B38W25S	15-MAY-96	THORIUM-230	0.5		0.3	0.19	PCI/L
B38W25S	05-JUN-97	THORIUM-230	0.44	U	0.29	0.26	PCI/L
B38W25S	01-JUL-98	THORIUM-230	0.14	UJ	0.2	0.33	PCI/L
B38W25S	17-May-99	THORIUM-230	0.26	UJ	0.26	0.36	PCI/L
MISS02B	09-MAY-95	THORIUM-230	0.08	UJ	0.12	0.19	PCI/L
MISS02B	14-MAY-96	THORIUM-230	0.38		0.26	0.19	PCI/L
MISS02B	19-MAY-97	THORIUM-230	0.81	U	0.4	0.21	PCI/L
MISS02B	10-JUN-98	THORIUM-230	0.18	UJ	0.22	0.32	PCI/L
MISS02B	18-May-99	THORIUM-230	0.59		0.4	0.43	PCI/L
MISS05A	12-MAY-95	THORIUM-230	0.43	U	0.28	0.22	PCI/L
MISS05A	10-MAY-96	THORIUM-230	1.7	J	0.77	0.33	PCI/L
MISS05A	02-JUN-97	THORIUM-230	0.92		0.52	0.43	PCI/L
MISS05A	29-JUN-98	THORIUM-230	0.28	UJ	0.3	0.46	PCI/L
MISS05A	14-May-99	THORIUM-230	0.69		0.48	0.44	PCI/L
MISS07B	11-May-95	THORIUM-230	0.34	U	0.22	0.09	PCI/L
MISS07B	16-May-96	THORIUM-230	0.26	U	0.22	0.26	PCI/L
MISS07B	16-MAY-97	THORIUM-230	0.44	U	0.27	0.22	PCI/L
MISS07B	27-May-99	THORIUM-230	0.39	U	0.88	0.49	PCI/L

TABLE A-2
Historical Results for Radioactive Parameters in Groundwater at MISS

STATION_ID	DATE	ANALYTE NAME	RESULT	REV Q	ERROR	SQL	UNITS
B38W19D	23-JUL-93	THORIUM-232	0.14	UJ	0.29	0.43	PCI/L
B38W19D	16-MAY-94	THORIUM-232	0.04	UJ	0.07	0.1	PCI/L
B38W19D	10-MAY-95	THORIUM-232	0.09	UJ		0.09	PCI/L
B38W19D	16-MAY-96	THORIUM-232	0.19	UJ	0	0.19	PCI/L
B38W19D	16-MAY-97	THORIUM-232	0.29	U	0.22	0.22	PCI/L
B38W19D	17-JUN-98	THORIUM-232	0.15	UJ	0.2	0.31	PCI/L
B38W19D	27-May-99	THORIUM-232	0.22	UJ	0.32	0.54	PCI/L
B38W19S	27-MAY-94	THORIUM-232	0.04	UJ	0.09	0.12	PCI/L
B38W19S	17-MAY-95	THORIUM-232	-0.01	UJ	0.02	0.21	PCI/L
B38W19S	10-MAY-96	THORIUM-232	0.24	UJ	0	0.24	PCI/L
B38W19S	29-JUN-98	THORIUM-232	0.03	UJ	0.11	0.32	PCI/L
B38W19S	14-May-99	THORIUM-232	0.02	UJ	0.1	0.29	PCI/L
B38W25S	03-AUG-93	THORIUM-232	0.24		0.16	0.14	PCI/L
B38W25S	24-MAY-94	THORIUM-232	0.13	UJ	0	0.13	PCI/L
B38W25S	15-MAY-95	THORIUM-232	0.06	UJ	0.11	0.2	PCI/L
B38W25S	15-MAY-96	THORIUM-232	0.08	UJ	0.12	0.19	PCI/L
B38W25S	05-JUN-97	THORIUM-232	0.17	UJ	0.18	0.2	PCI/L
B38W25S	01-JUL-98	THORIUM-232	0.04	UJ	0.11	0.3	PCI/L
B38W25S	17-May-99	THORIUM-232	0.13	UJ	0.18	0.3	PCI/L
MISS02B	20-JUL-93	THORIUM-232	0	UJ	0	0.2	PCI/L
MISS02B	09-MAY-95	THORIUM-232	0.07	UJ	0.12	0.22	PCI/L
MISS02B	14-MAY-96	THORIUM-232	0.25	UJ	0	0.25	PCI/L
MISS02B	19-MAY-97	THORIUM-232	0.14	UJ	0.16	0.12	PCI/L
MISS02B	10-JUN-98	THORIUM-232	0.05	UJ	0.11	0.14	PCI/L
MISS02B	18-May-99	THORIUM-232	0.04	UJ	0.11	0.3	PCI/L
MISS05A	27-MAY-94	THORIUM-232	0.4	J	0.29	0.21	PCI/L
MISS05A	12-MAY-95	THORIUM-232	0.23		0.2	0.18	PCI/L
MISS05A	10-MAY-96	THORIUM-232	0.21	UJ	0.25	0.19	PCI/L
MISS05A	02-JUN-97	THORIUM-232	0.13	UJ	0.19	0.51	PCI/L
MISS05A	29-JUN-98	THORIUM-232	0.04	UJ	0.17	0.48	PCI/L
MISS05A	14-May-99	THORIUM-232	0.17	UJ	0.26	0.47	PCI/L
B38W19D	23-JUL-93	TOTAL URANIUM	0.36		0.04	0.03	UG/L
B38W19D	16-MAY-94	TOTAL URANIUM	0.35		0.04	0.03	UG/L
B38W19D	10-MAY-95	TOTAL URANIUM	0.29		0.03	0.03	UG/L
B38W19D	16-MAY-96	TOTAL URANIUM	1.27		0.03	0.03	UG/L
B38W19D	16-MAY-97	TOTAL URANIUM	0.3		0.01	0.03	UG/L
B38W19D	17-JUN-98	TOTAL URANIUM	0.03	UJ	0	0.03	UG/L
B38W19D	27-May-99	TOTAL URANIUM	0.26	UJ	0.02	0.03	UG/L
B38W19S	27-MAY-94	TOTAL URANIUM	0.38		0.04	0.03	UG/L
B38W19S	17-MAY-95	TOTAL URANIUM	1.4		0.15	0.03	UG/L
B38W19S	10-MAY-96	TOTAL URANIUM	0.58		0.01	0.03	UG/L
B38W19S	29-JUN-98	TOTAL URANIUM	0.03	UJ	0	0.03	UG/L
B38W19S	14-May-99	TOTAL URANIUM	0.02	UJ	0.01	0.03	UG/L
B38W25S	03-AUG-93	TOTAL URANIUM	0.5		0.05	0.03	UG/L
B38W25S	24-MAY-94	TOTAL URANIUM	0.06		0.01	0.03	UG/L
B38W25S	15-MAY-95	TOTAL URANIUM	0.09		0.01	0.03	UG/L
B38W25S	15-MAY-96	TOTAL URANIUM	0.45		0.01	0.03	UG/L
B38W25S	05-JUN-97	TOTAL URANIUM	0.5		0.01	0.03	UG/L
B38W25S	01-JUL-98	TOTAL URANIUM	0.03	UJ	0	0.03	UG/L
B38W25S	17-May-99	TOTAL URANIUM	0.17	UJ	0.01	0.03	UG/L

TABLE A-2
Historical Results for Radioactive Parameters in Groundwater at MISS

STATION_ID	DATE	ANALYTE NAME	RESULT	REV Q	ERROR	SQL	UNITS
MISS02B	20-JUL-93	TOTAL URANIUM	0.33		0.04	0.03	UG/L
MISS02B	13-MAY-94	TOTAL URANIUM	0.29		0.03	0.03	UG/L
MISS02B	09-MAY-95	TOTAL URANIUM	0.29		0.03	0.03	UG/L
MISS02B	14-MAY-96	TOTAL URANIUM	0.68		0.02	0.03	UG/L
MISS02B	19-MAY-97	TOTAL URANIUM	0.28		0.02	0.03	UG/L
MISS02B	10-JUN-98	TOTAL URANIUM	0.03	UJ	0	0.03	UG/L
MISS02B	18-May-99	TOTAL URANIUM	0.12		0.01	0.03	UG/L
MISS05A	27-MAY-94	TOTAL URANIUM	86.8		10.3	0.03	UG/L
MISS05A	12-MAY-95	TOTAL URANIUM	41.2		4.8	0.03	UG/L
MISS05A	10-MAY-96	TOTAL URANIUM	140		8.6	0.03	UG/L
MISS05A	15-OCT-96	TOTAL URANIUM	139.05		8.95	0.03	UG/L
MISS05A	02-JUN-97	TOTAL URANIUM	96.15		6.03	0.03	UG/L
MISS05A	29-JUN-98	TOTAL URANIUM	181.71		12.18	0.03	UG/L
MISS05A	14-May-99	TOTAL URANIUM	110.46		2.51	0.03	UG/L

TABLE A-3
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
B38W15D	06-JUL-98	REG	ANTIMONY	0.7		
B38W15S	06-JUL-98	REG	ANTIMONY	0.75		
B38W17A	28-JUL-93	REG	ANTIMONY	445	=	
B38W17A	02-JUL-98	REG	ANTIMONY	1		
B38W19S	29-JUN-98	REG	ANTIMONY	0.65		
B38W24D	02-JUL-98	REG	ANTIMONY	0.6		
B38W24S	02-JUL-98	REG	ANTIMONY	0.7		
B38W25D	12-MAY-95	REG	ANTIMONY	2.9	=	
B38W25D	15-MAY-97	REG	ANTIMONY	2		
B38W25D	01-JUL-98	REG	ANTIMONY	0.65		
B38W25S	15-MAY-95	REG	ANTIMONY	1.5	=	
B38W25S	01-JUL-98	REG	ANTIMONY	0.6		
MISS02A	10-MAY-95	REG	ANTIMONY	2.4	=	
MISS02A	15-MAY-97	DUP	ANTIMONY	5.1		
MISS02A	11-JUN-98	DUP	ANTIMONY	3.2		
MISS02A	18-May-99	DUP	ANTIMONY	3.9		
MISS05A	27-MAY-94	REG	ANTIMONY	36.4	=	
MISS05A	12-MAY-95	REG	ANTIMONY	1.8	=	
MISS05A	29-JUN-98	REG	ANTIMONY	1.2		
MISS05A	14-May-99	REG	ANTIMONY	0.7		
MISS06A	24-MAY-94	REG	ANTIMONY	34.9	=	
MISS06A	01-JUL-98	REG	ANTIMONY	1.8		
MISS06A	17-May-99	REG	ANTIMONY	0.81		
MISS07B	18-MAY-94	REG	ANTIMONY	25.7	=	
MISS07B	16-JUN-98	REG	ARSENIC	57.3		
MISS07B	27-May-99	REG	ARSENIC	49.9		J
B38W02D	30-JUN-98	REG	ARSENIC	0.75		
B38W02D	20-May-99	REG	ARSENIC	0.61		
B38W14S	04-AUG-93	REG	ARSENIC	2.1	B	J
B38W14S	04-JUN-97	REG	ARSENIC	4.7		
B38W14S	17-May-99	REG	ARSENIC	0.52		
B38W15D	02-AUG-93	REG	ARSENIC	6.8	B	J
B38W15D	26-MAY-94	REG	ARSENIC	2.6	=	J
B38W15D	13-MAY-96	REG	ARSENIC	5.4	=	
B38W15D	03-JUN-97	REG	ARSENIC	5.7		
B38W15D	06-JUL-98	REG	ARSENIC	7.5		
B38W15S	02-AUG-93	REG	ARSENIC	3.9	B	J
B38W15S	19-MAY-95	REG	ARSENIC	4.9	=	
B38W15S	19-MAY-95	DUP	ARSENIC	4.8	=	
B38W15S	03-JUN-97	REG	ARSENIC	2.6		
B38W15S	06-JUL-98	REG	ARSENIC	3.1		
B38W17A	28-JUL-93	REG	ARSENIC	8.9	B	
B38W17A	02-JUL-98	REG	ARSENIC	2.9		
B38W17B	03-JUN-97	REG	ARSENIC	1.8		
B38W17B	02-JUL-98	REG	ARSENIC	1.3		
B38W17B	13-May-99	REG	ARSENIC	0.76		
B38W18D	21-JUL-93	REG	ARSENIC	2.5	B	
B38W18D	08-JUN-98	REG	ARSENIC	1.7		
B38W18D	20-May-99	REG	ARSENIC	2.3		
B38W19D	23-JUL-93	REG	ARSENIC	93	=	
B38W19D	16-MAY-94	REG	ARSENIC	68.7	=	
B38W19D	10-MAY-95	REG	ARSENIC	48.8	=	J
B38W19D	16-MAY-96	REG	ARSENIC	50.5	=	

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
B38W19D	16-MAY-97	REG	ARSENIC	59.5		
B38W19D	17-JUN-98	REG	ARSENIC	60.8		
B38W19D	27-May-99	REG	ARSENIC	55.1	=	J
B38W19S	27-MAY-94	REG	ARSENIC	8.6	=	
B38W19S	10-MAY-96	REG	ARSENIC	5.4	=	
B38W19S	29-JUN-98	REG	ARSENIC	18.1		
B38W19S	14-May-99	REG	ARSENIC	17.8		
B38W24S	02-JUL-98	REG	ARSENIC	1.8		
B38W25D	15-MAY-97	REG	ARSENIC	2.9		
B38W25D	01-JUL-98	REG	ARSENIC	1.1		
B38W25S	03-AUG-93	REG	ARSENIC	3.9	B	J
B38W25S	15-MAY-95	DUP	ARSENIC	2.5	=	
B38W25S	05-JUN-97	REG	ARSENIC	1.3		
B38W25S	01-JUL-98	REG	ARSENIC	2.8		
B38W25S	17-May-99	REG	ARSENIC	2.3		
MISS01AA	31-JUL-93	REG	ARSENIC	2.8	B	J
MISS01AA	18-MAY-95	REG	ARSENIC	18.7	=	
MISS01AA	23-MAY-97	REG	ARSENIC	4.2		
MISS01AA	18-JUN-98	REG	ARSENIC	5.2		
MISS01AA	12-May-99	REG	ARSENIC	6.5		
MISS01B	21-JUL-93	REG	ARSENIC	3.6	B	
MISS01B	16-MAY-94	REG	ARSENIC	3.6	=	
MISS01B	10-MAY-95	REG	ARSENIC	2.7	=	J
MISS01B	18-JUN-98	REG	ARSENIC	2.1		
MISS01B	25-May-99	REG	ARSENIC	1.1		J
MISS02A	20-JUL-93	REG	ARSENIC	2840	=	
MISS02A	12-MAY-94	REG	ARSENIC	6600	=	J
MISS02A	10-MAY-95	REG	ARSENIC	6000	=	J
MISS02A	16-MAY-96	REG	ARSENIC	6360	=	
MISS02A	15-MAY-97	REG	ARSENIC	5660		
MISS02A	15-MAY-97	DUP	ARSENIC	5580		
MISS02A	11-JUN-98	REG	ARSENIC	4310		
MISS02A	11-JUN-98	DUP	ARSENIC	5150		
MISS02A	18-May-99	DUP	ARSENIC	6350		
MISS05A	27-MAY-94	REG	ARSENIC	3.5	=	
MISS05A	12-MAY-95	REG	ARSENIC	3.8	=	
MISS05A	02-JUN-97	REG	ARSENIC	16.6		
MISS05A	29-JUN-98	REG	ARSENIC	16.4		
MISS05A	14-May-99	REG	ARSENIC	2		
MISS05B	23-JUL-93	REG	ARSENIC	16.6	=	
MISS05B	17-MAY-94	REG	ARSENIC	11.9	=	J
MISS05B	11-MAY-95	REG	ARSENIC	10.9	=	J
MISS05B	16-MAY-96	REG	ARSENIC	10.6	=	
MISS05B	14-MAY-97	REG	ARSENIC	10.1		J
MISS05B	30-JUN-98	REG	ARSENIC	9.9		
MISS06A	03-JUN-97	REG	ARSENIC	3.4		
MISS06A	01-JUL-98	REG	ARSENIC	5.4		
MISS06A	17-May-99	REG	ARSENIC	2.2		
B38W01S	23-MAY-94	REG	BARIUM	17.8	=	
B38W01S	21-MAY-95	REG	BARIUM	13.1	=	
B38W01S	17-MAY-96	REG	BARIUM	14.4	=	
B38W01S	04-JUN-97	REG	BARIUM	16.8		
B38W01S	07-JUL-98	REG	BARIUM	16.3		
B38W02D	27-JUL-93	REG	BARIUM	385	=	

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
B38W02D	19-MAY-94	REG	BARIUM	342	=	
B38W02D	20-MAY-95	REG	BARIUM	298	=	
B38W02D	17-MAY-96	REG	BARIUM	349	=	
B38W02D	04-JUN-97	REG	BARIUM	391		
B38W02D	30-JUN-98	REG	BARIUM	364		
B38W02D	20-May-99	REG	BARIUM	342		
MISS07B	16-JUN-98	REG	BARIUM	28.1		
MISS07B	27-May-99	REG	BARIUM	21.4		
B38W14D	04-AUG-93	REG	BARIUM	106	B	
B38W14D	20-MAY-95	REG	BARIUM	73.6	=	
B38W14D	17-MAY-96	REG	BARIUM	97.3	=	
B38W14D	04-JUN-97	REG	BARIUM	113		
B38W14D	07-JUL-98	REG	BARIUM	111		
B38W14D	07-JUL-98	DUP	BARIUM	113		
B38W14D	17-May-99	DUP	BARIUM	116		
B38W14S	04-AUG-93	REG	BARIUM	106	B	
B38W14S	20-MAY-95	REG	BARIUM	61.6	=	
B38W14S	17-MAY-96	REG	BARIUM	85.2	=	
B38W14S	17-MAY-96	DUP	BARIUM	77.8	=	
B38W14S	04-JUN-97	REG	BARIUM	90		
B38W14S	07-JUL-98	REG	BARIUM	108		
B38W14S	17-May-99	REG	BARIUM	86.6		
B38W15D	02-AUG-93	REG	BARIUM	32.4	B	
B38W15D	26-MAY-94	REG	BARIUM	30.3	=	
B38W15D	19-MAY-95	REG	BARIUM	22.3	=	
B38W15D	13-MAY-96	REG	BARIUM	39.4	=	
B38W15D	03-JUN-97	REG	BARIUM	27.5		
B38W15D	06-JUL-98	REG	BARIUM	22.6		
B38W15S	02-AUG-93	REG	BARIUM	50	B	
B38W15S	26-MAY-94	REG	BARIUM	34	=	
B38W15S	19-MAY-95	REG	BARIUM	50.9	=	
B38W15S	19-MAY-95	DUP	BARIUM	46.1	=	
B38W15S	13-MAY-96	REG	BARIUM	35.7	=	
B38W15S	03-JUN-97	REG	BARIUM	32.2		
B38W15S	06-JUL-98	REG	BARIUM	32.5		
B38W17A	28-JUL-93	REG	BARIUM	299	=	
B38W17A	25-MAY-94	REG	BARIUM	46.9	=	
B38W17A	20-MAY-95	REG	BARIUM	36.4	=	
B38W17A	13-MAY-96	REG	BARIUM	60.3	=	
B38W17A	03-JUN-97	REG	BARIUM	49.3		
B38W17A	02-JUL-98	REG	BARIUM	78.1		
B38W17A	13-May-99	REG	BARIUM	63.1		
B38W17B	29-JUL-93	REG	BARIUM	64.9	B	
B38W17B	25-MAY-94	REG	BARIUM	89.4	=	
B38W17B	20-MAY-95	REG	BARIUM	71.8	=	
B38W17B	13-MAY-96	REG	BARIUM	98.3	=	
B38W17B	03-JUN-97	REG	BARIUM	96.5		
B38W17B	02-JUL-98	REG	BARIUM	71.6		
B38W17B	13-May-99	REG	BARIUM	89.1		
B38W18D	21-JUL-93	REG	BARIUM	13.1	B	
B38W18D	13-MAY-94	REG	BARIUM	14.7	=	
B38W18D	15-MAY-95	REG	BARIUM	22.7	=	
B38W18D	14-MAY-96	REG	BARIUM	22.1	=	

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
B38W18D	09-MAY-97	REG	BARIUM	17.2		
B38W18D	08-JUN-98	REG	BARIUM	18.8		
B38W18D	20-May-99	REG	BARIUM	20.8		
B38W19D	16-MAY-94	REG	BARIUM	30.8	=	
B38W19D	10-MAY-95	REG	BARIUM	22.4	=	
B38W19D	16-MAY-96	REG	BARIUM	29.7	=	
B38W19D	16-MAY-97	REG	BARIUM	29.5		
B38W19D	17-JUN-98	REG	BARIUM	32.4		
B38W19D	23-JUL-93	REG	BARIUM	23.9	B	
B38W19D	23-May-99	REG	BARIUM	31		
B38W19S	27-MAY-94	REG	BARIUM	50.2	=	
B38W19S	17-MAY-95	REG	BARIUM	47.5	=	
B38W19S	10-MAY-96	REG	BARIUM	43.1	=	
B38W19S	29-JUN-98	REG	BARIUM	42.7		
B38W19S	14-May-99	REG	BARIUM	43.2		
B38W24D	09-AUG-93	REG	BARIUM	49.6	B	
B38W24D	18-May-94	REG	BARIUM	41.2	=	
B38W24D	17-MAY-95	REG	BARIUM	24.6	=	
B38W24D	09-MAY-96	REG	BARIUM	56.2	=	
B38W24D	02-JUN-97	REG	BARIUM	50.6		
B38W24D	02-JUL-98	REG	BARIUM	96.5		
B38W24D	13-May-99	REG	BARIUM	45.6		
B38W24S	05-AUG-93	REG	BARIUM	45	B	
B38W24S	25-MAY-94	REG	BARIUM	46	=	
B38W24S	17-MAY-95	REG	BARIUM	45.6	=	
B38W24S	09-MAY-96	REG	BARIUM	39.4	=	
B38W24S	02-JUN-97	REG	BARIUM	43.9		
B38W24S	02-JUL-98	REG	BARIUM	43.3		
B38W24S	02-May-99	DUP	BARIUM	39.1		
B38W25D	03-AUG-93	REG	BARIUM	49	B	
B38W25D	18-May-94	REG	BARIUM	51.7	=	
B38W25D	12-MAY-95	REG	BARIUM	62.7	=	
B38W25D	15-MAY-96	REG	BARIUM	54.5	=	
B38W25D	15-MAY-97	REG	BARIUM	48.3		
B38W25D	01-JUL-98	REG	BARIUM	48.1		
B38W25D	26-May-99	REG	BARIUM	58.4		
B38W25S	03-AUG-93	REG	BARIUM	126	B	
B38W25S	24-MAY-94	REG	BARIUM	50.5	=	
B38W25S	15-MAY-95	REG	BARIUM	68.5	=	
B38W25S	15-MAY-95	DUP	BARIUM	43.1	=	
B38W25S	15-MAY-96	REG	BARIUM	39	=	
B38W25S	15-MAY-96	DUP	BARIUM	39.4	=	
B38W25S	05-JUN-97	REG	BARIUM	47		
B38W25S	01-JUL-98	REG	BARIUM	112		
B38W25S	17-May-99	REG	BARIUM	73.6		
MISS01AA	31-JUL-93	REG	BARIUM	159	B	
MISS01AA	23-MAY-94	REG	BARIUM	19.5	=	
MISS01AA	18-MAY-95	REG	BARIUM	10.6	=	
MISS01AA	09-MAY-96	REG	BARIUM	14.4	=	
MISS01AA	23-MAY-97	REG	BARIUM	7		
MISS01AA	18-JUN-98	REG	BARIUM	8.1		
MISS01AA	12-May-99	REG	BARIUM	8.7		
MISS01B	21-JUL-93	REG	BARIUM	72.9	B	
MISS01B	21-JUL-93	REG	BARIUM	69.6	B	
MISS01B	16-MAY-94	REG	BARIUM	82.9	=	

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
MISS01B	10-MAY-95	REG	BARIUM	66.9	=	
MISS01B	15-MAY-96	REG	BARIUM	98.3	=	
MISS01B	18-JUN-98	REG	BARIUM	80		
MISS01B	25-May-99	REG	BARIUM	73.5		
MISS02A	20-JUL-93	REG	BARIUM	10	=	
MISS02A	12-MAY-94	REG	BARIUM	10.1	=	J
MISS02A	10-MAY-95	REG	BARIUM	12	=	
MISS02A	16-MAY-96	REG	BARIUM	9.5	=	
MISS02A	15-MAY-97	DUP	BARIUM	8.4		
MISS02A	11-JUN-98	DUP	BARIUM	6.2		
MISS02A	18-May-99	DUP	BARIUM	21		
MISS02B	20-JUL-93	REG	BARIUM	13.3	=	
MISS02B	13-MAY-94	REG	BARIUM	7.8	=	
MISS02B	09-MAY-95	REG	BARIUM	18.1	=	
MISS02B	14-MAY-96	REG	BARIUM	9.2	=	
MISS02B	19-MAY-97	REG	BARIUM	9		
MISS02B	10-JUN-98	REG	BARIUM	10		
MISS02B	18-May-99	REG	BARIUM	11		
MISS05A	27-MAY-94	REG	BARIUM	28.2	=	
MISS05A	12-MAY-95	REG	BARIUM	37.8	=	
MISS05A	10-MAY-96	REG	BARIUM	32	=	
MISS05A	02-JUN-97	REG	BARIUM	23.1		
MISS05A	29-JUN-98	REG	BARIUM	18.4		
MISS05A	14-May-99	REG	BARIUM	20.3		
MISS05B	23-JUL-93	REG	BARIUM	52.2	B	
MISS05B	17-MAY-94	REG	BARIUM	89.9	=	
MISS05B	11-MAY-95	REG	BARIUM	128	=	
MISS05B	16-MAY-96	REG	BARIUM	38.3	=	
MISS05B	14-MAY-97	REG	BARIUM	37.9		
MISS05B	30-JUN-98	REG	BARIUM	26.3		
MISS06A	04-AUG-93	REG	BARIUM	80.3	B	
MISS06A	24-MAY-94	REG	BARIUM	44.3	=	
MISS06A	16-MAY-95	REG	BARIUM	122	=	
MISS06A	10-MAY-96	REG	BARIUM	39.4	=	
MISS06A	03-JUN-97	REG	BARIUM	57.9		
MISS06A	01-JUL-98	REG	BARIUM	48.1		
MISS06A	17-May-99	REG	BARIUM	48		
B38W01S	28-JUL-93	REG	BERYLLIUM	4	B	
B38W01S	23-MAY-94	REG	BERYLLIUM	1.1	=	
B38W01S	21-MAY-95	REG	BERYLLIUM	3.1	=	
B38W01S	17-MAY-96	REG	BERYLLIUM	2.3	=	
B38W01S	04-JUN-97	REG	BERYLLIUM	2.7		
B38W01S	07-JUL-98	REG	BERYLLIUM	1.9		
B38W02D	04-JUN-97	REG	BERYLLIUM	0.24		
MISS07B	16-JUN-98	REG	BERYLLIUM	0.14		
B38W14D	04-JUN-97	REG	BERYLLIUM	0.2		
B38W14S	04-JUN-97	REG	BERYLLIUM	0.28		
B38W15D	26-MAY-94	REG	BERYLLIUM	0.5	=	
B38W15D	03-JUN-97	REG	BERYLLIUM	0.24		
B38W15S	03-JUN-97	REG	BERYLLIUM	0.2		
B38W17A	28-JUL-93	REG	BERYLLIUM	2.7	B	

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
B38W17A	03-JUN-97	REG	BERYLLIUM	0.2		
B38W17B	03-JUN-97	REG	BERYLLIUM	0.26		
B38W18D	15-MAY-95	REG	BERYLLIUM	1.1	=	
B38W18D	14-MAY-96	REG	BERYLLIUM	0.84	=	
B38W18D	09-MAY-97	REG	BERYLLIUM	0.46		
B38W18D	08-JUN-98	REG	BERYLLIUM	0.86		
B38W18D	20-May-99	DUP	BERYLLIUM	0.99		
B38W24D	02-JUN-97	REG	BERYLLIUM	0.52		
B38W24D	02-JUL-98	REG	BERYLLIUM	0.82		
B38W24D	13-May-99	REG	BERYLLIUM	0.42		
B38W24S	25-MAY-94	REG	BERYLLIUM	1.5	=	
B38W24S	17-MAY-95	REG	BERYLLIUM	0.77	=	
B38W24S	09-MAY-96	REG	BERYLLIUM	2	=	
B38W24S	02-JUN-97	REG	BERYLLIUM	6.3		
B38W24S	02-JUL-98	REG	BERYLLIUM	4.5		
B38W24S	13-May-99	REG	BERYLLIUM	1.1		
B38W25S	03-AUG-93	REG	BERYLLIUM	1.1	B	
B38W25S	05-JUN-97	REG	BERYLLIUM	0.3		
MISS02B	20-JUL-93	REG	BERYLLIUM	1.8	=	
MISS02B	14-MAY-96	REG	BERYLLIUM	0.68	=	
MISS02B	19-MAY-97	REG	BERYLLIUM	0.66		
MISS02B	10-JUN-98	REG	BERYLLIUM	0.74		
MISS02B	18-May-99	REG	BERYLLIUM	0.84		
MISS05A	02-JUN-97	REG	BERYLLIUM	0.48		
MISS05A	29-JUN-98	REG	BERYLLIUM	0.14		
B38W01S	28-JUL-93	REG	BORON	516	=	
B38W01S	23-MAY-94	REG	BORON	496	=	
B38W01S	21-MAY-95	REG	BORON	444	=	
B38W01S	04-JUN-97	REG	BORON	373		
B38W01S	07-JUL-98	REG	BORON	270		
B38W02D	20-MAY-95	REG	BORON	125	=	
B38W02D	04-JUN-97	REG	BORON	23.3		
B38W02D	30-JUN-98	REG	BORON	24.8		
B38W02D	20-May-99	REG	BORON	24.2		
B38W14D	04-AUG-93	REG	BORON	63.9	=	
B38W14D	20-MAY-95	REG	BORON	108	=	
B38W14D	04-JUN-97	REG	BORON	49.8		
B38W14D	07-JUL-98	DUP	BORON	49.8		
B38W14D	17-May-99	REG	BORON	47.5		
B38W14S	04-AUG-93	REG	BORON	68	=	
B38W14S	20-MAY-95	REG	BORON	142	=	
B38W14S	04-JUN-97	REG	BORON	40.6		
B38W14S	07-JUL-98	REG	BORON	39.3		
B38W14S	17-May-99	REG	BORON	38.6		
B38W15D	02-AUG-93	REG	BORON	297	=	
B38W15D	26-MAY-94	REG	BORON	520	=	
B38W15D	19-MAY-95	REG	BORON	338	=	
B38W15D	13-MAY-96	REG	BORON	521	=	
B38W15D	03-JUN-97	REG	BORON	415		
B38W15D	06-JUL-98	REG	BORON	235		
B38W15S	02-AUG-93	REG	BORON	532	=	
B38W15S	26-MAY-94	REG	BORON	425	=	
B38W15S	19-MAY-95	REG	BORON	608	=	

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
B38W15S	19-MAY-95	DUP	BORON	566	=	
B38W15S	13-MAY-96	REG	BORON	432	=	
B38W15S	03-JUN-97	REG	BORON	492		
B38W15S	06-JUL-98	REG	BORON	455		
B38W17A	20-MAY-95	REG	BORON	156	=	
B38W17A	13-MAY-96	REG	BORON	143	=	
B38W17A	03-JUN-97	REG	BORON	72.3		
B38W17A	02-JUL-98	REG	BORON	63.7		
B38W17A	13-May-99	REG	BORON	66.2		
B38W17B	29-JUL-93	REG	BORON	392	=	
B38W17B	25-MAY-94	REG	BORON	355	=	
B38W17B	20-MAY-95	REG	BORON	382	=	
B38W17B	13-MAY-96	REG	BORON	303	=	
B38W17B	03-JUN-97	REG	BORON	365		
B38W17B	02-JUL-98	REG	BORON	289		
B38W17B	13-May-99	REG	BORON	317		
B38W18D	21-JUL-93	REG	BORON	491	=	
B38W18D	13-MAY-94	REG	BORON	449	=	J
B38W18D	15-MAY-95	REG	BORON	425	=	
B38W18D	09-MAY-97	REG	BORON	405		
B38W18D	08-JUN-98	REG	BORON	425		
B38W18D	20-May-99	REG	BORON	366		
B38W19D	23-JUL-93	REG	BORON	2020	=	
B38W19D	16-MAY-94	REG	BORON	1020	=	
B38W19D	10-MAY-95	REG	BORON	885	=	
B38W19D	16-MAY-96	REG	BORON	762	=	J
B38W19D	16-MAY-97	REG	BORON	879		
B38W19D	17-JUN-98	REG	BORON	962		
B38W19D	27-May-99	REG	BORON	1120		
B38W19S	27-MAY-94	REG	BORON	1130	=	
B38W19S	17-MAY-95	REG	BORON	1240	=	
B38W19S	10-MAY-96	REG	BORON	1030	=	
B38W19S	29-JUN-98	REG	BORON	741		
B38W19S	14-May-99	REG	BORON	756		
B38W24D	09-AUG-93	REG	BORON	142	=	
B38W24D	09-MAY-96	REG	BORON	138	=	
B38W24D	02-JUN-97	REG	BORON	90.4		
B38W24D	02-JUL-98	REG	BORON	76.6		
B38W24D	13-May-99	REG	BORON	98.3		
B38W24S	05-AUG-93	REG	BORON	104	=	
B38W24S	17-MAY-95	REG	BORON	132	=	
B38W24S	09-MAY-96	REG	BORON	105	=	
B38W24S	02-JUN-97	REG	BORON	79.3		
B38W24S	02-JUL-98	REG	BORON	82		
B38W24S	13-May-99	REG	BORON	104		
B38W25D	03-AUG-93	REG	BORON	168	=	
B38W25D	18-MAY-94	REG	BORON	172	=	
B38W25D	12-MAY-95	REG	BORON	236	=	J
B38W25D	15-MAY-96	REG	BORON	159	=	
B38W25D	15-MAY-97	REG	BORON	154		
B38W25D	01-JUL-98	REG	BORON	138		
B38W25D	26-May-99	REG	BORON	146		
B38W25S	03-AUG-93	REG	BORON	134	=	
B38W25S	24-MAY-94	REG	BORON	133	=	UJ
B38W25S	15-MAY-95	REG	BORON	227	=	

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
B38W25S	15-MAY-95	DUP	BORON	171	=	
B38W25S	15-MAY-96	REG	BORON	150	=	
B38W25S	15-MAY-96	DUP	BORON	142	=	
B38W25S	05-JUN-97	REG	BORON	126		
B38W25S	01-JUL-98	REG	BORON	98.4		
B38W25S	17-May-99	REG	BORON	79.6		
MISS01AA	31-JUL-93	REG	BORON	189	=	
MISS01AA	23-MAY-94	REG	BORON	204	=	
MISS01AA	18-MAY-95	REG	BORON	222	=	
MISS01AA	09-MAY-96	REG	BORON	178	=	
MISS01AA	23-MAY-97	REG	BORON	234		
MISS01AA	18-JUN-98	REG	BORON	270		
MISS01AA	12-May-99	REG	BORON	278		
MISS01B	21-JUL-93	REG	BORON	106	=	
MISS01B	21-JUL-93	REG	BORON	85.3	=	
MISS01B	15-MAY-96	REG	BORON	94.9	=	
MISS01B	18-JUN-98	REG	BORON	72.1		
MISS01B	25-May-99	REG	BORON	61.6		
MISS02A	20-JUL-93	REG	BORON	1300	=	
MISS02A	12-MAY-94	REG	BORON	897	=	J
MISS02A	10-MAY-95	REG	BORON	1190	=	
MISS02A	16-MAY-96	REG	BORON	878	=	J
MISS02A	15-MAY-97	REG	BORON	1000		
MISS02A	15-MAY-97	DUP	BORON	910		
MISS02A	11-JUN-98	DUP	BORON	818		
MISS02A	18-May-99	REG	BORON	1680		
MISS02B	20-JUL-93	REG	BORON	2150	=	
MISS02B	13-MAY-94	REG	BORON	1260	=	J
MISS02B	09-MAY-95	REG	BORON	1220	=	
MISS02B	14-MAY-96	REG	BORON	1680	=	
MISS02B	19-MAY-97	REG	BORON	1450		
MISS02B	10-JUN-98	REG	BORON	1620		
MISS02B	18-May-99	REG	BORON	1580		
MISS05A	27-MAY-94	REG	BORON	420	=	
MISS05A	12-MAY-95	REG	BORON	588	=	J
MISS05A	10-MAY-96	REG	BORON	385	=	
MISS05A	02-JUN-97	REG	BORON	402		
MISS05A	29-JUN-98	REG	BORON	291		
MISS05A	14-May-99	REG	BORON	352		
MISS05B	17-MAY-94	REG	BORON	747	=	
MISS05B	11-MAY-95	REG	BORON	665	=	J
MISS05B	14-MAY-97	REG	BORON	662		
MISS05B	30-JUN-98	REG	BORON	281		
MISS05B	23-JUL-93	REG	BORON	806	=	
MISS06A	04-AUG-93	REG	BORON	1800	=	
MISS06A	24-MAY-94	REG	BORON	498	=	J
MISS06A	16-MAY-95	REG	BORON	2080	=	
MISS06A	10-MAY-96	REG	BORON	326	=	
MISS06A	03-JUN-97	REG	BORON	482		
MISS06A	01-JUL-98	REG	BORON	327		
MISS06A	17-May-99	REG	BORON	352		
MISS07B	22-JUL-93	REG	BORON	1180	=	
MISS07B	18-MAY-94	REG	BORON	757	=	
MISS07B	11-MAY-95	REG	BORON	1210	=	J

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
MISS07B	16-MAY-96	REG	BORON	963	=	
MISS07B	16-MAY-97	REG	BORON	1050		
MISS07B	16-JUN-98	REG	BORON	1260		
MISS07B	27-MAY-99	REG	BORON	1670		
B38W01S	23-MAY-94	REG	CADMIUM	2.4	=	
B38W01S	04-JUN-97	REG	CADMIUM	0.66		
B38W01S	07-JUL-98	REG	CADMIUM	1.2		
B38W14D	04-AUG-93	REG	CADMIUM	9.7	=	J
B38W14D	04-JUN-97	REG	CADMIUM	1		
B38W14D	07-JUL-98	DUP	CADMIUM	2.4		
B38W14D	07-JUL-98	REG	CADMIUM	2.4		
B38W14S	04-AUG-93	REG	CADMIUM	9.5	=	J
B38W14S	04-JUN-97	REG	CADMIUM	1.3		
B38W14S	07-JUL-98	REG	CADMIUM	11.9		
B38W15D	02-AUG-93	REG	CADMIUM	6.4	=	
B38W15D	06-JUL-98	REG	CADMIUM	0.44		
B38W15S	03-JUN-97	REG	CADMIUM	2.6		
B38W15S	06-JUL-98	REG	CADMIUM	2.2		
B38W17A	02-JUL-98	REG	CADMIUM	0.79		
B38W17B	03-JUN-97	REG	CADMIUM	0.33		
B38W17B	02-JUL-98	REG	CADMIUM	0.36		
B38W19D	16-MAY-97	REG	CADMIUM	0.44		
B38W19D	17-JUN-98	REG	CADMIUM	0.26		
B38W19S	29-JUN-98	REG	CADMIUM	0.54		
B38W24D	02-JUL-98	REG	CADMIUM	2.6		
B38W24S	02-JUL-98	REG	CADMIUM	0.79		
B38W25S	05-JUN-97	REG	CADMIUM	0.4		
B38W25S	01-JUL-98	REG	CADMIUM	1.4		
MISS01AA	31-JUL-93	REG	CADMIUM	7	=	
MISS01AA	23-MAY-97	REG	CADMIUM	1.4		
MISS01AA	18-JUN-98	REG	CADMIUM	0.82		
MISS02A	12-MAY-94	REG	CADMIUM	7.9	=	
MISS02A	15-MAY-97	REG	CADMIUM	0.46		
MISS02A	15-MAY-97	DUP	CADMIUM	0.32		
MISS05A	29-JUN-98	REG	CADMIUM	0.98		
MISS05B	30-JUN-98	REG	CADMIUM	0.48		
MISS06A	24-MAY-94	REG	CADMIUM	4.2	=	UJ
MISS06A	03-JUN-97	REG	CADMIUM	2.6		
MISS06A	01-JUL-98	REG	CADMIUM	2.2		
B38W01S	28-JUL-93	REG	CALCIUM	427000	=	
B38W01S	23-MAY-94	REG	CALCIUM	392000	=	
B38W01S	21-MAY-95	REG	CALCIUM	371000	=	
B38W01S	17-MAY-96	REG	CALCIUM	420000	=	
B38W01S	04-JUN-97	REG	CALCIUM	433000		
B38W01S	07-JUL-98	REG	CALCIUM	404000		
B38W02D	27-JUL-93	REG	CALCIUM	89000	=	

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
B38W02D	19-MAY-94	REG	CALCIUM	77700	=	
B38W02D	20-MAY-95	REG	CALCIUM	73700	=	
B38W02D	17-MAY-96	REG	CALCIUM	87700	=	
B38W02D	04-JUN-97	REG	CALCIUM	88700		
B38W02D	30-JUN-98	REG	CALCIUM	84700		
B38W02D	20-May-99	REG	CALCIUM	95600		
B38W14D	04-AUG-93	REG	CALCIUM	97900	=	J
B38W14D	20-MAY-95	REG	CALCIUM	77400	=	
B38W14D	17-MAY-96	REG	CALCIUM	111000	=	
B38W14D	04-JUN-97	REG	CALCIUM	110000		
B38W14D	07-JUL-98	DUP	CALCIUM	109000		
B38W14D	17-May-99	DUP	CALCIUM	119000		
B38W14S	04-AUG-93	REG	CALCIUM	47800	=	J
B38W14S	20-MAY-95	REG	CALCIUM	70800	=	
B38W14S	17-MAY-96	REG	CALCIUM	99700	=	
B38W14S	17-MAY-96	DUP	CALCIUM	90600	=	
B38W14S	04-JUN-97	REG	CALCIUM	90500		
B38W14S	07-JUL-98	REG	CALCIUM	85200		
B38W14S	17-May-99	REG	CALCIUM	95600		
B38W15D	02-AUG-93	REG	CALCIUM	48600	=	
B38W15D	26-MAY-94	REG	CALCIUM	92800	=	
B38W15D	19-MAY-95	REG	CALCIUM	58700	=	J
B38W15D	13-MAY-96	REG	CALCIUM	98600	=	J
B38W15D	03-JUN-97	REG	CALCIUM	71300		
B38W15D	06-JUL-98	REG	CALCIUM	44400		
B38W15S	02-AUG-93	REG	CALCIUM	75700	=	
B38W15S	26-MAY-94	REG	CALCIUM	55100	=	
B38W15S	19-MAY-95	REG	CALCIUM	80500	=	J
B38W15S	19-MAY-95	DUP	CALCIUM	75100	=	J
B38W15S	13-MAY-96	REG	CALCIUM	52500	=	J
B38W15S	03-JUN-97	REG	CALCIUM	57200		
B38W15S	06-JUL-98	REG	CALCIUM	55400		
B38W17A	28-JUL-93	REG	CALCIUM	133000	=	
B38W17A	25-MAY-94	REG	CALCIUM	75000	=	
B38W17A	20-MAY-95	REG	CALCIUM	57300	=	
B38W17A	13-MAY-96	REG	CALCIUM	93800	=	J
B38W17A	03-JUN-97	REG	CALCIUM	53400		
B38W17A	02-JUL-98	REG	CALCIUM	60800		
B38W17A	17-May-99	DUP	CALCIUM	88300		
B38W17B	29-JUL-93	REG	CALCIUM	219000	=	J
B38W17B	25-MAY-94	REG	CALCIUM	291000	=	
B38W17B	20-MAY-95	REG	CALCIUM	223000	=	
B38W17B	13-MAY-96	REG	CALCIUM	309000	=	J
B38W17B	03-JUN-97	REG	CALCIUM	313000		
B38W17B	02-JUL-98	REG	CALCIUM	235000		
B38W17B	13-May-99	REG	CALCIUM	303000		
B38W18D	21-JUL-93	REG	CALCIUM	151000	=	
B38W18D	13-MAY-94	REG	CALCIUM	164000	=	J
B38W18D	15-MAY-95	REG	CALCIUM	154000	=	
B38W18D	14-MAY-96	REG	CALCIUM	166000	=	
B38W18D	09-MAY-97	REG	CALCIUM	154000		
B38W18D	08-JUN-98	REG	CALCIUM	162000		
B38W18D	20-May-99	REG	CALCIUM	161000		

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
B38W19D	23-JUL-93	REG	CALCIUM	214000	=	
B38W19D	16-MAY-94	REG	CALCIUM	296000	=	
B38W19D	10-MAY-95	REG	CALCIUM	180000	=	
B38W19D	16-MAY-96	REG	CALCIUM	262000	=	
B38W19D	16-MAY-97	REG	CALCIUM	256000		
B38W19D	17-JUN-98	REG	CALCIUM	226000		
B38W19D	17-JUN-98	REG	CALCIUM	209000		
B38W19D	27-May-99	REG	CALCIUM	258000		
B38W19S	27-MAY-94	REG	CALCIUM	629000	=	
B38W19S	17-MAY-95	REG	CALCIUM	657000	=	
B38W19S	10-MAY-96	REG	CALCIUM	611000	=	J
B38W19S	29-JUN-98	REG	CALCIUM	670000		
B38W19S	27-May-99	REG	CALCIUM	654000		
B38W24D	09-AUG-93	REG	CALCIUM	80700	=	J
B38W24D	18-MAY-94	REG	CALCIUM	81300	=	
B38W24D	17-MAY-95	REG	CALCIUM	69700	=	
B38W24D	09-MAY-96	REG	CALCIUM	98300	=	J
B38W24D	02-JUN-97	REG	CALCIUM	83600		
B38W24D	02-JUL-98	REG	CALCIUM	82900		
B38W24D	14-May-99	REG	CALCIUM	98800		
B38W24S	05-AUG-93	REG	CALCIUM	42600	=	J
B38W24S	25-MAY-94	REG	CALCIUM	54000	=	
B38W24S	17-MAY-95	REG	CALCIUM	57000	=	
B38W24S	09-MAY-96	REG	CALCIUM	61300	=	J
B38W24S	02-JUN-97	REG	CALCIUM	43900		
B38W24S	02-JUL-98	REG	CALCIUM	41000		
B38W24S	13-May-99	REG	CALCIUM	67100		
B38W25D	03-AUG-93	REG	CALCIUM	152000	=	
B38W25D	18-MAY-94	REG	CALCIUM	117000	=	
B38W25D	12-MAY-95	REG	CALCIUM	144000	=	
B38W25D	15-MAY-96	REG	CALCIUM	134000	=	J
B38W25D	15-MAY-97	REG	CALCIUM	109000		J
B38W25D	01-JUL-98	REG	CALCIUM	109000		
B38W25D	26-May-99	REG	CALCIUM	109000		
B38W25S	03-AUG-93	REG	CALCIUM	255000	=	
B38W25S	24-MAY-94	REG	CALCIUM	189000	=	J
B38W25S	15-MAY-95	REG	CALCIUM	208000	=	
B38W25S	15-MAY-95	DUP	CALCIUM	199000	=	
B38W25S	15-MAY-96	REG	CALCIUM	162000	=	J
B38W25S	15-MAY-96	DUP	CALCIUM	183000	=	J
B38W25S	05-JUN-97	REG	CALCIUM	169000		
B38W25S	01-JUL-98	REG	CALCIUM	144000		
B38W25S	01-May-99	REG	CALCIUM	185000		
MISS01AA	31-JUL-93	REG	CALCIUM	616000	=	J
MISS01AA	23-MAY-94	REG	CALCIUM	564000	=	
MISS01AA	18-MAY-95	REG	CALCIUM	714000	=	
MISS01AA	09-MAY-96	REG	CALCIUM	555000	=	J
MISS01AA	23-MAY-97	REG	CALCIUM	616000		
MISS01AA	18-JUN-98	REG	CALCIUM	645000		
MISS01AA	12-May-99	REG	CALCIUM	645000		
MISS01B	21-JUL-93	REG	CALCIUM	92200	=	
MISS01B	16-MAY-94	REG	CALCIUM	90800	=	
MISS01B	10-MAY-95	REG	CALCIUM	84500	=	
MISS01B	15-MAY-96	REG	CALCIUM	97100	=	J

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
MISS01B	18-JUN-98	REG	CALCIUM	91900		
MISS01B	25-May-99	REG	CALCIUM	96600		
MISS02A	20-JUL-93	REG	CALCIUM	164000	=	
MISS02A	12-MAY-94	REG	CALCIUM	79400	=	J
MISS02A	10-MAY-95	REG	CALCIUM	54500	=	
MISS02A	16-MAY-96	REG	CALCIUM	67600	=	
MISS02A	15-MAY-97	REG	CALCIUM	66700		J
MISS02A	15-MAY-97	DUP	CALCIUM	62400		J
MISS02A	11-JUN-98	DUP	CALCIUM	106000		
MISS02A	81-MAY-99	REG	CALCIUM	116000		
MISS02B	20-JUL-93	REG	CALCIUM	295000	=	
MISS02B	13-MAY-94	REG	CALCIUM	221000	=	J
MISS02B	09-MAY-95	REG	CALCIUM	248000	=	
MISS02B	14-MAY-96	REG	CALCIUM	275000	=	
MISS02B	19-MAY-97	REG	CALCIUM	272000		
MISS02B	10-JUN-98	REG	CALCIUM	304000		
MISS02B	18-May-99	DUP	CALCIUM	304000		
MISS05A	27-MAY-94	REG	CALCIUM	582000	=	
MISS05A	12-MAY-95	REG	CALCIUM	683000	=	
MISS05A	10-MAY-96	REG	CALCIUM	603000	=	J
MISS05A	02-JUN-97	REG	CALCIUM	612000		
MISS05A	29-JUN-98	REG	CALCIUM	591000		
MISS05A	14-May-99	REG	CALCIUM	677000		
MISS05B	23-JUL-93	REG	CALCIUM	315000	=	
MISS05B	17-MAY-94	REG	CALCIUM	339000	=	
MISS05B	11-MAY-95	REG	CALCIUM	295000	=	
MISS05B	16-MAY-96	REG	CALCIUM	322000	=	
MISS05B	14-MAY-97	REG	CALCIUM	340000		
MISS05B	30-JUN-98	REG	CALCIUM	143000		
MISS06A	04-AUG-93	REG	CALCIUM	218000	=	J
MISS06A	24-MAY-94	REG	CALCIUM	249000	=	J
MISS06A	16-MAY-95	REG	CALCIUM	292000	=	
MISS06A	10-MAY-96	REG	CALCIUM	225000	=	J
MISS06A	03-JUN-97	REG	CALCIUM	273000		
MISS06A	01-JUL-98	REG	CALCIUM	198000		
MISS06A	17-May-99	DUP	CALCIUM	252000		
MISS07B	22-JUL-93	REG	CALCIUM	180000	=	
MISS07B	22-JUL-93	REG	CALCIUM	175000	=	
MISS07B	16-JUn-98	REG	CALCIUM	160000		
MISS07B	27-MAY-99	DUP	CALCIUM	250000		
B38W02D	27-JUL-93	REG	CHROMIUM	7.9	B	
B38W02D	17-MAY-96	REG	CHROMIUM	38.3	=	
B38W02D	04-JUN-97	REG	CHROMIUM	20.8		
B38W02D	30-JUN-98	REG	CHROMIUM	371		
B38W02D	20-May-99	REG	CHROMIUM	9.7		
B38W14D	04-JUN-97	REG	CHROMIUM	21.2		
B38W14D	07-JUL-98	REG	CHROMIUM	3.9		
B38W14D	07-JUL-98	DUP	CHROMIUM	2.6		
B38W14D	17-May-99	REG	CHROMIUM	1		
B38W14S	20-MAY-95	REG	CHROMIUM	35.9	=	
B38W14S	17-MAY-96	REG	CHROMIUM	345	=	
B38W14S	17-MAY-96	DUP	CHROMIUM	296	=	
B38W14S	04-JUN-97	REG	CHROMIUM	354		
B38W14S	07-JUL-98	REG	CHROMIUM	420		
B38W14S	17-May-99	REG	CHROMIUM	67.2		

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
B38W15D	02-AUG-93	REG	CHROMIUM	9.3	B	
B38W15D	03-JUN-97	REG	CHROMIUM	2.2		
B38W15D	06-JUL-98	REG	CHROMIUM	6.5		
B38W15S	03-JUN-97	REG	CHROMIUM	1.8		
B38W15S	06-JUL-98	REG	CHROMIUM	5.5		
B38W17A	28-JUL-93	REG	CHROMIUM	21000	=	
B38W17A	25-MAY-94	REG	CHROMIUM	122	=	
B38W17A	20-MAY-95	REG	CHROMIUM	56.6	=	
B38W17A	13-MAY-96	REG	CHROMIUM	632	=	
B38W17A	03-JUN-97	REG	CHROMIUM	1880		
B38W17A	02-JUL-98	REG	CHROMIUM	5350		
B38W17A	13-May-99	REG	CHROMIUM	66.3		
B38W17B	03-JUN-97	REG	CHROMIUM	0.84		
B38W17B	02-JUL-98	REG	CHROMIUM	2.8		
B38W17B	13-May-99	REG	CHROMIUM	1.4		
B38W18D	21-JUL-93	REG	CHROMIUM	27.2	=	
B38W18D	13-MAY-94	REG	CHROMIUM	25.8	=	J
B38W18D	15-MAY-95	REG	CHROMIUM	29.9	=	
B38W18D	14-MAY-96	REG	CHROMIUM	30.8	=	J
B38W18D	09-MAY-97	REG	CHROMIUM	26.9		
B38W18D	08-JUN-98	REG	CHROMIUM	83.4		
B38W18D	20-May-99	REG	CHROMIUM	39.5		
B38W19D	16-MAY-94	REG	CHROMIUM	5.1	=	
B38W19D	16-MAY-97	REG	CHROMIUM	3.4		
B38W19S	29-JUN-98	REG	CHROMIUM	2.9		
B38W19S	14-May-99	REG	CHROMIUM	2.6		
B38W24D	09-AUG-93	REG	CHROMIUM	8.9	B	J
B38W24D	18-MAY-94	REG	CHROMIUM	6.2	=	
B38W24D	09-MAY-96	REG	CHROMIUM	6.2	=	
B38W24D	02-JUL-98	REG	CHROMIUM	17.9		
B38W24D	13-May-99	REG	CHROMIUM	6.4		
B38W24S	25-MAY-94	REG	CHROMIUM	4.9	=	
B38W24S	02-JUN-97	REG	CHROMIUM	4.5		
B38W25D	18-MAY-94	REG	CHROMIUM	8.8	=	
B38W25D	12-MAY-95	REG	CHROMIUM	36.5	=	J
B38W25D	15-MAY-97	REG	CHROMIUM	6.2		
B38W25D	01-JUL-98	REG	CHROMIUM	3.2		
B38W25S	03-AUG-93	REG	CHROMIUM	210	=	
B38W25S	15-MAY-95	REG	CHROMIUM	14.6	=	
B38W25S	15-MAY-95	DUP	CHROMIUM	12.7	=	
B38W25S	15-MAY-96	REG	CHROMIUM	4.9	=	
B38W25S	05-JUN-97	REG	CHROMIUM	20.7		
B38W25S	01-JUL-98	REG	CHROMIUM	50.7		
B38W25S	17-May-99	REG	CHROMIUM	106		
MISS01AA	31-JUL-93	REG	CHROMIUM	54.9	=	
MISS01AA	23-MAY-94	REG	CHROMIUM	285	=	
MISS01AA	23-MAY-97	REG	CHROMIUM	2.1		
MISS01AA	18-JUN-98	REG	CHROMIUM	7.4		
MISS01AA	12-May-99	REG	CHROMIUM	1		
MISS02A	20-JUL-93	REG	CHROMIUM	157	=	
MISS02A	12-MAY-94	REG	CHROMIUM	15.1	=	J
MISS02A	10-MAY-95	REG	CHROMIUM	94.5	=	
MISS02A	15-MAY-97	REG	CHROMIUM	24.3		

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
MISS02A	15-MAY-97	DUP	CHROMIUM	22.3		
MISS02A	11-JUN-98	DUP	CHROMIUM	26.8		
MISS02A	18-May-99	REG	CHROMIUM	94.1		
MISS02B	20-JUL-93	REG	CHROMIUM	5.1	=	
MISS02B	09-MAY-95	REG	CHROMIUM	5.3	=	
MISS02B	19-MAY-97	REG	CHROMIUM	5.1		
MISS02B	10-JUN-98	REG	CHROMIUM	6.2		
MISS02B	18-May-99	REG	CHROMIUM	7.5		
MISS05B	11-MAY-95	REG	CHROMIUM	10.9	=	
MISS05B	14-MAY-97	REG	CHROMIUM	2.9		
MISS05B	30-JUN-98	REG	CHROMIUM	10.8		
B38W07B	16-JUN-98	REG	CHROMIUM	1.6		
B38W02D	04-JUN-97	REG	COBALT	1.1		
B38W02D	30-JUN-98	REG	COBALT	1.6		
B38W14D	07-JUL-98	REG	COBALT	0.42		
B38W14S	04-AUG-93	REG	COBALT	20.1	B	
B38W14S	04-JUN-97	REG	COBALT	0.97		
B38W14S	07-JUL-98	REG	COBALT	2.2		
B38W14S	17-May-99	REG	COBALT	1.5		
B38W15D	03-JUN-97	REG	COBALT	2.5		
B38W15D	06-JUL-98	REG	COBALT	1.4		
B38W15S	03-JUN-97	REG	COBALT	1.4		
B38W15S	06-JUL-98	REG	COBALT	0.69		
B38W17A	28-JUL-93	REG	COBALT	57	=	
B38W17A	25-MAY-94	REG	COBALT	5.8	=	
B38W17A	03-JUN-97	REG	COBALT	1.6		
B38W17A	02-JUL-98	REG	COBALT	8.1		
B38W17A	13-May-99	DUP	COBALT	1.2		
B38W18D	21-JUL-93	REG	COBALT	17.7	B	
B38W18D	13-MAY-94	REG	COBALT	19.1	=	J
B38W18D	15-MAY-95	REG	COBALT	18.5	=	
B38W18D	14-MAY-96	REG	COBALT	16.9	=	
B38W18D	09-MAY-97	REG	COBALT	11.5		
B38W18D	08-JUN-98	REG	COBALT	13.3		
B38W18D	20-May-99	REG	COBALT	15.7		
B38W24D	09-AUG-93	REG	COBALT	12	B	
B38W24D	02-JUL-98	REG	COBALT	0.74		
B38W25S	03-AUG-93	REG	COBALT	14.6	B	
B38W25S	15-MAY-95	REG	COBALT	3.6	=	
B38W25S	05-JUN-97	REG	COBALT	1.5		
B38W25S	01-JUL-98	REG	COBALT	2.4		
B38W25S	17-May-99	REG	COBALT	3.2		
MISS02A	15-MAY-97	REG	COBALT	1		
MISS02A	15-MAY-97	DUP	COBALT	0.98		
MISS02A	11-JUN-98	DUP	COBALT	1.1		
MISS02A	18-May-99	DUP	COBALT	2.2		
MISS02B	13-MAY-94	REG	COBALT	7	=	J
MISS02B	09-MAY-95	REG	COBALT	5.4	=	
MISS02B	19-MAY-97	REG	COBALT	3.3		
MISS02B	10-JUN-98	REG	COBALT	2.8		
MISS02B	18-May-99	REG	COBALT	3		
MISS05A	12-MAY-95	REG	COBALT	9.1	=	
MISS05A	02-JUN-97	REG	COBALT	1.4		
MISS05A	29-JUN-98	REG	COBALT	1.3		
MISS05A	14-May-99	REG	COBALT	14.1		

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
MISS06A	24-MAY-94	REG	COBALT	4.2	=	
MISS06A	03-JUN-97	REG	COBALT	0.95		
MISS06A	01-JUL-98	REG	COBALT	0.64		
B38W07B	16-JUN-98	REG	COBALT	4.4		
B38W07B	27-May-99	DUP	COBALT	5.3		
B38W02D	19-MAY-94	REG	COPPER	3.8	=	
B38W02D	04-JUN-97	REG	COPPER	2.4		
B38W02D	30-JUN-98	REG	COPPER	8.7		
B38W02D	20-May-99	REG	COPPER	2.9		
B38W14D	04-AUG-93	REG	COPPER	33.1	=	
B38W14D	20-MAY-95	REG	COPPER	5.7	=	
B38W14D	04-JUN-97	REG	COPPER	15.7		
B38W14D	07-JUL-98	REG	COPPER	13		
B38W14D	07-JUL-98	DUP	COPPER	11.8		
B38W14D	17-May-99	DUP	COPPER	3.6		
B38W14S	04-AUG-93	REG	COPPER	14.7	B	
B38W14S	20-MAY-95	REG	COPPER	4.1	=	
B38W14S	04-JUN-97	REG	COPPER	8.9		
B38W14S	07-JUL-98	REG	COPPER	22.3		
B38W14S	17-May-99	REG	COPPER	4.9		
B38W15D	02-AUG-93	REG	COPPER	33.7	=	
B38W15D	13-MAY-96	REG	COPPER	9.7	=	
B38W15D	03-JUN-97	REG	COPPER	2.6		
B38W15D	06-JUL-98	REG	COPPER	9.2		
B38W15S	19-MAY-95	REG	COPPER	9.3	=	
B38W15S	19-MAY-95	DUP	COPPER	6.4	=	
B38W15S	03-JUN-97	REG	COPPER	5.4		
B38W15S	06-JUL-98	REG	COPPER	21.8		
B38W17A	28-JUL-93	REG	COPPER	118	=	
B38W17A	25-MAY-94	REG	COPPER	7.6	=	
B38W17A	13-MAY-96	REG	COPPER	8.4	=	
B38W17A	03-JUN-97	REG	COPPER	10		
B38W17A	02-JUL-98	REG	COPPER	36.6		
B38W17A	13-May-99	REG	COPPER	2.9		
B38W17B	02-JUL-98	REG	COPPER	2.1		
B38W17B	13-May-99	REG	COPPER	1.2		
B38W19D	16-MAY-97	REG	COPPER	3.9		
B38W19D	17-JUN-98	REG	COPPER	1		
B38W19S	17-MAY-95	REG	COPPER	4.8	=	
B38W19S	29-JUN-98	REG	COPPER	2.8		
B38W24D	09-AUG-93	REG	COPPER	6	B	
B38W24D	18-MAY-94	REG	COPPER	3.4	=	
B38W24D	02-JUN-97	REG	COPPER	1.3		
B38W24D	02-JUL-98	REG	COPPER	10.4		
B38W24D	13-May-99	REG	COPPER	3		
B38W24S	05-AUG-93	REG	COPPER	8.8	B	
B38W24S	02-JUN-97	REG	COPPER	24.2		
B38W24S	02-JUL-98	REG	COPPER	2.8		
B38W24S	13-May-99	REG	COPPER	9.4		
B38W25D	15-MAY-97	REG	COPPER	4.6		
B38W25D	01-JUL-98	REG	COPPER	1.3		
B38W25S	03-AUG-93	REG	COPPER	52.4	=	
B38W25S	05-JUN-97	REG	COPPER	1		
B38W25S	01-JUL-98	REG	COPPER	7.3		
B38W25S	17-May-99	REG	COPPER	2.8		

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
MISS01AA	31-JUL-93	REG	COPPER	31.1	=	
MISS01AA	23-MAY-94	REG	COPPER	11.7	=	
MISS01AA	23-MAY-97	REG	COPPER	3.9		
MISS02A	20-JUL-93	REG	COPPER	126	=	
MISS02A	12-MAY-94	REG	COPPER	103	=	
MISS02A	10-MAY-95	REG	COPPER	173	=	
MISS02A	16-MAY-96	REG	COPPER	169	=	
MISS02A	15-MAY-97	REG	COPPER	112		
MISS02A	15-MAY-97	DUP	COPPER	114		
MISS02A	11-JUN-98	DUP	COPPER	96.2		
MISS02A	18-May-99	REG	COPPER	366		
MISS02B	13-MAY-94	REG	COPPER	166	=	J
MISS02B	09-MAY-95	REG	COPPER	6	=	
MISS02B	19-MAY-97	REG	COPPER	3.4		
MISS02B	10-JUN-98	REG	COPPER	1.1		
MISS05A	10-MAY-96	REG	COPPER	6	=	
MISS05A	02-JUN-97	REG	COPPER	3.7		
MISS05A	29-JUN-98	REG	COPPER	4.1		
MISS05A	14-May-99	REG	COPPER	1.7		
MISS05B	11-MAY-95	REG	COPPER	4.9	=	
MISS05B	30-JUN-98	REG	COPPER	3.4		
MISS06A	04-AUG-93	REG	COPPER	22.9	B	
MISS06A	24-MAY-94	REG	COPPER	21.8	=	
MISS06A	16-MAY-95	REG	COPPER	31.3	=	
MISS06A	10-MAY-96	REG	COPPER	27.2	=	
MISS06A	03-JUN-97	REG	COPPER	50.1		
MISS06A	01-JUL-98	REG	COPPER	44		
MISS06A	17-May-99	REG	COPPER	29.4		
B38W07B	16-JUN-98	REG	COPPER	4.9		
B38W01S	28-JUL-93	REG	IRON	31000	=	
B38W01S	23-MAY-94	REG	IRON	27500	=	
B38W01S	21-MAY-95	REG	IRON	22100	=	
B38W01S	17-MAY-96	REG	IRON	24700	=	
B38W01S	04-JUN-97	REG	IRON	28100		J
B38W01S	07-JUL-98	REG	IRON	28900		J
B38W02D	19-MAY-94	REG	IRON	33.1	=	
B38W02D	20-MAY-95	REG	IRON	72.4	=	
B38W02D	17-MAY-96	REG	IRON	737	=	
B38W02D	04-JUN-97	REG	IRON	183		J
B38W02D	30-JUN-98	REG	IRON	580		J
B38W02D	20-May-99	REG	IRON	28.8		
B38W14D	04-AUG-93	REG	IRON	320	=	
B38W14D	20-MAY-95	REG	IRON	32.4	=	
B38W14D	07-JUL-98	REG	IRON	274		J
B38W14D	07-JUL-98	DUP	IRON	204		J
B38W14D	17-May-99	REG	IRON	64.2		J
B38W14S	04-AUG-93	REG	IRON	403	=	
B38W14S	20-MAY-95	REG	IRON	324	=	
B38W14S	17-MAY-96	REG	IRON	820	=	
B38W14S	17-MAY-96	DUP	IRON	743	=	
B38W14S	04-JUN-97	REG	IRON	1200		J
B38W14S	07-JUL-98	REG	IRON	2540		J
B38W14S	17-May-99	REG	IRON	528		J

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
B38W15D	02-AUG-93	REG	IRON	709	=	
B38W15D	13-MAY-96	REG	IRON	103	=	UJ
B38W15D	03-JUN-97	REG	IRON	160		J
B38W15D	06-JUL-98	REG	IRON	593		J
B38W15S	02-AUG-93	REG	IRON	537	=	
B38W15S	26-MAY-94	REG	IRON	400	=	
B38W15S	19-MAY-95	REG	IRON	1720	=	
B38W15S	19-MAY-95	DUP	IRON	1450	=	
B38W15S	13-MAY-96	REG	IRON	530	=	J
B38W15S	03-JUN-97	REG	IRON	675		J
B38W15S	06-JUL-98	REG	IRON	1010		J
B38W17A	28-JUL-93	REG	IRON	116000	=	
B38W17A	25-MAY-94	REG	IRON	829	=	
B38W17A	20-MAY-95	REG	IRON	688	=	
B38W17A	13-MAY-96	REG	IRON	3280	=	J
B38W17A	03-JUN-97	REG	IRON	11700		J
B38W17A	02-JUL-98	REG	IRON	27900		J
B38W17A	13-May-99	REG	IRON	377		
B38W17B	29-JUL-93	REG	IRON	6520	=	J
B38W17B	25-MAY-94	REG	IRON	10200	=	
B38W17B	20-MAY-95	REG	IRON	6570	=	
B38W17B	13-MAY-96	REG	IRON	11400	=	J
B38W17B	03-JUN-97	REG	IRON	9470		J
B38W17B	02-JUL-98	REG	IRON	6890		J
B38W17B	13-May-99	REG	IRON	8350		
B38W18D	21-JUL-93	REG	IRON	16000	=	J
B38W18D	13-MAY-94	REG	IRON	12900	=	J
B38W18D	15-MAY-95	REG	IRON	14400	=	
B38W18D	14-MAY-96	REG	IRON	14200	=	
B38W18D	09-MAY-97	REG	IRON	12100		
B38W18D	08-JUN-98	REG	IRON	13500		
B38W18D	20-May-99	REG	IRON	14800		
B38W19D	23-JUL-93	REG	IRON	3030	=	J
B38W19D	16-MAY-94	REG	IRON	4090	=	
B38W19D	10-MAY-95	REG	IRON	2630	=	J
B38W19D	16-MAY-96	REG	IRON	3530	=	
B38W19D	16-MAY-97	REG	IRON	3260		J
B38W19D	17-JUN-98	REG	IRON	3110		J
B38W19D	17-JUN-98	REG	IRON	3160		
B38W19D	27-May-99	REG	IRON	3670		
B38W19S	27-MAY-94	REG	IRON	3240	=	
B38W19S	17-MAY-95	REG	IRON	1300	=	
B38W19S	10-MAY-96	REG	IRON	4590	=	J
B38W19S	29-JUN-98	REG	IRON	5980		J
B38W19S	14-May-99	REG	IRON	6600		
B38W24D	09-AUG-93	REG	IRON	22900	=	J
B38W24D	18-MAY-94	REG	IRON	21800	=	
B38W24D	17-MAY-95	REG	IRON	17500	=	
B38W24D	09-MAY-96	REG	IRON	28600	=	J
B38W24D	02-JUN-97	REG	IRON	26600		J
B38W24D	02-JUL-98	REG	IRON	25600		J
B38W24D	13-May-99	REG	IRON	27000		
B38W24S	05-AUG-93	REG	IRON	34800	=	

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
B38W24S	25-MAY-94	REG	IRON	35900	=	
B38W24S	17-MAY-95	REG	IRON	46500	=	
B38W24S	09-MAY-96	REG	IRON	33400	=	J
B38W24S	02-JUN-97	REG	IRON	51100		J
B38W24S	02-JUL-98	REG	IRON	31700		J
B38W24S	13-May-99	DUP	IRON	36100		
B38W25D	03-AUG-93	REG	IRON	5380	=	
B38W25D	18-MAY-94	REG	IRON	5550	=	
B38W25D	12-MAY-95	REG	IRON	6760	=	
B38W25D	15-MAY-96	REG	IRON	6460	=	J
B38W25D	15-MAY-97	REG	IRON	5640		J
B38W25D	01-JUL-98	REG	IRON	4620		J
B38W25D	26-May-99	REG	IRON	4980		
B38W25S	03-AUG-93	REG	IRON	19700	=	
B38W25S	24-MAY-94	REG	IRON	9080	=	J
B38W25S	15-MAY-95	REG	IRON	14600	=	
B38W25S	15-MAY-95	DUP	IRON	12000	=	
B38W25S	15-MAY-96	REG	IRON	9620	=	J
B38W25S	15-MAY-96	DUP	IRON	10200	=	J
B38W25S	05-JUN-97	REG	IRON	6260		J
B38W25S	01-JUL-98	REG	IRON	7490		J
B38W25S	17-May-99	REG	IRON	10400		J
MISS01AA	31-JUL-93	REG	IRON	9340	=	
MISS01AA	23-MAY-94	REG	IRON	2210	=	
MISS01AA	18-MAY-95	REG	IRON	360	=	
MISS01AA	09-MAY-96	REG	IRON	725	=	J
MISS01AA	23-MAY-97	REG	IRON	571		
MISS01AA	18-JUN-98	REG	IRON	512		
MISS01AA	12-May-99	REG	IRON	2790		
MISS01B	21-JUL-93	REG	IRON	1620	=	J
MISS01B	16-MAY-94	REG	IRON	7780	=	
MISS01B	10-MAY-95	REG	IRON	1030	=	J
MISS01B	15-MAY-96	REG	IRON	6260	=	J
MISS01B	18-JUN-98	REG	IRON	2080		
MISS01B	25-May-99	REG	IRON	1060		
MISS02A	20-JUL-93	REG	IRON	914	=	
MISS02A	12-MAY-94	REG	IRON	402	=	J
MISS02A	10-MAY-95	REG	IRON	892	=	J
MISS02A	16-MAY-96	REG	IRON	584	=	
MISS02A	15-MAY-97	REG	IRON	426		J
MISS02A	15-MAY-97	DUP	IRON	500		J
MISS02A	11-JUN-98	REG	IRON	1070		
MISS02A	11-JUN-98	DUP	IRON	1440		
MISS02A	18-May-99	REG	IRON	1010		
MISS02B	20-JUL-93	REG	IRON	19300	=	
MISS02B	13-MAY-94	REG	IRON	6800	=	J
MISS02B	09-MAY-95	REG	IRON	8690	=	
MISS02B	14-MAY-96	REG	IRON	7880	=	
MISS02B	19-MAY-97	REG	IRON	8880		J
MISS02B	10-JUN-98	REG	IRON	8140		
MISS02B	18-May-99	REG	IRON	8620		
MISS05A	27-MAY-94	REG	IRON	9770	=	
MISS05A	12-MAY-95	REG	IRON	15800	=	
MISS05A	10-MAY-96	REG	IRON	6590	=	J

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
MISS05A	02-JUN-97	REG	IRON	31600		J
MISS05A	29-JUN-98	REG	IRON	15900		J
MISS05A	14-May-99	REG	IRON	2190		
MISS05B	23-JUL-93	REG	IRON	2660	=	J
MISS05B	17-MAY-94	REG	IRON	2780	=	
MISS05B	11-MAY-95	REG	IRON	3180	=	J
MISS05B	16-MAY-96	REG	IRON	2910	=	
MISS05B	14-MAY-97	REG	IRON	2560		
MISS05B	30-JUN-98	REG	IRON	13800		J
MISS06A	04-AUG-93	REG	IRON	225	=	
MISS06A	24-MAY-94	REG	IRON	455	=	J
MISS06A	16-MAY-95	REG	IRON	333	=	
MISS06A	10-MAY-96	REG	IRON	157	=	J
MISS06A	03-JUN-97	REG	IRON	759		J
MISS06A	01-JUL-98	REG	IRON	1320		J
MISS06A	17-May-99	REG	IRON	370		J
B38W07B	16-JUN-98	REG	IRON	9160		
B38W07B	27-May-99	REG	IRON	5920		
B38W02D	17-MAY-96	REG	LEAD	1.4	=	
B38W02D	04-JUN-97	REG	LEAD	2.8		
B38W02D	30-JUN-98	REG	LEAD	7.1		
B38W14D	20-MAY-95	REG	LEAD	2.8	=	J
B38W14D	07-JUL-98	DUP	LEAD	1.7		
B38W14D	17-May-99	REG	LEAD	0.86		
B38W14S	20-MAY-95	REG	LEAD	2.9	=	J
B38W14S	17-MAY-96	REG	LEAD	1.2	=	
B38W14S	17-MAY-96	DUP	LEAD	1.8	=	
B38W14S	04-JUN-97	REG	LEAD	5.6		
B38W14S	07-JUL-98	REG	LEAD	23.9		
B38W14S	17-May-99	REG	LEAD	2.5		
B38W15D	02-AUG-93	REG	LEAD	27.5	=	J
B38W15D	03-JUN-97	REG	LEAD	1.8		
B38W15D	06-JUL-98	REG	LEAD	3.3		
B38W15S	02-AUG-93	REG	LEAD	2.3	B	J
B38W15S	26-MAY-94	REG	LEAD	3	=	J
B38W15S	19-MAY-95	REG	LEAD	2	=	
B38W15S	19-MAY-95	DUP	LEAD	2.4	=	
B38W15S	03-JUN-97	REG	LEAD	4		
B38W15S	06-JUL-98	REG	LEAD	5.3		
B38W17A	28-JUL-93	REG	LEAD	36.6	=	J
B38W17A	20-MAY-95	REG	LEAD	2.8	=	J
B38W17A	13-MAY-96	REG	LEAD	1.1	=	J
B38W17A	03-JUN-97	REG	LEAD	2.3		
B38W17A	02-JUL-98	REG	LEAD	1.3		
B38W18D	14-MAY-96	REG	LEAD	1	=	
B38W18D	08-JUN-98	REG	LEAD	0.45		
B38W18D	20-May-99	REG	LEAD	1.1		
B38W19S	29-JUN-98	REG	LEAD	0.35		
B38W24D	02-JUL-98	REG	LEAD	2.4		
B38W24D	13-May-99	REG	LEAD	1.2		
B38W24S	17-MAY-95	REG	LEAD	1.8	=	
B38W24S	02-JUL-98	REG	LEAD	0.85		
B38W25S	24-MAY-94	REG	LEAD	3.8	=	UJ

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
B38W25S	15-MAY-96	REG	LEAD	1.5	=	J
B38W25S	05-JUN-97	REG	LEAD	0.6		
B38W25S	01-JUL-98	REG	LEAD	1.3		
B38W25S	17-May-99	REG	LEAD	0.66		
MISS01AA	31-JUL-93	REG	LEAD	4.1	=	J
MISS01AA	18-MAY-95	REG	LEAD	2	=	
MISS01AA	18-JUN-98	REG	LEAD	9.8		
MISS01AA	12-May-99	REG	LEAD	1.6		
MISS02A	20-JUL-93	REG	LEAD	2.5	=	UJ
MISS02A	12-MAY-94	REG	LEAD	7.3	=	J
MISS02A	10-MAY-95	REG	LEAD	3.6	=	
MISS02A	16-MAY-96	REG	LEAD	8.1	=	
MISS02A	15-MAY-97	REG	LEAD	4.8		J
MISS02A	15-MAY-97	DUP	LEAD	4.7		J
MISS02A	11-JUN-98	REG	LEAD	3.9		
MISS02A	11-JUN-98	DUP	LEAD	4.9		
MISS02A	18-May-99	REG	LEAD	11		
MISS05A	29-JUN-98	REG	LEAD	11.9		
MISS05A	14-May-99	REG	LEAD	0.35		
MISS05B	17-MAY-94	REG	LEAD	2.1	=	J
MISS05B	30-JUN-98	REG	LEAD	0.5		
MISS06A	24-MAY-94	REG	LEAD	4.4	=	UJ
MISS06A	03-JUN-97	REG	LEAD	13.8		
MISS06A	01-JUL-98	REG	LEAD	17.8		
MISS06A	17-May-99	REG	LEAD	2.9		
B38W01S	28-JUL-93	REG	LITHIUM	2690	=	
B38W01S	23-MAY-94	REG	LITHIUM	2410	=	
B38W01S	17-MAY-96	REG	LITHIUM	1830	=	J
B38W01S	04-JUN-97	REG	LITHIUM	2370		
B38W01S	07-JUL-98	REG	LITHIUM	1840		J
B38W02D	19-MAY-94	REG	LITHIUM	30.1	=	
B38W02D	04-JUN-97	REG	LITHIUM	14.8		
B38W02D	30-JUN-98	REG	LITHIUM	16.5		J
B38W02D	20-May-99	REG	LITHIUM	11.7		
B38W14D	04-AUG-93	REG	LITHIUM	49.8	=	
B38W14D	04-JUN-97	REG	LITHIUM	44.5		
B38W14D	07-JUL-98	DUP	LITHIUM	48.4		J
B38W14D	07-JUL-98	REG	LITHIUM	47.2		J
B38W14D	17-May-99	REG	LITHIUM	34.3		
B38W14S	04-AUG-93	REG	LITHIUM	126	=	
B38W14S	04-JUN-97	REG	LITHIUM	48		
B38W14S	07-JUL-98	REG	LITHIUM	45.5		J
B38W14S	17-May-99	REG	LITHIUM	38		
B38W15D	02-AUG-93	REG	LITHIUM	1740	=	
B38W15D	26-MAY-94	REG	LITHIUM	2750	=	
B38W15D	13-MAY-96	REG	LITHIUM	2980	=	J
B38W15D	03-JUN-97	REG	LITHIUM	2980		
B38W15D	06-JUL-98	REG	LITHIUM	2060		
B38W15S	02-AUG-93	REG	LITHIUM	1910	=	
B38W15S	02-AUG-93	REG	LITHIUM	1970	=	
B38W15S	26-MAY-94	REG	LITHIUM	1590	=	
B38W15S	13-MAY-96	REG	LITHIUM	1800	=	J
B38W15S	03-JUN-97	REG	LITHIUM	2590		
B38W15S	06-JUL-98	REG	LITHIUM	2590		

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
B38W17A	28-JUL-93	REG	LITHIUM	348	=	
B38W17A	25-MAY-94	REG	LITHIUM	347	=	
B38W17A	13-MAY-96	REG	LITHIUM	431	=	J
B38W17A	03-JUN-97	REG	LITHIUM	334		
B38W17A	02-JUL-98	REG	LITHIUM	307		J
B38W17A	13-May-99	DUP	LITHIUM	363		
B38W17B	29-JUL-93	REG	LITHIUM	1650	=	J
B38W17B	25-MAY-94	REG	LITHIUM	1060	=	
B38W17B	13-MAY-96	REG	LITHIUM	920	=	J
B38W17B	03-JUN-97	REG	LITHIUM	1740		
B38W17B	02-JUL-98	REG	LITHIUM	1800		J
B38W17B	13-May-99	REG	LITHIUM	1460		J
B38W18D	21-JUL-93	REG	LITHIUM	3610	=	
B38W18D	13-MAY-94	REG	LITHIUM	3380	=	J
B38W18D	14-MAY-96	REG	LITHIUM	3000	=	J
B38W18D	09-MAY-97	REG	LITHIUM	3540		
B38W18D	08-JUN-98	REG	LITHIUM	3790		
B38W18D	20-May-99	REG	LITHIUM	2850		
B38W19D	23-JUL-93	REG	LITHIUM	6890	=	
B38W19D	16-MAY-94	REG	LITHIUM	4600	=	
B38W19D	16-MAY-96	REG	LITHIUM	3800	=	J
B38W19D	16-MAY-97	REG	LITHIUM	5600		
B38W19D	17-JUN-98	REG	LITHIUM	6220		J
B38W19D	17-JUN-98	REG	LITHIUM	5920		
B38W19D	27-May-99	REG	LITHIUM	6350		J
B38W19S	27-MAY-94	REG	LITHIUM	1690	=	
B38W19S	10-MAY-96	REG	LITHIUM	1450	=	J
B38W19S	29-JUN-98	REG	LITHIUM	1700		J
B38W19S	14-May-99	REG	LITHIUM	1400		J
B38W24D	09-AUG-93	REG	LITHIUM	44.1	=	
B38W24D	18-MAY-94	REG	LITHIUM	37.5	=	
B38W24D	09-MAY-96	REG	LITHIUM	80.1	=	J
B38W24D	02-JUN-97	REG	LITHIUM	54.3		
B38W24D	02-JUL-98	REG	LITHIUM	46.1		J
B38W24D	13-May-99	REG	LITHIUM	50.4		
B38W24S	09-MAY-96	REG	LITHIUM	56	=	J
B38W24S	02-JUN-97	REG	LITHIUM	27.5		
B38W24S	02-JUL-98	REG	LITHIUM	26.5		J
B38W24S	13-May-99	DUP	LITHIUM	32.4		
B38W25D	03-AUG-93	REG	LITHIUM	1330	=	
B38W25D	18-MAY-94	REG	LITHIUM	1230	=	
B38W25D	15-MAY-96	REG	LITHIUM	1370	=	J
B38W25D	15-MAY-97	REG	LITHIUM	1600		
B38W25D	01-JUL-98	REG	LITHIUM	1430		J
B38W25D	26-May-99	REG	LITHIUM	1280		J
B38W25S	03-AUG-93	REG	LITHIUM	1360	=	
B38W25S	24-MAY-94	REG	LITHIUM	1130	=	J
B38W25S	15-MAY-96	DUP	LITHIUM	994	=	J
B38W25S	05-JUN-97	REG	LITHIUM	1190		
B38W25S	01-JUL-98	REG	LITHIUM	827		J
B38W25S	17-May-99	REG	LITHIUM	793		
MISS01AA	31-JUL-93	REG	LITHIUM	442	=	
MISS01AA	23-MAY-94	REG	LITHIUM	240	=	
MISS01AA	09-MAY-96	REG	LITHIUM	224	=	J
MISS01AA	23-MAY-97	REG	LITHIUM	265		

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
MISS01AA	18-JUN-98	REG	LITHIUM	258		
MISS01AA	12-May-99	REG	LITHIUM	224		J
MISS01B	21-JUL-93	REG	LITHIUM	114	=	
MISS01B	16-MAY-94	REG	LITHIUM	80.8	=	
MISS01B	15-MAY-96	REG	LITHIUM	128	=	J
MISS01B	18-JUN-98	REG	LITHIUM	105		
MISS01B	25-May-99	REG	LITHIUM	95.1		J
MISS02A	20-JUL-93	REG	LITHIUM	6990	=	
MISS02A	12-MAY-94	REG	LITHIUM	4660	=	
MISS02A	16-MAY-96	REG	LITHIUM	4480	=	J
MISS02A	15-MAY-97	REG	LITHIUM	7090		
MISS02A	15-MAY-97	DUP	LITHIUM	6650		
MISS02A	11-JUN-98	DUP	LITHIUM	6110		
MISS02A	11-May-99	REG	LITHIUM	9300		
MISS02B	20-JUL-93	REG	LITHIUM	14100	=	
MISS02B	13-MAY-94	REG	LITHIUM	10200	=	J
MISS02B	14-MAY-96	REG	LITHIUM	11900	=	J
MISS02B	19-MAY-97	REG	LITHIUM	15200		
MISS02B	10-JUN-98	REG	LITHIUM	12800		
MISS02B	18-May-99	DUP	LITHIUM	12200		J
MISS05A	27-MAY-94	REG	LITHIUM	677	=	
MISS05A	10-MAY-96	REG	LITHIUM	664	=	J
MISS05A	02-JUN-97	REG	LITHIUM	854		
MISS05A	29-JUN-98	REG	LITHIUM	660		J
MISS05A	14-May-99	REG	LITHIUM	863		J
MISS05B	23-JUL-93	REG	LITHIUM	2520	=	
MISS05B	17-MAY-94	REG	LITHIUM	2370	=	
MISS05B	16-MAY-96	REG	LITHIUM	2130	=	J
MISS05B	14-MAY-97	REG	LITHIUM	2710		
MISS05B	30-JUN-98	REG	LITHIUM	1920		J
MISS06A	04-AUG-93	REG	LITHIUM	7340	=	
MISS06A	24-MAY-94	REG	LITHIUM	2140	=	J
MISS06A	10-MAY-96	REG	LITHIUM	1680	=	J
MISS06A	03-JUN-97	REG	LITHIUM	2780		
MISS06A	01-JUL-98	REG	LITHIUM	2130		J
MISS06A	17-May-99	REG	LITHIUM	2130		
B38W07B	16-JUN-98	REG	LITHIUM	5480		
B38W07B	27-May-99	REG	LITHIUM	6870		J
B38W01S	28-JUL-93	REG	MAGNESIUM	36900	=	
B38W01S	23-MAY-94	REG	MAGNESIUM	35400	=	
B38W01S	21-MAY-95	REG	MAGNESIUM	27600	=	
B38W01S	17-MAY-96	REG	MAGNESIUM	32800	=	
B38W01S	04-JUN-97	REG	MAGNESIUM	30300		
B38W01S	07-JUL-98	REG	MAGNESIUM	25600		J
B38W02D	27-JUL-93	REG	MAGNESIUM	3830	B	
B38W02D	19-MAY-94	REG	MAGNESIUM	3480	=	
B38W02D	20-MAY-95	REG	MAGNESIUM	3020	=	
B38W02D	17-MAY-96	REG	MAGNESIUM	3710	=	
B38W02D	04-JUN-97	REG	MAGNESIUM	3840		
B38W02D	20-May-99	REG	MAGNESIUM	4020		
B38W07B	16-JUN-98	REG	MAGNESIUM	57500		
B38W07B	27-May-99	DUP	MAGNESIUM	88300		
B38W14D	04-AUG-93	REG	MAGNESIUM	25100	=	J
B38W14D	20-MAY-95	REG	MAGNESIUM	19500	=	
B38W14D	17-MAY-96	REG	MAGNESIUM	27800	=	

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
B38W14D	04-JUN-97	REG	MAGNESIUM	27700		
B38W14D	07-JUL-98	DUP	MAGNESIUM	28700		J
B38W14D	17-May-99	REG	MAGNESIUM	30000		
B38W14S	04-AUG-93	REG	MAGNESIUM	12100	=	J
B38W14S	20-MAY-95	REG	MAGNESIUM	20000	=	
B38W14S	17-MAY-96	REG	MAGNESIUM	28900	=	
B38W14S	17-MAY-96	DUP	MAGNESIUM	26300	=	
B38W14S	04-JUN-97	REG	MAGNESIUM	25300		
B38W14S	07-JUL-98	REG	MAGNESIUM	25000		J
B38W14S	17-May-99	REG	MAGNESIUM	27400		
B38W15D	02-AUG-93	REG	MAGNESIUM	18100	=	
B38W15D	26-MAY-94	REG	MAGNESIUM	35500	=	
B38W15D	19-MAY-95	REG	MAGNESIUM	22700	=	J
B38W15D	13-MAY-96	REG	MAGNESIUM	37500	=	
B38W15D	03-JUN-97	REG	MAGNESIUM	26500		
B38W15D	06-JUL-98	REG	MAGNESIUM	17100		J
B38W15S	02-AUG-93	REG	MAGNESIUM	25200	=	
B38W15S	26-MAY-94	REG	MAGNESIUM	19300	=	
B38W15S	19-MAY-95	REG	MAGNESIUM	27700	=	J
B38W15S	19-MAY-95	DUP	MAGNESIUM	25300	=	J
B38W15S	13-MAY-96	REG	MAGNESIUM	17800	=	
B38W15S	03-JUN-97	REG	MAGNESIUM	19000		
B38W15S	06-JUL-98	REG	MAGNESIUM	18100		J
B38W17A	28-JUL-93	REG	MAGNESIUM	13300	=	
B38W17A	25-MAY-94	REG	MAGNESIUM	7340	=	
B38W17A	20-MAY-95	REG	MAGNESIUM	5610	=	
B38W17A	13-MAY-96	REG	MAGNESIUM	9720	=	
B38W17A	03-JUN-97	REG	MAGNESIUM	5620		
B38W17A	02-JUL-98	REG	MAGNESIUM	6280		J
B38W17A	13-May-99	DUP	MAGNESIUM	9300		
B38W17B	29-JUL-93	REG	MAGNESIUM	25400	=	J
B38W17B	25-MAY-94	REG	MAGNESIUM	26600	=	
B38W17B	20-MAY-95	REG	MAGNESIUM	22800	=	
B38W17B	13-MAY-96	REG	MAGNESIUM	23500	=	
B38W17B	03-JUN-97	REG	MAGNESIUM	24900		
B38W17B	13-May-99	REG	MAGNESIUM	25200		
B38W18D	21-JUL-93	REG	MAGNESIUM	13600	=	
B38W18D	13-MAY-94	REG	MAGNESIUM	14400	=	J
B38W18D	15-MAY-95	REG	MAGNESIUM	14100	=	
B38W18D	14-MAY-96	REG	MAGNESIUM	14300	=	
B38W18D	09-MAY-97	REG	MAGNESIUM	14000		
B38W18D	08-JUN-98	REG	MAGNESIUM	14400		
B38W18D	20-May-99	REG	MAGNESIUM	14500		
B38W19D	23-JUL-93	REG	MAGNESIUM	37200	=	
B38W19D	16-MAY-94	REG	MAGNESIUM	52600	=	
B38W19D	10-MAY-95	REG	MAGNESIUM	31200	=	
B38W19D	16-MAY-96	REG	MAGNESIUM	43900	=	
B38W19D	16-MAY-97	REG	MAGNESIUM	36600		J
B38W19D	17-JUN-98	REG	MAGNESIUM	38900		
B38W19D	27-May-99	REG	MAGNESIUM	42000		
B38W19S	27-MAY-94	REG	MAGNESIUM	76200	=	
B38W19S	17-MAY-95	REG	MAGNESIUM	69000	=	
B38W19S	10-MAY-96	REG	MAGNESIUM	62600	=	

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
B38W19S	29-JUN-98	REG	MAGNESIUM	43300		J
B38W19S	14-May-99	REG	MAGNESIUM	46100		
B38W24D	09-AUG-93	REG	MAGNESIUM	9710	=	J
B38W24D	18-MAY-94	REG	MAGNESIUM	9810	=	
B38W24D	17-MAY-95	REG	MAGNESIUM	8290	=	
B38W24D	09-MAY-96	REG	MAGNESIUM	11600	=	
B38W24D	02-JUN-97	REG	MAGNESIUM	10100		
B38W24D	02-JUL-98	REG	MAGNESIUM	9790		J
B38W24D	24-May-99	REG	MAGNESIUM	11400		
B38W24S	05-AUG-93	REG	MAGNESIUM	6330	=	J
B38W24S	25-MAY-94	REG	MAGNESIUM	7930	=	
B38W24S	17-MAY-95	REG	MAGNESIUM	8430	=	
B38W24S	09-MAY-96	REG	MAGNESIUM	8550	=	
B38W24S	02-JUN-97	REG	MAGNESIUM	6280		
B38W24S	02-JUL-98	REG	MAGNESIUM	5810		J
B38W24S	13-May-99	REG	MAGNESIUM	4910		
B38W25D	03-AUG-93	REG	MAGNESIUM	6810	=	
B38W25D	18-MAY-94	REG	MAGNESIUM	5680	=	
B38W25D	12-MAY-95	REG	MAGNESIUM	6940	=	
B38W25D	15-MAY-96	REG	MAGNESIUM	6470	=	
B38W25D	15-MAY-97	REG	MAGNESIUM	5670		J
B38W25D	01-JUL-98	REG	MAGNESIUM	5520		J
B38W25D	26-May-99	REG	MAGNESIUM	5290		
B38W25S	03-AUG-93	REG	MAGNESIUM	7480	=	
B38W25S	24-MAY-94	REG	MAGNESIUM	7290	=	J
B38W25S	15-MAY-95	REG	MAGNESIUM	9110	=	
B38W25S	15-MAY-95	DUP	MAGNESIUM	7630	=	
B38W25S	15-MAY-96	REG	MAGNESIUM	7550	=	
B38W25S	15-MAY-96	DUP	MAGNESIUM	7980	=	
B38W25S	05-JUN-97	REG	MAGNESIUM	7470		
B38W25S	01-JUL-98	REG	MAGNESIUM	7810		J
B38W25S	17-May-99	REG	MAGNESIUM	6150		
MISS01AA	31-JUL-93	REG	MAGNESIUM	23800	=	
MISS01AA	23-MAY-94	REG	MAGNESIUM	22200	=	
MISS01AA	18-MAY-95	REG	MAGNESIUM	22000	=	
MISS01AA	09-MAY-96	REG	MAGNESIUM	24100	=	
MISS01AA	23-MAY-97	REG	MAGNESIUM	32100		
MISS01AA	18-JUN-98	REG	MAGNESIUM	33800		
MISS01AA	12-May-99	REG	MAGNESIUM	31700		
MISS01B	21-JUL-93	REG	MAGNESIUM	18700	=	
MISS01B	16-MAY-94	REG	MAGNESIUM	18400	=	
MISS01B	10-MAY-95	REG	MAGNESIUM	17600	=	
MISS01B	15-MAY-96	REG	MAGNESIUM	19200	=	
MISS01B	18-JUN-98	REG	MAGNESIUM	18900		
MISS01B	25-May-99	REG	MAGNESIUM	18800		
MISS02A	20-JUL-93	REG	MAGNESIUM	16100	=	
MISS02A	12-MAY-94	REG	MAGNESIUM	7980	=	
MISS02A	10-MAY-95	REG	MAGNESIUM	3410	=	
MISS02A	16-MAY-96	REG	MAGNESIUM	5980	=	
MISS02A	15-MAY-97	REG	MAGNESIUM	7560		J
MISS02A	15-MAY-97	DUP	MAGNESIUM	7030		J
MISS02A	11-JUN-98	DUP	MAGNESIUM	11800		
MISS02A	18-May-99	REG	MAGNESIUM	5700		
MISS02B	20-JUL-93	REG	MAGNESIUM	42300	=	
MISS02B	13-MAY-94	REG	MAGNESIUM	30100	=	J

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
MISS02B	09-MAY-95	REG	MAGNESIUM	33600	=	
MISS02B	14-MAY-96	REG	MAGNESIUM	36100	=	
MISS02B	19-MAY-97	REG	MAGNESIUM	32500		J
MISS02B	10-JUN-98	REG	MAGNESIUM	34600		
MISS02B	18-May-99	DUP	MAGNESIUM	40500		
MISS05A	27-MAY-94	REG	MAGNESIUM	48200	=	
MISS05A	12-MAY-95	REG	MAGNESIUM	79200	=	
MISS05A	10-MAY-96	REG	MAGNESIUM	42700	=	
MISS05A	02-JUN-97	REG	MAGNESIUM	43300		
MISS05A	29-JUN-98	REG	MAGNESIUM	33100		J
MISS05A	14-May-99	REG	MAGNESIUM	47700		
MISS05B	23-JUL-93	REG	MAGNESIUM	58200	=	
MISS05B	17-MAY-94	REG	MAGNESIUM	64400	=	
MISS05B	11-MAY-95	REG	MAGNESIUM	52200	=	J
MISS05B	16-MAY-96	REG	MAGNESIUM	47400	=	
MISS05B	14-MAY-97	REG	MAGNESIUM	60300		
MISS05B	30-JUN-98	REG	MAGNESIUM	19000		J
MISS06A	04-AUG-93	REG	MAGNESIUM	14800	=	J
MISS06A	24-MAY-94	REG	MAGNESIUM	9830	=	J
MISS06A	16-MAY-95	REG	MAGNESIUM	19200	=	
MISS06A	10-MAY-96	REG	MAGNESIUM	8630	=	
MISS06A	03-JUN-97	REG	MAGNESIUM	13600		
MISS06A	01-JUL-98	REG	MAGNESIUM	9670		J
MISS06A	17-May-99	DUP	MAGNESIUM	12400		
B38W01S	28-JUL-93	REG	MANGANESE	2880	=	J
B38W01S	23-MAY-94	REG	MANGANESE	2910	=	
B38W01S	21-MAY-95	REG	MANGANESE	2340	=	
B38W01S	17-MAY-96	REG	MANGANESE	2810	=	
B38W01S	04-JUN-97	REG	MANGANESE	2780		
B38W01S	07-JUL-98	REG	MANGANESE	2270		
B38W02D	27-JUL-93	REG	MANGANESE	2220	=	J
B38W02D	19-MAY-94	REG	MANGANESE	2000	=	
B38W02D	20-MAY-95	REG	MANGANESE	1240	=	
B38W02D	17-MAY-96	REG	MANGANESE	1350	=	
B38W02D	04-JUN-97	REG	MANGANESE	2480		
B38W02D	30-JUN-98	REG	MANGANESE	3700		
B38W02D	20-May-99	REG	MANGANESE	1130		
B38W14D	04-AUG-93	REG	MANGANESE	31.7	=	
B38W14D	20-MAY-95	REG	MANGANESE	5.3	=	
B38W14D	17-MAY-96	REG	MANGANESE	5.3	=	
B38W14D	04-JUN-97	REG	MANGANESE	33.5		
B38W14D	07-JUL-98	REG	MANGANESE	14.2		
B38W14D	07-JUL-98	DUP	MANGANESE	13.3		
B38W14D	17-May-99	REG	MANGANESE	6.1		J
B38W14S	04-AUG-93	REG	MANGANESE	505	=	
B38W14S	20-MAY-95	REG	MANGANESE	7.9	=	
B38W14S	17-MAY-96	REG	MANGANESE	22.6	=	
B38W14S	17-MAY-96	DUP	MANGANESE	20.3	=	
B38W14S	04-JUN-97	REG	MANGANESE	15.7		
B38W14S	07-JUL-98	REG	MANGANESE	126		J
B38W14S	17-May-99	REG	MANGANESE	32.1		
B38W15D	02-AUG-93	REG	MANGANESE	474	=	J

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
B38W15D	26-MAY-94	REG	MANGANESE	944	=	
B38W15D	19-MAY-95	REG	MANGANESE	638	=	J
B38W15D	13-MAY-96	REG	MANGANESE	1080	=	J
B38W15D	03-JUN-97	REG	MANGANESE	809		
B38W15D	06-JUL-98	REG	MANGANESE	514		
B38W15S	02-AUG-93	REG	MANGANESE	1850	=	J
B38W15S	26-MAY-94	REG	MANGANESE	1370	=	
B38W15S	19-MAY-95	REG	MANGANESE	2170	=	J
B38W15S	19-MAY-95	DUP	MANGANESE	1970	=	J
B38W15S	13-MAY-96	REG	MANGANESE	1400	=	J
B38W15S	03-JUN-97	REG	MANGANESE	1540		
B38W15S	06-JUL-98	REG	MANGANESE	1550		
B38W17A	28-JUL-93	REG	MANGANESE	1030	=	J
B38W17A	25-MAY-94	REG	MANGANESE	57.7	=	
B38W17A	20-MAY-95	REG	MANGANESE	55.9	=	
B38W17A	13-MAY-96	REG	MANGANESE	38.4	=	J
B38W17A	03-JUN-97	REG	MANGANESE	59.9		
B38W17A	02-JUL-98	REG	MANGANESE	137		
B38W17A	13-May-99	DUP	MANGANESE	42.7		
B38W17B	29-JUL-93	REG	MANGANESE	3940	=	J
B38W17B	25-MAY-94	REG	MANGANESE	4650	=	
B38W17B	20-MAY-95	REG	MANGANESE	4020	=	
B38W17B	13-MAY-96	REG	MANGANESE	4710	=	J
B38W17B	03-JUN-97	REG	MANGANESE	4860		
B38W17B	02-JUL-98	REG	MANGANESE	3940		
B38W17B	13-May-99	REG	MANGANESE	4920		
B38W18D	21-JUL-93	REG	MANGANESE	4010	=	J
B38W18D	13-MAY-94	REG	MANGANESE	3800	=	J
B38W18D	15-MAY-95	REG	MANGANESE	4010	=	
B38W18D	14-MAY-96	REG	MANGANESE	3950	=	
B38W18D	09-MAY-97	REG	MANGANESE	2980		
B38W18D	08-JUN-98	REG	MANGANESE	3670		
B38W18D	20-May-99	REG	MANGANESE	4590		
B38W19D	23-JUL-93	REG	MANGANESE	2450	=	J
B38W19D	16-MAY-94	REG	MANGANESE	3090	=	
B38W19D	10-MAY-95	REG	MANGANESE	2030	=	
B38W19D	16-MAY-96	REG	MANGANESE	2570	=	
B38W19D	16-MAY-97	REG	MANGANESE	2400		
B38W19D	17-JUN-98	REG	MANGANESE	2530		
B38W19D	27-May-99	REG	MANGANESE	2820		
B38W19S	27-MAY-94	REG	MANGANESE	860	=	
B38W19S	17-MAY-95	REG	MANGANESE	301	=	
B38W19S	10-MAY-96	REG	MANGANESE	744	=	J
B38W19S	29-JUN-98	REG	MANGANESE	682		
B38W19S	29-May-99	REG	MANGANESE	841		
B38W24D	09-AUG-93	REG	MANGANESE	5620	=	
B38W24D	18-MAY-94	REG	MANGANESE	4730	=	J
B38W24D	17-MAY-95	REG	MANGANESE	3980	=	
B38W24D	09-MAY-96	REG	MANGANESE	6190	=	J
B38W24D	02-JUN-97	REG	MANGANESE	5600		
B38W24D	02-JUL-98	REG	MANGANESE	4720		
B38W24D	13-May-99	REG	MANGANESE	5860		
B38W24S	05-AUG-93	REG	MANGANESE	4720	=	

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
B38W24S	25-MAY-94	REG	MANGANESE	4610	=	
B38W24S	17-MAY-95	REG	MANGANESE	5420	=	
B38W24S	09-MAY-96	REG	MANGANESE	4430	=	J
B38W24S	02-JUN-97	REG	MANGANESE	3190		
B38W24S	02-JUL-98	REG	MANGANESE	2910		
B38W24S	13-May-99	DUP	MANGANESE	5040		
B38W25D	03-AUG-93	REG	MANGANESE	1620	=	J
B38W25D	18-MAY-94	REG	MANGANESE	1380	=	J
B38W25D	12-MAY-95	REG	MANGANESE	1740	=	J
B38W25D	15-MAY-96	REG	MANGANESE	1610	=	J
B38W25D	15-MAY-97	REG	MANGANESE	1380		
B38W25D	01-JUL-98	REG	MANGANESE	1400		
B38W25D	26-May-99	REG	MANGANESE	1390		
B38W25S	03-AUG-93	REG	MANGANESE	1730	=	J
B38W25S	24-MAY-94	REG	MANGANESE	1250	=	J
B38W25S	15-MAY-95	REG	MANGANESE	1540	=	
B38W25S	15-MAY-95	DUP	MANGANESE	1410	=	
B38W25S	15-MAY-96	REG	MANGANESE	1330	=	J
B38W25S	15-MAY-96	DUP	MANGANESE	1480	=	J
B38W25S	05-JUN-97	REG	MANGANESE	1450		
B38W25S	01-JUL-98	REG	MANGANESE	2390		
B38W25S	17-May-99	REG	MANGANESE	2670		J
MISS01AA	31-JUL-93	REG	MANGANESE	309	=	J
MISS01AA	23-MAY-94	REG	MANGANESE	156	=	
MISS01AA	18-MAY-95	REG	MANGANESE	8.6	=	
MISS01AA	09-MAY-96	REG	MANGANESE	119	=	J
MISS01AA	23-MAY-97	REG	MANGANESE	116		
MISS01AA	18-JUN-98	REG	MANGANESE	117		
MISS01AA	12-May-99	REG	MANGANESE	118		
MISS01B	21-JUL-93	REG	MANGANESE	236	=	J
MISS01B	16-MAY-94	REG	MANGANESE	356	=	
MISS01B	10-MAY-95	REG	MANGANESE	271	=	
MISS01B	15-MAY-96	REG	MANGANESE	390	=	J
MISS01B	18-JUN-98	REG	MANGANESE	375		
MISS01B	25-May-99	REG	MANGANESE	359		
MISS02A	20-JUL-93	REG	MANGANESE	96.8	=	
MISS02A	12-MAY-94	REG	MANGANESE	21.9	=	J
MISS02A	10-MAY-95	REG	MANGANESE	50.6	=	
MISS02A	16-MAY-96	REG	MANGANESE	20.9	=	
MISS02A	15-MAY-97	DUP	MANGANESE	19.4		
MISS02A	11-JUN-98	DUP	MANGANESE	49.7		
MISS02A	18-May-99	REG	MANGANESE	71		
MISS02B	20-JUL-93	REG	MANGANESE	4500	=	
MISS02B	13-MAY-94	REG	MANGANESE	4190	=	J
MISS02B	09-MAY-95	REG	MANGANESE	4210	=	
MISS02B	14-MAY-96	REG	MANGANESE	5470	=	
MISS02B	19-MAY-97	REG	MANGANESE	4630		
MISS02B	10-JUN-98	REG	MANGANESE	5120		
MISS02B	18-May-99	DUP	MANGANESE	5650		
MISS05A	27-MAY-94	REG	MANGANESE	728	=	
MISS05A	12-MAY-95	REG	MANGANESE	1330	=	J
MISS05A	10-MAY-96	REG	MANGANESE	646	=	J
MISS05A	02-JUN-97	REG	MANGANESE	584		
MISS05A	29-JUN-98	REG	MANGANESE	330		
MISS05A	14-May-99	REG	MANGANESE	688		

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
MISS05B	23-JUL-93	REG	MANGANESE	2220	=	J
MISS05B	17-MAY-94	REG	MANGANESE	2530	=	
MISS05B	11-MAY-95	REG	MANGANESE	2180	=	
MISS05B	16-MAY-96	REG	MANGANESE	1920	=	
MISS05B	14-MAY-97	REG	MANGANESE	2450		
MISS05B	30-JUN-98	REG	MANGANESE	771		
MISS06A	04-AUG-93	REG	MANGANESE	826	=	
MISS06A	24-MAY-94	REG	MANGANESE	49.7	=	J
MISS06A	16-MAY-95	REG	MANGANESE	1540	=	
MISS06A	10-MAY-96	REG	MANGANESE	95	=	J
MISS06A	03-JUN-97	REG	MANGANESE	374		
MISS06A	01-JUL-98	REG	MANGANESE	267		
MISS06A	17-May-99	REG	MANGANESE	58.6		J
MISS02A	11-JUN-98	REG	MERCURY	0.51		J
MISS02A	11-JUN-98	DUP	MERCURY	0.52		J
B38W02D	20-MAY-95	REG	MOLYBDENUM	9.7	=	
B38W02D	04-JUN-97	REG	MOLYBDENUM	2.5		
B38W02D	30-JUN-98	REG	MOLYBDENUM	23.6		
B38W14D	20-MAY-95	REG	MOLYBDENUM	16.6	=	
B38W14S	20-MAY-95	REG	MOLYBDENUM	18.1	=	
B38W14S	04-JUN-97	REG	MOLYBDENUM	20.5		
B38W14S	07-JUL-98	REG	MOLYBDENUM	29.7		
B38W14S	17-May-99	REG	MOLYBDENUM	9.4		
B38W17A	28-JUL-93	REG	MOLYBDENUM	281	=	
B38W17A	20-MAY-95	REG	MOLYBDENUM	18.9	=	
B38W17A	03-JUN-97	REG	MOLYBDENUM	18.7		
B38W17A	02-JUL-98	REG	MOLYBDENUM	79.1		
B38W17A	13-May-99	REG	MOLYBDENUM	2.6		
B38W18D	08-JUN-98	REG	MOLYBDENUM	9.7		
B38W19S	17-MAY-95	REG	MOLYBDENUM	20.4	=	
B38W19S	10-MAY-96	REG	MOLYBDENUM	10.1	=	
B38W24D	02-JUL-98	REG	MOLYBDENUM	3.9		
B38W25S	24-MAY-94	REG	MOLYBDENUM	6.4	=	
B38W25S	01-JUL-98	REG	MOLYBDENUM	7.6		
B38W25S	17-May-99	REG	MOLYBDENUM	16.6		
MISS01AA	23-MAY-94	REG	MOLYBDENUM	49.2	=	J
MISS01AA	18-MAY-95	REG	MOLYBDENUM	10	=	
MISS01AA	23-MAY-97	REG	MOLYBDENUM	1.8		
MISS01AA	18-JUN-98	REG	MOLYBDENUM	3		
MISS02A	12-MAY-94	REG	MOLYBDENUM	5.9	=	J
MISS02A	15-MAY-97	REG	MOLYBDENUM	3.5		
MISS02A	15-MAY-97	DUP	MOLYBDENUM	3.5		
MISS02A	11-JUN-98	REG	MOLYBDENUM	3.4		
MISS02A	11-JUN-98	DUP	MOLYBDENUM	3.8		
MISS02A	11-JUN-99	REG	MOLYBDENUM	31.1		
MISS05A	02-JUN-97	REG	MOLYBDENUM	2.5		
MISS05A	29-JUN-98	REG	MOLYBDENUM	3.3		
MISS05A	14-May-99	REG	MOLYBDENUM	1.9		
B38W01S	28-JUL-93	REG	NICKEL	14.8	B	
B38W01S	04-JUN-97	REG	NICKEL	3.6		
B38W01S	07-JUL-98	REG	NICKEL	2.7		

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
B38W02D	27-JUL-93	REG	NICKEL	14.8	B	
B38W02D	19-MAY-94	REG	NICKEL	10.1	=	
B38W02D	17-MAY-96	REG	NICKEL	40.8	=	
B38W02D	04-JUN-97	REG	NICKEL	17.6		
B38W02D	30-JUN-98	REG	NICKEL	41.6		
B38W02D	20-May-99	REG	NICKEL	5.7		
B38W14D	04-JUN-97	REG	NICKEL	18.5		
B38W14D	07-JUL-98	REG	NICKEL	10.2		
B38W14D	07-JUL-98	DUP	NICKEL	9.1		
B38W14D	17-MAY-99	REG	NICKEL	3.3		
B38W14S	04-Aug-93	REG	NICKEL	31.2	B	
B38W14S	17-MAY-96	REG	NICKEL	17	=	
B38W14S	17-MAY-96	DUP	NICKEL	17	=	
B38W14S	04-JUN-97	REG	NICKEL	19.7		
B38W14S	07-JUL-98	REG	NICKEL	31.3		
B38W14S	17-MAY-99	REG	NICKEL	23.5		
B38W15D	26-MAY-94	REG	NICKEL	30.9	=	
B38W15D	03-JUN-97	REG	NICKEL	6.8		
B38W15D	06-JUL-98	REG	NICKEL	8.2		
B38W15S	03-JUN-97	REG	NICKEL	3.8		
B38W15S	06-JUL-98	REG	NICKEL	5.2		
B38W17A	28-JUL-93	REG	NICKEL	824	=	
B38W17A	25-MAY-94	REG	NICKEL	153	=	
B38W17A	20-MAY-95	REG	NICKEL	167	=	
B38W17A	13-MAY-96	REG	NICKEL	143	=	
B38W17A	03-JUN-97	REG	NICKEL	148		
B38W17A	02-JUL-98	REG	NICKEL	201		
B38W17A	13-MAY-99	DUP	NICKEL	120		
B38W17B	03-JUN-97	REG	NICKEL	1.2		
B38W17B	02-JUL-98	REG	NICKEL	2.4		
B38W17B	13-MAY-99	REG	NICKEL	1.6		
B38W18D	21-JUL-93	REG	NICKEL	37.6	B	
B38W18D	13-MAY-94	REG	NICKEL	39.5	=	J
B38W18D	15-MAY-95	REG	NICKEL	26.3	=	
B38W18D	14-MAY-96	REG	NICKEL	28.4	=	
B38W18D	09-MAY-97	REG	NICKEL	17.3		
B38W18D	08-JUN-98	REG	NICKEL	55.5		
B38W18D	20-MAY-99	REG	NICKEL	24.9		
B38W19D	16-MAY-97	REG	NICKEL	3.9		
B38W19D	17-JUN-98	REG	NICKEL	1.9		
B38W19D	27-MAY-99	REG	NICKEL	1.7		
B38W19S	29-JUN-98	REG	NICKEL	4.7		
B38W19S	14-MAY-99	REG	NICKEL	4.2		
B38W24D	18-MAY-94	REG	NICKEL	12.5	=	
B38W24D	02-JUN-97	REG	NICKEL	1.2		
B38W24D	02-JUL-98	REG	NICKEL	14.7		
B38W24D	13-MAY-99	REG	NICKEL	4.4		
B38W24S	02-JUN-97	REG	NICKEL	5.4		
B38W24S	02-JUL-98	REG	NICKEL	0.85		
B38W25D	12-MAY-95	REG	NICKEL	27.7	=	
B38W25D	15-MAY-97	REG	NICKEL	5.3		
B38W25D	01-JUL-98	REG	NICKEL	2.7		
B38W25D	26-MAY-99	REG	NICKEL	2.7		
B38W25S	03-AUG-93	REG	NICKEL	134	=	
B38W25S	15-MAY-95	REG	NICKEL	22.5	=	
B38W25S	15-MAY-95	DUP	NICKEL	30	=	
B38W25S	05-JUN-97	REG	NICKEL	5.8		

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
B38W25S	01-JUL-98	REG	NICKEL	35.1		
B38W25S	17-MAY-99	DUP	NICKEL	78.1		
MISS01AA	31-JUL-93	REG	NICKEL	66.5	=	
MISS01AA	23-MAY-94	REG	NICKEL	243	=	
MISS01AA	23-MAY-97	REG	NICKEL	4.1		
MISS01AA	18-JUN-98	REG	NICKEL	9.9		
MISS01AA	12-MAY-99	REG	NICKEL	3.6		
MISS02A	20-JUL-93	REG	NICKEL	20.7	=	
MISS02A	12-MAY-94	REG	NICKEL	27.1	=	
MISS02A	10-MAY-95	REG	NICKEL	11.4	=	
MISS02A	15-MAY-97	REG	NICKEL	12.2		
MISS02A	15-MAY-97	DUP	NICKEL	13.5		
MISS02A	11-JUN-98	REG	NICKEL	9.7		
MISS02A	11-JUN-98	DUP	NICKEL	10.4		
MISS02A	18-MAY-99	REG	NICKEL	31.1		
MISS02B	20-JUL-93	REG	NICKEL	22.6	=	
MISS02B	13-MAY-94	REG	NICKEL	181	=	J
MISS02B	19-MAY-97	REG	NICKEL	9.2		
MISS02B	10-JUN-98	REG	NICKEL	9.2		
MISS02B	18-MAY-99	REG	NICKEL	9.6		
MISS05A	10-MAY-96	REG	NICKEL	10.9	=	
MISS05A	02-JUN-97	REG	NICKEL	6.1		
MISS05A	29-JUN-98	REG	NICKEL	5		
MISS05A	14-MAY-99	REG	NICKEL	22.8		
MISS05B	23-JUL-93	REG	NICKEL	17.7	B	
MISS05B	14-MAY-97	REG	NICKEL	4.1		
MISS05B	30-JUN-98	REG	NICKEL	10.8		
MISS06A	10-MAY-96	REG	NICKEL	17.3	=	
MISS06A	03-JUN-97	REG	NICKEL	10.6		
MISS06A	01-JUL-98	REG	NICKEL	8.1		
MISS06A	17-MAY-99	DUP	NICKEL	7.9		
B38W01S	28-JUL-93	REG	POTASSIUM	59500	=	
B38W01S	23-MAY-94	REG	POTASSIUM	54100	=	
B38W01S	21-MAY-95	REG	POTASSIUM	44600	=	
B38W01S	17-MAY-96	REG	POTASSIUM	49300	=	
B38W01S	04-JUN-97	REG	POTASSIUM	49500		
B38W01S	07-JUL-98	REG	POTASSIUM	43700		
B38W02D	19-MAY-94	REG	POTASSIUM	1210	=	
B38W02D	17-MAY-96	REG	POTASSIUM	449	=	
B38W02D	04-JUN-97	REG	POTASSIUM	819		
B38W02D	30-JUN-98	REG	POTASSIUM	941		
B38W02D	20-MAY-99	REG	POTASSIUM	777		
B38W14D	04-AUG-93	REG	POTASSIUM	7440	=	
B38W14D	20-MAY-95	REG	POTASSIUM	3750	=	
B38W14D	17-MAY-96	REG	POTASSIUM	4380	=	
B38W14D	04-JUN-97	REG	POTASSIUM	5300		
B38W14D	07-JUL-98	REG	POTASSIUM	6020		
B38W14D	07-JUL-98	DUP	POTASSIUM	6110		
B38W14D	17-MAY-99	REG	POTASSIUM	4140		
B38W14S	04-AUG-93	REG	POTASSIUM	5700	=	
B38W14S	20-MAY-95	REG	POTASSIUM	2850	=	
B38W14S	17-MAY-96	REG	POTASSIUM	3720	=	
B38W14S	17-MAY-96	DUP	POTASSIUM	3790	=	
B38W14S	04-JUN-97	REG	POTASSIUM	5080		

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
B38W14S	07-JUL-98	REG	POTASSIUM	4930		
B38W14S	17-MAY-99	REG	POTASSIUM	4810		
B38W15D	02-AUG-93	REG	POTASSIUM	41200	=	
B38W15D	26-MAY-94	REG	POTASSIUM	58800	=	
B38W15D	19-MAY-95	REG	POTASSIUM	43300	=	J
B38W15D	13-MAY-96	REG	POTASSIUM	65000	=	J
B38W15D	03-JUN-97	REG	POTASSIUM	50500		
B38W15D	06-JUL-98	REG	POTASSIUM	44200		
B38W15S	02-AUG-93	REG	POTASSIUM	146000	=	
B38W15S	26-MAY-94	REG	POTASSIUM	138000	=	
B38W15S	19-MAY-95	REG	POTASSIUM	168000	=	J
B38W15S	19-MAY-95	DUP	POTASSIUM	154000	=	J
B38W15S	13-MAY-96	REG	POTASSIUM	136000	=	J
B38W15S	03-JUN-97	REG	POTASSIUM	136000		
B38W15S	06-JUL-98	REG	POTASSIUM	120000		
B38W17A	28-JUL-93	REG	POTASSIUM	26600	=	
B38W17A	25-MAY-94	REG	POTASSIUM	20300	=	
B38W17A	20-MAY-95	REG	POTASSIUM	13900	=	
B38W17A	13-MAY-96	REG	POTASSIUM	31000	=	J
B38W17A	03-JUN-97	REG	POTASSIUM	19200		
B38W17A	02-JUL-98	REG	POTASSIUM	20800		
B38W17A	13-MAY-99	DUP	POTASSIUM	25000		
B38W17B	29-JUL-93	REG	POTASSIUM	78400	=	J
B38W17B	25-MAY-94	REG	POTASSIUM	83300	=	
B38W17B	20-MAY-95	REG	POTASSIUM	73200	=	
B38W17B	13-MAY-96	REG	POTASSIUM	88500	=	J
B38W17B	03-JUN-97	REG	POTASSIUM	91100		
B38W17B	02-JUL-98	REG	POTASSIUM	88000		
B38W17B	13-MAY-99	REG	POTASSIUM	98900		
B38W18D	21-JUL-93	REG	POTASSIUM	6910	=	
B38W18D	13-MAY-94	REG	POTASSIUM	6240	=	J
B38W18D	15-MAY-95	REG	POTASSIUM	6370	=	
B38W18D	14-MAY-96	REG	POTASSIUM	6830	=	
B38W18D	09-MAY-97	REG	POTASSIUM	7530		
B38W18D	08-JUN-98	REG	POTASSIUM	8870		
B38W18D	20-MAY-99	DUP	POTASSIUM	7370		
B38W19D	23-JUL-93	REG	POTASSIUM	381000	=	
B38W19D	16-MAY-94	REG	POTASSIUM	485000	=	
B38W19D	10-MAY-95	REG	POTASSIUM	329000	=	
B38W19D	16-MAY-96	REG	POTASSIUM	435000	=	
B38W19D	16-MAY-97	REG	POTASSIUM	397000		J
B38W19D	17-JUN-98	REG	POTASSIUM	415000		J
B38W19D	27-MAY-99	REG	POTASSIUM	408000		
B38W19S	27-MAY-94	REG	POTASSIUM	43500	=	
B38W19S	17-MAY-95	REG	POTASSIUM	40400	=	
B38W19S	10-MAY-96	REG	POTASSIUM	33500	=	J
B38W19S	29-JUN-98	REG	POTASSIUM	31800		
B38W19S	14-MAY-99	REG	POTASSIUM	35500		
B38W24D	09-AUG-93	REG	POTASSIUM	13000	=	
B38W24D	18-MAY-94	REG	POTASSIUM	9900	=	
B38W24D	17-MAY-95	REG	POTASSIUM	7530	=	
B38W24D	09-MAY-96	REG	POTASSIUM	12700	=	J

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
B38W24D	02-JUN-97	REG	POTASSIUM	12800		
B38W24D	02-JUL-98	REG	POTASSIUM	12200		
B38W24D	13-MAY-99	REG	POTASSIUM	12800		
B38W24S	05-AUG-93	REG	POTASSIUM	8060	=	
B38W24S	25-MAY-94	REG	POTASSIUM	6600	=	
B38W24S	17-MAY-95	REG	POTASSIUM	7050	=	
B38W24S	09-MAY-96	REG	POTASSIUM	8790	=	J
B38W24S	02-JUN-97	REG	POTASSIUM	6030		
B38W24S	02-JUL-98	REG	POTASSIUM	6450		
B38W24S	13-MAY-99	DUP	POTASSIUM	7710		
B38W25D	03-AUG-93	REG	POTASSIUM	92300	=	
B38W25D	18-MAY-94	REG	POTASSIUM	62800	=	
B38W25D	12-MAY-95	REG	POTASSIUM	73900	=	J
B38W25D	15-MAY-96	REG	POTASSIUM	77800	=	J
B38W25D	15-MAY-97	REG	POTASSIUM	61700		J
B38W25D	01-JUL-98	REG	POTASSIUM	56900		
B38W25D	26-MAY-99	DUP	POTASSIUM	56200		
B38W25S	03-AUG-93	REG	POTASSIUM	167000	=	
B38W25S	24-MAY-94	REG	POTASSIUM	89600	=	J
B38W25S	15-MAY-95	REG	POTASSIUM	88400	=	
B38W25S	15-MAY-95	DUP	POTASSIUM	88800	=	
B38W25S	15-MAY-96	REG	POTASSIUM	72800	=	J
B38W25S	15-MAY-96	DUP	POTASSIUM	77900	=	J
B38W25S	05-JUN-97	REG	POTASSIUM	71400		
B38W25S	01-JUL-98	REG	POTASSIUM	45900		
B38W25S	17-MAY-99	REG	POTASSIUM	74400		
MISS01AA	31-JUL-93	REG	POTASSIUM	2340	B	J
MISS01AA	18-MAY-95	REG	POTASSIUM	1550	=	
MISS01AA	09-MAY-96	REG	POTASSIUM	1460	=	J
MISS01AA	23-MAY-97	REG	POTASSIUM	1900		
MISS01AA	18-JUN-98	REG	POTASSIUM	2100		
MISS01AA	12-MAY-99	REG	POTASSIUM	1590		
MISS01B	21-JUL-93	REG	POTASSIUM	6350	=	
MISS01B	16-MAY-94	REG	POTASSIUM	5710	=	
MISS01B	10-MAY-95	REG	POTASSIUM	6950	=	
MISS01B	15-MAY-96	REG	POTASSIUM	15300	=	J
MISS01B	18-JUN-98	REG	POTASSIUM	13900		
MISS01B	25-MAY-99	REG	POTASSIUM	11900		
MISS02A	20-JUL-93	REG	POTASSIUM	9390	=	
MISS02A	12-MAY-94	REG	POTASSIUM	2850	=	
MISS02A	10-MAY-95	REG	POTASSIUM	4340	=	
MISS02A	16-MAY-96	REG	POTASSIUM	3190	=	
MISS02A	15-MAY-97	REG	POTASSIUM	5120		J
MISS02A	15-MAY-97	DUP	POTASSIUM	4940		J
MISS02A	11-JUN-98	REG	POTASSIUM	4790		J
MISS02A	11-JUN-98	DUP	POTASSIUM	5260		J
MISS02A	18-MAY-99	REG	POTASSIUM	12500		
MISS02B	20-JUL-93	REG	POTASSIUM	55100	=	
MISS02B	13-MAY-94	REG	POTASSIUM	32000	=	J
MISS02B	09-MAY-95	REG	POTASSIUM	40300	=	
MISS02B	14-MAY-96	REG	POTASSIUM	38000	=	
MISS02B	19-MAY-97	REG	POTASSIUM	40100		J
MISS02B	10-JUN-98	REG	POTASSIUM	46200		J
MISS02B	18-MAY-99	REG	POTASSIUM	70700		
MISS05A	27-MAY-94	REG	POTASSIUM	57800	=	

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
MISS05A	12-MAY-95	REG	POTASSIUM	84600	=	J
MISS05A	10-MAY-96	REG	POTASSIUM	53000	=	J
MISS05A	02-JUN-97	REG	POTASSIUM	64100		
MISS05A	29-JUN-98	REG	POTASSIUM	45000		
MISS05A	14-MAY-99	REG	POTASSIUM	58300		
MISS05B	23-JUL-93	REG	POTASSIUM	224000	=	
MISS05B	17-MAY-94	REG	POTASSIUM	230000	=	
MISS05B	11-MAY-95	REG	POTASSIUM	231000	=	
MISS05B	16-MAY-96	REG	POTASSIUM	234000	=	
MISS05B	14-MAY-97	REG	POTASSIUM	224000		
MISS05B	30-JUN-98	REG	POTASSIUM	162000		
MISS06A	04-AUG-93	REG	POTASSIUM	75400	=	
MISS06A	24-MAY-94	REG	POTASSIUM	12100	=	J
MISS06A	16-MAY-95	REG	POTASSIUM	97000	=	
MISS06A	10-MAY-96	REG	POTASSIUM	12300	=	J
MISS06A	03-JUN-97	REG	POTASSIUM	22900		
MISS06A	01-JUL-98	REG	POTASSIUM	15000		
MISS06A	17-MAY-99	REG	POTASSIUM	15800		
B38W02D	30-JUN-98	REG	SILVER	0.78		
B38W07B	16-JUN-98	REG	SILVER	1.1		J
B38W07B	27-MAY-99	DUP	SILVER	3		
B38W19D	16-MAY-94	REG	SILVER	6	=	
B38W19D	17-JUN-98	REG	SILVER	4.3		
B38W19S	14-MAY-99	REG	SILVER	1.5		
B38W24D	18-MAY-94	REG	SILVER	4.8	=	
B38W24D	02-JUL-98	REG	SILVER	0.56		
MISS01AA	18-JUN-98	REG	SILVER	1.3		J
MISS01B	16-MAY-94	REG	SILVER	6.4	=	
MISS01B	25-MAY-99	REG	SILVER	1.4		
MISS02A	11-JUN-98	REG	SILVER	3.5		J
MISS02A	11-JUN-98	DUP	SILVER	0.96		J
MISS02A	18-MAY-99	REG	SILVER	1.4		
MISS02B	10-JUN-98	REG	SILVER	1.2		J
MISS02B	18-MAY-99	REG	SILVER	1.4		
MISS05A	27-MAY-94	REG	SILVER	5.6	=	
MISS05A	14-MAY-99	REG	SILVER	1.5		
B38W01S	28-JUL-93	REG	SODIUM	91100	=	
B38W01S	23-MAY-94	REG	SODIUM	80300	=	
B38W01S	21-MAY-95	REG	SODIUM	53700	=	
B38W01S	17-MAY-96	REG	SODIUM	59900	=	
B38W01S	04-JUN-97	REG	SODIUM	52200		
B38W01S	07-JUL-98	REG	SODIUM	39500		J
B38W02D	27-JUL-93	REG	SODIUM	7820	=	
B38W02D	19-MAY-94	REG	SODIUM	7060	=	
B38W02D	20-MAY-95	REG	SODIUM	6050	=	
B38W02D	17-MAY-96	REG	SODIUM	7210	=	
B38W02D	04-JUN-97	REG	SODIUM	8410		
B38W02D	30-JUN-98	REG	SODIUM	8710		J
B38W02D	20-MAY-99	REG	SODIUM	8350		
B38W14D	04-AUG-93	REG	SODIUM	29400	=	
B38W14D	20-MAY-95	REG	SODIUM	22100	=	
B38W14D	17-MAY-96	REG	SODIUM	31100	=	
B38W14D	04-JUN-97	REG	SODIUM	34800		
B38W14D	07-JUL-98	REG	SODIUM	34500		J
B38W14D	07-JUL-98	DUP	SODIUM	35400		J
B38W14D	17-MAY-99	REG	SODIUM	38800		

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
B38W14S	04-AUG-93	REG	SODIUM	11500	=	
B38W14S	20-MAY-95	REG	SODIUM	13500	=	
B38W14S	17-MAY-96	REG	SODIUM	19500	=	
B38W14S	17-MAY-96	DUP	SODIUM	17700	=	
B38W14S	04-JUN-97	REG	SODIUM	21900		
B38W14S	07-JUL-98	REG	SODIUM	19900		J
B38W14S	17-MAY-99	REG	SODIUM	22800		
B38W15D	02-AUG-93	REG	SODIUM	229000	=	
B38W15D	26-MAY-94	REG	SODIUM	340000	=	
B38W15D	19-MAY-95	REG	SODIUM	245000	=	
B38W15D	13-MAY-96	REG	SODIUM	361000	=	J
B38W15D	03-JUN-97	REG	SODIUM	251000		
B38W15D	06-JUL-98	REG	SODIUM	181000		J
B38W15S	02-AUG-93	REG	SODIUM	223000	=	
B38W15S	26-MAY-94	REG	SODIUM	205000	=	
B38W15S	19-MAY-95	REG	SODIUM	269000	=	
B38W15S	19-MAY-95	DUP	SODIUM	248000	=	
B38W15S	13-MAY-96	REG	SODIUM	207000	=	J
B38W15S	03-JUN-97	REG	SODIUM	207000		
B38W15S	06-JUL-98	REG	SODIUM	187000		J
B38W17A	28-JUL-93	REG	SODIUM	47000	=	
B38W17A	25-MAY-94	REG	SODIUM	37500	=	
B38W17A	20-MAY-95	REG	SODIUM	28000	=	
B38W17A	13-MAY-96	REG	SODIUM	58100	=	J
B38W17A	03-JUN-97	REG	SODIUM	33300		
B38W17A	02-JUL-98	REG	SODIUM	32300		J
B38W17A	13-MAY-99	REG	SODIUM	50800		
B38W17B	29-JUL-93	REG	SODIUM	207000	=	J
B38W17B	25-MAY-94	REG	SODIUM	208000	=	
B38W17B	20-MAY-95	REG	SODIUM	232000	=	
B38W17B	13-MAY-96	REG	SODIUM	194000	=	J
B38W17B	03-JUN-97	REG	SODIUM	218000		
B38W17B	02-JUL-98	REG	SODIUM	172000		J
B38W17B	13-MAY-99	REG	SODIUM	197000		
B38W18D	21-JUL-93	REG	SODIUM	28300	=	
B38W18D	13-MAY-94	REG	SODIUM	32800	=	J
B38W18D	15-MAY-95	REG	SODIUM	27000	=	
B38W18D	14-MAY-96	REG	SODIUM	29700	=	
B38W18D	09-MAY-97	REG	SODIUM	29100		
B38W18D	08-JUN-98	REG	SODIUM	34800		
B38W18D	20-MAY-99	REG	SODIUM	34300		
B38W19D	23-JUL-93	REG	SODIUM	469000	=	
B38W19D	16-MAY-94	REG	SODIUM	499000	=	
B38W19D	10-MAY-95	REG	SODIUM	306000	=	
B38W19D	16-MAY-96	REG	SODIUM	391000	=	
B38W19D	16-MAY-97	REG	SODIUM	327000		
B38W19D	17-JUN-98	REG	SODIUM	367000		
B38W19D	27-MAY-99	REG	SODIUM	383000		
B38W19S	27-MAY-94	REG	SODIUM	25900	=	
B38W19S	17-MAY-95	REG	SODIUM	23700	=	J
B38W19S	10-MAY-96	REG	SODIUM	22700	=	J
B38W19S	29-JUN-98	REG	SODIUM	21300		J
B38W19S	14-MAY-99	REG	SODIUM	21700		

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
B38W24D	09-AUG-93	REG	SODIUM	59800	=	J
B38W24D	18-MAY-94	REG	SODIUM	46600	=	
B38W24D	17-MAY-95	REG	SODIUM	39700	=	J
B38W24D	09-MAY-96	REG	SODIUM	54500	=	J
B38W24D	02-JUN-97	REG	SODIUM	41300		
B38W24D	02-JUL-98	REG	SODIUM	33800		J
B38W24D	13-MAY-99	REG	SODIUM	40000		
B38W24S	05-AUG-93	REG	SODIUM	21700	=	
B38W24S	25-MAY-94	REG	SODIUM	19800	=	
B38W24S	17-MAY-95	REG	SODIUM	18800	=	J
B38W24S	09-MAY-96	REG	SODIUM	15700	=	J
B38W24S	02-JUN-97	REG	SODIUM	12500		
B38W24S	02-JUL-98	REG	SODIUM	12000		J
B38W24S	13-MAY-99	DUP	SODIUM	15600		
B38W25D	03-AUG-93	REG	SODIUM	54500	=	
B38W25D	18-MAY-94	REG	SODIUM	40200	=	
B38W25D	12-MAY-95	REG	SODIUM	43700	=	J
B38W25D	15-MAY-96	REG	SODIUM	37600	=	J
B38W25D	15-MAY-97	REG	SODIUM	30900		
B38W25D	01-JUL-98	REG	SODIUM	28900		J
B38W25D	26-MAY-99	REG	SODIUM	27700		
B38W25S	03-AUG-93	REG	SODIUM	83800	=	
B38W25S	24-MAY-94	REG	SODIUM	42200	=	J
B38W25S	15-MAY-95	REG	SODIUM	37200	=	
B38W25S	15-MAY-95	DUP	SODIUM	37000	=	
B38W25S	15-MAY-96	REG	SODIUM	28300	=	J
B38W25S	15-MAY-96	DUP	SODIUM	31400	=	J
B38W25S	05-JUN-97	REG	SODIUM	31800		
B38W25S	01-JUL-98	REG	SODIUM	21600		J
B38W25S	17-MAY-99	REG	SODIUM	29900		
MISS01AA	31-JUL-93	REG	SODIUM	7400	=	
MISS01AA	23-MAY-94	REG	SODIUM	4810	=	
MISS01AA	18-MAY-95	REG	SODIUM	5990	=	J
MISS01AA	09-MAY-96	REG	SODIUM	3870	=	J
MISS01AA	23-MAY-97	REG	SODIUM	5260		
MISS01AA	18-JUN-98	REG	SODIUM	5300		
MISS01AA	12-MAY-99	REG	SODIUM	5140		
MISS01B	21-JUL-93	REG	SODIUM	53200	=	
MISS01B	16-MAY-94	REG	SODIUM	48100	=	
MISS01B	10-MAY-95	REG	SODIUM	48100	=	
MISS01B	15-MAY-96	REG	SODIUM	56900	=	J
MISS01B	18-JUN-98	REG	SODIUM	49000		
MISS01B	25-MAY-99	REG	SODIUM	51500		
MISS02A	20-JUL-93	REG	SODIUM	870000	=	
MISS02A	12-MAY-94	REG	SODIUM	878000	=	
MISS02A	10-MAY-95	REG	SODIUM	986000	=	
MISS02A	16-MAY-96	REG	SODIUM	800000	=	
MISS02A	15-MAY-97	REG	SODIUM	709000		
MISS02A	15-MAY-97	DUP	SODIUM	679000		
MISS02A	11-JUN-98	DUP	SODIUM	555000		
MISS02B	20-JUL-93	REG	SODIUM	1310000	=	
MISS02B	13-MAY-94	REG	SODIUM	801000	=	J
MISS02B	09-MAY-95	REG	SODIUM	932000	=	J

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
MISS02B	14-MAY-96	REG	SODIUM	981000	=	
MISS02B	19-MAY-97	REG	SODIUM	959000		
MISS02B	10-JUN-98	REG	SODIUM	973000		
MISS02B	18-MAY-99	REG	SODIUM	1000000		
MISS05A	27-MAY-94	REG	SODIUM	17300	=	
MISS05A	12-MAY-95	REG	SODIUM	24200	=	J
MISS05A	10-MAY-96	REG	SODIUM	14000	=	J
MISS05A	02-JUN-97	REG	SODIUM	20100		
MISS05A	29-JUN-98	REG	SODIUM	13800		J
MISS05A	14-MAY-99	REG	SODIUM	18000		
MISS05B	23-JUL-93	REG	SODIUM	321000	=	
MISS05B	17-MAY-94	REG	SODIUM	382000	=	
MISS05B	11-MAY-95	REG	SODIUM	303000	=	
MISS05B	16-MAY-96	REG	SODIUM	272000	=	
MISS05B	14-MAY-97	REG	SODIUM	297000		
MISS05B	30-JUN-98	REG	SODIUM	107000		J
MISS06A	04-AUG-93	REG	SODIUM	57300	=	
MISS06A	24-MAY-94	REG	SODIUM	15100	=	J
MISS06A	16-MAY-95	REG	SODIUM	62600	=	
MISS06A	10-MAY-96	REG	SODIUM	10500	=	J
MISS06A	03-JUN-97	REG	SODIUM	19400		
MISS06A	01-JUL-98	REG	SODIUM	15800		J
MISS06A	17-MAY-99	DUP	SODIUM	21300		
MISS07B	27-MAY-99	REG	SODIUM	1290000		
B38W02D	04-JUN-97	REG	VANADIUM	1.2		
B38W02D	30-JUN-98	REG	VANADIUM	2.7		
B38W02D	20-MAY-99	REG	VANADIUM	1		
B38W14D	17-MAY-96	REG	VANADIUM	4.7	=	
B38W14D	07-JUL-98	REG	VANADIUM	1.1		
B38W14D	07-JUL-98	DUP	VANADIUM	0.8		
B38W14D	17-MAY99	REG	VANADIUM	1.1		
B38W14S	17-MAY-96	REG	VANADIUM	7.4	=	
B38W14S	17-MAY-96	DUP	VANADIUM	7.2	=	
B38W14S	04-JUN-97	REG	VANADIUM	6.2		
B38W14S	07-JUL-98	REG	VANADIUM	9.8		
B38W14S	17-MAY-99	REG	VANADIUM	2.9		
B38W15D	26-MAY-94	REG	VANADIUM	11.9	=	
B38W15D	13-MAY-96	REG	VANADIUM	12.3	=	
B38W15D	03-JUN-97	REG	VANADIUM	4.2		
B38W15D	06-JUL-98	REG	VANADIUM	4.2		
B38W15S	02-AUG-93	REG	VANADIUM	13.3	B	
B38W15S	03-JUN-97	REG	VANADIUM	2.1		
B38W15S	06-JUL-98	REG	VANADIUM	2.2		
B38W17A	25-MAY-94	REG	VANADIUM	9.9	=	
B38W17A	13-MAY-96	REG	VANADIUM	8.4	=	
B38W17A	03-JUN-97	REG	VANADIUM	7.2		
B38W17A	02-JUL-98	REG	VANADIUM	28.2		
B38W17B	25-MAY-94	REG	VANADIUM	20.8	=	
B38W17B	20-MAY-95	REG	VANADIUM	7.6	=	
B38W17B	13-MAY-96	REG	VANADIUM	20.6	=	
B38W17B	03-JUN-97	REG	VANADIUM	2		
B38W17B	02-JUL-98	REG	VANADIUM	1		
B38W17B	13-MAY-99	REG	VANADIUM	2.1		

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
B38W19D	16-MAY-94	REG	VANADIUM	4.2	=	
B38W19D	16-MAY-96	REG	VANADIUM	8.1	=	
B38W19D	16-MAY-97	REG	VANADIUM	5.2		
B38W19D	17-JUN-98	REG	VANADIUM	4.2		
B38W19D	27-MAY-99	REG	VANADIUM	8.2		
B38W19S	27-MAY-94	REG	VANADIUM	56.6	=	
B38W19S	17-MAY-95	REG	VANADIUM	6.7	=	
B38W19S	10-MAY-96	REG	VANADIUM	41.9	=	
B38W19S	29-JUN-98	REG	VANADIUM	1.1		
B38W19S	14-MAY-99	REG	VANADIUM	2		
B38W24D	02-JUN-97	REG	VANADIUM	1.2		
B38W24D	02-JUL-98	REG	VANADIUM	0.8		
B38W24D	13-MAY-99	REG	VANADIUM	0.8		
B38W24S	02-JUN-97	REG	VANADIUM	2.8		
B38W24S	02-JUL-98	REG	VANADIUM	1.1		
B38W24S	13-MAY-99	REG	VANADIUM	0.89		
B38W25S	03-AUG-93	REG	VANADIUM	16.7	B	J
B38W25S	24-MAY-94	REG	VANADIUM	15	=	
B38W25S	15-MAY-96	REG	VANADIUM	9.3	=	
B38W25S	15-MAY-96	DUP	VANADIUM	13.1	=	
B38W25S	05-JUN-97	REG	VANADIUM	1.3		
B38W25S	01-JUL-98	REG	VANADIUM	1.8		
B38W25S	17-MAY-99	REG	VANADIUM	1.7		
MISS01AA	31-JUL-93	REG	VANADIUM	46.1	B	J
MISS01AA	23-MAY-94	REG	VANADIUM	42.1	=	
MISS01AA	09-MAY-96	REG	VANADIUM	37.9	=	
MISS01AA	23-MAY-97	REG	VANADIUM	0.5		
MISS01AA	18-JUN-98	REG	VANADIUM	4.6		
MISS01AA	12-MAY-99	REG	VANADIUM	2.8		
MISS01B	16-MAY-94	REG	VANADIUM	7.4	=	
MISS01B	15-MAY-96	REG	VANADIUM	13.6	=	
MISS01B	18-JUN-98	REG	VANADIUM	2.5		
MISS01B	25-MAY-99	REG	VANADIUM	3.4		
MISS02A	10-MAY-95	REG	VANADIUM	10.1	=	
MISS02A	16-MAY-96	REG	VANADIUM	6.3	=	
MISS02A	15-MAY-97	REG	VANADIUM	4.7		
MISS02A	15-MAY-97	DUP	VANADIUM	4.8		
MISS02A	11-JUN-98	REG	VANADIUM	2		
MISS02A	11-JUN-98	DUP	VANADIUM	2.4		
MISS02A	18-MAY-99	DUP	VANADIUM	9.7		
MISS02B	09-MAY-95	REG	VANADIUM	6.8	=	
MISS02B	19-MAY-97	REG	VANADIUM	3.4		
MISS02B	10-JUN-98	REG	VANADIUM	3.4		
MISS02B	18-MAY-99	DUP	VANADIUM	3.9		
MISS05A	27-MAY-94	REG	VANADIUM	50.5	=	
MISS05A	10-MAY-96	REG	VANADIUM	41.9	=	
MISS05A	02-JUN-97	REG	VANADIUM	16.9		
MISS05A	29-JUN-98	REG	VANADIUM	11.3		
MISS05A	14-MAY-99	REG	VANADIUM	1.6		
MISS05B	17-MAY-94	REG	VANADIUM	27.7	=	
MISS05B	16-MAY-96	REG	VANADIUM	6	=	
MISS05B	14-MAY-97	REG	VANADIUM	3.8		
MISS05B	30-JUN-98	REG	VANADIUM	0.96		
MISS06A	04-AUG-93	REG	VANADIUM	21.9	B	J
MISS06A	24-MAY-94	REG	VANADIUM	23.6	=	
MISS06A	10-MAY-96	REG	VANADIUM	17.6	=	
MISS06A	03-JUN-97	REG	VANADIUM	1.2		

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
MISS06A	01-JUL-98	REG	VANADIUM	1.2		
MISS06A	17-MAY-99	REG	VANADIUM	1.2		
MISS07B	27-MAY-99	DUP	VANADIUM	19.6		
B38W01S	23-MAY-94	REG	ZINC	129	=	J
B38W01S	07-JUL-98	REG	ZINC	13.5		
B38W02D	27-JUL-93	REG	ZINC	15.2	B	
B38W02D	17-MAY-96	REG	ZINC	3.2	=	
B38W02D	30-JUN-98	REG	ZINC	7.4		
B38W14D	04-AUG-93	REG	ZINC	23.7	=	
B38W14D	17-MAY-96	REG	ZINC	4.2	=	
B38W14D	07-JUL-98	REG	ZINC	21.1		
B38W14D	07-JUL-98	DUP	ZINC	17.9		
B38W14S	04-AUG-93	REG	ZINC	47.1	=	
B38W14S	20-MAY-95	REG	ZINC	40.1	=	
B38W14S	17-MAY-96	REG	ZINC	6.5	=	
B38W14S	17-MAY-96	DUP	ZINC	5.3	=	
B38W14S	07-JUL-98	REG	ZINC	40.3		
B38W14S	13-MAY-99	REG	ZINC	6.9		
B38W15D	02-AUG-93	REG	ZINC	57.5	=	UJ
B38W15D	26-MAY-94	REG	ZINC	67.2	=	
B38W15D	06-JUL-98	REG	ZINC	11.2		
B38W15S	02-AUG-93	REG	ZINC	48.6	=	UJ
B38W15S	02-AUG-93	REG	ZINC	36.4	=	UJ
B38W15S	06-JUL-98	REG	ZINC	13.9		
B38W17A	28-JUL-93	REG	ZINC	147	=	
B38W17A	25-MAY-94	REG	ZINC	34.3	=	
B38W17A	02-JUL-98	REG	ZINC	22		
B38W17A	13-MAY-99	REG	ZINC	4.9		
B38W17B	25-MAY-94	REG	ZINC	42.8	=	
B38W17B	02-JUL-98	REG	ZINC	3.2		
B38W17B	13-MAY-99	REG	ZINC	1.6		
B38W18D	21-JUL-93	REG	ZINC	138	=	
B38W18D	13-MAY-94	REG	ZINC	226	=	J
B38W18D	15-MAY-95	REG	ZINC	152	=	J
B38W18D	14-MAY-96	REG	ZINC	102	=	
B38W18D	09-MAY-97	REG	ZINC	76.8		
B38W18D	08-JUN-98	REG	ZINC	79.7		
B38W18D	20-MAY-99	DUP	ZINC	81.5		
B38W19D	16-MAY-96	REG	ZINC	4.6	=	
B38W19D	16-MAY-97	REG	ZINC	3.1		
B38W19D	17-JUN-98	REG	ZINC	2.9		
B38W19D	27-MAY-99	REG	ZINC	2.1		
B38W19S	17-MAY-95	REG	ZINC	6	=	UJ
B38W19S	29-JUN-98	REG	ZINC	6.2		
B38W19S	14-MAY-99	REG	ZINC	1.7		
B38W24D	09-AUG-93	REG	ZINC	38.1	=	J
B38W24D	17-MAY-95	REG	ZINC	17.2	=	UJ
B38W24D	02-JUL-98	REG	ZINC	15.4		
B38W24D	13-MAY-99	REG	ZINC	5.9		
B38W24S	17-MAY-95	REG	ZINC	7.6	=	UJ
B38W24S	02-JUL-98	REG	ZINC	12.3		
B38W24S	13-MAY-99	REG	ZINC	30.4		
B38W25D	03-AUG-93	REG	ZINC	28.5	=	UJ
B38W25D	15-MAY-97	REG	ZINC	2.8		
B38W25D	01-JUL-98	REG	ZINC	4.6		
B38W25D	26-MAY-99	REG	ZINC	4.5		
B38W25S	03-AUG-93	REG	ZINC	231	=	J

TABLE A-3 (cont.)
Historical Results for Detected Selected Metals in Groundwater at MISS

Station	Date	Sample Type	Analyte	Result(ug/l)	Lab Q	Rev Q
B38W25S	15-MAY-95	REG	ZINC	12.4	=	UJ
B38W25S	15-MAY-95	DUP	ZINC	13.1	=	UJ
B38W25S	15-MAY-96	REG	ZINC	38.2	=	
B38W25S	15-MAY-96	DUP	ZINC	31.6	=	J
B38W25S	01-JUL-98	REG	ZINC	198		
B38W25S	17-MAY-99	REG	ZINC	29.7		
MISS01AA	31-JUL-93	REG	ZINC	142	=	J
MISS01AA	23-MAY-94	REG	ZINC	88.8	=	J
MISS01AA	18-MAY-95	REG	ZINC	7.6	=	UJ
MISS01AA	23-MAY-97	REG	ZINC	4.8		
MISS01AA	18-JUN-98	REG	ZINC	2.8		UJ
MISS01B	21-JUL-93	REG	ZINC	13.8	B	
MISS01B	10-MAY-95	REG	ZINC	34.6	=	
MISS01B	18-JUN-98	REG	ZINC	2.2		UJ
MISS01B	25-MAY-99	REG	ZINC	2.9		
MISS02A	20-JUL-93	REG	ZINC	17.3	=	
MISS02A	12-MAY-94	REG	ZINC	50	=	J
MISS02A	10-MAY-95	REG	ZINC	19.3	=	
MISS02A	16-MAY-96	REG	ZINC	4.5	=	
MISS02A	15-MAY-97	REG	ZINC	8		
MISS02A	15-MAY-97	DUP	ZINC	10.5		
MISS02A	11-JUN-98	REG	ZINC	17.7		J
MISS02A	11-JUN-98	DUP	ZINC	11		J
MISS02A	18-MAY-99	REG	ZINC	36		
MISS02B	13-MAY-94	REG	ZINC	148	=	J
MISS02B	09-MAY-95	REG	ZINC	22	=	
MISS02B	14-MAY-96	REG	ZINC	1.8	=	
MISS02B	19-MAY-97	REG	ZINC	70.8		
MISS02B	10-JUN-98	REG	ZINC	2.1		J
MISS05A	27-MAY-94	REG	ZINC	34.6	=	
MISS05A	12-MAY-95	REG	ZINC	34.4	=	
MISS05A	10-MAY-96	REG	ZINC	72.1	=	
MISS05A	29-JUN-98	REG	ZINC	27.4		
MISS05A	14-MAY-99	REG	ZINC	74.5		
MISS05B	11-MAY-95	REG	ZINC	98	=	J
MISS05B	16-MAY-96	REG	ZINC	7.8	=	
MISS05B	30-JUN-98	REG	ZINC	39.3		
MISS06A	04-AUG-93	REG	ZINC	1260	=	
MISS06A	24-MAY-94	REG	ZINC	1120	=	
MISS06A	16-MAY-95	REG	ZINC	865	=	
MISS06A	10-MAY-96	REG	ZINC	968	=	
MISS06A	03-JUN-97	REG	ZINC	1060		
MISS06A	01-JUL-98	REG	ZINC	802		
MISS06A	17-MAY-99	DUP	ZINC	934		
MISS07B	27-MAY-99	DUP	ZINC	4.8		

TABLE A-4
Historical Results for Detected VOCs in Groundwater at MISS

STATION	DATE	ANALYTE	RESULT (ug/L)	QUALIFIER BNI	QUALIFIER Lab	DETECTION LIMIT (ug/L)
B38W14D	04-Aug-93	1,1,1-Trichloroethane	8.00			5
B38W14D	20-May-95	1,1,1-Trichloroethane	6.00			5
B38W14D	04-Jun-97	1,1,1-Trichloroethane	4.00	J	J	5
B38W14D	07-Jul-98	1,1,1-Trichloroethane	3.00	J	J	10
B38W14D	20-May-99	1,1,1-Trichloroethane	3.00	J	J	10
B38W14S	20-May-95	1,1,1-Trichloroethane	7.00			5
B38W14S	04-Jun-97	1,1,1-Trichloroethane	4.00	J	J	5
B38W14S	07-Jul-98	1,1,1-Trichloroethane	4.00	J	J	5
B38W14S	17-May-99	1,1,1-Trichloroethane	2.00	J	J	5
B38W15D	02-Aug-93	1,1,1-Trichloroethane	10.00			5
B38W15D	26-May-94	1,1,1-Trichloroethane	5.00			5
B38W15D	19-May-95	1,1,1-Trichloroethane	7.00			5
B38W15D	13-May-96	1,1,1-Trichloroethane	3.00			2
B38W15D	03-Jun-97	1,1,1-Trichloroethane	3.00	J	J	5
B38W15D	06-Jul-98	1,1,1-Trichloroethane	5.00			5
B38W15S	02-Aug-93	1,1,1-Trichloroethane	2.00		J	5
B38W15S	26-May-94	1,1,1-Trichloroethane	2.00		J	5
B38W15S	13-May-96	1,1,1-Trichloroethane	1.00	J	J	2
MISS07B	13-Oct-92	1,1,1-Trichloroethane	1.00		J	5
MISS07B	12-Aug-93	1,1,1-Trichloroethane	2.00	J	J	5
MISS07B	18-May-94	1,1,1-Trichloroethane	2.00		J	5
MISS07B	18-May-94	1,1,1-Trichloroethane	2.00		J	5
B38W14D	04-Aug-93	1,1-Dichloroethane	3.00		J	5
B38W14D	20-May-95	1,1-Dichloroethane	4.00		J	5
B38W14D	04-Jun-97	1,1-Dichloroethane	3.00	J	J	5
B38W14D	17-May-99	1,1-Dichloroethane	2.00	J	J	5
B38W14S	20-May-95	1,1-Dichloroethane	2.00		J	5
B38W14S	04-Jun-97	1,1-Dichloroethane	2.00	J	J	5
B38W14S	07-Jul-98	1,1-Dichloroethane	1.00	J	J	5
B38W15D	02-Aug-93	1,1-Dichloroethane	6.00			5
B38W15D	26-May-94	1,1-Dichloroethane	4.00		J	5
B38W15D	19-May-95	1,1-Dichloroethane	6.00			5
B38W15D	13-May-96	1,1-Dichloroethane	3.00			2
B38W15D	03-Jun-97	1,1-Dichloroethane	4.00	J	J	5
B38W15D	06-Jul-98	1,1-Dichloroethane	6.00			5
B38W15S	02-Aug-93	1,1-Dichloroethane	4.00		J	5
B38W15S	26-May-94	1,1-Dichloroethane	6.00			5
B38W15S	19-May-95	1,1-Dichloroethane	4.00		J	5
B38W15S	13-May-96	1,1-Dichloroethane	5.00			2
B38W15S	03-Jun-97	1,1-Dichloroethane	4.00	J	J	5
B38W15S	06-Jul-98	1,1-Dichloroethane	4.00	J	J	5
B38W14D	04-Aug-93	1,1-Dichloroethene	6.00			5
B38W14D	20-May-95	1,1-Dichloroethene	7.00			5
B38W14D	04-Jun-97	1,1-Dichloroethene	5.00			1
B38W14D	07-Jul-98	1,1-Dichloroethene	3.00	J	J	10
B38W14D	07-May-99	1,1-Dichloroethene	3.00	J	J	5
B38W14S	20-May-95	1,1-Dichloroethene	7.00			5
B38W14S	17-May-96	1,1-Dichloroethene	6.00	J	J	10
B38W14S	04-Jun-97	1,1-Dichloroethene	5.00			1

TABLE A-4 (continued)
Historical Results for Detected VOCs in Groundwater at MISS

STATION	DATE	ANALYTE	RESULT (ug/L)	QUALIFIER BNI	QUALIFIER Lab	DETECTION LIMIT (ug/L)
B38W14S	07-Jul-98	1,1-Dichloroethene	5.00	J	J	5
B38W14S	17-May-99	1,1-Dichloroethene	2.00	J	J	5
B38W15D	02-Aug-93	1,1-Dichloroethene	8.00			5
B38W15D	26-May-94	1,1-Dichloroethene	7.00			5
B38W15D	19-May-95	1,1-Dichloroethene	9.00			5
B38W15D	13-May-96	1,1-Dichloroethene	5.00			2
B38W15D	03-Jun-97	1,1-Dichloroethene	7.00	J		1
B38W15D	06-Jul-98	1,1-Dichloroethene	6.00			5
B38W15S	13-May-96	1,1-Dichloroethene	0.30	J	J	2
MISS01B	16-May-94	1,1-Dichloroethene	1.00		J	5
MISS07B	13-Oct-92	1,1-Dichloroethene	2.00		J	5
MISS07B	18-May-94	1,1-Dichloroethene	3.00		J	5
MISS07B	11-May-95	1,1-Dichloroethene	2.00		J	5
MISS07B	16-May-96	1,1-Dichloroethene	2.00	J	J	2
MISS07B	16-May-97	1,1-Dichloroethene	2.00			1
B38W07B	16-Jun-98	1,2-Dichloroethene (Total)	6.00			5
B38W14D	04-Aug-93	1,2-Dichloroethene (Total)	56.00			5
B38W14D	20-May-95	1,2-Dichloroethene (Total)	93.00			5
B38W14D	17-May-96	1,2-Dichloroethene (Total)	83.00			50
B38W14D	04-Jun-97	1,2-Dichloroethene (Total)	78.00			5
B38W14D	07-Jul-98	1,2-Dichloroethene (Total)	71.00			10
B38W14D	17-May-99	1,2-Dichloroethene (Total)	77.00			5
B38W14S	04-Aug-93	1,2-Dichloroethene (Total)	10.00			5
B38W14S	20-May-95	1,2-Dichloroethene (Total)	53.00			5
B38W14S	17-May-96	1,2-Dichloroethene (Total)	29.00			10
B38W14S	17-May-96	1,2-Dichloroethene (Total)	0.90	J	J	1
B38W14S	04-Jun-97	1,2-Dichloroethene (Total)	43.00			5
B38W14S	07-Jul-98	1,2-Dichloroethene (Total)	44.00			5
B38W14S	17-May-99	1,2-Dichloroethene (Total)	43.00			5
B38W15D	02-Aug-93	1,2-Dichloroethene (Total)	150.00			5
B38W15D	26-May-94	1,2-Dichloroethene (Total)	120.00			5
B38W15D	19-May-95	1,2-Dichloroethene (Total)	160.00			5
B38W15D	13-May-96	1,2-Dichloroethene (Total)	110.00			2
B38W15D	03-Jun-97	1,2-Dichloroethene (Total)	120.00	J		5
B38W15D	06-Jul-98	1,2-Dichloroethene (Total)	140.00			5
B38W15S	02-Aug-93	1,2-Dichloroethene (Total)	42.00			5
B38W15S	26-May-94	1,2-Dichloroethene (Total)	94.00			5
B38W15S	19-May-95	1,2-Dichloroethene (Total)	6.00			5
B38W15S	19-May-95	1,2-Dichloroethene (Total)	10.00			5
B38W15S	13-May-96	1,2-Dichloroethene (Total)	55.00			2
B38W15S	03-Jun-97	1,2-Dichloroethene (Total)	13.00			5
B38W15S	06-Jul-98	1,2-Dichloroethene (Total)	15.00			5
B38W17B	29-Jul-93	1,2-Dichloroethene (Total)	3.00		J	5
B38W17B	25-May-94	1,2-Dichloroethene (Total)	1.00		J	5
B38W17B	20-May-95	1,2-Dichloroethene (Total)	2.00	J	J	5
B38W19D	11-Aug-93	1,2-Dichloroethene (Total)	2.00		J	5
B38W19D	16-May-96	1,2-Dichloroethene (Total)	0.30	J	J	1
B38W24D	09-May-96	1,2-Dichloroethene (Total)	0.70	J	J	1
B38W24S	09-May-96	1,2-Dichloroethene (Total)	0.20	J	J	1

TABLE A-4 (continued)
Historical Results for Detected VOCs in Groundwater at MISS

STATION	DATE	ANALYTE	RESULT (ug/L)	QUALIFIER BNI	QUALIFIER Lab	DETECTION LIMIT (ug/L)
MISS01B	15-Oct-92	1,2-Dichloroethene (Total)	1.00		J	5
MISS01B	21-Jul-93	1,2-Dichloroethene (Total)	5.00		J	5
MISS01B	16-May-94	1,2-Dichloroethene (Total)	31.00			5
MISS01B	10-May-95	1,2-Dichloroethene (Total)	3.00		J	5
MISS01B	15-May-96	1,2-Dichloroethene (Total)	22.00			5
MISS01B	18-JUN-98	1,2-Dichloroethene (Total)	11.00			5
MISS01B	25-May-99	1,2-Dichloroethene (Total)	2.00	J	J	5
MISS07B	13-Oct-92	1,2-Dichloroethene (Total)	10.00			5
MISS07B	12-Aug-93	1,2-Dichloroethene (Total)	11.00	J	J	5
MISS07B	18-May-94	1,2-Dichloroethene (Total)	9.00			5
MISS07B	18-May-94	1,2-Dichloroethene (Total)	10.00			5
MISS07B	11-May-95	1,2-Dichloroethene (Total)	8.00			5
MISS07B	16-May-96	1,2-Dichloroethene (Total)	7.00			2
MISS07B	16-May-97	1,2-Dichloroethene (Total)	7.00			5
MISS07B	16-Jun-98	1,2-Dichloroethene (Total)	6.00			5
MISS07B	27-May-99	1,2-Dichloroethene (Total)	6.00			5
B38W14D	04-Aug-93	1,2-Dichloropropane	1.00		J	5
B38W14D	20-May-95	1,2-Dichloropropane	1.00		J	5
B38W15D	02-Aug-93	1,2-Dichloropropane	2.00		J	5
B38W15D	26-May-94	1,2-Dichloropropane	1.00		J	5
B38W15D	13-May-96	1,2-Dichloropropane	0.80	J	J	2
B38W15D	06-Jul-98	1,2-Dichloropropane	2.00	J	J	5
B38W15S	26-May-94	1,2-Dichloropropane	2.00		J	5
B38W15S	13-May-96	1,2-Dichloropropane	0.90	J	J	2
MISS02A	11-Jun-98	2-Butanone	23.00			10
B38W15D	13-May-96	Benzene	0.70	J	J	2
B38W15S	26-May-94	Benzene	1.00		J	5
B38W15S	13-May-96	Benzene	0.50	J	J	2
B38W19D	16-May-94	Benzene	5.00			5
B38W19D	10-May-95	Benzene	1.00		J	5
B38W19D	16-May-96	Benzene	5.00			1
B38W24D	18-May-94	Benzene	2.00		J	5
B38W24D	09-May-96	Benzene	0.40	J	J	1
MISS02B	15-Oct-92	Benzene	3.00		J	5
MISS02B	20-Jul-93	Benzene	7.00			5
MISS02B	13-May-94	Benzene	2.00		J	5
MISS02B	09-May-95	Benzene	1.00		J	5
MISS02B	14-May-96	Benzene	1.00			1
MISS05B	14-Oct-92	Benzene	200.00			5
MISS05B	12-Aug-93	Benzene	83.00	J		5
MISS05B	17-May-94	Benzene	170.00			5
MISS05B	11-May-95	Benzene	89.00	J		5
MISS05B	16-May-96	Benzene	97.00			2
MISS05B	14-May-97	Benzene	62.00			5
MISS05B	30-JUN-98	Benzene	15.00			5

TABLE A-4 (continued)
Historical Results for Detected VOCs in Groundwater at MISS

STATION	DATE	ANALYTE	RESULT (ug/L)	QUALIFIER BNI	QUALIFIER Lab	DETECTION LIMIT (ug/L)
B38W24D	02-JUL-98	Benzene, 1,2-Dichloro-3-Methyl	9.00	NJ	NJ	0
B38W17B	02-JUL-98	Benzene, 1,2-Dichloro-3-Methyl	4.00	NJ	NJ	0
MISS05B	30-JUN-98	Benzene, 1,2-Dichloro-3-Methyl	10.00	NJ	NJ	0
MISS01AA	16-Oct-92	Bis(2-Ethylhexyl)Phthalate	11.00		JB	10
B38W02D	17-May-96	C4-Alkenylbenzene	1.00	NJ	J	0
B38W19D	16-May-96	Chlorobenzene	0.60	J	J	1
B38W25S	15-May-96	Chlorobenzene	0.40	J	J	1
MISS02B	14-May-96	Chlorobenzene	0.10	J	J	1
MISS05B	16-May-96	Chlorobenzene	0.60	J	J	2
B38W14D	04-Aug-93	Chloroform	7.00			5
B38W14D	17-May-96	Chloroform	6.00	J	J	50
B38W14D	04-Jun-97	Chloroform	6.00			5
B38W14D	17-May-99	Chloroform	2.00	J	J	5
B38W14S	20-May-95	Chloroform	3.00		J	5
B38W14S	17-May-96	Chloroform	3.00	J	J	10
B38W14S	04-Jun-97	Chloroform	3.00	J	J	5
B38W15D	13-May-96	Chloroform	0.30	J	J	2
MISS01B	15-Oct-92	Chloroform	15.00			5
MISS01B	21-Jul-93	Chloroform	4.00		J	5
MISS01B	16-May-94	Chloroform	2.00		J	5
MISS01B	15-May-96	Chloroform	0.90	J	J	5
MISS06A	10-May-96	Chloroform	0.20	J	J	1
B38W17B	29-Jul-93	Chlorotoluene	20.00	NJ	J	0
B38W17B	03-Jun-97	Chlorotoluene	10.00	NJ	J	
MISS05B	12-Aug-93	Chlorotoluene	30.00	NJ	J	0
MISS05B	12-Aug-93	Chlorotoluene	20.00	NJ	J	0
B38W25S	15-May-95	Dichloromethane	1.00		J	5
B38W24D	09-Aug-93	Dichlorotoluene	30.00	NJ	J	0
MISS05B	12-Aug-93	Dichlorotoluene	5.00	NJ	J	0
B38W24D	09-May-96	Ethylbenzene	0.10	J	J	1
B38W19D	13-Oct-92	N-Nitrosodiphenylamine	3.00		J	10
MISS02B	15-Oct-92	Phenol	1.00	J	J	10
B38W02D	30-Jun-98	Propane, 2-Methoxy-2-Methyl-	30.00	NJ	NJ	0
B38W15D	06-Jul-98	Propane, 2-Methoxy-2-Methyl-	20.00	NJ	NJ	0
B38W15S	06-Jul-98	Propane, 2-Methoxy-2-Methyl-	6.00	NJ	NJ	0
B38W25S	01-Jul-98	Silanol, Trimethyl-	10.00	J	NJ	0
B38W18D	08-Jun-98	Sulfur Dioxide	6.00	NJ	NJ	0

TABLE A-4 (continued)
Historical Results for Detected VOCs in Groundwater at MISS

STATION	DATE	ANALYTE	RESULT (ug/L)	QUALIFIER BNI	QUALIFIER Lab	DETECTION LIMIT (ug/L)
B38W01S	07-Jul-98	Tetrachloroethene	6.00			5
B38W07B	16-Jun-98	Tetrachloroethene	48.00			5
B38W14D	17-May-96	Tetrachloroethene	1100.00			50
B38W14D	07-Jul-98	Tetrachloroethene	840.00		D	25
B38W14D	17-May-99	Tetrachloroethene	630.00		D	5
B38W14S	04-Aug-93	Tetrachloroethene	23.00			5
B38W14S	17-May-96	Tetrachloroethene	360.00			10
B38W14S	17-May-96	Tetrachloroethene	34.00			1
B38W14S	07-Jul-98	Tetrachloroethene	300.00	E		12
B38W14S	17-May-99	Tetrachloroethene	290.00		D	5
B38W15S	13-May-96	Tetrachloroethene	0.30	J	J	2
MISS01B	15-Oct-92	Tetrachloroethene	15.00			5
MISS01B	21-Jul-93	Tetrachloroethene	33.00			5
MISS01B	16-May-94	Tetrachloroethene	140.00			5
MISS01B	10-May-95	Tetrachloroethene	20.00			5
MISS01B	15-May-96	Tetrachloroethene	120.00			5
MISS01B	18-Jun-98	Tetrachloroethene	69.00			5
MISS01B	18-May-99	Tetrachloroethene	15.00			5
MISS06A	04-Aug-93	Tetrachloroethene	14.00			5
MISS07B	13-Oct-92	Tetrachloroethene	43.00			5
MISS07B	12-Aug-93	Tetrachloroethene	61.00	J		5
MISS07B	18-May-94	Tetrachloroethene	94.00			5
MISS07B	18-May-94	Tetrachloroethene	88.00			5
MISS07B	11-May-95	Tetrachloroethene	45.00			5
MISS07B	16-May-96	Tetrachloroethene	61.00			2
MISS07B	16-May-97	Tetrachloroethene	57.00			1
MISS07B	16-Jun-98	Tetrachloroethene	48.00			1
MISS07B	27-May-99	Tetrachloroethene	24.00			5
B38W01S	17-May-96	Toluene	0.20	J	J	1
B38W19D	16-May-96	Toluene	0.10	J	J	1
B38W24D	09-May-96	Toluene	0.10	J	J	1
B38W24D	13-May-99	Toluene	2.00	J	J	5
MISS02A	11-JUN-98	Toluene	2.00	J	J	5
MISS05B	14-Oct-92	Toluene	2.00		J	5
MISS05B	17-May-94	Toluene	1.00		J	5
B38W01S	07-Jul-98	Trichloroethene	2.00	J	J	5
B38W07B	16-Jun-98	Trichloroethene	2.00	J	J	5
B38W14D	17-May-96	Trichloroethene	240.00			50
B38W14D	04-Jun-97	Trichloroethene	200.00	J		1
B38W14D	07-Jul-98	Trichloroethene	210.00			10
B38W14D	17-May-99	Trichloroethene	160.00			5
B38W14S	04-Aug-93	Trichloroethene	6.00			5
B38W14S	20-May-95	Trichloroethene	140.00			5
B38W14S	17-May-96	Trichloroethene	77.00			10
B38W14S	17-May-96	Trichloroethene	4.00			1
B38W14S	04-Jun-97	Trichloroethene	91.00	J		1
B38W14S	07-JUL-98	Trichloroethene	79.00			5
B38W14S	17-May-99	Trichloroethene	67.00			5
B38W15D	26-May-94	Trichloroethene	170.00			5
B38W15D	03-Jun-97	Trichloroethene	170.00	J		1
B38W15S	02-Aug-93	Trichloroethene	1.00		J	5
B38W15S	26-May-94	Trichloroethene	2.00		J	5

TABLE A-4 (continued)
Historical Results for Detected VOCs in Groundwater at MISS

STATION	DATE	ANALYTE	RESULT (ug/L)	QUALIFIER BNI	QUALIFIER Lab	DETECTION LIMIT (ug/L)
B38W15S	13-May-96	Trichloroethene	1.00	J	J	2
MISS01B	21-Jul-93	Trichloroethene	2.00		J	5
MISS01B	16-May-94	Trichloroethene	9.00			5
MISS01B	10-May-95	Trichloroethene	2.00		J	5
MISS01B	15-May-96	Trichloroethene	9.00			5
MISS01B	18-Jun-98	Trichloroethene	5.00	J	J	5
MISS02A	11-Jun-98	Trichloroethene	1.00	J	J	5
MISS06A	04-Aug-93	Trichloroethene	1.00		J	5
MISS07B	13-Oct-92	Trichloroethene	2.00		J	5
MISS07B	12-Aug-93	Trichloroethene	4.00	J	J	5
MISS07B	18-May-94	Trichloroethene	3.00		J	5
MISS07B	18-May-94	Trichloroethene	3.00		J	5
MISS07B	11-May-95	Trichloroethene	3.00		J	5
MISS07B	16-May-96	Trichloroethene	3.00			2
MISS07B	16-May-97	Trichloroethene	2.00			1
MISS07B	16-Jun-98	Trichloroethene	2.00	J		1
MISS07B	27-May-99	Trichloroethene	2.00	J	J	5
B38W14S	04-Aug-93	Vinyl Chloride	6.00		J	10
B38W15D	02-Aug-93	Vinyl Chloride	4.00		J	10
B38W15D	26-May-94	Vinyl Chloride	3.00		J	10
B38W15D	13-May-96	Vinyl Chloride	1.00	J	J	4
B38W15D	03-Jun-97	Vinyl Chloride	1.00	J	J	2
B38W15S	02-Aug-93	Vinyl Chloride	40.00			10
B38W15S	26-May-94	Vinyl Chloride	95.00			10
B38W15S	19-May-95	Vinyl Chloride	4.00		J	10
B38W15S	19-May-95	Vinyl Chloride	5.00		J	10
B38W15S	13-May-96	Vinyl Chloride	54.00			4
B38W15S	03-Jun-97	Vinyl Chloride	9.00			2
B38W15S	06-Jul-98	Vinyl Chloride	12.00			2
B38W17B	25-May-94	Vinyl Chloride	2.00		J	10
B38W17B	20-May-95	Vinyl Chloride	2.00	J	J	10
MISS07B	18-May-94	Vinyl Chloride	2.00		J	10
MISS07B	18-May-94	Vinyl Chloride	2.00		J	10
MISS07B	16-May-96	Vinyl Chloride	0.80	J	J	4
MISS07B	16-May-97	Vinyl Chloride	0.80	J	J	2
B38W19D	16-May-96	Xylenes (Total)	0.10	J	J	1
B38W24D	09-May-96	Xylenes (Total)	0.50	J	J	1
MISS05B	16-May-96	Xylenes (Total)	0.40	J	J	2

WATER LEVEL RECORD SHEET

Date: 6/22/99 **Site:MISS** **Page 1 of 6**

Measured by: M. Hanashy
G. Moyer

☐ Battery Check ☐ Funct. Check ☐ Physical Exam.
☐ Electric Sounder ☐ Chalked Tape ☐ Other _____
☐ Calibration of electric sounder
Date of last calibration: 06/22/1999

Well No. (Enter Complete Well No.)	Time (24-hour format)	Depth to water (0.01 ft)	Remarks	Measurement Reference Point	X
MISS-1AA	1117	17.25	Top of Riser	Protective CSG	X
[redacted]		17.25	Elevation:	Riser CSG X	
		17.25	62.7	Ground	
	Average	17.25		Other	
MISS-1B	1115	16.8	Top of Riser	Protective CSG	X
[redacted]		16.8	Elevation:	Riser CSG X	
		16.8	61.98	Ground	
	Average	16.8		Other	
MISS-2A	1110	10.4	Top of Riser	Protective CSG	X
[redacted]		10.4	Elevation:	Riser CSG X	
		10.4	61.47	Ground	
	Average	10.4		Other	
MISS-2B	1112	11.85	Top of Riser	Protective CSG	X
[redacted]		11.85	Elevation:	Riser CSG X	
		11.85	61.64	Ground	
	Average	11.85		Other	
MISS-3A	1055	9.68	Top of Riser	Protective CSG	X
[redacted]		9.68	Elevation:	Riser CSG X	
		9.68	58.52	Ground	
	Average	9.68		Other	
MISS-3B	1050	10.6	Top of Riser	Protective CSG	X
[redacted]		10.6	Elevation:	Riser CSG X	
		10.6	57.66	Ground	
	Average	10.6	Prot. cas. damaged	Other	

X - if well head and pad are in good condition
FUSRAP IG: 191-IG-007
Rev: 1

WATER LEVEL RECORD SHEET

Date: 6/22/99 **Site:MISS** **Page 2 of 6**

Measured by: M. Hanashy

G. Moyer

☐ Battery Check ☐ Funct. Check ☐ Physical Exam.
☐ Electric Sounder ☐ Chalked Tape ☐ Other _____
☐ Calibration of electric sounder
Date of last calibration:_____

Well No. (Enter Complete Well No.)	Time (24-hour format)	Depth to water (0.01 ft)	Remarks	Measurement Reference Point	X
MISS-4A	1035	10.40	Top of Riser	Protective CSG	X
Permit # 26-07173-8		10.40	Elevation:	Riser CSG X	
		10.40	57.17	Ground	
	Average	10.40		Other	
MISS-4B	1038	11.54	Top of Riser	Protective CSG	X
Permit #		11.54	Elevation:	Riser CSG X	
		11.54	56.42	Ground	
	Average	11.54		Other	
MISS-5A	1015	14.05	Top of Riser	Protective CSG	X
Permit # 26-07175-4		14.05	Elevation:	Riser CSG X	
		14.05	58.65	Ground	
	Average	14.05		Other	
MISS-5B	1017	16.32	Top of Riser	Protective CSG	X
Permit #		16.32	Elevation:	Riser CSG X	
		16.32	59.76	Ground	
	Average	16.32		Other	
MISS-6A		11.70	Top of Riser	Protective CSG	X
Permit #		11.70	Elevation:	Riser CSG X	
		11.70	58.26	Ground	
	Average	11.70	Prot.Cas.destroyed	Other	
MISS-7A	1025	9.25	Top of Riser	Protective CSG	X
Permit # 26-07179-7		9.25	Elevation:	Riser CSG X	
		9.25	55.6	Ground	
	Average	9.25		Other	

X - if well head and pad are in good condition
FUSRAP IG: 191-IG-007
Rev: 1

WATER LEVEL RECORD SHEET

Date: 6/22/99 **Site:MISS** **Page 3 of 6**

Measured by: M. Hanashy

G. Moyer

☐ Battery Check ☐ Funct. Check ☐ Physical Exam.
☐ Electric Sounder ☐ Chalked Tape ☐ Other _____
☐ Calibration of electric sounder
Date of last calibration:_____

Well No. (Enter Complete Well No.)	Time (24-hour format)	Depth to water (0.01 ft)	Remarks	Measurement Reference Point	X
MISS-7B	1023	11.50	Top of Riser	Protective CSG	X
Permit#		11.50	Elevation:	Riser CSG X	
		11.50	55.77	Ground	
	Average	11.50		Other	
B38W01S	940	6.91	Top of Riser	Protective CSG	X
Permit # 214081-21		6.91	Elevation:	Riser CSG X	
		6.91	60.72	Ground	
	Average	6.91		Other	
B38W02D	950	19.0	Top of Riser	Protective CSG	X
Permit# 2614082-9		19.0	Elevation:	Riser CSG X	
		19.0	67.7	Ground	
	Average	19.0		Other	
B38W03B	1100	10.65	Top of Riser	Protective CSG	X
Permit #		10.65	Elevation:	Riser CSG X	
		10.65	58.27	Ground	
	Average	10.65		Other	
B38W04B	1105	10.48	Top of Riser	Protective CSG	X
Permit #		10.48	Elevation:	Riser CSG X	
		10.48	65.85	Ground	
	Average	10.48		Other	
B38W05B	850	13.40	Top of Riser	Protective CSG	X
Permit #		13.40	Elevation:	Riser CSG X	
		13.40	71.05	Ground	
	Average	13.40		Other	

X - if well head and pad are in good condition
FUSRAP IG: 191-IG-007
Rev: 1

WATER LEVEL RECORD SHEET

Date: 6/22/99 **Site:MISS** **Page 4 of 6**

Measured by: M. Hanashy

G. Moyer

☐ Battery Check ☐ Funct. Check ☐ Physical Exam.
☐ Electric Sounder ☐ Chalked Tape ☐ Other _____
☐ Calibration of electric sounder
Date of last calibration:_____

Well No. (Enter Complete Well No.)	Time (24-hour format)	Depth to water (0.01 ft)	Remarks	Measurement Reference Point	X
B38W06B			Inaccessible	Protective CSG	
Permit #				Riser CSG X	
				Ground	
	Average			Other	
B38W07B	1053	10.53	Top of Riser	Protective CSG	X
Permit #		10.53	Elevation:	Riser CSG X	
		10.53	54.63	Ground	
	Average	10.53		Other	
B38W12A	900	7.31	Top of Riser	Protective CSG	X
Permit # 2614082-9		7.31	Elevation:	Riser CSG X	
		7.31	50.1	Ground	
	Average	7.31		Other	
B38W12B	903	6.74	Top of Riser	Protective CSG	X
Permit #		6.74	Elevation:	Riser CSG X	
		6.74	49.78	Ground	
	Average	6.74	Base pad cracked	Other	
B38W14S	920	5.21	Top of Casing	Protective CSG	X
Permit #		5.21	Elevation:	Riser CSG X	
		5.21	45.47	Ground	
	Average	5.21	Needs new lock	Other	
B38W14D	925	4.05	Top of Casing	Protective CSG	X
Permit # 2614042-0		4.05	Elevation:45.38	Riser CSG X	
		4.05	Needs lebel, and	Ground	
	Average	4.05	New plug.	Other	

X - if well head and pad are in good condition
FUSRAP IG: 191-IG-007
Rev: 1

WATER LEVEL RECORD SHEET

Date: 6/22/99 **Site:MISS** **Page 5 of 6**

Measured by: M. Hanashy

G. Moyer

☐ Battery Check ☐ Funct. Check ☐ Physical Exam.
☐ Electric Sounder ☐ Chalked Tape ☐ Other _____
☐ Calibration of electric sounder
Date of last calibration:_____

Well No. (Enter Complete Well No.)	Time (24-hour format)	Depth to water (0.01 ft)	Remarks	Measurement Reference Point	X
B38W15S			Needs Access	Protective CSG	
Permit #			Agreement	Riser CSG X	
				Ground	
	Average			Other	
B38W15D			Needs Access	Protective CSG	
Permit #			Agreement	Riser CSG X	
				Ground	
	Average			Other	
B38W17A	905	9.98	Top of Riser	Protective CSG	X
Permit #		9.98	Elevation:	Riser CSG X	
		9.98	53.24	Ground	
	Average	9.98		Other	
B38W17B	910	10.0	Top of Riser	Protective CSG	X
Permit #		10.0	Elevation:	Riser CSG X	
		10.0	53.28	Ground	
	Average	10.0		Other	
B38W18D	1145	4.30	Top of Casing	Protective CSG	X
Permit #		4.30	Elevation:	Riser CSG X	
		4.30	58.14	Ground	
	Average	4.30	No permit #	Other	
B38W19S	1020	16.38	Top of Riser	Protective CSG	X
Permit #		16.38	Elevation:	Riser CSG X	
		16.38	59.91	Ground	
	Average	16.38		Other	

X - if well head and pad are in good condition
FUSRAP IG: 191-IG-007
Rev: 1

WATER LEVEL RECORD SHEET

Date: 6/22/99 **Site:MISS**

Measured by: M. Hanashy

G. Moyer

☐ Battery Check ☐ Funct. Check ☐ Physical Exam.
☐ Electric Sounder ☐ Chalked Tape ☐ Other _____
☐ Calibration of electric sounder
Date of last calibration:_____

Well No. (Enter Complete Well No.)	Time (24-hour format)	Depth to water (0.01 ft)	Remarks	Measurement Reference Point	X
B38W19D	1024	16.56	Top of Riser	Protective CSG	X
[redacted]		16.56	Elevation:	Riser CSG X	
		16.56	59.98	Ground	
	Average	16.56		Other	
B38W24S	1040	10.35	Top of Riser	Protective CSG	X
Permit # [redacted]		10.35	Elevation:	Riser CSG X	
		10.35	55.04	Ground	
	Average	10.35		Other	
B38W24D	1350	9.90	Top of Casing	Protective CSG	X
Permit # [redacted]		9.90	Elevation:	Riser CSG X	
		9.90	57.77	Ground	
	Average	9.90		Other	
B38W25S	1128	8.13	Top of Riser	Protective CSG	X
Permit # [redacted]		8.13	Elevation:	Riser CSG X	
		8.13	57.44	Ground	
	Average	8.13	No permit #	Other	
B38W25D	1125	8.35	Top of Riser	Protective CSG	X
Permit # [redacted]		8.35	Elevation:	Riser CSG X	
		8.35	58.24	Ground	
	Average	8.35	Cas. is damaged	Other	
			Needs lock	Protective CSG	X
Permit # [redacted]				Riser CSG X	
				Ground	
	Average			Other	

X - if well head and pad are in good condition
FUSRAP IG: 191-IG-007
Rev: 1

WATER LEVEL RECORD SHEET

Date: 8/10/99 **Site:MISS** **Page 1 of 6**

Measured by: M. Hanashy
R. Robbins

☐ Battery Check ☐ Funct. Check ☐ Physical Exam.
☐ Electric Sounder ☐ Chalked Tape ☐ Other _____
☐ Calibration of electric sounder
Date of last calibration: 08/10/1999

Well No. (Enter Complete Well No.)	Time (24-hour format)	Depth to water (0.01 ft)	Remarks	Measurement Reference Point	X
MISS-1AA	940	19.21	Top of Riser	Protective CSG	X
[redacted]		19.21	Elevation:	Riser CSG X	[redacted]
		19.21	62.7	Ground	
	Average	19.21		Other	
MISS-1B	942	18.79	Top of Riser	Protective CSG	X
[redacted]		18.79	Elevation:	Riser CSG X	[redacted]
		18.79	61.98	Ground	
	Average	18.79		Other	
MISS-2A	930	13.38	Top of Riser	Protective CSG	X
[redacted]		13.38	Elevation:	Riser CSG X	[redacted]
		13.38	61.47	Ground	
	Average	13.38		Other	
MISS-2B	931	14.05	Top of Riser	Protective CSG	X
[redacted]		14.05	Elevation:	Riser CSG X	[redacted]
		14.05	61.64	Ground	
	Average	14.05		Other	
MISS-3A	1022	DRY	Top of Riser	Protective CSG	X
[redacted]			Elevation:	Riser CSG X	[redacted]
			58.52	Ground	
	Average			Other	
MISS-3B	1024	12.81	Top of Riser	Protective CSG	X
[redacted]		12.81	Elevation:	Riser CSG X	[redacted]
		12.81	57.66	Ground	
	Average	12.81	Prot. cas. damage	Other	

X - if well head and pad are in good condition
FUSRAP IG: 191-IG-007
Rev: 1

WATER LEVEL RECORD SHEET

Date: 8/10/99 **Site:MISS**

Measured by: M. Hanashy

R. Robbins

☐ Battery Check ☐ Funct. Check ☐ Physical Exam.
☐ Electric Sounder ☐ Chalked Tape ☐ Other _____
☐ Calibration of electric sounder
Date of last calibration:_____

Well No. (Enter Complete Well No.)	Time (24-hour format)	Depth to water (0.01 ft)	Remarks	Measurement Reference Point	X
MISS-4A	1018	DRY	Top of Riser	Protective CSG	X
[redacted]			Elevation:	Riser CSG X	
			57.17	Ground	
	Average			Other	
MISS-4B	1020	13.36	Top of Riser	Protective CSG	X
[redacted]		13.36	Elevation:	Riser CSG X	
		13.36	56.42	Ground	
	Average	13.36		Other	
MISS-5A	1000	15.87	Top of Riser	Protective CSG	X
[redacted]		15.87	Elevation:	Riser CSG X	
		15.87	58.65	Ground	
	Average	15.87		Other	
MISS-5B	957	17.95	Top of Riser	Protective CSG	X
[redacted]		17.95	Elevation:	Riser CSG X	
		17.95	59.76	Ground	
	Average	17.95		Other	
MISS-6A	955	13.80	Top of Riser	Protective CSG	X
[redacted]		13.80	Elevation:	Riser CSG X	
		13.80	58.26	Ground	
	Average	13.80	Prot.Cas.destroye	Other	
MISS-7A	950	9.55	Top of Riser	Protective CSG	X
[redacted]		9.55	Elevation:	Riser CSG X	
		9.55	55.6	Ground	
	Average	9.55		Other	

X - if well head and pad are in good condition
FUSRAP IG: 191-IG-007
Rev: 1

WATER LEVEL RECORD SHEET

Date: 8/10/99 **Site:MISS**

Measured by: M. Hanashy

R. Robbins

☐ Battery Check ☐ Funct. Check ☐ Physical Exam.
☐ Electric Sounder ☐ Chalked Tape ☐ Other _____
☐ Calibration of electric sounder
Date of last calibration:_____

Well No. (Enter Complete Well No.)	Time (24-hour format)	Depth to water (0.01 ft)	Remarks	Measurement Reference Point	X
MISS-7B	945	13.15	Top of Riser	Protective CSG	X
Permit #		13.15	Elevation:	Riser CSG X	
		13.15	55.77	Ground	
	Average	13.15		Other	
B38W01S	1530	9.11	Top of Riser	Protective CSG	X
Permit #2614081-1		9.11	Elevation:	Riser CSG X	
		9.11	60.72	Ground	
	Average	9.11	Casing damaged	Other	
B38W02D	1515	23.4	Top of Riser	Protective CSG	X
Permit #2614082-9		23.4	Elevation:	Riser CSG X	
		23.4	67.7	Ground	
	Average	23.4		Other	
B38W03B	1027	13.36	Top of Riser	Protective CSG	X
Permit #		13.36	Elevation:	Riser CSG X	
		13.36	58.27	Ground	
	Average	13.36		Other	
B38W04B	1035	13.46	Top of Riser	Protective CSG	X
Permit #		13.46	Elevation:	Riser CSG X	
		13.46	65.85	Ground	
	Average	13.46		Other	
B38W05B	957	17.95	Top of Riser	Protective CSG	X
Permit #		17.95	Elevation:	Riser CSG X	
		17.95	71.05	Ground	
	Average	17.95	Base is cracked	Other	

X - if well head and pad are in good condition
FUSRAP IG: 191-IG-007
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Date: 8/10/99 **Site:MISS** **Page 4 of 6**

Measured by: M. Hanashy

R. Robbins

☐ Battery Check ☐ Funct. Check ☐ Physical Exam.
☐ Electric Sounder ☐ Chalked Tape ☐ Other _____
☐ Calibration of electric sounder
Date of last calibration:_____

Well No. (Enter Complete Well No.)	Time (24-hour format)	Depth to water (0.01 ft)	Remarks	Measurement Reference Point	X
B38W06B			Inaccessible	Protective CSG	
Permit # [redacted]				Riser CSG X	[redacted]
				Ground	
	Average			Other	
B38W07B	1010	12.47	Top of Riser	Protective CSG	X
Permit # [redacted]		12.47	Elevation:	Riser CSG X	[redacted]
		12.47	54.63	Ground	
	Average	12.47		Other	
B38W12A	1431	10.46	Top of Riser	Protective CSG	X
Permit # 2614082-9		10.46	Elevation:	Riser CSG X	[redacted]
		10.46	50.1	Ground	
	Average	10.46		Other	
B38W12B	1430	10.09	Top of Riser	Protective CSG	X
Permit # [redacted]		10.09	Elevation:	Riser CSG X	[redacted]
		10.09	49.78	Ground	
	Average	10.09	Base is cracked	Other	
B38W14S			Needs Access	Protective CSG	
Permit # [redacted]			Agreement	Riser CSG X	[redacted]
				Ground	
	Average			Other	
B38W14D			Needs Access	Protective CSG	
Permit # 2614042-0			Agreement	Riser CSG X	[redacted]
				Ground	
	Average			Other	

X - if well head and pad are in good condition
FUSRAP IG: 191-IG-007
Rev: 1

WATER LEVEL RECORD SHEET

Date: 8/10/99 **Site:MISS** **Page 5 of 6**

Measured by: M. Hanashy

R. Robbins

☐ Battery Check ☐ Funct. Check ☐ Physical Exam.
☐ Electric Sounder ☐ Chalked Tape ☐ Other _____
☐ Calibration of electric sounder
Date of last calibration:_____

Well No. (Enter Complete Well No.)	Time (24-hour format)	Depth to water (0.01 ft)	Remarks	Measurement Reference Point	X
B38W15S			Needs Access	Protective CSG	
Permit #			Agreement	Riser CSG X	
				Ground	
	Average			Other	
B38W15D			Needs Access	Protective CSG	
Permit #			Agreement	Riser CSG X	
				Ground	
	Average			Other	
B38W17A	1443	11.99	Top of Riser	Protective CSG	X
Permit #		11.99	Elevation:	Riser CSG X	
		11.99	53.24	Ground	
	Average	11.99		Other	
B38W17B	1442	12.0	Top of Riser	Protective CSG	X
Permit #		12.0	Elevation:	Riser CSG X	
		12.0	53.28	Ground	
	Average	12.0		Other	
B38W18D	930	6.20	Top of Casing	Protective CSG	X
Permit #		6.20	Elevation:	Riser CSG X	
		6.20	58.14	Ground	
	Average	6.20	No permit #	Other	
B38W19S	954	17.74	Top of Riser	Protective CSG	X
Permit #		17.74	Elevation:	Riser CSG X	
		17.74	59.91	Ground	
	Average	17.74		Other	

X - if well head and pad are in good condition
FUSRAP IG: 191-IG-007
Rev: 1

WATER LEVEL RECORD SHEET

Date: 8/10/99 **Site:MISS** **Page 6 of 6**

Measured by: M. Hanashy

R. Robbins

☐ Battery Check ☐ Funct. Check ☐ Physical Exam.
☐ Electric Sounder ☐ Chalked Tape ☐ Other _____
☐ Calibration of electric sounder
Date of last calibration:_____

Well No. (Enter Complete Well No.)	Time (24-hour format)	Depth to water (0.01 ft)	Remarks	Measurement Reference Point	X
B38W19D	952	18.48	Top of Riser	Protective CSG	X
Permit #		18.48	Elevation:	Riser CSG X	
		18.48	59.98	Ground	
	Average	18.48		Other	
B38W24S	1015	11.5	Top of Riser	Protective CSG	X
Permit #		11.5	Elevation:	Riser CSG X	
		11.5	55.04	Ground	
	Average	11.5		Other	
B38W24D	1017	11.50	Top of Casing	Protective CSG	X
Permit #		11.50	Elevation:	Riser CSG X	
		11.50	57.77	Ground	
	Average	11.50		Other	
B38W25S	950	11.10	Top of Riser	Protective CSG	X
Permit #		11.10	Elevation:	Riser CSG X	
		11.10	57.44	Ground	
	Average	11.10		Other	
B38W25D	945	11.55	Top of Riser	Protective CSG	X
Permit #		11.55	Elevation:	Riser CSG X	
		11.55	58.24	Ground	
	Average	11.55	Cas. is damaged	Other	
				Protective CSG	
Permit #				Riser CSG X	
				Ground	
	Average			Other	

X - if well head and pad are in good condition
FUSRAP IG: 191-IG-007
Rev: 1

ANNUAL NESHAPS COMPLIANCE REPORT - 1999
FUSRAP MAYWOOD SUPERFUND SITE

Contract No. DACW41-99-D-9001
Task Order No. 0001
WAD 02, WBS07

Submitted to:

Department of the Army
U.S. Army Engineer District, Kansas City
Corps of Engineers
700 Federal Building
Kansas City, Missouri 64106

Department of the Army
U.S. Army Engineer District, New York
Corps of Engineers
FUSRAP Project Office
26 Federal Plaza
New York, New York 10007

Submitted by:

Stone & Webster Environmental Technology & Services
250 W. 34th Street
New York, New York 10119

May, 2000

Issued to: _____ **Date:** _____

Copy #: _____ ☐ **Controlled** ☐ **Uncontrolled**

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1.0 FACILITY INFORMATION

1.1 Site Description

The Maywood Interim Storage Site (MISS) is a 4.7 ha (11.7 acres) property located in the borough of Maywood and the township of Rochelle Park in Bergen County, New Jersey. MISS lies approximately 20 km (12 mi) northwest of New York City and 21 km (13 mi) northeast of Newark, New Jersey (see Figure 1). The MISS property was previously part of a 30-acre property owned by the Stepan Company and it was formerly part of the Maywood Chemical Works (MCW). The property is bordered on the west by State Route 17, on the north by a New York, Susquehanna, and Western Railroad line, and on the east by commercial and industrial properties.

Land use in the vicinity is primarily commercial and residential (see Figure 2). The nearest commercial building is 90 m (295 ft) north-northwest. The nearest residence is 90 m (295 ft) northeast. The nearest schools are 0.8 km (0.5 mi) northeast and northwest. There is no farm land in the vicinity of MISS.

Based on the National Oceanic and Atmospheric Administration (NOAA) records for 1999 for the Teterboro, New Jersey airport, monthly average temperatures ranged from 0.0 C (32.1 F) in January to 26.6 C (79.9 F) in July. Total monthly precipitation ranged from 0.46 cm (0.18 in) in June to 28.6 cm (11.25 in) in September. Monthly average wind speed ranged from 10.46 kph (6.5 mph) from the north-northeast in October to 16.41 kph (10.2 mph) from the west in March. Teterboro airport is located approximately 3 miles south of the MISS.

1.2 Source Description

MISS was established to provide storage for low level radioactive soils found in the vicinity of the former MCW. From 1916 through 1959, the MCW processed monazite sand (a thorium-containing ore) for industrial uses. Process wastes were placed in surface impoundments onsite. Some of these process wastes migrated offsite via surface water drainage and some were later used as mulch and fill on nearby properties, contaminating them with radioactive thorium.

After the enactment of the Atomic Energy Act of 1954, the Atomic Energy Commission (AEC) issued a license to the MCW for the processing and manufacture of radioactive material. The MCW stopped processing thorium in 1959 and shortly thereafter was sold to the Stepan Company. Based on AEC inspections and information, remedial actions were performed by the Stepan Company.

Subsequent radiological surveys from 1980 to 1984 identified additional areas of contamination, both onsite and offsite. Through a provision of the Energy and Water Development Appropriations Act of 1984, Congress authorized the Department of Energy (DOE) to conduct a decontamination research and development project at the Maywood site. The site was assigned to the Formerly Utilized Sites Remedial Action Program (FUSRAP). In 1984, the DOE negotiated a lease for Stephan Company land on which MISS would be established. The land was transferred in 1985 to DOE ownership

and currently provides interim storage for contaminated materials removed from vicinity properties.

FUSRAP was transferred from DOE to the U.S. Army Corps of Engineers (USACE) by Congressional action. The limits of USACE's responsibilities for the Maywood site are defined under a Federal Facilities Agreement (FFA) between DOE and the EPA Region II that became effective April 22, 1991. The USACE became a successor to the DOE as of March 17, 1999.

1.3 Model Source Description

The computer program used to model potential offsite exposure from airborne emissions is the Clean Air Act Assessment Package – 1988 Personal Computer (CAP88-PC) program (version 1.00). Airborne emissions contributing to offsite exposure could occur from areas where the radioactively contaminated soil is exposed to the elements and from operations that generate airborne emissions (see Figure 3). During 1999, the following potential sources of airborne emissions existed at MISS:

1. In situ, contaminated areas totaling 59,030 m^2 (635,375 ft^2) of MISS and the adjacent Stepan Company property were exposed to wind erosion throughout 1999.

2. The transfer and loading of 29,716,243 kg (32,756 tons) of contaminated vicinity property (VP) soil brought to MISS and transferred from dump trucks to gondola railcars for shipment to an offsite disposal facility.

3. The excavation of 2,238,062 kg (2,467 tons) of contaminated soil from five test pits.

The simulated airborne emission from these potential sources is used by CAP88-PC to estimate the annual dose from airborne particulates to the population within 80 km (50 mi) of the site (refer to the Appendix). In addition, for user-defined distances from the center of the site, CAP88-PC estimates individual effective dose equivalents in all compass directions (Appendix). For specific potentially exposed individuals (workers and residents) at known distances and compass directions from the site, the user can compare the calculated effective dose equivalents. The individual (worker and resident) corresponding to the maximum effective dose equivalent is identified as the hypothetical maximally exposed individual. Because dose from airborne emissions is dependent on prevailing wind direction in addition to proximity to the site, the hypothetical maximally exposed individual is not necessarily the person nearest the site. Although several potential receptors are evaluated by the model, only the hypothetical maximally exposed worker and resident are discussed in this report.

The individual effective dose equivalents given in the CAP88-PC output are based on the default assumption that the receptor occupies the location 100 percent of the time (i.e., 24 hours per day, 7 days per week, 52 weeks per year). The occupancy factor of 100 percent, although conservative, is considered to be appropriate for a resident. To estimate

the dose to an employee working normal hours, an occupancy factor of 24 percent (i.e., 8 hours per day, 5 days per week, 50 weeks per year) is applied to the CAP88-PC result.

The program calculates the effective dose equivalents by combining the inhalation and ingestion intake rates and the air and ground surface concentrations with dose conversion factors, using the weighting factors in "Recommendations of the International Commission on Radiological Protection" (ICRP Publication 26, 1977). CAP88-PC calculates dose to the gonads, breast, lungs, red marrow, thyroid, and endosteum in addition to the 50-year effective dose equivalent. Doses can be tabulated as a function of radionuclide, pathway, location, and organ as shown in the output (page 16 of 23) for the CAP88-PC runs.

2.0 AIR EMISSIONS DATA

The radionuclide particulate emission sources and controls are described in Table 1.

Table 1
Description of Radionuclide Particulate Emissions Sources

Point Sources	**Type Control**	**Efficiency**	**Distance to Hypothetical Maximally Exposed Individual**
None	Not applicable	Not applicable	Not applicable
Non-Point Sources	**Type Control**	**Efficiency**	**Distance to Hypothetical Maximally Exposed Individual**
In situ soil	Vegetative cover Bare Soil	99 percent 0 percent	Not applicable as threshold friction velocity not exceeded[1]
VP soil transfer	Dust suppression by water spray; off-hours pile coverage	No credit taken for dust controls	90 m (295 ft) NE (resident) 90 m (295 ft) NNE (employee)
Test pit excavation	None	No credit taken for dust controls	90 m (295 ft) NE (resident) 90 m (295 ft) NNE (employee)

(1) The fastest 2-minute wind speeds at Teterboro Airport for 1999 do not result in the threshold friction velocity being exceeded at any time.

The radionuclide emissions for 1999 from each of the emission sources are shown in Table 2.

Table 2
1999 Airborne Radionuclide Emissions at MISS

Non Point Source	Annual Quantity Released (Ci)						
Radionuclides	In Situ Soil*	VP Soil Transfer	Test Pit No. 1	Test Pit No. 2	Test Pit No. 3	Test Pit No. 4	Test Pit No. 5
U-238	0.00	4.56E-08	2.47E-10	6.86E-10	5.84E-10	3.27E-09	2.15E-10
Th-234	0.00	4.56E-08	2.47E-10	6.86E-10	5.84E-10	3.27E-09	2.15E-10
Pa-234m	0.00	4.56E-08	2.47E-10	6.86E-10	5.84E-10	3.27E-09	2.15E-10
Pa-234	0.00	5.93E-11	3.21E-13	8.92E-13	7.59E-13	4.25E-12	2.80E-13
U-234	0.00	4.88E-08	2.64E-10	7.34E-10	6.25E-10	3.50E-09	2.30E-10
Th-230	0.00	4.88E-08	2.64E-10	7.34E-10	6.25E-10	3.50E-09	2.30E-10
Ra-226	0.00	8.35E-09	6.15E-11	2.22E-10	1.68E-10	2.42E-10	3.74E-11
Po-218	0.00	8.35E-09	6.15E-11	2.22E-10	1.68E-10	2.42E-10	3.74E-11
Pb-214	0.00	8.35E-09	6.15E-11	2.22E-10	1.68E-10	2.42E-10	3.74E-11
Bi-214	0.00	8.35E-09	6.15E-11	2.22E-10	1.68E-10	2.42E-10	3.74E-11
Po-214	0.00	8.35E-09	6.15E-11	2.22E-10	1.68E-10	2.42E-10	3.74E-11
Pb-210	0.00	8.35E-09	6.15E-11	2.22E-10	1.68E-10	2.42E-10	3.74E-11
Bi-210	0.00	8.35E-09	6.15E-11	2.22E-10	1.68E-10	2.42E-10	3.74E-11
Po-210	0.00	8.35E-09	6.15E-11	2.22E-10	1.68E-10	2.42E-10	3.74E-11
U-235	0.00	2.14E-09	1.16E-11	3.21E-11	2.73E-11	1.53E-10	1.01E-11
Th-231	0.00	2.14E-09	1.16E-11	3.21E-11	2.73E-11	1.53E-10	1.01E-11
Pa-231	0.00	2.14E-09	1.16E-11	3.21E-11	2.73E-11	1.53E-10	1.01E-11
Ac-227	0.00	2.14E-09	1.16E-11	3.21E-11	2.73E-11	1.53E-10	1.01E-11
Th-227	0.00	2.11E-09	1.14E-11	3.17E-11	2.70E-11	1.51E-10	9.93E-12
Fr-223	0.00	2.95E-11	1.60E-13	4.43E-13	3.77E-13	2.11E-12	1.39E-13
Ra-223	0.00	2.14E-09	1.16E-11	3.21E-11	2.73E-11	1.53E-10	1.01E-11
Po-215	0.00	2.14E-09	1.16E-11	3.21E-11	2.73E-11	1.53E-10	1.01E-11
Pb-211	0.00	2.14E-09	1.16E-11	3.21E-11	2.73E-11	1.53E-10	1.01E-11
Bi-211	0.00	2.14E-09	1.16E-11	3.21E-11	2.73E-11	1.53E-10	1.01E-11
Po-211	0.00	5.83E-12	3.16E-14	8.77E-14	7.46E-14	4.18E-13	2.75E-14
Tl-207	0.00	2.13E-09	1.15E-11	3.20E-11	2.73E-11	1.53E-10	1.00E-11
Th-232	0.00	1.40E-07	1.86E-10	1.07E-09	1.68E-09	1.29E-08	9.73E-11
Ra-228	0.00	1.40E-07	1.86E-10	1.07E-09	1.68E-09	1.29E-08	9.73E-11
Ac-228	0.00	1.40E-07	1.86E-10	1.07E-09	1.68E-09	1.29E-08	9.73E-11
Th-228	0.00	1.40E-07	1.86E-10	1.07E-09	1.68E-09	1.29E-08	9.73E-11
Ra-224	0.00	1.40E-07	1.86E-10	1.07E-09	1.68E-09	1.29E-08	9.73E-11
Po-216	0.00	1.40E-07	1.86E-10	1.07E-09	1.68E-09	1.29E-08	9.73E-11
Pb-212	0.00	1.40E-07	1.86E-10	1.07E-09	1.68E-09	1.29E-08	9.73E-11
Bi-212	0.00	1.40E-07	1.86E-10	1.07E-09	1.68E-09	1.29E-08	9.73E-11
Po-212	0.00	8.95E-08	1.19E-10	6.84E-10	1.08E-09	8.27E-09	6.23E-11
Tl-208	0.00	5.02E-08	6.69E-11	3.84E-10	6.03E-10	4.64E-09	3.50E-11

* The in situ soil emissions are zero as the fastest 2-min wind speeds at Teterboro for 1999 do not result in the threshold friction velocity being exceeded at any time.

3.0 DOSE ASSESSMENTS

3.1 Description of Dose Model

The effective dose equivalent for the collective population and for the hypothetical maximally exposed individual were calculated in a two step process. The first step was to model the release of particulate from the site using the methodology given in the U.S. Environmental Protection Agency (EPA) "Estimation of Air Impacts from Area Sources of Particulate Matter Emissions at Superfund Sites" (EPA-451/R-93-004). The second step was to input these particulate release rates, along with local population and meteorological data, into the CAP88-PC program (EPA 402-B-92-001).

The CAP88-PC model uses a modified Gaussian plume equation to estimate the average dispersion of radionuclides released from a site. Assessments are done for a circular grid of distances and directions for a radius of 80 km (50 mi) around the site. The program computes radionuclide concentrations in air, rates of deposition on ground surfaces, concentrations in food, and intake rates to people from ingestion of food produced in the assessment area. By coupling the output of the atmospheric transport models with the terrestrial food chain models from the U.S. Nuclear Regulatory Commission Regulatory Guide 1.109 ("Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I"), the program estimates the radionuclide concentrations in produce, leafy vegetables, milk, and meat consumed by humans. The population distribution array used in the computer model was calculated from known land uses surrounding the site and 1990 census figures.

CAP88-PC also uses a modified version of DARTAB (ORNL5692) and a database of dose and risk factors generated by RADRISK (ORNL7105 and ORNL7745) for estimating dose and risk. Dose and risk factors are provided for the pathways of: ingestion and inhalation intake; ground level immersion; and ground surface irradiation. For assessments where Rn-222 decay products are not considered, the dose estimates are made by combining the inhalation and ingestion intake rates, air and ground surface concentrations with the appropriate dose conversion factors.

3.2 Summary of Input Parameters

Average Annual Temperature: 13 C (55.7 F)
Total Annual Precipitation: 87.6 cm (34.5 in.)
Wind Speed and Direction: Teterboro, NJ STAR Data (1989-1999)
Population Distribution: calculated from 1990 census

3.3 Compliance Assessment

Effective Dose Equivalent of Hypothetical Maximally Exposed Individuals (refer to page 13 of 22 in the Appendix):

Resident 90m NE of MISS (100% occupancy): 5.60×10^{-5} mSv/yr (5.60×10^{-3} mrem/yr)
Employee 90m NNE of MISS (24% occupancy): 1.54×10^{-6} mSv/yr (1.54×10^{-4} mrem/yr)

3.4 Certification

I certify under penalty of law that I have personally examined, and am familiar with, the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment. (See, 18 U.S.C. 1001.)

Name/Title: _____

Signature: _____ Date: _____

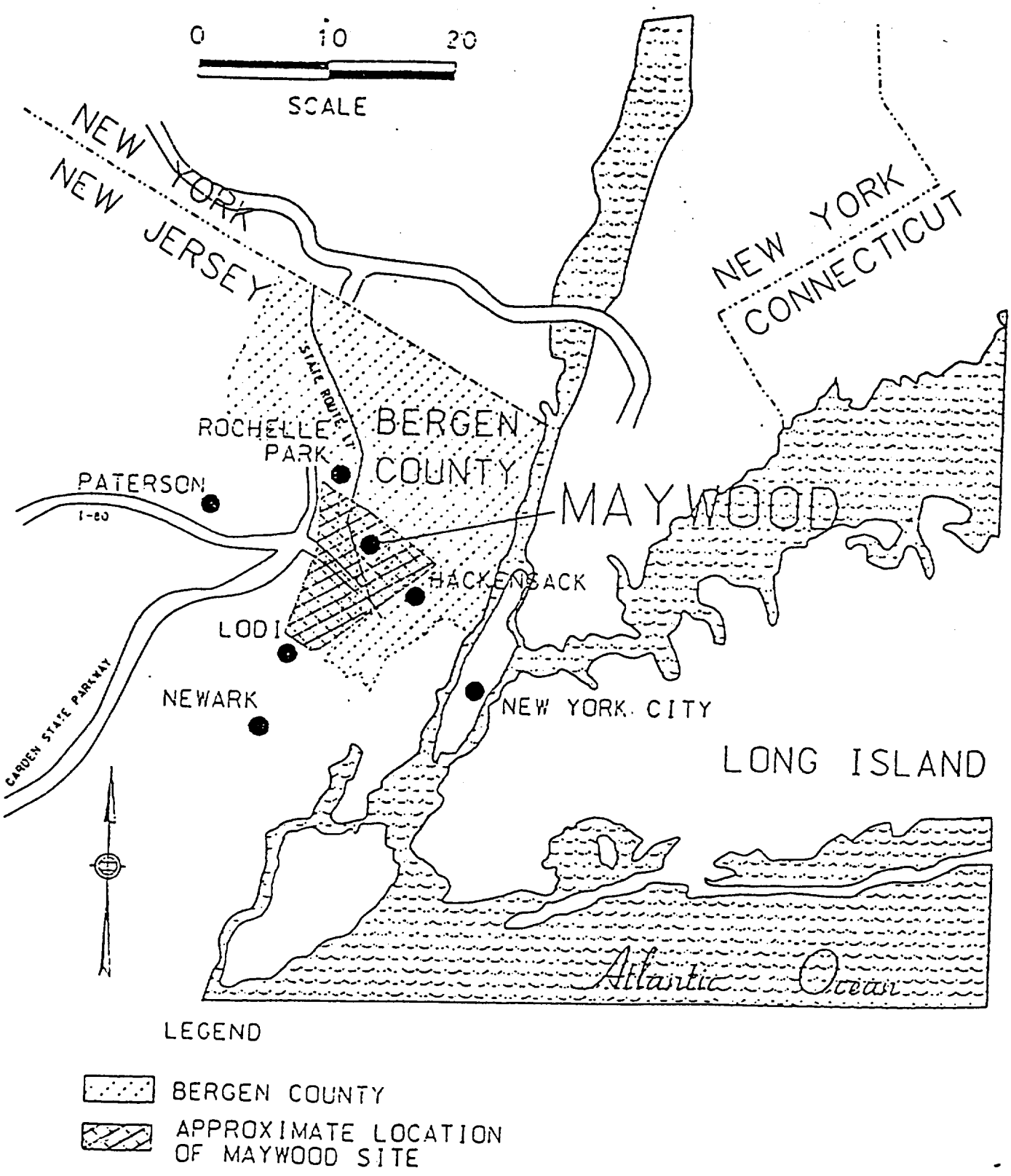
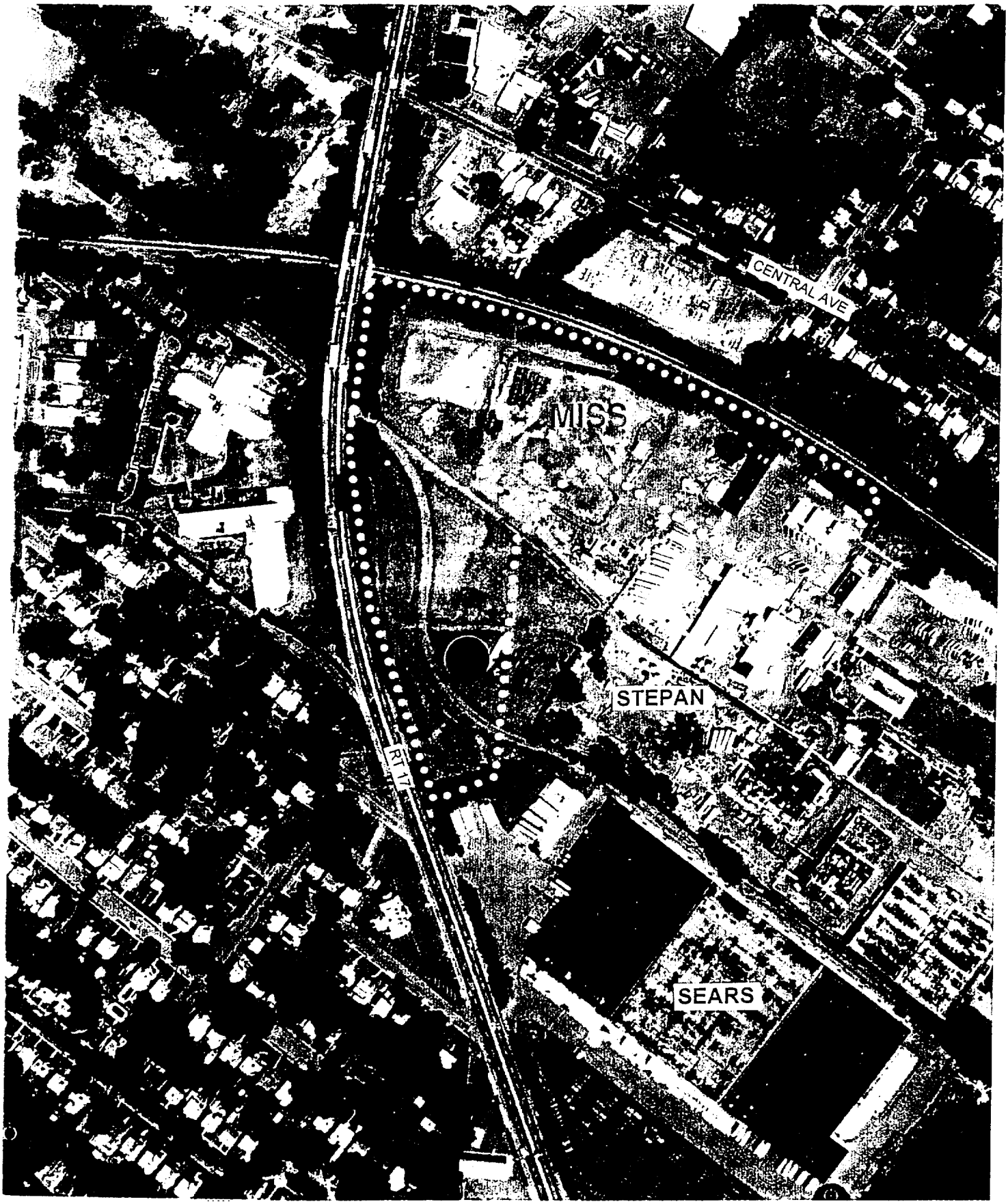


FIGURE 1 LOCATION OF THE MAYWOOD SITE

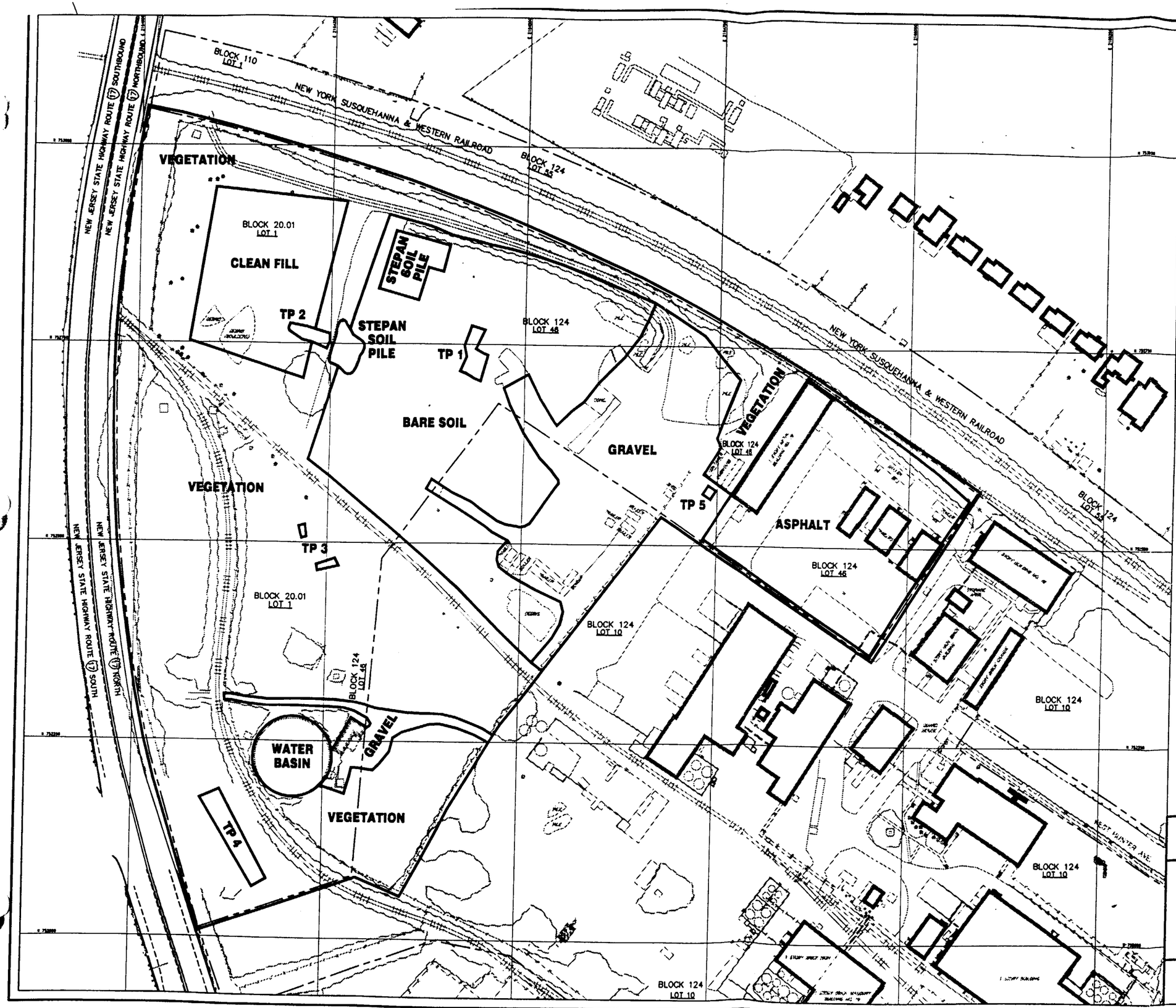


0 250 ft

MISS grid

state plane North

Figure 2
MAYWOOD INTERIM STORAGE SITE (MISS) & ADJACENT PROPERTIES
6-22-99 Aerial Photograph



LEGEND

———	APPROXIMATE PROPERTY BOUNDARY
—x—x—x—	EXISTING CHAIN–LINK FENCE
═══	RAILROAD
~~	EXISTING TREELINE
⁂	EXISTING SHRUBBERY
TP	TEST PIT

NOTES

1. THE HORIZONTAL DATUM IS REFERENCED TO THE NEW JERSEY STATE PLANE COORDINATE SYSTEM NORTH AMERICAN DATUM (NAD) 1927.
2. THE VERTICAL DATUM IS REFERENCED TO THE NATIONAL GEODETIC VERTICAL DATUM (NGVD) 1929.
3. THIS SURVEY SHOWS CONDITIONS AS OF OCTOBER 1999. THE DRAWING IS BASED ON AERIAL MAPPING PREPARED BY GEOD CORP. AND GROUND SURVEY BY GARDEN STATE ENGINEERING SURVEYING & PLANNING.

N

0 60 120 240

SCALE: 1" = 120'

FUSRAP MAYWOOD SUPERFUND SITE
MAYWOOD, NEW JERSEY

FIGURE 3

LAND USE AT MAYWOOD INTERIM STORAGE SITE AND ADJACENT STEPAN PROPERTY

STONE & WEBSTER ENVIRONMENTAL
TECHNOLOGY & SERVICES

APPENDIX

CALCULATIONS

STONE & WEBSTER ENGINEERING CORPORATION

5010.65

CALCULATION TITLE PAGE

CLIENT & PROJECT:	PAGE 1 of 23
U.S. ARMY CORPS OF ENGINEERS/FUSRAP-MISS	Total Pages: 29 w/attachments pages 6
CALCULATION TITLE:	QA CATEGORY (✓)
MISS 1999 Annual NESHAPS Calculation	☐ I ☐ III ☐ II

CALCULATION IDENTIFICATION NUMBER				OPTIONAL WORK PACKAGE NO.
JOB ORDER NO.	DISCIPLINE	CURRENT CALC NO	OPTIONAL TASK CODE	
08575.0207	E(B)	01		

APPROVALS - SIGNATURE & DATE			REVISION NO. OR NEW CALCULATION NO.	SUPERSEDES CALCULATION NO. OR REVISON NO.	CONFIRMATION REQUIRED (✓)	
PREPARES(S) / DATE(S)	REVIEWER(S) / DATES(S)	INDEPENDENT REVIEWER(S) / DATE(S)			YES	NO
Stephen A. Vigeant	Joseph McLaughlin		0			

DISTRIBUTION

GROUP	NAME & LOCATION	COPY SENT (✓)	GROUP	NAME & LOCATION	COPY SENT (✓)
Record Mgmt. File (or Fire File if none)					
Project File	J. McLaughlin: New York	Original			
Specialist	Stephen A. Vigeant: Boston - 3	cc			
Records Management	Iron Mountain	cc			

CALCULATION IDENTIFICATION NUMBER				
JOB ORDER NO. 08575.0207	DISCIPLINE E(B)	CALCULATION NO. 01	REVISION NUMBER 0	PAGE 2 OF 23

CHANGE HISTORY PAGE

REVISION NO.	DESCRIPTION OF CHANGES	PAGES REVISED	PAGES ADDED	PAGES REPLACED
0	N/A	N/A	N/A	N/A

TABLE OF CONTENTS

OBJECTIVE

To estimate the annual effective dose from airborne radioactivity releases at the Maywood Interim Storage Site (MISS) generated during calendar year 1999 from in situ wind erosion, vicinity property (VP) soil transfer, and test pit excavation.

METHODOLOGY

The calculation is performed using the U.S. Environmental Protection Agency (EPA) Clean Air Act Assessment Package - 1988 (CAP88-PC) model (Ref. 1) to estimate air doses to the population and hypothetical maximally exposed individuals. The radioactive particulate release rates from in situ wind erosion, VP soil transfer, and test pit excavation are calculated using EPA's Compilation of Air Pollutant Emission Factors - Volume 1:Stationary Point and Area Sources known as AP-42 (Ref. 2). The AP-42 expressions used to perform these calculations are provided in the "Equations" section of this calculation. The actual calculations were performed using an Excel spreadsheet, the results of which are provided in Attachment A.

Radionuclide emission rates are based on the particulate release rates and average radionuclide source concentrations based on sample measurements. Source concentrations for isotopes of uranium (U_{238}), radium (Ra_{226}), and thorium (Th_{232}) are based on average values for in situ soil (Ref. 7) and average values measured during remediation for soil transfers and test pit excavation. Unknown radionuclide source concentrations are based on the known source concentrations assuming secular equilibrium in the decay chains (Ref. 4).

The CAP88-PC computer model is a set of computer programs, databases, and associated utility programs developed by the EPA for estimation of dose and risk from radionuclide emissions to air. CAP88-PC is used for the purpose of demonstrating compliance with Subpart H of the National Emission Standards for Hazardous Air Pollutants (NESHAPS) as codified in 40 CFR 61.93a. CAP88-PC performs dose and risk assessments for both collective populations and maximally-exposed individuals.

This computer code estimates the average dispersion of radionuclides released from up to six sources. The sources may be either elevated stacks or uniform area sources. All sources are modeled as if located at the same point. Uniform contamination is assumed for area sources. Plume rise can be calculated assuming either a momentum or buoyancy driven plume. Assessments are done for a circular grid of distances and directions with a radius of 80 kilometers around the facility. The program computes radionuclide concentrations in air, rates of deposition on ground surfaces, concentrations in food and intake rates to people from ingestion of food produced in the assessment area.

CAP88-PC uses a modified version of the AIRDOS-EPA (Mo79) program to calculate environmental transport. Plume dispersion is based on the Gaussian plume equation of Pasquill as modified by Gifford, using sector-average concentrations. Plume rise is calculated using either Rupp's equation for momentum dominated plume rise or Briggs equation for buoyancy dominated plume rise. Dry deposition is handled using a proportionality constant applied to the ground-level concentration of the radionuclide and wet deposition is based on a scavenging coefficient related to the rainfall rate. Radionuclides are depleted from the plume by precipitation scavenging, dry deposition, and radioactive decay.

CAP88-PC also uses a modified version of DARTAB (ORNL5692) and a database of dose and risk factors generated by RADRISK (ORNL7105 and ORNL7745) for estimating dose and risk. Dose and risk factors are provided for the pathways of: ingestion and inhalation intake; ground level immersion; and ground surface irradiation. For assessments where Rn-222 decay products are not considered, the dose estimates are made by combining the inhalation and ingestion intake rates, air and ground surface concentrations with the appropriate dose conversion factors. CAP88-PC calculates dose to the gonads, breast, lungs, red marrow, thyroid, and endosteum in addition to the 50-year effective dose equivalent. Doses can be tabulated as a function of radionuclide, pathway, location, and organ.

For a given distance, the CAP88-PC model computes the annual effective dose equivalent for all compass directions. Specifically, the model computes the annual dose at a user-defined distance for all 22.5 degree compass point sectors (e.g., N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW, NNW). The CAP88-PC model computes an average sector concentration; thus, the annual dose computed for receptors at a given distance within a sector will be the same.

A review of land use surrounding the site and the prevailing wind directions was performed to select the appropriate receptors for inclusion in the modeling analyses. Based on this information, residences and commercial properties

located to the north, northeast and east of MISS along Central Avenue were selected as the receptors of most concern. Receptor locations in other compass directions such as west-southwest (across Route 17) and south-southeast (Sears and Stepan properties) were also selected to envelope the MISS. These receptor locations were used to establish the downwind distances that were input into the model to capture the maximally exposed individual (see Assumptions sections below for specific receptor locations).

ASSUMPTIONS

1. The contamination is uniformly distributed over a symmetrical land area with the concentration in respirable particles (PM-10) equaling the bulk contamination concentration in the surface material.

2. The erodibility classification of the site is "limited reservoir" characterized by a finite availability of erodible particles impregnated with nonerodible elements.

3. Emissions due to wind erosion and mechanical entrainment processes are continuous and steady state.

4. The locations of potential maximally exposed individuals (nearest residents and off-site workers) are based on a central location at the MISS site as follows:

	Distance (meters)	**Direction**
Residents:	90	Northeast
	135	North-northeast
	135	North-northwest
	180	East
	90	East-northeast
	180	East-northeast
	135	Northeast
	270	Northeast
	270	West-southwest
Workers:	90	North-northeast
	90	North
	90	North-northwest
	180	North
	180	Northwest
	90	South-southeast

5. The occupancy factor for the residents is 100 percent and 24 percent for workers (40-hour work week x 52 weeks per year = 2080 hours/8760 hours/year).

6. The number of disturbances relative to wind erosion of in situ soil is once per week from April to September and once per month from October to March for a total of 32 disturbances per year. Separate calculations are performed for soils covered by vegetation and for bare soils.

7. Daughters in the decay chain of radionuclides are considered to be in secular equilibrium with their parents until a radionuclide in the chain is encountered with a measured concentration whereupon the measured concentration is used (Ref. 4). Although the direct emission of radon gas is not considered in this analysis, the daughters of radon generated by the decay of Ra-226 in dust offsite is accounted for by the model in the computation of the effective dose equivalents for the various internal and external exposure pathways.

EQUATIONS

I. **In Situ Soil Wind Erosion Emissions**: (Ref. 2, Section 13.2.5, "Industrial Wind Erosion")

The wind speed profile in the surface boundary layer is found to follow a logarithmic distribution:

$$u(z) = \frac{u^*}{0.4} \ln\frac{z}{z_o} \quad (z > z_o) \qquad (1)$$

where:

u = wind speed, cm/s
u^* = friction velocity, cm/s
z = height above test surface, cm
z_o = roughness height, cm
0.4 = von Karman's constant, dimensionless

The friction velocity (u^*) is a measure of wind shear stress on the erodible surface, as determined from the slope of the logarithmic velocity profile. The roughness height (z_o) is a measure of the roughness of the exposed surface as determined from the y intercept of the velocity profile, i. e., the height at which the wind speed is zero.

Emissions generated by wind erosion are also dependent on the frequency of disturbance of the erodible surface because each time that a surface is disturbed, its erosion potential is restored. A disturbance is defined as an action that results in the exposure of fresh surface material. On a storage pile, this would occur whenever aggregate material is either added to or removed from the old surface. A disturbance of an exposed area may also result from the turning of surface material to a depth exceeding the size of the largest pieces of material present.

The emission factor for wind-generated particulate emissions from mixtures of erodible and nonerodible surface material subject to disturbance may be expressed in units of grams per square meter (g/m^2) per year as follows:

$$\text{Emission factor} = k \sum_{i=1}^{N} P_i \qquad (2)$$

where:

k = particle size multiplier
N = number of disturbances per year
P_i = erosion potential corresponding to the observed (or probable) fastest mile of wind for the ith period between disturbances, g/m^2

The particle size multiplier (k) for Equation 2 varies with aerodynamic particle size, as follows:

Aerodynamic Particle Size Multipliers For Equation 2			
30 μm	<15 μm	<10 μm	<2.5 μm
1.0	0.6	0.5	0.2

This distribution of particle size within the under 30 micrometer (μm) fraction is comparable to the distributions reported for other fugitive dust sources where wind speed is a factor. This is illustrated, for example, in the distributions for batch and continuous drop operations encompassing a number of test aggregate materials (see Section 13.2.4).

In calculating emission factors, each area of an erodible surface that is subject to a different frequency of disturbance should be treated separately. For a surface disturbed daily, N = 365 per year, and for a surface disturbance once every 6 months, N = 2 per year.

The erosion potential function for a dry, exposed surface is:

$$P = 58\,(u^* - u_t^*)^2 + 25(u^* - u_t^*) \qquad (3)$$

$$P = 0 \text{ for } u^* \le u_t^*$$

where:

u^* = friction velocity (m/s)
u_t = threshold friction velocity (m/s)

Because of the nonlinear form of the erosion potential function, each erosion event must be treated separately. Equations 2 and 3 apply only to dry, exposed materials with limited erosion potential. The resulting calculation is valid only for a time period as long or longer than the period between disturbances.

Threshold friction velocities for several surface types have been determined by field measurements with a portable wind tunnel. These values are presented below:

THRESHOLD FRICTION VELOCITIES

Material	Threshold Friction Velocity (m/s)	Roughness Height (cm)	Threshold Wind Velocity At 10 m (m/s)	
			z_o = Act	z_o = 0.5 cm
Overburden[a]	1.02	0.3	21	19
Scoria (roadbed material)[a]	1.33	0.3	27	25
Ground coal (surrounding coal pile)[a]	0.55	0.01	16	10
Uncrusted coal pile[a]	1.12	0.3	23	21
Scraper tracks on coal pile[a,b]	0.62	0.06	15	12
Fine coal dust on concrete pad[c]	0.54	0.2	11	10

[a] Western surface coal mine. Reference 2.
[b] Lightly crusted.
[c] Eastern power plant. Reference 3.

The fastest mile of wind for the periods between disturbances may be obtained from the monthly LCD summaries for the nearest reporting weather station that is representative of the site in question. These summaries report actual fastest mile values for each day of a given month. Because the erosion potential is a highly nonlinear function of the fastest mile, mean values of the fastest mile are inappropriate. The anemometer heights of reporting weather should be corrected to a 10-m reference height using Equation 1.

To convert the fastest mile of wind (u^+) from a reference anemometer height of 10 m to the equivalent friction velocity (u^*), the logarithmic wind speed profile may be used to yield the following equation:

$$u^* = 0.053\, u^+_{10} \qquad (4)$$

where:

u^* = friction velocity (m/s)
u^+_{10} = fastest mile of reference anemometer for period between disturbances (m/s)

This assumes a typical roughness height of 0.5 cm for open terrain. Equation 4 is restricted to large relatively flat piles or exposed areas with little penetration into the surface wind layer.

Implementation of the above procedure is carried out in the following steps:

1. Determine threshold friction velocity for erodible material of interest (see above table or determine from mode of aggregate size distribution).

2. Divide the exposed surface area into subareas of constant frequency of disturbance (N).

3. Tabulate fastest mile values (u^+) for each frequency of disturbance and correct them to 10 m (u^+) using Equation 1

4. Convert fastest mile values (u_{10}) to equivalent friction velocities (u^*), taking into account (a) the uniform wind exposure of nonelevated surfaces, using Equation 4.

5. Multiply the resulting emission factor for each subarea by the size of the subarea, and add the emission contributions of all subareas. Note that the highest 24-hour (hr) emissions would be expected to occur on the windiest day of the year. Maximum emissions are calculated assuming a single event with the highest fastest mile value for the annual period.

II. VP Soil Transfer and Test Pit Excavation Emissions: (Ref. 2, Section 13.2.4, "Aggregate Handling and Storage Piles")

$$E = k\,(0.0032)[U/3]^{1.3}\,[M/2]^{1.4} \qquad (5)$$

where:

E = emission factor (lb/ton)
k = particle size multiplier (dimensionless)
U = mean wind speed, meters per second (mph)
M = material moisture content (%)

The particle size multiplier in the equation, k, varies with aerodynamic particle size range, as follows:

Aerodynamic Particle Size Multiplier (k) For Equation 5				
< 30 μm	< 15 μm	< 10 μm	< 5 μm	< 2.5 μm
0.74	0.48	0.35	0.20	0.11

III. Radionuclide Emission Rates

The radionuclide source concentrations (S) for isotopes of uranium (U_{238}), radium (Ra_{226}), and thorium (Th_{232}) are based on average values for in situ soil (Ref. 7) and average values measured during remediation for soil transfers and test pit excavation. These values are as follows:

Emission Source	S_{U238} (pCi/g)	S_{Ra226} (pCi/g))	S_{Th232} (pCi/g)
In situ soil	27.5	4.30	24.80
VP soil transfer	9.94	1.82	30.45
Test pit No. 1	3.05	0.76	2.30
Test pit No. 2	5.63	1.82	8.76
Test pit No. 3	7.25	2.09	20.84
Test pit No. 4	68.24	5.05	269.41
Test pit No. 5	15.05	2.62	6.81

Ratios of uranium isotopes are calculated from the percentage of activity of U_{238}, U_{234}, and U_{235} in natural uranium as these components make up total uranium. The percentage (P) of each isotope comprising total uranium activity (Ref. 8) is:

Emission Source	P_{U238}	P_{U234}	P_{U235}
All sources	47.249	50.539	2.212

The source concentrations (S) of total uranium, U_{234}, and U_{235} are then given by:

$S_{Utot} = (S_{U238}/ P_{U238}) = (27.5/0.47249) =$ 58.2 pCi/g (In situ soil)
$S_{U234} = (S_{Utot} \times P_{U234}) = (58.2$ pCi/g) x 0.50539 = 29.4 pCi/g (In situ soil)
$S_{U235} = (S_{Utot} \times P_{U235}) = (58.2$ pCi/g) x 0.02212 = 1.29 pCi/g (In situ soil)

The annual radionuclide emissions (R) are then the individual radionuclide source concentrations (S) multiplied by the annual particulate emissions rate (E) for the In situ soil, VP soil transfer, and test pit excavation emission sources (R = S x E). Unknown radionuclide source emission rates are based on the known source emission rates assuming secular equilibrium in the decay chains (Ref. 4) as follows:

$R_{Th234} = R_{U238}$	$R_{Pa234m} = R_{U238}$	$R_{Pa234} = 0.0013R_{Pa234m}$	$R_{Th230} = R_{U234}$
$R_{Po218} = R_{Ra226}$	$R_{Pb214} = 0.9998R_{Po218}$	$R_{Bi214} = R_{Po218}$	$R_{Po214} = 0.99979R_{Bi214}$
$R_{Pb210} = R_{Bi214}$	$R_{Bi210} = R_{Pb210}$	$R_{Po210} = 0.9999987R_{Bi210}$	$R_{Th231} = R_{U235}$
$R_{Pa231} = R_{Th231}$	$R_{Ac227} = R_{Pa231}$	$R_{Th227} = 0.9862R_{Ac227}$	$R_{Fr223} = 0.0138R_{Ac227}$
$R_{Ra223} = R_{Ac227}$	$R_{Po215} = R_{Ra223}$	$R_{Pb211} = 0.9999977R_{Po215}$	$R_{Bi211} = R_{Po215}$
$R_{Po211} = 0.00273R_{Bi211}$	$R_{Tl207} = R_{Bi211}$	$R_{Ra228} = R_{Th232}$	$R_{Ac228} = R_{Ra228}$
$R_{Th228} = R_{Ac228}$	$R_{Ra224} = R_{Th228}$	$R_{Po216} = R_{Ra224}$	$R_{Pb212} = R_{Po216}$
$R_{Bi212} = R_{Pb212}$	$R_{Po212} = 0.6407\,R_{Bi212}$	$R_{Tl208} = 0.3593\,R_{Bi212}$	

Although the direct emission of radon gas is not considered in this analysis, the daughters of radon generated by the decay of Ra-226 in dust offsite is accounted for by the model in the computation of the effective dose equivalents for the various internal and external exposure pathways.

INPUT DATA

I. In Situ Soil Wind Erosion Emissions:

k= 0.50 (PM-10) - (Ref. 2, Section 13.2.5)
No. of Disturbances = 32 per year (See Assumption 6)
Surface Area of MISS vegetative soil = 30,817 m^2 (331,700 ft^2)
Surface Area of MISS bare soil = 11,273 m^2 (121,335 ft^2)
u^* = 1.02 m/sec - (Ref. 2, Section 13.2.5)
Anemometer Height = 6.1 m (Ref. 3)

Month	Week	Fastest Mile Wind Speed (mph)
Jan.	1-4	30
Feb.	1-4	25
Mar.	1-4	32
Apr.	1	20
	2	29
	3	28
	4	25
May	1	21
	2	18
	3	20
	4	29
Jun.	1	20
	2	22
	3	22
	4	22
Jul.	1	24
	2	22
	3	21
	4	18
	5	18
Aug.	1	21
	2	22
	3	17
	4	20
	5	20
Sept.	1	20
	2	18
	3	31
	4	28
Oct.	1-4	31
Nov.	1-4	37
Dec.	1-4	32

II. VP Soil Transfer Emissions:

k= 0.35 (PM-10) - (Ref. 2, Section 13.2.4)
U= 7.5 mph - (Ref. 3)
M =12.0 % - (Ref. 2, Section 13.2.4)
Tons of exposed soil handled = 32,756 tons

III. Test Pit Excavation Emissions:

	Soil Excavated (tons)	Surface Area (m^2)
Test pit No. 1	578	129.1
Test pit No. 2	870	81.3
Test pit No. 3	575	33.5
Test pit No. 4	342	295.0
Test pit No. 5	102	14.9

IV. CAP88-PC Input Data

Meteorological Data (1989-1999 Teterboro, NJ data, Ref. 9):

Annual average temperature = 55.7 °F (13.2 °F) – Ref. 3
Annual precipitation = 34.5 inches (87.6 cm) – Ref. 3

ARITHMETIC AVERAGE WIND SPEEDS (WIND TOWARDS) – Ref. 9

	Pasquill Stability Class						
Dir	A	B	C	D	E	F	G
N	2.572	3.108	4.093	4.718	3.300	2.295	0.000
NNW	2.572	3.188	4.226	4.923	3.134	2.235	0.000
NW	2.572	3.117	3.970	4.515	2.980	2.224	0.000
WNW	2.058	3.353	3.918	3.929	2.883	2.145	0.000
W	2.503	3.084	4.002	4.245	2.916	2.116	0.000
WSW	2.508	3.186	4.004	4.383	3.045	2.135	0.000
SW	2.572	3.061	3.786	4.346	3.141	2.270	0.000
SSW	2.572	2.925	3.915	4.789	3.387	2.309	0.000
S	2.460	3.095	3.933	4.955	3.585	2.265	0.000
SSE	2.572	3.241	4.362	5.782	3.989	2.333	0.000
SE	2.572	3.347	4.585	6.192	4.068	2.408	0.000
ESE	2.572	3.481	4.509	6.238	4.044	2.403	0.000
E	2.572	3.359	4.464	5.809	3.858	2.363	0.000
ENE	2.572	3.412	4.413	5.407	3.763	2.401	0.000
NE	2.337	3.236	4.159	4.694	3.384	2.293	0.000
NNE	2.494	3.357	4.068	4.362	3.415	2.265	0.000

FREQUENCIES OF STABILITY CLASSES (WIND TOWARDS)

	Pasquill Stability Class						
Dir	A	B	C	D	E	F	G
N	0.0030	0.0319	0.1169	0.5521	0.1757	0.1205	0.0000
NNW	0.0030	0.0424	0.1054	0.6320	0.1212	0.0960	0.0000
NW	0.0066	0.0512	0.1076	0.6499	0.0996	0.0851	0.0000
WNW	0.0079	0.0634	0.1156	0.6526	0.0943	0.0662	0.0000
W	0.0075	0.0531	0.0937	0.7203	0.0624	0.0630	0.0000
WSW	0.0069	0.0438	0.0734	0.7476	0.0578	0.0705	0.0000
SW	0.0008	0.0461	0.0977	0.6544	0.0923	0.1088	0.0000
SSW	0.0014	0.0337	0.1052	0.6373	0.1114	0.1108	0.0000
S	0.0015	0.0339	0.1039	0.5371	0.1580	0.1657	0.0000
SSE	0.0016	0.0272	0.1025	0.5851	0.1759	0.1077	0.0000
SE	0.0025	0.0267	0.0997	0.6255	0.1680	0.0777	0.0000
ESE	0.0025	0.0330	0.1023	0.6281	0.1589	0.0752	0.0000
E	0.0026	0.0367	0.1156	0.5691	0.1690	0.1070	0.0000
ENE	0.0030	0.0427	0.1109	0.5468	0.1922	0.1044	0.0000
NE	0.0028	0.0343	0.1175	0.4804	0.2024	0.1626	0.0000
NNE	0.0032	0.0334	0.1027	0.4707	0.2223	0.1678	0.0000
TOT	0.0029	0.0361	0.1053	0.5857	0.1555	0.1144	0.0000

Radionuclide Emission Rates:

See Attachment A, pages A1, A2, and A6

Population Data from 1990 Census:

See page 18

Individual Receptors:

	Distance (meters)	**Direction**
Residents:	90	Northeast
	135	North-northeast
	135	North-northwest
	180	East
	90	East-northeast
	180	East-northeast
	135	Northeast
	270	Northeast
	270	West-southwest
Workers:	90	North-northeast
	90	North
	90	North-northwest
	180	North
	180	Northwest
	90	South-southeast

CALCULATION

The actual radionuclide emission rate calculations are performed using an Excel spreadsheet, a printout of which is provided in Attachment A. The dose calculations are performed by the CAP88-PC model, the output of which is provided on pages 15-23.

RESULTS

The CAP88-PC output for the annual doses to the population within 80 km of MISS is provided on pages 15-19 and for the maximally exposed individuals on pages 20-23. The maximum annual effective doses are summarized below:

Receptor	Location	Annual Dose	Occupancy Factor (%)	Annual Effective Dose
Population (person-rem/yr)	N/A	6.19E-03	N/A	6.88E-03
Maximally Exposed Resident (mrem/yr)	90 m NE	5.60E-03	100	5.60E-03
Maximally Exposed Worker (mrem/yr)	90 m NNE	6.40E-03	24	1.54E-03

The maximum annual effective doses are almost entirely the result of the internal doses from the inhalation of dust particles and the ingestion of plant borne dust. The air immersion in the dust plume and ground surface irradiation from dust deposition pathways contribute a negligible amount to the total dose. The dominant pathway is inhalation as shown in the following example for the maximally exposed individual annual effective dose from page 21:

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	6.28E-05
INHALATION	6.33E-03
AIR IMMERSION	1.29E-08
GROUND SURFACE	6.33E-07
INTERNAL	6.39E-03
EXTERNAL	6.45E-07
TOTAL	6.39E-03

CONCLUSIONS

The annual effective dose to the public within 80 km of MISS from airborne particulate releases during 1999 was 6.88E-03 person-rem. The annual effective dose to the maximally exposed resident (located on the south side of Central Avenue east of the Maywood substation) and worker (Maywood substation), primarily from inhalation of airborne particulate releases during 1999, were 5.60E-03 mrem and 1.54E-03 mrem, respectively. These doses are well below the NESHAPS standard of 10 mrem/yr (40 CFR 61.92).

REFERENCES

1. Parks, Barry S., "User's Guide for CAP88-PC, Version 1.0". Prepared for the U.S. Department of Energy by the U.S. Environmental Protection Agency, Office of Radiation Programs, Las Vegas Facility. Document No. EPA 402-B-92-001, March, 1992. Stone & Webster Library Reference No. EN-293, V00, L00.

2. U. S. Environmental Protection Agency, "Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources", 5th Edition, AP-42, January 1, 1995 (Sections 13.2.4 and 13.2.5).

3. National Oceanic and Atmospheric Administration, National Environmental Satellite, Data, and Information Service, National Climatic Data Center. Unedited Local Climatological Data for January - December, 1999, Teterboro, NJ.

4. Shlein, "The Health Physics and Radiological Health Handbook", Revised Edition, Scinta, Inc. Silver Springs, MD, 1992.

5. U.S. Environmental Protection Agency, "Rapid Assessment of Exposure to Particulate Emissions from Surface Contaminated Sites". EPA Report No. EPA-600/8-85/002, Office of Health and Environmental Assessment, Washington, D.C., February, 1985.

6. U.S. Environmental Protection Agency, "Estimation of Impacts from Area Sources of Particulate Matter Emissions at Superfund Sites". EPA Report No. EPA-451/R-93/004, Office of Air Quality Planning and Standards, Research Triangle Park, NC, April, 1993.

7. Bechtel National, Inc. (BNI), "Characterization Report for the Maywood Interim Storage Site, Maywood, New Jersey". DOE/OR/20722-139, Oak Ridge, TN, June, 1987.

8. Bechtel National, Inc. (BNI), "Natural Uranium Specific Activity", 14501-191-CV-005, Rev. 2, Oak Ridge, TN, 1995.

9. 1989-1999 Stability Array (STAR) data for Teterboro, NJ supplied by the National Oceanic and Atmospheric Administration, National Climatic Data Center, Asheville, NC.

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Population Assessment
Feb 23, 2000 12:30 am

Facility: Maywood Interim Storage Site
Address: 100 W. Hunter Avenue
City: Maywood
State: NJ Zip: 07607

Effective Dose Equivalent
(mrem/year)

1.11E-03

At This Location: 250 Meters South
Source Category: Particulate Emission w radon daughters
Source Type: Area
Emission Year: 1999

Comments: Stone & Webster Engineers and Constructors for
U.S. Army Corps of Engineers

Dataset Name: misp99wr
Dataset Date: Feb 23, 2000 12:28 am
Wind File: WNDFILES\TET1358.WND
Population File: POPFILES\MAYWOOD.POP

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SYNOPSIS
Page 1

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 250 Meters South
Lifetime Fatal Cancer Risk: 1.27E-08

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)	Collective Population (person-rem/y)
GONADS	5.09E-06	3.36E-05
BREAST	4.25E-06	2.87E-05
R MAR	5.16E-04	3.20E-03
LUNGS	7.11E-03	4.38E-02
THYROID	4.09E-06	2.73E-05
ENDOST	6.42E-03	3.98E-02
RMNDR	1.52E-05	1.03E-04
EFFEC	1.11E-03	6.88E-03

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)	Collective Population (person-rem/y)
INGESTION	1.79E-07	1.24E-05
INHALATION	1.11E-03	6.87E-03
AIR IMMERSION	2.04E-09	6.31E-09
GROUND SURFACE	1.14E-07	1.10E-06
INTERNAL	1.11E-03	6.88E-03
EXTERNAL	1.16E-07	1.11E-06
TOTAL	1.11E-03	6.88E-03

Feb 23, 2000 12:30 am

SYNOPSIS
Page 2

RADIONUCLIDE EMISSIONS DURING THE YEAR 1999

Nuclide	Class	Size	Source #1 Ci/y	Source #2 Ci/y	Source #3 Ci/y	Source #4 Ci/y	Source #5 Ci/y	Source #6 Ci/y	TOTAL Ci/y
AC-227	Y	1.00	2.1E-09	1.2E-11	3.2E-11	2.7E-11	1.5E-10	1.0E-11	2.4E-09
AC-228	Y	1.00	1.4E-07	1.9E-10	1.1E-09	1.7E-09	1.3E-08	9.7E-11	1.6E-07
BI-211	W	1.00	2.1E-09	1.2E-11	3.2E-11	2.7E-11	1.5E-10	1.0E-11	2.4E-09
BI-212	W	1.00	1.4E-07	1.9E-10	1.1E-09	1.7E-09	1.3E-08	9.7E-11	1.6E-07
FR-223	D	1.00	2.9E-11	1.6E-13	4.4E-13	3.8E-13	2.1E-12	1.4E-13	3.3E-11
PA-234M	Y	1.00	4.6E-08	2.5E-10	6.9E-10	5.8E-10	3.3E-09	2.2E-10	5.1E-08
PA-231	Y	1.00	2.1E-09	1.2E-11	3.2E-11	2.7E-11	1.5E-10	1.0E-11	2.4E-09
PB-211	D	1.00	2.1E-09	1.2E-11	3.2E-11	2.7E-11	1.5E-10	1.0E-11	2.4E-09
PO-211		0.00	5.8E-12	3.2E-14	8.8E-14	7.5E-14	4.2E-13	2.8E-14	6.5E-12
PO-216	W	1.00	1.4E-07	1.9E-10	1.1E-09	1.7E-09	1.3E-08	9.7E-11	1.6E-07
PB-212	D	1.00	1.4E-07	1.9E-10	1.1E-09	1.7E-09	1.3E-08	9.7E-11	1.6E-07
PO-212	W	1.00	8.9E-08	1.2E-10	6.8E-10	1.1E-09	8.3E-09	6.2E-11	1.0E-07
PO-215	W	1.00	2.1E-09	1.2E-11	3.2E-11	2.7E-11	1.5E-10	1.0E-11	2.4E-09
RA-223	W	1.00	2.1E-09	1.2E-11	3.2E-11	2.7E-11	1.5E-10	1.0E-11	2.4E-09
RA-224	W	1.00	1.4E-07	1.9E-10	1.1E-09	1.7E-09	1.3E-08	9.7E-11	1.6E-07
TH-232	Y	1.00	1.4E-07	1.9E-10	1.1E-09	1.7E-09	1.3E-08	9.7E-11	1.6E-07
TH-228	Y	1.00	1.4E-07	1.9E-10	1.1E-09	1.7E-09	1.3E-08	9.7E-11	1.6E-07
TH-231	Y	1.00	2.1E-09	1.2E-11	3.2E-11	2.7E-11	1.5E-10	1.0E-11	2.4E-09
TH-227	Y	1.00	2.1E-09	1.1E-11	3.2E-11	2.7E-11	1.5E-10	9.9E-12	2.3E-09
TL-208	D	1.00	5.0E-08	6.7E-11	3.8E-10	6.0E-10	4.6E-09	3.5E-11	5.6E-08
U-235	Y	1.00	2.1E-09	1.2E-11	3.2E-11	2.7E-11	1.5E-10	1.0E-11	2.4E-09
TL-207	D	1.00	2.1E-09	1.1E-11	3.2E-11	2.7E-11	1.5E-10	1.0E-11	2.4E-09
U-238	Y	1.00	4.6E-08	2.5E-10	6.9E-10	5.8E-10	3.3E-09	2.2E-10	5.1E-08
TH-234	Y	1.00	4.6E-08	2.5E-10	6.9E-10	5.8E-10	3.3E-09	2.2E-10	5.1E-08
PA-234	Y	1.00	5.9E-11	3.2E-13	8.9E-13	7.6E-13	4.3E-12	2.8E-13	6.6E-11
U-234	Y	1.00	4.9E-08	2.6E-10	7.3E-10	6.2E-10	3.5E-09	2.3E-10	5.4E-08
TH-230	Y	1.00	4.9E-08	2.6E-10	7.3E-10	1.7E-10	3.5E-09	2.3E-10	5.4E-08
RA-226	W	1.00	8.3E-09	6.1E-11	2.2E-10	1.7E-10	2.4E-10	3.7E-11	9.1E-09
PO-218	W	1.00	8.3E-09	6.1E-11	2.2E-10	1.7E-10	2.4E-10	3.7E-11	9.1E-09
PB-214	D	1.00	8.3E-09	6.1E-11	2.2E-10	1.7E-10	2.4E-10	3.7E-11	9.1E-09
BI-214	W	1.00	8.3E-09	6.1E-11	2.2E-10	1.7E-10	2.4E-10	3.7E-11	9.1E-09
PO-214	W	1.00	8.3E-09	6.1E-11	2.2E-10	1.7E-10	2.4E-10	3.7E-11	9.1E-09
PB-210	D	1.00	8.3E-09	6.1E-11	2.2E-10	1.7E-10	2.4E-10	3.7E-11	9.1E-09
BI-210	W	1.00	8.3E-09	6.1E-11	2.2E-10	1.7E-10	2.4E-10	3.7E-11	9.1E-09
PO-210	W	1.00	8.3E-09	6.1E-11	2.2E-10	1.7E-10	2.4E-10	3.7E-11	9.1E-09
RA-228	W	1.00	1.4E-07	1.9E-10	1.1E-09	1.7E-09	1.3E-08	9.7E-11	1.6E-07

SITE INFORMATION

Temperature: 13 degrees C
Precipitation: 88 cm/y
Mixing Height: 1000 m

Feb 23, 2000 12:30 am

SYNOPSIS
Page 3

SOURCE INFORMATION

Source Number:	1	2	3	4	5	6
Source Height (m):	0.00	0.00	0.00	0.00	0.00	0.00
Area (sq m):	1.00E+04	1.29E+02	8.13E+01	3.35E+01	2.95E+02	1.49E+01

Plume Rise Pasquill Cat:	A	B	C	D	E	F	G
Zero:	0.00	0.00	0.00	0.00	0.00	0.00	0.00

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.076	0.000	0.008
Fraction From Assessment Area:	0.924	1.000	0.992
Fraction Imported:	0.000	0.000	0.000

Beef Cattle Density:	4.25E-02
Milk Cattle Density:	3.29E-02
Land Fraction Cultivated for Vegetable Crops:	1.82E-02

Feb 23, 2000 12:30 am

SYNOPSIS
Page 4

POPULATION DATA

	Distance (m)						
Direction	250	750	1500	2500	3500	4500	7500
N	67	201	802	1337	1872	2407	20057
NNW	67	201	802	1337	1872	2407	20057
NW	67	201	802	1337	1872	2407	20057
WNW	67	201	802	1337	1872	2407	18015
W	67	201	802	1337	1872	2407	15973
WSW	67	201	802	1337	1872	2407	15973
SW	67	201	802	1337	1872	2407	16228
SSW	67	201	802	1337	1872	2407	20057
S	67	201	802	1337	1872	2407	20057
SSE	67	201	802	1337	1872	2407	25914
SE	67	201	802	1337	1872	2407	20057
ESE	67	201	802	1337	1872	2407	20057
E	67	201	802	1337	1872	2407	20057
ENE	67	201	802	1337	1872	2407	20057
NE	67	201	802	1337	1872	2407	20057
NNE	67	201	802	1337	1872	2407	20057

	Distance (m)						
Direction	15000	25000	35000	45000	55000	65000	75000
N	74537	60196	70814	29909	28375	32864	31652
NNW	80228	100151	38356	25800	31534	37267	40828
NW	74537	78697	106487	126587	47978	25581	31795
WNW	56704	65308	91431	43632	20950	24760	25044
W	64114	84087	47693	59939	47949	40968	30281
WSW	112233	167453	56447	59420	70303	592514	29756
SW	120063	227594	237745	147380	112163	79165	127971
SSW	142152	249194	283497	211897	153403	180380	385790
S	236424	356896	290094	27391	48812	100953	91523
SSE	537391	974408	1119592	38176	0	0	0
SE	813384	678682	772130	363126	35070	0	0
ESE	837313	483781	278841	306070	279511	103569	51542
E	566935	290745	57469	146563	75595	89339	103084
ENE	84525	76576	79890	60083	55076	65090	75104
NE	65381	57432	102568	129885	161178	126989	143397
NNE	65457	30109	80543	125688	76315	38109	40796

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Feb 23, 2000 12:31 am

Facility: Maywood Interim Storage Site
Address: 100 W. Hunter Avenue
City: Maywood
State: NJ Zip: 07607

Source Category: Particulate Emission w radon daughters
Source Type: Area
Emission Year: 1999

Comments: Stone & Webster Engineers and Constructors for
U.S. Army Corps of Engineers

Dataset Name: misi99.wr
Dataset Date: Feb 23, 2000 12:28 am
Wind File: WNDFILES\TET1358.WND

Feb 23, 2000 12:31 am

SUMMARY
Page 1

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	3.86E-05
BREAST	3.34E-05
R MAR	3.02E-03
LUNGS	4.04E-02
THYROID	3.26E-05
ENDOST	3.75E-02
RMNDR	1.36E-04
EFFEC	6.39E-03

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	6.28E-05
INHALATION	6.33E-03
AIR IMMERSION	1.29E-08
GROUND SURFACE	6.33E-07
INTERNAL	6.39E-03
EXTERNAL	6.45E-07
TOTAL	6.39E-03

Feb 23, 2000 12:31 am

SUMMARY
Page 2

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
AC-227	7.70E-05
AC-228	6.81E-07
BI-211	1.11E-10
BI-212	2.67E-07
FR-223	4.46E-12
PA-234M	2.02E-11
PA-231	5.89E-05
PB-211	1.14E-09
PO-211	4.39E-25
PO-216	0.00E+00
PB-212	1.32E-06
PO-212	0.00E+00
PO-215	0.00E+00
RA-223	1.04E-06
RA-224	2.76E-05
TH-232	2.82E-03
TH-228	1.98E-03
TH-231	1.20E-10
TH-227	1.38E-06
TL-208	6.03E-09
U-235	1.51E-05
TL-207	1.07E-12
U-238	3.03E-04
TH-234	1.35E-07
PA-234	1.03E-11
U-234	3.65E-04
TH-230	6.76E-04
RA-226	5.79E-06
PO-218	2.14E-11
PB-214	4.99E-10
BI-214	6.39E-10
PO-214	0.00E+00
PB-210	1.35E-05
BI-210	8.90E-08
PO-210	5.97E-06
RA-228	3.42E-05
TOTAL	6.39E-03

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SUMMARY
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INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)			
Direction	90	135	180	270
N	4.8E-03	2.3E-03	1.4E-03	8.1E-04
NNW	3.2E-03	1.3E-03	7.4E-04	3.3E-04
NW	1.6E-03	7.2E-04	4.2E-04	2.1E-04
WNW	1.6E-03	7.1E-04	4.1E-04	1.9E-04
W	2.0E-03	9.5E-04	5.8E-04	3.0E-04
WSW	2.8E-03	1.3E-03	7.4E-04	3.5E-04
SW	3.6E-03	1.7E-03	9.8E-04	4.7E-04
SSW	5.8E-03	2.5E-03	1.4E-03	5.9E-04
S	6.0E-03	3.0E-03	1.9E-03	1.1E-03
SSE	5.8E-03	2.5E-03	1.4E-03	6.4E-04
SE	4.1E-03	1.9E-03	1.1E-03	5.8E-04
ESE	4.1E-03	1.8E-03	1.0E-03	4.5E-04
E	3.8E-03	1.8E-03	1.1E-03	5.8E-04
ENE	5.0E-03	2.2E-03	1.2E-03	4.8E-04
NE	5.6E-03	2.7E-03	1.6E-03	8.4E-04
NNE	6.4E-03	2.9E-03	1.7E-03	7.8E-04

RADIONUCLIDE SOURCE TERM EMISSIONS CALCULATIONS

FUSRAP - MISS

VP SOIL TRANSFER EMISSIONS

EQUATION E = k(0.0032)(U/5)^1.3/(M/2)^1.4 (AP-42, Chapter 13.2.4, "Aggregate Handling and Storage Piles", 01/95)

INPUT PARAMETERS:		Soil Transfer TSP	Soil Transfer PM-10
Particle Size Multiplier (k)		0.74	0.35
Mean Wind Speed - U (mph)	(Teterboro, LCD)	7.5	7.5
Material Moisture Content - M (%)		12.0	12.0
Tons of Material Dropped	(Assumption)	65512	65512

EMISSION FACTOR - E (lb/ton)	Soil Transfer
E (TSP) =	3.27E-04
E (PM-10) =	1.54E-04

CONTROL EFFICIENCY (%) - 0

ANNUAL EMISSIONS (grams/year):

E (TSP) =	9702.5
E (PM-10) =	4589.0

RADIONUCLIDE SOURCE CONCENTRATIONS

AVERAGE DETECTED ACTIVITY (MEASURED)

INPUT PARAMETERS:	U238	U234	U235	Ra226	Th232
Activity Concentration (S) - pCi/g	9.94	N/A	N/A	1.82	30.45
Isotope Contribution to Total Uranium (P) - %	47.249	50.539	2.212	N/A	N/A

ANNUAL RADIOACTIVITY EMISSION RATES (Ci/yr)

U238	4.56E-08
Th234	4.56E-08
Pa234m	4.56E-08
Pa234	5.93E-11
U234	4.88E-08
Th230	4.88E-08
Ra226	8.35E-09
Po218	8.35E-09
Pb214	8.35E-09
Bi214	8.35E-09
Po214	8.35E-09
Pb210	8.35E-09
Bi210	8.35E-09
Po210	8.35E-09
U235	2.14E-09
Th231	2.14E-09
Pa231	2.14E-09
Ac227	2.14E-09
Th227	2.11E-09
Fr-223	2.95E-11
Ra223	2.14E-09
Po215	2.14E-09

October		1-4	31	31	31	31	
November		1-4	37	37	37	37	
December		1-4	32	32	32	32	
Friction Velocity (m/s)							
January		1-4	0.76	0.76	0.76	0.76	
February		1-4	0.63	0.63	0.63	0.63	
March		1-4	0.81	0.81	0.81	0.81	
April		1	0.50	0.50	0.50	0.50	
		2	0.73	0.73	0.73	0.73	
		3	0.71	0.71	0.71	0.71	
		4	0.63	0.63	0.63	0.63	
May		1	0.53	0.53	0.53	0.53	
		2	0.45	0.45	0.45	0.45	
		3	0.50	0.50	0.50	0.50	
		4	0.73	0.73	0.73	0.73	
June		1	0.50	0.50	0.50	0.50	
		2	0.56	0.56	0.56	0.56	
		3	0.56	0.56	0.56	0.56	
		4	0.56	0.56	0.56	0.56	
July		1	0.61	0.61	0.61	0.61	
		2	0.56	0.56	0.56	0.56	
		3	0.53	0.53	0.53	0.53	
		4	0.45	0.45	0.45	0.45	
		5	0.45	0.45	0.45	0.45	
August		1	0.53	0.53	0.53	0.53	
		2	0.56	0.56	0.56	0.56	
		3	0.43	0.43	0.43	0.43	
		4	0.50	0.50	0.50	0.50	
		5	0.50	0.50	0.50	0.50	
September		1	0.50	0.50	0.50	0.50	
		2	0.45	0.45	0.45	0.45	
		3	0.78	0.78	0.78	0.78	
		4	0.71	0.71	0.71	0.71	
October		1-4	0.78	0.78	0.78	0.78	
November		1-4	0.93	0.93	0.93	0.93	
December		1-4	0.81	0.81	0.81	0.81	
	Vegetative Cover	Bare Soil					
CONTROL EFFICIENCY (%)	99	0					
EMISSION FACTOR - E (g/m^2)							
January		1-4	0.00	0.00	-2.56	0.00	0.00	-2.56
February		1-4	0.00	0.00	-0.94	0.00	0.00	-0.94
March		1-4	0.00	0.00	-2.69	0.00	0.00	-2.69
April		1	0.00	0.00	2.52	0.00	0.00	2.52
		2	0.00	0.00	-2.39	0.00	0.00	-2.39
		3	0.00	0.00	-2.14	0.00	0.00	-2.14
		4	0.00	0.00	-0.94	0.00	0.00	0.94
May		1	0.00	0.00	1.68	0.00	0.00	1.68
		2	0.00	0.00	4.43	0.00	0.00	4.43
		3	0.00	0.00	2.52	0.00	0.00	2.52
		4	0.00	0.00	2.39	0.00	0.00	-2.39
June		1	0.00	0.00	2.52	0.00	0.00	2.52
		2	0.00	0.00	0.92	0.00	0.00	0.92
		3	0.00	0.00	0.92	0.00	0.00	0.92

Pb211	2.14E-09
Bi211	2.14E-09
Po211	5.83E-12
Tl207	2.13E-09
Th232	1.40E-07
Ra228	1.40E-07
Ac228	1.40E-07
Th228	1.40E-07
Ra224	1.40E-07
Po216	1.40E-07
Pb212	1.40E-07
Bi212	1.40E-07
Po212	8.95E-08
Tl208	5.02E-08

IN SITU SOIL WIND EROSION EMISSIONS (AP-42, Chapter 13.2.5, "Industrial Wind Erosion", 01/95)

INPUT PARAMETERS				Vegetative Cover TSP	Vegetative Cover PM-10	Bare Soil TSP	Bare Soil PM-10
Particle Size Multiplier (k)				1	0.5	1	0.5
Number of Disturbances per Period	(Assumption)			1	1	1	1
Surface Area of Soil (m^2)	(Assumption)			30817	30817	11273	11273
Threshold Friction Velocity (m/s)	(Table 13.2.5-2)			1.02	1.02	1.02	1.02
Anemometer Height (m)	(Teterboro LCD)			6.10	6.10	6.10	6.10
Roughness Height (m)	(Table 13.2.5-2) -	Overburden		0.003	0.003	0.003	0.003
Fastest Mile Wind Speed (mph)	(Teterboro LCD)		Week				
	January		1-4	30	30	30	30
	February		1-4	25	25	25	25
	March		1-4	32	32	32	32
	April		1	20	20	20	20
			2	29	29	29	29
			3	28	28	28	28
			4	25	25	25	25
	May		1	21	21	21	21
			2	18	18	18	18
			3	20	20	20	20
			4	29	29	29	29
	June		1	20	20	20	20
			2	22	22	22	22
			3	22	22	22	22
			4	22	22	22	22
	July		1	24	24	24	24
			2	22	22	22	22
			3	21	21	21	21
			4	18	18	18	18
			5	18	18	18	18
	August		1	21	21	21	21
			2	22	22	22	22
			3	17	17	17	17
			4	20	20	20	20
			5	20	20	20	20
	September		1	20	20	20	20
			2	18	18	18	18
			3	31	31	31	31
			4	28	28	28	28

		4	0.00	0.00	0.92	0.00	0.00	0.92
	July	1	0.00	0.00	0.40	0.00	0.00	0.40
		2	0.00	0.00	0.92	0.00	0.00	0.92
		3	0.00	0.00	1.68	0.00	0.00	1.68
		4	0.00	0.00	4.43	0.00	0.00	4.43
		5	0.00	0.00	4.43	0.00	0.00	4.43
	August	1	0.00	0.00	1.68	0.00	0.00	1.68
		2	0.00	0.00	0.92	0.00	0.00	0.92
		3	0.00	0.00	5.49	0.00	0.00	5.49
		4	0.00	0.00	2.52	0.00	0.00	2.52
		5	0.00	0.00	2.52	0.00	0.00	2.52
	September	1	0.00	0.00	2.52	0.00	0.00	2.52
		2	0.00	0.00	4.43	0.00	0.00	4.43
		3	0.00	0.00	-2.66	0.00	0.00	-2.66
		4	0.00	0.00	-2.14	0.00	0.00	-2.14
	October	1-4	0.00	0.00	-2.66	0.00	0.00	-2.66
	November	1-4	0.00	0.00	-1.73	0.00	0.00	-1.73
	December	1-4	0.00	0.00	-2.69	0.00	0.00	-2.69

ANNUAL EMISSIONS (grams/year):

	Vegetative Cover	Bare Soil	Total Emissions
E (TSP) =	0.00	0.00	0.00
E (PM-10) =	0.00	0.00	0.00

RADIONUCLIDE SOURCE CONCENTRATION

AVERAGE DETECTED ACTIVITY (MEASURED)

INPUT PARAMETERS:

	U238	U234	U235	Ra226	Th232
Activity Concentration (S) - pCi/g	27.5	N/A	N/A	4.3	24.8
Isotope Contribution to Total Uranium (P) - %	47.249	50.539	2.212	N/A	N/A

ANNUAL RADIOACTIVITY EMISSION RATES (Ci/yr)

U238	0.00E+00
Th234	0.00E+00
Pa234m	0.00E+00
Pa234	0.00E+00
U234	0.00E+00
Th230	0.00E+00
Ra226	0.00E+00
Po218	0.00E+00
Pb214	0.00E+00
Bi214	0.00E+00
Po214	0.00E+00
Pb210	0.00E+00
Bi210	0.00E+00
Po210	0.00E+00
U235	0.00E+00
Th231	0.00E+00
Pa231	0.00E+00
Ac227	0.00E+00
Th227	0.00E+00
Fr-223	0.00E+00
Ra223	0.00E+00
Po215	0.00E+00

Pb211	0.00E+00
Bi211	0.00E+00
Po211	0.00E+00
Tl207	0.00E+00
Th232	0.00E+00
Ra228	0.00E+00
Ac228	0.00E+00
Th228	0.00E+00
Ra224	0.00E+00
Po216	0.00E+00
Pb212	0.00E+00
Bi212	0.00E+00
Po212	0.00E+00
Tl208	0.00E+00

TEST PIT SOIL EXCAVATION EMISSIONS

EQUATION: E = k(0.0032)(U/5)^1.3/(M/2)^1.4 (AP-42, Chapter 13.2.4, "Aggregate Handling and Storage Piles", 01/95)

INPUT PARAMETERS:		Test Pit No. 1		Test Pit No. 2		Test Pit No. 3		Test Pit No. 4		Test Pit No. 5	
		TSP	PM-10	TSP	PM-10	TSP	PM-10	TSP	PM-10	TSP	PM-10
Particle Size Multiplier (k)		0.74	0.35	0.74	0.35	0.74	0.35	0.74	0.35	0.74	0.35
Mean Wind Speed - U (mph)	(Teterboro, LCD)	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
Material Moisture Content - M (%)		12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Tons of Material Dropped	(Assumption)	1156	1156	1740	1740	1150	1150	684	684	204	204

EMISSION FACTOR - E (lb/ton):	Test Pit No. 1	Test Pit No. 2	Test Pit No. 3	Test Pit No. 4	Test Pit No. 5
E (TSP) =	3.27E-04	3.27E-04	3.27E-04	3.27E-04	3.27E-04
E (PM-10) =	1.54E-04	1.54E-04	1.54E-04	1.54E-04	1.54E-04
CONTROL EFFICIENCY (%):	0	0	0	0	0

ANNUAL EMISSIONS (grams/year):

E (TSP) =	171.2	257.7	170.3	101.3	30.2
E (PM-10) =	81.0	121.9	80.6	47.9	14.3

RADIONUCLIDE SOURCE CONCENTRATIONS

AVERAGE DETECTED ACTIVITY (MEASURED)

INPUT PARAMETERS:		U238	U234	U235	Ra226	Th232
Activity Concentration (S) - pCi/g	(Test Pit No. 1)	3.05	N/A	N/A	0.76	2.3
Activity Concentration (S) - pCi/g	(Test Pit No. 2)	5.63	N/A	N/A	1.82	8.76
Activity Concentration (S) - pCi/g	(Test Pit No. 3)	7.25	N/A	N/A	2.09	20.84
Activity Concentration (S) - pCi/g	(Test Pit No. 4)	68.24	N/A	N/A	5.05	269.41
Activity Concentration (S) - pCi/g	(Test Pit No. 5)	15.05	N/A	N/A	2.62	6.81
Isotope Contribution to Total Uranium (P) - %		47.249	50.539	2.212	N/A	N/A

ANNUAL RADIOACTIVITY EMISSION RATES (Ci/yr)	Test Pit No. 1	Test Pit No. 2	Test Pit No. 3	Test Pit No. 4	Test Pit No. 5
U238	2.47E-10	6.86E-10	5.84E-10	3.27E-09	2.15E-10
Th234	2.47E-10	6.86E-10	5.84E-10	3.27E-09	2.15E-10
Pa234m	2.47E-10	6.86E-10	5.84E-10	3.27E-09	2.15E-10
Pa234	3.21E-13	8.92E-13	7.59E-13	4.25E-12	2.80E-13
U234	2.64E-10	7.34E-10	6.25E-10	3.50E-09	2.30E-10
Th230	2.64E-10	7.34E-10	6.25E-10	3.50E-09	2.30E-10

Ra226	6.15E-11	2.22E-10	1.68E-10	2.42E-10	3.74E-11
Po218	6.15E-11	2.22E-10	1.68E-10	2.42E-10	3.74E-11
Pb214	6.15E-11	2.22E-10	1.68E-10	2.42E-10	3.74E-11
Bi214	6.15E-11	2.22E-10	1.68E-10	2.42E-10	3.74E-11
Po214	6.15E-11	2.22E-10	1.68E-10	2.42E-10	3.74E-11
Pb210	6.15E-11	2.22E-10	1.68E-10	2.42E-10	3.74E-11
Bi210	6.15E-11	2.22E-10	1.68E-10	2.42E-10	3.74E-11
Po210	6.15E-11	2.22E-10	1.68E-10	2.42E-10	3.74E-11
U235	1.16E-11	3.21E-11	2.73E-11	1.53E-10	1.01E-11
Th231	1.16E-11	3.21E-11	2.73E-11	1.53E-10	1.01E-11
Pa231	1.16E-11	3.21E-11	2.73E-11	1.53E-10	1.01E-11
Ac227	1.16E-11	3.21E-11	2.73E-11	1.53E-10	1.01E-11
Th227	1.14E-11	3.17E-11	2.70E-11	1.51E-10	9.93E-12
Fr 223	1.60E-13	4.43E-13	3.77E-13	2.11E-12	1.39E-13
Ra223	1.16E-11	3.21E-11	2.73E-11	1.53E-10	1.01E-11
Po215	1.16E-11	3.21E-11	2.73E-11	1.53E-10	1.01E-11
Pb211	1.16E-11	3.21E-11	2.73E-11	1.53E-10	1.01E-11
Bi211	1.16E-11	3.21E-11	2.73E-11	1.53E-10	1.01E-11
Po211	3.16E-14	8.77E-14	7.46E-14	4.18E-13	2.75E-14
Tl207	1.15E-11	3.20E-11	2.73E-11	1.53E-10	1.00E-11
Th232	1.86E-10	1.07E-09	1.68E-09	1.29E-08	9.73E-11
Ra228	1.86E-10	1.07E-09	1.68E-09	1.29E-08	9.73E-11
Ac228	1.86E-10	1.07E-09	1.68E-09	1.29E-08	9.73E-11
Th228	1.86E-10	1.07E-09	1.68E-09	1.29E-08	9.73E-11
Ra224	1.86E-10	1.07E-09	1.68E-09	1.29E-08	9.73E-11
Po216	1.86E-10	1.07E-09	1.68E-09	1.29E-08	9.73E-11
Pb212	1.86E-10	1.07E-09	1.68E-09	1.29E-08	9.73E-11
Bi212	1.86E-10	1.07E-09	1.68E-09	1.29E-08	9.73E-11
Po212	1.19E-10	6.84E-10	1.08E-09	8.27E-09	6.23E-11
Tl208	6.69E-11	3.84E-10	6.03E-10	4.64E-09	3.50E-11