Annual Environmental Monitoring Report - 2000

New York District
Formerly Utilized Sites Remedial Action Program
Maywood Superfund Site

Prepared by:
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for:
US Army Corps of Engineers - Kansas City District
Formerly Utilized Sites Remedial Action Program
Contract No. DACW41-99-D-9001

US Army Corps
of Engineers

June 2001

ANNUAL ENVIRONMENTAL MONITORING REPORT - 2000

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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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
NE	Not Established
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
SOR	Sum of Ratios
SQL	Sample Quantitation Limit
SW	Surface Water
TBD	To Be Determined
TCRA	Time Critical Removal Action
TETLD	Tissue-equivalent Thermo-luminescent Dosimeter
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 2000 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 are not available 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 taken in the year 2000 of external gamma radiation measurements, radon gas measurements, and samples of environmental media to the 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 the MISS in 2000, based on the measured TETLD results, is 7.15 mrem; which is well below the NRC standard of 100 mrem. Based on TETLD measurements from 1/00 to 1/01, the maximum gamma radiation value obtained (corrected for background, exposure duration, and attenuation) was 674.6 mrem/yr. Measured radon-222 concentrations for 2000 ranged from non-detectable to 0.6 pCi/l, which is well below the 4 pCi/l EPA action level. Radon-220 concentrations ranged from non-detect to a maximum of 3.84 pCi/l, which is also below the EPA action level.

The airborne particulate dose to the hypothetically maximally exposed individual in 2000 was 0.085 mrem/year which is well below the 10 mrem/year standard specified in 40 CFR, Part 61, Subpart H. No radiological parameter exceeded relevant criteria, except as discussed below.

- Sediment samples (collected in October 2000) from one location in the eastern tributary of Lodi Brook (LBSED-1) exceeded the DOE/EPA soil cleanup criteria for radium-226, thorium-228, and thorium-232. The measured concentrations (10.41 pCi/g radium-226, 23.58 pCi/g thorium-228, and 21.48 pCi/g thorium-232) were the highest concentrations measured at the site in 2000. 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. Further downstream at LBSED-6, LBSED-7, and LBSED-8 along Lodi Brook, detected concentrations of all analyzed radionuclides were below the soil cleanup criteria. All sediment samples collected in July 2000 in Lodi Brook had radionuclide concentrations below soil cleanup criteria. All analyzed radionuclides were below the soil cleanup criteria for sediment samples collected in Westerly Brook in both July 2000 and October 2000. Results for 2000 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.
- Conservative Federal and State drinking water Standards for radiological contaminants were used as criteria to evaluate monitoring results for surface water. Surface water samples collected in October 2000 from the western tributary of Lodi Brook (LBSW-2) and from two locations below Essex Street on Lodi Brook (LBSW-5 and LBSW-7) exceeded criteria for combined radium-226

and radium-228. The measured concentrations ranged from 5.75 pCi/L to 9.25 pCi/L at these locations. Two downstream locations on Westerly Brook (WBSW-1 and WBSW-2) also exceeded the radium criteria. The measured concentrations were 5.1 pCi/L and 5.58 pCi/L, respectively. No surface water samples collected in July 2000 exceeded any radiological criteria on Lodi Brook or on Westerly Brook.

- The same conservative Federal and State drinking water Standards for radiological contaminants were used as criteria to evaluate monitoring results for groundwater. There was one exceedance of the combined radium criteria for groundwater samples collected in 2000. Monitoring well B38W18D, collected near Building 76 had a measured concentration of 19.4 pCi/L for combined radium. There was also one exceedance of the uranium criteria with a measured uranium concentration of 73.48 pCi/L for monitoring well MISS05A. There were six exceedances of the gross alpha criteria with the highest measured concentration of 230 pCi/L for monitoring well B38W18D. All other gross alpha exceedances ranged from 18.9 to 27.0 pCi/L. There were also seven exceedances of the gross beta with the highest measured concentration of 886 pCi/L for monitoring well MISS05B. Results for 2000 are within the historical range for radium, thorium and uranium (gross alpha and gross beta have not been monitored previously).

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. Some metals exceeded proposed New Jersey Soil cleanup criteria in sediment samples. Some metals exceeded Federal and State standards in surface water. Some metals and volatile organic compounds (VOCs) in groundwater samples exceeded the State and Federal standards:

- Lodi Brook sediment concentrations of arsenic (LBSED-1) and lead (LBSED-7) were above the State proposed soil cleanup criteria at one location each. Arsenic and lead in 1999 were elevated but did not exceed State Criteria. There were no exceedances of the State proposed soil cleanup criteria in Westerly Brook. There were several exceedances of the Lower Effects Level (LEL) for lead, copper, zinc, chromium and nickel in both Lodi Brook and Westerly Brook. Elevated concentration of metals is 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.
- Federal Safe Drinking Water Act (SDWA) maximum contaminant levels (MCLs) and New Jersey Groundwater Quality Standards for Class II A aquifers were used as conservative criteria to evaluate monitoring results for chemical contaminants in surface water. Metals that exceeded both the Federal and State standards in Lodi Brook include aluminum, chromium, and lead. Aluminum also exceeded Federal and State standards in Westerly Brook. Arsenic exceeded State standards in both Lodi Brook and Westerly Brook.
- Metals which exceeded either the SDWA MCLs 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. These same metals exceeded standards in 1999. Although groundwater at the 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 2000 is consistent with historical results. The detected VOCs in groundwater at the MISS are tetrachloroethene and its degradation 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, B38W15D, MISS01B 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 the 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 the 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 the 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 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 2000 EMP program at the MISS were:

- measurement of external gamma radiation;
- measurement of radon gas concentrations in air (from radon-220 and radon-222);
- measurement of radon flux;
- sampling and analysis of streambed sediment for radioactive constituents and metals;
- sampling and analysis of surface water for radioactive constituents and metals; 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 2000 EMP program at the 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 the 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-version 2 (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 resumed in 2000 for the storage pile generated as a result of remediation and restoration of the Ballod property and operation of the pilot facility.

Summary of Radiological Criteria Used
External Gamma Radiation and Air

Parameter	NRC Standard	EPA Standard or Guideline
Radon-222		4 pCi/L [a]
Radon-220		-- [b]
Radon Flux		20 $pCi/m^2/s$ [g]
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 the 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.
[g] EPA standard 40 CFR Part 61, Subpart Q.

2.2 SEDIMENT, SURFACE WATER AND GROUNDWATER - RADIOACTIVE CONSTITUENTS

Criteria for evaluating the measured concentrations of radionuclides in sediment, surface water, and groundwater at the 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 (SOR) test and is thereby considered to exceed the soil guidelines. This SOR calculation is used for the purpose of this report and is a conservative approach.

- 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 total uranium, combined concentrations of radium-226 and radium-228, and gross alpha. Although groundwater at the 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. MCLs for drinking water were also used to conservatively evaluate surface water. Sampling was performed for specific radiological contaminants known to exist at the MISS (Gross alpha, Gross Beta, 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
Gross Alpha	15 pCi/L	15 pCi/L	
Gross Beta		50 pCi/L[e]	
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.

[e]If the gross beta particle activity exceed 50 pCi/L, an analysis of the sample must be performed to identify the major radioactive constituents present and the appropriate organ and total body doses shall be calculated (40 CFR 141.26).

2.3 SEDIMENT - CHEMICAL PARAMETERS

Criteria for evaluating the detected concentrations of chemical parameters in sediment at the 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 a need for further investigation.

2.4 GROUNDWATER AND SURFACE WATER - CHEMICAL PARAMETERS

Although the groundwater at the 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. MCLs for drinking water were used to conservatively evaluate groundwater and surface water monitoring results.

- 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 the 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 the 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 the 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, 3, 4-A, and 4-B show the EMP sampling locations at the MISS, and indicate the type of media sampled at each location. Table 1 summarizes the 2000 monitoring program at the MISS for external gamma radiation, radon gas, surface water, sediment, and groundwater.

Measurements of external gamma radiation are taken along fenceline locations surrounding the 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).

Radon flux data was collected for the storage pile at locations shown in Figure 5.

Surface water and sediment sampling includes the analysis for radioactive constituents and metals along Westerly Brook and Lodi Brook (Figure3, 4-A, and 4-B). Sampling locations along Lodi and 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 the MISS.

4.0 MONITORING METHODOLOGY

Under the MISS EMP conducted in 2000, 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 2000 program is provided in the FUSRAP Chemical Data Quality Management Plan (CDQMP).

Environmental monitoring activities at the MISS in 2000 were conducted in accordance with the Chemical Data Quality Management Plan (CDQMP) listed in the following table. The monitoring activities 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).* 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.*

FUSRAP Instruction Guides Used for Environmental Monitoring Activities

Document Number	Document Title
SW-MWD-410-0	Groundwater Level Measurements (CDQMP,1999)
SW-MWD-506-0	Decontamination of Field Sampling Equipment at FUSRAP Sites (CDQMP, 1999)
SW-MWD-302-0	Surface Water Sampling (CDQMP, 1999)
SW-MWD-301-0	Sediment sampling (CDQMP, 1999)
191-IG-029	Radon/Thoron and TETLD Exchange (BNI 1993b)
SW-MWD-304-0	Groundwater Sampling Activities (CDQMP,1999)

5.0 ANALYTICAL DATA AND INTERPRETATION OF RESULTS

This section presents the data and interpretation of results for the 2000 EMP at the MISS. Data for 2000 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 μ g/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. Correspondence from the NJDEP states that the generic conversion factor for total uranium from μg/L to pCi/L is 0.9. On this basis, since the new MCL for uranium is expressed as 30 μg/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 the 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 2000 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 the MISS in 2000 was 7.15 mrem/yr (Calc. 08575-0207-002).

5.2 RADON-220 AND RADON-222

Results of the 2000 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.

Radon-222 concentrations for 2000 ranged from non-detect to 0.6 pCi/L, below the EPA AL of 4 pCi/L. Radon-220 concentrations ranged from non-detect to a maximum of 3.84 pCi/L (location 24). While there is undoubtedly a probability that the population of values represented by the 3.84 pCi/l value exceed the action level of 4 pCi/L, this value is the highest of 15 values. The next highest values are 2.44 and 1.82 pCi/L.

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

Radon flux data was obtained for the storage pile on the MISS to verify compliance with 40 CFR Part 61, Subpart Q. To determine radon flux from a storage pile, charcoal canisters were placed on the pile at 25 ft intervals; the canisters remained on the pile for 24 hours. Radon flux measurements for 2000 are presented in Table 3-A; measurement locations are shown in Figure 5.

Analytical results from measurements obtained at the MISS in January 2001 ranged from non-detect to a maximum of 0.54 pCi/m2/s. All results are well below the 20 pCi/m2/s radon flux standard specified in 40 CFR part 61, Subpart Q.

5.4 AIRBORNE PARTICULATE DOSE

To determine the annual effective dose from airborne emissions of radioactive particulates generated during the year 2000 at the MISS and adjacent properties, multiple potential sources were considered including in situ wind erosion at the MISS; the Time Critical Removal Action (TCRA) performed for the swale; the remediation and restoration of the Ballod property; operation of the pilot demonstration facility; and operation of the exhaust system for the soil sample preparation laboratory. The particulate release rates from the in situ wind erosion at the MISS and the soil excavations and transfers associated with the TCRA for the swale, Ballod property remediation, and operation of the pilot facility were calculated using the methodology contained in the “Industrial Wind Erosion” section of EPA’s AP-42 (EPA 1995). The emissions of particulate matter from the exhaust system for the soil sample preparation laboratory was determined based on the number of soil samples prepared, the average quantity of particulate emissions resulting from the grinding of the samples, and the removal efficiency of the High Efficiency Particulate Air (HEPA) filter.

The radionuclide emission rates were based on the particulate release rates and the average radionuclide source concentrations obtained from soil measurements for each of the above operations. Specifically, the source concentrations for isotopes of uranium (U-238), radium (Ra-226) and thorium (Th-232) were based on the average values obtained from the measurements of these radionuclides in surface soil samples for the in situ soil (BNI 1987); and average values measured in soil samples for the excavated soils associated with the TCRA for the swale, Ballod property remediation, operation of the pilot demonstration facility, and operation of the exhaust system for the soil sample preparation laboratory. Unknown radionuclide source concentrations were based on the known source concentrations assuming secular equilibrium in the decay chains (Shlein 1992).

Although the 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 radionuclide emissions for the year from each of the above sources were entered into the “Clean Air Assessment Package-1988 personal computer”(CAP88-PC) program (Version 2.0) to perform the following two calculations:

1. Estimation of the hypothetical doses from airborne radioactive particulates at downwind distances corresponding to individuals located at the nearest residences and nearest commercial/industrial facilities as measured from the centers of the above sources. Analyses were performed separately for the TCRA at the swale, Ballod property remediation and operation of the pilot demonstration facility given the differences in receptor locations most affected by each of these areas. The in situ wind erosion and the exhaust hood emissions were found to be negligible and thus, were not included in the modeling analyses. Where individual receptors are affected by more than one emission source, doses caused by those sources were added. The hypothetical doses were based on the CAP88-PC 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) was applied to the CAP88-PC result. The hypothetical individual receiving the highest of these calculated doses was then identified as the individual maximally-exposed to the airborne particulate dose. Since this dose is based in part on wind direction and not simply the 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 (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, and workers).

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 2000 was an individual with 100 percent occupancy time located 35 m south-southwest of the Ballod Property. The 2000 airborne particulate dose to that individual, considering all site contributions throughout the year**,** was 0.084 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 0.021 person-rem/yr.

5.5 SURFACE WATER AND SEDIMENT

Surface watercourses and drainage near the MISS include Westerly and Lodi Brooks (Figure 3). Westerly Brook flows through a culvert after it enters the northwestern corner of the 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 the 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. Lodi Brook begins on the Sears property in a low marshy area that collects runoff from the Sears and Stepan properties; from there it flows southward under Route 17 remaining underground most of its course except for small sections on both sides of Interstate 80 and a small section along Route 17. From this area, the Brook flows approximately 1.8 miles downstream of the confluence of Westerly Brook and the Saddle River before joining the Saddle River.

Surface water and sediment samples in 2000 were collected in July and October. In July, samples (Tables 4, 5,6) were collected for the EMP (Figure 3); in October, samples (Tables 4-A, 5-A, 6-A, 6-B) were collected for the Groundwater Remedial Investigation (GWRI) program. The GWRI samples were used in the EMP to aid in the evaluation of contaminant migration further downstream from the site.

5.5.1 SURFACE WATER

Sampling locations in July 2000 (Figure 3) included location SWSD002 (downstream of the site 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's properties. Location SWSD001, which is not shown in Figure 3, was also sampled (where Lodi Brook meets the Saddle River). Background sampling was conducted in Westerly Brook, upstream (north) of the site, at SWSD003.

Sampling locations in October 2000 (Figures 4-A, 4-B) included two upstream locations (WBSW-4 and WBSW-5), three downstream locations (WBSW-1, WBSW-2, and WBSW-3) in Westerly Brook, two upstream (LBSW-1 and LBSW-2) locations and six downstream locations (LBSW-3 to LBSW-8) along Lodi Brook. At location LBSW-1, surface water sample was not taken because the water was stagnant.

Surface water samples in 2000 were collected and analyzed for metals and radioactive constituents. 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. For 2000, the sampling for radiological constituents was resumed (Tables 4, 4-A). All samples were analyzed for gross alpha, gross beta, radium, thorium, and uranium.

5.5.1.1 Radioactive Constituents

Surface water samples collected in July (Figure 3) at Westerly Brook (SWSD002) and Lodi Brook (SWSD005, SWSD006, and SWSD007) did not exhibit elevated concentrations of the analyzed radionuclides. Results for these locations are comparable to background measurements at SWSD003 (Table 4).

Surface water samples collected in October (Figures 4-A, 4-B) exceeded the State and Federal drinking water standards for either radium-228 or the combined concentrations of radium-226 and radium-228 (Table 4-A) at locations in Lodi Brook (LBSW-2, LBSW-5, LBSW-7), and Westerly Brook (WBSW-1, and WBSW-2). At these locations, radium-228 ranged from 4.75 pCi/L (WBSW-1) to 8.23 pCi/L (LBSW-5). The maximum concentration of combined radium-226 and radium-228 was 9.25 pCi/L (LBSW-1). All other radioactive constituents were below the State and Federal standards.

5.5.1.2 Metals

Federal drinking water and New Jersey groundwater standards are used for evaluating metal concentrations in surface water. Although surface water is not used as a source of potable water, Federal and State drinking water standards are used as a conservative basis for evaluation of the results. These regulatory standards are provided in Table 5 along with detected concentrations of metals in surface water.

Monitoring results revealed elevated concentrations in surface water for iron, manganese, and sodium (i.e., above Federal and State Criteria, except for sodium which has only a State Standard). All locations sampled (on Lodi Brook or Westerly Brook) had an exceedance for at least one of these metals and several locations had exceedances of all three metals.

At SWSD007, in the eastern tributary of Lodi Brook, there were exceedances for arsenic (21.7 μg/L), lead (162 μg/l), chromium (156 μg/l) and aluminum (3950 μg/L). Federal and State Criteria for aluminum (225 μg/L) were also exceeded in Westerly Brook (WBSW-3) downstream of the MISS. State Criteria for arsenic was exceeded on Lodi Brook at LBSW-2 (9.7 μg/L); and on Westerly Brook at WBSW-1 (12 μg/L), WBSW-2 (18.5 μg/L) and WBSW-3 (48.7 μg/L).

5.5.2 SEDIMENT

The sediment-sampling program was extended in 2000 to include more sample locations downstream of both Westerly and Lodi Brook, to identify the pattern of contaminant migration downstream from MISS. In addition to samples collected in July (Figure 3), sediment samples (Figure 4-A, 4-B) were also collected in October; samples were collected at two upstream locations and two downstream locations in Westerly Brook, and one location upstream and five downstream locations in Lodi Brook. Sediment samples could not be collected (unavailable sediment due to significant flow) at locations LBSED-2 and LBSED-005 in Lodi Brook and WBSED-3 in Westerly Brook.

5.5.2.1 Radioactive Constituents

- For the sediment samples collected in July 2000 (Figure 3), results for sample locations collected in Westerly Brook (SWSD001, SWSD002) were below soil cleanup. In the eastern tributary of Lodi Brook (SWSD005, SWSD006, SWSD007), results of sample analyses were elevated above background but below the soil cleanup criteria. Sediment sample collected at location SWSD004 was rejected for mishandling.
- For the sediment samples collected in October 2000 (Figure 4-A, 4-B), results for all locations (WBSED-1, WBSED-2, WBSED-5) were below soil cleanup criteria and comparable to background measurements at WBSED-4 (Table 6-A). Detected concentrations of radium-226 were above background at WBSED-2 (2.83 pCi/l), and WBSED-5 (1.74 pCi/L) but below the soil cleanup criteria.
- In the eastern tributary of Lodi Brook (Figure 4-A) results of sample analyses exceeded the soil cleanup criteria for radium-226, thorium-228 and thorium-232 (Table 6A). The highest concentrations (10.41 pCi/g radium-226, 23.58 radium-228, and 21.48 pCi/g thorium-232) were detected at the upstream location (LBSED-1). Further downstream, at location LBSED-3 and LBSED-4, detected concentrations of all radionuclides were above background, but below the soil cleanup criteria for all radionuclide parameters and the sum-of-ratios criterion for mixtures.
- Further downstream at LBSED-6, LBSED-7, and LBSED-8 (Figure 4-B) in Lodi Brook, detected concentrations of all analyzed radionuclides were below the soil cleanup criteria. Detected

concentrations of radium-226 at LBSED-7 (2.35 pCi/L), and LBSED-8 (2.51 pCi/L) were above background but below the soil cleanup criteria.

Results for 2000 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.

5.5.2.2 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-B along with the detected concentrations of metals in sediment. Sampling locations WBSED-4 (background), WBSED-5, LBSED-1, LBSED-3, and LBSED-4 are in areas zoned as light industrial (nonresidential), while sampling locations WBSED-1, WBSED-2, LBSED-6, LBSED-7, and LBSED-8 are in areas zoned for residential use.

Only the concentrations of arsenic at location LBSED-1 and lead at location LBSED-7 exceeded the proposed New Jersey Soil Cleanup Criteria. There were no exceedances of the soil cleanup criteria in Westerly Brook. The sampling results for 2000 are summarized below for each sampling location.

- At WBSED-4 and WBSED-5, the nonresidential upstream locations along Westerly Brook, no metal Concentrations exceeded the soil cleanup criteria.
- At WBSED-1 and WBSED-2, the residential downstream locations along Westerly Brook, no metal concentrations exceeded the soil cleanup criteria.
- In the eastern tributary of Lodi Brook at LBSED-1, results of sample analyses exceeded the soil cleanup criteria for arsenic (30.5 mg/kg). The elevated concentration of lead above background was reported but below the soil cleanup criteria. All other metals were below the proposed residential or nonresidential soil cleanup criteria at LBSED-1. Although the upstream location is in an area zoned for nonresidential use, two downstream sampling locations are zoned for residential use; therefore, it is prudent to evaluate upstream data against residential cleanup standards as well.
- At LBSED-3, at the confluence of the eastern and western tributaries of Lodi Brook, no metal concentrations exceeded the proposed residential or non-residential soil guidelines.
- At LBSED-4 and LBSED-6, the downstream locations along Lodi Brook, elevated concentrations of lead were reported above background but below the soil cleanup criteria. No other metal concentrations exceeded either the proposed residential or nonresidential soil guidelines.
- At LBSED-7, downstream location along Lodi Brook, elevated concentration of lead was reported at 427 mg/kg. Upstream of this sampling location and downstream from MISS, there are multiple potential industrial sources for this metal.
- At LBSED-8 further downstream along Lodi Brook, no metal concentrations exceeded either the proposed residential or nonresidential soil cleanup criteria.

5.5.2.3 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).

Various metal concentrations exceeded the LEL used in the Baseline Ecological Evaluation (BEE) at every sampling location. There were exceedances for lead, copper, zinc, chromium, and nickel in both Lodi Brook and Westerly Brook. However, metal concentrations exceeded SEL concentrations at only three locations, LBSED-1, LBSED-7 and WBSED-4 (Figure 4-A, 4-B).

- At WBSED-4 and WBSED-5, the nonresidential upstream locations along Westerly Brook, copper, lead, and zinc exceeded the LEL. Only copper (210 mg/kg) exceeded SEL at WBSED-4.
- At WBSED-1 and WBSED-2 the residential downstream locations along Westerly Brook, copper, lead, nickel and zinc exceeded the LEL. Non of the metals exceeded SEL.
- At LBSED-1, in the eastern tributary of Lodi Brook upstream of Lodi Brook, all metals (except nickel) exceeded the LEL. Only chromium and lead exceeded the SEL with concentrations of 191 mg/kg and 354 mg/kg, respectively.
- At LBSED-3, at the confluence of the eastern and western tributaries of Lodi Brook, only copper and lead exceeded the LEL with concentrations of 70.9 mg/kg and 33.8 mg/kg, respectively.
- At LBSED-4, LBSED-6, and LBSED-8 downstream locations along Lodi Brook, various metal concentrations exceeded the LEL. However, non-of the metal concentrations exceeded the SEL.
- At LBSED-7, the residential downstream locations along Lodi Brook, nickel exceeded the LEL and the concentrations of copper, lead, and zinc exceeded both the LEL and the SEL.

5.6 GROUNDWATER

The locations of groundwater monitoring wells at the 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

5.6.1.1 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 inter-finger 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. This information is further described in the following sections.

5.6.1.2 Water Level Measurements

Water level measurements were obtained from 35 monitoring wells (Figure 2) during 2000. Of these 35 monitoring wells, 15 are completed in unconsolidated overburden deposits, while 20 are completed in bedrock. During the synoptic gauging year 2000, five rounds of water levels were obtained. Four of these rounds (January, June, September and November) were associated with the Environmental Monitoring Program, and one round was associated with the Groundwater Remedial Investigation (GWRI). The GWRI gauging round was obtained in March 2000. Water Level Record Sheets for the five synoptic water level gauging rounds 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 deposits, groundwater levels measured during the five gauging rounds ranged as follows:

**Minimum and Maximum Water Level Elevations in Overburden Monitoring Wells
Synoptic Gauging Year 2000**

	January 19, 2000	March 27, 2000	June 12, 2000	September 29, 2000	November 29, 2000
Minimum GW. Elv. (ft. MSL)	44.32	44.77	39.44	39.00	39.52
Maximum GW. Elv. (ft. MSL)	54.86	55.21	55.06	54.52	54.49
Well Depicting Minimum GW. Elv.	B38W12A	B38W12A	B38W14S	B38W14S	B38W15S
Well Depicting Maximum GW. Elv.	B38W01S	B38W01S	B38W01S	B38W01S	B38W01S

Table 7 presents information regarding the ground surface, top of riser, and the water table elevations for the 15 monitoring wells completed in the unconsolidated deposits. As depicted in Table 7, well B38W14S and the MISS-4A showed the minimum and maximum water level fluctuations that occurred throughout the course of the year 2000 synoptic gauging program. Well B38W14S varied by 0.44 feet, whereas, well MISS-4A varied by 3.65 feet. The maximum and minimum groundwater elevations in the upgradient monitoring well B38W01S occurred in March 2000 and September 2000, respectively.

In the bedrock aquifer, groundwater levels measured during the five gauging rounds ranged as follows:

**Minimum and Maximum Water Level Elevations in Bedrock Monitoring Wells
Synoptic Gauging Year 2000**

	January 19, 2000	March 27, 2000	June 12, 2000	September 29, 2000	November 29, 2000
Minimum GW. Elv. (ft. MSL)	44.40	44.96	39.79	40.11	40.53
Maximum GW. Elv. (ft. MSL)	59.58	61.32	60.85	58.3	55.94
Well Depicting Minimum GW. Elv.	B38W19S	B38W12B	B38W14D	B38W14D	B38W15D
Well Depicting Maximum GW. Elv.	B38W05B	B38W05B	B38W05B	B38W05B	B38W05B

Table 8 presents information regarding the ground surface, top of riser, and the piezometric surface elevations for the 20 bedrock monitoring wells. As depicted in Table 8, well B38W14D and B38W05B showed the minimum and maximum water level fluctuations that occurred through out the course of the year 2000 synoptic gauging program. Well B38W14D varied by 0.32 feet, whereas, well B38W05B varied by 5.38 feet, respectively. The maximum and minimum groundwater elevations in the upgradient monitoring well B38W05B occurred in March 2000 and November 2000, respectively.

5.6.1.3 Groundwater Flow System

Potentiometric surface maps for the unconsolidated and bedrock groundwater flow systems during the five synoptic gauging rounds are presented in Figure 6 through 15. Figures 6 through 10 present the groundwater flow for wells completed in the overburden soils, whereas, Figures 11 through 15 presents the potentiometric surface maps for the wells completed in bedrock. 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 in Figure 16. 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.

During the year 2000 synoptic gauging rounds, the horizontal hydraulic gradient varied spatially but typically ranged from approximately 0.007 ft/ft to 0.015 ft/ft in the unconsolidated overburden aquifer. The direction of groundwater flow in the overburden aquifer is predominantly to the west-southwest as depicted in Figures 6 through 10. As depicted in these figures, the highest hydraulic head was present in upgradient monitoring well B38W01S. This well is located west of the bedrock high.

The hydraulic conductivity of the overburden material was estimated to be between 8.8×10^{-5} cm/s (0.25 ft/day) to 1.4×10^{-4} cm/s (0.4 ft/day). These values exhibit hydraulic conductivity similar to those cited in Freeze and Cherry (1979) for silt to silty sands. Results reported from previous hydraulic conductivity tests conducted on Stepan monitoring wells in 1994 (Stepan, 1994) yielded similar results. The average linear groundwater velocity in the overburden was estimated to range from 0.0125 ft/day to 0.02 ft/day (Stone & Webster, 2000).

The direction of groundwater flow in bedrock is presented in Figures 11 through 15. 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 16. Figures 11 through 15 depict the groundwater divide, with groundwater flowing predominantly to the west-southwest, with a component of groundwater flow to the northwest.

In the bedrock aquifer, the horizontal hydraulic gradients ranged between 0.010 ft/ft to 0.020 ft/ft during the year 2000 synoptic gauging program. The hydraulic conductivity of the bedrock aquifer was estimated to range between 2.0x10-4 cm/s (0.57 ft/day) and 4.6x10-4 cm/s (1.30 ft/day) based on slug tests performed as part of GWRI activities. These values exhibit hydraulic conductivity similar to those cited in Freeze and Cherry (1979) for consolidated material, i.e., sandstone and shale (Stone & Webster 2000).

As part of GWRI activities, pressure packer tests have been initiated and results from seven boreholes indicate that hydraulic conductivities for seven bedrock borings range from 3.9x10-4 cm/s (1.1 ft/day) to 1.1x10-3 cm/s (3.2 ft/day). The results of these tests including the procedures used to perform the tests will be presented in the Groundwater Remedial Investigation Report. The average linear groundwater velocity in the bedrock aquifer was estimated to range from 0.017 ft/day to 0.4 ft/day based on the findings of Phase I GWRI activities.

Based on the synoptic gauging rounds, information regarding the vertical component of groundwater flow may be inferred. As depicted in Table 9, thirteen well clusters were used to determine if a horizontal or vertical gradient (either upward or downward) exists between overburden and bedrock wells. Of the nine well clusters located within the MISS/Stepan property, the overburden well depicted a greater hydraulic head than the well completed in bedrock at seven clusters. The data contained in Table 9 principally indicates that the MISS/Stepan property represents a recharge area for the unconsolidated/overburden aquifer. The exception to this statement are well clusters B38W24S/24D and B38W25S/25D. At these two well clusters, 3 of the 5 gauging rounds, and 4 of 5 gauging rounds indicated a vertically upward component of groundwater flow, 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 of the bedrock surface. The bedrock surface has been 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, and in the vicinity of B38W24S/24D may be under confining conditions, and thereby responds with an upward gradient during different times of the year.

With respect to monitoring well clusters located off-site, water levels measured in gauging year 2000 indicate that for well clusters B38W12A/12B, B38W14S/14D, and B38W15S/15D, the hydraulic heads in the bedrock aquifer are greater than that in the overburden aquifer, thereby depicting an upward component of groundwater flow from the bedrock to the overburden. These wells are located in proximity to a drainage swale/Lodi Brook (B38W12A/12B), and the Saddle River (B38W14S/14D and B38W15S/15D). The other off-site well cluster, B38W17A/17B, predominantly displayed a horizontal component of groundwater flow, whereby the groundwater flow system is in transition between a recharge and discharge regime.

5.6.2 GROUNDWATER QUALITY

5.6.2.1 Field Parameters

Table 10 presents a summary of field parameters measured during annual sampling activities at the 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.

5.6.2.2 Water Quality Parameters

Groundwater quality at the MISS has been evaluated historically for the standard parameters 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) between June 2000 and July 2000 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 the 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

Three wells were not sampled during the 2000 Environmental Monitoring Program, which was conducted during June and July. At well B38W01S the peristaltic sampling tube was dropped into the well and recovery attempts were unsuccessful. Well B38W19S and MISS05A were dry. These three wells were sampled in November 2000 as part of the Groundwater Remedial Investigation and the data obtained is reported herein for evaluation of groundwater quality. Although groundwater at the site is not used as a source of potable water, Federal and State drinking water standards are used as a conservative basis for evaluation of the results. Results are provided in Table 11 and discussed below.

- On site and downgradient gross alpha results exceeded the Federal and State drinking water standard in 6 wells. The concentrations of gross alpha in these six wells ranged from a minimum of 18.9 pCi/L at well B38W17B to a maximum of 230 pCi/L at B38W18D.
- Gross beta results exceeded the Federal and State standard in seven wells. The concentrations in these seven wells ranged from a minimum of 65.6 pCi/L at B38W25S to a maximum of 365 pCi/L and 886 pCi/L at B38W19D and MISS05B respectively.
- Onsite and downgradient radium-226 results ranged from non-detect at 0.03 pCi/L (MISS01B) and 0.08 pCi/L (MISS02A) to 2.87 pCi/L (B38W18D) near Building 76. 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), except at B38W18D. The detected concentration of radium-226 at this location was 2.87 pCi/L and the combined radium concentration was 19.4 pCi/L. This was the only location which exceeded the radium standard. Although the SDWA does not apply because groundwater at the MISS is not used as a source of drinking water, combined radium-226 and 228 concentrations are used for evaluation of groundwater quality.

- Radium-228 was detected in five groundwater samples. The reported detected concentrations of radium-228 ranged from 0.74 pCi/L at B38W25D to a maximum of 16.53 pCi/L at B38W18D. The concentration at B38W18D exceeded the Federal and State drinking water for combined radium standard of 5 pCi/L. Thorium-230 was detected in almost all of the groundwater samples. Where it was detected, it ranged from 0.11 pCi/L (B38W14S) to 2.45 pCi/L (MISS05A).
- Thorium-232 was only detected at B38W18D with a concentration of 7.53 pCi/L.
- Total uranium concentrations in groundwater were much less than the SDWA standards with one exception. Total uranium was detected in the MISS05A at a concentration of 73.48 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 µg/L (27 pCi/L). This result is consistent with historical results and is less than results for 1996 through 1999. Monitoring well B38W18D (bedrock well) located near Building 76 contained 3.08 pCi/L of total uranium. The maximum offsite concentration reported was 7.38 pCi/L from monitoring well B38W15D southwest and downgradient of the site.

5.6.4 GROUNDWATER - METALS

Although groundwater at the 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 the MISS. Metals detected in groundwater are reported in Table 12.

Common metals that occur in abundance at the background locations (B38W01S and B38W02D) 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.

In 2000, arsenic concentrations in groundwater exceeded the SDWA MCL (50 µg/L) in three onsite wells MISS02A (3520 µg/L), B38W19D (70.3 µg/L), and MISS07B (52.6 µg/L). Five other wells: MISS05B (20.5 µg/L), B38W19S (31.8 µg/L), B38W25S (13.4 µg/L), B38W15D, (11.1 µg/L), and B38W18D (8.2 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. Although the measured concentrations from the other wells exceeded the more stringent State groundwater quality criteria, all but those discussed above 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 mentioned above, was the State limit exceeded.

- Antimony was detected in one well, with a maximum concentration of 37.6 µg/L (B38W17A). All other 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 maximum beryllium concentration reported was detected at well B38W01S (2.4 µg/L) in 2000. All reported beryllium concentrations (B38W24D, B38W18D, and MISS02B) were less than the Federal limit of 4 µg/L. All reported concentrations from the wells ranged from 0.52 to 2.4 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 various wells with a maximum concentration of 2.9 µg/L at offsite well (B38W14D) and 1.5 g/L at onsite well (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 most of the wells, however only one well had an exceedance of the SDWA standard, 1590 µg/L at B38W17A. All other concentrations were below the State and Federal limits (100 µg/L).
- Lead was detected in 4 wells (B38W01S, B38W17A, MISS02A and MISS06A) with concentrations ranging from 5.8 µg/L (B38W01S) to 13 µg/L (MISS02A). Only one well (B38W02A) exceeded the State PQL of 10 µg/L, but less than the Federal drinking water limit (15 µg/L).
- As in the previous seven years, the highest concentration of nickel was detected in well B38W17A (114 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 2000 (Table 13) is consistent with historical results Table (A-4).

The prevalent organic constituents in groundwater at the MISS are tetrachloroethene and its degradation products: trichloroethene, dichloroethenes, and vinyl chloride. As seen historically, at offsite wells B38W14D and B38W14S, and B38W15D 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 wells MISS01B, and MISS07B, but not in their shallow counterparts.
- Chloroform was identified in wells B38W14D (2 µg/L) and B38W14S (6 µg/L) at a concentration above the State groundwater limit of 1 µg/L but not above the PQL of 6 µg/L.
- Benzene was identified in three shallow wells with concentrations between 0.1 µg/L to 0.2 µg/L. In the deep wells, benzene was identified in many wells with estimated concentrations between 0.2 µg/L to 1.0 µg/l and exceptionally high concentration at well MISS05B (3500 µg/L).

6.0 CONCLUSIONS

6.1 EXTERNAL GAMMA RADIATION

The 2000, 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 674.6 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 75.9 and 109.7 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 the MISS to a hypothetical maximally-exposed individual residing 50 ft north of the fenceline at station 21 was 7.15 mrem/yr (Calc. 08575-0207-002). Results of gamma radiation monitors are consistent with historical data and all locations will continue to be monitored during 2001.

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 non-detect to a maximum of 3.84 pCi/L (location 24). While there is undoubtedly a probability that the population of values represented by the 3.84 pCi/L value exceed the action level of 4 pCi/L, this value is the highest of 15 values. The next highest values are 2.44 and 1.82 pCi/L. Results of radon monitoring are consistent with last year results and all locations will continue to be monitored during 2001.

6.3 RADON-222 FLUX

Radon flux measurements obtained at MISS are presented at Table 3-A; measurement locations are shown in Figure 5. Measurements of radon flux ranged from non-detect to a maximum of 0.54 pCi/m^2/s. All results are well below the 20 pCi/m^2/s radon flux standard specified in 40 CFR part 61, Subpart Q. for 2000, radon flux measurements were taken from stock piled material onsite. In the future, radon flux measurements will only be taken when there is long term stockpiling.

6.4 AIRBORNE PARTICULATE DOSE

The airborne particulate dose to the hypothetical maximally exposed individual in 2000 was an individual with 100 percent occupancy time located 35 m south-southwest of the Ballod Property. The 2000 airborne particulate dose to that individual, considering all site contributions throughout the year, was 0.084 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 0.021 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.

6.5 CUMULATIVE DOSE FROM EXTERNAL GAMMA RADIATION AND AIRBORNE PARTICULATE

The location of the maximally exposed individual from direct gamma radiation and the location of the maximally exposed individual from airborne particulates are different. The calculated maximally exposed individual from direct gamma radiation emitted at MISS occurred 50 feet from location 21 which is located on the southern perimeter of the site. The calculated cumulative dose from the external gamma radiation at the above location was 7.15 mrem/yr (see Section 5.1).

The location of the maximally exposed individual as determined by the dispersion modeling performed for the annual NESHAP's compliance report occurred at a facility located adjacent to the remediated portion of the Ballod Property (see Appendix C). The calculated annual effective dose to the maximally exposed resident was 8.42×10^{-2} mrem/yr. The maximum annual effective dose is almost entirely the result of the internal doses received from the inhalation of dust particles with a small contribution from the ingestion of plant borne dust.

Thus, the calculated cumulative dose from external gamma radiation and airborne particulates to a hypothetical maximally exposed individual is essentially the external gamma radiation dose. The calculated cumulative dose from external gamma radiation and airborne particulates of 7.15 mrem/yr is well below the NRC standard of 100 mrem/yr (from all sources, excluding radon).

6.6 SURFACE WATER

Surface water samples in 2000 were collected and analyzed for radioactive constituents (Tables 4, 4-A) and metals (Tables 5, 5-A). Surface water samples collected in October 2000 (Figures 4-A, 4-B) exceeded the Federal and State Standards for either radium-228 or the combined concentrations of radium-226 and radium-228 (Table 4-A) at locationsin Lodi Brook and Westerly Brook. Radium-228 concentrations ranged from 4.75 pCi/L (WBSW-1) to 8.23 pCi/l (LBSW-5). The maximum concentration for combined radium-226 and radium-228 was 9.25 pCi/L (LBSW-5). All other radioactive constituents were below the Federal and State standards. Historically, surface water has not exhibited above-background concentrations of radionuclides during past environmental sampling rounds. Metal concentrations of iron, manganese, and sodium exceeded the State criteria at almost every location. At SWSD007 (Table 5), arsenic (21.7 µg/L), chromium (156 µg/l), lead (162 µg/L) and aluminum (3950 µg/L) exceeded the State criteria for surface water. Surface water will continue to be monitored during 2001.

6.7 SEDIMENT

Radionuclide concentrations in sediment samples collected in Westerly Brook were within the background concentration and below the State cleanup criteria. In 2000 the concentrations in samples collected upstream at the eastern tributary of Lodi Brook (LBSED-1) exceeded the DOE soil limits for radium-226, radium-228, and thorium-232. At LBSED-1, the measured concentrations of radium-226 (10.41 pCi/g), thorium-228 (23.58 pCi/g) and thorium-232 (21.48 pCi/g) are the highest measured at the site in 2000. Further downstream at LBSED-3, and LBSED-4, detected concentrations of all radionuclides were above background but below the soil cleanup criteria for radium-226, radium-228, and thorium-232. Further downstream at LBSED-6, LBSED-7, and LBSED-8 detected concentrations of radium-226 were above background but below the soil cleanup criteria. Results for 2000 confirm the presence of localized contamination in the streambed sediment of the eastern tributary of Lodi Brook. Various metal concentrations in sediment samples collected in Westerly Brook and Lodi Brook exceeded the LEL. Some metal concentrations exceeded the SEL at three locations, LBSED-1, LBSED-7 and WBSED-4 (Table 6-B). Sediment will continue to be monitored during 2001.

6.8 GROUNDWATER

Concentrations of gross alpha and gross beta in groundwater exceeded the Federal and State drinking water in many wells. Concentrations of all other radionuclides sampled in groundwater in 2000 (radium-226, radium-228, thorium-230, thorium-232, and total uranium) were well below (except for well MISS05A, and B38W18D) the Federal and State drinking water standards. Total uranium was detected in MISS05A with concentration of 73.48 pCi/L. Radium 228, thorium-228, and thorium-232 were identified in well B38W18D with concentrations of 16.53 pCi/L, 6.89 pCi/l and 7.53 pCi/L respectively. Consistent with historical results, the highest concentration of total uranium was detected in well MISS05A.

Although groundwater at the MISS is not a source of drinking water, State and Federal drinking water standards are used for evaluating groundwater data. Radium concentrations (except well B38W18D) 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 Federal SDWA drinking water standards was identified in three onsite wells; MISS02A (3520 µg/L), B38W19D (70.3 µg/L) and MISS07B (52.6 µg/L). Five other locations exceeded the State limit (PQL). All detected concentrations of beryllium were less than the State PQL and Federal limit. Cadmium was reported in various wells, but all detected concentrations were less than the State and Federal standard. Chromium was detected in most wells, but only one exceeded State and Federal limits. Lead was detected in 4 wells. All detected concentrations were less than the Federal standard but one was above the State standard. 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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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
NE	Not Established
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
SOR	Sum of Ratios
SQL	Sample Quantitation Limit
SW	Surface Water
TBD	To Be Determined
TCRA	Time Critical Removal Action
TETLD	Tissue-equivalent Thermo-luminescent Dosimeter
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 2000 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 are not available 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 taken in the year 2000 of external gamma radiation measurements, radon gas measurements, and samples of environmental media to the 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 the MISS in 2000, based on the measured TETLD results, is 7.15 mrem; which is well below the NRC standard of 100 mrem. Based on TETLD measurements from 1/00 to 1/01, the maximum gamma radiation value obtained (corrected for background, exposure duration, and attenuation) was 674.6 mrem/yr. Measured radon-222 concentrations for 2000 ranged from non-detectable to 0.6 pCi/l, which is well below the 4 pCi/l EPA action level. Radon-220 concentrations ranged from non-detect to a maximum of 3.84 pCi/l, which is also below the EPA action level.

The airborne particulate dose to the hypothetically maximally exposed individual in 2000 was 0.085 mrem/year which is well below the 10 mrem/year standard specified in 40 CFR, Part 61, Subpart H. No radiological parameter exceeded relevant criteria, except as discussed below.

- Sediment samples (collected in October 2000) from one location in the eastern tributary of Lodi Brook (LBSED-1) exceeded the DOE/EPA soil cleanup criteria for radium-226, thorium-228 and thorium-232 . The measured concentrations (10.41 pCi/g radium-226, 23.58 pCi/g thorium-228, and 21.48 pCi/g thorium-232) were the highest concentrations measured at the site in 2000. 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. Further downstream at LBSED-6, LBSED-7, and LBSED-8 along Lodi Brook, detected concentrations of all analyzed radionuclides were below the soil cleanup criteria. All sediment samples collected in July 2000 in Lodi Brook had radionuclide concentrations below soil cleanup criteria. All analyzed radionuclides were below the soil cleanup criteria for sediment samples collected in Westerly Brook in both July 2000 and October 2000. Results for 2000 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.
- Conservative Federal and State drinking water Standards for radiological contaminants were used as criteria to evaluate monitoring results for surface water. Surface water samples collected in October 2000 from the western tributary of Lodi Brook (LBSW-2) and from two locations below Essex Street on Lodi Brook (LBSW-5 and LBSW-7) exceeded criteria for combined radium-226

and radium-228. The measured concentrations ranged from 5.75 pCi/L to 9.25 pCi/L at these locations. Two downstream locations on Westerly Brook (WBSW-1 and WBSW-2) also exceeded the radium criteria. The measured concentrations were 5.1 pCi/L and 5.58 pCi/L, respectively. No surface water samples collected in July 2000 exceeded any radiological criteria on Lodi Brook or on Westerly Brook.

- The same conservative Federal and State drinking water Standards for radiological contaminants were used as criteria to evaluate monitoring results for groundwater. There was one exceedance of the combined radium criteria for groundwater samples collected in 2000. Monitoring well B38W18D, collected near Building 76 had a measured concentration of 19.4 pCi/L for combined radium. There was also one exceedance of the uranium criteria with a measured uranium concentration of 73.48 pCi/L for monitoring well MISS05A. There were six exceedances of the gross alpha criteria with the highest measured concentration of 230 pCi/L for monitoring well B38W18D. All other gross alpha exceedances ranged from 18.9 to 27.0 pCi/L. There were also seven exceedances of the gross beta with the highest measured concentration of 886 pCi/L for monitoring well MISS05B. Results for 2000 are within the historical range for radium, thorium and uranium (gross alpha and gross beta have not been monitored previously).

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. Some metals exceeded proposed New Jersey Soil cleanup criteria in sediment samples. Some metals exceeded Federal and State standards in surface water. Some metals and volatile organic compounds (VOCs) in groundwater samples exceeded the State and Federal standards:

- Lodi Brook sediment concentrations of arsenic (LBSED-1) and lead (LBSED-7) were above the State proposed soil cleanup criteria at one location each. Arsenic and lead in 1999, were elevated but did not exceed State Criteria. There were no exceedances of the State proposed soil cleanup criteria in Westerly Brook. There were several exceedances of the Lower Effects Level (LEL) for lead, copper, zinc, chromium and nickel in both Lodi Brook and Westerly Brook. Elevated concentration of metals is 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.

- Federal Safe Drinking Water Act (SDWA) maximum contaminant levels (MCLs) and New Jersey Groundwater Quality Standards for Class II A aquifers were used as conservative criteria to evaluate monitoring results for chemical contaminants in surface water. Metals that exceeded both the Federal and State standards in Lodi Brook, include aluminum, chromium and lead. Aluminum also exceeded Federal and State standards in Westerly Brook. Arsenic exceeded State standards in both Lodi Brook and Westerly Brook.

- Metals which exceeded either the SDWA MCLs 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. These same metals exceeded standards in 1999. Although groundwater at the 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 2000 is consistent with historical results. The detected VOCs in groundwater at the MISS are tetrachloroethene and its degradation 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, B38W15D, MISS01B 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 the 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 the 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 the 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 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 2000 EMP program at the MISS were:

- measurement of external gamma radiation;
- measurement of radon gas concentrations in air (from radon-220 and radon-222);
- measurement of radon flux;
- sampling and analysis of streambed sediment for radioactive constituents and metals;
- sampling and analysis of surface water for radioactive constituents and metals; 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 2000 EMP program at the 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 the 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-version 2 (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 resumed in 2000 for the storage pile generated as a result of remediation and restoration of the Ballod property and operation of the pilot facility.

Summary of Radiological Criteria Used
External Gamma Radiation and Air

Parameter	NRC Standard	EPA Standard or Guideline
Radon-222		4 pCi/L [a]
Radon-220		-- [b]
Radon Flux		20 $pCi/m^2/s$ [g]
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 the 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.
[g] EPA standard 40 CFR Part 61, Subpart Q.

2.2 Sediment, Surface Water and Groundwater - Radioactive Constituents

Criteria for evaluating the measured concentrations of radionuclides in sediment, surface water, and groundwater at the 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 (SOR) test and is thereby considered to exceed the soil guidelines. This SOR calculation is used for the purpose of this report and is a conservative approach.

- 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 total uranium, combined concentrations of radium-226 and radium-228, and gross alpha. Although groundwater at the 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. MCLs for drinking water were also used to conservatively evaluate surface water. Sampling was performed for specific radiological contaminants known to exist at the MISS (Gross alpha, Gross Beta, 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
Gross Alpha	15 pCi/L	15 pCi/L	
Gross Beta		50 pCi/L[e]	
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.

[e]If the gross beta particle activity exceed 50 pCi/L, an analysis of the sample must be performed to identify the major radioactive constituents present and the appropriate organ and total body doses shall be calculated (40 CFR 141.26).

2.3 Sediment - Chemical Parameters

Criteria for evaluating the detected concentrations of chemical parameters in sediment at the 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 a need for further investigation.

2.4 Groundwater and Surface Water - Chemical Parameters

Although the groundwater at the 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. MCLs for drinking water were used to conservatively evaluate groundwater and surface water monitoring results.

- 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 the 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 the 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 the 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, 3, 4-A, and 4-B show the EMP sampling locations at the MISS, and indicate the type of media sampled at each location. Table 1 summarizes the 2000 monitoring program at the MISS for external gamma radiation, radon gas, surface water, sediment, and groundwater.

Measurements of external gamma radiation are taken along fenceline locations surrounding the 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).

Radon flux data was collected for the storage pile at locations shown in Figure 5.

Surface water and sediment sampling includes the analysis for radioactive constituents and metals along Westerly Brook and Lodi Brook (Figure3, 4-A, and 4-B). Sampling locations along Lodi and 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 the MISS.

4.0 MONITORING METHODOLOGY

Under the MISS EMP conducted in 2000, 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 2000 program is provided in the FUSRAP Chemical Data Quality Management Plan (CDQMP).

Environmental monitoring activities at the MISS in 2000 were conducted in accordance with the Chemical Data Quality Management Plan (CDQMP) listed in the following table. The monitoring activities 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).* 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.*

FUSRAP Instruction Guides Used for Environmental Monitoring Activities

Document Number	Document Title
SW-MWD-410-0	Groundwater Level Measurements (CDQMP,1999)
SW-MWD-506-0	Decontamination of Field Sampling Equipment at FUSRAP Sites (CDQMP, 1999)
SW-MWD-302-0	Surface Water Sampling (CDQMP, 1999)
SW-MWD-301-0	Sediment sampling (CDQMP, 1999)
191-IG-029	Radon/Thoron and TETLD Exchange (BNI 1993b)
SW-MWD-304-0	Groundwater Sampling Activities (CDQMP,1999)

5.0 ANALYTICAL DATA AND INTERPRETATION OF RESULTS

This section presents the data and interpretation of results for the 2000 EMP at the MISS. Data for 2000 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 μ g/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. Correspondence from the NJDEP states that the generic conversion factor for total uranium from μg/L to pCi/L is 0.9. On this basis, since the new MCL for uranium is expressed as 30 μg/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 the 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 2000 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 the MISS in 2000 was 7.15 mrem/yr (Calc. 08575-0207-002).

5.2 Radon-220 and Radon-222

Results of the 2000 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.

Radon-222 concentrations for 2000 ranged from non-detect to 0.6 pCi/L; below the EPA AL of 4 pCi/L. Radon-220 concentrations ranged from non-detect to a maximum of 3.84 pCi/L (location 24). While there is undoubtedly a probability that the population of values represented by the 3.84 pCi/l value exceed the action level of 4 pCi/L, this value is the highest of 15 values. The next highest values are 2.44 and 1.82 pCi/L.

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

Radon flux data was obtained for the storage pile on the MISS to verify compliance with 40 CFR Part 61, Subpart Q. To determine radon flux from a storage pile, charcoal canisters were placed on the pile at 25 ft intervals; the canisters remained on the pile for 24 hours. Radon flux measurements for 2000 are presented in Table 3-A; measurement locations are shown in Figure 5.

Analytical results from measurements obtained at the MISS in January 2001 ranged from non-detect to a maximum of 0.54 pCi/m2/s. All results are well below the 20 pCi/m2/s radon flux standard specified in 40 CFR part 61, Subpart Q.

5.4 Airborne Particulate Dose

To determine the annual effective dose from airborne emissions of radioactive particulates generated during the year 2000 at the MISS and adjacent properties, multiple potential sources were considered including in situ wind erosion at the MISS; the Time Critical Removal Action (TCRA) performed for the swale; the remediation and restoration of the Ballod property; operation of the pilot demonstration facility; and operation of the exhaust system for the soil sample preparation laboratory. The particulate release rates from the in situ wind erosion at the MISS and the soil excavations and transfers associated with the TCRA for the swale, Ballod property remediation, and operation of the pilot facility were calculated using the methodology contained in the "Industrial Wind Erosion" section of EPA's AP-42 (EPA 1995). The emissions of particulate matter from the exhaust system for the soil sample preparation laboratory was determined based on the number of soil samples prepared, the average quantity of particulate emissions resulting from the grinding of the samples, and the removal efficiency of the High Efficiency Particulate Air (HEPA) filter.

The radionuclide emission rates were based on the particulate release rates and the average radionuclide source concentrations obtained from soil measurements for each of the above operations. Specifically, the source concentrations for isotopes of uranium (U-238), radium (Ra-226) and thorium (Th-232) were based on the average values obtained from the measurements of these radionuclides in surface soil samples for the in situ soil (BNI 1987); and average values measured in soil samples for the excavated soils associated with the TCRA for the swale, Ballod property remediation, operation of the pilot demonstration facility, and operation of the exhaust system for the soil sample preparation laboratory. Unknown radionuclide source concentrations were based on the known source concentrations assuming secular equilibrium in the decay chains (Shlein 1992).

Although the 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 radionuclide emissions for the year from each of the above sources were entered into the "Clean Air Assessment Package-1988 personal computer"(CAP88-PC) program (Version 2.0) to perform the following two calculations:

1. Estimation of the hypothetical doses from airborne radioactive particulates at downwind distances corresponding to individuals located at the nearest residences and nearest commercial/industrial facilities as measured from the centers of the above sources. Analyses were performed separately for the TCRA at the swale, Ballod property remediation and operation of the pilot demonstration facility given the differences in receptor locations most affected by each of these areas. The in situ wind erosion and the exhaust hood emissions were found to be negligible and thus, were not included in the modeling analyses. Where individual receptors are affected by more than one emission source, doses caused by those sources were added. The hypothetical doses were based on the CAP88-PC 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) was applied to the CAP88-PC result. The hypothetical individual receiving the highest of these calculated doses was then identified as the individual maximally-exposed to the airborne particulate dose. Since this dose is based in part on wind direction and not simply the 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 (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).

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 2000 was an individual with 100 percent occupancy time located 35 m south-southwest of the Ballod Property. The 2000 airborne particulate dose to that individual, considering all site contributions throughout the year, was 0.084 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 0.021 person-rem/yr.

5.5 Surface Water and Sediment

Surface water courses and drainage near the MISS include Westerly and Lodi Brooks (Figure 3). Westerly Brook flows through a culvert after it enters the northwestern corner of the 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 the 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. Lodi Brook begins on the Sears property in a low marshy area that collects runoff from the Sears and Stepan properties; from there it flows southward under Route 17 remaining underground most of its course except for small sections on both sides of Interstate 80 and a small section along Route 17. From this area, the Brook flows approximately 1.8 miles downstream of the confluence of Westerly Brook and the Saddle River before joining the Saddle River.

Surface water and sediment samples in 2000 were collected in July and October. In July, samples (Tables 4, 5,6) were collected for the EMP (Figure 3); in October, samples (Tables 4-A, 5-A, 6-A, 6-B) were collected for the Groundwater Remedial Investigation (GWRI) program. The GWRI samples were used in the EMP to aid in the evaluation of contaminant migration further downstream from the site.

5.5.1 Surface Water

Sampling locations in July 2000 (Figure 3) included location SWSD002 (downstream of the site 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. Location SWSD001, which is not shown in Figure 3, was also sampled (where Lodi Brook meets the Saddle River). Background sampling was conducted in Westerly Brook, upstream (north) of the site, at SWSD003.

Sampling locations in October 2000 (Figures 4-A, 4-B) included two upstream locations (WBSW-4 and WBSW-5), three downstream locations (WBSW-1, WBSW-2, and WBSW-3) in Westerly Brook; two upstream (LBSW-1 and LBSW-2) locations and six downstream locations (LBSW-3 to LBSW-8) along Lodi Brook. At location LBSW-1, surface water sample was not taken because the water was stagnant.

Surface water samples in 2000 were collected and analyzed for metals and radioactive constituents. 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. For 2000, the sampling for radiological constituents was resumed (Tables 4, 4-A). All samples were analyzed for gross alpha, gross beta, radium, thorium, and uranium.

<u>**Radioactive Constituents**</u>

Surface water samples collected in July (Figure 3) at Westerly Brook (SWSD002) and Lodi Brook (SWSD005, SWSD006, and SWSD007) did not exhibit elevated concentrations of the analyzed radionuclides. Results for these locations are comparable to background measurements at SWSD003 (Table 4).

Surface water samples collected in October (Figures 4-A, 4-B) exceeded the State and Federal drinking water standards for either radium-228 or the combined concentrations of radium-226 and radium-228 (Table 4-A) at locations in Lodi Brook (LBSW-2, LBSW-5, LBSW-7), and Westerly Brook (WBSW-1, and WBSW-2). At these locations, radium-228 ranged from 4.75 pCi/L (WBSW-1) to 8.23 pCi/L

(LBSW-5). The maximum concentration of combined radium-226 and radium-228 was 9.25 pCi/L (LBSW-1). All other radioactive constituents were below the State and Federal standards.

Metals

Federal drinking water and New Jersey groundwater standards are used for evaluating metal concentrations in surface water. Although surface water is not used as a source of potable water, Federal and State drinking water standards are used as a conservative basis for evaluation of the results. These regulatory standards are provided in Table 5 along with detected concentrations of metals in surface water.

Monitoring results revealed elevated concentrations in surface water for iron, manganese and sodium (i.e., above Federal and State Criteria, except for sodium which has only a State Standard). All locations sampled (on Lodi Brook or Westerly Brook) had an exceedance for at least one of these metals and several locations had exceedances of all three metals.

At SWSD007, in the eastern tributary of Lodi Brook, there were exceedances for arsenic (21.7 μg/L), lead (162 μg/l), chromium (156 μg/l) and aluminum (3950 μg/L). Federal and State Criteria for aluminum (225 μg/L) were also exceeded in Westerly Brook (WBSW-3) downstream of the MISS. State Criteria for arsenic was exceeded on Lodi Brook at LBSW-2 (9.7 μg/L); and on Westerly Brook at WBSW-1 (12 μg/L), WBSW-2 (18.5 μg/L) and WBSW-3 (48.7 μg/L).

5.5.2 Sediment

The sediment sampling program was extended in 2000 to include more sample locations downstream of both Westerly and Lodi Brook, to identify the pattern of contaminant migration downstream from MISS. In addition to samples collected in July (Figure 3), sediment samples (Figure 4-A, 4-B) were also collected in October; samples were collected at two upstream locations and two downstream locations in Westerly Brook, and one location upstream and five downstream locations in Lodi Brook. Sediment samples could not be collected (unavailable sediment due to significant flow) at locations LBSED-2 and LBSED-005 in Lodi Brook and WBSED-3 in Westerly Brook.

Radioactive Constituents

- For the sediment samples collected in July 2000 (Figure 3), results for sample locations collected in Westerly Brook (SWSD001, SWSD002) were below soil cleanup. In the eastern tributary of Lodi Brook (SWSD005, SWSD006, SWSD007), results of sample analyses were elevated above background but below the soil cleanup criteria. Sediment sample collected at location SWSD004 was rejected for mishandling.
- For the sediment samples collected in October 2000 (Figure 4-A, 4-B), results for all locations (WBSED-1, WBSED-2, WBSED-5) were below soil cleanup criteria and comparable to background measurements at WBSED-4 (Table 6-A). Detected concentrations of radium-226 were above background at WBSED-2 (2.83 pCi/l), and WBSED-5 (1.74 pCi/L) but below the soil cleanup criteria.
- In the eastern tributary of Lodi Brook (Figure 4-A) results of sample analyses exceeded the soil cleanup criteria for radium-226, thorium-228 and thorium-232 (Table 6A). The highest concentrations (10.41 pCi/g radium-226, 23.58 radium-228, and 21.48 pCi/g thorium-232) were detected at the upstream location (LBSED-1). Further downstream, at location LBSED-3 and LBSED-4, detected concentrations of all radionuclides were above background, but below the soil cleanup criteria for all radionuclide parameters and the sum-of-ratios criterion for mixtures.

- Further downstream at LBSED-6, LBSED-7, and LBSED-8 (Figure 4-B) in Lodi Brook, detected concentrations of all analyzed radionuclides were below the soil cleanup criteria. Detected concentrations of radium-226 at LBSED-7 (2.35 pCi/L), and LBSED-8 (2.51 pCi/L) were above background but below the soil cleanup criteria.

Results for 2000 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.

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-B along with the detected concentrations of metals in sediment. Sampling locations WBSED-4 (background), WBSED-5, LBSED-1, LBSED-3, and LBSED-4 are in areas zoned as light industrial (nonresidential), while sampling locations WBSED-1, WBSED-2, LBSED-6, LBSED-7, and LBSED-8 are in areas zoned for residential use.

Only the concentrations of arsenic at location LBSED-1 and lead at location LBSED-7 exceeded the proposed New Jersey Soil Cleanup Criteria. There were no exceedances of the soil cleanup criteria in Westerly Brook. The sampling results for 2000 are summarized below for each sampling location.

- At WBSED-4 and WBSED-5, the nonresidential upstream locations along Westerly Brook, no metal Concentrations exceeded the soil cleanup criteria.
- At WBSED-1 and WBSED-2, the residential downstream locations along Westerly Brook, no metal concentrations exceeded the soil cleanup criteria.
- In the eastern tributary of Lodi Brook at LBSED-1, results of sample analyses exceeded the soil cleanup criteria for arsenic (30.5 mg/kg). The elevated concentration of lead above background was reported but below the soil cleanup criteria. All other metals were below the proposed residential or nonresidential soil cleanup criteria at LBSED-1. Although the upstream location is in an area zoned for nonresidential use, two downstream sampling locations are zoned for residential use; therefore, it is prudent to evaluate upstream data against residential cleanup standards as well.
- At LBSED-3, at the confluence of the eastern and western tributaries of Lodi Brook, no metal concentrations exceeded the proposed residential or non-residential soil guidelines.
- At LBSED-4 and LBSED-6, the downstream locations along Lodi Brook, an elevated concentrations of lead were reported above background but below the soil cleanup criteria. No other metal concentrations exceeded either the proposed residential or nonresidential soil guidelines.
- At LBSED-7, downstream location along Lodi Brook, elevated concentration of lead was reported at 427 mg/kg. Upstream of this sampling location and downstream from MISS, there are multiple potential industrial sources for this metal.
- At LBSED-8 further downstream along Lodi Brook, no metal concentrations exceeded either the proposed residential or nonresidential soil cleanup criteria.

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).

Various metal concentrations exceeded the LEL used in the Baseline Ecological Evaluation (BEE) at every sampling location. There were exceedances for lead, copper, zinc, chromium, and nickel in both Lodi Brook and Westerly Brook. However, metal concentrations exceeded SEL concentrations at only three locations, LBSED-1, LBSED-7 and WBSED-4 (Figure 4-A, 4-B).

- At WBSED-4 and WBSED-5 the nonresidential upstream locations along Westerly Brook, copper, lead, and zinc exceeded the LEL. Only copper (210 mg/kg) exceeded SEL at WBSED-4.
- At WBSED-1 and WBSED-2 the residential downstream locations along Westerly Brook, copper, lead, nickel and zinc exceeded the LEL. Non of the metals exceeded SEL.
- At LBSED-1, in the eastern tributary of Lodi Brook upstream of Lodi Brook, all metals (except nickel) exceeded the LEL. Only chromium and lead exceeded the SEL with concentrations of 191 mg/kg and 354 mg/kg, respectively.
- At LBSED-3, at the confluence of the eastern and western tributaries of Lodi Brook, only copper and lead exceeded the LEL with concentrations of 70.9 mg/kg and 33.8 mg/kg, respectively.
- At LBSED-4, LBSED-6, and LBSED-8 downstream locations along Lodi Brook, various metal concentrations exceeded the LEL. However, non-of the metal concentrations exceeded the SEL.
- At LBSED-7, the residential downstream locations along Lodi Brook, nickel exceeded the LEL and the concentrations of copper, lead, and zinc exceeded both the LEL and the SEL.

5.6 Groundwater

The locations of groundwater monitoring wells at the 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. This information is further described in the following sections.

Water Level Measurements

Water level measurements were obtained from 35 monitoring wells (Figure 2) during 2000. Of these 35 monitoring wells, 15 are completed in unconsolidated overburden deposits, while 20 are completed in bedrock. During the synoptic gauging year 2000, five rounds of water levels were obtained. Four of these rounds (January, June, September and November) were associated with the Environmental Monitoring Program, and one round was associated with the Groundwater Remedial Investigation (GWRI). The GWRI gauging round was obtained in March 2000. Water Level Record Sheets for the five synoptic water level gauging rounds 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 deposits, groundwater levels measured during the five gauging rounds ranged as follows:

Minimum and Maximum Water Level Elevations in Overburden Monitoring Wells Synoptic Gauging Year 2000

	January 19, 2000	March 27, 2000	June 12, 2000	September 29, 2000	November 29, 2000
Minimum GW. Elv. (ft. MSL)	44.32	44.77	39.44	39.00	39.52
Maximum GW. Elv. (ft. MSL)	54.86	55.21	55.06	54.52	54.49
Well Depicting Minimum GW. Elv.	B38W12A	B38W12A	B38W14S	B38W14S	B38W15S
Well Depicting Maximum GW. Elv.	B38W01S	B38W01S	B38W01S	B38W01S	B38W01S

Table 7 presents information regarding the ground surface, top of riser, and the water table elevations for the 15 monitoring wells completed in the unconsolidated deposits. As depicted in Table 7, well B38W14S and the MISS-4A showed the minimum and maximum water level fluctuations that occurred throughout the course of the year 2000 synoptic gauging program. Well B38W14S varied by 0.44 feet, whereas, well MISS-4A varied by 3.65 feet. The maximum and minimum groundwater elevations in the upgradient monitoring well B38W01S occurred in March 2000 and September 2000, respectively.

In the bedrock aquifer, groundwater levels measured during the five gauging rounds ranged as follows:

Minimum and Maximum Water Level Elevations in Bedrock Monitoring Wells Synoptic Gauging Year 2000

	January 19, 2000	March 27, 2000	June 12, 2000	September 29, 2000	November 29, 2000
Minimum GW. Elv. (ft. MSL)	44.40	44.96	39.79	40.11	40.53
Maximum GW. Elv. (ft. MSL)	59.58	61.32	60.85	58.3	55.94
Well Depicting Minimum GW. Elv.	B38W19S	B38W12B	B38W14D	B38W14D	B38W15D
Well Depicting Maximum GW. Elv.	B38W05B	B38W05B	B38W05B	B38W05B	B38W05B

Table 8 presents information regarding the ground surface, top of riser, and the piezometric surface elevations for the 20 bedrock monitoring wells. As depicted in Table 8, well B38W14D and B38W05B showed the minimum and maximum water level fluctuations that occurred through out the course of the year 2000 synoptic gauging program. Well B38W14D varied by 0.32 feet, whereas, well B38W05B varied by 5.38 feet, respectively. The maximum and minimum groundwater elevations in the upgradient monitoring well B38W05B occurred in March 2000 and November 2000, respectively.

Groundwater Flow System

Potentiometric surface maps for the unconsolidated and bedrock groundwater flow systems during the five synoptic gauging rounds are presented in Figure 6 through 15. Figures 6 through 10 present the groundwater flow for wells completed in the overburden soils, whereas, Figures 11 through 15 presents the potentiometric surface maps for the wells completed in bedrock. 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 in Figure 16. 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.

During the year 2000 synoptic gauging rounds, the horizontal hydraulic gradient varied spatially but typically ranged from approximately 0.007 ft/ft to 0.015 ft/ft in the unconsolidated overburden aquifer. The direction of groundwater flow in the overburden aquifer is predominantly to the west-southwest as depicted in Figures 6 through 10. As depicted in these figures, the highest hydraulic head was present in upgradient monitoring well B38W01S. This well is located west of the bedrock high.

The hydraulic conductivity of the overburden material was estimated to be between 8.8×10^{-5} cm/s (0.25 ft/day) to 1.4×10^{-4} cm/s (0.4 ft/day). These values exhibit hydraulic conductivity similar to those cited in Freeze and Cherry (1979) for silt to silty sands. Results reported from previous hydraulic conductivity tests conducted on Stepan monitoring wells in 1994 (Stepan, 1994) yielded similar results. The average linear groundwater velocity in the overburden was estimated to range from 0.0125 ft/day to 0.02 ft/day (Stone & Webster, 2000).

The direction of groundwater flow in bedrock is presented in Figures 11 through 15. 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 16. Figures 11 through 15 depict the groundwater divide, with groundwater flowing predominantly to the west-southwest, with a component of groundwater flow to the northwest.

In the bedrock aquifer, the horizontal hydraulic gradients ranged between 0.010 ft/ft to 0.020 ft/ft during the year 2000 synoptic gauging program. The hydraulic conductivity of the bedrock aquifer was estimated to range between 2.0x10-4 cm/s (0.57 ft/day) and 4.6x10-4 cm/s (1.30 ft/day) based on slug tests performed as part of GWRI activities. These values exhibit hydraulic conductivity similar to those cited in Freeze and Cherry (1979) for consolidated material, i.e., sandstone and shale (Stone & Webster 2000).

As part of GWRI activities, pressure packer tests have been initiated and results from seven boreholes indicate that hydraulic conductivities for seven bedrock borings range from 3.9x10-4 cm/s (1.1 ft/day) to 1.1x10-3 cm/s (3.2 ft/day). The results of these tests including the procedures used to perform the tests will be presented in the Groundwater Remedial Investigation Report. The average linear groundwater velocity in the bedrock aquifer was estimated to range from 0.017 ft/day to 0.4 ft/day based on the findings of Phase I GWRI activities.

Based on the synoptic gauging rounds, information regarding the vertical component of groundwater flow may be inferred. As depicted in Table 9, thirteen well clusters were used to determine if a horizontal or vertical gradient (either upward or downward) exists between overburden and bedrock wells. Of the nine well clusters located within the MISS/Stepan property, the overburden well depicted a greater hydraulic head than the well completed in bedrock at seven clusters. The data contained in Table 9 principally indicates that the MISS/Stepan property represents a recharge area for the unconsolidated/overburden aquifer. The exception to this statement are well clusters B38W24S/24D and B38W25S/25D. At these two well clusters, 3 of the 5 gauging rounds, and 4 of 5 gauging rounds indicated a vertically upward component of groundwater flow, 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 of the bedrock surface. The bedrock surface has been 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, and in the vicinity of B38W24S/24D may be under confining conditions, and thereby responds with an upward gradient during different times of the year.

With respect to monitoring well clusters located off-site, water levels measured in gauging year 2000 indicate that for well clusters B38W12A/12B, B38W14S/14D, and B38W15S/15D, the hydraulic heads in the bedrock aquifer are greater than that in the overburden aquifer, thereby depicting an upward component of groundwater flow from the bedrock to the overburden. These wells are located in proximity to a drainage swale/Lodi Brook (B38W12A/12B), and the Saddle River (B38W14S/14D and B38W15S/15D). The other off-site well cluster, B38W17A/17B, predominantly displayed a horizontal component of groundwater flow, whereby the groundwater flow system is in transition between a recharge and discharge regime.

5.6.2 Groundwater Quality

Field Parameters

Table 10 presents a summary of field parameters measured during annual sampling activities at the 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.

Water Quality Parameters

Groundwater quality at the MISS has been evaluated historically for the standard parameters 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) between June 2000 and July 2000 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 the 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

Three wells were not sampled during the 2000 Environmental Monitoring Program, which was conducted during June and July. At well B38W01S the peristaltic sampling tube was dropped into the well and recovery attempts were unsuccessful. Well B38W19S and MISS05A were dry. These three wells were sampled in November 2000 as part of the Groundwater Remedial Investigation and the data obtained is reported herein for evaluation of groundwater quality. Although groundwater at the site is not used as a source of potable water, Federal and State drinking water standards are used as a conservative basis for evaluation of the results. Results are provided in Table 11 and discussed below.

- On site and downgradient gross alpha results exceeded the Federal and State drinking water standard in 6 wells. The concentrations of gross alpha in these six wells ranged from a minimum of 18.9 pCi/L at well B38W17B to a maximum of 230 pCi/L at B38W18D.
- Gross beta results exceeded the Federal and State standard in seven wells. The concentrations in these seven wells ranged from a minimum of 65.6 pCi/L at B38W25S to a maximum of 365 pCi/L and 886 pCi/L at B38W19D and MISS05B respectively.
- Onsite and downgradient radium-226 results ranged from non-detect at 0.03 pCi/L (MISS01B) and 0.08 pCi/L (MISS02A) to 2.87 pCi/L (B38W18D) near Building 76. 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), except at B38W18D. The detected concentration of radium-226 at this location was 2.87 pCi/L and the combined radium concentration was 19.4 pCi/L. This was the only location which exceeded the radium standard. Although the SDWA does not apply because groundwater at the MISS is not used as a source of drinking water, combined radium-226 and 228 concentrations are used for evaluation of groundwater quality.

- Radium-228 was detected in five groundwater samples. The reported detected concentrations of radium-228 ranged from 0.74 pCi/L at B38W25D to a maximum of 16.53 pCi/L at B38W18D. The concentration at B38W18D exceeded the Federal and State drinking water for combined radium standard of 5 pCi/L. Thorium-230 was detected in almost all of the groundwater samples. Where it was detected, it ranged from 0.11 pCi/L (B38W14S) to 2.45 pCi/L (MISS05A).
- Thorium-232 was only detected at B38W18D with a concentration of 7.53 pCi/L.
- Total uranium concentrations in groundwater were much less than the SDWA standards with one exception. Total uranium was detected in the MISS05A at a concentration of 73.48 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 μg/L (27 pCi/L). This result is consistent with historical results and is less than results for 1996 through 1999. Monitoring well B38W18D (bedrock well) located near Building 76 contained 3.08 pCi/L of total uranium. The maximum offsite concentration reported was 7.38 pCi/L from monitoring well B38W15D southwest and downgradient of the site.

5.6.4 Groundwater - Metals

Although groundwater at the 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 the MISS. Metals detected in groundwater are reported in Table 12.

Common metals that occur in abundance at the background locations (B38W01S and B38W02D) 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.

In 2000, arsenic concentrations in groundwater exceeded the SDWA MCL (50 μg/L) in three onsite wells MISS02A (3520 μg/L), B38W19D (70.3 μg/L), and MISS07B (52.6 μg/L). Five other wells; MISS05B (20.5 μg/L), B38W19S (31.8 μg/L), B38W25S (13.4 μg/L), B38W15D, (11.1 μg/L), and B38W18D (8.2 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. Although the measured concentrations from the other wells exceeded the more stringent State groundwater quality criteria, all but those discussed above 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 mentioned above, was the State limit exceeded.

- Antimony was detected in one well, with a maximum concentration of 37.6 μg/L (B38W17A). All other 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 maximum beryllium concentration reported was detected at well B38W01S (2.4 μg/L) in 2000. All reported beryllium concentrations (B38W24D, B38W18D, and MISS02B) were less than the Federal limit of 4 μg/L. All reported concentrations from the wells ranged from 0.52 to 2.4 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 various wells with a maximum concentration of 2.9 μg/L at offsite well (B38W14D) and 1.5 g/L at onsite well (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 most of the wells, however only one well had an exceedance of the SDWA standard; 1590 μg/L at B38W17A. All other concentrations were below the State and Federal limits (100 μg/L).
- Lead was detected in 4 wells (B38W01S, B38W17A, MISS02A and MISS06A) with concentrations ranging from 5.8 μg/L (B38W01S) to 13 μg/L (MISS02A). Only one well (B38W02A) exceeded the State PQL of 10 μg/L, but less than the Federal drinking water limit (15 μg/L).
- As in the previous seven years, the highest concentration of nickel was detected in well B38W17A (114 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 2000 (Table 13) is consistent with historical results Table (A-4).

The prevalent organic constituents in groundwater at the MISS are tetrachloroethene and its degradation products: trichloroethene, dichloroethenes, and vinyl chloride. As seen historically, at offsite wells B38W14D and B38W14S, and B38W15D 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 wells MISS01B, and MISS07B, but not in their shallow counterparts.
- Chloroform was identified in wells B38W14D (2 μg/L) and B38W14S (6 μg/L) at a concentration above the State groundwater limit of 1 μg/L but not above the PQL of 6 μg/L.
- Benzene was identified in three shallow wells with concentrations between 0.1 μg/L to 0.2 μg/L. In the deep wells, benzene was identified in many wells with estimated concentrations between 0.2 μg/L to 1.0 μg/l and exceptionally high concentration at well MISS05B (3500 μg/L).

6.0 CONCLUSIONS

6.1 External Gamma Radiation

The 2000, 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 674.6 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 75.9 and 109.7 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 the MISS to a hypothetical maximally-exposed individual residing 50 ft north of the fenceline at station 21 was 7.15 mrem/yr (Calc. 08575-0207-002). Results of gamma radiation monitors are consistent with historical data and all locations will continue to be monitored during 2001.

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 non-detect to a maximum of 3.84 pCi/L (location 24). While there is undoubtedly a probability that the population of values represented by the 3.84 pCi/L value exceed the action level of 4 pCi/L, this value is the highest of 15 values. The next highest values are 2.44 and 1.82 pCi/L. Results of radon monitoring are consistent with last year results and all locations will continue to be monitored during 2001.

6.3 Radon-222 Flux

Radon flux measurements obtained at MISS are presented at Table 3-A; measurement locations are shown in Figure 5. Measurements of radon flux ranged from non-detect to a maximum of 0.54 pCi/m^2/s. All results are well below the 20 pCi/m^2/s radon flux standard specified in 40 CFR part 61, Subpart Q. for 2000, radon flux measurements were taken from stock piled material onsite. In the future, radon flux measurements will only be taken when there is long term stockpiling.

6.4 Airborne Particulate Dose

The airborne particulate dose to the hypothetical maximally exposed individual in 2000 was an individual with 100 percent occupancy time located 35 m south-southwest of the Ballod Property. The 2000 airborne particulate dose to that individual, considering all site contributions throughout the year, was

0.084 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 0.021 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.

6.5 Cumulative Dose from External Gamma Radiation and Airborne Particulate

The location of the maximally exposed individual from direct gamma radiation and the location of the maximally exposed individual from airborne particulates are different. The calculated maximally exposed individual from direct gamma radiation emitted at MISS occurred 50 feet from location 21 which is located on the southern perimeter of the site. The calculated cumulative dose from the external gamma radiation at the above location was 7.15 mrem/yr (see Section 5.1).

The location of the maximally exposed individual as determined by the dispersion modeling performed for the annual NESHAP's compliance report occurred at a facility located adjacent to the remediated portion of the Ballod Property (see Appendix C). The calculated annual effective dose to the maximally exposed resident was 8.42 x 10^{-2} mrem/yr. The maximum annual effective dose is almost entirely the result of the internal doses received from the inhalation of dust particles with a small contribution from the ingestion of plant borne dust.

Thus, the calculated cumulative dose from external gamma radiation and airborne particulates to a hypothetical maximally exposed individual is essentially the external gamma radiation dose. The calculated cumulative dose from external gamma radiation and airborne particulates of 7.15 mrem/yr is well below the NRC standard of 100 mrem/yr (from all sources, excluding radon).

6.6 Surface Water

Surface water samples in 2000 were collected and analyzed for radioactive constituents (Tables 4, 4-A) and metals (Tables 5, 5-A). Surface water samples collected in October 2000 (Figures 4-A, 4-B) exceeded the Federal and State Standards for either radium-228 or the combined concentrations of radium-226 and radium-228 (Table 4-A) at locationsin Lodi Brook and Westerly Brook. Radium-228 concentrations ranged from 4.75 pCi/L (WBSW-1) to 8.23 pCi/l (LBSW-5). The maximum concentration for combined radium-226 and radium-228 was 9.25 pCi/L (LBSW-5). All other radioactive constituents were below the Federal and State standards. Historically, surface water has not exhibited above-background concentrations of radionuclides during past environmental sampling rounds. Metal concentrations of iron, manganese, and sodium exceeded the State criteria at almost every location. At SWSD007 (Table 5), arsenic (21.7 μg/L), chromium (156 μg/l), lead (162 μg/L) and aluminum (3950 μg/L) exceeded the State criteria for surface water. Surface water will continue to be monitored during 2001.

6.7 Sediment

Radionuclide concentrations in sediment samples collected in Westerly Brook were within the background concentration and below the State cleanup criteria. In 2000 the concentrations in samples collected upstream at the eastern tributary of Lodi Brook (LBSED-1) exceeded the DOE soil limits for radium-226, radium-228, and thorium-232. At LBSED-1, the measured concentrations of radium-226 (10.41 pCi/g), thorium-228 (23.58 pCi/g) and thorium-232 (21.48 pCi/g) are the highest measured at the site in 2000. Further downstream at LBSED-3, and LBSED-4, detected concentrations of all radionuclides were above background but below the soil cleanup criteria for radium-226, radium-228, and thorium-232. Further downstream at LBSED-6, LBSED-7, and LBSED-8 detected concentrations of radium-226 were above background but below the soil cleanup criteria. Results for 2000 confirm the presence of localized contamination in the streambed sediment of the eastern tributary of Lodi Brook. Various metal concentrations in sediment samples collected in Westerly Brook and Lodi Brook exceeded the LEL. Some metal concentrations exceeded the SEL at three locations, LBSED-1, LBSED-7 and WBSED-4 (Table 6-B). Sediment will continue to be monitored during 2001.

6.8 Groundwater

Concentrations of gross alpha and gross beta in groundwater exceeded the Federal and State drinking water in many wells. Concentrations of all other radionuclides sampled in groundwater in 2000 (radium-226, radium-228, thorium-230, thorium-232, and total uranium) were well below (except for well MISS05A, and B38W18D) the Federal and State drinking water standards. Total uranium was detected in MISS05A with concentration of 73.48 pCi/L. Radium 228, thorium-228, and thorium-232 were identified in well B38W18D with concentrations of 16.53 pCi/L, 6.89 pCi/l and 7.53 pCi/L respectively. Consistent with historical results, the highest concentration of total uranium was detected in well MISS05A.

Although groundwater at the MISS is not a source of drinking water, State and Federal drinking water standards are used for evaluating groundwater data. Radium concentrations (except well B38W18D) 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 Federal SDWA drinking water standards was identified in three onsite wells; MISS02A (3520 μg/L), B38W19D (70.3 μg/L) and MISS07B (52.6 μg/L). Five other locations exceeded the State limit (PQL). All detected concentrations of beryllium were less than the State PQL and Federal limit. Cadmium was reported in various wells, but all detected concentrations were less than the State and Federal standard. Chromium was detected in most wells, but only one exceeded State and Federal limits. Lead was detected in 4 wells. All detected concentrations were less than the Federal standard but one was above the State standard. 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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TABLES

Table 1
Maywood Interim Storage Site
2000 Environmental Monitoring Program Summary
External Gamma Radiation and Radon Gas

Air Monitoring																										
		Number of Analyses or Measurements																								
		No. of Sample Locations				Sample Duplicate				Ship Blank				Contingency Sample				Matrix Spike				Matrix Spike Duplica				Total Analyses per Year
		CY Quarter				CY Quarter				CY Quarter				CY Quarter				CY Quarter				CY Quarter				
Measured Parameter	Station Identification	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, 21, 22, 23, 24, 25, 30, 31, 32, 33	15		15						1		1		16		16										64
Radon-222/Radon-220		15		15		1		1																		32
Radon-222		15		15		1		1																		32

Table 1 (continued)
2000 Environmental Monitoring Program Summary
Groundwater
Maywood Interim Storage Site

Measured Parameter	Station Identification	Number of Analyses or Measurements: No. of Sample Locations, CY Quarter 1	No. of Sample Locations, CY Quarter 2	No. of Sample Locations, CY Quarter 3	No. of Sample Locations, CY Quarter 4	Rinsate Blank, CY Quarter 1	Rinsate Blank, CY Quarter 2	Rinsate Blank, CY Quarter 3	Rinsate Blank, CY Quarter 4	Trip Blank, CY Quarter 1	Trip Blank, CY Quarter 2	Trip Blank, CY Quarter 3	Trip Blank, CY Quarter 4	Sample Duplicate, CY Quarter 1	Sample Duplicate, CY Quarter 2	Sample Duplicate, CY Quarter 3	Sample Duplicate, CY Quarter 4	Matrix Spike, CY Quarter 1	Matrix Spike, CY Quarter 2	Matrix Spike, CY Quarter 3	Matrix Spike, CY Quarter 4	Matrix Spike Duplicate, CY Quarter 1	Matrix Spike Duplicate, CY Quarter 2	Matrix Spike Duplicate, CY Quarter 3	Matrix Spike Duplicate, CY Quarter 4	Total Analyses per Year
FIELD MEASUREMENTS																										
Chemical/Physical	MISS01AA, MISS01B, MISS02A, MISS02B, MISS05A, MISS05B, MISS06A, MISS07B, MISS07A, B38W02D, B38W14S, B38W14D, B38W15S, B38W15D, B38W17A, B38W17B, B38W18D, B38W19S, B38W19D, B38W24S, B38W24D, B38W25S, B38W25D, B38W01S																									
Dissolved oxygen			23																							23
Eh[a]			23																							23
Turbidity			23																							23
Temperature			23																							23
Specific conductivity			23																							23
pH			23																							23
LABORATORY MEASURMENTS																										
Radiological	MISS01AA, MISS01B, MISS02A, MISS02B, MISS05A, MISS05B, MISS06A, MISS07B, MISS07A, B38W02D, B38W14S, B38W14D, B38W15S, B38W15D, B38W17A, B38W17B, B38W18D, B38W19S, B38W19D, B38W24S, B38W24D, B38W25S, B38W25D, B38W01S																									
Total uranium			23				10								2											35
Thorium-230/232			23				10								2											35
Radium-226/228			23				10								2											35
Gross Alpha			23				10								2											35
Gross Beta			23				10								2											35
Chemical																										
TAL Metals[b]			23				10								2				2				2			39
			23				10								2				2				2			39
Volatile organic compounds[b]			23				10				10				2				2				2			49

Table 1 (continued)
2000 Environmental Monitoring Program Summary
Surface Water and Sediment
Maywood Interim Storage Site

Surface Water and Sediment Monitoring																										
		Number of Analyses or Measurements																								
		Samples				Rinsate Blank				Trip Blank				Sample Duplicate				Matrix Spike				Matrix Spike Duplicate				Total Analyses per Year
		CY Quarter				CY Quarter				CY Quarter				CY Quarter				CY Quarter				CY Quarter				
Measured Parameter	Station Identification	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	LB-001, LB-003,		10																							10
Eh[a]	LB-004, LB-006,		10																							10
Turbidity	LB-007, LB-008		10																							10
Temperature	WB-001, WB-002		10																							10
Specific conductivity	WB-004, WB005		10																							10
pH			10																							10
LABORATORY MEASURMENTS																										
SEDIMENT																										
Radiological																										
Iso/Total uranium	LB-001, LB-003,		10				2								1											13
Thorium-230/232	LB-004, LB-006,		10				2								1											13
Radium-226/228	LB-007, LB-008		10				2								1											13
Chemical	WB-001, WB-002																									
MET-TAL	WB-004, WB005		10				2								1				1				1			15
SURFACE WATER																										
Radiological																										
Iso/Total uranium	LB-001, LB-003,		10				2								1											13
Thorium-230/232	LB-004, LB-006,		10				2								1											13
Radium-226/228	LB-007, LB-008		10				2								1											13
Gross Alpha	WB-001, WB-002		10				2								1											13
Gross Beta	WB-004, WB005		10				2								1											13
Chemical			10				2								1											13
MET-TAL			10				2								1				1				1			15

[a] Oxidation/reduction potential (Eh).

[b] See Table 14 for a comprehensive list of metals.

Table 1 (continued)
2000 Environmental Monitoring Program Summary
Surface Water and Sediment
Maywood Interim Storage Site

Surface Water and Sediment Monitoring																										
		Number of Analyses or Measurements																								
Measured Parameter	Station Identification	Samples CY Quarter				Rinsate Blank CY Quarter				Trip Blank CY Quarter				Sample Duplicate CY Quarter				Matrix Spike CY Quarter				Matrix Spike Duplicate CY Quarter				Total Analyses per Year
		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	SWSD002		5																							5
Eh[a]	SWSD003		5																							5
Turbidity	SWSD005		5																							5
Temperature	SWSD006		5																							5
Specific conductivity	SWSD007		5																							5
pH			5																							5
LABORATORY MEASURMENTS																										
SEDIMENT																										
Radiological																										
Iso/Total uranium	SWSD002		5				1								1											7
Thorium-230/232	SWSD003		5				1								1											7
Radium-226/228	SWSD005		5				1								1											7
Chemical	SWSD006																									
MET-TAL	SWSD007		5				1								1				1				1			9
SURFACE WATER																										
Radiological																										
Iso/Total uranium	SWSD002		5				1								1											7
Thorium-230/232	SWSD003		5				1								1											7
Radium-226/228	SWSD005		5				1								1											7
Gross Alpha	SWSD006		5				1								1											7
Gross Beta	SWSD007		5				1								1											7
Chemical			5				1								1											7
MET-TAL			5				1								1				1				1			9

[a] Oxidation/reduction potential (Eh).

[b] See Table 14 for a comprehensive list of metals.

Table 2
2000 External Gamma Radiation Dose Rates
Maywood Interim Storage Site

1/26/2000 to 7/25/2000 TETLD[a]				1/26/2000 to 1/26/2001 TETLD[a]		
Monitoring Location[b]		**Readings** (mrem)	**Corrected**[c] (mrem/yr)	**Monitoring Location**[b]	**Readings** (mrem)	**Corrected**[c] (mrem/yr)
MISS	4	75.6	87.6	4	148.0	85.7
Perimeter		75.8	88.0		143.6	80.9
	5	76.2	88.9	5	149.2	86.9
		72.4	80.6		144.6	82
	10	116.0	175.2	10	234.0	177.9
		120.8	185.6		238.4	182.6
	12	65.2	65.2	12	122.4	58.2
		70.8	77.2		123.2	59.1
	20	44.2	19.5	20	88.0	21.3
		50.2	32.5		93.2	26.9
	21	290.4	553.2	21	697.4	674.6
		316.4	609.6		652.2	626.2
	22	83.4	104.5	22	165.6	104.5
		92.6	124.4		157.2	95.5
	23	74.4	85.0	23	145.8	83.3
		79.8	96.7		164.6	103.5
	24	232.6	427.9	24	336.4	287.6
		187.0	329.1		341.2	292.8
	25	309.6	594.8	25	678.0	653.9
		307.2	589.6		651.6	625.5
	30	70.2	75.9	30	115.6	50.9
		70.2	75.9		115.4	50.7
	31	82.8	103.2	31	157.6	95.9
		85.8	109.7		154.6	92.7
	32	35.0	- 0.4	32	60.4	-8.3
		33.6	- 3.5		59.8	-8.9
	33	38.2	6.5	33	64.8	-3.5
		36.4	2.6		66.8	-1.4
Background	19	36.0	78.0	19	68.6	73.5
		34.4	74.6		67.6	72.5

[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
2000 Radon Gas Concentrations
Maywood Interim Storage Site

Monitoring Location[a]		Average Daily Concentration (pCi/L) 01/26/2000 to 07/25/2000 Radon-220[b]	Radon-222[c]	Average Daily Concentration (pCi/L) 07/25/99 to 01/26/2001 Radon-220[b]	Radon-222[c]
MISS perimeter	4	0.34	0.3	2.44	0.2
	5	0.40	0.3	1.16	0.3
	10	0.33	0.2	0.56	0.2
	12	0.83	0.3	1.29	0.3
	20	0.61	0.2	0.62	0.2
	21	1.07	0.6	1.40	0.2
Duplicate[d]	21	1.89	0.2	1.60	0.2*
	22	0.05	0.2	0.00	0.2
	23	0.71	0.2	1.02	0.3
	24	1.85	0.2*	3.84	0.3
	25	0.44	0.2	1.02	0.2*
	30	0.31	0.4	0.58	0.3
	31	1.97	0.2	1.82	0.2
	32	0.2*	0.2*	0.00	0.2
	33	0.2*	0.2*	0.00	0.2
Background	19	0.2*	0.2*	0.23	0.2*

(*) 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 3-A
2000 Radon Flux Monitoring Results
Maywood Interim Storage site

Sample ID[a]	Date Collected	Date Analyzed	Analyte	Result pCi/m2s		Error	MDA[b] pCi/m2s
RC-1	01/24/2001	01/25/2001	RN-222	0.049	±	0.036	0.077
RC-10	01/24/2001	01/25/2001	RN-222	0.137	±	0.047	0.120
RC-10-DUP	01/24/2001	01/25/2001	RN-222	0.118	±	0.025	0.041
RC-11	01/24/2001	01/25/2001	RN-222	0.055	±	0.041	0.107
RC-12	01/24/2001	01/25/2001	RN-222	0.098	±	0.055	0.147
RC-13	01/24/2001	01/25/2001	RN-222	0.061	±	0.030	0.081
RC-14	01/24/2001	01/25/2001	RN-222	0.059	±	0.045	0.114
RC-15	01/24/2001	01/25/2001	RN-222	0.073	±	0.034	0.087
RC-16	01/24/2001	01/25/2001	RN-222	0.126	±	0.057	0.150
RC-17	01/24/2001	01/25/2001	RN-222	0.034	±	0.025	0.069
RC-18	01/24/2001	01/25/2001	RN-222	0.039	±	0.042	0.106
RC-19	01/24/2001	01/25/2001	RN-222	0.085	±	0.039	0.095
RC-2	01/24/2001	01/25/2001	RN-222	0.103	±	0.046	0.109
RC-20	01/24/2001	01/25/2001	RN-222	0.519	±	0.078	0.055
RC-20-DUP	01/24/2001	01/25/2001	RN-222	0.541	±	0.079	0.092
RC-21	01/24/2001	01/25/2001	RN-222	0.085	±	0.041	0.094
RC-22	01/24/2001	01/25/2001	RN-222	0.075	±	0.046	0.123
RC-23	01/24/2001	01/25/2001	RN-222	0.063	±	0.030	0.078
RC-24	01/24/2001	01/25/2001	RN-222	0.063	±	0.048	0.130
RC-25	01/24/2001	01/25/2001	RN-222	0.082	±	0.049	0.096
RC-26	01/24/2001	01/25/2001	RN-222	0.105	±	0.069	0.154
RC-27	01/24/2001	01/25/2001	RN-222	0.051	±	0.031	0.074
RC-28	01/24/2001	01/25/2001	RN-222	0.040	±	0.034	0.096
RC-29	01/24/2001	01/25/2001	RN-222	-0.003	±	0.029	0.057
RC-3	01/24/2001	01/25/2001	RN-222	0.080	±	0.050	0.133
RC-30	01/24/2001	01/25/2001	RN-222	0.045	±	0.036	0.101
RC-30-DUP	01/24/2001	01/25/2001	RN-222	0.061	±	0.044	0.117
RC-31	01/24/2001	01/25/2001	RN-222	0.084	±	0.040	0.097
RC-4	01/24/2001	01/25/2001	RN-222	0.115	±	0.050	0.113
RC-5	01/24/2001	01/25/2001	RN-222	0.083	±	0.048	0.129
RC-6	01/24/2001	01/25/2001	RN-222	0.111	±	0.048	0.111
RC-7	01/24/2001	01/25/2001	RN-222	0.061	±	0.043	0.116
RC-8	01/24/2001	01/25/2001	RN-222	0.142	±	0.028	0.049
RC-9	01/24/2001	01/25/2001	RN-222	0.083	±	0.048	0.122

[a]All monitoring locations for the storage pile are shown in figure 5.
[b]Minimum detectable Activity (MDA).

Table 4
2000 Surface water Analytical Results - Radioactive Constituents
Maywood Interim Storage Site-July 2000

Sampling Location	Date Collected	Analyte	Result[a] (pCi/L)		Error	S&W Flag[b]	MDA[c] (pCi/L)	State/Federal[d] Standards (pCi/L)
SWSD001	24-Jul-00	Gross Alpha	-2.2	±	4.4	U	9.2	15
	24-Jul-00	Gross Beta	8.7	±	6.5	U	11	50
	24-Jul-00	Radium 226	0.01	±	0.08	U	0.15	5
	24-Jul-00	Radium 228	0.15	±	0.35	U	0.6	5
	24-Jul-00	Thorium 228	-0.01	±	0.06	U	0.21	
	24-Jul-00	Thorium 230	0.07	±	0.11	U	0.2	
	24-Jul-00	Thorium 232	0.02	±	0.05	U	0.15	
	24-Jul-00	Total Thorium	0.08					15
	24-Jul-00	Uranium 234	0.54	±	0.24	J	0.05	
	24-Jul-00	Uranium 235	0	±	0.01	U	0.12	
	24-Jul-00	Uranium 238	0.4	±	0.2	J	0.1	
	24-Jul-00	Total uranium						27
SWSD002	24-Jul-00	Gross Alpha	1	±	3.4	U	6.3	15
	24-Jul-00	Gross Beta	16.7	±	5		7.1	50
	24-Jul-00	Radium 226		±	0.73	R	0.14	5
	24-Jul-00	Radium 228	0.66	±	0.4	J	0.64	5
	24-Jul-00	Thorium 228	0.03	±	0.1	U	0.23	
	24-Jul-00	Thorium 230	0.13	±	0.13	J	0.09	
	24-Jul-00	Thorium 232	0.04	±	0.09	U	0.22	
	24-Jul-00	Total Thorium	0.2					15
	24-Jul-00	Uranium 234	0.6	±	0.26	J	0.1	
	24-Jul-00	Uranium 235	0.04	±	0.08	U	0.15	
	24-Jul-00	Uranium 238	0.24	±	0.16	J	0.14	
	24-Jul-00	Total uranium	0.88					27
SWSD003	20-Jul-00	Gross Alpha	3	±	2		2.6	15
	20-Jul-00	Gross Beta	4.7	±	3.6	U	5.8	50
	20-Jul-00	Radium 226	0.02	±	0.1	U	0.19	5
	20-Jul-00	Radium 228	0.03	±	0.31	U	0.54	5
	20-Jul-00	Thorium 228	-0.05	±	0.1	U	0.36	
	20-Jul-00	Thorium 230	0.12	±	0.13	J	0.08	
	20-Jul-00	Thorium 232	-0.02	±	0.02	U	0.2	
	20-Jul-00	Total Thorium	0.05					15
	20-Jul-00	Uranium 234	0.28	±	0.19	J	0.16	
	20-Jul-00	Uranium 235	0.07	±	0.1	UJ	0.1	
	20-Jul-00	Uranium 238	0.28	±	0.19	J	0.14	
	20-Jul-00	Total uranium	0.63					27

Table 4
2000 Surface water Analytical Results - Radioactive Constituents
Maywood Interim Storage Site-July 2000

Sampling Location	Date Collected	Analyte	Result[a] (pCi/L)		Error	S&W Flag[b]	MDA[c] (pCi/L)	State/Federal[d] Standards (pCi/L)
SWSD005	20-Jul-00	Gross Alpha	3.1	±	3	U	4.8	15
	20-Jul-00	Gross Beta	8.7	±	4.2		6.5	50
	20-Jul-00	Radium 226	0.09	±	0.11	U	0.18	5
	20-Jul-00	Radium 228	0.11	±	0.38	U	0.66	5
	20-Jul-00	Thorium 228	0.09	±	0.22	U	0.49	
	20-Jul-00	Thorium 230	0.3	±	0.25	J	0.26	
	20-Jul-00	Thorium 232	0	±	0	U	0.1	
	20-Jul-00	Total Thorium	0.39					15
	20-Jul-00	Uranium 234	0.35	±	0.19	J	0.06	
	20-Jul-00	Uranium 235	0	±	0	U	0.07	
	20-Jul-00	Uranium 238	0.15	±	0.12	J	0.06	
	20-Jul-00	Total uranium	0.5					27
SWSD006	20-Jul-00	Gross Alpha	11.7	±	4.2		4.5	15
	20-Jul-00	Gross Beta	7.5	±	5	U	8	50
	20-Jul-00	Radium 226	-1.25	±	0.26	R	0.2	5
	20-Jul-00	Radium 228	1.14	±	0.4		0.58	5
	20-Jul-00	Thorium 228	0.86	±	0.4	J	0.34	
	20-Jul-00	Thorium 230	0.55	±	0.29	J	0.18	
	20-Jul-00	Thorium 232	1	±	0.42		0.08	
	20-Jul-00	Total Thorium	2.41					15
	20-Jul-00	Uranium 234	0.81	±	0.35	J	0.18	
	20-Jul-00	Uranium 235	0.04	±	0.07	UJ	0.1	
	20-Jul-00	Uranium 238	0.99	±	0.39	J	0.14	
	20-Jul-00	Total uranium	1.84					27
SWSD007	20-Jul-00	Gross Alpha	9.3	±	4		4.6	15
	20-Jul-00	Gross Beta	12	±	5.1		7.7	50
	20-Jul-00	Radium 226	-0.71	±	0.2	R	0.12	5
	20-Jul-00	Radium 228	0.6	±	0.34	J	0.54	5
	20-Jul-00	Thorium 228	0.51	±	0.32	J	0.33	
	20-Jul-00	Thorium 230	0.55	±	0.32	J	0.23	
	20-Jul-00	Thorium 232	0.28	±	0.21	J	0.17	
	20-Jul-00	Total Thorium	1.34					15
	20-Jul-00	Uranium 234	0.83	±	0.35	J	0.07	
	20-Jul-00	Uranium 235	0.03	±	0.07	UJ	0.09	
	20-Jul-00	Uranium 238	0.88	±	0.36	J	0.07	
	20-Jul-00	Total uranium	1.74					27

Table 4
2000 Surface water Analytical Results - Radioactive Constituents
Maywood Interim Storage Site-July 2000

Sampling Location	Date Collected	Analyte	Result[a] (pCi/L)	Error	S&W Flag[b]	MDA[c] (pCi/L)	State/Federal[d] Standards (pCi/L)

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

[b] Stone & Webster data qualifier flags:
U = The analyte was not detected.
J = Reported as an estimated value.
R= Rejected by validation.

[c] Minimum Detectable Activity (MDA)

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

Table 4-A
2000 Surface Water Analytical Results - Radioactive Constituents
Maywood Interim Storage Site-October 2000

Sampling Location	Date Collected	Analyte	Result[a] pCi/L	Error	Qualifier S&W[b]	MDA[c] pCi/L	State/Federal[d] Standards pCi/L
Surface water samples collected in Lodi Brook:							
LBSW-2	19-Oct-00	Radium-226	0.96	0.51	J	0.71	5
		Radium-228	2.85	1.60	J	1.68	5
		Thorium-228	1.58	0.61		0.32	
		Thorium-230	0.84	0.42	J	0.25	
		Thorium-232	0.16	0.19	U	0.32	
		Total thorium	2.58				15
		Uranium-234	0.8	0.65	J	0.92	
		Uranium-235	0.23	0.41	U	0.85	
		Uranium-238	0.69	0.58	J	0.78	
		Total uranium	1.72				27
LBSW-2 Duplicate[e]	23-Oct-00	Radium-226	0.96	0.51		0.71	5
		Radium-228	4.79	1.92	J	1.95	5
		Thorium-228	1.58	0.61		0.32	
		Thorium-230	0.84	0.42		0.25	
		Thorium-232	0.16	0.19		0.32	
		Total thorium	2.58				15
		Uranium-234	0.8	0.65		0.92	
		Uranium-235	0.23	0.41		0.85	
		Uranium-238	0.69	0.58		0.78	
		Total uranium	1.72				27
LBSW-3	23-Oct-00	Radium-226	0.7	0.5	J	1.02	5
		Radium-228	4.8		J	1.92	
		Thorium-228	0.0	0.2	U	0.46	5
		Thorium-230	2.1	0.8	J	0.42	
		Thorium-232	0.3	0.3	J	0.5	
		Total thorium	2.45				15
		Uranium-234	1.2	0.5	J	0.4	
		Uranium-235	0.1	0.1	U	0.35	
		Uranium-238	0.4	0.3	J	0.31	
		Total uranium	1.68				27
LBSW-4	19-Oct-00	Radium-226	1.76	0.69	J	0.69	5
		Radium-228	3.04	1.33	J	1.36	5
		Thorium-228	0.24	0.32	U	0.61	
		Thorium-230	0.51	0.44	J	0.69	
		Thorium-232	0.41	0.34		0.4	
		Total thorium	1.16				15
		Uranium-234	2.08	1.15	J	0.68	
		Uranium-235	0.72	0.71	J	0.83	
		Uranium-238	0.49	0.58	U	0.92	
		Total uranium	3.29				27

Table 4-A
2000 Surface Water Analytical Results - Radioactive Constituents
Maywood Interim Storage Site-October 2000

Sampling Location	Date Collected	Analyte	Result[a] pCi/L	Error	Qualifier S&W[b]	MDA[c] pCi/L	State/Federal[d] Standards pCi/L
LBSW-4 Duplicate[e]	19-Oct-00	Radium-226	0.84	0.53		0.76	5
		Radium-228	1.52	1.65	U	1.77	5
		Thorium-228	0.18	0.24	J	0.4	
		Thorium-230	0.83	0.51	U	0.58	
		Thorium-232	0.23	0.29		0.53	
		Total thorium	1.24		J		15
		Uranium-234	0.83	0.46	U	0.53	
		Uranium-235	0.04	0.12	J	0.3	
		Uranium-238	0.29	0.25		0.3	
		Total uranium	1.16				27
LBSW-5	19-Oct-00	Radium-226	1.02	0.51	J	0.58	5
		Radium-228	8.23	2.31		2.28	5
		Thorium-228	0.12	0.22	U	0.45	
		Thorium-230	0.23	0.29	U	0.52	
		Thorium-232	0.19	0.24	U	0.42	
		Total thorium	0.54				15
		Uranium-234	1	0.49	J	0.43	
		Uranium-235	0.32	0.30	U	0.4	
		Uranium-238	0.3	0.26	J	0.34	
		Total uranium	1.62				27
LBSW-6	19-Oct-00	Radium-226	1.08	0.62	J	1.09	5
		Radium-228	2.91	1.60	J	1.67	5
		Thorium-228	0.14	0.23	U	0.46	
		Thorium-230	0.87	0.49	J	0.49	
		Thorium-232	0.09	0.25	U	0.61	
		Total thorium	1.1				15
		Uranium-234	0.73	0.39	J	0.36	
		Uranium-235	0.04	0.11	U	0.24	
		Uranium-238	0.36	0.26		0.23	
		Total uranium	1.13				27
LBSW-7	19-Oct-00	Radium-226	0.32	0.28	J	0.5	5
		Radium-228	5.74	1.91	J	1.88	5
		Thorium-228	0.33	0.30	J	0.37	
		Thorium-230	0.36	0.33	J	0.51	
		Thorium-232	0.24	0.24	UJ	0.32	
		Total thorium	0.93				15
		Uranium-234	0.59	0.34	J	0.29	
		Uranium-235	0.24	0.02	U	0.24	
		Uranium-238	0.35	0.26		0.25	
		Total uranium	1.18				27

Table 4-A
2000 Surface Water Analytical Results - Radioactive Constituents
Maywood Interim Storage Site-October 2000

Sampling Location	Date Collected	Analyte	Result[a] pCi/L	Error	Qualifier S&W[b]	MDA[c] pCi/L	State/Federal[d] Standards pCi/L
LBSW-8	19-Oct-00	Radium-226	0.68	0.50	J	0.85	5
		Radium-228	2.2	1.27	J	1.32	5
		Thorium-228	0.12	0.18	U	0.33	
		Thorium-230	0.89	0.46	J	0.51	
		Thorium-232	0.17	0.23	U	0.45	
		Total thorium	1.18				15
		Uranium-234	0.41	0.29	J	0.33	
		Uranium-235	0.18	0.20	UJ	0.26	
		Uranium-238	0.16	0.18	U	0.29	
		Total uranium	0.75				27
Surface water collected in Westerly Brook:							
WBSW-1	23-Oct-00	Radium-226	**0.35**	0.37	U	0.8	5
		Radium-228	**4.75**	1.65	J	1.65	5
		Thorium-228	0.12	0.19	U	0.34	
		Thorium230	0.71	0.44	J	0.5	
		Thorium-232	-0.07	0.17	U	0.58	
		Total thorium	0.76				15
		Uranium-234	1.4	0.58	J	0.25	
		Uranium-235	0.28	0.27		0.27	
		Uranium-238	0.73	0.40	J	0.28	
		Total uranium	2.41				27
WBSW-2	23-Oct-00	Radium-226	**0.78**	0.45		0.71	5
		Radium-228	**4.8**	1.29	J	1.24	5
		Thorium-228	0.07	0.13	U	0.24	
		Thorium230	0.83	0.46	J	0.56	
		Thorium-232	0.2	0.23	U	0.38	
		Total thorium	1.1				15
		Uranium-234	1.26	0.55	J	0.38	
		Uranium-235	0.04	0.11	U	0.3	
		Uranium-238	0.48	0.32	J	0.33	
		Total uranium	1.78				27
WBSW-3	26-Oct-00	Radium-226	0.92	0.35	J	0.26	5
		Radium-228	0.78	0.73	J	0.79	5
		Thorium-228	0.49	0.32		0.28	
		Thorium230	0.46	0.32	J	0.34	
		Thorium-232	0.23	0.23	UJ	0.34	15
		Total thorium	1.18				27
		Total uranium	1.2	0.02		0.04	5

Table 4-A
2000 Surface Water Analytical Results - Radioactive Constituents
Maywood Interim Storage Site-October 2000

Sampling Location	Date Collected	Analyte	Result[a] pCi/L	Error	Qualifier S&W[b]	MDA[c] pCi/L	State/Federal[d] Standards pCi/L
WBSW-4	23-Oct-00	Radium-226	0.44	0.33	J	0.6	5
		Radium-228	3.58	1.48	J	1.51	
		Thorium-228	0.01	0.11		0.36	
		Thorium230	0.37	0.34	J	0.53	
		Thorium-232	0.41	0.11	U	0.41	15
		Total thorium	0.79				
		Uranium-234	1.3	0.60	J	0.5	
		Uranium-235	0	0.14	U	0.47	
		Uranium-238	0.28	0.28	UJ	0.43	27
		Total uranium	1.58				
WBSW-5	24-Oct-00	Radium-226	0.67	0.46	J	0.74	5
		Radium-228	0.14	1.34	UJ	1.48	5
		Thorium-228	0.04	0.16	U	0.41	
		Thorium230	0.68	0.42	J	0.41	
		Thorium-232	0.02	0.16	U	0.46	
		Total thorium	0.74				15
		Uranium-234	1.18	0.51	J	0.38	
		Uranium-235	0.34	0.28	J	0.31	
		Uranium-238	0.56	0.34	J	0.37	
		Total uranium	1.2				27

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

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

[c] Minimum Detectable Activity (MDA)

[d] New Jersey and EPA MCL (N.J.A.C. 7:9-6).

[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 5
2000 Surface Water Analytical Results - Metals
Maywood Interim Storage Site - July 2000

Sampling Location	Date Collected	Detected Analyte[a]	Result: (ug/L)	Data Qualifier S&W[b]	Reporting Limits (ug/L)	Related Regulations Federal[c] (ug/L)	Related Regulations State[d] (ug/L)
	24-Jul-00	Aluminum, Total	121.00	J		200	200
SWSD001	24-Jul-00	Antimony, Total	2.10	U	2.7	6	2/20
	24-Jul-00	Arsenic, Total	7.00	U	4.7	50	0.02/8
	24-Jul-00	Barium, Total	98.10		1.5	2000	2000
	24-Jul-00	Beryllium, Total	0.20	U	0.04	4	0.008/20
	24-Jul-00	Cadmium, Total	0.20	U	0.1	5	4
	24-Jul-00	Calcium, Total	70900.00		325		
	24-Jul-00	Chromium, Total	0.66	J	2.2	100	100
	24-Jul-00	Cobalt, Total	0.3	U	0.45		
	24-Jul-00	Iron, Total	369		22	300	300
	24-Jul-00	Lead, Total	1.3	U	1.9	15	5
	24-Jul-00	Magnesium, Total	19100		23		
	24-Jul-00	Manganese, Total	86.6		1.3	50	50
	24-Jul-00	Mercury, Total	0.78		0.02	2	2
	24-Jul-00	Nickel, Total	2.2		1.6		100
	24-Jul-00	Potassium, Total	7330		120		
	24-Jul-00	Selenium, Total	1.5	UJ	5.6	50	50
	24-Jul-00	Silver, Total	0.3	U	0.94	1007	
	24-Jul-00	Sodium, Total	75400		150		50000
	24-Jul-00	Thallium, total	5.3	U	2.7	2	0.5
	24-Jul-00	Vanadium, Total	0.58	J	1.3		
	24-Jul-00	Zinc, Total	12.5		18	500	5000
SWSD002	24-Jul-00	Aluminum, Total	35.5	U		200	200
	24-Jul-00	Antimony, Total	2.1	U	2.7	6	2/20
	24-Jul-00	Arsenic, Total	14.9	U	4.7	50	0.02/8
	24-Jul-00	Barium, Total	107		1.5	2000	2000
	24-Jul-00	Beryllium, Total	0.2	U	0.04	4	0.008/20
	24-Jul-00	Cadmium, Total	0.2	U	0.1	5	4
	24-Jul-00	Calcium, Total	84800		325		
	24-Jul-00	Chromium, Total	0.3	U	2.2	100	100
	24-Jul-00	Cobalt, Total	0.3	U	0.45		
	24-Jul-00	Iron, Total	689		22	300	300
	24-Jul-00	Lead, Total	1.3	U	1.9	15	5/10
	24-Jul-00	Magnesium, Total	12100		23		
	24-Jul-00	Manganese, Total	410		1.3	50	50
	24-Jul-00	Mercury, Total	1.3		0.02	2	2
	24-Jul-00	Nickel, Total	3		1.6		100

Table 5
2000 Surface Water Analytical Results - Metals
Maywood Interim Storage Site - July 2000

Sampling Location	Date Collected	Detected Analyte[a]	Result: (ug/L)	Data Qualifier S&W[b]	Reporting Limits (ug/L)	Related Regulations Federal[c] (ug/L)	State[d] (ug/L)
SWSD002	24-Jul-00	Potassium, Total	18000		120		
	24-Jul-00	Selenium, Total	1.5	UJ	5.6	50	50
	24-Jul-00	Silver, Total	0.3	U	0.94	1007	
	24-Jul-00	Sodium, Total	62600		150		50000
	24-Jul-00	Thallium, total	5.3	U	2.7	2	0.5/10
	24-Jul-00	Vanadium, Total	0.3	U	1.3		
	24-Jul-00	Zinc, Total	12.1		18	500	5000
SWSD003	20-Jul-00	Aluminum, Total	121	J		200	200
	20-Jul-00	Antimony, Total	2.1	U	2.7	6	2/20
	20-Jul-00	Arsenic, Total	5.2	U	4.7	50	0.02/8
	20-Jul-00	Barium, Total	128		1.5	2000	2000
	20-Jul-00	Beryllium, Total	0.2	U	0.04	4	0.008/20
	20-Jul-00	Cadmium, Total	0.4	U	0.1	5	4
	20-Jul-00	Calcium, Total	57200		325		
	20-Jul-00	Chromium, Total	1.1	J	2.2	100	100
	20-Jul-00	Cobalt, Total	0.53	J	0.45		
	20-Jul-00	Iron, Total	1440		22	300	300
	20-Jul-00	Lead, Total	4.2	U	1.9	15	5/10
	20-Jul-00	Magnesium, Total	6770		23		
	20-Jul-00	Manganese, Total	180		1.3	50	50
	20-Jul-00	Mercury, Total	0.1	U	0.02	2	2
	20-Jul-00	Nickel, Total	3.8		1.6		100
	20-Jul-00	Potassium, Total	2730		120		
	20-Jul-00	Selenium, Total	3.4	UJ	5.6	50	50
	20-Jul-00	Silver, Total	1	U	0.94	1007	
	20-Jul-00	Sodium, Total	32000		150		50000
	20-Jul-00	Thallium, total	3.8	U	2.7	2	0.5/10
	20-Jul-00	Vanadium, Total	1.8	J	1.3		
	20-Jul-00	Zinc, Total	38.3	U	18	500	5000
SWSD005	20-Jul-00	Aluminum, Total	97	J		200	200
	20-Jul-00	Antimony, Total	2.6	U	2.7	6	2/20
	20-Jul-00	Arsenic, Total	3.4	U	4.7	50	0.02/8
	20-Jul-00	Barium, Total	85.6		1.5	2000	2000
	20-Jul-00	Beryllium, Total	0.2	U	0.04	4	0.008/20
	20-Jul-00	Cadmium, Total	0.4	U	0.1	5	4
	20-Jul-00	Calcium, Total	50500		325		

Table 5
2000 Surface Water Analytical Results - Metals
Maywood Interim Storage Site - July 2000

Sampling Location	Date Collected	Detected Analyte[a]	Result: (ug/L)	Data Qualifier S&W[b]	Reporting Limits (ug/L)	Related Regulations Federal[c] (ug/L)	State[d] (ug/L)
	20-Jul-00	Chromium, Total	1.3	J	2.2	100	100
	20-Jul-00	Cobalt, Total	0.81	J	0.45		
	20-Jul-00	Iron, Total	397		22	300	300
	20-Jul-00	Lead, Total	1.8	U	1.9	15	5/10
	20-Jul-00	Magnesium, Total	13600		23		
	20-Jul-00	Manganese, Total	155		1.3	50	50
	20-Jul-00	Mercury, Total	0.78	U	0.02	2	2
	20-Jul-00	Nickel, Total	2.7	J	1.6		100
	20-Jul-00	Potassium, Total	5520		120		
	20-Jul-00	Selenium, Total	3.4	UJ	5.6	50	50
	20-Jul-00	Silver, Total	1.4	J	0.94	1007	
	20-Jul-00	Sodium, Total	54600		150		50000
	20-Jul-00	Thallium, total	4.1	J	2.7	2	0.5/10
	20-Jul-00	Vanadium, Total	1.7	J	1.3		
	20-Jul-00	Zinc, Total	23.6	U	18	500	5000
SWSD006	20-Jul-00	Aluminum, Total	31.2	U		200	200
	20-Jul-00	Antimony, Total	3.6	U	2.7	6	2/20
	20-Jul-00	Arsenic, Total	4.2	U	4.7	50	0.02/8
	20-Jul-00	Barium, Total	40.5		1.5	2000	2000
	20-Jul-00	Beryllium, Total	0.2	U	0.04	4	0.008/20
	20-Jul-00	Cadmium, Total	0.4	U	0.1	5	4
	20-Jul-00	Calcium, Total	94600		325		
	20-Jul-00	Chromium, Total	1.5	J	2.2	100	100
	20-Jul-00	Cobalt, Total	0.53	J	0.45		
	20-Jul-00	Iron, Total	342		22	300	300
	20-Jul-00	Lead, Total	1.3	U	1.9	15	5/10
	20-Jul-00	Magnesium, Total	7390		23		
SWSD006	20-Jul-00	Manganese, Total	293		1.3	50	50
	20-Jul-00	Mercury, Total	0.62	U	0.02	2	2
	20-Jul-00	Nickel, Total	1.8	J	1.6		100
	20-Jul-00	Potassium, Total	2450		120		
	20-Jul-00	Selenium, Total	3.4	UJ	5.6	50	50
	20-Jul-00	Silver, Total	1	U	0.94	1007	
	20-Jul-00	Sodium, Total	44300		150		50000
	20-Jul-00	Thallium, total	3.8	U	2.7	2	0.5/10
	20-Jul-00	Vanadium, Total	2.6	J	1.3		
	20-Jul-00	Zinc, Total	10.8	U	18	500	5000

Table 5
2000 Surface Water Analytical Results - Metals
Maywood Interim Storage Site - July 2000

Sampling Location	Date Collected	Detected Analyte[a]	Result: (ug/L)	Data Qualifier S&W[b]	Reporting Limits (ug/L)	Related Regulations Federal[c] (ug/L)	State[d] (ug/L)
SWSD007	20-Jul-00	Aluminum, Total	3950			200	200
	20-Jul-00	Antimony, Total	3.4	U	2.7	6	2/20
	20-Jul-00	Arsenic, Total	21.7		4.7	50	0.02/8
	20-Jul-00	Barium, Total	182		1.5	2000	2000
	20-Jul-00	Beryllium, Total	0.27	J	0.04	4	0.008/20
	20-Jul-00	Cadmium, Total	2.2		0.1	5	4
	20-Jul-00	Calcium, Total	104000		325		
	20-Jul-00	Chromium, Total	156		2.2	100	100
	20-Jul-00	Cobalt, Total	4		0.45		
	20-Jul-00	Iron, Total	11500		22	300	300
	20-Jul-00	Lead, Total	162		1.9	15	5/10
	20-Jul-00	Magnesium, Total	8720		23		
	20-Jul-00	Manganese, Total	763		1.3	50	50
	20-Jul-00	Mercury, Total	0.32	U	0.02	2	2
	20-Jul-00	Nickel, Total	14.4		1.6		100
	20-Jul-00	Potassium, Total	2880		120		
	20-Jul-00	Selenium, Total	3.4	UJ	5.6	50	50
	20-Jul-00	Silver, Total	1	U	0.94	1007	
	20-Jul-00	Sodium, Total	43400		150		50000
	20-Jul-00	Thallium, total	5.4	J	2.7	2	0.5/10
	20-Jul-00	Vanadium, Total	17.7		1.3		
	20-Jul-00	Zinc, Total	451		18	500	5000

[a]Only the analytes that were detected are reported. Shaded result indicates value exceeds criteria.
[b] Stone & Webster 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 SWSD003 is the background location for surface water locations.

Table 5-A
2000 Surface Water Analytical Results - Metals
Maywood Interim Storage Site - October 2000

Sampling Location	Date Collected	Analyte	Result[a] (ug/L)	Qualifier S&W[b]	Reporting Limit (ug/L)	Related Regulations Federal[c] (ug/L)	Related Regulations State[d] (ug/L)
Surface water samples collected in Lodi Brook:							
LBSW-2	19-Oct-00	Aluminum, Total	97.3		10.6	200	200
	19-Oct-00	Antimony, Total	2.3	U	2.3	6	2/20
	19-Oct-00	Arsenic, Total	9.7		3.4	50	0.02/8
	19-Oct-00	Barium, Total	56.6		0.20	2000	2000
	19-Oct-00	Beryllium, Total	0.1	U	0.10	4	0.008/20
	19-Oct-00	Boron, Total	53.6	J	2.1		
	19-Oct-00	Cadmium, Total	0.3	U	0.30	5	4
	19-Oct-00	Calcium, Total	84700		8.9		
	19-Oct-00	Chromium, Total	1.8	J	0.90	100	100
	19-Oct-00	Cobalt, Total	1.1		0.9		
	19-Oct-00	Copper, Total	3.5		0.80	1300	1000
	19-Oct-00	Iron, Total	1160		16.4	300	300
	19-Oct-00	Lead, Total	7.7		2.1	15	5/10
	19-Oct-00	Lithium, Total	94.6		0.20		
	19-Oct-00	Magnesium, Total	7610		7.8		
	19-Oct-00	Manganese, Total	434		0.20	50	50
	19-Oct-00	Mercury, Total	0.1	U	0.10	2	2
	19-Oct-00	Nickel, Total	2.8		1.2		100
	19-Oct-00	Potassium, Total	4560		29.9		
	19-Oct-00	Selenium, Total	3.3	U	3.3	50	50
	19-Oct-00	Silver, Total	1.1	U	1.1	1007	
	19-Oct-00	Sodium, Total	42300		3.8		50000
	19-Oct-00	Thallium, Total	4	U	4	2	0.5/10
	19-Oct-00	Vanadium, Total	3		0.90		
	19-Oct-00	Zinc, Total	18.9	J	0.40	500	5000
LBSW-3	23-Oct-00	Aluminum, Total	91.9		10.6	200	200
	23-Oct-00	Antimony, Total	2.3	U	2.1	6	2/20
	23-Oct-00	Arsenic, Total	2.4	U	3.4	50	0.02/8
	23-Oct-00	Barium, Total	104		0.2	2000	2000
	23-Oct-00	Beryllium, Total	0.1	U	0.1	4	0.008/20
	23-Oct-00	Boron, Total	152		2.1		
	23-Oct-00	Cadmium, Total	0.3	U	0.3	5	4
	23-Oct-00	Calcium, Total	58400		8.9		
	23-Oct-00	Chromium, Total	1.1		0.9	100	100
	23-Oct-00	Cobalt, Total	0.9	U	0.8		
	23-Oct-00	Copper, Total	12.5		0.8	1300	1000
	23-Oct-00	Iron, Total	320		16.4	300	300
	23-Oct-00	Lead, Total	2.6		2.1	15	5/10
	23-Oct-00	Lithium, Total	11.5		0.2		
	23-Oct-00	Magnesium, Total	16900		7.8		
	23-Oct-00	Manganese, Total	103		0.2	50	50
	23-Oct-00	Mercury, Total	0.1	U	0.1	2	2

Table 5-A
2000 Surface Water Analytical Results - Metals
Maywood Interim Storage Site - October 2000

Sampling Location	Date Collected	Analyte	Result[a] (ug/L)	Qualifier S&W[b]	Reporting Limit (ug/L)	Related Regulations Federal[c] (ug/L)	Related Regulations State[d] (ug/L)
	23-Oct-00	Nickel, Total	2.6		1.2		100
	23-Oct-00	Potassium, Total	6410		29.9		
	23-Oct-00	Selenium, Total	3.3	U	4.3	50	50
	23-Oct-00	Silver, Total	1.1	U	1.1	1007	
	23-Oct-00	Sodium, Total	53000		3.8		50000
	23-Oct-00	Thallium, Total	4	U	3.6	2	0.5/10
	23-Oct-00	Vanadium, Total	0.95		0.9		
	23-Oct-00	Zinc, Total	24.6		0.4	500	5000
LBSW-4	19-Oct-00	Aluminum, Total	81.3		10.6	200	200
	19-Oct-00	Antimony, Total	2.3	U	2.3	6	2/20
	19-Oct-00	Arsenic, Total	3.6		3.4	50	0.02/8
	19-Oct-00	Barium, Total	90.4		0.2	2000	2000
	19-Oct-00	Beryllium, Total	0.1	U	0.1	4	0.008/20
	19-Oct-00	Boron, Total	166	J	2.1		
	19-Oct-00	Cadmium, Total	0.3	U	0.3	5	4
	19-Oct-00	Calcium, Total	51800		8.9		
	19-Oct-00	Chromium, Total	2	J	0.9	100	100
	19-Oct-00	Cobalt, Total	1		0.9		
	19-Oct-00	Copper, Total	23.8		0.8	1300	1000
	19-Oct-00	Iron, Total	339		16.4	300	300
	19-Oct-00	Lead, Total	3.6		2.1	15	5/10
	19-Oct-00	Lithium, Total	14.2		0.2		
	19-Oct-00	Magnesium, Total	15400		7.8		
	19-Oct-00	Manganese, Total	198		0.2	50	50
	19-Oct-00	Mercury, Total	0.1	U	0.1	2	2
	19-Oct-00	Nickel, Total	2.2		1.2		100
	19-Oct-00	Potassium, Total	10600		29.9		
	19-Oct-00	Selenium, Total	3.3	U	3.3	50	50
	19-Oct-00	Silver, Total	1.1	U	1.1	1007	
	19-Oct-00	Sodium, Total	49300		3.8		50000
	19-Oct-00	Thallium, Total	4	U	4	2	0.5/10
	19-Oct-00	Vanadium, Total	1.4		0.9		
	19-Oct-00	Zinc, Total	33.8		0.4	500	5000
LBSW-5	19-Oct-00	Aluminum, Total	92		10.6	200	200
	19-Oct-00	Antimony, Total	2.3	U	2.3	6	2/20
	19-Oct-00	Arsenic, Total	4		3.4	50	0.02/8
	19-Oct-00	Barium, Total	94.9		0.2	2000	2000
	19-Oct-00	Beryllium, Total	0.1	U	0.1	4	0.008/20
	19-Oct-00	Boron, Total	168	J	2.1		
	19-Oct-00	Cadmium, Total	0.3	U	0.3	5	4
	19-Oct-00	Calcium, Total	51500		8.9		
	19-Oct-00	Chromium, Total	2.2	J	0.9	100	100
	19-Oct-00	Cobalt, Total	0.9	U	0.9		
	19-Oct-00	Copper, Total	14.1		0.8	1300	1000
	19-Oct-00	Iron, Total	393		16.4	300	300

Table 5-A
2000 Surface Water Analytical Results - Metals
Maywood Interim Storage Site - October 2000

Sampling Location	Date Collected	Analyte	Result[a] (ug/L)	Qualifier S&W[b]	Reporting Limit (ug/L)	Related Regulations Federal[c] (ug/L)	Related Regulations State[d] (ug/L)
	19-Oct-00	Lead, Total	2.8		2.1	15	5/10
	19-Oct-00	Lithium, Total	21.4		0.2		
	19-Oct-00	Magnesium, Total	15000		7.8		
	19-Oct-00	Manganese, Total	119		0.2	50	50
	19-Oct-00	Mercury, Total	0.1	U	0.1	2	2
	19-Oct-00	Nickel, Total	2.4		1.2		100
	19-Oct-00	Potassium, Total	7050		29.9		
	19-Oct-00	Selenium, Total	3.3	U	3.3	50	50
	19-Oct-00	Silver, Total	1.3		1.1	1007	
	19-Oct-00	Sodium, Total	49800		3.8		50000
	19-Oct-00	Thallium, Total	4.3		3.6	2	0.5/10
	19-Oct-00	Vanadium, Total	1.4		0.9		
	19-Oct-00	Zinc, Total	39.5	J	0.4	500	5000
LBSW-6	19-Oct-00	Aluminum, Total	65.9			200	200
	19-Oct-00	Antimony, Total	2.3	U	2.7	6	2/20
	19-Oct-00	Arsenic, Total	3.9		4.7	50	0.02/8
	19-Oct-00	Barium, Total	91.2		1.5	2000	2000
	19-Oct-00	Beryllium, Total	0.1	U	0.04	4	0.008/20
	19-Oct-00	Boron, Total	162	J	13		
	19-Oct-00	Cadmium, Total	0.3	U	0.1	5	4
	19-Oct-00	Calcium, Total	50900		325		
	19-Oct-00	Chromium, Total	1.7	J	2.2	100	100
	19-Oct-00	Cobalt, Total	0.9	U	0.45		
	19-Oct-00	Copper, Total	12.1		1.7	1300	1000
	19-Oct-00	Iron, Total	325		22	300	300
	19-Oct-00	Lead, Total	2.1	U	1.9	15	5/10
	19-Oct-00	Lithium, Total	23		1.6		
	19-Oct-00	Magnesium, Total	14500		23		
	19-Oct-00	Manganese, Total	108		1.3	50	50
	19-Oct-00	Mercury, Total	0.1	U	0.02	2	2
	19-Oct-00	Nickel, Total	2.1		1.6		100
	19-Oct-00	Potassium, Total	6850		120		
	19-Oct-00	Selenium, Total	3.3	U	5.6	50	50
	19-Oct-00	Silver, Total	1.1		0.94	1007	
	19-Oct-00	Sodium, Total	48200		150		50000
	19-Oct-00	Thallium, Total	4	U	2.7	2	0.5/10
	19-Oct-00	Vanadium, Total	1.7		1.3		
	19-Oct-00	Zinc, Total	30.7	J	18	500	5000
LBSW-7	19-Oct-00	Aluminum, Total	69.7		10.6	200	200
	19-Oct-00	Antimony, Total	2.3	U	2.3	6	2/20
	19-Oct-00	Arsenic, Total	4		3.4	50	0.02/8
	19-Oct-00	Barium, Total	90.1		0.2	2000	2000
	19-Oct-00	Beryllium, Total	0.1	U	0.1	4	0.008/20
	19-Oct-00	Boron, Total	169	J	2.1		
	19-Oct-00	Cadmium, Total	0.3	U	0.3	5	4

Table 5-A
2000 Surface Water Analytical Results - Metals
Maywood Interim Storage Site - October 2000

Sampling Location	Date Collected	Analyte	Result[a] (ug/L)	Qualifier S&W[b]	Reporting Limit (ug/L)	Related Regulations Federal[c] (ug/L)	Related Regulations State[d] (ug/L)
	19-Oct-00	Calcium, Total	52300		8.9		
	19-Oct-00	Chromium, Total	1.5	J	0.9	100	100
	19-Oct-00	Cobalt, Total	0.9	U	0.9		
	19-Oct-00	Copper, Total	12.3		0.8	1300	1000
	19-Oct-00	Iron, Total	327		16.4	300	300
	19-Oct-00	Lead, Total	2.1	U	2.1	15	5/10
	19-Oct-00	Lithium, Total	27.3		0.2		
	19-Oct-00	Magnesium, Total	15000		7.8		
	19-Oct-00	Manganese, Total	101		0.2	50	50
	19-Oct-00	Mercury, Total	0.1	U	0.1	2	2
	19-Oct-00	Nickel, Total	2.5		1.2		100
	19-Oct-00	Potassium, Total	6900		29.9		
	19-Oct-00	Selenium, Total	3.3	U	3.3	50	50
	19-Oct-00	Silver, Total	1.1	U	1.1	1007	
	19-Oct-00	Sodium, Total	49300		3.8		50000
	19-Oct-00	Thallium, Total	4	U	4	2	0.5/10
	19-Oct-00	Vanadium, Total	1.5		0.9		
	19-Oct-00	Zinc, Total	31.8	J	0.4	500	5000
LBSW-8	19-Oct-00	Aluminum, Total	87		10.6	200	200
	19-Oct-00	Antimony, Total	2.3	U	2.3	6	2/20
	19-Oct-00	Arsenic, Total	4.6		3.4	50	0.02/8
	19-Oct-00	Barium, Total	92.5		0.2	2000	2000
	19-Oct-00	Beryllium, Total	0.1	U	0.1	4	0.008/20
	19-Oct-00	Boron, Total	176	J	2.1		
	19-Oct-00	Cadmium, Total	0.3	U	0.3	5	4
	19-Oct-00	Calcium, Total	54100		8.9		
	19-Oct-00	Chromium, Total	1.7	J	0.9	100	100
	19-Oct-00	Cobalt, Total	1.6		0.9		
	19-Oct-00	Copper, Total	11.7		0.8	1300	1000
	19-Oct-00	Iron, Total	332		16.4	300	300
	19-Oct-00	Lead, Total	2.1	U	2.1	15	5/10
	19-Oct-00	Lithium, Total	31.4		0.2		
	19-Oct-00	Magnesium, Total	15000		7.8		
	19-Oct-00	Manganese, Total	102		0.2	50	50
	19-Oct-00	Mercury, Total	0.1	U	0.1	2	2
	19-Oct-00	Nickel, Total	3.2		1.2		100
	19-Oct-00	Potassium, Total	6680		29.9		
	19-Oct-00	Selenium, Total	3.3	U	3.3	50	50
	19-Oct-00	Silver, Total	1.1		1.1	1007	
	19-Oct-00	Sodium, Total	49300		3.8		50000
	19-Oct-00	Thallium, Total	4	U	4	2	0.5/10
	19-Oct-00	Vanadium, Total	1.4		0.9		
	19-Oct-00	Zinc, Total	31.8	J	0.4	500	5000

Table 5-A
2000 Surface Water Analytical Results - Metals
Maywood Interim Storage Site - October 2000

Sampling Location	Date Collected	Analyte	Result[a] (ug/L)	Qualifier S&W[b]	Reporting Limit (ug/L)	Related Regulations Federal[c] (ug/L)	Related Regulations State[d] (ug/L)
Surface water samples collected in Westerly Brook:							
WBSW-1	23-Oct-00	Aluminum, Total	22.7		10.6	200	200
	23-Oct-00	Antimony, Total	2.3	U	2.1	6	2/20
	23-Oct-00	Arsenic, Total	12		3.4	50	0.02/8
	23-Oct-00	Barium, Total	114		0.2	2000	2000
	23-Oct-00	Beryllium, Total	0.1	U	0.1	4	0.008/20
	23-Oct-00	Boron, Total	218		2.1		
	23-Oct-00	Cadmium, Total	0.3	U	0.3	5	4
	23-Oct-00	Calcium, Total	116000		8.9		
	23-Oct-00	Cerium, Total	35.3	U	35.3		
	23-Oct-00	Chromium VI	0.02	U	0.02		
	23-Oct-00	Chromium, Total	4.9		0.9	100	100
	23-Oct-00	Cobalt, Total	0.9	U	0.8		
	23-Oct-00	Copper, Total	1.6		0.8	1300	1000
	23-Oct-00	Dysprosium, Total	3.1	U	3.1		
	23-Oct-00	Iron, Total	979		16.4	300	300
	23-Oct-00	Lanthanum, Total	33.8	U	33.8		
	23-Oct-00	Lead, Total	2.1	U	2.1	15	5/10
	23-Oct-00	Lithium, Total	642		0.2		
	23-Oct-00	Magnesium, Total	16900		7.8		
	23-Oct-00	Manganese, Total	487		0.2	50	50
	23-Oct-00	Mercury, Total	0.12		0.1	2	2
	23-Oct-00	Neodymium, Total	13.2	U	13.2		
	23-Oct-00	Nickel, Total	2.1		1.2		100
	23-Oct-00	Potassium, Total	32200		29.9		
	23-Oct-00	Selenium, Total	3.3	U	4.3	50	50
	23-Oct-00	Silver, Total	1.1	U	1.1	1007	
	23-Oct-00	Sodium, Total	75800		3.8		50000
	23-Oct-00	Thallium, Total	6.1		3.6	2	0.5/10
	23-Oct-00	Vanadium, Total	0.84		0.9		
	23-Oct-00	Yttrium, Total	1.9	U	1.9		
	23-Oct-00	Zinc, Total	14.8		0.4	500	5000
WBSW-2	23-Oct-00	Aluminum, Total	23.1		10.6	200	200
	23-Oct-00	Antimony, Total	2.3	U	2.1	6	2/20
	23-Oct-00	Arsenic, Total	18.5		3.4	50	0.02/8
	23-Oct-00	Barium, Total	113		0.2	2000	2000
	23-Oct-00	Beryllium, Total	0.1	U	0.1	4	0.008/20
	23-Oct-00	Boron, Total	213		2.1		
	23-Oct-00	Cadmium, Total	0.3	U	0.3	5	4
	23-Oct-00	Calcium, Total	113000		8.9		
	23-Oct-00	Cerium, Total	35.3	U	35.3		
	23-Oct-00	Chromium VI	0.02	U	0.02		
	23-Oct-00	Chromium, Total	0.6	U	0.9	100	100
	23-Oct-00	Cobalt, Total	0.9	U	0.8		
	23-Oct-00	Copper, Total	1.7		0.8	1300	1000
	23-Oct-00	Dysprosium, Total	3.1	U	3.1		
	23-Oct-00	Iron, Total	1090		16.4	300	300
	23-Oct-00	Lanthanum, Total	33.8	U	33.8		
	23-Oct-00	Lead, Total	2.1	U	2.1	15	5/10
	23-Oct-00	Lithium, Total	634		0.2		

Table 5-A
2000 Surface Water Analytical Results - Metals
Maywood Interim Storage Site - October 2000

Sampling Location	Date Collected	Analyte	Result[a] (ug/L)	Qualifier S&W[b]	Reporting Limit (ug/L)	Related Regulations Federal[c] (ug/L)	Related Regulations State[d] (ug/L)
	23-Oct-00	Magnesium, Total	16300		7.8		
	23-Oct-00	Manganese, Total	733		0.2	50	50
	23-Oct-00	Mercury, Total	0.1	U	0.1	2	2
	23-Oct-00	Neodymium, Total	13.2	U	13.2		
	23-Oct-00	Nickel, Total	3.1		1.2		100
	23-Oct-00	Potassium, Total	31900		29.9		
	23-Oct-00	Selenium, Total	3.3	U	4.3	50	50
	23-Oct-00	Silver, Total	1.1	U	1.1	1007	
	23-Oct-00	Sodium, Total	74200		3.8		50000
	23-Oct-00	Thallium, Total	4	U	3.6	2	0.5/10
	23-Oct-00	Vanadium, Total	0.88	U	0.9		
	23-Oct-00	Yttrium, Total	1.9	U	1.9		
	23-Oct-00	Zinc, Total	18.8		0.4	500	5000
WBSW-3	26-Oct-00	Aluminum, Total	255		22.7	200	200
	26-Oct-00	Antimony, Total	2.3	U	2.3	6	2/20
	26-Oct-00	Arsenic, Total	48.7		2.4	50	0.02/8
	26-Oct-00	Barium, Total	242		0.2	2000	2000
	26-Oct-00	Beryllium, Total	0.1	U	0.1	4	0.008/20
	26-Oct-00	Boron, Total	203		2.7		
	26-Oct-00	Cadmium, Total	0.54		0.3	5	4
	26-Oct-00	Calcium, Total	109000		19.2		
	26-Oct-00	Cerium, Total	35.3	U	35.3		
	26-Oct-00	Chromium VI	0.02	U	0.02		
	26-Oct-00	Chromium, Total	1		0.6	100	100
	26-Oct-00	Cobalt, Total	1.8		0.9		
	26-Oct-00	Copper, Total	4.9		0.9	1300	1000
	26-Oct-00	Dysprosium, Total	3.1	U	3.1		
	26-Oct-00	Iron, Total	3460		21.8	300	300
	26-Oct-00	Lanthanum, Total	33.8	U	33.8		
	26-Oct-00	Lead, Total	5.4		2.1	15	5/10
	26-Oct-00	Lithium, Total	546		0.2		
	26-Oct-00	Magnesium, Total	13700		6.7		
	26-Oct-00	Manganese, Total	3730		0.2	50	50
	26-Oct-00	Mercury, Total	0.11		0.1	2	2
	26-Oct-00	Neodymium, Total	13.2	U	13.2		
	26-Oct-00	Nickel, Total	7.9		0.9		100
	26-Oct-00	Potassium, Total	27400		40.9		
	26-Oct-00	Selenium, Total	3.3	U	3.3	50	50
	26-Oct-00	Silver, Total	59.4		1.1	1007	
	26-Oct-00	Sodium, Total	70300		4.1		50000
	26-Oct-00	Thallium, Total	4	U	4	2	0.5/10
	26-Oct-00	Vanadium, Total	3.3		0.8		
	26-Oct-00	Yttrium, Total	1.9	U	1.9		
	26-Oct-00	Zinc, Total	186		0.4	500	5000

Table 5-A
2000 Surface Water Analytical Results - Metals
Maywood Interim Storage Site - October 2000

Sampling Location	Date Collected	Analyte	Result[a] (ug/L)	Qualifier S&W[b]	Reporting Limit (ug/L)	Related Regulations Federal[c] (ug/L)	Related Regulations State[d] (ug/L)
WBSW-4	23-Oct-00	Aluminum, Total	54.3		10.6	200	200
	23-Oct-00	Antimony, Total	2.3	U	2.1	6	2/20
	23-Oct-00	Arsenic, Total	3.8		3.4	50	0.02/8
	23-Oct-00	Barium, Total	166		0.2	2000	2000
	23-Oct-00	Beryllium, Total	0.1	U	0.1	4	0.008/20
	23-Oct-00	Boron, Total	97.7		2.1		
	23-Oct-00	Cadmium, Total	0.3	U	0.3	5	4
	23-Oct-00	Calcium, Total	77100		8.9		
	23-Oct-00	Cerium, Total	35.3	U	35.3		
	23-Oct-00	Chromium VI	0.02	U	0.02		
	23-Oct-00	Chromium, Total	0.9	U	0.9	100	100
	23-Oct-00	Cobalt, Total	0.9	U	0.8		
	23-Oct-00	Copper, Total	2.6		0.8	1300	1000
	23-Oct-00	Dysprosium, Total	3.1	U	3.1		
	23-Oct-00	Iron, Total	1110		16.4	300	300
	23-Oct-00	Lanthanum, Total	35.3		33.8		
	23-Oct-00	Lead, Total	4		2.1	15	5/10
	23-Oct-00	Lithium, Total	23.6		0.2		
	23-Oct-00	Magnesium, Total	9620		7.8		
	23-Oct-00	Manganese, Total			0.2	50	50
	23-Oct-00	Mercury, Total	0.1	U	0.1	2	2
	23-Oct-00	Neodymium, Total	13.2	U	13.2		
	23-Oct-00	Nickel, Total	2.5		1.2		100
	23-Oct-00	Potassium, Total	3540		29.9		
	23-Oct-00	Selenium, Total	4.3	U	4.3	50	50
	23-Oct-00	Silver, Total	1.1	U	1.1	1007	
	23-Oct-00	Sodium, Total	33500		3.8		50000
	23-Oct-00	Thallium, Total	4	U	3.6	2	0.5/10
	23-Oct-00	Vanadium, Total	0.8	U	0.9		
	23-Oct-00	Yttrium, Total	1.9	U	1.9		
	23-Oct-00	Zinc, Total	23.3		0.4	500	5000
WBSW-5	24-Oct-00	Aluminum, Total	22.7	U	10.6	200	200
	24-Oct-00	Antimony, Total	2.3	U	2.1	6	2/20
	24-Oct-00	Arsenic, Total	2.4	U	3.4	50	0.02/8
	24-Oct-00	Barium, Total	157		0.2	2000	2000
	24-Oct-00	Beryllium, Total	0.1	U	0.1	4	0.008/20
	24-Oct-00	Boron, Total	95.1		2.1		
	24-Oct-00	Cadmium, Total	0.3	U	0.3	5	4
	24-Oct-00	Calcium, Total	82200		8.9		
	24-Oct-00	Cerium, Total	35.3	U	35.3		
	24-Oct-00	Chromium VI	0.02	U	0.02		
	24-Oct-00	Chromium, Total	0.6	U	0.9	100	100
	24-Oct-00	Cobalt, Total	0.9	U	0.8		
	24-Oct-00	Copper, Total	1.5		0.8	1300	1000
	24-Oct-00	Dysprosium, Total	3.1	U	3.1		
	24-Oct-00	Iron, Total	543		16.4	300	300
	24-Oct-00	Lanthanum, Total	33.8	U	33.8		
	24-Oct-00	Lead, Total	2.1	U	2.1	15	5/10
	24-Oct-00	Lithium, Total	41.4		0.2		
	24-Oct-00	Magnesium, Total	9600		7.8		

Table 5-A
2000 Surface Water Analytical Results - Metals
Maywood Interim Storage Site - October 2000

Sampling Location	Date Collected	Analyte	Result[a] (ug/L)	Qualifier S&W[b]	Reporting Limit (ug/L)	Related Regulations Federal[c] (ug/L)	State[d] (ug/L)
	24-Oct-00	Manganese, Total	201		0.2	50	50
	24-Oct-00	Mercury, Total	0.1	U	0.1	2	2
	24-Oct-00	Neodymium, Total	13.2	U	13.2		
	24-Oct-00	Nickel, Total	3		1.2		100
	24-Oct-00	Potassium, Total	3550		29.9		
	24-Oct-00	Selenium, Total	3.3	U	4.3	50	50
	24-Oct-00	Silver, Total	8.6		1.1	1007	
	24-Oct-00	Sodium, Total	35900		3.8		50000
	24-Oct-00	Thallium, Total	4	U	3.6	2	0.5/10
	24-Oct-00	Vanadium, Total	0.8	U	0.9		
	24-Oct-00	Yttrium, Total	1.9	U	1.9		
	24-Oct-00	Zinc, Total	19.1		0.4	500	5000

[a] Only the analytes that were detected are reported. Shaded results indicate reported value exceeds criteria.
[b] S&W and laboratory data qualifier flags:
U= The analyte was not detected
J= Reported as estimated value
[c]Federal SDWA MCLs, 40 CFR 141. Regulations pertain to drinking water quality and are listed for comparison purposes only.
[d] New Jersey surface water standards (NJAC 7:9-6).
Shaded values indicate exceedance above Federal/State limits.

Table 6
2000 Sediment Analytical Results - Radioactive Constituents
Maywood Interim Storage Site - July 2000

Sampling Location	Date Collected	Analyte	Result[a] (pCi/g)		Error	Qualifier S&W[b]	MDA[c] (pCi/g)	Cleanup Criteria[d] (pCi/g)
SWSD001	24-Jul-00	Radium 226	0.98	±	0.25	J	0.19	5
	24-Jul-00	Radium 228	0.59	±	0.44	UJ	0.72	5
	24-Jul-00	Thorium 228	0.62	±	0.23	J	0.13	
	24-Jul-00	Thorium 230	0.46	±	0.18	J	0.12	5
	24-Jul-00	Thorium 232	0.65	±	0.23	J	0.12	5
	24-Jul-00	Uranium 234	0.32	±	0.16	J	0.09	
	24-Jul-00	Uranium 235	0.02	±	0.04	UJ	0.05	
	24-Jul-00	Uranium 238	0.24	±	0.13	J	0.10	
	24-Jul-00	Total uranium	0.58					100
SWSD002	24-Jul-00	Radium 226	0.58	±	0.16	J	0.12	5
	24-Jul-00	Radium 228	0.31	±	0.40	UJ	0.66	5
	24-Jul-00	Thorium 228	0.29	±	0.19	J	0.23	
	24-Jul-00	Thorium 230	0.53	±	0.25	J	0.10	5
	24-Jul-00	Thorium 232	0.35	±	0.20	J	0.15	5
	24-Jul-00	Uranium 234	0.28	±	0.14	J	0.10	
	24-Jul-00	Uranium 235	-0.01	±	0.01	UJ	0.09	
	24-Jul-00	Uranium 238	0.21	±	0.12	J	0.09	
	24-Jul-00	Total uranium	0.48					100
SWSD002 Duplicate	24-Jul-00	Thorium 228	0.25	±	0.15	J	0.11	
	24-Jul-00	Thorium 230	0.90	±	0.32	J	0.05	5
	24-Jul-00	Thorium 232	0.25	±	0.14	J	0.10	5
	24-Jul-00	Uranium 234	0.39	±	0.16	J	0.07	
	24-Jul-00	Uranium 235	0.03	±	0.05	UJ	0.09	
	24-Jul-00	Uranium 238	0.42	±	0.16	J	0.03	
	24-Jul-00	Total uranium	0.84					100
SWSD005	20-Jul-00	Radium 226	-1.21	±	0.19	R	0.14	5
	20-Jul-00	Radium 228	2.64	±	0.52	J	0.62	5
	20-Jul-00	Thorium 228	1.50	±	0.56		0.28	
	20-Jul-00	Thorium 230	0.65	±	0.28	J	0.14	5
	20-Jul-00	Thorium 232	1.73	±	0.61		0.12	5
	20-Jul-00	Uranium 234	1.06	±	0.31		0.07	
	20-Jul-00	Uranium 235	0.04	±	0.05	UJ	0.07	
	20-Jul-00	Uranium 238	0.69	±	0.23	J	0.09	
	20-Jul-00	Total uranium	1.79					100
SWSD005 Duplicate	20-Jul-00	Radium 226	-0.72	±	0.11	R	0.15	5
	20-Jul-00	Radium 228	2.39	±	0.50	J	0.59	5
	20-Jul-00	Thorium 228	1.70	±	0.56		0.25	
	20-Jul-00	Thorium 230	0.64	±	0.31	J	0.12	5
	20-Jul-00	Thorium 232	1.70	±	0.55		0.10	5
	20-Jul-00	Uranium 234	0.53	±	0.19	J	0.09	
	20-Jul-00	Uranium 235	0.01	±	0.03	U	0.07	
	20-Jul-00	Uranium 238	0.77	±	0.25	J	0.06	
	20-Jul-00	Total uranium	1.31					100

Table 6
2000 Sediment Analytical Results - Radioactive Constituents
Maywood Interim Storage Site - July 2000

SWSD006	20-Jul-00	Radium 226	0.64	±	0.19	J	0.17	5
	20-Jul-00	Radium 228	0.09	±	0.32	UJ	0.56	5
	20-Jul-00	Thorium 228	0.39	±	0.20	J	0.20	
	20-Jul-00	Thorium 230	0.27	±	0.16	J	0.11	5
	20-Jul-00	Thorium 232	0.33	±	0.17	J	0.08	5
	20-Jul-00	Uranium 234	0.30	±	0.14	J	0.09	
	20-Jul-00	Uranium 235	-0.01	±	0.01	U	0.09	
	20-Jul-00	Uranium 238	0.40	±	0.17	J	0.06	
	20-Jul-00	Total uranium	0.69					100
SWSD007	20-Jul-00	Radium 226	-0.07	±	0.01	R	0.18	5
	20-Jul-00	Radium 228	1.42	±	0.40	J	0.55	5
	20-Jul-00	Thorium 228	1.75	±	0.70	J	0.39	
	20-Jul-00	Thorium 230	0.51	±	0.30	J	0.09	5
	20-Jul-00	Thorium 232	1.43	±	0.59	J	0.09	5
	20-Jul-00	Uranium 234	0.90	±	0.28	J	0.10	
	20-Jul-00	Uranium 235	0.05	±	0.06	UJ	0.07	
	20-Jul-00	Uranium 238	0.62	±	0.21	J	0.03	
	20-Jul-00	Total uranium	1.57					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-A
2000 Sediment Analytical Results - Radioactive Constituents
Maywood Interim Storage Site - October, December 2000

Sampling Location	Date Collected	Analyte	Result[a] (pCi/g)	Error	Qualifier S&W[b]	MDA[c] (pCi/g)	Cleanup Criteria[d] (pCi/g)
sediment samples collected in Lodi Brook:							
LBSED-1	07-Dec-00	Radium-226	10.41	1.4		0.36	5
		Thorium-228	23.58	4.919		0.20	
		Thorium-230	4.48	1.103		0.21	5
		Thorium-232	21.48	4.497		0.21	5
		Uranium-234	6.22	1.38		0.18	
		Uranium-235	0.27	0.1706		0.13	
		Uranium-238	5.76	1.291		0.16	
		Total uranium	12.25				100
LBSED-3	23-Oct-00	Radium-226	1.73	0.5072	J	0.50	5
		Thorium-228	1.32	0.403		0.18	
		Thorium-230	1.17	0.3692	J	0.17	5
		Thorium-232	0.91	0.3099		0.12	5
		Uranium-234	1.59	0.4549		0.20	
		Uranium-235	0.09	0.09076	UJ	0.10	
		Uranium-238	1.09	0.3489		0.15	
		Total uranium	2.77				100
LBSED-4	19-Oct-00	Radium-226	1.84	0.5217	J	0.32	5
		Thorium-228	1.59	0.492		0.19	
		Thorium-230	0.86	0.3296	J	0.22	5
		Thorium-232	1.45	0.4574	J	0.18	5
		Uranium-234	0.78	0.2996	J	0.19	
		Uranium-235	0.05	0.0724	U	0.12	
		Uranium-238	0.88	0.3219		0.18	
		Total uranium	1.71				100
LBSED-4	19-Oct-00	Radium-226	1.4	0.4146		0.3	5
Duplicate[e]		Thorium-228	1.14	0.4171		0.2	
		Thorium-230	1.05	0.4049	J	0.31	5
		Thorium-232	1.34	0.4651	J	0.26	5
		Uranium-234	0.74	0.2894	J	0.19	
		Uranium-235	0.07	0.08765	UJ	0.13	
		Uranium-238	0.54	0.2401		0.19	
		Total uranium	1.35				100
LBSED-6	19-Oct-00	Radium-226	1.2	0.423	J	0.42	5
		Thorium-228	1.18	0.4326		0.2	
		Thorium-230	1.26	0.4475	J	0.14	5
		Thorium-232	0.85	0.3505	J	0.21	5
		Uranium-234	1.52	0.457	J	0.2	
		Uranium-235	0.03	0.07103	U	0.16	
		Uranium-238	0.34	0.1889		0.21	
		Total uranium	1.89				100

Table 6-A
2000 Sediment Analytical Results - Radioactive Constituents
Maywood Interim Storage Site - October, December 2000

Sampling Location	Date Collected	Analyte	Result[a] (pCi/g)	Error	Qualifier S&W[b]	MDA[c] (pCi/g)	Cleanup Criteria[d] (pCi/g)
LBSED-7	19-Oct-00	Radium-226	2.35	0.5965		0.48	5
		Thorium-228	1.44	0.4256		0.16	
		Thorium-230	1.03	0.3413	J	0.17	5
		Thorium-232	0.33	0.1868	J	0.21	5
		Uranium-234	0.77	0.2993	J	0.22	
		Uranium-235	0.02	0.07464	U	0.2	
		Uranium-238	0.51	0.2322		0.17	
		Total uranium	1.30				100
LBSED-8	19-Oct-00	Radium-226	2.51	0.6557		0.36	5
		Thorium-228	0.67	0.2805		0.15	
		Thorium-230	0.8	0.3175	J	0.21	5
		Thorium-232	0.6	0.2601	J	0.13	5
		Uranium-234	1.34	0.4449	J	0.18	
		Uranium-235	0.19	0.1536		0.13	
		Uranium-238	0.72	0.2988		0.18	
		Total uranium	2.25				100
Sediment samples collected in Westerly brook:							
WBSED-1	23-Oct-00	Radium-226	1.17	0.4481		0.5	5
		Thorium-228	0.8	0.3982		0.22	
		Thorium-230	1.18	0.5081		0.26	5
		Thorium-232	0.59	0.3345		0.27	5
		Uranium-234	1.19	0.4251		0.29	
		Uranium-235	0.03	0.08832		0.22	
		Uranium-238	0.95	0.3655		0.25	
		Total uranium	2.17				100
WBSED-2	23-Oct-00	Radium-226	2.83	0.7473	J	0.43	5
		Thorium-228	0.8	0.3399		0.21	
		Thorium-230	1.18	0.4299	J	0.21	5
		Thorium-232	0.47	0.2457		0.18	5
		Uranium-234	1.3	0.4196	J	0.2	
		Uranium-235	0.14	0.1269	J	0.14	
		Uranium-238	1.22	0.4011		0.18	
		Total uranium	2.66				100
WBSED-4	23-Oct-00	Radium-226	1.2	0.4653	J	0.48	5
		Thorium-228	0.54	0.3582		0.4	
		Thorium-230	1.14	0.54	J	0.44	5
		Thorium-232	0.59	0.3562		0.29	5
		Uranium-234	1.3	0.6281	J	0.47	
		Uranium-235	0.12	0.2229	U	0.46	
		Uranium-238	1.41	0.6466	J	0.35	
		Total uranium	2.83				100

Table 6-A
2000 Sediment Analytical Results - Radioactive Constituents
Maywood Interim Storage Site - October, December 2000

Sampling Location	Date Collected	Analyte	Result[a] (pCi/g)	Error	Qualifier S&W[b]	MDA[c] (pCi/g)	Cleanup Criteria[d] (pCi/g)
WBSED-5	24-Oct-00	Radium-226	1.74	0.5599	J	0.34	5
		Thorium-228	0.53	0.2156	J	0.14	
		Thorium-230	1.29	0.3769		0.13	5
		Thorium-232	0.73	0.2598		0.15	5
		Uranium-234	0.7	0.2737	J	0.16	
		Uranium-235	0.01	0.04959	U	0.14	
		Uranium-238	0.73	0.281		0.17	
		Total uranium	1.44				100

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

[b] S&W 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-B
2000 Sediment Analytical Results - Metals
Maywood Interim Storage Site - October, December 2000

Sampling Location	Date Collected	Detected Analyte[a]	Result: (mg/kg)	Data Qualifier[b] S&W	Reporting Limits (mg/kg)	State Proposed Criteria[c] (mg/kg)	Lowest Effects Level (LEL) (mg/kg)	Severe Effects Level (SEL) (mg/kg)
LBSED-1	08-Dec-00	Aluminum, Total	7510		4.1	NE		
(nonresidential)	08-Dec-00	Antimony, Total	0.42	J	0.42	340		
	08-Dec-00	Arsenic, Total	30.5		0.43	20	6	33
	08-Dec-00	Barium, Total	132		0.04	47000		
	08-Dec-00	Beryllium, Total	0.57	U	0.02	1		
	08-Dec-00	Boron, Total	79.8		0.49	NE		
	08-Dec-00	Cadmium, Total	0.89		0.05	100	0.6	10
	08-Dec-00	Calcium, Total	14300		3.5	NE		
	08-Dec-00	Cerium, Total	758		6.4	NE		
	08-Dec-00	Chromium, Total	191		0.11	NE	26	110
	08-Dec-00	Cobalt, Total	3		0.16	NE		
	08-Dec-00	Copper, Total	96		0.16	600	16	110
	08-Dec-00	Dysprosium, Total	3.9		0.56	NE		
	08-Dec-00	Iron, Total	10400		3.9	NE		
	08-Dec-00	Lanthanum, Total	355		6.1	NE		
	08-Dec-00	Lead, Total	354	J	0.38	600	31	250
	08-Dec-00	Lithium, Total	94.6		0.04	NE		
	08-Dec-00	Magnesium, Total	1400		1.2	NE		
	08-Dec-00	Manganese, Total	94.4		0.04	NE		
	08-Dec-00	Mercury, Total	0.29	U	0.03	270		
	08-Dec-00	Neodymium, Total	301		2.4	NE		
	08-Dec-00	Nickel, Total	13.6		0.16	2400	16	75
	08-Dec-00	Potassium, Total	454		7.4	NE		
	08-Dec-00	Selenium, Total	0.6	U	0.60	3100		
	08-Dec-00	Silver, Total	0.45	U	0.45	4100		
	08-Dec-00	Sodium, Total	3840		0.74	NE		
	08-Dec-00	Thallium, Total	0.72	U	0.72	2		
	08-Dec-00	Vanadium, Total	21.4		0.14	7100		
	08-Dec-00	Yttrium, Total	11		0.34	NE		
	08-Dec-00	Zinc, Total	226		0.07	1500	120	820
LBSED-3	23-Oct-00	Aluminum, Total	3020		1.1	NE		
(nonresidential)	23-Oct-00	Antimony, Total	0.27	U	0.22	340		
	23-Oct-00	Arsenic, Total	1		0.36	20	6	33
	23-Oct-00	Barium, Total	40.7		0.02	47000		
	23-Oct-00	Beryllium, Total	0.27		0.01	1		
	23-Oct-00	Boron, Total	10.6	UJ	0.22	NE		
	23-Oct-00	Cadmium, Total	0.32		0.03	100	0.6	10
	23-Oct-00	Calcium, Total	8340		0.93	NE		
	23-Oct-00	Cerium, Total	16.7		3.8	NE		
	23-Oct-00	Chromium, Total	18.2	J	0.09	NE	26	110
	23-Oct-00	Cobalt, Total	3.3		0.08	NE		
	23-Oct-00	Copper, Total	70.9	R	0.08	600	16	110
	23-Oct-00	Dysprosium, Total	0.77		0.33	NE		
	23-Oct-00	Iron, Total	9330		1.7	NE		
	23-Oct-00	Lanthanum, Total	13.8		3.6	NE		
	23-Oct-00	Lead, Total	33.8		0.22	600	31	250
	23-Oct-00	Lithium, Total	3.6	J	0.02	NE		
	23-Oct-00	Magnesium, Total	5020	J	0.82	NE		
	23-Oct-00	Manganese, Total	138	J	0.02	NE		
	23-Oct-00	Mercury, Total	0.11		0.02	270		
	23-Oct-00	Neodymium, Total	8.3		1.4	NE		
	23-Oct-00	Nickel, Total	11.4		0.13	2400	16	75
	23-Oct-00	Potassium, Total	233		3.1	NE		
	23-Oct-00	Selenium, Total	0.39	U	0.45	3100		
	23-Oct-00	Silver, Total	0.14	U	0.12	4100		
	23-Oct-00	Sodium, Total	273		0.4	NE		
	23-Oct-00	Thallium, Total	0.42	U	0.38	2		
	23-Oct-00	Vanadium, Total	12.5	J	0.09	7100		
	23-Oct-00	Yttrium, Total	3.5		0.2	NE		
	23-Oct-00	Zinc, Total	108		0.04	1500	120	820

Table 6-B
2000 Sediment Analytical Results - Metals
Maywood Interim Storage Site - October, December 2000

Sampling Location	Date Collected	Detected Analyte[a]	Result: (mg/kg)	Data Qualifier[b] S&W	Reporting Limits (mg/kg)	State Proposed Criteria[c] (mg/kg)	Lowest Effects Level (LEL) (mg/kg)	Severe Effects Level (SEL) (mg/kg)
LBSED-4	19-Oct-00	Aluminum, Total	3860		1.2	NE		
(nonresidential)	19-Oct-00	Antimony, Total	0.43	J	0.24	340		
	19-Oct-00	Arsenic, Total	3.4	J	0.39	20	6	33
	19-Oct-00	Barium, Total	103	J	0.02	47000		
	19-Oct-00	Beryllium, Total	0.26	J	0.01	1		
	19-Oct-00	Boron, Total	10.1	J	0.24	NE		
	19-Oct-00	Cadmium, Total	0.42		0.03	100	0.6	10
	19-Oct-00	Calcium, Total	7890	J	1	NE		
	19-Oct-00	Cerium, Total	20.3		4.1	NE		
	19-Oct-00	Chromium, Total	81	J	0.1	NE	26	110
	19-Oct-00	Cobalt, Total	4.1		0.09	NE		
	19-Oct-00	Copper, Total	47.7	R	0.09	600	16	110
	19-Oct-00	Dysprosium, Total	1.2		0.36	NE		
	19-Oct-00	Iron, Total	15400		1.9	NE		
	19-Oct-00	Lanthanum, Total	26.1		3.9	NE		
	19-Oct-00	Lead, Total	229	J	0.24	600	31	250
	19-Oct-00	Lithium, Total	7	J	0.02	NE		
	19-Oct-00	Magnesium, Total	3730	J	0.9	NE		
	19-Oct-00	Manganese, Total	524		0.02	NE		
	19-Oct-00	Mercury, Total	0.08		0.02	270		
	19-Oct-00	Neodymium, Total	8.9		1.5	NE		
	19-Oct-00	Nickel, Total	12.1		0.14	2400	16	75
	19-Oct-00	Potassium, Total	411		3.5	NE		
	19-Oct-00	Selenium, Total	0.47		0.5	3100		
	19-Oct-00	Silver, Total	0.13		0.13	4100		
	19-Oct-00	Sodium, Total	220		0.44	NE		
	19-Oct-00	Thallium, Total	0.46		0.46	2		
	19-Oct-00	Vanadium, Total	15.5		0.1	7100		
	19-Oct-00	Yttrium, Total	4.6		0.22	NE		
	19-Oct-00	Zinc, Total	179		0.05	1500	120	820
LBSED-4	19-Oct-00	Aluminum, Total	3500		1.3	NE		
Duplicate[d]	19-Oct-00	Antimony, Total	0.29	U	0.29	340		
	19-Oct-00	Arsenic, Total	2.8	J	0.43	20	6	33
	19-Oct-00	Barium, Total	119	J	0.03	47000		
	19-Oct-00	Beryllium, Total	0.22	J	0.01	1		
	19-Oct-00	Boron, Total	17.6	J	0.27	NE		
	19-Oct-00	Cadmium, Total	0.54		0.04	100	0.6	10
	19-Oct-00	Calcium, Total	6920	J	1.1	NE		
	19-Oct-00	Cerium, Total	20		4.5	NE		
	19-Oct-00	Chromium, Total	45.3		0.11	NE	26	110
	19-Oct-00	Cobalt, Total	3.8		0.1	NE		
	19-Oct-00	Copper, Total	70.3		0.1	600	16	110
	19-Oct-00	Dysprosium, Total	0.81		0.39	NE		
	19-Oct-00	Iron, Total	14200		2.1	NE		
	19-Oct-00	Lanthanum, Total	20.4		4.3	NE		
	19-Oct-00	Lead, Total	57.7	J	0.27	600	31	250
	19-Oct-00	Lithium, Total	6.2		0.03	NE		
	19-Oct-00	Magnesium, Total	2930	J	0.99	NE		
	19-Oct-00	Manganese, Total	305		0.03	NE		
	19-Oct-00	Mercury, Total	0.07		0.02	270		
	19-Oct-00	Neodymium, Total	10.1		1.7	NE		
	19-Oct-00	Nickel, Total	11.6		0.15	2400	16	75
	19-Oct-00	Potassium, Total	399		3.8	NE		
	19-Oct-00	Selenium, Total	0.42		0.42	3100		
	19-Oct-00	Silver, Total	0.18	U	0.14	4100		
	19-Oct-00	Sodium, Total	328	J	0.48	NE		
	19-Oct-00	Thallium, Total	0.51		0.51	2		
	19-Oct-00	Vanadium, Total	15.2		0.11	7100		
	19-Oct-00	Yttrium, Total	3.7		0.24	NE		
	19-Oct-00	Zinc, Total	211	J	0.05	1500	120	820

Table 6-B
2000 Sediment Analytical Results - Metals
Maywood Interim Storage Site - October, December 2000

Sampling Location	Date Collected	Detected Analyte[a]	Result: (mg/kg)	Data Qualifier[b] S&W	Reporting Limits (mg/kg)	State Proposed Criteria[c] (mg/kg)	Lowest Effects Level (LEL) (mg/kg)	Severe Effects Level (SEL) (mg/kg)
LBSED-6	19-Oct-00	Aluminum, Total	3630		1.2	NE		
(residential)	19-Oct-00	Antimony, Total	2.6	J	0.24	14		
	19-Oct-00	Arsenic, Total	4.8	J	0.4	20	6	33
	19-Oct-00	Barium, Total	88.3	J	0.02	700		
	19-Oct-00	Beryllium, Total	0.78	J	0.01	1		
	19-Oct-00	Boron, Total	7.5	J	0.24	NE		
	19-Oct-00	Cadmium, Total	0.37		0.03	1	0.6	10
	19-Oct-00	Calcium, Total	21900	J	1	NE		
	19-Oct-00	Cerium, Total	23.8		4.1	NE		
	19-Oct-00	Chromium, Total	28.2	J	0.1	NE	26	110
	19-Oct-00	Cobalt, Total	8		0.09	NE		
	19-Oct-00	Copper, Total	96.3	R	0.09	600	16	110
	19-Oct-00	Dysprosium, Total	1.4		0.36	NE		
	19-Oct-00	Iron, Total	24200		1.9	NE		
	19-Oct-00	Lanthanum, Total	14.5		3.9	NE		
	19-Oct-00	Lead, Total	199	J	0.24	400	31	250
	19-Oct-00	Lithium, Total	6		0.02	NE		
	19-Oct-00	Magnesium, Total	3260	J	0.91	NE		
	19-Oct-00	Manganese, Total	410		0.02	NE		
	19-Oct-00	Mercury, Total	0.07		0.02	14		
	19-Oct-00	Neodymium, Total	11.6		1.5	NE		
	19-Oct-00	Nickel, Total	23.9		0.14	250	16	75
	19-Oct-00	Potassium, Total	407		3.5	NE		
	19-Oct-00	Selenium, Total	0.38	U	0.38	63		
	19-Oct-00	Silver, Total	0.13	U	0.13	110		
	19-Oct-00	Sodium, Total	545	J	0.44	NE		
	19-Oct-00	Thallium, Total	0.47	U	0.47	2		
	19-Oct-00	Vanadium, Total	16.4		0.1	370		
	19-Oct-00	Yttrium, Total	6.8		0.22	NE		
	19-Oct-00	Zinc, Total	621	J	0.05	1500	120	820
LBSED-7	19-Oct-00	Aluminum, Total	3770		1.2	NE		
(residential)	19-Oct-00	Antimony, Total	4.8	J	0.24	14		
	19-Oct-00	Arsenic, Total	3.9	J	0.39	20	6	33
	19-Oct-00	Barium, Total	59.8	J	0.02	700		
	19-Oct-00	Beryllium, Total	0.66	J	0.01	1		
	19-Oct-00	Boron, Total	16.3	J	0.24	NE		
	19-Oct-00	Cadmium, Total	0.27		0.03	1	0.6	10
	19-Oct-00	Calcium, Total	12900	J	1	NE		
	19-Oct-00	Cerium, Total	16		4.1	NE		
	19-Oct-00	Chromium, Total	21		0.1	NE	26	110
	19-Oct-00	Cobalt, Total	16.6		0.09	NE		
	19-Oct-00	Copper, Total	222	R	0.09	600	16	110
	19-Oct-00	Dysprosium, Total	1.4		0.36	NE		
	19-Oct-00	Iron, Total	30000		1.9	NE		
	19-Oct-00	Lanthanum, Total	6.6		3.9	NE		
	19-Oct-00	Lead, Total	427	J	0.24	400	31	250
	19-Oct-00	Lithium, Total	5.9		0.02	NE		
	19-Oct-00	Magnesium, Total	7240	J	0.9	NE		
	19-Oct-00	Manganese, Total	448		0.02	NE		
	19-Oct-00	Mercury, Total	0.07		0.02	14		
	19-Oct-00	Neodymium, Total	8.2		1.5	NE		
	19-Oct-00	Nickel, Total	61		0.14	250	16	75
	19-Oct-00	Potassium, Total	360		3.5	NE		
	19-Oct-00	Selenium, Total	0.38		0.38	63		
	19-Oct-00	Silver, Total	0.14	U	0.13	110		
	19-Oct-00	Sodium, Total	376	J	0.44	NE		
	19-Oct-00	Thallium, Total	0.46		0.46	2		
	19-Oct-00	Vanadium, Total	18.8		0.1	370		
	19-Oct-00	Yttrium, Total	5.5		0.22	NE		
	19-Oct-00	Zinc, Total	1020	J	0.05	1500	120	820

Table 6-B
2000 Sediment Analytical Results - Metals
Maywood Interim Storage Site - October, December 2000

Sampling Location	Date Collected	Detected Analyte[a]	Result: (mg/kg)	Data Qualifier[b] S&W	Reporting Limits (mg/kg)	State Proposed Criteria[c] (mg/kg)	Lowest Effects Level (LEL) (mg/kg)	Severe Effects Level (SEL) (mg/kg)
LBSED-8	19-Oct-00	Aluminum, Total	4570		1.1	NE		
(residential)	19-Oct-00	Antimony, Total	0.7	J	0.21	14		
	19-Oct-00	Arsenic, Total	4.7	J	0.35	20	6	33
	19-Oct-00	Barium, Total	95.4	J	0.02	700		
	19-Oct-00	Beryllium, Total	0.55	J	0.01	1		
	19-Oct-00	Boron, Total	12	J	0.21	NE		
	19-Oct-00	Cadmium, Total	0.41		0.03	1	0.6	10
	19-Oct-00	Calcium, Total	13800	J	0.9	NE		
	19-Oct-00	Cerium, Total	7.3		3.6	NE		
	19-Oct-00	Chromium, Total	27.3	J	0.09	NE	26	110
	19-Oct-00	Cobalt, Total	7.5		0.08	NE		
	19-Oct-00	Copper, Total	87.3	R	0.08	600	16	110
	19-Oct-00	Dysprosium, Total	1.1		0.31	NE		
	19-Oct-00	Iron, Total	37300		1.7	NE		
	19-Oct-00	Lanthanum, Total	5.9		3.4	NE		
	19-Oct-00	Lead, Total	128	J	0.21	400	31	250
	19-Oct-00	Lithium, Total	6.4		0.02	NE		
	19-Oct-00	Magnesium, Total	5920	J	0.79	NE		
	19-Oct-00	Manganese, Total	580		0.02	NE		
	19-Oct-00	Mercury, Total	0.04		0.01	14		
	19-Oct-00	Neodymium, Total	5.1		1.3	NE		
	19-Oct-00	Nickel, Total	24.3		0.12	250	16	75
	19-Oct-00	Potassium, Total	329		3	NE		
	19-Oct-00	Selenium, Total	0.33	U	0.33	63		
	19-Oct-00	Silver, Total	0.13	U	0.11	110		
	19-Oct-00	Sodium, Total	636	J	0.39	NE		
	19-Oct-00	Thallium, Total	0.41	U	0.41	2		
	19-Oct-00	Vanadium, Total	20.9		0.09	370		
	19-Oct-00	Yttrium, Total	4.5		0.19	NE		
	19-Oct-00	Zinc, Total	323	J	0.04	1500	120	820
WBSED-1	23-Oct-00	Aluminum, Total	4280		1.2	NE		
(residential)	23-Oct-00	Antimony, Total	0.49		0.25	14		
	23-Oct-00	Arsenic, Total	4.3		0.4	20	6	33
	23-Oct-00	Barium, Total	47.6		0.02	700		
	23-Oct-00	Beryllium, Total	0.46		0.01	1		
	23-Oct-00	Boron, Total	7.3	UJ	0.25	NE		
	23-Oct-00	Cadmium, Total	0.48		0.04	1	0.6	10
	23-Oct-00	Calcium, Total	7710		1	NE		
	23-Oct-00	Chromium, Total	13.6	J	0.11	NE	26	110
	23-Oct-00	Cobalt, Total	5.4	R	0.09	NE		
	23-Oct-00	Copper, Total	97.4		0.09	600	16	110
	23-Oct-00	Iron, Total	12500		1.9	NE		
	23-Oct-00	Lead, Total	88.8		0.25	400	31	250
	23-Oct-00	Lithium, Total	6.9	J	0.02	NE		
	23-Oct-00	Magnesium, Total	2590	J	0.91	NE		
	23-Oct-00	Manganese, Total	207	J	0.02	NE		
	23-Oct-00	Mercury, Total	0.07		0.02	14		
	23-Oct-00	Nickel, Total	17.7		0.14	250	16	75
	23-Oct-00	Potassium, Total	403		3.5	NE		
	23-Oct-00	Selenium, Total	0.51	U	0.5	63		
	23-Oct-00	Silver, Total	0.15	U	0.13	110		
	23-Oct-00	Sodium, Total	185		0.44	NE		
	23-Oct-00	Thallium, Total	0.47		0.42	2		
	23-Oct-00	Vanadium, Total	16.1	J	0.11	370		
	23-Oct-00	Zinc, Total	202		0.05	1500	120	820

Table 6-B
2000 Sediment Analytical Results - Metals
Maywood Interim Storage Site - October, December 2000

Sampling Location	Date Collected	Detected Analyte[a]	Result: (mg/kg)	Data Qualifier[b] S&W	Reporting Limits (mg/kg)	State Proposed Criteria[c] (mg/kg)	Lowest Effects Level (LEL) (mg/kg)	Severe Effects Level (SEL) (mg/kg)
WBSED-2	23-Oct-00	Aluminum, Total	4280		1.2	NE		
(residential)	23-Oct-00	Antimony, Total	0.49		0.25	14		
	23-Oct-00	Arsenic, Total	4.3		0.4	20	6	33
	23-Oct-00	Barium, Total	47.6		0.02	700		
	23-Oct-00	Beryllium, Total	0.46		0.01	1		
	23-Oct-00	Boron, Total	7.3	UJ	0.25	NE		
	23-Oct-00	Cadmium, Total	0.48		0.04	1	0.6	10
	23-Oct-00	Calcium, Total	7710		1	NE		
	23-Oct-00	Chromium, Total	13.6	J	0.11	NE	26	110
	23-Oct-00	Cobalt, Total	5.4		0.09	NE		
	23-Oct-00	Copper, Total	97.4	R	0.09	600	16	110
	23-Oct-00	Iron, Total	12500		1.9	NE		
	23-Oct-00	Lead, Total	88.8		0.25	400	31	250
	23-Oct-00	Lithium, Total	6.9	J	0.02	NE		
	23-Oct-00	Magnesium, Total	2590	J	0.91	NE		
	23-Oct-00	Manganese, Total	207	J	0.02	NE		
	23-Oct-00	Mercury, Total	0.07		0.02	14		
	23-Oct-00	Nickel, Total	17.7		0.14	250	16	75
	23-Oct-00	Potassium, Total	403		3.5	NE		
	23-Oct-00	Selenium, Total	0.51		0.5	63		
	23-Oct-00	Silver, Total	0.15	U	0.13	110		
	23-Oct-00	Sodium, Total	185		0.44	NE		
	23-Oct-00	Thallium, Total	0.47		0.42	2		
	23-Oct-00	Vanadium, Total	16.1	U	0.11	370		
	23-Oct-00	Zinc, Total	202		0.05	1500	120	820
WBSED-4	23-Oct-00	Aluminum, Total	2930		1.2	NE		
(nonresidential)	23-Oct-00	Antimony, Total	0.61		0.23	340		
	23-Oct-00	Arsenic, Total	1.9		0.38	20	6	33
	23-Oct-00	Barium, Total	31.3		0.02	47000		
	23-Oct-00	Beryllium, Total	0.3		0.01	1		
	23-Oct-00	Boron, Total	5.1	UJ	0.23	NE		
	23-Oct-00	Cadmium, Total	0.36		0.03	100	0.6	10
	23-Oct-00	Calcium, Total	2310		0.99	NE		
	23-Oct-00	Chromium, Total	9.6	J	0.1	NE	26	110
	23-Oct-00	Cobalt, Total	3.5		0.09	NE		
	23-Oct-00	Copper, Total	210	R	0.09	600	16	110
	23-Oct-00	Iron, Total	8050		1.8	NE		
	23-Oct-00	Lead, Total	50.9		0.23	600	31	250
	23-Oct-00	Lithium, Total	4.1	J	0.02	NE		
	23-Oct-00	Magnesium, Total	1490	J	0.87	NE		
	23-Oct-00	Manganese, Total	62.7	J	0.02	NE		
	23-Oct-00	Mercury, Total	0.03		0.02	270		
	23-Oct-00	Nickel, Total	15.7		0.13	2400	16	75
	23-Oct-00	Potassium, Total	305		3.3	NE		
	23-Oct-00	Selenium, Total	1.6		0.48	NE		
	23-Oct-00	Silver, Total	0.3	U	0.12	4100		
	23-Oct-00	Sodium, Total	162		0.42	NE		
	23-Oct-00	Thallium, Total	0.44		0.4	2		
	23-Oct-00	Vanadium, Total	8.9	J	0.1	7100		
	23-Oct-00	Zinc, Total	154		0.04	1500	120	820

Table 6-B
2000 Sediment Analytical Results - Metals
Maywood Interim Storage Site - October, December 2000

Sampling Location	Date Collected	Detected Analyte[a]	Result: (mg/kg)	Data Qualifier[b] S&W	Reporting Limits (mg/kg)	State Proposed Criteria[c] (mg/kg)	Lowest Effects Level (LEL) (mg/kg)	Severe Effects Level (SEL) (mg/kg)
WBSED-5	24-Oct-00	Aluminum, Total	2990		1.2			
(nonresidential)	24-Oct-00	Antimony, Total	0.59		0.23	340		
	24-Oct-00	Arsenic, Total	3.6		0.38	20	6	33
	24-Oct-00	Barium, Total	71.1		0.02	47000		
	24-Oct-00	Boron, Total	7.1	UJ	0.23	NE		
	24-Oct-00	Calcium, Total	3550	J	1	NE		
	24-Oct-00	Chromium, Total	9.7		0.1	NE	26	110
	24-Oct-00	Cobalt, Total	3.2		0.09	NE		
	24-Oct-00	Copper, Total	31.7		0.09	600	16	110
	24-Oct-00	Iron, Total	8180		1.8	NE		
	24-Oct-00	Lead, Total	93.3		0.23	600	31	250
	24-Oct-00	Lithium, Total	5.8		0.02	NE		
	24-Oct-00	Magnesium, Total	2060	J	0.87	NE		
	24-Oct-00	Manganese, Total	83.3	J	0.02	NE		
	24-Oct-00	Mercury, Total	0.05	J	0.02	270		
	24-Oct-00	Nickel, Total	11.1		0.13	2400	16	75
	24-Oct-00	Potassium, Total	338		3.3	NE		
	24-Oct-00	Selenium, Total	0.39		0.48	3100		
	24-Oct-00	Silver, Total	1.1		0.12	4100		
	24-Oct-00	Sodium, Total	160		0.42	NE		
	24-Oct-00	Thallium, Total	0.45	U	0.4	2		
	24-Oct-00	Vanadium, Total	10.5	J	0.1	7100		
	24-Oct-00	Zinc, Total	158		0.04	1500	120	820

[a] Only the analytes that were detected are reported. Shaded results indicate reported value exceeds criteria.
[b] S&W 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 loc
[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.
NE= Not established.

TABLE 7
DEPTH TO GROUNDWATER AND GROUNDWATER ELEVATIONS FOR OVERBURDEN MONITORING WELLS
JANUARY THROUGH NOVEMBER 2000

MAYWOOD FUSRAP SUPERFUND SITE,

MAYWOOD, NJ

Well Name	Northing	Easting	Elevation TOR (ft MSL)	Piezometric Elevation (ft MSL)	DTW Below Ground Surface (ft)	DTW Below TOR (ft)	Piezometric Elevation (ft MSL)	DTW Below TOR (ft)	DTW Below TOR (ft)	Groundwater Elevation (ft MSL)
MISS01AA	752963.64	2164101.98	62.70	60.50	14.58	16.78	45.92	12.72	14.92	47.78
MISS02A	752788.00	2164706.13	61.47	60.56	8.79	9.70	51.77	8.79	9.70	51.77
MISS03A	752302.00	2164437.77	58.52	56.56	7.10	9.06	49.46	6.36	8.32	50.20
MISS04A	752109.73	2164349.46	57.17	55.36	8.60	10.41	46.76	7.74	9.55	47.62
MISS05A	752360.40	2164044.20	58.65	57.86	13.07	13.86	44.79	12.21	13.00	45.65
MISS06A	752645.21	2164224.78	58.26	57.07	7.05	8.24	50.02	6.86	8.05	50.21
MISS07A	752657.57	2164053.10	55.60	53.52	6.12	8.20	47.40	6.63	8.71	46.89
B38W01S	752836.02	2164805.24	60.72	57.55	3.06	6.23	54.49	3.03	6.20	54.52
B38W12A	750774.61	2165389.50	50.10	47.23	3.77	6.64	43.46	3.38	6.25	43.85
B38W14S	752600.98	2163384.82	43.89	44.18	NG	NG	NA	5.18	4.89	39.00
B38W15S	752365.46	2163471.15	45.70	46.24	6.72	6.18	39.52	6.34	5.80	39.90
B38W17A	752019.80	2163922.90	53.24	50.70	6.53	9.07	44.17	6.53	9.07	44.17
B38W19S	752513.62	2164049.13	59.91	57.48	13.17	15.60	44.31	13.17	15.60	44.31
B38W24S	752193.57	2164291.43	55.04	55.38	9.85	9.51	45.53	9.85	9.51	45.53
B38W25S	752512.97	2164346.37	57.44	55.67	4.24	6.01	51.43	4.24	6.01	51.43

Min. GW Elv. (ft MSL)	39.52		Min. GW Elv. (ft MSL)	39.00
Max. GW Elv. (ft MSL)	54.49		Max. GW Elv. (ft MSL)	54.52

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 7
DEPTH TO GROUNDWATER AND GROUNDWATER ELEVATIONS FOR OVERBURDEN MONITORING WELLS
JANUARY THROUGH NOVEMBER 2000

MAYWOOD FUSRAP SUPERFUND SITE,

MAYWOOD, NJ

Well Name	DTW Below Ground Surface (ft)	DTW Below TOR (ft)	Piezometric Elevation (ft MSL)	DTW Below Ground Surface (ft)	DTW Below TOR (ft)	Piezometric Elevation (ft MSL)	DTW Below Ground Surface (ft)	DTW Below TOR (ft)	Piezometric Elevation (ft MSL)	Minimum Water Level Elevation (ft MSL) - Synoptic Gauging Year 2000	Maximum Water Level Elevation (ft MSL) - Synoptic Gauging Year 2000	Water Level Fluctuation (ft)
MISS01AA	12.16	14.36	48.34	12.31	14.51	48.19	NG	NG	NA	45.92	48.34	2.42
MISS02A	7.74	8.65	52.82	6.42	7.33	54.14	7.39	8.30	53.17	51.77	54.14	2.37
MISS03A	5.44	7.40	51.12	4.89	6.85	51.67	5.44	7.40	51.12	49.46	51.67	2.21
MISS04A	6.64	8.45	48.72	9.66	11.47	45.70	6.01	7.82	49.35	45.70	49.35	3.65
MISS05A	11.45	12.24	46.41	10.64	11.43	47.22	9.53	10.32	48.33	44.79	48.33	3.54
MISS06A	8.58	9.77	48.49	7.08	8.27	49.99	9.14	10.33	47.93	47.93	50.21	2.28
MISS07A	6.32	8.40	47.20	6.07	8.15	47.45	6.42	8.50	47.10	46.89	47.45	0.56
B38W01S	2.49	5.66	55.06	2.34	5.51	55.21	2.69	5.86	54.86	54.49	55.21	0.72
B38W12A	2.57	5.44	44.66	2.46	5.33	44.77	2.91	5.78	44.32	43.46	44.77	1.31
B38W14S	4.74	4.45	39.44	NG	NG	N/A	NG	NG	NA	39.00	39.44	0.44
B38W15S	5.84	5.30	40.40	NG	NG	N/A	NG	NG	NA	39.52	40.40	0.88
B38W17A	5.72	8.26	44.98	5.42	7.96	45.28	6.11	8.65	44.59	44.17	45.28	1.11
B38W19S	12.59	15.02	44.89	12.31	14.74	45.17	12.87	15.30	44.61	44.31	45.17	0.86
B38W24S	9.36	9.02	46.02	7.99	7.65	47.39	9.49	9.15	45.89	45.53	47.39	1.86
B38W25S	4.15	5.92	51.52	4.19	5.96	51.48	5.23	7.00	50.44	50.44	51.52	1.08
Legend		Min. GW Elv. (ft MSL)	39.44		Min. GW Elv. (ft MSL)	44.77		Min. GW Elv. (ft MSL)	44.32	Minimum Water Level Fluctuation - B38W14S (ft)		0.44
		Max. GW Elv. (ft MSL)	55.06		Max. GW Elv. (ft MSL)	55.21		Max. GW Elv. (ft MSL)	54.86	Maximum Water Level Fluctuation - MISS-4A (ft)		3.65

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 8
DEPTH TO GROUNDWATER AND GROUNDWATER ELEVATION FOR BEDROCK MONITORING WELLS
JANUARY THROUGH NOVEMBER 2000
FUSRAP MAYWOOD SUPERFUND SITE
MAYWOOD, NJ

					11/29/00			9/29/00		
Well	Northing	Easting	Elevation TOR (ft MSL)	Ground Surface Elevation (ft MSL)	DTW Below Ground Surface (ft)	DTW Below TOR (ft)	Piezometric Elevation (ft MSL)	DTW Below Ground Surface (ft)	DTW Below TOR (ft)	Piezometric Elevation (ft MSL)
MISS01B	752,964.86	2,164,092.32	61.98	60.42	15.13	16.69	45.29	14.83	16.39	45.59
MISS02B	752,771.91	2,164,709.45	61.64	61.15	8.99	9.48	52.16	10.85	11.34	50.30
MISS03B	752,296.78	2,164,451.46	57.66	56.78	9.18	10.06	47.60	8.82	9.70	47.96
MISS04B	752,096.08	2,164,353.55	56.42	55.38	10.02	11.06	45.36	9.76	10.80	45.62
MISS05B	752,371.68	2,164,044.40	59.76	58.09	14.42	16.09	43.67	13.88	15.55	44.21
MISS07B	752,652.98	2,164,048.77	55.77	53.99	9.44	11.22	44.55	9.12	10.90	44.87
B38W02D	752,558.00	2,165,243.20	67.70	64.75	13.90	16.85	50.85	13.90	16.85	50.85
B38W03B	752,253.19	2,164,513.81	58.27	56.93	8.86	10.20	48.07	8.46	9.80	48.47
B38W04B	752,093.44	2,164,950.21	65.85	63.02	8.77	11.60	54.25	7.32	10.15	55.70
B38W05B	752,175.06	2,165,367.58	71.05	68.18	12.24	15.11	55.94	9.88	12.75	58.30
B38W06B	752,016.47	2,164,670.94	54.41	51.70	7.98	10.69	43.72	7.83	10.54	43.87
B38W07B	751,974.49	2,164,168.36	54.63	52.25	7.44	9.82	44.81	7.12	9.50	45.13
B38W12B	750,766.38	2,165,393.46	49.78	47.53	4.14	6.39	43.39	3.50	5.75	44.03
B38W14D	752,597.24	2,163,391.63	43.79	44.16	NG	NG	NA	4.05	3.68	40.11
B38W15D	752,369.12	2,163,474.42	45.89	46.28	5.75	5.36	40.53	5.19	4.80	41.09
B38W17B	752,021.78	2,163,927.32	53.28	50.68	7.07	9.67	43.61	6.50	9.10	44.18
B38W18D	752,505.39	2,164,783.97	57.85	58.02	4.69	4.52	53.33	5.15	4.98	52.87
B38W19D	752,522.83	2,164,045.10	59.98	57.49	13.78	16.27	43.71	13.31	15.80	44.18
B38W24D	752,193.57	2,164,291.33	54.91	55.29	9.96	9.58	45.33	9.42	9.04	45.87
B38W25D	752,520.38	2,164,353.79	58.24	56.13	4.54	6.65	51.59	4.49	6.60	51.64

Minimum GW Elv.	40.53		Minimum GW Elv.	40.11
Maximum GW Elv.	55.94		Maximum GW Elv.	58.30

Legend

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

TABLE 8
DEPTH TO GROUNDWATER AND GROUNDWATER ELEVATION FOR BEDROCK MONITORING WELLS
JANUARY THROUGH NOVEMBER 2000
FUSRAP MAYWOOD SUPERFUND SITE
MAYWOOD, NJ

	6/12/2000			3/27/00			1/19/00			Water Level Trend		
Well	DTW Below Ground Surface (ft)	DTW Below TOR (ft)	Piezometric Elevation (ft MSL)	DTW Below Ground Surface (ft)	DTW Below TOR (ft)	Piezometric Elevation (ft MSL)	DTW Below Ground Surface (ft)	DTW Below TOR (ft)	Piezometric Elevation (ft MSL)	Minimum Water Level Elevation (ft MSL) - Synoptic Year 2000	Maximum Water Level Elevation (ft MSL) - Synoptic Year 2000	Water Level Fluctuation (ft)
MISS01B	14.21	15.77	46.21	14.57	16.13	45.85	14.47	16.03	45.95	45.29	46.21	0.92
MISS02B	10.28	10.77	50.87	10.01	10.50	51.14	10.41	10.90	50.74	50.30	52.16	1.86
MISS03B	8.02	8.90	48.76	7.94	8.82	48.84	8.42	9.30	48.36	47.60	48.84	1.24
MISS04B	9.01	10.05	46.37	8.72	9.76	46.66	NG	NG	N/A	45.36	46.66	1.30
MISS05B	13.23	14.90	44.86	12.99	14.66	45.10	13.53	15.20	44.56	43.67	45.10	1.43
MISS07B	8.44	10.22	45.55	8.40	10.18	45.59	8.77	10.55	45.22	44.55	45.59	1.04
B38W02D	11.67	14.62	53.08	11.73	14.68	53.02	12.60	15.55	52.15	50.85	53.08	2.23
B38W03B	7.51	8.85	49.42	7.41	8.75	49.52	8.00	9.34	48.93	48.07	49.52	1.45
B38W04B	5.87	8.70	57.15	6.07	8.90	56.95	6.87	9.70	56.15	54.25	57.15	2.90
B38W05B	7.33	10.20	60.85	6.86	9.73	61.32	8.60	11.47	59.58	55.94	61.32	5.38
B38W06B	6.69	9.40	45.01	NG	NG	NG	NG	NG	N/A	43.72	45.01	1.29
B38W07B	6.22	8.60	46.03	5.65	8.03	46.60	6.34	8.72	45.91	44.81	46.60	1.79
B38W12B	2.59	4.84	44.94	2.57	4.82	44.96	3.05	5.30	44.48	43.39	44.96	1.57
B38W14D	4.37	4.00	39.79	NG	NG	N/A	NG	NG	N/A	39.79	40.11	0.32
B38W15D	5.06	4.67	41.22	NG	NG	N/A	NG	NG	N/A	40.53	41.22	0.69
B38W17B	5.72	8.32	44.96	5.48	8.08	45.20	6.15	8.75	44.53	43.61	45.20	1.59
B38W18D	3.57	3.40	54.45	3.58	3.41	54.44	4.12	3.95	53.90	52.87	54.45	1.58
B38W19D	12.75	15.24	44.74	12.41	14.90	45.08	13.09	15.58	44.40	43.71	45.08	1.37
B38W24D	8.83	8.45	46.46	8.31	7.93	46.98	8.93	8.55	46.36	45.33	46.98	1.65
B38W25D	4.29	6.40	51.84	4.27	6.38	51.86	5.79	7.90	50.34	50.34	51.86	1.52

	Minimum GW Elv.	39.79		Minimum GW Elv.	44.96		Minimum GW Elv.	44.40	Minimum Water Level Fluctuation - B38W14D (ft)	0.32
	Maximum GW Elv.	60.85		Maximum GW Elv.	61.32		Maximum GW Elv.	59.58	Maximum Water Level Fluctuation - B38W05B (ft)	5.38

Legend

TOR - Top of Riser
DTW - Depth to Water
BGS - Below Ground Su
ft - feet
MSL - Mean Sea Level
NG - Not Gauged
N/A - Not Applicable

TABLE 9

VERTICAL GRADIENT CALCULATIONS
FOR MONITORING WELL CLUSTERS

MAYWOOD FUSRAP SUPERFUND SITE
MAYWOOD, NJ

Well	11/29/2000 Groundwater Elevation (ft MSL)	09/29/2000 Groundwater Elevation (ft MSL)	06/12/2000 Groundwater Elevation (ft MSL)	03/27/2000 Groundwater Elevation (ft MSL)	01/19/2000 Groundwater Elevation (ft MSL)
ON-SITE MISS WELLS					
MISS01AA	45.92	47.78	48.34	48.19	NG
MISS01B	45.29	45.59	46.21	45.85	45.95
Hydraulic Head Difference (ft)	0.63	2.19	2.13	2.34	N/A
Gradient Direction	Downward	Downward	Downward	Downward	N/A
MISS02A	51.77	51.77	52.82	54.14	53.17
MISS02B	52.16	50.30	50.87	51.14	50.74
Hydraulic Head Difference (ft)	-0.39	1.47	1.95	3.00	2.43
Gradient Direction	Upward	Downward	Downward	Downward	Downward
MISS03A	49.46	50.20	51.12	51.67	51.12
MISS03B	47.60	47.96	48.76	48.84	48.36
Hydraulic Head Difference (ft)	1.86	2.24	2.36	2.83	2.76
Gradient Direction	Downward	Downward	Downward	Downward	Downward
MISS04A	46.76	47.62	48.72	45.70	49.35
MISS04B	45.36	45.62	46.37	46.66	NG
Hydraulic Head Difference	1.40	2.00	2.35	-0.96	N/A
Gradient Direction	Downward	Downward	Downward	Upward	N/A
MISS05A	44.79	45.65	46.41	47.22	48.33
MISS05B	43.67	44.21	44.86	45.10	44.56
Hydraulic Head Difference (ft)	1.12	1.44	1.55	2.12	3.77
Gradient Direction	Downward	Downward	Downward	Downward	Downward
MISS07A	47.40	46.89	47.20	47.45	47.10
MISS07B	44.55	44.87	45.55	45.59	45.22
Hydraulic Head Difference (ft)	2.85	2.02	1.65	1.86	1.88
Gradient Direction	Downward	Downward	Downward	Downward	Downward
B38W19S	44.31	44.31	44.89	45.17	44.61
B38W19D	43.71	44.18	44.74	45.08	44.40
Hydraulic Head Difference (ft)	0.60	0.13	0.15	0.09	0.21
Gradient Direction	Downward	Downward	Downward	Downward	Downward
B38W24S	45.53	45.53	46.02	47.39	45.89
B38W24D	45.33	45.87	46.46	46.98	46.36
Hydraulic Head Difference (ft)	0.20	-0.34	-0.44	0.41	-0.47
Gradient Direction	Downward	Upward	Upward	Downward	Upward
B38W25S	51.43	51.43	51.52	51.48	50.44
B38W25D	51.59	51.64	51.84	51.86	50.34
Hydraulic Head Difference (ft)	-0.16	-0.21	-0.32	-0.38	0.10
Gradient Direction	Upward	Upward	Upward	Upward	Downward
OFF-SITE MISS WELLS					
B38W12A	43.46	43.85	44.66	44.77	44.32
B38W12B	43.39	44.03	44.94	44.96	44.48
Hydraulic Head Difference (ft)	0.07	-0.18	-0.28	-0.19	-0.16
Gradient Direction	Horizontal	Upward	Upward	Upward	Upward
B38W14S	NG	39.00	39.44	NG	NG
B38W14D	NG	40.11	39.79	NG	NG
Hydraulic Head Difference (ft)	N/A	-1.11	-0.35	N/A	N/A
Gradient Direction	N/A	Upward	Upward	N/A	Upward
B38W15S	39.52	39.90	40.40	NG	NG
B38W15D	40.53	41.09	41.22	NG	NG
Hydraulic Head Difference (ft)	-1.01	-1.19	-0.82	N/A	N/A
Gradient Direction	Upward	Upward	Upward	N/A	N/A
B38W17A	44.17	44.17	44.98	45.28	44.59
B38W17B	43.61	44.18	44.96	45.20	44.53
Hydraulic Head Difference (ft)	0.56	-0.01	0.02	0.08	0.06
Gradient Direction	Downward	Horizontal	Horizontal	Horizontal	Horizontal

Legend

NG - Not Gauged
N/A - Not Applicable

Positive Hydraulic Head Differences indicate a downward gradient
Negative Hydraulic Head Differences represent an upward gradient

Head Differences less than 0.10 are considered to represent horizontal flow

Table 10
2000 Field Parameter Summary
Maywood Interim Storage Site

Sampling Location	Date	Temp (C)	Spec. Cond.[a] (mS/cm)	pH	Eh (mV)[b]	DO mg/l	Turbidity (NTU)[c]	Discharge (GPM)[e]
GROUNDWATER								
MISS01AA	06/20/00	19.5	2.39	6.99	23	1.65	35	0.05
MISS01B	06/20/00	18.1	0.91	7.04	14	0.25	10	0.08
MISS02A	06/23/00	19.3	4.28	6.52	-162	0.89	5	0.04
MISS02B	06/23/00	17.0	5.84	6.58	-116	.09	15	0.10
MISS05A	07/11/00	--[d]	--[d]	--[d]	--[d]	--[d]	--[d]	--[d]
MISS05B	07/11/00	18.50	1.80	6.93	-150	0.62	57	0.100
MISS06A	07/10/00	26.0	0.93	6.26	88	1.22	136	0.04
MISS07B	07/12/00	17.4	5.0	6.72	-52	0.91	27	0.08
B38W01S	07/18/00	--[f]	--[f]	--[f]	--[f]	--[f]	--[f]	--[f]
B38W02D	07/17/00	16.4	0.504	6.22	135	2.25	11	0.04
B38W14S	07/05/00	20.0	0.769	6.70	15	0.17	3	0.066
B38W14D	07/05/00	17.6	0.857	6.75	51	1.38	10	0.050
B38W15S	06/26/00	19.00	2.30	6.94	-130	0.42	184	0.053
B38W15D	06/26/00	17.50	2.45	7.08	37	0.23	7	0.084
B38W17A	06/19/00	18.1	0.471	6.40	40	1.03	190	0.045
B38W17B	06/19/00	17.1	2.75	6.81	-154	0.47	10	0.069
B38W18D	07/06/00	19.1	1.03	5.64	33	0.08	28	0.070
B38W19S	07/12/00	--[d]	--[d]	--[d]	--[d]	--[d]	--[d]	--[d]
B38W19D	07/12/00	18.4	3.69	6.40	-146	0.01	10	0.082
B38W24S	06/21/00	27.6	0.525	5.78	19	0.53	41	0.074
B38W24D	06/22/00	22.0	0.90	5.94	-93	0.15	61	0.053
B38W25S	07/07/00	20.3	1.38	6.39	-56	1.8	30	0.050
B38W25D	07/07/00	19.5	0.96	6.44	-134	0.56	10	0.069

Table 10 (continued)
2000 Field Parameter Summary
Maywood Interim Storage Site

Sampling Location	Date	Temp (C)	Spec. Cond.[a] (mS/cm)	pH	Eh (mV)[b]	DO mg/l	Turbidity (NTU)[c]	Discharge (GPM)[e]
SURFACE WATER	2nd quarter							
SWSD001	07/24/00	23.5	1.0	7.60	107	8.55	2.0	--[g]
SWSD002	07/24/00	18.5	103	7.34	84	10.29	2	--[g]
SWSD003	07/20/00	18.6	0.524	7.13	133	10.95	3	--[g]
SWSD005	07/20/00	23.8	0.732	7.22	105	7.73	7	--[g]
SWSD006	07/20/00	19.8	0.758	7.27	433	10.51	0.0	--[g]
SWSD007	07/20/00	19.5	0.752	7.31	113	10.13	7	--[g]

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

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

[c] Nephelometric turbidity units.

[d] Well is dry.

[e] Gallons per Minute (GPM).

[f] Well was not sampled because of obstruction in the well. The sump pump could not be lowered more than 7 feet.

[g] Parameter not applicable.

TABLE 11
2000 Groundwater Analytical Results-Radioactive Constituents
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result[a] (pCi/L)			S&W Flag[b]	MDA[c] (pCi/L)	State/Federal[d] Standards (pCi/L)
Moniroring wells completed in unconsolidated sediment:								
B38W01S[g]	08-Nov-00	Radium 226	0.13	±	0.10	J	0.15	5
	08-Nov-00	Radium 228	-0.36	±	0.83	UJ	0.94	5
	08-Nov-00	Thorium 228	0.22	±	0.34	U	0.62	
	08-Nov-00	Thorium 230	1.96	±	1.03	J	1.07	
	08-Nov-00	Thorium 232	0.35	±	0.44	U	0.77	
	08-Nov-00	Total Thorium	0.15	±				15
	08-Nov-00	Uranium 234	0.92	±	0.71	J	1.06	
	08-Nov-00	Uranium 235	0.18	±	0.31	U	0.58	
	08-Nov-00	Uranium 238	0.22	±	0.51	U	1.16	
	08-Nov-00	Total Uranium	1.32	±				27
B38W14S	05-Jul-00	Gross Alpha	4.5	±	2.7	J	3.7	15
	05-Jul-00	Gross Beta	7.3	±	2.9		4.4	50
	05-Jul-00	Radium 226	0.07	±	0.11	R	0.19	5
	05-Jul-00	Radium 228	-0.11	±	0.44	U	0.77	5
	05-Jul-00	Thorium 228	0	±	0.16	U	0.44	
	05-Jul-00	Thorium 230	0.11	±	0.15	UJ	0.23	
	05-Jul-00	Thorium 232	0.04	±	0.08	UJ	0.11	
	05-Jul-00	Total Thorium	0.15					15
	05-Jul-00	Uranium 234	1.16	±	0.39	U	0.1	
	05-Jul-00	Uranium 235	0.07	±	0.09	UJ	0.13	
	05-Jul-00	Uranium 238	0.55	±	0.24	J	0.06	
	05-Jul-00	Total Uranium	1.78					27
B38W15S	26-Jun-00	Gross Alpha	13.8	±		J	7.1	15
	26-Jun-00	Gross Beta	137	±			9	50
	26-Jun-00	Radium 226	0.34	±		J	0.18	5
	26-Jun-00	Radium 228	0.58	±		U	0.6	5
	26-Jun-00	Thorium 228	0.14	±		U	0.31	
	26-Jun-00	Thorium 230	0.44	±		J	0.16	
	26-Jun-00	Thorium 232	-0.07	±		R	0.09	
	26-Jun-00	Total Thorium	0.58					15
	26-Jun-00	Uranium 234	0.24	±		J	0.14	
	26-Jun-00	Uranium 235	-0.01	±		U	0.18	
	26-Jun-00	Uranium 238	0.25	±		J	0.07	
	26-Jun-00	Total Uranium	0.48					27

TABLE 11
2000 Groundwater Analytical Results-Radioactive Constituents
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result[a] (pCi/L)			S&W Flag[b]	MDA[c] (pCi/L)	State/Federal[d] Standards (pCi/L)
B38W17A	19-Jun-00	Gross Alpha	6.9	±	2.5		2.8	15
	19-Jun-00	Gross Beta	22.3	±	3.4		3.2	50
	19-Jun-00	Radium 226	0.48	±	0.19	J	0.21	5
	19-Jun-00	Radium 228	0.46	±	0.58	U	0.96	5
	19-Jun-00	Thorium 228	-0.03	±	0.09	U	0.32	
	19-Jun-00	Thorium 230	0.28	±	0.23	U	0.3	
	19-Jun-00	Thorium 232	-0.01	±	0.02	U	0.2	
	19-Jun-00	Total Thorium	0.24					15
	19-Jun-00	Uranium 234	0.12	±	0.13	U	0.18	
	19-Jun-00	Uranium 235	-0.02	±	0.023	U	0.23	
	19-Jun-00	Uranium 238	0.06	±	0.09	U	0.09	
	19-Jun-00	Total Uranium	0.16					27
B38W19S[g]	07-Nov-00	Radium 226	0.63	±	0.24	J	0.23	5
	07-Nov-00	Radium 228	2.1	±	0.70	J	0.69	5
	07-Nov-00	Thorium 228	0	±	0.31	U	0.93	
	07-Nov-00	Thorium 230	1.2	±	0.77	J	0.74	
	07-Nov-00	Thorium 232	0.27	±	0.35	UJ	0.54	
	07-Nov-00	Total Thorium						15
	07-Nov-00	Uranium 234	0.72	±	0.63	J	0.91	
	07-Nov-00	Uranium 235	-0.02	±	0.04	U	0.58	
	07-Nov-00	Uranium 238	0.62	±	0.59	J	0.91	
	07-Nov-00	Total Uranium	1.32					27
B38W24S	21-Jun-00	Gross Alpha	2.8	±	1.8	J	2.6	15
	21-Jun-00	Gross Beta	12.4	±	2.7	J	3.3	50
	21-Jun-00	Radium 226	0.1	±	0.06	J	0.07	5
	21-Jun-00	Radium 228	0.11	±	0.71	U	1.2	5
	21-Jun-00	Thorium 228	0.05	±	0.13	U	0.29	
	21-Jun-00	Thorium 230	0.16	±	0.16	UJ	0.19	
	21-Jun-00	Thorium 232	-0.01	±	0.02	U	0.19	
	21-Jun-00	Total Thorium	0.2					15
	21-Jun-00	Uranium 234	0.05	±	0.07	U	0.11	
	21-Jun-00	Uranium 235	0.01	±	0.05	U	0.16	
	21-Jun-00	Uranium 238	0.02	±	0.04	UJ	0.05	
	21-Jun-00	Total Uranium	0.08					27

TABLE 11
2000 Groundwater Analytical Results-Radioactive Constituents
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result[a] (pCi/L)			S&W Flag[b]	MDA[c] (pCi/L)	State/Federal[d] Standards (pCi/L)
B38W25S	07-Jul-00	Gross Alpha	21.5	±	6.2		5.9	15
	07-Jul-00	Gross Beta	65.6	±	9		6.8	50
	07-Jul-00	Radium 226	0.8	±	0.22	R	0.22	5
	07-Jul-00	Radium 228	0.17	±	0.42	U	0.71	5
	07-Jul-00	Thorium 228	0.46	±	0.32	J	0.38	
	07-Jul-00	Thorium 230	0.38	±	0.28	J	0.28	
	07-Jul-00	Thorium 232	0.13	±	0.17	U	0.28	
	07-Jul-00	Total Thorium	0.97					15
	07-Jul-00	Uranium 234	0.17	±	0.14	J	0.16	
	07-Jul-00	Uranium 235	-0.01	±	0.016	U	0.16	
	07-Jul-00	Uranium 238	0.21	±	0.15	J	0.16	
	07-Jul-00	Total Uranium	0.37					27
MISS01AA	06-Jun-00	Gross Alpha	0.63	±	0.58	U	0.93	15
	06-Jun-00	Gross Beta	1.4	±	1.1	U	1.8	50
	06-Jun-00	Radium 226	0.13	±	0.06	J	0.084	5
	06-Jun-00	Radium 228	0.12	±	0.38	U	0.67	5
	06-Jun-00	Thorium 228	0	±	0.17	U	0.46	
	06-Jun-00	Thorium 230	0.76	±	0.41	J	0.24	
	06-Jun-00	Thorium 232	0.03	±	0.09	U	0.24	
	06-Jun-00	Total Thorium	0.79					15
	06-Jun-00	Uranium 234	0.04	±	0.07	U	0.12	
	06-Jun-00	Uranium 235	-0.01	±	0.01	U	0.15	
	06-Jun-00	Uranium 238	0	±	0	U	0.07	
	06-Jun-00	Total Uranium	0.03					27
MISS02A	23-Jun-00	Gross Alpha	2	±	10	U	19	15
	23-Jun-00	Gross Beta	8	±	12	U	21	50
	23-Jun-00	Radium 226	0.08	±	0.11	U	0.18	5
	23-Jun-00	Radium 228	0.09	±	0.36	U	0.63	5
	23-Jun-00	Thorium 228	0.01	±	0.09	U	0.25	
	23-Jun-00	Thorium 230	0.07	±	0.1	U	0.18	
	23-Jun-00	Thorium 232	0.02	±	0.06	U	0.14	
	23-Jun-00	Total Thorium	0.1					15
	23-Jun-00	Uranium 234	0.27	±	0.24	J	0.2	
	23-Jun-00	Uranium 235	-0.01	±	0.02	U	0.24	
	23-Jun-00	Uranium 238	0.3	±	0.26	J	0.25	
	23-Jun-00	Total Uranium	0.56					27

TABLE 11
2000 Groundwater Analytical Results-Radioactive Constituents
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result[a] (pCi/L)			S&W Flag[b]	MDA[c] (pCi/L)	State/Federal[d] Standards (pCi/L)
MISS05A[g]	06-Nov-00	Radium 226	1.39	±	0.34	J	0.22	5
	06-Nov-00	Radium 228	2.5	±	0.74	J	0.72	5
	06-Nov-00	Thorium 228	2.38	±	0.94		0.71	
	06-Nov-00	Thorium 230	2.45	±	0.94	J	0.66	
	06-Nov-00	Thorium 232	0.35	±	0.37	UJ	0.59	
	06-Nov-00	Total Thorium	5.18					15
	06-Nov-00	Uranium 234	35.02	±	7.22		0.87	
	06-Nov-00	Uranium 235	1.96	±	0.97		0.61	
	06-Nov-00	Uranium 238	36.5	±	7.49		0.57	
	06-Nov-00	Total Uranium	73.48					27
MISS06A	10-Jul-00	Gross Alpha	3.8	±	2.6		3.7	15
	10-Jul-00	Gross Beta	15.3	±	4		5.3	50
	10-Jul-00	Radium 226	0.42	±	0.18	R	0.22	5
	10-Jul-00	Radium 228	0.7	±	0.45	U	0.73	5
	10-Jul-00	Thorium 228	0.27	±	0.25	UJ	0.36	
	10-Jul-00	Thorium 230	0.41	±	0.27	J	0.22	
	10-Jul-00	Thorium 232	0.04	±	0.08	UJ	0.1	
	10-Jul-00	Total Thorium	0.72					15
	10-Jul-00	Uranium 234	0.99	±	0.37	J	0.16	
	10-Jul-00	Uranium 235	0.05	±	0.08	U	0.16	
	10-Jul-00	Uranium 238	2.13	±	0.62	J	0.06	
	10-Jul-00	Total Uranium	3.17					27
MISS07B	12-Jul-00	Gross Alpha	27	±	16		22	15
	12-Jul-00	Gross Beta	25	±	13		21	50
	12-Jul-00	Radium 226	0.1	±	0.09	UJ	0.14	5
	12-Jul-00	Radium 228	0.6	±	0.38	U	0.6	5
	12-Jul-00	Thorium 228	0.09	±	0.15	U	0.28	
	12-Jul-00	Thorium 230	0.37	±	0.24	J	0.21	
	12-Jul-00	Thorium 232	-0.02	±	0.02	U	0.19	
	12-Jul-00	Total Thorium	0.44					15
	12-Jul-00	Uranium 234	3.6	±	0.93		0.06	
	12-Jul-00	Uranium 235	0.18	±	0.15	J	0.13	
	12-Jul-00	Uranium 238	2.48	±	0.69		0.1	
	12-Jul-00	Total Uranium	6.26					27

TABLE 11
2000 Groundwater Analytical Results-Radioactive Constituents
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result[a] (pCi/L)			S&W Flag[b]	MDA[c] (pCi/L)	State/Federal[d] Standards (pCi/L)
Monitoring wells completed in bedrock:								
B38W02D[e]	13-Jul-00	Gross Alpha	1.2	±	1.4	U	2.2	15
Background	13-Jul-00	Gross Beta	7	±	2.7	J	4	50
	13-Jul-00	Radium 226	0.16	±	0.13	U	0.2	5
	13-Jul-00	Radium 228	0.39	±	0.39	U	0.64	5
	13-Jul-00	Thorium 228	0.07	±	0.11	U	0.22	
	13-Jul-00	Thorium 230	0.14	±	0.19	U	0.36	
	13-Jul-00	Thorium 232	0.09	±	0.11	UJ	0.15	
	13-Jul-00	Total Thorium	0.3					15
	13-Jul-00	Uranium 234	0.15	±	0.12	J	0.14	
	13-Jul-00	Uranium 235	0.01	±	0.052	U	0.14	
	13-Jul-00	Uranium 238	0.22	±	0.14	J	0.05	
	13-Jul-00	Total Uranium	0.38					27
B38W02D	13-Jul-00	Gross Alpha	1.9	±	1.7	U	2.7	15
Duplicate[f]	13-Jul-00	Gross Beta	1.1	±	3.1	UJ	5.3	50
	13-Jul-00	Radium 226	0.16	±	0.1	J	0.12	5
	13-Jul-00	Radium 228	0.28	±	0.37	U	0.63	5
	13-Jul-00	Thorium 228	-0.01	±	0.1	U	0.31	
	13-Jul-00	Thorium 230	0.29	±	0.22	J	0.27	
	13-Jul-00	Thorium 232	-0.04	±	0.03	R	0.24	
	13-Jul-00	Total Thorium	0.24					15
	13-Jul-00	Uranium 234	0.24	±	0.16	J	0.13	
	13-Jul-00	Uranium 235	-0.01	±	0.02	U	0.15	
	13-Jul-00	Uranium 238	1.03	±	0.36	J	0.12	
	13-Jul-00	Total Uranium	1.26					27
B38W14D	05-Jul-00	Gross Alpha	1.7	±	3.1	U	5.4	15
	05-Jul-00	Gross Beta	6.1	±	5.1	UJ	8.4	50
	05-Jul-00	Radium 226	0.12	±	0.11	R	0.17	5
	05-Jul-00	Radium 228	0	±	0	U	0.6	5
	05-Jul-00	Thorium 228	0.07	±	0.25	U	0.59	
	05-Jul-00	Thorium 230	0.41	±	0.31	J	0.14	
	05-Jul-00	Thorium 232	0.02	±	0.11	U	0.32	
	05-Jul-00	Total Thorium	0.5					15
	05-Jul-00	Uranium 234	0.55	±	0.26	J	0.14	
	05-Jul-00	Uranium 235	-0.01	±	0.01	U	0.14	
	05-Jul-00	Uranium 238	0.22	±	0.15	J	0.07	
	05-Jul-00	Total Uranium	0.76					27

TABLE 11
2000 Groundwater Analytical Results-Radioactive Constituents
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result[a] (pCi/L)			S&W Flag[b]	MDA[c] (pCi/L)	State/Federal[d] Standards (pCi/L)
B38W14D Duplicate	05-Jul-00	Gross Alpha	3.8	±	2.9	UJ	4.1	15
	05-Jul-00	Gross Beta	8.3	±	4.9	J	7.7	50
	05-Jul-00	Radium 226	0	±	0.1	R	0.19	5
	05-Jul-00	Radium 228	0.04	±	0.47	U	0.82	5
	05-Jul-00	Thorium 228	0.11	±	0.16	U	0.27	
	05-Jul-00	Thorium 230	0.18	±	0.17	J	0.1	
	05-Jul-00	Thorium 232	-0.02	±	0.03	U	0.23	
	05-Jul-00	Total Thorium	0.27					15
	05-Jul-00	Uranium 234	0.88	±	0.34	J	0.07	
	05-Jul-00	Uranium 235	0.03	±	0.07	U	0.15	
	05-Jul-00	Uranium 238	0.3	±	0.19	J	0.15	
	05-Jul-00	Total Uranium	1.21					27
B38W15D	26-Jun-00	Gross Alpha	10	±	5.2		6.8	15
	26-Jun-00	Gross Beta	47.5	±	8.4		9	50
	26-Jun-00	Radium 226	0.3	±	0.16		0.21	5
	26-Jun-00	Radium 228	0.15	±	0.37		0.63	5
	26-Jun-00	Thorium 228	-0.03	±	0.11		0.35	
	26-Jun-00	Thorium 230	0.35	±	0.27		0.41	
	26-Jun-00	Thorium 232	0.07	±	0.12		0.22	
	26-Jun-00	Total Thorium	0.39					15
	26-Jun-00	Uranium 234	4.5	±	1.1		0.1	
	26-Jun-00	Uranium 235	0.24	±	0.18		0.15	
	26-Jun-00	Uranium 238	2.64	±	0.75		0.12	
	26-Jun-00	Total Uranium	7.38					27
B38W17B	19-Jun-00	Gross Alpha	18.9	±	7.9		9	15
	19-Jun-00	Gross Beta	83	±	14		14	50
	19-Jun-00	Radium 226	-1.63	±	0.59	R	0.19	5
	19-Jun-00	Radium 228	0.97	±	0.48	J	0.75	5
	19-Jun-00	Thorium 228	0.07	±	0.1	U	0.18	
	19-Jun-00	Thorium 230	0.35	±	0.22	J	0.21	
	19-Jun-00	Thorium 232	0.02	±	0.06	U	0.14	
	19-Jun-00	Total Thorium	0.44					15
	19-Jun-00	Uranium 234	0.18	±	0.15	J	0.15	
	19-Jun-00	Uranium 235	0.06	±	0.1	U	0.16	
	19-Jun-00	Uranium 238	0.05	±	0.08	U	0.13	
	19-Jun-00	Total Uranium	0.29	±				27

TABLE 11
2000 Groundwater Analytical Results-Radioactive Constituents
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result[a] (pCi/L)			S&W Flag[b]	MDA[c] (pCi/L)	State/Federal[d] Standards (pCi/L)
B38W24D	21-Jun-00	Gross Alpha	8.6	±	4	J	5.1	15
	21-Jun-00	Gross Beta	13.7	±	5	J	7.4	50
	21-Jun-00	Radium 226	0.18	±	0.065	J	0.06	5
	21-Jun-00	Radium 228	0.33	±	0.72	U	1.2	5
	21-Jun-00	Thorium 228	0.04	±	0.24	U	0.21	
	21-Jun-00	Thorium 230	0.55	±	0.29	J	0.23	
	21-Jun-00	Thorium 232	0.02	±	0.09	U	0.24	
	21-Jun-00	Total Thorium	0.61					15
	21-Jun-00	Uranium 234	0.01	±	0.015	U	0.12	
	21-Jun-00	Uranium 235	0.03	±	0.065	U	0.13	
	21-Jun-00	Uranium 238	0.05	±	0.07	U	0.11	
	21-Jun-00	Total Uranium	0.09					27
B38W24D Duplicate	21-Jun-00	Gross Alpha	5.6	±	3.1	J	4	15
	21-Jun-00	Gross Beta	15.6	±	5.6	J	8.2	50
	21-Jun-00	Radium 226	0.28	±	0.08	J	0.07	5
	21-Jun-00	Radium 228	0.85	±	0.87	U	1.4	5
	21-Jun-00	Thorium 228	0.04	±	0.066	U	0.26	
	21-Jun-00	Thorium 230	0.47	±	0.25	J	0.15	
	21-Jun-00	Thorium 232	0.06	±	0.095	U	0.17	
	21-Jun-00	Total Thorium	0.57					15
	21-Jun-00	Uranium 234	0.04	±	0.074	U	0.12	
	21-Jun-00	Uranium 235	0.01	±	0.013	U	0.13	
	21-Jun-00	Uranium 238	0	±	0	U	0.07	
	21-Jun-00	Total Uranium	0.05	±				27
B38W25D	07-Jul-00	Gross Alpha	13.8	±	4.7		4.7	15
	07-Jul-00	Gross Beta	89	±	11		7	50
	07-Jul-00	Radium 226	-1.1	±	1	R	0.3	5
	07-Jul-00	Radium 228	0.74	±	0.46	J	0.72	5
	07-Jul-00	Thorium 228	0.08	±	0.14	U	0.3	
	07-Jul-00	Thorium 230	0.23	±	0.17	J	0.17	
	07-Jul-00	Thorium 232	0.02	±	0.051	U	0.12	
	07-Jul-00	Total Thorium	0.33					15
	07-Jul-00	Uranium 234	0.06	±	0.078	U	0.12	
	07-Jul-00	Uranium 235	0.03	±	0.054	UJ	0.07	
	07-Jul-00	Uranium 238	0.09	±	0.089	J	0.06	
	07-Jul-00	Total Uranium	0.18					27

TABLE 11
2000 Groundwater Analytical Results-Radioactive Constituents
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result[a] (pCi/L)			S&W Flag[b]	MDA[c] (pCi/L)	State/Federal[d] Standards (pCi/L)
MISS01B	20-Jun-00	Gross Alpha	11.3	±	7.4	U	11	15
	20-Jun-00	Gross Beta	11.1	±	7.4	U	12	50
	20-Jun-00	Radium 226	0.03	±	0.048	U	0.08	5
	20-Jun-00	Radium 228	0.39	±	0.74	U	1.3	5
	20-Jun-00	Thorium 228	-0.02	±	0.085	U	0.31	
	20-Jun-00	Thorium 230	0.32	±	0.23	J	0.17	
	20-Jun-00	Thorium 232	0.04	±	0.07	U	0.1	
	20-Jun-00	Total Thorium	0.34					15
	20-Jun-00	Uranium 234	0.12	±	0.11	U	0.07	
	20-Jun-00	Uranium 235	0.01	±	0.06	J	0.19	
	20-Jun-00	Uranium 238	0.09	±	0.1	U	0.14	
	20-Jun-00	Total Uranium	0.22					27
MISS02B	23-Jun-00	Gross Alpha	1	±	11	U	22	15
	23-Jun-00	Gross Beta	40	±	18		27	50
	23-Jun-00	Radium 226	0.25	±	0.13	J	0.15	5
	23-Jun-00	Radium 228	0.32	±	0.33	U	0.55	5
	23-Jun-00	Thorium 228	0.04	±	0.09	U	0.2	
	23-Jun-00	Thorium 230	0.4	±	0.25	J	0.27	
	23-Jun-00	Thorium 232	0.02	±	0.06	U	0.14	
	23-Jun-00	Total Thorium	0.46					15
	23-Jun-00	Uranium 234	0.25	±	0.17	J	0.11	
	23-Jun-00	Uranium 235	0.04	±	0.09	U	0.15	
	23-Jun-00	Uranium 238	0.14	±	0.12	J	0.06	
	23-Jun-00	Total Uranium	0.43					27
B38W18D[g]	13-Nov-00	Radium 226	2.87		0.65		0.44	5
	13-Nov-00	Radium 228	16.53		1.42		1.01	5
	13-Nov-00	Thorium 228	6.89		1.79	J	0.35	
	13-Nov-00	Thorium 230	1.71		0.69	J	0.39	
	13-Nov-00	Thorium 232	7.53		1.92		0.49	
	13-Nov-00	Total Thorium	16.13					15
	13-Nov-00	Uranium 234	1.54		0.64	J	0.58	
	13-Nov-00	Uranium 235	0.35		0.33	J	0.49	
	13-Nov-00	Uranium 238	1		0.49	J	0.45	
	13-Nov-00	Total Uranium	2.89					27

TABLE 11
2000 Groundwater Analytical Results-Radioactive Constituents
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result[a] (pCi/L)			S&W Flag[b]	MDA[c] (pCi/L)	State/Federal[d] Standards (pCi/L)
B38W18D	06-Jul-00	Gross Alpha	230	±	26		4	15
	06-Jul-00	Gross Beta	273	±	28		5	50
	06-Jul-00	Radium 226	-1.37	±	0.17	R	0.22	5
	06-Jul-00	Radium 228	4.05	±	0.76		0.87	5
	06-Jul-00	Thorium 228	0.02	±	0.09	R	0.22	
	06-Jul-00	Thorium 230	0.3	±	0.2	R	0.23	
	06-Jul-00	Thorium 232	-0.038	±	0.06	R	0.24	
	06-Jul-00	Total Thorium						15
	06-Jul-00	Uranium 234	1.64	±	0.49		0.14	
	06-Jul-00	Uranium 235	0.04	±	0.1	U	0.23	
	06-Jul-00	Uranium 238	1.4	±	0.43		0.19	
	06-Jul-00	Total Uranium	3.08					27
MISS05B	11-Jul-00	Gross Alpha	10.4	±	7.6	UJ	11	15
	11-Jul-00	Gross Beta	886	±	91		13	50
	11-Jul-00	Radium 226	0.22	±	0.15	U	0.23	5
	11-Jul-00	Radium 228	0.27	±	0.39	U	0.66	5
	11-Jul-00	Thorium 228	-0.04	±	0.14	U	0.42	
	11-Jul-00	Thorium 230	0.18	±	0.18	U	0.24	
	11-Jul-00	Thorium 232	0.07	±	0.1	U	0.1	
	11-Jul-00	Total Thorium	0.21					15
	11-Jul-00	Uranium 234	0.06	±	0.1	U	0.17	
	11-Jul-00	Uranium 235	0	±	0	U	0.09	
	11-Jul-00	Uranium 238	0.27	±	0.18	J	0.13	
	11-Jul-00	Total Uranium	0.33					27
MISS05B Duplicate	11-Jul-00	Gross Alpha	21	±	11	J	15	15
	11-Jul-00	Gross Beta	154	±	21		15	50
	11-Jul-00	Radium 226	0.19	±	0.14	U	0.21	5
	11-Jul-00	Radium 228	0.43	±	0.39	U	0.64	5
	11-Jul-00	Thorium 228	-0.09	±	0.06	R	0.37	
	11-Jul-00	Thorium 230	0.29	±	0.22	J	0.21	
	11-Jul-00	Thorium 232	0.04	±	0.08	UJ	0.1	
	11-Jul-00	Total Thorium	0.24					15
	11-Jul-00	Uranium 234	0.47	±	0.22	J	0.06	
	11-Jul-00	Uranium 235	0.03	±	0.05	U	0.07	
	11-Jul-00	Uranium 238	2.48	±	0.68	J	0.12	
	11-Jul-00	Total Uranium	2.98	±				27

TABLE 11
2000 Groundwater Analytical Results-Radioactive Constituents
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte	Result[a] (pCi/L)			S&W Flag[b]	MDA[c] (pCi/L)	State/Federal[d] Standards (pCi/L)
B38W19D	12-Jul-00	Gross Alpha	22	±	12		14	15
	12-Jul-00	Gross Beta	365	±	43		20	50
	12-Jul-00	Radium 226	0.16	±	0.13	UJ	0.2	5
	12-Jul-00	Radium 228	0.43	±	0.4	U	0.66	5
	12-Jul-00	Thorium 228	-0.03	±	0.03	R	0.19	
	12-Jul-00	Thorium 230	0.11	±	0.12	UJ	0.18	
	12-Jul-00	Thorium 232	0.01	±	0.05	U	0.13	
	12-Jul-00	Total Thorium	0.09					15
	12-Jul-00	Uranium 234	0.24	±	0.16	J	0.11	
	12-Jul-00	Uranium 235	0.04	±	0.08	U	0.16	
	12-Jul-00	Uranium 238	1.36	±	0.45	J	0.14	
	12-Jul-00	Total Uranium	1.64					27

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

[b]Stone & Webster 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. R= Rejected by validation.

[c] Minimum Detectable Activity (MDA).

[d] Federal and State SDWA standards.

[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.

[g]A groundwater data obtained from the 2000 Groundwater Remedial Investigation is used to compensate for either rejected data (by validation) or for data could not be obtained during the Environmental Monitoring Program. The GWRI program did not analyze for gross alpha and beta.

[h]The federal MCL of 50 pCi/L was used as standard to evaluate measured gross beta.

[i]Six of the eleven rejected sample results were in batch(es) that had a Ra-226 LCS recovery of 224%. Army Corp Radionuclide data Evaluation guidance recommends rejection of results associated with an LCS having a percent recovery of greater than 150%. Four of the eleven sample results were rejected because the 2 sigma uncertainty was less than the absolute value of the negative result

Table 12
2000 Groundwater Analytical Results - Metals
Maywood Interim Storage Site

Sampling Location	Date Collected	Detected Analyte[a]	Result (ug/L)	Data Qualifiers[b]	Reporting Limit (ug/L)	Related Regulations Federal[c] (ug/L)	Related Regulations State[d] (ug/L)
Monitoring wells completed in unconsolidated sediment							
B38W01S	08-Nov-00	Aluminum, Total	650		22.7	200	200
Background	08-Nov-00	Antimony, Total	2.3	U	2.3	6	2/20
	08-Nov-00	Arsenic, Total	2.4		2.4	50	0.02/8
	08-Nov-00	Barium, Total	27.7		0.2	2000	2000
	08-Nov-00	Beryllium, Total	2.4		0.1	4	0.008/20
	08-Nov-00	Boron, Total	290		2.7		
	08-Nov-00	Cadmium, Total	0.97		0.3	5	4
	08-Nov-00	Calcium, Total	403000		19.2		
	08-Nov-00	Chromium, Total	4	U	0.6	100	100
	08-Nov-00	Cobalt, Total	2.3		0.9		
	08-Nov-00	Copper, Total	3.9		0.9	1300	1000
	08-Nov-00	Iron, Total	36300		21.8	300	300
	08-Nov-00	Lead, Total	5.8		2.1	15	5/10
	08-Nov-00	Lithium, Total	1510		0.2		
	08-Nov-00	Magnesium, Total	31000		6.7		
	08-Nov-00	Manganese, Total	2650		0.2	50	50
	08-Nov-00	Mercury, Total	0.1	U	0.1	2	2
	08-Nov-00	Nickel, Total	22.1		0.9		100
	08-Nov-00	Potassium, Total	44200		303		
	08-Nov-00	Selenium, Total	3.3	U	3.3	50	50
	08-Nov-00	Silver, Total	1.1		1.1	1007	
	08-Nov-00	Sodium, Total	40000		4.1		50000
	08-Nov-00	Thallium, Total	4	U	4	2	0.5/10
	08-Nov-00	Vanadium, Total	1.6		0.8		
	08-Nov-00	Zinc, Total	11.3		0.4	500	5000
B38W14S	05-Jul-00	Aluminum, Total		R	22.2	200	200
	05-Jul-00	Antimony, Total	4.8	U	3.8	6	2/20
	05-Jul-00	Arsenic, Total	3.1	U	5	50	0.02/8
	05-Jul-00	Barium, Total	91.3		0.1	2000	2000
	05-Jul-00	Beryllium, Total	0.2	U	0.4	4	0.008/20
	05-Jul-00	Cadmium, Total	1.1		0.6	5	4
	05-Jul-00	Calcium, Total	94600		8.3		
	05-Jul-00	Chromium, Total	7.5		0.6	100	100
	05-Jul-00	Copper, Total	2.5		0.7	1300	1000
	05-Jul-00	Iron, Total	340		13	300	300
	05-Jul-00	Lead, Total	1.3	U	2.3	15	5/10
	05-Jul-00	Magnesium, Total	26600		6.1		
	05-Jul-00	Manganese, Total	76.3		0.3	50	50
	05-Jul-00	Mercury, Total	0.1	U	0.1	2	2
	05-Jul-00	Nickel, Total	9.6		1.2		100
	05-Jul-00	Potassium, Total	4420		182		
	05-Jul-00	Selenium, Total	1.5	U	5.2	50	50
	05-Jul-00	Silver, Total	0.3	U	0.8	1007	
	05-Jul-00	Sodium, Total	23300		188		50000
	05-Jul-00	Thallium, Total	5.3	U	6.3	2	0.5/10
	05-Jul-00	Vanadium, Total	2.1	U	0.6		
	05-Jul-00	Zinc, Total	4.3	U	1.8	500	5000

Table 12
2000 Groundwater Analytical Results - Metals
Maywood Interim Storage Site

Sampling Location	Date Collected	Detected Analyte[a]	Result (ug/L)	Data Qualifiers[b]	Reporting Limit (ug/L)	Related Regulations Federal[c] (ug/L)	State[d] (ug/L)
B38W15S	26-Jun-00	Aluminum, Total		R	10.5	200	200
	26-Jun-00	Antimony, Total	2.1	U	2.1	6	2/20
	26-Jun-00	Arsenic, Total	3.1	U	2	50	0.02/8
	26-Jun-00	Barium, Total	37.6		0.2	2000	2000
	26-Jun-00	Beryllium, Total	0.2	U	0.2	4	0.008/20
	26-Jun-00	Cadmium, Total	0.2	U	0.4	5	4
	26-Jun-00	Calcium, Total	80500		4.3		
	26-Jun-00	Chromium, Total	3	U	1	100	100
	26-Jun-00	Copper, Total	4.1		1	1300	1000
	26-Jun-00	Iron, Total	546		10.5	300	300
	26-Jun-00	Lead, Total	1.3	U	1.3	15	5/10
	26-Jun-00	Magnesium, Total	25300		7		
	26-Jun-00	Manganese, Total	2050		0.2	50	50
	26-Jun-00	Mercury, Total	0.1	U	0.1	2	2
	26-Jun-00	Nickel, Total	4.8		1		100
	26-Jun-00	Potassium, Total	164000		98		
	26-Jun-00	Selenium, Total	1.5	U	3.4	50	50
	26-Jun-00	Silver, Total	0.3	U	1	1007	
	26-Jun-00	Sodium, Total	175000		19.5		50000
	26-Jun-00	Thallium, Total	6.2	J	3.8	2	0.5/10
	26-Jun-00	Vanadium, Total	1.5	U	1		
	26-Jun-00	Zinc, Total	3.2	U	0.4	500	5000
B38W17A	19-Jun-00	Aluminum, Total	785		10.5	200	200
	19-Jun-00	Antimony, Total	37.6		2.1	6	2/20
	19-Jun-00	Arsenic, Total	2	U	2	50	0.02/8
	19-Jun-00	Barium, Total	94.1		0.2	2000	2000
	19-Jun-00	Beryllium, Total	0.21	J	0.2	4	0.008/20
	19-Jun-00	Cadmium, Total	0.4	U	0.4	5	4
	19-Jun-00	Calcium, Total	54000		4.3		
	19-Jun-00	Chromium, Total	1590		1	100	100
	19-Jun-00	Cobalt, Total	13		0.5		
	19-Jun-00	Iron, Total	12500		10.5	300	300
	19-Jun-00	Lead, Total	6.1	U	1.3	15	5/10
	19-Jun-00	Magnesium, Total	5930		7		
	19-Jun-00	Manganese, Total	2070		0.2	50	50
	19-Jun-00	Mercury, Total	0.1	U	0.1	2	2
	19-Jun-00	Nickel, Total	114		1		100
	19-Jun-00	Potassium, Total	18900		98		
	19-Jun-00	Selenium, Total	3.4	U	3.4	50	50
	19-Jun-00	Silver, Total	1	U	1	1007	
	19-Jun-00	Sodium, Total	38100		19.5		50000
	19-Jun-00	Thallium, total	3.8	U	3.8	2	0.5/10
	19-Jun-00	Vanadium, Total	11.8		1		
	19-Jun-00	Zinc, Total	25.8		0.4	500	5000

Table 12
2000 Groundwater Analytical Results - Metals
Maywood Interim Storage Site

Sampling Location	Date Collected	Detected Analyte[a]	Result (ug/L)	Data Qualifiers[b]	Reporting Limit (ug/L)	Related Regulations Federal[c] (ug/L)	Related Regulations State[d] (ug/L)
B38W19S	07-Nov-00	Aluminum, Total	37.4		22.7	200	200
	07-Nov-00	Antimony, Total	2.3	U	2.3	6	2/20
	07-Nov-00	Arsenic, Total	31.8		2.4	50	0.02/8
	07-Nov-00	Barium, Total	38.7	U	0.2	2000	2000
	07-Nov-00	Beryllium, Total	0.1	U	0.1	4	0.008/20
	07-Nov-00	Boron, Total	919		2.7		4
	07-Nov-00	Cadmium, Total	0.3	U	0.3	5	4
	07-Nov-00	Calcium, Total	634000		192		
	07-Nov-00	Chromium, Total	1.4		0.6	100	100
	07-Nov-00	Cobalt, Total	0.9	U	0.9		
	07-Nov-00	Copper, Total	0.9	U	0.9	1300	1000
	07-Nov-00	Iron, Total	1430		21.8	300	300
	07-Nov-00	Lead, Total	2.1		2.1	15	5/10
	07-Nov-00	Lithium, Total	1730		0.2		
	07-Nov-00	Magnesium, Total	52100		6.7		
	07-Nov-00	Manganese, Total	1180		0.2	50	50
	07-Nov-00	Mercury, Total	0.1	U	0.1	2	2
	07-Nov-00	Nickel, Total	3	U	0.9		100
	07-Nov-00	Potassium, Total	45900		303		
	07-Nov-00	Selenium, Total	3.3	U	3.3	50	50
	07-Nov-00	Silver, Total	1.1	U	1.1	1007	
	07-Nov-00	Sodium, Total	22700		4.1		50000
	07-Nov-00	Thallium, Total	4	U	4	2	0.5/10
	07-Nov-00	Vanadium, Total	0.85		0.8		
	07-Nov-00	Zinc, Total	2.1	U	0.4	500	5000
B38W24S	21-Jun-00	Aluminum, Total	10.5	U	10.5	200	200
	21-Jun-00	Antimony, Total	2.1	U	2.1	6	2/20
	21-Jun-00	Arsenic, Total	2	U	2	50	0.02/8
	21-Jun-00	Barium, Total	36.2		0.2	2000	2000
	21-Jun-00	Beryllium, Total	1.1		0.2	4	0.008/20
	21-Jun-00	Cadmium, Total	0.4	U	0.4	5	4
	21-Jun-00	Calcium, Total	56700		4.3		
	21-Jun-00	Chromium, Total	5.6		1	100	100
	21-Jun-00	Cobalt, Total	0.72	J	0.5		
	21-Jun-00	Iron, Total	31900		10.5	300	300
	21-Jun-00	Lead, Total	1.3	U	1.3	15	5/10
	21-Jun-00	Magnesium, Total	7830		7		
	21-Jun-00	Manganese, Total	3830		0.2	50	50
	21-Jun-00	Mercury, Total	0.12	J	0.1	2	2
	21-Jun-00	Nickel, Total	8		1		100
	21-Jun-00	Potassium, Total	6990		98		
	21-Jun-00	Selenium, Total	3.4	U	3.4	50	50
	21-Jun-00	Silver, Total	1	U	1	1007	
	21-Jun-00	Sodium, Total	13900		19.5		50000
	21-Jun-00	Thallium, total	3.8	U	3.8	2	0.5/10
	21-Jun-00	Vanadium, Total	1	U	1		
	21-Jun-00	Zinc, Total	10.9	U	0.4	500	5000

Table 12
2000 Groundwater Analytical Results - Metals
Maywood Interim Storage Site

Sampling Location	Date Collected	Detected Analyte[a]	Result (ug/L)	Data Qualifiers[b]	Reporting Limit (ug/L)	Related Regulations Federal[c] (ug/L)	Related Regulations State[d] (ug/L)
B38W25S	07-Jul-00	Aluminum, Total		R	22.2	200	200
	07-Jul-00	Antimony, Total	2.1	U	3.8	6	2/20
	07-Jul-00	Arsenic, Total	13.4		5	50	0.02/8
	07-Jul-00	Barium, Total	166		0.1	2000	2000
	07-Jul-00	Beryllium, Total	0.2	U	0.4	4	0.008/20
	07-Jul-00	Cadmium, Total	1.4		0.6	5	4
	07-Jul-00	Calcium, Total	186000		8.3		
	07-Jul-00	Chromium, Total	48.4		0.6	100	100
	07-Jul-00	Copper, Total	5.2		0.7	1300	1000
	07-Jul-00	Iron, Total	14000		13	300	300
	07-Jul-00	Lead, Total	1.3	U	2.3	15	5/10
	07-Jul-00	Magnesium, Total	7520		6.1		
	07-Jul-00	Manganese, Total	7120		0.3	50	50
	07-Jul-00	Mercury, Total	0.1	U	0.1	2	2
	07-Jul-00	Nickel, Total	32.4		1.2		100
	07-Jul-00	Potassium, Total	59900		182		
	07-Jul-00	Selenium, Total	1.5	U	5.2	50	50
	07-Jul-00	Silver, Total	0.76	U	0.8	1007	
	07-Jul-00	Sodium, Total	30100		188		50000
	07-Jul-00	Thallium, Total	17.4		6.3	2	0.5/10
	07-Jul-00	Vanadium, Total	1.4	U	0.6		
	07-Jul-00	Zinc, Total	530		1.8	500	5000
MISS01AA	20-Jun-00	Aluminum, Total	10.5	U	10.5	200	200
	20-Jun-00	Antimony, Total	2.1	U	2.1	6	2/20
	20-Jun-00	Arsenic, Total	2	U	2	50	0.02/8
	20-Jun-00	Barium, Total	6.9		0.2	2000	2000
	20-Jun-00	Beryllium, Total	0.2	U	0.2	4	0.008/20
	20-Jun-00	Cadmium, Total	0.4	U	0.4	5	4
	20-Jun-00	Calcium, Total	544000		4.3		
	20-Jun-00	Chromium, Total	4.4		1	100	100
	20-Jun-00	Cobalt, Total	0.5	U	0.5		
	20-Jun-00	Iron, Total	490		10.5	300	300
	20-Jun-00	Lead, Total	1.3	U	1.3	15	5/10
	20-Jun-00	Magnesium, Total	23700		7		
	20-Jun-00	Manganese, Total	94.9		0.2	50	50
	20-Jun-00	Mercury, Total	0.1	U	0.1	2	2
	20-Jun-00	Nickel, Total	4		1		100
	20-Jun-00	Potassium, Total	1270		98		
	20-Jun-00	Selenium, Total	3.4	U	3.4	50	50
	20-Jun-00	Silver, Total	1	U	1	1007	
	20-Jun-00	Sodium, Total	4850		19.5		50000
	20-Jun-00	Thallium, total	3.8	U	3.8	2	0.5/10
	20-Jun-00	Vanadium, Total	1	U	1		
	20-Jun-00	Zinc, Total	6.1	U	0.4	500	5000

Table 12
2000 Groundwater Analytical Results - Metals
Maywood Interim Storage Site

Sampling Location	Date Collected	Detected Analyte[a]	Result (ug/L)	Data Qualifiers[b]	Reporting Limit (ug/L)	Related Regulations Federal[c] (ug/L)	Related Regulations State[d] (ug/L)
MISS05A	06-Nov-00	Aluminum, Total	46.3		22.7	200	200
	06-Nov-00	Antimony, Total	2.3	U	2.3	6	2/20
	06-Nov-00	Arsenic, Total	2.4		2.4	50	0.02/8
	06-Nov-00	Barium, Total	18		0.2	2000	2000
	06-Nov-00	Beryllium, Total	0.1	U	0.1	4	0.008/20
	06-Nov-00	Boron, Total	475		2.7		
	06-Nov-00	Cadmium, Total	0.3	U	0.3	5	4
	06-Nov-00	Calcium, Total	659000		192		
	06-Nov-00	Chromium, Total	1.2		0.6	100	100
	06-Nov-00	Cobalt, Total	8.1		0.9		
	06-Nov-00	Copper, Total	2		0.9	1300	1000
	06-Nov-00	Iron, Total	1420		21.8	300	300
	06-Nov-00	Lead, Total	2.1	U	2.1	15	5/10
	06-Nov-00	Lithium, Total	1130		0.2		
	06-Nov-00	Magnesium, Total	76900		6.7		
	06-Nov-00	Manganese, Total	799		0.2	50	50
	06-Nov-00	Mercury, Total	0.1	U	0.1	2	2
	06-Nov-00	Nickel, Total	6		0.9		100
	06-Nov-00	Potassium, Total	73700		303		
	06-Nov-00	Selenium, Total	3.3	U	3.3	50	50
	06-Nov-00	Silver, Total	1.1	U	1.1	1007	
	06-Nov-00	Sodium, Total	27600		4.1		50000
	06-Nov-00	Thallium, Total	4	U	4	2	0.5/10
	06-Nov-00	Vanadium, Total	0.8	U	0.8		
	06-Nov-00	Zinc, Total	23.7		0.4	500	5000
MISS02A	22-Jun-00	Aluminum, Total	360		10.5	200	200
	22-Jun-00	Antimony, Total	2.3	U	2.1	6	2/20
	22-Jun-00	Arsenic, Total	3520		2	50	0.02/8
	22-Jun-00	Barium, Total	8.6		0.2	2000	2000
	22-Jun-00	Beryllium, Total	0.2	U	0.2	4	0.008/20
	22-Jun-00	Cadmium, Total	0.4	U	0.4	5	4
	22-Jun-00	Calcium, Total	116000		4.3		
	22-Jun-00	Chromium, Total	69.2		1	100	100
	22-Jun-00	Cobalt, Total	1.8	U	0.5		
	22-Jun-00	Iron, Total	5410		10.5	300	300
	22-Jun-00	Lead, Total	13		1.3	15	5/10
	22-Jun-00	Magnesium, Total	7780		7		
	22-Jun-00	Manganese, Total	268		0.2	50	50
	22-Jun-00	Mercury, Total	0.45		0.1	2	2
	22-Jun-00	Nickel, Total	20		1		100
	22-Jun-00	Potassium, Total	9350	J	98		
	22-Jun-00	Selenium, Total	3.4	U	3.4	50	50
	22-Jun-00	Silver, Total	1	U	1	1007	
	22-Jun-00	Sodium, Total	666000		19.5		50000
	22-Jun-00	Thallium, total	3.8	U	3.8	2	0.5/10
	22-Jun-00	Vanadium, Total	2.7	J	1		
	22-Jun-00	Zinc, Total	18.8		0.4	500	5000

Table 12
2000 Groundwater Analytical Results - Metals
Maywood Interim Storage Site

Sampling Location	Date Collected	Detected Analyte[a]	Result (ug/L)	Data Qualifiers[b]	Reporting Limit (ug/L)	Related Regulations Federal[c] (ug/L)	Related Regulations State[d] (ug/L)
MISS06A	10-Jul-00	Aluminum, Total	39.2	U	22.2	200	200
	10-Jul-00	Antimony, Total	2.5	U	3.8	6	2/20
	10-Jul-00	Arsenic, Total	4	J	5	50	0.02/8
	10-Jul-00	Barium, Total	51.4		0.1	2000	2000
	10-Jul-00	Beryllium, Total	0.2	U	0.4	4	0.008/20
	10-Jul-00	Cadmium, Total	1.5		0.6	5	4
	10-Jul-00	Calcium, Total	168000		8.3		
	10-Jul-00	Chromium, Total	16.8		0.6	100	100
	10-Jul-00	Cobalt, Total	1.2	J	0.8		
	10-Jul-00	Iron, Total	1910		13	300	300
	10-Jul-00	Lead, Total	9.6		2.3	15	5/10
	10-Jul-00	Magnesium, Total	9330		6.1		
	10-Jul-00	Manganese, Total	228		0.3	50	50
	10-Jul-00	Mercury, Total	0.22	UJ	0.1	2	2
	10-Jul-00	Nickel, Total	21.1		1.2		100
	10-Jul-00	Potassium, Total	12600		182		
	10-Jul-00	Selenium, Total	3.4	U	5.2	50	50
	10-Jul-00	Silver, Total	1	U	0.8	1007	
	10-Jul-00	Sodium, Total	17100		188		50000
	10-Jul-00	Thallium, total	3.8	U	6.3	2	0.5/10
	10-Jul-00	Vanadium, Total	2.1	J	0.6		
	10-Jul-00	Zinc, Total	495		1.8	500	5000
Monitoring wells completed in bedrock							
B38W02D[e]	13-Jul-00	Aluminum, Total	37.3	U	22.2	200	200
Background	13-Jul-00	Antimony, Total	2.1	U	3.8	6	2/20
	13-Jul-00	Arsenic, Total	2	U	5	50	0.02/8
	13-Jul-00	Barium, Total	299		0.1	2000	2000
	13-Jul-00	Beryllium, Total	0.2	U	0.4	4	0.008/20
	13-Jul-00	Cadmium, Total	0.4	U	0.6	5	4
	13-Jul-00	Calcium, Total	86300		8.3		
	13-Jul-00	Chromium, Total	98.4	J	0.6	100	100
	13-Jul-00	Cobalt, Total	1.4	J	0.8		
	13-Jul-00	Iron, Total	202		13	300	300
	13-Jul-00	Lead, Total	1.3	U	2.3	15	5/10
	13-Jul-00	Magnesium, Total	3740		6.1		
	13-Jul-00	Manganese, Total	2300		0.3	50	50
	13-Jul-00	Mercury, Total	0.1	UJ	0.1	2	2
	13-Jul-00	Nickel, Total	32.7		1.2		100
	13-Jul-00	Potassium, Total	847		182		
	13-Jul-00	Selenium, Total	3.4	U	5.2	50	50
	13-Jul-00	Silver, Total	1	U	0.8	1007	
	13-Jul-00	Sodium, Total	9050		188		50000
	13-Jul-00	Thallium, total	5.5	J	6.3	2	0.5/10
	13-Jul-00	Vanadium, Total	1.8	J	0.6		
	13-Jul-00	Zinc, Total	9.8	U	1.8	500	5000

Table 12
2000 Groundwater Analytical Results - Metals
Maywood Interim Storage Site

Sampling Location	Date Collected	Detected Analyte[a]	Result (ug/L)	Data Qualifiers[b]	Reporting Limit (ug/L)	Related Regulations Federal[c] (ug/L)	Related Regulations State[d] (ug/L)
B38W14D	05-Jul-00	Aluminum, Total		R	22.2	200	200
	05-Jul-00	Antimony, Total	4.8	U	3.8	6	2/20
	05-Jul-00	Arsenic, Total	3.1	U	5	50	0.02/8
	05-Jul-00	Barium, Total	105		0.1	2000	2000
	05-Jul-00	Beryllium, Total	0.2	U	0.4	4	0.008/20
	05-Jul-00	Cadmium, Total	2.9		0.6	5	4
	05-Jul-00	Calcium, Total	102000		8.3		
	05-Jul-00	Chromium, Total	3.8	U	0.6	100	100
	05-Jul-00	Copper, Total	21.6		0.7	1300	1000
	05-Jul-00	Iron, Total	130	U	13	300	300
	05-Jul-00	Lead, Total	1.3	U	2.3	15	5/10
	05-Jul-00	Magnesium, Total	25300		6.1		
	05-Jul-00	Manganese, Total	11.5		0.3	50	50
	05-Jul-00	Mercury, Total	0.11	J	0.1	2	2
	05-Jul-00	Nickel, Total	12.1		1.2		100
	05-Jul-00	Potassium, Total	6240		182		
	05-Jul-00	Selenium, Total	1.5	U	5.2	50	50
	05-Jul-00	Silver, Total	0.3	U	0.8	1007	
	05-Jul-00	Sodium, Total	34800		188		50000
	05-Jul-00	Thallium, Total	5.3	U	6.3	2	0.5/10
	05-Jul-00	Vanadium, Total	0.52	U	0.6		
	05-Jul-00	Zinc, Total	24.7		1.8	500	5000
B38W15D	26-Jun-00	Aluminum, Total		R	10.5	200	200
	26-Jun-00	Antimony, Total	2.1	U	2.1	6	2/20
	26-Jun-00	Arsenic, Total	11.1		2	50	0.02/8
	26-Jun-00	Barium, Total	30.2		0.2	2000	2000
	26-Jun-00	Beryllium, Total	0.2	U	0.2	4	0.008/20
	26-Jun-00	Cadmium, Total	0.2	U	0.4	5	4
	26-Jun-00	Calcium, Total	102000		4.3		
	26-Jun-00	Chromium, Total	2.1	U	1	100	100
	26-Jun-00	Copper, Total	1.3		1	1300	1000
	26-Jun-00	Iron, Total	7.2	U	10.5	300	300
	26-Jun-00	Lead, Total	1.3	U	1.3	15	5/10
	26-Jun-00	Magnesium, Total	39400		7		
	26-Jun-00	Manganese, Total	1060		0.2	50	50
	26-Jun-00	Mercury, Total	0.1	U	0.1	2	2
	26-Jun-00	Nickel, Total	9.7		1		100
	26-Jun-00	Potassium, Total	72700		98		
	26-Jun-00	Selenium, Total	1.5	U	3.4	50	50
	26-Jun-00	Silver, Total	0.3	U	1	1007	
	26-Jun-00	Sodium, Total	204000		19.5		50000
	26-Jun-00	Thallium, Total	5.3	U	3.8	2	0.5/10
	26-Jun-00	Vanadium, Total	2.5	U	1		
	26-Jun-00	Zinc, Total	5.5	U	0.4	500	5000

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2000 Groundwater Analytical Results - Metals
Maywood Interim Storage Site

Sampling Location	Date Collected	Detected Analyte[a]	Result (ug/L)	Data Qualifiers[b]	Reporting Limit (ug/L)	Related Regulations Federal[c] (ug/L)	Related Regulations State[d] (ug/L)
B38W17B	19-Jun-00	Aluminum, Total	40.6	J	10.5	200	200
	19-Jun-00	Antimony, Total	2.1	U	2.1	6	2/20
	19-Jun-00	Arsenic, Total	2	U	2	50	0.02/8
	19-Jun-00	Barium, Total	69.4		0.2	2000	2000
	19-Jun-00	Beryllium, Total	0.2	U	0.2	4	0.008/20
	19-Jun-00	Cadmium, Total	0.4	U	0.4	5	4
	19-Jun-00	Calcium, Total	258000		4.3		
	19-Jun-00	Chromium, Total	12.9		1	100	100
	19-Jun-00	Cobalt, Total	0.5	U	0.5		
	19-Jun-00	Iron, Total	8490		10.5	300	300
	19-Jun-00	Lead, Total	2.2	U	1.3	15	5/10
	19-Jun-00	Manganese, Total	3970		0.2	50	50
	19-Jun-00	Mercury, Total	0.1	U	0.1	2	2
	19-Jun-00	Nickel, Total	7		1		100
	19-Jun-00	Potassium, Total	93300		98		
	19-Jun-00	Selenium, Total	3.4	U	3.4	50	50
	19-Jun-00	Silver, Total	1	U	1	1007	
	19-Jun-00	Sodium, Total	211000		19.5		50000
	19-Jun-00	Thallium, total	3.8	U	3.8	2	0.5/10
	19-Jun-00	Vanadium, Total	1	J	1		
	19-Jun-00	Zinc, Total	11.3	U	0.4	500	5000
B38W18D	06-Jul-00	Aluminum, Total	101	R	22.2	200	200
	06-Jul-00	Antimony, Total	5.6	U	3.8	6	2/20
	06-Jul-00	Arsenic, Total	8.2	J	5	50	0.02/8
	06-Jul-00	Barium, Total	22.9		0.1	2000	2000
	06-Jul-00	Beryllium, Total	0.52	J	0.4	4	0.008/20
	06-Jul-00	Cadmium, Total	0.35	U	0.6	5	4
	06-Jul-00	Calcium, Total	143000		8.3		
	06-Jul-00	Chromium, Total	28		0.6	100	100
	06-Jul-00	Copper, Total	2.4		0.7	1300	1000
	06-Jul-00	Iron, Total	11600		13	300	300
	06-Jul-00	Lead, Total	1.9	J	2.3	15	5/10
	06-Jul-00	Magnesium, Total	12400		6.1		
	06-Jul-00	Manganese, Total	3510		0.3	50	50
	06-Jul-00	Mercury, Total	0.1	U	0.1	2	2
	06-Jul-00	Nickel, Total	22.7		1.2		100
	06-Jul-00	Potassium, Total	6320		182		
	06-Jul-00	Selenium, Total	1.5	U	5.2	50	50
	06-Jul-00	Silver, Total	0.3	U	0.8	1007	
	06-Jul-00	Sodium, Total	36600		188		50000
	06-Jul-00	Thallium, Total	7.8	J	6.3	2	0.5/10
	06-Jul-00	Vanadium, Total	0.3	U	0.6		
	06-Jul-00	Zinc, Total	91.2		1.8	500	5000

Table 12
2000 Groundwater Analytical Results - Metals
Maywood Interim Storage Site

Sampling Location	Date Collected	Detected Analyte[a]	Result (ug/L)	Data Qualifiers[b]	Reporting Limit (ug/L)	Related Regulations Federal[c] (ug/L)	Related Regulations State[d] (ug/L)
B38W19D	12-Jul-00	Aluminum, Total	10.5	U	22.2	200	200
	12-Jul-00	Antimony, Total	2.1	U	3.8	6	2/20
	12-Jul-00	Arsenic, Total	70.3		5	50	0.02/8
	12-Jul-00	Barium, Total	26.9		0.1	2000	2000
	12-Jul-00	Beryllium, Total	0.2	U	0.4	4	0.008/20
	12-Jul-00	Cadmium, Total	0.4	U	0.6	5	4
	12-Jul-00	Calcium, Total	192000		8.3		
	12-Jul-00	Chromium, Total	2.8		0.6	100	100
	12-Jul-00	Cobalt, Total	0.5	J	0.8		
	12-Jul-00	Iron, Total	3110		13	300	300
	12-Jul-00	Lead, Total	1.3	U	2.3	15	5/10
	12-Jul-00	Magnesium, Total	31100		6.1		
	12-Jul-00	Manganese, Total	2240		0.3	50	50
	12-Jul-00	Mercury, Total	0.13	UJ	0.1	2	2
	12-Jul-00	Nickel, Total	2.2	J	1.2		100
	12-Jul-00	Potassium, Total	291000		182		
	12-Jul-00	Selenium, Total	3.4	U	5.2	50	50
	12-Jul-00	Silver, Total	1	U	0.8	1007	
	12-Jul-00	Sodium, Total	206000	J	188		50000
	12-Jul-00	Thallium, total	3.8	U	6.3	2	0.5/10
	12-Jul-00	Vanadium, Total	4.5		0.6		
	12-Jul-00	Zinc, Total	13.5	U	1.8	500	5000
B38W24D	22-Jun-00	Aluminum, Total		R	10.5		200
	22-Jun-00	Antimony, Total	2.1	U	2.1	6	2/20
	22-Jun-00	Arsenic, Total	2.1	J	2	50	0.02/8
	22-Jun-00	Barium, Total	240	J	0.2	2000	2000
	22-Jun-00	Beryllium, Total		R	0.2	4	0.008/20
	22-Jun-00	Cadmium, Total		R	0.4	5	4
	22-Jun-00	Calcium, Total	89800		4.3		
	22-Jun-00	Chromium, Total		R	1	100	100
	22-Jun-00	Cobalt, Total		R	0.5		
	22-Jun-00	Iron, Total	37900		10.5	300	300
	22-Jun-00	Lead, Total		R	1.3	15	5/10
	22-Jun-00	Magnesium, Total	10700		7		
	22-Jun-00	Manganese, Total	5350		0.2	50	50
	22-Jun-00	Mercury, Total	0.1	U	0.1	2	2
	22-Jun-00	Nickel, Total		R	1		100
	22-Jun-00	Potassium, Total	11600		98		
	22-Jun-00	Selenium, Total	3.4	U	3.4	50	50
	22-Jun-00	Silver, Total	1	U	1	1007	
	22-Jun-00	Sodium, Total	34700		19.5		50000
	22-Jun-00	Thallium, total	3.8	U	3.8	2	0.5/10
	22-Jun-00	Vanadium, Total		R	1		
	22-Jun-00	Zinc, Total		R	0.4	500	5000

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2000 Groundwater Analytical Results - Metals
Maywood Interim Storage Site

Sampling Location	Date Collected	Detected Analyte[a]	Result (ug/L)	Data Qualifiers[b]	Reporting Limit (ug/L)	Related Regulations Federal[c] (ug/L)	Related Regulations State[d] (ug/L)
B38W25D	07-Jul-00	Aluminum, Total		R	22.2	200	200
	07-Jul-00	Antimony, Total	3.6	U	3.8	6	2/20
	07-Jul-00	Arsenic, Total	3.1	U	5	50	0.02/8
	07-Jul-00	Barium, Total	61.4		0.1	2000	2000
	07-Jul-00	Beryllium, Total	0.2	U	0.4	4	0.008/20
	07-Jul-00	Cadmium, Total	0.2	U	0.6	5	4
	07-Jul-00	Calcium, Total	99500		8.3		
	07-Jul-00	Chromium, Total	5.3		0.6	100	100
	07-Jul-00	Copper, Total	0.54	J	0.7	1300	1000
	07-Jul-00	Iron, Total	5270		13	300	300
	07-Jul-00	Lead, Total	1.3	U	2.3	15	5/10
	07-Jul-00	Magnesium, Total	4920		6.1		
	07-Jul-00	Manganese, Total	1250		0.3	50	50
	07-Jul-00	Mercury, Total	0.1	U	0.1	2	2
	07-Jul-00	Nickel, Total	3.6		1.2		100
	07-Jul-00	Potassium, Total	48300		182		
	07-Jul-00	Selenium, Total	1.5	U	5.2	50	50
	07-Jul-00	Silver, Total	0.3	U	0.8	1007	
	07-Jul-00	Sodium, Total	28600		188		50000
	07-Jul-00	Thallium, Total	5.3	U	6.3	2	0.5/10
	07-Jul-00	Vanadium, Total	0.4	U	0.6		
	07-Jul-00	Zinc, Total	8	U	1.8	500	5000
MISS01B	20-Jun-00	Aluminum, Total	10.5	U	10.5	200	200
	20-Jun-00	Antimony, Total	2.1	U	2.1	6	2/20
	20-Jun-00	Arsenic, Total	2	U	2	50	0.02/8
	20-Jun-00	Barium, Total	66.7		0.2	2000	2000
	20-Jun-00	Beryllium, Total	0.2	U	0.2	4	0.008/20
	20-Jun-00	Cadmium, Total	0.4	U	0.4	5	4
	20-Jun-00	Chromium, Total	1.7	J	1	100	100
	20-Jun-00	Cobalt, Total	0.5	U	0.5		
	20-Jun-00	Iron, Total	4970		10.5	300	300
	20-Jun-00	Lead, Total	1.3	U	1.3	15	5/10
	20-Jun-00	Magnesium, Total	17200		7		
	20-Jun-00	Manganese, Total	291		0.2	50	50
	20-Jun-00	Mercury, Total	0.1	U	0.1	2	2
	20-Jun-00	Nickel, Total	1.9	J	1		100
	20-Jun-00	Potassium, Total	9000		98		
	20-Jun-00	Selenium, Total	3.4	U	3.4	50	50
	20-Jun-00	Silver, Total	1	U	1	1007	
	20-Jun-00	Sodium, Total	50000		19.5		50000
	20-Jun-00	Thallium, total	3.8	U	3.8	2	0.5/10
	20-Jun-00	Vanadium, Total	2.9	J	1		
	20-Jun-00	Zinc, Total	4.1	U	0.4	500	5000

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Sampling Location	Date Collected	Detected Analyte[a]	Result (ug/L)	Data Qualifiers[b]	Reporting Limit (ug/L)	Related Regulations Federal[c] (ug/L)	Related Regulations State[d] (ug/L)
MISS02B	23-Jun-00	Aluminum, Total		R	10.5	200	200
	23-Jun-00	Antimony, Total	2.1	U	2.1	6	2/20
	23-Jun-00	Arsenic, Total	3.2	U	2	50	0.02/8
	23-Jun-00	Barium, Total	11.4		0.2	2000	2000
	23-Jun-00	Beryllium, Total	0.57	J	0.2	4	0.008/20
	23-Jun-00	Cadmium, Total	0.97		0.4	5	4
	23-Jun-00	Calcium, Total	240000		4.3		
	23-Jun-00	Chromium, Total	24.1		1	100	100
	23-Jun-00	Copper, Total	1.7		1	1300	1000
	23-Jun-00	Iron, Total	15500		10.5	300	300
	23-Jun-00	Lead, Total	1.3	U	1.3	15	5/10
	23-Jun-00	Magnesium, Total	34200		7		
	23-Jun-00	Manganese, Total	3820		0.2	50	50
	23-Jun-00	Mercury, Total	0.1	U	0.1	2	2
	23-Jun-00	Nickel, Total	20.9		1		100
	23-Jun-00	Potassium, Total	84400		98		
	23-Jun-00	Selenium, Total	1.5	U	3.4	50	50
	23-Jun-00	Silver, Total	0.3	U	1	1007	
	23-Jun-00	Sodium, Total	342000		19.5		50000
	23-Jun-00	Thallium, Total	7.8	J	3.8	2	0.5/10
	23-Jun-00	Vanadium, Total	4.7		1		
	23-Jun-00	Zinc, Total	109		0.4	500	5000
MISS05B	11-Jul-00	Aluminum, Total	15.5	U	22.2	200	200
	11-Jul-00	Antimony, Total	2.1	U	3.8	6	2/20
	11-Jul-00	Arsenic, Total	20.5		5	50	0.02/8
	11-Jul-00	Barium, Total	41.6		0.1	2000	2000
	11-Jul-00	Beryllium, Total	0.2	U	0.4	4	0.008/20
	11-Jul-00	Cadmium, Total	0.4	U	0.6	5	4
	11-Jul-00	Calcium, Total	201000		8.3		
	11-Jul-00	Chromium, Total	2.4		0.6	100	100
	11-Jul-00	Cobalt, Total	0.5	U	0.8		
	11-Jul-00	Iron, Total	6110		13	300	300
	11-Jul-00	Lead, Total	1.3	U	2.3	15	5/10
	11-Jul-00	Magnesium, Total	23900		6.1		
	11-Jul-00	Manganese, Total	951		0.3	50	50
	11-Jul-00	Mercury, Total	0.1	UJ	0.1	2	2
	11-Jul-00	Nickel, Total	4.1	U	1.2		100
	11-Jul-00	Potassium, Total	167000		182		
	11-Jul-00	Selenium, Total	3.4	U	5.2	50	50
	11-Jul-00	Silver, Total	1	U	0.8	1007	
	11-Jul-00	Sodium, Total	94800		188		50000
	11-Jul-00	Thallium, total	3.8	U	6.3	2	0.5/10
	11-Jul-00	Vanadium, Total	2.1	J	0.6		
	11-Jul-00	Zinc, Total	17		1.8	500	5000

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Sampling Location	Date Collected	Detected Analyte[a]	Result (ug/L)	Data Qualifiers[b]	Reporting Limit (ug/L)	Related Regulations Federal[c] (ug/L)	State[d] (ug/L)
MISS07B	12-Jul-00	Aluminum, Total	13.2	U	22.2	200	200
	12-Jul-00	Antimony, Total	2.1	U	3.8	6	2/20
	12-Jul-00	Arsenic, Total	52.6		5	50	0.02/8
	12-Jul-00	Barium, Total	20		0.1	2000	2000
	12-Jul-00	Beryllium, Total	0.2	U	0.4	4	0.008/20
	12-Jul-00	Cadmium, Total	0.4	U	0.6	5	4
	12-Jul-00	Calcium, Total	138000		8.3		
	12-Jul-00	Chromium, Total	2.1	J	0.6	100	100
	12-Jul-00	Cobalt, Total	3.6		0.8		
	12-Jul-00	Iron, Total	6390		13	300	300
	12-Jul-00	Lead, Total	1.3	U	2.3	15	5/10
	12-Jul-00	Magnesium, Total	50000		6.1		
	12-Jul-00	Manganese, Total	2030		0.3	50	50
	12-Jul-00	Mercury, Total	0.11	UJ	0.1	2	2
	12-Jul-00	Nickel, Total	6.8		1.2		100
	12-Jul-00	Potassium, Total	29200		182		
	12-Jul-00	Selenium, Total	3.4	U	5.2	50	50
	12-Jul-00	Silver, Total	1	U	0.8	1007	
	12-Jul-00	Sodium, Total	338000		188		50000
	12-Jul-00	Thallium, total	3.8	U	6.3	2	0.5/10
	12-Jul-00	Vanadium, Total	13.9		0.6		
	12-Jul-00	Zinc, Total	21.8	U	1.8	500	5000

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

[b] Stone & Webster qualifier flags: J = Reported as an estimated value, U= analyte was not detected. R= Rejected by validation.

[c] Federal SDWA MCLs, 40 CFR 141. Regulations pertain to drinking water quality and are listed for comparison purposes only.

[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 B38W02D is the background location for wells completed in bedrock.

Table 13
2000 Groundwater Analytical Results - Volatile Organic Compounds
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte[a]	Result (ug/L)	Data Qualifiers[b] S&W	Reporting Limit (ug/L)	Related Regulations Federal[c] (ug/L)	Related Regulations State[d] (ug/L)
Monitoring wells completed in unconsolidated sediment:							
B38W01S	08-Nov-00	1,1,1-Trichloroethane	1	U	1	200	30
		1,1,2,2-Tetrachloroethane	1	U	1		2
		1,1,2-Trichloroethane	1	U	1	3/5	3
		1,1-Dichloroethane	1	U	1		70
		1,1-Dichloroethene	1	U	1	7	1
		1,2-Dichloroethane	1	U	1	5	0.3
		1,2-Dichloroethene (total)	1	U	1	70	10
		1,2-Dichloropropane	1	U	1	5	0.5
		2-Butanone	5	U	5		3
		2-Hexanone	5	U	5		
		4-Methyl-2-pentanone	5	U	5		400
		Acetone	5	U	5		700
		Benzene	1	U	1	5	0.2
		Bromodichloromethane	1	U	1		0.3
		Bromoform	1	U	1		4
		Bromomethane	2	U	2		10
		Carbon Disulfide	1	U	1		
		Carbon Tetrachloride	1	U	1		0.4
		Chlorobenzene	1	U	1	100	4
		Chloroethane	2	U	2		
		Chloroform	1	U	1		6
		Chloromethane	2	U	2		30
		cis-1,3-Dichloropropene	1	U	1		
		Dibromochloromethane	1	U	1		10
		Ethylbenzene	0.1	J	1	700	700
		Methylene Chloride	2	U	2		2
		Styrene	1	U	1	100	100
		Tetrachloroethene	1	U	1	5	0.4
		Toluene	3		1	100	1000
		Trans-1,3-Dichloropropene	1	U	1		
		Trichloroethene	1	U	1	5	1
		Vinyl Chloride	2	U	2	5	0.08
B38W14S	16-Nov-00	1,1,1-Trichloroethane	1	U	1	200	30
		1,1,2,2-Tetrachloroethane	1	U	1		2
		1,1,2-Trichloroethane	1	U	1	3/5	3
		1,1-Dichloroethane	0.2	J	1		70
		1,1-Dichloroethene	1	U	1	7	1
		1,2-Dichloroethane	1	U	1	5	0.3
		1,2-Dichloroethene (total)	10		1	70	10
		1,2-Dichloropropane	1	U	1	5	0.5
		2-Butanone	5	U	5		3
		2-Hexanone	5	U	5		
		4-Methyl-2-pentanone	5	U	5		400
		Acetone	5	U	5		700
		Benzene	0.2	J	1	5	0.2
		Bromodichloromethane	1	U	1		0.3
		Bromoform	1	U	1		4
		Bromomethane	2	U	2		10

Table 13
2000 Groundwater Analytical Results - Volatile Organic Compounds
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte[a]	Result (ug/L)	Data Qualifiers[b] S&W	Reporting Limit (ug/L)	Related Regulations Federal[c] (ug/L)	Related Regulations State[d] (ug/L)
		Carbon Disulfide	1	U	1		
		Carbon Tetrachloride	1	U	1		0.4
		Chlorobenzene	1	U	1	100	4
		Chloroethane	2	U	2		
		Chloroform	6		1		6
		Chloromethane	2	U	2		30
		cis-1,3-Dichloropropene	1	U	1		
		Dibromochloromethane	1	U	1		10
		Ethylbenzene	0.1	J	1	700	700
		Methylene Chloride	0.8	U	2		2
		Styrene	1	U	1	100	100
		Tetrachloroethene	[redacted]		1	5	0.4
		Toluene	0.4	J	1	100	1000
		Trans-1,3-Dichloropropene	1	U	1		
		Trichloroethene	[redacted]		1	5	1
		Vinyl Chloride	0.1	J	2	5	0.08
B38W15S	09-Nov-00	1,1,1-Trichloroethane	1	U	1	200	30
		1,1,2,2-Tetrachloroethane	1	U	1		2
		1,1,2-Trichloroethane	1	U	1	3/5	3
		1,1-Dichloroethane	1	U	1		70
		1,1-Dichloroethene	1	U	1	7	1
		1,2-Dichloroethane	1	U	1	5	0.3
		1,2-Dichloroethene (total)	1	U	1	70	10
		1,2-Dichloropropane	1	U	1	5	0.5
		2-Butanone	5	U	5		3
		2-Hexanone	5	U	5		
		4-Methyl-2-pentanone	5	U	5		400
		Acetone	4	R	5		700
		Benzene	0.2	J	1	5	0.2
		Bromodichloromethane	1	U	1		0.3
		Bromoform	1	U	1		4
		Bromomethane	2	U	2		10
		Carbon Disulfide	1	U	1		
		Carbon Tetrachloride	1	U	1		0.4
		Chlorobenzene	1	U	1	100	4
		Chloroethane	2	U	2		
		Chloroform	1	U	1		6
		Chloromethane	2	U	2		30
		cis-1,3-Dichloropropene	1	U	1		
		Dibromochloromethane	1	U	1		10
		Ethylbenzene	0.4	J	1	700	700
		Methylene Chloride	2	U	2		2
		Styrene	1	U	1	100	100
		Tetrachloroethene	1	U	1	5	0.4
		Toluene	2		1	100	1000
		Trans-1,3-Dichloropropene	1	U	1		
		Trichloroethene	1	U	1	5	1
		Vinyl Chloride	2	U	2	5	0.08

Table 13
2000 Groundwater Analytical Results - Volatile Organic Compounds
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte[a]	Result (ug/L)	Data Qualifiers[b] S&W	Reporting Limit (ug/L)	Related Regulations Federal[c] (ug/L)	Related Regulations State[d] (ug/L)
B38W17A	02-Nov-00	1,1,1-Trichloroethane	1	U	1	200	30
		1,1,2,2-Tetrachloroethane	1	U	1		2
		1,1,2-Trichloroethane	1	U	1	3/5	3
		1,1-Dichloroethane	1	U	1		70
		1,1-Dichloroethene	1	U	1	7	1
		1,2-Dichloroethane	1	U	1	5	0.3
		1,2-Dichloroethene (total)	1	U	1	70	10
		1,2-Dichloropropane	1	U	1	5	0.5
		2-Butanone	5	U	5		3
		2-Hexanone	5	U	5		
		4-Methyl-2-pentanone	5	U	5		400
		Acetone	20	B	5		700
		Benzene	0.1	J	1	5	0.2
		Bromodichloromethane	1	U	1		0.3
		Bromoform	1	U	1		4
		Bromomethane	2	U	2		10
		Carbon Disulfide	1	U	1		
		Carbon Tetrachloride	1	U	1		0.4
		Chlorobenzene	1	U	1	100	4
		Chloroethane	2	U	2		
		Chloroform	1	U	1		6
		Chloromethane	2	U	2		30
		cis-1,3-Dichloropropene	1	U	1		
		Dibromochloromethane	1	U	1		10
		Ethylbenzene	0.3	J	1	700	700
		Methylene Chloride	2	U	2		2
		Styrene	1	U	1	100	100
		Tetrachloroethene	1	U	1	5	0.4
		Toluene	2		1	100	1000
		Trans-1,3-Dichloropropene	1	U	1		
		Trichloroethene	1	U	1	5	1
		Vinyl Chloride	2	U	2	5	0.08
B38W19S	07-Nov-00	1,1,1-Trichloroethane	1	U	1	200	30
		1,1,2,2-Tetrachloroethane	1	U	1		2
		1,1,2-Trichloroethane	1	U	1	3/5	3
		1,1-Dichloroethane	1	U	1		70
		1,1-Dichloroethene	1	U	1	7	1
		1,2-Dichloroethane	1	U	1	5	0.3
		1,2-Dichloroethene (total)	1	U	1	70	10
		1,2-Dichloropropane	1	U	1	5	0.5
		2-Butanone	5	U	5		3
		2-Hexanone	5	U	5		
		4-Methyl-2-pentanone	5	U	5		400
		Acetone	5	U	5		700
		Benzene	1	U	1	5	0.2
		Bromodichloromethane	1	U	1		0.3
		Bromoform	1	U	1		4
		Bromomethane	2	U	2		10
		Carbon Disulfide	1	U	1		

Table 13
2000 Groundwater Analytical Results - Volatile Organic Compounds
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte[a]	Result (ug/L)	Data Qualifiers[b] S&W	Reporting Limit (ug/L)	Related Regulations Federal[c] (ug/L)	State[d] (ug/L)
		Carbon Tetrachloride	1	U	1		0.4
		Chlorobenzene	1	U	1	100	4
		Chloroethane	2	U	2		
		Chloroform	1	U	1		6
		Chloromethane	2	U	2		30
		cis-1,3-Dichloropropene	1	U	1		
		Dibromochloromethane	1	U	1		10
		Ethylbenzene	0.2	J	1	700	700
		Methylene Chloride	2	U	2		2
		Styrene	1	U	1	100	100
		Tetrachloroethene	1	U	1	5	0.4
		Toluene	0.7	J	1	100	1000
		Trans-1,3-Dichloropropene	1	U	1		
		Trichloroethene	1	U	1	5	1
		Vinyl Chloride	2	U	2	5	0.08
B38W24S	15-Nov-00	1,1,1-Trichloroethane	1	U	1	200	30
		1,1,2,2-Tetrachloroethane	1	U	1		2
		1,1,2-Trichloroethane	1	U	1	3/5	3
		1,1-Dichloroethane	1	U	1		70
		1,1-Dichloroethene	1	U	1	7	1
		1,2-Dichloroethane	1	U	1	5	0.3
		1,2-Dichloroethene (total)	1	U	1	70	10
		1,2-Dichloropropane	1	U	1	5	0.5
		2-Butanone	5	U	5		3
		2-Hexanone	5	U	5		
		4-Methyl-2-pentanone	5	U	5		400
		Acetone	5	U	5		700
		Benzene	1	U	1	5	0.2
		Bromodichloromethane	1	U	1		0.3
		Bromoform	1	U	1		4
		Bromomethane	2	U	2		10
		Carbon Disulfide	1	U	1		
		Carbon Tetrachloride	1	U	1		0.4
		Chlorobenzene	1	U	1	100	4
		Chloroethane	2	U	2		
		Chloroform	1	U	1		6
		Chloromethane	2	U	2		30
		cis-1,3-Dichloropropene	1	U	1		
		Dibromochloromethane	1	U	1		10
		Ethylbenzene	0.1	J	1	700	700
		Methylene Chloride	0.8	JB	2		2
		Styrene	1	U	1	100	100
		Tetrachloroethene	1	U	1	5	0.4
		Toluene	0.7	J	1	100	1000
		Trans-1,3-Dichloropropene	1	U	1		
		Trichloroethene	1	U	1	5	1
		Vinyl Chloride	2	U	2	5	0.08

Table 13
2000 Groundwater Analytical Results - Volatile Organic Compounds
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte[a]	Result (ug/L)	Data Qualifiers[b] S&W	Reporting Limit (ug/L)	Related Regulations Federal[c] (ug/L)	Related Regulations State[d] (ug/L)
B38W25S	27-Nov-00	1,1,1-Trichloroethane	1	U	1	200	30
		1,1,2,2-Tetrachloroethane	1	U	1		2
		1,1,2-Trichloroethane	1	U	1	3/5	3
		1,1-Dichloroethane	1	U	1		70
		1,1-Dichloroethene	1	U	1	7	1
		1,2-Dichloroethane	1	U	1	5	0.3
		1,2-Dichloroethene (total)	1	U	1	70	10
		1,2-Dichloropropane	1	U	1	5	0.5
		2-Butanone	5	U	5		3
		2-Hexanone	5	U	5		
		4-Methyl-2-pentanone	5	U	5		400
		Acetone	5	U	5		700
		Benzene	1	U	1	5	0.2
		Bromodichloromethane	1	U	1		0.3
		Bromoform	1	U	1		4
		Bromomethane	2	U	2		10
		Carbon Disulfide	1	U	1		
		Carbon Tetrachloride	1	U	1		0.4
		Chlorobenzene	0.1	J	1	100	4
		Chloroethane	2	U	2		
		Chloroform	1	U	1		6
		Chloromethane	2	U	2		30
		cis-1,3-Dichloropropene	1	U	1		
		Dibromochloromethane	1	U	1		10
		Ethylbenzene	0.2	J	1	700	700
		Methylene Chloride	0.5	JB	2		2
		Styrene	1	U	1	100	100
		Tetrachloroethene	1	U	1	5	0.4
		Toluene	0.7	J	1	100	1000
		Total Xylene	0.9	J	1	10000	40
		Trans-1,3-Dichloropropene	1	U	1		
		Trichloroethene	1	U	1	5	1
		Vinyl Chloride	2	U	2	5	0.08
MISS01AA	21-Dec-00	1,1,1-Trichloroethane	1	U	1	200	30
		1,1,2,2-Tetrachloroethane	1	U	1		2
		1,1,2-Trichloroethane	1	U	1	3/5	3
		1,1-Dichloroethane	1	U	1		70
		1,1-Dichloroethene	1	U	1	7	1
		1,2-Dichloroethane	1	U	1	5	0.3
		1,2-Dichloroethene (total)	1	U	1	70	10
		1,2-Dichloropropane	1	U	1	5	0.5
		2-Butanone	5	U	5		3
		2-Hexanone	5	U	5		
		4-Methyl-2-pentanone	5	U	5		400
		Acetone	1	J	5		700
		Benzene	1	U	1	5	0.2
		Bromodichloromethane	1	U	1		0.3
		Bromoform	1	U	1		4
		Bromomethane	2	U	2		10

Table 13
2000 Groundwater Analytical Results - Volatile Organic Compounds
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte[a]	Result (ug/L)	Data Qualifiers[b] S&W	Reporting Limit (ug/L)	Related Regulations Federal[c] (ug/L)	State[d] (ug/L)
		Carbon Disulfide	1	U	1		
		Carbon Tetrachloride	1	U	1		0.4
		Chlorobenzene	1	U	1	100	4
		Chloroethane	2	U	2		
		Chloroform	1	U	1		6
		Chloromethane	2	U	2		30
		cis-1,3-Dichloropropene	1	U	1		
		Dibromochloromethane	1	U	1		10
		Ethylbenzene	1	U	1	700	700
		Methylene Chloride	2	U	2		2
		Styrene	1	U	1	100	100
		Tetrachloroethene	1	U	1	5	0.4
		Toluene	0.1	J	1	100	1000
		Total Xylene	0.1	J	1	10000	40
		Trans-1,3-Dichloropropene	1	U	1		
		Trichloroethene	1	U	1	5	1
		Vinyl Chloride	2	U	2	5	0.08
MISS02A	21-Nov-00	1,1,1-Trichloroethane	1	U	1	200	30
		1,1,2,2-Tetrachloroethane	1	U	1		2
		1,1,2-Trichloroethane	1	U	1	3/5	3
		1,1-Dichloroethane	1	U	1		70
		1,1-Dichloroethene	1	U	1	7	1
		1,2-Dichloroethane	1	U	1	5	0.3
		1,2-Dichloroethene (total)	1	U	1	70	10
		1,2-Dichloropropane	1	U	1	5	0.5
		2-Butanone	4	J	5		3
		2-Hexanone	5	U	5		
		4-Methyl-2-pentanone	5	U	5		400
		Acetone	10		5		700
		Benzene	1	U	1	5	0.2
		Bromodichloromethane	1	U	1		0.3
		Bromoform	1	U	1		4
		Bromomethane	2	U	2		10
		Carbon Disulfide	1	U	1		
		Carbon Tetrachloride	1	U	1		0.4
		Chlorobenzene	1	U	1	100	4
		Chloroethane	2	U	2		
		Chloroform	1	U	1		6
		Chloromethane	2	U	2		30
		cis-1,3-Dichloropropene	1	U	1		
		Dibromochloromethane	1	U	1		10
		Ethylbenzene	0.1	J	1	700	700
		Methylene Chloride	0.6	JB	2		2
		Styrene	1	U	1	100	100
		Tetrachloroethene	1	U	1	5	0.4
		Toluene	0.6	J	1	100	1000
		Total Xylene	0.8	J	1	10000	40
		Trans-1,3-Dichloropropene	1	U	1		
		Trichloroethene	1	U	1	5	1
		Vinyl Chloride	2	U	2	5	0.08

Table 13
2000 Groundwater Analytical Results - Volatile Organic Compounds
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte[a]	Result (ug/L)	Data Qualifiers[b] S&W	Reporting Limit (ug/L)	Related Regulations Federal[c] (ug/L)	Related Regulations State[d] (ug/L)
MISS05A	06-Nov-00	1,1,1-Trichloroethane	1	U	1	200	30
		1,1,2,2-Tetrachloroethane	1	U	1		2
		1,1,2-Trichloroethane	1	U	1	3/5	3
		1,1-Dichloroethane	1	U	1		70
		1,1-Dichloroethene	1	U	1	7	1
		1,2-Dichloroethane	1	U	1	5	0.3
		1,2-Dichloroethene (total)	1	U	1	70	10
		1,2-Dichloropropane	1	U	1	5	0.5
		2-Butanone	5	U	5		3
		2-Hexanone	5	U	5		
		4-Methyl-2-pentanone	5	U	5		400
		Acetone	3	JB	5		700
		Benzene	1	U	1	5	0.2
		Bromodichloromethane	1	U	1		0.3
		Bromoform	1	U	1		4
		Bromomethane	2	U	2		10
		Carbon Disulfide	1	U	1		
		Carbon Tetrachloride	1	U	1		0.4
		Chlorobenzene	1	U	1	100	4
		Chloroethane	2	U	2		
		Chloroform	1	U	1		6
		Chloromethane	2	U	2		30
		cis-1,3-Dichloropropene	1	U	1		
		Dibromochloromethane	1	U	1		10
		Ethylbenzene	1	U	1	700	700
		Methylene Chloride	2	U	2		2
		Styrene	1	U	1	100	100
		Tetrachloroethene	1	U	1	5	0.4
		Toluene	1	U	1	100	1000
		Trans-1,3-Dichloropropene	1	U	1		
		Trichloroethene	1	U	1	5	1
		Vinyl Chloride	2	U	2	5	0.08
MISS06A	21-Dec-00	1,1,1-Trichloroethane	1	U	1	200	30
		1,1,2,2-Tetrachloroethane	1	U	1		2
		1,1,2-Trichloroethane	1	U	1	3/5	3
		1,1-Dichloroethane	1	U	1		70
		1,1-Dichloroethene	1	U	1	7	1
		1,2-Dichloroethane	1	U	1	5	0.3
		1,2-Dichloroethene (total)	1	U	1	70	10
		1,2-Dichloropropane	1	U	1	5	0.5
		2-Butanone	5	U	5		3
		2-Hexanone	5	U	5		
		4-Methyl-2-pentanone	5	U	5		400
		Acetone	1	J	5		700
		Benzene	1	U	1	5	0.2
		Bromodichloromethane	1	U	1		0.3
		Bromoform	1	U	1		4

Table 13
2000 Groundwater Analytical Results - Volatile Organic Compounds
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte[a]	Result (ug/L)	Data Qualifiers[b] S&W	Reporting Limit (ug/L)	Related Regulations Federal[c] (ug/L)	Related Regulations State[d] (ug/L)
		Bromomethane	2	U	2		10
		Carbon Disulfide	1	U	1		
		Carbon Tetrachloride	1	U	1		0.4
		Chlorobenzene	1	U	1	100	4
		Chloroethane	2	U	2		
		Chloroform	0.3	J	1		6
		Chloromethane	2	U	2		30
		cis-1,3-Dichloropropene	1	U	1		
		Dibromochloromethane	1	U	1		10
		Ethylbenzene	1	U	1	700	700
		Methylene Chloride	2	U	2		2
		Styrene	1	U	1	100	100
		Tetrachloroethene	1	U	1	5	0.4
		Toluene	1	U	1	100	1000
		Total Xylene	1	U	1	10000	40
		Trans-1,3-Dichloropropene	1	U	1		
		Trichloroethene	1	U	1	5	1
		Vinyl Chloride	2	U	2	5	0.08
MISS07A	27-Nov-00	1,1,1-Trichloroethane	1	U	1	200	30
		1,1,2,2-Tetrachloroethane	1	U	1		2
		1,1,2-Trichloroethane	1	U	1	3/5	3
		1,1-Dichloroethane	1	U	1		70
		1,1-Dichloroethene	1	U	1	7	1
		1,2-Dichloroethane	1	U	1	5	0.3
		1,2-Dichloroethene (total)	1	U	1	70	10
		1,2-Dichloropropane	1	U	1	5	0.5
		2-Butanone	5	U	5		3
		2-Hexanone	5	U	5		
		4-Methyl-2-pentanone	5	U	5		400
		Acetone	5	U	5		700
		Benzene	1	U	1	5	0.2
		Bromodichloromethane	1	U	1		0.3
		Bromoform	1	U	1		4
		Bromomethane	2	U	2		10
		Carbon Disulfide	1	U	1		
		Carbon Tetrachloride	1	U	1		0.4
		Chlorobenzene	1	U	1	100	4
		Chloroethane	2	U	2		
		Chloroform	1	U	1		6
		Chloromethane	2	U	2		30
		cis-1,3-Dichloropropene	1	U	1		
		Dibromochloromethane	1	U	1		10
		Ethylbenzene	1	U	1	700	700
		Methylene Chloride	0.5	JB	2		2
		Styrene	1	U	1	100	100
		Tetrachloroethene	1	U	1	5	0.4
		Toluene	1	U	1	100	1000
		Total Xylene	1	U	1	10000	40
		Trans-1,3-Dichloropropene	1	U	1		
		Trichloroethene	1	U	1	5	1
		Vinyl Chloride	2	U	2	5	0.08

Table 13
2000 Groundwater Analytical Results - Volatile Organic Compounds
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte[a]	Result (ug/L)	Data Qualifiers[b] S&W	Reporting Limit (ug/L)	Related Regulations Federal[c] (ug/L)	Related Regulations State[d] (ug/L)
Monitoring wells completed in bedrock:							
B38W02D	08-Nov-00	1,1,1-Trichloroethane	1	U	1	200	30
		1,1,2,2-Tetrachloroethane	1	U	1		2
		1,1,2-Trichloroethane	1	U	1	3/5	3
		1,1-Dichloroethane	1	U	1		70
		1,1-Dichloroethene	1	U	1	7	1
		1,2-Dichloroethane	1	U	1	5	0.3
		1,2-Dichloroethene (total)	1	U	1	70	10
		1,2-Dichloropropane	1	U	1	5	0.5
		2-Butanone	5	U	5		3
		2-Hexanone	5	U	5		
		4-Methyl-2-pentanone	5	U	5		400
		Acetone	1	JB	5		700
		Benzene	0.7	J	1	5	0.2
		Bromodichloromethane	1	U	1		0.3
		Bromoform	1	U	1		4
		Bromomethane	2	U	2		10
		Carbon Disulfide	1	U	1		
		Carbon Tetrachloride	1	U	1		0.4
		Chlorobenzene	0.2	J	1	100	4
		Chloroethane	2	U	2		
		Chloroform	1	U	1		6
		Chloromethane	2	U	2		30
		cis-1,3-Dichloropropene	1	U	1		
		Dibromochloromethane	1	U	1		10
		Ethylbenzene	0.1	J	1	700	700
		Methylene Chloride	2	U	2		2
		Styrene	1	U	1	100	100
		Tetrachloroethene	1	U	1	5	0.4
		Toluene	0.6	J	1	1000	1000
		Trans-1,3-Dichloropropene	1	U	1		
		Trichloroethene	1	U	1	5	1
B38W02D Duplicate	08-Nov-00	1,1,1-Trichloroethane	1	U	1	200	30
		1,1,2,2-Tetrachloroethane	1	U	1		2
		1,1,2-Trichloroethane	1	U	1	3/5	3
		1,1-Dichloroethane	1	U	1		70
		1,1-Dichloroethene	1	U	1	7	1
		1,2-Dichloroethane	1	U	1	5	0.3
		1,2-Dichloroethene (total)	1	U	1	70	10
		1,2-Dichloropropane	1	U	1	5	0.5
		2-Butanone	5	U	5		3
		2-Hexanone	5	U	5		
		4-Methyl-2-pentanone	5	U	5		400
		Acetone	5	U	5		700
		Benzene	0.3	J	1	5	0.2
		Bromodichloromethane	1	U	1		0.3
		Bromoform	1	U	1		4

Table 13
2000 Groundwater Analytical Results - Volatile Organic Compounds
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte[a]	Result (ug/L)	Data Qualifiers[b] S&W	Reporting Limit (ug/L)	Related Regulations Federal[c] (ug/L)	Related Regulations State[d] (ug/L)
		Bromomethane	2	U	2		10
		Carbon Disulfide	1	U	1		
		Carbon Tetrachloride	1	U	1		0.4
		Chlorobenzene	1	U	1	100	4
		Chloroethane	2	U	2		
		Chloroform	1	U	1		6
		Chloromethane	2	U	2		30
		cis-1,3-Dichloropropene	1	U	1		
		Dibromochloromethane	1	U	1		10
		Ethylbenzene	0.1	J	1	700	700
		Methylene Chloride	2	U	2		2
		Styrene	1	U	1	100	100
		Tetrachloroethene	1	U	1	5	0.4
		Toluene	0.7	J	1	100	1000
		Trans-1,3-Dichloropropene	1	U	1		
		Trichloroethene	1	U	1	5	1
		Vinyl Chloride	2	U	2	5	0.08
B38W14D	16-Nov-00	1,1,1-Trichloroethane	2		1	200	30
		1,1,2,2-Tetrachloroethane	1	U	1		2
		1,1,2-Trichloroethane	1	U	1	3/5	3
		1,1-Dichloroethane	1		1		70
		1,1-Dichloroethene	4		1	7	1
		1,2-Dichloroethane	1	U	1	5	0.3
		1,2-Dichloroethene (total)	50	D	10	70	10
		1,2-Dichloropropane	0.4	J	1	5	0.5
		2-Butanone	5	U	5		3
		2-Hexanone	5	U	5		
		4-Methyl-2-pentanone	5	U	5		400
		Acetone	5	U	5		700
		Benzene	0.1	J	1	5	0.2
		Bromodichloromethane	1	U	1		0.3
		Bromoform	1	U	1		4
		Bromomethane	2	U	2		10
		Carbon Disulfide	1	U	1		
		Carbon Tetrachloride	1	U	1		0.4
		Chlorobenzene	1	U	1	100	4
		Chloroethane	2	U	2		
		Chloroform	2		1		6
		Chloromethane	2	U	2		30
		cis-1,3-Dichloropropene	1	U	1		
		Dibromochloromethane	1	U	1		10
		Ethylbenzene	1	U	1	700	700
		Methylene Chloride	0.8	BJ	2		2
		Styrene	1	U	1	100	100
		Tetrachloroethene	300	D	10	5	0.4
		Toluene	0.2	J	1	100	1000
		Trans-1,3-Dichloropropene	1	U	1		
		Trichloroethene	82	D	10	5	1
		Vinyl Chloride	2	U	2	5	0.08

Table 13
2000 Groundwater Analytical Results - Volatile Organic Compounds
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte[a]	Result (ug/L)	Data Qualifiers[b] S&W	Reporting Limit (ug/L)	Related Regulations Federal[c] (ug/L)	Related Regulations State[d] (ug/L)
B38W15D	09-Nov-00	1,1,1-Trichloroethane	0.6	J	1	200	30
		1,1,2,2-Tetrachloroethane	1	U	1		2
		1,1,2-Trichloroethane	1	U	1	3/5	3
		1,1-Dichloroethane	2		1		70
		1,1-Dichloroethene	[redacted]		1	7	1
		1,2-Dichloroethane	1	U	1	5	0.3
		1,2-Dichloroethene (total)	[redacted]		1	70	10
		1,2-Dichloropropane	0.3	J	1	5	0.5
		2-Butanone	5	U	5		3
		2-Hexanone	5	U	5		
		4-Methyl-2-pentanone	5	U	5		400
		Acetone	5	U	5		700
		Benzene	0.7	J	1	5	0.2
		Bromodichloromethane	1	U	1		0.3
		Bromoform	1	U	1		4
		Bromomethane	2	U	2		10
		Carbon Disulfide	1	U	1		
		Carbon Tetrachloride	1	U	1		0.4
		Chlorobenzene	1	U	1	100	4
		Chloroethane	2	U	2		
		Chloroform	0.2	J	1		6
		Chloromethane	2	U	2		30
		cis-1,3-Dichloropropene	1	U	1		
		Dibromochloromethane	1	U	1		10
		Ethylbenzene	0.1	J	1	700	700
		Methylene Chloride	2	U	2		2
		Styrene	1	U	1	100	100
		Tetrachloroethene	120	E	1	5	0.4
		Toluene	0.6	J	1	100	1000
		Trans-1,3-Dichloropropene	1	U	1		
		Trichloroethene	30		1	5	1
		Vinyl Chloride	0.6	J	2	5	0.08
B38W17B	01-Nov-00	1,1,1-Trichloroethane	10	U	10	200	30
		1,1,2,2-Tetrachloroethane	10	U	10		2
		1,1,2-Trichloroethane	10	U	10	3/5	3
		1,1-Dichloroethane	10	U	10		70
		1,1-Dichloroethene	10	U	10	7	1
		1,2-Dichloroethane	10	U	10	5	0.3
		1,2-Dichloroethene (total)	10	U	10	70	10
		1,2-Dichloropropane	10	U	10	5	0.5
		2-Butanone	50	U	50		3
		2-Hexanone	50	U	50		
		4-Methyl-2-pentanone	50	U	50		400
		Acetone	350	B	50		700
		Benzene	10	U	10	5	0.2
		Bromodichloromethane	10	U	10		0.3
		Bromoform	10	U	10		4

Table 13
2000 Groundwater Analytical Results - Volatile Organic Compounds
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte[a]	Result (ug/L)	Data Qualifiers[b] S&W	Reporting Limit (ug/L)	Related Regulations Federal[c] (ug/L)	State[d] (ug/L)
		Bromomethane	20	U	20		10
		Carbon Disulfide	10	U	10		
		Carbon Tetrachloride	10	U	10		0.4
		Chlorobenzene	10	U	10	100	4
		Chloroethane	20	U	20		
		Chloroform	10	U	10		6
		Chloromethane	20	U	20		30
		cis-1,3-Dichloropropene	10	U	10		
		Dibromochloromethane	10	U	10		10
		Ethylbenzene	2	J	10	700	700
		Methylene Chloride	25	B	20		2
		Styrene	10	U	10	100	100
		Tetrachloroethene	10	U	10	5	0.4
		Toluene	10	U	10	100	1000
		Trans-1,3-Dichloropropene	10	U	10		
		Trichloroethene	10	U	10	5	1
		Vinyl Chloride	20	U	20	5	0.08
B38W18D	13-Nov-00	1,1,1-Trichloroethane	1	U	1	200	30
		1,1,2,2-Tetrachloroethane	1	U	1		2
		1,1,2-Trichloroethane	1	U	1	3/5	3
		1,1-Dichloroethane	1	U	1		70
		1,1-Dichloroethene	1	U	1	7	1
		1,2-Dichloroethane	1	U	1	5	0.3
		1,2-Dichloroethene (total)	1	U	1	70	10
		1,2-Dichloropropane	1	U	1	5	0.5
		2-Butanone	5	U	5		3
		2-Hexanone	5	U	5		
		4-Methyl-2-pentanone	5	U	5		400
		Acetone	5	U	5		700
		Benzene	1	U	1	5	0.2
		Bromodichloromethane	1	U	1		0.3
		Bromoform	1	U	1		4
		Bromomethane	2	U	2		10
		Carbon Disulfide	1	U	1		
		Carbon Tetrachloride	1	U	1		0.4
		Chlorobenzene	1	U	1	100	4
		Chloroethane	2	U	2		
		Chloroform	1	U	1		6
		Chloromethane	2	U	2		30
		cis-1,3-Dichloropropene	1	U	1		
		Dibromochloromethane	1	U	1		10
		Ethylbenzene	1	U	1	700	700
		Methylene Chloride	0.8	JB	2		2
		Styrene	1	U	1	100	100
		Tetrachloroethene	1	U	1	5	0.4
		Toluene	0.4	J	1	100	1000
		Trans-1,3-Dichloropropene	1	U	1		
		Trichloroethene	1	U	1	5	1
		Vinyl Chloride	2	U	2	5	0.08

Table 13
2000 Groundwater Analytical Results - Volatile Organic Compounds
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte[a]	Result (ug/L)	Data Qualifiers[b] S&W	Reporting Limit (ug/L)	Related Regulations Federal[c] (ug/L)	Related Regulations State[d] (ug/L)
B38W19D	07-Nov-00	1,1,1-Trichloroethane	1	U	1	200	30
		1,1,2,2-Tetrachloroethane	1	U	1		2
		1,1,2-Trichloroethane	1	U	1	3/5	3
		1,1-Dichloroethane	1	U	1		70
		1,1-Dichloroethene	1	U	1	7	1
		1,2-Dichloroethane	1	U	1	5	0.3
		1,2-Dichloroethene (total)	0.5	J	1	70	10
		1,2-Dichloropropane	1	U	1	5	0.5
		2-Butanone	5	U	5		3
		2-Hexanone	5	U	5		
		4-Methyl-2-pentanone	5	U	5		400
		Acetone	1	JB	5		700
		Benzene	[redacted]		1	5	0.2
		Bromodichloromethane	1	U	1		0.3
		Bromoform	1	U	1		4
		Bromomethane	2	U	2		10
		Carbon Disulfide	1	U	1		
		Carbon Tetrachloride	1	U	1		0.4
		Chlorobenzene	0.4	J	1	100	4
		Chloroethane	2	U	2		
		Chloroform	1	U	1		6
		Chloromethane	2	U	2		30
		cis-1,3-Dichloropropene	1	U	1		
		Dibromochloromethane	1	U	1		10
		Ethylbenzene	0.1	J	1	700	700
		Methylene Chloride	2	U	2		2
		Styrene	1	U	1	100	100
		Tetrachloroethene	1	U	1	5	0.4
		Toluene	0.4	J	1	100	1000
		Trans-1,3-Dichloropropene	1	U	1		
		Trichloroethene	1	U	1	5	1
		Vinyl Chloride	2	U	2	5	0.08
B38W24D	15-Nov-00	1,1,1-Trichloroethane	1	U	1	200	30
		1,1,2,2-Tetrachloroethane	1	U	1		2
		1,1,2-Trichloroethane	1	U	1	3/5	3
		1,1-Dichloroethane	1	U	1		70
		1,1-Dichloroethene	1	U	1	7	1
		1,2-Dichloroethane	1	U	1	5	0.3
		1,2-Dichloroethene (total)	0.3	J	1	70	10
		1,2-Dichloropropane	1	U	1	5	0.5
		2-Butanone	5	U	5		3
		2-Hexanone	5	U	5		
		4-Methyl-2-pentanone	5	U	5		400
		Acetone	5	U	5		700
		Benzene	0.2	J	1	5	0.2
		Bromodichloromethane	1	U	1		0.3
		Bromoform	1	U	1		4
		Bromomethane	2	U	2		10
		Carbon Disulfide	0.2	J	1		

Table 13
2000 Groundwater Analytical Results - Volatile Organic Compounds
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte[a]	Result (ug/L)	Data Qualifiers[b] S&W	Reporting Limit (ug/L)	Related Regulations Federal[c] (ug/L)	Related Regulations State[d] (ug/L)
		Carbon Tetrachloride	1	U	1		0.4
		Chlorobenzene	0.3	J	1	100	4
		Chloroethane	2	U	2		
		Chloroform	1	U	1		6
		Chloromethane	2	U	2		30
		cis-1,3-Dichloropropene	1	U	1		
		Dibromochloromethane	1	U	1		10
		Ethylbenzene	0.2	J	1	700	700
		Methylene Chloride	0.7	JB	2		2
		Styrene	1	U	1	100	100
		Tetrachloroethene	1	U	1	5	0.4
		Toluene	0.7	J	1	100	1000
		Trans-1,3-Dichloropropene	1	U	1		
		Trichloroethene	1	U	1	5	1
		Vinyl Chloride	2	U	2	5	0.08
B38W25D	27-Nov-00	1,1,1-Trichloroethane	1	U	1	200	30
		1,1,2,2-Tetrachloroethane	1	U	1		2
		1,1,2-Trichloroethane	1	U	1	3/5	3
		1,1-Dichloroethane	1	U	1		70
		1,1-Dichloroethene	1	U	1	7	1
		1,2-Dichloroethane	1	U	1	5	0.3
		1,2-Dichloroethene (total)	1	U	1	70	10
		1,2-Dichloropropane	1	U	1	5	0.5
		2-Butanone	5	U	5		3
		2-Hexanone	5	U	5		
		4-Methyl-2-pentanone	5	U	5		400
		Acetone	5	U	5		700
		Benzene	0.4	J	1	5	0.2
		Bromodichloromethane	1	U	1		0.3
		Bromoform	1	U	1		4
		Bromomethane	2	U	2		10
		Carbon Disulfide	1	U	1		
		Carbon Tetrachloride	1	U	1		0.4
		Chlorobenzene	0.2	J	1	100	4
		Chloroethane	2	U	2		
		Chloroform	1	U	1		6
		Chloromethane	2	U	2		30
		cis-1,3-Dichloropropene	1	U	1		
		Dibromochloromethane	1	U	1		10
		Ethylbenzene	0.2	J	1	700	700
		Methylene Chloride	0.5	JB	2		2
		Styrene	1	U	1	100	100
		Tetrachloroethene	1	U	1	5	0.4
		Toluene	1		1	100	1000
		Total Xylene	0.9	J	1	10000	40
		Trans-1,3-Dichloropropene	1	U	1		
		Trichloroethene	1	U	1	5	1
		Vinyl Chloride	2	U	2	5	0.08

Table 13
2000 Groundwater Analytical Results - Volatile Organic Compounds
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte[a]	Result (ug/L)	Data Qualifiers[b] S&W	Reporting Limit (ug/L)	Related Regulations Federal[c] (ug/L)	Related Regulations State[d] (ug/L)
MISS01B	21-Dec-00	1,1,1-Trichloroethane	1	U	1	200	30
		1,1,2,2-Tetrachloroethane	1	U	1		2
		1,1,2-Trichloroethane	1	U	1	3/5	3
		1,1-Dichloroethane	0.2	J	1		70
		1,1-Dichloroethene	0.2	J	1	7	1
		1,2-Dichloroethane	1	U	1	5	0.3
		1,2-Dichloroethene (total)	1		1	70	10
		1,2-Dichloropropane	1	U	1	5	0.5
		2-Butanone	5	U	5		3
		2-Hexanone	5	U	5		
		4-Methyl-2-pentanone	5	U	5		400
		Acetone	5	U	5		700
		Benzene	1	U	1	5	0.2
		Bromodichloromethane	1	U	1		0.3
		Bromoform	1	U	1		4
		Bromomethane	2	U	2		10
		Carbon Disulfide	1	U	1		
		Carbon Tetrachloride	1	U	1		0.4
		Chlorobenzene	1	U	1	100	4
		Chloroethane	2	U	2		
		Chloroform	0.2	J	1		6
		Chloromethane	2	U	2		30
		cis-1,3-Dichloropropene	1	U	1		
		Dibromochloromethane	1	U	1		10
		Ethylbenzene	1	U	1	700	700
		Methylene Chloride	2	U	2		2
		Styrene	1	U	1	100	100
		Tetrachloroethene	12		1	5	0.4
		Toluene	0.3	J	1	100	1000
		Total Xylene	0.2	J	1	10000	40
		Trans-1,3-Dichloropropene	1	U	1		
		Trichloroethene	1		1	5	1
		Vinyl Chloride	2	U	2	5	0.08
MISS02B	21-Nov-00	1,1,1-Trichloroethane	1	U	1	200	30
		1,1,2,2-Tetrachloroethane	1	U	1		2
		1,1,2-Trichloroethane	1	U	1	3/5	3
		1,1-Dichloroethane	1	U	1		70
		1,1-Dichloroethene	1	U	1	7	1
		1,2-Dichloroethane	1	U	1	5	0.3
		1,2-Dichloroethene (total)	1	U	1	70	10
		1,2-Dichloropropane	1	U	1	5	0.5
		2-Butanone	4	J	5		3
		2-Hexanone	5	U	5		
		4-Methyl-2-pentanone	5	U	5		400
		Acetone	9		5		700
		Benzene	0.6	J	1	5	0.2
		Bromodichloromethane	1	U	1		0.3
		Bromoform	1	U	1		4
		Bromomethane	2	U	2		10

Table 13
2000 Groundwater Analytical Results - Volatile Organic Compounds
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte[a]	Result (ug/L)	Data Qualifiers[b] S&W	Reporting Limit (ug/L)	Related Regulations Federal[c] (ug/L)	Related Regulations State[d] (ug/L)
		Carbon Disulfide	0.2	J	1		
		Carbon Tetrachloride	1	U	1		0.4
		Chlorobenzene	1	U	1	100	4
		Chloroethane	2	U	2		
		Chloroform	1	U	1		6
		Chloromethane	2	U	2		30
		cis-1,3-Dichloropropene	1	U	1		
		Dibromochloromethane	1	U	1		10
		Ethylbenzene	0.5	J	1	700	700
		Methylene Chloride	0.6	JB	2		2
		Styrene	1	U	1	100	100
		Tetrachloroethene	1	U	1	5	0.4
		Toluene	3		1	100	1000
		Total Xylene	2		1	10000	40
		Trans-1,3-Dichloropropene	1	U	1		
		Trichloroethene	1	U	1	5	1
		Vinyl Chloride	2	U	2	5	0.08
MISS05B	06-Nov-00	1,1,1-Trichloroethane	1	U	1	200	30
		1,1,2,2-Tetrachloroethane	1	U	1		2
		1,1,2-Trichloroethane	1	U	1	3/5	3
		1,1-Dichloroethane	0.2	J	1		70
		1,1-Dichloroethene	1	U	1	7	1
		1,2-Dichloroethane	1	U	1	5	0.3
		1,2-Dichloroethene (total)	0.8	J	1	70	10
		1,2-Dichloropropane	1	U	1	5	0.5
		2-Butanone	5	U	5		3
		2-Hexanone	5	U	5		
		4-Methyl-2-pentanone	5	J	5		400
		Acetone	330		5		700
		Benzene	3500	D	100	5	0.2
		Bromodichloromethane	1	U	1		0.3
		Bromoform	1	U	1		4
		Bromomethane	2	U	2		10
		Carbon Disulfide	0.3	J	1		
		Carbon Tetrachloride	1	U	1		0.4
		Chlorobenzene	8		1	100	4
		Chloroethane	2	U	2		
		Chloroform	1	U	1		6
		Chloromethane	2	U	2		30
		cis-1,3-Dichloropropene	1	U	1		
		Dibromochloromethane	1	U	1		10
		Ethylbenzene	0.9	J	1	700	700
		Methylene Chloride	2	U	2		2
		Styrene	1	U	1	100	100
		Tetrachloroethene	1	U	1	5	0.4
		Toluene	6		1	100	1000
		Trans-1,3-Dichloropropene	1	U	1		
		Trichloroethene	1	U	1	5	1
		Vinyl Chloride	0.2	J	2	5	0.08

Table 13
2000 Groundwater Analytical Results - Volatile Organic Compounds
Maywood Interim Storage Site

Sampling Location	Date Collected	Analyte[a]	Result (ug/L)	Data Qualifiers[b] S&W	Reporting Limit (ug/L)	Related Regulations Federal[c] (ug/L)	Related Regulations State[d] (ug/L)
MISS07B	06-Nov-00	1,1,1-Trichloroethane	0.2	J	1	200	30
		1,1,2,2-Tetrachloroethane	1	U	1		2
		1,1,2-Trichloroethane	1	U	1	3/5	3
		1,1-Dichloroethane	0.6	J	1		70
		1,1-Dichloroethene	0.7	J	1	7	1
		1,2-Dichloroethane	1	U	1	5	0.3
		1,2-Dichloroethene (total)	6		1	70	10
		1,2-Dichloropropane	1	U	1	5	0.5
		2-Butanone	5	U	5		3
		2-Hexanone	5	U	5		
		4-Methyl-2-pentanone	5	U	5		400
		Acetone	3	JB	5		700
		Benzene	0.2	J	1	5	0.2
		Bromodichloromethane	1	U	1		0.3
		Bromoform	1	U	1		4
		Bromomethane	2	U	2		10
		Carbon Disulfide	0.2	J	1		
		Carbon Tetrachloride	1	U	1		0.4
		Chlorobenzene	0.2	J	1	100	4
		Chloroethane	2	U	2		
		Chloroform	1	U	1		6
		Chloromethane	2	U	2		30
		cis-1,3-Dichloropropene	1	U	1		
		Dibromochloromethane	1	U	1		10
		Ethylbenzene	1	U	1	700	700
		Methylene Chloride	2	U	2		2
		Styrene	1	U	1	100	100
		Tetrachloroethene	9		1	5	0.4
		Toluene	0.3	J	1	100	1000
		Trans-1,3-Dichloropropene	1	U	1		
		Trichloroethene	2		1	5	1
		Vinyl Chloride	1	J	2	5	0.08

[a] All analytes were reported, detected and undetected.
[b] S&W 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.
B= The analyte is found in the associated blank as well as in the sample. It indicates possible blank contamination.
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.
f 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.
No VOCs were detected during 1999 sampling of this monitoring well.
[g] Limits for cis-isomer/trans-isomer; PQL is 2 mg/L.

Table 14
2000 List of Analytes and Detection Limits for
Metals and Volatile Organic Compounds
Maywood Interim Storage Site

Metals	Detection Limit Groundwater (µg/L)	Detection Limit Sediment (mg/kg)
Aluminum, Total	10.5	2.1
Antimony, Total	2.1	0.42
Arsenic, Total	2	0.4
Barium, Total	0.2	0.04
Beryllium, Total	0.2	0.04
Boron, Total	2	0.22
Cadmium, Total	0.4	0.08
Calcium, Total	4.3	0.86
Chromium, Total	1	0.2
Cobalt, Total	0.5	0.1
Copper, Total	1	0.2
Iron, Total	10.5	2.1
Lead, Total	1.3	0.26
Magnesium, Total	7	1.4
Manganese, Total	0.2	0.04
Mercury, Total	0.1	0.22
Nickel, Total	1	0.2
Potassium, Total	98	19.6
Selenium, Total	3.4	0.68
Silver, Total	1	0.2
Sodium, Total	19.5	3.9
Thallium, Total	3.8	0.76
Vanadium, Total	1	0.2
Zinc, Total	0.4	0.08

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	1
1,1,2,2-Tetrachloroethane	1
1,1,2-Trichloroethane	1
1,1-Dichloroethane	1
1,1-Dichloroethene	1
1,2-Dichloroethane	1
1,2-Dichloroethene (total)	1
1,2-Dichloropropane	1
2-Butanone	5
2-Hexanone	5
4-Methyl-2-pentanone	5
Acetone	5
Benzene	1
Bromodichloromethane	1
Bromoform	1
Bromomethane	2
Carbon Disulfide	1
Carbon Tetrachloride	1
Chlorobenzene	1
Chloroethane	2
Chloroform	1
Chloromethane	2
cis-1,3-Dichloropropene	1
Dibromochloromethane	1
Ethylbenzene	1
Methylene Chloride	2
Styrene	1
Tetrachloroethene	1
Toluene	1
Total Xylene	1
Trans-1,3-Dichloropropene	1
Trichloroethene	1
Vinyl Chloride	2

FIGURES

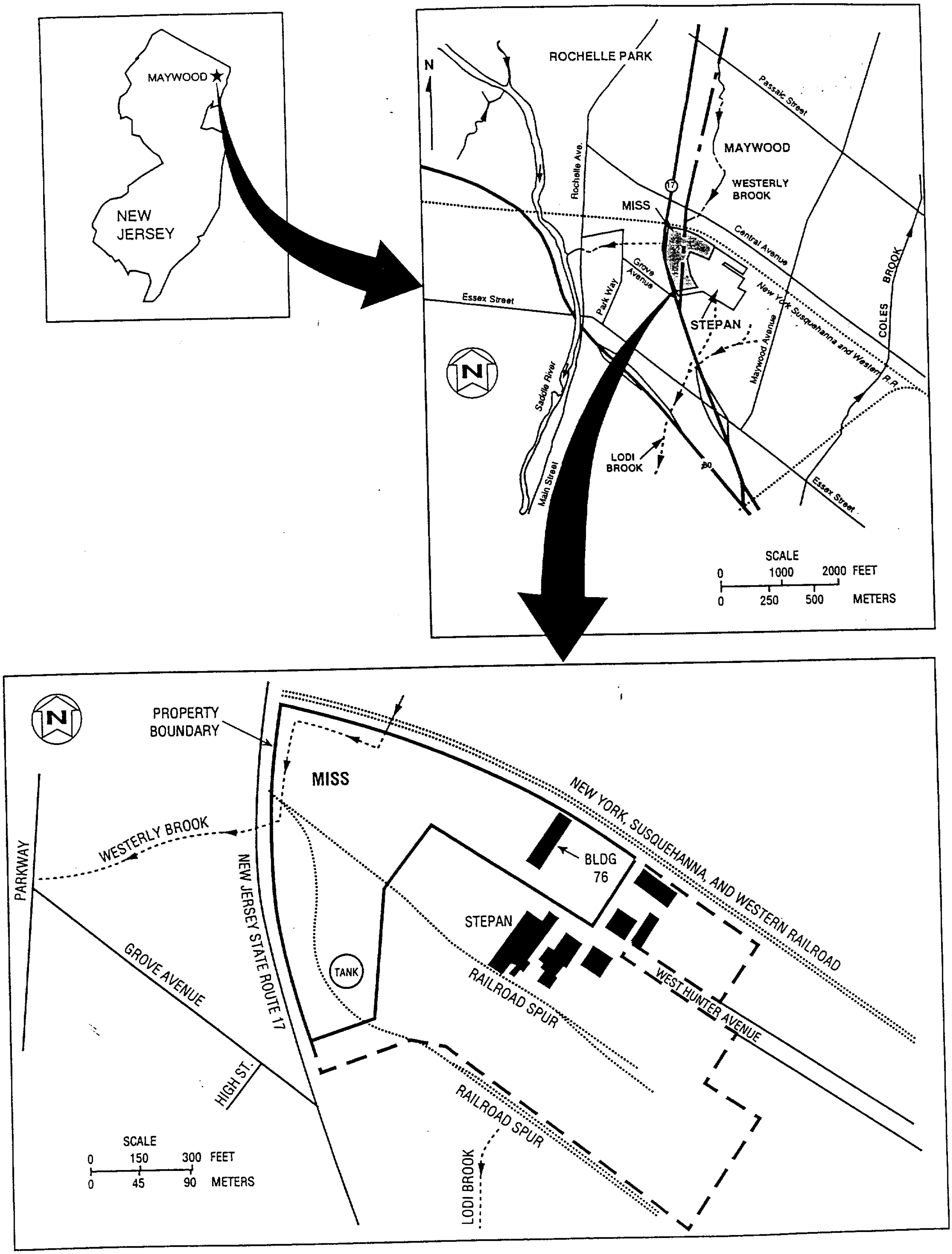

Figure 1
Maywood Interim Storage Site, Site Location and Site Map

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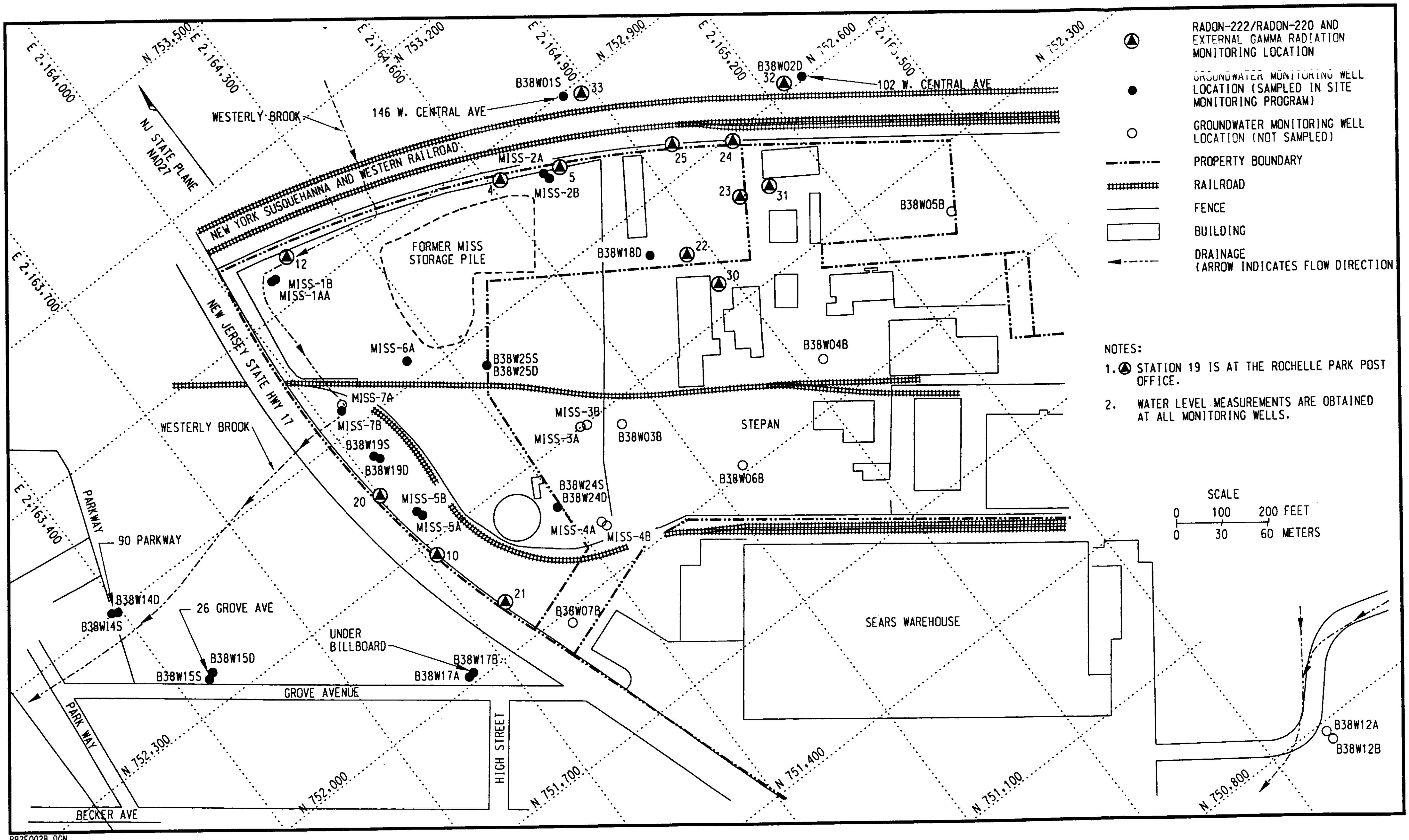

Figure 2
Maywood Interim Storage Site Environmental Monitoring Sampling Locations: External Gamma Radiation, Radon-222/Radon-220, and Groundwater

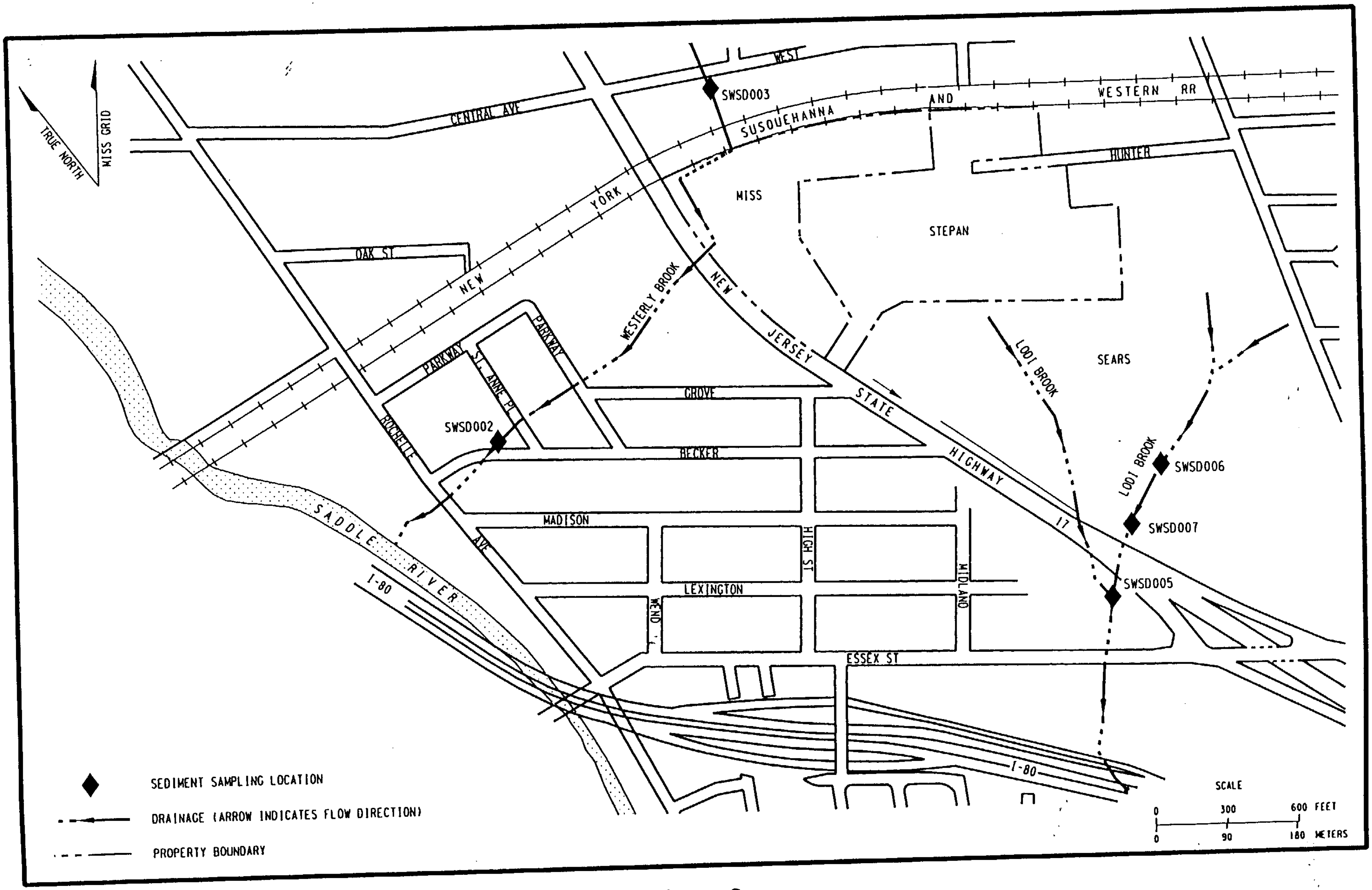

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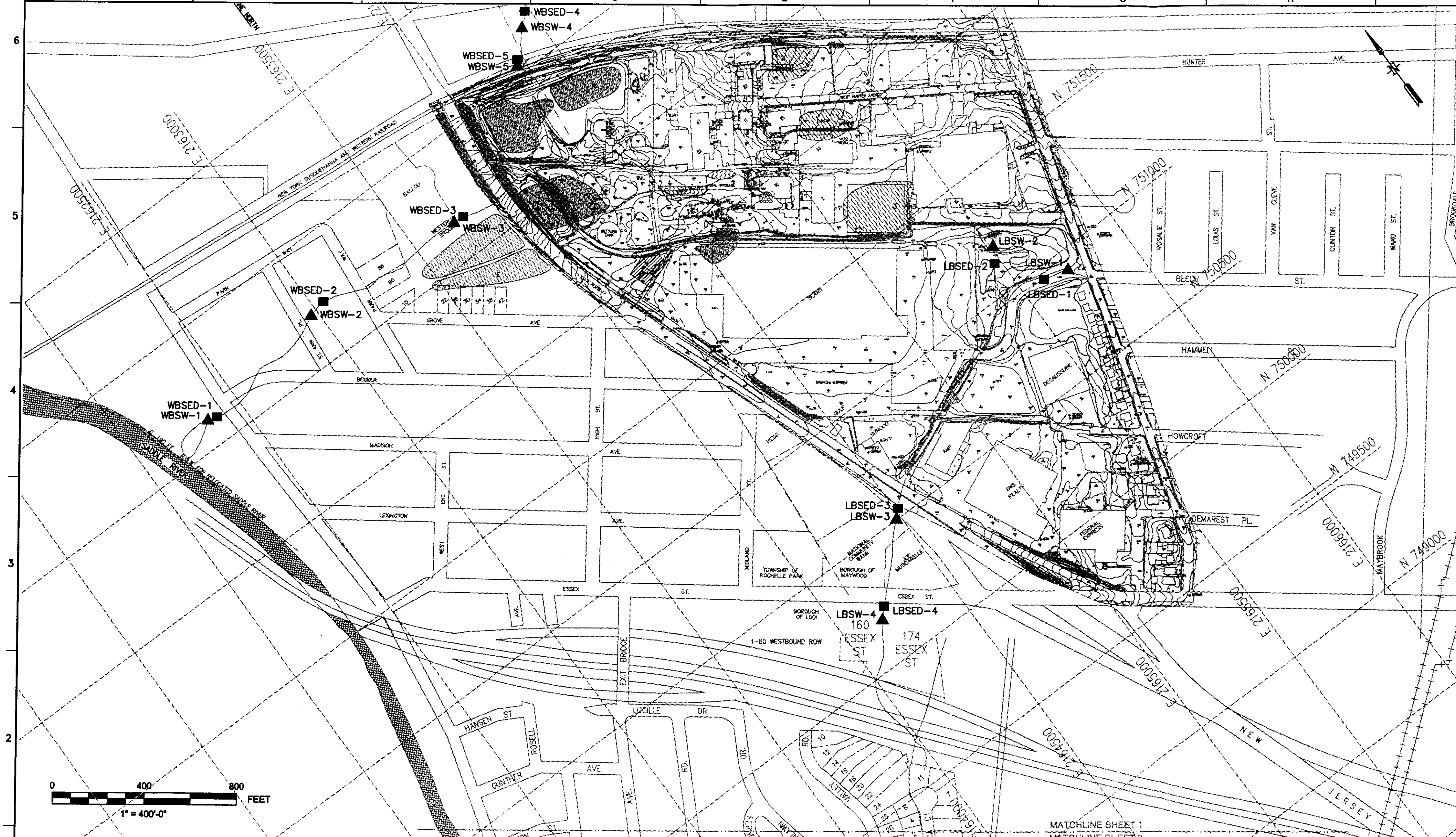
Figure 3
Surface Water and Sediment Sampling Locations



LEGEND

LBSW-1 ▲ SURFACE WATER SAMPLE LOCATION

LBSED-1 ■ SEDIMENT SAMPLE LOCATION

FORMER RETENTION POND

FORMER RETENTION POND (REMEDIATED)

BURIAL PITS

COAL STORAGE

APPROXIMATE AREAS OF LEATHER MATERIAL CONTAINING CHROMIUM

U.S. ARMY ENGINEER DIVISION
CORPS OF ENGINEERS
NEW YORK DISTRICT

US ARMY CORPS OF ENGINEERS
FUSRAP
FORMERLY UTILIZED SITES REMEDIAL ACTION PROGRAM

STONE & WEBSTER ENVIRONMENTAL TECHNOLOGY & SERVICES

Prepared by: MALCOLM PIRNIE | Reviewed by: | Date:

Drawn by: KPT | Date: 3/28/2001 | File Name: PROP-SAMP1

SURFACE WATER AND SEDIMENT SAMPLE LOCATIONS

GROUNDWATER REMEDIAL INVESTIGATION PHASE I - INTERIM REPORT
FUSRAP MAYWOOD SUPERFUND SITE
MAYWOOD, LODI, AND ROCHELLE PARK, NEW JERSEY

Contract Number: DACW41-96-R-0034
Job Number 08575
WAD# 1
WBS# 14
Figure Number: # 4-A

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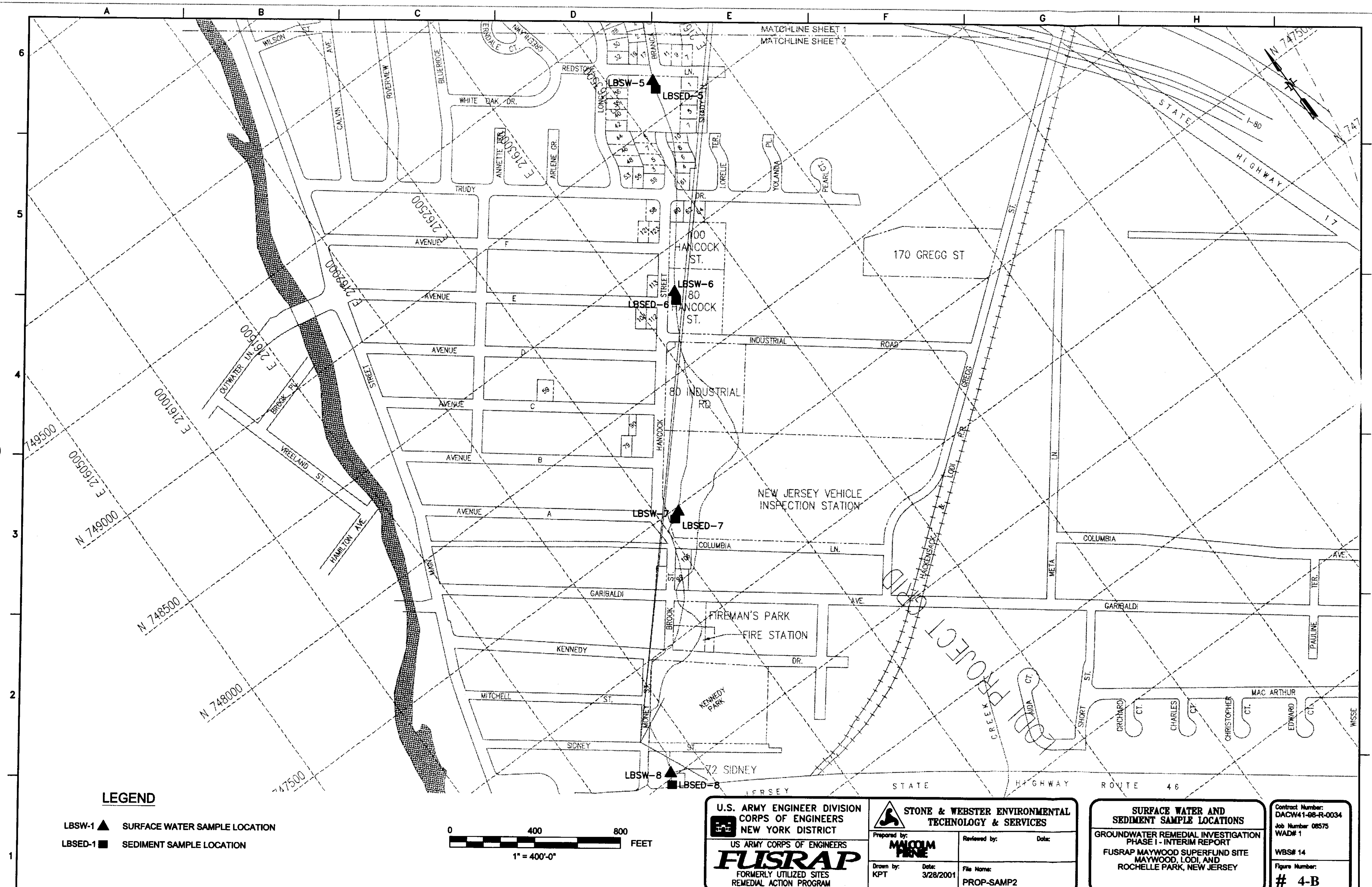
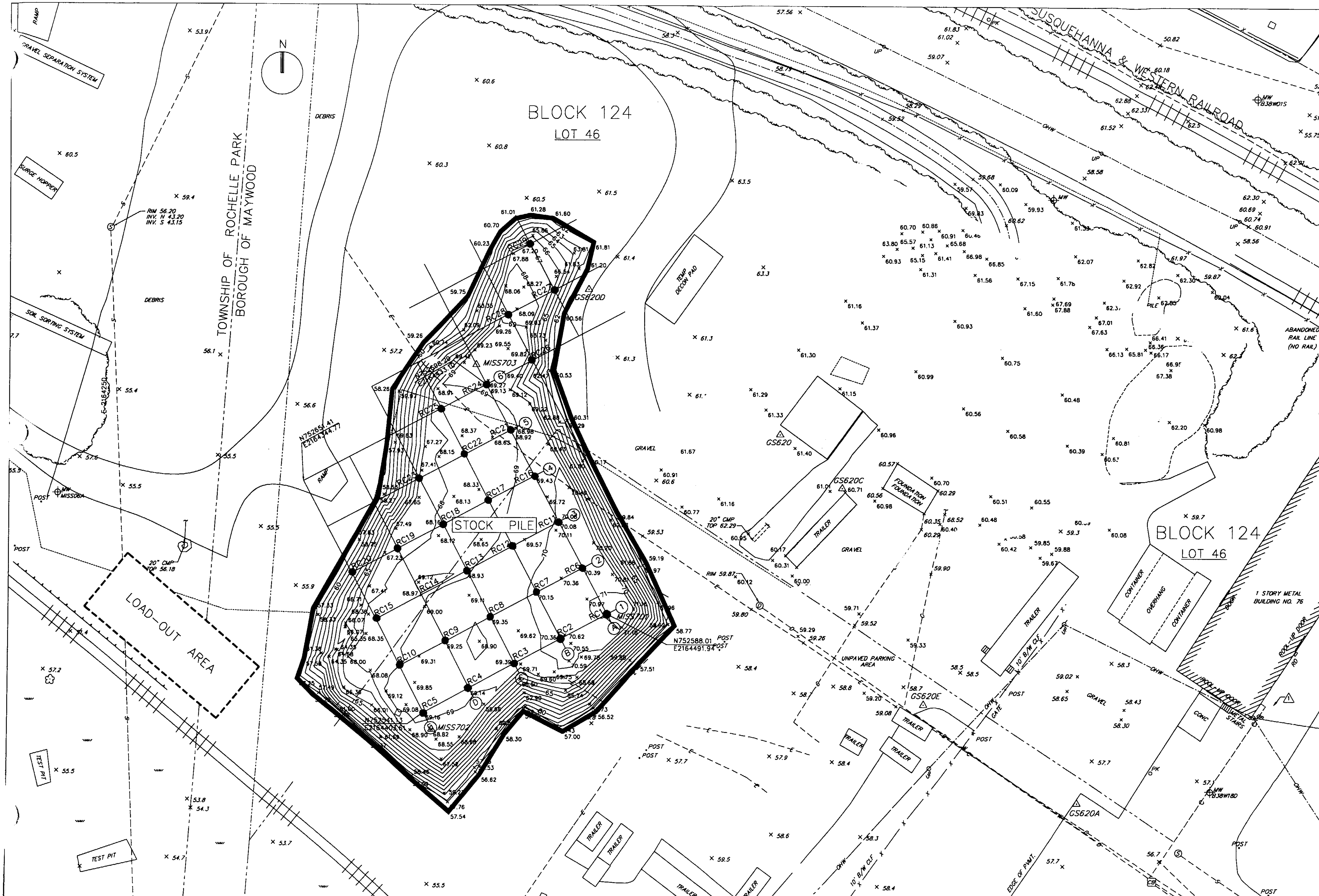
MATCHLINE SHEET 1
MATCHLINE SHEET 2
LBSW-5
LBSED-5
LBSW-6
LBSED-6
LBSW-7
LBSED-7
LBSW-8
LBSED-8
100 HANCOCK ST.
80 HANCOCK ST.
170 GREGG ST
80 INDUSTRIAL RD
NEW JERSEY VEHICLE INSPECTION STATION
FIREMAN'S PARK
FIRE STATION
KENNEDY PARK
72 SIDNEY
PROJECT
STATE HIGHWAY 17
STATE HIGHWAY ROUTE 46
I-80
N 749500
N 749000
N 748500
N 748000
N 747500
E 2160500
E 2161000
E 2161500
E 2162000
E 2162500
E 2163000
LEGEND
LBSW-1 SURFACE WATER SAMPLE LOCATION
LBSED-1 SEDIMENT SAMPLE LOCATION
0
400
800
FEET
1" = 400'-0"
U.S. ARMY ENGINEER DIVISION
CORPS OF ENGINEERS
NEW YORK DISTRICT
US ARMY CORPS OF ENGINEERS
FUSRAP
FORMERLY UTILIZED SITES REMEDIAL ACTION PROGRAM
STONE & WEBSTER ENVIRONMENTAL TECHNOLOGY & SERVICES
Prepared by:
MALCOLM PIRNIE
Reviewed by:
Date:
Drawn by: KPT
Date: 3/28/2001
File Name: PROP-SAMP2
SURFACE WATER AND SEDIMENT SAMPLE LOCATIONS
GROUNDWATER REMEDIAL INVESTIGATION PHASE I - INTERIM REPORT
FUSRAP MAYWOOD SUPERFUND SITE MAYWOOD, LODI, AND ROCHELLE PARK, NEW JERSEY
Contract Number: DACW41-98-R-0034
Job Number 08575
WAD# 1
WBS# 14
Figure Number:
4-B
29-March-2001



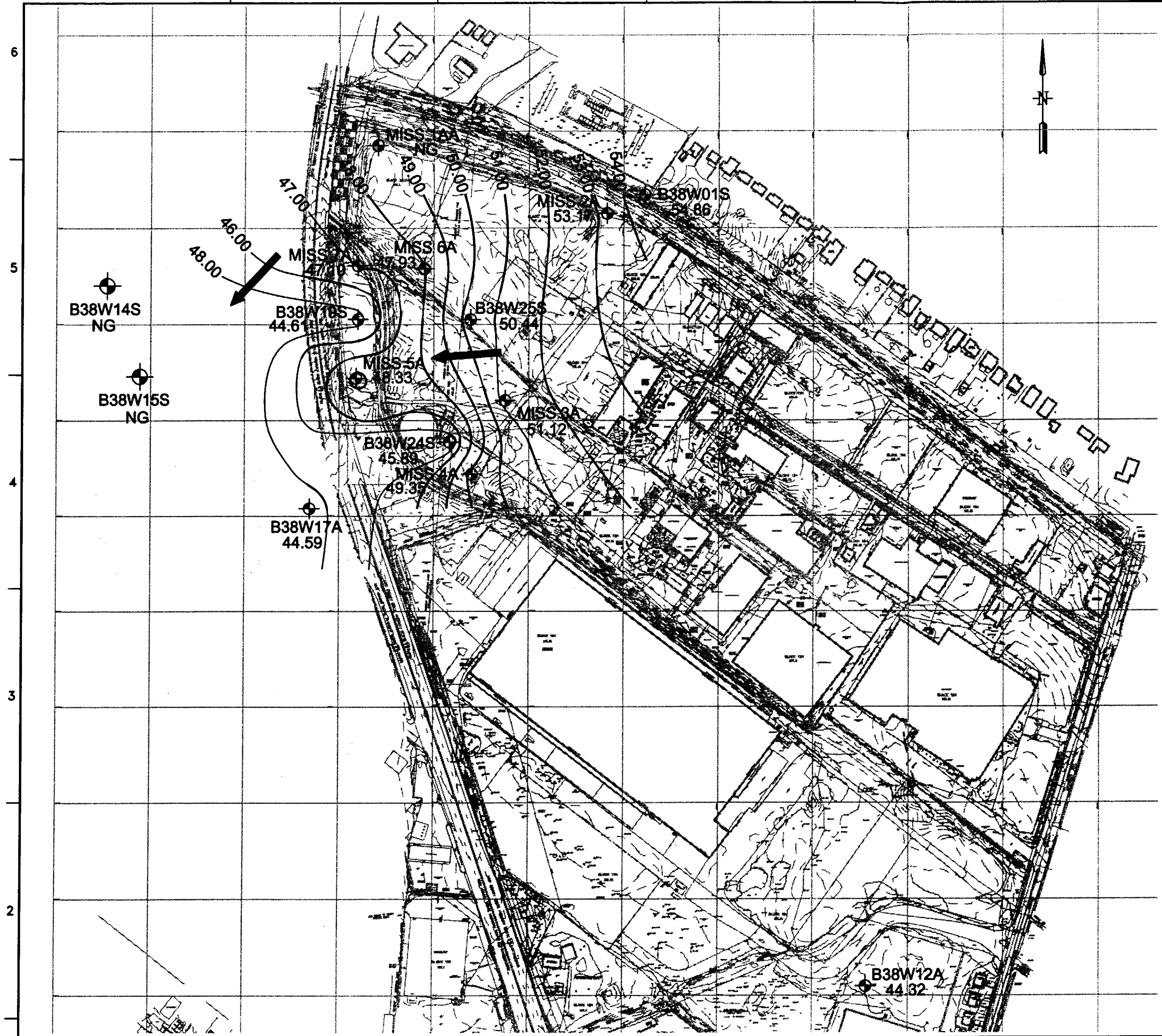
US Army Corps of Engineers
New York District

STONE & WEBSTER

FUSRAP
MAYWOOD SUPERFUND SITE
MAYWOOD, NEW JERSEY

MISS PROPERTY
RADON FLUX MONITORING
LOCATIONS

Figure 5



SYNOPTIC GROUNDWATER LEVEL MEASUREMENTS (OVERBURDEN)

JANUARY 19, 2000

Well ID	G.W. Elev. FT MSL
B38W01S	54.86
B38W12A	44.32 *
B38W14S	NG
B38W15S	NG
B38W17A	44.59
B38W19S	44.61
B38W24S	45.89
B38W25S	50.44
MISS 1AA	NG
MISS 2A	53.17
MISS 3A	51.12
MISS 4A	49.35
MISS 5A	48.33
MISS 6A	47.93
MISS 7A	47.10

LEGEND

- 50 — GROUNDWATER CONTOUR
- OVERBURDEN WELL
- GROUNDWATER FLOW DIRECTION
- NG — NOT GAUGED
- * — NOT CONTOURED DUE TO LACK OF CONTROL

NOTES:

1. THIS SURVEY SHOWS CONDITIONS AS OF OCTOBER 1999 BASED ON AERIAL MAPPING PREPARED BY GEOD CORP. AND GROUND SURVEY BY GARDEN STATE ENGINEERING SURVEYING AND PLANNING.
2. VERTICAL DATUM IS REFERENCED TO NGVD 1929.
3. HORIZONTAL DATUM IS REFERENCED TO NEW JERSEY STATE PLANE COORDINATE SYSTEM NAD 1927.
4. LOCATION OF HISTORIC LODI BROOK SHOWN ON THIS MAP IS APPROXIMATE ONLY. IT HAS BEEN TRANSFERRED FROM HISTORIC RECORDS THAT UTILIZED BASE MAPPING THAT DOES NOT CORRELATE WELL WITH BASE MAPPING SHOWN ON THIS SHEET.

0 300 600 FEET

1" = 300'-0"

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS NEW YORK DISTRICT

US ARMY CORPS OF ENGINEERS

FUSRAP

FORMERLY UTILIZED SITES REMEDIAL ACTION PROGRAM

STONE & WEBSTER ENVIRONMENTAL TECHNOLOGY & SERVICES

Prepared by: MALCOLM PIRNIE

Reviewed by:

Date:

Drawn by: KPT

Date: 3/21/2001

File Name: OVRBRDN

GROUNDWATER CONTOUR MAP OVERBURDEN - 01/19/00

GROUNDWATER REMEDIAL INVESTIGATION PHASE I - INTERIM REPORT

FUSRAP MAYWOOD SUPERFUND SITE MAYWOOD, LODI, AND ROCHELLE PARK, NEW JERSEY

Contract Number: DACW41-96-R-0034

Job Number 08575

WAD# 3

WBS# 10

Figure Number: # 6

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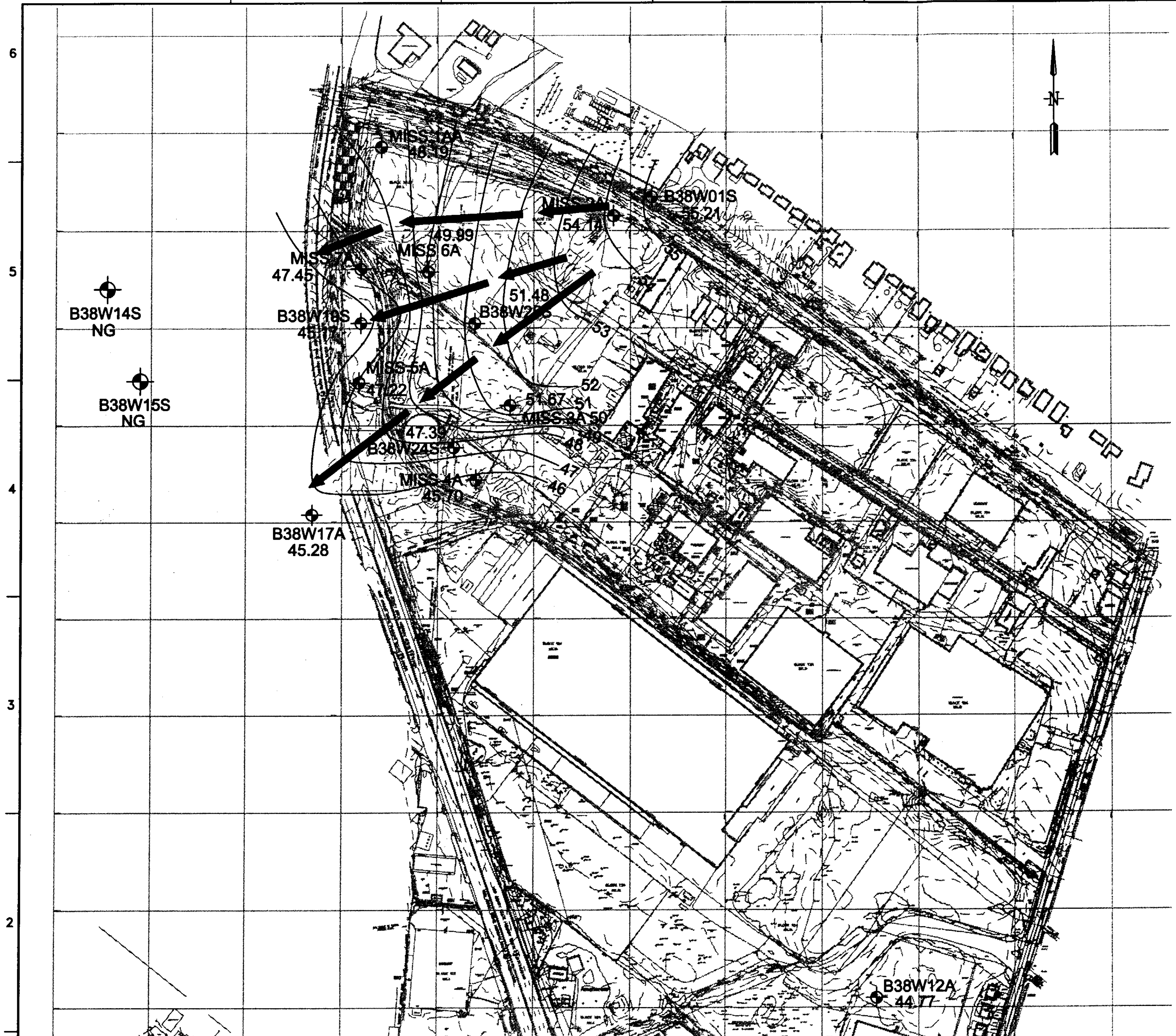
SYNOPTIC GROUNDWATER LEVEL MEASUREMENTS (OVERBURDEN)

MARCH 27, 2000

Well ID	G.W. Elev.
	FT MSL
B38W01S	55.21
B38W12A	44.77 *
B38W14S	NG
B38W15S	NG
B38W17A	45.28
B38W19S	45.17
B38W24S	47.39
B38W25S	51.48
MISS 1AA	48.19
MISS 2A	54.14
MISS 3A	51.67
MISS 4A	45.70
MISS 5A	47.22
MISS 6A	49.99
MISS 7A	47.45



LEGEND

- 50 — GROUNDWATER CONTOUR
- OVERBURDEN WELL
- GROUNDWATER FLOW DIRECTION
- NG — NOT GAUGED
- * — NOT CONTOURED DUE TO LACK OF CONTROL

NOTES:

1. THIS SURVEY SHOWS CONDITIONS AS OF OCTOBER 1999 BASED ON AERIAL MAPPING PREPARED BY GEOD CORP. AND GROUND SURVEY BY GARDEN STATE ENGINEERING SURVEYING AND PLANNING.
2. VERTICAL DATUM IS REFERENCED TO NGVD 1929.
3. HORIZONTAL DATUM IS REFERENCED TO NEW JERSEY STATE PLANE COORDINATE SYSTEM NAD 1927.
4. LOCATION OF HISTORIC LODI BROOK SHOWN ON THIS MAP IS APPROXIMATE ONLY. IT HAS BEEN TRANSFERRED FROM HISTORIC RECORDS THAT UTILIZED BASE MAPPING THAT DOES NOT CORRELATE WELL WITH BASE MAPPING SHOWN ON THIS SHEET.

U.S. ARMY ENGINEER DIVISION
CORPS OF ENGINEERS
NEW YORK DISTRICT

US ARMY CORPS OF ENGINEERS
FUSRAP
FORMERLY UTILIZED SITES REMEDIAL ACTION PROGRAM

STONE & WEBSTER ENVIRONMENTAL TECHNOLOGY & SERVICES

Prepared by: MALCOLM PIRNIE
Reviewed by:
Date:
Drawn by: KPT
Date: 3/21/2001
File Name: OVRBRDN

GROUNDWATER CONTOUR MAP
OVERBURDEN - 03/27/00

GROUNDWATER REMEDIAL INVESTIGATION
PHASE I - INTERIM REPORT
FUSRAP MAYWOOD SUPERFUND SITE
MAYWOOD, LODI, AND ROCHELLE PARK, NEW JERSEY

Contract Number: DACW41-98-R-0034
Job Number 08575
WAD# 3
WBS# 10
Figure Number: # 7

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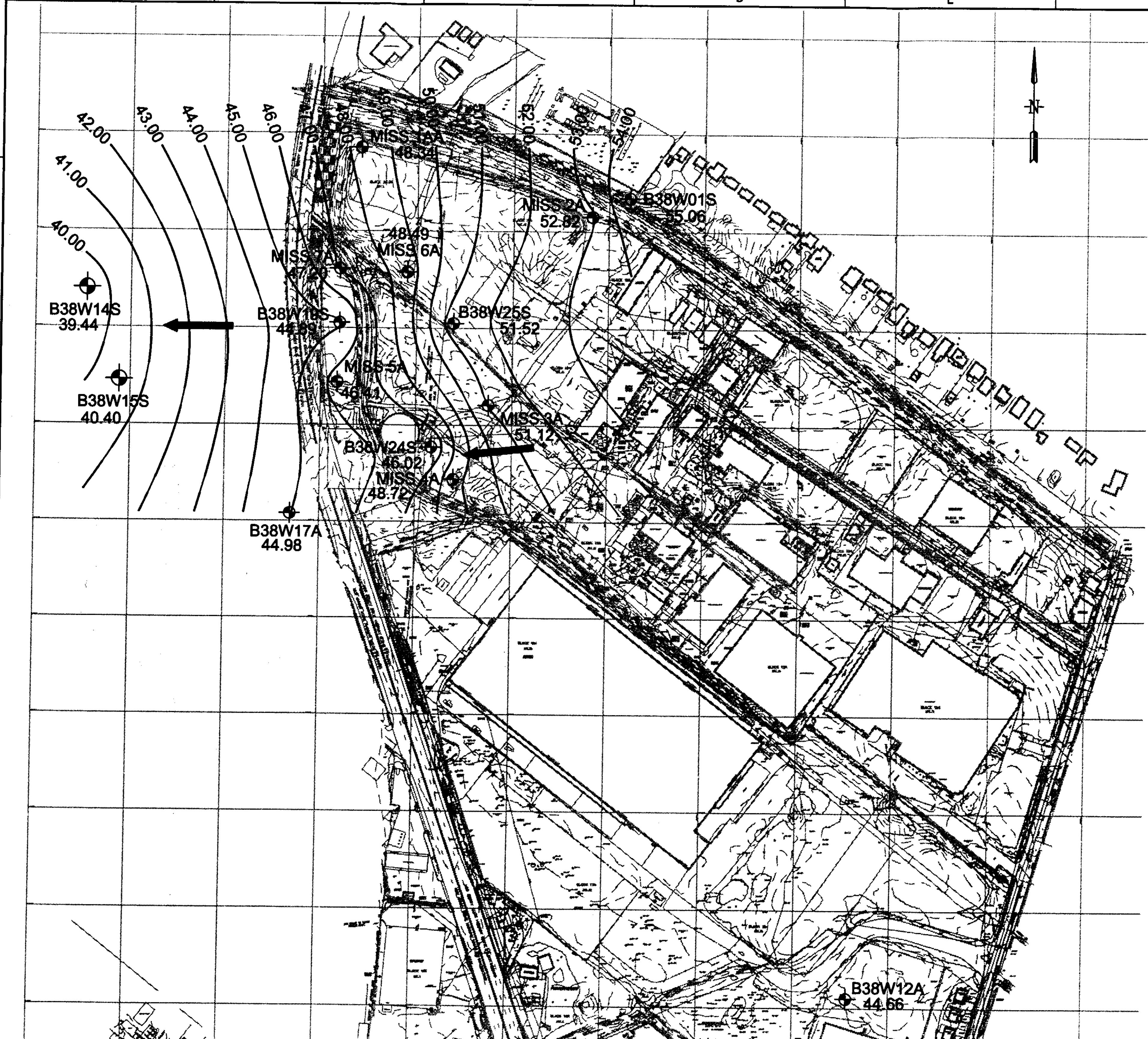

SYNOPTIC GROUNDWATER LEVEL MEASUREMENTS (OVERBURDEN)

JUNE 12, 2000

Well ID	G.W. Elev. FT MSL
B38W01S	55.06
B38W12A	44.66 *
B38W14S	39.44
B38W15S	40.40
B38W17A	44.98
B38W19S	44.89
B38W24S	46.02
B38W25S	51.52
MISS 1AA	48.34
MISS 2A	52.82
MISS 3A	51.12
MISS 4A	48.72
MISS 5A	46.41
MISS 6A	48.49
MISS 7A	47.20

LEGEND

- 50 — GROUNDWATER CONTOUR
- OVERBURDEN WELL
- GROUNDWATER FLOW DIRECTION
- * NOT CONTOURED DUE TO LACK OF CONTROL

NOTES:

1. THIS SURVEY SHOWS CONDITIONS AS OF OCTOBER 1999 BASED ON AERIAL MAPPING PREPARED BY GEOD CORP. AND GROUND SURVEY BY GARDEN STATE ENGINEERING SURVEYING AND PLANNING.
2. VERTICAL DATUM IS REFERENCED TO NGVD 1929.
3. HORIZONTAL DATUM IS REFERENCED TO NEW JERSEY STATE PLANE COORDINATE SYSTEM NAD 1927.
4. LOCATION OF HISTORIC LODI BROOK SHOWN ON THIS MAP IS APPROXIMATE ONLY. IT HAS BEEN TRANSFERRED FROM HISTORIC RECORDS THAT UTILIZED BASE MAPPING THAT DOES NOT CORRELATE WELL WITH BASE MAPPING SHOWN ON THIS SHEET.

0 300 600 FEET

1" = 300'-0"

U.S. ARMY ENGINEER DIVISION
CORPS OF ENGINEERS
NEW YORK DISTRICT

US ARMY CORPS OF ENGINEERS
FUSRAP
FORMERLY UTILIZED SITES REMEDIAL ACTION PROGRAM

STONE & WEBSTER ENVIRONMENTAL TECHNOLOGY & SERVICES

Prepared by: MALCOLM PIRNIE | Reviewed by: | Date:

Drawn by: KPT | Date: 3/21/2001 | File Name: OVRBRDN

GROUNDWATER CONTOUR MAP
OVERBURDEN - 06/12/00

GROUNDWATER REMEDIAL INVESTIGATION PHASE I - INTERIM REPORT

FUSRAP MAYWOOD SUPERFUND SITE
MAYWOOD, LODI, AND
ROCHELLE PARK, NEW JERSEY

Contract Number: DACW41-96-R-0034
Job Number 08575
WAD# 3
WBS# 10
Figure Number: # 8

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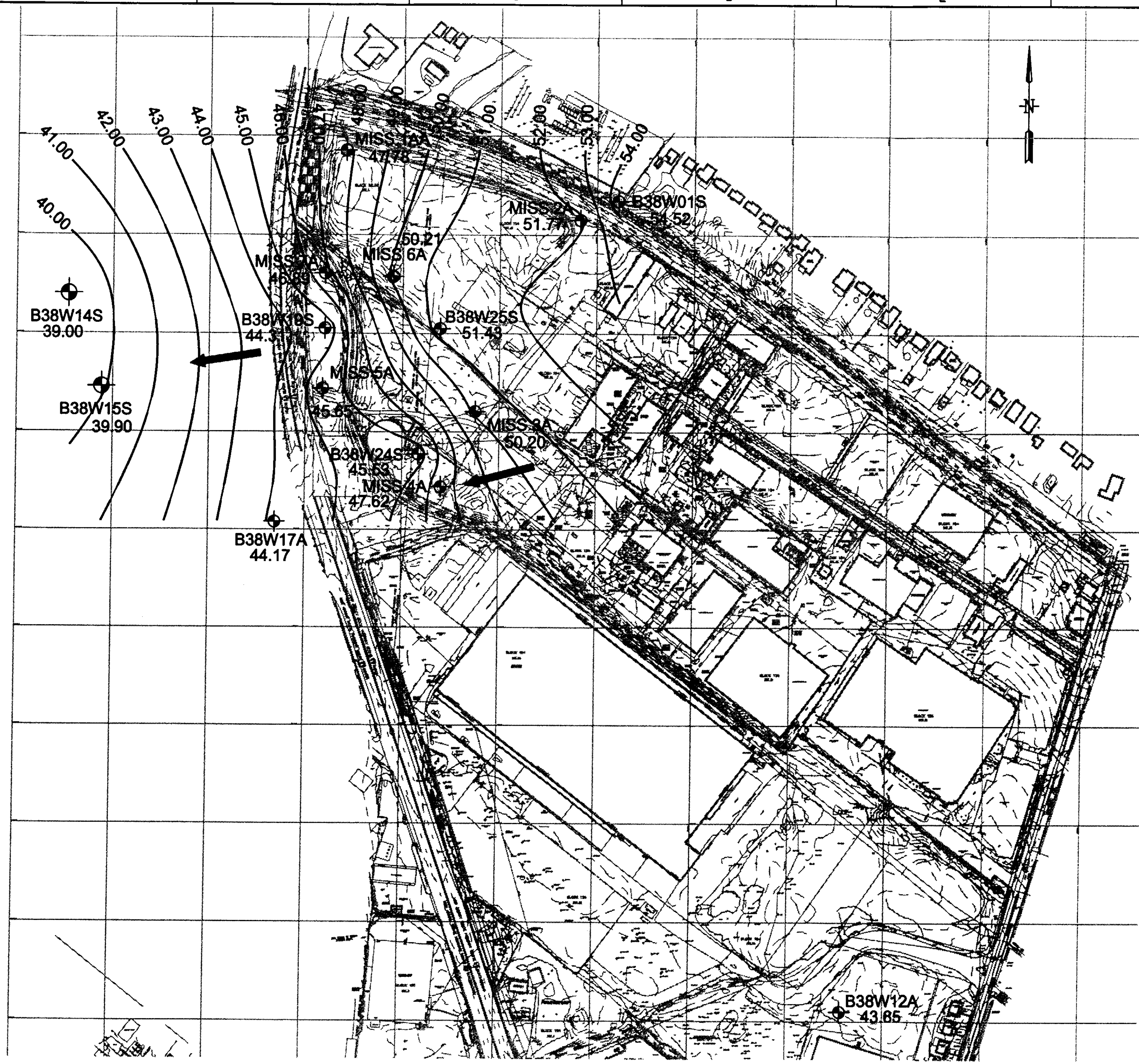

SYNOPTIC GROUNDWATER LEVEL MEASUREMENTS (OVERBURDEN)

SEPTEMBER 22, 2000

Well ID	G.W. Elev. FT MSL
B38W01S	54.52
B38W12A	43.85 *
B38W14S	39.00
B38W15S	39.90
B38W17A	44.17
B38W19S	44.31
B38W24S	45.53
B38W25S	51.43
MISS 1AA	47.78
MISS 2A	51.77
MISS 3A	50.20
MISS 4A	47.62
MISS 5A	45.65
MISS 6A	50.21
MISS 7A	46.89

LEGEND

- 50 — GROUNDWATER CONTOUR
- OVERBURDEN WELL
- GROUNDWATER FLOW DIRECTION
- * NOT CONTOURED DUE TO LACK OF CONTROL

NOTES:

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0 300 600 FEET
1" = 300'-0"

U.S. ARMY ENGINEER DIVISION
CORPS OF ENGINEERS
NEW YORK DISTRICT

US ARMY CORPS OF ENGINEERS
FUSRAP
FORMERLY UTILIZED SITES REMEDIAL ACTION PROGRAM

STONE & WEBSTER ENVIRONMENTAL TECHNOLOGY & SERVICES

Prepared by: MALCOLM PIRNIE
Reviewed by:
Date:
Drawn by: KPT
Date: 3/21/2001
File Name: OVRBRDN

GROUNDWATER CONTOUR MAP
OVERBURDEN - 09/22/00

GROUNDWATER REMEDIAL INVESTIGATION PHASE I - INTERIM REPORT
FUSRAP MAYWOOD SUPERFUND SITE MAYWOOD, LODI, AND ROCHELLE PARK, NEW JERSEY

Contract Number: DACW41-96-R-0034
Job Number 08575
WAD# 3
WBS# 10
Figure Number: # 9

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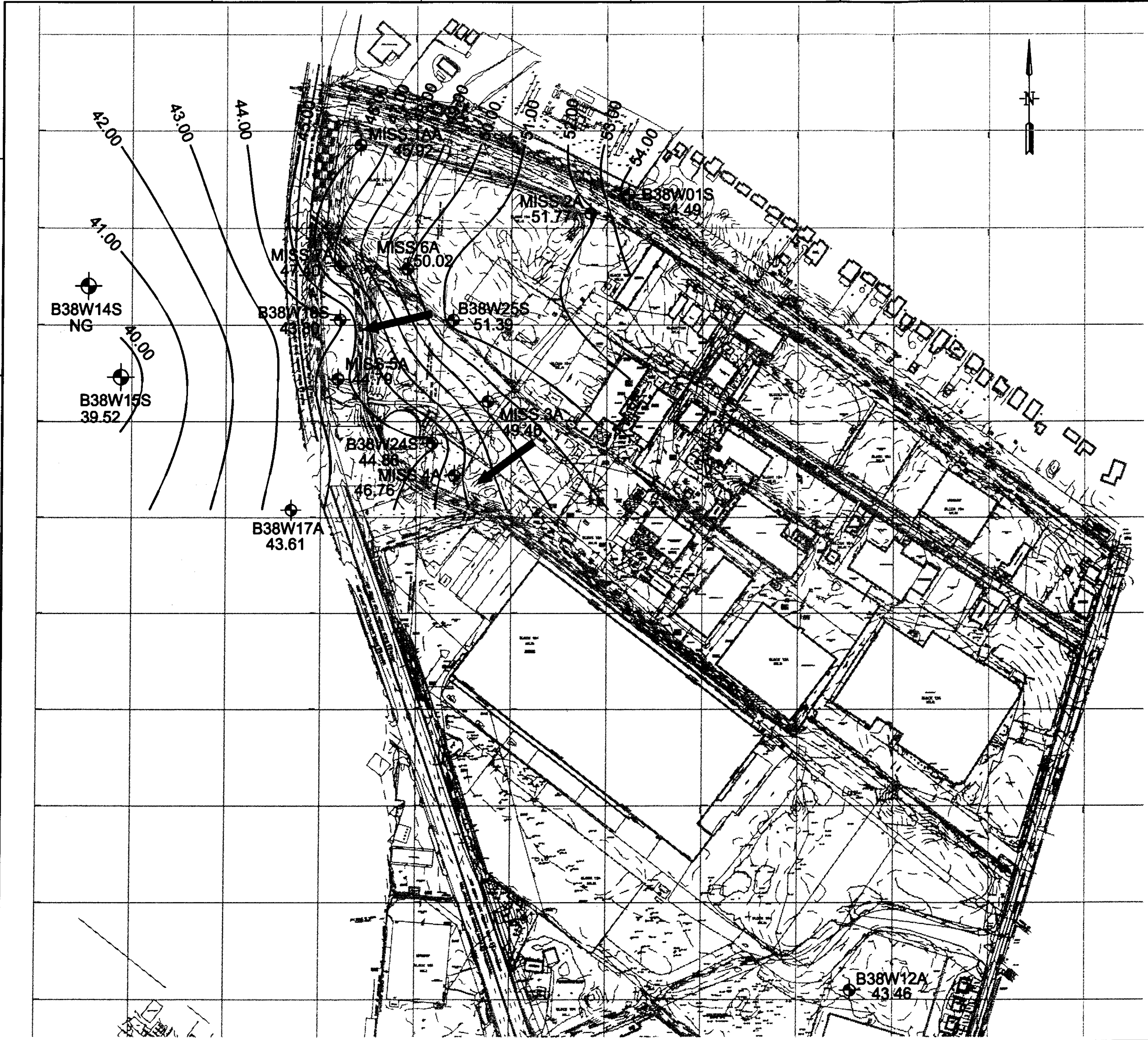

SYNOPTIC GROUNDWATER LEVEL MEASUREMENTS (OVERBURDEN)
NOVEMBER 29 2000

Well ID	G.W. Elev. FT MSL
B38W01S	54.49
B38W12A	43.46 *
B38W14S	NG
B38W15S	39.90
B38W17A	43.61
B38W19S	43.80
B38W24S	44.86
B38W25S	51.39
MISS 1AA	45.92
MISS 2A	51.77
MISS 3A	49.46
MISS 4A	46.76
MISS 5A	44.79
MISS 6A	50.02
MISS 7A	47.40

LEGEND

50 — GROUNDWATER CONTOUR
OVERBURDEN WELL
GROUNDWATER FLOW DIRECTION
NG NOT GAUGED
* NOT CONTOURED DUE TO LACK OF CONTROL

NOTES:

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FUSRAP
FORMERLY UTILIZED SITES REMEDIAL ACTION PROGRAM

STONE & WEBSTER ENVIRONMENTAL TECHNOLOGY & SERVICES

Prepared by: MALCOLM PIRNIE
Reviewed by:
Date:
Drawn by: KPT
Date: 3/21/2001
File Name: OVRBRDN

GROUNDWATER CONTOUR MAP
OVERBURDEN - 11/29/00

GROUNDWATER REMEDIAL INVESTIGATION
PHASE I - INTERIM REPORT
FUSRAP MAYWOOD SUPERFUND SITE
MAYWOOD, LODI, AND ROCHELLE PARK, NEW JERSEY

Contract Number: DACW41-98-R-0034
Job Number 08575
WAD# 3
WBS# 10
Figure Number: # 10

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SYNOPTIC GROUNDWATER LEVEL MEASUREMENTS (DEEP AND SHALLOW BEDROCK)

JANUARY 19, 2000

Well ID	G.W. Elev.
	FT MSL
B38W02D	52.15
B38W03B	48.93
B38W04B	56.15
B38W05B	59.58
B38W06B	NG
B38W07B	45.91
B38W12B	44.48 *
B38W14D	NG
B38W15D	NG
B38W17B	44.53
B38W18D	53.90
B38W19D	44.40
B38W24D	46.36
B38W25D	50.34
MISS 1B	45.95
MISS 2B	50.74
MISS 3B	48.36
MISS 4B	NG
MISS 5B	44.56
MISS 7B	45.22

LEGEND

- 50 — GROUNDWATER CONTOUR
- BEDROCK WELL
- OPEN HOLE WELL
- GROUNDWATER FLOW DIRECTION
- NG — NOT GAUGED
- * — NOT CONTOURED DUE TO LACK OF CONTROL

NOTES:

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0 300 600 FEET
1" = 300'-0"

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS NEW YORK DISTRICT
US ARMY CORPS OF ENGINEERS
FUSRAP
FORMERLY UTILIZED SITES REMEDIAL ACTION PROGRAM

STONE & WEBSTER ENVIRONMENTAL TECHNOLOGY & SERVICES

Prepared by: MALCOLM PIRNIE
Reviewed by:
Date:
Drawn by: KPT
Date: 3/21/2001
File Name: COMPOSIT

GROUNDWATER CONTOUR MAP SHALLOW & DEEP BEDROCK-01/19/00
GROUNDWATER REMEDIAL INVESTIGATION PHASE I - INTERIM REPORT
FUSRAP MAYWOOD SUPERFUND SITE MAYWOOD, LODI, AND ROCHELLE PARK, NEW JERSEY

Contract Number: DACW41-98-R-0034
Job Number 08575
WAD# 3
WBS# 10
Figure Number: # 11

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SYNOPTIC GROUNDWATER LEVEL MEASUREMENTS (DEEP AND SHALLOW BEDROCK)

MARCH 27, 2000

Well ID	G.W. Elev.
	FT MSL
B38W02D	53.02
B38W03B	49.52
B38W04B	56.95
B38W05B	61.32
B38W07B	46.60
B38W12B	44.96 *
B38W14D	NG
B38W15D	NG
B38W17B	45.20
B38W18D	54.44
B38W19D	45.08
B38W24D	46.98
B38W25D	51.86
MISS 1B	45.85
MISS 2B	51.14
MISS 3B	48.84
MISS 4B	46.66
MISS 5B	45.10
MISS 7B	45.59

LEGEND

- 50 — GROUNDWATER CONTOUR
- BEDROCK WELL
- OPEN HOLE WELL
- GROUNDWATER FLOW DIRECTION
- NG — NOT GAUGED
- * — NOT CONTOURED DUE TO LACK OF CONTROL

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NEW YORK DISTRICT

US ARMY CORPS OF ENGINEERS
FUSRAP
FORMERLY UTILIZED SITES REMEDIAL ACTION PROGRAM

STONE & WEBSTER ENVIRONMENTAL TECHNOLOGY & SERVICES

Prepared by: MALCOLM PIRNIE
Reviewed by:
Date:
Drawn by: KPT
Date: 3/27/2001
File Name: COMPOSIT

GROUNDWATER CONTOUR MAP
SHALLOW & DEEP BEDROCK-03/27/00

GROUNDWATER REMEDIAL INVESTIGATION
PHASE I - INTERIM REPORT
FUSRAP MAYWOOD SUPERFUND SITE
MAYWOOD, LODI, AND
ROCHELLE PARK, NEW JERSEY

Contract Number: DACW41-96-R-0034
Job Number 06575
WAD# 3
WBS# 10
Figure Number: # 12

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SYNOPTIC GROUNDWATER LEVEL MEASUREMENTS (DEEP AND SHALLOW BEDROCK)

JUNE 12, 2000

Well ID	G.W. Elev.
	FT MSL
B38W02D	53.08
B38W03B	49.42
B38W04B	57.15
B38W05B	60.85
B38W06B	45.01
B38W07B	46.03
B38W12B	44.94 *
B38W14D	39.79
B38W15D	41.22
B38W17B	44.96
B38W18D	54.45
B38W19D	44.74
B38W24D	46.46
B38W25D	51.84
MISS 1B	46.21
MISS 2B	50.87
MISS 3B	48.76
MISS 4B	46.37
MISS 5B	44.86
MISS 7B	45.55

LEGEND

50 — GROUNDWATER CONTOUR

BEDROCK WELL

OPEN HOLE WELL

GROUNDWATER FLOW DIRECTION

* NOT CONTOURED DUE TO LACK OF CONTROL

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US ARMY CORPS OF ENGINEERS
FUSRAP
FORMERLY UTILIZED SITES
REMEDIAL ACTION PROGRAM

STONE & WEBSTER ENVIRONMENTAL TECHNOLOGY & SERVICES

Prepared by: MALCOLM PIRNIE
Reviewed by:
Date:
Drawn by: KPT
Date: 3/21/2001
File Name: COMPOSIT

GROUNDWATER CONTOUR MAP
SHALLOW & DEEP BEDROCK-06/12/00

GROUNDWATER REMEDIAL INVESTIGATION
PHASE I - INTERIM REPORT

FUSRAP MAYWOOD SUPERFUND SITE
MAYWOOD, LODI, AND
ROCHELLE PARK, NEW JERSEY

Contract Number: DACW41-96-R-0034
Job Number 08575
WAD# 3
WBS# 10
Figure Number: # 13

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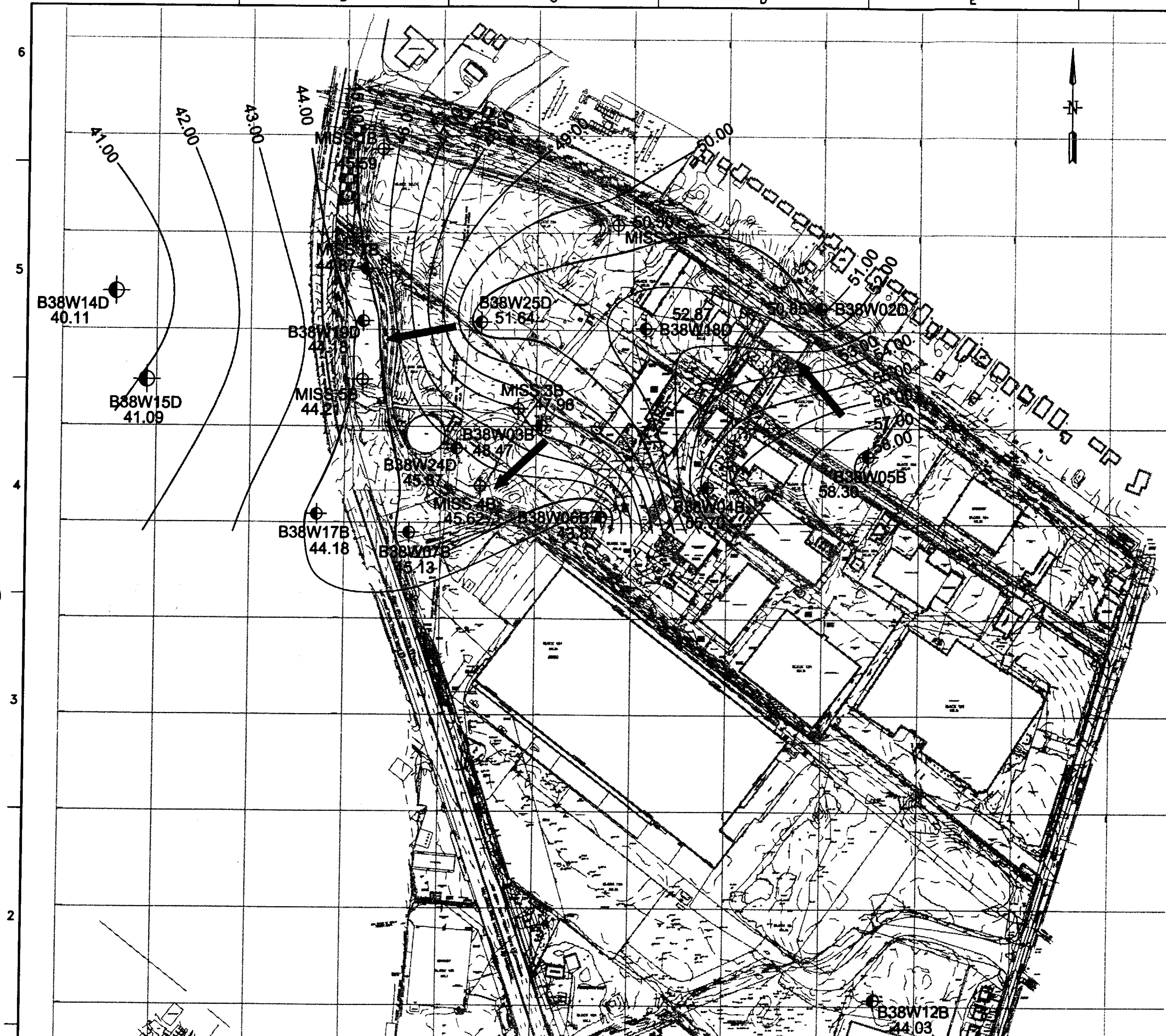

SYNOPTIC GROUNDWATER LEVEL MEASUREMENTS (DEEP AND SHALLOW BEDROCK)

SEPTEMBER 29, 2000

Well ID	G.W. Elev.
	FT MSL
B38W02D	50.85
B38W03B	48.47
B38W04B	55.70
B38W05B	58.30
B38W06B	43.87
B38W07B	45.13
B38W12B	44.03 *
B38W14D	40.11
B38W15D	41.09
B38W17B	44.18
B38W18D	52.87
B38W19D	44.18
B38W24D	45.87
B38W25D	51.64
MISS 1B	45.59
MISS 2B	50.30
MISS 3B	47.96
MISS 4B	45.62
MISS 5B	44.21
MISS 7B	44.87

LEGEND

- 50 — GROUNDWATER CONTOUR
- BEDROCK WELL
- OPEN HOLE WELL
- GROUNDWATER FLOW DIRECTION
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CORPS OF ENGINEERS
NEW YORK DISTRICT
US ARMY CORPS OF ENGINEERS
FUSRAP
FORMERLY UTILIZED SITES REMEDIAL ACTION PROGRAM

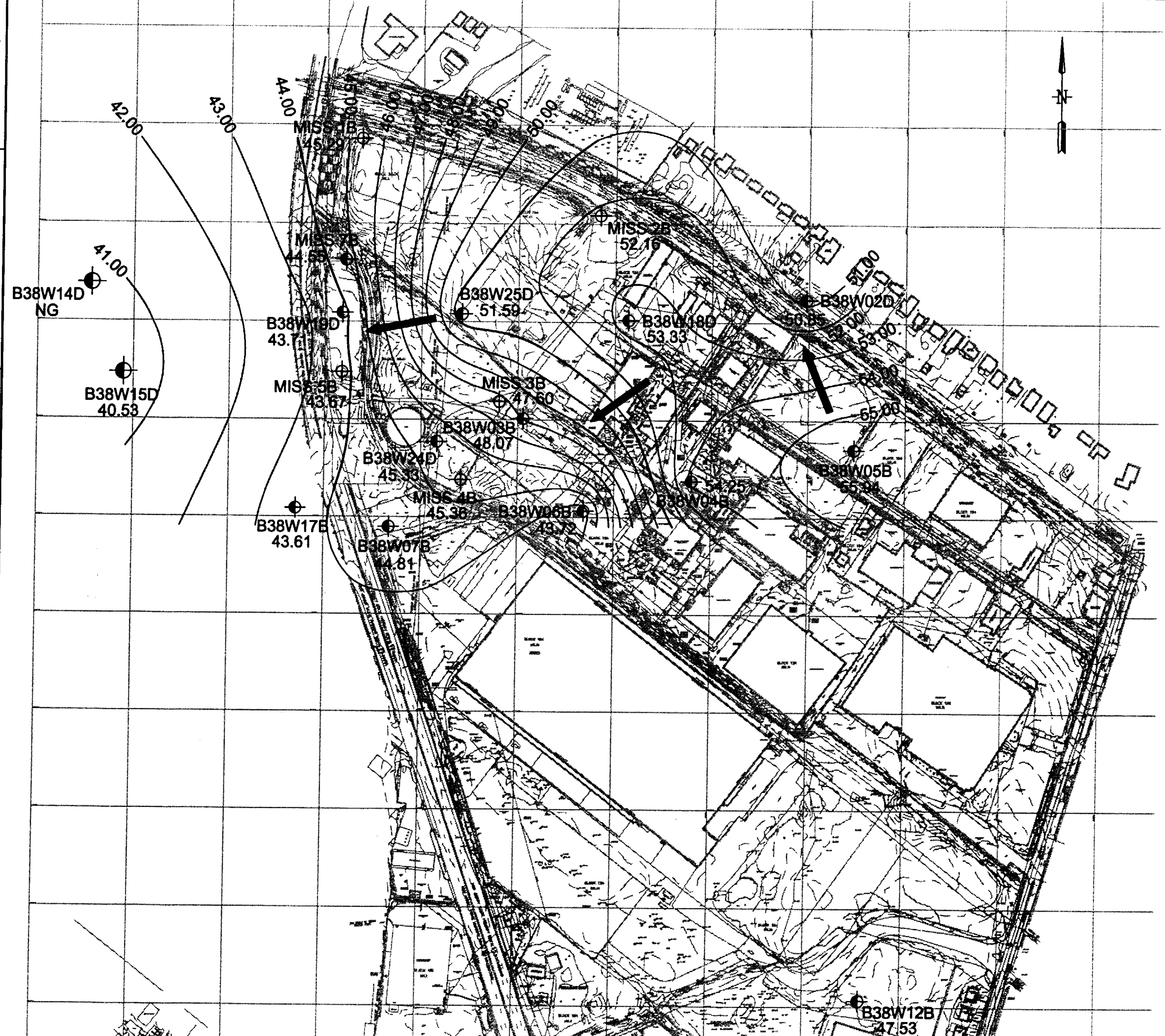
STONE & WEBSTER ENVIRONMENTAL TECHNOLOGY & SERVICES

Prepared by: MALCOLM PIRNIE	Reviewed by:	Date:
Drawn by: KPT	Date: 3/21/2001	File Name: COMPOSIT

GROUNDWATER CONTOUR MAP
SHALLOW & DEEP BEDROCK-09/29/00
GROUNDWATER REMEDIAL INVESTIGATION PHASE I - INTERIM REPORT
FUSRAP MAYWOOD SUPERFUND SITE
MAYWOOD, LODI, AND ROCHELLE PARK, NEW JERSEY

Contract Number: DACW41-96-R-0034
Job Number 08575
WAD# 3
WBS# 10
Figure Number: # 14

28-March-2001



SYNOPTIC GROUNDWATER LEVEL MEASUREMENTS (DEEP AND SHALLOW BEDROCK)

NOVEMBER 29, 2000

Well ID	G.W. Elev. FT MSL
B38W02D	50.85
B38W03B	48.07
B38W04B	54.25
B38W05B	55.94
B38W06B	43.72
B38W07B	44.81
B38W12B	47.53 *
B38W14D	NG
B38W15D	40.53
B38W17B	43.61
B38W18D	53.33
B38W19D	43.71
B38W24D	45.33
B38W25D	51.59
MISS 1B	45.29
MISS 2B	52.16
MISS 3B	47.60
MISS 4B	45.36
MISS 5B	43.67
MISS 7B	44.55

LEGEND

- 50 — GROUNDWATER CONTOUR
- BEDROCK WELL
- OPEN HOLE WELL
- GROUNDWATER FLOW DIRECTION
- NG NOT GAUGED
- * NOT CONTOURED DUE TO LACK OF CONTROL

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FORMERLY UTILIZED SITES REMEDIAL ACTION PROGRAM

STONE & WEBSTER ENVIRONMENTAL TECHNOLOGY & SERVICES

Prepared by: MALCOLM PIRNIE
Reviewed by: Date:
Drawn by: KPT Date: 3/21/2001
File Name: COMPOSIT

GROUNDWATER CONTOUR MAP
SHALLOW & DEEP BEDROCK-11/29/00

GROUNDWATER REMEDIAL INVESTIGATION PHASE I - INTERIM REPORT
FUSRAP MAYWOOD SUPERFUND SITE
MAYWOOD, LODI, AND ROCHELLE PARK, NEW JERSEY

Contract Number: DACW41-98-R-0034
Job Number 08575
WAD# 3
WBS# 10
Figure Number: # 15

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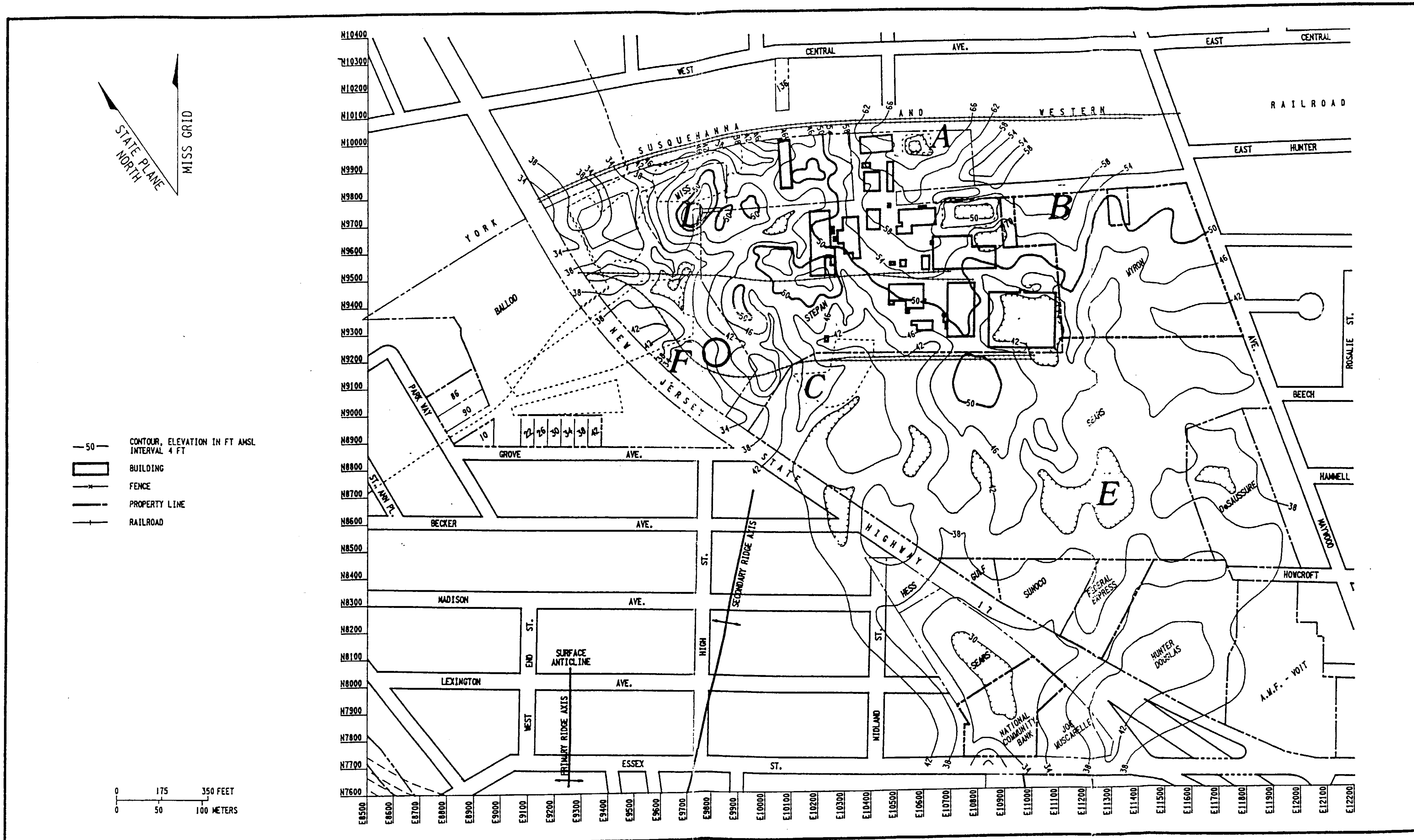

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Figure 16

Contour Map of the Top of Bedrock in the Maywood Area

Excerpted from Remedial Investigation Report (DOE 1992)

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
SWSD002	07/24/00	Radium-226	0.58		J	0.12
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

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)
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
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
SWSD006	07/20/00	Radium-226	0.64		J	0.17
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
SWSD007	07/20/00	Radium-226	-0.07		R	0.18
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
SWSD002	07/24/00	Radium-228	0.31		J	0.66
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

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)
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
SWSD005	07/20/00	Radium-228	2.39		J	0.59
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
SWSD006	07/20/00	Radium-228	0.39		J	0.20
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
SWSD007	07/20/00	Radium-228	1.42		J	0.55
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
SWSD002	07/24/00	Thorium-230	0.90		J	0.05
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

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)
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
SWSD005	07/20/00	Thorium-230	0.64		J	0.12
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
SWSD006	07/20/00	Thorium-230	0.27		J	0.11
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
SWSD007	07/20/00	Thorium-230	0.51		J	0.09
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
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
SWSD002	07/24/00	Thorium-232	0.35		J	0.15
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

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)
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
SWSD005	07/20/00	Thorium-232	1.73			0.12
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
SWSD006	07/20/00	Thorium-232	0.33		J	0.08
SWSD007	08/31/94	Thorium-232	1.10			0.10
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
SWSD007	07/20/00	Thorium-232	0.33		J	0.08
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
SWSD002	00/24/00	Total Uranium	0.84	1.24		0.09

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

STATION	DATE	ANALYTE	RESULT (pCi/g)	(ug/g)	QUALIFIER	DETECTION LIMIT(pCi/g)
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
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
SWSD005	07/20/00	Total Uranium	1.79	2.65		0.09
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
SWSD006	07/20/00	Total Uranium	0.7	1.03		0.09
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
SWSD007	07/20/00	Total Uranium	1.57	2.32		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
B38W19D	12-JUL-00	RADIUM-226	0.16	UJ	0.13	0.2	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
MISS02B	23-Jun-00	RADIUM-226	0.25	J	0.33	0.55	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
B38W19D	12-Jul-00	RADIUM-228	0.43	U	0.4	0.66	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
B38W25S	7-Jul-00	RADIUM-228	0.17	U	0.42	0.71	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
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
MISS02B	23-Jun-00	RADIUM-228	0.32	U	0.33	0.55	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
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
B38W25S	07-Jul-00	THORIUM-228	0.46	J	0.32	0.38	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
MISS02B	23-Jun-00	THORIUM-228	0.04	U	0.09	0.2	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
B38W19D	12-Jul-00	THORIUM-230	0.11	UJ	0.12	0.18	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
B38W25S	07-Jul-00	THORIUM-230	0.38	J	0.28	0.28	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
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
MISS02B	23-Jun-00	THORIUM-230	0.4	J	0.25	0.27	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
MISS07B	12-Jul-00	THORIUM-230	0.37	J	0.24	0.21	PCI/L
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
B38W19D	12-Jul-00	THORIUM-232	0.01	U	0.05	0.13	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
B38W25S	07-Jul-00	THORIUM-232	0.13	U	0.17	0.28	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
MISS02B	23-Jun-00	THORIUM-232	0.02	U	0.06	0.14	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
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
B38W19D	12-Jul-00	TOTAL URANIUM	1.82				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
B38W25S	07-Jul-00	TOTAL URANIUM	0.41				UG/L
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
MISS02B	23-Jun-00	TOTAL URANIUM	0.48				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
MISS02A	22-Jun-00	REG	ALUMINUM	360		
B38W17A	19-Jun-00	REG	ALUMINUM	785		
B38W17B	19-Jun-00	REG	ALUMINUM	40.6		J
B38W15D	06-JUL-98	REG	ANTIMONY	0.7		
B38W15D	26-Jun-00	REG	ANTIMONY	2.1		
B38W15S	06-JUL-98	REG	ANTIMONY	0.75		
B38W17A	28-JUL-93	REG	ANTIMONY	445	=	
B38W17A	02-JUL-98	REG	ANTIMONY	1		
B38W17A	19-Jun-00	REG	ANTIMONY	37.6		
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
MISS07B	12-Jul-00	REG	ARSENIC	52.6		
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		
B38W15D	26-Jun-00	REG	ARSENIC	11.1		
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		
B38W18D	06-Jul-00	REG	ARSENIC	8.2		J
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
B38W19D	12-Jul-00	REG	ARSENIC	70.3		
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		
B38W24D	22-Jun-00	REG	ARSENIC	2.1		J
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		
B38W25S	07-Jul-00	REG	ARSENIC	13.4		
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		
MISS02A	22-Jun-00	REG	ARSENIC	3520		
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		
MISS05B	11-Jul-00	REG	ARSENIC	20.5		
MISS06A	03-JUN-97	REG	ARSENIC	3.4		
MISS06A	01-JUL-98	REG	ARSENIC	5.4		
MISS06A	17-May-99	REG	ARSENIC	2.2		
MISS06A	10-Jul-00	REG	ARSENIC	4		J
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		
B38W02D	13-Jul-00	REG	BARIUM	299		
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		
B38W14D	05-Jul-00	REG	BARIUM	105		
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		
B38W14S	05-Jul-00	REG	BARIUM	91.3		
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		
B38W15D	26-Jun-00	REG	BARIUM	30.2		
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		
B38W15S	26-Jun-00	REG	BARIUM	37.6		
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		
B38W17A	19-Jun-00	REG	BARIUM	94.1		
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		
B38W17B	19-Jun-00	REG	BARIUM	69.4		
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		
B38W18D	06-Jul-00	REG	BARIUM	22.9		
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		
B38W19D	12-Jul-00	REG	BARIUM	26.9		
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		
B38W24D	22-Jun-00	REG	BARIUM	240		J
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		
B38W24S	21-Jun-00	REG	BARIUM	36.2		
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		
B38W25D	07-Jul-00	REG	BARIUM	61.4		
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		
B38W25S	07-Jul-00	REG	BARIUM	166		
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		
MISS01AA	20-Jun-00	REG	BARIUM	6.9		
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		
MISS01B	20-Jun-00	REG	BARIUM	66.7		
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		
MISS02A	22-Jun-00	REG	BARIUM	8.6		
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		
MISS02B	23-Jun-00	REG	BARIUM	11.4		
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		
MISS05B	11-Jul-00	REG	BARIUM	41.6		
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		
MISS06A	10-Jul-00	REG	BARIUM	51.4		
MISS07B	12-Jul-00	REG	BARIUM	20		
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		
B38W17A	19-Jun-00	REG	BERYLLIUM	0.21		J
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		
B38W18D	06-Jul-00	REG	BERYLLIUM	0.52		J
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		
B38W24S	21-Jun-00	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		
MISS02B	23-Jun-00	REG	BERYLLIUM	0.57		J
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		
B38W14D	05-Jul-00	REG	CADMIUM	2.9		
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		
B38W14S	05-Jul-00	REG	CADMIUM	1.1		
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		
B38W25S	07-Jul-00	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		
MISS02B	23-Jun-00	REG	CADMIUM	0.97		
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		
MISS06A	10-Jul-00	REG	CADMIUM	1.5		
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		
B38W02D	13-Jul-00	REG	CALCIUM	86300		
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		
B38W14D	05-Jul-00	REG	CALCIUM	102000		
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		
B38W14S	05-Jul-00	REG	CALCIUM	94600		
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		
B38W15D	26-Jun-00	REG	CALCIUM	102000		
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		
B38W15S	26-Jun-00	REG	CALCIUM	80500		
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		
B38W17A	19-Jun-00	REG	CALCIUM	54000		
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		
B38W17B	19-Jun-00	REG	CALCIUM	258000		
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		
B38W18D	06-Jul-00	REG	CALCIUM	143000		

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		
B38W19D	12-Jul-00	REG	CALCIUM	192000		
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		
B38W24D	22-Jun-00	REG	CALCIUM	89800		
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		
B38W24S	21-Jun-00	REG	CALCIUM	56700		
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		
B38W25D	07-Jul-00	REG	CALCIUM	99500		
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		
B38W25S	07-Jul-00	REG	CALCIUM	186000		
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		
MISS01AA	20-Jun-00	REG	CALCIUM	544000		
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		
MISS02A	22-Jun-00	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		
MISS02B	23-Jun-00	REG	CALCIUM	240000		
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		
MISS05B	11-Jul-00	REG	CALCIUM	201000		
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		
MISS06A	10-Jul-00	REG	CALCIUM	168000		
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		
MISS07B	12-Jul-00	REG	CALCIUM	138000		
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		
B38W02D	13-Jul-00	REG	CHROMIUM	98.4		J
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		
B38W14S	05-Jul-00	REG	CHROMIUM	7.5		

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
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		
B38W17A	19-Jun-00	REG	CHROMIUM	1590		
B38W17B	03-JUN-97	REG	CHROMIUM	0.84		
B38W17B	02-JUL-98	REG	CHROMIUM	2.8		
B38W17B	13-May-99	REG	CHROMIUM	1.4		
B38W17B	19-Jun-00	REG	CHROMIUM	12.9		
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		
B38W18D	06-Jul-00	REG	CHROMIUM	28		
B38W19D	16-MAY-94	REG	CHROMIUM	5.1	=	
B38W19D	16-MAY-97	REG	CHROMIUM	3.4		
B38W19D	12-Jul-00	REG	CHROMIUM	2.8		
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		
B38W24S	21-Jun-00	REG	CHROMIUM	5.6		
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		
B38W25D	07-Jul-00	REG	CHROMIUM	5.3		
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		
B38W25S	07-Jul-00	REG	CHROMIUM	48.4		
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		
MISS01AA	20-Jun-00	REG	CHROMIUM	4.4		
MISS01B	20-Jun-00	REG	CHROMIUM	1.7		J
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		
MISS02A	22-Jun-00	REG	CHROMIUM	69.2		
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		
MISS02B	23-Jun-00	REG	CHROMIUM	24.1		
MISS05B	11-MAY-95	REG	CHROMIUM	10.9	=	
MISS05B	14-MAY-97	REG	CHROMIUM	2.9		
MISS05B	30-JUN-98	REG	CHROMIUM	10.8		
MISS05B	11-Jul-00	REG	CHROMIUM	2.4		
MISS06A	10-Jul-00	REG	CHROMIUM	16.8		
B38W07B	16-JUN-98	REG	CHROMIUM	1.6		
B38W07B	12-Jul-00	REG	CHROMIUM	2.1		J
B38W02D	04-JUN-97	REG	COBALT	1.1		
B38W02D	30-JUN-98	REG	COBALT	1.6		
B38W02D	13-Jul-00	REG	COBALT	1.4		J
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		
B38W17A	19-Jun-00	REG	COBALT	13		
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		
B38W19D	12-Jul-00	REG	COBALT	0.5		J
B38W24D	09-AUG-93	REG	COBALT	12	B	
B38W24D	02-JUL-98	REG	COBALT	0.74		
B38W24S	21-Jun-00	REG	COBALT	0.72		J
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		
MISS06A	10-Jul-00	REG	COBALT	1.2		J
B38W07B	16-JUN-98	REG	COBALT	4.4		
B38W07B	27-May-99	DUP	COBALT	5.3		
B38W07B	12-Jul-00	REG	COBALT	3.6		
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		
B38W14D	05-Jul-00	REG	COPPER	21.6		
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		
B38W14S	05-Jul-00	REG	COPPER	2.5		
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		
B38W15D	26-Jun-00	REG	COPPER	1.3		
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		
B38W15S	26-Jun-00	REG	COPPER	4.1		
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		
B38W18D	06-Jul-00	REG	COPPER	2.4		
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		
B38W25D	07-Jul-00	REG	COPPER	0.54		J
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		
B38W25S	07-Jul-00	REG	COPPER	5.2		

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
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		
MISS02B	23-Jun-00	REG	COPPER	1.7		
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		
B38W02D	13-Jul-00	REG	IRON	202		
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
B38W14S	05-Jul-00	REG	IRON	340		

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
B38W15S	26-Jun-00	REG	IRON	546		
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		
B38W17A	19-Jun-00	REG	IRON	12500		
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		
B38W17B	19-Jun-00	REG	IRON	8490		
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		
B38W18D	06-Jul-00	REG	IRON	11600		
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		
B38W19D	12-Jul-00	REG	IRON	3110		
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		
B38W24D	22-Jun-00	REG	IRON	37900		
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		
B38W24S	21-Jun-00	REG	IRON	31900		
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		
B38W25D	07-Jul-00	REG	IRON	5270		
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
B38W25S	07-Jul-00	REG	IRON	14000		
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		
MISS01AA	20-Jun-00	REG	IRON	490		
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		
MISS01B	20-Jun-00	REG	IRON	4970		
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		
MISS02A	22-Jun-00	REG	IRON	5410		
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		
MISS02B	23-Jun-00	REG	IRON	15500		
MISS02B	11-Jul-00	REG	IRON	6110		
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
MISS06A	22-Jul-00	REG	IRON	1910		
B38W07B	16-JUN-98	REG	IRON	9160		
B38W07B	27-May-99	REG	IRON	5920		
B38W07B	12-Jul-00	REG	IRON	6390		
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		
B38W18D	06-Jul-00	REG	LEAD	1.9		J
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		
MISS02A	22-Jun-00	REG	LEAD	13		
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		
MISS06A	10-Jul-00	REG	LEAD	9.6		
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		
B38W02D	13-Jul-00	REG	MAGNESIUM	3740		
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		
B38W14D	05-Jul-00	REG	MAGNESIUM	25300		
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		
B38W14S	05-Jul-00	REG	MAGNESIUM	26600		
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
B38W15D	26-Jun-00	REG	MAGNESIUM	39400		
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
B38W15S	26-Jun-00	REG	MAGNESIUM	25300		
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		
B38W17A	19-Jun-00	REG	MAGNESIUM	5930		
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		
B38W18D	06-Jul-00	REG	MAGNESIUM	12400		
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		
B38W19D	12-Jul-00	REG	MAGNESIUM	31100		
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		
B38W24D	22-Jun-00	REG	MAGNESIUM	10700		
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		
B38W24S	21-Jun-00	REG	MAGNESIUM	7830		
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		
B38W25D	07-Jul-00	REG	MAGNESIUM	4920		
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		
B38W25S	07-Jul-00	REG	MAGNESIUM	7520		
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		
MISS01AA	20-Jun-00	REG	MAGNESIUM	23700		
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		
MISS01B	20-Jun-00	REG	MAGNESIUM	17200		
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		
MISS02A	22-Jun-00	REG	MAGNESIUM	7780		
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		
MISS02B	23-Jun-00	REG	MAGNESIUM	34200		
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
MISS05B	11-Jul-00	REG	MAGNESIUM	23900		
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		
MISS06A	10-Jul-00	REG	MAGNESIUM	9330		
MISS07B	12-Jul-00	REG	MAGNESIUM	50000		
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		
B38W02D	13-Jul-00	REG	MANGANESE	2300		
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
B38W14D	05-Jul-00	REG	MANGANESE	11.5		
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		
B38W14S	05-Jul-00	REG	MANGANESE	76.3		
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		
B38W15D	26-Jun-00	REG	MANGANESE	1060		
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		
B38W15S	26-Jun-00	REG	MANGANESE	2050		
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		
B38W17A	19-Jun-00	REG	MANGANESE	2070		
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		
B38W17B	19-Jun-00	REG	MANGANESE	3970		
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		
B38W18D	06-Jul-00	REG	MANGANESE	3510		
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		
B38W19D	12-Jul-00	REG	MANGANESE	2240		
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		
B38W24D	22-Jun-00	REG	MANGANESE	5350		
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		
B38W24S	21-Jun-00	REG	MANGANESE	3830		
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		
B38W25D	07-Jul-00	REG	MANGANESE	1250		
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
B38W25S	07-Jul-00	REG	MANGANESE	7120		
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		
MISS01AA	20-Jun-00	REG	MANGANESE	94.9		
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		
MISS01B	20-Jun-00	REG	MANGANESE	291		
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		
MISS02A	22-Jun-00	REG	MANGANESE	268		
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		
MISS02B	23-Jun-00	REG	MANGANESE	3820		
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		
MISS05B	11-Jul-00	REG	MANGANESE	951		
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
MISS06A	10-Jul-00	REG	MANGANESE	228		
MISS07B	12-Jul-00	REG	MANGANESE	2030		
MISS02A	11-JUN-98	REG	MERCURY	0.51		J
MISS02A	11-JUN-98	DUP	MERCURY	0.52		J
MISS02A	22-Jun-00	REG	MERCURY	0.45		
B38W14D	05-Jul-00	REG	MERCURY	0.11		J
B38W24S	21-Jun-00	REG	MERCURY	0.12		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		
B38W02D	13-Jul-00	REG	NICKEL	32.7		
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		
B38W14D	05-Jul-00	REG	NICKEL	12.1		
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		
B38W14S	05-Jul-00	REG	NICKEL	9.6		
B38W15D	26-MAY-94	REG	NICKEL	30.9	=	
B38W15D	03-JUN-97	REG	NICKEL	6.8		
B38W15D	06-JUL-98	REG	NICKEL	8.2		
B38W15D	26-Jun-00	REG	NICKEL	9.7		
B38W15S	03-JUN-97	REG	NICKEL	3.8		
B38W15S	06-JUL-98	REG	NICKEL	5.2		
B38W15S	26-Jun-00	REG	NICKEL	4.8		
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		
B38W17A	19-Jun-00	REG	NICKEL	114		
B38W17B	03-JUN-97	REG	NICKEL	1.2		
B38W17B	02-JUL-98	REG	NICKEL	2.4		
B38W17B	13-MAY-99	REG	NICKEL	1.6		
B38W17B	19-Jun-00	REG	NICKEL	7		
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		
B38W18D	06-Jul-00	REG	NICKEL	22.7		
B38W19D	16-MAY-97	REG	NICKEL	3.9		
B38W19D	17-JUN-98	REG	NICKEL	1.9		
B38W19D	27-MAY-99	REG	NICKEL	1.7		
B38W19D	12-Jul-00	REG	NICKEL	2.2		J
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		
B38W24S	21-Jun-00	REG	NICKEL	8		
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		
B38W25D	07-Jul-00	REG	NICKEL	3.6		
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		
B38W25S	07-Jul-00	REG	NICKEL	32.4		
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		
MISS01AA	20-Jun-00	REG	NICKEL	4		
MISS01B	20-Jun-00	REG	NICKEL	1.9		J
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		
MISS02A	22-Jun-00	REG	NICKEL	20		
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		
MISS02B	23-Jun-00	REG	NICKEL	20.9		
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		
MISS06A	10-Jul-00	REG	NICKEL	21.1		
MISS07B	12-Jul-00	REG	NICKEL	6.8		
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		
B38W02D	13-Jul-00	REG	POTASSIUM	847		
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		
B38W14D	05-Jul-00	REG	POTASSIUM	6240		
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		
B38W14S	05-Jul-00	REG	POTASSIUM	4420		
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		
B38W15D	26-Jun-00	REG	POTASSIUM	72700		
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		
B38W15S	26-Jun-00	REG	POTASSIUM	164000		
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		
B38W17A	19-Jun-00	REG	POTASSIUM	18900		
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		
B38W17B	19-Jun-00	REG	POTASSIUM	93300		
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		
B38W18D	06-Jul-00	REG	POTASSIUM	6320		
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		
B38W19D	12-Jul-00	REG	POTASSIUM	291000		
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		
B38W24D	22-Jun-00	REG	POTASSIUM	11600		
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		
B38W24S	21-Jun-00	REG	POTASSIUM	6990		
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		
B38W25D	07-Jul-00	REG	POTASSIUM	48300		
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		
B38W25S	07-Jul-00	REG	POTASSIUM	59900		
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		
MISS01AA	20-Jun-00	REG	POTASSIUM	1270		
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		
MISS01B	20-Jun-00	REG	POTASSIUM	9000		
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		
MISS02A	22-Jun-00	REG	POTASSIUM	9350		J
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		
MISS02B	23-Jun-00	REG	POTASSIUM	84400		
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		
MISS05B	11-Jul-00	REG	POTASSIUM	167000		
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		
MISS06A	10-Jul-00	REG	POTASSIUM	12600		
MISS07B	12-Jul-00	REG	POTASSIUM	29200		
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		
B38W02D	13-Jul-00	REG	SODIUM	9050		
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		
B38W14D	05-Jul-00	REG	SODIUM	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
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		
B38W14S	05-Jul-00	REG	SODIUM	23300		
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
B38W15D	26-Jun-00	REG	SODIUM	204000		
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
B38W15S	26-Jun-00	REG	SODIUM	175000		
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		
B38W17A	19-Jun-00	REG	SODIUM	38100		
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		
B38W17B	19-Jun-00	REG	SODIUM	211000		
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		
B38W18D	06-Jul-00	REG	SODIUM	36600		
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		
B38W19D	12-Jul-00	REG	SODIUM	206000		J
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		
B38W24D	22-Jun-00	REG	SODIUM	34700		
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		
B38W24S	21-Jun-00	REG	SODIUM	13900		
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		
B38W25D	07-Jul-00	REG	SODIUM	28600		
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		
B38W25S	07-Jul-00	REG	SODIUM	30100		
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		
MISS01AA	20-Jun-00	REG	SODIUM	4850		
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		
MISS01B	20-Jun-00	REG	SODIUM	50000		
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		
MISS02A	22-Jun-00	REG	SODIUM	666000		
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		
MISS02B	23-Jun-00	REG	SODIUM	342000		
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
MISS05B	11-Jul-00	REG	SODIUM	94800		
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		
MISS06A	10-Jul-00	REG	SODIUM	17100		
MISS07B	27-MAY-99	REG	SODIUM	1290000		
MISS07B	12-Jul-00	REG	SODIUM	338000		
B38W02D	13-Jul-00	REG	THALLIUM	5.5		J
B38W15S	26-Jun-00	REG	THALLIUM	6.2		J
B38W18D	06-Jul-00	REG	THALLIUM	7.8		J
B38W25S	07-Jul-00	REG	THALLIUM	17.4		
MISS02B	23-Jun-00	REG	THALLIUM	7.8		J
B38W02D	04-JUN-97	REG	VANADIUM	1.2		
B38W02D	30-JUN-98	REG	VANADIUM	2.7		
B38W02D	20-MAY-99	REG	VANADIUM	1		
B38W02D	13-Jul-00	REG	VANADIUM	1.8		J
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		
B38W17A	19-Jun-00	REG	VANADIUM	11.8		
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		
B38W17B	19-Jun-00	REG	VANADIUM	1		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
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		
B38W19D	12-Jul-00	REG	VANADIUM	4.5		
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		
MISS01B	20-Jun-00	REG	VANADIUM	2.9		J
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		
MISS02A	22-Jun-00	REG	VANADIUM	2.7		J
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		
MISS02B	23-Jun-00	REG	VANADIUM	4.7		
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		
MISS05B	11-Jul-00	REG	VANADIUM	2.1		J
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		
MISS06A	10-Jul-00	REG	VANADIUM	2.1		J
MISS07B	27-MAY-99	DUP	VANADIUM	19.6		
MISS07B	12-Jul-00	REG	VANADIUM	13.9		
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		
B38W14D	05-Jul-00	REG	ZINC	24.7		
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		
B38W17A	19-Jun-00	REG	ZINC	25.8		
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		
B38W18D	06-Jul-00	REG	ZINC	91.2		
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		
B38W25S	07-Jul-00	REG	ZINC	530		
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		
MISS02A	22-Jun-00	REG	ZINC	18.8		
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
MISS02B	23-Jun-00	REG	ZINC	109		
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		
MISS06A	10-Jul-00	REG	ZINC	495		
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
B38W14D	16-Nov-00	1,1,1-Trichloroethane	2.00			1
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
B38W14S	16-Nov-00	1,1,1-Trichloroethane	1.00		U	1
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
B38W15D	09-Nov-00	1,1,1-Trichloroethane	0.60		J	1
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
B38W15S	09-Nov-00	1,1,1-Trichloroethane	1.00		U	1
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
MISS07B	06-Nov-00	1,1,1-Trichloroethane	0.20		J	1
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
B38W14D	16-Nov-00	1,1-Dichloroethane	1.00			1
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
B38W14S	08-Nov-00	1,1-Dichloroethane	0.20		J	1
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
B38W15D	09-Nov-00	1,1-Dichloroethane	2.00			1
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
B38W15S	09-Nov-00	1,1-Dichloroethane	1.00		U	1
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
B38W14D	16-Nov-00	1,1-Dichloroethene	4.00			1
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
B38W14S	07-Jul-98	1,1-Dichloroethene	5.00	J	J	5
B38W14S	17-May-99	1,1-Dichloroethene	2.00	J	J	5
B38W14S	16-Nov-00	1,1-Dichloroethene	1.00		U	1

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)
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
B38W15D	09-Nov-00	1,1-Dichloroethene	2.00			1
B38W15S	13-May-96	1,1-Dichloroethene	0.30	J	J	2
B38W15S	09-Nov-00	1,1-Dichloroethene	1.00		U	1
MISS01B	16-May-94	1,1-Dichloroethene	1.00		J	5
MISS01B	21-Dec-00	1,1-Dichloroethene	0.20		J	1
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
MISS07B	06-Nov-00	1,1-Dichloroethene	0.70		J	1
B38W07B	16-Jun-98	1,2-Dichloroethene (Total)	6.00			5
B38W07B	06-Nov-00	1,2-Dichloroethene (Total)	6.00			1
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
B38W14D	16-Nov-00	1,2-Dichloroethene (Total)	50.00	D		1
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
B38W14S	16-Nov-00	1,2-Dichloroethene (Total)	10.00			1
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
B38W15D	09-Nov-00	1,2-Dichloroethene (Total)	55.00			1
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
B38W15S	09-Nov-00	1,2-Dichloroethene (Total)	1.00		U	1
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
B38W19D	07-Nov-00	1,2-Dichloroethene (Total)	0.50		J	1
B38W24D	09-May-96	1,2-Dichloroethene (Total)	0.70	J	J	1
B38W24D	15-Nov-00	1,2-Dichloroethene (Total)	0.30		J	1
B38W24S	09-May-96	1,2-Dichloroethene (Total)	0.20	J	J	1
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
MISS01B	21-Dec-00	1,2-Dichloroethene (Total)	1.00		J	1
MISS05B	06-Nov-00	1,2-Dichloroethene (Total)	0.80		J	1

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)
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
MISS07B	06-Nov-00	1,2-Dichloroethene (Total)	6.00			1
B38W14D	04-Aug-93	1,2-Dichloropropane	1.00		J	5
B38W14D	20-May-95	1,2-Dichloropropane	1.00		J	5
B38W14D	16-Nov-00	1,2-Dichloropropane	0.40		J	1
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
B38W15D	09-Nov-00	1,2-Dichloropropane	0.30		J	1
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
MISS02A	21-Nov-00	2-Butanone	4.00		J	5
B38W15D	13-May-96	Benzene	0.70	J	J	2
B38W15D	09-Nov-00	Benzene	0.70		J	1
B38W15S	26-May-94	Benzene	1.00		J	5
B38W15S	13-May-96	Benzene	0.50	J	J	2
B38W15S	09-Nov-00	Benzene	0.20		J	1
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
B38W19D	07-Nov-00	Benzene	1.00			1
B38W24D	18-May-94	Benzene	2.00		J	5
B38W24D	09-May-96	Benzene	0.40	J	J	1
B38W24D	15-Nov-00	Benzene	0.20		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
MISS02B	21-Nov-00	Benzene	0.60		J	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
MISS05B	06-Nov-00	Benzene	3500.00	D		1
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
B38W19D	07-Nov-00	Chlorobenzene	0.40		J	1
B38W25S	15-May-96	Chlorobenzene	0.40	J	J	1
B38W25S	27-Nov-00	Chlorobenzene	0.10		J	1
MISS02B	14-May-96	Chlorobenzene	0.10	J	J	1
MISS05B	16-May-96	Chlorobenzene	0.60	J	J	2
MISS05B	06-Nov-00	Chlorobenzene	8.00			1
MISS07B	06-Nov-00	Chlorobenzene	0.20		J	1

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	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
B38W14D	16-Nov-00	Chloroform	2.00			1
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
B38W14S	16-Nov-00	Chloroform	6.00			1
B38W15D	13-May-96	Chloroform	0.30	J	J	2
B38W15D	09-Nov-00	Chloroform	0.20		J	1
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
MISS01B	21-Dec-00	Chloroform	0.20		J	1
MISS06A	10-May-96	Chloroform	0.20	J	J	1
MISS06A	21-Dec-00	Chloroform	0.30		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
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
B38W14D	16-Nov-00	Tetrachloroethene	300.00	D		1
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
B38W14S	16-Nov-00	Tetrachloroethene	6.00			1
B38W15S	13-May-96	Tetrachloroethene	0.30	J	J	2
B38W15D	09-Nov-00	Tetrachloroethene	120.00			1
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
MISS01B	21-Nov-00	Tetrachloroethene	12.00			1
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
MISS07B	06-Nov-00	Tetrachloroethene	9.00			1

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)
B38W01S	17-May-96	Toluene	0.20	J	J	1
B38W01S	08-Nov-00	Toluene	3.00			1
B38W19D	16-May-96	Toluene	0.10	J	J	1
B38W19D	07-Nov-00	Toluene	0.40		J	1
B38W24D	09-May-96	Toluene	0.10	J	J	1
B38W24D	13-May-99	Toluene	2.00	J	J	5
B38W24D	15-Nov-00	Toluene	0.70		J	1
MISS02A	11-JUN-98	Toluene	2.00	J	J	5
MISS02A	21-Nov-00	Toluene	0.60		J	1
MISS05B	14-Oct-92	Toluene	2.00		J	5
MISS05B	17-May-94	Toluene	1.00		J	5
MISS05B	06-Nov-00	Toluene	6.00			1
B38W01S	07-Jul-98	Trichloroethene	2.00	J	J	5
B38W07B	16-Jun-98	Trichloroethene	2.00	J	J	5
B38W07B	06-Nov-00	Trichloroethene	2.00			1
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
B38W14D	16-Nov-00	Trichloroethene	82.00	D		1
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
B38W14S	08-Nov-00	Trichloroethene	5.00			1
B38W15D	26-May-94	Trichloroethene	170.00			5
B38W15D	03-Jun-97	Trichloroethene	170.00	J		1
B38W15D	09-Nov-00	Trichloroethene	30.00			1
B38W15S	02-Aug-93	Trichloroethene	1.00		J	5
B38W15S	26-May-94	Trichloroethene	2.00		J	5
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
MISS01B	21-Dec-00	Trichloroethene	1.00			1
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
MISS07B	06-Nov-00	Trichloroethene	2.00			1
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
B38W15D	09-Nov-00	Vinyl Chloride	0.60		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

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)
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
MISS07B	06-Nov-00	Vinyl Chloride	1.00		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: 1/19/00 **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:

Well No. (Enter Complete Well No.)	**Time (24-hour format)**	**Depth to water (0.01 ft)**	**Remarks**	**Measurement Reference Point**	**X**
MISS-1AA	1440		Top of Riser	Protective CSG	
Permit #			Elevation:	Riser CSG X	
			62.7	Ground	
	Average		Lock is frozen	Other	
MISS-1B	1442	16.03	Top of Riser	Protective CSG	X
Permit #		16.03	Elevation:	Riser CSG X	
		16.03	61.98	Ground	
	Average	16.03		Other	
MISS-2A	1435	8.30	Top of Riser	Protective CSG	X
Permit #		8.30	Elevation:	Riser CSG X	
		8.30	61.47	Ground	
	Average	8.30		Other	
MISS-2B	1437	10.90	Top of Riser	Protective CSG	X
Permit #		10.90	Elevation:	Riser CSG X	
		10.90	61.64	Ground	
	Average	10.90		Other	
MISS-3A	1407	7.40	Top of Riser	Protective CSG	
Permit #		7.40	Elevation:	Riser CSG X	
		7.40	58.52	Ground	
	Average	7.40	Riser needs cap.	Other	
MISS-3B	1405	9.30	Top of Riser	Protective CSG	
Permit #		9.30	Elevation:	Riser CSG X	
		9.30	57.66	Ground	
	Average	9.30	Prot. cas.damaged	Other	

X - if well head and pad are in good condition
FUSRAP SOP: SW-MWD-410-0
Rev: 0

WATER LEVEL RECORD SHEET

Date: 1/19/00 **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	1408	7.82	Top of Riser	Protective CSG	
Permit #		7.82	Elevation:	Riser CSG X	
		7.82	57.17	Ground	
	Average	7.82	Riser needs cap.	Other	
MISS-4B	1410	10.32	Top of Riser	Protective CSG	X
Permit #		10.32	Elevation:	Riser CSG X	
		10.32	56.42	Ground	
	Average	10.32		Other	
MISS-5A	1420	12.08	Top of Riser	Protective CSG	X
Permit #		12.08	Elevation:	Riser CSG X	
		12.08	58.65	Ground	
	Average	12.08	Riser needs cap.	Other	
MISS-5B	1421	15.20	Top of Riser	Protective CSG	X
Permit #		15.20	Elevation:	Riser CSG X	
		15.20	59.76	Ground	
	Average	15.20		Other	
MISS-6A	1500	10.33	Top of Riser	Protective CSG	
Permit #		10.33	Elevation:	Riser CSG X	
		10.33	58.26	Ground	
	Average	10.33	Prot. cas.damaged	Other	
MISS-7A	1427	8.50	Top of Riser	Protective CSG	X
Permit #		8.50	Elevation:	Riser CSG X	
		8.50	55.6	Ground	
	Average	8.50		Other	

X - if well head and pad are in good condition
FUSRAP SOP: SW-MWD-410-0
Rev: 0

WATER LEVEL RECORD SHEET

Date: 1/19/00 **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
MISS-7B	1426	10.55	Top of Riser	Protective CSG	X
Permit #		10.55	Elevation:	Riser CSG X	
		10.55	55.77	Ground	
	Average	10.55		Other	
B38W01S	1345	5.86	Top of Riser	Protective CSG	X
Permit #		5.86	Elevation:	Riser CSG X	
		5.86	60.72	Ground	
	Average	5.86	needs new lock	Other	
B38W02D	1350	15.55	Top of Riser	Protective CSG	X
Permit #		15.55	Elevation:	Riser CSG X	
		15.55	67.7	Ground	
	Average	15.55		Other	
B38W03B	1403	9.34	Top of Riser	Protective CSG	
Permit #		9.34	Elevation:	Riser CSG X	
		9.34	58.27	Ground	
	Average	9.34	Conc.base damag.	Other	
B38W04B	1400	9.70	Top of Riser	Protective CSG	
Permit #		9.70	Elevation:	Riser CSG X	
		9.70	65.85	Ground	
	Average	9.70	cas.cover is rusted	Other	
B38W05B	1320	11.47	Top of Riser	Protective CSG	X
Permit #		11.47	Elevation:	Riser CSG X	
		11.47	71.05	Ground	
	Average	11.47		Other	

X - if well head and pad are in good condition
FUSRAP SOP: SW-MWD-410-0
Rev: 0

WATER LEVEL RECORD SHEET

Date: 1/19/00 **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			Top of Riser	Protective CSG	
Permit #			Elevation:	Riser CSG X	
			54.41	Ground	
	Average		inaccessible	Other	
B38W07B	1417	8.72	Top of Riser	Protective CSG	X
Permit #		8.72	Elevation:	Riser CSG X	
		8.72	54.63	Ground	
	Average	8.72		Other	
B38W12A	1325	5.78	Top of Riser	Protective CSG	X
Permit #		5.78	Elevation:	Riser CSG X	
		5.78	50.1	Ground	
	Average	5.78		Other	
B38W12B	1327	5.30	Top of Riser	Protective CSG	
Permit #		5.30	Elevation:	Riser CSG X	
		5.30	49.78	Ground	
	Average	5.30	Conc.base cracked	Other	
B38W14S			Top of Riser	Protective CSG	
Permit #			Elevation:	Riser CSG X	
			43.89	Ground	
	Average		Inaccessible	Other	
B38W14D			Top of Riser	Protective CSG	
Permit #			Elevation:	Riser CSG X	
			43.79	Ground	
	Average		Inaccessible	Other	

X - if well head and pad are in good condition
FUSRAP SOP: SW-MWD-410-0
Rev: 0

WATER LEVEL RECORD SHEET

Date: 1/19/00 **Site: MISS** **Page 5 of 6**

Measured by: M. Hanashy

G. Moyer

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

Well No. (Enter Complete Well No.)	Time (24-hour format)	Depth to water (0.01 ft)	Remarks	Measurement Reference Point	X
B38W15S			Top of Riser	Protective CSG	
Permit #			Elevation:	Riser CSG X	
			45.7	Ground	
	Average		Inaccessible	Other	
B38W15D			Top of Riser	Protective CSG	
Permit #			Elevation:	Riser CSG X	
			45.89	Ground	
	Average		Inaccessible	Other	
B38W17A	1332	8.65	Top of Riser	Protective CSG	X
Permit #		8.65	Elevation:	Riser CSG X	
		8.65	53.24	Ground	
	Average	8.65		Other	
B38W17B	1335	8.75	Top of Riser	Protective CSG	X
Permit #		8.75	Elevation:	Riser CSG X	
		8.75	53.28	Ground	
	Average	8.75		Other	
B38W18D	1530	3.95	Top of Riser	Protective CSG	X
Permit #		3.95	Elevation:	Riser CSG X	
		3.95	57.85	Ground	
	Average	3.95		Other	
B38W19S	1422	15.30	Top of Riser	Protective CSG	X
Permit #		15.30	Elevation:	Riser CSG X	
		15.30	59.91	Ground	
	Average	15.30		Other	

X - if well head and pad are in good condition
FUSRAP SOP: SW-MWD-410-0
Rev: 0

WATER LEVEL RECORD SHEET

Date: 1/19/00 **Site: MISS** **Page 6 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
B38W19D	1424	15.58	Top of Riser	Protective CSG	X
Permit #		15.58	Elevation:	Riser CSG X	
		15.58	59.98	Ground	
	Average	15.58		Other	
B38W24S	1412	9.15	Top of Riser	Protective CSG	X
Permit #		9.15	Elevation:	Riser CSG X	
		9.15	55.04	Ground	
	Average	9.15		Other	
B38W24D	1415	8.55	Top of Riser	Protective CSG	X
Permit #		8.55	Elevation:	Riser CSG X	
		8.55	54.91	Ground	
	Average	8.55		Other	
B38W25S	1457	7.00	Top of Riser	Protective CSG	X
Permit #		7.00	Elevation:	Riser CSG X	
		7.00	57.44	Ground	
	Average	7.00		Other	
B38W25D	1455	7.90	Top of Riser	Protective CSG	
Permit #		7.90	Elevation:	Riser CSG X	
		7.90	58.24	Ground	
	Average	7.90	Prot. Cas.damaged	Other	
				Protective CSG	
Permit #				Riser CSG X	
				Ground	
	Average			Other	

X - if well head and pad are in good condition
FUSRAP SOP: SW-MWD-410-0
Rev: 0

WATER LEVEL RECORD SHEET

Date: 3/27/2000 **Site:MISS**

Measured by: J. Lincoln
B. Spinelli

☐ Battery Check ☐ Funct. Check ☐ Physical Exam.
☐ Electric Sounder ☐ Chalked Tape ☐ Other ______________
☐ Calibration of electric sounder
Date of last calibration: 36689.00

Well No. (Enter Complete Well No.)	Time (24-hour format)	Depth to water (0.01 ft)	Remarks	Measurement Reference Point	X
MISS-1AA	1800	14.51	Top of Riser	Protective CSG	
Permit #		14.51	Elevation:	Riser CSG X	X
		14.51	62.7	Ground	
	Average	14.51		Other	
MISS-1B	1518	16.13	Top of Riser	Protective CSG	
Permit #		16.13	Elevation:	Riser CSG X	X
		16.13	61.98	Ground	
	Average	16.13		Other	
MISS-2A	1510	7.33	Top of Riser	Protective CSG	
Permit #		7.33	Elevation:	Riser CSG X	X
		7.33	61.47	Ground	
	Average	7.33		Other	
MISS-2B	1505	10.50	Top of Riser	Protective CSG	
Permit #		10.50	Elevation:	Riser CSG X	X
		10.50	61.64	Ground	
	Average	10.50		Other	
MISS-3A	1534	6.85	Top of Riser	Protective CSG	
Permit #		6.85	Elevation:	Riser CSG X	X
		6.85	58.52	Ground	
	Average	6.85		Other	
MISS-3B	1537	8.82	Top of Riser	Protective CSG	
Permit #		8.82	Elevation:	Riser CSG X	
		8.82	57.66	Ground	
	Average	8.82	Prot. cas. damaged	Other	

X - if well head and pad are in good condition
FUSRAP SOP: SW-MWD-410-0
Rev: 0

WATER LEVEL RECORD SHEET

Date: 3/27/2000 **Site:MISS** **Page 2 of 6**

Measured by: J. Lincoln

B. Spinelli

☐ 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	1540	11.47	Top of Riser	Protective CSG	
Permit #		11.47	Elevation:	Riser CSG X	X
		11.47	57.17	Ground	
	Average	11.47		Other	
MISS-4B	1542	9.76	Top of Riser	Protective CSG	
Permit #		9.76	Elevation:	Riser CSG X	X
		9.76	56.42	Ground	
	Average	9.76		Other	
MISS-5A	1555	11.43	Top of Riser	Protective CSG	
Permit #		11.43	Elevation:	Riser CSG X	X
		11.43	58.65	Ground	
	Average	11.43		Other	
MISS-5B	1557	14.66	Top of Riser	Protective CSG	
Permit #		14.66	Elevation:	Riser CSG X	X
		14.66	59.76	Ground	
	Average	14.66		Other	
MISS-6A	1646	8.27	Top of Riser	Protective CSG	
Permit #		8.27	Elevation:	Riser CSG X	
		8.27	58.26	Ground	
	Average	8.27	Prot.Cas.destroyed	Other	
MISS-7A	1607	8.15	Top of Riser	Protective CSG	
Permit #		8.15	Elevation:	Riser CSG X	X
		8.15	55.6	Ground	
	Average	8.15		Other	

X - if well head and pad are in good condition
FUSRAP SOP: SW-MWD-410-0
Rev: 0

WATER LEVEL RECORD SHEET

Date: 3/27/2000 **Site:MISS** **Page 3 of 6**

Measured by: J. Lincoln

B. Spinelli

☐ 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	1605	10.18	Top of Riser	Protective CSG	
Permit #		10.18	Elevation:	Riser CSG X	X
		10.18	55.77	Ground	
	Average	10.18		Other	
B38W01S	1740	5.51	Top of Riser	Protective CSG	
Permit #		5.51	Elevation:	Riser CSG X	X
		5.51	60.72	Ground	
	Average	5.51		Other	
B38W02D	1445	14.68	Top of Riser	Protective CSG	
Permit #		14.68	Elevation:	Riser CSG X	X
		14.68	67.7	Ground	
	Average	14.68		Other	
B38W03B	1530	8.75	Top of Riser	Protective CSG	
Permit #		8.75	Elevation:	Riser CSG X	X
		8.75	58.27	Ground	
	Average	8.75		Other	
B38W04B	1522	8.90	Top of Riser	Protective CSG	
Permit #		8.90	Elevation:	Riser CSG X	
		8.90	65.85	Ground	
	Average	8.90	well cover damaged	Other	
B38W05B	1805	9.73	Top of Riser	Protective CSG	
Permit #		9.73	Elevation:	Riser CSG X	X
		9.73	71.05	Ground	
	Average	9.73		Other	

X - if well head and pad are in good condition
FUSRAP SOP: SW-MWD-410-0
Rev: 0

WATER LEVEL RECORD SHEET

Date: 3/27/2000 **Site:MISS**

Measured by: J. Lincoln

B. Spinelli

☐ 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	N/A	NG	Top of Riser	Protective CSG	
Permit #		NG	Elevation:	Riser CSG X	X
		NG	54.41	Ground	
	Average	NG		Other	
B38W07B	1550	8.03	Top of Riser	Protective CSG	
Permit #		8.03	Elevation:	Riser CSG X	X
		8.03	54.63	Ground	
	Average	8.03		Other	
B38W12A	1616	5.33	Top of Riser	Protective CSG	
Permit #		5.33	Elevation:	Riser CSG X	X
		5.33	50.1	Ground	
	Average	5.33		Other	
B38W12B	1615	4.82	Top of Riser	Protective CSG	
Permit #		4.82	Elevation:	Riser CSG X	X
		4.82	49.78	Ground	
	Average	4.82	Base pad cracked	Other	
B38W14S	N/A	NG	Top of Riser	Protective CSG	
Permit #		NG	Elevation:	Riser CSG X	X
		NG		Ground	
	Average	NG		Other	
B38W14D	N/A	NG	Top of Riser	Protective CSG	
Permit #		NG	Elevation:	Riser CSG X	X
		NG	43.79	Ground	
	Average	NG		Other	

X - if well head and pad are in good condition
FUSRAP SOP: SW-MWD-410-0
Rev: 0

WATER LEVEL RECORD SHEET

Date: 3/27/2000 **Site:**MISS

Measured by: J. Lincoln

B. Spinelli

☐ 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	N/A	NG	Top of Riser	Protective CSG	
Permit #		NG	Elevation:	Riser CSG X	X
		NG	45.7	Ground	
	Average	NG		Other	
B38W15D	N/A	NG	Top of Riser	Protective CSG	
Permit #		NG	Elevation:	Riser CSG X	X
		NG	45.89	Ground	
	Average	NG		Other	
B38W17A	1427	7.96	Top of Riser	Protective CSG	
Permit #		7.96	Elevation:	Riser CSG X	X
		7.96	53.24	Ground	
	Average	7.96		Other	
B38W17B	1426	8.08	Top of Riser	Protective CSG	
Permit #		8.08	Elevation:	Riser CSG X	X
		8.08	53.28	Ground	
	Average	8.08		Other	
B38W18D	1753	3.41	Top of Casing	Protective CSG	
Permit #		3.41	Elevation:	Riser CSG X	X
		3.41	57.85	Ground	
	Average	3.41	No permit #	Other	
B38W19S	1602	14.74	Top of Riser	Protective CSG	
Permit #		14.74	Elevation:	Riser CSG X	X
		14.74	59.91	Ground	
	Average	14.74		Other	

X - if well head and pad are in good condition
FUSRAP SOP: SW-MWD-410-0
Rev: 0

WATER LEVEL RECORD SHEET

Date: 3/27/2000 **Site:MISS**

Measured by: J. Lincoln

B. Spinelli

☐ 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	1600	14.90	Top of Riser	Protective CSG	
Permit #		14.90	Elevation:	Riser CSG X	X
		14.90	59.98	Ground	
	Average	14.90		Other	
B38W24S	1547	7.65	Top of Riser	Protective CSG	
Permit #		7.65	Elevation:	Riser CSG X	X
		7.65	55.04	Ground	
	Average	7.65		Other	
B38W24D	1545	7.93	Top of Casing	Protective CSG	
Permit #		7.93	Elevation:	Riser CSG X	X
		7.93	54.91	Ground	
	Average	7.93		Other	
B38W25S	1645	5.96	Top of Riser	Protective CSG	
Permit #		5.96	Elevation:	Riser CSG X	X
		5.96	57.44	Ground	
	Average	5.96	No permit #	Other	
B38W25D	1640	6.38	Top of Riser	Protective CSG	
Permit #		6.38	Elevation:	Riser CSG X	
		6.38	58.24	Ground	
	Average	6.38	Cas. is damaged	Other	
			Needs lock	Protective CSG	
Permit #				Riser CSG X	X
				Ground	
	Average			Other	

X - if well head and pad are in good condition
FUSRAP SOP: SW-MWD-410-0
Rev: 0

WATER LEVEL RECORD SHEET

Date: 6/12/2000 **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: 06/12/2000

Well No. (Enter Complete Well No.)	Time (24-hour format)	Depth to water (0.01 ft)	Remarks	Measurement Reference Point	X
MISS-1AA	1115	14.36	Top of Riser	Protective CSG	
Permit #		14.36	Elevation:	Riser CSG X	X
		14.36	62.7	Ground	
	Average	14.36		Other	
MISS-1B	1113	15.77	Top of Riser	Protective CSG	
Permit #		15.77	Elevation:	Riser CSG X	X
		15.77	61.98	Ground	
	Average	15.77		Other	
MISS-2A	1110	8.65	Top of Riser	Protective CSG	
Permit #		8.65	Elevation:	Riser CSG X	X
		8.65	61.47	Ground	
	Average	8.65		Other	
MISS-2B	1109	10.77	Top of Riser	Protective CSG	
Permit #		10.77	Elevation:	Riser CSG X	X
		10.77	61.64	Ground	
	Average	10.77		Other	
MISS-3A	10.52	7.40	Top of Riser	Protective CSG	
Permit #		7.40	Elevation:	Riser CSG X	X
		7.40	58.52	Ground	
	Average	7.40		Other	
MISS-3B	1053	8.90	Top of Riser	Protective CSG	
Permit #		8.90	Elevation:	Riser CSG X	
		8.90	57.66	Ground	
	Average	8.90	Prot. cas. damaged	Other	

X - if well head and pad are in good condition
FUSRAP SOP: SW-MWD-410-0
Rev: 0

WATER LEVEL RECORD SHEET

Date: 6/12/2000 **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	1040	8.45	Top of Riser	Protective CSG	
Permit #		8.45	Elevation:	Riser CSG X	X
		8.45	57.17	Ground	
	Average	8.45		Other	
MISS-4B	1042	10.05	Top of Riser	Protective CSG	
Permit #		10.05	Elevation:	Riser CSG X	X
		10.05	56.42	Ground	
	Average	10.05		Other	
MISS-5A	1034	12.24	Top of Riser	Protective CSG	
Permit #		12.24	Elevation:	Riser CSG X	X
		12.24	58.65	Ground	
	Average	12.24		Other	
MISS-5B	1032	14.90	Top of Riser	Protective CSG	
Permit #		14.90	Elevation:	Riser CSG X	X
		14.90	59.76	Ground	
	Average	14.90		Other	
MISS-6A	1123	9.77	Top of Riser	Protective CSG	
Permit #		9.77	Elevation:	Riser CSG X	
		9.77	58.26	Ground	
	Average	9.77	Prot.Cas.destroyed	Other	
MISS-7A	1040	8.40	Top of Riser	Protective CSG	
Permit #		8.40	Elevation:	Riser CSG X	X
		8.40	55.6	Ground	
	Average	8.40		Other	

X - if well head and pad are in good condition
FUSRAP SOP: SW-MWD-410-0
Rev: 0

WATER LEVEL RECORD SHEET

Date: 6/12/2000 **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
MISS-7B	1039	10.22	Top of Riser	Protective CSG	
Permit #		10.22	Elevation:	Riser CSG X	X
		10.22	55.77	Ground	
	Average	10.22		Other	
B38W01S	1012	5.66	Top of Riser	Protective CSG	
Permit #		5.66	Elevation:	Riser CSG X	X
		5.66	60.72	Ground	
	Average	5.66		Other	
B38W02D	1018	14.62	Top of Riser	Protective CSG	
Permit #		14.62	Elevation:	Riser CSG X	X
		14.62	67.7	Ground	
	Average	14.62		Other	
B38W03B	1100	8.85	Top of Riser	Protective CSG	
Permit #		8.85	Elevation:	Riser CSG X	X
		8.85	58.27	Ground	
	Average	8.85		Other	
B38W04B	1105	8.70	Top of Riser	Protective CSG	
Permit #		8.70	Elevation:	Riser CSG X	
		8.70	65.85	Ground	
	Average	8.70	well cover damaged	Other	
B38W05B	930	10.20	Top of Riser	Protective CSG	
Permit #		10.20	Elevation:	Riser CSG X	X
		10.20	71.05	Ground	
	Average	10.20		Other	

X - if well head and pad are in good condition
FUSRAP SOP: SW-MWD-410-0
Rev: 0

WATER LEVEL RECORD SHEET

Date: 6/12/2000 **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	1103	9.40	Top of Riser	Protective CSG	
Permit #		9.40	Elevation:	Riser CSG X	X
		9.40		Ground	
	Average	9.40		Other	
B38W07B	1030	8.60	Top of Riser	Protective CSG	
Permit #		8.60	Elevation:	Riser CSG X	X
		8.60	54.63	Ground	
	Average	8.60		Other	
B38W12A	936	5.44	Top of Riser	Protective CSG	
Permit #		5.44	Elevation:	Riser CSG X	X
		5.44	50.1	Ground	
	Average	5.44		Other	
B38W12B	935	4.84	Top of Riser	Protective CSG	
Permit #		4.84	Elevation:	Riser CSG X	X
		4.84	49.78	Ground	
	Average	4.84	Base pad cracked	Other	
B38W14S	959	4.45	Top of Riser	Protective CSG	
Permit #		4.45	Elevation:	Riser CSG X	X
		4.45		Ground	
	Average	4.45		Other	
B38W14D	1002	4.00	Top of Riser	Protective CSG	
Permit #		4.00	Elevation:	Riser CSG X	X
		4.00		Ground	
	Average	4.00		Other	

X - if well head and pad are in good condition
FUSRAP SOP: SW-MWD-410-0
Rev: 0

WATER LEVEL RECORD SHEET

Date: 6/12/2000 **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
B38W15S	946	5.30	Top of Riser	Protective CSG	
Permit #		5.30	Elevation:	Riser CSG X	X
		5.30		Ground	
	Average	5.30		Other	
B38W15D	953	4.67	Top of Riser	Protective CSG	
Permit #		4.67	Elevation:	Riser CSG X	X
		4.67		Ground	
	Average	4.67		Other	
B38W17A	943	8.26	Top of Riser	Protective CSG	
Permit #		8.26	Elevation:	Riser CSG X	X
		8.26	53.24	Ground	
	Average	8.26		Other	
B38W17B	941	8.32	Top of Riser	Protective CSG	
Permit #		8.32	Elevation:	Riser CSG X	X
		8.32	53.28	Ground	
	Average	8.32		Other	
B38W18D	1130	3.40	Top of Casing	Protective CSG	
Permit #		3.40	Elevation:	Riser CSG X	X
		3.40	58.14	Ground	
	Average	3.40	No permit #	Other	
B38W19S	1038	15.02	Top of Riser	Protective CSG	
Permit #		15.02	Elevation:	Riser CSG X	X
		15.02	59.91	Ground	
	Average	15.02		Other	

X - if well head and pad are in good condition
FUSRAP SOP: SW-MWD-410-0
Rev: 0

WATER LEVEL RECORD SHEET

Date: 6/12/2000 **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	1036	15.24	Top of Riser	Protective CSG	
Permit #		15.24	Elevation:	Riser CSG X	X
		15.24	59.98	Ground	
	Average	15.24		Other	
B38W24S	1047	9.02	Top of Riser	Protective CSG	
Permit #		9.02	Elevation:	Riser CSG X	X
		9.02	55.04	Ground	
	Average	9.02		Other	
B38W24D	1048	8.45	Top of Casing	Protective CSG	
Permit #		8.45	Elevation:	Riser CSG X	X
		8.45	57.77	Ground	
	Average	8.45		Other	
B38W25S	1120	5.92	Top of Riser	Protective CSG	
Permit #		5.92	Elevation:	Riser CSG X	X
		5.92	57.44	Ground	
	Average	5.92	No permit #	Other	
B38W25D	1122	6.40	Top of Riser	Protective CSG	
Permit #		6.40	Elevation:	Riser CSG X	
		6.40	58.24	Ground	
	Average	6.40	Cas. is damaged	Other	
			Needs lock	Protective CSG	
Permit #				Riser CSG X	X
				Ground	
	Average			Other	

X - if well head and pad are in good condition
FUSRAP SOP: SW-MWD-410-0
Rev: 0

WATER LEVEL RECORD SHEET

Date: 9/29/2000 **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: __________

Well No. (Enter Complete Well No.)	Time (24-hour format)	Depth to water (0.01 ft)	Remarks	Measurement Reference Point	X
MISS-1AA	1132	14.92	Top of Riser	Protective CSG	X
Permit #		14.92	Elevation:	Riser CSG X	
		14.92	62.7	Ground	
	Average	14.92		Other	
MISS-1B	1130	16.39	Top of Riser	Protective CSG	X
Permit #		16.39	Elevation:	Riser CSG X	
		16.39	61.98	Ground	
	Average	16.39		Other	
MISS-2A	1135	9.70	Top of Riser	Protective CSG	X
Permit #		9.70	Elevation:	Riser CSG X	
		9.70	61.47	Ground	
	Average	9.70		Other	
MISS-2B	1136	11.34	Top of Riser	Protective CSG	X
Permit #		11.34	Elevation:	Riser CSG X	
		11.34	61.64	Ground	
	Average	11.34		Other	
MISS-3A	1044	8.32	Top of Riser	Protective CSG	X
Permit #		8.32	Elevation:	Riser CSG X	
		8.32	58.52	Ground	
	Average	8.32		Other	
MISS-3B	1042	9.70	Top of Riser	Protective CSG	
Permit #		9.70	Elevation:	Riser CSG X	
		9.70	57.66	Ground	
	Average	9.70	Prot cas.damaged	Other	

X - if well head and pad are in good condition
FUSRAP SOP: SW-MWD-410-0
Rev: 0

WATER LEVEL RECORD SHEET

Date: 9/29/2000 **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
MISS-4A	1048	9.55	Top of Riser	Protective CSG	X
Permit #		9.55	Elevation:	Riser CSG X	
		9.55	57.17	Ground	
	Average	9.55		Other	
MISS-4B	1060	10.80	Top of Riser	Protective CSG	X
Permit #		10.80	Elevation:	Riser CSG X	
		10.80	56.42	Ground	
	Average	10.80		Other	
MISS-5A	1042	13.00	Top of Riser	Protective CSG	X
Permit #		13.00	Elevation:	Riser CSG X	
		13.00	58.65	Ground	
	Average	13.00		Other	
MISS-5B	1055	15.55	Top of Riser	Protective CSG	X
Permit #		15.55	Elevation:	Riser CSG X	
		15.55	59.76	Ground	
	Average	15.55		Other	
MISS-6A		8.05	Top of Riser	Protective CSG	
Permit #		8.05	Elevation:	Riser CSG X	
		8.05	58.26	Ground	
	Average	8.05	Prot.Cas.damaged	Other	
MISS-7A	11.04	8.71	Top of Riser	Protective CSG	X
Permit #		8.71	Elevation:	Riser CSG X	
		8.71	55.6	Ground	
	Average	8.71		Other	

X - if well head and pad are in good condition
FUSRAP SOP: SW-MWD-410-0
Rev: 0

WATER LEVEL RECORD SHEET

Date: 9/29/2000 **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	1105	10.90	Top of Riser	Protective CSG	X
Permit #		10.90	Elevation:	Riser CSG X	
		10.90	55.77	Ground	
	Average	10.90		Other	
B38W01S	1015	6.20	Top of Riser	Protective CSG	X
Permit # 1		6.20	Elevation:	Riser CSG X	
		6.20	60.72	Ground	
	Average	6.20		Other	
B38W02D	1020	16.85	Top of Riser	Protective CSG	X
Permit #		16.85	Elevation:	Riser CSG X	
		16.85	67.7	Ground	
	Average	16.85	Needs Lock	Other	
B38W03B	1040	9.80	Top of Riser	Protective CSG	X
Permit #		9.80	Elevation:	Riser CSG X	
		9.80	58.27	Ground	
	Average	9.80		Other	
B38W04B	1032	10.15	Top of Riser	Protective CSG	
Permit #		10.15	Elevation:	Riser CSG X	
		10.15	65.85	Ground	
	Average	10.15	Cas. Cover rusted	Other	
B38W05B	940	12.75	Top of Riser	Protective CSG	X
Permit #		12.75	Elevation:	Riser CSG X	
		12.75	71.05	Ground	
	Average	12.75		Other	

X - if well head and pad are in good condition
FUSRAP SOP: SW-MWD-410-0
Rev: 0

WATER LEVEL RECORD SHEET

Date: 9/29/2000 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
B38W06B	1035	10.54	Top of Riser	Protective CSG	X
Permit #		10.54	Elevation:	Riser CSG X	
		10.54	54.41	Ground	
	Average	10.54		Other	
B38W07B	1055	9.50	Top of Riser	Protective CSG	X
Permit #		9.50	Elevation:	Riser CSG X	
		9.50	54.63	Ground	
	Average	9.50		Other	
B38W12A	1027	6.25	Top of Riser	Protective CSG	X
Permit #		6.25	Elevation:	Riser CSG X	
		6.25	50.1	Ground	
	Average	6.25		Other	
B38W12B	1025	5.75	Top of Riser	Protective CSG	X
Permit #		5.75	Elevation:	Riser CSG X	
		5.75	49.78	Ground	
	Average	5.75		Other	
B38W14S	1000	4.89	Top of Riser	Protective CSG	X
Permit #		4.89	Elevation:	Riser CSG X	
		4.89	43.89	Ground	
	Average	4.89		Other	
B38W14D	1005	3.68	Top of Riser	Protective CSG	X
Permit #		3.68	Elevation:	Riser CSG X	
		3.68	43.79	Ground	
	Average	3.68		Other	

X - if well head and pad are in good condition
FUSRAP SOP: SW-MWD-410-0
Rev: 0

WATER LEVEL RECORD SHEET

Date: 9/29/2000 **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	957	5.80	Top of Riser	Protective CSG	X
Permit #		5.80	Elevation:	Riser CSG X	
		5.80	45.7	Ground	
	Average	5.80		Other	
B38W15D	958	4.80	Top of Riser	Protective CSG	X
Permit #		4.80	Elevation:	Riser CSG X	
		4.80	45.89	Ground	
	Average	4.80		Other	
B38W17A	950	9.07	Top of Riser	Protective CSG	X
Permit #		9.07	Elevation:	Riser CSG X	
		9.07	53.24	Ground	
	Average	9.07		Other	
B38W17B	951	9.10	Top of Riser	Protective CSG	X
Permit #		9.10	Elevation:	Riser CSG X	
		9.10	53.28	Ground	
	Average	9.10		Other	
B38W18D	1315	4.98	Top of Casing	Protective CSG	X
Permit #		4.98	Elevation:	Riser CSG X	
		4.98	57.85	Ground	
	Average	4.98		Other	
B38W19S	1100	15.60	Top of Riser	Protective CSG	X
Permit #		15.60	Elevation:	Riser CSG X	
		15.60	59.91	Ground	
	Average	15.60		Other	

X - if well head and pad are in good condition
FUSRAP SOP: SW-MWD-410-0
Rev: 0

WATER LEVEL RECORD SHEET

Date: 9/29/2000 **Site:MISS** **Page 6 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
B38W19D	1101	15.80	Top of Riser	Protective CSG	X
Permit #		15.80	Elevation:	Riser CSG X	
		15.80	59.98	Ground	
	Average	15.80		Other	
B38W24S	1045	9.51	Top of Riser	Protective CSG	X
Permit #		9.51	Elevation:	Riser CSG X	
		9.51	55.04	Ground	
	Average	9.51		Other	
B38W24D	1047	9.04	Top of Casing	Protective CSG	X
Permit #		9.04	Elevation:	Riser CSG X	
		9.04	54.91	Ground	
	Average	9.04		Other	
B38W25S	1117	6.01	Top of Riser	Protective CSG	X
Permit #		6.01	Elevation:	Riser CSG X	
		6.01	57.44	Ground	
	Average	6.01		Other	
B38W25D	1118	6.60	Top of Riser	Protective CSG	X
Permit #		6.60	Elevation:	Riser CSG X	
		6.60	58.24	Ground	
	Average	6.60	Prot.Cas damaged	Other	
				Protective CSG	
Permit #				Riser CSG X	
				Ground	
	Average			Other	

X - if well head and pad are in good condition
FUSRAP SOP: SW-MWD-410-0
Rev: 0

WATER LEVEL RECORD SHEET

Date: 11/29/2000 **Site:**MISS

Measured by: M. Myhowich
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-1AA	1030	16.78	Top of Riser	Protective CSG	X
Permit #		16.78	Elevation:	Riser CSG X	
		16.78	62.7	Ground	
	Average	16.78		Other	
MISS-1B	1032	16.69	Top of Riser	Protective CSG	X
Permit #		16.69	Elevation:	Riser CSG X	
		16.69	61.98	Ground	
	Average	16.69		Other	
MISS-2A	1037	9.70	Top of Riser	Protective CSG	X
Permit #		9.70	Elevation:	Riser CSG X	
		9.70	61.47	Ground	
	Average	9.70		Other	
MISS-2B	1039	9.48	Top of Riser	Protective CSG	X
Permit #		9.48	Elevation:	Riser CSG X	
		9.48	61.64	Ground	
	Average	9.48		Other	
MISS-3A	948	9.06	Top of Riser	Protective CSG	X
Permit #		9.06	Elevation:	Riser CSG X	
		9.06	58.52	Ground	
	Average	9.06		Other	
MISS-3B	949	10.06	Top of Riser	Protective CSG	
Permit #		10.06	Elevation:	Riser CSG X	
		10.06	57.66	Ground	
	Average	10.06	Prot cas.damaged	Other	

X - if well head and pad are in good condition
FUSRAP IG: SW-MWD-410-0
Rev:

WATER LEVEL RECORD SHEET

Date: 11/29/2000 **Site:MISS** **Page 2 of 6**

Measured by: M. Myhowich

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	935	10.41	Top of Riser	Protective CSG	X
Permit #		10.41	Elevation:	Riser CSG X	
		10.41	57.17	Ground	
	Average	10.41		Other	
MISS-4B	931	11.06	Top of Riser	Protective CSG	
Permit #		11.06	Elevation:	Riser CSG X	
		11.06	56.42	Ground	
	Average	11.06	Oter cas. bent	Other	
MISS-5A	917	13.86	Top of Riser	Protective CSG	X
Permit #		13.86	Elevation:	Riser CSG X	
		13.86	58.65	Ground	
	Average	13.86		Other	
MISS-5B	915	16.09	Top of Riser	Protective CSG	X
Permit #		16.09	Elevation:	Riser CSG X	
		16.09	59.76	Ground	
	Average	16.09		Other	
MISS-6A	1030	8.24	Top of Riser	Protective CSG	
Permit #		8.24	Elevation:	Riser CSG X	
		8.24	58.26	Ground	
	Average	8.24	Prot.Cas.damaged	Other	
MISS-7A	932	8.20	Top of Riser	Protective CSG	X
Permit #		8.20	Elevation:	Riser CSG X	
		8.20	55.6	Ground	
	Average	8.20		Other	

X - if well head and pad are in good condition
FUSRAP SOP: SW-MWD-410-0
Rev: 0

WATER LEVEL RECORD SHEET

Date: 11/29/2000 **Site:MISS** **Page 3 of 6**

Measured by: M. Myhowich

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	930	11.22	Top of Riser	Protective CSG	
Permit #		11.22	Elevation:	Riser CSG X	
		11.22	55.77	Ground	
	Average	11.22	Cracked conc. Pad	Other	
B38W01S	825	6.23	Top of Riser	Protective CSG	X
Permit #	1	6.23	Elevation:	Riser CSG X	
		6.23	60.72	Ground	
	Average	6.23		Other	
B38W02D	835	16.85	Top of Riser	Protective CSG	X
Permit #		16.85	Elevation:	Riser CSG X	
		16.85	67.7	Ground	
	Average	16.85	Needs Lock	Other	
B38W03B	953	10.20	Top of Riser	Protective CSG	
Permit #		10.20	Elevation:	Riser CSG X	
		10.20	58.27	Ground	
	Average	10.20	Cracked conc. Pad	Other	
B38W04B	1002	11.60	Top of Riser	Protective CSG	
Permit #		11.60	Elevation:	Riser CSG X	
		11.60	65.85	Ground	
	Average	11.60	Cas. cover rusted	Other	
B38W05B	900	15.11	Top of Riser	Protective CSG	X
Permit #		15.11	Elevation:	Riser CSG X	
		15.11	71.05	Ground	
	Average	15.11		Other	

X - if well head and pad are in good condition
FUSRAP SOP: SW-MWD-410-0
Rev: 0

WATER LEVEL RECORD SHEET

Date: 11/29/2000 **Site:MISS**

Measured by: M. Myhowich

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	956	10.69	Top of Riser	Protective CSG	X
Permit #		10.69	Elevation:	Riser CSG X	
		10.69	54.41	Ground	
	Average	10.69		Other	
B38W07B	907	9.82	Top of Riser	Protective CSG	X
Permit #		9.82	Elevation:	Riser CSG X	
		9.82	54.63	Ground	
	Average	9.82		Other	
B38W12A	748	6.64	Top of Riser	Protective CSG	X
Permit #		6.64	Elevation:	Riser CSG X	
		6.64	50.1	Ground	
	Average	6.64		Other	
B38W12B	749	6.39	Top of Riser	Protective CSG	X
Permit #		6.39	Elevation:	Riser CSG X	
		6.39	49.78	Ground	
	Average	6.39		Other	
B38W14S			Top of Riser	Protective CSG	
Permit #			Elevation:	Riser CSG X	
			43.89	Ground	
	Average			Other	
B38W14D			Top of Riser	Protective CSG	
Permit #			Elevation:	Riser CSG X	
			43.79	Ground	
	Average			Other	

X - if well head and pad are in good condition
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Rev: 0

WATER LEVEL RECORD SHEET

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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	811	6.18	Top of Riser	Protective CSG	X
Permit #		6.18	Elevation:	Riser CSG X	
		6.18	45.7	Ground	
	Average	6.18		Other	
B38W15D	810	5.36	Top of Riser	Protective CSG	X
Permit #		5.36	Elevation:	Riser CSG X	
		5.36	45.89	Ground	
	Average	5.36		Other	
B38W17A	800	9.63	Top of Riser	Protective CSG	X
Permit #		9.63	Elevation:	Riser CSG X	
		9.63	53.24	Ground	
	Average	9.63		Other	
B38W17B	801	9.67	Top of Riser	Protective CSG	X
Permit #		9.67	Elevation:	Riser CSG X	
		9.67	53.28	Ground	
	Average	9.67		Other	
B38W18D	1102	4.52	Top of Casing	Protective CSG	X
Permit #		4.52	Elevation:	Riser CSG X	
		4.52	57.85	Ground	
	Average	4.52		Other	
B38W19S	920	16.11	Top of Riser	Protective CSG	X
Permit #		16.11	Elevation:	Riser CSG X	
		16.11	59.91	Ground	
	Average	16.11		Other	

X - if well head and pad are in good condition
FUSRAP SOP: SW-MWD-410-0
Rev: 0

WATER LEVEL RECORD SHEET

Date: 11/29/2000 **Site:MISS**

Measured by: M. Myhowich

G. Moyer

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

Well No. (Enter Complete Well No.)	Time (24-hour format)	Depth to water (0.01 ft)	Remarks	Measurement Reference Point	X
B38W19D	924	16.27	Top of Riser	Protective CSG	X
Permit #		16.27	Elevation:	Riser CSG X	
		16.27	59.98	Ground	
	Average	16.27		Other	
B38W24S	944	10.18	Top of Riser	Protective CSG	X
Permit #		10.18	Elevation:	Riser CSG X	
		10.18	55.04	Ground	
	Average	10.18		Other	
B38W24D	942	9.58	Top of Casing	Protective CSG	X
Permit #		9.58	Elevation:	Riser CSG X	
		9.58	54.91	Ground	
	Average	9.58		Other	
B38W25S	956	6.05	Top of Riser	Protective CSG	X
Permit #		6.05	Elevation:	Riser CSG X	
		6.05	57.44	Ground	
	Average	6.05		Other	
B38W25D	955	6.65	Top of Riser	Protective CSG	X
Permit #		6.65	Elevation:	Riser CSG X	
		6.65	58.24	Ground	
	Average	6.65	Prot.Cas damaged	Other	
				Protective CSG	
Permit #				Riser CSG X	
				Ground	
	Average			Other	

X - if well head and pad are in good condition
FUSRAP SOP: SW-MWD-410-0
Rev: 0

Annual NESHAPS Compliance Report for the Year 2000

New York District
Formerly Utilized Sites Remedial Action Program
Maywood Superfund Site

Prepared by:
Stone & Webster, Inc.
100 West Hunter Ave.
Maywood, New Jersey 07607

for:
US Army Corps of Engineers - Kansas City District
Formerly Utilized Sites Remedial Action Program
Contract No. DACW41-99-D-9001

US Army Corps of Engineers

Revision 1 June 2001

ANNUAL NESHAP COMPLIANCE REPORT – YEAR 2000

FUSRAP MAYWOOD SUPERFUND SITE
MAYWOOD, NEW JERSEY

SITE-SPECIFIC ENVIRONMENTAL RESTORATION
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 Incorporated
100 West Hunter Avenue
Maywood, NJ 07607

Revision 1, June 2001

Issued to:________________________________ **Date:__________________**

Copy #:_________________________ ☐ **Controlled** ☒ **Uncontrolled**

ANNUAL NESHAP COMPLIANCE REPORT – YEAR 2000

FUSRAP MAYWOOD SUPERFUND SITE
MAYWOOD, NEW JERSEY

SITE-SPECIFIC ENVIRONMENTAL RESTORATION
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 Incorporated
100 West Hunter Avenue
Maywood, NJ 07607

June 2001

Reviewed/
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Sam Rice, P.E.
Project Manager

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Approved by ______ Date: 6/21/01
Kevin F. Donnelly, P.E.
Project Environmental Engineer

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Approved by ______ Date: 6/21/01
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Task Manager

Reviewed/
Approved by: ______ Date: 6/21/01
Barbara Reider
Certified Health Physicist

REVISIONS

Revision No.	Description of Revision	Date
A	Internal Original Issue	March 2001
B	Draft – for USACE Review	May 2001
C	Final – for USACE Review	June 2001
0	Final – for Issue to USACE, NJDEP & USEPA	June 2001
1	Final – Revised per USACE Review. Added Section 4.	June 2001

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LIST OF FIGURES

LIST OF ABBREVIATIONS AND ACRONYMS

AEC	Atomic Energy Commission
AP-42	Compilation of Air Pollutant Emission Factors – Volume 1
BP	Ballod Property
BNI	Bechtel National, Incorporated
°C	Degrees Centigrade
CAA	Clean Air Act
CAP88-PC	Clean Air Act Assessment Package 1988 – Personal Computer (Version 2)
CERCLA	Comprehensive Environmental Response, Compensation and Liabilities Act
Ci/yr	Curies per year
Cm	centimeters
CFR	Code of Federal Regulations
DOE	Department of Energy
EPA	U.S. Environmental Protection Agency
°F	Degrees Fahrenheit
FFA	Federal Facilities Agreement
ft	feet
ft^2	square feet
FUSRAP	Formerly Utilized Sites Remedial Action Program
g	gram
HEPA	High Efficiency Particulate Air
in.	inches
ICRP	International Commission on Radiological Protection
kph	kilometers per hour
km	kilometers
m	meters
m^2	square meters
mi	miles
MCW	Maywood Chemical Works
MISS	Maywood Interim Storage Site
mph	miles per hour
mSv/yr	millisievert per year
mrem	millirem
mrem/yr	millirem per year

LIST OF ABBREVIATIONS AND ACRONYMS

NJDEP	New Jersey Department of Environmental Protection
NESHAP	Nation Emission Standards for Hazardous Air Pollutants
NOAA	National Oceanic and Atmospheric Administration
NRC	Nuclear Regulatory Commission
ORAU	Oak Ridge Associated Universities
ORNL	Oak Ridge National Laboratory
pCi/g	Picocuries per gram
PDA	Pilot Demonstration Area
Ra	radium
Rn	radon
TCRA	Time Critical Removal Action
Th	Thorium
U	Uranium
USACE	U. S. Army Corps of Engineers

1.0 FACILITY INFORMATION

1.1 SITE DESCRIPTION

The Maywood Interim Storage Site (MISS) is a 4.7 hectare (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 south and east by commercial and industrial properties.

Land use in the vicinity is primarily commercial and residential (see Figure 2). The nearest commercial buildings are approximately 110 m (360 ft) southeast of the Pilot Demonstration Area (PDA), 35 m (115 ft) south-southwest of the Ballod Property (BP) and 12 m (40 ft) west of the Swale (see Figure 3). The nearest residences are approximately 140 m (460 ft) northeast of the PDA, 35 m (115 ft) south-southwest of the BP and 175 m (575 ft) east of the Swale. The nearest schools are 0.8 km (0.5 mi) northeast and northwest of the MISS. There is no farm land in the vicinity of MISS.

Based on the National Oceanic and Atmospheric Administration (NOAA) records for the year 2000 for Teterboro Airport, monthly average temperatures ranged from -1.1 ^{o}C (30.0 ^{o}F) in January to 22.8 ^{o}C (73.1 ^{o}F) in July. Total monthly precipitation ranged from 1.78 cm (0.70 in) in October to 12.5 cm (4.93 in) in September. Monthly average wind speed ranged from 9.65 kilometers per hour (kph) or 6.0 mph from the north-northwest in October to 15.45 kph (9.6 mph) from the northwest in January.

Due to the absence of onsite meteorological monitoring data, observations from Teterboro Airport were used to represent the general climatic conditions at MISS. Teterboro Airport is located approximately 3 miles south of the MISS and thus, meteorological data collected at this location is considered to be the best available data to represent the climatic regime at the MISS.

1.2 SITE HISTORY

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 Stepan 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 U.S. Environmental Protection Agency (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 SOURCES

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 2.0). 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 the year 2000, the potential sources of airborne emissions at MISS and nearby properties were:

- In situ, contaminated areas totaling approximately 59,000 m^2 (635,000 ft^2) of MISS and the adjacent Stepan Company property (within the MISS fence line) were potentially exposed to wind erosion during the year 2000.

- The performance of a Time-Critical Removal Action (TCRA) at a drainage feature located at the FUSRAP Maywood Superfund Site hereinafter referred to as the "swale". The principal purpose of the TCRA was to restore hydraulic flow to the swale to reduce the potential for area-wide flooding by the removal of accumulated contaminated sediment as well as vegetation and debris. This action involved the excavation of approximately 563 tons of material which was transported by truck to the MISS for future offsite disposal.

- The remediation and restoration of a 1.5 acre portion of the Ballod Property located adjacent to the MISS. The property is bounded the New York, Susquehanna and Western Railroad on the north, the Route 17 embankment on the east, commercial/residential properties on the west, and the previously remediated section of the Ballod property on the south. This work consisted of the removal of vegetation and contaminated soil, placement of clean backfill and the revegetation of the site. All excavated contaminated soil and vegetation was transported to the MISS for future offsite disposal. This action involved the excavation and transport of approximately 5, 913 tons of contaminated soil.

- The operation of a pilot facility, which utilized gravel separation and rinse technology as well as radiological sorting technology, for approximately a four month period to determine its' effectiveness in reducing the volume of contaminated soil requiring offsite disposal. The pilot facility focused on determining the effectiveness of the above two soil management technologies in separating excavated material into components above and below selected radioactivity criteria, and evaluating the benefits of materials management of the resulting processed soils. This operation involved the processing of approximately 6,965 tons of contaminated soil.

- The operation of the exhaust system for the soil sample preparation laboratory located in Building 76 (see Figure 3). Soil samples collected from various locations associated with the operation of the Pilot Demonstration Facility were brought to this laboratory to prepare the samples for radiological analysis. The individual soil samples were dried and then ground before placing the soil into sealed containers. The grinding operations, which generated very small amounts of dust, were performed under a laboratory hood. Air from the exhaust hood is passed through a high efficiency particulate air (HEPA) filter prior to discharge to the ambient air.

The simulated airborne emissions from these potential sources are used by CAP88-PC to estimate the annual dose from airborne particulates to the population within 80 km (50 mi) of the site (see Appendix). In addition, for user-defined distances from the center of the emission areas, CAP88-PC estimates individual effective dose equivalents in all compass directions. For specific potentially exposed individuals (workers and residents) at known distances and compass directions from the site, the user can determine and compare the calculated effective dose equivalents.

Analyses are performed separately for the TCRA at the swale, Ballod Property and Pilot Demonstration Area given the differences in receptor locations most affected by each of these areas. The in situ wind erosion emissions and the exhaust hood emissions were found to be negligible and thus, these sources were not included in the modeling analyses. Where individual receptors are affected by more than one emission source, doses caused by those sources are added. 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. The model was used to predict the annual effective dose at numerous receptors resulting from the combined impact of the above three sources. Although the model determined the annual effective dose at numerous receptors, only the hypothetical maximally exposed resident and worker 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 (see pages 20 – 61 in Appendix B) for the CAP88-PC runs.

1.4 DETAILED SOURCE DESCRIPTIONS

As discussed in the previous section, the key sources of potential airborne radioactive particulate releases to the atmosphere during the year 2000 were the TCRA performed for the swale; the remediation and restoration of the Ballod property; and operation of the pilot demonstration facility. In addition, in-situ wind erosion at MISS and operation of the exhaust system for the sample preparation laboratory in Building 76 were potential sources of radioactive particulates. A more comprehensive discussion of the activities performed at the above sources including the soil radiological concentrations and the potential pathways for the airborne release of contaminated particulates is provided below.

1.4.1 TCRA for the Swale

Six of the twenty-four commercial and governmental properties that comprise the FUSRAP Maywood Superfund Site abut Lodi Brook and the swale. Maywood area storm water empties into the swale at the terminus of West Howcroft Road (see Figure 3). Extremely heavy rainfall associated with Hurricane Floyd on September 16-17, 1999 created regional and localized flooding. The extremely heavy rainfall resulted in the backup of storm water due to extensive sedimentation within the swale and Lodi Brook. Some of the sediments in the swale and Lodi Brook contained elevated levels of radium-226, thorium-232 and uranium-238.

These sediments required removal because additional rainfall had the potential to cause their migration and release onto adjacent and nearby properties. The United States Army Corps of Engineers (USACE) performed a TCRA at the swale pursuant to the requirements of the Comprehensive Environmental Response, Compensation, and Liabilities Act (CERCLA) of 1980, as amended, and the National Oil and Hazardous Substances Pollution Contingency Plan. The TCRA addressed the removal of sediments within the swale and Lodi Brook to restore hydraulic flow and stabilize the swale to reduce the potential for the release of contaminated sediments onto adjacent properties (see Reference 1 for the complete details of this operation).

After Hurricane Floyd in September 1999 and subsequent heavy rains, the USACE collected a total of 52 sediment samples from 15 discrete locations along the swale and in a small section of Lodi Brook. Samples were collected in the sediment/silt layers and were obtained at 6 inch intervals until firm, native soil or clay was encountered.

Analysis of these samples revealed the presence of elevated (i.e., above background) levels of radium-226, thorium-232 and uranium-238 in the sediment found along large sections of the swale and in Lodi Brook. This data was used to determine the average concentrations of the above radioisotopes in the excavated soil that was used to generate the data inputs to the CAP-88-PC dispersion model. The average swale sediment radionuclide concentrations used in the modeling analyses for thorium-232, radium-226 and uranium-238 were 23.8 pCi/g, 0.88 pCi/g and 6.6 pCi/g; respectively.

To establish the appropriate hydraulic grade within the swale and Lodi Brook, soil, vegetation and debris were removed. The excavated soil was placed on the ground adjacent to the swale for drying. This soil was collected and stockpiled and subsequently placed into roll-off containers for transport by truck to MISS. The containers were emptied using the dump ramp and the excavated soil was moved to a dedicated storage area and ultimately transferred to the general soil staging area.

The stockpiled material was covered with tarps and sandbags to prevent the generation of airborne particulate emissions due to wind erosion. The TCRA involved the excavation and transport to MISS of approximately 563 tons of soil. Figure 4 shows selected photographs of the swale at various locations..

1.4.2 Ballod Property Remediation and Restoration

The Ballod property is located in Rochelle Park, New Jersey adjacent to the MISS. The property is bounded by the Route 17 embankment on the east, the New York, Susquehanna and Western Railroad on the north, commercial/industrial properties on the west and the previously remediated portion of the Ballod property on the south. The Ballod property was once part of the MCW site and was used, at least in part, for the disposal of thorium process waste. The area consists of a 1.5-acre parcel where the depth of the radiological contamination varied from one foot or less to four feet in the vicinity of a former dike.

The Oak Ridge Associated Universities (ORAU) performed a detailed radiological characterization of the Ballod property in 1981 (see Reference 2). This investigation, which included the collection of surface and subsurface soil samples, covered the Phase I Ballod property and the adjacent property now occupied by an extended care facility. The results of this investigation formed the basis for the construction work plan for the remediation and restoration of the Ballod property.

The ORAU study demonstrated that the soil radiological concentrations at the Ballod property varied considerably with the highest concentrations in the former diked area bounded by the New York, Susquehanna and Western railroad tracks on the north and Route 17 on the east. Within the former diked area, the measured soil radiological concentrations in the southern portion of the dike were considerably lower than in the northern portion. The soil radiological concentrations were also much lower outside of the former diked area.

Based on the above, the Ballod property was divided into three separate zones for modeling purposes (see Figure 3). For each of these zones, average soil radionuclide concentrations for thorium-232, radium-226 and uranium-238 were computed based on the ORAU sampling data (see Table 1 below). In addition, the corresponding tonnage of excavated soil for each of the three zones was determined.

Table 1 Ballod Property – Average Soil Radionuclide Concentrations by Zone

Zone	Thorium-232 (pCi/g)	Radium-226 (pCi/g)	Uranium-238 (pCi/g)	Tonnage	Surface Area (Ft^2)
1	2.2	0.4	3.5	1,985	29,560
2	574	26.2	64	1,760	7,870
3	155	18.9	82	2,168	9,690

The remediation consisted of the removal of vegetation and the contaminated soil, placement of clean backfill and the revegetation of the site. All excavated contaminated soil and vegetation was transported to MISS by truck for future offsite disposal via rail shipment. In the vicinity of the former dike, the soil was excavated down to an average depth of approximately 5 feet (Zones 2 and 3). In the area west of the dike, the soil was excavated down to an average depth of approximately 1.5 feet (Zone 1).

The remediation involved the excavation and transport to MISS of approximately 5,913 tons of contaminated soil. The breakdown of the amount of excavated soil for Zones 1, 2 and 3 were 1,985 tons, 1,760 and 2,168 tons; respectively.

The excavated soil was placed into piles near the work area, picked up by a front-end loader and either loaded directly into a dump truck or transferred to another onsite storage pile before being loaded into a dump truck. The dump truck transported the excavated soil to the MISS where it was then placed into the main soil staging area. The stockpiled material was covered with tarps and sandbags to prevent the generation of airborne particulate emissions due to wind erosion. Figure 5 shows selected photographs depicting the remediation of the Ballod property.

1.4.3 Operation of Pilot Demonstration Facility

The CERCLA mandates that remedial actions utilize alternative treatment technologies to the maximum extent practicable in providing permanent and significant reduction of toxicity, mobility and volume of hazardous substances or contaminants. Additionally, the National Oil and Hazardous Substances Contingency Plan mandates that an assessment be performed of the degree to which the remedy employs recycling, or treatment, that has reduced the toxicity, mobility, or volume of hazardous substances.

In support of the above volume reduction initiative, an evaluation was performed of various soil processing technology alternatives that may be applicable to the FUSRAP Maywood Superfund Site. Through the appropriate management and waste characterization of the processed soils, the volume of radioactively contaminated material may be reduced.

Previous characterizations of the site have shown that the volume of in-situ soil that may need to be remediated is approximately 200,000 cubic yards. Remediation in the form of excavation and offsite disposal of contaminated soil is being considered for the site. This type of remediation invariably results in the excavation of soil which is below the radiological clean-up levels. This “over-excavation” of material incurs additional costs in excavation, transport and the disposal of soils.

Unless the volume of soil requiring such offsite disposal is appropriately managed, the remediation will incur a significant cost in the disposal of the material alone. By employing a soil processing technology that can separate soil that is radiologically below criteria from radiologically contaminated (above criteria) soil, the cost of remediation may be reduced.

Based on the results of the technology evaluation and subsurface soils investigation (i.e., test pits), it was decided to employ gravel separation and rinse technology as well as radiological sorting technology in the pilot demonstration. The pilot demonstration focused on determining the effectiveness of the two soil management technologies in separating excavated material into components above and below selected radioactivity criteria, and evaluating the benefits of materials management of the resulting processed soil (see References 3 and 4 for a more thorough discussion of this project).

The goal of the pilot demonstration is to determine the full-scale equipment configurations and operating procedures as well as to evaluate economic considerations. The relative success of any soil processing technology resides in the effectiveness of the technology to realize appreciable cost savings in the remediation of the site and to provide community and other benefits relating to waste transport and disposal of the radiologically contaminated material.

The overall configuration of the pilot demonstration facility consisted of the following areas/components: soil acquisition area; temporary storage pile; gravel separation/rinse system; radiological sorting system; above criteria and below criteria storage process piles; 3/8 inch soil stockpile; 3/8 inch to 6 inch gravel stockpile; and oversize material pile (see Figure 3). In order to assess the efficacy of the pilot demonstration facility for the MISS, it was important that the feed soil have similar characteristics to the majority of the soil that would be processed assuming full scale soil processing would eventually be implemented on the project. Radiological heterogeneity and particle size distributions are the primary soil characteristics that will contribute to operational performance and was the basis for selecting the soil acquisition area.

A track-mounted excavator was used to perform the excavation at the soil acquisition area. The excavated soil was then transported by truck to a temporary soil staging area located adjacent to the load ramp for the pilot process train. During operation of the pilot facility, soil from the temporary storage pile was transported by front-end loaders via the load ramp and placed into the hopper leading to the gravel separation system/rinse system and radiological sorting system.

The gravel separation system used a coarse screening system (grizzly) to separate material greater than 6 inches in nominal diameter, followed by a vibrating screen that separated soil particles larger than 3/8 inch in nominal diameter. After the vibratory action, two streams were formed from the separation: material greater than 3/8 inch but less than 6 inches, and materials less than 3/8 inch. Material greater than 6 inches (oversize materials) was periodically collected using a front-end loader and placed in the main soil staging area or used as backfill.

The separated material greater than 3/8 inch was conveyed through a radial conveyor belt to the rinse system. Within the enclosed rinse system, the gravel was sprayed with water to remove adhering fine sand and silts. The rinse water passed through a filtration system to remove the fines and the filtered water was recycled to the rinse unit forming a closed system.

The less than 3/8 inch stream was directed via a conveyor belt to a feed hopper for the radiological sorting system. On occasion, this stream was directed to a less than 3/8 inch stockpile in order to assess the gravel separation unit's ability to run at full capacity.

The radiological sorting system consisted of a transportable gamma radiation system with motorized conveyor belts, a variable belt speed motor controller, air actuated gates for diverting soil, two arrays of eight sodium iodide (NaI) detectors in each array, and a computer for performing radionuclide assays. Material that was less than 3/8 inch nominal diameter was fed to the radiological sorting system via conveyor from the gravel separation system. The material entered a grizzly with a 1½ inch screen to remove gravel that might not have been removed by the gravel separation system.

The material was spread to a 2 inch thickness and conveyed under two sets of eight NaI detectors. These instruments were calibrated for the detection of thorium-232, radium-226 and uranium-238. The detectors performed a continuous assay of the material. The detectors then signaled the segmented gates which either opened or closed to divert soil that was below a selected threshold level to a "below criteria" stockpile. The remaining soil with radioactivity above the selected threshold level was directed to an "above criteria" stockpile.

The "above criteria" and "below criteria" soil piles were subsequently collected and transported to the main soil storage area at MISS for future offsite disposal. Figure 6 shows selected photographs depicting the operation of the Pilot Demonstration facility.

Operation of the pilot demonstration facility involved the processing of approximately 6,965 tons of contaminated soil. The average radionuclide concentrations of thorium-232, radium-226 and uranium-238 for the processed soil that was used in the modeling analyses were 10.1 pCi/g, 2.1 pCi/g and 2.9 pCi/g; respectively.

1.4.4 In Situ Wind Erosion

The MISS and adjacent Stepan Company property (within the MISS fence line) consists of approximately 59,000 m^2 (635,000 ft^2) of contaminated areas that were potentially exposed to wind erosion throughout the year 2000. The surface characteristics of the northern portion of the MISS (north of the soil load-out rail spur) has changed considerably during the year 2000.

The amount of bare soil present at MISS, which has the greatest wind erosion potential, has decreased considerably from past years due to the placement of gravel/stone and a plastic liner over much of the area. At present, the approximate breakdown of the types of various surfaces found at MISS (see Figure 3) is the following: bare soil - 5,000 m^2 (54,000 ft^2), vegetation - 22,760 m^2 (245,000 ft^2), gravel/stone - 22,110 m^2 (238,000 ft^2), water basin -740 m^2 (8,000 ft^2) and asphalt - 835 m^2 (90,000 ft^2).

Other than for bare soil, the wind erosion potential for the other surfaces is negligible. It should be noted that any storage piles created as a result of remediation activities and operation of the pilot facility were covered with tarps and sandbags to prevent wind erosion. In addition, best management practices such as spraying water on dry soil were used during the year to reduce the potential for wind erosion.

In order to assess the amount of wind erosion that occurred during the year 2000 at MISS, it is necessary to determine the fastest 2-minute wind speeds over the course of the year and then compare them to the friction velocity most representative of bare soil as defined in EPA's AP-42 publication (Industrial Wind Erosion). As mentioned previously, meteorological data from nearby Teterboro Airport was used to represent conditions at MISS. The results of this analysis showed that the fastest 2-minute wind speeds obtained from Teterboro Airport for the year 2000 do not result in the threshold friction velocity being exceeded at any time during the year. Thus, by definition, no in situ wind erosion occurred at MISS during the year 2000.

1.4.5 System Exhaust for Soil Sample Preparation Laboratory

The soil sample preparation laboratory is located in Building 76 (see Figure 3). Soil samples collected for the pilot demonstration facility were taken to this laboratory to prepare them for radiological analysis. Each sample was dried thoroughly to minimize the moisture content and then ground to create a homogeneous mixture. The presence of moisture, rocks or void spaces in the prepared sample could lead to inaccurate radioanalytical laboratory results.

The laboratory operates two electric ovens to dry the samples. These ovens are vented directly to the main laboratory fume hood for the removal of waste heat. The grinding of the soil samples is performed in a bench grinder positioned under the main laboratory fume hood. Each soil sample is weighed before and after the grinding process. The grinding of the individual soil samples produces minimal particulate emissions; the operators calculated that on average a 3 percent loss of the sample occurred during the grinding process.

The fume hood operates anytime that the ovens or grinder are operational. Dust generated by the grinding process is collected by the fume hood and passed through a HEPA filter with a 99.97 % removal efficiency before being discharged to the outside air.

Approximately 600 samples were prepared for radiological analysis during December 12 – 21, 2000. The total time that grinding was performed during this period was 90 hours. Each soil sample weighed 400 grams before preparation. The average amount of particulate emissions per sample generated by grinding operations was 12 grams. The average radionuclide concentrations of thorium-232, radium-226 and uranium-238 of the prepared soil was 16.0 pCi/g, 3.3 pCi/g and 4.3 pCi/g; respectively.

The total amount of particulate emissions generated during the preparation of all the soil samples was 7,200 grams. However, after passage through the HEPA filter, the particulate emissions discharged to the outside air was approximately 2 grams; a miniscule amount compared to the total amount of particulates (5,722 grams) that were emitted to the atmosphere from the other sources. The discharge of this miniscule amount of contaminated particulate to the atmosphere would have a negligible impact on the offsite exposure; therefore, this source was not included in the CAP88-PC modeling analyses.

2.0 AIR EMISSIONS DATA

The radionuclide particulate emission sources and controls are summarized in Table 2.

Table 2 Description of Radionuclide Particulate Emissions Sources

Point Sources	**Type Control**	**Efficiency**
Soil Sample Preparation Laboratory	HEPA Filter	99.97 percent
Non-Point Sources	**Type Control**	**Efficiency**
In situ soil	Gravel/Stone Vegetative cover Bare Soil	99 percent 99 percent 0 percent
Pilot Demo. Area soil transfers	Water Sprays for Dust Suppression. Use of tarps to cover storage piles.	No credit taken for dust controls
Ballod Property soil transfers	Water Sprays for Dust Suppression. Use of tarps to cover storage piles.	No credit taken for dust controls
Swale excavation	Water Sprays for Dust Suppression Use of tarps to cover storage piles.	No credit taken for dust controls

Radionuclide emission rates are based on the particulate release rates and average radionuclide source concentrations determined from sample measurements. The radioactive particulate release rates from in situ wind erosion, the TCRA at the swale, BP remediation and restoration and PDA soil transfers are calculated using EPA's Compilation of Air Pollutant Emission Factors – Volume 1:Stationary Point and Area Sources known as AP-42.

Source concentration for isotopes of thorium-232, radium-226 and uranium-238 are based on average values for the in situ soils and average values measured for the excavated soils resulting from the TCRA at the swale, BP remediation and operation of the pilot facility. Unknown radionuclide source concentrations are based on the known source concentrations assuming secular equilibrium in the decay chains. The radionuclide emissions for the year 2000 from each of the above emission sources, with the exception of the soil sample preparation laboratory, are shown in Table 3.

Table 3 Year 2000 Airborne Radionuclide Emissions at MISS (Ci/yr) †

Non Point Source Radionuclides	In Situ Soil *	PDA Soil Transfer	BP Zone 1	BP Zone 2	BP Zone 3	Swale Excavation
U-238	0	1.00E-08	2.43E-09	3.95E-08	6.23E-08	1.56E-09
Th-234	0	1.00E-08	2.43E-09	3.95E-08	6.23E-08	1.56E-09
Pa-234m	0	1.00E-08	2.43E-09	3.95E-08	6.23E-08	1.56E-09
Pa-234	0	1.31E-11	3.16E-12	5.13E-11	8.09E-11	2.03E-12
U-234	0	1.07E-08	2.60E-09	4.22E-08	6.66E-08	1.67E-09
Th-230	0	1.07E-08	2.60E-09	4.22E-08	6.66E-08	1.67E-09
Ra-226	0	7.07E-09	2.78E-10	1.62E-08	1.44E-08	2.08E-10
Po-218	0	7.07E-09	2.78E-10	1.62E-08	1.44E-08	2.08E-10
Pb-214	0	7.07E-09	2.78E-10	1.61E-08	1.43E-08	2.08E-10
Bi-214	0	7.07E-09	2.78E-10	1.62E-08	1.44E-08	2.08E-10
Po-214	0	7.07E-09	2.78E-10	1.61E-08	1.43E-08	2.08E-10
Pb-210	0	7.07E-09	2.78E-10	1.62E-08	1.44E-08	2.08E-10
Bi-210	0	7.07E-09	2.78E-10	1.62E-08	1.44E-08	2.08E-10
Po-210	0	7.07E-09	2.78E-10	1.62E-08	1.44E-08	2.08E-10
U-235	0	4.70E-10	1.14E-10	1.85E-09	2.91E-09	7.30E-11
Th-231	0	4.70E-10	1.14E-10	1.85E-09	2.91E-09	7.30E-11
Pa-231	0	4.70E-10	1.14E-10	1.85E-09	2.91E-09	7.30E-11
Ac-227	0	4.70E-10	1.14E-10	1.85E-09	2.91E-09	7.30E-11
Th-227	0	4.64E-10	1.12E-10	1.82E-09	2.87E-09	7.20E-11
Fr-223	0	6.49E-12	1.57E-12	2.55E-11	4.02E-11	1.01E-12
Ra-223	0	4.70E-10	1.14E-10	1.85E-09	2.91E-09	7.30E-11
Po-215	0	4.70E-10	1.14E-10	1.85E-09	2.91E-09	7.30E-11
Pb-211	0	4.70E-10	1.14E-10	1.85E-09	2.91E-09	7.30E-11
Bi-211	0	4.70E-10	1.14E-10	1.85E-09	2.91E-09	7.30E-11
Po-211	0	1.28E-12	3.11E-13	5.04E-12	7.96E-12	1.99E-13
Tl-207	0	4.69E-10	1.14E-10	1.84E-09	2.91E-09	7.28E-11
Th-232	0	3.45E-08	1.53E-09	3.54E-07	1.18E-07	5.63E-09
Ra-228	0	3.45E-08	1.53E-09	3.54E-07	1.18E-07	5.63E-09
Ac-228	0	3.45E-08	1.53E-09	3.54E-07	1.18E-07	5.63E-09
Th-228	0	3.45E-08	1.53E-09	3.54E-07	1.18E-07	5.63E-09
Ra-224	0	3.45E-08	1.53E-09	3.54E-07	1.18E-07	5.63E-09
Po-216	0	3.45E-08	1.53E-09	3.54E-07	1.18E-07	5.63E-09
Pb-212	0	3.45E-08	1.53E-09	3.54E-07	1.18E-07	5.63E-09
Bi-212	0	3.45E-08	1.53E-09	3.54E-07	1.18E-07	5.63E-09
Po-212	0	2.21E-08	9.80E-10	2.27E-07	7.54E-08	3.60E-09
Tl-208	0	1.24E-08	5.50E-10	1.27E-07	4.23E-08	2.02E-09

* The in situ soil emissions are zero as the fastest 2-min wind speeds at Teterboro Airport for the year 2000 do not result in the threshold friction velocity being exceeded at any time.

† Soil sample preparation laboratory is not considered a source due to the miniscule amount of particulates released to the atmosphere.

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 particulates from the site using the methodology given in the EPA's "Estimation of Air Impacts from Area Sources of Particulate Matter Emissions at Superfund Sites" (EPA-451/R-93-004). Particulate emissions were determined based on the number of times the soil was disturbed (e.g., excavated, stockpiled, loaded into trucks/containers, unloaded, moved) at both the source and at MISS. 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 model was used to predict the annual effective dose at numerous receptors resulting from the combined impacts of particulate emissions from the TCRA at the swale, Ballod Property remediation and operation of the Pilot Demonstration Facility. Although the emission of radon gas is not considered in this analysis, the daughters of radon gas 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 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 as well as the air and ground surface concentrations with the appropriate dose conversion factors.

3.2 SUMMARY OF INPUT PARAMETERS

- Average Annual Temperature: 11.8 C (53.3 F)
- Total Annual Precipitation: 85.6 cm (33.7 in.)
- Wind Speed and Direction: Teterboro Airport, NJ STAR Data (1989-1999)
- Population Distribution: calculated from 1990 census
- Annual Radionuclide Emission Rates (see Table 3)
- Surface areas of Emission Points
- Distances to Individual Resident and Worker Receptor Locations

3.3 COMPLIANCE ASSESSMENT

The maximum annual effective dose to residents and workers resulting from each of the key sources during the year 2000 (the TCRA at swale, Ballod Property remediation, and operation of the pilot demonstration facility) as determined by the CAP88-PC modeling analyses are shown in Table 4. The annual effective dose to the maximally exposed resident and worker, as well as the collective population dose, resulting from total site activities during the year 2000 are the following:

- Resident located 35m SSW of BP (100% occupancy): 8.41×10^{-4} mSv/yr (8.41×10^{-2} mrem/yr)
- Employee located 35m SSW of BP (24% occupancy): 2.02×10^{-4} mSv/yr (2.02×10^{-2} mrem/yr)
- Annual effective dose to the public within 80 km of MISS: 2.11×10^{-2} person-rem/year

The maximum annual effective dose to the residents and workers are well below the Subpart H NESHAP's standard of 10 mrem/yr (40 CFR 61.92). The maximum annual effective doses are almost entirely the result of the internal doses received from the inhalation of dust particles with a small contribution from the ingestion of plant borne dust. Air immersion in the dust plume and ground surface irradiation contribute a negligible amount to the total dose.

Table 4 Maximum Annual Effective Dose Equivalents

Source	Location of Maximum Impact	Annual Dose (mrem/yr)	Occupancy Factor (%)	Annual Effective Dose (mrem/yr)
Pilot Demonstration Area				
• Population (person-rem/yr)	N/A	1.50E-03	N/A	1.50E-03
• Maximally Exposed Resident	140 m NE	5.60E-04	100	5.60E-04
• Maximally Exposed Worker	120 m NNE	7.70E-04	24	1.85E-04
Ballod Property				
• Population (person-rem/yr)	N/A	1.94E-02	N/A	1.94E-02
• Maximally Exposed Resident	35 m SSW	8.40E-02	100	8.40E-02
• Maximally Exposed Worker	35 m SSW	8.40E-02	24	2.02E-02
Swale				
• Population (person-rem/yr)	N/A	2.40E-04	N/A	2.40E-04
• Maximally Exposed Resident	175 m E	6.00E-05	100	6.00E-05
• Maximally Exposed Worker	12 m W	7.80E-03	24	1.87E-03
Total Site*				
• Population (person-rem/yr)	N/A	2.11E-02	N/A	2.11E-02
• Maximally Exposed Resident	35 m SSW	8.41E-02	100	8.41E-02
• Maximally Exposed Worker	35 m SSW	8.41E-02	24	2.02E-02

* The total site dose for the maximally exposed resident and worker represent the combined impacts of particulate emissions from the TCRA at the swale, Ballod Property remediation, and operation of the Pilot Demonstration Facility at the specified location.

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: __________________

4.0 RADON FLUX MONITORING

4.1 RADON-222 FLUX

Radon flux data was obtained for the storage pile on the MISS to verify compliance with 40 CFR Part 61, Subpart Q. To determine radon flux from a storage pile, charcoal canisters were placed on the pile at 25 ft intervals; the canisters remained on the pile for 24 hours. Radon flux measurements for 2000 are presented in Table 5; measurement locations are shown in Figure 8.

Analytical results from measurements obtained at the MISS in January 2001 ranged from non-detect to a maximum of 0.54 pCi/m2/s. All results are well below the 20 pCi/m2/s radon flux standard specified in 40 CFR part 61, Subpart Q.

Table 5 Radon Flux Monitoring Results

Sample ID[a]	Date Collected	Date Analyzed	Analyte	Result pCi/m2s		Error	MDA[b] pCi/m2s
RC-1	01/24/2001	01/25/2001	RN-222	0.049	±	0.036	0.077
RC-10	01/24/2001	01/25/2001	RN-222	0.137	±	0.047	0.120
RC-10-DUP	01/24/2001	01/25/2001	RN-222	0.118	±	0.025	0.041
RC-11	01/24/2001	01/25/2001	RN-222	0.055	±	0.041	0.107
RC-12	01/24/2001	01/25/2001	RN-222	0.098	±	0.055	0.147
RC-13	01/24/2001	01/25/2001	RN-222	0.061	±	0.030	0.081
RC-14	01/24/2001	01/25/2001	RN-222	0.059	±	0.045	0.114
RC-15	01/24/2001	01/25/2001	RN-222	0.073	±	0.034	0.087
RC-16	01/24/2001	01/25/2001	RN-222	0.126	±	0.057	0.150
RC-17	01/24/2001	01/25/2001	RN-222	0.034	±	0.025	0.069
RC-18	01/24/2001	01/25/2001	RN-222	0.039	±	0.042	0.106
RC-19	01/24/2001	01/25/2001	RN-222	0.085	±	0.039	0.095
RC-2	01/24/2001	01/25/2001	RN-222	0.103	±	0.046	0.109
RC-20	01/24/2001	01/25/2001	RN-222	0.519	±	0.078	0.055
RC-20-DUP	01/24/2001	01/25/2001	RN-222	0.541	±	0.079	0.092
RC-21	01/24/2001	01/25/2001	RN-222	0.085	±	0.041	0.094
RC-22	01/24/2001	01/25/2001	RN-222	0.075	±	0.046	0.123
RC-23	01/24/2001	01/25/2001	RN-222	0.063	±	0.030	0.078
RC-24	01/24/2001	01/25/2001	RN-222	0.063	±	0.048	0.130
RC-25	01/24/2001	01/25/2001	RN-222	0.082	±	0.049	0.096
RC-26	01/24/2001	01/25/2001	RN-222	0.105	±	0.069	0.154
RC-27	01/24/2001	01/25/2001	RN-222	0.051	±	0.031	0.074
RC-28	01/24/2001	01/25/2001	RN-222	0.040	±	0.034	0.096
RC-29	01/24/2001	01/25/2001	RN-222	-0.003	±	0.029	0.057
RC-3	01/24/2001	01/25/2001	RN-222	0.080	±	0.050	0.133
RC-30	01/24/2001	01/25/2001	RN-222	0.045	±	0.036	0.101
RC-30-DUP	01/24/2001	01/25/2001	RN-222	0.061	±	0.044	0.117
RC-31	01/24/2001	01/25/2001	RN-222	0.084	±	0.040	0.097
RC-4	01/24/2001	01/25/2001	RN-222	0.115	±	0.050	0.113
RC-5	01/24/2001	01/25/2001	RN-222	0.083	±	0.048	0.129
RC-6	01/24/2001	01/25/2001	RN-222	0.111	±	0.048	0.111
RC-7	01/24/2001	01/25/2001	RN-222	0.061	±	0.043	0.116
RC-8	01/24/2001	01/25/2001	RN-222	0.142	±	0.028	0.049
RC-9	01/24/2001	01/25/2001	RN-222	0.083	±	0.048	0.122

[a]All monitoring locations for the storage pile are shown in figure 5.

[b]Minimum detectable Activity (MDA).

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APPENDICES

Appendix A

Figures

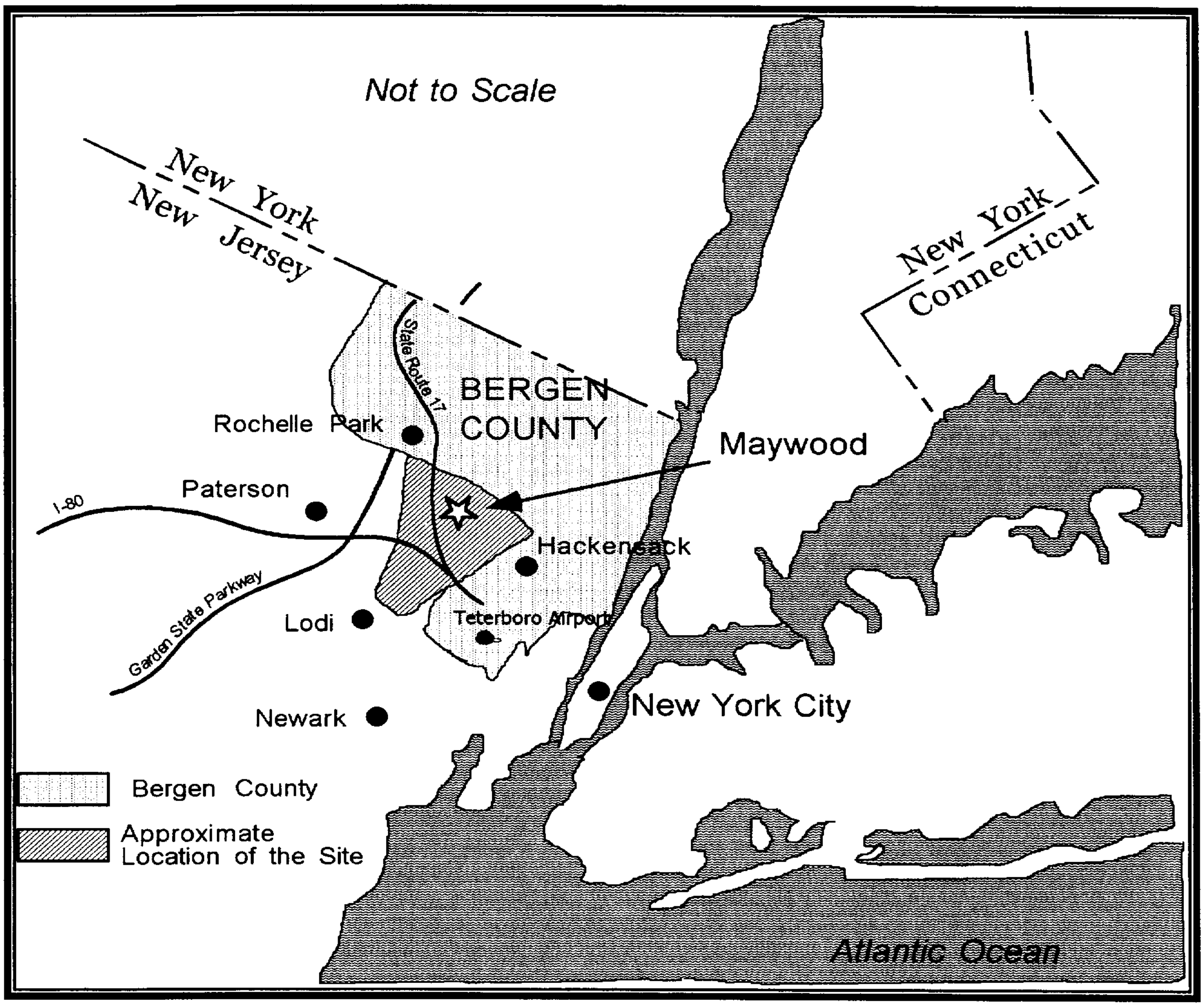

Figure 1 MISS General Location Map

Figure 2 - Aerial view of MISS and adjacent properties

LEGEND

■ = **BALLOD PROPERTY**

□ = **MISS PROPERTY**

▩ = **SWALE AREA**

N

March 2, 2000 – View of the Swale looking West toward the Uniform Fashions Building.

Soil is excavated and stockpiled for drying. The pile is covered to reduce dust.

Excavated soils were placed into roll-off containers for transport to MISSS

Roll-off containers were emptied using a ramp. Soil was stockpiled for off-site disposal.

March 24, 2000 – View of Swale looking West after restoration activities.

View of culvert at the terminus of W. Howcroft Avenue after restoration activities.

Figure 4 TCRA at Swale – Selected Photographs

Ballod Property – April 28, 2000
Before trees and brush have been cleared.

August 25, 2000 – After clearing. Stockpile of grubbing and cleared materials.

Dust control measures during excavation down to a depth of one-foot (controlled lift).

September 12th – Excavation down to a depth of three-feet (controlled lift).

October 2nd, 2000 – Transport of excavated soil to stockpile at MISS for future off-site disposal.

December 19, 2000 – Remediated rail spur and property with winter rye seed & hay mulch.

Figure 5 Ballod Property Remediation and Restoration – Selected Photographs

Soil acquisition area. First controlled cut. Kobelco excavator.

Acquisition soils fed into first hopper – Gravel Separation System (GSS)

Gravel separated from acquisition soil. Material transported to soil staging area.

Separated soil feed into hopper to Thermo-Nutech SGS system for radiological sorting.

Thermo-Nutech SGS radiological processing unit.

Behind shovel are processed soils. Feeder pile on left. Storage pile in rear, covered.

Figure 6 Pilot Demonstration Area – Selected Photographs

Building 76 on MISS – Location of Soil Sample Preparation Laboratory.

Electric ovens are used to dry the soil samples prior to grinding.

Grinding of soil samples is performed under the fume hood which exhausts to the HEPA filter.

Exhaust fan and HEPA filter in rear of lab. Air monitor is stored in cat carrier for protection from elements.

Figure 7 Soil Sample Preparation Laboratory – Selected Photographs

Appendix B

Calculations

5010.65

STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION TITLE PAGE

CLIENT & PROJECT: U.S. ARMY CORPS OF ENGINEERS/FUSRAP-MISS	PAGE 1 of 61 Total Pages: 70 w/attachments pages 9
CALCULATION TITLE: MISS 2000 Annual NESHAPS Calculation	QA CATEGORY (✓) ☐ I ☐ II ☑ III

CALCULATION IDENTIFICATION NUMBER				OPTIONAL WORK PACKAGE NO.
JOB ORDER NO.	DISCIPLINE	CURRENT CALC NO	OPTIONAL TASK CODE	
08575.0207	E(B)	03		

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 Stephen A. Vigeant 5-8-01	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: Stoughton - 4	cc			

5010.65

STONE & WEBSTER ENGINEERING CORPORATION

CALCULATION SHEET

CALCULATION IDENTIFICATION NUMBER				
JOB ORDER NO. 08575.0207	DISCIPLINE E(B)	CALCULATION NO. 03	REVISION NUMBER 0	PAGE 2 OF 61

CHANGE HISTORY PAGE

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

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CALCULATION IDENTIFICATION NUMBER				
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OBJECTIVE

To estimate the annual effective dose from airborne radioactivity releases at the Maywood Interim Storage Site (MISS) generated during calendar year 2000 from: in situ wind erosion; Time Critical Removal Action (TCRA) at the swale; Ballod Property (BP) remediation and restoration; Pilot Demonstration Area (PDA) soil transfers; and Soil Sample Preparation Laboratory exhaust system operation.

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, the TCRA at the swale, BP remediation and restoration and PDA soil transfers 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 the TCRA at the swale, BP remediation and restoration and PDA soil transfers. 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 as well as the 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 (i.e., 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. Analyses are performed separately for the TCRA at the swale, BP remediation and restoration and PDA soil transfers given the differences in receptor locations most affected by each of these areas. Where individual receptors are affected by more than one emission source, doses caused by those sources are added. Based on this information, residences and commercial properties located to the north, northeast and east of the MISS PDA along Central Avenue were selected as the receptors of most concern for this area. Receptor locations in other compass directions such as west and west-southwest of the PDA (west of Route 17) and north, south and west of the BP were also selected, along with receptors east, south and northwest of the swale, 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 point representative of each of the MISS site area emissions as follows:

Area	Distance (meters)	Direction
Pilot Demo. Area		
Residents:	140	Northeast
	175	North-northwest
	180	East-northeast
	185	North-northeast
	200	East
	215	West
	220	West-southwest
	300	Northwest

Workers:	110	Southeast
	120	North-northeast
	120	North
	155	North-northwest
	175	East-southeast
	240	South
	270	Northwest

Ballod Property

Residents:	35	South
	35	South-southwest
	60	Southwest
	120	West
	125	West-southwest
	125	South-southeast
	145	North-northeast
	150	North
	180	North-northwest
	180	East-northeast
Workers:	35	South
	35	South-southwest
	85	North-northeast
	120	Northwest
	120	North-northwest
	125	East-northeast
	140	Northeast
	240	East

Swale

Residents:	175	East
	175	East-southeast
	180	Southeast
	200	East-northeast
	225	South-southeast
Workers:	12	West
	12	West-northwest
	35	West-southwest
	35	South
	40	South-southwest
	60	Southwest
	65	South-southeast
	85	East
	85	East-southeast
	100	East-northeast
	145	North
	145	West-northwest
	155	North-northwest

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/gravel 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 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:

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

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:

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

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. Drop Operations Emissions: (Ref. 2, Section 13.2.4, "Aggregate Handling and Storage Piles")

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

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 excavations. 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
PDA - Soil Acquisition Area	2.94	2.07	10.1
BP - Zone 1 soil transfer	3.5	0.4	2.2
BP - Zone 2 soil transfer	64.0	26.2	574.0
BP - Zone 3 soil transfer	82.0	18.9	155.0
TCRA at the Swale	6.6	0.88	23.8

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:

$S_{Utot} = (S_{U238}/ P_{U238}) = (27.5/0.47249) = \underline{58.2\ pCi/g}$ (In situ soil)
$S_{U234} = (S_{Utot} \times P_{U234}) = (58.2\ pCi/g) \times 0.50539 = \underline{29.4\ pCi/g}$ (In situ soil)
$S_{U235} = (S_{Utot} \times P_{U235}) = (58.2\ pCi/g) \times 0.02212 = \underline{1.29\ pCi/g}$ (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, BP and PDA soil transfers, and swale excavation (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:

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$R_{Th234} = R_{U238}$ $R_{Pa234m} = R_{U238}$ $R_{Pa234} = 0.0013R_{Pa234m}$ $R_{Th230} = R_{U234}$

$R_{Po218} = R_{Ra226}$ $R_{Pb214} = 0.9998R_{Po218}$ $R_{Bi214} = R_{Po218}$ $R_{Po214} = 0.99979R_{Bi214}$

$R_{Pb210} = R_{Bi214}$ $R_{Bi210} = R_{Pb210}$ $R_{Po210} = 0.9999987R_{Bi210}$ $R_{Th231} = R_{U235}$

$R_{Pa231} = R_{Th231}$ $R_{Ac227} = R_{Pa231}$ $R_{Th227} = 0.9862R_{Ac227}$ $R_{Fr223} = 0.0138R_{Ac227}$

$R_{Ra223} = R_{Ac227}$ $R_{Po215} = R_{Ra223}$ $R_{Pb211} = 0.9999977R_{Po215}$ $R_{Bi211} = R_{Po215}$

$R_{Po211} = 0.00273R_{Bi211}$ $R_{Tl207} = R_{Bi211}$ $R_{Ra228} = R_{Th232}$ $R_{Ac228} = R_{Ra228}$

$R_{Th228} = R_{Ac228}$ $R_{Ra224} = R_{Th228}$ $R_{Po216} = R_{Ra224}$ $R_{Pb212} = R_{Po216}$

$R_{Bi212} = R_{Pb212}$ $R_{Po212} = 0.6407R_{Bi212}$ $R_{Tl208} = 0.3593R_{Bi212}$

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 = 22,762 m^2 (245,000 ft^2)
Surface Area of MISS bare soil = 5,017 m^2 (54,000 ft^2)
Surface Area of gravel/crushed stone = 22,111 m^2 (238,000 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	34
Feb.	1-4	29
Mar.	1-4	29
Apr.	1	24
	2	28
	3	24
	4	26
May	1	26
	2	23
	3	30
	4	25
Jun.	1	39
	2	21
	3	22
	4	24
Jul.	1	18
	2	20
	3	24
	4	16
	5	16
Aug.	1	22
	2	17
	3	23
	4	18
	5	18
Sept.	1	23
	2	22
	3	24
	4	18
Oct.	1-4	24
Nov.	1-4	23
Dec.	1-4	36

II. Drop Operations 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)

	Soil Handled (tons)	Surface Area (m^2)
PDA - Soil Acquisition Area	48,755	5,773
BP - Zone 1	9,925	2,746
BP - Zone 2	8,800	731
BP - Zone 3	10,840	900
TCRA at the Swale	3,375	1,897

The soil handled amounts account for the total tonnage of soil that is moved or transferred and the number of times that it is dropped.

IV. CAP88-PC Input Data

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

Annual average temperature = 53.3 °F (11.8 °F) – Ref. 3
Annual precipitation = 33.7 inches (85.6 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

CALCULATION IDENTIFICATION NUMBER				
JOB ORDER NO. 08575.0207	DISCIPLINE E(B)	CALCULATION NO. 03	REVISION NUMBER 0	PAGE 15 OF 61

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 (spreadsheet)

Population Data from 1990 Census:

See page 18

Individual Receptors:

Area	**Distance** (meters)	**Direction**
Pilot Demo. Area		
Residents:	140	Northeast
	175	North-northwest
	180	East-northeast
	185	North-northeast
	200	East
	215	West
	221	West-southwest
	300	Northwest

Workers:	110	Southeast
	120	North-northeast
	120	North
	155	North-northwest
	175	East-southeast
	241	South
	270	Northwest

Ballod Property

Residents:	35	South
	35	South-southwest
	60	Southwest
	120	West
	125	West-southwest
	125	South-southeast
	145	North-northeast
	150	North
	180	North-northwest
	180	East-northeast
Workers:	35	South
	35	South-southwest
	85	North-northeast
	120	Northwest
	120	North-northwest
	125	East-northeast
	140	Northeast
	240	East

Swale

Residents:	175	East
	175	East-southeast
	180	Southeast
	200	East-northeast
	225	South-southeast
Workers:	12	West
	12	West-northwest
	35	West-southwest
	35	South
	40	South-southwest
	60	Southwest
	65	South-southeast
	85	East
	85	East-southeast
	100	East-northeast
	145	North
	145	West-northwest
	155	North-northwest

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 20-61.

RESULTS

The CAP88-PC output for the annual doses to the maximally exposed individuals and population within 80 km of MISS is provided on pages 20-33 for the Pilot Demonstration Area, on pages 34-47 for the Ballod Property, and on pages 48-61 for the Swale. The maximum annual effective doses are summarized below:

Receptor	Location	Annual Dose (mrem/yr)	Occupancy Factor (%)	Annual Effective Dose (mrem/yr)
Pilot Demonstration Area				
• Population (person-rem/yr)	N/A	1.50E-03	N/A	1.50E-03
• Maximally Exposed Resident	140 m NE	5.60E-04	100	5.60E-04
• Maximally Exposed Worker	120 m NNE	7.70E-04	24	1.85E-04
Ballod Property				
• Population (person-rem/yr)	N/A	1.94E-02	N/A	1.94E-02
• Maximally Exposed Resident	35 m SSW	8.40E-02	100	8.40E-02
• Maximally Exposed Worker	35 m SSW	8.40E-02	24	2.02E-02
Swale				
• Population (person-rem/yr)	N/A	2.40E-04	N/A	2.40E-04
• Maximally Exposed Resident	175 m E	6.00E-05	100	6.00E-05
• Maximally Exposed Worker	12 m W	7.80E-03	24	1.87E-03
Total Site				
• Population (person-rem/yr)	N/A	2.11E-02	N/A	2.11E-02
• Maximally Exposed Resident	35 m SSW	8.41E-02	100	8.41E-02
• Maximally Exposed Worker	35 m SSW	8.41E-02	24	2.02E-02

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 for the Ballod Property from page 35:

CALCULATION IDENTIFICATION NUMBER				
JOB ORDER NO. 08575.0207	DISCIPLINE E(B)	CALCULATION NO. 03	REVISION NUMBER 0	PAGE 18 OF 61

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	5.39E-04
INHALATION	1.02E-01
AIR IMMERSION	2.35E-07
GROUND SURFACE	8.15E-06
INTERNAL	1.03E-01
EXTERNAL	8.38E-06
TOTAL	1.03E-01

CONCLUSIONS

The annual effective dose to the public within 80 km of MISS from airborne particulate releases during 2000 was 2.11E-02 person-rem/yr. The annual effective dose to the maximally exposed resident and worker (located on the west side of Highway 17 and south of the Ballod Property), primarily from inhalation of airborne particulate releases during 2000, were 8.41E-02 mrem/yr and 2.02E-02 mrem/yr respectively.

These doses are well below the NESHAPS standard of 10 mrem/yr (40 CFR 61.92).

CALCULATION IDENTIFICATION NUMBER				
JOB ORDER NO. 08575.0207	DISCIPLINE E(B)	CALCULATION NO. 03	REVISION NUMBER 0	PAGE 19 OF 61

REFERENCES

1. Parks, Barry, "CAP88-PC Version 2.0 User's Guide". U.S. Department of Energy, ER-8/GTN, Germantown, Maryland, June, 1997. 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, 2000 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 2.00

Clean Air Act Assessment Package - 1988

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

Non-Radon Individual Assessment
May 8, 2001 09:13 amm

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

Source Category: Particulate Emission w radon daughters
Source Type: Area
Emission Year: 2000

Comments: Stone & Webster, Inc. for
U.S. Army Corps of Engineers

Effective Dose Equivalent
(mrem/year)

9.98E-04

At This Location: 110 Meters South

Dataset Name: MISS PDA MEI
Dataset Date: May 8, 2001 09:11 am
Wind File: C:\DATA\CAP88PC2\WNDFILES\TET1358.WND

CALCULATION IDENTIFICATION NUMBER				
JOB ORDER NO. 08575.0207	DISCIPLINE E(B)	CALCULATION NO. 03	REVISION NUMBER 0	PAGE 21 OF 61

May 8, 2001 09:13 amm

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 110 Meters South
Lifetime Fatal Cancer Risk: 1.14E-08

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	6.77E-06
BREAST	6.06E-06
R MAR	4.72E-04
LUNGS	6.27E-03
THYROID	5.91E-06
ENDOST	5.87E-03
RMNDR	3.05E-05
EFFEC	9.98E-04

May 8, 2001 09:13 amm

SYNOPSIS
Page 2

RADIONUCLIDE EMISSIONS DURING THE YEAR 2000

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
AC-227	Y	1.00	4.7E-10	4.7E-10
AC-228	Y	1.00	3.5E-08	3.5E-08
BI-211	W	1.00	4.7E-10	4.7E-10
BI-212	W	1.00	3.5E-08	3.5E-08
FR-223	D	1.00	6.5E-12	6.5E-12
PA-234M	Y	1.00	1.0E-08	1.0E-08
PA-231	Y	1.00	4.7E-10	4.7E-10
PB-211	D	1.00	4.7E-10	4.7E-10
PO-211	-	0.00	1.3E-12	1.3E-12
PO-216	W	1.00	3.5E-08	3.5E-08
PB-212	D	1.00	3.5E-08	3.5E-08
PO-212	W	1.00	2.2E-08	2.2E-08
PO-215	W	1.00	4.7E-10	4.7E-10
RA-223	W	1.00	4.7E-10	4.7E-10
RA-224	W	1.00	3.5E-08	3.5E-08
TH-232	Y	1.00	3.5E-08	3.5E-08
TH-228	Y	1.00	3.5E-08	3.5E-08
TH-231	Y	1.00	4.7E-10	4.7E-10
TH-227	Y	1.00	4.6E-10	4.6E-10
TL-208	D	1.00	1.2E-08	1.2E-08
U-235	Y	1.00	4.7E-10	4.7E-10
TL-207	D	1.00	4.7E-10	4.7E-10
U-238	Y	1.00	1.0E-08	1.0E-08
TH-234	Y	1.00	1.0E-08	1.0E-08
PA-234	Y	1.00	1.3E-11	1.3E-11
U-234	Y	1.00	1.1E-08	1.1E-08
TH-230	Y	1.00	1.1E-08	1.1E-08
RA-226	W	1.00	7.1E-09	7.1E-09
PO-218	W	1.00	7.1E-09	7.1E-09
PB-214	D	1.00	7.1E-09	7.1E-09
BI-214	W	1.00	7.1E-09	7.1E-09
PO-214	W	1.00	7.1E-09	7.1E-09
PB-210	D	1.00	7.1E-09	7.1E-09
BI-210	W	1.00	7.1E-09	7.1E-09
PO-210	W	1.00	7.1E-09	7.1E-09
RA-228	W	1.00	3.5E-08	3.5E-08

SITE INFORMATION

Temperature: 12 degrees C
Precipitation: 86 cm/y
Mixing Height: 1000 m

CALCULATION IDENTIFICATION NUMBER				
JOB ORDER NO. 08575.0207	DISCIPLINE E(B)	CALCULATION NO. 03	REVISION NUMBER 0	PAGE 23 OF 61

May 8, 2001 09:13 amm

SOURCE INFORMATION

Source Number: 1

Source Height (m): 0.
Area (sq m): 5773.

Plume Rise Pasquill Cat:	A	B	C	D	E	F	G
Zero:	0.	0.	0.	0.	0.	0.	0.

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

Food Arrays were not generated for this run.
Default Values used.

DISTANCES (M) USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

110	120	140	155	175	180	185	200	215	220
240	270	300							

May 8, 2001 09:13 amm

SUMMARY
Page 2

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
AC-227	1.09E-05
AC-228	1.08E-07
BI-211	1.52E-11
BI-212	4.22E-08
FR-223	6.31E-13
PA-234M	2.67E-12
PA-231	8.33E-06
PB-211	1.61E-10
PO-211	8.72E-28
PO-216	0.00E+00
PB-212	2.10E-07
PO-212	0.00E+00
PO-215	0.00E+00
RA-223	1.47E-07
RA-224	4.38E-06
TH-232	4.48E-04
TH-228	3.14E-04
TH-231	1.70E-11
TH-227	1.96E-07
TL-208	9.29E-10
U-235	2.14E-06
TL-207	1.49E-13
U-238	4.28E-05
TH-234	1.85E-08
PA-234	1.47E-12
U-234	5.15E-05
TH-230	9.65E-05
RA-226	3.13E-06
PO-218	1.16E-11
PB-214	2.77E-10
BI-214	3.55E-10
PO-214	0.00E+00
PB-210	7.12E-06
BI-210	4.96E-08
PO-210	3.22E-06
RA-228	5.18E-06
TOTAL	9.97E-04

CALCULATION IDENTIFICATION NUMBER				
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SUMMARY
Page 5

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

Distance (m)

Direction	110	120	140	155	175	180	185
N	7.9E-04	6.8E-04	5.3E-04	4.5E-04	3.7E-04	3.6E-04	3.4E-04
NNW	4.4E-04	3.6E-04	2.6E-04	2.1E-04	1.6E-04	1.5E-04	1.4E-04
NW	2.3E-04	1.9E-04	1.4E-04	1.2E-04	9.2E-05	8.7E-05	8.2E-05
WNW	2.1E-04	1.7E-04	1.3E-04	1.0E-04	7.9E-05	7.5E-05	7.1E-05
W	2.9E-04	2.5E-04	1.9E-04	1.6E-04	1.3E-04	1.3E-04	1.2E-04
WSW	3.8E-04	3.2E-04	2.4E-04	2.0E-04	1.6E-04	1.5E-04	1.4E-04
SW	5.1E-04	4.3E-04	3.2E-04	2.7E-04	2.1E-04	2.0E-04	1.9E-04
SSW	7.5E-04	6.3E-04	4.6E-04	3.7E-04	2.9E-04	2.7E-04	2.5E-04
S	1.0E-03	8.7E-04	6.8E-04	5.9E-04	4.9E-04	4.7E-04	4.5E-04
SSE	8.1E-04	6.8E-04	4.9E-04	4.0E-04	3.1E-04	2.9E-04	2.8E-04
SE	6.2E-04	5.3E-04	4.0E-04	3.3E-04	2.7E-04	2.5E-04	2.4E-04
ESE	5.5E-04	4.6E-04	3.3E-04	2.7E-04	2.1E-04	2.0E-04	1.9E-04
E	5.8E-04	5.0E-04	3.8E-04	3.2E-04	2.6E-04	2.5E-04	2.4E-04
ENE	6.4E-04	5.3E-04	3.8E-04	3.0E-04	2.3E-04	2.2E-04	2.0E-04
NE	8.5E-04	7.3E-04	5.6E-04	4.8E-04	3.9E-04	3.7E-04	3.6E-04
NNE	9.1E-04	7.7E-04	5.7E-04	4.7E-04	3.7E-04	3.5E-04	3.3E-04

Distance (m)

Direction	200	215	220	240	270	300
N	3.0E-04	2.6E-04	2.5E-04	2.1E-04	1.7E-04	1.4E-04
NNW	1.2E-04	1.0E-04	1.0E-04	8.6E-05	7.1E-05	6.0E-05
NW	7.2E-05	6.3E-05	6.1E-05	5.3E-05	4.5E-05	3.8E-05
WNW	6.1E-05	5.4E-05	5.3E-05	4.6E-05	3.9E-05	3.4E-05
W	1.1E-04	9.3E-05	8.9E-05	7.7E-05	6.4E-05	5.4E-05
WSW	1.2E-04	1.1E-04	1.0E-04	9.1E-05	7.5E-05	6.3E-05
SW	1.7E-04	1.5E-04	1.4E-04	1.2E-04	1.0E-04	8.4E-05
SSW	2.2E-04	1.9E-04	1.8E-04	1.6E-04	1.3E-04	1.1E-04
S	4.0E-04	3.5E-04	3.3E-04	2.8E-04	2.3E-04	1.9E-04
SSE	2.4E-04	2.1E-04	2.0E-04	1.7E-04	1.4E-04	1.1E-04
SE	2.1E-04	1.8E-04	1.8E-04	1.5E-04	1.2E-04	1.0E-04
ESE	1.6E-04	1.4E-04	1.4E-04	1.2E-04	9.5E-05	8.0E-05
E	2.1E-04	1.8E-04	1.8E-04	1.5E-04	1.2E-04	1.0E-04
ENE	1.7E-04	1.5E-04	1.5E-04	1.2E-04	1.0E-04	8.5E-05
NE	3.1E-04	2.7E-04	2.6E-04	2.2E-04	1.8E-04	1.5E-04
NNE	2.9E-04	2.5E-04	2.4E-04	2.1E-04	1.7E-04	1.4E-04

CALCULATION IDENTIFICATION NUMBER				
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C A P 8 8 - P C

Version 2.00

Clean Air Act Assessment Package - 1988

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

Non-Radon Population Assessment
May 8, 2001 09:28 amm

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

Source Category: Particulate Emission w radon daughters
Source Type: Area
Emission Year: 2000

Comments: Stone & Webster, Inc. for
U.S. Army Corps of Engineers

Effective Dose Equivalent
(mrem/year)

2.53E-04

At This Location: 250 Meters South

Dataset Name: MISS PDA POP
Dataset Date: May 8, 2001 09:12 am
Wind File: C:\DATA\CAP88PC2\WNDFILES\TET1358.WND
Population File: C:\DATA\CAP88PC2\POPFILES\MAYWOOD.POP

CALCULATION IDENTIFICATION NUMBER				
JOB ORDER NO. 08575.0207	DISCIPLINE E(B)	CALCULATION NO. 03	REVISION NUMBER 0	PAGE 27 OF 61

May 8, 2001 09:28 amm

SYNOPSIS
Page 1

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 250 Meters South
Lifetime Fatal Cancer Risk: 2.90E-09

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)	Collective Population (person-rem/y)
GONADS	1.26E-06	8.06E-06
BREAST	1.09E-06	7.15E-06
R MAR	1.17E-04	6.96E-04
LUNGS	1.61E-03	9.50E-03
THYROID	1.05E-06	6.81E-06
ENDOST	1.46E-03	8.65E-03
RMNDR	4.67E-06	3.11E-05
EFFEC	2.53E-04	1.50E-03

FREQUENCY DISTRIBUTION OF LIFETIME FATAL CANCER RISKS

Risk Range	# of People	# of People in This Risk Range or Higher	Deaths/Year in This Risk Range	Deaths/Year in This Risk Range or Higher
1.0E+00 TO 1.0E-01	0	0	0.00E+00	0.00E+00
1.0E-01 TO 1.0E-02	0	0	0.00E+00	0.00E+00
1.0E-02 TO 1.0E-03	0	0	0.00E+00	0.00E+00
1.0E-03 TO 1.0E-04	0	0	0.00E+00	0.00E+00
1.0E-04 TO 1.0E-05	0	0	0.00E+00	0.00E+00
1.0E-05 TO 1.0E-06	0	0	0.00E+00	0.00E+00
LESS THAN 1.0E-06	17937859	17937859	2.43E-07	2.43E-07

CALCULATION IDENTIFICATION NUMBER				
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May 8, 2001 09:28 amm

RADIONUCLIDE EMISSIONS DURING THE YEAR 2000

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
AC-227	Y	1.00	4.7E-10	4.7E-10
AC-228	Y	1.00	3.5E-08	3.5E-08
BI-211	W	1.00	4.7E-10	4.7E-10
BI-212	W	1.00	3.5E-08	3.5E-08
FR-223	D	1.00	6.5E-12	6.5E-12
PA-234M	Y	1.00	1.0E-08	1.0E-08
PA-231	Y	1.00	4.7E-10	4.7E-10
PB-211	D	1.00	4.7E-10	4.7E-10
PO-211	-	0.00	1.3E-12	1.3E-12
PO-216	W	1.00	3.5E-08	3.5E-08
PB-212	D	1.00	3.5E-08	3.5E-08
PO-212	W	1.00	2.2E-08	2.2E-08
PO-215	W	1.00	4.7E-10	4.7E-10
RA-223	W	1.00	4.7E-10	4.7E-10
RA-224	W	1.00	3.5E-08	3.5E-08
TH-232	Y	1.00	3.5E-08	3.5E-08
TH-228	Y	1.00	3.5E-08	3.5E-08
TH-231	Y	1.00	4.7E-10	4.7E-10
TH-227	Y	1.00	4.6E-10	4.6E-10
TL-208	D	1.00	1.2E-08	1.2E-08
U-235	Y	1.00	4.7E-10	4.7E-10
TL-207	D	1.00	4.7E-10	4.7E-10
U-238	Y	1.00	1.0E-08	1.0E-08
TH-234	Y	1.00	1.0E-08	1.0E-08
PA-234	Y	1.00	1.3E-11	1.3E-11
U-234	Y	1.00	1.1E-08	1.1E-08
TH-230	Y	1.00	1.1E-08	1.1E-08
RA-226	W	1.00	7.1E-09	7.1E-09
PO-218	W	1.00	7.1E-09	7.1E-09
PB-214	D	1.00	7.1E-09	7.1E-09
BI-214	W	1.00	7.1E-09	7.1E-09
PO-214	W	1.00	7.1E-09	7.1E-09
PB-210	D	1.00	7.1E-09	7.1E-09
BI-210	W	1.00	7.1E-09	7.1E-09
PO-210	W	1.00	7.1E-09	7.1E-09
RA-228	W	1.00	3.5E-08	3.5E-08

SITE INFORMATION

Temperature: 12 degrees C
Precipitation: 86 cm/y
Mixing Height: 1000 m

CALCULATION IDENTIFICATION NUMBER				
JOB ORDER NO.	DISCIPLINE	CALCULATION NO.	REVISION NUMBER	PAGE
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SYNOPSIS
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SOURCE INFORMATION

Source Number: 1

Source Height (m): 0.
Area (sq m): 5773.

Plume Rise Pasquill Cat:	A	B	C	D	E	F	G
Zero:	0.	0.	0.	0.	0.	0.	0.

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

CALCULATION IDENTIFICATION NUMBER				
JOB ORDER NO. 08575.0207	DISCIPLINE E(B)	CALCULATION NO. 03	REVISION NUMBER 0	PAGE 30 OF 61

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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

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NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclides	Selected Individual (mrem/y)	Collective Population (person-rem/y)
AC-227	2.75E-06	1.63E-05
AC-228	2.76E-08	1.38E-07
BI-211	2.93E-12	2.05E-12
BI-212	1.07E-08	3.08E-08
FR-223	1.57E-13	2.55E-13
PA-234M	4.28E-13	2.74E-13
PA-231	2.09E-06	1.24E-05
PB-211	4.04E-11	8.83E-11
PO-211	0.00E+00	0.00E+00
PO-216	0.00E+00	0.00E+00
PB-212	5.37E-08	2.87E-07
PO-212	0.00E+00	0.00E+00
PO-215	0.00E+00	0.00E+00
RA-223	3.59E-08	2.13E-07
RA-224	1.12E-06	6.52E-06
TH-232	1.14E-04	6.77E-04
TH-228	8.04E-05	4.75E-04
TH-231	4.37E-12	2.51E-11
TH-227	5.01E-08	2.96E-07
TL-208	1.94E-10	1.46E-10
U-235	5.37E-07	3.22E-06
TL-207	3.35E-14	2.81E-14
U-238	1.08E-05	6.38E-05
TH-234	3.35E-09	2.13E-08
PA-234	3.77E-13	2.16E-12
U-234	1.29E-05	7.67E-05
TH-230	2.46E-05	1.46E-04
RA-226	5.88E-07	3.74E-06
PO-218	2.42E-12	1.82E-12
PB-214	6.93E-11	1.28E-10
BI-214	8.80E-11	1.37E-10
PO-214	0.00E+00	0.00E+00
PB-210	9.15E-07	6.40E-06
BI-210	1.27E-08	7.43E-08
PO-210	5.68E-07	3.64E-06
RA-228	7.85E-07	5.24E-06
TOTAL	2.53E-04	1.50E-03

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

	Distance (m)						
Direction	250	750	1500	2500	3500	4500	7500
N	1.9E-04	2.4E-05	6.9E-06	2.9E-06	1.7E-06	1.2E-06	5.3E-07
NNW	7.1E-05	8.9E-06	2.6E-06	1.1E-06	6.4E-07	4.3E-07	2.0E-07
NW	4.0E-05	5.1E-06	1.5E-06	6.3E-07	3.6E-07	2.5E-07	1.1E-07
WNW	3.4E-05	4.3E-06	1.3E-06	5.3E-07	3.0E-07	2.1E-07	9.4E-08
W	6.3E-05	8.0E-06	2.3E-06	9.8E-07	5.7E-07	3.9E-07	1.7E-07
WSW	7.5E-05	9.6E-06	2.8E-06	1.2E-06	6.8E-07	4.6E-07	2.1E-07
SW	1.0E-04	1.3E-05	3.8E-06	1.6E-06	9.4E-07	6.4E-07	2.9E-07
SSW	1.4E-04	1.7E-05	5.0E-06	2.1E-06	1.2E-06	8.4E-07	3.8E-07
S	2.5E-04	3.1E-05	9.1E-06	3.8E-06	2.2E-06	1.5E-06	7.0E-07
SSE	1.5E-04	1.9E-05	5.5E-06	2.3E-06	1.3E-06	9.2E-07	4.2E-07
SE	1.3E-04	1.7E-05	4.9E-06	2.1E-06	1.2E-06	8.3E-07	3.8E-07
ESE	9.9E-05	1.3E-05	3.7E-06	1.6E-06	9.1E-07	6.2E-07	2.9E-07
E	1.3E-04	1.7E-05	4.8E-06	2.0E-06	1.2E-06	8.1E-07	3.7E-07
ENE	1.1E-04	1.3E-05	3.9E-06	1.7E-06	9.7E-07	6.6E-07	3.0E-07
NE	2.0E-04	2.5E-05	7.1E-06	3.0E-06	1.8E-06	1.2E-06	5.5E-07
NNE	1.8E-04	2.3E-05	6.6E-06	2.8E-06	1.6E-06	1.1E-06	5.0E-07

	Distance (m)						
Direction	15000	25000	35000	45000	55000	65000	75000
N	2.0E-07	9.0E-08	5.6E-08	3.9E-08	2.8E-08	1.9E-08	1.5E-08
NNW	7.2E-08	3.3E-08	2.0E-08	1.4E-08	1.0E-08	6.8E-09	5.4E-09
NW	4.1E-08	1.8E-08	1.1E-08	7.8E-09	5.6E-09	3.8E-09	3.1E-09
WNW	3.4E-08	1.5E-08	9.2E-09	6.3E-09	4.5E-09	3.2E-09	2.5E-09
W	6.2E-08	2.7E-08	1.7E-08	1.1E-08	8.0E-09	5.5E-09	4.4E-09
WSW	7.4E-08	3.3E-08	2.0E-08	1.4E-08	9.6E-09	6.6E-09	5.2E-09
SW	1.0E-07	4.7E-08	2.9E-08	2.0E-08	1.4E-08	9.4E-09	7.5E-09
SSW	1.4E-07	6.3E-08	3.9E-08	2.7E-08	1.9E-08	1.3E-08	1.0E-08
S	2.6E-07	1.2E-07	7.3E-08	5.0E-08	3.6E-08	2.3E-08	1.8E-08
SSE	1.6E-07	7.2E-08	4.5E-08	3.2E-08	0.0E+00	0.0E+00	0.0E+00
SE	1.4E-07	6.6E-08	4.2E-08	2.9E-08	2.1E-08	0.0E+00	0.0E+00
ESE	1.1E-07	4.9E-08	3.1E-08	2.2E-08	1.6E-08	1.1E-08	9.0E-09
E	1.4E-07	6.4E-08	4.1E-08	2.8E-08	2.1E-08	1.4E-08	1.1E-08
ENE	1.1E-07	5.3E-08	3.4E-08	2.3E-08	1.7E-08	1.2E-08	9.4E-09
NE	2.0E-07	9.3E-08	5.9E-08	4.1E-08	2.9E-08	1.9E-08	1.5E-08
NNE	1.9E-07	8.5E-08	5.4E-08	3.7E-08	2.7E-08	1.7E-08	1.4E-08

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COLLECTIVE EFFECTIVE DOSE EQUIVALENT (person rem/y)
(All Radionuclides and Pathways)

Distance (m)

Direction	250	750	1500	2500	3500	4500	7500
N	1.3E-05	4.8E-06	5.6E-06	3.9E-06	3.2E-06	2.8E-06	1.1E-05
NNW	4.7E-06	1.8E-06	2.1E-06	1.5E-06	1.2E-06	1.0E-06	4.0E-06
NW	2.7E-06	1.0E-06	1.2E-06	8.4E-07	6.8E-07	6.0E-07	2.3E-06
WNW	2.3E-06	8.7E-07	1.0E-06	7.0E-07	5.7E-07	5.0E-07	1.7E-06
W	4.2E-06	1.6E-06	1.9E-06	1.3E-06	1.1E-06	9.3E-07	2.8E-06
WSW	5.0E-06	1.9E-06	2.2E-06	1.6E-06	1.3E-06	1.1E-06	3.3E-06
SW	7.0E-06	2.6E-06	3.1E-06	2.2E-06	1.8E-06	1.5E-06	4.7E-06
SSW	9.1E-06	3.5E-06	4.0E-06	2.8E-06	2.3E-06	2.0E-06	7.6E-06
S	1.7E-05	6.3E-06	7.3E-06	5.1E-06	4.2E-06	3.7E-06	1.4E-05
SSE	9.9E-06	3.8E-06	4.4E-06	3.1E-06	2.5E-06	2.2E-06	1.1E-05
SE	8.8E-06	3.4E-06	4.0E-06	2.8E-06	2.3E-06	2.0E-06	7.7E-06
ESE	6.6E-06	2.5E-06	3.0E-06	2.1E-06	1.7E-06	1.5E-06	5.7E-06
E	8.8E-06	3.3E-06	3.9E-06	2.7E-06	2.2E-06	2.0E-06	7.5E-06
ENE	7.1E-06	2.7E-06	3.2E-06	2.2E-06	1.8E-06	1.6E-06	6.1E-06
NE	1.3E-05	4.9E-06	5.7E-06	4.0E-06	3.3E-06	2.9E-06	1.1E-05
NNE	1.2E-05	4.5E-06	5.3E-06	3.7E-06	3.0E-06	2.6E-06	1.0E-05

Distance (m)

Direction	15000	25000	35000	45000	55000	65000	75000
N	1.5E-05	5.4E-06	4.0E-06	1.2E-06	7.9E-07	6.1E-07	4.7E-07
NNW	5.8E-06	3.3E-06	7.8E-07	3.6E-07	3.2E-07	2.5E-07	2.2E-07
NW	3.0E-06	1.4E-06	1.2E-06	9.9E-07	2.7E-07	9.8E-08	9.8E-08
WNW	1.9E-06	9.8E-07	8.4E-07	2.8E-07	9.5E-08	7.8E-08	6.3E-08
W	4.0E-06	2.3E-06	7.9E-07	6.8E-07	3.8E-07	2.3E-07	1.3E-07
WSW	8.3E-06	5.5E-06	1.1E-06	8.0E-07	6.7E-07	3.9E-06	1.5E-07
SW	1.3E-05	1.1E-05	6.9E-06	2.9E-06	1.6E-06	7.5E-07	9.5E-07
SSW	2.0E-05	1.6E-05	1.1E-05	5.7E-06	2.9E-06	2.3E-06	4.0E-06
S	6.1E-05	4.1E-05	2.1E-05	1.4E-06	1.7E-06	2.3E-06	1.7E-06
SSE	8.4E-05	7.0E-05	5.1E-05	1.2E-06	0.0E+00	0.0E+00	0.0E+00
SE	1.2E-04	4.5E-05	3.2E-05	1.1E-05	7.5E-07	0.0E+00	0.0E+00
ESE	8.9E-05	2.4E-05	8.7E-06	6.7E-06	4.4E-06	1.2E-06	4.6E-07
E	7.9E-05	1.9E-05	2.3E-06	4.2E-06	1.5E-06	1.2E-06	1.2E-06
ENE	9.6E-06	4.1E-06	2.7E-06	1.4E-06	9.4E-07	7.6E-07	7.1E-07
NE	1.3E-05	5.3E-06	6.0E-06	5.3E-06	4.7E-06	2.4E-06	2.2E-06
NNE	1.2E-05	2.6E-06	4.3E-06	4.7E-06	2.0E-06	6.6E-07	5.6E-07

CALCULATION IDENTIFICATION NUMBER				
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C A P 8 8 - P C

Version 2.00

Clean Air Act Assessment Package - 1988

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

Non-Radon Individual Assessment
Mar 9, 2001 01:29 pm

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

Source Category: Particulate Emission w radon daughters
Source Type: Area
Emission Year: 2000

Comments: Stone & Webster, Inc. for
U.S. Army Corps of Engineers

Effective Dose Equivalent (mrem/year)
1.03E-01

At This Location: 35 Meters Southwest

Dataset Name: MISS BP MEI
Dataset Date: Mar 8, 2001 05:12 pm
Wind File: C:\DATA\CAP88PC2\WNDFILES\TET1358.WND

CALCULATION IDENTIFICATION NUMBER				
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Mar 9, 2001 01:29 pm

SYNOPSIS
Page 1

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 35 Meters Southwest
Lifetime Fatal Cancer Risk: 1.18E-06

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	5.48E-04
BREAST	4.94E-04
R MAR	4.76E-02
LUNGS	6.53E-01
THYROID	4.82E-04
ENDOST	5.91E-01
RMNDR	1.77E-03
EFFEC	1.03E-01

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	5.39E-04
INHALATION	1.02E-01
AIR IMMERSION	2.35E-07
GROUND SURFACE	8.15E-06
INTERNAL	1.03E-01
EXTERNAL	8.38E-06
TOTAL	1.03E-01

RADIONUCLIDE EMISSIONS DURING THE YEAR 2000

Nuclide	Class	Size	Source #1 Ci/y	Source #2 Ci/y	Source #3 Ci/y	TOTAL Ci/y
AC-227	Y	1.00	1.1E-10	1.9E-09	2.9E-09	4.9E-09
AC-228	Y	1.00	1.5E-09	3.5E-07	1.2E-07	4.7E-07
BI-211	W	1.00	1.1E-10	1.9E-09	2.9E-09	4.9E-09
BI-212	W	1.00	1.5E-09	3.5E-07	1.2E-07	4.7E-07
FR-223	D	1.00	1.6E-12	2.5E-11	4.0E-11	6.7E-11
PA-234M	Y	1.00	2.4E-09	4.0E-08	6.2E-08	1.0E-07
PA-231	Y	1.00	1.1E-10	1.9E-09	2.9E-09	4.9E-09
PB-211	D	1.00	1.1E-10	1.9E-09	2.9E-09	4.9E-09
PO-211	-	0.00	3.1E-13	5.0E-12	8.0E-12	1.3E-11
PO-216	W	1.00	1.5E-09	3.5E-07	1.2E-07	4.7E-07
PB-212	D	1.00	1.5E-09	3.5E-07	1.2E-07	4.7E-07
PO-212	W	1.00	9.8E-10	2.3E-07	7.5E-08	3.0E-07
PO-215	W	1.00	1.1E-10	1.9E-09	2.9E-09	4.9E-09
RA-223	W	1.00	1.1E-10	1.9E-09	2.9E-09	4.9E-09
RA-224	W	1.00	1.5E-09	3.5E-07	1.2E-07	4.7E-07
TH-232	Y	1.00	1.5E-09	3.5E-07	1.2E-07	4.7E-07
TH-228	Y	1.00	1.5E-09	3.5E-07	1.2E-07	4.7E-07
TH-231	Y	1.00	1.1E-10	1.9E-09	2.9E-09	4.9E-09
TH-227	Y	1.00	1.1E-10	1.8E-09	2.9E-09	4.8E-09
TL-208	D	1.00	5.5E-10	1.3E-07	4.2E-08	1.7E-07
U-235	Y	1.00	1.1E-10	1.9E-09	2.9E-09	4.9E-09
TL-207	D	1.00	1.1E-10	1.8E-09	2.9E-09	4.9E-09
U-238	Y	1.00	2.4E-09	4.0E-08	6.2E-08	1.0E-07
TH-234	Y	1.00	2.4E-09	4.0E-08	6.2E-08	1.0E-07
PA-234	Y	1.00	3.2E-12	5.1E-11	8.1E-11	1.4E-10
U-234	Y	1.00	2.6E-09	4.2E-08	6.7E-08	1.1E-07
TH-230	Y	1.00	2.6E-09	4.2E-08	6.7E-08	1.1E-07
RA-226	W	1.00	2.8E-10	1.6E-08	1.4E-08	3.1E-08
PO-218	W	1.00	2.8E-10	1.6E-08	1.4E-08	3.1E-08
PB-214	D	1.00	2.8E-10	1.6E-08	1.4E-08	3.1E-08
BI-214	W	1.00	2.8E-10	1.6E-08	1.4E-08	3.1E-08
PO-214	W	1.00	2.8E-10	1.6E-08	1.4E-08	3.1E-08
PB-210	D	1.00	2.8E-10	1.6E-08	1.4E-08	3.1E-08
BI-210	W	1.00	2.8E-10	1.6E-08	1.4E-08	3.1E-08
PO-210	W	1.00	2.8E-10	1.6E-08	1.4E-08	3.1E-08
RA-228	W	1.00	1.5E-09	3.5E-07	1.2E-07	4.7E-07

SITE INFORMATION

Temperature: 12 degrees C
Precipitation: 86 cm/y
Mixing_Height: 1000 m

CALCULATION IDENTIFICATION NUMBER				
JOB ORDER NO. 08575.0207	DISCIPLINE E(B)	CALCULATION NO. 03	REVISION NUMBER 0	PAGE 37 OF 61

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SOURCE INFORMATION

Source Number:	1	2	3
Source Height (m):	0.	0.	0.
Area (sq m):	2746.	731.	900.

Plume Rise Pasquill Cat:	A	B	C	D	E	F	G
Zero:	0.	0.	0.	0.	0.	0.	0.

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

Food Arrays were not generated for this run.
Default Values used.

DISTANCES (M) USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

35 60 85 120 125 140 145 150 180 240

CALCULATION IDENTIFICATION NUMBER				
JOB ORDER NO. 08575.0207	DISCIPLINE E(B)	CALCULATION NO. 03	REVISION NUMBER 0	PAGE 38 OF 61

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NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
AC-227	8.58E-04
AC-228	1.20E-05
BI-211	1.40E-09
BI-212	4.71E-06
FR-223	5.07E-11
PA-234M	2.79E-10
PA-231	6.53E-04
PB-211	1.28E-08
PO-211	1.87E-18
PO-216	8.29E-23
PB-212	2.33E-05
PO-212	0.00E+00
PO-215	0.00E+00
RA-223	1.14E-05
RA-224	4.84E-04
TH-232	4.96E-02
TH-228	3.48E-02
TH-231	1.35E-09
TH-227	1.55E-05
TL-208	1.15E-07
U-235	1.68E-04
TL-207	1.27E-11
U-238	3.38E-03
TH-234	1.31E-06
PA-234	1.15E-10
U-234	4.06E-03
TH-230	7.65E-03
RA-226	9.57E-05
PO-218	4.42E-10
PB-214	9.52E-09
BI-214	1.23E-08
PO-214	0.00E+00
PB-210	1.96E-04
BI-210	1.69E-06
PO-210	9.66E-05
RA-228	4.80E-04
TOTAL	1.03E-01

CALCULATION IDENTIFICATION NUMBER				
JOB ORDER NO. 08575.0207	DISCIPLINE E(B)	CALCULATION NO. 03	REVISION NUMBER 0	PAGE 39 OF 61

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

Distance (m)

Direction	35	60	85	120	125	140	145
N	2.5E-02	1.3E-02	7.5E-03	4.0E-03	3.8E-03	7.7E-03	7.2E-03
NNW	2.5E-02	8.1E-03	4.4E-03	2.4E-03	2.3E-03	3.1E-03	2.9E-03
NW	3.4E-02	8.6E-03	3.7E-03	2.1E-03	2.0E-03	1.9E-03	1.8E-03
WNW	4.6E-02	1.3E-02	6.5E-03	3.5E-03	3.3E-03	1.6E-03	1.6E-03
W	6.5E-02	1.6E-02	7.7E-03	4.2E-03	3.9E-03	2.7E-03	2.6E-03
WSW	9.0E-02	2.3E-02	1.1E-02	5.7E-03	5.3E-03	3.2E-03	3.0E-03
SW	1.0E-01	3.3E-02	1.4E-02	7.4E-03	6.8E-03	4.4E-03	4.1E-03
SSW	8.4E-02	4.2E-02	2.6E-02	1.4E-02	1.3E-02	5.6E-03	5.3E-03
S	6.6E-02	2.8E-02	1.5E-02	8.1E-03	7.5E-03	1.0E-02	9.6E-03
SSE	6.2E-02	2.4E-02	1.3E-02	7.1E-03	6.6E-03	6.1E-03	5.7E-03
SE	6.7E-02	2.1E-02	1.0E-02	5.4E-03	5.1E-03	5.4E-03	5.1E-03
ESE	7.9E-02	2.4E-02	1.3E-02	7.2E-03	6.7E-03	4.1E-03	3.9E-03
E	9.6E-02	2.7E-02	1.1E-02	5.9E-03	5.5E-03	5.4E-03	5.1E-03
ENE	9.6E-02	3.7E-02	2.0E-02	1.1E-02	9.9E-03	4.5E-03	4.2E-03
NE	7.5E-02	3.5E-02	1.9E-02	9.8E-03	9.1E-03	8.0E-03	7.5E-03
NNE	4.2E-02	2.9E-02	1.9E-02	1.0E-02	9.5E-03	7.4E-03	7.0E-03

Distance (m)

Direction	150	180	240
N	6.8E-03	4.9E-03	3.0E-03
NNW	2.7E-03	2.0E-03	1.3E-03
NW	1.7E-03	1.3E-03	9.0E-04
WNW	1.5E-03	1.1E-03	8.1E-04
W	2.4E-03	1.8E-03	1.2E-03
WSW	2.9E-03	2.1E-03	1.4E-03
SW	3.8E-03	2.8E-03	1.8E-03
SSW	4.9E-03	3.6E-03	2.2E-03
S	9.0E-03	6.4E-03	3.9E-03
SSE	5.4E-03	3.9E-03	2.4E-03
SE	4.8E-03	3.5E-03	2.2E-03
ESE	3.7E-03	2.7E-03	1.7E-03
E	4.8E-03	3.5E-03	2.2E-03
ENE	3.9E-03	2.9E-03	1.8E-03
NE	7.1E-03	5.1E-03	3.1E-03
NNE	6.5E-03	4.7E-03	2.9E-03

C A P 8 8 - P C

Version 2.00

Clean Air Act Assessment Package - 1988

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

Non-Radon Population Assessment
Mar 9, 2001 01:36 pm

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

Source Category: Particulate Emission w radon daughters
Source Type: Area
Emission Year: 2000

Comments: Stone & Webster, Inc. for
U.S. Army Corps of Engineers

Effective Dose Equivalent
(mrem/year)

3.27E-03

At This Location: 250 Meters South

Dataset Name: MISS BP POP
Dataset Date: Mar 9, 2001 01:35 pm
Wind File: C:\DATA\CAP88PC2\WNDFILES\TET1358.WND
Population File: C:\DATA\CAP88PC2\POPFILES\MAYWOOD.POP

CALCULATION IDENTIFICATION NUMBER				
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MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 250 Meters South
Lifetime Fatal Cancer Risk: 3.77E-08

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)	Collective Population (person-rem/y)
GONADS	1.48E-05	9.33E-05
BREAST	1.30E-05	8.41E-05
R MAR	1.50E-03	8.93E-03
LUNGS	2.09E-02	1.24E-01
THYROID	1.26E-05	8.04E-05
ENDOST	1.87E-02	1.11E-01
RMNDR	4.38E-05	2.84E-04
EFFEC	3.27E-03	1.94E-02

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)	Collective Population (person-rem/y)
INGESTION	5.11E-07	3.37E-05
INHALATION	3.27E-03	1.93E-02
AIR IMMERSION	6.48E-09	1.92E-08
GROUND SURFACE	2.79E-07	2.56E-06
INTERNAL	3.27E-03	1.93E-02
EXTERNAL	2.86E-07	2.58E-06
TOTAL	3.27E-03	1.94E-02

CALCULATION IDENTIFICATION NUMBER				
JOB ORDER NO. 08575.0207	DISCIPLINE E(B)	CALCULATION NO. 03	REVISION NUMBER 0	PAGE 42 OF 61

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RADIONUCLIDE EMISSIONS DURING THE YEAR 2000

Nuclide	Class	Size	Source #1 Ci/y	Source #2 Ci/y	Source #3 Ci/y	TOTAL Ci/y
AC-227	Y	1.00	1.1E-10	1.9E-09	2.9E-09	4.9E-09
AC-228	Y	1.00	1.5E-09	3.5E-07	1.2E-07	4.7E-07
BI-211	W	1.00	1.1E-10	1.9E-09	2.9E-09	4.9E-09
BI-212	W	1.00	1.5E-09	3.5E-07	1.2E-07	4.7E-07
FR-223	D	1.00	1.6E-12	2.5E-11	4.0E-11	6.7E-11
PA-234M	Y	1.00	2.4E-09	4.0E-08	6.2E-08	1.0E-07
PA-231	Y	1.00	1.1E-10	1.9E-09	2.9E-09	4.9E-09
PB-211	D	1.00	1.1E-10	1.9E-09	2.9E-09	4.9E-09
PO-211	-	0.00	3.1E-13	5.0E-12	8.0E-12	1.3E-11
PO-216	W	1.00	1.5E-09	3.5E-07	1.2E-07	4.7E-07
PB-212	D	1.00	1.5E-09	3.5E-07	1.2E-07	4.7E-07
PO-212	W	1.00	9.8E-10	2.3E-07	7.5E-08	3.0E-07
PO-215	W	1.00	1.1E-10	1.9E-09	2.9E-09	4.9E-09
RA-223	W	1.00	1.1E-10	1.9E-09	2.9E-09	4.9E-09
RA-224	W	1.00	1.5E-09	3.5E-07	1.2E-07	4.7E-07
TH-232	Y	1.00	1.5E-09	3.5E-07	1.2E-07	4.7E-07
TH-228	Y	1.00	1.5E-09	3.5E-07	1.2E-07	4.7E-07
TH-231	Y	1.00	1.1E-10	1.9E-09	2.9E-09	4.9E-09
TH-227	Y	1.00	1.1E-10	1.8E-09	2.9E-09	4.8E-09
TL-208	D	1.00	5.5E-10	1.3E-07	4.2E-08	1.7E-07
U-235	Y	1.00	1.1E-10	1.9E-09	2.9E-09	4.9E-09
TL-207	D	1.00	1.1E-10	1.8E-09	2.9E-09	4.9E-09
U-238	Y	1.00	2.4E-09	4.0E-08	6.2E-08	1.0E-07
TH-234	Y	1.00	2.4E-09	4.0E-08	6.2E-08	1.0E-07
PA-234	Y	1.00	3.2E-12	5.1E-11	8.1E-11	1.4E-10
U-234	Y	1.00	2.6E-09	4.2E-08	6.7E-08	1.1E-07
TH-230	Y	1.00	2.6E-09	4.2E-08	6.7E-08	1.1E-07
RA-226	W	1.00	2.8E-10	1.6E-08	1.4E-08	3.1E-08
PO-218	W	1.00	2.8E-10	1.6E-08	1.4E-08	3.1E-08
PB-214	D	1.00	2.8E-10	1.6E-08	1.4E-08	3.1E-08
BI-214	W	1.00	2.8E-10	1.6E-08	1.4E-08	3.1E-08
PO-214	W	1.00	2.8E-10	1.6E-08	1.4E-08	3.1E-08
PB-210	D	1.00	2.8E-10	1.6E-08	1.4E-08	3.1E-08
BI-210	W	1.00	2.8E-10	1.6E-08	1.4E-08	3.1E-08
PO-210	W	1.00	2.8E-10	1.6E-08	1.4E-08	3.1E-08
RA-228	W	1.00	1.5E-09	3.5E-07	1.2E-07	4.7E-07

SITE INFORMATION

Temperature: 12 degrees C
Precipitation: 86 cm/y
Mixing Height: 1000 m

CALCULATION IDENTIFICATION NUMBER				
JOB ORDER NO. 08575.0207	DISCIPLINE E(B)	CALCULATION NO. 03	REVISION NUMBER 0	PAGE 43 OF 61

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SYNOPSIS
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SOURCE INFORMATION

Source Number:	1	2	3
Source Height (m):	0.	0.	0.
Area (sq m):	2746.	731.	900.

Plume Rise Pasquill Cat:	A	B	C	D	E	F	G
Zero:	0.	0.	0.	0.	0.	0.	0.

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

Mar 9, 2001 01:36 pm

POPULATION DATA

Direction	250	750	1500	2500	3500	4500	7500
	Distance (m)						
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

Direction	15000	25000	35000	45000	55000	65000	75000
	Distance (m)						
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

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SUMMARY
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NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclides	Selected Individual (mrem/y)	Collective Population (person-rem/y)
AC-227	2.86E-05	1.69E-04
AC-228	3.79E-07	1.89E-06
BI-211	3.04E-11	2.13E-11
BI-212	1.47E-07	4.22E-07
FR-223	1.63E-12	2.65E-12
PA-234M	4.46E-12	2.85E-12
PA-231	2.16E-05	1.28E-04
PB-211	4.19E-10	9.15E-10
PO-211	0.00E+00	0.00E+00
PO-216	0.00E+00	0.00E+00
PB-212	7.38E-07	3.93E-06
PO-212	0.00E+00	0.00E+00
PO-215	0.00E+00	0.00E+00
RA-223	3.72E-07	2.21E-06
RA-224	1.53E-05	8.94E-05
TH-232	1.57E-03	9.29E-03
TH-228	1.10E-03	6.52E-03
TH-231	4.53E-11	2.60E-10
TH-227	5.19E-07	3.06E-06
TL-208	2.66E-09	2.00E-09
U-235	5.57E-06	3.34E-05
TL-207	3.47E-13	2.92E-13
U-238	1.12E-04	6.65E-04
TH-234	3.49E-08	2.22E-07
PA-234	3.89E-12	2.24E-11
U-234	1.35E-04	7.99E-04
TH-230	2.56E-04	1.52E-03
RA-226	2.57E-06	1.63E-05
PO-218	1.06E-11	7.96E-12
PB-214	3.01E-10	5.54E-10
BI-214	3.84E-10	5.97E-10
PO-214	0.00E+00	0.00E+00
PB-210	4.00E-06	2.79E-05
BI-210	5.54E-08	3.24E-07
PO-210	2.48E-06	1.59E-05
RA-228	1.08E-05	7.19E-05
TOTAL	3.27E-03	1.94E-02

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

	Distance (m)						
Direction	250	750	1500	2500	3500	4500	7500
N	2.4E-03	3.1E-04	9.0E-05	3.8E-05	2.2E-05	1.5E-05	6.9E-06
NNW	9.2E-04	1.2E-04	3.4E-05	1.4E-05	8.2E-06	5.6E-06	2.6E-06
NW	5.2E-04	6.6E-05	1.9E-05	8.1E-06	4.7E-06	3.2E-06	1.5E-06
WNW	4.4E-04	5.6E-05	1.6E-05	6.8E-06	3.9E-06	2.7E-06	1.2E-06
W	8.1E-04	1.0E-04	3.0E-05	1.3E-05	7.4E-06	5.0E-06	2.3E-06
WSW	9.7E-04	1.2E-04	3.6E-05	1.5E-05	8.8E-06	6.0E-06	2.7E-06
SW	1.3E-03	1.7E-04	5.0E-05	2.1E-05	1.2E-05	8.2E-06	3.7E-06
SSW	1.8E-03	2.2E-04	6.5E-05	2.7E-05	1.6E-05	1.1E-05	4.9E-06
S	3.3E-03	4.1E-04	1.2E-04	5.0E-05	2.9E-05	2.0E-05	9.0E-06
SSE	1.9E-03	2.4E-04	7.1E-05	3.0E-05	1.7E-05	1.2E-05	5.4E-06
SE	1.7E-03	2.2E-04	6.4E-05	2.7E-05	1.6E-05	1.1E-05	4.9E-06
ESE	1.3E-03	1.6E-04	4.8E-05	2.0E-05	1.2E-05	8.0E-06	3.7E-06
E	1.7E-03	2.1E-04	6.3E-05	2.6E-05	1.5E-05	1.1E-05	4.8E-06
ENE	1.4E-03	1.7E-04	5.1E-05	2.2E-05	1.3E-05	8.6E-06	3.9E-06
NE	2.6E-03	3.2E-04	9.2E-05	3.9E-05	2.3E-05	1.5E-05	7.1E-06
NNE	2.3E-03	2.9E-04	8.5E-05	3.6E-05	2.1E-05	1.4E-05	6.5E-06

	Distance (m)						
Direction	15000	25000	35000	45000	55000	65000	75000
N	2.5E-06	1.2E-06	7.3E-07	5.0E-07	3.6E-07	2.4E-07	1.9E-07
NNW	9.3E-07	4.2E-07	2.6E-07	1.8E-07	1.3E-07	8.7E-08	6.9E-08
NW	5.3E-07	2.4E-07	1.5E-07	1.0E-07	7.2E-08	4.9E-08	3.9E-08
WNW	4.3E-07	1.9E-07	1.2E-07	8.1E-08	5.8E-08	4.0E-08	3.2E-08
W	8.0E-07	3.5E-07	2.1E-07	1.5E-07	1.0E-07	7.1E-08	5.6E-08
WSW	9.6E-07	4.2E-07	2.6E-07	1.7E-07	1.2E-07	8.4E-08	6.6E-08
SW	1.4E-06	6.0E-07	3.7E-07	2.5E-07	1.8E-07	1.2E-07	9.6E-08
SSW	1.8E-06	8.1E-07	5.0E-07	3.5E-07	2.5E-07	1.7E-07	1.3E-07
S	3.3E-06	1.5E-06	9.4E-07	6.5E-07	4.6E-07	3.0E-07	2.4E-07
SSE	2.0E-06	9.3E-07	5.9E-07	4.1E-07	0.0E+00	0.0E+00	0.0E+00
SE	1.8E-06	8.6E-07	5.4E-07	3.8E-07	2.8E-07	0.0E+00	0.0E+00
ESE	1.4E-06	6.4E-07	4.0E-07	2.8E-07	2.1E-07	1.4E-07	1.2E-07
E	1.8E-06	8.3E-07	5.3E-07	3.7E-07	2.6E-07	1.8E-07	1.4E-07
ENE	1.5E-06	6.8E-07	4.3E-07	3.0E-07	2.2E-07	1.5E-07	1.2E-07
NE	2.6E-06	1.2E-06	7.6E-07	5.3E-07	3.8E-07	2.5E-07	2.0E-07
NNE	2.4E-06	1.1E-06	6.9E-07	4.8E-07	3.4E-07	2.2E-07	1.8E-07

CALCULATION IDENTIFICATION NUMBER				
JOB ORDER NO. 08575.0207	DISCIPLINE E(B)	CALCULATION NO. 03	REVISION NUMBER 0	PAGE 47 OF 61

Mar 9, 2001 01:36 pm

COLLECTIVE EFFECTIVE DOSE EQUIVALENT (person rem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	250	750	1500	2500	3500	4500	7500
N	1.6E-04	6.2E-05	7.2E-05	5.1E-05	4.1E-05	3.6E-05	1.4E-04
NNW	6.1E-05	2.3E-05	2.7E-05	1.9E-05	1.5E-05	1.4E-05	5.1E-05
NW	3.5E-05	1.3E-05	1.6E-05	1.1E-05	8.8E-06	7.7E-06	2.9E-05
WNW	2.9E-05	1.1E-05	1.3E-05	9.1E-06	7.4E-06	6.5E-06	2.2E-05
W	5.4E-05	2.1E-05	2.4E-05	1.7E-05	1.4E-05	1.2E-05	3.6E-05
WSW	6.5E-05	2.5E-05	2.9E-05	2.0E-05	1.7E-05	1.4E-05	4.3E-05
SW	9.0E-05	3.4E-05	4.0E-05	2.8E-05	2.3E-05	2.0E-05	6.1E-05
SSW	1.2E-04	4.5E-05	5.2E-05	3.6E-05	3.0E-05	2.6E-05	9.9E-05
S	2.2E-04	8.2E-05	9.5E-05	6.6E-05	5.4E-05	4.8E-05	1.8E-04
SSE	1.3E-04	4.9E-05	5.7E-05	4.0E-05	3.2E-05	2.9E-05	1.4E-04
SE	1.1E-04	4.4E-05	5.1E-05	3.6E-05	2.9E-05	2.6E-05	9.9E-05
ESE	8.6E-05	3.3E-05	3.8E-05	2.7E-05	2.2E-05	1.9E-05	7.4E-05
E	1.1E-04	4.3E-05	5.0E-05	3.5E-05	2.9E-05	2.5E-05	9.7E-05
ENE	9.2E-05	3.5E-05	4.1E-05	2.9E-05	2.3E-05	2.1E-05	7.9E-05
NE	1.7E-04	6.4E-05	7.4E-05	5.2E-05	4.2E-05	3.7E-05	1.4E-04
NNE	1.6E-04	5.9E-05	6.8E-05	4.8E-05	3.9E-05	3.4E-05	1.3E-04

	Distance (m)						
Direction	15000	25000	35000	45000	55000	65000	75000
N	1.9E-04	7.0E-05	5.1E-05	1.5E-05	1.0E-05	7.9E-06	6.1E-06
NNW	7.5E-05	4.2E-05	1.0E-05	4.6E-06	4.1E-06	3.2E-06	2.8E-06
NW	3.9E-05	1.9E-05	1.6E-05	1.3E-05	3.4E-06	1.3E-06	1.2E-06
WNW	2.5E-05	1.3E-05	1.1E-05	3.5E-06	1.2E-06	1.0E-06	8.0E-07
W	5.1E-05	3.0E-05	1.0E-05	8.7E-06	4.9E-06	2.9E-06	1.7E-06
WSW	1.1E-04	7.1E-05	1.5E-05	1.0E-05	8.7E-06	5.0E-05	2.0E-06
SW	1.6E-04	1.4E-04	8.9E-05	3.8E-05	2.0E-05	9.6E-06	1.2E-05
SSW	2.6E-04	2.0E-04	1.4E-04	7.3E-05	3.8E-05	3.0E-05	5.1E-05
S	7.9E-04	5.3E-04	2.7E-04	1.8E-05	2.3E-05	3.0E-05	2.2E-05
SSE	1.1E-03	9.1E-04	6.6E-04	1.6E-05	0.0E+00	0.0E+00	0.0E+00
SE	1.5E-03	5.8E-04	4.2E-04	1.4E-04	9.6E-06	0.0E+00	0.0E+00
ESE	1.1E-03	3.1E-04	1.1E-04	8.6E-05	5.7E-05	1.5E-05	6.0E-06
E	1.0E-03	2.4E-04	3.0E-05	5.4E-05	2.0E-05	1.6E-05	1.5E-05
ENE	1.2E-04	5.2E-05	3.5E-05	1.8E-05	1.2E-05	9.8E-06	9.1E-06
NE	1.7E-04	6.9E-05	7.8E-05	6.8E-05	6.1E-05	3.1E-05	2.8E-05
NNE	1.6E-04	3.3E-05	5.6E-05	6.0E-05	2.6E-05	8.5E-06	7.3E-06

CALCULATION IDENTIFICATION NUMBER				
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C A P 8 8 - P C

Version 2.00

Clean Air Act Assessment Package - 1988

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

Non-Radon Individual Assessment
May 8, 2001 08:17 am

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

Source Category: Particulate Emission w radon daughters
Source Type: Area
Emission Year: 2000

Comments: Stone & Webster, Inc. for
U.S. Army Corps of Engineers

Effective Dose Equivalent
(mrem/year)

7.84E-03

At This Location: 12 Meters North Northeast

Dataset Name: MISS SWALE MEI
Dataset Date: May 8, 2001 08:14 am
Wind File: C:\DATA\CAP88PC2\WNDFILES\TET1358.WND

CALCULATION IDENTIFICATION NUMBER				
JOB ORDER NO. 08575.0207	DISCIPLINE E(B)	CALCULATION NO. 03	REVISION NUMBER 0	PAGE 49 OF 61

May 8, 2001 08:17 am

SYNOPSIS
Page 1

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 12 Meters North Northeast
Lifetime Fatal Cancer Risk: 8.97E-08

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	4.02E-05
BREAST	3.48E-05
R MAR	3.65E-03
LUNGS	4.99E-02
THYROID	3.38E-05
ENDOST	4.54E-02
RMNDR	1.23E-04
EFFEC	7.84E-03

STONE & WEBSTER ENGINEERING CORPORATION

5010.65

CALCULATION SHEET

CALCULATION IDENTIFICATION NUMBER				
JOB ORDER NO. 08575.0207	DISCIPLINE E(B)	CALCULATION NO. 03	REVISION NUMBER 0	PAGE 50 OF 61

May 8, 2001 08:17 am

RADIONUCLIDE EMISSIONS DURING THE YEAR 2000

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
AC-227	Y	1.00	7.3E-11	7.3E-11
AC-228	Y	1.00	5.6E-09	5.6E-09
BI-211	W	1.00	7.3E-11	7.3E-11
BI-212	W	1.00	5.6E-09	5.6E-09
FR-223	D	1.00	1.0E-12	1.0E-12
PA-234M	Y	1.00	1.6E-09	1.6E-09
PA-231	Y	1.00	7.3E-11	7.3E-11
PB-211	D	1.00	7.3E-11	7.3E-11
PO-211	-	0.00	2.0E-13	2.0E-13
PO-216	W	1.00	5.6E-09	5.6E-09
PB-212	D	1.00	5.6E-09	5.6E-09
PO-212	W	1.00	3.6E-09	3.6E-09
PO-215	W	1.00	7.3E-11	7.3E-11
RA-223	W	1.00	7.3E-11	7.3E-11
RA-224	W	1.00	5.6E-09	5.6E-09
TH-232	Y	1.00	5.6E-09	5.6E-09
TH-228	Y	1.00	5.6E-09	5.6E-09
TH-231	Y	1.00	7.3E-11	7.3E-11
TH-227	Y	1.00	7.2E-11	7.2E-11
TL-208	D	1.00	2.0E-09	2.0E-09
U-235	Y	1.00	7.3E-11	7.3E-11
TL-207	D	1.00	7.3E-11	7.3E-11
U-238	Y	1.00	1.6E-09	1.6E-09
TH-234	Y	1.00	1.6E-09	1.6E-09
PA-234	Y	1.00	2.0E-12	2.0E-12
U-234	Y	1.00	1.7E-09	1.7E-09
TH-230	Y	1.00	1.7E-09	1.7E-09
RA-226	W	1.00	2.1E-10	2.1E-10
PO-218	W	1.00	2.1E-10	2.1E-10
PB-214	D	1.00	2.1E-10	2.1E-10
BI-214	W	1.00	2.1E-10	2.1E-10
PO-214	W	1.00	2.1E-10	2.1E-10
PB-210	D	1.00	2.1E-10	2.1E-10
BI-210	W	1.00	2.1E-10	2.1E-10
PO-210	W	1.00	2.1E-10	2.1E-10
RA-228	W	1.00	5.6E-09	5.6E-09

SITE INFORMATION

Temperature: 12 degrees C
Precipitation: 86 cm/y
Mixing Height: 1000 m

May 8, 2001 08:17 am

SOURCE INFORMATION

Source Number: 1

Source Height (m): 0.
Area (sq m): 1897.

Plume Rise Pasquill Cat:	A	B	C	D	E	F	G
Zero:	0.	0.	0.	0.	0.	0.	0.

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

Food Arrays were not generated for this run.
Default Values used.

DISTANCES (M) USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

12	35	40	60	65	85	100	145	155	175
180	200	225							

May 8, 2001 08:17 am

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
AC-227	8.30E-05
AC-228	8.69E-07
BI-211	1.43E-10
BI-212	3.42E-07
FR-223	4.95E-12
PA-234M	2.96E-11
PA-231	6.31E-05
PB-211	1.25E-09
PO-211	6.17E-17
PO-216	1.97E-15
PB-212	1.69E-06
PO-212	0.00E+00
PO-215	0.00E+00
RA-223	1.10E-06
RA-224	3.52E-05
TH-232	3.60E-03
TH-228	2.53E-03
TH-231	1.31E-10
TH-227	1.50E-06
TL-208	8.65E-09
U-235	1.62E-05
TL-207	1.26E-12
U-238	3.26E-04
TH-234	1.22E-07
PA-234	1.12E-11
U-234	3.93E-04
TH-230	7.41E-04
RA-226	3.95E-06
PO-218	1.95E-11
PB-214	4.09E-10
BI-214	5.27E-10
PO-214	0.00E+00
PB-210	7.85E-06
BI-210	7.19E-08
PO-210	3.97E-06
RA-228	3.34E-05
TOTAL	7.84E-03

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

	Distance (m)						
Direction	12	35	40	60	65	85	100
N	7.8E-03	1.0E-03	8.1E-04	4.1E-04	3.6E-04	2.4E-04	1.9E-04
NNW	7.8E-03	7.1E-04	5.4E-04	2.4E-04	2.0E-04	1.2E-04	8.7E-05
NW	7.8E-03	3.8E-04	2.7E-04	1.3E-04	1.1E-04	7.2E-05	5.7E-05
WNW	7.8E-03	3.4E-04	2.5E-04	1.2E-04	1.0E-04	6.5E-05	5.1E-05
W	7.8E-03	4.1E-04	3.2E-04	1.6E-04	1.4E-04	9.3E-05	7.4E-05
WSW	7.8E-03	5.7E-04	4.4E-04	2.1E-04	1.8E-04	1.1E-04	8.7E-05
SW	7.8E-03	7.6E-04	5.7E-04	2.7E-04	2.3E-04	1.5E-04	1.1E-04
SSW	7.8E-03	1.1E-03	8.9E-04	3.9E-04	3.4E-04	2.0E-04	1.5E-04
S	7.8E-03	1.2E-03	9.9E-04	5.1E-04	4.5E-04	3.0E-04	2.4E-04
SSE	7.8E-03	1.2E-03	9.6E-04	4.2E-04	3.6E-04	2.2E-04	1.6E-04
SE	7.8E-03	9.1E-04	6.8E-04	3.2E-04	2.8E-04	1.8E-04	1.4E-04
ESE	7.8E-03	8.5E-04	6.5E-04	2.9E-04	2.5E-04	1.5E-04	1.1E-04
E	7.8E-03	8.1E-04	6.2E-04	3.0E-04	2.7E-04	1.7E-04	1.4E-04
ENE	7.8E-03	1.0E-03	7.9E-04	3.4E-04	2.9E-04	1.7E-04	1.2E-04
NE	7.8E-03	1.2E-03	8.9E-04	4.4E-04	3.8E-04	2.5E-04	1.9E-04
NNE	7.8E-03	1.3E-03	1.0E-03	4.7E-04	4.1E-04	2.5E-04	1.9E-04

	Distance (m)					
Direction	145	155	175	180	200	225
N	1.0E-04	9.4E-05	7.9E-05	7.6E-05	6.5E-05	5.6E-05
NNW	5.1E-05	4.7E-05	4.1E-05	4.0E-05	3.6E-05	3.3E-05
NW	3.7E-05	3.5E-05	3.2E-05	3.1E-05	2.9E-05	2.7E-05
WNW	3.4E-05	3.2E-05	3.0E-05	2.9E-05	2.7E-05	2.6E-05
W	4.7E-05	4.4E-05	3.9E-05	3.8E-05	3.4E-05	3.1E-05
WSW	5.2E-05	4.8E-05	4.2E-05	4.1E-05	3.7E-05	3.4E-05
SW	6.5E-05	6.0E-05	5.2E-05	5.0E-05	4.4E-05	3.9E-05
SSW	8.0E-05	7.3E-05	6.2E-05	5.9E-05	5.2E-05	4.6E-05
S	1.3E-04	1.2E-04	9.9E-05	9.5E-05	8.1E-05	6.9E-05
SSE	8.5E-05	7.7E-05	6.6E-05	6.3E-05	5.5E-05	4.8E-05
SE	7.8E-05	7.1E-05	6.0E-05	5.8E-05	5.1E-05	4.5E-05
ESE	6.3E-05	5.8E-05	5.0E-05	4.8E-05	4.3E-05	3.8E-05
E	7.8E-05	7.1E-05	6.0E-05	5.8E-05	5.1E-05	4.5E-05
ENE	6.7E-05	6.1E-05	5.2E-05	5.1E-05	4.5E-05	4.0E-05
NE	1.1E-04	9.7E-05	8.1E-05	7.8E-05	6.7E-05	5.8E-05
NNE	1.0E-04	9.1E-05	7.6E-05	7.3E-05	6.3E-05	5.5E-05

C A P 8 8 - P C

Version 2.00

Clean Air Act Assessment Package - 1988

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

Non-Radon Population Assessment
May 8, 2001 08:17 am

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

Source Category: Particulate Emission w radon daughters
Source Type: Area
Emission Year: 2000

Comments: Stone & Webster, Inc. for
U.S. Army Corps of Engineers

Effective Dose Equivalent
(mrem/year)

4.06E-05

At This Location: 250 Meters South

Dataset Name: MISS SWALE POP
Dataset Date: May 8, 2001 08:16 am
Wind File: C:\DATA\CAP88PC2\WNDFILES\TET1358.WND
Population File: C:\DATA\CAP88PC2\POPFILES\MAYWOOD.POP

CALCULATION IDENTIFICATION NUMBER				
JOB ORDER NO. 08575.0207	DISCIPLINE E(B)	CALCULATION NO. 03	REVISION NUMBER 0	PAGE 55 OF 61

May 8, 2001 08:17 am

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 250 Meters South
Lifetime Fatal Cancer Risk: 4.65E-10

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)	Collective Population (person-rem/y)
GONADS	1.81E-07	1.14E-06
BREAST	1.55E-07	9.97E-07
R MAR	1.87E-05	1.11E-04
LUNGS	2.59E-04	1.53E-03
THYROID	1.49E-07	9.48E-07
ENDOST	2.33E-04	1.38E-03
RMNDR	5.15E-07	3.32E-06
EFFEC	4.06E-05	2.40E-04

FREQUENCY DISTRIBUTION OF LIFETIME FATAL CANCER RISKS

Risk Range	# of People	# of People in This Risk Range or Higher	Deaths/Year in This Risk Range	Deaths/Year in This Risk Range or Higher
1.0E+00 TO 1.0E-01	0	0	0.00E+00	0.00E+00
1.0E-01 TO 1.0E-02	0	0	0.00E+00	0.00E+00
1.0E-02 TO 1.0E-03	0	0	0.00E+00	0.00E+00
1.0E-03 TO 1.0E-04	0	0	0.00E+00	0.00E+00
1.0E-04 TO 1.0E-05	0	0	0.00E+00	0.00E+00
1.0E-05 TO 1.0E-06	0	0	0.00E+00	0.00E+00
LESS THAN 1.0E-06	17937859	17937859	3.89E-08	3.89E-08

CALCULATION IDENTIFICATION NUMBER				
JOB ORDER NO. 08575.0207	DISCIPLINE E(B)	CALCULATION NO. 03	REVISION NUMBER 0	PAGE 56 OF 61

May 8, 2001 08:17 am

SYNOPSIS
Page 2

RADIONUCLIDE EMISSIONS DURING THE YEAR 2000

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
AC-227	Y	1.00	7.3E-11	7.3E-11
AC-228	Y	1.00	5.6E-09	5.6E-09
BI-211	W	1.00	7.3E-11	7.3E-11
BI-212	W	1.00	5.6E-09	5.6E-09
FR-223	D	1.00	1.0E-12	1.0E-12
PA-234M	Y	1.00	1.6E-09	1.6E-09
PA-231	Y	1.00	7.3E-11	7.3E-11
PB-211	D	1.00	7.3E-11	7.3E-11
PO-211	-	0.00	2.0E-13	2.0E-13
PO-216	W	1.00	5.6E-09	5.6E-09
PB-212	D	1.00	5.6E-09	5.6E-09
PO-212	W	1.00	3.6E-09	3.6E-09
PO-215	W	1.00	7.3E-11	7.3E-11
RA-223	W	1.00	7.3E-11	7.3E-11
RA-224	W	1.00	5.6E-09	5.6E-09
TH-232	Y	1.00	5.6E-09	5.6E-09
TH-228	Y	1.00	5.6E-09	5.6E-09
TH-231	Y	1.00	7.3E-11	7.3E-11
TH-227	Y	1.00	7.2E-11	7.2E-11
TL-208	D	1.00	2.0E-09	2.0E-09
U-235	Y	1.00	7.3E-11	7.3E-11
TL-207	D	1.00	7.3E-11	7.3E-11
U-238	Y	1.00	1.6E-09	1.6E-09
TH-234	Y	1.00	1.6E-09	1.6E-09
PA-234	Y	1.00	2.0E-12	2.0E-12
U-234	Y	1.00	1.7E-09	1.7E-09
TH-230	Y	1.00	1.7E-09	1.7E-09
RA-226	W	1.00	2.1E-10	2.1E-10
PO-218	W	1.00	2.1E-10	2.1E-10
PB-214	D	1.00	2.1E-10	2.1E-10
BI-214	W	1.00	2.1E-10	2.1E-10
PO-214	W	1.00	2.1E-10	2.1E-10
PB-210	D	1.00	2.1E-10	2.1E-10
BI-210	W	1.00	2.1E-10	2.1E-10
PO-210	W	1.00	2.1E-10	2.1E-10
RA-228	W	1.00	5.6E-09	5.6E-09

SITE INFORMATION

Temperature: 12 degrees C
Precipitation: 86 cm/y
Mixing Height: 1000 m

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SYNOPSIS
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SOURCE INFORMATION

Source Number: 1

Source Height (m): 0.
Area (sq m): 1897.

Plume Rise Pasquill Cat:	A	B	C	D	E	F	G
Zero:	0.	0.	0.	0.	0.	0.	0.

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

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

CALCULATION IDENTIFICATION NUMBER				
JOB ORDER NO. 08575.0207	DISCIPLINE E(B)	CALCULATION NO. 03	REVISION NUMBER 0	PAGE 60 OF 61

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

Distance (m)

Direction	250	750	1500	2500	3500	4500	7500
N	3.0E-05	3.8E-06	1.1E-06	4.7E-07	2.7E-07	1.9E-07	8.5E-08
NNW	1.1E-05	1.4E-06	4.2E-07	1.8E-07	1.0E-07	7.0E-08	3.2E-08
NW	6.5E-06	8.2E-07	2.4E-07	1.0E-07	5.9E-08	4.0E-08	1.8E-08
WNW	5.4E-06	6.9E-07	2.0E-07	8.5E-08	4.9E-08	3.3E-08	1.5E-08
W	1.0E-05	1.3E-06	3.8E-07	1.6E-07	9.1E-08	6.2E-08	2.8E-08
WSW	1.2E-05	1.5E-06	4.5E-07	1.9E-07	1.1E-07	7.4E-08	3.4E-08
SW	1.7E-05	2.1E-06	6.2E-07	2.6E-07	1.5E-07	1.0E-07	4.6E-08
SSW	2.2E-05	2.8E-06	8.0E-07	3.4E-07	2.0E-07	1.3E-07	6.1E-08
S	4.1E-05	5.1E-06	1.5E-06	6.2E-07	3.6E-07	2.4E-07	1.1E-07
SSE	2.4E-05	3.0E-06	8.8E-07	3.7E-07	2.2E-07	1.5E-07	6.7E-08
SE	2.1E-05	2.7E-06	7.9E-07	3.3E-07	1.9E-07	1.3E-07	6.1E-08
ESE	1.6E-05	2.0E-06	5.9E-07	2.5E-07	1.5E-07	1.0E-07	4.6E-08
E	2.1E-05	2.7E-06	7.8E-07	3.3E-07	1.9E-07	1.3E-07	6.0E-08
ENE	1.7E-05	2.2E-06	6.3E-07	2.7E-07	1.6E-07	1.1E-07	4.9E-08
NE	3.2E-05	3.9E-06	1.1E-06	4.8E-07	2.8E-07	1.9E-07	8.8E-08
NNE	2.9E-05	3.6E-06	1.1E-06	4.4E-07	2.6E-07	1.8E-07	8.1E-08

Distance (m)

Direction	15000	25000	35000	45000	55000	65000	75000
N	3.2E-08	1.4E-08	9.0E-09	6.2E-09	4.5E-09	3.0E-09	2.4E-09
NNW	1.2E-08	5.2E-09	3.2E-09	2.2E-09	1.6E-09	1.1E-09	8.5E-10
NW	6.5E-09	2.9E-09	1.8E-09	1.2E-09	8.9E-10	6.1E-10	4.8E-10
WNW	5.4E-09	2.4E-09	1.5E-09	1.0E-09	7.2E-10	5.0E-10	4.0E-10
W	9.9E-09	4.4E-09	2.7E-09	1.8E-09	1.3E-09	8.8E-10	6.9E-10
WSW	1.2E-08	5.2E-09	3.2E-09	2.2E-09	1.5E-09	1.0E-09	8.2E-10
SW	1.7E-08	7.5E-09	4.6E-09	3.2E-09	2.2E-09	1.5E-09	1.2E-09
SSW	2.2E-08	1.0E-08	6.3E-09	4.3E-09	3.1E-09	2.1E-09	1.6E-09
S	4.1E-08	1.9E-08	1.2E-08	8.1E-09	5.7E-09	3.7E-09	2.9E-09
SSE	2.5E-08	1.2E-08	7.3E-09	5.1E-09	0.0E+00	0.0E+00	0.0E+00
SE	2.3E-08	1.1E-08	6.7E-09	4.7E-09	3.4E-09	0.0E+00	0.0E+00
ESE	1.7E-08	7.9E-09	5.0E-09	3.5E-09	2.5E-09	1.8E-09	1.4E-09
E	2.2E-08	1.0E-08	6.5E-09	4.5E-09	3.3E-09	2.2E-09	1.8E-09
ENE	1.8E-08	8.5E-09	5.4E-09	3.7E-09	2.7E-09	1.9E-09	1.5E-09
NE	3.3E-08	1.5E-08	9.4E-09	6.5E-09	4.7E-09	3.1E-09	2.4E-09
NNE	3.0E-08	1.4E-08	8.6E-09	6.0E-09	4.2E-09	2.8E-09	2.2E-09

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COLLECTIVE EFFECTIVE DOSE EQUIVALENT (person rem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	250	750	1500	2500	3500	4500	7500
N	2.0E-06	7.7E-07	8.9E-07	6.3E-07	5.1E-07	4.5E-07	1.7E-06
NNW	7.6E-07	2.9E-07	3.4E-07	2.4E-07	1.9E-07	1.7E-07	6.4E-07
NW	4.3E-07	1.7E-07	1.9E-07	1.3E-07	1.1E-07	9.6E-08	3.6E-07
WNW	3.6E-07	1.4E-07	1.6E-07	1.1E-07	9.2E-08	8.0E-08	2.7E-07
W	6.7E-07	2.6E-07	3.0E-07	2.1E-07	1.7E-07	1.5E-07	4.5E-07
WSW	8.0E-07	3.1E-07	3.6E-07	2.5E-07	2.0E-07	1.8E-07	5.4E-07
SW	1.1E-06	4.2E-07	4.9E-07	3.5E-07	2.8E-07	2.5E-07	7.5E-07
SSW	1.5E-06	5.5E-07	6.5E-07	4.5E-07	3.7E-07	3.2E-07	1.2E-06
S	2.7E-06	1.0E-06	1.2E-06	8.2E-07	6.7E-07	5.9E-07	2.2E-06
SSE	1.6E-06	6.0E-07	7.0E-07	4.9E-07	4.0E-07	3.5E-07	1.7E-06
SE	1.4E-06	5.4E-07	6.3E-07	4.5E-07	3.6E-07	3.2E-07	1.2E-06
ESE	1.1E-06	4.1E-07	4.8E-07	3.3E-07	2.7E-07	2.4E-07	9.2E-07
E	1.4E-06	5.3E-07	6.2E-07	4.4E-07	3.6E-07	3.1E-07	1.2E-06
ENE	1.1E-06	4.3E-07	5.1E-07	3.6E-07	2.9E-07	2.6E-07	9.8E-07
NE	2.1E-06	7.9E-07	9.2E-07	6.4E-07	5.3E-07	4.6E-07	1.8E-06
NNE	1.9E-06	7.3E-07	8.4E-07	5.9E-07	4.8E-07	4.2E-07	1.6E-06

	Distance (m)						
Direction	15000	25000	35000	45000	55000	65000	75000
N	2.3E-06	8.6E-07	6.4E-07	1.9E-07	1.3E-07	9.8E-08	7.5E-08
NNW	9.3E-07	5.2E-07	1.2E-07	5.8E-08	5.0E-08	4.0E-08	3.5E-08
NW	4.9E-07	2.3E-07	1.9E-07	1.6E-07	4.3E-08	1.6E-08	1.5E-08
WNW	3.0E-07	1.6E-07	1.3E-07	4.4E-08	1.5E-08	1.2E-08	9.9E-09
W	6.4E-07	3.7E-07	1.3E-07	1.1E-07	6.1E-08	3.6E-08	2.1E-08
WSW	1.3E-06	8.8E-07	1.8E-07	1.3E-07	1.1E-07	6.2E-07	2.4E-08
SW	2.0E-06	1.7E-06	1.1E-06	4.7E-07	2.5E-07	1.2E-07	1.5E-07
SSW	3.2E-06	2.5E-06	1.8E-06	9.1E-07	4.7E-07	3.7E-07	6.3E-07
S	9.8E-06	6.6E-06	3.4E-06	2.2E-07	2.8E-07	3.7E-07	2.7E-07
SSE	1.3E-05	1.1E-05	8.1E-06	1.9E-07	0.0E+00	0.0E+00	0.0E+00
SE	1.9E-05	7.2E-06	5.2E-06	1.7E-06	1.2E-07	0.0E+00	0.0E+00
ESE	1.4E-05	3.8E-06	1.4E-06	1.1E-06	7.1E-07	1.8E-07	7.4E-08
E	1.3E-05	3.0E-06	3.7E-07	6.7E-07	2.5E-07	2.0E-07	1.8E-07
ENE	1.5E-06	6.5E-07	4.3E-07	2.3E-07	1.5E-07	1.2E-07	1.1E-07
NE	2.1E-06	8.6E-07	9.7E-07	8.5E-07	7.5E-07	3.9E-07	3.5E-07
NNE	2.0E-06	4.1E-07	6.9E-07	7.5E-07	3.2E-07	1.1E-07	9.0E-08

ATTACHMENT A

RADIONUCLIDE SOURCE TERM EMISSIONS CALCULATIONS

FUSRAP - MISS

YEAR 2000

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

INPUT PARAMETERS:				Vegetative Cover/Gravel TSP	Vegetative Cover/Gravel 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)			44873	44873	5017	5017
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	34	34	34	34
February			1-4	29	29	29	29
March			1-4	29	29	29	29
April			1	24	24	24	24
			2	28	28	28	28
			3	24	24	24	24
			4	26	26	26	26
May			1	26	26	26	26
			2	23	23	23	23
			3	30	30	30	30
			4	25	25	25	25
June			1	39	39	39	39
			2	21	21	21	21
			3	22	22	22	22
			4	24	24	24	24
July			1	18	18	18	18
			2	20	20	20	20
			3	24	24	24	24
			4	16	16	16	16
			5	16	16	16	16
August			1	22	22	22	22
			2	17	17	17	17
			3	23	23	23	23
			4	18	18	18	18
			5	18	18	18	18
September			1	23	23	23	23
			2	22	22	22	22
			3	24	24	24	24

		4	18	18	18	18
October		1-4	24	24	24	24
November		1-4	23	23	23	23
December		1-4	36	36	36	36
Friction Velocity (m/s)						
January		1-4	0.86	0.86	0.86	0.86
February		1-4	0.73	0.73	0.73	0.73
March		1-4	0.73	0.73	0.73	0.73
April		1	0.61	0.61	0.61	0.61
		2	0.71	0.71	0.71	0.71
		3	0.61	0.61	0.61	0.61
		4	0.66	0.66	0.66	0.66
May		1	0.66	0.66	0.66	0.66
		2	0.58	0.58	0.58	0.58
		3	0.76	0.76	0.76	0.76
		4	0.63	0.63	0.63	0.63
June		1	0.98	0.98	0.98	0.98
		2	0.53	0.53	0.53	0.53
		3	0.56	0.56	0.56	0.56
		4	0.61	0.61	0.61	0.61
July		1	0.45	0.45	0.45	0.45
		2	0.50	0.50	0.50	0.50
		3	0.61	0.61	0.61	0.61
		4	0.40	0.40	0.40	0.40
		5	0.40	0.40	0.40	0.40
August		1	0.56	0.56	0.56	0.56
		2	0.43	0.43	0.43	0.43
		3	0.58	0.58	0.58	0.58
		4	0.45	0.45	0.45	0.45
		5	0.45	0.45	0.45	0.45
September		1	0.58	0.58	0.58	0.58
		2	0.56	0.56	0.56	0.56
		3	0.61	0.61	0.61	0.61
		4	0.45	0.45	0.45	0.45
October		1-4	0.61	0.61	0.61	0.61
November		1-4	0.58	0.58	0.58	0.58
December		1-4	0.91	0.91	0.91	0.91
	Vegetative Cover	Bare Soil				
CONTROL EFFICIENCY (%)-	99	0				

EMISSION FACTOR -E (g/m^2):

January	1-4	0.00	0.00	-2.53	0.00	0.00	-2.53
February	1-4	0.00	0.00	-2.39	0.00	0.00	-2.39
March	1-4	0.00	0.00	-2.39	0.00	0.00	-2.39
April	1	0.00	0.00	-0.40	0.00	0.00	-0.40
	2	0.00	0.00	-2.14	0.00	0.00	-2.14
	3	0.00	0.00	-0.40	0.00	0.00	-0.40
	4	0.00	0.00	-1.41	0.00	0.00	-1.41
May	1	0.00	0.00	-1.41	0.00	0.00	-1.41
	2	0.00	0.00	0.22	0.00	0.00	0.22
	3	0.00	0.00	-2.56	0.00	0.00	-2.56
	4	0.00	0.00	-0.94	0.00	0.00	-0.94
June	1	0.00	0.00	-0.83	0.00	0.00	-0.83
	2	0.00	0.00	1.68	0.00	0.00	1.68
	3	0.00	0.00	0.92	0.00	0.00	0.92
	4	0.00	0.00	-0.40	0.00	0.00	-0.40
July	1	0.00	0.00	4.43	0.00	0.00	4.43
	2	0.00	0.00	2.52	0.00	0.00	2.52
	3	0.00	0.00	-0.40	0.00	0.00	-0.40
	4	0.00	0.00	6.62	0.00	0.00	6.62
	5	0.00	0.00	6.62	0.00	0.00	6.62
August	1	0.00	0.00	0.92	0.00	0.00	0.92
	2	0.00	0.00	5.49	0.00	0.00	5.49
	3	0.00	0.00	0.22	0.00	0.00	0.22
	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
September	1	0.00	0.00	0.22	0.00	0.00	0.22
	2	0.00	0.00	0.92	0.00	0.00	0.92
	3	0.00	0.00	-0.40	0.00	0.00	-0.40
	4	0.00	0.00	4.43	0.00	0.00	4.43
October	1-4	0.00	0.00	-0.40	0.00	0.00	-0.40
November	1-4	0.00	0.00	0.22	0.00	0.00	0.22
December	1-4	0.00	0.00	-2.07	0.00	0.00	-2.07

ANNUAL EMISSIONS (grams/year)	Vegetative Cover/Gravel	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

PDA 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 Acquis. Area TSP	Soil Acquis. Area 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	(7 x 6,965 tons)	48755	48755

EMISSION FACTOR -E (lb/ton): Soil Acquis. Area

E (TSP) =	3.27E-04
E (PM-10) =	1.54E-04

CONTROL EFFICIENCY (%)- 0

ANNUAL EMISSIONS (grams/year):

E (TSP) =	7220.7
E (PM-10) =	3415.2

RADIONUCLIDE SOURCE CONCENTRATIONS

AVERAGE DETECTED ACTIVITY (MEASURED)

INPUT PARAMETERS:

		U238	U234	U235	Ra226	Th232
Activity Concentration (S) - pCi/g	(Soil Acquis. Area)	2.94	N/A	N/A	2.07	10.1
Isotope Contribution to Total Uranium (P) - %		47.249	50.539	2.212	N/A	N/A

ANNUAL RADIOACTIVITY EMISSION RATES (Ci/yr)

	Soil Acquis. Area
U238	1.00E-08
Th234	1.00E-08
Pa234m	1.00E-08
Pa234	1.31E-11
U234	1.07E-08
Th230	1.07E-08
Ra226	7.07E-09
Po218	7.07E-09
Pb214	7.07E-09
Bi214	7.07E-09
Po214	7.07E-09
Pb210	7.07E-09
Bi210	7.07E-09
Po210	7.07E-09

U235	4.70E-10
Th231	4.70E-10
Pa231	4.70E-10
Ac227	4.70E-10
Th227	4.64E-10
Fr-223	6.49E-12
Ra223	4.70E-10
Po215	4.70E-10
Pb211	4.70E-10
Bi211	4.70E-10
Po211	1.28E-12
Tl207	4.69E-10
Th232	3.45E-08
Ra228	3.45E-08
Ac228	3.45E-08
Th228	3.45E-08
Ra224	3.45E-08
Po216	3.45E-08
Pb212	3.45E-08
Bi212	3.45E-08
Po212	2.21E-08
Tl208	1.24E-08

BP 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:

		Zone 1		Zone 2		Zone 3	
		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
Mean Wind Speed - U (mph)	(Teterboro, LCD)	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
Tons of Material Dropped	(5 x 5,913 tons))	9925	9925	8800	8800	10840	10840

EMISSION FACTOR -E (lb/ton):	Zone 1	Zone 2	Zone 3
E (TSP) =	3.27E-04	3.27E-04	3.27E-04
E (PM-10) =	1.54E-04	1.54E-04	1.54E-04
CONTROL EFFICIENCY (%)-	0	0	0
ANNUAL EMISSIONS (grams/year):			
E (TSP) =	1469.9	1303.3	1605.4
E (PM-10) =	695.2	616.4	759.3

RADIONUCLIDE SOURCE CONCENTRATIONS	AVERAGE DETECTED ACTIVITY (MEASURED)					
	INPUT PARAMETERS:	U238	U234	U235	Ra226	Th232
	Activity Concentration (S) - pCi/g (Zone 1)	3.5	N/A	N/A	0.4	2.2
	Activity Concentration (S) - pCi/g (Zone 2)	64.0	N/A	N/A	26.2	574.0
	Activity Concentration (S) - pCi/g (Zone 3)	82.0	N/A	N/A	18.9	155.0
	Isotope Contribution to Total Uranium (P) - %	47.249	50.539	2.212	N/A	N/A

ANNUAL RADIOACTIVITY EMISSION RATES (Ci/yr)

	Zone 1	Zone 2	Zone 3	Total
U238	2.43E-09	3.95E-08	6.23E-08	1.04E-07
Th234	2.43E-09	3.95E-08	6.23E-08	1.04E-07
Pa234m	2.43E-09	3.95E-08	6.23E-08	1.04E-07
Pa234	3.16E-12	5.13E-11	8.09E-11	1.35E-10
U234	2.60E-09	4.22E-08	6.66E-08	1.11E-07
Th230	2.60E-09	4.22E-08	6.66E-08	1.11E-07
Ra226	2.78E-10	1.62E-08	1.44E-08	3.08E-08
Po218	2.78E-10	1.62E-08	1.44E-08	3.08E-08
Pb214	2.78E-10	1.61E-08	1.43E-08	3.08E-08
Bi214	2.78E-10	1.62E-08	1.44E-08	3.08E-08
Po214	2.78E-10	1.61E-08	1.43E-08	3.08E-08
Pb210	2.78E-10	1.62E-08	1.44E-08	3.08E-08
Bi210	2.78E-10	1.62E-08	1.44E-08	3.08E-08
Po210	2.78E-10	1.62E-08	1.44E-08	3.08E-08
U235	1.14E-10	1.85E-09	2.91E-09	4.88E-09
Th231	1.14E-10	1.85E-09	2.91E-09	4.88E-09
Pa231	1.14E-10	1.85E-09	2.91E-09	4.88E-09
Ac227	1.14E-10	1.85E-09	2.91E-09	4.88E-09
Th227	1.12E-10	1.82E-09	2.87E-09	4.81E-09
Fr-223	1.57E-12	2.55E-11	4.02E-11	6.73E-11
Ra223	1.14E-10	1.85E-09	2.91E-09	4.88E-09
Po215	1.14E-10	1.85E-09	2.91E-09	4.88E-09
Pb211	1.14E-10	1.85E-09	2.91E-09	4.88E-09
Bi211	1.14E-10	1.85E-09	2.91E-09	4.88E-09
Po211	3.11E-13	5.04E-12	7.96E-12	1.33E-11
Tl207	1.14E-10	1.84E-09	2.91E-09	4.86E-09
Th232	1.53E-09	3.54E-07	1.18E-07	4.73E-07
Ra228	1.53E-09	3.54E-07	1.18E-07	4.73E-07
Ac228	1.53E-09	3.54E-07	1.18E-07	4.73E-07
Th228	1.53E-09	3.54E-07	1.18E-07	4.73E-07
Ra224	1.53E-09	3.54E-07	1.18E-07	4.73E-07
Po216	1.53E-09	3.54E-07	1.18E-07	4.73E-07
Pb212	1.53E-09	3.54E-07	1.18E-07	4.73E-07
Bi212	1.53E-09	3.54E-07	1.18E-07	4.73E-07

Po212	9.80E-10	2.27E-07	7.54E-08	3.03E-07
Tl208	5.50E-10	1.27E-07	4.23E-08	1.70E-07

SWALE 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:

		Swale Soil Excav. TSP	Swale Soil Excav. 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)	3375	3375

EMISSION FACTOR -E (lb/ton): Swale Soil Excav.

E (TSP) = 3.27E-04
E (PM-10) = 1.54E-04

CONTROL EFFICIENCY (%)- 0

ANNUAL EMISSIONS (grams/year):

E (TSP) = 499.8
E (PM-10) = 236.4

RADIONUCLIDE SOURCE CONCENTRATIONS

AVERAGE DETECTED ACTIVITY (MEASURED)

INPUT PARAMETERS:

	U238	U234	U235	Ra226	Th232
Activity Concentration (S) - pCi/g	6.6	N/A	N/A	0.88	23.8
Isotope Contribution to Total Uranium (P) - %	47.249	50.539	2.212	N/A	N/A

ANNUAL RADIOACTIVITY EMISSION RATES (Ci/yr)

	Swale Soil Excav.
U238	1.56E-09
Th234	1.56E-09
Pa234m	1.56E-09
Pa234	2.03E-12
U234	1.67E-09
Th230	1.67E-09
Ra226	2.08E-10
Po218	2.08E-10
Pb214	2.08E-10
Bi214	2.08E-10
Po214	2.08E-10
Pb210	2.08E-10

Bi210	2.08E-10
Po210	2.08E-10
U235	7.30E-11
Th231	7.30E-11
Pa231	7.30E-11
Ac227	7.30E-11
Th227	7.20E-11
Fr-223	1.01E-12
Ra223	7.30E-11
Po215	7.30E-11
Pb211	7.30E-11
Bi211	7.30E-11
Po211	1.99E-13
Tl207	7.28E-11
Th232	5.63E-09
Ra228	5.63E-09
Ac228	5.63E-09
Th228	5.63E-09
Ra224	5.63E-09
Po216	5.63E-09
Pb212	5.63E-09
Bi212	5.63E-09
Po212	3.60E-09
Tl208	2.02E-09