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ATTACHMENTS

RADIATION ENVIRONMENTAL MONITORING PLAN
CWM CHEMICAL SERVICES, LLC
MODEL CITY. NEW YORK. FACILITY

1.0 INTRODUCTION

The CWM Chemical Services, LLC (CWM), Model City Facility, is located within the Erie-Niagara Region in the western section of New York State. The facility is situated on the boundary between the Towns of Lewiston and Porter in Niagara County. All hazardous waste management units are located within the Town of Porter. The existing active units at the Model City Facility (U.S. Environmental Protection Agency (USEPA) ID No. NYD049836679) are fully permitted as part of the Model City Treatment, Storage, and Disposal Facility (TSDF). It uses fully permitted, state-of-the-art technologies for the proper storage, treatment, and disposal of a variety of liquid, solid, and semi-solid organic and inorganic hazardous waste and industrial non-hazardous waste. Storage, treatment, and disposal capabilities include an Aqueous Wastewater Treatment System (AWTS), waste stabilization, secure landfilling of approved waste solids and semi-solids including PCBs, solvent and fuel blending processes, and storage and disposal of wastes regulated under the Resource Conservation and Recovery Act (RCRA) and Toxic Substances Control Act (TSCA).

The Model City Facility began TSDF operations in 1971 as Chem-Trol Pollution Services, Inc. Due to corporate acquisitions and name changes, CWM Chemical Services, LLC, a subsidiary of Waste Management, Inc. (WMI), is the present owner and operator of the facility. WMI is based in Houston, Texas.

Prior to operation as a commercial waste facility, the site was owned by the U.S. Government (early 1940s through the mid 1960s) and was part of the Lake Ontario Ordinance Works (LOOW). U.S. Government activities at and in the vicinity of the site included:

- Explosives and solid/liquid fuel propellant research, development, and production.
- Storage of waste residues related to the Manhattan Project.
- Detonation of outdated or off-specification explosives.

Some of these activities resulted in the contamination of certain areas of the site with organic and inorganic chemicals and radioactive wastes. During the 1960s, initial efforts were made by the Atomic Energy Commission (AEC) to decontaminate these areas and in the early to mid 1980s, additional areas on the site were remediated by the U.S. Department of Energy (DOE). These remedial efforts by the AEC and DOE were overseen by the New York State Department of Health (NYSDOH) and the New York State Department of Environmental Conservation (NYSDEC). In 1993, CWM concluded its investigation into the nature and extent of contamination in soil and groundwater throughout the facility (including radioactive contamination) with the submission of the RCRA Facility Investigation (RFI) Summary Report to the NYSDEC. A Corrective Measures Study was completed in 1996, proposing measures to address the contaminated areas. In 2001, NYSDEC revised the CWM permit to require these corrective measures.

Due to the potential for residual radioactive contamination from the previous U.S. Government activities, on April 27, 1972, the NYSDOH issued an Order for approximately 614 acres of former LOOW property which imposed certain restrictions on the future use of said property,

until such time that the radioactive contmination is reduced to acceptable levels. On June 21, 1974, NYSDOH issued a Supplemental Order, which amended the 1972 Order related to 240 acres of the property then owned by Chem-Trol.

As required by Module II, Condition J(2), of CWM's Part 373 Permit #9-2934-00022/00097, the radiation environmental monitoring plan shall include sampling and analysis of groundwater, surface water, wastewater and air for specified radiological parameters. NYSDEC and NYSDOH will have the opportunity to take split samples as desired. Separate plans will address the surface soil radiological survey and the soils management requirements.

2.0 GROUNDWATER

The geologic stratigraphy at the Model City Facility consists of low permeability Upper Tills atop Glaciolacustrine Clay (GC) over a Glaciolacustrine Silt/Sand (GSS) unit. Beneath these units is a Basil Red Till above shale bedrock. Hydraulic conductivity data indicates that the GSS forms the uppermost aquifer underlying the facility. The lateral groundwater flow in the GSS is generally to the north/northwest over the developed area of the facility. The water table contours for the Upper Tills indicate a shallow water table that generally follows the surface topography. The estimated groundwater flowrates through the various geologic units are low, on the order of feet to fractions of a foot per year.

Groundwater monitoring is required by NYSDEC regulations and specified in the CWM permits. The purpose of this program is to monitor the quality of the downgradient groundwater in order to detect any potential releases from the regulated units (landfills and surface impoundments). It consists of the installation and sampling of monitoring wells, which are strategically located throughout the facility, generally along the north/northwest compliance boundary of the regulated landfills and surface impoundments (see Attachment #1). Monitoring wells include upgradient background wells ("BW" designation), shallow wells in the Upper Till Saturated Zone ("S" designation), and deep wells in the GSS Detection Zone ("D" designation). The groundwater is generally sampled twice per year (although a few monitoring wells are sampled on a different frequency) for a site-specific list of Priority Pollutant Volatile Organics. Results are then compared to historical background levels.

CWM is expanding the ground water monitoring program to include sampling and testing for radiological parameters. CWM will obtain two rounds of groundwater samples from a representative number of the shallow wells across the developed portion of the facility. The selected wells are listed in Attachment #1. A map with the specified wells highlighted is also included in the Attachment. The program will include mainly shallow wells since the shallow wells are more likely to provide an indication of any radiological contamination local to a particular well. In addition, samples will be collected from one deep well, W1204D, in the northwest comer (down gradient portion) of the facility. The unfiltered samples will be analyzed for isotopic uranium (^{234}U, ^{235}U and ^{238}U), isotopic thorium (^{228}Th, ^{230}Th and ^{232}Th) and radium (^{226}Ra and ^{228}Ra). Round two will also include a gamma spectroscopy analysis.

CWM started collecting samples for this program in fall 2004. Most of the wells in the RCRA monitoring program are sampled on a staggered bi-annual schedule. Sampling for round one of the additional radiological testing was completed in May 2005. The sampling for round two was

completed in November, 2005. CWM will continue with the monitoring as outlined in this plan, but, in accordance with the Sitewide Permit, may petition the Department to revise the plan subsequent to completion of one year of monitoring.

In addition, the following well pairs (shallow and deep) on the north side of the property will be sampled for two rounds of analysis using the drinking water protocol: W1204D/S, W1201D/S, W1207D/S, W704D/S and W1107D/S. Both filtered (45 um) and unfiltered samples will be analyzed for gross alpha and gross beta radiation. If the values for these parameters are above those specified in the protocol, additional analysis is prescribed. Once the initial two rounds are completed, these wells will be included in the 5 year test cycle, with the next sampling and analysis due in 2010.

3.0 SURFACE WATER

The Model City site is located in the Eighteen-Mile Creek Drainage Subbasin. Surface water flows northward into Lake Ontario east of the Niagara River. The major part of the facility drains to Four Mile Creek through Six Mile Swale, and a small portion of the property drains to Twelve Mile Creek. Non-operational surface water drainage and runoff is collected on-site in a series of retention basins and drainage channels with manual control gates, where the water is held and tested prior to discharge to nearby surface waters. No water leaves the operational areas of the site in an uncontrolled fashion. Discharges from surface water outfalls are included in the Facility's State Pollutant Discharge Elimination System (SPDES) Permit. The surface water control system and monitoring points are shown on Attachment #2.

The SPDES Permit contains the discharge limits and requirements for three surface water outfalls, i.e., Outfall 002, Outfall 003 and Outfall 004. Outfalls 002 and 003 discharge to Four Mile Creek, while Outfall 004 discharges to Twelve Mile Creek. The facility contains several Stormwater Monitoring Points (SMPs) upgradient to the outfalls. SMP03, SMP04, SMP05 and SMP08 include retention basins and manual control gates which discharge to Outfall 002 (SMP06). Outfall 003 has a retention basin and manual control gate (SMP07) to control discharge from its surface water tributary area. Similarly, Outfall 004 has a retention basin and manual control gate (SMP09) for its area. SMP01 is a small drainage ditch upgradient where background samples may be obtained. SMP02 is no longer used.

CWM will collect two rounds of samples for radiological parameters. One unfiltered grab sample will be collected from Outfalls 002,003 and 004 under high flow conditions (spring thaw or >0.75 inches of precipitation in 24 hours). The samples will be tested for isotopic uranium (^{234}U, ^{235}U and ^{238}U), isotopic thorium (^{228}Th, ^{230}Th and ^{232}Th), radium (^{226}Ra and ^{228}Ra), as well as gamma spectroscopy. After the completion of these two sampling events, NYSDEC and NYSDOH will review the data and determine whether additional sampling and testing is needed.

4.0 WASTEWATER

CWM treats site generated leachate and non-hazardous and hazardous wastewaters received from off-site through its aqueous waste treatment (AWT) facility. Each batch of treated wastewater is tested in accordance with the facility's WAP prior to discharge to Fac Pond 1&2. The water is then transferred to Fac Pond 3 or 8. When a sufficient quantity of water has been

collected, the pond is sampled and tested in accordance with the facility's SPDES permit to qualify it for discharge to the Niagara River. In addition to the parameters required by the SPDES permit, analysis will also be performed for isotopic uranium (^{234}U, ^{235}U and ^{238}U), isotopic thorium (^{228}Th, ^{230}Th and ^{232}Th), radium (^{226}Ra and ^{228}Ra), as well as gamma spectroscopy.

5.0 AIR

CWM operates an existing perimeter air monitoring system in accordance with the permit conditions. This system is designed to assess potential impact of the Model City Facility's emissions on the ambient air surrounding the site. The ambient air monitoring equipment has been located to best characterize the potential contaminant level in the air. There are six air monitoring locations, one upwind (#1) and five downwind (#2 through #6) of the prevailing west/southwest wind direction, as shown in Attachment #3. Each station is equipped with a high volume 10 micron particulate matter (PM10) sampler. Currently, CWM collects a 24 hour sample from each of the air monitoring stations every sixth day. Particles greater than or equal to 10 microns in diameter are collected on a borosilicate glass fiber filter. A mass concentration of PM10 is calculated and an annual arithmetic mean is determined to compare with national primary and secondary annual standards.

The air monitoring system provides a convenient means for obtaining air samples for radioactive analysis. In order to ensure a sufficient quantity of sample for analysis, CWM will accumulate all the PM10 filters for a typically dry month (July 2005). The filters will then be composited by air monitoring station number and sent for radiological testing. The dust on the filters will be tested for isotopic uranium (^{234}U, ^{235}U and ^{238}U), isotopic thorium (^{228}Th, ^{230}Th and ^{232}Th), and radium (^{226}Ra and ^{228}Ra), as well as gamma spectroscopy. After the completion of the 2005 sampling event, NYSDEC and NYSDOH will review the data and determine whether additional sampling and testing should be performed.

6.0 DATA REPORTING

The complete package for round one of the groundwater monitoring data will be submitted, when all wells have been completed. The report will include the results in pCi/L, the total uncertainty, the Minimum Detectable Concentration (MDC), the quality control data, a data summary and data interpretation. CWM will request that the laboratory does not report the gamma spectroscopy results for the radioisotopes for which the more specific isotopic analysis has been performed and the results reported. For round two of the groundwater monitoring, the results from each month's sampling events, as well as those from the surface water and air programs will be submitted to NYSDEC along with the monthly RCRA monitoring data. The results will be submitted to the NYSDEC 10 weeks after the end of the month in which sampling occurred. The report format will be same as for the first round of groundwater wells. For wastewater, the radiological analysis will be included as part of the pond pre-qualification package submitted to DEC for review and approval prior to discharge.

Attachment #1

Groundwater Monitoring Wells

[map of GW wells was submitted with the
April 15,2005 version of this plan)

GROUNDWATER SCHEDULE FOR RAD TESTING PROGRAM
2004 - 05

WELL ID	ROUND 1	ROUND 2
BW01S	December 9,2004	June 28, 2005
BW03S	December 9,2004	June 28, 2005
BW04S	May 11, 2005	June 28, 2005
BW05S	December 9, 2004	June 28,2005
F101S	September 21, 2004	May 5, 2005
F102S	September 21,2004	May 5,2005
F103S	September 21,2004	May 5,2005
F301S	September 21,2004	May 5, 2005
F302S	September 21,2004	May 5,2005
F5801S	September 22,2004	May 18,2005
F5802S	September 22,2004	May 18,2005
F801S	October 6, 2004	April 6, 2005
R101S	October 5, 2004	April 24, 2005
R104S	October 5, 2004	April 24, 2005
R107S	October 19,2004	April 8,2005
R111S	October 19, 2004	April 11, 2005
R114S	October 8, 2004	April 21, 2005
TP04S	January 4, 2005	July 12,2005
TW01S	October 6,2004	May 11, 2005
TW03S	January 4, 2005	July 12,2005
TW12S	May 10,2005	July 6, 2005
TW20S	October 26,2004	May 11,2005
WS01S	January	July 12, 2005
W1001S	January 4,2005	July 6,2005

WELL ID	ROUND 1	ROUND 2
W101S	September 23, 2004	09/27/05
W102S	September 23, 2004	09/27/05
W1101S	November 9, 2004	11/04/05
W1104S	November 4, 2004	11/11/05
W1107S	November 3, 2004	11/15/05
W1107D	May 18, 2005	11/15/05
W1201S	January 16, 2005	July 7, 2005
W121UD	May 10, 2005	July 7, 2005
W1204S	January 30, 2005	July 21, 2005
W1204D	May 10, 2005	July 21, 2005
W1207S	January 30, 2005	July 21, 2005
W1207D	May 10, 2005	July 21, 2005
W1209S	January 30, 2005	May 10, 2005
W201S	September 23, 2004	September 27, 2005
W202S	September 23, 2004	June 14, 2005
W301S	December 8, 2004	June 14, 2005
W302S	May 11, 2005	August 16, 2005
W303S	May 11, 2005	September 27, 2005
W601S	September 23, 2004	September 27, 2005
W602S	September 23, 2004	September 27, 2005
W603S	September 23, 2004	September 27, 2005
W701S	November 16, 2004	June 21, 2005
W704S	November 16, 2004	June 16, 2005
W704D	May 18, 2005	June 16, 2005

NOTES:

1. Round 1 parameters = Isotopic U, Th, and Ra. (Need 3 liters of sample.)
2. Round 2 parameters = Isotopic U, Th, Ra, and Gamma Spec. (Still need 3 liters of sample.)

SCHEDULE FOR RAD ANALYSES
2005

SURFACE WATER

SAMPLE POINT	ROUND 1 SAMPLE DATE	ROUND 2 SAMPLE DATE
SMP06	07-Sep-05	19-Sep-05
SMP07	04-Oct-05	24-Oct-05
SMP09	04-Oct-05	24-Oct-05

Sample when Precip ≥ 0.75" in 24 hours, IDEALLY Spring and Fall.

Analyze for Isotopic U, Th, Ra-226, Ra-228, and Gamma Spec. (Need 3 liters of sample.)

AIR

SAMPLE POINT	SAMPLE DATE
PM01	Performed in July 2005.
PM02	
PM03	
PM04	
PM05	
PM06	
PM07	

Analyze for Isotopic U, Th, Ra, and Gamma Spec.

After 2005, NO additional sampling is required unless NYSDEC/NYSDOH request otherwise.

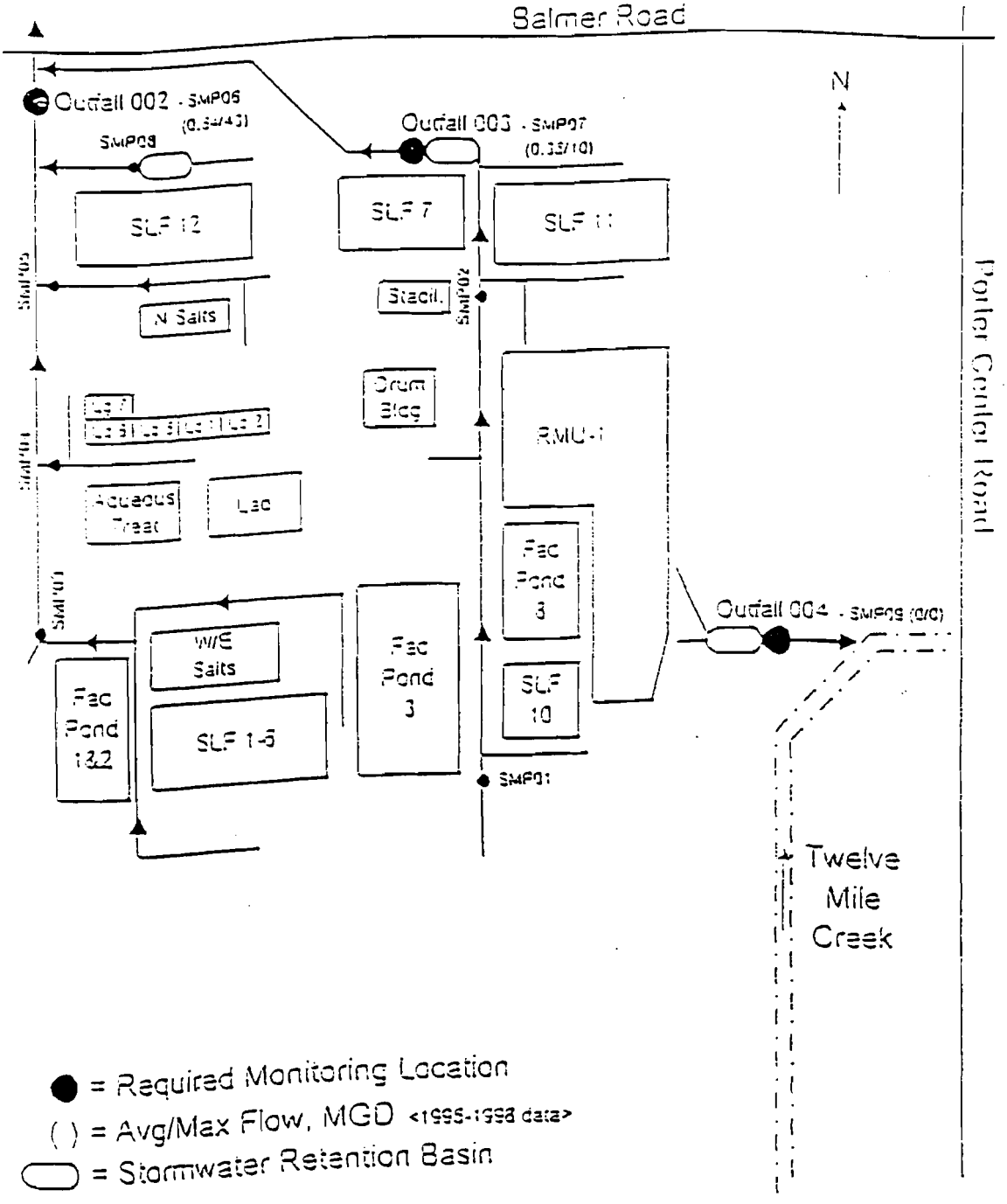
Provide NYSDEC, NYSDOH, and NCHD via email 72 hour advance notice for sampling if possible.

Attachment #2

Surface Water Monitoring Locations

MONITORING LOCATIONS

The permittee shall take samples and measurements, to comply with the monitoring requirements specified in this permit, at the location(s) specified below:



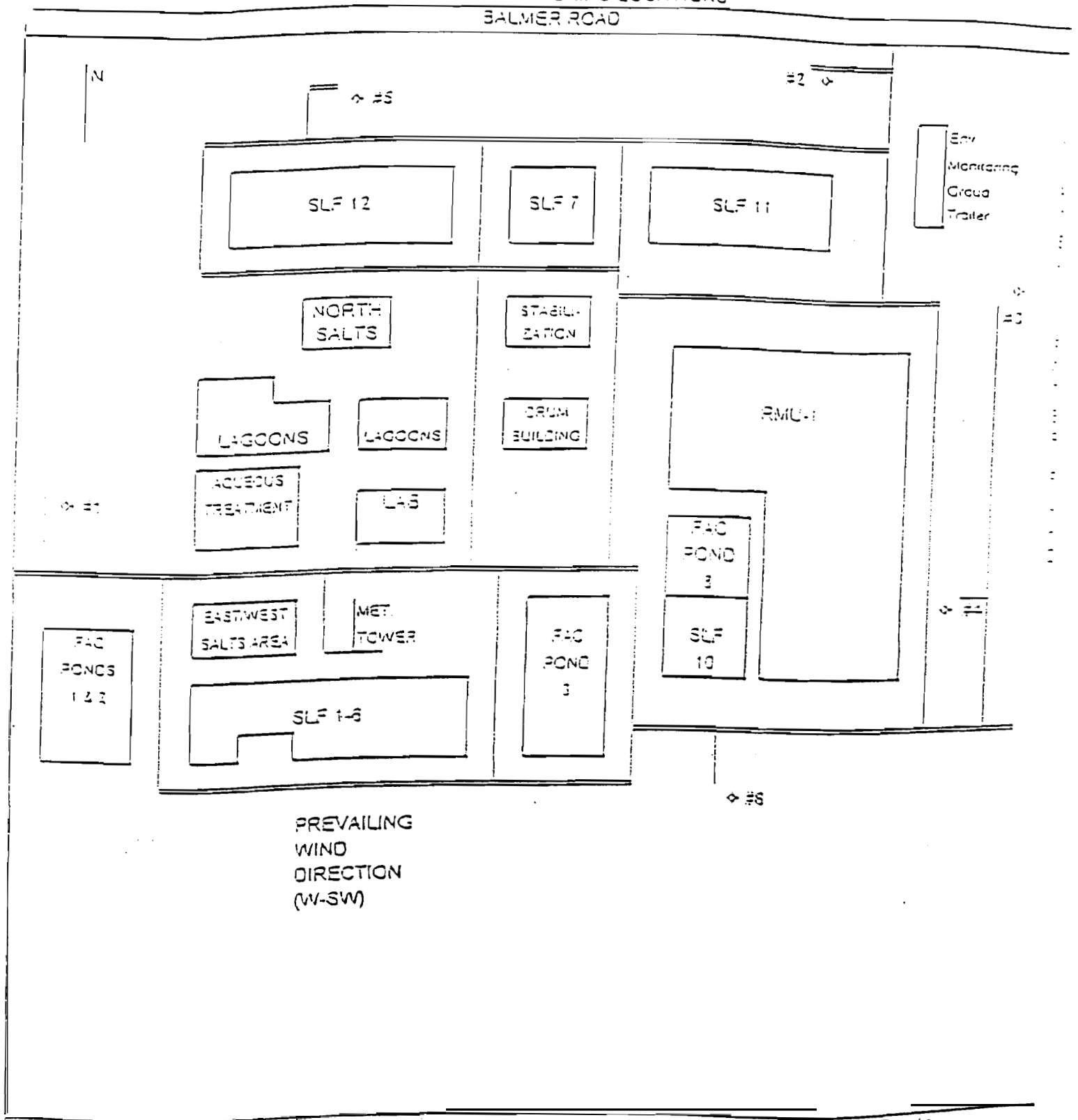
Site Conditions Predicted For January 2001 11/00

Attachment #3

Ambient Air Monitoring Stations

FIGURE 1

PM10 AIR MONITORING LOCATIONS



LEGEND

- Air Monitoring Station Location
- METEOROLOGICAL STATION AND TELEMETRY SYSTEM (Some equipment is in Environmental Monitoring Group trailer.)
- Access Roads
- Public Use Roads

Not-To-Scale