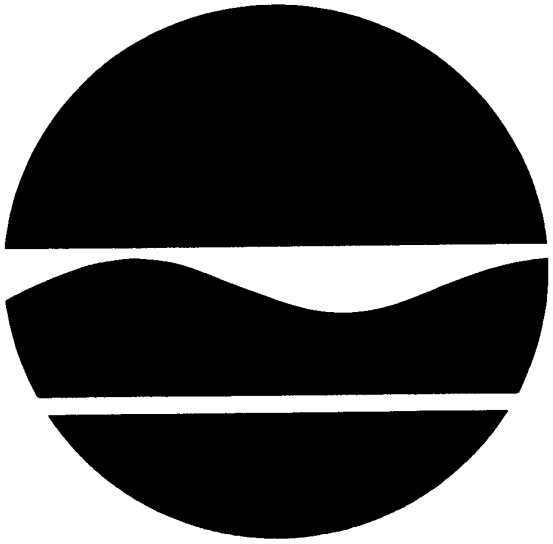
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

POST-CLOSURE MONITORING AND MAINTENANCE PLAN

VAN DER HORST PLANT NO. 2 SITE
CITY OF OLEAN, CATTARAUGUS COUNTY
CONTRACT NO. D003337
SITE NO. 9-05-022

November 1996



New York State Department of Environmental Conservation
GEORGE E. PATAKI, *Governor*
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SECTION 1

INTRODUCTION

This document presents a monitoring and maintenance operations plan for post-closure activities at the Van der Horst Plant #2(VDH) site which complies with the requirements set forth under New York Codes, Rules and Regulations, Title 6 (6 NYCRR), Part 360-2.15(k)(7). The plan describes groundwater monitoring, site cover and drainage system inspection and maintenance, contingency plans, and reporting requirements. This plan also contains detailed instructions to be used by site personnel to assure efficient monitoring, groundwater sampling and analysis, and maintenance of facility components for a minimum period of 30 years after site closure.

1.1 PROJECT BACKGROUND

The Van der Horst Corporation was founded in 1940 in the City of Olean. The first chrome plating operation was performed at Plant No. 1, which is located 0.5 miles east of Plant No. 2. The VDH opened a second a plating operation Plant No.2 in 1951 on Johnson Street in Olean. Plant No.2 was constructed to perform iron plating to repair and restore the worn surfaces of machinery components, including cylinders and crankshafts.

The Plant's plating process utilized many large open holding tanks containing a variety of hazardous substances. Several tanks were located below grade to a depth of 12 feet. From data obtained during the investigation, it is believed that these tanks were a major contributor to the subsurface soil and groundwater contamination at the site.

The on-site disposal of wastes reportedly occurred throughout the plant's active period. From the previous records of the plant's activities, documentation from the County Health Department, and interviews with former employees, it is believed that wastes from Plant No. 1 were dumped at Plant No. 2. An area west of the Plant No. 2 building was used as a fill area to deposit all the wastes generated at the plant.

Plant No. 2 ceased manufacturing operations in the summer of 1987. During a preliminary visit in the fall of 1988 by the New York State Department of Environmental Conservation (NYSDEC), several surface soil samples were collected in the fill area for chemical analyses. The results showed very high concentrations of chromium and barium in the soil. The VanDerHorst Corporation Plant No. 2 was listed in the "Registry of Inactive Hazardous Waste Sites" by the NYSDEC in 1988. The Plant No. 2 site was classified as a Class 2 site, which requires remediation to eliminate the significant threat posed by the site to the environment and public health.

In 1989, a summary abatement order was issued by NYSDEC to VanDerHorst Corporation stating that the conditions existing at the plant facility constituted an imminent and substantial danger to public health and the environment. At the hearing, substantial evidence was presented by the VanDerHorst Corporation to prove that the company lacked financial resources to undertake remedial activities, thus making it necessary for the State to do so.

In 1989, another summary abatement order was issued requiring the immediate removal and disposal of large volumes of corrosive plating solutions and other hazardous substances which remained at the VanDerHorst plants. The company responded with a proposed closure plan which fell short of requirements for closure, but did include financial statements which demonstrated that the company lacked financial resources to undertake the necessary activities for adequate closure. The NYSDEC requested USEPA to take action immediately because of the imminent threat posed by these improperly stored chemicals inside the plant's buildings. The USEPA mobilized its team in the middle of 1989 and erected a fence around the fill area at Plant No. 2 site. The chemicals inside the building were properly characterized, packaged, and removed. The removal action completed by USEPA eliminated the threat posed by the various chemicals and spent solutions which were improperly stored inside the building on the site.

NYSDEC's Remedial Investigation/Feasibility (RI/FS) study was completed and

in March 1992, a Record of Decision (ROD) was executed for VanDerHorst corporation Plant No. 2. The major elements of the selected remedy include:

- The asbestos materials will be removed from the plant building and the building will be demolished. The debris will be disposed at appropriate off-site facilities. This will eliminate the threat posed by the contamination inside the building and provide the space needed for the construction of the cap. (Completed July 1995 as part of Phase I of Remedial Activities)

- An impermeable, multi layer cap will be constructed on-site which will be located to the west of the plant building. This will minimize the leaching of contaminants from the soil to the groundwater.(Complete July 1996)

- Soils that are identified as characteristic hazardous waste will be excavated, chemically treated (stabilized) on-site and will be placed on-site before the placement of the cap. This will eliminate the leaching of contaminants from the hazardous soils to the groundwater.(Completed July 1996)

- Contaminated soils (above clean up goals) located in areas other than the cap area will be excavated and will be consolidated on-site in the area to be capped. This will eliminate the threat posed by the contaminated soil to the public health and the environment via direct contact and fugitive dust emissions.(Completed July 1996)

- The contaminated sediments from Two Mile Creek and the Catch Basin will be dredged and consolidated on-site before the placement of the cap. This will eliminate the threat posed by the creek sediments to the biota and will prevent the leaching of contaminants from the catch basin sediments to the groundwater.(Completed July 1996)

- The on-site groundwater contamination which is limited to the mid-section of the site will be monitored. Because of the inconsistencies detected in the concentration of the contaminants in the groundwater, a two year quarterly monitoring program was implemented in May 1992 by the State. (Completed June 1994)

- A long-term groundwater monitoring program outlined in this plan will be implemented to determine the effectiveness of the remedial program after the completion of the construction of the selected remedy

1.2 POST-CLOSURE SITE CONDITION

The Van der Horst Plant #2 Site was remediated in the Fall of 1995 and Winter and Spring of 1996. The activities completed during the remediation of the site complied with the remedial tasks outlined above in the Record of Decision The major element of the remedial activities consisted of the excavation of all known areas of the site that contained soil values that exceeded the clean-up goals of the project in soil for chromium (50 mg/kg), lead (500 mg/kg) and arsenic (35 mg/kg). All areas of contaminated soil and sediment that had been identified by NYSDEC through the Remedial Investigation and the construction activities was consolidated under the cap on site. The site was fully revegetated to control erosion. No fence was installed on the site so there are no access controls in place (Appendix A Record Drawings). Specific details of remedial activities can be found in the report entitled "*Remediation Summary Report*", NYSDEC, dated August 1996.

1.3 ORGANIZATION OF MONITORING AND MAINTENANCE PLAN

This plan is organized into five sections, including this introduction (Section 1). Section 2 provides a description of groundwater monitoring; Section 3 provides a description of site cover and drainage system inspections and correction procedures; Section 4 is a contingency plan; and Section 5 provides information on record keeping and the various reports that must be submitted. As-built drawings, a site health and safety

plan, and post-closure inspection and maintenance report forms for post-closure field activities are contained in Appendices A, B, and C, respectively.

SECTION 2
GROUNDWATER MONITORING

2.1 GENERAL

Groundwater monitoring will be a routine part of the VDH site post-closure operations. The following subsections will describe the procedures for sampling monitoring wells, analysis of samples, and evaluation of sample results.

2.2 MONITORING WELL LOCATIONS

All existing wells are shown in Appendix A - Final Site Survey, and include a total of nine monitoring wells. The wells were installed during the Remedial Investigation conducted from 1989 to 1993. The wells to be sampled include three representative upgradient wells (PW-19, 20, & MW-10s) and six downgradient wells (MW-2s, 2d, 4s,& PW- 5s, 7s & 7d). Information regarding the wells is provided in Table C.1 & C.5. Other monitoring wells are also available on the site but will not be included in this sampling plan unless sampling data indicates that a change in monitoring locations is warranted.

2.3 GROUNDWATER SAMPLING AND ANALYSIS

2.3.1 Frequency of Sampling

Groundwater sampling and analysis of nine site wells will be conducted quarterly the first year and annually thereafter, depending on the analytical results. At the first year, all wells on-site will be monitored for the site parameters. The nine wells will effectively monitor contaminant migration in all directions from the site. Should a well yield repeated high contaminant levels or a sudden rise in contamination, the well may be monitored quarterly in lieu of annually upon approval from the NYSDEC project

manager. Additional site wells may be added if needed.

2.3.2 Sample Container Preparation

Sample containers will be properly washed and decontaminated by the laboratory prior to use. The containers will be tagged and Chain of Custody initiated before shipping to the sampling site in coolers. The types of containers and preservation techniques are shown in Table C.2. All bottles will need to have preservatives, added prior to being filled. Following sample collection, the bottles will be placed on ice in the shipping cooler. The samples will be cooled to 4°C but not frozen.

2.3.3 Field Procedures

The following is a step-by-step sampling procedure to be used to collect the groundwater samples. Well sampling procedures will be recorded on the form shown on Table C.1.

- Assemble all field equipment necessary for sample collection (Table C.3).
- Inspect equipment to ensure it is working properly.
- Select upgradient well (MW-10s) as the initial sampling location.
- Prior to purging and sampling, measure the static water level from the surveyed well elevation mark on the top of the casing with a water level indicator. Water levels will be measured to nearest 0.01 foot and recorded on the Groundwater Sampling Record (Table C.1).
- Decontaminate the water level indicator. (See Section 2.3.4 for decontamination procedures.)
- Purge the well by removing a minimum of three well volumes of water. Purging will be conducted with a bailer or a stainless steel centrifugal pump and dedicated polyethylene tubing. The centrifugal pump will be equipped with a gate valve on its discharge. If the well goes dry before the required volumes are removed, the well may be sampled when it recovers sufficiently. The purged water may be disposed on the ground surface a minimum of ten feet away from the well in a

downhill location. *Sample collection must be performed within 24 hours of purging the well.*

- Collect samples from each well with a dedicated bailer lowered by a dedicated nylon line. Temperature, conductivity, dissolved oxygen, pH, and turbidity will be measured, and sample description and location noted on the Groundwater Sampling Record (Table C.1). Specific conductance and pH will be measured by precalibrated electronic probes. Temperature will be measured by a precalibrated probe or thermometer.
- Fill sample containers to be analyzed for metals (chromium(t), arsenic and lead) parameters. Sample containers will be labeled in accordance with historic monitoring well titles shown on Figure 2.1. *Care should be taken to obtain a sample with the least amount of turbidity possible (<50ntu).*
- The groundwater samples will be placed in a laboratory cooler, packed on ice and shipped overnight to the laboratory. Quality assurance blanks will be sent with each sample shipment. Chain-of-Custody procedures will be strictly followed as outlined in Section 2.3.5.

2.3.4 Equipment Decontamination

Prior to sampling equipment use, and between sampling points, all non-dedicated equipment (bailers, water-level indicators, etc.) coming in contact with well water will be properly decontaminated. The decontamination procedure is as follows: (Water-level indicator is used as an example.)

- Thoroughly clean the water-level indicator with a biodegradable detergent, such as Alconox and tap water.
- Triple rinse the water-level indicator with distilled water.
- Allow water-level indicator to air dry or wipe dry using disposable paper towels.
- Wrap water-level indicator in aluminum foil or place in clean plastic bag so that no outside contaminants are introduced.

- Between rinses, equipment will be placed on polyethylene sheets or aluminum foil if necessary. At no time will washed equipment be placed directly on the ground.

To prevent cross-contamination between wells, separate bailers and rope will be used for each well.

2.3.5 Field Sample Custody

Evidence of sample traceability and integrity is provided by Chain-of-Custody (COC) procedures. These procedures document the sample traceability from the selection and preparation of the sample containers by the laboratory, to sample collection, to sample shipment, to laboratory receipt and analysis. A sample is considered to be in a person's custody if the sample is:

- In a person's possession;
- Maintained in view after possession is accepted and documented;
- Locked and tagged with Custody Seals so that no one can tamper with it after having been in physical custody; or
- In a secured area which is restricted to authorized personnel only.

A COC record (Figure C.2) accompanies the sample containers from selection and preparation at the laboratory, during shipment to the field for sample containment and preservation, and during return to the laboratory. Triplicate copies of the COC must be completed for each sample set collected.

The COC lists the field personnel responsible for taking samples, the project name and number, the name of the analytical laboratory to which the samples are sent, and the method of sample shipment. The COC also lists a unique description of every sample bottle in the set. If samples are split and sent to different laboratories, a copy of the COC record will be sent with each sample.

The REMARKS space is used to indicate if the sample is a matrix spike, matrix spike duplicate or matrix duplicate. Since they are not specific to any one sample point, trip and field blanks are indicated on separate rows. Once all bottles are properly accounted for on the form, the sampler will write his or her signature and the date and time on the first RELINQUISHED BY space. The sampler will also write the method of

shipment, the shipping cooler identification number, and the shipper airbill number on the top of the COC. Mistakes will be crossed out with a single line and initialed by the author.

One copy of the COC is retained by sampling personnel and the other two copies are put into a sealable plastic bag and taped inside the lid of the shipping cooler. The cooler lid is closed, custody seals provided by the laboratory are affixed to the latch and across the back and front lids of the cooler, and the person relinquishing the sample signs his name across the seal. The seal is taped, and the cooler is wrapped tightly with clear packing tape. It is then relinquished by field personnel to personnel responsible for shipment, typically an overnight carrier. The COC seal must be broken to open the container. Breakage of the seals before receipt at the laboratory may indicate tampering. If tampering is apparent, the laboratory will contact the designated person, and the sample will not be analyzed.

2.3.6 Sample Analysis

As required in 6NYCRR Part 360-2.11(c)(5)(ii)(a), groundwater will be analyzed for routine parameters (Table 2.1). The parameters will be analyzed quarterly during the first year of the sampling program. There after, only an annual sampling event is anticipated which will vary by season (ie: spring, summer, fall, winter) to evaluate season groundwater changes.

After the first four rounds of analysis, the need for monitoring additional selected monitoring wells will be evaluated. If repeated low levels are also found in existing monitoring wells, reduced monitoring frequency may be evaluated in these wells.

After five years, the parameter list and monitoring well sampling locations will be reevaluated based on the post-closure sampling results.

Samples will be analyzed by a laboratory which is New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) approved in all categories of solid and hazardous waste. The number of samples to be analyzed annually are summarized in Table 2.3.

2.3.7 Quality Assurance/Quality Control

In addition to water samples collected from monitoring wells, and the sample port two types of "blanks" will be collected and submitted to the chemical laboratory for analyses. The blanks will consist of 750 ml plastic bottles, as follows:

a. Trip Blank - A Trip Blank are prepared before the sample bottles are sent by the laboratory. It consists of a sample of distilled, deionized water which accompanies the other sample bottles into the field and back to the laboratory. A trip blank will be included with each shipment of water samples, where sampling and analysis for volatile organic compounds is planned. The Trip Blank will be analyzed for volatile organic compounds as a measure of the internal laboratory procedures and their effect on the results.

b. Field Blank - Field Blanks are prepared by the laboratory before the sample bottles are sent to the field for use.

2.3.8 Health and Safety

A Health and Safety Plan is provided in Appendix B which includes information on chemical and physical hazards anticipated during maintenance and monitoring at the site, personnel protection and monitoring equipment, accident prevention and contingency plan, sample handling, monitoring well decommissioning, and decontamination.

2.3.9 Data Evaluation and Reporting

The results of each monitoring event will be summarized quarterly in a letter report. Analytical results will be evaluated quarterly with respect to background levels detected in monitoring wells during the Remedial Investigation, and applicable NYSDEC and NYSDOH standards and guidance values. Analytical results showing an increase in contamination must be reported to the NYSDEC project manager within 14 days of such determination. Background will be determined from the review of contaminant levels in upgradient wells(MWs-10s, 19-2 & 20-2) and from the review of historical data (Table

C.4).

An annual summary report will be prepared which compares background levels, individual sampling round results and applicable water quality standards. Included in the report will be a table with the following information:

- *Sample identification number*
- *Sample collection date*
- *Well identification including description of upgradient wells*
- *Analytical results*
- *Method Detection Limits (MDL)*
- *Chemical Abstracts Service (CAS) numbers for all compounds*
- *Applicable water quality standards*

Delineation of samples with accedences of background levels, standards, guidance values, or statistical triggers.

A summary and discussion of all accedences of background levels, standards, values, or statistical triggers and any proposed modifications to the sampling and analysis schedule will also be included.

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2.3.10 Contingency Monitoring Plan

This Contingency Monitoring Plan provides for increased water quality monitoring should an increase or migration of contaminants be determined. This plan has been developed in accordance with NYCRR Part 360-2.11(c)(5)(iii).

If increasing contamination for one or more routine parameters is found, then those affected monitoring wells will be sampled and analyzed for routine parameters during the next quarter and quarterly thereafter. The quarterly sampling will continue until the elevated parameter(s) is shown not to be site-derived, the contaminant release is remediated, or it is determined there is no threat to public health or the environment.

TABLE 2.1

GROUNDWATER QUALITY ANALYSIS TABLE

FIELD PARAMETERS	METHOD
Static water level (in wells)	x
Specific Conductance	9050
Temperature - °C	x
pH	9040/9041
Turbidity - ntu	x
METALS	
Arsenic	206.2 CLP-M (d.l.- <10ug/l)
Chromium (total)	218.2 CLP-M (d.l.- <10ug/l)

This list may be modified as needed.

All samples must be whole and unfiltered except as otherwise specified by the NYSDEC project manager.

1 **Any unusual conditions (colors, odors, surface sheens, etc.) noticed during well development, purging, or sampling must be reported.**

TABLE 2.2
NUMBER OF GROUNDWATER SAMPLES FOR LABORATORY ANALYSIS PER SAMPLING EVENT

Parameter	No. Of Samples[1]
Metals	9
Duplicate	1
Field Blank	0 [2]
MS/MSD	1
Total	11

[2] No field blanks will be collected on a routine basis unless laboratory contamination of glassware is suspected

[1] 1 sample/each well for 9 wells sampled each event

SECTION 3
POST CLOSURE LANDFILL CARE AND MAINTENANCE

3.1 INTRODUCTION

This section contains procedures for post-closure care and maintenance of the soil cover, drainage swales, drainage benches, leachate collection trenches, and other site structures. Specific procedures include routine inspections, routine maintenance, and contingency actions.

3.2 ROUTINE INSPECTIONS

The site will be inspected quarterly throughout the post-closure period in conjunction with the sampling events. The site will also be inspected following particularly heavy storm events, e.g. a 10-minute, 2-year frequency storm. After the two years has been completed inspection is to be performed when site groundwater sampling is conducted or at a minimum of once per year. The landfill will be inspected for:

- visible debris, litter and waste;
- loss of vegetative cover;
- integrity of drainage system including:
  - clogging of swales and drop inlet covers;
  - sediment build-up;
  - pooling or ponding;
- slope integrity and overall adequacy of surface runoff collection system;
- condition of access road, gates and fences;
- integrity of groundwater monitoring wells (to be inspected during sampling);
- integrity of soil/Cap cover including:
  - erosion or settling of cover material;
  - animal borrows
  - woody vegetation.

A site inspection map, post-closure inspection checklist, well inspection checklist, and maintenance schedule are contained in Appendix D. The site plan is to be used to

document problems and indicate areas that require attention.

3.3 ROUTINE MAINTENANCE

3.3.1 Soil Cover Maintenance

- Monitor site vegetation progress to annually confirm that the desired grass species have become established and that the desired ground cover is forming. Reseed and retreat local spots if the vegetation fails to become established by the end of the second growing season.
- Conduct annual ground inspections at the beginning of each summer to determine the status of woody plant species on the site surface.
- Mow the landfill cap surface once each year (in the late summer), to control woody vegetation and promote short grass species.
- If woody plants are detected, remove the plants using one of the following methods:
  - For a small number of isolated individual plants, pull out the plants or cut them off at ground level by hand.
  - For more extensive areas involving hundreds of individual plants, remove the plants by mowing the area once a year in late summer to early fall. Mowing should be deferred until after the grass cover has become firmly established and will not be damaged by mowing equipment.

Indications of erosion or other site maintenance problems detected during routine site inspections or following particularly heavy storm events will be corrected as soon as possible. Repairs of eroded areas will be made with materials and methods specified herein. If erosion of the topsoil layer is encountered, the repair action may include, but not be limited to, the following:

- Covering repaired areas with topsoil, as specified in the remedial construction Contract Documents (available at NYSDEC-Buffalo), to minimum thickness (min. 6 inches) and design grades; and
- reseeding and fertilizing in accordance with materials and application rates specified in Section 00503 Finish Grading, Topsoil and Seeding of the Contract Documents

(Appendix E).

If erosion is persistent in certain areas, alternate methods for maintaining soil and vegetative cover or erosion protection will be evaluated on a case-specific basis.

Spots barren of vegetation in the cap will be reseeded and fertilized as necessary. Seed and fertilizer will be of the same type and quality as originally specified. Any undesirable species will be removed if their presence is suspected of deteriorating the integrity of the cap.

The need for cap repairs due to subsidence or settling will be determined based on an evaluation of whether the function of the cap in the affected area has been impaired. Should large areas appear to have settled or drainage is not occurring, a survey of the cover may be conducted to determine the extent and nature of the repairs. Bench marks, such as the monitoring wells, established during construction shall be used for the survey. Those areas where the function has been impaired will be repaired to ensure that the integrity of the cap is maintained. See Figure 2.2 for the Cap Construction Profile diagram. Repair actions may include, but are not limited to:

- stripping and stockpiling topsoil from the affected area;
- regrading the affected area in accordance with the grading plan shown on the record drawings; and
- replacing topsoil, and reseeding and fertilizing to reestablish vegetative cover as described previously.

For animal control, follow these procedures:

- Conduct an annual site inspection for to look for woodchuck or other animal burrow or den entrances on the landfill. If den or burrow entrances are found, a program to trap, shoot, or otherwise remove the burrowing animal(s) will be implemented on a case-specific basis by the Department's Division of Natural Resources. Following removal of the burrowing animal(s), the entrances will be plugged and the bare areas will be reseeded and fertilized. Seed and fertilizer will be of the same type and quality as originally specified.

3.3.2 Maintenance of Site Structures

Maintenance activities will be performed as determined necessary based on routine inspections. During all maintenance activities, vehicle traffic crossing over the drainage benches shall be kept to a minimum. Maintenance vehicles shall cross the perimeter drain at the stone access crossings only, located on the southeast corner of the cap (see Record Drawings, Appendix A)

Drainage System Management

All elements of the drainage system including drainage swales, and percolation Basins will be maintained throughout the post-closure period. All elements will be inspected with sampling events as discussed in Section 3.2 or after severe rainfall events to verify the structures are intact and undisturbed, and that channels and discharge areas are free of obstructions which would impair the free flow of surface water run-off. In the event any of the structures are found to be damaged or incapable of conveying the design flows, repairs will be made as soon as practical. Any obstructions found in the swales will be immediately removed and channels regraded as necessary. Accumulated sediment will be removed from drainage channels and/or around outlet structures as required to maintain required capacity and proper operation.

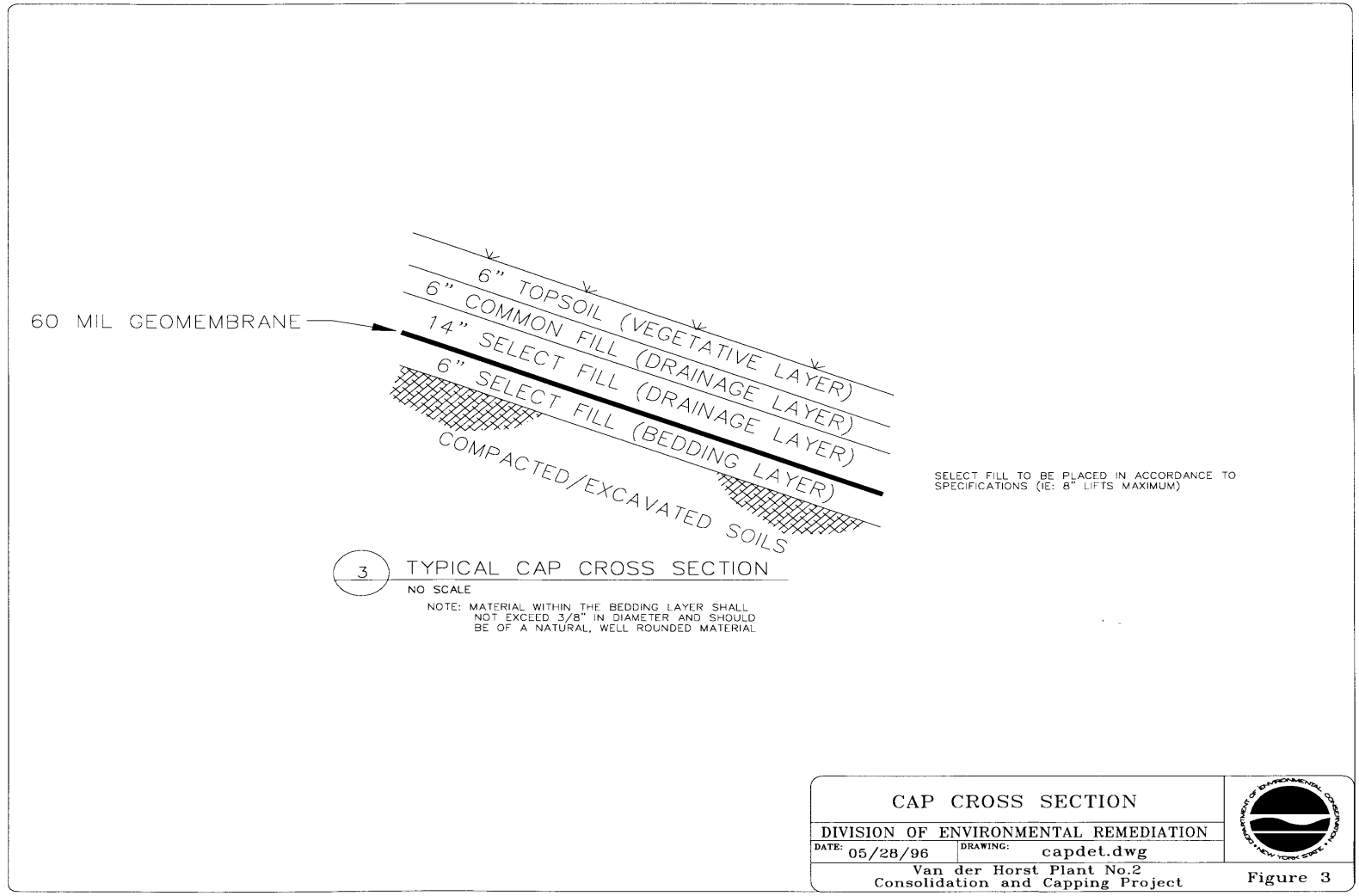
Groundwater Monitoring Wells

Monitoring wells which are damaged such that representative ground water samples cannot be obtained will be repaired or replaced. Repair measures will be based on case-specific evaluation. Any well damaged beyond repair or rendered inoperative will be replaced with a new well of similar depth and construction. Detailed requirements for well installation and decommissioning are specified in Department Guidance documents (ie: 6 NYCRR Part 360) and Section 00505.9 & 00505.10, Groundwater Monitoring Wells Abandonment and Installation, respectively, of the Contract Documents.

Access Control

The access road will be maintained in good condition so that routine inspections and required maintenance activities at the site can be carried out. The gates will be kept in good condition and locked to prevent unauthorized access. The condition of the gates, fences and roads will be assessed as part of the quarterly inspections. Repairs will be conducted as needed.

Figure 2.1
Typical Cap Cross Section



SECTION 4
CONTINGENCY PLAN

4.1 INTRODUCTION

The objective of this contingency plan is to establish procedures for handling events which occur outside the scope of the routine maintenance. The contingency plan should be implemented following the identification of a site condition which is not covered by the routine maintenance plan.

Natural occurrences such as storms, drought and subsidence should be considered "expected occurrences" and are addressed under the routine maintenance program. Certain problems which cannot be reasonably expected to occur, such as earthquakes, are not addressed in this contingency plan.

The following problems are examples of occurrences which are not expected to occur, but may be discovered during a routine post-closure inspection:

- degradation of the soil cover integrity which may be a result of or indicated by:
  - waste/contaminated soil protruding through the topsoil cover;
  - soil erosion or other drainage problems; or
  - uncontrolled burrowing by pests.
- vegetative cover missing despite repeated efforts at revegetation;

The following guidelines are offered to determine when the contingency plan should be implemented and to determine possible corrective actions when responding to a contingency. All corrective actions, where appropriate, will be executed in a timely fashion after notifying the appropriate regulatory agencies.

4.2 FIRE

Fires at the site will be immediately reported to the local fire department. Appropriate response measures, including personnel safety, will be the responsibility of the fire department. Fires will be quenched according to approved fire department protocol. Damage to the surface drainage system or soil cover will be repaired where these systems have been compromised.

4.3 VANDALISM

Vandalism will be reported to the local law enforcement authorities. If vandals have gained entry to the site, appropriate measures may be taken to eliminate or restrict future access. Vandalism to monitoring wells will be repaired as appropriate on a case-specific basis. Damage caused by off-road vehicles will be repaired where the damage is determined to have compromised the integrity of the soil cover or the function of the surface drainage system.

4.4 SEVERE EROSION AND COMPROMISE OF SOIL COVER INTEGRITY

Severe erosion of the soil cover, as well as the storm water management system will be repaired to original specifications. The cause of severe erosion will be investigated and remedial measures, if needed, will be developed and implemented accordingly.

4.5 UNAUTHORIZED DUMPING OR DISPOSAL

Unauthorized dumping or waste disposal will be reported to the NYSDEC and local enforcement officials. Appropriate measures will be taken to determine the waste characteristics, containment requirements and the necessary removal and disposal techniques. The waste will be removed and disposed of at an approved disposal facility, as appropriate. Efforts will be taken to eliminate further dumping and to restrict subsequent entry to the site. Persons found in the act of illegal dumping will be prosecuted according to the law and will be held responsible for all costs incurred in removing the waste.

4.6 QUALITY ASSURANCE/QUALITY CONTROL

To assure the performance of site inspection and maintenance, a reporting procedure has been established. A site inspection checklist is provided in Appendix C. The site inspection checklist was developed in accordance with the parameters identified in this section. The checklist will be completed after regularly scheduled site inspections

and inspections following severe storms.

The monitoring and maintenance contractor and any future designated authority responsible for performing site inspections and supervising maintenance operations will be fully qualified (as determined by NYSDEC) to perform the work. The site inspection checklist and maintenance schedule will be completed under the supervision of a New York State licensed Professional Engineer. Maintenance and repair work shall conform to the requirements set forth in this Plan.

EMERGENCY CONTACT LIST

Olean Fire Department:	(716) 376-5677 or 911
Olean Police Department	(716) 376-5685 or 911
NYSDEC - Region 9 Office	(716) 851-7220
NYSDEC - Albany Office	(518) 457-7878
NYSDOH - Albany Office	1-800-458-1158 or (518)458-6309
Cattaraugus County Department of Health	(716) 373-8050

SECTION 5
REPORTING AND RECORD KEEPING

5.1 INTRODUCTION

This section describes the reporting and record keeping that will be followed by the monitoring and maintenance contractor during the 30 year post-closure period. Groundwater data must be reported to NYSDEC on a quarterly basis. An annual report

summarizing monitoring and maintenance activities will also be submitted to NYSDEC. Copies of the quarterly and annual reports will be sent to NYSDEC at each of the following locations:

Mr. Gerald Rider, P.E.
Chief, Operation, Maintenance & Support Section
New York State Department of Environmental Conservation
50 Wolf Road
Albany, NEW YORK 12233-7010
(518) 457-0927
and
Mr. Peter Buechi, P.E.
Regional Hazardous Waste Engineer
New York State Department of Environmental
Conservation - Region 9
270 Michigan Avenue
Buffalo, New York 14203-2999
and
Dr. G. Anders Carlson
Director of Environmental Exposure
New York State Health of Department
2 University Place
Room 205
Albany, New York 12203-3399

5.2 QUARTERLY REPORTS

The quarterly report will include all of the quarterly groundwater data. The report outline will be based on the data reporting regulations in 6NYCRR Part 360-2.11(c)(4)(iv), including tables showing collection data, analytical results and applicable NYSDEC and NYSDOH standards and guidance values, a summary of contravention of water quality standards and a discussion of results.

5.3 ANNUAL REPORT

The annual report will contain a summary of water quality information from the quarterly reports with special note of any changes in water quality which have occurred throughout the year. The annual report will also summarize the inspection and maintenance activities on the cap and site structures for the year.

5.4 RECORD KEEPING

Records of data, drawings, and calculations concerning any work proposed or completed at the site are kept on permanent file by NYSDEC, Buffalo, New York. For example, wells will be monitored and data recorded on a data sheet. This and other investigative results are incorporated into reports that will be maintained by NYSDEC. Included in the reports are appendices with copies of data sheets, log books, and laboratory analysis results. A record of the cost for the monitoring and maintenance of the site should also be kept. The originals will be kept by NYSDEC or its contractor for performing maintenance and monitoring activities for at least five years.

APPENDIX A

RECORD DRAWINGS

APPENDIX B
HEALTH AND SAFETY PLAN

APPENDIX C
SAMPLING INFORMATION / FORMS

TABLE C.1
SUMMARY OF MONITORING WELL DATA- FIELD SHEET

VAN DER HORST PLANT #2
GROUNDWATER SAMPLING
Date _____
ANALYSIS FOR Cr & As

WELL NO.	BOTTOM DEPTH TOC (FT.)	GW ELEV. TOC (FT.)	AMOUNT OF H_2O (FT.)	WATER PURGED (GAL.)	TIME SAMPLED (HRS.)	TURBIDITY (ntu)	COMMENTS/ OBSERVATIONS
MW-2S	26.13						
MW-2D	27.34						
MW-4S	26.96						
PW-5S	28.92						
PW-7S	28.42						
PW-7D	63.75						
MW-10S	21.19						
PW-19	30.65						
PW-20	30.63						

.5 GAL PER FT. WATER = 3 VOLUMES FOR A 2" I.D. MONITORING WELL

The wells were purged of a minimum of three volumes of water. The wells were allowed to settle and a sample was collected. All shallow wells were purged with bottom loaded bailers. Deep wells were purged using a high volume parastallic pump. In general, all wells showed little if any draw down during purging. All samples were collected using detected bailers. At the time of sample collection, a turbidity measurement was made. Samples were collected in 1 liter plastic containers and preserved with HNO_3, and transported to the laboratory.

TABLE C.2

GROUNDWATER SAMPLE CONTAINERIZATION

AND HOLDING TIMES

Analysis	Bottle Type	Preservation	Holding Time
Aqueous Samples			
Metals	1 liter plastic bottle	Nitric Acid to pH <2 cool to 4°C	5 Days

All samples to be preserved in ice during collection and transport.

TABLE C.3

GROUNDWATER SAMPLING EQUIPMENT

SAMPLING EQUIPMENT

- Personal safety equipment (hard hats, safety shoes, etc.)
- Sampling and analysis program
- Appropriate number (including spares) of sample bottles
- Water-level indicator (electric drop-line)
- Polyethylene ground cloth
- Aluminum Foil
- Distilled water
- Alconox detergent
- Disposable surgical gloves
- Disposable towels
- pH meter
- Conductivity meter
- Buckets (small: 5 gallon; large: 25 to 30 gallon)
- Teflon well bailer
- Nylon rope (individual lengths for each well)
- Stainless steel submersible pumps (Grundflo Redi-Flo® style recommended)
- Portable Generator (required for pump operation)
- Pump hoist (if needed)
- Flashlight

SHIPPING AND PACKAGING EQUIPMENT

- Shipping labels
- Sufficient ice chests to hold all sample bottles, packing material and ice

DOCUMENTATION EQUIPMENT

- Well Sampling Record
- Chain-of-Custody Forms
- Waterproof Pens
- Field Note Book

Table C.4

Historical Pre-Remediation Groundwater Monitoring Analysis

SUMMARY OF GROUNDWATER ANALYSIS
CHROMIUM, LEAD, & ARSENIC
VAN DER HORST PLANT NO. 2
OLEAN(C), CATTARAUGUS CO.
SITE NO. 905022

SAMPLED BY:	ERM	ERM	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC
EVENT DATE:	3/90	11/91	05/29/92	08/24/92	11/23/92	03/10/93	05/26/93	08/12/93	12/08/93	04/28/94
CHROMIUM ANALYSIS: GW STD. 50 ug/l SHADED NUMBER INDICATES EXCEEDANCE OF STANDARD										
MON.WELL NO.	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
MW-2s	135	393	106	188	19	209	298	23	54	23
MW-4s	<10	187	<10	<10	<10	<10	<10	11	18	<10
MW-5s	1500	10	10	19	10	66	258	52	41	170
MW-5d	18	362	10	<10	<10	<10	17	22	22	<10
MW-7s	215	539	18	12	10	<10	13	134	13	<10
MW-7d	NA	28	NA	NA	NA	NA	NA	NA	12	<10
MW-9s	296	10,100	51	56	132	400	143	26	174	149
MW-10s	97	827	<10	10	<10	<10	<10	22	30	<10
MW-13s	NA	58	NA	NA	NA	NA	NA	NA	26	14
MW-13d	NA	33	NA	NA	NA	NA	NA	NA	15	<10
MW-14s	NA	197	<10	15	<10	<10	<10	30	17	17
MW-15	NA	208	<10	<10	<10	<10	<10	27	23	<10
MW-19	NA	<56	<10	13	<10	<10	<10	30	17	<10
MW-20	NA	1680	426	130	22	37	51	85	63	982

SUMMARY OF GROUNDWATER ANALYSIS
CHROMIUM, LEAD, & ARSENIC
VAN DER HORST PLANT NO. 2
OLEAN(C), CATTARAUGUS CO.
SITE NO. 905022

SAMPLED BY:	ERM	ERM	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC
EVENT DATE:	3/90	11/91	05/29/92	08/24/92	11/23/92	03/10/93	05/26/93	08/12/93	12/08/93	04/28/94
LEAD ANALYSIS: GW STD. 25 ug/l SHADED NUMBER INDICATES EXCEEDANCE OF STANDARD										
MON.WELL NO.	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
MW-2s	22	200	9	<3	4	<4	<3	<2	<2	5
MW-4s	86.7	263	12	<3	<3	<3	<3	<2	<2	<2
MW-5s	25.5	37	6.9	<3	<3	<3	<3	2	<2	8
MW-5d	<5	55	8	<3	<3	<3	<3	<2	<2	<2
MW-7s	143	600	21.5	4	<3	<3	<3	190	<2	3
MW-7d	NA	55	NA	NA	NA	NA	NA	NA	<2	<2
MW-9s	117	6380	15	17	10.8	9.4	24	<2	14	12
MW-10s	240	1670	12	<3	<3	9.8	<3	2	23	3
MW-13s	NA	189	NA	NA	NA	NA	NA	NA	22	17
MW-13d	NA	467	NA	NA	NA	NA	NA	NA	<2	<2
MW-14s	NA	467	7.3	<3	<3	<3	<3	3	<2	<2
MW-15	NA	555	15.5	<3	<3	3	<3	3	4	<2
MW-19	NA	170	8	<3	<3	<3	<3	<2	4	9
MW-20	NA	41	21	5	<3	<3	<3	<2	<2	4

SUMMARY OF GROUNDWATER ANALYSIS
CHROMIUM, LEAD, & ARSENIC
VAN DER HORST PLANT NO. 2
OLEAN(C), CATTARAUGUS CO.
SITE NO. 905022

SAMPLED BY:	ERM	ERM	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC
EVENT DATE:	3/90	11/91	05/29/92	08/24/92	11/23/92	03/10/93	05/26/93	08/12/93	12/08/93	04/28/94
ARSENIC ANALYSIS: GW STD. 25 ug/l SHADED NUMBER INDICATES EXCEEDANCE OF STANDARD										
MON.WELL NO.	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
MW-2s	<5	46.4	<5	<5	<5	<4	<4	<3	<3	<3
MW-4s	33.3	26	<5	<5	<5	<4	<4	<2	<5	<3
MW-5s	8.3	31	<5	3	15.3	<4	<4	2	<3	<3
MW-5d	7.8	<8	26	26	28	25	<4	<2	21	23
MW-7s	50.7	55	11	<5	<9	5	<4	2	<4	16
MW-7d	NA	26	NA	NA	NA	NA	NA	NA	29	42.4
MW-9s	24.4	50	<5	<5	<5	<4	<4	<2	<3	<4
MW-10s	41.2	179	14.6	<5	12	6	<4	2	11	10
MW-13s	NA	67	NA	NA	NA	NA	NA	NA	13	642
MW-13d	NA	6.4	NA	NA	NA	NA	NA	NA	23	29
MW-14s	NA	60	<5	<5	<5	4	<4	3	<8	<8
MW-15	NA	45	24	18	29	48.2	<4	3	17	19.7
MW-19	NA	58.9	<5	<5	<5	<4	<4	<2	<3	<3
MW-20	NA	<8	<6	<5	<5	<4	<4	<2	<3	<3

NA - Not Analyzed

Table C.5
Monitoring Well Construction Details

Boring Number	Date Completed	Ground Surface Elevation (ft)	Monitoring Point (I.C.) Elevation (ft)	Depth of Boring (ft)	Depth of Well TOC (ft)	Bottom of Boring Elevation (ft)	Screened Interval Depth (ft)	Screened Interval Elevation (ft)	Sand Pack Depth (ft)	Sand Pack Elevation (ft)
MW-1S	2-1-90	1422.26	1425.51	25.0	26.25	1397.26	8.0-23.0	1414.26-1399.26	6.0-25.0	1416.26-1397.26
MW-1D	2-15-90	1422.25	1425.01	60.0	60.76	1362.25	53.0-58.0	1369.25-1364.25	49.5-59.5	1372.75-1362.75
MW-2S	2-6-90	1419.06	1421.52	24.6	25.46	1394.46	8.0-23.0	1411.06-1396.06	6.0-24.6	1413.06-1394.46
MW-2D	2-8-90	1419.02	1421.58	58.8	59.56	1360.22	52.0-57.0	1367.02-1362.02	49.0-58.8	1370.02-1360.22
MW-3S	2-23-90	1419.69	1422.13	25.0	26.44	1394.69	9.0-24.0	1410.69-1395.69	6.0-25.0	1413.69-1394.69
MW-3D	3-5-90	1419.47	1422.22	59.5	60.25	1359.97	52.5-57.5	1366.97-1361.97	46.5-59.5	1372.97-1359.97
MW-4S	1-6-90	1419.74	1422.70	25.0	26.96	1394.74	9.0-24.0	1410.74-1395.74	6.0-25.0	1413.74-1394.74
MW-4D	1-31-90	1419.75	1422.98	55.0	55.23	1364.75	47.0-52.0	1372.75-1367.75	45.0-53.0	1374.75-1366.75
PW-5S	7-15-96	1421.04	1423.46	26.5	28.92	1394.54	11.0-26.0	1410.04-1395.04	7.5-26.5	1413.54-1394.54
MW-6S	2-5-90	1427.27	1430.25	32.2	33.98	1395.07	16.0-31.0	1411.27-1396.27	14.0-34.2	1413.27-1393.07
MW-6D	2-21-90	1427.50	1430.04	58.4	58.54	1369.10	51.0-56.0	1376.50-1371.50	47.5-58.4	1380.00-1369.10
PW-7S	7-15-96	1421.50	1423.92	26.5	28.42	1395.00	11.0-26.0	1410.5-1395.5	7.5-26.5	1414.00-1395.0
PW-7D	7-15-96	1421.59	1423.34	62.5	63.75	1359.09	57.0-62.0	1364.59-1359.59	53.5-62.5	1368.09-1359.09
MW-10	2-21-90	1420.55	1422.85	30.0	25.3	1390.55	8.0-23.0	1412.55-1397.55	7.5-30.0	1413.05-1390.55
MW-10D	9-25-91	1421.20	1424.27	60.0	63.07	1361.20	55.0-60.0	1366.20-1361.20	51.8-60.0	1369.40-1361.20
MW-12S	9-18-91	1420.00	1423.25	28.0	31.25	1392.00	13.0-28.0	1407.00-1392.00	10.0-28.0	1410.00-1392.00
MW-12D	9-23-91	1419.85	1422.53	59.0	61.48	1360.85	53.8-58.8	1366.05-1361.05	50.3-58.8	1369.55-1360.85
MW-13S	10-1-91	1426.00	1429.37	27.4	30.77	1398.60	12.4-27.4	1413.60-1398.60	9.0-27.4	1417.00-1398.60
MW-13D	9-30-91	1426.20	1429.57	60.7	63.37	1365.50	55.0-60.0	1371.20-1366.20	51.0-60.7	1375.20-1365.50
PW-19	7-15-96	1422.73	1425.38	28.5	30.65	1394.23	13.0-28.0	1409.73-1394.73	9.5-28.5	1413.23-1394.23
PW-20	7-15-96	1423.95	1426.08	28.5	30.63	1395.45	13.0-28.0	1410.95-1395.95	9.4-28.5	1414.55-1395.45

Figure C.1
Sample Chain of Custody Record

CHAIN-OF-CUSTODY

Page ____ of ____

Project No:	Project Name:	Project Manager:	REMARKS
Samplers: (Signatures)		Field Team Leader:	

STATION NUMBER	DATE	TIME	SAMPLE TYPE COMP	GRAB	A/R	SAMPLE INFORMATION EXPECTED COMPOUNDS	STATION LOCATION	NUMBER OF CONTAINERS	REMARKS

Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Ship Via	
Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Relinquished By: (Signature)	Date/Time	Received By: (Signature)	BL/Airbill Number	Date
Relinquished By: (Signature)	Date/Time	Received for Laboratory By: (Signature)	Relinquished By: (Signature)	Date/Time	Received for Laboratory By: (Signature)		

Distribution: Original Accompanies Shipment: Copy to Coordinator Field Files
*See CONCENTRATION RANGE on back of form.

SAMPLE CHAIN-OF-CUSTODY RECORD

APPENDIX D

INSPECTION AND MAINTENANCE REPORT FORMS

TABLE D.1
QUARTERLY SITE INSPECTION CHECKLIST

QUARTERLY INSPECTION AND MAINTENANCE CHECKLIST
VAN DER HORST PLANT #2 SITE
NYSDEC SITE NO. 9-05-022

Inspector: Gregory P. Sutton, P.E.	**Date:** December 9, 1997
Weather: Cold - 28° F , Partly Sunny - 6"	**Temperature:** 28° F

Area	Item	Action	Comments
Cover System	Seeps	Delineate, sample, evaluate.	None Noted
	Subsidence/ponding	Delineate, fill, and revegetate.	None Noted
	Erosion/gullies	Determine cause, grade, and vegetate.	None Noted
	Slope stability	Check for erosion, slippage, slope failure.	None Noted
	Vegetation	Check for areas of weak/no vegetation, revegetate.	Good vegetation across completed cap area
		Mow annually (ea. fall).	Mowed Late September 1997
		Remove scrubs and trees from cover system and drainage ways.	None Noted
	Vectors	Check for burrows and backfill with clean soil.	None Noted
Stormwater system	Ditches and swales	Check for pooling, erosion, excessive vegetation, and weak vegetation.	None Noted
	Cover system drainage	Check for cover soils that are excessively wet, slope failure without evidence of fill subsidence. Check condition of geocomposite drainage layer at cover perimeter.	None Noted Geocomposite checked along drainage swale - no issues
	Percolation Basin	Check perc. Manholes for blockage and general condition.	Manholes don't drain, Installed relief drain to Two-Mile Creek in September 1997 under Plant#1 remediation contract.
		Check relief structure Inlet not blocked, Flap gate functioning properly.	No problems noted - Basin draining adequately. Only small area of ponding water - est. 20'x20' area.
Groundwater monitoring system	Sampling wells	Check condition of caps, locks, surface seals, and markings. Lubricate locks.	Protective casing on MW-2s damaged. Repair requested by DOO. (completed 1/98)
Facility access system	Roads	Check condition. Check for erosion, potholes.	None Noted Roads starting to vegetate over.
	Access gate	Check condition. Lubricate lock.	Done

TABLE D.2

Cover System
Stormwater System
Monitoring Wells
Facility Access

COVER SYSTEM MAINTENANCE ITEMS VAN DER HORST PLANT #2 SITE NYSDEC SITE NO. 9-05-022			
Inspection Area	**Item Noted**	**Action**	**P reventive Maintenance**
1. Seeps breaching cover	a. Liquid seeps appear on ground surface of cover	• Delineate and mark area with flagging and stakes. • Collect samples of surface water or soil or both to determine horizontal extent of contamination. • Perform subsurface investigation in breakout area to determine cause and if geomembrane is breached. • Contact installer to repair cover as appropriate to match cross-section in Figure 5-1. Check guarantee and warranties.	• Quarterly inspection
	b. Persistent seeps/breaching	• Reestablish vegetation layer. • Reevaluate cover drainage and slope stability. • Investigate leachate collection system effectiveness.	
2.Subsidence/ponding	a. Formation of small depressions in cover ground surface	• Fill area with clean common fill to surrounding grade. • Re-establish vegetation layer.	• Quarterly inspection
	b. Formation of large depressions in cover ground surface	• Fill area with clean common fill to surrounding grade. • Re-establish vegetation layer. • Conduct subsurface investigation if problem persists.	

COVER SYSTEM MAINTENANCE ITEMS VAN DER HORST PLANT #2 SITE NYSDEC SITE NO. 9-05-022			
3. Erosion	a. Formation of erosion gullies	• Grade gully with clean common fill to smooth v-shaped cross sections and reestablish vegetation cover.	• Quarterly inspection
	b. Chronic gully formation	• Smooth gully sides and install Geotextile filter fabric or erosion control matting. Backfill gully to original grade with NYSDOT medium stone fill (NYSDOT Specification Section 620).	• Ensure vehicles on cover keep wheels perpendicular to slope (i.e., mowing tractors, inspection vehicles, etc.) to prevent ruts.
4. Slope Stability	a. Erosion, cover failure, slippage, slope	• All slopes are to remain less than 25% of inclination. • Develop and submit for NYSDEC approval a detailed plan to reconstruct cover to reduce slope to less than 25%. • If needed, install berm at base of slope to facilitate regrading.	• Quarterly inspection
5. Vegetation	a. Lack of vegetation	• Prepare area for vegetation establishment by fertilizing and placement of topsoil. • Apply seed - fescue and ryegrass varieties - either by hydro seeding or manual application. • Cover seed with mulch to allow establishment of roots and to minimize seed loss. • Reseeding should preferably occur in late August through October or April through June.	• Quarterly inspection • Annual fertilization and liming if necessary
	b. Excessive vegetation	• Mowing - preferably in June after the spring growth and in September before autumn.	• Annual mowing (vary cutting pattern to avoid causing ruts)

COVER SYSTEM MAINTENANCE ITEMS VAN DER HORST PLANT #2 SITE NYSDEC SITE NO. 9-05-022			
	c. Chronically weak and vulnerable vegetation	• Perform soil analyses to identify nutrient deficiencies, pH. • Evaluation of soil water-holding properties and drainage. • Application of required nutrients. • Physical removal of vegetation and root system. • Repair topsoil after root system removal. • Fertilization of soil and reseed.	• Quarterly inspection
	d. Undesirable species or scrubs on cover	• If uncontrollable, judicious application of herbicides may be necessary.	• Annual mowing
	e. Scrubs or trees obstructing roads or inspection routes		• Semi-annual mowing
6. Vectors	a. Large population of burrowing animals	• Backfill burrows with clean soil. Reseed affected area(s). • Capture animals in traps if problem becomes chronic. Remove animals to distant location or release.	• Quarterly inspections

STORM WATER SYSTEM MAINTENANCE ITEMS VAN DER HORST PLANT #2 SITE NYSDEC SITE NO. 9-05-022			
Inspection Area	**Item Noted**	**Action**	**Preventive Maintenance**
1. Ditches and swales (including former fill area)	a. Pooling	• Regrade, revegetate/repair, reinspect after 30 days.	• Inspect quarterly
	b. Erosion	• Regrade, revegetate/repair, reinspect after 30 days. • Mow area	
	c. Excessive vegetation, woody plants d. Weak vegetation	• Test soil, refertilize, adjust pH (if necessary), reseed, mulch; reinspect after 30 days.	• Annual mowing
2. Cover system drainage	a. Cover soils excessively wet, slope failure without evidence of fill subsidence	• Replace geocomposite drainage layer in affected area. Inspect geomembrane for damage; repair cover system, revegetate, reinspect after 30 days.	• Inspect quarterly
	b. Geocomposite drainage layer visible at perimeter ditch/swale	• Repair ditch/swale erosion protection.	
3. Drainage Swales	a. Blocked/restricted	• Remove blockage.	• Inspect quarterly
	b. Culvert damaged	• Assess damage, replace if warranted.	
	c. Erosion	• Regrade area, revegetate/repair, reinspect after 30 days.	

STORM WATER SYSTEM MAINTENANCE ITEMS VAN DER HORST PLANT #2 SITE NYSDEC SITE NO. 9-05-022			
4. Percolation Basin	a. Over-topping	• Check Percolation structures for excessive silt buildup/restriction. • Remove excessive silt. Reinspect after 30 days. • Regrade basin area, revegetate/repair, reinspect after 30 days.	
	b. Erosion	• Install Geotextile filter fabric or erosion control matting. Backfill area to original grade with material per design document NYSDOT medium stone fill (NYSDOT specification Section 620).	
	c. Excessive vegetation	• Mow area	• Annual mowing
	d. Weak vegetation	• Test soil, refertilize, adjust pH (if necessary), reseed, mulch; reinspect after 30 day days.	

GROUNDWATER MONITORING SYSTEM MAINTENANCE ITEMS
DER HORST PLANT #2 SITE
NYSDEC SITE NO. 9-05-022

Inspection Area	Item Noted	Action	Preventive Maintenance
1. Caps	a. Cracked or broken	• Replace.	• Check quarterly
2. Locks	a. Will not open	• Break open and replace.	• Lubricate quarterly
	b. Rusted		
	c. Different key for each well	• Replace with the same lock number.	
3. Surface seals	a. Cracked	• Re-grout.	• Inspect quarterly
4. Markings	a. None b. Mislabeled	• Remark.	
5. Water level (semiannually)	a. Dry	• DEC/DOH to determine if redrilling to a greater depth is warranted.	• Check during sampling
	b. Silted in or blocked	• DEC/DOH to determine if redrilling is warranted.	
		• Abandon in-place and/or install new well.	

FACILITY ACCESS SYSTEM MAINTENANCE ITEMS VAN DER HORST PLANT #2 SITE NYSDEC SITE NO. 9-05-022			
Inspection Item	**Problem Noted**	**Action Required**	**Preventive Maintenance**
1. Perimeter Road	a. Pot holes	• Fill and compact holes with crushed gravel or stone (NYSDOT material designation 703-0201 or 703-0202 with a minimum 50% crushed count, size 2).	• Quarterly inspection
	b. Inadequate drainage	• Regrade road surface and place grade crushed gravel or stone over area of concern.	• Quarterly inspection
2. Access gate	a. Sign damaged or worn	• Replace.	• Quarterly inspection
	b. Hinges or gate worn or damaged	• Replace with galvanized equipment for corrosion protection as needed.	• Quarterly inspection and lubrication
	c. Locks damaged or corroded	• Replace with new padlocks; all locks are to use a common key.	• Quarterly inspection and lubrication

APPENDIX E

TOPSOIL, SEEDING AND MULCH SPECIFICATIONS

TOPSOIL, SEEDING AND MULCH SPECIFICATIONS

TOPSOIL AND SOIL SUPPLEMENTS

A. Topsoil shall be friable sandy loam, free of subsoil, stones larger than 1 inch diameter, roots, grass, excessive amounts of weeds, and foreign matter. It shall be a loam typical of locality, meeting the following gradation:

1. 100 percent passing the No. 4 sieve.

2. Between 20 percent and 65 percent passing the No. 200 sieve.

B. Fertilizer shall contain total nitrogen, available phosphoric acid, and soluble potash in the ratio 10-10-10. Each bag of fertilizer shall bear the manufacturers guaranteed statement of analysis.

C. Limestone shall be ground limestone having a minimum total neutralizing value of 88% calcium carbonate equivalence. A minimum 90% shall pass No. 20 sieve and a minimum of 60% shall pass the No. 100 sieve.

D. Mulch shall be shredded stalks of oat, wheat, rye, or other approved crop air dried and free from noxious weeks, mold, or objectionable material.

Preparation for Placing Topsoil

A. Ensure that subgrade backfilling activities are complete and ready to receive topsoil.

B. Eliminate uneven areas and low spots in subsoil. Remove debris, roots, branches, and stones, in excess of ½ inch in size.

C. Provide topsoil material to location of placement.

D. Allow topsoil to dry at the source prior to transportation

E. Scarify subgrade to a depth of 3 inches where topsoil is designated for placement. Scarify in areas where equipment has compacted subsoil.

Placing Topsoil

A. Place 6 inches of topsoil in designated areas to lines and grades shown on the plans

B. Use relatively dry topsoil and place during dry weather.

C. Finely grade the topsoil, eliminating rough or low areas, maintain levels, profiles, and contours of subgrade.

D. Remove stones greater than 1 inch, roots, grass, weeds, debris, and foreign material while spreading.

E. Lightly compact or roll placed topsoil.

F. Remove surplus backfill and topsoil from Site.

Topsoil Testing

Test topsoil for sand and clay content.

SEEDING

Grass Seed

Seed shall be labeled in accordance with USDA Rules and Regulations under the Federal Seed Act and applicable State seed laws. Seed shall be furnished in sealed bags or containers bearing the date of the last germination, which date shall be within a period of six (6) months prior to commencement of planting operations. Seeding material shall be inspected upon arrival at the job site, and unacceptable material shall be removed from the job site. Seed shall be from same or previous year's crop; each variety of seed shall have a purity of not less than 85 percent, a percentage of germination not less than 90 percent, shall have a weed content of not more than 1 percent and contain no noxious weeds. The seed mixture shall consist of the following proportions or approved equal.

Common Name	Variety	% By Weight
Tall Fescue	KY-31	50
Perennial Ryegrass	Polly	20
Creeping Red Fescue	Ensylva	16
Orchard Grass	Pennlate	10
Bird-Foot Trefoil	Viking	4

Placement of Seed

A. Distribute fertilizer and limestone (as required) evenly over the surface of the soil in areas to be seeded as shown on the Plans or as directed by the Engineer, lime the topsoil to a pH of 6.0 and fertilize with 600 pounds of fertilizer per acre (14 pounds per 1,000 square feet). Any application method that will ensure an even distribution will be acceptable. When hydraulic application is used, the minimum rate of water shall be 500 gallons per acre.

B. Sow seeds at the rate of 2 pounds per 1,000 square feet in two operations of equal amounts, and at right angles to each other. The seed shall be sown at the rate of 1 pound per thousand square feet in each operation.

C. Lightly rake or drag the entire seeded area after sowing the seed. The area shall then be rolled with a 200-pound roller.

D. Contractor may hydroseed required areas, providing that a pre-germinated hydroseed mix is used, which includes all fertilizer and mulch specified in this section.

Mulching

The Contractor shall mulch at a rate of 2 tons per acre (90-1 00 pounds per 1,000 square feet) and water with a fine spray until a uniform moisture depth of 1 inch has been obtained after all raking and rolling operations are completed.

APPENDIX F

MONITORING WELL LOGS/CONSTRUCTION DIAGRAMS

APPENDIX G

CHEMICAL HAZARDS