The electronic version of this file/report should have the file name:

Type of document . Site Number . Year-Month . File *Year-Year* or Report name . pdf

_____.pdf

example: *letter . Year-Month . File Year-Year . pdf*

Report. HW. 932039. 1989. 03. 29. PCPapplication. pdf

_____.pdf

example: *report . Site Number . Year-Month . Report Name . pdf*

Project Site numbers will be proceeded by the following:

Municipal Brownfields - B
Superfund - HW
Spills - SP
ERP - E
VCP - V
BCP - C

VanDeMark Chemical Co., Inc.

March 29, 1989

Mr. Steven Doleski
Regional Permit Administrator
NYS Dept. of Environmental Conservation
Region 9 Office
600 Delaware Avenue
Buffalo, New York 14202

Re: 6NYCRR Part 373 Post-Closure Permit Application
EPA ID No. NYD991290529

Dear Mr. Doleski:

In accordance with 6NYCRR Part 373-2, enclosed please find a Part 373 State post-closure permit application for the VanDeMark Landfill. The application includes information outlined in 6NYCRR 373-1.4(a) and (b) as well as both general and specific information applicable as stated under 373-1.5(a) and (h). Additional information required by 6NYCRR 373-1.5 and all referenced Part 373-2 information relevant to post-closure care activities is also included.

Attached please find an environmental assessment short form (EAF) required to determine the environmental significance of the post-closure activity.

If you have any questions or comments, please call me.

Very truly yours,

Gregory H. Beck

Gregory H. Beck
Safety/Environmental Director

Att.

cc: Mr. Paul Counterman, P.E.
Mr. Edward Belmore
Mr. Frank Langone

ONE NORTH TRANSIT ROAD, LOCKPORT, NEW YORK 14094, 716-433-6764
TELEX 990731, FAX: 716-433-2850

14-16-4 (2/87)—Text 12

PROJECT I.D. NUMBER

617.21
Appendix C
State Environmental Quality Review

SEQR

SHORT ENVIRONMENTAL ASSESSMENT FORM

For UNLISTED ACTIONS Only

PART I—PROJECT INFORMATION (To be completed by Applicant or Project sponsor)

1. APPLICANT /SPONSOR
Van De Mark Chemical Co., Inc.

2. PROJECT NAME
Former Landfill

3. PROJECT LOCATION:
Municipality Lockport County Niagara

4. PRECISE LOCATION (Street address and road intersections, prominent landmarks, etc., or provide map)
Mill Street @ Plank Road
Lockport, New York 14094

RECEIVED
APR 3 1989
N.Y.S. DEPT. OF ENVIRONMENTAL CONSERVATION REGION 9

5. IS PROPOSED ACTION:
☒ New ☐ Expansion ☐ Modification/alteration

6. DESCRIBE PROJECT BRIEFLY:
6 NYCRR Part 373 Post - Closure Permit Application

7. AMOUNT OF LAND AFFECTED:
Initially 2 acres Ultimately 2 acres

8. WILL PROPOSED ACTION COMPLY WITH EXISTING ZONING OR OTHER EXISTING LAND USE RESTRICTIONS?
☒ Yes ☐ No If No, describe briefly

9. WHAT IS PRESENT LAND USE IN VICINITY OF PROJECT?
☐ Residential ☐ Industrial ☐ Commercial ☐ Agriculture ☐ Park/Forest/Open space ☒ Other
Describe:
Woods

10. DOES ACTION INVOLVE A PERMIT APPROVAL, OR FUNDING, NOW OR ULTIMATELY FROM ANY OTHER GOVERNMENTAL AGENCY (FEDERAL, STATE OR LOCAL)?
☒ Yes ☐ No If yes, list agency(s) and permit/approvals
NYSDEC, Post - Closure Permit

11. DOES ANY ASPECT OF THE ACTION HAVE A CURRENTLY VALID PERMIT OR APPROVAL?
☒ Yes ☐ No If yes, list agency name and permit/approval
NYSDEC, Closure Plan Approval

12. AS A RESULT OF PROPOSED ACTION WILL EXISTING PERMIT/APPROVAL REQUIRE MODIFICATION?
☐ Yes ☒ No

I CERTIFY THAT THE INFORMATION PROVIDED ABOVE IS TRUE TO THE BEST OF MY KNOWLEDGE

Applicant/sponsor name: Van De Mark Chemical Co., Inc. Date: March 29, 1989

Signature: Gregory A. Beck

If the action is in the Coastal Area, and you are a state agency, complete the Coastal Assessment Form before proceeding with this assessment

OVER

PART II—ENVIRONMENTAL ASSESSMENT (To be completed by Agency)

A. DOES ACTION EXCEED ANY TYPE I THRESHOLD IN 6 NYCRR, PART 617.12? If yes, coordinate the review process and use the FULL EAF.
☐ Yes ☐ No

B. WILL ACTION RECEIVE COORDINATED REVIEW AS PROVIDED FOR UNLISTED ACTIONS IN 6 NYCRR, PART 617.6? If No, a negative declaration may be superseded by another involved agency.
☐ Yes ☐ No

C. COULD ACTION RESULT IN **ANY** ADVERSE EFFECTS ASSOCIATED WITH THE FOLLOWING: (Answers may be handwritten, if legible)

C1. Existing air quality, surface or groundwater quality or quantity, noise levels, existing traffic patterns, solid waste production or disposal, potential for erosion, drainage or flooding problems? Explain briefly:

C2. Aesthetic, agricultural, archaeological, historic, or other natural or cultural resources; or community or neighborhood character? Explain briefly:

C3. Vegetation or fauna, fish, shellfish or wildlife species, significant habitats, or threatened or endangered species? Explain briefly:

C4. A community's existing plans or goals as officially adopted, or a change in use or intensity of use of land or other natural resources? Explain briefly.

C5. Growth, subsequent development, or related activities likely to be induced by the proposed action? Explain briefly.

C6. Long term, short term, cumulative, or other effects not identified in C1-C5? Explain briefly.

C7. Other impacts (including changes in use of either quantity or type of energy)? Explain briefly.

D. IS THERE, OR IS THERE LIKELY TO BE, CONTROVERSY RELATED TO POTENTIAL ADVERSE ENVIRONMENTAL IMPACTS?
☐ Yes ☐ No If Yes, explain briefly

PART III—DETERMINATION OF SIGNIFICANCE (To be completed by Agency)

INSTRUCTIONS: For each adverse effect identified above, determine whether it is substantial, large, important or otherwise significant. Each effect should be assessed in connection with its (a) setting (i.e. urban or rural); (b) probability of occurring; (c) duration; (d) irreversibility; (e) geographic scope; and (f) magnitude. If necessary, add attachments or reference supporting materials. Ensure that explanations contain sufficient detail to show that all relevant adverse impacts have been identified and adequately addressed.

☐ Check this box if you have identified one or more potentially large or significant adverse impacts which **MAY** occur. Then proceed directly to the FULL EAF and/or prepare a positive declaration.

☐ Check this box if you have determined, based on the information and analysis above and any supporting documentation, that the proposed action **WILL NOT** result in any significant adverse environmental impacts **AND** provide on attachments as necessary, the reasons supporting this determination:

Name of Lead Agency

Print or Type Name of Responsible Officer in Lead Agency

Title of Responsible Officer

Signature of Responsible Officer in Lead Agency

Signature of Preparer (If different from responsible officer)

Date

6NYCRR PART 373
POST-CLOSURE PERMIT APPLICATION

VanDeMark Chemical Co., Inc.
1 North Transit Road
Lockport, New York 14094

EPA ID No. NYD991290529

Prepared by: Gregory H. Beck
Safety/Environmental
Director

Date: March 29, 1989

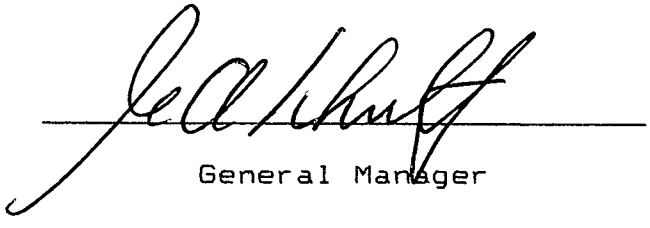
TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF FIGURES

1.0 Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is , to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."



General Manager

3/31/89

Date

2.0 General Information

VanDeMark Chemical Co., Inc. operated a waste disposal facility from approximately 1957 to 1982. The former Landfill area is located on a relatively flat plateau, located approximately 80 feet above Eighteen Mile Creek and approximately 275 yards west of the VanDeMark Chemical plant.

The waste consisted mainly of drums of silicon tetrachloride ($SiCl_4$) and chlorodisiloxane formed as by-products during the commercial production of silicon tetrachloride. A copy of a Material Safety Data Sheet (MSDS) for silicon tetrachloride is provided in Appendix A as Figure 1.

3.0 Site Security

Security for the VanDeMark Landfill Site will be maintained by the existing six-foot high chain link fence. Warning signs stating "DANGER - AUTHORIZED PERSONNEL ONLY" will be placed at the entrance to the site as well as the surrounding perimeter at a maximum of 50 feet apart. The entire fence will be inspected on a semi-annual basis.

The existing gates will be maintained and kept locked at all times when the site is not being supervised by VanDeMark personnel.

Since the facility is not active, there will be no chance of physical contact of waste, structures or equipment within the facility to injure unknowing or unauthorized persons or livestock which may enter the facility.

4.0 Inspection Schedule

A copy of the semi-annual post-closure inspection schedule is shown as Figure 2 in Appendix A.

5.0 Facility Location

Figure 3 in Appendix A shows a map for the National Flood Insurance Program determining that the former Landfill is located outside of the 100-year floodplain in Zone C (no shading).

6.0 Closure Plan

A copy of the Record of Closure Activities without the associated Appendices and Lists of Plans is shown in Appendix B.

7.0 Post-Closure Plan

The post-closure program is to monitor the effectiveness of the final cover system, inspect and maintain the integrity of the cap, and conduct a groundwater monitoring program. Inspections will include erosion damage, settlement and subsidence problems, condition of vegetative cover and drainage system. Groundwater and stream monitoring will be conducted to determine the impact of the landfill after closure. The post-closure monitoring period will be for 30 years. A copy of the Post-Closure Plan is shown in Appendix C.

8.0 Post-Closure Cost Estimate

The estimated cost for post-closure monitoring and maintenance is as follows:

Monitoring:

18 months - 3 years	Semi-Annually	$12,690.00
4 - 5 years	Annually	$ 4,230.00
6 - 30 years	Every 5 Years	$10,575.00
		$27,495.00

Maintenance:

29 years	7 Times per Year	$18,270.00

Total Cost: $45,765.00

Figure 4 in Appendix A shows a copy of the costs associated with the wastewater analysis. Figure 5 in Appendix A shows a copy of the costs associated with the lawn maintenance. Figure 6 in Appendix A shows a copy of the financial assurance mechanism adopted in compliance with section 373-2.8(f).

9.0 Additional Requirements

Appendix D shows a summary of the groundwater monitoring data obtained for all monitoring wells and points during each quarterly sampling period. All hi-lited values are actual values while other values are the detection limit of the equipment. Although most values were below the detection limit, the detection limit was entered as the value in order to determine the standard deviation and student t.

Groundwater elevations measured in the overburden/bedrock interface monitoring wells within VDM Landfill area (VDM-1, VDM-2, VDM-9, VDM-11, and D-55 and D-61) indicate that the general groundwater flow is in a southerly direction towards the embankment leading to Eighteen Mile Creek. Due to the removal of the Grimsby Formation in the area of the landfill the overburden/bedrock interface aquifer is believed to be connected with the Grimsby/Power Glen contact groundwater in the area east of the landfill to the railroad cut and are therefore considered to be the same aquifer. Grimsby/Power Glen Aquifer water surface contours are presented in Appendix A as Figure 7. Although hazardous constituents have been measured in the groundwater which exceed the concentration limits established under section 373-2.6(e), by comparing the results of 18-Mile Creek upstream and downstream, it is evident that the former landfill does not show any impact upon 18-Mile Creek.

Appendix E shows a summary of the groundwater monitoring data obtained for each monitoring well and point during the interim status period. Again, all hi-lited values are actual values while other values are the detection limit of the equipment. This data shows that the cap installed in September 1987 has been operating as designed for the following reasons:

1. VDM-12 has been dry since September 1987 showing that no water has been infiltrating the perched water zone. In addition, VDM-13 (pan lysimeter) has had no significant accumulation since its installation.

2. The average water elevation of wells VDM-9, VDM-10 and VDM-14 has dropped indicating that infiltration of surface water through the former landfill has been reduced.

3. The average pH of wells VDM-10, VDM-11 and VDM-14 has increased indicating there is less flow through the cap thus decreasing the amount of acidic groundwater filtering to the water table resulting in a higher pH value.

The results also show a decreasing trend as shown by the negative values obtained using the **Student's t.** All values fall within the 95% confidence level and were determined using the following t-ratio:

$$t = \frac{\bar{X} - u_m}{s_{\bar{X}}}$$

Where: $\bar{X}$ = Average of all data

u_m = Average of all data except last results

$s_{\bar{X}}$ = $\frac{\text{Standard deviation of all data}}{\text{Square root of } n-1}$

n = Number of sample data

Due to the above information, VanDeMark Chemical does not feel it is necessary at this time to implement a corrective action program.

The detailed plans for describing the groundwater monitoring program are provided in the Post-Closure Plan (Appendix C).

10.0 Exposure Information

Based on the analytical data obtained on Eighteen Mile Creek downstream from the former Landfill since its closure, there has been no evidence of migration from the landfill which would indicate a potential for the public to be exposed to hazardous wastes or hazardous constituents through releases related to the unit.

11.0 Contingency Program

The Contingency Program for the post-closure monitoring is outlined in the Closure Plan, Former Landfill Site, located in Appendix B.

— FIGURE 1 —

Van De Mark Chemical Co., Inc.

1 N. TRANSIT ROAD • LOCKPORT, NEW YORK 14094-2399 • 716 - 433-6764

MSDS#: VDM06-87-02

SECTION I: PRODUCT INFORMATION

PRODUCT NAME: Silicon Tetrachloride

TRADE NAME/ SYNONYM: Tetrachloro Silane, Siltet
Silicon Chloride

CHEMICAL FAMILY: Transition Metal Halide

CHEMICAL FORMULA $SiCl_4$

CAS REGISTRY NUMBER: 10026-04-07

HAZARD RATINGS

HEALTH	3
FLAMMABILITY	0
REACTIVITY	1

The Hazard Ratings have been conducted using the National Paint and Coatings Association HMIS system.

SECTION II: MANUFACTURER INFORMATION

COMPANY NAME: VanDeMark Chemical Company Inc.

ADDRESS: 1 North Transit Road, Lockport, NY. 14094

EMERGENCY PHONE NUMBER: 716-433-6764

SECTION III: HAZARDOUS INGREDIENTS

MATERIAL (CAS #)	THRESHOLD LIMIT VALUES	% BY VOLUME
Silicon Tetrachloride (10026-04-07)	None established	> 99%

SILICON TETRACHLORIDE

SECTION IV: PHYSICAL DATA

BOILING POINT: 57.5°C at 760 mmHg

SPECIFIC GRAVITY: (25°C / 25°C) 1.29

VAPOR PRESSURE: 210mmHg at 21.1°C

FREEZING RANGE: -68.7°C

VAPOR DENSITY: (air=1) 5.86

APPEARANCE AND ODOR: A clear to light yellow liquid with a suffocating odor of hydrogen chloride.

SECTION V: FIRE AND EXPLOSION HAZARDS

FLASH POINT: NONE LEL: NONE

FIRE EXTINGUISHING MEDIA: (CHECK IF APPLICABLE) Not Applicable.

FOAM:		WATER:	
ALCOHOL FOAM:		WATER FOG:	
CO2:		OTHER:	
DRY CHEMICAL:			

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Silicon tetrachloride is not flammable. If heated to decomposition it emits toxic fumes of chlorine, and in the presence of water or moisture, hydrogen chloride gas.

SPECIAL FIRE FIGHTING PROCEDURES:

If containers are involved in a fire, and intact, keep the containers cool by applying water. If spilled, contact with water will generate hydrogen chloride gas. Fire fighters should utilize a full face piece with a supplied source of respirable air and acid resistant protective clothing.

SECTION VI: REACTIVITY DATA:

STABILITY:	STABLE:	X
	UNSTABLE:	
HAZARDOUS POLYMERIZATION:	MAY OCCUR:	
	WILL NOT OCCUR:	X

SILICON TETRACHLORIDE

SECTION VI: REACTIVITY DATA

HAZARDOUS DECOMPOSITION PRODUCTS:

When heated to decomposition it emits toxic fumes of chlorine. In the presence of water or moisture toxic and corrosive hydrogen chloride gas is generated.

CONDITIONS TO AVOID:

Excessive heat and contact with water or moisture.

INCOMPATIBILITIES:

Reacts violently with water, Na, K, and other Alkalies.

SECTION VII: HEALTH HAZARDS

EFFECTS OF OVEREXPOSURE:

ACUTE: Silicon tetrachloride is a corrosive material that can cause irreparable damage when the liquid comes in contact with the skin, eyes, mucosa, or other tissue. The vapors are also highly irritating to the eyes, skin, mucosa, and respiratory tract. Inhalation of large amounts of the vapors in high concentrations can cause respiratory damage and failure. Ingestion can cause severe burns to the mouth throat, esophagus, and stomach.

CHRONIC: Chronic effects may include a skin rash or dermatitis, bleeding of the nose and gums, and ulceration of the nasal mucosa.

PRIMARY ROUTES OF ENTRY:	TOXICITY DATA
INGESTION:	Not Available
INHALATION:	LC50 Rat: 8000ppm / 4 Hours
CONTACT:	SKIN - Rabbit: 500 mg / 24 Hours - Severe
OTHER:	EYE - Rabbit: 20 mg / 24 Hours - Severe

STATUTORY HAZARD/CARCINOGEN RATING:

HAZARDOUS:	No
CARCINOGEN:	No

SECTION VIII: EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT: Flush with copious amounts of water for at least 15 minutes. Irrigate eyes with normal saline solution for 30 to 60 minutes. Seek medical attention immediately.

SKIN CONTACT: Flush with copious amounts of water for at least 15 minutes. If burning or irritation occurs, apply a magnesium oxide paste. Seek medical attention.

INGESTION: Administer a soluble calcium such as milk and large amounts of fluids. Do not induce vomiting.

INHALATION: Remove victim to fresh air. If conscious and breathing is difficult, administer oxygen by nasal cannula or mask (6-10L). If unconscious, administer mouth to mouth respiration and seek medical attention.

SECTION IX: PERSONAL PROTECTION

RESPIRATORY: Use only NIOSH/MSHA approved respiratory protection. For low concentrations, half or full face piece respirators with acid gas cartridges may be used. In higher concentrations, SCBA's are required.

EYE: Safety glasses and monogoggles or a face shield are required.

SKIN: Impervious gloves (Neoprene) are required. Acid proof clothing and boots are required when handling could result in contact with the skin.

OTHER: A safety shower and eye wash station is required in the area where handling occurs.

SECTION X: SAFE HANDLING / SPILL AND LEAK PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Store in a cool dry place with adequate ventilation. Diking should be provided to prevent any spilled material from entering the sewer system. Silicon tetrachloride can be stored in steel storage tanks. Piping used for the transfer of the material can also be of steel construction. Care must be taken to exclude all moisture from all piping, equipment and storage tanks. Aluminum is not suitable material of construction for handling or storage of this product.

SILICON TETRACHLORIDE

SECTION X: SAFE HANDLING / SPILL AND LEAK PROCEDURES

SPILL AND LEAK PROCEDURES:

Evacuate the area immediately. Take the necessary steps to contain the the spill. Ventilation should be provided if the spill is indoors. All workers should wear approved SCBA's or air line respirators. Recover all usable product and absorb any unusable material in an inert compound. Place all contaminated material in closed drums for proper disposal. Do not flush any material to the sewer system.

WASTE DISPOSAL:

Silicon Tetrachloride waste is considered a hazardous waste. The waste can be neutralized by diluting with large quantities of water and discharging the effluent to a POTW following all local, state, and federal regulations.

SECTION XI: DOT INFORMATION

TRANSPORTATION REQUIREMENTS:

DOT SHIPPING NAME:	SILICON TETRACHLORIDE
DOT HAZARD CLASS:	CORROSIVE MATERIAL
DOT LABELS:	CORROSIVE
DOT PLACARDS:	CORROSIVE
BILL OF LADING DESCRIPTION:	SILICON TETRACHLORIDE CORROSIVE MATERIAL
UN/NA NUMBER:	UN 1818
ADDITIONAL DOT REQUIREMENTS:	NONE

SILICON TETRACHLORIDE

SECTION XII: TRANSPORTER INFORMATION

EMERGENCY RESPONSE:

In the event of an unusual delay, fire, accident or release of product during transportation, the transporter can refer to this MSDS for emergency response information In any of the above mentioned circumstances the transporter shall immediately call the emergency response phone number on page one of this MSDS for emergency response support.

CHEMTREC 24 HOUR EMERGENCY PHONE NUMBER: 1-800-424-9300

SECTION XIII: ADDITIONAL INFORMATION

MSDS PREPARATION INFORMATION:

EFFECTIVE DATE: 06/20/87

REPLACES MSDS DATED: 03/03/86

PREPARED BY: Matthew Barmasse
Safety/Environmental Director

This MSDS has been prepared in compliance with the Federal Hazard Communication Standard (29 CFR Part 1910.1200). All information contained herein has been prepared by technically knowledgeable personnel and is correct to the best of our knowledge. This information is given without warranty or representation. We do not assume any legal responsibility for the source. It is the customers responsibility to establish policies for safe handling and use of this product, but our technical staff will be happy to respond to any questions concerning this product or information contained herein.

FIGURE 2

VAN DE MARK CHEMICAL LANDFILL
SEMI-ANNUAL INSPECTION SCHEDULE

1. Does the integrity of the cover look satisfactory? Yes No

2. Does the integrity of the ditch lining look satisfactory? Yes No

3. What is the condition of the vegetation over the cover?

---

4. Does rainwater appear to be draining properly? Yes No

5. Is the fence surrounding the site secure? Yes No

6. What is the water level in the pan lysimeter? _____

7. Are all the caps on the monitoring wells locked? Yes No

If any of the above were answered "no", please explain below.

---

8. Are there any iron stains present in the ditch? Yes No

9. Are any of the well casings damaged? Yes No

If any of the above were answered "yes", please explain below.

Date: _____ Time: _____ Inspected by: _____

The name, address and phone number of the person or office to contact about the landfill is:

Gregory H. Beck
VanDeMark Chemical Co., Inc.
1 North Transit Road
Lockport, New York 14094
(716)433-6764

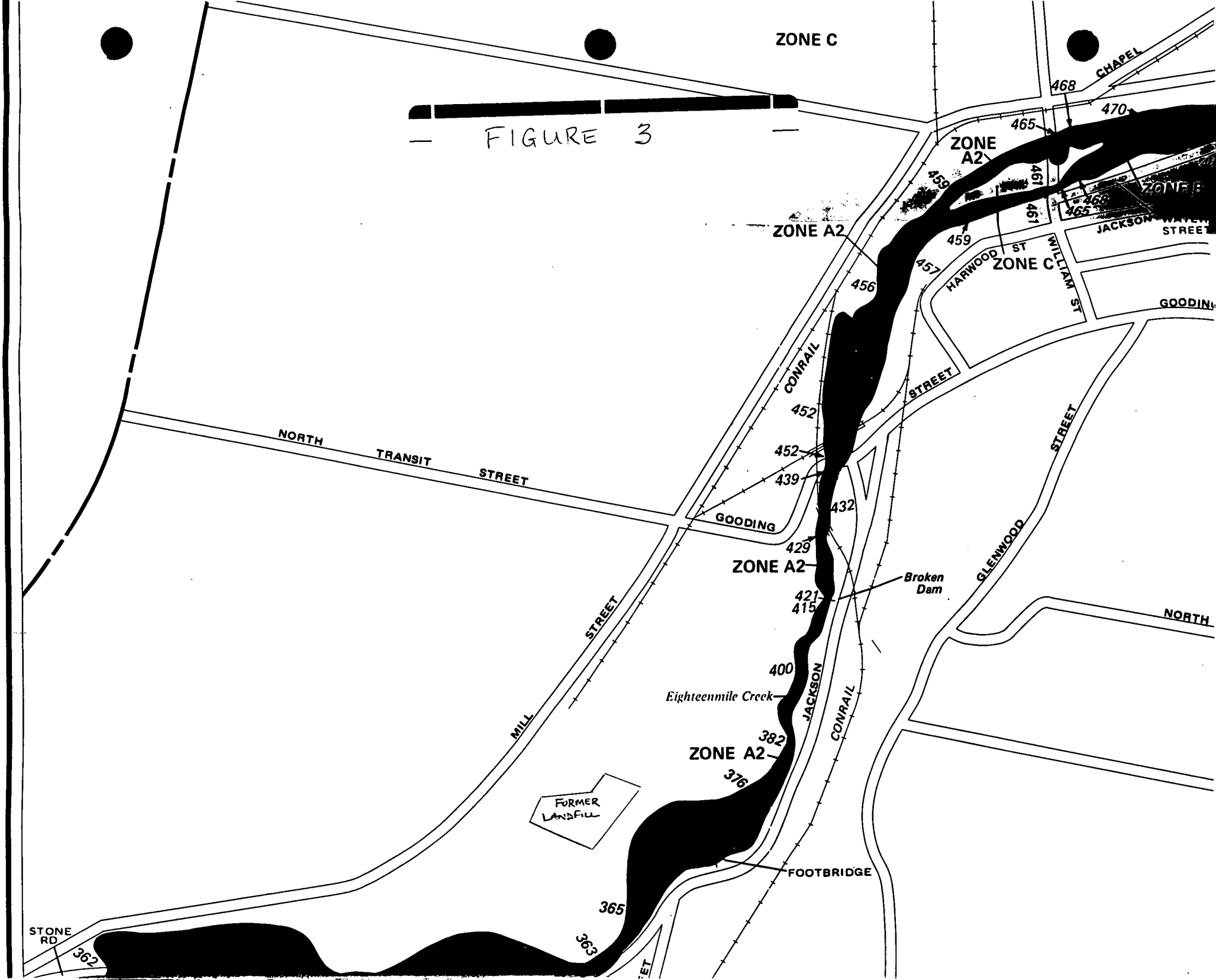
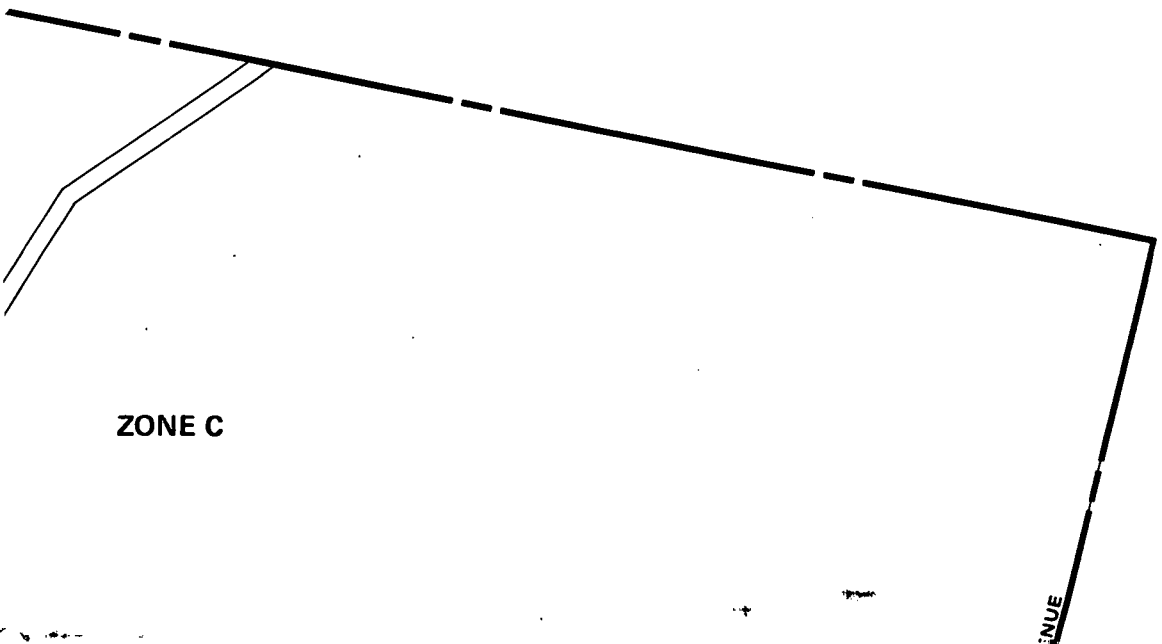


FIGURE 3
ZONE C
ZONE A2
ZONE A2
ZONE A2
ZONE A2
ZONE B
ZONE C
CHAPEL
468
470
465
461
459
457
456
452
439
432
429
421
415
400
382
376
365
363
362
JACKSON STREET
HARWOOD ST
WILLIAM ST
GOODIN
STREET
CONRAIL
NORTH TRANSIT STREET
GOODING
Broken Dam
GLENWOOD
NORTH
MILL STREET
JACKSON
CONRAIL
Eighteenmile Creek
FORMER LANDFILL
FOOTBRIDGE
STONE RD

ELEVATION REFERENCE MARKS

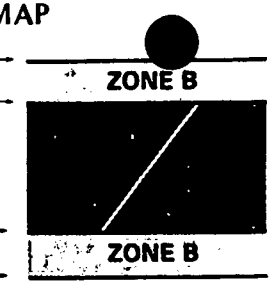
REFERENCE MARK	ELEVATION IN FT. (NGVD)[1]	DESCRIPTION OF LOCATION
RM 1	607.613	Lockport, 12 inches northeast of northeast corner of Niagara County Courthouse, Niagara and Hawley Streets, Lockport, New York; in 12-inch square concrete post; 8 inches above ground; standard tablet stamped "607 FT RESET 1959."

[1]National Geodetic Vertical Datum of 1929.



KEY TO MAP

500-Year Flood Boundary
100-Year Flood Boundary
Zone Designations* With Date of Identification e.g., 12/2/74
100-Year Flood Boundary
500-Year Flood Boundary



Base Flood Elevation Line With Elevation In Feet** — 513

Base Flood Elevation In Feet Where Uniform Within Zone** — (EL 987)

Elevation Reference Mark — RM7 ×

River Mile — • M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A0	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

FIGURE 4

HAS

HUNTINGDON ANALYTICAL SERVICES Inc

PO Box 250 Middleport New York 14105
Telephone (716) 735-3400 Telex 131246

QUOTATION No: 01283

Client: VanDeMark Chemical
1 North Transit Road
Lockport, NY 14094

Attn: Mr. Gregory H. Beck

Our Ref: TSJ/DFG

Your Ref:

Compound Description:

Type of study:

Annual Wastewater Analysis as per your request of 12/21/88

Please use Attachment I for unit pricing.

Annual Analytical Estimate **$11,575.00**

Sampling bottles and pick-up service additional and based upon need.

*A 10% analytical discount will be applied upon issuance of a total annual analytical purchase order by January 31, 1989.

Method of payment: Net upon receipt of invoice
Prices shown are exclusive of applicable taxes.

To confirm your acceptance of this quotation, please return one copy, duly signed, to the HAS signatory below.

Issued on behalf of HAS:

Signature: Douglas F. Gillard

Name: Douglas F. Gillard, Ph.D.

Date: January 5, 1989

Accepted on behalf of client:

Signature: _____

Name: _____

Date: _____

THIS QUOTATION IS VALID ONLY FOR A PERIOD OF THREE MONTHS FROM THE DATE OF ISSUE AND UNLESS ACCEPTED AND DELIVERED TO HUNTINGDON ANALYTICAL SERVICES Inc WITHIN THE SAID PERIOD SHALL THEREAFTER BECOME ABSOLUTELY VOID.

THIS QUOTATION IS SUBJECT TO THE TERMS AND CONDITIONS SET FORTH ON THE REVERSE SIDE

VonDeMark Chemical
Quotation No. 01283
January 5, 1988

ATTACHMENT I

Parameter	Method	# of of Samples	Frequency	Price/ Sample	Price/ Event
Total Residual Chlorine	330.4	3	Monthly	$15	$ 45
Ammonia	350.2, .3	3	"	20	60
Chemical Oxygen Demand	410.1	1	"	30	30
				Monthly Total	$135
Total Suspended Solids	160.2	3	Quarterly	$10	$ 30
Purgeable Halocarbons	601	9	"	70	630
Chloride	325.3	9	"	15	135
Total Metals:					
Digestion		9	"	10	90
As	206.2	9	"	20	180
Cd	200.7	9	"	10	90
Cr	200.7	9	"	10	90
Cu	200.7	9	"	10	90
Zn	200.7	9	"	10	90
Pb	239.2	9	"	20	180
Hg	245.1	9	"	30	270
Total Phenols	420.1	9	"	30	270
				Quarterly Total	$2145
Biochemical Oxygen Demand	SM 507 16 Ed.	3	Semi-Annual	25	75
Total Suspended Solids	160.2	3	"	10	30
Chemical Oxygen Demand	410.1	3	"	30	90
Total Kjeldahl Nitrogen	351.3	3	"	30	90
				Semi-Annual Total	$285
Priority Pollutants:					
Volatiles	624	1	Annual		$190
Semi-Volatiles	625	1	"		325
Pesticides & PCB's	608	1	"		75
Cyanide	335.2	1	"		30
Phenols	420.1	1	"		30
Metals:					
As	206.2	1	"		20
Be	200.7	1	"		10
Cd	200.7	1	"		10
Cr	200.7	1	"		10
Hg	245.1	1	"		30
Ni	200.7	1	"		10
Se	270.2	1	"		20
Ag	200.7	1	"		10
Tl	279.2	1	"		20
Zn	200.7	1	"		10
Pb	239.2	1	"		20
Sb	200.7	1	"		10
Cu	200.7	1	"		10
Digestion					10

Group price for all metals $155
Annual Total $805/sample

LAWN MEDIC

ERIE CO.
BOX 201
E. AMHERST, NY 14051
625-6820

NIAGARA CO.
208 OAKHURST
LOCKPORT, NY 14094
433-4211

SPECIAL SERVICES COST ESTIMATE

Bus. Regis. # 05846 Applicator ID. # C9277974

Mr. Gregory Beck

FIGURE 5

NAME VanDeMark Chemical Corp. Inc.

ADDRESS 1 North Transit

Lockport, NY ZIP 14094

PHONE NO. HOME _____ BUS. 433-6764

LOCATION OF PROPERTY _____

MAP ZONE _____ ROUTE ZONE _____

DATE REC'D 3/10/89 DATE OF EST. 3/14/89 TIME _____

MY NAME IS Brian Van Buren

☐ Facing Slopes ☐ Steep Slopes ☐ Dense Shade
☐ Uncontrollable Weeds ☐ Other _____

ADDITIONAL RECOMMENDED SERVICES

- ☐ Power Aerate & Roll
- ☐ Core Aeration
- ☐ Dethatch
- ☐ Renovation
- ☐ Seed
- ☐ Overseed
- ☐ Top soil
- ☐ Surface Insect Control
- ☐ Grub Control
- ☐ Broadleaf Weed Control
- ☐ Pre-emergent Crab Grass Control
- ☐ Coarse Fescue Creeping Bent Grass Control
- ☐ NU Lawn Program
- ☐ Total Vegetational Control
- ☐ Other Lawn Mowing (fenced in area)

LAWN DIAGRAM

Fenced in area near pipeline referred to as a landfill.

$ 6-10 mowings per year= $ 90.00/ mowing

less than 6 mowings= $ 120.00/ mowing

SERVICES RECOMMENDED	COST $
CHECK OFF SERVICES DESIRED BELOW	
☐ 6-10 mowings per yr.	$ 90.00/mowing
☐ less than 6 mowings	$ 120.00/mowing
NU Lawn	
Tax	
Number of Services	
Cost Per Service	

TERMS: SERVICES BILLED AS APPLIED PAYMENT DUE WITHIN 10 DAYS OF SERVICE.

SPECIAL SERVICE NOTES: _____

TO BEGIN SERVICE SIGN AND RETURN WHITE COPY TO LAWN MEDIC

CUSTOMER AUTHORIZATION

EXPLANATION OF SERVICES RECOMMENDED:

NU-LAWN GUARANTEE

Lawn Medic, at end of last Seasonal Application Visit, guarantees a stated percentage of total lawn area will be under grass coverage. That all seed used is of high quality and none of annual species or varieties. If guaranteed percentage is not achieved, Lawn Medic will continue service at no charge until guarantee is met No other guarantee is expressed or implied. Guarantee does not apply beyond end of last seasonal service time period when lawn is no longer under Lawn Medic care.

MARINE MIDLAND BANK, N.A.
1 MARINE MIDLAND CENTER
BUFFALO, NY 14203

ISSUE DATE: MARCH 22, 1989
L/C NO.: H-303504
APPLICANT REFERENCE NO.: NYS DEPT OF CONS

ADVISING BANK:
********** DIRECT **********

APPLICANT:
VAN DE MARK CHEMICAL COMPANY
INCORPORATED
ONE NORTH TRANSIT STREET
LOCKPORT, NEW YORK 14094

[redacted]

— FIGURE 6 —

BENEFICIARY:
COMMISSIONER, NEW YORK STATE DEPT.
OF ENVIRONMENTAL CONSERVATION
50 WOLF ROAD
ALBANY,NEW YORK 12233

AMOUNT: USD 46,000.00
(FORTY SIX THOUSAND AND 00/100
UNITED STATES DOLLARS)

GENTLEMEN:

WE HEREBY ESTABLISH AND OPEN OUR IRREVOCABLE STANDBY LETTER OF CREDIT NO. H-303504 IN YOUR FAVOR, AT THE REQUEST AND FOR THE ACCOUNT OF VAN DE MARK CHEMICAL COMPANY, INC. UP TO THE AGGREGATE AMOUNT OF FORTY-SIX THOUSAND AND 00/100 U.S.DOLLARS ($46,000.00), AVAILABLE UPON PRESENTATION OF:

(1) YOUR SIGHT DRAFT, BEARING REFERENCE TO THIS LETTER OF CREDIT NO. H-303504, AND

(2) YOUR SIGNED STATEMENT READING AS FOLLOWS:

"I CERTIFY THAT THE AMOUNT OF THE DRAFT IS PAYABLE PURSUANT TO REGULATIONS ISSUED UNDER AUTHORITY OF THE NEW YORK STATE ENVIRONMENTAL CONSERVATION LAW."

THIS LETTER OF CREDIT IS EFFECTIVE AS OF MARCH 22, 1989 AND SHALL EXPIRE ON MARCH 31, 1990, BUT SUCH EXPIRATION DATE SHALL BE AUTOMATICALLY EXTENDED FOR A PERIOD OF ONE YEAR AND ON EACH SUCCESSIVE EXPIRATION DATE THEREAFTER, UNLESS, AT LEAST 120 DAYS BEFORE THE CURRENT EXPIRATION DATE, WE NOTIFY BOTH YOU AND VAN DE MARK CHEMICAL COMPANY, INC. BY CERTIFIED MAIL, RETURN RECEIPT REQUESTED, THAT WE HAVE DECIDED NOT TO EXTEND THIS LETTER OF CREDIT BEYOND THE CURRENT EXPIRATION DATE. IN THE EVENT YOU ARE SO NOTIFIED, ANY UNUSED PORTION OF THE CREDIT SHALL BE AVAILABLE UPON PRESENTATION OF YOUR SIGHT DRAFT AND THE ABOVE-REFERRED TO SIGNED STATEMENT FOR 120 DAYS AFTER THE DATE OF RECEIPT BY BOTH YOU AND VAN DE MARK CHEMICAL COMPANY, INC., AS SHOWN ON THE SIGNED RETURN RECEIPTS.

THIS IS A NOTATION CREDIT. EACH DRAFT HEREUNDER MUST BE ENDORSED ON THE REVERSE OF THIS LETTER OF CREDIT AND EACH DRAFT OR ATTACHED WRITING MUST INDICATE THAT SUCH NOTATION HAS BEEN MADE. THIS LETTER OF CREDIT MUST BE ATTACHED TO THE LAST DRAFT WHEN THE CREDIT ESTABLISHED BY THIS LETTER OF CREDIT IS EXHAUSTED.

THE SUM OR SUMS OF ALL DRAFTS UNDER THIS LETTER OF CREDIT MUST NOT EXCEED THE AGGREGATE AMOUNT OF FORTY-SIXTY THOUSAND AND 00/100 U.S. DOLLARS ($46,000.00). THE PURPOSE OF THIS LETTER OF CREDIT IS TO ENSURE THAT FUNDS WILL BE AVAILABLE AND DRAFTS MAY BE DRAWN HEREUNDER FOR THE ACCOUNT OF THE COMMISSIONER OF THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, FOR THE BENEFIT OF THE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, FOR PURPOSES PURSUANT TO ARTICLE 27 OF THE NEW YORK STATE ENVIRONMENTAL CONSERVATION LAW.

-CONTINUED-

CUSTOMER COPY

MARINE MIDLAND BANK, N.A.
1 MARINE MIDLAND CENTER
BUFFALO, NY 14203

ISSUE DATE: MARCH 22, 1989
L/C NO.: H-303504
APPLICANT REFERENCE NO.: NYS DEPT OF CONS

ADVISING BANK:
********** DIRECT **********

APPLICANT:
VAN DE MARK CHEMICAL COMPANY
INCORPORATED
ONE NORTH TRANSIT STREET
LOCKPORT, NEW YORK 14094

BENEFICIARY:
COMMISSIONER, NEW YORK STATE DEPT.
OF ENVIRONMENTAL CONSERVATION
50 WOLF ROAD
ALBANY,NEW YORK 12233

AMOUNT: USD 46,000.00
(FORTY SIX THOUSAND AND 00/100
UNITED STATES DOLLARS)

MARINE MIDLAND BANK, N.A., AGREES THAT WHENEVER THIS LETTER OF CREDIT IS DRAWN ON, UNDER AND IN COMPLIANCE WITH THE TERMS OF THIS LETTER OF CREDIT, THAT MARINE MIDLAND BANK, N.A., SHALL DULY HONOR SUCH DRAFT UPON PRESENTATION TO MARINE MIDLAND BANK, N.A., AND MARINE MIDLAND BANK, N.A., SHALL PAY THE AMOUNT OF THE DRAFT TO THE COMMISSIONER OF NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION OR INTO STANDBY TRUST IN ACCORDANCE WITH THE COMMISSIONER'S INSTRUCTIONS.

WE HEREBY AGREE WITH YOU THAT DRAFTS DRAWN UNDER AND IN COMPLIANCE WITH THE TERMS OF THIS CREDIT WILL BE DULY HONORED ON DUE PRESENTATION TO THE DRAWEES, IF PRESENTED ON OR BEFORE THE EXPIRATION DATE TO THE DRAWEES TOGETHER WITH THIS LETTER OF CREDIT. THE AMOUNT AND DATE OF PAYMENT OF EACH DRAFT MUST BE ENDORSED ON THE REVERSE HEREOF BY OURSELVES.

EXCEPT SO FAR AS OTHERWISE EXPRESSLY STATED, THIS LETTER OF CREDIT IS SUBJECT TO THE UNIFORM CUSTOMS AND PRACTICES FOR DOCUMENTARY CREDITS (1983 REVISION) INTERNATIONAL CHAMBER OF COMMERCE PUBLICATION NO. 400

H-303504- -001-L1-01-02-01

AUTHORIZED SIGNATURE

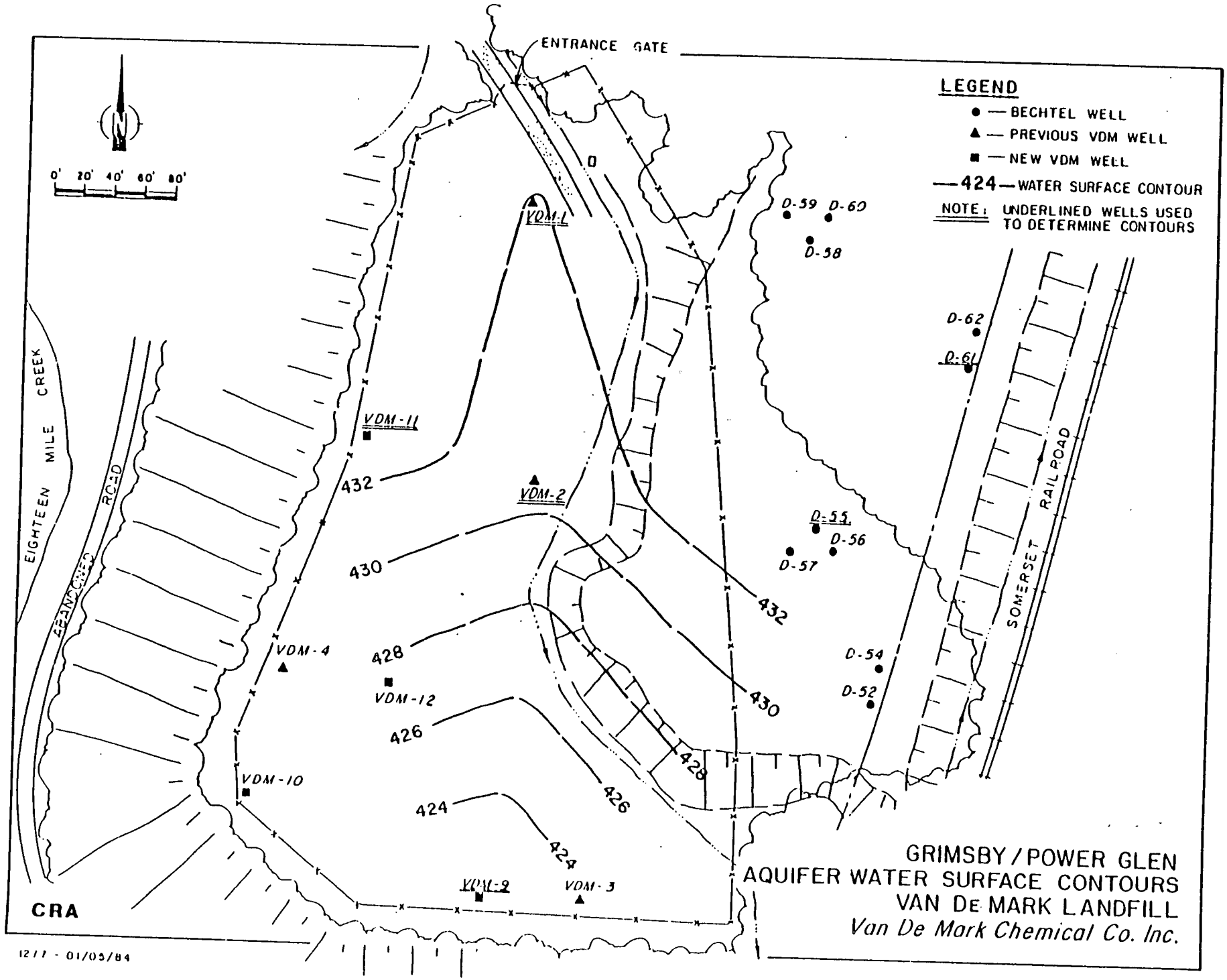

ENTRANCE GATE
LEGEND
● — BECHTEL WELL
▲ — PREVIOUS VDM WELL
■ — NEW VDM WELL
—424— WATER SURFACE CONTOUR
NOTE: UNDERLINED WELLS USED TO DETERMINE CONTOURS
0' 20' 40' 60' 80'
EIGHTEEN MILE CREEK
ABANDONED ROAD
SOMERSET RAIL ROAD
VDM-1
VDM-2
VDM-3
VDM-4
VDM-9
VDM-10
VDM-11
VDM-12
D-52
D-54
D-55
D-56
D-57
D-58
D-59
D-60
D-61
D-62
0
424
426
428
430
432
CRA
GRIMSBY/POWER GLEN
AQUIFER WATER SURFACE CONTOURS
VAN DE MARK LANDFILL
Van De Mark Chemical Co. Inc.
1211 - 01/05/84

FIGURE 7

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233

Thomas C. Jorling
Commissioner

OCT 11 1988

Mr. Matthew Barmassee
Safety/Environmental Manager
Van De Mark Chemical Co., Inc.
1 North Transit Road
Lockport, NY 14094

Re: Closure Certification;
Release of financial assurance for closure;
Establishment of financial assurance for post-closure

Dear Mr. Barmassee:

The Department has reviewed your submission of the Record of Closure Activities Report dated November 1987 and subsequent correspondence by Conestoga-Rovers and Associates regarding the closure of the Van De Mark Landfill. Staff have also observed and inspected the cover both during construction and after completion.

Based upon the above, the Department accepts the Certification of Closure for the Van De Mark Landfill and that closure has been accomplished in accordance with applicable regulations and the approved Closure Plan.

Under Part 373-3.8(d)(8), the Department hereby notifies that Van De Mark is no longer required to maintain financial assurance for closure of the landfill. However, under Part 373-3.8(f), Van De Mark is required to establish financial assurance for post-closure care of the facility.

At this time, Van De Mark has not supplied the Department with any financial assurance for post-closure care of the landfill.

Upon examination of Van De Mark's approved Closure Plan, the cost estimate for monitoring and maintenance was determined to be $177,100 for a thirty-year post closure care period. Van De Mark presently has a letter of credit for $44,730 which the Department will apply toward the partial post-closure financial assurance required. It is the owners responsibility to establish financial assurance for the entire post-closure amount using one or a combination of the mechanisms specified in Part 373-3.8(f).

Van De Mark must supply the appropriate financial assurance to the Department no later than March 31, 1989. In addition, the Post-Closure Permit Application that Van De Mark will be submitting, should in detail break down and verify the maintenance and monitoring costs that have previously been submitted in your Closure Plan. Please be aware that all costs must reflect third party costs.

Should you have any questions concerning the above matters, do not hesitate to contact Mr. Timothy DiGiulio at (518) 457-9253.

Sincerely,

Paul R. Counterman

Paul R. Counterman, P.E.
Director
Bureau of Hazardous Waste Facility Permitting
Division of Hazardous Substances Regulation

cc: P. Ingrisano, EPA, Region II
F. Langone, EPA, Region II
L. Thomas, NYSDEC Albany
J. Moran, NYSDEC Albany
T. DiGiulio, NYSDEC Albany

CRA
Consulting Engineers

CONESTOGA-ROVERS & ASSOCIATES LIMITED
651 Colby Drive,
Waterloo, Ontario, Canada N2V 1C2
(519) 884-0510

April 11, 1988 Reference No. 1277

Mr. Tim Digiulio
NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION
50 Wolf Road
Albany, NY
12233

Dear Mr. Digiulio:

Re: Van deMark Chemical Corporation - Lockport, NY
I.D. No.: NYD991290529

I hereby certify that the above referenced Landfill was closed as per the approved Closure Plan as amended in the "Record of Closure Activities" by Conestoga-Rovers & Associates (CRA) in November 1987.

No further investigations by the engineer are planned at this time.

Yours very truly,

CONESTOGA-ROVERS & ASSOCIATES

Donald J. Miller, P.E.
NYS #051886

Matthew Barmasse
Safety/Environmental Director
Van deMark Chemical Company

Van De Mark Chemical Co., Inc.

CLOSURE PLAN
Former Landfill Site

February 1987
Ref. No. 1277

ADVANCED ENVIRONMENTAL SERVICES
CONESTOGA-ROVERS & ASSOCIATES

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF FIGURES

LIST OF TABLES

1.0 INTRODUCTION

From approximately 1957 to 1982, Van De Mark Chemical Co. Inc. operated a waste disposal area on their property in Lockport, New York. A hydrogeologic investigation of the former landfill facility was undertaken in 1983 and 1984. The results of the investigation were presented in the report entitled "Former Landfill Investigation and Closure Plan" which was submitted to Van De Mark Chemical Co. Inc. in May 1984 by Advanced Environmental Systems (AES) and Conestoga-Rovers & Associates (CRA). The report presents details on the regional and local geology of the landfill area, including soil conditions, groundwater conditions, local topography, surface drainage and local groundwater quality, as well as addressing environmental concerns and presenting a recommended closure plan. A copy of the "Former Landfill Investigation and Closure Plan" is included in Appendix A of this report.

Previous reports detailing some of the area characteristics were used as references for the above mentioned report. These previous reports are presented in Appendices B and C. These reports are:

1) 'Somerset Railroad Project, Hydrogeologic Study, Danielewicz Route, Station 51+810 to 52+330', February,

1982 by Bechtel Associates Professional Corporation (Appendix B).

2) 'Closure Plan for Solid Waste Management Facility Van De Mark Chemical Co. Inc., Lockport, N.Y.', July 1, 1982 by William W. Whitemore, Consulting Engineers (Appendix C).

The "Former Landfill Investigation and Closure Plan" was subsequently submitted to the New York State Department of Environmental Conservation (DEC) and the U.S. Environmental Protection Agency (EPA) for review. Comments made by the DEC/EPA, and subsequent Van De Mark responses to the DEC/EPA comments, are included in Appendix D of this document.

Based upon the comments received and analytical data from a recent sampling program, it was deemed necessary to revise the originally proposed closure plan. The purpose of this document is to present the updated Closure Plan. This document provides the details for the following aspects of the Closure Plan:

- Construction of final cover
- Quality assurance of construction
- Provisions for surface water drainage
- Security and site access
- Post-closure monitoring plans

- Post-closure maintenance plan
- Environmental contingency plans
- Estimated costs - closure
  - post closure
- Estimated closure schedule

2.0 EXISTING CONDITIONS

The former Landfill area is located on a relatively flat plateau, located approximately 80 feet above Eighteen Mile Creek and approximately 275 yards west of the Van De Mark Chemical Plant. The Creek flows along the western and southern boundaries of the Site. The northern and eastern limits of the Landfill Site are bordered by a ridge which rises approximately 25-feet above the site to a second plateau. A general site plan indicating surface contours is shown in Figure 1. See also Plan 1.

A small berm, one to two feet in height, extends along the edge of the western and southern disposal limits to prevent on-site surface water discharge over the embankment to Eighteen Mile Creek. A drainage ditch is located along the east and northeast boundaries of the landfilled area. This drainage ditch channels surface water flow toward the railroad track and subsequently into Eighteen Mile Creek.

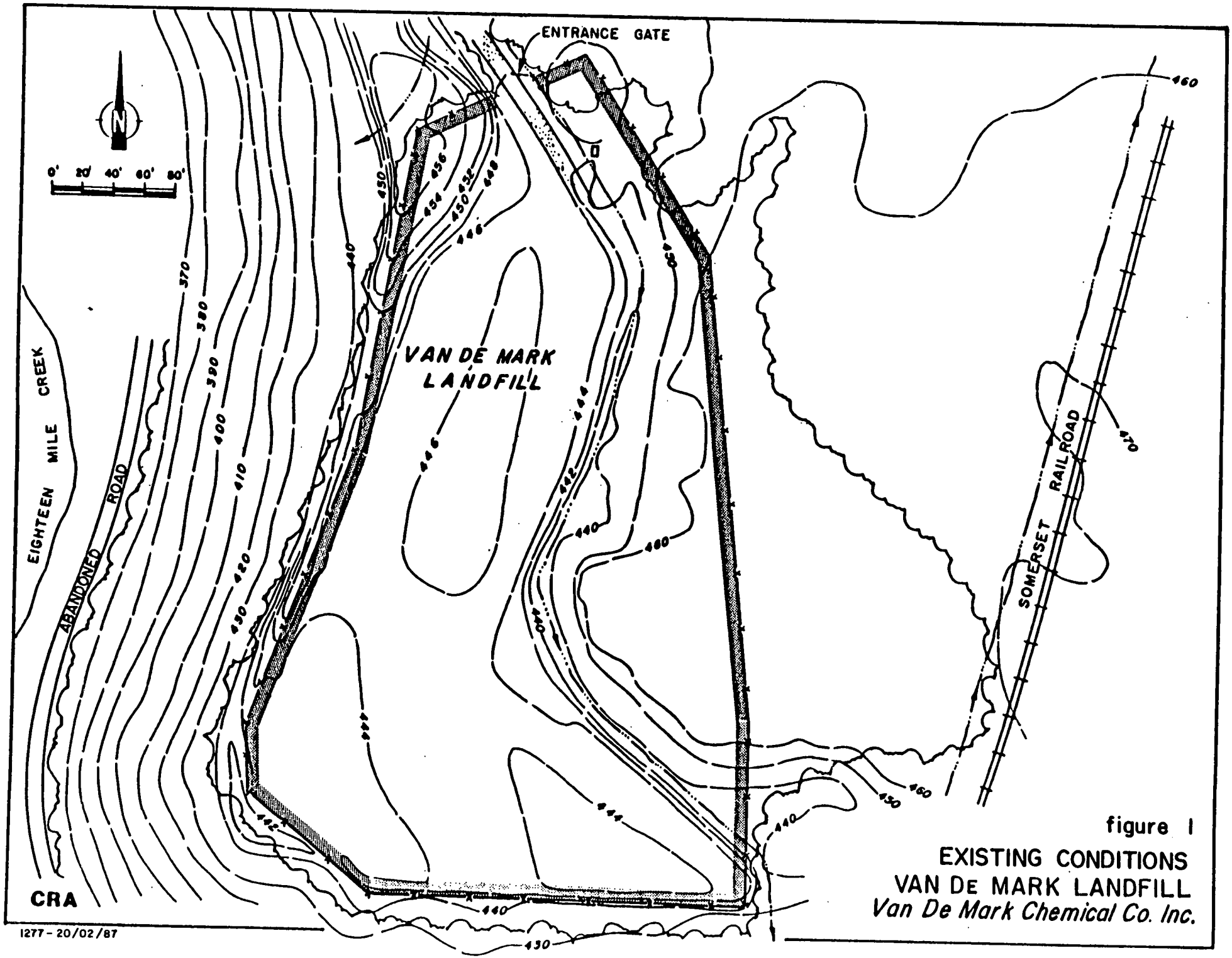


figure 1

EXISTING CONDITIONS
VAN DE MARK LANDFILL
Van De Mark Chemical Co. Inc.

3.0 LANDFILL PRACTICES

The Van De Mark Landfill can be subdivided into two major disposal areas as shown by Figure 2 and Plan 2. The Western region consists of an area which was used for waste disposal between 1957 and 1979 by Van De Mark Chemical. In this area, landfilling methods were generally random, consisting of excavation, disposal and covering. The waste consisted mainly of drums of silicon tetrachloride ($SiCl_4$) and chlorodisiloxane formed as by-products during the commercial production of silicon tetrachloride.

The Eastern region of the landfill was used for the disposal of similar by-products as well as carbon and silicon carbide. Such waste was disposed of according to Permit 2111, issued February 9, 1979 and which expired in February 1982. The drummed waste was deposited in pits on a base of crushed limestone and backfilled with crushed limestone. The drums were then perforated to enhance the neutralizing of the waste. The cover consisted of bags of finish lime and agricultural lime beneath an earthen cap of red silty clayey soils. Upon expiry of Permit 2111 VDM began disposal of pretreated wastes to the Lockport Wastewater Treatment Plant.

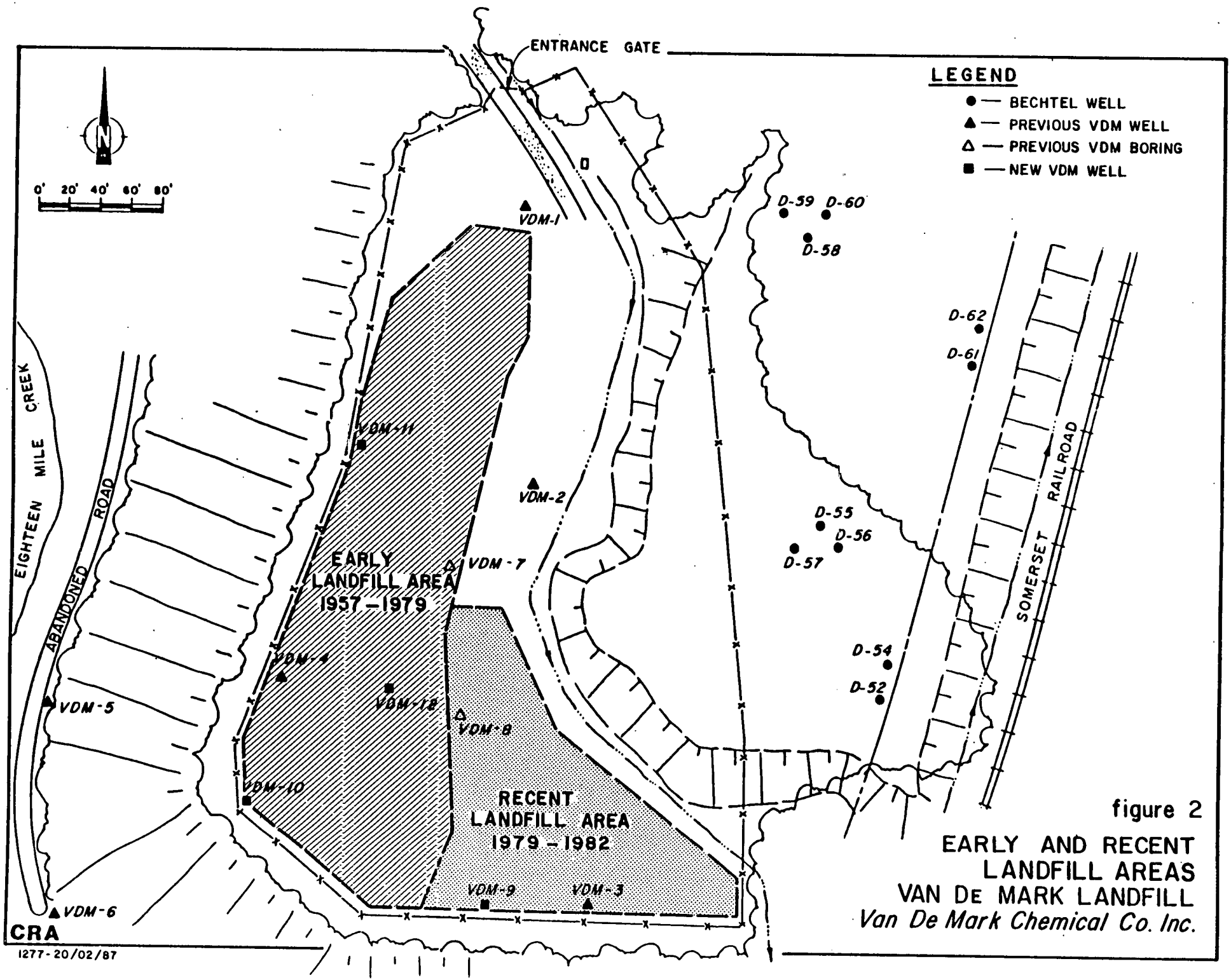


figure 2

EARLY AND RECENT LANDFILL AREAS
VAN DE MARK LANDFILL
Van De Mark Chemical Co. Inc.

4.0 SUPPLEMENTAL SAMPLING

On May 12, 1986, a sample collection program was conducted at the Van De Mark Landfill by AES. The intent of the program was to provide supplemental data and to provide confirmation of the analytical information presented from the April 1984 sampling program. Samples were collected from the following: groundwater monitoring wells VDM 9, 10, 11 and 12; water from the ditch adjacent to the Landfill; and from upstream and downstream locations on Eighteen Mile Creek. The samples were analyzed for chlorides, total recoverable phenols, total organic halides, pH, and priority pollutant volatiles, PCBs and pesticides, base/neutral extractables, acid extractables and metals.

Table 1 presents a summary of the analytical results. Complete analytical results are detailed in Appendix E. Figures 3 and 4 illustrate the locations of all of the wells in the landfill area and the creek sampling stations respectively.

The analytical results indicate that zinc levels have risen over 1984 levels but in general the water quality is very similar to 1984 conditions.

TABLE 1

ANALYTICAL RESULTS OF SAMPLES
COLLECTED MAY 12, 1986

Analytical Parameter(s)	Method No.	Det. Limits	VDM 9 5/12/86	VDM 10 5/12/86	VDM 11 5/12/86	VDM 12 5/12/86	UPSTREAM 18MI CREEK 5/12/86	DOWNSTREAM 18MI CREEK 5/12/86	DITCH 5/12/86	FIELD BLANK 5/12/86
Chlorides mg/L	407B	1	18,000 (15068)	6,470 (7730)	4,803 (1859)	57,200 (53593)	34.4	40.1	2,585	BDL*
Total Recoverable Phenols, mg/L	420.1	0.01	0.01	0.54	0.23	BDL (0.08)	0.01	BDL	BDL	
Total Organic Halides, mg/L	9020	0.001				2.81				
pH			4.30 (4.79)	6.18 (5.32)	2.20 (2.37)	1.83 (4.01)	7.89	8.13	4.66	
PURGEABLE HALOCARBONS										
micrograms/liter, or ppb										
Bromodichloromethane	601	10.0	BDL	BDL	BDL		BDL	BDL	BDL	BDL
Bromoform	601	10.0	BDL	BDL	BDL		BDL	BDL	BDL	BDL
Bromomethane	601	5.0	BDL	BDL	BDL		BDL	BDL	BDL	BDL
Carbon Tetrachloride	601	5.0	6.56 (BDL)	BDL	18.0		BDL	BDL	BDL	BDL
Vinyl Chloride	601	5.0	BDL	BDL	BDL		BDL	BDL	BDL	BDL
Chloroethane	601	5.0	BDL	BDL	BDL		BDL	BDL	BDL	BDL
2-Chloroethylvinyl Ether	601	5.0	BDL	BDL	BDL		BDL	BDL	BDL	BDL
Chloroform	601	5.0	163 (169)	5.97 (98)	72.9 (196)		BDL	BDL	13.7	BDL
Chloromethane	601	5.0	BDL	BDL	BDL		BDL	BDL	BDL	BDL
Dibromochloromethane	601	10.0	BDL	BDL	BDL		BDL	BDL	BDL	BDL
Trichlorofluoromethane	601	5.0	BDL	BDL	BDL		BDL	BDL	BDL	BDL
Trichloroethene	601	5.0	39.9	BDL	6.75		BDL	BDL	BDL	BDL
1,1,2-Trichloroethane	601	5.0	BDL	BDL	BDL		BDL	BDL	BDL	BDL

* BDL - Below Detection Limit

continued....

TABLE 1

ANALYTICAL RESULTS OF SAMPLES
COLLECTED MAY 12, 1986

Analytical Parameter(s)	Method No.	Det. Limits	VDM 9 5/12/86	VDM 10 5/12/86	VDM 11 5/12/86	VDM 12 5/12/86	UPSTREAM 18MI CREEK 5/12/86	DOWNSTREAM 18MI CREEK 5/12/86	DITCH 5/12/86	FIELD BLANK 5/12/86
Dichlorodifluoromethane	601	5.0	BDL	BDL	BDL		BDL	BDL	BDL	BDL
1,1-Dichloroethane	601	5.0	BDL	BDL	BDL		BDL	BDL	BDL	BDL
1,2-Dichloroethene	601	5.0	32.0	9.91	5.45		BDL	BDL	11.2	BDL
1,1-Dichloroethene	601	5.0	BDL	BDL	BDL		BDL	BDL	BDL	BDL
Trans-1,2-Dichloroethene	601	5.0	5.43	BDL	BDL		BDL	BDL	BDL	BDL
1,2-Dichloropropane	601	5.0	BDL	BDL	BDL		BDL	BDL	BDL	BDL
Cis-1,3-Dichloropropene	601	5.0	BDL	BDL	BDL		BDL	BDL	BDL	BDL
Trans-1,3-Dichloroethene	601	5.0	BDL	BDL	BDL		BDL	BDL	BDL	BDL
Methylene Chloride	601	5.0	34.3 (263)	69.5 (42)	168 (232)		BDL	BDL	BDL	BDL
1,1,2,2-Tetrachloroethane	601	5.0	257	BDL	BDL		BDL	BDL	437	BDL
Tetrachloroethene	601	5.0	46.0	BDL	71.6 (230)		BDL	BDL	BDL	BDL
1,1,1-Trichloroethane	601	5.0	BDL	BDL	BDL		BDL	BDL	6.45	BDL
							BDL	BDL	BDL	BDL
VOLATILE ORGANICS micrograms/liter, or ppb										
Chloromethane	624	10				490 (858)				
Vinyl Chloride	624	10				BDL				

continued...

TABLE 1

ANALYTICAL RESULTS OF SAMPLES
COLLECTED MAY 12, 1986

Analytical Parameter(s)	Method No.	Det. Limits	VDM 9 5/12/86	VDM 10 5/12/86	VDM 11 5/12/86	VDM 12 5/12/86	UPSTREAM 18MI CREEK 5/12/86	DOWNSTREAM 18MI CREEK 5/12/86	DITCH 5/12/86	FIELD BLANK 5/12/86
Chloroethane	624	10				BDL				
Bromomethane	624	10				BDL				
2-Chloroethyl Vinylether	624	10				BDL				
Ethylbenzene	624	10				BDL				
Methylene Chloride	624	10				180 (898)				
Chlorobenzene	624	10				BDL				
1,1-Dichloroethylene	624	10				BDL				
1,1-Dichloroethane	624	10				BDL				
trans-1,2-Dichloroethylene	624	10				BDL				
Chloroform	624	10				360 (616)				
1,2-Dichloroethane	624	10				BDL				
1,1,1-Trichloroethane	624	10				BDL				
Carbon Tetrachloride	624	10				38 (28)				
Bromodichloromethane	624	10				BDL				
1,2-Dichloropropane	624	10				BDL				
trans-1,3-Dichloropropene	624	10				BDL				
Trichloroethylene	624	10				13				

continued...

TABLE 1

ANALYTICAL RESULTS OF SAMPLES
COLLECTED MAY 12, 1986

Analytical Parameter(s)	Method No.	Det. Limits	VDM 9 5/12/86	VDM 10 5/12/86	VDM 11 5/12/86	VDM 12 5/12/86	UPSTREAM 18MI CREEK 5/12/86	DOWNSTREAM 18MI CREEK 5/12/86	DITCH 5/12/86	FIELD BLANK 5/12/86
Benzene	624	10				BDL				
cis-1,3-Dichloropropene	624	10				BDL				
1,1,2-Trichloroethane	624	10				BDL				
Dibromochloromethane	624	10				BDL				
Bromoform	624	10				BDL				
1,1,2,2-Tetrachloroethylene	624	10				140 (120)				
1,1,2,2-Tetrachloroethane	624	10				43				
Toluene	624	10				BDL				

PCBs AND PESTICIDES

Groundwater sample from VDM-12 tested. No PCB's or pesticides found above detection limits.

continued...

TABLE 1

ANALYTICAL RESULTS OF SAMPLES
COLLECTED MAY 12, 1986

Analytical Parameter(s)	Method No.	Det. Limits	VDM 9 5/12/86	VDM 10 5/12/86	VDM 11 5/12/86	VDM 12 5/12/86	UPSTREAM 18MI CREEK 5/12/86	DOWNSTREAM 18MI CREEK 5/12/86	DITCH 5/12/86	FIELD BLANK 5/12/86
BASE/NEUTRAL EXTRACTABLES										
Groundwater sample from VDM-12 tested. No Base/Neutral Extractables found above detection limits. During analysis of VDM-12 sample of January 24, 1984, Octylphthalate was found at 100 ppb.										
ACIDS										
Groundwater sample from VDM-12 tested. No acids found above detection limits.										

continued...

TABLE 1

ANALYTICAL RESULTS OF SAMPLES
COLLECTED MAY 12, 1986

Analytical Parameter(s)	Method No.	Det. Limits	VDM 9 5/12/86	VDM 10 5/12/86	VDM 11 5/12/86	VDM 12 5/12/86	UPSTREAM 18MI CREEK 5/12/86	DOWNSTREAM 18MI CREEK 5/12/86	DITCH 5/12/86	FIELD BLANK 5/12/86
METALS										
milligrams/liter, or ppm										
Arsenic (As)	206.2	0.005	0.181	0.023	0.105	4.0	BDL	BDL	BDL	
Beryllium (Be)	210.1	0.050	0.084 (0.028)	BDL	BDL (0.016)	0.38 (0.186)	BDL	BDL	BDL	
Cadmium (Cd)	213.1	0.05	BDL (0.096)	BDL (0.04)	BDL (0.017)	BDL (0.294)	BDL	BDL	BDL	
Chromium (Cr)	218.1	0.50	1.4 (0.19)	BDL (0.16)	BDL (0.19)	8.1 (5.26)	BDL	BDL	BDL	
Copper (Cu)	220.1	0.20	6.0 (7.8)	0.45 (0.29)	1.09 (0.51)	29 (57)	BDL	BDL	BDL	
Iron (Fe)	236.1	0.20	1,965	1,820	3,250	14,500	0.80	0.74	500	
Lead (Pb)	239.1	1.00	2.17 (0.75)	BDL (0.07)	BDL (0.1)	27 (22.2)	BDL	BDL	BDL	
Mercury (Hg)	245.1	0.001	0.006	0.005	0.002	BDL	0.001	0.003	0.004	
Nickel (Ni)	249.1	0.50	3.70 (1.73)	BDL (0.31)	0.86 (0.6)	1.94 (26.6)	BDL	BDL	0.68	
Selenium (Se)	270.2	0.005	BDL	BDL	BDL	0.017	BDL	BDL	BDL	
Silver (Ag)	272.1	0.10	BDL (0.21)	BDL (0.06)	BDL (0.06)	BDL (0.87)	BDL	BDL	BDL	
Thallium (Tl)	279.1	1.00	BDL (0.85)	BDL (0.3)	BDL (0.2)	BDL (1.23)	BDL	BDL	BDL	
Zinc (Zn)	289.1	0.050	1,150 (3.05)	0.51 (1.14)	1.19 (2.92)	1,360 (497)	0.52	0.22	0.33	

Notes: Analytical Results given in brackets are the highest results from previous sample rounds by AES.

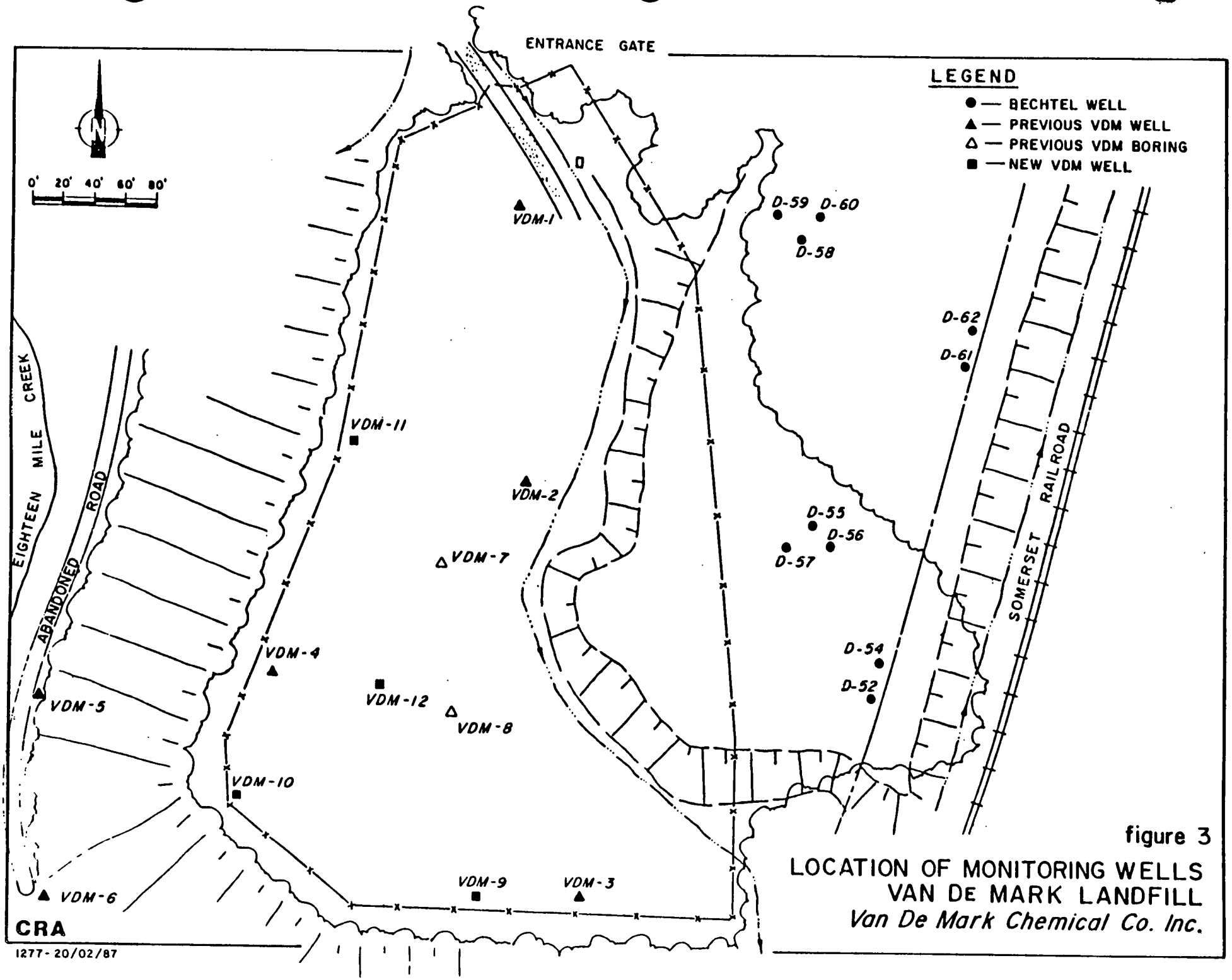


figure 3

LOCATION OF MONITORING WELLS
VAN DE MARK LANDFILL
Van De Mark Chemical Co. Inc.

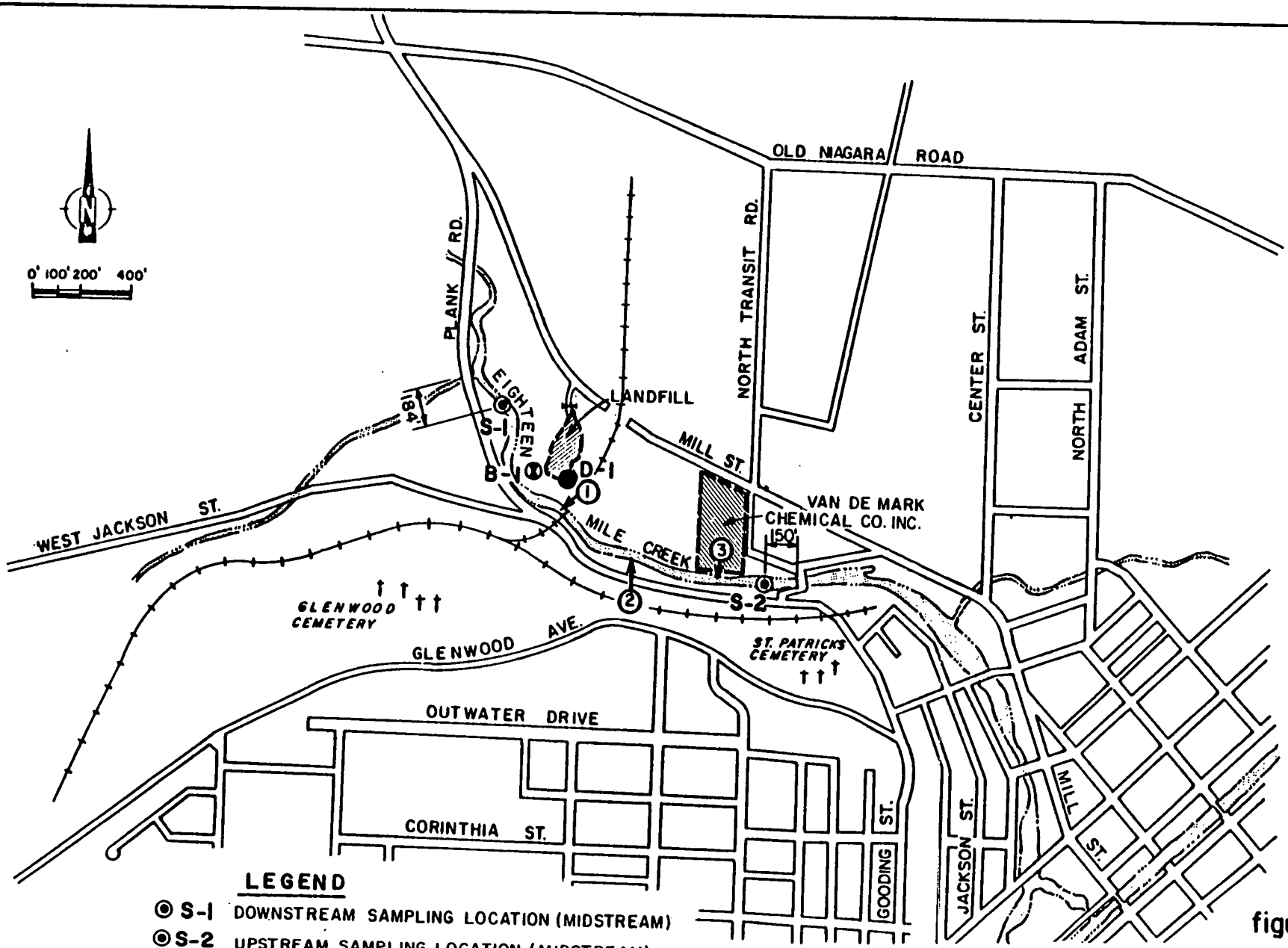


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figure 4

EIGHTEEN MILE CREEK
SAMPLING LOCATIONS
VAN DE MARK LANDFILL
Van De Mark Chemical Co. Inc.

1277-20/02/87

5.0 RECOMMENDED CLOSURE PLAN

Based upon the results of investigations by AES and CRA, it is apparent that the groundwater beneath the Van De Mark Landfill has been impacted by the placement of waste materials. Analytical data from groundwater samples collected from VDM12 (located in the middle of the landfill) reveal high concentrations of chlorides (52,000 ppm) and iron (10,000 ppm) and a low pH (4). Elevated concentrations of soluable metals (i.e. chromium - 8.1 ppm, and zinc - 1,360 ppm) and purgeable halocarbons (i.e. chloroform - 616 ppb, and chloromethane - 858 ppb) were also evident. Samples from monitoring wells VDM9, VDM10, and VDM11 as well as from the drainage ditch along the eastern limits of the landfill revealed some migration of various chemical components but at low concentrations. Surface water samples from upstream and downstream locations along Eighteen Mile Creek indicate that there is no measurable impact on Eighteen Mile Creek by the Van De Mark landfill site. See Table 1. Since the north shore of Eighteen Mile Creek is the site property boundary no off-site impact is occuring.

The principle mode of contaminant migration from the site is via groundwater flow. The main driving force behind groundwater flow is infiltrating precipitation which collects on the relatively flat, porous surface of the landfill area. The groundwater descends vertically through

the fill layer, enters the groundwater flow regime in the bedrock and moves southerly towards the embankment. As indicated by the "Former Landfill Investigation and Closure Plan" the major flow paths through the bedrock are lateral.

In general, the proposed closure plan is based upon the implementation of a low permeable clay cover over the former Landfill area to reduce infiltration and therefore the migration of landfilled contaminants. A layer of lime powder will be placed over the waste material prior to cap construction for the purpose of pH control. Precipitation penetrating through the cap will contact the lime and provide a buffering action to combat the low pH levels in the waste areas. A pan-lysimeter will be installed beneath the cap to measure the amount of any such infiltration through the cap. The surface of the cover will be graded such that a major portion of the surface runoff will flow east into the drainage ditch, while runoff from the remainder of the site will flow over the embankment to the west and south of the Landfill (see Plan 3 and Plan 4).

The existing drainage ditch traversing along the eastern limits of the Landfill area will be lined with clay to restrict the infiltration of ditch flow into the landfilled soils. Conversely, in order to prevent groundwater seepage from the landfilled area continuing to discharge into the ditch and along the underside of the clay

lining to an off-site discharge point, an interceptor drain will be dug near the downstream end of the ditch. The trench will extend from the underside of the clay ditch lining to a depth of two feet and will be backfilled with crushed limestone. Any seepage flowing along the clay lining will be intercepted and buffered then reenter the groundwater flow regime (see Figure 5).

In summary, the recommended closure plan will consist of the following:

a) Site grading and proof-rolling
b) Installation of a pan-lysimeter
c) Lime application
d) Installation of interceptor trench in ditch
e) Construction of a two-foot clay cover including lining of ditch with clay
f) Addition of loam and drainage layers
g) Addition of topsoil layer and application of seeding
h) Implementation of maintenance program
i) Implementation of post-closure monitoring program

6.0 SURFACE PREPARATION

The initial step of the closure plan construction involves the clearing and grubbing of the site. Any vegetation cleared from the site will be disposed of at a sanitary landfill site. Following clearing and grubbing, the site will be pre-graded according to the pre-grading plan (see Figure 6). Disturbance of existing cover soils over the landfilled areas will be minimized to the extent practicable during pre-grading of the site.

Where appropriate, areas of existing topsoil will be stripped and stockpiled for future use. Large surface debris (i.e. concrete, boulders) will be buried beneath the cover in the northeast section of the Landfill.

The entire site will be proof-rolled (20 ton $\pm$ static weight). Any settlement due to proof-rolling will be backfilled, graded and proof-rolled again. Proper proof-rolling of the site will reduce cover settlement following closure.

In conjunction with the pre-grading the pan-lysimeter will be installed. Further consideration is required prior to design of the pan-lysimeter.

Following pre-grading and proof-rolling, powdered lime will be added to the entire surface of the site at a rate of application of 0.1 pounds per square foot.

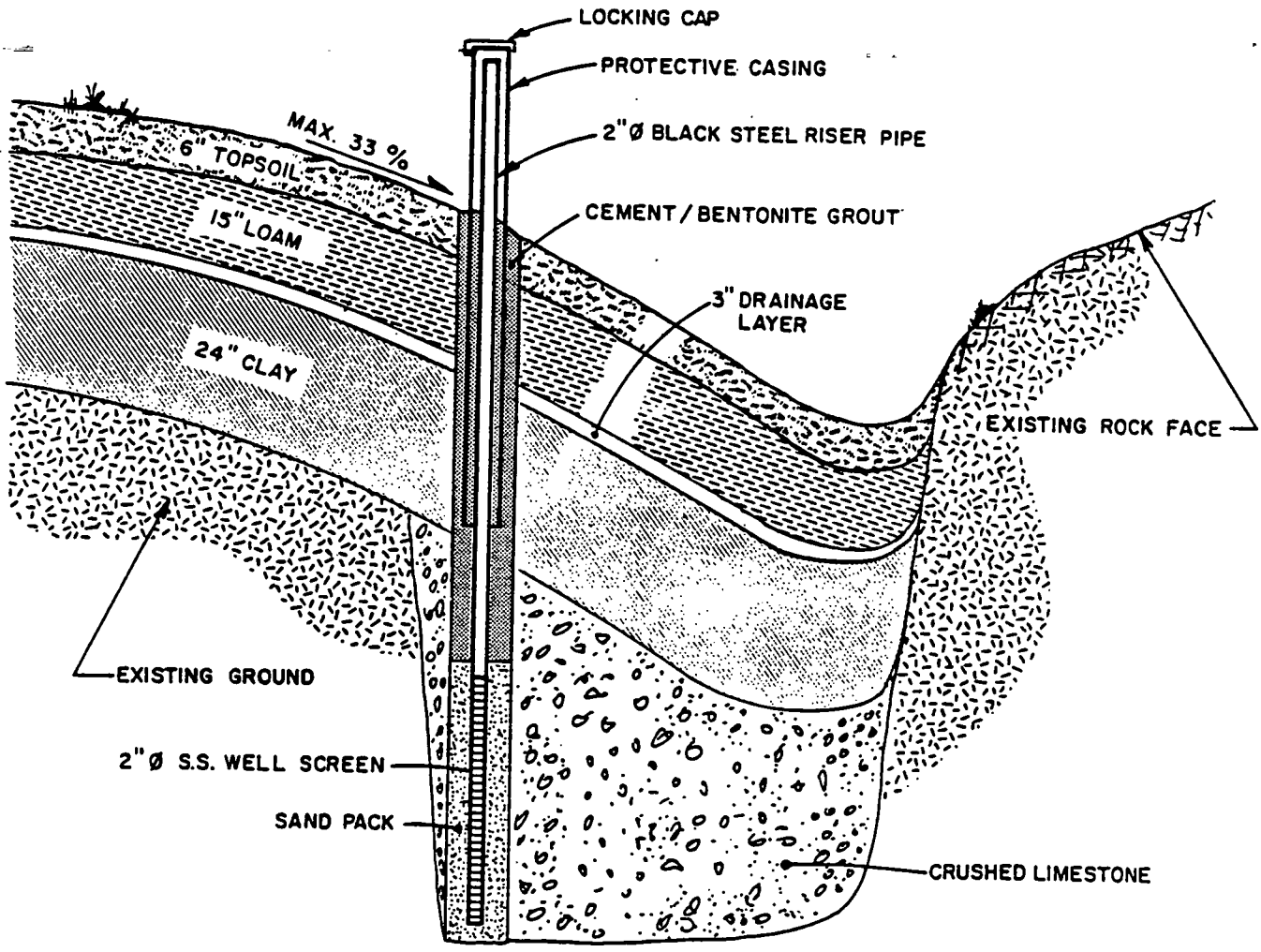

figure 5

INTERCEPTOR TRENCH
AND INTERCEPTOR TRENCH
SAMPLE COLLECTION SYSTEM
VAN DE MARK LANDFILL
Van De Mark Chemical Co. Inc.

NOTE: IRON STAINING ALONG DITCH WILL BE REMOVED AND BURIED ON SITE

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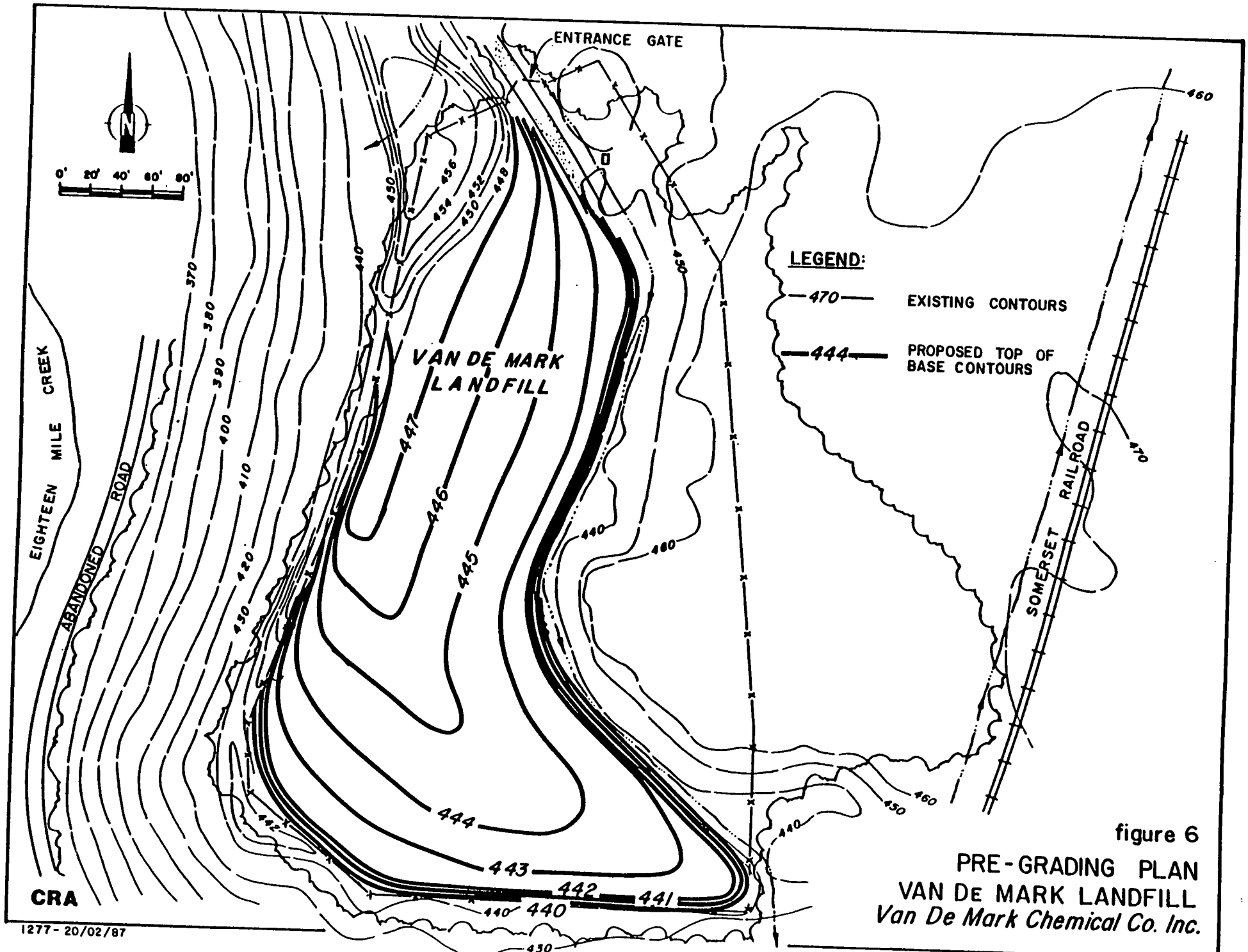

figure 6

PRE-GRADING PLAN
VAN DE MARK LANDFILL
Van De Mark Chemical Co. Inc.

7.0 FINAL COVER

The entire Van de Mark Landfill area will be covered with a low permeability cap to reduce precipitation infiltration. The final cover will consist of:

- vegetative cover (grass)
- 6-inch thick topsoil layer
- 15" thick loam layer
- 3" sand drainage layer
- 24-inch thick clay layer.

A typical cross section of the clay cap is presented on Figure 7. The areal extent and final surface elevations of the cover are presented on Figure 8. The clay will be placed and compacted to a hydraulic conductivity of 1 x 10^{-7} cm/sec or less.

The six-inch thick topsoil layer will be placed on top of the loam layer and will be planted with a persistent vegetative species. The vegetative cover will have a shallow root system. The surface slope of the final cover has been designed at three percent slope, but will never exceed five percent or be less than three percent. Effective vegetation and the proper slope of the cover surface will effectively minimize erosion. Any erosion that does occur will be suitably addressed by the maintenance program.

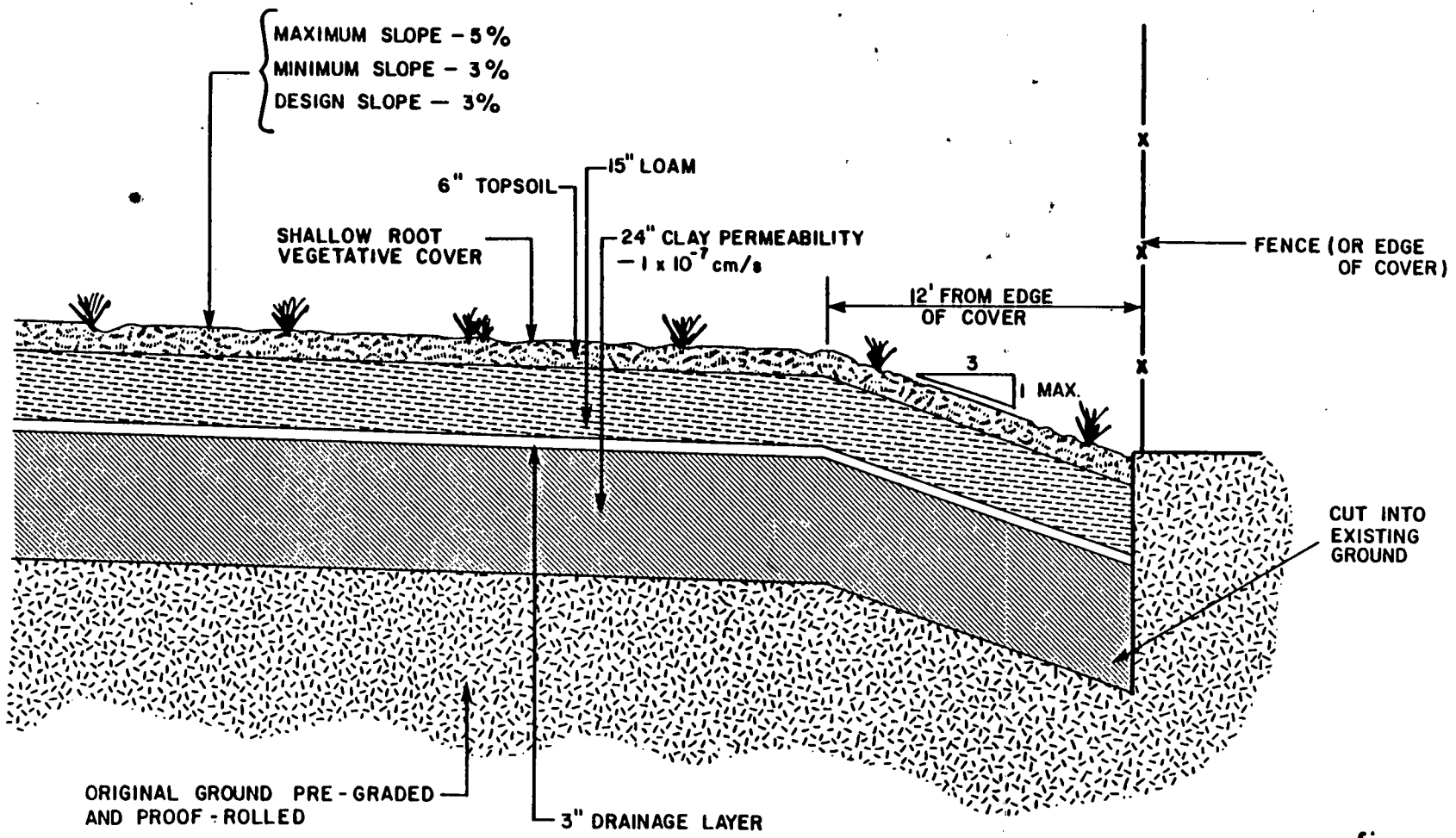

figure 7

CROSS SECTION OF COVER
VAN DE MARK LANDFILL
Van De Mark Chemical Co. Inc.

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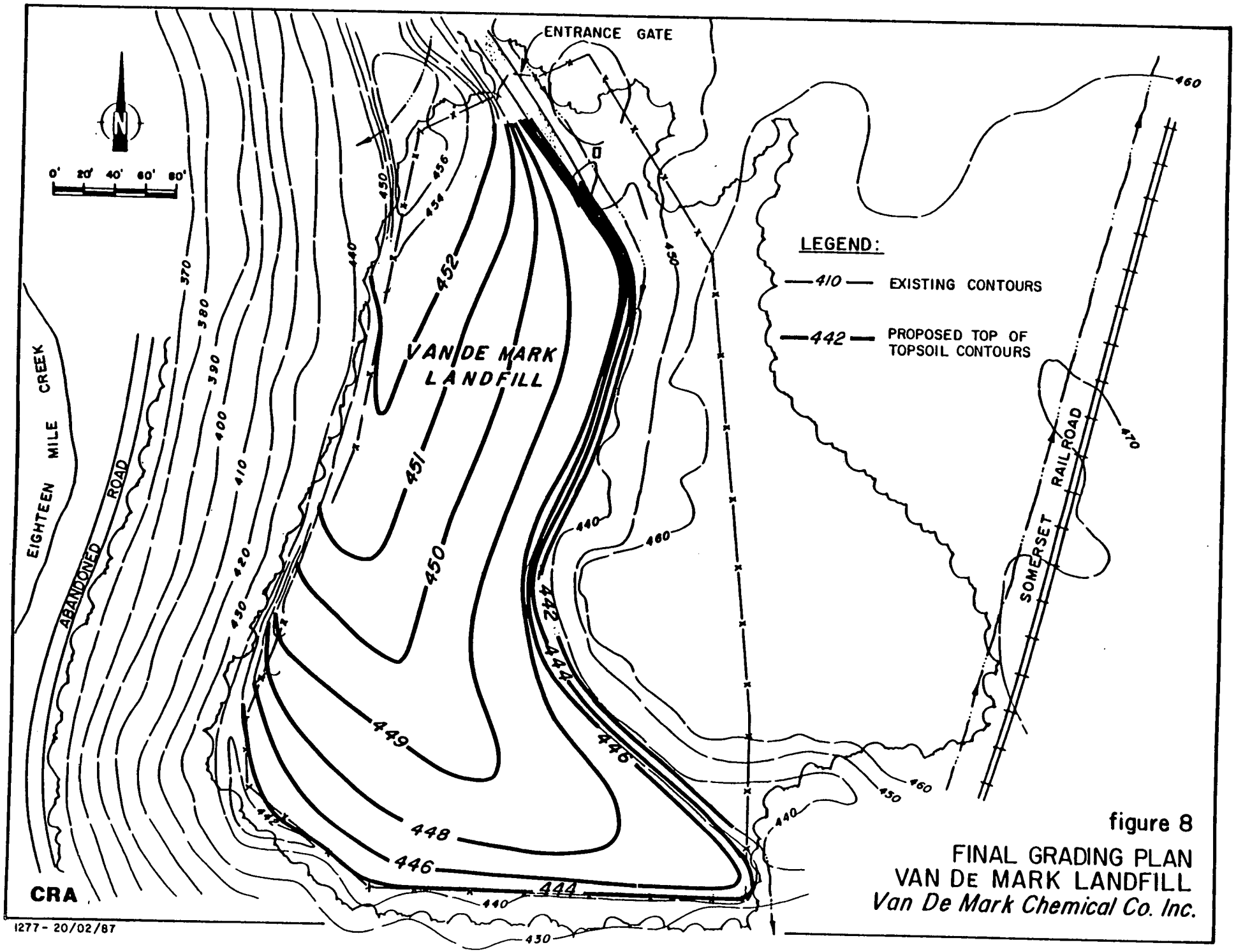


figure 8

FINAL GRADING PLAN
VAN DE MARK LANDFILL
Van De Mark Chemical Co. Inc.

Settlement of the proposed cover will be minimal as existing fill to be covered has had some time to settle and will be proof-rolled during the site grading program. Use of good quality materials and adequate compaction of same during construction of the proposed cover will also minimize settlement following closure. Due to the flexibility of the clay layer it is apparent that minor settlement will have very little effect on the permeability of the cover.

The proposed cover design minimizes the effects of freeze thaw cycles. The depth of frost penetration in the area is on the order of 36 inches, such that 12 inches of the clay layer remains below the depth of frost penetration.

Due to the nature of the fill disposed at the site, biodegradation or volatilization is not a concern. As a result, it will not be necessary to install a venting system to relieve generated gases.

8.0 MATERIAL SPECIFICATIONS AND QUALITY ASSURANCE PLAN

8.1 MATERIAL SPECIFICATIONS

All materials used to construct the final cover will be approved by the Site Supervisor prior to use to ensure they meet the required specifications as described in the following:

a) Clay

Clay for the final cover construction will be clayey soil obtained from sources as directed by the Site Supervisor. Clay material will have a permeability of 1×10^{-7} cm/sec or less, with a minimum of 45 percent fines passing the 200 sieve (clay, classified as CL or ML under the Unified Soils Classification System or defined by ASTM D-421-58 and D-422-63 procedures).

b) Sand

Sand for the drainage layer will be imported clean material from a source approved by the Site Supervisor. The sand shall have a minimum hydraulic conductivity of 1×10^{-3} cm/sec when remolded at 95 percent Standard Proctor Density at Optimum Moisture Content.

c) Loam

Loam material for the construction of the cover will be an imported clean sand or gravel fill which shall contain a minimum of 30 percent by volume of topsoil from a source approved by the Site Supervisor. Soil stockpiled during grading of the landfill site and soils from other VandeMark property will be used in construction of the cover as is suitable. In addition the topsoil requirements defined below shall apply to the loam.

d) Topsoil

Topsoil will be fertile loamy material free from roots, vegetation, weed, parts of weeds, weed seeds and other debris. The source of topsoil will be an area free from growth of Quackgrass, Japanese Clover, Horsetail, Morning Glory, and other persistent weed plants. Topsoil will be free from stones and clods over two inches in diameter.

Topsoil will not be obtained from swampy areas and will not be infested with the seeds of noxious weeds. The pH of the topsoil will be between 5.5 and 7.0.

Topsoil will be inspected and approved by the Site Supervisor prior to delivery to the job site. Topsoil of suitable quality from Van De Mark property will be incorporated into the final cover.

8.2 CONSTRUCTION QUALITY ASSURANCE PLAN

a) Clay Placement

Clay for the lower component of the final cover will be placed in 6-inch horizontal lifts compacted to a Modified Proctor Density determined to achieve a maximum permeability of 1.0×10^{-7} cm/sec for that clay as outlined in ASTM 1557, at a moisture content of -1 to +3 percent of its optimum moisture content as determined periodically by the Site Supervisor. During placement of the clay liner, grain size and moisture content determinations will be made for every 1,000 cubic yards of clay; and liquid limit, plasticity index and triaxial permeability will be determined every 5,000 cubic yards of clay. Compaction tests and moisture density determinations will be carried out in place by a soils technician, at a frequency of nine tests per acre per 6-inch lift. Following construction, in situ samples of the clay cap will be collected and tested for hydraulic conductivity at a frequency of one per acre of completed cap.

The clay component of the final cover will be sloped at a minimum two-percent grade.

All clay placed will meet compaction specifications. Should compaction specifications not be met, the affected area will be reworked and recompacted until subsequent testing confirms compliance with the specifications. Clay will not be placed until underlying lifts have been approved by the Site Supervisor.

b) Drainage Layer and Loam Placement

Following placement of clay layer a 3-inch layer of clean sand will be spread and compacted to 90% Standard Proctor Density over the 24-inch depth clay layer. 15 inches of loam will then be placed over the sand drainage layer. The loam will be placed and compacted in two lifts (each lift no greater than 8 inches thick) to 90% Standard Proctor Density.

c) Topsoil

Six inches of topsoil will be evenly and uniformly spread over the capped area following final grading of the loam.

d) Seeding and Mulching

Prior to seeding, fertilizer with a nitrogen/phosphoric acid/pot ash rating of 10/20/20 will be applied to the topsoil for purposes of soil enhancement. The fertilizer application rate will be 300 lb/acre. If a neutral or mildly alkaline silt loam is used for topsoil, the addition of lime will not be necessary.

A combination of Kentucky bluegrass and rye grass (at a ratio of 4:1) will be planted over the cover to reduce infiltration and erosion from wind and rainfall. Rye grass is an especially fast grower, able to survive dry conditions, and is a perennial plant. The Kentucky bluegrass has a shallow and strong root system, requires moderate maintenance, and is also a perennial plant. In combination, this provides an effective vegetative cover. A neutral or mildly alkaline silt loam is favorable to the grass. Suggested seed density for Kentucky bluegrass is 3 lb of seed per 1,000 square feet. This is equivalent to approximately 130 lb of seed per acre. With a 4:1 application of Kentucky bluegrass to rye grass, this amounts to 104 lb/acre and 26 lb/acre, respectively.

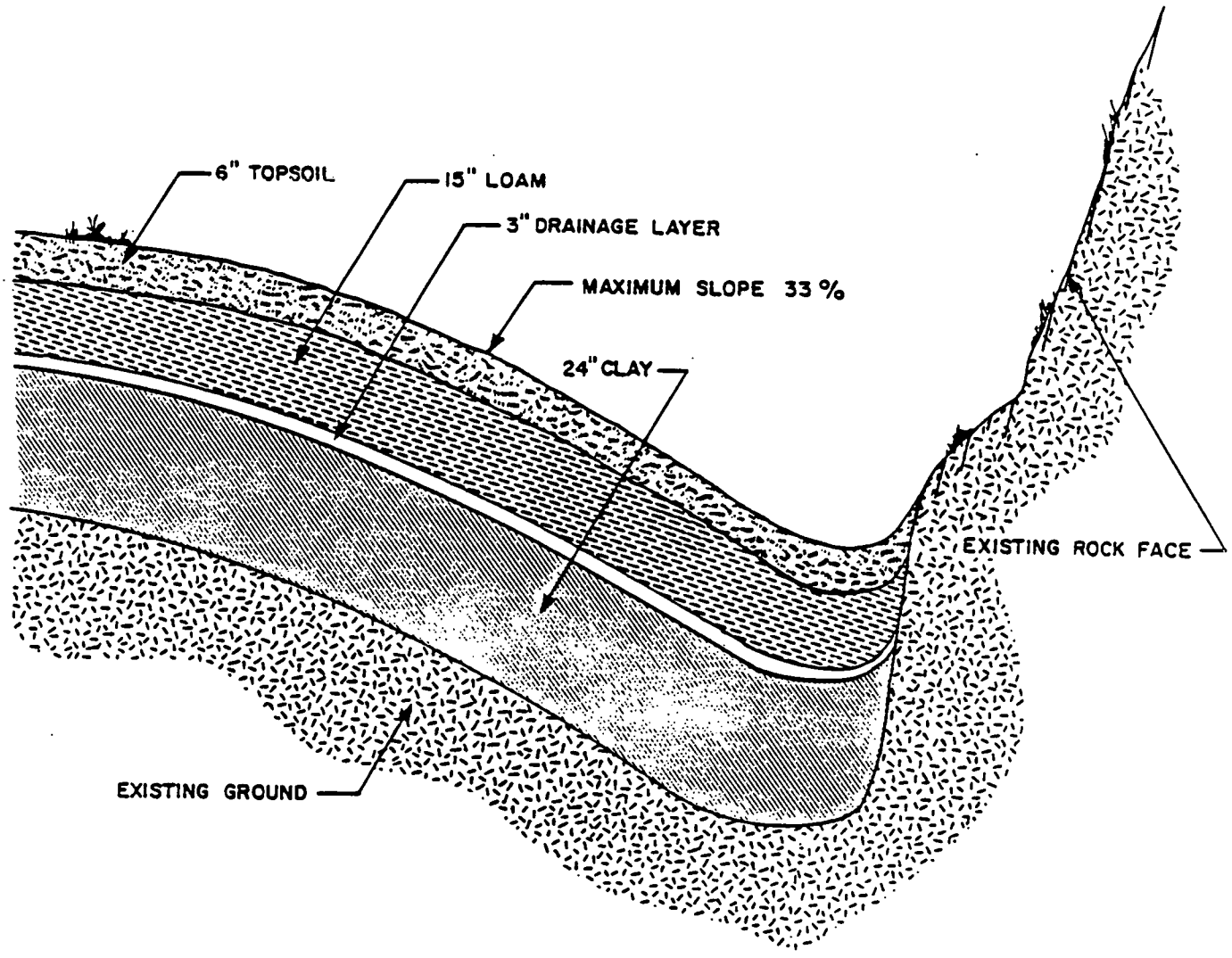
e) Construction Certification

As-built engineering drawings noting final clay cover elevations, topsoil elevations, final drainage features, monitoring device locations and elevations, test locations and any deviations from the approved plans, shall be provided. One east-west and one north-south cross-section through the completed area shall also be generated for cap certification. Once completed, all soil test reports, inspection reports, photographs of all major activities along with the construction certification plans (as-constructed drawings), shall be submitted to the NYSDEC.

9.0 SURFACE WATER DRAINAGE

It is proposed that the post-closure drainage pattern be similar to the existing pattern in that as little flow as possible be directed over the embankment bordering the Western and Southern limits of the Landfill. By diverting the majority of the flow toward the eastern ditch erosion of the embankment will be minimized. The proposed final grading plan (Figure 7) illustrates the surface drainage configuration.

It is proposed that the existing ditch be lined with clay and in fact will be an extention of the clay cap for the site. The ditch lining will be built to the same specifications as the site cap. The side slope of the ditch will have a maximum slope of 33 percent. A typical detail of the ditch lining is presented in Figure 9.



NOTE: IRON STAINING ALONG DITCH WILL BE REMOVED AND BURIED ON SITE

figure 9

PROPOSED DITCH LINING
VAN DE MARK LANDFILL
Van De Mark Chemical Co. Inc.

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1277 - 20/02/87

10.0 SITE SECURITY AND ACCESS

Security for the Van De Mark Landfill Site will be maintained by the existing six-foot high chain link fence. The entire fence will be inspected at the conclusion of capping construction and repaired as necessary.

The existing gates will be maintained and kept locked at all times when the site is not being supervised by Van De Mark personnel.

The existing site access road shall be maintained in reasonable condition to provide vehicular access to the site. No on-site access road will be constructed.

11.0 POST-CLOSURE MONITORING PROGRAM

The purpose of the post-closure monitoring program is to monitor the effectiveness of the closure construction for containing the migration of the contaminants within the landfilled area. The program consists of the collection and analysis of a series of groundwater and stream samples at regular intervals. The samples will be analyzed for the site specific parameters which include the following:

- pH (measured in the field)
- purgeable halocarbons (method 601)
- chlorides (method 407B)
- soluable metals: arsenic (method 206.2)
  chromium (method 218.2)
  iron (method 236.1)
  lead (method 239.2)
  mercury (method 245.1)
  zinc (method 289.1)

The sampling locations will include:

- monitoring wells VDM 9, VDM 10, VDM 11, VDM 12, and D-55;
- the effluent from the drainage ditch east of the Landfill;
- the seep in the area of the southwest corner of the Landfill; and,

- upstream and downstream locations of Eighteen Mile Creek.

Sampling Protocols are outlined in Appendix F.

Samples will be collected according to the following schedule:

Initial 18 Months following closure - quarterly
18 Months to end of year 3 following closure - semi-annually
Years 4 and 5 following closure - annually
Years 5 to 30 following closure - every five years

Prior to each sampling round, one complete set of groundwater elevation measurements will be made using all of the wells that have been installed on the landfill site proper.

The results of each sampling event will be submitted to the NYSDEC within one week of receipt of the analytical data.

In order to evaluate the performance of the clay cap, a lysimeter will be installed on the Site. During the regular sampling events outlined for the post-closure program, the water level in the lysimeter will be measured. This measurement will be converted into an estimated infiltration rate of the clay cap, compared to the required cap permeability of 1×10^{-7} cm/sec and reported along with the analytical results to the NYSDEC.

12.0 CONTINGENCY PROGRAM

Following each post-closure monitoring event, the analytical data will be reviewed for accuracy and evaluated to determine whether there have been any significant changes in the landfill conditions. The purpose of the contingency program is to outline the required remedial actions to be taken, where appropriate, based on observations made during post-closure monitoring program activities.

The mechanism which will trigger the implementation of the contingency program will be a significant impact measured in the stream. This will be done by monitoring water quality trends in the stream. Should this monitoring identify a significant increase in chemical parameter, a reassessment of the remedial action will be undertaken.

The initial step of the contingency plan is to notify the NYSDEC representative assigned to the site. The second step is to verify the increase by taking two additional samples at the sample location(s) in question, and analyzing for the particular parameter(s). This must be done within one month of receipt of the analytical data. If the increase is verified, a study will be initiated to determine the cause of the increase and the potential consequences. Within six months of the initial receipt of analytical data

which triggered the contingency program, a report must be submitted to the NYSDEC, which details these causes and consequences, as well as the recommended remedial action.

13.0 MAINTENANCE PROGRAM

Following site closure, the site will be inspected semi-annually. The site will be inspected with regards to:

a) cover integrity;
b) ditch lining integrity and presence of iron staining;
c) condition of vegetation over the cover;
d) drainage conditions and
e) condition of the fence surrounding the site.

A log will be maintained of the inspections for a minimum of six years from the date of inspection. The log will indicate the name of the inspector, item of inspection, date and time of inspection, observations, and date and nature of remedial action(s).

Any deficiencies noted during inspection will be addressed immediately.

Any settlement of the cover, should it occur, in excess of 12 inches will be remedied by removal of the topsoil, loam and drainage layer and subsequent backfilling with additional clay to top of clay grades and replacement of the drainage layer, loam and topsoil, properly compacted.

Any erosion of the cover will be repaired by reconstruction of the cover in the eroded area. If necessary sod will be used to re-establish vegetative cover.

14.0 SCHEDULE

The closure plan construction activities will be completed in two phases. Each phase will be completed in one of two consecutive construction seasons (years).

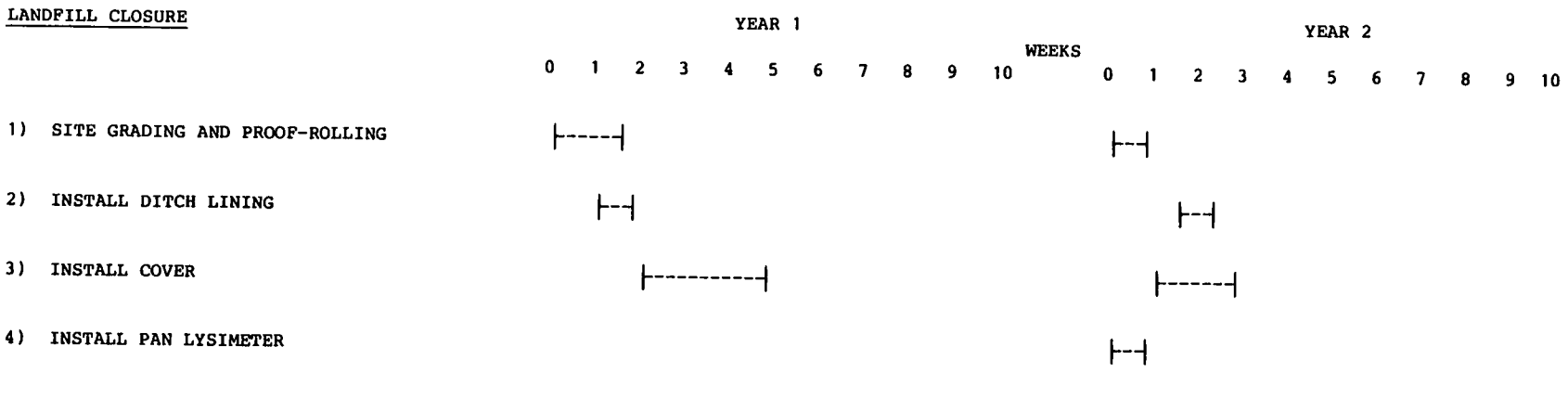
During the initial construction phase (Year 1) the entire site will be cleared and grubbed, proof-rolled and graded. A portion of the site cover, approximately the southern half of the site, will be completed including clay, drainage layer, loam, topsoil and seed and mulch during Year 1.

Year 2 construction activities will begin with regrading of the area remaining to be covered, and any repairs or upgrading required of Year 1 installations. Following these activities the lysimeter will be installed and the construction of the cover and ditch lining will be completed.

The estimated schedule is presented in Figure 10.

FIGURE 10

SCHEDULE OF LANDFILL CAPPING AND CLOSURE ACTIVITIES



It is to be noted that site capping is a warm weather construction project and as such could not be undertaken during the winter months. Closure is tentatively scheduled to begin in the spring of 1987, with completion being expected by summer of 1988.

15.0 ESTIMATED COST

The estimated costs for closure of the Van De Mark Landfill in accordance with the specifications contained herein are on the order of $261,000. Table 2 provides a breakdown of the cost components included in this estimate.

The estimated annual monitoring, maintenance and seepage collection/treatment costs for the site are as follows:

Monitoring-Year 1	$14,400
-Year 2	$10,800
-Year 3	$ 7,200
-Years 4 and 5	$ 3,600
-Thereafter	$ 700
Maintenance (Cap and Collection System)	$ 4,000 annually

TABLE 2

COST ESTIMATE
SOLID WASTE MANAGEMENT FACILITY CLOSURE

ITEM	
A) Site Preparation	
1. Site Grading and Proof-Rolling 2.5 acres @ $1,200/acre	$ 3,000.
2. Application of Powdered Lime 2.5 acres @ $2,000/acre	$ 5,000.
3. Survey Crew to set and check grades 2.5 acres @ $1,000/acre	$ 2,500.
SECTION A Subtotal	$10,500.
B) Clay Cover Installation and Testing	
1. 24-inch clay layer installation 8,000 c.y. @ $11.00/c.y.	$ 88,000.
2. Placement of 3-inch sand drainage layer 1,000 c.y. @ $17.00/c.y.	$ 17,000.
3. Placement of 15-inch loam cover 5,000 c.y. @ $12.00/c.y.	$ 60,000.
4. Placement of 6-inch topsoil layer 2,000 c.y. @ $12.00/c.y.	$ 24,000.
7. Application of seed and mulch 12,000 sq. yd. @ $0.30/sq. yd.	$ 3,600.
6. Testing	
a) Grain size and moisture content 8 @ $30/test	$ 300.
b) Liquid limit and plasticity 2 @ $50/test	$ 100.
c) Moisture-density measurements 2 @ $80/test	$ 200.
d) Remolded permeability tests 2 @ $270/test	$ 600.
e) In-place moisture-density 90 @ $15/test	$ 1,350.
f) Falling head permeability 10 @ $220/test	$ 2,200.

continued...

TABLE 2 (cont'd)

COST ESTIMATE
SOLID WASTE MANAGEMENT FACILITY CLOSURE

ITEM	
7. Construct trench in drainage ditch and backfill with crushed limestone 1 L.S. @ $1,000	$ 1,000.
8. Supply and install lysimeter 1 L.S. @ $1,500	$ 1,500.
SECTION B Subtotal	$199,850.

C) Closure Certification

1. Certification by land surveyor 2.5 acres @ $300/acre	$ 800.
2. Certification by professional engineer 1 L.S. @ $1,000	$ 1,000.
3. Closure Report - 1 L.S. @ $5,000	$ 5,000.
SECTION C Subtotal	$ 6,800.

Estimated Cost Summary

TOTAL SECTIONS A - C	$217,150.
MOBILIZATION/DEMOBILIZATION	$ 10,000.
CONTINGENCY (15 PERCENT)	$ 34,000.
TOTAL	$261,150.

16.0 SUMMARY

Closure of the Van De Mark Landfill in accordance with the specifications described herein including capping, monitoring and maintenance, will reduce the migration of contaminants discharging with the groundwater beneath the site through a reduction in the driving force created through precipitation infiltration.

All of which is respectfully submitted,

Frank A. Rovers, P. Eng.

David E. Black, P. Eng.

ADDENDUM I

CLOSURE PLAN FOR VAN DE MARK LANDFILL

March 1987

#1277

1.0 INTRODUCTION

This Addendum has been prepared in response to comments presented by the New York State Department of Environmental Conservation (NYSDEC) regarding the report entitled "Closure Plan - Former Landfill Site" for Van De Mark Chemical Company.

The NYSDEC has requested additional information regarding the following items of the Closure Plan:

1) Soil Loss
2) Clay Testing
3) Contingency Plan - Cap Permeability

This addendum presents the requested information.

2.0 ESTIMATED SOIL LOSS

As part of the design of the final cover, erosion rate calculations have been completed based upon the United States Department of Agriculture (USDA) universal soil loss equation.

The estimated soil loss for that part of the cap having a maximum slope of 5 percent is 0.14 tons per acre. This is based upon the following assumptions:

- A tons/acre = RKLSCP = universal soil loss equation
- R = 70, Rainfall Erosivity Factor,
- K = 0.3; equivalent to cover soil consisting of loam having an organic matter content of approximately 4 percent,
- LS = 0.66; assumes longest slope at 5 percent is less than 150 feet in length,
- C = 0.01; assumes vegetative cover to be grass,
- P = 1; no land management practice to reduce erosion,
- The above factors have been interpreted from Tables 5, 6, 7 and 8 and from Figure 20 as presented by the USEPA publication "Evaluating Cover Systems for Solid and Hazardous Waste, SW-867, September 1982".

Similarly, the calculation of soil loss was completed for the cap boundary area which has a slope as great as 33.3 percent over a 12 foot horizontal distance. The calculated soil loss based on the following assumptions for this slope is 0.84 tons per acre:

- R = 70, Rainfall Erosivity Factor
- K = 0.3; equivalent to cover soil consisting of loam having an organic matter content of approximately 4 percent,
- LS = 4.0; equal to a 30 percent slope 25 feet long,
- C = 0.01; assumes vegetative cover to be grass
- P = 1; no land management practice to reduce erosion.

The above soil loss quantities compare favorably with the recommended maximum rate of erosion of 2.0 tons per acre for any part of a cover as presented in the "Draft RCRA Guidance Document - Landfill Design - Liner Systems and Final Cover - Issued: 7/82". It is expected that a rate of runoff of less than 2.0 tons/acre will minimize potential gully development and will not significantly increase cover maintenance.

3.0 QUALITY CONTROL OF THE CLAY

The selection of the clay borrow source will be determined in part by a review of data submitted by the clay suppliers. This determination will be supplemented by a rigorous on-site inspection program which will include testing of each unit of clay prior to placement. Prior to placement, each 1,000 cubic yards of clay cover material will be tested for grain size distribution and moisture content determination. Liquid limit, plasticity index and triaxial permeability tests will be conducted prior to placement of each 5,000 cubic yards of clay.

Compaction tests and moisture density determinations will be carried out in place on the completed site at a frequency of nine tests per acre per lift of clay. In-situ samples of the clay cap will be collected and tested for hydraulic conductivity (falling head method) at a frequency of one per acre of completed cap. Table 1 further describes the clay placement quality control program.

TABLE 1

Test Description	Frequency	Clay Quantity	Quantity	Test Method	Approximate Cost (Each - Total)	
Grain Size Distribution	1/1,000 cy	8,000 cy	8	ASTM D 422	$120	$ 960
Moisture Content	1/1,000 cy	8,000 cy	8	ASTM D 2216	$ 30	$ 240
Liquid Limit	1/5,000 cy	8,000 cy	2	ASTM D 423	$ 50	$ 100
Plasticity Index	1/5,000 cy	8,000 cy	2	ASTM D 424		
Moisture-Density Curve	1/5,000 cy	8,000 cy	2	ASTM D 698 (5-15 blow modification)	$ 80	$ 160
Laboratory Permeability	1/5,000 cy	8,000 cy	2	ASTM D 698 (5-15 blow modification)	$270	$ 540
Moisture-Density	9/acre/lift	2.5 acres x 3 lifts	68	Nuclear Densitometer	$ 15	$1,020
Permeability	1/acre/lift	2.5 acres x 3 lifts	8	Falling Head	$270	$2,160
				Estimated Testing Cost		$5,180

4.0 LYSIMETER - CONTINGENCY PLAN

A pan Lysimeter will be installed at one location beneath the clay cover. The pan will measure 10'x10' and intercept moisture infiltrating through a 100 square foot area of the cap. Determination of infiltration will be made at six month intervals.

The Lysimeter will be calibrated such that infiltration can be determined by a simple water level measurement in the stand pipe connected to the Lysimeter. The water level will correspond to a calibrated volume of infiltration which in turn will be compared to the design infiltration rate of 1.0×10^{-7} cm/sec. A volume change of approximately 38 gallons is approximately equal to an infiltration rate of 1×10^{-7} cm/sec over six months.

If the volume of water intercepted by the Lysimeter is greater than 38 gallons for any six month period, the following contingency plan will be implemented:

- Increase the frequency of Lysimeter water level measurement/infiltration determination to monthly,

- Inspect integrity of cap, noting any subsidence, surface cracking, erosion and take immediate measures to restore the cap to within specified design criteria.

- If the cap appears to be in excellent condition then the cap must be inspected by excavating test pits and determining the condition of the clay layer itself.

- If the inspection and any subsequent repairs to the cap do not reduce the infiltration rate to below $1x10^{-7}$ cm/sec, VanDeMark and the NYSDEC will meet to discuss the situation.

5.0 SUMMARY

It is intended that the responses contained herein be attached to and incorporated into the Closure Plan for the Van De Mark Site.

ADDENDUM II

CLOSURE PLAN FOR VANDEMARK LANDFILL

MAY 1, 1987

1.0 INTRODUCTION

This addendum has been prepared in response to a conversation with T. DiGulio, NYSDEC Albany, on April 29, 1987 with regard to the VanDeMark Chemical Company Closure Plan for the Industrial Landfill EPA ID# NYD991290529.

The information requested and included in Addendum II are as follows:

1) Will the loam, topsoil, and seeding extend down to cover the drainage ditch.

2) Provide a copy of the calculations for the water loading to the pan lysimeter.

3) In the post closure plan, provide a means of sampling the interceptor trench.

4) Provide the specifications of the limestone to be used in the interceptor trench.

5) Specify the location of the pan lysimeter in the landfill.

6) What will the wording of the hazard signs placed around the landfill and the spacing of those signs.

7) Provide the name address and phone number of the person or office to contact about the disposal facility during the post closure care period.

8) Submit a construction schedule based upon closing the site in a 180 day period following approval of the closure plan.

2.0 COVERAGE OF THE DRAINAGE DITCH

The ditch will be covered with 24" of clay, a 3" drainage layer, 15" of loam, 6" of topsoil and seeded as shown in figure 1 of the attached letter from CRA.

3.0 CALCULATIONS FOR THE WATER LOADING TO THE PAN LYSIMETER.

The calculations for the water loadings to the pan lysimeter are contained in the attached letter from CRA number 1.

4.0 INTERCEPTOR TRENCH SAMPLING.

The interceptor trench shall be sampled in the post closure plan as provided for in the letter attached from CRA, number 2 and shown in figure 1.

5.0 LIMESTONE SPECIFICATIONS.

The specifications for the limestone to be used in the interceptor trench are provided in the attached letter from CRA, number 3.

6.0 LOCATION OF THE PAN LYSIMETER.

The pan lysimeter will be centrally located on the site. The approximate location will be 40 feet southeast of monitoring well VDM-12.

7.0 LOCATION AND WORDING OF THE HAZARD SIGNS AT THE SITE.

The exact wording of the signs is specified on figure 2 of this addendum. Signs will be located a a maximum of 50 feet apart. Signs will be placed on the entrance to the site and be conspicuous at any area where public access to the fence may be expected.

8.0 COMPANY CONTACT FOR THE POST CLOSURE PERIOD.

The VanDeMark contact for the site for the post post closure period will be the Safety Environmental Director of the company. The phone number and address are:

Safety/Environmental Director
VanDeMark Chemical Company
1 North Transit Road
Lockport, New York 14094

Phone Number: 716-433-6764

9.0 SCHEDULE OF CLOSURE.

Closure of the landfill within the specified 180 day time frame is provided for in Table 1 of the attached letter from CRA. The closure is scheduled to be completed in 20 weeks or 140 days from approval of the closure plan.

CRA
Consulting Engineers

CONESTOGA-ROVERS & ASSOCIATES LIMITED
651 Colby Drive,
Waterloo, Ontario, Canada N2V 1C2
(519) 884-0510

April 30, 1987

Reference No. 1277

Mr. Matthew Barmasse
Safety/Environmental Director
VAN DeMARK CHEMICAL COMPANY, INC.
1 North Transit
Lockport, NY
14094

Dear Matt:

Re: Additional Information Concerning Closure Program

Included with this letter is additional information obtained regarding the Closure Program for VanDeMark. Enclosed you will also find Figure 1 "Interceptor Trench and Interceptor Trench Sample Collection System".

1. Lysimeter Volume:

The calculation used to determine the critical volume change of water collected by the Lysimeter is presented below. A volume change of 40 gallons (38.73 gallons) is approximately equal to an infiltration rate of 1×10^{-7} cm/sec over a six month period.

$\Delta V = A \times t \times K$
ΔV = infiltration volume
A = Area (100 sf)
t = duration (6 months)
K = permeability (1×10^{-7} cm/sec)
Assumptions = maximum gradient (1) saturated conditions

2. Ditch Interceptor Sampling System:

To facilitate collection of groundwater samples from the interceptor trench, a 2-inch diameter monitoring well will be installed into the bottom of the interceptor trench. The well will be installed through the cap, extending to the bottom of one end of the trench. The bottom of the trench will be constructed so as to slope towards the monitoring well at a minimum slope of 1 percent. The well will consist of a 2-foot long 2-inch diameter stainless steel well screen and a 2-inch diameter black steel riser pipe extending approximately three feet above grade. A 4-inch diameter black steel protective casing and locking cap will be

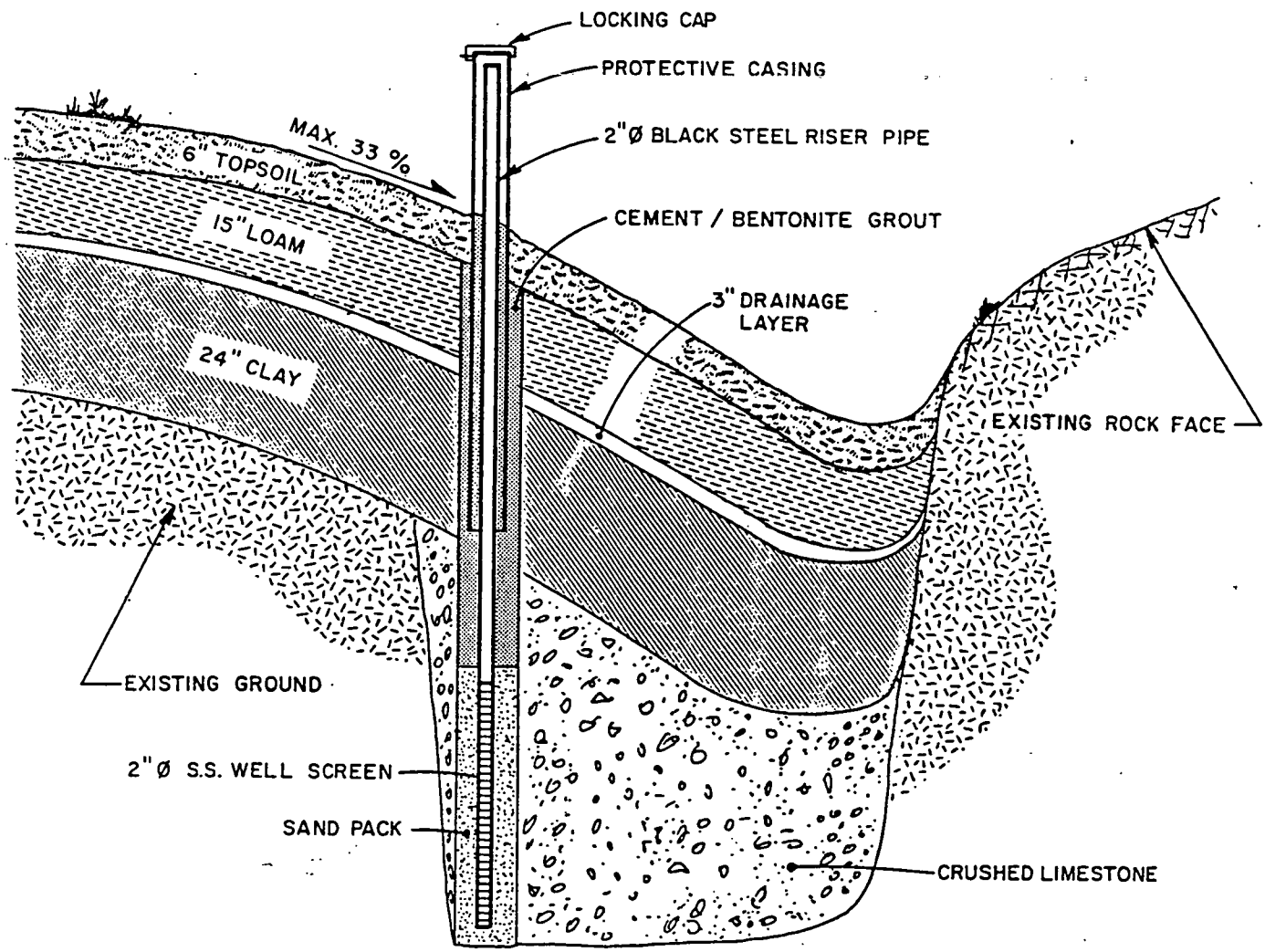


figure 1

INTERCEPTOR TRENCH
AND INTERCEPTOR TRENCH
SAMPLE COLLECTION SYSTEM
VAN DE MARK LANDFILL
Van De Mark Chemical Co. Inc.

CRA

1277 - 28/04/87

TABLE 1

SCHEDULE OF LANDFILL CAPPING AND CLOSURE ACTIVITIES (WEEKS)

LANDFILL CLOSURE	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1) Authorization to Proceed	*																				
2) Preparation of Bid Package	----------																				
3) Contract Award				---------																	
4) Site Grading & Proof Rolling								----------													
5) Install Cover											----------										
6) Install Ditch Lining															---------						
7) Install Pan Lysimeter													-----								
8) Closure Certification																	----------				

AUTHOR

PERSONNE

FIGURE 2

RECEIVED MAY 1 1 1987

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233-

Henry G. Williams
Commissioner

MAY 0 8 1987

Mr. Matthew Barmasse
Safety/Environmental Director
Van De Mark Chemical Co., Inc.
1 N. Transit Road
Lockport, New York 14094-2399

Dear Mr. Barmasse:

Re: Public Notice of Closure Plan
Van De Mark Chemical Co., Inc. Landfill
Lockport, New York - EPA I.D. #NYD991290529

The New York State Department of Environmental Conservation (NYSDEC) has reviewed the Van De Mark "Closure Plan, Former Landfill Site" revised February 1987, with Addendum I and Addendum II dated March 1987 and May 1987 respectively. As an interim status closure, this plan was reviewed for compliance with the applicable portions of 6 NYCRR Subpart 373-3. We have determined that the closure plan is substantively complete as amended by Attachment A of this letter. The items addressed in Attachment A must be incorporated into the Van De Mark Closure Plan at the appropriate locations.

Under the provisions of the New York State regulations, 6 NYCRR 373-3.7, when the owner or operator of a TSD facility submits a closure and post-closure plan, opportunity must be provided through a newspaper notice for the affected public to comment.

Therefore, to satisfy the aforementioned regulatory requirements in conjunction with closure/post-closure of your facility, the enclosed Public Notice must be published unedited in its entirety for one day by May 15, 1987 in a local newspaper of at least weekly circulation in the Lockport area. It is requested that the selected newspaper be a daily publication having wide circulation in the area surrounding your facility. Please note that you must insert the date that the public comment period will end (i.e. 30 days after publication, see last paragraph of public notice).

The notice should not be revised or edited unless you have been authorized to do so by this office. Minor revisions may be authorized by phone if necessary.

Please instruct the newspaper publisher to provide this office with an affidavit of publication. You are responsible for the cost of publication.

Also enclosed for your information is the "Fact Sheet" which will accompany the closure/post-closure plan during the public comment period. Any interested party has the right to comment on the amended closure/post-closure plan during the 30-day comment period. All comments made during this period must be resolved before closure/post-closure plan approval is granted by the NYSDEC.

If you should have any further questions regarding the above, please call Mr. Timothy I. DiGiulio, of my staff, at (518) 457-9253.

Sincerely,

Paul R. Counterman

Paul R. Counterman, P.E.
Chief
Bureau of Hazardous Waste Technology
Division of Solid and Hazardous Waste

Enclosure

cc: w/enc. - P. Ingrisano, USEPA
Robert Mitrey, Region 9

Public Notice
Closure and Post-Closure Plans for Landfill
Van De Mark Chemical Corp., Inc.
Lockport, New York

Notice is hereby given that Van De Mark Chemical Corp., Inc. EPA No. NYD991290529 has applied to the New York State Department of Environmental Conservation (NYSDEC) under the provisions of the Resource Conservation and Recovery Act (RCRA) and New York State regulations at 6NYCRR 373-3, for closure and post-closure of it's hazardous waste landfill located in Lockport, New York.

The complete closure of the landfill consists of two distinct, but related plans. The first plan is termed "closure" and involves the design and construction of a final cover system over the landfill. This system must be capable of controlling surface water infiltration into the landfill and minimize erosion. The second plan is termed "post-closure" and involves the implementation of a groundwater monitoring program and the long term maintenance of the final cover system.

The closure plan involves the construction of the final cover consisting of three layers. The bottom layer will consist of 24 inches of compacted clay with a very low permeability. The middle layer will consist of three inches of sand for drainage and 15 inches of loam. The top layer will be a top soil of sufficient thickness to support vegetation.

The second program includes both a groundwater monitoring program, that is currently underway, and a final cover performance evaluation to determine the effectiveness of the cover design. Based on the results of this program, additional closure requirements to mitigate any adverse effects from contamination may be required.

The closure/post-closure plans and fact sheet are available for public review during the normal business hours at the NYSDEC Region 9 office located at 600 Delaware Avenue, Buffalo, NY 14202. Further information may be obtained by calling Mr. Robert Mitrey, Regional Solid Waste Engineer at (716) 847-4585.

Interested persons with reasonable concerns of the adequacy or sufficiency of the closure and post-closure plans have an obligation to raise all reasonably ascertainable issues and submit, in writing, all available arguments and factual grounds supporting their position to the Regional Solid Waste Engineer, Region 9 at the above address no later than (insert 30 days from date of publication).

Appendix A

The following is an addendum to the Van De Mark Chemical Co., Inc. "Closure Plan, Former Landfill Site", dated February 1987, Ref. No. 1277 Addendum I and II dated March and May 1987 respectively. This addendum must be incorporated into the Closure Plan at the locations specified as follows:

Addendum to 8.0 Material Specifications and Quality Assurance Plan

8.1 Material Specifications

The material to be utilized for construction in the closure of the Van De Mark landfill must meet or exceed the material specifications as stated in 8.0 of the Closure Plan and herein.

Delete paragraph a) on page 13 and replace with the following:

a) Clay

Natural clay material free from roots, organic matter, trash, debris and rocks or slag larger than 1-inch and other deleterious materials shall be imported for use as the soil liner. It shall have a minimum of 45 percent passing the No. 200 sieve, a plastic index of 20 to 50 and a liquid limit of 30 to 50 maximum. The permeability of water through the clay shall be $1x10^{-7}$ cm/sec or less when compacted to 90 percent of the clay's maximum modified proctor density, when tested by a commercially independent laboratory approved by the Engineer/Site Supervisor. The following tests shall be performed on each borrow source utilized at least the prescribed frequency.

Organic Content	Initially and whenever organics are visually evident
Grain Size	1000 cubic yards
Moisture Content	1000 cubic yards
Atterberg Limits (liquid limit and plasticity index)	5000 cubic yards
Proctor Moisture - Density Curve	5000 cubic yards or changes in materials
Lab Permeability (remolded samples)	5000 cubic yards
Consolidated-undrained Triaxial Tests (remolded samples)	5000 cubic yards

Delete the second sentence of paragraph c) on page 14 and replace with the following:

c) Loam

During site grading of the landfill, soil will not be stockpiled for future utilization. All soil presently in the boundary of the landfill shall be used for grading purposes only and shall be contained within the clay component of the cap. Soils outside the limits of the landfill on Van De Mark property may be utilized providing they meet minimum specifications and there is no potential of soil contamination caused by offsite migration from the landfill.

Delete paragraphs in d) on page 14 and 15 and replace with the following:

d) Topsoil

1. Topsoil shall have at least 2 percent by weight of fine-textured stable organic material, and no greater than 6 percent. Muck soil shall not be considered topsoil.

2. Topsoil shall have not less than 20 percent fine-textured material (passing the No. 200 sieve) and not more than 15 percent clay.

3. Topsoil treated with soil sterilants or herbicides shall be so identified to the purchaser.

4. Topsoil shall be relatively free of stones over 1½ inches diameter, trash, noxious weeds such as nutsedge and quackgrass, and will have less than 10 percent gravel by volume.

5. Topsoil containing soluble salts greater than 500 ppm shall not be used.

6. Topsoil shall have a pH between 5.5 and 7.0.

8.2 Construction Quality Assurance Plan

Delete section a) on page 13 and 14 and replace with the following:

a) Clay Placement

The natural clay material shall be prepared for placement at a moisture content of optimum to +3 percent of its optimum moisture content and in loose lifts not exceeding 6 inches thickness. The clay shall be compacted to 90 percent maximum relative compaction as determined by ASTM D 1557. Install the clay to lines and grades as shown on the Drawings.

Compacted clay zones shall be constructed by placing clay in horizontal lifts no less than 10 feet wide, compacted full width, and cut back on side slopes to the lines and grades shown. The surface of each lift shall be scarified prior to placing the next lift of clay to ensure no construction seepage path or seam remains.

Intermediate lifts shall also be rolled to seal when subsequent lifts will not be placed until after 2 calendar days. The sealed surface of

the intermediate lifts will be scarified, moistened if required to aid compaction, and prepared to receive subsequent lifts prior to placement of clay material.

Prior to placing clay, the subgrade will be prepared by trimming to lines and grades shown and removing any zones of segregation or coarse particles which may cause loss of clay into voids. Final subgrade for clay shall be firm, uniformly well-graded, and free of soft or wet areas. The Engineer's/Site Supervisor's approval of subgrade preparation shall be obtained prior to placing clay.

Piles deposited by haul vehicles shall not exceed one rank beyond the spreading face. Each course shall not be placed in excess of 500 linear feet without being compacted. Damage to any compacted lift at any time during the course of construction, such as rutting under the loads imposed by earth moving equipment, shall be fully repaired prior to placement of any overlying materials.

During all compacting operations, maintain optimum practicable moisture content required for compaction purposes in each lift of the earth fill. Maintain moisture content uniform throughout the lift. Insofar as practicable, add water to the material at the site of excavation. Supplement, if required, by sprinkling the earth fill. The clay material at the time of compaction shall have a moisture content of optimum to three percentage points above optimum.

Compaction of fill material that contains excessive moisture will not be attempted. The material will be aerated by blading, discing, harrowing or other methods, to hasten the drying process.

The clay can be adjusted downward in moisture content by discing or can be adjusted upward by discing, watering, and discing again. However, whatever method is used should ensure an even distribution of moisture within the lift.

The clay shall not be overworked. No area shall receive more than twice the predicted number of passes necessary to reach the required density, except when the upper layer of the lift does not form a dry brittle crust.

Keying of one placed volume to another shall take place along certain important contact surfaces. One important contact surface is when fresh clay is placed in any area that was placed more than a few hours earlier. Another important contact surface is when clay from one borrow source touches clay from a different borrow source. Others should be determined by the Engineer/Site Supervisor. At a minimum, the previously placed clay should be scarified and adjusted to a proper moisture content.

If the differences in the clay type are larger or if the contact surface is parallel to the hydraulic gradient of a potential leak, then the contact surface shall be stepped and or keyed in order to minimize the possibility that a leak could travel along the contact surface due to incomplete bonding.

The top surface of the clay liner shall be smooth and the upper 4 inches (0.1 meters) shall be completely free of stones greater than one inch (25 mm) in diameter.

The surface shall be rolled with a smooth drum steel or pneumatic roller or acceptable alternative, as determined by the Engineer/Site Supervisor and found acceptable by the Department, so as to be free of irregularities, loose earth, and abrupt changes in grade. Monitoring checks shall be performed on at least the frequency specified as follows:

Clay Compaction:

Moisture - Density Testing - Nuclear Densitometer Per ASTM D2922	9 per acre per lift

Note: The results of each test should be compared to the most recent moisture density curve to assure that the proper percent compaction is being obtained and to the most recent permeability - density curve to assure that the proper permeability is being obtained.

Also Note: The calibration of each nuclear densitometer should be checked daily by comparison to density measured on the same material by ASTM D-1556.

Clay Permeability:

Undisturbed sample from a Shelby Tube with a falling head permeability test performed on each.	One per acre per lift (but no fewer than one per lift)

Note: This test should be run in a flexible wall permeameter with backpressure used to saturate the sample and keep it saturated during the test.

The clay component of the final cover shall be sloped at a minimum three-percent grade.

Delete section c) on page 16 and replace with the following:

c) Topsoil

Topsoil shall be distributed to a uniform depth of six inches over the capped area following final grading of the loam. It shall not be placed when it is partly frozen, muddy, or on frozen slopes or over ice, snow, or standing water puddles.

Topsoil placed and graded on slopes steeper than 5 percent shall be promptly fertilized, seeded, mulched and stabilized by "tracking" with suitable equipment (i.e. drainage ditch area).

Delete the second paragraph in Section d) on page 17 and replace with the following:

d) To reduce infiltration and erosion from wind and rainfall, the following seed mix shall be planted promptly over the cover.

Name	Variety	Wt. of Pure Live Seed Per Acre
Red Fescue	Commercial	50 lbs.
Kentucky Bluegrass	Commercial	10 lbs.
Perennial Ryegrass	Commercial	40 lbs.
White Clover	Commercial	10 lbs.
	Max 25% Hard Seed	5-10 lbs.
		Total 105-110 lbs./acre

Total application of the seed mix is 105-110 lbs./acre.

Mulch shall be spread uniformly in a continuous blanket of sufficient thickness to reasonably hide the soil from view, taking care not to over apply. Mulch may be spread by hand or by machinery. Mulch may be spread before, but not later than 72 hours after spreading.

e) Construction Certification

Add the following to page 18.

When closure is completed, Van De Mark shall submit to the commissioner certification both by Van De Mark and by an independent professional engineer registered in New York State that the facility has been closed in accordance with the specifications in the approved closure plan.

11.0 Post Closure Monitoring Plan

Add the following to page 21.

- Copper shall be added to the parameter list for metals. All metal analyses must include total metals. Soluble metals can be run in addition to, but not in lieu of, total metals.

- Total Recoverable Phenolics shall be added to the parameter lists.

Add the following to page 22 of the Closure Plan.

In addition to groundwater elevation measurements, lysimeter measurements shall also be taken quarterly during the initial 18 months of performance monitoring.

At the end of the 18 month monitoring period, Van De Mark shall prepare and submit a report to the Department which evaluates the performance of the cover system. The following data will be included in the Performance Evaluation Report:

1. All available historic water quality data from each monitoring point and all data collected during the performance period presented in spreadsheets. Supporting QA/QC results should also be submitted for data collected during the performance monitoring period.

2. All available groundwater level data presented in a spreadsheet showing monitoring point and water level for each sampling event.

3. Lysimeter data and calculations used to determine permeability/performance of the cap.

The report shall discuss this data, evaluate the effectiveness of the cover system and include a proposal for future monitoring or additional remedial measures at the landfill. Until that proposal is approved by the Department, and implemented, Van De Mark will continue monitoring as specified in the Post-Closure Monitoring Program.

12.0 Contingency Program

Delete paragraph two on page 23 and replace with the following:

The mechanism which will trigger the implementation of the contingency program shall be:

1. If monitoring results indicate that a significant deterioration in water quality has occurred.

2. If it is determined that cap permeability exceeds 10-7 cm/sec (i.e. through pan-lysimeter monitoring).

Delete paragraph three on page 23 and 24 and replace with the following:

Should the contingency plan be implemented at any time, the following steps will be taken:

1. Immediately notify NYSDEC.

2. Within 2 weeks of implementation, collect duplicate samples at the monitoring point(s) in question, and analyze for the parameter(s) of concern.

3. If a deterioration of the water quality or cap performance is verified, an evaluation of the potential impact to health and the environment will be made. This evaluation, along with a proposal for remedial action, will be submitted to the Department within eight (8) weeks of the implementation of the contingency program. If remedial action is warranted, the proposal must contain a schedule for the required additional work.

The NYSDEC has the right to implement the contingency plan and/or the Alternative Remedial Measures when deemed necessary.

13.0 Maintenance Program

Add the following to the semi-annual inspection list on page 25.

f) pan-lysimeter

g) monitoring wells and water quality monitoring points

If it is determined that a well may not provide accurate piezometric values, may be damaged in some way, or is inaccessible, within fourteen (14) days of such knowledge will attempt to remedy the problem.

Within twenty (20) days of such knowledge, through written notification to the NYSDEC, Van De Mark shall provide information which describes the nature of the problem associated with the well, and in the event of a failure to obtain a sample, the reason why the sample was not obtained.

In addition, the notification will contain:

1. A description of how the problem with the device was corrected; or

2. A schedule for the rehabilitation or replacement of the well.

If a problem with a well prevented the collection of a scheduled sample, a sample must be obtained within fourteen (14) days after rehabilitation or replacement of the well.

APPENDIX F

Sampling and Analysis Program for Monitoring the Van De Mark Landfill Site

The following shall be included in the plan:

- The frequency for sounding wells shall be annually.
- Total metals must be included and should be included in Table 3.
- A Field Blank and Blind Duplicate will be taken during every sampling event.
- Reporting - ID of the blind duplicate will be included when reports are submitted to the NYSDEC

New York State Department of Environmental Conservation

--

SEQR
Negative Declaration
Notice of Determination of Non-Significance

Project # NYD991290529 Date May 1, 1987

This notice is issued pursuant to Part 617 of the implementing regulations pertaining to Article 8 (State Environmental Quality Review) of the Environmental Conservation Law.

The Department of Environmental Conservation, as lead agency, has determined that the proposed action described below will not have a significant effect on the environment.

Title of Action: Van De Mark Chemical Corp., Inc. Landfill Closure/Post-Closure Plan

SEQR Status: Type I ☐
Unlisted ☒

Description of Action:

See attached sheets.

Location: (Include the name of the county and town. A location map of appropriate scale is also recommended)

This landfill is located in Niagara County between Mill Street and Eighteen Mile Creek, Lockport, New York.

Reasons Supporting This Determination:

See attached sheets.

For Further Information:

Contact Person: Paul R. Counterman, P.E.
Address: Bureau of Hazardous Waste Technology
50 Wolf Road, Albany NY 12233
Phone No.: (518) 457-9253

Copies of this Notice Sent to:

Commissioner-Department of Environmental Conservation, 50 Wolf Road, Albany, New York 12233-0001
Appropriate Regional Office of the Department of Environmental Conservation
Office of the Chief Executive Officer of the political subdivision in which the action will be principally located
Applicant (if any)
Other involved agencies (if any)

SEQR Negative Declaration
Van De Mark Chemical Corp., Inc.
Landfill Closure Plan
EPA ID No. NYD991290529

Description of Action

Van De Mark Chemical Co., Inc. has submitted to the Department a plan for the closure of a hazardous waste landfill located in Lockport, New York. This unit will be closed under the New York State Regulations 6NYCRR 373-3.

Van De Mark manufactured and produced silicone tetrachloride for commercial use. Through this process, chemical waste by-products are produced which have been disposed of in a landfill located between Mill Street and Eighteen Mile Creek, in Lockport, New York. Van De Mark disposed of these wastes beginning in 1953 and ending in 1982. Since 1982, the pre-treated wastes are processed through the Lockport Wastewater Treatment Facility.

Van De Mark Landfill consists of a largely flat 2.5 - acre plateau located on a bluff approximately 80 feet above Eighteen Mile Creek. The wastes that were previously landfilled were deposited in 55-gallon drums and placed in limestone lined trenches approximately 7-foot-deep by 12-foot-wide. Additional crushed limestone was placed on top of the drums and then backfilled to the original grade. The limestone was to enhance the neutralization process of the waste.

When closure begins, the site will be proof-rolled, graded and spread with lime. The plan includes a final cover system consisting of two feet of compacted clay with permeability of $1x10^{-7}$ cm/sec for less, overlain by a drainage layer of sand and loam, topped by soil capable of sustaining vegetative growth. The system is designed to minimize infiltration of surface water and promote drainage of run-off. The soil cover will then be fertilized and seeded to prevent erosion and to enhance the asthetics of the area.

Reasons Supporting This Determination of No Significant Impact Include:

1. The Closure of this inactive landfill under the proposed plan dated February 1987 should reduce potential threats to the environment.

2. No significant adverse environment impacts have been identified on Eighteen Mile Creek as a result of the disposal of wastes into the landfill. Closure of this inactive unit under the proposed plan would significantly decrease any future potential threat of impact to the creek.

3. The closure operations will take place entirely on the applicants property and includes only basic construction equipment and operations. The facility is located away from population centers and this increased activity should not impact local residence.

4. The facility will be constructed with a cap to securely enclose the contaminated soils inplace and to decrease the downward driving force of precipitation into the wastes.

5. The groundwater beneath and downgradient of the landfill is being monitored. Van De Mark will continue to monitor groundwater as a part of post-closure requirements in accordance with 6NYCRR 373-3.6 regulations.

6. The post-closure plan will address the maintenance, inspection and integrity of the final cover system.

POST-CLOSURE PLAN

VanDeMark Chemical Co., Inc.
1 North Transit Road
Lockport, New York 14094

EPA ID No. NYD991290529

Prepared by: Gregory H. Beck
Safety/Environmental
Director

Date: March 29, 1989

TABLE OF CONTENTS

1.0 Monitoring Program

The purpose of the post-closure monitoring program is to monitor the effectiveness of the closure construction for containing the migration of the contaminants within the landfill area. The program consists of the collection and analysis of a series of groundwater and stream samples at regular intervals. The samples will be analyzed for the site specific parameters which include the following:

- pH (measured in the field)
- purgeable halocarbons (Method 601)
- chlorides (Method 407B)
- total metals: arsenic (Method 206.2)
  chromium (Method 218.2)
  copper (Method 200.7)
  iron (Method 236.1)
  lead (Method 239.1)
  mercury (Method 245.1)
  zinc (Method 289.1)
- total recoverable phenolics (Method 420.1)

The sampling locations will include:

- monitoring wells VDM-9, 10, 11, 12, 14 (interceptor trench) and D-55
- the seep in the area of the southwest corner of the landfill
- upstream and downstream location of Eighteen Mile Creek

Samples will be collected according to the following schedule:

- Initial 18 months following closure - quarterly
- 18 months to 3 years - semi-annually
- years 4 and 5 following closure - annually
- years 5 to 30 following closure - every 5 years

Prior to each sampling round, one complete set of groundwater elevation measurements will be made using all of the wells that have been installed on the landfill site proper. In addition to groundwater elevation measurements, lysimeter measurements shall also be taken quarterly during the initial 18 months of performance monitoring.

At the end of the 18 month monitoring period, VanDeMark shall prepare and submit a report to the Department which evaluates the performance of the cover system. The following data will be included in the Performance Evaluation Report:

1. All available historic water quality data from each monitoring point and all data collected during the performance period presented in spreadsheets. Supporting QA/QC results should also be submitted for data collected during the performance monitoring period.

2. All available groundwater level data presented in a spreadsheet showing monitoring point and water level for each sampling event.

3. Lysimeter data and calculations used to determine permeability/performance of the cap.

The report shall discuss this data, evaluate the effectiveness of the cover system and include a proposal for future monitoring or additional remedial measures at the landfill. Until that proposal is approved by the Department, and implemented, VanDeMark will continue monitoring as specified in the Post-Closure Monitoring Program.

The results of each sampling event will be submitted to the NYSDEC within one week of receipt of the analytical data.

2.0 Maintenance Program

During the post-closure, the site will be inspected semi-annually. The site will be inspected with regards to:

- cover integrity
- ditch lining integrity and presence of iron staining
- condition of vegetation over the cover
- drainage conditions
- condition of the fence surrounding the site
- pan lysimeter
- monitoring wells and water quality monitoring points

A log will be maintained of the inspections for a minimum of six years from the date of inspection. The log will indicate the name of the inspector, item of inspection, date and time of inspection, observations and date and nature of remedial actions.

Any defeciencies noted during an inspection will be addressed immediately.

Any settlement of the cover, should it occur, in excess of 12 inches will be remedied by removal of the topsoil, loam and drainage layer and subsequent backfilling with additional clay to top of clay grades and replacement of the drainage layer, loam and topsoil, properly compacted.

Any erosion of the cover will be repaired by reconstruction of the cover in the eroded area. If necessary sod will be used to re-establish vegetative cover. The vegetation will be maintained on an as needed basis, approximately every six weeks.

3.0 Contact Person

The name, address and phone number of the person or office to contact about the landfill is:

Safety/Environmental Director
VanDeMark Chemical Co., Inc.
1 North Transit Road
Lockport, New York 14094
(716)433-6764

The Following Image(s) are the Best Copy Available

BIEL'S

VanDeMark Chemical Quarterly Landfill Sampling Results

May 12, 1986

Constituent	Upstrm	Dnstrm	D-55	VDM-9	VDM-10	VDM-11	VDM-12
Chloride	34.4	40.1	-	18800	6470	4803	57200
pH	7.89	8.13	-	4.3	6.18	2.20	1.83
Total Phenolics	0.01	0.01	-	0.01	0.54	0.23	0.01
Bromodichloromethane	0.01	0.01	-	0.01	0.01	0.01	0.01
Bromoform	0.01	0.01	-	0.01	0.01	0.01	0.01
Bromomethane	0.005	0.005	-	0.005	0.005	0.005	0.01
Carbon Tetrachloride	0.005	0.005	-	0.00636	0.005	0.018	0.038
Chloroethane	0.005	0.005	-	0.005	0.005	0.005	0.01
2-Chloroethylvinyl Ether	0.005	0.005	-	0.005	0.005	0.005	0.01
Chloroform	0.005	0.005	-	0.163	0.00597	0.0792	0.36
Chloromethane	0.005	0.005	-	0.005	0.005	0.005	0.49
Dibromochloromethane	0.01	0.01	-	0.01	0.01	0.01	0.01
1,1-Dichloroethane	0.005	0.005	-	0.005	0.005	0.005	0.01
1,2-Dichloroethane	0.005	0.005	-	0.032	0.00991	0.00545	0.01
1,1-Dichloroethene	0.005	0.005	-	0.005	0.005	0.005	0.01
Trans-1,2-Dichloroethene	0.005	0.005	-	0.00543	0.005	0.005	0.01
1,2-Dichloropropane	0.005	0.005	-	0.005	0.005	0.005	0.01
Cis-1,3-Dichloropropene	0.005	0.005	-	0.005	0.005	0.005	0.01
Trans-1,3-Dichloropropene	0.005	0.005	-	0.005	0.005	0.005	0.01
Methylene Chloride	0.005	0.005	-	0.0343	0.0695	0.168	0.18
1,1,2,2-Tetrachloroethane	0.005	0.005	-	0.257	0.005	0.005	0.043
Tetrachloroethene	0.005	0.005	-	0.046	0.005	0.0716	0.14
1,1,1-Trichloroethane	0.005	0.005	-	0.005	0.005	0.005	0.01
1,1,2-Trichloroethane	0.005	0.005	-	0.005	0.005	0.005	0.01
Trichloroethene	0.005	0.005	-	0.0399	0.005	0.00675	0.013
Vinyl Chloride	0.005	0.005	-	0.005	0.005	0.005	0.01
Trichlorofluoromethane	0.005	0.005	-	0.005	0.005	0.005	0.01
Dichlorodifluoromethane	0.005	0.005	-	0.005	0.005	0.005	0.01
Arsenic	0.005	0.005	-	0.181	0.023	0.105	4.00
Beryllium	0.05	0.05	-	0.084	0.05	0.05	0.38
Cadmium	0.5	0.5	-	0.05	0.05	0.05	0.05
Chromium	0.5	0.5	-	1.49	0.5	0.5	8.10
Copper	0.2	0.2	-	6.00	0.45	1.09	29.00
Iron	0.8	0.74	-	1965	1820	3250	14500
Lead	1.00	1.00	-	2.17	1.00	1.00	27.0
Mercury	0.001	0.003	-	0.006	0.005	0.002	0.001
Nickel	0.5	0.5	-	3.70	0.5	0.86	1.94
Selenium	0.005	0.005	-	0.005	0.005	0.005	0.017
Silver	0.1	0.1	-	0.1	0.1	0.1	0.1
Thallium	1.00	1.00	-	1.00	1.00	1.00	1.00
Zinc	0.52	0.22	-	1150	0.51	1.19	1360

VanDeMark Chemical Quarterly Landfill Sampling Results

January 22, 1987

Constituent	Upstrm	Dnstrm	D-55	VDM-9	VDM-10	VDM-10d	VDM-11	VDM-12
Chloride	35.8	36.0	10.8	26270	5451	5424	411	10300
pH	7.67	7.13	6.40	2.38	5.76	5.84	4.54	1.45
Total Phenolics	0.22	0.022	0.028	-	0.946	0.244	0.01	-
Bromodichloromethane	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Bromoform	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Bromomethane	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Carbon Tetrachloride	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Chloroethane	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
2-Chloroethylvinyl Ether	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Chloroform	0.005	0.005	0.005	0.35	0.0088	0.0063	0.0522	0.14
Chloromethane	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.146
Dibromochloromethane	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
1,1-Dichloroethane	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
1,2-Dichloroethane	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
1,1-Dichloroethene	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Trans-1,2-Dichloroethene	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
1,2-Dichloropropane	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Cis-1,3-Dichloropropene	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Trans-1,3-Dichloropropene	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Methylene Chloride	0.005	0.005	0.005	0.118	0.0891	0.0932	0.005	0.12
1,1,2,2-Tetrachloroethane	0.005	0.005	0.005	0.198	0.005	0.005	0.188	0.005
Tetrachloroethene	0.005	0.005	0.005	0.141	0.005	0.005	0.005	0.0
1,1,1-Trichloroethane	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
1,1,2-Trichloroethane	0.005	0.005	0.005	0.0087	0.005	0.005	0.005	-
Trichloroethene	0.005	0.005	0.005	0.151	0.0074	0.005	0.0219	0.012
Vinyl Chloride	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Trichlorofluoromethane	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Dichlorodifluoromethane	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Arsenic	0.005	0.005	0.005	0.333	0.005	0.033	0.048	0.3
Chromium	0.188	0.046	0.029	0.066	0.035	0.021	0.006	0.2
Copper	0.2	0.2	0.2	4.94	0.2	0.2	0.55	0.2
Iron	1.08	0.74	6.2	1300	7.85	6.73	13	500
Lead	0.013	0.011	0.014	0.76	0.029	0.039	0.009	0.4
Mercury	0.002	0.004	0.001	0.001	0.001	0.002	0.001	0.002
Zinc	0.12	0.05	0.05	3.6	0.2	0.18	0.66	0.4

VanDeMark Chemical Quarterly Landfill Sampling Results

June 3, 1987

Constituent	Upstrm	Dnstrm	D-55	VDM-9	VDM-10	VDM-10d	VDM-11
Chloride	(45)	(50)	(15)	(15300)	(6250)	(6250)	(1750)
pH	7.63	7.67	6.81	4.18	5.51	5.57	2.93
Total Phenolics	0.01	0.01	(0.08)	(0.54)	(0.17)	(0.12)	(0.06)
Bromodichloromethane	0.001	0.001	0.001	0.005	0.01	0.005	0.005
Bromoform	0.005	0.005	0.005	0.025	0.05	0.025	0.025
Bromomethane	0.001	0.001	0.001	0.005	0.01	0.005	0.005
Carbon Tetrachloride	0.001	0.001	0.001	0.005	0.01	0.005	0.005
Chloroethane	0.001	0.001	0.001	0.005	0.01	0.005	0.005
2-Chloroethylvinyl Ether	0.001	0.001	0.001	0.005	0.01	0.005	0.005
Chloroform	0.001	0.001	0.001	(0.0952)	(0.0432)	(0.0478)	(0.0307)
Chloromethane	0.001	0.001	0.001	0.005	0.01	0.005	0.005
Dibromochloromethane	0.001	0.001	0.001	0.005	0.01	0.005	0.005
1,1-Dichloroethane	0.001	0.001	0.001	0.005	0.01	0.005	0.005
1,2-Dichloroethane	0.001	0.001	0.001	(0.013)	0.01	0.005	0.005
1,1-Dichloroethene	0.001	0.001	0.001	0.005	0.01	0.005	0.005
Trans-1,2-Dichloroethene	0.001	0.001	0.001	0.005	0.01	0.005	0.005
1,2-Dichloropropane	0.001	0.001	0.001	0.005	0.01	0.005	0.005
Cis-1,3-Dichloropropene	0.001	0.001	0.001	0.005	0.01	0.005	0.005
Trans-1,3-Dichloropropene	0.001	0.001	0.001	0.005	0.01	0.005	0.005
Methylene Chloride	0.001	0.001	0.001	(0.034)	0.01	0.005	0.005
1,1,2,2-Tetrachloroethane	0.001	0.001	0.001	(0.076)	(0.0385)	(0.0248)	0.005
Tetrachloroethene	0.001	0.001	0.001	(0.0507)	0.01	0.005	(0.0372)
1,1,1-Trichloroethane	0.001	0.001	0.001	0.005	0.01	0.005	(0.0323)
1,1,2-Trichloroethane	0.001	0.001	0.001	0.005	0.01	0.005	0.005
Trichloroethene	0.001	0.001	0.001	(0.0395)	0.01	0.005	(0.00646)
Vinyl Chloride	0.001	0.001	0.001	0.005	0.01	0.005	0.005
Trichlorofluoromethane	0.001	0.001	0.001	0.005	0.01	0.005	0.005
Dichlorodifluoromethane	0.001	0.001	0.001	0.005	(0.0311)	0.005	0.005
Arsenic	0.005	0.005	0.005	(0.018)	(0.067)	(0.05)	0.005
Chromium	0.005	0.005	(0.008)	(0.017)	0.005	(0.006)	(0.123)
Copper	0.2	0.2	0.2	(2.43)	(0.51)	0.2	(1.15)
Iron	(0.42)	(0.46)	(0.4)	(525)	(19)	(1.28)	(75)
Lead	(0.011)	(0.011)	0.005	(0.028)	0.005	0.005	(0.008)
Mercury	0.001	(0.002)	0.001	(0.002)	(0.004)	(0.004)	(0.002)
Zinc	0.05	0.05	(0.07)	(1.58)	(0.7)	(0.32)	(1.78)

VanDeMark Chemical Quarterly Landfill Sampling Results

September 2, 1987

Constituent	Upstrm	Dnstrm	D-55	VDM-9	VDM-10	VDM-10H	VDM-10R	VDM-11
Chloride	44	45	32	4000	6000	5180	5711	2400
pH	7.41	7.05	6.92	4.75	5.82	-	5.74	3.28
Total Phenolics	0.01	0.01	0.01	0.15	0.1	0.1	0.036	0.05
Bromodichloromethane	0.005	0.005	0.005	0.005	0.005	0.0005	0.0002	0.005
Bromoform	0.005	0.005	0.005	0.005	0.005	0.0005	0.001	0.005
Bromomethane	0.005	0.005	0.005	0.005	0.005	0.001	0.0008	0.005
Carbon Tetrachloride	0.005	0.005	0.005	0.005	0.005	0.0005	0.0002	0.005
Chloroethane	0.005	0.005	0.005	0.005	0.005	0.00082	0.0004	0.005
2-Chloroethylvinyl Ether	0.005	0.005	0.005	0.005	0.005	0.0005	0.003	0.005
Chloroform	0.005	0.005	0.005	0.13	0.141	0.12	0.12	0.12
Chloromethane	0.005	0.005	0.005	0.005	0.005	0.01	0.0004	0.005
Dibromochloromethane	0.005	0.005	0.005	0.005	0.005	0.0005	0.001	0.005
1,1-Dichloroethane	0.005	0.005	0.005	0.005	0.005	0.0005	0.0002	0.005
1,2-Dichloroethane	0.005	0.005	0.005	0.0132	0.0072	0.0033	0.0078	0.00682
1,1-Dichloroethene	0.005	0.005	0.005	0.005	0.005	0.0005	0.0004	0.005
Trans-1,2-Dichloroethene	0.005	0.005	0.005	0.0088	0.005	0.0005	0.0004	0.005
1,2-Dichloropropane	0.005	0.005	0.005	0.005	0.005	0.0005	0.0004	0.005
Cis-1,3-Dichloropropene	0.005	0.005	0.005	0.005	0.005	0.0005	0.001	0.005
Trans-1,3-Dichloropropene	0.005	0.005	0.005	0.005	0.005	0.0005	0.0002	0.005
Methylene Chloride	0.005	0.005	0.005	0.0214	0.0053	0.01	0.004	0.00772
1,1,2,2-Tetrachloroethane	0.005	0.005	0.005	0.116	0.005	0.0034	0.0016	0.115
Tetrachloroethene	0.005	0.005	0.005	0.0617	0.005	0.0005	0.0004	0.12
1,1,1-Trichloroethane	0.005	0.005	0.005	0.005	0.005	0.0005	0.0004	0.005
1,1,2-Trichloroethane	0.005	0.005	0.005	0.005	0.005	0.0005	0.001	0.005
Trichloroethene	0.005	0.005	0.005	0.0372	0.005	0.0018	0.0002	0.0166
Vinyl Chloride	0.005	0.005	0.005	0.005	0.005	0.0005	0.0004	0.005
Trichlorofluoromethane	0.005	0.005	0.005	0.005	0.005	0.0005		0.005
Dichlorodifluoromethane	0.005	0.005	0.005	0.005	0.005	0.0005		0.005
Arsenic	0.005	0.005	0.005	0.103	0.01	0.01	0.0055	0.01
Chromium	0.005	0.005	0.005	0.019	0.037	0.05	0.036	0.05
Copper	0.2	0.2	0.2	1.71	0.78	0.25	0.28	2.8
Iron	0.37	0.38	0.23	290	33.6	135	36	155
Lead	0.019	0.017	0.009	0.057	0.008	0.37	0.0095	0.15
Mercury	0.001	0.001	0.001	0.002	0.001	0.003	0.002	0.001
Zinc	0.05	0.05	0.06	0.98	2.7	6.28	1.9	2

VanDeMark Chemical Quarterly Landfill Sampling Results

November 5, 1987

Constituent	Upstrm	Dnstrm	D-55	VDM-9	VDM-10	VDM-10d	VDM-11	VDM-14
Chloride	28	27	20	13000	4400	5600	1900	1600
pH	8.25	8.23	6.95	2.97	6.04	6.04	2.90	6.11
Total Phenolics	0.003	0.002	0.002	0.18	0.299	0.108	0.052	0.034
Bromodichloromethane	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Bromoform	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Bromomethane	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Carbon Tetrachloride	0.001	0.001	0.001	0.0641	0.001	0.001	0.068	0.001
Chloroethane	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
2-Chloroethylvinyl Ether	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Chloroform	0.001	0.001	0.001	0.328	0.154	0.124	0.123	0.022
Chloromethane	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Dibromochloromethane	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
1,1-Dichloroethane	0.001	0.001	0.001					
1,2-Dichloroethane	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
1,1-Dichloroethene	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Trans-1,2-Dichloroethene	0.001	0.001	0.001	0.0461	0.001	0.001	0.001	0.001
1,2-Dichloropropane	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Cis-1,3-Dichloropropene	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Trans-1,3-Dichloropropene	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Methylene Chloride	0.001	0.001	0.001	0.0493	0.001	0.001	0.0183	0.001
1,1,2,2-Tetrachloroethane	0.001	0.001	0.001	5	0.001	0.001	0.001	0.001
Tetrachloroethene	0.001	0.001	0.001	0.0847	0.001	0.001	0.0268	0.0223
1,1,1-Trichloroethane	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
1,1,2-Trichloroethane	0.001	0.001	0.001	0.001	0.001	0.001	0.00556	0.001
Trichloroethene	0.001	0.001	0.001	0.0861	0.00145	0.001	0.0163	0.639
Vinyl Chloride	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Trichlorofluoromethane	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Dichlorodifluoromethane	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Arsenic	0.005	0.005	0.005	0.005	0.006	0.005	0.005	0.005
Chromium	0.021	0.005	0.028	0.016	0.035	0.01	0.05	0.064
Copper	0.2	0.2	0.2	3	0.23	0.28	1.57	0.2
Iron	0.025	0.3	0.31	248	38.5	20.2	42.9	196
Lead	0.005	0.005	0.005	0.76	0.018	0.01	0.031	0.021
Mercury	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Zinc	0.05	0.05	0.06	1.18	0.54	0.58	2.3	0.2

VanDeMark Chemical Quarterly Landfill Sampling Results

March 31, 1988

Constituent	Upstrm	Dnstrm	D-55	VDM-9	VDM-10	VDM-10d	VDM-11	VDM-14
Chloride	<51	<54	<13	<15500	<2300	<2300	<810	<45
pH	8.31	8.30	6.98	3.42	5.98	5.98	3.28	6.67
Total Phenolics	0.01	0.01	0.01	0.01	<0.018	<0.012	0.01	0.01
Bromodichloromethane	0.0002	0.0002	0.0002	0.0004	0.0002	0.0002	0.0002	0.0002
Bromoform	0.001	0.001	0.001	<0.0024	0.001	0.001	<0.001	0.001
Bromomethane	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008
Carbon Tetrachloride	0.0002	0.0002	0.0002	<0.012	0.0002	0.0002	<0.017	<0.0029
Chloroethane	0.0004	0.0004	0.0004	0.00088	0.0004	0.0004	.0.0004	0.0004
2-Chloroethylvinyl Ether	0.001	0.001	0.001	0.001	0.004	0.004	0.001	0.001
Chloroform	0.0002	0.0002	0.0002	<0.17	<0.11	<0.12	<0.056	<0.0032
Chloromethane	0.0004	0.0004	0.0004	<0.0046	<0.00095	<0.0011	<0.00064	0.0004
Dibromochloromethane	0.0002	0.0002	0.0002	<0.0079	0.0002	0.0002	<0.0032	0.0002
1,1-Dichloroethane	0.0002	0.0002	<0.00038	0.0002	0.0004	0.0004	0.0004	0.0002
1,2-Dichloroethane	0.0002	0.0002	0.0002	<0.019	<0.0076	<0.0078	<0.0035	0.0002
1,1-Dichloroethene	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004
Trans-1,2-Dichloroethene	<0.00047	<0.00066	0.0002	<0.011	0.00063	<0.001	<0.0021	0.0002
1,2-Dichloropropane	0.0002	0.0002	0.0002	<0.0033	<0.00027	<0.00025	<0.0019	0.0002
Cis-1,3-Dichloropropene	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Trans-1,3-Dichloropropene	0.0002	0.0002	0.0002	0.001	0.0002	0.0002	0.0002	0.0002
Methylene Chloride	0.0002	0.0002	0.0002	<0.043	<0.003	<0.0026	<0.00075	0.0002
1,1,2,2-Tetrachloroethane	0.0002	<0.00026	<0.00053	<0.29	<0.0028	<0.0029	<39	<0.0002
Tetrachloroethene	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
1,1,1-Trichloroethane	0.0002	0.0002	<0.00033	0.0004	0.0002	0.0002	0.0004	0.0002
1,1,2-Trichloroethane	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Trichloroethene	0.0002	0.0002	0.0002	<0.026	<0.00072	<0.00079	<0.0038	<0.00062
Vinyl Chloride	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004
Trichlorofluoromethane								
Dichlorodifluoromethane								
Arsenic	<0.01	<0.009	0.005	0.005	0.005	0.005	0.01	0.005
Chromium	0.005	0.005	0.005	0.005	0.005	0.005	<0.014	<0.28
Copper	<0.008	<0.009	<0.009	<3.5	<0.035	<0.03	<1.5	<0.051
Iron	0.89	<0.86	<0.34	<490	9.5	8.8	<4.9	<2.3
Lead	0.03	<0.03	0.03	<0.33	<0.04	<0.05	0.03	<0.03
Mercury	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Zinc	0.014	<0.016	<0.041	1.9	<1	<1	2.4	<0.095

VanDeMark Chemical Quarterly Landfill Sampling Results

June 28, 1988

Constituent	Upstrm	Dnstrm	D-55	VDM-9	VDM-10	VDM-10d	VDM-11	VDM-14
Chloride	<27	<47	<26	<14400	<7400	<7000	<2600	<7300
pH	8.25	8.32	7.36	3.32	5.83	5.83	3.36	5.32
Total Phenolics	0.01	0.01	0.01	0.01	<0.16	<0.12	0.01	0.01
Bromodichloromethane	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Bromoform	0.0002	0.0002	0.0002	0.001	0.0002	0.0002	<0.002	0.00083
Bromomethane	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008
Carbon Tetrachloride	0.0002	0.0002	0.0002	<0.015	0.0002	0.0002	0.0002	<0.0092
Chloroethane	0.0002	0.0002	0.0002	0.0004	0.0002	0.0002	0.0002	0.0002
2-Chloroethylvinyl Ether	0.0002	0.0002	0.0002	0.001	0.0002	0.0002	0.0002	0.0002
Chloroform	0.0002	0.0002	0.0002	<0.032	<0.19	<0.18	<0.023	<0.087
Chloromethane	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	<0.0066
Dibromochloromethane	0.0002	0.0002	0.0002	<0.0013	<0.00065	<0.0006	<0.0012	<0.0025
1,1-Dichloroethane	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	<0.0051	0.0002
1,2-Dichloroethane	0.0002	0.0002	0.0002	<0.01	<0.023	<0.022	<0.0038	<0.013
1,1-Dichloroethene	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Trans-1,2-Dichloroethene	0.0002	0.0002	0.0002	<0.004	<0.001	<0.0011	<0.00067	<0.004
1,2-Dichloropropane	0.0002	0.0002	0.0002	<0.0006	<0.0022	<0.0006	0.0002	<0.0041
Cis-1,3-Dichloropropene	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Trans-1,3-Dichloropropene	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Methylene Chloride	<0.0016	<0.00078	<0.0032	<0.018	<0.018	<0.019	<0.0017	<0.022
1,1,2,2-Tetrachloroethane	0.0002	0.0002	0.0002	<0.064	<0.0042	<0.0047	<0.035	<0.038
Tetrachloroethene	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
1,1,1-Trichloroethane	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
1,1,2-Trichloroethane	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Trichloroethene	0.0002	0.0002	0.0002	<0.0083	<0.0015	<0.0016	<0.0016	<0.01
Vinyl Chloride	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004
Trichlorofluoromethane								
Dichlorodifluoromethane								
Arsenic	0.005	0.005	<0.026	0.005	<0.027	<0.022	<0.013	0.005
Chromium	0.006	<0.007	<0.054	<0.17	<0.021	<0.018	<0.048	<0.034
Copper	<0.015	<0.012	<0.4	<2.2	<3.1	<0.99	<3.2	<0.014
Iron	<0.94	<1.1	<39	<240	<86	<68	<49	<640
Lead	0.05	0.05	<0.06	<0.45	<0.11	<0.13	<0.07	<0.1
Mercury	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
Zinc	<0.037	<0.036	<0.28	<2.0	<9.2	<7.6	<4.6	<1.5

VanDeMark Chemical Quarterly Landfill Sampling Results

August 31, 1988

Constituent	Upstrm	Dnstrm	D-55	VDM-9	VDM-10	VDM-10d	VDM-11	VDM-14
Chloride	<36	<35	<25	<16310	<8280	<8530	<3460	<10540
pH	8.14	8.32	7.53	3.26	5.17	5.10	3.24	4.83
Total Phenolics	0.01	0.01	0.01	0.01	<0.059	<0.046	<0.018	0.01
Bromodichloromethane	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.001
Bromoform	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.005
Bromomethane	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.002
Carbon Tetrachloride	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	<0.0055	<0.012
Chloroethane	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.001
2-Chloroethylvinyl Ether	0.001	0.001	0.001	0.001	0.005	0.002	0.001	0.005
Chloroform	0.0002	0.0002	0.0002	<0.014	<0.3	<0.29	<0.098	<0.22
Chloromethane	0.0004	0.0004	0.0004	0.0004	<0.0046	<0.002	0.0004	<0.019
Dibromochloromethane	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	<0.016
1,1-Dichloroethane	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.001
1,2-Dichloroethane	0.0002	0.0002	0.0002	<0.0057	<0.021	<0.02	<0.0071	<0.02
1,1-Dichloroethene	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.001
Trans-1,2-Dichloroethene	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	<0.014
1,2-Dichloropropane	0.0002	0.0002	0.0002	0.0002	0.0022	0.0002	0.0002	0.001
Cis-1,3-Dichloropropene	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.002
Trans-1,3-Dichloropropene	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.001
Methylene Chloride	0.0002	0.0002	0.0002	<0.042	<0.015	<0.017	<0.0051	<0.022
1,1,2,2-Tetrachloroethane	0.0002	0.0002	0.0002	0.012	0.0047	<0.004	<0.097	<0.42
Tetrachloroethene	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.001
1,1,1-Trichloroethane	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.001
1,1,2-Trichloroethane	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Trichloroethene	0.0002	0.0002	0.0002	0.0002	<0.0018	<0.0016	0.0002	<0.022
Vinyl Chloride	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.002
Trichlorofluoromethane								
Dichlorodifluoromethane								
Arsenic	0.005	0.005	0.005	<0.007	<0.061	<0.07	<0.053	<0.02
Chromium	0.008	0.008	0.008	<0.009	<0.02	<0.023	<0.053	<0.52
Copper	<0.011	<0.01	<0.014	<3.2	<12	<12	<2.7	<0.015
Iron	0.98	<0.94	<1.4	<570	<110	<120	<89	<1100
Lead	0.06	0.06	0.06	<0.31	<0.06	0.06	<0.029	0.06
Mercury	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	<0.00047	0.0002
Zinc	<0.014	<0.016	<0.047	<2.4	<2.8	<3.7	3.5	<3.3

VanDeMark Chemical Quarterly Landfill Sampling Results

November 16, 1988

Constituent	Upstrm	Dnstrm	D-55	VDM-9	VDM-10	VDM-11	VDM-14	VDM-14d
Chloride	37	37	27	14400	2200	1400	220	280
pH	8.30	8.52	7.22	2.87	5.84	3.25	6.69	6.68
Total Phenolics	0.01	0.01	0.01	0.01	0.011	0.01	0.01	0.01
Bromodichloromethane	0.001	0.001	0.001	0.0005	0.001	0.001	0.001	0.001
Bromoform	0.003	0.003	0.003	0.002	0.003	0.003	0.003	0.003
Bromomethane	0.005	0.005	0.005	0.003	0.005	0.005	0.005	0.005
Carbon Tetrachloride	0.001	0.001	0.001	0.00084	0.001	0.001	0.0098	0.009
Chloroethane	0.002	0.002	0.002	0.001	0.002	0.002	0.002	0.002
2-Chloroethylvinyl Ether	0.003	0.002	0.003	0.002	0.003	0.003	0.003	0.003
Chloroform	0.001	0.003	0.001	0.055	0.13	0.052	0.028	0.03
Chloromethane	0.003	0.001	0.003	0.0032	0.003	0.003	0.003	0.003
Dibromochloromethane	0.001	0.003	0.001	0.001	0.001	0.001	0.001	0.001
1,1-Dichloroethane	0.001	0.001	0.001	0.0005	0.001	0.001	0.001	0.001
1,2-Dichloroethane	0.001	0.001	0.001	0.0094	0.001	0.001	0.001	0.001
1,1-Dichloroethene	0.002	0.002	0.002	0.001	0.002	0.002	0.002	0.002
Trans-1,2-Dichloroethene	0.0021	0.001	0.001	0.0039	0.001	0.001	0.001	0.001
1,2-Dichloropropane	0.003	0.003	0.003	0.002	0.003	0.003	0.003	0.003
Cis-1,3-Dichloropropene	0.001	0.001	0.001	0.0005	0.001	0.001	0.001	0.001
Trans-1,3-Dichloropropene	0.001	0.001	0.001	0.0005	0.001	0.001	0.001	0.001
Methylene Chloride	0.002	0.002	0.002	0.011	0.002	0.002	0.002	0.002
1,1,2,2-Tetrachloroethane	0.001	0.001	0.001	0.029	0.001	0.048	0.097	0.09
Tetrachloroethene	0.001	0.001	0.001	0.0005	0.001	0.001	0.001	0.001
1,1,1-Trichloroethane	0.001	0.001	0.001	0.0005	0.001	0.001	0.001	0.001
1,1,2-Trichloroethane	0.001	0.001	0.001	0.0005	0.001	0.001	0.001	0.001
Trichloroethene	0.001	0.001	0.001	0.0069	0.001	0.001	0.0058	0.001
Vinyl Chloride	0.003	0.003	0.003	0.002	0.003	0.003	0.003	0.003
Trichlorofluoromethane								
Dichlorodifluoromethane								
Arsenic	0.005	0.005	0.005	0.044	0.008	0.068	0.005	0.00
Chromium	0.024	0.018	0.018	0.051	0.034	0.036	0.24	0.1
Copper	0.026	0.018	0.039	2.8	0.1	1.1	0.028	0.02
Iron	0.36	0.34	0.8	280	20	25	3.9	3.3
Lead	0.05	0.05	0.05	0.31	0.05	0.05	0.05	0.05
Mercury	0.0004	0.0004	0.0004	0.0006	0.0004	0.0004	0.0004	0.0004
Zinc	0.026	0.026	0.036	1.7	1.3	2.5	0.057	0.04

VanDeMark Chemical Quarterly Landfill Sampling Results

February 15, 1989

Constituent	Upstrm	Dnstrm	D-55	VDM-9	VDM-10	VDM-11	VDM-14	VDM-14d
Chloride	<86>	<86>	<24>	<11000>	<8400>	<760>	<180>	<190
pH	9.35	8.50	7.63	4.55	7.38	4.90	7.14	7.14
Total Phenolics	0.01	0.01	<0.015>	0.01	0.043	0.01	0.01	0.01
Bromodichloromethane	0.0002	0.0002	0.0002	0.001	0.0002	0.001	0.001	0.001
Bromoform	0.0004	0.0004	0.0004	0.002	0.0004	0.002	0.002	0.002
Bromomethane	0.0002	0.0002	0.0002	0.001	0.0002	0.001	0.001	0.001
Carbon Tetrachloride	0.0002	0.0002	0.0002	0.001	0.0002	<0.0035>	0.001	0.001
Chloroethane	0.001	0.001	0.001	0.005	0.001	0.005	0.005	0.005
2-Chloroethylvinyl Ether	0.0004	0.0004	0.0004	0.002	0.0004	0.002	0.002	0.002
Chloroform	0.0002	0.0002	0.0002	<0.078>	<0.12>	<0.042>	<0.0052>	<0.0051
Chloromethane	0.001	0.001	0.001	0.005	0.001	0.005	0.005	0.005
Dibromochloromethane	0.0002	0.0002	0.0002	<0.002>	0.0002	<0.0026>	0.001	0.001
1,1-Dichloroethane	0.0002	0.0002	<0.0013>	0.001	0.0002	<0.0032>	0.001	0.001
1,2-Dichloroethane	0.0002	0.0002	0.0002	<0.014>	0.0002	0.001	0.001	0.001
1,1-Dichloroethene	0.0002	0.0002	0.0002	0.001	0.0002	0.001	0.001	0.001
Trans-1,2-Dichloroethene	0.0002	0.0002	0.0002	<0.0043>	0.0002	<0.0015>	0.001	0.001
1,2-Dichloropropane	0.0002	0.0002	0.0002	0.001	0.0002	0.001	0.001	0.001
Cis-1,3-Dichloropropene	0.0002	0.0002	0.0002	0.001	0.0002	0.001	0.001	0.001
Trans-1,3-Dichloropropene	0.0002	0.0002	0.0002	0.001	0.0002	0.001	0.001	0.001
Methylene Chloride	<0.00079>	<0.00024>	<0.00035>	<0.023>	<0.0054>	<0.0048>	<0.0012>	0.0008
1,1,2,2-Tetrachloroethane	0.0002	0.0002	0.0002	<0.1>	0.0002	<0.1>	<0.077>	<0.065
Tetrachloroethene	0.0002	0.0002	0.0002	0.001	0.0002	0.001	0.001	0.001
1,1,1-Trichloroethane	0.0002	0.0002	0.0002	0.001	0.0002	0.001	0.001	0.001
1,1,2-Trichloroethane	0.0002	0.0002	0.0002	0.001	0.0002	0.001	0.001	0.001
Trichloroethene	0.0002	0.0002	0.0002	<0.0067>	0.0002	<0.0021>	0.001	0.001
Vinyl Chloride	0.0002	0.0002	0.0002	0.001	0.0002	0.001	0.001	0.001
Trichlorofluoromethane								
Dichlorodifluoromethane								
Arsenic	0.005	0.005	0.005	<0.012>	<0.011>	<0.012>	0.005	0.005
Chromium	<0.011>	<0.011>	<0.01>	<0.033>	<0.032>	<0.019>	<2.7>	<5.3
Copper	0.01	0.01	<0.013>	<2>	<4.3>	<0.82>	<0.018>	<0.026
Iron	<0.25>	<0.25>	<0.55>	<170>	<4.2>	<4.4>	<8.2>	<6.4
Lead	0.07	0.07	<0.07>	<0.81>	<0.58>	<0.08>	<0.09>	0.07
Mercury	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004
Zinc	<0.026>	<0.027>	<0.21>	<1.8>	<2.8>	<1.4>	<0.17>	<0.24

VANDEMARK LANDFILL: QUARTERLY MONITORING PROGRAM RESULTS

18 MILE CREEK UPSTREAM

CONSTITUENT:	5/12/86	1/22/87	6/3/87	9/2/37	11/5/87	03/31/88	06/28/88	08/31/88	11/16/88	02/15/89	STANDARD DEVIATION	STUDENT (95%)
CHLORIDE	(34.4)	(35.8)	(45)	(44)	(28)	(51)	(27)	(36)	(37)	86	16.1445	0.399
pH	7.89	7.67	7.63	7.41	8.25	8.31	8.25	8.14	8.3	9.35	0.5114	0.801
TOTAL PHENOLS	(0.01)	(0.22	0.01	0.01	(0.003)	0.01	0.01	0.01	0.01	(0.01)	0.0633	-0.107
BROMODICHLOROMETHANE	0.01	0.005	0.001	0.005	0.005	0.0002	0.0002	0.0002	0.001	0.0002	0.0032	-0.272
BROMOFORM	0.01	0.005	0.005	0.005	0.005	0.001	0.0002	0.001	0.003	0.0004	0.0029	-0.362
BROMOMETHANE	0.005	0.005	0.001	0.005	0.005	0.0008	0.0008	0.0004	0.005	0.0002	0.0022	-0.398
CARBON TETRACHLORIDE	0.005	0.005	0.001	0.005	0.001	0.0002	0.0002	0.0002	0.001	0.0002	0.0021	-0.270
CHLOROETHANE	0.005	0.005	0.001	0.005	0.001	0.0004	0.0002	0.0002	0.002	0.001	0.0020	-0.188
2-CHLOROETHYLVINYL ETHER	0.005	0.005	0.001	0.005	0.01	0.001	0.0002	0.001	0.003	0.0004	0.0030	-0.311
CHLOROFORM	0.005	0.005	0.001	0.005	0.001	0.0002	0.0002	0.0002	0.001	0.0002	0.0021	-0.270
CHLOROMETHANE	0.005	0.005	0.001	0.005	0.005	0.0004	0.0004	0.0004	0.003	0.001	0.0021	-0.260
DIBROMOCHLOROMETHANE	0.01	0.005	0.001	0.005	0.005	0.0002	0.0002	0.0002	0.001	0.0002	0.0032	-0.272
1,1-DICHLOROETHANE	0.005	0.005	0.001	0.005	0.001	0.0002	0.0002	0.0002	0.001	0.0002	0.0021	-0.270
1,2-DICHLOROETHANE	0.005	0.005	0.001	0.005	0.001	0.0002	0.0002	0.0002	0.001	0.0002	0.0021	-0.270
1,1-DICHLOROETHENE	0.005	0.005	0.001	0.005	0.001	0.0004	0.0002	0.0002	0.002	0.0002	0.0020	-0.295
TRANS-1,2-DICHLOROETHENE	0.005	0.005	0.001	0.005	0.001	(0.00047)	0.0002	0.0002	(0.0021)	0.0002	0.0020	-0.298
1,2-DICHLOROPROPANE	0.005	0.005	0.001	0.005	0.001	0.0002	0.0002	0.0002	0.003	0.0002	0.0021	-0.302
CIS-1,3-DICHLOROPROPENE	0.005	0.005	0.001	0.005	0.001	0.0002	0.0002	0.0002	0.001	0.0002	0.0021	-0.270
TRANS-1,3-DICHLOROPROPENE	0.005	0.005	0.001	0.005	0.001	0.0002	0.0002	0.0002	0.001	0.0002	0.0021	-0.270
METHYLENE CHLORIDE	0.005	0.005	0.001	0.005	0.001	0.0002	(0.0016	0.0002	0.002	0.00079)	0.0019	-0.241
1,1,2,2-TETRACHLOROETHANE	0.005	0.005	0.001	0.005	0.001	0.0002	0.0002	0.0002	0.001	0.0002	0.0021	-0.270
TETRACHLOROETHENE	0.005	0.005	0.001	0.005	0.001	0.0002	0.0002	0.0002	0.001	0.0002	0.0021	-0.270
1,1,1-TRICHLOROETHANE	0.005	0.005	0.001	0.005	0.001	0.0002	0.0002	0.0002	0.001	0.0002	0.0021	-0.270
1,1,2-TRICHLOROETHANE	0.005	0.005	0.001	0.005	0.001	0.0002	0.0002	0.0002	0.001	0.0002	0.0021	-0.270
TRICHLOROETHENE	0.005	0.005	0.001	0.005	0.001	0.0002	0.0002	0.0002	0.001	0.0002	0.0021	-0.270
VINYL CHLORIDE	0.005	0.005	0.001	0.005	0.001	0.0004	0.0004	0.0004	0.003	0.0002	0.0020	-0.350
TRICHLOROFLUOROMETHANE	0.005	0.005	0.001	0.005	0.001						0.0020	-0.567
DICHLORODIFLUOROMETHANE	0.005	0.005	0.001	0.005	0.001						0.0020	-0.567
ARSENIC	0.005	0.005	0.005	0.005	0.005	(0.01)	0.005	0.005	0.005	0.005	0.0015	-0.111
CHROMIUM	0.5	(0.188)	0.005	0.005	(0.024)	0.005	0.006	0.008	(0.029)	(0.011	0.1506	-0.146
COPPER	0.2	0.2	0.2	0.2	0.2	(0.008)	(0.015)	(0.011)	(0.026)	0.01	0.0931	-0.347
IRON	(0.8)	(1.08)	(0.42)	(0.37)	(0.025)	(0.89)	(0.94)	(0.98)	(0.36)	(0.25)	0.3477	-0.346
LEAD	1	(0.013)	(0.011	0.019)	0.005	0.03	0.05	0.06	0.05	0.07	0.2905	-0.069
MERCURY	(0.001)	(0.02)	0.001	0.001	0.001	0.0002	0.0005	0.0002	0.0004	0.0004	0.0058	-0.124
ZINC	(0.55)	(0.12)	0.05	0.05	0.05	(0.014)	(0.037	(0.014)	(0.026)	(0.026)	0.1460	-0.147

VANDEMARK LANDFILL: QUARTERLY MONITORING PROGRAM RESULTS

18 MILE CREEK DOWNSTREAM

CONSTITUENT:	5/12/86	1/22/87	6/3/87	9/2/87	11/5/87	03/31/88	06/28/88	08/31/88	11/16/88	02/15/89	STANDARD DEVIATION	STUDENT T (95%)
CHLORIDE	(40.1)	(36)	(50)	(45)	(27)	(54)	(47)	(35)	(37)	(86)	15.4239	0.8797
pH	8.13	7.13	7.67	7.05	8.23	8.3	8.32	8.32	8.52	8.5	0.5148	0.3127
TOTAL PHENOLS	0.01	(0.022)	0.01	0.01	0.002	0.01	0.01	0.01	0.01	0.01	0.0045	-0.0251
BROMODICHLOROMETHANE	0.01	0.005	0.001	0.005	0.005	0.0002	0.0002	0.0002	0.001	0.0002	0.0032	-0.6721
BROMOFORM	0.01	0.005	0.005	0.005	0.005	0.001	0.0002	0.001	0.003	0.0004	0.0029	-0.3624
BROMOMETHANE	0.005	0.005	0.001	0.005	0.005	0.0008	0.0008	0.0004	0.005	0.0002	0.0022	-0.8599
CARBON TETRACHLORIDE	0.005	0.005	0.001	0.005	0.001	0.0002	0.0002	0.0002	0.001	0.0002	0.0021	-0.8701
CHLOROETHANE	0.005	0.005	0.001	0.005	0.001	0.0004	0.0002	0.0002	0.002	0.001	0.0020	-0.1853
2-CHLOROETHYLVINYL ETHER	0.005	0.005	0.001	0.005	0.01	0.001	0.0002	0.001	0.002	0.0004	0.0039	-0.2979
CHLOROFORM	0.005	0.005	0.001	0.005	0.001	0.0002	0.0002	0.0002	0.003	0.0002	0.0021	-0.3021
CHLOROMETHANE	0.005	0.005	0.001	0.005	0.005	0.0004	0.0004	0.0004	0.001	0.001	0.0021	-0.2833
DIBROMOCHLOROMETHANE	0.01	0.005	0.001	0.005	0.005	0.0002	0.0002	0.0002	0.003	0.0002	0.0031	-0.2985
1,1-DICHLOROETHANE	0.005	0.005	0.001	0.005	0.001	0.0002	0.0002	0.0002	0.001	0.0002	0.0021	-0.2706
1,2-DICHLOROETHANE	0.005	0.005	0.001	0.005	0.001	0.0002	0.0002	0.0002	0.001	0.0002	0.0021	-0.2706
1,1-DICHLOROETHENE	0.005	0.005	0.001	0.005	0.001	0.0004	0.0002	0.0002	0.002	0.0002	0.0020	-0.2953
TRANS-1,2-DICHLOROETHENE	0.005	0.005	0.001	0.005	0.001	(0.00066)	0.0002	0.0002	0.001	0.0002	0.0020	-0.2824
1,2-DICHLOROPROPANE	0.005	0.005	0.001	0.005	0.001	0.0002	0.0002	0.0002	0.003	0.0002	0.0021	-0.3031
CIS-1,3-DICHLOROPROPENE	0.005	0.005	0.001	0.005	0.001	0.0002	0.0002	0.0002	0.001	0.0002	0.0021	-0.2706
TRANS-1,3-DICHLOROPROPENE	0.005	0.005	0.001	0.005	0.001	0.0002	0.0002	0.0002	0.001	0.0002	0.0021	-0.2711
METHYLENE CHLORIDE	0.005	0.005	0.001	0.005	0.001	0.0002	(0.00078)	0.0002	0.002	(0.00024)	0.0020	-0.3003
1,1,2,2-TETRACHLOROETHANE	0.005	0.005	0.001	0.005	0.001	(0.00026)	0.0002	0.0002	0.001	0.0002	0.0021	-0.2763
TETRACHLOROETHENE	0.005	0.005	0.001	0.005	0.001	0.0002	0.0002	0.0002	0.001	0.0002	0.0021	-0.2706
1,1,1-TRICHLOROETHANE	0.005	0.005	0.001	0.005	0.001	0.0002	0.0002	0.0002	0.001	0.0002	0.0021	-0.2706
1,1,2-TRICHLOROETHANE	0.005	0.005	0.001	0.005	0.001	0.0002	0.0002	0.0002	0.001	0.0002	0.0021	-0.2706
TRICHLOROETHENE	0.005	0.005	0.001	0.005	0.001	0.0002	0.0002	0.0002	0.001	0.0002	0.0021	-0.2706
VINYL CHLORIDE	0.005	0.005	0.001	0.005	0.001	0.0004	0.0004	0.0004	0.003	0.0002	0.0020	-0.3204
TRICHLOROFLUOROMETHANE	0.005	0.005	0.001	0.005	0.001						0.0020	-0.8673
DICHLORODIFLUOROMETHANE	0.005	0.005	0.001	0.005	0.001						0.0020	-0.8673
ARSENIC	0.005	0.005	0.005	0.005	0.005	(0.009)	0.005	0.005	0.005	0.005	0.0018	-0.1111
CHROMIUM	0.5	(0.056)	0.005	0.005	0.005	0.005	(0.007)	0.008	(0.018)	(0.011)	0.1468	-0.1135
COPPER	0.2	0.2	0.2	0.2	0.2	(0.009)	(0.012)	(0.01)	(0.018)	0.01	0.0941	-0.3894
IRON	(0.74)	(0.24)	(0.56)	(0.38)	(0.3)	(0.86)	(1.1)	(0.94)	(0.34)	(0.25)	0.2962	-0.4204
LEAD	1	(0.011)	(0.014)	(0.017)	0.005	(0.03)	0.05	0.06	0.05	0.07	0.2907	-0.0693
MERCURY	(0.003)	(0.004)	(0.002)	0.001	0.001	0.0002	0.0005	0.0002	0.0004	0.0004	0.0012	-0.2385
ZINC	(0.28)	0.05	0.05	(0.05)	0.05	(0.016)	(0.036)	(0.016)	(0.026)	(0.026)	0.0569	-0.1555

VANDEMARK LANDFILL QUARTERLY MONITORING PROGRAM RESULTS

WELL D-35

CONSTITUENT:	1/6/84	3/21/84	1/22/87	6/3/87	9/2/87	11/5/87	03/31/88	06/29/88	08/31/88	11/16/88	02/15/89	STANDARD DEVIATION	STUDENT T (95%)
WELL ELEVATION			434.05	432.77	432.96	433.19	433.71	432.61	432.8	433.58	433.05		
CHLORIDE	49	636	(10.8)	(15)	(32)	(20)	(12)	(26)	(25)	(27)	(24)	176.1666	-0.1002
pH	7.545	6.671	6.4	6.81	6.92	6.95	6.98	7.36	7.53	7.22	7.63	0.3781	0.4496
TOTAL PHENOLS		0.005	(0.028)	(0.02)	0.01	0.002	0.01	0.01	0.01	0.01	(0.015)	0.0071	0.1417
BROMODICHLOROMETHANE			0.005	0.001	0.005	0.005	0.0002	0.0002	0.0002	0.001	0.0002	0.0022	-0.2911
BROMOFORM			0.005	0.005	0.005	0.005	0.001	0.0002	0.001	0.003	0.0004	0.0021	-0.4185
BROMOMETHANE			0.005	0.001	0.005	0.005	0.0008	0.0008	0.0004	0.005	0.0002	0.0022	-0.3861
CARBON TETRACHLORIDE		0.00022	0.005	0.001	0.005	0.001	0.0002	0.0002	0.0002	0.001	0.0002	0.0018	-0.2187
CHLOROETHANE			0.005	0.001	0.005	0.001	0.0004	0.0002	0.0002	0.002	0.001	0.0018	-0.1475
2-CHLOROETHYLVINYL ETHER			0.005	0.001	0.005	0.01	0.001	0.0002	0.001	0.003	0.0004	0.0018	-0.3075
CHLOROFORM		0.00013	0.005	0.001	0.005	0.001	0.0002	0.0002	0.0002	0.001	0.0002	0.0018	-0.2164
CHLOROMETHANE		0.00026	0.005	0.001	0.005	0.005	0.0004	0.0004	0.0004	0.003	0.001	0.0020	-0.1898
DIBROMOCHLOROMETHANE			0.005	0.001	0.005	0.005	0.0002	0.0002	0.0002	0.001	0.0002	0.0022	-0.2911
1,1-DICHLOROETHANE			0.005	0.001	0.005	0.001	(0.00038)	0.0002	0.0002	0.001	(0.0013)	0.0018	-0.0732
1,2-DICHLOROETHANE			0.005	0.001	0.005	0.001	0.0002	0.0002	0.0002	0.001	0.0002	0.0019	-0.2500
1,1-DICHLOROETHENE			0.005	0.001	0.005	0.001	0.0004	0.0002	0.0002	0.002	0.0002	0.0019	-0.2781
TRANS-1,2-DICHLOROETHENE			0.005	0.001	0.005	0.001	0.0002	0.0002	0.0002	0.001	0.0002	0.0019	-0.2500
1,2-DICHLOROPROPANE			0.005	0.001	0.005	0.001	0.0002	0.0002	0.0002	0.003	0.0002	0.0019	-0.3854
CIS-1,3-DICHLOROPROPENE			0.005	0.001	0.005	0.001	0.0002	0.0002	0.0002	0.001	0.0002	0.0019	-0.2500
TRANS-1,3-DICHLOROPROPENE			0.005	0.001	0.005	0.001	0.0002	0.0002	0.0002	0.001	0.0002	0.0019	-0.2500
METHYLENE CHLORIDE		0.00376	0.005	0.001	0.005	0.001	0.0002	(0.0032)	0.0002	0.002	(0.00035)	0.0018	-0.3319
1,1,2,2-TETRACHLOROETHANE			0.005	0.001	0.005	0.001	(0.00053)	0.0002	0.0002	0.001	0.0002	0.0019	-0.2601
TETRACHLOROETHENE		0.00014	0.005	0.001	0.005	0.001	0.0002	0.0002	0.0002	0.001	0.0002	0.0018	-0.2167
1,1,1-TRICHLOROETHANE			0.005	0.001	0.005	0.001	(0.00033)	0.0002	0.0002	0.001	0.0002	0.0019	-0.2540
1,1,2-TRICHLOROETHANE			0.005	0.001	0.005	0.001	0.0002	0.0002	0.0002	0.001	0.0002	0.0019	-0.2500
TRICHLOROETHENE			0.005	0.001	0.005	0.001	0.0002	0.0002	0.0002	0.001	0.0002	0.0019	-0.2500
VINYL CHLORIDE			0.005	0.001	0.005	0.001	0.0004	0.0004	0.0004	0.003	0.0002	0.0019	-0.3057
TRICHLOROFLUOROMETHANE			0.005	0.001	0.005	0.001						0.0020	-0.5774
DICHLORODIFLUOROMETHANE			0.005	0.001	0.005	0.001						0.0020	-0.5774
ARSENIC			0.005	0.003	0.005	0.005	0.005	(0.024)	0.005	0.005	0.005	0.0066	-0.1250
CHROMIUM		0.16	(0.029)	(0.008)	0.005	(0.028)	0.005	(0.054)	0.008	(0.018)	(0.01)	0.0449	-0.1670
COPPER		0.08	0.2	0.2	0.2	0.2	(0.008)	(0.04)	(0.014)	(0.039)	(0.013)	0.1203	-0.3394
IRON	0.2	0.0001	(5.2)	(0.4)	(0.23)	(0.31)	(0.34)	(38)	(1.4)	(9.8)	(0.55)	11.0400	-0.1326
LEAD		0.003	(0.014)	0.005	(0.009)	0.005	0.03	(0.06)	0.06	0.05	(0.07)	0.0254	0.5162
MERCURY			0.001	0.001	0.001	0.001	0.0002	0.0005	0.0002	0.0004	0.0004	0.0003	-0.2427
ZINC		0.00025	0.05	(0.07)	(0.06)	(0.06)	(0.041)	(0.28)	(0.047)	(0.035)	(0.21)	0.0833	0.4988

ARLEMARK LANDFILL: QUARTERLY MONITORING PROGRAM RESULTS

WELL 7

CONSTITUENT:	1/6/84	3/21/84	3/21/84d	5/12/86	1/22/87	6/3/87	9/2/87	11/5/87	03/31/88	06/28/88	08/31/88	11/16/88	02/15/89	STANDARD DEVIATION	Student-T (95%)
WELL ELEVATION					422.42	422.23	421.74	422.43	422.06	421.97	422.04	422.04	421.74		
CHLORIDE	9197	13068	15968	18800	26270	15300	4000	13000	15500	14400	16310	14400	11000	4940.1756	-0.2077
pH	5.66	4.793	4.904	4.3	2.38	4.18	4.75	2.97	3.42	3.32	3.26	2.87	4.55	0.9391	0.1843
TOTAL PHENOLS		0.01	0.02	0.01		0.54	0.15	0.18	0.01	0.01	0.01	0.01	0.01	0.1502	-0.1627
BROMODICHLOROMETHANE				0.01	0.005	0.005	0.005	0.005	0.0004	0.0002	0.0002	0.0005	0.001	0.0031	-0.2385
BROMOFORM				0.01	0.005	0.025	0.005	0.005	0.0024	0.001	0.001	0.002	0.002	0.0069	-0.1858
BROMOMETHANE				0.005	0.005	0.005	0.005	0.005	0.0008	0.0008	0.0004	0.003	0.001	0.0020	-0.3485
CARBON TETRACHLORIDE		0.00111	0.00022	0.00636	0.005	0.005	0.005	0.0044	0.018	0.015	0.0002	0.00084	0.001	0.0170	-0.1532
CHLOROETHANE				0.005	0.005	0.005	0.005	0.001	0.00088	0.0004	0.0002	0.001	0.005	0.0022	0.3314
2-CHLOROETHYLVINYL ETHER				0.005	0.005	0.005	0.005	0.01	0.001	0.001	0.001	0.002	0.002	0.0027	-0.2082
CHLOROFORM		0.16921	0.13459	0.163	0.35	0.0952	0.13	0.328	0.17	0.032	0.011	0.055	0.078	0.1013	-0.1935
CHLOROMETHANE		0.00131	0.00026	0.005	0.005	0.005	0.005	0.005	0.0046	0.0004	0.0004	0.0032	0.005	0.0020	0.2465
DIBROMOCHLOROMETHANE				0.01	0.005	0.005	0.005	0.005	0.0079	0.0013	0.0002	0.001	0.002	0.0030	-0.2498
1,1-DICHLOROETHANE				0.005	0.005	0.005	0.005		0.0002	0.0002	0.0002	0.0005	0.001	0.0023	-0.2245
1,2-DICHLOROETHANE				0.032	0.005	0.019	0.0138	0.001	0.019	0.01	0.0057	0.0094	0.014	0.0082	0.0718
1,1-DICHLOROETHENE				0.005	0.005	0.005	0.005	0.001	0.0004	0.0002	0.0002	0.001	0.001	0.0022	-0.2131
TRANS-1,2-DICHLOROETHENE				0.00543	0.005	0.005	0.0088	0.0461	0.011	0.006	0.0002	0.0038	0.0043	0.0125	-0.1348
1,2-DICHLOROPROPANE				0.005	0.005	0.005	0.005	0.001	0.0038	0.0006	0.0002	0.002	0.001	0.0020	-0.3082
CIS-1,3-DICHLOROPROPENE				0.005	0.005	0.005	0.005	0.001	0.0002	0.0002	0.0002	0.0005	0.001	0.0022	-0.1972
TRANS-1,3-DICHLOROPROPENE				0.005	0.005	0.005	0.005	0.001	0.001	0.0002	0.0002	0.0005	0.001	0.0021	-0.2155
METHYLENE CHLORIDE		0.26313	0.35007	0.0343	0.118	0.039	0.021	0.049	0.048	0.018	0.042	0.011	0.028	0.1045	-0.1759
1,1,2,2-TETRACHLOROETHANE				0.257	0.158	0.076	0.116	0.5	0.08	0.064	0.012	0.029	0.1	0.1428	-0.1498
TETRACHLOROETHENE				0.044	0.144	0.0502	0.0615	0.0847	0.0002	0.0002	0.0002	0.0005	0.001	0.0454	-0.2761
1,1,1-TRICHLOROETHANE				0.005	0.005	0.005	0.005	0.001	0.0004	0.0002	0.0002	0.0005	0.001	0.0022	-0.2019
1,1,2-TRICHLOROETHANE				0.005	0.0083	0.005	0.005	0.001	0.0002	0.0002	0.0002	0.0005	0.001	0.0033	-0.2054
TRICHLOROETHENE				0.0399	0.151	0.0396	0.0376	0.0861	0.006	0.0088	0.0002	0.0049	0.0067	0.0441	-0.2532
VINYL CHLORIDE				0.005	0.005	0.005	0.005	0.001	0.0004	0.0004	0.0004	0.002	0.001	0.0021	-0.2444
TRICHLOROFLUOROMETHANE				0.005	0.005	0.005	0.005	0.001						0.0024	-0.6708
DICHLORODIFLUOROMETHANE				0.005	0.005	0.005	0.005	0.001						0.0024	-0.6682
ARSENIC				0.181	0.333	0.018	0.103	0.005	0.005	0.005	0.007	0.044	0.012	0.1029	-0.1920
CHROMIUM		0.19	0.19	1.4	0.066	0.017	0.019	0.016	0.005	0.17	0.009	0.051	0.033	0.3741	-0.1189
COPPER		7.8	7.7	6	4.94	2.43	1.71	3	3.5	2.2	3.2	2.2	2	2.1005	-0.2713
IRON	81	0.88	0.87	1965	1300	525	290	248	490	240	570	280	170	539.8941	-0.1625
LEAD		0.075	0.09	2.17	0.76	0.328	0.057	0.6	0.38	0.45	0.31	0.31	0.81	0.5652	0.1658
MERCURY				0.006	0.001	0.002	0.002	0.001	0.0002	0.0005	0.0002	0.0006	0.0004	0.0017	-0.1989
ZINC		3.05	3.15	1130	3.6	1.58	0.98	1.18	1.9	2	2.4	1.7	1.8	317.2577	-0.0912

VANDEMARK LANDFILL: QUARTERLY MONITORING PROGRAM RESULTS

VDM 10

CONSTITUENT:	1/6/84	3/21/84	3/21/84d	5/12/86	1/22/87	1/22/87d	6/3/87	6/3/87d	9/2/87	9/2/87d	9/2/87R	9/2/87H	9/2/87Hd
WELL ELEVATION					414.54	414.54	414.17	414.17	413.46	413.46			
CHLORIDE	7730	5039		6470	5451	5424	6250	6250	6000	4200	5711	5180	
pH	5.32	6.358		6.18	5.76	5.84	5.51	5.57	5.82	5.85	5.74		
TOTAL PHENOLS		0.2		0.54	0.946	0.244	0.17	0.12	0.1	0.14	0.036	0.1	
BROMODICHLOROMETHANE				0.01	0.005	0.005	0.01	0.005	0.005	0.005	0.0002	0.0005	0.00063
BROMOFORM				0.01	0.005	0.005	0.05	0.025	0.005	0.005	0.001	0.0005	0.00063
BROMOMETHANE				0.005	0.005	0.005	0.01	0.005	0.005	0.005	0.0008	0.001	0.0013
CARBON TETRACHLORIDE		0.00022	0.00022	0.005	0.005	0.005	0.01	0.005	0.005	0.005	0.0002	0.0005	0.00063
CHLOROETHANE				0.005	0.005	0.005	0.01	0.005	0.005	0.005	0.0004	0.00082	0.00063
2-CHLOROETHYLVINYL ETHER				0.005	0.005	0.005	0.01	0.005	0.005	0.005	0.003	0.0005	0.00063
CHLOROFORM		0.0976	0.09646	0.00597	0.0088	0.0063	0.0432	0.0478	0.141	0.13	0.12	0.12	0.084
CHLOROMETHANE		0.00026	0.00026	0.005	0.005	0.005	0.01	0.005	0.005	0.005	0.0004	0.01	0.013
DIBROMOCHLOROMETHANE				0.01	0.005	0.005	0.01	0.005	0.005	0.005	0.001	0.0005	0.0005
1,1-DICHLOROETHANE				0.005	0.005	0.005	0.01	0.005	0.005	0.005	0.0002	0.0005	0.00063
1,2-DICHLOROETHANE				0.00991	0.005	0.005	0.01	0.005	0.0072	0.00786	0.0072	0.0033	0.0027
1,1-DICHLOROETHENE				0.005	0.005	0.005	0.01	0.005	0.005	0.005	0.0004	0.0005	0.00063
TRANS-1,2-DICHLOROETHENE				0.005	0.005	0.005	0.01	0.005	0.005	0.005	0.0004	0.0005	0.00063
1,2-DICHLOROPROPANE				0.005	0.005	0.005	0.01	0.005	0.005	0.005	0.0004	0.0005	0.00063
CIS-1,3-DICHLOROPROPENE				0.005	0.005	0.005	0.01	0.005	0.005	0.005	0.001	0.0005	0.0037
TRANS-1,3-DICHLOROPROPENE				0.005	0.005	0.005	0.01	0.005	0.005	0.005	0.0002	0.0005	0.00063
METHYLENE CHLORIDE		0.0417	0.04203	0.0695	0.0891	0.0932	0.0385	0.0248	0.0053	0.005	0.004	0.01	0.0125
1,1,2,2-TETRACHLOROETHANE				0.005	0.005	0.005	0.01	0.005	0.005	0.005	0.0016	0.0034	0.0022
TETRACHLOROETHENE		0.00014	0.00014	0.005	0.005	0.005	0.01	0.005	0.005	0.005	0.0002	0.0005	0.00063
1,1,1-TRICHLOROETHANE				0.005	0.005	0.005	0.01	0.005	0.005	0.005	0.0004	0.0005	0.0011
1,1,2-TRICHLOROETHANE				0.005	0.005	0.005	0.01	0.005	0.005	0.005	0.001	0.0005	0.00063
TRICHLOROETHENE				0.005	0.0074	0.005	0.01	0.005	0.005	0.005	0.0002	0.0012	0.00063
VINYL CHLORIDE				0.005	0.005	0.005	0.01	0.005	0.005	0.005	0.0004	0.0005	0.0025
TRICHLOROFLUOROMETHANE				0.005	0.005	0.005	0.01	0.005	0.005	0.005		0.0005	0.00063
DICHLORODIFLUOROMETHANE				0.005	0.005	0.005	0.0311	0.005	0.005	0.005			
ARSENIC				0.023	0.005	0.033	0.067	0.05	0.01	0.011	0.0055	0.01	
CHROMIUM		0.16		0.5	0.035	0.021	0.005	0.006	0.037	0.036	0.036	0.05	
COPPER		0.29		0.45	0.2	0.2	0.51	0.2	0.78	0.27	0.28	0.25	
IRON	27.5	0.0001		1820	7.85	6.73	19	1.28	33.6	34.65	36	135	
LEAD		0.007		1	0.029	0.039	0.005	0.005	0.008	0.01	0.0095	0.37	
MERCURY				0.005	0.001	0.002	0.004	0.004	0.001	0.001	0.002	0.003	
ZINC		1.14		0.51	0.2	0.18	0.7	0.32	2.7	1.2	1.9	6.28	

VANDEMARK LANDFILL: QUARTER

VDM 10

CONSTITUENT:	11/5/87	11/5/87d	3/31/88	3/31/88d	06/28/88	6/28/88d	08/31/88	8/31/88d	11/16/88	02/15/89	STANDARD DEVIATION	STUDENT (95%)
WELL ELEVATION	414.21	414.21	413.87	413.87	411.6	411.6	412.04	412.04	413.73	412.57		
CHLORIDE	4400	5600	2300	2300	7400	7000	8280	8530	2200	8400	1852.9451	0.32
pH	6.04	6.04	5.98	5.98	5.83	5.83	5.17	5.1	5.84	7.38	0.4655	0.75
TOTAL PHENOLS	0.299	0.108	0.018	0.012	0.16	0.12	0.059	0.046	0.011	0.043	0.2141	-0.14
BROMODICHLOROMETHANE	0.005	0.005	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.001	0.0002	0.0032	-0.19
BROMOFORM	0.005	0.005	0.001	0.001	0.0002	0.0002	0.001	0.001	0.003	0.0004	0.0114	-0.11
BROMOMETHANE	0.005	0.005	0.0008	0.0008	0.0008	0.0008	0.0004	0.0004	0.005	0.0002	0.0026	-0.25
CARBON TETRACHLORIDE	0.001	0.001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.001	0.0002	0.0027	-0.15
CHLOROETHANE	0.001	0.001	0.0004	0.0004	0.0002	0.0002	0.0002	0.0002	0.002	0.001	0.0027	-0.12
2-CHLOROETHYLVINYL ETHER	0.01	0.01	0.004	0.004	0.0002	0.0002	0.005	0.002	0.003	0.0004	0.0030	-0.28
CHLOROFORM	0.154	0.124	0.11	0.12	0.19	0.18	0.3	0.29	0.13	0.12	0.0749	0.00
CHLOROMETHANE	0.005	0.005	0.00095	0.0011	0.0004	0.0004	0.0046	0.002	0.003	0.001	0.0034	-0.18
DIBROMOCHLOROMETHANE	0.005	0.005	0.0002	0.0002	0.00066	0.0006	0.0002	0.0002	0.001	0.0002	0.0031	-0.20
1,1-DICHLOROETHANE			0.0004	0.0004	0.0002	0.0002	0.0002	0.0002	0.001	0.0002	0.0028	-0.16
1,2-DICHLOROETHANE	0.001	0.001	0.0076	0.0078	0.023	0.023	0.021	0.02	0.001	0.0002	0.0073	-0.34
1,1-DICHLOROETHENE	0.001	0.001	0.0004	0.0004	0.0002	0.0002	0.0002	0.0002	0.002	0.0002	0.0027	-0.18
TRANS-1,2-DICHLOROETHENE	0.001	0.001	0.00063	0.001	0.001	0.0011	0.0002	0.0002	0.001	0.0002	0.0026	-0.19
1,2-DICHLOROPROPANE	0.001	0.001	0.00027	0.00025	0.0022	0.0006	0.0002	0.0002	0.003	0.0002	0.0026	-0.20
CIS-1,3-DICHLOROPROPENE	0.001	0.001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.001	0.0002	0.0027	-0.19
TRANS-1,3-DICHLOROPROPENE	0.001	0.001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.001	0.0002	0.0027	-0.17
METHYLENE CHLORIDE	0.001	0.001	0.003	0.0026	0.018	0.019	0.015	0.017	0.002	0.0054	0.0273	-0.14
1,1,2,2-TETRACHLOROETHANE	0.001	0.001	0.0028	0.0029	0.0042	0.0047	0.0047	0.004	0.001	0.0002	0.0022	-0.36
TETRACHLOROETHENE	0.001	0.001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.001	0.0002	0.0026	-0.16
1,1,1-TRICHLOROETHANE	0.001	0.001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.001	0.0002	0.0027	-0.17
1,1,2-TRICHLOROETHANE	0.001	0.001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.001	0.0002	0.0027	-0.18
TRICHLOROETHENE	0.00145	0.001	0.00072	0.00079	0.0015	0.0016	0.0018	0.0016	0.001	0.0002	0.0026	-0.22
VINYL CHLORIDE	0.001	0.001	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.003	0.0002	0.0027	-0.19
TRICHLOROFLUOROMETHANE	0.001	0.001									0.0025	-0.33
DICHLORODIFLUOROMETHANE	0.001	0.001									0.0027	-0.24
ARSENIC	0.006	0.005	0.005	0.005	0.027	0.022	0.061	0.07	0.008	0.011	0.0220	-0.12
CHROMIUM	0.035	0.01	0.005	0.005	0.021	0.018	0.02	0.023	0.034	0.032	0.1072	-0.04
COPPER	0.23	0.28	0.035	0.03	3.1	0.99	12	12	0.1	4.3	3.5505	0.15
IRON	38.5	20.2	9.5	8.8	86	68	110	120	20	4.2	331.2810	-0.07
LEAD	0.018	0.01	0.04	0.05	0.11	0.13	0.06	0.06	0.05	0.58	0.2433	0.42
MERCURY	0.001	0.001	0.0002	0.0002	0.0005	0.0005	0.0002	0.0002	0.0004	0.0004	0.0014	-0.17
ZINC	0.34	0.58	1	1	9.2	7.6	2.8	3.7	1.3	2.8	2.5089	0.04

VANDENMARK LANDFILL QUARTERLY MONITORING PROGRAM RESULTS

VDM 11

CONSTITUENT:	1/6/84	3/21/84	3/21/84d	5/12/86	1/22/87	6/3/87	9/2/87	11/5/87	03/31/88	06/28/88	08/31.88	11/16/88	02/15/89	STANDARD DEVIATION	STUDENT T (95%)
WELL ELEVATIONS					433.19	431.52	431.46	«31.55	434.8	431.08	431	432.76	432.48		
CHLORIDE	1859	1859	1859	(803)	(410)	(1750)	(2400)	(1900)	(810)	(2400)	(2550)	(1210)	(760)	1125.8464	-0.3154
pH	3.628	3.365		2.2	4.54	2.93	3.29	2.9	3.28	3.36	3.24	3.25	4.9	0.7411	0.6417
TOTAL PHENOLS		0.013	0.013	(0.23)	0.01	(0.06)	(0.004)	(0.052)	0.01	0.01	(0.019)	0.01	0.01	0.0599	-0.1493
BROMODICHLOROMETHANE				0.01	0.005	0.005	0.005	0.005	0.0002	0.0002	0.0002	0.001	0.001	0.0031	-0.2433
BROMOFORM				0.01	0.005	0.025	0.005	0.005	(0.001)	(0.008)	0.001	0.003	0.002	0.0069	-0.1894
BROMOMETHANE				0.005	0.005	0.005	0.005	0.005	0.0002	0.0008	0.0004	0.005	0.001	0.0021	-0.3674
CARBON TETRACHLORIDE				(0.018)	0.005	0.005	(0.0278)	(0.068)	(0.01)	0.0002	(0.0355)	0.001	(0.0035)	0.0196	-0.1978
CHLOROETHANE				0.005	0.005	0.005	0.005	0.001	0.0004	0.0002	0.0002	0.002	0.005	0.0022	0.3249
2-CHLOROETHYLVINYL ETHER				0.005	0.005	0.005	0.005	0.01	0.001	0.0002	0.001	0.003	0.002	0.0028	-0.2071
CHLOROFORM				(0.0752)	(0.0522)	(0.0307)	(0.138)	(0.123)	(0.05)	(0.123)	(0.038)	(0.052)	(0.048)	0.0370	-0.6471
CHLOROMETHANE				0.005	0.005	0.005	0.005	0.005	(0.00054)	0.0004	0.0004	0.003	0.005	0.0029	0.2558
DIBROMOCHLOROMETHANE				0.01	0.005	0.005	0.005	0.005	(0.0032)	(0.0012)	0.0002	0.001	(0.0026)	0.0027	-0.1499
1,1-DICHLOROETHANE				0.005	0.005	0.005	0.005		0.0004	(0.0051)	0.0002	0.001	(0.0038)	0.0022	-0.0197
1,2-DICHLOROETHANE				(0.00545)	0.005	0.005	(0.00586)	0.001	(0.0035)	(0.0038)	(0.0021)	0.001	0.001	0.0022	-0.4466
1,1-DICHLOROETHENE				0.005	0.005	0.005	0.005	0.001	0.0004	0.0002	0.0002	0.002	0.001	0.0021	-0.2332
TRANS-1,2-DICHLOROETHENE				0.005	0.005	0.005	0.005	0.001	(0.0021)	(0.0006)	0.0002	0.001	(0.0015)	0.0020	-0.1934
1,2-DICHLOROPROPANE				0.005	0.005	0.005	0.005	0.001	(0.0013)	0.0002	0.0002	0.003	0.001	0.0023	-0.2878
CIS-1,3-DICHLOROPROPENE				0.005	0.005	0.005	0.005	0.001	0.0002	0.0002	0.0002	0.001	0.001	0.0022	-0.2082
TRANS-1,3-DICHLOROPROPENE				0.005	0.005	0.005	0.005	0.001	0.0002	0.0002	0.0002	0.001	0.001	0.0022	-0.2082
METHYLENE CHLORIDE				(0.158)	0.005	0.005	(0.00723)	(0.0183)	(0.00725)	(0.001)	(0.0054)	0.002	(0.0048)	0.0489	-0.1160
1,1,2,2-TETRACHLOROETHANE				0.005	0.005	(0.0342)	(0.015)	0.001	(0.038)	(0.0035)	(0.0052)	(0.0058)	(0.01)	0.1097	0.0507
TETRACHLOROETHENE				(0.0715)	(0.182)	(0.0325)	(0.127)	(0.0258)	0.0002	0.0002	0.0002	0.001	0.001	0.0609	-0.2640
1,1,1-TRICHLOROETHANE				0.005	0.005	0.005	0.005	0.001	0.0004	0.0002	0.0002	0.001	0.001	0.0022	-0.2131
1,1,2-TRICHLOROETHANE				0.005	0.005	0.005	0.005	(0.00556)	0.0002	0.0002	0.0002	0.001	0.001	0.0023	-0.2611
TRICHLOROETHENE				(0.00675)	(0.0219)	(0.00648)	(0.0166)	(0.0168)	(0.0038)	(0.0018)	0.0002	0.001	(0.0021)	0.0074	-0.2582
VINYL CHLORIDE				0.005	0.005	0.005	0.005	0.001	0.0004	0.0004	0.0004	0.003	0.001	0.0021	-0.2609
TRICHLOROFLUOROMETHANE				0.005	0.005	0.005	0.005	0.001						0.0024	-0.6708
DICHLORODIFLUOROMETHANE				0.005	0.005	0.005	0.005	0.001						0.0024	-0.6708
ARSENIC				(0.105)	(0.348)	0.005	(0.05)	0.005	0.01	(0.01)	(0.053)	(0.068)	(0.018)	0.0318	-0.2611
CHROMIUM		0.19		0.5	(0.006)	(0.123)	(0.13)	(0.05)	(0.014)	(0.048)	(0.053)	(0.038)	(0.018)	0.1360	-0.2030
COPPER		0.51		(1.09)	(0.55)	(1.15)	(2.88)	(1.57)	(1.5)	(3.2)	(2.2)	(1.2)	(0.98)	0.9048	-0.2659
IRON	45.3	0.225		(3650)	(13)	(25)	(165)	(3673)	(0.9)	(43)	(99)	(85)	(4.9)	884.4692	-0.1052
LEAD		0.01		1	(0.009)	(0.008)	(0.018)	(0.031)	0.03	(0.02)	(0.029)	0.05	(0.008)	0.2772	-0.0640
MERCURY				(0.008)	0.001	(0.0005)	0.001	0.001	0.0005	0.0005	(0.0042)	0.0004	0.0004	0.0006	-0.2672
ZINC		2.92		(1.19)	(1.65)	(1.78)	(5)	(2.3)	(2.2)	(4.3)	(3.2)	(2.3)	(2.2)	1.3056	-0.2226

VDM - 12

CONSTITUENT:	1/6/84	1/6/84d	3/21/84	3/21/84d	5/12/86	1/22/87	STANDARD DEVIATION	STUDENT T (95%)
WELL ELEVATION						437.97		
CHLORIDE	50682	51660	53593	53593	57200	103000	18616.9622	0.7803
pH	3.628		4.014		1.83	1.45	1.1072	-0.6677
TOTAL PHENOLS	0.08		0.043		0.01		0.0286	-0.8491
BROMODICHLOROMETHANE					0.01	0.005	0.0025	-1.0000
BROMOFORM					0.01	0.005	0.0025	-1.0000
BROMOMETHANE					0.01	0.005	0.0025	-1.0000
CARBON TETRACHLORIDE		0.028	0.00556		0.038	0.005	0.0143	-0.5707
CHLOROETHANE					0.01	0.005	0.0025	-1.0000
2-CHLOROETHYLVINYL ETHER					0.01	0.005	0.0025	-1.0000
CHLOROFORM	0.5	0.5	0.61583		0.36	0.146	0.1611	-0.8441
CHLOROMETHANE	0.55	0.39	0.85821		0.49	0.148	0.2307	-0.7353
DIBROMOCHLOROMETHANE					0.01	0.005	0.0025	-1.0000
1,1-DICHLOROETHANE					0.01	0.005	0.0025	-1.0000
1,2-DICHLOROETHANE					0.01	0.005	0.0025	-1.0000
1,1-DICHLOROETHENE					0.01	0.005	0.0025	-1.0000
TRANS-1,2-DICHLOROETHENE					0.01	0.005	0.0025	-1.0000
1,2-DICHLOROPROPANE					0.01	0.005	0.0025	-1.0000
CIS-1,3-DICHLOROPROPENE					0.01	0.005	0.0025	-1.0000
TRANS-1,3-DICHLOROPROPENE					0.01	0.005	0.0025	-1.0000
METHYLENE CHLORIDE	0.33	0.29	0.89764		0.18	0.12	0.2767	-0.4343
1,1,2,2-TETRACHLOROETHANE					0.043	0.005	0.0190	-1.0000
TETRACHLOROETHENE	0.11	0.12	0.03359		0.14	0.11	0.0363	0.1004
1,1,1-TRICHLOROETHANE					0.01	0.005		
1,1,2-TRICHLOROETHANE					0.01	0.005	0.0025	-1.0000
TRICHLOROETHENE					0.013	0.0131	0.0000	1.0000
VINYL CHLORIDE					0.01	0.005	0.0025	-1.0000
TRICHLOROFLUOROMETHANE					0.01	0.005	0.0025	-1.0000
DICHLORODIFLUOROMETHANE					0.01	0.005	0.0025	-1.0000
ARSENIC					4	32	14.0000	1.0000
BERYLLIUM	0.186		0.182		0.38		0.0924	0.9998
CADMIUM	0.294		0.204		0.05		0.1007	-0.9311
CHROMIUM	4.25		5.26		8.1	20	6.2792	0.9744
COPPER	31		57		29	120	36.7721	0.9538
IRON	9.8		17.5		14500	3000	5967.5967	-0.1337
LEAD	0.485		2.22		27	47	19.1850	0.8373
MERCURY					0.001	0.068	0.0335	1.0000
NICKEL	22.9		26.6		1.94		10.8583	-0.9903
SELENIUM					0.017			
SILVER	0.87		0.21		0.1		0.3400	-0.6100
THALLIUM	1.12		1.23		1		0.0939	-0.8782
ZINC	497		226		1360	41	505.3519	-0.5598

COMMENTS:

No samples collected on 6/3/87, 9/2/87, 11/5/87, 3/31/88, 6/28/88, 8/31/88, 11/16/88 and 2/15/89 - Well dry.

VANDEMARK LANDFILL: QUARTERLY MONITORING PROGRAM RESULTS

VDM 14

CONSTITUENT:	11/5/87	03/31/88	06/28/88	08/31/88	11/16/88	11/16/88d	02/15/89	02/15/89d	STANDARD DEVIATION	STUDENT T (95%)
WELL ELEVATION	436.46	436.98	435.77	433.57	436.96	436.96	436.29			
CHLORIDE	<1600>	<45>	<7300>	<10540>	<220>	<280>	<180>	190	3797.1728	-0.2344
pH	6.11	6.67	5.32	4.83	6.69	6.68	7.14	7.14	0.7904	0.3909
TOTAL PHENOLS	<0.034>	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.0079	-0.1429
BROMODICHLOROMETHANE	0.005	0.0002	0.0002	0.001	0.001	0.001	0.001	0.001	0.0014	-0.0788
BROMOFORM	0.005	0.001	<0.00083>	0.005	0.003	0.003	0.002	0.002	0.0015	-0.1830
BROMOMETHANE	0.005	0.0008	0.0008	0.002	0.005	0.005	0.001	0.001	0.0019	-0.3114
CARBON TETRACHLORIDE	0.001	<0.0038>	<0.0092>	<0.018>	<0.0098>	<0.009>	0.001	0.001	0.0056	-0.3752
CHLOROETHANE	0.001	0.0004	0.0002	0.001	0.002	0.002	0.005	0.005	0.0018	0.6162
2-CHLOROETHYLVINYL ETHER	0.01	0.001	0.0002	0.005	0.003	0.003	0.002	0.002	0.0149	-0.0323
CHLOROFORM	<0.0227>	<0.0032>	<0.087>	<0.17>	<0.028>	<0.03>	<0.0052>	<0.0051>	0.0540	-0.2717
CHLOROMETHANE	0.005	0.0004	<0.0066>	<0.019>	0.003	0.003	0.005	0.005	0.0053	-0.0628
DIBROMOCHLOROMETHANE	0.005	0.0002	<0.0025>	<0.012>	0.001	0.001	0.001	0.001	0.0037	-0.2009
1,1-DICHLOROETHANE		0.0002	0.0002	0.001	0.001	0.001	0.001	0.001	0.0004	0.2582
1,2-DICHLOROETHANE	0.001	0.0002	0.013	0.02	0.001	0.001	0.001	0.001	0.0070	-0.2039
1,1-DICHLOROETHENE	0.001	0.0004	0.0002	0.001	0.002	0.002	0.001	0.001	0.0006	-0.0466
TRANS-1,2-DICHLOROETHENE	0.001	0.0002	<0.009>	<0.017>	0.001	0.001	0.001	0.001	0.0056	-0.1948
1,2-DICHLOROPROPANE	0.001	0.0002	<0.0041>	0.001	0.003	0.003	0.001	0.001	0.0013	-0.2309
CIS-1,3-DICHLOROPROPENE	0.001	0.0002	0.0002	0.0002	0.001	0.001	0.001	0.001	0.0004	0.2928
TRANS-1,3-DICHLOROPROPENE	0.001	0.0002	0.0002	0.001	0.001	0.001	0.001	0.001	0.0003	0.2182
METHYLENE CHLORIDE	0.001	0.0002	<0.022>	<0.028>	0.002	0.002	<0.0012>	<0.002>	0.0103	-0.1936
1,1,2,2-TETRACHLOROETHANE	0.001	<0.046>	<0.038>	<0.45>	<0.097>	<0.093>	<0.077>	<0.065>	0.1324	-0.1238
TETRACHLOROETHENE	<0.0224>	0.0002	0.0002	0.001	0.001	0.001	0.001	0.001	0.0072	-0.1306
1,1,1-TRICHLOROETHANE	0.001	0.0002	0.0002	0.001	0.001	0.001	0.001	0.001	0.0003	0.2182
1,1,2-TRICHLOROETHANE	0.001	0.0002	0.0002	0.0002	0.001	0.001	0.001	0.001	0.0004	0.2928
TRICHLOROETHENE	<0.639>	<0.00065>	<0.01>	<0.023>	<0.0058>	0.0017	0.001	0.001	0.2094	-0.1521
VINYL CHLORIDE	0.001	0.0004	0.0004	0.002	0.003	0.003	0.001	0.001	0.0010	-0.1805
TRICHLOROFLUOROMETHANE	0.001									
DICHLORODIFLUOROMETHANE	0.001									
ARSENIC	0.005	0.005	0.005	<0.024>	0.005	0.005	0.005	0.005	0.0063	-0.1429
CHROMIUM	<0.069>	<0.33>	<0.034>	<0.52>	<0.24>	<0.19>	<2.7>	<5.3>	1.7630	0.8849
COPPER	0.2	<0.021>	<0.014>	<0.015>	<0.028>	<0.022>	<0.018>	<0.026>	0.0595	-0.1080
IRON	<193>	<2.4>	<640>	<1100>	<3.9>	<3.5>	<8.2>	<6.4>	383.7420	-0.2347
LEAD	<0.021>	<0.03>	<0.1>	0.06	0.05	0.05	<0.09>	0.07	0.0255	0.1648
MERCURY	0.001	0.0002	0.0005	0.0002	0.0004	0.0004	0.0004	0.0004	0.0002	-0.0605
ZINC	<0.8>	<0.095>	<1.5>	<3.3>	<0.057>	<0.047>	<0.17>	<0.24>	1.0810	-0.1612