SWS Silicones Corporation
ADRIAN, MICHIGAN 49221 • TELEPHONE (517) 263-5711

December 23, 1982

US EPA RECORDS CENTER REGION 5
1005179

Chief Engineer
State of Michigan
Department of Natural Resources
Water Quality Division
P. O. Box 30028
Stevens T. Mason Building
Lansing, Michigan 48909

Re: SWS Silicones Corporation
NPDES Permit MI 0026034

Gentlemen:

This letter concerns Special Condition Number Six (6) of our NPDES permit, and is a report summarizing our findings of the DNR-approved Phase II Hydrogeologic Study Plan for the old evaporation-settling pond.

Please note that the pond has been out of service since May, 1980. The pond has since been drained, closed, and capped in accordance with the DNR-approved plan, and in compliance with Special Condition Number Seven (7) of our NPDES permit.

The following information is enclosed:

1. Gilbert/Commonwealth report entitled "Permeability Testing of OW-Series Observation Wells for SWS Silicones Corporation, Adrian, Michigan".
2. Gilbert/Commonwealth report entitled "Ground Water Flow Beneath the Sealed Evaporation and Settling Basin at SWS Silicones Corporation, Adrian, Michigan".
3. Summary Table of Well analyses for June 9, July 21, and August 11, 1982.
4. Inter-office memo from B. S. McClellan, dated December 20, 1982, entitled "Estimate of Mass Loading, Phase II Hydrogeologic Investigation, Evaporation and Settling Basin, Adrian".

This report concludes our study of the evaporation-settling pond portion of the Phase II Hydrogeological Investigation.

Yours truly,

SWS SILICONES CORPORATION

Gordon C. Philbrook

Gordon C. Philbrook
Environmental Control Coordinator

GCP:pb 82-377, certified

cc: R. Schrameck, MDNR, District #1, certified
J. Calamungi

bcc: J. M. Barancin
G. L. Ford
H. Kim
B. S. McClellan
G. H. Meyer; Meyer & Kirl
T. J. Sayers
G. R. Wolf

Stauffer CHEMICALS

INTER-OFFICE CORRESPONDENCE

Westport

Adrian

G.C. Philbrook

J. Calamungi
G.L. Ford
D. McGrade
T.J. Sayers

B.S. McClellan
Sr. Hydrogeologist

12/20/82

Estimate of Mass Loading, Phase II Hydrogeologic Investigation, Evaporation and Settling Basin, Adrian

This report presents an estimate of mass loading from the basin to the river. This estimate is based on my review of the information obtained during the Phase II Hydrogeologic Investigative work performed in regards to the now closed Evaporation and Settling Basin. Specifically I have reviewed two reports by the outside contractor Gilbert/Commonwealth.

1. Report No. 1 - Permeability Testing of OW-Series Observation Wells For SWS Silicones Corporation

2. Report No. 2 - Ground-Water Flow Beneath the Sealed Evaporation and Settling Basin at SWS Silicones Corporation, Adrian, Michigan

Also reviewed were the results of chemical analysis performed by SWS Silicones Corporation on samples collected from the nine observation wells on June 9, 1982, July 21, 1982 and August 11, 1982.

The purposes of this work has been to obtain the information needed to estimate the mass loading (in pounds per unit time) to the river from the basin area via ground-water discharge from the "Perched and Near Surface Aquifers." Based on the work conducted the estimated cumulative total mass loading for the chlorinated organic chemicals analyzed was 0.502 pounds per day from the "Perched Aquifer" and 0.003 pounds per day from the "Near Surface Aquifer." Ground-water in the "Perched Aquifer" (shallow) discharges along the upland slope to the floodplain swampy area and from the "Near Surface Aquifer" (deeper) to the floodplain swampy area and the River Raisin.

## Discussion of Methods Used

Ground-Water Discharge Rate: The ground-water discharge rate was determined by Gilbert/Commonwealth for both the "Perched Aquifer and Near Surface Aquifer." In order to accomplish this it was necessary to determine the in-site permeability of the soil contained in each saturated zone and construct a structural/hydrogeologic model of the site from which the dimensions of ground-water flow could be determined. The work performed and conclusion reached are described at depth in Reports No. 1 and No. 2. In Report No. 2 Gilbert/Commonwealth has presented a discharge rate of 3359 gpd for the "Perched Aquifer" and 2558 gpd for the "Near Surface Aquifer." These discharge rates represent the volume of ground water per unit time that will pass through a cross-sectional area situated downgradient of the basin and are representative of flow in the aquifers beneath the basin.

Chemical Analysis: Ground-water samples from the existing OW-Series wells were analyzed by SWS Silicones for the proposed list of chemicals. Samples were collected on June 9, 1982, July 21, 1982 and August 11, 1982. Using the analytical results from wells 1S, 1D, 4S and 4D (S-perched aquifer and D-near surface aquifer) an average concentration for each chemical in ground-water downgradient from the basin in each aquifer was obtained. Table 1 shows the actual analytical results for each compound, on each date sampled, for the downgradient wells and the average concentration obtained.

**TABLE 1**

Perched Aquifer

| Chemical - mg/L | Well No./Date Sample | | | | | | Average Concentration Mg/L |
|---|---|---|---|---|---|---|---|
| | 1S | | | 4S | | | |
| | 6/9 | 7/21 | 8/11 | 6/9 | 7/21 | 8/11 | |
| TOC | 30 | 900 | 1000 | 20 | 34 | 360 | 390.7 |
| Hydrolyzable (Ionic or Non-Organic) Chlorides | 950 | 1600 | 2157 | 1280 | 1390 | 1978 | 1559.2 |
| 1,1,1-Trichloroethane | 3.7 | 5.5 | 6.9 | 3.0 | 2.5 | 3.6 | 4.2 |
| 1,1-Dichloroethane | 17.0 | 28.0 | 36.0 | N.D. | 0.4 | 0.35 | 13.6 |
| t-1,2-dichloroethylene | N.D. | N.D. | N.D. | 0.8 | 0.03 | 0.03 | 0.14 |
| Di-n-butyl phthalate | $\leq$ 0.025 | -- | -- | N.D. | -- | -- | 0.013 |

TABLE 1 - (Continued)

Near Surface Aquifer

| Chemical - mg/L | Well No./Date Sampled 1D 6/9 | 1D 7/21 | 1D 8/11 | 4D 6/9 | 4D 7/21 | 4D 8/11 | Average Concentration mg/L |
|---|---|---|---|---|---|---|---|
| TOC | 13 | -- | 100 | 8 | 8 | 11 | 28.0 |
| Hydrolyzable (Ionic or Non-Organic) Chlorides | 855 | -- | 1180 | 273 | 235 | 249 | 558.4 |
| 1,1,-Trichloro-ethane | 0.13 | -- | 0.12 | 0.08 | 0.06 | 0.18 | 0.11 |
| 1,1-Dichloro-ethane | N.D. | -- | N.D. | N.D. | N.D. | N.D. | N.D. |
| t-1,2-Dichloro-ethylene | N.D. | -- | N.D. | 0.04 | 0.05 | 0.16 | 0.05 |
| Di-n-butyl phthalate | N.D. | -- | -- | N.D. | -- | -- | N.D. |

Mass Loading Determination: Using the average concentration for each compound (mg/L) in each aquifer and the discharge rate for each aquifer (Liters/day) an estimate of the mass loading for each compound (pounds per day) in each aquifer was obtained. The results of this determination are presented in Table 2 along with the cumulative totals for chlorinated organics. It is important to note that in making this determination no consideration was given to the attenuative capabilities of the water bearing soils or the hydrolytic stability of the compounds involved. Therefore, the results presented here should be viewed as a worst case situation and the actual amounts of the observed compound reaching the discharge areas could be significantly less.

## TABLE 2

### Mass Loading Determination Lb./day

| Compound | Perched (Shallow) Aquifer | Near Surface (Deeper) Aquifer |
|---|---|---|
| TOC | 10.9 | 0.6 |
| Hydrolyzable (Ionic or Non-Organic) Chlorides | 43.6 | 11.9 |
| 1,1,1-Trichloro-ethane | 0.118 | 0.002 |
| 1,1-Dichloro-ethane | 0.380 | N.D. |
| t-1,2-Dichloro-ethylene | 0.004 | 0.001 |
| Di-n-butyl Phthalate | < 0.001 | N.D. |
| Chlorinated Organics Cumulative Totals | 0.502 | 0.003 |

## Conclusions

1) I believe that the representation of hydrogeologic conditions presented by Gilbert/Commonwealth are reasonably accurate. Furthermore, because of the relatively high permeability values used for the type of materials described and the recent elimination of the Evaporation and Settling Basin as a source of recharge, I believe that the ground-water discharge rates presented are on the high side. Based on this I do not predict significantly higher values for discharge than those used here.

2) Given that the Evaporation and Settling Basin is now closed and caped the mass loading determinations presented here should be considered a high point. The elimination of the basin as a potential source of recharge to the "Perched Aquifer" should result in a reduction of mass loading values presented here.

3) When considering the mass loading values presented here it is important to keep in mind that this discharge does not occur from a point source but is spread out over a significant area as shown on Figure 5 and 6 of Report 2 by Gilbert/Commonwealth. Also discharge is not directly to the river but to a swampy area and it is questionable as to how much if any of the estimated mass loading reaches the river.

If you have any questions please call.

B.S. McClellan

B.S. McClellan

BSM005:dm

SWS SILICONES CORPORATION

TABLE I

Old Evaporation Pond, Well Analyses

For June 9, July 21 and August 11, 1982

mg/l

| Well # | T.O.C. 6/9 | T.O.C. 7/21 | T.O.C. 8/11 | Chloride 6/9 | Chloride 7/21 | Chloride 8/11 | di-n-butyl-phthalate 6/9 |
|---|---|---|---|---|---|---|---|
| 1S | 30 | 900 | 1000 | 950 | 1600 | 2157 | ≤ 0.025 |
| 1D | 13 | 100 | (1) | 855 | 1180 | (1) | ND(2) |
| 2S | 29 | 28 | 24 | 440 | 410 | 547 | ND(2) |
| 2D | 5 | (1) | (1) | 240 | (1) | (1) | ≤ 0.030 |
| 3S | 14 | 13 | 14 | 190 | 400 | 537 | ND(2) |
| 3D | 5 | 7 | 6 | 174 | 250 | 239 | ≤0.025 |
| 4S | 20 | 34 | 360 | 1280 | 1390 | 1978 | ND(2) |
| 4D | 8 | 8 | 11 | 273 | 235 | 249 | ND(2) |
| 5 | 14 | 16 | 18 | 370 | 370 | 403 | ND(2) |

| Well # | 1,1,1 trichloroethane 6/9 | 1,1,1 trichloroethane 7/21 | 1,1,1 trichloroethane 8/11 | t-1,2-dichloroethylene 6/9 | t-1,2-dichloroethylene 7/21 | t-1,2-dichloroethylene 8/11 | 1,1 dichloroethane 6/9 | 1,1 dichloroethane 7/21 | 1,1 dichloroethane 8/11 |
|---|---|---|---|---|---|---|---|---|---|
| 1S | 3.7 | 5.5 | 6.9 | ND | ND | ND(3) | 17 | 28 | 36 |
| 1D | 0.13 | 0.12 | (1) | ND | ND | (1) | ND | ND | (1) |
| 2S | 0.25 | 0.40 | 0.61 | 0.74 | 0.65 | 0.67 | ND | ND | 0.01 |
| 2D | ND | (1) | (1) | ND | (1) | (1) | ND | (1) | (1) |
| 3S | 0.30 | 1.0 | 1.7 | ND | ND | 0.01 | ND | ND | 0.01 |
| 3D | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 4S | 3 | 2.5 | 3.6 | 0.80 | 0.03 | 0.03 | ND | 0.40 | 0.35 |
| 4D | 0.08 | 0.06 | 0.18 | 0.04 | 0.05 | 0.16 | ND | ND | ND |
| 5 | 0.25 | 0.20 | 0.31 | 0.14 | 0.25 | 0.40 | ND | ND | ND |

(1) Insufficient water for sampling.

(2) Detection limit about 0.02 mg/l.

(3) Detection limit about 1.0 mg/l in this sample.

(4) Other ND (None Detected) limits about 0.01 mg/l.

G. C. Philbrook
12-22-82

DEC 16 1982

SHW-TUB

Mr. Joseph Calimungi
Director of Manufacturing
SWS Silicones Corporation
Sutton Road
Adrian, Michigan 49221

RE: MID076000671

Dear Mr. Calimungi:

By now you should have received our letter requesting submittal of the Hazardous Waste Permit Application, Part B, for the above referenced facility.

A guidance document has been prepared for the use of hazardous waste management facilities in the preparation of their permit applications. A copy of that document is enclosed for your use.

A one-day workshop/seminar for Part B applicants is being scheduled for January 10 and 11, 1983. You will be further advised of the time and location as soon as arrangements have been made.

In the meantime, please contact me at (312) 886-2771, if you have any questions.

Sincerely yours,

Allen A. Debus
Permit Contact
Technical, Permits, and Compliance Section

Enclosure

cc: Alan J. Howard, Chief
Office of Hazardous Waste Management
Michigan Department of Natural Resources

SHW-TUB:ADebus:THaywood:12/16/82

Failure to furnish the complete Part B permit application by the above date, and to provide in full all required information, is grounds for termination of interim status under 40 CFR 122.22.

Information you submit in the Part B permit application can be disclosed to the public, according to the Freedom of Information Act and U.S. Environmental Protection Agency (U.S. EPA) Freedom of Information regulations. If you wish, however, you may assert a claim of business confidentiality by printing the word "Confidential" on each page of the application which you believe contains confidential business information. U.S. EPA will review business confidentiality claims under regulations at 40 CFR Part 2, and will later request substantiation of any claims. Please review these rules carefully before making a claim.

If you claim parts of the application as confidential, please provide us with a public information copy of the application. The public information copy must be identical to the full application with the exclusion of the confidential information.

We have also enclosed a copy of 40 CFR Part 264 which includes technical standards for the operation of treatment and storage facilities. These standards will become applicable upon issuance of an RCRA permit to your facility by U.S. EPA.

We will coordinate review of the application with the Michigan Department of Natural Resources, and if the application is acceptable, will strive for a simultaneous issuance of Federal and State hazardous waste facility permits. It is possible that during the processing of the application, the State hazardous waste program may become authorized to issue RCRA permits for your type of facility. In that case, direct Federal processing will cease, and the State in lieu of U.S. EPA will make the final determination on your application.

We look forward to receiving your Part B permit application.

Sincerely yours,

Karl J. Klepitsch, Jr., Chief
Waste Management Branch

Enclosures: 40 CFR 122.25
40 CFR 264

cc: L. B. Bruner
Vice-President and General Manager
SWS Silicones Corp.
Sutton Road
Adrian, MI 49221

Al Howard, MDNR

bcc: Allen Debus
Part B file

| INITIALS | TYPIST | AUTHOR | R.E.M. | STU #1 | STU #2 | TPCS | WMD CHIEF | WMD BR. | RA |
|---|---|---|---|---|---|---|---|---|---|
| DATE | | | WEM 11/29/82 | | | DJB 11/30/82 | | | |

5HW-TUB:ADebus:THaywood:11/29/82
11/29/82

PART B DOCKET LOG

Please print

Facility SWS Silicones

I.D. # MID 075 400 671

| Item No. | Item Date | Description | Item Filed* |
|---|---|---|---|
| 137-47 | 7/17/84 | News Release | see 6 |
| 137-48 | | Radio Broadcast Announcement | 6 |
| 137-49 | 6/4/84 | Comment: Klepitsch, from Bigelow | 6 |
| 137-50 | 6/6/84 | Comment: Ohm, from Guenther (MI Dept of State) | 6 |
| 137-51 | 5/25/84 | Certificate of Mailing (MDNR) | 6 |
| 137-52 | | Mailing List (w/ inapplicable names crossed out) | 6 |
| 137-53 | 8/1/84 | Memo: Ohm to Oehas | 6 |
| 137-54 | [illegible] | Memo: [illegible] to Klepitsch | 6 |
| 137-55 | 9/7/84 | Letter U.S. EPA to Calamurgi | 2 |
| 137-56 | 9/7/84 | Responsiveness Summary and Sign off page | 6 |
| 137-57 | 7/12/84 | News Release (Duplicate copy of 137-47) | 6 |
| 137-58 | | | |

*Folder 1 is [illegible] by [illegible].

UN )D STATES ENVIRONMENTAL PROTECT. AGENCY
REGION V

Name of Permittee: SWS Silicones Corporation

Facility Location: Sutton Road, Adrian, Michigan

EPA Identification Number: MID075400671

Effective Date: _____

Expiration Date: (This permit will have a ten year duration.)

## Authorized Activities

Pursuant to the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended (42 USC §6901 et seq., commonly known as RCRA) and regulations promulgated thereunder by the U.S. Environmental Protection Agency (U.S. EPA) codified and to be codified in Title 40 of the Code of Federal Regulations), a permit is issued to SWS Silicones Corp. (hereafter called the Permittee), to operate a hazardous waste storage facility located in Adrian, Michigan at latitude 41° 56' 48" N and longitude 83° 57' 13" W. You are authorized to conduct the following hazardous waste management activities:

| X Storage | Treatment | Disposal |
|---|---|---|
| X Container | Tank | Injection Well |
| X Tank | Surface Impoundment | Landfill |
| Waste Pile | Incinerator | Land Application |
| Surface Impoundment | Other | Ocean Disposal |
| | | Surface Impoundment |

Applicable Regulations:

The conditions of this permit were developed in accordance with the applicable provisions of 40 CFR Part:

| | | |
|---|---|---|
| X 261 | X 264, Subpart G | 264, Subpart L |
| X 262 | X 264, Subpart H | 264, Subpart M |
| X 264, Subparts A-E | X 264, Subpart I | 264, Subpart N |
| 264, Subpart F | X 264, Subpart J | 264, Subpart O |
| | 264, Subpart K | X 270 |

## Permit Approval

The Permittee must comply with all terms and conditions of this permit. This permit consists of the conditions contained herein (including those in any attachments) and the applicable regulations contained in 40 CFR Parts 260 through 264 and 270 and 124 as specified in the permit. Applicable regulations are those which are in effect on the date of issuance of this permit (see 40 CFR §270.32(c)).

137-37

This permit is based on the assumption that the information submitted in the permit application attached to the Permittee's letter dated May 23, 1983 and any subsequent amendments (hereafter referred to as the application) is accurate and that the facility will be constructed and operated as specified in the application. Any inaccuracies found in this information may be grounds for the termination or modification of this permit (see 40 CFR §270.42 and §270.43) and potential enforcement action. The Permittee must inform U.S. EPA of any deviation from or changes in the information in the application which would affect the Permittee's ability to comply with the applicable regulations or permit conditions.

Issued this _____ day of _____

by _____
Basil G. Constantelos, Director
Waste Management Division

# I. STANDARD CONDITIONS

## A. EFFECT OF PERMIT

The Permittee is allowed to store hazardous waste in accordance with the conditions of this permit. Any storage of hazardous waste not authorized in this permit is prohibited. Compliance with this permit constitutes compliance, for purposes of enforcement, with Subtitle C of RCRA. Issuance of this permit does not convey property rights of any sort or any exclusive privilege; nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of State or local law or regulations. Compliance with the terms of this permit does not constitute a defense to any action brought under Section 3013 or Section 7003 of RCRA, Section 106(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. 9606(a), commonly known as CERCLA), or any other law providing for protection of public health or the environment.

## B. PERMIT ACTIONS

This permit may be modified, revoked and reissued, or terminated for for cause as specified in 40 CFR 270.41, 270.42, and 270.43. The filing of a request for a permit modification, revocation and reissuance, or termination or the notification of planned changes or anticipated noncompliance on the part of the Permittee does not stay the applicability or enforceability of any permit condition.

## C. SEVERABILITY

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby.

## D. DUTIES AND REQUIREMENTS

1. Duty to Comply. The Permittee shall comply with all conditions of this permit, except to the extent and for the duration such noncompliance is authorized by an emergency permit. Any permit noncompliance, constitutes a violation of RCRA and is grounds for enforcement action, permit termination, revocation and reissuance, modification, or denial of a permit renewal application.

2. Duty to Reapply. If the Permittee wishes to continue an activity allowed by this permit after the expiration date of this permit, the Permittee must submit a complete application for a new permit at least 180 days before this permit expires.

3. Permit Expiration. The duration of this permit shall be 10 years from the effective date of the permit, in conformance with the provisions of 40 CFR 270.50. This permit and all conditions herein will remain in effect beyond the permit's expiration date if the Permittee has submitted a timely, complete application (see 40 CFR 270.13-270.29) and through no fault of the Permittee the Regional Administrator has not issued a new permit as set forth in 40 CFR 270.15.

4. Need to Halt or Reduce Activity Not a Defense. It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

5. Duty to Mitigate. The Permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit.

6. Proper Operation and Maintenance. The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facility or similar systems only when necessary to achieve compliance with the conditions of the permit.

7. Duty to Provide Information. The Permittee shall furnish to the Regional Administrator, within a reasonable time, any relevant information which the Regional Administrator may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The Permittee shall also furnish to the Regional Administrator, upon request, copies of records required to be kept by this permit.

8. Inspection and Entry. The Permittee shall allow the Regional Administrator, or an authorized representative, upon the presentation of credentials and other documents as may be required by law to:

   (a) Enter at reasonable times upon the Permittee's premises where a regulated activity is located or conducted, or where records must be kept under the conditions of this permit;

(b) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

(c) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

(d) Sample or monitor, at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by RCRA, any substances or parameters at any location.

9. Monitoring and Records.

(a) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The method used to obtain a representative sample of the waste to be analyzed must be the appropriate method from Appendix I of 40 CFR Part 261. Laboratory methods must be those specified in Test Methods for Evaluating Solid Waste: Physical/Chemical Methods SW-846, (July, 1982) or an equivalent method as specified in the attached Waste Analysis Plan.

(b) The Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports and records required by this permit, and records of all data used to complete the application for this permit for a period of at least 3 years from the date of the sample, measurement, report or record. These periods may be extended by request of the Regional Administrator at any time and are automatically extended during the course of any unresolved enforcement action regarding this facility.

(c) Records of monitoring information shall specify:

(i) The dates, exact place, and times of sampling or measurements;

(ii) The individuals who performed the sampling or measurements;

(iii) The dates analyses were performed;

(iv) The individuals who performed the analyses;

(v) The analytical techniques or methods used; and

(vi) The results of such analyses.

10. Reporting Planned Changes. The Permittee shall give notice to the Regional Administrator as soon as possible of any planned physical alterations or additions to the permitted facility.

11. Certification of Construction or Modification. The Permitee must cease storing hazardous waste in tanks at the facility after four months following the effective date of this permit, unless:

(a) The Permittee has submitted to the Regional Administrator by certified mail or hand delivery a letter signed by the Permittee and a registered professional engineer stating that the facility has been constructed or modified in compliance with the permit; and,

(b) (i) The Regional Administrator has inspected the modified and newly constructed facility and finds it is in compliance with the conditions of the permit; and,

(ii) The Regional Administrator has either waived the inspection or has not within 15 days notified the Permittee of his or her intent to inspect.

12. Anticipated Noncompliance. The Permittee shall give advance notice to the Regional Administrator of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

13. Transfer of Permits. This permit may be transferred to a new owner or operator only if it is modified or revoked and reissued pursuant to 40 CFR 270.41(b)(2) or 270.42(d). Before transferring ownership or operation of the facility during its operating life, the Permittee shall notify the new owner or operator in writing of the requirements of 40 CFR Parts 264 and 270.

14. Compliance Schedules. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.

15. Twenty-four Hour Reporting. The Permittee shall report to the Regional Administrator any noncompliance with the permit which may endanger health or the environment. Any such information shall be reported orally within 24 hours from the time the Permittee becomes aware of the circumstances. This report shall include the following:

(a) Information concerning the release of any hazardous waste which may endanger public drinking water supplies.

(b) Any information of a release or discharge of hazardous waste, or of a fire or explosion at the facility, which could threaten the environment or human health outside the facility. The description of the occurrence and its cause shall include:

(i) Name, address, and telephone number of the owner or operator;

(ii) Name, address, and telephone number of the facility;

(iii) Date, time, and type of incident;

(iv) Name and quantity of materials involved;

(v) The extent of injuries, if any;

(vi) An assessment of actual or potential hazard to the environment and human health outside the facility, where this is applicable; and

(vii) Estimated quantity and disposition of recovered material that resulted from the incident.

A written submission shall also be provided within 5 days of the time the Permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the periods of noncompliance (including exact dates and times); whether the noncompliance has been corrected; and if not, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The Permittee need not comply with the five day written notice requirement if the Regional Administrator waives the requirement and the Permittee submits a written report within fifteen days of the time the Permittee becomes aware of the circumstances.

16. Other Noncompliance. The Permittee shall report all other instances of noncompliance not otherwise required to be reported above, at the time monitoring reports, as required by this permit are submitted. The reports shall contain the information listed in condition I.D.15.

17. Other Information. Whenever the Permittee becomes aware that he failed to submit any relevant facts in the permit application, or submitted incorrect information in a permit application or in any report to the Regional Administrator, the Permittee shall promptly submit such facts or information.

E. Signatory Requirement. All reports or other information requested by the Regional Administrator shall be signed and certified as required by 40 CFR 270.11.

F. Confidential Information. The Permittee may claim confidential any information required to be submitted by this permit in accordance with 40 CFR 270.12.

G. Documents To Be Maintained at Facility Site. The Permittee shall maintain at the facility, until closure is completed and certified by an independent registered professional engineer, the following documents and amendments, revisions and modifications to these documents:

1. Waste analysis plan as required by 40 CFR 264.13 and this permit.

2. Personnel training documents and records as required by 40 CFR 264.16(d) and this permit.

3. Contingency plan as required by 40 CFR 264.53(a) and this permit.

4. Closure plan as required by 40 CFR 264.112(a) and this permit.

5. Cost estimate for facility closure as required by 40 CFR 264.142(d) and this permit.

6. Operating record as required by 40 CFR 264.73 and this permit.

7. Inspection schedules as required by 40 CFR 264.15(b) and this permit.

## II. GENERAL FACILITY CONDITIONS

A. Design and Operation of Facility. The Permittee shall maintain and operate the facility to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment.

B. General Waste Analysis. The Permittee shall follow the procedures described in the attached waste analysis plan, Attachment 1.

C. Security. The Permittee shall comply with the security provisions of 40 CFR 264.14(b)(1) and (c).

D. General Inspection Requirements. The Permittee shall follow the inspection schedule, Attachment 2. The Permittee shall remedy any deterioration or malfunction discovered by an inspection as required by 40 CFR 264.15(c). Records of inspections shall be kept as required by 40 CFR 264.15(d).

E. Personnel Training. The Permittee shall conduct personnel training as required by 40 CFR 264.16. This training program shall follow the attached outline, Attachment 3. The Permittee shall maintain training documents and records as required by 40 CFR 264.16(d) and (e).

F. General Requirements for Ignitable, Reactive, or Incompatible Waste. The Permittee shall comply with the requirements of 40 CFR 264.17(a).

G. Preparedness and Prevention

1. Required Equipment. At a minimum, the Permittee shall equip the facility with the equipment set forth in the contingency plan, Attachment 4 as required by 40 CFR 265.32.

2. Testing and Maintenance of Equipment. The Permittee shall test and maintain the equipment specified in the previous permit condition, as necessary to assure its proper operation in time of emergency.

3. Access to Communications or Alarm System. The Permittee shall maintain access to the communications or alarm system as required by 40 CFR 264.34.

4. Required Aisle Space. At a minimum, the Permittee shall maintain aisle space as required by 40 CFR 264.35.

5. Arrangements with Local Authorities. The Permittee shall attempt to make arrangements with State and local authorities as required by 40 CFR 264.37. If State or local officials refuse to enter into preparedness and prevention arrangements with the Permittee, the Permittee must document this refusal in the operating record.

H. Contingency Plan.

1. Implementation of Plan. The Permittee shall immediately carry out the provisions of the contingency plan, Attachment 4, and follow the emergency procedures described by 40 CFR 264.56 whenever there is a fire, explosion, or release of hazardous waste or constituents which threatens or could threaten human health or the environment.

2. Copies of Plan. The Permittee shall comply with the requirements of 40 CFR 264.53.

3. Amendments to Plan. The Permittee shall review and immediately amend, if necessary, the contingency plan, as required by 40 CFR 264.54.

4. Emergency Coordinator. The Permittee shall comply with the requirements of 40 CFR 264.55, concerning the emergency coordinator.

I. Recordkeeping and Reporting.

1. Operating Record. The Permittee shall maintain a written operating record at the facility in accordance with 40 CFR 264.73(a), (b)(1), (2), (3), (4), (5), (6), and (8).

2. Biennial Report. The Permittee shall comply with the biennial report requirements of 40 CFR 264.75.

J. Closure.

1. Performance Standard. The Permittee shall close the facility as required by 40 CFR 264.111 and in accordance with the closure plan, Attachment 5.

2. Amendment to Closure Plan. The Permittee shall amend the closure plan in accordance with 40 CFR 264.112(b) whenever necessary.

3. Notification of Closure. The Permittee shall notify the Regional Administrator at least 180 days prior to the date he expects to begin closure.

4. Time Allowed For Closure. After receiving the final volume of hazardous waste, the Permittee shall treat or remove from the site all hazardous waste in accordance with the schedule specified in the closure plan, Attachment 5. After receiving the final volume of hazardous waste, the Permittee shall complete closure activities in accordance with the schedule specified in the closure plan, Attachment 5.

5. Disposal or Decontamination of Equipment. The Permittee shall decontaminate and/or dispose of all facility equipment as required by 40 CFR 264.114 and the closure plan, Attachment 5.

6. Certification of Closure. The Permittee shall certify that the facility has been closed in accordance with the specifications in the closure plan as required by 40 CFR 264.115.

K. Cost Estimate for Facility Closure.

1. The Permittee's original closure cost estimate, prepared in accordance with 40 CFR 264.142(a) is specified in Attachment 5. The Permittee must adjust the closure cost estimate for inflation within 30 days after each anniversary of date on which the first closure cost estimate was prepared, as required by 40 CFR 264.142(b).

2. The Permittee must revise the closure cost estimate whenever there is a change in the facility's closure plan as required by 40 CFR 264.142(c).

3. The Permittee must keep at the facility the latest closure cost estimate as required by 40 CFR 264.142(d).

L. Financial Assurance for Facility Closure. The Permittee shall demonstrate continuous compliance with 40 CFR 264.143 by providing documentation of financial assurance, as required by 40 CFR 264.151, in at least the amount of the cost estimates required by permit condition II.K. Changes in financial assurance mechanisms must be approved by the Regional Administrator pursuant to 40 CFR 264.143.

M. Liability Requirements. The Permittee shall demonstrate continuous compliance with the requirements of 40 CFR 264.147 and the documentation requirements of 40 CFR 264.151, including the requirements to have and maintain liability coverage for sudden and accidental occurrences in the amount of at least $1 million per occurrence with an annual aggregate of at least $2 million, exclusive of legal defense costs.

N. Incapacity of Owners or Operators, Guarantors, or Financial Institutions.

The Permittee shall comply with 40 CFR 264.148 whenever necessary.

## III. STORAGE IN CONTAINERS

A. Waste Identification. The Permittee may store the following wastes in containers at the facility, subject to the terms of this permit:

| Waste Type | Waste Code |
|---|---|
| a. Spend halogenated solvents | F002 |
| b. Spent non-halogenated solvents | F003 |
| c. Ignitable wastes | D001 |
| d. Corrosive wastes | D002 |

These wastes were indicated on page #3 of Form #3 of Part A of the Permittee's Hazardous Waste Permit Application, Attachment 6. The Permittee may store wastes in 55-gallon drums. The maximum quantity of 55-gallon drums to be held in the designated storage area shall not exceed 300 drums, to comply with the requirements of 40 CFR 264.175(b)(3).

B. Condition of Containers. If a container holding hazardous waste is not in good condition (e.g., severe rusting, apparent structural defects) or if it begins to leak, the Permittee shall transfer the hazardous waste from such container to a container that is in good condition or otherwise manage the waste in compliance with the the conditions of this permit.

C. Compatibility of Waste with Containers. The Permittee shall assure that the ability of the container to contain the waste is not impaired as required by 40 CFR 264.172. Containers constructed of low carbon steel that meets U.S. Department of Transportation specifications No. 17E shall be used for all hazardous waste storage except for storage of ignitable HCR vent waste and corrosive/ignitable cyclizer waste. Cyclizer and HCR vent wastes shall be stored in containers meeting the U.S. DOT specification No. 17H and will be protected against corrosion by epoxy phenolic linings.

D. Management of Containers. The Permittee shall manage containers as required by 40 CFR 264.173.

E. Containment. The Permittee shall maintain the containment system in accordance with the requirements of 40 CFR 264.175 as specified in the attached plans and specifications, Attachment 7.

F. Special Requirements for Ignitable or Reactive Waste.

1. The Permittee shall not locate containers holding ignitable or reactive hazardous waste within 15 meters (50 feet) of the facility's property line.

G. Special Requirements for Incompatible Wastes.

1. The Permittee shall not store incompatible wastes together in the containment area described in Attachment 7.

2. The Permittee must document compliance with III.G.1 as required by 40 CFR 264.17(c) and place this documentation in the operating record (condition II.I.1).

## IV. STORAGE IN TANKS

A. Waste Identification. The Permittee may store the following hazardous wastes in tanks, subject to the terms of this permit:

| Waste type | Waste Code |
|---|---|
| a. Spent halogenated solvents except for tetrachloroethylene | F002 |
| b. Spent non-halogenated solvents except for acetone | F003 |
| c. Ignitable wastes | D001 |

These wastes were indicated on page #3 of form #3 of Part A of the Permittee's Hazardous Waste Permit Application, Attachment 6. The 3 storage tanks are located at the north-east corner of the facility, and are not in the 100 year Flood-plain of the Raisin River. The tank storage area is located 375 feet from the closest company property line which is in compliance with the National Fire Code Standards for "Flammable and Combustible Liquids Codes". The tanks have been fabricated to specifications listed in Attachment 8. The hazardous wastes which shall be stored in each tank are fully described in Attachment 8. Only tanks designated as T-105 and T-108 shall be utilized for the storage of ignitable hazardous waste. Compounds containing benzene, carbon tetrachloride, methyl ethyl ketone, aniline, or formaldehyde shall not be stored in T-101, T-105, or T-108. Tank T-101 has a 25,000 gallon capacity, and tanks T-105 and T-108 have 15,000 gallon capacities.

B. Design of Tanks. The Permittee shall maintain all tanks as required by 40 CFR 264.191, as specified in the attached plans and specifications Attachment 8. The Permittee shall maintain the minimum shell thickness specified below at all times to ensure sufficient shell strength.

| Tank Designation # | Minimum Shell Thickness |
|---|---|
| T-105 | 0.188 inches |
| T-108 | 0.188 inches |
| T-101 | 0.250 inches |

The shell thickness of each tank must be determined annually, and records of testing must be maintained as part of the operating record.

C. General Operating Requirements.
The Permittee shall prevent overfilling of tanks as required by 40 CFR 264.192(b), by methods specified in Attachment 8.

D. Special Requirements for Ignitable or Reactive Wastes.

1. The permittee shall not place ignitable or reactive waste in a tank unless the procedures described in Attachment 8 are followed, as required by 40 CFR 264.198(a).

2. The Permittee shall document compliance with IV.D.1 as required by 40 CFR 264.17(c) and place this documentation in the operating record (condition II.I.1).

3. The Permittee shall maintain buffer zones around covered tanks as specified in Attachment 8, as required by 40 CFR 264.198(b).

E. Special Requirements for Incompatible Wastes.

1. The Permittee shall not place incompatible wastes in the same tank or place hazardous waste in a tank that previously held an incompatible waste or material unless the procedures specified in Attachment 8 are followed, as required by 40 CFR 264.17(b).

2. The Permittee shall document compliance with IV.E.1 as required by 40 CFR 264.17(c) and place this documentation in the operating record (Condition II.I.1).

F. Compliance Schedule.

Within four months from the date of issuance of this permit, the Permittee shall install high level alarms in tanks T-101, T-105, and T-108 to comply with 40 CFR 264.192(b). Pursuant to the certification requirement of I.D.11, the storage of hazardous wastes in tanks must cease if the high level alarms are not installed.

# SECTION C

## WASTE CHARACTERISTICS

### C-1 Chemical and Physical Analyses [40 CFR 122.25(a)(2)]

List of Hazardous Wastes Stored at Facility: Hazardous wastes are stored at this facility in 55-gallon drum containers, two 15,000-gallon storage tanks and one 25,000-gallon storage tank. Current inventory consists of approximately

90 containers (55-gallon drums)
One 25,000-gallon tank with 8,000 gal.
One 15,000-gallon tank with 1,500 gal.
One 15,000-gallon tank with 400 gal.

Table 1 lists the hazardous wastes stored at the SWS Silicones Corporation manufacturing plant, their associated hazard classification, and the basis for the hazard classification. In most cases, the classification is based on known characteristics of the wastes, such as ignitability and corrosivity.

None of the wastes are incompatible.

The following wastes are generated as a result of general cleanup in the plant for the various batch mixing tanks and reactors:

Mixed Alcohol
Hydrocarbon, Extremely Flammable
Hydrocarbon, Flammable
Hydrocarbon, Combustible
Solvent Sump
Mineral Spirits
Polychlorohydrocarbon

The following wastes are generated as by-products or wastes from various plant processes:

Mixed Alcohol
Hydrocarbon, Extremely Flammable
ES-40 Lites
Cyclizer
SWS-960
HCR Vent

Also, the following wastes are generated from the Technical Center Laboratories:

Flammable Waste, Tech Center
Non-Combustible Waste (T.C.)

Bulk polychlorohydrocarbon waste is the same as drummed Polychlorohydrocarbon Waste In general, the majority of this waste is stored in the 25,000-gallon storage tank, T-101. The volume of 60,000 gallons indicated in both Figures 24 and 31, is the total overall volume per year. The Bulk polychlorohydrocarbon waste is sold to a solvent reclaimer.

Bulk Ignitables Wastes is a combination of the following drummed wastes:

Mixed Alcohol
Hydrocarbon - Extremely Flammable
Hydrocarbon - Flammable
Hydrocarbon - Combustible
ES-40 Lites

The volume of 21,400 gallons for Bulk Ignitables Waste is the accumulative total of the above annual volumes. The majority of this waste is in bulk form (T-105) and is disposed at a cement kiln or at an incinerator.

Bulk Mineral Spirits Waste is the same as drummed Mineral Spirits Waste In general, the majority of this waste is stored in the 15,000-gallon storage tank, T-108. The volume of 33,000 gallons is the total overall volume per year. The majority of this waste is stored in bulk form, and is disposed at a cement kiln or at an incinerator.

Waste Handling: All drummed wastes are labeled; the label describes the contents of each drum and its associated hazard (corrosivity, toxicity or ignitability). Bulk tank, T-101 is labeled "Polychloro-hydrocarbon." Bulk tank, T-105, is labeled "Flammable." Bulk tank, T-108, is labeled "Combustible." This practice informs workers handling these wastes of the associated hazards so that the appropriate precautions can be taken.

Some examples of appropriate precautions include: grounding drums, tote tanks or trucks during transfer operations; no smoking; and wearing protective equipment such as gloves, hard hats, safety glasses and safety shoes.

Details regarding the tanks, containers, storage areas, and personnel training are presented in other sections of this application.

## C-2 Waste Analysis Plan [40 CFR 122.25(a)(3)]

### C-2a Parameters and Rationale

Table 2 shows the hazardous wastes stored at the facility, the analytical parameters that apply to each, and the rationale for their selection.

### C-2b Test Methods

Table 3 shows the test methods that are used to measure the analytical parameters. All test methods are from EPA approved methods.

### C-2c Sampling Methods

Table 4 lists methods used to sample hazardous wastes.

### C-2d Frequency of Analyses

As shown on Table 5, each waste is analyzed annually. Wastes generated at this facility do not change significantly. Additional analyses will be performed if a process change should affect the hazardous characteristics of a waste.

### C-2e Additional Requirements for Waste Generated Offsite

This facility only stores on-site generated wastes; therefore, requirements for wastes received from off-site generators do not apply. This facility does not treat nor dispose any wastes on-site.

TABLE 2

PARAMETERS AND RATIONALE FOR THEIR SELECTION

| Hazardous Waste | Parameter | Rationale |
|---|---|---|
| **Drums** | | |
| Mixed Alcohol | Flash point, Methanol | This waste is ignitable. Practical flash point of 68-77°F. This is also a listed toxic waste (F003). |
| Hydrocarbon, Extremely Flammable | Flash point | This waste is ignitable. Practical flash point of 25-34°F. |
| Hydrocarbon, Flammable | Flash point, Xylene | This waste is ignitable. Practical flash point of 68-77°F. This is also a listed toxic waste (F003). |
| Hydrocarbon, Combustible | Flash point | This waste is ignitable. Practical flash point of 104-113°F. |
| Flammable, Tech Center | Flash point, Xylene Acetone | This waste is ignitable. Practical flash point of 68-77°F. This is also a listed toxic waste (F003). |
| Solvent Sump | Flash point | This waste is ignitable. Practical flash point of 104-113°F. |
| Mineral Spirits | Flash point | This waste is ignitable. Practical flash point of 104-113°F. |
| Polychlorohydrocarbon | 1,1,1 trichloroethane | This is a listed toxic waste (F002) |
| Non-Combustible, Tech Center | 1,1,1 trichloroethane | This is a listed toxic waste (F002) |
| ES-40 Lites | Flash point | This waste is ignitable. Practical flash point of 68-77°F. |
| Cyclizer | pH, Flash point | This waste has a pH value greater than 13, making it a corrosive waste. Also this waste is ignitable with a practical flash point of 122-131°F. |
| SWS-960 | Flash point | This waste is ignitable. Practical flash point of 59-68°F. |
| HCR Vent | Flash point | This waste is ignitable. Practical flash point of 80-86°F. |
| **Tanks** | | |
| Bulk Ignitables | Flash point Methanol 1,1,1 trichloroethane Xylene | This waste is ignitable. Practical flash point of 25-113°F. Listed toxic waste F002, F003. |
| Bulk Polychlorohydrocarbon | 1,1,1 trichloroethane | This is a listed toxic waste (F002) |
| Bulk Mineral Spirits | Flash point | This waste is ignitable. Practical flash point of 104-113°F. |

TABLE 3

PARAMETERS AND TEST METHODS

| Parameter | Test Method | Reference |
|---|---|---|
| pH | Electrometric | SW-846 Method 9040 |
| Flash point | Pensky-Martens Closed Cup Tester<br>Tag Closed Cup Tester | ASTM Standards D-93-81 or E-134-81<br>D-56-81 |
| 1,1,1-tri-chloroethane | GC/MS | Purgeable Hydro-carbons-Method 601 Federal Register, Vol. 44, No. 233, p. 69468 |
| Acetone<br>Methanol<br>Xylene | NMR or GC | Purgeable Hydro-carbons - Method 601 Federal Register, Vol. 44, No. 233, p. 69468 |

TABLE 4

METHODS USED TO SAMPLE HAZARDOUS WASTES

| Hazardous Waste | Sampling Method | Description of Sampling | Reference of Sampler |
|---|---|---|---|
| Drummed Wastes* | "Coliwasa" Composite Liquid Waste Sampler | Representative composite samples from random drums. | "Samplers and Sampling Procedures for Hazardous Waste Streams", EPA 600/2-80-018, January 1980. |
| Storage Tank Wastes* | Sampling a Storage Tank from "Samplers and Sampling Procedures for Hazardous Waste Streams", EPA 600/2-80-018, January 1980. (If annual sample is required.) | Representative composite tank outlet samples at the beginning and end of each tanker shipment. | "Samplers and Sampling Procedures for Hazardous Waste Streams", EPA 600/2-80-018, January 1980. |

*Refer to Table 2.

TABLE 5

FREQUENCY OF ANALYSES

| Hazardous Waste | Analysis | Frequency |
|---|---|---|
| Drums: | | |
| Mixed Alcohol | Flash Point<br>Methanol | Annually |
| Hydrocarbon, Extremely Flammable | Flash Point | Annually |
| Hydrocarbon, Flammable | Flash Point<br>Xylene | Annually |
| Hydrocarbon, Combustible | Flash Point | Annually |
| Flammable, Tech Center | Flash Point<br>Xylene<br>Acetone | Annually |
| Solvent Sump | Flash Point | Annually |
| Mineral Spirits | Flash Point | Annually |
| Polychlorohydrocarbon | 1,1,1-trichloroethane | Annually |
| Non-Combustible, Tech Center | 1,1,1-trichloroethane | Annually |
| ES-40 Lites | Flash Point | Annually |
| Cyclizer | Flash Point<br>pH | Annually |
| SWS-960 | Flash Point | Annually |
| HCR Vent | Flash Point | Annually |
| Tanks: | | |
| Bulk Ignitables | Flash Point<br>Methanol<br>1,1,1-trichloroethane<br>xylene | Every shipment OR annually |
| Bulk Polychlorohydrocarbon | 1,1,1-trichloroethane | Every shipment OR annually |
| Bulk Mineral Spirits | Flash Point | Every shipment OR annually |

F-2d Inspection Log

Inspection logs are maintained for each calendar year in three-ring binders at the appropriate departments. After an inspection, each log sheet is filed in the appropriate binder, which provides a case history of a particular item. The inspection log notebook for the container storage area is always kept at the Warehouse Supervisor's office. The inspection notebooks for T-101 and T-105 are always kept at the Hi Bay Supervisor's office. The inspection log notebook for T-108 is always kept at the RTV Supervisor's office. Table 8 and 9 are copies of the inspection log sheets. Also included with these tables are the instructions for inspection logs.

F-2 Inspection Schedule [40 CFR Sections 122.25(a)(5), 264.15]

F-2a General Inspection Requirements

SWS Silicones Corporation conducts regular inspections of the facility for equipment malfunctions, structural deterioration, operator errors, and discharges that could cause or lead to the release of hazardous waste constituents and adversely affect the environment or threaten human health.

F-2a(1) Types of Problems

Table 7 presents the schedule for inspecting the container

TABLE 7

INSPECTION SCHEDULE

| Area/Equipment | Specific Item | Types of Problems | Frequency of Inspection |
|---|---|---|---|
| Container Storage Area | Container placement and stacking | Aisle space, height of stacks | Weekly |
| | Sealing of containers | Open lids | Weekly |
| | Labeling of containers | Improper identification, date missing | Weekly |
| | Containers | Corrosion, leakage, structural defects | Weekly |
| | Pallets | Damaged | Weekly |
| | Base or foundation | Cracks, spalling, uneven settlement, erosion, wet spots | Weekly |
| | Dikes | Cracks, deterioration | Weekly |
| | Drain area, drain valve | Corrosion, deterioration, leaks | Daily |
| | Debris and refuse | Clogged drain, aesthetics | Weekly |
| | Ramp | Cracks, spalling, uneven settlement, erosion | Weekly |
| Tank Storage Area and Ancillary Equipment | Dike | Cracks, deterioration | Weekly |
| | Base or foundation | Cracks, spalling, uneven settlement, erosion, wet spots | Weekly |
| | Drain area | Leaks, deterioration | Daily |
| | Pipes | Leaks, corrosion or deterioration | Weekly |
| | Valves | Leaks, corrosion or deterioration | Weekly |
| | Pumps | Power, clogging | Weekly |
| | Level indicator | Sticking, malfunction, reading | Daily |
| | Surrounding Area | Leaks | Weekly |
| Tanks | Ladder | Damaged, structural stability | Weekly |
| | Foundation/Structural supports | Cracks, spalling, uneven settlement, erosion, wet spots | Weekly |
| | Pipe connections | Corrosion, cracks, distortion | Weekly |
| | Protective coating | Rust spots, blisters, film lifting | Weekly |
| | Tank shell | Corrosion, discoloration, cracks, buckles, bulges, leaks | Weekly |
| | Tank roof | Malfunction of seals, corrosion | Weekly |
| | Nozzles | Cracks, corrosion, leaks | Weekly |
| | Tank shell | Thickness | Yearly |
| | Internal inspection | Tank integrity, corrosion, cracks | Yearly |
| | Overflow Pipe | Leaks | Daily |
| | High level alarms | Operability | Daily |

storage area, the tank storage area and the tanks. Provided with each item is a list of problems normally encountered.

F-2a(2) Frequency of Inspection

Also provided in Table 7 is a recommended frequency of inspection for each item.

F-2b Specific Process Inspection Requirements

F-2b(1) Container Inspection

Inspections of the container storage area will be conducted per the inspection schedule provided in Table 7. Results of each inspection will be recorded on inspection log sheets entitled "Container Storage Area Weekly Inspection Log Sheet" (Table 8). Information requested on the log sheets includes the inspector's name and title, date, item of inspection, typical problems encountered, status of the item, observations, and the date and nature of repairs and remedial action.

The inspection sheets are kept in a three-ring binder at the Warehouse department. The inspector (a department supervisor) is required to check the status of each item and indicate whether its condition is acceptable or unacceptable. If the status of a particular item is unacceptable, appropriate and complete information is recorded, including date and nature of repairs and remedial action.

F-2b(2) Tank Inspection

CONTAINER STORAGE AREA WEEKLY INSPECTION LOG SHEET

(Hazardous Waste Storage Pad)

Inspector's name/title_____

Date of Inspection_____(month/day/year)

| Item | Types of problems | Status (✓) Acceptable | Status (✓) Unacceptable | Observations | Date and nature of repairs/remedial action |
|---|---|---|---|---|---|
| Container placement and stacking | Aisle space, height of stacks | | | | |
| Sealing of containers | Open lids | | | | |
| Labeling of containers | Improper identification, date missing | | | | |
| Containers | Corrosion, leakage structural defects | | | | |
| Pallets | Damaged | | | | |
| Base or foundation | Cracks, spalling, uneven settlement erosion, wet spots | | | | |
| Dikes | Cracks, deterioration | | | | |
| Drain area, drain valve | Corrosion, deterioration, leaks | | | | |
| Debris and refuse | Clogged drain, aesthetics | | | | |
| Ramp | Cracks, spalling, uneven settlement erosion | | | | |

Table 8
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Table 8
(page 2)

WAREHOUSE DEPARTMENT

Hazardous Waste Storage Pad

SWS Silicones Corporation
RCRA Plan
Inspection Plan and Log

Inspect drum storage area weekly, looking for leaks and/or drum deterioration.

Any problems are to be reported immediately to management. An inspection log will be kept in the Warehouse area. This will include dates of inspections, inspector, problems found and remedial action taken. These records must be kept for at least 3 years.

The drain area (and the drain valve) should be checked daily.

Tank inspections will be conducted per the inspection schedule provided in Table 7. Results of each inspection will be recorded on inspection log sheets entitled "Tank Storage Area and Ancillary Equipment Weekly Inspection Log Sheet" (Table 9). Upon completion of the log sheets, they will be inserted in inspection log three-ring binders previously discussed in Section F-2b(1). The T-101 and T-105 inspection log binders are kept in the Hi Bay production area. The T-108 inspection log binder is kept in the RTV production area.

F-2b(3) Waste Pile Inspection

Not Applicable.

F-2c Remedial Action

If inspections reveal that non-emergency maintenance is needed, they will be completed as soon as possible to preclude further damage and reduce the need for emergency repairs. If a hazard is imminent or has already occurred at any time, remedial action will be taken immediately. SWS Silicones Corporation personnel will notify the appropriate authorities per the Contingency Plan (see Section G) and initiate remedial actions. In the event of an emergency involving the release of hazardous constituents to the environment, efforts will be directed towards containing the hazard, removing it, and subsequently decontaminating the affected area. Refer to Contingency Plan for further details.

TANK STORAGE AREA AND ANCILLARY EQUIPMENT WEEKLY INSPECTION LOG SHEET

T-101, T-105, T-108 (circle one)

Inspector's name/title_____

Date of inspection_____(month/day/year)

| Item | Types of problems | Status (✓) Acceptable | Status (✓) Unacceptable | Observations | Date and nature of repairs/remedial action |
|---|---|---|---|---|---|
| Tank Storage Area & ancillary equipment: | | | | | |
| Dike | Cracks, deterioration | | | | |
| Base or foundation | Cracks, spalling, uneven settlement, erosion, wet spots | | | | |
| Drain area | Leaks, deterioration | | | | |
| Pipes | Leaks, corrosion, or deterioration | | | | |
| Valves | Leaks, corrosion, or deterioration | | | | |
| Pumps | Power, clogging | | | | |
| Level Indicator | Sticking, malfunction, reading | | | | |
| Surrounding Area | Leaks | | | | |
| Tanks: | | | | | |
| Ladder | Damaged, structural stability | | | | |
| Foundation/Structural Supports | Cracks, spalling, uneven settlement, erosion, wet spots | | | | |
| Pipe connections | Corrosion, cracks, distortion | | | | |
| Protective coating | Rust spots, blisters, film lifting | | | | |
| Tank shell | Corrosion, discoloration, cracks, buckles, bulges, leaks | | | | |
| Tank Roof | Malfunction of seals, corrosion | | | | |
| Nozzles | Cracks, corrosion, leaks | | | | |
| Overflow Pipe | Leaks | | | | |

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Table 9
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Table 9
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## HI BAY AREA

### T-101

SWS Silicones Corporation
RCRA Plan
Inspection Plan and Log

A Department Supervisor will inspect around the T-101 tank once per week, and whenever loading or unloading the tank. Look for leaks around pump and tank; inspect equipment, and inspect dike for erosion or malfunction. Look for operator errors, spills, or any other environmental problem.

Any problems are to be reported immediately to management. An inspection log will be kept in the Operator area. This will include dates of inspections, inspector, problems found, and remedial action taken. These records must be kept for at least 3 years.

The drain area should be inspected daily. Internal inspection of the tank and the tank shell thickness should be checked annually.

Table 9
(page 3)

HI BAY AREA

T-105

SWS Silicones Corporation
RCRA Plan
Inspection Plan and Log

A Department Supervisor will inspect around the T-105 tank once per week, and whenever loading or unloading the tank. Look for leaks around pump and tank; inspect equipment, and inspect dike for erosion or malfunction. Look for operator errors, spills, or any other environmental problem.

Any problems are to be reported immediately to management. An inspection log will be kept in the Operator area. This will include dates of inspections, inspector, problems found, and remedial action taken. These records must be kept for at least 3 years.

The drain area should be inspected daily. Internal inspection of the tank and the tank shell thickness should be checked annually.

Table 9
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RTV AREA

T-108

SWS Silicones Corporation
RCRA Plan
Inspection Plan and Log

A Department Supervisor will inspect around the T-108 tank once per week, and whenever loading or unloading the tank. Look for leaks around pump and tank; inspect equipment, and inspect dike for erosion or malfunction. Look for operator errors, spills, or any other environmental problem.

Any problems are to be reported immediately to management. An inspection log will be kept in the Operator area. This will include dates of inspections, inspector, problems found, and remedial action taken. These records must be kept for at least 3 years.

The drain area should be inspected daily. Internal inspection of the tank and the tank shell thickness should be checked annually.

DA. _____ (A)

CHECKER _____

TIME STARTED _____ TIME FINISHED _____

MONTHLY
SAFETY EQUIPMENT CHECKLIST

High Bay Area

| Ground Level | REMARKS (Needs repair or replacing) | O.K |
|---|---|---|
| 1. Fire extinguisher by R-902 (202) | 1. | |
| 2. Gas mask on west wall (condition & canister) | 2. | |
| 3. Gas mask by men's room (condition & canister) | 3. | |
| 4. Scott Air Pac by men's room | 4. | |
| 5. Stretcher in hallway by men's room | 5. | |
| 6. Safety shower by R-902 | 6. | |
| 7. Eyewash by R-902 | 7. | |
| 8. Fire extinguisher on east wall by ML pump room | 8. | |
| 9. Safety shower on east wall by ML pump room | 9. | |
| 10. Eyewash on east wall by ML pump room | 10. | |
| 11. Fire extinguisher on west wall below stairs (228) | 11. | |
| 1. [illegible]re extinguisher on west wall by telephone (205) | 12. | |
| 13. Fire blanket on I-beam by T-928 scale | 13. | |
| 14. Fire extinguisher in ML pump room, north door (212) | 14. | |
| 15. Fire extinguisher in ML pump room, south door (211) | 15. | |
| 6. Safety shower on east wall by R-903 | 16. | |
| 7. Eyewash on east wall by R-903 | 17. | |
| 8. Gas mask on east wall by R-903 desk (condition & canister) | 18. | |
| 9. Safety shower on south wall by R-903 | 19. | |
| 0. Eyewash on south wall by R-903 | 20. | |
| 1. Fire extinguisher by M-916 (206) | 21. | |
| 2. Gas mask by M-916 (condition & canister) | 22. | |
| 3. 3-step portable ladder (L 4) | 23. | |
| 4. Fire extinguisher on north wall by T942 scale | 24. | |
| 5. Fire extinguisher by south door by M-922 (208) | 25. | |
| 6. [illegible]ety shower by post west of T-927 | 26. | |
| 7. Eyewash by post, west of T-927 | 27. | |
| 3. 3-step portable ladder (no wheels) (L2 & L1) | 28. | |

(A)2

## High Bay Area

| 1st Level | REMARKS (Needs repair or replacing) | O.K |
|---|---|---|
| 1. Fire extinguisher by top of stairs by M-922 (210) | 1. | |
| 2. Fire extinguisher on handrail by T-942 (226) | 2. | |
| 3. Gas mask by fire extinguisher #226 (condition & canister) | 3. | |
| 4. Eyewash by T-942 | 4. | |
| 5. Safety shower by T-942 | 5. | |
| 6. Gas mask by top of T-927 (condition & canister) | 6. | |
| 7. Fire extinguisher by top of T-927 (209) | 7. | |
| 8. Fire extinguisher above R-903 (216) | 8. | |
| 9. Gas mask above R-903 (condition & canister) | 9. | |
| 10. Gas mask on handrail by R-905 (condition & canister) | 10. | |
| 11. Fire extinguisher on handrail by T-928 desk (215) | 11. | |
| 12. Safety shower by top of T-928 | 12. | |
| [illegible]ewash by top of T-928 | 13. | |
| 14. Fire extinguisher on handrail by R-902 (214) | 14. | |
| 15. Emergency light by office door | 15. | |
| 16. Emergency light above racks | 16. | |

| 2nd Level | REMARKS (Needs repair or replacing) | O.K. |
|---|---|---|
| 1. Fire extinguisher by WFE (218) | 1. | |
| 2. Gas mask by WFE (condition & canister) | 2. | |
| 3. Fire extinguisher above R-903 (217) | 3. | |
| 4. Gas mask above R-903 (condition & canister) | 4. | |

| 3rd Level & Penthouse | REMARKS (Needs repair or replacing) | O.K. |
|---|---|---|
| 1. Fire extinguisher by R-903 column (221) | 1. | |
| 2. Gas mask by R-903 column (condition & canister) | 2. | |
| 3. Fire extinguisher by top of R-910 column (220) | 3. | |
| 4. Gas mask by top of R-910 column (condition & [illegible]nister) | 4. | |
| 5. Gas mask in penthouse (condition & canister) | 5. | |
| 6. Fire extinguisher top of R-901 column (219) | 6. | |
| 7. Gas mask top of R-901 column (condition & canister) | 7. | |

(A) 3

## Middle Area - High Bay

| Ground Level | REMARKS (Needs repair or replacing) | O.K |
|---|---|---|
| 1. Fire extinguisher by north overhead door (190) | 1. | |
| 2. Emergency light by steps (north side) | 2. | |
| 3. Safety shower by south overhead door | 3. | |
| 4. Eyewash by south overhead door | 4. | |
| 5. Fire extinguisher by personnel door, south | 5. | |
| 6. Gas mask by bottom of T-962 stairs (condition & canister) | 6. | |
| 7. Emergency light by T-962 stairs | 7. | |
| 8. Fire extinguisher in motor control center (191) | 8. | |
| 9. 5-step movable ladder by F-791 totes (L3) | 9. | |
| 10. 3-step movable with handrail (L5) | 10. | |

| 1st Level | REMARKS (Needs repair or replacing) | O.K |
|---|---|---|
| 1. Fire extinguisher on south wall by Ribbon Blender (195) | 1. | |
| 2. Safety shower by top of M-919 | 2. | |
| 3. Eyewash by top of M-919 | 3. | |
| 4. Fire extinguisher by top of T-962 stairs (196) | 4. | |
| 5. Gas mask by top of T-962 stairs (condition & canister) | 5. | |
| 6. Emergency light by top of T-962 stairs | 6. | |
| 7. Fire extinguisher by north door | 7. | ✓ |

| Office Area | REMARKS (Needs repair or replacing | O.K. |
|---|---|---|
| 1. Two fire extinguishers outside conference room (200 & 201) | 1. | |
| 2. Fire extinguisher inside conference room door (198) | 2. | |
| 3. Emergency light, stairway | 3. | |
| 4. Fire extinguisher in hallway by drinking fountain | 4. | |
| 5. Scott Air-Pack in hallway | 5. | |
| 6. Emergency light by General Foreman's office | 6. | |

A4

Middle Area - Hi Bay

| Bottling Room | REMARKS (Needs repair or replacing) | O.K |
|---|---|---|
| 1. Fire extinguisher by south door on east wall (194) | 1. | |
| 2. Safety shower by south door on east wall | 2. | |
| 3. Eyewash by south door on east wall | 3. | |
| 4. Emergency light by south door on east wall | 4. | |
| 5. Fire extinguisher by north door on north wall | 5. | |
| 6. Safety shower by north door on east wall | 6. | |
| 7. Eyewash by north door on east wall. | 7. | |

| Outside Area | REMARKS (Needs repair or replacing) | O.K |
|---|---|---|
| 1. Fire extinguisher outside east door of cold warehouse (148) | 1. | |
| 2. Fire extinguisher outside west door of cold warehouse | 2. | |
| 3. Fire extinguisher outside fire water room of cold warehouse (227) | 3. | |
| 4. Fire extinguisher, north side of new hot room | 4. | |
| 5. Fire extinguisher by underground tanks | 5. | |
| 6. Fire extinguisher, new motor control center (225) | 6. | |
| 7. Emergency lights, south & north sides of cold warehouse | 7. | |
| 8. Large portable ladder, cold whse. (L6) | 8. | |

| Middle Warehouse | REMARKS (Needs repair or replacing) | O.K. |
|---|---|---|
| 1. Fire extinguisher, west wall (next to racks) (18) | 1. | |
| 2. Fire extinguisher, aisle between rows b & c (12 & 13) | 2. | |
| 3. Fire extinguisher (fence by transformer) (14) | 3. | |
| 4. Fire extinguisher, aisle between rows d & e (15 & 16) | 4. | |

A 5

Middle Area - Hi Bay - Continued

| Black House | REMARKS (Needs repair or replacing) | O.K |
|---|---|---|
| 1. Fire Extinguisher, north wall | 1. | |
| 2. Fire extinguisher, south wall | 2. | |
| 3. Safety eyewash, east wall | 3. | |
| 4. Safety shower, east wall | 4. | |

SRD:jjf
01/26/84

B1

# POLYMERS SAFETY EQUIPMENT INSPECTION

OPERATOR_____ DATE_____

FREQUENCY: WEEKLY

WHEN: MONDAY EACH WEEK

WHO: OPERATOR AS ASSIGNED BY SHIFT FOREMAN.

HOW: TOUR THE DEPARTMENT CHECKING EACH UNIT LISTED FOR CLEANLINESS, ACCESSIBILITY.

TESTING: EACH SHOWER AND EYEWASH SHOULD BE ACTIVATED FOR 5-10 SECONDS. WATER ON FLOOR AFTER TESTING IS TO BE CLEANED UP IMMEDIATELY.

ACTION:

| SAFETY SHOWERS & EYEWASH | CLEAN | | ACCESSIBLE | | WATER FLOW | | REMARKS |
|---|---|---|---|---|---|---|---|
| | YES | NO | YES | NO | ADEQUATE | INADEQUATE | |
| 1. Cyclics Ground Floor | | | | | | | |
| 2. Cyclics 2nd Floor | | | | | | | |
| P.C. Lab East | | | | | | | |
| 4. P.C. Lab West | | | | | | | |
| 5. Fluids Ground Flr. R802 | | | | | | | |
| 6. Fluids Ground Flr. R804 | | | | | | | |
| 7. Fluids 2nd Floor R802 | | | | | | | |
| 8. Fluids 2nd Floor R805 | | | | | | | |
| 9. P.C. Lab West Sink | | | | | | | |
| 10. | | | | | | | |
| 11. | | | | | | | |

(B)2

# POLYMERS SAFETY EQUIPMENT INSPECTION

FOR[illegible]N_____ DATE_____

OPERATOR_____

FREQUENCY: MONTHLY

WHEN: TO BE CONDUCTED DURING THE FIRST FULL CALENDAR WEEK EACH MONTH.

WHO: THE SHIFT FOREMAN ON THE 8 X 4 SHIFT ACCOMPANIED BY ONE OPERATOR. (IT IS SUGGESTED THAT THE OPERATORS BE ROTATED).

HOW: TOUR THE DEPARTMENT CHECKING EACH UNIT LISTED, PAYING CLOSE ATTENTION TO CLEANLINESS, ACCESSIBILITY, PHYSICAL CONDITION OF THE UNIT AND ITS CONTAINER.

ACTION: NOTE IN WRITING ANY ACTION REQUIRED AND/OR TAKEN TO CORRECT SUBSTANDARD CONDITIONS. USE BACK OF FORM IF NECESSARY.

| SCOTT AIR PAKS | CLEAN | | ACCESSIBLE | | PRESSURE | | REMARKS |
|---|---|---|---|---|---|---|---|
| | YES | NO | YES | NO | FULL | NOT FULL | |
| 1. Office Hallway South | | | | | | | |
| 2. Control Room | | | | | | | |

| GAS MASKS | CANISTER | | CANISTER DATES | | CLEAN | | BAG COND. | | BOX |
|---|---|---|---|---|---|---|---|---|---|
| | SEALED | UNSEALED | STORAGE | SEAL BREAK | YES | NO | OK | REPLACED | |
| 1. Ground Level T-406 | | | | | | | | | |
| 2. Ground Level Cyc. Bldg. | | | | | | | | | |
| 3. 2nd Floor Cyc. Bldg. | | | | | | | | | |
| 4. P.C. Lab North Bench | | | | | | | | | |
| 5. Fluids 2nd Flr. R-802 | | | | | | | | | |
| 6. Fluids 2nd Flr. T-806 | | | | | | | | | |
| 7. Fluids 1st Flr. R-801 | | | | | | | | | |
| 8. C-503 3rd Deck | | | | | | | | | |
| 9. C-505 4th Deck | | | | | | | | | |
| 10. C-505 5th Deck | | | | | | | | | |
| . C-505 6th Deck | | | | | | | | | |
| 2. 2nd Flr. Cyc. Outside | | | | | | | | | |
| 3. Drum Building | | | | | | | | | |
| . [illegible]er Area by Control Panel | | | | | | | | | |
| 5. Solvent Shed | | | | | | | | | |
| . Fluid 1st Flr. R-806 | | | | | | | | | |
| . C500 1st Level | | | | | | | | | |
| 8. C505 2nd Level | | | | | | | | | |

RTV

AREA _____ SUPERVISOR _____ DATE _____ TIME INSPECTED _____ A.M. / P.M. SHIFT

## HOUSEKEEPING

Floors _____

Aisles _____

Hold Area _____

Returned Goods Area _____

Benches _____

Tool Box _____

Lockers _____

Toilets _____

Eyewash Fountain _____

Overhead Doors _____

Personnel Doors _____

## TOOLS

Broken _____

Worn Out _____

New Ones Needed _____

## SAFETY EQUIPMENT

Safety Shower _____

Fire Extinguisher _____

## WAREHOUSE

Drums Stacked Neat _____

Fillers Stacked _____

Fillers - Part Bags Put Away _____

Drums in Correct Rows _____

Drum Tags Facing Out _____

## MAINTENANCE & WORK ORDER NUMBER

Lights _____

Fans _____

Equipment _____

_____

_____

Lift Truck _____

Hoist Chains _____

Ladders _____

_____

Foreman _____

General Foreman _____

MONTH

HCR

# Monthly Fire Extinguisher Check List

D

| Locations | Date Checked | Checked By | Action Taken |
|---|---|---|---|
| Outside HCR Offices | | | |
| 2. South Side Small Package Room | | | |
| 3. West Wall outside Label Room | | | |
| 4. By Extruder 704 | | | |
| 5. Between Mixer 701 & 702 Mill | | | |
| 6. Between Mill 704 & 708 | | | |
| 7. South Wall M-603 Area | | | |
| 8. Opposite M-603 Mixer | | | |
| 9. Wall North of Mixer 602 | | | |
| 0. Wall South of Mixer 601 | | | |
| 1. Wall West of Mill 703 | | | |
| 2. South Wall of Chiller Room | | | |
| South Wall of Y-400 Room | | | |
| 4. South Wall of Y-400 Room - by $D_3$ Tote | | | |
| 5. First Level Y-400 Deck - by Stairs | | | |
| 6. First Level Y-400 Deck - on Railing | | | |
| 7. Roof Level Y-400 Room - on Railing | | | |
| 8. South of Whse 702 - Outside | | | |
| 9. South of Whse 701 - Outside | | | |
| 0. North of Whse 701 - Outside | | | |
| 1. Wall West of M-704 | | | |
| 2. North Wall of Whse 702 | | | |
| 3. North Wall of Whse 701 | | | |
| 4. Inside Small Package Room | | | |
| | | | |
| | | | |
| | | | |
| | | | |

MONTH _____

HCR

## Monthly Safety Equipment Check List

1. Scott Airpak - Location: North Door Y-400 Area (Outside)
   Date Checked _____ Checked By _____
   Action Taken:

---

2. Scott Airpak - Location: South Door Y-400 Area (Inside)
   Date Checked _____ Checked By _____
   Action Taken:

---

3. Scott Airpak - Location: Y-400 room (First Level)
   Date Checked _____ Checked By _____
   Action Taken:

---

4. Scott Airpak - Location: Y-400 room (Roof Level)
   Date Checked _____ Checked By _____
   Action Taken:

---

5. Full Face Respirator - Location: Solvent Shed
   Date Checked _____ Checked By _____
   Action Taken:

---

6. Ladders - Location: Misc. -- Be Sure to check all ladders

   1. Date Checked _____ Checked By _____
   2. Date Checked _____ Checked By _____
   3. Date Checked _____ Checked By _____
   4. Date Checked _____ Checked By _____
   5. Date Checked _____ Checked By _____
   6. Date Checked _____ Checked By _____
   7. Date Checked _____ Checked By _____
   8. Date Checked _____ Checked By _____
   9. Date Checked _____ Checked By _____
   10. Date Checked _____ Checked By _____
   11. Date Checked _____ Checked By _____
   12. Date Checked _____ Checked By _____

Actions Taken -- 1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.

N NTENANCE SAFETY INSPECTION

E

| | GOOD | NEEDS IMPROVEMENT |
|---|---|---|
| **OUSEKEEPING** | | |
| DIRTY RAGS IN METAL CONTAINER | | |
| DOORWAYS | | |
| FLOOR CONDITION | | |
| TRASH RECEPTICLE | | |
| PIPE RACK | | |
| HOSES ORDERLY | | |
| CYLINDERS CHAINED & CAPPED | | |
| **QUIPMENT** | | |
| EQUIPMENT LOCKED OUT | | |
| FACE SHIELD NEAR GRINDER | | |
| TOOL REST 1/8" | | |
| FACE SHIELD NEAR CUT OFF | | |
| TORCH GAS CYLINDERS OFF | | |
| GUARDS IN PLACE | | |
| NORTH CRANE | | |
| SOUTH CRANE OH | | |
| SOUTH CRANE BENCH | | |
| DIE LIFTER | | |
| MANLIFT | | |
| BENJU BOOM | | |
| SCISSOR LIFT | | |
| FORK TRUCK (SEE BACK) | | |
| **SAFETY** | | |
| SPRINKLER SUPPLY VALVE | | |
| EXTINGUISHER 237 | | |
| EXTINGUISHER 238 | | |
| EXTINGUISHER 236 | | |
| EXTINGUISHER 234 | | |
| EXTINGUISHER 235 | | |
| EXTINGUISHER 245 | | |
| EXTINGUISHER 244 | | |
| EXTINGUISHER ON WELDER | | |
| FIRE BLANKET | | |
| FIRE TRUCK (SEE BACK) | | |

Stauffer CHEMICALS

INTER-OFFICE CORRESPONDENCE

Westport

TO: Adrian

ATTENTION: G.C. Philbrook

COPY TO: J. Calamungi
G.L. Ford
D. McGrade
T.J. Sayers

FROM: B.S. McClellan
Sr. Hydrogeologist

DATE: 12/20/82

SUBJECT: Estimate of Mass Loading, Phase II Hydrogeologic Investigation, Evaporation and Settling Basin, Adrian

This report presents an estimate of mass loading from the basin to the river. This estimate is based on my review of the information obtained during the Phase II Hydrogeologic Investigative work performed in regards to the now closed Evaporation and Settling Basin. Specifically I have reviewed two reports by the outside contractor Gilbert/Commonwealth.

1. Report No. 1 - Permeability Testing of OW-Series Observation Wells For SWS Silicones Corporation

2. Report No. 2 - Ground-Water Flow Beneath the Sealed Evaporation and Settling Basin at SWS Silicones Corporation, Adrian, Michigan

Also reviewed were the results of chemical analysis performed by SWS Silicones Corporation on samples collected from the nine observation wells on June 9, 1982, July 21, 1982 and August 11, 1982.

The purposes of this work has been to obtain the information needed to estimate the mass loading (in pounds per unit time) to the river from the basin area via ground-water discharge from the "Perched and Near Surface Aquifers." Based on the work conducted the estimated cumulative total mass loading for the chlorinated organic chemicals analyzed was 0.502 pounds per day from the "Perched Aquifer" and 0.003 pounds per day from the "Near Surface Aquifer." Ground-water in the "Perched Aquifer" (shallow) discharges along the upland slope to the floodplain swampy area and from the "Near Surface Aquifer" (deeper) to the floodplain swampy area and the River Raisin.

## Discussion of Methods Used

Ground-Water Discharge Rate: The ground-water discharge rate was determined by Gilbert/Commonwealth for both the "Perched Aquifer and Near Surface Aquifer." In order to accomplish this it was necessary to determine the in-site permeability of the soil contained in each saturated zone and construct a structural/hydrogeologic model of the site from which the dimensions of ground-water flow could be determined. The work performed and conclusion reached are described at depth in Reports No. 1 and No. 2. In Report No. 2 Gilbert/Commonwealth has presented a discharge rate of 3359 gpd for the "Perched Aquifer" and 2558 gpd for the "Near Surface Aquifer." These discharge rates represent the volume of ground water per unit time that will pass through a cross-sectional area situated downgradient of the basin and are representative of flow in the aquifers beneath the basin.

Chemical Analysis: Ground-water samples from the existing OW-Series wells were analyzed by SWS Silicones for the proposed list of chemicals. Samples were collected on June 9, 1982, July 21, 1982 and August 11, 1982. Using the analytical results from wells 1S, 1D, 4S and 4D (S-perched aquifer and D-near surface aquifer) an average concentration for each chemical in ground-water downgradient from the basin in each aquifer was obtained. Table 1 shows the actual analytical results for each compound, on each date sampled, for the downgradient wells and the average concentration obtained.

TABLE 1

Perched Aquifer

| Chemical - mg/L | Well No./Date Sample | | | | | | Average Concentration Mg/L |
|---|---|---|---|---|---|---|---|
| | 1S | | | 4S | | | |
| | 6/9 | 7/21 | 8/11 | 6/9 | 7/21 | 8/11 | |
| TOC | 30 | 900 | 1000 | 20 | 34 | 360 | 390.7 |
| Hydrolyzable (Ionic or Non-Organic) Chlorides | 950 | 1600 | 2157 | 1280 | 1390 | 1978 | 1559.2 |
| 1,1,1-Trichloroethane | 3.7 | 5.5 | 6.9 | 3.0 | 2.5 | 3.6 | 4.2 |
| 1,1-Dichloroethane | 17.0 | 28.0 | 36.0 | N.D. | 0.4 | 0.35 | 13.6 |
| t-1,2-dichloroethylene | N.D. | N.D. | N.D. | 0.8 | 0.03 | 0.03 | 0.14 |
| Di-n-butyl phthalate | $\leq$ 0.025 | -- | -- | N.D. | -- | -- | 0.013 |

TABLE 1 - (Continued)

Near Surface Aquifer

| Chemical - mg/L | Well No./Date Sampled 1D 6/9 | 1D 7/21 | 1D 8/11 | 4D 6/9 | 4D 7/21 | 4D 8/11 | Average Concentration mg/L |
|---|---|---|---|---|---|---|---|
| TOC | 13 | -- | 100 | 8 | 8 | 11 | 28.0 |
| Hydrolyzable (Ionic or Non-Organic) Chlorides | 855 | -- | 1180 | 273 | 235 | 249 | 558.4 |
| 1,1,-Trichloro-ethane | 0.13 | -- | 0.12 | 0.08 | 0.06 | 0.18 | 0.11 |
| 1,1-Dichloro-ethane | N.D. | -- | N.D. | N.D. | N.D. | N.D. | N.D. |
| t-1,2-Dichloro-ethylene | N.D. | -- | N.D. | 0.04 | 0.05 | 0.16 | 0.05 |
| Di-n-butyl phthalate | N.D. | -- | -- | N.D. | -- | -- | N.D. |

Mass Loading Determination: Using the average concentration for each compound (mg/L) in each aquifer and the discharge rate for each aquifer (Liters/day) an estimate of the mass loading for each compound (pounds per day) in each aquifer was obtained. The results of this determination are presented in Table 2 along with the cumulative totals for chlorinated organics. It is important to note that in making this determination no consideration was given to the attenuative capabilities of the water bearing soils or the hydrolytic stability of the compounds involved. Therefore, the results presented here should be viewed as a worst case situation and the actual amounts of the observed compound reaching the discharge areas could be significantly less.

TABLE 2

Mass Loading Determination Lb./day

| Compound | Perched (Shallow) Aquifer | | Near Surface (Deeper) Aquifer | |
|---|---|---|---|---|
| | MAX | | MAX | |
| TOC | 28 | 10.9 | 2.1 | 0.6 |
| Hydrolyzable (Ionic or Non-Organic) Chlorides | 60 | 43.6 | 25 | 11.9 |
| 1,1,1-Trichloro-ethane | .19 | 0.118 | .003 | 0.002 |
| 1,1-Dichloro-ethane | 1 | 0.380 | — | N.D. |
| t-1,2-Dichloro-ethylene | .02 | 0.004 | .003 | 0.001 |
| Di-n-butyl Phthalate | | < 0.001 | | N.D. |
| Chlorinated Organics Cumulative Totals | 1.210 | 0.502 | | 0.003 |

Conclusions

1) I believe that the representation of hydrogeologic conditions presented by Gilbert/Commonwealth are reasonably accurate. Furthermore, because of the relatively high permeability values used for the type of materials described and the recent elimination of the Evaporation and Settling Basin as a source of recharge, I believe that the ground-water discharge rates presented are on the high side. Based on this I do not predict significantly higher values for discharge than those used here.

2) Given that the Evaporation and Settling Basin is now closed and caped the mass loading determinations presented here should be considered a high point. The elimination of the basin as a potential source of recharge to the "Perched Aquifer" should result in a reduction of mass loading values presented here.

3) When considering the mass loading values presented here it is important to keep in mind that this discharge does not occur from a point source but is spread out over a significant area as shown on Figure 5 and 6 of Report 2 by Gilbert/Commonwealth. Also discharge is not directly to the river but to a swampy area and it is questionable as to how much if any of the estimated mass loading reaches the river.

If you have any questions please call.

B.S. McClellan

B.S. McClellan

BSM005:dm

12-13-82

# GROUND WATER FLOW BENEATH THE SEALED EVAPORATION AND SETTLING BASIN AT SWS SILICONES CORPORATION ADRIAN, MICHIGAN

Prepared by:

Commonwealth Associates Inc.
209 East Washington Avenue
Jackson, Michigan
December 13, 1982

Approved by:

Annette Brewster
Annette Brewster
Senior Geologist/Hydrogeologist
Industrial & Environmental Div.

# GROUND WATER FLOW BENEATH THE SEALED EVAPORATION AND SETTLING BASIN AT SWS SILICONES CORPORATION ADRIAN, MICHIGAN

## INTRODUCTION

During the summer of 1982, SWS Silicones Corporation (SWS) removed from service and sealed over an evaporation and settling basin located in the southeast portion of their plant site near Adrian, Michigan. Commonwealth Associates Inc. (Commonwealth) was retained in October 1982 to determine the quantity of ground water passing beneath the basin. The results of Commonwealth's investigations, analytical procedures and data and assumptions used in the analysis are presented in this letter report.

## EXISTING HYDROGEOLOGIC CONDITIONS

### Soil Sequence

Logs of the B-series and OW-series borings were reviewed to establish the soil sequence in the vicinity of the evaporation and settling basin. These logs were originally presented in Commonwealth Report R-2194, "Hydrogeologic Study for Evaporation and Settling Basin." Boring locations are shown on Figure 1, Site Topography and Plot Plan, along with the configuration of the evaporation and settling basin before sealing.

Subsurface geologic profiles through the basin area are shown on Figures 2 and 3. To construct the profiles, contour maps were first prepared for the four major soils changes indicated on the boring logs. Profiles of the contacts between soil types were then developed by superimposing the profile lines shown on Figure 1 onto each contour map. The different soil types on the boring logs and profiles are based upon the Unified Soil Classification System, which is described on Figure 4.

In descending order, the soil sequence shown on the profiles consists of an upper sand layer (SW·SM), very fine sand and organic silt (ML), silty clay (CL), a second layer of very fine sand and silt (ML), and a lower layer of sand (SP·SM). The base of the lower sand layer is not shown because the borings were terminated in this layer. All of the layers present in the basin area were assumed to be continuous to the river bluff. The assumed sequence of upper floodplain soils on all three profiles is based upon soils encountered in boring OW-5.

Ground Water Flow Systems

As documented in Commonwealth Report R-2194, two ground water flow systems occur in the upper 40 feet of unconsolidated soils in the vicinity of the evaporation and settling basin. The upper sand (SW·SM) and silt (ML) comprise the shallow aquifer while the lower silt (ML) and sand (SP·SM) comprise the deep aquifer. In the 1980 report, these aquifers were labeled "perched" and "normal," respectively. Soils immediately below the silty clay layer were unsaturated, indicating that the CL layer acts as a confining layer between the two aquifers.

A pair of observation wells was installed at four locations in the basin area during June 1980 to permit periodic measurements of ground water levels in the shallow and deep aquifers. A ninth observation well was installed at the northern edge of floodplain deposits along the River Raisin (Figure 1). Ground water levels recorded for both aquifers are summarized in Table 1.

Ground water contours for the shallow and deep aquifers on October 15, 1982 are shown on Figures 5 and 6, respectively. Flow lines drawn orthogonal to the contours illustrate the direction of ground water flow in each aquifer. Ground water in the shallow aquifer beneath the former evaporation and settling basin is moving to the south and southeast under an average gradient of approximately 0.027 (27 feet in 1,000 feet). Ground water in the deep aquifer, however, is flowing entirely to the

southeast under an average gradient of approximately 0.019. Water table profiles shown on Figures 2 and 3 reflect the water levels measured on October 15, 1982. As shown on Figures 2 and 3, water in the shallow aquifer discharges along the slope from the upland to the floodplain while water in the deep aquifer discharges to the floodplain swamp and the River Raisin.

Based upon contour maps plotted (but not shown here) for July 1, 1980 and May 26, 1982, ground water flow directions in both aquifers have not changed substantially since the observation wells were first installed. In fact, ground water contours for the deep aquifer on July 1, 1980 are virtually identical to those shown on Figure 6. Deep aquifer contours for May 26, 1982 have the same orientation, but reflect water levels 1 to 2 feet higher than those measured on October 15, 1982. The same relationships do not hold, however, for the shallow aquifer. Although the shallow aquifer contours for July 1, 1980 and May 26, 1982 are nearly the same, ground water levels measured on both dates are 3 to 4 feet higher than water levels measured on October 15, 1982. Also, the contours shown on Figure 5 are less strongly curved than those for either of the previous dates.

Soil Permeabilities

Permeability values to be used in calculating discharge from the shallow and deep aquifers were established from field permeability tests conducted by Commonwealth in six observation wells around the evaporation and settling basin. Permeability test results were summarized in a previous letter report dated October 14, 1982.

Recommended permeability values for the upper sand (SW·SM) and lower sand (SP·SM) layers are $2.0 \times 10^{-2}$ cm/sec and $3.0 \times 10^{-3}$ cm/sec, respectively. These values correspond to 57 ft/day for the upper sand and 8.5 ft/day for the lower sand. Based upon the test results for well OW-3s, the permeability of the sandy silt (ML) is $2.5 \times 10^{-3}$ cm/sec (7.1 ft/day). This well is screened entirely within the upper ML layer. Since the silt (ML) layer of the deep aquifer was not tested, the permeability is assumed to be the same as for the upper ML layer.

## DISCHARGE ANALYSES

### Theoretical Basis

Commonwealth was requested to calculate the quantity of ground water reaching the River Raisin or adjacent swamp that also passes beneath the sealed evaporation and settling basin. The computations described herein are based upon ground water flow (potential) theory and the law of mass conservation.

According to the theory of ground water flow, lines drawn orthogonal to equipotential lines (ground water contours) represent impermeable boundaries across which flow does not occur. The area between any two flow lines is called a flow channel. By the law of mass conservation, the quantity of ground water moving in any particular flow channel must be constant unless water is added from an outside source (recharge) or is removed from the flow channel (discharge). For these calculations, it was assumed that there is no recharge to or discharge from either the shallow or deep aquifer in the basin area. This is a reasonable assumption because the cooling lagoons south of the evaporation and settling basin are fully lined.

### Analytical Procedures

On Figures 5 and 6, the outer flow lines for each aquifer have been drawn to encompass the evaporation and settling basin in a single flow channel. The quantity of water reaching the bluff or swamp that also passes beneath the basin may be calculated from the relation

$$Q = KiA \qquad \text{(Equation 1)}$$

In this form of Darcy's law, Q is the discharge rate in cubic feet per day ($ft^3$day), K is the hydraulic conductivity (permeability) of the saturated materials in ft/day, i is the dimensionless hydraulic gradient,

and A is the cross-sectional area normal to the direction of flow. The parameter A may also be written

$$A = mL \qquad \text{(Equation 2)}$$

where m is the saturated thickness of the aquifer and L is the length of any equipotential line between the outer flow lines. Both m and L are in feet (ft).

It was previously established that, in the absence of recharge or discharge, the discharge rate, Q, is constant throughout the length of any flow channel. Therefore, Q will be the same whether it is calculated at the bluff or the edge of the evaporation and settling basin. An arbitrary equipotential line between the outer flow lines and tangent to the southeast corner of the former basin was selected as the line across which the discharge rate would be calculated for each aquifer. This equipotential is indicated on Figures 5 and 6 by a heavy dashed line. Values of k, m, and i are relatively well known at these locations.

As indicated by the geologic profiles and water level measurements in the observation wells, ground water is moving through both the sand and silt layers in each aquifer. Total aquifer discharge, $Q_T$, is the sum of discharge through the sand layer, $Q_{sd}$, and discharge through the silt layer, $Q_{st}$,

$$Q_T = Q_{sd} + Q_{st} \qquad \text{(Equation 3)}$$

Darcy's law applied to each layer yields

$$Q_{sd} = (K_{sd})(m_{sd})iL \text{ and} \qquad \text{(Equation 4A)}$$

$$Q_{st} = (K_{st})(m_{st})\ iL \qquad \text{(Equation 4B)}$$

Substituting Equations 4A and 4B into Equation 3 results in

$$Q_T = [(K_{sd})(m_{sd}) + (K_{st})(m_{st})]iL \qquad \text{(Equation 5)}$$

Calculations

Permeability and hydraulic conductivity values to be used in the discharge calculations are provided earlier in this report. The parameter L is the length of the dashed equipotential line shown on Figures 5 and 6. L is 300 feet for the shallow aquifer and 279 feet for the deep aquifer.

A three-step process was used to establish the saturated thicknesses, m, of all layers except the lower sand. First, profile lines A-A', B-B', and C-C' (Figure 1) were superimposed on the ground water contour maps to locate the point where the dashed equipotential line crosses the profile lines. Next, the saturated thicknesses at that point were determined from the profiles. On October 15, 1982, the saturated thickness ranged from 0.0 to 0.5 ft for the upper sand, 2.5 to 8.5 ft for the upper silt, and 5.0 to 6.0 ft for the lower silt. Finally, values of m were averaged for each layer to obtain a single value for use in the calculations.

The saturated thickness of the lower sand cannot be determined from existing data. A value may be estimated, however, based upon an understanding of ground water flow theory. According to the theory, vertical (upward) components of flow associated with discharge areas would prevent convective mixing of ground water between the upper and lower portions of the aquifer. Available data indicate that ground water in the deep aquifer is discharging to the floodplain swamp and River Raisin. Therefore, the effective saturated thickness for computing the quantity of ground water affected by the evaporation and settling basin would be less than the total saturated thickness of the aquifer. An effective saturated thickness of 3 feet has been assumed for the lower sand. If a different value can be shown to be more appropriate, the daily discharge from the deep aquifer can be readily computed by substituting the new value for $m_{sd}$ into Equation 5.

For the shallow aquifer, the discharge rate from the flow channel shown on Figure 5 was calculated using the following values for K, m, i, and L:

$K_{sd}$ = 57 ft/day $K_{st}$ = 7.1 ft/day

$m_{sd}$ = 0.2 ft $m_{st}$ = 6.2 ft

i = 0.027 L = 300 ft

Substitution of these values into Equation 5 yields

$$Q_T = 449 \text{ ft}^3/\text{day (3359 gallons/day)}$$

for the shallow aquifer.

Values of k, m, i, and L used in calculating the discharge rate from the flow channel shown on Figure 6 were:

$K_{st}$ = 7.1 ft/day $K_{sd}$ = 8.5 ft/day

$m_{st}$ = 5.5 ft $m_{sd}$ = 3.0 ft

i = 0.019 L = 279 ft

Substitution of these values into Equation 5 yields

$$Q = 342 \text{ ft}^3/\text{day (2558 gallons/day)}$$

for the deep aquifer.

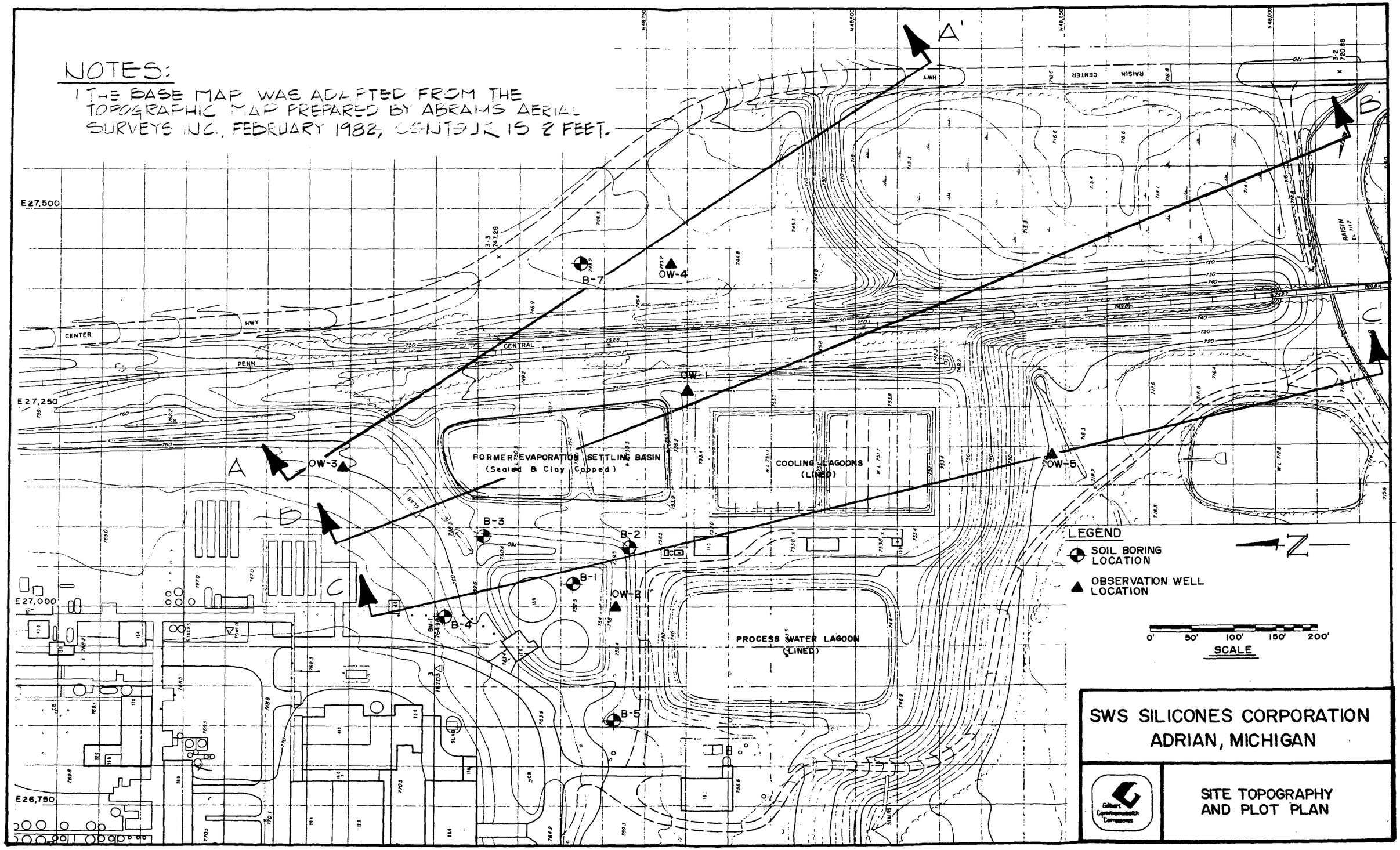
TABLE 1

SUMMARY OF RECORDED WATER LEVELS
FOR THE SHALLOW AND DEEP AQUIFERS

| | Well No. | 7/1/80 | 8/80 | 5/26/82 | 6/8/82 | 8/11/82 | 10/15/82 | 11/18/82 |
|---|---|---|---|---|---|---|---|---|
| Shallow Aquifer | OW-1s | 741.6 | 741.9 | 741.7 | 741.0 | 739.3 | 738.3 | 739.1 |
| | OW-2s | 743.2 | 742.9 | 742.8 | 742.8 | 741.8 | 740.8 | 741.1 |
| | OW-3s | 753.0 | 752.7 | 752.6 | 752.6 | 750.9 | 750.2 | 751.2 |
| | OW-4s | 739.7 | 739.3 | 740.3 | 739.1 | 737.0 | 735.9 | 737.3 |
| Deep Aquifer | OW-1d | 720.2 | 720.2 | 722.0 | 721.2 | 720.6 | 720.4 | 720.3 |
| | OW-2d | 725.8 | 725.9 | 727.1 | 727.1 | 727.4 | 725.9 | 726.6 |
| | OW-3d | 726.7 | 726.5 | 728.4 | 728.4 | 727.2 | 727.3 | 727.5 |
| | OW-4d | 718.6 | 718.7 | 720.1 | 719.5 | 718.5 | 718.6 | 719.0 |
| | OW-5 | 715.9 | 716.4 | 717.3 | 717.0 | 715.4 | 715.8 | 716.5 |

NOTES:

1 THE BASE MAP WAS ADAPTED FROM THE TOPOGRAPHIC MAP PREPARED BY ABRAMS AERIAL SURVEYS INC., FEBRUARY 1982, CONTOUR IS 2 FEET.

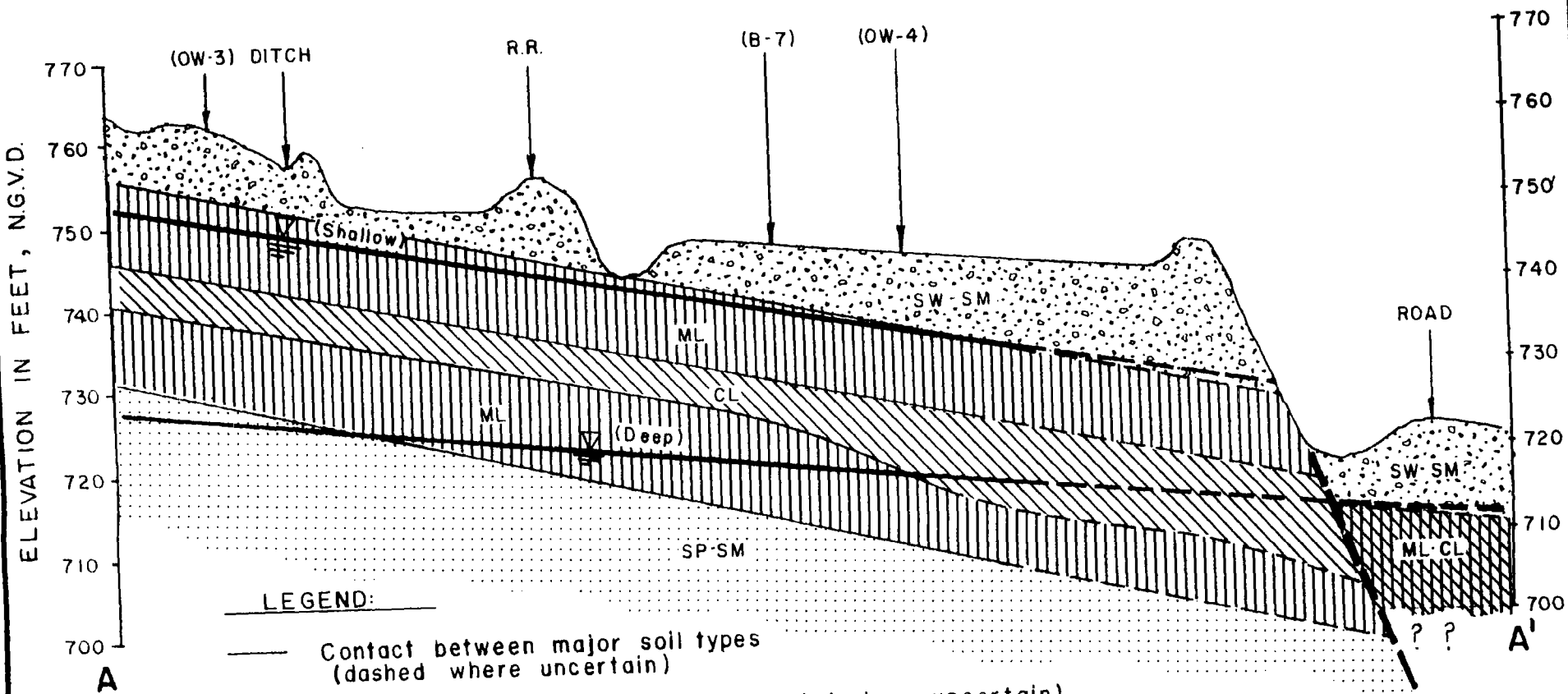



SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

Gilbert Commonwealth Companies

SITE TOPOGRAPHY AND PLOT PLAN

FIGURE 1




LEGEND:

Contact between major soil types (dashed where uncertain)

Water table (dashed where extrapolated or uncertain)

0' 50' 100' 200' 300'

SCALE

(Vertical Exaggeration: Approx. 5X)

NOTES:

1.) Profile locations are shown on Figure 1.

2.) Soil borings projected to the profile line are enclosed in parentheses.

3.) Abbreviations for general soil types shown on the profile are described on Figure 4.

4.) Water table profiles are based upon water levels measured in the shallow and deep wells on October 15, 1982.

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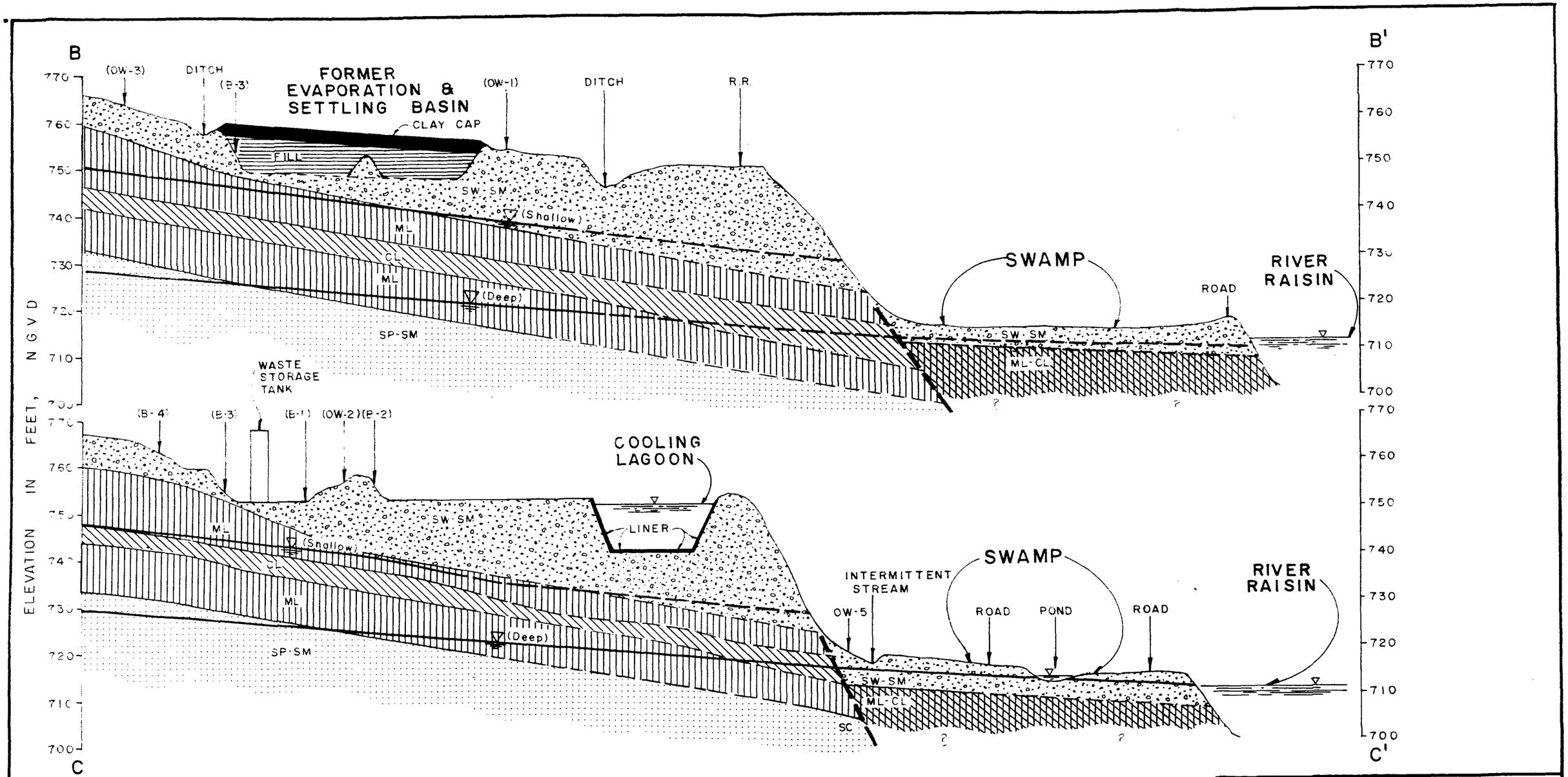
GEOLOGIC PROFILE A-A'

FIGURE 2




NOTE:

1.) The legend and notes for these profiles are given on Figure 2.

0' 50' 100' 200' 300'

SCALE

(Vertical Exaggeration: Approx. 5X)

SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

Gilbert Commonwealth Companies

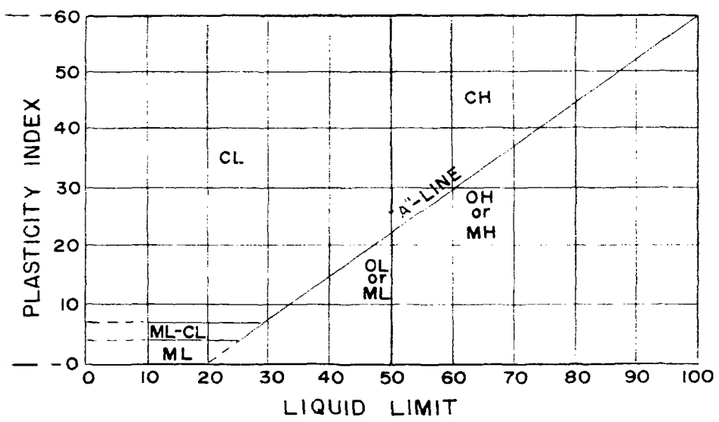
GEOLOGIC PROFILES B-B' AND C-C'

FIGURE 3

| MAJOR DIVISIONS | | | GRAPH SYMBOL | LETTER SYMBOL | TYPICAL DESCRIPTION |
|---|---|---|---|---|---|
| COARSE GRAINED SOILS<br>MORE THAN 50 % OF MATERIAL IS LARGER THAN NO. 200 SIEVE | GRAVEL AND GRAVELLY SOILS<br>MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE. | CLEAN GRAVEL (LITTLE OR NO FINES) | | GW | WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES |
| | | | | GP | POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES |
| | | GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES) | | GM | SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES |
| | | | | GC | CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES |
| | SAND AND SANDY SOILS<br>MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE. | CLEAN SAND (LITTLE OR NO FINES) | | SW | WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES |
| | | | | SP | POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES |
| | | SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES) | | SM | SILTY SANDS, SAND-SILT MIXTURES |
| | | | | SC | CLAYEY SANDS, SAND CLAY MIXTURES. |
| FINE GRAINED SOILS<br>MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE. | SILTS AND CLAYS | LIQUID LIMIT LESS THAN 50 | | ML | INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY. |
| | | | | CL | INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS. |
| | | | | OL | ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY. |
| | SILTS AND CLAYS | LIQUID LIMIT GREATER THAN 50 | | MH | INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS. |
| | | | | CH | INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS. |
| | | | | OH | ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS. |
| HIGHLY ORGANIC SOILS | | | | PT | PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS. |

| GRAPH SYMBOL | LETTER SYMBOL | ROCK CLASSIFICATION |
|---|---|---|
| | SH | SHALE |
| | SI | SILTSTONE |
| | SS | SANDSTONE |
| | LS | LIMESTONE |

PLASTICITY CHART




SWS SILICONES CORPORATION
ADRIAN , MICHIGAN

Gilbert Commonwealth Companies

CLASSIFICATION CHARTS

FIGURE 4

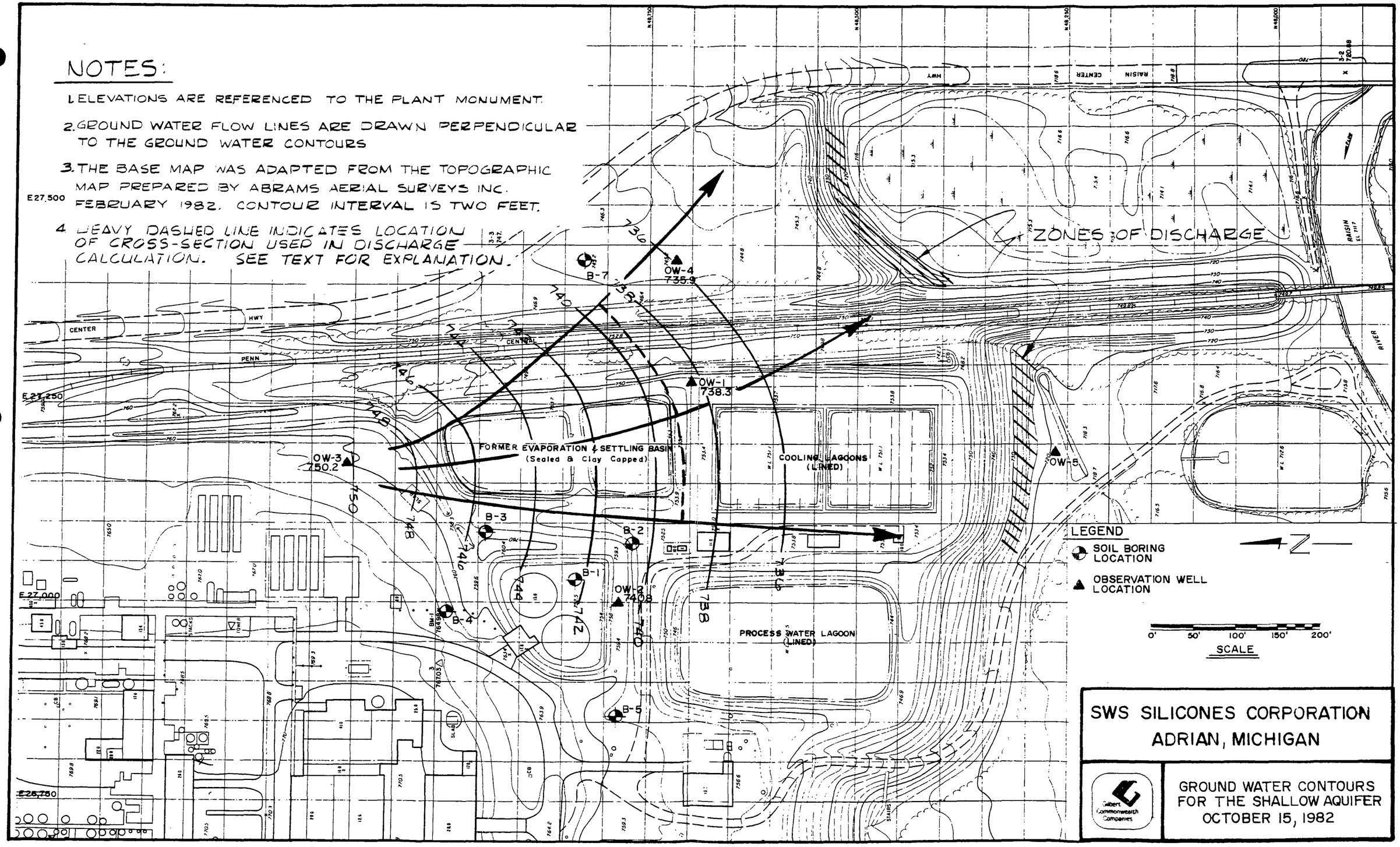

NOTES:
1. ELEVATIONS ARE REFERENCED TO THE PLANT MONUMENT.
2. GROUND WATER FLOW LINES ARE DRAWN PERPENDICULAR TO THE GROUND WATER CONTOURS
3. THE BASE MAP WAS ADAPTED FROM THE TOPOGRAPHIC MAP PREPARED BY ABRAMS AERIAL SURVEYS INC. FEBRUARY 1982. CONTOUR INTERVAL IS TWO FEET.
4. HEAVY DASHED LINE INDICATES LOCATION OF CROSS-SECTION USED IN DISCHARGE CALCULATION. SEE TEXT FOR EXPLANATION.
ZONES OF DISCHARGE
FORMER EVAPORATION & SETTLING BASIN (Sealed & Clay Capped)
COOLING LAGOONS (LINED)
PROCESS WATER LAGOON (LINED)
OW-1 738.3
OW-2 740.8
OW-3 750.2
OW-4 735.9
OW-5
B-1
B-2
B-3
B-4
B-5
B-7
CENTER
HWY
PENN
RAISIN
RIVER
E 27,500
E 27,250
E 27,000
E 26,750
LEGEND
SOIL BORING LOCATION
OBSERVATION WELL LOCATION
0' 50' 100' 150' 200'
SCALE
SWS SILICONES CORPORATION
ADRIAN, MICHIGAN
Gilbert Commonwealth Companies
GROUND WATER CONTOURS FOR THE SHALLOW AQUIFER
OCTOBER 15, 1982

FIGURE 5

M1D075400671 CONTINENTAL BANK
CONTINENTAL ILLINOIS NATIONAL BANK AND TRUST COMPANY OF CHICAGO • 231 SOUTH LA SALLE STREET, CHICAGO, ILLINOIS 60693
MULTINATIONAL BANKING SERVICES

December 10, 1982

RECEIVED
DEC 13 1982
WASTE MANAGEMENT BRANCH
EPA, REGION V

Mr. Thomas B. Golz
C.P.A.
U.S. Environmental
Protection Agency
Waste Management Branch
230 S. Dearborn Street
Chicago, Il 60604

Dear Mr. Golz:

Enclosed please find your original letter dated October 6, 1982 from SWS Silicones Corporation. I believe this belongs in your files. Thank you for all your help in executing these documents for SWS. Have a happy holiday season.

Sincerely,

Larry C. Beverage
Banking Officer
Telephone: (312) 828-7110

LCB:KC

Enclosure

STATE OF MICHIGAN

NATURAL RESOURCES COMMISSION
JACOB A. HOEFER
CARL T. JOHNSON
E.M. LAITALA
HILARY F. SNELL
HARRY H. WHITELEY
JOAN L. WOLFE
CHARLES G. YOUNGLOVE

WILLIAM G. MILLIKEN, Governor

STEVENS T. MASON BUILDING
BOX 30028
LANSING, MI 48909

DEPARTMENT OF NATURAL RESOURCES
HOWARD A. TANNER, Director
Water Quality Division
9311 Groh Road
Grosse Ile, Michigan 48138

RECEIVED
NOV 12 1982
Groundwater Qual., WQD

November 9, 1982

Mr. Gordon Philbrook
Environmental Control Coordinator
SWS Silicones Corporation
Adrian, Michigan 49221

Dear Mr. Philbrook:

This letter will hopefully catch up with all the pending items we have with your facility.

Further to our letter of July 27, 1982, we are hereby approving the use of Nalco 354, Nalco 19, Nalco 7211, Nalco 7213 and Nalco 7220 at your facility at the usage rates indicated in your December 28, 1981 request. Additionally, based on our telephone conversation of November 8, 1982 regarding the usage rates and degradation of Nalco 7326 and 7320, we are approving the usage of these additives at the periodic slug dosage rates requested in your letter of January 22, 1982. Your October 12, 1982 request to use Nalco 7202 has been received and is currently under review.

Industrial Process Characterization Study

We have reviewed the information in your August 23, 1982 letter regarding the percent removal of ethyl silicate, Trimethoxyboroxine and Tetraethylorthotitanate and agree with your assumptions. These chemicals will not therefore be included in the final analytical list. The final analytical list agreed upon is that indicated as "Possible Contaminants of Interest" under part I. of your "Sampling Plan".

The sampling plan proposed does not address the sampling techniques nor the analytical methods you intend to use. This information must be supplied prior to our final approval. I would also suggest that your samples be collected on different days during the three week sampling period rather than all samples being collected on Wednesday. Additionally, our office would like to be notified at least two days prior to the time you collect samples so that we can split samples with you, if at all possible, on at least one occasion.

We have received your November 4, 1982 letter, regarding the biodegradability and toxicity data for Tergitol TMNIO, Triton X-45, Proxcel GXL, Atlox 1087 and Sulfanic N-150 and it is currently under review.

Lastly, many of the chemicals were deleted from the final analytical list based on assumed "percent removal" efficiencies across your treatment facilities. To verify these assumptions and to provide further credence to future use of these study results, we are requesting that the following sample locations be added to your sampling plan and that the samples be analyzed for styrene, cyclohexane and 1,1,1-trichloroethane:

1. Influent to wash water system
2. Effluent from wash water system to chemical sewer
3. Influent to chemical sewer treatment facility

While we understand the company position regarding "up the pipe" sampling expressed during our July 28, 1982 meeting, it appears to me that with all the effort that your facility has put into this study, verification of our basic assumptions so that the study results are usable in the future is warranted.

Hydrogeological Study

We have received your letter of September 10, 1982 with the information on the "old drum burial site" monitoring wells. Based on the analytical results shown in your report, we are requesting at least one additional sample from each well to determine what materials consitute the Total Organic Halogens and the Total Organic Carbon concentrations. There appears to be a significant increase between wells M-1, M-2 and well M-4 and further definition of these indicator parameters is necessary. Additionally, we would like you to calculate the flow volume of the affected groundwater table and furnish a projection of the anticipated spread through the ground from the possible source of contamination.

Hopefully, this letter has addressed all items we presently owe you a response on. If you have any questions regarding this letter, or if you are awaiting additional response from our office, please contact us.

Yours truly,

WATER QUALITY DIVISION

Roy E. Schrameck

Roy E. Schrameck, P.E.
District Engineer

RES/sc

cc: Bill Iversen
Jerry Saalfeld
Chang Bek
WQD files

10-14-82

# PERMEABILITY TESTING OF

# OW-SERIES OBSERVATION WELLS

# FOR

# SWS SILICONES CORPORATION

# ADRIAN, MICHIGAN

Approved by:

Annette Brewster

Annette Brewster
Senior Geologist/Hydrogeologist
Industrial & Environmental Div.

Prepared by:

Commonwealth Associates Inc.
209 East Washington Avenue
Jackson, Michigan
October 14, 1982

OCT 15 1982

# PERMEABILITY TESTING OF OW-SERIES OBSERVATION WELLS FOR SWS SILICONES CORPORATION

## INTRODUCTION

Field tests were performed in existing observation wells to obtain permeability estimates for granular soils around the former evaporation basin on the property of SWS Silicones Corporation (SWS), Adrian, Michigan. The tests were conducted on July 27-28, 1982. At the direction of Mr. B. S. McClellan of Stauffer Chemical Company, six of the nine observation wells around the basin were tested: OW-1s, OW-1d, OW-3s, OW-3d, OW-4s, and OW-4d.

Commonwealth Associates Inc. (Commonwealth) installed the OW-series observation wells during June 1980 as part of an investigation to determine the direction of ground water flow in the vicinity of the evaporation basin. Each well was constructed of 2-inch diameter, Schedule 80 PVC casing with 10 feet of slotted PVC screen (Timco). At each location referenced above, a pair of wells was installed and the well screens were set above and below a silty confining layer that begins between depths of 7 and 14 feet below ground. A well installation summary for the entire OW-series is presented in Table 1. Boring logs for OW-1, OW-3, and OW-4 are also attached.

## TESTING PROCEDURES

Several factors affected the selection of a permeability testing method for the OW-series wells. Since the wells are used as ground water sampling points, testing methods which removed water from the wells were preferable to those which

introduced water from another source. The selection was further limited because water levels in the three deep wells were below the level necessary for suction lift pumping. Static water levels only 5 to 8 feet above the base of the well screen were also marginal for the use of a small diameter submersible pump. Considering these factors, a procedure based upon the measured recovery of water levels following air-lift pumping was selected as an appropriate testing method.

The following procedure was used for the recovery tests. Prior to testing, the depths to water and to the bottom of the well were measured and recorded. Compressed air was then introduced to the bottom of the well to remove the column of standing water. A visible change in the ejection rate was judged to mark the time at which all standing water had been removed. Two Soiltest water level indicators were used to measure water level recovery. The straight line yielded by a plot of the depth to water during recovery versus the logarithum of time since the discharge (air-lift pumping) stopped was used in conjunction with the nonequilibrium formula to compute transmissivity and, from that, permeability.

The recovery procedure proved unsuccessful on wells OW-1d and OW-1s. Prior to testing of OW-1d, the well screen was found to be filled with more than 5 feet of sediment, even though the well had been cleaned out by SWS during the previous week. The level of sediment actually rose more than 1 foot in the well during air-lift pumping. In lieu of a field permeability test, a sample of the sediment blown out during cleaning operations was collected from the ground surface outside of the well casing for particle-size analysis. The permeability of this material was computed from the gradation curve using several accepted empirical equations.

An alternate method of testing well OW-1s had to be found because water levels recovered too quickly to be measured. Water level measurements in this well were also complicated by cascading water in the screened interval. A bailer test was attempted but was only partially successful. However, a record of the bailer volumes removed and the duration of bailing permitted computation of a minimum value for permeability.

## CALCULATIONS

### Recovery Tests

The governing equation for calculation of permeability from recovery test data is the modified nonequilibrium formula

$$T = \frac{264\ Q}{\Delta s}$$

where T is transmissivity in gallons per day/foot (gpd/ft), Q is the discharge rate in gallons per minute (gpm), and $\Delta s$ is the change in water level in feet (ft) over one log cycle. However, transmissivity may also be defined as

$$T = km$$

where k is permeability in gpd/ft$^2$ and m is the saturated thickness in ft. Combination of the two equations yields the relation

$$K = \frac{264\ Q}{m\ \Delta s}$$

The permeability of the formation being tested may be calculated from this relation, with the value of $\Delta s$ obtained from a plot of water levels measured during recovery versus the logarithum of time since discharge stopped. Permeability calculations are shown on the attached recovery plots for wells OW-3s, OW-3d, OW-4s, and OW-4d. Values of Q and m were determined in the following manner.

The discharge rate used in the computations equals the volume of standing water in the well divided by the duration of air-lift pumping required to remove it. The volume (V) of water in the well was computed from the relation

$$V = \pi (d/2)^2 h$$

where d is the inside diameter of the well screen and casing and h is the height of water in the well. For the wells tested, d = 0.15 ft, which is equivalent to 0.132 gal/ft of water in the well (h). Subtraction of the measured static water level from the measured depth to the bottom of the well provided the value of h. As mentioned earlier, the time required to remove one well volume of water by air-lift pumping was identified by a visible change in the ejection rate. Two assumptions are inherent in the computation of discharge rate by this method: 1) that all water standing in the well was removed during air-lift pumping, and 2) that water from the aquifer did not enter the well during pumping.

Values of m used in the computations were based upon consideration of the static water level and the formations present in the screened interval. It was assumed that all water entering the well during recovery was derived from the coarsest sediments in the screened interval below the water table. For the deep wells, m was assumed to be equal to the height of standing water in the well or the screened thickness of sand below the overlying, silty confining layer, whichever was smaller. For the shallow wells, m was generally assumed to be equal to the screened thickness of saturated sands above the confining layer. In well OW-3s, however, the saturated zone consisted entirely of sandy silt (ML). The approximate thickness and type of soils screened in each well are listed in Table 1.

Permeability calculations for wells OW-3s, OW-3d, OW-4s, and OW-4d are shown on the recovery data plots. Calculated permeability values range from $2.5 \times 10^{-3}$ cm/sec for sandy silt in well OM-3s to $1.7 \times 10^{-2}$ cm/sec for fine to coarse sand in well OM-4s. The value for well OM-4s is the average resulting from two tests. Test results are summarized in Table 2.

Bailer Test

The basis for computing the permeability of granular materials screened in OW-1s is the observation that water entered the well as fast as it was removed by bailing. Knowing the rate at which water entered the well permits the calculation of permeability from Darcy's Law, written as

$$K = \frac{Q}{iA}$$

where K and Q are as previously defined, i is the hydraulic gradient (dimensionless), and A is the surface area of the well screen ($ft^2$) across which water is flowing.

Prior to bailing, the static water level and depth to bottom of the well were measured at 14.28 ft and 20.00 ft, respectively. During bailing, the time was recorded each time the bailer was removed from the well. A stainless steel bailer having a volume of 0.28 gal was used for the test. Approximately 14 bailer volumes of water were removed. By dividing the total volume of water removed, 3.9 gal, by the total bailing time, 5.82 min, a discharge rate of 0.67 gpm was determined for the test.

For the bailer test, the hydraulic gradient, i, is the change in water level, $\Delta h$, divided by the radial distance, R, affected by the withdrawal of water from the well. Based upon the sound of water flowing over the top of the 5-foot long

bailer, the apparent height of water in the well during bailing was approximately 5 ft. Taking into account the volume of water displaced by the bailer (0.211 gal), the actual height of water in the well during bailing was approximately 3.4 ft. Therefore, $\Delta h$ is the actual height of water during bailing subtracted from the original height before bailing (5.7 ft), or 2.3 ft. The radial distance affected by bailing can only be estimated. For a test of such short duration and low discharge rate, R is not likely to exceed 1 foot. Therefore, a hydraulic gradient of 2.3 was used in the permeability calculation.

The area, A, across which water enters the well during recovery may be determined from the equation for surface area of a cylinder

$$A = 2\pi r_w L$$

where $r_w$ is the radius of the well screen (ft) and L is the length of screen (ft) across which flow occurs. For the OW-series wells, $r_w$ equals 0.075 ft. Two cases are considered. If water enters the well through the full length of screen below the static water level, then L is equivalent to the height of water in the well before bailing (h), or 5.7 ft. If, however, water enters the well only from the sandy soil (SW·SM) above the silty confining layer, L is equal to 1.8 ft.

Substitution of the appropriate values of Q, i, and A into the Darcy equation yields permeability values of $7.4 \times 10^{-3}$ cm/sec for L = 5.7 ft and $2.3 \times 10^{-2}$ cm/sec for L = 1.8 ft. Because the well was not totally evacuated during bailing, some water stored in the filter sand around the screen also entered the well during the test. Therefore, the actual permeability is probably an intermediate value between the two cases. Assuming a simple average as a first approximation, the permeability of the fine to coarse sand in well OW-1s is approximately $1.5 \times 10^{-2}$ cm/sec.

Particle-Size Analysis

The permeability of the sandy soils screened in well OW-1d may be estimated from particle-size data taken from the attached gradation curve. Although the analyzed sand sample was obtained from the ground surface outside the well casing, it is believed to be representative of the sediment inside the well screen.

Three empirical methods were used to compute permeability: Hazen's Approximation, the method of Beyer (1969), and the method of Masch and Denny (1966). All three methods are described in Commonwealth Report No. R-2451, "Hydrogeologic Investigation of Disposal Area," for SWS Silicones Corporation. Permeability values calculated from these methods ranged from $2.0 \times 10^{-3}$ to $7.3 \times 10^{-3}$ cm/sec, and averaged $3.8 \times 10^{-3}$ cm/sec.

DISCUSSION

Permeability values for granular soils in the six tested observation wells are listed in Table 2. Limitations on the accuracy of the permeability values reported in Table 2 should be understood before they are used to calculate ground water flow rates. The various assumptions described in the calculations section introduce a degree of uncertainty to each permeability value. Moreover, direct comparison of permeability from one well and soil type to another is complicated because three different methods were used. For example, a recovery test was performed during development of well M-1 in the disposal on June 14, 1982, using the same testing procedure described in this letter report. The resulting permeability was $2.9 \times 10^{-3}$ cm/sec. Based upon particle-size data for boring M-1 (samples 11 and 12), an average permeability of $4.9 \times 10^{-3}$ cm/sec was calculated. Thus, it appears that permeability values computed from particle-size data are higher than those from recovery

test data. If a recovery test could have been performed in well OW-1d instead of a particle-size analysis, the reported permeability value would probably be lower than $3.8 \times 10^{-3}$ cm/sec (Table 2). Unfortunately, a similar comparison between bailer test results and the other test methods cannot be made since the bailer test was performed in only one well.

In general, the permeability of the upper sand layer is higher than that of the sand below the confining layer. This result was expected because the OW-series borings indicated the presence of coarser soils above the confining layer. For the purposes of future computations, we recommend using a permeability value of $2 \times 10^{-2}$ cm/sec for the upper fine to coarse sand layer and $3 \times 10^{-3}$ cm/sec for the lower silty sand layer. These values reflect the relative permeability difference between the upper and lower sand layers and are considered accurate to within one-half an order of magnitude.

56.7 ft/day

8.5 ft/day

INSTALLATION SUMMARY FOR
OW-SERIES OBSERVATION WELLS
TABLE 1

| Well No. | Date Installed | Surveyed Elevation Top of PVC ft | Measured PVC Height Above Ground ft | Ground Elevation ft | Screened Interval Depth ft / Elevation ft | Elevation, Top of Sand Filter ft | Elevation, Top of Bentonite ft | Approx. Thickness of Screened Formation ft |
|---|---|---|---|---|---|---|---|---|
| OW-1d | 6/20/80 | 752.77 | 0.8 | 752.0 | 30.8-40.8/712.0-722.0 | 724.5 | 727.5 | 7'ML/3'SP·SM |
| OW-1s | 6/20/80 | 754.08 | 1.3 | 752.8 | 10.6-20.6/733.5-743.5 | 747.8 | 749.8 | 5.5'SW·SM/4.5'ML |
| OW-2d | 6/23/80 | 755.91 | 2.1 | 753.8 | 27.6-37.6/718.3-728.3 | 731.8 | 734.8 | 3.5'ML/6.5'SM |
| OW-2d | - | 761.91 | 3.1 | 758.8 | 33.6-43.6/718.3-728.3 | 731.8 | 734.8 | |
| OW-2s | 6/24/80 | 757.22 | 3.2 | 754.0 | 12.7-22.7/734.5-744.5 | 747.0 | 750.0 | 2.5'SM/7'ML/0.5'CL |
| OW-2s | - | 761.83 | 3.9 | 757.9 | 17.3-27.3/734.5-744.5 | 747.0 | 750.0 | |
| OW-3d | 6/25/80 | 763.49 | 2.8 | 760.7 | 32.8-42.8/720.7-730.7 | 738.7 | 741.7 | 2'ML/8'SM |
| OW-3s | 6/25/80 | 764.23 | 3.3 | 760.9 | 10.3-20.3/743.9-753.9 | 754.9 | 757.9 | 10'ML |
| OW-4d | 6/26/80 | 748.51 | 3.6 | 744.9 | 30.6-40.6/707.9-717.9 | 720.9 | 723.9 | 8'ML/2'SM |
| OW-4s | 6/27/80 | 748.09 | 2.9 | 745.2 | 6.4-16.4/731.7-741.7 | 742.2 | 744.2 | 6.5'SW/3.5'ML |
| OW-5 | 6/24/80 | 722.77 | 3.2 | 719.6 | 8.2-18.2/704.6-714.6 | 715.6 | 717.1 | 2'SW/4.5'ML·CL/ 3.5'SC |

Notes:

1. All depths are below top of PVC casing.

2. During dike construction, the top of wells OW-2d and OW-2s was raised by adding 6.0 and 4.6 feet of PVC casing to the wells, respectively. Top of PVC elevations were not resurveyed.

Gilbert/Commonwealth

RESULTS OF PERMEABILITY TESTS
CONDUCTED JULY 27-28, 1982

TABLE 2

| Well No. | Test Type | Permeability, cm/sec | Soil Description (1) |
|---|---|---|---|
| OW-1s | Bailer | $1.5 \times 10^{-2}$ | Fine-coarse sand |
| OW-1d | Particle-size | $3.8 \times 10^{-3}$ (2) | Silty fine sand |
| OW-3s | Recovery | $2.5 \times 10^{-3}$ | Sandy silt |
| OW-3d | Recovery | $2.8 \times 10^{-3}$ | Silty fine sand |
| OW-4s | Recovery | $1.7 \times 10^{-2}$ (3) | Fine-coarse sand |
| OW-4d | Recovery | $3.8 \times 10^{-3}$ | Silty fine sand |

Notes:

(1) Coarsest saturated soils within screened interval.

(2) Average of three values.

(3) Average of two values.

— Gilbert/Commonwealth —

HYDROGEOLOGIC STUDY
SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

# BORING OW-1

SURFACE ELEVATION 752.1
COORDINATE 1298 S - 3612E

| ELEV. IN FEET | OTHER TESTS | SHEAR STRENGTH TEST (PSF) | ATTERBERG LIMITS: LIQUID LIMIT | ATTERBERG LIMITS: PLASTICITY INDEX | FIELD MOISTURE CONTENT (%) | DRY DENSITY (PCF) | PERCENT RECOVERY (%) | RQD | % PASSING 200 SIEVE | DEEP IN FEET | BLOW COUNT | SAMPLES | SYMBOLS | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | SM | Brown fine to medium SAND, some silt. (Fill) (Medium Dense) |
| | | | | | | | | | | 5 | 10 | ☒ | | |
| | | | | | | | | | 8.6 | 10 | 15 | ☒ | SW SM | Varicolored fine to coarse SAND and fine gravel, trace silt. |
| | | | | | | | | | | 15 | 36 | ☒ | ML | Light gray-brown SILT, some fine sand. (Medium Dense) |
| | | | | | | | | | 87.2 | | 23 | ☒ | | |
| | | | | | | | | | | 20 | 46 | ☒ | | Grades to gray, thin clay seams noted. |
| | | | | | | | | | | | 17 | ☒ | | |
| | | | 28.4 | 11.6 | 22.4 | | | | 90.1 | 25 | 16 | ☒ | CL | Gray CLAY, trace silt, coarse sand noted. (Stiff) |
| | | | | | | | | | | | 15 | ☒ | | |
| | | | | | | | | | 68.8 | 30 | 49 | ☒ | ML | Gray SILT, some fine sand. (Very Dense) |
| | | | | | | | | | | 35 | 58 | ☒ | | |
| | | | | | | | | | 6.4 | 40 | 64 | ☒ | SP SM | Brown fine SAND, trace silt. (Very Dense) |
| | | | | | | | | | | | | | | Boring terminated at 40' on 6/20/80. Water level encountered at 10.8' and 31.4' |
| | | | | | | | | | | 45 | | | | |
| | | | | | | | | | | 50 | | | | |
| | | | | | | | | | | 55 | | | | |
| | | | | | | | | | | 60 | | | | |

## LEGEND

- ☒ — STANDARD PENETRATION TEST
- ■ — UNDISTURBED SOIL SAMPLE
- ◪ — DISTURBED SOIL SAMPLE
- □ — LOST SOIL SAMPLE
- CR — CORE RUN NO.
- 22 — BLOWS PER FOOT
- P — HYDRAULICALLY PUSHED
- TV — TORVANE TEST
- UC — UNCONFINED COMPRESSION TEST
- Gs — SPECIFIC GRAVITY
- C — CONSOLIDATION TEST
- PN — PENETROMETER

Monitoring wells were installed in two separate borings within a 5-foot diameter circle. All wells had a 10-foot long preslotted screen as the bottom section. The deep well had the screen tip at a depth of 40.0 feet; gravel packed to a depth of 27.5 feet; bentonite seal from a depth of 24.5 to 27.5 feet; and bentonite-cement grout from the bentonite seal to the ground surface. The shallow well had the screen tip at a depth of 19.3 feet; gravel packed to a depth of 5.0 feet; bentonite seal from a depth of 3.0 to 5.0 feet; and bentonite-cement grout from the bentonite seal to the ground surface.

LOG OF BORING

Gilbert/Commonwealth

HYDROGEOLOGIC STUDY
SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

# BORING OW-3

SURFACE ELEVATION 760.7
COORDINATE 897S - 3512E

| ELEV IN FEET | OTHER TESTS | SHEAR STRENGTH TEST (PSF) | ATTERBERG LIMITS: LIQUID LIMIT | ATTERBERG LIMITS: PLASTICITY INDEX | FIELD MOISTURE CONTENT (%) | DRY DENSITY (PCF) | PERCENT RECOVERY (%) | RQD | | DEEP IN FEET |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 38.6 | 5 |
| | | | | | | | | | | 10 |
| | | | | | | | | | 74.7 | 15 |
| | | PN-2750 | 30.4 | 13.0 | 19.2 | | | | | 20 |
| | | PN-3700 | | | | | | | 71.2 | 25 |
| | | | | | | | | | | 30 |
| | | | | | | | | | | 35 |
| | | | | | | | | | | 40 |
| | | | | | | | | | | 45 |
| | | | | | | | | | | 50 |
| | | | | | | | | | | 55 |
| | | | | | | | | | | 60 |

| BLOW COUNT | SAMPLES | SYMBOLS | DESCRIPTION |
|---|---|---|---|
| 9 | ⊠ | SM | Brown fine to coarse SAND and SILT. (Fill) (Loose) |
| 10 | ⊠ | ML | Brown SILT, some fine sand. |
| 32 | ⊠ | | Grades to gray. (Graded Dense) |
| 17 | ⊠ | CL | Gray CLAY. (Stiff) Grades with silt seams. |
| 29 | ⊠ | | Grades with silt seams. |
| 72 | ⊠ | ML | Gray SILT, some fine sand. (Very Dense) |
| 37 | ⊠ | | (Grades Dense) Grades to tan. |
| 60 | ⊠ | SM | Brown fine SAND, trace silt. (Very Dense) |
| 78 | ⊠ | | Boring terminated at 40.5' on 6/25/80. Water level encountered at 7.7' and 33.7' |

## LEGEND

- ⊠ — STANDARD PENETRATION TEST
- ■ — UNDISTURBED SOIL SAMPLE
- ◪ — DISTURBED SOIL SAMPLE
- □ — LOST SOIL SAMPLE
- CR — CORE RUN NO.
- 22 — BLOWS PER FOOT
- P — HYDRAULICALLY PUSHED
- TV — TORVANE TEST
- UC — UNCONFINED COMPRESSION TEST
- Gs — SPECIFIC GRAVITY
- C — CONSOLIDATION TEST
- PN — PENETROMETER

Monitoring wells were installed in two separate borings within a 5-foot diameter circle. All wells had a 10-foot long preslotted screen as the bottom section. The deep well had the screen tip at a depth of 40.0 feet; gravel packed to a depth of 22.0 feet; bentonite seal from a depth of 19.0 to 22.0 feet; and bentonite-cement grout from the bentonite seal to the ground surface. The shallow well had the screen tip at a depth of 17.0 feet; gravel packed to a depth of 6.0 feet; bentonite seal from a depth of 3.0 to 6.0 feet; and bentonite-cement grout from the bentonite seal to the ground surface.

LOG OF BORING

Gilbert/Commonwealth

HYDROGEOLOGIC STUDY
SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

# BORING OW-4

SURFACE ELEVATION 744.9'
COORDINATE 1276 S – 3762E

| ELEV IN FEET | OTHER TESTS | SHEAR STRENGTH TEST (PSF) | ATTERBERG LIMITS: LIQUID LIMIT | ATTERBERG LIMITS: PLASTICITY INDEX | FIELD MOISTURE CONTENT (%) | DRY DENSITY (PCF) | PERCENT RECOVERY (%) | RQD | | DEEP IN FEET |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 2.4 | 5 |
| | | | | | | | | | 99.0 | 10 |
| | | | | | | | | | | 15 |
| | | | | | | | | | | 20 |
| | PN-2250 | 31.6 | 11.7 | 23.0 | | | | | | 25 |
| | | | | | | | | | 61.6 | 30 |
| | | | | | | | | | | 35 |
| | | | | | | | | | 6.7 | 40 |
| | | | | | | | | | | 45 |
| | | | | | | | | | | 50 |
| | | | | | | | | | | 55 |
| | | | | | | | | | | 60 |

| BLOW COUNT | SAMPLES | SYMBOLS | DESCRIPTION |
|---|---|---|---|
| 12 | ⊠ | SW | Brown fine to coarse SAND. (Medium Dense) |
| 27 | ⊠ | ML | Tan SILT, trace fine sand. (Medium Dense) |
| 18 | ⊠ | | |
| 21 | ⊠ | | Grades to gray. |
| 12 | ⊠ | CL | Gray CLAY. (Stiff) |
| 14 | ⊠ | | |
| 13 | ⊠ | | |
| 47 | ⊠ | ML | Gray SILT, some fine sand. (Dense) |
| 69 | ⊠ | SM | Gray fine SAND, trace silt. (Very Dense) |
| 62 | ⊠ | | Boring terminated at 40' on 6/26/80 Water level encountered at 4.5' and 28.0' |

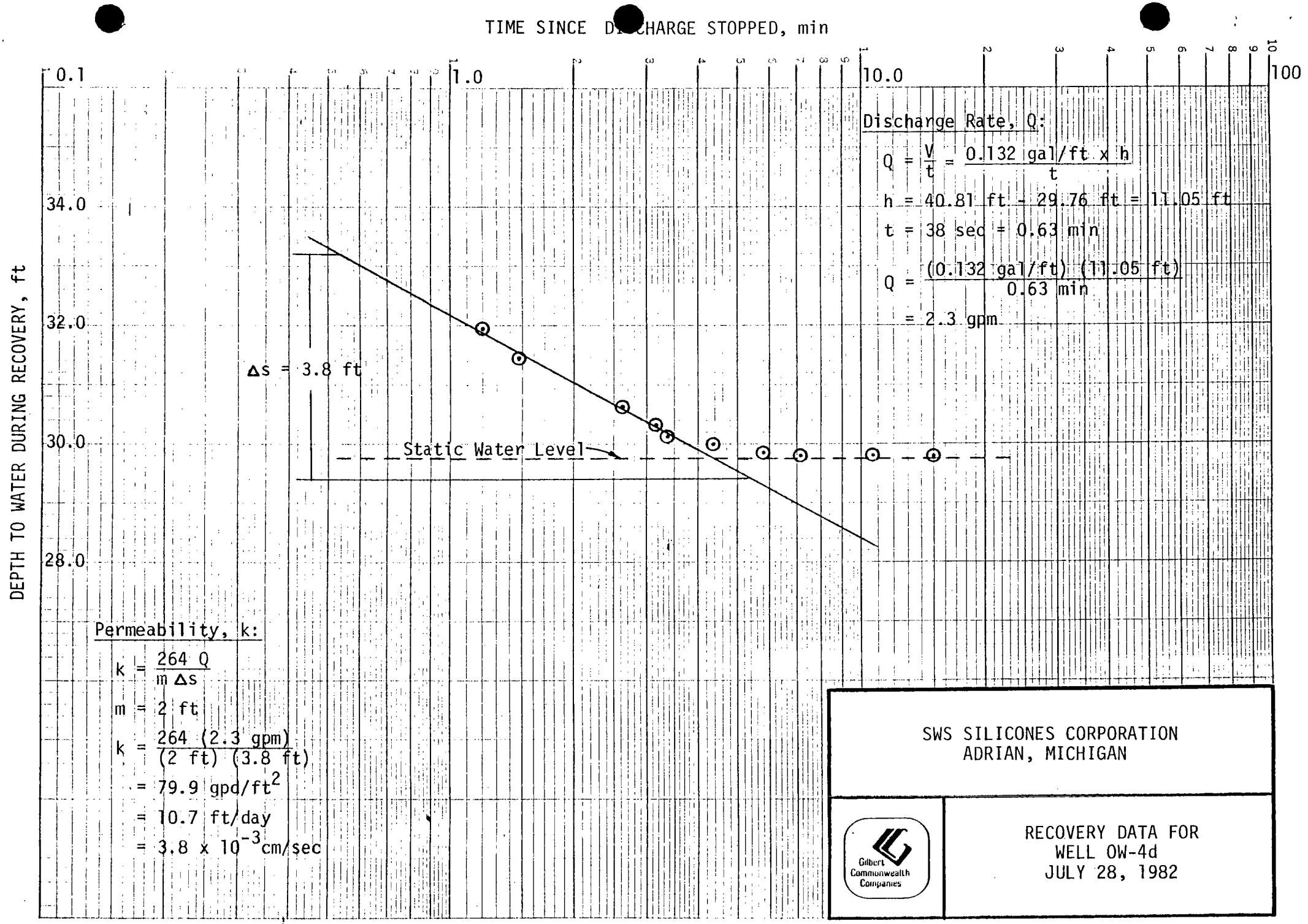
Monitoring wells were installed in two separate borings within a 5-foot diameter circle. All wells had a 10-foot long preslotted screen as the bottom section. The deep well had the screen tip at a depth of 37.0 feet; gravel packed to a depth of 24.0 feet; bentonite seal from a depth of 21.0 to 24.0 feet; and bentonite-cement grout from the bentonite seal to the ground surface. The shallow well had the screen tip at a depth of 13.5 feet; gravel packed to a depth of 3.0 feet; bentonite seal from a depth of 1.0 to 3.0 feet; and bentonite-cement grout from the bentonite seal to the ground surface.

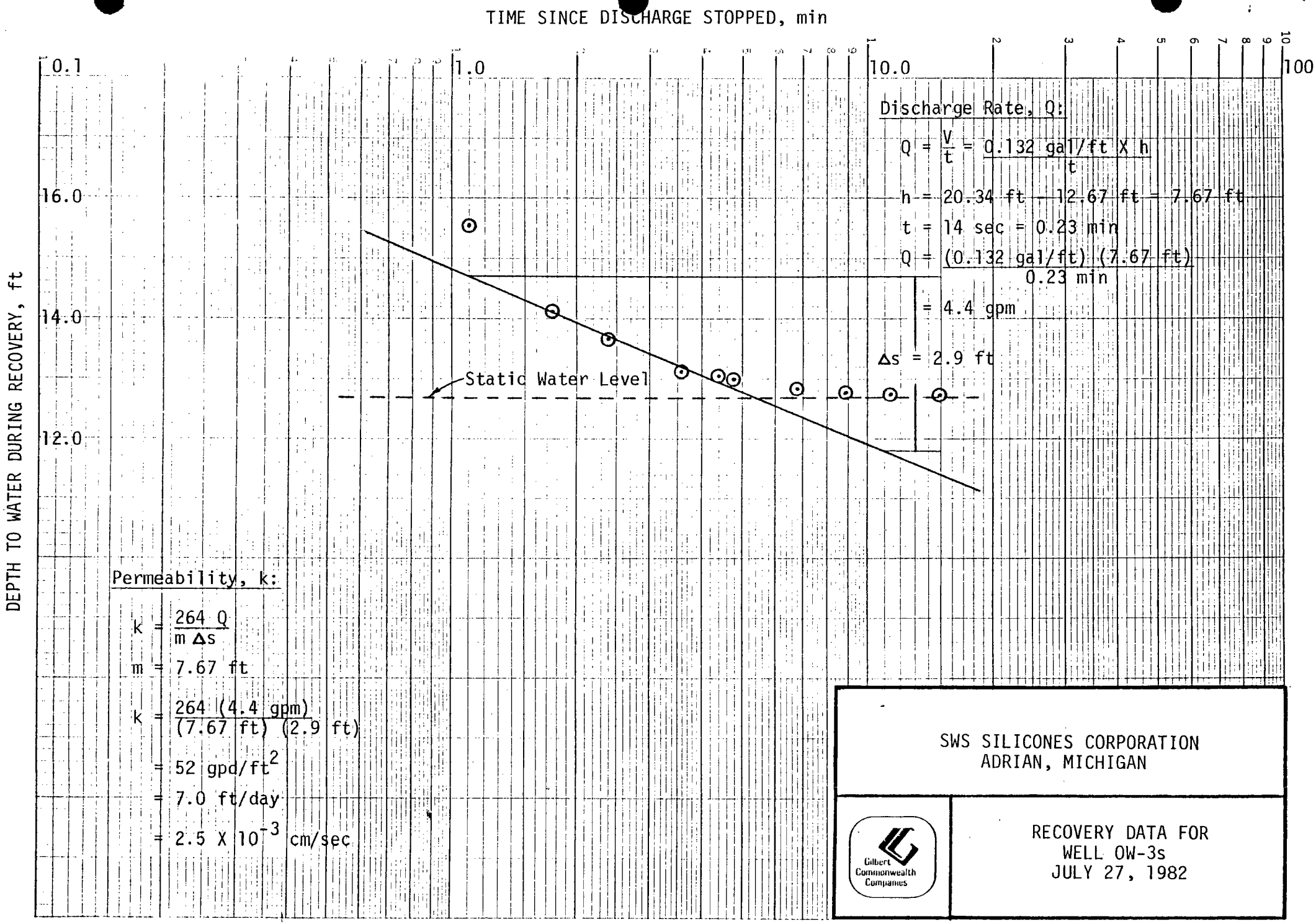
## LEGEND

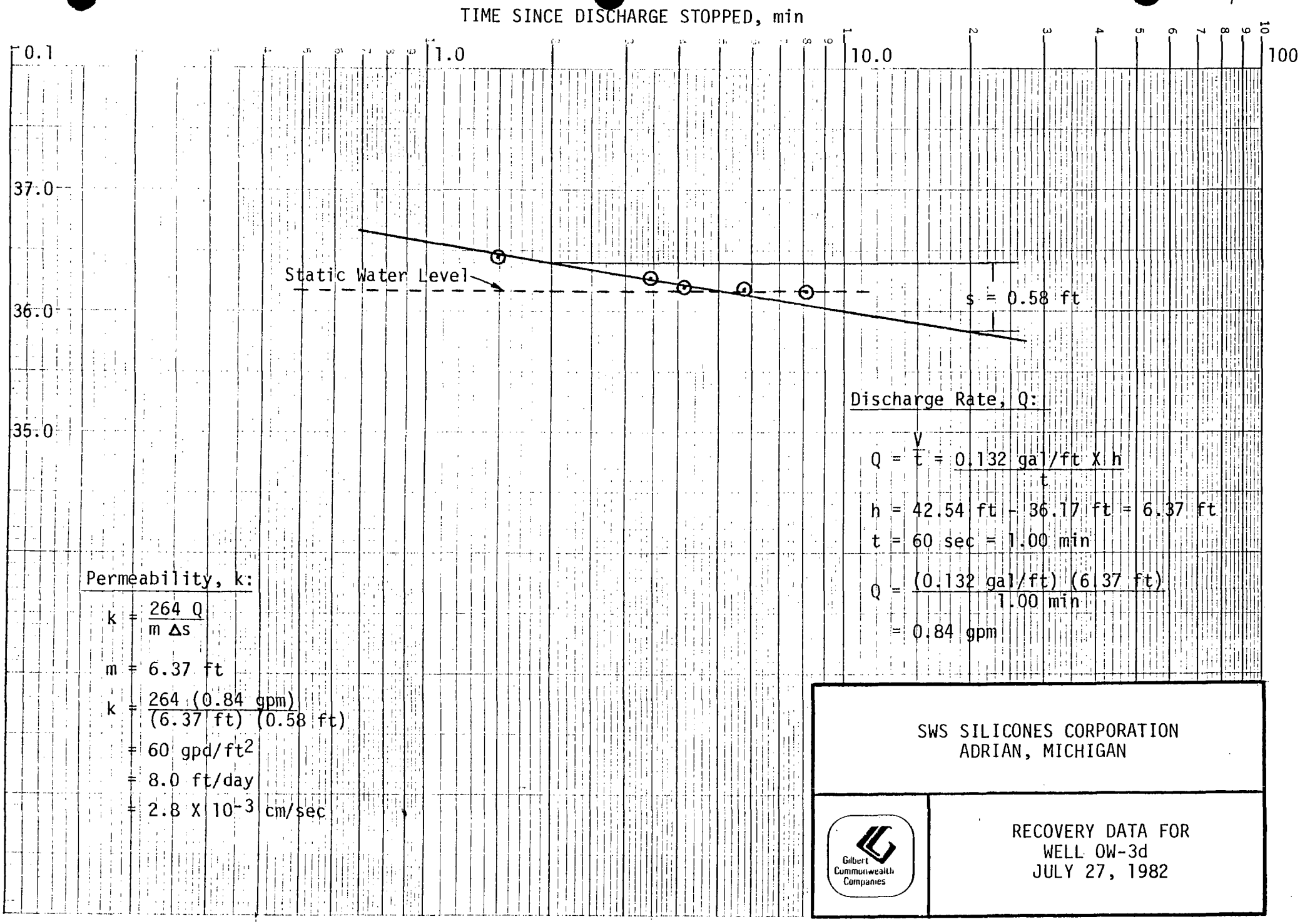
- ⊠ — STANDARD PENETRATION TEST
- ■ — UNDISTURBED SOIL SAMPLE
- ◪ — DISTURBED SOIL SAMPLE
- □ — LOST SOIL SAMPLE
- CR — CORE RUN NO.
- 22 — BLOWS PER FOOT
- P — HYDRAULICALLY PUSHED
- TV — TORVANE TEST
- UC — UNCONFINED COMPRESSION TEST
- Gs — SPECIFIC GRAVITY
- C — CONSOLIDATION TEST
- PN — PENETROMETER

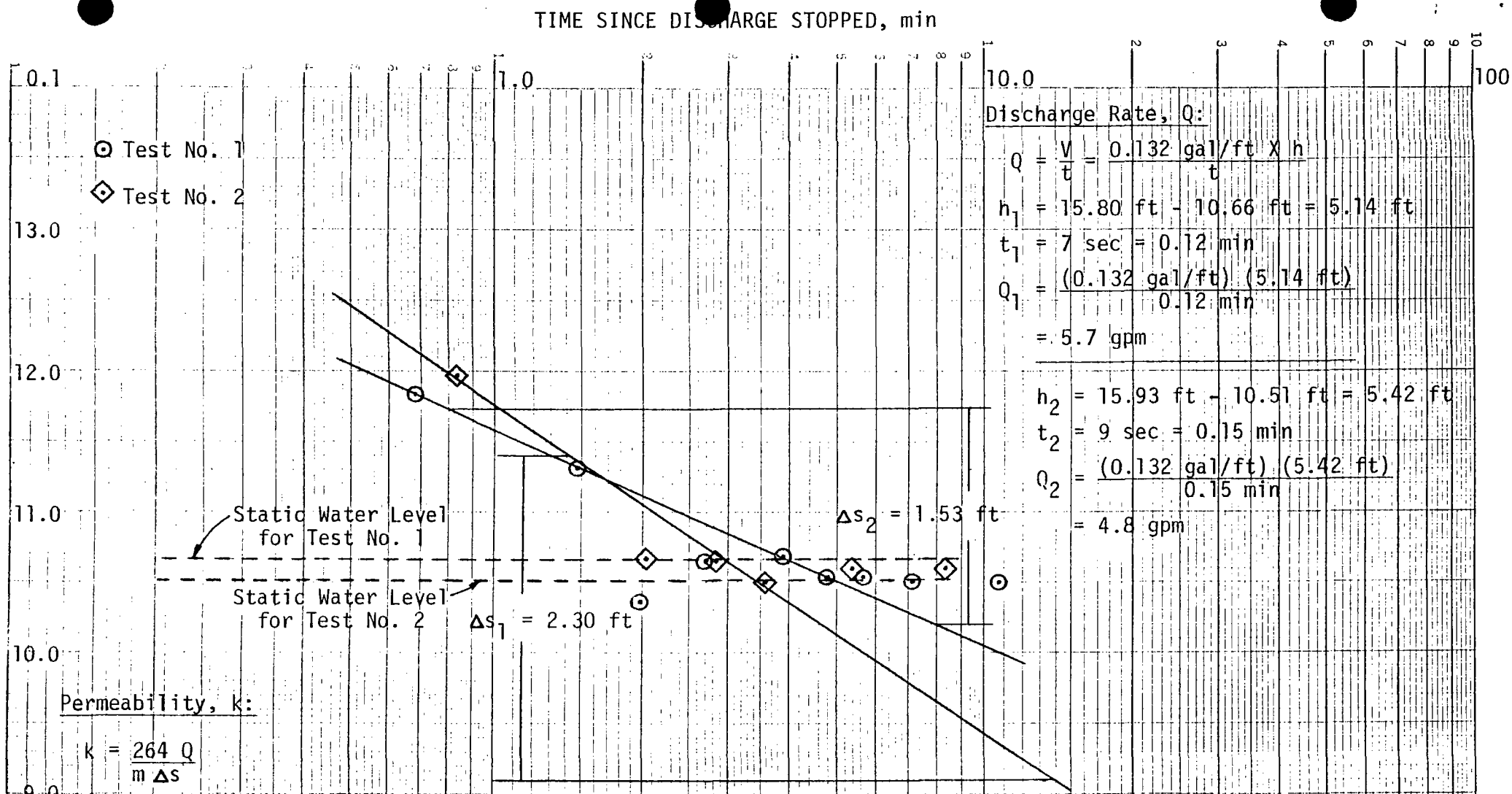
LOG OF BORING

Gilbert/Commonwealth


TIME SINCE DISCHARGE STOPPED, min
0.1
1.0
10.0
100
DEPTH TO WATER DURING RECOVERY, ft
34.0
32.0
30.0
28.0
Δs = 3.8 ft
Static Water Level
Discharge Rate, Q:
Q = V/t = 0.132 gal/ft x h / t
h = 40.81 ft - 29.76 ft = 11.05 ft
t = 38 sec = 0.63 min
Q = (0.132 gal/ft) (11.05 ft) / 0.63 min
= 2.3 gpm
Permeability, k:
k = 264 Q / m Δs
m = 2 ft
k = 264 (2.3 gpm) / (2 ft) (3.8 ft)
= 79.9 gpd/ft²
= 10.7 ft/day
= 3.8 x 10⁻³ cm/sec
SWS SILICONES CORPORATION
ADRIAN, MICHIGAN
Gilbert Commonwealth Companies
RECOVERY DATA FOR
WELL OW-4d
JULY 28, 1982


TIME SINCE DISCHARGE STOPPED, min
0.1
1.0
10.0
100
DEPTH TO WATER DURING RECOVERY, ft
16.0
14.0
12.0
Static Water Level
Discharge Rate, Q:
Q = V/t = 0.132 gal/ft X h / t
h = 20.34 ft − 12.67 ft = 7.67 ft
t = 14 sec = 0.23 min
Q = (0.132 gal/ft) (7.67 ft) / 0.23 min
= 4.4 gpm
Δs = 2.9 ft
Permeability, k:
k = 264 Q / m Δs
m = 7.67 ft
k = 264 (4.4 gpm) / (7.67 ft) (2.9 ft)
= 52 gpd/ft²
= 7.0 ft/day
= 2.5 X 10⁻³ cm/sec
SWS SILICONES CORPORATION
ADRIAN, MICHIGAN
Gilbert Commonwealth Companies
RECOVERY DATA FOR
WELL OW-3s
JULY 27, 1982


TIME SINCE DISCHARGE STOPPED, min
0.1
1.0
10.0
100
DEPTH TO WATER DURING RECOVERY, ft
37.0
36.0
35.0
Static Water Level
s = 0.58 ft
Discharge Rate, Q:
Q = V/t = 0.132 gal/ft X h / t
h = 42.54 ft - 36.17 ft = 6.37 ft
t = 60 sec = 1.00 min
Q = (0.132 gal/ft) (6.37 ft) / 1.00 min
= 0.84 gpm
Permeability, k:
k = 264 Q / m Δs
m = 6.37 ft
k = 264 (0.84 gpm) / (6.37 ft) (0.58 ft)
= 60 gpd/ft2
= 8.0 ft/day
= 2.8 X 10-3 cm/sec
SWS SILICONES CORPORATION
ADRIAN, MICHIGAN
Gilbert Commonwealth Companies
RECOVERY DATA FOR
WELL OW-3d
JULY 27, 1982




Discharge Rate, Q:

$$Q = \frac{V}{t} = \frac{0.132 \text{ gal/ft} \times h}{t}$$

$h_1$ = 15.80 ft - 10.66 ft = 5.14 ft

$t_1$ = 7 sec = 0.12 min

$$Q_1 = \frac{(0.132 \text{ gal/ft})(5.14 \text{ ft})}{0.12 \text{ min}}$$

= 5.7 gpm

$h_2$ = 15.93 ft - 10.51 ft = 5.42 ft

$t_2$ = 9 sec = 0.15 min

$$Q_2 = \frac{(0.132 \text{ gal/ft})(5.42 \text{ ft})}{0.15 \text{ min}}$$

= 4.8 gpm

Permeability, k:

$$k = \frac{264\ Q}{m\ \Delta s}$$

$m_1$ = 2.0 ft

$$k_1 = \frac{264\ (5.7 \text{ gpm})}{(2.0 \text{ ft})(2.30 \text{ ft})}$$

= 327 gpd/ft$^2$

= 437 ft/day

= $1.5 \times 10^{-2}$ cm/sec

$m_2$ = 2.2 ft

$$k_2 = \frac{264\ (4.8 \text{ gpm})}{(2.2 \text{ ft})(1.53 \text{ ft})}$$

= 376 gpd/ft$^2$

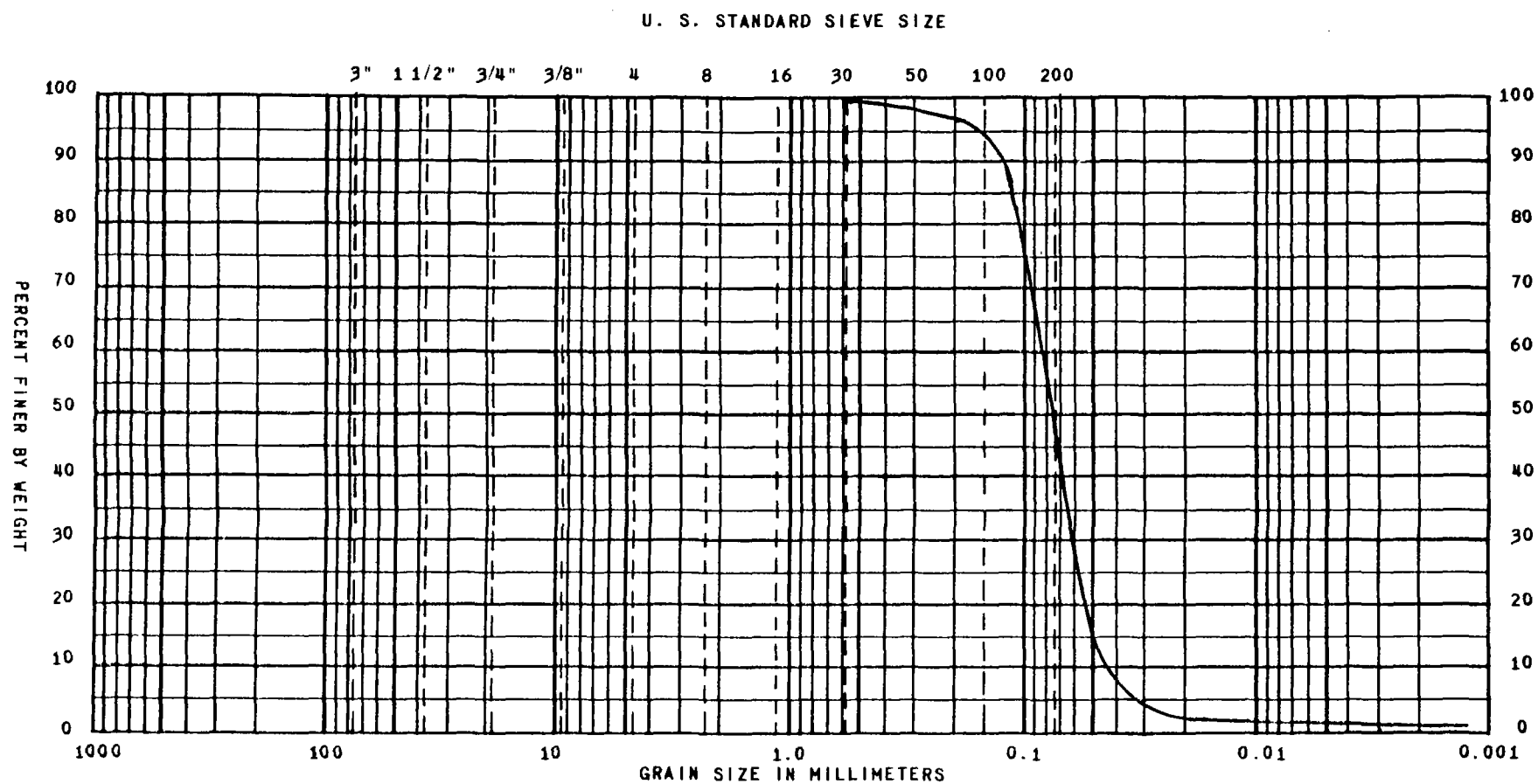
= 50.3 ft/day

= $1.8 \times 10^{-2}$ cm/sec

SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

Gilbert Commonwealth Companies

RECOVERY DATA FOR
WELL OW-4s
JULY 28, 1982




| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | COARSE | FINE | COARSE | MEDIUM | FINE | |

| BORING | DEPTH | CLASSIFICATION | | NAT. WC | LL | PL | PI | |
|---|---|---|---|---|---|---|---|---|
| OW-1d | * | SM | SILTY SAND | | | | | |

* Sand from screened interval.

SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

Gilbert Commonwealth Companies

GRADATION CURVE
FROM WELL OW-1d

# SWS Silicones Corporation

ADRIAN, MICHIGAN 49221 • TELEPHONE (517) 263-5711


October 6, 1982

Regional Administrator
Region V
U.S. EPA
230 South Dearborn Street
Chicago, Illinois 60604

Re: RCRA Financial Requirements

Dear Sir:

On June 30, 1982, Alexander & Alexander of New York, Inc. wrote your office to inform you of their intended effort to secure closure cost ($62,200) insurance coverage for our facility (MID075400671, SWS Silicones Corporation, Sutton Road, Adrian, Michigan 49221). Subsequently, we have determined that it would be better to satisfy our RCRA financial assurance requirements through use of a Letter of Credit and Standby Trust Fund. We have secured this coverage and have had the following documents submitted to you by Continental Illinois National Bank, as evidence, and for your information and use:

1. A Letter of Credit for $62,200 (LC#6234888), issued by Continental Illinois National Bank, dated 10/4/82.

2. An "Originally Signed Duplicate" of the Standby Trust Agreement between SWS Silicones and Continental Illinois National Bank.

If you have any questions regarding this submission, please call us.

Very truly yours,

SWS SILICONES CORPORATION

J. Calamungi
Director of Manufacturing

JC:pm

CERTIFIED MAIL

Conil Bank Telex 02-5233
TELEPHONE (312) XXX 923-5946

CONTINENTAL BANK
CONTINENTAL ILLINOIS NATIONAL BANK AND TRUST COMPANY OF CHICAGO
231 SOUTH LA SALLE STREET, CHICAGO, ILLINOIS 60693

Original

ISSUE DATE 10/4/82

IRREVOCABLE DOCUMENTARY CREDIT NUMBER 6234888

ORIGINAL TO WMB SAFE

APPLICANT
SWS SILICONES CORPORATION
3901 SUTTON ROAD
ADRIAN, MICHIGAN 49221

BENEFICIARY
ENVIRONMENTAL PROTECTION AGENCY
REGION V
230 SOUTH DEARBORN STREET
CHICAGO, ILLINOIS 60604

AMOUNT
US$ 62,200.00
SIXTY TWO THOUSAND TWO HUNDRED AND 00/100
U.S. DOLLARS

EXPIRY
10-05-83
October 05, 1983
AT OUR COUNTERS

DEAR SIR(S),

We hereby establish our Irrevocable Standby Letter of Credit No. 6234888 in your favor, at the request and for the account of SWS Silicone Corporation up to the aggregate amount of Sixty-Two Thousand Two Hundred U.S. Dollars 62,200.00, available upon presentation of;

(1) Your sight draft, bearing reference to this letter of credit No. 6234888, 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 Resource Conservation and Recovery Act of 1976 as amended."

This letter of credit is effective as of October 5, 1982, and shall expire on October 5, 1983, but such expiration date shall be automatically extended for a period of one year on October 5, 1983, and on each successive expiration date, unless, at least 120 days before the current expiration date, we notify both you and SWS Silicone Corporation by certified mail 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 for 120 days after the date of receipt by both you and SWS Silicone Corporation, as shown on the signed return receipts.

Whenever this letter of credit is drawn on under and in compliance with the terms of this credit, we shall duly honor such draft upon presentation to us, and we shall deposit the amount of the draft directly into the standby trust fund of SWS Silicone Corporation in accordance with your instructions.

We certify that the wording of this letter of credit is identical to the wording specified in 40 CFR 264.151(d) as such regulations were constituted on the date shown immediately below.

Please be advised that there have been no changes to date in the wording for trust agreements set forth in 40 CFR 264.151(a)(1) from that shown in Federal Register, Vol. 47 No. 67 dated April 7, 1982.

We hereby engage with you that your drawings in conformity with the terms of this letter of credit will be duly honored on presentation.

** This documentary credit is subject to the "Uniform Customs and Practice for Documentary Credits" (1974 revision) International Chamber of Commerce (Publication No. 290).

CONTINENTAL ILLINOIS NATIONAL BANK AND TRUST COMPANY OF CHICAGO

02043
For Cashier

H4102
For Cashier

** GLC:djs **

PLEASE ADDRESS ALL CORRESPONDENCE TO:
Continental Illinois National Bank and Trust Company of Chicago
Letters of Credit - 1580
231 South La Salle Street
Chicago, Illinois 60693

No. 173564

10-4-82

RECEIVED
OCT
WASTE MAN BRANCH

# TRUST AGREEMENT

Trust Agreement, the "Agreement" entered into as of October 4, 1982 by and between SWS Silicones Corporation, a Delaware corporation, the Grantor, and Continental Illinois National Bank & Trust Co. of Chicago, a national banking corporation, the "Trustee."

WHEREAS, the United States Environmental Protection Agency, "EPA", an agency of the United States Government has established certain regulations applicable to the Grantor, requiring that an owner or operator of a hazardous waste management facility shall provide assurance that funds will be available when needed for closure and/or post-closure care of the facility.

WHEREAS, the Grantor has elected to establish a trust to provide all or part of such financial assurance for the facilities identified herein.

WHEREAS, the Grantor, acting through its duly authorized officers, has selected the Trustee to be the trustee under this agreement and the Trustee is willing to act as trustee.

Now, Therefore, the Grantor and the Trustee agree as follows:

Section 1. Definitions.

As used in this Agreement:

(a) The term "Grantor" means the owner or operator who enters into this Agreement and any successors or assigns of the Grantor.

(b) The term "Trustee" means the Trustee who enters into this Agreement and any successor Trustee.

Section 2. Identification of Facilities and Cost Estimates.

This Agreement pertains to the facilities and cost estimates identified on attached Schedule A.

Section 3. Establishment of Fund.

The Grantor and the Trustee hereby establish a trust fund, the "Fund" for the benefit of EPA. The Grantor and the Trustee intend that no third party have access to the Fund except as herein provided. The Fund is established initially as consisting of the property, which is acceptable to the Trustee, described in Schedule B attached hereto. Such property and any other property subsequently transferred to the Trustee is referred to as the Fund, together with all earnings and profits thereon, less any payments or distributions made by the Trustee pursuant to this Agreement. The Fund shall be held by the Trustee, IN TRUST, as hereinafter provided. The Trustee shall not be responsible nor shall it undertake any responsibility for the amount or adequacy of, nor any duty to collect from the Grantor, any payments necessary to discharge any liabilties of the Grantor established by EPA.

Section 4. Payment for Closure and Post-Closure Care.

The Trustee shall make payments from the Fund as the EPA Regional Administrator shall direct, in writing to provide for the payment of the costs of closure and/or post-closure care of the facilities covered by this Agreement. The Trustee shall reimburse the Grantor or other persons as specified by the EPA Regional Administrator from the Fund for closure and post-closure expenditures in such amounts as the EPA Regional Administrator shall direct in writing. In addition, the Trustee shall refund to the Grantor such amounts as the EPA Regional Administrator

SCHEDULE A

This Agreement demonstrates financial assurance for the following cost estimates for the following facility.

| U.S. EPA I.D.# | Facility Name & Address | Cost Estimates for Which Financial Assurance is Being Demonstrated by This Agreement |
|---|---|---|
| MID075400671 | SWS Silicones Corp.<br>Sutton Road; Adrian,<br>Michigan 49221 | Closure $62,200 |

The cost estimate listed here was last adjusted on February 18, 1982.

SCHEDULE B

The fund is established initially as consisting of $1.00, and a standby letter of credit with Continental Illinois in the amount of $62,200, held by the Regional Administrator.

12-10-82

| | |
|---|---|
| Issuing Institution: | Continental Illinois National Bank & Trust Company of Chicago |
| Letter of Credit Number: | 6234888 |
| Date of Letter of Credit: | October 4, 1982 |

specifies in writing. Upon refund, such funds shall no longer constitute part of the Fund as defined herein.

Section 5. Payments Comprising the Fund.

Payments made to the Trustee for the Fund shall consist of cash or securities acceptable to the Trustee.

Section 6. Trustee Management.

The Trustee shall invest and reinvest the principal and income of the Fund and keep the Fund invested as a single fund, without distinction between principal and income, in accordance with general investment policies and guidelines which the Grantor may communicate in writing to the Trustee from time to time, subject, however, to the provisions of this Section. In investing, reinvesting, exchanging, selling, and managing the Fund, the Trustee shall discharge his duties with respect to the trust fund solely in the interest of the beneficiary and with the care, skill, prudence, and diligence under the circumstances then prevailing which persons of prudence, acting in a like capacity and familiar with such matters, would use in the conduct of an enterprise of a like character and with like aims; except that:

(i) Securities or other obligations of the Grantor, or any other owner or operator of the facilities, or any of their affiliates as defined in the Investment Company Act of 1940, as amended, 15 U.S.C. 80a-2.(a), shall not be acquired or held, unless they are securities or other obligations of the Federal or a State government;

(ii) The Trustee is authorized to invest the Fund in time or demand deposits of the Trustee to the extent insured by an agency of the Federal or State government; and

(iii) The Trustee is authorized to hold cash awaiting investment or distribution uninvested for a reasonable time and without liability for the payment of interest thereon.

Section 7. Commingling and Investment.

The Trustee is expressly authorized in its discretion:

(a) To transfer from time to time any or all of the assets of the Fund to any common, commingled, or collective trust fund created by the Trustee in which the Fund is eligible to participate, subject to all of the provisions thereof, to be commingled with the assets of other trusts participating therein; and

(b) To purchase shares in any investment company registered under the Investment Company Act of 1940, 15 U.S.C. 80a-1 et seq., including one which may be created, managed, underwritten, or to which investment advice is rendered or the shares of which are sold by the Trustee. The Trustee may vote such shares in its discretion.

Section 8. Express Powers of Trustee.

Without in any way limiting the powers and discretions conferred upon the Trustee by the other provisions of this Agreement or by law, the Trustee is expressly authorized and empowered:

(a) To sell, exchange, convey, transfer, or otherwise dispose of any property held by it, by public or private sale. No person dealing with the Trustee shall be bound to see to the application of the purchase money or to inquire into the validity or expediency of any such sale or other disposition.

(b) To make, execute, acknowledge, and deliver any and all documents of transfer and conveyance and any and all other instruments that may be necessary or appropriate to carry out the powers herein granted;

(c) To register any securities held in the Fund in its own name or in the name of a nominee and to hold any security in bearer form or in book entry, or to combine certificates representing such securities with certificates of the same issue held by the Trustee in other fiduciary capacities, or to deposit or arrange for the deposit of such securities in a qualified central depositary even though, when so deposited, such securities may be merged and held in bulk in the name of the nominee of such depositary with other securities deposited therein by another person or to deposit or arrange for the deposit of any securities issued by the United States Government, or any agency or instrumentality thereof, with a Federal Reserve bank, but the books and records of the Trustee shall at all times show that all such securities are part of the Fund;

(d) To deposit any cash in the Fund in interest-bearing accounts maintained or savings certificates issued by the Trustee, in its separate corporate capacity, or in any other banking institution affiliated with the Trustee, to the extent insured by an agency of the Federal or State government; and

(e) To compromise or otherwise adjust all claims in favor of or against the Fund.

Section 9. Taxes and Expenses.

All taxes of any kind that may be assessed or levied against or in respect of the Fund and all brokerage commissions incurred by the Fund shall be paid from the Fund. All other expenses incurred by the Trustee in connection with the administration of this Trust, including fees for legal services rendered to the Trustee, the compensation of the Trustee to the extent not paid directly by the Grantor, and all other proper charges and disbursements of the Trustee shall be paid from the Fund.

Section 10. Annual Valuation.

The Trustee shall annually, at least 30 days prior to the anniversary date of establishment of the Fund, furnish to the Grantor and to the appropriate EPA Regional Administrator a statement confirming the value of the Trust. Any securities in the Fund shall be valued at market value as of no more than 60 days prior to the anniversary date of establishment of the Fund. The failure of the Grantor to object in writing to the Trustee within 90 days after the statement has been furnished to the Grantor and the EPA Regional Administrator shall constitute a conclusively binding assent by the Grantor, barring the Grantor from asserting any claim or liabiilty against the Trustee with respect to matters disclosed in the statement.

Section 11. Advice of Counsel.

The Trustee may from time to time consult with counsel, who may be counsel to the Grantor, with respect to any question arising as to the construction of this Agreement or any action to be taken hereunder. The Trustee shall be fully protected, to the extent permitted by law, in acting upon the advice of counsel.

Section 12. Trustee Compensation.

The Trustee shall be entitled to reasonable compensation for its services as agreed upon in writing from time to time with the Grantor.

Section 13. Successor Trustee.

The Trustee may resign or the Grantor may replace the Trustee, but such resignation or replacement shall not be effective until the Grantor has appointed a successor trustee and this successor accepts the appointment. The successor trustee shall have the same powers and duties as those conferred upon the Trustee hereunder. Upon the successor trustee's acceptance of the appointment, the Trustee shall assign, transfer, and pay over to the successor trustee the funds and properties then constituting the Fund. If for any reason the Grantor cannot or does not act in the event of the resignation of the Trustee, the Trustee may apply to a court of competent jurisdiction for the appointment of a successor trustee or for instructions. The successor trustee shall specify the date on which it assumes administration of the trust in a writing sent to the Grantor, the EPA Regional Administrator, and the present Trustee by certified mail 10 days before such change becomes effective. Any expenses incurred by the Trustee as a result of any of the acts contemplated by this Section shall be paid as provided in Section 9.

Section 14. Instructions to the Trustee.

All orders, requests, and instructions by the Grantor to the Trustee shall be in writing, signed by such persons as are designated in the attached Exhibit A or such other designees as the Grantor

may designate by amendment to Exhibit A. The Trustee shall be fully protected in acting without inquiry in accordance with the Grantor's orders, requests, and instructions. All orders, requests, and instructions by the EPA Regional Administrator to the Trustee shall be in writing, signed by the EPA Regional Administrators of the Regions in which the facilities are located, or their designees, and the Trustee shall act and shall be fully protected in acting in accordance with such orders, requests, and instructions. The Trustee shall have the right to assume, in the absence of written notice to the contrary, that no event constituting a change or a termination of the authority of any person to act on behalf of the Grantor or EPA hereunder has occurred. The Trustee shall have no duty to act in the absence of such orders, requests, and instructions from the Grantor and/or EPA, except as provided for herein.

Section 15. Notice of Nonpayment.

The Trustee shall notify the Grantor and the appropriate EPA Regional Administrator, by certified mail within 10 days following the expiration of the 30-day period after the anniversary of the establishment of the Trust, if no payment is received from the Grantor during that period. After the pay-in period is completed, the Trustee shall not be required to send a notice of nonpayment.

Section 16. Amendment of Agreement.

This Agreement may be amended by an instrument in writing executed by the Grantor, the Trustee, and the appropriate EPA Regional Administrator, or by the Trustee and the appropriate EPA Regional Administrator of the Grantor ceases to exist.

Section 17. Irrevocability and Termination.

Subject to the right of the parties to amend this Agreement as provided in Section 16, the Trust shall be irrevocable and shall continue until terminated at the written agreement of the Grantor, the Trustee, and the EPA Regional Administrator, or by the Trustee and the EPA Regional Administrator, if the Grantor ceases to exist. Upon termination of the Trust, all remaining trust property, less final trust administration expenses, shall be delivered to the Grantor.

Section 18. Immunity and Indemnification.

The Trustee shall not incur personal liability of any nature in connection with any act or omission, made in good faith, in the administration of this Trust, or in carrying out any directions by the Grantor or the EPA Regional Administrator issued in accordance with this Agreement. The Trustee shall be indemnified and saved harmless by the Grantor or from the Trust Fund, or both, from and against any personal liability to which the Trustee may be subjected by reason of any act or conduct in its official capacity, including all expenses reasonably incurred in its defense in the event the Grantor fails to provide such defense.

Section 19. Choice of Law.

This Agreement shall be administered, construed, and enforced according to the laws of the State of California.

Section 20. Interpretation.

As used in this Agreement, words in the singular include the plural and words in the plural include the singular. The descriptive

headings for each Section of this Agreement shall not affect the interpretation or the legal efficacy of this Agreement.

In Witness Whereof the parties have caused this Agreement to be executed by their respective officers duly authorized and their corporate seals to be hereunto affixed and attested as of the date first above written. The parties below certify that the wording of this Agreement is identical to the wording specified in 40 CFR 264.151(a)(1) as such regulations were constituted on the date first above written.

SWS SILICONES CORPORATION

By: _____

Title: V.P and GENERAL MANAGER

Attest:

_____

CONTINENTAL ILLINOIS
NATIONAL BANK & TRUST
COMPANY OF CHICAGO

By: _____

Title: Vice President

Attest:

John T. Vergez
Trust Officer

STATE OF MICHIGAN)
)
COUNTY OF LENAWEE)

The foregoing instrument was acknowledged before me this 17th day of September, 1982 by L. B. Bruner, an Officer of SWS Silicones Corporation, a Delaware corporation, on behalf of the corporation.

Priscilla M. Wilt
Notary Public
Lenawee County, Michigan

My Commission Expires

PRISCILLA M. WILT
*Notary Public*
LENAWEE COUNTY, MI
MY COMM. EXPIRES 7-16-85

# EXHIBIT A

GRANTOR: STAUFFER CHEMICAL COMPANY

TRUSTEE: CONNECTICUT BANK & TRUST CO.

List of personnel authorized by Grantor to issue orders, requests and instructions to Trustee:

Any two of the following Stauffer personnel
Director, Environmental Control
Assistant Treasurer
Assistant Director, Law Dept.

AMENDMENT

This Amendment, dated this 1st day of July 1983, amends the Trust Agreement entered into by SWS Silicones Corporation and Continental Illinois National Bank & Trust Co. dated October 4, 1982 as follows:

1. Schedule A is amended by deleting the amount "$62,200" therein and substituting the amount "$75,000" in its place and by deleting the date "February 18, 1982" therein and substituting the date "March 31, 1983" in its place.

2. Schedule B is amended by deleting the amount "$62,200" therein and substituting the amount "$75,000" in its place.

Except for the foregoing amendments, the Trust Agreement shall remain in full force and effect.

In witness whereof, the parties hereto have executed this Amendment as of the day and year above written.

CONTINENTAL ILLINOIS NATIONAL BANK & TRUST COMPANY OF CHICAGO

By: [signature]

Title: SECOND VICE PRESIDENT

SWS SILICONES CORPORATION

By: [signature]

Title: Vice President & General Manager

READ AND APPROVED:

ENVIRONMENTAL PROTECTION AGENCY

By: [signature]

Title: Environmental Scientist

M

# SWS Silicones Corporation

ADRIAN, MICHIGAN 49221 • TELEPHONE (517) 263-5711

September 10, 1982

Mr. Robert J. Courchaine
Chief, Water Quality Division
Michigan Department of Natural Resources
P. O. Box 30028
Lansing, Michigan 48909

Re: SWS Silicones Corporation
NPDES Permit MI 0026034

Dear Mr. Courchaine:

This letter responds to Special Condition number 6 (six) of our NPDES permit, and is a submittal of some findings concerning the Hydrogeological Investigation.

This report concerns the "old drum burial site" area of our plant. Four wells were installed by Gilbert/Commonwealth Inc. as shown on attached drawings 1 and 2, and well logs M-1 thru M-4.

These wells were sampled on July 1 and July 21, 1982. The results are attached.

The second area involved in the Hydrogeological Investigation concerns the study of the perched aquifer and near surface aquifer by the old evaporation-settling (black) pond. This information is still being assembled and we expect to submit a report of our findings in the near future.

We are requesting that drawings 1 and 2, and memos dated August 18, 1982 and August 20, 1982 remain confidential.

Very truly yours,

SWS SILICONES CORPORATION

Gordon C. Philbrook

Gordon C. Philbrook
Environmental Control Coordinator

GCP:pb 82-216, certified
Enclosures (8)

cc: L. B. Bruner
J. Calamungi
G. L. Ford
B. S. McClellan
T. J. Sayers
R. E. Schrameck, DNR, District 1; certified

bcc: J. M. Barancin
H. Kim
G. R. Wolf

INTER-OFFICE CORRESPONDENCE

SWS Silicones Corporation

To G. R. Wolf

Copy to G. C. Philbrook

Date August 18, 1982

From B. P. Dennis

Subject "M" Well Analysis

The results from the analysis of the four "M" well samples collected on July 1, 1982 are tabulated below:

| | M-1 | M-2 | M-3 | M-4 |
|---|---|---|---|---|
| Copper, mg/l | 0.02 | 0.02 | 0.01 | 0.04 |
| Zinc, mg/l | 0.06 | 0.05 | 0.02 | 0.15 |
| TOC mg/l | 8 | 6 | 5 | 32 |
| Specific Conductance, Mhos/Cm | $7.69 \times 10^{-4}$ @76.0°F | $5.55 \times 10^{-4}$ @76.0°F | $8.0 \times 10^{-4}$ @76.0°F | $1.66 \times 10^{-3}$ @76.1°F |
| Silicone, mg/l | <0.5 | <0.5 | <0.5 | <0.5 |
| pH | 7.8 | 7.7 | 7.6 | 7.7 |
| Organic halide, mg/l | 0.020<br>0.022 | 0.011<br>0.014 | 0.061<br>0.060<br>0.063<br>0.058 | 0.76<br>0.69<br>0.98<br>0.96 |

B. P. Dennis

BPD:cw

0032-095-02A (2/75)

INTER-OFFICE CORRESPONDENCE

SWS Silicones Corporation

To G. R. Wolf

Copy to G. C. Philbrook

Date August 20, 1982

From B. P. Dennis

Subject Well Analysis

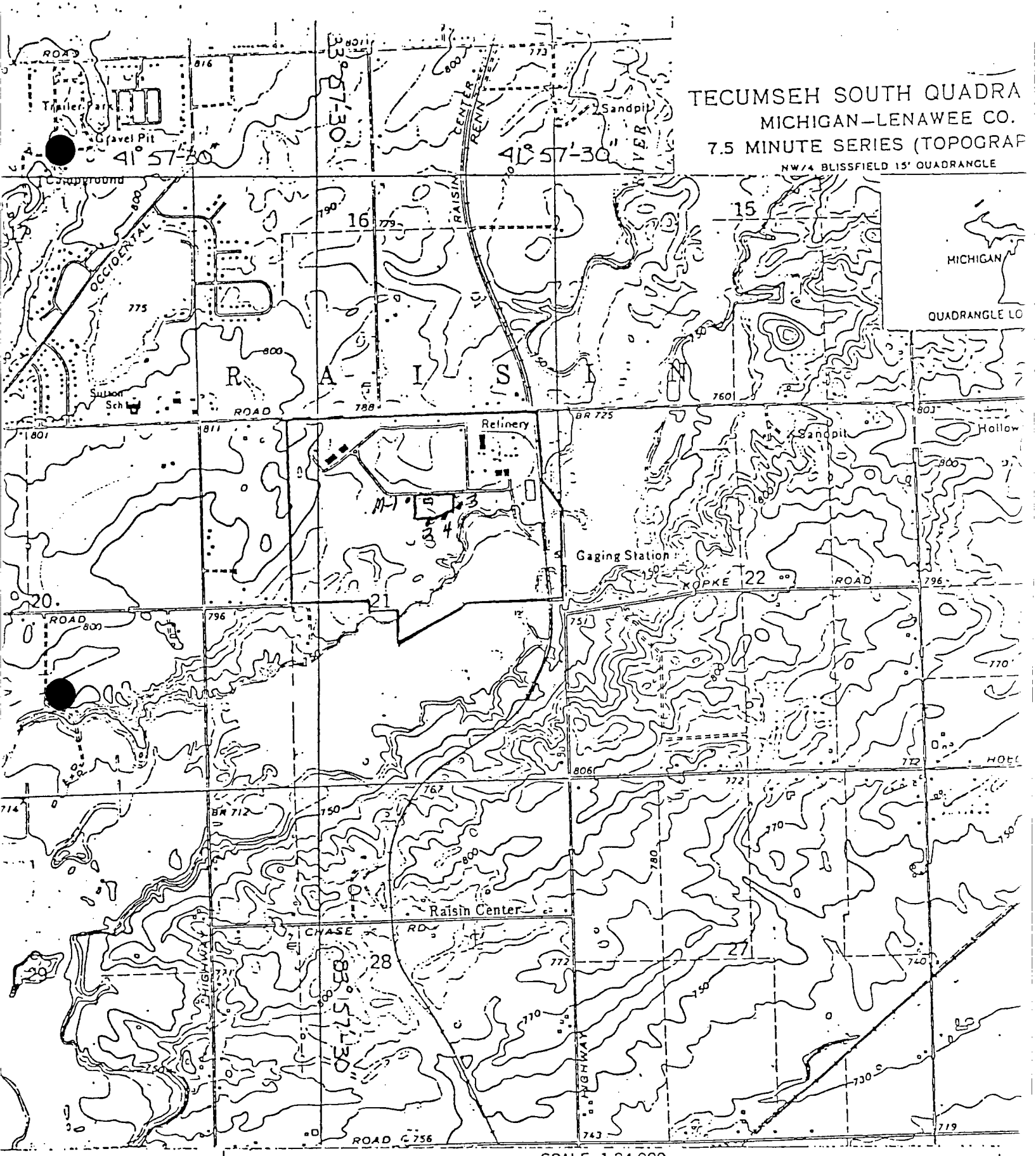
The four monitoring wells in the dump site area were resampled on July 21st and analyzed for Total Organic Halogen (TOH) and Total Silicone. The results are shown below:

| WELL NO. | TOH, mg/l | SILICONE mg/l |
|---|---|---|
| M-1 | 0.007 | <0.5 |
| | 0.008 | |
| M-2 | 0.011 | <0.5 |
| | 0.013 | |
| M-3 | 0.041 | <0.5 |
| | 0.043 | |
| | 0.059 | |
| | 0.058 | |
| M-4 | 1.1 | <0.5 |
| | 1.1 | |
| | 1.0 | |
| | 1.1 | |

B. P. Dennis

BPD:cw

0032-095.02A (2/75)




SWS SILICONES CORPORATION

Drawing No. 1

# BORING M-1

SURFACE ELEVATION 780.5' NGVD
PLANT COORDINATES: N48,826
E25,337

| ELEV. IN FEET | OTHER TESTS | SHEAR STRENGTH TEST (PSF) | ATTERBERG LIMITS: LIQUID LIMIT | ATTERBERG LIMITS: PLASTICITY INDEX | FIELD MOISTURE CONTENT (%) | DRY DENSITY (PCF) | PERCENT PASSING #200 SIEVE | RECOVERY (%) | WATER LEVEL DURING DRILLING | DEPTH IN FEET | BLOW COUNT | SAMPLES | SYMBOLS | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 780.5 | | | | | | | | | | | | | SP | Fill, brown fine to medium SAND, trace coarse sand and fine gravel, concrete fragments noted. |
| | | | | | | | | | | 5 | 26 | | | |
| | | | | | | | | | | 10 | 23 | | SP | Brown fine to coarse SAND, trace fine gravel, occasional thin layer of coarse sand noted. (medium dense) |
| | | | | | | | | | | | 23 | | | |
| | | | | | | | 2.5 | | | 15 | 21 | | | |
| 764.0 | | | | | | | | | | | 32 | | SP • SM | Light brown fine SAND, trace to little silt, dry. (dense to very dense) |
| | | | | | | | | | | 20 | 49 | | | |
| | | | | | | | | | | 25 | 57 | | | |
| | | | | | | | | | | 30 | 55 | | | Grades to moist. |
| 749.5 | | | | | | | | | ▼ | | | | SM | Light brown fine SAND, little silt, saturated. (dense) |
| | | | | | | | 14.7 | | | 35 | (42) | | | |
| | | | | | | | | | | | (22/6") | | | |
| 740.5 | | | | | | | 50.3 | | | 40 | 32 | | | Grades to fine SAND and silt. |
| | | | | | | | | | | 45 | | | | Boring terminated at 40.0' on 6/08/82. Water level encountered at approx. 32.5' during drilling. |
| | | | | | | | | | | 50 | | | | |
| | | | | | | | | | | 55 | | | | |
| | | | | | | | | | | 60 | | | | |

NOTES:

1. A 2-inch PVC monitoring well was installed in the borehole with 4 feet of Johnson, continuous slot screen set between depths of 34.5 to 38.5 feet. Slot size is 0.006 inch. A complete installation summary is given in Table 1.

2. Blow counts in parentheses are not representative of the in situ soils.

SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

Gilbert Commonwealth Companies

LOG OF
BORING M-1

FIGURE 5

# BORING M-2

SURFACE ELEVATION 775.0' NGVD
PLANT COORDINATES: N 48,483
E 25,572

| ELEV. IN FEET | OTHER TESTS | SHEAR STRENGTH TEST (PSF) | ATTERBERG LIMITS: LIQUID LIMIT | ATTERBERG LIMITS: PLASTICITY INDEX | FIELD MOISTURE CONTENT (%) | DRY DENSITY (PCF) | PERCENT PASSING #200 SIEVE | RECOVERY (%) | WATER LEVEL DURING DRILLING | DEPTH IN FEET | BLOW COUNT | SAMPLES | SYMBOLS | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 775.0 | | | | | | | | | | | | | | Brown fine to coarse SAND, little silt or clay, trace fine gravel (topsoil). |
| | | | | | | | | | | 5 | 14 | | SP | Light brown fine to coarse SAND. (medium dense) |
| | | | | | | | | | | 10 | 9 | | | |
| | | | | | | | | | | 15 | 19 | | | |
| 758.5 | | | | | | | | | | | | | | |
| | | | | | | | | | | 20 | 27 | | SP • SM | Gray-brown fine SAND, trace to little silt, cross-bedded, dry. (medium dense to dense) |
| | | | | | | | 19.6 | | | 25 | 27 | | | |
| | | | | | | | | | | | 26 | | | |
| | | | | | | | | | | 30 | 33 | | | |
| | | | | | | | | | | | 38 | | | Grades to moist. |
| | | | | | | | | | ▼ | 35 | (51) | | | Saturated. |
| | | | | | | | 11.7 | | | 40 | (56) | | | Grades to tan to orange-brown. |
| 733.5 | | | | | | | 10.0 | | | | (60) | | | Grades to gray, less silt. |
| | | | | | | | | | | 45 | | | | Boring terminated at 41.5' on 6/09/82. Water level encountered at approx. 33.3' during drilling. |
| | | | | | | | | | | 50 | | | | |
| | | | | | | | | | | 55 | | | | |
| | | | | | | | | | | 60 | | | | |

NOTES:

1. A 2-inch PVC monitoring well was installed in the borehole with 5 feet of Johnson, continuous slot screen set between depths of 35.4' to 40.4 feet. Slot size is 0.006 inch. A complete installation summary is given in Table 1.

2. Blow counts in parentheses are not representative of the in situ soils.

SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

LOG OF
BORING M-2

FIGURE 6

# BORING M-3

SURFACE ELEVATION 770.9' NGVD
PLANT COORDINATES: N48,647
E25,998

| ELEV. IN FEET | OTHER TESTS | SHEAR STRENGTH TEST (PSF) | ATTERBERG LIMITS: LIQUID LIMIT | ATTERBERG LIMITS: PLASTICITY INDEX | FIELD MOISTURE CONTENT (%) | DRY DENSITY (PCF) | PERCENT PASSING #200 SIEVE | RECOVERY (%) | WATER LEVEL DURING DRILLING | DEPTH IN FEET | BLOW COUNT | SAMPLES | SYMBOLS | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 770.9 | | | | | | | | | | | | | SP | Brown medium to coarse SAND, trace fine gravel, coarse gravel noted. (medium dense) |
| | | | | | | | | | | 5 | 20 | | | |
| 763.4 | | | | | | | | | | | | | ML • CL | Interbedded tan to orange-brown SILT, some fine sand; tan SILT, some clay, little fine to medium sand; and gray clayey SILT to SILTY CLAY, trace fine sand; occasional silt or fine sand partings; contacts are gradational; high moisture content, but not saturated. (very stiff) |
| | | | | | | | | | | 10 | 42 | | | |
| | | PN=2500 | 24.7 | 11.2 | | | 87.3 | | | | 22 | | | |
| | | PN=1500-2000 | 23.6 | 0.2 | | | 94.8 | | | 15 | 18 | | | |
| 754.7 | | | | | | | | | | | (57) | | | |
| | | | | | | | 59.6 | | | 20 | (148) | | ML • SM | Tan SILT, some fine sand, moist to dry. Grades to fine SAND, some silt, dry. |
| 748.5 | | | | | | | | | | | | | SP • SM | Light brown fine SAND, little silt, cross-bedded, dry. (dense to very dense) |
| | | | | | | | | | | 25 | 44 | | | |
| | | | | | | | | | | 30 | 69 | | | |
| | | | | | | | | | | | 27/8" | | | Saturated |
| | | | | | | | | | | 35 | 39 | | | Grades to tan, a few thin layers of medium sand noted. |
| 731.4 | | | | | | | 12.9 | | | 40 | 105 | | | Grades tan to yellow-brown, little silt. (extremely dense) |
| | | | | | | | | | | 45 | | | | Boring terminated at 39.5' on 6/09/82. Water level encountered at appox. 31.5' during drilling. |
| | | | | | | | | | | 50 | | | | |
| | | | | | | | | | | 55 | | | | |
| | | | | | | | | | | 60 | | | | |

NOTES:

1. A 2-inch PVC monitoring well was installed in the borehole with 5 feet of Johnson, continuous slot screen set between depths of 34.4 to 39.4 feet. Slot size is 0.006 inch. A complete installation summary is given in Table 1.

2. Blow counts in parentheses are not representative of the in situ soils.

SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

LOG OF
BORING M-3

FIGURE 7

# BORING M-4

SURFACE ELEVATION 771.4' NGVD
PLANT COORDINATES: N 48,556
E 25,827

| ELEV. IN FEET | OTHER TESTS | SHEAR STRENGTH TEST (PSF) | ATTERBERG LIMITS: LIQUID LIMIT | ATTERBERG LIMITS: PLASTICITY INDEX | FIELD MOISTURE CONTENT (%) | DRY DENSITY (PCF) | PERCENT PASSING #200 SIEVE | RECOVERY (%) | WATER LEVEL DURING DRILLING | DEPTH IN FEET | BLOW COUNT | SAMPLES | SYMBOLS | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 771.4 | | | | | | | | | | | | | | (No topsoil) |
| | | | | | | | | | | 5 | 17 | | SP | Brown medium to coarse SAND, trace fine gravel, trace silt or clay. (medium dense) |
| 764.4 | | | | | | | 99.2 | | | 10 | (41) | | ML · CL | Interbedded tan to orange-brown SILT, no sand; tan to orange-brown SILT, trace to some fine sand; gray-brown SILTY CLAY, plastic; mottled gray-brown and orange-brown clayey SILT, trace fine to coarse sand with dry silt partings; contacts are gradational; high moisture content. |
| | | | | | | | | | | | (28) | | | |
| | | PN=3750-4500 | 23.4 | 5.9 | | | 87.7 | | | 15 | (33) | | | |
| | | PN=3750-4500 | 18.0 | 1.8 | | | 92.7 | | | | (30) | | | |
| 753.9 | | | | | | | | | | | | | ML · SM | Tan to orange-brown SILT, some fine sand grading to fine SAND, some silt, moist. |
| 751.9 | | | | | | | | | | 20 | 83/6" | | | |
| | | | | | | | | | | | (133) | | SP · SM | Tan to light brown SAND, little silt, moist to dry |
| | | | | | | | 36.8 | | | 25 | 42 | | | Grades to light gray-brown some silt, cross-bedded, dry. (dense to very dense) |
| | | | | | | | | | | 30 | (46) | | | Grades to tan, trace to little silt. |
| | | | | | | | | | | | 41 | | | Saturated |
| | | | | | | | 11.4 | | | 35 | 58 | | | Grades to gray-brown. |
| 731.4 | | | | | | | | | | 40 | 62 | | | |
| | | | | | | | | | | 45 | | | | Boring terminated at 40.0' on 6/10/82. Water level encountered at appox. 32.0' during drilling. |
| | | | | | | | | | | 50 | | | | |
| | | | | | | | | | | 55 | | | | |
| | | | | | | | | | | 60 | | | | |

NOTES:

1. A 2-inch PVC monitoring well was installed in the borehole with 5 feet of Johnson, continuous slot screen set between depths of 35.2 to 40.2 feet. Slot size is 0.006 inch. A complete installation summary is given in Table 1.

2. Blow counts in parentheses are not representative of the in situ soils.

SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

Gilbert Commonwealth Companies

LOG OF
BORING M-4

FIGURE 8

# SWS Silicones Corporation

ADRIAN, MICHIGAN 49221 • TELEPHONE (517) 263-5711

August 27, 1982

RECEIVED

AUG 30 1982

WASTE MANAGEMENT BRANCH
EPA, REGION V

U. S. Environmental Protection Agency
Region V
RCRA Activities
P. O. Box A3587
Chicago, Illinois 60690

8/30/82

Dear Sir,

In reference to your June, 1982 letter, SWS Silicones Corporation (U. S. EPA I.D. MSD #075400671) has met the requirements of 40 CFR Part 122.23, and has been acknowledged to operate under interim status.

Attached is the revised RCRA application for a hazardous waste permit which includes the following:

EPA Consolidated Permit Application Form 1
EPA Consolidated Permit Application Form 3

The major changes from the 1980 RCRA Application are:

1. Elimination of treatment tanks, because these are part of the waste wash-water, NPDES system.

2. Addition of a new drum pad; deletion of the old drum pad.

Please confirm upon receipt of this permit application-revision. If you have any questions regarding this submittal, please contact us.

Sincerely yours,

SWS SILICONES CORPORATION

Gordon C. Philbrook

Gordon C. Philbrook
Environmental Control Coordinator

GCP:pb 82-05-HK, certified

cc: J. Calamungi
W. P. Pagano

Note
G, TSD, PA

)KT

ne in the unshaded areas only
paced for elite type, i.e., 12 characte inch).

Form Approved OMB No. 158-R0175

U.S. IRONMENTAL PROTECTION AGENCY

# EPA

## GENERAL INFORMATION

*Consolidated Permits Program*

*(Read the "General Instructions" before starting.)*

.. EPA I.D. NUMBER

F M I D 0 7 5 4 0 0 6 7 1 D

I. ITEMS

NUMBER: MID 075 400 671

ILITY NAME: SWS SILICONES CORPORATION

ACILITY MAILING ADDRESS: Adrian, Michigan 49221-9355

VI. FACILITY LOCATION: Sutton Road, Adrian, Michigan 49221-9355

RECEIVED
AUG 30 1982
WASTE MANAGEMENT BRANCH
EPA, REGION V

**GENERAL INSTRUCTIONS**

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill—in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill—in area*(s)* below. If the label is complete and correct, you need not complete Items I, III, V, and VI *(except VI-B which must be completed regardless)*. Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.

## II. POLLUTANT CHARACTERISTICS

**INSTRUCTIONS:** Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of bold—faced terms.

| SPECIFIC QUESTIONS | MARK 'X' YES | MARK 'X' NO | MARK 'X' FORM ATTACHED |
|---|---|---|---|
| A. Is this facility a **publicly owned treatment works** which results in a **discharge** to **waters of the U.S.**? (FORM 2A) | | X | |
| C. Is this a facility which currently results in **discharges** to **waters of the U.S.** other than those described in A or B above? (FORM 2C) | X* | | |
| E. Does or will this facility treat, store, or dispose of **hazardous wastes**? (FORM 3) | X | | X |
| G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4) | | X | |
| I. Is this facility a proposed **stationary source** which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an **attainment area**? (FORM 5) | | X | |

| SPECIFIC QUESTIONS | MARK 'X' YES | MARK 'X' NO | MARK 'X' FORM ATTACHED |
|---|---|---|---|
| B. Does or will this facility *(either existing or proposed)* include a **concentrated animal feeding operation** or **aquatic animal production facility** which results in a **discharge** to **waters of the U.S.**? (FORM 2B) | | X | |
| D. Is this a proposed facility *(other than those described in A or B above)* which will result in a **discharge** to **waters of the U.S.**? (FORM 2D) | | X | |
| F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4) | | X | |
| H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4) | | X | |
| J. Is this facility a proposed **stationary source** which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an **attainment area**? (FORM 5) | | X | |

## III. NAME OF FACILITY

1 SKIP S W S S I L I C O N E S C O R P O R A T I O N

## IV. FACILITY CONTACT

| A. NAME & TITLE *(last, first, & title)* | B. PHONE *(area code & no.)* |
|---|---|
| 2 C A L A M U N G I , J O S E P H , D I R O F M A N U | 5 1 7 2 6 3 5 7 1 1 |

## V. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX: 3 S U T T O N R O A D

| B. CITY OR TOWN | C. STATE | D. ZIP CODE |
|---|---|---|
| 4 A D R I A N | M I | 4 9 2 2 1 |

RECEIVED 8/30/82

## VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER: 5 S A M E

*See Attachment A

B. COUNTY NAME: L E N A W E E

| C. CITY OR TOWN | D. STATE | E. ZIP CODE | F. COUNTY CODE *(if known)* |
|---|---|---|---|
| 6 | | | |

CONTINUED FROM THE FRONT

## VII. SIC CODES (4-digit, in order of priority)

| A. FIRST | B. SECOND |
|---|---|
| 2821 (specify) SILICONE MATERIALS | 2822 (specify) SILICONE RUBBER |
| **C. THIRD** | **D. FOURTH** |
| 2891 (specify) SILICONE SEALANTS | 2869 (specify) SILICONE FLUIDS |

## VIII. OPERATOR INFORMATION

A. NAME: SWS SILICONES CORPORATION

B. Is the name listed in Item VIII-A also the owner? [X] YES [ ] NO

C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box; if "Other", specify.)
F = FEDERAL
S = STATE
P = PRIVATE
M = PUBLIC (other than federal or state)
O = OTHER (specify)

Answer: P (specify)

D. PHONE (area code & no.): A 517 263 5711

E. STREET OR P.O. BOX: SUTTON ROAD

F. CITY OR TOWN: ADRIAN

G. STATE: MI

H. ZIP CODE: 49221

## IX. INDIAN LAND

Is the facility located on Indian lands? [ ] YES [X] NO

## X. EXISTING ENVIRONMENTAL PERMITS

| | |
|---|---|
| A. NPDES (Discharges to Surface Water): N MI 0026034 | D. PSD (Air Emissions from Proposed Sources): P |
| B. UIC (Underground Injection of Fluids): U | E. OTHER (specify): 9 (specify) |
| C. RCRA (Hazardous Wastes): R MID075400671 | E. OTHER (specify): 9 (specify) See Attachment B |

## XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property bounderies. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in the map area. See instructions for precise requirements.

## XII. NATURE OF BUSINESS (provide a brief description)

MANUFACTURE OF SILICONE PRODUCTS, INCLUDING FLUIDS, EMULSIONS, SEALANTS AND RUBBERS.

## XIII. CERTIFICATION (see instructions)

*I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.*

| A. NAME & OFFICIAL TITLE (type or print) | B. SIGNATURE | C. DATE SIGNED |
|---|---|---|
| L. B. Bruner<br>Vice President and General Manager | L B Bruner | 8/19/82 |

COMMENTS FOR OFFICIAL USE ONLY

SWS SILICONES CORPORATION

Attachment A

There may be rain runoff discharges possibly subject to NPDES requirements. The extent to which such storm water discharges should be subject to permitting requirements is presently under discussion with EPA.

SWS SILICONES CORPORATION

Attachment B

Michigan Air Permits

210-75

211-75

441-75

375-76

957-79

37-81

84-81

257-81

494-81

597-81

628-81

658-81

777-81

184-82

Please print or type in the unshaded areas only
(Shaded areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved OMB No. 158-S80004

FORM 3 RCRA

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

# HAZARDOUS WASTE PERMIT APPLICATION

*Consolidated Permits Program*

*(This information is required under Section 3005 of RCRA.)*

I. EPA I.D. NUMBER

| S | | | | | | | | | | | | | T/A | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F | M | I | D | 0 | 7 | 5 | 4 | 0 | 0 | 6 | 7 | 1 | | 1 |

1 2 - 13 14 15

## FOR OFFICIAL USE ONLY

| APPLICATION APPROVED | DATE RECEIVED (yr., mo., & day) | COMMENTS |
|---|---|---|
| 23 | 24 - 29 | |

## II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below *(mark one box only)* to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter your facility's EPA I.D. Number in Item I above.

**A. FIRST APPLICATION** *(place an "X" below and provide the appropriate date)*

☐ 71 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)*

FOR EXISTING FACILITIES, PROVIDE THE DATE *(yr., mo., & day)* OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*

| C | YR. | MO. | DAY |
|---|---|---|---|
| 8 | 6 5 | 0 6 | 2 1 |
| 15 | 73 74 | 75 76 | 77 78 |

☐ 71 2. NEW FACILITY *(Complete item below.)*

FOR NEW FACILITIES, PROVIDE THE DATE *(yr., mo., & day)* OPERATION BEGAN OR IS EXPECTED TO BEGIN

| YR. | MO. | DAY |
|---|---|---|
| | | |
| 73 74 | 75 76 | 77 78 |

**B. REVISED APPLICATION** *(place an "X" below and complete Item I above)*

☒ 72 1. FACILITY HAS INTERIM STATUS

☐ 72 2. FACILITY HAS A RCRA PERMIT

## III. PROCESSES – CODES AND DESIGN CAPACITIES

**A. PROCESS CODE** – Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code*(s)* in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the form *(Item III-C)*.

**B. PROCESS DESIGN CAPACITY** – For each code entered in column A enter the capacity of the process.

1. AMOUNT – Enter the amount.
2. UNIT OF MEASURE – For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

| PROCESS | PROCESS CODE | APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY |
|---|---|---|
| **Storage:** | | |
| CONTAINER *(barrel, drum, etc.)* | S01 | GALLONS OR LITERS |
| TANK | S02 | GALLONS OR LITERS |
| WASTE PILE | S03 | CUBIC YARDS OR CUBIC METERS |
| SURFACE IMPOUNDMENT | S04 | GALLONS OR LITERS |
| **Disposal:** | | |
| INJECTION WELL | D79 | GALLONS OR LITERS |
| LANDFILL | D80 | ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER |
| LAND APPLICATION | D81 | ACRES OR HECTARES |
| OCEAN DISPOSAL | D82 | GALLONS PER DAY OR LITERS PER DAY |
| SURFACE IMPOUNDMENT | D83 | GALLONS OR LITERS |

| PROCESS | PROCESS CODE | APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY |
|---|---|---|
| **Treatment:** | | |
| TANK | T01 | GALLONS PER DAY OR LITERS PER DAY |
| SURFACE IMPOUNDMENT | T02 | GALLONS PER DAY OR LITERS PER DAY |
| INCINERATOR | T03 | TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR |
| OTHER *(Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided: Item III-C.)* | T04 | GALLONS PER DAY OR LITERS PER DAY |

| UNIT OF MEASURE | UNIT OF MEASURE CODE | UNIT OF MEASURE | UNIT OF MEASURE CODE | UNIT OF MEASURE | UNIT OF MEASURE CODE |
|---|---|---|---|---|---|
| GALLONS | G | LITERS PER DAY | V | ACRE-FEET | A |
| LITERS | L | TONS PER HOUR | D | HECTARE-METER | F |
| CUBIC YARDS | Y | METRIC TONS PER HOUR | W | ACRES | B |
| CUBIC METERS | C | GALLONS PER HOUR | E | HECTARES | Q |
| GALLONS PER DAY | U | LITERS PER HOUR | H | | |

**EXAMPLE FOR COMPLETING ITEM III** *(shown in line numbers X-1 and X-2 below)*: A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

| S | | T/A | C |
|---|---|---|---|
| C | DUP | | 1 |

1 2 - 13 14 15

| LINE NUMBER | A. PROCESS CODE (from list above) | B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify) | B. 2. UNIT OF MEASURE (enter code) | FOR OFFICIAL USE ONLY | LINE NUMBER | A. PROCESS CODE (from list above) | B. PROCESS DESIGN CAPACITY 1. AMOUNT | B. 2. UNIT OF MEASURE (enter code) | FOR OFFICIAL USE ONLY |
|---|---|---|---|---|---|---|---|---|---|
| | 16 - 18 | 19 - 27 | 28 | 29 - 32 | | 16 - 18 | 19 - 27 | 28 | 29 - 32 |
| X-1 | S 0 2 | 600 | G | | 5 | | | | |
| X-2 | T 0 3 | 20 | E | | 6 | | | | |
| 1 | S 0 1 | 44,000 | G | | 7 | | | | |
| 2 | S 0 2 | 55,000 | G | | 8 | | | | |
| 3 | | | | | 9 | | | | |
| 4 | | | | | 10 | | | | |
| | 16 - 18 | 19 - 27 | 28 | 29 - 32 | | 16 - 18 | 19 - 27 | 28 | 29 - 32 |



CONTINUE ON REVERSE

Continued from the front.

## III. PROCESSES *(continued)*

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESSES *(code "T04")*. FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

## IV. DESCRIPTION OF HAZARDOUS WASTES

**A. EPA HAZARDOUS WASTE NUMBER** – Enter the four–digit number from 40 CFR, Subpart D for each listed hazardous waste you will handle. If you handle hazardous wastes which are not listed in 40 CFR, Subpart D, enter the four–digit number*(s)* from 40 CFR, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.

**B. ESTIMATED ANNUAL QUANTITY** – For each **listed waste** entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each **characteristic** or **toxic contaminant** entered in column A estimate the total annual quantity of all the non–listed waste*(s)* that will be handled which possess that characteristic or contaminant.

**C. UNIT OF MEASURE** – For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

| ENGLISH UNIT OF MEASURE | CODE | METRIC UNIT OF MEASURE | CODE |
|---|---|---|---|
| POUNDS | P | KILOGRAMS | K |
| TONS | T | METRIC TONS | M |

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking account the appropriate density or specific gravity of the waste.

**D. PROCESSES**

1. PROCESS CODES:
   **For listed hazardous waste:** For each **listed** hazardous waste entered in column A select the code*(s)* from the list of process codes contained in Item III to indicate how the waste will be stored, treated, and/or disposed of at the facility.
   **For non–listed hazardous wastes:** For each characteristic or toxic contaminant entered in column A, select the code*(s)* from the list of process codes contained in Item III to indicate **all** the processes that will be used to store, treat, and/or dispose of all the non–listed hazardous wastes that possess that characteristic or toxic contaminant.
   **Note:** Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code*(s)*.

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

**NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER** – Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. Select one of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns B,C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.
3. Repeat step 2 for each other EPA Hazardous Waste Number that can be used to describe the hazardous waste.

**EXAMPLE FOR COMPLETING ITEM IV** *(shown in line numbers X-1, X-2, X-3, and X-4 below)* – A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non–listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

| LINE NO. | A. EPA HAZARD. WASTE NO. *(enter code)* | B. ESTIMATED ANNUAL QUANTITY OF WASTE | C. UNIT OF MEASURE *(enter code)* | D. PROCESSES 1. PROCESS CODES *(enter)* | D. PROCESSES 2. PROCESS DESCRIPTION *(if a code is not entered in D(1))* |
|---|---|---|---|---|---|
| X-1 | K 0 5 4 | 900 | P | T 0 3 D 8 0 | |
| X-2 | D 0 0 2 | 400 | P | T 0 3 D 8 0 | |
| X-3 | D 0 0 1 | 100 | P | T 0 3 D 8 0 | |
| X-4 | D 0 0 2 | | | | *included with above* |

 CONTINUE ON PAGE 3

ued from page 2.
E: Photocopy this page before completing if you more than 26 wastes to list.

Form Approved OMB No. 158-S80004

EPA I.D. NUMBER (enter from page 1): W M I D 0 7 5 4 0 0 6 7 1 — T/A C: 1

FOR OFFICIAL USE ONLY: W DUP — T/A C: 2 DUP

## IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

| LINE NO. | A. EPA HAZARD. WASTE NO. (enter code) | B. ESTIMATED ANNUAL QUANTITY OF WASTE | C. UNIT OF MEASURE (enter code) | D. PROCESSES 1. PROCESS CODES (enter) | D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1)) |
|---|---|---|---|---|---|
| 1 | F002 | 550,000 | P | S01 S02 | |
| 2 | F002 | 20,000 | P | S01 | |
| 3 | F003 | 30,000 | P | S01 | |
| 4 | F003 | 40,000 | P | S01 S02 | |
| 5 | D001 | 544,000 | P | S01 S02 | |
| 6 | D002 | 140,000 | P | S01 | |
| 7 | D001 | | | | INCLUDED WITH ABOVE |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
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| 22 | | | | | |
| 23 | | | | | |
| 24 | | | | | |
| 25 | | | | | |
| 26 | | | | | |

EPA Form 3510-3 (6-80)

CONTINUE ON REVERSE

Continued from the front.

## IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM ITEM D(1) ON PAGE 3.

EPA I.D. NO. *(enter from page 1)*

| S | | | | | | | | | | | | | T/A | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F | M | I | D | 0 | 7 | 5 | 4 | 0 | 0 | 6 | 7 | 1 | | 6 |

## V. FACILITY DRAWING

All **existing** facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail).*

## VI. PHOTOGRAPHS

All existing facilities must include photographs *(aerial or ground—level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail).*

## VII. FACILITY GEOGRAPHIC LOCATION

| LATITUDE *(degrees, minutes, & seconds)* | LONGITUDE *(degrees, minutes, & seconds)* |
|---|---|
| 41 56 48 N | 83 57 13 W |

## VIII. FACILITY OWNER

[X] A. If the facility owner is also the facility operator as listed in Section VIII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VIII on Form 1, complete the following items:

| 1. NAME OF FACILITY'S LEGAL OWNER | 2. PHONE NO. *(area code & no.)* |
|---|---|
| E | |

| 3. STREET OR P.O. BOX | 4. CITY OR TOWN | 5. ST. | 6. ZIP CODE |
|---|---|---|---|
| F | G | | |

## IX. OWNER CERTIFICATION

*I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.*

| A. NAME *(print or type)* | B. SIGNATURE | C. DATE SIGNED |
|---|---|---|
| L. B. Bruner | L B Bruner | 8/19/82 |

## X. OPERATOR CERTIFICATION

*I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.*

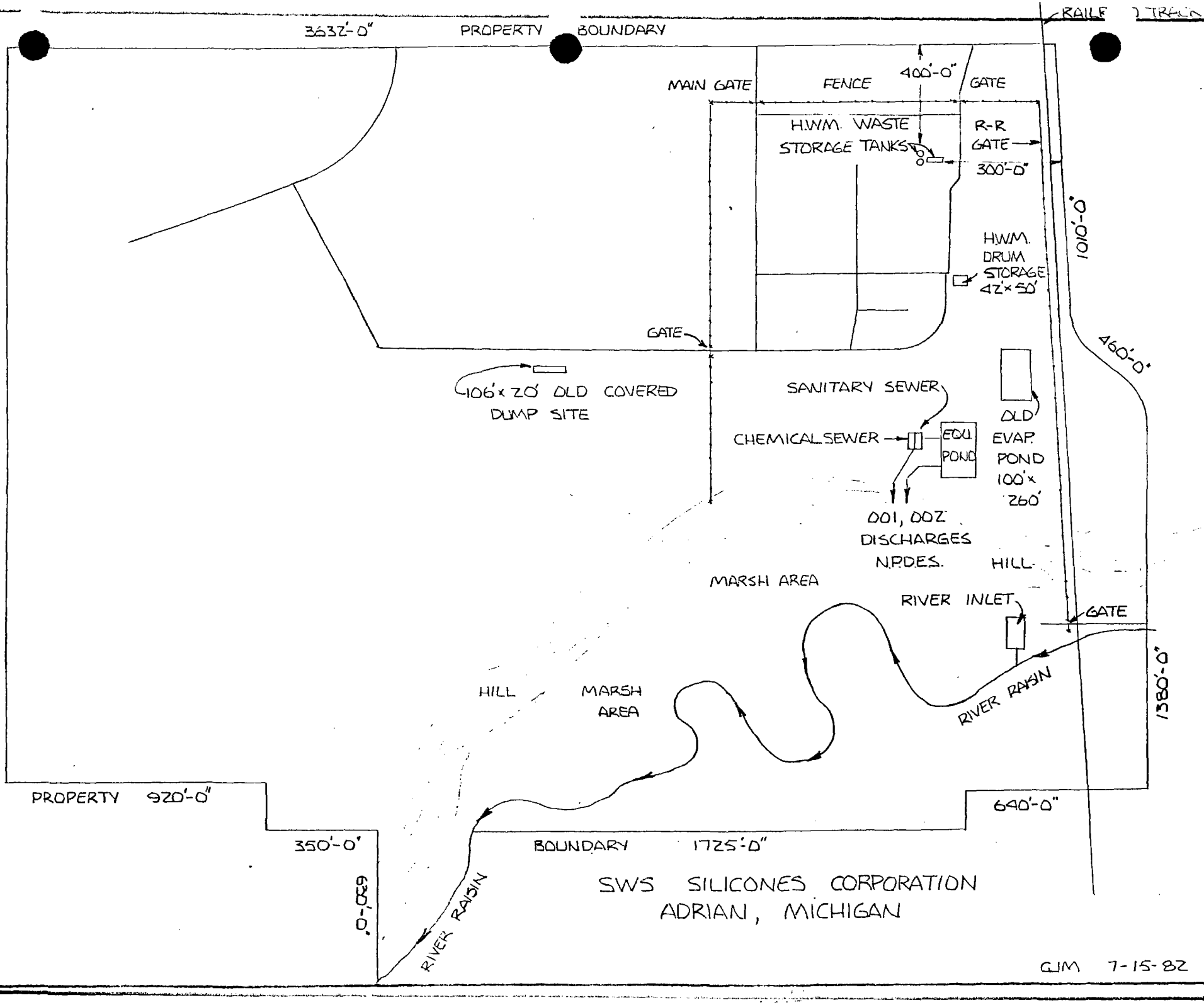
| A. NAME *(print or type)* | B. SIGNATURE | C. DATE SIGNED |
|---|---|---|
| | | |



CONTINUE ON PAGE 5

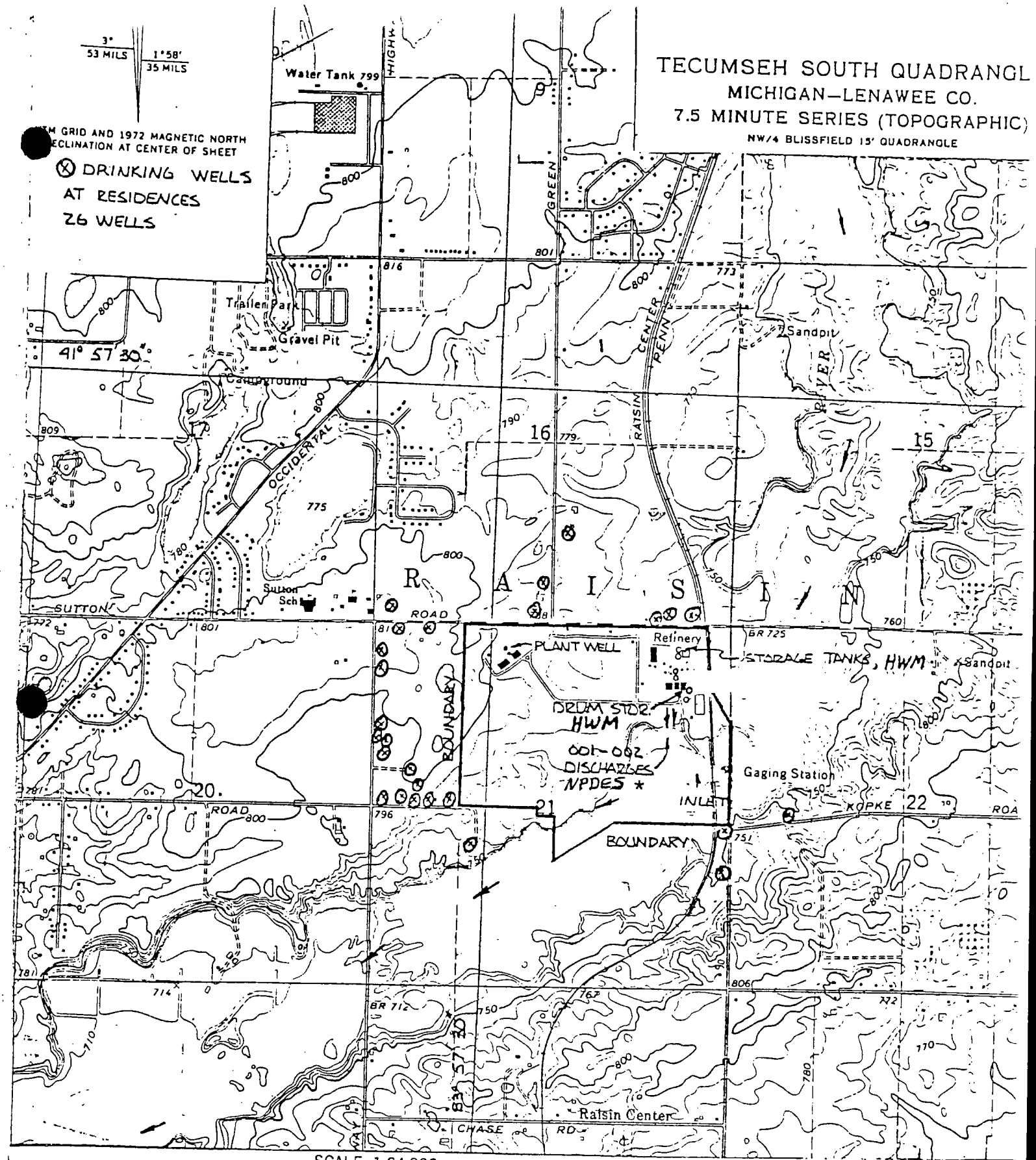
Continued from page 4.

## V. FACILITY DRAWING (see page 4)






Form Approved OMB No. 158-S80004




SWS RCRA Plan,
Revised July 13, 1982

LOCATION MAP

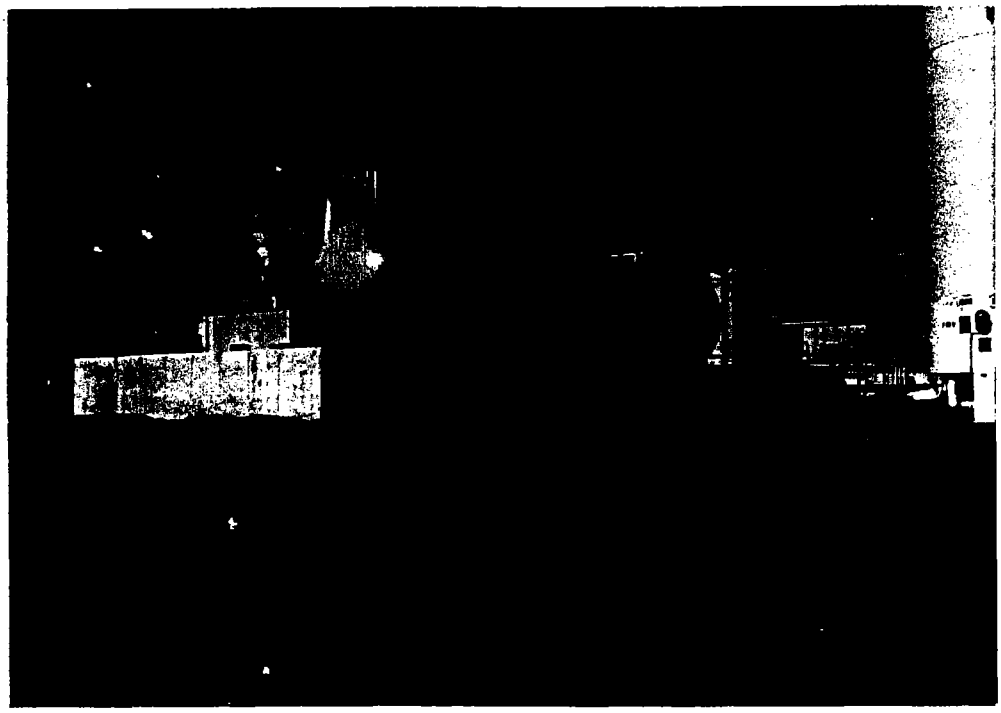
SWS SILICONES CORPORATION ADRIAN MICHIGAN

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS

SWS SILICONES CORPORATION

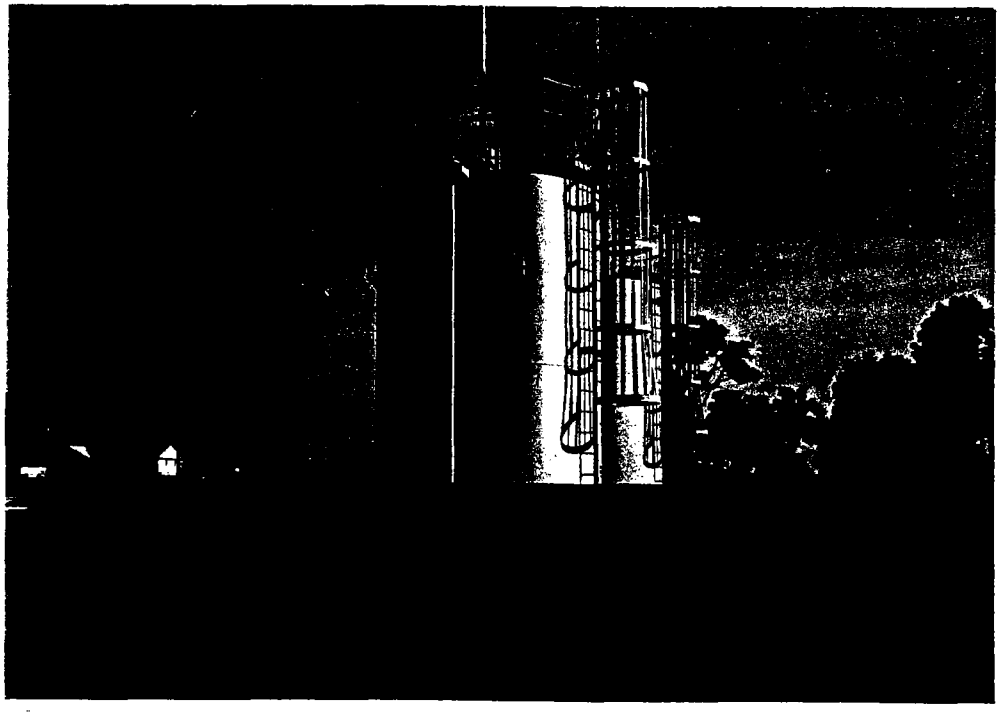
Covered Waste Tank T-101

July 13, 1982



Covered Waste Tanks T-105, T-108

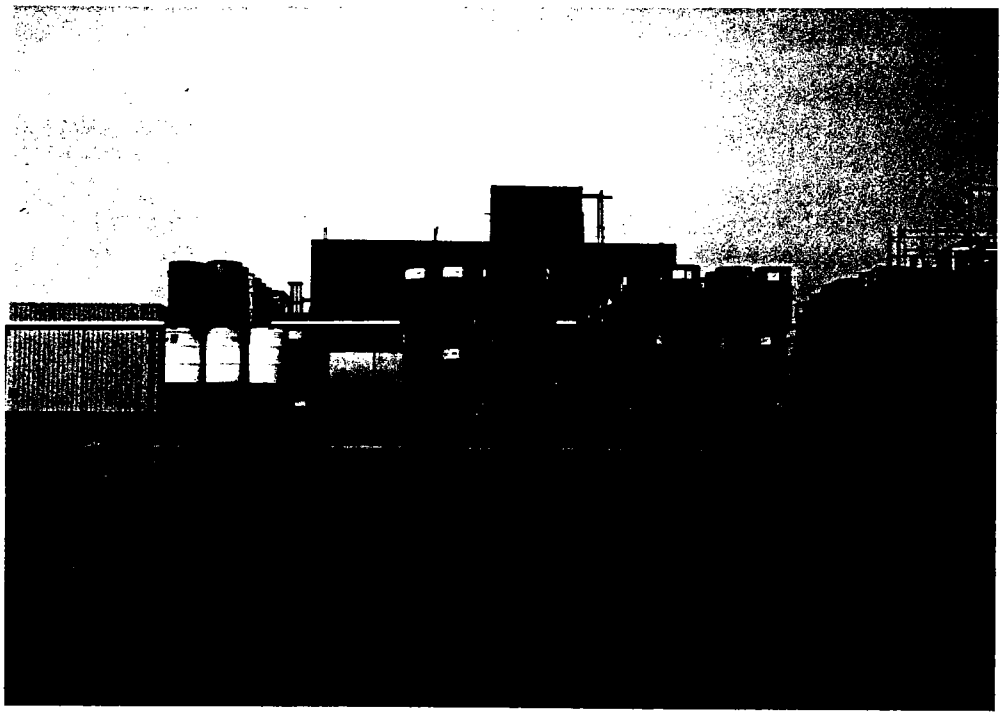
July 13, 1982

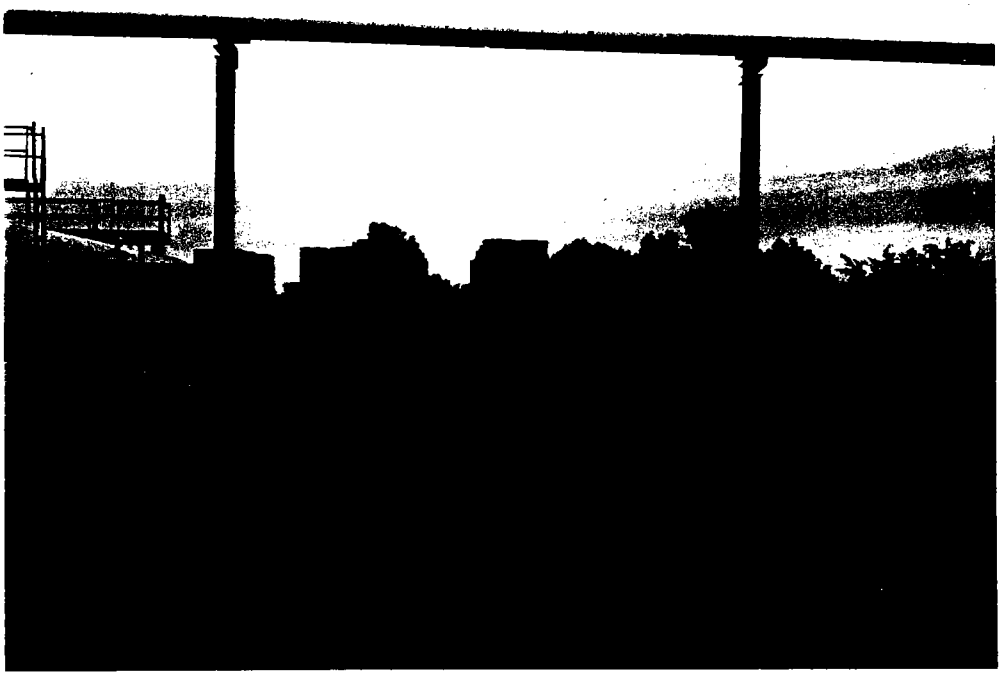


SWS SILICONES CORPORATION

Covered Waste Drum Storage

August 19, 1982





# SWS Silicones Corporation

ADRIAN, MICHIGAN 49221 • TELEPHONE (517) 263-5711


November 18, 1980

U.S. Environmental Protection Agency
Region V
RCRA Activities
P.O. Box 7861
Chicago, Illinois 60680

Dear Sir:

In accordance with 40 CFR Part 122, Consolidated Permits Program, enclosed is the RCRA Part A permit application for the hazardous waste management facility at our Adrian, Michigan location.

Please confirm, at your earliest convenience, receipt of this permit application. If you have any questions regarding this submittal, please contact us.

Sincerely,

SWS SILICONES CORPORATION

Gordon C. Philbrook

Gordon C. Philbrook
Environmental Control Coordinator

GCP:pm

SWS SILICONES CORPORATION

ATTACHMENT A

There may be rain runoff discharges possibly subject to NPDES requirements. The extent to which such storm water discharges should be subject to permitting requirements is presently under discussion with EPA.

SWS SILICONES CORPORATION

ATTACHMENT B

MICHIGAN AIR PERMITS

210-75

211-75

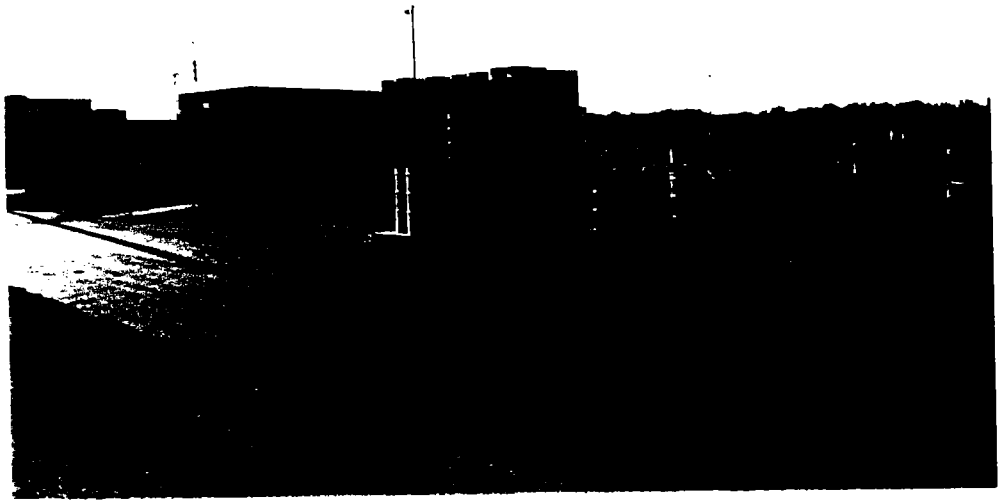
441-75

375-76

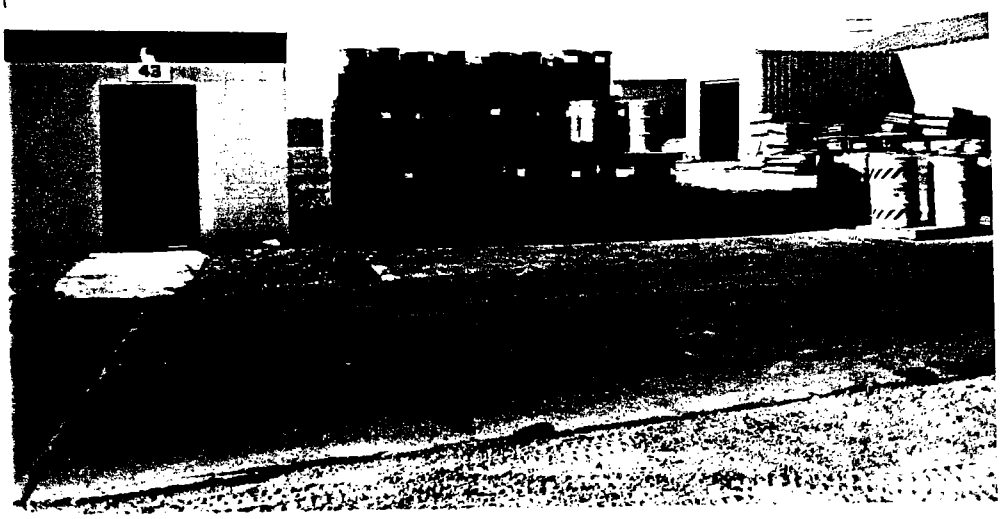
957-79

SWS SILICONES CORPORATION

COVERED WASTE DRUM STORAGE
November 19, 1980

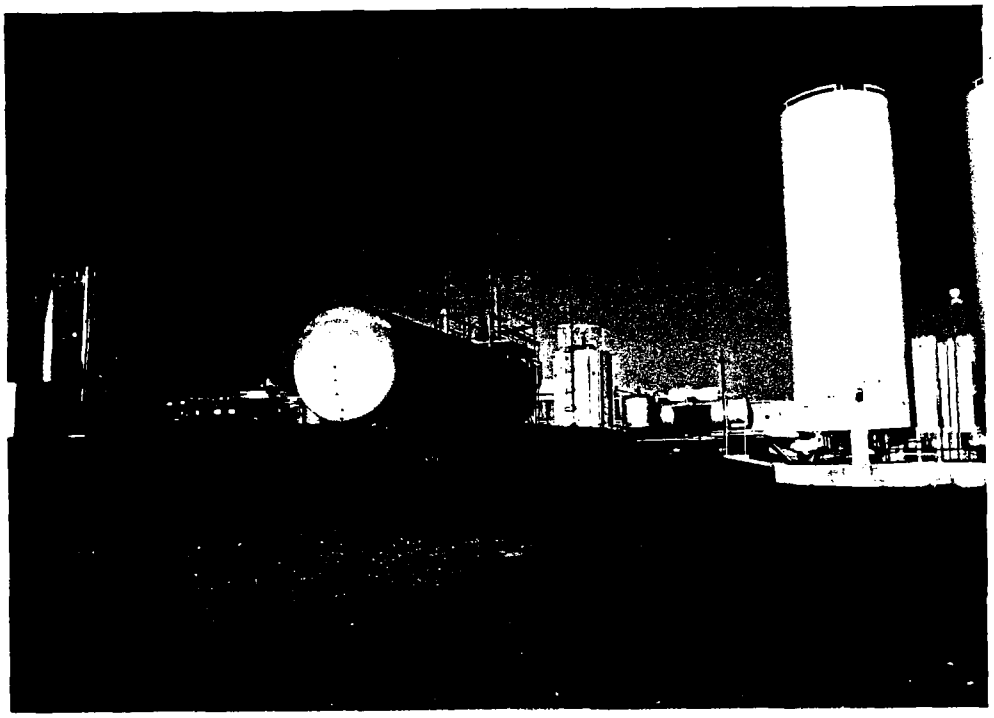


COVERED WASTE DRUM STORAGE
November 19, 1980

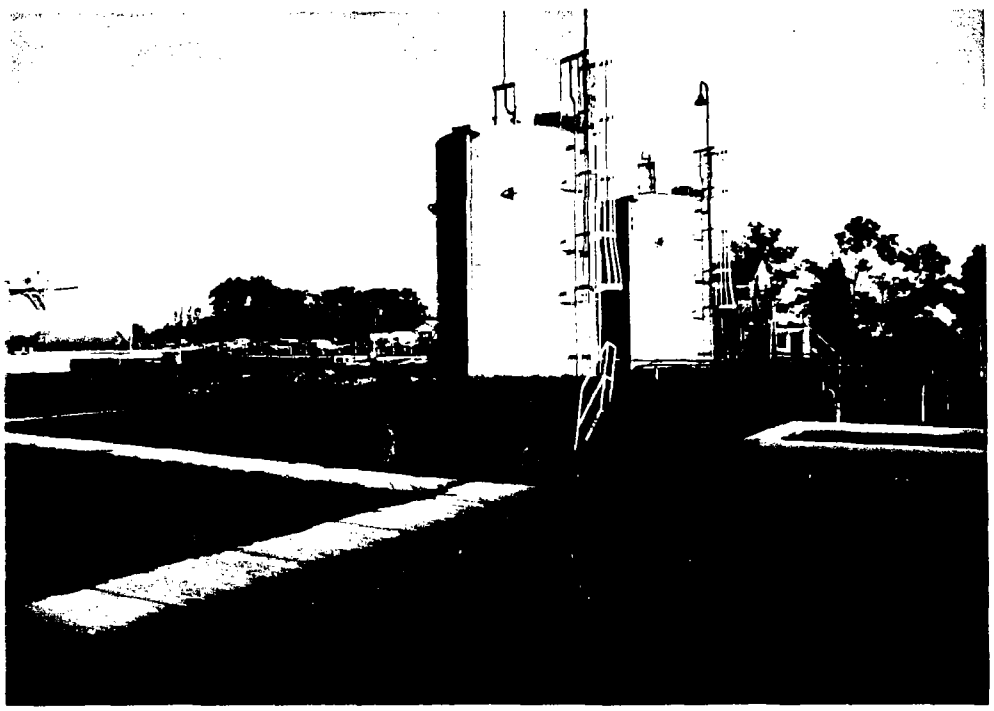


SWS SILICONES CORPORATION

COVERED WASTE TANK T-101
November 19, 1980

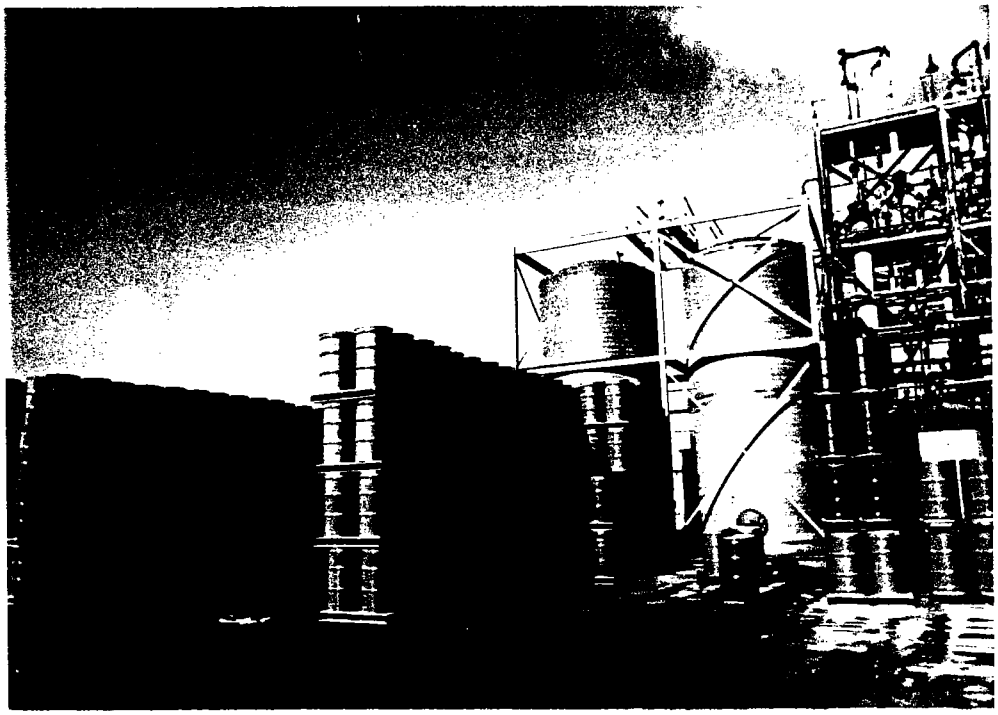


COVERED WASTE TANKS T-105, T-108
November 19, 1980

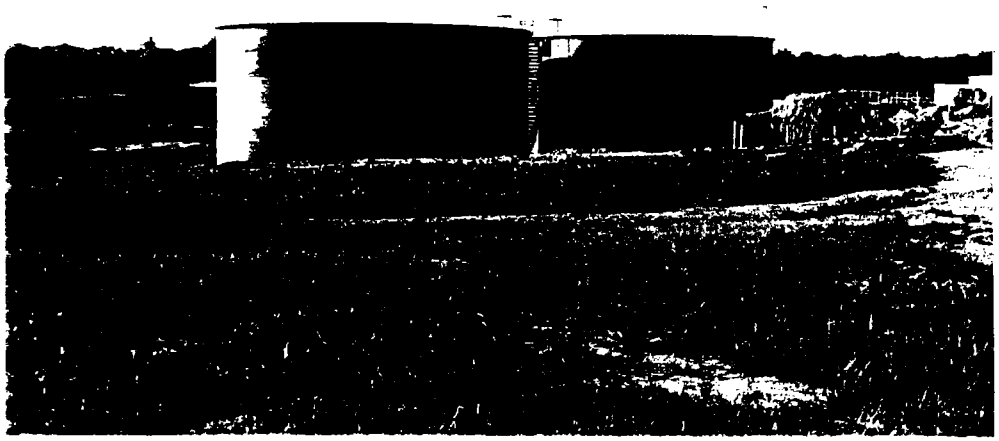


SWS SILICONES CORPORATION

COVERED WASTE TREATING TANKS, T-418, T-419
November 19, 1980

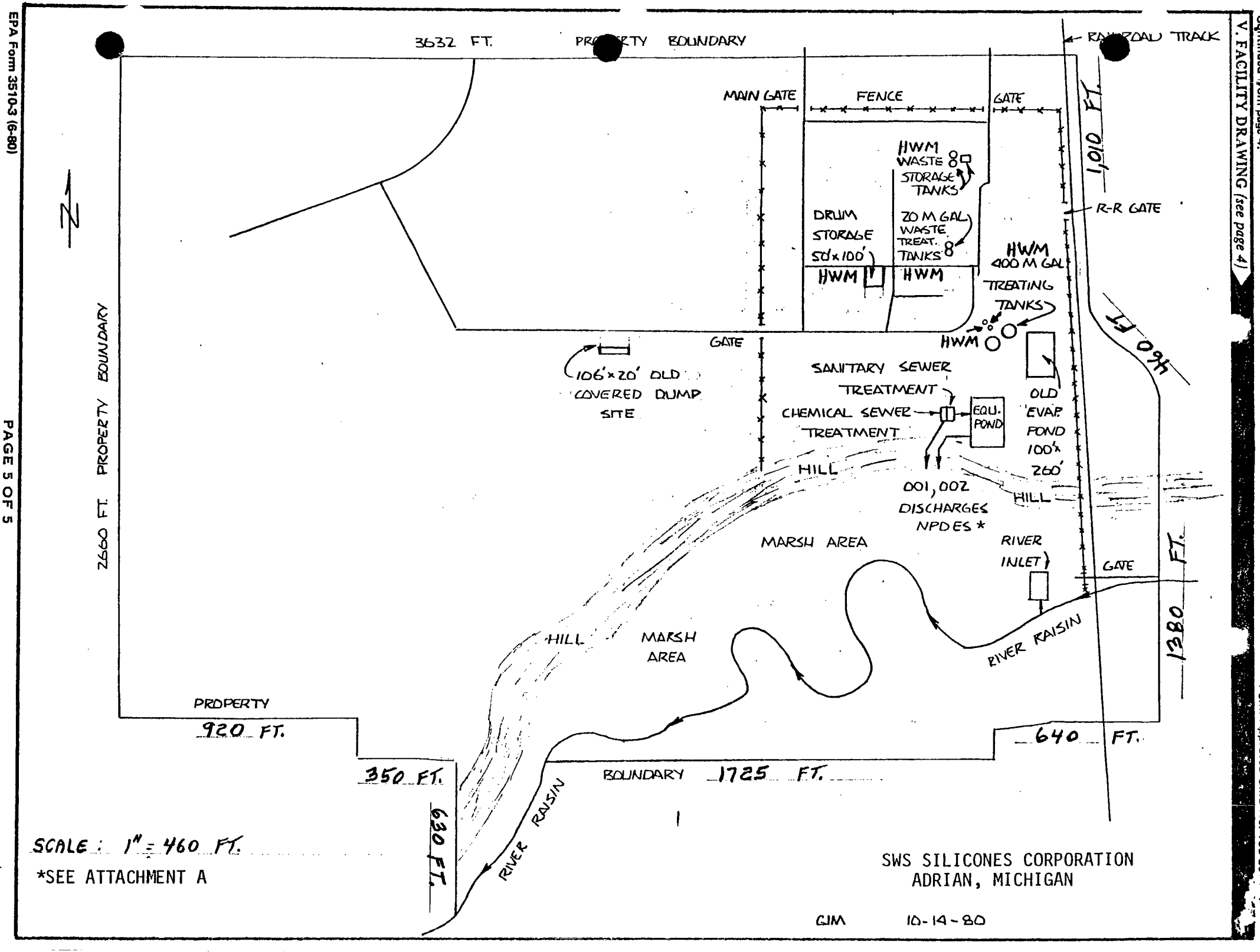


COVERED WASTE TREATING TANKS, T-126A, T-126B
November 19, 1980



Continued from page 4.

V. FACILITY DRAWING (see page 4)



SWS Silicones Corporation
ADRIAN, MICHIGAN 49221 • TELEPHONE (517) 263-5711

NOTIFICATION OF HAZARDOUS WASTE ACTIVITY

Addendum

V. Ownership

Also partially owned by Wacker Chemical Company, Portland, Oregon.

AUG 12 1980

Do not make entries in shaded areas

OMB #: 2050-0024 Expires: 12-31-86

ENVIRONMENTAL PROTECTION AGENCY

# FACILITY BIENNIAL HAZARDOUS WASTE REPORT FOR 1983

This report is for the calendar year ending December 31, 1983.
Read All Instructions Carefully Before Making Any Entries on Form

## I. NON-REGULATED STATUS

See instructions before completing this section.

This facility did not treat, store, or dispose of regulated quantities of hazardous waste at any time during 1983. . . . . ☐

Explain your non-regulated status in the space below.

Please print/type with elite type (12 characters per inch)

## II. FACILITY EPA I.D. NUMBER

T/A C

F M I D 0 7 5 4 0 0 6 7 1 1
1 2 13 14 15

This Facility's Non-Regulated Status is Expected to Apply:

☐ For 1983 Only ☐ Permanently

☐ Other (explain in comment section)

C303 ENTRY (OFFICIAL USE ONLY): ☐

## III. NAME OF FACILITY

S W S S I L I C O N E S C O R P O R A T I O N
30 69

## IV. FACILITY MAILING ADDRESS

3 S U T T O N R O A D
15 16 45

Street or P.O. Box

4 A D R I A N M I 4 9 2 2 1
15 16 41 42 47 51

City or Town State Zip Code

## V. LOCATION OF FACILITY (if different than section IV above)

5
15 16 45

Street or Route number

6
15 16 41 42 47 51

City or Town State Zip Code

## VI. FACILITY CONTACT

2 P H I L B R O O K G O R D O N
15 16 45

Name (last and first)

5 1 7 – 2 6 3 – 5 7 1 1
46 55

Phone No. (area code & no.)

## VII. COST ESTIMATES FOR FACILITIES

$ 6 5 9 1 0
16 19 22

A. Cost Estimate for Facility Closure

$ , ,
25 28 31

B. Cost Estimate for Post Closure Monitoring and Maintenance (disposal facilities only)

## VIII. CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

| JOSEPH CALAMUNGI | DIR. OF MFG. | Joseph Calamungi | 2/24/84 |
|---|---|---|---|
| Print/Type Name | Title | Signature of Authorized Representative | Date Signed |

Tear out here

EPA Form 8700-13B(5-80) (Revised 11-83)

Do not make entries in shaded areas

ENVIRONMENTAL PROTECTION AGENCY

# Facility Biennial Hazardous Waste Report for 1983 (cont.)

This report is for the calendar year ending December 31, 1983.

Date rec'd: _____ Rec'd by: _____

XI. GENERATOR NAME (specify generator from whom all wastes on this page were received)

ON-SITE ☒

IX. FACILITY'S EPA I.D. NO.

T/A C

FMID075400671 1

XII. GENERATOR ADDRESS

X. GENERATOR'S EPA I.D. NO.

GMID075400671

XIII. TOTAL WASTE IN STORAGE ON DECEMBER 31, 1983 (complete this section only once for your facility)

S01 AMOUNT OF WASTE 6560 UOM P

S02 AMOUNT OF WASTE 1071 UOM P

S03 AMOUNT OF WASTE UOM

S04 AMOUNT OF WASTE UOM

S05 AMOUNT OF WASTE UOM

XIV. WASTE IDENTIFICATION

| Sequence # | Line # | A. Description of Waste | B. EPA Hazardous Waste No. (see instructions) | C. Handling Method | D. Amount of Waste | E. Unit of Measure |
|---|---|---|---|---|---|---|
| | 1 | Ignitable spent solvent used in production: mixture of methanol, isopropanol and water (1) | D001 F003 | S01 | 800 | P |
| | 2 | Ignitable spent solvent used in production: mixture of heptane, cyclohexane and silicones (2) | D001 | S01 | 800 | P |
| | 3 | Ignitable spent solvent used in production: mixture of naptha, and xylene (3) | F003 D001 | S01 | 3200 | P |
| | 4 | Ignitable spent solvent used at R&D; mix. of methanol, isopropanol, xylene, min. spir.& water(5) | F003 D001 | S01 | 3800 | P |
| | 5 | Spent solvent used in production: mixture of 1,1,1 trichloroethane and silicones (10) | F002 | S01 | 640 | P |
| | 6 | Waste byproduct from production: mixture of octadecene & siliconates/siloxanes (19) | D002 D001 | S01 | 400 | P |
| | 7 | Spent solvent used in production: mixture of mineral spirits, water and silicones (8) | D001 | S01 | 1520 | P |
| | 8 | Spent solvent used in production: mixture of 1,1,1trichloroethane and silicones (Bulk) (T-101) | F002 | S02 | 6550 | P |
| | 9 | Ignit. spent solvent used in production: mix. of alcohols, hydrocarbons & 1,1,1 trichloro .(T-105) | F002 D001 F003 | S02 | 4160 | P |
| | 10 | | | | | |
| | 11 | | | | | |
| | 12 | | | | | |

XV. COMMENTS (enter information by section number—see instructions)

Do not make entries in shaded areas

OMB #: 2050-0024 Exp. Date 12-31-86

ENVIRONMENTAL PROTECTION AGENCY

# GENERATOR BIENNIAL HAZARDOUS WASTE REPORT FOR 1983

This report is for the calendar year ending December 31, 1983.
Read All Instructions Carefully Before Making Any Entries on Form

## I. NON-REGULATED STATUS

Complete this section only if you did not generate regulated quantities of hazardous waste at any time during the 1983 calendar year. Circle the one code at right that best describes your status during the entire year (see instructions for explanation of codes).

1 Non-handler
2 Small Quantity Generator
4 Exempt
5 Beneficial Use
9 Closed

Please print/type with elite type (12 characters per inch)

This Installation's Non-Regulated Status is Expected to Apply:

☐ For 1983 Only ☐ Permanently

☐ Other _____

## II. GENERATOR'S EPA I.D. NUMBER

T/A C

F M I D 0 7 5 4 0 0 6 7 1 1 1

1 2 13 14 15

9,TSD

C303 ENTRY (OFFICIAL USE ONLY): ☐

## III. NAME OF INSTALLATION

S W S SILICONES CORPORATION

30 69

## IV. INSTALLATION MAILING ADDRESS

3 SUTTON ROAD

15 16 45

Street or P.O. Box

4 ADRIAN MI 49221

15 16 41 42 47 51

City or Town State Zip Code

## V. LOCATION OF INSTALLATION (if different than section IV above)

5

15 16 45

Street or Route number

6

15 16 41 42 47 51

City or Town State Zip Code

## VI. INSTALLATION CONTACT

2 PHILBROOK GORDON

15 16 45

Name (last and first)

517-263-5711

46 55

Phone No. (area code & no.)

## VII. CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

JOSEPH CALAMUNGI, DIR. OF MFG. Joseph Calamungi 2/24/84

Print/Type Name Title Signature of Authorized Representative Date Signed

Tear out here

EPA Form 8700-13A (5-80) (Revised 10-80)

Do not make entries in shaded areas

ENVIRONMENTAL PROTECTION AGEN

# Generator Biennial Hazardous Waste Report for 1983 (cont.)

This report is for the calendar year ending December 31, 1983.

Date rec'd: _____ Rec'd by: _____

VIII. GENERATOR'S EPA I.D. NO.

T/A C

GMID075400671 1

IX. FACILITY NAME (specify facility to which all wastes on this page were shipped)

CECOS International

X. FACILITY'S EPA I.D. NO.

FOHD000816629

XI. FACILITY ADDRESS

4879 Spring Grove Ave.
Cincinnati, OH 45232

XII. TRANSPORTATION SERVICES USED

Tonawanda Transport NYD097644801

XIII. WASTE IDENTIFICATION

| Sequence # (29–32) | Line # | A. Description of Waste | B. DOT Hazard code (33–34) | C. EPA Hazardous Waste No. (see instructions) (35–38, 39–42, 43–46, 47–50) | D. Amount of Waste (51–59) | E. Unit of Measure (60) |
|---|---|---|---|---|---|---|
| | 1 | Flammable Waste (Tech Center) | 08 | F003 | 21200 | P |
| | 2 | Silicone Fluid F-873 Waste | 08 | D001 | 800 | P |
| | 3 | PVC Foam Stabilizer A-232 | 08 | D001 | 2000 | P |
| | 4 | Silicone Dispersion C-567U | 08 | D001 | 350 | P |
| | 5 | Waste Isoprene/Methylmethacrylate | 01 | D001 | 100 | P |
| | 6 | Waste Butyl Acetate | 01 | D001 | <1 | P |
| | 7 | Waste Combustible Liquid | 01 | D001 | 160 | P |
| | 8 | Waste Sodium Hydrosulfide | 09 | D001<br>D003 | 2 | P |
| | 9 | Waste Butyric Acid/Combustible | 01 | D001<br>D002 | 4 | P |
| | 10 | Corrosive Solid | 02 | D002 | <1 | P |
| | 11 | | | | | |
| | 12 | | | | | |

Tear out here

XIV. COMMENTS (enter information by section number—see instructions)

Do not make entries in shaded areas

ENVIRONMENTAL PROTECTION AGEN

# Generator Biennial Hazardous Waste Report for 1983 (cont.)

This report is for the calendar year ending December 31, 1983.

Date rec'd: _____ Rec'd by: _____

VIII. GENERATOR'S EPA I.D. NO.

G M I D 0 7 5 4 0 0 6 7 1 T/A C 1

1 2 13 14 15

IX. FACILITY NAME (specify facility to which all wastes on this page were shipped)

CHEM-MET Services

X. FACILITY'S EPA I.D. NO.

F M I D 0 9 6 9 6 3 1 9 4

16 28

XI. FACILITY ADDRESS

18550 Allen Road
Wyandotte, MI 48192

XII. TRANSPORTATION SERVICES USED

CHEM-MET Services MID 096963194

XIII. WASTE IDENTIFICATION

| Sequence # | Line # | A. Description of Waste | B. DOT Hazard code | C. EPA Hazardous Waste No. (see instructions) | | D. Amount of Waste | E. Unit of Measure |
|---|---|---|---|---|---|---|---|
| 29 32 | 1 | Solvent Sump Waste | 01 (33 34) | D001 (35 38 / 43 46) | (39 42 / 47 50) | 120000 (51 59) | P (60) |
| | 2 | Cyclizer Waste | 02 | D002 / D001 | | 99200 | P |
| | 3 | HCR Vent Waste | 08 | D001 | | 68000 | P |
| | 4 | Undertread Cement Waste | 08 | D001 | | 490 | P |
| | 5 | Maintenance Oil & Solvent Waste | 13 | F001 | | 7040 | P |
| | 6 | Resin Solution H9 Waste | 08 | D001 | | 215 | P |
| | 7 | Wacker K0118 Waste | 08 | D001 | | 55 | P |
| | 8 | F-784 gelled waste | 08 | D001 | | 400 | P |
| | 9 | | | | | | |
| | 10 | | | | | | |
| | 11 | | | | | | |
| | 12 | | | | | | |

XIV. COMMENTS (enter information by section number—see instructions)

Tear out here

Do not make entries in shaded areas

ENVIRONMENTAL PROTECTION AGE Y

# Generator Biennial Hazardous Waste Report for 1983 (cont.)

This report is for the calendar year ending December 31, 1983.

Date rec'd: _____ Rec'd by: _____

VIII. GENERATOR'S EPA I.D. NO.

T/A C

G M I D 0 7 5 4 0 0 6 7 1 1

1 2 13 14 15

IX. FACILITY NAME (specify facility to which all wastes on this page were shipped)

CHEM-MET Services

X. FACILITY'S EPA I.D. NO.

F M I D 0 9 6 9 6 3 1 9 4

16 28

XI. FACILITY ADDRESS

18550 Allen Road

Wyandotte, MI 48192

XII. TRANSPORTATION SERVICES USED

Paul O. Sellars Co. MID980793350

XIII. WASTE IDENTIFICATION

| Sequence # (29–32) | Line # | A. Description of Waste (33–34) | B. DOT Hazard code | C. EPA Hazardous Waste No. (see instructions) (35–38, 39–42, 43–46, 47–50) | D. Amount of Waste (51–59) | E. Unit of Measure (60) |
|---|---|---|---|---|---|---|
| | 1 | Waste 1,1,1-trichloroethane mixture | | F002 | 540000 | P |
| | 2 | | | | | |
| | 3 | | | | | |
| | 4 | | | | | |
| | 5 | | | | | |
| | 6 | | | | | |
| | 7 | | | | | |
| | 8 | | | | | |
| | 9 | | | | | |
| | 10 | | | | | |
| | 11 | | | | | |
| | 12 | | | | | |

Tear out here

XIV. COMMENTS (enter information by section number—see instructions)

## SWS SILICONES CORPORATION

## RIVER WATER ANALYSIS

On August 25, 1983 water samples were collected at three different locations on the Raisin River south of SWS Silicones Corporation. The results from the analysis of these samples are as follows:

mg/l

| | Raisin Hwy. Bridge (Upstream) | South of the Electrical Substation | Wilmoth Hwy. Bridge (Downstream) |
|---|---|---|---|
| 1,1 dichloroethane | N.D. | N.D. | N.D. |
| t-1,2 dichloroethylene | N.D. | N.D. | N.D. |
| 1,1,1 trichloroethane | N.D. | N.D. | N.D. |
| trichloroethylene | N.D. | N.D. | N.D. |
| tetrachloroethylene | N.D. | N.D. | N.D. |
| trimethyl silanol | N.D. | N.D. | N.D. |

INTER-OFFICE CORRESPONDENCE

SWS Silicones Corporation

To G. C. Philbrook

Copy to L. B. Bruner
J. Calamungi
B. P. Dennis
G. L. Ford
B. McClellen
T. J. Sayers
G. R. Wolf

E+E on 9/27/83

Date December 2, 1983

From S. L. Compton

Subject SWS TEST WELL WATER RESULTS

Six filtered and unfiltered SWS test well water samples, collected on October 14, 1983, were analyzed for the 13 total priority metals. The results are as follows:

| Metal mg/l | POND 1S Well(U) | POND 1S Well(F) | DRUM M-1 Well(U) | DRUM M-1 Well(F) | DRUM M-4 Well(U) | DRUM M-4 Well(F |
|---|---|---|---|---|---|---|
| 1. Antimony | 0.05 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| 2. Arsenic | <0.04 | <0.04 | <0.004 | <0.004 | 0.004 | <0.004 |
| 3. Beryllium | 0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.01 |
| 4. Cadmium | 0.014 | <0.001 | 0.003 | 0.004 | 0.005 | <0.001 |
| 5. Chromium | 0.14 | <0.01 | <0.01 | 0.01 | <0.01 | <0.01 |
| 6. Copper | 3.69 | 0.008 | 0.015 | 0.015 | 0.026 | 0.012 |
| 7. Lead | 0.24 | 0.003 | 0.013 | 0.002 | 0.016 | 0.004 |
| 8. Mercury | 0.0004 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.000 |
| 9. Nickel | 0.33 | 0.009 | 0.006 | 0.001 | 0.009 | 0.007 |
| 10. Selenium | <0.02 | <0.002 | <0.004 | <0.004 | <0.01 | <0.004 |
| 11. Silver | 0.023 | 0.006 | <0.005 | <0.005 | <0.005 | 0.007 |
| 12. Thallium | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| 13. Zinc | 2.13 | 0.029 | 0.048 | 0.026 | 0.061 | 0.032 |

(U) = unfiltered and containing nitric acid preservative
(F) = filtered prior to addition of nitric acid preservative

Analyses clearly indicate a reduction in some of the metal concentrations following sample filtration.

The filtration removes insoluble material. The contamination (insoluble material) results from bailing the wells prior to sampling.

Samuel L. Compton

Samuel L. Compton

SLC:jj

0032-093-02A (2/73)

DEC 6 1983

G. Philbrook

POND

EQE on 9/27/83

SWS SILICONES CORPORATION
Laboratory Testing - October 14, 1983
JONES & HENRY LABORATORIES, INC.

SWS Sample Identification: 63900
JHL Sample Number: 8310-201

IS Wall unfiltered

| TEST PARAMETER | CONCENTRATION (mg/l) |
|---|---|
| Antimony | 0.05 |
| Arsenic | < 0.04 |
| Beryllium | 0.01 |
| Cadmium | 0.014 |
| Chromium | 0.14 |
| Copper | 3.69 |
| Lead | 0.24 |
| Mercury | 0.0004 |
| Nickel | 0.33 |
| Selenium | < 0.02 |
| Silver | 0.023 |
| Thallium | < 0.1 |
| Zinc | 2.13 |

LT - Actual value less than stated level of detection

Please advise should you have questions concerning these data.

POND

SWS SILICONES CORPORATION
Laboratory Testing - October 14, 1983
JONES & HENRY LABORATORIES, INC.

SWS Sample Identification: 63903
JHL Sample Number: 8310-204

15 well
Filtered

| TEST PARAMETER | CONCENTRATION (mg/l) |
|---|---|
| Antimony | < 0.01 |
| Arsenic | < 0.04 |
| Beryllium | < 0.01 |
| Cadmium | < 0.001 |
| Chromium | < 0.01 |
| Copper | 0.008 |
| Lead | 0.003 |
| Mercury | < 0.0002 |
| Nickel | 0.009 |
| Selenium | < 0.002 |
| Silver | 0.006 |
| Thallium | < 0.1 |
| Zinc | 0.029 |

LT - Actual value less than stated level of detection

Please advise should you have questions concerning these data.

POND

G. Pilbrook

E & E

9/27/83 sample, all unfiltered

SWS SILICONES CORPORATION
Laboratory Testing - September 29, 1983
JONES & HENRY LABORATORIES, INC.

1S well

SWS Sample Identification: Well 690
JHL Sample Number: 8309-400

| TEST PARAMETER | | Concentration (mg/l) | |
|---|---|---|---|
| Antimony | | 0.2 | |
| Arsenic | | 0.009 | |
| Beryllium | LT | 0.01 | |
| Cadmium | | 0.014 | ✓ |
| Chromium | | 0.03 | |
| Copper | | 2.73 | ✓ |
| Lead | | 0.22 | ✓ |
| Mercury | LT | 0.001 | |
| Nickel | | 0.20 | |
| Selenium | LT | 0.015 | ✓ |
| Silver | | 0.045 | |
| Thallium | LT | 0.1 | |
| Zinc | | 1.15 | ✓ |

LT-Actual value less than stated level of detection

Please advise should you have questions concerning these data.

POND

UNFILTERED

SWS SILICONES CORPORATION
Laboratory Testing - September 29, 1983
JONES & HENRY LABORATORIES, INC.

IS well duplicate

SWS Sample Identification: Well 691
JHL Sample Number: 8309-401

| TEST PARAMETER | | Concentration (mg/l) |
|---|---|---|
| Antimony | | 0.3 |
| Arsenic | | 0.008 |
| Beryllium | LT | 0.01 |
| Cadmium | | 0.014 |
| Chromium | | 0.02 |
| Copper | | 1.89 |
| Lead | | 0.050 |
| Mercury | | 0.0005 |
| Nickel | | 0.19 |
| Selenium | LT | 0.015 |
| Silver | | 0.045 |
| Thallium | LT | 0.1 |
| Zinc | | 1.10 |

LT-Actual value less than stated level of detection

Please advise should you have questions concerning these data.

POND

UNFILTERED

SWS SILICONES CORPORATION
Laboratory Testing - September 29, 1983
JONES & HENRY LABORATORIES, INC.

35 well

SWS Sample Identification: Well 693
JHL Sample Number: 8309-403

| TEST PARAMETER | | Concentration (mg/l) |
|---|---|---|
| Antimony | | 0.08 |
| Arsenic | | 0.016 |
| Beryllium | LT | 0.01 |
| Cadmium | | 0.001 |
| Chromium | | 0.085 ✓ |
| Copper | | 0.154 |
| Lead | | 0.025 |
| Mercury | | 0.0005 |
| Nickel | | 0.070 |
| Selenium | LT | 0.015 |
| Silver | | 0.016 |
| Thallium | LT | 0.1 |
| Zinc | | 0.408 |

LT-Actual value less than stated level of detection

Please advise should you have questions concerning these data.

POND

UNFILTERED

SWS SILICONES CORPORATION
Laboratory Testing - September 29, 1983
JONES & HENRY LABORATORIES, INC.

3 D well

SWS Sample Identification: Well 694
JHL Sample Number: 8309-404

| TEST PARAMETER | Concentration (mg/l) | |
|---|---|---|
| Antimony | | 0.1 |
| Arsenic | LT | 0.002 |
| Beryllium | LT | 0.01 |
| Cadmium | | 0.005 |
| Chromium | | 0.09 ✓ |
| Copper | | 0.161 |
| Lead | | 0.075 ✓ |
| Mercury | LT | 0.0002 |
| Nickel | | 0.26 |
| Selenium | LT | 0.015 ✓ |
| Silver | | 0.012 |
| Thallium | LT | 0.1 |
| Zinc | | 0.600 |

LT-Actual value less than stated level of detection

Please advise should you have questions concerning these data.

PAND

UNFILTERED

SWS SILICONES CORPORATION
Laboratory Testing - September 29, 1983
JONES & HENRY LABORATORIES, INC.

SWS Sample Identification: Well 696 45 well
JHL Sample Number: 8309-406

| TEST PARAMETER | | Concentration (mg/l) |
|---|---|---|
| Antimony | | 0.02 |
| Arsenic | | 0.027 |
| Beryllium | LT | 0.01 |
| Cadmium | | 0.004 |
| Chromium | | 0.04 |
| Copper | | 0.065 |
| Lead | | 0.031 |
| Mercury | LT | 0.0002 |
| Nickel | | 0.082 |
| Selenium | LT | 0.015 ✓ |
| Silver | | 0.013 |
| Thallium | LT | 0.1 |
| Zinc | | 0.161 |

LT-Actual value less than stated level of detection

Please advise should you have questions concerning these data.

POND UNFILTERED

SWS SILICONES CORPORATION
Laboratory Testing - September 29, 1983
JONES & HENRY LABORATORIES, INC.

4D well

SWS Sample Identification: Well 697
JHL Sample Number: 8309-407

| TEST PARAMETER | | Concentration (mg/l) | |
|---|---|---|---|
| Antimony | | 0.02 | |
| Arsenic | | 0.029 | |
| Beryllium | LT | 0.01 | |
| Cadmium | | 0.008 | |
| Chromium | | 0.095 | ✓ |
| Copper | | 0.136 | |
| Lead | | 0.065 | ✓ |
| Mercury | LT | 0.0002 | |
| Nickel | | 0.12 | |
| Selenium | LT | 0.010 | |
| Silver | | 0.023 | |
| Thallium | LT | 0.1 | |
| Zinc | | 0.428 | |

LT-Actual value less than stated level of detection

Please advise should you have questions concerning these data.

SWS SILICONES CORPORATI

TABLE I

Old Evaporation Pond, Well Analyses

For June 9, July 21 and August 11, 1982

mg/l

| Well # | T.O.C. 6/9 | T.O.C. 7/21 | T.O.C. 8/11 | Chloride 6/9 | Chloride 7/21 | Chloride 8/11 | di-n-butyl-phthalate 6/9 |
|---|---|---|---|---|---|---|---|
| 1S | 30 | 900 | 1000 | 950 | 1600 | 2157 | ≤ 0.025 |
| 1D | 13 | 100 | (1) | 855 | 1180 | (1) | ND(2) |
| 2S | 29 | 28 | 24 | 440 | 410 | 547 | ND(2) |
| 2D | 5 | (1) | (1) | 240 | (1) | (1) | ≤ 0.030 |
| 3S | 14 | 13 | 14 | 190 | 400 | 537 | ND(2) |
| 3D | 5 | 7 | 6 | 174 | 250 | 239 | ≤0.025 |
| 4S | 20 | 34 | 360 | 1280 | 1390 | 1978 | ND(2) |
| 4D | 8 | 8 | 11 | 273 | 235 | 249 | ND(2) |
| 5 | 14 | 16 | 18 | 370 | 370 | 403 | ND(2) |

| Well # | 1,1,1 trichloroethane 6/9 | 1,1,1 trichloroethane 7/21 | 1,1,1 trichloroethane 8/11 | t-1,2-dichloroethylene 6/9 | t-1,2-dichloroethylene 7/21 | t-1,2-dichloroethylene 8/11 | 1,1 dichloroethane 6/9 | 1,1 dichloroethane 7/21 | 1,1 dichloroethane 8/11 |
|---|---|---|---|---|---|---|---|---|---|
| 1S | 3.7 | 5.5 | 6.9 | ND | ND | ND(3) | 17 | 28 | 36 |
| 1D | 0.13 | 0.12 | (1) | ND | ND | (1) | ND | ND | (1) |
| 2S | 0.25 | 0.40 | 0.61 | 0.74 | 0.65 | 0.67 | ND | ND | 0.01 |
| 2D | ND | (1) | (1) | ND | (1) | (1) | ND | (1) | (1) |
| 3S | 0.30 | 1.0 | 1.7 | ND | ND | 0.01 | ND | ND | 0.01 |
| 3D | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 4S | 3 | 2.5 | 3.6 | 0.80 | 0.03 | 0.03 | ND | 0.40 | 0.35 |
| 4D | 0.08 | 0.06 | 0.18 | 0.04 | 0.05 | 0.16 | ND | ND | ND |
| 5 | 0.25 | 0.20 | 0.31 | 0.14 | 0.25 | 0.40 | ND | ND | ND |

(1) Insufficient water for sampling.

(2) Detection limit about 0.02 mg/l.

(3) Detection limit about 1.0 mg/l in this sample.

(4) Other ND (None Detected) limits about 0.01 mg/l.

G. C. Philbrook
12-22-82

INSTALLATION SUMMARY FOR
OW-SERIES OBSERVATION WELLS
TABLE 1

| Well No. | Date Installed | Surveyed Elevation Top of PVC ft | Measured PVC Height Above Ground ft | Ground Elevation ft | Screened Interval Depth ft / Elevation ft | Elevation, Top of Sand Filter ft | Elevation, Top of Bentonite ft | Approx. Thickness of Screened Formation ft |
|---|---|---|---|---|---|---|---|---|
| OW-1d | 6/20/80 | 752.77 | 0.8 | 752.0 | 30.8-40.8/712.0-722.0 | 724.5 | 727.5 | 7'ML/3'SP·SM |
| OW-1s | 6/20/80 | 754.08 | 1.3 | 752.8 | 10.6-20.6/733.5-743.5 | 747.8 | 749.8 | 5.5'SW·SM/4.5'ML |
| OW-2d | 6/23/80 | 755.91 | 2.1 | 753.8 | 27.6-37.6/718.3-728.3 | 731.8 | 734.8 | 3.5'ML/6.5'SM |
| OW-2d | - | 761.91 | 3.1 | 758.8 | 33.6-43.6/718.3-728.3 | 731.8 | 734.8 | |
| OW-2s | 6/24/80 | 757.22 | 3.2 | 754.0 | 12.7-22.7/734.5-744.5 | 747.0 | 750.0 | 2.5'SM/7'ML/0.5'CL |
| OW-2s | - | 761.83 | 3.9 | 757.9 | 17.3-27.3/734.5-744.5 | 747.0 | 750.0 | |
| OW-3d | 6/25/80 | 763.49 | 2.8 | 760.7 | 32.8-42.8/720.7-730.7 | 738.7 | 741.7 | 2'ML/8'SM |
| OW-3s | 6/25/80 | 764.23 | 3.3 | 760.9 | 10.3-20.3/743.9-753.9 | 754.9 | 757.9 | 10'ML |
| OW-4d | 6/26/80 | 748.51 | 3.6 | 744.9 | 30.6-40.6/707.9-717.9 | 720.9 | 723.9 | 8'ML/2'SM |
| OW-4s | 6/27/80 | 748.09 | 2.9 | 745.2 | 6.4-16.4/731.7-741.7 | 742.2 | 744.2 | 6.5'SW/3.5'ML |
| OW-5 | 6/24/80 | 722.77 | 3.2 | 719.6 | 8.2-18.2/704.6-714.6 | 715.6 | 717.1 | 2'SW/4.5'ML·CL/ 3.5'SC |

Notes:

1. All depths are below top of PVC casing.

2. During dike construction, the top of wells OW-2d and OW-2s was raised by adding 6.0 and 4.6 feet of PVC casing to the wells, respectively. Top of PVC elevations were not resurveyed.

Gilbert/Commonwealth

RESULTS OF PERMEABILITY TESTS
CONDUCTED JULY 27-28, 1982

TABLE 2

| Well No. | Test Type | Permeability, cm/sec | Soil Description (1) |
|---|---|---|---|
| OW-1s | Bailer | $1.5 \times 10^{-2}$ | Fine-coarse sand |
| OW-1d | Particle-size | $3.8 \times 10^{-3}$ (2) | Silty fine sand |
| OW-3s | Recovery | $2.5 \times 10^{-3}$ | Sandy silt |
| OW-3d | Recovery | $2.8 \times 10^{-3}$ | Silty fine sand |
| OW-4s | Recovery | $1.7 \times 10^{-2}$ (3) | Fine-coarse sand |
| OW-4d | Recovery | $3.8 \times 10^{-3}$ | Silty fine sand |

Notes:

(1) Coarsest saturated soils within screened interval.

(2) Average of three values.

(3) Average of two values.

HYDROGEOLOGIC STUDY
SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

# BORING OW-1

SURFACE ELEVATION 752.1
COORDINATE 1298 S – 3612E

| ELEV. IN FEET | OTHER TESTS | SHEAR STRENGTH TEST (PSF) | ATTEMBERG LIMITS: LIQUID LIMIT | ATTEMBERG LIMITS: PLASTICITY INDEX | FIELD MOISTURE CONTENT (%) | DRY DENSITY (PCF) | PERCENT RECOVERY (%) | RQD | % PASSING 200 SIEVE | DEEP IN FEET | BLOW COUNT | SAMPLES | SYMBOLS | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | SM | Brown fine to medium SAND, some silt. (Fill) (Medium Dense) |
| | | | | | | | | | | 5 | 10 | | | |
| | | | | | | | | | 8.6 | 10 | 15 | | SW SM | Varicolored fine to coarse SAND and fine gravel, trace silt. |
| | | | | | | | | | | 15 | 36 | | ML | Light gray-brown SILT, some fine sand. (Medium Dense) |
| | | | | | | | | | 87.2 | | 23 | | | |
| | | | | | | | | | | 20 | 46 | | | Grades to gray, thin clay seams noted. |
| | | | | | | | | | | | 17 | | | |
| | | | 28.4 | 11.6 | 22.4 | | | | 90.1 | 25 | 16 | | CL | Gray CLAY, trace silt, coarse sand noted (Stiff) |
| | | | | | | | | | | | 15 | | | |
| | | | | | | | | | 68.8 | 30 | 49 | | ML | Gray SILT, some fine sand. (Very Dense) |
| | | | | | | | | | | 35 | 58 | | | |
| | | | | | | | | | 6.4 | 40 | 64 | | SP SM | Brown fine SAND, trace silt. (Very Dense) |
| | | | | | | | | | | 45 | | | | Boring terminated at 40' on 6/20/80. Water level encountered at 10.8' and 31.4' |
| | | | | | | | | | | 50 | | | | |
| | | | | | | | | | | 55 | | | | |
| | | | | | | | | | | 60 | | | | |

Monitoring wells were installed in two separate borings within a 5-foot diameter circle. All wells had a 10-foot long preslotted screen as the bottom section. The deep well had the screen tip at a depth of 40.0 feet; gravel packed to a depth of 27.5 feet; bentonite seal from a depth of 24.5 to 27.5 feet; and bentonite-cement grout from the bentonite seal to the ground surface. The shallow well had the screen tip at a depth of 19.3 feet; gravel packed to a depth of 5.0 feet; bentonite seal from a depth of 3.0 to 5.0 feet; and bentonite-cement grout from the bentonite seal to the ground surface.

## LEGEND

- ⊠ — STANDARD PENETRATION TEST
- ■ — UNDISTURBED SOIL SAMPLE
- ◪ — DISTURBED SOIL SAMPLE
- □ — LOST SOIL SAMPLE
- CR — CORE RUN NO.
- 22 — BLOWS PER FOOT
- P — HYDRAULICALLY PUSHED
- TV — TORVANE TEST
- UC — UNCONFINED COMPRESSION TEST
- Gs — SPECIFIC GRAVITY
- C — CONSOLIDATION TEST
- PN — PENETROMETER

LOG OF BORING

Gilbert/Commonwealth

HYDROGEOLOGIC STUDY
SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

# BORING OW-3

SURFACE ELEVATION 760.7
COORDINATE 897S - 3512E

| ELEV IN FEET | OTHER TESTS | SHEAR STRENGTH TEST (PSF) | ATTERBERG LIMITS: LIQUID LIMIT | ATTERBERG LIMITS: PLASTICITY INDEX | FIELD MOISTURE CONTENT (%) | DRY DENSITY (PCF) | PERCENT RECOVERY (%) | RQD | | DEPTH IN FEET | BLOW COUNT | SAMPLES | SYMBOLS | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 38.6 | 5 | 9 | ⊠ | SM | Brown fine to coarse SAND and SILT. (Fill) (Loose) |
| | | | | | | | | | | 10 | 10 | ⊠ | ML | Brown SILT, some fine sand. |
| | | | | | | | | | 74.7 | 15 | 32 | ⊠ | | Grades to gray. (Graded Dense) |
| | | PN-2750 | 30.4 | 13.0 | 19.2 | | | | | 20 | 17 | ⊠ | CL | Gray CLAY. (Stiff) Grades with silt seams. |
| | | PN-3700 | | | | | | | | | 29 | ⊠ | | Grades with silt seams. |
| | | | | | | | | | 71.2 | 25 | 72 | ⊠ | ML | Gray SILT, some fine sand. (Very Dense) |
| | | | | | | | | | | 30 | 37 | ⊠ | | (Grades Dense) Grades to tan. |
| | | | | | | | | | | 35 | 60 | ⊠ | SM | Brown fine SAND, trace silt. (Very Dense) |
| | | | | | | | | | | 40 | 78 | ⊠ | | Boring terminated at 40.5' on 6/25/80. Water level encountered at 7.7' and 33.7' |
| | | | | | | | | | | 45 | | | | |
| | | | | | | | | | | 50 | | | | |
| | | | | | | | | | | 55 | | | | |
| | | | | | | | | | | 60 | | | | |

Monitoring wells were installed in two separate borings within a 5-foot diameter circle. All wells had a 10-foot long preslotted screen as the bottom section. The deep well had the screen tip at a depth of 40.0 feet; gravel packed to a depth of 22.0 feet; bentonite seal from a depth of 19.0 to 22.0 feet; and bentonite-cement grout from the bentonite seal to the ground surface. The shallow well had the screen tip at a depth of 17.0 feet; gravel packed to a depth of 6.0 feet; bentonite seal from a depth of 3.0 to 6.0 feet; and bentonite-cement grout from the bentonite seal to the ground surface.

## LEGEND

- ⊠ — STANDARD PENETRATION TEST
- ■ — UNDISTURBED SOIL SAMPLE
- ◪ — DISTURBED SOIL SAMPLE
- □ — LOST SOIL SAMPLE
- CR — CORE RUN NO.
- 22 — BLOWS PER FOOT
- P — HYDRAULICALLY PUSHED
- TV — TORVANE TEST
- UC — UNCONFINED COMPRESSION TEST
- Gs — SPECIFIC GRAVITY
- C — CONSOLIDATION TEST
- PN — PENETROMETER

LOG OF BORING

Gilbert/Commonwealth

HYDROGEOLOGIC STUDY
SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

# BORING OW-4

SURFACE ELEVATION 744.9'
COORDINATE 1276 S - 3762E

| ELEV IN FEET | OTHER TESTS | SHEAR STRENGTH TEST (PSF) | ATTERBERG LIMITS: LIQUID LIMIT | ATTERBERG LIMITS: PLASTICITY INDEX | FIELD MOISTURE CONTENT (%) | DRY DENSITY (PCF) | PERCENT RECOVERY (%) | RQD | | DEPTH IN FEET | BLOW COUNT | SAMPLES | SYMBOLS | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 2.4 | 5 | 12 | ⊠ | SW | Brown fine to coarse SAND. (Medium Dense) |
| | | | | | | | | | | 10 | 27 | ⊠ | ML | Tan SILT, trace fine sand. (Medium Dense) |
| | | | | | | | | | 990 | 15 | 18 | ⊠ | | |
| | | | | | | | | | | | 21 | ⊠ | | Grades to gray. |
| | | | | | | | | | | 20 | 12 | ⊠ | CL | Gray CLAY. (Stiff) |
| | PN-2250 | 31.6 | 11.7 | 23.0 | | | | | | | 14 | ⊠ | | |
| | | | | | | | | | | 25 | 13 | ⊠ | | |
| | | | | | | | | | 61.6 | 30 | 47 | ⊠ | ML | Gray SILT, some fine sand. (Dense) |
| | | | | | | | | | | 35 | 69 | ⊠ | SM | Gray fine SAND, trace silt. (Very Dense) |
| | | | | | | | | | 6.7 | 40 | 62 | ⊠ | | Boring terminated at 40' on 6/26/80 Water level encountered at 4.5' and 28.0' |
| | | | | | | | | | | 45 | | | | |
| | | | | | | | | | | 50 | | | | |
| | | | | | | | | | | 55 | | | | |
| | | | | | | | | | | 60 | | | | |

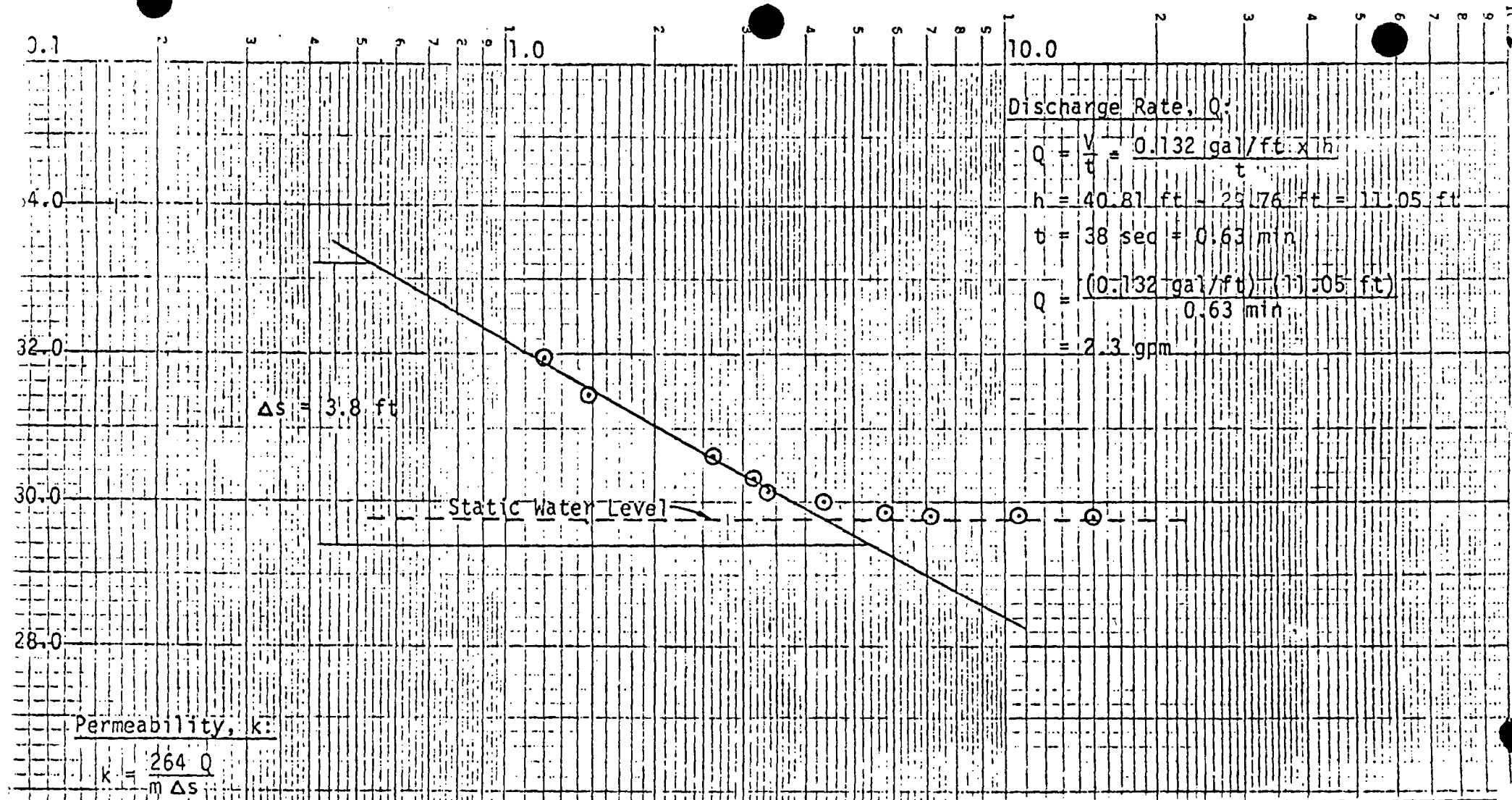
Monitoring wells were installed in two separate borings within a 5-foot diameter circle. All wells had a 10-foot long preslotted screen as the bottom section. The deep well had the screen tip at a depth of 37.0 feet; gravel packed to a depth of 24.0 feet; bentonite seal from a depth of 21.0 to 24.0 feet; and bentonite-cement grout from the bentonite seal to the ground surface. The shallow well had the screen tip at a depth of 13.5 feet; gravel packed to a depth of 3.0 feet; bentonite seal from a depth of 1.0 to 3.0 feet; and bentonite-cement grout from the bentonite seal to the ground surface.

## LEGEND

- ⊠ — STANDARD PENETRATION TEST
- ■ — UNDISTURBED SOIL SAMPLE
- ◪ — DISTURBED SOIL SAMPLE
- □ — LOST SOIL SAMPLE
- CR — CORE RUN NO.
- 22 — BLOWS PER FOOT
- P — HYDRAULICALLY PUSHED
- TV — TORVANE TEST
- UC — UNCONFINED COMPRESSION TEST
- Gs — SPECIFIC GRAVITY
- C — CONSOLIDATION TEST
- PN — PENETROMETER

LOG OF BORING

Gilbert/Commonwealth




Discharge Rate, Q:

$$Q = \frac{V}{t} = \frac{0.132\ \text{gal/ft} \times h}{t}$$

h = 40.81 ft − 29.76 ft = 11.05 ft

t = 38 sec = 0.63 min

$$Q = \frac{(0.132\ \text{gal/ft})(11.05\ \text{ft})}{0.63\ \text{min}}$$

= 2.3 gpm

Permeability, k:

$$k = \frac{264\ Q}{m\ \Delta s}$$

m = 2 ft

$$k = \frac{264\ (2.3\ \text{gpm})}{(2\ \text{ft})\ (3.8\ \text{ft})}$$

$= 79.9\ \text{gpd/ft}^2$

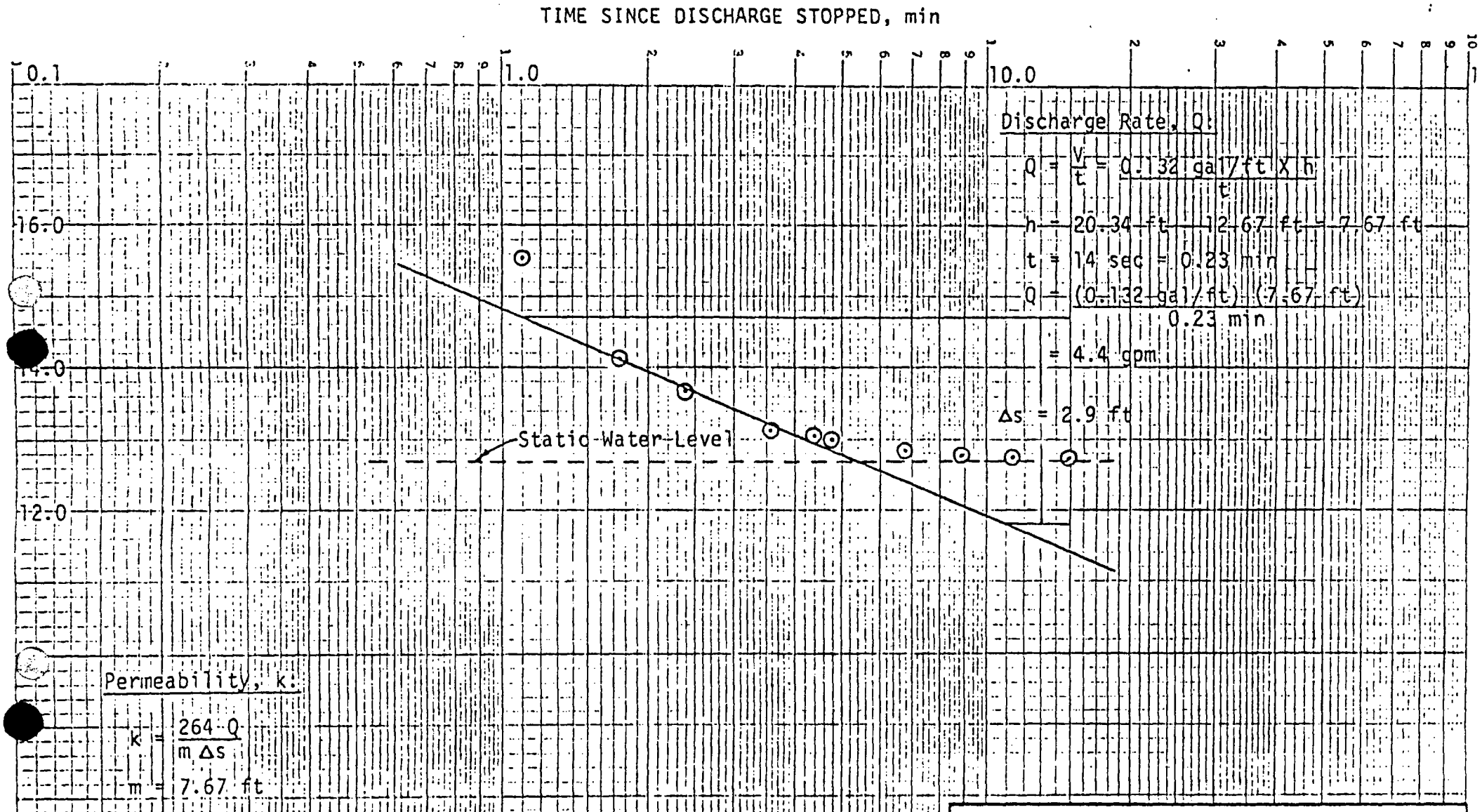
= 10.7 ft/day

$= 3.8 \times 10^{-3}$ cm/sec

SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

Gilbert Commonwealth Companies

RECOVERY DATA FOR
WELL OW-4d
JULY 28, 1982




Discharge Rate, Q:

$$Q = \frac{V}{t} = \frac{0.132\ \text{gal/ft} \times h}{t}$$

$h = 20.34\ \text{ft} - 12.67\ \text{ft} = 7.67\ \text{ft}$

$t = 14\ \text{sec} = 0.23\ \text{min}$

$$Q = \frac{(0.132\ \text{gal/ft})\ (7.67\ \text{ft})}{0.23\ \text{min}}$$

$= 4.4\ \text{gpm}$

$\Delta s = 2.9\ \text{ft}$

Permeability, k:

$$k = \frac{264\ Q}{m\ \Delta s}$$

$m = 7.67\ \text{ft}$

$$k = \frac{264\ (4.4\ \text{gpm})}{(7.67\ \text{ft})\ (2.9\ \text{ft})}$$

$= 52\ \text{gpd/ft}^2$

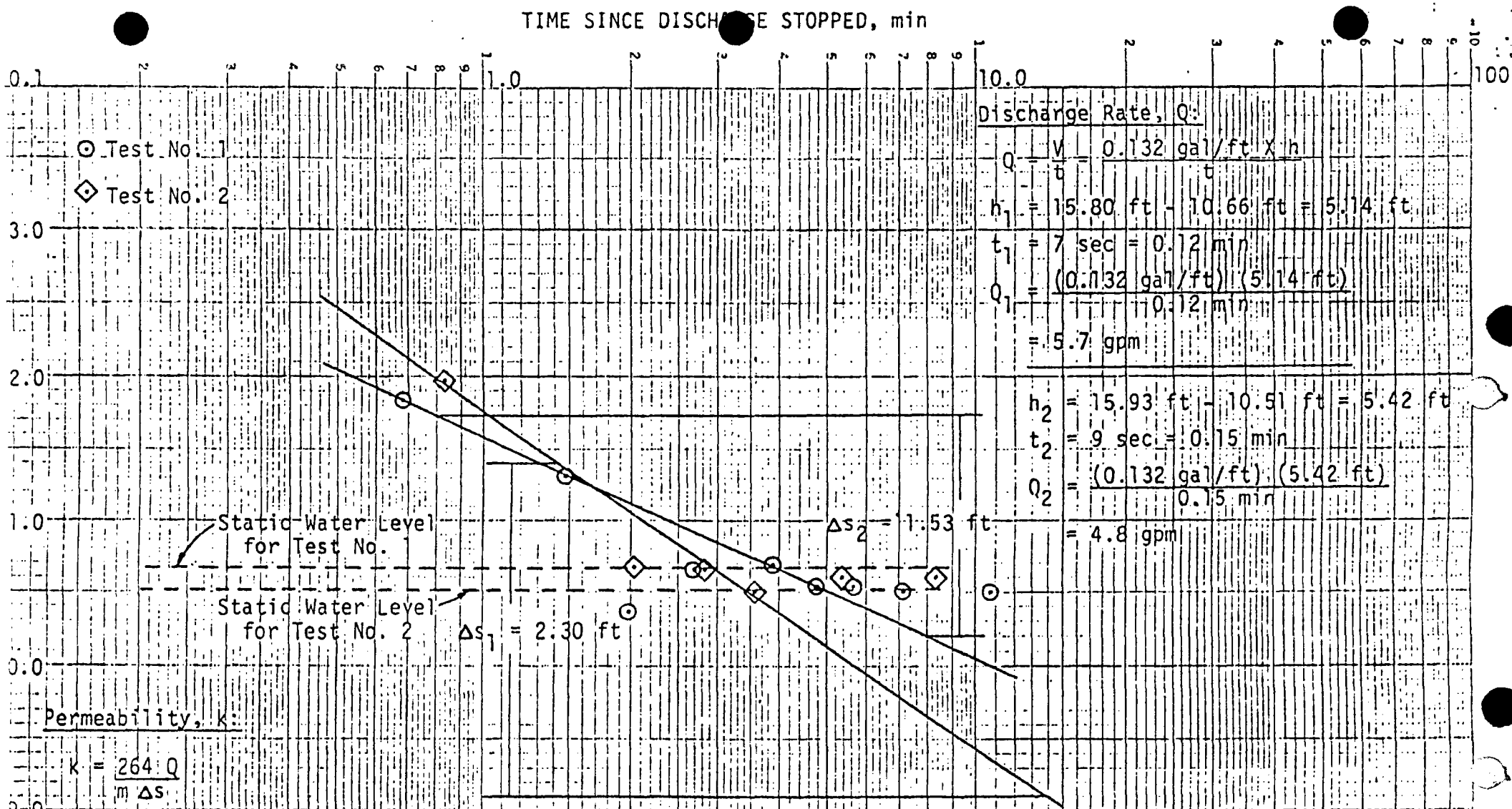
$= 7.0\ \text{ft/day}$

$= 2.5 \times 10^{-3}\ \text{cm/sec}$

SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

Gilbert Commonwealth Companies

RECOVERY DATA FOR
WELL OW-3s
JULY 27, 1982




**Discharge Rate, Q:**

$$Q = \frac{V}{t} = \frac{0.132 \text{ gal/ft} \times h}{t}$$

$h_1$ = 15.80 ft - 10.66 ft = 5.14 ft

$t_1$ = 7 sec = 0.12 min

$$Q_1 = \frac{(0.132 \text{ gal/ft})(5.14 \text{ ft})}{0.12 \text{ min}}$$

= 5.7 gpm

$h_2$ = 15.93 ft - 10.51 ft = 5.42 ft

$t_2$ = 9 sec = 0.15 min

$$Q_2 = \frac{(0.132 \text{ gal/ft})(5.42 \text{ ft})}{0.15 \text{ min}}$$

= 4.8 gpm

**Permeability, k:**

$$k = \frac{264\ Q}{m\ \Delta s}$$

$m_1$ = 2.0 ft

$$k_1 = \frac{264\ (5.7 \text{ gpm})}{(2.0 \text{ ft})(2.30 \text{ ft})}$$

= 327 gpd/ft$^2$

= 43.7 ft/day

= $1.5 \times 10^{-2}$ cm/sec

$m_2$ = 2.2 ft

$$k_2 = \frac{264\ (4.8 \text{ gpm})}{(2.2 \text{ ft})(1.53 \text{ ft})}$$

= 376 gpd/ft$^2$

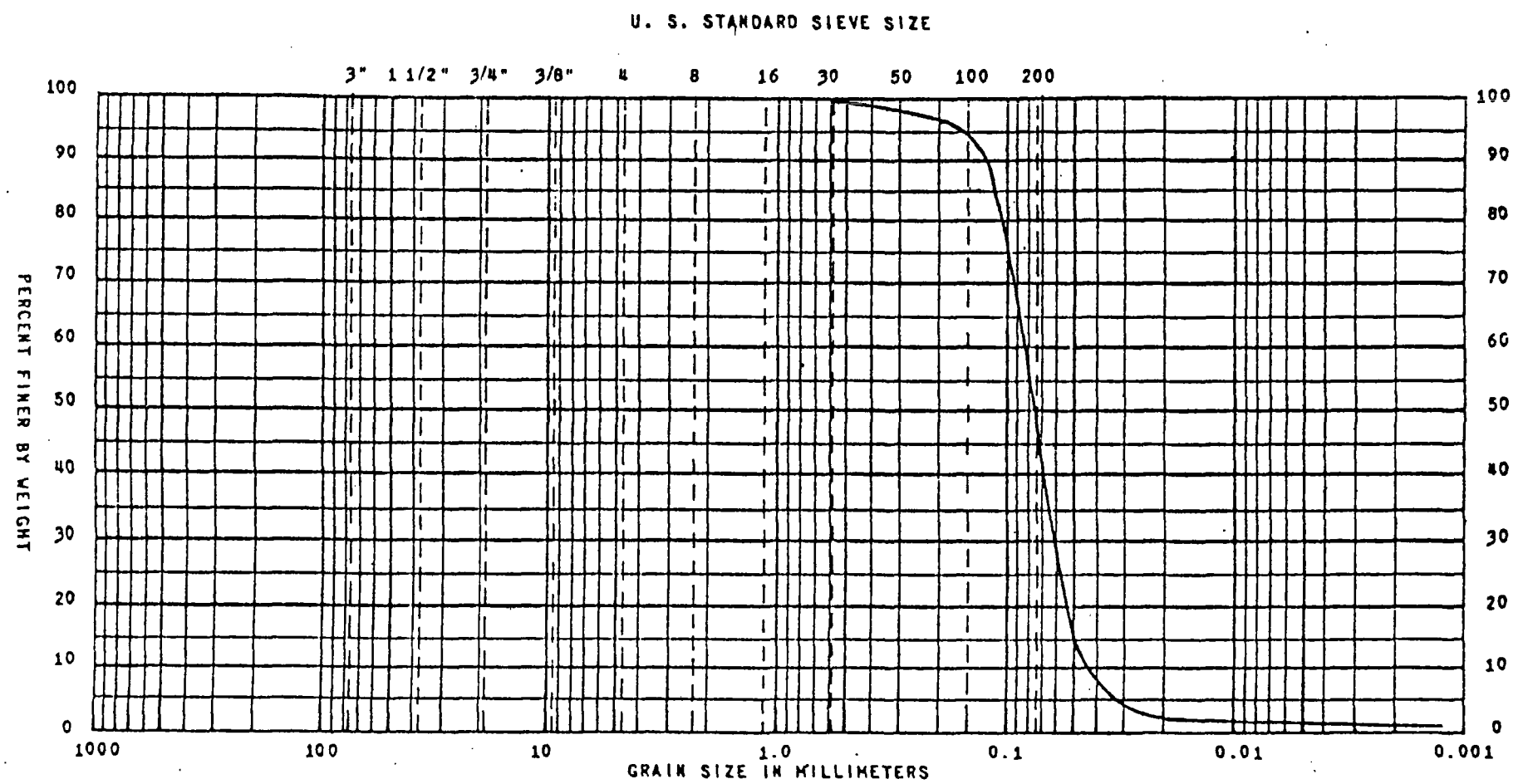
= 50.3 ft/day

= $1.8 \times 10^{-2}$ cm/sec

SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

Gilbert Commonwealth Companies

RECOVERY DATA FOR
WELL OW-4s
JULY 28, 1982




| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | COARSE | FINE | COARSE | MEDIUM | FINE | |

| BORING | DEPTH | CLASSIFICATION | | NAT. WC | LL | PL | PI | |
|---|---|---|---|---|---|---|---|---|
| OW-1d | * | SM | SILTY SAND | | | | | |

* Sand from screened interval.

SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

Gilbert Commonwealth Companies

GRADATION CURVE
FROM WELL OW-1d

INTER-OFFICE CORRESPONDENCE

SWS Silicones Corporation

To G. R. Wolf

Copy to G. C. Philbrook

Date August 4, 1982

From B. P. Dennis

Subject EVAPORATION POND

The results from the analysis of the nine Evaporation Pond well samples collected on July 21, 1982 are tabulated below:

| WELL NO. | TOC mg/l | Hydrolyzable chloride, mg/l | 1,1,1 trichloro-ethane, µg/l | 1,1 dichloro-ethane, µg/l | t-1,2-dichloro ethylene, µg/l |
|---|---|---|---|---|---|
| 1S | 900 | 1600 | 5500 | 28000 | N.D. |
| 1D | 100 | 1180 | 120 | N.D. | N.D. |
| | 28 | 410 | 400 | N.D. | 650 |
| 2D | (No water available for sampling) | | | | |
| 3S | 13 | 400 | 1000 | N.D. | N.D. |
| 3D | 7 | 250 | N.D. | N.D. | N.D. |
| 4S | 34 | 1390 | 2500 | 400 | 30 |
| 4D | 8 | 235 | 60 | N.D. | 50 |
| 5 | 16 | 370 | 200 | N.D. | 250 |

B. P. Dennis

BPD:cw

AUG 17 1982

0032-095-02A (2/78)

INTER-OFFICE CORRESPONDENCE

SWS Silicones Corporation

To G. R. Wolf

Copy to G. C. Philbrook

Date August 18, 1982

From B. P. Dennis

Subject Well Analysis

The Evaporation Pond monitoring wells were resampled on August 11, 1982 and analyzed for TOC, hydrolyzable chloride and three volatile halogenated organic compounds. The results from these analyses are given below:

| WELL NO. | TOC mg/l | Hydrolyzable chloride, mg/l | 1,1,1 trichloro-ethane, µg/l | 1,1 dichloro-ethane, µg/l | t-1,2-dichloro-ethylene, µg/l |
|---|---|---|---|---|---|
| 1S | 1000 | 2157 | 6900 | 36000 | N.D. (<1000) |
| 1D | | Insufficient water for sampling | | | |
| 2S | 24 | 547 | 610 | 10 | 670 |
| 2D | | Insufficient water for sampling | | | |
| 3 | 14 | 537 | 1700 | 10 | 10 |
| 3D | 6 | 239 | N.D. | N.D. | N.D. |
| 4S | 360 | 1978 | 3600 | 350 | 30 |
| 4D | 11 | 249 | 180 | N.D. | 160 |
| 5 | 18 | 403 | 310 | N.D. | 400 |

N.D. = None detected. Detection limits 10 µg/l except in 1S where 1,1 dichloroethane peak interferes.

B. Dennis

B. P. Dennis

BPD:cw

0032-095-02A (2/78)

AUG 20 1982

INTER-OFFICE CORRESPONDENCE

SWS Silicones Corporation

To G. R. Wolf

Copy to G. C. Philbrook

Date July 19, 1982

From B. P. Dennis

Subject ANALYSIS OF WATER FROM TEST WELLS

The results from the analysis of the test well samples for di-n-butyl phthalate are tabulated below. These samples were collected on June 9, 1982.

| WELL NO. | di-n-butyl phthalate, µg/l |
|---|---|
| 1 S | ≤25 |
| 1 D | ND |
| 2 S | ND |
| 2 D | ≤30 |
| 3 S | ND |
| 3 D | ≤25 |
| 4 S | ND |
| 4 D | ND |
| 5 | ND |

ND = None detected. Detection limits ~20 µg/l

B. P. Dennis

B Dennis

BPD:cw

JUL 21 1982

0032-095-02A (2/75)

# ORGANIC VOL. RESULTS FROM WELL SAMPLES ANALYSES (JUNE, 1982)

Sampled 6-9-82 / Analyzed 6-16/19-82

| Analysis Order | WELL | 1,1-Dichloroethane | t-1,2-Dichloroethylene | 1,2-Dichloroethane | * 1,1,1-Trichloroethane | Carbon Tetrachloride | 2-Methyl-2-BuOH | Trichloro-ethylene | Benzene | Toluene | Tetrachloro-ethylene | Cl⁻ mg/l | TOC mg/l | dinbutyl phthalate, ppb | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | 1 S | 17,000 | N.D. | 200 | 3,700 | 700 | 4,400 | N.D. | 100 | 700 | N.D. | 950 | 30 | | <25 |
| 13 | 1 S spiked | 18,000 (18,300) | 1,600 (1550) | 220 | 5,000 (6,700) | 800 | 5,000 | N.D. | 110 | 700 | N.D. | | | | |
| 9 | 1 D | N.D. | N.D. | N.D. | 130 | N.D. | N.D. | N.D. | N.D. | N.D. | 150 | 855 | 13 | | ND |
| 3 | 2 S | N.D. | 740 | N.D. | 250 | N.D. | 50 | 850 | N.D. | N.D. | N.D. | 440 | 29 | | ND |
| 1 | 2 D | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | 240 | 5 | | <30 |
| 4 | 3 S | N.D. | N.D. | N.D. | 300 | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | 190 | 14 | | ND |
| 2 | 3 D | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | 174 | 5 | | <25 |
| 11 | 3 D spiked | 210 (250) | 360 (310) | N.D. | 400 (410) | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | | | | |
| 8 | 4 S | N.D. | 800 | 15 | 3,000 | 1,000 | 6,500 | N.D. | 70 | N.D. | N.D. | 1280 | 20 | | ND |
| 7 | 4 D | N.D. | 40 | N.D. | 80 | N.D. | N.D. | 100 | N.D. | N.D. | 3,500 | 273 | 8 | | ND |
| 6 | 5 | N.D. | 140 | N.D. | 250 | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | 370 | 14 | | ND |
| 5 | DI BLANK | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | | | | |
| 10 | DI spiked | 230 (250) | 450 (310) | N.D. | 470 (410) | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | | | | |
| | FOR STATE DNR :→ | X | X | | X | | | | | | | X | X | | X |

STATE OF MICHIGAN

NATURAL RESOURCES COMMISSION
A HOEFER
JOHNSON
E M LAITALA
HILARY F SNELL
HARRY H WHITELEY
JOAN L WOLFE
CHARLES G YOUNGLOVE

WILLIAM G MILLIKEN, Governor

STEVENS T MASON BUILDING
BOX 30028
LANSING MI 48909

# DEPARTMENT OF NATURAL RESOURCES

HOWARD A TANNER, Director

Water Quality Division
9311 Groh Road
Grosse Ile, Michigan 48138

July 26, 1982

Mr. Gordon C. Philbrook
Environmental Control Coordinator
SWS Silicones Corporation
Adrian, Michigan 49221

Dear Mr. Philbrook:

We have completed our review of your September 26, 1980 Closure Plan for the "Black Pond" and subsequent submittals of January 11, January 29, April 14 and May 27, 1982. Based on our review, we are approving your September 26, 1980 Closure Plan with the following conditions:

1. The sludge in the Pond shall be mixed with "birm mix" at a ratio of 1 part sludge to 4 parts "birm mix" prior to any backfilling rather than just adding "birm mix" on top of the existing sludge as depicted in Part III of your Plan and drawing 0-181. The "birm mix" shall be added to the existing sludge in a manner guaranteed to provide complete mixing.

2. The backfill materials and thicknesses specified in Part III, IV and V of your Plan shall be adjusted to provide a minimum clay cap thickness of 36 inches while still maintaining the final grade as specified in Part VIII of your Plan and shown on drawing 0-181.

3. All backfill materials shall be compacted as specified in your Plan with no single lift exceeding six inches.

4. As I discussed with you by telephone on July 15, 1982, the water in the Pond can be transferred to the Chemical Sewer for treatment and discharge through outfall 001 at a rate not to exceed 30,000 gpd and on a Monday through Friday only basis.

Based on the above conditional approval, your facility is hereby considered to be in compliance with Part I.C.4.a. of NPDES Permit MI0026034

MICHIGAN
THE GREAT LAKE STATE

ADRIAN, MICHIGAN 49221 • TELEPHONE (517) 263-5711

May 27, 1982

RECEIVED
JUN 1 1982
WATER QUALITY DIV.
DIST. 1

Mr. Roy Schrameck, District Engineer
Michigan Department of Natural Resources
Water Quality Division, District #1
9311 Groh Road
Grosse Ile, Michigan 48138

Dear Mr. Schrameck:

As requested in your letter of January 26, 1982, we are enclosing analytical information, from duplicate samples, of the old evaporation pond water. These were analyzed for DEHP, 1,1,1 trichloroethane, trichloroethylene, 1,2-t-dichloroethylene, 1,1-dichloroethane, ethylbenzene, tetrachloroethylene, and toluene.

The DEHP was analyzed on a separate sample, and showed an ND ($<$20 micrograms/liter) level. However, we have not received a formal letter from Shrader labs, yet, on the DEHP results.

Based on this data, and also the fact that the NPDES parameter items, such as TSS, BOD and chlorides are also low, we would like to start discharging this pond water to the chemical sewer system at the rate of about 20,000 to 30,000 GPD.

As you know, this water would receive further treatment in the chemical sewer system. The discharge rate would be controlled so that there would be no risk of exceeding any NPDES parameters.

Any final Pond Closure Plan must include removal of the pond water as a preliminary step. Pond water removal would eliminate the hydraulic head over the pond sludge and would also allow the sludge to dry out, so that future treatment would be more effective.

This would be of great help in meeting our pond closure target date of September 30, 1982.

Yours truly,

SWS SILICONES CORPORATION

Gordon C. Philbrook

Gordon C. Philbrook
Environmental Control Coordinator

GCP:pb 82-138, certified

cc: J. Calamungi
G. L. Ford
B. McClellan
T. J. Sayers

SHRADER ANALYTICAL
&
CONSULTING LABORATORIES , INC.

PRIORITY POLLUTANT SUMMARY

CUSTOMER . . SWS SILICONES CORP DATE : 20-MAY-82
SAMPLE : 7361 SAMPLE# 56304

CONC. UNITS : MICROGRAMS/LITER LIMIT OF DETECTION : 2.

| COMPOUND | CONC. | # IONS |
|---|---|---|
| INTERNAL STANDARD AREA : 822. | | |
| 1,1,1-TRICHLOROETHANE | 346.6 | 4 |
| TRICHLOROETHYLENE | < 2 | 2 |
| 1,2-TRANS-DICHLOROETHYLENE | 49.1 | 1 |
| 1,1-DICHLOROETHANE | 346.5 | 3 |
| ETHYLBENZENE | < 2 | 1 |
| TETRACHLOROETHYLENE | < 2 | 3 |
| TOLUENE | 131.7 | 2 |

ND = NOT DETECTED

OTHER COMPOUNDS DETECTED

| SCAN | IONS | COMPOUND NAME |
|---|---|---|

SHRADER ANALYTICAL

CONSULTING LABORATORIES , INC.

PRIORITY POLLUTANT SUMMARY

CUSTOMER . . SWS SILICONES DATE : 20-MAY-82
SAMPLE : 7362 SAMPLE# X-56304

CONC. UNITS : MICROGRAMS/LITER LIMIT OF DETECTION : 2.

| COMPOUND | CONC. | # IONS |
|---|---|---|
| INTERNAL STANDARD AREA : 1003. | | |
| 1,1,1-TRICHLOROETHANE | 311.5 | 4 |
| TRICHLOROETHYLENE | 2.3 | 5 |
| 1,2-TRANS-DICHLOROETHYLENE | 50.9 | 4 |
| 1,1-DICHLOROETHANE | 307.9 | 3 |
| ETHYLBENZENE | ND | |
| TETRACHLOROETHYLENE | < 2 | 5 |
| TOLUENE | 149.9 | 1 |

ND = NOT DETECTED

OTHER COMPOUNDS DETECTED

| SCAN | IONS | COMPOUND NAME |
|---|---|---|

ADRIAN, MICHIGAN 49221 • TELEPHONE (517) 263-5711

April 14, 1982

RECEIVED

APR 16 1982

WATER QUALITY DIV.
DIST. 1

Mr. Roy Schrameck, District Engineer
Michigan Department of Natural Resources
Water Quality Division, District #1
9311 Groh Road
Grosse Ile, Michigan 48138

Dear Mr. Schrameck,

This letter is in answer to your letter of January 26, 1982 in which you requested additional information concerning the old evaporation pond, in order to evaluate our proposed Pond Closure Plan.

Table 1 attached is a summary of the pond sludge analyses for methyl chloroform in the raw sludge, the sludge leachate and the sludge/birm mix leachate.

We had problems getting a representative pond sample thru the ice and snow. We are now in the process of sampling the pond and we will send you the analyses around the end of April.

Yours truly,

SWS SILICONES CORPORATION

Gordon C. Philbrook

Gordon C. Philbrook
Environmental Control Coordinator

GCP:pb 82-93, certified

cc: J. Calamungi
T. J. Sayers

Table I

SWS SILICONES CORPORATION

Summary

Evaporation Pond Sludge Analyses; February 1982

| Sample | Sample Location | % Methyl Chloroform(1) |
|---|---|---|
| A | NE Corner; N 1/2 | 18% |
| B | N Center; N 1/2 | 7.0% |
| C | Center; N 1/2 | 0.16% |
| D | W; N 1/2 | 2.5% |
| E | SE Corner; S 1/2 | 0.24% |
| Composite (2) | ---- | 7.1% |

(1) By chloroform extraction; then NMR

(2) Used weighted average based upon estimated volumes of sludge at each location. However, we skewed the composite to the high side, in order to get a better study of the effects of fixing with birm mix.

| Sample | Sample Location | Leach Water; mg/l Methyl Chloroform |
|---|---|---|
| A | NE Corner; N 1/2 | 45 mg/l |
| C | Center; N 1/2 | 0.54 mg/l |
| Composite (2) | ---- | 27 mg/l |

| Birm Mix Ratios | | Leach Water; mg/l Methyl Chloroform |
|---|---|---|
| Sample A, 1 part | to 4 parts birm mix | 0.10 mg/l |
| Composite, 1 part | to 2 parts birm mix | 0.17 mg/l |
| Composite, 1 part | to 4 parts birm mix | 0.09 mg/l |

These results are highly suspect without a full explanation of sampling and analytical methodology. I would say the method would have to be equivalent to MDNR volatiles in soils methodology.

RBP
2-26-85

SWS Silicones Corporation
ADRIAN, MICHIGAN 49221 • TELEPHONE (517) 263-5711

August 26, 1981

Ms. Claudia Weaver
Environmental Enforcement Division
State of Michigan
Department of Natural Resources
Steven T. Mason Building
P. O. Box 30028
Lansing, Michigan 48909

Re: SWS Silicones Corp., Adrian, MI
Your letter of June 17, 1981

Dear Ms. Weaver:

We have analyzed the old evaporation pond (black pond) sludge for chemicals listed in Table 302(b) of Rule 302, Act 64. There were three which were detected:

| Hazardous Waste # | Substance | Weighted average in sludge |
|---|---|---|
| U226 | 1,1,1 trichloroethane | 36,900 ppm |
| U069 | di-n-butyl phthalate | < 50 ppm |
| U188 | phenol | < 50 ppm |

It should be pointed out that getting representative sampling of the pond sludge was very difficult, due to variability in concentrations, and the results above are weighted averages of many samples. Analyses were done by Schrader Laboratories, Inc. of Detroit, Michigan.

Most of the pond sludge showed very low concentrations of 1,1,1 trichloroethane. The high concentrations were localized and, in part, reflect the absorbent characteristics of carbon black and other materials found in the pond sludge.

Since there is an estimated 2,000,000 kg of sludge, the waste would become a notification waste under the criteria of Act 64, due to the presence of 1,1,1 trichloroethane.

A completed Michigan Waste Characterization Report for this sludge is attached.

We assume you will contact Mr. Gary Ford for a meeting concerning the pond closure.

Yours truly,

SWS SILICONES CORPORATION

Gordon C. Philbrook

Gordon C. Philbrook
Environmental Control Coordinator

81-196-GCP:pb
cc: R. Schrameck, DNR District Office
Certified mail

bcc: G. L. Ford
J. Calamungi
T. J. Sayers

EPA CONSOLIDATED PERMIT FORM 2C - PART C (Cont.)

SWS SILICONES CORPORATION

Outfall no. 2 SAMPLE : 47785-001 SA-5331

Outfall 001

Analyses performed on 10-SEP-90

| 1. POLLUTANT | 2. MARK 'X' Test Req'd | Believed Pres. | Believed Abs. | 3. EFFLUENT a. MAXIMUM DAILY VALUE (1) conc | (2) mass | d. NO. OF ANALYSES | 4. UNITS a. CONCENTRATION | b. MASS |
|---|---|---|---|---|---|---|---|---|
| **GC/MS FRACTION - VOLATILE COMPOUNDS** | | | | | | | | |
| 1V. Acrolein (107-02-8) | X | | | < 0.020 | | 1 | milligr/L | Karan |
| 2V. Acrylonitrile (107-13-1) | X | | | < 0.020 | | 1 | milligr/L | Karan |
| 3V. Benzene (71-43-2) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 4V. Bis(Chl'methyl)Ether (542-88-1) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 5V. Bromoform (75-25-2) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 6V. Carbon Tetrachloride (56-23-5) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 7V. Chlorobenzene (108-90-7) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 8V. Chlorodibromomethane (124-48-1) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 9V. Chloroethane (75-00-3) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 10V. 2-Cl'ethylvinylEther (110-75-8) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 11V. Chloroform (67-66-3) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 12V. Dichlorobromomethane (75-27-4) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 13V. Dichlorodifluoromethane (75-71-8) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 14V. 1,1-Dichloroethane (75-34-3) | X | | | .010 | .00 | 1 | milligr/L | Karan |
| 15V. 1,2-Dichloroethane (107-06-2) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 16V. 1,1-Dichloroethylene (75-35-4) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 17V. 1,2-Dichloropropane (78-87-5) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 18V. 1,2-Dichloropropylene (542-75-6) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 19V. Ethylbenzene (100-41-4) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 20V. Methyl Bromide (74-83-9) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 21V. Methyl Chloride (74-87-3) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 22V. Methylene Chloride (75-09-2) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 23V. 1,1,2,2-TetraCl'ethane (79-34-5) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 24V. Tetrachloroethylene (127-18-4) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 25V. Toluene (108-88-3) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 26V. 1,2-t-Dichloroethylene (156-60-5) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 27V. 1,1,1-Trichloroethane (71-55-6) | X | | | .223 | .00 | 1 | milligr/L | Karan |
| 28V. 1,1,2-Trichloroethane (79-00-5) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 29V. Trichloroethylene (79-01-6) | X | | | .001 | .00 | 1 | milligr/L | Karan |
| 30V. Trichlorofluoromethane (75-69-4) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 31V. Vinyl Chloride (75-01-4) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| **GC/MS FRACTION - ACID COMPOUNDS** | | | | | | | | |
| 1A. 2-Chlorophenol (95-57-8) | X | | | .016 | .00 | 1 | milligr/L | Karan |
| 2A. 2,4-Dichlorophenol (120-83-2) | X | | | < 0.002 | | 1 | milligr/L | Karan |
| 3A. 2,4-Dimethylphenol (105-67-9) | X | | | < 0.002 | | 1 | milligr/L | Karan |
| 4A. 4,6-Dinitro-o-Cresol (534-52-1) | X | | | < 0.020 | | 1 | milligr/L | Karan |
| 5A. 2,4-Dinitrophenol (51-28-5) | X | | | < 0.020 | | 1 | milligr/L | Karan |
| 6A. 2-Nitrophenol (88-75-5) | X | | | .018 | .00 | 1 | milligr/L | Karan |
| 7A. 4-Nitrophenol (100-02-7) | X | | | < 0.020 | | 1 | milligr/L | Karan |
| 8A. P-Chloro-M-Cresol (59-50-7) | X | | | < 0.002 | | 1 | milligr/L | Karan |
| 9A. Pentachlorophenol (87-86-5) | X | | | < 0.002 | | 1 | milligr/L | Karan |
| 10A. Phenol (108-95-2) | X | | | < 0.002 | | 1 | milligr/L | Karan |
| 11A. 2,4,6-Trichlorophenol (88-06-2) | X | | | < 0.002 | | 1 | milligr/L | Karan |

EPA CONSOLIDATED PERMIT FORM 2C - PART C (Cont.)

SWS SILICONES CORPORATION

Outfall no. 2 SAMPLE : 47785-001 SA-5301

Analyses performed on 10-SEP-80

| 1. POLLUTANT | 2. MARK 'X' Test Req'd | Believed Pres. | Believed Abs. | 3. EFFLUENT a. MAXIMUM DAILY VALUE (1) conc | (2) mass | d. NO. OF ANALYSES | 4. UNITS a. CONCEN-TRATION | b. MASS |
|---|---|---|---|---|---|---|---|---|
| GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS | | | | | | | | |
| 1B. Acenaphthene (83-32-9) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 2B. Acenaphthylene (208-96-8) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 3B. Anthracene (120-12-7) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 4B. Benzidine (92-87-5) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 5B. Benzo(a)Anthracene (56-55-3) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 6B. Benzo(a)Pyrene (50-32-8) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 7B. 3,4-Benzofluoranthene (205-99-2) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 8B. Benzo(ghi)Perylene (191-24-2) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 9B. Benzo(k)Fluoranthene (207-08-9) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 10B. Bis(2-Cl'ethoxy)Me'ane(111-91-1) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 11B. Bis(2-Cl'ethyl) Ether (111-44-4) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 12B. Bis(2-Cl'isopr'l)E'r(39638-32-9) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 13B. Bis(2-Ethylhexyl)Phth (117-81-7) | X | | | .048 | .00 | 1 | milligr/L | Karan |
| 14B. 4-Br'phenylPhenylEther(101-55-3) | X | | | < 0.001 ← .039 net | | 1 | milligr/L | Karan |
| 15B. Butyl Benzyl Phth (85-68-7) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 16B. 2-Chloronaphthalene (91-58-7) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 17B. 4-Cl'phenylPhenylEther(7005-72-3 | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 18B. Chrysene (218-01-9) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 19B. Dibenzo(a,h)Anthracene (53-70-3) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 20B. 1,2-Dichlorobenzene (95-50-1) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 21B. 1,3-Dichlorobenzene (541-73-1) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 22B. 1,4-Dichlorobenzene (106-46-7) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 23B. 3,3'-Dichlorobenzidine (91-94-1) | X | | | < 0.001 No Net | | 1 | milligr/L | Karan |
| 24B. Diethyl Phthalate (84-66-2) | X | | | .001 | .00 | 1 | milligr/L | Karan |
| 25B. Dimethyl Phthalate (131-11-3) | X | | | < 0.001 No Net | | 1 | milligr/L | Karan |
| 26B. Di-n-Butyl Phthalate (84-74-2) | X | | | .001 | .00 | 1 | milligr/L | Karan |
| 27B. 2,4-Dinitrotoluene (121-14-2) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 28B. 2,6-Dinitrotoluene (606-20-2) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 29B. Di-n-Octyl Phthalate (117-84-0) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 30B. 1,2-Diphenylhydrazine (122-66-7) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 31B. Fluoranthene (206-44-0) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 32B. Fluorene (86-73-7) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 33B. Hexachlorobenzene (118-71-1) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 34B. Hexachlorobutadiene (87-68-3) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 35B. HexaCl'cyclopentadiene (77-47-4) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 36B. Hexachloroethane (67-72-1) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 37B. Indeno(1,2,3-cd)Pyrene(193-39-5) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 38B. Isophorone (78-59-1) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 39B. Naphthalene (91-20-3) | X | | | .001 | .00 | 1 | milligr/L | Karan |
| 40B. Nitrobenzene (98-95-3) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 41B. N-Nitrosodimethylamine (62-75-9) | X | | | < 0.001 | | 1 | milligr/L | Karan |

This document consists of 10 pages, Page 5 of 10

SHRAI[illegible] LABORATORIES

EPA CONSOLIDATED PERMIT FORM 2C - PART C (Cont.)

SWS SILICONES CORPORATION

Outfall no. 2 SAMPLE : 47705-001 SA-5331

Analyses performed on 10-SEP-90

| 1. POLLUTANT | 2. MARK 'X' Test Req'd | Believed Pres. | Abs. | 3. EFFLUENT a. MAXIMUM DAILY VALUE (1) conc | (2) mass | d. NO. OF ANALYSES | 4. UNITS a. CONCEN-TRATION | b. MASS |
|---|---|---|---|---|---|---|---|---|
| GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS (Cont.) | | | | | | | | |
| 42B. N-Nitroso-n-Pr'lamine (621-64-7) | X | | | < 0.001 | | 1 | milligr/L | Kgram |
| 43B. N-Nitrosodiphenylamine (86-30-6) | X | | | < 0.001 | | 1 | milligr/L | Kgram |
| 44B. Phenanthrene (85-01-8) | X | | | < 0.001 | | 1 | milligr/L | Kgram |
| 45B. Pyrene (129-00-0) | X | | | < 0.001 | | 1 | milligr/L | Kgram |
| 46B. 1,2,4-Trichlorobenzene(120-82-1) | X | | | < 0.001 | | 1 | milligr/L | Kgram |
| GC/MS FRACTION - PESTICIDES | | | | | | | | |
| 1P. Aldrin (309-00-2) | | | X | | | | | |
| 2P. Alpha-BHC (319-84-6) | | | X | | | | | |
| 3P. Beta-BHC (319-85-7) | | | X | | | | | |
| 4P. Gamma-BHC (58-89-9) | | | X | | | | | |
| 5P. Delta-BHC (319-86-8) | | | X | | | | | |
| 6P. Chlordane (57-74-9) | | | X | | | | | |
| 7P. 4,4'-DDT (50-29-3) | | | X | | | | | |
| 8P. 4,4'-DDE (72-55-9) | | | X | | | | | |
| 9P. 4,4'-DDD* (72-54-8) | | | X | | | | | |
| 10P. Dieldrin (60-57-1) | | | X | | | | | |
| 11P. Alpha-Endosulfan (115-29-7) | | | X | | | | | |
| 12P. Beta-Endosulfan (115-29-7) | | | X | | | | | |
| 13P. Endosulfan Sulfate (1031-07-8) | | | X | | | | | |
| 14P. Endrin (72-20-8) | | | X | | | | | |
| 15P. Endrin Aldehyde (7421-93-4) | | | X | | | | | |
| 16P. Heptachlor (76-44-8) | | | X | | | | | |
| 17P. Heptachlor Epoxide (1024-57-3) | | | X | | | | | |
| 18P. PCB-1242 (53469-21-9) | | | X | | | | | |
| 19P. PCB-1254 (11097-69-1) | | | X | | | | | |
| 20P. PCB-1221 (11104-28-2) | | | X | | | | | |
| 21P. PCB-1232 (11141-16-5) | | | X | | | | | |
| 22P. PCB-1248 (12672-29-6) | | | X | | | | | |
| 23P. PCB-1260 (11096-82-5) | | | X | | | | | |
| 24P. PCB-1016 (12674-11-2) | | | X | | | | | |
| 25P. Toxaphene (8001-35-2) | | | X | | | | | |

EPA CONSOLIDATED PERMIT FORM 2C - PART C (Cont.)

SWS SILICONES CORPORATION

Outfall no. 1 SAMPLE : 47734-EP SA-5330

Black Pond

Analyses performed on 10-SEP-80

| 1. POLLUTANT | 2. MARK 'X' Test Req'd | Believed Pres. | Abs. | 3. EFFLUENT a. MAXIMUM DAILY VALUE (1) conc | (2) mass | d. NO. OF ANALYSES | 4. UNITS a. CONCENTRATION | b. MASS |
|---|---|---|---|---|---|---|---|---|
| **GC/MS FRACTION - VOLATILE COMPOUNDS** | | | | | | | | |
| 1V. Acrolein (107-02-8) | X | | | < 0.020 | | 1 | milligr/L | Kgram |
| 2V. Acrylonitrile (107-13-1) | X | | | < 0.020 | | 1 | milligr/L | Kgram |
| 3V. Benzene (71-43-2) | X | | | .001 | .00 | 1 | milligr/L | Kgram |
| 4V. Bis(Chl'methyl)Ether (542-88-1) | X | | | < 0.001 | | 1 | milligr/L | Kgram |
| 5V. Bromoform (75-25-2) | X | | | < 0.001 | | 1 | milligr/L | Kgram |
| 6V. Carbon Tetrachloride (56-23-5) | X | | | < 0.001 | | 1 | milligr/L | Kgram |
| 7V. Chlorobenzene (108-90-7) | X | | | < 0.001 | | 1 | milligr/L | Kgram |
| 8V. Chlorodibromomethane (124-48-1) | X | | | < 0.001 | | 1 | milligr/L | Kgram |
| 9V. Chloroethane (75-00-3) | X | | | < 0.001 | | 1 | milligr/L | Kgram |
| 10V. 2-Cl'ethylvinylEther (110-75-8) | X | | | < 0.001 | | 1 | milligr/L | Kgram |
| 11V. Chloroform (67-66-3) | X | | | < 0.001 | | 1 | milligr/L | Kgram |
| 12V. Dichlorobromomethane (75-27-4) | X | | | < 0.001 | | 1 | milligr/L | Kgram |
| 13V. Dichlorodifluoromethane(75-71-8) | X | | | < 0.001 | | 1 | milligr/L | Kgram |
| 14V. 1,1-Dichloroethane (75-34-3) | X | | | .326 | .00 | 1 | milligr/L | Kgram |
| 15V. 1,2-Dichloroethane (107-06-2) | X | | | < 0.001 | | 1 | milligr/L | Kgram |
| 16V. 1,1-Dichloroethylene (75-35-4) | X | | | < 0.001 | | 1 | milligr/L | Kgram |
| 17V. 1,2-Dichloropropane (78-87-5) | X | | | .001 | .00 | 1 | milligr/L | Kgram |
| 18V. 1,2-Dichloropropylene (542-75-6) | X | | | < 0.001 | | 1 | milligr/L | Kgram |
| 19V. Ethylbenzene (100-41-4) | X | | | .004 | .00 | 1 | milligr/L | Kgram |
| 20V. Methyl Bromide (74-83-9) | X | | | < 0.001 | | 1 | milligr/L | Kgram |
| 21V. Methyl Chloride (74-87-3) | X | | | < 0.001 | | 1 | milligr/L | Kgram |
| 22V. Methylene Chloride (75-09-2) | X | | | < 0.001 | | 1 | milligr/L | Kgram |
| 23V. 1,1,2,2-TetraCl'ethane (79-34-5) | X | | | < 0.001 | | 1 | milligr/L | Kgram |
| 24V. Tetrachloroethylene (127-18-4) | X | | | .003 | .00 | 1 | milligr/L | Kgram |
| 25V. Toluene (108-88-3) | X | | | .018 | .00 | 1 | milligr/L | Kgram |
| 26V. 1,2-t-Dichloroethylene(156-60-5) | X | | | .229 | .00 | 1 | milligr/L | Kgram |
| 27V. 1,1,1-Trichloroethane (71-55-6) | X | | | 1.045 | .00 | 1 | milligr/L | Kgram |
| 28V. 1,1,2-Trichloroethane (79-00-5) | X | | | < 0.001 | | 1 | milligr/L | Kgram |
| 29V. Trichloroethylene (79-01-6) | X | | | .010 | .00 | 1 | milligr/L | Kgram |
| 30V. Trichlorofluoromethane (75-69-4) | X | | | < 0.001 | | 1 | milligr/L | Kgram |
| 31V. Vinyl Chloride (75-01-4) | X | | | < 0.001 | | 1 | milligr/L | Kgram |
| **GC/MS FRACTION - ACID COMPOUNDS** | | | | | | | | |
| 1A. 2-Chlorophenol (95-57-8) | X | | | .007 | .00 | 1 | milligr/L | Kgram |
| 2A. 2,4-Dichlorophenol (120-83-2) | X | | | < 0.002 | | 1 | milligr/L | Kgram |
| 3A. 2,4-Dimethylphenol (105-67-9) | X | | | < 0.002 | | 1 | milligr/L | Kgram |
| 4A. 4,6-Dinitro-o-Cresol (534-52-1) | X | | | < 0.020 | | 1 | milligr/L | Kgram |
| 5A. 2,4-Dinitrophenol (51-28-5) | X | | | < 0.020 | | 1 | milligr/L | Kgram |
| 6A. 2-Nitrophenol (88-75-5) | X | | | < 0.002 | | 1 | milligr/L | Kgram |
| 7A. 4-Nitrophenol (100-02-7) | X | | | < 0.020 | | 1 | milligr/L | Kgram |
| 8A. P-Chloro-M-Cresol (59-50-7) | X | | | < 0.002 | | 1 | milligr/L | Kgram |
| 9A. Pentachlorophenol (87-86-5) | X | | | < 0.002 | | 1 | milligr/L | Kgram |
| 10A. Phenol (108-95-2) | X | | | < 0.002 | | 1 | milligr/L | Kgram |
| 11A. 2,4,6-Trichlorophenol (88-06-2) | X | | | < 0.002 | | 1 | milligr/L | Kgram |

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EPA CONSOLIDATED PERMIT FORM 2C - PART C (Cont.)

SWS SILICONES CORPORATION

Outfall no. 1 SAMPLE : 47784-EP SA-5300

Analyses performed on 10-SEP-90

| 1. POLLUTANT | 2. MARK 'X' Test Req'd | Believed Pres. | Abs. | 3. EFFLUENT a. MAXIMUM DAILY VALUE (1) conc | (2) mass | d. NO. OF ANALYSES | 4. UNITS a. CONCENTRATION | b. MASS |
|---|---|---|---|---|---|---|---|---|
| GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS | | | | | | | | |
| 1B. Acenaphthene (83-32-9) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 2B. Acenaphthylene (208-96-8) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 3B. Anthracene (120-12-7) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 4B. Benzidine (92-87-5) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 5B. Benzo(a)Anthracene (56-55-3) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 6B. Benzo(a)Pyrene (50-32-8) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 7B. 3,4-Benzofluoranthene (205-99-2) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 8B. Benzo(ghi)Perylene (191-24-2) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 9B. Benzo(k)Fluoranthene (207-08-9) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 10B. Bis(2-Chloroethoxy)Methane (111-91-1) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 11B. Bis(2-Chloroethyl) Ether (111-44-4) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 12B. Bis(2-Chloroisopropyl)Ether (39638-32-9) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 13B. Bis(2-Ethylhexyl)Phth (117-81-7) | X | DENR | | .009 | .00 | 1 | milligr/L | Karan |
| 14B. 4-Bromophenyl Phenyl Ether (101-55-3) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 15B. Butyl Benzyl Phth (85-68-7) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 16B. 2-Chloronaphthalene (91-58-7) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 17B. 4-Chlorophenyl Phenyl Ether (7005-72-3 | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 18B. Chrysene (218-01-9) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 19B. Dibenzo(a,h)Anthracene (53-70-3) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 20B. 1,2-Dichlorobenzene (95-50-1) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 21B. 1,3-Dichlorobenzene (541-73-1) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 22B. 1,4-Dichlorobenzene (106-46-7) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 23B. 3,3'-Dichlorobenzidine (91-94-1) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 24B. Diethyl Phthalate (84-66-2) | X | | | .059 | .00 | 1 | milligr/L | Karan |
| 25B. Dimethyl Phthalate (131-11-3) | X | | | .002 | .00 | 1 | milligr/L | Karan |
| 26B. Di-n-Butyl Phthalate (84-74-2) | X | | | .097 | .00 | 1 | milligr/L | Karan |
| 27B. 2,4-Dinitrotoluene (121-14-2) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 28B. 2,6-Dinitrotoluene (606-20-2) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 29B. Di-n-Octyl Phthalate (117-84-0) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 30B. 1,2-Diphenylhydrazine (122-66-7) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 31B. Fluoranthene (206-44-0) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 32B. Fluorene (86-73-7) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 33B. Hexachlorobenzene (118-71-1) | X | | | .001 | .00 | 1 | milligr/L | Karan |
| 34B. Hexachlorobutadiene (87-68-3) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 35B. Hexachlorocyclopentadiene (77-47-4) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 36B. Hexachloroethane (67-72-1) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 37B. Indeno(1,2,3-cd)Pyrene (193-39-5) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 38B. Isophorone (78-59-1) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 39B. Naphthalene (91-20-3) | X | | | .003 | .00 | 1 | milligr/L | Karan |
| 40B. Nitrobenzene (98-95-3) | X | | | < 0.001 | | 1 | milligr/L | Karan |
| 41B. N-Nitrosodimethylamine (62-75-9) | X | | | < 0.001 | | 1 | milligr/L | Karan |

This continuation page is intended for use with Form 2C and Form 2D only.

SHRADER LABORATORIES

EPA CONSOLIDATED PERMIT FORM 2C - PART C (Cont.)

SBS SILICONES CORPORATION

Outfall no. 1 SAMPLE : 47784-EP SA-5330

Analyses performed on 10-SEP-90

| 1. POLLUTANT | 2. MARK 'X' Test Req'd | Believed Pres. | Believed Abs. | 3. EFFLUENT a. MAXIMUM DAILY VALUE (1) conc | (2) mass | d. NO. OF ANALYSES | 4. UNITS a. CONCENTRATION | b. MASS |
|---|---|---|---|---|---|---|---|---|
| GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS (Cont.) | | | | | | | | |
| 42B. N-Nitroso-n-Propylamine (621-64-7) | X | | | < 0.001 | | 1 | milligr/L | Karam |
| 43B. N-Nitrosodiphenylamine (86-30-6) | X | | | < 0.001 | | 1 | milligr/L | Karam |
| 44B. Phenanthrene (85-01-8) | X | | | < 0.001 | | 1 | milligr/L | Karam |
| 45B. Pyrene (129-00-0) | X | | | < 0.001 | | 1 | milligr/L | Karam |
| 46B. 1,2,4-Trichlorobenzene (120-82-1) | X | | | < 0.001 | | 1 | milligr/L | Karam |
| GC/MS FRACTION - PESTICIDES | | | | | | | | |
| 1P. Aldrin (309-00-2) | | | X | | | | | |
| 2P. Alpha-BHC (319-84-6) | | | X | | | | | |
| 3P. Beta-BHC (319-85-7) | | | X | | | | | |
| 4P. Gamma-BHC (58-89-9) | | | X | | | | | |
| 5P. Delta-BHC (319-86-8) | | | X | | | | | |
| 6P. Chlordane (57-74-9) | | | X | | | | | |
| 7P. 4,4'-DDT (50-29-3) | | | X | | | | | |
| 8P. 4,4'-DDE (72-55-9) | | | X | | | | | |
| 9P. 4,4'-DDD (72-54-8) | | | X | | | | | |
| 10P. Dieldrin (60-57-1) | | | X | | | | | |
| 11P. Alpha-Endosulfan (115-29-7) | | | X | | | | | |
| 12P. Beta-Endosulfan (115-29-7) | | | X | | | | | |
| 13P. Endosulfan Sulfate (1031-07-8) | | | X | | | | | |
| 14P. Endrin (72-20-8) | | | X | | | | | |
| 15P. Endrin Aldehyde (7421-93-4) | | | X | | | | | |
| 16P. Heptachlor (76-44-8) | | | X | | | | | |
| 17P. Heptachlor Epoxide (1024-57-3) | | | X | | | | | |
| 18P. PCB-1242 (53469-21-9) | | | X | | | | | |
| 19P. PCB-1254 (11097-69-1) | | | X | | | | | |
| 20P. PCB-1221 (11104-28-2) | | | X | | | | | |
| 21P. PCB-1232 (11141-16-5) | | | X | | | | | |
| 22P. PCB-1248 (12672-29-6) | | | X | | | | | |
| 23P. PCB-1260 (11096-82-5) | | | X | | | | | |
| 24P. PCB-1016 (12674-11-2) | | | X | | | | | |
| 25P. Toxaphene (8001-35-2) | | | X | | | | | |

This document prepared for with State fund

Environmental Services
Borg-Warner Corporation
32740 Northwestern Highway, Farmington Hills, Michigan 48018 (313) 626-2426

Kemron Report No. 20701 (Revised)
Date 10-28-80

TO: SWS SILICONES CORPORATION
Attn: Mr. Burt Dennis
P. O. Box 428
ADRIAN, MI 49221

The following results were obtained on samples received on 9-30-80 and identified as shown.

TYPE OF SAMPLE: Water Pond

ANALYSIS REQUESTED: Cu, Sb, Cd, Pb, Zn, Ni, Cr, Se, Co, Hg, Be, As, Tl, and Ag

| KEMRON Lab No. | Your Identification Number | Name or Sample Description | Results of analysis |
|---|---|---|---|
| 05334 | 47784-EP | 9-29-80 | 0.04 ppm Cu |
| | Evaporation Pond | | 0.02 ppm Sb |
| | | | <0.02 ppm Cd |
| | | | <0.10 ppm Pb |
| | | | 0.05 ppm Zn |
| | | | <0.10 ppm Ni |
| | | | <0.10 ppm Cr |
| | | | <0.01 ppm Se |
| | | | <0.10 ppm Co |
| | | | <0.01 ppm Hg |
| | | | <0.03 ppm Be |
| | | | <0.01 ppm As |
| | | | <2 ppm Tl |
| | | | <0.05 ppm Ag |

This document paid for with State funds.

Analyst

Cecil L. Smith, Manager

Envi[illegible]al Services
Borg-Warner C[illegible]poration
32740 Northwestern Highway Farmington Hills Michigan 48018 (313) 626-2426

Kemron Report No. 20701 (Revised)

Date 10-28-80

TO: SWS SILICONES CORPORATION
(cont'd)

The following results were obtained on samples received on 9-30-80 and identified as shown.

Outfall 001

TYPE OF SAMPLE: Water

ANALYSIS REQUESTED: Cu, Sb, Cd, Pb, Zn, Ni, Cr, Se, Co, Hg, Be, As, Tl, and Ag

| KEMRON Lab No. | Your Identification Number | Name or Sample Description | Results of analysis |
|---|---|---|---|
| 05335 | 47785-001 | 9-29-80 | 0.06 ppm Cu |
| | | | <0.02 ppm Sb |
| | | | <0.02 ppm Cd |
| | | | <0.10 ppm Pb |
| | | | 0.03 ppm Zn |
| | | | <0.10 ppm Ni |
| | | | <0.10 ppm Cr |
| | | | <0.01 ppm Se |
| | | | <0.10 ppm Co |
| | | | <0.01 ppm Hg |
| | | | <0.03 ppm Be |
| | | | <0.01 ppm As |
| | | | <2 ppm Tl |
| | | | <0.05 ppm Ag |

No Net

Assessment paid for with State funds

Analyst

Cecil L. Smith Manager

Environmental Services
Borg-Warner Corporation
32740 Northwestern Highway, Farmington Hills Michigan 48018 (313) 626 2426

Kemron Report No. 20701 (Revised)

Date 10-28-80

TO: SWS SILICONES CORPORATION
(cont'd)

The following results were obtained on samples received on 9-30-80
and identified as shown.

Intake

TYPE OF SAMPLE: Water

ANALYSIS REQUESTED: Cu, Sb, Cd, Pb, Zn, Ni, Cr, Se, Co, Hg, Be, As, Tl, and Ag

| KEMRON Lab No. | Your Identification Number | Name or Sample Description | Results of analysis |
|---|---|---|---|
| 05336 | 47786-R1 | 9-29-80 | 0.07 ppm Cu |
| | | | <0.02 ppm Sb |
| | | | <0.02 ppm Cd |
| | | | <0.10 ppm Pb |
| | | | <0.01 ppm Zn |
| | | | <0.10 ppm Ni |
| | | | <0.10 ppm Cr |
| | | | <0.01 ppm Se |
| | | | <0.10 ppm Co |
| | | | <0.01 ppm Hg |
| | | | <0.03 ppm Be |
| | | | <0.01 ppm As |
| | | | <2 ppm Tl |
| | | | <0.05 ppm Ag |

Analyst

Cecil L. Smith Manager

SWS Silicones File

# MICHIGAN DEPARTMENT OF NATURAL RESOURCES

## INTEROFFICE COMMUNICATION

TO: David Batchelor, EED

FROM: Tim Jaski, WQD
District One

Subject: SWS Silicones
Collection of Water & Sludge Samples

DATE: October 27, 1980

On September 9, 1980, the writer and Water Quality Specialist Brian Reicks visited the SWS Silicones plant in Adrian. The purpose of the visit was to conduct a split sampling operation at several locations on the company's property. Before the sampling began, wemet briefly with Messrs. Calamungi and Philbrook as well as two men from the company's laboratory section. The parameters to be analyzed for from the collected samples were discussed.

The parameters are as follows:

| | | | | |
|---|---|---|---|---|
| Phenol | Nickel | Antimony | Aliphatic Amines | Toluene |
| Cadmium | Lead | Selenium | Styrene | Xylene |
| Chromium | Zinc | Dechlorane | Benzene | Methyl Chlorof[illegible] |
| Copper | Cobalt | Aromatic Amines | Ethyl Benzene | Tetra-Chloro-E[illegible] |
| | | | | 3,3 Di Chloro [illegible] |

The sampling points were determined to be as follows: (sketch attached)

Sample Station One : SWS Silicones NPDES Outfall 001
Water Sample only

Sample Station Two : SWS Silicones Settling/Evaporation Lagoon
(Black Pond) Composite Water & Sediments samples

Sample Station Three: SWS Silicones Water Intake at River Raisin
Water only

Sample Station Four: Waste Type A - Previously was discharged to
Black Pond
Liquid only

Sample Station Five: Waste Type B - Previously was discharged to
Black Pond
Liquid only

The Black Pond samples (both liquid and solids) were made by compositing material collected from three different locations in the pond. The subsurface liquid fraction was taken from the discharge of one of the aeration units whose intake was two feet below the surface. We needed to only collect two samples of the wastes (Type A & B), that are now stored but previously went to the Black Pond, because the company had segregated their waste storage into two classifications (based on plant production) for ease of handling.

If you have any questions regarding this memo, please contact our office.

TSJ/jmg

cc: Bob Babcock-Surface Water Compliance/WQD Files

| Parameter | Station One (process output ed) | Station Two (black pond) Liquid | Station Two Sediments | Station Three (river intake) | Station Four | Station Five |
|---|---|---|---|---|---|---|
| Phenol | 9 ug/l | 60 (unit?) | 2.6 mg/kg | K 5 | 21 | 39 |
| Cadmium | K 20 ug/l | K 20 | K 2 mg/kg | K 20 | K 20 | J 50 PS |
| Chromium | K 50 ug/l | K 50 | 6 mg/kg | K 50 | 90 | K 50 PS |
| Copper | K 20 ug/l | 60 | 4600 mg/kg | K 20 | K 20 | J 30 PS |
| Nickel | K 50 ug/l | K 50 | K 5 mg/kg | K 50 | K 50 | K 50 PS |
| [illegible] | K 50 ug/l | K 50 | K 5 mg/kg | K 50 | 160 | K 50 PS |
| Zinc | 60 ug/l | 90 | 60 mg/kg | K 50 | 60 | K 50 PS |
| Cobalt | K 50 ug/l | K 50 | K 5 mg/kg | K 50 | K 50 | K500 PS |
| Antimony | NAV | NAV | NAV | NAV | NAV | NAV |
| Selenium | NAV | NAV | NAV | NAV | NAV | NAV |
| Dechlorane | K 0.1 ug/l | K 0.1 | 240 ug/kg | K 0.1 | K 0.1 | K 0.1 |
| 1,3 Dichlorobenzene | K 0.1 ug/l | K 0.1 | K200 ug/kg | K 0.1 | interference K 10 | K 0.1 |
| Aromatic Amines | K100 ug/l | K 100 | NAV | K100 | K 100 | K100 |
| [illegible]atic Amines | K100 ug/l | 4500 | NAV | K100 | 11000 | K100 |
| Styrene | K 50 ug/l | K 50 | U | K 50 | K 50 | K 50 |
| Benzene | K 50 ug/l | K 50 | U | K 50 | K 50 | K 50 |
| Ethyl Benzene | K 50 ug/l | K 50 | U | K 50 | K 50 | K 50 |
| Toluene | K 50 ug/l | K 50 | U | K 50 | K 50 | K 50 |
| Xylene | K 50 ug/l | K 50 | U | K 50 | K 50 | K 50 |
| Methyl Chloroform | 80 ug/l | 670 | M | K 1 | L6000 | 52 |
| Tetra Chloro Ethylene | K 1 ug/l | K 1 | M | K 1 | K 1 | K 1 |

8-82

# HYDROGEOLOGIC INVESTIGATION OF DISPOSAL AREA

SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

R-2451

Approved by:

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Senior Geologist/Hydrogeologist
Industrial & Environmental Div.

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209 East Washington Avenue
Jackson, Michigan 49201
August, 1982

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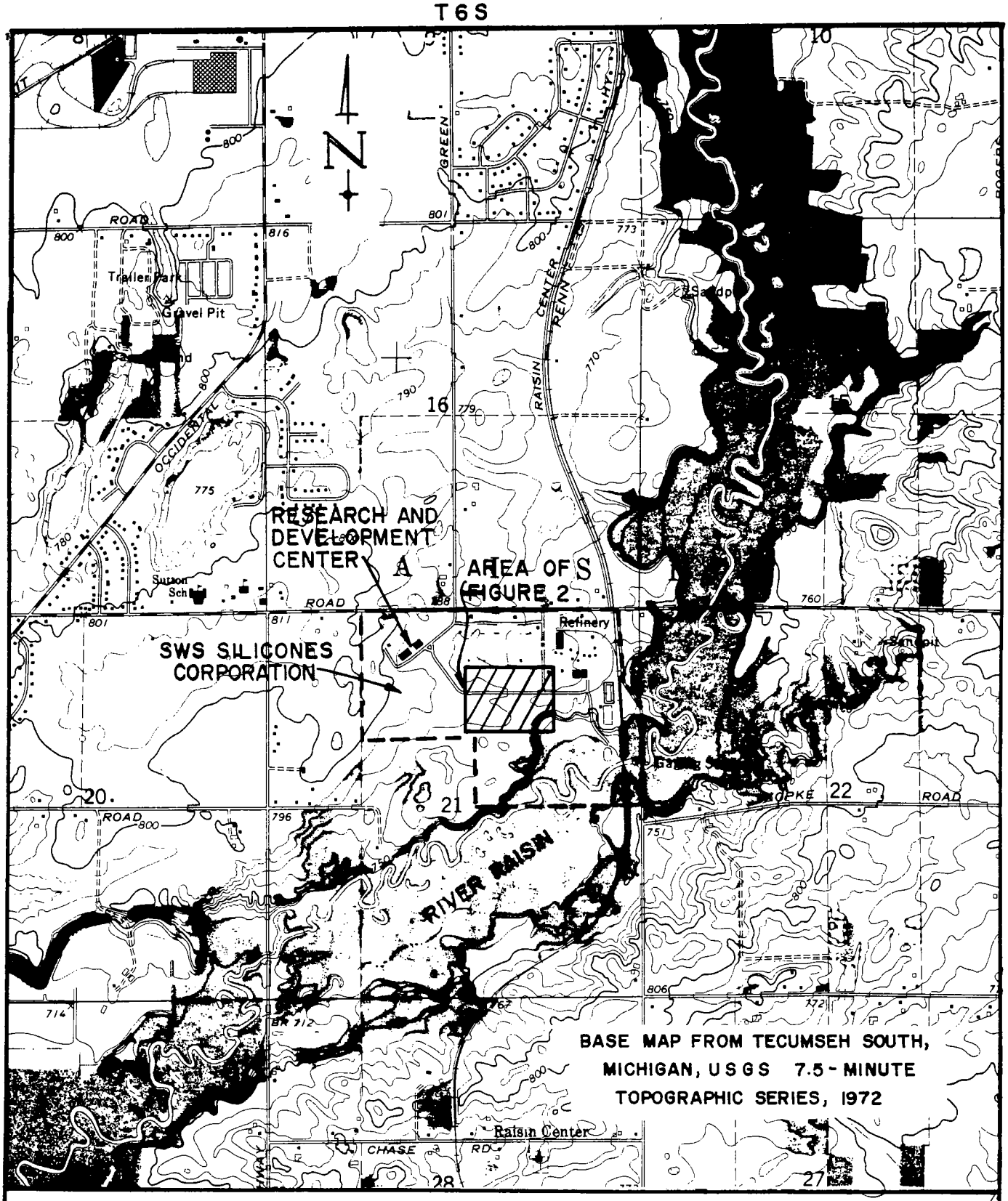
## I. PURPOSE AND LOCATION OF INVESTIGATION

In June 1982, Commonwealth Associates Inc. (Commonwealth) was retained by Stauffer Chemical Company to establish the existing hydrogeologic conditions in the vicinity of a disposal area on the property of SWS Silicones Corporation (SWS). The scope of the investigation was limited to definition of the physical parameters governing the occurrence and movement of ground water in the disposal area, particularly the nature of shallow subsurface materials and hydraulic gradient.

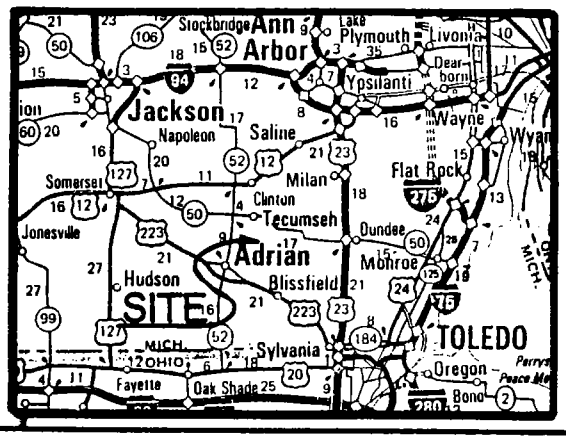
Located in the west half of the northeast quarter of Section 21 in Raisin Township (T.6S, R.4E), Lenawee County, the study area is approximately 4 miles south of Tecumseh and 4 miles northeast of Adrian, Michigan (Figure 1). The disposal area is approximately 1,200 feet south of Sutton Road, near the center of the SWS site. As shown on Figure 2, the valley of the River Raisin approaches to within 300 feet of the disposal area.

Wastes from the SWS plant were previously disposed within the area shown on Figure 2. The outer limits of the disposal area, which encompasses approximately 4 acres, were previously identified by SWS officials. In September 1972, approximately 100 steel drums containing mixed silanes were buried about 6 feet below grade within a small portion of the disposal area. The remainder of the disposal area contains scattered deposits of fine slag resulting from plant operations. Some plant refuse may also be buried within the area according to SWS officials.

T6S




BASE MAP FROM TECUMSEH SOUTH, MICHIGAN, USGS 7.5-MINUTE TOPOGRAPHIC SERIES, 1972




SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

Gilbert Commonwealth Companies

GENERAL SITE LOCATION

FIGURE 1

## II. SUMMARY

Four test borings were drilled on the property of SWS Silicones Corporation to determine the hydrogeologic conditions around a 4-acre disposal area. The 40-foot borings encountered two distinct layers of sand: an upper layer of fine to coarse sand and a lower layer of fine sand with varying amounts of silt. Two borings on the south and east sides of the disposal area, M-3 and M-4, also encountered approximately 10 feet of interbedded silt, clayey or sandy silt, and silty clay between the sand layers. The top of the interbedded material begins approximately 6.5 feet below existing grade. Owing to relatively high clay contents, the interbedded sediments could function as a barrier to vertical infiltration if they are areally extensive. Dry soils above these materials and the variability of soils exhibited in the 1964 exploration borings strongly suggest they are not continuous beneath the SWS site.

A PVC monitoring well was installed in each test boring in order to measure ground water levels and to permit sampling of ground water quality. One well, M-4, is located directly downgradient of the drum disposal area. The wells are screened approximately 3 feet below the water table in the lower fine sand aquifer. Ground water levels measured on June 17, 1982, ranged from elevation 749.53 feet on the northwest of the waste disposal area to 737.89 feet on the southeast. Based upon a ground water contour map and a permeability of $6 \times 10^{-3}$ cm/sec estimated from grain size data, ground water beneath the disposal area is flowing to the southeast toward the River Raisin valley at an approximate rate of 2 feet/day. The average hydraulic gradient is 0.019.

## III. METHODS OF INVESTIGATION

### Review of Existing Data

Published literature and reports of previous onsite investigations by Commonwealth and by others were reviewed to establish the hydrogeologic setting of the study area. Published data for the area are limited to the Tecumseh South Topographic Quadrangle, 7.5-minute series (USGS, 1972), and the report "Southeastern Michigan Water-Resources Study" by F. W. Twenter (1975). Onsite data included:

1. Logs of 38 shallow exploration borings drilled to depths of 15 to 40 feet in 1964 prior to plant construction.

2. Logs of 11 water supply test wells drilled in the middle 1960's, 1979, and 1980.

3. Logs of 12 soil borings drilled to depths of 12 to 40 feet in 1980 for waste storage tanks and the evaporation and settling basin.

4. Logs of two test wells for water supply drilled in 1980.

None of the above borings or test wells were located within the disposal area.

### Soil Borings

Four soil borings, M-1 through M-4, were drilled in the study area between June 8 and June 10, 1982. Boring locations are shown on Figure 2. The borings were approximately 40 feet deep and were drilled using truck-mounted rotary drilling

equipment. Soil samples were taken at 2.5- to 5.0-foot intervals using a split spoon sampler (Standard Penetration Test). Drilling operations were supervised by a Commonwealth geologist who maintained a continuous log of the soils encountered. Soils were classified in accordance with the Unified Classification System (Figures 3 and 4). Logs of the borings are presented in Figures 5 through 8.

The first boring drilled, M-1, was advanced using 6-inch hollow stem augers. However, heaving sand below the water table, which could not be controlled with either clear water or thin bentonite drilling mud, dictated a change in drilling method. In the remaining borings, 3-inch solid stem or flight augers were used to advance the borehole to the water table. Drilling continued below the water table with rotary wash bits while a thin bentonite slurry was circulated to keep the borehole open. Water used during drilling was obtained from the plant potable water system.

Cross-contamination between boreholes was minimized using several techniques. Boring M-1, located upgradient of the disposal area, was drilled first. The downgradient borings were drilled in the probable order of increasing contamination potential based upon the likely direction of ground water flow inferred from the surface topography. All drilling equipment, including the rig, was flushed with potable water prior to moving to the next boring location. In addition to these precautions, a new batch of bentonite slurry was prepared for each boring. The spent slurry was incorporated into the grout used to seal the borehole.

## Laboratory Soils Tests

Soil samples collected during drilling were taken to Commonwealth's soils laboratory in Jackson for review and testing. Selected samples were subjected to laboratory tests to determine particle size and Atterberg limits. Particle-size tests included sieve and hydrometer analyses. Analytical results were used to refine the soils classification assigned in the field during drilling. Laboratory test results are summarized on each boring log.

Gradation curves for all tested are presented on Figures 9 and 10. Data from these curves were used in conjunction with accepted equations to estimate the hydraulic conductivity (permeability) of the more granular soils. Permeability estimates are discussed in Section V.

## Monitoring Wells

A 2-inch diameter observation well was constructed in each borehole upon completion of drilling to permit the measurement of ground water levels. The wells were also designed to be suitable as monitoring wells for ground water quality. A well installation summary is presented in Table 1.

Each well is constructed of threaded, flush-joint PVC casing attached to 5 feet of Johnson, continuous-slot PVC well screen having a slot size of 0.006 inch. All screens and casing sections were steam cleaned, wrapped in plastic, and heat sealed by the manufacturer. Materials required for well construction were unwrapped immediately prior to installation.

In borings M-2 through M-4, the casing-screen assembly was installed in a slurry-filled borehole such that the top of the screen was approximately 3 feet below the water table noted

TABLE 1

WELL INSTALLATION SUMMARY

| Well No. | Date Installed | Location Plant Coordinates | Elev., Top of PVC ft, NGVD | PVC Height Above Ground ft | Ground Elev. ft, NGVD | Screened Interval Depth* ft / Elevation ft, NGVD | Elev., Top of Sand Filter ft, NGVD | Elev., Top of Bentonite Seal ft, NGVD |
|---|---|---|---|---|---|---|---|---|
| M-1 | 6/08/82 | N 48,826<br>E 25,337 | 783.28 | 2.8 | 780.5 | 34.5-38.5/742.0-746.0 | 747.5 | 749.5 |
| M-2 | 6/09/82 | N 48,483<br>E 25,572 | 777.79 | 2.8 | 775.0 | 35.4-40.4/734.6-739.6 | 743.8 | 746.2 |
| M-3 | 6/09/82 | N 48,647<br>E 25,998 | 773.41 | 2.5 | 770.9 | 34.4-39.4/731.5-736.5 | 739.9 | 742.9 |
| M-4 | 6/10/82 | N 48,556<br>E 25,827 | 773.74 | 2.3 | 771.4 | 35.2-40.2/731.2-736.2 | 745.6 | 746.6 |

*Below ground

Note:

1. During development of well M-1, the bottom plug separated from the well screen, allowing formation sand to enter the well. After flushing with clear water, pea gravel was added to a height of 6 inches above the base of the screen. The well was then sealed with 6 inches of cement, which was allowed to cure for 3 days before the well was redeveloped. Total reduction in screen length by this procedure was 1 foot, leaving 4 feet open to the aquifer.

during drilling. After installation, the borehole was flushed with potable water to remove the drilling fluid. The annular space around and a few feet above the screen was filled with clean silica sand. Flushing in M-2 caused the borehole to collapse around the well screen before the silica sand could be placed. Silica sand was added to raise the sand to the level shown in Table 1 prior to sealing the well. A layer of bentonite pellets followed by bentonite-cement grout was used to fill the remainder of the annular space to the ground surface. Each well was provided with a vented PVC cap and a 4-inch diameter protective steel standpipe.

The installation procedure for well M-1 differed slightly from that employed for the other wells. After the casing-screen assembly was placed in M-1, the hollow stem augers were pulled back to the top of the screen. Before the filter (silica) sand could be placed, however, the borehole collapsed around the screen so that fine sand formation material (SP-SM) is in direct contact with the screen. Prior to sealing,filter (silica) sand was added to raise the sand to the level shown in Table 1.

One objective of this investigation was to install a monitoring well directly downgradient of the drum disposal area. To do this, a sequential installation procedure was employed wherein the first three wells were installed to establish the direction of ground water flow. The location of boring and monitoring well M-4 was then selected based upon a flow map drawn using water levels observed during drilling and measured upon completion of wells M-1, M-2, and M-3.

Because the water level in the observation wells was below the limits for suction-lift pumping, the wells were developed with compressed air. The grout was allowed to set at least 12 hours before development began. Each well was developed until water bailed from the well was clear and sand free. Development time ranged from approximately 1.5 hours for M-3 to 4 hours for M-1.

Upon completion, observation well locations and elevations were established by registered surveyors from Commonwealth from the plant monument and grid system shown on Figure 2. The measuring point elevations recorded in Table 1 are for the highest point on the PVC casing with the PVC cap removed. Measured depths to water in the wells were converted to elevations in order to determine the direction of ground water flow and magnitude of the hydraulic gradient. All depths to water were measured using an electric water level indicator.

## IV. HYDROGEOLOGIC SETTING

The study area is situated on rolling uplands adjacent to the valley of the River Raisin. The ground surface slopes gently to the southeast from a topographic high of approximately elevation 790 feet near the Research and Development Center to below elevation 730 feet in the floodplain of the river. The center of the waste disposal area is approximately 1,500 feet southeast of the Research and Development Center and 500 feet northwest of the closest approach of the floodplain (Figures 1 and 2). Topographic relief across the upland is approximately 15 feet. An abrupt change in slope marks the edge of the upland.

[redacted] to coarse sand is exposed at the ground surface.

Soils in the study area consist of interbedded sands, silts, and clays of glacial origin. Based upon logs of the deeper test wells, soils on the upland are more than 200 feet thick. According to Twenter (1975, p. 26), the upper soils were reworked several times and deposited as beaches and lacustrine sediments in a large lake in front of the receding ice. Repeated advances and retreats of the ice front produced a highly variable hydrogeologic environment. The upper soils on the upland are predominantly fine sands with varying amounts of silt. However, logs of the earliest site borings, some of which were drilled 200 feet apart, indicate the presence of discontinuous layers or pockets of sandy silt, clayey silt, silt, and silty clay. In previous investigations, saturated soils were observed beneath a water table in fine sand at depths of 30 to 35 feet below ground.

## V. RESULTS OF INVESTIGATION

### Stratigraphic Sequence

Logs of the four borings drilled for this investigation are shown on Figures 5 through 9. As expected from previous investigations, sands are the predominant soil type. [redacted] uppermost soil beneath 0 to 2 feet of topsoil consists of [redacted] fine [redacted] area, this [redacted] very dense cross-bedded [redacted] of silt (SP-SM). Gradation differences between the two types of sand are illustrated on Figure 9. The fine sand in borings M-1 and M-2 began at a depth of approximately 17 feet and continued to the bottom of the borehole. No cohesive material that could function as a confining layer was encountered in these boreholes.

In the eastern part of the study area, approximately 10 feet of interbedded silt, clayey or sandy silt, and silty clay underlain by 1.5 to 5 feet of sandy silt occurs between the upper sand (SP) and lower sand (SP-SM). The top of the interbedded sediments is approximately 6.5 feet below existing grade in borings M-3 and M-4. Although the contact between the sandy silt beneath the interbedded sediments and the lower sand is gradational, the fine, cross-bedded sand begins at depths of approximately 22 and 19.5 feet in borings M-3 and M-4, respectively.

Soils above and below the interbedded materials are dry. At the time of sampling, the interbedded sediments were moist but not saturated. The higher water contents observed in these materials are characteristic of clayey soils. Gradation curves shown on Figure 10 indicate the silt and clay contents of representative samples from these soils.

Because of the relatively high clay content, the interbedded silts observed in borings M-3 and M-4 act as a local confining layer to vertical infiltration. The extent of these materials beneath the waste disposal area cannot be extrapolated from the borings taken for this investigation. However, if the interbedded silts were continuous, evidence of a perched water table would probably have been observed in the overlying fine to coarse sands. In fact, the soils above the interbedded silts were observed to be unsaturated, indicating that these materials are not laterally extensive. Even if they are present beneath the drum disposal area, it cannot be assumed they are connected to the interbedded silts encountered in either boring M-3 or M-4. Based upon the subsurface variability demonstrated by the previous exploration borings and water supply test wells, such continuity is doubtful.

Permeability

The hydraulic conductivity (permeability) of the water table aquifer beneath the waste disposal area was estimated from laboratory particle size data shown on Figures 9 and 10. Field permeability tests were not considered feasible because 1) the response of the fine sand aquifer to low-volume pumping or bailing tests would be too rapid for reliable measurement, and 2) injection (constant or falling head) tests would introduce foreign water to the aquifer prior to sampling for ground water analysis. Estimates of permeability using grain-size data are most applicable to uniformly graded sands such as those occurring below the water table in the study area.

Several empirical methods of determining permeability from grain-size data are described in ground water literature. The simplest, Hazen's Approximation, may be written

$$K = Ad_{10}^{2}$$

where K is permeability in cm/sec, $d_{10}$ is the particle size at which 10 percent of the soil particles are finer (by weight),

and A is 100. Using this equation, permeability of the six soil samples below the water table is estimated to range from $1.7 \times 10^{-3}$ to $5.5 \times 10^{-3}$ cm/sec.

As shown by the equation, Hazen's Approximation relies on a single grain size value from the gradation curve. Methods which also consider particle-size distribution have greater validity for non-uniform soils. Permeabilities for the same six soil samples were calculated using two such methods. The first is a modification of Hazen's Approximation, proposed by Beyer (1969), which replaces the constant A with a proportionality constant, C, based upon the uniformity coefficient, $d_{60}/d_{10}$. The proportionality constant is determined graphically. For the same six soil samples, C ranges from 101 to 108, resulting in slightly higher estimates of permeability than Hazen's Approximation.

Masch and Denny (1966) recommended a procedure which uses the median grain size, $d_{50}$, and the inclusive standard deviation, $\sigma_I$, as a measure of soil uniformity, where

$$\sigma_I = \frac{d_{16}-d_{84}}{4} + \frac{d_5-d_{95}}{6.6}$$

Gradation curves used to determine $d_5$, $d_{16}$, $d_{50}$, $d_{84}$, and $d_{95}$ are plotted using the ø-scale devised by Krumbein. Once $d_{50}$ and $\sigma_I$ are known, K is determined graphically from a family of experimental type curves. Permeabilities determined using this method range from $7.2 \times 10^{-3}$ to $9.7 \times 10^{-3}$ cm/sec.

Estimated permeability values calculated using all three empirical methods are summarized in Table 2.

TABLE 2

ESTIMATED PERMEABILITY
FROM GRAIN-SIZE DATA

| Well No. | Sample No. | Percent Passing No. 200 Sieve | Hazen's Method | Beyer's Method | Masch & Denny's Method |
|---|---|---|---|---|---|
| M-1 | 11 | 10.0 | $4.9 \times 10^{-3}$ | $5.3 \times 10^{-3}$ | $8.5 \times 10^{-3}$ |
| M-1 | 12 | 50.3 | $1.7 \times 10^{-3}$ | $1.8 \times 10^{-3}$ | $7.2 \times 10^{-3}$ |
| M-2 | 10 | 11.7 | $5.0 \times 10^{-3}$ | $5.2 \times 10^{-3}$ | $9.2 \times 10^{-3}$ |
| M-2 | 11 | 14.7 | $5.5 \times 10^{-3}$ | $5.7 \times 10^{-3}$ | $9.0 \times 10^{-3}$ |
| M-3 | 13 | 12.9 | $4.9 \times 10^{-3}$ | $5.0 \times 10^{-3}$ | $9.7 \times 10^{-3}$ |
| M-4 | 11 | 11.4 | $4.9 \times 10^{-3}$ | $5.0 \times 10^{-3}$ | $9.0 \times 10^{-3}$ |

Notes:

1. Methods of computing permeability are described in the text.

2. Gradation curves for the tested soil samples are shown on Figures 9 and 10. All samples are fine sand with varying amounts of silt.

Ground Water Flow

Ground water levels measured in monitoring wells M-1, M-2, M-3, and M-4 were used to prepare the ground water contour map shown on Figure 2. Ground water levels listed on the map were measured approximately 1 week after the wells were developed. These values compare favorably to the levels observed during drilling and measured before development.

Ground water flow lines constructed orthogonal to the ground water contours on Figure 2 show the horizontal direction of ground water flow. Based upon the map, ground water is flowing to the southeast across the study area toward the valley of the River Raisin. The hydraulic gradient along the flow lines averages 0.019, or 19 feet in 1,000 feet.

Ground water flow rates may be estimated from the relation

$$\overline{V} = \frac{Ki}{n_e}$$

where $\overline{V}$ is the average linear discharge or flow rate, K is hydraulic conductivity or permeability, i is the hydraulic gradient, and $n_e$ is effective porosity. (Permeability is a property only of the porous medium through which a fluid is moving while hydraulic conductivity is a function of both the medium and the fluid. Although not absolutely correct, the two terms are used synonymously in this discussion.) Based upon the permeabilities listed in Table 2, a value of $6 \times 10^{-3}$ is assumed for the calculation of flow rate. Effective porosity in unconfined aquifers is essentially equal to specific yield, or the volume of water released from storage under the influence of gravity per unit volume of saturated soil. For uniform sand, specific yield is commonly assumed to be 0.20. Therefore, using the average hydraulic gradient of 0.019, the flow rate is computed to be $5.7 \times 10^{-4}$ cm/sec or 1.6 ft/day. Thus, ground water is moving beneath the waste disposal area at a rate of approximately 2 ft/day.

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Masch, F. D., and K. J. Denny. 1966. Grain-size distribution and its effect on the permeability of unconsolidated sands: Water Resources Research, Vol. 2, pp. 665-677.

Twenter, F. W., 1975. Southeastern Michigan water-resources study: Ground water and geology: U.S. Geological Survey and U.S. Army Corps of Engineers.

# GENERAL NOTES FOR LOG OF BORINGS

## GRANULAR SOILS

| COMPONENT | SIEVE SIZE RANGE |
|---|---|
| BOULDERS | 8 in. |
| COBBLES | 8 in. – 3 in. |
| GRAVEL (COARSE) | 3 in. – 3/4 in. |
| GRAVEL (FINE) | 3/4 in – #4 (4.75 mm) |
| SAND (COARSE) | #4 – #10 (2.00 mm) |
| SAND (MEDIUM) | #10 – #40 (0.425 mm) |
| SAND (FINE) | #40 – #200 (0.074 mm) |
| SILT | #200 |

## RQD INTERPRETATION

RQD = TOTAL LENGTH OF RECOVERED CORE PIECES MEASURING 4". OR MORE IN LENGTH, EXPRESSED AS A PERCENTAGE OF THE TOTAL LENGTH OF THE CORE RUN.

| DESCRIPTIVE TERM | RQD, PERCENTAGE |
|---|---|
| VERY POOR | 0 – 25 |
| POOR | 26 – 50 |
| FAIR | 51 – 75 |
| GOOD | 76 – 90 |
| EXCELLENT | 91 – 100 |

## DEGREE OF COMPACTNESS OF GRANULAR SOILS

| N – BLOWS/FT | DESCRIPTION |
|---|---|
| <4 | VERY LOOSE |
| 4 – 9 | LOOSE |
| 10 – 29 | MEDIUM DENSE |
| 30 – 49 | DENSE |
| 50 – 80 | VERY DENSE |
| >80 | EXTREMELY DENSE |

## CONSISTENCY OF COHESIVE SOILS

| N – BLOWS/FT | UNCONFINED COMPRESSIVE STRENGTH, qu, TSF | CONSISTENCY |
|---|---|---|
| <2 | qu < 0.25 | VERY SOFT |
| 2 – 3 | 0.25 ≤ qu < 0.50 | SOFT |
| 4 – 7 | 0.50 ≤ qu < 1.00 | MEDIUM STIFF |
| 8 – 14 | 1.00 ≤ qu < 2.00 | STIFF |
| 15 – 30 | 2.00 ≤ qu < 4.00 | VERY STIFF |
| >30 | 4.00 ≤ qu | HARD |

N = NUMBER OF BLOWS OF A 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE A 2 IN. O.D. SPLIT-SPOON SAMPLER ONE FOOT.

## LEGEND

- ☒ – STANDARD PENETRATION TEST
- ■ – UNDISTURBED SOIL SAMPLE
- ◪ – DISTURBED SOIL SAMPLE
- ☐ – LOST SOIL SAMPLE
- CR – CORE RUN NO.
- 22 – BLOWS PER FOOT
- P – HYDRAULICALLY PUSHED
- TV – TORVANE TEST
- UC – UNCONFINED COMPRESSION TEST
- G – SPECIFIC GRAVITY
- C – CONSOLIDATION TEST
- PN – PENETROMETER
- BG – BAG SAMPLE

## CLASSIFICATION TERMINOLOGY

| DESCRIPTIVE TERM | PERCENT BY WEIGHT |
|---|---|
| TRACE | 0-9 |
| LITTLE | 10-19 |
| SOME | 20-34 |
| AND | 35-50 |

SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

Gilbert Commonwealth Companies

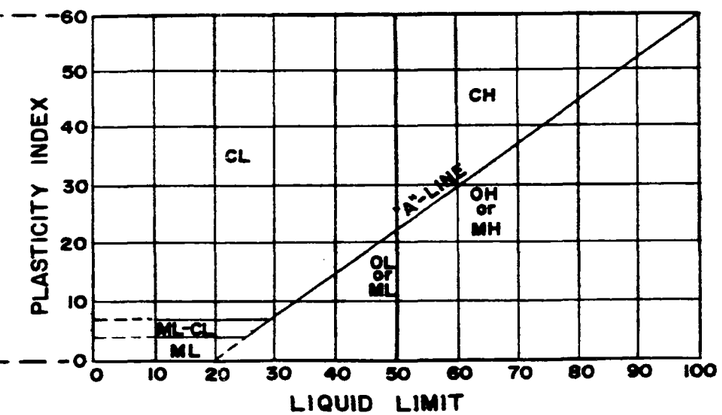
KEY TO LOG OF BORINGS

FIGURE 3

| MAJOR DIVISIONS | | | GRAPH SYMBOL | LETTER SYMBOL | TYPICAL DESCRIPTION |
|---|---|---|---|---|---|
| COARSE GRAINED SOILS<br>MORE THAN 50 % OF MATERIAL IS LARGER THAN NO. 200 SIEVE | GRAVEL AND GRAVELLY SOILS<br>MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE. | CLEAN GRAVEL (LITTLE OR NO FINES) | | GW | WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES |
| | | | | GP | POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES |
| | | GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES) | | GM | SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES |
| | | | | GC | CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES |
| | SAND AND SANDY SOILS<br>MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE. | CLEAN SAND (LITTLE OR NO FINES) | | SW | WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES |
| | | | | SP | POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES |
| | | SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES) | | SM | SILTY SANDS, SAND-SILT MIXTURES |
| | | | | SC | CLAYEY SANDS, SAND CLAY MIXTURES. |
| FINE GRAINED SOILS<br>MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE. | SILTS AND CLAYS | LIQUID LIMIT LESS THAN 50 | | ML | INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY. |
| | | | | CL | INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS. |
| | | | | OL | ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY. |
| | SILTS AND CLAYS | LIQUID LIMIT GREATER THAN 50 | | MH | INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS. |
| | | | | CH | INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS. |
| | | | | OH | ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS. |
| HIGHLY ORGANIC SOILS | | | | PT | PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS. |

| GRAPH SYMBOL | LETTER SYMBOL | ROCK CLASSIFICATION |
|---|---|---|
| | SH | SHALE |
| | SI | SILTSTONE |
| | SS | SANDSTONE |
| | LS | LIMESTONE |

PLASTICITY CHART




SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

CLASSIFICATION CHARTS

FIGURE 4

# BORING M-1

SURFACE ELEVATION 780.5' NGVD
PLANT COORDINATES: N48,826
E25,337

| ELEV. IN FEET | OTHER TESTS | SHEAR STRENGTH TEST (PSF) | ATTERBERG LIMITS: LIQUID LIMIT | ATTERBERG LIMITS: PLASTICITY INDEX | FIELD MOISTURE CONTENT (%) | DRY DENSITY (PCF) | PERCENT PASSING #200 SIEVE | RECOVERY (%) | WATER LEVEL DURING DRILLING | DEPTH IN FEET | BLOW COUNT | SAMPLES | SYMBOLS | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 780.5 | | | | | | | | | | | | | SP | Fill, brown fine to medium SAND, trace coarse sand and fine gravel, concrete fragments noted. |
| | | | | | | | | | | 5 | 26 | | | |
| | | | | | | | | | | | | | SP | Brown fine to coarse SAND, trace fine gravel, occasional thin layer of coarse sand noted. (medium dense) |
| | | | | | | | | | | 10 | 23 | | | |
| | | | | | | | | | | | 23 | | | |
| | | | | | | | 2.5 | | | 15 | 21 | | | |
| 764.0 | | | | | | | | | | | 32 | | | |
| | | | | | | | | | | 20 | 49 | | SP SM | Light brown fine SAND, trace to little silt, dry. (dense to very dense) |
| | | | | | | | | | | 25 | 57 | | | |
| | | | | | | | | | | 30 | 55 | | | Grades to moist. |
| 749.5 | | | | | | | | | | | | | SM | Light brown fine SAND, little silt, saturated. (dense) |
| | | | | | | | 14.7 | | | 35 | (42) (22/6") | | | |
| 740.5 | | | | | | | 50.3 | | | 40 | 32 | | | Grades to fine SAND and silt. |
| | | | | | | | | | | 45 | | | | Boring terminated at 40.0' on 6/08/82. Water level encountered at approx. 32.5' during drilling. |
| | | | | | | | | | | 50 | | | | |
| | | | | | | | | | | 55 | | | | |
| | | | | | | | | | | 60 | | | | |

NOTES:

1. A 2-inch PVC monitoring well was installed in the borehole with 4 feet of Johnson, continuous slot screen set between depths of 34.5 to 38.5 feet. Slot size is 0.006 inch. A complete installation summary is given in Table 1.

2. Blow counts in parentheses are not representative of the in situ soils.

SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

Gilbert Commonwealth Companies

LOG OF
BORING M-1

FIGURE 5

# BORING M-2

SURFACE ELEVATION 775.0' NGVD
PLANT COORDINATES: N 48,483
E 25,572

| ELEV. IN FEET | OTHER TESTS | SHEAR STRENGTH TEST (PSF) | ATTERBERG LIMITS: LIQUID LIMIT | ATTERBERG LIMITS: PLASTICITY INDEX | FIELD MOISTURE CONTENT (%) | DRY DENSITY (PCF) | PERCENT PASSING #200 SIEVE | RECOVERY (%) | WATER LEVEL DURING DRILLING | DEPTH IN FEET | BLOW COUNT | SAMPLES | SYMBOLS | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 775.0 | | | | | | | | | | | | | | Brown fine to coarse SAND, little silt or clay, trace fine gravel (topsoil). |
| | | | | | | | | | | 5 | 14 | | SP | Light brown fine to coarse SAND. (medium dense) |
| | | | | | | | | | | 10 | 9 | | | |
| | | | | | | | | | | 15 | 19 | | | |
| 758.5 | | | | | | | | | | | | | | |
| | | | | | | | | | | 20 | 27 | | SP • SM | Gray-brown fine SAND, trace to little silt, cross-bedded, dry. (medium dense to dense) |
| | | | | | | | 19.6 | | | 25 | 27 | | | |
| | | | | | | | | | | | 26 | | | |
| | | | | | | | | | | | 33 | | | |
| | | | | | | | | | | 30 | 38 | | | Grades to moist. |
| | | | | | | | | | | 35 | (51) | | | Saturated. |
| | | | | | | | 11.7 | | | 40 | (56) | | | Grades to tan to orange-brown. |
| 733.5 | | | | | | | 10.0 | | | | (60) | | | Grades to gray, less silt. |
| | | | | | | | | | | 45 | | | | Boring terminated at 41.5' on 6/09/82. Water level encountered at approx. 33.3' during drilling. |
| | | | | | | | | | | 50 | | | | |
| | | | | | | | | | | 55 | | | | |
| | | | | | | | | | | 60 | | | | |

NOTES:

1. A 2-inch PVC monitoring well was installed in the borehole with 5 feet of Johnson, continuous slot screen set between depths of 35.4 to 40.4 feet. Slot size is 0.006 inch. A complete installation summary is given in Table 1.

2. Blow counts in parentheses are not representative of the in situ soils.

SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

Gilbert Commonwealth Companies

LOG OF
BORING M-2

FIGURE 6

# BORING M-3

SURFACE ELEVATION 770.9' NGVD
PLANT COORDINATES: N48,647
E25,998

| ELEV. IN FEET | OTHER TESTS | SHEAR STRENGTH TEST (PSF) | ATTERBERG LIMITS: LIQUID LIMIT | ATTERBERG LIMITS: PLASTICITY INDEX | FIELD MOISTURE CONTENT (%) | DRY DENSITY (PCF) | PERCENT PASSING #200 SIEVE | RECOVERY (%) | WATER LEVEL DURING DRILLING | DEPTH IN FEET | BLOW COUNT | SAMPLES | SYMBOLS | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 770.9 | | | | | | | | | | | | | SP | Brown medium to coarse SAND, trace fine gravel, coarse gravel noted. (medium dense) |
| | | | | | | | | | | 5 | 20 | | | |
| 763.4 | | | | | | | | | | | | | ML · CL | Interbedded tan to orange-brown SILT, some fine sand; tan SILT, some clay, little fine to medium sand; and gray clayey SILT to SILTY CLAY, trace fine sand; occasional silt or fine sand partings; contacts are gradational; high moisture content, but not saturated. (very stiff) |
| | | | | | | | | | | 10 | 42 | | | |
| | | PN=2500 | 24.7 | 11.2 | | | 87.3 | | | | 22 | | | |
| | | PN=1500–2000 | 23.6 | 0.2 | | | 94.8 | | | 15 | 18 | | | |
| 754.7 | | | | | | | | | | | (57) | | ML · SM | Tan SILT, some fine sand, moist to dry. |
| | | | | | | | 59.6 | | | 20 | (148) | | | Grades to fine SAND, some silt, dry. |
| 748.5 | | | | | | | | | | | | | SP · SM | Light brown fine SAND, little silt, cross-bedded, dry. (dense to very dense) |
| | | | | | | | | | | 25 | 44 | | | |
| | | | | | | | | | | 30 | 69 | | | |
| | | | | | | | | | | | 27/8" | | | Saturated |
| | | | | | | | | | | 35 | 39 | | | Grades to tan, a few thin layers of medium sand noted. |
| 731.4 | | | | | | | 12.9 | | | 40 | 105 | | | Grades tan to yellow-brown, little silt. (extremely dense) |
| | | | | | | | | | | 45 | | | | Boring terminated at 39.5' on 6/09/82. Water level encountered at appox. 31.5' during drilling. |
| | | | | | | | | | | 50 | | | | |
| | | | | | | | | | | 55 | | | | |
| | | | | | | | | | | 60 | | | | |

NOTES:

1. A 2-inch PVC monitoring well was installed in the borehole with 5 feet of Johnson, continuous slot screen set between depths of 34.4 to 39.4 feet. Slot size is 0.006 inch. A complete installation summary is given in Table 1.

2. Blow counts in parentheses are not representative of the in situ soils.

SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

Gilbert Commonwealth Consultants

LOG OF
BORING M-3

FIGURE 7

# BORING M-4

SURFACE ELEVATION 771.4' NGVD
PLANT COORDINATES: N 48,556
E 25,827

| ELEV. IN FEET | OTHER TESTS | SHEAR STRENGTH TEST (PSF) | ATTERBERG LIMITS: LIQUID LIMIT | ATTERBERG LIMITS: PLASTICITY INDEX | FIELD MOISTURE CONTENT (%) | DRY DENSITY (PCF) | PERCENT PASSING #200 SIEVE | RECOVERY (%) | WATER LEVEL DURING DRILLING | DEPTH IN FEET | BLOW COUNT | SAMPLES | SYMBOLS | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 771.4 | | | | | | | | | | | | | | (No topsoil) |
| | | | | | | | | | | 5 | 17 | | SP | Brown medium to coarse SAND, trace fine gravel, trace silt or clay. (medium dense) |
| 764.4 | | | | | | | 99.2 | | | 10 | (41) | | ML · CL | Interbedded tan to orange-brown SILT, no sand; tan to orange-brown SILT, trace to some fine sand; gray-brown SILTY CLAY, plastic; mottled gray-brown and orange-brown clayey SILT, trace fine to coarse sand with dry silt partings; contacts are gradational; high moisture content. |
| | | | | | | | | | | | (28) | | | |
| | | PN=3750-4500 | 23.4 | 5.9 | | | 87.7 | | | 15 | (33) | | | |
| | | PN=3750-4500 | 18.0 | 1.8 | | | 92.7 | | | | (30) | | | |
| 753.9 | | | | | | | | | | | | | ML · SM | Tan to orange-brown SILT, some fine sand grading to fine SAND, some silt, moist. |
| 751.9 | | | | | | | | | | 20 | 83/6" | | | |
| | | | | | | | | | | | (133) | | SP · SM | Tan to light brown SAND, little silt, moist to dry |
| | | | | | | | 36.8 | | | 25 | 42 | | | Grades to light gray-brown some silt, cross-bedded, dry. (dense to very dense) |
| | | | | | | | | | | 30 | (46) | | | Grades to tan, trace to little silt. |
| | | | | | | | | | | | 41 | | | Saturated |
| | | | | | | | 11.4 | | | 35 | 58 | | | Grades to gray-brown. |
| 731.4 | | | | | | | | | | 40 | 62 | | | |
| | | | | | | | | | | 45 | | | | Boring terminated at 40.0' on 6/10/82. Water level encountered at appox. 32.0' during drilling. |
| | | | | | | | | | | 50 | | | | |
| | | | | | | | | | | 55 | | | | |
| | | | | | | | | | | 60 | | | | |

NOTES:

1. A 2-inch PVC monitoring well was installed in the borehole with 5 feet of Johnson, continuous slot screen set between depths of 35.2 to 40.2 feet. Slot size is 0.006 inch. A complete installation summary is given in Table 1.

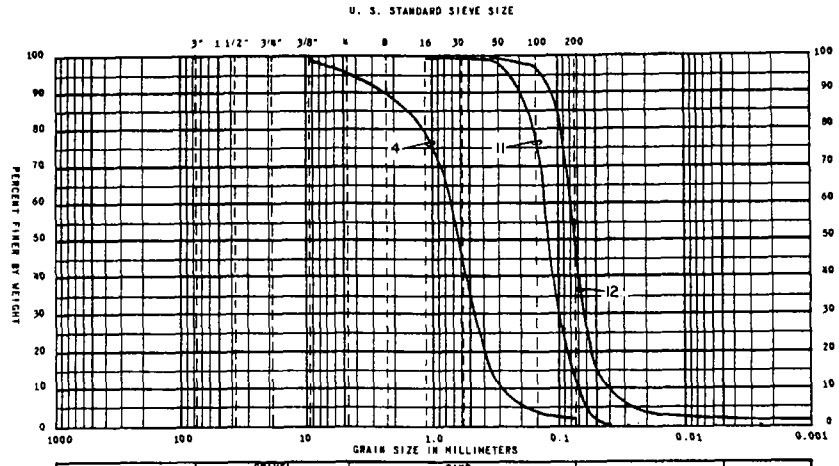
2. Blow counts in parentheses are not representative of the in situ soils.

SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

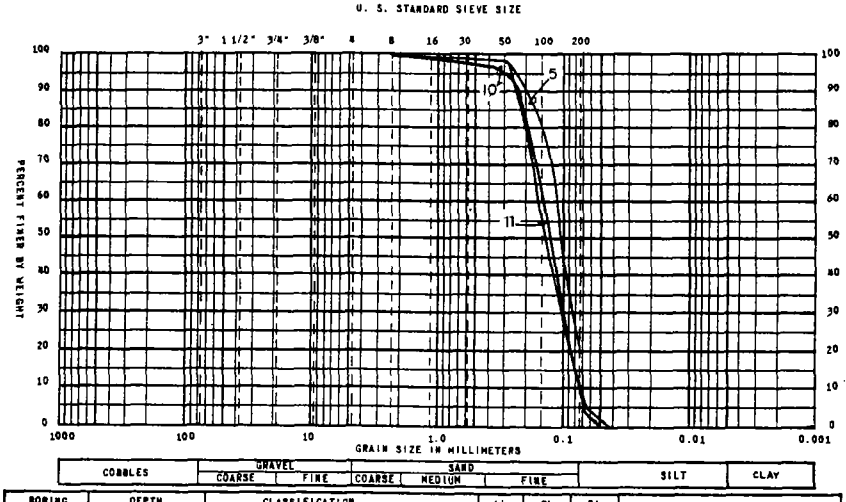
Gilbert Commonwealth Companies

LOG OF
BORING M-4

FIGURE 8




| BORING | DEPTH | CLASSIFICATION | | LL | PL | PI | |
|---|---|---|---|---|---|---|---|
| M-1 | 13.5'-15.0' (4) | SP | FINE-COARSE SAND, TRACE FINE GRAVEL | | | | |
| M-1 | 36.0'-37.0' (11) | SM | FINE SAND, LITTLE SILT | | | | |
| M-1 | 38.5'-40.0' (12) | SM | SILTY FINE SAND | | | | |



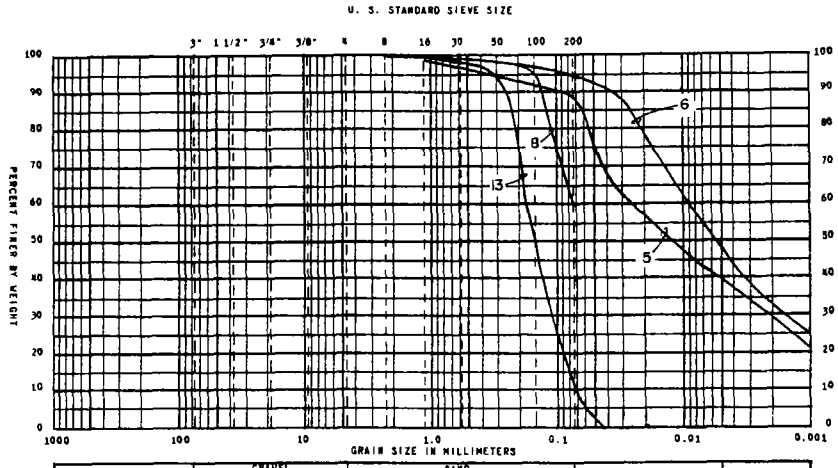

| BORING | DEPTH | CLASSIFICATION | | LL | PL | PI | |
|---|---|---|---|---|---|---|---|
| M-2 | 23.5'-25.0' (5) | SM | FINE SAND, LITTLE SAND | | | | |
| M-2 | 38.5'-40.0' (10) | SP-SM | FINE-MEDIUM SAND, LITTLE SILT | | | | |
| M-2 | 40.0'-41.5' (11) | SP-SM | FINE SAND, LITTLE SILT | | | | |

SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

Gilbert Commonwealth Companies

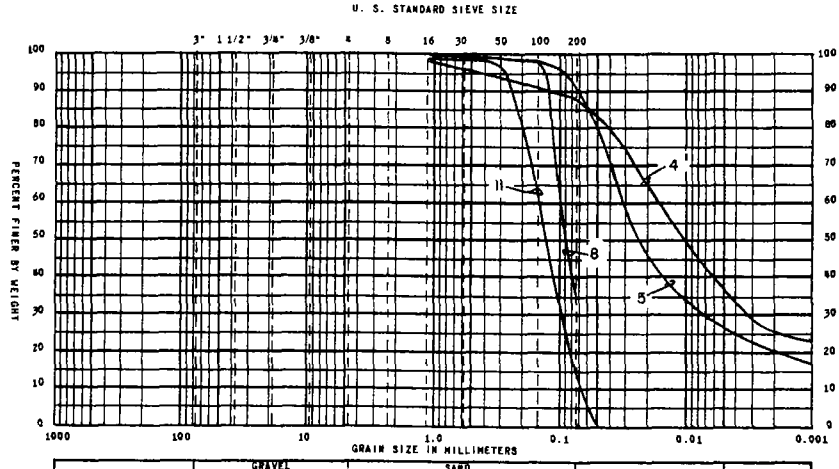
GRADATION CURVES
FOR BORINGS M-1, M-2

FIGURE 9




| COBBLES | GRAVEL | | SAND | | | SILT | CLAY |
|---|---|---|---|---|---|---|---|
| | COARSE | FINE | COARSE | MEDIUM | FINE | | |

| BORING | DEPTH | CLASSIFICATION | | LL | PL | PI | |
|---|---|---|---|---|---|---|---|
| M-3 | 11.7'-12.5' (5) | CL | SILTY CLAY, LITTLE FINE-MED SAND | 24.7 | 13.5 | 11.2 | |
| M-3 | 13.5'-15.0' (6) | ML | CLAYEY SILT, TRACE FINE-MED SAND | 23.6 | 23.4 | 0.2 | |
| M-3 | 18.5'-20.0' (8) | ML | SANDY SILT | | | | |
| M-3 | 38.0'-39.5 (13) | SM | FINE-MEDIUM SAND, LITTLE SILT | | | | |




| COBBLES | GRAVEL | | SAND | | | SILT | CLAY |
|---|---|---|---|---|---|---|---|
| | COARSE | FINE | COARSE | MEDIUM | FINE | | |

| BORING | DEPTH | CLASSIFICATION | | LL | PL | PI | |
|---|---|---|---|---|---|---|---|
| M-4 | 13.5'-15.0' (4) | ML-CL | CLAYEY SILT, LITTLE FINE-MED. SAND | 23.4 | 17.5 | 5.9 | |
| M-4 | 16.0'-17.5' (5) | ML | CLAYEY SILT, TRACE FINE-MED. SAND | 18.0 | 16.2 | 1.8 | |
| M-4 | 26.0'-27.5' (8) | SM | SILTY FINE SAND | | | | |
| M-4 | 36.0'-37.5' (11) | SP-SM | FINE-MEDIUM SAND, LITTLE SILT | | | | |

SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

Gilbert Commonwealth Companies

GRADATION CURVES
FOR BORING M-3, M-4

FIGURE 10

Stauffer Chemical Company
Westport, Connecticut 06881 / Tel. (203) 222-3000 / Cable "Staufchem"

CERTIFIED MAIL, RETURN RECEIPT REQUESTED

July 9, 1982

Regional Administrator
Region V
U. S. Environmental Protection Agency
230 South Dearborn Street
Chicago, Illinois, 60604

Re: RCRA Financial Requirements

Dear Sir:

In accordance with Section 265.147 of the April 16, 1982 amendments to RCRA, we are hereby submitting a signed duplicate Certificate of Liability Insurance as demonstration of liability coverage for the following Stauffer hazardous waste management facility which is located in a state in your region that does not have RCRA Phase I authorization:

- MID075400671; SWS Silicones Corp., Sutton Road, Adrian, MI 49211

If you have any questions regarding the enclosed material, please call me at 203-222-3230.

Sincerely,

William P. Pagano/rcg

W. P. Pagano, Administrator
Environmental Control Dept.

WPP/rcg
Attachment
cc: J. Calamungi
G. Philbrook
W. Winans

SWS Silicones Corporation
ADRIAN, MICHIGAN 49221 • TELEPHONE (517) 263-5711

7/82

Mr. Roy Schrameck, District Engineer
Michigan Department of Natural Resources
Water Quality Division, District #1
9311 Groh Road
Grosse Ile, Michigan 48138

Re: SWS Silicones Corporation
NPDES Permit No. MI0026034
Hydrogeological Study

Dear Mr. Schrameck,

Enclosed is a summary of the analyses of the nine monitoring wells around our Old Evaporation Pond (Black Pond), as specified in our letter to you on January 5, 1982, and confirmed by your letter of April 8, 1982. The sampling was done on June 9, 1982.

The mass loading (in pounds per unit time) has not yet been calculated by our Senior Hydrogeologist, Mr. Bruce McClellan. We have made arrangements with an Engineering firm to do the permeability testing of the nine wells. We hope to send you the mass loading results in July.

For your reference, a sketch of the well locations is also attached. These are labeled OW-1 through OW-5. Note that IS is No. 1 Shallow, and ID is No. 1 Deep, etc.

Yours very truly,

SWS SILICONES CORPORATION

Gordon C. Philbrook
Environmental Control Coordinator

GCP:pb 82-164, certified, attachs.

cc: Chief Engineer, MDNR, Lansing; certified
J. Calamungi*
T. J. Sayers*
B. S. McClellan*
G. L. Ford*

*no attachs.

INTER-OFFICE CORRESPONDENCE

SWS Silicones Corporation

To G. R. WOLF

Copy to G. C. PHILBROOK

Date JUNE 25, 1982

From B. P. DENNIS

Subject ANALYSIS OF WATER FROM TEST WELLS

The analysis of five of the six parameters requested on the well samples is complete. The results are tabulated below:

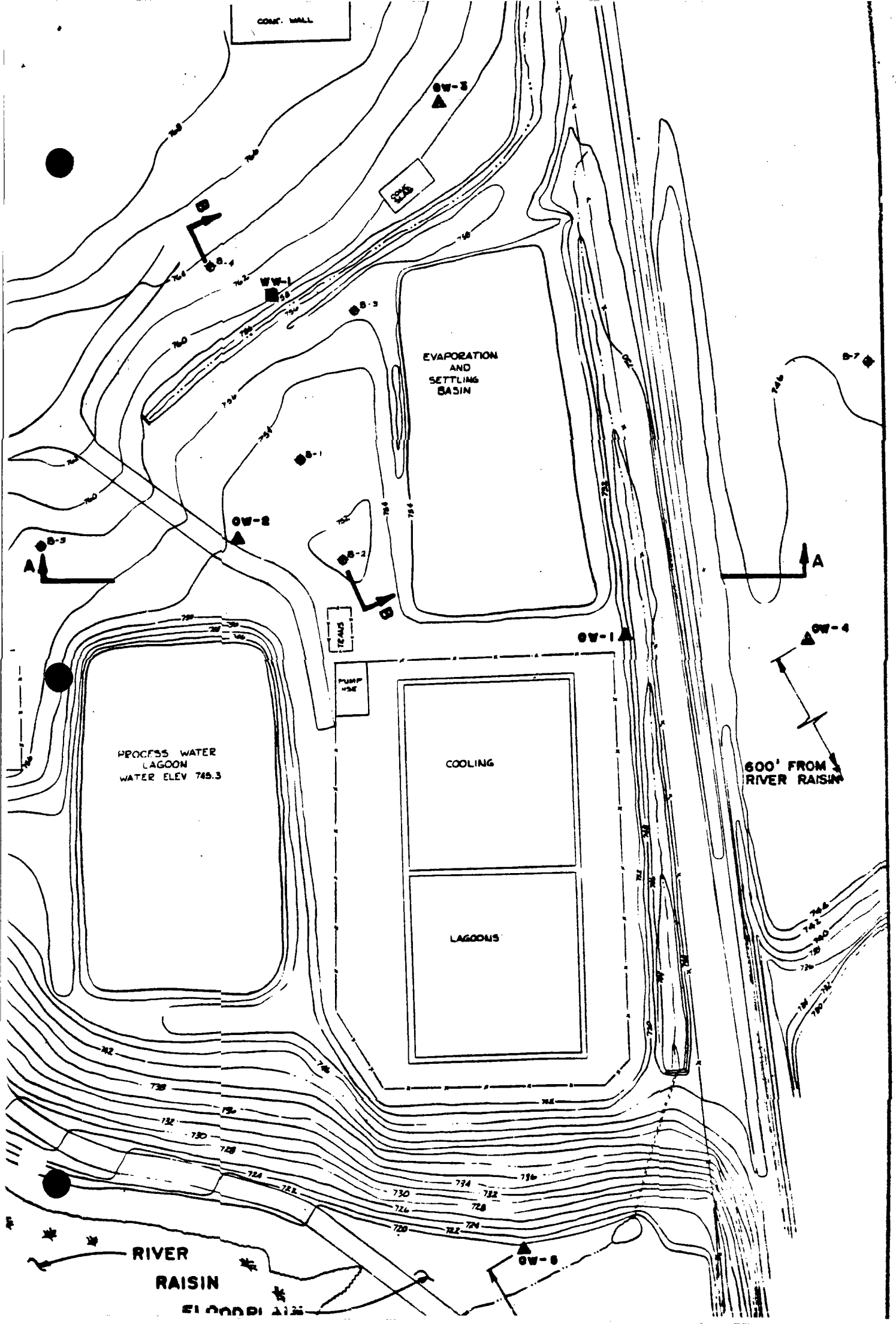
| Well Number | TOC mg/l | Chloride mg/l | 1,1-dichloro-ethane, mg/l | t-1,2-dichloro-ethylene, mg/l | 1,1,1 tri-chloroethane, mg/l |
|---|---|---|---|---|---|
| 1S | 30 | 950 | 17 | ND | 3.7 |
| 1D | 13 | 855 | ND | ND | 0.13 |
| 2S | 29 | 440 | ND | 0.74 | 0.25 |
| 2D | 5 | 240 | ND | ND | ND |
| 3S | 14 | 190 | ND | ND | 0.30 |
| 3D | 5 | 174 | ND | ND | ND |
| 4S | 20 | 1280 | ND | 0.80 | 3 |
| 4D | 8 | 273 | ND | 0.04 | 0.08 |
| 5 | 14 | 370 | ND | 0.14 | 0.25 |

The n-butyl-phthalate analyses will be complete in about one week.

B. P. Dennis

BPD:cw

0032-095-02A (2/75)



CONC. WALL
OW-3
CONC. SLAB
B
B-4
WW-1
B-3
EVAPORATION AND SETTLING BASIN
B-7
B-1
OW-2
B-5
A
B-2
B
A
TRANS
OW-1
OW-4
PUMP HSE
PROCESS WATER LAGOON WATER ELEV 745.3
COOLING
LAGOONS
600' FROM RIVER RAISIN
OW-5
RIVER RAISIN

**Alexander & Alexander of New York Inc.**
1185 Avenue of the Americas
New York, N.Y. 10036
Telephone 212 575-8000

Alexander & Alexander

June 30, 1982

Regional Director E.P.A.
230 South Deaborn Street
Chicago, Illinois 60604

RE: SWS Silicones Corporation
E.P.A. No. M1D075400671
Closure/Post Closure Insurances

Gentlemen:

Please be advised that Alexander & Alexander Inc., which is a duly licensed insurance broker and/or agent, is presently and will continue, throughout the 90 day period commencing July 6, 1982, to diligently pursue Closure/Post Closure insurances, conforming to specifications of E.P.A. regulation with available qualified insurers on behalf of SWS Silicones Corporation, Sutton Road, Adrian, Michigan, 49221.

We will contact you immediately as developments arise.

Very truly yours,

Glenn A Totino

Glenn A. Totino
Casualty Department

GAT/kmc
cc: Messrs. Walter Winans, Director of Insurance, Stauffer Chemical Company
William Pagano, Director Environmental Affairs, Stauffer Chemical Company
Gerard F. Curtis, Senior Vice President, Alexander & Alexander, Inc.

TWX 710-581-2018
Telex 420580
Cable ALEXALEX

SWS Silicones Corporation
ADRIAN, MICHIGAN 49221 • TELEPHONE (517) 263-5711

3-29-82

March 29, 1982

~~MDD 072555755~~

Ms. Linda Koivuniemi
Environmental Specialist
Air Quality Division
Michigan Department of Natural Resources
2309 Shelby
Ann Arbor, Michigan 48103

Dear Ms. Koivuniemi,

This letter is a confirmation of our telephone conversation around March 19, 1982, concerning your report issued March 15, 1982 of the RCRA site investigation of our facility on March 10, 1982.

On page 10, under Section J (Tanks), item 5, the question was: "Are required daily and weekly inspections done?" You checked the answer as "Not Inspected".

However, during your visit here, I did inform you that we do these inspections as required and we do keep a record log book in the Hi Bay area and the Utility areas of our plant. After inspecting some other record log books during the plant tour, you said you did not need to see all of them and you did not request to see these two particular log books.

In the subsequent phone call of March 19, 1982, you indicated that you did remember the discussions mentioned above, but a "Not Inspected" answer on the form was not necessarily a negative answer and if the subject came up by the EPA, we would just need to verify that we do the inspections and that we have the appropriate log books.

Yours truly,

SWS SILICONES CORPORATION

Gordon C. Philbrook

Gordon C. Philbrook
Environmental Control Coordinator

GCP:pb 82-79, Certified

cc: Al Howard, MDNR, Lansing, Certified
J. Calamungi
W. P. Pagano
T. J. Sayers
RCRA file

RECEIVED
MAR 30 1982
ACT 64

Reply to:
2309 Shelby
Ann Arbor, MI 48103
(313) 665-9461

March 15, 1982

Mr. Gordon Philbrook
Environmental Control Coordinator
SWS Silicones Corporation
P.O. Box 428
Sutton Road
Adrain, Mich 49211

Dear Mr. Philbrook:

As an authorized representative of the U.S. Environmental Protection Agency, I conducted a site investigation of your Sutton Road facility on March 10, 1982 to evaluate compliance of this facility with requirments of Subtitle C of the Resource Conservation Recovery Act (RCRA) as amended. During this investigation, I completed the enclosed RCRA Inspection Report - Interim Status Standards Treatment, Storage, and Disposal Facilities Form A - General Facility Standards. This inspection report is enclosed for your information.

If you have any questions concerning this inspection report, please contact me at (313) 665-9461.

Sincerely,

Linda Koivuniemi,
Environmental Specialist
Air Quality Division

cc: Al Howard, OHWM, MDNR
U.S. EPA Region V

LK:jec

STATE IDENTIFICATION NUMBER (If Applicable)

To: U.S. EPA, Region V

MID 075 406 67
EPA IDENTIFICATION NO
3-10-82

RCRA INSPECTION REPORT - INTERIM STATUS STANDARDS
TREATMENT, STORAGE, AND DISPOSAL FACILITIES
Form A - General Facility Standards

## I. General Information:

(A) Facility Name: SWS Silicones Corporation

(B) Street: Sutton Rd

(C) City: Adrian (D) State: Mi (E) Zip Code: 49221

(F) Phone: (517) 263-5711 (G) County: Lenawee

(H) Operator: SWS Silicones Corporation

(I) Street: Sutton Rd

(J) City: Adrian (K) State: Mi (L) Zip Code 49221

(M) Phone: (517) 263-5711 (N) County: Lenawee

(O) Owner: Stauffer Chemical (subsidiary)

(P) Street:

(Q) City: (R) State: (S) Zip Code:

(T) Phone: (U) County:

(V) Date of Inspection: Mar. 10, 82 (W) Time of Inspection (From) 2 PM (To) 4:30 PM

(X) Weather Conditions: Cloudy, 40°F,

* NA = not applicable

Rev. 1-26-81/J.B.

| (Y) Person(s) Interviewed | Title | Telephone |
|---|---|---|
| Gordon Philbrook | Env. Control Coor. | (517) 263-5711 |
| | | |
| | | |

| (Z) Inspection Participants | Agency/Title | Telephone |
|---|---|---|
| LINDA Koivuniemi | Environmental Spec. Mich. Dept. Nat. Resources | (313) 665-9461 |
| | | |
| | | |

(AA) Preparer Information

| Name | Agency/Title | Telephone |
|---|---|---|
| LINDA Koivuniemi | Envir. Spec. 2307 Shelby Ann Arbor, Mi. 48103 | (313) 665-9461 |

## II. SITE ACTIVITY:

Complete sections I through VII for all treatment, storage, and/or disposal facilities. Complete the forms (in parenthesis) in section VIII corresponding to the site activities identified below:

X A. Storage and/or Treatment
1. Containers (I)
2. Tanks (J)
3. Surface Impoundments (K)
4. Waste Piles (L)

No B. Land Treatment (M)

No C. Landfills (N)

No D. Incineration and/or Thermal Treatment (O and P)

Y E. Chemical, Physical, and Biological Treatment (Q)

Post only with waste wash water in a NPDES permitted facility.

Note: If facility is also a generator or transporter of hazardous waste complete sections IX and X of this form as appropriate.

N A - not applicable

## III. GENERAL FACILITY STANDARDS
(Part 265 Subpart B)

| | Yes | No | NI* | Remark |
|---|---|---|---|---|
| (A) Has the Regional Administrator been notified regarding: | | | | |
| 1. Receipt of hazardous waste from a foreign source? | | X | | (N A) No foreign haz. waste |
| 2. Facility expansion? | | X | | No expansions |
| (b) General Waste Analysis: | | | | |
| 1. Has the owner or operator obtained a detailed chemical and physical analysis of the waste? | X | | | |
| 2. Does the owner or operator have detailed waste analysis plan on file at the facility? | X | | | |
| 3. Does the waste analysis plan specify procedures for inspection and analysis of each movement of hazardous waste from off-site? | | | X | Does not accept off site waste. |
| (C) Security - Do security measures include: (if applicable) | | | | |
| 1. 24-Hour surveillance? | X | | | |
| 2. Artificial or natural barrier around facility? | X | | | |
| 3. Controlled entry? | X | | | 24hr guard service |
| 4. Danger sign(s) at entrance? | X | | | |
| (D) Do Owner or Operator Inspections Include: | | | | |
| 1. Records of malfunctions? | | | X | Have not had any |
| 2. Records of operator error? | | | X | " " " " |
| 3. Records of discharges? | | | X | " " " " |

*Not Inspected

| | Yes | No | NI* | Remarks |
|---|---|---|---|---|
| 4. Inspection schedule: | X | | | inspection logs als |
| 5. Safety, emergency equipment? | X | | | |
| 6. Security devices? | X | | | |
| 7. Operating and structural devices? | X | | | |
| 8. Inspection log? | X | | | in plant |
| (E) Do personnel training records include: (Effective 5/19/81) | | | | |
| 1. Job Titles? | X | | | |
| 2. Job Descriptions? | X | | | |
| 3. Description of Training? | X | | | |
| 4. Records of Training? | X | | | |
| 5. Have facility personnel received required training by 5-19-81? | X | | | |
| 6. Do new personnel receive required training within six months? | X | | | |
| (F) If required are the following special requirements for ignitable, reactive, or incompatible wastes addressed? | | | | |
| 1. Special handling? | X | | | all waste in steel cont. |
| 2. No smoking signs? | X | | | |
| 3. Separation and protection from ignition sources? | X | | | |

*Not Inspected

## IV. PREPARENDNESS AND PREVENTION:
(Part 265 Subpart C)

| | Yes | No | N/F | |
|---|---|---|---|---|
| (A) Maintenance and Operation of Facility: | | | | |
| 1. Is there any evidence of fire, explosion, or release of hazardous waste or hazardous waste constituent? | [redacted] | X | | |
| (b) If required, does the Facility have the Following Equipment: | | | | |
| 1. Internal communications or alarm systems? | X | | | Steam + air alarms |
| 2. Telephone or 2-way Radios at the scene of operations? | X | | | |
| 3. Portable fire extinguishers, fire control, spill control equipment and decontamination equipment? | X | | | own fire truck |

Indicate the volume of water and/or foam available for fire control:

Units: water $1.5 \times 10^6$ [redacted] gal.

| | | | | |
|---|---|---|---|---|
| (C) Testing and Maintenance of Emergency Equipment: | | | | |
| 1. Has the Owner or Operator established Testing and Maintenance Procedures for Emergency Equipment? | X | | | |
| 2. Is Emergency Equipment Maintained in Operable Conditions? | X | | | |
| (D) Has Owner or Operator Provided Immediate Access to Internal Alarms? (if needed) | X | | | |

*Not Inspected

Yes no NI

(E) Is there adequate aisle space for unobstructed movement? X

## V. CONTINGENCY PLAN AND EMERGENCY PROCEDURES:
(Part 265 Subpart D)

| (A) Does the contingency Plan contain the following information: | Yes | No | NI* | Remarks |
|---|---|---|---|---|
| 1. The actions facility personnel must take to comply with §265.51 and 265.56 in response to fires, explosions, or any unplanned release of hazardous waste? (If the owner has a Spill Prevention, Control, and Counter-measures (SPCC) Plan, he needs only to amend that plan to incorporate hazardous waste management provisions that are sufficient to comply with the requirements of this Part (as applicable.) | X | | | |
| 2. Arrangements agreed to by local police departments, fire departments hospitals, contractors, and State and local emergency response teams to coordinate emergency services pursuant to §265.37? | X | | | letters dated Dec. 30, 1980 Fire Dept. Dec 23, 80 Sheriff's off. Dec. 25, 80 Bixby Hospi |
| 3. Names, addresses, and phone numbers (office and home) of all persons qualified to act as emergency coordinators? | X | | | |
| 4. A list of all emergency equipment at the facility which includes the location and physical description of each item on the list and a brief outline of its capabilities? | X | | | updated since last inspection (RCRA) (Dec. 1980) |
| 5. An evacuation plan for facility personnel where there is a possibility that evacuation could be necessary? (This plan must describe signal(s) to be used to begin evacuation, evacuation routes, and alternate evacuation routes?) | X | | | |

*Not Inspected.

| | Yes | No | NI* | Remarks |
|---|---|---|---|---|
| (B) Are copies of the Contingency Plan Available at Site and local Emergency Organizations? | X | | | |
| (C) Emergency Coordinator | | | | |
| 1. Is the facility Emergency Coordinator identified? | X | | | |
| 2. Is coordinator familiar with all aspects of site operation and emergency procedures? | X | | | |
| 3. Does the Emergency Coordinator have the authority to carry out the Contingency Plan? | X | | | |
| (D) Emergency Procedures | | | | |
| If an emergency situation has occurred at this facility, has the Emergency Coordinator followed the emergency procedures listed in 265.56? | | | X | No emergency to date |

## VI. MANIFEST SYSTEM, RECORDKEEPING, AND REPORTING
(Part 265 Subpart E)

| | Yes | No | NI* | Remarks |
|---|---|---|---|---|
| (A) Use of Manifest System | | | | |
| 1. Does the facility follow the procedures listed in §265.71 for processing each Manifest? | X | | | |
| 2. Are records of past shipments retained for 3 years | X | | | |
| (B) Does the owner or operator meet requirements regarding Manifest Discrepancies? | X | | | |

*NI - Not Inspected

Yes No NI

(C) Operating Record

| | Yes | No | NI | Comments |
|---|---|---|---|---|
| 1. Does the owner or operator maintain an operating record as required in 265.73? | X | | | has computer printout to verify all transfers and volumes of waste |
| 2. Does the operating record contain the following information: | | | | |
| **b. The method(s) and date(s) of each wastes treatment, storage, or disposal as required in Appendix I? | X | | | Keeps data on drums + tanks |
| c. The location and quantity of each hazardous waste within the facility? | X | | | |
| ***d. A map or diagram of each cell or disposal area showing the location and quantity of each hazardous waste? (This information should be cross-referenced to specific manifest numbers if waste was accompanied by a manifest.) | | | X | Not applicable |
| e. Records and results of all waste analyses, trial tests, monitoring data, and operator inspections? | X | | | |
| f. Reports detailing all incidents that required implementation of the contingency plan? | | | X | No need - no incidents. |
| g. All closure and past closure costs as applicable? (Effective 5-19-81) | X | | | updated costs on Feb. 18, 82 to include inflation 7.1% |

** See page 33252 of the May 19 , 1980, Federal Register.

*** Only applies to disposal facilities

*Not Inspected

## VIII. CLOSURE AND POST CLOSURE
(Part 265 Subpart G)

| | Yes | No | NI* | Remarks |
|---|---|---|---|---|
| **(A) Closure and Post Closure** | | | | |
| 1. Closure Plan Available for Inspection by May 19, 1981? | X | | | |
| 2. Has this plan been submitted to the Regional Administrator | | | X | Does not expect to close. |
| 3. Has Closure begun? | | X | | |
| 4. Is closure estimate available by May 19, 1981? | X | | | |
| **(B) Post Closure Care and Use of Property** | | | | |
| Has the Owner or Operator supplied a Post Closure Monitoring Plan (by May 19, 1981)? | | | X | Expects to clean up all waste and foundations - including containers tanks + pads. |

## IX. FACILITY STANDARDS
(Part 265, Subparts I thru R)

### I
### USE AND MANAGEMENT OF CONTAINERS

Facility Name: SLCS Date of Inspection: 3-10-82

| | Yes | No | NI* | Remarks |
|---|---|---|---|---|
| 1. Are containers in good condition? | X | | | All steel containers |
| 2. Are containers compatible with waste in them? | X | | | |
| 3. Are containers stored closed? | X | | | |
| 4. Are containers managed to prevent leaks? | X | | | |
| 5. Are containers inspected weekly for leaks and defects? | X | | | |
| 6. Are ignitable & reactive wastes stored at least 15 meters (50 feet) from the facility property line? | X | | | Indicate if waste is: ☒ Ignitable, ☐ Reactive |

*Not Inspected

| | Yes | No | NI* | Remarks |
|---|---|---|---|---|
| 7. Are incompatible wastes stored in separate containers? (If not, the provisions of 40 CFR 265.17(b) apply.) | X | | | |
| 8. Are containers of incompatible wastes separated or protected from each other physical barriers or sufficient distance? | X | | | |

J
TANKS

Facility Name: SWS Date of Inspection: 3-10-82

| | | | | |
|---|---|---|---|---|
| 1. Are tanks used to store only those wastes which will not cause corrosion, leakage or premature failure of the tank? | X | | | |
| 2. Do uncovered tanks have at least 60 cm (2 feet) of freeboard, or dikes or other containement structures? | X | | | |
| 3. Do continuous feed systems have a waste-feed cutoff? | | | X | Everything is batch |
| 4. Are waste analyses done before the tanks are used to store a substantially different waste than before? | | | X | Tanks will hold same type waste. |
| 5. Are required daily and weekly inspections done? | | | X | |
| 6. Are reactive & ignitable wastes in tanks protected or rendered non-reactive or non-ignitable? (If waste is rendered non-reactive or non-ignitable, see treatment requirements.) | X | | | Indicate if waste is: ☒ Ignitable ☐ Reactive protected - no treatment |
| 7. Are incompatible waste stored in separate tanks? (If not, the provisions of 40 CFR 265.17(b) apply.) | X | | | |

*Not Inspected

| | Yes | No | NI* | Remarks |
|---|---|---|---|---|

8. Has the owner or operator observed the National Fire Protection Associations buffer zone requirements for tanks containing ignitable or reactive wastes?

Tank capacity: 2 tanks = 14,900 gal (vertical) = 10 ft diameter; 1 tank = 25,000 gallons (horizontal) = 9 ft. diameter

Tank diameter: _____ feet

Distance of tank from property line 300-350 feet

(See table 2 - 1 through 2 - 6 of NRPA's "Flammable and Combustible Code - 1977" to determine compliance.)

## K
## SURFACE IMPOUNDMENTS

N/A

Facility Name: _____ Date of Inspection: _____

| | | | | |
|---|---|---|---|---|
| 1. Do surface impoundments have at least 60 cm (2 feet) of freeboard? | | | | |
| 2. Do earthen dikes have protective covers? | | | | |
| 3. Are waste analyses done when the impoundment is used to store a substantially different waste than before? | | | | |
| 4. Is the freeboard level inspected at least daily? | | | | |
| 5. Are the dikes inspected weekly for evidence of leaks or deterioration? | | | | |
| 6. Are reactive & ignitable wastes rendered non-reactive or non-ignitable before storage in a surface impoundment? (If waste is rendered non-reactive or non-ignitable, see treatment requirements.) | | | | |
| 7. Are imcompatible wastes stored in different impoundments? (If not, the provisions of 40 CFR 265.17(b) apply.) | | | | |

L

WASTE PILES

NA

Facility Name: _____ Date of Inspection: _____

| | Yes | No | NI* | Remarks |
|---|---|---|---|---|
| 1. Are waste piles covered or protected from the wind? | ___ | ___ | ___ | _____ |
| 2. Is each in-coming movement of waste analyzed before being added to the waste pile? | ___ | ___ | ___ | _____ |
| 3. Are leachate, run-off, and run-on controlled? (The effective date of this provision is Nov. 19, 1981.) | ___ | ___ | ___ | _____ |
| 4. Are reactive & ignitable wastes rendered non-reactive or non-ignitable before storage in a pile? (If waste is rendered non-reactive or non-ignitable, see treatment requirements.) | Indicate if waste is: ☐ Ignitable, ☐ Reactive | | | |
| | ___ | ___ | ___ | _____ |
| 5. Are piles of reactive or ignitable waste protected? | ___ | ___ | ___ | _____ |
| 6. Are incompatible wastes stored in different piles? (If not, the provisions of 40 CFR 265.17(b) apply.) | ___ | ___ | ___ | _____ |
| 7. Are piles of imcompatible waste protected by barriers or distance from other waste? | ___ | ___ | ___ | _____ |

*Not Inspected

M

LAND TREATMENT

FAcility Name: _____ Date of Inspection: _____

1. Is hazardous waste treated capable of biological or chemical degradation? ___ ___ ___ _____

2. Are run-off and run-on diverted from the facility or collected (Effective date: November 19, 1981)? ___ ___ ___ _____

3. Is waste analyzed according to 265.273? ___ ___ ___ _____

4. If food chain crops are grown at the facility, has the owner or operator addressed the requirements of 265.276? ___ ___ ___ _____

5. Is an unsaturated zone monitoring plan designed and implemented to detect the vertical migration of hazardous waste and provide information on the background concentrations of the hazardous waste available? ___ ___ ___ _____

6. Does the unsaturated zone monitoring plan address the minimum information specified in 265.278? ___ ___ ___ _____

7. Are records kept regarding application dates, ~~and~~ rates, quantities, and locations of all hazardous waste placed in the facility? ___ ___ ___ _____

8. Are the special requirements fulfilled regarding land treatment of ignitable or reactive wastes? Indicate if waste is: ☐ Ignitable ☐ Reactive ___ ___ ___ _____

9. Are incompatible wastes land treated? (If yes, 265.17(b) applies) ___ ___ ___ _____

Inspected

N
LANDFILLS

NA

Facility Name: _____ Date of Inspection: _____

| | Yes | No | NI* | Remarks |
|---|---|---|---|---|
| (A) General Operating Requirements<br>Does the facility provide the following: | | | | |
| **1. Diversion of run-on away from active portions of the fill? | ___ | ___ | ___ | _____ |
| **2. Collection of run-off from active portions of the fill? | ___ | ___ | ___ | _____ |
| **3. Is collected run off treated? | | | | _____ |
| 4. Control of wind disposal of hazardous waste? | ___ | ___ | ___ | _____ |
| (**Effective 11-19-81) | | | | |
| (B) Surveying and Recordkeeping<br>Does the Operating Record Include: | | | | |
| 1. A map showing the exact location and dimensions of each cell? | ___ | ___ | ___ | _____ |
| 2. The contents of each cell and the location of each hazardous waste type withing each cell? | ___ | ___ | ___ | _____ |
| (C) Closure and Post-Closure | | | | |
| 1. Is the Closure Plan available for inspection by 5-19-81? | ___ | ___ | ___ | _____ |
| 2. Has this plan been submitted to the Regional Administrator? | ___ | ___ | ___ | _____ |
| 3. Has Closure begun? | ___ | ___ | ___ | _____ |
| 4. Is Closure cost estimate available by 5-19-81? | | | | |
| (D) Special requirements ~~fro~~ for ignitable or reactive waste | | | | |
| Are ignitable or reactive wastes treated so the resulting mixture is no longer ignitable or reactive? | ___ | ___ | ___ | _____ |

| | Yes | No | NI* | Remarks |
|---|---|---|---|---|
| (If waste is rendered non-reactive or non-[illegible] treatment requirements.) | | | | |
| If not, the provisions of 40 CFR 265.17(b) apply. | ___ | ___ | ___ | _____ |
| **(E) Special requirements for Incompatible Wastes.** | | | | |
| Does the owner or operator dispose of incompatible wastes in separate cells? | ___ | ___ | ___ | _____ |
| If not, the provisions of 40 CFR 265.17(b) apply. | ___ | ___ | ___ | _____ |
| **(F) Special requirements for liquid waste (effective [illegible])** | | | | |
| 1. Are bulk or non-containerized liquids placed in the landfill? | ___ | ___ | ___ | _____ |
| 2. Does the landfill have a chemically and physically resistant liner system? | ___ | ___ | ___ | _____ |
| 3. Does the landfill have a functional leachate collection system? | ___ | ___ | ___ | _____ |
| 4. Are free liquids stabilized prior to or immediately after placement in the landfill? | ___ | ___ | ___ | _____ |
| **(G) Special requirements for Containers (effective [illegible])** | | | | |
| Are empty containers crushed flat, shredded, or similarly reduced in volume before being placed on the surface of the landfill? | ___ | ___ | ___ | _____ |

*Not Inspected

O and P
INCINERATION and THERMAL TREATMENT NA

(A) Facility Name _____

(B) Date of Inspection _____

## I. Determination of Steady State

A. Type of unit (type of incinerator or thermal treatment:): _____

_____

B. Co[illegible] condition:

**** Was this component at SS prior to adding waste?

| | Yes | No | NI* | Remarks |
|---|---|---|---|---|
| 1. _____ | ___ | ___ | ___ | _____ |
| 2. _____ | ___ | ___ | ___ | _____ |
| 3. _____ | ___ | ___ | ___ | _____ |
| 4. _____ | ___ | ___ | ___ | _____ |
| 5. _____ | ___ | ___ | ___ | _____ |

## II. Waste Analysis

A. Minimum requirements for wastes not previously burned/treated.

| | Yes | No | NI* | Remarks |
|---|---|---|---|---|
| 1. [illegible] has an analysis [illegible] performed [illegible] | | | | |
| a. [illegible] | ___ | ___ | ___ | _____ |
| b. [illegible] | ___ | ___ | ___ | _____ |
| c. [illegible] | ___ | ___ | ___ | _____ |

NA Inspected

| | Yes | No | NI* | Remarks |
|---|---|---|---|---|
| 2. Documented, written data may be substituted for analysis for these. Are either present for: | | | | |
| a. Lead? | ___ | ___ | ___ | _____ |
| b. Mercury? | ___ | ___ | ___ | _____ |

B. Other parameters for which the waste is tested to enable owner or operator to establish steady state or determine the types of pollutants which may be emitted. (Note in Remarks any which you feel should be tested for.)

| | | Remarks |
|---|---|---|
| 1. | _____ | _____ |
| 2. | _____ | _____ |
| 3. | _____ | _____ |
| 4. | _____ | _____ |
| 5. | _____ | _____ |

## III. Monitoring and Inspections

| | Yes | No | NI* | Remarks |
|---|---|---|---|---|
| A. Combustion/emission control instruments monitored at least every 15 minutes | ___ | ___ | ___ | _____ |
| B. Steady state maintained or corrections attempted? | ___ | ___ | ___ | _____ |
| C. Stack Plume observed at least hourly for normal color and opacity? | ___ | ___ | ___ | _____ |
| D. Did any stack observations made by owner or operator show a plume different than normal?** | ___ | ___ | ___ | _____ |
| E. If yes to D above, were corrections made to return emissions to normal appearance?** | ___ | ___ | ___ | _____ |
| F. Complete unit and associated equipment inspected daily for leaks, spills, and fugitive emissions? | ___ | ___ | ___ | _____ |
| G. Emergency shutdown controls, system alarms checked daily for proper operation? | ___ | ___ | ___ | _____ |

*Not Inspected
**Specify in Remarks for what period of time this was checked.

## IV. Open Burning

N/A

A. Only complete this part if the facility open burns hazardous waste.

| | Yes | No | NI* | Remarks |
|---|---|---|---|---|
| 1. Does this facility burn only waste explosives? (A No answer means other hazardous waste is open-burned.) | ___ | ___ | ___ | _____ |
| 2. If this facility open-burns waste explosive, does it burn the waste at a distance greater than or equal to the minimum specified distance (below) | ___ | ___ | ___ | _____ |

| Pounds of waste explosives or propellants | Minimum distance from open burning or detonation to the property of others | |
|---|---|---|
| 0 to 100..... | 204 m | 670 ft |
| 101 to 1,000..... | 380 m | 1.250 ft |
| 1,001 to 10,000..... | 530 m | 1,730 ft |
| 10,0001 to 30,000..... | 690 m | 2,260 ft |

## Q
## CHEMICAL, PHYSICAL and BIOLOGICAL TREATMENT

Facility Name: SLCS

Date of Inspection: 3-10-82

waste wash water is no longer considered a haz. waste, therefore this section no longer applies.

| | yes | No | NI* | Remarks |
|---|---|---|---|---|
| 1. Is equipment used to treat only those wastes which will not cause leakage, corrosion, or premature failure? | ___ | ___ | ___ | _____ |
| 2. Is a continously fed system equipped with a means of hazardous waste inflow stoppage or control (e.g., cut-off system?) | ___ | ___ | ___ | _____ |



*Not Inspected

| | Yes | No | NI* | Remarks |
|---|---|---|---|---|
| 3. Has the owner or operator addressed the waste analysis requirements of 265.402? | ___ | ___ | ___ | _____ |
| 4. Are inspection procedures followed according to 265.403? | ___ | ___ | ___ | _____ |
| 5. Are the special requirements fulfilled for ignitable or reactive wastes? | ___ | ___ | ___ | _____ |
| 6. Are incompatible wastes treated? (If yes, 265.17(b) applies.) | ___ | ___ | ___ | _____ |

Note: EPA has temporarily suspended the applicability of the requirements of the hazardous waste regulations in 40 CFR Parts 122, 264 and 265 to owners and operators of (1) wastewater treatment tanks that receive, store, and treat wastewaters that are hazardous waste or that generate, store or treat a wastewater treatment sludge which is a hazardous waste where such wastewaters are subject to regulation under Sections 402 or 307(b) of the Clean Water Act (33 U.S.C. 1251 et seq.) and (2) neutralization tanks, transport vehicles, vessels, or containers which neutraliz wastes which are hazardous only because they exhibit the corrosivity characteristic under 40 CFR §261.22 or are listed as hazardous wastes in Subpart D of 40 CFR Part 261 only for this reason.

## IX

Complete this section if the owner or operator of a TSD facility also generates hazardous waste that is subsequently shipped off-site for treatment, storage, or disposal.

### 1. MANIFEST REQUIREMENTS

| | Yes | No | NI* | Remarks |
|---|---|---|---|---|
| (A) Does the operator have copies of the Manifest available for review? | X | ___ | ___ | _____ |
| (B) Do the Manifest forms reviewed contain the following information: (If possible, make copies of/or record information from, manifest(s) that do not contain the critical elements) | | | | |
| 1. Manifest document number? | X | ___ | ___ | _____ |
| 2. Name, mailing address, telephone number, and EPA ID Number of Generator | X | ___ | ___ | _____ |

| | Yes | No | NI* | Remarks |
|---|---|---|---|---|
| 3. Name and EPA ID Number of Transporter(s)? | X | | | |
| 4. Name, address, and EPA ID Number of Designated permitted facility and alternate facility? | X | | | |
| 5. The description of the waste(s) (DOT shipping name, DOT hazard class, DOT identification number)? | X | | | |
| 6. The total quantity of waste(s) and the type and number of containers loaded? | X | | | |
| 7. Required Certification? | X | | | |
| 8. Required Signatures? | X | | | |
| (C) Does the Owner or Operator Submit Exception Reports when Needed? | X | | | Has not had an exception, but would ~~be~~ ~~correct~~, submit an exception report if any were needed. |

## 2. PRE-TRANSPORT REQUIREMENTS

| | | | | |
|---|---|---|---|---|
| (A) Is waste packaged in accordance with DOT Regulations? (Required prior to movement of hazardous waste off site) | X | | | |
| (B) Are waste packages marked and labeled in accordance with DOT Regulations concerning hazardous waste materials? (Required to movement of hazardous waste off site) | X | | | |
| (C) If required, are placards available to transfer? | X | | | |

*Omit Section 3 if the facility has ~~interim~~ status and its part A permit application describes storage (Company contends it only stores haz. waste.)

## 3. On Site Accumulation

NA

| | Yes | No | NI* | Remarks |
|---|---|---|---|---|
| 1. Are containers marked with start of accumulation date? | ___ | ___ | ___ | _____ |
| 2. Are the containers of hazardous waste removed from installation before they can accumulate for more than 90 days | ___ | ___ | ___ | _____ |
| 3. Are wastes stored in containers managed in accordance with 40 CFR Part 265.174 and 265.176 (weekly inspections of containers, containers holding ignitable or reactive wastes located at least 15 meters (50 Feet) from facility's property line? | ___ | ___ | ___ | _____ |
| 4. If wastes are stored in tanks, are the tanks managed according to the following requirements? | | | | |
| a. Are tanks used to store only those wastes which will not cause corrosion leakage or premature failure of the tank? | ___ | ___ | ___ | _____ |
| b. Do uncovered tanks have at least 60 cm (2 feet) of freeboard, dikes, or other containment structures? | ___ | ___ | ___ | _____ |
| c. Do continous feed systems have a waste-feed cutoff? | ___ | ___ | ___ | _____ |
| d. Are required daily and weekly inspections done? | ___ | ___ | ___ | _____ |
| e. Are reactive & ignitable wastes in tanks protected or rendered non-reactive or non-ignitable? (If waste is rendered non-reactive or non-ignitable, see treatment requirements? | ___ | ___ | ___ | _____ |
| f. Are incompatible wastes stored in separate tanks? (If not, the provisions of 40 CFR §265.17(b) apply.) | ___ | ___ | ___ | _____ |



*Not Inspected

## VI. RECORDKEEPING and REPORTING
(Part 262, Subpart D)

| | Yes | No | NI* | Remarks |
|---|---|---|---|---|
| (A) Are Manifests, Annual Reports, Exception Reports, and all test results and analyses retained for at least three years? | X | | | |
| (B) Has the Generator submitted Annual Reports and Exception Reports as required? | X | | | Annual Reports not required as yet. |

## VII. INTERNATIONAL SHIPMENTS
(Part 262, Subpart E)

| | Yes | No | NI* | Remarks |
|---|---|---|---|---|
| (A) Has the installation imported or exported Hazardous Waste? | | X | | |

(If A was answered Yes, then complete the following as applicable.)

| | Yes | No | NI* | Remarks |
|---|---|---|---|---|
| 1. Exporting Hazardous waste, has a generator: | | | | |
| a. Notified the Administrator in writing? | | | | |
| b. Obtained the signature of the foreign consignee confirming delivery of the waste(s) in the foreign country? | | | | |
| c. Met the Manifest requirements? | | | | |
| 2. Importing Hazardous Waste, has the generator: | | | | |
| a. Met the manifest requirements? | | | | |

*Not Inspected

X

TRANSPORTER REQUIREMENTS
40 CFR Part 263

N A

Complete this Section if the owner or operator transports hazardous waste.

## I. MANIFEST SYSTEM AND RECORDKEEPING
(Subpart B)

| | Yes | No | NI* | Remarks |
|---|---|---|---|---|
| (A) Are copies of the completed manifests or shipping paper(s) available for review and retained for three years? | ___ | ___ | ___ | _____ |

## II. INTERNATIOINAL SHIPMENTS

| | | | | |
|---|---|---|---|---|
| A. Does the Transporter record on the manifest the date the waste left the U.S.? | ___ | ___ | ___ | _____ |
| B. Are signed completed manifest(s) on file? | ___ | ___ | ___ | _____ |

## V. MISCELLANEOUS

| | | | | |
|---|---|---|---|---|
| A. Does Transporter transport hazardous waste into the U.S. from abroad | ___ | ___ | ___ | _____ |
| B. Does the Transporter mix hazardous waste of different DOT shipping descriptions by placing them into a single container? | ___ | ___ | ___ | _____ |

NOTE: If (A) or (B) were answered "Yes" then the Transporter is also a Generator and must comply with the Generator regulations.

*NI = Not Inspected

REMARKS

Use this section to briefly describe site activities observed at the time of the inspection. Note any possible violations of Interim Status Standards.

It appears Company is in compliance with the intent of this form & these RCRA regulations.

1-15-82

**INA**

# INSURANCE COMPANY OF NORTH AMERICA
## GROUP OF INSURANCE COMPANIES

(This Certificate of Insurance neither affirmatively nor negatively amends, extends or alters the coverage, limits, terms or conditions of the policies it cerificates.)

## HAZARDOUS WASTE FACILITY
## CERTIFICATE OF POLLUTION LIABILITY INSURANCE

1. Insurance Company of North America, (the Insurer) of 1600 Arch Street Philadelphia, PA, hereby certifies that it has issued pollution liability insurance covering bodily injury and property damage to Stauffer Chemical Company (the Insured), of Westport, Connecticut, in connection with the Insured's obligation to demonstrate financial responsibility under 40 CFR 264.147 or 265.147. The coverage applies at

SWS Silcones Corp.
Sutton Road, Adrian, MI 49211 MID075400671

for sudden accidental occurrences

The limits of liability are $ 1,000,000 and $ 2,000,000 annual aggregate, exclusive of legal defense costs. The coverage is provided under policy number ISLG00025380 issued on 1/15/82. The effective date of said policy is 1/15/82.

The insurance hereby certified is either primary or excess insurance, as indicated by "X" for the limits shown:

☒ The insurance hereby certified is primary and the Insurer shall not be liable for amounts in excess of $ 1,000,000, $ 2,000,000 annual aggregate, exclusive of legal defense costs.

☐ The insurance hereby certified is excess and the Insurer will not be liable for amounts in excess of $ _____, $ _____ annual aggregate, exclusive of legal defense costs, in excess of the underlying limits of $ _____.

2. The Insurer further certifies the following with respect to the insurance described in Paragraph 1:

(a) Bankruptcy or insolvency of the Insured shall not relieve the Insurer of its obligations under the policy.

(b) The primary Insurer is liable for the payment of amounts within any deductible applicable to the policy, with a right of reimbursement by the Insured for any such payment made by the Insurer. This provision does not apply with respect to that amount of any deductible for which coverage is demonstrated as specified in 40 CFR 264.147 (f) or 265.147 (f).

(c) Whenever requested by a Regional Administrator of the U.S. Environmental Protection Agency (EPA), the Insurer agrees to furnish to the Regional Administrator a signed duplicate original of the policy and all endorsements.

(d) Cancellation of the insurance, whether by the Insurer or the Insured, will be effective only upon written notice and only after the expiration of sixty (60) days after a copy of such written notice is received by the Regional Administrator(s) of the EPA Region(s) in which the facility(ies) is (are) located.

(e) Any other termination of the insurance will be effective only upon written notice and only after the expiration of thirty (30) days after a copy of such written notice is received by the Regional Administrator(s) of the EPA Region(s) in which the facility(ies) is (are) located.

I hereby certify that the wording of this instrument is identical to the wording specified in 40 CFR 264.151 (j) as such regulation was constituted on the date first above written, and that the Insurer is licensed to transact the business of insurance, or eligible to provide insurance as an excess or surplus lines insurer, in one or more States.

John Santapaola
(Signature of authorized representative of Insurer)

John Santapaola
(Type name)

Account Manager
(Title), Authorized Representative of

Insurance Company of North America
(name of Insurer)

127 John Street New York, New York 10038
(Address of Representative)

LD-8C54 Printed in U.S.A.

RECEIVED
JAN 07 1982
WQC COMPLIANCE

Compliance
Section
Lenawee

# SWS Silicones Corporation

ADRIAN, MICHIGAN 49221 • TELEPHONE (517) 263-5711

RECEIVED
JAN 6 1982
Water Qual. Control

January 5, 1982

Mr. Robert J. Courchaine
Chief, Water Quality Division
Michigan Department of Natural Resources
P. O. Box 30028
Lansing, Michigan 48909

Re: SWS Silicones Corporation

Dear Mr. Courchaine:

This letter responds to Special Condition number six (6) of our recently renewed NPDES permit and is our proposal for certain additional hydrogeological work (Phase II) at our Adrian facility.

Special Condition number six refers to three investigative areas: (1) ground water contamination from buried barrels and sludge disposal area; (2) the extent of horizontal and vertical contamination in the perched aquifer and the extent of contamination in the lower aquifer; and (3) the impact of contaminants on the River Raisin.

1) Old drum burial site

We propose to drill groundwater monitoring wells around this site, one upgradient and three downgradient. We will analyze for copper and zinc, as well as the following parameters used as indicators of groundwater contamination under Section 265.92 of the federal RCRA rules (45 FR 33066, 33240, May 19, 1980) -

(i) PH;
(ii) Specific Conductance;
(iii) Total Organic Carbon;
(iv) Total Organic Halogen.

2) Study of Perched Aquifer and Near Surface Aquifer

We are prepared to resample our existing wells that are downgradient of the evaporation-settling (black) pond. The parameters to be sampled will include the original indicator parameters, TOC, chlorides, and methyl chloroform, as well as some pollutants which were detected in "significant" concentrations in the pond water, 1,1 dichloroethane (326 ppb), 1,2 dichloroethylene (229 ppb), and di-n-butyl phthalate (97 ppb). Since the parameters found in the pond water are few, the analysis of groundwater monitoring well samples should be similarly limited.

3) Study of the River Raisin

As you indicated in your March 5, 1981 letter, groundwater in both the perched and water table aquifers flow in a southeasterly direction to the river. Therefore, even if contamination were found in the

XC: R. Schumeck
W. Iversen
C. Bak

perched and water table aquifers, that contamination would only impact the river. On April 23, 1981 we submitted to you sampling results for our river inlet, which is downgradient of the evaporation pond. Those sampling results, which include analysis of the 129 priority pollutants, show no significant contamination. We have also performed comparable analytical work on the river upstream of the pond, and that analytical work also shows no significant contamination. The results of these upstream samples were mailed to you on June 24, 1981. Further study of the river is unnecessary.

As required by the NPDES permit Schedule of Compliance, Part I, Section C.3.a, we must have an approved Phase II hydrogeological investigation plan on or before January 31, 1982. Therefore, we would appreciate a prompt reply to this proposal.

Please note that the above proposed plan is very similar to the one sent to Ms. Claudia Weaver from our Mr. Gary Ford on June 15, 1981.

Very truly yours,

SWS SILICONES CORPORATION

Gordon C. Philbrook

Gordon C. Philbrook
Environmental Control Coordinator

GCP:pb 82-02, Certified

cc: L. B. Bruner
J. Calamungi
G. R. Wolf
G. L. Ford (Westport)
T. J. Sayers (Westport)
B. McClellan (Westport)
G. H. Meyer (Meyer and Kirk)
Ms. C. I. Weaver (DNR Enforcement Div.)

NPDES file

GEOLOGICAL SURVEY SAMPLE No.

# WATER WELL RECORD

ACT 294 PA 1965

MICHIGAN DEPARTMENT OF PUBLIC HEALTH

**1 LOCATION OF WELL**

| County | Twp. | Fraction | Section No. | Town | Range |
|---|---|---|---|---|---|
| Lenawee | Raisin | ¼SE ¼NW ¼ | 16 | T6 N/S. | 4 E/W. |

Distance And Direction from Road Intersections: Rt #49 - ½ Mi. E. of Occidental Hwy. 2" S. Grady Rd. The "Heights" Subdivision

OWNER No.

Street address & City of Well Location

**3 OWNER OF WELL:** R.D Boxton

Address: 228 W. Church St Adrain

| 2 FORMATION | THICKNESS OF STRATUM | DEPTH TO BOTTOM OF STRATUM |
|---|---|---|
| Gravel | 15 | 15' |
| Yellow Sand | 30 | 45' |
| Sand | 22 | 67 |

**4 WELL DEPTH:** (completed) ft. Date of Completion

**5** ☑ Cable tool ☐ Rotary ☐ Driven ☐ Dug ☐ Hollow rod ☐ Jetted ☐ Bored ☐ ___

**6 USE:** ☑ Domestic ☐ Public Supply ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☐ ___

**7 CASING:** Diam. Threaded ☑ Welded ☐ Height: Above/Below surface 12" ft. Weight 11 lbs/ft. Drive Shoe? Yes ☐ No ☐

4 in. to ___ ft. Depth

___ in. to ___ ft. Depth

**8 SCREEN:**

Type: Brass Dia. 3¾"

Slot/Gauze 10 Length 4'

Set between 63 ft. and 67 ft.

Fittings: Rubber Packer

**9 STATIC WATER LEVEL**

24.9 ft. below land surface

**10 PUMPING LEVEL below land surface**

___ ft. after ___ hrs. pumping ___ g.p.m.

___ ft. after ___ hrs. pumping ___ g.p.m.

**11 WATER QUALITY in Parts Per Million:**

Iron (Fe) ___ Chlorides (Cl) ___

Hardness ___

**12 WELL HEAD COMPLETION:** ☐ In Approved Pit ☑ Pitless Adapter ☐ 12" Above Grade

**13 GROUTING:**

Well Grouted? ☐ Yes ☐ No

Material: ☐ Neat Cement ☐ ___

Depth: From ___ ft. to ___ ft.

**14 SANITARY:**

Nearest Source of possible contamination

50+ feet W Direction Septic Type

Well disinfected upon completion ☑ Yes ☐ No

**15 PUMP:**

Manufacturer's Name Tait

Model Number ___ HP ⅓

Length of Drop Pipe 40 ft. capacity ___ G.P.M.

Type: ☑ Submersible ☐ ___ ☐ Jet ☐ Reciprocating

**16 Remarks, elevation, source of data, etc.**

[illegible] DRILLER, [illegible]

[illegible]

[illegible]

**17 WATER WELL CONTRACTOR'S CERTIFICATION:**

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

[illegible] Drilling — REGISTERED BUSINESS NAME

0825 — REGISTRATION NO.

Address RR3 Delta, Ohio

Signed [illegible] — AUTHORIZED REPRESENTATIVE

Date 10-5-68

D67D 100M 6-66

GEOLOGICAL SURVEY SAMPLE No.

# WATER WELL RECORD

ACT 294 PA 1965

MICHIGAN DEPARTMENT OF PUBLIC HEALTH

**1 LOCATION OF WELL**

| County | Twp. | Fraction | Section No. | Town | Range |
|---|---|---|---|---|---|
| Lenawee | [illegible] | ¼ SE ¼ NW ¼ | 16 | 6 N/S. | 24 E/W. |

Distance And Direction from Road Intersections: Rt 53 ½ mi E of [illegible] The Heights Subdivision

OWNER No.

Street address & City of Well Location

**3 OWNER OF WELL:** S.C.S Construction

Address Lyons, Ohio

| 2 FORMATION | THICKNESS OF STRATUM | DEPTH TO BOTTOM OF STRATUM |
|---|---|---|
| Gravel | 8 | 8 |
| Sand | 63 | 71 |

**4 WELL DEPTH:** (completed) 71 ft. Date of Completion

**5** ☑ Cable tool ☐ Rotary ☐ Driven ☐ Dug ☐ Hollow rod ☐ Jetted ☐ Bored ☐ ___

**6 USE:** ☑ Domestic ☐ Public Supply ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☐ ___

**7 CASING:** Diam. 4 in. to 71 ft. Depth; ___ in. to ___ ft. Depth. Threaded ☑ Welded ☐. Height: Above/Below surface 1 ft. Weight 11 lbs/ft. Drive Shoe? Yes ☑ No ☐

**8 SCREEN:**
Type: Stainless Dia.: 3 3/4
Slot/Gauze 10 Length 3
Set between 68 ft. and 71 ft.
Fittings: Rubber

**9 STATIC WATER LEVEL**
25 ft. below land surface

**10 PUMPING LEVEL below land surface**
___ ft. after ___ hrs. pumping ___ g.p.m.
___ ft. after ___ hrs. pumping ___ g.p.m.

**11 WATER QUALITY in Parts Per Million:**
Iron (Fe) ___ Chlorides (Cl) ___
Hardness ___

**12 WELL HEAD COMPLETION:** ☐ In Approved Pit ☑ Pitless Adapter ☑ 12" Above Grade

**13 GROUTING:**
Well Grouted? ☐ Yes ☑ No
Material: ☐ Neat Cement ☐ ___
Depth: From ___ ft. to ___ ft.

**14 SANITARY:**
Nearest Source of possible contamination
50+ feet S Direction Septic Type
Well disinfected upon completion ☑ Yes ☐ No

**15 PUMP:**
Manufacturer's Name Tait
Model Number 32P27 HP 3
Length of Drop Pipe 50 ft. capacity 12 G.P.M.
Type: ☑ Submersible ☐ ___ ☐ Jet ☐ Reciprocating

**16 Remarks, elevation, source of data, etc.**

[illegible]

**17 WATER WELL CONTRACTOR'S CERTIFICATION:**
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Walters Drilling — REGISTERED BUSINESS NAME
0835 — REGISTRATION NO.

Address Delta, Ohio

Signed [illegible] — AUTHORIZED REPRESENTATIVE
Date 11/68

the DETROIT TESTING LABORATORY INC.
554 BAGLEY AVENUE • DETROIT, MICHIGAN 48226
Telephone | Area Code 313 961-4870

REPORT FOR

Stauffer Chemical Company
P. O. Box 367
Adrian, Michigan

Attention: Mr. Bruce Rhodes

REPORT NUMBER 40410-CS-110
DATE ISSUED 12 May 1964
CLIENT'S ORDER 0001-0002
DTL ORDER NUMBER 35432

## REPORT OF SOIL TEST BORINGS

**WORK REQUESTED:**

Perform thirty-eight (38) preliminary Soil Test Borings in accordance with A.S.T.M. D 1586-58 T and instructions stated in Purchase Orders referenced above. The Soil Test Borings were made at approximately 400 foot intervals and are identified in accordance with grid lines established on the submitted location plan (see final page of report).

**PROCEDURE:**

The Borings were advanced by the "dry sample" method, wherein samples of undisturbed soil are recovered in a 2" O.D. split-spoon sampler, driven by an 140 lb. hammer falling 30". The number of blows required to drive the sampler 12" is recorded as the Standard Penetration Resistance.

**DISCUSSION:**

The Borings indicate an overall general soil condition as follows:

(continued)



Approximately 1'6" of brown loamy sand blankets the entire area, and is underlain by loose brown coarse sand, indicating traces of silt and gravel. As evidenced by the Boring logs, the sand material is predominent throughout the Borings; the granular material increasing in density with increased depth.

The following tabulation represents clay found at various depths in the Borings:

| BORING LOCATION | DEPTH ENCOUNTERED | STRATUM DEPTH | REMARKS |
|---|---|---|---|
| 2S 27E | 8'6" | 9'0" | Traces-Clay |
| 2S 31E | 5'0" | 8'0" | Silty |
| 2S 35E | 5'0" | 17'0" | Silty-Sandy |
| 4S 5E | 12'6" | 3'6" | Sandy |
| 6S 27E | Surface | 2'0" | Traces-Clay |
| 6S 29E | 1'6" | 5'0" | Traces-Clay |
| 6S 31E | 8'6" | 4'6" | Silty |
| 6S 33E | 12'6" | 2'6" | Sandy |
| 6S 35E | 12'6" | 11'6" | Silty |
| 8S 29E | 5'6" | 9'6" | Sandy |
| 10S 23E | 2'6" | 2'6" | Sandy |
| 10S 27E | 5'0" | 3'6" | Sandy |
| 10S 31E | 18'0" | 4'6" | Silty |
| 10S 35E | 8'0" | 4'0" | Silty |

The amount of granular material, in combination with clay, make unconfined compressive strength tests inconclusive,

(continued)

B Known

ENVIRONMENTAL PROTECTION AGENCY
NOTIS DATA MANAGEMENT SYSTEM



NOTIS REPORT #4 — LISTING BY FACILITY — REPORT DATE: 10/14/81
REGION: 05 STATE: MI

| NOTIFICATION ID NO. | SITE NAME / SITE STREET / SITE CITY / SITE COUNTY / EPS SITE ID NO. | NOTIFIER NAME / NOTIFIER STREET / NOTIFIER CITY / (CONTACT NAME/TITLE) / (CONTACT PHONE) | STATE | ZIP | NOTIFIER STATUS (PRES OWN, PAST OWN PRES OP, PAST OP TRANSPORTER, VOLUNTEER) |
|---|---|---|---|---|---|
| MI[illegible]1208 | SWS SILICONES CORP. / 3901 MUTTON RD. / ADRIAN / LENAWEE / MID075400871 — 49221 | JOSEPH CALAMUNGI DIR. MANUF. / (CALAMUNGI, JOSEPH DIR. MANUF. ) / (517-263-5711) | | | PRES OWN PAST OWN PRES OP |

RELEASES TO THE ENVIRONMENT: — DATES OF WASTE HANDLING: 1965 TO 1980

WASTE AMOUNT: 34.000 CU FT — AREA: Y ACRES — MAP PRESENT: NO — FORM TYPE: 8900-1

NOTIF. POSTMARKED DATE: 81/08/08 — SIGNATURE PRESENT: YES — DATE OF LAST UPDATE: 81/09/28

| TYPE OF FACILITY | TYPES OF WASTES | SOURCES OF WASTE |
|---|---|---|
| IMPOUNDMENT<br>DRUM ABOVE GROUND<br>DRUM BELOW GROUND<br>OTHER (SEE COMMENTS)<br>LANDFILL | | |

| COMMENTS | SEQ NO. |
|---|---|
| LOW LEVEL SEEPAGE OF RCRA WASTES FROM | 2 |
| INACTIVE IMPOUNDMENT. MONITORING RESULTS | 3 |
| INDICATE THAT THIS SITE DOES NOT PRESENT | 4 |
| A HEALTH HAZARD. | 5 |

# EPA Notification of Hazardous Waste Site

United States Environmental Protection Agency
Washington DC 20460

This initial notification information is required by Section 103(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 and must be mailed by June 9, 1981.

Please type or print in ink. If you need additional space, use separate sheets of paper. Indicate the letter of the item which applies.

810608 MI #188 MIS-000-001-208

**A Person Required to Notify:**

Enter the name and address of the person or organization required to notify.

Name: SWS SILICONES CORPORATION
Street: 3901 Sutton Road
City: Adrian State: MI Zip Code: 49221

**B Site Location:**

Enter the common name (if known) and actual location of the site.

Name of Site: SWS SILICONES CORPORATION
Street: 3901 Sutton Road
City: Adrian County: Lenawee State: MI Zip Code: 49221

MID075400671

**C Person to Contact:**

Enter the name, title (if applicable), and business telephone number of the person to contact regarding information submitted on this form.

Name (Last, First and Title): Calamungi, Joseph - Director of Manufacturing
Phone: (517) 263-5711

**D Dates of Waste Handling:**

Enter the years that you estimate waste treatment, storage, or disposal began and ended at the site.

From (Year): 1965 To (Year): 1980

**E Waste Type:** Choose the option you prefer to complete

**Option I:** Select general waste types and source categories. If you do not know the general waste types or sources, you are encouraged to describe the site in Item I—Description of Site.

**General Type of Waste:** Place an X in the appropriate boxes. The categories listed overlap. Check each applicable category.

1. ☐ Organics
2. ☐ Inorganics
3. ☒ Solvents
4. ☐ Pesticides
5. ☒ Heavy metals
6. ☒ Acids
7. ☒ Bases
8. ☐ PCBs
9. ☐ Mixed Municipal Waste
10. ☐ Unknown
11. ☐ Other (Specify)

**Source of Waste:** Place an X in the appropriate boxes.

1. ☐ Mining
2. ☐ Construction
3. ☐ Textiles
4. ☐ Fertilizer
5. ☐ Paper/Printing
6. ☐ Leather Tanning
7. ☐ Iron/Steel Foundry
8. ☒ Chemical, General
9. ☐ Plating/Polishing
10. ☐ Military/Ammunition
11. ☐ Electrical Conductors
12. ☐ Transformers
13. ☐ Utility Companies
14. ☐ Sanitary/Refuse
15. ☐ Photofinish
16. ☐ Lab/Hospital
17. ☐ Unknown
18. ☐ Other (Specify)

**Option 2:** This option is available to persons familiar with the Resource Conservation and Recovery Act (RCRA) Section 3001 regulations (40 CFR Part 261).

**Specific Type of Waste:** EPA has assigned a four-digit number to each hazardous waste listed in the regulations under Section 3001 of RCRA. Enter the appropriate four-digit number in the boxes provided. A copy of the list of hazardous wastes and codes can be obtained by contacting the EPA Region serving the State in which the site is located.

000194 JUN-8 81

JUN 12 1981

Form Approved
OMB No. 2000-0138
EPA Form 8900-1

**Notification of Hazardous Waste Site** **Side Two**

**F Waste Quantity:**

Place an X in the appropriate boxes to indicate the facility types found at the site.

In the "total facility waste amount" space give the estimated combined quantity (volume) of hazardous wastes at the site using cubic feet or gallons.

In the "total facility area" space, give the estimated area size which the facilities occupy using square feet or acres.

**Facility Type**

1. ☐ Piles
2. ☐ Land Treatment
3. ☒ Landfill
4. ☐ Tanks
5. * ☒ Impoundment
6. ☐ Underground Injection
7. ☐ Drums, Above Ground
8. ☒ Drums, Below Ground
9. ☒ Other (Specify) Treatment

**Total Facility Waste Amount**

cubic feet 34,000 C

gallons

**Total Facility Area**

square feet

acres 0.65 A

**G Known, Suspected or Likely Releases to the Environment:**

Place an X in the appropriate boxes to indicate any known, suspected, or likely releases of wastes to the environment.

☒ Known * ☐ Suspected ☐ Likely ☐ None

**Note:** Items H and I are optional. Completing these items will assist EPA and State and local governments in locating and assessing hazardous waste sites. Although completing the items is not required, you are encouraged to do so.

**H Sketch Map of Site Location:** (Optional)

Sketch a map showing streets, highways, routes or other prominent landmarks near the site. Place an X on the map to indicate the site location. Draw an arrow showing the direction north. You may substitute a publishing map showing the site location.

**I Description of Site:** (Optional)

Describe the history and present conditions of the site. Give directions to the site and describe any nearby wells, springs, lakes, or housing. Include such information as how waste was disposed and where the waste came from. Provide any other information or comments which may help describe the site conditions.

* Low level seepage of RCRA wastes from inactive impoundment. Monitoring results indicate that this site does not present a health hazard.

**J Signature and Title:**

The person or authorized representative (such as plant managers, superintendents, trustees or attorneys) of persons required to notify must sign the form and provide a mailing address (if different than address in Item A). For other persons providing notification, the signature is optional. Check the boxes which best describe the relationship to the site of the person required to notify. If you are not required to notify check "Other".

Name Joseph Calamungi
Director of Manufacturing

Street

City State Zip Code

Signature J Calamungi Date 6/8/81

☒ Owner, Present
☐ Owner, Past
☐ Transporter
☒ Operator, Present
☐ Operator, Past
☐ Other

December 22, 1981

CERTIFIED MAIL

SWS Silicones Corporation
Adrian, MI 49221

Attention: Mr. Gordon C. Philbrook

Re: MI 0026034

Gentlemen:

Your application for a National Pollutant Discharge Elimination System (NPDES) Permit has been processed in accordance with appropriate State and Federal regulations.

Your NPDES Permit contains: 1) limitations which require you to monitor your effluent in accordance with Part I, Section A; and 2) a schedule of compliance for submittal of information concerning other permit requirements.

REVIEW THE PERMIT EFFLUENT LIMITS AND PERFORMANCE SCHEDULES CAREFULLY. These are subject to the criminal and civil enforcement provisions of both state and federal law. All permit violations are audited by the United States Environmental Protection Agency and will appear in a published quarterly non-compliance report made available to agencies and the public.

Your monthly operating report forms will be transmitted to you in the near future. These reports are to be submitted monthly as required by your NPDES permit.

RECEIVED
DEC28 1981
PTE MOUILLEE S.G.A.

Very truly yours,

WATER QUALITY DIVISION

Karl Zollner, Jr., P.E., Chief
Permits Section

Enclosure: Permit
KZ/bl:clp
cc: Glenn Pratt (2), R. Schrameck, Data Center, Files,
Comprehensive Studies Section, Point Source Studies Section,
Compliance Section, C. Odin
Southeast Michigan Council of Governments

RECEIVED
NOV 03 1981
FTL. MOUILLEE S.G.A.

November 2, 1981

CERTIFIED MAIL

SWS Silicones Corporation
Adrian, Michigan 49221

Attention: Mr. Gordon C. Philbrook, Environmental Control Coordinator

Re: Discharge of Pretreated Wash Water

Gentlemen:

This is in response to your October 21, 1981 letter which requests temporary authorization to discharge 2,000 gallons per day of treated washwater to the River Raisin.

Staff have reviewed your request and determined that the storage level is reaching a critical point and that immediate authorization to discharge is necessary to avoid an emergency situation. Accordingly, I am issuing a temporary emergency authorization to expire November 12, 1981, the date of the Water Resources Commission meeting.

This authorization is conditioned on your continued compliance with the discharge limitations and monitoring requirements in the current permit. The concentration of 1,1,1-trichloroethane in the main treatment plant effluent is not to exceed 2.0 mg/l average and 4.0 mg/l maximum.

Within the next 10 days we will forward a draft permit containing, among other things, authorization for this discharge. We will request the Water Resources Commission at its November meeting to place the permit on public notice and to continue the emergency authorization until December 17, 1981, the date of the December Commission meeting. At that time it is anticipated that the NPDES permit can be reissued, and the need for temporary authorization will cease.

Very truly yours,

WATER QUALITY DIVISION

Wayne E. Denniston, P.E., Chief
Pollution Control Branch

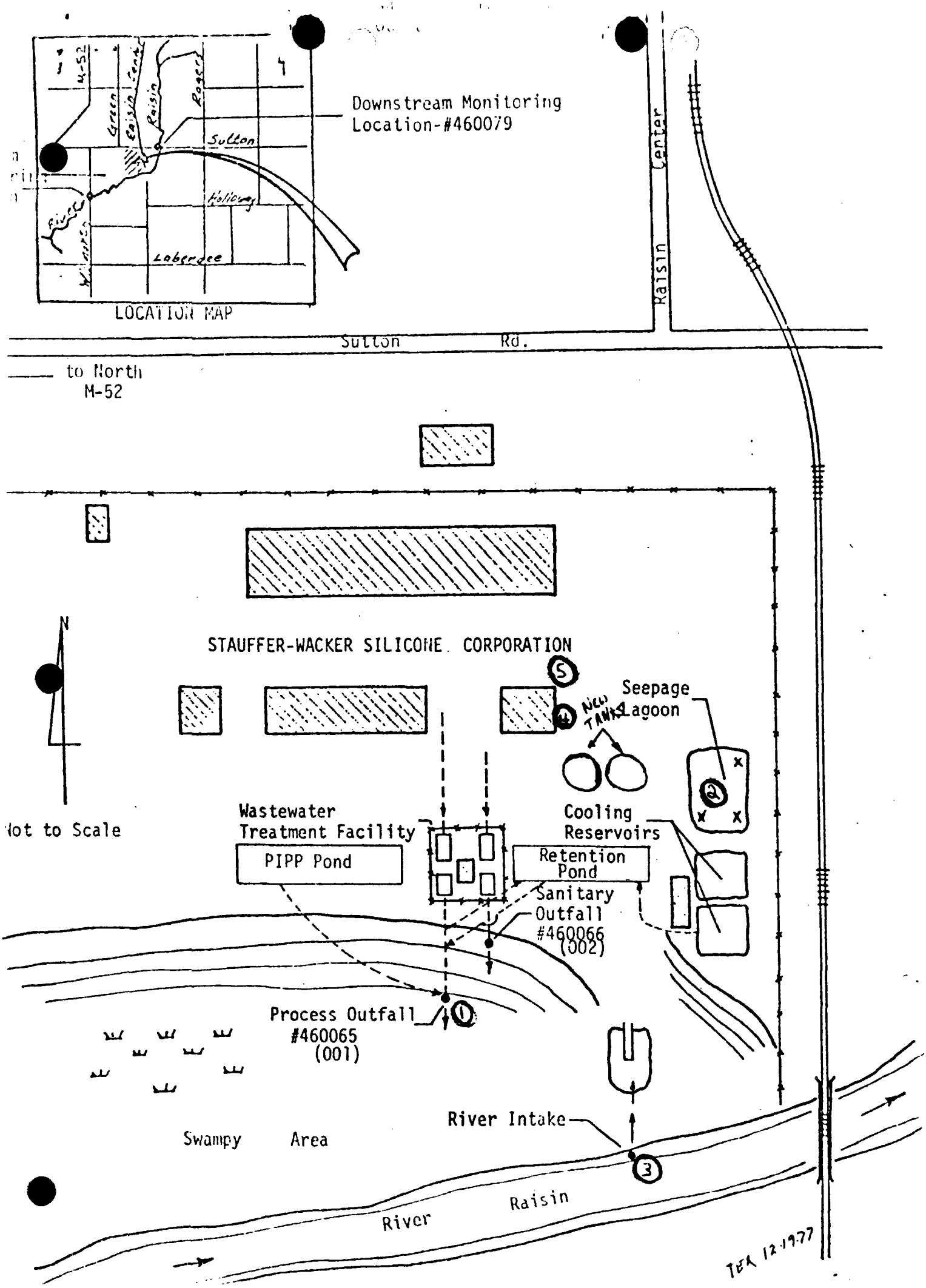
[illegible]/[illegible]:clp
cc: Mr. J. Ballis
Mr. R. Schrameck
Mr. P. Bladwin
Mr. G. Pratt
Mr. R. Zollner

4-22-81

Sample identifications for samples sent to Shrader Laboratories for GC/MS analyses.

| SAMPLE IDENTIFICATION | | SOURCE |
|---|---|---|
| Outfall 1 | 47784-EP | Black Pond |
| Outfall 2 | 47785-001 | Outfall 001 |
| Outfall 3 | 47786-RI | River Inlet |

This document prepared with State funds.



Downstream Monitoring
Location-#460079
LOCATION MAP
Sutton
Holloway
Laberdee
Raisin
Center
Sutton Rd.
to North
M-52
STAUFFER-WACKER SILICONE CORPORATION
N
Not to Scale
Seepage
Lagoon
New Tanks
Wastewater
Treatment Facility
PIPP Pond
Cooling
Reservoirs
Retention
Pond
Sanitary
Outfall
#460066
(002)
Process Outfall
#460065
(001)
River Intake
Swampy Area
River Raisin
TEK 12-19-77

A

EPA

**ACKNOWLEDGEMENT OF NOTIFICATION OF HAZARDOUS WASTE ACTIVITY**
*(VERIFICATION)*

This is to acknowledge that you have filed a Notification of Hazardous Waste Activity for the installation located at the address shown in the box below to comply with Section 3010 of the Resource Conservation and Recovery Act *(RCRA)*. Your EPA Identification Number for that installation appears in the box below. The EPA Identification Number must be included on all shipping manifests for transporting hazardous wastes; on all Annual Reports that generators of hazardous waste, and owners and operators of hazardous waste treatment, storage and disposal facilities must file with EPA; on all applications for a Federal Hazardous Waste Permit; and other hazardous waste management reports and documents required under Subtitle C of RCRA.

EPA I.D. NUMBER → • MID075400671 REACKNOWLEDGEMENT

SWS SILICONES CORPORATION
SUTTON ROAD
ADRIAN MI 49221

INSTALLATION ADDRESS → SUTTON ROAD
ADRIAN MI 49221

EPA Form 8700-12B (4-80) 09/28/81

SWS Silicones Corporation
ADRIAN, MICHIGAN 49221 • TELEPHONE (517) 263-5711

RECEIVED
AUG 31 1981
ENVIRONMENTAL ENFORCEMENT DIVISION

August 27, 1981

Ms. Claudia Weaver
Environmental Enforcement Division
State of Michigan
Department of Natural Resources
Steven T. Mason Building
P. O. Box 30028
Lansing, Michigan 48909

Re: SWS Silicones Corp., Adrian, MI
my letter of August 26, 1981

Dear Ms. Weaver:

We wish to remind you that the quantity of old evaporation pond sludge mentioned on the Waste Characterization Report, Section F. 14., is a one-time only bulk amount and is not a monthly generated quantity, as indicated on the form.

Yours truly,

SWS SILICONES CORPORATION

Gordon C. Philbrook

Gordon C. Philbrook
Environmental Control Coordinator

81-200
GCP:pb

cc: R. Schrameck, DNR District Office
Certified mail

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
OFFICE OF HAZARDOUS WASTE MANAGEMENT
BOX 30038
LANSING, MICHIGAN 48909

# WASTE CHARACTERIZATION REPORT

**SECTION A. WASTE GENERATOR IDENTIFICATION INFORMATION**

EPA IDENTIFICATION NUMBER: MID 075 400 671

BUSINESS NAME: SWS SILICONES CORPORATION

ADDRESS: SUTTON ROAD

CITY: ADRIAN | STATE: MI | ZIP CODE: 49221

NAME AND TITLE OF CONTACT PERSON: Gordon Philbrook, Environmental Control Coordinator

TELEPHONE NUMBER: 517-263-5711

**SECTION B. COMMON NAME OF THE WASTE**

ENTER TYPE OF WASTE (i.e. common name) characterized on this form and the source or process from which it was produced.

Old Evaporation Pond Sludge

**SECTION C. LISTED HAZARDOUS WASTE**

| | | HAZARDOUS WASTE NO. |
|---|---|---|
| 1. If the waste is listed in tables 301 a, b, c, or d of Rule 299.6308, 299. 6309, 299.6310 or 299.6311, respectively or table 305 of Rule 299.6317, enter the hazardous waste number from the appropriate table | *N/A | |
| 2. If the waste is a discarded commercial chemical product, off-specification specie, container or spill residue of a substance listed in Table 302a, Rule 299.6312, or Table 302 b or c, Rule 299.6313 or 299.6314, respectively, enter the hazardous waste number from the applicable table | N/A | |
| 3. If waste *contains* any substances listed in table 302 a, b, or c, Rule 299.6312, 299.6313, or 299.6314, respectively, enter their hazardous waste number(s) from the applicable table AND record the component concentrations. | COMPONENT CONCENTRATION: ____ to 3.7 % | U226 |
| | < ____ to .005% | U069 |
| | < ____ to .005% | U188 |
| 4. If the waste contains viable desease-causing agents listed in table 304, Rule 299.6316, enter the hazardous waste number(s) from the table | N/A | |

*N/A = Not Applicable

**SECTION D. HAZARDOUS WASTE BASED ON CHARACTERISTICS**

| 5. Ignitable Wastes | Test Results | Parameters | Reference |
|---|---|---|---|
| 5a. Liquid flash point test (aqueous solutions containing less than 24% alcohol by volume are excluded from this test). Non-liquid | N/A ____ to ____ °c | Flash Pt. 60°c | 299.6201 (c) (i) |
| 5b. Non-liquid — Is it ignitable based on conditions stated in the reference? | ☐ Yes ☒ No | See Reference | 299.6201 (c) (ii) |
| 5c. Compressed gas — Is the waste a flammable compressed gas as defined in the reference? N/A | ☐ Yes ☐ No | See Reference | 49 CFR § 173.300 |
| 5d. Oxidizer — Is the waste an oxidizer as defined in the reference? N/A | ☐ Yes ☐ No | See Reference | 49 CRF § 173.151 |
| 5e. Enter "D001", as the hazardous waste number if the waste exceeds one or more of the parameters listed or meets the definition of a hazardous waste based on the reference | N/A | | |

| 6. Corrosive Wastes (concentrated salt solutions are by definintion not coorosive) | Test Results | Parameters | Reference |
|---|---|---|---|
| 6a. Aqueous Solution — ph test Supernatant Water | 8 ph | See Reference | 299.6201 (a) (i) |
| 6b. Liquid-Steel (type SAE 1020) corrosion test N/A | ____ mm/yr | Rate 6.35 mm/yr | 299.6201 (a) (ii) |
| 6c. Albino rabbit skin test — Is the tissue destroyed or irreversibly changed? N/A | ☐ Yes ☐ No | See Reference | 229.6201 (a) (iii) & 49 CFR § 173.240 |
| 6d. Enter "D002", as the hazardous waste number if the waste exceeds one or more of the parameters listed | N/A | | |

7. Reactive wastes

| | |
|---|---|
| 7a. Is the waste normally unstable and capable of undergoing violent chemical or physical change without detonating? | ☐ Yes ☒ No |
| 7b. Does it react with water forming potentially explosive mixtures with water? | ☐ Yes ☒ No |
| 7c. When mixed with water, does it generate toxic gases, vapors, or fumes? | ☐ Yes ☒ No |
| 7d. Is it a sulfide or cyanide bearing waste which when exposed to ph conditions between 2 and 12.5, can generate toxic gasses, vapors, or fumes? | ☐ Yes ☒ No |
| 7e. Is the waste capable of detonation or explosive reaction when subjected to a strong initiating source or if heated under confinement? | ☐ Yes ☒ No |

7f. Is the waste capable of detonation or explosive decomposition or reaction at standard temperature and pressure? ☐ Yes ☒ No

7g. Is the waste a forbidden explosive as defined in 49 CFR § 173.51? ☐ Yes ☒ No

7h. Is the waste a Class A explosive as defined in 49 CFR § 173.53? ☐ Yes ☒ No

7i. Is the waste a Class B explosive as defined in 49 CFR § 173.88? ☐ Yes ☒ No

7j. If the answer to any of the questions 7a through 7i is yes, enter "D003", as the hazardous waste number. N/A

8. EPA Toxic Wastes — Upon obtaining on extract of the waste as described on 40 CFR § 261, Appendix II, test for the components listed in Table 303, Rule 299.6315. For each component material that exceeds the extract concentration listed in the table, enter the hazardous waste number(s) and the tested concentration(s): None that exceeds.

| Hazardous Waste No. | Concentration |
|---|---|
| N/A | _____ mg/l |
| | _____ mg/l |
| | _____ mg/l |
| | _____ mg/l |

## SECTION E. PHYSICAL STATE AT 25°

9. What is the average density of the material? 1.16

10. Solids: Does the material produce dust if exposed to air movement? ☐ Yes ☒ No

11. Liquid — Sludge: What is the percent solids? 80-90 %

Do the solids settle out? ☐ Yes ☒ No

Can the material be pumped? ☐ Yes ☒ No

Can the material be poured.? ☐ Yes ☒ No

12. Liquid: At what temperature does it freeze? N/A _____ °c

13. Gases: What is the maximum pressure of the container? N/A _____ PSIG

## SECTION F. OTHER INFORMATION:

14. What is the maximum quantity of this waste that is generated per month? 2,000,000 kg.

15. If the only hazardous waste numbers listed on this form are the numbers that have been entered for Item 3, enter the numbers in the space provided if the component concentration (Item 3) and the quantity of the waste generated (Item 14) cause the waste to be considered as a notification waste based on R 299.6201 (1) (g) (iii) and (iv), *figure A* of R299.6201(2), or *figure B* of R299.6201 (3): U226

NOTE: If the hazardous waste numbers that have been entered under item 3, begin with the letter "P" use *figure A* to determine if it is a notification waste. If the number begins or ends with the letter "U" use *figure B*.

16. Are the hazardous wastes listed on this form disposed of onsite? ☒ Yes ☐ No

17. If the waste is a hazardous waste, is it exempt under the small quantity exemptions pursuant to R 299.6203(2) and (3)? ☐ Yes ☒ No

18. If tests were conducted in the evaluation of the waste, all of the following information shall be transmitted to the Department of Natural Resources with the waste characterization Record:

(a) The sampling procedure and the reasons for determining that the sample is representative of the waste.

(b) The results of all tests conducted.

(c) The accuracy and precision of any test conducted.

## SECTION G. U.S. DEPT. OF TRANSPORTATION REPORTING REQUIREMENTS

Hazardous Materials Description and Shipping Name

Hazard Class

UN/DA ID No.

Special Handling and Shipping Requirements

If the waste is hazardous and not exempt or excluded from management, or is a notification waste, send the completed form to the Department of Natural Resources, Office of Hazardous Waste Management, P.O. Box 30038, Lansing, MI 48909.

| Signature | Title | Date |
|---|---|---|
| [illegible] | Environmental Control Coordinator | 7-27-81 |

SWS Silicones Corporation
ADRIAN, MICHIGAN 49221 • TELEPHONE (517) 263-5711

August 26, 1981

Ms. Claudia Weaver
Environmental Enforcement Division
State of Michigan
Department of Natural Resources
Steven T. Mason Building
P. O. Box 30028
Lansing, Michigan 48909

RECEIVED
AUG 28 1981
ENVIRONMENTAL ENFORCEMENT DIVISION

Re: SWS Silicones Corp., Adrian, MI
Your letter of June 17, 1981

Dear Ms. Weaver:

We have analyzed the old evaporation pond (black pond) sludge for chemicals listed in Table 302(b) of Rule 302, Act 64. There were three which were detected:

| Hazardous Waste # | Substance | Weighted average in sludge |
|---|---|---|
| U226 | ~~1,1,1 trichloroethane~~ | ~~36,900 ppm~~ |
| U069 | di-n-butyl phthalate | < 50 ppm |
| U188 | phenol | < 50 ppm |

It should be pointed out that getting representative sampling of the pond sludge was very difficult, due to variability in concentrations, and the results above are weighted averages of many samples. Analyses were done by Schrader Laboratories, Inc. of Detroit, Michigan.

Most of the pond sludge showed very low concentrations of 1,1,1 trichloroethane. The high concentrations were localized and, in part, reflect the absorbent characteristics of carbon black and other materials found in the pond sludge.

Since there is an estimated 2,000,000 kg of sludge, the waste would become a notification waste under the criteria of Act 64, due to the presence of 1,1,1 trichloroethane.

A completed Michigan Waste Characterization Report for this sludge is attached.

We assume you will contact Mr. Gary Ford for a meeting concerning the pond closure.

Yours truly,

SWS SILICONES CORPORATION

Gordon C. Philbrook

Gordon C. Philbrook
Environmental Control Coordinator

81-196-GCP:pb
cc: R. Schrameck, DNR District Office
Certified mail
xc: G. Ford
W. Iversen

JUN 1 8 1981

Gary Ford, Esq.
SWS Silicones Corporation
Division of Stauffer Chemical Co.
Westport, Connecticut 06880

Re: SWS Silicones Corp.
V-W-81-R-30
Consent Agreement and
Final Order

Dear Mr. Ford:

This is to acknowledge receipt of the Consent Agreement and Final Order signed by you. A fully executed copy of the Consent Agreement and Final Order is enclosed for your files.

Your cooperation in resolving this matter is appreciatedd.

Very truly yours,

Jane E. Schulteis
Chief, Litigation Unit II

Enclosure

cc: Delbert Rector, Chief
Environmental Services Division
Michigan Department of Natural Resources

bcc: Leder, w/enclosure
Donaldson/Biros, w/enclosure
Joel Boyle, State Implementation Officer, w/enclosure
Regional Hearing Clerk, w/enclosure
Toepfer(Muno), w/enclosure
Tuttolph, w/enclosure

JESCHULTEIS:6-6733:ddw:6/17/81:

SWS Silicones Corporation
ADRIAN, MICHIGAN 49221 • TELEPHONE (517) 263-5711

June 8, 1981

United States Environmental Protection Agency
Region V
Sites Notification
230 South Dearborn Street
Chicago, Illinois 60604

Gentlemen:

Enclosed is the completed EPA Form 8900-1 for our facility at Adrian, Michigan.

Yours truly,

SWS SILICONES CORPORATION

Joseph Calamungi
Director of Manufacturing

JC:jb
Attachment

JUN 12 1981

SWS Silicones Corporation
ADRIAN, MICHIGAN 49221 • TELEPHONE (517) 263-5711

May 13, 1981

U.S. Environmental Protection Agency
Region V, Enforcement Division
Water & Hazardous Materials
Enforcement Branch
Attention: Melanie Toepfer
230 South Dearborn Street
Chicago, Illinois 60604

Re: Consent Agreement and Final Order SWS Silicones Corporation
EPA ID No. MI D075400671

Dear Ms. Toepfer:

Enclosed please find the Consent Agreement and Final Order, signed by Dr. L. B. Bruner. Would you mail to me a copy of the document, after it is signed by appropriate Regional personnel.

Very truly yours,

Gary L. Ford

Gary L. Ford
Stauffer Chemical Company
Westport, Connecticut 06880

GLF:mjz

APR 28 1981

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Gary Ford, Esq.
SWS Silicones Corporation
Division of Stauffer
Chemical Company
Westport, Connecticut 06880

Re: Consent Agreement and
Final Order
SWS Silicones Corporation
EPA ID No. MI D075400671

Dear Mr. Ford:

Enclosed please find a Consent Agreement and Final Order to be reviewed by yourself and signed by Mr. Bruner. Thereupon, please return the signed original to the United States Environmental Protection Agency (U.S. EPA), Region V, Enforcement Division, Water & Hazardous Materials Enforcement Branch, Attention: Melanie Toepfer, 230 South Dearborn Street, Chicago, Illinois 60604. A copy of the document will be returned to SWS Silicones after the appropriate Regional signatures have been acquired.

This Consent Agreement will serve to complete this proceeding, Docket No. EPA-V-W-81-R-30. If you should have any questions, please do not hesitate to call Melanie Toepfer of my staff at (312) 353-2110.

Very truly yours,

Original Signed by Sandra S. Gardebring

Sandra S. Gardebring
Director, Enforcement Division

Enclosure

cc: Gordon Philbrook
SWS Silicones Corporation

Lenore Bruner
SWS Silicones Corporation

bcc: Buttolph
Schulteis

MST 4/10/81 KB 4/15/81
TOEPFER:srj 3-2110 4-7-81

MUNO WEM 4/13/81

MINER 4/17/81

GROMNICKI 4/14

FEHNER

Consent Agreement + Final Order Toeffer: [illegible]

PS Form 3811, Apr. 1977 RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

SEWHME

● SENDER: Complete items 1, 2, and 3.
Add your address in the "RETURN TO" space on reverse.

1. The following service is requested (check one).
   - ☐ Show to whom and date delivered ..... ____¢
   - ☐ Show to whom, date, and address of delivery .. ____¢
   - ☐ RESTRICTED DELIVERY
     Show to whom and date delivered ..... ____¢
   - ☐ RESTRICTED DELIVERY
     Show to whom, date, and address of delivery . $____
     (CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO: Gary Ford, Esq.
SWS Silicones Corp.
Division of Stauffer Chemical Company
Westport, Connecticut 06880

3. ARTICLE DESCRIPTION:

| REGISTERED NO. | CERTIFIED NO. | INSURED NO. |
|---|---|---|
| | 927467 | |

**(Always obtain signature of addressee or agent)**

I have received the article described above.
SIGNATURE ☐ Addressee ☐ Authorized agent

4. [signature]
DATE OF DELIVERY — POSTMARK

WESTPORT, CT. USPO 1981

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE: — CLERK'S INITIALS

☆GPO: 1977—0—249-595

PS Form 3800, Apr. 1976 EPA ID No. MI D075400671

RECEIPT FOR CERTIFIED MAIL
NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL
(See Reverse)

SENT TO Gary Ford Esq
SWS Silicones Corp. Division
STREET AND NO.
of Stauffer Chemical Co
P.O., STATE AND ZIP CODE
Westport, Connecticut 06880

| | |
|---|---|
| POSTAGE | $ |
| CERTIFIED FEE | ¢ |
| SPECIAL DELIVERY | ¢ |
| RESTRICTED DELIVERY | ¢ |
| SHOW TO WHOM AND DATE DELIVERED | ¢ |
| SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY | ¢ |
| SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY | ¢ |
| SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY | ¢ |
| TOTAL POSTAGE AND FEES | $ |

CONSULT POSTMASTER FOR FEES
OPTIONAL SERVICES
RETURN RECEIPT SERVICE

POSTMARK OR DATE

APR 29 1981

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION V

| | | |
|---|---|---|
| IN THE MATTER OF: | ) | DOCKET NO. EPA-V-W-81-R-30 |
| | ) | |
| SWS SILICONES CORPORATION | ) | |
| ADRIAN, MICHIGAN | ) | CONSENT AGREEMENT AND |
| | ) | FINAL ORDER |
| EPA ID NO. MI D075400671 | ) | |

WHEREAS,

1. This Administrative proceeding was initiated pursuant to Section 3008 of the Resource Conservation and Recovery Act, as amended (42 USC §6901 et seq.), hereinafter RCRA.

2. This action was instituted by a Complaint and Notice of Opportunity for Hearing by Complainant on January 12, 1981, charging that SWS Silicones, hereafter Respondent, was in violation of Subtitle C of RCRA, Section 3004, 42 USC §6924 and regulations 40 CFR §§ 265.33, 265.37, 265.52(c), 265.52(e) and 265.73. These violations occurred at the Respondent's facility located at 3505 Sutton Road, Adrian, Michigan. They were observed by officials of the United States Environmental Protection Agency, hereafter U.S. EPA, during an inspection of the facility on December 9, 1980.

3. The parties discussed compliance with this action through various phone conversations between Melanie Toepfer, Environmental Scientist for U.S. EPA, and Gordon Philbrook, Environmental Control Coordinator for SWS Silicones.

WHEREFORE, for the purpose of this proceeding only, and without prejudice to any other proceeding:

a. Respondent hereby admits the jurisdictional allegations contained in this Complaint;

b. Respondent admits the allegations as set forth in the Complaint, Paragraphs 1 through 6;

c. Paragraph 7 is hereby vacated; and

d. Respondent explicity waives its right to request a hearing on the Complaint.

4. The parties stipulate that Respondent's representatives, Gordon Philbrook and Lenord Bruner, have represented that:

a. The steam whistle was replaced on February 6, 1981. In addition, the Respondent maintains a loud speaker system and a "red phone" system for emergencies;

b. A "letter of agreement" has been received by the local Fire Department, Sheriff's Office and hospital. The letter has been incorporated within all copies of the contingency plan for the facility;

c. A list of emergency equipment has been prepared and added to all copies of the contingency plan; and

d. An inspection log book for the drum storage area was begun on December 29, 1981. A computerized, drum waste inventory system was implemented on February 15, 1981.

5. Respondent consents to the issuance of the Final Order hereinafter cited. Respondent consents to the following:

a. Maintain all facility communications and alarm systems;

b. Maintain a complete contingency plan, copies of which have been submitted to the appropriate local emergency organizations;

c. Maintain an operating record for the drum-containerized hazardous wastes at the facility; and

d. Comply will all applicable RCRA requirements in managing hazardous waste.

The above Order is hereby consented to by both of the parties to this proceeding.

_____
Lenord B. Bruner
Vice President and General Manager
SWS Silicones Corporation

Dated: _____ At: _____

_____
Sandra S. Gardebring
Director, Enforcement Division
U.S. Environmental Protection Agency
Region V

Dated: _____ At: _____

Therefore, it is so ordered. This Order shall become effective immediately.

_____
Valdas V. Adamkus
Acting Regional Administrator
U.S. Environmental Protection Agency
Region V

# SWS Silicones Corporation

ADRIAN, MICHIGAN 49221 • TELEPHONE (517) 263-5711


March 3, 1981

Ms. Melanie Toepfer
Region V, U. S. Environmental Protection Agency
Water and Hazardous Materials
Enforcement Branch
230 South Dearborn Street
Chicago, Illinois 60604

Re: Your letter of 2-13-81

Dear Ms. Toepfer:

In your discussion of our company having two EPA identification numbers, you said it would be preferable to use the second issued number (MID 075 400 671) since that number was currently entered in your computer system.

However, since receiving the first issued number (MID 000 268 524) last September, we have supplied the number to numerous companies, such as waste haulers and waste disposers, and to many files in our own company. Therefore, we would prefer using the first number.

Would you please make the arrangements to have the computer number changed back to our first number.

Would the final identification number be the same as our first number except with a "T" replacing the "D"? This would be advantageous to us.

Your assistance in this matter would be appreciated.

Yours truly,

SWS SILICONES CORPORATION

Gordon C. Philbrook

Gordon C. Philbrook
Environmental Control Coordinator

GCP:pb

81-49-GCP, Certified mail

cc: G. L. Ford (Westport)
J. Calamungi
RCRA/NPDES file

RECEIVED

MAR 6 1981

ENFORCEMENT DIVISION
EPA-REGION V

# SWS Silicones Corporation

ADRIAN, MICHIGAN 49221 • TELEPHONE (517) 263-5711


EPA ID NO. MID 000268524
OR MID 075400671

February 24, 1981

Director, Enforcement Division
Region V, United States Environmental Protection Agency
Water and Hazardous Materials Enforcement Branch
230 South Dearborn Street
Chicago, Illinois 60604

Attention: Compliance Section

Re: Docket No. V-W-81-R-30
Complaint and Findings
of Violation

Our letter of January 27, 1981

This letter is the SWS Silicones Corporation notification of compliance of Order paragraphs number two and three of the Complaint and Findings of Violation, dated January 12, 1981.

All requirements "a" through "e" have been completed and are in operation as outlined in our letter of January 27, 1981.

As per the request of Ms. Melanie Toepfer, we are enclosing a copy of our revised RCRA Contingency Plan, a copy of our hazardous drum storage inspection log, and a copy of our computer print out of the hazardous drum storage amount.

Concerning requirement "f", Ms. Melanie Toepfer has sent us a letter confirming that we are not required to mark the date of accumulation on the waste drums.

Very truly yours,

SWS SILICONES CORPORATION

L. B. Bruner
Vice President and General Manager

LBB:pm

cc: (Without enclosures)
Jack Bails, Chief, Environmental Enforcement, Michigan DNR
Stuart Freeman, Michigan Attorney General's Office
RCRA/NPDES File

## WAREHOUSE DEPARTMENT

SWS Silicones Corporation
RCRA Plan
Inspection Plan and Log

Inspect drum storage area weekly, looking for leaks and/or drum deterioration.

Any problems are to be reported immediately to management. An inspection log will be kept in the Warehouse area. This will include dates of inspections, inspector, problems found and remedial action taken. These records must be kept for at least 3 years.

WATER ENFORCEMENT ACTION SIGN-OFF

Mailed 1-12-81
V-W-81-R-30

PART I. BACKGROUND

PERMITTEE NAME SWS Silicones

PERMITTEE LOCATION Adrian, Michigan

RCRA ID ~~NPDES PERMIT~~ NUMBER MID 000268524

NATURE OF VIOLATION RCRA - 1SS violations

PART II. RECOMMENDATION

TYPE OF ACTION 3008 Order

MAJOR MINOR

NAME & DATE OF STATE CONTACT NOTIFIED 1-8-81

Claudia Weaver MDNR

ANY OTHER OUTSTANDING ENFORCEMENT ACTIONS AGAINST THIS PERMITTEE:

WATER

AIR

PART III. CONCURRENCES

| | INITIALS | DATE | AGREE | DISAGREE |
|---|---|---|---|---|
| CHIEF, ENGINEERING UNIT I | LEM | 1/8/81 | (X) | ( ) |
| CHIEF, COMPLIANCE ~~UNIT~~ SECTION | [illegible] | [illegible] | (X) | ( ) |
| CHIEF, ~~COMPL.~~ & ENG. SECTION | WXH | 1/9/81 | (X) | ( ) |
| CHIEF, CASE DEVELOPMENT UNIT | GES | 1/9/81 | (X) | ( ) |
| CHIEF, LEGAL SUPPORT SECTION | | | (X) | ( ) |
| Actg CHIEF, ~~[redacted]~~ Haz Mat. ENF. BRANCH | WXH | 1/9/81 | (X) | ( ) |

PART IV. APPROVAL

DIRECTOR, ENFORCEMENT DIVISION APPROVES ( ) DISAPPROVES ( )

SWS Silicones Corporation
ADRIAN, MICHIGAN 49221 • TELEPHONE (517) 263-5711

Date: 5/31/83
Revision No.: 0

December 29, 1980

Mr. Paul Nelson, Administrator
Emma L. Bixby Hospital
818 Riverside Avenue
Adrian, MI. 49221

Dear Mr. Nelson:

In accordance with the new Hazardous Wastes Management rules and regulations recently (11/19/80) pulmugated by the U.S. Environmental Protection Agency, we must have a contingency plan which includes arrangements agreed-to by local hospitals, in the event of a plant emergency, such as fires or explosions, involving hazardous wastes.

Our understanding is that Bixby Hospital can and would provide the following services, when appropriate:

1. The Emergency Room is available 24 hours/day.
2. Doctors are available or on call 24 hours/day at the Hospital.
3. There are emergency shower facilities at the Hospital Emergency Room area.
4. There would be communications between the Hospital, the Sheriff's department and the Ambulance service.
5. The Hospital has a heliport.
6. The Hospital maintains a 24 hour/day Poison Control center for information and advise concerning poisons and chemicals. ?

Please review our comments if you agree or have any suggestions please call me at 263-5711 Ext. 361. Your assistance is greatly appreciated in this matter.

Yours truly,

SWS SILICONES CORPORATION

Gordon C. Philbrook
Environmental Control Coordinator

SWS RCRA Plan, page 114
Revised 1/20/81



GCP:ceh
cc: J. Calamungi

12-09-80

MID000268524
EPA IDENTIFICATION NUMBER

RCRA INSPECTION REPORT - INTERIM STATUS STANDARDS
TREATMENT, STORAGE, AND DISPOSAL FACILITIES
Form 1 - General Facility Standards

## I. General Information:

(A) Facility Name: SWS SILICONES CORP.

(B) Street: P.O. BOX 428 SUTTON RD

(C) City: ADRIAN (D) State: MICH (E) Zip Code: 49221

(F) Phone: (G) County:

(H) Operator: JOSEPH CALAMUNGI DIRECTOR OF MANUFACTURING GORDON MAILBROOK ENV. COORD

(I) Street: SAME

(J) City: (K) State: (L) Zip Code:

(M) Phone: (N) County:

(O) Owner: DR. LEONARD BRUNER GEN. MGR & VICE PRES.

(P) Street: SAME

(Q) City: (R) State: (S) Zip Code:

(T) Phone: (U) County:

(V) Type of Ownership: ____ Federal ____ Municipal ✓ Private ____ State ____ County

(W) Date of Inspection: ~~12/5/80~~ (Q) Time of Inspection (From) 1:00 (To) 3:45

(X) Weather Conditions: 30'S OVERCAST

| (Y) Person(s) Interviewed | Title | Telephone |
|---|---|---|
| JOSEPH CALHOUNAI | DIRECTOR OF MANUF. | 517 263 5711 |
| GORDON PHILBROOK | ENV. CONTROL COORD. | 517 263 5711 |
| | | |

| (Z) Inspection Participants | Title | Telephone |
|---|---|---|
| NORM MEDERGANS | ENV. ENG. | 886-6753 |
| MIKE MUTNAI | CHEM ENG. | 886-6790 |
| BRIAN REICHS MDNR | WATER QUALITY | RICKWOOD |
| JACK LARSON | AIR QUALITY | ANN ARBOR |

## II. Description of Site Activity

(A) ✓ Generator (Form 2)

(B) ____ Transporter (Form 3)

(C) ✓ Chemical, Physical and Biological Treatment (Form 4)

(D) ✓ Storage (Form 5)

____ Landfill (Form 6)

(F) ____ Incineration (Form 7)

(G) ____ Land Treatment (Form 4)

(H) ____ Thermal Treatment (Form 7)

(I) Comments: NO TREATMENT UNDERWAY, SEVERAL HUNDRED DRUMS IN STORAGE - SPENT SOLVENTS & FLAMMABLES & CORROSIVES NO WASTE IN TANKS. AN INACTIVE LAGOON MAY BE A POTENTIAL PROBLEM. MDNR IS INVESTIGATING (CONTACT CLAUDIA WEAVER). WE SHOULD INVESTIGATE IF CLOSURE OF THE INACTIVE LAGOON CAN OR SHOULD BE CONTROLLED BY AIR REGS.

Supplemental forms (Listed in Parathesis) must be completed for each activity inspected. Attach all Supplemental forms to this report.

| | Yes | No | Not Inspected | See Remark Number |
|---|---|---|---|---|
| (J) Has this facility Submitted a Part A Permit Application? | ✓ | | | |

## III. GENERAL FACILITY STANDARDS

| | Yes | No | Not Inspected | See Remark Number |
|---|---|---|---|---|
| (A) Has the Regional Administrator been notified regarding: | | | | |
| 1. Receipt of hazardous waste from a foreign source? | | | | NA |
| 2. Transfer of Ownership? | | | | NA |
| (B) General Waste Analysis: | | | | |
| 1. Has the owner or operator obtained a detailed chemical and physical analysis of the waste? | ✓ | | | |
| 2. Does the owner or operator have a detailed waste analysis plan on file at the facility? | ✓ | | | |
| 3. Does the waste analysis plan specify procedures for inspection and analysis of each movement of hazardous waste from off-site? | | | | NA |
| (C) Security - Do security measures include: | | | | |
| 1. 24-Hour Surveillance? | ✓ | | | |
| 2. Artificial or Natural Barrier Around Facility? | ✓ | | | |
| 3. Controlled Entry? Kaiser River & FENCE | | | | |
| 4. Danger Sign(s) at Entrance? ? | ✓ | | | |
| (D) Do Owner or Operator Inspections Include: | | | | |
| 1. Records of Malfunctions? | | | | NA |
| 2. Records of Operator Error? | | | | NA |
| 3. Records of Discharges? | | | | NA |
| 4. Inspection Schedule? | ✓ | | | |
| 5. Safety, Emergency Equipment? | ✓ | | | |
| 6. Security Devices? | ✓ | | | |
| 7. Operating and Structural Devices? | ✓ | | | |
| 8. Inspection Log? | ✓ | | (NOT FOR DRUM. | |

NO PROBLEMS SINCE 1/19

## III. GENERAL FACILITY STANDARDS - Continued

| | Yes | No | Not Inspected | See Remark Number |
|---|---|---|---|---|
| (E) Do Personnel Training Records Include: | | | | 2 UTILITY OPERATORS |
| 1. Job Titles? | ✓ | | | |
| 2. Description of Training? | ✓ | | | |
| 3. Records of Training? | ✓ | | | |
| Is Personnel Training Completed within the Required Time Frame? | | | | NA |
| (F) Are the Following Special Requirements for Ignitable, Reactive, or Incompatible Wastes Addressed? | | | | |
| 1. Special Handling? | ✓ | | | |
| 2. No Smoking Signs? | ✓ | | | |
| 3. Separation and Confinement? | ✓ | | | |

## IV. PREPAREDNESS AND PREVENTION

| | | | | |
|---|---|---|---|---|
| (A) Maintenance and Operation of Facility: | | | | |
| 1. Is there any evidence of fire, Explosion, or release of hazardous waste or hazardous waste constituent? | | ✓ | | |
| (B) Does the Facility have the Following Equipment: | | | | |
| 1. Alarm System? | ✓ | | | AIR WHISTLE NOT OPERATIV |
| 2. Telephone or 2-Way Radios? | ✓ | | | |
| 3. Portable fire extinguishers, fire control, spill control equipment and decontamination equipment? | ✓ | | | |

Indicate the volume of water and/or foam available for fire control;

Units: 3 MILL GAL RES. - 3000 GAL MIN. . FIRETRUCK

RAISEN TWSHP FIRE DEPT.

| | Yes | No | Not Inspected | See Remark Number |
|---|---|---|---|---|
| (C) Testing and Maintenance of Emergency Equipment: | | | | |
| 1. Has the Owner or Operator established Testing and Maintenance Procedures for Emergency Equipment? | ✓ | | | |
| 2. Is Emergency Equipment Maintained in Operable Conditions? | ✓ | | | |
| (D) Has Owner or Operator Provided Immediate Access to Internal Alarms (if needed)? | ✓ | | | |
| (E) Is there Adequate Aisle Space for Unobstructed Movement? | | | | |
| (F) Are Arrangements with Local Authorities Included in the Operating Record? | ✓ | | | |

## V. CONTINGENCY PLAN AND EMERGENCY PROCEDURES

| | | | | |
|---|---|---|---|---|
| (A) Does the Contingency Plan Contain the Following Information: | | | | |
| 1. The actions facility personnel must take to comply with §264.51 and 265.56 in response to fires, explosions, or any unplanned release of hazardous waste? (If the owner has a Spill Prevention, Control, and Countermeasures (SPCC) Plan, he needs only to amend that plan to incorporate hazardous waste management provisions that are sufficient to comply with the requirements of this Part.) | ✓ | | | |
| 2. Arrangements agreed to by Local police departments, fire departments hospitals, contractors, and State and local emergency response teams to coordinate emergency services pursuant to §264.37? | | ✓ | | |

| | Yes | No | Not Inspected | See Remark Number |
|---|---|---|---|---|
| 3. Names, addresses, and phone numbers (office and home) of all persons qualified to act as emergency coordinators? | ✓ | | | |
| 4. A list of all emergency equipment at the facility which includes the location and physical description of each item on the list and a brief outline of its capabilities? | | ✓ | | |
| 5. An evacuation plan for facility personnel where there is a possibility that evacuation could be necessary? (This plan must describe signal(s) to be used to begin evacuation, evacuation routes, and alternate evacuation routes.) | ✓ | | | |
| (B) Are copies of Contingency Plan Available at Site and local Emergency Organizations? | ✓ | | | |
| (C) Emergency Coordinator | | | | |
| 1. Is the facility Emergency Coordinator identified? | ✓ | | | |
| 2. Is Coordinator Familiar with all aspects of site operation and emergency procedures? | ✓ | | | |
| 3. Does the Emergency Coordinator have the authority to carry out the Contingency Plan? | ✓ | | | |
| (D) Emergency Procedures | | | | |
| If an Emergency Situation has occurred at this facility; has the Emergency Coordinator followed the Emergency procedures listed in 256.56? | | | | NA |

NOT SINCE 1975

## VI. MANIFEST SYSTEM, RECORDKEEPING, AND REPORTING

| | Yes | No | Not Inspected | See Remark Number |
|---|---|---|---|---|
| (A) Use of Manifest System | | | | |
| 1. Does the facility follow the procedures listed in §265.71 for processing each Manifest? | | | | NA |
| 2. Are records of past shipments retained for 3 years? | | | | NA |
| (B) Does the owner or operator meet requirements regarding Manifest Discrepancies? | | | | NA |
| (C) Operating Record | | | | |
| Does the facility maintain an operating record at the site as required in §265.73? | | ✓ | | DON'T KEEP DATA ON DOWN |
| (D) Availability, Retention and Disposition of Records | | | | |
| Are all records available at the site for inspection as required in §265.74? | ✓ | | | |

## VII. CLOSURE AND POST CLOSURE

| | Yes | No | Not Inspected | See Remark Number |
|---|---|---|---|---|
| (A) Closure and Post Closure | | | | |
| 1. Closure Plan Available for Inspection by May 19, 1981? | | | | NA |
| 2. Has this plan been submitted to the Regional Administrator? | | | | NA |
| 3. Has Closure begun? | | | | NA |
| 4. Is closure cost estimate available by May 19, 1981? | | | | NA |
| (B) Post Closure Care and Use of Property - Has the Owner or Operator supplied a Post Closure Monitoring Plan (by May 19, 1981)? | | | | NA |

EPA IDENTIFICATION NUMBER

RCRA INSPECTION REPORT - INTERIM STATUS STANDARDS
Form 2 - Generator Inspection

## I. General Information:

(A) Installation Name: _____

(B) Street: _____

(C) City: _____ (D) State: _____ (E) Zip Code: _____

(F) Phone: _____ (G) County: _____

(H) Operator: _____

(I) Street: _____

(J) City: _____ (K) State: _____ (L) Zip Code: _____

(M) Phone: _____ (N) County: _____

(O) Owner: _____

(P) Street: _____

(Q) City: _____ (R) State: _____ (S) Zip Code: _____

(T) Phone: _____ (U) County: _____

(V) Type of Ownership: _____ Federal _____ Municipal _____ Private _____ State _____ County

(W) Date of Inspection: _____ Time of Inspection (From) _____ (To) _____

(X) Weather Conditions: _____

| (Y) Person(s) Interviewed | Title | Telephone |
|---|---|---|
| | | |
| | | |
| | | |

| (Z) Inspection Participants | Title | Telephone |
|---|---|---|
| | | |
| | | |
| | | |

## II. OTHER TYPE OF HAZARDOUS WASTE ACTIVITY

(A) _____ Transporter (Form 3)

(B) _____ Chemical, Physical and Biological Treatment (Form 4)

(C) _____ Storage (Form 5)

(D) _____ Landfill (Form 6)

(E) _____ Incineration (Form 7)

(F) _____ Thermal Treatment (Form 7)

(G) Comments: _____

Supplemental forms (Listed in Parathesis) must be completed for each activity inspected. Attach all Supplemental forms to this report.

## III. MANIFEST

| | Yes | No | Not Inspected | See Remark Number |
|---|---|---|---|---|
| (A) Are copies of the Manifest available? | ✓ | | | |
| (B) Does the Manifest contain the following information: | | | | |
| 1. Manifest document number? | ✓ | | | |
| 2. Name, mailing address, telephone number, and EPA ID Number of Generator? | ✓ | | | |
| 3. Name and EPA ID Number of Transporter(s)? | ✓ | | | |
| 4. Name, Address, and EPA ID Number of Designated permitted facility and alternate facility? | ✓ | | | |
| 5. The description of the waste(s) (DOT shipping name, DOT hazard class, DOT identification number)? | ✓ | | | |
| 6. The total quantity of waste(s) and the type and number of containers loaded? | ✓ | | | |
| 7. Required Certification? | ✓ | | | |
| 8. Required Signatures? | ✓ | | | |
| (C) Does the Owner or Operator Submit Exception Reports when Needed? | | | | NA |

## IV. PRE-TRANSPORT REQUIREMENTS

| | | | | |
|---|---|---|---|---|
| (A) Is Generator Packaging waste in accordance with DOT Regulations? | ✓ | | | |
| (B) Are waste packages marked and labeled in accordance with DOT Regulations concerning hazardous waste materials? | ✓ | | | |
| (C) If required, are placards available to transporter? | ✓ | | | |

| | Yes | No | Not Inspected | See Remark Number |
|---|---|---|---|---|
| (D) Pre-shipment Accumulation: | | | | SEE FORM 5 |
| 1. Are containers marked with start of accumulation date? | | | | |
| 2. Are the containers of hazardous waste removed from installation before they can accumulate for more than 90 days? | | | | |
| 3. Are wastes stored in containers managed in accordance with 40 CFR Part 265.174 and 265.176 (weekly inspections of containers, containers holding ignitable or reactive wastes located at least 15 meters (50 Feet) from facility's property line? | | | | |
| 4. Are wastes stored in tanks managed according to the following: | | | | |
| a. Are tanks used to store only those wastes which will not cause corrosion leakage or premature failure of the tank? | | | | |
| b. Do uncovered tanks have at least 60 cm (2 feet) of freeboard, or dikes or other containment structures? | | | | |
| c. Do continuous feed systems have a waste-feed cutoff? | | | | |
| d. Are required daily and weekly inspections done? | | | | |
| e. Are reactive & ignitable wastes in tanks protected or rendered non-reactive or non-ignitable? (If waste is rendered non-reactive or non-ignitable, see treatment requi em nts? | | | | |
| f. Are incompatible wastes stored in separate tanks? (If not, the provisions of 40 CFR §265.17(b) apply) | | | | |

EPA IDENTIFICATION NUMBER

# RCRA INSPECTION REPORT - INTERIM STATUS STANDARDS
## TREATMENT, STORAGE, AND DISPOSAL FACILITIES
### Form 4 - Chemical, Physical and Biological Treatment/Land Treatment

## I. General Information

(A) Facility Name: _____

(B) Street: _____

(C) City: _____ (D) State: _____ (E) Zip Code _____

(F) Phone: _____ (G) County: _____

NO TREATMENT UNDERWAY

## II. Chemical, Physical and Biological Treatment (Subpart Q)

| | Yes | No | Not Inspected | See Remark Number |
|---|---|---|---|---|
| 1. Is equipment used to treat only those wastes which will not cause leakage, corrosion, or premature failure? | ✓(ORAL) | | | |
| 2. Is a continuously fed system equipped with a means of hazardous waste inflow stoppage or control (e.g., cut-off system)? | ✓(ORAL) | | | |
| 3. Has the owner or operator addressed the waste analysis requirements of 265.402? | ✓(ORAL) | | | |
| 4. Are inspection procedures followed according to 265.403? | ✓(ORAL) | | | |
| 5. Are the special requirements fulfilled for ignitable or reactive wastes? | ✓(ORAL) | | | |
| 6. Are incompatible wastes treated? (If yes, 265.17(b) applies.) | | ✓ | | |

## III. Land Treatment (Subpart M)

| | Yes | No | Not Inspected | See Remark Number |
|---|---|---|---|---|
| 1. Is hazardous waste capable of biological or chemical degradation? | | | | |
| 2. Are run-off and run-on diverted from the facility or collected (Effective date: November 19, 1981)? | | | | |
| 3. Is waste analysis according to 265.273? | | | | |
| 4. If food chain crops are grown at the facility, has the owner or operator addressed the requirements of 265.276? | | | | |
| 5. Is an unsaturated zone monitoring plan designed and implemented to detect the vertical migration of hazardous waste and provide information on the background concentrations of the hazardous waste available? | | | | |
| 6. Does the unsaturated zone monitoring plan address the minimum information specified in 265.278? | | | | |
| 7. Are records kept regarding application dates and rates, quantities, and location of all hazardous waste placed in the facility? | | | | |
| 8. Are the special requirements fulfilled regarding land treatment of ignitable or reactive wastes? | | | | |
| 9. Are incompatible wastes land treated? (If yes, 265.17(b) applies.) | | | | |

| | YES | NO | NOT INSPECTED | REMARK # |
|---|---|---|---|---|
| 3. Do continuous feed systems have a waste-feed cutoff? | | | | |
| 4. Are waste analyses done before the tanks are used to store a substantially different waste than before? | | | | |
| 5. Are required daily and weekly inspections done? | | | | |
| 6. Are reactive & ignitable wastes in tanks protected or rendered non-reactive or non-ignitable? (If waste is rendered non-reactive or non-ignitable, see treatment requirements.) | | | | |
| 7. Are incompatible wastes stored in separate tanks? (If not, the provisions of 40 CFR 265.17(b) apply.) | | | | |
| C. Facilities which store hazardous waste in surface impoundments (Subpart K). | | | | |
| 1. Do surface impoundments have at least 60 cm (2 feet) of freeboard? | | | | |
| 2. Do earthen dikes have protective cover? | | | | |
| 3. Are waste analyses done when the impoundment is used to store a substantially different waste than before? | | | | |
| 4. Is the freeboard level inspected at least daily? | | | | |
| 5. Are the dikes inspected weekly for evidence of leaks or deterioration? | | | | |
| 6. Are reactive & ignitable wastes rendered non-reactive or non-ignitable before storage in a surface impoundment? (If waste is rendered non-reactive or non-ignitable, see treatment requirements.) | | | | |
| 7. Are incompatible wastes stored in different impoundments? (If not, the provisions of 40 CFR 265.17(b) apply.) | | | | |
| D. Facilities which store hazardous waste in waste piles (Subpart L) | | | | |
| 1. Are waste piles covered or protected from the wind? | | | | |
| 2. Is each in-coming movement of waste analyzed before being added to the waste pile? | | | | |
| 3. Are leachate, run-off, and run-on controlled? (The effective date of this provision is Nov. 19, 1981.) | | | | |
| 4. Are reactive & ignitable wastes rendered non-reactive or non-ignitable before storage in a pile? (If waste is rendered non-reactive or non-ignitable, see treatment requirements.) | | | | |

Continued on next page

| | YES | NO | NOT IN-SPECTED | REMARK # |
|---|---|---|---|---|
| 5. Are piles of reactive or ignitable waste protected? | | | | |
| 6. Are incompatible wastes stored in different piles? (If not, the provisions of 40 CFR 265.17(b) apply.) | | | | |
| 7. Are piles of incompatible waste protected by barriers or distance from other waste? | | | | |

EPA IDENTIFICATION NUMBER

# RCRA INSPECTION REPORT - INTERIM STATUS STANDARDS
# SUPPLEMENTAL FORM 5 FOR STORAGE FACILITY INSPECTIONS

## I. General Information

(A) Facility Name: _____

(B) Street: _____

(C) City: _____ (D) State: _____ (E) ZIP Code _____

(F) Date of Inspection: _____

## II. Storage Facility Standards (Part 265)

A. Facilities which store containers of hazardous waste (Subpart I)

| | YES | NO | NOT INSPECTED | REMARK # |
|---|---|---|---|---|
| 1. Are containers in good condition? | ✓ | | | |
| 2. Are containers compatible with waste in them? | ✓ | | | |
| 3. Are containers stored closed? | ✓ | | | 1 OPEN CONTAINER |
| 4. Are containers managed to prevent leaks? | ✓ | | | |
| 5. Are containers inspected weekly for leaks and defects? | ✓ (CRAC) | | | |
| 6. Are ignitable & reactive wastes stored at least 15 meters (50 feet) from the facility property line? | ✓ | | | |
| 7. Are incompatible wastes stored in separate containers? (If not, the provisions of 40 CFR 265.17(b) apply.) | ✓ | | | |
| 8. Are containers of incompatible wastes separated or protected from each other physical barriers or sufficient distance? | | | | NA |

B. Facilities which store hazardous waste in tanks (Subpart J)

| | | | | |
|---|---|---|---|---|
| 1. Are tanks used to store only those wastes which will not cause corrosion, leakage or premature failure of the tank? | | | | |
| 2. Do uncovered tanks have at least 60 cm (2 feet) of freeboard, or dikes or other containment structures? | | | | |

Continued on next page

| | Yes | No | Not Inspected | See Remark Number |
|---|---|---|---|---|
| ~~5. If hazardous wastes accumulate on site, does the generator follow the following general facility standards?~~ | | | | |
| IV General Facility Standards<br>If Generator is also a TSD; omit section IV | | | | |
| A. Do Personnel training records include: | | | | |
| 1. Job Titles? | | | | |
| 2. Description of Training? | | | | |
| 3. Records of Training? | | | | |
| Is Personnel Training Completed within the Requried Time Frame? | | | | |
| B. Preparedness and Prevention | | | | |
| 1. Maintenance and Operation of Facility: | | | | |
| a. Is there any evidence of fire, explosion, or release of hazardous waste or hazardous waste constituent? | | | | |
| 2. Does the Facility have the following equipment? | | | | |
| a. Alarm system? | | | | |
| b. Telephone or 2-Way Radios? | | | | |
| c. Portable fire extinguishers, fire control, spill control equipment and decontamination equipment? | | | | |

Indicate the volume of water and/or foam available for fire control

Units: _____

| | | | | |
|---|---|---|---|---|
| 3. Testing and Maintenance of Emergency Equipment: | | | | |
| a. Has the Owner or Operator established testing and Maintenance Procedures for Emergency Equipment | | | | |
| b. Is emergency equipment Maintained in Operable Condition? | | | | |

SEE FORM

| | Yes | No | Not Inspected | See Remark Number |
|---|---|---|---|---|
| 4. Has Owner/Operator Provided Immediate Access to Internal Alarms (if needed)? | | | | |
| 5. Is there adequate Aisle Space for unobstructed Movement? | | | | |
| 6. Are arrangements with local authorities included in the operating record? | | | | |
| (C) Contingency Plan and Emergency Procedure | | | | |
| 1. Does the contingency plan contain the following: | | | | |
| a. The actions facility personnel must take to comply with §264.51 and 261.56 in response to fires, explosions, or any unplanned release of hazardous waste? (If the owner has a Spill Prevention, Control and Countermeasures (SPCC) Plan, he needs only to amend that plan to incorporate hazardous waste management provisions that are sufficient to comply with the requirements of this Part) | | | | |
| b. Arrangements agreed to by local police departments, fire departments, hospitals, contractors, and State and local emergency response teams to coordinate emergency services, pursuant to §264.37? | | | | |
| c. Names, addresses, and Phone numbers (office and Home) of all persons qualified to act as emergency coordinator. | | | | |
| d. A list of all emergency equipment at the facility which include the location and physical description of each item on the list, and a brief outline of its capabilities? | | | | |
| e. An evacuation plan for facility personnel where there is a possibility that evacuation could be necessary? (This plan must describe signal(s) to be used to begin evacuation, evacuation routes and alternate evacuation routes. | | | | |

| | Yes | No | Not Inspected | See Remark Number |
|---|---|---|---|---|
| 2. Are copies of the Contingency Plan available at site and local Emergency Organizations? | | | | |
| 3. Emergency Coordinator | | | | |
| a. Is the Facility Emergency Coordinator Identified? | | | | |
| b. Is Coordinator Familiar with all aspects of site operation and Emergency Procedures? | | | | |
| c. Does the Emergency Coordinator have the authority to carry out the Contingency Plan? | | | | |
| 4. Emergency Procedures | | | | |
| If an Emergency Situation has occurred at this facility; has the Emergency Coordinator followed the Emergency Procedures listed in §256.56? | | | | |

## VI. RECORDKEEPING

| | | | | |
|---|---|---|---|---|
| (A) Are Manifests, Annual Reports, Exception Reports, and All Test Results and Analyses Retained for at least three years? | | | | |

## VII. INTERNATIONAL SHIPMENTS

| | | | | |
|---|---|---|---|---|
| (A) Has the Installation Imported or Exported Hazardous Waste? | | ✓ | | |

(If A was answered Yes, then complete one or both of the following)

| | | | | |
|---|---|---|---|---|
| 1. Exporting Hazardous waste, has a generator: | | | | |
| a. Notified the Administrator in writing? | | | | |
| b. Obtained the Signature of the foreign consignee confirming delivery of the waste(s) in the foreign country? | | | | |

| | Yes | No | Not Inspected | See Remark Number |
|---|---|---|---|---|
| c. Met the Manifest requirements? | _____ | _____ | _____ | _____ |
| 2. Importing Hazardous Waste, has the generator: | | | | |
| a. Met the manifest requirements? | _____ | _____ | _____ | _____ |

## VIII. PREPARER INFORMATION

Name: _____

Title: _____

Phone Number: _____

REMARKS: _____

Please print or type in the unshaded areas only
(fill-in areas are spaced for elite type, i.e., 12 characters/inch).

APPENDIX J

Form Approved OMB No. 158-S80001

FORM 3 3 0 RCRA

EPA

U. ENVIRONMENTAL PROTECTION AGENCY

# HAZARDOUS WASTE PERMIT APPLICATION

*Consolidated Permits Program*

*(This information is required under Section 3005 of RCRA.)*

I. EPA I.D. NUMBER

F M I D 0 0 0 2 6 8 5 2 4

FOR OFFICIAL USE ONLY

| APPLICATION APPROVED | DATE RECEIVED (yr., mo., & day) | COMMENTS |
|---|---|---|
| | | |

## II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below *(mark one box only)* to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter your facility's EPA I.D. Number in Item I above.

A. FIRST APPLICATION *(place an "X" below and provide the appropriate date)*

☐ 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)*

8 — FOR EXISTING FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*

☐ 2. NEW FACILITY *(Complete item below.)*

FOR NEW FACILITIES PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR IS EXPECTED TO BEGIN

B. REVISED APPLICATION *(place an "X" below and complete Item I above)*

☐ 1. FACILITY HAS INTERIM STATUS

☐ 2. FACILITY HAS A RCRA PERMIT

## III. PROCESSES — CODES AND DESIGN CAPACITIES

A. PROCESS CODE — Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the form *(Item III-C)*.

B. PROCESS DESIGN CAPACITY — For each code entered in column A enter the capacity of the process.

1. AMOUNT — Enter the amount.
2. UNIT OF MEASURE — For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

| PROCESS | PROCESS CODE | APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY |
|---|---|---|
| Storage: | | |
| CONTAINER *(barrel, drum, etc.)* | S01 | GALLONS OR LITERS |
| TANK | S02 | GALLONS OR LITERS |
| WASTE PILE | S03 | CUBIC YARDS OR CUBIC METERS |
| SURFACE IMPOUNDMENT | S04 | GALLONS OR LITERS |
| Disposal: | | |
| INJECTION WELL | D79 | GALLONS OR LITERS |
| LANDFILL | D80 | ACRES-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER |
| LAND APPLICATION | D81 | ACRES OR HECTARES |
| OCEAN DISPOSAL | D82 | GALLONS PER DAY OR LITERS PER DAY |
| SURFACE IMPOUNDMENT | D83 | GALLONS OR LITERS |

| PROCESS | PROCESS CODE | APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY |
|---|---|---|
| Treatment: | | |
| TANK | T01 | GALLONS PER DAY OR LITERS PER DAY |
| SURFACE IMPOUNDMENT | T02 | GALLONS PER DAY OR LITERS PER DAY |
| INCINERATOR | T03 | TONS PER HOUR, METRIC TONS PER HOUR, GALLONS PER HOUR OR LITERS PER HOUR |
| OTHER *(Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Item III-C.)* | T04 | GALLONS PER DAY OR LITERS PER DAY |

| UNIT OF MEASURE | UNIT OF MEASURE CODE | UNIT OF MEASURE | UNIT OF MEASURE CODE | UNIT OF MEASURE | UNIT OF MEASURE CODE |
|---|---|---|---|---|---|
| GALLONS | G | LITERS PER DAY | V | ACRE-FEET | A |
| LITERS | L | TONS PER HOUR | D | HECTARE-METER | F |
| CUBIC YARDS | Y | METRIC TONS PER HOUR | W | ACRES | S |
| CUBIC METERS | C | GALLONS PER HOUR | E | HECTARES | Q |
| GALLONS PER DAY | U | LITERS PER HOUR | H | | |

EXAMPLE FOR COMPLETING ITEM III *(shown in line numbers X-1 and X-2 below)*: A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

DUP

| LINE NUMBER | A. PROCESS CODE (from list above) | B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify) | B. 2. UNIT OF MEASURE (enter code) | FOR OFFICIAL USE ONLY | LINE NUMBER | A. PROCESS CODE (from list above) | B. PROCESS DESIGN CAPACITY 1. AMOUNT | B. 2. UNIT OF MEASURE (enter code) | FOR OFFICIAL USE ONLY |
|---|---|---|---|---|---|---|---|---|---|
| X-1 | S02 | 600 | G | | 5 | | | | |
| X-2 | T03 | 20 | E | | 6 | | | | |
| 1 | S01 | 65,000 | G | | 7 | | | | |
| 2 | S02 | 55,000 | G | | 8 | | | | |
| 3 | T01 | 8,000 | U | | 9 | | | | |
| 4 | | | | | 10 | | | | |



APPENDIX J

Continued from page 2.
NOTE: Photocopy this page before completing if have more than 26 wastes to list.

Form Approved OMB No. 158-S80004

EPA I.D. NUMBER (enter from page 1): MID000268524

FOR OFFICIAL USE ONLY: W DUP 2

## IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

| LINE NO. | A. EPA HAZARD. WASTE NO. (enter code) | B. ESTIMATED ANNUAL QUANTITY OF WASTE | C. UNIT OF MEASURE (enter code) | D. PROCESSES 1. PROCESS CODES (enter) | | | | D. PROCESSES 2. PROCESS DESCRIPTION (If a code is not entered in D(1)) |
|---|---|---|---|---|---|---|---|---|
| 1 | F002 | 550,000 | P | S01 | S02 | | | |
| 2 | F002 | 20,000 | P | S01 | | | | |
| 3 | F003 | 30,000 | P | S01 | | | | |
| 4 | F003 | 40,000 | P | S01 | S02 | | | |
| 5 | D001 | 380,000 | P | T01 | | | | |
| 6 | D001 | 464,000 | P | S01 | S02 | | | |
| 7 | D002 | 140,000 | P | S01 | | | | |
| 8 | D001 | | | | | | | |
| 9 | D002 | 240000 | P | T01 | | | | |
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Brian
Carl

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DEC 9 1980
PTE. MOUILLEE S.G.A.

December 1, 1980

TO: Robert Babcock, Surface Water Compliance Section

FROM: Larry Fink, Office of Toxic Materials Control

SUBJECT: Hydrogeological Survey and Lagoon Closure
SWS Silicones Corp., Adrian, Michigan

Based on the results of the Phase I hydrogeological survey conducted by SWS Silicones according to a protocol approved by William Iverson, Groundwater Compliance and Special Studies Section, it has been established that the evaporation lagoon seeped, resulting in the contamination of water beneath the pond with methylchloroform (1,1,1-trichloroethane). It is also likely that soils underlying the lagoon have become contaminated with substances historically discharged to the lagoon. To determine the identity and concentration of toxic pollutants potentially contaminating soils beneath the lagoon, we are recommending that samples of underlying soils be obtained; a leachate test performed on the soils according to RCRA protocols; and the leachate analyzed for the Section 307(a) toxic pollutants, the Critical Material styrene, and the halogenated fire retardants Dechlorane 5-10 and 604.

The proposed method of closure does not appear to meet the requirements of either Act 64 or RCRA. A determination should be made by the Office of Hazardous Waste Management as to whether the sludge in the lagoon is hazardous according to any Act 64 or RCRA criteria. At a minimum, it would appear appropriate to require some sort of underdrainage collection system and a monitoring well to establish that the lagoon is no longer a source of groundwater contamination, if the sludges are to be left on-site and the lagoon capped.

Should you have any questions, feel free to contact me.

LF/vls
cc: J. Grant/OTMC Files
V. Harris
R. Schrameck, District 1
W. Iversen
C. Bek

Please print or type in the unshaded areas only
(fill-in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved OMB No. 158-R0175 H4

FORM 1 GENERAL

EPA

U. ENVIRONMENTAL PROTECTION AGENCY

# GENERAL INFORMATION

*Consolidated Permits Program*

*(Read the "General Instructions" before starting.)*

**I. EPA I.D. NUMBER**

F MID 075400671 D

**GENERAL INSTRUCTIONS**

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill-in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill-in area*(s)* below. If the label is complete and correct, you need not complete Items I, III, V, and VI *(except VI-B which must be completed regardless)*. Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.

**LABEL ITEMS**

I. EPA I.D. NUMBER

II. FACILITY NAME [redacted]

V. FACILITY MAILING ADDRESS XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXX ADRIAN, MI 49221

VI. FACILITY LOCATION SUTTON RD ADRIAN, MI 49221

## II. POLLUTANT CHARACTERISTICS

**INSTRUCTIONS:** Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of **bold-faced terms.**

| SPECIFIC QUESTIONS | MARK 'X' YES | NO | FORM ATTACHED |
|---|---|---|---|
| A. Is this facility a **publicly owned treatment works** which results in a **discharge** to **waters of the U.S.**? (FORM 2A) | | X | |
| C. Is this a facility which currently results in **discharges** to **waters of the U.S.** other than those described in A or B above? (FORM 2C) | X* | | |
| E. Does or will this facility treat, store, or dispose of **hazardous wastes**? (FORM 3) | X | | X |
| G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4) | | X | |
| I. Is this facility a proposed **stationary source** which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an **attainment area**? (FORM 5) | | X | |

| SPECIFIC QUESTIONS | MARK 'X' YES | NO | FORM ATTACHED |
|---|---|---|---|
| B. Does or will this facility *(either existing or proposed)* include a **concentrated animal feeding operation** or **aquatic animal production facility** which results in a **discharge to waters of the U.S.**? (FORM 2B) | | X | |
| D. Is this a proposed facility *(other than those described in A or B above)* which will result in a **discharge** to **waters of the U.S.**? (FORM 2D) | | X | |
| F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4) | | X | |
| H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4) | | X | |
| J. Is this facility a proposed **stationary source** which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an **attainment area**? (FORM 5) | | X | |

## III. NAME OF FACILITY

1 SKIP SWS SILICONES CORPORATION

## IV. FACILITY CONTACT

A. NAME & TITLE *(last, first, & title)*: CALAMUNGI JOSEPH, DIR OF MANUF

B. PHONE *(area code & no.)*: 517 263 5711

## V. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX: 3 SUTTON ROAD

B. CITY OR TOWN: 4 ADRIAN

C. STATE: MI

D. ZIP CODE: 49221

## VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER: 5 SAME

*SEE ATTACHMENT A

B. COUNTY NAME: LENAWEE

C. CITY OR TOWN: 6

D. STATE

E. ZIP CODE

F. COUNTY CODE *(if known)*

EPA Form 3510-1 (6-80)

NOV 18 1980

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

## VII. SIC CODES (4-digit, in order of priority)

| A. FIRST | | B. SECOND | |
|---|---|---|---|
| C 7 2,8,2,1 | (specify) SILICONE MATERIALS | C 7 2,8,2,2 | (specify) SILICONE RUBBER |
| **C. THIRD** | | **D. FOURTH** | |
| C 7 2,8,9,1 | (specify) SILICONE SEALANTS | C 7 2,8,6,9 | (specify) SILICONE FLUIDS |

## VIII. OPERATOR INFORMATION

**A. NAME**

C 8 S W S  S I L I C O N E S  C O R P O R A T I O N

**B. Is the name listed in Item VIII-A also the owner?** ☒ YES ☐ NO (66)

**C. STATUS OF OPERATOR** (Enter the appropriate letter into the answer box; if "Other", specify.)

F = FEDERAL
S = STATE
P = PRIVATE
M = PUBLIC (other than federal or state)
O = OTHER (specify)

P (specify)

**D. PHONE** (area code & no.)

C A 5 1 7 2 6 3 5 7 1 1

**E. STREET OR P.O. BOX**

S U T T O N  R O A D

**F. CITY OR TOWN**

C B A D R I A N

**G. STATE** M I

**H. ZIP CODE** 4 9 2 2 1

## IX. INDIAN LAND

Is the facility located on Indian lands? ☐ YES ☒ NO (52)

## X. EXISTING ENVIRONMENTAL PERMITS

| | | | |
|---|---|---|---|
| **A. NPDES** (Discharges to Surface Water) | C 9 T N | **D. PSD** (Air Emissions from Proposed Sources) | C 9 T P |
| **B. UIC** (Underground Injection of Fluids) | C 9 T U | **E. OTHER** (specify) | C 9 T I M I D 0 0 2 6 0 3 4 (specify) MICH. NPDES PERMIT |
| **C. RCRA** (Hazardous Wastes) | C 9 T R | **E. OTHER** (specify) | C 9 T F (specify) SEE ATTACHMENT B |

## XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property bounderies. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in the map area. See instructions for precise requirements.

## XII. NATURE OF BUSINESS (provide a brief description)

MANUFACTURE OF SILICONE PRODUCTS, INCLUDING FLUIDS, EMULSIONS, SEALANTS AND RUBBERS.

## XIII. CERTIFICATION (see instructions)

*I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.*

| A. NAME & OFFICIAL TITLE (type or print) | B. SIGNATURE | C. DATE SIGNED |
|---|---|---|
| L. B. Bruner<br>Vice President and General Manager | L B Bruner | Nov. 18 1980 |

**COMMENTS FOR OFFICIAL USE ONLY**

C

Please print or type in the unshaded areas only
*(fill–in areas are spaced for elite type, i.e., 12 characters/inch).*

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*Form Approved OMB No. 158-S80004*

FORM 3 RCRA

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

# HAZARDOUS WASTE PERMIT APPLICATION

*Consolidated Permits Program*

*(This information is required under Section 3005 of RCRA.)*

**I. EPA I.D. NUMBER**

S F MID07540067 T/A C 1

## FOR OFFICIAL USE ONLY

| APPLICATION APPROVED | DATE RECEIVED (yr., mo., & day) | COMMENTS |
|---|---|---|
| | | |

## II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below *(mark one box only)* to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter your facility's EPA I.D. Number in Item I above.

**A. FIRST APPLICATION** *(place an "X" below and provide the appropriate date)*

[X] 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)*

[ ] 2. NEW FACILITY *(Complete item below.)*

FOR EXISTING FACILITIES, PROVIDE THE DATE *(yr., mo., & day)* OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*

C 8 — YR. 65 — MO. 06 — DAY 21

FOR NEW FACILITIES, PROVIDE THE DATE *(yr., mo., & day)* OPERATION BEGAN OR IS EXPECTED TO BEGIN

YR. — MO. — DAY

**B. REVISED APPLICATION** *(place an "X" below and complete Item I above)*

[ ] 1. FACILITY HAS INTERIM STATUS

[ ] 2. FACILITY HAS A RCRA PERMIT

## III. PROCESSES – CODES AND DESIGN CAPACITIES

**A. PROCESS CODE** – Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code*(s)* in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the form *(Item III-C)*.

**B. PROCESS DESIGN CAPACITY** – For each code entered in column A enter the capacity of the process.

1. AMOUNT – Enter the amount.
2. UNIT OF MEASURE – For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

| PROCESS | PROCESS CODE | APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY |
|---|---|---|
| **Storage:** | | |
| CONTAINER *(barrel, drum, etc.)* | S01 | GALLONS OR LITERS |
| TANK | S02 | GALLONS OR LITERS |
| WASTE PILE | S03 | CUBIC YARDS OR CUBIC METERS |
| SURFACE IMPOUNDMENT | S04 | GALLONS OR LITERS |
| **Disposal:** | | |
| INJECTION WELL | D79 | GALLONS OR LITERS |
| LANDFILL | D80 | ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER |
| LAND APPLICATION | D81 | ACRES OR HECTARES |
| OCEAN DISPOSAL | D82 | GALLONS PER DAY OR LITERS PER DAY |
| SURFACE IMPOUNDMENT | D83 | GALLONS OR LITERS |

| PROCESS | PROCESS CODE | APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY |
|---|---|---|
| **Treatment:** | | |
| TANK | T01 | GALLONS PER DAY OR LITERS PER DAY |
| SURFACE IMPOUNDMENT | T02 | GALLONS PER DAY OR LITERS PER DAY |
| INCINERATOR | T03 | TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR |
| OTHER *(Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Item III-C.)* | T04 | GALLONS PER DAY OR LITERS PER DAY |

| UNIT OF MEASURE | UNIT OF MEASURE CODE | UNIT OF MEASURE | UNIT OF MEASURE CODE | UNIT OF MEASURE | UNIT OF MEASURE CODE |
|---|---|---|---|---|---|
| GALLONS | G | LITERS PER DAY | V | ACRE-FEET | A |
| LITERS | L | TONS PER HOUR | D | HECTARE-METER | F |
| CUBIC YARDS | Y | METRIC TONS PER HOUR | W | ACRES | B |
| CUBIC METERS | C | GALLONS PER HOUR | E | HECTARES | Q |
| GALLONS PER DAY | U | LITERS PER HOUR | H | | |

**EXAMPLE FOR COMPLETING ITEM III** *(shown in line numbers X-1 and X-2 below):* A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

S C DUP T/A C 1

| LINE NUMBER | A. PROCESS CODE (from list above) | B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify) | B. 2. UNIT OF MEASURE (enter code) | FOR OFFICIAL USE ONLY | LINE NUMBER | A. PROCESS CODE (from list above) | B. 1. AMOUNT | B. 2. UNIT OF MEASURE (enter code) | FOR OFFICIAL USE ONLY |
|---|---|---|---|---|---|---|---|---|---|
| X-1 | S02 | 600 | G | | 5 | | | | |
| X-2 | T03 | 20 | E | | 6 | | | | |
| 1 | S01 | 65,000 | G | | 7 | | | | |
| 2 | S02 | 55,000 | G | | 8 | | | | |
| 3 | T01 | 8,000 | U | | 9 | | | | |
| 4 | | | | | 10 | | | | |



CONTINUE ON REVERSE

Continued from the front.

## III. PROCESSES *(continued)*

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESSES *(code "T04 )*. FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

## IV. DESCRIPTION OF HAZARDOUS WASTES

**A. EPA HAZARDOUS WASTE NUMBER** – Enter the four–digit number from 40 CFR, Subpart D for each listed hazardous waste you will handle. If you handle hazardous wastes which are not listed in 40 CFR, Subpart D, enter the four–digit number*(s)* from 40 CFR, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.

**B. ESTIMATED ANNUAL QUANTITY** – For each **listed waste** entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each **characteristic** or **toxic contaminant** entered in column A estimate the total annual quantity of all the non–listed waste*(s)* that will be handled which possess that characteristic or contaminant.

**C. UNIT OF MEASURE** – For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

| ENGLISH UNIT OF MEASURE | CODE | METRIC UNIT OF MEASURE | CODE |
|---|---|---|---|
| POUNDS | P | KILOGRAMS | K |
| TONS | T | METRIC TONS | M |

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

**D. PROCESSES**

1. PROCESS CODES:
   **For listed hazardous waste:** For each **listed** hazardous waste entered in column A select the code*(s)* from the list of process codes contained in Item III to indicate how the waste will be stored, treated, and/or disposed of at the facility.
   **For non–listed hazardous wastes:** For each characteristic or toxic contaminant entered in column A, select the code*(s)* from the list of process codes contained in Item III to indicate **all** the processes that will be used to store, treat, and/or dispose of all the non–listed hazardous wastes that possess that characteristic or toxic contaminant.
   **Note:** Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code*(s)*.

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

**NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER** – Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. Select one of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns B,C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.
3. Repeat step 2 for each other EPA Hazardous Waste Number that can be used to describe the hazardous waste.

**EXAMPLE FOR COMPLETING ITEM IV** *(shown in line numbers X-1, X-2, X-3, and X-4 below)* – A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non–listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

| LINE NO. | A. EPA HAZARD. WASTE NO. *(enter code)* | B. ESTIMATED ANNUAL QUANTITY OF WASTE | C. UNIT OF MEASURE *(enter code)* | D. PROCESSES 1. PROCESS CODES *(enter)* | D. PROCESSES 2. PROCESS DESCRIPTION *(if a code is not entered in D(1))* |
|---|---|---|---|---|---|
| X-1 | K 0 5 4 | 900 | P | T 0 3 D 8 0 | |
| X-2 | D 0 0 2 | 400 | P | T 0 3 D 8 0 | |
| X-3 | D 0 0 1 | 100 | P | T 0 3 D 8 0 | |
| X-4 | D 0 0 2 | | | | *included with above* |

 CONTINUE ON PAGE 3

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Continued from page 2.

NOTE: Photocopy this page before completing if yc ive more than 26 wastes to list.

Form Approved OMB No. 158-S80004

| EPA I.D. NUMBER (enter from page 1) | | | FOR OFFICIAL USE ONLY | | | |
|---|---|---|---|---|---|---|
| S W | M ID 07 540067 1 | T/A C 1 | S W | DUP | T/A C 2 | DUP |

## IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

| LINE NO. | A. EPA HAZARD. WASTE NO. (enter code) | B. ESTIMATED ANNUAL QUANTITY OF WASTE | C. UNIT OF MEASURE (enter code) | D. PROCESSES 1. PROCESS CODES (enter) | | | | D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1)) |
|---|---|---|---|---|---|---|---|---|
| 1 | F002 | 550,000 | P | S01 | S02 | | | |
| 2 | F002 | 20,000 | P | S01 | | | | |
| 3 | F003 | 30,000 | P | S01 | | | | |
| 4 | F003 | 40,000 | P | S01 | S02 | | | |
| 5 | D001 | 380,000 | P | T01 | | | | |
| 6 | D001 | 464,000 | P | S01 | S02 | | | |
| 7 | D002 | 140,000 | P | S01 | | | | |
| 8 | D001 | | | | | | | INCLUDED WITH ABOVE |
| 9 | D002 | 240,000 | P | T01 | | | | |
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EPA Form 3510-3 (6-80)

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## IV. DESCRIPTION OF HAZARDOUS WAS *(continued)*

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM ITEM D(1) ON PAGE 3.

EPA I.D. NO. *(enter from page 1)*

S F MID075400671 T/A C 6

## V. FACILITY DRAWING

All **existing** facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail).*

## VI. PHOTOGRAPHS

All existing facilities must include photographs *(aerial or ground—level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail).*

## VII. FACILITY GEOGRAPHIC LOCATION

| LATITUDE *(degrees, minutes, & seconds)* | LONGITUDE *(degrees, minutes, & seconds)* |
|---|---|
| 41 56 48 N | 83 57 13 W |

## VIII. FACILITY OWNER

☒ A. If the facility owner is also the facility operator as listed in Section VIII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VIII on Form 1, complete the following items:

| 1. NAME OF FACILITY'S LEGAL OWNER | 2. PHONE NO. *(area code & no.)* |
|---|---|
| E | |

| 3. STREET OR P.O. BOX | 4. CITY OR TOWN | 5. ST. | 6. ZIP CODE |
|---|---|---|---|
| F | G | | |

## IX. OWNER CERTIFICATION

*I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.*

| A. NAME *(print or type)* | B. SIGNATURE | C. DATE SIGNED |
|---|---|---|
| L. B. Bruner | L. B. Bruner | Nov. 18 1980 |

## X. OPERATOR CERTIFICATION

*I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.*

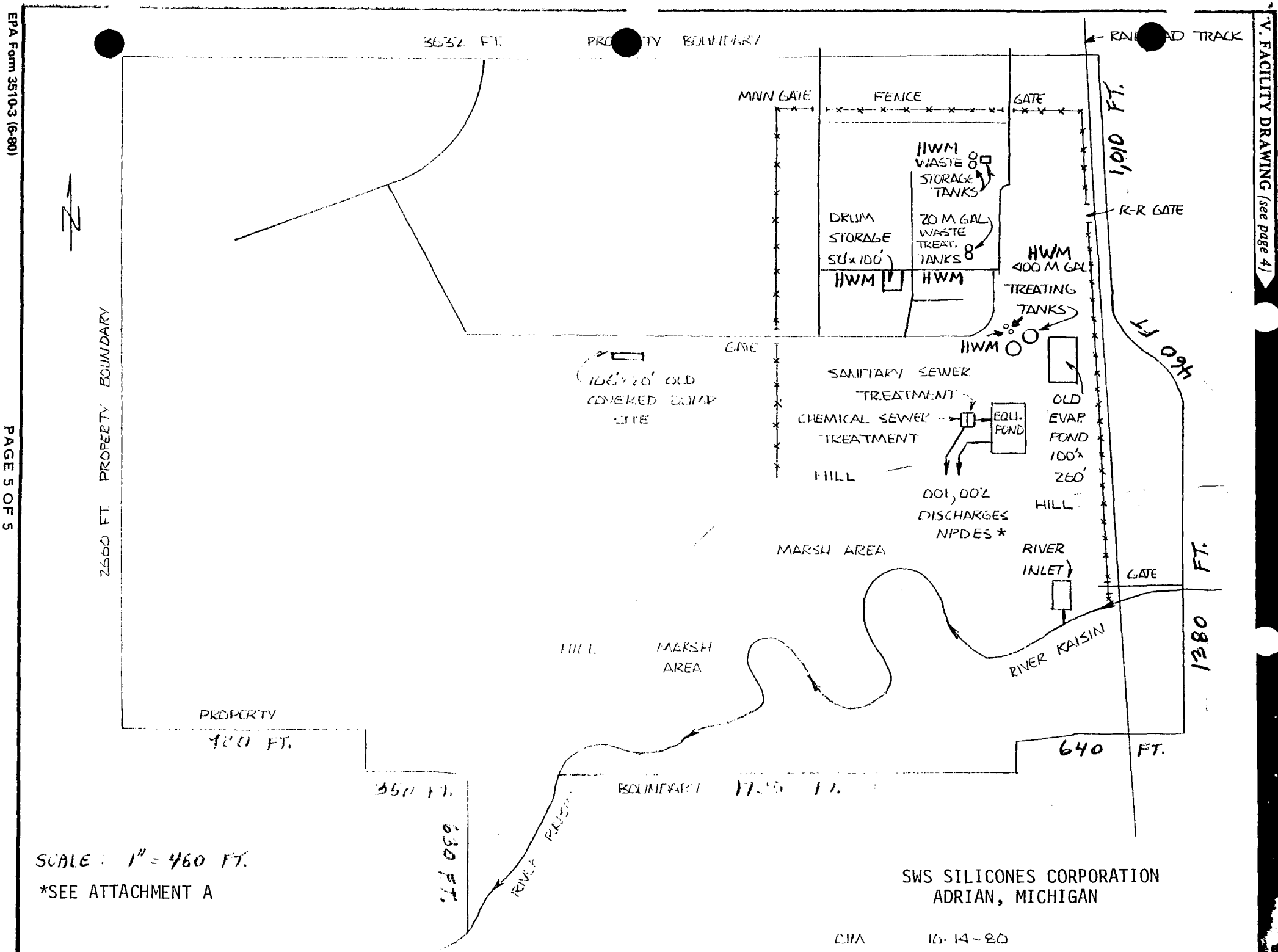
| A. NAME *(print or type)* | B. SIGNATURE | C. DATE SIGNED |
|---|---|---|
| | | |



CONTINUE ON PAGE 5

Continued from page 4.

## V. FACILITY DRAWING (see page 4)








144

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ANALYTICAL AND CONSULTING
LABORATORIES INC.
• Mass Spectrometry • Gas Chromatography • Supporting Services

8-28-80
Is this as attachment to another reference?

SUBMITTED TO:

SWS SILICONES CORPORATION
Sutton Road
Adrian, Michigan 49221

Attn: Mr. Burt Dennis

We are pleased to provide the enclosed analytical results for the following sample(s). Should you have any questions regarding the methods and/or results, please feel free to write or call.

Customer sample: WELL 4S(47167), WELL 1S(47161), WELL 1D(47162)

SA : # 5221 - 5223

Sample Description: Contaminated Water Samples

Analysis Requested: GC/MS

Date Completed: August 27, 1980

Report Date: August 28, 1980

Approved [signature] Signed [signature]
John Defever-Lab Manager Stephen Shrader-Ph.D.

Enclosure(s)

3450 Lovett Avenue • Detroit, Michigan 48210 • (313) 894-1440

## ANALYTICAL PROCEDURES

The three water samples were analyzed by EPA-accepted purge and trap GC/MS methods. Chromatography was performed using a 6' 0.2% Carbowax 1500 on Carbopak C column, temperature programmed from ambient to 200°C at 8°/minute. Mass spectra were recorded at intervals of 6 seconds during the entire analysis.

Qualitative identifications were made by comparison of the mass spectra with reference spectra.

Quantitation was accomplished, where possible, by comparison of the response of compounds in the samples with the response from standard injections. For some compounds, indicated by *, quantitation is only approximate, and is based on total ion current response. A few compounds, indicated by ‡, overloaded the instrument detector, and are therefore present in concentrations greater than that indicated.

Chromatograms and mass spectra are enclosed.

## RESULTS

### WELL4S

| Scan | Ions | Compound | Concentration |
|---|---|---|---|
| 28 | 58, 43 | acetone | 15 |
| 42 | 98, 63 | 1,1-dichloroethane | 428 ppb |
| 43 | 72, 71, 42, 41 | tetrahydrofuran | 400 ppb* |
| 45 | 96, 61 | t-1,2-dichloroethylene | 545 |
| 48 | 84 | $CDCl_3$(int. std.) | 200 ppb |
| 48 | 83 | chloroform | 6 |
| 52 | 62 | t-1,2-dichloroethane | 3 |
| 59 | 117, 97 | 1,1,1-trichloroethane | 53 |
| 60 | 88, 58 | dioxane | 100 ppb* |
| 61 | 75 | trimethylsiloxane | >2 ppm‡ |
| 65 | 83 | bromodichloromethane | 3 |
| 71 | 73, 59, 55, 31 | 2-methyl-2-butanol | 600 ppb* |

WELL4S (con't)

| Scan | Ions | Compound | Concentration |
|---|---|---|---|
| 77 | 130, 95 | trichloroethylene | 1 |
| 80 | 78 | benzene | 8 |
| 90 | 57, 43 | hydrocarbon? | 10* |
| 96 | 87, 69, 59 | 2,3-dimethyl-2-butanol | 50* |
| 116 | 166, 131 | tetrachloroethylene | 8 |
| 123 | 92, 91 | toluene | 52 |
| 132 | 112 | chlorobenzene | 1 |

WELL IS

| Scan | Ions | Compound | Concentration |
|---|---|---|---|
| 27 | 58, 43 | acetone | 247 |
| 31 | 59, 45 | isopropanol | 250* |
| 35 | 74, 59, 43 | methyl acetate | 200* |
| 41 | 98, 63 | 1,1-dichloroethane | >2 ppm‡ |
| 42 | 72, 71, 42, 41 | tetrahydrofuran | 200* |
| 45 | 96, 61 | t-1,2-dichloroethylene | >10 ppm‡ |
| 47 | 84 | $CDCl_3$(int. std.) | 200 |
| 51 | 72, 57, 43<br>also: 62 | methyl ethyl ketone<br>1,2-dichloroethane | 231<br>64 |
| 56 | 73, 59, 45 | 2-butanol | 200 ppb* |
| 58 | 117, 97 | 1,1,1-trichloroethane | 2624 |
| 59 | 88, 58<br>also: 119 | dioxane<br>carbon tetrachloride | 500*<br>46 |
| 60 | 75 | trimethylsilanol | >2 ppm‡ |
| 64 | 83 | bromodichloromethane | 147 |
| 65 | 83, 69, 43 | 2-methyl-3-butyn-2-ol | 1 ppm* |
| 73 | 73, 59, 55, 43, 41 | 2-methyl-2-butanol | >2 ppm‡ |
| 77 | 130, 95 | trichloroethylene | 4 |
| 79 | 78 | benzene | 113 |
| 81 | 97, 83 | 1,1,2-trichloroethane | 27 |
| 98 | 59, 45 | ? | 30* |

WELL IS (con't)

| Scan | Ions | Compound | Concentration |
|---|---|---|---|
| 115 | 166, 131 | tetrachloroethylene | 13 |
| 122 | 92, 91 | toluene | 429 |
| 133 | 149, 133, 75 | pentamethyldisilanol | 100* |
| 148 | 106, 91 | ethyl benzene | 10 |

WELL ID

| Scan | Ions | Compound | Concentration |
|---|---|---|---|
| 30 | 58, 43 | acetone | 16 |
| 46 | 72, 71, 42, 41 | tetrahydrofuran | 200* |
| 48 | 96, 61 | t-1,2-dichloroethylene | 6154 ppb |
| 51 | 84<br>also: 83 | $CDCl_3$(int. std.)<br>chloroform | 200<br>8 |
| 56 | 72, 57, 43 | methyl ethyl ketone | 138 |
| 64 | 97 | 1,1,1-trichloroethane | 2 |
| 65 | 78, 58 | dioxane | 100* |
| 68 | 75 | trimethylsilanol | 200* |
| 77 | 73, 59, 55 | 2-methyl-2-butanol | 20* |
| 83 | 130, 95 | trichloroethylene | 265 |
| 85 | 78 | benzene | 9 |
| 120 | 166, 131 | tetrachloroethylene | >3 ppm* |
| 129 | 92, 91 | toluene | 113 |
| 157 | 106, 91 | ethyl benzene | 1 |

CONCLUSION

Samples WELL4S, WELL IS, and WELL ID are highly contaminated with volatile organic compounds. Many of these compounds are on the EPA priority pollutant list. Others, though not on the list, can also be expected to be toxic.

Initialed: SS

SS/kal

OLD POND

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## ANALYTICAL AND CONSULTING LABORATORIES INC.

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# REPORT OF ANALYTICAL SERVICES

SUBMITTED TO :

SWS SILICONES CORPORATION
SUTTON ROAD
ADRIAN, MICHIGAN 49221

ATTN: MR. BURT DENNIS

We are pleased to provide the enclosed analytical results for the following sample(s). Should you have any questions regarding the methods and/or results, please feel free to write or call.

Customer sample : 63690 - 63704

SL # : 9257 - 9271

Sample description : WATER

Analysis requested : GC/MS

Date received : 29-SEPTEMBER-83

Date completed : 17-OCTOBER-83

Report date : 18-OCTOBER-83

Approved _____ Analyst _____
John A. Defever Maria L. Ordinario

Enclosure(s)

-Continued-

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SL # 9257 - 9271

SWS SILICONES CORPORATION
Sample(s) 63690 - 63704

18-OCTOBER-83



## Analytical Procedures

The water samples were analyzed by EPA methods 624 and 625 for volatile and semi-volatile priority pollutants. Included with the samples was a laboratory blank spiked with 2,4,5-trichlorophenol and 1,2,4,5-tetrachlorobenzene at concentrations of 80 and 20 micrograms per liter, respectively.

## Results

Summary of the results are tabulated below.

I. VOLATILE PRIORITY POLLUTANTS

| SAMPLE | COMPOUND | CONC(µgr/L) ppb |
|---|---|---|
| 63690 | chloroethane | 22084.9 |
| (SL #9257) | 1,1-dichloroethane | 17494.4 |
| 15 | 1,2-dichloroethane | 155.9 |
| | methylene chloride | 166.2 |
| | 1,2-trans-dichloroethylene | 108.8 |
| | 1,1,1-trichloroethane | 13.6 |
| 63691 | benzene | 88.0 |
| (SL #9258) | chloroethane | 10973.2 |
| 15 (duplicate) | 1,1-dichloroethane | 16321.6 |
| | 1,2-dichloroethane | 198.9 |
| | methylene chloride | 197.2 |
| | toluene | 33.0 |
| | 1,1,1-trichloroethane | 30.5 |
| 63693 | chloroethane | 84.9 |
| (SL #9260) | 1,1-dichloroethane | 47.0 |
| 35 | methylene chloride | 8.1 |
| | tetrachloroethylene | 10.3 |
| | toluene | 23.5 |

-Continued-

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I. VOLATILE PRIORITY POLLUTANTS (con'd)

| SAMPLE | COMPOUND | CONC(µgr/L) | spike |
|---|---|---|---|
| 63694 | toluene | 11.1 | |
| (SL #9261) | | | |
| 3D | | | |
| 63695 | methylene chloride | 54.4 | |
| (SL #9262) | tetrachloroethylene | 272.1 | 700 |
| 3D (Solvent) | 1,2-trans-dichloroethylene | 606.6 | 470 |
| | 1,1,1-trichloroethane | 382.6 | 1030 |
| | trichloroethylene | 427.9 | 360 |
| | | | 620 MM |
| 63696 | benzene | 220.5 | |
| (SL #9263) | chloroethane | 1569.0 | |
| 4S | 1,1-dichloroethane | 2596.9 | |
| | 1,2-dichloroethane | 47.0 | |
| | methylene chloride | 1276.9 | |
| 63697 | benzene | 15.3 | |
| (SL #9264) | methylene chloride | 56.9 | |
| 4D | 1,1,2,2-tetrachloroethane | 242.5 | |
| | tetrachloroethylene | 12909.1 | |
| | 1,2-trans-dichloroethylene | 125.3 | |
| | trichloroethylene | 106.8 | |
| 63698 | chloroform | 101.5 | |
| (SL #9265) | 1,1-dichloroethane | 320.0 | |
| M4 | tetrachloroethylene | 577.7 | |
| | 1,2-trans-dichloroethylene | 763.2 | |
| | 1,1,1-trichloroethane | 1961.1 | |
| | trichloroethylene | 684.1 | |
| 63699 | chloroform | 78.2 | |
| (SL #9266) | 1,1-dichloroethane | 216.1 | |
| M4 (Duplicate) | tetrachloroethylene | 327.3 | |
| | 1,2-trans-dichloroethylene | 871.4 | |
| | 1,1,1-trichloroethane | 1575.4 | |
| | trichloroethylene | 1282.7 | |

-Continued-

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I. VOLATILE PRIORITY POLLUTANTS (con'd)

| SAMPLE | COMPOUND | CONC(µgr/L) | Spike |
|---|---|---|---|
| 63700 (SL #9267) M1 | methylene chloride | 1866.5 | |
| 63701 (SL #9268) M1 (Duplicate) | methylene chloride | 2059.6 | |
| 63702 (SL #9269) Dist H2O (Kroger) | none detected | ---- | |
| 63703 (SL #9270) Dist H2O (Bailer Rinse) | none detected | ---- | |
| 63704 (SL #9271) 63703+spike | tetrachloroethylene | 301.0 | 80 |
| | 1,2-trans-dichloroethylene | 84.9 | 50 |
| | 1,1,1-trichloroethane | 97.7 | 115 |
| | trichloroethylene | 46.2 | 40 |
| | | | 70 MM |
| LAB BLANK DI H2O | none detected | ---- | |

II. BASE/NEUTRALS and ACIDS PRIORITY POLLUTANTS

| SAMPLE | COMPOUND | CONC(µgr/L) |
|---|---|---|
| EXTRACTED BLANK(spiked) | 2,4,5-trichlorophenol | 66.9 |
| | 1,2,4,5-tetrachlorobenzene | 10.0 |
| | diethyl phthalate | 19.4 |
| 63690 (SL #9257) 15 | phenol | 20.0 |
| | bis(2-chloroethyl)ether | 9.7 |
| 63691 (SL #9258) 15 (duplicate) | phenol | 26.2 |
| | dimethyl phthalate | 2.2 |

-Continued-

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II. BASE/NEUTRALS and ACIDS PRIORITY POLLUTANTS (con'd)

| SAMPLE | COMPOUND | CONC(µgr/L) | Spike |
|---|---|---|---|
| 63692 | phenol | 173.5 | 380 |
| (SL #9259) | dimethyl phthalate | 1.7 | |
| 1S (spiked) | di-n-butyl phthalate | 126.5 | 415 |
| | naphthalene | 342.9 | 390 |
| | nitrobenzene | 418.0 | 570 |
| | | | 540 1,2,4 trichlorobenzene |
| 63693 | bis(2-ethylhexyl)phthalate | 4.1 | |
| (SL #9260) | diethyl phthalate | 52.1 | |
| 3S | di-n-butyl phthalate | 9.5 | |
| | naphthalene | 4.4 | |
| | nitrobenzene | 1.7 | |
| | 1,2,4-trichlorobenzene | 2.8 | |
| 63694 | bis(2-ethylhexyl)phthalate | 38.0 | |
| (SL #9261) | diethyl phthalate | 62.9 | |
| 3D | di-n-butyl phthalate | 10.1 | |
| | | | Spike |
| 63695 | phenol | 53.8 | 210 |
| (SL #9262) | di-n-butyl phthalate | 55.4 | 235 |
| 3D (spiked) | naphthalene | 108.1 | 220 |
| | nitrobenzene | 395.8 | 320 |
| | 1,2,4-trichlorobenzene | 97.6 | 305 |
| 63696 | bis(2-ethylhexyl)phthalate | 7.5 | |
| (SL #9263) | di-n-butyl phthalate | 3.3 | |
| 4S | | | |
| 63697 | bis(2-ethylhexyl)phthalate | 2.2 | |
| (SL #9264) | naphthalene | 2.2 | |
| 4D | | | |
| 63698 | bis(2-ethylhexyl)phthalate | 4.9 | |
| (SL #9265) | di-n-butyl phthalate | 3.6 | |
| M4 | | | |
| 63699 | diethyl phthalate | 44.1 | |
| (SL #9266) | di-n-butyl phthalate | 5.9 | |
| M4 (duplicate) | | | |

-Continued-

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SL # 9257 - 927

SWS SILICONES CORPORATIO
Sample(s) 63690 - 6370

18-OCTOBER-8

Page

II. BASE/NEUTRALS and ACIDS PRIORITY POLLUTANTS (con'd)

| SAMPLE | COMPOUND | CONC(µgr/L) |
|---|---|---|
| 63700 | diethyl phthalate | 115.4 |
| (SL #9267) | di-n-butyl phthalate | 6.3 |
| MI | | |
| 63701 | none detected | ---- |
| (SL #9268) | | |
| MI (duplicate) | | |
| 63702 | diethyl phthalate | 56.4 |
| (SL #9269) | di-n-butyl phthalate | 11.9 |
| Dis- $H_2O$ (Kroger) | | |

## Conclusion

Enclosed are the quantitation summaries for all samples and plots of total ion chromatograms. 1,2,4,5-tetrachlorobenzene spiked onto the laboratory blank was quantitated based on 1,2,4-trichlorobenzene in base/neutral #3 standard. Recoveries for the two compounds spiked onto the blank are:

2,4,5-trichlorophenol - 84%

1,2,4,5-tetrachlorobenzene - 50%

MLO/kal

3814 Vinewood • Detroit, Michigan 48208 • (313) 894-1440

9-18-80

EPA

# POTENTIAL HAZARDOUS WASTE SITE TENTATIVE DISPOSITION

REGION: V | SITE NUMBER: M1000000 490

File this form in the regional Hazardous Waste Log File and submit a copy to: U.S. Environmental Protection Agency; Site Tracking System; Hazardous Waste Enforcement Task Force (EN-335); 401 M St., SW; Washington, DC 20460.

## I. SITE IDENTIFICATION

| A. SITE NAME | B. STREET | |
|---|---|---|
| SWS Silicones | | |
| **C. CITY** | **D. STATE** | **E. ZIP CODE** |
| Adrian | MI | 49221 |

## II. TENTATIVE DISPOSITION

Indicate the recommended action(s) and agency(ies) that should be involved by marking 'X' in the appropriate boxes.

| RECOMMENDATION | MARK 'X' | ACTION AGENCY: EPA | STATE | LOCAL | PRIVATE |
|---|---|---|---|---|---|
| A. NO ACTION NEEDED -- NO HAZARD | | | | | |
| B. INVESTIGATIVE ACTION(S) NEEDED *(If yes, complete Section III.)* | | X | | | |
| C. REMEDIAL ACTION NEEDED *(If yes, complete Section IV.)* | | | | | |
| D. ENFORCEMENT ACTION NEEDED *(If yes, specify in Part E whether the case will be primarily managed by the EPA or the State and what type of enforcement action is anticipated.)* | | | | | |

E. RATIONALE FOR DISPOSITION

F. INDICATE THE ESTIMATED DATE OF FINAL DISPOSITION *(mo., day, & yr.)*

G. IF A CASE DEVELOPMENT PLAN IS NECESSARY, INDICATE THE ESTIMATED DATE ON WHICH THE PLAN WILL BE DEVELOPED *(mo., day, & yr.)*

H. PREPARER INFORMATION

| 1. NAME | 2. TELEPHONE NUMBER | 3. DATE *(mo., day, & yr.)* |
|---|---|---|
| Kathleen Hammer | (312) 886-6144 | 9/18/80 |

## III. INVESTIGATIVE ACTIVITY NEEDED

A. IDENTIFY ADDITIONAL INFORMATION NEEDED TO ACHIEVE A FINAL DISPOSITION.

full field inspection w/ monitoring

B. PROPOSED INVESTIGATIVE ACTIVITY *(Detailed Information)*

| 1. METHOD FOR OBTAINING NEEDED ADDITIONAL INFO. | 2. SCHEDULED DATE OF ACTION *(mo, day, & yr)* | 3. TO BE PERFORMED BY *(EPA, Contractor, State, etc.)* | 4. ESTIMATED MANHOURS | 5. REMARKS |
|---|---|---|---|---|
| a. TYPE OF SITE INSPECTION | | | | |
| (1) | | | | |
| (2) Inspection | Nov. '80 | EPA | unknown | |
| (3) | | | | |
| b. TYPE OF MONITORING | | | | |
| (1) Groundwater | Nov. '80 | " | " | |
| (2) | | | | |
| c. TYPE OF SAMPLING | | | | |
| (1) lagoons | Nov. '80 | " | " | |
| (2) | | | | |

Continued From Fro

## III. INVESTIGATIVE ACTIVITIES NEEDED and PART B - PROPOSED INVESTIGATIVE ACTIVITY (Continued)

| | | | | |
|---|---|---|---|---|
| d. TYPE OF LAB ANALYSIS (1) | | | | |
| (2) | | | | |
| e. OTHER (specify) (1) | | | | |
| (2) | | | | |

f. ELABORATE ON ANY OF THE INFORMATION PROVIDED IN PART B (on front & above) AS NEEDED TO IDENTIFY ADDITIONAL INVESTIGATIVE WORK.

D. ESTIMATED MANHOURS BY ACTION AGENCY

| 1. ACTION AGENCY | 2. TOTAL ESTIMATED MANHOURS FOR INVESTIGATIVE ACTIVITIES | 1. ACTION AGENCY | 2. TOTAL ESTIMATED MANHOURS FOR INVESTIGATIVE ACTIVITIES |
|---|---|---|---|
| a. EPA | | b. STATE | |
| c. EPA CONTRACTOR | | d. OTHER (specify) | |

## IV. REMEDIAL ACTIONS

A. SHORT TERM/EMERGENCY STRATEGY (On Site & Off-Site): List all emergency actions needed to bring site under immediate control, e.g., restrict access, provide alternate water supply, etc. See instructions for a list of Key Words for each of the actions to be used in the space below.

| 1. ACTION | 2. EST. START DATE (mo, day, & yr) | 3. EST. END DATE (mo, day, & yr) | 4. ACTION AGENCY (EPA, State, Private Party) | 5. ESTIMATED COST | 6. SPECIFY 311 OR OTHER ACTION; INDICATE THE MAGNITUDE OF THE WORK REQUIRED |
|---|---|---|---|---|---|
| | | | | $ | |
| | | | | $ | |
| | | | | $ | |
| | | | | $ | |
| | | | | $ | |
| | | | | $ | |

B. LONG TERM STRATEGY (On Site & Off-Site): List all long term solutions, e.g., excavation, removal, ground water monitoring wells, etc. See instructions for a list of Key Words for each of the actions to be used in the spaces below.

| 1. ACTION | 2. EST. START DATE (mo, day, & yr) | 3. EST. END DATE (mo, day, & yr) | 4. ACTION AGENCY (EPA, State Private Party) | 5. ESTIMATED COST | 6. SPECIFY 311 OR OTHER ACTION; INDICATE THE MAGNITUDE OF THE WORK REQUIRED |
|---|---|---|---|---|---|
| | | | | $ | |
| | | | | $ | |
| | | | | $ | |
| | | | | $ | |
| | | | | $ | |
| | | | | $ | |

C. ESTIMATED MANHOURS AND COST BY ACTION AGENCY

| 1. ACTION AGENCY | 2. TOTAL EST. MANHOURS FOR REMEDIAL ACTIVITIES | 3. TOTAL EST. COST FOR REMEDIAL ACTIVITIES | 1. ACTION AGENCY | 2. TOTAL EST. MANHOURS FOR REMEDIAL ACTIVITIES | 3. TOTAL EST. COST FOR REMEDIAL ACTIVITIES |
|---|---|---|---|---|---|
| a. EPA | | | b. STATE | | |
| c. PRIVATE PARTIES | | | d. OTHER (specify) | | |

Stauffer Chemical Company
Westport, Connecticut 06880 / Tel. (203) 222-3000 / Cable "Staufchem"

September 16, 1980

Mr. William Iversen
Chief Geologist
Water Quality Division
Michigan Department of Natural Resources
P.O. Box 30028
Lansing, Michigan 48909

RECEIVED
SEP 19 1980
Groundwater Comp, WQD

Dear Mr. Iversen:

As discussed in your letter of June 16, 1980, we have completed our investigation of geologic and ground water conditions in the vicinity of the evaporation pond at the SWS facility in Adrian. The nature of the hydrogeology encountered, i.e., the extensive clay layer 15 to 25 feet below grade and the presence of a perched ground water body above this clay layer, was different than envisioned when we outlined our original investigation proposal. Because of this, the well cluster configurations were modified so that at each point where clay was encountered, both the perched and actual ground water bodies could be sampled.

The attached report by Commonwealth Associates, Inc., "Hydrogeologic Study for Evaporation and Settling Basin", includes descriptions of the drilling methods used, the geologic conditions at the site, and water table contour maps for both the perched and true water tables. Some permeability data has also been developed from shelby tube analyses. These show that the clay has a permeability of $1 \times 10^{-7}$ cm/sec. and that the silt above the clay has a permeability of about $10^{-5}$ cm/sec. From measured gradients, it can thus be calculated that ground water flow rate in the silt layer is about 7 ft/yr.

Also attached are the results of the requested analyses of ground water samples. These analyses were run at the SWS laboratory. They should be viewed as indicator analyses only and are not intended to fully characterize either the water in the pond or the ground water. Other organics are also present in some of the samples.

Based on these results, it appears that the evaporation pond is leaking only a minor amount of water into the perched system. Flow in the perched system is very slow and any leakage into the aquifer is probably extremely small. Removal of all water coupled with sludge fixation and sealing the top of the evaporation pond in such a manner as to prevent infiltration of rainfall, and continued monitoring of the 9 test wells would seem to be appropriate based on these findings.

Very truly yours,

Paul H. Roux
Senior Hydrogeologist

PHR/ach
Attachments
cc: Mr. David J. Batchelor (with attachments)
Mr. L. Bruner

SWS SILICONES, ADRIAN, MI.

INDICATOR ANALYSES RESULTS

| SAMPLE | DEPTH BELOW LAND SURFACE (FEET) | DATE SAMPLED | CHLORIDES (PPM) | TOC (mg/1) | METHYLCHLOROFORM (PPM) |
|---|---|---|---|---|---|
| Evaporation Pond | -- | 8/5 | 2100 | -- | 5 |
| Well 1S[1)] | 12 | 8/8 | 4700 | 3600* | 18 |
| Well 1D[2)] | 32 | 8/8 | 1182 | 18 | N.D. |
| Well 2S | 14 | 8/8 | 191 | 12 | N.D. |
| Well 2D | 30 | 8/8 | 152 | 6 | N.D. |
| Well 3S | 11 | 8/8 | 623 | 15 | N.D. |
| Well 3D | 37 | 8/8 | 265 | 4 | N.D. |
| Well 4S | 8 | 8/8 | 1390 | 44 | N.D. |
| Well 4D | 29 | 8/8 | 301 | 7 | N.D. |
| Well 5 | 6 | 8/8 | 453 | 23 | N.D. |
| Evaporation Pond | -- | 8/25 | 2024 | 600 | 4.5 |
| Well 1S | 12 | 8/25 | 375 | 320 | 17 |

*result is not reasonable, resampled and analyzed on 8/25, see new result above.

Detection limit for methylchloroform 0.04 ppm

1) S - Suffix wells tap only perched ground water above the shallow aquifer.
2) D - Suffix wells tap the shallow aquifer.

Note: Well locations and descriptions are given the in the report "Hydrogeologic Study for Evaporation and Settling Basin" by Gilbert/Commonwealth.

RECEIVED
SEP 17 1980
ENVIRONMENTAL ENFORCEMENT DIVISION

Stauffer CHEMICALS
Stauffer Chemical Company
Westport, Connecticut 06880 / Tel. (203) 222-3000 / Cable "Stauffchem"

September 11, 1980

David J. Batchelor, Esq.
Resource Specialist
Environmental Enforcement Division
State of Michigan
Department of Natural Resources
Stevens T. Mason Building
Box 30028
Lansing, Michigan 48909

Re: Notice of Violation
2/5/80 - NPDES Permit
No. MI 0026034

Dear Mr. Batchelor:

This letter is responsive to your letter to Mr. J. Calamungi, dated August 29, 1980, and the telephone conversation between T. Sayers and G. Ford, Stauffer Chemical Company, and yourself, held on September 3, 1980. The purpose of this letter is to set forth our understanding of the current status of this matter, and SWS Silicones Corporation's (The Company) position on certain issues, as follows:

1. As represented by Mr. G. Philbrook, the Company has eliminated the methyl chloroform discharge into the evaporation pond, but has not eliminated the discharge at outfall 001. Methyl chloroform is a very minor constituent of the process water treated for discharge at outfall 001. Total elimination would require cessation of all discharge and result in plant shut down. Methyl chloroform is not regulated in any known Michigan issued NPDES permit and a demand for cessation of discharge is inconsistent with our ongoing negotiations for an acceptable NPDES permit limitation for methyl chloroform at outfall 001.

2. The approved hydrogeological survey has been completed, and the results will be presented to the State by September 19, 1980. That survey includes soil borings, ground water flow patterns and sampling and analysis for the agreed upon indicator parameters TOC, chlorides, and methyl chloroform.

3. As reiterated in the 9/3/80 telephone conversation with Messrs Sayers and Ford, the State requested an analysis of the evaporation pond and the discharge from outfall 001. The analysis will be limited to the volatiles portion of the EPA 129 priority pollutants (using GC/MS), as well as the Michigan Critical Material styrene, and dechlorane.

   As discussed in the 9/3/80 telephone conversation, we believe an agreement was made that no analysis of outfall 002 is necessary. The effluent discharged from this outfall is sanitary waste from a sanitary package unit, and does not contain process waste. Our notes of the May 2, 1980 meeting with DNR reflect that understanding.

4. The results of the pond and outfall 001 sampling will not be available in September. Analysis of the pond and 001 could not commence until the DNR indicated the pollutants of concern for analysis. The sampling of the pond could not commence until a sampling protocal was agreed upon. It is our understanding that representatives of DNR and the Office of Toxic Substances will visit the plant on 9/9/80 to discuss the sampling protocol. Samples will be taken by the DNR and split with the Company at that time.

5. We will provide to you by September 30 a proposed corrective program and schedule for the removal and proper disposal of the pond contents, as follows:

   (a) We propose to transfer the supernatant waters in the pond to the NPDES treatment system for further treatment and discharge through outfall 001. This action will be commenced promptly after DNR approval. Water diverted from the pond and presently stored in above ground tanks will be treated in the batch pre-treatment tank system now under construction and will then pass through the NPDES treatment system.

(b) We will provide to you by September 30 a proposed closure plan for the pond site. This plan will involve the in situ closure of the pond after the liquid phase has been removed and disposed of as set forth in 5(a) above. The closure plan will set forth procedures for fixation of sludge, filling and grading, for clay capping the site, and for top soil and seed. The plan will also address the need for, frequency of and time period for ground-water monitoring in the vicinity of the pond, to assure that no substantial leachate is generated.

6. We will provide to you by September 30, the plans for the above ground tanks, to be used as the alternate storage and treatment facility for the pond waters, including the proposal to discharge these waters from the tanks through outfall 001.

7. It is our understanding that a formal determination on NPDES permit limits for methyl chloroform and chlorides will be provided by the Water Quality Division staff in the near future.

8. After receipt and review by you of the above-referenced information, a meeting in early October will be scheduled between the Company and DNR.

Pursuant to the 9/3/80 telephone conversation, it is our understanding that in lieu of an amended NPDES permit application, the foregoing agreements, including a description of the above ground tanks, may be formalized into an administrative Board order, which will include a comprehensive program and schedule to correct all outstanding regulatory concerns and water quality concerns.

Sincerely,

SWS SILICONES CORPORATION

By Gary L. Ford
Gary L. Ford
Senior Attorney

GLF:kfk

cc: George H. Meyer, Esq.

INTEROFFICE COMMUNICATION

TO: David Batchelor
Environmental Enforcement Division

FROM: Roy Schrameck, District One
Water Quality Division

Re: SWS Silicones - Adrian
Correction Proposals

DATE: October 23, 1980

As requested by you at a meeting in Lansing on 10/22/80 the staff from the District One office are submitting their comments and recommendations regarding two proposals submitted by SWS Silicones.

PROPOSAL ONE: Waste-Washes Treatment System

a. We need the company's analysis results from split samples taken on 9/9/80.

b. The aliphatic amines found present in the "evaporation lagoon" need to be identified and quantified.

c. We would like to have a detailed engineering plan of the proposed batch treatment system including procedures, flow diagram, estimated daily loading, projected holding time, and a cross sectional plan of the tanks and their base.

d. Ultimate methods of removal, handling, transporting, manifesting and disposal of sludges generated in the treatment facility need to be defined.

e. Where in the system will separable constituents of waste water be removed (if planned) prior to discharge of treated waste wash water to the 001 treatment system ie. Methyl Chloroform.

PROPOSAL TWO: Closure of Evaporation-Settling Pond

a. We have no problem with the proposed diking to be located within the lagoon.

b. We need company's results of analysis of 129 priority pollutants for both the "evaporation lagoon" and outfall 001.

We need this in order to determine whether or not the 10,000 gal. per day discharge from the lagoon will be truly amenable to treatment in the 001 system and meet permit limits upon discharge. Based on current information the company won't have trouble with Methyl Chloroform and Chlorides but we're in the dark regarding Aliphatic Amines and the 129 Priority Pollutants.

c. We want the company to convert the sludge into a truly stabilized sludge that won't leach in the future. This would be demonstrated prior to implementation by running a bench test for leachability under projected compression and compaction pressures.

d. Both the fill and the clay cap should be compacted to $10^{-7}$ cm/sec.

e. Is the existing dike to be modified in accordance with "pond" cover's slope?

f. Soil erosion control measures should be employed until ground cover vegetation is established.

We have some miscellaneous comments to add before closing out this memo.

1. Regarding the Hydrogeological Study: we are concerned about the fact that the perched water table (which is receiving leachate from the pond) is connected geologically to the River Raisin. This further argues for stabilizing the pond's sludge.

2. We have not received the analyses for the samples taken from the borings during the hydrogeological study.

3. The monitoring wells don't seem to be in adequate locations to quickly intercept migration of contaminants from the pond after it is closed.

4. We feel that the diking material around the two 400,000 gallon tanks should be clay that can be compacted to $10^{-7}$ cm. Also the floor of the diked area should be made impervious with necessary controlled drainage.

Stauffer Chemical Company
Westport, Connecticut 06880 / Tel. (203) 222-3000 / Cable "Stauffer"

RECEIVED
SEP 17 1980
ENVIRONMENTAL ENFORCEMENT DIVISION

September 11, 1980

David J. Batchelor, Esq.
Resource Specialist
Environmental Enforcement Division
State of Michigan
Department of Natural Resources
Stevens T. Mason Building
Box 30028
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plans?

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Pursuant to the 9/3/80 telephone conversation, it is our understanding that in lieu of an amended NPDES permit application, the foregoing agreements, including a description of the above ground tanks, may be formalized into an administrative Board order, which will include a comprehensive program and schedule to correct all outstanding regulatory concerns and water quality concerns.

Sincerely,

SWS SILICONES CORPORATION

By Gary L. Ford
Gary L. Ford
Senior Attorney

GLF:kfk

cc: George H. Meyer, Esq.

ADRIAN, MICHIGAN 4922 • TELEPHONE (517) 263-5711

September 19, 1980

Mr. Tim Jaski
State of Michigan, Department of Natural Resources
District #1, Water Quality Division
Pte. Mouillee State Game Area
Route #2
Rockwood, Michigan 48173

Dear Mr. Jaski:

As discussed in our phone conversation of September 19, 1980, in order to better control the water and sludge portions of the evaporation-settling pond at our Adrian facility, we propose to install two dikes in the pond during the next two to three weeks.

These dikes will be of limestone berm mix and the elevations will be about 3 to 5 feet below the current dirt-perimeter dike level.

One dike will run East-West to divide the pond into two halves. A second dike will run North-South in the South half, to divide that area of the pond into two quarters.

By transferring the pond water into the SW quarter, the "wetted" area will be reduced by 75% and most of the pond sludge will then be more accessible for future disposition. Also the pond water will then have more solids settling, and water removal would be more efficient.

As you know, time is critical as we would like to have the pond closed before winter. A complete pond closure plan will be submitted to you by September 30, 1980. It is felt that this diking would be beneficial no matter what closure plan is decided upon.

Yours truly,

SWS SILICONES CORPORATION

Gordon C. Philbrook

Gordon C. Philbrook
Environmental Control
Coordinator

GCP:jb
cc: Mr. David J. Batchelor

RECEIVED
SEP 22 1980
PTE MOUILLEE S.G.A.

Stauffer

# Stauffer Chemical Company

Westport, Connecticut 06880 / Tel. (203) 222-3000 / Cable "Staufchem"

September 16, 1980

Mr. William Iversen
Chief Geologist
Water Quality Division
Michigan Department of Natural Resources
P.O. Box 30028
Lansing, Michigan 48909

RECEIVED
SEP 19 1980
Groundwater Comp. WQD

Dear Mr. Iversen:

As discussed in your letter of June 16, 1980, we have completed our investigation of geologic and ground water conditions in the vicinity of the evaporation pond at the SWS facility in Adrian. The nature of the hydrogeology encountered, i.e., the extensive clay layer 15 to 25 feet below grade and the presence of a perched ground water body above this clay layer, was different than envisioned when we outlined our original investigation proposal. Because of this, the well cluster configurations were modified so that at each point where clay was encountered, both the perched and actual ground water bodies could be sampled.

The attached report by Commonwealth Associates, Inc., "Hydrogeologic Study for Evaporation and Settling Basin", includes descriptions of the drilling methods used, the geologic conditions at the site, and water table contour maps for both the perched and true water tables. Some permeability data has also been developed from shelby tube analyses. These show that the clay has a permeability of $1 \times 10^{-7}$ cm/sec. and that the silt above the clay has a permeability of about $10^{-5}$ cm/sec. From measured gradients, it can thus be calculated that ground water flow rate in the silt layer is about 7 ft/yr.

Also attached are the results of the requested analyses of ground water samples. These analyses were run at the SWS laboratory. They should be viewed as indicator analyses only and are not intended to fully characterize either the water in the pond or the ground water. Other organics are also present in some of the samples.

Based on these results, it appears that the evaporation pond is leaking only a minor amount of water into the perched system. Flow in the perched system is very slow and any leakage into the aquifer is probably extremely small. Removal of all water coupled with sludge fixation and sealing the top of the evaporation pond in such a manner as to prevent infiltration of rainfall, and continued monitoring of the 9 test wells would seem to be appropriate based on these findings.

Very truly yours,

Paul H. Roux
Senior Hydrogeologist

PHR/ach
Attachments
cc: Mr. David J. Batchelor (with attachments)
Mr. L. Bruner

SWS SILICONES, ADRIAN, MI.

INDICATOR ANALYSES RESULTS

| SAMPLE | DEPTH BELOW LAND SURFACE (FEET) | DATE SAMPLED | CHLORIDES (PPM) | TOC (mg/l) | METHYLCHLOROFORM (PPM) |
|---|---|---|---|---|---|
| Evaporation Pond | -- | 8/5 | 2100 | -- | 5 |
| Well 1S[1)] | 12 | 8/8 | 4700 | 3600* | 18 |
| Well 1D[2)] | 32 | 8/8 | 1182 | 18 | N.D. |
| Well 2S | 14 | 8/8 | 191 | 12 | N.D. |
| Well 2D | 30 | 8/8 | 152 | 6 | N.D. |
| Well 3S | 11 | 8/8 | 623 | 15 | N.D. |
| Well 3D | 37 | 8/8 | 265 | 4 | N.D. |
| Well 4S | 8 | 8/8 | 1390 | 44 | N.D. |
| Well 4D | 29 | 8/8 | 301 | 7 | N.D. |
| Well 5 | 6 | 8/8 | 453 | 23 | N.D. |
| Evaporation Pond | -- | 8/25 | 2024 | 600 | 4.5 |
| Well 1S | 12 | 8/25 | 375 | 320 | 17 |

*result is not reasonable, resampled and analyzed on 8/25, see new result above.

Detection limit for methylchloroform 0.04 ppm

1) S - Suffix wells tap only perched ground water above the shallow aquifer.
2) D - Suffix wells tap the shallow aquifer.

Note: Well locations and descriptions are given the in the report "Hydrogeologic Study for Evaporation and Settling Basin" by Gilbert/Commonwealth.

9-80

R-2194

# HYDROGEOLOGIC STUDY

# FOR

# EVAPORATION AND SETTLING BASIN

SWS SILICONES CORPORATION

ADRIAN, MICHIGAN

Reviewed by:

T. C. Tidyman

T. C. Tidyman
Senior Geologist

Approved by:

J. K. Meisenheimer

J. K. Meisenheimer, P.E.
Supervisor
Geotechnical Services

Prepared by
R. W. Wagner
At the offices of
Commonwealth Associates Inc.
209 East Washington Ave.
Jackson, Michigan 49201
September, 1980

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TABLE 1 - SUMMARY OF ATTERBERG LIMITS

EXHIBITS

Appendix A - Field Exploration and Laboratory Tests

Appendix B - Procedure for Installation of Monitoring Wells

## 1.0 GENERAL

### 1.1 INTRODUCTION

This report presents the results of our hydrogeologic survey for the evaporation and settlement basin. The survey included compilation of existing data, drilling and sampling of five borings to approximately 40 feet in depth, installation of nine monitoring wells, and a soils laboratory testing program to determine engineering properties.

### 1.2 PURPOSE AND SCOPE

The hydrogeologic survey was initiated to define the groundwater regime near the abandoned evaporation and settling basin. The scope of the hydrogeologic survey was planned in discussions between P. Roux of Stauffer Chemical Company, J. Lorenzen and L. Andre of SWS Silicones Corporation, and R. Wagner of Commonwealth Associates Inc. (CAI) and detailed in a letter to L. Andre from C. H. D. Henriksen dated June 25, 1980. The following summarizes the scope of work.

1. Installation of nine monitoring wells in accordance with procedures presented in Appendix B.

2. Preparation of groundwater contour map of the perched water table and on the normal water table if enough data is available on the latter.

3. Preparation of a contour map of the top of the clay layer and an isopach map showing the estimated thickness of the clay layer.

4. Preparation of an up-to-date topographic map of the study area.

5. Preparation of a formal report describing the findings of the hydrogeologic survey.

## 1.3 SITE LOCATION

The SWS Silicones Plant is located approximately 50 miles southwest of Detroit, 38 miles southeast of Jackson, Michigan, and 40 miles northwest of Toledo, Ohio. The site is roughly 4 miles south of M-50 in Tecumseh, Michigan, 3 miles north of Adrian, Michigan, and 3 miles east of M-52. Locations of the site and study area are shown on Plate 1 - General Site Location, and Plate 2 - Boring Location Plan.

The evaporation and settling basin is on the eastern edge of the present plant property approximately 1,100 feet south of the nearest major road (Sutton Road). An abandoned township road located approximately 200 feet east of the basin has been chained off to traffic at Sutton Road. The New York Central Railroad parallels the east side of the basin approximately 50 feet from the east dike. The River Basin at its closest point to the evaporation and settling basin is 800 feet south of the basin.

## 1.4 SITE HISTORY

The SWS Silicones Plant was constructed during 1964 and 1965. A pilot plant was constructed and abandoned after completion of the existing facility. The evaporation and settling basin was constructed in 1971 and used in the operation of the plant until 1974 when the plant process was changed and the basin was no longer required. From that time until the spring of 1980, the basin was used to collect various plant spills and waste products from the cleaning of plant facilities. The DNR has been aware of the basin's existence since construction and included it in some of their reports as early as 1972.

## 1.5 EXISTING DATA

Data from prior investigations included published literature, soil borings for construction of the plant in 1964, exploration for water wells in 1964, and soil borings for waste storage tanks in 1980.

### 1.5.1 PUBLISHED LITERATURE

The available published literature for the study area included the U.S.G.S. 7-1/2' topographic map - Tecumseh South, Michigan, and the Regional Geologic Map No. 8 Fort Wayne, Indiana Sheet, Parts A and B published by the Indiana State Geological Survey. The geologic map does not include the study area but extends to within 3 miles of the site.

### 1.5.2 PLANT BORINGS - 1964

The soil borings for the plant are generally northwest of the evaporation and settling basin. Approximately 38 borings were drilled to depths from 15 to 40 feet. Depth to the normal water table as recorded on the boring logs averaged approximately 33 feet in the uplands.

### 1.5.3 EXPLORATION WATER WELL BORINGS - 1964

Exploration for water was initiated during construction of the site and included five exploration wells and one 14-inch water well. The first exploration well was approximately 200 feet west of the evaporation and settling basin and extended 296 feet into rock for a total depth of 508 feet. The other borings were farther away from the study area but showed approximately the same overall stratigraphy. These borings varied in depth from 154 to 240 feet. The approximate location of exploration Water Well 1 (WW-1) is shown on Plate 2. The driller's log as written by John Roberts Well Drilling indicates the following materials were encountered:

| Depth (Feet) | |
|---|---|
| 0-85 | Fine sand |
| 85-102 | Blue clay |
| 102-108 | Hard pan |
| 108-119 | Fine sand |
| 119-131 | Clay |
| 131-134 | Gravel and sand |
| 134-138 | Clay |
| 138-176 | Fine sand |
| 176-191 | Clay and gravel |
| 191-194 | Clay |
| 194-212 | Gravel |
| 212-421 | Blue shale |
| 421-508 | Blue shale, gray limestone, and sandstone |

### 1.5.4 BORINGS FOR WASTE STORAGE TANKS - 1980

Seven borings numbered B-1 through B-7 were drilled and sampled at the site on June 5 and 6, 1980. The borings varied in depth from 12 to 40 feet and were drilled using truck-mounted rotary drilling equipment utilizing flight augers and rotary wash bits to advance the hole. The soils were sampled at 2-1/2 to 5-foot intervals using either the Standard Penetration test or thin-walled Shelby tubes. The drilling operations were supervised by a CAI engineer who maintained continuous boring logs of the soils encountered. Boring locations are shown on the Boring Location Plan, Plate 2. Boring B-6 was drilled in a potential clay borrow area located approximately 1,100 feet from the tank foundation and evaporation and settling basin area and is not shown on Plate 2. Detailed boring logs of the B-Series borings are presented on Plates A-1 through A-7 in Appendix A.

During the tank foundation study, selected undisturbed and disturbed soil samples extracted from the borings were subjected to laboratory testing in CAI's soils laboratory in Jackson, Michigan. This test data was correlated with the data obtained from borings for installation of the monitoring wells (OW-Series borings) to show uniformity of soils across the study area. Soil tests included sieve analysis, moisture, density, Atterberg limits, unconfined compression tests, and consolidation tests. All soil test results are presented on the appropriate boring logs in Appendix A. Graphical representation of the gradation curves and consolidation test data are presented on Plate A-13 and Plate A-15, respectively, in Appendix A. Descriptions of all tests are included in Appendix A.

The data from the B-Series borings were used to determine the stratigraphy and soil characteristics of the materials encountered and to develop preliminary contours of the groundwater surface of the perched water table. Other data obtained from these borings include depth, thickness, uniformity, and permeability of the clay layer and depth to normal water table.

## 2.0 FIELD AND LABORATORY INVESTIGATION

### 2.1 TEST BORINGS

Data obtained from the waste storage tank borings (B-Series) were used to locate nine additional borings numbered OW-1 through OW-5 which were drilled between June 19 and 27, 1980. Borings OW-1 through OW-4 each included a deep and a shallow boring. The borings varied in depth from 16 to 40 feet and were drilled using truck-mounted rotary drilling equipment utilizing flight augers and rotary wash bits to advance the hole. The soils were sampled at 2-1/2 to 5-foot intervals in

the deep borings using the Standard Penetration test. No sampling was performed in the shallow borings. The deep and shallow borings in each set were drilled within 5 feet of each other.

The drilling operations were supervised by a geologist from CAI who maintained continuous boring logs of the soils encountered. Each boring was developed into a monitoring well by installing a preslotted screen and PVC casing according to procedures described in Appendix B. Appendix B also notes special drilling methods that were used to prevent contamination of the lower aquifer by water from the upper saturated strata.

Boring locations are shown on the Boring Location Plan - Plate 2. Detailed boring logs are presented on Plates A-8 through A-12 in Appendix A.

## 2.2 LABORATORY TESTING

Selected, disturbed soil samples extracted from the OW-Series borings were subjected to laboratory testing in CAI's soils laboratory in Jackson, Michigan. Soil tests consisting of sieve analysis, moisture content, and Atterberg limits were compared with test results of borings for the waste storage tanks. In addition, falling head permeability tests were performed on selected undisturbed samples of the silts above and below the clay layer.

The sample of silt overlying the clay was obtained from the tank foundation excavation. A Shelby tube was hydraulically pushed into the strata by a backhoe and then pulled out. The sample of silt underlying the clay layer was selected from the Shelby tubes taken during the B-Series borings.

All soil test results are presented on the appropriate boring logs in Appendix A. Graphical representation of the gradation curves for the OW-Series borings are presented on Plate 14. A summary of the Atterberg limits for both the B-Series and OW-Series borings is presented in Table 1.

## 3.0 SITE CONDITIONS

### 3.1 LOCATION OF STUDY AREA

The hydrogeologic study was performed for the evaporation and settling basin which is located in a rectangular area southeast of the main plant facilities. The study area is bounded on the east by the closed township road that forms the east property line of SWS Silicones, on the south by the River Raisin valley, on the west by the road to the river water intake, and on the north by the abandoned pilot plant.

### 3.2 SURFACE CONDITIONS

The process water lagoon, cooling lagoons, evaporation and settling basin, transformer, sewage plant, cooling water pumphouse and associated underground piping, and an electrical duct run all lie within the study area. In addition, two waste storage tanks are under construction immediately west of the evaporation and settling basin. This area will have a final grade at approximately Elevation 753. The drainage ditch northwest of the evaporation and settling basin will be rerouted around the waste storage tank area. The New York Central Railroad traverses north-south through the eastern edge of the study area and parallels the east dike of the evaporation and settling basin.

The topography of the majority of the study area has been affected by construction activity. Plate 4

shows topography of the majority of the study area prior to construction of the process water lagoon and evaporation and settling basin.

The existing topography as presented on Plate 2 shows a gently sloping terrain from Elevation 768 in the main plant area on the northwest to Elevation 754 in the main study area. The main study area is relatively flat except for the constructed dikes in the basin area, the ditches for drainage, and the railroad fill. The southern and southeastern portions of the study area slopes rather steeply (approximately 3H:1V) from Elevation 752 to approximately Elevation 720 feet where the River Raisin valley dissects the uplands.

The preconstruction topography was much the same except that several deep gullies dissected the southern portion of the upland. These gullies were filled in to construct the process water lagoon.

## 3.3 EXISTING IMPOUNDMENT FACILITIES

### 3.3.1 EVAPORATION AND SETTLING BASIN

The evaporation and settling basin consists of a partially excavated and partially diked structure. The depth is estimated to vary from approximately 4 feet on the north to 6-1/2 feet on the south. The basin is unlined and has no overflow channel or open discharge pipe to surface channels.

### 3.3.2 COOLING LAGOONS

The cooling lagoons consist of excavated structures. The bottom of the lagoons are approximately at Elevation 741.5 feet and the lagoons have a normal pool elevation of approximately 750 feet.

The lagoons have artificial liners to prevent loss of cooling water.

## 3.3 PROCESS WATER LAGOON

The process water lagoon is predominantly located on backfill. The bottom and sides are lined with a 12-inch thick clay layer to prevent seepage into the groundwater regime. The northwest corner area of the lagoon has a tile drain behind the clay liner to intercept the perched groundwater. The drain empties into a surface water channel in the River Raisin valley on the southwest corner of the study area.

## 3.4 SUBSURFACE CONDITIONS

The subsurface profiles in the study area as developed from the boring program show the stratigraphy to be relatively uniform. The soils strata are gently sloping to the River Raisin valley (south to southeast) and are relatively uniform in thickness throughout the study area. Five distinct soil layers were identified on the uplands between ground level and the ultimate depth (40 feet) of the borings. Following is a detailed description of these layers. The subsurface profiles are presented on Plate 3.

Surface soils encountered in the borings are 4 to 9 feet thick and consist of fine to coarse and fine to medium sands with trace to some fines. The upper 1 to 4 feet appear to be reworked and have been classified as fill on the boring logs. Differentiation between natural in-situ soils and the reworked materials is somewhat difficult. These soils ranged from loose to dense.

Underlying the surface sandy soils is a layer from 5 to 13 feet thick that consists of brown to gray silt with a trace to some fine sand. The top of this layer varies from Elevation 760 feet in the northwest to 735 feet on the southeast edge of the proposed construction area. The strata reaches its maximum thickness of 13 feet in B-4 in the northwest and in general thins to approximately 5 feet at the southern edge of the construction area. These soils ranged from loose to dense with a perched water table encountered either slightly above or within this soil strata. Groundwater contours on the perched water table are presented in Plate 7. A falling head permeability test performed on a Shelby tube sample of the material obtained from the waste storage tank excavation indicates a permeability on the order of $3 \times 10^{-5}$ cm/sec.

Underlying the silt strata is a layer from 3 to 6 feet thick that consists of gray silty clay to clay. The top of the clay layer as determined in the borings varies from Elevation 747 feet in the northwest to 727 feet in the southeast. A contour map on top of the clay layer is presented on Plate 5. The strata is relatively uniform across the proposed construction area and becomes thicker towards the river. An isopach map of the clay layer is presented on Plate 6. The clay was medium stiff to stiff with an average liquid limit of $\approx 32$ and an average plasticity index of $\approx 14$. The dry density of the clay ranged from 98.8 to 112.7 lbs/cu ft. Unconfined compression tests indicate the clay has a shear strength of approximately 1,750 psf. A consolidation test was performed to determine the amount of settlement that could be anticipated from the design loads of the tank foundations. The permeability of the clay layer as derived from the consolidation test at the existing overburden pressure was determined to be on the order of $1 \times 10^{-7}$ cm/sec.

Underlying the clay strata is an approximately 10-foot thick layer of gray-brown to gray silt with some fine sand. The top of the silt layer varies from Elevation 743 in the northwest to 728 in the east. The silt is generally dense and is saturated below the normal water table. Groundwater contours on the normal water table are presented on Plate 8. A falling head permeability test performed on a Shelby tube sample obtained from the B-Series borings indicates a permeability on the order of $1 \times 10^{-6}$ cm/sec.

Underlying the second silt strata is a layer of brown to gray fine sand with a trace of silt and medium sand. Boring B-1 penetrated approximately 13 feet of this layer prior to termination of the boring. The sand is very dense and saturated.

The strata encountered by the B-Series and OW-Series borings are all Wisconsinan age glacial deposits. The sands and silts are believed to be valley train deposits and the silty clay and clay a lacustrine deposit. With the exception of the sandy soil at the surface, the layers of soils encountered are relatively uniform in texture, density, and classification across the study area.

## 3.5 GROUNDWATER

Two water levels were encountered in the borings. In all but Borings B-6 and OW-5, a perched water table was encountered above the clay layer and a normal water level below the clay layer. Boring B-6 was in a potential clay borrow area approximately 1,100 feet from the study area and Boring OW-5 was in the floodplain. These borings did not encounter the same soil strata. Plates 7 and 8 present the groundwater surface contours of the two water levels.

### 3.5.1 PERCHED WATER TABLE

The perched water table generally follows the surface contour of the relatively impervious clay layer. This effect can be seen on Plates 5 and 7 where a slight depression in the clay surface corresponds to a local gradient in the perched water table. The perched water table was encountered at Elevation 756 feet in the northwest and slopes to Elevation 740 feet in the southeast. At the time of drilling the B-Series borings (June 5 and 6, 1980), the depth to the perched water table varied from 3.5 feet in Boring B-7 in the east to 8 feet in Boring B-4 in the northwest. At the time of drilling the OW-Series borings (June 20 to 27, 1980), the depth to the perched water table varied from 4.5 feet in OW-4 which is approximately 100 feet south of Boring B-7 to 10 feet in OW-2 which is in the vicinity of Borings B-1 and B-2. A test hole drilled on June 27, 1980 within 5 feet of Boring B-7 indicated a two foot drop in the depth to water from June 6, 1980 to June 27, 1980.

### 3.5.2 NORMAL WATER TABLE

The normal water level was encountered between approximately Elevation 715 feet on the floodplain (OW-5) and southeast part of the uplands (OW-4) and Elevation 727 feet on the northern part of the study area (OW-3). The elevation of the normal water table in the floodplain corresponds approximately to the river elevation with an increasing gradient toward the uplands. Groundwater contours on the normal water table are presented on Plate 8.

## 4.0 SUMMARY OF FINDINGS

The groundwater level data were collected June 5 and 6, 1980, in the B-Series borings and July 1, 1980, from the monitoring wells (OW-Series borings). On June 27, 1980, a

shallow auger probe was performed adjacent to B-7. The water level was encountered at 5-1/2 feet below the ground surface. This reflected a 2-foot drop in the water level since B-7 was originally drilled. It is anticipated that all the B-Series water levels were at least 2 feet lower on July 1, 1980 when the monitoring well water levels were recorded. All the B-Series borings were grouted with a cement/bentonite/water mixture after completion of drilling.

The hydrogeologic study indicates that a relatively impermeable clay layer exists beneath the study area at relatively shallow depths. The study also shows the presence of two water tables: a perched water table on top of the clay layer and a normal water table below the clay layer. Both water tables have an overall northwest to southeast gradient towards the river valley as shown on Plates 7 and 8.

There is no water well downgradient of the evaporation and settling basin. The nearest residence which has a well is located more than 1200 feet away in the upgradient direction. It is improbable that the perched water table extends that far. Plate 6 shows the clay layer thinning to the north and west. It is unlikely that any pumping well would be located in such a shallow perched water system. The nature of the materials encountered within the perched water table (fine sandy silts) preclude the possibility of the perched water system being considered as an aquifer.

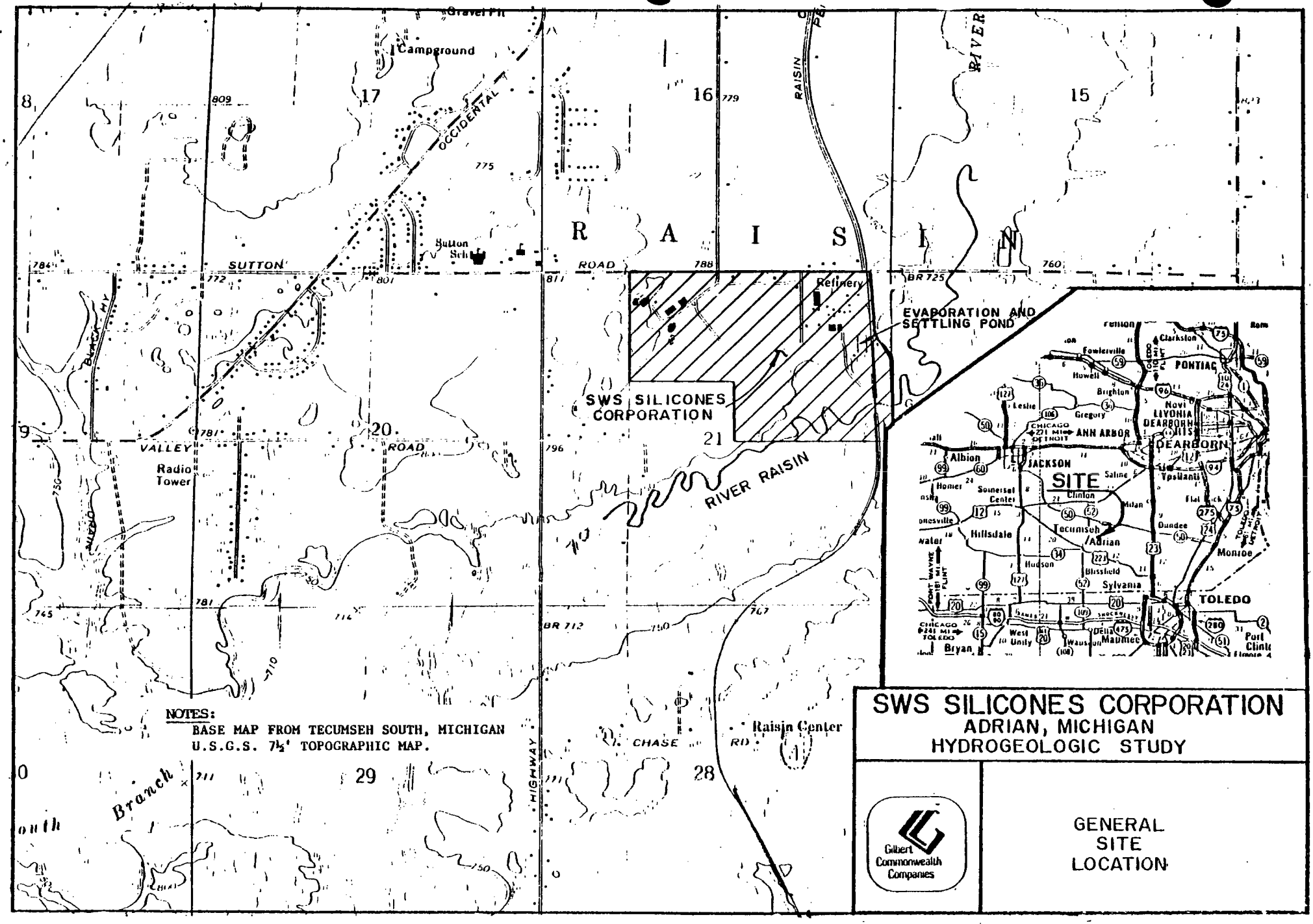
The normal water table is considered as an aquifer capable of meeting residential and agricultural requirements. This water table is isolated from the perched water table in the study area by the overlying clay layer. The River Raisin valley acts as a buffer that intercepts the flow and prevents groundwater in the perched water and normal water tables from flowing from one side of the river to the other.

In summary, the perched water system within the study area is isolated from the underlying aquifer by the clay layer. All the boring data in the study area indicates the clay is continuous throughout the study area and that it varies from 3 to 5 feet in thickness. Laboratory tests indicate permeability of the silt above the clay layer is on the order of $10^{-5}$ cm/sec and of the silt below the clay layer is on the order of $10^{-6}$ cm/sec. The clay layer has a permeability on the order of $10^{-7}$ cm/sec. From this data, it can be assumed that the perched water system is confined above the clay layer in the study area and that there is very little, if any, mixing of waters between the two water tables.

TABLE 1

SUMMARY OF ATTERBERG LIMITS

| Boring No. | Sample No. | Depth (ft) | LL | PL | PI | Moisture Content (Percent) |
|---|---|---|---|---|---|---|
| OW-1 | 7 | 23.5-25.0 | 28.4 | 16.8 | 11.6 | 22.4 |
| OW-3 | 4 | 18.5-20.0 | 30.4 | 17.4 | 13.0 | 19.2 |
| OW-4 | 6 | 21-22.5 | 31.6 | 19.9 | 11.7 | 23.0 |
| B-4 | ST-1 | 18-20 | 28.8 | 17.1 | 11.7 | 17.7 |
| B-5 | ST-1 | 14-16 | 35.0 | 18.1 | 16.9 | 26.4 |




NOTES:
BASE MAP FROM TECUMSEH SOUTH, MICHIGAN
U.S.G.S. 7½' TOPOGRAPHIC MAP.

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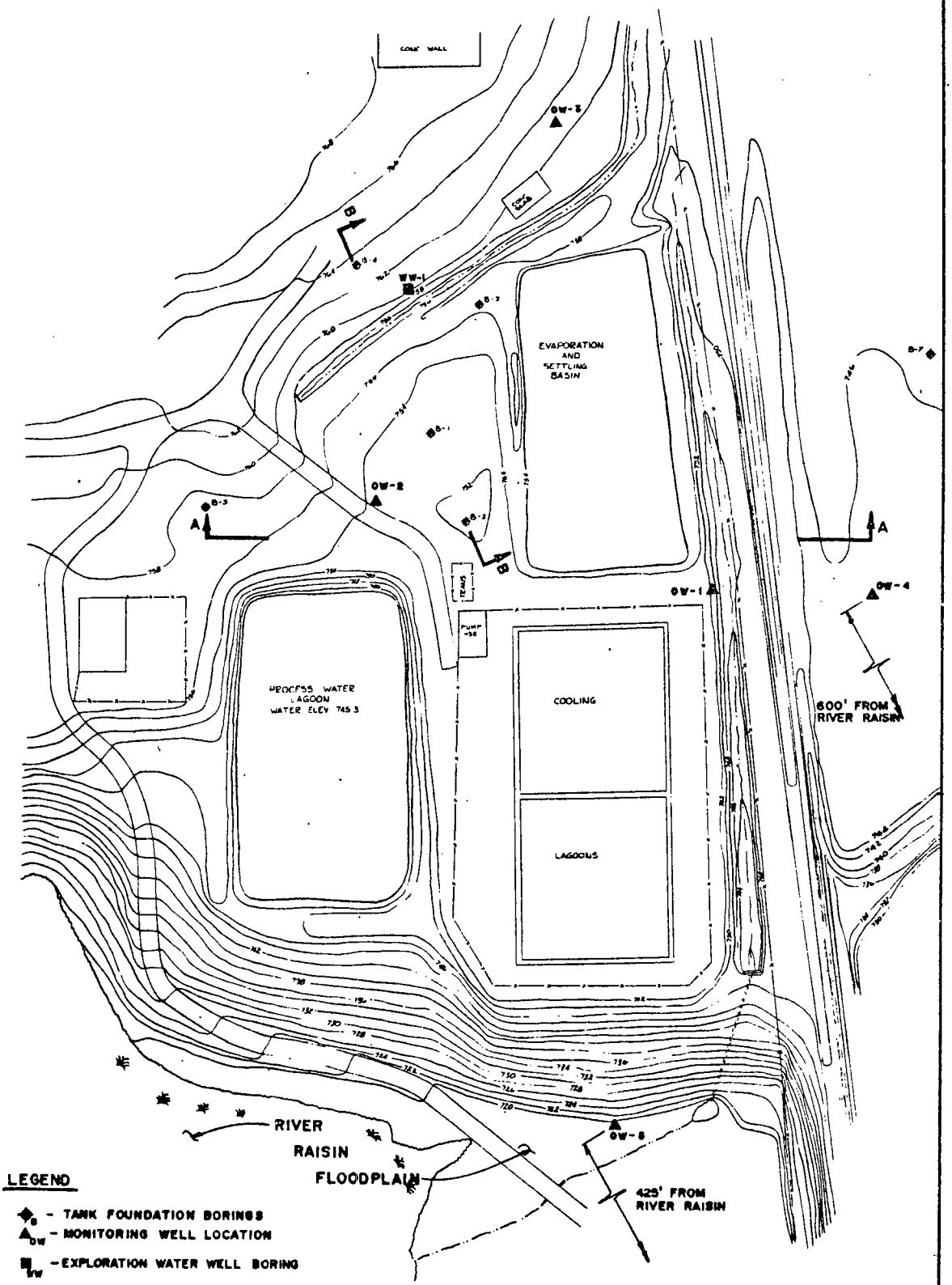
GENERAL SITE LOCATION

PLATE I




LEGEND

- B - TANK FOUNDATION BORINGS
- OW - MONITORING WELL LOCATION
- WW - EXPLORATION WATER WELL BORING

NOTE: PRECONSTRUCTION TOPOGRAPHY SHOWN ON PLATE 4

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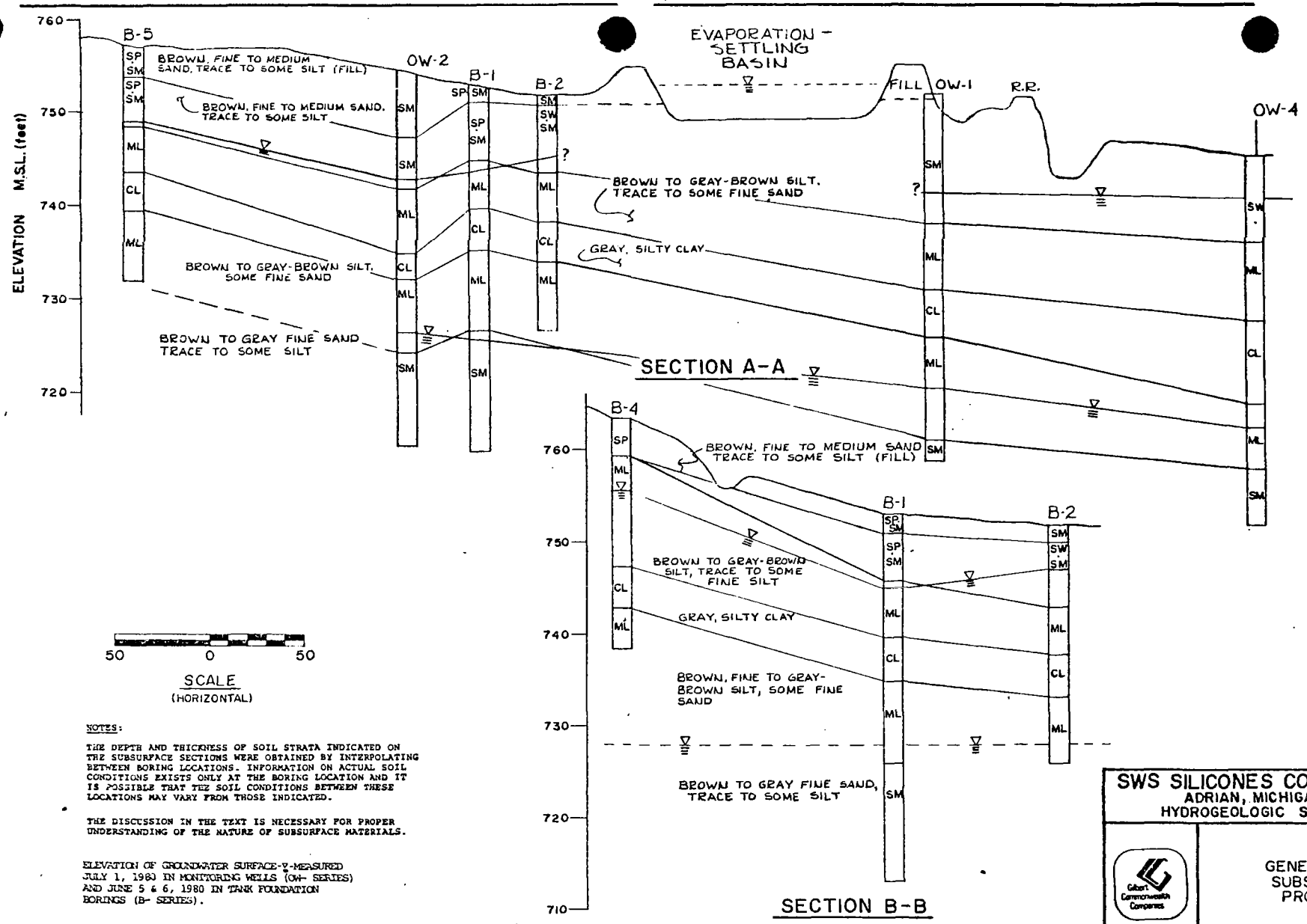
BORING LOCATION PLAN




NOTES:

THE DEPTH AND THICKNESS OF SOIL STRATA INDICATED ON THE SUBSURFACE SECTIONS WERE OBTAINED BY INTERPOLATING BETWEEN BORING LOCATIONS. INFORMATION ON ACTUAL SOIL CONDITIONS EXISTS ONLY AT THE BORING LOCATION AND IT IS POSSIBLE THAT THE SOIL CONDITIONS BETWEEN THESE LOCATIONS MAY VARY FROM THOSE INDICATED.

THE DISCUSSION IN THE TEXT IS NECESSARY FOR PROPER UNDERSTANDING OF THE NATURE OF SUBSURFACE MATERIALS.

ELEVATION OF GROUNDWATER SURFACE-∇-MEASURED JULY 1, 1980 IN MONITORING WELLS (OW- SERIES) AND JUNE 5 & 6, 1980 IN TANK FOUNDATION BORINGS (B- SERIES).

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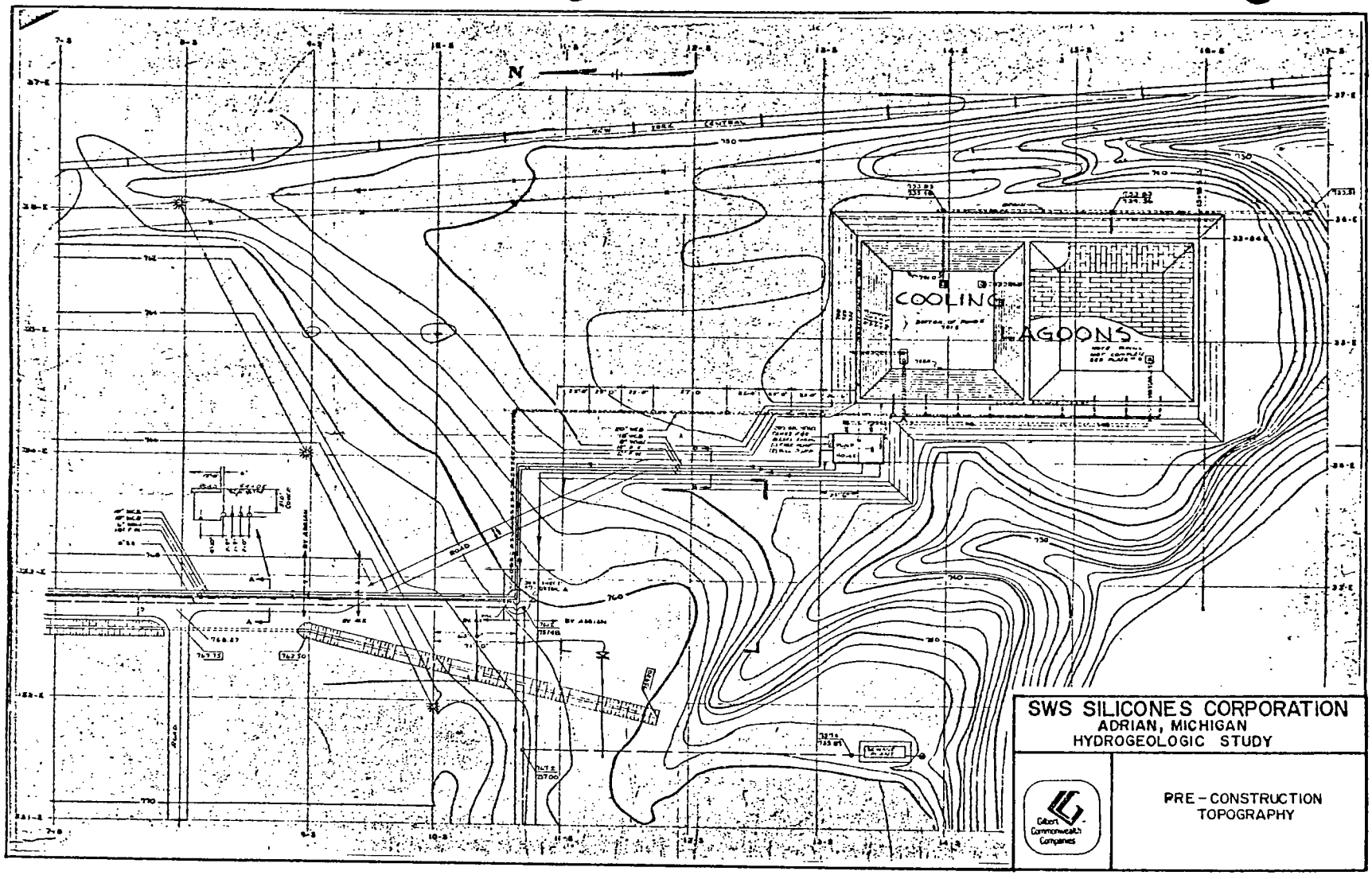
GENERALIZED SUBSURFACE PROFILES

PLATE 3


N
COOLING
LAGOONS
ROAD
SWS SILICONES CORPORATION
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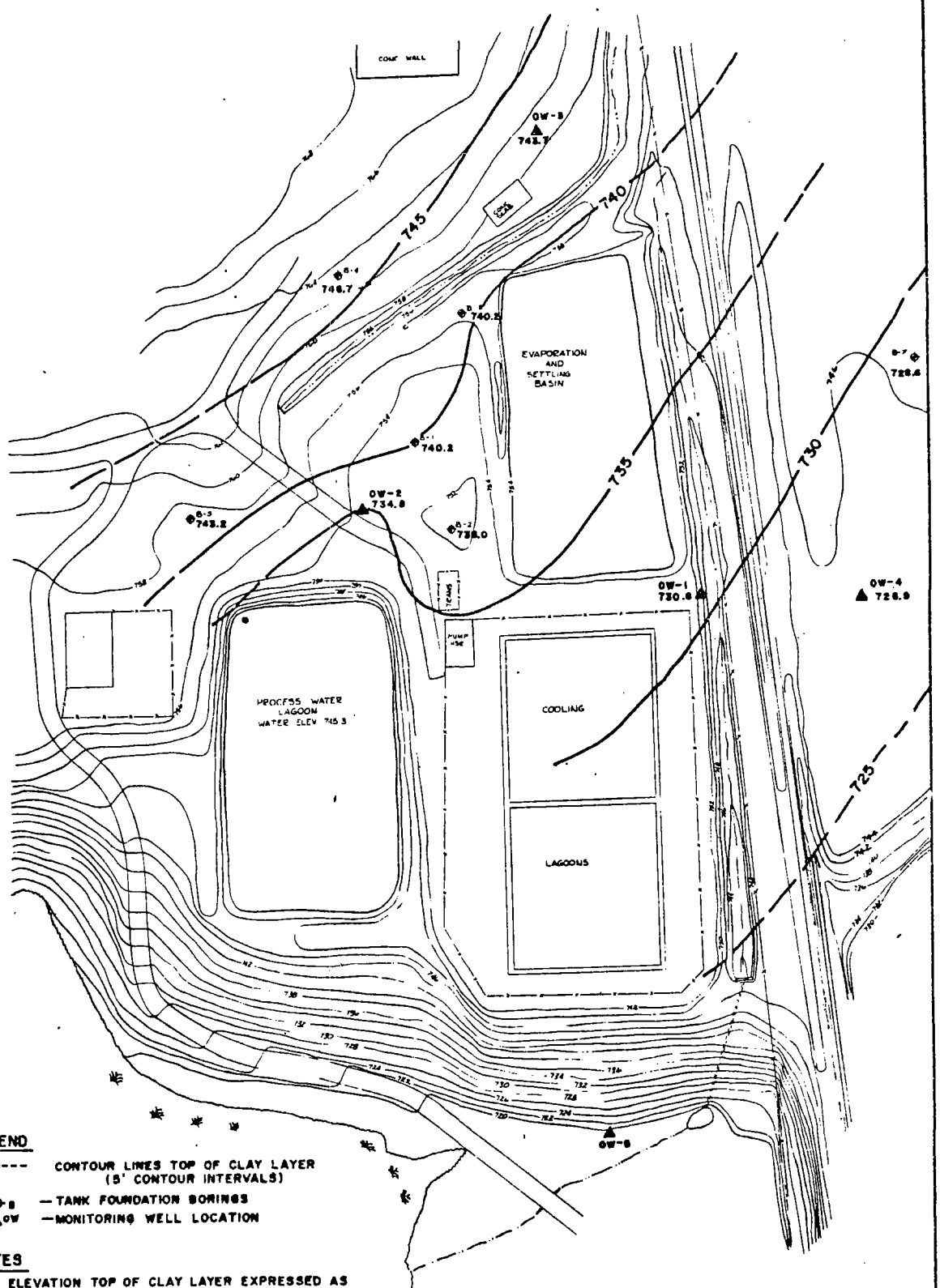
PRE-CONSTRUCTION
TOPOGRAPHY

PLATE-4




**LEGEND**

—740--- CONTOUR LINES TOP OF CLAY LAYER (5' CONTOUR INTERVALS)

◆B — TANK FOUNDATION BORINGS

▲OW — MONITORING WELL LOCATION

**NOTES**

1. ELEVATION TOP OF CLAY LAYER EXPRESSED AS FEET ABOVE MEANS SEA LEVEL.
2. DASHED CONTOUR LINES INDICATE INFERRED CONTOURS BASED ON LIMITED DATA.

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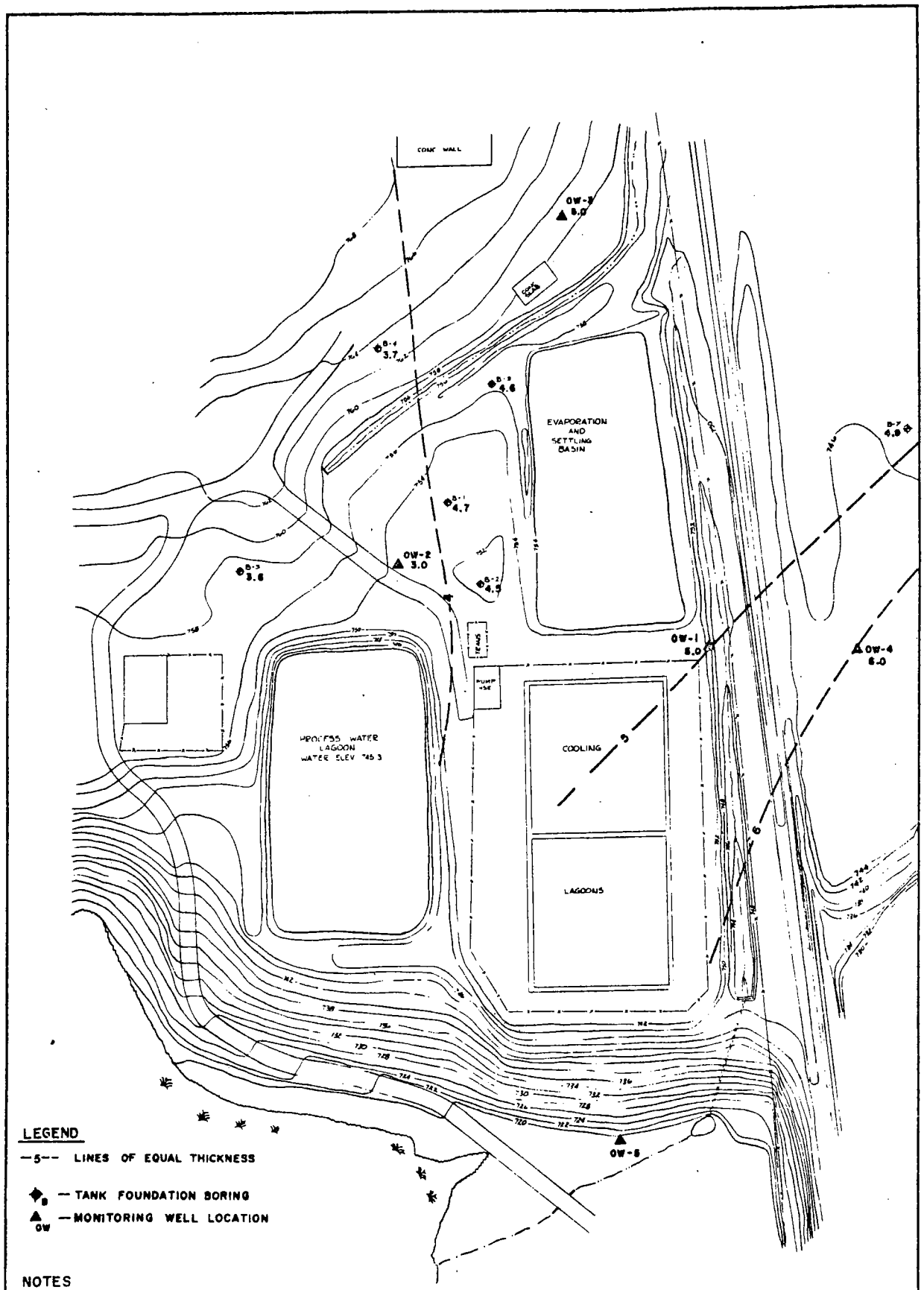
**CONTOUR MAP ON TOP OF CLAY LAYER**

PLATE 5




LEGEND

—5— LINES OF EQUAL THICKNESS

— TANK FOUNDATION BORING

— MONITORING WELL LOCATION

NOTES

1. THICKNESS OF CLAY LAYER EXPRESSED IN FEET

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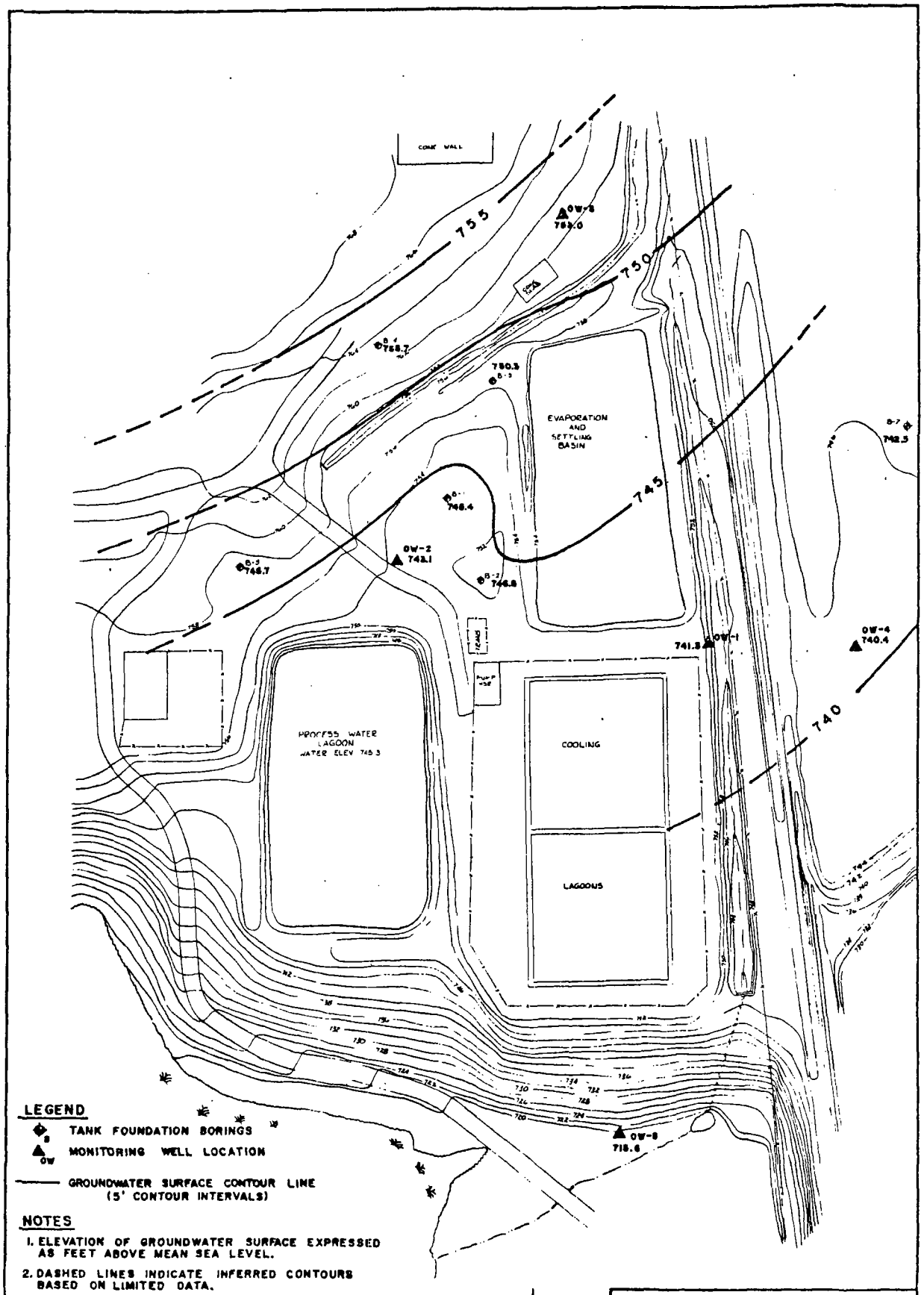
GENERALIZED ISOPACH
OF CLAY LAYER

PLATE 6




**LEGEND**

- TANK FOUNDATION BORINGS
- MONITORING WELL LOCATION
- GROUNDWATER SURFACE CONTOUR LINE (5' CONTOUR INTERVALS)

**NOTES**

1. ELEVATION OF GROUNDWATER SURFACE EXPRESSED AS FEET ABOVE MEAN SEA LEVEL.
2. DASHED LINES INDICATE INFERRED CONTOURS BASED ON LIMITED DATA.
3. PROCESS WATER LAGOON IS CLAY LINED WITH TILE DRAIN AT TOP OF CLAY IN NORTHWEST PORTION OF LAGOON; COOLING PONDS HAVE ARTIFICIAL LINER, EVAPORATION- SETTLING POND IS UNLINED.
4. CONTOURS ARE COMPOSITE OF WATERLEVELS RECORDED JUNE 5 AND 6, 1980 FROM TANK FOUNDATION BORINGS AND JULY 1, 1980 FROM MONITORING WELLS. CORRELATION OF WATER LEVEL DATA INDICATES AN APPROXIMATE 2' DROP IN WATER LEVEL BETWEEN RECORDING TIMES.

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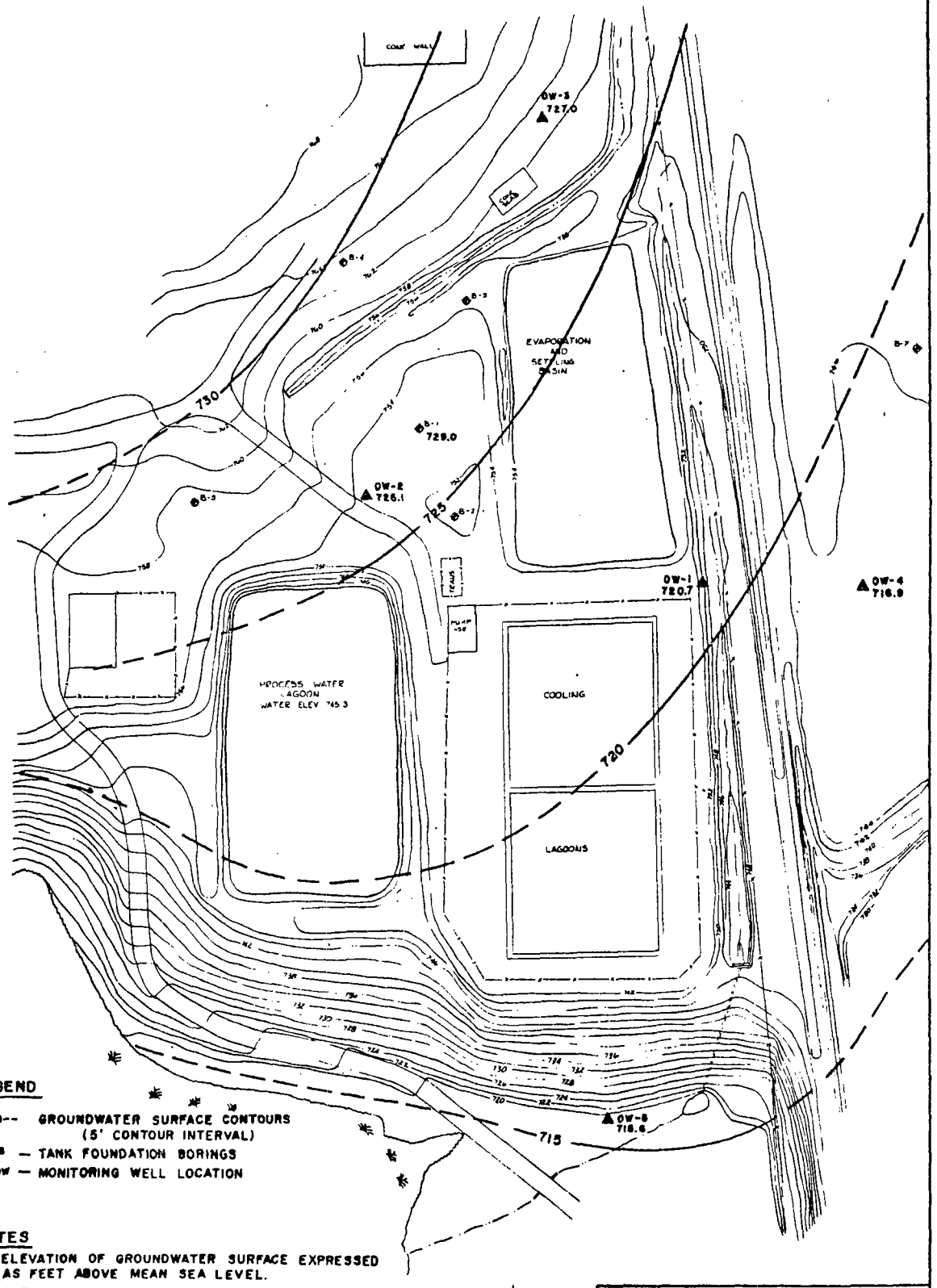
GROUNDWATER SURFACE PERCHED WATER TABLE

PLATE 7




**LEGEND**

—720-- GROUNDWATER SURFACE CONTOURS (5' CONTOUR INTERVAL)

◆B — TANK FOUNDATION BORINGS

▲OW — MONITORING WELL LOCATION

**NOTES**

1. ELEVATION OF GROUNDWATER SURFACE EXPRESSED AS FEET ABOVE MEAN SEA LEVEL.
2. ELEVATION OF GROUNDWATER SURFACE MEASURED JULY 1, 1980 IN MONITORING WELLS (OW-SERIES) AND JUNE 5, 1980 IN BORING B-1.
3. DASHED CONTOUR LINES INDICATE INFERRED CONTOURS BASED ON LIMITED DATA
4. ELEVATION OF WATER LEVEL FOR B-1 MAY HAVE DROPPED BETWEEN JUNE 5, 1980 WHEN B-1 WAS DRILLED AND JULY 1, 1980 WHEN WATER LEVELS WERE RECORDED IN MONITORING WELLS.

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GROUNDWATER SURFACE
NORMAL WATER TABLE

PLATE 8

# APPENDIX A

## FIELD EXPLORATIONS AND LABORATORY TESTS

### FIELD EXPLORATIONS

Seven exploration borings, numbered B-1 to B-7 and five borings for monitoring wells were drilled and sampled at the SWS Silicones Plant using truck-mounted rotary-wash type drilling equipment. The rotary-wash method was used in drilling all borings except B-6 and B-7. Borings B-6 and B-7 were drilled using continuous flight augers. The borings were drilled to depths ranging from 12 to 40 feet. Locations of the borings are shown on Plate 2 - Boring Location Plan.

Relatively undisturbed soil samples were obtained within the clay layer by the use of Shelby tubes hydraulically pushed into the ground. Standard Penetration tests were performed at 2-1/2 to 5 feet intervals. Shelby tube sampling and Standard Penetration tests were performed in accordance with ASTM Methods D1587-74 and D1586-67, respectively.

The field explorations were under the supervision of a qualified CAI soils engineer who classified the soils encountered by visual and textural examination and maintained a continuous and detailed log of each boring. A graphical representation of the boring logs is presented on Plates A-1 to A-12. The soils have been classified in accordance with the Unified Soil Classification System (ASTM D2487-69).

Ground surface elevations and boring locations were determined by CAI personnel using standard surveying procedures. Where possible, the depth to the static water level was measured prior to backfilling of the borehole.

LABORATORY STUDIES

A number of laboratory tests were performed on representative samples obtained from the borings to determine pertinent physical properties of the various soil types encountered. The tests included moisture-density determinations, Atterberg limit tests, unconfined compression tests, laboratory vane shear tests (Torvane), sieve analysis, and consolidation tests. All engineering tests were performed on extruded Shelby tube soil samples. Jar samples from standard penetration tests were used in soil classification tests.

1. Moisture-Density Determinations

Moisture content determinations were performed in accordance with ASTM D2216-71. Moisture tests were performed on selected samples for correlation purposes. Density determinations were performed only on thin-walled Shelby tube samples. The results of all moisture-density tests are shown to the left of the boring logs.

2. Atterberg Limits

Liquid and plastic limit tests were performed in accordance with ASTM D423-66 and D424-59. These tests were performed for soil classification purposes and have been used to correlate soils strata and engineering properties from empirical relationships. The results of these tests are shown to the left of the boring logs.

3. Particle Size Determinations

Sieve analysis tests were performed on selected soil samples to determine their correct classifications. The tests were performed in accordance with ASTM D422-63. The percentage of fines passing the No. 200 sieve is shown to the left of the boring logs. Gradation curves of the soils are presented on Plates A-13 and 14.

4. Strength Tests

The clay layer was tested to determine its undrained strength properties. Unconfined compression and Torvane shear tests were performed on selected thin-walled tube samples. The unconfined compression tests were performed in accordance with ASTM D2166-66. All test results are reported to the left of the boring logs.

5. Consolidation Test

A consolidation test was performed on a representative sample of the clay layer in accordance with ASTM D2435-70. The consolidation test was performed on the clay in order to assess the compressibility characteristics. Of interest was the Recompression index (C'r), the Compression index (C'c), the Preconsolidation pressure (Pc) and the Coefficient of consolidation (Cv). The consolidation curve with appropriate supporting data is presented on Plate A-15.

6. Falling Head Permeability Test

A falling head permeability test was performed on representative samples of silt from above the clay layer and below the layer. A head of approximately 6 feet was applied to both samples. Permeability of the specific soils is discussed in the text.

The following plates are attached and complete this appendix.

| | |
|---|---|
| Plate A-1: | Boring B-1 |
| Plate A-2: | Boring B-2 |
| Plate A-3: | Boring B-3 |
| Plate A-4: | Boring B-4 |
| Plate A-5: | Boring B-5 |
| Plate A-6: | Boring B-6 |
| Plate A-7: | Boring B-7 |
| Plate A-8: | Boring OW-1 |
| Plate A-9: | Boring OW-2 |
| Plate A-10: | Boring OW-3 |
| Plate A-11 | Boring OW-4 |
| Plate A-12 | Boring OW-5 |
| Plate A-13 | Gradation Curves |
| Plate A-14 | Gradation Curves |
| Plate A-15 | Consolidation Test Data |

WASTE STORAGE TANK STUDY
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# BORING B-1

**SURFACE ELEVATION 753.0'**
**COORDINATE: 1163 S - 3363 E**

| ELEV. IN FEET | OTHER TESTS | SHEAR STRENGTH (PSF) | ATTERBERG LIMITS: LIQUID LIMIT | ATTERBERG LIMITS: PLASTICITY INDEX | FIELD MOISTURE CONTENT (%) | DRY DENSITY (PCF) | PERCENT RECOVERY (%) | RQD | % PASSING 200 SIEVE | DEEP IN FEET | BLOW COUNT | SAMPLES | SYMBOLS | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | SP. SM | BROWN FINE TO MEDIUM SAND, TRACE SILT. (FILL) |
| | | | | | | | | | | | 41 | ☒ | | BROWN FINE TO MEDIUM SAND, TRACE TO LITTLE SILT, COARSE SAND NOTED. (DENSE) |
| | | | | | 7.3 | | | | 5.4 | 5 | 12 | ☒ | | |
| | | | | | | | | | | | 5 | ☒ | ML | BROWN SILT, LITTLE FINE SAND. 8.5' TO 10' GRADES WITH SOME FINE SAND. (LOOSE) |
| | | | | | 27.6 | | | | 89.4 | 10 | 12 | ☒ | | |
| | | | | | | | | | | | 8 | ☒ | CL | GRAY SILTY CLAY, SILT LENSES NOTED IN LOWER PART OF CLAY. (MEDIUM STIFF) |
| | | U.C.=2230 | | | | | | | | | P | ■ | | |
| | | TV=2000+ | | | 23.1 | 108.3 | 90 | | | 15 | | | | |
| | | | | | | | | | | | 76 | ☒ | ML | LIGHT BROWN SILT. SOME FINE SAND NOTED. (VERY DENSE) |
| | | | | | | | | | | 20 | | | | |
| | | | | | 22.3 | | | | 72.9 | 25 | 43 | ☒ | | (DENSE) |
| | | | | | | | | | | | 43 | ☒ | SP. SM | BROWN FINE SAND. TRACE SILT. |
| | | | | | | | | | | 30 | | | | |
| | | | | | 21.7 | | | | 8.8 | 35 | 34 | ☒ | | |
| | | | | | | | | | | | | | | GRADES TO GRAY (VERY DENSE) |
| | | | | | | | | | | 40 | 63 | ☒ | | BORING TERMINATED AT 40' ON 6-5-80 |
| | | | | | | | | | | | | | | WATER ENCOUNTERED AT 7.6' AND 24' |
| | | | | | | | | | | 45 | | | | |
| | | | | | | | | | | 50 | | | | |
| | | | | | | | | | | 55 | | | | |
| | | | | | | | | | | 60 | | | | |

## LEGEND

- ☒ — STANDARD PENETRATION TEST
- ■ — UNDISTURBED SOIL SAMPLE
- ◪ — DISTURBED SOIL SAMPLE
- □ — LOST SOIL SAMPLE
- CR — CORE RUN NO.
- 22 — BLOWS PER FOOT
- P — HYDRAULICALLY PUSHED
- TV — TORVANE TEST
- UC — UNCONFINED COMPRESSION TEST
- Gs — SPECIFIC GRAVITY
- C — CONSOLIDATION TEST
- PN — PENETROMETER

LOG OF BORING

Gilbert/Commonwealth

WASTE STORAGE TANK STUDY
SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

# BORING B-2

**SURFACE ELEVATION** 751.5'
**COORDINATE** 1288S-3450E

| ELEV. IN FEET | OTHER TESTS | STRENGTH TEST (PSF) | ATTERBERG LIMITS: LIQUID LIMIT | ATTERBERG LIMITS: PLASTICITY INDEX | FIELD MOISTURE CONTENT (%) | DRY DENSITY (PCF) | PERCENT RECOVERY (%) | RQD | % PASSING 200 SIEVE | DEEP IN FEET |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | 5 |
| | | | | | 11.2 | | | | 14.5 | 10 |
| | | | | | | | | | | 15 |
| | | | | | 17.3 | | | | | 20 |
| | | | | | 25.0 | | | | 73.1 | 25 |
| | | | | | | | | | | 30 |
| | | | | | | | | | | 35 |
| | | | | | | | | | | 40 |
| | | | | | | | | | | 45 |
| | | | | | | | | | | 50 |
| | | | | | | | | | | 55 |
| | | | | | | | | | | 60 |

| BLOW COUNT | SAMPLES | SYMBOLS | DESCRIPTION |
|---|---|---|---|
| 43 | ⊠ | SM | BROWN FINE TO MEDIUM SAND, SOME SILT. (FILL) (DENSE) |
| 31 | ⊠ | SM | BROWN FINE TO COARSE SAND, LITTLE SILT. (MEDIUM DENSE) |
| 10 | ⊠ | | |
| 12 | ⊠ | ML | BROWN SILT, SOME FINE SAND. |
| 18 | ⊠ | | |
| P | | CL | GRAY SILTY CLAY. (MEDIUM STIFF) |
| P | | | |
| 43 | ⊠ | ML | GRAY-BROWN SILT, SOME FINE SAND. (DENSE) |
| 41 | ⊠ | | |

BORING TERMINATED AT 25' ON 6-5-80
WATER ENCOUNTERED AT 5.0' AND 24'

## LEGEND

- ⊠ — STANDARD PENETRATION TEST
- ■ — UNDISTURBED SOIL SAMPLE
- ◪ — DISTURBED SOIL SAMPLE
- □ — LOST SOIL SAMPLE
- CR — CORE RUN NO.
- 22 — BLOWS PER FOOT
- P — HYDRAULICALLY PUSHED
- TV — TORVANE TEST
- UC — UNCONFINED COMPRESSION TEST
- Gs — SPECIFIC GRAVITY
- C — CONSOLIDATION TEST
- PN — PENETROMETER

LOG OF BORING

Gilbert/Commonwealth

WASTE STORAGE TANK STUDY
SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

# BORING B-3

**SURFACE ELEVATION** 756.3'
**COORDINATE** 1062 S - 3428E

| ELEV IN FEET | OTHER TESTS | SHEAR STRENGTH (PSF) | ATTERBERG LIMITS: LIQUID LIMIT | ATTERBERG LIMITS: PLASTICITY INDEX | FIELD MOISTURE CONTENT (%) | DRY DENSITY (PCF) | PERCENT RECOVERY (%) | RQD | % PASSING 200 SIEVE | DEEP IN FEET | BLOW COUNT | SAMPLES | SYMBOLS | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 10.5 | | | | | | 5 | ⊠ | SP-SM | BROWN FINE TO MEDIUM SAND, COARSE SAND NOTED, SOME SILT. (TOP 4.4' IS FILL) (LOOSE) |
| | | | | | | | | | | 5 | 12 | ⊠ | SP-SM | (MEDIUM DENSE) |
| | | | | | 23.0 | | | | 90 | 10 | 15 | ⊠ | ML | LIGHT BROWN SILT, TRACE FINE SAND. (MEDIUM DENSE) |
| | | | | | | | | | | | 20 | ⊠ | | GRADES TO GRAY |
| | | | | | 23.9 | | | | 91.5 | 15 | 17 | ⊠ | | |
| | | PN:3500 | | | 28.2 | 98.8 | | | | | 10 | ⊠ | CL | GRAY SILTY CLAY, LITTLE FINE SAND. (MEDIUM STIFF) |
| | | | | | | | | | | 20 | P | | | |
| | | | | | 20.1 | | | | 97.3 | | P | | | |
| | | | | | | | | | | | 38 | ⊠ | ML | (DENSE) BROWN SILT SOME FINE SAND. |
| | | | | | | | | | | 25 | 89 | ⊠ | | (VERY DENSE) |
| | | | | | | | | | | | | | | BORING TERMINATED AT 25' ON 6-6-80 |
| | | | | | | | | | | | | | | WATER ENCOUNTERED AT 6.8' |
| | | | | | | | | | | 30 | | | | |
| | | | | | | | | | | 35 | | | | |
| | | | | | | | | | | 40 | | | | |
| | | | | | | | | | | 45 | | | | |
| | | | | | | | | | | 50 | | | | |
| | | | | | | | | | | 55 | | | | |
| | | | | | | | | | | 60 | | | | |

## LEGEND

- ⊠ — STANDARD PENETRATION TEST
- ■ — UNDISTURBED SOIL SAMPLE
- ◪ — DISTURBED SOIL SAMPLE
- □ — LOST SOIL SAMPLE
- CR — CORE RUN NO.
- 22 — BLOWS PER FOOT
- P — HYDRAULICALLY PUSHED
- TV — TORVANE TEST
- UC — UNCONFINED COMPRESSION TEST
- Gs — SPECIFIC GRAVITY
- C — CONSOLIDATION TEST
- PN — PENETROMETER

LOG OF BORING

Gilbert/Commonwealth

WASTE STORAGE TANK STUDY
SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

# BORING B-4

SURFACE ELEVATION 763.7'
COORDINATE 1033 S - 3374 E

| ELEV. IN FEET | OTHER TESTS | SHEAR STRENGTH (PSF) | ATTERBERG LIMITS: LIQUID LIMIT | ATTERBERG LIMITS: PLASTICITY INDEX | FIELD MOISTURE CONTENT (%) | DRY DENSITY (PCF) | PERCENT RECOVERY (%) | RQD | % PASSING 200 SIEVE | DEEP IN FEET | BLOW COUNT | SAMPLES | SYMBOLS | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 13.6 | | | | 14 | | 8 | ⊠ | SM | BROWN FINE TO MEDIUM SAND, TRACE COARSE SAND AND SILT.(LOOSE), (FILL) |
| | | | | | 25.3 | | | | 96.4 | 5 | 7 | ⊠ | ML | BROWN SILT, TRACE FINE SAND. |
| | | | | | 28.6 | | | | | | 7 | ⊠ | | (MEDIUM DENSE) |
| | | | | | | | | | | 10 | 14 | ⊠ | | |
| | | | | | 25.4 | | | | | | 19 | ⊠ | | |
| | | | | | | | | | | 15 | 34 | ⊠ | | (DENSE) |
| | | PN:5600 UC:1770 TV:2000+ | 29 | 12 | 20.1 | 112.7 | | | | 20 | P | ■ | CL | GRAY SILTY CLAY. (STIFF) |
| | | PN:4600 | | | | | | | | | 22 | ⊠ | ML | GRAY-BROWN SILT, SOME FINE SAND. (VERY DENSE) |
| | | | | | 16.5 | | | | | 25 | 143 | ⊠ | | BORING TERMINATED AT 25' ON 6-6-80 |
| | | | | | | | | | | | | | | WATER ENCOUNTERED AT 8.0' |
| | | | | | | | | | | 30 | | | | |
| | | | | | | | | | | 35 | | | | |
| | | | | | | | | | | 40 | | | | |
| | | | | | | | | | | 45 | | | | |
| | | | | | | | | | | 50 | | | | |
| | | | | | | | | | | 55 | | | | |
| | | | | | | | | | | 60 | | | | |

## LEGEND

- ⊠ — STANDARD PENETRATION TEST
- ■ — UNDISTURBED SOIL SAMPLE
- ◪ — DISTURBED SOIL SAMPLE
- □ — LOST SOIL SAMPLE
- CR — CORE RUN NO.
- 22 — BLOWS PER FOOT
- P — HYDRAULICALLY PUSHED
- TV — TORVANE TEST
- UC — UNCONFINED COMPRESSION TEST
- Gs — SPECIFIC GRAVITY
- C — CONSOLIDATION TEST
- PN — PENETROMETER

LOG OF BORING

Gilbert/Commonwealth

WASTE STORAGE TANK STUDY
SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

# BORING B-5

**SURFACE ELEVATION 756.9'**
**COORDINATE 1221 S - 3183 E**

| ELEV. IN FEET | OTHER TESTS | SHEAR STRENGTH (PSF) | ATTERBERG LIMITS: LIQUID LIMIT | ATTERBERG LIMITS: PLASTICITY INDEX | FIELD MOISTURE CONTENT (%) | DRY DENSITY (PCF) | PERCENT RECOVERY (%) | RQD | % PASSING 200 SIEVE | DEEP IN FEET | BLOW COUNT | SAMPLES | SYMBOLS | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | 8 | | SP SM | BROWN FINE TO MEDIUM SAND, TRACE COARSE SAND, SOME SILT. (FILL) |
| | | | | | 13.0 | | | | | 5 | 6 | | SP. SM | BROWN FINE TO MEDIUM SAND, TRACE SILT. (LOOSE) |
| | | | | | | | | | | | 9 | | | |
| | | | | | 34.4 | | | | | 10 | 1 | | ML | GRAY-BROWN SILT, TRACE FINE SAND. (VERY LOOSE) |
| | | | | | 25.2 | | | | | | 12 | | | (MEDIUM DENSE) |
| | | TV:2000+ | 35.0 | 16.9 | 26.4 | 104.2 | | | | 15 | P | | CL | GRAY SILTY CLAY. |
| | | | | | | | | | | | P | | | (STIFF) |
| | | | | | 17.8 | | | | | 20 | 57 | | ML | BROWN SILT, SOME FINE SAND. (VERY DENSE) |
| | | | | | | | | | 70.7 | 25 | 46 | | | BORING TERMINATED AT 25' ON 6-6-80 |
| | | | | | | | | | | | | | | WATER ENCOUNTERED AT 8.2' |
| | | | | | | | | | | 30 | | | | |
| | | | | | | | | | | 35 | | | | |
| | | | | | | | | | | 40 | | | | |
| | | | | | | | | | | 45 | | | | |
| | | | | | | | | | | 50 | | | | |
| | | | | | | | | | | 55 | | | | |
| | | | | | | | | | | 60 | | | | |

## LEGEND

- ⊠ — STANDARD PENETRATION TEST
- ■ — UNDISTURBED SOIL SAMPLE
- ◪ — DISTURBED SOIL SAMPLE
- □ — LOST SOIL SAMPLE
- CR — CORE RUN NO.
- 22 — BLOWS PER FOOT
- P — HYDRAULICALLY PUSHED
- TV — TORVANE TEST
- UC — UNCONFINED COMPRESSION TEST
- Gs — SPECIFIC GRAVITY
- C — CONSOLIDATION TEST
- PN — PENETROMETER

LOG OF BORING

Gilbert/Commonwealth

WASTE STORAGE TANK STUDY
SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

# BORING B-6

SURFACE ELEVATION 778'
COORDINATE 775 S - 2460 E
(APPROXIMATE)

| ELEV. IN FEET | OTHER TESTS | STRENGTH TEST (PSF) | ATTERBERG LIMITS: LIQUID LIMIT | ATTERBERG LIMITS: PLASTICITY INDEX | FIELD MOISTURE CONTENT (%) | DRY DENSITY (PCF) | PERCENT RECOVERY (%) | RQD | | DEEP IN FEET | BLOW COUNT | SAMPLES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | 5 | | |
| | | | | | | | | | | 10 | | |
| | | | | | | | | | | 15 | | |
| | | | | | | | | | | 20 | | |
| | | | | | | | | | | 25 | | |
| | | | | | | | | | | 30 | | |
| | | | | | | | | | | 35 | | |
| | | | | | | | | | | 40 | | |
| | | | | | | | | | | 45 | | |
| | | | | | | | | | | 50 | | |
| | | | | | | | | | | 55 | | |
| | | | | | | | | | | 60 | | |

| SYMBOLS | DESCRIPTION |
|---|---|
| CL | BROWN SANDY CLAY, COARSE SAND NOTED. |
| ML | BROWN SANDY SILT, TRACE CLAY, SATURATED. |
| SC | BROWN CLAYEY FINE TO MEDIUM SAND, LITTLE COARSE SAND, MOIST. |
| SM | BROWN SILTY FINE SAND, MOIST. BORING TERMINATED AT 12' ON 6-6-80 WATER ENCOUNTERED AT 3' |

## LEGEND

- ⊠ — STANDARD PENETRATION TEST
- ■ — UNDISTURBED SOIL SAMPLE
- ◪ — DISTURBED SOIL SAMPLE
- □ — LOST SOIL SAMPLE
- CR — CORE RUN NO.
- 22 — BLOWS PER FOOT
- P — HYDRAULICALLY PUSHED
- TV — TORVANE TEST
- UC — UNCONFINED COMPRESSION TEST
- Gs — SPECIFIC GRAVITY
- C — CONSOLIDATION TEST
- PN — PENETROMETER

LOG OF BORING

Gilbert/Commonwealth

WASTE STORAGE TANK STUDY
SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

# BORING B-7

SURFACE ELEVATION 746'
COORDINATE 1175 S - 3775E
(APPROXIMATE)

| ELEV. IN FEET | OTHER TESTS | SHEAR STRENGTH (PSF) | ATTERBERG LIMITS: LIQUID LIMIT | ATTERBERG LIMITS: PLASTICITY INDEX | FIELD MOISTURE CONTENT (%) | DRY DENSITY (PCF) | PERCENT RECOVERY (%) | RQD | DEPTH IN FEET | BLOW COUNT | SAMPLES | SYMBOLS | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | SW | BROWN MEDIUM TO COARSE SAND, TRACE FINE GRAVEL. (MEDIUM DENSE) |
| | | | | | | | | | 5 | 11 | ⊠ | | |
| | | | | | | | | | 10 | 16 | ⊠ | ML | BROWN SILT, TRACE FINE SAND. 9.5' GRADES TO GRAY |
| | | | | | | | | | 15 | 11 | ⊠ | | |
| | | | | | 23.9 | 108.2 | | | | 15 | ⊠ | CL | GRAY SILTY CLAY. (STIFF) |
| | | PN 4000 | | | | | | | | 16 | ⊠ | | |
| | | PN 7800 | | | | | | | 20 | 22 | ⊠ | | |
| | | | | | | | | | | 53 | ⊠ | ML | BROWN SILT, SOME FINE SAND. (VERY DENSE) |
| | | | | | | | | | 25 | | | | BORING TERMINATED AT 21.5' ON 6-6-80 |
| | | | | | | | | | | | | | WATER ENCOUNTERED AT 3.5' |
| | | | | | | | | | 30 | | | | |
| | | | | | | | | | 35 | | | | |
| | | | | | | | | | 40 | | | | |
| | | | | | | | | | 45 | | | | |
| | | | | | | | | | 50 | | | | |
| | | | | | | | | | 55 | | | | |
| | | | | | | | | | 60 | | | | |

## LEGEND

- ⊠ — STANDARD PENETRATION TEST
- ■ — UNDISTURBED SOIL SAMPLE
- ◪ — DISTURBED SOIL SAMPLE
- □ — LOST SOIL SAMPLE
- CR — CORE RUN NO.
- 22 — BLOWS PER FOOT
- P — HYDRAULICALLY PUSHED
- TV — TORVANE TEST
- UC — UNCONFINED COMPRESSION TEST
- Gs — SPECIFIC GRAVITY
- C — CONSOLIDATION TEST
- PN — PENETROMETER

LOG OF BORING

Gilbert/Commonwealth

HYDROGEOLOGIC STUDY
SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

# BORING OW-1

SURFACE ELEVATION 752.1
COORDINATE 1298 S - 3612E

| ELEV. IN FEET | OTHER TESTS | SHEAR STRENGTH TEST (PSF) | ATTERBERG LIMITS: LIQUID LIMIT | ATTERBERG LIMITS: PLASTICITY INDEX | FIELD MOISTURE CONTENT (%) | DRY DENSITY (PCF) | PERCENT RECOVERY (%) | RQD | % PASSING 200 SIEVE | DEEP IN FEET | BLOW COUNT | SAMPLES | SYMBOLS | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | SM | Brown fine to medium SAND, some silt. (Fill) (Medium Dense) |
| | | | | | | | | | | 5 | 10 | ☒ | | |
| | | | | | | | | | 8.6 | 10 | 15 | ☒ | SW SM | Varicolored fine to coarse SAND and fine gravel, trace silt. |
| | | | | | | | | | | 15 | 36 | ☒ | ML | Light gray-brown SILT, some fine sand. (Medium Dense) |
| | | | | | | | | | 87.2 | | 23 | ☒ | | |
| | | | | | | | | | | 20 | 46 | ☒ | | Grades to gray, thin clay seams noted. |
| | | | | | | | | | | | 17 | ☒ | | |
| | | | 28.4 | 11.6 | 22.4 | | | | 90.1 | 25 | 16 | ☒ | CL | Gray CLAY, trace silt, coarse sand noted. (Stiff) |
| | | | | | | | | | | | 15 | ☒ | | |
| | | | | | | | | | 68.8 | 30 | 49 | ☒ | ML | Gray SILT, some fine sand. (Very Dense) |
| | | | | | | | | | | 35 | 58 | ☒ | | |
| | | | | | | | | | 6.4 | 40 | 64 | ☒ | SP SM | Brown fine SAND, trace silt. (Very Dense) |
| | | | | | | | | | | 45 | | | | Boring terminated at 40' on 6/20/80. Water level encountered at 10.8' and 31.4' |
| | | | | | | | | | | 50 | | | | |
| | | | | | | | | | | 55 | | | | |
| | | | | | | | | | | 60 | | | | |

Monitoring wells were installed in two separate borings within a 5-foot diameter circle. All wells had a 10-foot long preslotted screen as the bottom section. The deep well had the screen tip at a depth of 40.0 feet; gravel packed to a depth of 27.5 feet; bentonite seal from a depth of 24.5 to 27.5 feet; and bentonite-cement grout from the bentonite seal to the ground surface. The shallow well had the screen tip at a depth of 19.3 feet; gravel packed to a depth of 5.0 feet; bentonite seal from a depth of 3.0 to 5.0 feet; and bentonite-cement grout from the bentonite seal to the ground surface.

## LEGEND

- ☒ — STANDARD PENETRATION TEST
- ■ — UNDISTURBED SOIL SAMPLE
- ◪ — DISTURBED SOIL SAMPLE
- □ — LOST SOIL SAMPLE
- CR — CORE RUN NO.
- 22 — BLOWS PER FOOT
- P — HYDRAULICALLY PUSHED
- TV — TORVANE TEST
- UC — UNCONFINED COMPRESSION TEST
- Gs — SPECIFIC GRAVITY
- C — CONSOLIDATION TEST
- PN — PENETROMETER

LOG OF BORING

Gilbert/Commonwealth

HYDROGEOLOGIC STUDY
SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

# BORING OW-2

SURFACE ELEVATION 753.8'
COORDINATE 1210S - 3336E

| ELEV IN FEET | OTHER TESTS | SHEAR STRENGTH TEST (PSF) | ATTERBERG LIMITS: LIQUID LIMIT | ATTERBERG LIMITS: PLASTICITY INDEX | FIELD MOISTURE CONTENT (%) | DRY DENSITY (PCF) | PERCENT RECOVERY (%) | RQD | DEEP IN FEET | BLOW COUNT | SAMPLES | SYMBOLS | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | SM | Brown fine to medium SAND, some silt, trace coarse sand. (Fill) (Loose) |
| | | | | | | | | | 5 | 2 | ⊠ | | |
| | | | | | | | | | | | | SM | Brown fine to medium SAND, some silt, moist. |
| | | | | | | | | | 10 | 10 | ⊠ | | |
| | | | | | | | | | | | | ML | Brown SILT, trace fine sand. (Medium Dense) |
| | | | | | | | | | 15 | 23 | ⊠ | | |
| | | | | | | | | | | 23 | ⊠ | | |
| | | | | | 26.0 | | | | | | | | |
| | | | | | 23.0 | | | | 20 | 13 | ⊠ | CL | Gray CLAY. (Stiff) |
| | | PN-1800 | | | | | | | | 29 | ⊠ | | |
| | | | | | | | | | | | | ML | Tan-brown SILT, some fine sand. |
| | | | | | | | | | 25 | 30 | ⊠ | | |
| | | | | | | | | | | | | | (Dense) |
| | | | | | | | | | 30 | 43 | ⊠ | | |
| | | | | | | | | | | | | SM | Tan-brown fine SAND, some silt, grades to gray. (Grades Very Dense) |
| | | | | | | | | | 35 | 51 | ⊠ | | |
| | | | | | | | | | | | | | Clayballs noted, grades coarser. |
| | | | | | | | | | 40 | 105 | ⊠ | | |
| | | | | | | | | | | | | | Boring terminated at 40' on 6/23/80. Water level encountered at 10.7' and 27.7'. |
| | | | | | | | | | 45 | | | | |
| | | | | | | | | | 50 | | | | |
| | | | | | | | | | 55 | | | | |
| | | | | | | | | | 60 | | | | |

## LEGEND

- ⊠ — STANDARD PENETRATION TEST
- ■ — UNDISTURBED SOIL SAMPLE
- ◪ — DISTURBED SOIL SAMPLE
- □ — LOST SOIL SAMPLE
- CR — CORE RUN NO.
- 22 — BLOWS PER FOOT
- P — HYDRAULICALLY PUSHED
- TV — TORVANE TEST
- UC — UNCONFINED COMPRESSION TEST
- Gs — SPECIFIC GRAVITY
- C — CONSOLIDATION TEST
- PN — PENETROMETER

Monitoring wells were installed in two separate borings within a 5-foot diameter circle. All wells had a 10-foot long preslotted screen as the bottom section. The deep well had the screen tip at a depth of 35.5 feet; gravel packed to a depth of 22.0 feet; bentonite seal from a depth of 19.0 to 22.0 feet; and bentonite-cement grout from the bentonite seal to the ground surface. The shallow well had the screen tip at a depth of 19.5 feet; gravel packed to a depth or 7.0 feet; bentonite seal from a depth of 4.0 to 7.0 feet; and bentonite-cement grout from the bentonite seal to the ground surface.

LOG OF BORING

Gilbert/Commonwealth

HYDROGEOLOGIC STUDY
SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

# BORING OW-3

SURFACE ELEVATION 760.7
COORDINATE 897S - 3512E

| ELEV IN FEET | OTHER TESTS | SHEAR STRENGTH TEST (PSF) | ATTERBERG LIMITS: LIQUID LIMIT | ATTERBERG LIMITS: PLASTICITY INDEX | FIELD MOISTURE CONTENT (%) | DRY DENSITY (PCF) | PERCENT RECOVERY (%) | RQD | | DEEP IN FEET | BLOW COUNT | SAMPLES | SYMBOLS | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 38.6 | 5 | 9 | ⊠ | SM | Brown fine to coarse SAND and SILT. (Fill) (Loose) |
| | | | | | | | | | | 10 | 10 | ⊠ | | |
| | | | | | | | | | 74.7 | 15 | 32 | ⊠ | ML | Brown SILT, some fine sand. Grades to gray. (Graded Dense) |
| | | PN-2750 | 30.4 | 13.0 | 19.2 | | | | | 20 | 17 | ⊠ | CL | Gray CLAY. (Stiff) Grades with silt seams. |
| | | PN-3700 | | | | | | | | | 29 | ⊠ | | Grades with silt seams. |
| | | | | | | | | | 71.2 | 25 | 72 | ⊠ | ML | Gray SILT, some fine sand. (Very Dense) |
| | | | | | | | | | | 30 | 37 | ⊠ | | (Grades Dense) Grades to tan. |
| | | | | | | | | | | 35 | 60 | ⊠ | SM | Brown fine SAND, trace silt. (Very Dense) |
| | | | | | | | | | | 40 | 78 | ⊠ | | Boring terminated at 40.5' on 6/25/80. Water level encountered at 7.7' and 33.7' |
| | | | | | | | | | | 45 | | | | |
| | | | | | | | | | | 50 | | | | |
| | | | | | | | | | | 55 | | | | |
| | | | | | | | | | | 60 | | | | |

## LEGEND

- ⊠ — STANDARD PENETRATION TEST
- ■ — UNDISTURBED SOIL SAMPLE
- ◪ — DISTURBED SOIL SAMPLE
- □ — LOST SOIL SAMPLE
- CR — CORE RUN NO.
- 22 — BLOWS PER FOOT
- P — HYDRAULICALLY PUSHED
- TV — TORVANE TEST
- UC — UNCONFINED COMPRESSION TEST
- Gs — SPECIFIC GRAVITY
- C — CONSOLIDATION TEST
- PN — PENETROMETER

Monitoring wells were installed in two separate borings within a 5-foot diameter circle. All wells had a 10-foot long preslotted screen as the bottom section. The deep well had the screen tip at a depth of 40.0 feet; gravel packed to a depth of 22.0 feet; bentonite seal from a depth of 19.0 to 22.0 feet; and bentonite-cement grout from the bentonite seal to the ground surface. The shallow well had the screen tip at a depth of 17.0 feet; gravel packed to a depth of 6.0 feet; bentonite seal from a depth of 3.0 to 6.0 feet; and bentonite-cement grout from the bentonite seal to the ground surface.

LOG OF BORING

Gilbert/Commonwealth

HYDROGEOLOGIC STUDY
SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

# BORING OW-4

SURFACE ELEVATION 744.9'
COORDINATE 1276 S-3762E

| ELEV IN FEET | OTHER TESTS | SHEAR STRENGTH TEST (PSF) | ATTERBERG LIMITS: LIQUID LIMIT | ATTERBERG LIMITS: PLASTICITY INDEX | FIELD MOISTURE CONTENT (%) | DRY DENSITY (PCF) | PERCENT RECOVERY (%) | RQD | | DEEP IN FEET | BLOW COUNT | SAMPLES | SYMBOLS | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 2.4 | 5 | 12 | | SW | Brown fine to coarse SAND. (Medium Dense) |
| | | | | | | | | | | 10 | 27 | | | |
| | | | | | | | | | 990 | 15 | 18 | | ML | Tan SILT, trace fine sand. (Medium Dense) |
| | | | | | | | | | | | 21 | | | Grades to gray. |
| | | | | | | | | | | 20 | 12 | | CL | Gray CLAY. (Stiff) |
| | PN-2250 | | 31.6 | 11.7 | 23.0 | | | | | | 14 | | | |
| | | | | | | | | | | 25 | 13 | | | |
| | | | | | | | | | 61.6 | 30 | 47 | | ML | Gray SILT, some fine sand. (Dense) |
| | | | | | | | | | | 35 | 69 | | | |
| | | | | | | | | | | | | | SM | Gray fine SAND, trace silt. (Very Dense) |
| | | | | | | | | | 6.7 | 40 | 62 | | | Boring terminated at 40' on 6/26/80 Water level encountered at 4.5' and 28.0' |
| | | | | | | | | | | 45 | | | | |
| | | | | | | | | | | 50 | | | | |
| | | | | | | | | | | 55 | | | | |
| | | | | | | | | | | 60 | | | | |

Monitoring wells were installed in two separate borings within a 5-foot diameter circle. All wells had a 10-foot long preslotted screen as the bottom section. The deep well had the screen tip at a depth of 37.0 feet; gravel packed to a depth of 24.0 feet; bentonite seal from a depth of 21.0 to 24.0 feet; and bentonite-cement grout from the bentonite seal to the ground surface. The shallow well had the screen tip at a depth of 13.5 feet; gravel packed to a depth of 3.0 feet; bentonite seal from a depth of 1.0 to 3.0 feet; and bentonite-cement grout from the bentonite seal to the ground surface.

## LEGEND

- ⊠ — STANDARD PENETRATION TEST
- ■ — UNDISTURBED SOIL SAMPLE
- ◪ — DISTURBED SOIL SAMPLE
- □ — LOST SOIL SAMPLE
- CR — CORE RUN NO.
- 22 — BLOWS PER FOOT
- P — HYDRAULICALLY PUSHED
- TV — TORVANE TEST
- UC — UNCONFINED COMPRESSION TEST
- Gs — SPECIFIC GRAVITY
- C — CONSOLIDATION TEST
- PN — PENETROMETER

LOG OF BORING

Gilbert/Commonwealth

HYDROGEOLOGIC STUDY
SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

# BORING OW-5

SURFACE ELEVATION 719.6
COORDINATE 1532 S - 3528E

| ELEV IN FEET | OTHER TESTS | SHEAR STRENGTH TEST (PSF) | ATTERBERG LIMITS: LIQUID LIMIT | ATTERBERG LIMITS: PLASTICITY INDEX | FIELD MOISTURE CONTENT (%) | DRY DENSITY (PCF) | PERCENT RECOVERY (%) | RQD | DEPTH IN FEET | BLOW COUNT | SAMPLES | SYMBOLS | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | SM | Gray fine to coarse SAND, some silt and clay. |
| | | | | | | | | | 5 | 15 | ⊠ | SW | Tan fine to medium SAND, trace coarse sand and silt. |
| | | | | | | | | | 10 | 2 | ⊠ | ML · CL | Dark gray to black clayey SILT, trace fine sand, organic material and coarse sand noted. (Loose) |
| | | | | | 21.7 | | | | 15 | 8 | ⊠ | SC | Gray fine SAND, some clay |
| | | | | | | | | | | | | | Boring terminated at 16' on 6/24/80 Water level encountered at 4.5' |
| | | | | | | | | | 20 | | | | |
| | | | | | | | | | 25 | | | | |
| | | | | | | | | | 30 | | | | |
| | | | | | | | | | 35 | | | | |
| | | | | | | | | | 40 | | | | |
| | | | | | | | | | 45 | | | | |
| | | | | | | | | | 50 | | | | |
| | | | | | | | | | 55 | | | | |
| | | | | | | | | | 60 | | | | |

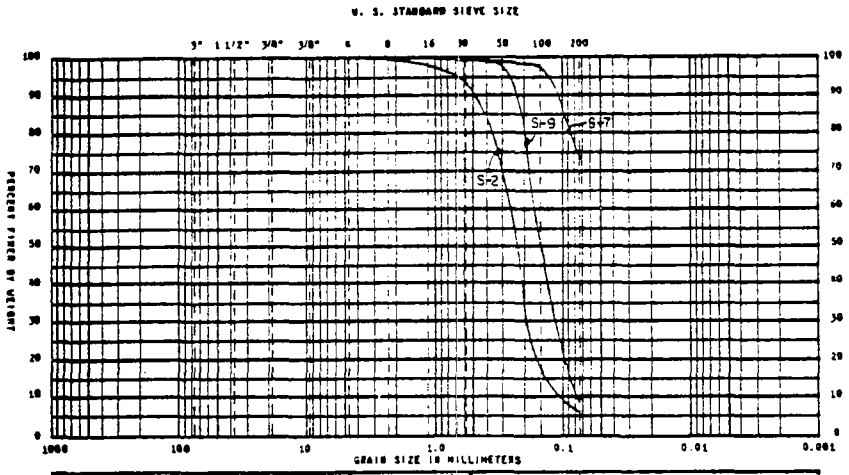
Monitoring well was installed with a 10-foot long preslotted screen as the bottom section. The well had the screen tip at a depth of 15.0 feet; gravel packed to a depth of 4.0 feet; bentonite seal from a depth of 2.5 to 4.0 feet; and bentonite-cement grout from the bentonite seal to the ground surface.

## LEGEND

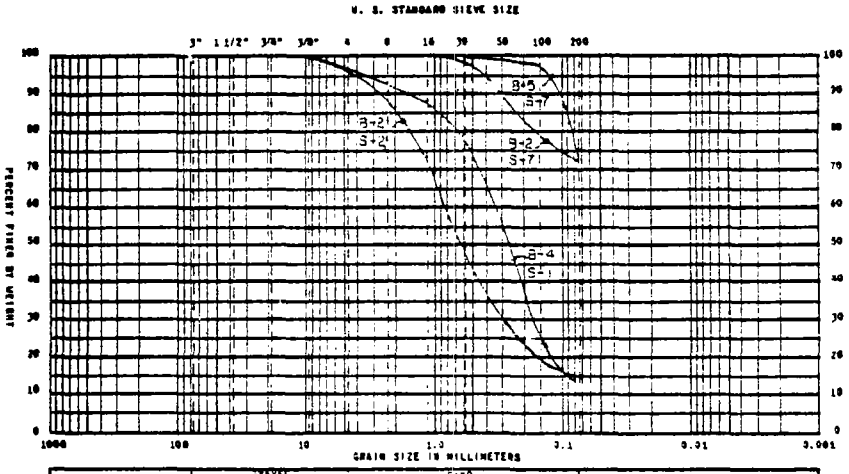
- ⊠ — STANDARD PENETRATION TEST
- ■ — UNDISTURBED SOIL SAMPLE
- ◪ — DISTURBED SOIL SAMPLE
- □ — LOST SOIL SAMPLE
- CR — CORE RUN NO.
- 22 — BLOWS PER FOOT
- P — HYDRAULICALLY PUSHED
- TV — TORVANE TEST
- UC — UNCONFINED COMPRESSION TEST
- Gs — SPECIFIC GRAVITY
- C — CONSOLIDATION TEST
- PN — PENETROMETER

LOG OF BORING

Gilbert/Commonwealth




| BORING | DEPTH | CLASSIFICATION | NAT. WC | LL | PL | PI |
|---|---|---|---|---|---|---|
| B-1 | 5-6.5 (S-2) | SP-SM FINE-MEDIUM SAND | | | | |
| B-1 | 23.5-25 (S-7) | ML LIGHT BROWN SILT | | | | |
| B-1 | 33.5-35 (S-9) | SP-SM BROWN FINE SAND | | | | |




| BORING | DEPTH | CLASSIFICATION | NAT. WC | LL | PL | PI |
|---|---|---|---|---|---|---|
| B-2 | 5-6.5 (S-2) | SM SILTY FINE-COARSE SAND | | | | |
| B-2 | 20-21.5 (S-7) | ML GRAY-BROWN SILT | | | | |
| B-4 | 2.5-4 (S-1) | SM SILTY FINE MEDIUM SAND | | | | |
| B-5 | 23.5-25 (S-7) | ML BROWN SILT | | | | |

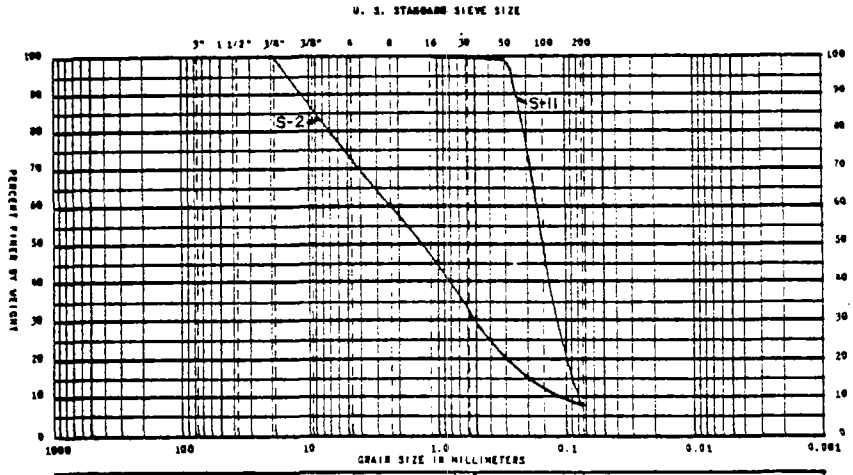
# SWS SILICONES CORPORATION

ADRIAN, MICHIGAN

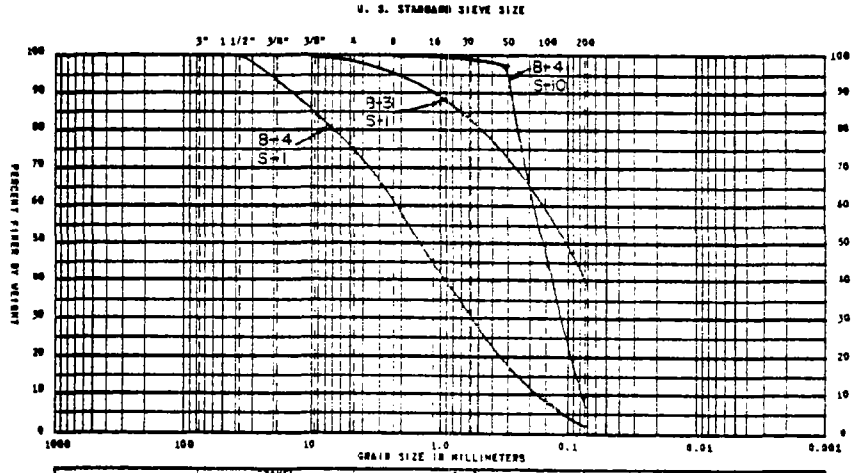
HYDROGEOLOGIC STUDY

Gilbert Commonwealth Companies

GRADATION CURVES




| BORING | DEPTH | CLASSIFICATION | LL | PL | PI |
|---|---|---|---|---|---|
| B-1 | 8.5-10' (S-2) | SP-SM FINE-COARSE GRAVELLY SAND | | | |
| B-1 | 38.5-40 (S-11) | SP-SM FINE SAND | | | |




| BORING | DEPTH | CLASSIFICATION | | LL | PL | PI |
|---|---|---|---|---|---|---|
| B-3 | 3.5-5' (S-1) | SM | SILTY FINE-COARSE SAND | | | |
| B-4 | 3.5'-5' (S-1) | SW | FINE-COARSE GRAVELLY SAND | | | |
| B-4 | 38.5-40 (S-10) | SP-SM | FINE SAND | | | |

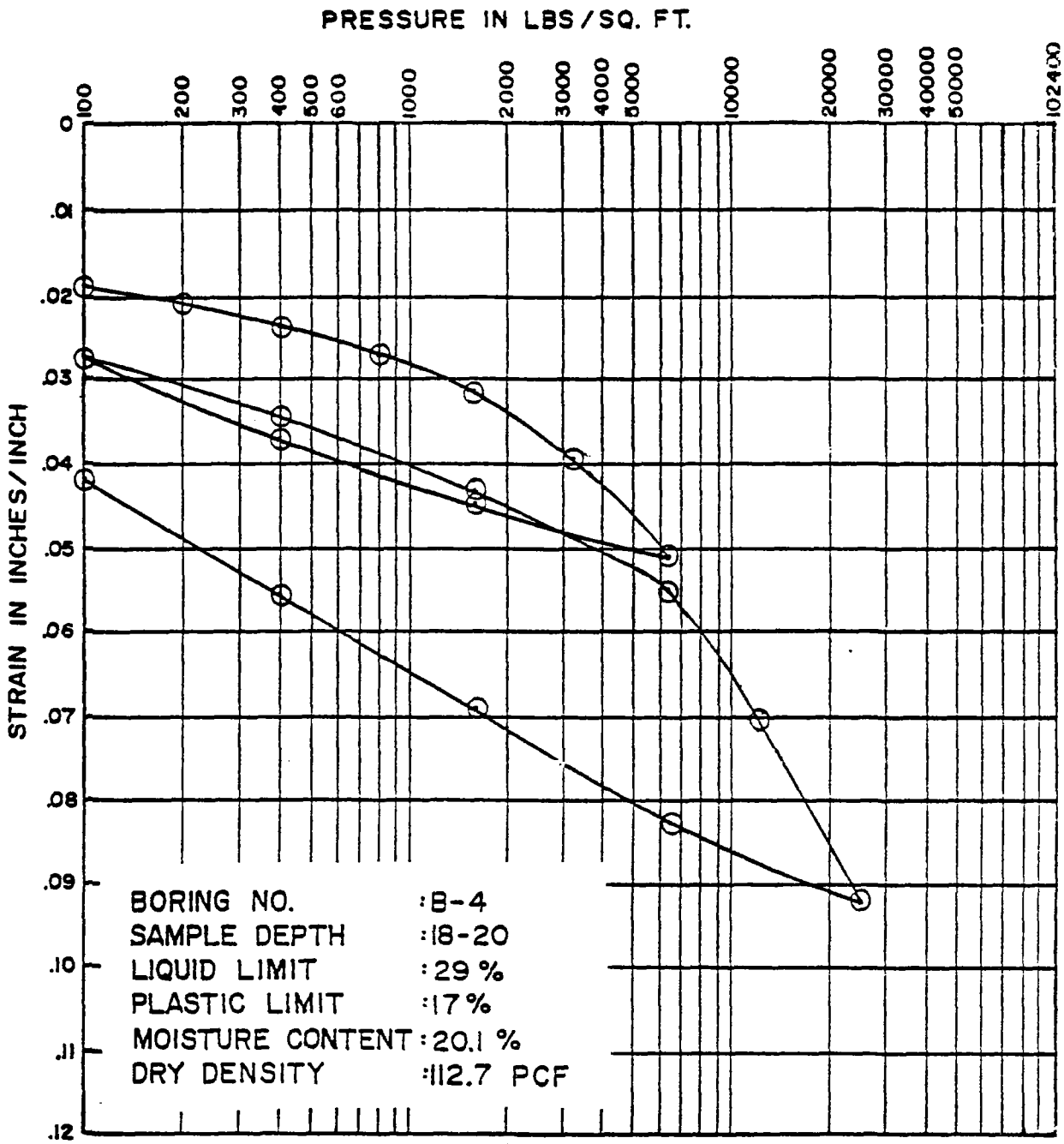
SWS SILICONES CORPORATION

ADRIAN, MICHIGAN

HYDROGEOLOGIC STUDY

Gilbert Commonwealth

GRADATION CURVES




# CONSOLIDATION TEST DATA

HYDROGEOLOGIC STUDY
SWS SILICONES CORPORATION
ADRIAN, MICHIGAN

Gilbert/Commonwealth
ENGINEERS/CONSULTANTS Reading,PA/Jackson,MI

APPENDIX B

PROCEDURES FOR INSTALLATION OF
MONITORING WELLS FOR SWS
SILICONES - ADRIAN, MICHIGAN

I. GENERAL

A. Monitoring wells will be installed at the locations as specified on Plate 2. The depth at which the monitoring well is installed is dependent on the depth to the water table.

B. The use of bentonite drilling mud or "revert" in these borings will not be permitted unless approved by engineer (CAI).

C. Due to the type and quality of water sampling to be performed from these wells, no PVC glue will be permitted to be introduced into the well which has cured for less than 24 hours.

D. The top of the observation wells shall be 3 feet above the existing ground, be clearly marked with the monitoring well number, and supplied with a vented cap.

E. The bottom of the monitoring well shall be sealed with a cap.

F. Installation of monitoring wells below the first clay layer requires special drilling procedures.

G. Plate B-1 shows typical well installations.

II. MATERIALS

A. The monitoring wells shall be constructed using 2-inch diameter Schedule 80 rigid PVC pipe, threaded couplings, caps, and the appropriate cement.

B. Screens shall consist of 10-foot long preslotted PVC sections. Number 10 slot size shall be used unless substitutes are approved by SWS.

C. The gravel pack shall consist of washed sand, gravel, or a mixture of sand and gravel such that 90 percent will be retained by the slot size.

D. Bentonite in pellet form and equivalent to naturally occurring Wyoming bentonite whall be used for the bentonite seal above the gravel pack.

III. PROCEDURE FOR DRILLING

A. Borings shall be made with heavy duty rotary drilling equipment of a size and type designed to drill holes of 4 to 6 inches in diameter. Drilling units shall be equipped with hydraulic feed. All drilling shall be accomplished using "A" size or larger drilling rods. Borings will be held open either by circulating a drilling fluid approved by Stauffer Chemical Company or by the use of casing.

B. Standard Penetration Tests performed at 2-1/2 to 5 feet intervals or at change in stratigraphy will be used to determine physical properties, stratigraphy, and thickness of the various soil strata encountered.

C. Special Drilling Procedures: Borings penetrating the upper confining layer of clay require casing to be set into the clay prior to penetration of the layer. The existing drilling fluid will be flushed

from the casing and a new, clean drilling fluid used for advancing the hole. Disposal of the drilling fluid shall be as specified by SWS.

D. Each boring shall be advanced using flight augers, tricone, fish tail or other bits as approved by the engineer (CAI), hollow stem augers will not be permitted for installing monitoring wells.

IV. PROCEDURE FOR INSTALLING MONITORING WELLS

A. After drilling is completed, the casing will be washed out leaving it filled with relatively clean water. If no casing is used, the drilling fluid will be thinned out but left thick enough for the hole to stand open.

B. The well pipe will be lowered to a depth such that the top 10 feet of the water table will be monitored. The depth to the bottom of the well pipe and location of the screen in relation to the bottom will be recorded.

C. The gravel pack will be poured into the hole while at the same time pulling the casing (if used). The casing will be pulled up to within 1 foot of the top of the gravel pack.

D. After completing the installation of the gravel pack to the specified depth (see Section IV F) an approximately 3-foot thick bentonite seal will be installed to prevent migration of water from overlying strata into the screened section of the monitoring well. Casing will be pulled as required to obtain an effective bentonite seal.

E. A cement/bentonite grout will be installed from the bentonite seal to the ground surface. At the ground surface a 2-foot diameter cement cap, mounded to provide drainage radially away from the PVC pipe, anchored at least 6 inches into the ground surface at its perimeter will be installed. Casing will be pulled while maintaining a suitable head of grout to obtain a continuous grout seal from the bentonite seal to the ground surface.

F. Location of Bentonite Seal

1. Monitoring wells extending below the upper confining clay layer will be gravel packed to the base of the clay; the bentonite seal will be predominantly within the clay layer; cement/bentonite grout will extend from the upper part of the clay layer to the ground surface.

2. Monitoring wells seated above the clay layer will be gravel packed to 1 foot above the top of the screened section or as directed by the engineer (CAI); the bentonite seal will be installed above the gravel pack and the cement/bentonite grout above the bentonite seal to the ground surface.

G. Cleaning out of monitoring wells

1. Due to the nature of the possible contaminants, pumping or bailing will be used to clean out the piezometers after installation. If significant sediment is present, an air hose should be lowered to the bottom of the monitoring well to blow the sediment out.

2. After installation of the monitoring well or blowing out of sediment, bailing or pumping should be performed approximately three times a day for 1 week to remove drilling fluid or aerated water.

H. Monitoring wells will be supplied with vented caps to exclude surface water or sediment contamination.

The following plate is attached and completes this appendix.

Plate B-1 - Typical Monitoring Well Installation

8-5-80

Form Approved OMB No. 158-S79C:6
G... No. 0246-EPA-OT

Please print or type with ELITE type (12 charact... /inch) in the unshaded areas only.

EPA

U.S. ENVIRO...ENTAL PROTECTION AGENCY

# NOTIFICATION OF HAZARDOUS WASTE ACTIVITY

| | |
|---|---|
| INSTALLATION'S EPA I.D. NO. | [redacted] MID075400671 |
| I. NAME OF INSTALLATION | 3901 Sutton |
| II. INSTALLATION MAILING ADDRESS | ~~STAUFFER CHEMICAL COMPANY~~ ~~PO BOX 420~~ ADRIAN, MI 49221 |
| III. LOCATION OF INSTALLATION | SUTTON RD ADRIAN, MI 49221 |

000561 AUG 12 80

**INSTRUCTIONS:** If you received a preprinted label, affix it in the space at left. If any of the information on the label is incorrect, draw a line through it and supply the correct information in the appropriate section below. If the label is complete and correct, leave Items I, II, and III below blank. If you did not receive a preprinted label, complete all items. "Installation" means a single site where hazardous waste is generated, treated, stored and/or disposed of, or a transporter's principal place of business. Please refer to the INSTRUCTIONS FOR FILING NOTIFICATION before completing this form. The information requested herein is required by law *(Section 3010 of the Resource Conservation and Recovery Act).*

DETACH

## FOR OFFICIAL USE ONLY

COMMENTS: C

| INSTALLATION'S EPA I.D. NUMBER | APPROVED | DATE RECEIVED (yr., mo., & day) |
|---|---|---|
| F MID075400671 [redacted] 1 | A | 800812 |

## I. NAME OF INSTALLATION

SWS SILICONES CORPORATION

## II. INSTALLATION MAILING ADDRESS

STREET OR P.O. BOX: 3 SUTTON ROAD

| CITY OR TOWN | ST. | ZIP CODE |
|---|---|---|
| | | |

## III. LOCATION OF INSTALLATION

STREET OR ROUTE NUMBER: 5 SAME

| CITY OR TOWN | ST. | ZIP CODE |
|---|---|---|
| 6 | | |

## IV. INSTALLATION CONTACT

| NAME AND TITLE (last, first, & job title) | PHONE NO. (area code & no.) |
|---|---|
| 2 CALAMUNGI JOSEPH, DIR OF ~~MANUF~~ FG | 517-263-5711 |

## V. OWNERSHIP

A. NAME OF INSTALLATION'S LEGAL OWNER: 8 STAUFFER CHEMICAL COMPANY

DETACH

B. TYPE OF OWNERSHIP (enter the appropriate letter into box): F = FEDERAL; M = NON-FEDERAL — M

## VI. TYPE OF HAZARDOUS WASTE ACTIVITY (enter "X" in the appropriate box(es))

- [X] A. GENERATION
- [ ] B. TRANSPORTATION (complete item VII)
- [X] C. TREAT/STORE/DISPOSE
- [ ] D. UNDERGROUND INJECTION

## VII. MODE OF TRANSPORTATION (transporters only – enter "X" in the appropriate box(es))

- [ ] A. AIR
- [ ] B. RAIL
- [ ] C. HIGHWAY
- [ ] D. WATER
- [ ] E. OTHER (specify):

## VIII. FIRST OR SUBSEQUENT NOTIFICATION

Mark "X" in the appropriate box to indicate whether this is your installation's first notification of hazardous waste activity or a subsequent notification. If this is not your first notification, enter your Installation's EPA I.D. Number in the space provided below.

- [X] A. FIRST NOTIFICATION
- [ ] B. SUBSEQUENT NOTIFICATION (complete item C)

C. INSTALLATION'S EPA I.D. NO.: [redacted]

## IX. DESCRIPTION OF HAZARDOUS WASTES

Please go to the reverse of this form and provide the requested information.

EPA Form 8700-12 (6-80)

AUG 12 1980

CONTINUE ON REVERSE

I.D. – FOR OFFICIAL USE ONLY

| S | | | | | | | | | | | | | | T/A | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| W | M | [redacted] | | | | | | | | | | 4 | | 2 | 1 |
| 1 | 2 | | | | | | | | | | | 13 | 14 | | 15 |

## IX. DESCRIPTION OF HAZARDOUS WASTES *(continued from front)*

A. HAZARDOUS WASTES FROM NON–SPECIFIC SOURCES. Enter the four–digit number from 40 CFR Part 261.31 for each listed hazardous waste from non–specific sources your installation handles. Use additional sheets if necessary.

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| F002 | F003 | F005 | | | |
| 7 | 8 | 9 | 10 | 11 | 12 |
| | | | | | |

B. HAZARDOUS WASTES FROM SPECIFIC SOURCES. Enter the four–digit number from 40 CFR Part 261.32 for each listed hazardous waste from specific industrial sources your installation handles. Use additional sheets if necessary.

| 13 | 14 | 15 | 16 | 17 | 18 |
|---|---|---|---|---|---|
| | | | | | |
| 19 | 20 | 21 | 22 | 23 | 24 |
| | | | | | |
| 25 | 26 | 27 | 28 | 29 | 30 |
| | | | | | |

C. COMMERCIAL CHEMICAL PRODUCT HAZARDOUS WASTES. Enter the four–digit number from 40 CFR Part 261.33 for each chemical substance your installation handles which may be a hazardous waste. Use additional sheets if necessary.

| 31 | 32 | 33 | 34 | 35 | 36 |
|---|---|---|---|---|---|
| U002 | U056 | U069 | U122 | U123 | U154 |
| 37 | 38 | 39 | 40 | 41 | 42 |
| U226 | U239 | | | | |
| 43 | 44 | 45 | 46 | 47 | 48 |
| | | | | | |

D. LISTED INFECTIOUS WASTES. Enter the four–digit number from 40 CFR Part 261.34 for each listed hazardous waste from hospitals, veterinary hospitals, medical and research laboratories your installation handles. Use additional sheets if necessary.

| 49 | 50 | 51 | 52 | 53 | 54 |
|---|---|---|---|---|---|
| | | | | | |

E. CHARACTERISTICS OF NON–LISTED HAZARDOUS WASTES. Mark "X" in the boxes corresponding to the characteristics of non–listed hazardous wastes your installation handles. *(See 40 CFR Parts 261.21 – 261.24.)*

[X] 1. IGNITABLE (D001) [X] 2. CORROSIVE (D002) [X] 3. REACTIVE (D003) [X] 4. TOXIC (D000)

## X. CERTIFICATION

*I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.*

| SIGNATURE | NAME & OFFICIAL TITLE *(type or print)* | DATE SIGNED |
|---|---|---|
| Joseph Calamungi | Joseph Calamungi<br>Director of Manufacturing | 8/5/80 |

DETACH

# SWS Silicones Corporation

ADRIAN, MICHIGAN 49221 · TELEPHONE (517) 263-5711

July 31, 1980

Mr. Tim Jaski
State of Michigan
Department of Natural Resources
District #1 Engineer
Water Quality Division
Pte. Mouillee State Game Area
Route #2
Rockwood, Michigan 48173

Re: Waste Treatment Tanks

Dear Mr. Jaski:

This is to confirm our telephone conversation of Tuesday, July 29, 1980, concerning the installation of the two 400,000 gallon waste treating tanks at our facilities here in Adrian.

As you know, we are installing the treating tanks in order to eliminate the usage of the evaporation (settling) pond and to allow closing of this pond.

As agreed, we are installing the two treating tanks as per accepted construction practice for large API tanks. There will be six inches deep of oil-impregnated-sand under each tank, in order to allow proper support of the tanks. The tanks are being installed on a clay layer, with a five foot deep ring-wall foundation.

Yours truly,

SWS SILICONES CORPORATION

Gordon C. Philbrook

Gordon C. Philbrook
Environmental Control Coordinator

GCP:jb

xc: John Bokinsky / WRD files
Scott Ross

xc: D. Batchelor
R. Babcock
C. Beck
W. Iversen
L. Fink

RECEIVED
AUG 04 1980
PTE. MOUILLEE S.G.A.

6-16-80

# MODIFIED LEGRAND ASSESSMENT

| COUNTY | OWN. STAT. | SITE CLASS. | SITE NUMBER | SITE LOCATION | STEP 10 |
|---|---|---|---|---|---|
| Lenawee | IND | ACDE | | 4606S04E21AA | 39 |

NAME: (A) OWNER B) OPERATOR C) COMPLAINTANT D) APPLICANT E) NONE

A S.W.S. SILICONES CORP.

MAILING ADDRESS

PO BOX 428

| CITY | STATE | ZIP CODE | AREA CODE | TELEPHONE NUMBER |
|---|---|---|---|---|
| ADRIAN | MI | 49221 | 517 | 263-5711 |

| DATE ASSESSED | SIC CODE | WASTE ID | SITE STATUS | HYDROGEO REPORT? |
|---|---|---|---|---|
| 06-16-80 | 2822 | E 2008 | A | 1 B 2 A 3 B 4 Paul Roux Hydrogeologist Stauffer Chemical Co. |

| STEP 1 * | STEP 2 * | STEP 3 Q * | STEP 4 | STEP 5 * | STEP 6 | STEP 7 | STEP 8 | STEP 9 | MISCELLANEOUS IDENTIFIERS |
|---|---|---|---|---|---|---|---|---|---|
| 9C2 | 5A2 | 9B2 | 23 | 8C1 | 3 | 5 | 08 | 7 | AT |

BOX 1 Has the groundwater or surface water quality in the site area been adversely affected? 1) YES 2) NO (3) UNKNOWN

Explain: methyl chloroform was found at levels of 0.3 mg/l in outfall 001 in sept 1979. However no further sampling or testing of outfall has been done

3

BOX 2 Have drinking water wells in the site area been adversely affected? If so, what type? 1) YES 2) NO (3) UNKNOWN

Explain: No sampling of water supply wells on site [illegible] area has been done

3

REPRESENTATIVE WELL RECORD

Location

* A) 11 wells/ borings 1 16 sq. mi. @ ≈200 ft.

** B) 40 wells/ 1/16 sq. mi. @ 40 ft.

C) 44 wells/ 2 sq. mi. @ 65 ft.

D) ___ wells/ ___ sq. mi. @ ___ ft.

| * Lithology | Thickness | DTB |
|---|---|---|
| A) fine to med sand some clay lenses | 0-90 | 90 |
| blue clay sand lenses | 70 | 160 |
| sand & gravel, | 65 | 225 |
| shale bedrock lime, and ss | 283 | 508 bottom of test well #1 |
| ** B) sand, gravel, some silt and clay lenses | 40 | 40 |
| C) sand & gravel Representative logs attached | 65 | 65 |

* 11 test wells and borings on site property records on SWS map 3a enclosure

** 38 soil boring on site to ≈40 ft

shown on SWS [illegible]

C.P.

COMMENTS

1) The site has landfilled 100 barrels of waste in 9-27-72. In addition unlined seepage lagoon containing liquids and sludges is located on site. Contents are liquids - semi liquids and solids

2) SIC codes - The plant manufactures silicones adhesives sealants, elastomers, RTV, tire paints, tire rubber etc 500 to 700 different processes have been carried out at the plant. SIC codes are 2891 and 2822

3. waste id - from Table II - the following compounds have been utilized at the plant
- methyl chloroform 1-1-1 trichloroethylene
- solvents
- Dechlorane
- halogenated hydrocarbons
- Alipatic hydrocarbons
- Alcohols
- Aromatic hydrocarbons
- Anilines
- phenols
- bromonated hydrocarbons
- mirex
- heavy metals See comments under #6

Step 3 based on halogenated hydrocarbons 2006
Qualifier - high toxicity, large volumes, high concentrations

4. A hydrogeologic study is presently being conducted at the site of the seepage lagoon. The proposed study plan has received approval but the company has been requested to expand the study to include other possible source areas such as the buried barrels

3 E.M. Iversen 6-16-80

5. In 9-27-72 the company buried ≈ 100 barrels of trichlorsilane in area shown on map 2 SWS. The barrels were covered with sandy soil and topsoil. No monitoring wells exist around barrels. Office of Toxic states the mixed silanes will hydrolize to a gelantinous mass and HCL acid.

6. The unlined seepage lagoon on site received ≈ 30,000 gallons per month of wash water, bad batches, bailer blowdown, and sump residues since 1968. A Sept 1979 sample survey by point source studies ESD indicated over 50 mg/l of methyl chloroform in lagoon with TOC levels of 1780 mg/l and BOD of 2000 mg/l. Outfall 001 also showed methyl chloroform at 0.2 - 0.3 mg/l levels

7. Step 5 potential endangerment to water supply
case A - no water supply wells exist within 1 mile. in anticipated direction of flow which is towards Raisin River.

case B - no surface water supply located within 1 mi of site

case C - River Raisin within 1000 ft of lagoon site - swamp connected to River is within 660 ft of discharge site. 8c

Case D - 3D - 2 production 200 gpm wells located at company development lab 3100 ft NW from lagoon. Residential wells located 1800 ft north of lagoon

8. miscellaneous identifiers - The facility production wells are located in an artesian aquifer. approx 70 ft of clay overlies the production zone.

9. The following files were utilized in the assessment.
Water Quality Division Files
Geological Survey Div well Logs Files
Maps and soil boring from SWS silicones submitted 5-14-80
Preliminary assessment

10. Company served with N.O.V. Feb 5, 1980 for methylchloroform in outfall 001. and use of unpermitted seepage lagoon. Asked to cease discharge and conduct hydrogeological survey. Study is now in progress.

# EPA Notification of Hazardous Waste Site

1490

United States Environmental Protection Agency
Washington DC 20460

This initial notification information is required by Section 103(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 and must be filed by June 9, 1981.

Please type or print in ink. If you need additional space, use separate sheets of paper. Indicate the letter of the item which applies.

**Person Required to Notify:**
Enter the name and address of the person or organization required to notify.

Name: SWS SILICONES CORPORATION
Street: 3901 Sutton Road
City: Adrian State: MI Zip Code: 49221

**Site Location:**
Enter the common name (if known) and actual location of the site.

Name of Site: SWS SILICONES CORPORATION
Street: 3901 Sutton Road
City: Adrian County: Lenawee State: MI Zip Code: 49221

**Person to Contact:**
Enter the name, title (if applicable), and business telephone number of the person to contact regarding information submitted on this form.

Name (Last, First and Title): Calamungi, Joseph - Director of Manufacturing
Phone: (517) 263-5711

**Dates of Waste Handling:**
Enter the years that you estimate waste treatment, storage, or disposal began and ended at the site.

From (Year): 1965 To (Year): 1980

**Waste Type:** Choose the option you prefer to complete

**Option I:** Select general waste types and source categories. If you do not know the general waste types or sources, you are encouraged to describe the site in Item I—Description of Site.

**General Type of Waste:**
Place an X in the appropriate boxes. The categories listed overlap. Check each applicable category.

1. ☐ Organics
2. ☐ Inorganics
3. ☒ Solvents
4. ☐ Pesticides
5. ☒ Heavy metals
6. ☒ Acids
7. ☒ Bases
8. ☐ PCBs
9. ☐ Mixed Municipal Waste
10. ☐ Unknown
11. ☐ Other (Specify)

**Source of Waste:**
Place an X in the appropriate boxes.

1. ☐ Mining
2. ☐ Construction
3. ☐ Textiles
4. ☐ Fertilizer
5. ☐ Paper/Printing
6. ☐ Leather Tanning
7. ☐ Iron/Steel Foundry
8. ☒ Chemical, General
9. ☐ Plating/Polishing
10. ☐ Military/Ammunition
11. ☐ Electrical Conductors
12. ☐ Transformers
13. ☐ Utility Companies
14. ☐ Sanitary/Refuse
15. ☐ Photofinish
16. ☐ Lab/Hospital
17. ☐ Unknown
18. ☐ Other (Specify)

**Option 2:** This option is available to persons familiar with the Resource Conservation and Recovery Act (RCRA) Section 3001 regulations (40 CFR Part 261).

**Specific Type of Waste:**
EPA has assigned a four-digit number to each hazardous waste listed in the regulations under Section 3001 of RCRA. Enter the appropriate four-digit number in the boxes provided. A copy of the list of hazardous wastes and codes can be obtained by contacting the EPA Region serving the State in which the site is located.

Form Approved
OMB No. 2000-0138

**Waste Quantity**

Place an X in the appropriate boxes to indicate the facility types found at the site.

In the "total facility waste amount" space give the estimated combined quantity (volume) of hazardous wastes at the site using cubic feet or gallons.

In the "total facility area" space, give the estimated area size which the facilities occupy using square feet or acres.

**Facility Type**

1. ☐ Piles
2. ☐ Land Treatment
3. ☒ Landfill
4. ☐ Tanks
5. * ☒ Impoundment
6. ☐ Underground Injection
7. ☐ Drums, Above Ground
8. ☒ Drums, Below Ground
9. ☒ Other (Specify) Treatment

**Total Facility Waste Amount**

cubic feet 34,000

gallons

**Total Facility Area**

square feet

acres 0.65

**Known, Suspected or Likely Releases to the Environment:**

Place an X in the appropriate boxes to indicate any known, suspected, or likely releases of wastes to the environment.

* ☒ Known ☐ Suspected ☐ Likely ☐ None

**Note:** Items H and I are optional. Completing these items will assist EPA and State and local governments in locating and assessing hazardous waste sites. Although completing the items is not required, you are encouraged to do so.

**Sketch Map of Site Location:** (Optional)

Sketch a map showing streets, highways, routes or other prominent landmarks near the site. Place an X on the map to indicate the site location. Draw an arrow showing the direction north. You may substitute a publishing map showing the site location.

**Description of Site:** (Optional)

Describe the history and present conditions of the site. Give directions to the site and describe any nearby wells, springs, lakes, or housing. Include such information as how waste was disposed and where the waste came from. Provide any other information or comments which may help describe the site conditions.

* Low level seepage of RCRA wastes from inactive impoundment. Monitoring results indicate that this site does not present a health hazard.

**Signature and Title:**

The person or authorized representative (such as plant managers, superintendents, trustees or attorneys) of persons required to notify must sign the form and provide a mailing address (if different than address in item A). For other persons providing notification, the signature is optional. Check the boxes which best describe the relationship to the site of the person

Name Joseph Calamungi
Director of Manufacturing

Street

City State Zip Code

☒ Owner, Present
☐ Owner, Past
☐ Transporter
☒ Operator, Present
☐ Operator, Past
☐ Other

Bean District I WQD

STATE OF MICHIGAN

NATURAL RESOURCES COMMISSION
JACOB A. HOEFER
CARL T. JOHNSON
E. M. LAITALA
F. SNELL
Y H. WHITELEY
JOAN L. WOLFE
CHARLES G. YOUNGLOVE

WILLIAM G. MILLIKEN, Governor

DEPARTMENT OF NATURAL RESOURCES

HOWARD A. TANNER, Director

STEVENS T. MASON BUILDING
BOX 30028
LANSING, MI 48909

August 29, 1980

Mr. J. Calamungi, Director
SWS Silicones Corporation
P. O. Box 428
Adrian, Michigan 49221

Re: Notice of Violation 2/5/80
NPDES Permit No. MI 0026034

Dear Mr. Calamungi:

This letter summarizes the current status of compliance with the terms of the February 5, 1980 Notice of violation; and, provides a response to the corporate letter of July 31, 1980, regarding NPDES Permit No. MI 0026034 effluent limitations.

During an August 19, 1980 phone conversation, Mr. Gordon Philbrook represented that the company had eliminated all discharges of wastes into the seepage lagoon; but, had not eliminated the methyl chloroform (1,1,1-trichloroethane) discharge at outfall 001. Mr. Philbrook also indicated that Phase I of the approved hydrogeological survey had been completed and that analyses therefrom would be made available to the Department by early to mid-September. The gas chromatograph/mass spectrometric (GC/MS) characterization of seepage pond contents and outfalls 001 and 002 was also discussed. It is my understanding that the results of these samples would also be completed and submitted to the Department in September. If the above does not reflect the current status or the company's position, this office should be notified immediately.

Finally, the Department has not yet received a proposed corrective program and schedule for the removal and proper disposal of contaminated lagoon contents.

In a letter of July 31, 1980, the company agreed to analyze for and accept the limitation of methyl chloroform under NPDES permit; however, the limitations proposed by the Department were felt to be unreasonably low. Suggested chloride loading limitations were also presented for consideration by the Department.

SEP 1 1980
PTE. MOUILLEE S.C.A.

The company's requested limitations for methyl chloroform and chlorides are under review. Some relief on the methyl chloroform limits may be appropriate. A formal determination on this issue will be provided by Water Quality Division staff in the near future.

It is the position of the Department that the following information must be submitted to consider the company's application for reissuance of NPDES permit complete:

1. GC/MS characterization of lagoon contents and outfall 001 and 002 effluents for the EPA 129 Priority Pollutants; the Michigan Critical Material styrene; and, dechlorane;

2. The results of Phase I of the hydrogeological survey;

3. A program and schedule for removal and proper disposal of contaminants from the seepage lagoon; and,

4. Submission of an amended NPDES application (federal and state forms enclosed) for increased use resulting from a discharge of treated wastewaters from the proposed batch treatment system.

This information should be submitted on or before September 30, 1980. Failure of the company to submit this information will result in the Department initiating escalated enforcement action. Upon receipt of the above, Department staff can proceed with development of an NPDES permit and/or administrative order which would include a comprehensive program and schedule to correct all outstanding violations and water quality concerns.

If you have any questions, feel free to contact my office (517) 373-3503.

Sincerely,

David J. Batchelor
Resource Specialist
ENVIRONMENTAL ENFORCEMENT DIVISION

DJB:ca
Encl.
cc: G. Meyers, Esquire
G. Philbrook
T. Sayers
R. Courchaine
F. Baldwin/B. Babcock
K. Zollner/C. Bek
R. Schrameck/B. Ricks
J. Bails/J. Miller
J. Saalfeld/L. Fink

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DETROIT OFFICE
700 BOOK BUILDING
DETROIT, MICHIGAN 48226
(313) 961-1261

March 6, 1980

Mr. Robert J. Courchaine
Executive Secretary
Water Resources Commission
Michigan Department of Natural Resources
P.O. Box 30028
Lansing, Michigan 48909

Re: In the Matter of Abatement of Water Pollution:
SWS Silicones Corporation, Adrian, Michigan 49221
NPDES Permit No. MI 0026034
WRC No. NB-02-80-01-0142

Dear Mr. Courchaine:

As the Department recognizes, both from our letter to your Mr. Frank Baldwin of February 15, 1980 and the meeting between representatives of the Department and SWS Silicones Corporation (SWS) on February 22, 1980, SWS strongly denies that there is either a factual or legal basis for the Notice of Violation (NOV) issued against it February 5, 1980. However, in the interest of cooperation, SWS will agree to take substantive action as was discussed at the February 22 meeting and as is stated in the attachment to this letter, if the Department agrees that it will not seek or institute any administrative, civil or criminal remedies in connection with the NOV or any of the violations charged in it. This agreement by the Department would be subject to SWS making and continuing to make reasonable progress toward fulfilling its commitments stated in the attachment. In the event SWS does not make such progress, the Department would be authorized to seek or institute administrative, civil or criminal remedies, but only for violations which occur subsequent to the receipt by SWS of a written notice from the Department that SWS has failed to honor its commitments. Upon the satisfactory completion by SWS of the program, the Department agrees to withdraw the NOV.

With this understanding in mind, SWS will agree to undertake the program set forth in the attachment to this letter.

STATE OF MICHIGAN

WILLIAM G. MILLIKEN, Governor

**DEPARTMENT OF NATURAL RESOURCES**

STEVENS T. MASON BUILDING, BOX 30028, LANSING, MICHIGAN 48909

HOWARD A. TANNER, Director

April 14, 1980

Mr. George H. Meyer
MEYER & KIRK
100 West Long Lake Road
Suite 100
Bloomfield Hills, MI 48013

RE: SWS Silicones Corporation
Adrian, Michigan

Dear Mr. Meyer:

Appropriate staff from the Department of Natural Resources have reviewed your correspondence dated February 15 and March 6, 1980 and the statements made on behalf of SWS Silicones at the meeting on February 22, 1980.

A proposed agreement was described in your March 6, 1980 letter:

> "...SWS will agree to take substantive action as was discussed at the February 22, 1980 meeting and as is stated in the attachment to this letter, if the Department agrees that it will not seek or institute any administrative, civil or criminal remedies in connection with the NOV or any of the violations charged in it. This agreement by the Department would be subjected to SWS making and continuing to make reasonable progress toward fulfilling its commitments stated in the attachment. In the event SWS does not make such progress, the Department would be authorized to seek or institute administrative, civil or criminal remedies, but only for violations which occur subsequent to the receipt by SWS of a written notice from the Department that SWS has failed to honor its commitments."

Your suggestion that the Department of Natural Resources waive enforcement actions for past violations of state statutes regardless of company progress toward fulfilling its commitments is entirely innappropriate and is hereby rejected.

As stated in the Notice of Violation dated February 5, 1980, Department of Natural Resources staff has reason to believe that you have violated the terms and conditions of your NPDES permit no. MI 0026034 issued on January 31, 1974, and that you have violated Section 7 (1) of the Water



Resources Commission Act (1929 PA 245, as amended).

Specifically, the Department has information as follows:

1. The company discharges process wastes to an unlined earthen lagoon on their property. The lagoon receives approximately 30,000 gallons of waste per month. A grab sample of the lagoon collected during a September 24-25, 1979 point source survey showed a concentration of greater than 50 mg/l of methyl chloroform.

   This unpermitted discharge of concentrated wastes to the ground is a violation of Section 7(1) of the Water Resources Commission Act (1929 PA 245, as amended).

2. Concentrations of methyl chloroform were also detected in two grab samples from outfall 001 of the company facility. The NPDES discharge permit for this facility does not authorize the discharge of methyl chloroform; therefore, the discharge of methyl chloroform is a violation of the company's NPDES permit no. MI 0026034.

An informal opportunity for SWS Silicones to show compliance on these matters with all lawful requirements for retention of your NPDES permit will be held with Department of Natural Resources staff on May 2, 1980 at 10:00 a.m. in the 3rd Floor Conference Room of the Stevens T. Mason Building, Lansing, Michigan.

If staff concludes after the meeting that you have not shown compliance, they may recommend that formal administrative proceedings be commenced for the revocation, annulment, withdrawal, recall, cancellation or amendment of your permit by the filing of an administrative complaint and notice of hearing.

Very truly yours,

Jack D. Bails

Jack D. Bails, Chief
ENVIRONMENTAL ENFORCEMENT DIVISION

Robert J. Courchaine

Robert J. Courchaine, Chief
WATER QUALITY DIVISION

JDB:JM:jp

cc: ~~Joseph Calamungi~~
xc: Roy Schromeck

RECEIVED
MAY 5 1980
PTE. MOUILLEE S.G.A.

We understand that this program also satisfies the requirements of the NOV, revised per the Department's letter to SWS of March 3, 1980, that a program and schedule be submitted to the Department by March 17, 1980.

Assuming this letter reflects the Department's understanding, will you kindly let us know by a written acknowledgment from the Department so that SWS can immediately proceed to implement the program.

Yours very truly,

George H. Meyer

GHM/rg
Attachment

cc: Mr. Jack Bails, Chief
Environmental Enforcement Division

Mr. Frank Baldwin, Chief
Surface Water Compliance Section

Mr. Andrew Hogarth
Water Quality Specialist

Mr. Roy E. Schrameck
District Engineer

Mr. Gary Ford
Mr. Thomas Sayers
Mr. Gordon Philbrook

ATTACHMENT TO LETTER TO MR. ROBERT J. COURCHAINE, MARCH 6, 1980

1. In response to the Department's suggestion that the evaporation pond at the site may be a source of seepage to the ground waters of the State, SWS will undertake a ground water survey to determine if and to what degree contaminants from the pond have reached the ground water in the near surface aquifer in the area of the pond. Mr. Paul Roux, a ground water hydrogeologist with Stauffer Chemical Company, will undertake a visual survey of the property by March 14, 1980 and will contact the Department's staff geologist to discuss a specific program. Assuming an agreement is reached between SWS and the Department, the program will be formally submitted by SWS to the Department for the Department's review and approval within approximately one month. Should SWS discover significant ground water contamination, SWS will propose and promptly undertake a program of remedial action.

2. In response to the desire of the Department for further analyses of the 001 discharge point effluent, SWS will conduct such analyses as are necessary in the view of the Department and SWS using such protocols as shall be discussed and agreed upon between SWS and the Department's staff. Arrangements for these analyses are presently being made based upon the standard protocol for the 129 priority pollutants. To the extent that data is necessary beyond the scope of the protocol for analysis of the 129 priority pollutants the Department will identify the specific additional compounds for which analysis is required. A protocol for analysis of these compounds shall be discussed and agreed upon between SWS and the Department prior to beginning the analyses.

3. Equivalent analyses to those discussed in the preceding paragraph for the 001 discharge will be conducted on samples taken from the evaporation pond. The manner of collection of the samples will be consistent with the Federal RCRA requirements for sampling of waste water ponds. The manner of collection of the sample is to be discussed and agreed upon between SWS and the Department's District Engineers. SWS plant personnel will be available to discuss a sampling technique at the convenience of the Department's District Engineers.

4. SWS will undertake an investigation and submit to the Department a proposal for alternate handling of wash water waste now disposed of in the evaporation pond. The anticipated alternate will involve probable discharge of treated supernatant waters through the 001 discharge point. The Department understands that modification of the NPDES permit to allow for at least additional chlorides discharge is essential to this alternate. Additionally, the Department understands that its full cooperation will be necessary in order to satisfy any additional Federal or State regulatory requirements and the obtaining of necessary permits for the construction and operation of the alternate that is agreed upon. The goal of SWS is to complete the alternate treatment system and close the pond by the end of 1980.

Tim
Brian
Carl

- P. Jaski,
Patricia

February [illegible], 1980

TO: Frank Baldwin

FROM: Bob Babcock

SUBJECT: SWS Silicones Corporation MD.

At 10:30 a.m. on Friday, February 22, 1980, a meeting was held with company representatives. Staff participants in the meeting were as follows: Scott Ross, Bob Babcock, Jim Miller, Warren Hutchinson, Chang Beh, Larry Fink, Christine Iversen, Carol Dixon, Wendy Waskin, Timothy Jaski. People representing the Company were: Gordon Philbrook, Engineering Manager; James Lorenzen; Guenther Lengnick; and Thomas Sayers. Additionally, Messrs. Randy Safford and George Meyer of Meyer & Kirk were representing the Company as counsel.

Summary: The purpose of the meeting was for parties involved to discuss the Notice of Violation which was issued February 5, 1980, and the Company's position relative to the actions ordered in the Notice. The Company stated that although they were willing to pursue certain investigative measures and provide further evaluation of their waste and waste disposal practices, their counsel was concerned that the Company may be incriminating themselves by providing this information. Although there were perhaps four items in which the company and the technical staff were in agreement that further evaluation should be provided, the company and their counsel wanted the assurance of staff that the company would not be prosecuted as a result of providing this information. It was agreed that the state would seek counsel from the Department of Attorney General and would telephone the Company's counsel as soon as possible. Presuming a satisfactory understanding between the Company and the State, it was agreed that the Company would proceed with providing the specific evaluations of their waste.

Actions Needed: Given satisfactory agreement from all parties of the potential prosecution issue, the company appeared willing to provide the following information with the understanding that a specific written protocol be agreed to by the company and the staff prior to these actions:

1. The Company would provide a G.C.-M.S. analytical evaluation of the surface water discharge to the River Raisin, outfall 001.

2. The Company would provide a G.C.-M.S. analytical evaluation of the contents of the "black pond". Apparently some details would need to be agreed to in the compositing of the various phases of materials in this lagoon.

FEB 27 [illegible]

PTE. MOUILLEE S.C.A.

3. The Company indicated a desire to discontinue the use of the pond, and, presuming agreement on alternative disposal, the Company felt that they could discontinue the use of this lagoon in 1980.

4. The Company indicated that a Mr. Paul Roux, a corporate hydrologist, would be contacting our appropriate staff in order to develop a satisfactory groundwater hydrogeological evaluation.

History: The Company started some operations at the Adrian facility in 1965. There were some soil borings taken at that time in order to determine the necessary construction specifications for the plant. One of these borings was apparently near the subsequently constructed black lagoon which showed that there was 4 feet of clay underlying the bottom of the black lagoon. The company constructed the black lagoon in 1971 and has apparently noted no exfiltration from the lagoon. The Company pointed out that on the east side of the lagoon there is a 15 foot drop off which has shown no apparent evidence of exfiltration. The aesthetic appearance of the lagoon is due to the use of carbon black in their processing. The Company pointed out that since 1971 there have been many types of process wastes disposed of in this lagoon. Apparently there is no sewer to this lagoon, but the company must deliver all wastes in some type of a container. The Company pointed out that the concentrated processing wastes generally referred to as the non-aqueous wastes have been put in barrels and hauled from the manufacturing site. However, dilute wastes, such as reactor vessel washings have been discharged into the black lagoon. As a matter of explanation for its construction, the Company indicated that the chlorides present in the initial process wastes, which went into the lagoon from 1971 until 1974 were not felt to be acceptable to be discharged to the River Raisin.

As a point of concern for the Company, they indicated that there was not a satisfactory laboratory protocol to allow them to provide data for all of the priority pollutants and the substances on the Critical Materials Register. As indicated above, the company apparently is willing to provide a G.C.-M.S. evaluation in lieu of providing data for all of the priority pollutants and the items on the Critical Materials Register.

clp
cc: Jim Miller
C. Bek
C. Iversen
T. Jaski ✓
L. Fink

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ATTORNEYS AND COUNSELLORS AT LAW
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DETROIT OFFICE
700 BOOK BUILDING
DETROIT, MICHIGAN 48226
(313) 961-1261

February 15, 1980

Mr. Frank Baldwin, Chief
Surface Water Compliance Section
Water Quality Division
Department of Natural Resources
P.O. Box 30028
Lansing, Michigan 48909

Re: In the Matter of Abatement of Water Pollution:
SWS Silicones Corporation, Adrian, Michigan 49221
NPDES Permit No. MI 0026034
WRC No. NB-02-80-01-0142

Dear Mr. Baldwin:

As Michigan counsel for SWS Silicones Corporation (SWS), we acknowledge SWS's receipt on February 6, 1980, of a Notice of Violation (NOV) dated February 5, 1980, issued to SWS for its chemical plant in Adrian, Michigan.

This letter will also serve as required by the NOV as a written certification by SWS of the extent to which SWS intends to comply with the terms of the Notice of Violation.

As we mentioned to you and Mr. Babcock on the telephone Tuesday, SWS has reviewed the NOV and the findings contained in it. SWS is not in agreement with the Department's finding in the NOV that SWS is discharging concentrated waste into the ground waters via its "black pond" and the finding that SWS is discharging methyl chloroform into the Raisin River without a permit. Among the reasons for the Company's disagreement with these findings, which we mentioned to you and Mr. Babcock, are the following:

A. Black Pond

The grab sample taken by the Department in September, 1979 may not accurately measure the concentration of methyl chloroform in the pond. Because this material is not water soluble and because the pond is quiescent, we would expect to obtain materially different

concentration levels depending on the timing and location of sampling. As we mentioned, a sample taken by SWS at the same time as the Department shows a concentration of 5 mg/l of methyl chloroform in the pond. Moreover, there is no evidence of actual seepage from the pond into the ground water and some evidence that seepage has not occurred. If there is no seepage, there is no violation of Section 7 of Act 245. Even if methyl chloroform from the pond has entered the ground water, because of the unique topography around the plant, it is unlikely that the ground water goes anywhere but into the Raisin River. Given the conservative ten times dilution factor used by the Federal Government, even if the 50 mg/l finding is accepted as a representative sampling, the amount of methyl chloroform which would be entering the Raisin River would be within the proposed Federal water quality standard for aquatic life of 5.3 mg/l for methyl chloroform.

B. Outfall 001

The Company believes that its 1974 NPDES Permit does not prohibit the discharge of methyl chloroform from its plant into the Raisin River. At the time the permit was applied for and issued and until 1978 (and then only as part of the renewal application process) there was no requirement for the Company either to disclose trace materials in its effluent or to advise the Department of the materials which were being used in the plant and which might possibly appear in the effluent. Accordingly, the discharge of methyl chloroform from Outfall 001 cannot be a violation of the original 1974 NPDES permit since disclosure of methyl chloroform as a possible component of the effluent was only required for the first time as part of the renewal permit process.

Moreover, the concentration found at Outfall 001 is substantially below both the above mentioned proposed Federal water quality standard for aquatic life and the one (1) mg/l standard recommended by a staff member of the Department in a December 21, 1978 internal memorandum which we mentioned to you on the telephone.

C. Miscellaneous

Finally, methyl chloroform, particularly at the levels found by the Department, is recognized as not a serious health hazard. Methyl chloroform has been recently shown not to be a carcinogen and it has an oral - rat LD 50 of 14,300 mg/kg. It is also not on the Michigan Critical Materials List and is an "other regulated material" (ORM-A) under Department of Transportation Regulations. As the Department's own handling of this matter (the delay between the date of testing and the date of the issuance of the Notice) would appear to indicate, the levels of methyl chloroform found by the Department do not constitute a health hazard.

For these among other reasons SWS does not agree with the Department's findings. SWS, therefore, is not prepared to immediately cease discharging wastes into the Black Pond or to remove all contaminants from the pond; nor does SWS concur that there is adequate justification for immediately ceasing the discharge of methyl chloroform from Outfall 001, which would necessitate shut-down of the entire plant.

In order that it may formally apprise the Department of its position on the Department's allegations and supply the Department with the evidence the Company has to support its position, and also to obtain the withdrawal or rescission of the Notice of Violation, SWS hereby formally requests that a hearing be held pursuant to both Section 92 of the Administrative Procedures Act and Section 8 of Act 245. We request that such a hearing or hearings be conducted as soon as possible.

Pending the hearing(s), the Company will continue the status quo as of the date it received the NOV concerning its discharge into the pond and its discharge of methyl chloroform from Outfall 001. In addition, without waiving its opposition to the Notice of Violation, but in an effort to attempt to amicably resolve this dispute and submit alternative proposals, the Company requests that a meeting between its technical representatives and those of the Department be convened as soon as possible and prior to any formal hearing. As we discussed Wednesday with Mr. Babcock, the Company and its representatives are available to meet at your office in Lansing on February 22, 1980 at 10:30 A.M. The Company will also be prepared at this meeting to discuss the technical manner and the extent to which it will comply with the Department's order concerning the hydrogeological evaluation of the plant site and the chemical characterization of the contents of the pond.

Finally, as I discussed Wednesday with Mr. Babcock, we understand that this letter will be considered satisfactory compliance with the ten-day requirement imposed by the Notice of Violation if it is mailed, as it will be, on or before February 16, 1980.

Yours very truly,

George H. Meyer

GHM/rg

CERTIFIED MAIL/RETURN RECEIPT REQUESTED

cc: Mr. Jack Bails, Chief
Environmental Enforcement Division

Mr. Robert J. Courchaine
Executive Secretary
Water Resources Commission

Mr. Roy E. Schrameck
District Engineer

Mr. Robert Babcock
Water Quality Specialist

Mr. Andrew Hogarth
Groundwater Compliance Section

Lenawee County Health Department

31

REF. 4

MO1210020813

Gateway Army
MO1210020813
1.6

INSTALLATION ASSESSMENT

OF

GATEWAY ARMY AMMUNITION PLANT

REPORT NO. 152

CONCUR:

A. D. BAIN
Commander's Representative
Gateway Army Ammunition Plant

APPROVED:

FRANK A. JONES, JR.
Colonel, CmlC
Commanding
US Army Toxic and Hazardous
Materials Agency

December 1979

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

# REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS BEFORE COMPLETING FORM

| | |
|---|---|
| 1. REPORT NUMBER<br>DRXTH-AS-CR-83250 | 2. GOVT ACCESSION NO. |
| 3. RECIPIENT'S CATALOG NUMBER<br>— | |
| 4. TITLE (and Subtitle)<br>Decontamination Operations at Gateway Army Ammunition Plant | 5. TYPE OF REPORT & PERIOD COVERED<br>Final Report, May - November 1983 |
| | 6. PERFORMING ORG. REPORT NUMBER |
| 7. AUTHOR(s)<br>Mr. Douglas Fuhrman | 8. CONTRACT OR GRANT NUMBER(s)<br>DAAK11-83-C-0039 |
| 9. PERFORMING ORGANIZATION NAME AND ADDRESS<br>US Army Toxic and Hazardous Materials Agency<br>Assessments Div., Decontamination Evaluation Br.<br>Aberdeen Proving Ground, MD 21010 | 10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS |
| 11. CONTROLLING OFFICE NAME AND ADDRESS<br>Gateway Army Ammunition Plant<br>6703 Southwest Ave.<br>St. Louis, MO 63143 | 12. REPORT DATE<br>November 1983 |
| | 13. NUMBER OF PAGES |
| 14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office) | 15. SECURITY CLASS. (of this report)<br>UNCLASSIFIED |
| | 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE |

16. DISTRIBUTION STATEMENT (of this Report)

Distribution limited to US Government agencies only for protection of privileged information evaluating another command: November 1983. Other requests for this document must be referred to: Commander, St. Louis Army Ammunition Plant, Goodfellow Ave., St. Louis, MO.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

friable asbestos
polychlorinated biphenyls (PCB)
trichlorobenzene (TCB)
heavy metals
decontamination
lead-based paint

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

The purpose of installation restoration activities undertaken at Gateway Army Ammunition Plant was to eliminate environmental, health, and safety hazards which had developed over a number of years. During the course of operations, friable asbestos was encapsulated or removed, peeling lead-based paint and spilled PCB contaminated materials were removed, and a number of minor health and safety hazards corrected. At the termination of this project, the facility was restored to an environmentally safe condition.

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

ENCLOSURE 2

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

## ABSTRACT

A records search was conducted to assess the environmental quality of Gateway Army Ammunition Plant (GAAP) with regard to the use, storage, treatment, and disposal of toxic and hazardous materials and to define any conditions which may adversely affect health and welfare or result in environmental degradation.

A review of the records indicated that contamination at the plant is unlikely because of the nature and relatively short duration of its operations coupled with the fact that the City of St. Louis has always provided the utility service.

The 6 hectare area encompassed by the plant is considered to be improved property and is almost entirely covered with either concrete or macadam. No contamination from past operations was found to be present at GAAP.

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APPENDIX

A Photographs of Gateway Army Ammunition Plant

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## I. GENERAL

### A. Purpose of the Assessment

To aassess the environmental quality of Gateway Army Ammunition Plant (GAAP) with regard to the use, storage, treatment, and disposal of toxic and hazardous materials and to define any conditions which may adversely affect health and welfare or result in environmental degradation.

### B. Authority

DARCOM Regulation 10-30, Mission and Major Funcitons of the US Army Toxic and Hazardous Materials Agency (USATHAMA), 22 May 1979.

### C. Introduction

1. In response to a letter from the Project Manager for Chemical Demilitarization and Installation Restoration (PM CDIR), now USATHAMA, requesting the identification of potentially contaminated installations, the Commander, US Army Armament Materiel Readiness Command (ARRCOM), recommended GAAP be included in the Installation Restoration Program.

2. Presurvey instructions were forwarded to GAAP by letter, on 20 December 1978 to outline assessment scope, provide guidelines to GAAP personnel, and obtain information for review by the Records Search Team prior to the onsite search. The Commander's Representative was assigned as the installation point of contact.

3. Installation personnel were briefed by USATHAMA on the Installation Restoration Program prior to the onsite records search.

4. Various government agencies were contacted during the period of 8 January 1979 through 23 March 1979 for documents pertinent to the records search effort. Agencies contacted included:

a. Department of Defense Explosives Safety Board (DDESB).
b. US Army Environmental Hygiene Agency (USAEHA).
c. US Geological Survey (USGS).
d. US Army Engineer Waterways Experiment Station (WES).
e. National Technical Information Service (NTIS).
f. US Army Armament Materiel Readiness Command (ARRCOM).
g. Chemical Systems Laboratory (CSL).

5. The onsite phase of the records search was conducted from 5 March through 9 March 1979. The following personnel were assigned to the team and prepared the report:

a. Mr. Norman Leibel, Team Leader, CSL.
b. Mr. Steven Kolodzey, Chemical Engineer, CSL.
c. Mr. James Goheen, Chemical Engineer, CSL.
d. SP4 Janice Canterbury, Environmentalist, CSL.
e. Mr. Harry Woods, Geologist, WES.

6. Since the Commander's Representative was the only government employee at GAAP and the maintenance contractor was not familiar with GAAP operations, the records search was restricted to the use of available records.

Photographs taken during the ground tour are included in Appendix A.

7. Findings conclusions, and recommendations are based on the records made available at the time of the search. Where conspicuous discrepancies existed, attempts were made to determine the validity of information through other records and interviews.

D. Brief History

GAAP is located in St. Louis, Missouri, and is comprised of approximately 6 hectares (ha) (see Figure 1). This industrial complex is divided into two parcels:

1. One irregularly shaped parcel encompasses approximately 5 ha. This parcel is south of the River Des Peres right-of-way and has an average length of 636 meters (m) and varies in width from 61 m to 94 m. It is bounded on the south by the right-of-way of the St. Louis and San Francisco Railroad, on the north by the River Des Peres, on the east by property belonging to Scullin Steel Company, and on the west by Southwest Avenue.

2. The second parcel, also irregular in shape, covers approximately one ha. This parcel is situated north of the River Des Peres right-of-way and has an average length of 128 m and width of 91 m. It is bounded on the south by Southwest Avenue, on the north by property of Scullin Steel Company, on the east by the River Des Peres, and on the west by Ecoff Avenue.

The land was acquired in October 1942 by the Defense Plant Corporation, a subsidiary of the Reconstruction Finance Corporation. The plant was designed and constructed by Scullin Steel Company and financed by the United States Government. The original plant consisted of approximately 35 buildings, structures, tanks, etc., together with machinery and equipment

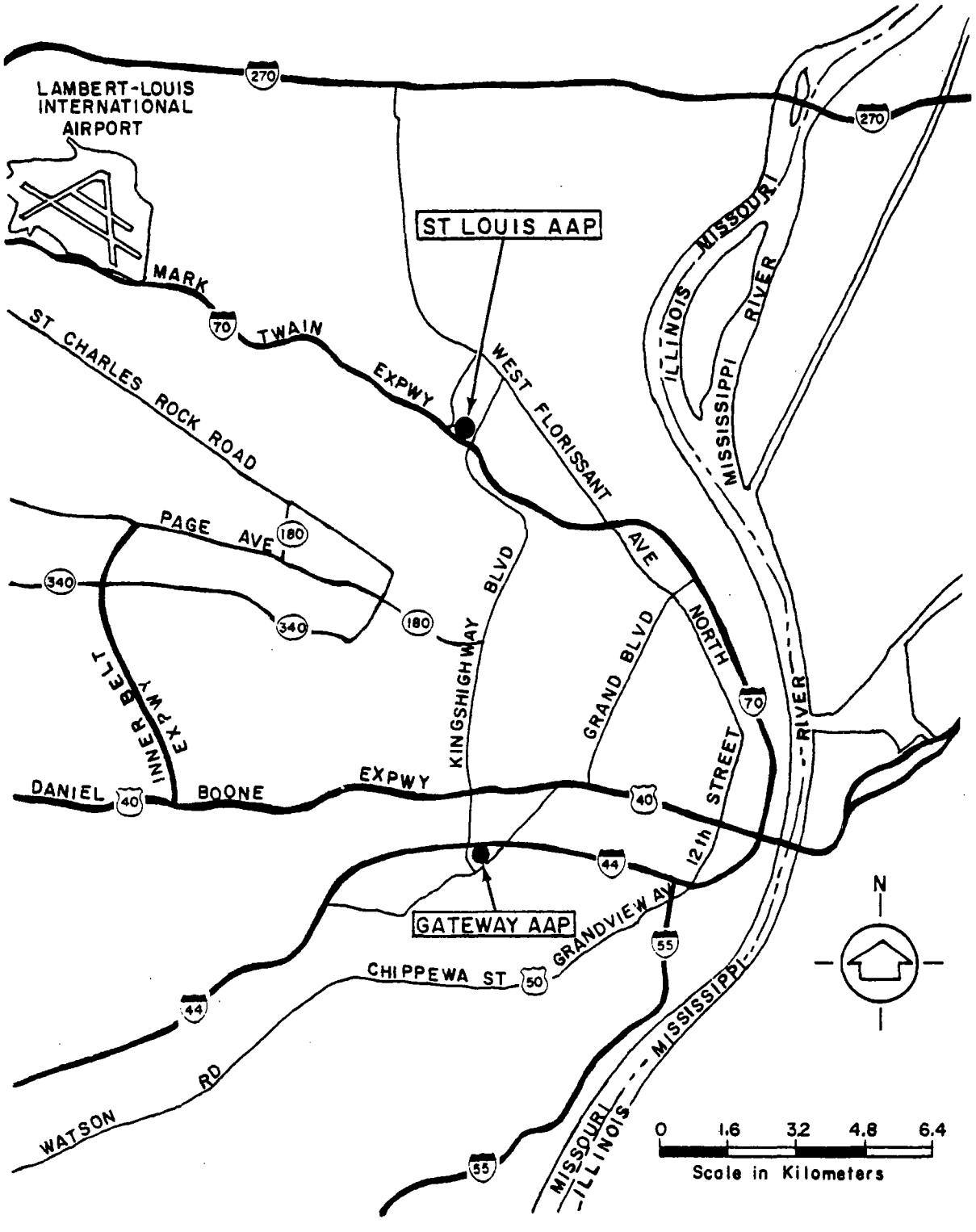



Figure 1. Location Map, Gateway Army Ammunition Plant

designed as a separate and complete plant for production of heavy armor casting for the Maritime Commission. Construction of the plant began in late 1942 and was completed the following year with production beginning in August 1943.

During peak production the plant employed approximately 2,000 personnel consisting primarily of pattern makers, smelters, core makers, X-ray personnel, and general laborers.

Production ceased at the end of World War II; in 1947 the plant was declared surplus property and was placed in the National Reserve.

In December 1950 during the Korean conflict, the facility was reactivated and redesignated as the St. Louis Army Steel Foundry; the plant was temporarily made available to the Department of the Army for production of armor castings for medium tanks. This government-owned plant was operated by the adjacent Scullin Steel Company and together they provided the Ordnance Corps with a substantial armor casting potential which included the buildings and equipment required to support foundry operations.

Permanent control and jurisdiction of the facility was transferred by the General Services Administration to the Department of the Army in 1953 and was placed under the jurisdiction of the Chief of Ordnance in March 1953. The plant operated until September 1954 when production was terminated.

In 1954 the facility was placed in a layaway status and from 1955 to 1967 the plant was in an inactive status. From 1955 to 1962 the inactive plant was contracted to Universal Marion Corporation (Scullin Steel Division) for production of medium tank hulls and turrets in the event of mobilization. The main foundry building and supporting facilities were leased in 1962 to the Universal Marion Corporation for commercial purposes. This commercial venture failed and the plant remained idle.

In October 1966 a firm requirement was determined for a source of shells to include 8-inch and M106 shells and 175mm projectiles. The US Army Ammunition Procurement and Supply Agency surveyed the St. Louis Tank - Automotive Steel Foundry in December 1966; the plant was found to be adequate for meeting the government's needs.

Effective 17 April 1967, the St. Louis Army Tank - Automotive Steel Foundry, a class II inactive installation under the jurisdiction of the US Army Materiel Command (AMC), was placed in an active status and redesignated the Gateway Army Ammunition Plant.

The Space Division of Chrysler Corporation was selected as the Government Owned-Contractor Operated (GOCO) operator of GAAP in August 1967.

Chrysler Corporation started the production of 175mm projectiles and by September 1968, having successfully completed a pilot run of the projectiles, Chrysler Corporation was authorized to proceed with full production.

Pending decision on the future status of the plant, Chrysler was authorized to perform surveillance and interim maintenance on the facility (production, production support equipment, and real property). This action was necessary to clean, repair, and maintain all facilities until contracts for subsequent production or layaway maintenance were awarded. Chrysler completed the interim maintenance work on 30 April 1971.

In November 1970 AMC decided to layaway the plant and prepare the facilities for long-term storage albeit in a high state of readiness. This action was due to the reduction in 175mm projectile requirements in Southeast Asia.

On 13 April 1971 fixed price contracts were awarded to Voss Machinery Company, Pittsburgh, Pennsylvania, for the following: layaway of production facilities; in-place, power de-energized, maintenance and surveillance of inactive facilities; data and reports. GAAP has remained inactive to date and Voss Machinery Company has remained the maintenance and surveillance contractor. ARRCOM has recommended that the facility be declared excess.

E. Leases

1. In the late 1950's Building 31 was leased to Perceptual Development Laboratory for a 15-year period. Details regarding this operation were not available.

Vulcan Manufacturing Company leases two buildings (31 and 62) and adjacent parking lots in the southwest section of GAAP. The lease was initiated in January 1975 and extends through October 1980. The area leased comprises 0.22 ha.

A 50-year water line easement with the Union Electric Company was initiated in April 1977. This easement comprises 0.12 ha.

2. There have never been any active grazing or agricultural leases at GAAP.

F. Legal Actions

There are presently no legal actions pending against GAAP and neither available records nor personnel interviewed revealed that there had ever been any legal suits resulting from production contamination.

## II. ENVIRONMENTAL SETTING

### A. Meteorological Data

GAAP is located in the southern section of St. Louis, Missouri. The climate of St. Louis has been defined as "humid continental" and is characterized by four distinct seasons. Summers are warm and extended periods of extremely hot temperatures are rare; temperatures of $\geq$32°C occur 35 to 40 days a year, usually during July and August. Spring and autumn are generally moderate. Winters are brisk without extended periods of bitter cold; temperatures $\leq$0°C occur less than 25 days per year; readings below -17°C occur rarely. The average annual precipitation is 93 centimeters (cm) and is well distributed throughout the year. High winds and flooding occasionally occur in the St. Louis area.[1,2]

### B. Geological Setting

#### 1. Physiography/Topography/Drainage

GAAP lies within the corporate limits of the City of St. Louis, St. Louis County, Missouri. St. Louis County is situated in the southern portion of the Dissected Till Plains Section of the Central Lowland Province as shown in Figure 2. The topography of the eastern two-thirds of St. Louis County consists of rolling uplands with slopes between 2 to 5% at elevations up to 168 m mean sea level. Local relief seldom exceeds 30 m. The drainage within St. Louis County terminates in the Missouri River on the north, the Mississippi River to the east, and the Meramec River to the south.

#### 2. Geology

##### a. Surface

St. Louis County lies at the southern extremity of the glacier activity with only a few patches of soil having been tentatively classified as glacial material. Almost all of the surface formations in St. Louis County consist of extensive deposits of windblown silt (loess) derived from the flood plain of the Missouri River during the Pleistocene (glacial) Age. The deepest loess, more than 15 m thick, is found along the bluffs of the Missouri River. In general these deposits narrow to the south and are seldom more than 1.5 to 3 m deep along the ridgetops in the southwestern part of the county. Loess deposits on the adjacent hillsides have generally been removed or reworked by surface water.

##### b. Subsurface

The bedrock geology in St. Louis County consists of essentially flat-lying sedimentary formations, mostly limestone and dolomite. A

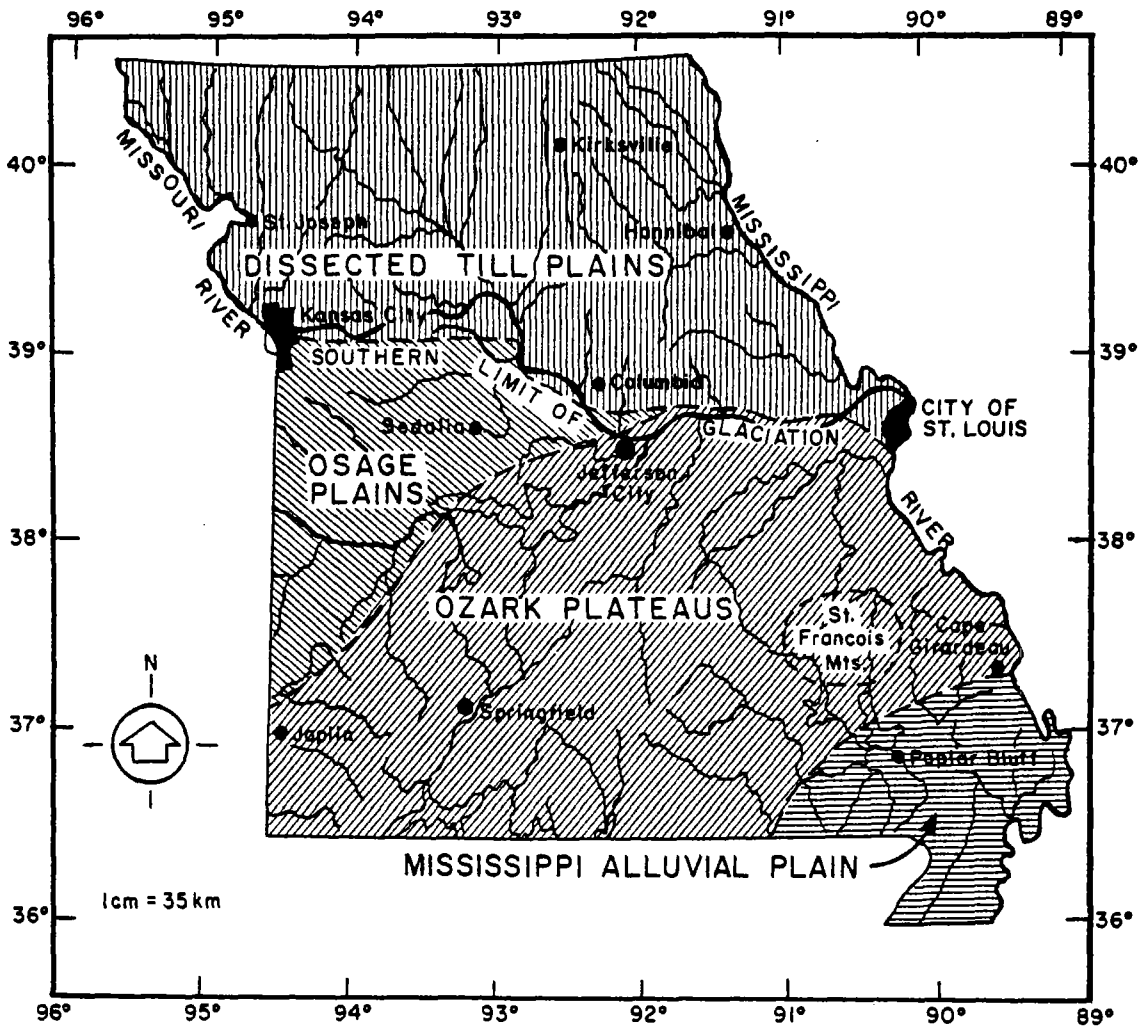



Figure 2. Physiographic Provinces of Missouri

slight regional northeast dip has been modified by several minor northwest-southeast trending folds or flexures. A soil test boring drilled in 1971 at the nearby St. Louis Army Ammunition Plant (SLAAP) encountered medium hard, light gray, medium- to fine-grain limestone at 19.8 m; this is apparently the Ste. Genevieve limestone of the Mississippi Age and is overlain by 13 m of medium hard, light yellow to gray, sandy clay shale to shale which is possibly of the lower Pennsylvania Age. The above formations are listed in Table I which also includes a generalized stratigraphic column for St. Louis, St. Charles, and Jefferson Counties, Missouri. The soil test boring log is presented in Appendix B.

All bedrock units in and around St. Louis are capable of yielding varying amounts of water to wells. Yields of wells are dependent, of course, on such factors as depth, length, and diameter of the open hole; formations penetrated; geographic location; structural attitude of the rock; and permeability of the aquifers tapped. Most wells in the St. Louis area yield a maximum of 189 liters per minute (l/min) from depths down to 244 m. Water yields of up to 7,520 l/min can be expected from wells drilled in thick alluvial deposits and contain little silt or clay-sized material.

Some water-bearing characteristics of the subsurface units in the St. Louis area are presented in Table I with the more important zones identified by an asterisk.

3. Soil

GAAP is almost entirely covered with buildings and/or parking lots. The remaining areas have been reworked during construction, whereby the original surface soil has lost its true identity.

The subsurface soil, however, extends down to a depth of approximately 8 m as determined from the soil test boring at SLAAP. This material is a medium stiff, light gray to brown silt to clayey silt. Rust stains and small roots were encountered at 6 m. Weathered shaley limestone underlies the subsurface soil.

C. Biota

GAAP is located within the industrial/residential area of St. Louis. The plant area is largely covered by buildings, roads, parking lots, and other man-made structures; furthermore, GAAP encompasses no bodies of water. Thus, very limited plant and animal life exists in or near the vicinity of the plant. A biota list of the St. Louis area is included as Appendix C.

TABLE I

GENERALIZED STRATIGRAPHIC COLUMN FOR ST. LOUIS, ST. CHARLES, AND JEFFERSON COUNTIES, MISSOURI

| System | Series | Group | Formation | Aquifer Group | Thickness (Meters) | Dominant Lithology | Water-bearing Character |
|---|---|---|---|---|---|---|---|
| Quaternary | Holocene | | Alluvium[1]/* | | 0-46 | Sand, gravel, and clay. | Some wells yield more than 7,570 l/min. |
| | Pleistocene | | Loess<br>Glacial till | | 0-34<br>0-17 | Silt<br>Pebbly clay and silt. | Essentially not water yielding. |
| Pennsylvanian | Missourian | Pleasanton | Undifferentiated | | 0-23 | Shales, siltstones, "dirty" sandstones, coal beds and thin limestone beds. | Generally yields very small quantities of water to wells. Yields range from 0 to 38 l/min. |
| | | Marmaton | Undifferentiated | | 0-27 | | |
| | Desmoinesian | Cherokee | Undifferentiated | | 0-61 | | |
| | Atokan | | Undifferentiated | | | | |
| Mississippian | Meramecian | | Ste. Genevieve Formation | 1 | 0-49 | Argillaceous to arenaceous limestone. | Yields small to moderate quantities of water to wells. Yields range from 19 to 190 l/min. Higher yields are reported for this interval locally. |
| | | | St. Louis Limestone* | | 0-55 | | |
| | | | Salem Formation* | | 0-58 | | |
| | | | Warsaw Formation* | | 0-34 | | |
| | Osagian | | Burlington-Keokuk Limestone | | 0-75 | Cherty limestone. | |
| | | | Fern Glen Formation | | 0-32 | Red limestone and shale. | |
| | Kinderhookian | Chouteau | Undifferentiated | | 0-37 | Limestone, dolomitic limestone, shale, and siltstone. | |
| Devonian | Upper | Sulphur Springs | Bushberg Sandstone | | 0-18 | Limestone and sandstone. | |
| | | | Glen Park Limestone | | | | |
| | | | Grassy Creek Shale | | 0-15 | Fissile, carbonaceous shale. | |
| Silurian | | | Undifferentiated | | 0-61 | Cherty limestone. | |
| Ordovician | | | Mequoketa Shale | | 0-50 | Silty, calcareous or dolomitic shale. | Probably constitutes a confining influence on water movement. |
| | Cincinnatian | | Cape Limestone | | 0-2 | Argillaceous limestone. | Yields small to moderate quantities of water to wells. Yields range from 11 to 89 l/min. Decorah Formation probably acts as a confining bed locally. |
| | Champlainian | | Kimmswick Formation* | 2 | 0-44 | Massive limestone. | |
| | | | Decorah Formation | | 0-15 | Shale with interbedded limestone. | |
| | | | Plattin Formation | | 0-73 | Finely crystalline limestone. | |
| | | | Rock Levee Formation | | 0-28 | Dolomite and limestone, some shale. | |
| | | | Joachim Dolomite* | | 0-41 | Primarily argillaceous dolomite. | |
| | | | St. Peter Sandstone* | 3 | 0-49 | Silty sandstone, cherty limestone grading upward into quartzose sandstone. | Yields moderate quantities of water to wells. Yields range from 38 to 530 l/min. |
| | | | Everton Formation* | | 0-40 | | |
| | Canadian | | Powell Dolomite* | 4 | 0-46 | Sandy and cherty dolomites and sandstone. | Yields small to large quantities of water to wells. Yields range from 38 to 1,136 l/min. Upper part of aquifer group yields only small amounts of water to wells. |
| | | | Cotter Dolomite | | 0-98 | | |
| | | | Jefferson City Dolomite | | 0-69 | | |
| | | | Roubidoux Formation* | | 0-54 | | |
| | | | Gasconade Dolomite* Crater Sandstone Member | | 0-85 | | |
| Cambrian | Upper | | Eminence Dolomite* | 5 | 0-52 | Cherty dolomite, siltstones, sandstone and shale. | Yields moderate to large quantities of water to wells. Yields range from 38 to 1,514 l/min. |
| | | | Potosi Dolomite* | | 0-99 | | |
| | | Elvins | Derby-Doerun Dolomite | | 0-50 | | |
| | | | Davis Formation | | 0-46 | | |
| | | | Bonneterre Formation | | 75-117 | | |
| | | | Lamotte Sandstone* | | 72+ | | |
| Precambrian | | | | | | Igneous and metamorphic rocks. | Does not yield water to wells in this area. |

1/ Basal part may be of Pleistocene Age.

NOTE: Stratagraphic nomenclature may not necessarily be that of the U.S. Geological Survey.

* Water-bearing formations.

## III. DISCUSSION

### A. Potential Contamination

#### 1. Installation Operations

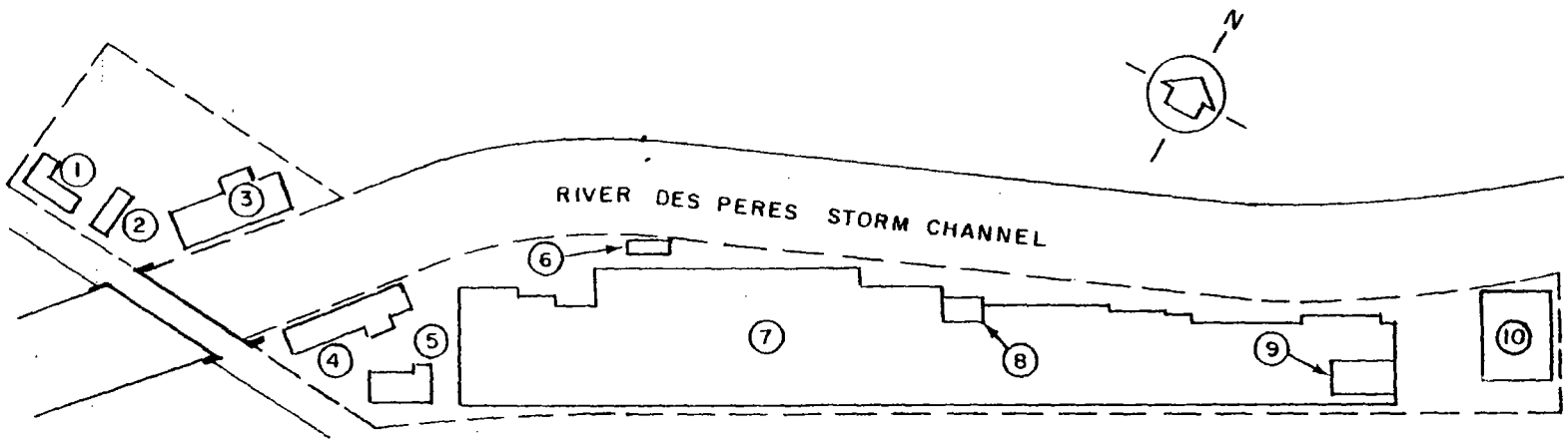
##### a. Industrial Operations

GAAP has been involved in the metalworking industry for only 8 years since its opening. The plant manufactured heavy armor and miscellaneous alloy steel castings (anchors, chains, etc.) for the Maritime Commission during the last 2 years of World War II. The installation was closed in 1945 and reopened again in 1950 when turrets for the M47 and M48 medium tanks were manufactured during the next 4 years. GAAP was a metal foundry and conducted all of the operations common to that industry during these two production periods. Four open hearth furnaces supplied the necessary molten steel for casting, while the sand plant, drying ovens, and pattern shop completed the manufacturing process. Other support facilities included 44 heat-treating furnaces, a machine shop, an oil storage tank farm, several shot blast scale removal machines, and a power house (Building 32)* for supplying steam. Quality control checks were provided by a laboratory (Building 20), an X-ray area which contained 3 inspection machines (Building 11), and a 2 million-pound chain and anchor testing machine. Because this installation has had a sporadic and short production history, personnel and records were not available from the foundry era to confirm waste disposal methods. Characteristic waste products from these industrial operations would not presently be classified as hazardous; furthermore, with the absence of landfills and burial sites at this installation, industrial waste was probably handled by accepted commercial practices. Waste materials would have included sand and scale from cleaning operations, slag from the open hearth furnaces, ash from the power house, excess metal from molds, rejected items, metal chips, and oils from the machine shop, quenching, and hydraulic press areas.

In 1967/1968 some modifications were made in the foundry in anticipation of a future requirement for 8-inch shell production; however, this requirement never materialized. At that time substantial modifications were made for the production of 175mm projectiles; a total of 246,810 projectiles were manufactured between December 1968 and September 1970. Figure 3 shows the current plant layout.

The manufacturing process for 175mm projectile production was representative of its class. Various heating, descaling, pressing, and lathing operations transformed a steel billet into the shape of a projectile.

*See Figure 3 for all building number references.




LEGEND

1. LEASED TO VULCAN MFG CO., BUILDING 31
2. LEASED TO VULCAN MFG CO., BUILDING 62
3. POWER HOUSE, BUILDING 43
4. MAIN OFFICE, BUILDING 16
5. STORAGE, BUILDING 18
6. LABORATORY, BUILDING 20
7. MAIN PLANT
8. WASTE TREATMENT PLANT
9. X-RAY, BUILDING 11
10. FORMER OIL TANK FARM

Figure 3. General Site Map of Gateway Army Ammuntion Plant

Wastes from these production areas consisted primarily of lubricating and quenching oils (containing sulfur and molybdenum disulfide) and metallic cutting chips. Toward the end of the production line the projectile was washed, rinsed, and dipped in several treatment solutions in preparation for painting. These areas contributed wastes in the form of alkalis (cleaners), zinc phosphate, chromates (tri- and hexavalent), and oil-based paints. The battery charging area and general plant floor washings also contributed to wastewater production.

When the foundry was modified for the production of 175mm projectiles, a small waste treatment plant was installed through which all industrial wastewaters were to be processed. The waste treatment system was completed one month after the start of 175mm projectile production. In February 1969 Chrysler Corporation (GOCO operator) filed a protest with the government stating that the treatment plant could not be operated properly without considerable design changes. The government eventually decided to make the suggested modifications and it was not until April 1970 when the waste treatment system was completed. Since production of 175mm projectiles ended in September 1970, the waste treatment plant operated for only 5 months.

During the modification of the treatment plant, the industrial wastewaters were collected in an underground concrete tank located beneath the floor of the treatment plant. During a period of 16 months the tank was pumped out and the contents were hauled away on a daily basis by a contractor. The modified treatment plant handled daily wastes plus periodic dumps of oily wastes. These wastes were neutralized in a batch process by the addition of sulfuric acid, lime, coagulation chemicals (e.g., ferrous sulfate, aluminum sulfate, or ferric chloride), and activated silica to enhance the flotation of suspended material. In the case of an occasional dump of a chromium solution (1 to 2 times per year; less than 18,950 liters per dump), a reducing agent such as sodium meta-bisulfite or ferrous sulfate was added to reduce hexavalent chromium to the trivalent state. In either case, if the resultant neutralized batch had a pH $\leq 10$, the effluent was directed to the sanitary sewer; if the pH was $\geq 10$, it went to the River Des Peres storm channel. Sludge was hauled away by a contractor.

b. Lessee Industrial Operations

In 1962 the Universal Marion Corporation, Scullin Steel Division, leased the main foundry building and support facilities for commercial purposes. The venture, however, failed that same year. No further information pertaining to the lease was available, nor is it known whether any items were ever produced.

The Vulcan Manufacturing Company has leased Buildings 31 and 62 since 1975. Their operation includes a job shop for the light metal manufacture of such items as dishwasher parts, roof trusses, baskets, etc.

c. Laboratory Operations

Laboratory operations were conducted in Building 20. Samples were analyzed for manganese, carbon, sulfur, phosphorus, silica, etc.

d. Proof and Surveillance Tests

There has never been any proof and surveillance testing conducted at GAAP.

e. Training Areas

There has never been any troop training conducted at GAAP.

f. Chemical/Biological/Radiological Activities

There have never been any chemical or biological agents manufactured, stored, or tested at GAAP. In addition, no radiological agents have ever been manufactured or tested at the plant. However, the X-ray Department (Building 11) once contained three machines used for the inspection of metal casings. The X-ray equipment used was as follows:

(1) Betatron - 15 million volts.
(2) X-ray - 1 million volts.
(3) X-ray - 250,000 volts.

These voltages were declared to be excessive in 1967 and the machines were disposed of through government channels.

g. Storage of Toxic/Hazardous Materials

No toxic or hazardous materials are presently stored at GAAP; nor were any records found to indicate that these materials were ever stored at the plant in the past.

h. Pesticide/Herbicide/Fertilizer Usage

The pest control program has been contracted to a commercial agency in the St. Louis area.

Pesticide usage has included Rid-a-Bird* with the active ingredient Fenthion, and Avitrol which contains 4-aminopyridine. Avitrol is also used in grain form as a bait. Both chemicals are EPA approved and are not considered to be persistent.

*The use of trade names in this report does not constitute an official endorsement or approval of such commercial products. This report may not be cited for purposes of advertisement.

Malathion is occasionally used for termite control. There are no records indicating that pesticides, herbicides, or insecticides have ever been stored at GAAP.

2. Disposal Operations

a. Sewage Treatment

The domestic sewage is directed from the plant via a separate sewer system which flows by gravity into the City of St. Louis sewer system. The city sewage is treated at the St. Louis-Lemay Treatment Plant.

The surface water runoff from rain storms is collected throughout the plant by a network of downspouts and catch basins, then flows through a separate system of storm sewers to the River Des Peres. This river forms a confluence with the Mississippi River.

b. Burials

There are no burial sites located at GAAP. All trash and wastes are collected and removed by a local contractor.

c. Holding Ponds

There have never been any holding ponds at this installation.

d. Demolition and Burning Ground Areas

There have never been any demolition or burning ground areas at GAAP.

e. Demilitarization

There have never been any demilitarization activities at GAAP.

B. Water Quality

GAAP has always purchased its water from the City of St. Louis Water System and it is used for all plant operations.

C. Migration Potential

The substratum soil of GAAP consists of 4.5 to 7.6 m of silt and a clayey silt. No permeability values are available on these soils; however, it can be assumed that vertical migration of liquids would be rather slow. The underlying limestone is susceptible to the formation of karst (solution

channels and cavities) once surface water reaches the limestone. Since most of the surface area of GAAP is covered and all surface runoff and industrial liquids controlled, the available contamination for offpost migration was held to a minimum.

GAAP has been inactive for several years and all sumps and industrial drains have been cleaned and flushed.

## IV. FINDINGS

A. There are no current industrial operations at GAAP. The last projectile production operation was conducted in 1970.

B. According to available records there has never been:

1. Any burning ground, sanitary landfills, burial sites, or holding ponds at GAAP.

2. Any chemical or biological agents manufactured, tested, or stored at GAAP.

3. Any radiological materials manufactured or tested at the plant. There were three X-ray machines in use during World War II and the Korean Conflict.

C. Based on available records, plant sewage and water have always been provided by the St. Louis Metropolitan Area.

D. A metallurgy laboratory was in existence at GAAP during industrial operations.

E. Pesticide control has been provided by a local contractor.

F. Based on the team's observation, there was no evidence of contamination within the plant area.

G. ARRCOM has recommended that GAAP be declared as excess property. A letter has been forwarded to DARCOM.

## V. CONCLUSIONS

A. Based upon available documentation, GAAP is not contaminated by hazardous wastes as a result of past plant operations.

B. This survey revealed no indications or evidence of contaminant migration.

C. If GAAP is declared excess, a final investigation will be required by USATHAMA to provide a current clearance prior to release.

## VI. RECOMMENLATIONS

A. That no preliminary survey be conducted at this time.

B. When GAAP is declared excess by the Army, a comprehensive sampling program be conducted to certify that the property is safe for release.

## REFERENCES


1. DARCOM Installations and Activity Brochure, Report Control Symbol DRCIS-102-R1, dated 31 March 1977.

2. Modernization Engr Project for U.S. Army Ammunition Plant, St. Louis AAP Report No. 70-28-RE, dated August 1970.

3. Missouri Department of Conservation, Natural History Section, Jefferson City, Missouri.

4. Letter HSE-MF, USAEHA Regional Division West, dated 3 May 1976, Subject: U.S. Army Drinking Water Surveillance Program Analytical Results.

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6. Lutzen, E. E. and Rockway, J. D., Jr., "Engineering Geology of St. Louis County, Missouri," Missouri Geological Survey and Water Resources, EG Report No. 4, Rolla, Missouri, 1971.

7. Miller, D. E., et al., "Water Resources, St. Louis Area, Missouri," Missouri Geological Survey and Water Resources, WR Report No. 30, Rolla, Missouri, 1974.


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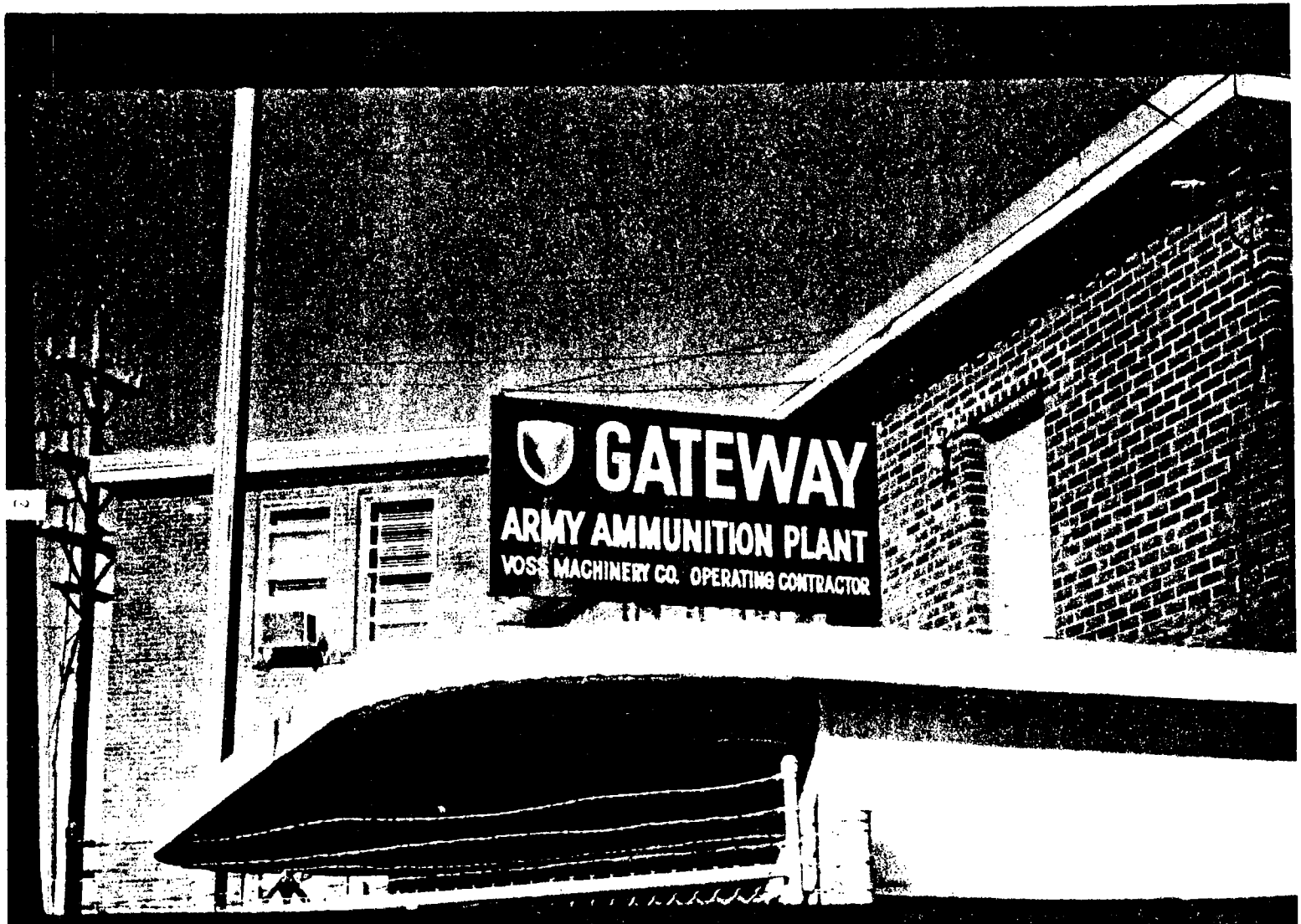
9. USAEHA, APG, letter report dated 10 February 1968, "Report of Water Pollution Evaluation Visit GAAP," 16-20 December 1968.

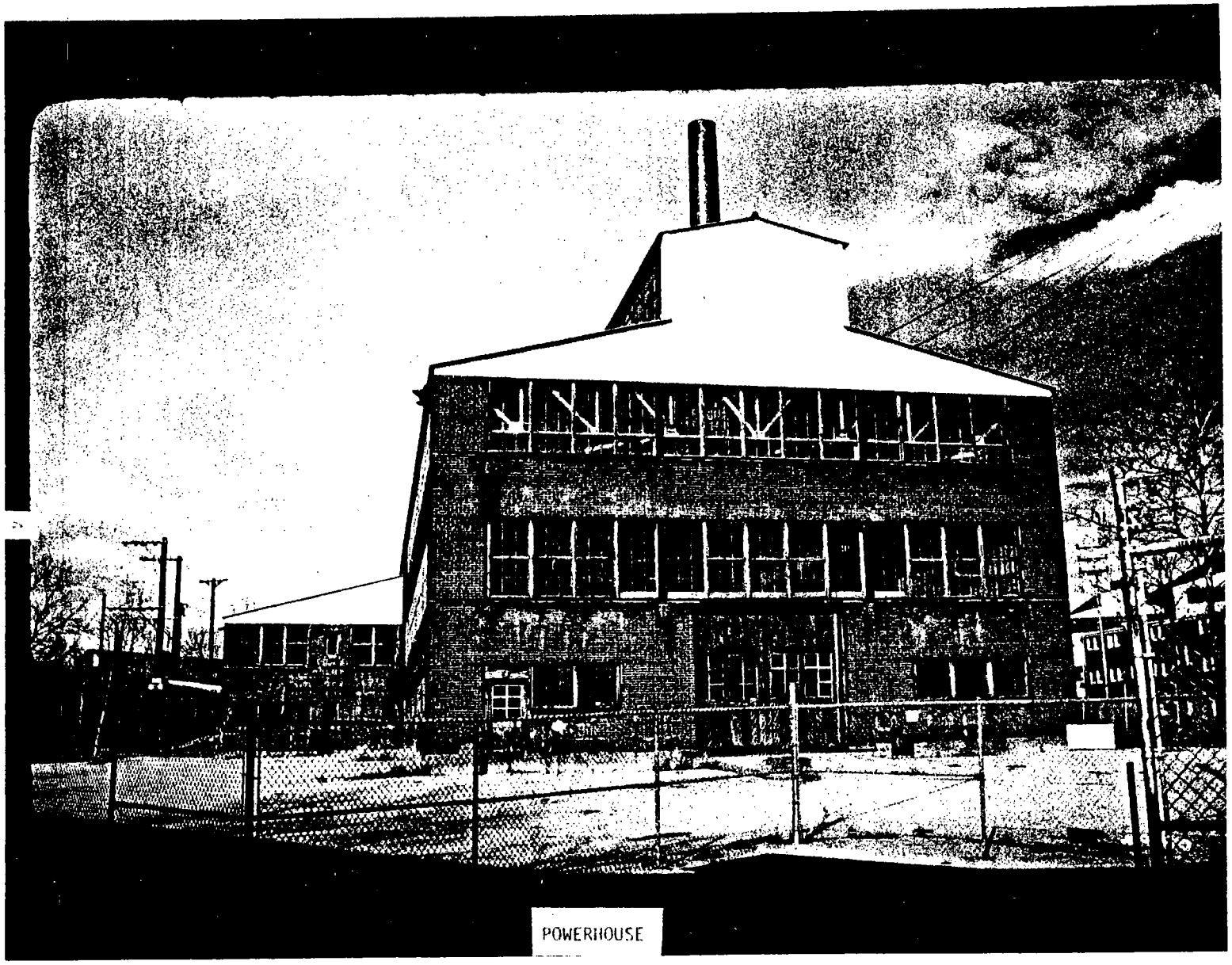
10. USAEHA, APG, report, "Report of Consultation Visit GAAP," Project No. 21-011-69, 5 June 1968.

11. USAEHA, Denver, Colorado, Report No. 66-0130-77, "Waste Management Practices GAAP," 15 February 1977.




ENTRANCE TO GATEWAY ARMY AMMUNITION PLANT

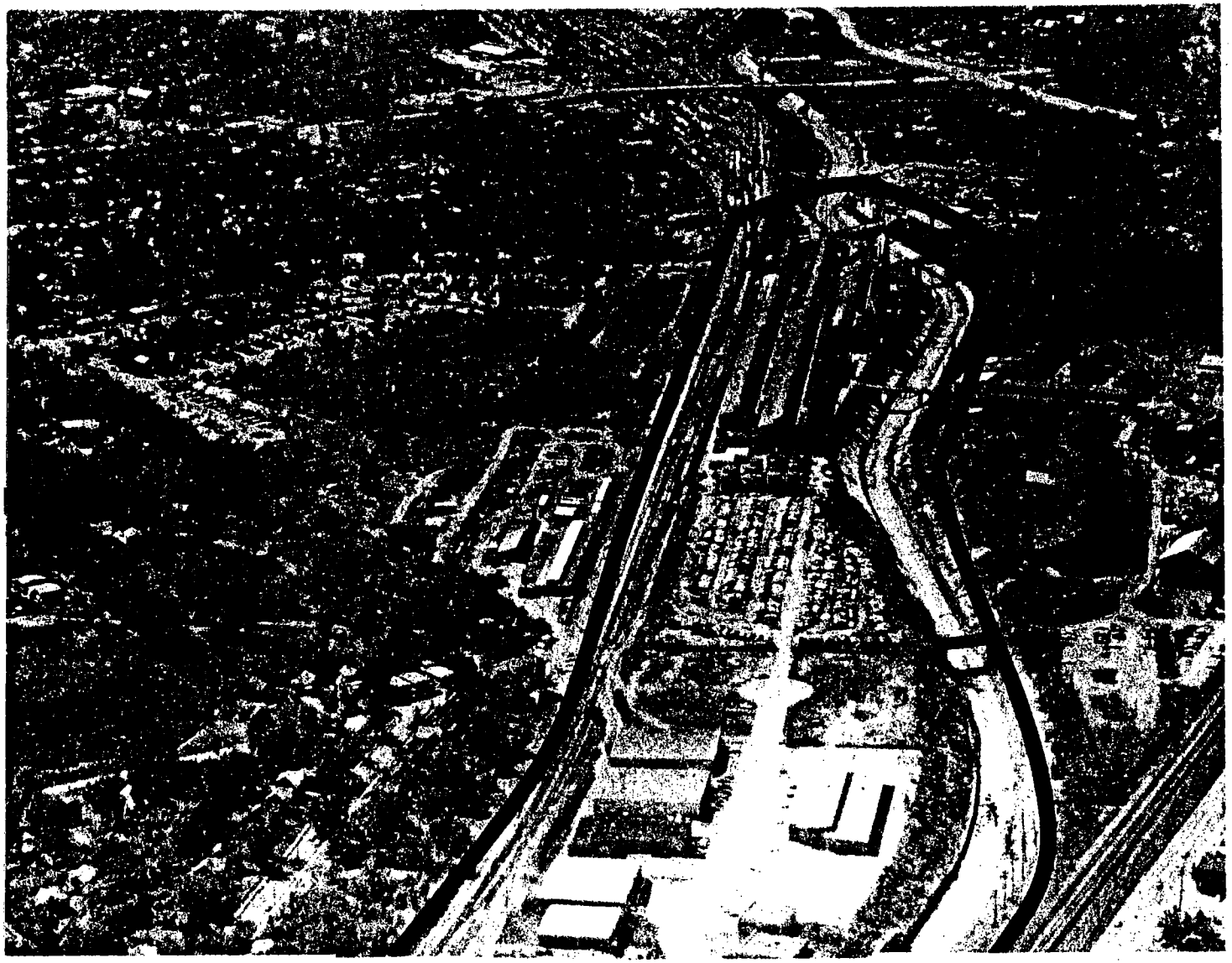
INTERIOR VIEW OF PRODUCTION LINE



POWERHOUSE

DISPOSAL AREA OF SCULLIN STEEL - PROPERTY IS LOCATED ACROSS THE Des Peres River

INTERIOR VIEW OF PRODUCTION LINE



HISTORICAL VIEW OF GATEWAY ARMY AMMUNITION PLANT

# APPENDIX B

## SOIL TEST BORING - GATEWAY ARMY AMMUNITION PLANT

SOIL TEST BORING - GATEWAY ARMY AMMUNITION PLANT

| Depth Below Ground Surface (Meters) | Blows On Casing | Sample Number | Blows On Sampler | Penetration Of Sampler (cm) | FIELD IDENTIFICATION OF SOIL (Include relative firmness, relative moisture, color, mention all soil constituents, etc.) | REMARKS |
|---|---|---|---|---|---|---|
| 1.45 | | | | | Reinforced concrete floor | |
| | | | | | Moist, medium stiff brown clay silt fill. | Set 3 m of 10.2 cm casing advanced boring w/10.2 cm roller cone bit. |
| 1.5 | | 1 | 18-18 | 15.2-15.2 | | |
| 1.6 | | | | | Moist, compact limestone rock and gravel fill with gray clayey silt binding. | |
| 2.1 | | | | | | |
| 2.9 | | | | | Damp, medium stiff light gray clayey silt fill. | |
| 3.0 | | 2 | 3-6 | 15.2-15.2 | | |
| | | | | | Damp, stiff to medium stiff brown clay, clayey silt and silt fill in layers. Trace of gray silt. | |
| 4.6 | | 3 | 2-4 | 15.2-15.2 | | |
| 5.3 | | | | | | |
| 6.1 | | 4 | 3-3 | 15.2-15.2 | Moist, medium stiff light gray silt, traces of clay; rust stains; and small roots. | |
| 7.6 | | 5 | 3-6 | 15.2-15.2 | Damp, stiff light brown and gray clay; some gravel. | |
| 8.1 | | | | | | |
| 9.1 | | 6 | 21-48 | 15.2-15.2 | Damp, hard light gray, slightly sandy shaley clay with thin layers of brown and yellow shaley clay. | |
| 9.60 | | | | | | |

SOIL TEST BORING - GATEWAY ARMY AMMUNITION PLANT (Continued)

| Depth Below Ground Surface (Meters) | Blows On Casing | Sample Number | Blows On Sampler | Penetration Of Sampler (cm) | FIELD IDENTIFICATION OF SOIL (Include relative firmness, relative moisture, color, mention all soil constituents, etc.) | REMARKS |
|---|---|---|---|---|---|---|
| 10.7 | | | | | Dry, medium hard, light gray, brown and yellow slightly sandy shale. | |
| | | 7 | 42-50 | 15.2-7.6 | | |
| 11.3 | | | | | | |
| 12.2 | | | | | Dry, medium hard, light gray to gray shale. A trace of clay. | |
| | | 8 | 40-50 | 15.2-8.9 | | |
| 13.7 | | | | | Dry, medium hard, light gray to gray shale. A trace of clay. | |
| | | 9 | 50-50 | 15.2-12.7 | | |
| 15.2 | | | | | | |
| | | 10 | 37-50 | 15.2-11.4 | | |
| 16.5 | | | | | Dry, very hard, brown, yellow and gray mottled shaley clay. | |
| 16.8 | | | | | | |
| | | 11 | 50 | 10.2 | | |
| 18.3 | | | | | | |
| | | 12 | 50 | 11.4 | | |

SOIL TEST BORING - GATEWAY ARMY AMMUNITION PLANT (Continued)

| Depth Below Ground Surface (Meters) | Blows On Casing | Sample Number | Blows On Sampler | Penetration Of Sampler (cm) | FIELD IDENTIFICATION OF SOIL (Include relative firmness, relative moisture, color, mention all soil constituents, etc.) | REMARKS |
|---|---|---|---|---|---|---|
| 20.0 | | 13 | 50 | 5.08 | Began NX coring. Cored 20 m to 21.5 m. Recovered 1.45 m of medium hard, light gray, medium to fine grain limestone with bedding plane 3.8 cm to 7.62 cm apart. 2.54 cm clay and weathered rock seam at 20.1 m. Pulled over 3.8 cm core in bottom of boring. Ground up 1.3 cm at 20.1 m due to softness of rock and coring action. | |
| 21.5 | | | | | Total depth of drilling at 21.5 m. | |

# APPENDIX C

## FLORA AND FAUNA
## GATEWAY ARMY AMMUNITION PLANT

## MISSOURI FLORA

Bergemot
Bittersweet Family
Bloodroot
Buttercup
Calamint
Cinquefoil
Columbine
Crateagus
Delphinium
Eugenia
Fire pink
Fleabane
Geranium
Goldenrod
Joe-pye weed
Lily Family
Mallow Family
Milkweed
Missouri gooseberry
Missouri primrose
Mullein
Nasturtium
Nettle
Orchid Family
Phlox
Pineweed
Plantain
Pokeweed
Queen Anne's Lace
Rhododendron
Rose Family
Sassafras
Scorpion grass
Selfheal
Solomon's seal
Spring beauty
Sorrel
St.-John's-wort
Teasel Family
Trillium
Verbena
Violet Family
Wild crocus

RARE AND ENDANGERED PLANTS OF ST. LOUIS COUNTY

*Asclepias meadii*
*Aster commutatus*
*Boltonia asteroides var. decurrens*
*Botrychium dissectum var. dissectum*
*Carex douglasii*
*Carex gracillima*
*Carex praegracilis*
*Carex schweinitzii*
*Distichlis stricta*
*Fontinalis disticha*
*Habenoria leucophaea*
*Lithospermum latifolium*
*Lycopodium lucidulum var. lucidulum*
*Malaxis unifolia f. unifolia*
*Matelea obliqua*
*Matricaria maritima var. agrestis*
*Orobanche ludoviciana*
*Petandra virginica*
*Polygonum bicorne*
*Prenanthes racemosa*
*Spiranthes ovalis*
*Stachys hyssopifolia var. ambigua*

## COMMON BIRDS OF ST. LOUIS COUNTY

- Baltimore oriole
- Blackbirds
  - Cowbird
  - Red-winged
  - Bronzed Grackle
- Bluebird
- Cardinal
- Catbird
- Chickadee
- Chimney Sweep
- Crow
- Field Sparrow
- Flycatchers
- Herons
  - Great blue
  - Little green
  - American bittern
  - American egret
- Horned lark
- Meadow lark
- Mourning dove
- Nuthatch
- Ovenbird
- Phoebe
- Purple martin
- Rails
  - Sora
  - Virginia
- Red-eyed vireo
- Redstart
- Robin
- Rose brown grosbeak
- Sparrow hawk
- Tanagers
  - Scarlet
  - Summer
- Titmouse
- Towhee
- Turkey vulture
- Warblers
- Whippoorwill
- Woodpeckers
  - Red-bellied
  - Downy
  - Hairy
  - Flicker
- Wood pewee
- Wood thrush
- Wrens
  - House
  - Carolina
- Yellow dove
- Yellow throat
- Yellow warbler

## 1975-1976 MISSOURI FUR HARVEST

| Species | Number Pelts |
|---|---|
| Raccoon | 276,524 |
| Opossum | 91,611 |
| Muskrat | 89,727 |
| Coyote | 14,243 |
| Gray Fox | 9,310 |
| Mink | 5,863 |
| Red Fox | 3,337 |
| Striped Skunk | 2,983 |
| Beaver | 2,320 |
| Bobcat | 911 |
| Badger | 127 |
| Spotted Skunk | 124 |
| Weasel | 58 |
| TOTAL | 497,138 |

## IMPORTANT HOOK AND LINE FISHES IN MISSOURI

| Common Name | Scientific Name |
|---|---|
| Rock Bass<br>Goggle-eye, shaddow | *Ambloplites rupertris* |
| Warmouth Sunfish<br>Goggle-eye, redear bass | *Chaenobryttus coronaris* |
| Bluegill Sunfish<br>Bream, brim, pondperch | *Lepomis macrochirus* |
| Green Sunfish<br>Black perch, goggle-eye | *Lepomis cyanellus* |
| Longear Sunfish<br>Red-belly, bream, tobacco box | *Lepomis megalotis* |
| Redhorses (5 kinds)<br>Mullet, yellow sucker | *Genus maxostoma* |
| Carp<br>German, mirror, leather | *Gyprinus carpio* |
| Freshwater Drum<br>Sheepshead, stone perch<br>croaker, white perch | *Aplodinatus grunniens* |
| Rainbow Trout | *Salmo gairdneri* |
| Smallmouth Bass<br>Bronzeback, redeye, brownie | *Micropterus dolomieui* |
| Spotted Bass<br>Kentucky bass | *Micropterus punctulatus* |
| Largemouth Bass<br>Line sides, green and black | *Micropterus salmoides* |
| White Bass<br>Stripped, sand, silver | *Roccus chrysops* |
| Channel Catfish<br>Fiddler, spotted, cat | *Ictalurus punctatus* |
| Blue Catfish<br>Fulton, chuckle-head | *Ictalurus furcatus* |
| Flathead Catfish<br>Shovelhead, yellow, mudcat | *Pilodictis alivaris* |

IMPORTANT HOOK AND LINE FISHES IN MISSOURI (Continued)

| Common Name | Scientific Name |
| --- | --- |
| Bullheads<br>Yellow, black, brown | Genus *ameiurus* |
| Walleye<br>Jack salmon, pike | *Stizostedion vitreum* |
| White Crappie<br>Calico bass | *Pomoxis annularis* |

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

November 26, 1979

TO: Karl Zollner, Jr., Chief
Engineering and Technical Services Section
Water Quality Division

Roy Schrameck, District Engineer
District 1
Water Quality Division

FROM: Larry Fink, Chemist
Office of Toxic Materials Control
Environmental Services Division

SUBJECT: NPDES Discharge Permit Application
SWS Silicones Corporation, Adrian, MI

In order to determine the total contributions of toxic materials to the waters of the State from the SWS Silicones Corporation facility resulting from existing and historical facility toxic materials management practices, it is necessary to characterize the loadings which result from the recharge of the River Raisin during once-in-ten-year, seven-day drought flow conditions with groundwater contaminated by substances originating from the facility. The Company should, therefore, submit the following information as an addendum to NPDES Discharge Permit Application MI 0026603:

1. Existing and historical land disposal sites (landfills, seepage lagoons, evaporation ponds, sludge drying beds, etc.).

   a. location on facility map;
   b. date of first use of the site, years of use to date, and, if applicable, date of final closure;
   c. geological and hydrogeological description of the site;
   d. description and chemical content of the materials disposed of at the site, including, but not limited to, the Michigan Critical Materials and EPA Priority Pollutants;
   e. estimated quantities of toxic materials present at the disposal site, inlcuding, but not limited to, the Michigan Critical Materials and EPA Priority Pollutants;
   f. description of leachate collection system or other groundwater contamination abatement practices at the site;
   g. any data presently in Company possession identifying and quantifying contaminants in land disposal site leachate or groundwater to which leachate flow is tributary.

2. Spill sites:

   a. location on facility map;
   b. date and time of spill and duration of loss;
   c. PEAS incident number, if available;

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PTE. MOBILE SEA

d. geological and hydrogeological description of the site;
e. description of each of the materials spilled there, including chemical name, trade name, and supplier, where appropriate;
f. the estimated or actual quantity of each of the materials spilled;
g. spill containment and clean-up procedures employed;
h. the estimated or actual quantity of each of the materials lost to the ground;
i. description of groundwater contamination abatement practices employed during and following the spill;
j. any data presently in Company possession identifying and quantifying contaminants in spill site leachate or groundwater to which spill flow is tributary.

clp

Date Distri[illegible]d

POINT SOURCE STUDIES
INSPECTION SHEET

Survey Date - September 24-25, 1979
Survey By - Boersen, McDonald, Irvin
NPDES Permit No. - MI0026034

Plant Name - SWS Silicones

Location - 3505 Sutton Road, Adrian County - Lenawee

Receiving Waters - Raisin River

Personnel Contacted/Title - Lee Andre, Plant Engineer

Comments from Survey:

The company's use of what they term a "Black Pond" was reviewed during the survey. This "Black Pond" has been previously described as a seepage lagoon in previous surveys. The narrative below describes its present use, past history and comments on its future status.

The Black Pond is a 180 ft. x 50 ft. pond which the company uses to dispose of reactor vessel washings, bad batches and floor washings from certain areas. The majority of the wastewater is from reactor washings and floor washings. Bad batches into the lagoon were indicated by the company as being infrequent, but a batch was discharged into the lagoon the first day of the survey. All wastewater is pumped out to the lagoon from special sumps in the plant. The company does maintain a list of what goes out to the lagoon. This list contains the volume and general area it originates from. Residues from sumps also go out to the lagoon. Skimmings from the sumps are hauled by a wastehauler. It was also noted during the survey that it appeared someone had dumped something into the lagoon from the bank.

The use of the lagoon began in 1968 when monomer production (a building block for the plant process) was still being conducted at the plant. When the plant started production in 1964 or 65, hydrochloric acid was a by-product of the reaction process. Local complaints caused the company to start neutralizing the HCl emmissions with a lime slurry in the reactor tanks. A lagoon was excavated to receive the slurry which was pumped to the lagoon. The clarified lagoon water would be mixed with lime again and the process repeated. The use of the lagoon for this purpose was continued until late 1974 when the monomer production was shut down. The lagoon was cleaned in 1975 and the residue spread on adjacent plant property. If there were other cleanings prior to this date, it is unknown.

The company has been monitoring the lagoon elevation since March on a daily basis, because of their concern if they were required to discharge. Previously the elevation was monitored infrequently. The lagoon depth has decreased over the summer. About 30,000 gallons/month goes to the lagoon. The company is also

trying to increase the pH of the lagoon with lime to improve clarification. This is also with the intent of being able to discharge if required. The pH was originally 5.1 S.U. on July 1 when the project began and on August 31 was 6.8 S.U., but the pond is still very turbid. The company has done some jar tests in the lab and it appears like the pH will have to get to about 11 S.U. before good clarification can be achieved.

Groundwater contamination from the lagoon appears to be a possibility. The soils in the area are sand and gravel. The lagoon presently has what appears to be a heavy coat of oil on the sides and bottom, but it is probably some type of silicone material, considering the nature of the material being put in it. Because of this layer of material, the lagoon probably has a low seepage rate, if any. But past history is a big question. The groundwater situation in the area is compounded by the fact that the lagoon is adjacent to the old Raisin Township Landfill which was recently closed by the State because it is inadequate.

The company did not really regard the lagoon as much of a problem. They do have under consideration possible revisions in the pond, such as putting in a tank, but prefer to keep the situation as is. Following the survey, I think they are more concerned now and are interested in starting a dialogue with department concerning it.

The lagoon was sampled for all critical materials reported by the company and a number of metals.

NATURAL RESOURCES COMMISSION
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STATE OF MICHIGAN

WILLIAM G. MILLIKEN, Governor

# DEPARTMENT OF NATURAL RESOURCES

STEVENS T. MASON BUILDING, LANSING, MICHIGAN 48926

RALPH A. MAC MULLAN, Director

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GEORGE F. LIDDLE
JOHN H. KITCHEL, M.D.

Pointe Mouillee State Game Area
RFD #2
Rockwood, Michigan 48173
March 10, 1971

Mr. Joe Calumungi, Production Manager
Stauffer-Wacker Silicone Corporation
Box 428 Sutton Road
Adrian, Michigan 49221

Dear Mr. Calumungi:

The purpose of this letter is to report the results of laboratory tests performed on the sample of the above plant's industrial waste water effluent collected on February 18, 1971. These analyses are reviewed below:

Stauffer Wacker Silicone Corporation, Adrian Plant
Quality of Industrial Waste Water Final Effluent

| | |
|---|---|
| Laboratory No. | 71-227* |
| Date Sampled | 2-18-71 @ 2:30 P.M. |
| Estimated Flow | 150 gpm |
| Appearance | slightly turbid with light green coloration |
| Suspended Solids | 30 mg/l |
| pH | 8.3 |
| Chloroform Extractables | 8 mg/l |
| Chlorides | 58 mg/l |
| Total Phosphates | 0.90 mg/l |

* Sample collected by K.E. Cooley and Frank Baldwin. Mr. Jim Barincin and Mr. Joe Calumungi, Stauffer-Wacker Silicone Corporation, witnessed the sampling. Analyses performed by Water Resources Commission's District 1 Laboratory.

If you have any questions concerning this letter, please feel free to contact this office.

Very truly yours,

WATER RESOURCES COMMISSION

Wayne E. Denniston

Wayne E. Denniston, P.E.
Basin Engineer

K.E. Cooley

by K. E. Cooley

cc: John M. Bohunsky, Regional Engineer
KC:gm

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