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Mr. R. E. Malpass, Chief
Bureau of Solid and Hazardous Waste
Management
South Carolina Department of Health
and Environmental Control
2600 Bull Street
Columbia, SC 29201

Dear Mr. Malpass:

HAZARDOUS WASTE PART B PERMIT APPLICATION, SAVANNAH RIVER PLANT (SRP)

Enclosed is the five-volume Part B permit application for the interim status hazardous waste management facilities at SRP. This application was prepared in accordance with Regulation R.61-79.270 of the South Carolina Hazardous Waste Management Regulations and your letter of August 2, 1984, received by the Savannah River Operations Office on August 6, 1984. A mid-course review of the status of the preparation of this application was conducted for the South Carolina Department of Health and Environmental Control (SCDH&EC) and the U. S. Environmental Protection Agency on December 6, 1984. Please note that this application also includes data on radionuclides that are discharged to the hazardous waste disposal facilities in 300-M, 200-F, and 200-H Areas in order to provide a complete picture of the practices and procedures associated with these facilities.

P&W
Prod.

OCC

The Part B permit application consists of five volumes, as shown below. Since it is probable that the several waste management facilities will progress through technical review, negotiation, and public participation steps at different rates, the total application has been organized as a series of separate applications each capable of standing alone. The organization of the permit is:

AMO

<u>VOLUME</u>	<u>CONTENT</u>
I*	General Plant Information and Revised Part A
II	Container Storage Facilities (Buildings 710-U, 709-G, 709-4G, and 709-2G)

AMHS&E



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III	M-Area Settling Basin (Post-Closure)
IV	F-Area Seepage Basins
V	H-Area Seepage Basins

*A "complete" application for a specific facility consists of two volumes.

As agreed at the mid-course review meeting, the permit application for the M-Area hazardous waste management facility, Volume III, is for the post-closure period. Basically, this is a Part B permit application excluding all, or most, of the following sections which are inapplicable:

<u>SECTION</u>	<u>TITLE</u>
D	Process Information
F	Procedures to Prevent Hazards
G	Contingency Plan

This facility will be closed using interim status standards, but the post-closure period will be managed, including groundwater protection, using permanent facility standards. The Closure Plan for the M-Area Settling Basin and Vicinity at the Savannah River Plant (DPSPU-84-11-11) was submitted to your office on October 2, 1984, and has been incorporated into Volume III, Section I, by reference.

As was discussed at the mid-course review meeting, some work to fulfill all information requirements remains to be completed. This work falls into two categories: current Part B information requirements, and information required by the Hazardous and Solid Waste Amendments of 1984 (1984 Resource Conservation and Recovery Act (RCRA) Amendments). The application adopts by reference the SRP Groundwater Assessment Plan, January 1985, submitted to SCDHEC on January 31, 1985; the proposed groundwater monitoring system will be based on the results of the interim status groundwater quality assessment program delineated in this plan. The schedules for completing the remaining work are shown in the enclosures to this letter.

In addition to fulfilling all information requirements, there are two items associated with the 200-F and -H Areas that will require further discussion and interpretation. First, basin H-3 currently is included within the compliance point for 200-H Area. The use of this basin was discontinued in 1962 because it failed to seep as designed. Inclusion of this basin as part of the 200-H Area hazardous waste management facility may not be appropriate. Second, current schedules call for the effluent treatment facility for 200-F and -H Areas (F&H ETF) to commence operation in 1989; the use of the seepage basins in these areas cannot be discontinued until the F&H ETF is available. Funding for this project has been requested in the FY 1986 Federal budget; no

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work can begin until the requested funds are authorized and appropriated by Congress. This schedule is in conflict with the requirements of the recently-enacted 1984 RCRA Amendments, which require surface impoundments that do not meet the minimum technological requirements to cease operations by November 1988. However, we are aggressively investigating our options for acceleration of the schedule for the F&M RTF and will let you know the outcome of our investigation.

For this application, the M-Area Hazardous Waste Management Facility has been defined as the M-Area Settling Basin. The seep area and Lost Lake, which receive the discharge from this basin, are included in the plans for closure of this facility; however, for the reasons outlined in the enclosure, we do not believe it is appropriate to consider them to be part of the Hazardous Waste Management Facility.

We recognize that there will be much public interest in this permit application. Therefore, we request that you schedule a public hearing during the public review segment of the permit application review process.

We look forward to working with you and your staff on the issuance of the necessary permits for the SRP hazardous waste management facilities. Questions your staff may have can be directed to L. C. Geidell (803/725-3966) of my staff.

Sincerely,

G. A. Smithwick,
Acting Assistant Manager for Health,
Safety and Environment

EEE:LCG:gsp

Enclosures

cc w/encl:

A. G. Linton, EPA-Region 4

cc w/o encl:

F. K. Hill, SCDHEC-Aiken

bcc w/encl:

P&W (Concur)

Prod. Div. (Concur)

PED

OCC (Concur)

bcc w/o encl:

J. A. Porter, Du Pont, SRP

R. E. Tiller, HQ (PE-20)

F. C. Gilbert, HQ (DP-4)

R. W. Cochran, HQ (DP-10)

AMO (Concur)

Manager's File

SR Reading File

Enclosures

1. Application for a Hazardous Waste Part B Permit, Savannah River Plant - 1985, Volumes I-V, Copy Nos. 1-5, inclusive
2. Submission Schedule, F-Area Hazardous Waste Management Facility
3. Submission Schedule, H-Area Hazardous Waste Management Facility
4. Submission Schedule, M-Area Hazardous Waste Management Facility
5. M-Area Hazardous Waste Management Facility

SUBMISSION SCHEDULESAVANNAH RIVER PLANTPART B HAZARDOUS WASTE PERMIT APPLICATIONF-AREA HAZARDOUS WASTE MANAGEMENT FACILITY

<u>Work To Be Completed</u>	<u>Reference*</u>	<u>Submit To SCDHEC</u>	<u>Remarks</u>
1. Certificate of structural integrity	270.17e	9/30/85	The as built drawings and specifications for the seepage basin dikes no longer exist. For this reason, to accomplish the dike stability analysis (Section D.6, Dike Design), field borings at critical locations followed by laboratory testing of undisturbed soil samples are required. Arrangements are progressing to accomplish this work. The long lead time projected is due to the anticipated requirement to collect and test soil samples which are radioactive.
2. Appendix VIII analyses (one year of sampling)	270.14(c)(4)	See Remarks	See SRP interim status groundwater assessment plan dated January, 1985. Items 2, 3 & 4 will be submitted 15 months after SCDHEC approves this plan.
3. Define hazardous constituents for compliance monitoring	264.93(a), 270.14(c)(7)(iii)	See Remarks, Item 2	
4. Define compliance point concentration limits	270.14(c)(7)(iv)	See Remarks, Item 2	

Enclosure 2

<u>Work To Be Completed</u>	<u>Reference*</u>	<u>Submit To SCDHEC</u>	<u>Remarks</u>
5. Install compliance point monitoring wells	264.97(a) & (b)	Not Applicable	A completion report will be submitted within 15 months after SCDHEC has approved the point of compliance groundwater monitoring system defined in Revision 0 of the permit application.
6. Sample new compliance point monitoring wells for hazardous constituents identified in Item 2 if necessary to supplement data acquired in Item 2	270.14(c)(4)(ii)	See Remarks	Data to supplement item 2 for plume definition purposes will be reported to SCDHEC six months after compliance point monitoring wells are installed, if applicable.
7. Initiate compliance monitoring program	264.99	Quarterly	Initial samples will be taken during the calendar quarter which follows issuance of a final permit.
8. Public exposure assessment	**	8/8/85	Adequate guidance to prepare this assessment does not exist currently. However, the submission date is mandated by the reference cited.
9. Certificate of compliance with interim status groundwater monitoring requirements	***	11/8/85	Although not required for the permit application, this certification is required to continue operation under interim status pending issuance of a final permit.

*SCDHEC Regulation R.61-79.

**Section 3019(a) Solid Waste Disposal Act (1984 RCRA Amendments)

***Section 3005(e) Solid Waste Disposal Act (1984 RCRA Amendments)

Enclosure 2

SUBMISSION SCHEDULESAVANNAH RIVER PLANTPART B HAZARDOUS WASTE PERMIT APPLICATIONH-AREA HAZARDOUS WASTE MANAGEMENT FACILITY

<u>Work To Be Completed</u>	<u>Reference*</u>	<u>Submit To SCDHEC</u>	<u>Remarks</u>
1. Certificate of structural integrity	270.17e	9/30/85	The as built drawings and specifications for the seepage basin dikes no longer exist. For this reason, to accomplish the dike stability analysis (Section D.6, Dike Design), field borings at critical locations followed by laboratory testing of undisturbed soil samples are required. Arrangements are progressing to accomplish this work. The long lead time projected is due to the anticipated requirement to collect and test soil samples which are radioactive.
2. Appendix VIII analyses (one year of sampling)	270.14(c)(4)	See Remarks	See SRP interim status groundwater assessment plan dated January, 1985. Items 2, 3 & 4 will be submitted 15 months after SCDHEC approves this plan.
3. Define hazardous constituents for compliance monitoring	264.93(a), 270.14(c)(7)(iii)	See Remarks, Item 2	
4. Define compliance point concentration limits	270.14(c)(7)(iv)	See Remarks, Item 2	

Enclosure 3

<u>Work To Be Completed</u>	<u>Reference*</u>	<u>Submit To SCDHEC</u>	<u>Remarks</u>
5. Engineering feasibility study	270.14(c)(7)	See Remarks	An engineering feasibility study for a corrective action program will be submitted within 180 days after SCDHEC approves proposed compliance point concentration limits, Item 4.
6. Install compliance point monitoring wells	264.97(a) & (b)	Not Applicable	A completion report will be submitted within 15 months after SCDHEC has approved the point of compliance groundwater monitoring system defined in Revision 0 of the permit application.
7. Sample new compliance point monitoring wells for hazardous constituents identified in Item 2 if necessary to supplement data acquired in Item 2	270.14(c)(4)(ii)	See Remarks	Data to supplement item 2 for plume definition purposes will be reported to SCDHEC six months after compliance point monitoring wells are installed, if applicable.
8. Initiate compliance monitoring program	264.99	Quarterly	Initial samples will be taken during the calendar quarter which follows issuance of a final permit.
9. Public exposure assessment	**	8/8/85	Adequate guidance to prepare this assessment does not exist currently. However, the submission date is mandated by the reference cited.
10. Certificate of compliance with interim status groundwater monitoring requirements	***	11/8/85	Although not required for the permit application, this certification is required to continue operation under interim status pending issuance of a final permit.

*SCDHEC Regulation R.61-79.

**Section 3019(a) Solid Waste Disposal Act (1984 RCRA Amendments)

***Section 3005(e) Solid Waste Disposal Act (1984 RCRA Amendments)

Enclosure 3

SUBMISSION SCHEDULESAVANNAH RIVER PLANTPART B HAZARDOUS WASTE PERMIT APPLICATIONM-AREA HAZARDOUS WASTE MANAGEMENT FACILITY

<u>Work To Be Completed</u>	<u>Reference*</u>	<u>Submit To SCDHEC</u>	<u>Remarks</u>
1. Appendix VIII analyses (one year of sampling)	270.14(c)(4)	See Remarks	See SRP interim status groundwater assessment plan dated January, 1985. Items 1, 2 & 3 will be submitted 15 months after SCDHEC approves this plan.
2. Define hazardous constituents for compliance monitoring	264.93(a), 270.14(c)(7)(iii)	See Remarks, Item 1	
3. Define compliance point concentration limits	270.14(c)(7)(iv)	See Remarks, Item 1	
4. Install compliance point monitoring wells	264.97(a) & (b)	Not Applicable	A completion report will be submitted within 15 months after SCDHEC has approved the point of compliance groundwater monitoring system defined in Revision 0 of the permit application.
5. Engineering feasibility study	270.14(c)(7)	See Remarks	An engineering feasibility study will be submitted within 180 days after SCDHEC approves proposed compliance point concentration limits, Item 3, should hazardous constituents, in addition to chlorocarbons, require corrective action.

<u>Work To Be Completed</u>	<u>Reference*</u>	<u>Submit To SCDHEC</u>	<u>Remarks</u>
6. Sample new compliance point monitoring wells for hazardous constituents identified in Item 2 if necessary to supplement data acquired in Item 2	270.14(c)(4)(11)	See Remarks	Data to supplement item 2 for plume definition purposes will be reported to SCDHEC six months after compliance point monitoring wells are installed, if applicable.
7. Initiate compliance monitoring program	264.99	Quarterly	Initial samples will be taken during the calendar quarter which follows issuance of a final permit.
8. Public exposure assessment	**	8/8/85	Adequate guidance to prepare this assessment does not exist currently. However, the submission date is mandated by the reference cited.
9. Certificate of compliance with interim status groundwater monitoring requirements	***	11/8/85	Although not required for the permit application, this certification is required pending issuance of a final post-closure permit.

*SCDHEC Regulation R.61-79.

**Section 3019(a) Solid Waste Disposal Act (1984 RCRA Amendments)

***Section 3005(e) Solid Waste Disposal Act (1984 RCRA Amendments)

Enclosure 4

M-AREA HAZARDOUS WASTE MANAGEMENT FACILITY

DOE plans to close the M-Area Settling Basin subject to SCDHEC approval under the Closure Plan (DPSPU-84-11-11) for the M-Area Settling Basin and Vicinity at the Savannah River Plant, as transmitted to SCDHEC by DOE on October 2, 1984. The M-Area Settling Basin is the only Hazardous Waste Management Facility in M-Area previously recognized under interim status. The closure plan is intended to address the overall program associated with closing the M-Area Settling Basin and Vicinity which includes the overflow ditch, the seep area and Lost Lake. The closure plan previously submitted specifically identified these affected areas outside the M-Area Settling Basin in the description, characterization of waste inventories, closure plans, and post-closure program (see sections 4.1, 4.8, 4.9, 6.0, 6.3, 6.4, 6.5 and 7.0). The Post-Closure Program in section 7.0 outlines the planned monitoring program, the remedial action program and program for future investigations.

The M-Area Settling Basin was built in 1958 to settle out and contain uranium and other heavy metals by neutralization and precipitation. With time, wastewater input exceeded the seepage rate and a weir and ditch were installed to receive settling basin overflow. Settling Basin overflow drained through a natural seep area to Lost Lake. The overflow from this basin is not a hazardous waste per SCDHEC Regulation R.61-79.261. Consequently, the M-Area Hazardous Waste Management Facility is the Settling Basin. The justification for this interpretation is presented below.

The regulations specify that a solid waste generated from the treatment of a hazardous waste is itself a hazardous waste unless and until (1) it does not exhibit any characteristics of a hazardous waste (as defined in Subpart C) and/or until (2) it is delisted, if it is derived from a listed waste (per Subpart D) [R.61-79.261.3(c)(d)].

Hazardous Characteristics

There are four classifications of hazardous characteristics (R.61-79.261 Subpart C):

- (1) Ignitability
- (2) Corrosivity
- (3) Reactivity
- (4) EP Toxicity

Enclosure 5

The M-Area basin effluent does not exhibit either ignitability or reactivity characteristics. Monthly measurements conducted from December, 1981 to June, 1982 demonstrate that the basin effluent pH fluctuated from 8.9 to 11.5 (Table 1)-- within the corrosivity limits (greater than 2.0 and less than 12.5) In addition, the concentrations of the EP toxic metals in the basin effluent are below the limits used to classify these metals as hazardous. Based on these data, the basin effluent is not hazardous.

The concern over trace metals in the settling basin effluent carryover also led to a 1980 study of the sediments in Lost Lake. EP Toxicity tests were conducted on cores taken on five lines extending from the point where the basin discharge enters Lost Lake (Table 2). These results demonstrate that the concentrations of EP toxic metals in the Lost Lake sediments are generally below detection limits, clearly indicating that the sediments are not hazardous.

Listed Hazardous Waste

Listed hazardous wastes possess a "cradle to grave" character, i.e., if a listed waste has entered a facility it is presumed to be present in the effluent from that facility unless that effluent has been delisted. Due to the type of manufacturing operations in M-Area, potential exists for the presence of two listed wastes in the basin:

- (1) F006 - sludge from wastewater treatment of electroplating wastes, and
- (2) F001 - spent halogenated solvent and sludge (1,1,1-trichloroethane). (R.61-79.261.31)

The first listed waste is sludge from a wastewater treatment facility treating electroplating wastes (F006). There are two areas where one must examine the possibility of the presence of this waste--the influent to the basin and the effluent from the basin.

The M-Area manufacturing operations contain electroplating operations. The raw process wastewaters from these operations comprise part of the influent to the settling basin. These wastewaters cannot be considered F006 since they are not treated in any way prior to entering the settling basin.

The M-Area basin is a permitted wastewater treatment facility (Permit #SC7289). In the M-Area basin, influent wastewaters are neutralized producing a precipitated sludge containing metal hydroxides and phosphates (Table 3). This sludge layer is classified as the listed hazardous waste, F006: sludge from wastewater treatment of electroplating operations (R.61-79.261.31). Thus, the M-Area basin discharge is a treated wastewater effluent and not a sludge in the F006 category, per the definition of "sludge" in R.61-79.260.10.

The second listed waste is the spent halogenated solvent, 1,1,1-trichloroethane, and its sludge from recovery operations (F001). The basin operation would not of itself result in the presence of 1,1,1-trichloroethane. However, the influent must be examined for this listed waste.

M-Area operations include a vapor degreasing processing step which results in the evaporation of almost all of the 1,1,1-trichloroethane. The spent degreaser is recovered by an evaporation/condensation process. This process is closed loop with no release to the waste effluent. The residual sludge which remains from the recovery operation is drummed and stored in a permitted hazardous waste storage facility. The amount of solvent released to the basin is minimized by a solvent management plan. During the degreasing operations, small amounts of the 1,1,1-trichloroethane are carried over from the degreasers into rinsewater tanks. This rinsewater is eventually released to the basin. The M-basin, therefore, does not receive either a spent halogenated solvent or a sludge from the recovery of said solvent.

The M-basin does receive a mixture of small quantities of solvent and process wastewaters. The regulations provide an exclusion from the hazardous waste classification for wastes which contain a mixture of a listed waste and a solid waste [R.61-79.261.3(a)(2)(iv)(B)]. The regulations specify that a wastewater discharge subject to regulation under the S. C. Pollution Control Act Section 48-1-10 may be excluded from the hazardous waste definition based upon a maximum concentration limit: (maximum weekly usage/average weekly flow less than 25 ppm for 1,1,1-trichloroethane).

A material balance for 1,1,1 trichloroethane in M-Area would resemble:

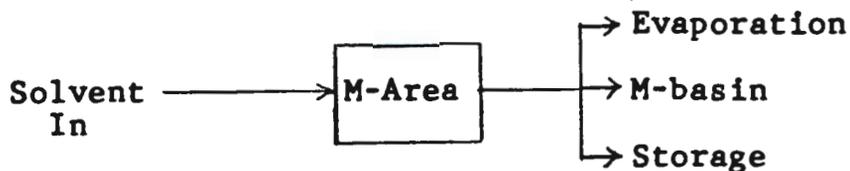


Table 4 presents 1,1,1-trichloroethane usage since November 1980. M-Area records indicate that the maximum monthly usage of 1,1,1-trichloroethane occurred in August 1983. There are three outlet paths for the solvent: storage, evaporation, release to the basin.

Storage records indicate that about 0.6% of the 1,1,1-trichloroethane used in M-Area is drummed and stored.

An estimate of evaporation can be calculated based upon available data. The operation of the vapor degreasing process results in intentional solvent evaporation. Operating personnel have kept records of 1,1,1-trichloroethane addition to 321-M tanks since June 1984. These very rough records indicate that essentially all of the solvent is evaporated.

Actual 1,1,1-trichloroethane measurements on the influent to the basin support the evidence that the 1,1,1-trichloroethane is in fact released by evaporation (Table 5). These grab samples indicate the average 1,1,1-trichloroethane concentration in the basin influent was 1.7 mg/l, i.e. about 0.30% of the 1,1,1-trichloroethane used was released to the basin. Assuming 0.6% of the 1,1,1-trichloroethane went to storage, the evaporation rate can be calculated at 99.1%. To ensure conservatism in the calculation, we will use this latter rate for evaporation.

Storage and evaporation of 1,1,1-trichloroethane in M-Area account for at least 99.7% of the M-Area usage. Release to the seepage basin is less than 0.3% of the usage.

Calculation of Maximum Weekly Concentration

	<u>1,1,1-trichloroethane gal/week</u>
Maximum Weekly Usage	3538
Storage	21
<u>Evaporation</u>	<u>3506</u>
Released to basin	11
Flow to basin	1.75×10^6 gal/week
Density	11 lb/gal

$$[[(11 \text{ gal/week}) \times (11 \text{ lb/gal})] / (1.75 \times 10^6 \text{ gal/week})] \times (119974 \text{ mg-gal/l-lb}) = 8.3 \text{ mg/l}$$

The calculated maximum weekly concentration of 8.3 mg/l is well below the mixture rule limit of 25 ppm for 1,1,1-trichloroethane. Therefore, the influent to the basin is not classified as a hazardous waste by a F001 listed waste classification.

Based upon this preceding discussion, the basin overflow is not a hazardous waste. The areas receiving this treated overflow are not considered part of the M-Area HWMF since they receive no hazardous waste.

References

J. B. Pickett and W. P. Colven; Closure Plan for the M-Area Settling Basin and Vicinity at the Savannah River Plant, DPSPU 84-11-11; September 1984.

E. J. Christensen and D. E. Gordon, Technical Summary of Groundwater Quality Protection Program at Savannah River Plant, DPST-83-829 Vol. 1; December 1983.

J. E. Harris to H. A. McClearen; Sediment Sampling of Lost Lake, Inter-Office Memorandum; August 1980

Table 1

Influent and Effluent Samples From N-Area Settling Basin, Winter/Spring 1982

Date Sampled	Concentrations						
	12/15-16/81	1/12-13/82	2/11/82	3/9-10/82	4/13-14/82	5/11-12/82	6/15-16/82
Flow (gpm)	In -	164	227	221	174	283	561
	Out -	175	200	215	186	210	410
	Δ -	+9	-27	-6	+12	-73	-151
pH	In -	2.9-8.9	4.3-8.7	2.8-8.0	4.5-8.9	6.3-7.5	3.2-8.1
	Out -	8.9-9.9	9.5-9.9	9.5-11.5	9.7-10.1	8.9-10.2	9.8-10.5
Conductivity umho/cm	In -	90-261	80-148	108-606	39-149	64-151	84-333
	Out -	303-330	195-397	201-505	286-321	236-598	608-694
NO ₃ ⁻ (as N mg/L)	In 3.65	8.5	6.1	255	9.0	5.0	10.0
	Out 14.6	20.0	6.0	27	38	22	28
P (mg/L)	In 1.06	0.26	0.26	39.3	0.39	0.13	1.12
	Out 0.17	1.24	2.50	1.57	1.97	1.04	1.85
SO ₄ (mg/L)	In <3	18	<5	8	<5	5	5
	Out <3	15	<5	198	<5	225	155
Al (mg/L)	In 7.9	4.2	0.6	2.1	1.5	0.32	1.96
	Out 0.77	10.0	12.9	17.5	11.2	10.9	129
Cu (mg/L)	In 0.76	0.04	0.037	0.096	0.016	0.014	0.026
	Out 0.16	<0.02	0.013	0.012	<0.002	0.006	0.007
Pb (mg/L)	In 0.009	0.026	0.008	0.208	0.05	0.006	0.023
	Out 0.003	0.004	0.004	0.004	0.002	0.005	0.012
Ni (mg/L)	In 4.49	1.89	2.48	9.6	1.53	2.11	2.03
	Out 0.90	0.37	0.51	0.29	0.19	0.40	0.38
Gross α (pCi/L)	In 560	890	246	720	1840	916	911
	Out 322	102	114	180	109	213	198
Gross β (pCi/L)	In 848	1000	636	26,300	2540	1650	3120
	Out 532	217	244	296	129	278	361
Ra-226 (pCi/L)	In 0.28	0.23	0.36	0.23	0.83	0.37	0.34
	Out 0.22	0.13	0.1	0.18	0.12	0.28	0.26
Tetrachloroethylene Perclene (ugm/L)	In 17	19	24	27	12	12	7
	Out <2	15	8	18	9	9	52
1,1,1-Trichloroethane 1,1,1-TCE (ugm/L)	In 322	764	21	262	38	25	17
	Out 469	998	206	1090	301	178	134
As (mg/L)	In <0.001	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002
	Out 0.008	<0.002	0.006	0.006	<0.002	0.001	0.011
Ba (mg/L)	In <0.05	<0.05	0.28	<0.05	<0.05	0.198	<0.1
	Out <0.05	<0.05	0.08	<0.05	<0.05	0.096	<0.1
Cd (mg/L)	In 0.0047	0.0016	<0.0003	0.0020	0.0072	0.004	0.0045
	Out 0.0004	0.0004	<0.0003	0.0006	<0.0003	<0.001	<0.0003
Cr (mg/L)	In 0.003	0.004	0.065	0.062	0.003	<0.002	0.002
	Out 0.003	0.002	0.010	0.002	<0.001	<0.002	0.009
Hg (mg/L)	In 0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0006
	Out 0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0006

Ref.: Pickett and Colven, 1984

Table 2
Lost Lake Sediments
EP Toxicity Test Results

Concentration mg/l

<u>Core</u>	<u>Depth</u>	<u>As</u>	<u>Cd</u>	<u>Cr</u>	<u>Pb</u>	<u>Hg</u>	<u>Ag</u>
A-1	0-6	<0.005	<0.0005	<0.005	0.01	<0.0002	<0.001
	6-12	<0.005	<0.0005	<0.005	<0.005	<0.0002	<0.001
	12-18	<0.005	<0.0005	<0.005	<0.005	<0.0002	<0.001
	18-24	<0.005	<0.0005	<0.005	<0.005	<0.0002	<0.001
	24-36	<0.005	<0.0005	<0.005	<0.005	<0.0002	<0.001
	36-48	<0.005	<0.0005	<0.005	<0.005	<0.0002	<0.001
B-1	0-6	<0.005	<0.0005	<0.005	0.006	<0.0002	<0.001
C-1	0-6	<0.005	<0.0005	<0.005	<0.005	<0.0002	<0.001
C-2	0-6	--	--	<0.005	<0.005	--	--
C-5	0-6	--	--	<0.005	<0.005	--	--
D-1	0-6	<0.005	<0.0005	<0.005	<0.005	<0.0002	<0.001
D-3	0-6	--	--	<0.005	<0.005	--	--
E-1	0-6	<0.005	<0.0005	<0.005	<0.005	<0.0002	<0.001
E-2	0-6	--	--	<0.005	<0.005	--	--

Ref: J. E. Harris, 1980

Table 3
 Analyses of Bottom Sludge (Green Floc) Layer in II-Area Basin

Study Constituent	February 11, 1982 Concentration (µg/gm of solution)	Oct. 79 of solution)	Aug. 81	Nov. 81	Weighted Average
NO ₃ + NO ₂ (as N)	176	36	-	-	100
P	298	100	-	-	200
SO ₄	-	42	-	-	42
Cl	-	2.2	-	-	2.2
F	-	0.11	-	-	0.11
B	-	1.3	-	-	1.3
Na	1137	-	-	-	1137
K	2.2	-	-	-	2.2
Al	-	2450	-	-	2450
Fe	2.8	-	-	-	2.8
Cu	5.1	11	18	-	12
Ni	484	750	1510, 92, 180*	-	700
Zn	3.5	-	8	-	7
U	460	439	-	-	450
Pb	-	25.5	40	-	35
Hg	-	-	0.18	-	0.18
As	-	-	7.0	-	7.0
Cd	-	-	0.38	-	0.38
Cr	-	-	25	-	25
Ag	-	-	3.5	-	3.5
No. of Samples	1	1	3	2	-
Z Solids	-	-	8, 11, 3*	-	9.5
Triclene	-	-	0.17, 0.011, -	0.042, 0.076†	~0.07
Perclene	-	-	300, 1.2, 0.3	44, 37.3	~90
1,1,1-TCE	-	-	87, 0.12, 0.5	1.4, 4.8	~20

* Near inlet, near outlet, near outlet; respectively

† Near inlet, near outlet; respectively

Ref.: Pickett and Colven, 1984

Table 4
1,1,1 Trichloroethane Usage

Building Usage gal/mo

<u>Month</u>	<u>321-M</u>	<u>313-M</u>	<u>320-M</u>
Nov. 1980	778	239	178
Dec. 1980	1363	420	314
Jan. 1981	1694	521	391
Feb. 1981	1898	584	438
March 1981	1906	440	387
April	2163	666	499
May	1523	469	352
June	1458	449	336
July	143	44	33
August	2993	921	691
September	3400	1046	785
October	3194	983	737
November	6423	2000	1500
December*	----	----	----
Jan. 1982	3141	966	725
Feb.	2329	717	537
March	1999	615	461
April	4306	1325	994
May	2384	734	550
June	1593	664	498
July	3958	1218	914
August	752	231	174
September	2779	855	641
October	2886	888	666
November	1814	558	419
December	2510	772	579
Jan. 1983	1698	522	392
Feb.	2229	686	514
March	2611	803	603
April	2013	619	464
May	1990	617	459
June	2463	758	568
July	2580	794	596
Aug.	9967	3066	2300
Sept.	3259	1003	752
Oct.	3439	1058	794
Nov.	2407	741	555
Dec.	3815	1174	880
Jan. 1984	2603	801	601
Feb.	393	121	91
March	1849	569	427
April	480	148	111
May	4794	1475	1106
June	8876	2731	2048

* Records indicate overestimated use in previous month.

Table 4 (Contd)

<u>Month</u>	<u>321-M</u>	<u>313-M</u>	<u>320-M</u>
July	2744	844	633
Aug.	6448	1984	1488
Sept.	3417	1051	789
Oct.	3280	1009	757
Nov.	4491	1382	1036
Dec.	7807	2402	1802
Jan. 1985	5665	1743	1307

Table 5
Evaporation Calculations

<u>Month</u>	<u>Influent Concentration* (mg/l)</u>	<u>Solvent Use Mo. (gal/Mo.)</u>
11/82	8.5	2791
12/82	0.034	3861
1/83	0.065	2612
2/83	---	---
3/83	0.081	4017
4/83	0.072	3096
Average	1.7504	3275.4
Percent to basin: 0.30%		

*Ref: E. J. Christenson and D. E. Gordon