



State of Wisconsin

DEPARTMENT OF NATURAL RESOURCES

Carroll D. Beaudry, Secretary

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TELEFAX NO. 608-267-3579

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September 29, 1989 ✓

IN REPLY REFER TO: 4430

Mr. Kevin O'Toole
District Manager
Waste Management of Wisconsin, Inc.
Two Park Plaza
10850 West Park Place, Suite 1200
Milwaukee, WI 53224

RECEIVED
OCT 5 1989
KEVIN O'TOOLE

SUBJECT: Conditional Approval (Modification) of the
Chapter NR 181 Closure and Long-Term Care Plan
Omega Hills North Landfill
EPA ID# WID000808568

Dear Mr. O'Toole:

Attached is a conditional approval (modification) for your facility in response to the proposed ch. NR 181, Wis. Adm. Code, Closure and Long-Term Care Plan, dated March 30, 1989, received on March 31, 1989, and the Contingency Plan and Inspection Plan supplements received on June 9, 1989, all prepared by Warzyn Engineering, Inc. A proposed determination was sent to you on August 14, 1989. A response to the proposed determination was received on September 13, 1989, through your attorneys, Frieber, Finerty & St. John, S. C., which included comments and other legal documents that requested various actions by the Department. The legal documents will be responded to under separate cover. A meeting was held on September 14, 1989 to discuss certain technical issues related to the draft determination. You submitted additional comments related to the statistical test used for groundwater monitoring on September 14, 1989, through your attorneys. You submitted additional comments on the final use plan issue and a copy of an August 13, 1976 soil documentation report prepared by STS Engineers, Inc. on September 19, 1989. You submitted information on a site in Pennsylvania relating to compliance boundary issues on September 26, 1989. Further discussions regarding statistical procedures took place on September 28, 1989.

The attached determination represents the first formal administrative action under ch. NR 181, Wis. Adm. Code (the hazardous waste rules--to be renumbered chs. NR 600-699 series in the future) for the facility. As a result, future plan approval modifications for the facility will modify this determination, as well as modifying the Plan of Operation approval for the facility under chs. NR 500-520, Wis. Adm. Code.

On July 14, 1989, the Department approved only the cost estimates portion of the plan under chs. NR 500-520, Wis. Adm. Code, as a Plan of Operation

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modification. You should note that no review of the Closure and Long-Term Care Plan against the requirements of ch. NR 181, Wis. Adm. Code, occurred under that previous action. Therefore, the attached determination contains conditions reflecting the results of our review under ch. NR 181, Wis. Adm. Code.

This determination updates the facility's groundwater monitoring program and addresses groundwater corrective action under s. NR 181.49, Wis. Adm. Code. This determination does not address corrective action requirements under the federal Hazardous and Solid Waste Amendments of 1984 (HSWA), which U.S. EPA is currently responsible for implementing in Wisconsin (The Department plans to obtain authorization to implement that portion of the program in the future), nor corrective action requirements under s. 144.735, Stats. As indicated in previous correspondence, the facility will be required to comply with such requirements by U. S. EPA or the Department in the future. HSWA corrective action or corrective action under s. 144.735, Stats., should not be confused with groundwater corrective action under s. NR 181.49, Wis. Adm. Code. These are separate authorities and programs, even though there can be overlap between the type of remedial actions required under each.

HISTORICAL OVERVIEW OF HAZARDOUS WASTE ACTIVITIES

Department files show the first formal Department acknowledgement of toxic and hazardous waste disposal activities at the facility in a letter dated May 12, 1971. These files also have records of actual waste disposal report logs, beginning in July, 1974. As a result of the promulgation of the federal Resource Conservation and Recovery Act (RCRA) hazardous waste regulations, Waste Management of Wisconsin, Inc. (WMI) applied for and received interim status as a hazardous waste disposal facility from the U.S. EPA in November, 1980. As a result of the promulgation of ch. NR 181, Wis. Adm. Code, Wisconsin's hazardous waste rules, WMI applied to the Department for an interim license on November 3, 1981.

In conjunction with an inspection at the facility in June, 1982 to determine if the facility was in compliance with interim license standards, WMI submitted a closure and long-term care plan for review. Subsequently, revised cost estimates for closure and long-term care were submitted in August, 1982 as a revision to that plan and to meet the requirements of ch. NR 180, Wis. Adm. Code, the solid waste rules in effect at that time.

In a letter dated November 19, 1982, the Department notified WMI that the facility was not in compliance with the interim license requirements. That letter also stated that the Department intended to deny the interim license application unless WMI came into compliance with several requirements, including the need to revise the previously submitted closure and long-term care plan and cost estimates. A more detailed response to the closure/long-term care cost estimates was outlined by the Department in a letter to WMI dated December 16, 1982.

According to the March 30, 1989 Closure and Long-Term Care Plan submittal, hazardous waste was co-disposed of at the site prior to October 29, 1982.

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Disposal of solid wastes at the site continued after that date. WMI withdrew the interim license application on January 19, 1983, in accordance with a final executed stipulated settlement. On February 25, 1983, the Department outlined in a letter to WMI the requirements for proper closure of the facility under ch. NR 181, Wis. Adm. Code, in view of the interim license application withdrawal. Subsequently, the Department referred WMI to the State Department of Justice (DOJ) for legal action in April 1983, and a law suit was filed in 1986, in response to alleged violations of chs. NR 180 and NR 181, Wis. Adm. Code, at the facility.

In November 1985, WMI submitted a post-closure permit application to U. S. EPA, which has not, to date, been reviewed or acted upon by U. S. EPA. In April 1988, negotiations between the Department and WMI on issues related to the closure and long-term care plan and cost estimates began in earnest as part of the overall negotiations to resolve the outstanding law suit. Agreement on the closure and long-term cost estimates for the facility was reached in March, 1989. A stipulated agreement was signed resolving the law suit, and approved by the court on April 3, 1989. The Department approved the closure and long-term care cost estimates under chs. NR 500-520, Wis. Adm. Code, on July 14, 1989, but did not review or approve the estimates under ch. NR 181, Wis. Adm. Code, at that time.

REVIEW COMMENTS

Regulation as a Single Disposal Unit

The Omega Hills North landfill can be characterized as a large, complex landfill developed in several different areas in stages. Filling occurred over many years in a contiguous fashion, with each new fill area adjacent to and above earlier fill areas. In some areas of the facility, base and sidewall soil conditions and berm construction was documented. However, no information has been submitted documenting the construction of any engineered structure within the fill area (excluding the side perimeter) extending from the base of the site to the elevation of the final cover, which would act as a complete effective barrier to leachate and gas migration, to prevent the migration of hazardous constituents from one area of the facility to another. In addition, no information has been submitted documenting any areas where separate cells were constructed with undisturbed land in between the cells. Therefore, for the purposes of this determination, the facility is considered one disposal unit, in accordance with the definition of "unit" in s. NR 181.04(107t), Wis. Adm. Code. Under this definition, a unit includes "... the largest portion in which there is significant likelihood of mixing hazardous waste constituents in the same area." It should be noted that the Omega Hills North facility includes other non-disposal units, such as the leachate pretreatment facility.

Status of the A-1 Area

The A-1 Area is located in the southeast portion of the facility, as shown on the map in Appendix B of the determination. This area was filled and covered before the RCRA regulations went into effect, and the Department understands

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the area never received interim status under RCRA and was not a part of the interim license application discussed above. The A-1 Area does not appear to have a construction documentation report prepared for its cover, as outlined on drawings 13181-1 in the March 30, 1989 closure and long-term care plan. No information has been submitted documenting that this area is separated by undisturbed land from the rest of the fill areas, or documenting that there is any engineered structure within the fill that would act as a complete, effective barrier to leachate and gas migration from the rest of the fill areas into the A-1 Area. Therefore, for the purposes of the attached determination the A-1 Area is also a part of the single disposal unit discussed above. As a result, the A-1 Area is regulated like the rest of the landfill under this determination. This means the requirements for documenting and certifying closure under s. NR 181.42(8)(i) and (9)(i), Wis. Adm. Code, apply to that area. It also means the A-1 Area will be considered when setting the design management zone (DMZ) under table 4 of s. NR 140.22, Wis. Adm. Code. Finally, it means the A-1 Area is subject to the long-term care requirements under ch. NR 181, Wis. Adm. Code.

It should also be noted that the A-1 Area is considered a solid waste management unit (SWMU) subject to the corrective action requirements under HSWA and s. 144.735, Stats. While this determination does not require any improvements to the existing cover over the A-1 Area, such improvements could be required in the future under those corrective action authorities.

Closure Documentation and Certification

Since the landfill is defined as one unit, closure documentation and certification for the entire landfill, including the A-1 Area, must be accomplished in accordance with s. NR 181.42(8)(i)2., Wis. Adm. Code. This rule requires construction documentation reports for all closure work accomplished and a certification by both WMI and an independent registered engineer that the entire landfill, including the A-1 Area, was closed in accordance with the closure plan and all Department requirements and plan approvals.

Certain areas in the landfill have already had final cover applied to them, and construction documentation reports were prepared in the past for them (except the A-1 Area) as outlined on drawing 13181-1 in the March 30, 1989 Closure and Long-Term Plan. Some of these reports have been approved by the Department under the applicable solid waste rules. For the purposes of this determination, the Department has determined that all the previously approved construction documentation reports, whether or not prepared by an independent engineer, are acceptable for the closure documentation required by s. NR 181.42(8)(i)2.b, Wis. Adm. Code, provided that the certification statement required by s. NR 181.42(8)(i)2.a, Wis. Adm. Code, is met for all these areas. Therefore, an independent registered engineer will have to review all the previously prepared construction documentation reports as well as the reports for those areas not yet closed and prepare a certification statement for the entire facility. Should supplemental data on the construction of the previously closed areas, including the A-1 Area, be needed, it may be necessary to perform additional fieldwork and sampling and analysis of in-place cover materials.

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Finally, we note the plan does not specify the date by which construction documentation and the independent certification will be submitted, nor does it discuss the required deed notation and certification thereof (this is not to be confused with the survey plat, which is discussed in the plan). In accordance with s. NR 181.42(8)(i)2.(intro.), and (9)(i), Wis. Adm. Code, all the construction documentation reports not yet received by the Department for the entire landfill, including the A-1 Area, the required certification statement and the required deed notation certification for the entire landfill, including the A-1 Area, must be submitted to the Department within 60 days after completion of final closure, in accordance with the completion dates specified in condition no. 1 of the 1988-1989 Refuse Filling Plan Approval. The actual recording of the deed notation will need to be accomplished before the certification of its recording is submitted.

Management of Newly Generated Waste after Covering and Facility Decontamination

Since the landfill is defined as one unit, and there are no effective barriers we are aware of to prevent hazardous constituent migration, any waste, contaminated groundwater, contaminated soils, liquids or other material removed from the landfill as a result of any construction, remediation or investigation must be managed as a listed hazardous waste at an on or off-site facility that is licensed, permitted or approved to accept such hazardous wastes. This is because such waste or material is a mixture of solid and hazardous waste and/or is derived from the previous disposal of listed hazardous waste (see s. NR 181.12(1)(b)2. and 4., Wis. Adm. Code). Therefore, there are no "documented non-hazardous waste areas" which would contain non-hazardous wastes we are aware of.

In view of the above discussion, any remedial or other construction work at this site will likely contaminate the equipment used for construction with hazardous constituents. Therefore, all such equipment must be subject to an approved decontamination procedure that must be developed now. The closure plan indicates such a procedure will only be developed if needed at a later date. Therefore, the determination contains a condition requiring WMI to develop and submit that procedure for approval within 30 days.

Final Use

The Closure and Long-Term Care Plan does not clearly specify a final use for the landfill. The site was originally approved in 1978 with the expectation that it would become a ski hill. However, that final use may not be compatible with the required performance goals for cover infiltration, the regulatory requirement to not disturb the cover (see s. NR 181.42(9)(c), Wis. Adm. Code), the number of structures (caissons, wells, etc.) constructed on the site, any liability concerns you may have and local community input and land-use (zoning) considerations. Therefore, the determination contains a condition requiring WMI to develop a final use plan for the site that considers these and any other factors that impact the site's final uses, and

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submit it for approval in accordance with a schedule that allows enough time to develop a draft plan and seek Department and community input.

Long-Term Care License and Duration

Chapter NR 181, Wis. Adm. Code, requires WMI to apply for and obtain a long-term care license for the facility. Section NR 181.55(5)(f), Wis. Adm. Code, requires the submittal of an application for a long-term care license after closure of the facility. For the purposes of this determination, this application must be submitted within 30 days after the Department approves the closure documentation and certification required under s. NR 181.42(8)(1)2., Wis. Adm. Code.

The hazardous waste rules also fix the term of the long-term care license and the duration of this determination to ten years, under s. NR 181.55(5)(g), Wis. Adm. Code. For the purposes of this determination, this ten-year period will begin once the long-term care license is issued. One hundred eighty (180) days before the end of this period, WMI is required to submit a new, updated Long-Term Care Plan that addresses any then current requirements, including, but not limited to the requirements of the hazardous waste rules in effect at that time and any then current Plan of Operation approval requirements under the solid waste rules in effect at that time. An updated Long-Term Care Plan will have to continue to be submitted at 10 year intervals until the end of the long-term care period.

Final Cover Inspection Frequency

While the Long-Term Care Plan specifies that the final cover will be inspected for various items, no frequency of inspection is specified. Generally, the frequency of such inspections will be the highest in the first few years after closure; once a good cover is established, the frequencies may decrease. An amendment to the inspection manual for the site must be submitted within 30 days for approval that outlines the proposed frequencies, and accounts for specific site conditions, including steep sideslopes and the required final use plan discussed above.

Miscellaneous Hazardous Waste Rule Requirements

The Closure and Long-Term Care Plan did not address several ch. NR 181, Wis. Adm. Code, requirements, so they are addressed as conditions in the determination. These include:

1. Section NR 181.42(8)(c) and (9)(f), Wis. Adm. Code - plan amendments
2. Section NR 181.42(9)(e)(intro), Wis. Adm. Code - maintenance of the Long-Term Care Plan at the facility
3. Section NR 181.42(9)(k), Wis. Adm. Code - certification of completion of long-term care

4. Section NR 181.44(14)(b)6., Wis. Adm. Code - benchmark maintenance
5. Section NR 181.55(8)(e), Wis. Adm. Code - other license/plan approval conditions

Section NR 181 Groundwater Monitoring and Corrective Action

There are several conditions in the attached determination which are intended to bringing the site into compliance with the monitoring requirements of s. NR 181.49, Wis. Adm. Code. Since the facility accepted hazardous waste after July 26, 1982, it is subject to the groundwater and leachate monitoring requirements of s. NR 181.49 (4) and (6), Wis. Adm. Code, as revised on March 1, 1988.

Section NR 181.49(6)(c), Wis. Adm. Code, requires the Department to specify groundwater protection standards for the facility for constituents in Table VI of s. NR 181.16(4), Wis. Adm. Code, which have been detected in groundwater and are likely to be derived from waste in the landfill. Table A of condition 16 lists these constituents and the concentration limits. These limits are being set at the ch. NR 140, Wis. Adm. Code, Enforcement Standard (ES) for those constituents for which Enforcement Standards exist. For the constituents that do not have ESs, we are requiring WMI to propose health-based concentration limits should these compounds be detected during future monitoring. We may expand the list of hazardous compounds for which concentration limits are set if additional compounds are detected in groundwater around the facility.

Since the facility has caused a release of hazardous constituents to groundwater and the concentrations exceed the concentration limits set in this determination, WMI is required to institute a corrective action program by s. NR 181.49(6)(a)1.c., Wis. Adm. Code, as outlined under s. NR 181.49(6)(k), Wis. Adm. Code. As part of the corrective action, the determination requires the continued maintenance and operation of already approved remedial measures such as leachate extraction and groundwater removal from the upper and intermediate sand seam extraction systems until the concentration of hazardous constituents is reduced to below the concentration limits set in the determination.

Section NR 181.49(6)(k), Wis. Adm. Code, requires the removal or treatment in place of any hazardous constituents which may have migrated past the design management zone (DMZ). Table 4 of s. NR 140.22, Wis. Adm. Code, sets the DMZ for this hazardous waste facility at 0 feet. Groundwater monitoring has detected hazardous constituents above the concentration limits in the bedrock aquifer (e.g. PW-2). Although remedial measures previously performed (e.g., the N-22 area) have resulted in improved water quality in the bedrock aquifer, recent monitoring results indicate that some compounds are still present above the concentration limits. Starting with the March, 1989 monitoring round, additional VOC data will be available for many of the new and existing wells. The determination requires WMI to submit an annual report discussing the extent of hazardous constituents in groundwater around the site, based upon the previous year's monitoring results. Remedial measures must be proposed

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for portions of the aquifer not already undergoing active remediation, in which hazardous constituents are still being detected above the concentration limits. The first report must be submitted by March 1, 1990, and annually thereafter during the compliance period.

In accordance with s. NR 181.49(6)(f), Wis. Adm. Code, the determination specifies the compliance period as the number of years equal to the active life of the waste management area. Because our records indicate the landfill accepted what would now be considered hazardous wastes as early as July 1974, and closure is anticipated in October, 1989, the compliance period is 15 years. The period continues indefinitely until WMI can demonstrate that groundwater protection standards are not exceeded for 3 consecutive years.

The monitoring program required in this determination is necessary to meet the intent of s. NR 181.49(6)(k)4., Wis. Adm. Code, which requires sufficient monitoring to demonstrate the effectiveness of the corrective action program. In order to comply with the requirements of that section, Group E wells listed in condition 1 of the December 7, 1988 Plan Modification are being designated NR 181 wells to better assess site compliance with ch. NR 181, Wis. Adm. Code.

We are granting an exemption to the quarterly monitoring requirement at some of the wells to allow annual monitoring.

Section NR 181.49(6)(j)6., Wis. Adm. Code, requires that all monitoring wells be sampled for constituents contained in Table VI of s. NR 181.16(4), Wis. Adm. Code on an annual basis. At this time we are granting an exemption from this requirement for most of the monitoring wells and are requiring this protocol only at selected leachate sampling points (Manholes 17 and 18). Should monitoring at these points reveal the presence of additional Table VI compounds, additional leachate or groundwater Table VI monitoring may be required.

Under s. NR 181.49(6)(h), Wis. Adm. Code, the Department is required to specify a statistical test for the compliance monitoring program. At this time, the Department will specify the Mann-Whitney test to determine if the concentrations are statistically increasing. This nonparametric test has the advantage of easily handling 'no-detect' values and includes increased protection of falsely indicating a statistical increase by including the previous quarter's results. The following example shows how this technique would be applied.

Table 1. Example Data Set - Tetrachloroethylene at Well #1

<u>New Monitoring Data (Data Set A)</u>	<u>Initial Data (Data Set B)</u>
2	<1
3	<1
	<5
Number of Samples (N_A)=2	<2
	2
	Number of Samples (N_B)=5

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Table 2. Ranked Concentrations

Rank	1.5	1.5	3	4.5	4.5	6	7
Value	<1	<1	<2	2	2	3	<5
Data Set	B	B	B	B	A	A	B

The test statistic W is calculated by adding the ranks of data set A:

$$W = 4.5 + 6 = 10.5$$

The test statistic T is calculated by the following equation:

$$T = W - [N_A(N_A+1)/2] = 10.5 - [2(2+1)/2] = 7.5$$

The following table is the table of Mann-Whitney T statistics for an initial data set of 5 points ($N_A=5$) and a new data set of 2 points ($N_A=2$):

Table 3. T Statistics ($N_A=2$, $N_B=5$)

	Lower Limit	Upper Limit
α	T_{α}	$T_{1-\alpha}$
0.001	0	10
0.005	0	10
0.01	0	10
0.025	0	10
0.05	1	9
0.10	2	8

In order to establish that a statistically significant increase may have occurred, the upper limit statistic must be equal to or greater than 9 ($\alpha = 0.05$). As the calculated test statistic is 7.5, there is no evidence of a statistically significant increase.

WMI may propose an alternate procedure, if it is consistent with s. NR 181.49(6)(h)2., Wis. Adm. Code, and U. S. EPA's new statistical requirements as promulgated on October 11, 1988.

(Note: The new U.S. EPA requirements will require that at least 4 samples are collected semiannually under 40 CFR 264.99(f).) The Department's quarterly sampling requirements will provide only 2 samples semiannually. When the Department adopts the new rules, the quarterly sampling must be revised to provide at these additional samples.)

Please be aware that the s. NR 181.49, Wis. Adm. Code corrective action requirements of this approval in no way limit the applicability of the requirements of chs. NR 140 or 500-520, Wis. Adm. Code, to the facility. Additional corrective actions could be mandated to meet the requirements of these codes. Section NR 181.49(6)(k)7, Wis. Adm. Code, requires the semi-annual submission of reports documenting the effectiveness of the corrective action program. We feel that an annual report is sufficient to assess the corrective action program.

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Sampling and Analysis Procedures

The Long-Term Care Plan refers to the Department's December 7, 1988 Plan of Operation Modification (under the Solid Waste Rules, chs. NR 500-520, Wis. Adm. Code) as the groundwater sampling and analysis plan. However, that modification did not contain the procedures for groundwater sampling and analysis; it merely outlined where new wells are to be installed, sample frequency and sampling parameters. Normally, a groundwater sampling and analysis plan is prepared to outline the procedures. In fact, such a plan has been prepared for the site and was examined and found generally acceptable at an inspection by district staff on September 14, 1988. Therefore, that plan, which is now on file with the Department, will be incorporated into the determination by reference and made a part of the Long-Term Care Plan.

The Long-Term Care Plan does not mention procedures for gas sampling and analysis. Again, a sampling and analysis plan for gas has been prepared for the site, in draft form, and is on file with the Department. That plan will also be incorporated into the determination and made a part of the Long-Term Care Plan. A condition is included requiring that the gas sampling and analysis plan be finalized and submitted for review within 30 days of the date of the determination.

Both sampling and analysis plans will have to be updated and revised as necessary to account for new regulatory requirements, changes in monitoring programs initiated by WMI and any changes required by the Department or U.S. EPA. It may be necessary for WMI to revise the Groundwater Sampling and Analysis Plan at this time (you may have already done so recently) to account for s. NR 181.49, Wis. Adm. Code, groundwater monitoring and corrective action requirements that are specifically required by the determination. Any proposed changes must be submitted to the Department for review.

Revised Cost estimates and Proof of Financial Responsibility

Based on the s. NR 181.49, Wis. Adm. Code, groundwater monitoring and corrective action requirements outlined above, it will be necessary to revise the cost estimates for long-term care to account for the required program. Revised cost estimates must be submitted within 60 days after the Department acts on the first corrective action report required on March 1, 1990, outlining the extent of hazardous constituents in groundwater around the site and proposing remedial measures for the portions of the aquifer not already undergoing active remediation. The proof of financial responsibility for the facility must then be updated to account for these revised cost estimates by the next anniversary date of the proof mechanism that occurs after the Department takes action on the revised estimates.

Long-Term Care Monitoring Costs Reduction

As noted above, the Department approved the cost estimates under chs. NR 500-520, Wis. Adm. Code, in a separate action on July 14, 1989. During the course

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of negotiations on those estimates, we agreed to an assumed reduction to the monitoring costs after 30 years. Our agreement to assume a reduction in monitoring would be allowed after 30 years is only for the purpose of estimating long-term care costs. Any proposed changes to the required monitoring program set forth in the Department's December 7, 1988 letter and the attached determination must be accompanied by a formal plan modification request along with all supporting justification. No reductions in monitoring may be made without first receiving written Department approval.

Summary of Submittals

For ease of reference, this table outlines the submittals required by the determination:

Table 4. Required Submittals

<u>Condition No.</u>	<u>Requirement</u>	<u>Date Required By</u>
No. 1. - No. 3.	Construction documentation reports not yet received, required independent certification and required deed notice certification	60 days after completion of final closure, in accordance with condition No. 1 of the 1988-89 refuse filling plan approval
No. 5.	Decontamination procedure submittal	30 days from the date of this determination
No. 6.	Final use plan	Draft-60 days from the date of this determination; final-180 days from the date of this determination
No. 7.	Long-term care license application	30 days after the Department takes action on the closure documentation and required certifications
No. 8.	New Long-Term Care Plan	180 days prior to the date each Long-term care license expires (each license expires 10 years from the date it is issued)

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No. 9.	Cover inspection frequencies (amend the inspection manual)	30 days from the date of this determination
No. 21.	Final gas sampling and analysis plans	30 days from the date of this determination
Nos. 10. & 21.	Revisions to the gas and groundwater sampling and analysis plan	As required
No. 20.d.	Annual s. NR 181.49, Wis. Adm. Code, hazardous constituent assessment and corrective action report	March 1 of every year of the compliance period (defined in Condition 18), beginning on March 1, 1990
No. 22.	Revised long-term care cost estimates	60 days after the Department acts on the report under Condition 20.d
No. 22.	Updated proof of financial responsibility	By the next anniversary date after the Department acts on the revised cost estimates

RESPONSE TO COMMENTS

On September 13, 1989, WMI submitted, through its attorneys, comments on the Department's August 14, 1989 draft determination, along with other legal documents that requested various actions by the Department. The legal documents will be responded to under separate cover. A meeting was held on September 14, 1989 to discuss certain technical issues related to the draft determination. WMI submitted additional comments related to the statistical test used for groundwater monitoring on September 14, 1989, through its attorneys. WMI submitted additional comments on the final use plan issue and a copy of an August 13, 1976 soil documentation report prepared by STS Engineers, Inc. on September 19, 1989. WMI submitted information on a site in Pennsylvania on September 26, 1989. Department staff had additional conversations with WMI staff regarding statistical analysis issues on September 28, 1989. The Department's response to all the comments, submittals (except the legal documents) and the meeting are outlined below.

Finding of Fact No. 1

The intent of the finding is to establish that the record contains facts upon which jurisdiction is based, not to give the entire history of the landfill, nor to set out the full record upon which the decision is based. This finding remains unchanged.

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Findings of Fact No. 2 and 3

Again, these findings are not intended to give a complete history, nor set out the entire record. Key events or conclusions are set out. The findings remain unchanged, but any historical information related to hazardous waste activities was considered and the historical overview section revised accordingly.

Finding of Fact No. 4

The decision was written with the history of the landfill in mind, which involves an understanding of, in a general sense, most of the documents and correspondence related to the landfill. This involves literally hundreds of documents, too burdensome to name here. The finding specifically lists the more important documents considered. The rationale for the Department's findings or conditions can reasonably be ascertained from the documents which are specifically cited in the findings of fact. For purposes of the determination, the Department is not placing significant reliance on any unspecified document, but by noting the existence of other relevant documents and reports on file, it asserts that the determination is further supported by the file. The finding remains unchanged.

Finding of Fact No. 5

The Department believes the finding is accurate as written and remains unchanged. The finding (and findings 6 - 9) is a factual basis for Conclusion of Law No. 3 and Conditions related to regulating the landfill as a single unit and the regulation of materials removed from the landfill. It is not necessary to set out the full hazardous waste disposal history for the purposes of this finding, but merely to establish that listed hazardous waste was accepted for disposal at the landfill, a fact supported by WMI's comments on this finding.

Finding of Fact No. 6

This finding needs only to establish that the potential exists for hazardous constituents to migrate throughout the landfill, not establish that such migration has absolutely occurred. Just because the Department did not find that the migration has definitely, without any doubt, occurred does not mean that the migration hasn't occurred. We believe the finding is accurate as written and has not been changed.

Finding of Fact No. 7

The comment listed both Findings of Fact Nos. 6 and 7 in the introduction. We assume that was a typographic error and WMI intended to only comment on Finding of Fact No. 7 here.

The Department believes the finding is accurate as written and remains unchanged. The finding (and findings 5, 6, 8 and 9) is a factual basis for Conclusion of Law No. 3 and Conditions related to regulating the landfill as a single unit and the regulation of materials removed from the landfill. It is

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not necessary to set out the full hazardous waste disposal history for the purposes of this finding, but merely to establish that hazardous waste was mixed with solid waste in the landfill, a fact supported by WMI's comments on this finding. However, it should be noted that this finding is only a part of the basis for Conclusion of Law No. 3 and the Conditions relating to the regulation of materials removed from the landfill. The Department relied on both the "derived-from" rule under s. NR 181.12(1)(b)4, Wis. Adm. Code, and the "mixture" rule under s. NR 181.12(1)(b)2, Wis. Adm. Code for this basis. This finding only relates to the latter. The Department agrees that if it were only relying on this finding, we would only regulate materials removed from portions of the landfill where it is documented that hazardous and solid wastes were mixed. However, the Department is also using findings 5, 6, 8 and 9 as a basis for regulating the materials (it should be noted that findings 5, 6, 8 and 9 relate to both the "derived-from" and "mixture" rules). The comment on affirmative evidence and the U. S. EPA Superfund guidance cited is addressed in the response to the comments on Finding of Fact No. 10 and Condition No. 4, below.

Findings of Fact Nos. 8 and 9

The Department has examined the report referenced in the comment (which is dated August 13, 1976, not 1978) and the reports listed on pages 19 and 20 under the comment on Finding of Fact No. 4 as agreed to at the September 14 meeting and affirmed that findings 8 and 9 are still accurate as written and remain unchanged. In its interpretation of the "derived-from" and "mixture" rules and the definition of "unit" in s. NR 181.04(107t), the Department must rely on interpretive guidance when examining the possibility of separation between units and the possible migration of hazardous constituents in a unit. The interpretive guidance, in this case, is based on U. S. EPA's policy on separation of contiguous hazardous and non-hazardous units at landfills that continue to accept non-hazardous waste when it is desired to avoid the defining of the solid waste unit as a "lateral expansion of an existing unit" therefore avoiding the application of the minimum technology requirements under HSWA. The U. S. EPA policy was applied at sites in Wisconsin, including the WMI Metro site. U. S. EPA policy calls for engineered structures to be present between contiguous units (note: if there was undisturbed land between units they would not be contiguous) that provide physical and hydraulic separation to effectively prevent the migration of hazardous constituents. Even though there was some documentation performed on the characteristics of the base and sidewall soils for the Germantown Parcel, there is no evidence that a continuous barrier exists between the A-1 Area and the remainder of the landfill, including the Germantown Parcel. In fact, the construction and documentation of the Germantown Parcel is similar to that undertaken in the western expansion of the landfill. While these sidewalls were also to have provided a continuous barrier, monitoring data from the N-22 well and subsequent remedial actions revealed that, in fact, substantial contaminant escape had occurred. Therefore, it is the Department's opinion that a continuous barrier which meets the intent of U. S. EPA's policy, and hence the Department's guidance, does not exist.

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Finding of Fact No. 10

The Department generally agrees that additional affirmative evidence of waste disposal activities is necessary to establish the first date in the proposed finding. In addition, in instances where more affirmative evidence of waste acceptance activities are required, the Department intends to follow the U. S. EPA guidance on the types of evidence to accept. The Department has reexamined its records to determine if better evidence of hazardous waste acceptance exists. The records show toxic and hazardous waste accounting forms for the site, which list the waste type, generator, amount and facility receiving the waste beginning in July, 1974. The finding and related discussion in this letter have been revised accordingly.

The Department rejects WMI's contention that it lacked authority to promulgate the March, 1988 revisions to ch. NR 181, Wis. Adm. Code. The Department also rejects the claim that it is retroactively applying standards and regulatory conditions. Retroactive application of a requirement means that past acts, which were legal when done, are later deemed to have been illegal. WMI has confused retroactive application of a requirement with the applicability criteria upon which the Department's prospective requirements are based. The Department's rules do not make conduct that occurred prior to the effective date of the rules illegal, but they do set out requirements to be met after the effective date of the rules by certain facilities already in existence when the rules took effect.

Finding of Fact No. 11

The finding has been revised to delete the wording in question. The Department is not requiring additional wells in the determination.

Finding of Fact No. 15

The comment sets forth the wording of the second sentence in the finding incorrectly. The Department assumes this was a typographical error. The finding has been revised to correct an error in wording and remove unnecessary language.

The response to the comment regarding compliance and the DMZ is contained in the response to Conclusion of Law No. 2 and Condition No. 17, below.

The Department is unaware of any conflicts between this conditional approval and the December 7, 1988 plan approval modification. This approval was drafted to build on the previous modification. WMI should identify conflicting conditions.

Requested Additional Findings

The requested additional findings are not needed to establish a factual basis for the decision. However, the Department appreciates and acknowledges the efforts WMI has made to address problems at the landfill, and the historical overview section of this letter has been revised to include some of the information provided as appropriate.

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Condition No. 1

The response to the inclusion of the A-1 Area comment is provided in the response to the comment on Findings of Fact Nos. 8 and 9, above.

The time period specified in the condition is a requirement under s. NR 181.42(8)(i)2., Wis. Adm. Code. More time could be allowed only if WMI applied for an exemption under s. NR 181.05, Wis. Adm. Code, and the exemption was granted. The Department is not expressing an opinion on whether such an exemption would be granted here.

Condition No. 2

The time period specified in the condition is a requirement under s. NR 181.42(8)(i)2., Wis. Adm. Code. More time could be allowed only if WMI applied for an exemption under s. NR 181.05, Wis. Adm. Code, and the exemption was granted. The Department is not expressing an opinion on whether such an exemption would be granted here.

Condition No. 3

The time period specified in the condition is a requirement under s. NR 181.42(8)(i)2 and (9)(i), Wis. Adm. Code. More time could be allowed only if WMI applied for an exemption under s. NR 181.05, Wis. Adm. Code, and the exemption was granted. The Department is not expressing an opinion on whether such an exemption would be granted here.

Condition No. 4

This condition sets out the requirements relating to the re-disposal of wastes in the landfill that are generated from on-site remedial actions and investigations, herein referred to as the "re-disposal issue". This issue involves both Department and U. S. EPA regulations and policies. U. S. EPA's policies relating to this issue are still evolving. To give a clear response to the comments, it is helpful to briefly describe both the Department's and U. S. EPA's regulations and policies.

Under s. NR 181.44(1), Wis. Adm. Code, a landfill may not operate (i. e. accept hazardous waste for disposal) without having an operating or interim license or waiver issued under ch. NR 181, Wis. Adm. Code (variances aren't available to landfills under s. NR 181.55(10), Wis. Adm. Code). In accordance with the Chapter, hazardous waste can be generated from on-site remedial or investigative activities at the landfill. Under the "derived-from" and "mixture" rules, s. NR 181.12(1)(b)4. and 2., Wis. Adm. Code, material removed from the landfill, once removed for management, are hazardous wastes if they are contaminated by hazardous constituents from the past disposal of listed hazardous wastes. A closed landfill which doesn't have an operating or interim license may not accept such material for disposal, even if the material originated there, without violating the rule. The Department has, as a matter of policy, allowed closing landfills that formerly accepted hazardous waste (the Department may allow a closing hazardous waste landfill to continue

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to operate and accept solid waste under s. NR 181.44(12)(a), Wis. Adm. Code) and still have open hazardous waste units to continue to accept remedial waste generated on-site without a license or waiver, but only until the open hazardous waste unit closes.

U. S. EPA's regulations are similar and require a landfill to have a permit or interim status to continue to accept hazardous waste, and also require a landfill to close within 180 days after ceasing to accept hazardous waste (U. S. EPA is proposing regulations that would allow disposal facilities to continue to accept non-hazardous solid wastes without closing). It's regulations also include the "derived-from" and "mixture" rules. In addition, U. S. EPA has developed a "contained in" policy for non-solid waste media, such as soil or groundwater that is contaminated by hazardous wastes. Such contaminated media must be managed as a hazardous waste until all the contamination is removed, if contaminated by listed waste, or until the contaminated media no longer displays a characteristic, if contaminated by characteristic waste. U. S. EPA has been petitioned to develop a "deminimus" rule setting specific concentration levels for hazardous constituents in media below which it would no longer be regulated as a hazardous waste. Until such a rule is promulgated, U. S. EPA and the states may look at each situation involving potentially contaminated media on a case by case basis.

U. S. EPA has developed additional policy and guidance related to the application of the HSWA land disposal restrictions for on-site actions at sites remediated under a federal Superfund project. The Department understands that U. S. EPA intends that this policy apply to RCRA hazardous waste facilities. WMI's comments referred to some of this guidance, as related to Superfund sites. In summary, this guidance describes how to determine when a RCRA waste is being managed and when a disposal activity takes place on-site that triggers the land disposal restrictions. A new term, "placement", was developed to help determine when disposal occurs that cause the land disposal restrictions to apply. This term does not appear in the federal regulations. However, the Department understands that U. S. EPA plans to codify the policy in the future. In short, "placement", and hence disposal, takes place if waste is managed in a different unit than it came from, or in the same unit it came from if it is first managed in an intervening treatment or storage unit. If the waste is moved around or consolidated in the same unit or "area of contamination", consolidated without being managed in an intervening unit, then "placement" does not occur.

The Department has not yet incorporated the land disposal prohibitions into ch. NR 181, Wis. Adm. Code, but intends to do so in the future. Once those rules are adopted, the Department will consider adopting the U. S. EPA policies and guidance related to them. In the meantime, the Department can consider, on a case by case basis, U. S. EPA's policies when formulating its own policies on the re-disposal issue.

WMI has requested that the Department regulate wastes removed from the landfill differently. Specifically, WMI has requested that:

1. Material removed from the landfill that has "clearly been significantly contaminated by demonstrable mixing and are removed for placement at a

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different management unit..." would be the only material managed as a hazardous waste in accordance with the condition.

2. The Department grant a treatability variance for soil and debris from the landfill and allow removed waste to be replaced in the existing fill or disposed of at Parkview Landfill.

3. That leachate from the landfill be assigned the hazardous waste number for all the hazardous wastes known to be accepted at the landfill.

In response to request 1, limiting the requirements to material that has "clearly been significantly contaminated by demonstrable mixing" would not meet the intent of the "derived-from" and "mixture" rules under ch. NR 181, Wis. Adm. Code. In addition, such a limit would be contrary to U. S. EPA's regulations; we are not aware of any federal policy that limits these two rules as this proposed language would. Finally, it is not clear who would make such a demonstration. Any material from the landfill that has the potential to be contaminated by hazardous constituents must be managed as a hazardous waste. However, in response to the submitted comments and the September 14 meeting discussion, the Department can further refine the condition to more clearly indicate that if soil, including cover soil, and groundwater is demonstrated by WMI to not be contaminated, then it would not be regulated as a hazardous waste in accordance with the condition. This was the condition's original intent. Until a "deminimus" rule is in place, the Department has latitude in judging if a demonstration method is adequate. Generally, the Department's policy is to require testing of the material, and field screening methods can be considered, depending on the hazardous constituents of concern (i. e., if VOC's are of concern, an Hnu or OVA screening method may be appropriate). Also, Department field staff may determine, on a case by case basis, that certain materials are not considered contaminated based on field observations.

Request 1 also has language further limiting the requirements only to material "removed for placement in a different management unit". This limitation would defeat the purpose of the condition and would generally allow re-disposal on site without limits. This would be in clear violation of ch. NR 181, Wis. Adm. Code, as outlined in the second paragraph of the response to the Condition No. 4 comments, above. We also note this would be in conflict with the Closure and Long-Term Care plan, page 2-10. The Department does not intend to grant a "blanket" approval to the re-disposal of waste in the landfill during the entire long-term care period. Therefore, the condition will not be revised to conform with this request. However, in light of U. S. EPA's policies, as discussed above, the Department is willing to consider, on a case by case basis, requests for re-disposal of wastes associated with remedial actions and investigations, with each separate remedial action or investigation proposal. That will allow the Department to take into account any changes in U. S. EPA guidance or policy, the kinds of wastes being generated, any testing requirements, and the portion of the landfill the wastes are being re-disposed of in. The Department will not approve such proposals unless they conform with any U. S. EPA guidance, policy or regulations in effect at the time.

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Request 2 refers to a variance authority under the HSWA land disposal prohibitions, which are not contained in ch. NR 181, Wis. Adm. Code at this time. Therefore, the Department does not have the authority to consider such a variance, so the condition can't be changed in response. In addition, it is not clear that U. S. EPA will grant this variance authority to a state as part of the authorization process.

Request 3 refers to a letter regarding a leachate pretreatment pilot facility that has since closed at the landfill. The Department has no objection to the suggested waste code designation. The proper procedure to formally notify the Department and U. S. EPA of a waste code designation is through specific correspondence and a revised notification form. However, it should be noted that if such material (or any other material from the site covered by this condition) is manifested, a specific waste code or code(s) will be needed on the manifest form. Questions on this issue should be directed to the Department's Southeast district hazardous waste staff. No revision to the determination appears to be necessary to respond to the request.

Condition No. 5

The Closure and Long-Term care plan did not include such procedures related to remedial work, as outlined in paragraph 2 on page 2-10 of the plan. The procedures should discuss, but need not be limited to: all the cleaning method(s), all the equipment to be cleaned and management methods for all wastes and solutions generated.

Condition No. 6

Based on WMI's comments, and other comments received (discussed below), the Department agrees that a revised schedule is appropriate. The condition has been revised to include a schedule that allows sufficient time to obtain community input and for the development of a draft final use plan and a final final use plan.

Condition No. 8

The Department agrees that the wording of this condition was not clear and has revised it appropriately to account for the comment.

Condition No. 12

The Department is prepared to work with WMI to develop a tracking system.

Condition No. 14

See the response to Condition No. 4 comments.

Condition No. 15

As stated in the proposed condition, all wells (group 1 and group 2 wells) are to be designated NR 181 wells.

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Condition No. 16

Again, WMI asserts that application of the monitoring and corrective action requirements of s. NR 181.49(6), Wis. Adm. Code to the landfill is beyond the Department's authority because it is a retroactive classification of a closed site.

The Department disagrees with WMI's characterization of the rules as retroactive (See response to comments on Finding of Fact No. 10, above.) and maintains that it has ample authority to promulgate s. NR 181.49(6), Wis. Adm. Code. Furthermore, the facility is not a closed site. It has yet to complete closure under ch. NR 181, Wis. Adm. Code.

The Department would like to clarify WMI's comments regarding the duration of remedial action. Rather than continuing remedial action until a health based concentration limit is met, ch. NR 181, Wis. Adm. Code requires that the "concentration limit" be met. The "concentration limit" may be a health based concentration limit or an Alternate Concentration Limit (ACL) or background.

This approval requests that WMI develop health based or background based concentration limits for chloroethane, naphthalene and phenol. The Department suggested that WMI use the Mann-Whitney test in the event that the data contained a significant number of values that were less than the detection limit.

The example of the Mann-Whitney test was meant as an inter-well rather than an intra-well test. In the event that the concentration limit is based on background, an upgradient well would be used to establish the concentration limit.

As indicated elsewhere in this letter, the Department is not requiring the use of the Mann-Whitney test. Should WMI propose an alternate test and that data set contains a substantial amount of censored data, the alternate test must handle the censored data in an acceptable manner.

In general, the Department accepts the U. S. EPA guidance submitted by WMI in determining whether a statistically significant exceedance of a concentration limit has occurred. However, the choice of non-parametric statistics is not appropriate at this time because the data distribution is not known and the non-parametric test requires significantly more samples than a parametric test. The Department will assume the data from contaminated wells is normally distributed and proposes the confidence interval approach (section 6.2.1.1 of EPA's guidance document) in determining whether a well concentration exceeds a concentration limit.

One modification required of the confidence interval approach is the choice of the t statistic. Though ch. NR 181, Wis. Adm. Code, does not explicitly state the significance level for compliance monitoring wells, a 0.05 significance level is used for detection monitoring wells. The Department will use this 0.05 significance level for compliance wells to provide a reasonable test in determining whether a concentration limit has been exceeded.

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The procedure for conducting the confidence interval approach is as follows:

- 1) Calculate the mean (X) and standard deviation (S) for each parameter that has a concentration limit for each well.
- 2) Calculate the lower confidence limit of the mean for each well using the latest 4 quarters sampling results (n=4) by the following equation:

$$\text{Confidence Limits} = X \pm t_{(0.95, n-1)} S/\sqrt{n}$$

Where t is 2.3 for 4 samples.

- 3) In compliance monitoring, if the lower Confidence Limit is less than the concentration limit, the well is in compliance.

Condition No. 17

Again, WMI asserts that application of the monitoring and corrective action requirements of s. NR 181.49(6), Wis. Adm. Code to the landfill is beyond the Department's authority because it is a retroactive classification of a closed site.

The Department disagrees with WMI's characterization of the rule as retroactive (See response to comments on Finding of Fact No. 10, above.) and maintains that it has ample authority to promulgate s. NR 181.49(6), Wis. Adm. Code. Furthermore, the facility has yet to complete closure under ch. NR 181, Wis. Adm. Code.

WMI suggests that the Design Management Zone (DMZ) should be expanded to include the perimeter engineering modifications. These barriers are designed to catch waste after it escapes from the unit. Since the limit of the DMZ includes any barrier to contain hazardous waste within the unit, this would constitute an unlicensed expansion of the landfill. As required by s. NR 181.49(6), Wis. Adm. Code, the DMZ is 0 feet from the limits of fill, including any dike or liner.

The Department is unable to consider an exemption to the 0 feet requirement. Chapter NR 140, Wis. Adm. Code conditionally allows a DMZ to be increased by 50%, but since the DMZ is set at 0 feet for hazardous waste facilities such as this one, Ch. NR 140, Wis. Adm. Code does not allow an expansion of the DMZ (because 50% of 0 feet is still 0 feet).

The Department has considered the information submitted by WMI on September 26, 1989 regarding the compliance boundary at the Modern Landfill in Pennsylvania. The Department has learned, based on a discussion with the state contact for the site, that the facility is not covered by the hazardous waste regulations. Therefore, the approach at that site does not pertain to a facility regulated under s. NR 181.49(6), Wis. Adm. Code.

Condition No. 18

Again, WMI asserts that application of the monitoring and corrective action requirements of s. NR 181.49(6), Wis. Adm. Code to the landfill is beyond the Department's authority because it is a retroactive classification of a closed site.

The Department disagrees with WMI's characterization of the rule as retroactive (See response to comments on Finding of Fact 10, above.) and maintains that it has ample authority to promulgate s. NR 181.49(6), Wis. Adm. Code. Furthermore, the facility has yet to complete closure under ch. NR 181, Wis. Adm. Code.

The basis for the extension of the compliance period is s. NR 181.49(6)(k)6, Wis. Adm. Code.

Section NR 181.49(6)(f), Wis. Adm. Code states that the compliance period begins when the owner/operator initiates a compliance monitoring program that meets the requirements of s. NR 181.6(j), Wis. Adm. Code (Compliance Monitoring). Since the attached determination requires WMI to initiate a compliance monitoring program, the compliance period begins with its issuance.

During the course of the September 14, 1989 meeting, the topic came up as to the feasibility of ever reaching the concentration limit through corrective action. According to Jack Dowden, WMI had conversations with Jim Brown (U. S. EPA) who indicated that U. S. EPA was allowing corrective action to be terminated once concentrations had stabilized (i.e., concentrations were not significantly changing during the course of corrective action). In our staff's discussions with Jim Brown, Jim indicated that this was not the case. The concentration limits were not to be based on the technology chosen for corrective action. If the chosen technology is not effective in achieving the concentration limits, it is the facility's responsibility to reevaluate corrective action to determine what further measures should be taken.

Through discussions between Mark Tusler and Jack Dowden, it was mutually agreed that the exact procedures to determine compliance with the concentration limits over a three year period would be best established at a later time when more information is available on the distribution of the data to address the false-positive concern. We have included additional language in Condition No. 18 to require WMI to propose a procedure to determine compliance with the concentration limit.

Condition No. 20

WMI again asserts that application of the monitoring and corrective action requirements of s. NR 181.49(6), Wis. Adm. Code to the landfill is beyond the Department's authority because it is a retroactive classification of a closed site.

The Department disagrees with WMI's characterization of the rule as retroactive (See response to comments on Finding of Fact No. 10, above.) and maintains that it has ample authority to promulgate s. NR 181.49(6), Wis. Adm.

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Code. Furthermore, the facility has yet to complete closure under ch. NR 181, Wis. Adm. Code.

See the response to comments on Conclusion of Law No. 2, regarding WMI's substantive comments on compliance at the DMZ.

The Department has addressed the concern over when corrective action may be terminated through the use of the confidence limit approach WMI proposed. The use of the upper Confidence Limit in corrective action is consistent with the use of the lower Confidence Limit in compliance monitoring.

WMI may submit the reports required under this condition, beginning in March 1990, with the other annual report submittals, or may submit separate documents, at its discretion. The condition was intended to have the submittal deadlines for these reports coincide.

The corrective action proposal is due by March 1 of each year beginning in 1990. The proposal is not required for areas that have been previously addressed by a corrective action measure. Ch. NR 181, Wis. Adm. Code, requires this proposal to establish a program to meet the requirements of s. NR 181.49(6)(k), Wis. Adm. Code.

Conclusion of Law No. 1

WMI's offers an objection rather than a comment on this conclusion of law. After considering the objection, the Department has decided that the conclusion will remain as proposed. However, the conclusion has been revised to include citation of s. 144.64(2m), Stats.

The Department disagrees with WMI's legal analysis. WMI has confused the Department's authority to conditionally approve (and thereby "modify", in layman's terms) an owner or operator's plan with the authority to modify a previously issued department plan approval. WMI failed to consider the Department's authority to condition its approvals of closure and long term care plans under ss. 144.44(3)(c) and 144.64(2m), Stats., and instead focused only on the Department's authority to modify plan approvals under s. 144.44(3)(d), Stats. WMI's legal analysis also failed to give due consideration to the Department's authority to promulgate conditional approval provisions under s. NR 181.42 (8) and (9), Wis. Adm. Code.

The attached determination is not a modification of a previous plan approval. Rather, it is a conditional approval of WMI's closure and long term care plan. As we noted at the beginning of this letter, the attached determination represents the first formal administrative action under ch. NR 181, Wis. Adm. Code for the facility.

See also Finding of Fact No. 15, Conclusion of Law No. 8 in the determination and the Department's response to comments on Finding of Fact No. 10 and Condition No. 16, above.

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Conclusion of Law No. 2

See the Department's response to WMI's comment on Conclusion of Law No. 1, above.

The Department is not aware of any prior actions under ch. NR 181, Wis. Adm. Code where it has set a DMZ of 100 feet for this facility.

WMI's reliance on s. NR 140.22(5)(d), Wis. Adm. Code is misplaced. This rule places restrictions on the adjustment of the DMZ under par. (b) and is not germane to the initial application of a DMZ under par. (a) of the rule.

WMI has presented no information to show that compliance with the standards is impossible. Since the engineering modifications are outside the proposed DMZ, WMI has only shown that compliance is unlikely with the existing engineering modifications. This indicates that additional modifications may be required to address the contamination between the landfill liner and engineering modifications.

Conclusion of Law No. 3

The Department's response to WMI's objection to Conclusion of Law No. 3 may be found at the response to comments on Findings of Fact Nos. 5 to 9, above. The Federal Register citation relied upon by WMI seems to deal with mixing of sludge and wastewater in lagoons, not to hazardous waste landfills.

Conclusion of Law No. 4

This comment acknowledges that this conclusion of law is correct, so no response appears to be necessary.

Conclusion of Law No. 5

For reasons previously stated, the Department disagrees with WMI's analysis of and objection to the Department's authority. Moreover, as has also been noted elsewhere in this letter, the "corrective action" mandated by the attached determination is not being implemented under the authority of s. 144.735, Stats.

Conclusion of Law No. 6

No response to WMI's reservation appears to be necessary.

Conclusion of Law No. 7

No response to WMI's reservation appears to be necessary.

Conclusion of Law No. 8

The conclusion that the conditions of the determination are needed to ensure compliance with the hazardous waste rules is both accurate and relevant. See ss. 144.44(3)(c) and 144.64(2m), Stats., and the Department's response to

WMI's comments on Finding of Fact No. 10, Condition No. 16 and Conclusion of Law No.1, above.

WMI's logic is hard to follow. The comment seems to assert that by applying the requirements of ch. NR 181, Wis. Adm. Code to this facility, the attached determination will somehow make it "practically or technically impossible" to comply with many of these same requirements.

In addition, the "corrective action" called for in the determination is the groundwater corrective action provided for under the rule, not the statute. The rule predates the statute and uses the term in a generic sense. The statute borrows the term from federal hazardous waste law (HSWA) and uses it as more as a term of art. The statute was intended to expand the Department's authority to correspond with the 1984 federal hazardous waste amendments. It should not be read as an implied repeal of an existing administrative rule.

Although some may be confused by coincidental use of the same phrase in each, the Department is expressly not using its authority under s. 144.735, Stats., in this determination. The Department will treat WMI's comment as a recommendation that it amend s. NR 181.49, Wis. Adm. Code to substitute some other term for "corrective action" in order to prevent such confusion.

Conclusion of Law No. 9

The Department disagrees, for the reasons stated above, that the attached determination is unauthorized or contrary to law.

Response to Other Comments

On September 1, 1989, the Department received a letter from Ronald Horn and Melvin Mueller commenting on the proposed determination. The Department's response to those comments are as follows.

Condition No. 6

The authors requested more time for WMI to develop a final use plan, to allow for suggested community input. The Department agrees and has revised the condition to include a schedule allowing for more time than 30 days.

For the commentor's information, the Department notes that the long-term care period for the landfill has been extended beyond 30 years after closure. It is now required that the long-term care period extend 30 years beyond the time leachate head levels are complied with, a period that is now estimated to be 60 years after closure.

Condition No. 16

WMI is still being required to sample for the full list of VOC's. Condition No. 16 refers only to the VOC's which have been detected in groundwater which are also hazardous constituents. Detection limits are specified in the December 7, 1988 plan modification for the compounds for which the existing

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analytical methods generally have detection limits above the drinking water standards. The levels of the detection limits were set at levels generally achievable by most labs. Should analytical methodologies improve, the required detection limits will also be reduced. For other compounds, the detection limits are well below the concentrations of health concern.

The previous plan modifications require quarterly VOC monitoring at 36 wells including the private wells closest to the landfill. The exemptions for annual monitoring is for wells in areas not previously impacted. Although groundwater flow velocities within the bedrock aquifer are higher than some have suggested, most of the wells on the annual VOC schedule are screened in unconsolidated deposits where flow rates should be substantially slower. Considering this and the number of wells sampled on a quarterly basis, it is not likely that annual sampling of some of the wells will significantly hinder determination of the effectiveness of the remedial actions or cause an increased risk to public health. Should VOC's be detected during the annual sampling, the modifications require immediate resampling and quarterly VOC monitoring thereafter. Because of the presence of many clay layers within the landfill, leachate production (and exfiltration from the landfill) does not experience strong temporal oscillations, reducing the need to schedule VOC sampling to particular times of the year.

Condition 19

Protocol E was included as attachment A to the December 7, 1988 modification. While a copy can be provided, it should be noted that it is equivalent to Table VI in ch. NR 181, Wis. Adm. Code. Should the commentors still wish to receive a copy, it will be provided upon request.

Condition 20

Although extension of the water main along Wasauskee Road was a required remedial measure, it was not included because it was a one-time action, the culmination of which will not be predicated upon groundwater quality.

Condition 23

The determination does not set a 30 year long-term care period. Referring to the Stipulation and Judgement is equally effective as citing the language; the condition is not ambiguous. Please see the response to the comment on Condition No. 6.

Leachate Recirculation

This was attempted in the past at Omega Hills North, and the Department believes this practice contributed to the extremely high leachate head levels in the landfill. Reintroducing liquid to the site would likely result in it taking much longer to reach the required head levels, if they could be reached at all, thus allowing high outward gradients in the bottom and sides to exist for a much longer period. This would likely result in an increase in contaminant release through the bottom and sides, and a longer period of such a release. These impacts should be avoided, so recirculation is no longer

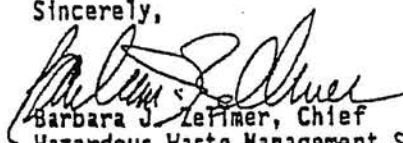
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considered a good idea, even if decomposition can be improved, especially at a facility with only minimal leachate extraction capabilities.

Should you have any questions on this matter, please contact Mr. Gary Edelstein of this office at (608) 267-7563, Mr. Mark Tusler of this office at (608) 266-5798 or Mr. Jim Schmidt of our Southeast District Office at (414) 562-9648.

Sincerely,



Barbara J. Leffmer, Chief
Hazardous Waste Management Section
Bureau of Solid & Hazardous Waste Management

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wmwifdc1.pdf

Attach.

cc: Jim Schmidt - SED
Pete Flaherty - LC/5
Carl Sinderbrand - DOJ
Bill Muno - EPA Region V SHR-12
Chuck Slaustas - EPA Region V SHR-13
Ron Horn - Germantown
Mel Mueller - Germantown
Lloyd Turner - Dir. Pub. Works, Village of Germantown
John Belken - Warzyn Engineering, Inc.
Dan Otzelberger - WMI

BEFORE THE
STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

CONDITIONAL CLOSURE AND
LONG-TERM CARE PLAN APPROVAL (MODIFICATION)
OMEGA HILLS NORTH LANDFILL
EPA ID# WID000808568

FINDINGS OF FACT

The Department finds that:

1. Waste Management of Wisconsin, Inc. (WMI) owns and operates a solid and hazardous waste disposal facility (herein referred to as the landfill) located in Section 36, T9N, R20E, Village of Germantown, Washington County, Wisconsin.
2. On March 31, 1989, Warzyn Engineering, Inc., on behalf of WMI submitted a plan entitled "Closure and Long-Term Care Plan, Omega Hills Recreational Landfill Development."
3. On June 9, 1989, WMI submitted a Contingency Plan and an Inspection Plan as supplements to the Closure and Long-Term Care Plan referenced in Findings of Fact 2, above.
4. Additional documents considered in connection with this review include the following:
 - a. A document entitled "Specific Groundwater Monitoring Plan for the Omega Hills Landfill", on file with the Department.
 - b. A draft document entitled "Specific Gas Monitoring Plan for the Omega Hills Landfill", on file with the Department.
 - c. The Department's Plan of Operation Approval Letter for the facility dated June 15, 1978 and modifications thereto.
 - d. The April 3, 1989, Stipulation and Judgement entered into by WMI and the Department to resolve case No. 86-CV-245, State v. Waste Management, et al.
 - e. WMI's Comments and objections to August 14, 1989 Draft Conditional Approval (Modification) for the Omega Hills Closure and Long-Term Care Plan, and WMI's Comments and Responses to DNR Conclusions of Law, dated and submitted on September 13, 1989, and additional comments regarding U. S. EPA Statistical Guidance, dated September 14, 1989, prepared by Friebert, Finerty & St. John, S. C.
 - f. A letter dated August 30, 1989 from Ronald Horn and Melvin Mueller commenting on the proposed determination, recieved on September 1, 1989.

- g. Various technical documents and reports, including final cover construction documentation reports, on file with the Department pertaining to the landfill.
5. The landfill accepted hazardous wastes listed in s. NR 181.16, Wis. Adm. Code, for disposal.
6. Hazardous constituents from the hazardous wastes accepted at the landfill for disposal can migrate throughout the entire landfill.
7. Hazardous wastes accepted at the landfill for disposal were mixed with solid wastes at the landfill.
8. There are no engineered structures within the landfill (excluding the site perimeter) which extend from the base to the elevation of the final cover that will serve to effectively prevent the migration of hazardous constituents from one area of the landfill to another.
9. There are no portions of the landfill where separate landfill cells were constructed with undisturbed land in between such cells.
10. The landfill accepted hazardous wastes (as defined by s. NR 181.12, Wis. Adm. Code) at least as early as July, 1974, after July 26, 1982 and up to October 29, 1982.
11. Modification of the existing environmental monitoring program is necessary to achieve compliance with the requirements of s. NR 181.49, Wis. Adm. Code, and assess the following: the degree and extent of groundwater contamination around the facility; the potential for gas migration; and the performance of implemented remedial actions.
12. Groundwater monitoring at the landfill has indicated that groundwater protection standards set in this determination for certain hazardous constituents under s. NR 181.49(6), Wis. Adm. Code, have been exceeded. Appendix A lists the specific wells and constituents for which there were exceedances of the concentration limit during the March, 1989 monitoring round.
13. Volatile organic compounds (VOC's) are the most mobile and toxic compounds listed in Table VI of s. NR 181.16(4), Wis. Adm. Code, detected at the facility.
14. The NR 181 monitoring program includes wells that have not had confirmed detections of hazardous constituents (group E2 wells as defined in the December 7, 1988 plan modification for the landfill). Due to the rate of groundwater flow at the facility, annual, rather than quarterly monitoring will provide sufficient protection of public health and the environment.
15. The special conditions set forth below are needed to assure that the landfill does not pose a substantial hazard to the environment or public health and welfare.

CONCLUSIONS OF LAW

1. The Department has the authority to approve or modify a Closure and Long-Term Care Plan under s. NR 181.42(8)(d) and (9)(g), Wis. Adm. Code, and ss. 144.44(3) and 144.64(2m), Stats.
2. In accordance with Findings of Fact 10., above, the Department has the authority to subject the Omega Hills North facility to the monitoring and corrective requirements of s. NR 181.49(4) and (6), Wis. Adm. Code. Because the landfill is subject to s. NR 181.49(6), Wis. Adm. Code, the design management zone (DMZ) of the landfill is 0 feet, in accordance with table 4 of s. NR 140.22, Wis. Adm. Code.
3. In accordance with Findings of Facts 5. through 9., above, the Department has the authority to regulate the landfill as a single disposal unit, in accordance with s. NR 181.04(107t), Wis. Adm. Code, and the authority to regulate all wastes within the entire landfill as hazardous waste, in accordance with s. NR 181.12(1)(b)2. and 4., Wis. Adm. Code.
4. The Department has the authority under s. 144.441(2)(c), Stats., to require the owner of a hazardous waste disposal facility to remain responsible for long-term care of the facility for a period of more than 30 years if it is necessary to protect human health or the environment.
5. Section NR 181.49(6)(a)1.c., Wis. Adm. Code, requires the owner or operator of the landfill to institute a corrective action program under s. NR 181.49(6)(k), Wis. Adm. Code.
6. Site conditions warrant an exemption to annual monitoring of NR 181 designated wells for the constituents listed in Table VI of s. NR 181.16(4), Wis. Adm. Code, as required by s. NR 181.49(6)(j)6, Wis. Adm. Code.
7. Site conditions warrant an exemption to the required quarterly determination of the concentration of hazardous constituents at group E2 wells.
8. The conditions of this action are needed to ensure compliance with the applicable portions of ch. NR 181, Wis. Adm. Code.
9. In accordance with the foregoing, the Department has the authority to take the following action:

GRANT OF EXEMPTIONS

The Department hereby grants the following exemptions:

1. An exemption to annual monitoring of NR 181 designated wells for all constituents listed in Table VI of s. NR 181.16(4), Wis. Adm. Code, as required by s. NR 181.49(6)(j)6, Wis. Adm. Code, is granted. As specified in Condition 16 of this approval, WMI shall monitor the NR 181 wells for only the hazardous constituents listed in that condition. Additional monitoring of wells for Table VI constituents may be required in the future.
2. An exemption to quarterly monitoring of certain NR 181 wells for hazardous constituents in Table A, below, on a quarterly basis as required by s. NR 181.49(6)(j)4, Wis. Adm. Code, is granted. The concentrations of hazardous constituents shall be determined on an annual basis. These wells are outlined in condition 1 of the December 7, 1988 Plan Modification approval. Additional monitoring of wells for hazardous constituents may be required in the future.

CONDITIONAL CLOSURE AND LONG-TERM CARE PLAN
APPROVAL (MODIFICATION)

The Department hereby approves the Closure and Long-Term Care Plan for the landfill, subject to the following conditions which hereby modify the plan:

1. WMI shall submit closure construction documentation reports for all portions of the landfill, including the A-1 Area (see Appendix B), to the Department for review and approval within 60 days after final closure, in accordance with the final closure date required under condition No. 1 of the 1988-1989 Refuse Filling Plan Approval, except construction documentation reports already submitted to the Department for certain portions of the landfill that have completed closure need not be submitted again. All such reports shall meet the requirements of s. NR 181.42(8)(i)2.b, Wis. Adm. Code. It may be necessary for WMI to conduct additional testing of certain areas of the site to meet the requirements of this condition.
2. WMI shall submit a certification statement prepared by both an independent registered professional engineer and WMI to the Department for review and approval certifying that the entire landfill, including the A-1 Area, has been closed in accordance with the requirements of s. NR 181.42(8)(i)2.a, Wis. Adm. Code, within 60 days after final closure in accordance with the final closure date required under condition No. 1 of the 1988-1989 Refuse Filling Plan Approval. It may be necessary for WMI to conduct additional testing of certain areas of the site to meet the requirements of this condition. If additional soil testing or other documentation is undertaken, the results of those efforts shall be included in the submittals under Condition 1., above.
3. WMI shall submit a deed notation certification, in accordance with s. NR 181.42(9)(i), Wis. Adm. Code, to the Department for the entire landfill, including the A-1 Area, within 60 days after final closure, in accordance with the final closure date required under condition No. 1 of the 1988-1989 Refuse Filling Plan Approval.
4. All wastes, liquids, contaminated groundwater, contaminated soils or other materials removed from the landfill as a result of any construction, remediation or investigation shall be managed as a hazardous waste at a facility licensed, permitted or approved to accept such wastes, in accordance with s. NR 181.21(4), Wis. Adm. Code, regardless of where the material originates. The Department shall consider specific requests by WMI, on a case by case basis, on whether soil or groundwater to be removed from the landfill is contaminated and therefore subject to this condition. The Department shall consider specific requests by WMI, on a case by case basis, on whether material removed as part of a particular remedial action or investigation may be managed in an different fashion than set out in this condition, but only when such requests accompany the particular remedial action or investigation proposal.

5. WMI shall develop and submit to the Department for review and approval, procedures for the proper decontamination of equipment used for remedial or other construction work at the landfill, within 30 days of the date of this determination.
6. WMI shall develop and submit to the Department for review and approval, a final use plan for the landfill that considers, at a minimum, the following:

- a. Required cover performance goals for infiltration;
- b. s. NR 181.42(9)(c), Wis. Adm. Code, which restricts cover disturbance;
- c. the number of structures constructed through the final cover;
- d. liability concerns WMI may have; and
- e. local community input, including any zoning requirements.

The final use plan shall be developed in accordance with the following schedule:

- a. Submit a draft final use plan to the Department, within 60 days of the date of this determination. The draft plan is not required to consider local community input, per e., above.
 - b. Submit a final final use plan to the Department, that considers local community input, per e., above, within 180 days of this determination.
7. WMI shall complete and submit to the Department an application for a long-term license for the landfill in accordance with s. NR 181.55(5)(f), Wis. Adm. Code, within 30 days after the Department approves the construction documentation reports and certifications required under conditions 1 through 3, above.
 8. WMI shall submit a new, updated Long-Term Care Plan to the Department for review and approval 180 days before each long-term care license for the facility expires, at 10 year intervals, during the entire long-term care period. This new, updated plan shall address any then current regulatory requirements, including, but not limited to the hazardous waste rules in effect at the time of submittal, and any then current requirements imposed through modifications to the approved Plan of Operation under the solid rules in effect at the time of submittal. This condition does not in any way limit WMI's obligation to change or modify any plan approval applicable to the landfill or the Long-Term Care Plan during any long-term care license period, should that be required.
 9. WMI shall submit a revision to the inspection manual for the landfill to the Department for review and approval that specifies cover inspection

frequencies during the long-term care period, accounting for specific site conditions, within 30 days date of the date of this determination.

10. WMI shall amend the Closure and Long-Term Care Plan whenever required by the conditions specified in s. NR 181.42(8)(c) and (9)(f), Wis. Adm. Code. Such amendments shall be submitted to the Department for review and approval in accordance with those code requirements.
11. The Closure and Long-Term Care Plan shall be kept at the landfill or an appropriate office in accordance with s. NR 181.42(9)(e)(intro), Wis. Adm. Code.
12. WMI shall certify to the Department, in accordance with s. NR 181.42(9)(k), Wis. Adm. Code, that all requirements imposed during long-term care period were properly completed in accordance with the Long-Term Care Plan and any other requirements, within 60 days after completion of the long-term care period.
13. WMI shall maintain and protect all surveyed benchmarks at the landfill for the entire period of long-term care.
14. WMI shall comply with the applicable license conditions contained in s. NR 181.55(8)(e), Wis. Adm. Code.
15. All Group E wells listed in condition 1 of the Department's December 7, 1988 Plan Modification are designated "NR 181 Wells" and shall be used for the purpose of assessing compliance with the groundwater monitoring requirements of s. NR 181.49, Wis. Adm. Code.
16. Table A lists the hazardous constituents and concentration limits to which the groundwater protection standard as defined by s. NR 181.49(6)(b), Wis. Adm. Code, applies. If compounds marked with an asterisk are detected, a concentration limit shall be proposed by WMI in accordance with s. NR 181.49(6)(d), Wis. Adm. Code, within 60 days of detection and submitted in writing to the Department for approval. If the concentration limit is based upon background concentrations, a statistical procedure to determine if a significant increase over background is indicated shall also be proposed.

In compliance monitoring, the following procedure shall be used in evaluating compliance with the concentration limit:

- a. Calculate the mean (X) and standard deviation (S) for each parameter that has a concentration limit for each well.
- b. Calculate the lower confidence limit of the mean for each well using the latest 4 quarters sampling results (n=4) by the following equation:

$$\text{Confidence Limits} = X \pm t_{(0.95, n-1)} S/\sqrt{n}$$

Where t is 2.3 for 4 samples.

- c. In compliance monitoring, if the lower Confidence Limit is less than the concentration limit, the well is in compliance.

If, through the course of collecting monitoring data from this facility, WMI finds that the above statistical procedure is inappropriate due to site specific conditions, WMI may propose an alternate test.

Table A

Hazardous Constituent	Concentration Limit(ppb)
Benzene	0.67
Chloroethane	*
1,1 Dichloroethane	850
1,2 Dichloroethane	0.5
1,2 Dichloroethylene	100
Naphthalene	*
Phenol	*
Tetrachloroethylene	1
Toluene	343
1,1,1 Trichloroethane	200
Trichloroethylene	1.8
Vinyl Chloride	0.015

17. The design management zone for the landfill as defined by s. NR 140.05(6), Wis. Adm. Code, is 0 feet, as required by s. NR 140.22, Wis. Adm. Code.
18. The compliance period is the number of years equal to the active life of the waste management area. It is documented that the landfill began accepting toxic and hazardous wastes (that would now be considered hazardous waste under ch. NR 181, Wis. Adm. Code) in July, 1974 and closure is anticipated in October 1989, the compliance period for the landfill is specified to be 15 years. This compliance period begins with the effective date of this determination. As WMI is engaged in a corrective action program, the compliance period shall automatically extend indefinitely until WMI can demonstrate that the groundwater protection standard is not exceeded for a period of three (3) consecutive years.

When WMI is able to demonstrate that corrective action has been effective in reducing the levels of contamination, WMI shall submit a procedure to evaluate the facility's compliance with the concentration limit for a period of three consecutive years.

19. As required by Condition 1 of the Department's December 7, 1988 Plan Modification, WMI shall monitor manholes 17 and 18 annually for the

parameters listed in Attachment A to that approval (Protocol E). Based on this waste analysis, the Department may require additional parameters to be added to the monitoring program.

20. The following corrective action program shall be implemented by WMI at the landfill to meet the requirements of s. NR 181.49(6)(k)5, Wis. Adm. Code:
- a. The upper sand seam collection system along county line Road and the A-1 Area shall be operated and maintained in accordance with the requirements of the plan of operation approval and modifications thereto. Groundwater monitoring results from the following wells shall be used to assess compliance with the groundwater protection standard and continuation of this corrective action in this area: N-50, S-6R, S-6BR2, S-17R.
 - b. The intermediate sand seam collection system shall be operated in accordance with the requirements of the plan of operation approval and modifications thereto. Groundwater monitoring results from the following wells shall be used to assess compliance with the groundwater protection standard and the need for continuation of this corrective action in this area: N-9B, N-11, N-12, N-13A, S-6R, S-6BR2, S-17R, S-17AR, S-37R, S-38R, S-39R, and S-40R.
 - c. All leachate extraction systems shall be operated in accordance with the requirements of the plan of operation approval and modifications thereto. Groundwater monitoring results from all NR 181 wells shall be used to assess compliance with groundwater protection standards set in this approval and the need for continuation of this corrective action.
 - d. By March 1, 1990 and annually thereafter during the compliance period specified under Condition 18 above, a report shall be submitted by WMI to the Department for review and approval. The report shall contain an assessment of groundwater monitoring performed at the landfill during the previous year for the existence of hazardous constituents listed in Table VI of s. NR 181.16(4), Wis. Adm. Code. All exceedances of enforcement standards or concentration limits for those constituents shall be noted. A proposal shall be included for corrective action to remove or treat in place any hazardous constituents found at levels above the concentration limits and located beyond the design management zone which are not currently being remediated. This report shall also include a review of groundwater monitoring results required under the Plan of Operation approval. Non-NR 181 monitoring wells in areas not undergoing active remediation shall be added to the NR 181 monitoring program if exceedances of the Concentration Limits (Table A) are confirmed.
21. The documents "Specific Groundwater Monitoring Plan for the Omega Hills Landfill" and "Specific Gas Monitoring Plan for the Omega Hills Landfill (draft)" are hereby incorporated into the Closure and Long-Term Care

Plan and made a part thereof. These two monitoring plans shall be revised by WMI as needed or required in accordance with condition 10, above. The gas monitoring document shall be finalized and submitted to the Department for review and approval within 30 days of the date of this determination.

22. WMI shall prepare and submit to the Department for review and approval revised long-term care cost estimates to account for the revised monitoring program under conditions 15-20, above by March 1, 1990, with the first report required under condition 20.d. The proof of financial responsibility for long-term care for the landfill shall be updated to account for the revised estimates by the next anniversary date of the proof mechanism that occurs after the Department takes action on the updated estimates.
23. The long-term care period for the landfill shall be as specified in condition D. of the April 3, 1989 stipulation and judgement.
24. This action may not be considered an approval of a reduction in the monitoring program at the landfill at year 30 of the long-term care period. It is simply an acknowledgement that for the purposes of preparing cost estimates, it is reasonable to assume that such a reduction may be granted in the future if site conditions warrant.

The Department retains the jurisdiction to either require the submittal of additional information or to modify this approval at any time if, in the Department's opinion, further modifications are necessary. Unless specifically noted, the conditions of this approval do not supersede or replace any previous conditions of approval for the landfill.

NOTICE OF APPEAL RIGHTS

If you believe that you have a right to challenge this decision, you should know that Wisconsin statutes and administrative rules establish time periods within which requests to review Department decisions must be filed.

For judicial review of a decision pursuant to sections 227.52 and 227.53, Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to file your petition with the appropriate circuit court and

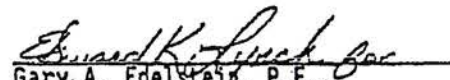
serve the petition on the Department. Such a petition for judicial review shall name the Department of Natural Resources as the respondent.

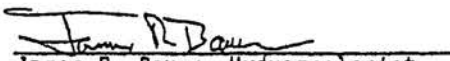
This notice is provided pursuant to section 227.48(2), Stats. :

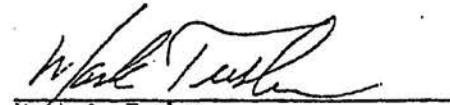
Dated: September 29, 1989

DEPARTMENT OF NATURAL RESOURCES
For the Secretary


Barbara J. Zelmer, Chief
Hazardous Waste Management Section


Gary A. Edelstein, P.E.,
Environmental Engineer,
Environmental Response and Repair Section


James R. Bauer, Hydrogeologist
Solid Waste Management Section


Mark A. Tusler,
Environmental Engineer
Hazardous Waste Management Section

Appendix A

1st Quarter Concentration Limit Exceedances

Benzene (NR 140 Enforcement Standard - 0.67 ug/l)

<u>Well</u>	<u>Concentration</u>
N22B	5
N29	50
N30	34
N35R02	9

1,2 (Cis)dichloroethylene (NR 140 Enforcement Standard - 100 ug/l)

<u>Well</u>	<u>Concentration</u>
N29	840
N31A	5,300
N33B	113
N35R02	360
N35A	250

Tetrachloroethylene (NR 140 Enforcement Standard - 1 ug/l)

<u>Well</u>	<u>Concentration</u>
N29	40

Tetrahydrofuran (NR 140 Enforcement Standard - 50 ug/l)

<u>Well</u>	<u>Concentration</u>
N27	140

Trichloroethylene (NR 140 Enforcement Standard - 1.8 ug/l)

<u>Well</u>	<u>Concentration</u>
N29	110
N31A	286
N33B	13
N35R02	11
N35A	30
N93	6
N95	2
PW02	2
PW03	23

1,1,2-Trichloroethane (NR 140 Enforcement Standard - 0.6 ug/l)

<u>Well</u>	<u>Concentration</u>
N33B	16

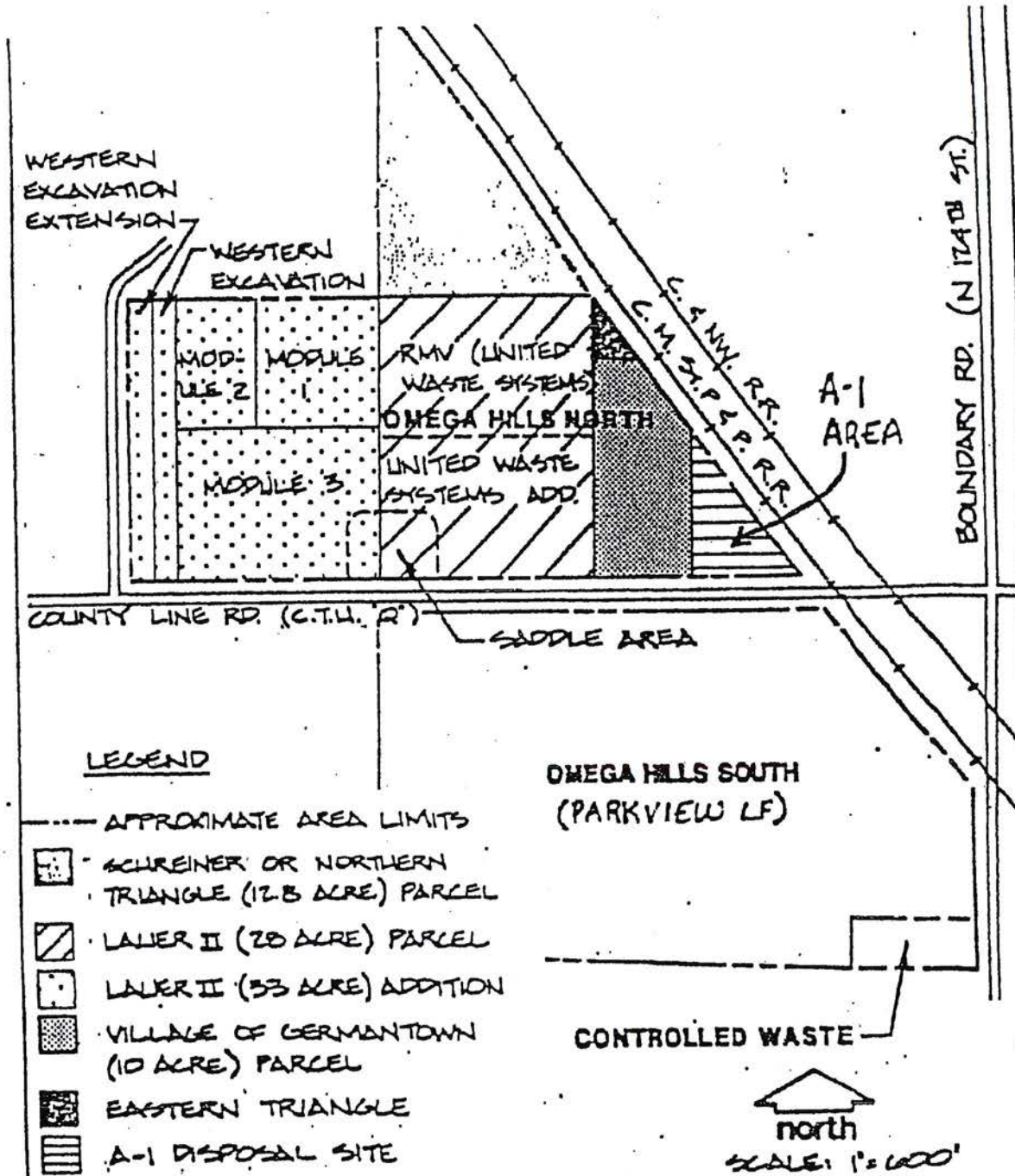
Vinyl Chloride (NR 140 Enforcement Standard - 0.015 ug/l)

<u>Well</u>	<u>Concentration</u>
N29	111
N30	40
N31A	247
N35R02	26

N89
N93
N95
PW03

10
46
4
54

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WARZYN  ENGINEERING INC		OMEGA HILLS NORTH PARCELS		
		SUMMARY REPORT		
		OMEGA HILLS LANDFILL AND RECREATIONAL DEVELOPMENT PROJECT		
		WASTE MANAGEMENT OF WISCONSIN, INC.		
		PART OF SEC. 36, T8N, R20E		
VILLAGE OF GERMANTOWN		WASHINGTON CO.	WISCONSIN	
PART OF SEC. 1, T8N, R20E				
VILLAGE OF MENOMONEE FALLS		WAUKESHA CO.	WISCONSIN	
DWN DLF	CHK'D BER	APP'D <i>Robert F. Kothberg</i>	DATE 12/31/81	C9784E-A2



September 29, 1989

IN REPLY REFER TO: 4430

Mr. Kevin O'Toole
District Manager
Waste Management of Wisconsin, Inc.
Two Park Plaza
10850 West Park Place, Suite 1200
Milwaukee, WI 53224

SUBJECT: Conditional Approval (Modification) of the
Chapter NR 181 Closure and Long-Term Care Plan
Omega Hills North Landfill
EPA ID# WID000808568

REVIEW COMMENTS

Management of Newly Generated Waste after Covering and Facility
Decontamination

Since the landfill is defined as one unit, and there are no effective barriers we are aware of to prevent hazardous constituent migration, any waste, contaminated groundwater, contaminated soils, liquids or other material removed from the landfill as a result of any construction, remediation or investigation must be managed as a listed hazardous waste at an on or off-site facility that is licensed, permitted or approved to accept such hazardous wastes. This is because such waste or material is a mixture of solid and hazardous waste and/or is derived from the previous disposal of listed hazardous waste (see s. NR 181.12(1)(b)2. and 4., Wis. Adm. Code). Therefore, there are no "documented non-hazardous waste areas" which would contain non-hazardous wastes we are aware of.

In view of the above discussion, any remedial or other construction work at this site will likely contaminate the equipment used for construction with hazardous constituents. Therefore, all such equipment must be subject to an approved decontamination procedure that must be developed now. The closure plan indicates such a procedure will only be developed if needed at a later date. Therefore, the determination contains a condition requiring WMI to develop and submit that procedure for approval within 30 days.

RESPONSE TO COMMENTS

On September 13, 1989, WMI submitted, through its attorneys, comments on the Department's August 14, 1989 draft determination, along with other legal documents that requested various actions by the Department. The legal

documents will be responded to under separate cover. A meeting was held on September 14, 1989 to discuss certain technical issues related to the draft determination. WMI submitted additional comments related to the statistical test used for groundwater monitoring on September 14, 1989, through its attorneys. WMI submitted additional comments on the final use plan issue and a copy of an August 13, 1976 soil documentation report prepared by STS Engineers, Inc. on September 19, 1989. WMI submitted information on a site in Pennsylvania on September 26, 1989. Department staff had additional conversations with WMI staff regarding statistical analysis issues on September 28, 1989. The Department's response to all the comments, submittals (except the legal documents) and the meeting are outlined below.

Condition No. 4

This condition sets out the requirements relating to the re-disposal of wastes in the landfill that are generated from on-site remedial actions and investigations, herein referred to as the "re-disposal issue". This issue involves both Department and U. S. EPA regulations and policies. U. S. EPA's policies relating to this issue are still evolving. To give a clear response to the comments, it is helpful to briefly describe both the Department's and U. S. EPA's regulations and policies.

Under s. NR 181.44(1), Wis. Adm. Code, a landfill may not operate (i. e. accept hazardous waste for disposal) without having an operating or interim license or waiver issued under ch. NR 181, Wis. Adm. Code (variances aren't available to landfills under s. NR 181.55(10), Wis. Adm. Code). In accordance with the Chapter, hazardous waste can be generated from on-site remedial or investigative activities at the landfill. Under the "derived-from" and "mixture" rules, s. NR 181.12(1)(b)4. and 2., Wis. Adm. Code, material removed from the landfill, once removed for management, are hazardous wastes if they are contaminated by hazardous constituents from the past disposal of listed hazardous wastes. A closed landfill which doesn't have an operating or interim license may not accept such material for disposal, even if the material originated there, without violating the rule. The Department has, as a matter of policy, allowed closing landfills that formerly accepted hazardous waste (the Department may allow a closing hazardous waste landfill to continue to operate and accept solid waste under s. NR 181.44(12)(a), Wis. Adm. Code) and still have open hazardous waste units to continue to accept remedial waste generated on-site without a license or waiver, but only until the open hazardous waste unit closes.

U. S. EPA's regulations are similar and require a landfill to have a permit or interim status to continue to accept hazardous waste, and also require a landfill to close within 180 days after ceasing to accept hazardous waste (U. S. EPA is proposing regulations that would allow disposal facilities to continue to accept non-hazardous solid wastes without closing). It's regulations also include the "derived-from" and "mixture" rules. In addition, U. S. EPA has developed a "contained in" policy for non-solid waste media, such as soil or groundwater that is contaminated by hazardous wastes. Such contaminated media must be managed as a hazardous waste until all the contamination is removed, if contaminated by listed waste, or until the contaminated media no longer displays a characteristic, if contaminated by characteristic waste. U. S. EPA has been petitioned to develop a "de minimus"

rule setting specific concentration levels for hazardous constituents in media below which it would no longer be regulated as a hazardous waste. Until such a rule is promulgated, U. S. EPA and the states may look at each situation involving potentially contaminated media on a case by case basis.

U. S. EPA has developed additional policy and guidance related to the application of the HSWA land disposal restrictions for on-site actions at sites remediated under a federal Superfund project. The Department understands that U. S. EPA intends that this policy apply to RCRA hazardous waste facilities. WMI's comments referred to some of this guidance, as related to Superfund sites. In summary, this guidance describes how to determine when a RCRA waste is being managed and when a disposal activity takes place on-site that triggers the land disposal restrictions. A new term, "placement", was developed to help determine when disposal occurs that cause the land disposal restrictions to apply. This term does not appear in the federal regulations. However, the Department understands that U. S. EPA plans to codify the policy in the future. In short, "placement", and hence disposal, takes place if waste is managed in a different unit than it came from, or in the same unit it came from if it is first managed in an intervening treatment or storage unit. If the waste is moved around or consolidated in the same unit or "area of contamination", consolidated without being managed in an intervening unit, then "placement" does not occur.

The Department has not yet incorporated the land disposal prohibitions into ch. NR 181, Wis. Adm. Code, but intends to do so in the future. Once those rules are adopted, the Department will consider adopting the U. S. EPA policies and guidance related to them. In the meantime, the Department can consider, on a case by case basis, U. S. EPA's policies when formulating its own policies on the re-disposal issue.

WMI has requested that the Department regulate wastes removed from the landfill differently. Specifically, WMI has requested that:

1. Material removed from the landfill that has "clearly been significantly contaminated by demonstrable mixing and are removed for placement at a different management unit..." would be the only material managed as a hazardous waste in accordance with the condition.
2. The Department grant a treatability variance for soil and debris from the landfill and allow removed waste to be replaced in the existing fill or disposed of at Parkview Landfill.
3. That leachate from the landfill be assigned the hazardous waste number for all the hazardous wastes known to be accepted at the landfill.

In response to request 1, limiting the requirements to material that has "clearly been significantly contaminated by demonstrable mixing" would not meet the intent of the "derived-from" and "mixture" rules under ch. NR 181, Wis. Adm. Code. In addition, such a limit would be contrary to U. S. EPA's regulations; we are not aware of any federal policy that limits these two rules as this proposed language would. Finally, it is not clear who would make such a demonstration. Any material from the landfill that has the potential to be contaminated by hazardous constituents must be managed as a hazardous waste. However, in response to the submitted comments and the

September 14 meeting discussion, the Department can further refine the condition to more clearly indicate that if soil, including cover soil, and groundwater is demonstrated by WMI to not be contaminated, then it would not be regulated as a hazardous waste in accordance with the condition. This was the condition's original intent. Until a "deminimus" rule is in place, the Department has latitude in judging if a demonstration method is adequate. Generally, the Department's policy is to require testing of the material, and field screening methods can be considered, depending on the hazardous constituents of concern (i. e., if VOC's are of concern, an Hnu or OVA screening method may be appropriate). Also, Department field staff may determine, on a case by case basis, that certain materials are not considered contaminated based on field observations.

Request 1 also has language further limiting the requirements only to material "removed for placement in a different management unit". This limitation would defeat the purpose of the condition and would generally allow re-disposal on site without limits. This would be in clear violation of ch. NR 181, Wis. Adm. Code, as outlined in the second paragraph of the response to the Condition No. 4 comments, above. We also note this would be in conflict with the Closure and Long-Term Care plan, page 2-10. The Department does not intend to grant a "blanket" approval to the re-disposal of waste in the landfill during the entire long-term care period. Therefore, the condition will not be revised to conform with this request. However, in light of U. S. EPA's policies, as discussed above, the Department is willing to consider, on a case by case basis, requests for re-disposal of wastes associated with remedial actions and investigations, with each separate remedial action or investigation proposal. That will allow the Department to take into account any changes in U. S. EPA guidance or policy, the kinds of wastes being generated, any testing requirements, and the portion of the landfill the wastes are being re-disposed of in. The Department will not approve such proposals unless they conform with any U. S. EPA guidance, policy or regulations in effect at the time.

Request 2 refers to a variance authority under the HSWA land disposal prohibitions, which are not contained in ch. NR 181, Wis. Adm. Code at this time. Therefore, the Department does not have the authority to consider such a variance, so the condition can't be changed in response. In addition, it is not clear that U. S. EPA will grant this variance authority to a state as part of the authorization process.

Request 3 refers to a letter regarding a leachate pretreatment pilot facility that has since closed at the landfill. The Department has no objection to the suggested waste code designation. The proper procedure to formally notify the Department and U. S. EPA of a waste code designation is through specific correspondence and a revised notification form. However, it should be noted that if such material (or any other material from the site covered by this condition) is manifested, a specific waste code or code(s) will be needed on the manifest form. Questions on this issue should be directed to the Department's Southeast district hazardous waste staff. No revision to the determination appears to be necessary to respond to the request.

BEFORE THE
STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

CONDITIONAL CLOSURE AND
LONG-TERM CARE PLAN APPROVAL (MODIFICATION)
OMEGA HILLS NORTH LANDFILL
EPA ID# WID000808568

CONDITIONAL CLOSURE AND LONG-TERM CARE PLAN
APPROVAL (MODIFICATION)

The Department hereby approves the Closure and Long-Term Care Plan for the landfill, subject to the following conditions which hereby modify the plan:

- ~~3.~~ 4. All wastes, liquids, contaminated groundwater, contaminated soils or other materials removed from the landfill as a result of any construction, remediation or investigation shall be managed as a hazardous waste at a facility licensed, permitted or approved to accept such wastes, in accordance with s. NR 181.21(4), Wis. Adm. Code, regardless of where the material originates. The Department shall consider specific requests by WMI, on a case by case basis, on whether soil or groundwater to be removed from the landfill is contaminated and therefore subject to this condition. The Department shall consider specific requests by WMI, on a case by case basis, on whether material removed as part of a particular remedial action or investigation may be managed in an different fashion than set out in this condition, but only when such requests accompany the particular remedial action or investigation proposal.



United States
Environmental Protection
Agency

Office of
Solid Waste and
Emergency Response

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Guide to Management of Investigation-Derived Wastes

Office of Emergency and Remedial Response
Hazardous Site Control Division OS-220W

Quick Reference Fact Sheet

CERCLA field investigation activities (e.g., remedial investigation/feasibility studies and remedial designs) may result in the generation of waste materials that may pose a risk to human health and the environment. These investigation-derived wastes (IDW) may include drilling muds, cuttings, and purge water from test pit and well installation; purge water, soil, and other materials from collection of samples; residues (e.g., ash, spent carbon, well development purge water) from testing of treatment technologies and pump and treat systems; contaminated personal protective equipment (PPE); and solutions (aqueous or otherwise) used to decontaminate non-disposable protective clothing and equipment. The management of IDW must ensure protection of human health and the environment and comply with (or waive) regulatory requirements that are applicable or relevant and appropriate requirements (ARAR). This fact sheet presents an overview of possible IDW management options, discusses the protectiveness requirements and ARARs associated with these options, and outlines general objectives established for IDW management under Superfund.¹

The general options for managing IDW (see Highlight 1) are collection and either (1) immediate disposal or (2) some type of interim management. Interim management may include storage or other temporary measures. As discussed below, the specific option selected will depend on the type of waste produced, its relative threat to human health and the environment, and other site-specific conditions.

IDW MANAGEMENT REQUIREMENTS

When managing IDW, site managers are required to choose an option that: (1) is protective of human health and the environment and (2) complies with (or waives) ARARs, as described below.

Protectiveness

In determining if a particular management/disposal option is protective, site managers should consider the following:

- The contaminants, their concentrations, and total volume of IDW;
- Media potentially affected (e.g., ground water, soil) under management options;
- Location of the nearest population(s) and the likelihood and/or degree of site access;
- Potential exposures to workers; and
- Potential for environmental impacts.

¹ Management of treatability study and treatment pilot wastes is discussed in Guide for Conducting Treatability Studies Under CERCLA, Interim Final, December 1989, EPA/540/2-89/058. Information on management of IDW generated during Preliminary Assessments and Site Investigations is provided in Management of Investigation-Derived Waste During Site Investigations, May 1990, EPA/540/G-91/009.

As a general rule, it will be necessary to use best professional judgment, in light of the site-specific conditions, to determine whether an option is protective of human health and the environment. For example, a site manager may determine that storing IDW temporarily until the final action or returning IDW to its source is protective, based on knowledge that the material poses low risk and/or that the final action will address any risks posed by the wastes and there will be no unacceptable risks in the interim.

Alternatively, if the site includes or is near residential areas, the site is unsecured, and/or contaminants appear to be present at unacceptable levels, it may not be protective to return excavated soil to the source. Storing IDW in containers in an on-site, secure location, or loading it off site immediately may be more appropriate.

Site managers also need to consider the potential effects of IDW management-related activities on environmental media. For example, pouring contaminated purge water on the ground around a well may not be prudent, because such an action could mobilize any hazardous constituents present in the soil or introduce contamination into clean soil.

Compliance with ARARs

Remedial Investigation/Feasibility Study (RI/FS) and Remedial Design (RD) actions must comply with ARARs "to the extent practicable, considering the exigencies of the situation" (NCP, 55 FR 8756, *emphasis added*); therefore, it generally will not be necessary to obtain a waiver if an ARAR cannot be attained during these actions. If a site manager determines that, based on site-specific factors, compliance with an ARAR is practicable but an ARAR waiver is warranted for an RI/FS or RD action, an interim action waiver may be available if the final remedy will attain the ARAR. An action memorandum should be prepared for the waiver, the state gives an opportunity to comment, and the decision document placed in the administrative record.

Highlight 1: IDW MANAGEMENT OPTIONS

<u>Type of IDW</u>	<u>Generation Processes</u>	<u>Management Options</u>
Soil	- Well/test pit installation - Borehole drilling - Soil sampling	- Return to boring, pit, or source immediately after generation - Spread around boring, pit, or source within the AOC* - Consolidate in a pit (within the AOC) - Send to on-site TDU* - Send to TDU off site immediately - Store for future treatment and/or disposal
Sediment/sediment	Sediment pit/sediment sampling	- Return to boring, pit, or source immediately after generation - Send to on-site TDU - Send to TDU off site immediately - Store for future treatment and/or disposal
Aqueous liquids (ground water, surface water, drilling fluids, other wastewater)	- Well installation/development - Well purging during sampling - Ground water discharge during pump tests - Surface water sampling	- Discharge to surface water - Pour onto ground close to well (non-hazardous waste) - Send to on-site TDU - Send to off-site commercial treatment unit - Send to POTW* - Store for future treatment and/or disposal
Decontamination fluids	Decontamination of PPE* and equipment	- Send to on-site TDU - Evaporate (for small amounts of low contamination organic fluids) - Send to TDU off site immediately - Store for future treatment and/or disposal
Disposable PPE	Sampling procedures or other on-site activities	- Send to on-site TDU - Place in on-site industrial dumpster - Send to TDU off site immediately - Store for future treatment and/or disposal

* The generation processes listed here are provided as examples. IDW may also be produced as a result of activities not listed here.

* AOC: Area of Contamination (AOC) is a site may not yet have been identified at the time of the RI/FS; TDU: Treatment/Disposal Unit; POTW: Publicly Owned Treatment Works; PPE: Personal Protective Equipment

Potential ARARs for IDW at CERCLA sites include regulations under the Resource Conservation and Recovery Act (RCRA) (including both Federal and State underground injection control (UIC) regulations), the Clean Water Act (CWA), the Clean Air Act (CAA), the Toxic Substances Control Act (TSCA), and other State environmental laws. How these various requirements may direct or influence IDW management decisions is described below.

Resource Conservation and Recovery Act (RCRA). Certain sections of the RCRA Subtitle C hazardous waste regulations (e.g., land disposal restrictions and storage restrictions) may be ARARs for IDW should RCRA hazardous waste be identified at a site. (Note that RCRA may be relevant and appropriate even if the IDW is not a RCRA hazardous waste.) A waste is hazardous under RCRA if it is listed as such in 40 CFR 261.31-261.33 or if it exhibits one of four characteristics: ignitability, corrosivity, reactivity, or toxicity.

Site managers should not assume that a waste considered to pose a potential risk at a CERCLA site is a listed or characteristic RCRA hazardous waste. Until there is positive evidence (records, test results, other knowledge of waste properties) that the IDW is a RCRA hazardous waste, site managers should manage it in a protective manner (but not necessarily in accordance with Subtitle C requirements). Business records or facility processes should be examined to determine whether RCRA listed wastes were generated and are present in the IDW. For characteristic wastes, site managers should rely on testing results or on knowledge of the material's properties. If best professional judgment and available information indicate that, for protectiveness reasons (or because RCRA requirements are relevant and appropriate), IDW is best managed as a "hazardous waste," management in accordance with Subtitle C requirements is prudent, regardless of whether it is known to be a RCRA waste.

If aqueous liquid IDW is considered a RCRA hazardous waste, the site manager should determine whether the Domestic Sewage Extension (DSE) applies to the discharge of that IDW to a POTW. The RCRA DSE exempts domestic sewage and any mixture of domestic sewage and other wastes that passes through a sewer system to a POTW for treatment from classification as a solid waste and, therefore, as a RCRA hazardous waste (40 CFR 261.4).

• Land Disposal Restrictions

If IDW is determined to be a RCRA hazardous waste and subject to the land disposal restrictions (LDRs), "land disposal" of the IDW will be prohibited unless specified treatment standards are met (see Superfund LDR Guides #5 and #7, Determining When LDRs Are Applicable to CERCLA Response Actions and Determining When LDRs Are Relevant and Appropriate to CERCLA Response Actions, OSWER Directive 9347.3-05FS and 9347.3-06FS, June 1989 and December 1989 and the NCP, 55 FR 8759, March 8, 1990). "Land disposal" occurs when wastes from different AOCs are consolidated into one AOC; when wastes are moved outside an AOC (for treatment or storage) and returned to the same or a different AOC; or when wastes are removed, placed in a separate hazardous waste management unit such as an incinerator or tank within the AOC, and then redeposited into the AOC.

Storing IDW in a container ("a portable device in which a material is stored, transported, treated, disposed of, or otherwise handled" (40 CFR 260.10)) within the AOC and then returning it to its source, however, is allowable without meeting the specified LDR treatment standards. Under the definition of "hazardous

waste management unit" (40 CFR 260.10), EPA states that "a container alone does not constitute a unit; the unit includes the container and the land or pad upon which they are placed." Therefore, returning IDW that has been stored in containers (or tanks or other RCRA-regulated units) within the AOC to its source does not constitute land disposal, as long as containers are or managed in such a manner as to constitute a RCRA storage unit as defined in 40 CFR 260.10. In addition, sampling and direct replacement of wastes within an AOC do not constitute land disposal.

• Storage

Subtitle C outlines the storage requirements for RCRA hazardous wastes. Under RCRA, "storage" is defined as "the holding of hazardous waste for a temporary period, at the end of which the hazardous waste is treated, disposed of, or stored elsewhere" (40 CFR 260.10).

"On-site Superfund actions are only required to comply with the substantive standards of other laws (see 40 CFR 300.5, definitions of applicable or relevant and appropriate requirements). Superfund sites are also exempt from permit requirements under CERCLA §121(c). Therefore, site managers are not required to comply with administrative requirements triggered by RCRA storage deadlines (e.g., contingency planning, inspections, recordkeeping). Generally equivalent administrative activities are undertaken at Superfund sites, however, under existing Superfund management practices.

Site managers storing known RCRA hazardous waste must comply with the substantive, technical requirements of 40 CFR Parts 264 and 265 Subparts I (containers), J (tanks), and L (waste piles), to the extent practicable. (See Highlight 2 for a summary of these technical requirements for each type of unit.) In addition, the ground-water monitoring requirements of 40 CFR Parts 264 and 265 Subpart F are potential ARARs, and to the extent they are determined to be ARARs at a site, they should be attained to the extent practicable (or waived). (In many cases, ground-water monitoring conducted during the RI/FS will provide protection equivalent to the Subpart F requirements.)

[NOTE: Under the LDRs, restricted RCRA hazardous waste may not be stored at a site unless the storage is solely for the purpose of accumulating sufficient quantities of the waste to facilitate proper disposal, treatment, or recovery (see 40 CFR 268.50). Generally, storing IDW until a final disposal option is selected in a Record of Decision (ROD) and implemented during the remedial action is allowable storage under the RCRA LDR storage prohibition.]

• Recordkeeping and Manifesting

If hazardous wastes are sent off site, the site manager must comply with both administrative and substantive elements of the RCRA generator requirements of 40 CFR Part 262 and LDR notification and certification requirements of Part 268. (For example, a site manager must prepare an LDR notification and certification when restricted wastes are sent off site to a land disposal facility.) These standards include requirements such as manifests for shipping waste that list all hazardous waste listings and characteristics applicable to the waste (see 40 CFR 262.11), packaging and transport requirements, and recordkeeping requirements.

If the LDRs are applicable, the following information should be collected and available before the removal of wastes to an off-site disposal facility: EPA hazardous waste number, LDR treatment

**Highlight 2:
EXAMPLES OF RCRA TECHNICAL STORAGE
REQUIREMENTS***

RCRA storage requirements, applicable to both less-than-90-days generators and permitted or interim status storage facilities, may include the following substantive requirements:

Containers 40 CFR 264 Subpart J and 265 Subpart J

- Containers must be in good condition
- Wastes must be compatible with container
- Container must be closed during storage
- Container storage areas must have a containment system that can contain 10 percent of the volume of containers or of the largest container
- Spilled or leaked waste must be removed from the collection area as necessary to prevent overflow

Tanks 40 CFR 264 Subpart J and 265 Subpart J

- Tanks must have a secondary containment system that includes a liner, a vault, a double-walled tank, or an equivalent device (applies only to certain tanks)

Waste Piles 40 CFR 264 Subpart L and 265 Subpart L

- Waste piles must have a liner and a leachate collection and removal system
- Owners/operators must have a run-off control system to prevent flow onto the active portion of the pile during peak discharge from at least a 25-year storm
- Owners/operators must have a run-off management system to collect and control at least the water volume resulting from a 24-hour, 25-year storm
- This is a partial list of substantive requirements. For more detail, see 40 CFR Part 264 and 265.

standards, manifest number for the waste shipment, and waste analysis data.

• **Underground Injection Control (UIC) Program**

Under the UIC regulations, RCRA hazardous wastes may be injected into Class I permitted wells. In some cases, hazardous liquids, such as extracted ground water from pump and treat operations, may be injected into a Class IV UIC well. For example, ground water contaminated with RCRA hazardous wastes may be injected into Class IV permitted wells if it is part of a CERCLA response action or a RCRA corrective action and if it has been treated to "substantially reduce hazardous constituents prior to such injection." (RCRA § 3020(b)). (See Applicability of Land Disposal Restrictions to RCRA and CERCLA Ground Water Treatment Reinjection, OSWER Directive #9234.1-06, December 1989.)

• **Non-RCRA Hazardous Wastes**

Some non-RCRA hazardous waste may be subject to management requirements under Subtitle D of RCRA as solid wastes. Subtitle D regulates disposal of solid waste in facilities such as municipal landfills. Therefore, non-RCRA hazardous IDW, such

as decommissioned PPE or equipment, may need to be disposed of in a Subtitle D facility (depending on State requirements).

Clean Water Act (CWA). Discharges of aqueous IDW to surface water and publicly owned treatment works (POTWs) may be required to comply with CWA Federal, State, and local requirements. Requirements to be met may include water quality criteria, pre-treatment standards, State water quality standards, and NPDES permit conditions. Direct discharges to on-site waters are subject only to substantive requirements, while discharges to POTWs and other off-site discharges must comply with both substantive and administrative CWA requirements (including permitting requirements). (See Guide to Discharging CERCLA Aqueous Wastes to POTWs, June 1991 and CERCLA Compliance with the CWA and SDWA, #9234.2-06PS, January 1991.)

Toxic Substances Control Act (TSCA). If IDW contains PCBs, TSCA treatment and/or disposal requirements may apply during its management. TSCA requirements regulate the disposal of material contaminated with PCBs at concentrations of 50 ppm or greater as found on site (i.e., based on sample analysis and not the PCB concentration of the source material (e.g., transformer fluid)). (See PCB Guidance Manual, EPA/540/G-90/007, August 1990.) In addition, TSCA storage requirements may apply that limit the time that PCBs may be stored to one year. Furthermore, if PCB materials are mixed with a RCRA hazardous waste, they may be regulated by the LDR California list prohibitions. (See RCRA sections 3004(d)(2)(D) and (E).)

Department of Transportation (DOT) requirements. Where IDW will be disposed of off site or transported on public roads to a site, DOT requirements for containerizing, labeling, and transporting hazardous materials and substances may apply.

State requirements. Promulgated State regulations that are legally enforceable, timely identified, and more stringent than Federal regulations may be potential ARARs for IDW managed on site. Substantive requirements of State law that may be ARARs for IDW management include State water quality standards, direct discharge limits, and RCRA requirements (including underground injection control regulations) promulgated in a State with an authorized RCRA hazardous waste management program (as well as programs authorized by State laws). Off-site, substantive and administrative requirements of State law may apply.

Off-Site Policy. In addition to complying with requirements of Federal and State laws, all off-site disposal of wastes must comply with CERCLA section 121(d)(3) and the CERCLA Off-Site Policy (OSWER Directive No. 9334.11 (November 13, 1987)). The Off-Site Policy establishes criteria for selecting an appropriate treatment, storage, or disposal facility (TSDF), including release criteria for all facilities that receive wastes from CERCLA-authorized or funded response actions. In addition, receiving facilities must be in compliance with all "applicable laws."

Before shipping wastes off site, approval should be obtained for the proposed disposal facility from EPA's Regional Off-Site Policy Coordinator. In addition, EPA has adopted a policy for Superfund wastes shipped out of State that written notification should be provided to receiving States (OSWER Directive 9330.2-07, September 14, 1989).

GENERAL OBJECTIVES FOR IDW MANAGEMENT

In addition to the two requirements of protectiveness and compliance with ARARs to the extent practicable (on site) or

compliance with applicable law (off site), EPA has identified two general objectives that Superfund site managers should consider when managing IDW: (1) minimization of IDW generation; and (2) management of IDW consistent with the final remedy for the site. The extent to which these objectives can be achieved is highly dependent on site-specific circumstances.

IDW Minimization

Site managers should strive to minimize the generation of IDW to reduce the need for special storage or disposal requirements that may result in substantial additional costs yet provide little or no reduction in site risks relative to the final remedial action. Generation of IDW can be minimized through proper planning of all remedial activities that may generate IDW, as well as through use of screening information from the site inspection. The potential problems of managing IDW should be a factor in choosing an investigative method. Site managers may wish to consider techniques such as replacing solvent-based cleaners with aqueous-based cleaners for decontamination of equipment, reuse of equipment (where it can be decontaminated), limitation of traffic between clean and hot zones, and drilling methods and sampling techniques that generate little waste. Examples of such techniques include using gridding techniques to minimize the number of test pits or using soil borings instead of test pits. Alternative drilling and subsurface sampling methods may include the use of small diameter boreholes, as well as borehole testing methods such as a core penetrometer instead of coring. Site managers should also be careful to keep hazardous wastes separate from nonhazardous wastes.

Management Consistent with Final Remedy

Most IDW (with the exception of non-indigenous IDW) generated during the course of an investigation are intrinsic elements of the site. If possible, IDW should be considered part of the site and should be managed with other wastes from the site, consistent with the final remedy. This will avoid the need for separate treatment and/or disposal arrangements.

Because early planning for IDW management can prevent unnecessary costs and the use of treatment or disposal capacity, IDW management should be considered as early as possible during the remedial process. A key decision to be made is whether the waste will best be treated/disposed of immediately or addressed with the final remedy. If addressed with the final remedy, IDW volumes should be considered in the FS. In addition, when IDW is stored on site, it should be managed as part of the first remedial action/operable unit that addresses the affected media.

SELECTION OF IDW DISPOSAL OPTIONS

The following sections present the Agency's presumptions for IDW management that have been established based on the above considerations. The actual option selected should be based upon best professional judgment and should take into account the following factors:

- The type and quantity of IDW generated (sludge/soil, aqueous liquid, non-indigenous IDW);
- Risk posed by managing the IDW on site (e.g., based on site access controls, contaminant concentrations);
- Compliance with ARARs, to the extent practicable (on site);
- IDW minimization; and

- Whether the final remedy is anticipated to be an off-site or on-site remedy (or the information is unknown) and whether IDW can be managed consistent with the final remedy.

Off-site Final Remedies

If a site manager believes that the final remedy will involve off-site disposal of waste, EPA's presumption is to manage the IDW as part of the remedial action addressing the waste/medium. Thus, until the final action, the IDW may be stored (e.g., drummed, covered waste pile) or returned to its source. However, the management option selected should also take into account any protectiveness concerns, ARARs, and other relevant site-specific factors (e.g., weather, storage space, and public concern/perceptions).

There are several potential reasons why it may be advisable to store IDW until the final action. First, because wastes at the site will be shipped off site eventually, returning IDW (especially sludge and soil) to its source would require that it be excavated again. Thus, site managers may consider it practical to containerize IDW as soon as it is generated. Second, storing IDW in containers may be more protective than returning it to its source. Third, because off-site actions may trigger such requirements as the LDRs, temporary storage will eliminate the need to meet these additional requirements until the final remedy.

In some cases, circumstances may lead site managers to choose to return the IDW to its source. This may be appropriate if it is determined that returning IDW to the source is protective and that storage at the site is not possible or practicable (i.e., given State or community concerns). In other cases, long-term storage may not be protective, and immediate off-site disposal may be a better option.

Example: A site involves volatile organic RCRA hazardous wastes that will likely be sent off site for final treatment and disposal. Site conditions are such that temporary storage of IDW is considered protective until the remedial action begins. Because off-site disposal will trigger RCRA disposal requirements such as the LDRs and immediate containerization would be more protective than redepositing into the source area at the time of sampling, the site manager decides to containerize the IDW (and comply with RCRA substantive technical tank and container standards) until the final action is initiated.

On-site Final Remedies (or Final Management in an Unknown Location)

When final management of waste is likely to occur on site, the management presumptions vary depending on the type of IDW produced.

Sludge/soil

Generally, the Agency expects sludge or soil IDW will be returned to its source if short-term protectiveness is not an issue. The reason behind this presumption is that IDW that may pose a risk to human health and the environment in the long term will be addressed by the final action. Storage of RCRA hazardous IDW in containers within the AOC prior to returning it to the source will not trigger the LDRs, as long as the containers are not managed in such a way as to constitute a RCRA storage unit as

defined in 48 CFR 201.12. Therefore, it may be possible to store IDW temporarily before redisposing of it. However, EPA believes that, in many cases, returning sludges and soils to their source immediately will be protective and will avoid potentially increased costs and requirements associated with storage. Site-specific decisions on how to manage sludge and soil IDW may ultimately vary from the presumption based on protectiveness, ARARs, and/or community concerns.

Example 1: The soil at a site contains wastes that are expected to be stabilized on site during the final remedial action. The site manager determines that sending soil IDW off site is not cost-effective, because off-site disposal would involve testing and transport costs for a relatively small amount of waste. Instead, knowing that the site is secure and that redisposing the waste at the source will not increase site risk or violate ARARs, the site manager decides to return soil IDW to the source area from which it originated.

Example 2: A site manager determines that returning highly contaminated PCB wastes to the ground at a site is not protective because of the potential risks associated with the material; instead, the site manager chooses to drum the waste and send it off site (in compliance with TSCA). (Off-site disposal may occur immediately or at a later date.)

Example 3: Soil IDW contaminated with a RCRA hazardous waste is generated from a soil boring. The site manager decides to put the IDW back into the borehole immediately after generation, but ensures that site risks will not be increased (e.g., the contaminated soil will not be replaced at a greater depth than where it was originally so that it will not contaminate "down" areas) and that the contamination will be addressed in the final remedy.

Aqueous Liquids

EPA has not established a presumption for the management of aqueous liquid IDW (e.g., ground water). Site managers should determine the most appropriate disposal option for aqueous liquids on a site-specific basis. Parameters to consider, especially in making the protectiveness decision, include the volume of IDW, the contaminants present in the ground water, the presence of contaminants in the soil at the site, whether the ground or surface water is a drinking water supply, and whether the ground-water plume is contained or moving. Special disposal/handling may be needed for drilling fluids because they may contain significant acid components. Examples of aqueous liquid management decisions considering these factors are presented in the following box.

Non-hazardous IDW

Non-hazardous IDW (e.g., sampling materials, disposable PPE, decontamination fluids) should be stored until the final remedy or disposed of immediately. If contaminated, such waste may not be disposed of onto the ground because such an action would add

Example 1: A site manager has large volumes of ground water IDW and does not know if it is contaminated. Pouring this IDW on the ground would not be protective, because it may contaminate previously uncontaminated soil or may mobilize contaminants that are present in the soil. Therefore, the site manager stores the water in a mobile tank until a determination is made as to whether the water and soil are contaminated or until the final action.

Example 2: IDW is generated from the sampling of background, upgradient wells. Because there are no community concerns or evidence of any soil contamination from other sources, the site manager decides to pour this presumably uncontaminated IDW on the ground around the well.

Example 3: Purge water from a deep aquifer is known to be contaminated with a RCRA hazardous waste. At this site, if this water were poured on the ground, it could contaminate a previously uncontaminated shallow aquifer that is a potential drinking water source and would have to comply with the LDRA. The site manager decides to contain the water within the AOC and store it until the final remedy.

contamination that was not present when activities began at the site (e.g., solvents used for decontamination). If non-hazardous IDW is contaminated with RCRA hazardous waste, it must be managed in accordance with RCRA Subtitle C requirements. Otherwise, site managers may generally dispose of it in an on-site dumpster (for PPE).

Example 1: Disposable PPE (e.g., gloves, shoe covers) becomes contaminated with RCRA hazardous waste during the field investigation. The site manager decontaminates and disposes of this IDW in compliance with RCRA Subtitle C requirements.

Example 2: Disposable equipment becomes contaminated during a field investigation. The site manager decontaminates them and sends them to a Subtitle D facility.

COMMUNITY CONCERNS

Residents of communities near a CERCLA site, local governments, or States may have concerns about certain disposal methods or long-term storage of IDW at the site. As with all CERCLA activities, site managers should evaluate community concerns regarding disposal of IDW in deciding what action to take. For example, if a community is concerned about the direct discharge of IDW water to surface water on site, site managers may want to consider sending the water to a POTW, if one is located nearby. In some instances, it may be appropriate to prepare fact sheets, include options in other community relations documents, or explain IDW management decisions at public meetings prior to action.

NOTICE: The policies set out in this memorandum are not final agency action, but are intended solely as guidance. They are not intended, nor can they be relied upon, to create any rights enforceable by any party in litigation with the United States. EPA officials may decide to follow the guidance provided in this memorandum, or to act in variance with the guidance, based on an analysis of specific site circumstances. The Agency also reserves the right to change this guidance, any time, without public notice.

ATTACHMENT 2

SAMPLING AND TESTING OF INVESTIGATIVE WASTES

During the installation of monitoring wells and soil borings the amount of waste material generated in the form of drilling fluids and soil cuttings should be minimized. Waste materials generated from these activities will require containerization and sampling in order to determine proper disposal or treatment options. The following is a discussion of ways to not only minimize the amount of materials accumulated and thereby minimize the number of samples which have to be collected and analyzed, but also how to sample these wastes in order to best obtain representative results.

An attempt should be made to identify the exact depth within the formation where the soil cuttings originated or, in the case of drilling fluids, were in contact with the formation, if possible. When borings are extended into or below the water table it is advisable to segregate materials from a point approximately 10 feet above the top of the water table from those collected below the water table. In that way you can potentially minimize the amount of materials which may need to be sampled and characterized because they were in contact with contaminated groundwater.

When drilling off-site, or away from the area where a release occurred, an assumption can be made that soils above the water table do not contain contaminants, and therefore do not need to be containerized or sampled. This may not be true in those situations where soil gas migration may have carried contaminants off-site to adjacent properties. Field screening equipment, such as an OVM or PID, can be used to help isolate contaminated materials from 'clean' soils and cuttings for the contaminants in question, when appropriate.

Materials collected as the result of drilling or soil boring activities which require containerization should be collected and stored in 55 gallon drums, roll-off containers, or similar containers which can be closed or covered watertight and are compatible with the wastes being stored in them. These drums or containers should be marked such that they can be clearly identified as to the exact location and depths the materials came from. These drums or containers should also be stored in a secured location, if possible, and labelled as special waste materials until an exact determination can be made.

If soil samples are being analyzed from a soil boring or well location, the results from those analyses must be directly tied back to the material collected and the container it was placed in. In certain cases, you may be analyzing specific samples based upon elevated readings from field screening devices. This is why very precise labelling and identification of containers is necessary. Should the samples be too widely distributed or should you be unable to field screen for elevated readings, such as with pesticide contamination, all samples will need to be analyzed for the contaminants of concern.

Samples should be taken such that they are representative of the waste material to be analyzed. For material stored in 55 gallon drums, if field readings do not detect a hot spot or area from the boring, a representative sample should be collected for every 5-55 gallon drums or portion thereof. This sample should be a discrete sample taken from approximately the middle of

one of the 5 drums. If the drum contains both liquid and solid fractions, these should be sampled and analyzed separately. This assumes that soil formations for the material collected in the 5 drums are consistent in their unified soil classification system (USCS) rating and there was no visual or other indications of contamination present. Where visual observations or field readings detect elevated readings, the sample should be collected from that depth or from the container where those specific materials were placed. Standard sampling methods and procedures should be followed to ensure that the results are representative of the materials in question.

If materials are being stored in a large container, such as a covered rolloff, a minimum of two samples should be collected from opposite ends of the soil pile. Two additional samples should be collected for every additional 100 cubic yards of material being collected and stored. These should be discrete samples and should be taken from at least 18 inches below the surface of the soil pile. An attempt should be made to identify those areas of a soil pile which may contain elevated concentrations or hot spots and these areas should be segregated out and sampled individually.

Liquids collected as part of well installation or development should be segregated from soils as much as possible. If the area is served by a sanitary sewerage system, permission should be obtained from its operator as well as the local District wastewater engineer for permission to directly discharge these liquids into that system. In most cases an analysis of the liquids will be required by the sewage treatment plant if information is not available on what contaminants are present.

All analyses should be performed using a method listed in EPA SW-846 designed to detect the target compounds. The method chosen should be one which gives an acceptable detection limit and will allow for characterization of the materials as hazardous or non-hazardous waste. Based upon these results, a determination will need to be made as to proper disposal or treatment options.

ATTACHMENT 3

LONG-TERM ON-SITE STORAGE OF INVESTIGATIVE WASTES (IW)

General

Storage of IW should be in above ground tanks or containers. Examples of tanks include large metal or fiberglass tanks and trailer tanks for hauling liquids on roads. Examples of containers are 55-gallon drums, rolloff boxes (also called "luggers") and U. S. DOT approved boxes for solids. Storage should not be in underground tanks, in-ground pits, surface impoundments, trenches or lagoons. The tanks or containers should be water tight and compatible with the IW being stored. Permanent labels that indicate the source of the wastes and their descriptions should be attached to all containers.

Containers or tanks should be stored in area with limited access, such as a fenced area or a building. If vandalism is a potential concern, consideration should be given to storing the IW in a building. Temporary buildings can be constructed for this purpose. For liquids, and especially highly contaminated liquids, consideration should be given to providing secondary containment for spills and leaks in accordance with the hazardous waste regulations (see below). For outdoor secondary containment, precipitation run on and run off control should be provided in accordance with those regulations.

Stored IW should be periodically inspected, with records kept. Deteriorating containers or tanks should be immediately replaced. Deteriorating 55-gallon drums can be overpacked. If a container label has deteriorated, it should also be replaced.

Hazardous IW Storage

Storage of hazardous IW should be in accordance with the Hazardous Waste Program regulation technical standards. The standards for containers are outlined in ss. NR 640.08 - 640.15. The standards for tanks are outlined in ss. NR 645.08 - 645.15.

